

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

BPA NO.

1. CONTRACT ID CODE

PAGE 1 OF PAGES 2

2. AMENDMENT/MODIFICATION NUMBER
00073. EFFECTIVE DATE
04-05-2021

4. REQUISITION/PURCHASE REQ. NUMBER

5. PROJECT NUMBER (if applicable)
618-17-1276. ISSUED BY
CODE
Department of Veterans Affairs
Program Contracting Activity Central

6150 Oak Tree Blvd, Suite 300
Independence OH 44131

36C776

7. ADMINISTERED BY (If other than Item 6)
CODE
Department of Veterans Affairs
Department of Veterans Affairs

6150 Oak Tree Blvd, Suite 300
Independence OH 44131

00076

8. NAME AND ADDRESS OF CONTRACTOR (Number, street, county, State and ZIP Code)
To all Offerors/Bidders

(X)

9A. AMENDMENT OF SOLICITATION NUMBER

36E77620R0050

9B. DATED (SEE ITEM 11)
04-05-2021

10A. MODIFICATION OF CONTRACT/ORDER NUMBER

10B. DATED (SEE ITEM 13)

CODE

FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified. N/A

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE

 A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b). C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: D. OTHER (Specify type of modification and authority)**E. IMPORTANT:** Contractor is not, is required to sign this document and return 1 (ONE) copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this amendment is to provide the following:

1. A copy VA Addendum 2 combined document as well as the Addendum 2 Attachments and Narrative Documents.
2. A copy of 23 07 11 HVAC and Boiler Plant Insulation Document.
3. A copy of the Exterior Site Plan Dumpster Laydown Document.
4. A copy of the Minneapolis Mental Health Technical Questions Spreadsheet.
5. A copy of the Addendum 2 Revision Set 2
6. Technical question due date has been extended from April 6, 2021 to April 8, 2021 at 2:00 PM ET.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

Donald A. Marsh III
Contracting Officer

PCAC-15L3-1697

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED

(Signature of person authorized to sign)

(Signature of Contracting Officer)

See attached document: 4-4-2021 Combined Documents Addendum 2.

See attached document: 4-4-2021 VA Addendum 2.Narrative.

See attached document: 4-4-2021 VA Addendum 2.Attachments.

See attached document: 23 07 11.

See attached document: Exterior Site Plan_Dumpster_Laydown.

See attached document: Technical Question Tracking Sheet.

See attached document: VA Pre-Bid Addendum 2 Revision Set 2.

End of Document



VA Project: **Renovate MH Ward 1L, 1H, and 1K**

VA Project #: 618-17-127

VA Addendum #2 Information

Date: **April 4, 2021**

DRAWING SHEET REVISIONS

GI001 OVERALL PHASING PLAN - LEVEL 1

- a. Phase 2 work on North side of temporary partition is to include new finishes scheduled in Corridors C1-65, and 1K 100.
- b. The scope of work occurring within the courtyard will begin during phase II. Work is to be coordinated so as not to conflict with seasonal resident use of the courtyard. Scheduling of this work to be coordinated with COR.

GI002 ENLARGED PHASING PLAN - CONSTRUCTION BOUNDARIES

- a. Detail 1/GI001 is to be updated to reflect inclusion and revised sequencing of corridors as noted in revision item b. for sheet GI001, and phasing of Courtyard alterations and improvements

G101 LIFE SAFETY PLAN

- a. Bounding walls of existing exit Corridor to the South of Stair 8 is an existing 2hr fire barrier and will retain this rating.
- b. The interstitial level floor associated with the first level is a one-hour fire rated assembly. The integrity of this assembly is to be maintained.
- c. Add the outlined information below to the sheet

GENERAL TYPE OF PROJECT	YES	NO
NEW BUILDING	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ADDITION	<input type="checkbox"/>	<input checked="" type="checkbox"/>
REMODEL	<input checked="" type="checkbox"/>	<input type="checkbox"/>

AUTHORITIES HAVING JURISDICTION (AHJ's)	YES	NO
THE JOINT COMMISSION (TJC)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CENTER FOR MEDICARE/MEDICAID SERVICES (CMS)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input checked="" type="checkbox"/>

APPLICABLE REGULATIONS
2021 NFPA 101 (LIFE SAFETY CODE)
2021 IBC (WHERE SPECIFICALLY REFERENCED)
ABA STANDARDS (2015) (ABAAS)
VA BARRIER FREE DESIGN STANDARD (PG-18-13)
NFPA NATIONAL FIRE CODES (EXCEPTION: NFPA 5000 & 900)
2018 FGI GUIDELINES
OSHA STANDARDS
VA SEISMIC DESIGN REQUIREMENTS H-18-8
NATIONAL ELECTRIC CODE (NEC)
ASME BOILER AND PRESSURE VESSEL CODE
ASME CODE FOR PRESSURE PIPING
BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, AMERICAN CONCRETE INSTITUTE AND COMMENTARY (ACI 318)
MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
ENERGY POLICY ACT OF 2005 (EPAc)
DOE INTERIM FINAL RULE: ENERGY CONSERVATION STANDARDS FOR NEW FEDERAL, COMMERCIAL AND MULTI-FAMILY HIGH-RISE RESIDENTIAL BUILDINGS AND NEW LOW-RISE RESIDENTIAL BUILDINGS, 10 CFR PARTS 433,434 AND 435
FEDERAL LEADERSHIP IN HIGH PERFORMANCE AND SUSTAINABLE BUILDINGS: MEMORANDUM OF UNDERSTANDING (MOU)
EXECUTIVE ORDER 13423: STRENGTHENING FEDERAL ENVIRONMENTAL, ENERGY, AND TRANSPORTATION MANAGEMENT
THE PROVISIONS FOR CONSTRUCTION AND SAFETY SIGNS. STATED IN THE GENERAL REQUIREMENTS SECTION 01010 OF THE VA MASTER CONSTRUCTION SPECIFICATION
VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY - ASHRAE STANDARD 62.1-2004
SAFETY STANDARD FOR REFRIGERATION SYSTEMS - ASHRAE STANDARD 15-2007
VA FIRE PROTECTION DESIGN MANUAL
VA DIRECTIVES, DESIGN MANUALS, MASTER SPECIFICATIONS, VA NATIONAL CAD STANDARD APPLICATION GUIDE, AND OTHER GUIDANCE ON THE TECHNICAL INFORMATION LIBRARY (TIL)

OCCUPANCY CLASSIFICATION(S)			
OCCUPANCIES (LSC CH 12-42)	HEALTHCARE	YES	NO
CHANGE OF OCCUPANCY? (If Remodeling)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SEPARATED OCCUPANCIES? (2015 LSC (TABLE 6.1.14.1))		<input checked="" type="checkbox"/>	<input type="checkbox"/>
FIRE BARRIER RATING(S) (Section 8.3)	SEE LIFE SAFETY PLANS		

TYPE(S) OF CONSTRUCTION			
CONSTRUCTION TYPE(S)	(LSC Chapter 18/19) LSC I (322)	(IBC Chapter 6)	IBC II-A
AREA SEPARATIONS / FIRE WALLS	SEE LIFE SAFETY PLANS		

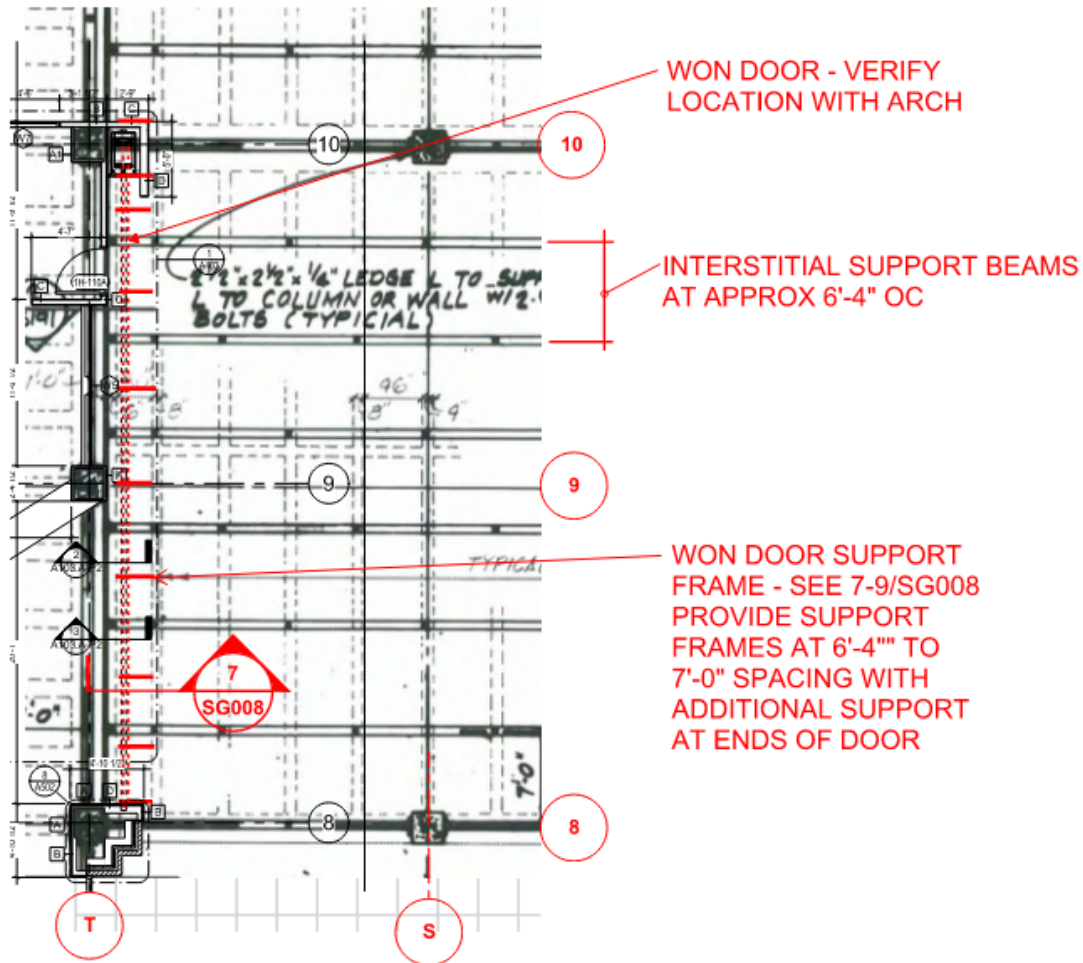
FIRE-RESISTIVE REQUIREMENTS		
	RATING (HRS)	TEST
STRUCTURAL FRAME		
COLUMNS	3	ASTM E119
GIRDERS	3	ASTM E119
TRUSSES	3	ASTM E119
BEARING WALLS		
EXTERIOR BEARING WALLS	3	ASTM E119
INTERIOR BEARING WALLS	3	ASTM E119
NON-BEARING WALLS AND PARTITIONS		
EXTERIOR	0	ASTM E119
INTERIOR	See Life Safety Plans	
FLOOR CONSTRUCTION		
FLOOR/CEILING ASSEMBLY	2	ASTM E119
PRIME & SEC. FLOOR BEAMS, JOISTS	N/A	ASTM E119
ROOF CONSTRUCTION		
ROOF/CEILING ASSEMBLY	1.5	ASTM E119
PRIME & SEC. ROOF BEAMS, JOISTS	N/A	N/A
OTHER		
SHAFTS AND EXIT PASSAGEWAYS	2	ASTM E119

MISCELLANEOUS		
	YES	NO
FIRE RESISTIVE CORRIDORS?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SMOKE TIGHT CORRIDORS (SMOKE PARTITIONS)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
INCIDENTAL USE AREA RATING(S)	SEE PLANS	
INTERIOR FINISHES CLASSIFICATION		
EXIT ACCESS CORRIDORS	A or B	
OTHER SPACES	I or II	

SG008 STRUCTURAL DETAILS

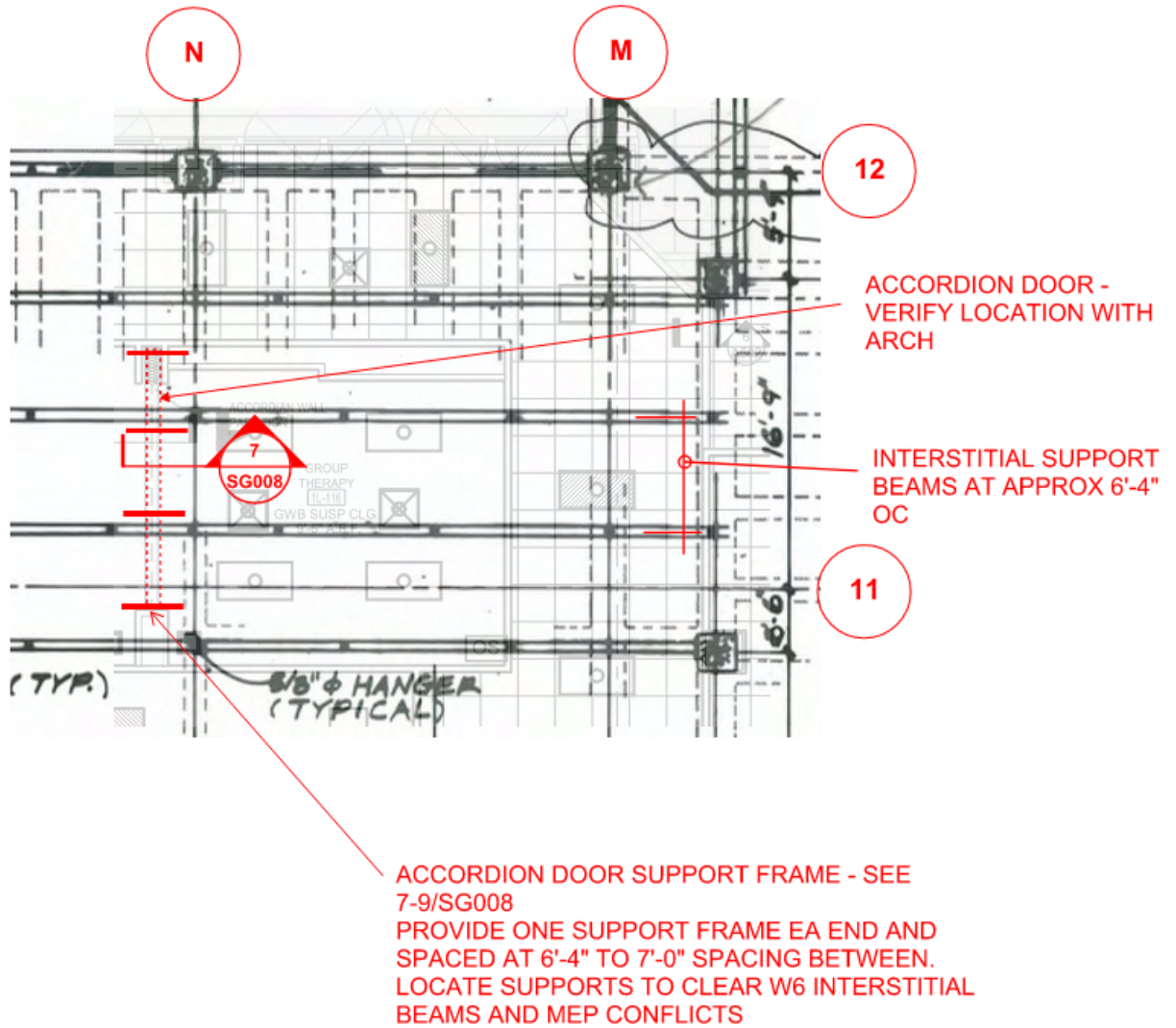
1. DETAILS 7,8,9: Details are for WON DOOR SUPPORT. Where details refer to plan, reference plan information below.

WON DOOR SUPPORT



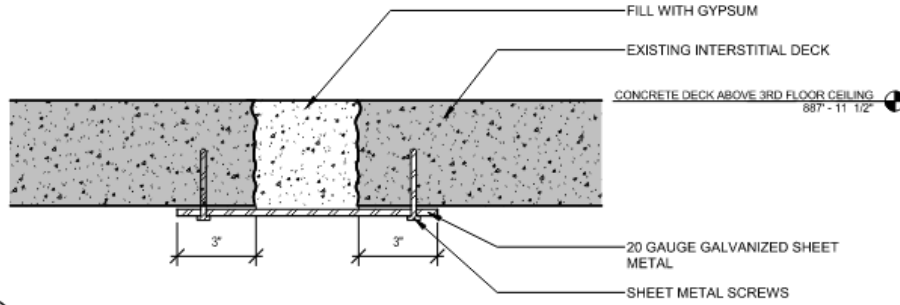
2. Refer to the plan information below for the structural support of the ACCORDIAN WALL PARTITION in phase 3, area L.

ACCORDION DOOR SUPPORT

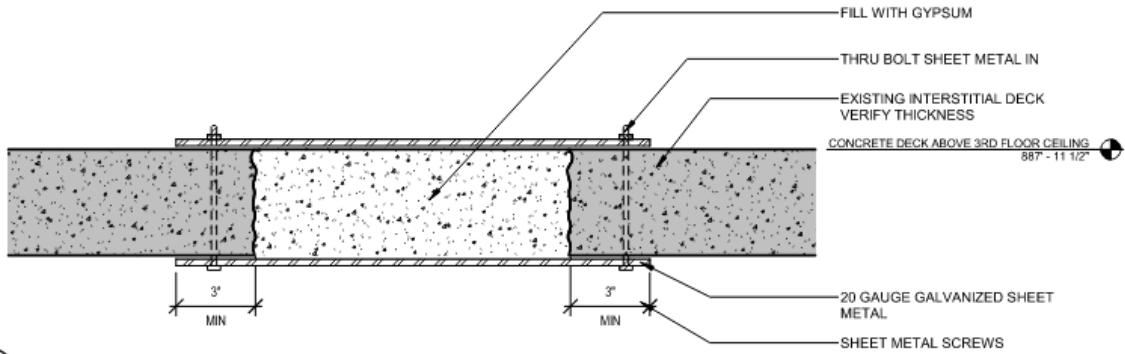


3. ADD the Details 10, 11 and INTERSTITIAL SPACE GENERAL NOTES provided below to this sheet.

INTERSTITIAL FLOOR PATCH



10 TYP INTERSTITIAL DECK PATCH (LESS THAN 4" DIA)
 3" = 1'-0"

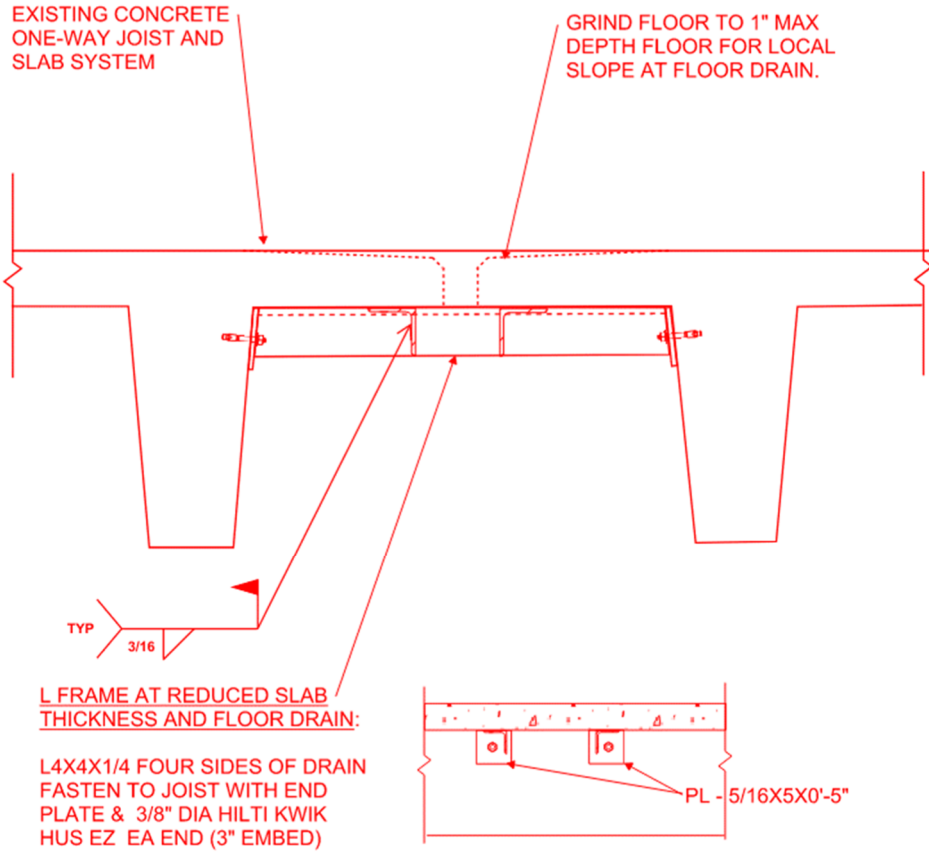


11 TYP INTERSTITIAL DECK PATCH
 3" = 1'-0"

INTERSTITIAL SPACE GENERAL NOTES	
1.	VERIFY EXTENT OF EXISTING PENETRATIONS THROUGH THE INTERSTITIAL BARRIER ONCE DEMOLITION OF MECHANICAL DUCTING, PLUMBING AND ELECTRICAL SYSTEM IS COMPLETE
2.	VERIFY PLANNED REUSE OF EXISTING PENETRATIONS BY MECHANICAL AND ELECTRICAL CONTRACTORS TO ESTABLISH EXTENT OF ABANDONED PENETRATIONS. REVIEW SURVEY / INVENTORY LIST WITH MECHANICAL AND ELECTRICAL CONTRACTORS.
3.	PATCH ALL ABANDONED PENETRATIONS THROUGH THE INTERSTITIAL BARRIER THAT ARE GREATER THAN FOUR SQUARE INCHES AS INDICATED ON DETAIL 11
4.	PATCH ALL ABANDONED PENETRATIONS THROUGH THE INTERSTITIAL BARRIER THAT ARE LESS THAN FOUR SQUARE INCHES AS INDICATED ON DETAIL 10
5.	VERIFY / COORDINATE SIZE AND LOCATIONS OF ADDITIONAL REQUIRED OPENINGS / PENETRATIONS IN THE INTERSTITIAL BARRIER. SAWCUT AND REMOVE BARRIER MATERIAL AT THESE LOCATIONS AS REQUIRED TO ACCOMMODATE DETAIL

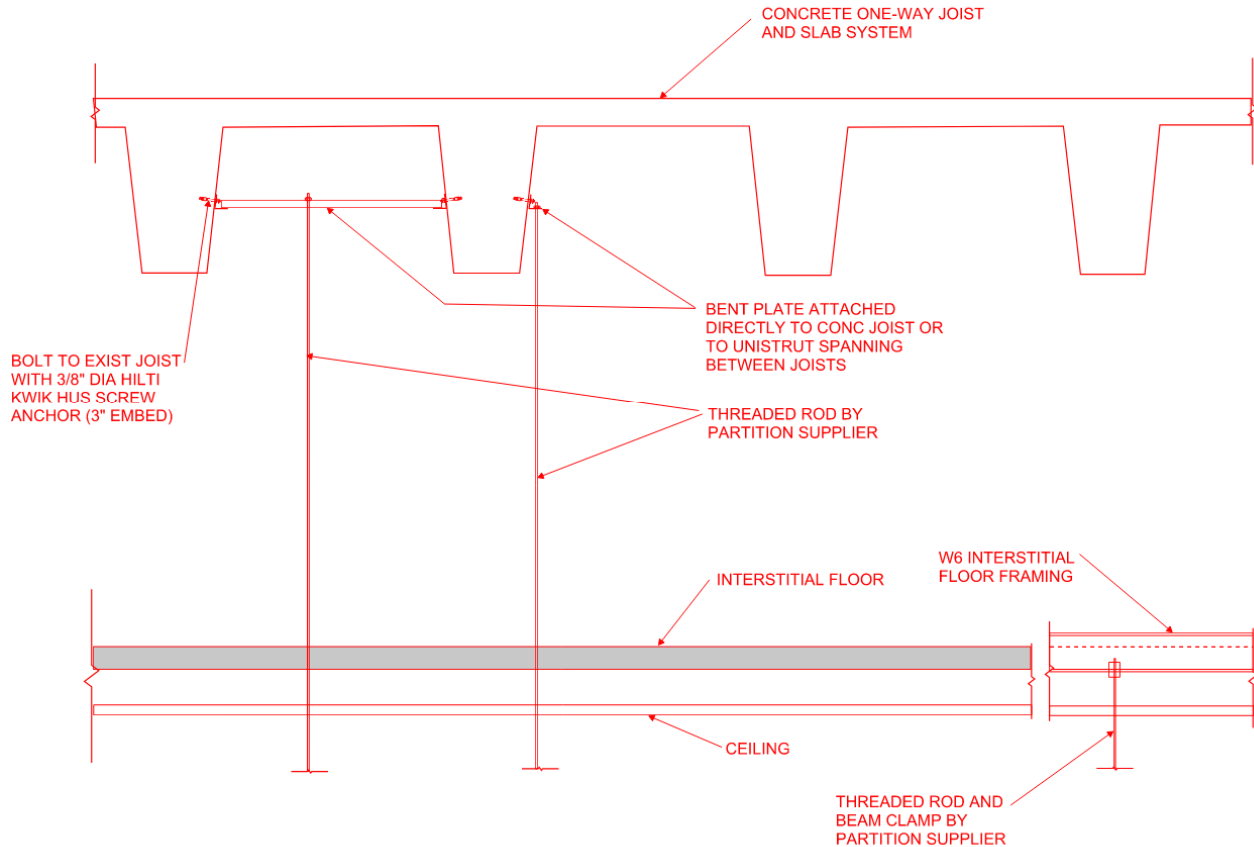
4. ADD to sheet detail 13, shown below: Shower Floor Recess for use @ STAFF LKR/TLT Rm 1H-105.

FLOOR DRAIN IN EXISTING SLAB



5. ADD to sheet detail 14, shown below: Toilet Partition Support @ STAFF LKR/TLT Rm 1H-105.

TOILET PARTITION SUPPORT



A001 ARCHITECTURAL RENOVATION & DEMOLITION GENERAL NOTES & KEYNOTES

- a. Delete this sheet in it's entirety.

A002 ARCHITECTURAL RENOVATION & DEMOLITION GENERAL NOTES & LEGENDS

- a. Sheet is to be renamed "WALL TYPES AND TYPICAL FRAMING DETAILS"
- b. DELETE: Note #4 "ALL GWB TO BE SMOOTH FINISH THROUGHOUT, LEVEL 5 FINISH, UNLESS NOTED OTHERWISE." Refer to specifications.
- c. ADD the following text to the "Temporary Partition Detail":
 - i. Where temporary doors occur within temporary partitions, door and frame assemblies are to provide a 45 min fire rating. Doors are to have locking and latching hardware meeting construction exiting requirements. Keying is to be per requirements of the COR.
 - ii. Temporary partitions are to extend to bottom of interstitial level floor structure.
- d. ADD DETAIL: "TYPICAL PARTITION CONTROL JOINT FRAMING AT DOORS", see attached.

AD100 OVERALL DEMOLITION PLAN - LEVEL 1

- a. Demolition General Notes and Demolition Key Notes on this sheet are applicable to all Phase 2 and Phase 3 Architectural Demolition Plans and RCP Sheets. Note: Not all demolition keynotes are used on each sheet.
- b. Replace all DEMOLITION GENERAL NOTES on sheet with the following:

DEMOLITION GENERAL NOTES

1. Where alterations expose, or require penetrations in the gypsum floor of the interstitial level above, patch the existing floor to restore integrity and fire resistance of the assembly. See structural for patch requirements.
2. Coordinate demolition scope with mechanical, electrical, and plumbing demolition and new work. MEP demolition includes demolition of elements in interstitial level above.
3. Demolition and construction must be sequenced and coordinated to insure the hospital's operations are continually maintained.
4. Demolition and replacement of existing exterior windows is to be sequenced to preserve existing building temperature, pressure, and security. Intended sequencing to be reviewed with COR prior to commencing work.
5. Demolition plan reflects information gathered from existing drawings and field inspections. Each contractor shall verify accuracy of Information and include all required demolition in his bid. All contractors shall report any discrepancies to the VA.
6. The locations of items to be demolished as indicated on plan are approximate and must be field verified. Any discrepancies in conditions depicted are to be reported to the COR before demolition occurs. Stop work and contact VA COR for direction if demolished walls contain unanticipated piping, electrical, or structural elements.
7. Existing elements to be demolished are shown dashed. Existing elements to remain are shown as light grey.
8. Provide new penetrations at openings as required for all new piping and ductwork.
9. Contractor to ensure all remaining devices, including lights, smoke detectors, and speakers remain functioning and are properly supported and protected during all demolition and rebuild operations. Cover all smoke detectors during pipe soldering, etc. to prevent false alarms.
10. Patch and/or repair all wall surfaces to match adjacent surface where demolition disturbs materials and surfaces otherwise not identified for demolition. Prep, prime and paint the entire wall at the repair.
11. dashed lines indicate demolition elements. Solid grey lines indicate existing elements to remain. U.N.O.
12. Existing windows and frames that are shown to remain on plans need to be protected from damage during demolition and construction.
13. Review items to be salvaged, and/or reused with COR prior to demolition. Return items identified by the drawings and by the COR which are not designated to be reused, or reinstalled.
14. Existing fireproofing damaged, or removed due to demolition, or construction activities is to be patched, or restored to level of required fire protection.
15. Remove existing finishes designated for removal to substrate below unless noted otherwise. Patch and repair substrate as required for installation of new finishes.
16. Refer to mechanical dwgs for related mechanical demolition & new construction not shown.
17. Refer to electrical and technology dwgs for related electrical & technology demolition & new

construction not shown.

18. Existing fire protection system to remain operational during construction unless otherwise arranged with the COR.
19. Refer to code review & life safety plans for fire & smoke partition legend.
20. Demolition waste to be removed to dumpster. The COR will approve of dumpster locations
21. Disruptive activities in occupied spaces to be limited as directed by cor. Coordinate well in advance with COR prior to beginning work.
22. in areas that are to be occupied and/or operational during the construction period and designated for after-hours and/or weekend work, the contractor shall return area to serviceable condition prior to the end of the contractor's work period including cleaning of area and reinstallation of acoustical tile ceilings.
24. Coordinate removal of existing door hardware to be replaced where new door hardware is identified on door schedule on existing doors.
25. Devices and utilities serving other floors are to be identified and protected during demolition. Any modification of these elements is to be coordinated with COR prior to work.
26. All structural elements are to be protected from damage.
27. Retain metal studs along exterior wall during demolition.
28. Ceilings not otherwise identified for removal are to be temporarily supported and any damaged elements are to be patched or replaced to return the ceiling to its original condition. Replace damaged elements with those matching existing materials and finishes.
29. See reflected ceiling plans for extents of ceiling to be replaced.

- c. Replace all DEMOLITION KEYNOTES on sheet with the following:

DEMOLITION KEY NOTES

1. Remove existing ceiling as needed and prep for new construction.
2. Remove existing casework.
3. Remove existing wall furring. Protect existing elements & structure.
4. Remove existing door. Paint frame as needed to match existing.
5. Remove existing door and frame.
6. Remove existing wall in its entirety.
7. Remove portion of exist gwb/metal stud wall. Protect adjacent surfaces.
8. Remove all plumbing fixtures in this room.
9. Protect and retain soiled linen chute which will remain in operation throughout construction serving other floors
10. Remove existing windows and frames. Protect adjacent surfaces.
11. Existing toilet rooms – remove all plumbing fixtures; remove ceramic tile flooring to concrete substrate. See mep demo drawings for capping of existing plumbing lines.
12. Remove existing finishes and ceiling.
13. Remove existing window, pre-cast sill, and framing. See detail 1/a501 for more information.
14. Sticky walk-off mat at construction entrances.
15. Contractor and material ingress/egress path. Maintain path for egress during construction.
16. Erect non-combustible temporary construction barrier. See temporary partition detail on a002.
17. Exist door at stairs to remain accessible during duration of construction for emergency egress.
18. See elec. For work associated w/ data closet; schedule & coordinate work in closet w/ cor.
19. Exist fire sprinklers in room to remain (typ).
20. Existing fire extinguisher cabinet.

21. Extents of work/laydown areas for this project.
22. Remove existing shower stalls, ceramic tile, and floor drains.
23. Demo work in this area requires removal of entire existing gwb/plaster ceiling, field verify. Remove ceiling in room. Remove as shown and coordinate removal and reinstallation of ceiling equipment (example: lighting and diffusers) in new ceiling. Contractor is responsible to Coordinate removal, salvage and reinstallation of other equipment (example: lighting and diffusers) that might be displaced in the process. Area shown is an approximate area to be removed. Verify existing conditions with COR during pre-construction walk thru, additional costs will not be allowed.
24. Complete demolition of area shown to interstitial level above. Exterior walls are to be demolished to metal studs behind existing surface. Verify and coordinate demolition required at perimeter of demolition area with scope of new materials and finishes. Remove interior walls, doors, windows, ceilings and finishes in their entirety U.N.O.
25. Existing doors used as a part of construction partition and are to be demo'd only when only when construction in the associated phase has been completed.
26. Existing doors to be secured shut and entry restricted from patients. Locking anti-ligature hardware is to be installed so as to secure these doors during phase 2. COR to review and approve hardware used and be provided access keys.
27. Remove existing floor base & floor finish to bare concrete and prep for new floor finishes. Refer to finish plans and finish schedules for new finishes and locations.
28. Remove wall mounted accessories. Patch and repair as needed to match existing.
29. Remove existing brick column

AD101 OVERALL REFLECTED CEILING PLAN DEMOLITION - LEVEL 1

- a. Delete existing Demolition General Notes and replace with "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."
- b.

AD101-P1 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA L - PHASE 1

- c. Delete existing Demolition General Notes and replaced with "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."
- a. Delete Keynote 17 at Stair, 6.
- b. Handrail demolition shown in corridor C1-64A is to occur as part of phase 2 demolition rather than phase 1.
- c. New accessible shower is to replace existing tub in room 1L-136A. Coordinate demolition requirements with those for new shower.
- d. Add the following General Notes
 - 1) Coordinate the extent of the demolition in this phase with the requirements for new construction including demolition required for access, or installation of MEP, devices, fixtures, and components.
 - 2) Where existing construction has been removed, patch or infill with new materials or finishes to match adjacent materials and finishes. Where matching finishes are not available, replace finishes with complimentary materials of like type for entire wall, floor area, etc.. Complimentary materials and extents are to be reviewed and approved by the COR.

- 3) Coordinate scope of demolition work with demolition required by Mechanical, Electrical, and Plumbing drawings for demolition, installation, or access required for work in this phase.
- 4) Provide temporary supports as necessary to preserve or support existing construction to remain.
- 5) At existing corridor C1-313, and 1H-118 existing handrails are to be demolished. New handrails are to be provided in Phase 2 construction.
- 6) Coordinate scope of demolition on this sheet with new construction requirements on sheet A101-P1.

AD101.A-P1 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA L - PHASE 1

- a. Demolition General Notes.
 1. Add Note: Remove existing handrails, Remove vinyl wall covering, patch and prepare walls for new paint in existing Corridors C1-58, C1-59, C1-60, C1-61, and C1-63.
 2. Patch drywall and prepare all patient rooms for new paint.
 3. Patch drywall and prepare for new paint in existing rooms IL-102, and IL-103
 4. At patient toilet rooms remove all ceramic tiles which have been damaged or has holes from the mounting of previous fixtures and toilet accessories.
 5. Remove ceiling projector, speakers, and wall mounted screen at existing rooms IL-130, and IL-109. Patch and prepare walls for new paint.

AD102-P2 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA K - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD102.A-P2 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA K - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD103-P2 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA H - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."
- a. Coordinate demolition of existing handrails including those shown as to remain with new construction scheduled.
- c. Work adjacent to occupied areas is to be scheduled per COR requirements as noise may impact occupied areas.

AD103.A-P2 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA H - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD104-P3 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA L - PHASE 3

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD104.A-P3 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA L - PHASE 3

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD201 EXTERIOR DEMOLITION ELEVATIONS

- a. Removal of exterior brick to bottom of window elevation required for new exterior brick shown in detail 8/A502. Verify new lintel is not required prior to demolition.

A100 OVERALL PLAN - LEVEL 1

- a. Replace text in Renovation General Notes in note #2 stating "All finishes and hardware to be anti-ligature." With "Fixtures, features, and hardware in areas with patient access are to be anti-ligature."

A101-P1 ARCHITECTURAL PLANS - LEVEL 1 - AREA L - PHASE 1

- b. At door C1—61D hinge locations are correct, however, door swing directions are to be reversed to avoid conflict with entry to Exam Rm, 1L-103.
- c. Contractor responsibility to construct new walls as required for continuity of existing smoke and fire barriers in area L. Coordinate new partition construction requirements with COR.
- d. Storage rooms 1-L121, and 1L-123 , walls of these rooms are to have a 1-hour fire rating.
- e. Phase 1 General Notes:
 1. Replace Note #3 in with the following text: "Replace the two existing non-locking fire extinguisher cabinets present in unit and the existing fire connection cabinet and replace with new flush mounted lockable fire extinguisher and fire connection cabinets. Verify location of new cabinets with COR."
 2. Delete Note #7. Refer to flooring information issued via this addendum as added to sheet AF-002.
 3. Replace Note #8 with the following text: "Replace the existing (6"x27" - Verify) vision lites present in 4 existing doors and replace the existing half lite windows present in two existing doors with new LG-1 glazing. Replace existing trim screws with tamper resistant screws at these locations"
 4. Add Note #10. Coordinate locations requiring alterations, or access with scope of Mech., Elec, or Plumbing work. Patch areas of walls removed or disturbed with materials and finishes of like kind.
 5. Add Note #11 Provide new handrail (HR-2) where existing handrail was removed in Corridor C1-58, C1-59, C1-60, C1-61, C1-61D, and in Sally Port.

A101.A-P1 ARCHITECTURAL PLANS - LEVEL 1 - AREA L - PHASE 1- RCP

- a. Refer to MEPF drawings for quantities and locations of ceiling mounted lights, diffusers and devices.
- b. At Rm IL-103A provide new painted gypsum board ceiling.
- c. Provide new ceiling components as necessary due to demolition, including new ceiling grid components and panels, to match or complete existing where new walls interrupt existing ceiling.
- d. Corridors C1-58, C1-59, C1-60, C1-61, and C1-63 and L1-61D are to receive new tamper resistant 2x4 ceiling. Basis of Design for new ceilings is Armstrong Metalworks Secure Lock tamper resistant ceiling system.

ARCHITECTURAL DRAWING REVISIONS – GENERAL

1. Typical resident toilet rooms to be constructed in Phase II and III have been modified. Perimeter walls of Resident room remain unchanged. Shower configurations are to be configured as shown on the revised Typical Resident Room layouts attached to this addendum. Addendum 2 Sheet A401, details 1,2, and 3 and replace prior details 1, 2, and 3 on sheet. Alterations include reconfiguration of shower and sloped floor configuration and extents for recess in new bathroom and shower floors. Slopes are to be ¼" / foot in shower and the sloped area shown adjacent to shower drain. Floors in toilet room to slope as shown to linear drain.
2. Interior window frames in Theatre Rm 1K-118, Alcove C1-718, and RN Station 1-L-120 each of these locations show 2 windows forming an outside corner condition. These windows are to be constructed as a single window assembly and not as separate window frames.
3. All wood blocking shown in architectural drawings is to be fire treated wood blocking.

A201 EXTERIOR ELEVATIONS

- a. Refer to detail 8 / 502 for locations of new brick.

A302 BUILDING & WALL SECTION DETAILS

- b. Remove all references to VA provided materials and finishes. All feature wall materials and finishes are to be provided by the Contractor. Contractor to coordinate with VA on product and finish selection.
- c. Basis of Design products for feature wall are as follows:
Decorative Artificial Plants: Fire Retardant Artificial Foliage roll, or mat by Plantscape. Boxwood foliage or similar with final selection by VA.
Stone: Veneer limestone, Honey Stone Colors in Ashlar pattern and veine cut blend of honed and polish finished stone.

A402.A ENLARGED ARCHITECTURAL PLANS

Lockers shown in elevations are to be installed with a 4" concrete base and a prefinished sloped metal top with matching finish to lockers.

A502 ARCHITECTURAL DETAILS

- a. Detail 7/A502: Contractor to provide threaded rod and supporting structure above per details 7,8, and

9 on sheet SG008.

- b. Detail 8/A502: Drawings indicate new exterior wall assembly at pier. Wall assembly requires application of air barrier on exterior sheathing. See attached spec section:

072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR PERMEABLE

- c. Detail 8. Continue wall (Wall type C) from WON DOOR pocket to face of exterior sheathing to provide continuity of smoke and fire rated wall to exterior wall.
- d. Detail 9. Coiling shutter has been deleted from this location. Construct soffit as shown.

A503 ARCHITECTURAL DETAILS

- a. Detail 8. FEC is to have an anti ligature cabinet pull.
- b. Detail 10. Refer to item #20 on Technical Questions and Responses. Pocket shown in detail will be revised to length required for a 40' door.

A701 DOOR & WINDOW SCHEDULES & DETAILS

- a. Door widths have been updated as per the summary below, in accordance with VA facility specific standards.
 - 1. Phase 1: Doors 1L-103, 1L-103A, 1L-105A, 1L-108B, 1L-112A, 1L-127A, 1L-128A, 1L-134A, 1L-135A, 1L-136B and 1L-137B: 44" width.
 - 2. Phase 2: Doors 1K-118 and 1K-119A: 44" width.
 - 3. Phase 3: Doors 1L-101, 1L-102, 1L-104, 1L-105A, 1L-105B, 1L-107A, 1L-107B, 1L-110, 1L-112, 1L-113A, 1L-114, 1L-116, 1L-121, 1L-122, 1L-123, 1L-123A, 1L-124, 1L-124A, 1L-125, 1L-125A, 1L-126, 1L-126A, 1L-128, 1L-128A, 1L-128-B, 1L-128C, 1L-128, 1L-129: 44" width.
- b. For Door Type 'G', Overhead Door, provide of stainless steel material.
- c. At all patient toilet rooms replace current door type with new door type "I". Door Type I - Basis of Design: Norva Plastics Suicide Prevention Door, Version 1.
(Norva Plastics Inc., norvaplastics.com, 757-622-9281)
- d. Windows W4, and W21 at Work Room, 1H-110A are to be a 60-minute fire-rated system that incorporates butt-glazed fire-resistive glass with a fire-resistive perimeter frame. Basis of Design for window and glazing system: Superlite II – XL 60, Architectural Series (Mfgr: Saftifirst), Finish to match windows by section 10 23 10.
- e. Revise Schedule to change Frame type at patient room entry doors to be new frame type 10 as described on narrative for sheet A702.
- f. Refer to assemblies identified to be provided by section 10 23 10 in the prior addendum (except as noted in item c above for W4 and W21). Remove all references to CRL products as the basis of design. Basis of Design has been revised as follows so as to accept laminated glass:
Glazing is per section 08 80 00 for glass window and door assemblies. Frame, Rails and hardware are to be provided as follows:
 - a. Contractor to provide all hardware and accessories for complete installation. Hardware components are to be provided with appropriate models for door and glass lite size and functionality identified on plans, elevations.

- b. Hardware Basis of Design: MUNDUS Premium Hardware by **Dormakaba** at glass window and door assemblies; Hardware includes:
 - 1. Patch Fittings
 - 2. Rails (Frame height to correspond to 2-1/2" Frame for W4, and W21)
 - 3. Pivot Hinges (with Closer function)
 - 4. Clear gaskets and seals between glass panes (and at side edges in locations where smoke seals are required).

A702 DOOR & WINDOW DETAILS

- a. Frame Type 2 – Not Used
- b. Frame Type 1 – Glazing to be IL-1B.
- c. Window Type 1 - Glazing to be IL-1B.
- d. Refer to Addendum narrative for Sheet A701 for revisions to Windows W4 and W21 and assemblies provided under spec section 10 23 10..
- e. Refer to Addendum narrative for
- b. Add new frame type (10) – 2" Hollow metal frame for use at patient room entry doors. Stopless Frame to accommodate emergency stops as specified in section 08 71 00.

A703 DOOR & WINDOW DETAILS

General Notes:

- a. Add General Note: Frame and glazing type shown on details are approximations and may not represent frame profiles and glazing type as scheduled or specified. Refer to associated specification sections for frame information and frame elevations, as amended in addendum 2, for frame and glazing types.
- b. Details 2 and 4 – Provide solid surface sill at sill condition.
- c. Detail 6 – Provide clear silicone glazing gasket at perimeter of frame for smoke seal.
- d. Details 7 and 8 - Refer to Addendum narrative for Sheet A701 for revisions to Windows W4 and W21 and assemblies provided under spec section 10 23 10.

AF-002 ARCHITECTURAL FINISH PLAN & SIGNAGE SCHEDULE

- e. At shower stalls floor porcelain tile shall be installed over tapered mortar bed, sloped ¼" per foot toward floor drain. Line shower stall floor with tile sheet waterproofing isolation membrane and wrap up vertical faces of shower stall minimum 8", behind finished wall tile but over wall sheathing. Provide liquid-applied elastomeric waterproofing membrane beneath the remainder of the toilet room porcelain tile flooring. Slope remainder of toilet room porcelain tile flooring by tapering the mortar bed as indicated in the updated attached details 1, 2 and 3 from sheet A401.
- f. Phase-I Finish Schedule:
 - 1. Paint (P-1), All walls (Corner to corner): Corridor C1-58, C1-59, C1-60, C1-61D, C1-63, and Sally Port, IL-102, and IL-103.
 - 2. Paint (P-5), Ceiling: IL-102, and IL-103.
 - 3. Paint – Sherwin Williams (Color – SW6219 Rain, eggshell), All walls (Corner to Corner), All Patient

Rooms

4. Ceramic Tile, 4"x4" Daltile, color Matte Biscuit K775, (Existing tile match for infill and replacement tile): Patient Toilet Room.

AF102 ARCHITECTURAL FURNITURE PLAN – LEVEL 1 – AREA K

- a. HR-1 locations identified on this sheet are to be relabeled HR-2

AF104 ARCHITECTURAL FURNITURE PLAN – LEVEL 1 – AREA L

- a. HR-1 locations identified on this sheet are to be relabeled HR-2
- b. Handrail (HR-2) and Crash Rail (CR-1) are to be added to both sides of Corridor, C1-60.
- c. Handrail (HR-2), and Wall Protection (RSV-1 to a height of 34" A.F.F) are to be added to both sides of Corridor, C1-61.

AI-101 CASEWORK SECTIONS & DETAILS

- a. All blocking shown or identified as wood is required to be fire treated wood.
- b. All base cabinets should be provided one adjustable, or fixed shelf.
- c. All millwork door pulls in patient accessible areas shall have anti-ligature pulls, style to match facility standards, as approved by the VA during shop drawing approval process.
- d. All millwork drawers and doors shall be provided a keyed lock.

QH100 TYPICAL MOUNTING HEIGHTS AND EQUIPMENT SCHEDULE

- a. Shower seats are to be of portable style, furnished and installed by the VA. There will be no built-in shower benches in this project.

MECHANICAL ADDENDUM

- SHEET FX100 – FIRE SUPPRESSION PLAN – OVERALL FINAL
 - Existing sprinkler zone boundaries are modified. Connect sprinklers in former sprinkler zone 35⁸ to sprinkler zone 33⁷. Provide hydraulic calculations during the submittal process that demonstrate adequate pressure/flow at remote areas within revised sprinkler zones.
- SHEET FX102-P2 – FIRE SUPPRESSION PLAN – AREA K – PHASE 2
 - Refer to comment for Sheet FX100 regarding revised sprinkler zone.
- SHEET FX103-P2 – FIRE SUPPRESSION PLAN – AREA H – PHASE 2
 - Refer to comment for Sheet FX100 regarding revised sprinkler zone.
 - The identification of EX Office as an Ordinary Hazard (Gr. II) appears to be in error. VA to confirm if the room will house chemicals or storage racks above 8' that would require this hazard designation.
- All Plumbing and Mechanical Drawings:
 - Numerical grid bubbles do not coordinate with existing building or architectural plans. Bidding contractors shall make drawing references using grid bubble designation found on the architectural or electrical plans.
 - Interstitial plans overlaid on floor plan below. While this method does make alignment with the floorplan below more straight-forward, it also leads to confusion as to where the piping and ductwork are to be routed. Contractor shall bid documents assuming that domestic water, sanitary vent and HVAC ductwork and piping is located in the interstitial space above. The mechanical contractor is responsible for all core drilling required for extension of piping and ductwork between levels. No flexible duct is permitted at floor penetration; hard duct only with fire sealant around each penetration to maintain a 1-hour rating (typical of all penetrations).
- SHEET PD102U-P2 – PLUMBING DEMOLITION PLANS – UNDERGROUND - AREA K - PHASE 2
 - There is a tunnel, extending roughly between Gridlines V and W, below the project area. For all sanitary piping that lies outside of the basement area, saw cut floor for pipe demolition. For all sanitary piping that is located in the tunnel that will be removed, patch wall at former pipe penetrations.
- SHEET PD103U-P2 – PLUMBING DEMOLITION PLANS – UNDERGROUND - AREA H - PHASE 2
 - Drawing title is incorrect as piping is located on basement interstitial level. Saw cut floor for pipe demolition that occurs beyond the basement at approximately Gridline 7.
- SHEET PD104U-P2 – PLUMBING DEMOLITION PLANS – UNDERGROUND - AREA L - PHASE 3
 - Most piping in this area is underground, but there are basement and steam tunnel walls that will interfere with pipe demolition and some demolition will occur in the interstitial space below. Saw cut floor on grade for pipe demolition. Patch former wall penetrations.
- SHEET PD101-P1 – PLUMBING DEMOLITION PLANS - AREA L - PHASE 1
 - Plumbing fixtures are shown demolished. Contractor shall include the work effort to demolish walls and existing plumbing fixture carriers.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and

capped at existing valves, will not be acceptable.

- SHEET PD102-P2 – PLUMBING DEMOLITION PLANS - AREA K - PHASE 2
 - Key Note PD02 directs contractor to demo branch piping and cap at main; however according to drawing, mains are to be demolished as well. Contractor shall remove all domestic cold, hot, recirculation and sanitary vent piping within the scope of work.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and capped at existing valves, will not be acceptable.
- SHEET PD103-P2 – PLUMBING DEMOLITION PLANS - AREA H - PHASE 2
 - Key Note PD02 directs contractor to demo branch piping and cap at main; however according to drawing, mains are to be demolished as well. Contractor shall remove all domestic old, hot, recirculation and sanitary vent piping within the scope of work.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and capped at existing valves, will not be acceptable.
- SHEET PD104-P3 – PLUMBING DEMOLITION PLANS - AREA L - PHASE 3
 - Key Note PD02 directs contractor to demo branch piping and cap at main; however according to drawing, mains are to be demolished as well. Contractor shall remove all domestic cold, hot, recirculation and sanitary vent piping within the scope of work.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and capped at existing valves, will not be acceptable.
- SHEET PP102U-P2 – PLUMBING PLANS – UNDERGROUND - AREA K - PHASE 2
 - There is a tunnel, extending roughly between Gridlines V and W, below the project area. Saw cut floor for installation of new sanitary sewer piping that extends outside the boundary of the tunnel. Provide modular link sleeves at all pipe penetrations of concrete walls. Patch walls at former pipe penetrations. Patch floor that has been saw cut for demolition and installation.
 - It is the contractor's option to redesign sanitary piping shown on the plans to minimize the amount of tunnel wall penetrations and to coordinate with the existing north/south pipe runs. Contractor's layout must be submitted to the COR in a 3D rendering and approved prior to the commencement of construction.
- SHEET PP103U-P2 – PLUMBING PLANS – UNDERGROUND - AREA H - PHASE 2
 - Ignore drawing title; piping is located on basement interstitial level, not underground.
- SHEET PP104U-P3 – PLUMBING PLANS – UNDERGROUND - AREA L - PHASE 3
 - Saw cut floor on grade for installation of new sanitary sewer piping. Provide modular link seals at all pipe penetrations of concrete walls. Patch walls at former pipe penetrations. Patch floor that has been saw cut for demolition and installation.
- SHEET PP101-P1 – PLUMBING PLANS – LEVEL 1 - AREA L - PHASE 1
 - Disregard key note direction to connect to existing waste vent and water piping. Provide new

sanitary sewer, vent and domestic water piping for all plumbing fixtures. Provide and install carriers for all wall-mounted fixtures.

- SHEET PP102-P2 – PLUMBING PLANS – LEVEL 1 - AREA K - PHASE 2
 - Disregard key note direction to connection to existing domestic water pipe mains. Provide new cold water, hot water and recirculating hot water mains and connect to existing at the perimeter of the project area.
 - Disregard key note PP11 and the installation of a circuit setter at each sink. Provide ASSE 1070 mixing valve at each sink. Refer to PP102-P2 rev1 for redesign of domestic water (red lines) and hot water recirculation system (orange lines). In lieu of circuit setters at each toilet group, extend hot water piping so that it is positioned above the plumbing fixture that it serves, to minimize standing water and comply with the VA Plumbing Design Manual requirements.
 - Note: that an additional solenoid valve is required for each toilet group, as shown on the revised plumbing plan.
 - Key note PP05 indicates solenoid valves for shutoff override for every patient room. While the plumbing plan shows 4, now 5, valves for back-to-back toilet rooms, the electrical drawings only show one electrical connection for all valves. Provide an electrical connection for each valve. Provide a 12" L-VIS touchscreen monitor, located at the Nurse's Station that is pre-programmed to shutoff water flow within an individual Patient Room.
- SHEET PP103-P2 – PLUMBING PLANS – LEVEL 1 - AREA H - PHASE 2
 - Similar to comments for PP102-P2, disregard key note to install a circuit setter at each sink. Provide ASSE 1070 mixing valve at each sink. Refer to PP103-P2 rev 1 for redesign of domestic water (red lines) and hot water recirculation system (orange lines). extend hot water piping so that it is positioned above the plumbing fixture that it serves, to minimize standing water and comply with the VA Plumbing Design Manual requirements.
 - Note: that an additional solenoid valve is required for each toilet group, as shown on the revised plumbing plan.
 - Contractor shall also disregard key notes PP12 and PP13 and provide recirculation balancing valves with the flows listed on the revised plan.
- SHEET PP104-P3 – PLUMBING PLANS – LEVEL 1 - AREA L - PHASE 3
 - Apply comments for PP102-P2 and PP103-P2 to the work area shown on this page.
- PP601 – PLUMBING SCHEDULES
 - Provide ASSE 1070 mixing valve on all lavatories and sinks per Directive 1061 requirements.
 - In lieu of high efficiency, low flow plumbing fixtures for P-101, P-103, P-104 and P-201, provide standard efficiency plumbing fixtures, (1.6 GPF water closet and 1.0 GPF urinal) which are typical for this facility.
 - To clarify, P-701 shall be ADA, dual head, flush-mounted, ligature-resistant wall shower.
- GENERAL – typical all HVAC plans
 - *Existing ductwork is unlabeled and vague. Contractor shall add duct tags and callouts to coordination drawings to differentiate supply, return and exhaust systems to facilitate installation.
- SHEET MH-100
 - DUCT CLEANING: As part of the demolition services, clean all supply air, return air and exhaust air

duct mains located in Areas H, K, and L. For Areas H and K, this task includes (2) 28"Ø SA, (1) 32"Ø SA, (2) 28"Ø RA, (1) 32"Ø RA, (1) 26"Ø EA and (1) 24"Ø EA ducts. For Area L, this task includes (2) 28"Ø SA, (2) 28"Ø RA and (1) 24"Ø EA ducts. Duct cleaning shall extend, for supply airflow, from the respective air handling unit to the end of the duct run and, for return and exhaust airflow, from the start of the duct run to the respective return or exhaust fan.

- SHEET MH103-P2 – MECHANICAL HVAC PLANS – LEVEL 1 – AREA H – PHASE 2
 - Disregard 12" SA and 14" RA ductwork that is denoted to be extended for future P3 work. Areas must be connected to the mains that serve that smoke control zone and cannot cross from one smoke control zone to another. As a result, the ducts identified as extended for future phase 3 work cannot extend into SCZ 1-21 as they are dedicated to SCZ 1—22. See comments on MH104-P3 for correct duct connections.
- SHEET MH104-P3 – MECHANICAL HVAC PLANS – LEVEL 1 – AREA L – PHASE 3
 - Connect VAV box 1H110B to 32" SA that serves SCZ 1-23. Connect return grille from 1H-110B-2 to 12"RA duct located in 1H-110A that serves SCZ 1-23.
 - Disregard balancing dampers are shown as new. They were installed in Phase 2 and will be existing in P3.
- SHEET MP101-P1 – MECHANICAL PIPING PLANS – LEVEL 1 – AREA L – PHASE 1
 - Thermostats for VAV boxes L161D and C163 are shown in the middle of a doorway. Thermostat for L144 is shown located on a door jamb. Confirm that there is adequate space for a thermostat to mount or relocate as required.
- SHEET MP102-P2 – MECHANICAL PIPING PLANS – LEVEL 1 – AREA K – PHASE 2
 - Disregard two control valves for two small pieces of radiant panel in Room 1K-103. Contractor to interconnect panel piping across column so that water flows from one panel to the next, in series. Provide one control valve for the radiant panel.
 - For missing waterflow values for fin tube at 1K-130 Dining (Gridlines T/39), contractor shall assume 1.0 GPM per every 10,000 BTU/hr (based on 20° delta-T) for any equipment without flow information.
 - Key note MP01 should reference all addendum notes for drawing MH301.
- SHEET MH104-P3 – MECHANICAL HVAC PLANS – LEVEL 1 – AREA L – PHASE 3
 - For missing water flow values for all fin tube and radiant panels along south perimeter, contractor shall assume 1.0 GPM per every 10,000 BTU/hr (based on 20° delta-T) for any equipment without flow information, as follows.
 - 1L-130 Dining; 1300 BTU for RP-1.
 - 1L-121 Single; 2300 BTU for RP-1
 - 1L-122 Single; disregard two control valves for two small pieces of radiant panel. Contractor to interconnect panel piping across column so that water flows from one panel to the next, in series. Provide one control valve for the radiant panel. 1400 BTU total for both RP-1.
 - 1L-123 Single; 2300 BTU for RP-1
 - 1L-124 Single; 1500 BTU for RP-1
 - 1L-125 Single; 1600 BTU for RP-1
 - 1L-126 Single; 1500 BTU for RP-1

- SHEET MH301 – ENLARGED MECHANICAL PLANS & SECTIONS
 - Note that phasing of AHU installation will be the sole responsibility of the contractor. Installation schedule should have replacement during seasonal periods with mild weather to minimize potential risk and discomfort caused by outage. Acceptable period of time to replace this AHU would be either between March – May or September – November. Do not schedule any AHU replacement activities outside of those 3-month windows to avoid extreme weather conditions of winter or summer. Temporary air handling unit may be sized in accordance to more mild temperatures anticipated during actual outage timeframe scheduled (based on average historic weather data).
 - Drawings indicate all materials, both demolished and new, to be transported through the exterior wall louver. Note that this louver has structural bracing that may limit size of material that can be passed through that opening. In addition, the shaft behind the louver plenum is continuous which will leave an approximate 72” wide gap that needs to be bridged over and secured with appropriate safety rails per contractor’s safety officer requirements. Provide temporary lockable door at temporary opening to both secure facility during overnight/weekend periods, and also create a weather tight seal from outside elements.
 - Note that contractor may opt to transport material through the facility instead of utilizing this louver opening. In that scenario the contractor shall coordinate the material transport path, and proposed acceptable hours during the day when staff/patient would be least impacted, to both the COTR and VA Infection Control Representative.
 - Air handling unit shall assume to be delivered on pallets completely disassembled, or shipped to site in a ‘loosely bolted’ configuration for site disassembly and reassembly on site. Contractor to coordinate largest section of equipment or materials in either transport strategy outlined above.
 - Note that it shall be a contract requirement of the AHU manufacturer to provide a factory technician to oversee assembly and start-up of this AHU to certify warranty. This visit shall be a minimum of 1-week in duration and include a site pressure test at 150% of the AHU operating pressure to be witnessed by the factory representative to ensure it passes their standard/documented leakage rate requirements of a normally factory assembled unit.
 - Selection and positioning of temporary air handling unit to be used during this AHU replacement shall be coordinated by the contractor. Submit proposal showing cut sheets for all temporary equipment being used, source and utility tie-in points for heating/cooling, and temporary BAS integration and safeties to be provided for remote monitoring during use of this temporary service.
 - Temporary air handling unit shall have an airflow capacity of 6,000 CFM, 10 HP fan, a cooling capacity of 35 tons, a heating capacity of 420 MBH and MERV 14 final filters. Unit shall be located directly outside of the ‘K’ mechanical room. Extend a 26” diameter temporary duct from AHU, through OA louver, into the mechanical room and interstitial space. Extend duct approximately 300 feet north and connect to existing 26” diameter supply at Gridline 12/V.5. Similarly, extend a 26” diameter return duct from existing 26” diameter main at Gridline 12/V.5, 300’ to return fan, 70-RF-07, located in ‘K’ mechanical room.
 - Temporary unit is assumed to be electric but contractor may extend temporary chilled water piping to temp unit, at no additional cost to the VA. MERV 14 final filters may be

located in the AHU or mounted in the ductwork inside the mechanical room.

- Contractor should also submit a comprehensive weekend outage plan for both switch over to temporary unit, and reconnection to replaced AHU. All HVAC outages shall be scheduled during weekend/overtime hours that are approved by VA representative a minimum of 2-weeks in advance.
 - Unless indicated otherwise, contractor shall match pipe size connection to all new coils and humidifiers for replaced AHU. Contractor shall field verify exact piping sizes on site and provide all new piping components as indicated on details. Do not reutilize any piping or components without direct approval of VA representative.
 - Contractor is responsible to provide a 4" thick concrete equipment pad for new AHU, and all other associated equipment and components provided within mechanical room. Coordinate size of equipment curbs with manufacturer shop drawings and maintain a level condition for all installations. Also verify that appropriate guard rails are anchored to floor to protect any equipment at floor level that may be prone to damage from mobile carts or lifts.
 - Correction: key note MN07 is referencing return fan 70-RF-7, not 70-RF-8. Existing return fan motor is 5HP. Contractor to confirm motor size after TAB measurements are taken per key note MD01 on MD102-P2.
- SHEET MH502 – MECHANICAL DETAILS
 - Detail 1; provide additional isolation valve on return side of chilled water coil at main.
 - SHEET MH601 – MECHANICAL SCHEDULES
 - Disregard description for RG2 in GRD schedule. The correct description is PERFORATED RETURN GRILLE.
 - Air Handling Unit Schedule; 70-AHU-08 provide top-fed steam coil (LJ Wing). Bottom-fed type steam coils are prohibited.
 - SHEET MH802 – MECHANICAL CONTROL DIAGRAMS
 - Verify that there is a minimum OA damper and an economizer damper. There is no mention of it elsewhere.
 - Provide RA plenum pressure measurement.
 - Provide a control valve for the steam humidifier and add to Points List.
 - Provide (2) steam control valves in the Points List for steam coil.
 - Provide return fan high static alarm and supply plenum pressure measurement and high static alarm. Add to Points List.
 - Clarification; there is only one return fan. Disregard 'fans'.

ELECTRICAL ADDENDUM

- SHEET EP103-P2 – ELECTRICAL PLAN AREA K PHASE 2
 - Remove all CI light fixtures from room 1K-124. Provide Nova Flex MUD-IN 6214 Channel around perimeter of room with RGBW SERIES LED strip. Provide S3i Touch RGBW dimmer outside room for control. Provide required power supply. NOVA FLEX as basis of design.
- SHEET EP105-P3 – ELECTRICAL LIGHTING PLAN AREA L PHASE 3
 - Remove all CI light fixtures from room 1L-129. Provide Nova Flex MUD-IN 6214 Channel around perimeter of room with RGBW SERIES LED strip. Provide S3i Touch RGBW dimmer outside room for control. Provide required power supply. NOVA FLEX as basis of design.
- SHEET EP107 – ELECTRICAL RISER DIAGRAMS G1 & G2
 - Add Note. Contractor shall bid documents with homeruns located in the interstitial space above. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations).
 - *Remove and replace panels NL1G1-1A, NL1G1-1B and CL1G2-1. Replace panel NL1G1-1A and NL1G1-1B like for like. Provide 42 pole panel for CL1G2-1.
 - *Remove and replace transformers NT1G1-1 and CT1G2-1
- SHEET EP108 – ELECTRICAL RISER DIAGRAM H1
 - Add Note. Contractor shall bid documents with homeruns located in the interstitial space above. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations).
 - *Remove and replace panels NL1H1-1A, NL1H1-1B, CL1H1-1. Replace panel NL1H1-1B like for like. Provide 42 pole panel for NL1H1-1A. Provide 60 pole panel for CL1H1-1.
 - *Remove and replace transformers NT1H1-1, CT1H1-1
 - Panel NL1H1-2 does not appear on riser sheet EP108 as it should. Remove and replace panel NL1H1-2.

LOW VOLTAGE AND SECURITY ADDENDUM

- SHEET LV102 – LOW VOLTAGE SYSTEMS PHASE 2 – AREA H
 - Add Note. Contractor shall bid documents with cable tray located in the interstitial space above. Provide layout to COR prior to installation for review. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations). Cable tray to follow building lines at 90 deg angles.
- SHEET LV103 – LOW VOLTAGE SYSTEMS PHASE 2 – AREA K
 - Add Note. Contractor shall bid documents with cable tray located in the interstitial space above. Provide layout to COR prior to installation for review. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations). Cable tray to follow building lines at 90 deg angles.
- SHEET LV104 – LOW VOLTAGE SYSTEMS PHASE 3 – AREA L

- Add Note. Contractor shall bid documents with cable tray located in the interstitial space above. Provide layout to COR prior to installation for review. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations). Cable tray to follow building lines at 90 deg angles.

ATTACHMENTS:

Specification Sections

07 27 26 FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR PERMEABLE
28 05 13 CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY
28 05 28.33 CONDUITS AND BACKBOXES FOR ELECTRONIC SAFETY AND SECURITY

Sheets (30"x42")

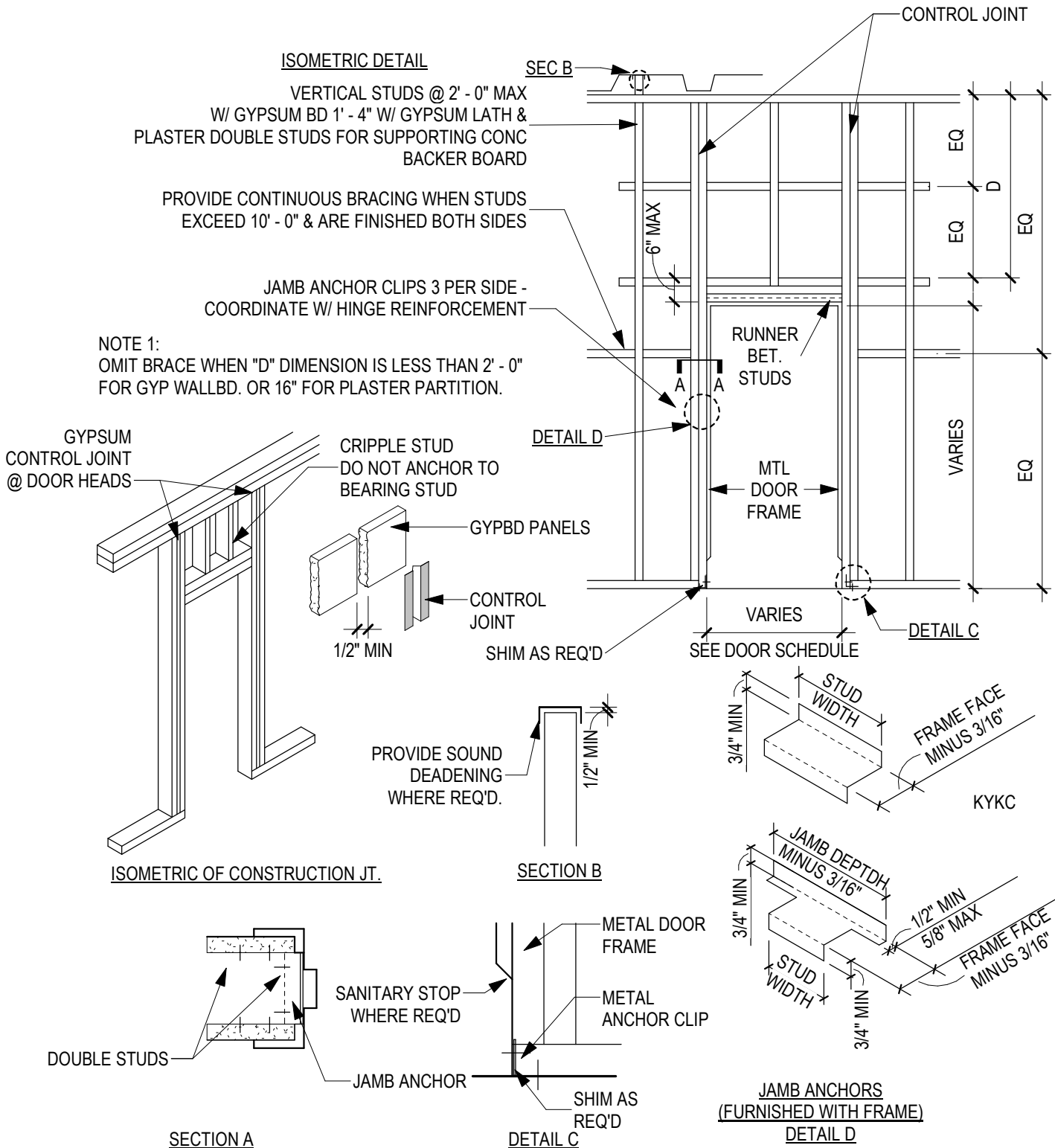
Sheet PP102-P2 Replace Sheet with Addendum 2, Sheet PP102-P2
Sheet PP103-P2 Replace Sheet with Addendum 2, Sheet PP103-P2
Sheet PP104-P3 Replace Sheet with Addendum 2, Sheet PP104-P3

Drawing Details (8-1/2"x11")

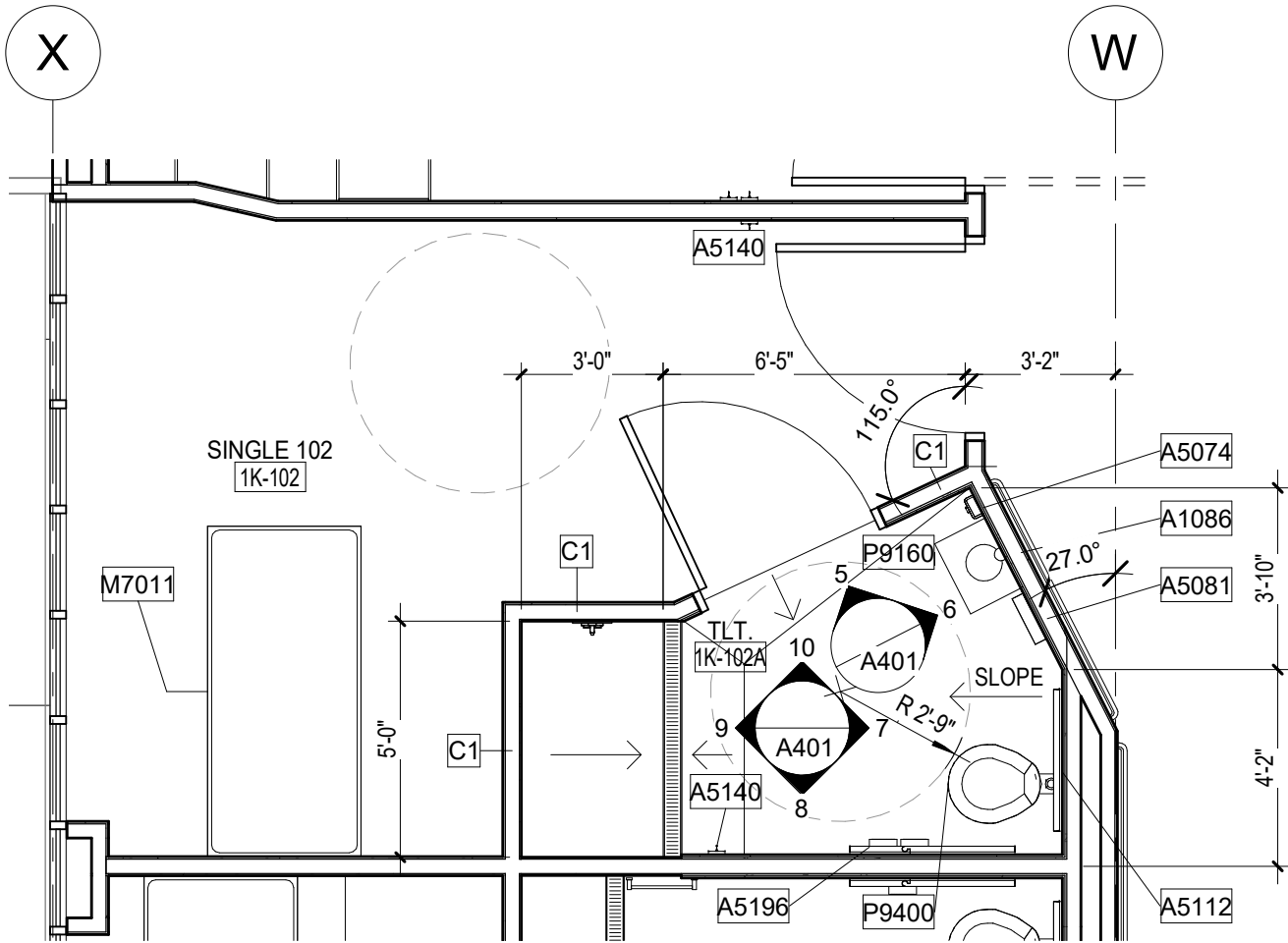
Sheet A002 New Detail 1: TYPICAL PARTITION CONTROL JOINT FRAMING AT DOORS
Sheet A401 Replace Detail 1 with Addendum 2, Sheet A401, Detail 1
Sheet A401 Replace Detail 2 with Addendum 2, Sheet A401, Detail 2
Sheet A401 Replace Detail 1 with Addendum 2, Sheet A401, Detail 3

Drawings (8-1/2"x11")

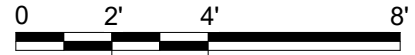
New Detail: Duct to Linear Diffuser Connection Detail
New Detail: Temp AHU location



1 TYPICAL PARTITION CONTROL JOINT FRAMING AT DOORS
 1 1/2" = 1'-0"



TYPICAL- SINGLE PATIENT AND TOILET RM



1/4" = 1'-0"

Room Number	JSN	Content Name	Provided By
SINGLE	A5140	Hook, Garment, Security	CC
SINGLE TOILET	M7011	Bed, Platform, Without Visible Legs, Psychiatric	CC
SINGLE TOILET	A1086	Mirror, Safety, Psychiatric	CC
SINGLE TOILET	A5074	Soap Dispenser, Recessed, SS, Psychiatric	CC
SINGLE TOILET	A5081	Dispenser, Paper Towel, SS, Recessed, Psychiatric	CC
SINGLE TOILET	A5112	Grab Bar, Psychiatric	CC
SINGLE TOILET	A5140	Hook, Garment, Security	CC
SINGLE TOILET	A5196	Dispenser, Toilet Tissue, Psychiatric	CC
SINGLE TOILET	A5207	Bar, Towel, 1" Diameter, SS, Surface Mntd, Psych	CC
SINGLE TOILET	P5350	Shower, Patient, Psychiatric	CC
SINGLE TOILET	P9160	Lavatory, China, for Disturbed Patient	CC
SINGLE TOILET	P9400	Toilet, Wall Hung, Siphon Jet, Psychiatric	CC

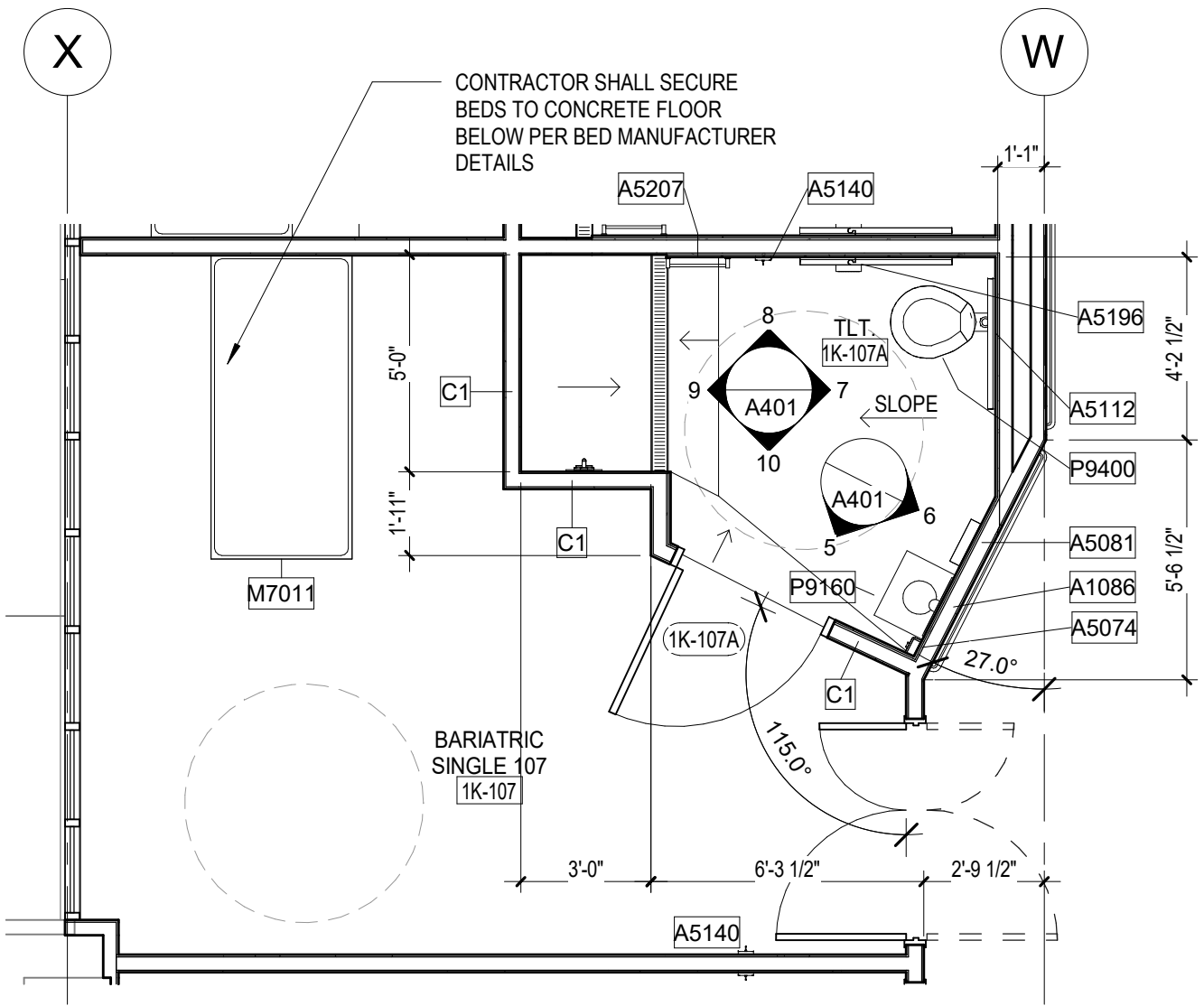


U.S. Department
of Veterans Affairs

RENOVATE MH WARD 1L,1H,1K
TPY SINGLE PATIENT ROOM

DETAIL
1/A401

VA MEDICAL CENTER, MINNEAPOLIS, MN
RENOVATE MENTAL HEALTH WARD. BLDG 1338
Date: 04/02/21 VA JOB NUMBER: 618-17-127



TYPICAL - BARIATRIC SINGLE AND TOILET RM

1/4" = 1'-0"

Room Number	JSN	Content Name	Provided By
DOUBLE PATIENT	A5140	Hook, Garment, Security	CC
DOUBLE PATIENT TOILET	M7011	Bed, Platform, Without Visible Legs, Psychiatric	CC
DOUBLE PATIENT TOILET	A1086	Mirror, Safety, Psychiatric	CC
DOUBLE PATIENT TOILET	A5074	Soap Dispenser, Recessed, SS, Psychiatric	CC
DOUBLE PATIENT TOILET	A5081	Dispenser, Paper Towel, SS, Recessed, Psychiatric	CC
DOUBLE PATIENT TOILET	A5112	Grab Bar, Psychiatric	CC
DOUBLE PATIENT TOILET	A5140	Hook, Garment, Security	CC
DOUBLE PATIENT TOILET	A5196	Dispenser, Toilet Tissue, Psychiatric	CC
DOUBLE PATIENT TOILET	A5207	Bar, Towel, 1" Diameter, SS, Surface Mntd, Psych	CC
DOUBLE PATIENT TOILET	P5350	Shower, Patient, Psychiatric	CC
DOUBLE PATIENT TOILET	P9160	Lavatory, China, for Disturbed Patient	CC
DOUBLE PATIENT TOILET	P9400	Toilet, Wall Hung, Siphon Jet, Psychiatric	CC



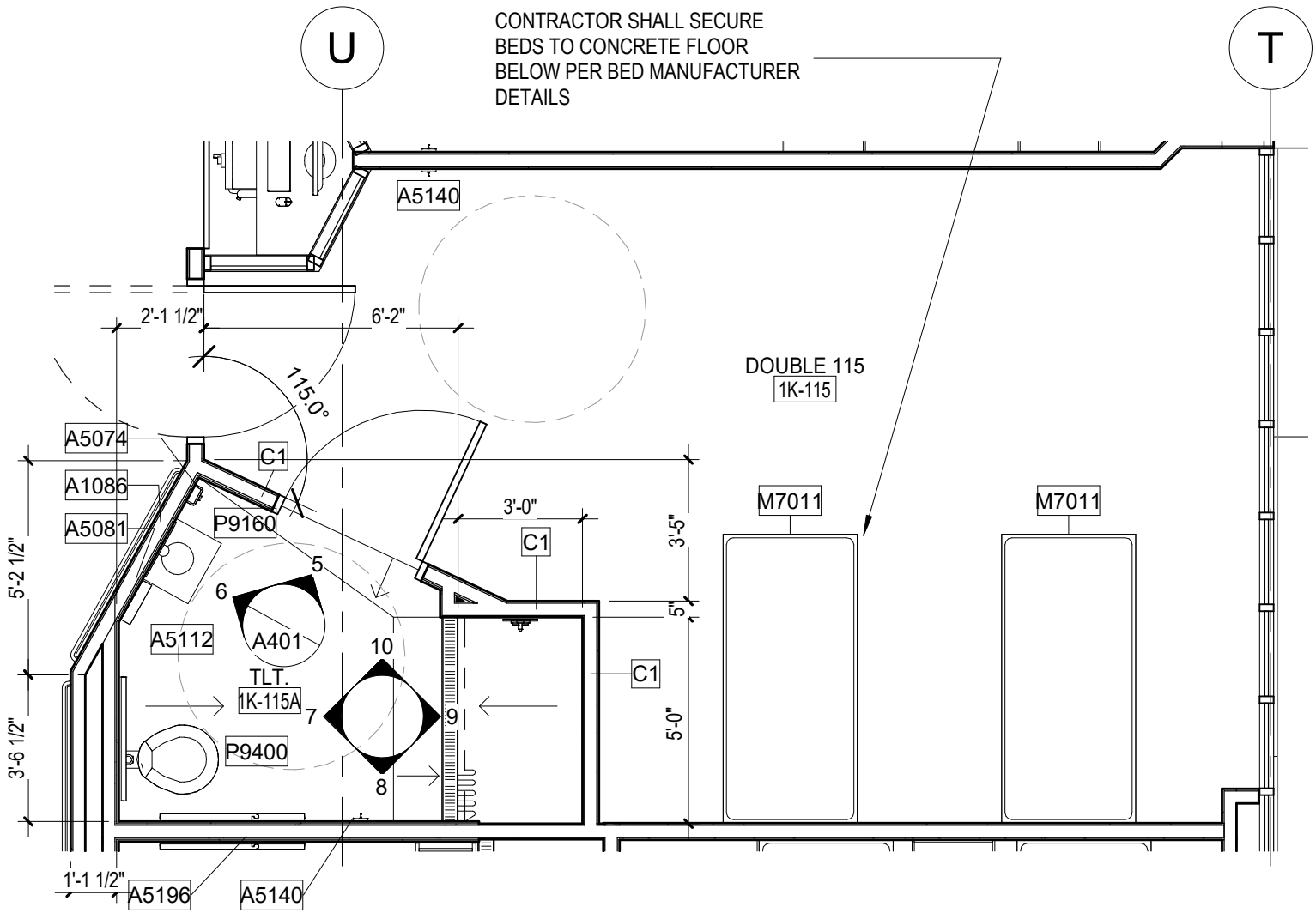
U.S. Department of Veterans Affairs

RENOVATE MH WARD 1L,1H,1K
TYP BARIATRIC SINGLE

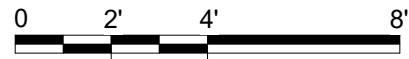
DETAIL
2/A401

VA MEDICAL CENTER, MINNEAPOLIS, MN
RENOVATE MENTAL HEALTH WARD. BLDG 1338
Date: 04/02/21 VA JOB NUMBER: 618-17-127

CONTRACTOR SHALL SECURE
BEDS TO CONCRETE FLOOR
BELOW PER BED MANUFACTURER
DETAILS



TYPICAL - DOUBLE PATIENT AND TOILET RM



1/4" = 1'-0"

Room Number	JSN	Content Name	Provided By
BARIATRIC SINGLE	A5140	Hook, Garment, Security	CC
BARIATRIC SINGLE TOILET	M7011	Bed, Platform, Without Visible Legs, Psychiatric	CC
BARIATRIC SINGLE TOILET	A1086	Mirror, Safety, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5074	Soap Dispenser, Recessed, SS, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5081	Dispenser, Paper Towel, SS, Recessed, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5112	Grab Bar, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5140	Hook, Garment, Security	CC
BARIATRIC SINGLE TOILET	A5196	Dispenser, Toilet Tissue, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5207	Bar, Towel, 1" Diameter, SS, Surface Mntd, Psych	CC
BARIATRIC SINGLE TOILET	P5350	Shower, Patient, Psychiatric	CC
BARIATRIC SINGLE TOILET	P9160	Lavatory, China, for Disturbed Patient	CC
BARIATRIC SINGLE TOILET	P9400	Toilet, Wall Hung, Siphon Jet, Psychiatric	CC



U.S. Department
of Veterans Affairs

RENOVATE MH WARD 1L,1H,1K
TPY DOUBLE PATIENT ROOM

DETAIL
3/A401

VA MEDICAL CENTER, MINNEAPOLIS, MN
RENOVATE MENTAL HEALTH WARD. BLDG 1338
Date: 04/02/21 VA JOB NUMBER: 618-17-127

Temporary AHU Location



Locate temporary AHU on-grade outside of 'K' Mechanical Room. Confirm location with COR.

FLEXIBLE AIR DUCT.
SEE SPECIFICATIONS.

SUPPLY AIR DUCT.
SEE PLAN FOR
SIZE (TYPICAL).

1-1/2" THICK, 1 POUND
DENSITY, GLASS FIBER BLANKET
WITH FOIL-SCRIM-CRAFT
FACING ON EXTERIOR OF
PLENUM

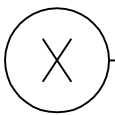
BALANCING DAMPER
WITH LOCKING
QUADRANT

FLEXIBLE DUCT
CLAMPS.

SUPPLY DIFFUSER

CEILING SYSTEM

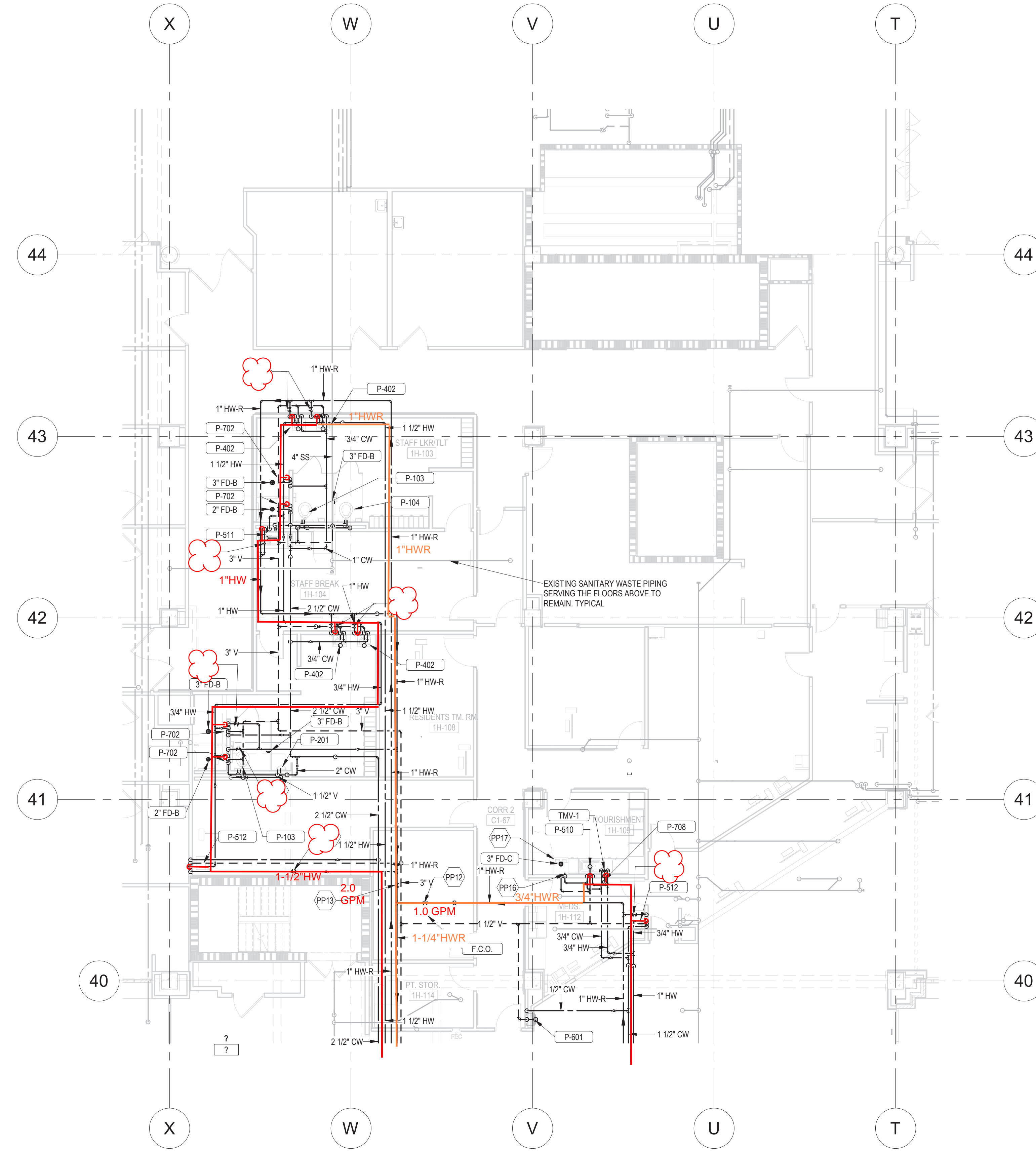
DUCT TO LINEAR DIFFUSER CONNECTION DETAIL



NO SCALE

KEYNOTE LEGEND	
KEY	DESCRIPTION
PP11	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURNS. BALANCE FLOW TO 25 GPM
PP12	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE FLOW TO 4.5 GPM
PP13	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE FLOW TO 5.75 GPM
PP16	1/2" CW DOWN TO ICE WATER DISPENSER. STUB OUT OF WALL AND PROVIDE BALL VALVE BACKFLOW PREVENTER AND WATER FILTER.
PP17	PROVIDE 3/4" COPPER DRAIN FROM ICE WATER DISPENSER DRAIN CONNECTION DOWN TO FUNNEL FLOOR DRAIN BELOW COUNTER. PROVIDE 1" MINIMUM AIR GAP.

PLUMBING GENERAL NOTES	
A.	CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER PRIOR TO START OF DEMOLITION OF CONSTRUCTION ACTIVITIES.
B.	ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF NATIONAL AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.
C.	COORDINATE DEMOLITION WITH SCHEDULES, CONSTRUCTION REQUIREMENTS AND SUBCONTRACTOR'S OPERATIONS. COORDINATE SEQUENCING WITH THE CONSTRUCTION MANAGER AND PROCEED ONLY AFTER OBTAINING THE OWNER'S ACCEPTANCE OF DEMOLITION SCHEDULE.
D.	NO WORK SHALL BE STARTED WHICH AFFECTS EXISTING FACILITY OPERATIONS WITHOUT PRIOR COORDINATION AND APPROVAL OF THE WORK WITH THE OWNER.
E.	PROVIDE FIRE PROTECTION EQUIPMENT (FIRE EXTINGUISHERS, ETC.) AS REQUIRED FOR DEMOLITION & CONSTRUCTION ACTIVITIES.
F.	FACILITY NEEDS TO BE KEPT WEATHER TIGHT REGARDLESS OF WEATHER CONDITIONS AT THE END OF EACH DAY. MAINTAIN WEATHER TIGHT CONDITIONS 24 HOURS A DAY FOR THE DURATION OF THE PROJECT.
G.	ALL PLUMBING EQUIPMENT, ACCESSORIES AND/OR PLUMBING FIXTURES WILL BE SECURED WITH VANDAL RESISTANT MOUNTING HARDWARE.
H.	INSTALL VERTICAL SANITARY AND VENT PIPING TRUE AND PLUMB.
I.	INSTALL ALL HORIZONTAL SANITARY PIPING SLOPED AT 1/4" PER FOOT.
J.	INSTALL HORIZONTAL SANITARY VENT PIPING SLOPED AT 1/8" PER FOOT.
K.	REFER TO ARCHITECTURAL PLANS FOR PIPING ACCESS PANEL LOCATIONS.
L.	REFER TO FIRE PROTECTION DRAWINGS FOR PIPING AND SPRINKLER HEAD LOCATIONS.
M.	PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. ROUTE ALL PIPING AS HIGH AS POSSIBLE.
N.	COORDINATE FINAL LOCATIONS OF NEW PIPING AND PLUMBING FIXTURES WITH EXISTING SYSTEMS, STRUCTURE, LIGHTING, ARCHITECTURAL ELEMENTS, DUCTWORK, PIPING AND SPRINKLERS.
O.	REFER TO PLUMBING DETAILS FOR ACCESSORIES AND FINAL CONNECTIONS TO PLUMBING EQUIPMENT.
P.	PROVIDE DRAIN VALVES WITH CAPPED HOSE END CONNECTIONS AT THE BOTTOM OF EACH RISER AND AT ALL LOW POINTS IN EACH PRESSURE PIPING SYSTEM. VERIFY WITH ACCESS PANEL LOCATIONS.
Q.	PROVIDE SLEEVES AT EACH PENETRATION OF FIRE AND SMOKE RATED ASSEMBLIES AND SEAL WITH INTUMESCENT MATERIAL.
R.	CONNECT PIPE AND EQUIPMENT HANGERS TO TOP CHORD OF ROOF JOISTS, BEAM FLANGES OR CONCRETE FLOOR DECK BY APPROVED MEANS.
S.	FOR PLUMBING PIPE SIZES, SEE RISER DIAGRAMS.
T.	ALL LAVATORIES AND HAND SINKS SHALL HAVE THERMOSTATIC MIXING VALVES BELOW THE SINKS TO MAINTAIN A MAXIMUM HOT WATER TEMPERATURE OF 110 DEGREES F. MIXING VALVE SHALL BE A WATTS SERIES LFUSG-B LEAD FREE OR EQUAL.
U.	REBALANCE THE BUILDING RECIRCULATED HOT WATER SYSTEM UPON COMPLETION OF NEW WORK. PROVIDE NEW, OR ADDITIONAL, RECIRC. PUMP AS REQUIRED FOR A COMPLETE AND WORKING BUILDING RECIRCULATED HOT WATER SYSTEM.
V.	PROVIDE ISOLATION SHUT-OFF VALVES ON ALL PIPE RUNOUTS FROM MAINS TO PATIENT ROOMS. FROM MAINS TO SINGLE PLUMBING FIXTURES. AND WHEREVER SHOWN ON PLANS AND RISERS.
W.	FIELD VERIFY ALL NEW WATER, WASTE, AND VENT CONNECTIONS, AND PROVIDE NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS.
X.	PITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED OTHERWISE.
Y.	WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.
Z.	PROVIDE CLEANOUTS IN ACCESSIBLE LOCATIONS AT THE BASE OF ALL PLUMBING RISERS.



1 LEVEL 1 PLUMBING PLAN, AREA H, PHASE 2
SCALE: 1/8" = 1'-0"

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Chad Michael Estinger*
Typed or printed name: Chad Michael Estinger
Date: 01/07/2021, License Number: 48710

REVISIONS	DATE

GENERAL NOTES:

GENERAL CONTRACTOR AND/OR ALL SUBCONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR VARIATIONS BETWEEN PLAN DIMENSIONS AND ACTUAL FIELD DIMENSIONS. WHERE VARIATIONS ARE FOUND TO OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADJUSTMENT TO THE WORK WILL BE MADE WITHOUT THE PRIOR APPROVAL OF THE PROJECT ENGINEER.

GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL DEMOLITION INCLUDING REMOVAL OF WALLS, PARTITIONS, DOORS & CEILING & FLOORS. ANY AND ALL CUTTING OF CONCRETE FLOORS, WALLS OR STRUCTURE SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY. CORE DRILLING THROUGH CONCRETE WALLS, FLOORS OR STRUCTURE FOR PIPING OR CONDUIT SHALL BE THE RESPONSIBILITY OF THE SUBCONTRACTOR BY TRADE. FIRE STOPPING OF THESE OPENINGS SHALL BE DONE BY THE RESPECTIVE SUBCONTRACTOR. REMOVAL OF DEBRIS RESULTING FROM DEMOLITION, CUTTING, AND/OR DRILLING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. PATCHING AND REPAIR OF CONCRETE WALLS, FLOOR, OR STRUCTURE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS WILL BE ACCOMPLISHED UPON COMPLETION OF THE INSTALLATION OF ANY AND ALL UTILITIES INSTALLED BY THE VARIOUS SUBCONTRACTORS.

CLH
Calvin L. Hinz
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

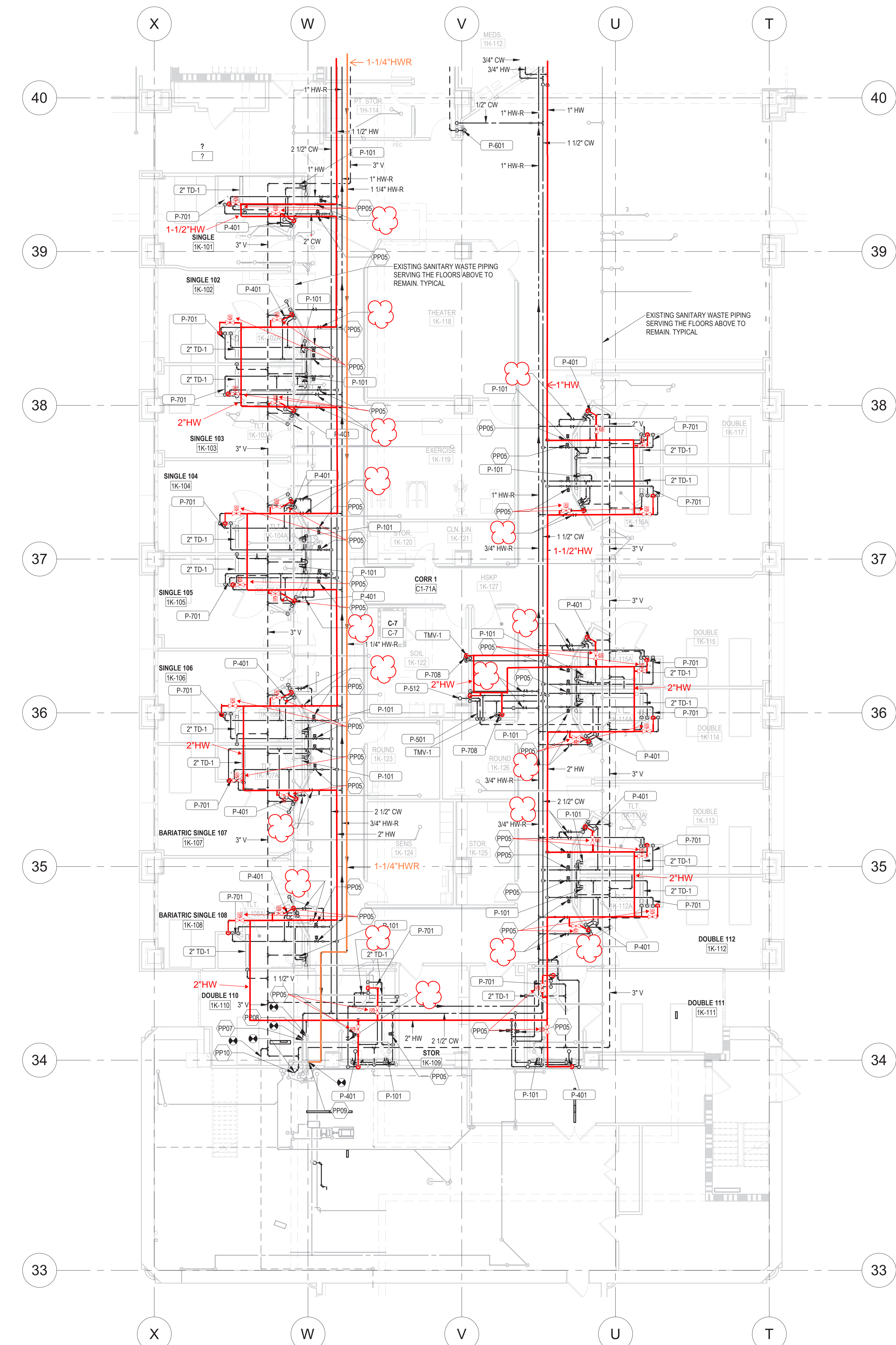
TRUE NORTH
PLAN NORTH

Drawing Title PLUMBING PLANS - LEVEL 1 - AREA H - PHASE 2		Project Title RENOVATE MH WARD 1L, 1H, AND 1K	
Drawing Scale 1/8" = 1'-0"	Approved: Division Chief	Location 1 Veterans Dr., Minneapolis, MN 55417	Date 1/7/2021
Plot Scale	Approved: Service Director	Checked CME	Drawn GJH

Project No. 618-17-127		Building Number 70	
DRAWING NO. 1338 - PP103-P2			

Office of Facilities Management

Department of Veterans Affairs



KEYNOTE LEGEND	
KEY	DESCRIPTION
PP05	PROVIDE SOLENOID SHUT OFF VALVE ON EACH HOT AND COLD WATER LINE THAT SERVES AN INDIVIDUAL PATIENT ROOM. THE SOLENOID VALVE SHALL BE CONTROLLED BY A USER PROGRAMMABLE TOUCH SCREEN DIGITAL MONITOR LOCATED IN A PANEL BACK IN THE NURSES STATION.
PP07	CONNECT TO EXISTING MINIMUM 3" COLD WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP08	CONNECT TO EXISTING MINIMUM 2" HOT WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP09	CONNECT TO EXISTING MINIMUM 1-1/2" RECIRCULATED HOT WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP10	CONNECT NEW SANITARY VENTS TO EXISTING VENT RISER. VERIFY SIZE AND LOCATION OF EXISTING RISER.
PP11	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURNS. BALANCE FLOW TO .25 GPM.

PLUMBING GENERAL NOTES	
A.	CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER PRIOR TO START OF DEMOLITION OF CONSTRUCTION ACTIVITIES.
B.	ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF NATIONAL AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.
C.	COORDINATE DEMOLITION WITH SCHEDULES, CONSTRUCTION REQUIREMENTS AND SUBCONTRACTORS OPERATIONS. COORDINATE SEQUENCING WITH THE CONSTRUCTION MANAGER AND PROCEED ONLY AFTER OBTAINING THE OWNERS ACCEPTANCE OF DEMOLITION SCHEDULE.
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E.	PROVIDE FIRE PROTECTION EQUIPMENT (FIRE EXTINGUISHERS, ETC) AS REQUIRED FOR DEMOLITION & CONSTRUCTION ACTIVITIES.
F.	FACILITY NEEDS TO BE KEPT WEATHER TIGHT REGARDLESS OF WEATHER CONDITIONS AT THE END OF EACH DAY. MAINTAIN WEATHER TIGHT CONDITIONS 24 HOURS A DAY FOR THE DURATION OF THE PROJECT.
G.	ALL PLUMBING EQUIPMENT, ACCESSORIES AND/OR PLUMBING FIXTURES WILL BE SECURED WITH VANDAL RESISTANT MOUNTING HARDWARE.
H.	INSTALL VERTICAL SANITARY AND VENT PIPING TRUE AND PLUMB.
I.	INSTALL ALL HORIZONTAL SANITARY PIPING SLOPED AT 1/4" PER FOOT.
J.	INSTALL HORIZONTAL SANITARY VENT PIPING SLOPED AT 1/8" PER FOOT.
K.	REFER TO ARCHITECTURAL PLANS FOR PIPING ACCESS PANEL LOCATIONS.
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M.	PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. ROUTE ALL PIPING AS HIGH AS POSSIBLE.
N.	COORDINATE FINAL LOCATIONS OF NEW PIPING AND PLUMBING FIXTURES WITH EXISTING SYSTEMS, STRUCTURE, LIGHTING, ARCHITECTURAL ELEMENTS, DUCTWORK, PIPING AND SPRINKLERS.
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Q.	PROVIDE SLEEVES AT EACH PENETRATION OF FIRE AND SMOKE RATED ASSEMBLIES AND SEAL WITH INTUMESCENT MATERIAL.
R.	CONNECT PIPE AND EQUIPMENT HANGERS TO TOP CHORD OF ROOF JOISTS, BEAM FLANGES OR CONCRETE FLOOR DECK BY APPROVED MEANS.
S.	FOR PLUMBING PIPE SIZES, SEE RISER DIAGRAMS.
T.	ALL LAVATORIES AND HAND SINKS SHALL HAVE THERMOSTATIC MIXING VALVES BELOW THE SINKS TO MAINTAIN A MAXIMUM HOT WATER TEMPERATURE OF 110 DEGREES F. MIXING VALVE SHALL BE A WATTS SERIES LFUSG-B LEAD FREE OR EQUAL.
U.	REBALANCE THE BUILDING RECIRCULATED HOT WATER SYSTEM UPON COMPLETION OF NEW WORK. PROVIDE NEW, OR ADDITIONAL RECIRC. PUMP AS REQUIRED FOR A COMPLETE AND WORKING BUILDING RECIRCULATED HOT WATER SYSTEM.
V.	PROVIDE ISOLATION SHUT-OFF VALVES ON ALL PIPE RUNOUTS FROM MAINS TO PATIENT ROOMS, FROM MAINS TO SINGLE PLUMBING FIXTURES, AND WHEREVER SHOWN ON PLANS AND RISERS.
W.	FIELD VERIFY ALL NEW WATER, WASTE, AND VENT CONNECTIONS, AND PROVIDE NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS.
X.	PITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED OTHERWISE.
Y.	WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.
Z.	PROVIDE CLEANOUTS IN ACCESSIBLE LOCATIONS AT THE BASE OF ALL PLUMBING RISERS.

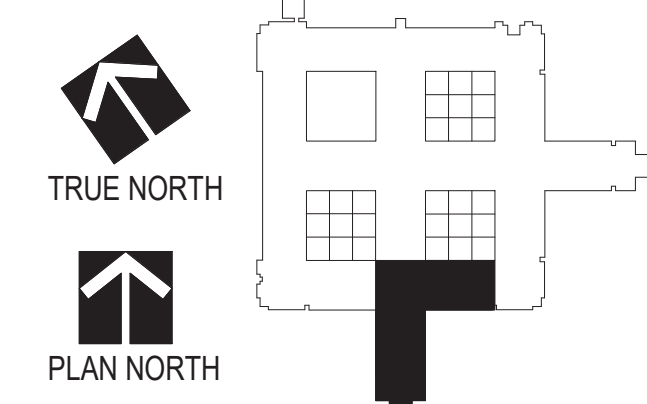
1 LEVEL 1 PLUMBING PLAN, AREA K, PHASE 2
SCALE: 1/8" = 1'-0"

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Chad Michael Eslinger*
Typed or printed name: Chad Michael Eslinger
Date: 01/07/2021 License Number: 48710

GENERAL NOTES:

GENERAL CONTRACTOR AND/OR ALL SUBCONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR VARIATIONS BETWEEN PLAN DIMENSIONS AND ACTUAL FIELD DIMENSIONS. WHERE VARIATIONS ARE FOUND TO OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADJUSTMENT TO THE WORK WILL BE MADE WITHOUT THE PRIOR APPROVAL OF THE PROJECT ENGINEER.

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Drawing Title
PLUMBING PLANS - LEVEL 1 - AREA K - PHASE 2

Approved: Division Chief
Approved: Service Director

Project Title
RENOVATE MH WARD 1L, 1H, AND 1K

Location
1 Veterans Dr., Minneapolis, MN 55417

Date
1/7/2021

Checked
CME

Drawn
GJH

Project No.
618-47-127

Building Number
70

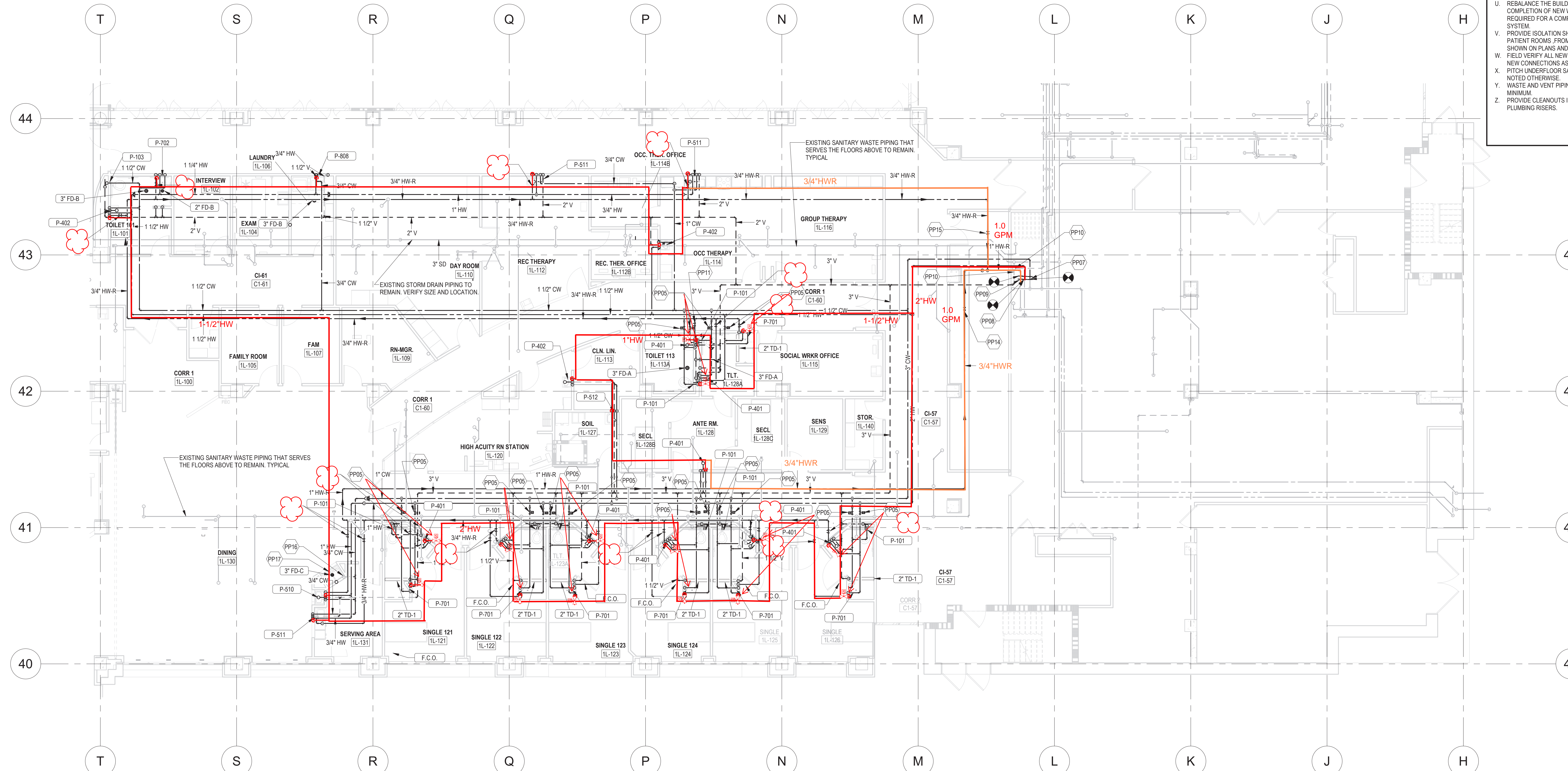
DRAWING NO.
1338 - PP102-P2

Office of Facilities Management
Department of Veterans Affairs

REVISIONS
DATE

KEYNOTE LEGEND	
KEY	DESCRIPTION
PP05	PROVIDE SOLENOID SHUT OFF VALVE ON EACH HOT AND COLD WATER LINE THAT SERVES AN INDIVIDUAL PATIENT ROOM. THE SOLENOID VALVE SHALL BE CONTROLLED BY A USER PROGRAMMABLE TOUCH SCREEN DIGITAL MONITOR LOCATED IN A PANEL BACK IN THE NURSES STATION.
PP07	CONNECT TO EXISTING MINIMUM 3" COLD WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP08	CONNECT TO EXISTING MINIMUM 2" HOT WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP09	CONNECT TO EXISTING MINIMUM 1-1/2" RECIRCULATED HOT WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP10	CONNECT NEW SANITARY VENTS TO EXISTING VENT RISER. VERIFY SIZE AND LOCATION OF EXISTING RISER.
PP11	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURNS. BALANCE FLOW TO 25 GPM.
PP14	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE TO 1.5 GPM.
PP15	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE TO 1.5 GPM.
PP16	1/2" CW DOWN TO ICE/WATER DISPENSER. STUB OUT OF WALL AND PROVIDE BALL VALVE, BACKFLOW PREVENTER AND WATER FILTER.
PP17	PROVIDE 3/4" COPPER DRAIN FROM ICE/WATER DISPENSER DRAIN CONNECTION DOWN TO FUNNEL FLOOR DRAIN BELOW COUNTER. PROVIDE 1" MINIMUM AIR GAP.

- PLUMBING GENERAL NOTES**
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 - B. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF NATIONAL AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.
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 - G. ALL PLUMBING EQUIPMENT, ACCESSORIES AND/OR PLUMBING FIXTURES WILL BE SECURED WITH VANDAL RESISTANT MOUNTING HARDWARE.
 - H. INSTALL VERTICAL SANITARY AND VENT PIPING TRUE AND PLUMB.
 - I. INSTALL ALL HORIZONTAL SANITARY PIPING SLOPED AT 1/4" PER FOOT.
 - J. INSTALL HORIZONTAL SANITARY VENT PIPING SLOPED AT 1/8" PER FOOT.
 - K. REFER TO ARCHITECTURAL PLANS FOR PIPING ACCESS PANEL LOCATIONS.
 - L. REFER TO FIRE PROTECTION DRAWINGS FOR PIPING AND SPRINKLER HEAD LOCATIONS.
 - M. PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. ROUTE ALL PIPING AS HIGH AS POSSIBLE.
 - N. COORDINATE FINAL LOCATIONS OF NEW PIPING AND PLUMBING FIXTURES WITH EXISTING SYSTEMS, STRUCTURE, LIGHTING, ARCHITECTURAL ELEMENTS, DUCTWORK, PIPING AND SPRINKLERS.
 - O. REFER TO PLUMBING DETAILS FOR ACCESSORIES AND FINAL CONNECTIONS TO PLUMBING EQUIPMENT.
 - P. PROVIDE DRAIN VALVES WITH CAPPED HOSE END CONNECTIONS AT THE BOTTOM OF EACH RISER AND AT ALL LOW POINTS IN EACH PRESSURE PIPING SYSTEM. VERIFY WITH ACCESS PANEL LOCATIONS.
 - Q. PROVIDE SLEEVES AT EACH PENETRATION OF FIRE AND SMOKE RATED ASSEMBLIES AND SEAL WITH INTUMESCENT MATERIAL.
 - R. CONNECT PIPE AND EQUIPMENT HANGERS TO TOP CHORD OF ROOF JOISTS, BEAM FLANGES OR CONCRETE FLOOR DECK BY APPROVED MEANS.
 - S. FOR PLUMBING PIPE SIZES, SEE RISER DIAGRAMS.
 - T. ALL LAVATORIES AND HAND SINKS SHALL HAVE THERMOSTATIC MIXING VALVES BELOW THE SINKS TO MAINTAIN A MAXIMUM HOT WATER TEMPERATURE OF 110 DEGREES F. MIXING VALVE SHALL BE A WATTS SERIES LFUSG-6 LEAD FREE OR EQUAL.
 - U. REBALANCE THE BUILDING RECIRCULATED HOT WATER SYSTEM UPON COMPLETION OF NEW WORK. PROVIDE NEW OR ADDITIONAL RECIRC. PUMP AS REQUIRED FOR A COMPLETE AND WORKING BUILDING CIRCULATED HOT WATER SYSTEM.
 - V. PROVIDE ISOLATION SHUT-OFF VALVES ON ALL PIPE RUNOUTS FROM MAINS TO PATIENT ROOMS FROM MAINS TO SINGLE PLUMBING FIXTURES, AND WHEREVER SHOWN ON PLANS AND RISERS.
 - W. FIELD VERIFY ALL NEW WATER, WASTE, AND VENT CONNECTIONS, AND PROVIDE NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS.
 - X. FITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED OTHERWISE.
 - Y. WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.
 - Z. PROVIDE CLEANOUTS IN ACCESSIBLE LOCATIONS AT THE BASE OF ALL PLUMBING RISERS.

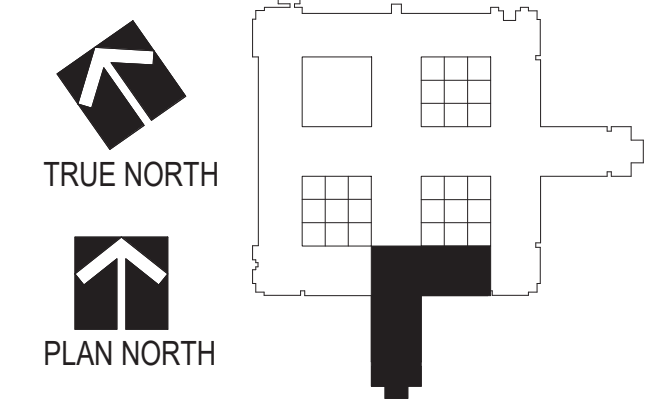


1 LEVEL 1 PLUMBING PLAN, AREA L, PHASE 3
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

GENERAL CONTRACTOR AND/OR ALL SUBCONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR VARIATIONS BETWEEN PLAN DIMENSIONS AND ACTUAL FIELD DIMENSIONS. WHERE VARIATIONS ARE FOUND TO OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADJUSTMENT TO THE WORK WILL BE MADE WITHOUT THE PRIOR APPROVAL OF THE PROJECT ENGINEER.

GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL DEMOLITION INCLUDING REMOVAL OF WALLS, PARTITIONS, DOORS & CEILING & FLOORS. ANY AND ALL CUTTING OF CONCRETE FLOORS, WALLS OR STRUCTURE FOR PIPING OR CONDUIT SHALL BE THE RESPONSIBILITY OF THE SUBCONTRACTOR BY TRADE. PRESTRESSING OF THESE OPENINGS SHALL BE DONE BY THE RESPECTIVE SUBCONTRACTOR. REMOVAL OF DEBRIS RESULTING FROM DEMOLITION, CUTTING, AND/OR DRILLING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. PATCHING AND REPAIR OF CONCRETE WALLS, FLOOR, OR STRUCTURE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS WILL BE ACCOMPLISHED UPON COMPLETION OF THE INSTALLATION OF ANY AND ALL UTILITIES INSTALLED BY THE VARIOUS SUBCONTRACTORS.



Drawing Scale
1/8" = 1'-0"
Plot Scale

Drawing Title
PLUMBING PLANS - LEVEL 1 - AREA L - PHASE 3

Approved: Division Chief
Approved: Service Director

Project Title
RENOVATE MH WARD 1L, 1H, AND 1K

Location
1 Veterans Dr., Minneapolis, MN 55417

Date
1/7/2021

Checked
CME

Drawn
GJH

Project No.
618-17-127

Building Number
70

DRAWING NO.
1338 - PP104-P3



Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature:
Typed or printed name: Chad Michael Eslinger
Date: 01/07/2021 License Number: 48710

SECTION 07 27 26
FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR PERMEABLE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fluid-applied vapor-permeable air barrier at exterior above grade wall assemblies.
2. Connection to adjacent air barrier components providing a durable, continuous, full building air barrier.

1.2 RELATED WORK

- A. Section 01 45 29 TESTING LABORATORY SERVICES: General Quality Assurance and Quality Control Requirements.
- B. Section 01 91 00 GENERAL COMMISSIONING REQUIREMENTS: Commissioning of building envelope components.
- C. Section 04 20 00 UNIT MASONRY: Masonry Unit Air Barrier Substrates.
- D. Section 07 92 00, JOINT SEALANTS: Joint Sealants.
- E. Division 08 sections for glazed aluminum curtain walls
- F. Section 09 29 00 GYPSUM BOARD: Wall Sheathings Air Barrier Substrates.

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.
- B. Air Barrier Association of America (ABAA):
Quality Assurance Program.
- C. ASTM International (ASTM):
C920-18.....Elastomeric Joint Sealants.
C1193-16.....Use of Joint Sealants.
D412-16.....Vulcanized Rubber and Thermoplastic
Elastomers-Tension.
E96/E96M-16.....Water Vapor Transmission of Materials.
E162-16.....Surface Flammability of Materials Using a
Radiant Heat Energy Source.
E783-02(2018).....Field Measurement of Air Leakage Through
Installed Exterior Windows and Doors.
E1186-17.....Air Leakage Site Detection in Building
Envelopes and Air Barrier Systems.
E2178-13.....Air Permanence of Building Materials.

E2357-18.....Determining Air Leakage of Air Barrier
Assemblies.

1.4 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 - 1. Show size, configuration, and fabrication and installation details.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Installation instructions.

1.5 QUALITY ASSURANCE

- A. Coordinate work with adjacent and related work to provide continuous, unbroken, durable air barrier system.
- B. Manufacturer Qualifications:
 - 1. Regularly and presently manufactures specified products.
 - 2. Manufactured specified products with satisfactory service on five similar installations for minimum five years.
- C. Installer Qualifications:
 - 1. Regularly and presently installs specified products.
 - 2. Approved by manufacturer.

1.6 DELIVERY

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, production run number, and manufacture date.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

1.7 STORAGE AND HANDLING

- A. Store products indoors in dry, weathertight, conditioned facility.
- B. Protect products from damage during handling and construction operations.

1.8 FIELD CONDITIONS

- A. Environment:
 - 1. Work Area Ambient Temperature Range: 4 to 32 degrees C (40 to 90 degrees F) continuously, beginning 48 hours before installation.
 - 2. Surface Requirements: visibly dry, and complying with manufacturer's instructions.

1.9 WARRANTY

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

PART 2 - PRODUCTS

2.1 SYSTEM PERFORMANCE

- A. Air-Barrier Assembly Air Leakage: Maximum 0.2 L/s/square meter (0.04 cfm/square feet) of surface area at 75 Pa (1.57 psf) differential pressure when tested according to ASTM E2357.
- B. Provide full system of compatible materials under conditions of service and application required. Compatibility based on testing by material manufacturer.
- C. Perform as continuous vapor permeable air barrier and moisture drainage plane.
- D. Transition to adjacent flashings and discharge water to building exterior.
- E. Accommodate substrate movement and seal expansion and control joints, construction material transitions, opening transitions, penetrations, and perimeter conditions without moisture deterioration and air leakage exceeding performance requirements.

2.2 PRODUCTS - GENERAL

- A. Provide air barrier system components from one manufacturer.

2.3 AIR BARRIER

- A. Fluid-Applied, Vapor-Permeable Membrane Air Barrier:
 - 1. Elastomeric, modified bituminous or synthetic polymer membrane.
 - 2. Air Permeance: ASTM E2178: 0.02 L/s/square meter (0.004 cfm/square feet) of surface area at 75 Pa (1.57 psf) differential pressure.
 - 3. Vapor Permeance: ASTM E96/E96M: Minimum 580 ng/Pa/s/square meter (10 perms).
 - 4. Elongation: Ultimate, ASTM D412, Die C: 200 percent, minimum.
 - 5. Thickness: Minimum 1.0 mm (40 mils) dry film thickness, applied in single continuous coat.
 - 6. Surface Burning Characteristics: When tested according to ASTM E84.
 - a. Flame Spread Rating: 25 maximum.
 - b. Smoke Developed Rating: 450 maximum.

2.4 ACCESSORIES

- A. Primer: Waterborne primer complying with VOC requirements, recommended air barrier manufacturer to suit application.
- B. Counterflashing Sheet: Modified bituminous, minimum 1.0 mm (40 mils) thick, self-adhering composite sheet consisting of minimum 0.8 mm (33 mils) of rubberized asphalt laminated to polyethylene film.
- C. Substrate Patching Material: Manufacturer's standard trowel-grade filler material.
- D. Sprayed Polyurethane Foam Sealant: Foamed-in-place, 24 to 32 kg/cu. m (1.5 to 2.0 pcf) density, with maximum flame-spread index of 25 when tested according to ASTM E84.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Correct substrate deficiencies:
 - 1. Remove projections and excess materials and fill voids with substrate patching material.
 - 2. Remove contaminants capable of affecting subsequently installed product's performance.
- D. Prepare and treat substrate joints and cracks according to ASTM C1193 and membrane air barrier manufacturer's instructions.

3.2 INSTALLATION - AIR BARRIER

- A. Install products according to manufacturer's instructions.
 - 1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.
- B. Apply primer.
- C. Install transition strips and accessory materials.
- D. Seal air barrier to adjacent components of building air barrier system.
- E. At penetrations, seal transition strips around penetrating objects with termination mastic.
 - 1. Fill gaps at perimeter of penetrations with sprayed polyurethane foam sealant.
- F. At top of through-wall flashings, seal with continuous transition strip of manufacturer's recommended material to suit application.

- G. Apply air barrier in full contact with substrate to produce continuous seal with transitions.
- H. Apply fluid membrane in thickness recommended by manufacturer, and minimum specified thickness.
- I. Leave air barrier exposed until tested and inspected and approved by Contracting Officer's Representative.

3.3 FIELD QUALITY CONTROL

- A. Field Inspections and Tests: Performed by testing laboratory specified in Section 01 45 29, TESTING LABORATORY SERVICES.
 - 1. Perform inspections and tests before concealing air barrier with subsequent work.
- B. Inspection:
 - 1. Compatibility of materials within air barrier system and adjacent materials.
 - 2. Suitability of substrate and support for air barrier.
 - 3. Suitability of conditions under which air barrier is applied.
 - 4. Adequacy of substrate priming.
 - 5. Application and treatment of joints and edges of transition strips, flexible opening transitions, and accessory materials.
 - 6. Continuity and gap-free installation of air barrier, transition strips, and accessory materials.
- C. Submit inspection and test reports to Contracting Officer's Representative within seven calendar days of completing inspection and test.
- D. Defective Work:
 - 1. Correct deficiencies, make necessary repairs, and retest as required to demonstrate compliance with specified requirements.

3.4 CLEANING

- A. Remove masking materials.
- B. Clean spills and overspray using cleaning agents recommended by manufacturers of affected construction.

3.5 PROTECTION

- A. Protect air barrier from construction operations.
- B. Protect air barrier from exposure to UV light exposure exceeding manufacturer's recommendation.
- C. Replace overexposed materials and retest.

MINNEAPOLIS VAMC BLDG. 70
RENOVATE MH WARD 1L,1H AND 1K

Specification 618-17-127
Section No. 07 21 13
4-02-21

- - E N D - -

SECTION 28 05 13
CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the finishing, installation, connection, testing and certification the conductors and cables required for a fully functional for electronic safety and security (ESS) system.

1.2 RELATED WORK

- A. Section 01 00 00 - GENERAL REQUIREMENTS. For General Requirements.
B. Section 07 84 00 - FIRESTOPPING. Requirements for firestopping application and use.
C. Section 28 05 00 - COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. Requirements for general requirements that are common to more than one section in Division 28.
D. Section 28 05 26 - GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
E. Section 28 05 28.33 - CONDUITS AND BOXES FOR ELECTRONIC SECURITY AND SAFETY. Requirements for infrastructure.
F. Section 28 08 00 - COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS. Requirements for commissioning.
G. Section 31 20 00 - EARTH MOVING. For excavation and backfill for cables that are installed in conduit.

1.3 DEFINITIONS

- A. BICSI: Building Industry Consulting Service International.
B. EMI: Electromagnetic interference.
C. IDC: Insulation displacement connector.
D. Ladder Cable Tray: A fabricated structure consisting of two longitudinal side rails connected by individual transverse members (rungs).
E. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.
F. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity).
G. RCDD: Registered Communications Distribution Designer.
H. Solid-Bottom or Nonventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal side rails, and a bottom without ventilation openings.
I. Trough or Ventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal rails and a bottom having openings sufficient for the passage of air and using 75 percent or less of the plan area of the surface to support cables.
J. UTP: Unshielded twisted pair.

1.4 QUALITY ASSURANCE

- A. See section 28 05 00, Paragraph 1.4.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:
1. Manufacturer's Literature and Data: Showing each cable type and rating.
 2. Certificates: Two weeks prior to final inspection, deliver to the Resident Engineer/COTR four copies of the certification that the material is in accordance with the drawings and specifications and diagrams for cable management system.

3. Shop Drawings: Cable tray layout, showing cable tray route to scale, with relationship between the tray and adjacent structural, electrical, and mechanical elements. Include the following:
 - a. Vertical and horizontal offsets and transitions.
 - b. Clearances for access above and to side of cable trays.
 - c. Vertical elevation of cable trays above the floor or bottom of ceiling structure.
 - d. Load calculations to show dead and live loads as not exceeding manufacturer's rating for tray and its support elements.
 - e. System labeling schedules, including electronic copy of labeling schedules that are part of the cable and asset identification system of the software specified in Parts 2 and 3.
4. Wiring Diagrams. Show typical wiring schematics including the following:
 - a. Workstation outlets, jacks, and jack assemblies.
 - b. Patch cords.
 - c. Patch panels.
5. Cable Administration Drawings: As specified in Part 3 "Identification" Article.
6. Project planning documents as specified in Part 3.
7. Maintenance Data: For wire and cable to include in maintenance manuals.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are reference in the text by the basic designation only.
- B. American Society of Testing Material (ASTM):
D2301-04.....Standard Specification for Vinyl Chloride
Plastic Pressure Sensitive Electrical
Insulating Tape
- C. Federal Specifications (Fed. Spec.):
A-A-59544-08.....Cable and Wire, Electrical (Power, Fixed
Installation)
- D. National Fire Protection Association (NFPA):
70-11.....National Electrical Code (NEC)
- E. Underwriters Laboratories, Inc. (UL):
44-05.....Thermoset-Insulated Wires and Cables
83-08.....Thermoplastic-Insulated Wires and Cables
467-07.....Electrical Grounding and Bonding Equipment
486A-03.....Wire Connectors and Soldering Lugs for Use with
Copper Conductors
486C-04.....Splicing Wire Connectors
486D-05.....Insulated Wire Connector Systems for
Underground Use or in Damp or Wet Locations
486E-00.....Equipment Wiring Terminals for Use with
Aluminum and/or Copper Conductors
493-07.....Thermoplastic-Insulated Underground Feeder and
Branch Circuit Cable
514B-04.....Fittings for Cable and Conduit
1479-03.....Fire Tests of Through-Penetration Fire Stops

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Test cables upon receipt at Project site.
 1. Test optical fiber cable to determine the continuity of the strand end to end. Use optical loss test set.

2. Test optical fiber cable on reels. Use an optical time domain reflectometer (OTDR) to verify the cable length and locate cable defects, splices, and connector; include the loss value of each. Retain test data and include the record in the maintenance data.
3. Test each pair of UTP cable for open and short circuits.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install UTP, optical fiber, and coaxial cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 GENERAL

- A. General: All cabling locations shall be in conduit systems as outlined in Division 28 unless a waiver is granted in writing or an exception is noted on the construction drawings.
- B. Support of Open Cabling: NRTL labeled for support of Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
 1. Support brackets with cable tie slots for fastening cable ties to brackets.
 2. Lacing bars, spools, J-hooks, and D-rings.
 3. Straps and other devices.
- C. Cable Trays:
 1. Cable Tray Materials: Metal, suitable for indoors, and protected against corrosion by electroplated zinc galvanizing, complying with ASTM B 633, Type 1, not less than 0.000472 inch (0.012 mm) thick.
 2. Basket Cable Trays: 6 inches (150 mm) wide and 2 inches (50 mm) deep. Wire mesh spacing shall not exceed 2 by 4 inches (50 by 100 mm).
 3. Trough Cable Trays: Nominally 6 inches (150 mm) wide.
 4. Ladder Cable Trays: Nominally 18 inches (455 mm) wide, and a rung spacing of 12 inches (305 mm).
 5. Channel Cable Trays: One-piece construction, nominally 4 inches (100 mm) wide. Slot spacing shall not exceed 4-1/2 inches (115 mm) o.c.
 6. Solid-Bottom Cable Trays: One-piece construction, nominally 12 inches (305 mm) wide. Provide with solid covers.
- D. Conduit and Boxes: Comply with requirements in Division 28 Section "Conduits and Backboxes for Electrical Systems." Flexible metal conduit shall only be used in lengths less than 3 feet.
 1. Outlet boxes shall be no smaller than 2 inches (50 mm) wide, 3 inches (75 mm) high, and 2-1/2 inches (64 mm) deep.

2.2 BACKBOARDS

- A. Backboards: Plywood, fire-retardant treated, 3/4 by 48 by 96 inches (19 by 1220 by 2440 mm). Comply with requirements for plywood backing panels in Division 06 Section "Rough Carpentry".

2.3 UTP CABLE

- A. Description: 100-ohm, 4-pair UTP, formed into 25-pair binder groups covered with a blue thermoplastic jacket.
 1. Comply with ICEA S-90-661 for mechanical properties.
 2. Comply with TIA/EIA-568-B.1 for performance specifications.
 3. Comply with TIA/EIA-568-B.2, Category 6.
 4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:

- a. Communications, General Purpose: Type CM or CMG.
- b. Communications, Plenum Rated: Type CMP, complying with NFPA 262.
- c. Communications, Riser Rated: Type CMR, complying with UL 1666.
- d. Communications, Limited Purpose: Type CMX.
- e. Multipurpose: Type MP or MPG.
- f. Multipurpose, Plenum Rated: Type MPP, complying with NFPA 262.
- g. Multipurpose, Riser Rated: Type MPR, complying with UL 1666.

2.4 UTP CABLE HARDWARE

- A. UTP Cable Connecting Hardware: IDC type, using modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of the same category or higher.
- B. *Duress buttons shall use Orange colored Category 6 cable and shall terminate in a Security System Control Panel. Unused pairs shall be neatly coiled and supported at or near the Security System Control Panel. Confirm location of Security System Control Panel with VA COR.*

2.5 OPTICAL FIBER CABLE

- A. Description: Multimode, 50/125-micrometer, minimum 6-fiber, tight buffer, optical fiber cable.
 1. Comply with ICEA S-83-596 for mechanical properties.
 2. Comply with TIA/EIA-568-B.3 for performance specifications.
 3. Comply with TIA/EIA-492AAAA-B or TIA/EIA-492AAAA-A as applicable for detailed specifications.
 4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:
 - a. General Purpose, Nonconductive: Type OFN or OFNG.
 - b. Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.
 - c. Riser Rated, Nonconductive: Type OFNR, complying with UL 1666.
 - d. General Purpose, Conductive: Type OFC or OFCG
 - e. Plenum Rated, Conductive: Type OFCP, complying with NFPA 262.
 - f. Riser Rated, Conductive: Type OFCR, complying with UL 1666.
 5. Conductive cable shall be steel armored type.
 6. Maximum Attenuation: 3.50 dB/km at 850 nm; 1.5 dB/km at 1300 nm.
 7. Minimum Modal Bandwidth: 160 MHz-km at 850 nm; 500 MHz-km at 1300 nm.
- B. Jacket:
 1. Jacket Color: Aqua for 50/125-micrometer cable.
 2. Cable cordage jacket, fiber, unit, and group color shall be according to TIA/EIA-598-B.
 3. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

2.6 OPTICAL FIBER CABLE HARDWARE

- A. Cable Connecting Hardware: Meet the Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA/EIA-604-2, TIA/EIA-604-3-A, and TIA/EIA-604-12. Comply with TIA/EIA-568-B.3.
 1. Quick-connect, simplex and duplex, Type SC connectors. Insertion loss shall be not more than 0.75 dB.
 2. Type SFF connectors may be used in termination racks, panels, and equipment packages.

2.7 COAXIAL CABLE

- A. General Coaxial Cable Requirements: Broadband type, recommended by cable manufacturer specifically for broadband data transmission applications. Coaxial cable and accessories shall have 75-ohm nominal impedance with a return loss of 20 dB maximum from 7 to 806 MHz.
- B. RG-11/U: NFPA 70, Type CATV.
 1. No. 14 AWG, solid, copper-covered steel conductor.

2. Gas-injected, foam-PE insulation.
 3. Double shielded with 100 percent aluminum polyester tape and 60 percent aluminum braid.
 4. Jacketed with sunlight-resistant, black PVC or PE.
 5. Suitable for outdoor installations in ambient temperatures ranging from minus 40 to plus 85 deg C.
- C. RG59/U: NFPA 70, Type CATVR.
1. No. 20 AWG, solid, silver-plated, copper-covered steel conductor.
 2. Gas-injected, foam-PE insulation.
 3. Triple shielded with 100 percent aluminum polyester tape and 95 percent aluminum braid; covered by aluminum foil with grounding strip.
 4. Color-coded PVC jacket.
- D. RG-6/U: NFPA 70, Type CATV or CM.
1. No. 16 AWG, solid, copper-covered steel conductor; gas-injected, foam-PE insulation.
 2. Double shielded with 100 percent aluminum-foil shield and 60 percent aluminum braid.
 3. Jacketed with black PVC or PE.
 4. Suitable for indoor installations.
- E. RG59/U: NFPA 70, Type CATV.
1. No. 20 AWG, solid, copper-covered steel conductor; gas-injected, foam-PE insulation.
 2. Double shielded with 100 percent aluminum polyester tape and 40 percent aluminum braid.
 3. PVC jacket.
- F. RG59/U (Plenum Rated): NFPA 70, Type CMP.
1. No. 20 AWG, solid, copper-covered steel conductor; foam fluorinated ethylene propylene insulation.
 2. Double shielded with 100 percent aluminum-foil shield and 65 percent aluminum braid.
 3. Copolymer jacket.

2.8 COAXIAL CABLE HARDWARE

- A. Coaxial-Cable Connectors: Type BNC, 75 ohms.

2.9 RS-232 CABLE

- A. Standard Cable: NFPA 70, Type CM.
1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
 2. Polypropylene insulation.
 3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
 4. PVC jacket.
 5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
 6. Flame Resistance: Comply with UL 1581.
- B. Plenum-Rated Cable: NFPA 70, Type CMP.
1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
 2. Plastic insulation.
 3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
 4. Plastic jacket.
 5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
 6. Flame Resistance: Comply with NFPA 262.

2.10 RS-485 CABLE

- A. Standard Cable: NFPA 70, Type CM.
 - 1. Paired, 2 pairs, twisted, No. 22 AWG, stranded (7x30) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with UL 1581.
- B. Plenum-Rated Cable: NFPA 70, Type CMP.
 - 1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
 - 2. Fluorinated ethylene propylene insulation.
 - 3. Unshielded.
 - 4. Fluorinated ethylene propylene jacket.
 - 5. Flame Resistance: NFPA 262, Flame Test.

2.11 LOW-VOLTAGE CONTROL CABLE

- A. Paired Lock Cable: NFPA 70, Type CMG.
 - 1. 1 pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with UL 1581.
- B. Plenum-Rated, Paired Lock Cable: NFPA 70, Type CMP.
 - 1. 1 pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with NFPA 262.
- C. Paired Lock Cable: NFPA 70, Type CMG.
 - 1. 1 pair, twisted, No. 18 AWG, stranded (19x30) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with UL 1581.
- D. Plenum-Rated, Paired Lock Cable: NFPA 70, Type CMP.
 - 1. 1 pair, twisted, No. 18 AWG, stranded (19x30) tinned copper conductors.
 - 2. Fluorinated ethylenepropylene insulation.
 - 3. Unshielded.
 - 4. Plastic jacket.
 - 5. Flame Resistance: NFPA 262, Flame Test.

2.12 CONTROL-CIRCUIT CONDUCTORS

- A. Class 1 Control Circuits: Stranded copper, Type THHN-THWN, in raceway complying with UL 83.
- B. Class 2 Control Circuits: Stranded copper, Type THHN-THWN, in raceway complying with UL 83.
- C. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type TW or TF, complying with UL 83.

2.13 FIRE ALARM WIRE AND CABLE

- A. General Wire and Cable Requirements: NRTL listed and labeled as complying with NFPA 70, Article 760.
- B. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer.

1. Circuit Integrity Cable: Twisted shielded pair, NFPA 70, Article 760, Classification CI, for power-limited fire alarm signal service Type FPL. NRTL listed and labeled as complying with UL 1424 and UL 2196 for a 2-hour rating.

C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-Voltage Circuits: No. 16 AWG, minimum.

2. Line-Voltage Circuits: No. 12 AWG, minimum.

3. Multiconductor Armored Cable: NFPA 70, Type MC, copper conductors, Type TFN/THHN conductor insulation, copper drain wire, copper armor with red identifier stripe, NRTL listed for fire alarm and cable tray installation, plenum rated, and complying with requirements in UL 2196 for a 2-hour rating.

2.14 IDENTIFICATION PRODUCTS

A. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

2.15 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate cables.

B. Factory test UTP and optical fiber cables on reels according to TIA/EIA-568-B.1.

C. Factory test UTP cables according to TIA/EIA-568-B.2.

D. Factory test multimode optical fiber cables according to TIA/EIA-526-14-A and TIA/EIA-568-B.3.

E. Factory sweep test coaxial cables at frequencies from 5 MHz to 1 GHz. Sweep test shall test the frequency response, or attenuation over frequency, of a cable by generating a voltage whose frequency is varied through the specified frequency range and graphing the results.

F. Cable will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

2.16 WIRE LUBRICATING COMPOUND

A. Suitable for the wire insulation and conduit it is used with, and shall not harden or become adhesive.

B. Shall not be used on wire for isolated type electrical power systems.

2.17 FIREPROOFING TAPE

A. The tape shall consist of a flexible, conformable fabric of organic composition coated one side with flame-retardant elastomer.

B. The tape shall be self-extinguishing and shall not support combustion. It shall be arc-proof and fireproof.

C. The tape shall not deteriorate when subjected to water, gases, salt water, sewage, or fungus and be resistant to sunlight and ultraviolet light.

D. The finished application shall withstand a 200-ampere arc for not less than 30 seconds.

E. Securing tape: Glass cloth electrical tape not less than 0.18 mm (7 mils) thick, and 19 mm (3/4 inch) wide.

PART 3 - EXECUTION

3.1 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1.

B. General Requirements for Cabling:

1. Comply with TIA/EIA-568-B.1.

2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."

3. Install 110-style IDC termination hardware unless otherwise indicated.

4. Terminate all conductors; no cable shall contain un-terminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
5. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
6. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
7. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
8. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
9. Pulling Cable:
 - a. Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.
 - b. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling of cables.
 - c. Use ropes made of nonmetallic material for pulling feeders.
 - d. Attach pulling lines for feeders by means of either woven basket grips or pulling eyes attached directly to the conductors, as approved by the Resident Engineer/COTR.
 - e. Pull in multiple cables together in a single conduit.
- C. Splice cables and wires where necessary only in outlet boxes, junction boxes, or pull boxes.
 1. Splices and terminations shall be mechanically and electrically secure.
 2. Where the Government determines that unsatisfactory splices or terminations have been installed, remove the devices and install approved devices at no additional cost to the Government.
- D. Seal cable and wire entering a building from underground, between the wire and conduit where the cable exits the conduit, with a non-hardening approved compound.
- E. Unless otherwise specified in other sections install wiring and connect to equipment/devices to perform the required functions as shown and specified.
- F. Except where otherwise required, install a separate power supply circuit for each system so that malfunctions in any system will not affect other systems.
- G. Where separate power supply circuits are not shown, connect the systems to the nearest panel boards of suitable voltages, which are intended to supply such systems and have suitable spare circuit breakers or space for installation.
- H. Install a red warning indicator on the handle of the branch circuit breaker for the power supply circuit for each system to prevent accidental de-energizing of the systems.
- I. System voltages shall be 120 volts or lower where shown on the drawings or as required by the NEC.
- J. UTP Cable Installation:
 1. Comply with TIA/EIA-568-B.2.
 2. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.

- K. Optical Fiber Cable Installation:
1. Comply with TIA/EIA-568-B.3.
 2. Cable shall be terminated on connecting hardware that is rack or cabinet mounted.
- L. Open-Cable Installation:
1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
 2. Suspend copper cable not in a wireway or pathway a minimum of 8 inches (200 mm) above ceilings by cable supports not more than 60 inches (1525 mm) apart.
 3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.
- M. Installation of Cable Routed Exposed under Raised Floors:
1. Install plenum-rated cable only.
 2. Install cabling after the flooring system has been installed in raised floor areas.
 3. Coil cable 72 inches (1830 mm) long shall be neatly coiled not less than 12 inches (300 mm) in diameter below each feed point.
- N. Outdoor Coaxial Cable Installation:
1. Install outdoor connections in enclosures complying with NEMA 250, Type 4X. Install corrosion-resistant connectors with properly designed O-rings to keep out moisture.
 2. Attach antenna lead-in cable to support structure at intervals not exceeding 36 inches (915 mm).
- O. Separation from EMI Sources:
1. Comply with BICSI TDMM and TIA/EIA-569-A recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
 2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (300 mm).
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (600 mm).
 3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (300 mm).
 4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (75 mm).
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).

5. Separation between Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).
6. Separation between Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

3.2 FIRE ALARM WIRING INSTALLATION

- A. Comply with NECA 1 and NFPA 72.
- B. Wiring Method: Install wiring in metal raceway according to Division 28 Section CONDUITS AND BACKBOXES FOR ELECTRICAL SYSTEMS."
 1. Install plenum cable in environmental air spaces, including plenum ceilings.
 2. Fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.
- C. Wiring Method:
 1. Cables and raceways used for fire alarm circuits, and equipment control wiring associated with the fire alarm system, may not contain any other wire or cable.
 2. Fire-Rated Cables: Use of 2-hour, fire-rated fire alarm cables, NFPA 70, Types MI and CI, is permitted.
 3. Signaling Line Circuits: Power-limited fire alarm cables may be installed in the same cable or raceway as signaling line circuits.
- D. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- E. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
- F. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.
- G. Risers: Install at least two vertical cable risers to serve the fire alarm system. Separaterisers in close proximity to each other with a minimum one-hour-rated wall, so the loss of one riser does not prevent the receipt or transmission of signals from other floors or zones.
- H. Wiring to Remote Alarm Transmitting Device: 1-inch (25-mm) conduit between the fire alarm control panel and the transmitter. Install number of conductors and electrical supervision for connecting wiring as needed to suit monitoring function.

3.3 CONTROL CIRCUIT CONDUCTORS

- A. Minimum Conductor Sizes:
 1. Class 1 remote-control and signal circuits, No. 14 AWG.
 2. Class 2 low-energy, remote-control and signal circuits, No. 16 AWG.
 3. Class 3 low-energy, remote-control, alarm and signal circuits, No. 12 AWG.

3.4 CONNECTIONS

- A. Comply with requirements in Division 28 Section, PHYSICAL ACCESS CONTROL for connecting, terminating, and identifying wires and cables.

- B. Comply with requirements in Division 28 Section "INTRUSION DETECTION" for connecting, terminating, and identifying wires and cables.
- C. Comply with requirements in Division 28 Section "VIDEO SURVEILLANCE" for connecting, terminating, and identifying wires and cables.
- D. Comply with requirements in Division 28 Section "ELECTRONIC PERSONAL PROTECTION SYSTEMS" for connecting, terminating, and identifying wires and cables.
- E. Comply with requirements in Division 28 Section "FIRE DETECTION AND ALARM" for connecting, terminating, and identifying wires and cables.

3.5 FIRESTOPPING

- A. Comply with requirements in Division 07 Section "PENETRATION FIRESTOPPING."
- B. Comply with TIA/EIA-569-A, "Firestopping" Annex A.
- C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.6 GROUNDING

- A. For communications wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.
- B. For low-voltage wiring and cabling, comply with requirements in Division 28 Section "GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY."

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 - 1. Visually inspect UTP and optical fiber cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA/EIA-568-B.1.
 - 2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
 - 3. Test UTP cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross connection.
 - a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
 - 4. Optical Fiber Cable Tests:
 - a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.1. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
 - b. Link End-to-End Attenuation Tests:
 - 1) Multimode Link Measurements: Test at 850 or 1300 nm in 1 direction according to TIA/EIA-526-14-A, Method B, One Reference Jumper.
 - 2) Attenuation test results for links shall be less than 2.0 dB. Attenuation test results shall be less than that calculated according to equation in TIA/EIA-568-B.1.
 - 5. Coaxial Cable Tests: Comply with requirements in Division 27 Section "Master Antenna Television System."

- D. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.
- E. End-to-end cabling will be considered defective if it does not pass tests and inspections.
- F. Prepare test and inspection reports.

3.8 EXISTING WIRING

- A. Unless specifically indicated on the plans, existing wiring shall not be reused for the new installation. Existing wiring to be removed from the site.

3.9 IDENTIFICATION

- A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A.
- B. Install a permanent wire marker on each wire at each termination.
- C. Identifying numbers and letters on the wire markers shall correspond to those on the wiring diagrams used for installing the systems.
- D. Wire markers shall retain their markings after cleaning.
- E. Examples
 - 1. Duress Tip Jack label
Label shall identify the security panel location, board number, input number, alarm number for this location. Example shown below.

2E-122A/B2-I6 Alarm-1

2. Security Panel

- a. All Security Panels are to have a directory. An example is shown in Image 3.9.E.2 at the end of this specification.
- b. All cabling in security panels shall be labeled with the location of the device. Examples shown below.

BT-107
BT-105 tamper
BD-101e lock

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MINNEAPOLIS VAMC BLDG. 70
RENOVATE MH WARD 1L,1H,AND 1K

Specification 618-17-127
Section No. 28 05 00
10-18

MINNEAPOLIS VAMC BLDG. 70
RENOVATE MH WARD 1L,1H,AND 1K

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10-18

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SECTION 28 05 28.33
CONDUITS AND BACKBOXES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the finishing, installation, connection, testing certification of the conduit, fittings, and boxes to form a complete, coordinated, raceway system(s). Conduits and when approved separate UL Certified and Listed partitioned telecommunications raceways are required for a fully functional Electronic Safety and Security (ESS) system. Raceways are required for all electronic safety and security cabling unless shown or specified otherwise.
- B. Definitions: The term conduit, as used in this specification, shall mean any or all of the raceway types specified.
- C. New Construction requires a dedicated conduit from box to security panel location.

1.2 RELATED WORK

- A. Section 01 00 00 - GENERAL REQUIREMENTS. For General Requirements.
- B. Section 07 84 00 - FIRESTOPPING. Requirements for sealing around penetrations to maintain the integrity of fire rated construction.
- C. Section 28 05 00 - COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. For general electrical requirements, general arrangement of the contract documents, coordination, quality assurance, project conditions, equipment and materials, and items that is common to more than one section of Division 28.
- D. Section 28 05 26 - GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
- E. Section 28 08 00 - COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS. Requirements for commissioning - systems readiness checklists, and training.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical nonmetallic tubing.
- C. EPDM: Ethylene-propylene-diene terpolymer rubber.
- D. FMC: Flexible metal conduit.
- E. IMC: Intermediate metal conduit.
- F. LFMC: Liquidtight flexible metal conduit.
- G. LFNC: Liquidtight flexible nonmetallic conduit.
- H. NBR: Acrylonitrile-butadiene rubber.
- I. RNC: Rigid nonmetallic conduit.

1.4 QUALITY ASSURANCE

- A. Refer to Paragraph 1.4 Quality Assurance, in Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY.

1.5 SUBMITTALS

- A. Submit in accordance with Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY and Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Furnish the following:
- B. Shop Drawings:
 - 1. Size and location of main feeders;
 - 2. Size and location of panels and pull boxes

- 3. Layout of required conduit penetrations through structural elements.
- 4. The specific item proposed and its area of application shall be identified on the catalog cuts.
- C. Certification: Prior to final inspection, deliver to the Resident Engineer/COTR four copies of the certification that the material is in accordance with the drawings and specifications and has been properly installed.
- D. Completed System Readiness Checklists provided by the Commissioning Agent and completed by the contractor, signed by a qualified technician and dated on the date of completion, in accordance with the requirements of Section 28 08 00 COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS.
- E. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- F. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
- G. Coordination Drawings: Conduit routing plans shown are diagrammatic on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Structural members in the paths of conduit groups with common supports.
 - 2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.
- H. Source quality-control test reports.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. National Electrical Manufacturers Association (NEMA):
 - TC-3-04.....PVC Fittings for Use with Rigid PVC Conduit and Tubing
 - FB1-07.....Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
- C. National Fire Protection Association (NFPA):
 - 70-11.....National Electrical Code (NEC)
- D. Underwriters Laboratories, Inc. (UL):
 - 1-05.....Flexible Metal Conduit
 - 5-04.....Surface Metal Raceway and Fittings
 - 6-07.....Rigid Metal Conduit
 - 50-07.....Enclosures for Electrical Equipment
 - 360-09.....Liquid-Tight Flexible Steel Conduit
 - 467-07.....Grounding and Bonding Equipment
 - 514A-04.....Metallic Outlet Boxes
 - 514B-04.....Fittings for Cable and Conduit
 - 514C-02.....Nonmetallic Outlet Boxes, Flush-Device Boxes and Covers
 - 651-05.....Schedule 40 and 80 Rigid PVC Conduit
 - 651A-07.....Type EB and A Rigid PVC Conduit and HDPE Conduit
 - 797-07.....Electrical Metallic Tubing
 - 1242-06.....Intermediate Metal Conduit

PART 2 - PRODUCTS

2.1 GENERAL

- A. Conduit Size: In accordance with the NEC, but not less than 20 mm (3/4 inch) unless otherwise shown.

2.2. CONDUIT

- A. Rigid galvanized steel: Shall Conform to UL 6, ANSI C80.1.
- B. Rigid aluminum: Shall Conform to UL 6A, ANSI C80.5.
- C. Rigid intermediate steel conduit (IMC): Shall Conform to UL 1242, ANSI C80.6.
- D. Electrical metallic tubing (EMT): Shall Conform to UL 797, ANSI C80.3. Maximum size not to exceed 105 mm (4 inches) and shall be permitted only with cable rated 600 volts or less.
- E. Flexible galvanized steel conduit: Shall Conform to UL 1.
- F. Liquid-tight flexible metal conduit: Shall Conform to UL 360.
- G. Direct burial plastic conduit: Shall conform to UL 651 and UL 651A, heavy wall PVC or high density polyethylene (PE).

2.3. CONDUIT COLORING CHART

- A. Security Card Reader conduit shall be yellow.
- B. Security Camera conduit shall be yellow.
- C. Security Panic Button cabling shall be yellow.
- D. Security cabling for Lenel Panels shall be yellow.
- E. Fire Alarm conduit shall be red.
- F. Paging Systems conduit shall be purple.

2.4. CONDUIT FITTINGS

- A. Rigid steel and IMC conduit fittings:
 - 1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
 - 2. Standard threaded couplings, locknuts, bushings, and elbows: Only steel or malleable iron materials are acceptable. Integral retractable type IMC couplings are also acceptable.
 - 3. Locknuts: Bonding type with sharp edges for digging into the metal wall of an enclosure.
 - 4. Bushings: Metallic insulating type, consisting of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.
 - 5. Erickson (union-type) and set screw type couplings: Approved for use in concrete are permitted for use to complete a conduit run where conduit is installed in concrete. Use set screws of case hardened steel with hex head and cup point to firmly seat in conduit wall for positive ground. Tightening of set screws with pliers is prohibited.
 - 6. Sealing fittings: Threaded cast iron type. Use continuous drain type sealing fittings to prevent passage of water vapor. In concealed work, install fittings in flush steel boxes with blank cover plates having the same finishes as that of other electrical plates in the room.
- B. Rigid aluminum conduit fittings:
 - 1. Standard threaded couplings, locknuts, bushings, and elbows: Malleable iron, steel or aluminum alloy materials; Zinc or cadmium

- plate iron or steel fittings. Aluminum fittings containing more than 0.4 percent copper are prohibited.
2. Locknuts and bushings: As specified for rigid steel and IMC conduit.
 3. Set screw fittings: Not permitted for use with aluminum conduit.
- C. Electrical metallic tubing fittings:
1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
 2. Only steel or malleable iron materials are acceptable.
 3. Couplings and connectors: Concrete tight and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 50 mm (2 inches) and smaller. Use set screw type couplings with four set screws each for conduit sizes over 50 mm (2 inches). Use set screws of case-hardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding.
 4. Indent type connectors or couplings are prohibited.
 5. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.
- D. Flexible steel conduit fittings:
1. Conform to UL 514B. Only steel or malleable iron materials are acceptable.
 2. Clamp type, with insulated throat.
- E. Liquid-tight flexible metal conduit fittings:
1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
 2. Only steel or malleable iron materials are acceptable.
 3. Fittings must incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.
- F. Direct burial plastic conduit fittings:
1. Fittings shall meet the requirements of UL 514C and NEMA TC3.
 2. As recommended by the conduit manufacturer.
- G. Surface metal raceway fittings: As recommended by the raceway manufacturer.
- H. Expansion and deflection couplings:
1. Conform to UL 467 and UL 514B.
 2. Accommodate, 19 mm (0.75 inch) deflection, expansion, or contraction in any direction, and allow 30 degree angular deflections.
 3. Include internal flexible metal braid sized to guarantee conduit ground continuity and fault currents in accordance with UL 467, and the NEC code tables for ground conductors.
 4. Jacket: Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber material with stainless steel jacket clamps.

2.5 CONDUIT SUPPORTS

- A. Parts and hardware: Zinc-coat or provide equivalent corrosion protection.
- B. Individual Conduit Hangers: Designed for the purpose, having a pre-assembled closure bolt and nut, and provisions for receiving a hanger rod.
- C. Multiple conduit (trapeze) hangers: Not less than 38 mm by 38 mm (1-1/2 by 1-1/2 inch), 12 gage steel, cold formed, lipped channels; with not less than 9 mm (3/8 inch) diameter steel hanger rods.
- D. Solid Masonry and Concrete Anchors: Self-drilling expansion shields, or machine bolt expansion.

2.6 OUTLET, JUNCTION, AND PULL BOXES

- A. UL-50 and UL-514A.
- B. Cast metal where required by the NEC or shown, and equipped with rustproof boxes.
- C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- D. Metal Floor Boxes: Cast or sheet metal, semi-adjustable, rectangular.
- E. Sheet metal boxes: Galvanized steel, except where otherwise shown.
- F. Flush mounted wall or ceiling boxes shall be installed with raised covers so that front face of raised cover is flush with the wall. Surface mounted wall or ceiling boxes shall be installed with surface style flat or raised covers.

2.7 CABINETS

- A. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
- B. Hinged door in front cover with flush latch and concealed hinge.
- C. Key latch to match panelboards.
- D. Metal barriers to separate wiring of different systems and voltage.
- E. Accessory feet where required for freestanding equipment.

2.8 WIREWAYS

- A. Equip with hinged covers, except where removable covers are shown.

2.9 WARNING TAPE

- A. Standard, 4-Mil polyethylene 76 mm (3 inches) wide tape non-detectable type, red with black letters, and imprinted with "CAUTION BURIED ELECTRONIC SAFETY AND SECURITY CABLE BELOW".

2.10 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. Description: Comply with SCTE 77.
 - 1. Color of Frame and Cover: Gray.
 - 2. Configuration: Units shall be designed for flush burial and have closed bottom, unless otherwise indicated.
 - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
 - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - 5. Cover Legend: Molded lettering, as indicated for each service. <Insert legend.>
 - 6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
 - 7. Handholes 300 mm wide by 600 mm long (2 inches wide by 24 inches long) <Insert dimensions> and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.
- B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.

2.11 SLEEVES FOR RACEWAYS

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

- B. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch (1.3- or 3.5-mm) thickness as indicated and of length to suit application.
- C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 84 00 "FIRESTOPPING."

2.12 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 PENETRATIONS

- A. Cutting or Holes:
 - 1. Locate holes in advance where they are proposed in the structural sections such as ribs or beams. Obtain the approval of the Resident Engineer/COTR prior to drilling through structural sections.
 - 2. Cut holes through concrete and masonry in new and existing structures with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Resident Engineer/COTR as required by limited working space.
- B. Fire Stop: Where conduits, wireways, and other electronic safety and security raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases as specified in Section 07 84 00, FIRESTOPPING, with rock wool fiber or silicone foam sealant only. Completely fill and seal clearances between raceways and openings with the fire stop material.
- B. Waterproofing: At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight as specified in Section 07 92 00, "JOINT SEALANTS".

3.2 INSTALLATION, GENERAL

- A. Install conduit as follows:
 - 1. In complete runs before pulling in cables or wires.
 - 2. Flattened, dented, or deformed conduit is not permitted. Remove and replace the damaged conduits with new undamaged material.
 - 3. Assure conduit installation does not encroach into the ceiling height head room, walkways, or doorways.
 - 4. Cut square with a hacksaw, ream, remove burrs, and draw up tight.
 - 5. Mechanically continuous.
 - 6. Independently support conduit at 2.4 m (8 foot) on center. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, conduits, mechanical piping, or mechanical ducts).
 - 7. Support within 300 mm (12 inches) of changes of direction, and within 300 mm (12 inches) of each enclosure to which connected.
 - 8. Close ends of empty conduit with plugs or caps at the rough-in stage to prevent entry of debris, until wires are pulled in.
 - 9. Conduit installations under fume and vent hoods are prohibited.
 - 10. Secure conduits to cabinets, junction boxes, pull boxes and outlet boxes with bonding type locknuts. For rigid and IMC conduit

- installations, provide a locknut on the inside of the enclosure, made up wrench tight. Do not make conduit connections to junction box covers.
11. Flashing of penetrations of the roof membrane is specified in Section 07 60 00, "FLASHING AND SHEET METAL".
 12. Do not use aluminum conduits in wet locations.
 13. Unless otherwise indicated on the drawings or specified herein, all conduits shall be installed concealed within finished walls, floors and ceilings.
- B. Conduit Bends:
1. Make bends with standard conduit bending machines.
 2. Conduit hickey may be used for slight offsets, and for straightening stubbed out conduits.
 3. Bending of conduits with a pipe tee or vise is prohibited.
- C. Layout and Homeruns:
1. Install conduit with wiring, including homeruns, as shown.
 2. Deviations: Make only where necessary to avoid interferences and only after drawings showing the proposed deviations have been submitted approved by the Resident Engineer/COTR.
- D. Fire Alarm:
1. Fire alarm conduit shall be painted red (a red "top-coated" conduit from the conduit manufacturer may be used in lieu of painted conduit) in accordance with the requirements of Section 28 31 00, "FIRE DETECTION AND ALARM".

3.3 CONCEALED WORK INSTALLATION

- A. In Concrete:
1. Conduit: Rigid steel, IMC or EMT. Do not install EMT in concrete slabs that are in contact with soil, gravel or vapor barriers.
 2. Align and run conduit in direct lines.
 3. Install conduit through concrete beams only when the following occurs:
 - a. Where shown on the structural drawings.
 - b. As approved by the Resident Engineer/COTR prior to construction, and after submittal of drawing showing location, size, and position of each penetration.
 4. Installation of conduit in concrete that is less than 75 mm (3 inch) thick is prohibited.
 - a. Conduit outside diameter larger than 1/3 of the slab thickness is prohibited.
 - b. Space between conduits in slabs: Approximately six conduit diameters apart, except one conduit diameter at conduit crossings.
 - c. Install conduits approximately in the center of the slab so that there will be a minimum of 19 mm (3/4 inch) of concrete around the conduits.
 5. Make couplings and connections watertight. Use thread compounds that are UL approved conductive type to insure low resistance ground continuity through the conduits. Tightening set screws with pliers is prohibited.
- B. Furred or Suspended Ceilings and in Walls:
1. Conduit for conductors above 600 volts:
 - a. Rigid steel or rigid aluminum.
 - b. Aluminum conduit mixed indiscriminately with other types in the same system is prohibited.

2. Conduit for conductors 600 volts and below:
 - a. Rigid steel, IMC, rigid aluminum, or EMT. Different type conduits mixed indiscriminately in the same system is prohibited.
3. Align and run conduit parallel or perpendicular to the building lines.
4. Connect recessed lighting fixtures to conduit runs with maximum 1800 mm (6 feet) of flexible metal conduit extending from a junction box to the fixture.
5. Tightening set screws with pliers is prohibited.

3.4 EXPOSED WORK INSTALLATION

- A. Unless otherwise indicated on the drawings, exposed conduit is only permitted in mechanical and electrical rooms.
- B. Conduit for Conductors 600 volts and below:
 1. Rigid steel, IMC, rigid aluminum, or EMT. Different type of conduits mixed indiscriminately in the system is prohibited.
- C. Align and run conduit parallel or perpendicular to the building lines.
- D. Install horizontal runs close to the ceiling or beams and secure with conduit straps.
- E. Support horizontal or vertical runs at not over 2400 mm (eight foot) intervals.
- F. Surface metal raceways: Use only where shown.
- G. Painting:
 1. Paint exposed conduit as specified in Section 09 91 00, "PAINTING".
 2. Paint all conduits containing cables rated over 600 volts safety orange. Refer to Section 09 91 00, "PAINTING" for preparation, paint type, and exact color. In addition, paint legends, using 50 mm (two inch) high black numerals and letters, showing the cable voltage rating. Provide legends where conduits pass through walls and floors and at maximum 6000 mm (20 foot) intervals in between.
 3. Security System conduits shall be colored yellow by the manufacturer or field painted yellow. Field painted conduit shall have minimum 1' of painted conduit every 10'.

3.5 EXPANSION JOINTS

- A. Conduits 75 mm (3 inches) and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install the couplings in accordance with the manufacturer's recommendations.
- B. Provide conduits smaller than 75 mm (3 inches) with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 125 mm (5 inch) vertical drop midway between the ends. Flexible conduit shall have a copper green ground bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for 375 mm (15 inches) and larger conduits are acceptable.
- C. Install expansion and deflection couplings where shown.

3.6 CONDUIT SUPPORTS, INSTALLATION

- A. Safe working load shall not exceed 1/4 of proof test load of fastening devices.
- B. Use pipe straps or individual conduit hangers for supporting individual conduits. Maximum distance between supports is 2.5 m (8 foot) on center.

- C. Support multiple conduit runs with trapeze hangers. Use trapeze hangers that are designed to support a load equal to or greater than the sum of the weights of the conduits, wires, hanger itself, and 90 kg (200 pounds). Attach each conduit with U-bolts or other approved fasteners.
- D. Support conduit independently of junction boxes, pull boxes, fixtures, suspended ceiling T-bars, angle supports, and similar items.
- E. Fasteners and Supports in Solid Masonry and Concrete:
 - 1. New Construction: Use steel or malleable iron concrete inserts set in place prior to placing the concrete.
 - 2. Existing Construction:
 - a. Steel expansion anchors not less than 6 mm (1/4 inch) bolt size and not less than 28 mm (1-1/8 inch) embedment.
 - b. Power set fasteners not less than 6 mm (1/4 inch) diameter with depth of penetration not less than 75 mm (3 inches).
 - c. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.
- F. Hollow Masonry: Toggle bolts are permitted.
- G. Bolts supported only by plaster or gypsum wallboard are not acceptable.
- H. Metal Structures: Use machine screw fasteners or other devices specifically designed and approved for the application.
- I. Attachment by wood plugs, rawl plug, plastic, lead or soft metal anchors, or wood blocking and bolts supported only by plaster is prohibited.
- J. Chain, wire, or perforated strap shall not be used to support or fasten conduit.
- K. Spring steel type supports or fasteners are prohibited for all uses except: Horizontal and vertical supports/fasteners within walls.
- L. Vertical Supports: Vertical conduit runs shall have riser clamps and supports in accordance with the NEC and as shown. Provide supports for cable and wire with fittings that include internal wedges and retaining collars.

3.7 BOX INSTALLATION

- A. Boxes for Concealed Conduits:
 - 1. Flush mounted.
 - 2. Provide raised covers for boxes to suit the wall or ceiling, construction and finish.
- B. In addition to boxes shown, install additional boxes where needed to prevent damage to cables and wires during pulling in operations.
- C. Remove only knockouts as required and plug unused openings. Use threaded plugs for cast metal boxes and snap-in metal covers for sheet metal boxes.
- D. Outlet boxes in the same wall mounted back-to-back are prohibited. A minimum 600 mm (24 inch), center-to-center lateral spacing shall be maintained between boxes).
- E. Minimum size of outlet boxes for ground fault interrupter (GFI) receptacles is 100 mm (4 inches) square by 55 mm (2-1/8 inches) deep, with device covers for the wall material and thickness involved.
- F. Stencil or install phenolic nameplates on covers of the boxes identified on riser diagrams; for example "SIG-FA JB No. 1".
- G. On all Branch Circuit junction box covers, identify the circuits with black marker.

3.8 ELECTRONIC SAFETY AND SECURITY CONDUIT

- A. Install the electronic safety and security raceway system as shown on drawings.
- B. Minimum conduit size of 19 mm (3/4 inch), but not less than the size shown on the drawings.
- C. All conduit ends shall be equipped with insulated bushings.
- D. All 100 mm (four inch) conduits within buildings shall include pull boxes after every two 90 degree bends. Size boxes per the NEC.
- E. Vertical conduits/sleeves through closets floors shall terminate not less than 75 mm (3 inches) below the floor and not less than 75 mm (3 inches) below the ceiling of the floor below.
- F. Terminate conduit runs to/from a backboard in a closet or interstitial space at the top or bottom of the backboard. Conduits shall enter communication closets next to the wall and be flush with the backboard.
- G. Where drilling is necessary for vertical conduits, locate holes so as not to affect structural sections such as ribs or beams.
- H. All empty conduits located in communications closets or on backboards shall be sealed with a standard non-hardening duct seal compound to prevent the entrance of moisture and gases and to meet fire resistance requirements.
- I. Conduit runs shall contain no more than four quarter turns (90 degree bends) between pull boxes/backboards. Minimum radius of communication conduit bends shall be as follows (special long radius):

Sizes of Conduit Trade Size	Radius of Conduit Bends mm, Inches
¾	150 (6)
1	230 (9)
1-1/4	350 (14)
1-1/2	430 (17)
2	525 (21)
2-1/2	635 (25)
3	775 (31)
3-1/2	900 (36)
4	1125 (45)

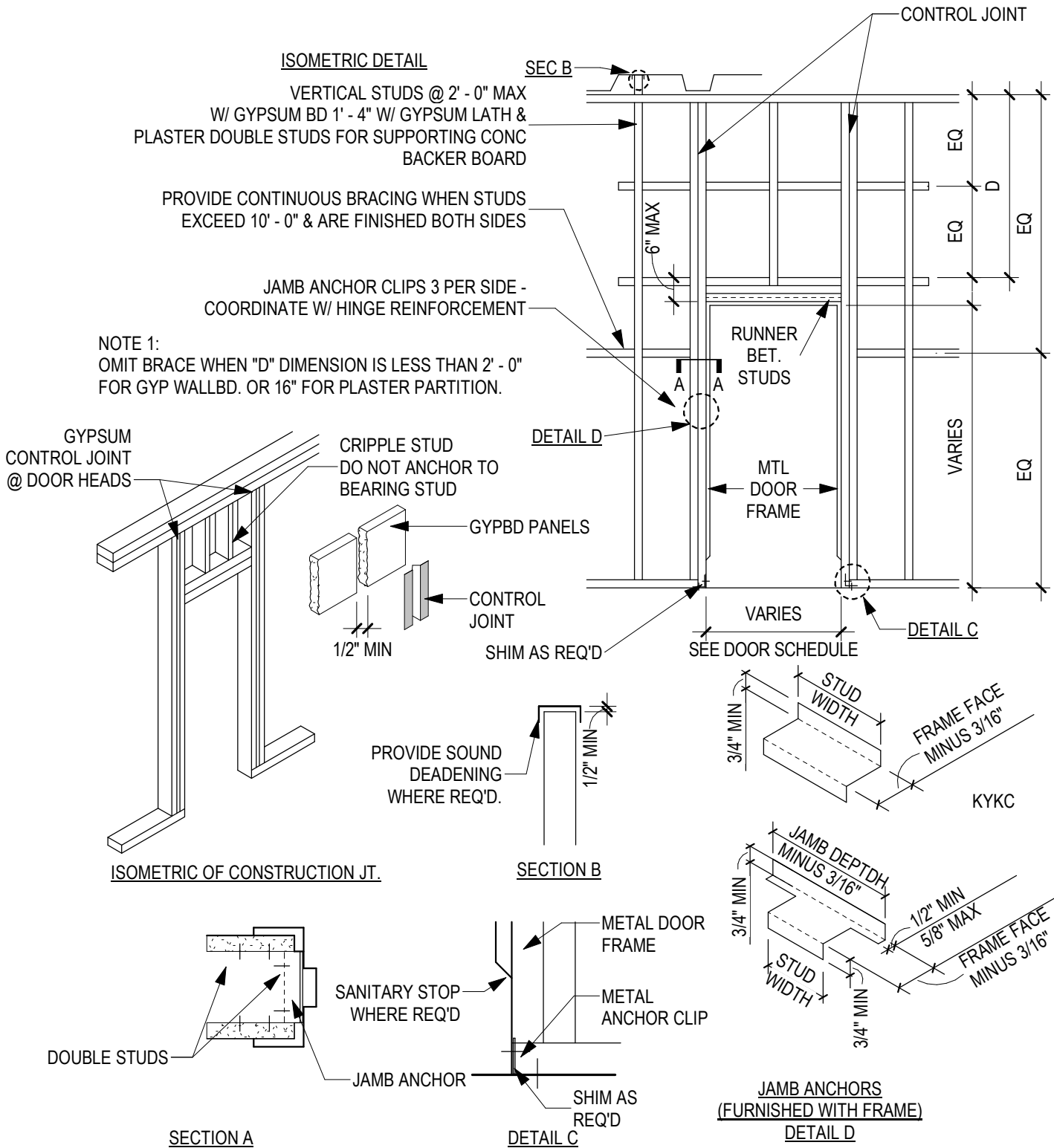
- J. Furnish and install 19 mm (3/4 inch) thick fire retardant plywood specified in on the wall of communication closets where shown on drawings. Mount the plywood with the bottom edge 300 mm (one foot) above the finished floor.
- K. Furnish and pull wire in all empty conduits. (Sleeves through floor are exceptions).

3.9 COMMISSIONING

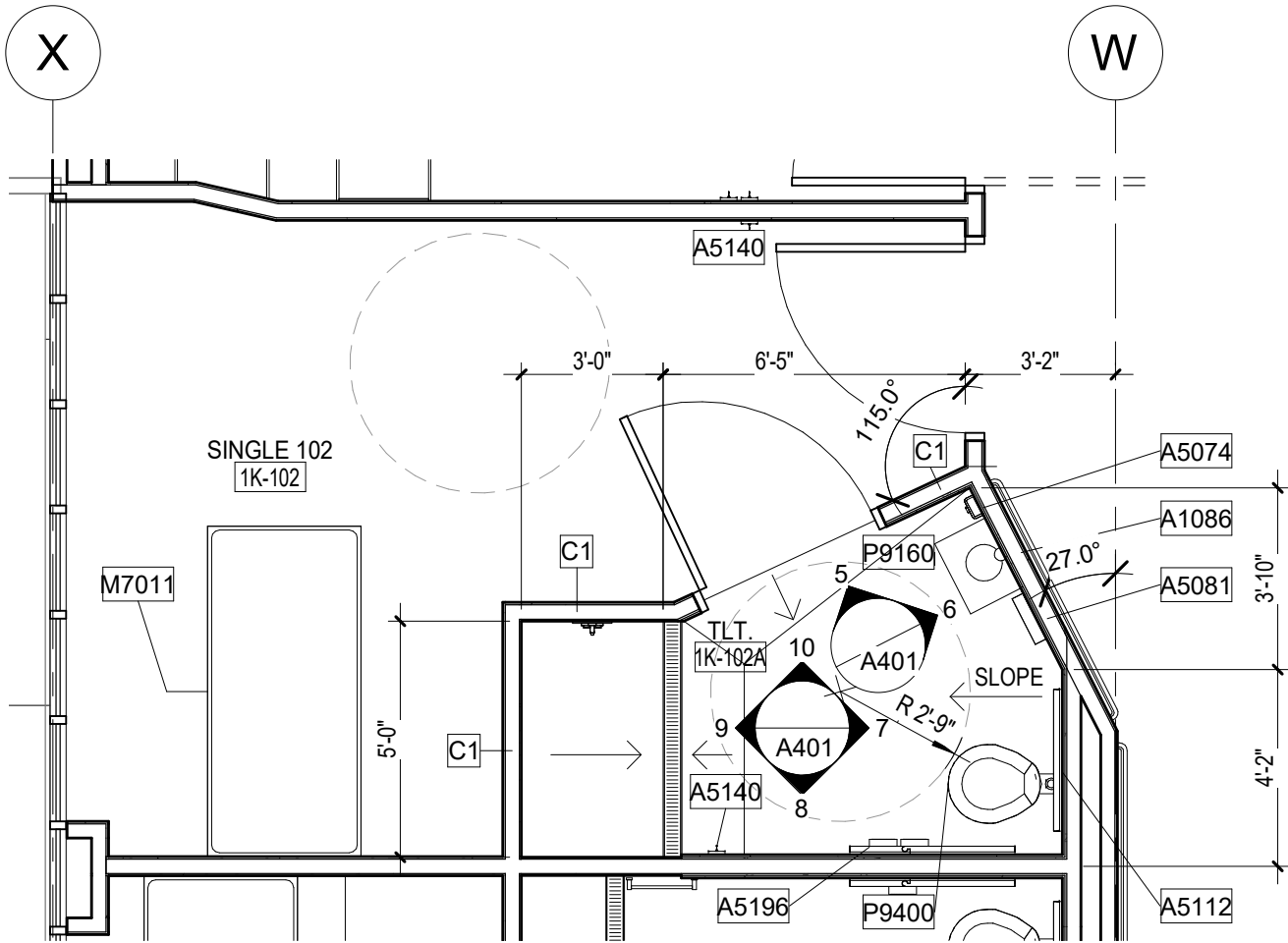
- A. Provide commissioning documentation in accordance with the requirements of Section 28 08 00 - "COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS" for all inspection, start up, and contractor testing required above and required by the System Readiness Checklist provided by the Commissioning Agent.

- B. Components provided under this section of the specification will be tested as part of a larger system. Refer to Section 28 08 00, "COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS" and related sections for contractor responsibilities for system commissioning.

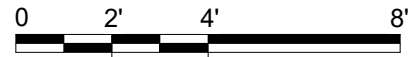
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1 TYPICAL PARTITION CONTROL JOINT FRAMING AT DOORS
 1 1/2" = 1'-0"



TYPICAL- SINGLE PATIENT AND TOILET RM



1/4" = 1'-0"

Room Number	JSN	Content Name	Provided By
SINGLE	A5140	Hook, Garment, Security	CC
SINGLE TOILET	M7011	Bed, Platform, Without Visible Legs, Psychiatric	CC
SINGLE TOILET	A1086	Mirror, Safety, Psychiatric	CC
SINGLE TOILET	A5074	Soap Dispenser, Recessed, SS, Psychiatric	CC
SINGLE TOILET	A5081	Dispenser, Paper Towel, SS, Recessed, Psychiatric	CC
SINGLE TOILET	A5112	Grab Bar, Psychiatric	CC
SINGLE TOILET	A5140	Hook, Garment, Security	CC
SINGLE TOILET	A5196	Dispenser, Toilet Tissue, Psychiatric	CC
SINGLE TOILET	A5207	Bar, Towel, 1" Diameter, SS, Surface Mntd, Psych	CC
SINGLE TOILET	P5350	Shower, Patient, Psychiatric	CC
SINGLE TOILET	P9160	Lavatory, China, for Disturbed Patient	CC
SINGLE TOILET	P9400	Toilet, Wall Hung, Siphon Jet, Psychiatric	CC

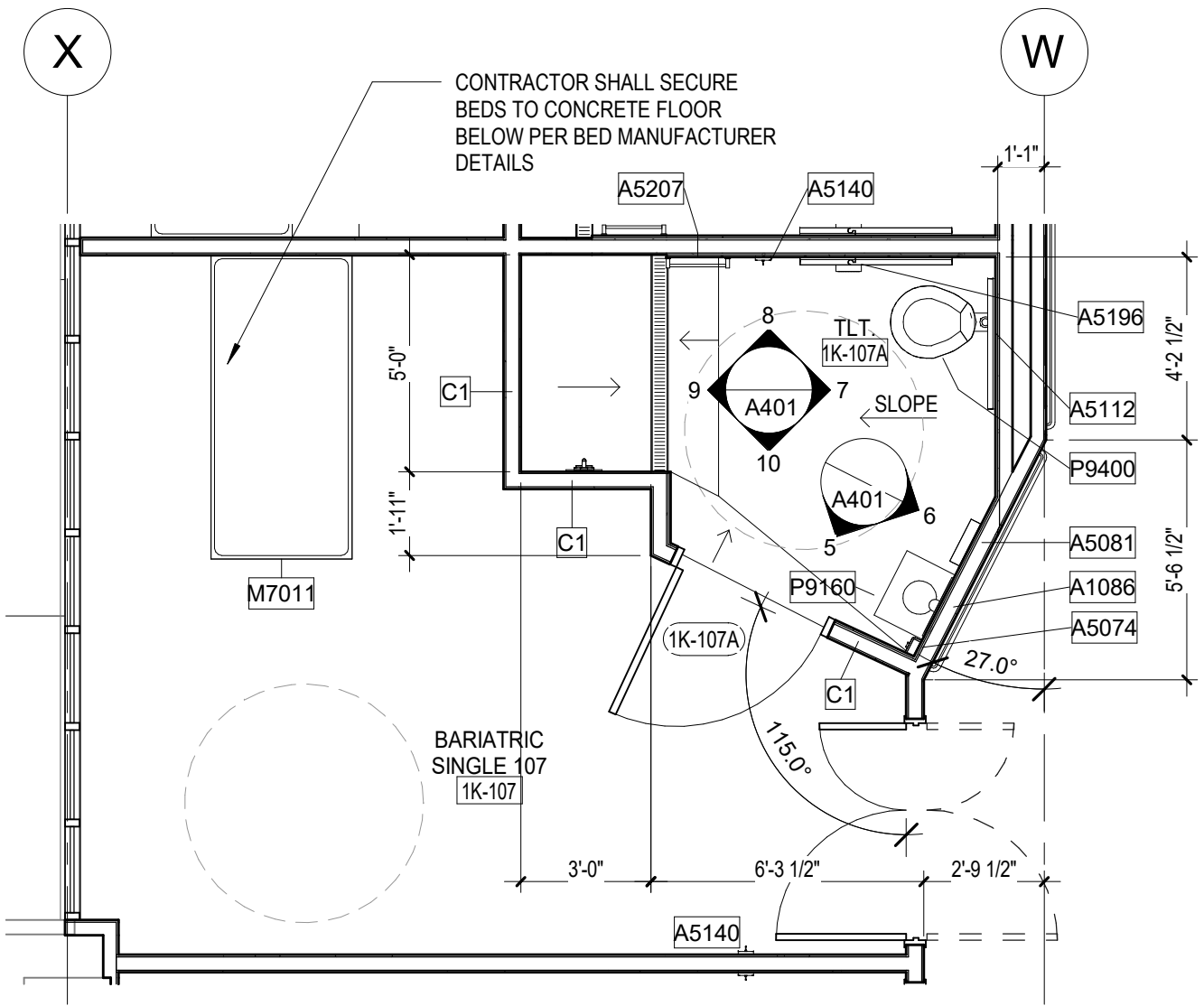


U.S. Department
of Veterans Affairs

RENOVATE MH WARD 1L,1H,1K
TPY SINGLE PATIENT ROOM

DETAIL
1/A401

VA MEDICAL CENTER, MINNEAPOLIS, MN
RENOVATE MENTAL HEALTH WARD. BLDG 1338
Date: 04/02/21 VA JOB NUMBER: 618-17-127



TYPICAL - BARIATRIC SINGLE AND TOILET RM

1/4" = 1'-0"

Room Number	JSN	Content Name	Provided By
DOUBLE PATIENT	A5140	Hook, Garment, Security	CC
DOUBLE PATIENT TOILET	M7011	Bed, Platform, Without Visible Legs, Psychiatric	CC
DOUBLE PATIENT TOILET	A1086	Mirror, Safety, Psychiatric	CC
DOUBLE PATIENT TOILET	A5074	Soap Dispenser, Recessed, SS, Psychiatric	CC
DOUBLE PATIENT TOILET	A5081	Dispenser, Paper Towel, SS, Recessed, Psychiatric	CC
DOUBLE PATIENT TOILET	A5112	Grab Bar, Psychiatric	CC
DOUBLE PATIENT TOILET	A5140	Hook, Garment, Security	CC
DOUBLE PATIENT TOILET	A5196	Dispenser, Toilet Tissue, Psychiatric	CC
DOUBLE PATIENT TOILET	A5207	Bar, Towel, 1" Diameter, SS, Surface Mntd, Psych	CC
DOUBLE PATIENT TOILET	P5350	Shower, Patient, Psychiatric	CC
DOUBLE PATIENT TOILET	P9160	Lavatory, China, for Disturbed Patient	CC
DOUBLE PATIENT TOILET	P9400	Toilet, Wall Hung, Siphon Jet, Psychiatric	CC



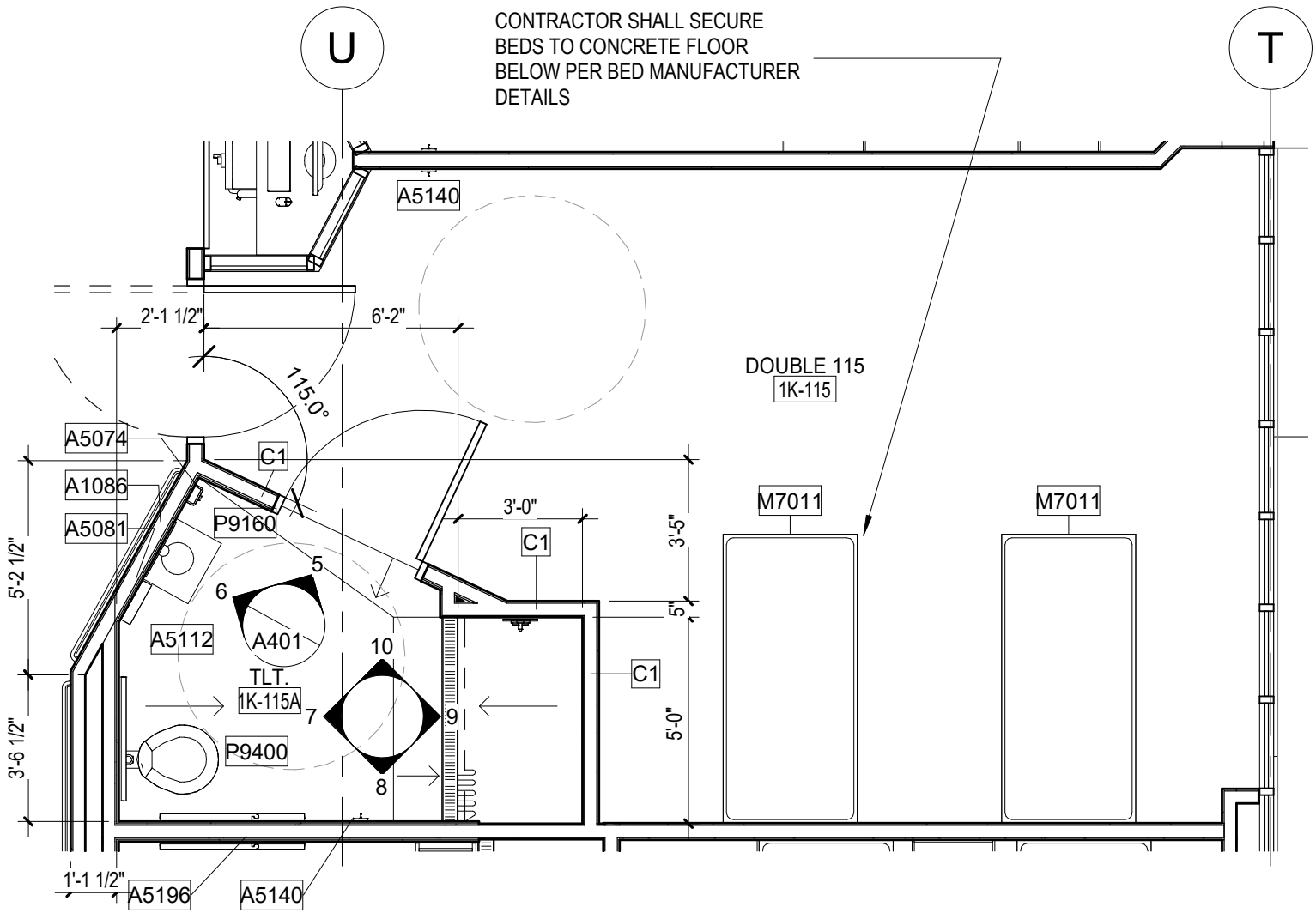
U.S. Department of Veterans Affairs

RENOVATE MH WARD 1L,1H,1K
TYP BARIATRIC SINGLE

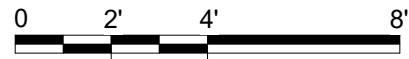
DETAIL
2/A401

VA MEDICAL CENTER, MINNEAPOLIS, MN
RENOVATE MENTAL HEALTH WARD. BLDG 1338
Date: 04/02/21 VA JOB NUMBER: 618-17-127

CONTRACTOR SHALL SECURE
BEDS TO CONCRETE FLOOR
BELOW PER BED MANUFACTURER
DETAILS



TYPICAL - DOUBLE PATIENT AND TOILET RM



1/4" = 1'-0"

Room Number	JSN	Content Name	Provided By
BARIATRIC SINGLE	A5140	Hook, Garment, Security	CC
BARIATRIC SINGLE TOILET	M7011	Bed, Platform, Without Visible Legs, Psychiatric	CC
BARIATRIC SINGLE TOILET	A1086	Mirror, Safety, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5074	Soap Dispenser, Recessed, SS, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5081	Dispenser, Paper Towel, SS, Recessed, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5112	Grab Bar, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5140	Hook, Garment, Security	CC
BARIATRIC SINGLE TOILET	A5196	Dispenser, Toilet Tissue, Psychiatric	CC
BARIATRIC SINGLE TOILET	A5207	Bar, Towel, 1" Diameter, SS, Surface Mntd, Psych	CC
BARIATRIC SINGLE TOILET	P5350	Shower, Patient, Psychiatric	CC
BARIATRIC SINGLE TOILET	P9160	Lavatory, China, for Disturbed Patient	CC
BARIATRIC SINGLE TOILET	P9400	Toilet, Wall Hung, Siphon Jet, Psychiatric	CC



U.S. Department
of Veterans Affairs

RENOVATE MH WARD 1L,1H,1K
TPY DOUBLE PATIENT ROOM

DETAIL
3/A401

VA MEDICAL CENTER, MINNEAPOLIS, MN
RENOVATE MENTAL HEALTH WARD. BLDG 1338
Date: 04/02/21 VA JOB NUMBER: 618-17-127

Temporary AHU Location



Locate temporary AHU on-grade outside of 'K' Mechanical Room. Confirm location with COR.

FLEXIBLE AIR DUCT.
SEE SPECIFICATIONS.

SUPPLY AIR DUCT.
SEE PLAN FOR
SIZE (TYPICAL).

1-1/2" THICK, 1 POUND
DENSITY, GLASS FIBER BLANKET
WITH FOIL-SCRIM-CRAFT
FACING ON EXTERIOR OF
PLENUM

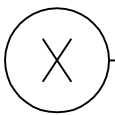
BALANCING DAMPER
WITH LOCKING
QUADRANT

FLEXIBLE DUCT
CLAMPS.

SUPPLY DIFFUSER

CEILING SYSTEM

DUCT TO LINEAR DIFFUSER CONNECTION DETAIL



NO SCALE

KEYNOTE LEGEND	
KEY	DESCRIPTION
PP11	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURNS. BALANCE FLOW TO 25 GPM
PP12	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE FLOW TO 4.5 GPM
PP13	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE FLOW TO 5.75 GPM
PP16	1/2" CW DOWN TO ICE WATER DISPENSER. STUB OUT OF WALL AND PROVIDE BALL VALVE, BACKFLOW PREVENTER AND WATER FILTER.
PP17	PROVIDE 3/4" COPPER DRAIN FROM ICE WATER DISPENSER DRAIN CONNECTION DOWN TO FUNNEL FLOOR DRAIN BELOW COUNTER. PROVIDE 1" MINIMUM AIR GAP.

- PLUMBING GENERAL NOTES**
- CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER PRIOR TO START OF DEMOLITION OF CONSTRUCTION ACTIVITIES.
 - ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF NATIONAL AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.
 - COORDINATE DEMOLITION WITH SCHEDULES, CONSTRUCTION REQUIREMENTS AND SUBCONTRACTOR'S OPERATIONS. COORDINATE SEQUENCING WITH THE CONSTRUCTION MANAGER AND PROCEED ONLY AFTER OBTAINING THE OWNER'S ACCEPTANCE OF DEMOLITION SCHEDULE.
 - NO WORK SHALL BE STARTED WHICH AFFECTS EXISTING FACILITY OPERATIONS WITHOUT PRIOR COORDINATION AND APPROVAL OF THE WORK WITH THE OWNER.
 - PROVIDE FIRE PROTECTION EQUIPMENT (FIRE EXTINGUISHERS, ETC) AS REQUIRED FOR DEMOLITION & CONSTRUCTION ACTIVITIES.
 - FACILITY NEEDS TO BE KEPT WEATHER TIGHT REGARDLESS OF WEATHER CONDITIONS AT THE END OF EACH DAY. MAINTAIN WEATHER TIGHT CONDITIONS 24 HOURS A DAY FOR THE DURATION OF THE PROJECT.
 - ALL PLUMBING EQUIPMENT, ACCESSORIES AND/OR PLUMBING FIXTURES WILL BE SECURED WITH VANDAL RESISTANT MOUNTING HARDWARE.
 - INSTALL VERTICAL SANITARY AND VENT PIPING TRUE AND PLUMB.
 - INSTALL ALL HORIZONTAL SANITARY PIPING SLOPED AT 1/4" PER FOOT.
 - INSTALL HORIZONTAL SANITARY VENT PIPING SLOPED AT 1/8" PER FOOT.
 - REFER TO ARCHITECTURAL PLANS FOR PIPING ACCESS PANEL LOCATIONS.
 - REFER TO FIRE PROTECTION DRAWINGS FOR PIPING AND SPRINKLER HEAD LOCATIONS.
 - PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. ROUTE ALL PIPING AS HIGH AS POSSIBLE.
 - COORDINATE FINAL LOCATIONS OF NEW PIPING AND PLUMBING FIXTURES WITH EXISTING SYSTEMS, STRUCTURE, LIGHTING, ARCHITECTURAL ELEMENTS, DUCTWORK, PIPING AND SPRINKLERS.
 - REFER TO PLUMBING DETAILS FOR ACCESSORIES AND FINAL CONNECTIONS TO PLUMBING EQUIPMENT.
 - PROVIDE DRAIN VALVES WITH CAPPED HOSE END CONNECTIONS AT THE BOTTOM OF EACH RISER AND AT ALL LOW POINTS IN EACH PRESSURE PIPING SYSTEM. VERIFY WITH ACCESS PANEL LOCATIONS.
 - PROVIDE SLEEVES AT EACH PENETRATION OF FIRE AND SMOKE RATED ASSEMBLIES AND SEAL WITH INTUMESCENT MATERIAL.
 - CONNECT PIPE AND EQUIPMENT HANGERS TO TOP CHORD OF ROOF JOISTS, BEAM FLANGES OR CONCRETE FLOOR DECK BY APPROVED MEANS.
 - FOR PLUMBING PIPE SIZES, SEE RISER DIAGRAMS.
 - ALL LAVATORIES AND HAND SINKS SHALL HAVE THERMOSTATIC MIXING VALVES BELOW THE SINKS TO MAINTAIN A MAXIMUM HOT WATER TEMPERATURE OF 110 DEGREES F. MIXING VALVE SHALL BE A WATTS SERIES LFUSG-B LEAD FREE OR EQUAL.
 - REBALANCE THE BUILDING RECIRCULATED HOT WATER SYSTEM UPON COMPLETION OF NEW WORK. PROVIDE NEW, OR ADDITIONAL, RECIRC. PUMP AS REQUIRED FOR A COMPLETE AND WORKING BUILDING RECIRCULATED HOT WATER SYSTEM.
 - PROVIDE ISOLATION SHUT-OFF VALVES ON ALL PIPE RUNOUTS FROM MAINS TO PATIENT ROOMS, FROM MAINS TO SINGLE PLUMBING FIXTURES, AND WHEREVER SHOWN ON PLANS AND RISERS.
 - FIELD VERIFY ALL NEW WATER, WASTE, AND VENT CONNECTIONS, AND PROVIDE NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS.
 - PITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED OTHERWISE.
 - WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.
 - PROVIDE CLEANOUTS IN ACCESSIBLE LOCATIONS AT THE BASE OF ALL PLUMBING RISERS.



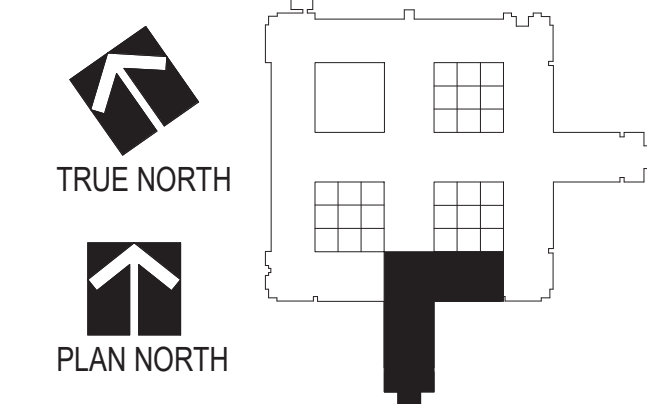
1 LEVEL 1 PLUMBING PLAN, AREA H, PHASE 2
SCALE: 1/8" = 1'-0"

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Chad Michael Estinger*
Typed or printed name: Chad Michael Estinger
Date: 01/07/2021, License Number: 48710

GENERAL NOTES:

GENERAL CONTRACTOR AND/OR ALL SUBCONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR VARIATIONS BETWEEN PLAN DIMENSIONS AND ACTUAL FIELD DIMENSIONS. WHERE VARIATIONS ARE FOUND TO OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADJUSTMENT TO THE WORK WILL BE MADE WITHOUT THE PRIOR APPROVAL OF THE PROJECT ENGINEER.

GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL DEMOLITION INCLUDING REMOVAL OF WALLS, PARTITIONS, DOORS & CEILING & FLOORS. ANY AND ALL CUTTING OF CONCRETE FLOORS, WALLS OR STRUCTURE SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY. CORE DRILLING THROUGH CONCRETE WALLS, FLOORS OR STRUCTURE FOR PIPING OR CONDUIT SHALL BE THE RESPONSIBILITY OF THE SUBCONTRACTOR BY TRADE. FIRE STOPPING OF THESE OPENINGS SHALL BE DONE BY THE RESPECTIVE SUBCONTRACTOR. REMOVAL OF DEBRIS RESULTING FROM DEMOLITION, CUTTING, AND/OR DRILLING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. PATCHING AND REPAIR OF CONCRETE WALLS, FLOOR, OR STRUCTURE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS WILL BE ACCOMPLISHED UPON COMPLETION OF THE INSTALLATION OF ANY AND ALL UTILITIES INSTALLED BY THE VARIOUS SUBCONTRACTORS.



REVISIONS	DATE

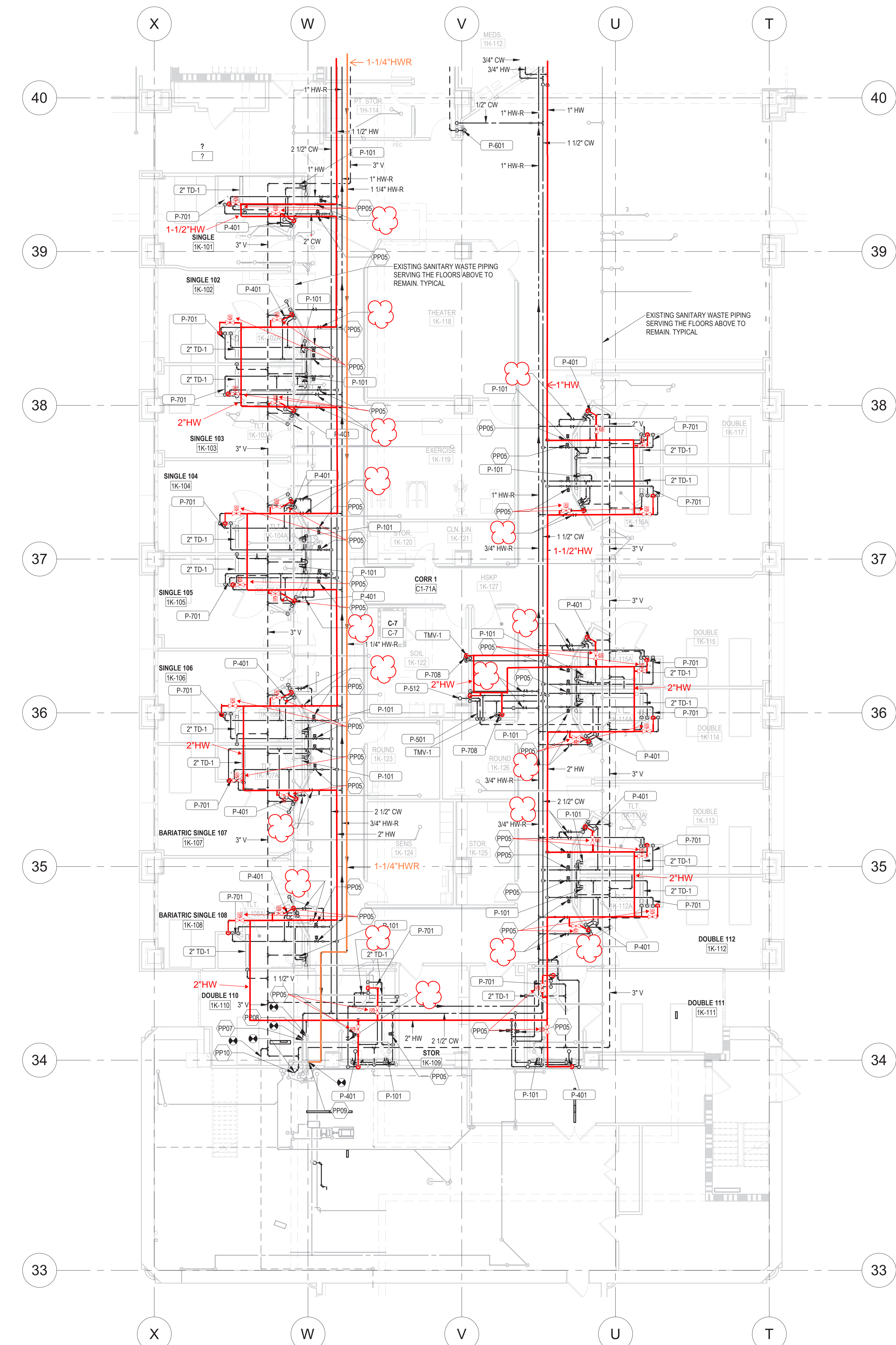
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Drawing Scale 1/8" = 1'-0"	Approved: Division Chief
Plot Scale	Approved: Service Director

Project Title RENOVATE MH WARD 1L, 1H, AND 1K	
Project No. 618-17-127	Building Number 70
Location 1 Veterans Dr., Minneapolis, MN 55417	
Date 1/7/2021	Checked CME
Drawn GJH	

DRAWING NO. 1338 - PP103-P2



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KEYNOTE LEGEND	
KEY	DESCRIPTION
PP05	PROVIDE SOLENOID SHUT OFF VALVE ON EACH HOT AND COLD WATER LINE THAT SERVES AN INDIVIDUAL PATIENT ROOM. THE SOLENOID VALVE SHALL BE CONTROLLED BY A USER PROGRAMMABLE TOUCH SCREEN DIGITAL MONITOR LOCATED IN A PANEL BACK IN THE NURSES STATION.
PP07	CONNECT TO EXISTING MINIMUM 3\"/>

PLUMBING GENERAL NOTES	
A.	CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER PRIOR TO START OF DEMOLITION OF CONSTRUCTION ACTIVITIES.
B.	ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF NATIONAL AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.
C.	COORDINATE DEMOLITION WITH SCHEDULES, CONSTRUCTION REQUIREMENTS AND SUBCONTRACTORS OPERATIONS. COORDINATE SEQUENCING WITH THE CONSTRUCTION MANAGER AND PROCEED ONLY AFTER OBTAINING THE OWNERS ACCEPTANCE OF DEMOLITION SCHEDULE.
D.	NO WORK SHALL BE STARTED WHICH AFFECTS EXISTING FACILITY OPERATIONS WITHOUT PRIOR COORDINATION AND APPROVAL OF THE WORK WITH THE OWNER.
E.	PROVIDE FIRE PROTECTION EQUIPMENT (FIRE EXTINGUISHERS, ETC) AS REQUIRED FOR DEMOLITION & CONSTRUCTION ACTIVITIES.
F.	FACILITY NEEDS TO BE KEPT WEATHER TIGHT REGARDLESS OF WEATHER CONDITIONS AT THE END OF EACH DAY. MAINTAIN WEATHER TIGHT CONDITIONS 24 HOURS A DAY FOR THE DURATION OF THE PROJECT.
G.	ALL PLUMBING EQUIPMENT, ACCESSORIES AND/OR PLUMBING FIXTURES WILL BE SECURED WITH VANDAL RESISTANT MOUNTING HARDWARE.
H.	INSTALL VERTICAL SANITARY AND VENT PIPING TRUE AND PLUMB.
I.	INSTALL ALL HORIZONTAL SANITARY PIPING SLOPED AT 1/4\"/>

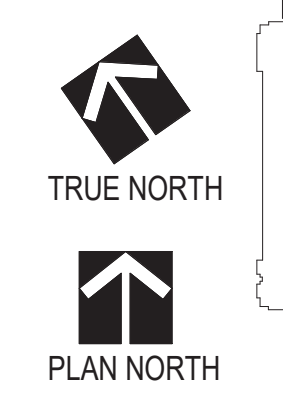
1 LEVEL 1 PLUMBING PLAN, AREA K, PHASE 2
SCALE: 1/8" = 1'-0"

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Chad Michael Eslinger*
Typed or printed name: Chad Michael Eslinger
Date: 01/07/2021 License Number: 48710

GENERAL NOTES:

GENERAL CONTRACTOR AND/OR ALL SUBCONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR VARIATIONS BETWEEN PLAN DIMENSIONS AND ACTUAL FIELD DIMENSIONS. WHERE VARIATIONS ARE FOUND TO OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADJUSTMENT TO THE WORK WILL BE MADE WITHOUT THE PRIOR APPROVAL OF THE PROJECT ENGINEER.

GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL DEMOLITION INCLUDING REMOVAL OF WALLS, PARTITIONS, DOORS & CEILING & FLOORS. ANY AND ALL CUTTING OF CONCRETE FLOORS, WALLS OR STRUCTURE SHALL BE THE GENERAL CONTRACTORS RESPONSIBILITY. CORE DRILLING THROUGH CONCRETE WALLS, FLOORS OR STRUCTURE FOR PIPING OR CONDUIT SHALL BE THE RESPONSIBILITY OF THE SUBCONTRACTOR BY TRADE. FIRESTOPPING OF THESE OPENINGS SHALL BE DONE BY THE RESPECTIVE SUBCONTRACTOR. REMOVAL OF DEBRIS RESULTING FROM DEMOLITION, CUTTING, AND/OR DRILLING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. PATCHING AND REPAIR OF CONCRETE WALLS, FLOOR, OR STRUCTURE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS WILL BE ACCOMPLISHED UPON COMPLETION OF THE INSTALLATION OF ANY AND ALL UTILITIES INSTALLED BY THE VARIOUS SUBCONTRACTORS.



Drawing Title
PLUMBING PLANS - LEVEL 1 - AREA K - PHASE 2

Project Title
RENOVATE MH WARD 1L, 1H, AND 1K

Project No.
618-47-127

Building Number
70

DRAWING NO.
1338 - PP102-P2

Office of Facilities Management



REVISIONS	DATE

Drawing Scale
1/8" = 1'-0"

Approved: Division Chief
Approved: Service Director

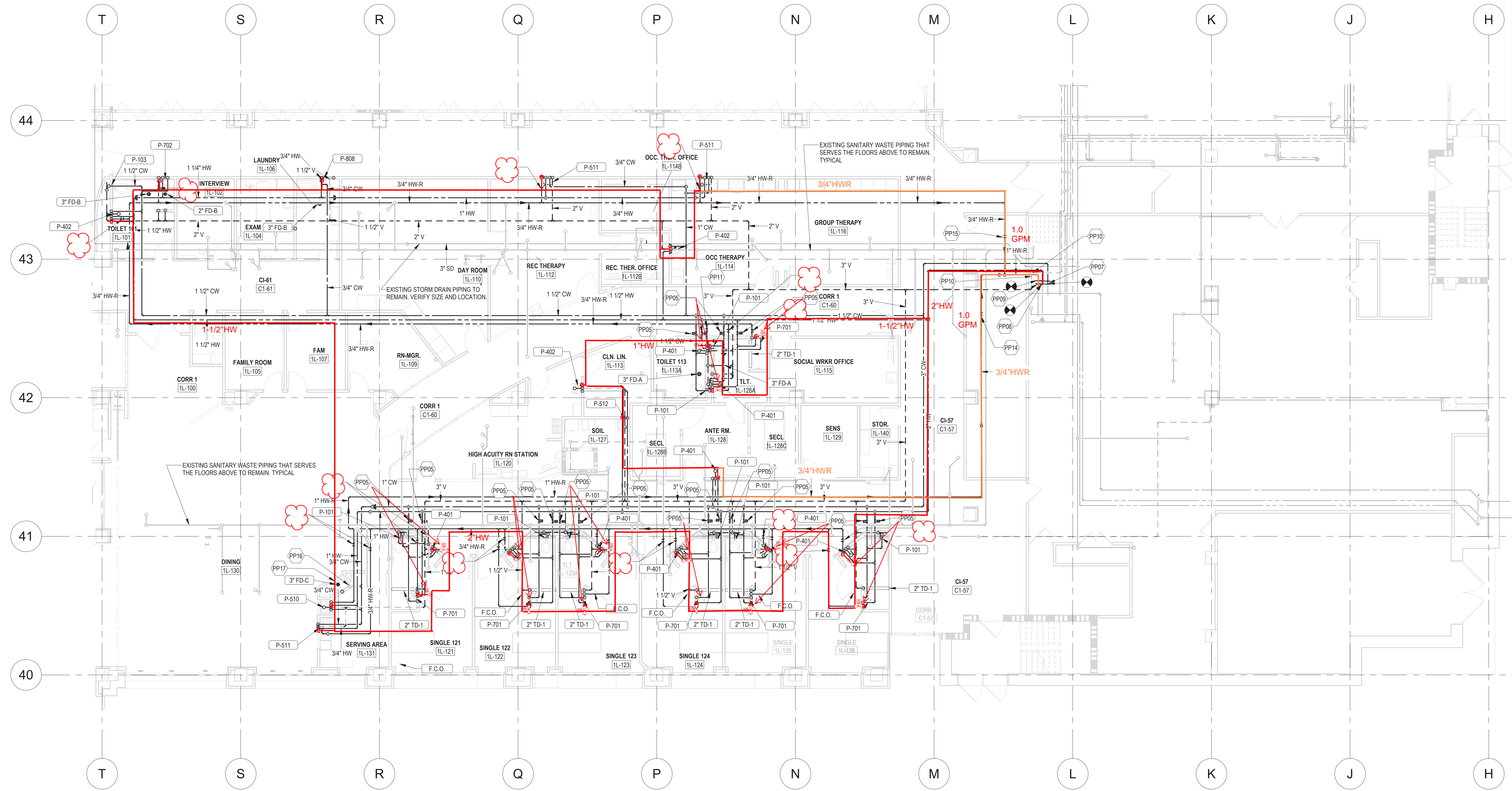
Date
1/7/2021

Checked
CME

Drawn
GJH

KEY	DESCRIPTION
PP05	PROVIDE SOLENOID SHUT OFF VALVE ON EACH HOT AND COLD WATER LINE THAT SERVES AN INDIVIDUAL PATIENT ROOM. THE SOLENOID VALVE SHALL BE CONTROLLED BY A USER PROGRAMMABLE TOUCH SCREEN DIGITAL MONITOR LOCATED IN A PANEL BACK IN THE NURSES STATION.
PP07	CONNECT TO EXISTING MINIMUM 3" COLD WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP08	CONNECT TO EXISTING MINIMUM 2" HOT WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP09	CONNECT TO EXISTING MINIMUM 1-1/2" RECIRCULATED HOT WATER MAIN. VERIFY SIZE AND LOCATION OF EXISTING PIPING.
PP10	CONNECT NEW SANITARY VENTS TO EXISTING VENT RISER. VERIFY SIZE AND LOCATION OF EXISTING RISER.
PP11	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURNS. BALANCE FLOW TO 25 GPM.
PP14	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE TO 1.5 GPM.
PP15	PROVIDE BALANCE VALVE ON RECIRCULATED HOT WATER RETURN MAIN. BALANCE TO 1.5 GPM.
PP16	1/2" CW DOWN TO ICE/WATER DISPENSER. STUB OUT OF WALL AND PROVIDE BALL VALVE, BACKFLOW PREVENTER AND WATER FILTER.
PP17	PROVIDE 3/4" COPPER DRAIN FROM ICE/WATER DISPENSER DRAIN CONNECTION DOWN TO FUNNEL FLOOR DRAIN BELOW COUNTER. PROVIDE 1" MINIMUM AIR GAP.

- PLUMBING GENERAL NOTES**
- CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER PRIOR TO START OF DEMOLITION OF CONSTRUCTION ACTIVITIES.
 - ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF NATIONAL AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.
 - COORDINATE DEMOLITION WITH SCHEDULES, CONSTRUCTION REQUIREMENTS AND SUBCONTRACTOR OPERATIONS. COORDINATE SEQUENCING WITH THE CONSTRUCTION MANAGER AND PROCEED ONLY AFTER OBTAINING THE OWNER'S ACCEPTANCE OF DEMOLITION SCHEDULE.
 - NO WORK SHALL BE STARTED WHICH AFFECTS EXISTING FACILITY OPERATIONS WITHOUT PRIOR COORDINATION AND APPROVAL OF THE WORK WITH THE OWNER.
 - PROVIDE FIRE PROTECTION EQUIPMENT (FIRE EXTINGUISHERS, ETC.) AS REQUIRED FOR DEMOLITION & CONSTRUCTION ACTIVITIES.
 - FACILITY NEEDS TO BE KEPT WEATHER TIGHT REGARDLESS OF WEATHER CONDITIONS AT THE END OF EACH DAY. MAINTAIN WEATHER TIGHT CONDITIONS 24 HOURS A DAY FOR THE DURATION OF THE PROJECT.
 - ALL PLUMBING EQUIPMENT, ACCESSORIES AND/OR PLUMBING FIXTURES WILL BE SECURED WITH VANDAL RESISTANT MOUNTING HARDWARE.
 - INSTALL VERTICAL SANITARY AND VENT PIPING TRUE AND PLUMB.
 - INSTALL ALL HORIZONTAL SANITARY PIPING SLOPED AT 1/4" PER FOOT.
 - INSTALL HORIZONTAL SANITARY VENT PIPING SLOPED AT 1/8" PER FOOT.
 - REFER TO ARCHITECTURAL PLANS FOR PIPING ACCESS PANEL LOCATIONS.
 - REFER TO FIRE PROTECTION DRAWINGS FOR PIPING AND SPRINKLER HEAD LOCATIONS.
 - PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. ROUTE ALL PIPING AS HIGH AS POSSIBLE.
 - COORDINATE FINAL LOCATIONS OF NEW PIPING AND PLUMBING FIXTURES WITH EXISTING SYSTEMS, STRUCTURE, LIGHTING, ARCHITECTURAL ELEMENTS, DUCTWORK, PIPING AND SPRINKLERS.
 - REFER TO PLUMBING DETAILS FOR ACCESSORIES AND FINAL CONNECTIONS TO PLUMBING EQUIPMENT.
 - PROVIDE DRAIN VALVES WITH CAPPED HOSE END CONNECTIONS AT THE BOTTOM OF EACH RISER AND AT ALL LOW POINTS IN EACH PRESSURE PIPING SYSTEM. VERIFY WITH ACCESS PANEL LOCATIONS.
 - PROVIDE SLEEVES AT EACH PENETRATION OF FIRE AND SMOKE RATED ASSEMBLIES AND SEAL WITH INTUMESCENT MATERIAL.
 - CONNECT PIPE AND EQUIPMENT HANGERS TO TOP CHORD OF ROOF JOISTS, BEAM FLANGES OR CONCRETE FLOOR DECK BY APPROVED MEANS.
 - FOR PLUMBING PIPE SIZES, SEE RISER DIAGRAMS.
 - ALL LAVATORIES AND HAND SINKS SHALL HAVE THERMOSTATIC MIXING VALVES BELOW THE SINKS TO MAINTAIN A MAXIMUM HOT WATER TEMPERATURE OF 110 DEGREES F. MIXING VALVE SHALL BE A WATTS SERIES LFUSG-B LEAD FREE OR EQUAL.
 - REBALANCE THE BUILDING RECIRCULATED HOT WATER SYSTEM UPON COMPLETION OF NEW WORK. PROVIDE NEW OR ADDITIONAL RECIRC. PUMP AS REQUIRED FOR A COMPLETE AND WORKING BUILDING CIRCULATED HOT WATER SYSTEM.
 - PROVIDE ISOLATION SHUT-OFF VALVES ON ALL PIPE RUNOUTS FROM MAINS TO PATIENT ROOMS, FROM MAINS TO SINGLE PLUMBING FIXTURES, AND WHEREVER SHOWN ON PLANS AND RISERS.
 - FIELD VERIFY ALL NEW WATER, WASTE, AND VENT CONNECTIONS, AND PROVIDE NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS.
 - FITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED OTHERWISE.
 - WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.
 - PROVIDE CLEANOUTS IN ACCESSIBLE LOCATIONS AT THE BASE OF ALL PLUMBING RISERS.



1 LEVEL 1 PLUMBING PLAN. AREA L, PHASE 3
SCALE: 1/8" = 1'-0"

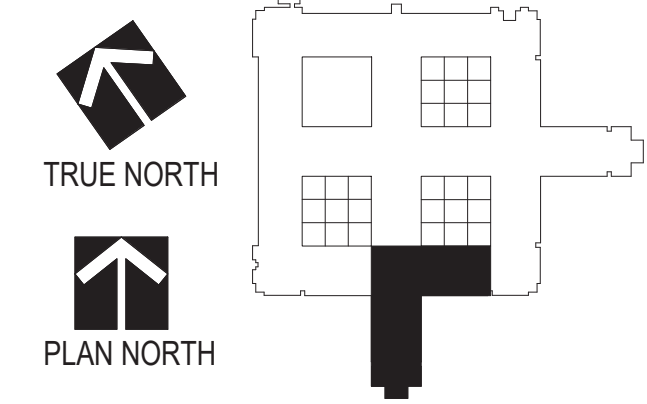
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3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941



Drawing Scale
1/8" = 1'-0"

Plot Scale

Drawing Title
PLUMBING PLANS - LEVEL 1 - AREA L - PHASE 3

Approved: Division Chief

Approved: Service Director

Project Title
RENOVATE MH WARD 1L, 1H, AND 1K

Location
1 Veterans Dr., Minneapolis, MN 55417

Date
1/7/2021

Checked
CME

Drawn
GJH

Project No.
618-17-127

Building Number
70

DRAWING NO.
1338 - PP104-P3

Office of Facilities Management

Department of Veterans Affairs

Professional Engineer

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Signature: *[Signature]*

Typed or printed name: Chad Michael Esslinger

Date: 01/07/2021 License Number: 48710

SECTION 07 27 26
FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR PERMEABLE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fluid-applied vapor-permeable air barrier at exterior above grade wall assemblies.
 - 2. Connection to adjacent air barrier components providing a durable, continuous, full building air barrier.

1.2 RELATED WORK

- A. Section 01 45 29 TESTING LABORATORY SERVICES: General Quality Assurance and Quality Control Requirements.
- B. Section 01 91 00 GENERAL COMMISSIONING REQUIREMENTS: Commissioning of building envelope components.
- C. Section 04 20 00 UNIT MASONRY: Masonry Unit Air Barrier Substrates.
- D. Section 07 92 00, JOINT SEALANTS: Joint Sealants.
- E. Division 08 sections for glazed aluminum curtain walls
- F. Section 09 29 00 GYPSUM BOARD: Wall Sheathings Air Barrier Substrates.

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.
- B. Air Barrier Association of America (ABAA):
Quality Assurance Program.
- C. ASTM International (ASTM):
 - C920-18.....Elastomeric Joint Sealants.
 - C1193-16.....Use of Joint Sealants.
 - D412-16.....Vulcanized Rubber and Thermoplastic
Elastomers-Tension.
 - E96/E96M-16.....Water Vapor Transmission of Materials.
 - E162-16.....Surface Flammability of Materials Using a
Radiant Heat Energy Source.
 - E783-02(2018).....Field Measurement of Air Leakage Through
Installed Exterior Windows and Doors.
 - E1186-17.....Air Leakage Site Detection in Building
Envelopes and Air Barrier Systems.
 - E2178-13.....Air Permanence of Building Materials.

E2357-18.....Determining Air Leakage of Air Barrier
Assemblies.

1.4 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 - 1. Show size, configuration, and fabrication and installation details.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Installation instructions.

1.5 QUALITY ASSURANCE

- A. Coordinate work with adjacent and related work to provide continuous, unbroken, durable air barrier system.
- B. Manufacturer Qualifications:
 - 1. Regularly and presently manufactures specified products.
 - 2. Manufactured specified products with satisfactory service on five similar installations for minimum five years.
- C. Installer Qualifications:
 - 1. Regularly and presently installs specified products.
 - 2. Approved by manufacturer.

1.6 DELIVERY

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, production run number, and manufacture date.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

1.7 STORAGE AND HANDLING

- A. Store products indoors in dry, weathertight, conditioned facility.
- B. Protect products from damage during handling and construction operations.

1.8 FIELD CONDITIONS

- A. Environment:
 - 1. Work Area Ambient Temperature Range: 4 to 32 degrees C (40 to 90 degrees F) continuously, beginning 48 hours before installation.
 - 2. Surface Requirements: visibly dry, and complying with manufacturer's instructions.

1.9 WARRANTY

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

PART 2 - PRODUCTS

2.1 SYSTEM PERFORMANCE

- A. Air-Barrier Assembly Air Leakage: Maximum 0.2 L/s/square meter (0.04 cfm/square feet) of surface area at 75 Pa (1.57 psf) differential pressure when tested according to ASTM E2357.
- B. Provide full system of compatible materials under conditions of service and application required. Compatibility based on testing by material manufacturer.
- C. Perform as continuous vapor permeable air barrier and moisture drainage plane.
- D. Transition to adjacent flashings and discharge water to building exterior.
- E. Accommodate substrate movement and seal expansion and control joints, construction material transitions, opening transitions, penetrations, and perimeter conditions without moisture deterioration and air leakage exceeding performance requirements.

2.2 PRODUCTS - GENERAL

- A. Provide air barrier system components from one manufacturer.

2.3 AIR BARRIER

- A. Fluid-Applied, Vapor-Permeable Membrane Air Barrier:
 - 1. Elastomeric, modified bituminous or synthetic polymer membrane.
 - 2. Air Permeance: ASTM E2178: 0.02 L/s/square meter (0.004 cfm/square feet) of surface area at 75 Pa (1.57 psf) differential pressure.
 - 3. Vapor Permeance: ASTM E96/E96M: Minimum 580 ng/Pa/s/square meter (10 perms).
 - 4. Elongation: Ultimate, ASTM D412, Die C: 200 percent, minimum.
 - 5. Thickness: Minimum 1.0 mm (40 mils) dry film thickness, applied in single continuous coat.
 - 6. Surface Burning Characteristics: When tested according to ASTM E84.
 - a. Flame Spread Rating: 25 maximum.
 - b. Smoke Developed Rating: 450 maximum.

2.4 ACCESSORIES

- A. Primer: Waterborne primer complying with VOC requirements, recommended air barrier manufacturer to suit application.
- B. Counterflashing Sheet: Modified bituminous, minimum 1.0 mm (40 mils) thick, self-adhering composite sheet consisting of minimum 0.8 mm (33 mils) of rubberized asphalt laminated to polyethylene film.
- C. Substrate Patching Material: Manufacturer's standard trowel-grade filler material.
- D. Sprayed Polyurethane Foam Sealant: Foamed-in-place, 24 to 32 kg/cu. m (1.5 to 2.0 pcf) density, with maximum flame-spread index of 25 when tested according to ASTM E84.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Correct substrate deficiencies:
 - 1. Remove projections and excess materials and fill voids with substrate patching material.
 - 2. Remove contaminants capable of affecting subsequently installed product's performance.
- D. Prepare and treat substrate joints and cracks according to ASTM C1193 and membrane air barrier manufacturer's instructions.

3.2 INSTALLATION - AIR BARRIER

- A. Install products according to manufacturer's instructions.
 - 1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.
- B. Apply primer.
- C. Install transition strips and accessory materials.
- D. Seal air barrier to adjacent components of building air barrier system.
- E. At penetrations, seal transition strips around penetrating objects with termination mastic.
 - 1. Fill gaps at perimeter of penetrations with sprayed polyurethane foam sealant.
- F. At top of through-wall flashings, seal with continuous transition strip of manufacturer's recommended material to suit application.

- G. Apply air barrier in full contact with substrate to produce continuous seal with transitions.
- H. Apply fluid membrane in thickness recommended by manufacturer, and minimum specified thickness.
- I. Leave air barrier exposed until tested and inspected and approved by Contracting Officer's Representative.

3.3 FIELD QUALITY CONTROL

- A. Field Inspections and Tests: Performed by testing laboratory specified in Section 01 45 29, TESTING LABORATORY SERVICES.
 - 1. Perform inspections and tests before concealing air barrier with subsequent work.
- B. Inspection:
 - 1. Compatibility of materials within air barrier system and adjacent materials.
 - 2. Suitability of substrate and support for air barrier.
 - 3. Suitability of conditions under which air barrier is applied.
 - 4. Adequacy of substrate priming.
 - 5. Application and treatment of joints and edges of transition strips, flexible opening transitions, and accessory materials.
 - 6. Continuity and gap-free installation of air barrier, transition strips, and accessory materials.
- C. Submit inspection and test reports to Contracting Officer's Representative within seven calendar days of completing inspection and test.
- D. Defective Work:
 - 1. Correct deficiencies, make necessary repairs, and retest as required to demonstrate compliance with specified requirements.

3.4 CLEANING

- A. Remove masking materials.
- B. Clean spills and overspray using cleaning agents recommended by manufacturers of affected construction.

3.5 PROTECTION

- A. Protect air barrier from construction operations.
- B. Protect air barrier from exposure to UV light exposure exceeding manufacturer's recommendation.
- C. Replace overexposed materials and retest.

MINNEAPOLIS VAMC BLDG. 70
RENOVATE MH WARD 1L,1H AND 1K

Specification 618-17-127
Section No. 07 21 13
4-02-21

- - E N D - -

SECTION 28 05 13
CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the finishing, installation, connection, testing and certification the conductors and cables required for a fully functional for electronic safety and security (ESS) system.

1.2 RELATED WORK

- A. Section 01 00 00 - GENERAL REQUIREMENTS. For General Requirements.
B. Section 07 84 00 - FIRESTOPPING. Requirements for firestopping application and use.
C. Section 28 05 00 - COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. Requirements for general requirements that are common to more than one section in Division 28.
D. Section 28 05 26 - GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
E. Section 28 05 28.33 - CONDUITS AND BOXES FOR ELECTRONIC SECURITY AND SAFETY. Requirements for infrastructure.
F. Section 28 08 00 - COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS. Requirements for commissioning.
G. Section 31 20 00 - EARTH MOVING. For excavation and backfill for cables that are installed in conduit.

1.3 DEFINITIONS

- A. BICSI: Building Industry Consulting Service International.
B. EMI: Electromagnetic interference.
C. IDC: Insulation displacement connector.
D. Ladder Cable Tray: A fabricated structure consisting of two longitudinal side rails connected by individual transverse members (rungs).
E. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.
F. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity).
G. RCDD: Registered Communications Distribution Designer.
H. Solid-Bottom or Nonventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal side rails, and a bottom without ventilation openings.
I. Trough or Ventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal rails and a bottom having openings sufficient for the passage of air and using 75 percent or less of the plan area of the surface to support cables.
J. UTP: Unshielded twisted pair.

1.4 QUALITY ASSURANCE

- A. See section 28 05 00, Paragraph 1.4.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:
1. Manufacturer's Literature and Data: Showing each cable type and rating.
 2. Certificates: Two weeks prior to final inspection, deliver to the Resident Engineer/COTR four copies of the certification that the material is in accordance with the drawings and specifications and diagrams for cable management system.

3. Shop Drawings: Cable tray layout, showing cable tray route to scale, with relationship between the tray and adjacent structural, electrical, and mechanical elements. Include the following:
 - a. Vertical and horizontal offsets and transitions.
 - b. Clearances for access above and to side of cable trays.
 - c. Vertical elevation of cable trays above the floor or bottom of ceiling structure.
 - d. Load calculations to show dead and live loads as not exceeding manufacturer's rating for tray and its support elements.
 - e. System labeling schedules, including electronic copy of labeling schedules that are part of the cable and asset identification system of the software specified in Parts 2 and 3.
4. Wiring Diagrams. Show typical wiring schematics including the following:
 - a. Workstation outlets, jacks, and jack assemblies.
 - b. Patch cords.
 - c. Patch panels.
5. Cable Administration Drawings: As specified in Part 3 "Identification" Article.
6. Project planning documents as specified in Part 3.
7. Maintenance Data: For wire and cable to include in maintenance manuals.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are reference in the text by the basic designation only.
- B. American Society of Testing Material (ASTM):
D2301-04.....Standard Specification for Vinyl Chloride
Plastic Pressure Sensitive Electrical
Insulating Tape
- C. Federal Specifications (Fed. Spec.):
A-A-59544-08.....Cable and Wire, Electrical (Power, Fixed
Installation)
- D. National Fire Protection Association (NFPA):
70-11.....National Electrical Code (NEC)
- E. Underwriters Laboratories, Inc. (UL):
44-05.....Thermoset-Insulated Wires and Cables
83-08.....Thermoplastic-Insulated Wires and Cables
467-07.....Electrical Grounding and Bonding Equipment
486A-03.....Wire Connectors and Soldering Lugs for Use with
Copper Conductors
486C-04.....Splicing Wire Connectors
486D-05.....Insulated Wire Connector Systems for
Underground Use or in Damp or Wet Locations
486E-00.....Equipment Wiring Terminals for Use with
Aluminum and/or Copper Conductors
493-07.....Thermoplastic-Insulated Underground Feeder and
Branch Circuit Cable
514B-04.....Fittings for Cable and Conduit
1479-03.....Fire Tests of Through-Penetration Fire Stops

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Test cables upon receipt at Project site.
 1. Test optical fiber cable to determine the continuity of the strand end to end. Use optical loss test set.

2. Test optical fiber cable on reels. Use an optical time domain reflectometer (OTDR) to verify the cable length and locate cable defects, splices, and connector; include the loss value of each. Retain test data and include the record in the maintenance data.
3. Test each pair of UTP cable for open and short circuits.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install UTP, optical fiber, and coaxial cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 GENERAL

- A. General: All cabling locations shall be in conduit systems as outlined in Division 28 unless a waiver is granted in writing or an exception is noted on the construction drawings.
- B. Support of Open Cabling: NRTL labeled for support of Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
 1. Support brackets with cable tie slots for fastening cable ties to brackets.
 2. Lacing bars, spools, J-hooks, and D-rings.
 3. Straps and other devices.
- C. Cable Trays:
 1. Cable Tray Materials: Metal, suitable for indoors, and protected against corrosion by electroplated zinc galvanizing, complying with ASTM B 633, Type 1, not less than 0.000472 inch (0.012 mm) thick.
 2. Basket Cable Trays: 6 inches (150 mm) wide and 2 inches (50 mm) deep. Wire mesh spacing shall not exceed 2 by 4 inches (50 by 100 mm).
 3. Trough Cable Trays: Nominally 6 inches (150 mm) wide.
 4. Ladder Cable Trays: Nominally 18 inches (455 mm) wide, and a rung spacing of 12 inches (305 mm).
 5. Channel Cable Trays: One-piece construction, nominally 4 inches (100 mm) wide. Slot spacing shall not exceed 4-1/2 inches (115 mm) o.c.
 6. Solid-Bottom Cable Trays: One-piece construction, nominally 12 inches (305 mm) wide. Provide with solid covers.
- D. Conduit and Boxes: Comply with requirements in Division 28 Section "Conduits and Backboxes for Electrical Systems." Flexible metal conduit shall only be used in lengths less than 3 feet.
 1. Outlet boxes shall be no smaller than 2 inches (50 mm) wide, 3 inches (75 mm) high, and 2-1/2 inches (64 mm) deep.

2.2 BACKBOARDS

- A. Backboards: Plywood, fire-retardant treated, 3/4 by 48 by 96 inches (19 by 1220 by 2440 mm). Comply with requirements for plywood backing panels in Division 06 Section "Rough Carpentry".

2.3 UTP CABLE

- A. Description: 100-ohm, 4-pair UTP, formed into 25-pair binder groups covered with a blue thermoplastic jacket.
 1. Comply with ICEA S-90-661 for mechanical properties.
 2. Comply with TIA/EIA-568-B.1 for performance specifications.
 3. Comply with TIA/EIA-568-B.2, Category 6.
 4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:

- a. Communications, General Purpose: Type CM or CMG.
- b. Communications, Plenum Rated: Type CMP, complying with NFPA 262.
- c. Communications, Riser Rated: Type CMR, complying with UL 1666.
- d. Communications, Limited Purpose: Type CMX.
- e. Multipurpose: Type MP or MPG.
- f. Multipurpose, Plenum Rated: Type MPP, complying with NFPA 262.
- g. Multipurpose, Riser Rated: Type MPR, complying with UL 1666.

2.4 UTP CABLE HARDWARE

- A. UTP Cable Connecting Hardware: IDC type, using modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of the same category or higher.
- B. *Duress buttons shall use Orange colored Category 6 cable and shall terminate in a Security System Control Panel. Unused pairs shall be neatly coiled and supported at or near the Security System Control Panel. Confirm location of Security System Control Panel with VA COR.*

2.5 OPTICAL FIBER CABLE

- A. Description: Multimode, 50/125-micrometer, minimum 6-fiber, tight buffer, optical fiber cable.
 1. Comply with ICEA S-83-596 for mechanical properties.
 2. Comply with TIA/EIA-568-B.3 for performance specifications.
 3. Comply with TIA/EIA-492AAAA-B or TIA/EIA-492AAAA-A as applicable for detailed specifications.
 4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:
 - a. General Purpose, Nonconductive: Type OFN or OFNG.
 - b. Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.
 - c. Riser Rated, Nonconductive: Type OFNR, complying with UL 1666.
 - d. General Purpose, Conductive: Type OFC or OFCG
 - e. Plenum Rated, Conductive: Type OFCP, complying with NFPA 262.
 - f. Riser Rated, Conductive: Type OFCR, complying with UL 1666.
 5. Conductive cable shall be steel armored type.
 6. Maximum Attenuation: 3.50 dB/km at 850 nm; 1.5 dB/km at 1300 nm.
 7. Minimum Modal Bandwidth: 160 MHz-km at 850 nm; 500 MHz-km at 1300 nm.
- B. Jacket:
 1. Jacket Color: Aqua for 50/125-micrometer cable.
 2. Cable cordage jacket, fiber, unit, and group color shall be according to TIA/EIA-598-B.
 3. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

2.6 OPTICAL FIBER CABLE HARDWARE

- A. Cable Connecting Hardware: Meet the Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA/EIA-604-2, TIA/EIA-604-3-A, and TIA/EIA-604-12. Comply with TIA/EIA-568-B.3.
 1. Quick-connect, simplex and duplex, Type SC connectors. Insertion loss shall be not more than 0.75 dB.
 2. Type SFF connectors may be used in termination racks, panels, and equipment packages.

2.7 COAXIAL CABLE

- A. General Coaxial Cable Requirements: Broadband type, recommended by cable manufacturer specifically for broadband data transmission applications. Coaxial cable and accessories shall have 75-ohm nominal impedance with a return loss of 20 dB maximum from 7 to 806 MHz.
- B. RG-11/U: NFPA 70, Type CATV.
 1. No. 14 AWG, solid, copper-covered steel conductor.

2. Gas-injected, foam-PE insulation.
 3. Double shielded with 100 percent aluminum polyester tape and 60 percent aluminum braid.
 4. Jacketed with sunlight-resistant, black PVC or PE.
 5. Suitable for outdoor installations in ambient temperatures ranging from minus 40 to plus 85 deg C.
- C. RG59/U: NFPA 70, Type CATVR.
1. No. 20 AWG, solid, silver-plated, copper-covered steel conductor.
 2. Gas-injected, foam-PE insulation.
 3. Triple shielded with 100 percent aluminum polyester tape and 95 percent aluminum braid; covered by aluminum foil with grounding strip.
 4. Color-coded PVC jacket.
- D. RG-6/U: NFPA 70, Type CATV or CM.
1. No. 16 AWG, solid, copper-covered steel conductor; gas-injected, foam-PE insulation.
 2. Double shielded with 100 percent aluminum-foil shield and 60 percent aluminum braid.
 3. Jacketed with black PVC or PE.
 4. Suitable for indoor installations.
- E. RG59/U: NFPA 70, Type CATV.
1. No. 20 AWG, solid, copper-covered steel conductor; gas-injected, foam-PE insulation.
 2. Double shielded with 100 percent aluminum polyester tape and 40 percent aluminum braid.
 3. PVC jacket.
- F. RG59/U (Plenum Rated): NFPA 70, Type CMP.
1. No. 20 AWG, solid, copper-covered steel conductor; foam fluorinated ethylene propylene insulation.
 2. Double shielded with 100 percent aluminum-foil shield and 65 percent aluminum braid.
 3. Copolymer jacket.

2.8 COAXIAL CABLE HARDWARE

- A. Coaxial-Cable Connectors: Type BNC, 75 ohms.

2.9 RS-232 CABLE

- A. Standard Cable: NFPA 70, Type CM.
1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
 2. Polypropylene insulation.
 3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
 4. PVC jacket.
 5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
 6. Flame Resistance: Comply with UL 1581.
- B. Plenum-Rated Cable: NFPA 70, Type CMP.
1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
 2. Plastic insulation.
 3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
 4. Plastic jacket.
 5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
 6. Flame Resistance: Comply with NFPA 262.

2.10 RS-485 CABLE

- A. Standard Cable: NFPA 70, Type CM.
 - 1. Paired, 2 pairs, twisted, No. 22 AWG, stranded (7x30) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with UL 1581.
- B. Plenum-Rated Cable: NFPA 70, Type CMP.
 - 1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
 - 2. Fluorinated ethylene propylene insulation.
 - 3. Unshielded.
 - 4. Fluorinated ethylene propylene jacket.
 - 5. Flame Resistance: NFPA 262, Flame Test.

2.11 LOW-VOLTAGE CONTROL CABLE

- A. Paired Lock Cable: NFPA 70, Type CMG.
 - 1. 1 pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with UL 1581.
- B. Plenum-Rated, Paired Lock Cable: NFPA 70, Type CMP.
 - 1. 1 pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with NFPA 262.
- C. Paired Lock Cable: NFPA 70, Type CMG.
 - 1. 1 pair, twisted, No. 18 AWG, stranded (19x30) tinned copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with UL 1581.
- D. Plenum-Rated, Paired Lock Cable: NFPA 70, Type CMP.
 - 1. 1 pair, twisted, No. 18 AWG, stranded (19x30) tinned copper conductors.
 - 2. Fluorinated ethylenepropylene insulation.
 - 3. Unshielded.
 - 4. Plastic jacket.
 - 5. Flame Resistance: NFPA 262, Flame Test.

2.12 CONTROL-CIRCUIT CONDUCTORS

- A. Class 1 Control Circuits: Stranded copper, Type THHN-THWN, in raceway complying with UL 83.
- B. Class 2 Control Circuits: Stranded copper, Type THHN-THWN, in raceway complying with UL 83.
- C. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type TW or TF, complying with UL 83.

2.13 FIRE ALARM WIRE AND CABLE

- A. General Wire and Cable Requirements: NRTL listed and labeled as complying with NFPA 70, Article 760.
- B. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer.

1. Circuit Integrity Cable: Twisted shielded pair, NFPA 70, Article 760, Classification CI, for power-limited fire alarm signal service Type FPL. NRTL listed and labeled as complying with UL 1424 and UL 2196 for a 2-hour rating.

C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-Voltage Circuits: No. 16 AWG, minimum.

2. Line-Voltage Circuits: No. 12 AWG, minimum.

3. Multiconductor Armored Cable: NFPA 70, Type MC, copper conductors, Type TFN/THHN conductor insulation, copper drain wire, copper armor with red identifier stripe, NRTL listed for fire alarm and cable tray installation, plenum rated, and complying with requirements in UL 2196 for a 2-hour rating.

2.14 IDENTIFICATION PRODUCTS

A. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

2.15 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate cables.

B. Factory test UTP and optical fiber cables on reels according to TIA/EIA-568-B.1.

C. Factory test UTP cables according to TIA/EIA-568-B.2.

D. Factory test multimode optical fiber cables according to TIA/EIA-526-14-A and TIA/EIA-568-B.3.

E. Factory sweep test coaxial cables at frequencies from 5 MHz to 1 GHz. Sweep test shall test the frequency response, or attenuation over frequency, of a cable by generating a voltage whose frequency is varied through the specified frequency range and graphing the results.

F. Cable will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

2.16 WIRE LUBRICATING COMPOUND

A. Suitable for the wire insulation and conduit it is used with, and shall not harden or become adhesive.

B. Shall not be used on wire for isolated type electrical power systems.

2.17 FIREPROOFING TAPE

A. The tape shall consist of a flexible, conformable fabric of organic composition coated one side with flame-retardant elastomer.

B. The tape shall be self-extinguishing and shall not support combustion. It shall be arc-proof and fireproof.

C. The tape shall not deteriorate when subjected to water, gases, salt water, sewage, or fungus and be resistant to sunlight and ultraviolet light.

D. The finished application shall withstand a 200-ampere arc for not less than 30 seconds.

E. Securing tape: Glass cloth electrical tape not less than 0.18 mm (7 mils) thick, and 19 mm (3/4 inch) wide.

PART 3 - EXECUTION

3.1 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1.

B. General Requirements for Cabling:

1. Comply with TIA/EIA-568-B.1.

2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."

3. Install 110-style IDC termination hardware unless otherwise indicated.

4. Terminate all conductors; no cable shall contain un-terminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
5. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
6. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
7. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
8. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
9. Pulling Cable:
 - a. Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.
 - b. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling of cables.
 - c. Use ropes made of nonmetallic material for pulling feeders.
 - d. Attach pulling lines for feeders by means of either woven basket grips or pulling eyes attached directly to the conductors, as approved by the Resident Engineer/COTR.
 - e. Pull in multiple cables together in a single conduit.
- C. Splice cables and wires where necessary only in outlet boxes, junction boxes, or pull boxes.
 1. Splices and terminations shall be mechanically and electrically secure.
 2. Where the Government determines that unsatisfactory splices or terminations have been installed, remove the devices and install approved devices at no additional cost to the Government.
- D. Seal cable and wire entering a building from underground, between the wire and conduit where the cable exits the conduit, with a non-hardening approved compound.
- E. Unless otherwise specified in other sections install wiring and connect to equipment/devices to perform the required functions as shown and specified.
- F. Except where otherwise required, install a separate power supply circuit for each system so that malfunctions in any system will not affect other systems.
- G. Where separate power supply circuits are not shown, connect the systems to the nearest panel boards of suitable voltages, which are intended to supply such systems and have suitable spare circuit breakers or space for installation.
- H. Install a red warning indicator on the handle of the branch circuit breaker for the power supply circuit for each system to prevent accidental de-energizing of the systems.
- I. System voltages shall be 120 volts or lower where shown on the drawings or as required by the NEC.
- J. UTP Cable Installation:
 1. Comply with TIA/EIA-568-B.2.
 2. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.

- K. Optical Fiber Cable Installation:
1. Comply with TIA/EIA-568-B.3.
 2. Cable shall be terminated on connecting hardware that is rack or cabinet mounted.
- L. Open-Cable Installation:
1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
 2. Suspend copper cable not in a wireway or pathway a minimum of 8 inches (200 mm) above ceilings by cable supports not more than 60 inches (1525 mm) apart.
 3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.
- M. Installation of Cable Routed Exposed under Raised Floors:
1. Install plenum-rated cable only.
 2. Install cabling after the flooring system has been installed in raised floor areas.
 3. Coil cable 72 inches (1830 mm) long shall be neatly coiled not less than 12 inches (300 mm) in diameter below each feed point.
- N. Outdoor Coaxial Cable Installation:
1. Install outdoor connections in enclosures complying with NEMA 250, Type 4X. Install corrosion-resistant connectors with properly designed O-rings to keep out moisture.
 2. Attach antenna lead-in cable to support structure at intervals not exceeding 36 inches (915 mm).
- O. Separation from EMI Sources:
1. Comply with BICSI TDMM and TIA/EIA-569-A recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
 2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (300 mm).
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (600 mm).
 3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (300 mm).
 4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (75 mm).
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).

5. Separation between Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).
6. Separation between Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

3.2 FIRE ALARM WIRING INSTALLATION

- A. Comply with NECA 1 and NFPA 72.
- B. Wiring Method: Install wiring in metal raceway according to Division 28 Section CONDUITS AND BACKBOXES FOR ELECTRICAL SYSTEMS."
 1. Install plenum cable in environmental air spaces, including plenum ceilings.
 2. Fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.
- C. Wiring Method:
 1. Cables and raceways used for fire alarm circuits, and equipment control wiring associated with the fire alarm system, may not contain any other wire or cable.
 2. Fire-Rated Cables: Use of 2-hour, fire-rated fire alarm cables, NFPA 70, Types MI and CI, is permitted.
 3. Signaling Line Circuits: Power-limited fire alarm cables may be installed in the same cable or raceway as signaling line circuits.
- D. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- E. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
- F. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.
- G. Risers: Install at least two vertical cable risers to serve the fire alarm system. Separaterisers in close proximity to each other with a minimum one-hour-rated wall, so the loss of one riser does not prevent the receipt or transmission of signals from other floors or zones.
- H. Wiring to Remote Alarm Transmitting Device: 1-inch (25-mm) conduit between the fire alarm control panel and the transmitter. Install number of conductors and electrical supervision for connecting wiring as needed to suit monitoring function.

3.3 CONTROL CIRCUIT CONDUCTORS

- A. Minimum Conductor Sizes:
 1. Class 1 remote-control and signal circuits, No. 14 AWG.
 2. Class 2 low-energy, remote-control and signal circuits, No. 16 AWG.
 3. Class 3 low-energy, remote-control, alarm and signal circuits, No. 12 AWG.

3.4 CONNECTIONS

- A. Comply with requirements in Division 28 Section, PHYSICAL ACCESS CONTROL for connecting, terminating, and identifying wires and cables.

- B. Comply with requirements in Division 28 Section "INTRUSION DETECTION" for connecting, terminating, and identifying wires and cables.
- C. Comply with requirements in Division 28 Section "VIDEO SURVEILLANCE" for connecting, terminating, and identifying wires and cables.
- D. Comply with requirements in Division 28 Section "ELECTRONIC PERSONAL PROTECTION SYSTEMS" for connecting, terminating, and identifying wires and cables.
- E. Comply with requirements in Division 28 Section "FIRE DETECTION AND ALARM" for connecting, terminating, and identifying wires and cables.

3.5 FIRESTOPPING

- A. Comply with requirements in Division 07 Section "PENETRATION FIRESTOPPING."
- B. Comply with TIA/EIA-569-A, "Firestopping" Annex A.
- C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.6 GROUNDING

- A. For communications wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.
- B. For low-voltage wiring and cabling, comply with requirements in Division 28 Section "GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY."

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 - 1. Visually inspect UTP and optical fiber cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA/EIA-568-B.1.
 - 2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
 - 3. Test UTP cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross connection.
 - a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
 - 4. Optical Fiber Cable Tests:
 - a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.1. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
 - b. Link End-to-End Attenuation Tests:
 - 1) Multimode Link Measurements: Test at 850 or 1300 nm in 1 direction according to TIA/EIA-526-14-A, Method B, One Reference Jumper.
 - 2) Attenuation test results for links shall be less than 2.0 dB. Attenuation test results shall be less than that calculated according to equation in TIA/EIA-568-B.1.
 - 5. Coaxial Cable Tests: Comply with requirements in Division 27 Section "Master Antenna Television System."

- D. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.
- E. End-to-end cabling will be considered defective if it does not pass tests and inspections.
- F. Prepare test and inspection reports.

3.8 EXISTING WIRING

- A. Unless specifically indicated on the plans, existing wiring shall not be reused for the new installation. Existing wiring to be removed from the site.

3.9 IDENTIFICATION

- A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A.
- B. Install a permanent wire marker on each wire at each termination.
- C. Identifying numbers and letters on the wire markers shall correspond to those on the wiring diagrams used for installing the systems.
- D. Wire markers shall retain their markings after cleaning.
- E. Examples
 - 1. Duress Tip Jack label
Label shall identify the security panel location, board number, input number, alarm number for this location. Example shown below.

2E-122A/B2-I6 Alarm-1

2. Security Panel

- a. All Security Panels are to have a directory. An example is shown in Image 3.9.E.2 at the end of this specification.
- b. All cabling in security panels shall be labeled with the location of the device. Examples shown below.

BT-107
BT-105 tamper
BD-101e lock

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MINNEAPOLIS VAMC BLDG. 70
RENOVATE MH WARD 1L,1H,AND 1K

Specification 618-17-127
Section No. 28 05 00
10-18

MINNEAPOLIS VAMC BLDG. 70
RENOVATE MH WARD 1L,1H,AND 1K

Specification 618-17-127
Section No. 28 05 00
10-18

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SECTION 28 05 28.33
CONDUITS AND BACKBOXES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the finishing, installation, connection, testing certification of the conduit, fittings, and boxes to form a complete, coordinated, raceway system(s). Conduits and when approved separate UL Certified and Listed partitioned telecommunications raceways are required for a fully functional Electronic Safety and Security (ESS) system. Raceways are required for all electronic safety and security cabling unless shown or specified otherwise.
- B. Definitions: The term conduit, as used in this specification, shall mean any or all of the raceway types specified.
- C. New Construction requires a dedicated conduit from box to security panel location.

1.2 RELATED WORK

- A. Section 01 00 00 - GENERAL REQUIREMENTS. For General Requirements.
- B. Section 07 84 00 - FIRESTOPPING. Requirements for sealing around penetrations to maintain the integrity of fire rated construction.
- C. Section 28 05 00 - COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. For general electrical requirements, general arrangement of the contract documents, coordination, quality assurance, project conditions, equipment and materials, and items that is common to more than one section of Division 28.
- D. Section 28 05 26 - GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
- E. Section 28 08 00 - COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS. Requirements for commissioning - systems readiness checklists, and training.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical nonmetallic tubing.
- C. EPDM: Ethylene-propylene-diene terpolymer rubber.
- D. FMC: Flexible metal conduit.
- E. IMC: Intermediate metal conduit.
- F. LFMC: Liquidtight flexible metal conduit.
- G. LFNC: Liquidtight flexible nonmetallic conduit.
- H. NBR: Acrylonitrile-butadiene rubber.
- I. RNC: Rigid nonmetallic conduit.

1.4 QUALITY ASSURANCE

- A. Refer to Paragraph 1.4 Quality Assurance, in Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY.

1.5 SUBMITTALS

- A. Submit in accordance with Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY and Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Furnish the following:
- B. Shop Drawings:
 - 1. Size and location of main feeders;
 - 2. Size and location of panels and pull boxes

- 3. Layout of required conduit penetrations through structural elements.
- 4. The specific item proposed and its area of application shall be identified on the catalog cuts.
- C. Certification: Prior to final inspection, deliver to the Resident Engineer/COTR four copies of the certification that the material is in accordance with the drawings and specifications and has been properly installed.
- D. Completed System Readiness Checklists provided by the Commissioning Agent and completed by the contractor, signed by a qualified technician and dated on the date of completion, in accordance with the requirements of Section 28 08 00 COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS.
- E. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- F. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
- G. Coordination Drawings: Conduit routing plans shown are diagrammatic on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Structural members in the paths of conduit groups with common supports.
 - 2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.
- H. Source quality-control test reports.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. National Electrical Manufacturers Association (NEMA):
 - TC-3-04.....PVC Fittings for Use with Rigid PVC Conduit and Tubing
 - FB1-07.....Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
- C. National Fire Protection Association (NFPA):
 - 70-11.....National Electrical Code (NEC)
- D. Underwriters Laboratories, Inc. (UL):
 - 1-05.....Flexible Metal Conduit
 - 5-04.....Surface Metal Raceway and Fittings
 - 6-07.....Rigid Metal Conduit
 - 50-07.....Enclosures for Electrical Equipment
 - 360-09.....Liquid-Tight Flexible Steel Conduit
 - 467-07.....Grounding and Bonding Equipment
 - 514A-04.....Metallic Outlet Boxes
 - 514B-04.....Fittings for Cable and Conduit
 - 514C-02.....Nonmetallic Outlet Boxes, Flush-Device Boxes and Covers
 - 651-05.....Schedule 40 and 80 Rigid PVC Conduit
 - 651A-07.....Type EB and A Rigid PVC Conduit and HDPE Conduit
 - 797-07.....Electrical Metallic Tubing
 - 1242-06.....Intermediate Metal Conduit

PART 2 - PRODUCTS

2.1 GENERAL

- A. Conduit Size: In accordance with the NEC, but not less than 20 mm (3/4 inch) unless otherwise shown.

2.2. CONDUIT

- A. Rigid galvanized steel: Shall Conform to UL 6, ANSI C80.1.
- B. Rigid aluminum: Shall Conform to UL 6A, ANSI C80.5.
- C. Rigid intermediate steel conduit (IMC): Shall Conform to UL 1242, ANSI C80.6.
- D. Electrical metallic tubing (EMT): Shall Conform to UL 797, ANSI C80.3. Maximum size not to exceed 105 mm (4 inches) and shall be permitted only with cable rated 600 volts or less.
- E. Flexible galvanized steel conduit: Shall Conform to UL 1.
- F. Liquid-tight flexible metal conduit: Shall Conform to UL 360.
- G. Direct burial plastic conduit: Shall conform to UL 651 and UL 651A, heavy wall PVC or high density polyethylene (PE).

2.3. CONDUIT COLORING CHART

- A. Security Card Reader conduit shall be yellow.
- B. Security Camera conduit shall be yellow.
- C. Security Panic Button cabling shall be yellow.
- D. Security cabling for Lenel Panels shall be yellow.
- E. Fire Alarm conduit shall be red.
- F. Paging Systems conduit shall be purple.

2.4. CONDUIT FITTINGS

- A. Rigid steel and IMC conduit fittings:
 - 1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
 - 2. Standard threaded couplings, locknuts, bushings, and elbows: Only steel or malleable iron materials are acceptable. Integral retractable type IMC couplings are also acceptable.
 - 3. Locknuts: Bonding type with sharp edges for digging into the metal wall of an enclosure.
 - 4. Bushings: Metallic insulating type, consisting of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.
 - 5. Erickson (union-type) and set screw type couplings: Approved for use in concrete are permitted for use to complete a conduit run where conduit is installed in concrete. Use set screws of case hardened steel with hex head and cup point to firmly seat in conduit wall for positive ground. Tightening of set screws with pliers is prohibited.
 - 6. Sealing fittings: Threaded cast iron type. Use continuous drain type sealing fittings to prevent passage of water vapor. In concealed work, install fittings in flush steel boxes with blank cover plates having the same finishes as that of other electrical plates in the room.
- B. Rigid aluminum conduit fittings:
 - 1. Standard threaded couplings, locknuts, bushings, and elbows: Malleable iron, steel or aluminum alloy materials; Zinc or cadmium

- plate iron or steel fittings. Aluminum fittings containing more than 0.4 percent copper are prohibited.
2. Locknuts and bushings: As specified for rigid steel and IMC conduit.
 3. Set screw fittings: Not permitted for use with aluminum conduit.
- C. Electrical metallic tubing fittings:
1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
 2. Only steel or malleable iron materials are acceptable.
 3. Couplings and connectors: Concrete tight and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 50 mm (2 inches) and smaller. Use set screw type couplings with four set screws each for conduit sizes over 50 mm (2 inches). Use set screws of case-hardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding.
 4. Indent type connectors or couplings are prohibited.
 5. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.
- D. Flexible steel conduit fittings:
1. Conform to UL 514B. Only steel or malleable iron materials are acceptable.
 2. Clamp type, with insulated throat.
- E. Liquid-tight flexible metal conduit fittings:
1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
 2. Only steel or malleable iron materials are acceptable.
 3. Fittings must incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.
- F. Direct burial plastic conduit fittings:
1. Fittings shall meet the requirements of UL 514C and NEMA TC3.
 2. As recommended by the conduit manufacturer.
- G. Surface metal raceway fittings: As recommended by the raceway manufacturer.
- H. Expansion and deflection couplings:
1. Conform to UL 467 and UL 514B.
 2. Accommodate, 19 mm (0.75 inch) deflection, expansion, or contraction in any direction, and allow 30 degree angular deflections.
 3. Include internal flexible metal braid sized to guarantee conduit ground continuity and fault currents in accordance with UL 467, and the NEC code tables for ground conductors.
 4. Jacket: Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber material with stainless steel jacket clamps.

2.5 CONDUIT SUPPORTS

- A. Parts and hardware: Zinc-coat or provide equivalent corrosion protection.
- B. Individual Conduit Hangers: Designed for the purpose, having a pre-assembled closure bolt and nut, and provisions for receiving a hanger rod.
- C. Multiple conduit (trapeze) hangers: Not less than 38 mm by 38 mm (1-1/2 by 1-1/2 inch), 12 gage steel, cold formed, lipped channels; with not less than 9 mm (3/8 inch) diameter steel hanger rods.
- D. Solid Masonry and Concrete Anchors: Self-drilling expansion shields, or machine bolt expansion.

2.6 OUTLET, JUNCTION, AND PULL BOXES

- A. UL-50 and UL-514A.
- B. Cast metal where required by the NEC or shown, and equipped with rustproof boxes.
- C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- D. Metal Floor Boxes: Cast or sheet metal, semi-adjustable, rectangular.
- E. Sheet metal boxes: Galvanized steel, except where otherwise shown.
- F. Flush mounted wall or ceiling boxes shall be installed with raised covers so that front face of raised cover is flush with the wall. Surface mounted wall or ceiling boxes shall be installed with surface style flat or raised covers.

2.7 CABINETS

- A. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
- B. Hinged door in front cover with flush latch and concealed hinge.
- C. Key latch to match panelboards.
- D. Metal barriers to separate wiring of different systems and voltage.
- E. Accessory feet where required for freestanding equipment.

2.8 WIREWAYS

- A. Equip with hinged covers, except where removable covers are shown.

2.9 WARNING TAPE

- A. Standard, 4-Mil polyethylene 76 mm (3 inches) wide tape non-detectable type, red with black letters, and imprinted with "CAUTION BURIED ELECTRONIC SAFETY AND SECURITY CABLE BELOW".

2.10 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. Description: Comply with SCTE 77.
 - 1. Color of Frame and Cover: Gray.
 - 2. Configuration: Units shall be designed for flush burial and have closed bottom, unless otherwise indicated.
 - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
 - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - 5. Cover Legend: Molded lettering, as indicated for each service. <Insert legend.>
 - 6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
 - 7. Handholes 300 mm wide by 600 mm long (2 inches wide by 24 inches long) <Insert dimensions> and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.
- B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.

2.11 SLEEVES FOR RACEWAYS

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

- B. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch (1.3- or 3.5-mm) thickness as indicated and of length to suit application.
- C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 84 00 "FIRESTOPPING."

2.12 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 PENETRATIONS

- A. Cutting or Holes:
 - 1. Locate holes in advance where they are proposed in the structural sections such as ribs or beams. Obtain the approval of the Resident Engineer/COTR prior to drilling through structural sections.
 - 2. Cut holes through concrete and masonry in new and existing structures with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Resident Engineer/COTR as required by limited working space.
- B. Fire Stop: Where conduits, wireways, and other electronic safety and security raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases as specified in Section 07 84 00, FIRESTOPPING, with rock wool fiber or silicone foam sealant only. Completely fill and seal clearances between raceways and openings with the fire stop material.
- B. Waterproofing: At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight as specified in Section 07 92 00, "JOINT SEALANTS".

3.2 INSTALLATION, GENERAL

- A. Install conduit as follows:
 - 1. In complete runs before pulling in cables or wires.
 - 2. Flattened, dented, or deformed conduit is not permitted. Remove and replace the damaged conduits with new undamaged material.
 - 3. Assure conduit installation does not encroach into the ceiling height head room, walkways, or doorways.
 - 4. Cut square with a hacksaw, ream, remove burrs, and draw up tight.
 - 5. Mechanically continuous.
 - 6. Independently support conduit at 2.4 m (8 foot) on center. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, conduits, mechanical piping, or mechanical ducts).
 - 7. Support within 300 mm (12 inches) of changes of direction, and within 300 mm (12 inches) of each enclosure to which connected.
 - 8. Close ends of empty conduit with plugs or caps at the rough-in stage to prevent entry of debris, until wires are pulled in.
 - 9. Conduit installations under fume and vent hoods are prohibited.
 - 10. Secure conduits to cabinets, junction boxes, pull boxes and outlet boxes with bonding type locknuts. For rigid and IMC conduit

- installations, provide a locknut on the inside of the enclosure, made up wrench tight. Do not make conduit connections to junction box covers.
11. Flashing of penetrations of the roof membrane is specified in Section 07 60 00, "FLASHING AND SHEET METAL".
 12. Do not use aluminum conduits in wet locations.
 13. Unless otherwise indicated on the drawings or specified herein, all conduits shall be installed concealed within finished walls, floors and ceilings.
- B. Conduit Bends:
1. Make bends with standard conduit bending machines.
 2. Conduit hickey may be used for slight offsets, and for straightening stubbed out conduits.
 3. Bending of conduits with a pipe tee or vise is prohibited.
- C. Layout and Homeruns:
1. Install conduit with wiring, including homeruns, as shown.
 2. Deviations: Make only where necessary to avoid interferences and only after drawings showing the proposed deviations have been submitted approved by the Resident Engineer/COTR.
- D. Fire Alarm:
1. Fire alarm conduit shall be painted red (a red "top-coated" conduit from the conduit manufacturer may be used in lieu of painted conduit) in accordance with the requirements of Section 28 31 00, "FIRE DETECTION AND ALARM".

3.3 CONCEALED WORK INSTALLATION

- A. In Concrete:
1. Conduit: Rigid steel, IMC or EMT. Do not install EMT in concrete slabs that are in contact with soil, gravel or vapor barriers.
 2. Align and run conduit in direct lines.
 3. Install conduit through concrete beams only when the following occurs:
 - a. Where shown on the structural drawings.
 - b. As approved by the Resident Engineer/COTR prior to construction, and after submittal of drawing showing location, size, and position of each penetration.
 4. Installation of conduit in concrete that is less than 75 mm (3 inch) thick is prohibited.
 - a. Conduit outside diameter larger than 1/3 of the slab thickness is prohibited.
 - b. Space between conduits in slabs: Approximately six conduit diameters apart, except one conduit diameter at conduit crossings.
 - c. Install conduits approximately in the center of the slab so that there will be a minimum of 19 mm (3/4 inch) of concrete around the conduits.
 5. Make couplings and connections watertight. Use thread compounds that are UL approved conductive type to insure low resistance ground continuity through the conduits. Tightening set screws with pliers is prohibited.
- B. Furred or Suspended Ceilings and in Walls:
1. Conduit for conductors above 600 volts:
 - a. Rigid steel or rigid aluminum.
 - b. Aluminum conduit mixed indiscriminately with other types in the same system is prohibited.

2. Conduit for conductors 600 volts and below:
 - a. Rigid steel, IMC, rigid aluminum, or EMT. Different type conduits mixed indiscriminately in the same system is prohibited.
3. Align and run conduit parallel or perpendicular to the building lines.
4. Connect recessed lighting fixtures to conduit runs with maximum 1800 mm (6 feet) of flexible metal conduit extending from a junction box to the fixture.
5. Tightening set screws with pliers is prohibited.

3.4 EXPOSED WORK INSTALLATION

- A. Unless otherwise indicated on the drawings, exposed conduit is only permitted in mechanical and electrical rooms.
- B. Conduit for Conductors 600 volts and below:
 1. Rigid steel, IMC, rigid aluminum, or EMT. Different type of conduits mixed indiscriminately in the system is prohibited.
- C. Align and run conduit parallel or perpendicular to the building lines.
- D. Install horizontal runs close to the ceiling or beams and secure with conduit straps.
- E. Support horizontal or vertical runs at not over 2400 mm (eight foot) intervals.
- F. Surface metal raceways: Use only where shown.
- G. Painting:
 1. Paint exposed conduit as specified in Section 09 91 00, "PAINTING".
 2. Paint all conduits containing cables rated over 600 volts safety orange. Refer to Section 09 91 00, "PAINTING" for preparation, paint type, and exact color. In addition, paint legends, using 50 mm (two inch) high black numerals and letters, showing the cable voltage rating. Provide legends where conduits pass through walls and floors and at maximum 6000 mm (20 foot) intervals in between.
 3. Security System conduits shall be colored yellow by the manufacturer or field painted yellow. Field painted conduit shall have minimum 1' of painted conduit every 10'.

3.5 EXPANSION JOINTS

- A. Conduits 75 mm (3 inches) and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install the couplings in accordance with the manufacturer's recommendations.
- B. Provide conduits smaller than 75 mm (3 inches) with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 125 mm (5 inch) vertical drop midway between the ends. Flexible conduit shall have a copper green ground bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for 375 mm (15 inches) and larger conduits are acceptable.
- C. Install expansion and deflection couplings where shown.

3.6 CONDUIT SUPPORTS, INSTALLATION

- A. Safe working load shall not exceed 1/4 of proof test load of fastening devices.
- B. Use pipe straps or individual conduit hangers for supporting individual conduits. Maximum distance between supports is 2.5 m (8 foot) on center.

- C. Support multiple conduit runs with trapeze hangers. Use trapeze hangers that are designed to support a load equal to or greater than the sum of the weights of the conduits, wires, hanger itself, and 90 kg (200 pounds). Attach each conduit with U-bolts or other approved fasteners.
- D. Support conduit independently of junction boxes, pull boxes, fixtures, suspended ceiling T-bars, angle supports, and similar items.
- E. Fasteners and Supports in Solid Masonry and Concrete:
 - 1. New Construction: Use steel or malleable iron concrete inserts set in place prior to placing the concrete.
 - 2. Existing Construction:
 - a. Steel expansion anchors not less than 6 mm (1/4 inch) bolt size and not less than 28 mm (1-1/8 inch) embedment.
 - b. Power set fasteners not less than 6 mm (1/4 inch) diameter with depth of penetration not less than 75 mm (3 inches).
 - c. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.
- F. Hollow Masonry: Toggle bolts are permitted.
- G. Bolts supported only by plaster or gypsum wallboard are not acceptable.
- H. Metal Structures: Use machine screw fasteners or other devices specifically designed and approved for the application.
- I. Attachment by wood plugs, rawl plug, plastic, lead or soft metal anchors, or wood blocking and bolts supported only by plaster is prohibited.
- J. Chain, wire, or perforated strap shall not be used to support or fasten conduit.
- K. Spring steel type supports or fasteners are prohibited for all uses except: Horizontal and vertical supports/fasteners within walls.
- L. Vertical Supports: Vertical conduit runs shall have riser clamps and supports in accordance with the NEC and as shown. Provide supports for cable and wire with fittings that include internal wedges and retaining collars.

3.7 BOX INSTALLATION

- A. Boxes for Concealed Conduits:
 - 1. Flush mounted.
 - 2. Provide raised covers for boxes to suit the wall or ceiling, construction and finish.
- B. In addition to boxes shown, install additional boxes where needed to prevent damage to cables and wires during pulling in operations.
- C. Remove only knockouts as required and plug unused openings. Use threaded plugs for cast metal boxes and snap-in metal covers for sheet metal boxes.
- D. Outlet boxes in the same wall mounted back-to-back are prohibited. A minimum 600 mm (24 inch), center-to-center lateral spacing shall be maintained between boxes).
- E. Minimum size of outlet boxes for ground fault interrupter (GFI) receptacles is 100 mm (4 inches) square by 55 mm (2-1/8 inches) deep, with device covers for the wall material and thickness involved.
- F. Stencil or install phenolic nameplates on covers of the boxes identified on riser diagrams; for example "SIG-FA JB No. 1".
- G. On all Branch Circuit junction box covers, identify the circuits with black marker.

3.8 ELECTRONIC SAFETY AND SECURITY CONDUIT

- A. Install the electronic safety and security raceway system as shown on drawings.
- B. Minimum conduit size of 19 mm (3/4 inch), but not less than the size shown on the drawings.
- C. All conduit ends shall be equipped with insulated bushings.
- D. All 100 mm (four inch) conduits within buildings shall include pull boxes after every two 90 degree bends. Size boxes per the NEC.
- E. Vertical conduits/sleeves through closets floors shall terminate not less than 75 mm (3 inches) below the floor and not less than 75 mm (3 inches) below the ceiling of the floor below.
- F. Terminate conduit runs to/from a backboard in a closet or interstitial space at the top or bottom of the backboard. Conduits shall enter communication closets next to the wall and be flush with the backboard.
- G. Where drilling is necessary for vertical conduits, locate holes so as not to affect structural sections such as ribs or beams.
- H. All empty conduits located in communications closets or on backboards shall be sealed with a standard non-hardening duct seal compound to prevent the entrance of moisture and gases and to meet fire resistance requirements.
- I. Conduit runs shall contain no more than four quarter turns (90 degree bends) between pull boxes/backboards. Minimum radius of communication conduit bends shall be as follows (special long radius):

Sizes of Conduit Trade Size	Radius of Conduit Bends mm, Inches
¾	150 (6)
1	230 (9)
1-1/4	350 (14)
1-1/2	430 (17)
2	525 (21)
2-1/2	635 (25)
3	775 (31)
3-1/2	900 (36)
4	1125 (45)

- J. Furnish and install 19 mm (3/4 inch) thick fire retardant plywood specified in on the wall of communication closets where shown on drawings. Mount the plywood with the bottom edge 300 mm (one foot) above the finished floor.
- K. Furnish and pull wire in all empty conduits. (Sleeves through floor are exceptions).

3.9 COMMISSIONING

- A. Provide commissioning documentation in accordance with the requirements of Section 28 08 00 - "COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS" for all inspection, start up, and contractor testing required above and required by the System Readiness Checklist provided by the Commissioning Agent.

- B. Components provided under this section of the specification will be tested as part of a larger system. Refer to Section 28 08 00, "COMMISSIONING OF ELECTRONIC SAFETY AND SECURITY SYSTEMS" and related sections for contractor responsibilities for system commissioning.

- - - E N D - - -



VA Project: **Renovate MH Ward 1L, 1H, and 1K**

VA Project #: 618-17-127

VA Addendum #2 Information

Date: **April 4, 2021**

DRAWING SHEET REVISIONS

GI001 OVERALL PHASING PLAN - LEVEL 1

- a. Phase 2 work on North side of temporary partition is to include new finishes scheduled in Corridors C1-65, and 1K 100.
- b. The scope of work occurring within the courtyard will begin during phase II. Work is to be coordinated so as not to conflict with seasonal resident use of the courtyard. Scheduling of this work to be coordinated with COR.

GI002 ENLARGED PHASING PLAN - CONSTRUCTION BOUNDARIES

- a. Detail 1/GI001 is to be updated to reflect inclusion and revised sequencing of corridors as noted in revision item b. for sheet GI001, and phasing of Courtyard alterations and improvements

G101 LIFE SAFETY PLAN

- a. Bounding walls of existing exit Corridor to the South of Stair 8 is an existing 2hr fire barrier and will retain this rating.
- b. The interstitial level floor associated with the first level is a one-hour fire rated assembly. The integrity of this assembly is to be maintained.
- c. Add the outlined information below to the sheet

GENERAL TYPE OF PROJECT	YES	NO
NEW BUILDING	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ADDITION	<input type="checkbox"/>	<input checked="" type="checkbox"/>
REMODEL	<input checked="" type="checkbox"/>	<input type="checkbox"/>

AUTHORITIES HAVING JURISDICTION (AHJ's)	YES	NO
THE JOINT COMMISSION (TJC)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CENTER FOR MEDICARE/MEDICAID SERVICES (CMS)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input checked="" type="checkbox"/>

APPLICABLE REGULATIONS
2021 NFPA 101 (LIFE SAFETY CODE)
2021 IBC (WHERE SPECIFICALLY REFERENCED)
ABA STANDARDS (2015) (ABAAS)
VA BARRIER FREE DESIGN STANDARD (PG-18-13)
NFPA NATIONAL FIRE CODES (EXCETION: NFPA 5000 & 900)
2018 FGI GUIDELINES
OSHA STANDARDS
VA SEISMIC DESIGN REQUIREMENTS H-18-8
NATIONAL ELECTRIC CODE (NEC)
ASME BIOLER AND PRESSURE VESSEL CODE
ASME CODE FOR RESSURE PIPING
BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, AMERICAN CONCRETE INSTITTE AND COMENTARY (ACI 318)
MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
ENERGY POLICY ACT OF 2005 (EPAc)
DOE INTERIM FINAL RULE: ENERGY CONSERVATION STANDARDS FOR NEW FEDERAL, COMMERCIAL AND MULTI-FAMILY HIGH-RISE RESIDENTIAL BUILDINGS AND NEW LOW-RISE RESIDENTIAL BUILDINGS, 10 CFR PARTS 433,434 AND 435
FEDERAL LEADERSHIP IN HIGH PERFORMANCE AND SUSTAINABLE BUILDINGS: MEMORANDUM OF UNDERSTANDING (MOU)
EXECUTIVE ORDER 13423: STRENGTHENING FEDERAL ENVIRONMENTAL, ENERGY, AND TRANSPORTATION MANAGEMENT
THE PROVISIONS FOR CONSTRUCTION AND SAFETY SIGNS. STATED IN THE GENERAL REQUIREMENTS SECTION 01010 OF THE VA MASTER CONSTRUCTION SPECIFICATION
VENTILATION FOR ACCEPTDABLE INDOOR AIR QUALITY - ASHRAE STANDARD 62.1-2004
SAFETY STANDARD FOR REFRIGERATION SYSTEMS - ASHRAE STANDARD 15 -2007
VA FIRE PROTECTION DESIGN MANUAL
VA DIRECTIVES, DESIGN MANUALS, MASTER SPECIFICATIONS, VA NATIONAL CAD STANDARD APPLICATION GUIDE, AND OTHER GUIDANCE ON THE TECHNICAL INFORMATION LIBRARY (TIL)

OCCUPANCY CLASSIFICATION(S)			
OCCUPANCIES (LSC CH 12-42)	HEALTHCARE	YES	NO
CHANGE OF OCCUPANCY? (If Remodeling)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SEPARATED OCCUPANCIES? 2015 LSC (TABLE 6.1.14.1)		<input checked="" type="checkbox"/>	<input type="checkbox"/>
FIRE BARRIER RATING(S) (Section 8.3)	SEE LIFE SAFETY PLANS		

TYPE(S) OF CONSTRUCTION			
CONSTRUCTION TYPE(S)	(LSC Chapter 18/19) LSC I (322)	(IBC Chapter 6)	IBC II-A
AREA SEPARATIONS / FIRE WALLS	SEE LIFE SAFETY PLANS		

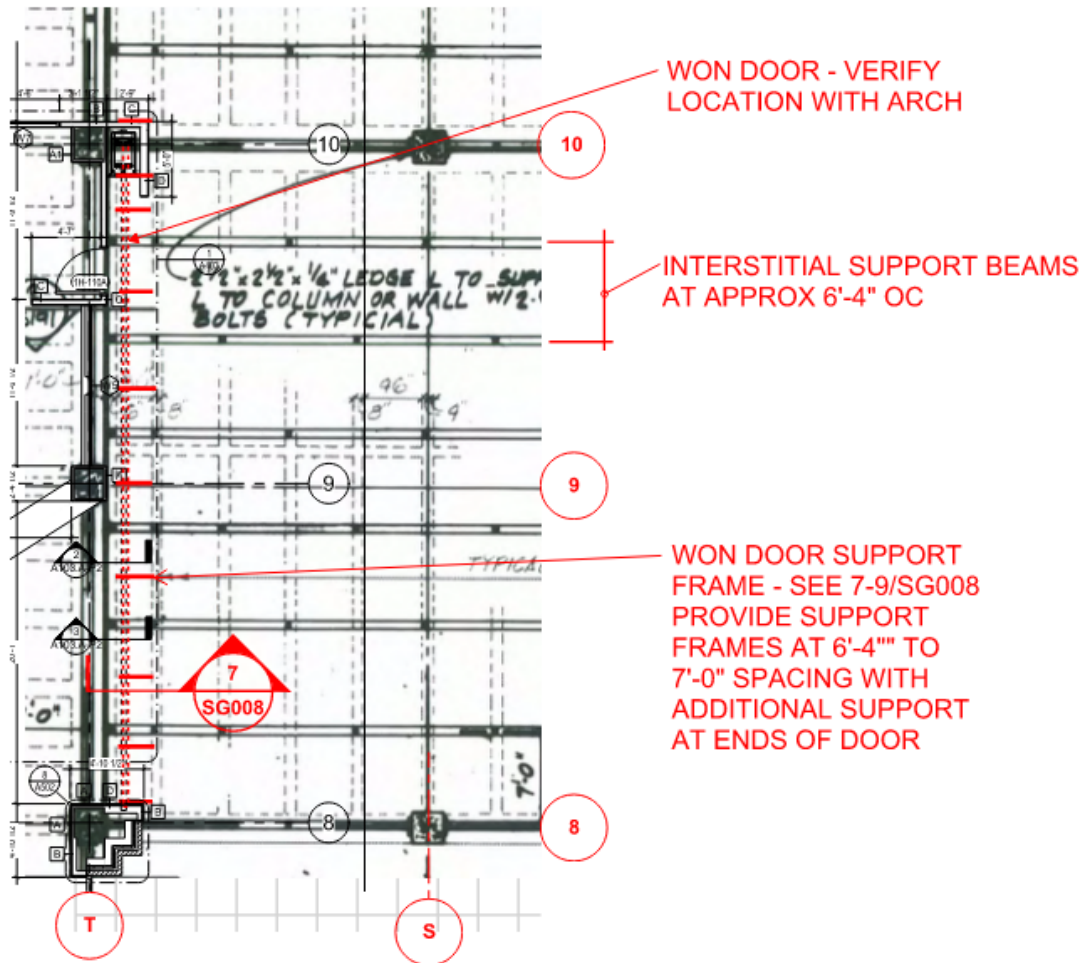
FIRE-RESISTIVE REQUIREMENTS		
	RATING (HRS)	TEST
STRUCTURAL FRAME		
COLUMNS	3	ASTM E119
GIRDERS	3	ASTM E119
TRUSSES	3	ASTM E119
BEARING WALLS		
EXTERIOR BEARING WALLS	3	ASTM E119
INTERIOR BEARING WALLS	3	ASTM E119
NON-BEARING WALLS AND PARTITIONS		
EXTERIOR	0	ASTM E119
INTERIOR	See Life Safety Plans	
FLOOR CONSTRUCTION		
FLOOR/CEILING ASSEMBLY	2	ASTM E119
PRIME & SEC. FLOOR BEAMS, JOISTS	N/A	ASTM E119
ROOF CONSTRUCTION		
ROOF/CEILING ASSEMBLY	1.5	ASTM E119
PRIME & SEC. ROOF BEAMS, JOISTS	N/A	N/A
OTHER		
SHAFTS AND EXIT PASSAGEWAYS	2	ASTM E119

MISCELLANEOUS		
	YES	NO
FIRE RESISTIVE CORRIDORS?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SMOKE TIGHT CORRIDORS (SMOKE PARTITIONS)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
INCIDENTAL USE AREA RATING(S)	SEE PLANS	
INTERIOR FINISHES CLASSIFICATION		
EXIT ACCESS CORRIDORS	A or B	
OTHER SPACES	I or II	

SG008 STRUCTURAL DETAILS

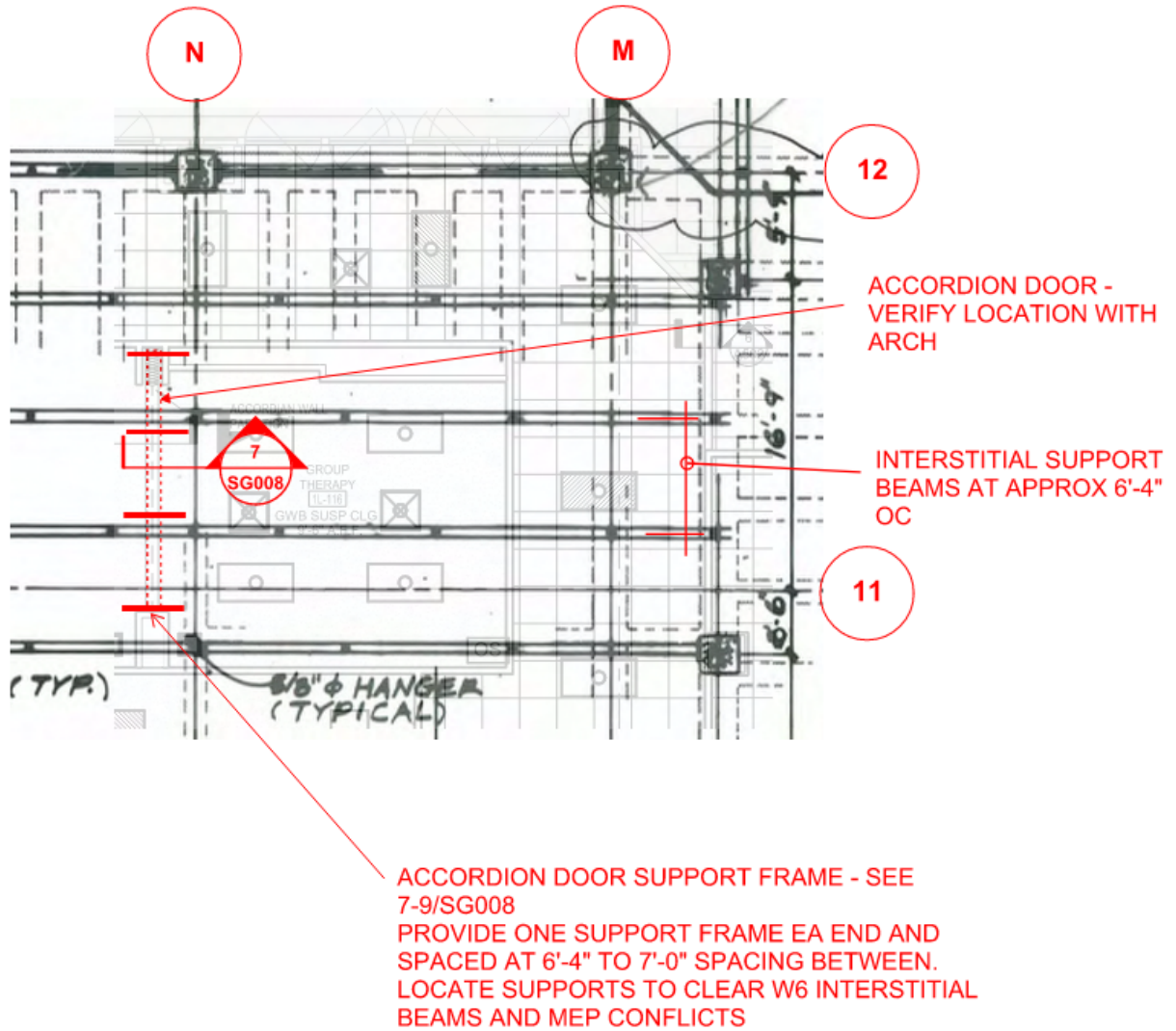
1. DETAILS 7,8,9: Details are for WON DOOR SUPPORT. Where details refer to plan, reference plan information below.

WON DOOR SUPPORT



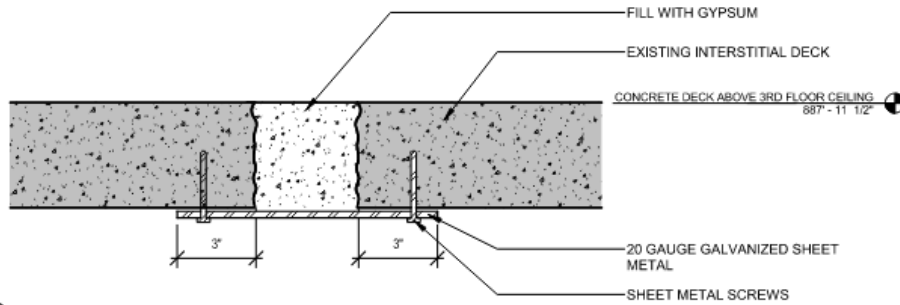
2. Refer to the plan information below for the structural support of the ACCORDIAN WALL PARTITION in phase 3, area L.

ACCORDION DOOR SUPPORT

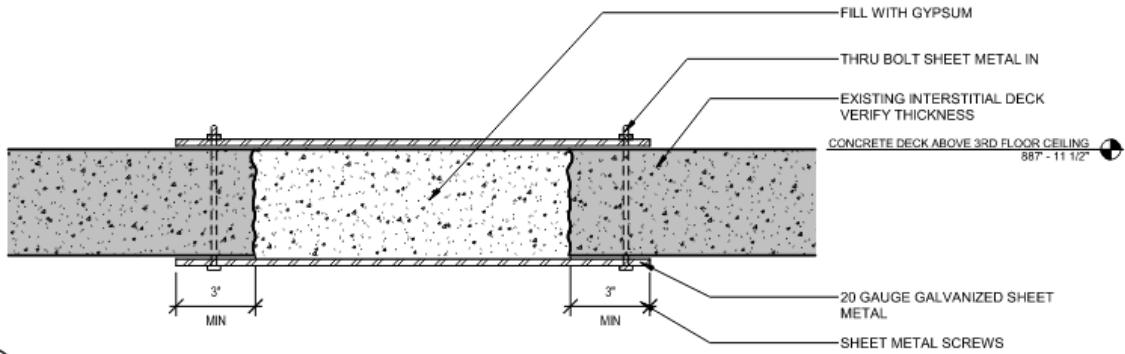


3. ADD the Details 10, 11 and INTERSTITIAL SPACE GENERAL NOTES provided below to this sheet.

INTERSTITIAL FLOOR PATCH



10 TYP INTERSTITIAL DECK PATCH (LESS THAN 4" DIA)
3" = 1'-0"

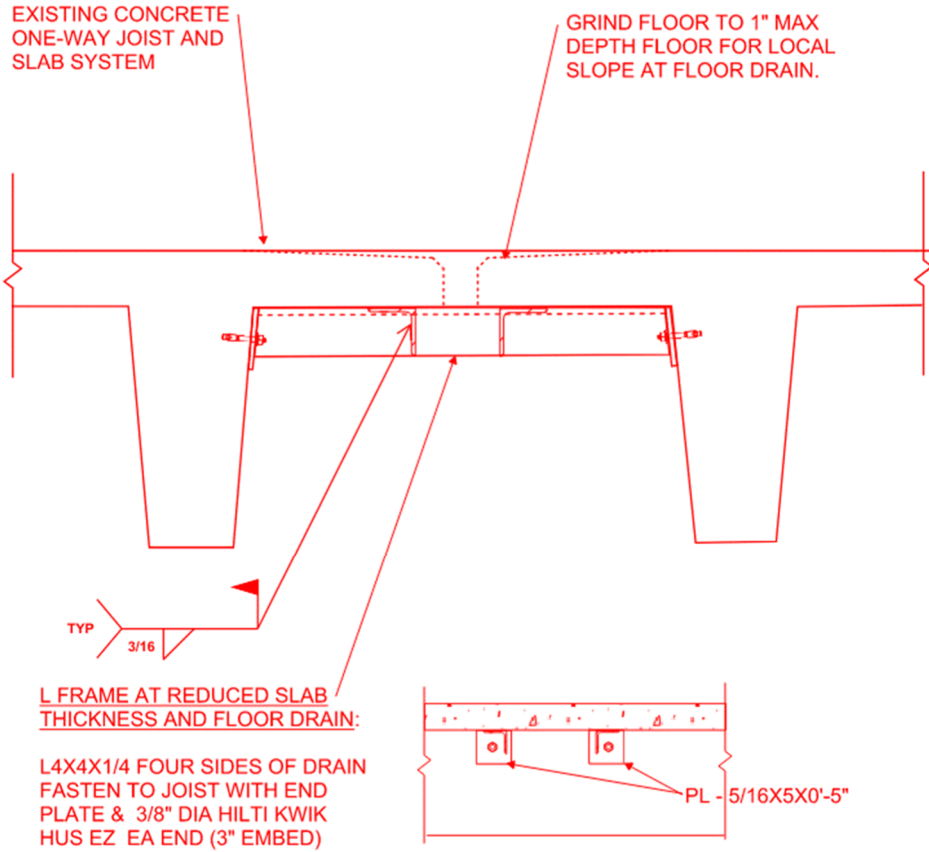


11 TYP INTERSTITIAL DECK PATCH
3" = 1'-0"

INTERSTITIAL SPACE GENERAL NOTES	
1.	VERIFY EXTENT OF EXISTING PENETRATIONS THROUGH THE INTERSTITIAL BARRIER ONCE DEMOLITION OF MECHANICAL DUCTING, PLUMBING AND ELECTRICAL SYSTEM IS COMPLETE
2.	VERIFY PLANNED REUSE OF EXISTING PENETRATIONS BY MECHANICAL AND ELECTRICAL CONTRACTORS TO ESTABLISH EXTENT OF ABANDONED PENETRATIONS. REVIEW SURVEY / INVENTORY LIST WITH MECHANICAL AND ELECTRICAL CONTRACTORS.
3.	PATCH ALL ABANDONED PENETRATIONS THROUGH THE INTERSTITIAL BARRIER THAT ARE GREATER THAN FOUR SQUARE INCHES AS INDICATED ON DETAIL 11
4.	PATCH ALL ABANDONED PENETRATIONS THROUGH THE INTERSTITIAL BARRIER THAT ARE LESS THAN FOUR SQUARE INCHES AS INDICATED ON DETAIL 10
5.	VERIFY / COORDINATE SIZE AND LOCATIONS OF ADDITIONAL REQUIRED OPENINGS / PENETRATIONS IN THE INTERSTITIAL BARRIER. SAWCUT AND REMOVE BARRIER MATERIAL AT THESE LOCATIONS AS REQUIRED TO ACCOMMODATE DETAIL

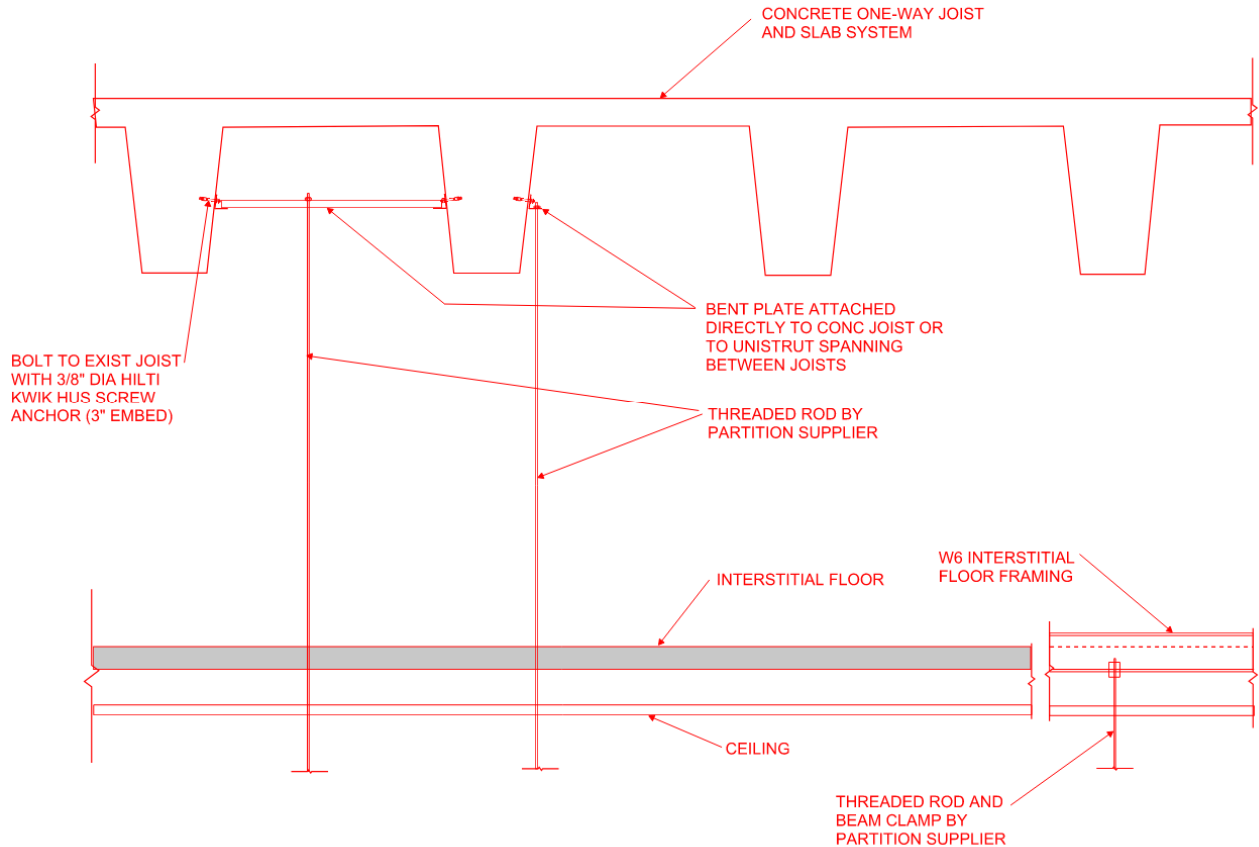
4. ADD to sheet detail 13, shown below: Shower Floor Recess for use @ STAFF LKR/TLT Rm 1H-105.

FLOOR DRAIN IN EXISTING SLAB



5. ADD to sheet detail 14, shown below: Toilet Partition Support @ STAFF LKR/TLT Rm 1H-105.

TOILET PARTITION SUPPORT



A001 ARCHITECTURAL RENOVATION & DEMOLITION GENERAL NOTES & KEYNOTES

- a. Delete this sheet in it's entirety.

A002 ARCHITECTURAL RENOVATION & DEMOLITION GENERAL NOTES & LEGENDS

- a. Sheet is to be renamed "WALL TYPES AND TYPICAL FRAMING DETAILS"
- b. DELETE: Note #4 "ALL GWB TO BE SMOOTH FINISH THROUGHOUT, LEVEL 5 FINISH, UNLESS NOTED OTHERWISE." Refer to specifications.
- c. ADD the following text to the "Temporary Partition Detail":
 - i. Where temporary doors occur within temporary partitions, door and frame assemblies are to provide a 45 min fire rating. Doors are to have locking and latching hardware meeting construction exiting requirements. Keying is to be per requirements of the COR.
 - ii. Temporary partitions are to extend to bottom of interstitial level floor structure.
- d. ADD DETAIL: "TYPICAL PARTITION CONTROL JOINT FRAMING AT DOORS", see attached.

AD100 OVERALL DEMOLITION PLAN - LEVEL 1

- a. Demolition General Notes and Demolition Key Notes on this sheet are applicable to all Phase 2 and Phase 3 Architectural Demolition Plans and RCP Sheets. Note: Not all demolition keynotes are used on each sheet.
- b. Replace all DEMOLITION GENERAL NOTES on sheet with the following:

DEMOLITION GENERAL NOTES

1. Where alterations expose, or require penetrations in the gypsum floor of the interstitial level above, patch the existing floor to restore integrity and fire resistance of the assembly. See structural for patch requirements.
2. Coordinate demolition scope with mechanical, electrical, and plumbing demolition and new work. MEP demolition includes demolition of elements in interstitial level above.
3. Demolition and construction must be sequenced and coordinated to insure the hospital's operations are continually maintained.
4. Demolition and replacement of existing exterior windows is to be sequenced to preserve existing building temperature, pressure, and security. Intended sequencing to be reviewed with COR prior to commencing work.
5. Demolition plan reflects information gathered from existing drawings and field inspections. Each contractor shall verify accuracy of Information and include all required demolition in his bid. All contractors shall report any discrepancies to the VA.
6. The locations of items to be demolished as indicated on plan are approximate and must be field verified. Any discrepancies in conditions depicted are to be reported to the COR before demolition occurs. Stop work and contact VA COR for direction if demolished walls contain unanticipated piping, electrical, or structural elements.
7. Existing elements to be demolished are shown dashed. Existing elements to remain are shown as light grey.
8. Provide new penetrations at openings as required for all new piping and ductwork.
9. Contractor to ensure all remaining devices, including lights, smoke detectors, and speakers remain functioning and are properly supported and protected during all demolition and rebuild operations. Cover all smoke detectors during pipe soldering, etc. to prevent false alarms.
10. Patch and/or repair all wall surfaces to match adjacent surface where demolition disturbs materials and surfaces otherwise not identified for demolition. Prep, prime and paint the entire wall at the repair.
11. dashed lines indicate demolition elements. Solid grey lines indicate existing elements to remain. U.N.O.
12. Existing windows and frames that are shown to remain on plans need to be protected from damage during demolition and construction.
13. Review items to be salvaged, and/or reused with COR prior to demolition. Return items identified by the drawings and by the COR which are not designated to be reused, or reinstalled.
14. Existing fireproofing damaged, or removed due to demolition, or construction activities is to be patched, or restored to level of required fire protection.
15. Remove existing finishes designated for removal to substrate below unless noted otherwise. Patch and repair substrate as required for installation of new finishes.
16. Refer to mechanical dwgs for related mechanical demolition & new construction not shown.
17. Refer to electrical and technology dwgs for related electrical & technology demolition & new

construction not shown.

18. Existing fire protection system to remain operational during construction unless otherwise arranged with the COR.
19. Refer to code review & life safety plans for fire & smoke partition legend.
20. Demolition waste to be removed to dumpster. The COR will approve of dumpster locations
21. Disruptive activities in occupied spaces to be limited as directed by cor. Coordinate well in advance with COR prior to beginning work.
22. in areas that are to be occupied and/or operational during the construction period and designated for after-hours and/or weekend work, the contractor shall return area to serviceable condition prior to the end of the contractor's work period including cleaning of area and reinstallation of acoustical tile ceilings.
24. Coordinate removal of existing door hardware to be replaced where new door hardware is identified on door schedule on existing doors.
25. Devices and utilities serving other floors are to be identified and protected during demolition. Any modification of these elements is to be coordinated with COR prior to work.
26. All structural elements are to be protected from damage.
27. Retain metal studs along exterior wall during demolition.
28. Ceilings not otherwise identified for removal are to be temporarily supported and any damaged elements are to be patched or replaced to return the ceiling to its original condition. Replace damaged elements with those matching existing materials and finishes.
29. See reflected ceiling plans for extents of ceiling to be replaced.

- c. Replace all DEMOLITION KEYNOTES on sheet with the following:

DEMOLITION KEY NOTES

1. Remove existing ceiling as needed and prep for new construction.
2. Remove existing casework.
3. Remove existing wall furring. Protect existing elements & structure.
4. Remove existing door. Paint frame as needed to match existing.
5. Remove existing door and frame.
6. Remove existing wall in its entirety.
7. Remove portion of exist gwb/metal stud wall. Protect adjacent surfaces.
8. Remove all plumbing fixtures in this room.
9. Protect and retain soiled linen chute which will remain in operation throughout construction serving other floors
10. Remove existing windows and frames. Protect adjacent surfaces.
11. Existing toilet rooms – remove all plumbing fixtures; remove ceramic tile flooring to concrete substrate. See mep demo drawings for capping of existing plumbing lines.
12. Remove existing finishes and ceiling.
13. Remove existing window, pre-cast sill, and framing. See detail 1/a501 for more information.
14. Sticky walk-off mat at construction entrances.
15. Contractor and material ingress/egress path. Maintain path for egress during construction.
16. Erect non-combustible temporary construction barrier. See temporary partition detail on a002.
17. Exist door at stairs to remain accessible during duration of construction for emergency egress.
18. See elec. For work associated w/ data closet; schedule & coordinate work in closet w/ cor.
19. Exist fire sprinklers in room to remain (typ).
20. Existing fire extinguisher cabinet.

21. Extents of work/laydown areas for this project.
22. Remove existing shower stalls, ceramic tile, and floor drains.
23. Demo work in this area requires removal of entire existing gwb/plaster ceiling, field verify. Remove ceiling in room. Remove as shown and coordinate removal and reinstallation of ceiling equipment (example: lighting and diffusers) in new ceiling. Contractor is responsible to Coordinate removal, salvage and reinstallation of other equipment (example: lighting and diffusers) that might be displaced in the process. Area shown is an approximate area to be removed. Verify existing conditions with COR during pre-construction walk thru, additional costs will not be allowed.
24. Complete demolition of area shown to interstitial level above. Exterior walls are to be demolished to metal studs behind existing surface. Verify and coordinate demolition required at perimeter of demolition area with scope of new materials and finishes. Remove interior walls, doors, windows, ceilings and finishes in their entirety U.N.O.
25. Existing doors used as a part of construction partition and are to be demo'd only when only when construction in the associated phase has been completed.
26. Existing doors to be secured shut and entry restricted from patients. Locking anti-ligature hardware is to be installed so as to secure these doors during phase 2. COR to review and approve hardware used and be provided access keys.
27. Remove existing floor base & floor finish to bare concrete and prep for new floor finishes. Refer to finish plans and finish schedules for new finishes and locations.
28. Remove wall mounted accessories. Patch and repair as needed to match existing.
29. Remove existing brick column

AD101 OVERALL REFLECTED CEILING PLAN DEMOLITION - LEVEL 1

- a. Delete existing Demolition General Notes and replace with "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."
- b.

AD101-P1 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA L - PHASE 1

- c. Delete existing Demolition General Notes and replaced with "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."
- a. Delete Keynote 17 at Stair, 6.
- b. Handrail demolition shown in corridor C1-64A is to occur as part of phase 2 demolition rather than phase 1.
- c. New accessible shower is to replace existing tub in room 1L-136A. Coordinate demolition requirements with those for new shower.
- d. Add the following General Notes
 - 1) Coordinate the extent of the demolition in this phase with the requirements for new construction including demolition required for access, or installation of MEP, devices, fixtures, and components.
 - 2) Where existing construction has been removed, patch or infill with new materials or finishes to match adjacent materials and finishes. Where matching finishes are not available, replace finishes with complimentary materials of like type for entire wall, floor area, etc.. Complimentary materials and extents are to be reviewed and approved by the COR.

- 3) Coordinate scope of demolition work with demolition required by Mechanical, Electrical, and Plumbing drawings for demolition, installation, or access required for work in this phase.
- 4) Provide temporary supports as necessary to preserve or support existing construction to remain.
- 5) At existing corridor C1-313, and 1H-118 existing handrails are to be demolished. New handrails are to be provided in Phase 2 construction.
- 6) Coordinate scope of demolition on this sheet with new construction requirements on sheet A101-P1.

AD101.A-P1 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA L - PHASE 1

a. Demolition General Notes.

1. Add Note: Remove existing handrails, Remove vinyl wall covering, patch and prepare walls for new paint in existing Corridors C1-58, C1-59, C1-60, C1-61, and C1-63.
2. Patch drywall and prepare all patient rooms for new paint.
3. Patch drywall and prepare for new paint in existing rooms IL-102, and IL-103
4. At patient toilet rooms remove all ceramic tiles which have been damaged or has holes from the mounting of previous fixtures and toilet accessories.
5. Remove ceiling projector, speakers, and wall mounted screen at existing rooms IL-130, and IL-109. Patch and prepare walls for new paint.

AD102-P2 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA K - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD102.A-P2 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA K - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD103-P2 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA H - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."
- a. Coordinate demolition of existing handrails including those shown as to remain with new construction scheduled.
- c. Work adjacent to occupied areas is to be scheduled per COR requirements as noise may impact occupied areas.

AD103.A-P2 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA H - PHASE 2

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD104-P3 ARCHITECTURAL DEMOLITION PLANS - LEVEL 1 - AREA L - PHASE 3

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD104.A-P3 ARCHITECTURAL DEMOLITION PLANS - RCP - LEVEL 1 - AREA L - PHASE 3

- a. Delete existing Demolition General Notes and replaced with text stating, "See sheet AD100 for Demolition General Notes and Demolition Key Notes Applicable to this sheet."

AD201 EXTERIOR DEMOLITION ELEVATIONS

- a. Removal of exterior brick to bottom of window elevation required for new exterior brick shown in detail 8/A502. Verify new lintel is not required prior to demolition.

A100 OVERALL PLAN - LEVEL 1

- a. Replace text in Renovation General Notes in note #2 stating "All finishes and hardware to be anti-ligature." With "Fixtures, features, and hardware in areas with patient access are to be anti-ligature."

A101-P1 ARCHITECTURAL PLANS - LEVEL 1 - AREA L - PHASE 1

- b. At door C1—61D hinge locations are correct, however, door swing directions are to be reversed to avoid conflict with entry to Exam Rm, 1L-103.
- c. Contractor responsibility to construct new walls as required for continuity of existing smoke and fire barriers in area L. Coordinate new partition construction requirements with COR.
- d. Storage rooms 1-L121, and 1L-123 , walls of these rooms are to have a 1-hour fire rating.
- e. Phase 1 General Notes:
 1. Replace Note #3 in with the following text: "Replace the two existing non-locking fire extinguisher cabinets present in unit and the existing fire connection cabinet and replace with new flush mounted lockable fire extinguisher and fire connection cabinets. Verify location of new cabinets with COR."
 2. Delete Note #7. Refer to flooring information issued via this addendum as added to sheet AF-002.
 3. Replace Note #8 with the following text: "Replace the existing (6"x27" - Verify) vision lites present in 4 existing doors and replace the existing half lite windows present in two existing doors with new LG-1 glazing. Replace existing trim screws with tamper resistant screws at these locations"
 4. Add Note #10. Coordinate locations requiring alterations, or access with scope of Mech., Elec, or Plumbing work. Patch areas of walls removed or disturbed with materials and finishes of like kind.
 5. Add Note #11 Provide new handrail (HR-2) where existing handrail was removed in Corridor C1-58, C1-59, C1-60, C1-61, C1-61D, and in Sally Port.

A101.A-P1 ARCHITECTURAL PLANS - LEVEL 1 - AREA L - PHASE 1- RCP

- a. Refer to MEPF drawings for quantities and locations of ceiling mounted lights, diffusers and devices.
- b. At Rm IL-103A provide new painted gypsum board ceiling.
- c. Provide new ceiling components as necessary due to demolition, including new ceiling grid components and panels, to match or complete existing where new walls interrupt existing ceiling.
- d. Corridors C1-58, C1-59, C1-60, C1-61, and C1-63 and L1-61D are to receive new tamper resistant 2x4 ceiling. Basis of Design for new ceilings is Armstrong Metalworks Secure Lock tamper resistant ceiling system.

ARCHITECTURAL DRAWING REVISIONS – GENERAL

1. Typical resident toilet rooms to be constructed in Phase II and III have been modified. Perimeter walls of Resident room remain unchanged. Shower configurations are to be configured as shown on the revised Typical Resident Room layouts attached to this addendum. Addendum 2 Sheet A401, details 1,2, and 3 and replace prior details 1, 2, and 3 on sheet. Alterations include reconfiguration of shower and sloped floor configuration and extents for recess in new bathroom and shower floors. Slopes are to be ¼” / foot in shower and the sloped area shown adjacent to shower drain. Floors in toilet room to slope as shown to linear drain.
2. Interior window frames in Theatre Rm 1K-118, Alcove C1-718, and RN Station 1-L-120 each of these locations show 2 windows forming an outside corner condition. These windows are to be constructed as a single window assembly and not as separate window frames.
3. All wood blocking shown in architectural drawings is to be fire treated wood blocking.

A201 EXTERIOR ELEVATIONS

- a. Refer to detail 8 / 502 for locations of new brick.

A302 BUILDING & WALL SECTION DETAILS

- b. Remove all references to VA provided materials and finishes. All feature wall materials and finishes are to be provided by the Contractor. Contractor to coordinate with VA on product and finish selection.
- c. Basis of Design products for feature wall are as follows:
Decorative Artificial Plants: Fire Retardant Artificial Foliage roll, or mat by Plantscape. Boxwood foliage or similar with final selection by VA.
Stone: Veneer limestone, Honey Stone Colors in Ashlar pattern and veine cut blend of honed and polish finished stone.

A402.A ENLARGED ARCHITECTURAL PLANS

Lockers shown in elevations are to be installed with a 4” concrete base and a prefinished sloped metal top with matching finish to lockers.

A502 ARCHITECTURAL DETAILS

- a. Detail 7/A502: Contractor to provide threaded rod and supporting structure above per details 7,8, and

9 on sheet SG008.

- b. Detail 8/A502: Drawings indicate new exterior wall assembly at pier. Wall assembly requires application of air barrier on exterior sheathing. See attached spec section:

072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR PERMEABLE

- c. Detail 8. Continue wall (Wall type C) from WON DOOR pocket to face of exterior sheathing to provide continuity of smoke and fire rated wall to exterior wall.
- d. Detail 9. Coiling shutter has been deleted from this location. Construct soffit as shown.

A503 ARCHITECTURAL DETAILS

- a. Detail 8. FEC is to have an anti ligature cabinet pull.
- b. Detail 10. Refer to item #20 on Technical Questions and Responses. Pocket shown in detail will be revised to length required for a 40' door.

A701 DOOR & WINDOW SCHEDULES & DETAILS

- a. Door widths have been updated as per the summary below, in accordance with VA facility specific standards.
 - 1.Phase 1: Doors 1L-103, 1L-103A, 1L-105A, 1L-108B, 1L-112A, 1L-127A, 1L-128A, 1L-134A, 1L-135A, 1L-136B and 1L-137B: 44" width.
 - 2.Phase 2: Doors 1K-118 and 1K-119A: 44" width.
 - 3.Phase 3: Doors 1L-101, 1L-102, 1L-104, 1L-105A, 1L-105B, 1L-107A, 1L-107B, 1L-110, 1L-112, 1L-113A, 1L-114, 1L-116, 1L-121, 1L-122, 1L-123, 1L-123A, 1L-124, 1L-124A, 1L-125, 1L-125A, 1L-126, 1L-126A, 1L-128, 1L-128A, 1L-128-B, 1L-128C, 1L-128, 1L-129: 44" width.
- b. For Door Type 'G', Overhead Door, provide of stainless steel material.
- c. At all patient toilet rooms replace current door type with new door type "I". Door Type I - Basis of Design: Norva Plastics Suicide Prevention Door, Version 1.
(Norva Plastics Inc., norvaplastics.com, 757-622-9281)
- d. Windows W4, and W21 at Work Room, 1H-110A are to be a 60-minute fire-rated system that incorporates butt-glazed fire-resistive glass with a fire-resistive perimeter frame. Basis of Design for window and glazing system: Superlite II – XL 60, Architectural Series (Mfgr: Saftifirst), Finish to match windows by section 10 23 10.
- e. Revise Schedule to change Frame type at patient room entry doors to be new frame type 10 as described on narrative for sheet A702.
- f. Refer to assemblies identified to be provided by section 10 23 10 in the prior addendum (except as noted in item c above for W4 and W21). Remove all references to CRL products as the basis of design. Basis of Design has been revised as follows so as to accept laminated glass:
Glazing is per section 08 80 00 for glass window and door assemblies. Frame, Rails and hardware are to be provided as follows:
 - a. Contractor to provide all hardware and accessories for complete installation. Hardware components are to be provided with appropriate models for door and glass lite size and functionality identified on plans, elevations.

- b. Hardware Basis of Design: MUNDUS Premium Hardware by **Dormakaba** at glass window and door assemblies; Hardware includes:
 - 1. Patch Fittings
 - 2. Rails (Frame height to correspond to 2-1/2" Frame for W4, and W21)
 - 3. Pivot Hinges (with Closer function)
 - 4. Clear gaskets and seals between glass panes (and at side edges in locations where smoke seals are required).

A702 DOOR & WINDOW DETAILS

- a. Frame Type 2 – Not Used
- b. Frame Type 1 – Glazing to be IL-1B.
- c. Window Type 1 - Glazing to be IL-1B.
- d. Refer to Addendum narrative for Sheet A701 for revisions to Windows W4 and W21 and assemblies provided under spec section 10 23 10..
- e. Refer to Addendum narrative for
- b. Add new frame type (10) – 2" Hollow metal frame for use at patient room entry doors. Stopless Frame to accommodate emergency stops as specified in section 08 71 00.

A703 DOOR & WINDOW DETAILS

General Notes:

- a. Add General Note: Frame and glazing type shown on details are approximations and may not represent frame profiles and glazing type as scheduled or specified. Refer to associated specification sections for frame information and frame elevations, as amended in addendum 2, for frame and glazing types.
- b. Details 2 and 4 – Provide solid surface sill at sill condition.
- c. Detail 6 – Provide clear silicone glazing gasket at perimeter of frame for smoke seal.
- d. Details 7 and 8 - Refer to Addendum narrative for Sheet A701 for revisions to Windows W4 and W21 and assemblies provided under spec section 10 23 10.

AF-002 ARCHITECTURAL FINISH PLAN & SIGNAGE SCHEDULE

- e. At shower stalls floor porcelain tile shall be installed over tapered mortar bed, sloped ¼" per foot toward floor drain. Line shower stall floor with tile sheet waterproofing isolation membrane and wrap up vertical faces of shower stall minimum 8", behind finished wall tile but over wall sheathing. Provide liquid-applied elastomeric waterproofing membrane beneath the remainder of the toilet room porcelain tile flooring. Slope remainder of toilet room porcelain tile flooring by tapering the mortar bed as indicated in the updated attached details 1, 2 and 3 from sheet A401.
- f. Phase-I Finish Schedule:
 - 1. Paint (P-1), All walls (Corner to corner): Corridor C1-58, C1-59, C1-60, C1-61D, C1-63, and Sally Port, IL-102, and IL-103.
 - 2. Paint (P-5), Ceiling: IL-102, and IL-103.
 - 3. Paint – Sherwin Williams (Color – SW6219 Rain, eggshell), All walls (Corner to Corner), All Patient

Rooms

4. Ceramic Tile, 4"x4" Daltile, color Matte Biscuit K775, (Existing tile match for infill and replacement tile): Patient Toilet Room.

AF102 ARCHITECTURAL FURNITURE PLAN – LEVEL 1 – AREA K

- a. HR-1 locations identified on this sheet are to be relabeled HR-2

AF104 ARCHITECTURAL FURNITURE PLAN – LEVEL 1 – AREA L

- a. HR-1 locations identified on this sheet are to be relabeled HR-2
- b. Handrail (HR-2) and Crash Rail (CR-1) are to be added to both sides of Corridor, C1-60.
- c. Handrail (HR-2), and Wall Protection (RSV-1 to a height of 34" A.F.F) are to be added to both sides of Corridor, C1-61.

AI-101 CASEWORK SECTIONS & DETAILS

- a. All blocking shown or identified as wood is required to be fire treated wood.
- b. All base cabinets should be provided one adjustable, or fixed shelf.
- c. All millwork door pulls in patient accessible areas shall have anti-ligature pulls, style to match facility standards, as approved by the VA during shop drawing approval process.
- d. All millwork drawers and doors shall be provided a keyed lock.

QH100 TYPICAL MOUNTING HEIGHTS AND EQUIPMENT SCHEDULE

- a. Shower seats are to be of portable style, furnished and installed by the VA. There will be no built-in shower benches in this project.

MECHANICAL ADDENDUM

- SHEET FX100 – FIRE SUPPRESSION PLAN – OVERALL FINAL
 - Existing sprinkler zone boundaries are modified. Connect sprinklers in former sprinkler zone 35⁸ to sprinkler zone 33⁷. Provide hydraulic calculations during the submittal process that demonstrate adequate pressure/flow at remote areas within revised sprinkler zones.
- SHEET FX102-P2 – FIRE SUPPRESSION PLAN – AREA K – PHASE 2
 - Refer to comment for Sheet FX100 regarding revised sprinkler zone.
- SHEET FX103-P2 – FIRE SUPPRESSION PLAN – AREA H – PHASE 2
 - Refer to comment for Sheet FX100 regarding revised sprinkler zone.
 - The identification of EX Office as an Ordinary Hazard (Gr. II) appears to be in error. VA to confirm if the room will house chemicals or storage racks above 8' that would require this hazard designation.
- All Plumbing and Mechanical Drawings:
 - Numerical grid bubbles do not coordinate with existing building or architectural plans. Bidding contractors shall make drawing references using grid bubble designation found on the architectural or electrical plans.
 - Interstitial plans overlaid on floor plan below. While this method does make alignment with the floorplan below more straight-forward, it also leads to confusion as to where the piping and ductwork are to be routed. Contractor shall bid documents assuming that domestic water, sanitary vent and HVAC ductwork and piping is located in the interstitial space above. The mechanical contractor is responsible for all core drilling required for extension of piping and ductwork between levels. No flexible duct is permitted at floor penetration; hard duct only with fire sealant around each penetration to maintain a 1-hour rating (typical of all penetrations).
- SHEET PD102U-P2 – PLUMBING DEMOLITION PLANS – UNDERGROUND - AREA K - PHASE 2
 - There is a tunnel, extending roughly between Gridlines V and W, below the project area. For all sanitary piping that lies outside of the basement area, saw cut floor for pipe demolition. For all sanitary piping that is located in the tunnel that will be removed, patch wall at former pipe penetrations.
- SHEET PD103U-P2 – PLUMBING DEMOLITION PLANS – UNDERGROUND - AREA H - PHASE 2
 - Drawing title is incorrect as piping is located on basement interstitial level. Saw cut floor for pipe demolition that occurs beyond the basement at approximately Gridline 7.
- SHEET PD104U-P2 – PLUMBING DEMOLITION PLANS – UNDERGROUND - AREA L - PHASE 3
 - Most piping in this area is underground, but there are basement and steam tunnel walls that will interfere with pipe demolition and some demolition will occur in the interstitial space below. Saw cut floor on grade for pipe demolition. Patch former wall penetrations.
- SHEET PD101-P1 – PLUMBING DEMOLITION PLANS - AREA L - PHASE 1
 - Plumbing fixtures are shown demolished. Contractor shall include the work effort to demolish walls and existing plumbing fixture carriers.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and

capped at existing valves, will not be acceptable.

- SHEET PD102-P2 – PLUMBING DEMOLITION PLANS - AREA K - PHASE 2
 - Key Note PD02 directs contractor to demo branch piping and cap at main; however according to drawing, mains are to be demolished as well. Contractor shall remove all domestic cold, hot, recirculation and sanitary vent piping within the scope of work.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and capped at existing valves, will not be acceptable.
- SHEET PD103-P2 – PLUMBING DEMOLITION PLANS - AREA H - PHASE 2
 - Key Note PD02 directs contractor to demo branch piping and cap at main; however according to drawing, mains are to be demolished as well. Contractor shall remove all domestic old, hot, recirculation and sanitary vent piping within the scope of work.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and capped at existing valves, will not be acceptable.
- SHEET PD104-P3 – PLUMBING DEMOLITION PLANS - AREA L - PHASE 3
 - Key Note PD02 directs contractor to demo branch piping and cap at main; however according to drawing, mains are to be demolished as well. Contractor shall remove all domestic cold, hot, recirculation and sanitary vent piping within the scope of work.
 - Contractor shall note that Directive 1061 for Legionella Control prohibits any dead leg piping from abandoned tee connections. Any point of disconnect shall fully remove associated tee and replace with straight section of pipe. Abandoned tees, or piping simply disconnected and capped at existing valves, will not be acceptable.
- SHEET PP102U-P2 – PLUMBING PLANS – UNDERGROUND - AREA K - PHASE 2
 - There is a tunnel, extending roughly between Gridlines V and W, below the project area. Saw cut floor for installation of new sanitary sewer piping that extends outside the boundary of the tunnel. Provide modular link sleeves at all pipe penetrations of concrete walls. Patch walls at former pipe penetrations. Patch floor that has been saw cut for demolition and installation.
 - It is the contractor's option to redesign sanitary piping shown on the plans to minimize the amount of tunnel wall penetrations and to coordinate with the existing north/south pipe runs. Contractor's layout must be submitted to the COR in a 3D rendering and approved prior to the commencement of construction.
- SHEET PP103U-P2 – PLUMBING PLANS – UNDERGROUND - AREA H - PHASE 2
 - Ignore drawing title; piping is located on basement interstitial level, not underground.
- SHEET PP104U-P3 – PLUMBING PLANS – UNDERGROUND - AREA L - PHASE 3
 - Saw cut floor on grade for installation of new sanitary sewer piping. Provide modular link seals at all pipe penetrations of concrete walls. Patch walls at former pipe penetrations. Patch floor that has been saw cut for demolition and installation.
- SHEET PP101-P1 – PLUMBING PLANS – LEVEL 1 - AREA L - PHASE 1
 - Disregard key note direction to connect to existing waste vent and water piping. Provide new

sanitary sewer, vent and domestic water piping for all plumbing fixtures. Provide and install carriers for all wall-mounted fixtures.

- SHEET PP102-P2 – PLUMBING PLANS – LEVEL 1 - AREA K - PHASE 2
 - Disregard key note direction to connection to existing domestic water pipe mains. Provide new cold water, hot water and recirculating hot water mains and connect to existing at the perimeter of the project area.
 - Disregard key note PP11 and the installation of a circuit setter at each sink. Provide ASSE 1070 mixing valve at each sink. Refer to PP102-P2 rev1 for redesign of domestic water (red lines) and hot water recirculation system (orange lines). In lieu of circuit setters at each toilet group, extend hot water piping so that it is positioned above the plumbing fixture that it serves, to minimize standing water and comply with the VA Plumbing Design Manual requirements.
 - Note: that an additional solenoid valve is required for each toilet group, as shown on the revised plumbing plan.
 - Key note PP05 indicates solenoid valves for shutoff override for every patient room. While the plumbing plan shows 4, now 5, valves for back-to-back toilet rooms, the electrical drawings only show one electrical connection for all valves. Provide an electrical connection for each valve. Provide a 12" L-VIS touchscreen monitor, located at the Nurse's Station that is pre-programmed to shutoff water flow within an individual Patient Room.
- SHEET PP103-P2 – PLUMBING PLANS – LEVEL 1 - AREA H - PHASE 2
 - Similar to comments for PP102-P2, disregard key note to install a circuit setter at each sink. Provide ASSE 1070 mixing valve at each sink. Refer to PP103-P2 rev 1 for redesign of domestic water (red lines) and hot water recirculation system (orange lines). extend hot water piping so that it is positioned above the plumbing fixture that it serves, to minimize standing water and comply with the VA Plumbing Design Manual requirements.
 - Note: that an additional solenoid valve is required for each toilet group, as shown on the revised plumbing plan.
 - Contractor shall also disregard key notes PP12 and PP13 and provide recirculation balancing valves with the flows listed on the revised plan.
- SHEET PP104-P3 – PLUMBING PLANS – LEVEL 1 - AREA L - PHASE 3
 - Apply comments for PP102-P2 and PP103-P2 to the work area shown on this page.
- PP601 – PLUMBING SCHEDULES
 - Provide ASSE 1070 mixing valve on all lavatories and sinks per Directive 1061 requirements.
 - In lieu of high efficiency, low flow plumbing fixtures for P-101, P-103, P-104 and P-201, provide standard efficiency plumbing fixtures, (1.6 GPF water closet and 1.0 GPF urinal) which are typical for this facility.
 - To clarify, P-701 shall be ADA, dual head, flush-mounted, ligature-resistant wall shower.
- GENERAL – typical all HVAC plans
 - *Existing ductwork is unlabeled and vague. Contractor shall add duct tags and callouts to coordination drawings to differentiate supply, return and exhaust systems to facilitate installation.
- SHEET MH-100
 - DUCT CLEANING: As part of the demolition services, clean all supply air, return air and exhaust air

duct mains located in Areas H, K, and L. For Areas H and K, this task includes (2) 28"Ø SA, (1) 32"Ø SA, (2) 28"Ø RA, (1) 32"Ø RA, (1) 26"Ø EA and (1) 24"Ø EA ducts. For Area L, this task includes (2) 28"Ø SA, (2) 28"Ø RA and (1) 24"Ø EA ducts. Duct cleaning shall extend, for supply airflow, from the respective air handling unit to the end of the duct run and, for return and exhaust airflow, from the start of the duct run to the respective return or exhaust fan.

- SHEET MH103-P2 – MECHANICAL HVAC PLANS – LEVEL 1 – AREA H – PHASE 2
 - Disregard 12" SA and 14" RA ductwork that is denoted to be extended for future P3 work. Areas must be connected to the mains that serve that smoke control zone and cannot cross from one smoke control zone to another. As a result, the ducts identified as extended for future phase 3 work cannot extend into SCZ 1-21 as they are dedicated to SCZ 1—22. See comments on MH104-P3 for correct duct connections.
- SHEET MH104-P3 – MECHANICAL HVAC PLANS – LEVEL 1 – AREA L – PHASE 3
 - Connect VAV box 1H110B to 32" SA that serves SCZ 1-23. Connect return grille from 1H-110B-2 to 12"RA duct located in 1H-110A that serves SCZ 1-23.
 - Disregard balancing dampers are shown as new. They were installed in Phase 2 and will be existing in P3.
- SHEET MP101-P1 – MECHANICAL PIPING PLANS – LEVEL 1 – AREA L – PHASE 1
 - Thermostats for VAV boxes L161D and C163 are shown in the middle of a doorway. Thermostat for L144 is shown located on a door jamb. Confirm that there is adequate space for a thermostat to mount or relocate as required.
- SHEET MP102-P2 – MECHANICAL PIPING PLANS – LEVEL 1 – AREA K – PHASE 2
 - Disregard two control valves for two small pieces of radiant panel in Room 1K-103. Contractor to interconnect panel piping across column so that water flows from one panel to the next, in series. Provide one control valve for the radiant panel.
 - For missing waterflow values for fin tube at 1K-130 Dining (Gridlines T/39), contractor shall assume 1.0 GPM per every 10,000 BTU/hr (based on 20° delta-T) for any equipment without flow information.
 - Key note MP01 should reference all addendum notes for drawing MH301.
- SHEET MH104-P3 – MECHANICAL HVAC PLANS – LEVEL 1 – AREA L – PHASE 3
 - For missing water flow values for all fin tube and radiant panels along south perimeter, contractor shall assume 1.0 GPM per every 10,000 BTU/hr (based on 20° delta-T) for any equipment without flow information, as follows.
 - 1L-130 Dining; 1300 BTU for RP-1.
 - 1L-121 Single; 2300 BTU for RP-1
 - 1L-122 Single; disregard two control valves for two small pieces of radiant panel. Contractor to interconnect panel piping across column so that water flows from one panel to the next, in series. Provide one control valve for the radiant panel. 1400 BTU total for both RP-1.
 - 1L-123 Single; 2300 BTU for RP-1
 - 1L-124 Single; 1500 BTU for RP-1
 - 1L-125 Single; 1600 BTU for RP-1
 - 1L-126 Single; 1500 BTU for RP-1

- SHEET MH301 – ENLARGED MECHANICAL PLANS & SECTIONS
 - Note that phasing of AHU installation will be the sole responsibility of the contractor. Installation schedule should have replacement during seasonal periods with mild weather to minimize potential risk and discomfort caused by outage. Acceptable period of time to replace this AHU would be either between March – May or September – November. Do not schedule any AHU replacement activities outside of those 3-month windows to avoid extreme weather conditions of winter or summer. Temporary air handling unit may be sized in accordance to more mild temperatures anticipated during actual outage timeframe scheduled (based on average historic weather data).
 - Drawings indicate all materials, both demolished and new, to be transported through the exterior wall louver. Note that this louver has structural bracing that may limit size of material that can be passed through that opening. In addition, the shaft behind the louver plenum is continuous which will leave an approximate 72” wide gap that needs to be bridged over and secured with appropriate safety rails per contractor’s safety officer requirements. Provide temporary lockable door at temporary opening to both secure facility during overnight/weekend periods, and also create a weather tight seal from outside elements.
 - Note that contractor may opt to transport material through the facility instead of utilizing this louver opening. In that scenario the contractor shall coordinate the material transport path, and proposed acceptable hours during the day when staff/patient would be least impacted, to both the COTR and VA Infection Control Representative.
 - Air handling unit shall assume to be delivered on pallets completely disassembled, or shipped to site in a ‘loosely bolted’ configuration for site disassembly and reassembly on site. Contractor to coordinate largest section of equipment or materials in either transport strategy outlined above.
 - Note that it shall be a contract requirement of the AHU manufacturer to provide a factory technician to oversee assembly and start-up of this AHU to certify warranty. This visit shall be a minimum of 1-week in duration and include a site pressure test at 150% of the AHU operating pressure to be witnessed by the factory representative to ensure it passes their standard/documented leakage rate requirements of a normally factory assembled unit.
 - Selection and positioning of temporary air handling unit to be used during this AHU replacement shall be coordinated by the contractor. Submit proposal showing cut sheets for all temporary equipment being used, source and utility tie-in points for heating/cooling, and temporary BAS integration and safeties to be provided for remote monitoring during use of this temporary service.
 - Temporary air handling unit shall have an airflow capacity of 6,000 CFM, 10 HP fan, a cooling capacity of 35 tons, a heating capacity of 420 MBH and MERV 14 final filters. Unit shall be located directly outside of the ‘K’ mechanical room. Extend a 26” diameter temporary duct from AHU, through OA louver, into the mechanical room and interstitial space. Extend duct approximately 300 feet north and connect to existing 26” diameter supply at Gridline 12/V.5. Similarly, extend a 26” diameter return duct from existing 26” diameter main at Gridline 12/V.5, 300’ to return fan, 70-RF-07, located in ‘K’ mechanical room.
 - Temporary unit is assumed to be electric but contractor may extend temporary chilled water piping to temp unit, at no additional cost to the VA. MERV 14 final filters may be

located in the AHU or mounted in the ductwork inside the mechanical room.

- Contractor should also submit a comprehensive weekend outage plan for both switch over to temporary unit, and reconnection to replaced AHU. All HVAC outages shall be scheduled during weekend/overtime hours that are approved by VA representative a minimum of 2-weeks in advance.
 - Unless indicated otherwise, contractor shall match pipe size connection to all new coils and humidifiers for replaced AHU. Contractor shall field verify exact piping sizes on site and provide all new piping components as indicated on details. Do not reutilize any piping or components without direct approval of VA representative.
 - Contractor is responsible to provide a 4" thick concrete equipment pad for new AHU, and all other associated equipment and components provided within mechanical room. Coordinate size of equipment curbs with manufacturer shop drawings and maintain a level condition for all installations. Also verify that appropriate guard rails are anchored to floor to protect any equipment at floor level that may be prone to damage from mobile carts or lifts.
 - Correction: key note MN07 is referencing return fan 70-RF-7, not 70-RF-8. Existing return fan motor is 5HP. Contractor to confirm motor size after TAB measurements are taken per key note MD01 on MD102-P2.
- SHEET MH502 – MECHANICAL DETAILS
 - Detail 1; provide additional isolation valve on return side of chilled water coil at main.
 - SHEET MH601 – MECHANICAL SCHEDULES
 - Disregard description for RG2 in GRD schedule. The correct description is PERFORATED RETURN GRILLE.
 - Air Handling Unit Schedule; 70-AHU-08 provide top-fed steam coil (LJ Wing). Bottom-fed type steam coils are prohibited.
 - SHEET MH802 – MECHANICAL CONTROL DIAGRAMS
 - Verify that there is a minimum OA damper and an economizer damper. There is no mention of it elsewhere.
 - Provide RA plenum pressure measurement.
 - Provide a control valve for the steam humidifier and add to Points List.
 - Provide (2) steam control valves in the Points List for steam coil.
 - Provide return fan high static alarm and supply plenum pressure measurement and high static alarm. Add to Points List.
 - Clarification; there is only one return fan. Disregard 'fans'.

ELECTRICAL ADDENDUM

- SHEET EP103-P2 – ELECTRICAL PLAN AREA K PHASE 2
 - Remove all CI light fixtures from room 1K-124. Provide Nova Flex MUD-IN 6214 Channel around perimeter of room with RGBW SERIES LED strip. Provide S3i Touch RGBW dimmer outside room for control. Provide required power supply. NOVA FLEX as basis of design.
- SHEET EP105-P3 – ELECTRICAL LIGHTING PLAN AREA L PHASE 3
 - Remove all CI light fixtures from room 1L-129. Provide Nova Flex MUD-IN 6214 Channel around perimeter of room with RGBW SERIES LED strip. Provide S3i Touch RGBW dimmer outside room for control. Provide required power supply. NOVA FLEX as basis of design.
- SHEET EP107 – ELECTRICAL RISER DIAGRAMS G1 & G2
 - Add Note. Contractor shall bid documents with homeruns located in the interstitial space above. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations).
 - *Remove and replace panels NL1G1-1A, NL1G1-1B and CL1G2-1. Replace panel NL1G1-1A and NL1G1-1B like for like. Provide 42 pole panel for CL1G2-1.
 - *Remove and replace transformers NT1G1-1 and CT1G2-1
- SHEET EP108 – ELECTRICAL RISER DIAGRAM H1
 - Add Note. Contractor shall bid documents with homeruns located in the interstitial space above. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations).
 - *Remove and replace panels NL1H1-1A, NL1H1-1B, CL1H1-1. Replace panel NL1H1-1B like for like. Provide 42 pole panel for NL1H1-1A. Provide 60 pole panel for CL1H1-1.
 - *Remove and replace transformers NT1H1-1, CT1H1-1
 - Panel NL1H1-2 does not appear on riser sheet EP108 as it should. Remove and replace panel NL1H1-2.

LOW VOLTAGE AND SECURITY ADDENDUM

- SHEET LV102 – LOW VOLTAGE SYSTEMS PHASE 2 – AREA H
 - Add Note. Contractor shall bid documents with cable tray located in the interstitial space above. Provide layout to COR prior to installation for review. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations). Cable tray to follow building lines at 90 deg angles.
- SHEET LV103 – LOW VOLTAGE SYSTEMS PHASE 2 – AREA K
 - Add Note. Contractor shall bid documents with cable tray located in the interstitial space above. Provide layout to COR prior to installation for review. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations). Cable tray to follow building lines at 90 deg angles.
- SHEET LV104 – LOW VOLTAGE SYSTEMS PHASE 3 – AREA L

- Add Note. Contractor shall bid documents with cable tray located in the interstitial space above. Provide layout to COR prior to installation for review. The electrical contractor is responsible for all core drilling required and to maintain a 1-hour rating (typical of all penetrations). Cable tray to follow building lines at 90 deg angles.

ATTACHMENTS:

Specification Sections

07 27 26 FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR PERMEABLE
28 05 13 CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY
28 05 28.33 CONDUITS AND BACKBOXES FOR ELECTRONIC SAFETY AND SECURITY

Sheets (30"x42")

Sheet PP102-P2 Replace Sheet with Addendum 2, Sheet PP102-P2
Sheet PP103-P2 Replace Sheet with Addendum 2, Sheet PP103-P2
Sheet PP104-P3 Replace Sheet with Addendum 2, Sheet PP104-P3

Drawing Details (8-1/2"x11")

Sheet A002 New Detail 1: TYPICAL PARTITION CONTROL JOINT FRAMING AT DOORS
Sheet A401 Replace Detail 1 with Addendum 2, Sheet A401, Detail 1
Sheet A401 Replace Detail 2 with Addendum 2, Sheet A401, Detail 2
Sheet A401 Replace Detail 1 with Addendum 2, Sheet A401, Detail 3

Drawings (8-1/2"x11")

New Detail: Duct to Linear Diffuser Connection Detail
New Detail: Temp AHU location

SECTION 23 07 11
HVAC AND BOILER PLANT INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Field applied insulation for thermal efficiency and condensation control for
 - 1. HVAC piping, ductwork, and equipment.
 - 2. Re-insulation of HVAC piping, ductwork and equipment, plumbing piping, and equipment after disruption of existing conditions.
- B. Definitions
 - 1. ASJ: All service jacket, white finish facing or jacket.
 - 2. Air-conditioned space: Space having air temperature and/or humidity controlled by mechanical equipment.
 - 3. Cold: Equipment, ductwork or piping handling media at design temperature of 16 degrees C (60 degrees F) or below.
 - 4. Concealed: Ductwork and piping above ceilings and in chases, interstitial space, and pipe spaces.
 - 5. Exposed: Piping, ductwork, and equipment exposed to view in finished areas including mechanical and electrical equipment rooms or exposed to outdoor weather. Attics and crawl spaces where air handling units are located are considered to be mechanical rooms. Shafts, chases, interstitial spaces, unfinished attics, crawl spaces and pipe basements are not considered finished areas.
 - 6. FSK: Foil-scrim-kraft facing.
 - 7. Hot: HVAC Ductwork handling air at design temperature above 16 degrees C (60 degrees F); HVAC equipment or piping handling media above 41 degrees C (105 degrees F).
 - 8. Density: kg/m^3 - kilograms per cubic meter (Pcf - pounds per cubic foot).
 - 9. Runouts: Branch pipe connections up to 25-mm (one-inch) nominal size to fan coil units or reheat coils for terminal units.
 - 10. Thermal conductance: Heat flow rate through materials.
 - a. Flat surface: Watt per square meter (BTU per hour per square foot).
 - b. Pipe or Cylinder: Watt per square meter (BTU per hour per linear foot).

11. Thermal Conductivity (k): Watt per meter, per degree C (BTU per inch thickness, per hour, per square foot, per degree F temperature difference).
12. Vapor Retarder (Vapor Barrier): A material which retards the transmission (migration) of water vapor. Performance of the vapor retarder is rated in terms of permeance (perms). For the purpose of this specification, vapor retarders shall have a maximum published permeance of 0.1 perms and vapor barriers shall have a maximum published permeance of 0.001 perms.
13. HPS: High pressure steam (415 kPa [60 psig] and above).
14. HPR: High pressure steam condensate return.
15. MPS: Medium pressure steam (110 kPa [16 psig] thru 414 kPa [59 psig]).
16. MPR: Medium pressure steam condensate return.
17. LPS: Low pressure steam (103 kPa [15 psig] and below).
18. LPR: Low pressure steam condensate gravity return.
19. PC: Pumped condensate.
20. HWH: Hot water heating supply.
21. HWHR: Hot water heating return.
22. GH: Hot glycol-water heating supply.
23. GHR: Hot glycol-water heating return.
24. FWPD: Feedwater pump discharge.
25. FWPS: Feedwater pump suction.
26. CTPD: Condensate transfer pump discharge.
27. CTPS: Condensate transfer pump suction.
28. VR: Vacuum condensate return.
29. CPD: Condensate pump discharge.
30. R: Pump recirculation.
31. FOS: Fuel oil supply.
32. FOR: Fuel oil return.
33. CW: Cold water.
34. SW: Soft water.
35. HW: Hot water.
36. CH: Chilled water supply.
37. CHR: Chilled water return.
38. GC: Chilled glycol-water supply.

39. GCR: Chilled glycol-water return.

40. RS: Refrigerant suction.

41. PVDC: Polyvinylidene chloride vapor retarder jacketing, white.

1.2 RELATED WORK

A Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.

B. Section 07 84 00, FIRESTOPPING.

C. Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

D. Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.

E. Section 23 21 13, HYDRONIC PIPING.

F. Section 23 22 13, STEAM and CONDENSATE HEATING PIPING

1.3 QUALITY ASSURANCE

A. Refer to article QUALITY ASSURANCE, in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

B. Criteria:

1. Comply with NFPA 90A, particularly paragraphs 4.3.3.1 through 4.3.3.6, 4.3.10.2.6, and 5.4.6.4, parts of which are quoted as follows:

4.3.3.1 Pipe insulation and coverings, duct coverings, duct linings, vapor retarder facings, adhesives, fasteners, tapes, and supplementary materials added to air ducts, plenums, panels, and duct silencers used in duct systems, unless otherwise provided for in 4.3.3.1.1 or 4.3.3.1.2., shall have, in the form in which they are used, a maximum flame spread index of 25 without evidence of continued progressive combustion and a maximum smoke developed index of 50 when tested in accordance with NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*.

4.3.3.1.1 Where these products are to be applied with adhesives, they shall be tested with such adhesives applied, or the adhesives used shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when in the final dry state. (See 4.2.4.2.)

4.3.3.1.2 The flame spread and smoke developed index requirements of 4.3.3.1.1 shall not apply to air duct weatherproof coverings where they are located entirely outside of a building, do not penetrate a wall or roof, and do not create an exposure hazard.

4.3.3.2 Closure systems for use with rigid and flexible air ducts tested in accordance with UL 181, Standard for Safety Factory-Made Air Ducts and Air Connectors, shall have been tested, listed, and used in accordance with the conditions of their listings, in accordance with one of the following:

- (1) UL 181A, Standard for Safety Closure Systems for Use with Rigid Air Ducts and Air Connectors

(2) UL 181B, Standard for Safety Closure Systems for Use with Flexible Air Ducts and Air Connectors

4.3.3.3 Air duct, panel, and plenum coverings and linings, and pipe insulation and coverings shall not flame, glow, smolder, or smoke when tested in accordance with a similar test for pipe covering, ASTM C 411, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation, at the temperature to which they are exposed in service.

4.3.3.3.1 In no case shall the test temperature be below 121°C (250°F).

4.3.3.4 Air duct coverings shall not extend through walls or floors that are required to be fire stopped or required to have a fire resistance rating, unless such coverings meet the requirements of 5.4.6.4.

4.3.3.5* Air duct linings shall be interrupted at fire dampers to prevent interference with the operation of devices.

4.3.3.6 Air duct coverings shall not be installed so as to conceal or prevent the use of any service opening.

4.3.10.2.6 Materials exposed to the airflow shall be noncombustible or limited combustible and have a maximum smoke developed index of 50 or comply with the following.

4.3.10.2.6.1 Electrical wires and cables and optical fiber cables shall be listed as noncombustible or limited combustible and have a maximum smoke developed index of 50 or shall be listed as having a maximum peak optical density of 0.5 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.5 m (5 ft) or less when tested in accordance with NFPA 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

4.3.10.2.6.4 Optical-fiber and communication raceways shall be listed as having a maximum peak optical density of 0.5 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.5 m (5 ft) or less when tested in accordance with UL 2024, Standard for Safety Optical-Fiber Cable Raceway.

4.3.10.2.6.6 Supplementary materials for air distribution systems shall be permitted when complying with the provisions of 4.3.3.

5.4.6.4 Where air ducts pass through walls, floors, or partitions that are required to have a fire resistance rating and where fire dampers are not required, the opening in the construction around the air duct shall be as follows:

(1) Not exceeding a 25.4 mm (1 in.) average clearance on all sides

(2) Filled solid with an approved material capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste when subjected to the time-temperature fire conditions required for fire barrier penetration as specified in NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*

2. Test methods: ASTM E84, UL 723, or NFPA 255.
 3. Specified k factors are at 24 degrees C (75 degrees F) mean temperature unless stated otherwise. Where optional thermal insulation material is used, select thickness to provide thermal conductance no greater than that for the specified material. For pipe, use insulation manufacturer's published heat flow tables. For domestic hot water supply and return, run out insulation and condensation control insulation, no thickness adjustment need be made.
 4. All materials shall be compatible and suitable for service temperature and shall not contribute to corrosion or otherwise attack surface to which applied in either the wet or dry state.
- C. Every package or standard container of insulation or accessories delivered to the job site for use must have a manufacturer's stamp or label giving the name of the manufacturer and description of the material.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.
- B. Shop Drawings:
 1. All information, clearly presented, shall be included to determine compliance with drawings and specifications and ASTM, federal and military specifications.
 - a. Insulation materials: Specify each type used and state surface burning characteristics.
 - b. Insulation facings and jackets: Each type used. Make it clear that white finish will be furnished for exposed ductwork, casings and equipment.
 - c. Insulation accessory materials: Each type used.
 - d. Manufacturer's installation and fitting fabrication instructions for flexible unicellular insulation.
 - e. Make reference to applicable specification paragraph numbers for coordination.
- C. Samples:

1. Each type of insulation: Minimum size 100 mm (4 inches) square for board/block/ blanket; 150 mm (6 inches) long, full diameter for round types.
2. Each type of facing and jacket: Minimum size 100 mm (4 inches square).
3. Each accessory material: Minimum 120 ML (4 ounce) liquid container or 120 gram (4 ounce) dry weight for adhesives / cement / mastic.

1.5 STORAGE AND HANDLING OF MATERIAL

Store materials in clean and dry environment, pipe covering jackets shall be clean and unmarred. Place adhesives in original containers. Maintain ambient temperatures and conditions as required by printed instructions of manufacturers of adhesives, mastics and finishing cements.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. Federal Specifications (Fed. Spec.):
L-P-535E (2)- 99..... Plastic Sheet (Sheeting): Plastic Strip; Poly (Vinyl Chloride) and Poly (Vinyl Chloride - Vinyl Acetate), Rigid.
- C. Military Specifications (Mil. Spec.):
MIL-A-3316C -90 Adhesives, Fire-Resistant, Thermal Insulation
MIL-A-24179A (1)-87 Adhesive, Flexible Unicellular-Plastic Thermal Insulation
MIL-C-19565C (1)-88 Coating Compounds, Thermal Insulation, Fire-and Water-Resistant, Vapor-Barrier
MIL-C-20079H-87..... Cloth, Glass; Tape, Textile Glass; and Thread, Glass and Wire-Reinforced Glass
- D. American Society for Testing and Materials (ASTM):
A167-99 2014 Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
B209- Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

- C411-2019 Standard test method for Hot-Surface
Performance of High-Temperature Thermal
Insulation
- C449-2019 Standard Specification for Mineral Fiber
Hydraulic-Setting Thermal Insulating and
Finishing Cement
- C533-2017 Standard Specification for Calcium Silicate
Block and Pipe Thermal Insulation
- C534-2017... Standard Specification for Preformed Flexible
Elastomeric Cellular Thermal Insulation in
Sheet and Tubular Form
- C547-2017 Standard Specification for Mineral Fiber pipe
Insulation
- C552-07 Standard Specification for Cellular Glass
Thermal Insulation
- C553-2015 Standard Specification for Mineral Fiber
Blanket Thermal Insulation for Commercial and
Industrial Applications
- C585-2016 Standard Practice for Inner and Outer Diameters
of Rigid Thermal Insulation for Nominal Sizes
of Pipe and Tubing (NPS System) R (1998)
- C612-2014 Standard Specification for Mineral Fiber Block
and Board Thermal Insulation
- C1126- 2019 Standard Specification for Faced or Unfaced
Rigid Cellular Phenolic Thermal Insulation
- C1136- 2017 Standard Specification for Flexible, Low
Permeance Vapor Retarders for Thermal
Insulation
- D1668-97a 2017 Standard Specification for Glass Fabrics (Woven
and Treated) for Roofing and Waterproofing
- E84-2014 Standard Test Method for Surface Burning
Characteristics of Building
Materials
- E119-2007 Standard Test Method for Fire Tests of Building
Construction and Materials

VAMC Minneapolis, MN
Modernize Lab Utilities
1 Veterans Drive
Minneapolis, MN 55417

VA Project 618-17-127

Construction Documents

E136-2019 Standard Test Methods for Behavior of Materials
in a Vertical Tube Furnace at 750 degrees C
(1380 F)

E. National Fire Protection Association (NFPA):

90A-2018 Standard for the Installation of Air
Conditioning and Ventilating Systems

96-2018 Standards for Ventilation Control and Fire
Protection of Commercial Cooking Operations

101-2018 Life Safety Code

251-2014 Standard methods of Tests of Fire Endurance of
Building Construction Materials

255-2006 Standard Method of tests of Surface Burning
Characteristics of Building Materials

F. Underwriters Laboratories, Inc (UL):

723 UL Standard for Safety Test for Surface Burning
Characteristics of Building Materials with
Revision of 09/08

G. Manufacturer's Standardization Society of the Valve and Fitting
Industry (MSS):

SP58-2018 Pipe Hangers and Supports Materials, Design,
and Manufacture

PART 2 - PRODUCTS

2.1 MINERAL FIBER OR FIBER GLASS

A. ASTM C612 (Board, Block), Class 1 or 2, density 48 kg/m³ (3 pcf), k =
0.037 (0.26) at 24 degrees C (75 degrees F), external insulation for
temperatures up to 204 degrees C (400 degrees F) with foil scrim (FSK)
facing.

B. ASTM C553 (Blanket, Flexible) Type I, // Class B-3, Density 16 kg/m³ (1
pcf), k = 0.045 (0.31) // Class B-5, Density 32 kg/m³ (2 pcf), k = 0.04
(0.27) // at 24 degrees C (75 degrees F), for use at temperatures up to
204 degrees C (400 degrees F) with foil scrim (FSK) facing.

C. ASTM C547 (Pipe Fitting Insulation and Preformed Pipe Insulation),
Class 1, k = 0.037 (0.26) at 24 degrees C (75 degrees F), for use at
temperatures up to 230 degrees C (450 degrees F) with an all service

vapor retarder jacket with polyvinyl chloride premolded fitting covering.

2.2 MINERAL WOOL OR REFRACTORY FIBER

A. Comply with Standard ASTM C612, Class 3, 450 degrees C (850 degrees F).

2.3 CELLULAR GLASS CLOSED-CELL

A. Comply with Standard ASTM C177, C518, density 120 kg/m³ (7.5 pcf) nominal, k = 0.033 (0.29) at 24 degrees C (75 degrees F).

B. Pipe insulation for use at temperatures up to 200 degrees C (400 degrees F) with all service vapor retarder jacket.

2.4 POLYISOCYANURATE CLOSED-CELL RIGID

A. Preformed (fabricated) pipe insulation, ASTM C591, type IV, K=0.027(0.19) at 24 degrees C (75 degrees F), flame spread not over 25, smoke developed not over 50, for use at temperatures up to 149 degree C (300 degree F) with factory applied PVDC or all service vapor retarder jacket with polyvinyl chloride premolded fitting covers.

B. Equipment and duct insulation, ASTM C 591, type IV, K=0.027(0.19) at 24 degrees C (75 degrees F), for use at temperatures up to 149 degrees C (300 degrees F) with PVDC or all service jacket vapor retarder jacket.

2.5 FLEXIBLE ELASTOMERIC CELLULAR THERMAL

ASTM C177, C518, k = 0.039 (0.27) at 24 degrees C (75 degrees F), flame spread not over 25, smoke developed not over 50, for temperatures from minus 4 degrees C (40 degrees F) to 93 degrees C (200 degrees F). No jacket required.

2.6 CALCIUM SILICATE

A. Preformed pipe Insulation: ASTM C533, Type I and Type II with indicator denoting asbestos-free material.

B. Premolded Pipe Fitting Insulation: ASTM C533, Type I and Type II with indicator denoting asbestos-free material.

C. Equipment Insulation: ASTM C533, Type I and Type II

D. Characteristics:

Insulation Characteristics		
ITEMS	TYPE I	TYPE II
Temperature, maximum degrees C (degrees F)	649 (1200)	927 (1700)

Density (dry), Kg/m ³ (lb/ ft ³)	232 (14.5)	288 (18)
Thermal conductivity: Min W/ m K (Btu in/h ft ² degrees F)@ mean temperature of 93 degrees C (200 degrees F)	0.059 (0.41)	0.078 (0.540)
Surface burning characteristics: Flame spread Index, Maximum	0	0
Smoke Density index, Maximum	0	0

2.7 INSULATION FACINGS AND JACKETS

- A. Vapor Retarder, higher strength with low water permeance \leq 0.02 or less perm rating, Beach puncture 50 units for insulation facing on exposed ductwork, casings and equipment, and for pipe insulation jackets. Facings and jackets shall be all service type (ASJ) or PVDC Vapor Retarder jacketing.
- B. ASJ jacket shall be white kraft bonded to 0.025 mm (1 mil) thick aluminum foil, fiberglass reinforced, with pressure sensitive adhesive closure. Comply with ASTM C1136. Beach puncture 50 units, Suitable for painting without sizing. Jackets shall have minimum 40 mm (1-1/2 inch) lap on longitudinal joints and minimum 75 mm (3 inch) butt strip on end joints. Butt strip material shall be same as the jacket. Lap and butt strips shall be self-sealing type with factory-applied pressure sensitive adhesive.
- C. Vapor Retarder medium strength with low water vapor permeance of 0.02 or less perm rating), Beach puncture 25 units: Foil-Scrim-Kraft (FSK) or PVDC vapor retarder jacketing type for concealed ductwork and equipment.
- D. Field applied vapor barrier jackets shall be provided, in addition to the specified facings and jackets, on all exterior piping and ductwork as well as on interior piping and ductwork //exposed to outdoor air (i.e.; in ventilated attics, piping in ventilated (not air conditioned) spaces, etc.)in high humidity areas//conveying fluids below ambient temperature//. The vapor barrier jacket shall consist of a multi-layer laminated cladding with a maximum water vapor permeance of 0.001 perms. The minimum puncture resistance shall be 35 cm-kg (30 inch-pounds) for

interior locations and 92 cm-kg (80 inch-pounds) for exterior or exposed locations or where the insulation is subject to damage.

- E. Glass Cloth Jackets: Presized, minimum 0.18 kg per square meter (7.8 ounces per square yard), 2000 kPa (300 psig) bursting strength with integral vapor retarder where required or specified. Weather proof if utilized for outside service.
- F. Factory composite materials may be used provided that they have been tested and certified by the manufacturer.
- G. Pipe fitting insulation covering (jackets): Fitting covering shall be premolded to match shape of fitting and shall be polyvinyl chloride (PVC) conforming to Fed Spec L-P-335, composition A, Type II Grade GU, and Type III, minimum thickness 0.7 mm (0.03 inches). Provide color matching vapor retarder pressure sensitive tape.

2.8 PIPE COVERING PROTECTION SADDLES

- A. Cold pipe support: Premolded pipe insulation 180 degrees (half-shells) on bottom half of pipe at supports. Material shall be cellular glass or high density Polyisocyanurate insulation of the same thickness as adjacent insulation. Density of Polyisocyanurate insulation shall be a minimum of 48 kg/m³ (3.0 pcf).

Nominal Pipe Size and Accessories Material (Insert Blocks)	
Nominal Pipe Size mm (inches)	Insert Blocks mm (inches)
Up through 125 (5)	150 (6) long
150 (6)	150 (6) long
200 (8), 250 (10), 300 (12)	225 (9) long
350 (14), 400 (16)	300 (12) long
450 through 600 (18 through 24)	350 (14) long

- B. Warm or hot pipe supports: Premolded pipe insulation (180 degree half-shells) on bottom half of pipe at supports. Material shall be high density Polyisocyanurate (for temperatures up to 149 degrees C [300 degrees F]), cellular glass or calcium silicate. Insulation at supports shall have same thickness as adjacent insulation. Density of Polyisocyanurate insulation shall be a minimum of 48 kg/m³ (3.0 pcf).

//C. Boiler Plant Pipe supports: MSS SP58, Type 39. Apply at all pipe support points, except where MSS SP58, Type 3 pipe clamps provided as part of the support system. //

2.9 ADHESIVE, MASTIC, CEMENT

- A. Mil. Spec. MIL-A-3316, Class 1: Jacket and lap adhesive and protective finish coating for insulation.
- B. Mil. Spec. MIL-A-3316, Class 2: Adhesive for laps and for adhering insulation to metal surfaces.
- C. Mil. Spec. MIL-A-24179, Type II Class 1: Adhesive for installing flexible unicellular insulation and for laps and general use.
- D. Mil. Spec. MIL-C-19565, Type I: Protective finish for outdoor use.
- E. Mil. Spec. MIL-C-19565, Type I or Type II: Vapor barrier compound for indoor use.
- F. ASTM C449: Mineral fiber hydraulic-setting thermal insulating and finishing cement.
- G. Other: Insulation manufacturers' published recommendations.

2.10 MECHANICAL FASTENERS

- A. Pins, anchors: Welded pins, or metal or nylon anchors with galvanized steel-coated or fiber washer, or clips. Pin diameter shall be as recommended by the insulation manufacturer.
- B. Staples: Outward clinching // monel or // galvanized steel.
- C. Wire: 1.3 mm thick (18 gage) soft annealed galvanized or 1.9 mm (14 gage) copper clad steel or nickel copper alloy.
- D. Bands: 13 mm (0.5 inch) nominal width, brass, galvanized steel, aluminum or stainless steel.

2.11 REINFORCEMENT AND FINISHES

- A. Glass fabric, open weave: ASTM D1668, Type III (resin treated) and Type I (asphalt treated).
- B. Glass fiber fitting tape: Mil. Spec MIL-C-20079, Type II, Class 1.
- C. Tape for Flexible Elastomeric Cellular Insulation: As recommended by the insulation manufacturer.
- D. Hexagonal wire netting: 25 mm (one inch) mesh, 0.85 mm thick (22 gage) galvanized steel.
- E. Corner beads: 50 mm (2 inch) by 50 mm (2 inch), 0.55 mm thick (26 gage) galvanized steel; or, 25 mm (1 inch) by 25 mm (1 inch), 0.47 mm thick

(28 gage) aluminum angle adhered to 50 mm (2 inch) by 50 mm (2 inch) Kraft paper.

- F. PVC fitting cover: Fed. Spec L-P-535, Composition A, 11-86 Type II, Grade GU, with Form B Mineral Fiber insert, for media temperature 4 degrees C (40 degrees F) to 121 degrees C (250 degrees F). Below 4 degrees C (40 degrees F) and above 121 degrees C (250 degrees F). Provide double layer insert. Provide color matching vapor barrier pressure sensitive tape.

2.12 FIRESTOPPING MATERIAL

Other than pipe and duct insulation, refer to Section 07 84 00 FIRESTOPPING.

2.13 FLAME AND SMOKE

Unless shown otherwise all assembled systems shall meet flame spread 25 and smoke developed 50 rating as developed under ASTM, NFPA and UL standards and specifications. See paragraph 1.3 "Quality Assurance".

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Required pressure tests of duct and piping joints and connections shall be completed and the work approved by the Resident Engineer for application of insulation. Surface shall be clean and dry with all foreign materials, such as dirt, oil, loose scale and rust removed.
- B. Except for specific exceptions, insulate entire specified equipment, piping (pipe, fittings, valves, accessories), and duct systems. Insulate each pipe and duct individually. Do not use scrap pieces of insulation where a full length section will fit.
- C. Insulation materials shall be installed in a first class manner with smooth and even surfaces, with jackets and facings drawn tight and smoothly cemented down at all laps. Insulation shall be continuous through all sleeves and openings, except at fire dampers and duct heaters (NFPA 90A). Vapor retarders shall be continuous and uninterrupted throughout systems with operating temperature 16 degrees C (60 degrees F) and below. Lap and seal vapor retarder over ends and exposed edges of insulation. Anchors, supports and other metal projections through insulation on cold surfaces shall be insulated and vapor sealed for a minimum length of 150 mm (6 inches).

- D. Install vapor stops at all insulation terminations on either side of valves, pumps and equipment and particularly in straight lengths of pipe insulation.
- E. Construct insulation on parts of equipment such as chilled water pumps and heads of chillers, convertors and heat exchangers that must be opened periodically for maintenance or repair, so insulation can be removed and replaced without damage. Install insulation with bolted 1 mm thick (20 gage) galvanized steel or aluminum covers as complete units, or in sections, with all necessary supports, and split to coincide with flange/split of the equipment.
- F. Insulation on hot piping and equipment shall be terminated square at items not to be insulated, access openings and nameplates. Cover all exposed raw insulation with white sealer or jacket material.
- G. Protect all insulations outside of buildings with aluminum jacket using lock joint or other approved system for a continuous weather tight system. Access doors and other items requiring maintenance or access shall be removable and sealable.
- H. Insulate PRVs, flow meters, and steam traps.
- I. HVAC work not to be insulated:
 - 1. Internally insulated ductwork and air handling units.
 - 2. Relief air ducts (Economizer cycle exhaust air).
 - 3. Exhaust air ducts and plenums, and ventilation exhaust air shafts.

SPEC WRITER NOTE: Edit this list if additional equipment is required, or if certain equipment is insulated for safety reasons.

- 4. Equipment: Expansion tanks, flash tanks, hot water pumps, //steam condensate pumps. //
- 5. In hot piping: Unions, flexible connectors, control valves, //PRVs//, safety valves and discharge vent piping, vacuum breakers, thermostatic vent valves, steam traps 20 mm (3/4 inch) and smaller, exposed piping through floor for convectors and radiators. Insulate piping to within approximately 75 mm (3 inches) of uninsulated items.

- J. Apply insulation materials subject to the manufacturer's recommended temperature limits. Apply adhesives, mastic and coatings at the manufacturer's recommended minimum coverage.
- K. Elbows, flanges and other fittings shall be insulated with the same material as is used on the pipe straights. // The elbow/ fitting insulation shall be field-fabricated, mitered or factory prefabricated to the necessary size and shape to fit on the elbow/ fitting.// Use of polyurethane spray-foam to fill a PVC elbow jacket is prohibited on cold applications.
- L. Firestop Pipe and Duct insulation:
1. Provide firestopping insulation at fire and smoke barriers through penetrations. Fire stopping insulation shall be UL listed as defines in Section 07 84 00, FIRESTOPPING.
 2. Pipe and duct penetrations requiring fire stop insulation including, but not limited to the following:
 - a. Pipe risers through floors
 - b. Pipe or duct chase walls and floors
 - c. Smoke partitions
 - d. Fire partitions
- M. Freeze protection of above grade outdoor piping (over heat tracing tape): 26 mm (10 inch) thick insulation, for all pipe sizes 75 mm(3 inches) and smaller and 25 mm(1inch) thick insulation for larger pipes. Provide metal jackets for all pipes. Provide for cold water make-up to cooling towers and condenser water piping and chilled water piping as described in Section 23 21 13, HYDRONIC PIPING (electrical heat tracing systems).
- N. Provide vapor barrier jackets over insulation as follows:
1. All piping and ductwork exposed to outdoor weather.
 2. All interior piping and ducts conveying fluids //exposed to outdoor air (i.e. in attics, ventilated (not air conditioned) spaces, etc.) below ambient air temperature.
- O. Provide metal jackets over insulation as follows:
1. All piping and ducts exposed to outdoor weather.
 2. Piping exposed in building, within 1800 mm (6 feet) of the floor, that connects to sterilizers, kitchen and laundry equipment. Jackets

may be applied with pop rivets. Provide aluminum angle ring escutcheons at wall, ceiling or floor penetrations.

3. A 50 mm (2 inch) overlap is required at longitudinal and circumferential joints.

3.2 INSULATION INSTALLATION

A. Mineral Fiber Board:

1. Faced board: Apply board on pins spaced not more than 300 mm (12 inches) on center each way, and not less than 75 mm (3 inches) from each edge of board. In addition to pins, apply insulation bonding adhesive to entire underside of horizontal metal surfaces. Butt insulation edges tightly and seal all joints with laps and butt strips. After applying speed clips cut pins off flush and apply vapor seal patches over clips.
2. Plain board:
 - a. Insulation shall be scored, beveled or mitered to provide tight joints and be secured to equipment with bands spaced 225 mm (9 inches) on center for irregular surfaces or with pins and clips on flat surfaces. Use corner beads to protect edges of insulation.
 - b. For hot equipment: Stretch 25 mm (1 inch) mesh wire, with edges wire laced together, over insulation and finish with insulating and finishing cement applied in one coat, 6 mm (1/4 inch) thick, trowel led to a smooth finish.
 - c. For cold equipment: Apply meshed glass fabric in a tack coat 1.5 to 1.7 square meter per liter (60 to 70 square feet per gallon) of vapor mastic and finish with mastic at 0.3 to 0.4 square meter per liter (12 to 15 square feet per gallon) over the entire fabric surface.
 - d. Chilled water pumps: Insulate with removable and replaceable 1 mm thick (20 gage) aluminum or galvanized steel covers lined with insulation. Seal closure joints/flanges of covers with gasket material. Fill void space in enclosure with flexible mineral fiber insulation.

SPEC WRITER NOTE: Provide 50 mm (2 inch) duct insulation for supply and return duct work exposed to outdoor conditions. In paragraph 3.c below delete outdoor air

duct insulation in mild climates (where the design temperature difference between the interior and exterior of the duct does not exceed 8 degrees C (15 degree F)).

3. Exposed, unlined ductwork and equipment in unfinished areas, mechanical and electrical equipment rooms and attics, //interstitial spaces// and duct work exposed to outdoor weather:
 - a. 40 mm (1-1/2 inch) thick insulation faced with ASJ (white all service jacket): Supply air duct and after filter housing.
 - b. 40 mm (1-1/2 inch) thick insulation faced with ASJ: Return air duct, mixed air plenums and prefilter housing.
 - c. Outside air intake ducts: 50mm (2 inch) thick insulation faced with ASJ..
 - d. Exposed, unlined supply and return ductwork exposed to outdoor weather: 50 mm (2 inch) thick insulation faced with a reinforcing membrane and two coats of vapor barrier mastic or multi-layer vapor barrier with a maximum water vapor permeability of 0.001 perms.
 4. Supply air duct in the warehouse and in the laundry: 25 mm (one inch) thick insulation faced with ASJ.
 5. Cold equipment: 40 mm (1-1/2inch) thick insulation faced with ASJ.
 - a. Chilled water pumps, water filter, chemical feeder pot or tank.
 - b. Pneumatic, cold storage water and surge tanks.
 6. Hot equipment: 40 mm (1-1/2 inch) thick insulation faced with ASJ.
 - a. Convertors, air separators, steam condensate pump receivers.
 - b. Reheat coil casing and separation chambers on steam humidifiers located above ceilings.
 - c. Domestic water heaters and hot water storage tanks (not factory insulated).
 - d. Booster water heaters for dietetics dish and pot washers and for washdown grease-extracting hoods.
- B. Flexible Mineral Fiber Blanket:
1. Adhere insulation to metal with 75 mm (3 inch) wide strips of insulation bonding adhesive at 200 mm (8 inches) on center all around duct. Additionally, secure insulation to bottom of ducts exceeding 600 mm (24 inches) in width with pins welded or adhered on 450 mm (18 inch) centers. Secure washers on pins. Butt insulation

- edges and seal joints with laps and butt strips. Staples may be used to assist in securing insulation. Seal all vapor retarder penetrations with mastic. Sagging duct insulation will not be acceptable. Install firestop duct insulation where required.
2. Supply air ductwork to be insulated includes main and branch ducts from AHU discharge to room supply outlets, and the bodies of ceiling outlets to prevent condensation. Insulate sound attenuator units, coil casings and damper frames. To prevent condensation, insulate trapeze type supports and angle iron hangers for flat oval ducts that are in direct contact with metal duct.
 3. Concealed supply air ductwork.
 - a. Above ceilings at a roof level, in attics, and duct work exposed to outdoor weather: 50 mm (2 inch) thick insulation faced with FSK.
 - b. Above ceilings for other than roof level: 40 mm (1 ½ inch) thick insulation faced with FSK.
 4. Concealed return air duct:
 - a. In attics (where not subject to damage) and where exposed to outdoor weather: 50mmmm (2 inch) thick insulation faced with FSK.
 - b. Above ceilings at a roof level, unconditioned areas, and in chases with external wall or containing steam piping; 40 mm (1-1/2 inch) thick, insulation faced with FSK.
 - c. In interstitial spaces (where not subject to damage): 40 mm (1-1/2 inch) thick insulation faced with FSK.
 - d. Concealed return air ductwork in other locations need not be insulated.
 5. Concealed outside air duct: 40 mm (1-1/2 inch) thick insulation faced with FSK.
- C. Molded Mineral Fiber Pipe and Tubing Covering:
1. Fit insulation to pipe or duct, aligning longitudinal joints. Seal longitudinal joint laps and circumferential butt strips by rubbing hard with a nylon sealing tool to assure a positive seal. Staples may be used to assist in securing insulation. Seal all vapor retarder penetrations on cold piping with a generous application of vapor barrier mastic. Provide inserts and install with metal

- insulation shields at outside pipe supports. Install freeze protection insulation over heating cable.
2. Contractor's options for fitting, flange and valve insulation:
 - a. Insulating and finishing cement for sizes less than 100 mm (4 inches) operating at surface temperature of 16 degrees C (61 degrees F) or more.
 - b. Factory premolded, one piece PVC covers with mineral fiber, (Form B), inserts. Provide two insert layers for pipe temperatures below 4 degrees C (40 degrees F), or above 121 degrees C (250 degrees F). Secure first layer of insulation with twine. Seal seam edges with vapor barrier mastic and secure with fitting tape.
 - c. Factory molded, ASTM C547 or field mitered sections, joined with adhesive or wired in place. For hot piping finish with a smoothing coat of finishing cement. For cold fittings, 16 degrees C (60 degrees F) or less, vapor seal with a layer of glass fitting tape imbedded between two 2 mm (1/16 inch) coats of vapor barrier mastic.
 - d. Fitting tape shall extend over the adjacent pipe insulation and overlap on itself at least 50 mm (2 inches).
 3. Nominal thickness in millimeters and inches specified in the schedule at the end of this section.

SPEC WRITER NOTE: Specify only cellular glass, polyisocyanurate (exterior only) or phenolic closed cell insulation for chilled water piping systems conveying fluids below ambient temperatures and/or where insulation for condensation control is specified.

D. Cellular Glass Insulation:

1. Pipe and tubing, covering nominal thickness in millimeters and inches as specified in the schedule at the end of this section.
2. Underground Piping Other than or in lieu of that Specified in Section 23 21 13, HYDRONIC PIPING and Section 33 63 00, STEAM ENERGY DISTRIBUTION: Type II, factory jacketed with a 3 mm laminate jacketing consisting of 3000 mm x 3000 mm (10 ft x 10 ft) asphalt impregnated glass fabric, bituminous mastic and outside protective plastic film.

- a. 75 mm (3 inches) thick for hot water piping.
 - b. As scheduled at the end of this section for chilled water piping.
 - c. Underground piping: Apply insulation with joints tightly butted. Seal longitudinal self-sealing lap. Use field fabricated or factory made fittings. Seal butt joints and fitting with jacketing as recommended by the insulation manufacturer. Use 100 mm (4 inch) wide strips to seal butt joints.
 - d. Provide expansion chambers for pipe loops, anchors and wall penetrations as recommended by the insulation manufacturer.
 - e. Underground insulation shall be inspected and approved by the Resident Engineer as follows:
 - 1) Insulation in place before coating.
 - 2) After coating.
 - f. Sand bed and backfill: Minimum 75 mm (3 inches) all around insulated pipe or tank, applied after coating has dried.
3. Cold equipment: 50 mm (2 inch) thick insulation faced with ASJ for chilled water pumps, water filters, chemical feeder pots or tanks, expansion tanks, air separators and air purgers.
 4. Exposed, unlined supply and return ductwork exposed to outdoor weather: 50 mm (2 inch) thick insulation faced with a reinforcing membrane and two coats of vapor barrier mastic or multi-layer vapor barrier with a water vapor permeability of 0.00 perms.

SPEC WRITER NOTE: Polyisocyanurate insulation does not meet the 50 smoke rating and therefore shall not be specified for piping or ductwork located indoors (only suitable for exterior locations per paragraph 1.3.B).

E. Polyisocyanurate Closed-Cell Rigid Insulation:

1. Polyisocyanurate closed-cell rigid insulation (PIR) may be provided for exterior piping, equipment and ductwork for temperature up to 149 degree C (300 degree F).
2. Install insulation, vapor barrier and jacketing per manufacturer's recommendations. Particular attention should be paid to recommendations for joint staggering, adhesive application, external hanger design, expansion/contraction joint design and spacing and vapor barrier integrity.

3. Install insulation with all joints tightly butted (except expansion joints in hot applications).
4. If insulation thickness exceeds 63 mm (2.5 inches), install as a double layer system with longitudinal (lap) and butt joint staggering as recommended by manufacturer.
5. For cold applications, vapor barrier shall be installed in a continuous manner. No staples, rivets, screws or any other attachment device capable of penetrating the vapor barrier shall be used to attach the vapor barrier or jacketing. No wire ties capable of penetrating the vapor barrier shall be used to hold the insulation in place. Banding shall be used to attach PVC or metal jacketing.
6. Elbows, flanges and other fittings shall be insulated with the same material as is used on the pipe straights. The elbow/ fitting insulation shall be field-fabricated, mitered or factory prefabricated to the necessary size and shape to fit on the elbow/ fitting. Use of polyurethane spray-foam to fill PVC elbow jacket is prohibited on cold applications.
7. For cold applications, the vapor barrier on elbows/fittings shall be either mastic-fabric-mastic or 2 mil thick PVDC vapor barrier adhesive tape.
8. All PVC and metal jacketing shall be installed so as to naturally shed water. Joints shall point down and shall be sealed with either adhesive or caulking (except for periodic slip joints).
9. Underground piping: Follow instructions for above ground piping but the vapor retarder jacketing shall be 6 mil thick PVDC or minimum 30 mil thick rubberized bituminous membrane. Sand bed and backfill shall be a minimum of 150 mm (6 inches) all around insulated pipe.
10. Exposed, unlined supply and return ductwork exposed to outdoor weather: 50 mm (2 inch) thick insulation faced with a multi-layer vapor barrier with a water vapor permeance of 0.00 perms.
11. Note the NFPA 90A burning characteristic requirements of 25/50 in paragraph 1.3B. Refer to paragraph 3.1 for items not to be insulated.
12. Minimum thickness in millimeter (inches) specified in the schedule at the end of this section.

SPEC WRITER NOTE: Flexible elastomeric thermal insulation may be specified in lieu of mineral fiber insulation. However its use greater than 38 mm (1-1/2 inch) thickness is restricted and shall not be specified for ceiling spaces used as unducted return air plenums.

F. Flexible Elastomeric Cellular Thermal Insulation:

1. Apply insulation and fabricate fittings in accordance with the manufacturer's installation instructions and finish with two coats of weather resistant finish as recommended by the insulation manufacturer.
2. Pipe and tubing insulation:
 - a. Use proper size material. Do not stretch or strain insulation.
 - b. To avoid undue compression of insulation, provide cork stoppers or wood inserts at supports as recommended by the insulation manufacturer. Insulation shields are specified under Section 23 05 11, COMMON WORK RESULTS FOR HVAC //and Section 23 05 10, COMMON WORK RESULTS FOR BOILER PLANT and STEAM GENERATION//.
 - c. Where possible, slip insulation over the pipe or tubing prior to connection, and seal the butt joints with adhesive. Where the slip-on technique is not possible, slit the insulation and apply it to the pipe sealing the seam and joints with contact adhesive. Optional tape sealing, as recommended by the manufacturer, may be employed. Make changes from mineral fiber insulation in a straight run of pipe, not at a fitting. Seal joint with tape.
3. Apply sheet insulation to flat or large curved surfaces with 100 percent adhesive coverage. For fittings and large pipe, apply adhesive to seams only.
4. Pipe insulation: nominal thickness in millimeters (inches as specified in the schedule at the end of this section.
5. Minimum 20 mm (0.75 inch) thick insulation for pneumatic control lines for a minimum distance of 6 m (20 feet) from discharge side of the refrigerated dryer.
6. Use Class S (Sheet), 20 mm (3/4 inch) thick for the following:
 - a. Chilled water pumps
 - b. Bottom and sides of metal basins for winterized cooling towers (where basin water is heated).

- c. Chillers, insulate any cold chiller surfaces subject to condensation which has not been factory insulated.
 - d. Piping inside refrigerators and freezers: Provide heat tape under insulation.
7. Exposed, unlined supply and return ductwork exposed to outdoor weather: 50 mm (2 inch) thick insulation faced with a multi-layer vapor barrier with a water vapor permeance of 0.00 perms.
- G. Calcium Silicate:
- 1. Minimum thickness in millimeter (inches) specified in the schedule at the end of this section for piping other than in boiler plant. See paragraphs 3.3 through 3.7 for Boiler Plant Applications.
 - 2. Engine Exhaust Insulation for Emergency Generator and Diesel Driven Fire Pump: Type II, Class D, 65 mm (2 1/2 inch) nominal thickness. Cover exhaust completely from engine through roof or wall construction, including muffler. Secure with 16 AWG galvanized annealed wire or 0.38 x 12 mm 0.015 x 1/2 IN wide galvanized bands on 300 mm 12 IN maximum centers. Anchor wire and bands to welded pins, clips or angles. Apply 25 mm 1 IN hex galvanized wire over insulation. Fill voids with 6 mm 1/4 IN insulating cement.
 - 3. ETO Exhaust (High Temperature): Type II, class D, 65 mm (2.5 inches) nominal thickness. Cover duct for entire length. Provide sheet aluminum jacket for all exterior ductwork.
 - 4. Kitchen Exhaust Duct work: Type II, class D, 65 mm (2.5 inches) nominal thickness. Wire insulation in place with 12 gauge galvanized wire.
 - 5. MRI Quench Vent Insulation: Type I, class D, 150 mm (6 inch) nominal thickness.

3.7 COMMISSIONING

- A. Provide commissioning documentation in accordance with the requirements of section 23 08 00 - COMMISSIONING OF HVAC SYSTEMS for all inspection, start up, and contractor testing required above and required by the System Readiness Checklist provided by the Commissioning Agent.
- B. Components provided under this section of the specification will be tested as part of a larger system. Refer to section 23 08 00 - COMMISSIONING OF HVAC SYSTEMS and related sections for contractor responsibilities for system commissioning.

3.8 PIPE INSULATION SCHEDULE

Provide insulation for piping systems as scheduled below:

SPEC WRITER NOTE: Insulate vent piping for PRV safety valves, receivers and flash tanks where protection to personnel is required.

Insulation Wall Thickness Millimeters (Inches)					
		Nominal Pipe Size Millimeters (Inches)			
Operating Temperature Range/Service	Insulation Material	Less than 25 (1)	25 - 32 (1 - 1¼)	38 - 75 (1½ - 3)	100 (4) and Above
Insulation Wall Thickness Millimeters (Inches)					
122-177 degrees C (251-350 degrees F) (HPS, MPS)	Mineral Fiber (Above ground piping only)	75 (3)	100 (4)	113 (4.5)	113 (4.5)
100-121 degrees C (212-250 degrees F) (HPR, MPR, LPS, vent piping from PRV Safety Valves, Condensate receivers and flash tanks)	Mineral Fiber (Above ground piping only)	62 (2.5)	62 (2.5)	75 (3.0)	75 (3.0)
38-94 degrees C (100-200 degrees F) (LPR, PC, HWH, HWHR, GH and GHR)	Mineral Fiber (Above ground piping only)	38 (1.5)	38 (1.5)	50 (2.0)	50 (2.0)

VAMC Minneapolis, MN
 Modernize Lab Utilities
 1 Veterans Drive
 Minneapolis, MN 55417

VA Project 618-17-127

Construction Documents

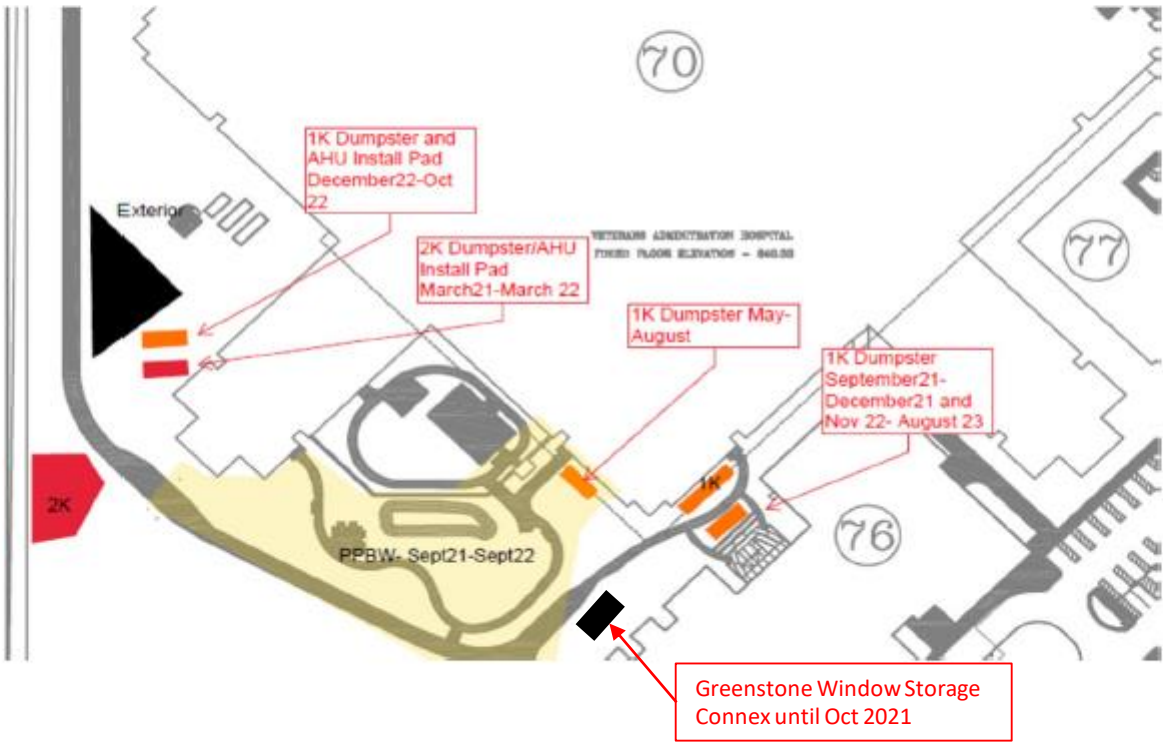
(40-60 degrees F) (CH, CHR, GC, GCR and RS for DX refrigeration)	Flexible Elastomeric Cellular Thermal (Above ground piping only)	38 (1.5)	38 (1.5)	38 (1.5)	38 (1.5)

- - - E N D - - -

Exterior Coordination

Start Date 3/1/2021

Item No.	Activity Description	Responsibility	March												April												May												June												July												August												September											
1	Tuck Pointing K	Jake	[Grid of colored cells: green, black, yellow]																																																																																			
2	Window Install L-K-F-E	Jake	[Grid of colored cells: green, black, yellow]																																																																																			
3	2K Project Trailer/Dumpster/Yard	Kelley	[Grid with red blocks labeled 'Dumpster 2K' in March, April, May, June, and August]																																																																																			
4	1K Project Trailer/Dumpster/Yard	Quentin	[Grid with yellow blocks labeled 'Trailer/Dumpster 1K' in May, June, July, and August]																																																																																			
5	PPBW Sitework	Quentin	[Grid with yellow blocks labeled 'Duct Bank and Utilities' in August and September]																																																																																			



TECHNICAL QUESTIONS AND RESPONSE TRACKING SHEET

PROJECT TITLE

36E77620R0050

Minneapolis Renovate Mental Health Ward

QUESTION	QUESTION RECEIVE DATE	QUESTION ANSWERED DATE	CONTRACTOR QUESTIONS	VA RESPONSES TO QUESTIONS
			Note revisions to questions 3, 4, 6, 13, 16, 18, 20 and 26 from original attachment and are highlighted below. Questions 27-31 have been added to this attachment.	
1	2.24.21	2.26.21	I am going through the specifications and have a general comment/question for the documents. Some of the sections have unclear language, mixed up letters, for the headers and titles. Some examples are Sections 08 33 13, 08 56 13, 08 53 53, etc. It can be decoded but it is confusing trying to figure it out. Could you please reissue the specifications with the corrections made?	This was issued through an amendment with the specifications being updated
2	2.24.21	2.26.21	The entire section 09 65 16 is illegible. Could you please reissue the section?	This was issued through an amendment with the specifications being updated
3	3.4.21	3.17.21	The all-glass doors (openings 1K-118, 1L-110, & 1L-112) are called out to be laminated glass. The CR Laurence hardware components detailed on 7/A703 call out for a patch fitting at the bottom of the door and a 1" Slender Rail top rail at the top of the door. These components cannot be used with laminated glass. Please either specify a product that will accommodate laminated glass or confirm that monolithic glass can be used for the all-glass doors.	See Addendum 2
4	3.4.21	3.17.21	The all-glass doors (openings 1L-110, & 1L-112) are called out to have a full width top rail and a patch fitting at the bottom of the door. The Glass Association of North America (GANA) engineering guidelines do not recommend using patch fitting hardware on doors over 42" X 102". These doors fall outside of these engineering standards. If full width top and bottom rails are used, we can go up to 42" X 108". Please confirm if using full width top and bottom rails will be acceptable.	See Addendum 2
5	3.4.21	3.17.21	Door 1K-130 is called out as type F on the door schedule. 1K-130 is an exterior door. Please confirm if this should be a type E aluminum door.	Door 1K-130 should be type E not F.
6	3.4.21	3.17.21	Door 1K-130 is assumed to be included in spec section 084113 (please confirm). Spec section 084113 calls for a blast rated system and also calls for a thermally broken door. Thermally broken doors will not	

			accommodate a blast rating. Please confirm that a non-thermal door that will accommodate a blast rating will be acceptable.	Section 084113 notes that thermal break is only required at locations where insulating glass is scheduled. No insulating glass is scheduled at this location. Section 084113 notes that thermal break is only required at locations where insulating glass is scheduled. Door 1K-130 is an exterior door and requires a thermally broken frame. It has been verified with Kawneer products are available which will accommodate these requirements.
7	3.4.21	3.17.21	Do the exterior window assemblies (frame type 1, & W1) at non-patient rooms require integral blind units or psychiatric rated interior sash panels? For example, frame type 1 is an exterior assembly at the Dining Room. Will integral blinds (glass type IL-1A) be required for the fixed lites? The door assembly can only accept up to a 1" IGU and integral blinds will not fit within the door assembly. Please confirm that this will be acceptable.	Areas required to have intergral blinds are noted as IL1-A on sheet A702. Refer to section 102310 2.01 and section 085113 section 2.01 on psychiatric rated frames.
8	3.4.21	3.17.21	Please provide a list of what frame/window types on A702 go with what specification sections.	Addendum 2 Updates: 102310- 2, 3, 4, 6, W4-7, W9-21 085619- W8 085113/085653-W1, W2, W3 084113/085653-1 Revision: See Addendum #2 for changes to W4 and W21
9	3.4.21	3.17.21	C1-59A & C1-60A on the door schedule are called out as type A Flush doors. In the "door size" column they call out a narrow vision lite. Please verify if these two doors require glazing.	These doors should be changed to type C
10	3.4.21	3.17.21	Do any of the interior window assemblies require psychiatric rated frames or glazing? For example window types W15, & W16?	Refer to section 102310 2.01 and section 085113 section 2.01
11	3.5.21	3.17.21	The exterior window assemblies are detailed as a curtain wall assembly. The IL-1A glass makeup as specified will not work as detailed. Would it be acceptable to install an interior psychiatric rated sash panel with integral blinds within the curtain wall back-member framing assembly that flushes out with the inside of the curtain wall mullion and install a 1-5/16" tempered and laminated insulated glass units in the glazing pocket of the curtain wall system that would meet the blast ratings? The exterior glazing makeup would be ¼" tempered glass outboard lite, ½" argon filled air space, ¼" tempered glass, .060 clear PVB interlayer, ¼" clear tempered glass. The low E/Tint would match the adjacent recently renovated window systems.	The system proposed in the question is acceptable.
12	3.5.21	3.17.21	At the spandrel locations, the glass fabricators will not put ceramic frit on laminated glass due to possible delamination from heat buildup. Will a translucent colored interlayer be acceptable at the spandrel locations so long as it meets the blast requirements?	Spandrel glass(IL1B) needs to match the outdoor lite color and be indishtiguishable from the remainder of the exterior glass adjcent and above(IL1A). The method to make the glass opaque isnt specified. Use of ceramic frit or interlayer is acceptable as long as

				the window appearance matches adjacent windows and hides structure behind.
13	3.8.21	3.17.21	Plan Sheet 1338-AF101-P1 has note attached to Room 1L-137 stating “Existing Beds to be removed by construction contractor. Relocated. And secure in new locations indicated by COR.” We were not given the opportunity to visit Ward L during the limited site visit. Please verify if the beds noted are from Ward L or from Ward K to be relocated.	Ward L will be emptied by the VA prior to construction. Relocation of beds will be from ward K to ward L. See Question 14.
14	3.8.21	3.17.21	If beds are to be relocated from Ward K, how many beds are in current inventory?	Quantity of beds is shown on sheet AF101-P1
15	3.8.21	3.17.21	Plan Sheet 1338-QH100 Equipment Schedule item M7011 denoted Bed Platform to be “Contractor Furnished/Contractor Installed”. Please verify this is correct.	This is correct. Refer to specification section 11 72 13 for more information.
16	3.8.21	3.17.21	Specification Section 11 72 13-3 Paragraph 2.2.3 M7011 Bed, Platform lists Basis of Design manufacturer Safehouse Captain’s Bed. This product is not listed on the Brand Name Sole Source. Is it the government ‘s intention to exclude this product on the Brand Name list?	Basis of design only.
17	3.4.21	3.17.21	For the all-glass channel set frame types on A702 (W4 for example), what is the required finish for the channel?	See section 1.5.D of the relevant specification section for finish information.
18	3.4.21	3.17.21	For the interior aluminum framed storefront windows on A702 (W7, W9, W12, W15, & W16), what is the required finish?	See section 1.5.D of the relevant specification section for finish information.
19	3.4.21	3.17.21	The signage schedule on Drawing AF-002 makes reference to the different Sign Types but we could not find a description or details of them in the drawings or specification section 10 14 00. Please direct us where to find them or provide the details of the Basis of Design, if they are not in the construction documents.	Section 10 14 00 2.1 notes that the basis of design shall be Vivid as manufactured by Takeform.
20	3.18.21	3.18.21	Per the plans the width of the Won-Door measures 42’-6” clear, with a narrow lead post door. This design would result in a pocket depth of 110”, not the size shown in the project drawings, which can accommodate up to 40’ in width. We would suggest going to the flat lead post and reduce the opening width to 40’, this would put the pocket depth at 62”. Please respond which solution we should price.	See addendum 2. The 40’ door should be used for pricing.
21	3.18.21	3.18.21	Please confirm the commissioning agent will be provided by the VA. The contractor will provide commissioning assist.	Specification 01 91 00 -17 Paragraph 1.8
22	3.18.21	3.18.21	Please confirm we are to include all applicable taxes.	Please include all applicable taxes within your pricing

23	3.18.21	3.18.21	Please confirm the Superintendent can dual hat as the Site Safety and Health Officer.	The Superintendent can also fill the role as SSHO provided they have adequate training and have adequate time to fill both roles per specification. Note any other duties assigned to the superintendent.																					
24	3.18.21	3.18.21	Is a dedicated Quality Control Manager required for this project?	Quality Control specification 01 45 00 attached. See answer to question 23 also.																					
25	3.18.21	3.18.21	Specification Section 08 33 13 – Coiling Counter Doors is missing. Please provide.	Specification Section 08 33 13 is provided with these Q & A.																					
26	3.18.21	3.25.21	The materials selected for LVT-1, WSF-1, WSF-2, and WSF-3 appear to be Non-American made products. Please advise if this is acceptable. If not please reselect.	<table border="1"> <thead> <tr> <th>Finish</th> <th>Replacement finishes made in the US</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>PW T-1</td> <td>Daltile, Exquiste, Ivory EQ-10, 12x12</td> <td>Reference sheet AF-001</td> </tr> <tr> <td>WS F-1</td> <td>Mannington, Bloom, Wellspring, color: Shade</td> <td>Reference sheet AF-001</td> </tr> <tr> <td>WS F-2</td> <td>Mannington, Color Anchor, color spec, color: Nimbus, size: 18 1/8" x 18 1/8"</td> <td>Reference sheet AF-001-all location except 1L-128, 1L-128b, 1L-128c</td> </tr> <tr> <td>WS F-2a</td> <td>Ecore, Aurora, color: Stormy 2719</td> <td>1L-128, 1L-128b, 1L-128c</td> </tr> <tr> <td>WS F-3</td> <td>Mannington, Maple Creek, color Drummond 5693R</td> <td>Reference sheet AF-001</td> </tr> <tr> <td>MC -1</td> <td>Need replacement solution-consider dropping ceiling and doing a gyp ceiling</td> <td>Reference sheet AF-001</td> </tr> </tbody> </table>	Finish	Replacement finishes made in the US	Location	PW T-1	Daltile, Exquiste, Ivory EQ-10, 12x12	Reference sheet AF-001	WS F-1	Mannington, Bloom, Wellspring, color: Shade	Reference sheet AF-001	WS F-2	Mannington, Color Anchor, color spec, color: Nimbus, size: 18 1/8" x 18 1/8"	Reference sheet AF-001-all location except 1L-128, 1L-128b, 1L-128c	WS F-2a	Ecore, Aurora, color: Stormy 2719	1L-128, 1L-128b, 1L-128c	WS F-3	Mannington, Maple Creek, color Drummond 5693R	Reference sheet AF-001	MC -1	Need replacement solution-consider dropping ceiling and doing a gyp ceiling	Reference sheet AF-001
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27	3.18.21	3.23.21	The specifications include Section 10 11 13 Chalkboards and Markerboards. We have not been able to find in the drawings information relative to location(s), size(s) and quantities of the products. Please clarify where to find the information or provide if missing.	Chalkboards and Markerboards are VV.																					
29	4.5.21	3.25.21	The top 2 feet portion of elevation 1/A302 (titled as feature wall) shows for decorative artificial plants and asking us to coordinate with VA. Who is responsible to furnish this item? If it is by the GC, please provide product information, basis of design, and specifications.	CC- Contractor provided and installed. See Addendum 2																					
30	4.5.21	3.25.21	The middle 5' 6" portion of elevation 1/A302 (titled as feature wall) depicts for the Soundcor product asking us to coordinate with VA. It is also mentioned that the feature wall by the VA. The spec section 09 84	CC- Contractor provided and installed. See Addendum 2																					

			33 with a BOD as a Soundcore product is provided in the spec book. Please clarify who is responsible to furnish this item the VA or GC.	
31		3.25.21	The bottom 1' 6" portion of elevation 1/A302 (titled as feature wall) calls for stone (TBD by VA) and the color schedule of AF-001 also indicates stone TBD by VA. Please provide product information/BOD of the stone.	CC- Contractor provided and installed. See Addendum 2
			Questions 27 through 31 not provided on previous Amendment.	
32	3.22.21	4.5.21	The price/cost schedule on page 6 of the solicitation calls only line item 0001 (BASE BID) which includes the renovation of the entire work within the documents. Note 1 of the AHU schedule provided on MH601 asks to provide AHU installation price as a deductive alternate # 1. If later is correct, please provide an updated price/cost schedule.	There is no deduct alternate. Please delete Note 1 from page 1338-MH601 of the design drawing set. Disregard any reference to bid deduct.
33	3.22.21	4.5.21	"Is this project tax-exempt? If yes, please issue the Tax Exemption number for bidding purposes. If not, what is the percentage of tax?"	The project is not tax-exempt.
34	3.22.21	4.5.21	Please show a pathway (for hauling off the demo debris) to the loading dock on the drawing from the construction area K, H, and L.	Demo debris can be removed from Building 70 via mechanical rooms 1K and 1L in the vicinity of the construction boundary. Green space will be provided for dumpsters, lay down, and construction trailer office. Due to the large number of projects in this vicinity, exact locations of above will be determined upon construction commencement. It will, however, be in the same vicinity. Site plan attached to this Amendment.
35	3.22.21	4.5.21	Are we allowed to use the courtyard entrance to bring in and takeout the construction materials to the construction area?	It is acceptable to use the courtyard entrance during Phase 2 and Phase 3. Please see question 7 for further information.
36	3.22.21	4.5.21	Please provide a site logistic plan showing the connection for temp water connection, temp power connection, location for site trailer, contractor parking, etc.. For bidding purposes.	See Question 3 and 7.
37	3.22.21	4.5.21	Phasing notes & legends of GI001 reference and discusses the hazardous material abatement and direct us to obtain the ACM & lead-based paint report from the COR. Please provide the ACM & lead base paint report and provide ACM and lead abatement drawing, quantities of abatement, and specifications.	Notes pertaining to lead, and asbestos are not relevant to this project. Lead or asbestos are not present in Building 70.
38	3.22.21	4.5.21	Phase 2 & 3 reference and discusses that the VA medical center will continue to use the exterior therapy area plan south of zone 1L during phase 2 & 3. Are you referring to the courtyard as an exterior therapy area? Please identify the exterior therapy area on the drawing.	Addendum 1 also addresses work to be completed in the courtyard area. Recreation area is synonymous with courtyard area for purposes of this project. It is the requirement of the VA Mental Health to utilize the exterior recreation area as much as possible during the construction PoP. Exact dates for recreation area open to MH will be established during construction.

39	3.22.21	4.5.21	Detail 5/SG008 titled sidewalk support at the new exterior door has shown on drawing SG008. We would not see any reference to this detail on any structural drawings. Please provide a reference on the drawing this detail applicable to.	Detail not required for new sidewalk.
40	3.22.21	4.5.21	Detail 7 & 8/SG008 titled vertical skyfold partition support and vertical partition support respectively have shown on drawing SG008. We would not see any reference to this detail on any structural drawings. Are you referring to the accordion partition door and the won-door fire door as a skyfold partition? Please provide a reference to this detail on the respective structural drawing.	See Addendum 2
41	3.22.21	4.5.21	Please provide a reference of an interstitial floor in the detail 7 & 8/SG008 to understand that C8x11.5 stays above or below the interstitial floor.	See Addendum 2
42	3.22.21	4.5.21	Are we to provide a temporary built-out for weather protection in construction area while removing the existing windows and installation of new windows/curtain walls?	See Addendum 2
43	3.22.21	4.5.21	Some of the areas outside the construction in area K (C1-68A, C1-72A), area H (1J-101a, 1H-100, 1H-101, 1H-102, 1H-121) & area L (door by corridor C1-57 between column line 9 & 10) have only access from the construction area. Please confirm that these rooms will be closed and not in use for VA during the construction period as discussed during the site walk.	See Addendum 1 for construction boundary and temporary wall placement. Rooms may be occupied.
44	3.22.21	4.5.21	Keynote 24 of all demo drawings indicate "COMPLETE DEMOLITION OF AREA AS SHOWN. ONLY METAL STUDS WILL REMAIN ON EXTERIOR WALLS U.N.O. REMOVE INTERIOR WALLS IN THEIR ENTIRETY U.N.O." But, Keynote 7 of all architectural drawings show "FURR/INSULATE EXTERIOR WALL W/ 3-5/8" LT. GA. METAL STUDS, R-11 BATT INSULATION AND 5/8" GWB FROM FLOOR TO B.O. STRUCTURE ABOVE.". Please confirm that all the exterior walls are going to be entirely new with new studs as per architectural drawings.	Disregard Keynote 7.
45	3.22.21	4.5.21	KN-8 of AD101-P1 is annotated in rooms 1L-114, 1L-115, & 1-116 asking to remove the plumbing fixtures. There are no images of any plumbing fixtures on this demo plan neither on the plumbing demo drawing PD101-P1. Please provide an updated demo & plumbing demo drawing for phase 1 to understand the plumbing fixture demo scope.	See Addendum 2
46	3.22.21	4.5.21	Phase 1 general notes provided on A101-P1 requires a demolition of FE cabinets, wall protection, patient beds, bathroom accessories, patient room flooring, interior glazing etc. However the demo drawing AD101-	See responses to question 16, 19 and clarifications in Addendum 2 on sheets AD101-P1, and A101-P1

			P1 do not show any of the above items to be removed. Please provide an updated AD101-P1 drawing.	
47	3.22.21	4.5.21	Phase 1 General note 2 shows "REMOVE MARKERBOARD, WALL HUNG HAND CLEANER DISPENSERS, HAND SANITIZERS, IDEA BOARD BULLETIN BOARD FROM WALLS AND OTHER ITEMS TO BE COORDINATED WITH OWNER FOR STORAGE AND/OR DISPOSAL." Please provide a list of items that need to be removed and stored for bidding purposes, so that all bidders can bid the same scope.	VA to remove identified items identified in this note prior to Phase 1 demolition.
48	3.22.21	4.5.21	Phase 1 General note 3 depicts "REMOVE ALL EXISTING UNLOCKED FIRE EXTINGUISHER CABINETS AND REPLACE WITH NEW FLUSH MOUNTED LOCKABLE FIRE EXTINGUISHER CABINETS." Please quantify the number of Fire Extinguisher cabinets that need to be removed and replaced for bidding purposes, so that all bidders can bid the same scope.	See Addendum 2
49	3.22.21	4.5.21	Phase 1 General note 4 depicts "REPLACE ALL WALL PROTECTION ITEMS WITH ANTI-LIGATURE GRADE WALL PROTECTION AND CORNER GUARDS." Please provide the drawing showing temporary phase 1 wall protection and product information for bidding purposes, so that all bidders can bid the same scope.	Refer to response to question 48, 87, and 90. See Addendum 2
50	3.22.21	4.5.21	Phase 1 General note 5 depicts "CONTRACTOR SHALL RELOCATE PATIENT BEDS FROM EXISTING 1K AND SECURE INTO THE FLOOR OF PATIENT BEDROOMS ON THIS PLAN AT THE END OF PHASE 1 DURING THE ONE WEEK OWNER MOVE PERIOD." Please provide the existing patient bed's product manufacturer and detail to understand the disassemble and reinstallation of the same for bidding purposes, so that all bidders can bid the same scope.	See question 109. See Phase 1 amendment for additional Phase 1 operations.
51	3.22.21	4.5.21	Phase 1 General note 6 depicts "ALL EXISTING PATIENT BATHROOMS IN PHASE 1 MUST HAVE ALL BATHROOM ACCESSORIES REPLACED WITH ANTI-LIGATURE GRADE ACCESSORIES." Please provide an anti-ligature bathroom accessories schedule and drawing for phase 1, so that all bidders can bid the same scope.	Accessories replaced in Phase 1 are the same accessories as to be provided in patient toilet rooms in Phase 2 and 3. Patch walls affected by installation of new fixtures and accessories. Product purchased for Phase 1 can be salvaged and used in Phase 2 and 3.

52	3.22.21	4.5.21	Phase 1 General note 7 depicts "ALL PATIENT ROOM FLOORING IN PHASE 1 WILL BE REPLACED WITH RSV-1. " Please provide a finish plan and finish schedule (incl product information) for area L phase 1, so that all bidders can bid the same scope. Do all patient rooms require a new wall base? if yes, please provide wall base product information.	<table border="1"> <thead> <tr> <th>Finish</th> <th>Replacement finishes made in the US</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>PWT-1</td> <td>Daltile, Exquisite, Ivory EQ-10, 12x12</td> <td>Reference sheet AF-001</td> </tr> <tr> <td>WSF-1</td> <td>Mannington, Bloom, Wellspring, color: Shade</td> <td>Reference sheet AF-001</td> </tr> <tr> <td>WSF-2</td> <td>Mannington, Color Anchor, color spec, color: Nimbus, size: 18 1/8" x 18 1/8"</td> <td>Reference sheet AF-001-all location except 1L-128, 1L-128b, 1L-128c</td> </tr> <tr> <td>WSF-2a</td> <td>Ecore, Aurora, color: Stormy 2719</td> <td>1L-128, 1L-128b, 1L-128c</td> </tr> <tr> <td>WSF-3</td> <td>Mannington, Maple Creek, color Drummond 5693R</td> <td>Reference sheet AF-001</td> </tr> <tr> <td>MC-1</td> <td>Need replacement solution- consider dropping ceiling and doing a gyp ceiling</td> <td>Reference sheet AF-001</td> </tr> </tbody> </table>	Finish	Replacement finishes made in the US	Location	PWT-1	Daltile, Exquisite, Ivory EQ-10, 12x12	Reference sheet AF-001	WSF-1	Mannington, Bloom, Wellspring, color: Shade	Reference sheet AF-001	WSF-2	Mannington, Color Anchor, color spec, color: Nimbus, size: 18 1/8" x 18 1/8"	Reference sheet AF-001-all location except 1L-128, 1L-128b, 1L-128c	WSF-2a	Ecore, Aurora, color: Stormy 2719	1L-128, 1L-128b, 1L-128c	WSF-3	Mannington, Maple Creek, color Drummond 5693R	Reference sheet AF-001	MC-1	Need replacement solution- consider dropping ceiling and doing a gyp ceiling	Reference sheet AF-001
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53	3.22.21	4.5.21	Phase 1 General note 8 depicts "REPLACE ALL INTERIOR GLAZING WITH AN APPROVED LAMINATE HIGH IMPACT GLAZING. " Please provide a list of doors and windows opening sizes and glazing sizes on phase 1 drawing which need to be replaced with the glazing so that all bidders can bid the same scope. Also, provide a glazing type and thickness.	See Addendum 2																					
54	3.22.21	4.5.21	Do we need to paint the entire area L phase 1? or just paint locally where patching has been done and new walls constructed.	See Addendum 2																					
55	3.22.21	4.5.21	Keynote 6 of A101-P1 calls for providing of ADA compliant shower stall. Please provide a Basis of design of the shower stall.	See Addendum 2. Reference the design for the new 3'x5' shower stalls in the new patient toilet rooms.																					
56	3.22.21	4.5.21	Keynote 8 of all architectural drawings depict "EXISTING WALL MOUNTED STEAM CONVECTOR TO BE REMOVED (SEE MECH.). FINISH TO MATCH EXISTING CONDITION. SEE DETAILS ON SHEET AE-500." This keynote refers to drawing AE500 for details that do not exist in drawing piles. Please clarify.	Not all keynotes listed on each drawing sheet apply to every drawing sheet. Remove reference to AE-500 detail.																					
57	3.22.21	4.5.21	A104-P3 shows accordion wall partition between OCC therapy 1L-114 and Group therapy 1L-116. The spec section 1.1 of 10 22 26.13 indicates electric or manually operated accordion partition. Please clarify whether it requires an electric or manually operated accordion partition. Also, provide a basis of design for the accordion partition.	Manually operated partition. Basis of design is Moderfold Soundmaster SM8																					

58	3.22.21	4.5.21	what is the window type on the southern wall of REC therapy room 1L-112?	The assembly is identified by the frame type in the door schedule for door 1L-112 within this assembly.
59	3.22.21	4.5.21	Detail 3/A302 calls for L-angle MTL framing @ 16"O.C. to support pre-cast concrete bench. The detail is drawn as all light gauge framing, the detail references as L-angle MTL framing. This appears to be in conflict with what is drawn. Please provide cross section to show intent.	The bench will be supported by light gauge framing.
60	3.22.21	4.5.21	The top 2 feet portion of elevation 1/A302 (titled as feature wall) shows for decorative artificial plants and asking us to coordinate with VA. Who is responsible to furnish this item.If it is by the GC, please provide product information, basis of design, and specifications.	See Addendum 2
61	3.22.21	4.5.21	The middle 5' 6" portion of elevation 1/A302 (titled as feature wall) depicts for the Soundcor product asking us to coordinate with VA. It is also mentioned that the feature wall by the VA. The spec section 09 84 33 with a BOD as a soundcore product is provided in the spec book. Please clarify who is responsible to furnish this item the VA or GC.	See Addendum 2
62	3.22.21	4.5.21	The bottom 1' 6" portion of elevation 1/A302 (titled as feature wall) calls for stone (TBD by VA) and the color schedule of AF-001 also indicates stone TBD by VA. Please provide product information/BOD of the stone.	See Addendum 2
63	3.22.21	4.5.21	The equipment schedule for toilet 1L-101 and VAPD storage 1L-103 are missing on A405. Please provide the missing schedule.	<u>Room Number, JSN, Content Name, Provided By</u> 1L-101, P9160, Lavatory, China, for Disturbed patient, CC 1L-101, A5081, Dispenser, Paper Towel-SS Recessed Psychiatric, CC 1L-101, A5074, Soap Dispenser, Recessed, SS Psychiatric, CC 1L-101, A1086, Mirror- Safety, Psychiatric, CC 1L-101, P5350, Shower, Patient Psychiatric, CC 1L-101, A5030, Bench, Stall Shower, built-in, CC 1L-101, P9400, Toilet, Wall Hung-Siphon Jet, Psychiatric, CC 1L-101, A5196, Dispenser, Toilet Tissue, psychiatric, CC 1L-103, M2070, Shelving, Storage, 77Hx36Wx18D, VV"
64	3.22.21	4.5.21	The equipment schedule for toilet 1L-113A is missing on A405. Please provide the missing schedule.	<u>Room Number JSN Content Name Provided By</u> 1L-113A, P9400, Toilet Wall Hung, Siphon jet, Psychiatric, CC 1L-113A, P9160, Lavatory, China, for Disturbed Patient, CC 1L-113A, A5196, Dispenser, Toilet Tissue, Psychiatric, CC 1L-113A, A5112, Grab Bar, Psychiatric, CC 1L-113A, A5081, Dispenser Paper Towel, SS Recessed Psychiatric, CC

				1L-113A, A5074, Soap Dish, Recessed. SS, Psychiatric, CC 1L-113A, A1086, Mirror, Safety, Psychiatric, CC
65	3.22.21	4.5.21	The door type E and H are shown on A701. These door types are not used in any opening in the door schedule. Please clarify.	Not all door types shown are used.
66	3.22.21	4.5.21	We do not see the aluminum frame type 2 and 6 in the door schedule nor in the floor plan. Please clarify where these frame types are used.	Not all frame types shown are used.
67	3.22.21	4.5.21	Detail 4/A502, 5/A702 & 14/AI101 show the hollow metal frame in the window section. But the window type W5 in nurse station 1H-110 & W13 in the High Acuity RN station 1L-120 are called out as an aluminum window per window type on A702. Please clarify which one is correct.	See Addendum. Frames types in window details are generic representations. Refer to prior addendum for information identifying the specification section responsible for the specific windows and frames elevated on sheet A702.
68	3.22.21	4.5.21	The door types provided on A701 call for LG-1 glazing, and aluminum frame types and aluminum windows call for LG-1, IL-1A, and IL-1B glazing. Please provide specifics for each type of glazing's.	1L-101, P5350, Shower, Patient Psychiatric, CC. Refer to Specifications Section 08 80 00 for glazing types.
69	3.22.21	4.5.21	Product types RSV-1 shows in (Corridor C1-61 & 1L-131 serving room) & RSV-2 (1K-127 HSKP room), rigid sheet vinyl inpro products have shown in the color schedule on AF-001 & AF002. Please specify the height of this products at this location.	Refer to response to item 90.
70	3.22.21	4.5.21	Sign schedules are provided on AF-001 for all 3 phases of signage requirement. Will a floor plan showing the location for each signage be available?	No. Signage provider will provide layout showing sign placement as part of the submittal.
71	3.22.21	4.5.21	Product type SS-3 (Solid surface for walls by dining/nurse's station front) has shown in the color schedule on AF-001. We do not see any wall in the dining room shows with SS-3 except the nurse's station front. Please clarify.	Price where indicated on interior elevations.
72	3.22.21	4.5.21	Product type MTL-1 stainless steel column wrap called out in theater room 1K-118. Please provide SS column wrap specification or basis of design.	In lieu of MTL-1 stainless steel column wrap uses Solid Surface (SS-2) at column. Extend to a height of 48" and provide matching solid surface bullnose trim at top edge.
73	3.22.21	4.5.21	HR-2 handrail shows in the color schedule on AF-001. We do not see this handrail type HR-2 on any of the interior elevations or plans. Please clarify.	See response for item 89.
74	3.22.21	4.5.21	Finish plan note 2 of AF-001 indicates "ALL PATIENT TOILET COVES SHALL BE EITHER PORCELAIN TILE MATCHING THE FLOOR TILE OR SOLID SURFACE MATCHING THE WALL	Phase 1, Porcelain Tile. Phase 2 and 3 see Sheet AF-002

			SOLID SURFACE MATERIAL." Please specify whether to use porcelain tile or SS product for bidding purposes.	
75	3.22.21	4.5.21	A variety of furniture have shown in the plan AF101-P1. Please confirm all those types of furniture are for reference only except for the patient beds. If those furniture are by the GC, please provide a furniture schedule and basis of design for bidding purposes.	Furniture is VV. VA provided and installed. Phase 1 beds are relocated. Phase 2 and 3 beds are CC. See question 116 for additional Phase 1 operations.
76	3.22.21	4.5.21	A bunch of lockers has shown in the locker rooms 1L-124 & 1L-125 in area L phase 1. Who is responsible to provide those lockers? If it is by GC, please provide the size and quantities of lockers.	Contractor to relocate from 1H-114A and 1H-114C to 1L-124 and 1L-125. Provide temporary fire-resistant wood platform.
77	3.22.21	4.5.21	A variety of furniture have shown in the plan AF102, AF103 & AF104. Please confirm all those types of furniture are for reference except for the patient beds. If those furniture are by the GC, please provide a furniture schedule and basis of design for bidding purposes.	Furniture is VV. VA provided and installed. Phase 1 beds are relocated. Phase 2 and 3 beds are CC. See question 116 for additional Phase 1 operations.
78	3.22.21	4.5.21	Crash rail detail 12 CR1 is provided in AI101. We do not see this crash rail type CR-1 on any of the interior elevations or plans. Please clarify.	See item 87.
79	3.22.21	4.5.21	Detail 11 of AI101 shows corner guard types CG-1 to CG-7. The floor plans AF102, AF103 and AF104 only call for CG-1. Please advise.	See Addendum 2. Corner Guards are to be provided in types and locations as identified on the architectural Furniture Plans. AF102, AF103, and AF104. Phase I Corner Guards will utilize existing corner guards and locations.
80	3.22.21	4.5.21	The equipment schedule on QH100 indicates CT050, which is stainless steel countertop that needs to be provided and installed by the contractor. This stainless-steel countertop does not show in any of the enlarged architectural plans or the equipment schedule of the enlarged architectural plans. Please clarify.	This item is not used. No Stainless-Steel Countertops are to be provided.
81	3.22.21	4.5.21	Detail 12/PP-501 & detail 2/MH-501 shows the interstitial deck repair detail. Which is not to scale detail. Please provide thickness, gypsum concrete specification, and as built of the interstitial deck.	Detail in Addendum 2. Interstitial deck is 3-1/2" thick. Gypsum concrete specification is included in addendum.
82	3.22.21	4.5.21	Please provide the existing slab on grade thickness that needs to be demoed for plumbing.	Typically, 6 inches
83	3.22.21	4.5.21	Keynote MH04 of MH102-P2 & MH301 ask for providing temporary heating and cooling to any spaces that are not within the limits of the construction while the new unit is being installed. Please provide the mechanical drawing showing the entire area outside the construction limit serving by 70 AHU 08 and temporary heating and cooling requirements.	See Addendum 2. Area needing temporary heating/cooling is shown on MH103-P2 north of Gridline 44 (actual Gridline 12). 6000 CFM and 10 HP is needed for the twelve (12) VAV boxes that are outside of the scope of the project but are fed from 70-AHU-08. Provide temp AHU outside 1K Mechanical room and extend 26" diameter temporary supply and return ducts, in interstitial space, from the mechanical room to connection point at Gridline 12/V.5

				(approximately 300' each). Temporary AHU shall be located outside 'K' mechanical room with supply ducts extending from it, through the outside louver and into the interstitial space. The return ducts shall connect to 70-RF-07 return fan, located 'K' mechanical room.
84	3.22.21	4.5.21	MH12 of MH104-P3 calls for providing temporary cooling to areas that are to remain occupied during construction. Please provide the intent of the temporary cooling as there is only some modification to branch ductwork in area L. Also, provide the requirement of temporary cooling.	See Addendum 2. AHU 70-AHU-07, located in Mechanical Room 1F-119, will remain operational during remodeling of 1L, Phase 3. A temporary AHU is not required but supply and return ducts serving L wing must be isolated and shutdown during construction activities. Supply and return ductwork from 70-AHU-07 will remain active. Prior to duct shutdown have a TAB balancer measure airflow (2) 30"dia supply and (2) 30" dia return to ensure that that airflow is maintained after temporary shutdown. Similarly the 24" general exhaust duct shall be isolated and shutdown after a TAB balancer measures airflow for the 22"dia general exhaust ducts at 2nd and 3rd floor and the 20" dia duct from 4th floor upstream of 70-EF-38, located on 3rd floor.
85	3.22.21	4.5.21	MH102-P2 & MH104-P3 have shown some linear slot diffusers. There is no detail for linear slot diffusers in the mechanical schedule. Please provide linear slot diffusers schedule.	See Addendum 2. Linear supply diffuser (LSD) shall be aluminum moduli near slot supply diffuser, 1" slot and factory manufactured plenum (no interior insulation; 1-1/2" exterior insulation), Titus ML-39 and MP-39 or equal. No. of slots, length and connection sizes are listed on the drawings. A typical installation detail is issued by addendum.
86	3.22.21	4.5.21	Specification 04 01 00 maintenance of masonry is provided within the specification booklet. We do not see any scope for the maintenance of masonry. Please identify the scope associated with 04 01 00.	New brick work identified in elevations for new exterior door and removed exterior door. See details. See additional clarification in Addendum 2.
87	3.22.21	4.5.21	Specification 04 20 00-unit masonry is provided within the specification booklet. We do not see any scope with CMU masonry for an exterior wall or interior partition. Please identify the scope.	New brick work identified in elevations for new exterior door and removed exterior door. See details. See additional clarification in Addendum 2.
88	3.22.21	4.5.21	Specification section 07 81 00 applied fireproofing is provided within the specification booklet. We do not see any fireproofing scope in this project. Please clarify.	See Addendum 2. Existing steel structure is used at interstitial level and primary members are fire protected. This structure will be impacted and will need patching and repair due to scope of work.
89	3.22.21	4.5.21	Spec section 1.1 of 08 34 53 titled as Security doors and frames depicts "The extent of abuse-resistant security door assemblies required for the Project is indicated on Contract Drawings, and in Door/Frame/Hardware schedules, indicated as "Heavy Duty-Security Door" including construction, profiles, swing, sizes, hardware, accessories, devices, and	No doors were identified as to be provided from this specification section. Disregard this specification section.

			locations." None of the doors and frames on the door schedule or the drawing identified as Heavy Duty-Security doors. Please clarify.	
90	3.22.21	4.5.21	Spec section 2.3A & 2.9A of 08 41 13 indicates "Basis of Design, exterior systems: Specific material, finish, and color to match adjacent new aluminum curtain wall/door systems to be installed per separate, concurrent VA aluminum window/door system replacement project. Contractor to field verify, approved by Contracting Officers Representative.". Please confirm that this specification 08 41 13 applies to the curtain wall W1 and exterior aluminum frame type 1 of this project. Also, provide product detail & manufacturer, finish, color, and installer information of the VA aluminum window/door replacement project for the exterior system.	Previous window projects have been Wausau Window sashes Interior color Linetec Burnt Sun and Exterior color Linetec Dark Bronze with limits.
91	3.22.21	4.5.21	Spec section 2.3B & 2.9B of 08 41 13 indicates "Basis of Design, interior systems: Aluminum finish and color to match adjacent CRL Aluminum door/window and frame systems.". Please confirm that this specification 08 41 13 applies to the interior aluminum openings (frame type 3 & 4) and interior windows (W4 to W21) of this project. Also, provide finish, color, and installer information of the adjacent CRL Aluminum door/window and frame system.	As per the prior addendum, specification section 084113 applies only to Frame type 1. Finish and Installer information is as specified within this section. Also, note response to item #59 for matching finish.
92	3.22.21	4.5.21	Spec section 08 51 13 is provided as an aluminum window with integral blinds within the insulated glass units. Which window types does this spec section apply to?	See Spec Section 08 80 00 and Sheet A702. This applies to exterior windows at patient rooms
93	3.22.21	4.5.21	Spec section 08 56 53 titled as blast resistant windows depicts "Prefabricated fixed aluminum, blast-resistant exterior window units to be included at all exterior window replacement and storefront locations indicated in this project." Please confirm that this spec section 08 56 53 applies to window type W2 and W3.	Blast resistance is required at all exterior window locations.
94	3.22.21	4.5.21	Specification 10 11 13 Chalkboard & Markerboards is provided within the specification booklet. We do not see any scope for the same. Please identify the scope associated with 10 11 13.	Chalkboards and Markerboards are VV.
95	3.22.21	4.5.21	The updated specifications provided in amendment 2 still have some of the Div 28 specification illegible, i.e. 28 05 00, 28 05 28.33, etc... Please reissue a legible copy of the specifications.	See Addendum 2
96	3.22.21	4.5.21	Are we allowed to work all the demo work, coring and drilling work within the construction zone during the regular normal working hours?	All noise producing construction shall be coordinated with the facility through the COR. Consideration will be required pertaining to time of day, and weekend work may be required for portions of high noise making operations. This area of the facility houses in-

				patient wards, and thus sleeping hours of 2200 to 0600 shall remain as quiet as possible.
97	3.22.21	4.5.21	Please provide a contact information of the preferred/maintenance temperature control contractor.	JCI
98	3.22.21	4.5.21	Please provide a contact information of the preferred/maintenance fire alarm contractor.	Firenet
99	3.22.21	4.5.21	Please provide a contact information of the preferred/maintenance nurse call system contractor.	Beacon Communications is the maintenance contractor for the nurse call system
100	3.22.21	4.5.21	Please provide a contact information of the preferred/maintenance access control system contractor.	HID/LVC
101	3.22.21	4.5.21	Please provide a contact information of the preferred/maintenance CCTV/SSTV system contractor.	LVC
102	3.22.21	4.5.21	Please provide a contact information of the preferred/maintenance public address system contractor.	LVC
103	3.22.21	4.5.21	1.9A Contractor and their CPM consultant (if applicable) shall attend all monthly schedule update meetings. Could the meeting be conducted via Zoom or Webex call in lieu of in person meetings?	Virtual is acceptable.
104	3.22.21	4.5.21	1.3C. The VA will provide the initial submittal register in electronic format. Thereafter, the Contractor shall track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the VA. Could the Government please provide the submittal register?	See individual specifications. Register provided to winning bidder.
105	3.22.21	4.5.21	1.4D. All submittals are required to be approved prior to the start of the specified work activity. Has the submittal review and approval process, as well as the procurement been included in the approximately 6-month period of performance for the Phase I portion or the entire period of performance?	Yes
107	3.22.21	4.5.21	1.10D D. VA review period is 15 working days for submittals. This is 21 Calendar days for VA review. Has the submittal process as well as the fabrication and procurements been included in the approximately 6 months Phase I duration as well as the overall period of performance?	Should be 15 calendar days.
108	3.22.21	4.5.21	1.6A A. Submittal Exchange, no substitute. Please verify if Viewpoint Team (meets all of the requirements) may be used in lieu of Submittal Exchange.	Submittal Exchange provided by the VA.

109	3.22.21	4.5.21	E. The SSHO or an equally qualified Designated Representative/alternate will maintain a presence on the site during construction operations in accordance with FAR Clause 52.236-6: Superintendence by the Contractor. CPs will maintain presence during their construction activities in accordance with above mentioned clause. A listing of the designated SSHO and all known CPs shall be submitted prior to the start of work as part of the APP with the training documentation and/or AHA as listed in Section 1.8 below. Can the SSHO also perform other roles onsite such as the superintendent?	Dual roles are authorized as long as the duties do not exceed assigned staff weekly obligation.
110	3.22.21	4.5.21	No Asbestos containing or lead containing materials have been identified in the specifications or the drawings. Is there hazardous materials within the work areas?	Please note question 6
111	3.22.21	4.5.21	3.5 C. Test Specimen: 1. Include window assembly and construction. Affix test chamber to interior side of test specimen and the conduct testing using positive static air pressure (Test method A). 2. Test specimens to be selected by the Contracting Officer's Representative after windows have been installed according to the drawings and specification. Please identify the quantity and locations of these tests for bidding purposes.	As required by the COR upon review of work.
112	3.22.21	4.5.21	3.19A. Test floors in accordance with ASTM C627 to show compliance with codes 1 through 10. This is destructive testing of the floor. Is this testing requirement to remain?	This is a field test for evaluating ceramic floor tile installations. The threshold of Cycles 1 through 10 establish a Moderate strength for the installation. This level is a threshold for normal commercial and light institutional use in public space of restaurants and hospitals. Provided the installation passes this test it would not be a destructive test.
113	3.22.21	4.5.21	Copies of the most current asbestos report and lead-based paint report are to be obtained from the COR. Please provide these reports for our review.	No lead or asbestos in Building 70
114	3.22.21	4.5.21	Is there asbestos within the work areas?	No asbestos in Building 70
115	3.22.21	4.5.21	In Area C, are there corner guards going on all corners? And are they all 8'?	See response to question 48.
116	3.22.21	4.5.21	Has a design been chosen for WC11? We can get a budgetary number but not a firm number until a design is chosen.	No. Use budgetary number initially.
117	3.22.21	4.5.21	What is the finish of the hallways in Area C? AF-001 shows the exterior walls of the hallway but not the inside hallway walls.	Unclear question. Please specific exact location.

118	3.22.21	4.5.21	Please provide HVAC insulation spec, spec section 230711	See Addendum 2.
119	3.22.21	4.5.21	Please confirm CR-1, as detailed on 12/AI101, is not needed. CR-1 is not specified, and no locations were identified.	CR-1 is to be provided at all walls where handrail (HR-2) is to be installed. See Addendum #2 for further information on where HR-2 will be provided.
120	3.22.21	4.5.21	Confirm CG-2, CG-3, CG-4, CG-5, CG-6, and CG-7 as detailed on 11/AI101 are not needed. No locations were identified.	See Question 83.
121	3.22.21	4.5.21	Confirm HR-2 as specified on Sheet AF-001 is not needed. No locations were identified.	All handrail identified on Sheets AF104 and AF102 is labeled HR-1. These locations are to be HR-2. Handrail identified on Sheet AF102 is correctly identified as HR-1. Additionally, on Sheet AF102 new handrail (HR-1) is to be installed in Elevator Lobby C1-313, and Elevator Lobby C1-314 on walls where new doors, or infill of existing doors requires replacement or additional handrail. See addendum 2 for additional clarifications.
122	3.22.21	4.5.21	Please provide installation height for RSV-1 & RSV-2. The installation height was not specified.	At 1L-131 elevations identify a typical height of 48" for RSV-1. At 1K127 the height will also be 48". Additionally, refer to Addendum 2 narrative for sheet AF104 for additional information.
123	3.22.21	4.5.21	Drawing EP110 has "Watt stopper" as the basis of design for lighting controls; Lutron and Accuity are more commonly used in the facility and also meet the design with equal components, Spec section 26 09 23 does not specify a manufacturer. Are Accuity and Lutron acceptable?	Products meeting the specification are acceptable.
124	3.22.21	4.5.21	General Note #18 states that "circuits over 100' require #10 conductors" (assuming that this is homerun portion of the circuit), the spec states all homeruns need to be #10. Should we assume that all homeruns are #10 (or larger if noted) regardless of length? (1H would still have to be #8 AWG for the homeruns as detailed on note #6 on EP103-P2)	All home runs from breaker to first J-Box shall be #10 AWG as stated in Minneapolis Spec. unless identified to be larger or upsized per NFPA 70.
125	3.22.21	4.5.21	Spec section 27 12 00 paragraph 2.9. A.1 states Riser rated cable for Cat6A but later in the sentence it says "listing for plenum and riser" we assume that "plenum" should be deleted since the space is applicable to riser rated cable?	No plenum space exists in the construction zone. Riser cable is acceptable.
126	3.22.21	4.5.21	What is extent of CMU walls in project? Such as Room 1K-130 typical per area noticed to be CMU.	No CMU to be constructed.
127	3.22.21	4.5.21	What is extent of Gypsum Ceilings as opposed to ACT? Not all rooms were accessible.	See Addendum 2. For existing ceilings refer to demolition RCP plans.
128	3.22.21	4.5.21	Will you please confirm all the areas that are employee spaces vs. private patient spaces? If the area is a private patient space do I need to	Detail 1 on sheet A002 identifies these areas.

			meet behavioral health standards with anti-ligature (recessed) pulls and other hardware?	
129	3.22.21	4.5.21	I will price this project in the finishes as listed on the Color Schedule. Please note that the cost would be less if the end user were to choose standard finishes (instead of a special laminate).	Thank you
130	3.22.21	4.5.21	I've also gotten some feedback from our Engineering Department regarding the Nurse Station 1H-110. Along the guest side of this area the detail calls for a very large rounded front of the counter to be made of solid surface material. We can provide a typical 1 ½" thick solid surface top but it would not round over 20" tall on the front. Will it be acceptable for us to show our standard counter? Or, must the quote be compiled with this rounded front?	Must be rounded per details.
131	3.22.21	4.5.21	The structural drawing 1338 - SB100 makes reference to the Detail 4 on Drawing 1338 -SG008. One of the notes in the detail 4 indicates "see arch. for additional information". We could not find any additional information in the architectural drawings. Please provide this missing information of the work scope	Disregard reference to architectural drawings. Refer to specification section 07 95 13 for interior floor joint and wall joint systems.
132	3.22.21	4.5.21	Spec section 23 07 11 HVAC Insulation appears to be missing from the spec. Could you please provide this section?	Specification included in Addendum 2.
133	3.22.21	4.5.21	Mechanical MH104-P3 notes a new range hood on the north side of room 1L-114. The mechanical plans note to make transition as necessary and make connection. Please confirm who provides the hood. If it's by the construction team, please provide details on the hood – make, model, material construction, etc.	Provided by kitchen equipment vendor. Hood to be typical residential type hood. See spec 11 30 13.
134	3.22.21	4.5.21	Was this area tested for any Hazardous materials? Is there a report available?	Please note question 6
135	3.22.21	4.5.21	Please confirm only the column fur routs on exterior wall locations will get treated with the 3'11" Stone as shown on A503 Detail 11? Any interior locations?	See Addendum 2. Not sharp edges.
136	3.22.21	4.5.21	GI001, Phase 2 – Paragraph D, mentions about the un-scalable and to make those temp partitions to match current exterior walls, what is the height of those walls to match? Same material and finishes?	See Addendum 2. The temporary partitions at the exterior of the building are required should work occur during seasonal use of the outdoor courtyard. They are required to prevent residents from entering the work area. Vertical 4'x8' panels may be used provided they are adequately anchored to withstand weather events and create a fixed barrier.
137	3.22.21	4.5.21	Basis of design for the Auto-operator?	Stanley

138	3.22.21	4.5.21	Spec 10 16 01 – Solid Surface shower inserts mention both shampoo caddies and shower walls in patient rooms but elevations on A402.A is listing tile in the shower area, only Room 1L-136 on Page A101.P1 is calling for an ADA Shower stall. Please confirm if that Specification is only for the shower on the A101.P1?	A-402.A is a staff shower. Can be tile. Patient toilet rooms and shower walls are solid surface as identified on room finish schedule.
139	3.22.21	4.5.21	There were a couple of pages that seems to be misprint. A103-P2 – Elevator Lobby C1314, AF103 – 1H110A / B.	Items in gray shaded area are existing construction and outside the scope of work for this specific sheet.
140	3.22.21	4.5.21	Question 14 on last amendment says that AF101.P1 has the quantity of beds to be removed & relocated by Contractor. I'm just not seeing the quantity. Is it all the beds in that page, 23 totals?	AF101.P1 identifies location of beds to be relocated from 1K as 'Single' or 'Double' rooms. See question 116 for additional Phase 1 operations.
141	3.22.21	4.5.21	When the GC is securing those beds in the final locations, are we to mechanically anchor them?	Yes. Beds are Norix Attenda. Detail with manufacturer. See question 116 for additional Phase 1 operations.
142	3.22.21	4.5.21	CR070 – tall cabinet Shown on A404 detail 8, A406 Detail 3.... is that VV or CC?	CC
143	3.22.21	4.5.21	Detail 3 on Page A405 showing 1H110B doesn't seem to match with or may be mislabeled on AF103. Please confirm.	Main MSA room is 1H-110B. Detail 3 is correct showing 1H-110B.
144	3.22.21	4.5.21	Expansion Joints are not clear where they are needed... can you pinpoint where we can expect to replace them.	See Addendum 2. Expansion joints in the building occur in the building as follows: Aligned with the West side of the columns on grid line X in area H. Aligned with the North side of the columns on grid line 12 in areas H, and L. An additional expansion joint occurs aligning with the south side of the columns on grid line 8 in area H.
145	3.22.21	4.5.21	The Patient beds on Spec 11 72 13, are those new, CC? Or are those the ones to be relocated and secured as mentioned on page AF101.P1?	CC for Phase 2 and 3. Re-use for Phase 1. See question 116 for additional Phase 1 operations.
146	3.22.21	4.5.21	Please confirm what to price out for the artificial plants on the feature wall?	See Addendum 2
147	3.22.21	4.5.21	CR070 – tall cabinet Shown on A404 detail 8, A406 Detail 3.... is that VV or CC?	CC
148	3.22.21	4.5.21	Detail 3 on Page A405 showing 1H110B doesn't seem to match with or may be mislabeled on AF103. Please confirm.	Main MSA room is 1H-110B. Detail 3 is correct showing 1H-110B.
149	3.22.21	4.5.21	Expansion Joints are not clear where they are needed... can you pinpoint where we can expect to replace them.	See Addendum 2. Expansion joints in the building occur in the building as follows: Aligned with the West side of the columns on grid line X in area H. Aligned with the North side of the columns on grid line 12 in areas H, and L. An additional expansion joint

				occurs aligning with the south side of the columns on grid line 8 in area H.
150	3.22.21	4.5.21	The Patient beds on Spec 11 72 13, are those new, CC? Or are those the ones to be relocated and secured as mentioned on page AF101.P1?	CC for Phase 2 and 3. Re-use for Phase 1. See question 116 for additional Phase 1 operations.
151	3.22.21	4.5.21	Please confirm what to price out for the artificial plants on the feature wall?	See Addendum 2
152	3.22.21	4.5.21	Do the patient room and patient bath doors need angled top doors or wood doors with The Door Switch?	See Addendum 2, Sheet A701 Narrative.
153	3.22.21	4.5.21	Where will patients be housed during the one-week transition from 1K to 1L identified in Phase 1 guidance?	Relocation of the patient beds identified in Phase 1 (one-week transition) shall consist of 2 sub-phases and coordinated with the MH staff and the COR. The facility will restrict patient intake to a maximum of 9-10 Inpatient MH patients during this transition period. The initial move will consists of one half of the total beds to be moved. This includes either high number side of the ward or low number side of the ward moved from 1K to 1L. When one full side of 1L is complete, the medical staff and patients will move from 1K to 1L. This will leave 1K empty of staff and patients. At that time, the remainder of beds will be relocated from 1K to 1L, completing 1L Phase 1, and additional patients can be admitted.

VA Project: Renovate MH Ward 1L, 1H, and 1K

VA Project #: 618-17-127

VA Addendum Items: Anderson Revision Set 2

Date: April 5, 2021

DRAWING REVISIONS

Revise drawing sheets listed below as follows:

Architectural

A101-P1 – Add an additional 25' for handrail HR-1 to existing corridor C1-64A. Coordinate specific location of additional handrail with COR.

Mechanical

MP101-P1 – MECHANICAL PIPING PLANS – LEVEL 1 – AREA L – PHASE 1; Add General Note 10. All thermostats located in patient areas shall be anti-ligature type.

MP1012-P2 – MECHANICAL PIPING PLANS – LEVEL 1 – AREA K – PHASE 2; Add General Note 10. All thermostats located in patient areas shall be anti-ligature type.

MP104-P3 – MECHANICAL PIPING PLANS – LEVEL 1 – AREA L – PHASE 3; Add General Note 10. All thermostats located in patient areas shall be anti-ligature type.

MH-601 – MECHANICAL SCHEDULES; VAV Terminal Unit Schedule, disregard reference to 30% PG in heating water solution. Heating water contains no glycol.

Electrical

ED101-P1 – ELECTRICAL LIGHTING DEMOLITION AREA L PHASE 1

Demolish exit sign located outside room 1L-123 in C1-59 and exit signs in C1-57. Replace with XA fixture.