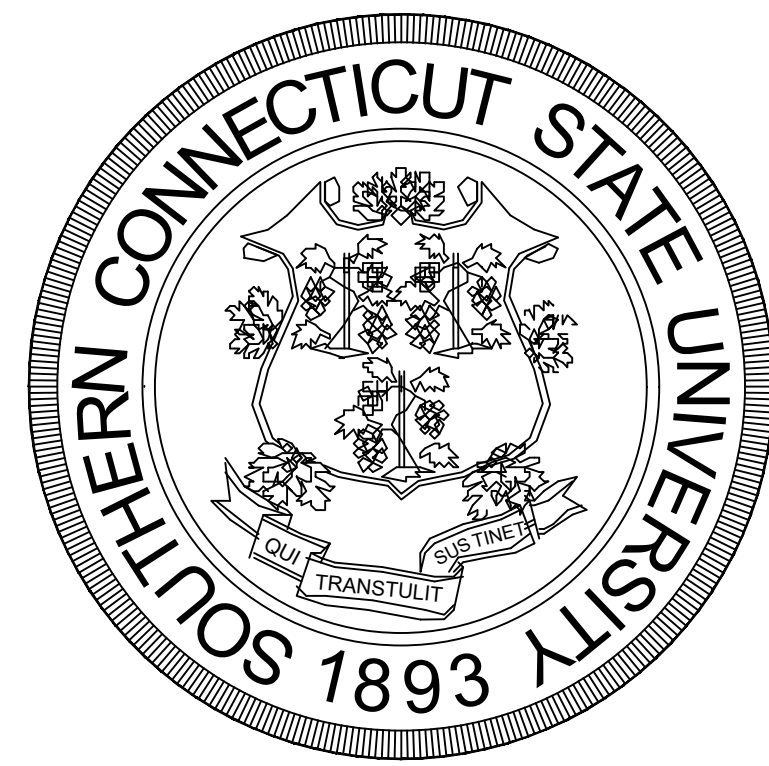


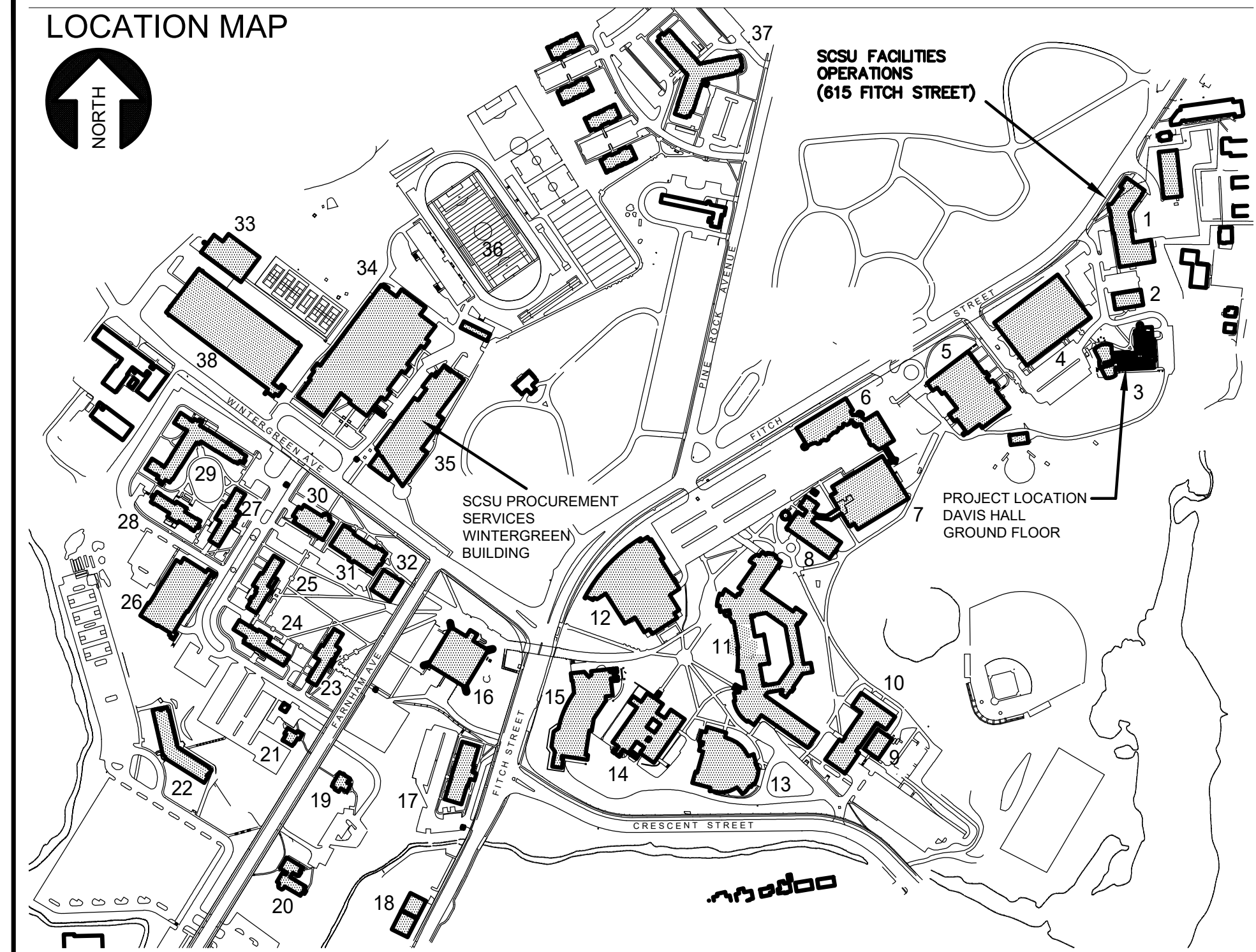
SOUTHERN CONNECTICUT STATE UNIVERSITY



JOE BERTOLINO
PRESIDENT
DAVIS HALL

GROUND FLOOR RENOVATIONS - 2023

PROJECT NO. SCSU-2023-02



BUILDING NUMBER	WEST CAMPUS
16	CONNECTICUT HALL - FOOD SERVICE
17	SCHWARTZ HALL - RESIDENCE HOUSING OFFICE
18	ETHNIC HERITAGE CENTER
19	ALUMNI HOUSE
20	LANG HOUSE - DEPARTMENT OF SOCIAL WORK
21	ORLANDO HOUSE - DEPARTMENT OF PUBLIC HEALTH
22	BROWNELL HALL - RESIDENCE HALL
23	FARNHAM HALL - RESIDENCE HALL
24	WILKINSON HALL - RESIDENCE HALL
25	CHASE HALL - RESIDENCE HALL
26	WEST CAMPUS PARKING GARAGE
27	HICKERSON HALL - RESIDENCE HALL
28	NEFF HALL - RESIDENCE HALL
29	WEST CAMPUS RESIDENCE COMPLEX
30	UNIVERSITY POLICE & GRANOFF STUDENT HEALTH CENTER
31	OFFICE BUILDING 1
32	TEMPORARY BUILDING 6

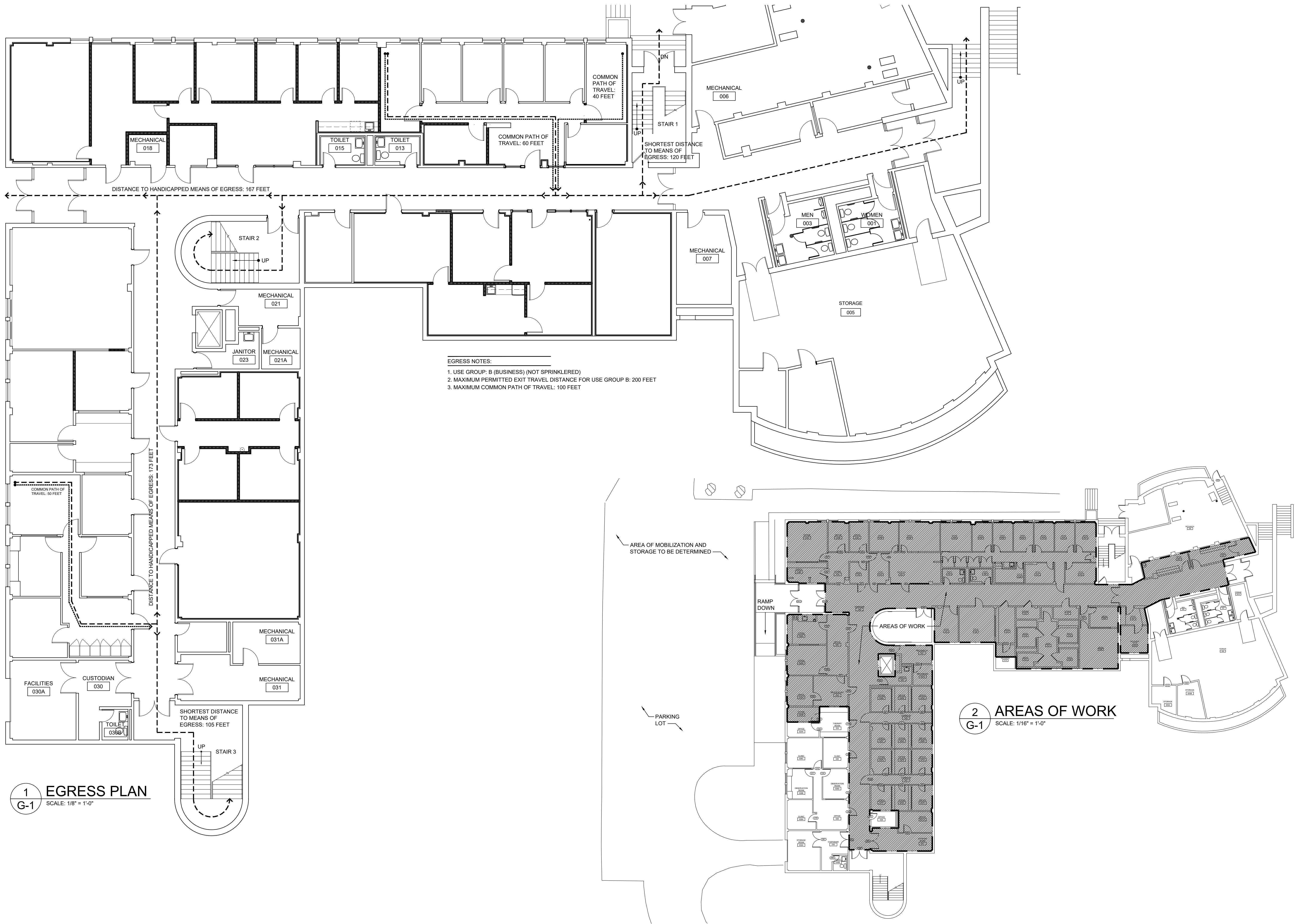
BUILDING NUMBER	EAST CAMPUS
1	FACILITIES OPERATIONS
2	NURSING CLASSROOM BUILDING
3	DAVIS HALL
4	FITCH STREET PARKING GARAGE
5	PELZ GYMNASIUM
6	ACADEMIC SCIENCE AND LABORATORY
7	JENNINGS HALL
8	MORRILL HALL
9	TE-8 CLASSROOM BUILDING 8
10	SCHOOL OF BUSINESS
11	ENGLEMAN HALL
12	BULEY LIBRARY
13	LYMAN CENTER FOR THE PERFORMING ARTS
14	EARL HALL
15	ADANTI STUDENT CENTER

BUILDING NUMBER	NORTH CAMPUS
33	ENERGY CENTER
34	MOORE FIELD HOUSE
35	WINTERGREEN BUILDING
36	MESS BOWFIELD
37	NORTH CAMPUS RESIDENCE COMPLEX
38	WINTERGREEN AVENUE GARAGE

FUSS & O'NEILL
 146 HARTFORD ROAD
 MANCHESTER, CONNECTICUT 06040
 860.646.2469
 www.fando.com

SOUTHERN CONNECTICUT STATE UNIVERSITY FACILITIES PLANNING DEPARTMENT / OFFICE OF FACILITIES OPERATIONS / 615 FITCH STREET, HAMDEN, CT 06514 / UNIVERSITY REPRESENTATIVE: PETER J. VISENTIN AIA, TEL: (203) 392-6055, FAX: (203) 392-6058

<p>BUILDING CODE INFORMATION (FOR EXISTING BUILDING)</p> <p>2022 CONNECTICUT STATE BUILDING CODE (INCLUDES THE FOLLOWING ADOPTED MODEL CODES AND AMENDMENTS TO...) 2021 INTERNATIONAL BUILDING CODE (IBC) 2017 ICC A117.1 STANDARD FOR ACCESSIBLE AND USABLE BUILDING AND FACILITIES 2021 INTERNATIONAL EXISTING BUILDING CODE 2021 INTERNATIONAL PLUMBING CODE 2021 INTERNATIONAL MECHANICAL CODE 2021 INTERNATIONAL ENERGY CONSERVATION CODE 2020 NFPA 70, NATIONAL ELECTRICAL CODE</p> <p>2018 CONNECTICUT STATE FIRE SAFETY CODE (INCLUDES THE FOLLOWING ADOPTED MODEL CODES AND AMENDMENTS TO...) 2015 INTERNATIONAL FIRE CODE 2015 NFPA 101, LIFE SAFETY CODE OF THE NATIONAL FIRE PROTECTION ASSOCIATION</p> <p>2018 CONNECTICUT STATE FIRE PREVENTION CODE (INCLUDES THE FOLLOWING ADOPTED MODEL CODES AND AMENDMENTS TO...) 2015 NFPA 1, FIRE CODE OF THE NATIONAL FIRE PROTECTION ASSOCIATION</p>	<p>BUILDING INFORMATION</p> <p>EXISTING BUILDING: EXISTING OCCUPANCY CLASSIFICATION: GROUP B (BUSINESS) BUILDING HEIGHT AND AREA: HEIGHT: 3 STORIES, 48 FEET TOTAL FLOOR AREA: 49,614 SQ. FT. FIRST FLOOR AREA: 16,550 SQ. FT. (LOCATION OF WORK) ORIGINAL 1969</p> <p>CONSTRUCTION DATE: CONSTRUCTION TYPE: IIB FIRE PROTECTION AND ALARM: EXISTING AUTOMATIC FIRE DETECTION AND ALARM SYSTEM NO AUTOMATIC SPRINKLER SYSTEM</p>	<p>GENERAL NOTES</p> <ol style="list-style-type: none"> THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS AND DIMENSIONS. ANY DISCREPANCIES MUST BE REPORTED AND REVIEWED BY THE CONTRACTOR AND THE UNIVERSITY REPRESENTATIVE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD VERIFICATION AND COORDINATION REQUIRED FOR SHOP DRAWING ACCEPTANCE. EXISTING CONSTRUCTION TO REMAIN, WHICH IS REMOVED AND/OR ALTERED IN ORDER TO FACILITATE OR ACCESS OTHER WORK, SHALL BE REPAIRED AND FINISHED TO ITS ORIGINAL CONDITION PRIOR TO THOSE ALTERATIONS. CONTRACTOR IS TO USE APPROPRIATE MEANS AND METHODS TO PROTECT ALL EXISTING SURFACES, MATERIALS AND FINISHES TO REMAIN. IF DAMAGE IS INCURRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL PATCH AND/OR REPAIR DAMAGES TO SCSU CAMPUS STANDARDS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL ABOVE CEILING WORK AND SHALL REVIEW THE COMPLETE PLANS IN ORDER TO ANTICIPATE AND RESOLVE POTENTIAL CONFLICTS WITH SYSTEMS AND STRUCTURE (NEW AND EXISTING) PRIOR TO INSTALLATIONS. DEMOLISH AND REMOVE ABANDONED TELEPHONE AND NETWORK CABLING ABOVE CEILING IN ALL AREAS (TO BE IDENTIFIED BY OWNER). PATCH HOLES WHERE FASTENINGS HAVE BEEN REMOVED AS PART OF THE DEMOLITION AT LOCATIONS WHERE THESE HOLES WILL REMAIN EXPOSED. PATCH TO MATCH ADJACENT EXISTING FINISH AND/OR MATERIAL. FIRE-STOP ELECTRICAL CONDUIT PENETRATIONS OF CONCRETE FLOOR SLABS. INSTALLATION ASSEMBLY SHALL PROVIDE AN APPROVED THROUGH PENETRATION THAT HAS BEEN LISTED IN ACCORDANCE WITH ASTM E814. SEAL AROUND CONDUIT WITH UL LISTED FIRE-STOPPING MATERIAL WITH A RATING EQUAL TO OR GREATER THAN THAT OF THE FLOOR CONSTRUCTION. AT ALL FLOOR AREAS TO RECEIVE NEW FINISHES, PROVIDE FLOOR FILLER FOR 100 PERCENT OF AREA. FILLER MATERIAL TO BE APPROVED SUBSTANCE BY FINISH FLOORING MANUFACTURER. DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER AND ACCEPTABLE CONSTRUCTION INSTALLATIONS, MANUFACTURER'S APPROVED METHODS, OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ARCHITECT, SHALL BE INCLUDED IN THE WORK IN THE SAME MANNER AS IF HEREIN SPECIFIED OR INDICATED. ALL WORK SHALL BE INSTALLED SO THAT ALL PARTS AND/OR ACCESS REQUIRED FOR INSPECTION, OPERATION, MAINTENANCE AND/OR REPAIR, ARE READILY ACCESSIBLE. CONTRACTOR TO PROVIDE BARRICADES, BARRIERS AND/OR SECURITY AROUND WORK AREAS AS REQUIRED TO PREVENT UNAUTHORIZED PERSON(S) FROM ENTERING AREAS OF WORK, MATERIAL STORAGE OR STAGING AND HAS THE SOLE RESPONSIBILITY FOR PROTECTING ALL DANGEROUS AREAS FROM ENTRY BY UNAUTHORIZED PARTIES. CONTRACTOR SHALL KEEP WORK SITE FREE FROM DEBRIS AND ACCUMULATED REFUSE. CONSTRUCTION SITE AND PATHS OF TRAVEL FOR MATERIALS AND CREW, SHALL BE LEFT BROOM CLEAN AT THE END OF EACH WORKING DAY. REPLACE ALL LANDSCAPING DISTURBED OR DESTROYED DURING THE WORK OF THE CONTRACT WITH NEW TO MATCH EXISTING. THIS INCLUDES SOFTSCAPES SUCH AS VEGETATION WHICH INCLUDES, BUT IS NOT LIMITED TO, TREES, SHRUBS, AND OTHER PLANTINGS. GRASS AREAS THAT ARE DAMAGED MUST BE RE-GRADED AND NEW SEED APPLIED. HARDSCAPES SUCH AS WALKWAYS, PAVED AREAS, BOLLARDS, POLES, FENCING, ETC. ARE TO BE REPAIRED OR REPLACED WITH LIKE KIND. 	<p>LIST OF DRAWINGS</p> <p>C1 COVER SHEET, CODE SCOPE, LOCATION MAP AND GENERAL NOTES G1 OCCUPANCY LOAD, SITE INFORMATION AND EGRESS PLAN A1 DEMOLITION PLAN A2 CONSTRUCTION PLAN A3 REFLECTED CEILING PLAN A4a HARDWARE SCHEDULE AND NOTE A4b HARDWARE SCHEDULE AND ELEVATIONS A4c DOOR AND SIDELIGHT DETAILS A5 FINISH PLAN A6 SIGNAGE A7 FURNITURE PLAN</p> <p>M0.01 MECHANICAL GENERAL NOTES M0.02 MECHANICAL SPECIFICATIONS M0.03 MECHANICAL SPECIFICATIONS M0.04 MECHANICAL SPECIFICATIONS MD1.01 DUCTWORK DEMOLITION MD1.02 PIPING DEMOLITION M1.01 DUCTWORK M1.02 PIPING MS.01 MECHANICAL DETAILS MS.02 MECHANICAL DETAILS M6.01 MECHANICAL SCHEDULES</p> <p>P0.01 PLUMBING GENERAL NOTES AND SPECIFICATIONS P0.02 PLUMBING SPECIFICATIONS PD1.01 SANITARY AND VENTING DEMOLITION PD1.02 DOMESTIC WATER DEMOLITION P1.01 SANITARY AND VENTING P1.02 DOMESTIC WATER PIPING P1.03 CONDENSATE PIPING P5.01 PLUMBING DETAILS AND SCHEDULES</p> <p>E0.01 ELECTRICAL SPECIFICATIONS E0.02 ELECTRICAL SPECIFICATIONS E0.03 ELECTRICAL SPECIFICATIONS E0.04 ELECTRICAL SPECIFICATIONS ED1.01 ELECTRICAL DEMOLITION EP1.01 ELECTRICAL POWER EL1.01 ELECTRICAL LIGHTING EF1.01 ELECTRICAL FIRE ALARM ET1.01 ELECTRICAL TELECOMMUNICATIONS F5.01 ELECTRICAL DETAILS</p>	<p>SET NO: DATE: APRIL 7, 2023 SHEET NO: C1</p>
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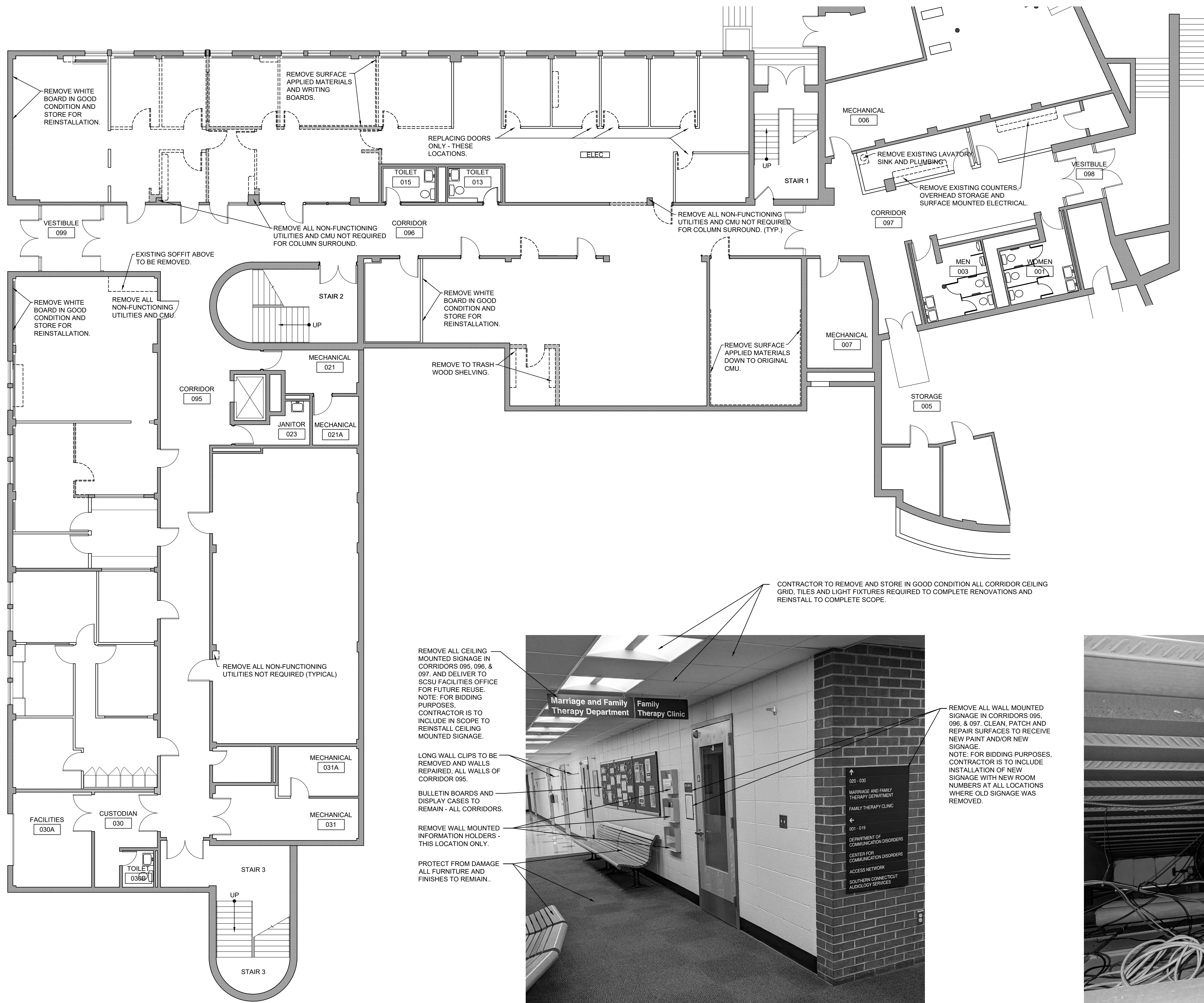
EGRESS NOTES:
 1. USE GROUP: B (BUSINESS) (NOT SPRINKLERED)
 2. MAXIMUM PERMITTED EXIT TRAVEL DISTANCE FOR USE GROUP B: 200 FEET
 3. MAXIMUM COMMON PATH OF TRAVEL: 100 FEET

1
G-1 EGRESS PLAN
 SCALE: 1/8" = 1'-0"

2
G-1 AREAS OF WORK
 SCALE: 1/16" = 1'-0"



GROUND FLOOR RENOVATIONS
GROUND FLOOR - DAVIS HALL



- DEMOLITION LEGEND:**
- EXISTING CONCRETE &/OR CMU CONSTRUCTION TO REMAIN
 - EXISTING STUD WALL AND GYPSUM BOARD CONSTRUCTION TO REMAIN
 - EXISTING CONCRETE &/OR CMU CONSTRUCTION TO DEMOLISHED
 - EXISTING STUD WALL AND GYPSUM BOARD CONSTRUCTION TO DEMOLISHED
 - MISC. ITEMS (SHELVING, WHITE BOARD, ETC.) SECURED TO STRUCTURE THAT ARE TO BE REMOVED - INCLUDING ALL MECHANICAL FASTENERS AND MOUNTING DEVICES.

- DEMOLITION NOTES:**
1. THE PRIMARY PURPOSE FOR DEMOLITION DRAWINGS WITHIN THESE DOCUMENTS ARE TO PRESENT A SCHEMATIC SCOPE OF WORK. CONTRACTOR AND/OR SUBCONTRACTORS ARE TO REVIEW ALL DRAWINGS (INCLUDING M.E.P. DRAWINGS) AND SURVEY EXISTING SITE CONDITIONS TO DETERMINE THE FULL SCOPE OF DEMOLITION REQUIRED FOR THE CONSTRUCTION OF PROJECT.
 2. ALL ITEMS OR METHODS OF DEMOLITION NOT SPECIFICALLY ADDRESSED WITHIN THESE DOCUMENTS BUT ARE DISCOVERED DURING CONSTRUCTION AND WHICH WILL INCREASE THE COST OF THE PROJECT, MUST BE ADDRESSED TO SCSU FACILITIES OPERATIONS PRIOR TO CONTINUANCE OF DEMOLITION.
 3. ALL ITEMS OR METHODS OF DEMOLITION NOT SPECIFICALLY ADDRESSED WITHIN THESE DOCUMENTS BUT ARE DISCOVERED DURING CONSTRUCTION AND WHICH WILL INCREASE THE COST OF THE PROJECT, MUST BE ADDRESSED TO SCSU FACILITIES OPERATIONS PRIOR TO CONTINUANCE OF DEMOLITION.



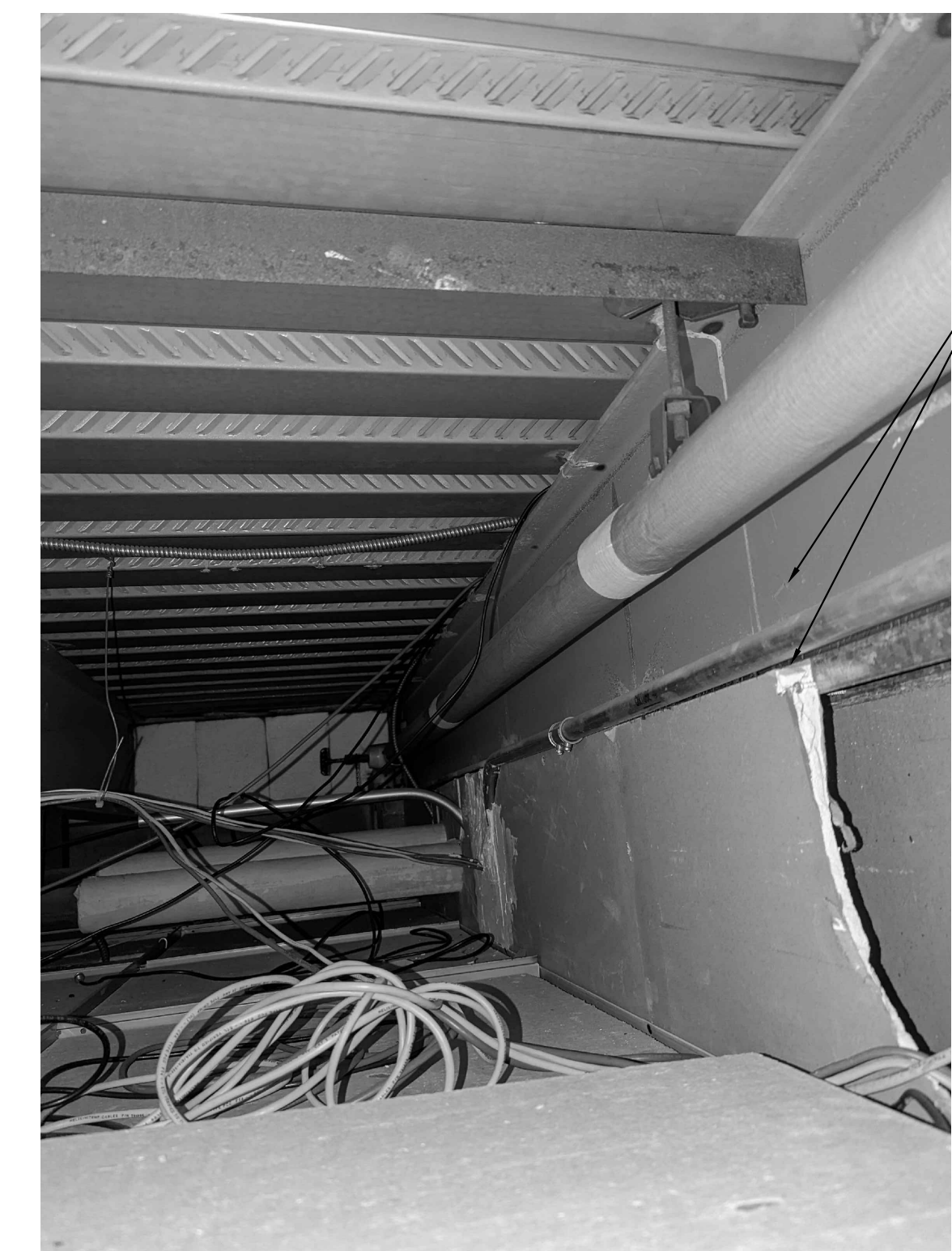
1
A-1 **DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"

2
A-1 **PHOTO: CORRIDOR 095**
NO SCALE

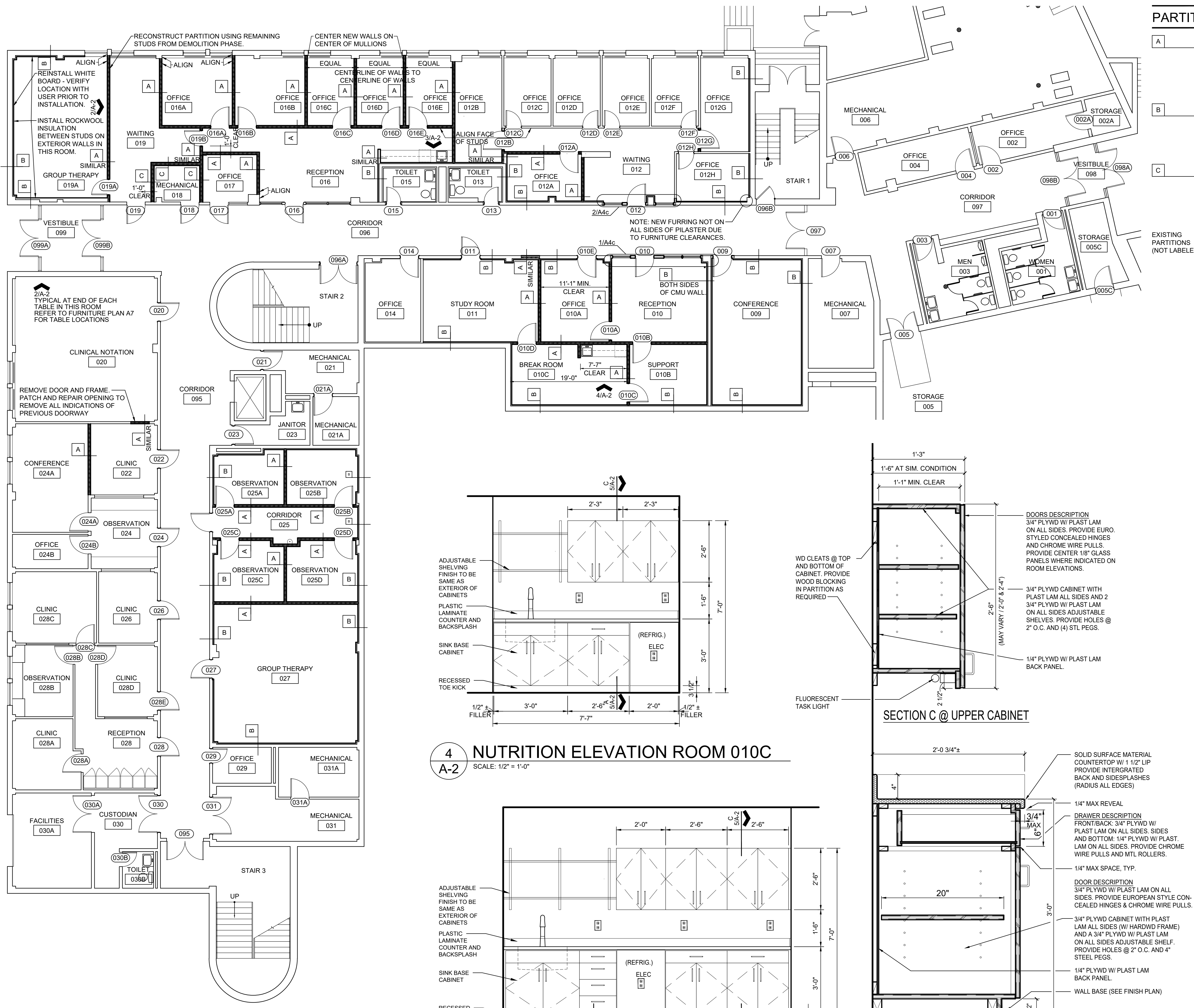


- REMOVE ALL CEILING MOUNTED SIGNAGE IN CORRIDORS 095, 096, & 097, AND DELIVER TO SCSU FACILITIES OFFICE FOR FUTURE REUSE. NOTE: FOR BIDDING PURPOSES, CONTRACTOR IS TO INCLUDE IN SCOPE TO REINSTALL CEILING MOUNTED SIGNAGE.
- LONG WALL CLIPS TO BE REMOVED AND WALLS REPAIRED. ALL WALLS OF CORRIDOR 095.
- BULLETIN BOARDS AND DISPLAY CASES TO REMAIN - ALL CORRIDORS.
- REMOVE WALL MOUNTED INFORMATION HOLDERS - THIS LOCATION ONLY.
- PROTECT FROM DAMAGE ALL FURNITURE AND FINISHES TO REMAIN.

- REMOVE ALL WALL MOUNTED SIGNAGE IN CORRIDORS 095, 096, & 097. CLEAN, PATCH AND REPAIR SURFACES TO RECEIVE NEW PAINT AND/OR NEW SIGNAGE. NOTE: FOR BIDDING PURPOSES, CONTRACTOR IS TO INCLUDE INSTALLATION OF NEW SIGNAGE WITH NEW ROOM NUMBERS AT ALL LOCATIONS WHERE OLD SIGNAGE WAS REMOVED.



2
A-2 **PHOTO: TYPICAL EXISTING CONDITIONS ABOVE CEILINGS**
NO SCALE



PARTITION TYPES:

- A** NEW WALL PARTITIONS ARE 3 5/8" STUDS @ 16" OC WITH ONE (1) LAYER OF 5/8" TYPE X GYPSUM BOARD EACH SIDE OF STUD. BUILD TO UNDERSIDE OF STRUCTURE ABOVE. PROVIDE BATT INSULATION FULL HEIGHT OF PARTITION FOR SOUND ATTENUATION. (4 7/8" NOMINAL WALL THICKNESS)
- B** NEW FURRING PARTITIONS ARE 1 5/8" STUDS @ 16" OC WITH ONE LAYER 5/8" TYPE X GYPSUM BOARD TO 6" ABOVE CEILING HEIGHT. (PROVIDE MINERAL WOOL INSULATION FULL HEIGHT OF FURRING PARTITION WHERE INDICATED ON PLAN.) (2 1/4" NOMINAL WALL THICKNESS)
- C** NEW WALL PARTITIONS ARE 3 5/8" STUDS @ 16" OC WITH TWO (2) LAYERS OF 5/8" TYPE X GYPSUM BOARD EACH SIDE OF STUD. BUILD TO UNDERSIDE OF STRUCTURE ABOVE. PROVIDE BATT INSULATION FULL HEIGHT OF PARTITION FOR SOUND ATTENUATION. (6 1/8" NOMINAL WALL THICKNESS)

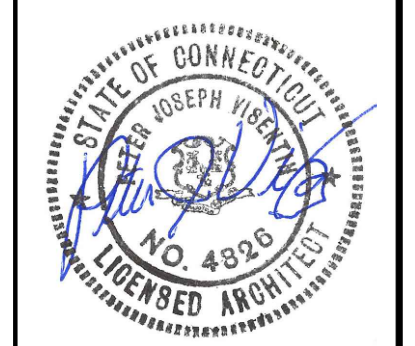
CONSTRUCTION LEGEND:

- EXISTING PARTITIONS TO REMAIN
- NEW PARTITIONS WITH BATT INSULATION
- NEW FURRING PARTITION ON EXISTING
- A** PARTITION TYPE INDICATOR
- XXX** DOOR NUMBER INDICATOR
- ALIGN** ALIGN INDICATOR

CONSTRUCTION NOTES:

1. WRITTEN DIMENSIONS GOVERN AND DRAWINGS ARE NOT TO BE SCALED. DIMENSIONS ARE TAKEN FROM FACE OF PARTITION AND/OR CONSTRUCTION TO RECEIVE FINAL FINISH UNLESS NOTED OTHERWISE. GENERAL CONTRACTOR IS TO FIELD VERIFY ALL JOB CONDITIONS, DIMENSION AND DETAILS PRIOR TO CONSTRUCTION.
2. FOR DIMENSIONS NOT FOUND ON FLOOR PLANS, G.C. IS TO FIRST REFER TO ELEVATIONS (INTERIOR, DOOR, ETC.) FOR INFORMATION BEFORE CONTACTING ARCHITECT.
3. GENERAL CONTRACTOR IS TO PROVIDE BLOCKING PARTITIONS FOR ALL WALL MOUNTED ITEMS, INCLUDING BUT NOT LIMITED TO EQUIPMENT, FURNISHINGS, ETC.
4. GENERAL CONTRACTOR IS TO PROVIDE SHOP DRAWINGS FOR ARCHITECT'S APPROVAL FOR ALL FINISHES, MILLWORK, DOORS, HARDWARE, ETC. PRIOR TO FABRICATIONS AND/OR PURCHASING.
5. REFER TO PHOTO 3/A1 FOR EXAMPLE OF EXISTING PARTITIONS TAKEN TO UNDERSIDE OF STRUCTURE. NEW PARTITIONS TO REPLICATE CONSTRUCTION METHOD.
6. CONTRACTOR TO FIELD VERIFY EXISTING WALL THICKNESSES TO REMAIN AND NOTIFY ARCHITECT WHEN ANY EXISTING CONDITION HINDERS EXECUTION OF SCOPE OF WORK.

SOUTHERN CONNECTICUT STATE UNIVERSITY
FACILITIES PLANNING DEPARTMENT
 615 FITCH STREET / HAMDEN, CT 06514 / TEL: 203-392-6055



GROUND FLOOR RENOVATIONS
GROUND FLOOR - DAVIS HALL

1 CONSTRUCTION PLAN
SCALE: 1/8" = 1'-0"

3 NUTRITION ELEVATION ROOM 016
SCALE: 1/2" = 1'-0"

5 CABINET DETAILS
SCALE: 1 1/2" = 1'-0"

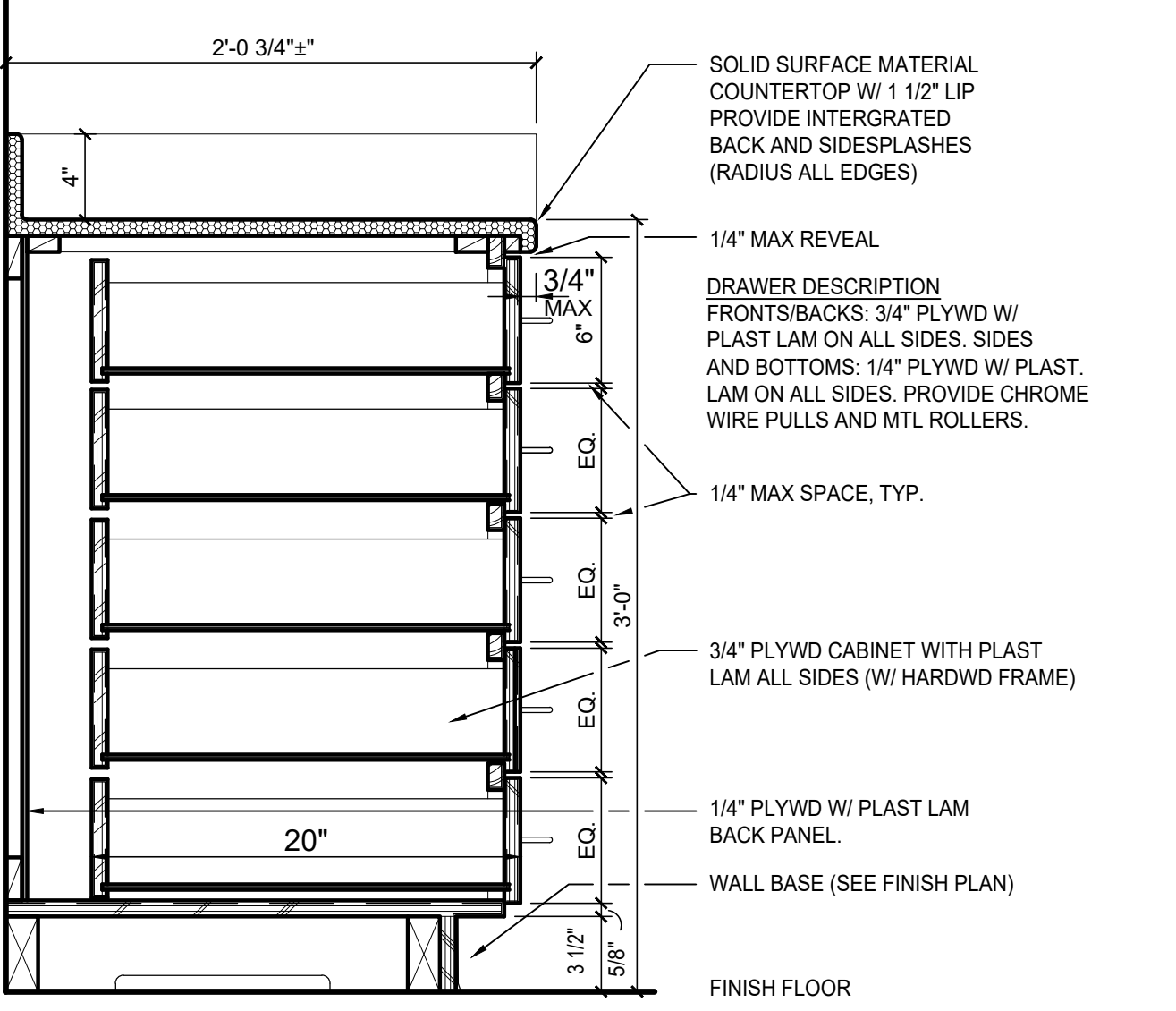
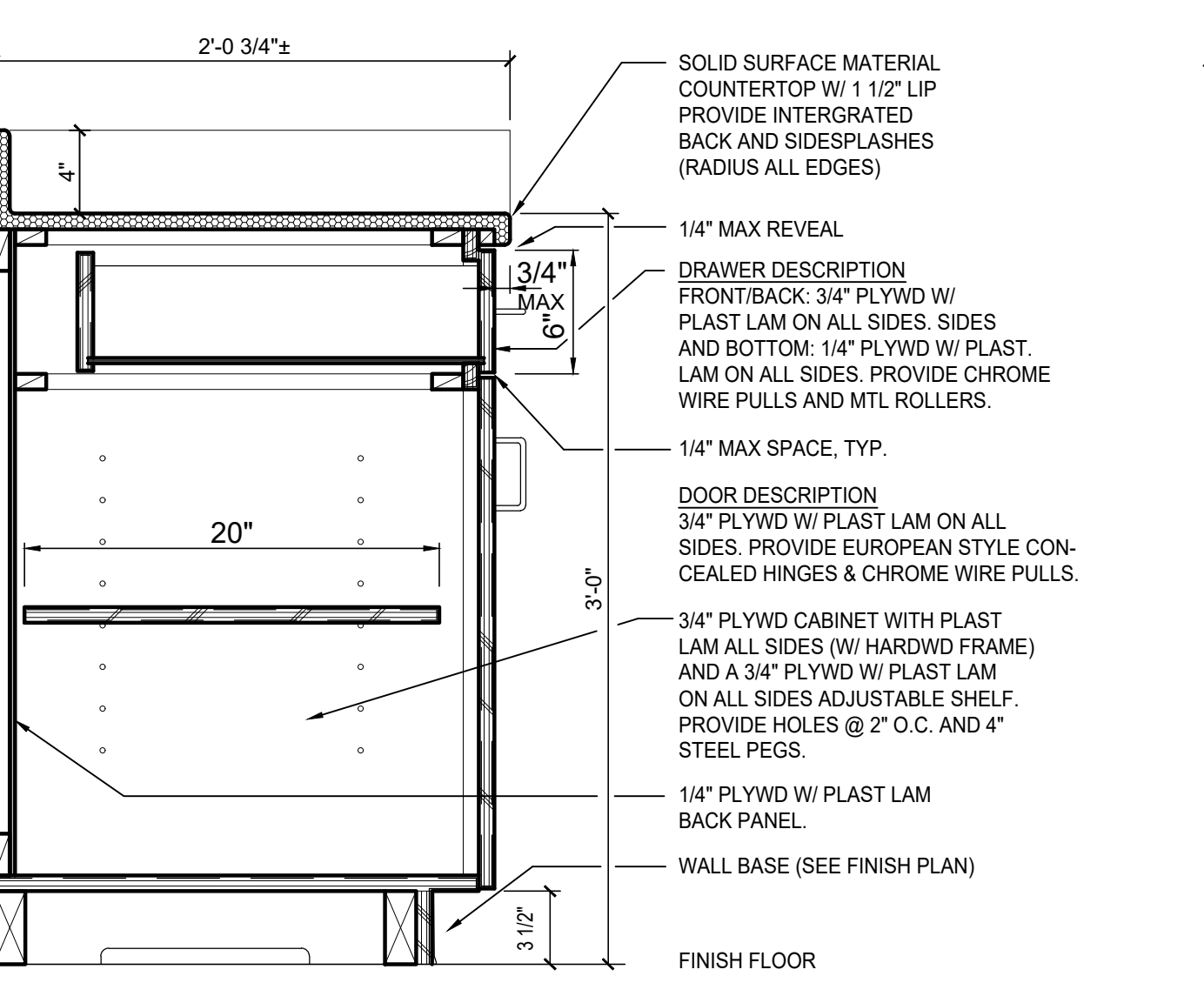
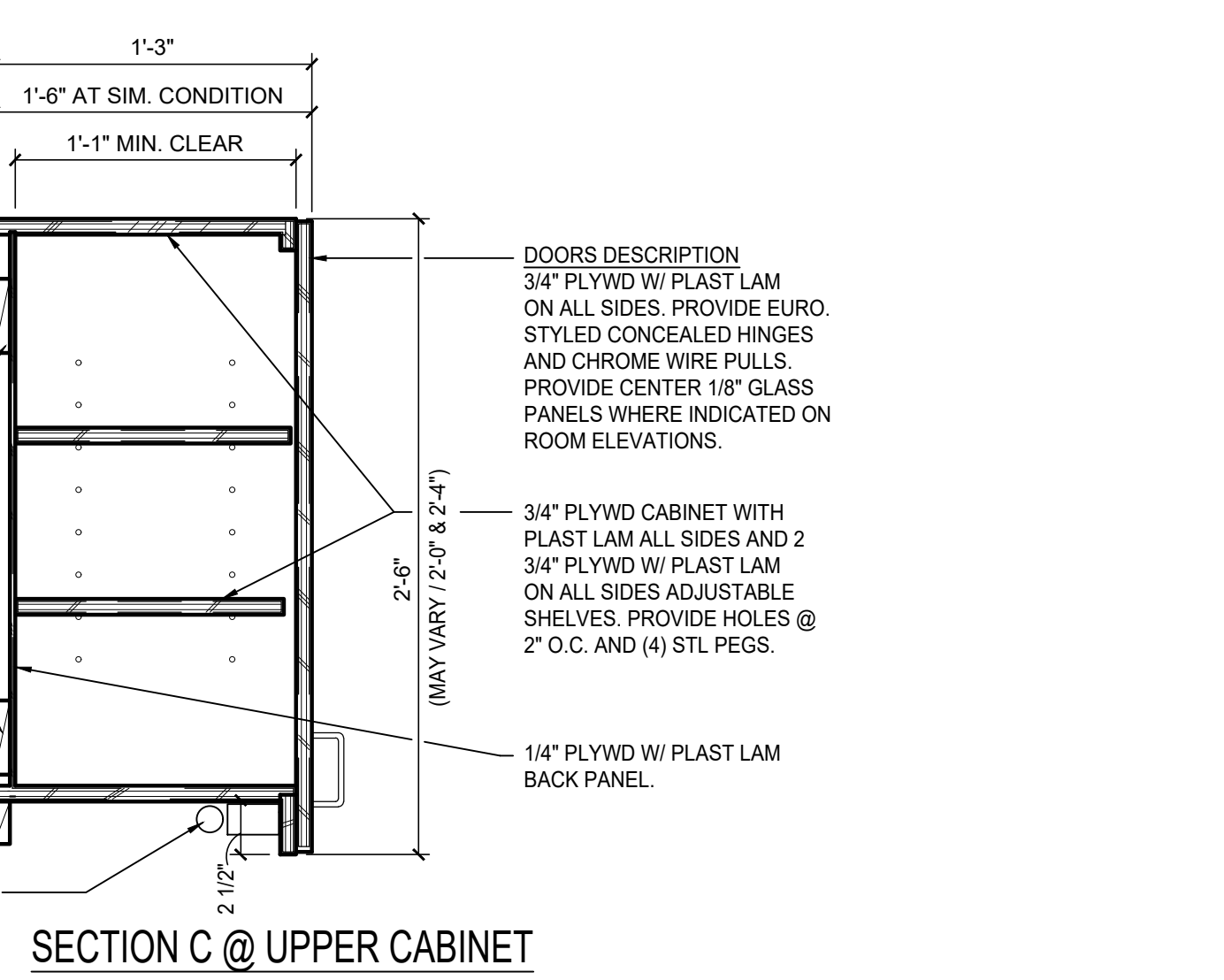
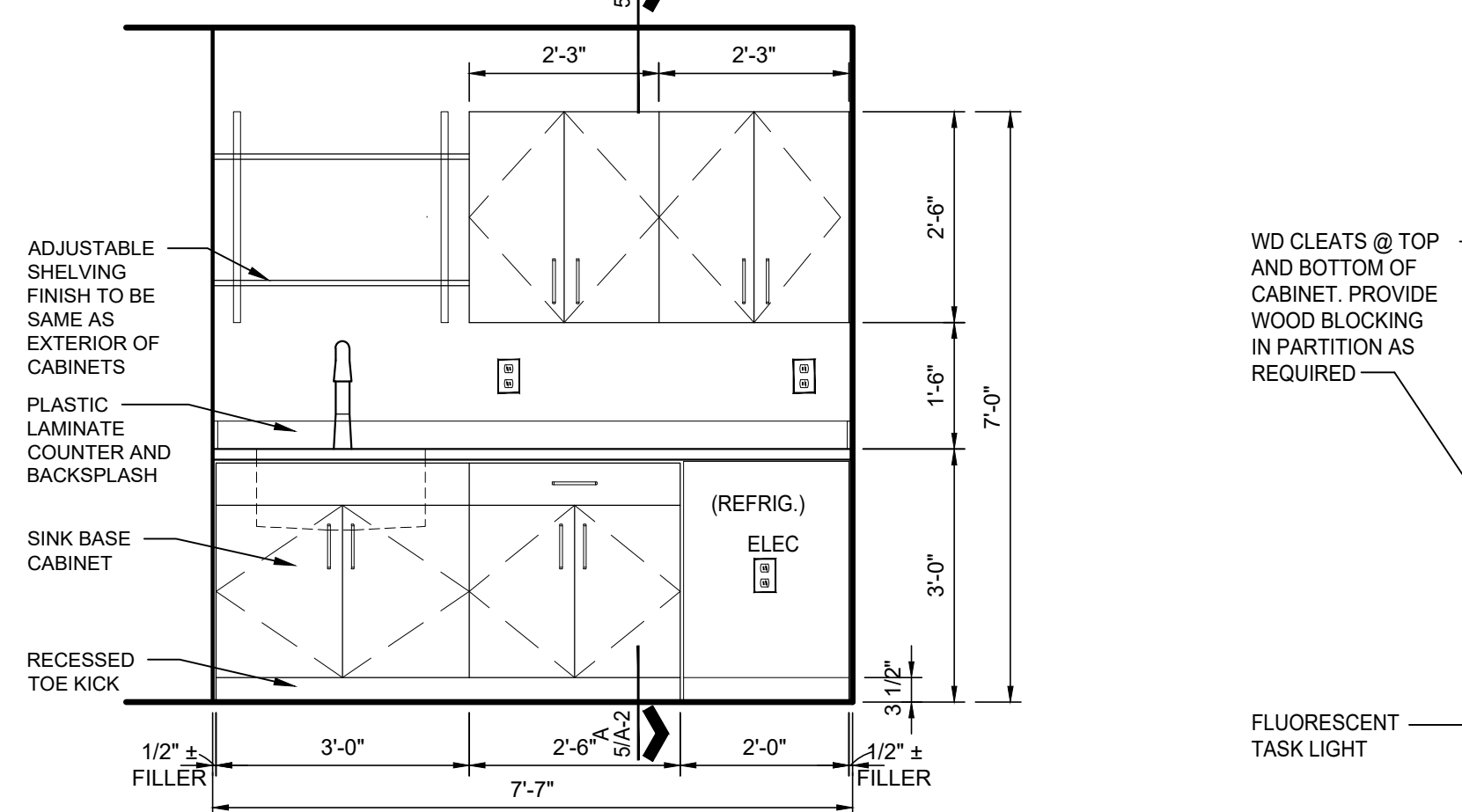
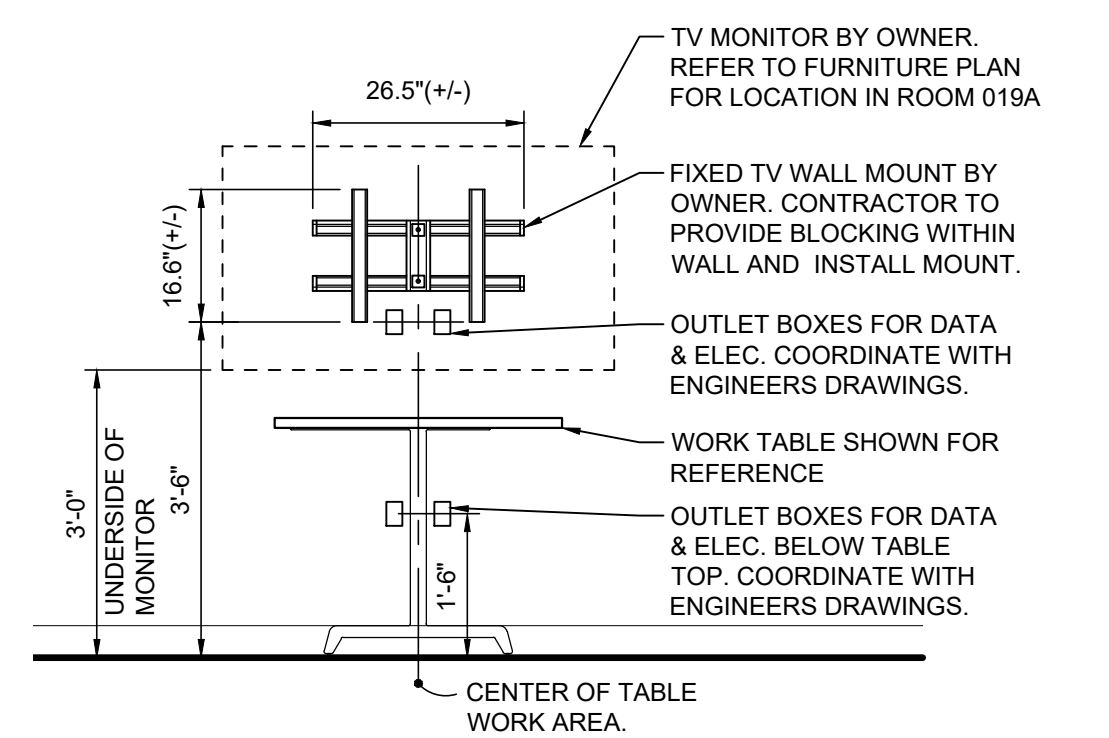
4 NUTRITION ELEVATION ROOM 010C
SCALE: 1/2" = 1'-0"

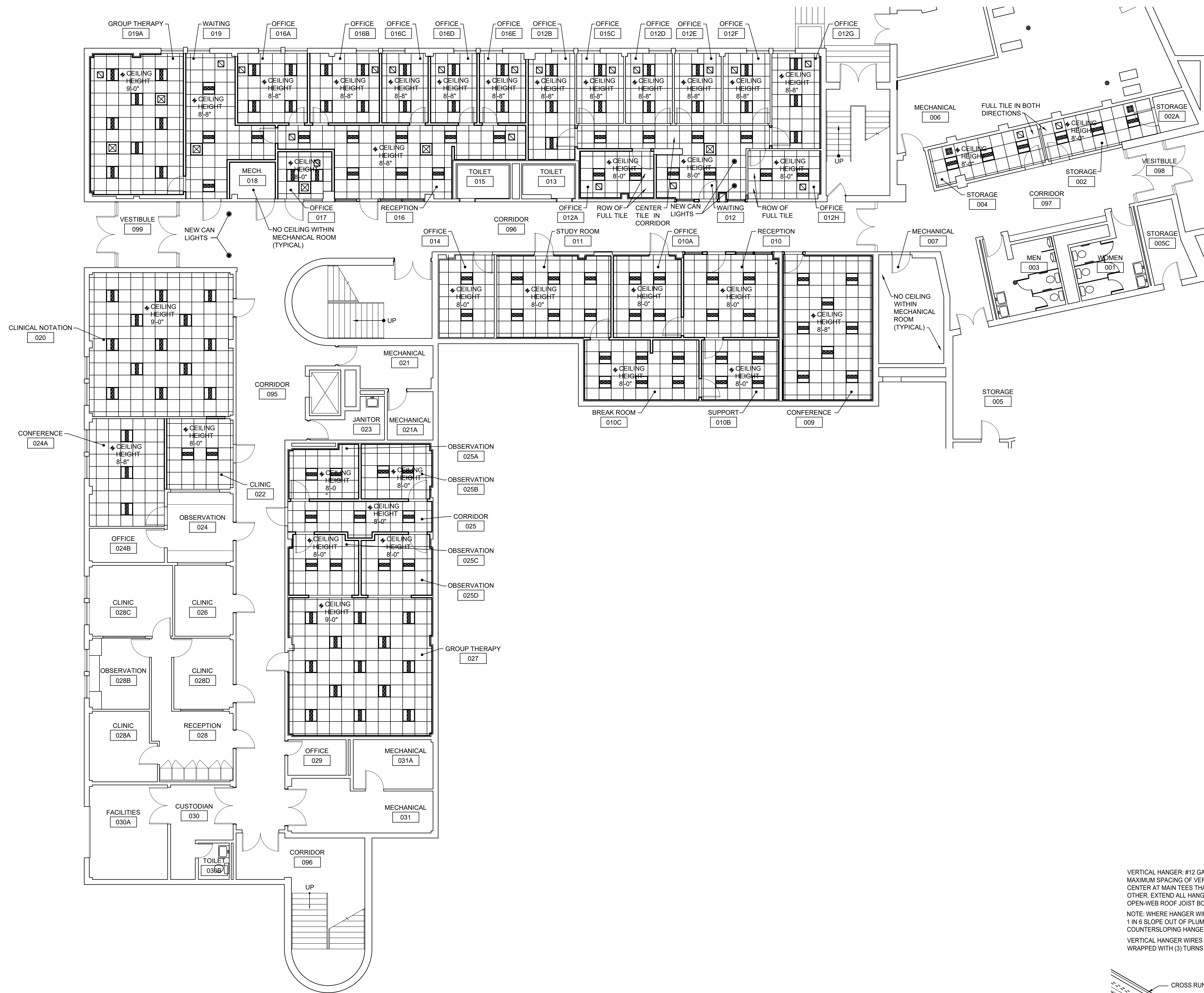
SECTION C @ UPPER CABINET

SECTION A @ BASE CAB. (1-DRWR, 1-DR)

SECTION B @ BASE CAB. (ALL DRWRS)

2 ELEVATION FOR TYPICAL TV &/OR MONITOR MOUNT
SCALE: 1/2" = 1'-0"



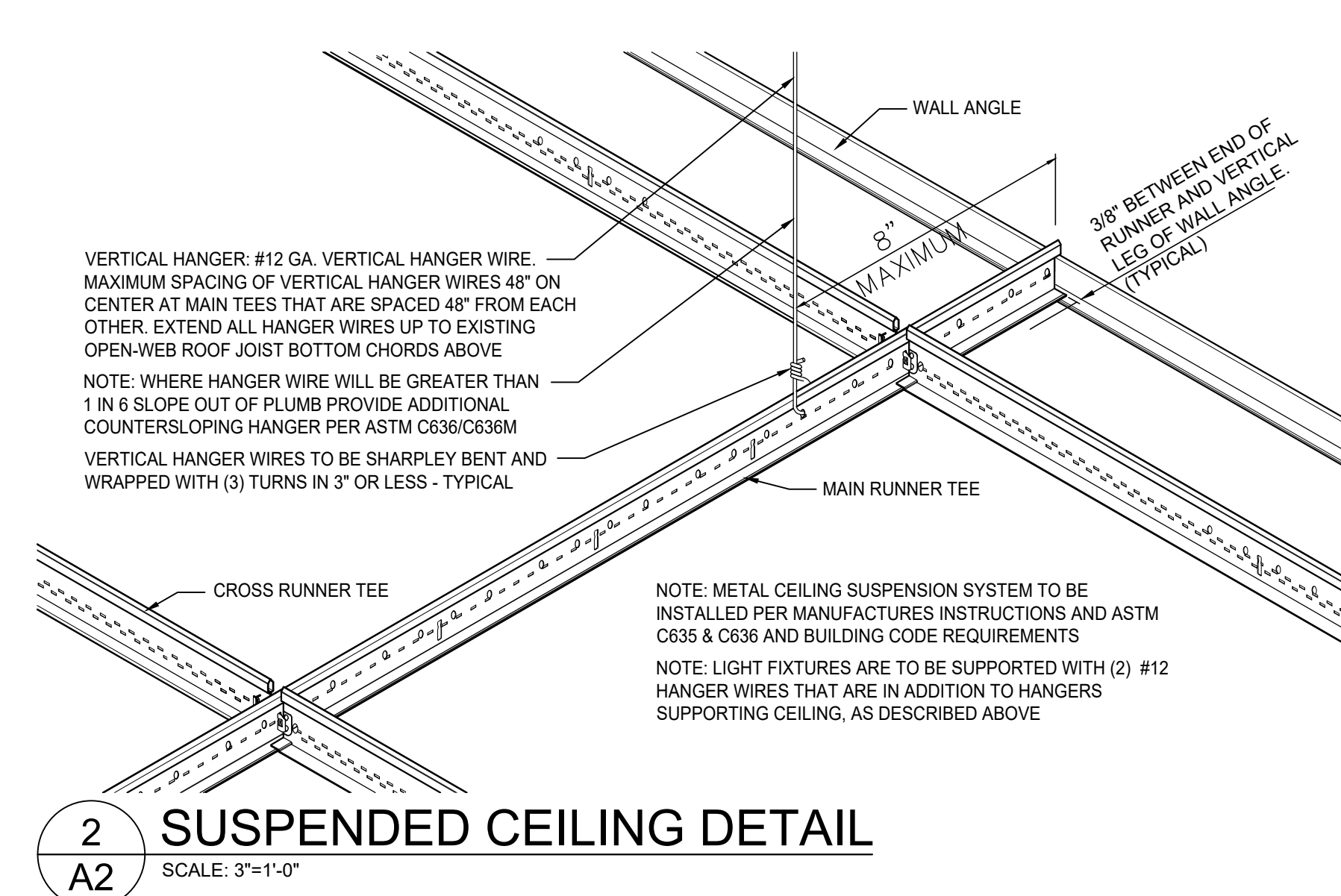


REFLECTED CEILING LEGEND:

- EXISTING 2' X 4' LIGHT FIXTURE TO BE RELOCATED.
- NEW 2' X 2' LIGHT FIXTURE: TO BE METALUX 2X2 MODULE, LED SERIES "OVATION" 4000K MODEL 22RD-UNV-L840-CD1-U WITH INTEGRAL EMERGENCY BATTERY PACK.
- NEW RECESSED CAN LIGHT FIXTURE
- NEW AIR SUPPLY DIFFUSER
- NEW AIR RETURN
- EXHAUST VENTILATION OPERATED VIA LIGHT SWITCH: TO BE NuTone MODEL AERN80K EXHAUSTED INTO ATTIC SPACE.
- OCCUPANCY SENSOR
- SMOKE/FIRE DETECTOR & ALARM
- NEW CEILING GRID AND TILE: TO BE ARMSTRONG / TILE: #180 - 2X2 AND ARMSTRONG GRID & TRIM: HEAVY DUTY PRELUDE XL EXPOSED T

REFLECTED CEILING NOTES:

1. REFER TO ENGINEERS DRAWINGS AND NOTES FOR EQUIPMENT AND FIXTURE DEMOLITION INFORMATION.
2. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CODE COMPLIANT HANGING SYSTEMS FOR LIGHT FIXTURES.
3. IF ANY EXISTING TO REMAIN CEILING COMPONENTS OR EQUIPMENT IS NOT COMPATIBLE WITH NEW AND/OR REPAIRED CEILING SYSTEMS, CONTRACTOR IS TO INFORM SCSU PRIOR TO DEMOLITION.
4. NEW CEILING HEIGHTS NOTED. CONTRACTOR TO VERIFY CEILING HEIGHTS NOTED ON ARCHITECTURAL DRAWINGS AND COORDINATE WITH MECHANICAL DRAWINGS. IF A CEILING HEIGHT NEEDS TO BE ADJUSTED TO ACCOMMODATE MECHANICAL, ELECTRICAL OR PLUMBING INSTALLATIONS, CONTRACTOR IS TO INFORM SCSU FACILITIES PRIOR TO SHOP DRAWING SUBMITTALS.
5. IT IS ACKNOWLEDGED BY SCSU FACILITIES THAT SOME REMOVAL OF CEILING TILES, GRID AND LIGHT FIXTURES WILL NEED TO OCCUR IN MAIN CORRIDORS 95, 96 & 97. (AREAS NOT SHOWN ON ARCHITECTURAL REFLECTED CEILING PLAN.) CONTRACTOR IS TO REMOVE ITEMS AS NEEDED, STORE AND REINSTALL TO COMPLETE SCOPE OF WORK.



1 REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

2 SUSPENDED CEILING DETAIL
SCALE: 3/8" = 1'-0"



DOOR SCHEDULE (PART ONE)

DOOR NUMBER	DOOR TYPE	DOOR MATERIAL	SIZE (W X H)	THICKNESS	FINISH	LABEL	HARDWARE	ROOM NUMBER	ROOM NAME	FRAME TYPE	FRAME MATERIAL	WALL THICKNESS	FRAME FINISH	JAMB DETAIL	REMARKS
001	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	001	WOMEN'S	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
002	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#1	002	OFFICE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
002A	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#5	002A	STORAGE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
003	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	003	MEN'S	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
004	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#1	004	OFFICE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
005	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	005	STORAGE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
005A	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	005A	STORAGE	EXISTING TO REMAIN	METAL	-----	-----		
005B	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	005B	STORAGE	EXISTING TO REMAIN	METAL	-----	-----		
005C	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	005C	STORAGE	EXISTING TO REMAIN	METAL	-----	-----		
006	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	006	MECHANICAL	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
007	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#6	007	MECHANICAL	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
008	(NOT USED)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
009	TYPE B	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	009	CONFERENCE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	APPLY NEW WINDOW FILM
010	TYPE B	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#8	010	RECEPTION	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
010A	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	010A	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	APPLY NEW WINDOW FILM
010B	TYPE A	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#4	010B	SUPPORT	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
010C	TYPE A	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#4	010C	BREAK RM	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
010D	TYPE A	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#1	010C	BREAK RM	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
010E	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#12	010C	BREAK RM	EXISTING TO REMAIN	METAL	-----	NEW PAINT		APPLY NEW WINDOW FILM
011	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#7	011	STUDY	EXISTING TO REMAIN	METAL	-----	NEW PAINT		REPLACE WINDOW FILM WITH NEW
012	TYPE B	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012	WAITING	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
012A	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012A	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
012B	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012B	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
012C	TYPE C	WOOD	2'-6" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012C	OFFICE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
012D	TYPE C	WOOD	2'-6" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012D	CLINIC	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
012E	TYPE C	WOOD	2'-6" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012E	OFFICE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
012F	TYPE C	WOOD	2'-6" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012F	OFFICE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
012G	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012G	OFFICE	1	METAL	4 7/8"	NEW PAINT		
012H	TYPE C	WOOD	2'-6" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	012H	OFFICE	1	METAL	4 7/8"	NEW PAINT		
013	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	013	TOILET	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
014	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#1	014	OFFICE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		REPLACE WINDOW FILM WITH NEW
015	EXISTING TO REMAIN	-----	-----	-----	-----	-----	ETR	015	TOILET	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
016	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#11	016	RECEPTION	EXISTING TO REMAIN	METAL	-----	NEW PAINT		REPLACE GLAZING IN EXISTING DOOR
016A	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	016A	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
016B	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	016B	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
016C	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	016C	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
016D	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	016D	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
016E	TYPE C	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	NONE	#7	016E	OFFICE	1	METAL	4 7/8"	NEW PAINT	JAMB 2 4/A-4c	
017	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#1	017	OFFICE	EXISTING TO REMAIN	METAL	-----	NEW PAINT		
018	TYPE A	WOOD	3'-0" X 7'-0"	1 3/4"	PRE-FINISHED	1 HOUR	#10	018	MECHANICAL	EXISTING TO REMAIN	METAL	-----	NEW PAINT		NEW FIRE RATED DOOR
019	EXISTING TO REMAIN	-----	-----	-----	-----	-----	#2	019	WAITING	EXISTING TO REMAIN	METAL	-----	NEW PAINT		REPLACE WINDOW FILM WITH NEW
DOOR NUMBER	DOOR TYPE	DOOR MATERIAL	SIZE (W X H)	THICKNESS	FINISH	LABEL	HARDWARE	ROOM NUMBER	ROOM NAME	FRAME TYPE	FRAME MATERIAL	WALL THICKNESS	FRAME FINISH	JAMB DETAIL	REMARKS

HARDWARE SCHEDULE

- SET #1 NEW CYLINDER KEY TO BUILDING STANDARD BALANCE OF HARDWARE TO REMAIN
- SET #2 ONE (1) 11U15 LL 626 BALANCE OF HARDWARE TO REMAIN
- SET #3 ONE (1) 11G05 LL 626 NEW KICK PLATE BALANCE OF HARDWARE TO REMAIN
- SET #4 THREE (3) TA2714 4.5X4.5 626 WALL BUMPER
- SET #5 THREE (3) TA2714 626 (FIELD MEASURE SIZE) ONE (1) 11U15 LL 626 ONE (1) 1431 OU (PARALLEL MOUNT) KICK PLATE
- SET #6 ONE (1) 11G04 LL 626 BALANCE OF HARDWARE TO REMAIN
- SET #7 THREE (3) TA2714 4.5X4.5 626 ONE (1) 11G05 LL 626 ONE (1) WALL BUMPER
- SET #8 THREE (3) TA2714 4.5X4.5 626 ONE (1) 11G05 LL 626 ONE (1) 1431 OU (REGULAR MOUNT) ONE (1) 1-XXX OVERHEAD STOP KICK PLATE
- SET #9 THREE (3) TA2714 4.5X4.5 626 ONE (1) 11G04 LL 626 ONE (1) WALL BUMPER
- SET #10 ONE (1) 11G04 LL 626 ONE (1) 1431 OU (PARALLEL MOUNT - 150") KICK PLATE
- SET #11 NEW CYLINDER (KEY TO BUILDING STANDARD) NEW KICK PLATE BALANCE OF HARDWARE TO REMAIN
- SET #12 THREE (3) TA2714 4.5X4.5 626 ONE (1) 11G05 LL 626 ONE (1) 1431 OU (REGULAR MOUNT) KICK PLATE

HARDWARE NOTES:

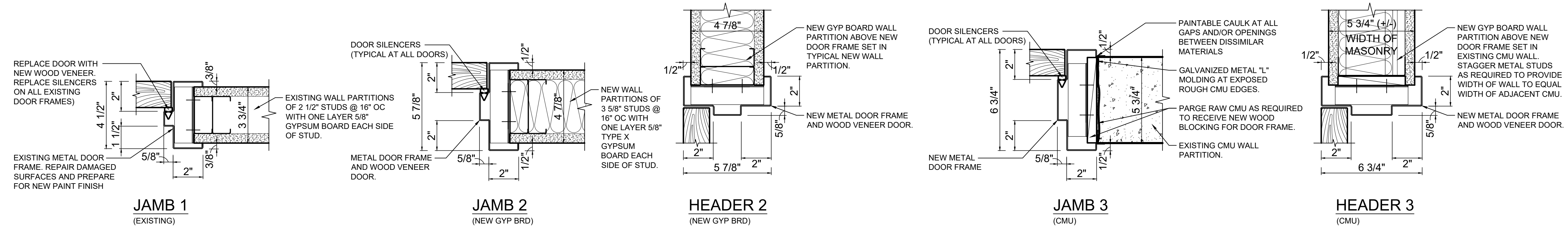
1. GENERAL CONTRACTOR IS TO PROVIDE SHOP DRAWINGS FOR ALL HARDWARE SETS AND ITEMS.
2. KEY ALL CYLINDERS TO BUILDING STANDARDS
3. ALL KICK PLATES TO BE K1050 16"x24" LDW (REPLACE ALL SMALLER KICK PLATES TO MATCH.)
4. ETR = EXISTING TO REMAIN
5. ALL LOCKS AND KEYING ARE TO BE BY SARGENT (SCSU STANDARDS). NO SUBSTITUTIONS ALLOWED.
6. LOCKS TO BE SARGENT 11 LINE WITH 26D FINISH.
7. DOOR STRIKES TO BE 4 3/8" CURVED LIP 808 ANSI.
8. DOOR CLOSERS TO BE SARGENT POWERGLIDE 1431 SERIES WITH SATIN STAINLESS FINISH.
9. CONCEALED DOOR STOPS AND HOLDERS TO BE NORTON RIXSON 1 SERIES, WITH SATIN STAINLESS FINISH.
10. METAL KICK PLATES TO BE ROCKWOOD K1050 WITH US32D/630 FINISH
11. SURFACE APPLIED DOOR STOP TO BE ROCKWOOD 405 WITH US26D/626 FINISH



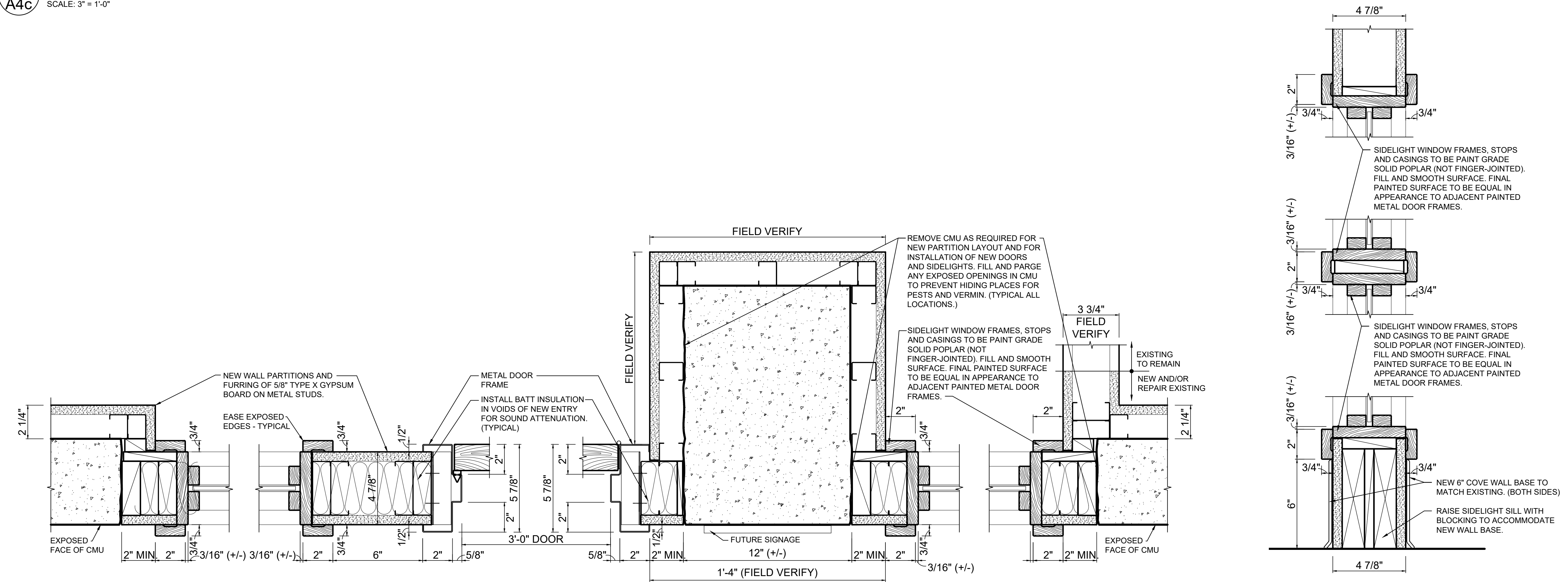
SOUTHERN CONNECTICUT STATE UNIVERSITY
GROUND FLOOR RENOVATIONS
GROUND FLOOR - DAVIS HALL

PROJECT NO.: SCSU-2022-02
 DATE: APRIL 7, 2023
 DRAWING TITLE: **DOOR SCHEDULE LEGEND AND NOTES**
 SCALE: AS NOTED
A-4a

SOUTHERN CONNECTICUT STATE UNIVERSITY
FACILITIES PLANNING DEPARTMENT
 615 FITCH STREET / HAMDEN, CT 06514 / TEL: 203-392-6055

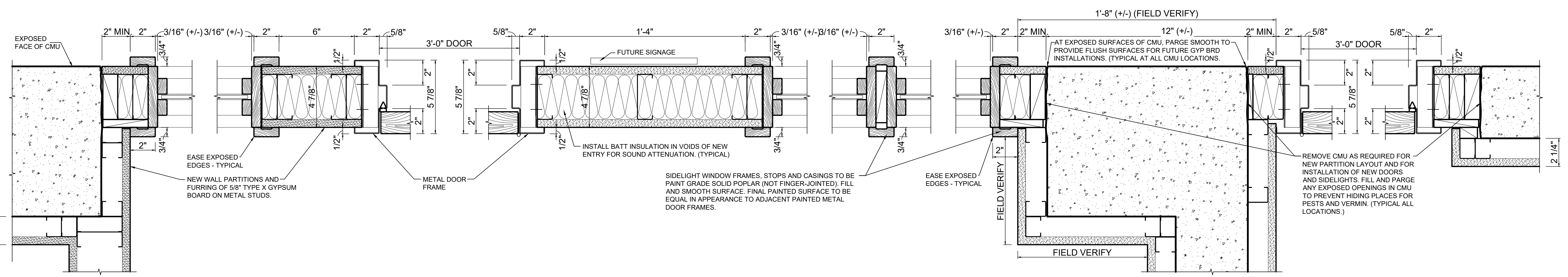


4 DOOR DETAILS
A4c SCALE: 3" = 1'-0"

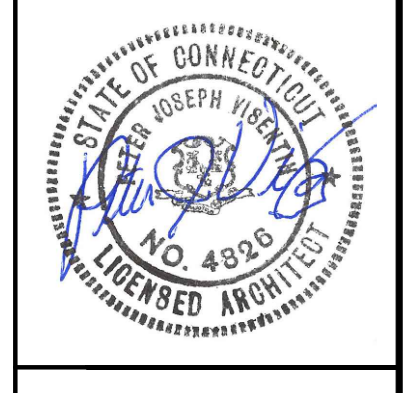


2 SIDELIGHT PLAN SETION ROOM 012
A4c SCALE: 3" = 1'-0"

3 SIDELIGHT SETION ROOM 010 & 012
A4c SCALE: 3" = 1'-0"

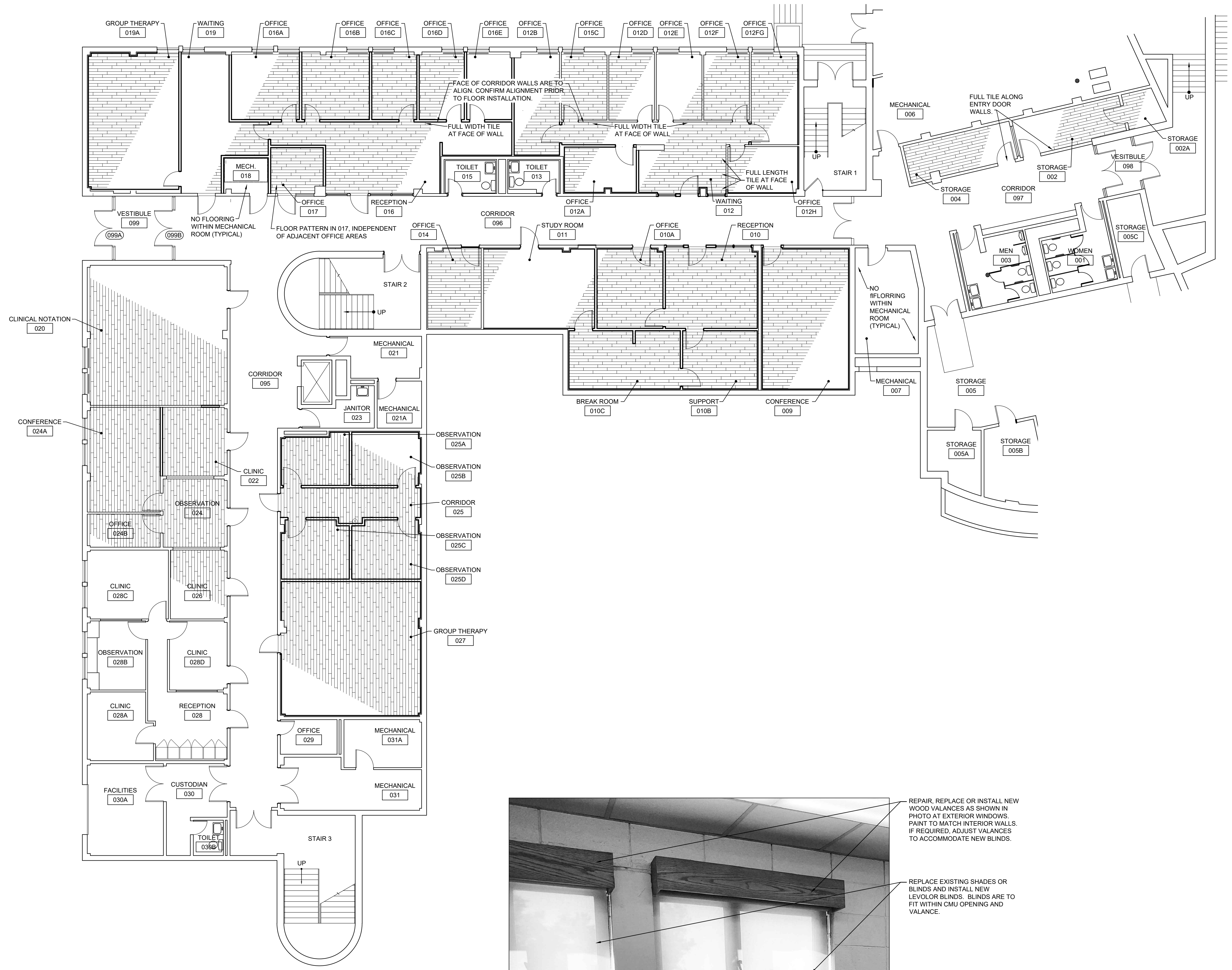


1 SIDELIGHT PLAN SETION ROOM 010
A4c SCALE: 3" = 1'-0"



FINISH SCHEDULE & NOTES:

- WALLS** TO BE PAINTED. MANUFACTURER: BENJAMIN MOORE / COLOR: "SOFT CHAMOIS" #OC-13 / FINISH: EGGSHELL
- METAL SURFACES** (EX. HOUSING FOR WALL HEATERS) TO BE PAINTED. MANUFACTURER: BENJAMIN MOORE / COLOR: "SOFT CHAMOIS" #OC-13 / FINISH: EGGSHELL
- TRIM &/OR DOOR FRAMES** TO BE PAINTED. MANUFACTURER: SHERWIN WILLIAMS / COLOR: "GRAND CANAL" #SW-6488 / FINISH: SEMI-GLOSS.
- FLOORING IN TOILET ROOMS** TO BE LUXURY VINYL TILE (LVT). MANUFACTURER: MOHAWK GROUP / TYPE: SHAW TERRAIN II / STYLE: 20 MIL 6"x48" #0454V / COLOR: PIRCH #00684
- FLOORING ADHESIVE** FOR LVT. MANUFACTURER: MOHAWK GROUP / TYPE: M99
- WALL BASE** TO BE VINYL. MANUFACTURER: JOHNSONITE / TYPE: 6" HIGH COVE / COLOR: "SAGE" #665
- ALL NEW AND REPAIRED SURFACES TO HAVE PRIME COAT PRIOR TO FINISH COATS.
 - ALL NEW AND EXISTING PAINTED SURFACES ARE TO HAVE TWO FINISH COATS OF NEW PAINT.
 - REMOVE EXISTING CARPET IN AREA OF NEW TOILET ROOMS FOR REUSE AND REPAIR ANY DAMAGED AREAS OF EXISTING CARPET TO REMAIN. CONTRACTOR TO CLEAN ALL CARPET AREAS PER SCSU CLEANING STANDARDS.
 - AT ALL EXTERIOR WINDOWS WITHIN SCOPE OF WORK, CONTRACTOR IS TO INSTALL WINDOW BLINDS. MANUFACTURER: LEVOLOR STYLE: RIVERA DUSTGUARD (35 MM) COLOR: TBD FROM MANUFACTURE'S STANDARDS WARRANTY: MANUFACTURE'S "FOREVER NEVER WORRY" MOUNTING: INCLUDE BRACKETS AND MOUNTING SYSTEMS. MOUNT SIMILAR TO EXISTING. REFER TO PHOTO THIS SHEET. OPERATION: PROVIDE EXTRA LONG WAND & CORDS FOR HANDICAPPED ACCESSIBILITY.

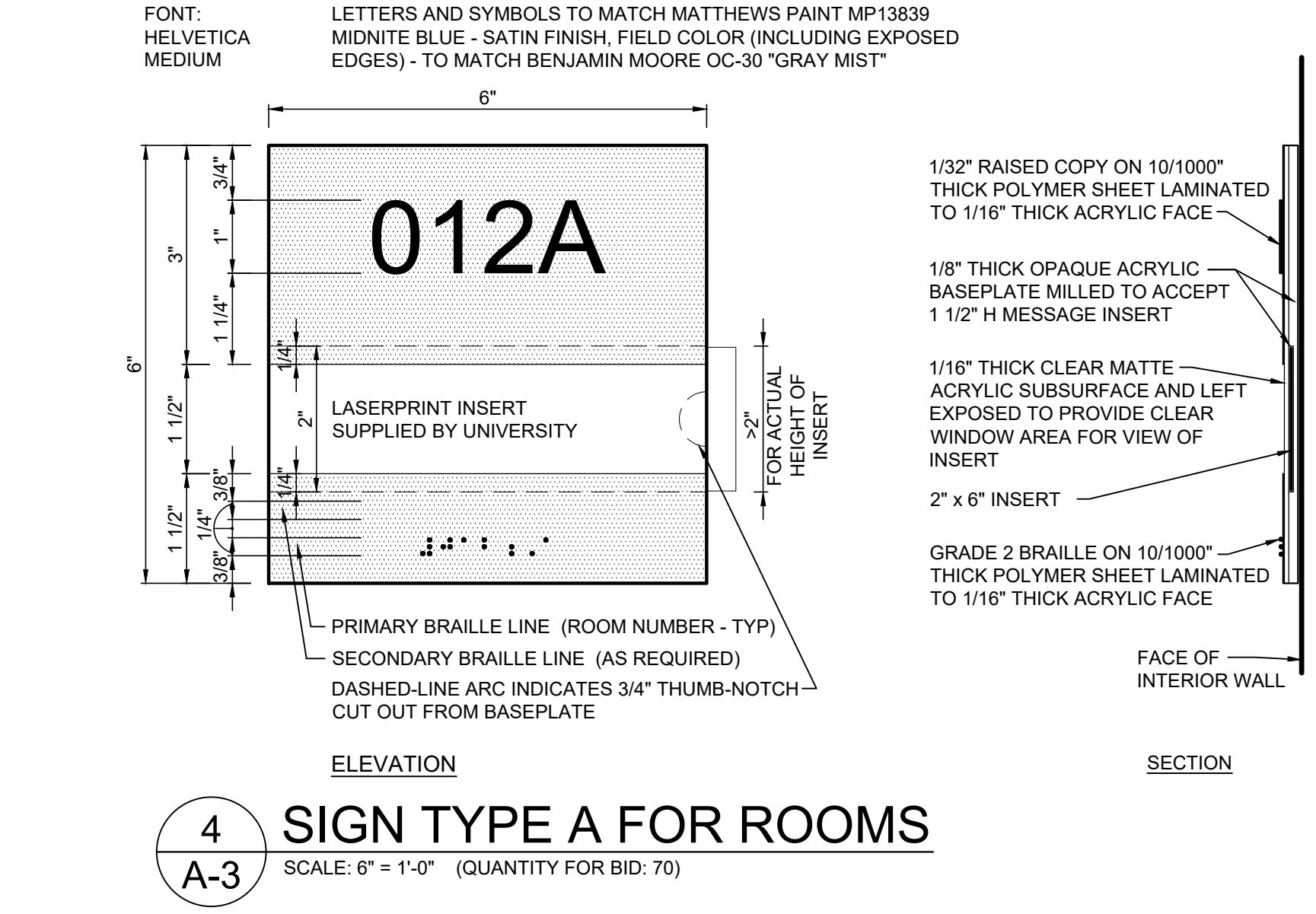
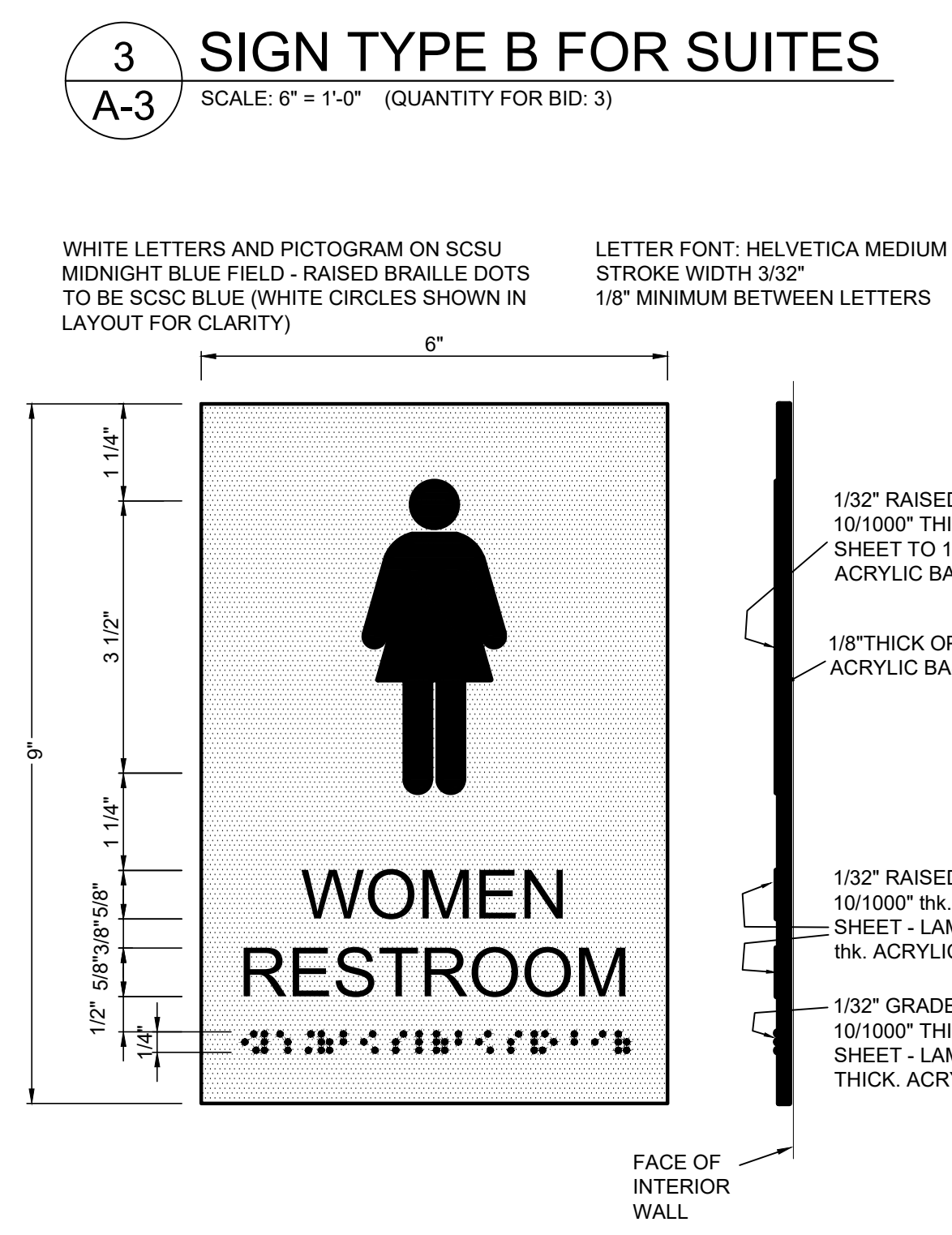
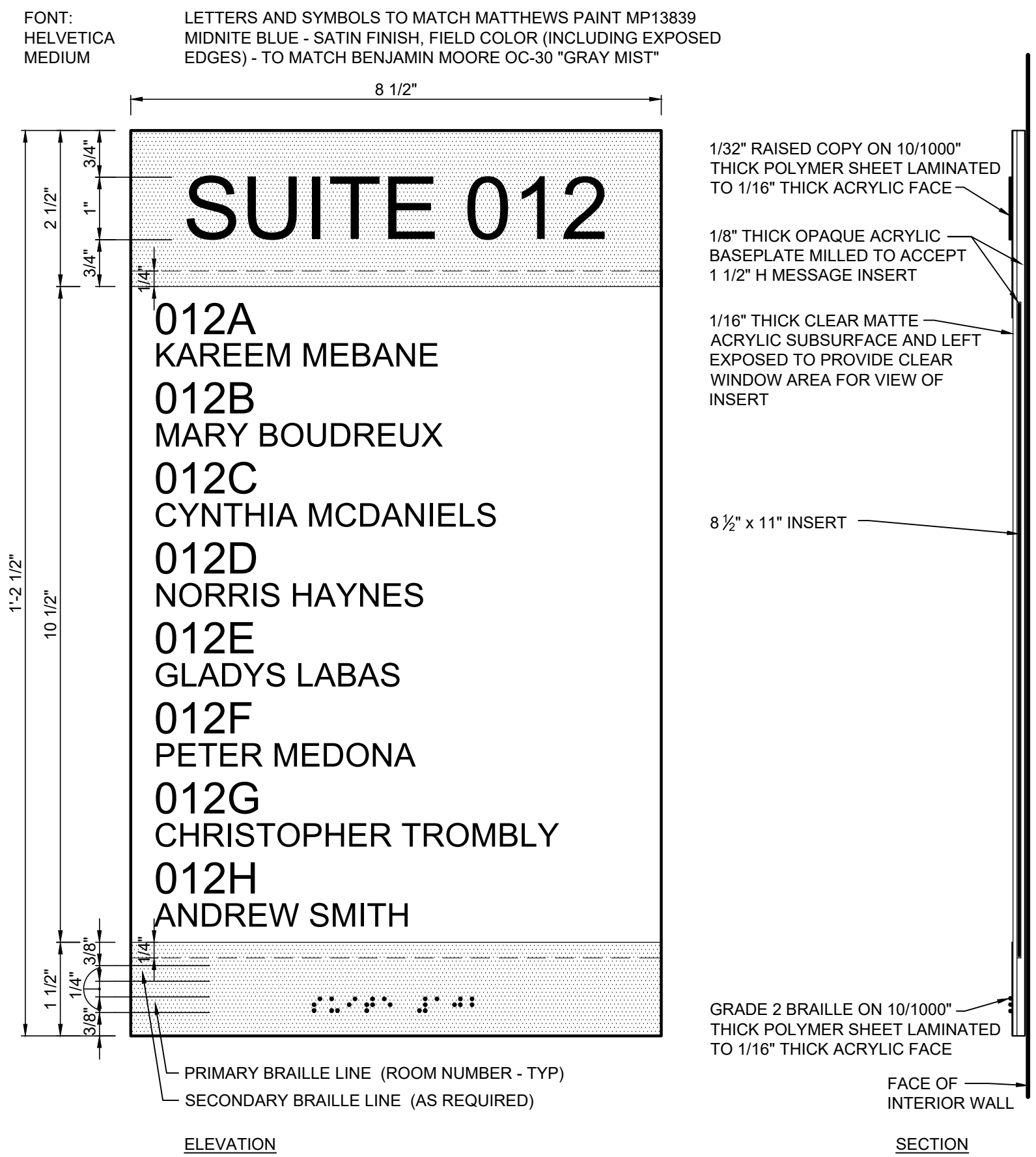
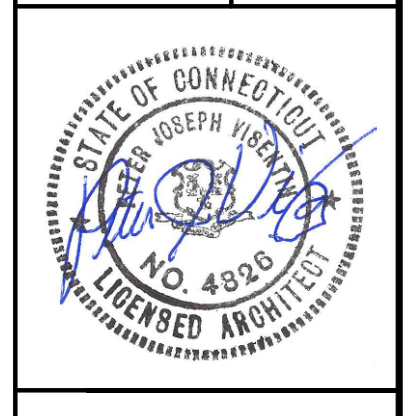


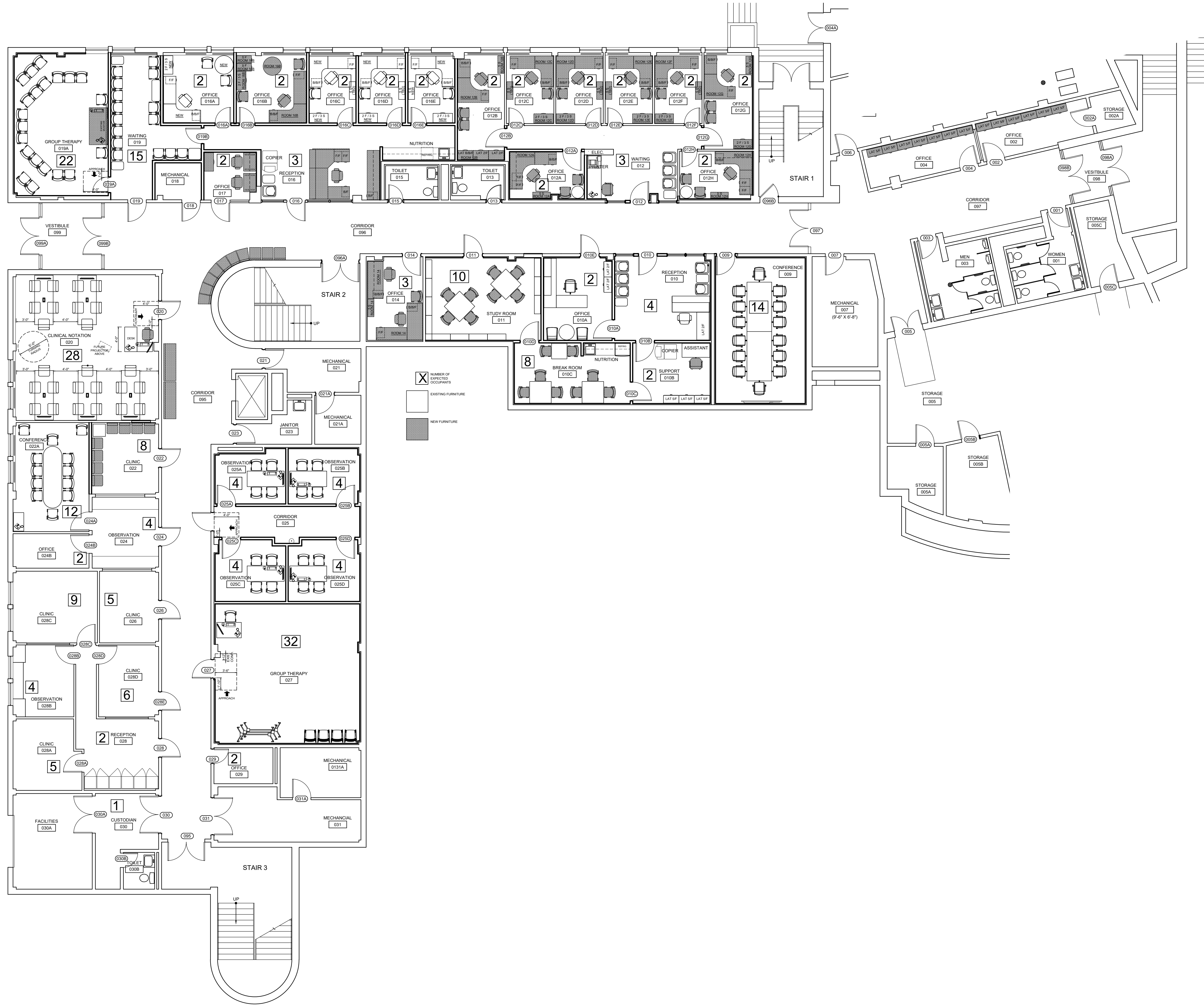
REPAIR, REPLACE OR INSTALL NEW WOOD VALANCES AS SHOWN IN PHOTO AT EXTERIOR WINDOWS. PAINT TO MATCH INTERIOR WALLS. IF REQUIRED, ADJUST VALANCES TO ACCOMMODATE NEW BLINDS.

REPLACE EXISTING SHADES OR BLINDS AND INSTALL NEW LEVOLOR BLINDS. BLINDS ARE TO FIT WITHIN CMU OPENING AND VALANCE.

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

2 PHOTO OF EXISTING/TYPICAL VALANCE
 NO SCALE





1 FURNITURE PLAN
A-7 SCALE: 1/8" = 1'-0"



GROUND FLOOR RENOVATIONS
GROUND FLOOR - DAVIS HALL

REVISION:	PROJECT NO.: SCSU-2022-02
SHEET:	DATE: APRIL 7, 2023
A-7	DRAWING TITLE: FURNITURE PLAN
	SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. THE WORD "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
2. ALL CONTRACTORS SHALL OBTAIN AND REVIEW ALL CONTRACT DOCUMENTS INCLUDING PLANS AND SPECIFICATIONS OF ALL TRADES BEFORE SUBMITTING BID. REFER TO SPECIFICATION AND PLANS, INCLUDING ALL EQUIPMENT SCHEDULES FOR MECHANICAL AND ELECTRICAL ENGINEERING.
3. THE INFORMATION SHOWN ON THE DRAWINGS IS DIAGRAMMATIC, INDICATING THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE LOCATIONS OF EQUIPMENT, AND THEIR ASSOCIATED ACCESS AREAS, WITH ALL TRADES BEFORE STARTING CONSTRUCTION. ANY MODIFICATIONS TO THE EQUIPMENT LAYOUT REQUIRED BY INSTALLATION BY ANY CONTRACTOR SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
4. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL CONFLICTS BETWEEN DRAWINGS AND SPECIFICATIONS, OR BETWEEN CONSTRUCTION DOCUMENTS AND FIELD CONDITIONS. FOR EACH CONFLICT, CONTRACTOR SHALL CARRY THE MORE EXPENSIVE OR LARGER QUANTITY OPTION.
5. SUBMISSION OF PROPOSAL DIRECTLY OR INDIRECTLY IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH HE WILL BE OBLIGATED TO OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING EQUIPMENT LOCATIONS IN THE FIELD, AND SHALL ADVISE THE ENGINEER AND THE OWNER OF ANY DISCREPANCIES BEFORE PERFORMING THE WORK.
7. ALL WORK SHALL CONFORM TO ALL APPLICABLE CURRENT BUILDING CODES, RULES, REGULATIONS AND ORDINANCES, INCLUDING THE ONES WRITTEN BY:
 - 7.1. REGULATORY AUTHORITIES HAVING JURISDICTION.
 - 7.2. OWNER'S INSURANCE CARRIER.
8. CONTRACTOR SHALL SECURE ALL PERMITS AND APPLICATIONS AND PAY ALL FEES PERTAINING TO THE CONTRACT.
9. ALL EQUIPMENT SHALL BE LOCATED IN ACCESSIBLE LOCATIONS WITH CODE OR MANUFACTURER-REQUIRED ACCESS SPACES. IF EQUIPMENT IS INSTALLED IN AN INACCESSIBLE LOCATION THE CONTRACTOR SHALL PROVIDE REQUIRED FIRE-RATED ACCESS DOORS, COORDINATED WITH THE ARCHITECT OR ENGINEER.
10. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE ALL HANGERS AND SUPPORTS REQUIRED FOR A COMPLETE INSTALLATION.
11. EACH CONTRACTOR SHALL COORDINATE THE LOCATION OF THEIR WORK WITH ALL OTHER TRADES BEFORE STARTING CONSTRUCTION. ANY MODIFICATIONS TO THE SYSTEM LAYOUT REQUIRED FOR INSTALLATION SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
12. CONTRACTOR TO RESTORE ANY EXISTING SYSTEMS, DEVICES, FINISHES, ETC., THAT ARE DAMAGED OR ALTERED DUE TO THE NEW WORK, TO ACCEPTABLE CONDITION AS DETERMINED BY THE OWNER AND ENGINEER.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR WORKMEN'S IDENTIFICATION AND BADGING, SITE SAFETY AND FIRE PROTECTION, CONTRACTOR'S LIABILITY INSURANCE, BARRICADES, WARNING SIGNS, TRASH REMOVAL, CUTTING AND PATCHING.
14. CONTRACTOR SHALL SCHEDULE ALL SHUTDOWNS THAT AFFECT UTILITIES AND PORTIONS OF THE BUILDING THAT MUST REMAIN IN OPERATION WITH THE OWNER.
15. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER AND ALL OTHER CONTRACTORS.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING AND PROTECTION OF MATERIALS.
17. CONTRACTOR SHALL PROVIDE LABOR TO RECEIVE, UNLOAD, STORE, PROTECT AND TRANSFER TO POINT OF INSTALLATION, OWNER FURNISHED ITEMS.
18. CONTRACTORS SHALL PROVIDE SLEEVES AND SEALS FOR ALL PIPING OR CONDUIT THAT PENETRATES WALLS OR FLOOR SLABS.
19. WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A LISTED FIRE STOP MATERIAL THAT MEETS ALL OF THE REQUIREMENTS OF THE STATE AND LOCAL BUILDING CODES AND THE LOCAL AUTHORITIES HAVING JURISDICTION. THIS MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUFACTURER TO MAINTAIN THE FIRE RATING OF THE PENETRATED WALL OR FLOOR. THE FIRE-STOP INSTALLING CONTRACTOR SHALL BE CERTIFIED BY THE FIRE-STOPPING SYSTEM MANUFACTURER.
20. CONTRACTOR SHALL SUBMIT SIZE AND LOCATION OF ALL WALL AND FLOOR CORINGS TO STRUCTURAL ENGINEER FOR REVIEW BEFORE INSTALLATION. CONTRACTOR SHALL REPAIR ANY DAMAGE DUE TO CORINGS INSTALLED, AT NO COST TO OWNER. THE DAMAGE REPAIRING SHALL ALSO BE REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER.
21. CONTRACTOR SHALL SUBMIT SIZE AND LOCATION OF ANY PROPOSED STRUCTURAL MEMBER PENETRATIONS TO THE STRUCTURAL ENGINEER FOR REVIEW AND DETAILING BEFORE INSTALLATION. CONTRACTOR SHALL REPAIR ANY DAMAGE DUE TO PENETRATIONS INSTALLED, AT NO COST TO OWNER. THE DAMAGE REPAIRING SHALL ALSO BE REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER.
22. CONTRACTOR AND SUBCONTRACTORS SHALL COLLECTIVELY PREPARE TRADE COORDINATION DRAWINGS IN SUFFICIENT DETAIL TO PREVENT TRADE CONFLICTS IN AREAS OF CONGESTED WORK. THE TRADE COORDINATION DRAWINGS SHALL BE BASED ON SHOP DRAWINGS PREPARED BY ALL MEP TRADES INCLUDING SPRINKLER CONTRACTOR.
23. CONTRACTOR SHALL SUBMIT ONE ELECTRONIC SET OF SHOP DRAWINGS, SUBMITTALS, AND EQUIPMENT CUT SHEET INFORMATION TO THE ENGINEER FOR REVIEW PRIOR TO STARTING ANY WORK.
24. UPON COMPLETION OF CONSTRUCTION CONTRACTOR SHALL SUPPLY THE ENGINEER WITH (1) COMPLETE SET OF ELECTRONIC AS-BUILT DOCUMENTS AND (1) COMPLETE SET OF OPERATIONS AND MAINTENANCE MANUALS, ALL AT CONTRACTOR'S EXPENSE.
25. ALL PIPING AND DUCTWORK LAYOUTS ARE SHOWN IN APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL INSTALL ALL REQUIRED OFFSETS AND TRANSITIONS TO PREVENT INTERFERENCE WITH FIELD CONDITIONS AND TO COORDINATE WITH OTHER TRADES AT NO COST TO THE OWNER.
26. ALL REQUIRED OPENINGS THROUGH WALLS, FLOORS, AND CEILINGS SHALL BE COORDINATED BY THE CONTRACTOR USING ENGINEER AND ARCHITECT REVIEWED & APPROVED EQUIPMENT SHOP DRAWINGS.
27. PROVIDE A VOLUME DAMPER FOR EACH SUPPLY, RETURN, AND EXHAUST AIR TAKE-OFF, AND EVERY DUCT SPLIT OR WYE.
28. PROVIDE A BALANCING VALVE FOR EACH HYDRONIC PIECE OF EQUIPMENT.
29. THE HVAC CONTROL SYSTEM SHALL BE A COMPLETE SYSTEM. EACH HVAC ZONE SHALL BE AT A MINIMUM THERMOSTATICALLY CONTROLLED BY A SENSOR, THERMOSTAT, OR CONTROLLER WHETHER OR NOT ONE IS SHOWN ON THE DRAWINGS.
30. ALL HVAC SYSTEMS SHALL BE TESTED AND BALANCED BY A CERTIFIED (NEBB OR TABB) SUB-CONTRACTOR THAT THE CONTRACTOR CARRIES IN HIS/HER BID PRICE.
31. NO PIPING OR DUCTS SHALL BE INSTALLED OVER ELECTRICAL PANELS, TRANSFORMERS, OR ELEVATOR MACHINE ROOM EQUIPMENT. CONTRACTOR SHALL COORDINATE PIPING AND DUCTWORK WITH ELECTRICAL EQUIPMENT IN FIELD AS PART OF COORDINATION DRAWINGS.
32. PROVIDE SPRING ISOLATED & SEISMICALLY RATED HANGERS FOR EQUIPMENT, DUCTS, AND PIPING ACCORDING TO THE VIBRATION ISOLATION SCHEDULE. INCLUDE DETAILS AND LOCATIONS ON COORDINATION DRAWINGS.
33. PROVIDE AIR VENTS AT ALL HIGH POINTS AND DRAINS AT LOW POINTS.
34. PROVIDE CODE-REQUIRED LIFE/SAFETY DAMPERS FOR EACH DUCT PENETRATION OF RATED CONSTRUCTION.
35. WHEN ROOF ACCESS IS REQUIRED, CONTRACTOR SHALL MAKE PROVISIONS TO PROTECT THE ROOF WARRANTY DURING THE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ROOF DAMAGE AND SHALL REPAIR THE DAMAGE AT NO COST TO THE OWNER.
36. HYDROSTATIC TESTING SHALL BE PERFORMED ON ALL EQUIPMENT AND PIPING THAT IS SUBJECTED TO PRESSURES ABOVE AMBIENT. THE MECHANICAL CONTRACTOR SHALL DEVELOP A TEST SEQUENCE AND PHASES BASED UPON THE SYSTEM DESIGN, THE SYSTEM COMPONENTS THAT REQUIRE TESTING, AND THE CONSTRUCTION SEQUENCE OF THOSE COMPONENTS. THE CONTRACTOR SHALL PROVIDE THIS TEST SEQUENCE TO THE OWNER AND ENGINEER FOR REVIEW. THE CONTRACTOR SHALL GIVE THE ENGINEER AND OWNER 48 HOURS NOTICE BEFORE PERFORMING ANY SYSTEM COMPONENT PRESSURE TEST. THE CONTRACTOR SHALL NOT USE A COMPRESSIBLE FLUID, SUCH AS COMPRESSED AIR, FOR THE HYDROSTATIC TESTS. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE ENGINEER AND OWNER THAT THE PRESSURE TEST EQUIPMENT, INCLUDING PRESSURE SENSORS AND GAGES, HAS BEEN CALIBRATED BEFORE USE. THE CONTRACTOR SHALL ISOLATE ALL EQUIPMENT AND PIPING THAT IS NOT UNDERGOING TESTING USING FLANGES OR CAPS, NOT SHUTOFF VALVES. REFER TO SPECIFICATION SECTION 23-21-13 FOR HYDROSTATIC PRESSURE TEST DETAILS.

RENOVATION

THIS PROJECT IS A RENOVATION OF AN EXISTING FACILITY.

BEFORE SUBMITTING HIS BID THE CONTRACTOR SHALL VISIT THE SITE AND BECOME THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS UNDER WHICH THE PROJECT IS TO BE COMPLETED.

THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY ASSUMPTIONS, OMISSIONS OR ERRORS MADE AS A RESULT OF FAILURE TO BECOME FULLY FAMILIAR WITH THE EXISTING CONDITIONS.

IT IS NOT THE INTENT OF THESE DRAWINGS TO SHOW EVERY PIECE OF EQUIPMENT, PIPING OR CONDUIT TO BE REMOVED. EQUIPMENT NOT BEING REUSED SHALL BE REMOVED INCLUDING ALL ASSOCIATED HANGERS, SUPPORTS, PIPES, DUCTS, CONDUITS, WIRES AND CONTROLS BACK TO THE POINT OF ORIGIN.

NO EQUIPMENT, PIPING, OR CONDUIT SHALL BE ABANDONED IN PLACE, UNLESS SPECIFICALLY NOTED.

PROPERLY DISPOSE OF ALL DEMOLISHED EQUIPMENT IN COMPLIANCE WITH CODES AND REGULATIONS.

RELOCATE EXISTING EQUIPMENT, PIPING, WIRING AND RELATED SYSTEMS AS REQUIRED FOR CONSTRUCTION. ALL EXISTING SYSTEMS TO BE FULLY OPERATIONAL, INCLUDING RECONNECTION TO SERVICES AND UPGRADED SYSTEMS. ALL RELOCATED EQUIPMENT SHALL BE PROTECTED DURING CONSTRUCTION.

PROVIDE TEMPORARY CONNECTIONS AND SYSTEM MODIFICATIONS AS REQUIRED FOR CONSTRUCTION.

INCLUDE ALL WORK REQUIRED TO ALLOW PHASED CONSTRUCTION WHERE NECESSARY. COORDINATE WITH GENERAL CONTRACTOR/CONSTRUCTION MANAGER FOR PHASING REQUIREMENTS.

REBALANCE EXISTING AIR AND WATER SYSTEMS ASSOCIATED WITH RENOVATIONS, INCLUDING ALL RENOVATED AREAS AND ALL AREAS AFFECTED BY SYSTEM MODIFICATIONS.

ALL EXISTING EQUIPMENT, FIXTURES AND DEVICES TO BE REMOVED SHALL BE FIELD VERIFIED FOR EXACT QUANTITY.

SOUTHERN CONNECTICUT
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FACILITIES PLANNING DEPARTMENT
615 FITCH STREET / HAMDEN, CT 06514 / TEL: 203-392-6055



DAVIS HALL GROUND FLOOR
RENOVATIONS

PROJECT NO.: SCSU-2023-02
DATE: APRIL 7, 2023
DRAWING TITLE: MECHANICAL GENERAL NOTES
SCALE: NTS

REVISION:
SHEET:
M0.01

SECTION 01 33 00 – SUBMITTAL PROCEDURES

- 1.1 SUBMITTALS
A. SUBMITTAL SCHEDULE: SUBMIT A SCHEDULE OF SUBMITTALS, ARRANGED IN CHRONOLOGICAL ORDER BY DATES REQUIRED BY CONSTRUCTION SCHEDULE. INCLUDE TIME REQUIRED FOR REVIEW, ORDERING, MANUFACTURING, FABRICATION, AND DELIVERY WHEN ESTABLISHING DATES. INCLUDE ADDITIONAL TIME REQUIRED FOR MAKING CORRECTIONS OR REVISIONS TO SUBMITTALS NOTED BY ENGINEER (AND CONSTRUCTION MANAGER) AND ADDITIONAL TIME FOR HANDLING AND REVIEWING SUBMITTALS REQUIRED BY THOSE CORRECTIONS.
1. COORDINATE SUBMITTAL SCHEDULE WITH LIST OF SUBCONTRACTS, THE SCHEDULE OF VALUES, AND CONTRACTOR'S CONSTRUCTION SCHEDULE.
2. INITIAL SUBMITTAL: SUBMIT CONCURRENTLY WITH STARTUP CONSTRUCTION SCHEDULE. INCLUDE SUBMITTALS REQUIRED DURING THE FIRST 60 DAYS OF CONSTRUCTION. LIST THOSE SUBMITTALS REQUIRED TO MAINTAIN ORDERLY PROGRESS OF THE WORK AND THOSE REQUIRED EARLY BECAUSE OF LONG LEAD TIME FOR MANUFACTURE OR FABRICATION.
3. FINAL SUBMITTAL: SUBMIT CONCURRENTLY WITH THE FIRST COMPLETE SUBMITTAL OF CONTRACTOR'S CONSTRUCTION SCHEDULE.
a. SUBMIT REVISED SUBMITTAL SCHEDULE TO REFLECT CHANGES IN CURRENT STATUS AND TIMING FOR SUBMITTALS.

- 1.2 ELECTRONIC SUBMITTALS
A. IDENTIFY AND INCORPORATE INFORMATION IN EACH ELECTRONIC SUBMITTAL FILE AS FOLLOWS:
1. ASSEMBLE COMPLETE SUBMITTAL PACKAGE INTO A SINGLE INDEXED FILE INCORPORATING SUBMITTAL REQUIREMENTS OF A SINGLE SPECIFICATION SECTION AND TRANSMITTAL FORM WITH LINKS ENABLING NAVIGATION TO EACH ITEM.
2. NAME FILE WITH SUBMITTAL NUMBER OR OTHER UNIQUE IDENTIFIER, INCLUDING REVISION IDENTIFIER.
3. TRANSMITTAL FORM FOR ELECTRONIC SUBMITTALS: USE ELECTRONIC FORM ACCEPTABLE TO OWNER, CONTAINING THE FOLLOWING INFORMATION:
a. PROJECT NAME.
b. DATE.
c. NAME AND ADDRESS OF ENGINEER.
d. NAME OF CONSTRUCTION MANAGER.
e. NAME OF CONTRACTOR.
f. NAME OF FIRM OR ENTITY THAT PREPARED SUBMITTAL.
g. NAMES OF SUBCONTRACTOR, MANUFACTURER, AND SUPPLIER.
h. CATEGORY AND TYPE OF SUBMITTAL.
i. SUBMITTAL PURPOSE AND DESCRIPTION.
j. SPECIFICATION SECTION NUMBER AND TITLE.
k. SPECIFICATION PARAGRAPH NUMBER OR DRAWING DESIGNATION AND GENERIC NAME FOR EACH OF MULTIPLE ITEMS.
l. DRAWING NUMBER AND DETAIL REFERENCES, AS APPROPRIATE.
m. LOCATION(S) WHERE PRODUCT IS TO BE INSTALLED, AS APPROPRIATE.
n. STANDARD MANUFACTURER'S WARRANTY.
o. RELATED PHYSICAL SAMPLES SUBMITTED DIRECTLY.
p. INDICATION OF FULL OR PARTIAL SUBMITTAL.
q. TRANSMITTAL NUMBER (NUMBERED CONSECUTIVELY).
r. SUBMITTAL AND TRANSMITTAL DISTRIBUTION RECORD.
s. OTHER NECESSARY IDENTIFICATION.
t. REMARKS.
B. OPTIONS: IDENTIFY OPTIONS REQUIRING SELECTION BY ENGINEER.
C. DEVIATIONS AND ADDITIONAL INFORMATION: ON AN ATTACHED SEPARATE SHEET, PREPARED ON CONTRACTOR'S LETTERHEAD, RECORD RELEVANT INFORMATION, REQUESTS FOR DATA, REVISIONS OTHER THAN THOSE REQUESTED BY ENGINEER ON PREVIOUS SUBMITTALS, AND DEVIATIONS FROM REQUIREMENTS IN THE CONTRACT DOCUMENTS, INCLUDING MINOR VARIATIONS AND LIMITATIONS. INCLUDE SAME IDENTIFICATION INFORMATION AS RELATED SUBMITTAL.
D. RE-SUBMITTALS: MAKE RE-SUBMITTALS IN SAME FORM AND NUMBER OF COPIES AS INITIAL SUBMITTAL.
1. NOTE DATE AND CONTENT OF PREVIOUS SUBMITTAL.
2. NOTE DATE AND CONTENT OF REVISION IN LABEL OR TITLE BLOCK AND CLEARLY INDICATE EXTENT OF REVISION.
3. RESUBMIT SUBMITTALS UNTIL THEY ARE MARKED WITH APPROVAL NOTATION FROM ENGINEER'S ACTION STAMP.

SECTION 23 05 00 – COMMON WORK RESULTS FOR HVAC

- 1.1 SUBMITTALS
A. SUBMIT SHOP DRAWINGS
1. FURNISH COMPLETE CATALOG DATA FOR MATERIALS AND MANUFACTURED ITEMS OF EQUIPMENT TO BE USED IN THE WORK TO ARCHITECT FOR REVIEW WITHIN 30 DAYS AFTER AWARD OF CONTRACT.
2. SUBMIT EIGHT (8) COPIES OF DATA IN BINDERS AND INDEX IN SAME ORDER AND NAME AS THEY APPEAR IN SPECIFICATION.
3. STATE SIZES, CAPACITIES, BRAND NAMES, MOTOR HP, ACCESSORIES, MATERIALS, GAUGES, DIMENSIONS, AND OTHER PERTINENT INFORMATION.
4. LIST CATALOG PAGE NUMBERS OF SUBMITTED ITEMS.
5. UNDERLINE APPLICABLE DATA.
6. IF MATERIAL OR EQUIPMENT IS NOT AS SPECIFIED OR SUBMITTAL IS NOT COMPLETE, IT WILL BE REJECTED BY THE ARCHITECT.
1.2 QUALITY ASSURANCE
A. STEEL SUPPORT WELDING: QUALIFY PROCESSES AND OPERATORS ACCORDING TO AWS D1.1, "STRUCTURAL WELDING CODE--STEEL."
B. STEEL PIPE WELDING: QUALIFY PROCESSES AND OPERATORS ACCORDING TO ASME BOILER AND PRESSURE VESSEL CODE SECTION IX, "WELDING AND BRAZING QUALIFICATIONS."
1. COMPLY WITH PROVISIONS IN ASME B31 SERIES, "CODE FOR PRESSURE PIPING."
2. CERTIFY THAT EACH WELDER HAS PASSED AWS QUALIFICATION TESTS FOR WELDING

PROCESSES INVOLVED AND THAT CERTIFICATION IS CURRENT.

- 1.3 WARRANTY
A. IN ADDITION TO GUARANTEES SPECIFIED IN GENERAL CONDITIONS AND OTHER SECTIONS OF DIVISION 23, GUARANTY, HVAC SYSTEMS SHALL BE FREE FROM NOISE IN OPERATION THAT MAY DEVELOP AS A RESULT OF FAILURE TO CONSTRUCT SYSTEM IN ACCORDANCE WITH CONTRACT DOCUMENTS. IN ORDER TO BE PROTECTED, CONTRACTOR SHALL SECURE PROPER GUARANTEES FROM SUPPLIERS AND SUBCONTRACTORS.
1.4 FINAL ACCEPTANCE
A. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING A PRELIMINARY INSPECTION TO DETERMINE IF ALL WORK IS COMPLETE. AFTER VERIFICATION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH WRITTEN NOTICE THAT THE WORK IS COMPLETE. THE ENGINEER SHALL SCHEDULE AN INITIAL AND FOLLOW-UP VISIT TO VERIFY THAT THE WORK HAS BEEN COMPLETED IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. THE ENGINEER SHALL PREPARE A FORMAL PUNCH LIST OF ANY ITEMS CONSIDERED INCOMPLETE, AND DISTRIBUTE TO THE ARCHITECT, OWNER, AND CONTRACTOR. THE ENGINEER WILL THEN SCHEDULE ANOTHER FIELD VISIT TO VERIFY THE WORK IS COMPLETE. IF THE WORK IS NOT COMPLETE, THE COST FOR ADDITIONAL FIELD VISITS TO VERIFY THAT THE WORK IS COMPLETE SHALL BE BILLED TO THE CONTRACTOR AT THE RATE OF \$150.00 PER HOUR.

- 1.5 COORDINATION
A. ARRANGE FOR PIPE SPACES, CHASES, SLOTS, AND OPENINGS IN BUILDING STRUCTURE DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR HVAC INSTALLATIONS.
B. COORDINATE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SET SLEEVES IN POURED-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED.
C. COORDINATE REQUIREMENTS FOR ACCESS PANELS AND DOORS FOR HVAC ITEMS REQUIRING ACCESS THAT ARE CONCEALED BEHIND FINISHED SURFACES.

- 2.1 SUBSTITUTIONS
A. SUBSTITUTION REQUEST FROM CONTRACTORS MAY BE SUBMITTED ONLY AFTER THE AWARD OF CONTRACT. REQUESTS SHALL BE IN WRITING ON CONTRACTOR'S LETTERHEAD AND SHALL INCLUDE:
1. CONTRACTOR'S STATEMENT TO THE EFFECT THAT PROPOSED SUBSTITUTION WILL RESULT IN OVERALL WORK EQUAL TO, OR BETTER THAN, WORK ORIGINALLY INTENDED.
2. CONTRACTOR'S DETAILED COMPARISON OF SIGNIFICANT QUALITIES BETWEEN SPECIFIED ITEM AND PROPOSED SUBSTITUTION.
B. STATEMENT OF EFFECT ON CONSTRUCTION TIME, COORDINATION WITH OTHER AFFECTED WORK, AND COST INFORMATION OR PROPOSAL, SHALL BE INCLUDED. SUBSTITUTION REQUESTS FROM CONTRACTORS WILL ONLY BE CONSIDERED IF: (1) EXTENSIVE REVISIONS TO CONTRACT DOCUMENTS ARE NOT REQUIRED; (2) CHANGES ARE IN KEEPING WITH GENERAL INTENT OF CONTRACT DOCUMENTS; (3) REQUESTS ARE SUBMITTED IN A TIMELY AND PROPER MANNER, FULLY DOCUMENTED; AND (4) ONE OR MORE OF FOLLOWING CONDITIONS IS SATISFIED, ALL AS JUDGED BY ENGINEER:
1. WHERE REQUEST IS DIRECTLY RELATED TO THE "OR EQUAL" CLAUSE OR WORDS OF SIMILAR EFFECT IN CONTRACT DOCUMENTS.
2. WHERE SPECIFIED PRODUCT, MATERIAL OR METHOD CAN NOT BE PROVIDED WITHIN CONTRACT TIME, BUT NOT AS A RESULT OF CONTRACTOR'S FAILURE TO PURSUE THE WORK PROMPTLY TO COORDINATE VARIOUS ACTIVITIES PROPERLY.
3. WHERE SPECIFIED PRODUCT, MATERIAL OR METHOD CAN NOT BE PROVIDED IN MANNER WHICH IS COMPATIBLE WITH OTHER MATERIALS OF THE WORK AND WHERE CONTRACTOR CERTIFIES THAT PROPOSED SUBSTITUTION IS COMPATIBLE.
4. WHERE SPECIFIED PRODUCT, MATERIAL OR METHOD CAN NOT BE PROPERLY COORDINATED WITH OTHER MATERIALS OF THE WORK AND WHERE CONTRACTOR CERTIFIES THAT PROPOSED SUBSTITUTION CAN BE PROPERLY COORDINATED.
5. WHERE SPECIFIED PRODUCT, MATERIAL OR METHOD CAN NOT BE WARRANTED AS REQUIRED AND WHERE CONTRACTOR CERTIFIES THAT PROPOSED SUBSTITUTION CAN BE SO WARRANTED.
6. WHERE SPECIFIED PRODUCT, MATERIAL OR METHOD CAN NOT BE USED WITHOUT ADVERSELY AFFECTING OWNER'S INSURANCE COVERAGE ON COMPLETED WORK AND WHERE CONTRACTOR CERTIFIES THAT PROPOSED SUBSTITUTION CAN BE SO USED.
7. WHERE SPECIFIED PRODUCT, MATERIAL OR METHOD WILL ENCOUNTER OTHER SUBSTANTIAL NON-COMPLIANCES WHICH ARE NOT POSSIBLE TO OTHERWISE OVERCOME EXCEPT BY USING PROPOSED SUBSTITUTION.
8. WHERE SPECIFIED PRODUCT, MATERIAL OR METHOD CAN NOT RECEIVE REQUIRED APPROVAL BY GOVERNING AUTHORITY AND PROPOSED SUBSTITUTION CAN BE SO APPROVED.
9. WHERE A SUBSTANTIAL ADVANTAGE IS OFFERED TO THE OWNER, IN TERMS OF COST, TIME, ENERGY CONSERVATION OR OTHER VALUABLE CONSIDERATIONS, AFTER DEDUCTING OFFSETTING RESPONSIBILITIES THAT THIS CONTRACTOR MAY BE REQUIRED TO BEAR, INCLUDING ADDITIONAL COMPENSATION TO ENGINEER FOR ANY REDESIGN OR EVALUATION SERVICES, INCREASED COST OF OTHER WORK BY OTHER CONTRACTORS, AND SIMILAR CONSIDERATIONS.
C. THE BURDEN IS UPON THE CONTRACTOR, SUPPLIER AND MANUFACTURER TO SATISFY THE ENGINEER THAT:
1. THE PROPOSED SUBSTITUTE IS EQUAL TO, OR SUPERIOR TO, THE ITEM SPECIFIED.
2. THE INTENT OF THE CONTRACT DOCUMENTS, INCLUDING REQUIRED PERFORMANCE, CAPACITY, EFFICIENCY, QUALITY, DURABILITY, SAFETY, FUNCTION, APPEARANCE, SPACE CLEARANCES AND DELIVERY DATE, WILL BE EQUALED OR BETTERED.
D. CHANGES IN WORK OF OTHER TRADES, SUCH AS STRUCTURAL SUPPORTS, WHICH ARE REQUIRED AS A RESULT OF SUBSTITUTION AND THE ASSOCIATED COSTS FOR SUCH CHANGES SHALL BE THE COMPLETE RESPONSIBILITY OF THE CONTRACTOR PROPOSING THE SUBSTITUTION. THERE SHALL BE NO ADDITIONAL EXPENSE TO THE OWNER.

SECTION 23 05 23 – GENERAL DUTY VALVES FOR HVAC PIPING

- 1.1 GLOBE VALVES
A. 2 INCH AND SMALLER: 150 LB BRONZE BODY AND TRIM, UNION BONNET, RISING STEM AND HANDWHEEL, RENEWABLE BUNA-N DISC, THREADED OR SWEAT ENDS, GLAND PACKED, PACKABLE UNDER PRESSURE. EQUAL TO MILWAUKEE 590S (THREADED) OR 1590S (SWEAT).
B. 2-1/2 INCH AND GREATER: 125 LB IRON BODY, BRONZE TRIM, REPLACEABLE BRONZE DISC, BOLTED BONNET, GLAND PACKED, FLANGED ENDS. EQUAL TO MILWAUKEE F2981.
1.2 BALL VALVES

- A. UP TO 1-1/2 INCHES: BRONZE ONE PIECE BODY, STAINLESS STEEL BALL AND SHAFT, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE, SOLDER OR THREADED ENDS. CLASS 125, MINIMUM SAFE WORKING PRESSURE RATING SHALL BE 125 PSIG. EQUAL TO MILWAUKEE BA-100-S (THREADED) OR BA-150-S (SWEAT).
1.3 SWING CHECK VALVES
A. UP TO 2 INCHES: BRONZE OR IRON BODY, 45 DEGREE SWING DISC, SCREWED ENDS. MINIMUM GAGE WORKING PRESSURE RATING SHALL BE 125 PSIG. EQUAL TO MILWAUKEE FIG 508.
B. OVER 2 INCHES: IRON BODY, BRONZE TRIM, 45 DEGREE SWING DISC, RENEWABLE DISC AND SEAT, FLANGED ENDS. MINIMUM SAFE WORKING PRESSURE RATING SHALL BE 125 PSIG. EQUAL TO MILWAUKEE F-2974-M.
1.4 DRAIN VALVES
A. EQUAL TO MILWAUKEE FIG. BA-150-H (SWEAT) OR MILWAUKEE FIG. BA-100-H (THREADED) WITH 3/4 INCH HOSE CONNECTION.

SECTION 23 05 29 – HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

- PART 1 SUBMITTALS
1.1 SUBMITTALS
A. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED.
B. SHOP DRAWINGS SHOWING FABRICATION, ASSEMBLY AND INSTALLATION DETAILS AND INCLUDE CALCULATIONS.
1.2 PIPE HANGERS AND SUPPORTS
A. PROVIDE PIPE SUPPORT FOR ALL NEW PIPING.
B. SUPPORT HORIZONTAL PIPING AS FOLLOWS (MINIMUM):
PIPE SIZE MAX. HANGER SPACING HANGER DIAMETER
1/2" TO 1-1/4" 6'-0" 3/8"
1-1/2" TO 2" 8'-0" 3/8"
2-1/2" TO 3" 9'-0" 1/2"
4" TO 6" 10'-0" 5/8"
8" TO 12" 12'-0" 7/8"

- PART 2 PRODUCTS
2.1 SUPPORT AND ATTACHMENT COMPONENTS
A. GENERAL REQUIREMENTS:
1. PROVIDE ALL REQUIRED HANGERS, SUPPORTS, ANCHORS, FASTENERS, FITTINGS, ACCESSORIES, AND HARDWARE AS NECESSARY FOR THE COMPLETE INSTALLATION.
2. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED, WHERE APPLICABLE.
3. WHERE SUPPORT AND ATTACHMENT COMPONENT TYPES AND SIZES ARE NOT INDICATED, SELECT IN ACCORDANCE WITH MANUFACTURER'S APPLICATION CRITERIA AS REQUIRED FOR THE LOAD TO BE SUPPORTED WITH A MINIMUM SAFETY FACTOR OF 1.5. INCLUDE CONSIDERATION FOR VIBRATION, EQUIPMENT OPERATION, AND SHOCK LOADS WHERE APPLICABLE.
4. STEEL COMPONENTS: USE CORROSION RESISTANT MATERIALS SUITABLE FOR THE ENVIRONMENT WHERE INSTALLED.
a. ZINC-PLATED STEEL: ELECTROPLATED IN ACCORDANCE WITH ASTM B633.
b. GALVANIZED STEEL: HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123/A123M OR ASTM A153/A153M.
B. METAL CHANNEL (STRUT) FRAMING SYSTEMS: FACTORY-FABRICATED CONTINUOUS-SLOT METAL CHANNEL (STRUT) AND ASSOCIATED FITTINGS, ACCESSORIES, AND HARDWARE REQUIRED FOR FIELD-ASSEMBLY OF SUPPORTS.
1. COMPLY WITH MFMA-4.
2. CHANNEL MATERIAL:
a. INDOOR DRY LOCATIONS: USE PAINTED STEEL, ZINC-PLATED STEEL, OR GALVANIZED STEEL.
b. OUTDOOR AND DAMP OR WET INDOOR LOCATIONS: USE GALVANIZED STEEL.
3. MINIMUM CHANNEL THICKNESS: STEEL SHEET, 12 GAGE, 0.1046 INCH.
4. MINIMUM CHANNEL DIMENSIONS: 1-5/8 INCH WIDTH BY 13/16 INCH HEIGHT.
C. HANGER RODS: THREADED ZINC-PLATED STEEL UNLESS OTHERWISE INDICATED.
1. MINIMUM SIZE, UNLESS OTHERWISE INDICATED OR REQUIRED:
a. EQUIPMENT SUPPORTS: 1/2 INCH DIAMETER.
b. PIPING UP TO 1 INCH (27 MM) NOMINAL: 1/4 INCH DIAMETER.
c. PIPING LARGER THAN 1 INCH (27 MM) NOMINAL: 3/8 INCH DIAMETER.
d. TRAPEZE SUPPORT FOR MULTIPLE PIPES: 3/8 INCH DIAMETER.
D. THERMAL INSULATED PIPE SUPPORTS:
1. GENERAL CONSTRUCTION AND REQUIREMENTS:
a. INSULATED PIPE SUPPORTS TO BE PROVIDED AT HANGER, SUPPORT, AND GUIDE LOCATIONS ON PIPE REQUIRING INSULATION OR ADDITIONAL SUPPORT.
b. SURFACE BURNING CHARACTERISTICS: FLAME SPREAD INDEX/SMOKE DEVELOPED INDEX OF 5/30, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723.
c. INSULATION INSERTS TO CONSIST OF RIGID POLYSOCYANURATE (URETHANE) INSULATION SURROUNDED BY A 360 DEGREE, PVC JACKETING.
2. PVC JACKET:
a. PIPE INSULATION PROTECTION SHIELDS TO BE PROVIDED WITH A BALL BEARING HINGE AND LOCKING SEAM.
b. MOISTURE VAPOR TRANSMISSION: 0.0071 PERM INCH, WHEN TESTED IN ACCORDANCE WITH ASTM E96/E96M.
c. THICKNESS: 60 MIL.
3. PIPE INSULATION PROTECTION SHIELDS TO BE PROVIDED AT THE HANGER POINTS AND GUIDE LOCATIONS ON PIPES REQUIRING INSULATION AS INDICATED ON DRAWINGS.
E. PIPE SUPPORTS:
1. LIQUID TEMPERATURES UP TO 122 DEGREES F:

- a. OVERHEAD SUPPORT: MSS SP-58 TYPES 1, 3 THROUGH 12.
b. SUPPORT FROM BELOW: MSS SP-58 TYPES 35 THROUGH 38.
F. BEAM CLAMPS: MSS SP-58 TYPES 19 THROUGH 23, 25 OR 27 THROUGH 30 BASED ON REQUIRED LOAD.
1. MATERIAL: ASTM A36/A36M CARBON STEEL OR ASTM A181/A181M FORGED STEEL.
2. PROVIDE CLAMPS WITH HARDENED STEEL CUP-POINT SET SCREWS AND LOCK-NUTS FOR ANCHORING IN PLACE.
G. RISER CLAMPS:
1. PROVIDE COPPER PLATED CLAMPS FOR COPPER TUBING SUPPORT.
2. FOR INSULATED PIPE RUNS, PROVIDE TWO BOLT-TYPE CLAMPS DESIGNED FOR INSTALLATION UNDER INSULATION.
H. OFFSET PIPE CLAMPS: DOUBLE-LEG DESIGN TWO-PIECE PIPE CLAMP.
I. STRUT CLAMPS: TWO-PIECE PIPE CLAMP.
J. INSULATION CLAMPS: TWO BOLT-TYPE CLAMPS DESIGNED FOR INSTALLATION UNDER INSULATION.
K. PIPE HANGERS: FOR A GIVEN PIPE RUN USE HANGERS OF THE SAME TYPE AND MATERIAL.
1. MATERIAL: MALLEABLE IRON, ASTM A47/A47M; OR CARBON STEEL, ASTM A36/A36M.
2. PROVIDE COATED OR PLATED HANGERS TO ISOLATE STEEL HANGERS FROM DISSIMILAR METAL TUBE OR PIPE.
L. INTERMEDIATE PIPE GUIDES: USE PIPE CLAMPS WITH OVERSIZE PIPE SLEEVE THAT PROVIDES CLEARANCE AROUND PIPE.
1. PIPE DIAMETER 6 INCHES AND SMALLER: PROVIDE MINIMUM CLEARANCE OF 0.16 INCH.
2. PIPE DIAMETER 8 INCHES: PROVIDE U-BOLTS WITH DOUBLE NUTS PROVIDING MINIMUM CLEARANCE OF 0.28 INCH.
3. PIPE DIAMETER 8 INCHES: 0.625 INCH U-BOLT.
4. PIPE DIAMETER 10 INCHES: 0.75 INCH U-BOLT.
5. PIPE DIAMETER 12 TO 16 INCHES: 0.875 INCH U-BOLT.
6. PIPE DIAMETER 18 TO 30 INCHES: 1 INCH U-BOLT.
M. PIPE ALIGNMENT GUIDES: GALVANIZED STEEL.
1. PIPE DIAMETER 8 INCHES AND SMALLER: SPIDER OR SLEEVE TYPE.
N. DIELECTRIC BARRIERS: PROVIDE BETWEEN METALLIC SUPPORTS AND METALLIC PIPING AND ASSOCIATED ITEMS OF DISSIMILAR TYPE; ACCEPTABLE DIELECTRIC BARRIERS INCLUDE RUBBER OR PLASTIC SHEETS OR COATINGS ATTACHED SECURELY TO PIPE OR ITEM.
O. ANCHORS AND FASTENERS:
1. UNLESS OTHERWISE INDICATED AND WHERE NOT OTHERWISE RESTRICTED, USE THE ANCHOR AND FASTENER TYPES INDICATED FOR THE SPECIFIED APPLICATIONS.
2. CONCRETE: USE PRESET CONCRETE INSERTS, EXPANSION ANCHORS, OR SCREW ANCHORS.
3. SOLID OR GROUT-FILLED MASONRY: USE EXPANSION ANCHORS OR SCREW ANCHORS.
4. HOLLOW MASONRY: USE TOGGLE BOLTS.
5. HOLLOW STUD WALLS: USE TOGGLE BOLTS.
6. STEEL: USE BEAM CLAMPS, MACHINE BOLTS, OR WELDED THREADED STUDS.
7. SHEET METAL: USE SHEET METAL SCREWS.
8. WOOD: USE WOOD SCREWS.
9. PLASTIC AND LEAD ANCHORS ARE NOT PERMITTED.
10. PRESET CONCRETE INSERTS: CONTINUOUS METAL CHANNEL (STRUT) AND SPOT INSERTS SPECIFICALLY DESIGNED TO BE CAST IN CONCRETE CEILINGS, WALLS, AND FLOORS.
a. COMPLY WITH MFMA-4.
b. CHANNEL MATERIAL: USE GALVANIZED STEEL.
c. MANUFACTURER: SAME AS MANUFACTURER OF METAL CHANNEL (STRUT) FRAMING SYSTEM.
PART 3 EXECUTION
3.1 EXAMINATION
A. VERIFY THAT FIELD MEASUREMENTS ARE AS INDICATED.
B. VERIFY THAT MOUNTING SURFACES ARE READY TO RECEIVE SUPPORT AND ATTACHMENT COMPONENTS.
C. VERIFY THAT CONDITIONS ARE SATISFACTORY FOR INSTALLATION PRIOR TO STARTING WORK.
3.2 INSTALLATION
A. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. PROVIDE INDEPENDENT SUPPORT FROM BUILDING STRUCTURE. DO NOT PROVIDE SUPPORT FROM PIPING, DUCTWORK, CONDUIT, OR OTHER SYSTEMS.
C. UNLESS SPECIFICALLY INDICATED OR APPROVED BY ENGINEER, DO NOT PROVIDE SUPPORT FROM SUSPENDED CEILING SUPPORT SYSTEM OR CEILING GRID.
D. DO NOT PENETRATE OR OTHERWISE NOTCH OR CUT STRUCTURAL MEMBERS WITHOUT APPROVAL OF STRUCTURAL ENGINEER.
E. PROVIDE THERMAL INSULATED PIPE SUPPORTS COMPLETE WITH HANGERS AND ACCESSORIES. INSTALL THERMAL INSULATED PIPE SUPPORTS DURING THE INSTALLATION OF THE PIPING SYSTEM.
F. EQUIPMENT SUPPORT AND ATTACHMENT:
1. USE METAL FABRICATED SUPPORTS OR SUPPORTS ASSEMBLED FROM METAL CHANNEL (STRUT) TO SUPPORT EQUIPMENT AS REQUIRED.
2. USE METAL CHANNEL (STRUT) SECURED TO STUDS TO SUPPORT EQUIPMENT SURFACE-MOUNTED ON HOLLOW STUD WALLS WHEN WALL STRENGTH IS NOT SUFFICIENT TO RESIST PULL-OUT.
3. USE METAL CHANNEL (STRUT) TO SUPPORT SURFACE-MOUNTED EQUIPMENT IN WET OR DAMP LOCATIONS TO PROVIDE SPACE BETWEEN EQUIPMENT AND MOUNTING SURFACE.
4. SECURELY FASTEN FLOOR-MOUNTED EQUIPMENT. DO NOT INSTALL EQUIPMENT SUCH THAT IT RELIES ON ITS OWN WEIGHT FOR SUPPORT.
G. PRESET CONCRETE INSERTS: USE MANUFACTURER PROVIDED CLOSURE STRIPS TO INHIBIT CONCRETE SEEPAGE DURING CONCRETE POUR.
H. SECURE FASTENERS ACCORDING TO MANUFACTURER'S RECOMMENDED TORQUE SETTINGS. REMOVE TEMPORARY SUPPORTS.



SECTION 23 05 53 -- IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

- 1.1 EQUIPMENT LABELS
A. METAL LABELS FOR EQUIPMENT:
1. MATERIAL AND THICKNESS: STAINLESS STEEL, 0.025-INCH MINIMUM THICKNESS, AND HAVING PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE.
2. MINIMUM LABEL SIZE: LENGTH AND WIDTH VARY FOR REQUIRED LABEL CONTENT, BUT NOT LESS THAN 2-1/2 BY 3/4 INCH.
3. MINIMUM LETTER SIZE: 1/4 INCH FOR NAME OF UNITS IF VIEWING DISTANCE IS LESS THAN 24 INCHES, 1/2 INCH FOR VIEWING DISTANCES UP TO 72 INCHES, AND PROPORTIONATELY LARGER LETTERING FOR GREATER VIEWING DISTANCES.
4. FASTENERS: STAINLESS-STEEL SELF-TAPPING SCREWS.
5. ADHESIVE: CONTACT-TYPE PERMANENT ADHESIVE, COMPATIBLE WITH LABEL AND WITH SUBSTRATE.
B. LABEL CONTENT: INCLUDE EQUIPMENT'S DRAWING DESIGNATION OR UNIQUE EQUIPMENT NUMBER, DRAWING NUMBERS WHERE EQUIPMENT IS INDICATED (PLANS, DETAILS, AND SCHEDULES), PLUS THE SPECIFICATION SECTION NUMBER AND TITLE WHERE EQUIPMENT IS SPECIFIED.
C. EQUIPMENT LABEL SCHEDULE: FOR EACH ITEM OF EQUIPMENT TO BE LABELED, ON A 8-1/2-BY-11-INCH (A4) BOND PAPER, TABULATE EQUIPMENT IDENTIFICATION NUMBER AND IDENTIFY DRAWING NUMBERS WHERE EQUIPMENT IS INDICATED (PLANS, DETAILS, AND SCHEDULES), PLUS THE SPECIFICATION SECTION NUMBER AND TITLE WHERE EQUIPMENT IS SPECIFIED. EQUIPMENT SCHEDULE SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL.

- 1.2 PIPE LABELS
A. GENERAL REQUIREMENTS FOR MANUFACTURED PIPE LABELS: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION.
B. PRE-TENSIONED PIPE LABELS: PRE-COILED, SEM-RIGID PLASTIC FORMED TO COVER FULL CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE.
C. SELF-ADHESIVE PIPE LABELS: PRINTED PLASTIC WITH CONTACT-TYPE, PERMANENT-ADHESIVE BACKING.
D. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION.
1. FLOW-DIRECTION ARROWS: INTEGRAL WITH PIPING SYSTEM SERVICE LETTERING TO ACCOMMODATE BOTH DIRECTIONS, OR AS SEPARATE UNIT ON EACH PIPE LABEL TO INDICATE FLOW DIRECTION.
2. LETTERING SIZE: AT LEAST 1-1/2 INCHES HIGH.

- 1.3 VALVE TAGS
A. VALVE TAGS: STAMPED OR ENGRAVED WITH 1/4-INCH LETTERS FOR PIPING SYSTEM ABBREVIATION AND 1/2-INCH NUMBERS.
1. TAG MATERIAL: STAINLESS STEEL, 0.025-INCH MINIMUM THICKNESS, AND HAVING PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE.
2. FASTENERS: BRASS S-HOOK.
B. VALVE SCHEDULES: FOR EACH PIPING SYSTEM, ON A 8-1/2-BY-11-INCH (A4) BOND PAPER, TABULATE VALVE NUMBER, PIPING SYSTEM, SYSTEM ABBREVIATION (AS SHOWN ON VALVE TAG), LOCATION OF VALVE (ROOM OR SPACE), NORMAL-OPERATING POSITION (OPEN, CLOSED, OR MODULATING), AND VARIATIONS FOR IDENTIFICATION. MARK VALVES FOR EMERGENCY SHUTOFF AND SIMILAR SPECIAL USES.
1. VALVE-TAG SCHEDULE SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL.

- 2.1 PIPE LABEL INSTALLATION
A. LOCATE PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE ACCESSIBLE CEILINGS IN FINISHED SPACES; MACHINE ROOMS; ACCESSIBLE MAINTENANCE SPACES SUCH AS SHAFTS, TUNNELS, AND PLENUMS; AND EXTERIOR EXPOSED LOCATIONS AS FOLLOWS:
1. NEAR EACH VALVE AND CONTROL DEVICE.
2. NEAR EACH BRANCH CONNECTION, EXCLUDING SHORT TAKEOFFS FOR FIXTURES AND TERMINAL UNITS. WHERE FLOW PATTERN IS NOT OBVIOUS, MARK EACH PIPE AT BRANCH.
3. NEAR PENETRATIONS THROUGH WALLS, FLOORS, CEILINGS, AND INACCESSIBLE ENCLOSURES.
4. AT ACCESS DOORS, MANHOLES, AND SIMILAR ACCESS POINTS THAT PERMIT VIEW OF CONCEALED PIPING.
5. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGIN AND TERMINATION.
6. SPACED AT MAXIMUM INTERVALS OF 50 FEET ALONG EACH RUN. REDUCE INTERVALS TO 25 FEET IN AREAS OF CONGESTED PIPING AND EQUIPMENT.
7. ON PIPING ABOVE REMOVABLE ACOUSTICAL CEILINGS, OMIT INTERMEDIATELY SPACED LABELS.
B. PIPE LABEL COLOR SCHEDULE:
1. NATURAL GAS PIPING:
a. BACKGROUND COLOR: YELLOW.
b. LETTER COLOR: BLACK.
2. REFRIGERANT PIPING:
a. BACKGROUND COLOR: GREEN.
b. LETTER COLOR: WHITE.

SECTION 23 05 48 -- VIBRATION ISOLATION AND SEISMIC RESTRAINTS FOR HVAC

- 1.1 SUBMITTAL DATA REQUIREMENTS
A. THE MANUFACTURER OF VIBRATION ISOLATION AND SEISMIC RESTRAINTS SHALL PROVIDE SUBMITTALS FOR PRODUCTS AS FOLLOWS:
4. DESCRIPTIVE DATA:
a. CATALOG CUTS OR DATA SHEETS ON VIBRATION ISOLATORS AND SPECIFIC

- RESTRAINTS DETAILING COMPLIANCE WITH THE SPECIFICATION.
b. DETAILED SCHEDULES OF FLEXIBLE AND RIGIDLY MOUNTED EQUIPMENT, SHOWING VIBRATION ISOLATORS AND SEISMIC RESTRAINTS BY REFERENCING NUMBERED DESCRIPTIVE DRAWINGS.
2. SHOP DRAWINGS:
a. SUBMIT FABRICATION DETAILS FOR EQUIPMENT BASES INCLUDING DIMENSIONS, STRUCTURAL MEMBER SIZES AND SUPPORT POINT LOCATIONS.
b. PROVIDE ALL DETAILS OF SUSPENSION AND SUPPORT FOR CEILING HUNG EQUIPMENT.
c. WHERE WALLS, FLOORS, SLABS OR SUPPLEMENTARY STEEL WORK ARE USED FOR SEISMIC RESTRAINT LOCATIONS, DETAILS OF ACCEPTABLE ATTACHMENT METHODS FOR DUCTS, AND PIPE MUST BE INCLUDED AND APPROVED BEFORE THE CONDITION IS ACCEPTED FOR INSTALLATION. RESTRAINT MANUFACTURERS' SUBMITTALS MUST INCLUDE SPACING, STATIC LOADS AND SEISMIC LOADS AT ALL ATTACHMENT AND SUPPORT POINTS.
d. PROVIDE SPECIFIC DETAILS OF SEISMIC RESTRAINTS AND ANCHORS; INCLUDE NUMBER, SIZE AND LOCATIONS FOR EACH PIECE OF EQUIPMENT.
e. SUBMITTALS FOR ALL DIRECTIONAL SEISMIC SNUBBERS SHALL INCLUDE THE LOAD DEFLECTION CURVES UP TO 1/2" DEFLECTION IN THE X, Y AND Z PLANES.
3. DELEGATED SEISMIC ANALYSIS:
a. PROVIDE SEISMIC RESTRAINTS FOR ALL NATURAL GAS PIPING.
b. SEISMIC RESTRAINT CALCULATIONS MUST BE PROVIDED FOR ALL CONNECTIONS OF EQUIPMENT TO THE STRUCTURE. CALCULATIONS MUST BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER WITH AT LEAST FIVE YEARS OF SEISMIC DESIGN EXPERIENCE, LICENSED IN THE STATE OF THE JOB LOCATION.
c. ALL RESTRAINING DEVICES SHALL HAVE A PREAPPROVAL NUMBER FROM CALIFORNIA OSHPD OR SOME OTHER RECOGNIZED GOVERNMENT AGENCY SHOWING MAXIMUM RESTRAINT RATINGS. PREAPPROVALS BASED ON INDEPENDENT TESTING ARE PREFERRED TO PREAPPROVALS BASED ON CALCULATIONS. WHERE PREAPPROVED DEVICES ARE NOT AVAILABLE, SUBMITTALS BASED ON INDEPENDENT TESTING ARE PREFERRED. CALCULATIONS (INCLUDING THE COMBINING OF TENSILE AND SHEAR LOADINGS) TO SUPPORT SEISMIC RESTRAINT DESIGNS MUST BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER WITH AT LEAST FIVE YEARS OF SEISMIC DESIGN EXPERIENCE AND LICENSED IN THE STATE OF THE JOB LOCATION. TESTING AND CALCULATIONS MUST INCLUDE BOTH SHEAR AND TENSILE LOADS AS WELL AS ONE TEST OR ANALYSIS AT 45 DEGREES TO THE WEAKEST MODE.
d. ANALYSIS MUST INDICATE CALCULATED DEAD LOADS, STATIC SEISMIC LOADS AND CAPACITY OF MATERIALS UTILIZED FOR CONNECTIONS TO EQUIPMENT AND STRUCTURE. ANALYSIS MUST DETAIL ANCHORING METHODS, BOLT DIAMETER, EMBEDMENT AND/OR WELDED LENGTH.

- 1.2 MANUFACTURER'S RESPONSIBILITY
A. MANUFACTURER OF VIBRATION ISOLATION AND SEISMIC CONTROL EQUIPMENT SHALL HAVE THE FOLLOWING RESPONSIBILITIES:
1. DETERMINE VIBRATION ISOLATION AND SEISMIC RESTRAINT SIZES AND LOCATIONS.
2. PROVIDE VIBRATION ISOLATION AND SEISMIC RESTRAINTS AS SCHEDULED OR SPECIFIED.
3. PROVIDE CALCULATIONS AND MATERIALS IF REQUIRED FOR RESTRAINT OF UNISOLATED EQUIPMENT.
4. PROVIDE INSTALLATION INSTRUCTIONS, DRAWINGS AND TRAINED FIELD SUPERVISION TO INSURE PROPER INSTALLATION AND PERFORMANCE.
5. PROVIDE FIELD SURVEY OF THE INSTALLATION AND SUBMIT LETTER TO ENGINEER STATING THAT THE SEISMIC AND VIBRATION ISOLATION EQUIPMENT HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

SECTION 23 05 93 -- TESTING ADJUSTING AND BALANCING FOR HVAC

- 1.1 SUMMARY
A. A PORTION OF THE EXISTING DUCTWORK SHALL BE REUSED AS SHOWN ON THE DRAWINGS. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL VOLUME DAMPERS AS SHOWN ON THE DRAWING TO AID BALANCING.
B. THE CONTRACTOR SHALL HIRE A DUCT CLEANING SUBCONTRACTOR TO THOROUGHLY CLEAN ALL EXISTING AND NEW DUCTWORK BEFORE TESTING, ADJUSTING, AND BALANCING. CLEANLINESS SHALL BE IN ACCORDANCE WITH "VACUUM TEST" IN NADCA ACR, "ASSESSMENT, CLEANING AND RESTORATION OF HVAC SYSTEMS." ACCEPTABLE CLEANLINESS LEVEL: NET WEIGHT OF DEBRIS COLLECTED ON THE FILTER MEDIA SHALL NOT EXCEED 0.75MG/100SQ.CM.
C. THE CONTRACTOR SHALL CONDUCT DUCT LEAKAGE TEST IN COMPLIANCE WITH SMACNA'S "HVAC AIR DUCT LEAKAGE TEST MANUAL." SUBMIT A TEST REPORT. FOR ALL CUTS, TEST REPRESENTATIVE DUCT SECTIONS TOTALING NO LESS THAN 50 PERCENT OF TOTAL INSTALLED DUCT AREA. TEST FOR LEAKS BEFORE APPLY EXTERNAL INSULATION. CONDUCT TESTS AT STATIC PRESSURES EQUAL TO MAX DESIGN PRESSURE OF THE SYSTEM.
D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESEALING LEAKS. REFER TO SECTION 233113 METAL DUCTS FOR LEAKAGE CLASS REQUIREMENTS.
E. TAB CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR HVAC SYSTEMS TESTING, ADJUSTING, AND BALANCING WORK. PRIOR TO BALANCING, THE ALL CONTROL DAMPERS IN THE SYSTEM SHALL BE OPEN.
1.2 COORDINATION
A. NOTICE: PROVIDE SEVEN (7) DAYS' ADVANCE NOTICE FOR EACH TEST. INCLUDE SCHEDULED TEST DATES AND TIMES.
B. PERFORM TAB AFTER LEAKAGE AND PRESSURE TESTS ON AIR AND WATER DISTRIBUTION SYSTEMS HAVE BEEN SATISFACTORILY COMPLETED.
1.3 QUALITY ASSURANCE
A. TAB CONTRACTOR QUALIFICATIONS: ENGAGE A TAB ENTITY CERTIFIED BY NEBB OR TABB.
1. TAB FIELD SUPERVISOR: EMPLOYEE OF THE TAB CONTRACTOR AND CERTIFIED BY NEBB OR TABB.
2. TAB TECHNICIAN: EMPLOYEE OF THE TAB CONTRACTOR AND CERTIFIED BY NEBB OR

- TABB AS A TAB TECHNICIAN.
3. FINAL TAB SUBMITTAL: SUBMIT CONCURRENTLY WITH THE FIRST COMPLETE SUBMITTAL OF CONTRACTOR'S CONSTRUCTION SCHEDULE.
a. SUBMIT REVISED SUBMITTAL SCHEDULE TO REFLECT CHANGES IN CURRENT STATUS AND TIMING FOR SUBMITTALS.
b. ACTUAL FLOW RATES SHALL BE WITHIN 10% OF DESIGN FLOW RATES.
1.4 GENERAL PROCEDURES FOR TESTING AND BALANCING
A. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN ASHRAE 111, NEBB'S "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS", SMACNA'S "HVAC SYSTEMS - TESTING, ADJUSTING, AND BALANCING", AND IN THIS SECTION.
1. COMPLY WITH REQUIREMENTS IN ASHRAE 62.1, SECTION 7.2.2 - "AIR BALANCING."
B. CUT INSULATION, DUCTS, PIPES, AND EQUIPMENT CABINETS FOR INSTALLATION OF TEST PROBES TO THE MINIMUM EXTENT NECESSARY FOR TAB PROCEDURES.
1. AFTER TESTING AND BALANCING, INSTALL TEST PORTS AND DUCT ACCESS DOORS THAT COMPLY WITH REQUIREMENTS IN SECTION 233113 "METAL DUCTS."
2. INSTALL AND JOIN NEW INSULATION THAT MATCHES REMOVED MATERIALS. RESTORE INSULATION, COVERINGS, VAPOR BARRIER, AND FINISH ACCORDING TO SECTION 230713 "EXTERIOR DUCT INSULATION" AND SECTION 230700 "HVAC INSULATION".
C. MARK EQUIPMENT AND BALANCING DEVICES, INCLUDING VALVE POSITION INDICATORS, FAN-SPEED-CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, WITH PAINT OR OTHER SUITABLE, PERMANENT IDENTIFICATION MATERIAL TO SHOW FINAL SETTINGS.
D. TAKE AND REPORT TESTING AND BALANCING MEASUREMENTS IN INCH-POUND (IP) UNITS.

- 1.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS
A. ADJUST FANS TO DELIVER TOTAL INDICATED AIRFLOWS WITHIN THE MAXIMUM ALLOWABLE FAN SPEED LISTED BY FAN MANUFACTURER.
1. MEASURE TOTAL AIRFLOW.
a. WHERE SUFFICIENT SPACE IN DUCTS IS UNAVAILABLE FOR PITOT-TUBE TRAVERSE MEASUREMENTS, MEASURE AIRFLOW AT TERMINAL OUTLETS AND INLETS AND CALCULATE THE TOTAL AIRFLOW.
2. MEASURE FAN STATIC PRESSURES AS FOLLOWS TO DETERMINE ACTUAL STATIC PRESSURE:
a. MEASURE OUTLET STATIC PRESSURE AS FAR DOWNSTREAM FROM THE FAN AS PRACTICAL AND UPSTREAM FROM RESTRICTIONS IN DUCTS SUCH AS ELBOWS AND TRANSITIONS.
b. MEASURE STATIC PRESSURE DIRECTLY AT THE FAN OUTLET OR THROUGH THE FLEXIBLE CONNECTION.
c. MEASURE INLET STATIC PRESSURE OF SINGLE-INLET FANS IN THE INLET DUCT AS NEAR THE FAN AS POSSIBLE, UPSTREAM FROM THE FLEXIBLE CONNECTION, AND DOWNSTREAM FROM DUCT RESTRICTIONS.
d. MEASURE INLET STATIC PRESSURE OF DOUBLE-INLET FANS THROUGH THE WALL OF THE PLENUM THAT HOUSES THE FAN.
e. REPORT THE CLEANLINESS STATUS OF FILTERS AND THE TIME STATIC PRESSURES ARE MEASURED.
3. MEASURE STATIC PRESSURES ENTERING AND LEAVING OTHER DEVICES, SUCH AS SOUND TRAPS, HEAT-RECOVERY EQUIPMENT, AND AIR WASHERS, UNDER FINAL BALANCED CONDITIONS.
4. REVIEW RECORD DOCUMENTS TO DETERMINE VARIATIONS IN DESIGN STATIC PRESSURES VERSUS ACTUAL STATIC PRESSURES. CALCULATE ACTUAL SYSTEM-EFFECT FACTORS. RECOMMEND ADJUSTMENTS TO ACCOMMODATE ACTUAL CONDITIONS.
5. DO NOT MAKE FAN-SPEED ADJUSTMENTS THAT RESULT IN MOTOR OVERLOAD. CONSULT EQUIPMENT MANUFACTURERS ABOUT FAN-SPEED SAFETY FACTORS. MEASURE AMPERAGE IN FULL-COOLING, FULL-HEATING, ECONOMIZER, AND ANY OTHER OPERATING MODE TO DETERMINE THE MAXIMUM REQUIRED BRAKE HORSEPOWER.

- 1.6 REPORTING
A. INITIAL CONSTRUCTION-PHASE REPORT: BASED ON EXAMINATION OF THE CONTRACT DOCUMENTS AS SPECIFIED IN "EXAMINATION" ARTICLE, PREPARE A REPORT ON THE ADEQUACY OF DESIGN FOR SYSTEMS' BALANCING DEVICES. RECOMMEND CHANGES AND ADDITIONS TO SYSTEMS' BALANCING DEVICES TO FACILITATE PROPER PERFORMANCE MEASURING AND BALANCING. RECOMMEND CHANGES AND ADDITIONS TO HVAC SYSTEMS AND GENERAL CONSTRUCTION TO ALLOW NECESSARY FOR PERFORMANCE MEASURING AND BALANCING DEVICES.

- 1.7 FINAL REPORT
A. FINAL REPORT: PREPARE A CERTIFIED WRITTEN REPORT; TABULATE AND DIVIDE THE REPORT INTO SEPARATE SECTIONS FOR TESTED SYSTEMS AND BALANCED SYSTEMS.
1. INCLUDE A CERTIFICATION SHEET AT THE FRONT OF THE REPORT'S BINDER, SIGNED AND SEALED BY THE CERTIFIED TESTING AND BALANCING ENGINEER.
2. INCLUDE A LIST OF INSTRUMENTS USED FOR PROCEDURES, ALONG WITH PROOF OF CALIBRATION.

SECTION 23 07 00 -- HVAC INSULATION

- PART 1 - PRODUCTS
1.1 HVAC PIPING
1. INSULATION FOR THE HYDRONIC HEATING AND CHILLER PIPING SHALL BE RIGID MOLDED, NONCOMBUSTIBLE, WITH WICKING MATERIAL TO TRANSPORT CONDENSED WATER TO THE OUTSIDE OF THE SYSTEM FOR EVAPORATION TO THE ATMOSPHERE.
2. INSULATION THICKNESS FOR HYDRONIC HEATING SHALL BE:
FLUID TYPE PIPE SIZE (IN.) INSULATION THICKNESS
HWS/R (141F - 200F) < 1" 2.5"
1" - 1-1/2" 2.5"
1-1/2" - 4" 2.5"
NOTE: THICKNESS IS BASED ON INSULATION CONDUCTIVITY OF 0.27 BTU X IN/H.F.T.2. IF INSULATION CONDUCTIVITY IS GREATER, ADJUST THICKNESS TO MEET HEAT LOSS REQUIREMENTS.

- 3. INSULATION THICKNESS FOR CHILLED WATER PIPING SHALL BE:
FLUID TYPE PIPE SIZE (IN.) INSULATION THICKNESS
CHWS/R (40F - 60F) < 1" 0.5"
1" - 1-1/2" 0.5"
1-1/2" - 4" 1.0"
NOTE: THICKNESS IS BASED ON INSULATION CONDUCTIVITY OF 0.27 BTU X IN/H.F.T.2. IF INSULATION CONDUCTIVITY IS GREATER, ADJUST THICKNESS TO MEET HEAT LOSS REQUIREMENTS.

- 1.2 INTERIOR DUCT INSULATION
1. INSTALL DUCT INSULATION AFTER DUCTWORK HAS BEEN INSPECTED AND APPROVED.
2. INSTALL ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
3. SEAL JACKET BUTT JOINTS WITH FSK TAPE.
4. INSULATE DUCTWORK IN UNHEATED AND/OR UNCONDITIONED SPACES WITH 2 INCH DUCT INSULATION WITH ALUMINUM FOIL SCRIM KRAFT FACING. DENSITY SHALL BE 1.5 LB/CU. FT. EQUAL TO KNAUF "DUCT WRAP FSK".
5. INSULATE ALL INTERIOR DUCTWORK IN CONDITIONED SPACES. AIR INTAKE DUCTWORK AND DUCTWORK WITH AIR TEMPERATURES BELOW 50 DEGREES FAHRENHEIT SHALL BE INSULATED WITH 1-1/2" OF CLOSED-CELL INSULATION, ARMACELL OR EQUIVALENT

SECTION 23 21 13 -- HYDRONIC PIPING

- PART 1 - GENERAL
1.1 SECTION INCLUDES
A. HYDRONIC SYSTEM REQUIREMENTS
B. HEATING WATER PIPING ABOVE GRADE
C. CHILLED WATER PIPING ABOVE GRADE
D. PIPE HANGERS AND SUPPORTS
E. UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS
F. VALVES
F.1. BALL VALVES
F.2. BUTTERFLY VALVES
PART 2
2.01 HYDRONIC SYSTEM REQUIREMENTS
A. COMPLY WITH ASME B31 AND APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS/
B. PIPING: PROVIDE PIPING, FITTINGS, HANGERS, AND SUPPORTS AS REQUIRED, AND AS FOLLOWS:
1. WHERE MORE THAN ONE PIPING SYSTEM IS SPECIFIED, PROVIDE JOINING FITTINGS THAT ARE COMPATIBLE WITH PIPING MATERIALS AND ENSURE THAT THE INTEGRITY OF THE SYSTEM IS NOT JEOPARDIZED.
2. USE NON-CONDUCTING DIELECTRIC CONNECTIONS WHENEVER JOINING DISSIMILAR METALS.
3. GROOVED MECHANICAL JOINTS MAY BE USED IN ACCESSIBLE LOCATIONS ONLY.
a. ACCESSIBLE LOCATIONS INCLUDE THOSE EXPOSED ON INTERIOR OF BUILDING, IN PIPE CHASES, AND IN MECHANICAL ROOMS, ABOVEGROUND OUTDOORS, AND AS APPROVED BY ENGINEER.
b. USE RIGID JOINTS UNLESS OTHERWISE INDICATED.
4. PROVIDE PIPE HANGERS AND SUPPORTS IN ACCORDANCE WITH ASME B31.9 OR MSS SP-58 UNLESS INDICATED OTHERWISE.
C. PIPE-TO-VALVE AND PIPE-TO-EQUIPMENT CONNECTIONS: USE FLANGES, UNIONS, OR GROOVED COUPLINGS TO ALLOW DISCONNECTION OF COMPONENTS FOR SERVICING; DO NOT USE DIRECT WELDED, SOLDERED, OR THREADED CONNECTIONS.
D. VALVES: PROVIDE VALVES WHERE INDICATED:
1. PROVIDE DRAIN VALVES WHERE INDICATED, AND IF NOT INDICATED, PROVIDE AT LEAST AT MAIN SHUT-OFF, LOW POINTS OF PIPING, BASES OF VERTICAL RISES, AND AT EQUIPMENT. USE 3" GATE VALVES WITH CAP" PIPE TO NEAREST FLOOR DRAIN.
2.02 HEATING WATER PIPING, ABOVE GRADE
A. STEEL PIPE: ASTM A53/A53M, SCHEDULE 40, BLACK, USING ONE OF THE FOLLOWING JOINT TYPES:
1. WELDED JOINTS: ASTM A234/A234M, WROUGHT STEEL WELDING TYPE FITTINGS; AWS D1.1/D1.1M WELDED.
2. THREADED JOINTS: ASME B16.3, MALLEABLE IRON FITTINGS.
3. GROOVED JOINTS: ANWA C606 GROOVED PIPE, FITTINGS OF SAME MATERIAL, AND MECHANICAL COUPLINGS.
B. COPPER TUBE: ASTM B88 (ASTMB88M), TYPE K (A), DRAWN, USING ONE OF THE FOLLOWING JOINT TYPES:
1. SOLDER JOINTS: ASME B16.18 VAST BRASS/BRONZE OR ASME B16.22 SOLDER WROUGHT COPPER FITTINGS.
a. SOLDER: ASTM B32 LEAD-FREE SOLDER, HB ALLOY (95-5 TIN-ANTIMONY) OR TIN AND SILVER.
b. BRAZE: AWS A5.8M/A5.8 BCuP COPPER/SILVER ALLOY.
2. TEE CONNECTIONS: MECHANICALLY EXTRACTED COLLARS WITH NOTCHED AND DIMPLED BRANCH TUBE.
3. MECHANICAL PRESS SEALED FITTINGS: DOUBLE PRESSED TYPE COMPLYING WITH ASME B16.22, UTILIZING EPDM, NONTOXIC SYNTHETIC RUBBER SEALING ELEMENTS.
2.03 CHILLED WATER PIPING, ABOVE GRADE.
A. STEEL PIPE: ASTM A53/A53M, SCHEDULE 40, BLACK, USING ONE OF THE FOLLOWING JOINT TYPES:
1. WELDED JOINTS: ASTM A234/A234M, WROUGHT STEEL WELDING TYPE FITTINGS; AWS D1.1/D1.1M WELDED.
2. THREADED JOINTS: ASME B16.3, MALLEABLE IRON FITTINGS.
3. GROOVED JOINTS: ANWA C606 GROOVED PIPE, FITTINGS OF SAME MATERIAL, AND MECHANICAL COUPLINGS.

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DAVIS HALL GROUND FLOOR RENOVATIONS

PROJECT NO.: SCSU-2023-02
DATE: APRIL 7, 2023
DRAWING TITLE: MECHANICAL SPECIFICATIONS
REVISION:
SHEET: M0.03
SCALE: NTS

2.04 PIPE HANGERS AND SUPPORTS.

- A. PROVIDE HANGERS AND SUPPORTS THAT COMPLY WITH MSS SP-58.
 - 1. IF TYPE OF HANGER OR SUPPORT OF A PARTICULAR SITUATION IS NOT INDICATED, SELECT APPROPRIATE TYPE USING MSS-SP-58 RECOMMENDATIONS.
- B. IN GROOVED INSTALLATIONS, USE RIGID COUPLINGS WITH OFFSETTING ANGLE-PATTERN BOLT PADS OR WITH WEDGE-SHAPED GROOVES IN HEADER PIPING TO PERMIT SUPPORT AND HANGING IN ACCORDANCE WITH ASME B31.9.

2.05 UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS

- A. MECHANICAL COUPLINGS FOR GROOVED AND SHOULDERED JOINTS, TWO OR MORE CURVED HOUSING SEGMENTS WITH CONTINUOUS KEY TO ENGAGE PIPE GROOVE, CIRCULAR C-PROFILE GASKET, AND BOLTS TO SECURE AND COMPRESS GASKET.
 - 1. DIMENSIONS AND TESTING: IN ACCORDANCE WITH AWWA C606.
 - 2. MECHANICAL COUPLINGS: COMPLY WITH ASTM F1476
 - 3. BOLTS AND NUTS: HOT DIPPED GALVANIZED OR ZINC-ELECTROPLATED STEEL.
 - 4. WHEN PIPE IS FIELD GROOVED: PROVIDE COUPLING MANUFACTURER'S GROOVING TOOLS.

SECTION 23 31 13 -- METAL DUCTS

1.1 MATERIALS

PROVIDE THE MATERIALS LISTED BELOW AND ANY ACCESSORIES NOT LISTED FOR THE COMPLETE OPERATION OF SAID MATERIAL.

- A. GENERAL: NON-COMBUSTIBLE OR CONFORMING TO REQUIREMENTS FOR CLASS 1 AIR DUCT MATERIALS, OR UL 181. EXCEPT AS NOTED OR SPECIFIED OTHERWISE, DUCTS SHALL BE FABRICATED FOR SMACNA DUCT PRESSURE CLASS 2" W.G. WITH CLASS B SEALS. FABRICATE FOR HIGHER PRESSURE CLASS WHERE SHOWN. FABRICATE BRANCH DUCTS TO INDIVIDUAL DIFFUSERS FOR 1" W.G. PRESSURE CLASS WITH CLASS C SEALS.

E. SHOP DRAWINGS AND COORDINATION DRAWINGS

- 1. FABRICATION, ASSEMBLY, AND INSTALLATION, INCLUDING PLANS, ELEVATIONS, SECTIONS, COMPONENTS, AND ATTACHMENTS TO OTHER WORK.
- 2. DUCT LAYOUT INDICATING SIZES, CONFIGURATION, LINER MATERIAL, AND STATIC PRESSURE CLASSES.
- 3. PENETRATIONS THROUGH FIRE-RATED AND OTHER PARTITIONS.
- 4. LOCATIONS FOR DUCT ACCESSORIES, INCLUDING DAMPERS, AND TURNING VANES.
- 5. HANGERS AND SUPPORTS.
- 6. DUCT INSTALLATION IN CONGESTED SPACES, INDICATING COORDINATION WITH GENERAL CONSTRUCTION, BUILDING COMPONENTS, AND OTHER BUILDING SERVICES. INDICATE ANY PROPOSED CHANGES TO DUCT LAYOUT.

F. DUCT MATERIAL

- 1. STEEL: ASTM A525 GALVANIZED STEEL SHEET, LOCK-FORMING QUALITY, HAVING ZINC COATING OF 1.25 OZ PER SQ. FT. FOR EACH SIDE. MINIMUM 26 GAUGE.
- 2. SPIRAL ROUND DUCTWORK
 - a. ROUND SUPPLY DUCTWORK SHALL BE OF SPIRAL LOCKSEAM CONSTRUCTION. LONGITUDINAL SEAM AND SPIRAL LOCKSEAM WITH STANDING RIB CONSTRUCTION NOT ALLOWED.
 - b. EQUAL TO UNITED MCGILL, SEMCO, LINDAB, EASTERN SHEETMETAL OR SHOP FABRICATED APPROVED EQUAL.
 - c. FITTINGS: EQUAL TO UNITED MCGILL "UNI-SEAM". DO NOT USE MITERED ELBOWS OR ANY FITTING WITH TURNING VANES.
- 3. MATERIAL THICKNESS SHALL CONFORM TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS FOR DUCT PRESSURE CLASS CONSISTENT WITH REINFORCEMENT METHOD AND DUCT SIZE.
- 4. FLEXIBLE INSULATED DUCTWORK
 - TRILAMINATE OF ALUMINUM FOIL, FIBERGLASS AND ALUMINIZED POLYESTER MECHANICALLY INTERLOCKED BY A CORROSION RESISTANT METAL SPIRAL HELIX ON THE OUTSIDE OF THE FABRIC WITH FIBERGLASS INSULATION BLANKET AND POLYETHYLENE JACKET. LISTED UL 181 CLASS 1 AIR DUCT. EQUAL TO FABRIFLEX 2 AS MANUFACTURED BY BUCKLEY ASSOC. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE EIGHT FEET.

C. ACCESS DOORS IN DUCTS

- 1. FOLLOW FIGURE 2-14 IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS. DOOR SHALL BE TYPE C, INSULATED, WITH TWO BUTT HINGES AND TWO SASH LOCKS.
- 2. FIRE DAMPER ACCESS DOORS SHALL HAVE A MINIMUM CLEAR OPENING OF 12" X 12" OR LARGER AS REQUIRED TO EASILY SERVICE FIRE DAMPER. DOORS SHALL BE WITHIN SIX INCHES OF FIRE DAMPERS.

D. FLEXIBLE CONNECTIONS

- 1. 30 OZ. CLOSELY WOVEN UL APPROVED GLASS FABRIC, DOUBLE COATED WITH NEOPRENE.
- 2. FIRE RETARDANT, WATERPROOF, AIR-TIGHT, RESISTANT TO ACIDS AND GREASE, AND WITHSTAND CONSTANT TEMPERATURES OF 250 DEG F.
- 3. EQUAL TO DURO-DYNE SUPER METAL FAB - NEOPRENE.

E. DUCT SEALANT

- 1. DUCT SEALANTS AND ADHESIVES SHALL BE UL CLASSIFIED 25/50 OR LESS FLAME SPREAD/SMOKE DEVELOPED.
- 2. TRANSVERSE SEAMS SHALL BE SEALED WITH WATER-BASED DUCT SEALANT EQUAL TO UNITED MCGILL "UNITED DUCT SEALER" OR 2-PART SYSTEM USING EQUAL TO UNITED MCGILL "UNI-CAST" TAPE AND ADHESIVE. DUCT TAPE IS NOT ACCEPTABLE.
- 3. LONGITUDINAL (PITTSBURG OR OTHER) SEAMS SHALL BE SEALED WITH SEALANT EQUAL TO UNITED MCGILL "UNI-SEAM" SOLVENT-BASED POLYMERIC RUBBER MASTIC.

E. DUCT SEALING

- 1. SEAL DUCTS TO THE FOLLOWING SEAL CLASSES ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE":
 - 1.1. OUTDOOR, SUPPLY AIR DUCTS: SEAL CLASS A.
 - 1.2. OUTDOOR, EXHAUST DUCTS: SEAL CLASS C.
 - 1.3. OUTDOOR, RETURN AIR DUCTS: SEAL CLASS C.
 - 1.4. CONDITIONED SPACE, SUPPLY AIR DUCTS IN PRESSURE CLASSES 2 INCH WG AND LOWER: SEAL CLASS C.

1.5. CONDITIONED SPACE, EXHAUST DUCTS: SEAL CLASS B.

1.6. CONDITIONED SPACE, RETURN AIR DUCTS: SEAL CLASS C.

F. VOLUME DAMPERS

- 1. IN MAIN DUCTS: 16 GAUGE GALVANIZED STEEL, OPPOSED BLADE TYPE WITH 3/8 INCH PINS AND END BEARINGS. BLADES SHALL HAVE 1/8 INCH CLEARANCE ALL AROUND. MANUFACTURED BY DURO-DYNE, OR APPROVED EQUAL.
- 2. IN BRANCH DUCTS: EXTRUDED ALUMINUM, OPPOSED BLADE TYPE. WHEN IN OPEN POSITION, SHALL NOT EXTEND BEYOND DAMPER FRAME. MAXIMUM BLADE LENGTH: TWELVE INCHES. DAMPER REGULATOR: CONCEALED TYPE WITH OPERATION FROM BOTTOM OR WITH 90 DEG MITER GEAR ASSEMBLY FROM SIDE. MANUFACTURED BY DURO-DYNE, OR APPROVED EQUAL.
- 3. DAMPERS ABOVE REMOVABLE CEILING SHALL HAVE A LOCKING QUADRANT ON BOTTOM OR SIDE OF DUCT. OTHERWISE, PROVIDE A CONCEALED CEILING DAMPER REGULATOR AND COVER PLATE.

G. BALANCING DAMPER

- 1. FURNISH AND INSTALL, AT LOCATIONS SHOWN ON PLANS OR IN ACCORDANCE WITH SCHEDULES, CALIBRATED IRIS BALANCING DAMPERS. IRIS DAMPER FRAME SHALL BE 22 GAGE STEEL. FRAME SHALL FULLY ENCAPSULATE IRIS BLADE SEGMENTS, HOLDING THEM FIRMLY INTO POSITION, AND HAVE ROLLED MOUNTED BEADS TO INCREASE THE OVERALL STRENGTH OF THE ASSEMBLY. FULL CIRCUMFERENCE DUCT SEAL SHALL BE FURNISHED ON AIR ENTERING AND AIR LEAVING SIDE OF FRAME TO INSURE A TIGHT DUCT CONNECTION. CASING LEAKAGE SHALL NOT EXCEED 6 CFM. IRIS BLADE SEGMENTS SHALL BE INTERNALLY LINKED AND DRIVEN BY A FACTORY CALIBRATED MANUAL ADJUSTMENT KNOB. ALL LINKAGE PARTS SHALL BE FULLY ENCAPSULATED AND OUT OF THE AIR STREAM.
- 2. MANUAL ADJUSTMENT KNOB SHALL BE CALIBRATED TO THE EXACT APERTURE POSITION AND ALIGNED WITH THE K FACTOR SET POINT TO PROVIDE LINEAR RESPONSE FLOW CONTROL. FLOW MEASUREMENT ACCURACY SHALL BE WITHIN +/- 5% ASSEMBLED UNIT SHALL BE FURNISHED WITH SPECIFIC CHARTS DESIGNED FOR THE EXACT SIZE AND BLADE APERTURE CONFIGURATION. AIR PRESSURE TAPS SHALL BE INTEGRAL TO THE DAMPER FRAME AND POSITIONED ON EITHER SIDE OF THE IRIS BLADE SEGMENTS. THE DAMPER SHALL BE EQUIVALENT TO RUSKIN MODEL VFBD35.

H. TURNING VANES

EQUAL TO DURO-DYNE "VANE RAIL."

I. DUCT HANGERS

- 1. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," CHAPTER 5, "HANGERS AND SUPPORTS."
- 2. RECTANGULAR DUCTWORK
 - a. 1" X 18 GAUGE GALVANIZED STEEL STRAPS OR TRAPEZE HANGERS WITH THREADED STEEL RODS, SPACED NOT MORE THAN EIGHT FEET APART. DO NOT USE WIRE HANGERS. HANGER FREQUENCY SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS.

K. DUCT CONNECTION SYSTEM

- 1. TRANSVERSE JOINTS AND LONGITUDINAL SEAMS SHALL CONFORM TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS FOR PRESSURE CLASS, DUCT DIMENSIONS AND REINFORCEMENT METHOD.
- 2. BUTTON PUNCH SNAP LOCK FABRICATION METHOD FOR LONGITUDINAL SEAMS SHALL NOT BE USED.
- 3. RECTANGULAR DUCT
 - a. EQUAL TO "DUCTMATE 25" OR "DUCTMATE 35" BY DUCTMATE INDUSTRIES.
 - b. SYSTEM CONSISTS OF THE FOLLOWING:
 - 1) DUCTMATE 35 ANGLE IS ROLL-FORMED FROM 20 GA GALVANIZED STEEL, WITH AN INTEGRAL SEALANT.
 - 2) DUCTMATE 25 ANGLE IS ROLL-FORMED FROM 24 GA GALVANIZED STEEL, WITH AN INTEGRAL SEALANT.
 - 3) DUCTMATE DC11B OR DC35 CORNER PIECES INSERT INTO THE HOLLOW WEB OF THE 35 ANGLE.
 - 4) METAL CLEAT IS ROLL-FORMED FROM 20 GA GALVANIZED STEEL.
 - 5) GASKET IS EXTRUDED BUTYL FOR USE BETWEEN MATING FLANGES.
 - 6) CORNER CLIPS ARE 16 GA GALVANIZED STEEL.
 - 7) MASTIC: 5511M
 - 8) GASKET: DUCTMATE 440
 - c. LIMITATIONS
 - 1) DUCTMATE 35 SYSTEM IS COMPARABLE TO SMACNA CLASS "J" TRANSVERSE JOINT AND IS NOT RECOMMENDED FOR APPLICATIONS WITH DUCT GAGES HEAVIER THAN 16 GAGE OR LIGHTER THAN 26 GAGE.
 - 2) DUCTMATE 25 SYSTEM IS COMPARABLE TO SMACNA CLASS "F" TRANSVERSE JOINT AND IS NOT RECOMMENDED FOR APPLICATIONS WITH DUCT GAGES HEAVIER THAN 20 GAGE OR LIGHTER THAN 26 GAGE.
- 4. SPIRAL ROUND DUCT
 - a. EQUAL TO "SPIRALMATE" ROUND DUCT CONNECTOR SYSTEM BY DUCTMATE INDUSTRIES.
 - b. SYSTEM CONSISTS OF THE FOLLOWING COMPONENTS:
 - 1) TWO MATING ROUND DUCT CONNECTOR FLANGES OF ROLL-FORMED GALVANIZED STEEL WITH INTEGRAL SEALANT.
 - 2) A CLOSURE RING OF ROLL-FORMED GALVANIZED STEEL.
 - 3) MASTIC: DUCTMATE DM5511M.
 - 4) GASKET: DUCTMATE DM440 AND NEOPRENE.
 - c. LIMITATIONS
 - 1) NOT RECOMMENDED FOR APPLICATIONS WITH DUCT GAGES HEAVIER THAN 16 GAGE.
 - 2) FOR USE ON ROUND DUCT SIZES FROM 10" TO 72".

- J. FIRE DAMPERS SHALL BE PREFCO TYPE 5500 LPB OR EQUAL BY RUSKIN, GREENHECK OR PHILLIPS INDUSTRIES. PROVIDE 14 GA. SLEEVE THROUGH WALL/FLOOR OPENING AND 1" X 1" X 18 GA. MOUNTING ANGLES FOR DAMPERS UP TO 72" WIDTH OR HEIGHT ON BOTH SIDES OF WALL/FLOOR OPENING.

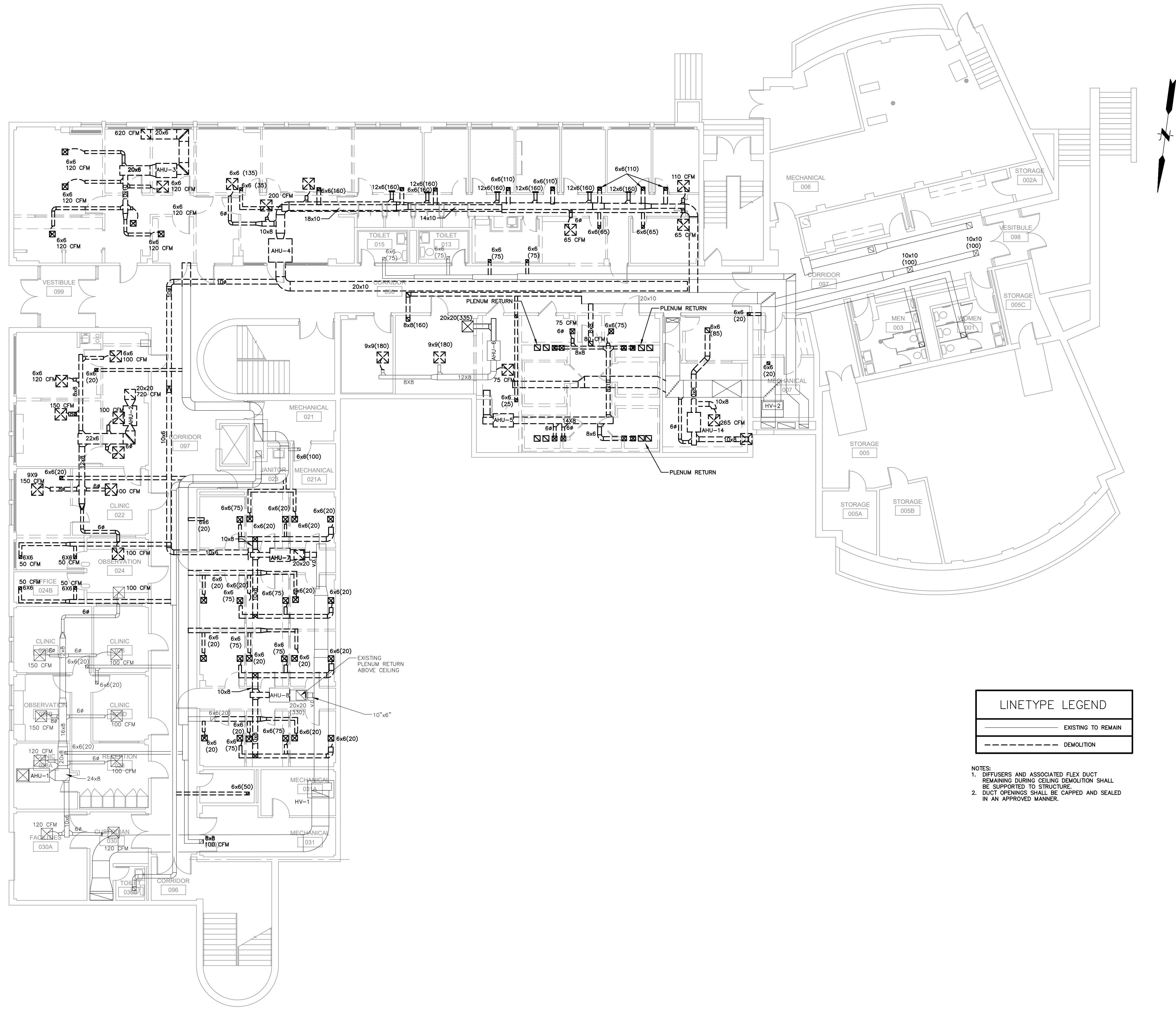
- K. SMOKE DAMPERS SHALL BE TYPE 5150 AND COMBINATION FIRE/SMOKE DAMPERS SHALL BE TYPE 5020 MANUFACTURED BY PREFCO PRODUCTS, INC. OR EQUAL BY RUSKIN, GREENHECK OR PHILLIPS INDUSTRIES. DAMPER SHALL BE COUPLED TO A POWER OPEN/SPRING RETURN 120 VAC DAMPER ACTUATOR EQUAL TO PREFCO 5800 SERIES. SMOKE DAMPER AND

COMBINATION SMOKE/FIRE DAMPER SHALL ALSO SERVE AS A VOLUME DAMPER.

SECTION 23 90 00 -- PROJECT CLOSEOUT

- A. ENGINEERING INSPECTIONS SHALL TAKE PLACE AT SUBSTANTIAL COMPLETION BUT BEFORE INSULATION IS INSTALLED ON EQUIPMENT, PIPING AND DUCTWORK. CONTACT THE ENGINEER TO COORDINATE INSPECTION.
 - B. CONTACT THE MANUFACTURER COORDINATE FORMAL STARTUP FOR ALL MAJOR EQUIPMENT.
 - C. CLOSEOUT REPORTS SHALL BE SUBMITTED TO THE ENGINEER AND OWNER UPON COMPLETION. CLOSEOUT DOCUMENTS MUST BE SUBMITTED TO THE ENGINEER IN ORDER FOR ENGINEER TO PROVIDE THE FINAL AFFIDAVITS.
 - D. AT MINIMUM, THE FOLLOWING REPORTS SHALL BE SUBMITTED:
 - 1. TESTING AND BALANCING REPORT
 - 2. SYSTEM STARTUP REPORTS
- MANUFACTURER STARTUP REPORTS ON MAJOR EQUIPMENT



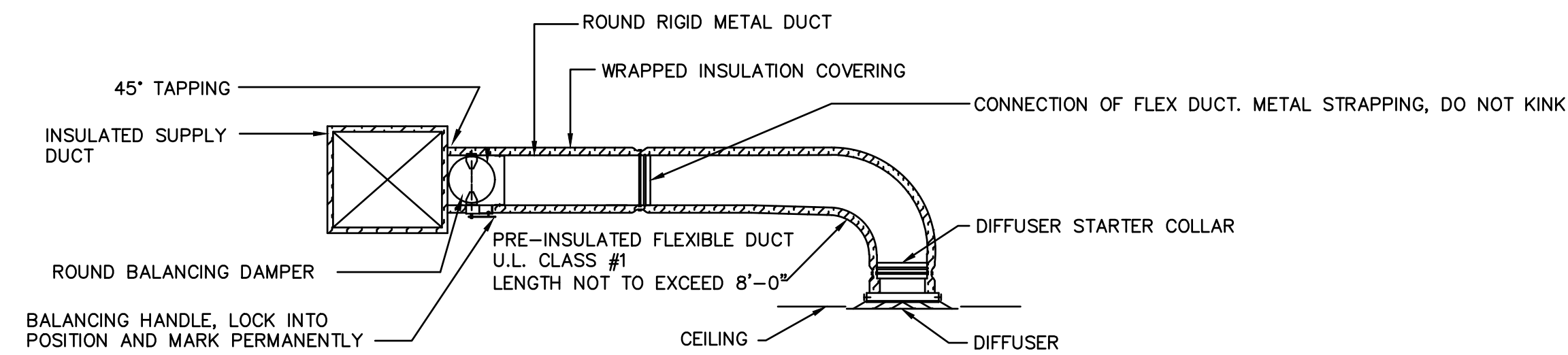


LINETYPE LEGEND	
	EXISTING TO REMAIN
	DEMOLITION

- NOTES:
1. DIFFUSERS AND ASSOCIATED FLEX DUCT REMAINING DURING CEILING DEMOLITION SHALL BE SUPPORTED TO STRUCTURE.
 2. DUCT OPENINGS SHALL BE CAPPED AND SEALED IN AN APPROVED MANNER.



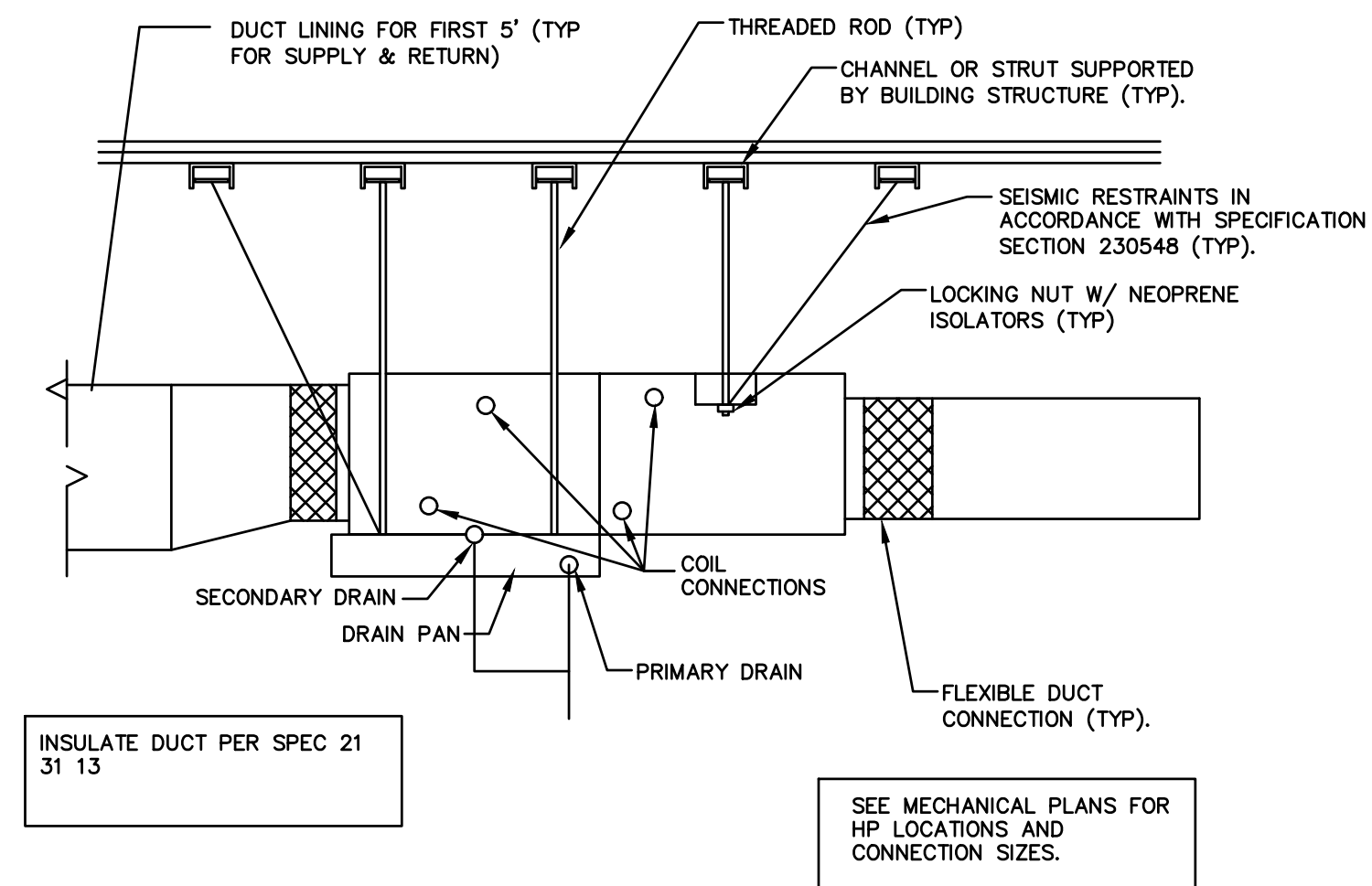
DAVIS HALL GROUND FLOOR RENOVATIONS



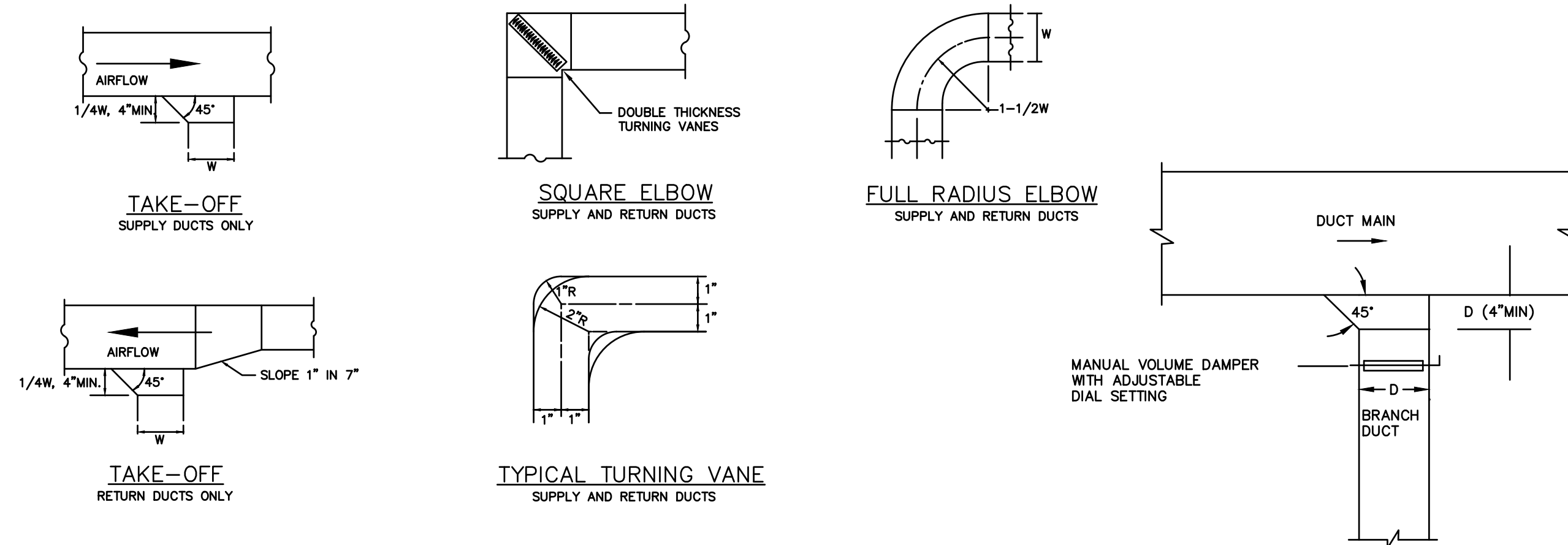
- NOTES:
1. PROVIDE AT FLEXIBLE DUCT CONNECTION METAL OR "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX. SECURE THE INSULATION OVER THE DRAW BAND WITH AN ADDITIONAL DRAWBAND.
 2. PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.
 3. PROVIDE MINIMUM 2" COLLARS FOR ATTACHMENT OF THE FLEX DUCT TO ROUND DUCT, DAMPERS AND DIFFUSERS.
 4. BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.
 5. PROVIDE 45° TAKE-OFF WHERE DUCT HEIGHT WILL NOT ACCOMMODATE A BELLMOUTH TYPE FITTING.

FLEXIBLE DUCT SIZES (CONNECTION TO DIFFUSERS AND GRILLES)		
CFM	INCHES	NOTE
LESS AND 100	6"	10' MAX LENGTH
101 - 250	8"	10' MAX LENGTH
251 - 350	10"	10' MAX LENGTH

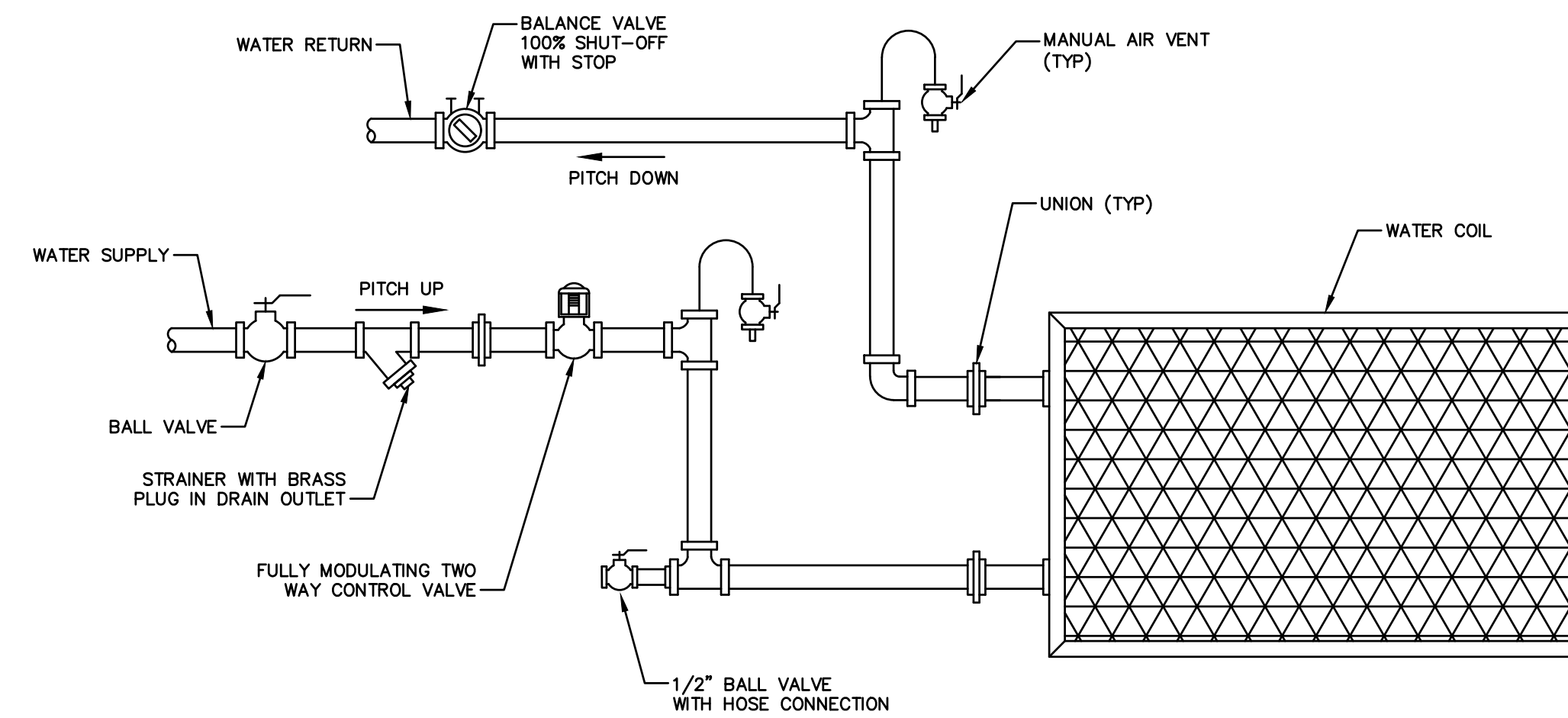
3 FLEXIBLE DUCT INSTALLATION DETAIL
SCALE: NTS



6 TYPICAL FCU UNIT
SCALE: N.T.S.

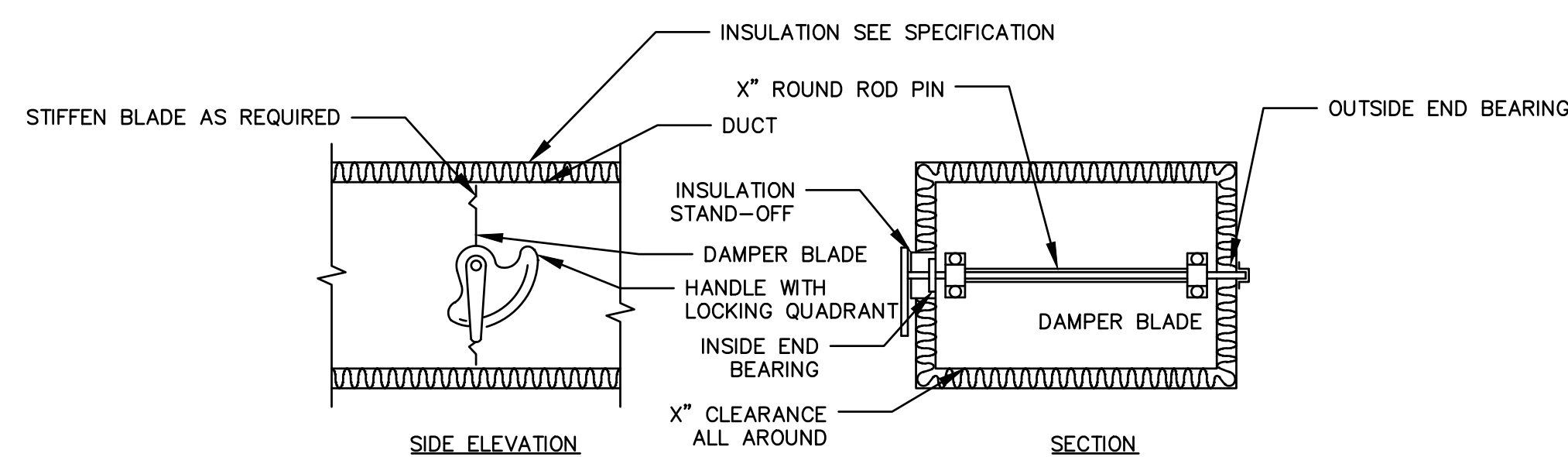


2 TYPICAL DUCT DETAILS
SCALE: N.T.S.



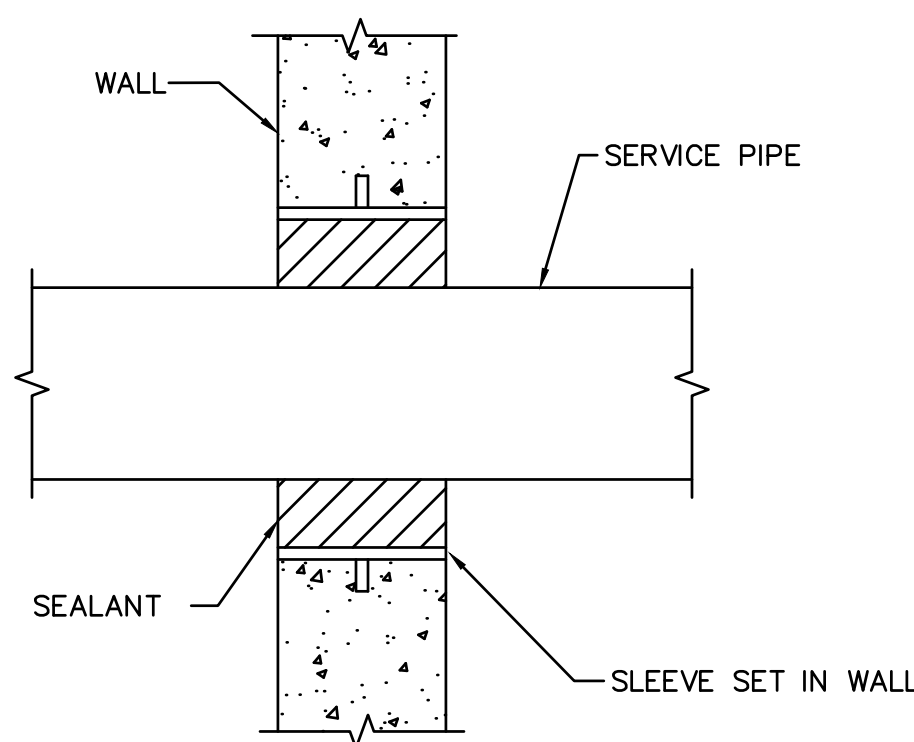
- NOTES:
1. THIS DETAIL IS DIAGRAMMATIC ONLY. ARRANGE PIPING TO FACILITATE COIL REMOVAL AND DO NOT OBSTRUCT ADJACENT EQUIPMENT.
 2. THIS DETAIL APPLIES TO BLOWER COIL UNITS (BCU'S) AND FAN COIL UNITS (FCU'S).

5 HYDRONIC (HOT/CHILLED WATER) COIL PIPING DETAIL
SCALE: N.T.S.

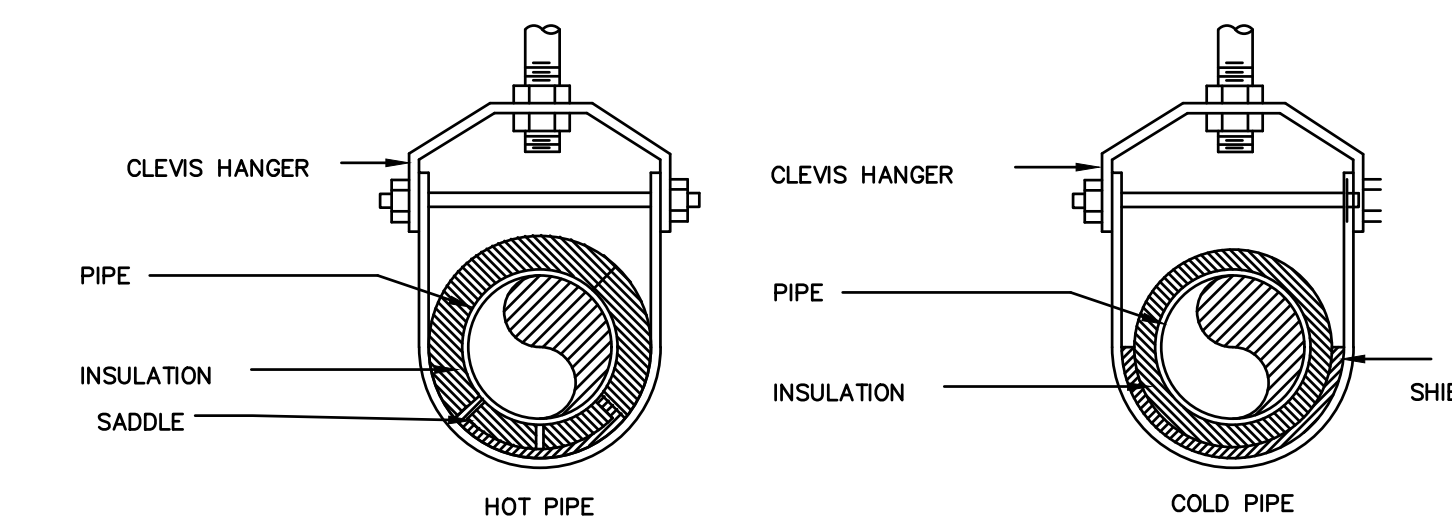


- NOTE:
1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
 2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

1 TYPICAL VOLUME DAMPER DETAIL
SCALE: N.T.S.



4 TYPICAL WALL PENETRATION
SCALE: N.T.S.



7 TYPICAL CLEVIS HANGER DETAIL
SCALE: N.T.S.





DAVIS HALL GROUND FLOOR
RENOVATIONS

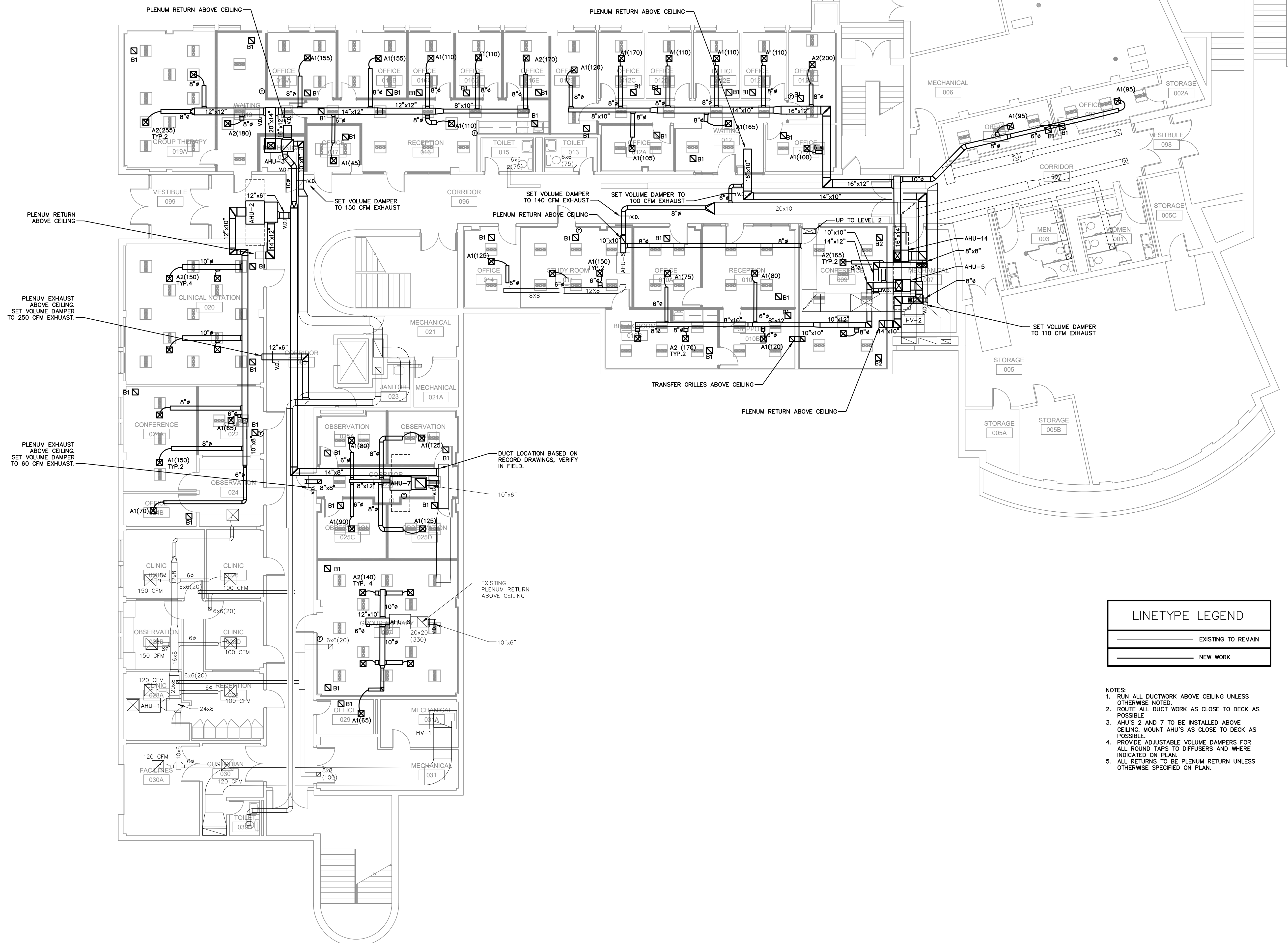
REVISION: PROJECT NO.: SCSU-2023-02

DATE: APRIL 7, 2023

DRAWING DUCTWORK
TITLE:

SHEET:
M1.01

SCALE: 1/8" = 1'



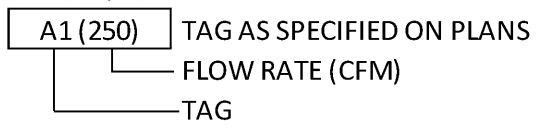
LINETYPE LEGEND	
	EXISTING TO REMAIN
	NEW WORK

- NOTES:
1. RUN ALL DUCTWORK ABOVE CEILING UNLESS OTHERWISE NOTED.
 2. ROUTE ALL DUCT WORK AS CLOSE TO DECK AS POSSIBLE.
 3. AHU'S 2 AND 7 TO BE INSTALLED ABOVE CEILING. MOUNT AHU'S AS CLOSE TO DECK AS POSSIBLE.
 4. PROVIDE ADJUSTABLE VOLUME DAMPERS FOR ALL ROUND TAPS TO DIFFUSERS AND WHERE INDICATED ON PLAN.
 5. ALL RETURNS TO BE PLENUM RETURN UNLESS OTHERWISE SPECIFIED ON PLAN.

AHU SCHEDULE (BASED ON TRANE)																			
UNIT	MODEL	SUPPLY CFM	OA CFM	ESP ("WC)	RPM	FAN POWER (BHP)	COOLING SECTION			HEATING SECTION			ELECTRICAL			DIMENSIONS (IN) (H X L X W)	WEIGHT (LBS)		
							EAT (DB/WB) (F)	MBH (T/S)	GPM	EAT/LAT (F)	HEATING CAPACITY (MBH)	GPM	VOLTS	FLA (BLOWER)	MCA			MOP	
AHU-2	BCHE054	1130	255	0.3	1006	0.272	75/65.4	39.55/25.36	8.3	N/A	N/A	N/A	115	13.3	16.63	25	18 X 35.8 X 46	243	
AHU-3	BCVE060	1850	150	0.4	1052	0.756	75/65.4	49.66/35.29	11.3	N/A	N/A	N/A	115	13.3	16.63	25	58.6 X 27.45 X 34.8	343	
AHU-5	BCVE048	1150	110	0.6	998	0.421	75/65.4	35.66/23.66	7.72	70/100.4	37.85	2.38	115	7.46	9.32	15	56.6 X 24.42 X 34.8	321	
AHU-7	BCHE018	496	120	0.6	1528	0.246	75/65.4	16.12/10.41	5.06	70/94.8	13.3	1.85	115	7.46	9.32	15	17 X 30.1 X 28	165	
AHU-14	BVCE036	865	100	0.3	1210	0.271	75/65.4	26.15/17.59	5.57	70/99.8	27.86	1.96	115	7.46	9.32	15	49.9 X 22.95 X 29.8	254	

NOTES:
1. UNITS TO BE FURNISHED WITH CONTROLS AS SHOWN ON SHEET M5.02.
2. DISCONNECT TO BE SUPPLIED BY DIVISION 23.
3. POWER AND RACEWAY TO BE PROVIDED BY DIVISION 26.

AIR DEVICE SCHEDULE (BASED ON PRICE)											
TAG	DESCRIPTION	MATERIAL	MFR	MODEL	FLOW RANGE		NOMINAL SIZE	NECK SIZE	MAX NC	MAX NECK VEL (FPM)	MOUNTING SELECTION
					MIN (CFM)	MAX (CFM)					
A1	4-WAY SUPPLY DIFFUSER	ALUMINUM	PRICE	SCD	75	139	12"x12"	4"	29	700	CEILING
A2	4-WAY SUPPLY DIFFUSER	ALUMINUM	PRICE	SMD	137	235	12"x12"	6"	29	600	CEILING
B1	RETURN GRILLE	ALUMINUM	PRICE	630	-	543	12"x 12"	-	30	700	CEILING

NOTES:
1. PROVIDE AIR FLOW (CFM) AND FLOW PATTERN AS SHOWN ON DRAWINGS.
2. COLOR AND FINISH OF ALL GRILLES, REGISTERS, AND DIFFUSERS AS SELECTED BY ARCHITECT.
3. GRILLE AND DIFFUSER NOMENCLATURE:


**SOUTHERN CONNECTICUT
STATE UNIVERSITY**
FACILITIES PLANNING DEPARTMENT
615 FITCH STREET / HAMDEN, CT 06514 / TEL: 203-392-6056



**DAVIS HALL GROUND FLOOR
RENOVATIONS**

REVISION:	PROJECT NO.: SCSU-2023-02
SHEET:	DATE: APRIL 7, 2023
M6.01	DRAWING TITLE: MECHANICAL SCHEDULES
	SCALE: NTS

GENERAL NOTES

- THE WORD "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
- ALL CONTRACTORS SHALL OBTAIN AND REVIEW ALL CONTRACT DOCUMENTS INCLUDING PLANS AND SPECIFICATIONS OF ALL TRADES BEFORE SUBMITTING BID. REFER TO SPECIFICATION AND PLANS, INCLUDING ALL EQUIPMENT SCHEDULES FOR MECHANICAL/PLUMBING AND ELECTRICAL ENGINEERING.
- THE INFORMATION SHOWN ON THE DRAWINGS IS DIAGRAMMATIC, INDICATING THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE LOCATIONS OF EQUIPMENT, AND THEIR ASSOCIATED ACCESS AREAS, WITH ALL TRADES BEFORE STARTING CONSTRUCTION. ANY MODIFICATIONS TO THE EQUIPMENT LAYOUT REQUIRED BY INSTALLATION BY ANY CONTRACTOR SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL NOTIFY ENGINEER OF ALL CONFLICTS BETWEEN DRAWINGS AND SPECIFICATIONS, OR BETWEEN CONSTRUCTION DOCUMENTS AND FIELD CONDITIONS. FOR EACH CONFLICT, CONTRACTOR SHALL CARRY THE MORE EXPENSIVE OR LARGER QUANTITY OPTION.
- SUBMISSION OF PROPOSAL DIRECTLY OR INDIRECTLY IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH HE WILL BE OBLIGATED TO OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING EQUIPMENT LOCATIONS IN THE FIELD, AND SHALL ADVISE THE ENGINEER AND THE OWNER OF ANY DISCREPANCIES BEFORE PERFORMING THE WORK.
- ALL WORK SHALL CONFORM TO ALL APPLICABLE CURRENT BUILDING CODES, RULES, REGULATIONS AND ORDINANCES, INCLUDING THE ONES WRITTEN BY:
 - REGULATORY AUTHORITIES HAVING JURISDICTION.
 - OWNER'S INSURANCE CARRIER
- CONTRACTOR SHALL SECURE ALL PERMITS AND APPLICATIONS AND PAY ALL FEES PERTAINING TO THE CONTRACT.
- ALL EQUIPMENT SHALL BE LOCATED IN ACCESSIBLE LOCATIONS WITH CODE OR MANUFACTURER-REQUIRED ACCESS SPACES. IF EQUIPMENT IS INSTALLED IN AN INACCESSIBLE LOCATION THE CONTRACTOR SHALL PROVIDE REQUIRED FIRE-RATED ACCESS DOORS, COORDINATED WITH THE ARCHITECT OR ENGINEER.
- ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE ALL HANGERS AND SUPPORTS REQUIRED FOR A COMPLETE INSTALLATION.
- EACH CONTRACTOR SHALL COORDINATE THE LOCATION OF THEIR WORK WITH ALL OTHER TRADES BEFORE STARTING CONSTRUCTION. ANY MODIFICATIONS TO THE SYSTEM LAYOUT REQUIRED FOR INSTALLATION SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
- RESTORATION OF EXISTING SYSTEMS, DEVICES, FINISHES, ETC., THAT ARE DAMAGED OR ALTERED BY NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY THE OWNER AND ENGINEER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR WORKMEN'S IDENTIFICATION AND BADGING, SITE SAFETY AND FIRE PROTECTION, CONTRACTOR'S LIABILITY INSURANCE, BARRICADES, WARNING SIGNS, TRASH REMOVAL, CUTTING AND PATCHING.
- CONTRACTOR SHALL SCHEDULE ALL SHUTDOWNS THAT AFFECT UTILITIES AND PORTIONS OF THE BUILDING THAT MUST REMAIN IN OPERATION WITH THE OWNER.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER AND ALL OTHER CONTRACTORS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING AND PROTECTION OF MATERIALS.
- CONTRACTOR SHALL PROVIDE LABOR TO RECEIVE, UNLOAD, STORE, PROTECT AND TRANSFER TO POINT OF INSTALLATION, OWNER FURNISHED ITEMS.
- CONTRACTORS SHALL PROVIDE SLEEVES AND SEALS FOR ALL PIPING OR CONDUIT THAT PENETRATES WALLS OR FLOOR SLABS.
- WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A LISTED FIRE STOP MATERIAL THAT MEETS ALL OF THE REQUIREMENTS OF THE STATE AND LOCAL BUILDING CODES AND THE LOCAL AUTHORITIES HAVING JURISDICTION. THIS MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUFACTURER TO MAINTAIN THE FIRE RATING OF THE PENETRATED WALL OR FLOOR. THE FIRE-STOP INSTALLING CONTRACTOR SHALL BE CERTIFIED BY THE FIRE-STOPPING SYSTEM MANUFACTURER.
- ALL FLOOR-MOUNTED MECHANICAL/PLUMBING AND ELECTRICAL EQUIPMENT SHALL BE INSTALLED ON A CONCRETE HOUSEKEEPING PAD.
- CONTRACTOR SHALL SUBMIT SIZE AND LOCATION OF ALL WALL AND FLOOR CORINGS TO STRUCTURAL ENGINEER FOR REVIEW BEFORE INSTALLATION. CONTRACTOR SHALL REPAIR ANY DAMAGE DUE TO CORINGS INSTALLED, AT NO COST TO OWNER. THE DAMAGE REPAIRING SHALL ALSO BE REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER.
- CONTRACTOR SHALL SUBMIT SIZE AND LOCATION OF ANY PROPOSED STRUCTURAL MEMBER PENETRATIONS TO THE STRUCTURAL ENGINEER FOR REVIEW AND DETAILING BEFORE INSTALLATION. CONTRACTOR SHALL REPAIR ANY DAMAGE DUE TO PENETRATIONS INSTALLED, AT NO COST TO OWNER. THE DAMAGE REPAIRING SHALL ALSO BE REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER.
- CONTRACTOR SHALL SUBMIT (3) SETS OF SHOP DRAWINGS, SUBMITTALS, AND EQUIPMENT CUT SHEET INFORMATION TO THE ENGINEER FOR REVIEW PRIOR TO STARTING ANY WORK.
- UPON COMPLETION OF CONSTRUCTION CONTRACTOR SHALL SUPPLY THE ENGINEER WITH (1) COMPLETE SET OF ELECTRONIC AS-BUILT DOCUMENTS AND (4) COMPLETE COPIES OF OPERATIONS AND MAINTENANCE MANUALS, ALL AT CONTRACTOR'S EXPENSE.
- ALL PIPING AND DUCTWORK LAYOUTS ARE SHOWN IN APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL INSTALL ALL REQUIRED OFFSETS AND TRANSITIONS TO PREVENT INTERFERENCE WITH FIELD CONDITIONS AND TO COORDINATE WITH OTHER TRADES AT NO COST TO THE OWNER.
- ALL REQUIRED OPENINGS THROUGH WALLS, FLOORS, AND CEILINGS SHALL BE COORDINATED BY THE CONTRACTOR USING ENGINEER AND ARCHITECT REVIEWED & APPROVED EQUIPMENT SHOP DRAWINGS.
- NO PIPING OR DUCTS SHALL BE INSTALLED OVER ELECTRICAL PANELS, TRANSFORMERS, OR ELEVATOR MACHINE ROOM EQUIPMENT. CONTRACTOR SHALL COORDINATE PIPING AND DUCTWORK WITH ELECTRICAL EQUIPMENT IN FIELD AS PART OF COORDINATION DRAWINGS.
- PROVIDE SPRING ISOLATED & SEISMICALLY RATED HANGERS FOR EQUIPMENT, DUCTS, AND PIPING ACCORDING TO THE VIBRATION ISOLATION SCHEDULE. INCLUDE DETAILS AND LOCATIONS ON COORDINATION DRAWINGS.
- PROVIDE AIR VENTS AT ALL HIGH POINTS AND DRAINS AT LOW POINTS.
- ROOF PENETRATION IS NOT ANTICIPATED FOR THIS PROJECT. WHEN ROOF ACCESS IS REQUIRED, SUCH AS CHIMNEY LINER INSTALLATION, CONTRACTOR SHALL MAKE PROVISIONS TO PROTECT THE ROOF WARRANTY DURING THE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ROOF DAMAGE AND SHALL REPAIR THE DAMAGE AT NO COST TO THE OWNER.
- HYDROSTATIC TESTING SHALL BE PERFORMED ON ALL EQUIPMENT AND PIPING THAT IS SUBJECTED TO PRESSURES ABOVE AMBIENT. THE MECHANICAL/PLUMBING CONTRACTOR SHALL DEVELOP A TEST SEQUENCE AND PHASES BASED UPON THE SYSTEM DESIGN, THE SYSTEM COMPONENTS THAT REQUIRE TESTING, AND THE CONSTRUCTION SEQUENCE OF THOSE COMPONENTS. THE CONTRACTOR SHALL PROVIDE THIS TEST SEQUENCE TO THE OWNER AND ENGINEER FOR REVIEW. THE CONTRACTOR SHALL GIVE THE ENGINEER AND OWNER 48 HOURS NOTICE BEFORE PERFORMING ANY SYSTEM COMPONENT PRESSURE TEST. THE CONTRACTOR SHALL NOT USE A COMPRESSIBLE FLUID, SUCH AS COMPRESSED AIR, FOR THE HYDROSTATIC TESTS. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE ENGINEER AND OWNER THAT THE PRESSURE TEST EQUIPMENT, INCLUDING PRESSURE SENSORS AND GAGES, HAS BEEN CALIBRATED BEFORE USE. THE CONTRACTOR SHALL ISOLATE ALL EQUIPMENT AND PIPING THAT IS NOT UNDERGOING TESTING USING FLANGES OR CAPS, NOT SHUTOFF VALVES. REFER TO SPECIFICATIONS FOR HYDROSTATIC PRESSURE TEST DETAILS FOR A GIVEN SYSTEM COMPONENT.

PLUMBING ABBREVIATIONS	
S	= SANITARY
W	= WASTE
W&V	= COMBINATION WASTE & VENT
V	= VENT
VTR	= VENT THROUGH ROOF
C	= COLD WATER
H	= HOT WATER
HWR	= HOT WATER RETURN
TYP	= TYPICAL
GPM	= GALLONS PER MINUTE
TW	= TEPID WATER
AFF	= ABOVE FINISHED FLOOR
ETR	= EXISTING TO REMAIN

PLUMBING SYMBOL LEGEND	
	CHECK VALVE
	BALL VALVE
	BALANCE VALVE
	HOSE BIB WITH VALVE
	PIPE UP
	PIPE DOWN
	TEE DOWN
	UNION
	FLOOR CLEANOUT
	FIXTURE TRAP
	CLEANOUT
	GAS COCK
	THERMOMETER
	FLOOR DRAIN
	WATER METER
	WATER HAMMER ARRESTOR

SECTION 01 33 00 – SUBMITTAL PROCEDURES

1.1 SUBMITTALS

- A. SUBMITTAL SCHEDULE: SUBMIT A SCHEDULE OF SUBMITTALS, ARRANGED IN CHRONOLOGICAL ORDER BY DATES REQUIRED BY CONSTRUCTION SCHEDULE. INCLUDE TIME REQUIRED FOR REVIEW, ORDERING, MANUFACTURING, FABRICATION, AND DELIVERY WHEN ESTABLISHING DATES. INCLUDE ADDITIONAL TIME REQUIRED FOR MAKING CORRECTIONS OR REVISIONS TO SUBMITTALS NOTED BY ENGINEER AND CONSTRUCTION MANAGER AND ADDITIONAL TIME FOR HANDLING AND REVIEWING SUBMITTALS REQUIRED BY THOSE CORRECTIONS.

- COORDINATE SUBMITTAL SCHEDULE WITH LIST OF SUBCONTRACTS, THE SCHEDULE OF VALUES, AND CONTRACTOR'S CONSTRUCTION SCHEDULE.
- INITIAL SUBMITTAL: SUBMIT CONCURRENTLY WITH STARTUP CONSTRUCTION SCHEDULE. INCLUDE SUBMITTALS REQUIRED DURING THE FIRST 60 DAYS OF CONSTRUCTION. LIST THOSE SUBMITTALS REQUIRED TO MAINTAIN ORDERLY PROGRESS OF THE WORK AND THOSE REQUIRED EARLY BECAUSE OF LONG LEAD TIME FOR MANUFACTURE OR FABRICATION.
- FINAL SUBMITTAL: SUBMIT CONCURRENTLY WITH THE FIRST COMPLETE SUBMITTAL OF CONTRACTOR'S CONSTRUCTION SCHEDULE.
 - SUBMIT REVISED SUBMITTAL SCHEDULE TO REFLECT CHANGES IN CURRENT STATUS AND TIMING FOR SUBMITTALS.

1.2 ELECTRONIC SUBMITTALS

- A. IDENTIFY AND INCORPORATE INFORMATION IN EACH ELECTRONIC SUBMITTAL FILE AS FOLLOWS:
- ASSEMBLE COMPLETE SUBMITTAL PACKAGE INTO A SINGLE INDEXED FILE INCORPORATING SUBMITTAL REQUIREMENTS OF A SINGLE SPECIFICATION SECTION AND TRANSMITTAL FORM WITH LINKS ENABLING NAVIGATION TO EACH ITEM.
 - NAME FILE WITH SUBMITTAL NUMBER OR OTHER UNIQUE IDENTIFIER, INCLUDING REVISION IDENTIFIER.
 - TRANSMITTAL FORM FOR ELECTRONIC SUBMITTALS: USE ELECTRONIC FORM ACCEPTABLE TO OWNER, CONTAINING THE FOLLOWING INFORMATION:
 - PROJECT NAME.
 - DATE.
 - NAME AND ADDRESS OF ENGINEER.
 - NAME OF CONSTRUCTION MANAGER.
 - NAME OF CONTRACTOR.
 - NAME OF FIRM OR ENTITY THAT PREPARED SUBMITTAL.
 - NAMES OF SUBCONTRACTOR, MANUFACTURER, AND SUPPLIER.
 - CATEGORY AND TYPE OF SUBMITTAL.
 - SUBMITTAL PURPOSE AND DESCRIPTION.
 - SPECIFICATION SECTION NUMBER AND TITLE.
 - SPECIFICATION PARAGRAPH NUMBER OR DRAWING DESIGNATION AND GENERIC NAME FOR EACH OF MULTIPLE ITEMS.
 - DRAWING NUMBER AND DETAIL REFERENCES, AS APPROPRIATE.
 - LOCATION(S) WHERE PRODUCT IS TO BE INSTALLED, AS APPROPRIATE.
 - RELATED PHYSICAL SAMPLES SUBMITTED DIRECTLY.
 - INDICATION OF FULL OR PARTIAL SUBMITTAL.
 - TRANSMITTAL NUMBER, NUMBERED CONSECUTIVELY.
 - SUBMITTAL AND TRANSMITTAL DISTRIBUTION RECORD.
 - OTHER NECESSARY IDENTIFICATION.
 - REMARKS.
 - OPTIONS: IDENTIFY OPTIONS REQUIRING SELECTION BY ENGINEER.
 - DEVIATIONS AND ADDITIONAL INFORMATION: ON AN ATTACHED SEPARATE SHEET, PREPARED ON CONTRACTOR'S LETTERHEAD, RECORD RELEVANT INFORMATION, REQUESTS FOR DATA, REVISIONS OTHER THAN THOSE REQUESTED BY ENGINEER ON PREVIOUS SUBMITTALS, AND DEVIATIONS FROM REQUIREMENTS IN THE CONTRACT DOCUMENTS, INCLUDING MINOR VARIATIONS AND LIMITATIONS. INCLUDE SAME IDENTIFICATION INFORMATION AS RELATED SUBMITTAL.
 - RESUBMITTALS: MAKE RESUBMITTALS IN SAME FORM AND NUMBER OF COPIES AS INITIAL SUBMITTAL.
 - NOTE DATE AND CONTENT OF PREVIOUS SUBMITTAL.
 - NOTE DATE AND CONTENT OF REVISION IN LABEL OR TITLE BLOCK AND CLEARLY INDICATE EXTENT OF REVISION.
 - RESUBMIT SUBMITTALS UNTIL THEY ARE MARKED WITH APPROVAL NOTATION FROM ENGINEER'S ACTION STAMP.

1.3 SUBMITTALS & SHOP DRAWINGS

- A. PROVIDE SUBMITTALS IN ACCORDANCE WITH THESE SPECIFICATIONS, DIVISION 1 AND EACH DIVISION 22 SPECIFICATION SECTION.
- B. SUBMIT PRODUCT DATA AND SPECIFICATIONS INDICATING PERFORMANCE AS SPECIFIED IN THE CONTRACT DOCUMENTS. ALL PRODUCTS SUBMITTED SHALL BE CLEARLY IDENTIFIED ON THE CUT SHEETS ALONG WITH ALL ACCESSORIES PROVIDED. IDENTIFY PRODUCT USING SPECIFICATION SECTION NUMBER, SCHEDULE TAG OR OTHER DESCRIPTIVE IDENTIFIER.
- C. FURNISH COMPLETE CATALOG DATA FOR MATERIALS AND MANUFACTURED ITEMS OF EQUIPMENT THAT ARE TO BE USED FOR THIS PROJECT. CONTRACTOR SHALL SUBMIT ITEMS WITH THE LONGEST LEAD TIME FIRST. STATE SIZES, CAPACITIES, BRAND NAMES, MOTOR HP, ACCESSORIES, MATERIALS, GAUGES, DIMENSIONS, AND OTHER PERTINENT INFORMATION. UNDERLINE APPLICABLE DATA.
- D. IF MATERIAL OR EQUIPMENT IS NOT AS SPECIFIED OR SUBMITTAL IS INCOMPLETE SUBMITTAL WILL BE REJECTED BY ENGINEER WITHOUT FURTHER COMMENT.
- E. SUBMITTALS SHALL BE COMPLETE IN EVERY WAY INCLUDING COORDINATION WITH EXISTING CONDITIONS AND THE WORK OF OTHER DIVISIONS. ALL INCOMPLETE SUBMITTALS WILL BE RETURNED TO THE CONTRACTOR WITHOUT FURTHER COMMENT.

- F. CONTRACTOR SHALL KEEP A SUBMITTAL LOG AND SHALL SUBMIT REVISED SUBMITTAL LOG WITH EVERY SUBMISSION.
- G. EACH SUBMITTAL SHALL BE FOR A SPECIFIC ITEM, DEVICE OR FIXTURE USED. DO NOT COMBINE ALL SUBMITTALS INTO ONE PACKAGE. SUBMITTALS THAT ARE CONFUSING OR INAPPROPRIATELY ORGANIZED WILL BE REJECTED WITHOUT FURTHER COMMENT.
- H. SHOP DRAWINGS SHALL BE PROJECT SPECIFIC DRAWINGS PREPARED BY CONTRACTOR AT 1/4"=1'-0" SCALE WITH TITLE BLOCK. SHOP DRAWINGS SHALL SHOW THE EXTENT NECESSARY ALL DIMENSIONS, AND COORDINATION CLEARANCES NECESSARY.

- I. UNLESS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS CONTRACTOR SHALL SUBMIT (8) EIGHT HARD COPIES OF EACH SUBMITTAL USING APPROPRIATE DESCRIPTIVE NAME, SPECIFICATION SECTION OR SCHEDULE TAG FOR REVIEW.
- J. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING A REVIEW OF ALL SUBMITTALS FOR COMPLETENESS PRIOR TO SUBMITTING TO ENGINEER FOR REVIEW. CONTRACTOR SHALL STAMP AND SIGN EACH SUBMITTAL PRIOR TO SENDING TO ENGINEER FOR REVIEW. THE ENGINEER WILL PROVIDE AN INITIAL AND FOLLOW-UP REVIEW FOR EACH SUBMITTAL. IF ADDITIONAL REVIEW OF SUBMITTALS IS REQUIRED OR UNDUE TIME IS SPENT REVIEWING POORLY PREPARED SUBMITTALS THE CONTRACTOR SHALL COMPENSATE THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER FOR THE ADDITIONAL TIME REQUIRED TO PERFORM THE SUBMITTAL REVIEW AT ENGINEER'S BILLABLE RATE FOR THE PROJECT.

1.4 WARRANTIES AND GUARANTEES

- A. CONTRACTOR SHALL COMPLY WITH WARRANTIES AND GUARANTEES SPECIFIED WITHIN THE CONTRACT DOCUMENTS. IN THE EVENT OF CONTRADICTION THE MORE STRINGENT SHALL APPLY.
- B. THE CONTRACTOR SHALL GUARANTEE THE PLUMBING SYSTEM TO BE FREE FROM NOISE IN OPERATION THAT MAY DEVELOP AS A RESULT OF FAILURE TO CONSTRUCT SYSTEM IN ACCORDANCE WITH CONTRACT DOCUMENTS. IN ORDER TO BE PROTECTED THE CONTRACTOR SHALL SECURE PROPER GUARANTEES FROM SUPPLIERS AND SUBCONTRACTORS.
- C. DISCLAIMERS AND LIMITATIONS: MANUFACTURER'S DISCLAIMERS AND LIMITATIONS ON PRODUCT WARRANTIES DO NOT RELIEVE THE CONTRACTOR OF THE WARRANTY REQUIREMENTS OF THESE SPECIFICATIONS.
- D. RELATED DAMAGES AND LOSSES: WHEN CORRECTING FAILED OR DAMAGED WARRANTED CONSTRUCTION, REMOVE AND REPLACE CONSTRUCTION THAT HAS BEEN DAMAGED AS A RESULT OF SUCH FAILURE OR MUST BE REMOVED AND REPLACED TO PROVIDE ACCESS FOR CORRECTION OF WARRANTED CONSTRUCTION.
- E. REINSTATEMENT OF WARRANTY: WHEN WORK COVERED BY A WARRANTY HAS FAILED AND BEEN CORRECTED BY REPLACEMENT OR REBUILDING, REINSTATE THE WARRANTY BY WRITTEN ENDORSEMENT. THE REINSTATED WARRANTY SHALL BE EQUAL TO THE ORIGINAL WARRANTY WITH AN EQUITABLE ADJUSTMENT FOR DEPRECIATION.
- F. REPLACEMENT COST: UPON DETERMINATION THAT WORK COVERED BY A WARRANTY HAS FAILED, REPLACE OR REBUILD THE WORK TO AN ACCEPTABLE CONDITION COMPLYING WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF REPLACING OR REBUILDING DEFECTIVE WORK REGARDLESS OF WHETHER THE OWNER HAS BENEFITED FROM USE OF THE WORK THROUGH A PORTION OF ITS ANTICIPATED USEFUL SERVICE LIFE.
- G. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF EIGHTEEN MONTHS FROM THE DATE OF SUBSTANTIAL COMPLETION.
- H. THE CONTRACTOR SHALL FURNISH WRITTEN CONFIRMATION OF ALL WARRANTIES AND GUARANTEES SPECIFIED AND IMPLIED FOR THIS PROJECT TO THE OWNER AND ENGINEER FOR REVIEW (SUBMIT FOUR COPIES).

1.5 FINAL ACCEPTANCE

- A. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING A PRELIMINARY INSPECTION TO DETERMINE IF ALL WORK IS COMPLETE. AFTER VERIFICATION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH WRITTEN NOTICE THAT THE WORK IS COMPLETE. THE ENGINEER SHALL SCHEDULE AN INITIAL AND FOLLOW-UP VISIT TO VERIFY THAT THE WORK HAS BEEN COMPLETED IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. THE ENGINEER SHALL PREPARE A FORMAL PUNCH LIST OF ANY ITEMS CONSIDERED INCOMPLETE, AND DISTRIBUTE TO THE ARCHITECT, OWNER, AND CONTRACTOR. THE ENGINEER WILL THEN SCHEDULE ANOTHER FIELD VISIT TO VERIFY THE WORK IS COMPLETE. IF THE WORK IS NOT COMPLETE, THE COST FOR ADDITIONAL FIELD VISITS TO VERIFY THAT THE WORK IS COMPLETE SHALL BE BILLED TO THE CONTRACTOR AT THE RATE OF \$150.00 PER HOUR.

SECTION 22 05 19 – METERS AND GAGES FOR PLUMBING PIPING

- 1.1 METAL-CASE, LIQUID-IN-GLASS THERMOMETER
- A. CASE: BRASS 7 INCHES LONG.
- B. TUBE: RED OR BLUE READING, ORGANIC-LIQUID FILLED, WITH MAGNIFYING LENS.
- C. TUBE BACKGROUND: SATIN-FACED, NONREFLECTIVE ALUMINUM WITH PERMANENTLY ETCHED SCALE MARKINGS.
- D. WINDOW: GLASS.
- E. CONNECTOR: ADJUSTABLE TYPE, 180 DEGREES IN VERTICAL PLANE, 360 DEGREES IN HORIZONTAL PLANE, WITH LOCKING DEVICE.
- F. STEM: BRASS FOR THERMOWELL INSTALLATION AND OF LENGTH TO SUIT INSTALLATION.
- G. ACCURACY: PLUS OR MINUS 1 PERCENT OF RANGE OR PLUS OR MINUS 1 SCALE DIVISION TO MAXIMUM OF 1.5 PERCENT OF RANGE.

1.2 THERMOWELLS

SOUTHERN CONNECTICUT STATE UNIVERSITY
 FACILITIES PLANNING DEPARTMENT
 615 FITCH STREET / HAMDEN, CT 06514 / TEL: 203-392-6056



DAVIS HALL GROUND FLOOR RENOVATIONS

PROJECT NO.: SCSU-2023-02
 DATE: APRIL 7, 2023
 DRAWING TITLE: PLUMBING GENERAL NOTES AND SPECIFICATIONS
 SCALE: NTS

REVISION:
 SHEET: P0.01

- A. MANUFACTURERS: SAME AS MANUFACTURER OF THERMOMETER BEING USED.
- B. DESCRIPTION: PRESSURE-TIGHT, SOCKET-TYPE METAL FITTING MADE FOR INSERTION INTO PIPING AND OF TYPE, DIAMETER, AND LENGTH REQUIRED TO HOLD THERMOMETER.
- 1.3 PRESSURE GAGES
- A. DIRECT-MOUNTING, DIAL-TYPE PRESSURE GAGES: INDICATING-DIAL TYPE COMPLYING WITH ASME B40.100.
- CASE: LIQUID-FILLED TYPE, DRAWN STEEL OR CAST ALUMINUM, 4-1/2-INCH DIAMETER.
 - PRESSURE-ELEMENT ASSEMBLY: BOURDON TUBE, UNLESS OTHERWISE INDICATED.
 - PRESSURE CONNECTION: BRASS, NPS 1/4, BOTTOM-OUTLET TYPE UNLESS BACK-OUTLET TYPE IS INDICATED.
 - MOVEMENT: MECHANICAL, WITH LINK TO PRESSURE ELEMENT AND CONNECTION TO POINTER.
 - DIAL: SATIN-FACED, NON-REFLECTIVE ALUMINUM WITH PERMANENTLY ETCHED SCALE MARKINGS.
 - POINTER: RED METAL.
 - WINDOW: GLASS.
 - RING: BRASS.
 - ACCURACY: GRADE B, PLUS OR MINUS 2 PERCENT OF MIDDLE HALF SCALE.
 - VACUUM-PRESSURE RANGE: 30-IN. HG OF VACUUM TO 15 PSIG OF PRESSURE.
 - RANGE FOR FLUIDS UNDER PRESSURE: TWO TIMES OPERATING PRESSURE.
- B. PRESSURE-GAGE FITTINGS:
- VALVES: NPS 1/4 BRASS OR STAINLESS-STEEL NEEDLE TYPE.
 - SNUBBERS: ASME B40.5, NPS 1/4 BRASS BUSHING WITH CORROSION-RESISTANT, POROUS-METAL DISC OF MATERIAL SUITABLE FOR SYSTEM FLUID AND WORKING PRESSURE.

- 1.4 TEST PLUGS
- A. DESCRIPTION: CORROSION-RESISTANT BRASS OR STAINLESS-STEEL BODY WITH CORE INSERTS AND GASKETED AND THREADED CAP, WITH EXTENDED STEM FOR UNITS TO BE INSTALLED IN INSULATED PIPING.
- B. MINIMUM PRESSURE AND TEMPERATURE RATING: 500 PSIG AT 200 DEG F.
- C. CORE INSERTS: ONE OR TWO SELF-SEALING RUBBER VALVES.
- INSERT MATERIAL FOR WATER SERVICE AT 20 TO 200 DEG F SHALL BE CR.
 - INSERT MATERIAL FOR WATER SERVICE AT MINUS 30 TO PLUS 275 DEG F SHALL BE EPDM.

SECTION 22 05 23 - GENERAL DUTY VALVES FOR PLUMBING

- 1.1 BALL VALVES
- A. WATER TO 600 # CWP
- 2 INCHES AND SMALLER: MSS SP 110, CLASS 150, BRONZE, TWO PIECE BODY, STAINLESS STEEL BALL AND TRIM, FULL PORT, TEFLON SEATS, BLOW-OUT PROOF STEM, SOLDER OR THREADED ENDS, LEVER HANDLE WITH STOPS.
- B. UL LISTED FOR FUEL AND GAS SERVICE
- 1/4 INCH TO 1 INCH: MSS SP 110, CLASS 125, TWO PIECE, THREADED ENDS, BRONZE BODY, CHROME PLATED BRONZE BALL, REINFORCED TEFLON SEATS, BLOW-OUT PROOF STEM, LEVER HANDLE, UL 842 LISTED FOR FLAMMABLE LIQUIDS AND LPG, FULL PORT.
 - 1-1/4 INCH TO 3 INCH: MSS SP 110, CLASS 125, TWO PIECE, THREADED ENDS, BRONZE BODY, CHROME PLATED BRONZE BALL, REINFORCED TEFLON SEATS, BLOW-OUT PROOF STEM, LEVER HANDLE, UL 842 LISTED FOR FLAMMABLE LIQUIDS AND LPG, CONVENTIONAL PORT.
- 1.2 CHECK VALVES
- A. SWING CHECK VALVES:
- WOG APPLICATIONS
 - 2 INCHES AND SMALLER: MSS SP 80, CLASS 150, BRONZE BODY AND CAP, BRONZE SEAT, BUNA-N TILTING DISC FOR WATER-OIL-GAS APPLICATIONS, TEFLON TILTING DISC FOR LOW PRESSURE (<15 PSIG) STEAM APPLICATIONS, SOLDER OR THREADED ENDS.
 - 2-1/2 INCHES AND LARGER: MSS SP 71, CLASS 125, CAST IRON BODY, BOLTED CAP, BRONZE OR CAST IRON DISC, RENEWABLE DISC SEAL AND SEAT, FLANGED ENDS.
- B. LIFT CHECK VALVES:
- WOG APPLICATIONS
 - 2 INCHES AND SMALLER: MSS SP 80, CLASS 150, BRONZE BODY, IN-LINE SPRING LIFT CHECK, SILENT CLOSING, BUNA-N DISC FOR WOG, TEFLON DISC FOR LP STEAM, INTEGRAL SEAT, SOLDER OR THREADED ENDS.
 - 2-1/2 INCHES AND LARGER: MSS SP 71, CLASS 125, WAFER STYLE, CAST IRON BODY, BRONZE SEAT, CENTER GUIDED BRONZE DISC, STAINLESS STEEL SPRING AND SCREWS, FLANGED ENDS.

SECTION 22 05 53 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

- 1.1 PIPE LABELS
- A. GENERAL REQUIREMENTS FOR MANUFACTURED PIPE LABELS: PREPRINTED,

- COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION.
- B. PRETENSIONED PIPE LABELS: PRECOILED, SEMIRIGID PLASTIC FORMED TO COVER FULL CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE.
- C. SELF-ADHESIVE PIPE LABELS: PRINTED PLASTIC WITH CONTACT-TYPE, PERMANENT-ADHESIVE BACKING.
- D. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION.
- FLOW-DIRECTION ARROWS: INTEGRAL WITH PIPING SYSTEM SERVICE LETTERING TO ACCOMMODATE BOTH DIRECTIONS OR AS SEPARATE UNIT ON EACH PIPE LABEL TO INDICATE FLOW DIRECTION.
 - LETTERING SIZE: AT LEAST 1-1/2 INCHES HIGH.
- 1.2 VALVE TAGS
- A. VALVE TAGS: STAMPED OR ENGRAVED WITH 1/4-INCH LETTERS FOR PIPING SYSTEM ABBREVIATION AND 1/2-INCH NUMBERS.
- TAG MATERIAL: BRASS, 0.032-INCH MINIMUM THICKNESS, AND HAVING PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE.
 - FASTENERS: BRASS BEADED CHAIN.
- B. VALVE SCHEDULES: FOR EACH PIPING SYSTEM, ON 8-1/2-BY-11-INCH BOND PAPER. TABULATE VALVE NUMBER, PIPING SYSTEM, SYSTEM ABBREVIATION (AS SHOWN ON VALVE TAG), LOCATION OF VALVE (ROOM OR SPACE), NORMAL-OPERATING POSITION (OPEN, CLOSED, OR MODULATING), AND VARIATIONS FOR IDENTIFICATION. MARK VALVES FOR EMERGENCY SHUTOFF AND SIMILAR SPECIAL USES.
- VALVE-TAG SCHEDULE SHALL BE INCLUDED IN OPERATION AND MAINTENANCE DATA.

- 2.1 PIPE LABEL INSTALLATION
- A. PIPING COLOR-CODING: COLOR-CODE PIPING IN ACCORDANCE WITH ANSI A13.1.
- B. STENCILED PIPE LABEL OPTION: STENCILED LABELS MAY BE PROVIDED INSTEAD OF MANUFACTURED PIPE LABELS, AT INSTALLER'S OPTION. INSTALL STENCILED PIPE LABELS WITH PAINTED, COLOR-CODED BANDS OR RECTANGLES ON EACH PIPING SYSTEM.
- IDENTIFICATION PAINT: USE FOR CONTRASTING BACKGROUND.
 - STENCIL PAINT: USE FOR PIPE MARKING.
- C. LOCATE PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE ACCESSIBLE CEILINGS IN FINISHED SPACES; MACHINE ROOMS; ACCESSIBLE MAINTENANCE SPACES SUCH AS SHAFTS, TUNNELS, AND PLenums; AND EXTERIOR EXPOSED LOCATIONS AS FOLLOWS:
- NEAR EACH VALVE AND CONTROL DEVICE.
 - NEAR EACH BRANCH CONNECTION, EXCLUDING SHORT TAKEOFFS FOR FIXTURES AND TERMINAL UNITS. WHERE FLOW PATTERN IS NOT OBVIOUS, MARK EACH PIPE AT BRANCH.
 - NEAR PENETRATIONS THROUGH WALLS, FLOORS, CEILINGS, AND INACCESSIBLE ENCLOSURES.
 - AT ACCESS DOORS, MANHOLES, AND SIMILAR ACCESS POINTS THAT PERMIT VIEW OF CONCEALED PIPING.
 - NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGIN AND TERMINATION.

SECTION 22 07 00 - PLUMBING INSULATION

- 1.1 MATERIALS
- A. PIPE INSULATION
- EQUAL TO JOHNS MANVILLE "MICRO_LOK AP" MOLDED ALL-PURPOSE FIBERGLASS PIPE INSULATION WITH ALL PURPOSE SERVICE JACKET (ASJ). PIPE INSULATION SHALL HAVE A MAXIMUM CONDUCTIVITY OF 0.27 BTU PER INCH/H * FT2* DEGREE F.
 - INSULATION THICKNESS SHALL BE AS SCHEDULED BELOW:
- | TYPE | PIPE SIZE | THICKNESS |
|---------------------|----------------|-----------|
| DOMESTIC COLD WATER | 1/2" TO 1-1/4" | 1/2" |
| | 1-1/2" AND UP | 1" |
| DOMESTIC HOT WATER | 1/2" - 1-1/2" | 1" |
| | 2" AND UP | 2" |
- B. VALVE AND FITTING INSULATION: EQUAL TO MANVILLE MOLDED FIBERGLASS INSULATION WITH ZESTON 2000 SERIES 25/50 CLASS A COVERS.
- C. ADA LAVATORY & SINK PROTECTIVE PIPE & TRAP COVERINGS: ADA-CONFORMING, WHEELCHAIR ACCESSIBLE LAVATORY P-TRAP AND ANGLE VALVE ASSEMBLIES SHALL BE COVERED WITH THE MOLDED CLOSED CELL VINYL, ANTIMICROBIAL UNDER-SINK PROTECTIVE PIPE COVER SYSTEM EQUAL TO TRUEBRO LAV GUARD 2. COVER SHALL BE SECURED WITH SNAP-CLIP FLUSH REUSABLE FASTENERS, ANGLE STOP SHALL HAVE LOCK-LID LOCKING ACCESS COVER, VENT SLOTS, AND ACCESSORIES AS NECESSARY TO COVER ENTIRE DRAIN AND SUPPLY PIPING TO EACH SINK.
- D. ALL INSULATION AND COVERING SYSTEMS SHALL HAVE FIRE HAZARD CLASSIFICATION NOT EXCEEDING 25 FLAME SPREAD, 50 FUEL CONTRIBUTION, AND 50 SMOKE DEVELOPED WHEN TESTED UNDER ASTM E84 AND UL723.
- E. PRODUCTS SHALL NOT CONTAIN ASBESTOS, LEAD, MERCURY, OR MERCURY COMPOUNDS.
- F. PRODUCTS THAT COME IN CONTACT WITH STAINLESS STEEL SHALL HAVE A LEACHABLE CHLORIDE CONTENT OF LESS THAN 50 PPM WHEN TESTED ACCORDING TO ASTM C 871.
- G. INSULATION MATERIALS FOR USE ON AUSTENITIC STAINLESS STEEL SHALL BE QUALIFIED AS ACCEPTABLE ACCORDING TO ASTM C 795.

- H. FOAM INSULATION MATERIALS SHALL NOT BE USED.
- SECTION 22 11 16 - DOMESTIC WATER PIPING
- 1.1 COPPER TUBES AND FITTINGS
- A. HARD COPPER TUBE: ASTM B 88, TYPE L WATER TUBE, DRAWN TEMPER.
- WROUGHT-COPPER SOLDER-JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS.
 - BRONZE FLANGES: ASME B16.24, CLASS 150, WITH SOLDER-JOINT ENDS.
 - COPPER UNIONS: MSS SP-123, CAST-COPPER-ALLOY, HEXAGONAL-STOCK BODY, WITH BALL-AND-SOCKET, METAL-TO-METAL SEATING SURFACES, AND SOLDER-JOINT OR THREADED ENDS.
- 1.2 VALVES
- A. VALVES
- BALL VALVES SHALL BE USED IN SIZES 1-1/2 INCHES OR LESS.
 - BALL VALVES SHALL BE MILWAUKEE BA-150-S (SWEAT) WITH STAINLESS STEEL BALL AND STEM OR EQUAL BY NIBCO OR STOCKHAM.
 - VALVES SHALL HAVE STAINLESS STEEL BALL AND STEM.

SECTION 22 11 19 - DOMESTIC WATER PIPING SPECIALTIES

- 1.1 VACUUM BREAKERS
- A. HOSE-CONNECTION VACUUM BREAKERS (WATTS MODEL 88C)
- BODY: BRASS, WITH BREAKAWAY SET SCREW, WITH MANUAL DRAIN.
 - OUTLET CONNECTION: GARDEN-HOSE THREADED COMPLYING WITH ASME B1.20.7.
 - FINISH: CHROME.
- 1.2 BACKFLOW PREVENTERS
- A. REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTERS (WATTS MODEL 909-QT-S-C-U)
- ASSE 1013, AWWA C511, CSA B64.3 APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY WITH QUARTER TURN INLET AND OUTLET BALL VALVES, TEST COCKS. UNIT SHALL BE COMPLETE ASSEMBLY. UNIT SHALL HAVE 4 RESILIENT SEATED TEST COCKS; THE FIRST TEST COCK SHALL BE LOCATED ON THE UPSTREAM SIDE OF THE FIRST SHUT OFF VALVE, THE SECOND BETWEEN THE FIRST SHUT OFF VALVE AND THE FIRST CHECK VALVE, THE THIRD BETWEEN THE TWO CHECK VALVES AND THE FOURTH ON THE DOWNSTREAM SIDE OF THE SECOND CHECK VALVE. PROVIDE WITH INLET STRAINER, UNION CONNECTIONS AND AIR GAP FITTING. INSTALLING CONTRACTOR TO PIPE AIR GAP DRAIN TO NEAREST FLOOR DRAIN.
 - STANDARD: ASSE 1013.
 - OPERATION: CONTINUOUS-PRESSURE APPLICATIONS.
 - SIZE: AS SHOWN OR INDICATED ON THE DRAWINGS.
 - BODY: BRONZE.
 - END CONNECTIONS: UNION.
 - FINISH: ROUGH BRONZE.
- 1.3 WATER PRESSURE-REDUCING VALVES
- A. WATER PRESSURE REDUCING VALVE (WATTS SERIES N45BDU-EZ-G)
- ASSE 1003, ANSI A112.26.2 AND CSA APPROVED WATER PRESSURE REDUCING VALVE DESIGNED TO REDUCE INCOMING WATER PRESSURE AND PROTECT PLUMBING SYSTEM FROM EXCESSIVE PRESSURE. VALVE SHALL BE SUITABLE FOR POTABLE WATER AT PRESSURES UP TO 300 PSI AND ALLOW FOR ADJUSTMENT FROM 25-75 PSI. ALL PARTS SHALL BE EASILY SERVICEABLE WITHOUT REMOVING VALVE FROM THE PIPING SYSTEM. PROVIDE WITH BYPASS FEATURE.
 - STANDARD: ASSE 1003.
 - PRESSURE RATING: INITIAL WORKING PRESSURE OF 300 PSI.
 - SIZE: 2"
 - BODY: BRONZE.
 - VALVES TO INCLUDE INTEGRAL BYPASS.
 - END CONNECTIONS: THREADED .

- 1.4 BALANCING VALVES
- A. COPPER-ALLOY CALIBRATED BALANCING VALVES (EQUAL TO WATTS OR BELL & GOSSETT)
- TYPE BALL VALVE WITH TWO READOUT PORTS AND MEMORY SETTING INDICATOR.
 - BODY: BRONZE
 - SIZE: SAME AS CONNECTED PIPING, BUT NOT LARGER THAN 1".
 - ACCESSORIES: METER HOSES, FITTINGS, VALVES, DIFFERENTIAL PRESSURE METER, AND CARRYING CASE.
- 1.5 STRAINERS FOR DOMESTIC WATER PIPING
- A. Y-PATTERN STRAINERS (WATTS SERIES 777)
- PRESSURE RATING: 125 PSIG MINIMUM, UNLESS OTHERWISE INDICATED.
 - BODY: BRONZE COMPLYING WITH AWWA C550 OR FDA-APPROVED. (LINE SIZE ON DRAWINGS)
 - END CONNECTIONS: THREADED NPS 2 AND SMALLER; FLANGED FOR NPS 2-1/2 AND LARGER.
 - SCREEN: STAINLESS STEEL WITH ROUND PERFORATIONS, UNLESS OTHERWISE INDICATED.
 - DRAIN: PIPE PLUG.

- 1.6 WATER HAMMER ARRESTERS
- A. WATER HAMMER ARRESTERS (PRECISION PLUMBING SC "SYSTEM RATED" SERIES)
- STANDARD: ASSE 1010 OR PDI-WH 201.
 - TYPE: COPPER TUBE WITH PISTON.
 - SIZE: ASSE 1010, SIZES AA AND A THROUGH F OR PDI-WH 201, SIZES A THROUGH F.
- 1.7 AIR VENTS
- A. BOLTED-CONSTRUCTION AUTOMATIC AIR VENTS :
- BODY: BRONZE.
 - PRESSURE RATING: 125-PSIG MINIMUM PRESSURE RATING AT 140 DEG F .
 - FLOAT: REPLACEABLE, CORROSION-RESISTANT METAL.
 - MECHANISM AND SEAT: STAINLESS STEEL.
 - SIZE: NPS 3/8 MINIMUM INLET.
 - INLET AND VENT OUTLET END CONNECTIONS: THREADED.

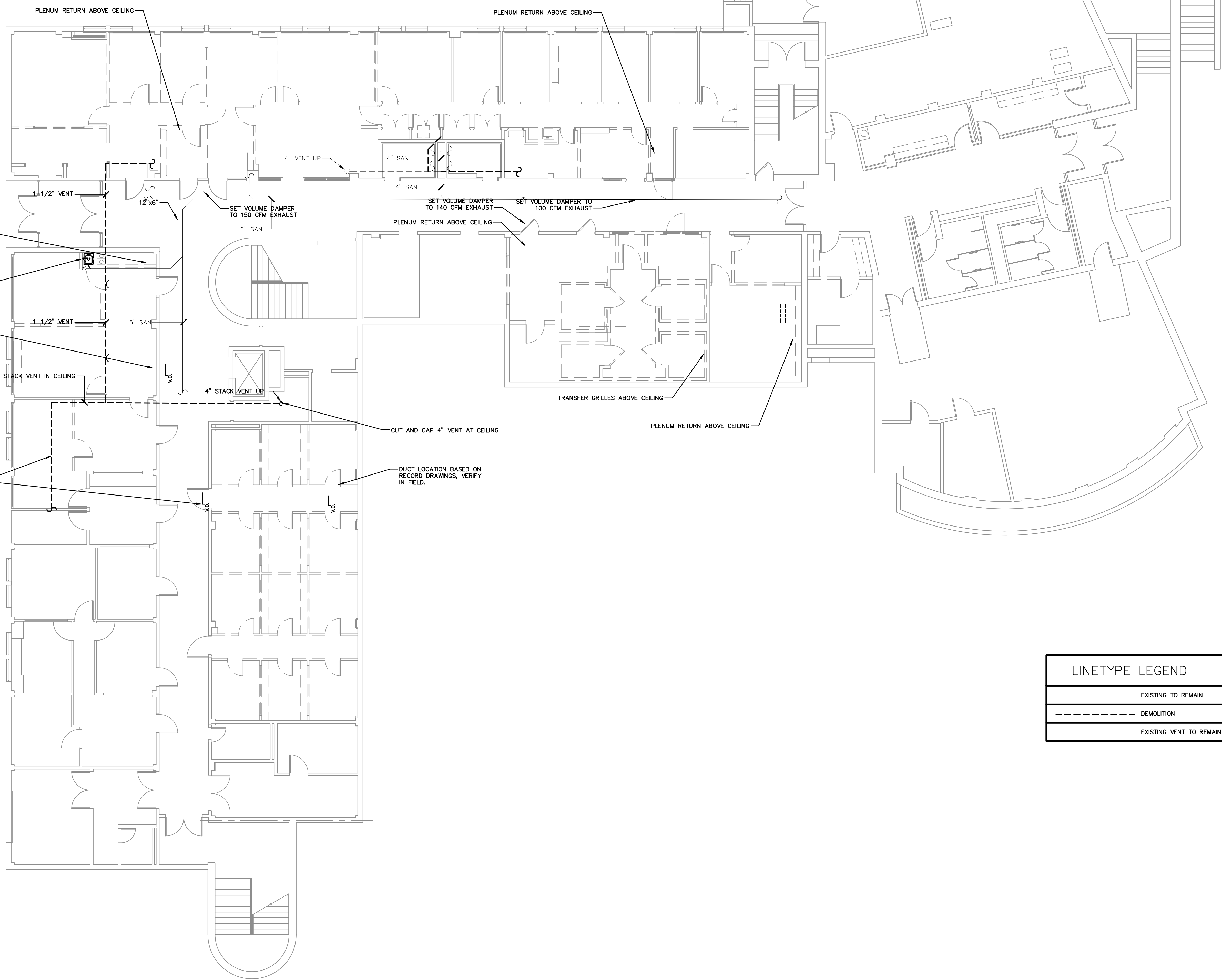
SECTION 22 13 16 - SANITARY WASTE AND VENT PIPING

- 1.1 PVC PIPE AND FITTINGS
- A. SOLID-WALL PVC PIPE: ASTM D 2665 SCHEDULE-40, DRAIN, WASTE, AND VENT.
- PVC SOCKET FITTINGS: ASTM D 2665, SOCKET TYPE, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS.
- B. SOLVENT CEMENT AND ADHESIVE PRIMER:
- USE PVC SOLVENT CEMENT THAT HAS A VOC CONTENT OF 510 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
 - USE ADHESIVE PRIMER THAT HAS A VOC CONTENT OF 550 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
- 1.2 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS
- A. PIPE AND FITTINGS: ASTM A 888 OR CISPI 301.
- B. SOVENT STACK FITTINGS: ASME B16.45 OR ASSE 1043, HUBLESS, CAST-IRON AERATOR AND DEAERATOR DRAINAGE FITTINGS.
- C. STANDARD, SHIELDED, STAINLESS-STEEL COUPLINGS: CISPI 310, WITH STAINLESS-STEEL CORRUGATED SHIELD; STAINLESS-STEEL BANDS AND TIGHTENING DEVICES; AND ASTM C 564, RUBBER SLEEVE.

SECTION 22 13 19 - SANITARY WASTE PIPING SPECIALTIES

- 1.1 CLEANOUTS
- A. EXPOSED METAL CLEANOUTS
- STANDARD: ASME A112.36.2M FOR CAST IRON FOR CLEANOUT TEST TEE.
 - SIZE: SAME AS CONNECTED DRAINAGE PIPING
 - BODY MATERIAL: HUB-AND-SPIGOT, CAST-IRON SOIL PIPE T-BRANCH AS REQUIRED TO MATCH CONNECTED PIPING.
 - CLOSURE: COUNTERSUNK OR RAISED-HEAD, CAST-IRON PLUG.
 - CLOSURE PLUG SIZE: SAME AS OR NOT MORE THAN ONE SIZE SMALLER THAN CLEANOUT SIZE.
 - CLOSURE: STAINLESS-STEEL PLUG WITH SEAL.
- 1.2 AIR-ADMITTANCE VALVES
- A. FIXTURE AIR-ADMITTANCE VALVES:
- AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
 - STANDARD: ASSE 1051, TYPE A FOR SINGLE FIXTURE OR TYPE B FOR BRANCH PIPING.
 - HOUSING: PLASTIC.
 - OPERATION: MECHANICAL SEALING DIAPHRAGM.
 - SIZE: SAME AS CONNECTED FIXTURE OR BRANCH VENT PIPING.





PLENUM RETURN ABOVE CEILING
 REMOVE SAN PIPING TO FLOOR. INFILL FLOOR WITH NON-SHRINK GROUT. REMOVE VENT PIPING TO HEADER ABOVE CEILING. REMOVE ABANDONED VENT PIPING.

PLENUM EXHAUST ABOVE CEILING. SET VOLUME DAMPER TO 250 CFM EXHAUST.

PLENUM EXHAUST REMOVE ABANDONED SET VOLUME DAMPER ABOVE TO 60 CFM EXHAUST (TYP)

PLENUM RETURN ABOVE CEILING

PLENUM RETURN ABOVE CEILING

PLENUM RETURN ABOVE CEILING

PLENUM RETURN ABOVE CEILING

CUT AND CAP 4" VENT AT CEILING

DUCT LOCATION BASED ON RECORD DRAWINGS, VERIFY IN FIELD.

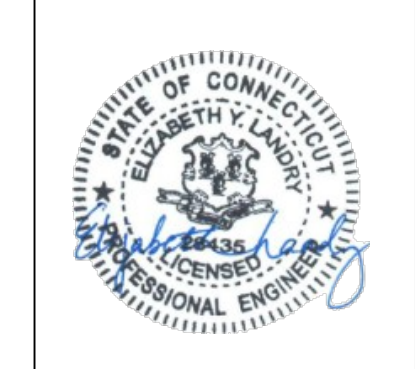
SET VOLUME DAMPER TO 150 CFM EXHAUST

SET VOLUME DAMPER TO 140 CFM EXHAUST

SET VOLUME DAMPER TO 100 CFM EXHAUST

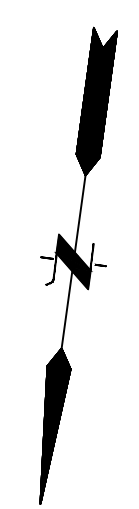
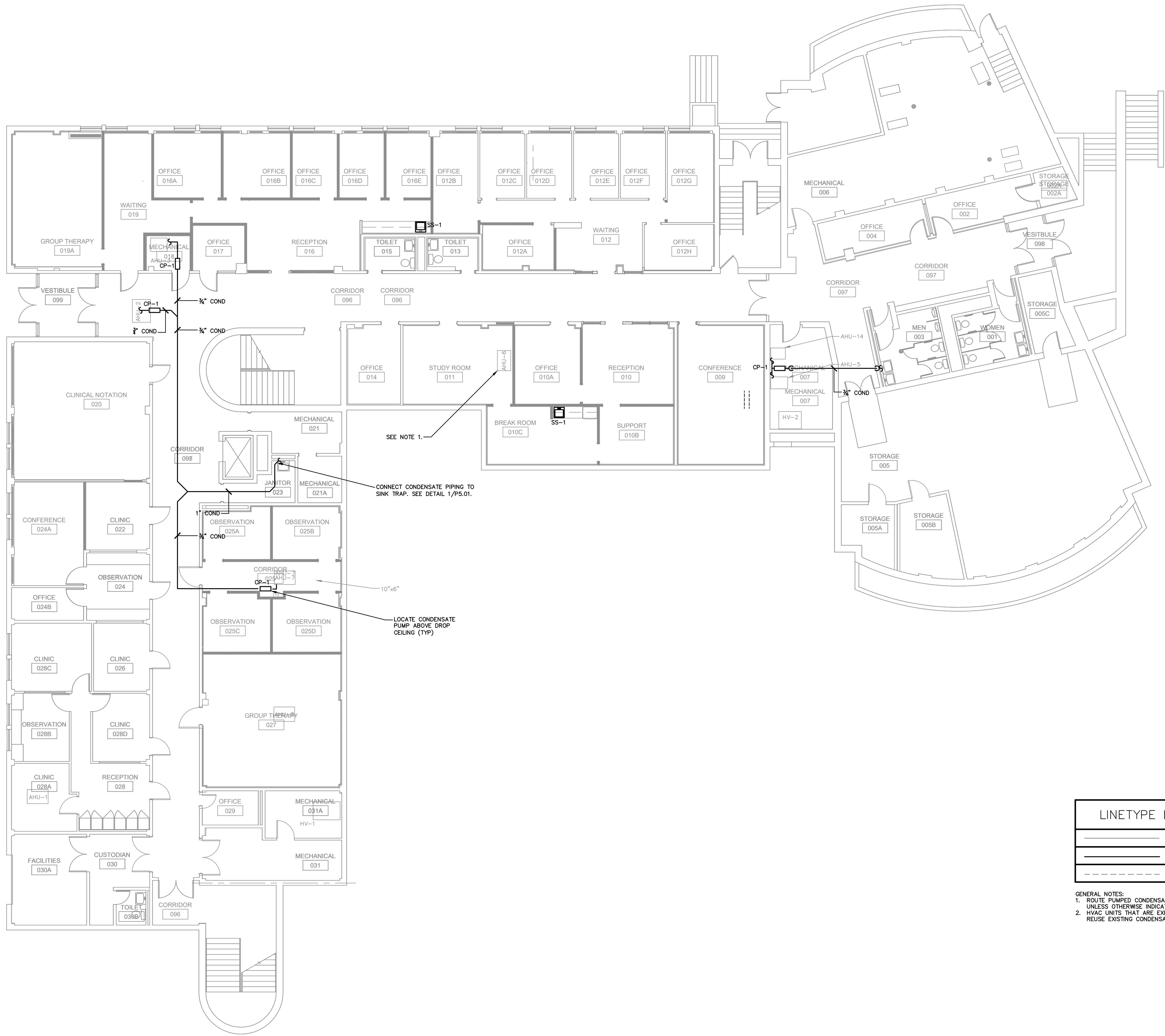
TRANSFER GRILLES ABOVE CEILING

LINETYPE LEGEND	
	EXISTING TO REMAIN
	DEMOLITION
	EXISTING VENT TO REMAIN



DAVIS HALL GROUND FLOOR RENOVATIONS

REVISION:	PROJECT NO.: SCSU-2023-02
SHEET:	DATE: APRIL 7, 2023
PD1.01	DRAWING TITLE: SANITARY AND VENTING
	TITLE: DEMOLITION
	SCALE: 1/8" = 1'

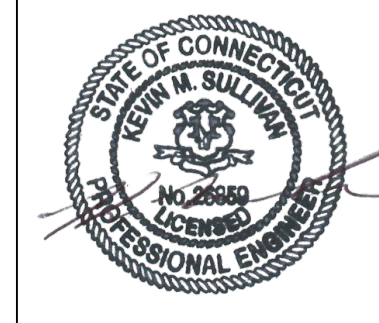


LINETYPE LEGEND	
	EXISTING TO REMAIN
	NEW WORK
	EXISTING VENT TO REMAIN

GENERAL NOTES:
 1. ROUTE PUMPED CONDENSATE TIGHT TO DECK UNLESS OTHERWISE INDICATED.
 2. HVAC UNITS THAT ARE EXISTING TO REMAIN SHALL REUSE EXISTING CONDENSATE ROUTING.



DAVIS HALL GROUND FLOOR RENOVATIONS



LIGHTING

S	SWITCH TO EQUIPMENT SERVED MOUNTED 48" AFF TO CENTER OF BOX UNLESS OTHERWISE SHOWN ON DRAWING. PROVIDE WHERE SHOWN:
S _{DM}	LOW VOLTAGE DIMMER CONTROL
S _P	PILOT LIGHT
S _{KEY}	KEY OPERATED SWITCH
S _{WP}	WEATHERPROOF SWITCH
S ₃	THREE WAY SWITCH
S ₄	FOUR WAY SWITCH
S _o	LOWER CASE LETTERS (o,b) DENOTE SWITCHING
S _{oc}	OCCUPANCY SENSOR WITH SWITCH
IC _{xx}	CEILING MOUNTED OCCUPANCY SENSOR SUBSCRIPT "xx" = PI - PASSIVE INFRARED UL - ULTRASONIC DT - DUAL TECHNOLOGY
TC	TIMELOCK
PC	PHOTOCELL
⊗	CEILING MOUNTED EXIT SIGN, SINGLE FACE, WITH BATTERY BACKUP
⊗	CEILING MOUNTED EXIT SIGN, DOUBLE FACE, WITH BATTERY BACKUP
⊗	CEILING MOUNTED EXIT SIGN, SINGLE FACE WITH CHEVRONS AND BATTERY BACKUP CHEVRONS SHALL BE IDENTIFIABLE AT A MINIMUM DISTANCE OF 40 FEET.
⊗	CEILING MOUNTED EXIT SIGN, DOUBLE FACE WITH CHEVRONS AND BATTERY BACKUP CHEVRONS SHALL BE IDENTIFIABLE AT A MINIMUM DISTANCE OF 40 FEET.
⊗	WALL MOUNTED EXIT SIGN WITH BATTERY BACKUP
⊗	EMERGENCY LIGHT FIXTURE MOUNTED 6" BELOW CEILING AND WITH BATTERY BACKUP
⊗	EMERGENCY LIGHT REMOTE HEAD MOUNTED 6" BELOW CEILING
⊗	EMERGENCY LIGHT RECESSED MOUNTING
⊗	FAN LIGHT COMBINATION FIXTURE
⊗	CEILING MOUNTED LIGHT FIXTURE
⊗	WALL MOUNTED LIGHT FIXTURE
⊗	LIGHT FIXTURES (TYP)
⊗	LIGHT FIXTURES WITH EMERGENCY BALLAST & BATTERY BACK-UP
⊗	EXTERIOR LIGHT AND POLE
⊗	UPPER CASE LETTERS DENOTE FIXTURE TYPE IN SCHEDULE

POWER CONNECTIONS

AF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
⊗ _a	SINGLE RECEPTACLE MOUNTED AT 16" AFF TO CENTER OF BOX.
⊗ _a	DUPLEX RECEPTACLE MOUNTED AT 16" AFF TO CENTER OF BOX.
⊗ _a	DUPLEX RECEPTACLE SPLIT WIRED MOUNTED AT 16" AFF TO CENTER OF BOX.
⊗ _a	DUPLEX RECEPTACLE CIRCUITED TO EMERGENCY POWER MOUNTED AT 16" AFF TO CENTER OF BOX.
⊗ _a	QUADPLEX RECEPTACLE MOUNTED AT 16" AFF TO CENTER OF BOX.
⊗ _c	QUADPLEX RECEPTACLE FOR COMPUTERS MOUNTED AT 16" AFF TO CENTER OF BOX.
⊗ _a	SPECIAL RECEPTACLE FOR SPECIFIED EQUIPMENT. COORDINATE WITH OTHER TRADES FOR MOUNTING LOCATION.
S _P	SWITCH WITH PILOT LIGHT
□	RECEPTACLES SHOWN IN BOX WILL BE FLOOR MOUNTED
○	RECEPTACLES SHOWN IN CIRCLE WILL BE CEILING MOUNTED
F	FIREMATIC MOUNTED ON CEILING ABOVE HEATING EQUIPMENT. WIRE IN SERIES WITH CONTROL CIRCUIT.
SEM	EMERGENCY POWER SHUT OFF SWITCH
M	ELECTRICAL METER MOUNTED PER UTILITY COMPANY REQUIREMENTS.
⊗	CONTACTOR
⊗	MAGNETIC MOTOR STARTER
⊗	MANUAL DISCONNECT SWITCH
⊗	FUSED DISCONNECT SWITCH
⊗	JUNCTION BOX
⊗	CEILING MOUNTED DOWN DRAFT FAN
X, Y	BRANCH CIRCUIT HOMERUN "X" INDICATES CIRCUIT NUMBER "Y" INDICATES POWER PANEL

SUBSCRIPTS
 "n" = NUMBER EQUALS ALTERNATE MOUNTING HEIGHT IN INCHES.
 INTERIOR WILL BE TO CENTER OF BOX AFF.
 EXTERIOR WILL BE TO CENTER OF BOX AFF.
 D = DEDICATED CIRCUIT TO THE DEVICE.
 GFI = GROUND FAULT INTERRUPT PROTECTION.
 WP = WEATHERPROOF BOX PER SPECIFICATIONS.

FIRE ALARM/LIFE SAFETY

FACP	FIRE ALARM CONTROL PANEL MOUNTED AT 60" AFF TO CENTER OF BOX.
FAAN	FIRE ALARM ANNUNCIATOR PANEL MOUNTED AT 60" AFF TO CENTER OF BOX.
F	FIRE ALARM MASTER STATION
F	FIRE ALARM HORN UNIT
F	FIRE ALARM SPEAKER UNIT
F	FIRE ALARM STROBE UNIT
F	FIRE ALARM HORN/STROBE UNIT
F	FIRE ALARM SPEAKER/STROBE UNIT
F	FIRE ALARM PULL STATION MOUNTED AT 48" AFF TO CENTER OF BOX.
H	HEAT DETECTOR
S _{xx}	SMOKE DETECTOR
C _{xx}	CARBON MONOXIDE DETECTOR
M	MAGNETIC DOOR HOLDER
R	REMOTE LED/TEST STATION FOR DUCT TYPE SMOKE DETECTOR
F	FIRE FIGHTERS PHONE JACK
AMM	ADDRESSABLE MONITOR MODULE
ACM	ADDRESSABLE CONTROL MODULE
FS	SPRINKLER FLOW SWITCH
TS	SPRINKLER TAMPER SWITCH
PS	SPRINKLER PRESSURE SWITCH
CF	CALL FOR AID EMERGENCY STATION WITH PULL CORD, MOUNTED 36" TO CENTER OF BOX WITH BOTTOM OF PULL CORD 12" AFF.
CFA	CALL FOR AID AUDIO/VISUAL ALARM

GENERAL NOTES FOR FIRE ALARM/LIFE SAFETY EQUIPMENT
 WP = WEATHERPROOF BOX PER SPECIFICATIONS
 xx" = MOUNTING HEIGHT (AFF INSIDE, AFG OUTSIDE)
 DEFAULT MOUNTING HEIGHT SHOWN IN SCHEDULE
 xx = SUBSCRIPT AS DEFINED BELOW

SPEAKERS/HORNS MOUNTING
 ALL AUDIBLE DEVICES SHALL BE MULTI-TAP
 db LEVEL SHALL BE HIGHEST TAP UNLESS OTHERWISE NOTED
 W = WALL
 C = CEILING
 XXdb = db RATING
STROBES OR COMBINATION WITH STROBE MOUNTING
 WALL MOUNTING 80" AFF TO CENTER OF STROBE UNLESS OTHERWISE NOTED
 W = WALL
 C = CEILING

STROBE MOUNTING AND INTENSITY RATING
 WALL MOUNTING 80" AFF TO CENTER OF STROBE UNLESS OTHERWISE NOTED
 W = WALL
 C = CEILING
 XXdb = CANDELA RATING
HEAT DETECTORS
 TEMPERATURE RATING WILL BE 135° UNLESS OTHERWISE NOTED
 XX" = FIXED TEMPERATURE
 RR = RATE OF RISE

SMOKE DETECTORS
 PHOTOELECTRIC UNLESS OTHERWISE NOTED
 DD = DUCT TYPE DETECTOR
 I = IONIZATION
 P = PHOTOELECTRIC
 H = COMBINATION SMOKE/HEAT DETECTOR
 CD = COMBINATION SMOKE/CARBON MONOXIDE DETECTOR
 DUCT DETECTORS ARE PROVIDED BY ELECTRICAL CONTRACTOR, MOUNTED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR. SEE MECHANICAL DRAWINGS FOR LOCATION.

FLOW, TAMPER AND PRESSURE SWITCHES PROVIDED BY OTHERS, WIRED BY ELECTRICAL CONTRACTOR.

POWER DISTRIBUTION EQUIPMENT

□	PANELBOARD, SURFACE MOUNTED
□	PANELBOARD, FLUSH MOUNTED
□	JUNCTION BOX, SIZED PER NEC
⊗	MOTOR, "2" DENOTES HORSEPOWER
⊗	MAGNETIC MOTOR STARTER WITH ENCLOSURE, MINIMUM SIZE NEMA 1
⊗	MANUAL MOTOR STARTER WITH THERMAL OVERLOAD.
⊗ _{20/3}	NON-FUSED DISCONNECT SWITCH: "30/3" DENOTES 30 AMP/3 POLE SWITCH
⊗ _{30/20/3}	FUSED DISCONNECT SWITCH: "30/20/3" DENOTES 30 AMP/3 POLE SWITCH, 20 AMP FUSES
⊗	COMBINATION MAGNETIC STARTER AND FUSED DISCONNECT SWITCH. SIZE OF STARTER, SWITCH AND FUSE AS REQUIRED
T	DRY-TYPE DISTRIBUTION TRANSFORMER
ATS	AUTOMATIC TRANSFER SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TI	PAD MOUNTED TRANSFORMER
⊕	GROUND ROD, REFER TO PLANS FOR EXACT SIZE

TELECOMMUNICATIONS (MOUNTED 18" AFF)

⊗	VOICE & DATA JACK (EXISTING WALL MOUNTED)
⊗	BLUE / GREEN RJ-45 (EXISTING WALL MOUNTED)
⊗	BLUE / GREEN RJ-45 (NEW WALL MOUNTED: NOTE MOUNTING HEIGHT INDICATED)
⊗	COMMUNICATIONS OUTLET
⊗	NODE (WALL MOUNTED BEHIND MONITOR)
⊗	SCPCP
⊗	DATA/ELEC CLUSTER FOR PC & NODE COMBINATION TO INCLUDE THE FOLLOWING OUTLETS...
⊗	DB PC
⊗	DB REF PC
⊗	MONITORING PC
⊗	PTZ CAMERA (CEILING MOUNTED)
⊗	AUDIO MODULE (CEILING MOUNTED): TO INCLUDE**
⊗	MICROPHONE (CEILING MOUNTED): NO DATA/POWER REQUIREMENTS. INSTALLED AND WIRED BY B-LINE MEDICAL.
⊗	MICROPHONE (WALL MOUNTED): NO DATA/POWER REQUIREMENTS. INSTALLED AND WIRED BY B-LINE MEDICAL.
⊗	MICROPHONE (CEILING MOUNTED): NO DATA/POWER REQUIREMENTS. INSTALLED AND WIRED BY B-LINE MEDICAL.
⊗	ADVANCED PACKAGE RACK (CEILING MOUNTED): TO INCLUDE**

**CAMERA: 1xCAT6 DATA CEILING DROP TERMINATED INTO RJ45 SURFACE MOUNT BOX. REQUIRES 15.4 WATTS POWER OVER ETHERNET.
 **AUDIO MODULE: 1xCAT6 DATA CEILING DROP TERMINATED INTO RJ45 SURFACE MOUNT BOX. REQUIRES 15.4 WATTS POWER OVER ETHERNET.
 **MICROPHONE: NO DATA/POWER REQUIREMENTS. INSTALLED AND WIRED BY B-LINE MEDICAL.
 **SPEAKER: NO DATA/POWER REQUIREMENTS. INSTALLED AND WIRED BY B-LINE MEDICAL.

**CAMERA: 1xCAT6 DATA CEILING DROP TERMINATED INTO RJ45 SURFACE MOUNT BOX. REQUIRES 15.4 WATTS POWER OVER ETHERNET FOR DSP ETHERNET - NIC.
 **CAMERA: 1xCAT6 DATA CEILING DROP TERMINATED INTO RJ45 SURFACE MOUNT BOX. PDE DISABLED ON THIS JACK FOR DSP DANTE - NIC.
 **CAMERA: 1xCAT6 DATA CEILING DROP TERMINATED INTO RJ45 SURFACE MOUNT BOX. REQUIRES 15.4 WATTS POWER OVER ETHERNET FOR AUDIO MODULE.

BRANCH CIRCUIT WIRING NOTES:

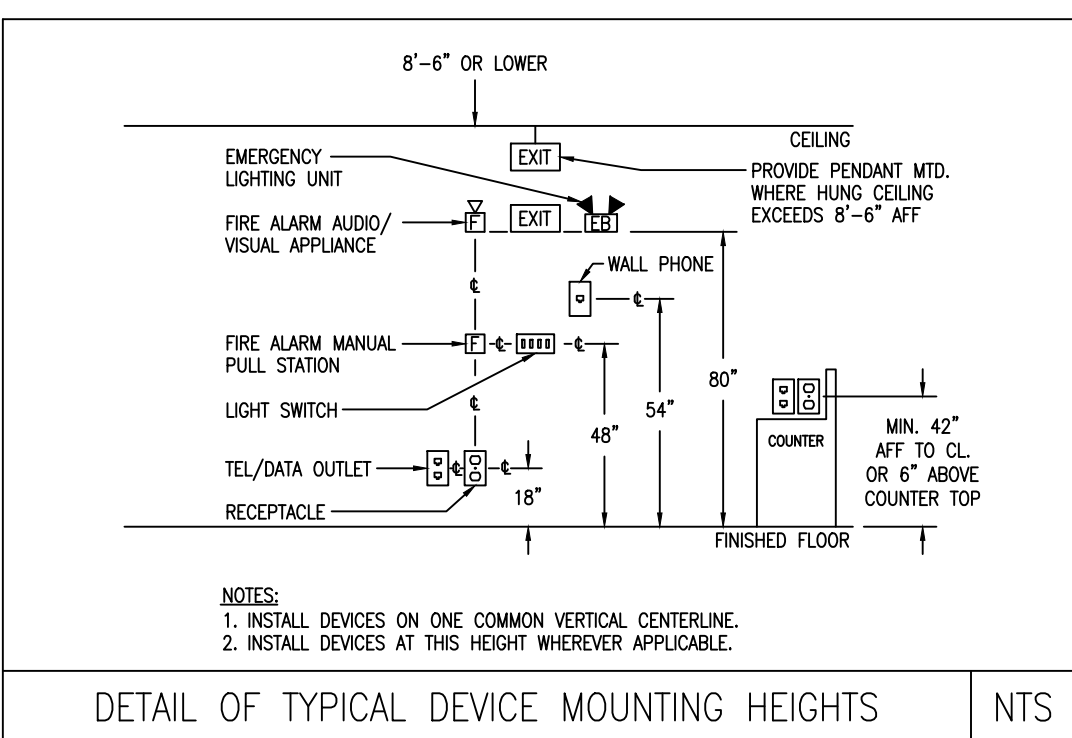
- WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
- WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
- ALL SWITCH CONTROLS SHALL BE PROVIDED WITH WIRING AND CONDUIT AS REQUIRED.
- ALTHOUGH ALL BRANCH CIRCUIT WIRING AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
- A GREEN GROUNDING CONDUCTOR SHALL BE RUN WITH ALL CIRCUITS. VERIFY CONDUIT SIZE TO ENSURE IT CAN ACCOMMODATE ALL PHASE, NEUTRAL AND GROUND CONDUCTORS.
- PROVIDE A NEUTRAL CONDUCTOR TO ALL LIGHTING SWITCH BOXES PER NEC ARTICLE 404.2.
- ALL 15A AND 20A, 125V RECEPTACLES IN NON-DWELLING TYPE OCCUPANCIES SHALL BE GFCI PROTECTED PER NEC ARTICLE 210.8(B).
- 120 VOLT CIRCUITS OVER 100 FEET IN LENGTH AND 277 VOLT CIRCUITS OVER 200 FEET IN LENGTH FROM THE POINT OF SUPPLY TO THE FIRST OUTLET SHALL BE #10 AWG.

ABBREVIATIONS

3R	NEMA 3R RATING
4X	NEMA 4X RATING
A	AMPERES
AF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
C/B	CIRCUIT BREAKER
CAT	CATALOG
CKT	CIRCUIT
CU	COPPER
DWG	DRAWING
E	WIRED ON EMERGENCY CIRCUIT
EC	ELECTRICAL CONTRACTOR
EM	EMERGENCY
G	GROUND
GC	GENERAL CONTRACTOR
GFI	GROUND FAULT INTERRUPTER
HVAC	HEATING, VENTILATION, AIR CONDITIONING CONTRACTOR
IG	ISOLATED GROUND
KCML	ONE THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE
NL	NIGHT LIGHT
NTS	NOT TO SCALE
#	PHASE
P	POLE
PC	PLUMBING CONTRACTOR
PVC	POLYVINYL CHLORIDE
SM	SURFACE MOUNT
ST	SHUNT TRIP
T/D	TEL/DATA
TEL	TELEPHONE
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
V	VOLT
W	WATT
WP	WEATHERPROOF
XFMR	TRANSFORMER

MECHANICAL EQUIPMENT TAG ABBREVIATIONS

ACC	AIR-COOLED CONDENSER
AHU	AIR HANDLING UNIT
B	BOILER
CH	CHILLER
CUH	CABINET UNIT HEATER
EBB	ELECTRIC BASEBOARD
EF	EXHAUST FAN
EH	EXHAUST HOOD
DWH	ELECTRIC WALL HEATER
FC	FAN COIL
HP	HEAT PUMP
GWH	GAS WATER HEATER
MAU	MAKE-UP AIR UNIT
P	PUMP
RTU	ROOF TOP UNIT
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME BOX



DETAIL OF TYPICAL DEVICE MOUNTING HEIGHTS NTS

4. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.
- C. Evidence of qualifications for installer.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
- E. Test Plan: Complete and detailed plan, with list of test equipment, procedures for inspection and testing, and intended test date; submit at least 60 days prior to intended test date.
- F. Field Test Reports.
- G. Project Record Documents: Prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
- Record actual locations of outlet boxes and distribution frames.
 - Show as-installed color coding, pair assignment, polarization, and cross-connect layout.
 - Identify distribution frames and equipment rooms by room number on drawings.
- H. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of project record documents.

1.04 QUALITY ASSURANCE

- A. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- B. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.
- C. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:
- Employing a BICSI Registered Communications Distribution Designer (RCDD).
 - Supervisors and installers factory certified by manufacturers of products to be installed.
- D. Products: Listed, classified, and labeled as suitable for the purpose intended.
- E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep stored products clean and dry.

1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a 2 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SYSTEM DESIGN

- A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.
- Comply with TIA-568 (SET) (cabling) and TIA-569 (pathways) (commercial standards).
 - Comply with Communications Service Provider requirements.
 - Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.
 - Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F (0 to 60 degrees C) at relative humidity of 0 to 95 percent, noncondensing.
 - In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.
- B. Main Distribution Frame (MDF): Centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider.
- C. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star also referred to as "tree".

2.02 COPPER CABLE AND TERMINATIONS

- A. Copper Horizontal Cable:
- Description: 100 ohm, balanced twisted pair cable complying with TIA-568.2 and listed and labeled as complying with UL 444.
 - Cable Type - Data: TIA-568.2 Category 6 UTP (unshielded twisted pair); 23 AWG.
 - Cable Capacity: 4-pair.
 - Cable Applications: Use listed NFPA 70 Type CMP plenum cable unless otherwise indicated.
 - Cable Jacket Color - Data Cable: One blue and one green per pair.
- B. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable, UL 1963 listed.
- Performance: 500 mating cycles.
 - Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.

2.03 COMMUNICATIONS OUTLETS

- A. Outlet Boxes: Comply with Section 260533.16.
- Provide depth as required to accommodate cable manufacturer's recommended minimum conductor bend radius.
- B. Wall Plates:
- Comply with system design standards and UL 514C.
 - Accepts modular jack/inserts.
 - Capacity:
 - Data or Combination Voice/Data Outlets: 2 ports.
 - Wall Plate Material/Finish - Flush-Mounted Outlets: Match wiring device and wall plate finishes specified in Section 262726.

2.04 GROUNDING AND BONDING COMPONENTS

- A. Comply with TIA-607.

2.05 IDENTIFICATION PRODUCTS

- A. Comply with TIA-606.
- B. Comply with Section 260553.

2.06 SOURCE QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Factory test cables according to TIA-568 (SET).

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Comply with latest editions and addenda of TIA-568 (SET) (cabling), TIA-569 (pathways), TIA-607 (grounding and bonding), BICSI N1, NFPA 70, and SYSTEM DESIGN as specified in PART 2.
- B. Comply with Communication Service Provider requirements.
- C. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.

3.02 INSTALLATION OF PATHWAYS

- A. Install pathways with the following minimum clearances:
- 48 inches (1220 mm) from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.
 - 12 inches (300 mm) from power conduits and cables and panelboards.
 - 5 inches (125 mm) from fluorescent and high frequency lighting fixtures.
 - 6 inches (150 mm) from flues, hot water pipes, and steam pipes.
- B. Outlet Boxes:
- Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of telecommunications outlets provided under this section.
 - Mounting Heights: Unless otherwise indicated, as follows:
 - Telephone and Data Outlets: 18 inches (450 mm) above finished floor.

3.03 INSTALLATION OF EQUIPMENT AND CABLING

- A. Cabling:
- Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
 - Do not over-clinch or crush cables.
 - Do not exceed manufacturer's recommended cable pull tension.
 - When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.
- B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly.
- At Distribution Frames: 120 inches (3000 mm)
 - At Outlets - Copper: 12 inches (305 mm)
- C. Copper Cabling:
- Category 5e and Above: Maintain cable geometry; do not untwist more than 1/2 inch (12 mm) from point of termination.
 - For 4-pair cables in conduit, do not exceed 25 pounds (110 N) pull tension.
 - Use T568B wiring configuration.
- D. Identification:
- Use wire and cable markers to identify cables at each end.
 - Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.

- Use identification nameplate to identify cross-connection equipment, equipment racks, and cabinets.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for submittal procedures.
- B. Comply with inspection and testing requirements of specified installation standards.
- C. Visual Inspection:
- Inspect cable jackets for certification markings.
 - Inspect cable terminations for color coded labels of proper type.
 - Inspect outlet plates and patch panels for complete labels.
- D. Testing - Copper Cabling and Associated Equipment:
- Category 5e and Above Backbone: Perform near end cross talk (NEXT) and attenuation tests.
- E. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

END OF SECTION SECTION 264000 FIRE DETECTION AND ALARM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Replacement and removal of existing fire alarm system components, wiring, and conduit indicated.

1.02 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:
- Copy (if any) of list of data required by authority having jurisdiction.
 - NFPA 72 "Record of Completion", filled out to the extent known at the time.
 - Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7.5-2(9), and complete listing of software required.
 - System zone boundaries and interfaces for fire safety systems.
- C. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.
- D. Circuit layouts, number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
- E. List of all devices on each signaling line circuit, with spare capacity indicated.
- F. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.
- G. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.
- H. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
- I. Certification by the manufacturer of the control unit that the system design complies with Contract Documents.
- J. Certification by Contractor that the system design complies with Contract Documents.
- K. Do not show existing components to be removed.

1.03 QUALITY ASSURANCE

- A. Evidence of installer qualifications.
- B. Evidence of maintenance contractor qualifications, if different from installer.
- C. Inspection and Test Reports:
- Submit inspection and test plan prior to closeout demonstration.
 - Submit documentation of satisfactory inspections and tests.
 - Submit NFPA 72 "Inspection and Test Form," filled out.
- D. Operation and Maintenance Data: See Section 017800 for additional requirements; revise and resubmit until acceptable; have one set available during closeout demonstration:
- Complete set of specified design documents, as approved by authority having jurisdiction.
 - Additional printed set of project record documents and closeout documents, bound or filed in same manuals.
 - Contact information for firm that will be providing contract maintenance and trouble call-back service.
 - List of recommended spare parts, tools, and instruments for testing.
 - Replacement parts list with current prices, and source of supply.
 - Detailed troubleshooting guide and large scale input/output matrix.
 - Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.
 - Detailed but easy to read explanation of procedures to be taken by non-technical administrative personnel in the event of system trouble, when routine testing is being conducted, for fire drills, and when entering into contracts for remodeling.

1.04 WARRANTY

- A. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.
- B. PART 2 PRODUCTS
- C. 2.01 MANUFACTURERS
- D. 2.02 FIRE ALARM SYSTEM
- E. END OF SECTION

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
- Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
 - Installer Personnel: At least 2 years of experience installing fire alarm systems.
 - Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.
- B. Maintenance Contractor Qualifications: Same entity as installer or different entity with specified qualifications.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 WARRANTY

- A. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide modifications and extensions to the existing automatic fire detection and alarm system:
- Provide all components necessary, regardless of whether shown in Contract Documents or not.
 - Protected Premises: Entire building shown on drawings.
 - Comply with the following, where requirements conflict, order of precedence of requirements is as listed:
 - ADA Standards.
 - The requirements of the local authority having jurisdiction.
 - Applicable local codes.
 - Contract Documents (drawings and specifications).
 - NFPA 72, where the word "should" is used consider that provision mandatory, where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
 - Evacuation Alarm: Multiple smoke zones, allow for evacuation notification of any individual zone or combination of zones, in addition to general evacuation of entire premises.
 - General Evacuation Zones: Each smoke zone is considered a general evacuation zone unless otherwise indicated, with alarm notification in all zones on the same floor, on the floor above, and the floor below.
 - Hearing Impaired Occupants: Provide visible notification devices in all public areas and in dwelling units.
 - Fire Command Center: Location indicated on drawings.
 - Fire Alarm Control Unit: Existing, located at fire command center.
- B. Supervising Stations and Fire Department Connections:
- Public Fire Department Notification: By on-premises supervising station.
 - On-Premises Supervising Station: Existing proprietary station operated by Owner, located at _____.
 - Means of Transmission to On-Premises Supervising Station: Directly connected noncoded system.
- C. Circuits:
- Initiating Device Circuits (IDC): Class B, Style A.
 - Signaling Line Circuits (SLC) Within Single Building: Class B, Style 0.5.
 - Notification Appliance Circuits (NAC): Class B, Style W.
- D. Spare Capacity:
- Initiating Device Circuits: Minimum 25 percent spare capacity.
 - Notification Appliance Circuits: Minimum 25 percent spare capacity.
- E. Power Sources:
- Primary: Dedicated branch circuits of the facility power distribution system.
 - Secondary: Storage batteries.
 - Capacity: Sufficient to operate entire system for period specified by NFPA 72.
 - Each Computer System: Provide uninterruptible power supply (UPS).

2.03 EXISTING COMPONENTS

- A. Existing Fire Alarm System: Remove existing components indicated and incorporate remaining components into new system, under warranty as if they were new; do not take existing portions of system out of service until new portions are fully operational, tested, and connected to existing system.

- B. On-Premises Supervising Station: Include as part of this work all modifications necessary to existing supervising station to accommodate new fire alarm work.
- C. Clearly label components that are "Not In Service."
- D. Remove unused existing components and materials from site and dispose of properly.

2.04 COMPONENTS

- A. General:
- Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.
 - Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.
- B. Fire Alarm Control Units: Analog, addressable type; listed, classified, and labeled as suitable for the purpose intended.
- C. Master Control Unit: _____.
- D. Notification Appliances:
- Speakers: _____.
 - Strobes: _____.
- E. Circuit Conductors: Copper or optical fiber; provide 200 feet (60 m) extra; color code and label.
- F. Surge Protection: In accordance with IEEE C62.41.2 category B combination waveform and NFPA 70, except for optical fiber conductors.
- G. Locks and Keys: Deliver keys to Owner.
- H. Instruction Charts: Printed instruction chart for operators, showing steps to be taken when a signal is received (normal, alarm, supervisory, and trouble); easily readable from normal operator's station.
- Frame: Stainless steel or aluminum with polycarbonate or glass cover.
 - Provide one for each control unit where operations are to be performed.
 - Obtain approval of Owner prior to mounting; mount in location acceptable to Owner.
 - Provide extra copy with operation and maintenance data submittal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and Contract Documents.
- B. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.
- C. Obtain Owner's approval of locations of devices, before installation.
- D. Install instruction cards and labels.
- E. END OF SECTION
- F. END OF SECTION
- G. END OF SECTION
- H. END OF SECTION
- I. END OF SECTION
- J. END OF SECTION
- K. END OF SECTION
- L. END OF SECTION
- M. END OF SECTION
- N. END OF SECTION
- O. END OF SECTION
- P. END OF SECTION
- Q. END OF SECTION
- R. END OF SECTION
- S. END OF SECTION
- T. END OF SECTION
- U. END OF SECTION
- V. END OF SECTION
- W. END OF SECTION
- X. END OF SECTION
- Y. END OF SECTION
- Z. END OF SECTION

3.02 INSPECTION AND TESTING FOR COMPLETION

- A. Notify Owner 7 days prior to beginning completion inspections and tests.
- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
- G. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.
- H. Diagnostic Period: After successful completion of inspections and tests, Operate system in normal mode for at least 14 days without any system or equipment malfunctions.
- Record all system operations and malfunctions.
 - If a malfunction occurs, start diagnostic period over after correction of malfunction.
 - Owner will provide attendant operator personnel during diagnostic period; schedule training to allow Owner personnel to perform normal duties.
 - At end of successful diagnostic period, fill out and submit NFPA 72 "Inspection and Testing Form."

3.03 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
- Be prepared to conduct any of the required tests.
 - Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
 - Have authorized technical representative of control unit manufacturer present during demonstration.
 - Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
 - Repeat demonstration until successful.
- B. Occupancy of the project will not occur prior to Substantial Completion.
- C. Substantial Completion of the project cannot be achieved until inspection and testing is successful and:
- Specified diagnostic period without malfunction has been completed.
 - Approved operating and maintenance data has been delivered.
 - All aspects of operation have been demonstrated to Owner.
 - Final acceptance of the fire alarm system has been given by authorities having jurisdiction.

3.04 MAINTENANCE

- A. See Section 017000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- B. Perform routine inspection, testing, and preventive maintenance required by NFPA 72, including:
- Maintenance of fire safety interface and supervisory devices connected to fire alarm system.
 - Repairs required, unless due to improper use, accidents, or negligence beyond the control of the maintenance contractor.
 - Record keeping required by NFPA 72 and authorities having jurisdiction.
- C. Provide trouble call-back service upon notification by Owner:
- Provide on-site response within 2 hours of notification.
 - Include allowance for call-back service during normal working hours at no extra cost to Owner.
 - Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- D. Provide a complete description of preventive maintenance, systematic examination, adjustment, clearing, inspection, and testing, with a detailed schedule.
- E. Maintain a log at each fire alarm control unit, listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced. Submit duplicate of each log entry to Owner's representative upon completion of site visit.
- F. Comply with Owner's requirements for access to facility and security.

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DAVIS HALL GROUND FLOOR
RENOVATIONS

PROJECT NO.: SCSU-2023-02

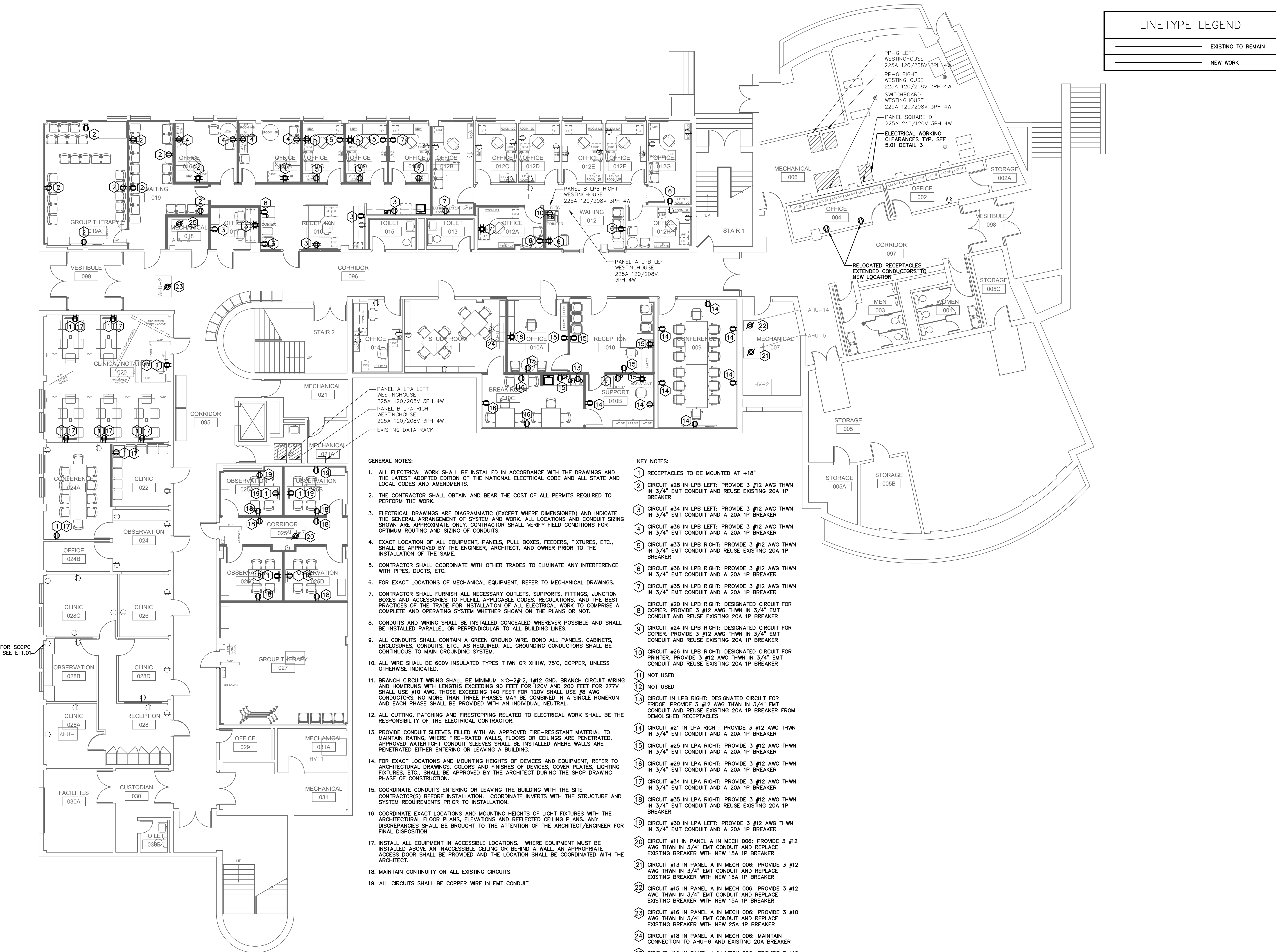
DATE: APRIL 7, 2023

DRAWING SPECIFICATIONS
TITLE:

SCALE: NTS

REVISION:

SHEET:
E0.04



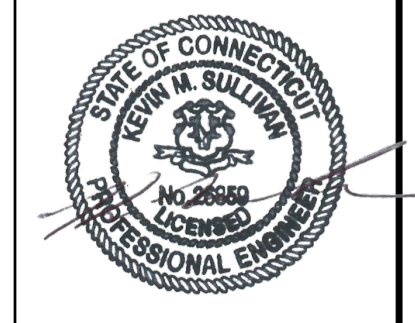
LINETYPE LEGEND	
	EXISTING TO REMAIN
	NEW WORK

GENERAL NOTES:

- ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE DRAWINGS AND THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AND ALL STATE AND LOCAL CODES AND AMENDMENTS.
- THE CONTRACTOR SHALL OBTAIN AND BEAR THE COST OF ALL PERMITS REQUIRED TO PERFORM THE WORK.
- ELECTRICAL DRAWINGS ARE DIAGRAMMATIC (EXCEPT WHERE DIMENSIONED) AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEM AND WORK. ALL LOCATIONS AND CONDUIT SIZING SHOWN ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY FIELD CONDITIONS FOR OPTIMUM ROUTING AND SIZING OF CONDUITS.
- EXACT LOCATION OF ALL EQUIPMENT, PANELS, PULL BOXES, FEEDERS, FIXTURES, ETC., SHALL BE APPROVED BY THE ENGINEER, ARCHITECT, AND OWNER PRIOR TO THE INSTALLATION OF THE SAME.
- CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO ELIMINATE ANY INTERFERENCE WITH PIPES, DUCTS, ETC.
- FOR EXACT LOCATIONS OF MECHANICAL EQUIPMENT, REFER TO MECHANICAL DRAWINGS.
- CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS, JUNCTION BOXES AND ACCESSORIES TO FULFILL APPLICABLE CODES, REGULATIONS, AND THE BEST PRACTICES OF THE TRADE FOR INSTALLATION OF ALL ELECTRICAL WORK TO COMPRISE A COMPLETE AND OPERATING SYSTEM WHETHER SHOWN ON THE PLANS OR NOT.
- CONDUITS AND WIRING SHALL BE INSTALLED CONCEALED WHEREVER POSSIBLE AND SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO ALL BUILDING LINES.
- ALL CONDUITS SHALL CONTAIN A GREEN GROUND WIRE. BOND ALL PANELS, CABINETS, ENCLOSURES, CONDUITS, ETC., AS REQUIRED. ALL GROUNDING CONDUCTORS SHALL BE CONTINUOUS TO MAIN GROUNDING SYSTEM.
- ALL WIRE SHALL BE 600V INSULATED TYPES THWN OR XHHW, 75°C, COPPER, UNLESS OTHERWISE INDICATED.
- BRANCH CIRCUIT WIRING SHALL BE MINIMUM 1/2" C-2 #12, 1 #12 GND. BRANCH CIRCUIT WIRING AND HOMERUNS WITH LENGTHS EXCEEDING 90 FEET FOR 120V AND 200 FEET FOR 277V SHALL USE #10 AWG. THOSE EXCEEDING 140 FEET FOR 120V SHALL USE #8 AWG CONDUCTORS. NO MORE THAN THREE PHASES MAY BE COMBINED IN A SINGLE HOMERUN AND EACH PHASE SHALL BE PROVIDED WITH AN INDIVIDUAL NEUTRAL.
- ALL CUTTING, PATCHING AND FIRESTOPPING RELATED TO ELECTRICAL WORK SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
- PROVIDE CONDUIT SLEEVES FILLED WITH AN APPROVED FIRE-RESISTANT MATERIAL TO MAINTAIN RATING, WHERE FIRE-RATED WALLS, FLOORS OR CEILINGS ARE PENETRATED. APPROVED WATERTIGHT CONDUIT SLEEVES SHALL BE INSTALLED WHERE WALLS ARE PENETRATED EITHER ENTERING OR LEAVING A BUILDING.
- FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF DEVICES AND EQUIPMENT, REFER TO ARCHITECTURAL DRAWINGS. COLORS AND FINISHES OF DEVICES, COVER PLATES, LIGHTING FIXTURES, ETC., SHALL BE APPROVED BY THE ARCHITECT DURING THE SHOP DRAWING PHASE OF CONSTRUCTION.
- COORDINATE CONDUITS ENTERING OR LEAVING THE BUILDING WITH THE SITE CONTRACTOR(S) BEFORE INSTALLATION. COORDINATE INVERTS WITH THE STRUCTURE AND SYSTEM REQUIREMENTS PRIOR TO INSTALLATION.
- COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS OF LIGHT FIXTURES WITH THE ARCHITECTURAL FLOOR PLANS, ELEVATIONS AND REFLECTED CEILING PLANS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR FINAL DISPOSITION.
- INSTALL ALL EQUIPMENT IN ACCESSIBLE LOCATIONS. WHERE EQUIPMENT MUST BE INSTALLED ABOVE AN INACCESSIBLE CEILING OR BEHIND A WALL, AN APPROPRIATE ACCESS DOOR SHALL BE PROVIDED AND THE LOCATION SHALL BE COORDINATED WITH THE ARCHITECT.
- MAINTAIN CONTINUITY ON ALL EXISTING CIRCUITS
- ALL CIRCUITS SHALL BE COPPER WIRE IN EMT CONDUIT

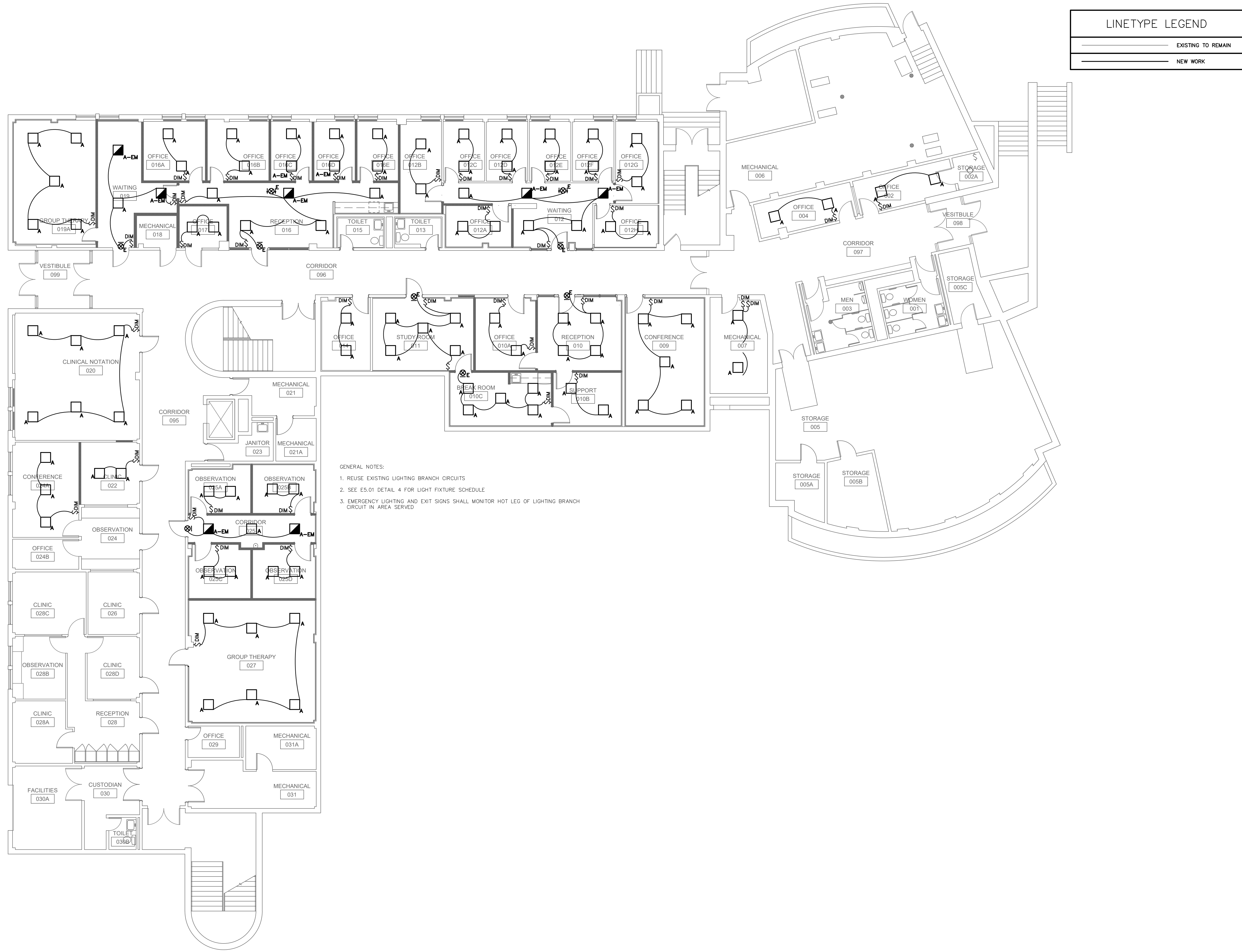
KEY NOTES:

- RECEPTACLES TO BE MOUNTED AT +18"
- CIRCUIT #28 IN LPB LEFT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REUSE EXISTING 20A 1P BREAKER
- CIRCUIT #34 IN LPB LEFT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #36 IN LPB LEFT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #33 IN LPB RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REUSE EXISTING 20A 1P BREAKER
- CIRCUIT #36 IN LPB RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #35 IN LPB RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #20 IN LPB RIGHT: DESIGNATED CIRCUIT FOR COPIER. PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REUSE EXISTING 20A 1P BREAKER
- CIRCUIT #24 IN LPB RIGHT: DESIGNATED CIRCUIT FOR COPIER. PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REUSE EXISTING 20A 1P BREAKER
- CIRCUIT #26 IN LPB RIGHT: DESIGNATED CIRCUIT FOR PRINTER. PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REUSE EXISTING 20A 1P BREAKER
- NOT USED
- NOT USED
- CIRCUIT IN LPB RIGHT: DESIGNATED CIRCUIT FOR FRIDGE. PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REUSE EXISTING 20A 1P BREAKER FROM DEMOLISHED RECEPTACLES
- CIRCUIT #21 IN LPA RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #25 IN LPA RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #29 IN LPA RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #34 IN LPA RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #35 IN LPA RIGHT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REUSE EXISTING 20A 1P BREAKER
- CIRCUIT #30 IN LPA LEFT: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND A 20A 1P BREAKER
- CIRCUIT #11 IN PANEL A IN MECH 006: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REPLACE EXISTING BREAKER WITH NEW 15A 1P BREAKER
- CIRCUIT #13 IN PANEL A IN MECH 006: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REPLACE EXISTING BREAKER WITH NEW 15A 1P BREAKER
- CIRCUIT #15 IN PANEL A IN MECH 006: PROVIDE 3 #12 AWG THWN IN 3/4" EMT CONDUIT AND REPLACE EXISTING BREAKER WITH NEW 15A 1P BREAKER
- CIRCUIT #16 IN PANEL A IN MECH 006: PROVIDE 3 #10 AWG THWN IN 3/4" EMT CONDUIT AND REPLACE EXISTING BREAKER WITH NEW 25A 1P BREAKER
- CIRCUIT #18 IN PANEL A IN MECH 006: MAINTAIN CONNECTION TO AHU-6 AND EXISTING 20A BREAKER
- CIRCUIT #19 IN PANEL A IN MECH 006: PROVIDE 3 #10 AWG THWN IN 3/4" EMT CONDUIT AND REPLACE EXISTING BREAKER WITH NEW 25A 1P BREAKER



DAVIS HALL GROUND FLOOR RENOVATIONS
ELECTRICAL POWER

REVISION:	PROJECT NO.: SCSU-2023-02
SHEET:	DATE: APRIL 7, 2023
EP1.01	DRAWING TITLE: ELECTRICAL POWER
	SCALE: 1/8" = 1'



LINETYPE LEGEND	
	EXISTING TO REMAIN
	NEW WORK

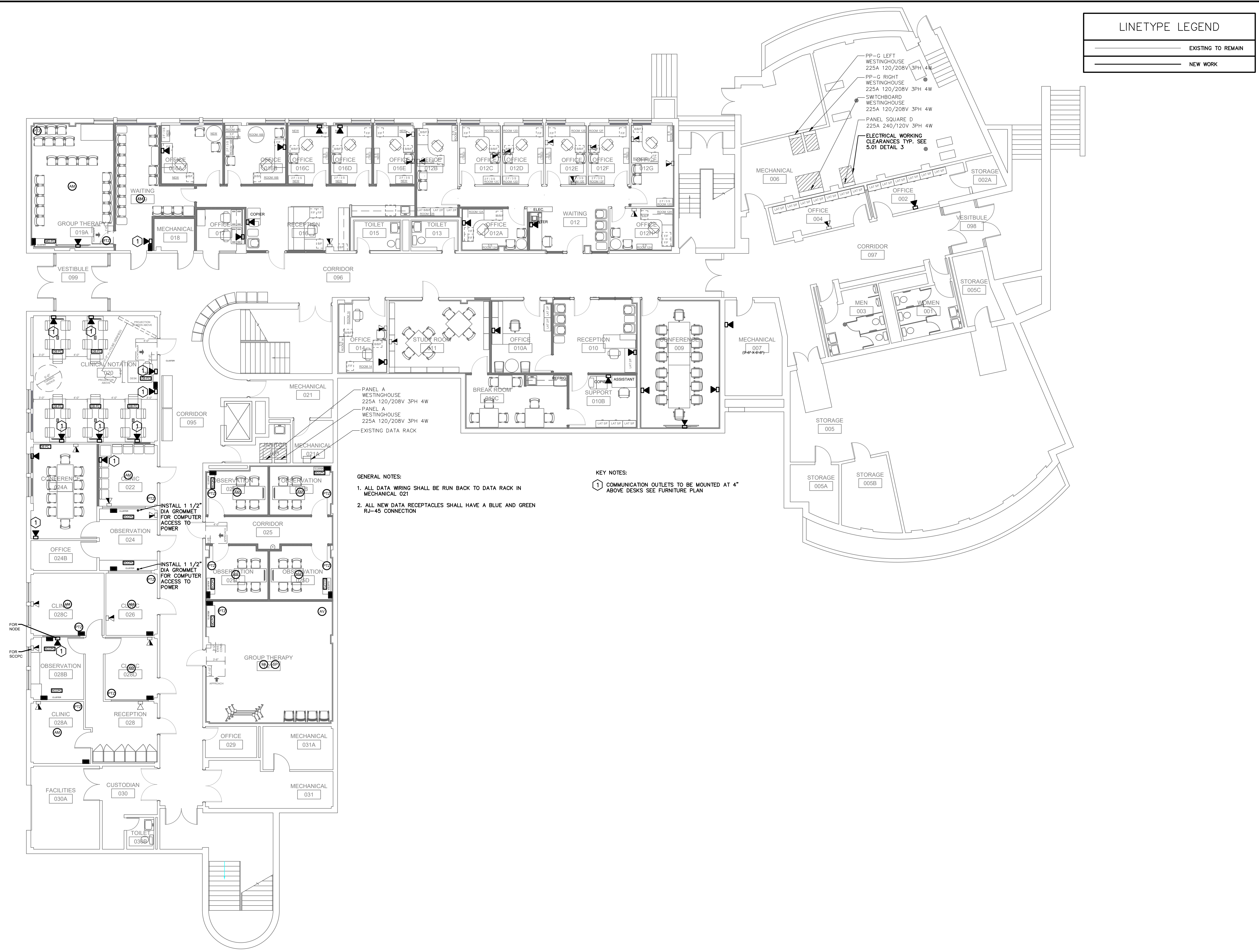
- GENERAL NOTES:
1. REUSE EXISTING LIGHTING BRANCH CIRCUITS
 2. SEE ES.01 DETAIL 4 FOR LIGHT FIXTURE SCHEDULE
 3. EMERGENCY LIGHTING AND EXIT SIGNS SHALL MONITOR HOT LEG OF LIGHTING BRANCH CIRCUIT IN AREA SERVED

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**DAVIS HALL GROUND FLOOR
RENOVATIONS**

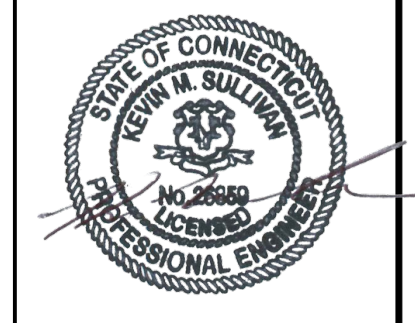
REVISION:	PROJECT NO.: SCSU-2023-02
SHEET:	DATE: APRIL 7, 2023
EL1.01	DRAWING TITLE: ELECTRICAL LIGHTING
	SCALE: 1/8" = 1'



LINETYPE LEGEND	
	EXISTING TO REMAIN
	NEW WORK

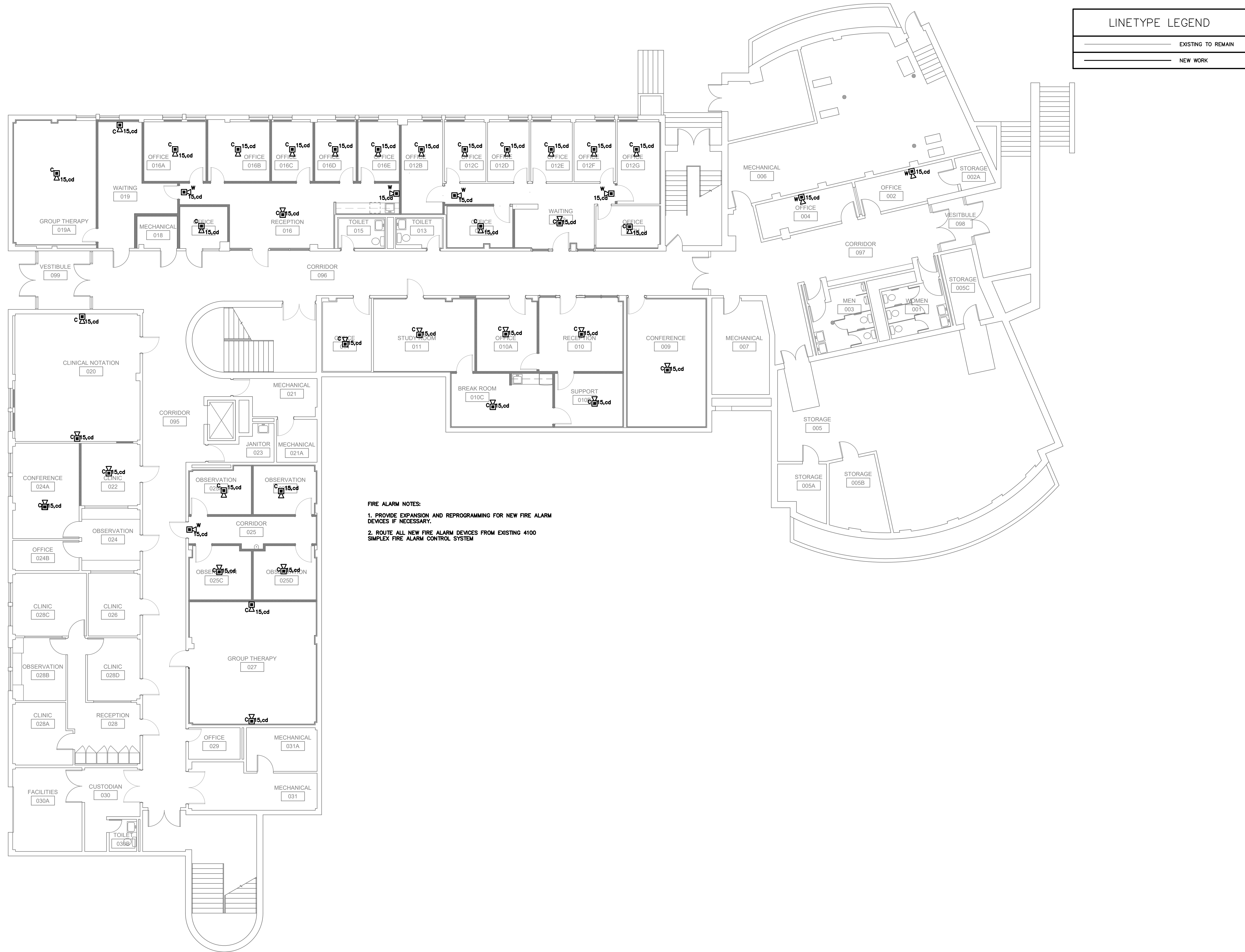
- GENERAL NOTES:**
1. ALL DATA WRING SHALL BE RUN BACK TO DATA RACK IN MECHANICAL 021
 2. ALL NEW DATA RECEPTACLES SHALL HAVE A BLUE AND GREEN RJ-45 CONNECTION
- KEY NOTES:**
- 1 COMMUNICATION OUTLETS TO BE MOUNTED AT 4" ABOVE DESKS SEE FURNITURE PLAN

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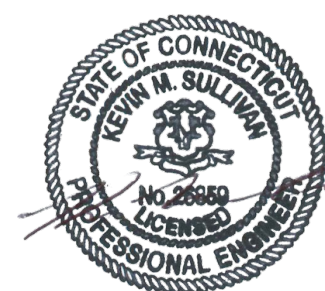
DAVIS HALL GROUND FLOOR RENOVATIONS

REVISION:	PROJECT NO.: SCSU-2023-02
SHEET:	DATE: APRIL 7, 2023
ET1.01	DRAWING TITLE: ELECTRICAL TELECOMMUNICATIONS
	SCALE: 1/8" = 1'



**DAVIS HALL GROUND FLOOR
RENOVATIONS**

REVISION:	PROJECT NO.: SCSU-2023-02
SHEET:	DATE: APRIL 7, 2023
EF1.01	DRAWING TITLE: ELECTRICAL FIRE ALARM
	SCALE: 1/8" = 1'

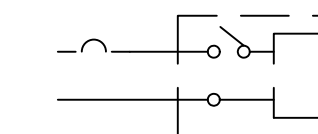


ELECTRICAL EQUIPMENT SCHEDULE - BROADBROOK

Equipment Designation	Room Description	EQUIPMENT RATING							DISCONNECT					MOTOR CONTROLLER								
		H.P.	Load (VA/W)	Voltage	Phase	FLA	MCA	MOCBP	# REQUIRED	VOLTAGE	# OF POLES	RATING (AMPS)	ENCLOSURE (NEMA)	O.C.	# REQUIRED	TYPE (SEE NOTES)	VOLTAGE	# OF POLES	RATING (AMPS)	ENCLOSURE (NEMA)	O.L. (Y/N)	CURRENT TRANSFORMER
AHU-2	Corridor 096	1	1,596.0	120	1	13.30	16.63	25	Div 23						Div 23	Integral						
AHU-3	Mechanical 018	1	1,596.0	120	1	13.30	16.63	25	Div 23						Div 23	Integral						
AHU-5	Mechanical 007	0.5	895.2	120	1	7.46	9.32	15	Div 23						Div 23	Integral						
AHU-14	Mechanical 007	0.5	895.2	120	1	7.46	9.32	15	Div 23						Div 23	Integral						
AHU-7	Corridor 025	0.5	895.2	120	1	7.46	9.32	15	Div 23						Div 23	Integral						

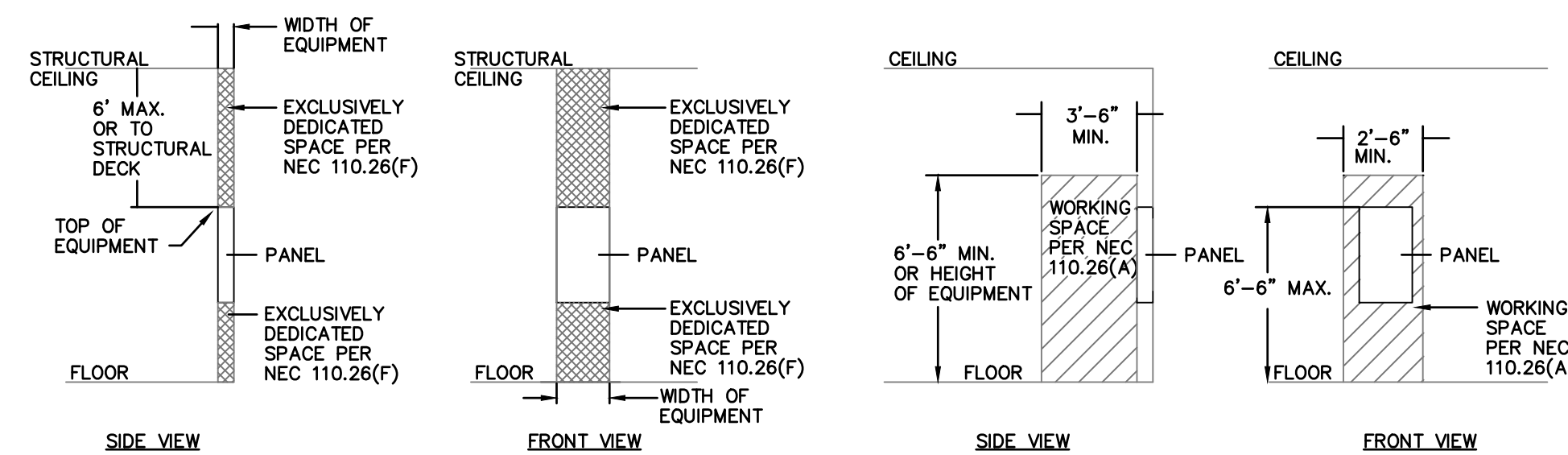
NOTES:
 ATL = Across The Line Motor Starter
 MOTOR CONTROL TYPE: D/Y= DELTA Wye
 CONT = Contactor
 2S = Two Speed Motor Starter
 SWITCH = 20 amp light switch
 VFD = Variable Frequency Drive, Furnished and Installed by Div. 15, Wired by Div. 16.
 EIR = Existing To Remain
 Tstat=Line voltage thermostat furnished by Div.15, installed and wired by Div.16
 5,877.6 VA
 16.3339 AMPS

120 or 277 Volts, 1ø
 - New circuit
 - Mechanical equipment with integral controls, disconnect and integral overload protection.
 - Electrical contractor provides final connection



1 EQUIPMENT SCHEDULE
NOT TO SCALE

2 AHU-2, AHU-3, AHU-5, AHU-7, AHU-14 WIRING DIAGRAM
NOT TO SCALE



3 TYPICAL ELECTRICAL CLEARANCES DETAIL
NOT TO SCALE

Symbol	Label	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
□	A	COOPER LIGHTING SOLUTIONS METLAUX	22RDI-40-UNV-L840-CD1-U	METALUX 2X2 OVATION LED TROFFER STANDARD VERSION	196	4076	0.91	41.8
◼	A-EM	COOPER LIGHTING SOLUTIONS METLAUX	22RDI-40-UNV-EL7W-L840-CD1-U	METALUX 2X2 OVATION LED TROFFER STANDARD VERSION	196	4076	0.91	41.8
⊗	E	Lithonia Lighting	LQM S W 3 R120/277 SD	Red Exit, AC only, White				

4 LIGHT FIXTURE SCHEDULE
NOT TO SCALE