ADDENDUM TO THE CONTRACT

for the

RAINFOREST RECOVERY CENTER DETOX ADDITION
Contract No. BE19-173

ADDENDUM NO.: **TWO**

CURRENT DEADLINE FOR BIDS:
April 25, 2019

PREVIOUS ADDENDA: **ONE**

ISSUED BY:
City and Borough of Juneau
ENGINEERING DEPARTMENT
155 South Seward Street
Juneau, Alaska 99801

DATE ADDENDUM ISSUED: **April 19, 2019**

The following items of the contract are modified as herein indicated. All other items remain the same. This addendum has been issued and is posted online. Please refer to the CBJ Engineering Contracts Division webpage at: http://www.juneau.org/engineering_ftp/contracts/Contracts.php

QUESTIONS:

Question 1. Section 015000 Temp Facilities indicates:

"USE CHARGES
A. General: Installation and removal of and use charges for temporary facilities shall be included
in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
B. Electric Power Service: Contractor shall provide power for construction operations and temporary facilities. Contractor responsible for cost of power until final completion of Project.
C. Water and Sewer Service: Contractor shall provide water and sewer service for construction operations and temporary facilities. Contractor responsible for cost of water and sewer service until final completion of Project."

Does this mean that we are to bring in our own generation for the construction activities or do we plug into CBJ power onsite and then you figure out a fee for our usage?

Also regarding the water and sewer service I'm assuming we can use your water for tasks such as concrete pours and general cleaning. Then for sewer service we can just bring in portable toilets?

Response: The intent is that the Contractor provide a temporary electrical service for construction operations in which they are metered by AELP and pay for their electricity usage directly to AELP. Use of Owner water service without fee is acceptable. Contractor to provide portable toilet facilities for their staff. Contractors use of owner water clarified

further in Project Manual revisions.

Question 2. *Will new exit sign be required at new egress door near back of building?*

Response: No. Not a public exit.

Question 3. *Confirm that asbestos containing material will not be an issue for installation of new fire alarm devices in portions of building to remain in operation?*

Response: Reference Addendum 2 Sheet E502 note 4.

Question 4. *Are existing data cables able to be re-used from new temporary location, or is the intent to demo all existing data cables, install new to temporary rack location, and install new again to permanent new rack location?*

Response: Reference Addendum 2 Sheet E402 note 8.

Question 5. *Confirm that CAT6 data cables are required, although Sheet E402/3 indicates that owner provided rack equipment will be rated for CAT5E?*

Response: CAT 6 data cable required

Question 6. *Confirm that all rack equipment is to be provided by owner, and contractor is only to supply the vertical and horizontal management?*

Response: Reference Addendum 2 Sheet E402 detail 3 note 1.

Question 7. *Is the intent to demo existing comm link cables only, i.e. abandon existing conduit in place?*

Response: Utilize existing conduits where possible. Remove existing abandoned Fire Alarm and Network conduits in the attic.

Question 8. *Will the owner entertain other conduit routes for the new fiber service in order to avoid the boiler room as drawn?*

Response: Reference Drawing Sheet E103. Going through the boiler is the most direct path for the fiber optic cable. Alternate routes shall be coordinated between the contractor and the Engineer. Exposed conduit in finished, occupied spaces is not desired.

Question 9. *Is spec section 015000.3.2.G to imply that existing building power will not be available for contractor use, and a new temporary service is to be installed for construction purposes?*

Response: Reference Drawing sheet E202 note 2 project sequence. Contractor to provide temporary power for Contractor facilities and construction operations.

Question 10. *Sheet E402 shows a table listing rooms that will require data service to remain during the project. Room numbers shown do not seem to correlate with room numbers on drawings. Please clarify.*

Response: Room numbers shown on the table listed on Drawing sheet E402 Project Sequence: note 2 are per the existing door names and the existing network switch configuration that are not part of the renovation but needing the temporary transfer per the

drawings.

Question 11. *Can we confirm that the wall mounted data rack in the NW conference room is the only rack on site presently?*

Response: Yes.

Question 12. *Sheet E402/Detail 2 shows hardwired door access controls, but specs and floor plan indicate wireless. Are we correct to assume that the specs take precedence?*

Response: Reference Drawing Sheet E401 and E402. All access control is hardwired. Reference to addendum 1 for access control specification update.

Question 13. *Basic access control software is no longer available. Please clarify if this building is to be connected as a node on the hospital Millennium System.*

Response: Reference to Addendum 2 Access Control Specification update. Yes, access control to be tied into the existing BRH Millennium System. Reference to Addendum 1 E401 note 2.

Question 14. *Is the intent to remove all existing fire alarm devices and equipment, even those not shown in drawings? For example, annunciator in East vestibule, or Edwards fire panel in existing room 123A, etc…*

Response: Remove all existing fire alarm devices, cables and equipment's per note 4 on drawing sheet E501. Reference Addendum 2 drawing sheet E502.

Question 15. *Upon site visit, it was noticed that some of the existing pull stations are mounted higher than standard ADA regulations. Is the intent to correct these locations, or demo completely and not replace, as the drawings seem to indicate?*

Response: Reference to Drawing Sheet E502 and reference to addendum 2 sheet E100

Question 16. *Would it be feasible to install new fire alarm devices in the building portion to remain all at the same time? Sprinkler monitor and dialout could be maintained while SLC and NAC circuits/devices are changed out. This would be substantially cheaper and faster than removing and installing devices from a live system, or having two separate systems operating at the same time as is indicated in the drawings.*

Response: Alternate solutions shall be coordinated between the contractor and the Engineer during construction.

Question 17. *Is Type B fixture flush mounted?*

Response: Type B light fixture is surface mounted, reference to Sheet E302 Luminaire Schedule.

PROJECT MANUAL:

Item No. 1 SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS; 1.3, USE CHARGES, paragraph C., ***delete*** and ***replace*** paragraph in its entirety with the following: "C. Sewer Service: Contractor shall provide sewer service or temporary toilet facilities for construction operations and temporary facilities. Contractor responsible for cost of sewer

service or temporary toilet facilities until final completion of Project."

Item No. 2 SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS; 1.3, USE CHARGES, ***add*** the following paragraph: "E. Water Service: Use of Owner's water service without fee is acceptable. Contractor is responsible for any modifications of Owner's water system required for Contractor use and must return Owner's water system to original configuration upon completion of the Work. Contractor is responsible for repair of any damage to Owner's facility and systems caused by Contractor's use."

Item No. 3 ***Add*** the attached specification titled: SECTION 028213 – ASBESTOS ABATEMENT – Addendum No. 2

Item No. 4 ***Add*** the attached specification titled: SECTION 028416 – HAZARDOUS BALLASTS AND LAMPS (Addendum No. 2)

Item No. 5 ***Delete*** SECTION 087100 – DOOR HARDWARE and ***replace*** with the attached SECTION 087100 – DOOR HARDWARE (Addendum 2)

Item No. 6 SECTION 097200 – WALL COVERINGS, Part 1.2, SUMMARY, A. Section Includes: ***Delete*** the following: "3. Textile wall covering. 4. Heavy-duty, synthetic, textile wall covering. 5. Wood-veneer wall covering. 6. Wallpaper."

Item No. 7 SECTION 097200 – WALL COVERINGS, Section 1.9, FIELD CONDITIONS, paragraph A. Environmental Limitations: ***Delete*** the following: "1. Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before installation."

Item No. 8 ***Add*** the attached SECTION 281300 – ACCESS CONTROL.

DRAWINGS:

Item No. 1 Sheet A002 – SYMBOLS, ABBREVIATIONS & SCHEDULES, ***reverse*** the line types under the symbols for Smoke Partitions and Smoke Barriers.

Item No. 2 Sheet A002 – SYMBOLS, ABBREVIATIONS & SCHEDULES, PARTITION TYPES, ***modify*** the last sentence, "to provide free passage of smoke" ***to read "***to prevent the free passage of smoke."

Item No. 3 Sheet A003 - SCHEDULES, OPENING SCHEDULES, ***modify*** the following:

- **All REMARKS** which read, "wireless keycard system" ***to read***, "wired keycard system".
- Door 114 Hardware Set ***to read***, "S3".
- Door 118 Hardware Set ***to read***, "O2".
- Door 120 Hardware Set ***to read***, "O3".
- Door 161 Hardware Set ***to read***, "S".
- Door 164A Hardware Set ***to read***, "R3".
- Door 166A Hardware Set ***to read***, "R3".
- Door 167 Hardware Set ***to read***, "S".

Item No. 4 Sheet AD201 – DEMOLITION FLOOR PLAN, ***add*** a GENERAL DEMOLITION NOTE which reads, "Properly remove and dispose of polychlorinated biphenyl (PCB) containing light ballasts, and mercury-containing fluorescent lamps, thermostats and exit signs."

Item No. 5 SHEET AD201 – DEMOLITION KEYNOTES , ***add*** the following to the end of Keynote 6, "Reinstall door at end of Phase 1."

Item No. 6 SHEET AD201 – DEMOLITION KEYNOTES , ***add*** the following to the end of Keynote 7, "Partition to match A4 construction, taped and painted on occupied side, firetaped on construction side."

Item No. 7 SHEET A201 –FLOOR PLAN , ***modify*** GENERAL NOTE which reads, "5. Patch walls and ceilings in locations of removed devices… …throughout building." ***to read***, "5. Install painted metal cover plates over electrical boxes in locations of removed devices, see Elect. Note that work takes place throughout the building."

Item No. 8 SHEET A201 –FLOOR PLAN , ***add*** a KEYNOTE which reads, "4. Patch ceiling with "popcorn" texture to match adjacent as required by removed rooms and partitions. Paint ceiling from doors at Grid 3.5 west." Add keynote 4 in Hall South 104 outside of Dining 122.

Item No. 9 SHEET A302 –EXTERIOR ELEVATIONS, ***replace*** with the attached sheet A302.

Item No. 10 SHEET A303 –BUILDING SECTIONS, 1. BUILDING SECTION ***add*** a note with a leader pointing to the attic space which reads, "Neatly cut batt insulation so panels can lifted at all valve locations in piping above ceiling. ID valve locations as per mechanical specifications."

Item No. 11 SHEET A401 –ENLARGED PLAN, ***replace*** with the attached sheet A401.

Item No. 12 SHEET A503 –INTERIOR ELEVATIONS, ***replace*** with the attached A503.

Item No. 13 SHEET C102 –SITE PLAN, ENLARGED , ***replace*** with the attached C102.

Item No. 14 SHEET C103 –ALTERNATE 3 ENLARGED PLAN & DETAILS, 3. FENCE POST UPRIGHT , ***add*** a note which reads, "1/4"x10"x10" baseplate, attach with (4) 18" x ¾" threaded rods embedded in conc. Foundation. Conc. Foundation: 18" diameter x 48", buried 47" with (4) #4 reinforcing vert. and @ 12" o.c. horz."

Item No. 15 SHEET HAZ201 –HAZARDOUS MATERIALS ADVISORY – FLOOR PLAN , ***add*** the attached sheet HAZ201.

Item No. 16 SHEET M002 –SCHEDULES , ***replace*** with the attached sheet M002.

Item No. 17 SHEET M201 –FIRST FLOOR PLAN - PLUMBING , ***replace*** with the attached sheet M201.

Item No. 18 SHEET M701 –LARGE SCALE – DETOX AREA - PLUMBING , ***replace*** with the attached sheet M701.

Item No. 19 SHEET M901 –PLUMBING ISOMETRIC – WASTE AND VENT – 118 & 167, ***replace*** with the attached sheet M901.

Item No. 20 SHEET M902 –PLUMBING ISOMETRIC – WASTE AND VENT – 164A & 166A, ***replace*** with the attached sheet M902.

Item No. 21 SHEET M903 –PLUMBING ISOMETRIC – WASTE AND VENT – 162A & 114, ***replace*** with the attached sheet M903.

Item No. 22 SHEET M911 –PLUMBING ISOMETRIC – DOMESTIC WATER – 118 & 167, ***replace*** with the attached sheet M911.

Item No. 23 SHEET M912 –PLUMBING ISOMETRIC – DOMESTIC WATER – 164A & 166A, ***replace*** with the attached sheet M912.

Item No. 24 SHEET M913 –PLUMBING ISOMETRIC – DOMESTIC WATER – 162A & 114, ***replace*** with the attached sheet M913

Item No. 25 SHEET E100: Typical Device Mounting Heights: ***Add*** 43" (3'-7") UON to the center for Card Readers, Push Plates, Manual Pull Stations.

Item No. 26 SHEET E103: Detail 1: ***Add*** note 1 that states – "Reference to drawing sheet Haz 201 for network work in Room 1128 Mech and Boiler Room 1153."

Item No. 27 SHEET E401: Note 1: ***Revise*** note 1 – "Provide conduits, cables and boxes for the camera system. Cameras are owner furnished; contractor installed. Software shall be furnished and programmed by the owner."

Item No. 28 SHEET E401 Note 2: ***Revise*** note 2 – "Provide conduits, cables, boxes and devices per drawing. Software shall be furnished and programmed by the owner."

Item No. 29 SHEET E401 Double door Hall East 102: ***Remove*** push plate, conduit and cable for both doors.

Item No. 30 SHEET E402: Detail 3: ***Replace*** " CAT 5e" from the network rack note with "CAT 6".

Item No. 31 SHEET E402: Detail 3 Note 1: ***Revise*** note 1 – Provide Patch Panel and Fiber Patch Panel. Switch owner furnished and contractor installed.

Item No. 32 SHEET E402: Detail 3: ***Replace*** " CAT 5e" from the network rack note with "CAT 6".

Item No. 33 SHEET E402: Detail 5: ***Add*** note 8 that states – "Utilize existing conduits and cables where possible for network connections."

Item No. 34 SHEET E502: Note2: ***Revise*** note 2 – "Utilize existing conduits for Fire Alarm circuits where possible and remove existing abandoned Fire Alarm conduits in the Attic."

Item No. 35 SHEET E502: Notes: ***Add*** note 4 that states – "Coordinate with Drawing sheet Haz 201 for Fire Alarm work in Hall West 105."

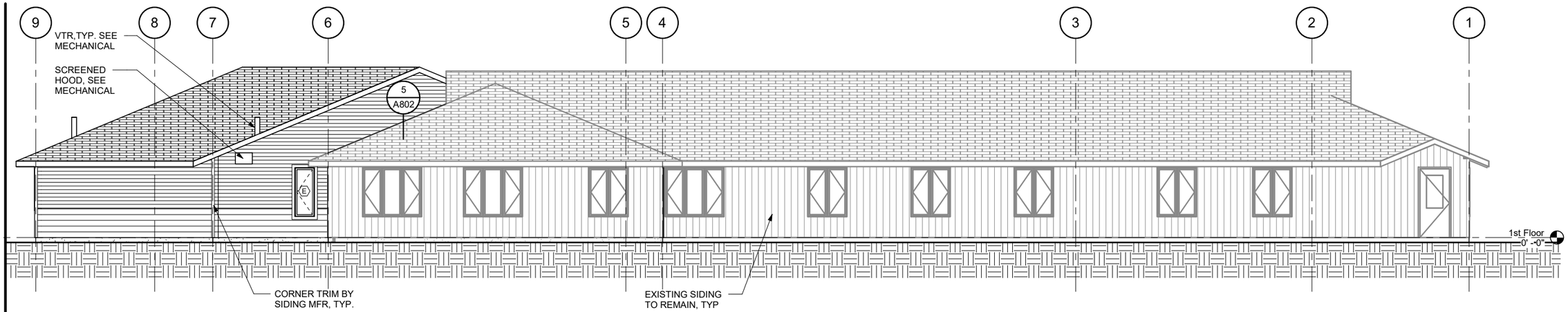
Item No. 36 SHEET E502: Hall East 102 double door: ***Add*** electromagnetic door holder for both the doors.

Item No. 37 SHEET E502: ***Add*** note 5: "Where new smoke detectors are designed to be placed in the same locations as the existing smoke detectors, utilize existing device boxes."

By: _____

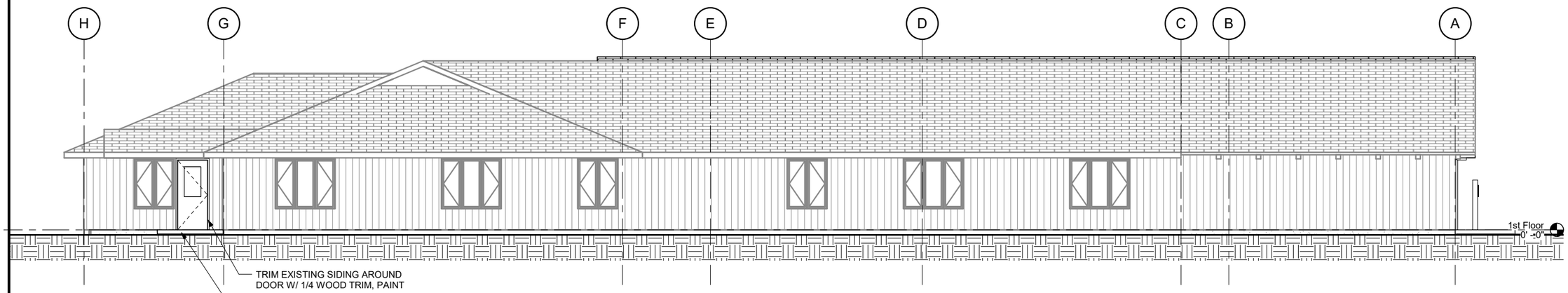
Greg Smith,
Contract Administrator

Total number of pages contained within this Addendum: 77



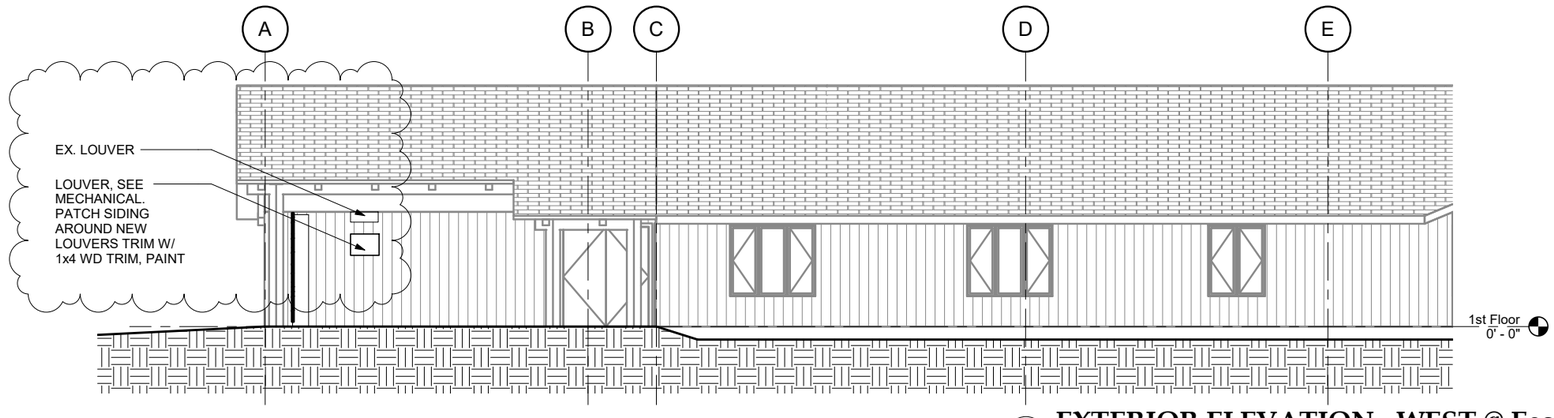
1 EXTERIOR ELEVAITON - SOUTH

SCALE: 0 2' 4' 8' 16'



2 EXTERIOR ELEVATION - EAST

SCALE: 0 2' 4' 8' 16'



3 EXTERIOR ELEVATION - WEST @ East Wing

SCALE: 0 2' 4' 8' 16'

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Rainforest Recovery Center
Detox Addition

CBJ Project #BE19-173
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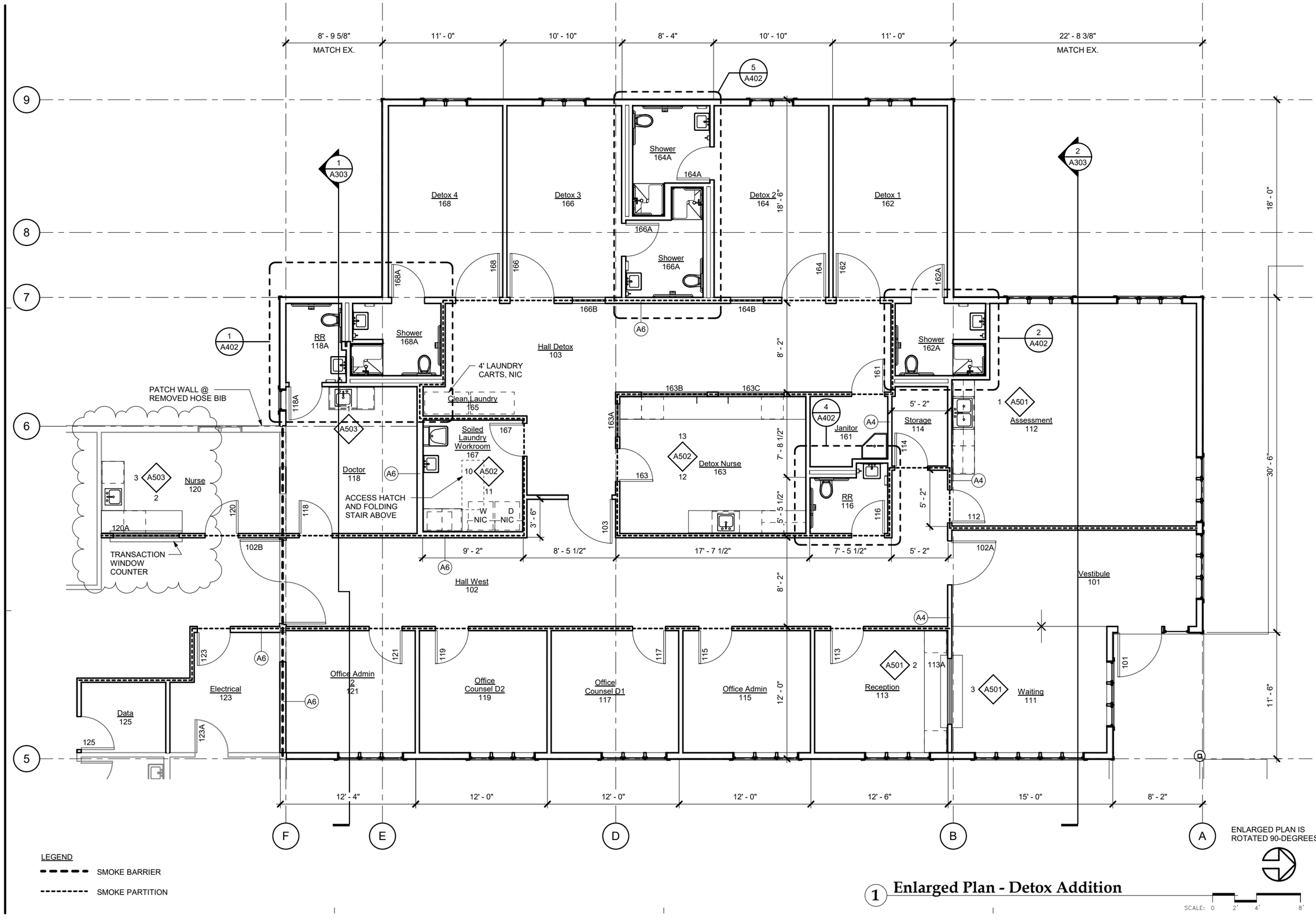
SHEET TITLE
EXTERIOR ELEVATIONS

DATE: March 26, 2019
FILE: 18002

A302



LEGEND

SMOKE BARRIER

SMOKE PARTITION

ENLARGED PLAN IS ROTATED 90-DEGREES

1 Enlarged Plan - Detox Addition

SCALE: 0 2' 4' 8'

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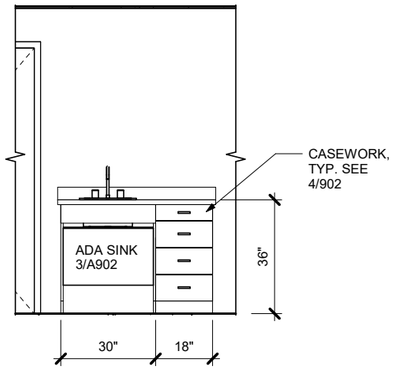
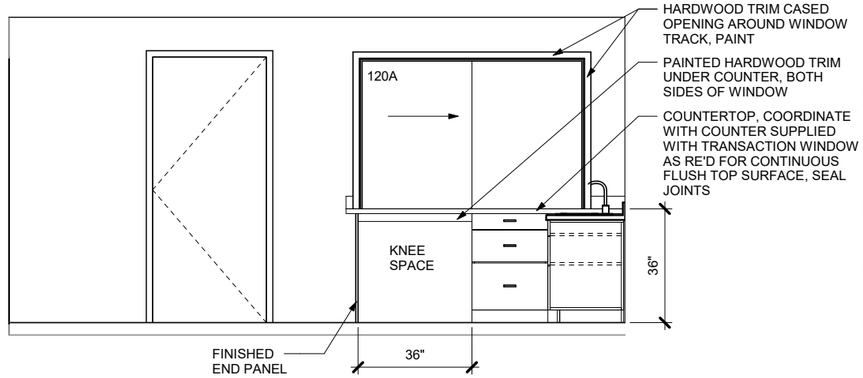
SHEET TITLE
ENLARGED PLAN

DATE: March 26, 2019
FILE: 18002

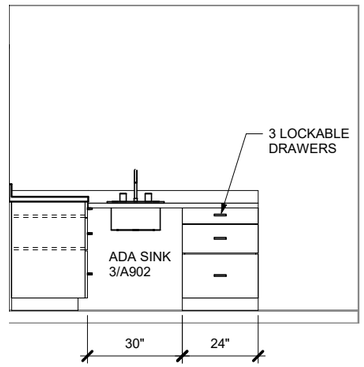
A401



1 DOCTOR 118



2 NURSE 120



3 NURSE 120

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SHEET TITLE
INTERIOR ELEVATIONS

DATE: March 26, 2019
FILE: 18002

A503

KEY NOTES:

THE KEY NOTES LISTED BELOW ARE PROJECT SPECIFIC AND MAY NOT BE SPECIFIC TO THIS SHEET.

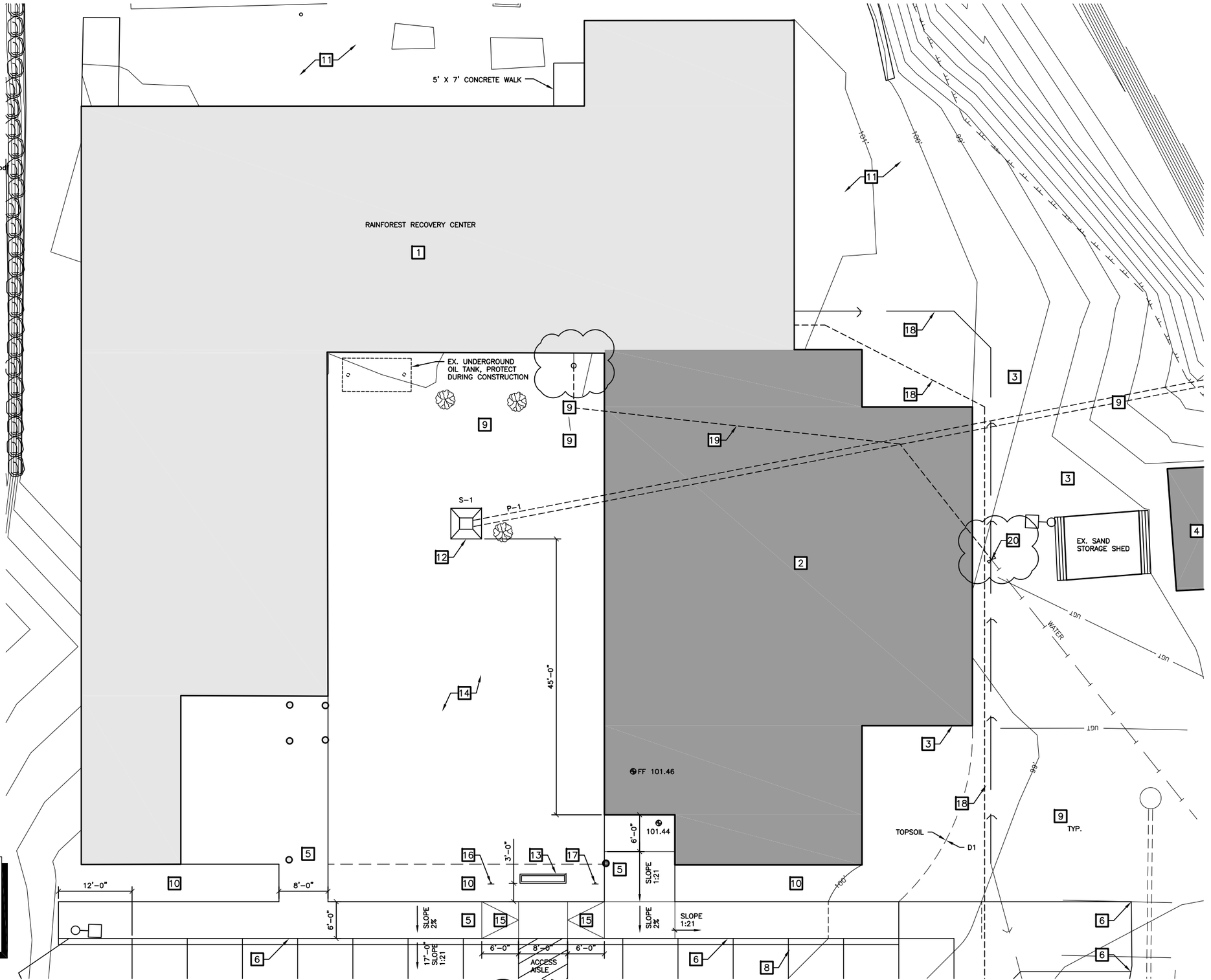
1. EXISTING BUILDING
2. ADDITION, SEE ARCH.
3. ADD COMPACTED D1 AND LEVEL GRADE IN LOCATION OF REMOVED BUILDING
4. RELOCATED BUILDING, FLOATING CONC. SLAB FOUNDATION AS PER CBJ STANDARD DETAILS www.juneau.org/cddftp/documents/Foundation2016.pdf
5. CONC. WALK WITH TYPE I CURB AND GUTTER, CBJ DETAIL 111A, SIM., CONFIGURED AS SPILL GUTTER
6. LIMIT OF ASPHALT REPLACEMENT. MATCH GRADES AT EXISTING. SEE CBJ DETAIL 102A FOR NOTES AND SPECIFICATIONS. CROSS SECTION AT ASPHALT PAVING:
   - 2–1/2" ASPHALT PAVING
   - 1" D1 LEVELING COURSE
   - 7" 2"–MINUS CRUSHED ROCK
7. PATCH ASPHALT OVER NEW UTILITY WORK, SEE ELECT. CBJ DETAIL 125, SIM.
8. RE–STRIPE PARKING LOT, 9' x 18' STALLS, SEE CBJ SPECIFICATION 02720. PAINT ACCESSIBLE STALLS AND CURB BLUE.
9. ADD SELECT EMBANKMENT AND LEVEL SUBGRADE IN LOCATION OF REMOVED ITEMS. ADD TOPSOIL AND HYDRAULIC SEEDING AS PER CBJ SPECIFICATIONS 02709 AND 02710
10. COMPACT SELECT EMBANKMENT. ADD TOPSOIL AS PER CBJ SPECIFICATION 02709, PREPARE FOR FUTURE LANDSCAPING
11. EXISTING LANDSCAPING TO REMAIN. PROTECT DURING CONSTRUCTION
12. TYPE III CATCH BASIN AND AREA DRAIN, FRAME AND GRATE, SEE CBJ DETAILS 304A AND 310. 12" DUAL WALL HDPE STORM DRAIN, DAYLIGHT TO SW
13. REINSTALL BUILDING SIGN ON NEW 18" x 7'–6" x 36" DEEP CONCRETE BASE. RECONNECT LIGHTS, SEE ELECT.
14. BASE BID: SLOPE COMPACTED SUBGRADE TO DRAIN TO CATCH BASIN. ADD TOPSOIL AND HYDRAULIC SEEDING AS PER CBJ SPECIFICATIONS 02709 AND 02710. SEE C103 FOR ALTERNATE 3 WORK.
15. ACCESSIBLE SIDEWALK RAMP. SEE CBJ DETAIL 106, SIM.
16. SINGLE POST SIGN ASSEMBLY, SEE CBJ DETAIL 127A AND SPECIFICATION 02718. 12" X 18" "RESERVED PARKING" SIGN WITH HANDICAPPED SYMBOL.
17. SIMILAR TO NOTE 16, BUT WITH ADDITION OF 12" X 6" "VAN ACCESSIBLE" SIGN.
18. NEW / REPLACED UNDERGROUND UTILITIES, SEE MECH. AND ELEC. TRENCH AND BACKFILL AS PER CBJ SPECIFICATION 02203. SURFACE TO BE COMPACTED D1, SLOPE TO DRAIN
19. REPLACE 4" DUCTILE IRON HORIZONTAL WATER SERVICE LINE WITH 6" HDPE WATER SERVICE LINE. PIPING TO BE LOCATED 36" MIN. BELOW BOTTOM OF FOOTINGS AND BEDDED PER CBJ STANDARD DETAILS. CONTRACTOR TO FURNISH AND INSTALL ALL NECESSARY BENDS AND FITTINGS TO EXECUTE THE WORK AND SHALL MAINTAIN WATER SERVICE TO THE BUILDING TO THE GREATEST EXTENT PRACTICAL.
20. VALVE BETWEEN REPLACED AND EXISTING WATERLINE. CBJ DETAIL 407, SIM.

STORM DRAIN
S–1:
GRATE ELEVATION: 100.25'
P–1 INVERT: 96.5'
SUMP: 16"

P–1:
LENGTH: 124'
SLOPE: 2%
INVERT AT OUTFALL: 94'

GENERAL NOTE

THESE IMAGES/DRAWINGS HAVE BEEN DIGITALLY REPRODUCED BASED ON INFORMATION AND MATERIALS SUBMITTED IN PART BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, JENSEN YORBA LOTT, INC. IS NOT RESPONSIBLE FOR ITS ACCURACY NOR FOR THE ERRORS AND OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THIS DOCUMENT AS A RESULT. CONTRACTOR SHOULD SITE VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING ANY WORK.



1 SITE PLAN, ENLARGED

SCALE: 0 4' 8' 16'

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COREY A. WALL
Apr. 18, 19
NO. A 12834
REGISTERED PROFESSIONAL ARCHITECT

City and Borough of Juneau Bartlett Regional Hospital
Rainforest Recovery Center
Detox Addition
CBJ Project #BE19-173
Juneau, Alaska

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REVISIONS
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2 .
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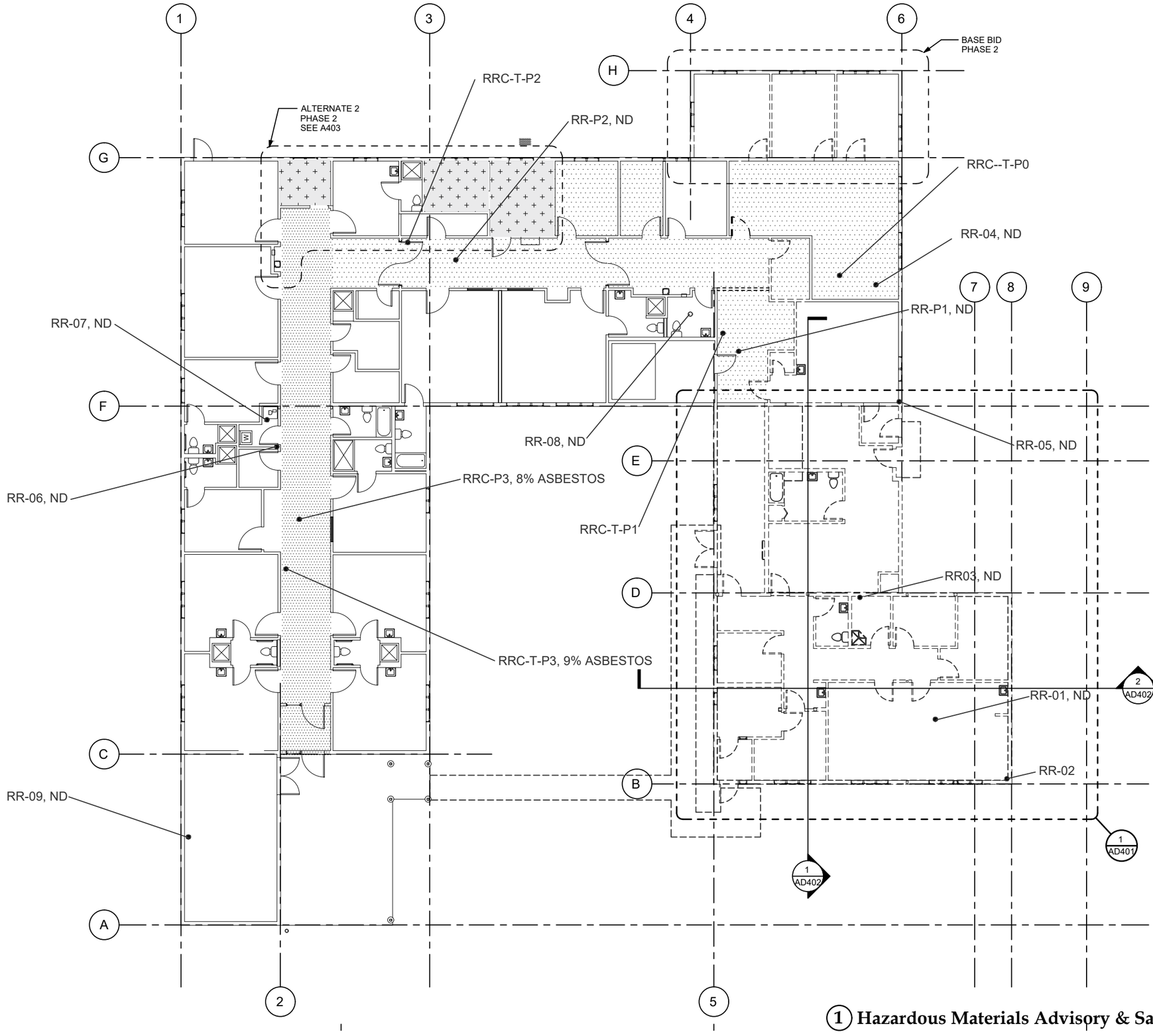
SHEET TITLE
SITE PLAN, ENLARGED
.

DATE: March 26, 2019
FILE: 18002

C102



HAZARDOUS MATERIALS GENERAL NOTES:

1. POPCORN CEILING TEXTURE IN EAST HALLWAY IS THE ONLY ASBESTOS-CONTAINING MATERIAL (ACM) PRESENT IN THE BUILDING. ANY DISTURBANCE OF POPCORN CEILING IN EAST HALLWAY MUST BE PERFORMED AS OSHA CLASS I ABATEMENT WORK.
2. PROJECT WORK IS NOT EXPECTED TO DISTURB ACM CEILING IN EAST HALLWAY. ALL WORK IN THIS AREA SHALL BE DONE IN A MANNER THAT LEAVES CEILING FINISHES INTACT.
3. NO LEAD WAS DETECTED IN INTERIOR OR EXTERIOR PAINTS.

HAZARDOUS MATERIALS PLM SAMPLE RESULTS:

RR-01: CEILING TILE, ND
RR-02: GYPSUM WALLBOARD MUD, ND
RR-03: GYPSUM WALLBOARD MUD, ND
RR-04: POPCORN CEILING, DINING 34, ND
RR-05: TEXTURED WALL PLASTER, ND
RR-06: GYPSUM WALLBOARD MUD, ND
RR-07: SHEET VINYL, LAUNDRY 10, ND
RR-08: SHEET VINYL, TOILET 27, ND
RR-09: GYPSUM WALLBOARD MUD, ND
RRC-P1: POPCORN CEILING, WEST HALLWAY, ND
RRC-P2: POPCORN CEILING, NORTH HALLWAY, ND
RRC-P3: POPCORN CEILING, EAST HALLWAY, 8%

POPCORN CEILING SAMPLE NOTES:

1. INITIAL POLARIZED LIGHT MICROSCOPY (PLM) SAMPLE ANALYSIS (2018) DETECTED NO ASBESTOS IN THE POPCORN CEILING.
2. ADDITIONAL SAMPLES WERE ANALYZED USING TRANSMISSION ELECTRON MICROSCOPY (TEM) IN 2019.
3. POPCORN CEILING IN EAST HALLWAY CONTAINS REGULATED LEVELS OF ASBESTOS.
4. POPCORN CEILING IN MOST PROJECT WORK AREAS DOES NOT CONTAIN REGULATED LEVELS OF ASBESTOS.
5. REGULATORY STANDARD IS >1.0% ASBESTOS

SAMPLE RESULTS - UNREGULATED MATERIALS
DINING AREA:
RR-04: NONE DETECTED via PLM
RRC-T-P0: 0.01% ASBESTOS via TEM (TRACE)
WEST HALLWAY:
RRC-P1: NONE DETECTED via PLM
RRC-T-P1: 0.09% ASBESTOS (TRACE)
SOUTH HALLWAY
RRC-P2: NONE DETECTED via PLM
RRC-T-P2 - 0.01% ASBESTOS (TRACE)

SAMPLE RESULTS - REGULATED MATERIALS
EAST HALLWAY:
RRC-P3: 8% CHRYSOTILE ASBESTOS via plm
RRC-T-P3: 8.97% ASBESTOS (REGULATED ACM)

POPCORN CEILING TEXTURE LEGEND

- EXIST. POPCORN CEILING (UNREGULATED, NON-HAZARDOUS)
- EXIST. POPCORN CEILING (REGULATED, HAZARDOUS)
- EXIST. POPCORN CEILING AFFECTED BY ALTERNATE 2 WORK

1 Hazardous Materials Advisory & Sample Locations

SCALE: 0 4' 8' 16'

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Sigrid K. Dahlberg
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REGISTERED PROFESSIONAL ENGINEER

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Juneau, Alaska

Addendum No. 2
REVISIONS

SHEET TITLE
HAZARDOUS MATERIALS ADVISORY-FLOOR PLAN

DATE: April 18, 2019
FILE: 18002

HAZ201

AIR HANDLING UNIT SCHEDULE

NOTES: AIR HANDLER UNIT SUPPLIED WITH MIXING BOX, MOTORIZED CONTROL DAMPERS ON OSA AND RA INTAKES, VFD SUPPLIED WITH AND MOUNTED TO THE UNIT, INSULATED PANELS, HOT WATER HEATING COIL, WITH MERV 8 PREFILTERS, AND MERV 14 FINAL FILTER. LEFT SIDE ACCESS.

								ELECTRICAL					HEATING COIL AIR SIDE		HEATING COIL WATER SIDE				BASIS OF DESIGN		
MARK	SERVICE	SA CFM	ESP	TSP	FAN DRIVE	FAN TYPE	MOTOR RPM	SUPPLY FAN HP	A	HZ	PH	V	EAT/LAT	MAX APD	FLOW (GPM)	EWT (°F)	LWT (°F)	FLUID TYPE	MANUFACTURER	MODEL	COMMENTS
AHU-2	DETOX CLINIC	2650	1.2	2.1	VFD DIRECT DRIVE	PLENUM	1750	3	9.3	60	3	208	40/60	0.11	5.9	120	100	WATER	DAIKIN VISION	CAH007GHGM	SEE NOTES

FAN SCHEDULE

NOTES: SUPPORT FROM STRUCTURE WITH SEISMICALLY RATED VIBRATION ISOLATORS

							ELECTRICAL					BASIS OF DESIGN		
MARK	SERVICE	CFM	ESP (IN. WC)	TYPE	DRIVE	RPM	HP	V	HZ	PH	VFD	MANUFACTURER	MODEL	COMMENTS
EF-1	DETOX CLINIC	830	.75	CABINET FAN	DIRECT	1100	.25	115	60	1	No	GREENHECK	CSP-A2150	LOCATED ABOVE ROOM 167. PROVIDE WITH REUSABLE METAL FILTER OPTION.
EF-2														
RF-1	DETOX CLINIC	1950	1.2	CENTRIFUGAL	DIRECT	1264	1	208	60	1	Yes	GREENHECK	SQ-160-VG	LOCATED IN THE FAN ROOM ABOVE AHU-2

FINNED TUBE SCHEDULE

NOTES:

	ENCLOSURE			ELEMENT									BASIS OF DESIGN		
				FIN			TUBE								
MARK	TYPE	GAUGE	HEIGHT	SIZE (INxIN)	SPACING (FPF)	MATERIAL	DIAMETER	ROWS	MATERIAL	FLUID	AVERAGE FLUID TEMP (°F)	CAPACITY (BTU/H/FT)	ENTERING AIR TEMP (°F)	MANUFACTURER	MODEL	COMMENTS
FP-1		16	1' - 2"	4-1/4X4-1/4	32	CU/AL	3/4"	2	CU							

PLUMBING FIXTURE SCHEDULE

NOTES:

MARK	FIXTURE DESCRIPTION	HW/TW	CW	TRAP	WASTE	VENT	BASIS OF DESIGN	COMMENTS
FD-1	FLOOR DRAIN	-	-	2"	2"	2"	ZURN FD2254	CAST IRON TWO PIECE BODY WITH 5" NICKEL-BRONZE STRAINER, 2" SIZE
L-1	LAVATORY	1/2"	1/2"	1-1/2"	1-1/2"	1-1/2"	AMERICAN STANDARD LUCERNE	20-1/2" X 18-1/4" X 8-1/8", WALL MOUNT, TEMPERING VALVE MANUAL SINGLE LEVER MIXING FAUCET
S-1	2-COMPARTMENT SINK	1/2"	1/2"	1-1/2"	1-1/2"	1-1/2"	ELKAY LRAD331965	33" X 19-1/2" X 6-1/2", ADA
S-2	CLINIC SINK	1/2"	1-1/2"	2"	3"	2"	KOHLER CAMERTON K-12867	21-1/2" X 25" X 13-1/2", WALL MOUNT BLOW-OUT SERVICE SINK
S-3	MOP SINK	1/2"	1/2"	2"	2"	2"	AMERICAN STANDARD FLOORWELL	28" X 28" X 13", CORNER STYLE, MIXING VALVE MOUNT FAUCET.
S-4	DOCTOR/NURSE SINK	1/2"	1/2"	1-1/2"	2"	1-1/2"	ELKAY LRAD191855	19"X18"X9-1/2", ADA
SH-1	SHOWER	1/2"	1/2"	2"	2"	2"	AQUATIC 3636BFS	36" X 36" X 80", SHOWER SYSTEM KIT.
TP-1	TRAP PRIMER	-	1/2"	-	-	-	MIFAB M-500	SPRING LOADED PRESSURE DIFFERENTIAL ACTIVATED.
WB-1	CLOTHES WASHER BOX	1/2"	1/2"	2"	2"	2"	SIOUX CHIEF 0X BOX 696	RECESSED BOX, UPFED SUPPLIES, INTEGRAL WATER HAMMER ARRESTORS
WB-2	ICE MACHINE WALL BOX	-	1/2"	2"	2"	2"	GUY GRAY RMDW1AB	RECESSED BOX, UPFED SUPPLIES, INTEGRAL WATER HAMMER ARRESTORS
WC-1	WATER CLOSET	-	1"	-	3"	2"	AMERICAN STANDARD AFWALL MILLENIUM	ADA/. WALL MOUNT. BATTERY POWERED SENSOR FLUSH. 1.1 - 1.6 GPF
WCO	WALL CLEANOUT	-	-	-		-	ZURN Z1441	LINE TYPE WITH CAST IRON BODY, ROUND GASKET COVER AND STAINLESS STEEL ACCESS COVER.
WH-1	WALL HYDRANT	-	3/4"	-	-	-	ZURN Z134Z	NON-FREEZE, INTEGRAL VACUUM BREAKER.
YCO	YARD CLEANOUT	-	-	-	-	-	WATTS CO-200-R	EPOZY COATED CAST IRON

2

PUMP SCHEDULE

NOTES:

							ELECTRICAL				BASIS OF DESIGN		
MARK	LOCATION	SERVICE	FLOW (GPM)	HEAD (FT)	FLUID	TYPE	WATT	V	PH	VFD	MANUFACTURER	MODEL	COMMENTS
PMP-4A	BOILER ROOM	TEMPERED WATER LOOP	12	30	WATER	CIRCULATOR	106	115	1	No	GRUNDFOS	MAGNA3 32-60 F	INTEGRAL CONTROLLER, BUILT IN TERMPERATURE, & DIFFERENTIAL PRESSURE SENSORS
PMP-4B	BOILER ROOM	TEMPERED WATER LOOP	12	30	WATER	CIRCULATOR	106	115	1	No	GRUNDFOS	MAGNA3 32-60 F	INTEGRAL CONTROLLER, BUILT IN TERMPERATURE, & DIFFERENTIAL PRESSURE SENSORS

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Detox Addition
CBJ Project #BE19-173
Juneau, Alaska

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REVISIONS
2 PLUMING SIZING AND SHOWERS

SHEET TITLE
SCHEDULES

DATE: MARCH 26, 2019
FILE: 18002

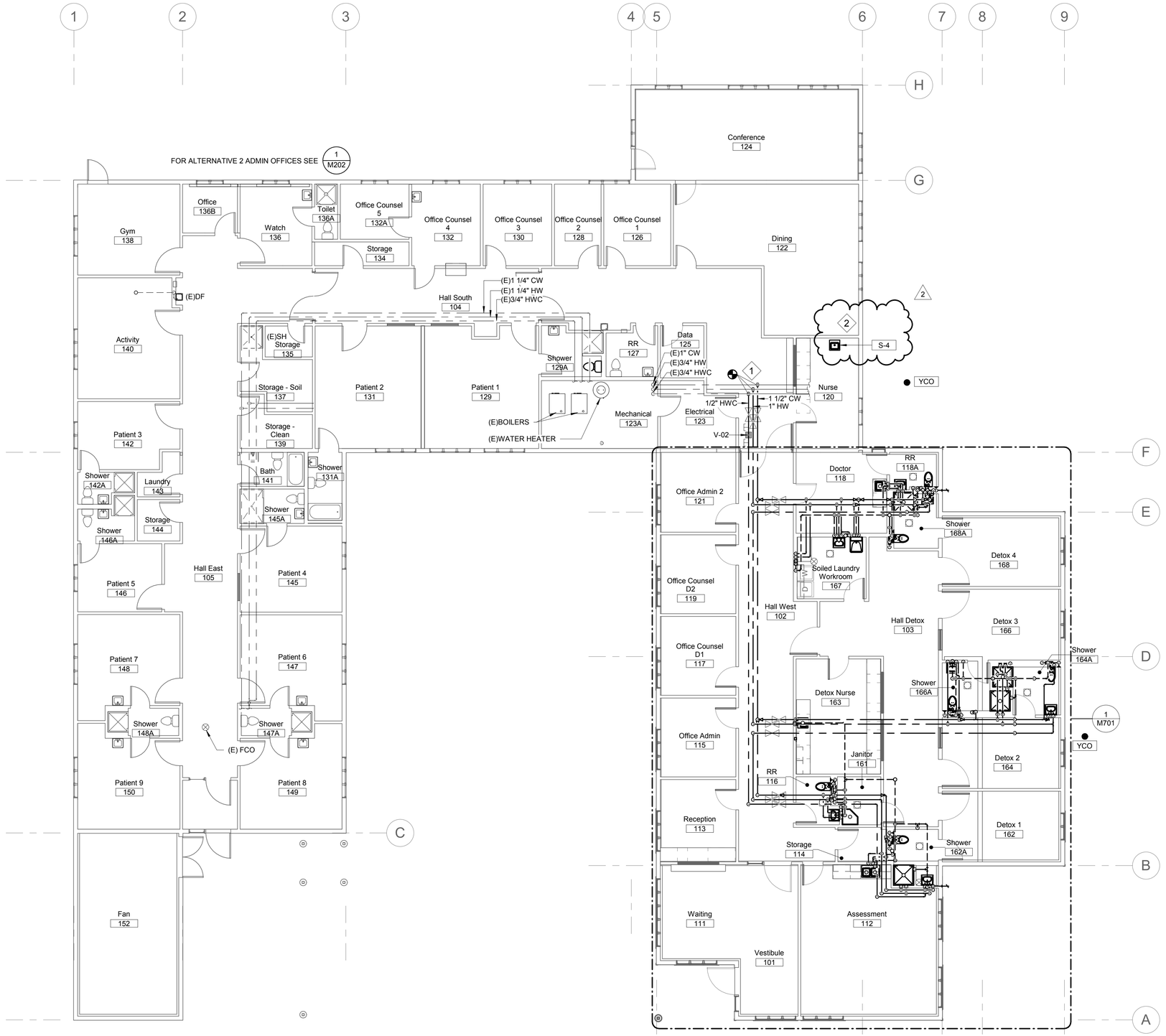
M002

SHEET NOTES

1. DOMESTIC PIPING SHOWN IS GENERALLY ROUTED IN ATTIC SPACE BELOW INSULATION.

SHEET KEYNOTES

1. CONNECT NEW DETOX CLINIC CW, HW AND HWC TO EXISTING ISOLATION VALVES IN CEILING SPACE.
2. PROVIDE AND INSTALL A NEW COUTERTOP SINK IN NURSE ROOM 120. CONNECT CW, HW, W AND V TO THE EXISTING UTILITIES IN THE WALL THAT ARE CONNECTED TO THE SINK IN DINING ROOM 122.



1 FIRST FLOOR PLAN - PLUMBING

SCALE: 0 4' 8' 16'

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2 PLUMING SIZING AND SHOWERS

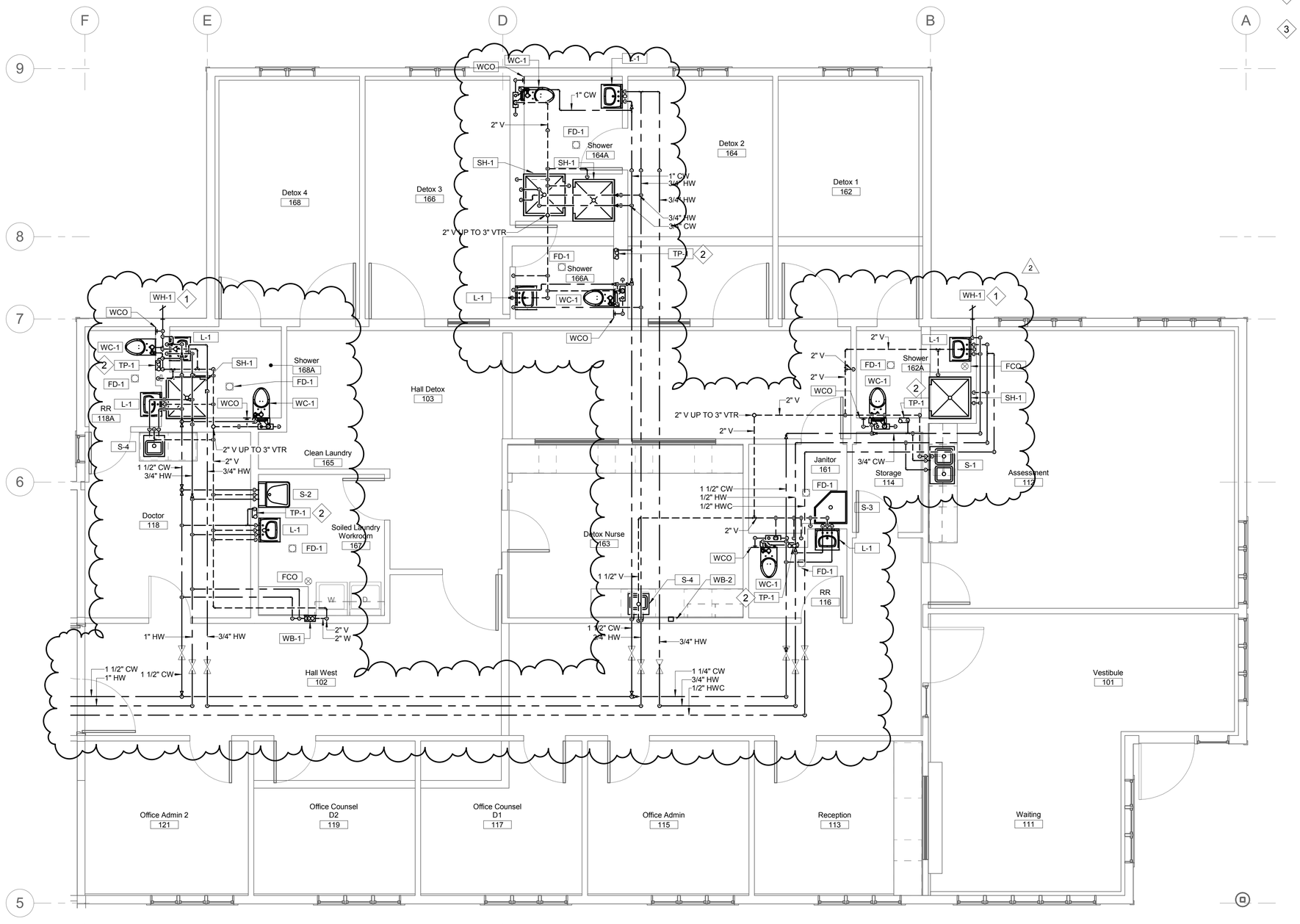
SHEET TITLE
FIRST FLOOR PLAN - PLUMBING

DATE: MARCH 26, 2019
FILE: 18002

M201

SHEET KEYNOTES

1. INSTALL NONFREEZE WALL HYDRANT AT EXTERIOR WALL. INSTALL ISOLATION VALVE BEHIND WALL ACCESS DOOR. COORDINATE LOCATION WITH GENERAL CONTRACTOR. CONNECT TO COLD WATER PIPING IN PLUMBING CHASE.
2. INSTALL TRAP PRIMER WITH ISOLATION VALVE BEHIND WALL ACCESS DOOR LOW.
3. WHA BEHIND ACCESS DOOR.



1 LARGE SCALE - DETOX AREA - PLUMBING

SCALE: 0 2' 4' 8'

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SHEET TITLE
LARGE SCALE - DETOX AREA - PLUMBING

DATE: MARCH 26, 2019
FILE: 18002

M701

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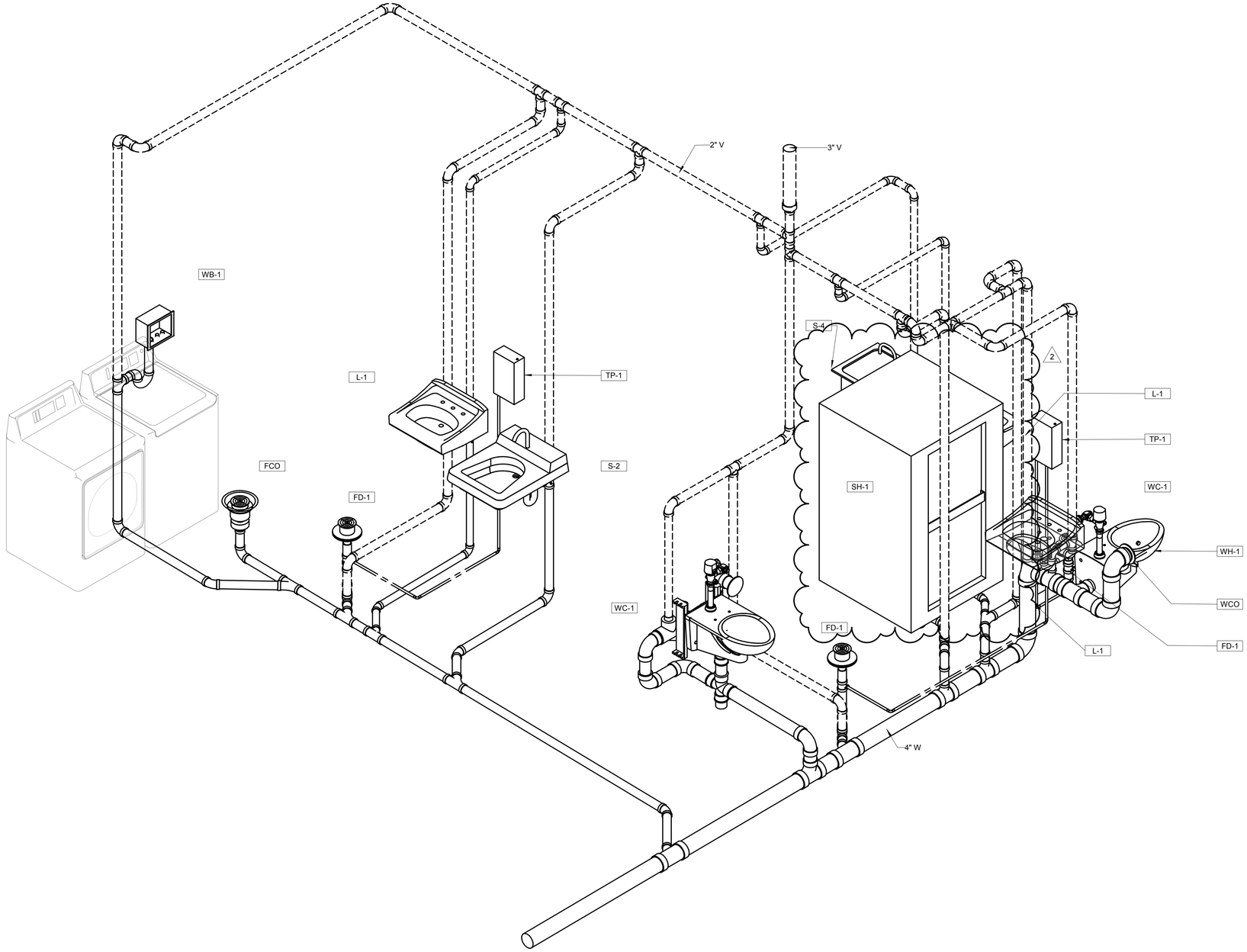

1 PLUMBING ISOMETRIC - WASTE & VENT - RR 118 & SOIL LAUNDRY WORKROOM 167

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SHEET TITLE
PLUMBING ISOMETRIC - WASTE & VENT - 118 & 167

DATE: MARCH 26, 2019
FILE: 18002

M901

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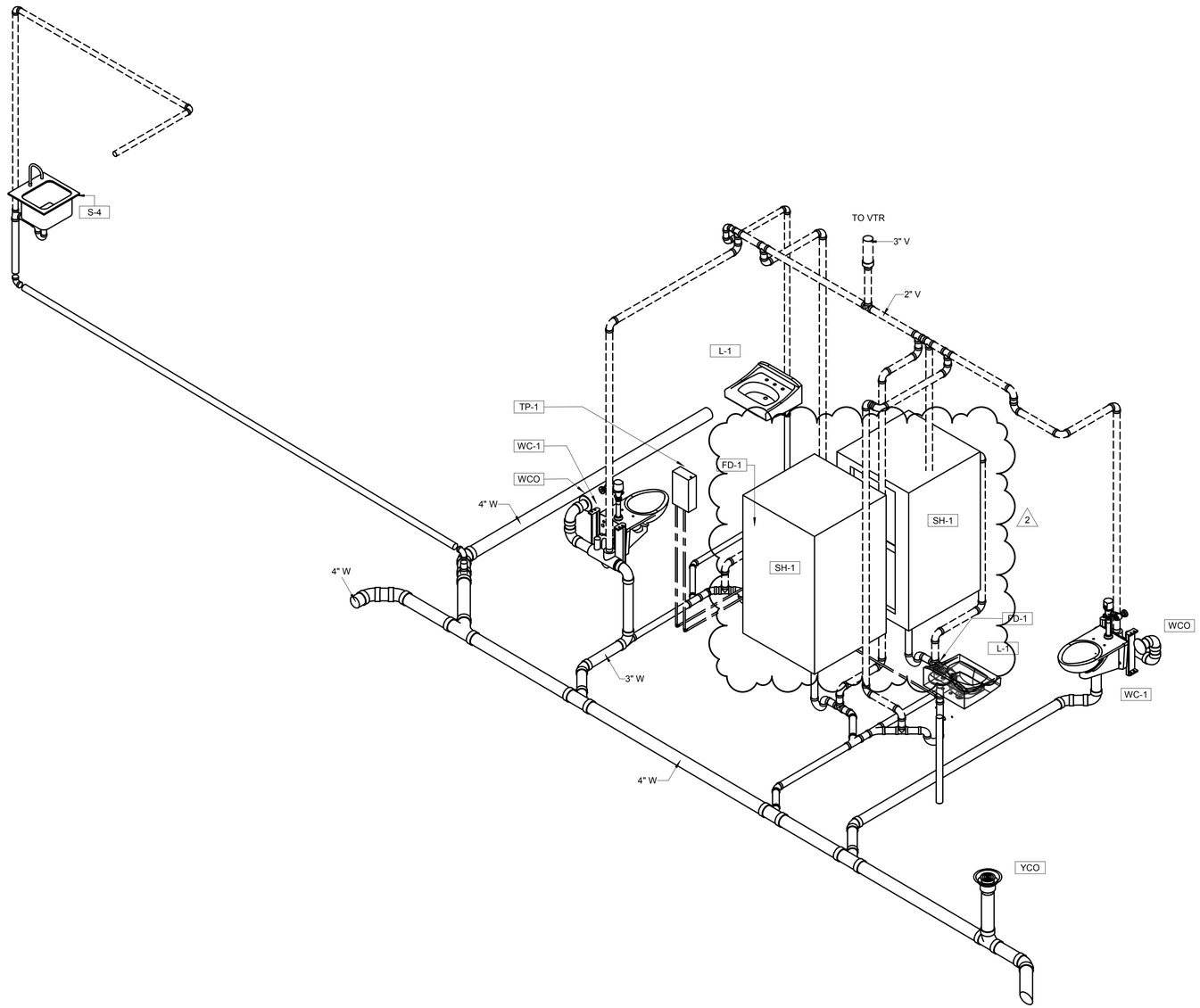

1 PLUMBING ISOMETRIC - WASTE & VENT - SHOWER 164A & SHOWER 166A

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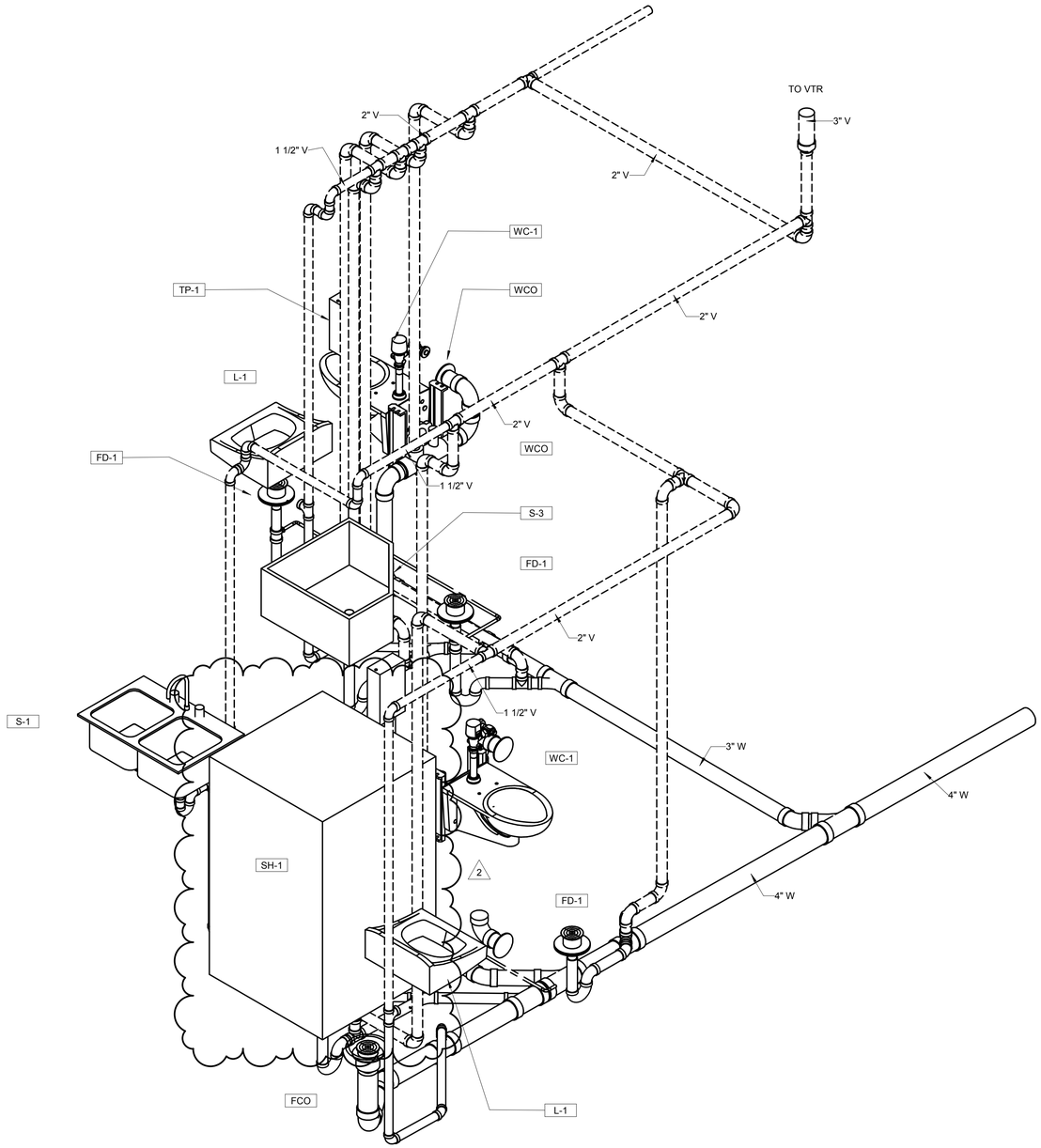
SHEET TITLE
PLUMBING ISOMETRIC - WASTE & VENT - 164A & 166A

DATE: MARCH 26, 2019
FILE: 18002

M902



1 PLUMBING ISOMETRIC - WASTE & VENT - SHOWER 162A & STORAGE 114

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SHEET TITLE
PLUMBING ISOMETRIC - WASTE & VENT - 162A & 114

DATE: MARCH 26, 2019
FILE: 18002

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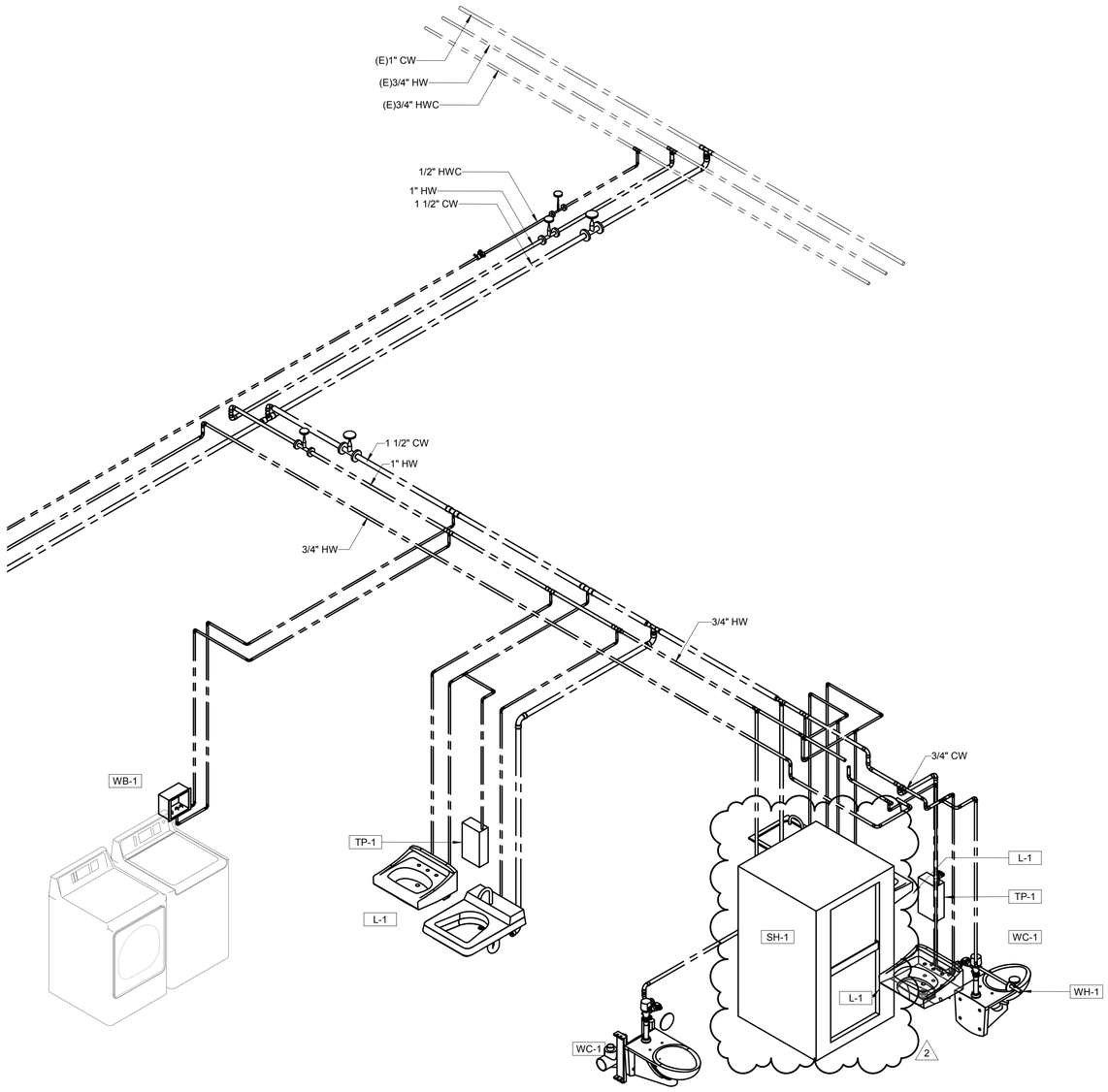

1 PLUMBING ISOMETRIC - DOMESTIC WATER - RR 118 & SOIL LAUNDRY WORKROOM 167

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PLUMBING ISOMETRIC - DOMESTIC WATER - 118 & 167

DATE: MARCH 26, 2019
FILE: 18002

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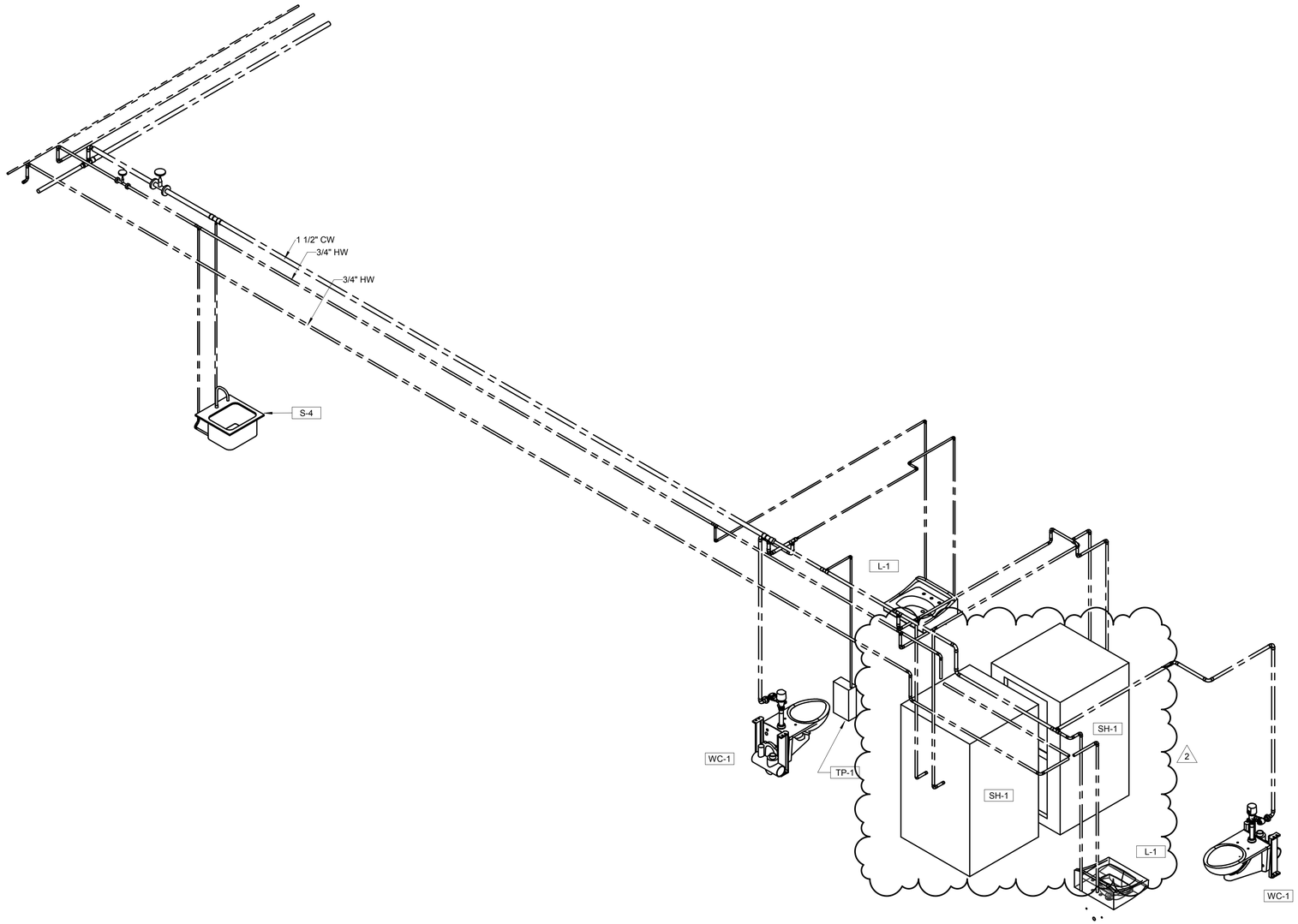

1 PLUMBING ISOMETRIC - DOMESTIC WATER - SHOWER 164A & SHOWER 166A

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PLUMBING ISOMETRIC - DOMESTIC WATER - 164A & 166A

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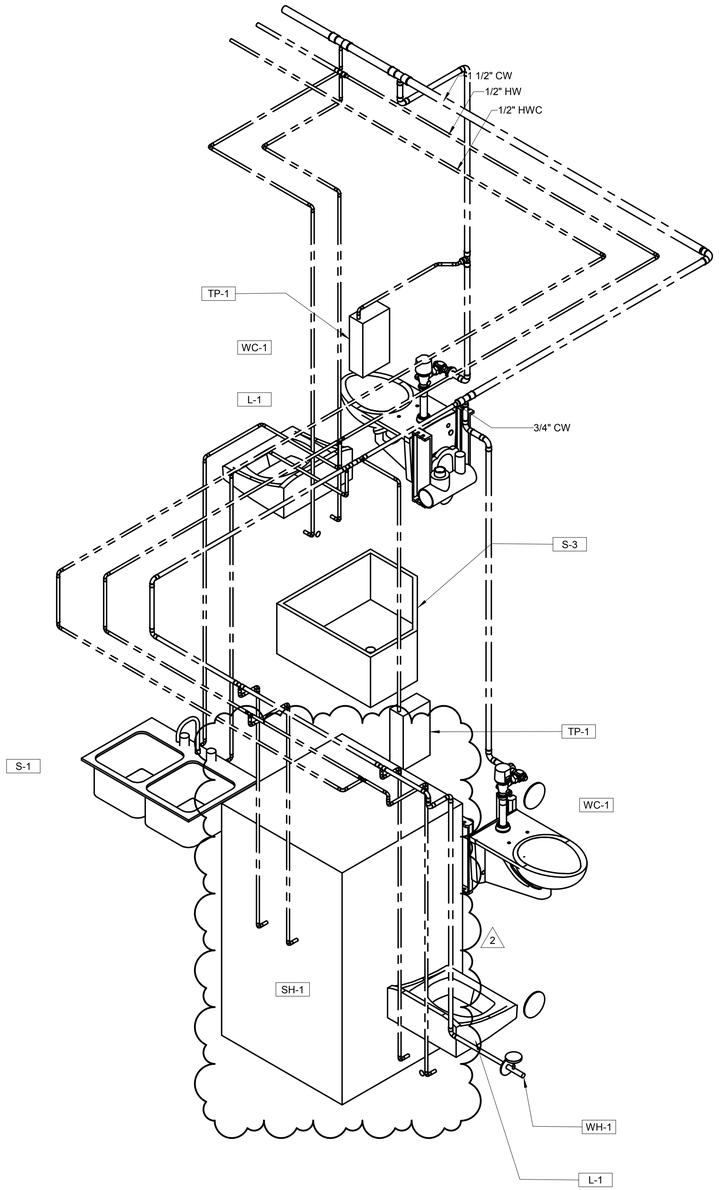

1 PLUMBING ISOMETRIC - DOMESTIC WATER - SHOWER 162A & STORAGE 114

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SHEET TITLE
PLUMBING ISOMETRIC - DOMESTIC WATER - 162A & 114

DATE: MARCH 26, 2019
FILE: 18002

M913

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. General provisions of the Contract, including General and Supplementary Conditions.

B. Contract Drawings.

1.2 SUMMARY

A. The work described herein is in support of a renovation of the Rainforest Recovery Center, located on the Bartlett Regional Hospital Campus in Juneau, Alaska.

B. Bulk sampling has identified the following asbestos containing materials (ACM) in the Rainforest Recovery Center that will impact this project:

1. Popcorn ceiling texture in the east hallway of the building.

C. Bulk sampling shows the following suspect materials to be non-ACM:

1. Gypsum wallboard and taping mud throughout the building;
2. Textured wall plaster on walls and ceilings;
3. Sheet vinyl in toilet and laundry rooms; and
4. Popcorn ceiling in the south and west hallways of the building.

D. The expectation is that no work in this project will disturb the hazardous popcorn ceiling in the east hallway of the building. Work in this area includes installation of new smoke alarms to replace existing equipment (in the same location, mounted to the same frame) and CO2 detectors that will be installed on walls without affecting the ceiling finish.

E. Should any need for disturbance of the hazardous popcorn ceiling texture in the east hallway arise, no work shall occur until the Architect has been notified and a hazardous materials plan, meeting the requirements of this document, shall be developed.

F. Project abatement includes abatement for all items included in the Base Bid, should the need arise for disturbance of the popcorn ceiling texture in the east hallway.

G. The abatement project includes all material, labor, equipment and other related costs for:

1. coordinating with prime contractor to determine the timing for abatement.
2. mobilizing (including moving all plant and equipment onto the site; providing necessary project utilities or improving existing utilities as necessary, arranging for approved storage areas, issuing and posting all notices, and submitting all submittals),
3. installing all necessary critical barriers to establish non-permanent asbestos control areas to isolate the various abatement areas,
4. completing all abatement elements as described in Paragraph C. above,
5. cleaning all surfaces and spaces within the confines of the asbestos control areas,
6. providing air monitoring, including appropriate elements summarized in Asbestos

Air Monitoring in DEFINITIONS below, and in accordance with PART 3 EXECUTION of this section,

7. providing on-site lab analysis for required air monitoring,
8. disposing of ACM and related demolition debris in accordance with these contract documents,
9. removing the non-permanent asbestos control areas,
10. general cleanup and demobilization.

H. Hazardous Materials drawings, along with Architectural and Civil drawings, illustrate the locations where the above-described work is necessary and allow quantification for the bidding purposes. A site visit is strongly recommended for the Abatement Subcontractor (required for General Contractor).

1.3 COORDINATION AND TIMING OF ABATEMENT ACTIVITIES

A. The building is a medical detoxification and recovery facility and is occupied 24 hours per day, 7 days per week. Access to patient rooms and group facilities will be necessary on an ongoing basis, so work must occur around the schedule of the occupants.

B. The Owner will provide access to temporary power and to cold water for direct project use. Abatement Subcontractor will need to supply provisions for hot water on the site. The Abatement Subcontractor is responsible for all costs and effort required to develop those utilities for his use.

C. Security to the site shall be maintained for the duration of the abatement project. It will be the responsibility of the Abatement Subcontractor to coordinate with the Contractor and other trades to sequence the work.

1.4 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. Code of Federal Regulations (CFR) Publications:

29 CFR 1910.1001	Asbestos (for general industry standards)
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.145 Signs and Tags	Specifications for Accident Prevention
29 CFR 1910.1200	Hazard Communications
29 CFR 1926.1101 standards)	Asbestos (for construction and demolition
40 CFR 61 Sub-part A	General Provisions
40 CFR 61 Sub-part M	National Emission Standard for Asbestos
40 CFR 241 Wastes	Guidelines for Land Disposal of Solid

2. Alaska Department of Labor Construction Code:

Subchapter 05.045 (as amended November 27, 1991)-Construction Code (Asbestos)
Subchapter 15.0101-Hazard Communication

1. Additional References:
US EPA Publication 560/5-85-024: A Revision to the US EPA's 1985 Guidance for Controlling Asbestos Containing Materials in Buildings, March 2015
ASTM1368-14 Standard Practice for Visual Inspection of Asbestos Abatement Projects

1.5 DEFINITIONS

A. ACM: See Asbestos Containing Material (ACM).

B. Abandonment: Leaving in place existing asbestos materials. An example is leaving pipes inside walls when new piping is to be routed differently. Complete documentation must be made of the exact location and condition of the asbestos before abandonment, including the type and method of use of any encapsulant.

C. Action Level: See Exposure Standards.

D. Aggressive Conditions: Required technique to prepare an area that has passed visual inspection for clearance sampling. Before starting the sampling pumps, the exhaust from forced air equipment (such as a 1 horsepower leaf blower) shall be directed against all walls, ceilings, floors, ledges and other surfaces in the room. This effort shall take at least 5 minutes per 1,000 square feet of floor. Next, a 20-inch fan shall be placed in the center of the space (one such fan shall be employed for every 10,000 cubic feet of room volume), directed towards the ceiling, and set to run on slow speed. Once the fans are set up and operational, the sampling pumps shall be started and run for the required time. Once sampling is complete all 20-inch fans shall be secured.

E. Amended Water: Water containing a wetting agent specifically designated by the manufacturer for the wetting of asbestos.

F. Approved Laboratory: An independent laboratory properly staffed and equipped for the collection and analysis of asbestos bulk and/or air samples, and who maintains demonstrable satisfactory performance from all technicians involved in the performance of these analyses. For air samples, participation and a documented record of satisfactory performance in either the NIOSH Proficiency Analytical Testing (PAT) program, equivalent American Industrial Hygiene Association (AIHA) program, or an equivalent inter-laboratory testing protocol in accordance with 29 CFR 1926.1101, Appendix A is required. The lab must be capable of performing both phase contract illumination microscopy, and transmission electron microscopy, and be capable of the required short turn around times. For bulk analysis, participation in and maintenance of a satisfactory record with the bulk asbestos analysis program with the Research Triangle Park, NC 27709-2194, (919) 541- 6000, is required. If any participation in any equivalent program is proposed to meet this requirement, the details of the program, documentation of satisfactory performance, and name, address and telephone number of the operator of the program must be submitted as part of the asbestos work plan for approval.

G. Area Monitoring: See Asbestos Air Monitoring.

H. Asbestos: A class of six naturally occurring fibrous hydrous mineral silicates. Minerals included in this group are chrysotile, crocidolite, amosite and the fibrous forms of anthophyllite, tremolite and actinolite.

I. Asbestos Air Monitoring: An approved air monitoring plan is required if air monitoring is part of the abatement work. To be approved such a plan must include the following elements:

1. Area Monitoring: Sampling for airborne concentrations of asbestos fibers within the existing or planned asbestos control area that is representative of the fiber levels that may reach the worker's breathing zone. Area pumps drawing 10 liters per minute through the filter cassette are used for area monitoring and should pull at least 1,200 liters of air for each sample.
2. Environmental Monitoring: Sampling for airborne concentrations of asbestos fibers outside the asbestos control area to assure that no asbestos fibers are escaping the enclosure, and that personnel outside the control area are not being exposed. Where a sealed area is not used, such as during exterior siding removal, this will refer to sampling conducted at the perimeter of the control area to assure that a sufficient buffer zone around the work in progress has been established, and that personnel outside this zone are not being exposed. Area pumps drawing 10 liters per minute through the filter cassette are used for environmental monitoring and should pull at least 1,200 liters of air for each sample.
3. Baseline (Background) Monitoring: Sampling conducted to determine the initial level of airborne asbestos fibers present prior to the start of asbestos work. Area pumps drawing ≥ 1 but < 10 liters per minute through the filter cassette are used for this monitoring and should pull at least 1,200 liters of air for each sample. This sampling can be subdivided into three parts:

    a. Natural Background Sampling: Sampling conducted outside the structure where the work will be accomplished to determine the naturally occurring fiber levels present in that locale. When results indicate that this level may reach or exceed 0.01 f/cc, a minimum of 5 consecutive days of sampling will be used to establish an arithmetic average. This average will be used as the background level.

    b. Environmental Background Sampling: Sampling conducted to determine the background fiber levels within a structure, but outside the planned asbestos work area. This sampling is accomplished to ascertain the normal background fiber level within these areas of the structure. Special care must be taken during this sampling to minimize sample contamination by non-asbestos fibers, such as from cloth, paper and carpet.

    c. Work Area Background Sampling: Sampling conducted in the area where asbestos work is planned, normally used to determine the level of personal and other protective measures required by personnel preparing the area for asbestos work and to establish the level of contamination present prior to the beginning of asbestos operations.

4. Initial Exposure Assessment Monitoring: Sampling conducted by a "competent

person" immediately before or at the initiation of the operation to ascertain the expected exposures during that operation. Initial Exposure Assessment Monitoring must be completed in time to allow compliance with requirements which are triggered by exposure data or the lack of a "negative exposure assessment", and to provide information necessary to assure that all control systems planned are appropriate for the operation and will work properly. Until Initial Exposure Assessment Monitoring confirms that employees on the job will not be exposed in excess of the PEL, or a "negative exposure assessment" for non-friable asbestos has been accepted, it shall be assumed that employees are exposed in excess of the TWA and excursion limit.

5. Negative Exposure Assessment: For any one specific asbestos job involving non-friable material which will be performed by trained employees, it may be demonstrated that employee exposures will be below the PEL by data which conform to the following criteria:

   a. Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos.

   b. Where the employer has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analyses were performed in compliance with the asbestos standard in effect; and the data were obtained during work operations conducted workplace conditions "closely resembling" the processes, type of material, control methods, work practices, and environmental conditions in the current operations, the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA and excursion limit.

   c. The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30 minute short-term exposures of each employee covering operations that are most likely during the performance of the entire asbestos job to result in exposures over the PEL.

6. Clearance Monitoring: Sampling occurring at the completion of the asbestos work or at the completion of a specific phase of asbestos work, prior to removing the enclosure. It is accomplished to prove that the clean-up activities have been effective, and that remaining fiber levels both inside and outside the enclosure comply with airborne fiber concentrations defined in "Clearance Levels" below. Clearance sampling is normally accomplished in the same locations and by the same methods as the baseline monitoring and is done in an aggressive manner (see EPA 560/5-85-024 for description of methods). Transmission Electron Microscopy (TEM) analysis is required for clearance monitoring inside schools and sometimes for inside public buildings to assure that the area is truly safe for reoccupancy. For public buildings the requirement for TEM analysis can be

waived in favor of Phase Contrast Illumination Microscopy (PCM) at the Owner's option. See PART 3-EXECUTION, MONITORING for additional information.

7. Personal Monitoring: Sampling for asbestos fiber concentrations at the breathing zone of a worker, used to document individual exposures, and, in conjunction with the work area sampling, to determine the required degree of personal and respiratory protection. A minimum of two samples shall be collected per eight-hour shift at a flow rate of 0.5 to 2.5 liters per minute. At least 25% of the workers doing a particular job shall be sampled each eight-hour shift. See Exposure Standards for more information.

J. Asbestos Containing Material (ACM): Material composed of asbestos of any type, and in any amount equal to or greater than 1 percent by weight, either alone or mixed with other fibrous or non-fibrous materials.

K. Asbestos Control Area: An area where operations involving asbestos are performed which is isolated by physical barriers designed to prevent the spread of asbestos dust, fibers, and debris, and to prevent or deter the entry or unauthorized and unprotected personnel. For areas where isolation is not feasible, it will be an area that is physically demarcated, e.g., bounded by a physical barrier such as a rope, barricade, etc., separating the known "clean" zone from the asbestos work area and buffer zone.

L. Asbestos Fibers: This expression refers to a particular form of asbestos, fibrous tremolite, anthophyllite, or actinolite having a length to diameter aspect ratio of 3:1 or greater, and an overall length of 5.0 micrometers or longer. Where specialized analytical techniques, such as electron microscopy, are utilized for analysis, this shall refer to the number of fibers considered to equate to a specific weight of asbestos.

M. Asbestos Survey: A detailed survey accomplished by specially trained, experienced technicians of a specific area to determine the presence, absence, condition, and amount of asbestos and asbestos contamination present in that area.

N. Asbestos Workers' Personal Hygiene Area: A dedicated area containing shower(s), change room and, if required, toilet facilities where personnel working with asbestos (where a control area is not established) can change into protective clothing, and can disrobe, shower, and change into clean clothing without danger of transferring contamination to themselves or others.

O. Baseline Monitoring: See Asbestos Air Monitoring.

P. Bulk Sampling and Analysis: Representative samples taken from materials suspected to contain asbestos, analyzed by an approved laboratory using polarized light microscopy (PLM). When specialized methodology, such as electron microscopy is required, collection and analysis shall be in accordance with the recommendations of the laboratory providing the analysis, and the result expressed as both mass per unit volume and percent by weight shall be given.

Q. Clean: As used in these documents, "clean" means that the surface in question is free of visible asbestos, to the point where no physical sample can be collected for analysis.

R. Clean Room: An uncontaminated room having facilities for storage of employees' street clothing, uncontaminated materials and equipment.

S. Clearance Levels: The maximum fiber levels present after completion of the asbestos work, or a given phase of work, sampled during initial or final clearance monitoring. This level shall be the lower of the baseline work area monitoring value for the location, or less than **0.01 fibers/cc**, whichever is lower. In the special case where the naturally occurring outdoor background levels outside the structure are greater than or equal to 0.01 f/cc, averaged arithmetically over a minimum 5-day period, the clearance level shall be the interior work area background level prior to the start of CONTRACTOR work, or less than or equal to the average natural background level, wherever is lower.

T. Clearance Monitoring: See Asbestos Air Monitoring.

U. Competent Person: An individual experienced in the abatement and control of asbestos who has received specialized additional training in the supervision and management of asbestos abatement projects. This individual is the full-time on-site manager responsible for ensuring that all safety, health and environmental protection requirements are met, that approved operational methods are followed, and that all personnel on the site comply with these requirements. Specialized training must include an EPA recognized course in the management of asbestos abatement projects. The Competent Person shall report to the Industrial Hygienist.

V. Containment: See Enclosure.

W. Decontamination Area: An enclosed area adjacent and connected to a sealed asbestos control area and consisting of an equipment room, shower area, and clean room used for the decontamination of workers, materials and equipment. This also forms the only authorized entry and exit for the control area, except as required in Equipment Decontamination Area below.

X. Encapsulant: A liquid material which can be applied to ACM which reduces the potential for release of asbestos fibers from a material, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

Y. Encapsulate: The process whereby an encapsulant is applied to ACM to seal in or bind together the individual asbestos fibers, thereby reducing the potential for the release of these fibers.

Z. Enclosure: Construction of a sealed, permanent structure around asbestos. Complete documentation must be made of the exact location and condition of the asbestos before the enclosure is finished, including the type and method of use of any encapsulant.

AA. Equipment Decontamination Area: When used, a separate area designed similarly to the personnel decontamination area, but on a large scale. Used to decontaminate large items, or for the purpose of a separate exit for asbestos waste removal where the normal means of egress is not effective (such as the removal of long pieces of pipe from the basement of a structure).

BB. Equipment Room (Change Room): A room located within the decontamination area that is supplied with impermeable bags or receptacles for the disposal or storage of contaminated protective clothing and equipment, and lockers for the storage and contaminated tools and work shoes.

CC. Exposure Standards

1. Workers:
   a. Action Level: An action level concept shall be used by the abatement Subcontractor to ensure that no personnel are exposed to airborne concentrations of asbestos, actinolite, anthophyllite, or tremolite fibers, or a combination of these mineral fibers, equaling or exceeding **0.1 fibers per cubic centimeter** (0.1 f/cc) expressed as an 8-hour time weighted average (TWA) without placement on a medical monitoring program for asbestos. Personnel exposed at or above this level must be provided proper training in the removal of asbestos containing materials and must be provided proper personal protective equipment.
   b. Excursion Limit (EL): An airborne concentration of asbestos of **1.0 fiber per cubic centimeter** of air (1 f/cc) as averaged over a sampling period of 30 minutes.
   c. Permissible Exposure Level (PEL): The abatement Subcontractor shall ensure that no employee is exposed to an airborne concentration of asbestos, actinolite, anthophyllite, or tremolite fibers, or a combination of these mineral fibers, exceeding **0.1 fibers per cubic centimeter** (0.1 f/cc) expressed as an 8-hour time weighted average (TWA) as defined by the NIOSH sampling and analytical method 7400. (Reference 29 CFR 1926.1101, Appendix A.)
2. Non-Workers:
   a. Personnel who are not asbestos workers as defined by OSHA and this specification shall not be exposed to levels of asbestos fibers exceeding the EPA clearance level criteria of **0.01 f/cc**.

DD. Fibers: All fibers, regardless of composition, as determined by analysis in accordance with the method described in 29 CFR 1926.1101, Appendix A. When specialized methodology, such as electron microscopy is required, collection and analysis shall be in accordance with the recommendations of the laboratory providing the analysis, and the equivalent fiber level, expressed in both mass per unit volume and fibers per cubic centimeter shall be given.

EE. Glovebag Technique: A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces not isolated inside an enclosure. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of 6-mil transparent polyethylene or polyvinyl chloride plastic), two inward projecting long sleeve gloves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. All workers who are permitted to use the glovebag technique must be highly trained, experienced and skilled in this method.

FF. HEPA Filter Equipment: High Efficiency Particulate Air (HEPA) filtered vacuuming, local exhaust, or respiratory protective equipment equipped with specialized filters capable of collecting and retaining asbestos fibers. Filters must be of 99.97 percent or greater efficiency at collection of 0.3-micron diameter particles. Filters must be factory tested and certified as meeting this filtration requirement.

GG. Industrial Hygienist: An individual certified by the American Board of Industrial Hygiene and having significant prior experience in managing and evaluating the health and safety aspects on asbestos projects of similar nature and scope to ensure capability of performing asbestos work in a satisfactory manner. Prior project similarities shall be in areas related to material composition, project size, number of employees, and in the engineering, work practice, environmental, and personal protection control required. An equivalent individual, such as a Licensed Professional Safety Engineer, Certified Safety Professional, and other qualified person with a minimum of 5 years of experience in industrial hygiene, including extensive experience in the management and evaluation of health and safety aspects of asbestos abatement, may substitute for the Certified Industrial Hygienist, subject to approval by the Engineer. The Industrial Hygienist shall be responsible for all monitoring, training and asbestos work, for ensuring that all safety and health requirements prescribed by State and Federal regulations, as well as these specifications, are compiled with, and for ensuring that the competent person performs all assigned duties in accordance with this specification and applicable Federal and State regulations.

HH. Initial Exposure Assessment Monitoring: See Asbestos Air Monitoring.

II. Lockdown Sealant: A spray-on liquid-type sealant applied to surfaces from which ACM has been removed. It is applied after final cleaning and visual inspection has occurred, but prior to initial clearance sampling. Its purpose is to control and minimize the amount of airborne asbestos fiber generation that might result from any residual ACM debris on the substrate. All lockdown sealant shall be acrylic copolymer blend that forms a durable non-combustible barrier that when cured becomes an excellent primer for spray back insulation and water based architectural coatings.

JJ. Lower Limit of Detection (LLD): The smallest quantifiable amount of a substance, or number of fibers, present in a given sample that can be determined accurately by the sampling and analysis methods in use. A LLD is normally specified to represent a 95% confidence level. All samples taken for baseline, background, environmental or clearance sampling shall have an LLD of 0.01 f/cc or less. Samples taken for bulk analysis shall have an LLD of less than 0.1 percent by weight of the sample of homogeneous samples.

KK. Negative Exposure Assessment: See Asbestos Air Monitoring.

LL. Negative Pressure: A minimum of **minus 0.02 inches of water pressure** (negative pressure) differential between the asbestos control area and all adjacent areas, at a minimum flow rate of **four air changes per hour** at all points within the asbestos control area. See PART 3-EXECUTION; SAFETY AND HEALTH COMPLIANCE; Vacuums and local exhaust systems for additional information.

MM. Permissible Exposure Level (PEL): See Exposure Standards.

NN. Personal Monitoring: See Asbestos Air Monitoring.

OO. Phase Contrast Illumination Microscopy (PCM): An analytical method for counting fibers in air sampling filters.

PP. Polarized Light Microscopy (PLM): An analytical method for determining asbestos content in bulk samples.

QQ. Time Weighted Average (TWA): The TWA is an average of the airborne concentration of asbestos fibers, expressed as the number of fibers per cubic centimeter (f/cc) of air, measured and calculated for a minimum of 8 hours, and taken into account the relative proportions of time exposed when averaging different exposure levels.

RR. Transmission Electron Microscopy (TEM): A procedure whereby an electron beam is scanned through a specially prepared air-sampling filter. The beam diffraction pattern is then analyzed by computer, which differentiates between the patterns of asbestos and the non-asbestos materials and quantifies the mass of the asbestos present on the filter. This mass can then be referenced to an equivalent number of fibers per cubic centimeter. By far the most sensitive and specific test for airborne asbestos, it is expensive, and results cannot normally be provided for several days. Used for detection of extremely low levels, or when suspected non-asbestos fibers are believed to be interfering with the accuracy or readability of normal sampling methods. All clearance samples for projects inside school buildings must use TEM in accordance with methods set forth in 40 CFR 760, Subpart E.

1.6 PRE-WORK SUBMITTALS

A. The Pre-Work Submittal shall be submitted digitally as a complete package and modified as necessary to obtain approval by the Engineer five working days prior to any work on the project. The abatement Subcontractor shall perform all work in compliance with the approved Pre-Work Submittal which shall include:

1. Asbestos Work Plan: A plain language plan describing work procedures to be used during each and all operations involving asbestos. Annotated building plans or site plans no larger than 11 inches by 17 inches shall be included to detail locations for asbestos control areas, monitoring locations, access and disposal routes, and other activities where needed. The plan shall include as a minimum the following elements:

   a. Location and construction of each asbestos control area.
   b. Sequencing of asbestos work, to include separate sequences if the work is to be accomplished in separate sections or phases, including detail regarding how the abatement work fits into the overall schedule for demolition.
   c. A detailed air monitoring plan that complies with 05.045 Alaska Department of Labor Construction Code (Asbestos), 29 CFR 1926.1101, current US EPA guidance, and applicable requirements of “Asbestos Air Monitoring”, “Exposure Standards”, and “Personal Monitoring” in DEFINITIONS above.
   d. Transport and disposal plans.

e. A contingency plan for potential emergencies/accidents/incidents covering, but not limited to:

- Medical emergencies/accidents inside the control area.
- Violation of the control area.
- Spills inside the control area.
- Spills outside the control area.
- Fire inside and outside the control area.
- Loss of power.
- Loss of negative pressure in the controlled area.
- Discovery that fiber levels inside or outside the control area have exceeded prescribed limits.
- Site instability encountered during the project.
- Spills during transport or disposal.

f. A notification listing of personnel and organizations to be contacted by the abatement Subcontractor in the event of an incident, emergency or contingency.

g. The 24-hour contact point for the abatement Subcontractor and the designated "competent person" to contact in case of an on-site problem. Response time to the site shall not exceed 1 hour from the time of the notification.

2. Notifications: Copies of EPA and OSHA notifications submitted prior to work.

3. Competent Person: Submit the name(s) proposed, address (es), telephone number(s) and complete documentation the individual's qualifications proving the person's qualifications meet the requirements described in DEFINITIONS above.

4. Industrial Hygienist: Submit the name, address and telephone number of the Industrial Hygienist selected to prepare the asbestos work plan, and direct monitoring and training. Include documentation proving the person's qualification meet the requirements described in DEFINITIONS above.

5. Training: Submit certificates signed by each employee and the Industrial Hygienist that each employee has received the training required by 29 CFR 1910.1001, 29 CFR 1926.1101, and appropriate State of Alaska Regulations and this specification. Include proof that each employee is certified as an asbestos worker in the State of Alaska in accordance with current state regulations.

6. Testing Laboratory: If Asbestos Air Monitoring is included in the Contract, submit the name, address, telephone number and qualifications of the independent testing laboratory selected to perform the monitoring, testing and reporting of airborne asbestos fibers. Include documentation certifying that all technicians performing the analysis have been judged proficient by successful participation within the last year in the NIOSH PAT program or the equivalent AIHA program, or an equivalent inter-laboratory testing program.

7. Protective Equipment and Protective Method Plans: Details of planned personnel protective equipment requirements and protective methods, including respirators as will be required for each specific type of operation or condition. Include supporting justification when alternate (e.g., less than the maximum specified) protection is proposed.

B. Any changes to procedures, methods, conditions, etc., identified in the approved Pre-Work Submittal must be submitted in writing for review and approval by the Engineer prior to the inception of the change. The changes must be reviewed and approved by the Certified Industrial Hygienist prior to being submitted to the Engineer for review. Where changes must be implemented immediately for the protection of workers, personnel outside the work area, the structure or the environment, and the change established an environment more stringent than that previously existing, the changes may be implemented by the competent person or other individuals with appropriate authority, and the Engineer notified immediately. These changes will then be submitted in writing within 24 hours for final review and approval.

C. Any analytical data collected as part of the pursuit of the WORK shall be considered the property of the Owner and shall be submitted to the Owner within 24 hours of receipt of such data.

1.7 POST-WORK SUBMITTALS

A. The Post-Work Submittal shall be submitted digitally and approved by the Engineer as complete before final payment is approved. The Post-Work Submittal shall include:

1. Work Log: A detailed log of all operations involving the asbestos portion of the work, to include but not be limited to:

a. The names, entry and exit dates and times, duties performed, and protective equipment worn by each individual during their time within the asbestos control area, covering all personnel, (including inspectors, monitoring personnel and visitors) entering each asbestos control area. This information is normally provided in the form of fully legible copies of the entry/exit control log for the control area. Each day's listing should also include a summary of the work performed (quantity, type, location, etc.).

b. A listing of all personnel performing asbestos related work outside the control area, showing duties performed, date, time, duration, and location of the work and protective equipment worn while performing these duties. Each day's listing should also include a summary of the work performed (quantity, type, location, etc.).

c. Copies of the complete and reviewed sampling results as an attachment.

d. A summary of each problem, incident, contingency, and emergency that occurred, and the actions taken to resolve the situation.

e. A copy of all shipping manifests that document disposal of all ACM at an approved solid waste facility.

PART 2- PRODUCTS-NOT USED

PART 3- EXECUTION

3.1 PROTECTION OF ADJACENT AREAS

A. Perform all asbestos work in such a way as to not contaminate 1) adjacent areas, or 2) interior spaces of components within the abatement area. At the finish of the abatement project, all areas should be asbestos-free and ready for demolition as non-hazardous construction. Should any areas become contaminated during the implementation of the abatement plan, such areas shall be cleaned and/or restored to their original condition as directed by the Engineer at the abatement Subcontractor's expense.

3.2 NOTIFICATIONS AND PERMITS

A. The abatement Subcontractor shall notify the regional office of the United States Environmental Protection Agency (US EPA) in accordance with 40 CFR 61 Subpart M.

B. The abatement Subcontractor shall also notify the Alaska Department of Labor, Occupational Safety and Health Division (AK OSHD) in accordance with current State of Alaska asbestos regulations.

C. The abatement Subcontractor shall notify the Engineer 48 hours prior to commencement of any abatement work, and immediately upon completion or termination of the work.

D. The abatement Subcontractor shall carry out removal, transportation, and disposal in accordance with state and federal requirements, and shall secure necessary permits in conjunction with asbestos removal and transport, and provide timely notification of such actions as may be required by Federal, State, regional and local authorities.

3.3 COMPETENT PERSON

A. All asbestos work, including setup and teardown of the asbestos enclosure(s) and control area(s), and all asbestos disposal operations shall be under the direct and continuous on-site supervision of the Competent Person (who is identified in the Pre-Work Submittal and whose qualifications and duties are defined in DEFINITIONS above). The Industrial Hygienist shall oversee all activities of the competent person.

3.4 INDUSTRIAL HYGIENIST

A. The abatement Subcontractor shall conduct all monitoring, training and asbestos work under the direction of the Industrial Hygienist (who is identified in the Pre-Work Submittal and whose qualifications and duties are defined in DEFINITIONS above).

B. While performing asbestos work, the abatement Subcontractor may be subject to on-site inspection by the Owner, the Engineer (or his designated representative), fire, safety, and

health personnel, and Federal and State inspectors. If the work is in violation of specification requirements, or applicable Federal or State regulations, the Engineer may issue a stop-work order to be in effect immediately, and which will remain in place until the violation(s) are resolved and, if required by the Engineer, a new or amended asbestos work plan is submitted. Restart will not be accomplished without approval of the Engineer. Standby time and expenses required to resolve the violation(s) and provide new or amended submittals shall be at the abatement Subcontractor's expense.

3.5 SAFETY AND HEALTH COMPLIANCE

A. The abatement Subcontractor shall comply with all laws, ordinances, rules and regulations of Federal, State, regional and local authorities regarding demolition, handling, storing, transporting and disposing of asbestos and asbestos containing materials. He shall also comply with the applicable requirements of the current issues of 29 CFR 1910.1001, 29 CFR 1926.1101, and 40 CFR 61 Subparts A and M. Asbestos removal is also required to comply with the provisions of the State of Alaska, Solid Waste Management Codes, title 18 of the Alaska Administrative Code, and the State of Alaska OSHA Standards.

3.6 ASBESTOS WORK PROCEDURES

A. The work specified in these contract documents shall be carried out in accordance with all applicable local, state, and federal regulations, and the following special requirements:

1. Negative Air: The CONTRACTOR shall use negative air machines as necessary to ensure that air is drawn into the abatement WORK area and exhausted through HEPA filters during Class I asbestos removal activities.
2. OSHA Class I asbestos WORK: Class I WORK shall comply with the appropriate sections of OSHA 1926.1101(g)(4) "Class I Requirements" and OSHA 1926.1101(g)(5). Certified asbestos abatement workers are a requirement for Class I asbestos WORK.
3. OSHA Class II asbestos WORK: Class II WORK shall comply with the appropriate sections of OSHA 1926.1101(g)(7) "Work Practices and Engineering Controls for Class II WORK" and OSHA 1926.1101(g)(8). Certified asbestos abatement workers are a requirement for Class II asbestos WORK.
4. Asbestos Handling Procedures: The CONTRACTOR shall sufficiently wet ACM with a fine spray of amended water during removal, cutting or other handling to reduce the emission of airborne fibers. All removed and waste materials shall be placed in plastic disposal bags or other approved containers. Under no circumstances shall asbestos waste or debris be allowed to accumulate in the WORK area.

5. Disposal of Asbestos: Procedures for hauling and disposal shall comply with 40 CFR 61, Subpart M, 40 CFR 241 and 257, and state, regional, and local standards. Abated material and associated debris shall be packaged in accordance with applicable regulations and disposed of at an approved facility. All ACM shall be transported in an enclosed vehicle.

3.7 MONITORING

A. The Owner shall provide third-party on-site air monitoring for the duration of the abatement, including "Area Monitoring", "Environmental Monitoring", "Baseline (Background) Monitoring", "Initial Exposure Assessment Monitoring" and "Clearance Monitoring" all as specified in Paragraph 1.5 "DEFINITIONS", above.

B. The CONTRACTING OFFICER reserves the right to perform confirmation air monitoring including all elements summarized in Asbestos Air Monitoring in DEFINITIONS, above.

C. Clearance Procedures

1. After abatement activities are complete but prior to the application of any lockdown sealant, the abatement Subcontractor and the Engineer or a designated representative shall perform a detailed visual inspection of the work area for any visible asbestos residual. If any is found, a complete re-cleaning of the area shall be performed, and the area re-inspected. Once the visual inspection is satisfactorily completed the lockdown shall be applied.
2. After the area has passed the visual inspection and has received spray application of lockdown sealant but prior to the removal of the enclosure, clearance monitoring of the WORK area shall be accomplished to confirm the effectiveness of the clean-up operations. Such sampling shall not be performed until all areas and materials within the WORK area are fully dry.
3. Clearance sampling will be done under aggressive conditions using PCM analysis. Once clearance criteria have been achieved, clearance shall be considered final and removal of any protective enclosure shall be accomplished.
4. The abatement Subcontractor shall be responsible for all costs relating to all visual inspections after the second failed visual inspection.

END OF SECTION 028213

SECTION 028416 – HAZARDOUS BALLASTS AND LAMPS (Addendum No. 2)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General provisions of the Contract, including General and Supplementary Conditions.

B. Contract Drawings

1.2 SUMMARY

A. The work described herein is in support of a renovation of the Rainforest Recovery Center, located on the Bartlett Regional Hospital Campus in Juneau, Alaska.

B. Fluorescent lighting fixtures are being removed and replaced throughout most of the north half of the building.

C. Fluorescent lamps contain mercury, and older ballasts may contain PCBs.

D. Some ballasts were observed to be marked as "non-PCB"; however, some may exist that are not marked as non-hazardous.

E. The intent of the project is to:

1. Collect and sort all fluorescent ballasts and to dispose of them according to their indicated level of hazard, and

2. Separate all fluorescent lamps from the waste stream and dispose of them as hazardous materials.

1.3 COORDINATION AND TIMING OF ABATEMENT ACTIVITIES

A. The building is a medical treatment facility and is occupied 24 hours a day, 7 days a week. Access to the dining area will be necessary on a daily basis, so work must occur around the active schedule for the facility.

B. Security to the site shall be maintained for the duration of the Project. It will be the responsibility of the Contractor to coordinate with other trades to sequence the mold abatement portion of the Work.

1.4 PRE-WORK SUBMITTALS

A. The contractor shall submit a plan for disposal of unmarked ballasts presumed to contain PCBs.

PART 2 - PRODUCTS-NOT USED

PART 3 - EXECUTION

3.1 ENGINEERING CONTROLS

A. Minimum personal protection equipment shall be respiratory protection (e.g., N-95 disposable respirator), gloves, and eye protection.

3.2 PROTECTION OF ADJACENT AREAS

A. Perform all hazardous materials Work in such a way as to not contaminate adjacent areas. All such efforts shall be at the Abatement Subcontractor's expense.

B. Should any adjacent areas become contaminated with materials potentially containing PCBs or mercury, Abatement Subcontractor shall collect and dispose of all contaminated materials appropriately at his or her own expense.

3.3 DISPOSAL

A. Unmarked ballasts are presumed to contain PCBs and shall be disposed of as such. A fully completed waste disposal manifest shall be filled out to track all PCB waste.

B. Fluorescent lamps and mercury thermostat bulbs shall be disposed of as a mercury hazard.

END OF SECTION 028416

SECTION 087100 – DOOR HARDWARE (Addendum 2)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Door Hardware Schedule”.
2. Division 08 Section “Hollow Metal Doors and Frames”.
3. Division 08 Section “Flush Wood Doors”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards:

1. ANSI/BHMA Certified Product Standards - A156 Series
2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:

a. Type, style, function, size, label, hand, and finish of each door hardware item.
b. Manufacturer of each item.
c. Fastenings and other pertinent information.
d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
e. Explanation of abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for door hardware.
g. Door and frame sizes and materials.
h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.

b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Seven years for heavy duty cylindrical (bored) locks and latches.
3. Five years for exit hardware.
4. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Manufacturers:

a. Hager Companies (HA).
b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
c. Stanley Hardware (ST).

2.3 POWER TRANSFER DEVICES

A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

a. Hager Companies (HA) - ETW-QC (# wires) Option.
b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - QC (# wires) Option.
c. Stanley Hardware (ST) – C Option.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:
a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

a. Hager Companies (HA) - Quick Connect.
b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.
c. Stanley Hardware (ST) – WH Series.

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

C. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
5. Keyway: Match Facility Restricted Keyway.

D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

E. Keying System: Each type of lock and cylinders to be factory keyed.

1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Key locks to Owner's existing system.

F. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

G. Construction Keying: Provide construction master keyed cylinders.

H. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

I. Key Control Software: Provide one network version of "Key Wizard" branded key management software package that includes one year of technical support and upgrades to software at no charge. Provide factory key system formatted for importing into “Key Wizard” software.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Manufacturers:

    a. Corbin Russwin Hardware (RU) – ML2000 Series.
    b. Sargent Manufacturing (SA) – 8200 Series.
    c. No Substitution.

B. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified.

1. Furnish with solid cast levers, standard 2 3/4” backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.

2. Locks are to be non-handed and fully field reversible.

3. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 2 million cycles.

4. Manufacturers:

    a. Corbin Russwin Hardware (RU) – CL3300 Series.
    b. Sargent Manufacturing (SA) – 10 Line.
    c. No Substitution.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.7 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.

8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

9. Rail Sizing: Provide exit device rails factory sized for proper door width application.

10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
b. Sargent Manufacturing (SA) - 80 Series.
c. No Substitution.

2.8 INTEGRATED WIEGAND OUTPUT EXIT DEVICES – MULTI-CLASS READER

A. Integrated Wiegand Output Multi-Class Exit Hardware: Wiegand output ANSI 156.3 Grade 1 rim, mortise, and vertical rod exit device hardware with integrated proximity card reader, latchbolt and touchbar monitoring, and request-to-exit signaling, in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle exit trim with 3/4" throw latch bolt. U.L listed and labeled for either panic or "fire exit hardware" for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.

1. Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand compatible access control systems. Inside push bar (request-to-exit) signaling and door position (open/closed status) monitoring (via separately connected DPS).
2. Integrated reader supports the following credentials:
   a. 125kHz proximity credentials: HID, AWID, Indala, and EM4102.
   b. 13.56 MHz proximity credentials: HID iClass, HID iClass SE, SE for MIFARE Classic, DESFire EV1.
3. 12VDC external power supply required for reader. 24VDC required for solenoid operated exit trim. Fail safe or fail secure options.
4. Installation requires only one cable run from the exit hardware to the access control panel without requirements for additional proprietary lock panel interface boards or modules.
5. Competitor Alternates Allowed Option>Installation to include manufacturer's access control panel interface board or module where required for Wiegand output protocol.

6. Manufacturers:

   a. Corbin Russwin (RU) – ED5000 SE-LP10 Series.
   b. Sargent Manufacturing (SA) – M1 80 Series.

2.9 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Manufacturers:

a. Sargent Manufacturing (SA) - 351 Series.
b. Norton Door Controls (NO) - 7500 Series.

2.10 SURFACE MOUNTED CLOSER HOLDERS

A. Electromagnetic Door Holders: Certified ANSI A156.15 electromagnetic door holder/releases with a minimum 20 to 40 pounds holding power and single coil construction able to accommodate.12VDC, 24VAC, 24VDC and 120VAC. Coils to be independently wound, employing an integral fuse and armatures to include a positive release button.

1. Manufacturers:

a. Rixson (RF) - 980/990 Series.
b. Sargent Manufacturing (SA) - 1560 Series.

2.11 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.

2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and

not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.

4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:

    a. Stainless Steel: 300 grade, 050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.

6. Manufacturers:

    a. Hiawatha, Inc. (HI).
    b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    c. Trimco (TC).

2.12 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Hiawatha, Inc. (HI).
    b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

    a. Rixson Door Controls (RF).
    b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

c. Sargent Manufacturing (SA).

2.13 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products (NG).
2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
3. Reese Enterprises, Inc. (RE).

2.14 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

B. The supplier is responsible for handing and sizing all products and providing the correct option for the appropriate door type and material where more than one is presented in the hardware sets. Quantities listed are for each pair of doors, or for each single door.

C. Manufacturer's Abbreviations:

1. MK - McKinney
2. RU - Corbin Russwin
3. RF - Rixson
4. NO - Norton
5. RO - Rockwood
6. PE - Pemko
7. SU - Securitron

Hardware Sets

Set: X

Doors: 101

2 Hinge (heavy weight)	T4A3386xNRP 5" x 4-1/2"	US32D	MK	087100
1 Electric Hinge (heavy weight)	T4A3386-QC12 5" x 4-1/2"	US32D	MK	087100 ⚡
1 Access Control Exit Device (SELP10)	ED5200N PR9603ET CT7R	630	RU	087100 ⚡
1 Door Closer	PR7500	689	NO	087100
1 Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100
1 Door Stop	463-RKW	US32D	RO	087100
1 Threshold	273x3AFG FHSL14SS-2		PE	087100
1 Gasketing	S44W		PE	087100
1 Sweep	315CN 36"		PE	087100
1 Frame Harness	QC-C1500 (as required)		MK	087100 ⚡
1 Door Harness	QC-C__ (as required)		MK	087100 ⚡
1 Card Reader	provided by access control.			
1 Low Energy Operator				

1 Push Button Switch
1 Power Supply
1 Power Transfer

Set: X2

Doors: 124A

1 Exit Device (classroom)	ED5200 PR955ET CT7R	630	RU	087100
1 Door Closer	PR7500	689	NO	087100
1 Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100
1 Door Stop	463-RKW	US32D	RO	087100
1 Threshold	273x3AFG FHSL14SS-2		PE	087100
1 Gasketing	S44W		PE	087100
1 Sweep	315CN 36"		PE	087100

Set: C

Doors: 102A

2 Hinge (heavy weight)	T4A3386xNRP 5" x 4-1/2"	US32D	MK	087100
1 Electric Hinge (heavy weight)	T4A3386-QC12 5" x 4-1/2"	US32D	MK	087100 ⚡
1 Access Control Exit Device (SELP10)	ED5200N PR9603ET CT7R	630	RU	087100 ⚡
1 Door Closer	PR7500	689	NO	087100
1 Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100
1 Door Stop	463-RKW	US32D	RO	087100
1 Gasketing	S44W		PE	087100
1 Sweep	315CN 36"		PE	087100
1 Frame Harness	QC-C1500 (as required)		MK	087100 ⚡
1 Door Harness	QC-C__ (as required)		MK	087100 ⚡
1 Card Reader	provided by access control.			
1 Power Supply				
1 Power Transfer				

Set: C2

Doors: 102B

6 Hinge (heavy weight)	T4A3786 5" x 4-1/2"	US26D	MK	087100
2 Exit Device (exit only) SVR top rod only	ED5470B EO M55	630	RU	087100
2 Door Closer	PR7500	689	NO	087100

2 Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100	
2 Electromagnetic Holder	998M	689	RF	087100	⚡
1 Gasketing	S44W		PE	087100	
1 Astragal	S772GR 8'		PE	087100	

Set: C3

Doors: 103

2 Hinge (heavy weight)	T4A3786 5" x 4-1/2"	US26D	MK	087100	
1 Electric Hinge (heavy weight)	T4A3386-QC12 5" x 4-1/2"	US32D	MK	087100	⚡
1 Access Control Cyl Lock	CL33905 PZD CT7R	626	RU	087400	⚡
1 Door Closer	PR7500	689	NO	087100	
1 Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100	
1 Door Stop	441CU/409 as required	US26D	RO	087100	
1 Gasketing	S44W		PE	087100	
1 Frame Harness	QC-C1500 (as required)		MK	087100	⚡
1 Door Harness	QC-C__ (as required)		MK	087100	⚡
1 Card Reader	provided by access control.				
1 Power Supply					
1 Power Transfer					

Set: O

Doors: 113, 115, 117, 119, 121, 124, 136

3 Hinge	TA2714 4.5 x 4.5	US26D	MK	087100
1 Entrance Lock	CL3361 PZD CT7R	626	RU	087100
1 Door Closer	7500	689	NO	087100
1 Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100
1 Door Stop	441CU/409 as required	US26D	RO	087100
1 Gasketing	S44W		PE	087100

Set: O2

Doors: 112, 118

3 Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK	087100
1 Passage Latch	CL3310 PZD	626	RU	087100
1 Door Stop	441CU/409 as required	US26D	RO	087100
1 Gasketing	S44W		PE	087100

Set: O3

Doors: 120, 163

2	Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK 087100	
1	Electric Hinge (heavy weight)	T4A3386-QC12 5" x 4-1/2"	US32D	MK 087100	⚡
1	Access Control Cyl Lock	CL33905 PZD CT7R	626	RU 087400	⚡
1	Conc Overhead Stop	6-X36	689	RF 087100	
1	Door Closer	7500	689	NO 087100	
1	Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO 087100	
1	Gasketing	S44W		PE 087100	
1	Frame Harness	QC-C1500 (as required)		MK 087100	⚡
1	Door Harness	QC-C__ (as required)		MK 087100	⚡
1	Card Reader	provided by access control.			
1	Power Supply				
1	Power Transfer				

Set: P

Doors: 162, 164, 166, 168

3	Hinge (heavy weight)	T4A3786 5" x 4-1/2"	US26D	MK 087100	
1	Passage Latch	CL3310 PZD	626	RU 087100	
1	Conc Overhead Stop	6-X36	689	RF 087100	
1	Door Closer	7500	689	NO 087100	
1	Gasketing	S44W		PE 087100	

Set: R

Doors: 116, 118A

3	Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK 087100	
1	Privacy Lock	ML2020 PSA M34 M19VN	626	RU 087100	
1	Door Closer	7500	689	NO 087100	
1	Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO 087100	
1	Door Stop	441CU/409 as required	US26D	RO 087100	
1	Gasketing	S44W		PE 087100	

Set: R2

Doors: 162A, 168A

3	Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK 087100	
1	Privacy Lock	ML2020 PSA M34 M19VN	626	RU 087100	

1	Door Stop	441CU/409 as required	US26D	RO	087100
1	Gasketing	S44W		PE	087100

Set: R3

Doors: 164A, 166A

3	Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK	087100
1	Privacy Lock	ML2020 PSA M34 M19VN	626	RU	087100
1	Surface OH Stop	10-X36	630	RF	087100
1	Gasketing	S44W		PE	087100

Set: S

Doors: 123, 161, 167

3	Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK	087100
1	Storeroom Lock	CL3357 PZD CT7R	626	RU	087100
1	Door Closer	7500	689	NO	087100
1	Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100
1	Door Stop	441CU/409 as required	US26D	RO	087100
1	Gasketing	S44W		PE	087100

Set: S2

Doors: 125

3	Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK	087100	
1	Electric Hinge (heavy weight)	T4A3386-QC12 5" x 4-1/2"	US32D	MK	087100	⚡
1	Access Control Cyl Lock	CL33905 PZD CT7R	626	RU	087400	⚡
1	Door Closer	7500	689	NO	087100	
1	Kick Plate	K1050 10X1.5LDW CSK BEV	US32D	RO	087100	
1	Door Stop	441CU/409 as required	US26D	RO	087100	
1	Gasketing	S44W		PE	087100	
1	Frame Harness	QC-C1500 (as required)		MK	087100	⚡
1	Door Harness	QC-C__ (as required)		MK	087100	⚡
1	Card Reader	provided by access control.				
1	Power Supply					
1	Power Transfer					

Set: S3

Doors: 114

3	Hinge (heavy weight)	T4A3786 4.5 x 4.5	US26D	MK	087100
1	Storeroom Lock	CL3357 PZD CT7R	626	RU	087100
1	Door Stop	441CU/409 as required	US26D	RO	087100
1	Gasketing	S44W		PE	087100

END OF SECTION 087100

SECTION 281300 - ACCESS CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Security access operating system and application software.
2. Security access controllers connected to high-speed electronic-data transmission network.

1.3 DEFINITIONS

A. CCTV: Closed-circuit television.

B. CPU: Central processing unit.

C. Credential: Data assigned to an entity and used to identify that entity.

D. dpi: Dots per inch.

E. DTS: Digital Termination Service. A microwave-based, line-of-sight communication provided directly to the end user.

F. GFI: Ground fault interrupter.

G. Identifier: A credential card; keypad personal identification number; or code, biometric characteristic, or other unique identification entered as data into the entry-control database for the purpose of identifying an individual. Where this term is presented with an initial capital letter, this definition applies.

H. I/O: Input/Output.

I. LAN: Local area network.

J. Location: A Location on the network having a PC-to-controller communications link, with additional controllers at the Location connected to the PC-to-controller link with a TIA 485-A communications loop. Where this term is presented with an initial capital letter, this definition applies.

K. PC: Personal computer. Applies to the central station, workstations, and file servers.

L. PCI Bus: Peripheral Component Interconnect. A peripheral bus providing a high-speed data path between the CPU and the peripheral devices such as a monitor, disk drive, or network.

M. PDF: Portable Document Format. The file format used by the Acrobat document-exchange-system software from Adobe.

N. RAS: Remote access services.

O. RF: Radio frequency.

P. ROM: Read-only memory. ROM data are maintained through losses of power.

Q. TCP/IP: Transport control protocol/Internet protocol incorporated into Microsoft Windows.

R. TWAIN: Technology without an Interesting Name. A programming interface that lets a graphics application, such as an image editing program or desktop publishing program, activate a scanner, frame grabber, or other image-capturing device.

S. UPS: Uninterruptible power supply.

T. USB: Universal serial bus.

U. WAN: Wide area network.

V. WAV: The digital audio format used in Microsoft Windows.

W. WMP: Windows media player.

X. Wiegand: Patented magnetic principle that uses specially treated wires embedded in the credential card.

Y. Windows: Operating system by Microsoft Corporation.

Z. Workstation: A PC with software that is configured for specific, limited security-system functions.

AA. WYSIWYG: What You See Is What You Get. Text and graphics appear on the screen the same as they will in print.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Reference each product to a location on Drawings. Test and evaluation data presented in Product Data shall comply with SIA BIO-01.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. System labeling schedules, including electronic copy of labeling schedules that are part of the cable and asset identification system of the software specified in Parts 2 and 3.
2. Wiring Diagrams. For power, signal, and control wiring. Show typical wiring schematics.
3. Battery and charger calculations for controllers.

C. Other Action Submittals:

1. Project planning documents as specified in Part 3.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For security system to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

1. Hard copies of manufacturer's specification sheets, operating specifications, design guides, user's guides for software and hardware, and PDF files on CD-ROM of the hard-copy submittal.
2. System installation and setup guides with data forms to plan and record options and setup decisions.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

1. Cable installer must have on staff a registered communication distribution designer certified by Building Industry Consulting Service International.

B. Source Limitations: Obtain central station, workstations, controllers, Identifier readers, and all software through one source from single manufacturer.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NFPA 70, "National Electrical Code."

E. Comply with SIA DC-01 and SIA DC-03 and SIA DC-07.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Controllers:

1. Store in temperature- and humidity-controlled environment in original manufacturer's sealed containers. Maintain ambient temperature between 50 and 85 deg F (10 and 30 deg C), and not more than 80 percent relative humidity, noncondensing.
2. Open each container; verify contents against packing list; and file copy of packing list, complete with container identification, for inclusion in operation and maintenance data.
3. Save original manufacturer's containers and packing materials and deliver as directed under provisions covering extra materials.

1.9 PROJECT CONDITIONS

A. Environmental Conditions: System shall be capable of withstanding the following environmental conditions without mechanical or electrical damage or degradation of operating capability:

1. Control Station: Rated for continuous operation in ambient conditions of 60 to 85 deg F (16 to 30 deg C) and a relative humidity of 20 to 80 percent, noncondensing.
2. Indoor, Controlled Environment: NEMA 250, Type 1 enclosure. System components, except the central-station control unit, installed in temperature-controlled indoor environments shall be rated for continuous operation in ambient conditions of 36 to 122 deg F (2 to 50 deg C) dry bulb and 20 to 90 percent relative humidity, noncondensing.
3. Outdoor Environment: NEMA 250, NEMA 250, Type 4 enclosures. System components installed in locations exposed to weather shall be rated for continuous operation in ambient conditions of minus 30 to plus 122 deg F (minus 34 to plus 50 deg C) dry bulb and 20 to 90 percent relative humidity, condensing. Rate for continuous operation where exposed to rain as specified in NEMA 250, winds up to 85 mph (137 km/h) and snow cover up to 24 inches (610 mm) thick.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide the following:

1. Millennium Expert.

2.2 DESCRIPTION

A. Security Access System: field-installed controllers, connected by a high-speed electronic-data transmission network.

B. Network(s) connecting PCs and controllers shall consist of one or more of the following:

1. Local area, IEEE 802.3 Fast Ethernet, star topology network based on TCP/IP.

2.3 OPERATION

A. Security access system shall use a single database for access-control and credential-creation functions.

B. Distributed Processing: A fully distributed processing system.

1. Access-control information, including time, date, valid codes, access levels, and similar data, shall be downloaded to controllers so each controller can make access-control decisions.
2. Intermediate controllers for access control are prohibited.
3. In the event that communications with the central controller are lost, controllers shall automatically buffer event transactions until communications are restored, at which time buffered events shall be uploaded to the central station.

C. Number of Locations:

1. Support at least 128 separate Locations using a single PC with combinations of direct-connect, dial-up, or TCP/IP LAN connections to each Location.
2. Each Location shall have its own database and history in the central station.
3. Locations may be combined to share a common database.

Location Capacity:

1. 10,000 total-access credentials.
2. 10 supervised alarm inputs.
3. 10 programmable outputs.

E. System Network Requirements:

1. System components shall be interconnected and shall provide automatic communication of status changes, commands, field-initiated interrupts, and other communications required for proper system operation.
2. Communication shall not require operator initiation or response and shall return to normal after partial- or total-network interruption such as power loss or transient upset.
3. System shall automatically annunciate communication failures to the operator and shall identify the communications link that has experienced a partial or total failure.

F. Field equipment shall include controllers, sensors, and controls.

1. Controllers shall serve as an interface between the central station and sensors and controls.
2. Data exchange between the central station and the controllers shall include down-line transmission of commands, software, and databases to controllers.
3. The up-line data exchange from the controller to the central station shall include status data such as intrusion alarms, status reports, and entry-control records.
4. Controllers are classified as alarm-annunciation or entry-control type.

G. System Response to Alarms:

1. Field device network shall provide a system end-to-end response time of one second(s) or less for every device connected to the system.
2. Alarms shall be annunciated at the central station within one second of the alarm occurring at a controller or at a device controlled by a local controller, and within 100 ms if the alarm occurs at the central station.
3. Alarm and status changes shall be displayed within 100 ms after receipt of data by the central station.

H. False-Alarm Reduction: The design of the central station and controllers shall contain features to reduce false alarms. Equipment and software shall comply with SIA CP-01.

I. Error Detection:

1. Use a cyclic code method to detect single- and double-bit errors, burst errors of eight bits or fewer, and at least 99 percent of all other multibit and burst errors between controllers and the central station.
2. Interactive or product error-detection codes alone will not be acceptable.
3. A message shall be in error if one bit is received incorrectly.
4. Retransmit messages with detected errors.
5. Allow for an operator-assigned two-digit decimal number to each communications link representing the number of retransmission attempts.
6. Monitor the frequency of data transmission failure for display and logging.

J. Data Line Supervision: System shall initiate an alarm in response to opening, closing, shorting, or grounding of data transmission lines.

K. Door Hardware Interface:

1. Comply with requirements in Section 087100 "Door Hardware" for door hardware required to be monitored or controlled by the security access system.
2. Electrical characteristics of controllers shall match the signal and power requirements of door hardware.

L. Controller-to-Controller Communications:

1. TIA 485-A, four-wire, point-to-point, regenerative (repeater) communications network methodology.
2. TIA 485-A communications signal shall be regenerated at each controller.

M. Database Downloads:

1. All data transmissions from PCs to a Location, and between controllers at a Location, shall include a complete database checksum to check the integrity of the transmission. If the data checksum does not match, a full data download shall be automatically retransmitted.
2. If a controller is reset for any reason, it shall automatically request and receive a database download from the PC. The download shall restore data stored at the controller to their normal working state and shall take place with no operator intervention.
3. Software shall provide for setting downloads via dial-up connection to once per 24-hour period, with time selected by the operator.

4. Software shall provide for setting delays of database downloads for dial-up connections. Delays change the download from immediately to a delay ranging from one to 999 minutes.

5. System Setup:

    a. Assign manual and automatic responses to incoming-point status change or alarms.
    b. Automatically respond to input with a link to other inputs, outputs, or operator-response plans; unique sound with use of WAV files; and maps or images that graphically represent the point location.
    c. Sixty-character message field for each alarm.
    d. Operator-response-action messages shall allow message length of at least 65,000 characters, with database storage capacity of up to 32,000 messages. Setup shall assign messages to access point.
    e. Secondary messages shall be assignable by the operator for printing to provide further information and shall be editable by the operator.
    f. Allow 25 secondary messages with a field of four lines of 60 characters each.
    g. Store the most recent 1000 alarms for recall by the operator using the report generator.

6. Software Tamper:

    a. Annunciate a tamper alarm when unauthorized changes to system database files are attempted. Three consecutive unsuccessful attempts to log onto system shall generate a software tamper alarm.
    b. Annunciate a software tamper alarm when an operator or other individual makes three consecutive unsuccessful attempts to invoke functions beyond the authorization level.
    c. Maintain a transcript file of the last 5000 commands entered at each central station to serve as an audit trail. System shall not allow write access to system transcript files by any person, regardless of their authorization level.
    d. Allow only acknowledgment of software tamper alarms.

7. Read access to system transcript files shall be reserved for operators with the highest password authorization level available in system.
8. Animated Response Graphics: Highlight alarms with flashing icons on graphic maps; display and constantly update the current status of alarm inputs and outputs in real time through animated icons.
9. Multimedia Alarm Annunciation: WAV files to be associated with alarm events for audio annunciation or instructions.
10. Alarm Handling: Each input may be configured so that an alarm cannot be cleared unless it has returned to normal, with options of requiring the operator to enter a comment about disposition of alarm. Allow operator to silence alarm sound when alarm is acknowledged.
11. Alarm Automation Interface: High-level interface to central-station alarm automation software systems. Allows input alarms to be passed to and handled by automation systems in the same manner as burglar alarms, using a TIA 232-F ASCII interface.
12. CCTV Alarm Interface: Allow commands to be sent to CCTV systems during alarms (or input change of state) through serial ports.
13. Camera Control: Provides operator ability to select and control cameras from graphic maps.

N. Alarm Monitoring: Monitor sensors, controllers, and DTS circuits and notify operators of an alarm condition. Display higher-priority alarms first and, within alarm priorities, display the oldest unacknowledged alarm first. Operator acknowledgment of one alarm shall not be considered acknowledgment of other alarms nor shall it inhibit reporting of subsequent alarms.

1. Displayed alarm data shall include type of alarm, location of alarm, and secondary alarm messages.
2. Printed alarm data shall include type of alarm, location of alarm, date and time (to nearest second) of occurrence, and operator responses.
3. Maps shall automatically display the alarm condition for each input assigned to that map if that option is selected for that input location.
4. Alarms initiate a status of "pending" and require the following two handling steps by operators:

    a. First Operator Step: "Acknowledged." This action shall silence sounds associated with the alarm. The alarm remains in the system "Acknowledged" but "Un-Resolved."
    b. Second Operator Step: Operators enter the resolution or operator comment, giving the disposition of the alarm event. The alarm shall then clear.

5. Each workstation shall display the total pending alarms and total unresolved alarms.
6. Each alarm point shall be programmable to disallow the resolution of alarms until the alarm point has returned to its normal state.
7. Alarms shall transmit to the central station in real time except for allowing connection time for dial-up locations.
8. Alarms shall be displayed and managed from a minimum of four different windows.

    a. Input Status Window: Overlay status icon with a large red blinking icon. Selecting the icon will acknowledge the alarm.
    b. History Log Transaction Window: Display name, time, and date in red text. Selecting red text will acknowledge the alarm.
    c. Alarm Log Transaction Window: Display name, time, and date in red. Selecting red text will acknowledge the alarm.
    d. Graphic Map Display: Display a steady colored icon representing each alarm input location. Change icon to flashing red when the alarm occurs. Change icon from flashing red to steady red when the alarm is acknowledged.

9. Once an alarm is acknowledged, the operator shall be prompted to enter comments about the nature of the alarm and actions taken. Operator's comments may be manually entered or selected from a programmed predefined list, or a combination of both.
10. For locations where there are regular alarm occurrences, provide programmed comments. Selecting that comment shall clear the alarm.
11. The time and name of the operator who acknowledged and resolved the alarm shall be recorded in the database.
12. Identical alarms from the same alarm point shall be acknowledged at the same time the operator acknowledges the first alarm. Identical alarms shall be resolved when the first alarm is resolved.
13. Alarm functions shall have priority over downloading, retrieving, and updating database from workstations and controllers.
14. When a reader-controlled output (relay) is opened, the corresponding alarm point shall be automatically bypassed.

O. Monitor Display: Display text and graphic maps that include zone status integrated into the display. Colors are used for the various components and current data. Colors shall be uniform throughout the system.

1. Color Code:

a. FLASHING RED: Alerts operator that a zone has gone into an alarm or that primary power has failed.
b. STEADY RED: Alerts operator that a zone is in alarm and alarm has been acknowledged.
c. YELLOW: Advises operator that a zone is in access.
d. GREEN: Indicates that a zone is secure and that power is on.

2. Graphics:

a. Support 32,000 graphic display maps and allow import of maps from a minimum of 16 standard formats from another drawing or graphics program.
b. Allow I/O to be placed on graphic maps by the drag-and-drop method.
c. Operators shall be able to view the inputs, outputs, and the point's name by moving the mouse cursor over the point on the graphic map.
d. Inputs or outputs may be placed on multiple graphic maps. The operator shall be able to toggle to view graphic maps associated with I/Os.
e. Each graphic map shall have a display-order sequence number associated with it to provide a predetermined order when toggled to different views.
f. Camera icons shall have the ability to be placed on graphic maps that, when selected by an operator, will open a video window, display the camera associated with that icon, and provide pan-tilt-zoom control.
g. Input, output, or camera placed on a map shall allow the ability to arm or bypass an input, open or secure an output, or control the pan-tilt-zoom function of the selected camera.

P. System test software enables operators to initiate a test of the entire system or of a particular portion of the system.

1. Test Report: The results of each test shall be stored for future display or printout. The report shall document the operational status of system components.

Q. SURGE AND TAMPER PROTECTION

1. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor-entry connection to components.

2. Tamper Protection: Tamper switches on enclosures, control units, pull boxes, junction boxes, cabinets, and other system components shall initiate a tamper-alarm signal when unit is opened or partially disassembled. Control-station control-unit alarm display shall identify tamper alarms and indicate locations

2.4 CONTROLLERS

A. Controllers: Intelligent peripheral control unit, complying with UL 294, that stores time, date, valid codes, access levels, and similar data downloaded from the central station or workstation for controlling its operation.

B. Subject to compliance with requirements in this article, manufacturers may use multipurpose controllers.

C. Entry-Control Controller:

1. Function: Provide local entry-control functions including one- and two-way communications with access-control devices such as card readers, keypads, door strikes, magnetic latches, gate and door operators, and exit push buttons.

a. Operate as a stand-alone portal controller using the downloaded database during periods of communication loss between the controller and the field-device network.
b. Accept information generated by the entry-control devices; automatically process this information to determine valid identification of the individual present at the portal:

1) On authentication of the credentials or information presented, check privileges of the identified individual, allowing only those actions granted as privileges.
2) Privileges shall include, but are not limited to, time of day control, day of week control, group control, and visitor escort control.

c. Maintain a date-, time-, and Location-stamped record of each transaction. A transaction is defined as any successful or unsuccessful attempt to gain access through a controlled portal by the presentation of credentials or other identifying information.

2. Inputs:

a. Data from entry-control devices; use this input to change modes between access and secure.
b. Database downloads and updates from the central station that include enrollment and privilege information.

3. Outputs:

a. Indicate success or failure of attempts to use entry-control devices and make comparisons of presented information with stored identification information.
b. Grant or deny entry by sending control signals to portal-control devices.
c. Maintain a date-, time-, and Location-stamped record of each transaction and transmit transaction records to the central station.
d. Door Prop Alarm: If a portal is held open for longer than **20 seconds**, alarm sounds.

4. With power supplies sufficient to power at voltage and frequency required for field devices and portal-control devices.
5. Data Line Problems: For periods of loss of communication with the central station, or when data transmission is degraded and generating continuous checksum errors, the controller shall continue to control entry by accepting identifying information, making authentication decisions, checking privileges, and controlling portal-control devices.

    a. Store up to 1000 transactions during periods of communication loss between the controller and access-control devices for subsequent upload to the central station on restoration of communication.

6. Controller Power: NFPA 70, Class II power-supply transformer, with 12- or 24-V ac secondary, backup battery and charger.

    a. Backup Battery: Premium, Valve-regulated, recombinant-sealed, lead-calcium battery; spill proof; with a full one-year warranty and a pro rata [**19**] [**9**]-year warranty. With single-stage, constant-voltage-current, limited battery charger, comply with battery manufacturer's written instructions for battery terminal voltage and charging current recommendations for maximum battery life.
    b. Backup Power-Supply Capacity: 90 minutes of battery supply. Submit battery and charger calculations.
    c. Power Monitoring: Provide manual, dynamic battery-load test, initiated and monitored at the control center; with automatic disconnection of the controller when battery voltage drops below controller limits. Report by using local controller-mounted digital displays and by communicating status to central station. Indicate normal power on and battery charger on trickle charge. Indicate and report the following:

        1) Trouble Alarm: Normal power-off load assumed by battery.
        2) Trouble Alarm: Low battery.
        3) Alarm: Power off.

2.5 CARD READERS, CREDENTIAL CARDS, AND KEYPADS

A. Card-Reader Power: Powered from its associated controller, including its standby power source, and shall not dissipate more than 5 W.

B. Response Time: Card reader shall respond to passage requests by generating a signal that is sent to the controller. Response time shall be 800 ms or less, from the time the card reader finishes reading the credential card until a response signal is generated.

C. Enclosure: Suitable for surface, semi-flush, pedestal, or weatherproof mounting. Mounting types shall additionally be suitable for installation in the following locations:

1. Indoors, controlled environment.
2. Indoors, uncontrolled environment.
3. Outdoors, with built-in heaters or other cold-weather equipment to extend the operating temperature range as needed for operation at the site.

D. Display: Digital visual indicator shall provide visible status indications and user prompts. Indicate power on or off, whether user passage requests have been accepted or rejected, and whether the door is locked or unlocked.

E. Touch-Plate and Proximity Readers:
   1. The card reader shall read proximity cards in a range from direct contact to at least 6 inches (150 mm) from the reader.

F. Communication Protocol: Compatible with local processor.

G. Touch-Plate and Contactless Card Reader: The reader shall have "flash" download capability to accommodate card format changes. The card reader shall have capability of transmitting data to security control panel and shall comply with ISO/IEC 7816.

H. Credential Card Modification: Entry-control cards shall be able to be modified by lamination direct print process during the enrollment process without reduction of readability. The design of the credential cards shall allow for the addition of at least one slot or hole to accommodate the attachment of a clip for affixing the credential card to the badge holder used at the site.

I. The credential card material shall be dimensionally stable so that an undamaged card with deformations resulting from normal use shall be readable by the card reader.

J. Card Material: Abrasion resistant, nonflammable, nontoxic, and impervious to solar radiation and effects of ultraviolet light.

2.6 DOOR AND GATE HARDWARE INTERFACE

A. Exit Device with Alarm: Operation of the exit device shall generate an alarm. Exit device and alarm contacts are specified in Section 087100 "Door Hardware."

B. Exit Alarm: Operation of a monitored door shall generate an alarm. Exit devices and alarm contacts are specified in Section 087100 "Door Hardware."

C. Electric Door Strikes: Use end-of-line resistors to provide power-line supervision. Signal switches shall transmit data to controller to indicate when the bolt is not engaged and the strike mechanism is unlocked, and they shall report a forced entry. Power and signal shall be from the controller. Electric strikes are specified in Section 087100 "Door Hardware."

2.7 CABLES

A. General Cable Requirements: Comply with requirements in Section 260523 "Control Voltage Electrical Power Cables" and as recommended by system manufacturer for integration requirement.

2.8 TRANSFORMERS

A. NFPA 70, Class II control transformers, NRTL listed. Transformers for security access-control system shall not be shared with any other system.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine pathway elements intended for cables. Check raceways, cable trays, and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.

B. Examine roughing-in for LAN and control cable conduit systems to controllers, card readers, and other cable-connected devices to verify actual locations of conduit and back boxes before device installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with recommendations in SIA CP-01.

B. Comply with TIA/EIA 606-A, "Administration Standard for Commercial Telecommunications Infrastructure."

C. Obtain detailed Project planning forms from manufacturer of access-control system; develop custom forms to suit Project. Fill in all data available from Project plans and specifications and publish as Project planning documents for review and approval.

1. Record setup data for control station.
2. For each Location, record setup of controller features and access requirements.
3. Propose start and stop times for time zones and holidays, and match up access levels for doors.
4. Set up groups, facility codes, linking, and list inputs and outputs for each controller.
5. Assign action message names and compose messages.
6. Set up alarms. Establish interlocks between alarms, intruder detection, and video surveillance features.
7. Prepare and install alarm graphic maps.
8. Develop user-defined fields.
9. Develop screen layout formats.
10. Complete system diagnostics and operation verification.
11. Prepare a specific plan for system testing, startup, and demonstration.
12. Develop acceptance test concept and, on approval, develop specifics of the test.
13. Develop cable and asset-management system details; input data from construction documents. Include system schematics and Visio Technical Drawings in electronic format.

D. In meetings with Architect and Owner, present Project planning documents and review, adjust, and prepare final setup documents. Use final documents to set up system software.

3.3 CABLING

A. Comply with NECA 1, "Good Workmanship in Electrical Construction."

B. Install cables and wiring according to requirements in Section 260523 "Control Voltage Electrical Power Cables".

C. Wiring Method: Install wiring in raceway and cable tray except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Use NRTL-listed plenum cable in environmental airspaces, including plenum ceilings. Conceal raceway and cables except in unfinished spaces.

D. Boxes and enclosures containing security-system components or cabling, and which are easily accessible to employees or to the public, shall be provided with a lock. Boxes above ceiling level in occupied areas of the building shall not be considered accessible. Junction boxes and small device enclosures below ceiling level and easily accessible to employees or the public shall be covered with a suitable cover plate and secured with tamperproof screws.

E. Install end-of-line resistors at the field device location and not at the controller or panel location.

3.4 CABLE APPLICATION

A. Comply with TIA 569-B, "Commercial Building Standard for Telecommunications Pathways and Spaces."

B. Cable application requirements are minimum requirements and shall be exceeded if recommended or required by manufacturer of system hardware.

C. TIA 232-F Cabling: Install at a maximum distance of 50 ft. (15 m).

D. TIA 485-A Cabling: Install at a maximum distance of 4000 ft. (1220 m).

E. Card Readers and Keypads:

1. Install number of conductor pairs recommended by manufacturer for the functions specified.
2. Unless manufacturer recommends larger conductors, install No. 22 AWG wire if maximum distance from controller to the reader is 250 ft. (75 m), and install No. 20 AWG wire if maximum distance is 500 ft. (150 m).
3. For greater distances, install "extender" or "repeater" modules recommended by manufacturer of the controller.
4. Install minimum No. 18 AWG shielded cable to readers and keypads that draw 50 mA or more.

F. Install minimum No. 16 AWG cable from controller to electrically powered locks. Do not exceed 250 ft. (75 m).

G. Install minimum No. 18 AWG ac power wire from transformer to controller, with a maximum distance of 25 ft. (8 m).

3.5 GROUNDING

A. Comply with Section 260526 "Grounding and Bonding for Electrical Systems."

B. Comply with IEEE 1100, "Recommended Practice for Power and Grounding Electronic Equipment."

C. Ground cable shields, drain conductors, and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.

D. Bond shields and drain conductors to ground at only one point in each circuit.

E. Signal Ground:

1. Terminal: Locate in each equipment room and wiring closet; isolate from power system and equipment grounding.
2. Bus: Mount on wall of main equipment room with standoff insulators.
3. Backbone Cable: Extend from signal ground bus to signal ground terminal in each equipment room and wiring closet.

3.6 INSTALLATION

A. Install card readers.

3.7 IDENTIFICATION

A. In addition to requirements in this article, comply with applicable requirements in Section 260553 "Identification for Electrical Systems" and with TIA/EIA 606-A.

B. Label each terminal strip and screw terminal in each cabinet, rack, or panel.

1. All wiring conductors connected to terminal strips shall be individually numbered, and each cable or wiring group being extended from a panel or cabinet to a building-mounted device shall be identified with the name and number of the particular device as shown.
2. Each wire connected to building-mounted devices is not required to be numbered at the device if the color of the wire is consistent with the associated wire connected and numbered within the panel or cabinet.

C. At completion, cable and asset management software shall reflect as-built conditions.

3.8 SYSTEM SOFTWARE AND HARDWARE

A. Develop, install, and test software and hardware, and perform database tests for the complete and proper operation of systems involved. Assign software license to Owner.

3.9 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:

1. Test each circuit and component of each system. Tests shall include, but are not limited to, measurements of power-supply output under maximum load, signal loop resistance, and leakage to ground where applicable. System components with battery backup shall be operated on battery power for a period of not less than 10 percent of the calculated battery operating time. Provide special equipment and software if testing requires special or dedicated equipment.
2. Operational Test: After installation of cables and connectors, demonstrate product capability and compliance with requirements. Test each signal path for end-to-end performance from each end of all pairs installed. Remove temporary connections when tests have been satisfactorily completed.

C. Devices and circuits will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.10 STARTUP SERVICE

A. Engage a factory-authorized service representative to supervise and assist with startup service.

1. Complete installation and startup checks according to approved procedures that were developed in "Preparation" Article and with manufacturer's written instructions.
2. Enroll and prepare badges and access cards for Owner's operators, management, and security personnel.

3.11 PROTECTION

A. Maintain strict security during the installation of equipment and software. Rooms housing the control station, and workstations that have been powered up shall be locked and secured with an activated burglar alarm and access-control system reporting to a central station complying with UL 1610, "Central-Station Burglar-Alarm Units," during periods when a qualified operator in the employ of Contractor is not present.

3.12 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain security access system. See Section 017900 "Demonstration and Training."

B. Develop separate training modules for the following:

1. Computer system administration personnel to manage and repair the LAN and databases and to update and maintain software.
2. Operators who prepare and input credentials to man the control station and workstations and to enroll personnel.
3. Security personnel.
4. Hardware maintenance personnel.
5. Corporate management.

END OF SECTION 281300