ADDENDUM NO. 5

DATE: May 23, 2018

PROJECT: Cherokee Hard Rock Casino 4
Catoosa, Oklahoma

FROM: JCJ Architecture, Inc.
120 Huyshope Avenue, Suite 400
Hartford, Connecticut 06106
(860) 247-9226

TO: Bidders of Record

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated April 23, 2018. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of two (2) pages and the following attached documents:

1. Specification Sections.

PROJECT MANUAL:

1. TABLE OF CONTENTS:
   a. Delete Section 047100 - Brick Panel Systems. Not used.

2. Section 047100 - BRICK PANEL SYSTEMS:
   a. Delete Section. Not Used..

3. Section 087100 - DOOR HARDWARE:
   a. Replace with attached Section.

4. Section 093013 - CERAMIC TILING:
   a. Replace with attached revised Section.

5. Section 096513 - RESILIENT BASE AND ACCESSORIES:
   a. Replace with attached revised Section.

6. Section 102113 - TOILET COMPARTMENTS:
   a. Replace with attached revised Section.

7. Section 102113.16 - PLASTIC-LAMINATE-CLAD TOILET COMPARTMENTS:
   a. Replace with attached revised Section.

8. Section 102800 - TOILET, BATH AND LAUNDRY ACCESSORIES:
   a. Replace with attached revised Section.

9. Section 237313 - CENTRAL STATION AIR HANDLING UNITS:
   a. Replace with attached revised Section.

10. Section 237313.1 - CENTRAL STATION AIR HANDLING UNITS WITH ENERGY RECOVERY:
   a. Replace with attached revised Section.

END OF ADDENDUM NO. 5

TABLE OF CONTENTS

DIVISION 06 - WOOD, PLASTICS AND COMPOSITES

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

DIVISION 08 - OPENINGS

DIVISION 09 - FINISHES

DIVISION 10 - SPECIALITIES

DIVISION 11 - EQUIPMENT

DIVISION 12 - FURNISHINGS

DIVISION 13 - SPECIAL CONSTRUCTION (Not Used)

DIVISION 14 - CONVEYING SYSTEMS

DIVISION 15- 20 (Not Used)

DIVISION 21 - FIRE SUPPRESSION

DIVISION 22 - PLUMBING

DIVISION 23 -HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

SECTION 087100
DOOR HARDWARE

PART 1 - GENERAL

1.01 WORK INCLUDED

The work in this section shall include the furnishing of all items of door hardware as hereinafter specified, or obviously necessary to complete the building, except those items which are specifically excluded from this section of the specification.

1.02 DESCRIPTION OF WORK

Door Hardware - Hardware used in building construction but particularly that used on or in connection with doors and frames, cabinets and other movable members. It also has a finished appearance as well as functional purpose and may be considered as a part of the decorative treatment of a room or building.

1.03 RELATED WORK

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.

B. Related Sections:

Section 081000 - Steel Doors and Frames
Section 081000 – Standard Steel Frames
Section 082100 – Flush Wood Doors
Section 083300 - Coiling Doors and Grilles

1.04 COORDINATION

A. Schedule coordination meeting to clarify sub-contractor and supplier requirements to provide a complete and functioning access control system.

1.05 QUALITY ASSURANCE

A. Hardware has been specified herein by manufacturer's name, brand and catalog numbers for the purpose of establishing a basis for quality, finish, design and operational function. To insure a uniform basis of acceptable material, it is the intention that only manufacturer's items specified as "Acceptable and Approved" be furnished for use on this project. Obtain each type of hardware (latch and lock sets, hinges, exit devices closers) from single manufacturer, although several may be indicated as offering products complying with requirements.

B. *Substitutions:* Request for substitutions of items of hardware not listed as "Acceptable and Approved" shall be made to the Architect no later than ten (10) days prior to bid opening. Approval of substitutions will only be in writing or by addenda. Request for substitutions shall be accompanied by samples and/or detailed information as to the manufacturer of the product.

C. *Underwriters' Laboratories Requirements:* Hardware for openings classed as requiring a UL label in the door schedule, or by code, shall be furnished and installed to meet the applicable requirements of NFPA 80. Hardware shall be UL listed for usage with types and sizes of fire doors specified and scheduled. Products tested shall meet requirements of UBC 7-2-1997 / UL10C

D. *Accessibility Standards:* Hardware shall be in conformance with Article 9102, Texas Civil Statutes, Elimination of Architectural Barriers Act of Texas.

1. Door Closers: The sweep period of closers shall be adjusted so that from an open position of 90 degrees, the door will take at least five seconds to move to an open position of approximately 12 degrees.

2. The maximum force for pushing or pulling open door shall be as follows:
   a. Exterior hinged doors: Not to exceed 8.5 lbf.
   b. Sliding, folding, and interior hinged doors: Not to exceed 5 lbf.
   c. Fire doors: Adjusted to meet minimum closing force permitted by governing fire safety standards.

E. *Federal Accessibility Standards:* Hardware shall be in accordance will all requirements of the Americans With Disabilities Act - 1990.

F. *Supplier:* A recognized builders hardware supplier who has been furnishing hardware in the project's vicinity for a period of not less than two (2) years, and who is, or has in employment, a Hardware Consultant (AHC) in good standing as certified by the Door and Hardware Institute. This consultant shall have experience in the preparation of architectural hardware specifications, estimating, detailing, ordering, servicing of architectural hardware in all its branches and will be available at reasonable times during the course of the work for project hardware consultation to the Owner, Architect and Contractor. It is the hardware distributor’s responsibility to coordinate the hardware specified to work with the Aluminum doors.

G. *Pre-Installation Instructional Meeting:* Contractor shall schedule and hold a pre-installation meeting that includes the Contractor, the Architect and/or his chosen representative, the Hardware Supplier, and all installers of hardware. Instructional meeting shall be conducted by the Hardware Supplier, covering proper installation of all items of hardware to be incorporated into the Project.

H. *Installer:* Firm with a minimum of five years of documented experience in installing the types and grade of hardware being incorporated into the Project. Three written references from Construction Administrators of previous projects required for the Architect's review before installation Contract or Subcontract is executed.

I. Prototype Installations: One of each type of the following hardware installations shall be performed to the Architect's (and/or his designated representative's) approval before any installations of like-type applications are performed:

1. One exterior door pair with exit devices
2. One exterior single door with an exit device
3. One single classroom door
4. One interior pair of doors with vertical rod exit devices

1.06 REFERENCES

A. Door Hardware in this section shall meet the following as established by the American National Standards Institute, Inc. (ANSI) which is sponsored by the Builders Hardware Manufacturers Association, Inc., (BHMA). Product tests are to be administered by the ETL Testing Laboratories, Inc., or other official testing laboratories which have been designed by BHMA for the testing of ANSI standards latest revision will be in effect.

B.

Materials and Finishes	BHMA 1301
Butts and Hinges	ANSI A156.1
Locks and Lock Trim	ANSI A156.2
Exit Devices	ANSI A156.3
Door Controls-Closers	ANSI A156.4
Auxiliary Lock & Assoc. Products	ANSI A156.5
Architectural Door Trim	ANSI A156.6
Template Hinge Dimensions	ANSI A156.7
Door Controls-Overhead Holders	ANSI A156.8
Mortise Locks and Latches	ANSI A156.13

C. *Listed Hardware:* Hardware which is to be installed in or on fire labeled doors and frames, Class A or lesser, single or pairs shall be tested and listed by Underwriters Laboratories and/or Warnock Hersey Fire Laboratories Division. Exit devices which are to be used as panic hardware shall be tested and listed in Underwriters Laboratories "Accident Equipment List-Panic Hardware". All listed hardware shall be in compliance with National Fire Protection Association (NFPA) Standard Number 80 IBC current year adopted and be properly stamped or labeled for easy identification.

1.07 SUBMITTALS

A. The door hardware supplier shall, after award of a formal contract, submit to the Architect, six (6) complete typewritten copies of the proposed Door Hardware Schedule for approval. This schedule shall be prepared using the "Sequence and Format for the Hardware Schedule" as approved and recommended by the Door and Hardware Institute (DHI).

B. When submitting schedules for approval, include six (6) copies of cut sheets on each hardware item proposed. Index it with the use of number or letters or a combination of both, with the hardware schedule. The index numbers/letters are to be in the right hand column on the same line as the respective manufacturer's numbers shall be indexed even when appearing more than once.

C. *Samples:* As part of this contract, if requested, the hardware supplier shall provide the Architect with one sample of each item of door hardware that is to be furnished for this project.

D. *Templates:* The hardware supplier shall provide necessary templates and/or physical hardware to all trades requiring them in order that they may cut, reinforce or otherwise prepare their material or product to receive the hardware item. If physical hardware is required by any manufacturer, the hardware supplier shall ship to them such hardware via prepaid freight in sufficient time to prevent any delay in the execution of their work.

1.08 DELIVERY, STORAGE AND HANDLING

A. All items of hardware to be delivered to the jobsite shall be completely packaged with all necessary screws, bolts, miscellaneous parts, instructions and where necessary installation templates for manufacturer's suggested installation. They are to be clearly labeled as to conveniently identify them and their intended location in the building.

B. A representative of the General Contractor shall receive the hardware when delivered at the jobsite. A dry locked storage space complete with shelving, shall be set aside for the purpose of unpacking, sorting out, checking and storage.

C. Door Hardware shall be delivered to the General Contractor by the hardware supplier. Direct factory shipments to the jobsite are not acceptable.

D. The hardware shall be jointly inventoried by representatives of the General Contractor and the Hardware Supplier.

E. Items damaged in shipment shall be replaced promptly and with proper material without additional cost to the General Contractor.

F. All hardware shall be handled in a manner to minimize marring, scratching or damage.

G. Store and handle all materials strictly according to the manufacturer's instructions.

1.09 WARRANTY

Door Closers shall carry a limited warranty against defects in workmanship and operation for a period of five (5) years from the date of acceptance. The balance of door hardware shall carry a limited warranty against defects in workmanship and operation for a period of one (1) year from date of acceptance. No liability is to be assumed where damage or faulty operation is due to abuse, improper usage, improper installation or failure to exercise normal maintenance.

PART 2 - PRODUCTS

2.01 FINISH OF HARDWARE

A. Finish of items shall be as specified under the door hardware sets of this section.

B. The finish of items not specially mentioned above nor set forth in the schedule shall be US26D, unless shown otherwise.

2.02 HINGES

A. *Template Hinges:* Provide only template hinges which conform to ANSI A156.7.

B. Use five-knuckle ball bearing hinges, as indicated in the hardware sets, on heavy doors, doors where high frequency service is expected, doors equipped with door closers, and all labeled doors. (Oil impregnated bearing hinges are not acceptable.)

C. All hinges to be used on exterior doors or doors subject to special atmospheric conditions, (pool areas, chemical laboratories, sewage disposal plants, etc.) shall be of non-ferrous material, brass, bronze or stainless steel.

D. Hinge pins, except as otherwise indicated, shall be as follows:

1. Steel hinges: Steel pins
2. Non-ferrous hinges: Stainless steel pins

E. Sizes of hinges shall be as follows:

Door Thickness and Width	Hinge Height	Hinge Width
1 3/4" to 36"	4½	4½

F. Number of hinges per door, provided quantities as follows:

For doors less than 5 feet high: 1 pair
For doors 5 feet to 7 feet 6 inches high: 1 1/2 pair and additional hinge for each additional 2 1/2 feet or fraction thereof.

G. Where projection of door trim is such as to prevent degree of opening, the proper hinge width shall be provided to allow the door to clear the trim.

H. Provided above criteria are met, Acceptable and Approved as follows:

Ives
Hager
Bommer

I. Continuous Hinges shall be type scheduled and as manufactured by one of the following. Coordinate hinge type with Aluminum door supplier.

ABH
Ives
Hager

2.03 KEYING

A. All locks and cylinders shall be restricted keyway as instructed by Owner to match existing key system. Stamp all keys with “Do Not Duplicate” on one side and key symbol on the other side. A keying meeting is required prior to ordering cylinders for this project. Submit a separate keying submittal for review and approval.
Furnish “3” Change keys Each Lockset
Furnish “6” Building Master Keys
Furnish “10” Construction Master Keys
Furnish “2” Temp core removal keys
Furnish “2” Permanent core installation keys
All permanent keys to be delivered to Owner.

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2.04 MORTISE LOCKS

A. Locks shall have all functions available in one size case, manufactured from heavy gauge steel, minimum thickness of 3/32", complete chrome plated for corrosion resistance and lubricity of parts. Cases are to be closed on all sides to protect internal parts. Locks are to have adjustable, beveled and armored fronts, standard 2 3/4" backset, a full 3/4" throw two-piece mechanical anti-friction latchbolt, a one-piece stainless steel 1" throw deadbolt, and shall be available for a minimum door thickness of 1 3/8". Internal parts shall be heavy gauge steel, zinc dichromate plated for corrosion resistance.

B. All locksets with latchbolts, regardless of trim, shall be listed by Underwriters Laboratories for A label and less class doors, 4' x 8' single or 8' x 8' pair.

C. Lock trim (knob, lever, sectional or escutcheon) shall be throughbolted through the lock case to assure correct alignment and proper operation.

D. Locksets shall conform to Federal Specification FF-H-106C, and be certified as meeting ANSI A156.13 Series 1000, Grade 1 requirements, ANSI A117.1, Accessibility Code (lever handle trim), and California State Reference Code, 1989 (formerly Title 19, California State Fire Marshall Standard) (lever handle trim).

E. Acceptable and Approved: **No Substitutions**

Schlage

2.05 EXIT DEVICES

LOW PROFILE PUSH BAR EXIT DEVICES

A. The maximum exit device projection shall be a maximum of 3-1/16” when activated. The exit device bar shall have an average minimum thickness of .201". The pushpad surface shall be constructed of stainless steel; pushpads with plastic or Lexan coatings shall not be acceptable. Nylon bearings and stainless steel springs shall be used for long life and durability. Only torsion or compression springs are acceptable. Extension type springs are not acceptable. All device covers shall be of cast brass, deep drawn steel or stainless steel. Latchbolts shall be of stainless steel and shall have a deadlocking latch for extra security, except at full-glass or two-light glass doors requiring narrow stile device. Mounting screws shall be concealed to deter tampering. All ferrous parts shall be zinc coated to prevent rusting.

B. Single point, one quarter turn hex dogging shall be standard on panic listed devices. Optional key cylinder dogging shall be available, and furnished if so indicated in the hardware sets, on panic listed devices. Devices with hex key dogging shall be easily field converted to cylinder dogging.

C. All devices shall be listed by Underwriters Laboratories for safety as panic hardware. Fire rated devices shall be UL listed for A label and lesser class doors, 4' x 8' single and 8' x 8' pair. The model number shall be located on the end cap; devices having the model number located other than on the end cap shall not be acceptable.

D. All exit devices shall have a unitized installation feature and may be cut in the field to size. Devices shall be closed on all sides with no pinch points. The pushpad shall be designed to prevent pinching of the fingers when depressed.

E. Exit Device trim to be throughbolted. Lever trim to be heavy duty forged escutcheon with free wheeling levers.

F. All exit devices shall conform to Federal Specification FF-H-1820, and be certified as meeting ANSI A156.3, Grade 1 requirements.

G. Acceptable and Approved: **No Substitutions**

Von Duprin

2.06 DOOR CLOSERS

A. Closers shall be rack and pinion construction. They shall be non-sized with adjustable spring power. Closing the door shall be controlled by two valves, one to control closing and one to control latching speed. Closers shall be regularly furnished with fully adjustable backcheck and a backcheck selector valve allowing approximate 70 degree backcheck on both regular and parallel arm closers. Delayed action shall be available. Valves shall be concealed against unauthorized adjustment and be non-critical needle valve type. Closers shall be mounted out of line of sight wherever possible (i.e., room side of corridor doors, etc.) with parallel arm mounting on out swing doors. Mount closers top jamb or on brackets and/or drop plates where special conditions exist. Include cost for any required special templates.

B. Closers shall be certified as meeting the ANSI A156.4, Grade 1 requirements and be listed by Underwriters Laboratories for all classes of labeled doors.

C. Door Closers shall be furnished on all labeled doors.

D. Acceptable and Approved: **No Substitutions**

LCN

2.07 OVERHEAD STOPS AND HOLDERS

A. Furnish overhead stops or holders of the weight, functions and materials indicated in the hardware sets.

B. Overhead stops or holders shall be manufactured entirely of metallic components. Units containing plastic, nylon, or similar materials are not acceptable.

C. Acceptable and Approved as follows:

ABH Manufacturing
Glynn Johnson

2.08 TRIM/KICK PLATES/DOOR STOPS

A. All door protection plates to be manufactured of .050" stainless steel. Protection plates to be furnished 2" less than door width on single doors and 1" less than door width on pairs of doors.

B. Wall mounted door stops shall be provided where door leaves will strike a wall at the end of their opening cycle. If other conditions exist, furnish floor stops or overhead stops as required.

C. Acceptable and Approved as follows:

Trimco/Quality
Baldwin
Ives

2.09 WEATHERSTRIP/THRESHOLDS/SMOKE SEALS

A. Provide weatherstrip, thresholds, and/or sound seals for each opening as scheduled. Review Sill detail on Architectural drawings and furnish threshold type required.

B. Provide smoke seal (including meeting stile seal for door pairs) for all fire rated doors. All smoke seal and astragals shall be listed by either Underwriters Laboratory or Warnock-Hersey as Category "H" – Smoke and Draft Control Gasket under the testing protocols of UBC Standard 7-2 – 1997, Part 2 and/or UL1784. All smoke seal and astragals shall, additionally, comply with the door manufacturer's listing under the same protocols.

C. Acceptable and Approved as follows:

National Guard
Pemko
Zero

PART 3 - EXECUTION

3.01 INSTALLATION

A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware" for (Standard Steel Doors and Frames) by the Door and Hardware Institute (DHI), except if otherwise specifically indicated or to comply with requirements of governing regulations, requirements for the handicapped, or if otherwise directed by the Architect.

B. All hardware shall be installed by a tradesman skilled in the application of commercial grade hardware.

C. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Securely fasten all parts to be attached. Fit faces of mortise parts snug and flush. Make sure all operating parts move freely and smoothly without binding, sticking or excessive clearance. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, the hardware shall be removed and stored prior to the painting or finishing. Items shall then be reinstalled only when the finished have been completed on the surface to which the hardware is to be applied.

D. At exterior doors and elsewhere as indicated, set thresholds in a bed of sealant as specified in Section 07900 to completely fill concealed voids and excluded moisture from every source. Do not plug drain hole or block weeps. Remove excess sealant.

E. After installation, representative templates, instruction sheets and installation details shall be placed in a file folder to be turned over to the Owner when building is accepted. Included shall be at least five (5) each of any special adjusting and/or installation tools furnished with the hardware by the manufacturers.

PART 4 - SCHEDULES

4.01 HARDWARE SETS

Hardware Group No. 001

For use on mark/door #(s):
100 100A 204

Provide each PR door(s) with the following:

1	NOTE	HARDWARE BY DOOR MANUFACTURER

Hardware Group No. 002

For use on mark/door #(s):
103K

Provide each SL door(s) with the following:

1	NOTE	HARDWARE BY DOOR MANUFACTURER

Hardware Group No. 003

For use on mark/door #(s):
102B 104A 144B

Provide each RU door(s) with the following:

1	EA	MORTISE CYLINDER	20-059 TYPE AS REQ	626	SCH
1	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1		NOTE	HARDWARE BY DOOR MANUFACTURER		

Hardware Group No. 103

For use on mark/door #(s):
214

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	OFFICE/ENTRY LOCK	L9050T 06A	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. 201

For use on mark/door #(s):
114 122 124 138 215

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080T 06A	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. 207

For use on mark/door #(s):
115 133A

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080T 06A	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. 212SW

For use on mark/door #(s):
149 149A

Provide each PR door(s) with the following:

6	EA	HINGE	5BB1 5 X 4.5	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	L9080T 06A	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. 301

For use on mark/door #(s):
148

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	L9040 06A	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. 501

For use on mark/door #(s):
126A

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070T 06A	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. 700

For use on mark/door #(s):
143 144

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	PANIC HARDWARE	9949/50-L-06 (WDC @ WD) LENGTH & HEIGHT AS REQ	626	VON
2	EA	RIM HOUSING	20-079	626	SCH
2	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS406/407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 700A

For use on mark/door #(s):
103G 103H 103J

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	PANIC HARDWARE	9949/50-L-06 (WDC @ WD) LENGTH & HEIGHT AS REQ	626	VON
2	EA	RIM HOUSING	20-079	626	SCH
2	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
1	SET	ASTRAGAL	MEETING STILE SEAL BY DOOR MANUFACTURER		

Hardware Group No. 700C

For use on mark/door #(s):
154

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	PANIC HARDWARE	9949/50-L-06 (WDC @ WD) LENGTH & HEIGHT AS REQ	626	VON
2	EA	RIM HOUSING	20-079	626	SCH
2	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 700H

For use on mark/door #(s):
204A

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	PANIC HARDWARE	9949/50-L-06 (WDC @ WD) LENGTH & HEIGHT AS REQ	626	VON
2	EA	RIM HOUSING	20-079	626	SCH
2	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP/HOLDER	WS40	626	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 701

For use on mark/door #(s):
134 218

Provide each SGL door(s) with the following:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	99-L-06 LENGTH AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 714

For use on mark/door #(s):
135A 135B 155

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	9949/50-EO LENGTH & HEIGHT AS REQ	626	VON
1	EA	PANIC HARDWARE	9949/50-NL LENGTH & HEIGHT AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142A DW + 4"	AA	ZER
1	EA	GASKETING	328AA H & J	AA	ZER
1	EA	ASTRAGAL	328AA (2 PCS - 1 SET) HEIGHT AS REQUIRED	AL	ZER
2	EA	DOOR SWEEP	8198AA LENGTH AS REQ	AA	ZER
1	EA	THRESHOLD	65A LENGTH AS REQ	A	ZER

Hardware Group No. 714A

For use on mark/door #(s):
118 118A

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	9949/50-EO LENGTH & HEIGHT AS REQ	626	VON
1	EA	PANIC HARDWARE	9949/50-NL LENGTH & HEIGHT AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
1	EA	RAIN DRIP	142A DW + 4"	AA	ZER
1	SET	ASTRAGAL	MEETING STILE SEAL BY DOOR MANUFACTURER		
2	EA	DOOR SWEEP	8198AA LENGTH AS REQ	AA	ZER
1	EA	THRESHOLD	65A LENGTH AS REQ	A	ZER

Hardware Group No. 725

For use on mark/door #(s):
157

Provide each SGL door(s) with the following:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	99-EO LENGTH AS REQ	626	VON
1	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142A DW + 4"	AA	ZER
1	EA	GASKETING	328AA H & J	AA	ZER
1	EA	DOOR SWEEP	8198AA LENGTH AS REQ	AA	ZER
1	EA	THRESHOLD	65A LENGTH AS REQ	A	ZER

Hardware Group No. 800AV

For use on mark/door #(s):
118B 118C

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	DUMMY PUSH BAR	330 LENGTH AS REQ	626	VON
2	EA	90 DEG OFFSET PULL	8190-O 10"	630	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
1	SET	ASTRAGAL	MEETING STILE SEAL BY DOOR MANUFACTURER		

Hardware Group No. 800V

For use on mark/door #(s):
135C 135D

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	DUMMY PUSH BAR	330 LENGTH AS REQ	626	VON
2	EA	90 DEG OFFSET PULL	8190-O 10"	630	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	GASKETING	328AA H & J	AA	ZER
1	EA	ASTRAGAL	328AA (2 PCS - 1 SET) HEIGHT AS REQUIRED	AL	ZER

Hardware Group No. 801

For use on mark/door #(s):
140 141

Provide each SGL door(s) with the following:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PUSH PLATE	8200 4" X 16"	630	IVE
1	EA	PULL PLATE	8303 10" 4" X 16"	630	IVE
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. B700CH

For use on mark/door #(s):
103 103A 103B

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	PANIC HARDWARE	3349A-L-06 LENGTH AS REQ	626	VON
2	EA	MORTISE CYLINDER	20-059 TYPE AS REQ	626	SCH
2	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
2	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP SHCUSH X MTG BRKT, SPACER & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. C201

For use on mark/door #(s):

108	108A	112	127	130	130A
133	136	137	147	150	151
200	205	206	207	212	212A
216	219				

Provide each SGL door(s) with the following:

2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	HINGE	5BB1 4.5 X 4.5 CON TW8	652	IVE
1	EA	EU MORTISE LOCK	L9092TEU 06A RX (FAIL SECURE)	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER
1	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
1	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902	LGR	SCE
1	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C201C

For use on mark/door #(s):
102A 113A

Provide each SGL door(s) with the following:

2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	HINGE	5BB1 4.5 X 4.5 CON TW8	652	IVE
1	EA	EU MORTISE LOCK	L9092TEU 06A RX (FAIL SECURE)	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER
1	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
1	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902	LGR	SCE
1	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C201W

For use on mark/door #(s):
113

Provide each SGL door(s) with the following:

2	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	HINGE	5BB1HW 5 X 4.5 CON TW8	652	IVE
1	EA	EU MORTISE LOCK	L9092TEU 06A RX (FAIL SECURE)	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER
1	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
1	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902	LGR	SCE
1	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C207

For use on mark/door #(s):

102 104 117 145 202

Provide each SGL door(s) with the following:

2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	HINGE	5BB1 4.5 X 4.5 CON TW8	652	IVE
1	EA	EU MORTISE LOCK	L9092TEU 06A RX (FAIL SECURE)	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER
1	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
1	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902	LGR	SCE
1	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C710

For use on mark/door #(s):

103C 103D 103E 103F 103L 120
120A 135 153

Provide each PR door(s) with the following:

6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-DT-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-NL-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE

2	EA	WALL STOP	WS406/407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
2	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
2	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 2RS		VON
2	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C710C

For use on mark/door #(s):
152

Provide each PR door(s) with the following:

6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-DT-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-NL-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
2	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
2	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 2RS		VON
2	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C710R

For use on mark/door #(s):
156

Provide each PR door(s) with the following:

6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	ELEC FIRE EXIT HARDWARE	RX-QEL-9949/50-DT-F-LBR-CON (WDC @ WD) LENGTH & HEIGHT AS REQ	626	VON
1	EA	ELEC FIRE EXIT HARDWARE	RX-QEL-9949/50-NL-F-LBR-CON (WDC @ WD) LENGTH & HEIGHT AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	MEETING STILE	328AA (2 PCS - 1 SET) HEIGHT AS REQUIRED	AA	ZER
1	EA	GASKETING	188S H & J	BK	ZER
2	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
2	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 FA 2RS		VON
2	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C710S3

For use on mark/door #(s):
153A

Provide each PR door(s) with the following:

6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-DT-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-NL-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY

2	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
2	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
2	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 2RS		VON
2	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C711

For use on mark/door #(s):
146

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-99-NL-CON LENGTH AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
1	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 2RS		VON
1	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. C714

For use on mark/door #(s):
134A 143A 144A

Provide each PR door(s) with the following:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-DT-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949/50-NL-CON LENGTH & HEIGHT AS REQ	626	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 ICX CONSTRUCTION CORE	622	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142A DW + 4"	AA	ZER
1	EA	MEETING STILE	328AA (2 PCS - 1 SET) HEIGHT AS REQUIRED	AA	ZER
1	EA	GASKETING	328AA H & J	AA	ZER
2	EA	DOOR SWEEP	8198AA LENGTH AS REQ	AA	ZER
1	EA	THRESHOLD	65A LENGTH AS REQ	A	ZER
2	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHER SECTION		
2	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 2RS		VON
2	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		VON

Hardware Group No. W401HW

For use on mark/door #(s):
106 109 128 131

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	MULT PT PASSAGE SET	LM9310 06A	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS40	626	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. W501W

For use on mark/door #(s):
126

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	MULT PT CLASSROOM	LM9370T 06A	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. W507

For use on mark/door #(s):
142

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	MULT PT CLASSROOM	LM9370T 06A	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S H & J (USE SILENCERS @ NON-RATED DOORS)	BK	ZER

Hardware Group No. W700H

For use on mark/door #(s):
139

Provide each PR door(s) with the following:

2	EA	CONT. HINGE	112HD	628	IVE
2	EA	PANIC HARDWARE	WS-9927-L-06 LENGTH AS REQ	626	VON
1	EA	ROD AND LATCH GUARD	RG-27-	630	VON
2	EA	RIM HOUSING	20-079	626	SCH
2	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
2	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
2	EA	PROTECTION PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP/HOLDER	WS40	626	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. W701H

For use on mark/door #(s):
139A

Provide each SGL door(s) with the following:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	WS-9927-L-06 LENGTH AS REQ	626	VON
1	EA	ROD AND LATCH GUARD	RG-27-	630	VON
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 PERMANENT CORE	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4040XP X MTG BRKT, SPCR & PLATE AS REQ X ST3596	689	LCN
1	EA	PROTECTION PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS40	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

END OF SECTION

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 the following:

1. Ceramic mosaic tile.
2. Porcelain paver tile.
3. Substrate board for curved walls.

B. Related Sections include the following:

1. Division 03 Section "Cast-in-Place Concrete" for monolithic slab finishes specified for tile substrates.
2. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
3. Section 090001 “Schedule of Finishes” for tile products.
4. Section 092900 "Gypsum Board" for moisture resistant gypsum board installed in gypsum wallboard assemblies.
5. Section 096340 "Stone Flooring."

1.3 DEFINITIONS:

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. ISO 13007 Standards for Ceramic Tiles, Adhesives and Grouts.

D. Module Size: Actual tile size plus joint width indicated.

E. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS:

A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:

1. Level Surfaces: Minimum 0.6.

1.5 PREINSTALLATION MEETINGS:

A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.6 SUBMITTALS:

A. Product Data: For each type of tile, mortar, grout, and other products specified.

B. Shop Drawings: For the following:

1. Tile patterns and locations.
2. Widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

C. Tile Samples for Initial Selection: Manufacturer's color charts consisting of actual tiles or sections of tiles showing the full range of colors, textures, and patterns available for each type and composition of tile indicated. Include Samples of accessories involving color selection.

D. Grout Samples for Initial Selection: Manufacturer's color charts consisting of actual sections of grout showing the full range of colors available for each type of grout indicated.

E. Samples for Verification: Of each item listed below, prepared on Samples of size and construction indicated. Where products involve normal color and texture variations, include Sample sets showing the full range of variations expected.

1. Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on braced cementitious backer units, and with grouted joints using product complying with specified requirements and approved for completed work in color or colors selected by Architect.
2. Full-size units of each type of trim and accessory for each color required.
3. Metal edge strips in 6-inch lengths.

F. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

G. Product Certificates: Signed by manufacturers certifying that the products furnished comply with requirements.

H. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names of architects and owners, and other information specified.

I. Setting Material Test Reports: Indicate and interpret test results for compliance of tile-setting and -grouting products with specified requirements.

1.7 QUALITY ASSURANCE:

A. Installer Qualifications: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.

C. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

D. Source Limitations for Other Products: Obtain each of the following products specified in this Section from one source and by a single manufacturer for each product:

1. Joint sealants.
2. Waterproofing.

E. Mockups: Before installing tile, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for completed Work.

1. Locate mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Build mockup of floor tile installation.
3. Build mockup of wall tile installation.
4. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before proceeding with final unit of Work.
7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

    a. When directed, demolish and remove mockups from Project site.
    b. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.8 DELIVERY, STORAGE, AND HANDLING:

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.9 PROJECT CONDITIONS:

A. Environmental Limitations: Do not install tile until construction in spaces is completed and ambient temperature and humidity conditions are being maintained to comply with referenced standards and manufacturer's written instructions.

1.10 EXTRA MATERIALS:

A. Deliver extra materials to Owner. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Tile Products:

a. American Olean Tile Company.
b. Crossville Ceramics.
c. Dal-Tile Corporation.
d. Summitville Tiles, Inc.
e. United States Ceramic Tile Company.

2.2 PRODUCTS, GENERAL:

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard Grade requirements, unless otherwise indicated.

2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting Materials" and "Grouting Materials" articles.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:

1. Match Architect's samples.
2. Match colors, textures, and patterns indicated by referencing manufacturer's standard designations for these characteristics.
3. Provide Architect's selections from manufacturer's full range of colors, textures, and patterns for products of type indicated.
4. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Factory Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, blend tile in the factory and package so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples.

E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless another mounting method is indicated.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS:

A. Products [**T-(#)**]: Reference Section 090001 “Schedule of Finishes.

2.4 SETTING MATERIALS:

A. Latex-Portland Cement Mortar (Thinset): ANSI A118.4 and ISO 13007; C2ES2P2.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Ardex Americas.
b. Boiardi Products Corporation; a QEP company.
c. Bonsal American; an Oldcastle company.
d. Bostik, Inc.
e. C-Cure.
f. Custom Building Products.
g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Summitville Tiles, Inc.

2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4 and the ISO T standard.-2.1.2.

2.5 GROUTING MATERIALS:

A. High-Performance Tile Grout: Non-staining, ANSI A118.6, A118.3.

1. Basis-of-Design Product: Subject to compliance with requirements, provide **Plasma; Laticrete International, Inc.** or a comparable product by one of the following:

a. Ardex FG-C; Ardex Americas.
b. FlexcolorCQ; MAPEI Corporation
c. InColorAdvanced Performance Grout; TEC; H. B. Fuller Construction Products Inc.

2.6 ELASTOMERIC SEALANTS:

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements of Division 7 Section "Joint Sealants."

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

C. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.

D. Products: Subject to compliance with requirements, provide one of the following:

1. Multipart, Pourable Urethane Sealants:

a. Chem-Calk 550; Bostik.
b. Vulkem 245; Mameco International, Inc.
c. NR-200 Urexpan; Pecora Corp.
d. THC-900; Tremco, Inc.

2.7 MISCELLANEOUS MATERIALS:

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Temporary Protective Coating: Provide product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; is compatible with tile, mortar, and grout products; and is easily removable after grouting is completed without damaging grout or tile.

1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.

2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as a temporary protective coating for tile.

C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

~~D. Metal Edge Strips: White-zinc-alloy terrazzo strips, 1/8 inch wide at top edge with integral provision for anchorage to mortar bed or substrate, unless otherwise indicated. **~~

~~1. Products [**TS (#)**]: Reference Section 090001 "Schedule of Finishes.~~

E. Metal Edge Strips: Aluminum. **

1. [**TS-1**]: Schluter - Quadec Trendline - Q80TSSG, Stone Gray, 8 mm Aluminum.
2. [**TS-2**]: Schluter - Quadec Trendline - Q80TSG, Pewter, 8 mm Aluminum.
3. [**TS-3**]: Schluter - Rondec - Bullnose 3/8" - R0100TSB, Beige, Aluminum.

F. Substrate Board for Curved Walls: Schluter-KERDI-BOARD-V, vertically grooved substrate and building panel for creating curved elements.

1. Thickness: 3/4 inch.
2. Fasteners: Mount KERDI-BOARD vertically or horizontally on wood or metal framing with screws and corresponding KERDI-BOARD-ZT washers. Abut the individual panels over the center of the studs or other solid backing.

2.8 MIXING MORTARS AND GROUT:

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations indicated.

2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

A. Remove coatings, including curing compounds, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.

B. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards for installations indicated.

1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent adhesion or staining of exposed tile surfaces by grout, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of temporary protective coating indicated below, taking care not to coat unexposed tile surfaces:

1. Grout release.

3.3 INSTALLATION, GENERAL:

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Locate joints in tile surfaces directly above joints in concrete substrates.
2. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."

G. Grout tile to comply with the requirements of the following tile installation standards:

1. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.

3.4 WATERPROOFING INSTALLATION:

A. Install waterproofing to comply with waterproofing manufacturer's written instructions to produce a waterproof membrane of uniform thickness bonded securely to substrate.

B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 FLOOR TILE INSTALLATION:

A. General: Install tile to comply with requirements in the Ceramic Tile Floor Installation Schedule, including those referencing TCA installation methods and ANSI A108 series of tile installation standards.

B. Joint Widths: Install tile on floors with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 inch.
2. Paver Tile: 1/4 inch (6 mm).

C. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

3.6 CLEANING AND PROTECTING:

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure tile is without damage or deterioration at the time of Substantial Completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.7 CERAMIC TILE FLOOR INSTALLATION SCHEDULE:

A. Interior Floor Installations, Concrete Slab Sub-Floor: Where floor installations of this designation are indicated, comply with the following:

1. Installation Method: TCA F113 (latex-portland cement mortar bonded to concrete slab on grade).

a. Thinset Mortar: Latex- portland cement mortar.

1) Polymer enriched cement mortar..

b. Grout: High-performance unsanded grout.

1) Plasma; Laticrete International, Inc.
2) Color: See section 090001 “Schedule of Finishes.”

c. Provide crack isolation membrane under all floor tile larger than 12-inches in any dimension.

3.8 CERAMIC TILE WALL INSTALLATION SCHEDULE:

A. Interior Wall Installations, Wood or Metal Studs or Furring:

1. Ceramic Tile Installation: TCNA W245 or TCNA W248; thinset mortar on glass-mat, water-resistant gypsum backer board.

a. Thinset Mortar: Latex- portland cement mortar.

1) Polymer enriched cement mortar.

b. Grout: High-performance unsanded grout.

1) Plasma; Laticrete International, Inc.
2) Color: See section 090001 “Schedule of Finishes.”

END OF SECTION 093000

SECTION 096513 RESILIENT BASE AND ACCESSORIES

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 the following:

1. Resilient wall base.
2. Resilient flooring accessories.
3. Resilient carpet accessories.
4. Resilient stair accessories.

B. Related Sections include the following:

1. Section 090001 “Schedule of Finishes.”
2. Section 096816 "Sheet Carpeting."

1.3 SUBMITTALS:

A. Product Data: For each type of product specified.

B. Samples for Initial Selection: Manufacturer's standard sample sets consisting of sections of units showing the full range of colors and patterns available for each type of product indicated.

C. Samples for Verification: In manufacturer's standard sizes, but not less than 12 inches long, of each product color and pattern specified.

D. Product Certificates: Signed by manufacturers of resilient wall base and accessories certifying that each product furnished complies with requirements.

1.4 QUALITY ASSURANCE:

A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient products similar to those required for this Project and with a record of successful in-service performance.

B. Source Limitations: Obtain each type and color of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

C. Fire-Test-Response Characteristics: Provide products with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: 0.45 W/sq. cm or greater when tested per ASTM E 648.
2. Smoke Density: Maximum specific optical density of 450 or less when tested per ASTM E 662.

1.5 DELIVERY, STORAGE, AND HANDLING:

A. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 50 and 90 deg F.

C. Move products into spaces where they will be installed at least 48 hours before installation, unless longer conditioning period is recommended in writing by manufacturer.

1.6 PROJECT CONDITIONS:

A. Maintain a temperature of not less than 70 deg F or more than 95 deg F in spaces to receive resilient products for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After postinstallation period, maintain a temperature of not less than 55 deg F or more than 95 deg F.

B. Do not install products until they are at the same temperature as the space where they are to be installed.

C. For resilient products installed on traffic surfaces, close spaces to traffic during installation and for time period after installation recommended in writing by manufacturer.

D. Coordinate resilient product installation with other construction to minimize possibility of damage and soiling during remainder of construction period. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS:

A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.

1. Furnish not less than 10 linear feet for each 500 linear feet or fraction thereof, of each different type, color, pattern, and size of resilient product installed.
2. Deliver extra materials to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Products: Subject to compliance with requirements, provide one of the products indicated for each designation in the Resilient Wall Base and Accessory Schedule at the end of Part 3.

2.2 RESILIENT WALL BASE:

A. Rubber Wall Base: Products complying with FS SS-W-40, Type I and with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.3 RESILIENT STAIR ACCESSORIES:

A. Rubber Stair Treads: Products of style suitable for use indicated and complying with FS RR-T-650, Composition A and with requirements specified in the Resilient Wall Base and Accessory Schedule.

B. Risers: Products of same manufacturer as stair treads and complying with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.4 RESILIENT ACCESSORIES:

A. Rubber Accessories: Products complying with requirements in the Resilient Wall Base and Accessory Schedule.

B. Vinyl Accessories: Products complying with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.5 INSTALLATION ACCESSORIES:

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by resilient product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

    a. Cove Base Adhesives: Not more than 50 g/L.
    b. Rubber Floor Adhesives: Not more than 60 g/L.

C. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine substrates, areas, and conditions where installation of resilient products will occur, with Installer present, for compliance with manufacturer's requirements, including those for maximum moisture content. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

A. General: Comply with manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Broom and vacuum clean substrates to be covered immediately before installing resilient products. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 INSTALLATION:

A. General: Install resilient products according to manufacturer's written installation instructions.

B. Apply resilient wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

1. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
2. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
3. Do not stretch base during installation.
4. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
5. Install premolded outside and inside corners before installing straight pieces.

C. Place resilient products so they are butted to adjacent materials and bond to substrates with adhesive. Install reducer strips at edges of flooring that would otherwise be exposed.

3.4 CLEANING AND PROTECTING:

A. Perform the following operations immediately after installing resilient products:

1. Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
2. Sweep or vacuum horizontal surfaces thoroughly.
3. Do not wash resilient products until after time period recommended by resilient product manufacturer.
4. Damp-mop or sponge resilient products to remove marks and soil.

B. Apply resilient products to stairs as indicated and according to manufacturer's written installation instructions.

C. Protect resilient products against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by resilient product manufacturer.

1. Apply protective floor polish to vinyl resilient products installed on floors that are free from soil, visible adhesive, and surface blemishes, if recommended by manufacturer.

a. Use commercially available product acceptable to resilient product manufacturer.
b. Coordinate selection of floor polish with Owner's maintenance service.

2. Cover resilient products installed on floors with undyed, untreated building paper until inspection for Substantial Completion.

D. Clean resilient products not more than 4 days before dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean products according to manufacturer's written recommendations.

1. Before cleaning, strip protective floor polish that was applied to vinyl products on floors after completing installation only if required to restore polish finish and if recommended by resilient product manufacturer.
2. After cleaning, reapply polish on vinyl products on floors to restore protective floor finish according to resilient product manufacturer's written recommendations. Coordinate with Owner's maintenance program.

3.5 RESILIENT WALL BASE AND ACCESSORY SCHEDULE:

A. Rubber Wall Base "**WB-[#]**": Where these designations are indicated, provide rubber wall base complying with the following:

1. Manufacturer's: Provide rubber wall base manufactured by **Mannington Commercial**, , or equivalent products by one of the following:

a. Armstrong World Industries, Inc.
b. Nora Systems, Inc.
c. Roppe Corporation, USA.

d. Johnsonite; A Tarkett Company

2. Style: Cove with top-set toe at linoleum tile and at carpet.
3. Minimum Thickness: c inch.
4. Lengths: Coils in lengths standard with manufacturer, but not less than 96 feet.
5. Outside Corners: Field formed.
6. Inside Corners: Field formed.
7. Ends: Field formed.
8. Surface: Smooth.
9. Height: 6 inches, unless otherwise noted.
10. Color and Pattern: Provide the following colors:

a. "**WB-[#]**": See Section 090001 "Schedule of Finishes."

B. Vinyl Accessory Molding: Where flooring mat1erials change, provide vinyl accessory moldings complying with the following:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Armstrong World Industries, Inc.
b. Burke Mercer Flooring Products, Division of Burke Industries Inc.
c. Flexco.
d. Johnsonite; A Tarkett Company.
e. Musson Rubber Company.
f. Roppe Corporation, USA.

2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

** ~~a. Resilient to Resilient Tile (1/4" to 1/8") [**TS-1**]: Model No. **CTA-XX-H**, carpet to resilient tile transition edge for glue-down applications; Johnsonite.~~
~~b. Carpet to Carpet (3/8" to 1/4") [**TS-2**]: Model No. **CTA-XX-L**, carpet to resilient tile transition edge for glue-down applications; Johnsonite.~~

c. Carpet to concrete (1/4" to 0") [**TS-4**]: Model No. **CTA-XX-J**, carpet to concrete transition edge for glue-down applications; Johnsonite. Verify carpet thickness before ordering.
d. Carpet to Resilient Tile (1/4" to 1/8") [**TS-5**]: Model No. **CTA-XX-HT**, carpet to resilient tile transition edge for glue-down applications; Johnsonite. Verify carpet thickness before ordering.

3. Color: ~~See Section 090001 "Schedule of Finishes."~~ As selected by Architect.
4. Profiles and Dimensions: As specified by product designation indicated above.

END OF SECTION 096513

SECTION 102113.16 PLASTIC-LAMINATE-CLAD TOILET COMPARTMENTS

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. Plastic-laminate-clad toilet compartments configured as toilet enclosures and urinal screens.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for blocking.
2. Section 102800 "Toilet, Bath, and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories mounted on toilet compartments.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

B. Sustainable Design Submittals:

1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
2. Product Data: For adhesives, indicating that product contains no urea formaldehyde.
3. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.
4. Product Data: For composite wood products, indicating that product contains no urea formaldehyde.
5. Laboratory Test Reports: For composite wood products, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: For toilet compartments.

1. Include plans, elevations, sections, details, and attachment details.
2. Show locations of cutouts for compartment-mounted toilet accessories.
3. Show locations of centerlines of toilet fixtures.
4. Show locations of floor drains.

D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

1. Each type of material, color, and finish required for toilet compartments, prepared on 6-inch-152-mm- square Samples of same thickness and material indicated for Work.
2. Each type of hardware and accessory.

E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of toilet compartment.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hinges: Five hinge(s) with associated fasteners.
2. Latch and Keeper: Five latch(es) and keeper(s) with associated fasteners.
3. Door Bumper: Five door bumper(s) with associated fasteners.
4. Door Pull: Five door pull(s) with associated fasteners.
5. Fasteners: Twenty fasteners of each size and type.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in 2010 ADA Standards for Accessible Design and ICC A117.1 for toilet compartments designated as accessible.

2.2 PLASTIC-LAMINATE-CLAD TOILET COMPARTMENTS ~~(TA-25, TA-26)~~ **TP-2**

A. Basis-of-Design Product: Subject to compliance with requirements, provide **Plastic Laminate Moisture Guard; ASI Global Partitions,** or comparable product by one of the following:

1. Accurate Partitions Corporation.
2. All American Metal Corp.
3. American Sanitary Partition Corporation.
4. Ampco, Inc.
5. Bradley Corporation; Mills Partitions.
6. Decolam.
7. Flush Metal Partition Corp.
8. General Partitions Mfg. Corp.

9. Knickerbocker Partition Corporation.
10. Marlite.
11. Metpar Corp.
12. Scranton Products.
13. Tex-Lam Manufacturing, Inc.
14. Weis-Robart Partitions, Inc.

B. Toilet-Enclosure Style: Overhead braced.

C. Urinal-Screen Style: Floor anchored.

D. Door, Panel, and Pilaster Construction: One-piece, plastic-laminate facing sheets pressure laminated to core material without splices or joints in facings or cores; with laminate applied to edges before faces to seal edges and prevent laminate from being pried loose. Seal exposed core material at cutouts to protect core from moisture.

1. Core Material: Particleboard.
2. Doors and Panels: Finished to not less than 1 inch (25 mm) thick.
3. Pilasters: Provide construction to comply with the following:

   a. Finished to not less than 1 inch (25 mm) thick and with internal, nominal 0.120-inch-(3.04-mm-) thick, steel-sheet reinforcement.

E. Pilaster Shoes: Formed from stainless-steel sheet, not less than 0.031-inch (0.79-mm) nominal thickness and 3 inches (76 mm) high, finished to match hardware.

F. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters; with shoe matching that on the pilaster.

G. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

H. Plastic-Laminate Finish: One color and pattern in each room.

1. Color and Pattern: **

   ~~a. **TA-25**: As selected by Architect.~~
   ~~b. **TA-26**: As selected by Architect.~~
   c. **TP-2**: “Cherry” #9954; ASI Global Partitions

2.3 HARDWARE AND ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard operating hardware and accessories.

1. Material: Stainless steel.
2. Hinges: Manufacturer's standard continuous, cam type that swings to a closed or partially open position, allowing emergency access by lifting door.
3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.

6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless-steel, hot-dip galvanized-steel, or other rust-resistant, protective-coated steel anchors compatible with related materials.

2.4 MATERIALS

A. Particleboard: ANSI A208.1, Grade M-2.

1. Particleboard shall be made without urea formaldehyde.

B. Plastic Laminate: NEMA LD 3, general-purpose HGS grade, 0.048-inch (1.2-mm) nominal thickness.

C. Adhesives: Do not use adhesives that contain urea formaldehyde.

D. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.

E. Stainless-Steel Castings: ASTM A 743/A 743M.

2.5 FABRICATION

A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.

B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

C. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at bottoms of posts. Provide shoes at posts to conceal anchorage.

D. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide out-swinging doors with a minimum 32-inch- (813-mm-) wide clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.

1. Confirm location and adequacy of blocking and supports required for installation.

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

3.2 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

1. Maximum Clearances:

a. Pilasters and Panels: 1/2 inch (13 mm).
b. Panels and Walls: 1 inch (25 mm).

2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.

a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile joints.
b. Align brackets at pilasters with brackets at walls.

B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113.16

SECTION 102113 TOILET COMPARTMENTS

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. Section Includes:

1. Phenolic-core toilet compartments configured as toilet enclosures and urinal screens.

B. Related Sections include the following:

1. Division 06 Section "Miscellaneous Carpentry" for wood blocking.
2. Division 10 "Toilet, Bath and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories.

1.3 SUBMITTALS:

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

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

1. Show locations of cutouts for compartment-mounted toilet accessories.
2. Show locations of reinforcements for compartment-mounted grab bars.

C. Samples for Initial Selection: For each type of unit indicated.

D. Samples for Verification: Of each type of color and finish required for units, prepared on 6-inch-square Samples of same thickness and material indicated for Work.

1.4 QUALITY ASSURANCE:

A. Comply with requirements in CID-A-A-60003, "Partitions, Toilets, Complete."

1.5 PROJECT CONDITIONS:

A. Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating toilet compartments without field measurements. Coordinate wall, floor, ceilings, and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS:

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 75 or less.
2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for toilet compartments designated as accessible.

2.2 PHENOLIC-CORE UNITS:

A. Basis-of-Design Product [**TP-1**]: Subject to compliance with requirements, provide "**Solid Phenolic Toilet Enclosures; General Partitions Mfg. Corp.**, or approved equivalent of one of the following:

1. Global Partitions.
2. Metpar Corp,
3. Accurate Partitions Corp.

B. Door, Panel and Pilaster Construction: Solid phenolic-core panel material with plastic laminate facing on both sides fused to substrate during panel manufacture, and with eased and polished edges. Provide minimum 3/4-inch- thick doors and pilasters and minimum 1/2-inch- thick panels.

1. Core Color: Black.
2. Facing Sheet Finish:

a. As indicated by laminate manufacturer's designations.

FINISH	MANUFACTURER	STYLE/PATTERN	COLOR
~~**PL-1**~~ **TP-1**	Pionite		~~Leather L-Finish- Black~~ ST604 Suede – Nubian Brown
~~**PL-2**~~	~~Pionite~~		~~AG021 Suede- Sable~~ **

C. Heavy-duty "Bank Vault" hinge shall have gravity-acting cams, fabricated from 12 gauge, 304 stainless steel. Hinges are through-bolted onto doors and pilasters using stainless steel tamper resistant through bolts. Hinges are easily adjusted at the job site to a full close or partially open position, as required.

D. Urinal-Screen Style: Wall hung, flat panel.

1. Continuous heavy duty stainless steel wall brackets are pre-drilled. Wall brackets are mounted with stainless steel, vandal-resistant screws.

E. Pilaster Shoes and Sleeves (Caps): Stainless steel, ASTM A 666, Type 302 or 304, not less than 0.0312 inch specified thickness and 3 inches high, finished to match hardware.

F. Brackets (Fittings):

1. Stirrup Type: Ear or U-brackets, stainless steel.

2.3 ACCESSORIES:

A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.

1. Material: Stainless steel.
2. Hinges: Manufacturer's standard paired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees.
3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Fabricate from 12 gauge 304 stainless steel.
4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories. Fabricate from 304 stainless steel.

a. Provide coat hook without bumper on Handicap stalls only.

5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors. Fabricate from 304 stainless steel.
6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Fabricate from 304 stainless steel.

a. Provide one (1) additional pull handle on the compartment side of the door, mounted 6-inches from the hinge edge and between 26 and 36-inches above the floor. Provide pull with a shape that is easily grasped with one hand and does not require tight, pinching or twisting of the wrist to operate.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

2.4 FABRICATION:

A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

B. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

1. Maximum Clearances:

a. Pilasters and Panels: 1/2 inch.
b. Panels and Walls: 1 inch.

2. Stirrup Brackets: Secure panels to walls and to pilasters with not less than three brackets attached at midpoint and near top and bottom of panel.

a. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
b. Align brackets at pilasters with brackets at walls.

B. Wall-Hung Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb and to resist lateral impact.

C. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

3.2 ADJUSTING:

A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 10155

-SECTION 102800 TOILET, BATH AND LAUNDRY ACCESSORIES

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 the following:

1. Toilet and bath accessories.

B. Related Sections include the following:

1. Section 102113 “Toilet Compartments” for compartments and screens.

1.3 SUBMITTALS:

A. Product Data: Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.

B. Setting Drawings: For cutouts required in other work; include templates, substrate preparation instructions, and directions for preparing cutouts and installing anchoring devices.

C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Toilet and Bath Accessory Schedule and room designations indicated on Drawings in product schedule.

D. Maintenance Data: For accessories to include in maintenance manuals specified in Division 01. Provide lists of replacement parts and service recommendations.

1.4 QUALITY ASSURANCE:

A. Source Limitations: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise approved by Architect.

B. Product Options: Accessory requirements, including those for materials, finishes, dimensions, capacities, and performance, are established by specific products indicated in the Toilet and Bath Accessory Schedule.

1. Products of other manufacturers listed in Part 2 with equal characteristics, as judged solely by Architect, may be provided.

2. Do not modify aesthetic effects, as judged solely by Architect, except with Architect's approval. Where modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.5 COORDINATION:

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY:

A. General Warranty: Special warranty 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. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.

1. Minimum Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following:

1. American Specialties, Inc.
2. Bobrick Washroom Equipment, Inc.
3. Bradley Corporation.
4. Georgia-Pacific.

B. Products manufactured by Bobrick Washroom Equipment, Inc., and Georgia-Pacific are specified. Items designated establish minimum requirements for design and performance of equipment required by this Section.

2.2 MATERIALS:

A. Stainless Steel: ASTM A 666, Type 304, with No. 4 finish (satin), in 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Galvanized Steel Sheet: ASTM A 653/A 653M, G60.

C. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service), nickel plus chromium electrodeposited on base metal.

D. Mirror Glass: ASTM C 1036, Type I, Class 1, Quality q2, nominal 6.0 mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.

E. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

2.3 FABRICATION:

A. General: One, maximum 1-1/2-inch-diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of accessories. On interior surface not exposed to view or back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.

B. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.

C. Framed Glass-Mirror Units: Fabricate frames for glass-mirror units to accommodate glass edge protection material. Provide mirror backing and support system that permits rigid, tamper-resistant glass installation and prevents moisture accumulation.

1. Provide galvanized steel backing sheet, not less than 0.034 inch and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

D. Mirror-Unit Hangers: Provide mirror-unit mounting system that permits rigid, tamper- and theft-resistant installation, as follows:

1. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.

E. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.

C. Install grab bars to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING:

A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

3.3 TOILET AND BATH ACCESSORY SCHEDULE:

A. Grab Bars - Stainless Steel Type [**TA-1#**]: Provide grab bars with wall thickness not less than 0.05 inch (18 gage) and as follows:

1. Mounting: Concealed, manufacturer's standard flanges and anchorage with four set-screws.
2. Clearance: 1-1/2-inch clearance between wall surface and inside face of bar.
3. Gripping Surfaces: Manufacturer's standard nonslip texture.
4. Heavy-Duty Size: Outside diameter of 1-1/2 inches.
5. [**TA-1A**] Product: Bradley Corp. Model **812 x 18**".
6. [**TA-1D**] Product: Bradley Corp. Model **812 x 42**".

B. Toilet Tissue Dispenser "**TA-2D**": Where this designation is indicated, provide toilet tissue dispenser complying with the following:

1. Jumbo-roll toilet tissue dispenser door and cabinet shall be type-304 stainless steel with satin-finish: door shall be 18 gauge (1.2mm); cabinet shall be 20 gauge (1.0mm). Cabinet shall be equipped with a tumbler lock keyed like other Bobrick washroom accessories. Door shall have a wide viewing slot to reveal toilet tissue supply inside cabinet. Dispensing mechanism shall be constructed of high-impact ABS shall accommodate two toilet tissue rolls up to 10" (255mm) diameter with 3" (75mm) diameter core; and be equipped with a sliding access panel that exposes one roll at a time. Spindles shall be convertible in the field to dispense 2-1/4" (55mm) diameter core rolls by removing outer spindles furnished in-place.
2. Product: Model No. **B-2892**, surface mounted.

C. Recessed Sanitary Napkin/Tampon Vendor Unit [**TA-5B**]: Where this designation is indicated, provide stainless-steel sanitary napkin vendor complying with the following:

1. General: Fabricate cabinet of all-welded construction. Provide seamless door with returned edges and secured by tumbler lockset. Provide identification reading "Napkins" and "Tampons"; brand-name advertising is not allowed. Capacity not less than 31 napkins and 22 tampons.
2. Operation: Coordinate price with Owner.
3. Product: Bobrick Model **B-37063C Trimline Series**.

** ~~D. Semi-Recessed Waste Receptacle [**TA-6B**]: Where this designation is indicated, provide semi-recessed paper towel dispenser complying with the following:~~

~~1. Recessed waste receptacle shall be type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Flange shall be drawn and beveled, one-piece, seamless construction. Removable waste receptacle shall be secured to cabinet with a tumbler lock keyed like other Bobrick washroom accessories, have front and side edges of bottom and all top edges hemmed for safe handling, and shall have a minimum capacity of 12-gal. (45.4-L).~~

~~2. Product: Bobrick Model **B-3644**.~~

** E. [**TA-7~~A~~**] Surface Mounted Paper Towel Dispenser: Where this designation is indicated, provide stainless-steel paper towel dispenser unit complying with the following:

1. Surface Mounted Automated Towel Dispenser, hands-free, electronic towel dispenser, engineered to be surface mounted to the wall.
2. Battery operated.
3. Product: Wausau Paper Wall Mount Automated Touchless Towel Dispenser, Model **Wave'n Dry**.

F. Surface Mounted Sanitary Napkin Disposal [**TA-8A**]: Where this designation is indicated, provide stainless-steel combination unit complying with the following:

1. Surface-mounted sanitary napkin disposal shall be type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Door shall be secured to cabinet with a full-length stainless steel piano-hinge and equipped with a tumbler lock keyed like other washroom accessories. Unit shall have a self-closing panel covering disposal opening. Panel shall have bottom edge hemmed for safety, be secured to door with a spring-loaded, full-length stainless steel piano-hinge, and equipped with an international graphic symbol identifying sanitary napkin disposal. Unit shall be furnished with a removable, leak-proof, rigid molded polyethylene receptacle. Receptacle shall have a capacity of 1.5-gal. (6.6-L).

    a. Bradley Model No. **4722-15**

G. Soap Dispenser [**TA-10**]: Where this designation is indicated, provide soap dispenser complying with the following:

1. Surface-mounted foam soap dispenser, battery operated.

a. Dimensions: 10" Height x 6" Width x 4" Depth.

2. Product: GOJO USA Model No. **H-1585 Touch Free Dispenser - Dove Gray**.

** H. Surface Mounted Electric Backlit Mirror [**TA-11~~G~~**]: Where this designation is indicated, provide surface mounted electric backlit mirror complying with the following:

1. The Fusion™ Lighted Mirror by Electric Mirror has two bands of vertical frosted light on the left and right sides of the backlit mirror and comes in six standard sizes. Fusion features long lasting lamps, natural light temperature, anti-corrosion mirror treatment, energy efficiency, and is proudly designed and manufactured in the USA.
2. Size: Custom size, 18"W x 36" H.
3. Product: Electric Mirror, LLC, Model **Fusion Lighted Mirror**.

I. Mirror Units [**TA-11A**]: Where this designation is indicated, provide mirror unit complying with the following:

1. Stainless Steel Framed Mirror Units: Fabricate frame with angle shapes not less than 0.05 inch (18 gage), with square corners mitered, welded, and ground smooth. Provide in No. 4 satin polished finish.

a. Product : Bobrick Model No. **B-165 - 16** (wide) **x 36** (high).

J. Clothes Hook [**TA-13**]: Where this designation is indicated, provide clothes hook complying with the following:

1. Clothes Hook: Clothes hook shall be type-304, 11-gauge stainless steel with satin finish and all-welded construction. Surface mounted with stainless steel fasteners.
2. Product: Bobrick Model No. **B-233**.

K. Mop and Broom Holder [**TA-14**]: Where this designation is indicated, provide mop and broom holder with rag hooks complying with the following:

1. Mop and Broom Holder/Utility Shelf: Combination unit with 0.05-inch (18-gage), Type 304, stainless steel shelf with 1/2-inch returns, 0.062-inch (16-gage) support brackets for wall mounting. Provide 0.062-inch (16-gage) stainless steel hooks for wiping rags on front of shelf, together with spring-loaded, rubber hat, cam-type mop/broom holders; 1/4-inch-diameter stainless steel drying rod suspended beneath shelf. Provide unit 36 inches long and complete with four mop/broom holders and rag rod.
2. Product: Bradley Corp., **9954-36**.

L. Pipe Insulation [**TA-23**]: Provide pipe insulation and fittings on hot and cold supplies and P-trap and waste below sinks on ADA accessible units utilizing one of the following:

a. Lav Guard 2 EZ; TRUEBRO, IPS Corporation.
b. Pro Wrap; McGuire Manufacturing Co., Inc.

M. Toilet Accessory [**TA-25**]: Toilet partitions. Refer to Specification Section 102113 - Toilet Compartments.

N. Toilet Accessory [**TA-26**]: Urinal Screens. Refer to Specification Section 102113 - Toilet Compartments.

O. Surface Mounted Toilet Seat Cover Dispenser [**TA-35**]: Where this designation is indicated, provide surface mounted toilet seat cover dispenser complying with the following:

1. Surface-mounted seat cover dispenser, with face formed with contemporary contours, radii, and finish matching related accessories in manufacturer's designer series. Capacity 250 standard single-fold or half-fold toilet seat covers. Equipped with spring clip dispensing mechanism and bottom-hinged service door with keyed tumbler lock. Universal keying. Formed from stainless steel sheet with satin finish on exposed surfaces, fully welded, with seamless corners and burrfree edges: cabinet and door 0.036- inch / 20-ga. thick.
2. Product: Bradley Model **5A40**.

P. Sharps Receptacle and Mail System [**TA-37**]: One Quart Disposal by Mail System. Approximately 50-70 1cc syringe capacity. Sharps Container Cabinet, lockable metal container.

1. Sharps Item: #**10101-012**.
2. Sharps Item: #**50020-004**.
3. Provide one cabinet and container in each toilet room.
4. http://www.allsafetyproducts.com/documents/catalogs/Catalog_Page_285.pdf or as approved by the Architect.

END OF SECTION 102800

SECTION 237313 CENTRAL-STATION AIR-HANDLING UNITS

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 constant-volume, central-station air-handling units with coils for indoor installations.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each central-station air-handling unit specified, including the following:

1. Fan-performance curves with system operating conditions indicated.
2. Fan-sound power ratings.
3. Coil-performance ratings with system operating conditions indicated.
4. Motor ratings and electrical characteristics plus motor and fan accessories.
5. Material gages and finishes.
6. Filters with performance characteristics.
7. Dampers, including housings, linkages, and operators.

C. Shop Drawings from manufacturer detailing equipment assemblies and indicating dimensions, weights, loadings, required clearances, method of field assembly, components, and location and size of each field connection.

D. Wiring diagrams detailing wiring for power and control systems and differentiating between manufacturer-installed and field-installed wiring.

E. Maintenance data for central-station air-handling units to include in the operation and maintenance manual specified in Division 1 Sections and Division 23 Section "Basic HVAC Requirements."

1.4 QUALITY ASSURANCE

A. NFPA Compliance: Central-station air-handling units and components shall be designed, fabricated, and installed in compliance with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."

B. UL Compliance: Electric coils, along with complete central-station air-handling unit, shall be listed and labeled by UL.

C. ARI Certification: Central-station air-handling units and their components shall be factory tested according to the applicable portions of ARI 430, "Central-Station Air-Handling Units," and shall be listed and bear the label of the Air-Conditioning and Refrigeration Institute (ARI).

D. UL and NEMA Compliance: Provide motors required as part of air-handling units that are listed and labeled by UL and comply with applicable NEMA standards.

E. Comply with NFPA 70 for components and installation.

F. Listing and Labeling: Provide electrically operated components specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.

G. Coordination: Coordinate layout and installation of central-station air-handling units with piping and ductwork and with other installations.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver air-handling unit as a factory-assembled module with protective crating and covering.

B. Lift and support units with manufacturer's designated lifting or supporting points.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate size and location of concrete housekeeping bases. Cast anchor-bolt inserts into base.

B. Coordinate size and location of structural-steel support members.

1.7 EXTRA MATERIALS

Removes the wording about extra belts. Only direct drive fans wanted & provided

A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.

B. Filters: Furnish 1 set for each central-station air-handling unit.

PART 2 - PRODUCTS

Changed approved manufacturers to ones with a known track record for quality and support after installation. Standard manufactures can meet specification expectations without compromising owner expectations.

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be considered equal include, and are limited to, the following:

1. AnnexAir
2. Energy Labs
3. Air Enterprises

Unit(s) weight, dimensions, and performance must match with the project schedules and drawings. This is a fast track project and as such can afford time lost due to construction and coordination deviations.

2.2 MANUFACTURED UNITS

A. General Description: Factory assembled, consisting of fans, motor and drive assembly, coils, damper, plenums, filters, drip pans, and mixing dampers.

Same cabinet construction as the Talequah Clinic & Casino. Keeps the owner standards of construction consistent across properties.

2.3 CABINET

A. Materials:

1. The unit housing shall be no-through metal with 2'' Thermo-Composite and foam panel construction - interior and exterior or an all-aluminum 4" Foam thermal break construction - interior and exterior. Thermal break construction using a gasket to insulate two panels is not an acceptable equivalent to a no-through metal constructed casing. No-through metal construction will be inherent to all the component construction in the assembly.
2. All panels and access doors shall be double wall construction with R14 foam insulation for every 2" of construction. All panels and access doors shall be double wall construction with R14 foam insulation for every 2" of construction. All foam insulation must be Greenguard certified®. Any insulation incorporating CFCs or HCFCs in its construction is strictly prohibited from this application.
3. Unit casing will have no exterior condensation at interior AHU temperatures down to 43F while unit exterior conditions are maintained at 95 F dry bulb / 85 F wet bulb. The air handling unit manufacturer general contraction shall be tested to demonstrate the thermal performance of the unit casing.
4. The panels shall be tested in accordance with SMACNA and ASHRAE 111 to have a deflection of no more than L/1150 at 10'' and withstand air pressures up to 8" w.c with less than 1% leakage. Fire resistance of the panel will be in compliance with UL 94 rated at 5VA; and a flame spread / smoke development in compliance with UL 723 ASTM E84 Class 1 rating.
5. Thermo-Composite or aluminum panels shall be provided for the entire unit construction, including but not limited to, walls, doors, floors, roof, interior partitions, and electrical compartment. Panels shall be non-load bearing type.
6. The frame shall consist of anodized extruded aluminum profiles which incorporates a thermally broken construction; welded together for reinforcement and insulated for superior thermal performance.

7. Base Structure: Base structure shall be fully welded G-90, painted exterior, and have integral lifting lugs which can be removed once the unit is installed.
8. All roof and side wall seams shall be positively sealed to prevent water and air leakage. The OA and EA compartment shall have 1" PVC drains extended to exterior of unit.
9. Access doors shall be provided to all major components to facilitate quick and easy access. Access doors will be made from the same material as the unit casing and shall incorporate thermal break construction. Fan access door(s) shall have Allegis type handles, with one handle interlinking multiple latches and threaded insert fastening handles for all remaining doors. If access doors do not open against unit operating pressure, provide safety latches that allow access doors to partially open after first handle movement and fully open after second handle movement. Removable panels provided for equipment pull out for coil(s), and air to air heat exchanger section(s) shall have key tooled threaded insert fasteners. Hinges shall be Nylon hinge type designed to open 180 degrees.
10. Unit shall have the entire exterior finished with a PVDF coating designed for UV resistance. Panels shall pass ASTM B117 3000-hour salt fog resistance test and ASTM D4585 3000-hour moisture condensation resistance test. In addition, paint must meet AAMA 620-02 standard for color, chalking, gloss retention, and abrasion resistance.
11. The air handler unit casing shall be provided with a lifetime warranty against corrosion resistance under normal use.

B. Drain Pans: Formed sections of galvanized steel sheet with stainless steel liner. Fabricate pans in sizes and shapes to collect condensate from cooling coils (including coil piping connections and return bends) when units are operating at maximum catalogued face velocity across cooling coil.
   1. Drain pan shall be provided for cooling coils. Cooling coils shall sit on stainless steel tubular support rails, which shall stand a minimum of (2) two inches above the highest point of the floor drain pan
   2. Stainless steel drain pan shall be insulated with minimum of 0.25 Armaflex or similar insulation.
   3. Stacked coils shall be provided for larger airflows and intermediate drain pans shall be provided for each coil bank.
   4. Drain pans shall be stainless steel with stainless steel drain connections on one side only. Pan shall be sloped in two planes. All coils shall be certified in accordance with ARI standard 410.

C. Weather Hood(s): The outdoor intake weather hood shall be completely constructed in aluminum for superior corrosion resistance. The hood shall ship loose for field installation by the installing contractor. Painted galvanized hoods shall not be acceptable due to its susceptibility to corrosion. The outdoor air hood shall be designed with a 4" extruded aluminum louver, bird screen and a plenum enclosure with drain holes. The louver blades shall be drainable type with a maximum 45 degree angle and curved with integral rain baffle. The louver design shall not allow more than 0.03 oz/ft2 water penetration when tested in accordance to AMCA 500. The pressure drop of the complete hood assembly shall not exceed 0.05"wc at a maximum 500 fpm face velocity. A Pre-filter rack system shall be installed within the weather hood enclosure to prevent outdoor air dust and debris from entering the damper and unit casing plenum. Pre-filters installed inside the unit casing plenum and downstream of the outdoor damper will not be acceptable as this will increase overall maintenance on the damper, reduce indoor air quality and promote mold and bacteria growth. Filter access in the hood shall be accomplished via the louver that is installed with a stainless steel piano hinge and spring loaded latch. No tools or ladders shall be required to access the pre-filters in the weather hood assembly.

D. Exhaust Air Louver(s): The exhaust air outlet louvers shall be 2" extruded aluminum, with non-restricting blade design and bird screen

Same Fan Section as the Talequah Clinic & Casino.
Removes belt drive allowance.
Keeps the owner standards of construction consistent across properties.

2.4 FAN SECTION

A. Fan-Section Construction: Fans shall be direct drive radial centrifugal fans with free running impeller. No fan belts will be acceptable for this application. Fans shall be compact, optimized and construction made of galvanized sheet steel with backward curved 7-blade high efficiency impeller, protected by an epoxy powder coating. To reduce vibration, the impeller shall be balanced with hub to an admissible vibration severity of less than 2.8 mm/s in conformity with DIN ISO 14694 and proof shall be supplied for each individual impeller. Tests shall be made according to DIN ISO 1940 Part 1, quality of balancing G2.5/6.3. The single inlet shall be mounted onto constant speed direct drive motor, equipped with an air flow optimized inlet cone from galvanized sheet steel.

B. Fans shall be completely certified as per ISO 5801 and in accordance to AMCA standards. Fans will re-quire to be operated by a Variable speed drive. Optional: Plug fan shall come equipped with guard grilles for the air intake side.

C. Housings: Fabricate from formed- and reinforced-steel panels to form curved scroll housings with shaped cutoff, spun-metal inlet bell, and access doors or panels to allow entry to internal parts and components.

D. Fan-Section Source Quality Control: The following factory tests are required.

1. Sound Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Fans shall bear AMCA-certified sound ratings seal.
2. Factory test fan performance for flow rate, pressure, power, air density, rotation speed, and efficiency. Establish ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."

2.5 MOTORS

A. General: Refer to Division 23 Section "Motors" for general requirements.

B. The fan motors shall meet NEMA standard dimensions and comply with the Energy policy Act of 1997. Motors shall have high efficiencies with low noise and vibration output. Motors shall be certified and built in accordance to ISO 9001 quality control system. Motors shall have ODP enclosure with Premium efficiency performance. Units shall be designed for constant application. Please refer to the unit schedule for the application type.

C. Option: A shaft grounding brush kit will be provided to prevent electrical damage to motor bearings by safely channeling harmful shaft currents to ground.

2.6 COILS & PIPING CABINETS

A. Coil Sections: Common or individual, insulated, galvanized steel casings for heating and cooling coils. Design and construct to facilitate removal and replacement of coil for maintenance and to assure full airflow through coils.

B. Coil Construction: Rigidly supported across full face, pitched to allow drainage.

1. Fins: Aluminum, mechanically bonded to tubes.
2. Tubes: Seamless copper.
3. Coil Casing: Galvanized steel.
4. Headers for Water Coils: Steel with connections for drain valve and air vent, and threaded piping connections.

C. Water Coils: Drainable with threaded plugs, serpentine with return bends in smaller sizes and with return headers in larger sizes.

D. All coil sections shall incorporate an internal piping vestibule. Should an external piping vestibule (dog house) be used, it shall conform to the same construction and insulation standards and specifications set forth in cabinet and materials specification section.

Same Damper Section as the Talequah Clinic & Casino.
Removes belt drive allowance.
Keeps the owner standards of construction consistent across properties.

2.7 DAMPERS

A. General: Leakage rate, according to AMCA 500, "Test Methods for Louvers, Dampers and Shutters," shall not exceed 2 percent of air quantity at 2000-fpm (10-m/s) face velocity through damper and 4-inch wg (1000-Pa) pressure differential.

B. Dampers shall be installed where shown on the drawings. Dampers shall be low leak type (NON-INSULATED TAMCO SERIES 1000 or similar) with rubber edges, opposed or parallel blades, and constructed from extruded aluminum. Galvanized dampers will not be acceptable. The exhaust air outlet shall have a standard aluminum gravity type damper, unless otherwise noted below.

C. Dampers shall be installed in the compartments (as shown on the drawings) with linkage rod for actuators:

2.8 FILTER SECTION

A. Filters: Comply with NFPA 90A.

B. Filters shall be Maxi Pleat 2" MERV 8.

C. Filters shall be factory installed upstream of the heat exchanger and coils, in both airstreams. The filters shall be Filtration Lab's Maxi-60 MERV 8. Each filter shall consist of 100% synthetic media, expanded metal on the downstream and enclosing with high wet-strength beverage board with diagonal support bonded on air entering and air exiting side of each pleat. MERV 8 model 615 filters, UL class 2 are rated as per ASHRAE test 52.2.1999 at 70% efficiency initial (based on Minimum Average Efficiency) at 3-10 microns. The model 615 could be operated at 500 FPM, surface area 17.6 FT2 of media based on 24 x 24 x 2 initial static pressure at 0.30", final will be 1". Filters shall be placed in a completely sealed, galvanized holding frame with quick release latches for easy replacement.

2.9 FREQUENCY DRIVE (VFD)

A. A single fan VFDs shall control all fans for a given section.

B. Fan VFDs shall be installed in an internal ventilated cabinet. The cabinet shall be completely isolated from any hydronic coils or piping.

C. VFDs will be used to set or regulate the fan speed and airflow for these units. The VFD shall have PID function for constant flow applications.

D. The VFDs will be installed with integral brake transistor, overload protection, and adjustable pulse-width modulation (PWM). The VFD shall use Insulated Gate Bipolar Transistor (IGBT) technology to convert three phase input power to coded PWM output and have 4-20mA analog output terminals that are fully programmable for variable flow applications. The VFD shall be equipped with a keypad with status indicators, easy access functions, and monitoring functions during motor operation.

E. In the event of a momentary power failure or fault the VFD shall read the inverter speed and direction of a coasting motor and shall automatically restart the motor smoothly. Technical support will be provided by the VFD manufacturer.

F. VFDs shall be installed as shown on drawings with contactors, relays, and all specified accessories. VFDs to be installed without by-pass.

Corrected factory installed controls language. To remove ambiguity in control expectations & provisions

2.10 CONTROLS VALVES AND END DEVICES

A. With exception to the humidifier and dispersion tube system, all control valves, airflow balancing system, all control temperature sensors, and actuators are to be field installed and provided by the controls contractor.

Corrected power & connection language. To remove ambiguity in electrician expectations & provisions

2.11 POWER & SAFETY CONTROL

A. The power and control center shall be integral to the unit housing and rated equivalent to NEMA 3R. Panels that are externally mounted to the unit shall not be accepted, regardless of the NEMA rating they may have. A separate access door shall be provided with an approved locking device. All electrical components contained in the panel shall be UL/CSA certified and labeled. The unit shall be complete with VFDs, fuses, cascading overloads (without VFD's or 2 motors on same VFD), relays, terminals for main ON/OFF and step-down transformer. All components shall be factory wired for single point power connection by the manufacturer of the unit. A non-fused safety disconnect switch shall be factory installed for ON/OFF servicing. An electrical pipe chase for power and control feeding shall be provided next to the control panel. Any power or control wiring that is field installed shall not be accepted under any circumstances. The Short Circuit Current Rating (SCCR) is 5kA rms symmetrical, 600V Maximum.

B. GFI, lights, and switches shall be factory installed and wired to a common junction box. A separate power connection 120V/1 will be required (powered by others).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions to receive equipment, for compliance with installation tolerances and other conditions affecting performance of central-station air-handling units.

B. Examine roughing-in of hydronic, condensate drainage piping, and electrical to verify actual locations of connections before installation.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install central-station air-handling units level and plumb, according to manufacturer's written instructions.

1. Floor-Mounted Units: Support on concrete housekeeping bases using housed-spring isolators. Secure units to anchor bolts installed in concrete housekeeping base.
2. Suspended Units: Suspend units from structural-steel support frame using threaded steel rods and vibration isolation.

B. Arrange installation of units to provide access space around air-handling units for service and maintenance.

3.3 HOUSEKEEPING BASES

A. Coordinate size of housekeeping bases with actual unit sizes provided. Construct base 4 inches (100 mm) larger in both directions than overall dimensions of supported unit.

B. Form concrete bases with steel channels conforming to ASTM A 36 (ASTM A 36M), size and location as indicated. Miter and weld corner and provide cross bracing. Anchor or key to floor slab.

C. Form concrete bases with framing lumber with form-release compounds. Chamfer top edge and corners of base.

D. Install reinforcing bars, tied to frame, and place anchor bolts and sleeves to facilitate securing units.

E. Place concrete and allow to cure before installing units. Use portland cement conforming to ASTM C 150, 4000-psig (27.6-MPa) compressive strength, and normal-weight aggregate.

F. Clean exposed steel form according to SSPC-SP 2 or SSPC-SP 3 and apply 2 coats of rust-preventive metal primer.

3.4 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. The Drawings indicate the general arrangement of piping, fittings, and specialties. The following are specific connection requirements:

1. Install piping adjacent to machine to allow service and maintenance.
2. Connection piping to air-handling units with flexible connectors.
3. Connect condensate drain pans using 1-1/4-inch NPS (DN32), Type M copper tubing. Extend to nearest equipment or floor drain. Construct deep trap at connection to drain pan and install cleanouts at changes in direction.
4. Hot- and Chilled-Water Piping: Conform to applicable requirements of Division 23 Section "Hydronic Piping." Connect to supply and return coil tappings with shutoff or balancing valve and union or flange at each connection.
5. Refrigerant Piping: Conform to applicable requirements of Division 23 Section "Refrigerant Piping." Connect to supply and return coil tappings with shutoff valve and union or flange at each connection.

B. Duct installation and connection requirements are specified in other Division 23 Sections. The Drawings indicate the general arrangement of ducts and duct accessories. Make final duct connections with flexible connections.

C. Electrical: Conform to applicable requirements of Division 26Sections.

1. Connect fan motors to wiring systems and to ground. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.5 ADJUSTING

A. Adjust damper linkages for proper damper operation.

3.6 CLEANING

A. After completing installation, inspect exposed finish. Remove burrs, dirt, and construction debris, and repair damaged finishes including chips, scratches, and abrasions.

B. Clean fan interiors to remove foreign material and construction dirt and dust. Vacuum clean fan wheels, cabinets, and coils entering air face.

3.7 COMMISSIONING

A. Manufacturer's Field Inspection: Installer is to perform the following:

1. Inspect field assembly of components and installation of central-station air-handling units including piping, ductwork, and electrical connections.

B. Final Checks before Startup: Perform the following before startup:

1. Verify that shipping, blocking, and bracing are removed.
2. Verify that unit is secure on mountings and supporting devices and that connections for piping, ductwork, and electrical are complete. Verify that proper thermal overload protection is installed in motors, starters, and disconnects.
3. Perform cleaning and adjusting specified in this Section.

4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify free fan wheel rotation and smooth bearings operations. Reconnect fan drive system, align belts, and install belt guards.
5. Lubricate bearings, pulleys, belts, and other moving parts with factory-recommended lubricants.
6. Set zone dampers to fully open position for each zone.
7. Set face-and-bypass dampers to full face flow.
8. Set outside-air and return-air mixing dampers to minimum outside-air setting.
9. Comb coil fins for parallel orientation.
   a. Install clean filters.
10. Verify that manual and automatic volume control, and fire and smoke dampers in connected ductwork systems are in fully open position.

C. Starting procedures for central-station air-handling units include the following:

1. Energize motor; verify proper operation of motor, drive system, and fan wheel. Adjust fan to indicated rpm.

   a. Replace fan and motor pulleys as required to achieve design conditions.

2. Measure and record motor electrical values for voltage and amperage.
3. Manually operate dampers from fully closed to fully open position and record fan performance.

D. Refer to Division 23 Section "Testing, Adjusting, and Balancing" for air-handling system testing, adjusting, and balancing.

3.8 DEMONSTRATION

A. Installer is to train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.

1. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Contract Closeout."
2. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

END OF SECTION 237313

SECTION 237313.1 CENTRAL-STATION AIR-HANDLING UNITS (WITH ENERGY RECOVERY)

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 central-station air-handling units with coils and energy recovery for outdoor installations.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each central-station air-handling unit specified, including the following:

1. Fan-performance curves with system operating conditions indicated.
2. Fan-sound power ratings.
3. Energy recovery performance ratings with system operating conditions indicated on schedule.
4. Coil-performance ratings with system operating conditions indicated on schedule.
5. Motor ratings and electrical characteristics plus motor and fan accessories.
6. Material gages and finishes.
7. Filters with performance characteristics.
8. Dampers, including housings, linkages, and operators.

C. Shop Drawings from manufacturer detailing equipment assemblies and indicating dimensions, weights, loadings, required clearances, method of field assembly, components, and location and size of each field connection.

D. Wiring diagrams detailing wiring for power and control systems and differentiating between manufacturer-installed and field-installed wiring.

E. Maintenance data for central-station air-handling units to include in the operation and maintenance manual specified in Division 1 Sections and Division 23 Section "Basic HVAC Requirements."

1.4 QUALITY ASSURANCE

A. NFPA Compliance: Central-station air-handling units and components shall be designed, fabricated, and installed in compliance with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."

B. UL Compliance: Electric coils, along with complete central-station air-handling unit, shall be listed and labeled by UL. Unit(s) shall bear the ETL label, tested in accordance to UL 1995.

C. ARI Certification: Central-station air-handling units and their components shall be factory tested according to the applicable portions of ARI 430, "Central-Station Air-Handling Units," and shall be listed and bear the label of the Air-Conditioning and Refrigeration Institute (ARI). Fans shall be tested in an AMCA certified laboratory; coils shall tested in accordance to ARI 410 ; energy recovery exchangers shall be in accordance to AHRI 1060, “Rating Air-to-Air Energy Recovery Equipment” and Eurovent standards; filters shall be tested in accordance to ASHRAE 52.

D. The air leakage of the unit(s) shall not exceed 1% at 8” inches H_2O positive static pressure and a copy of the report must be submitted upon request. Unit shall be constructed to limit frame and panel deflection to $1/250^{th}$ of the panel length at 8” inches H_2O positive static pressure and a copy of the report must be submitted upon request.

E. UL and NEMA Compliance: Provide motors required as part of air-handling units that are listed and labeled by UL and comply with applicable NEMA standards.

F. Comply with NFPA 70 for components and installation.

G. Listing and Labeling: Provide electrically operated components specified in this Section that are listed and labeled.

   1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.

H. All unit(s) shall be factory run tested before shipping. A proof copy of the test shall be placed in the unit electrical power & control panel.

I. Coordination: Coordinate layout and installation of central-station air-handling units with piping and ductwork and with other installations.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver air-handling unit as a factory-assembled module with protective crating and covering.

B. Lift and support units with manufacturer's designated lifting or supporting points.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate size and location of concrete housekeeping bases. Cast anchor-bolt inserts into base.

B. Coordinate size and location of structural-steel support members.

Removes the wording about extra belts. Only direct drive fans wanted & provided

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.

B. Filters: Furnish 1 set for each central-station air-handling unit.

PART 2 - PRODUCTS

Changed approved manufacturers to ones with a known track record for quality and support after installation. Standard manufactures can meet specification expectations without compromising owner expectations.

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be considered equal include, and are limited to, the following:

1. AnnexAir
2. SEMCO
3. Energy Labs
4. Des Champs

Unit(s) weight, dimensions, and performance must match with the project schedules and drawings. This is a fast track project and as such can afford time lost due to construction and coordination deviations.

2.2 MANUFACTURED UNITS

A. General Description: Factory assembled, consisting of fans, motor and drive assembly, coils, damper, plenums, filters, drip pans, energy recovery wheel and mixing dampers.

Same cabinet construction as the Talequah Clinic & Casino. Keeps the owner standards of construction consistent across properties.

2.3 CABINET

A. Materials:

1. The unit housing shall be no-through metal with 2'' Thermo-Composite and foam panel construction - interior and exterior or an all-aluminum 4" Foam thermal break construction - interior and exterior. Thermal break construction using a gasket to insulate two panels is not an acceptable equivalent to a no-through metal constructed casing. No-through metal construction will be inherent to all the component construction in the assembly.

2. All panels and access doors shall be double wall construction with R14 foam insulation for every 2" of construction. All panels and access doors shall be double wall construction with R14 foam insulation for every 2" of construction. All foam insulation must be Greenguard certified®. Any insulation incorporating CFCs or HCFCs in its construction is strictly prohibited from this application.
3. Unit casing will have no exterior condensation at interior AHU temperatures down to 43F while unit exterior conditions are maintained at 95 F dry bulb / 85 F wet bulb. The air handling unit manufacturer general contraction shall be tested to demonstrate the thermal performance of the unit casing.
4. The panels shall be tested in accordance with SMACNA and ASHRAE 111 to have a deflection of no more than L/1150 at 10'' and withstand air pressures up to 8" w.c with less than 1% leakage. Fire resistance of the panel will be in compliance with UL 94 rated at 5VA; and a flame spread / smoke development in compliance with UL 723 ASTM E84 Class 1 rating.
5. Thermo-Composite or aluminum panels shall be provided for the entire unit construction, including but not limited to, walls, doors, floors, roof, interior partitions, and electrical compartment. Panels shall be non-load bearing type.
6. The frame shall consist of anodized extruded aluminum profiles which incorporates a thermally broken construction; welded together for reinforcement and insulated for superior thermal performance.
7. Base Structure: Base structure shall be fully welded G-90, painted exterior, and have integral lifting lugs which can be removed once the unit is installed.
8. All roof and side wall seams shall be positively sealed to prevent water and air leakage. The OA and EA compartment shall have 1" PVC drains extended to exterior of unit.
9. Access doors shall be provided to all major components to facilitate quick and easy access. Access doors will be made from the same material as the unit casing and shall incorporate thermal break construction. Fan access door(s) shall have Allegis type handles, with one handle interlinking multiple latches and threaded insert fastening handles for all remaining doors. If access doors do not open against unit operating pressure, provide safety latches that allow access doors to partially open after first handle movement and fully open after second handle movement. Removable panels provided for equipment pull out for coil(s), and air to air heat exchanger section(s) shall have key tooled threaded insert fasteners. Hinges shall be Nylon hinge type designed to open 180 degrees.
10. Unit shall have the entire exterior finished with a PVDF coating designed for UV resistance. Panels shall pass ASTM B117 3000-hour salt fog resistance test and ASTM D4585 3000-hour moisture condensation resistance test. In addition, paint must meet AAMA 620-02 standard for color, chalking, gloss retention, and abrasion resistance.
11. The air handler unit casing shall be provided with a lifetime warranty against corrosion resistance under normal use.

B. Drain Pans: Formed sections of galvanized steel sheet with stainless steel liner. Fabricate pans in sizes and shapes to collect condensate from cooling coils (including coil piping connections and return bends) when units are operating at maximum catalogued face velocity across cooling coil.
   1. Drain pan shall be provided for cooling coils. Cooling coils shall sit on stainless steel tubular support rails, which shall stand a minimum of (2) two inches above the highest point of the floor drain pan
   2. Stainless steel drain pan shall be insulated with minimum of 0.25 Armaflex or similar insulation.

3. Stacked coils shall be provided for larger airflows and intermediate drain pans shall be provided for each coil bank.
4. Drain pans shall be stainless steel with stainless steel drain connections on one side only. Pan shall be sloped in two planes. All coils shall be certified in accordance with ARI standard 410.

C. Weather Hood(s): The outdoor intake weather hood shall be completely constructed in aluminum for superior corrosion resistance. The hood shall ship loose for field installation by the installing contractor. Painted galvanized hoods shall not be acceptable due to its susceptibility to corrosion. The outdoor air hood shall be designed with a 4" extruded aluminum louver, bird screen and a plenum enclosure with drain holes. The louver blades shall be drainable type with a maximum 45 degree angle and curved with integral rain baffle. The louver design shall not allow more than 0.03 oz/ft2 water penetration when tested in accordance to AMCA 500. The pressure drop of the complete hood assembly shall not exceed 0.05"wc at a maximum 500 fpm face velocity. A Pre-filter rack system shall be installed within the weather hood enclosure to prevent outdoor air dust and debris from entering the damper and unit casing plenum. Pre-filters installed inside the unit casing plenum and downstream of the outdoor damper will not be acceptable as this will increase overall maintenance on the damper, reduce indoor air quality and promote mold and bacteria growth. Filter access in the hood shall be accomplished via the louver that is installed with a stainless steel piano hinge and spring loaded latch. No tools or ladders shall be required to access the pre-filters in the weather hood assembly.

D. Exhaust Air Louver(s): The exhaust air outlet louvers shall be 2" extruded aluminum, with non-restricting blade design and b

Changed Wheel Type to Molecular Sieve construction. Experience of 20yrs has shown that for casino with allowed smoking require this type of desiccant for long term odor and humidity management. Anything less is not acceptable.

2.4 ENTHALPY WHEEL

A. The substrate shall be made of aluminum. The aluminum shall have a rotational speed of 20 to 25 RPM. Non-metallic substrates made from paper, plastic, synthetic or glass fiber media shall not be acceptable. The substrate shall not be made from any material which is combustible supports combustion such as synthetic fibrous media. The enthalpy wheel media shall have NFPA 90A certification with 0% for flame spread classification. The pressure drop shall not be more than 0.1" WC for every 100 FPM face velocity for the stated and scheduled latent recovery and efficiency.

B. The desiccant shall be water molecule selective and non-migratory. The desiccant shall be molecular sieve 3 angstrom, so as to prevent cross contamination. The enthalpy wheel desiccant shall have a desiccant mass of no less than 5 kg per 1,000 CFM of air. The desiccant shall utilize a coating with non-masking porous binder adhesive on the aluminum substrate so as to allow quick and easy uptake and release of water vapor. A confirmation by the enthalpy wheel manufacturer shall be provided. A matrix utilizing desiccants impregnated in non-metallic substrates, such as synthetic fiber, glass fiber or plastic, shall not be acceptable.

C. The rotor and wheel matrix shall have equal sensible and latent effectiveness. A rotor matrix which has been etched or oxidized to make a desiccant on a metal foil results in insufficient latent recovery and hence unequal recovery and shall not be acceptable. A rotor matrix made from desiccant integrated in a synthetic fiber matrix results in insufficient sensible recovery and requires high rotational speeds, provides unequal energy transfer and shall not be acceptable.

Rotors having diameters up to 2000mm shall have spokes to reinforce the matrix. 2000mm rotors and up shall have a special wing structure to prevent wobble or deformation due to excessive pressure differentials.

D. Sectioned wheels shall be available as an option for field assembly in sizes 2000mm and larger. The surface of the wheel shall be highly polished to ensure vertical run out does not exceed +/- 1mm for every 1 meter in diameter, thereby ensuring negligible leakage through the provided Labyrinth seals. The radial run out shall not exceed +/- 1mm for every 1 meter diameter, thereby minimizing the leakage drag on the radial seals and minimizing the tension and fluctuations in the drive belt. The rotor shall be a non-clogging aluminum media, having a multitude of narrow aluminum foil channels, thus ensuring a laminar flow and will allow particles up to 800 microns to pass through it.

E. The media shall be cleanable with compressed air or low pressure steam or light detergent without degrading the latent recovery. Wheel sizes up to 2 meter Diameter– casing shall be made of folded galvanized steel sheets and be a self-supporting structure with purge sector, rotor, bearing, contact / brush seals, drive mechanism with drive belt. Wheel sizes above 2 meter Diameter –casing shall be made of tubular steel structure and be a self-supporting structure with field adjustable purge sector, rotor, bearing, labyrinth seals, drive mechanism with drive belt.

F. Casing shall have a factory set field adjustable purge mechanism to limit cross contamination. The face and radial seals shall be four (4) pass non-contact labyrinth seals for effective sealing between the two air streams and also for minimum wear, ensuring long life of the seals.

G. Provide VFD for energy wheel.

Same Fan Section as the Talequah Clinic & Casino.
Removes belt drive allowance.
Keeps the owner standards of construction consistent across properties.

2.5 FAN SECTION

A. Fan-Section Construction: Fans shall be direct drive radial centrifugal fans with free running impeller. No fan belts will be acceptable for this application. Fans shall be compact, optimized and construction made of galvanized sheet steel with backward curved 7-blade high efficiency impeller, protected by an epoxy powder coating. To reduce vibration, the impeller shall be balanced with hub to an admissible vibration severity of less than 2.8 mm/s in conformity with DIN ISO 14694 and proof shall be supplied for each individual impeller. Tests shall be made according to DIN ISO 1940 Part 1, quality of balancing G2.5/6.3. The single inlet shall be mounted onto constant speed direct drive motor, equipped with an air flow optimized inlet cone from galvanized sheet steel.

B. Fans shall be completely certified as per ISO 5801 and in accordance to AMCA standards. Fans will re-quire to be operated by a Variable speed drive. Optional: Plug fan shall come equipped with guard grilles for the air intake side.

C. Housings: Fabricate from formed- and reinforced-steel panels to form curved scroll housings with shaped cutoff, spun-metal inlet bell, and access doors or panels to allow entry to internal parts and components.

D. Fan-Section Source Quality Control: The following factory tests are required.

1. Sound Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Fans shall bear AMCA-certified sound ratings seal.
2. Factory test fan performance for flow rate, pressure, power, air density, rotation speed, and efficiency. Establish ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."

2.6 FAN MOTORS

A. General: Refer to Division 23 Section "Motors" for general requirements.

B. The fan motors shall meet NEMA standard dimensions and comply with the Energy policy Act of 1997. Motors shall have high efficiencies with low noise and vibration output. Motors shall be certified and built in accordance to ISO 9001 quality control system. Motors shall have ODP enclosure with Premium efficiency performance. Units shall be designed for constant application. Please refer to the unit schedule for the application type.

C. Option: A shaft grounding brush kit will be provided to prevent electrical damage to motor bearings by safely channeling harmful shaft currents to ground.

2.7 FREQUENCY DRIVE (VFD)

A. A single fan VFDs shall control all fans for a given section.

B. Fan VFDs shall be installed in an internal ventilated cabinet. The cabinet shall be completely isolated from any hydronic coils or piping.

C. VFDs will be used to set or regulate the fan speed and airflow for these units. The VFD shall have PID function for constant flow applications.

D. The VFDs will be installed with integral brake transistor, overload protection, and adjustable pulse-width modulation (PWM). The VFD shall use Insulated Gate Bipolar Transistor (IGBT) technology to convert three phase input power to coded PWM output and have 4-20mA analog output terminals that are fully programmable for variable flow applications. The VFD shall be equipped with a keypad with status indicators, easy access functions, and monitoring functions during motor operation.

E. In the event of a momentary power failure or fault the VFD shall read the inverter speed and direction of a coasting motor and shall automatically restart the motor smoothly. Technical support will be provided by the VFD manufacturer.

F. VFDs shall be installed as shown on drawings with contactors, relays, and all specified accessories. VFDs to be installed without by-pass.

2.8 CONTROLS VALVES AND END DEVICES

A. With exception to the hydronic control valves and airflow balancing system, all control temperature sensors, actuators.

2.9 COILS

A. Coil Sections: Common or individual, insulated, galvanized steel casings for heating and cooling coils. Design and construct to facilitate removal and replacement of coil for maintenance and to assure full airflow through coils.

B. Coil Construction: Rigidly supported across full face, pitched to allow drainage.
   1. Fins: Aluminum, mechanically bonded to tubes.
   2. Tubes: Seamless copper.
   3. Coil Casing: Galvanized steel.
   4. Headers for Water Coils: Steel with connections for drain valve and air vent, and threaded piping connections.

C. Water Coils: Drainable with threaded plugs, serpentine with return bends in smaller sizes and with return headers in larger sizes.

D. All coil sections shall incorporate an internal piping vestibule. Should an external piping vestibule (dog house) be used, it shall conform to the same construction and insulation standards and specifications set forth in cabinet and materials specification section.

2.10 DAMPERS

Same Damper Section as the Talequah Clinic & Casino.
Removes belt drive allowance.
Keeps the owner standards of construction consistent across properties.

A. General: Leakage rate, according to AMCA 500, "Test Methods for Louvers, Dampers and Shutters," shall not exceed 2 percent of air quantity at 2000-fpm (10-m/s) face velocity through damper and 4-inch wg (1000-Pa) pressure differential.

B. Dampers shall be installed where shown on the drawings. Dampers shall be low leak type (NON-INSULATED TAMCO SERIES 1000 or similar) with rubber edges, opposed or parallel blades, and constructed from extruded aluminum. Galvanized dampers will not be acceptable. The exhaust air outlet shall have a standard aluminum gravity type damper, unless otherwise noted below.

C. Dampers shall be installed in the compartments (as shown on the drawings) with linkage rod for actuators:

2.11 FILTER SECTION

A. Filters: Comply with NFPA 90A.

B. Filters shall be Maxi Pleat 2" MERV 8.

C. Filters shall be factory installed upstream of the heat exchanger and coils, in both airstreams. The filters shall be Filtration Lab’s Maxi-60 MERV 8. Each filter shall consist of 100%

synthetic media, expanded metal on the downstream and enclosing with high wet-strength beverage board with diagonal support bonded on air entering and air exiting side of each pleat. MERV 8 model 615 filters, UL class 2 are rated as per ASHRAE test 52.2.1999 at 70% efficiency initial (based on Minimum Average Efficiency) at 3-10 microns. The model 615 could be operated at 500 FPM, surface area 17.6 FT2 of media based on 24 x 24 x 2 initial static pressure at 0.30", final will be 1". Filters shall be placed in a completely sealed, galvanized holding frame with quick release latches for easy replacement.

Corrected power & connection language. To remove ambiguity in electrician expectations & provisions

2.12 POWER & SAFETY CONTROL

A. The power and control center shall be integral to the unit housing and rated equivalent to NEMA 3R. Panels that are externally mounted to the unit shall not be accepted, regardless of the NEMA rating they may have. A separate access door shall be provided with an approved locking device. All electrical components contained in the panel shall be UL/CSA certified and labeled. The unit shall be complete with VFDs, fuses, cascading overloads (without VFD's or 2 motors on same VFD), relays, terminals for main ON/OFF and step-down transformer. All components shall be factory wired for single point power connection by the manufacturer of the unit. A non-fused safety disconnect switch shall be factory installed for ON/OFF servicing. An electrical pipe chase for power and control feeding shall be provided next to the control panel. Any power or control wiring that is field installed shall not be accepted under any circumstances. The Short Circuit Current Rating (SCCR) is 5kA rms symmetrical, 600V Maximum.

B. GFI, lights, and switches shall be factory installed and wired to a common junction box. A separate power connection 120V/1 will be required (powered by others).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions to receive equipment, for compliance with installation tolerances and other conditions affecting performance of central-station air-handling units.

B. Examine roughing-in of hydronic, condensate drainage piping, and electrical to verify actual locations of connections before installation.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install central-station air-handling units level and plumb, according to manufacturer's written instructions.

1. Floor-Mounted Units: Support on concrete housekeeping bases using housed-spring isolators. Secure units to anchor bolts installed in concrete housekeeping base.
2. Suspended Units: Suspend units from structural-steel support frame using threaded steel rods and vibration isolation.

B. Arrange installation of units to provide access space around air-handling units for service and maintenance.

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. The Drawings indicate the general arrangement of piping, fittings, and specialties. The following are specific connection requirements:

1. Install piping adjacent to machine to allow service and maintenance.
2. Connection piping to air-handling units with flexible connectors.
3. Connect condensate drain pans using 1-1/4-inch NPS (DN32), Type M copper tubing. Extend to nearest equipment or floor drain. Construct deep trap at connection to drain pan and install cleanouts at changes in direction.
4. Hot- and Chilled-Water Piping: Conform to applicable requirements of Division 23 Section "Hydronic Piping." Connect to supply and return coil tappings with shutoff or balancing valve and union or flange at each connection.
5. Refrigerant Piping: Conform to applicable requirements of Division 23 Section "Refrigerant Piping." Connect to supply and return coil tappings with shutoff valve and union or flange at each connection.

B. Duct installation and connection requirements are specified in other Division 23 Sections. The Drawings indicate the general arrangement of ducts and duct accessories. Make final duct connections with flexible connections.

C. Electrical: Conform to applicable requirements of Division 26Sections.

1. Connect fan motors to wiring systems and to ground. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 ADJUSTING

A. Adjust damper linkages for proper damper operation.

3.5 CLEANING

A. After completing installation, inspect exposed finish. Remove burrs, dirt, and construction debris, and repair damaged finishes including chips, scratches, and abrasions.

B. Clean fan interiors to remove foreign material and construction dirt and dust. Vacuum clean fan wheels, cabinets, and coils entering air face.

3.6 COMMISSIONING

A. Manufacturer's Field Inspection: Installer is to perform the following:

1. Inspect field assembly of components and installation of central-station air-handling units including piping, ductwork, and electrical connections.

B. Final Checks before Startup: Perform the following before startup:

1. Verify that shipping, blocking, and bracing are removed.
2. Verify that unit is secure on mountings and supporting devices and that connections for piping, ductwork, and electrical are complete. Verify that proper thermal overload protection is installed in motors, starters, and disconnects.
3. Perform cleaning and adjusting specified in this Section.
4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify free fan wheel rotation and smooth bearings operations. Reconnect fan drive system, align belts, and install belt guards.
5. Lubricate bearings, pulleys, belts, and other moving parts with factory-recommended lubricants.
6. Set zone dampers to fully open position for each zone.
7. Set face-and-bypass dampers to full face flow.
8. Set outside-air and return-air mixing dampers to minimum outside-air setting.
9. Comb coil fins for parallel orientation.
10. Install clean filters.
11. Verify that manual and automatic volume control, and fire and smoke dampers in connected ductwork systems are in fully open position.

C. Starting procedures for central-station air-handling units include the following:

1. Energize motor; verify proper operation of motor, drive system, and fan wheel. Adjust fan to indicated rpm.

    a. Replace fan and motor pulleys as required to achieve design conditions.

2. Measure and record motor electrical values for voltage and amperage.
3. Manually operate dampers from fully closed to fully open position and record fan performance.

D. Refer to Division 23 Section "Testing, Adjusting, and Balancing" for air-handling system testing, adjusting, and balancing.

3.7 DEMONSTRATION

A. Installer is to train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.

1. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Contract Closeout."
2. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

END OF SECTION 237313.1

ADDENDUM NO. 5

DATE: May 23, 2018

PROJECT: Cherokee Hard Rock Casino 4
Catoosa, Oklahoma

FROM: JCJ Architecture, Inc.
120 Huyshope Avenue, Suite 400
Hartford, Connecticut 06106
(860) 247-9226

TO: Bidders of Record

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated April 23, 2018. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of two (2) pages and the following attached documents:

1. Specification Sections.

PROJECT MANUAL:

1. TABLE OF CONTENTS:
   a. Delete Section 047100 - Brick Panel Systems. Not used.

2. Section 047100 - BRICK PANEL SYSTEMS:
   a. Delete Section. Not Used..

3. Section 087100 - DOOR HARDWARE:
   a. Replace with attached Section.

4. Section 093013 - CERAMIC TILING:
   a. Replace with attached revised Section.

5. Section 096513 - RESILIENT BASE AND ACCESSORIES:
   a. Replace with attached revised Section.

6. Section 102113 - TOILET COMPARTMENTS:
   a. Replace with attached revised Section.

7. Section 102113.16 - PLASTIC-LAMINATE-CLAD TOILET COMPARTMENTS:
   a. Replace with attached revised Section.

8. Section 102800 - TOILET, BATH AND LAUNDRY ACCESSORIES:
   a. Replace with attached revised Section.

9. Section 237313 - CENTRAL STATION AIR HANDLING UNITS:
   a. Replace with attached revised Section.

10. Section 237313.1 - CENTRAL STATION AIR HANDLING UNITS WITH ENERGY RECOVERY:
   a. Replace with attached revised Section.

END OF ADDENDUM NO. 5