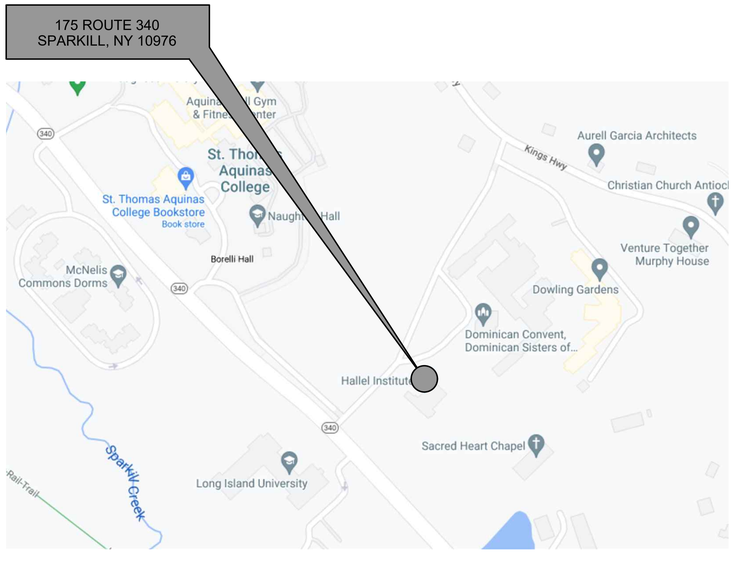
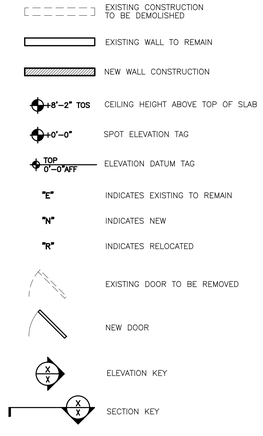
HALLEL BUILDING GYMNASIUM ALTERATION

175 ROUTE 340
SPARKILL, NY 10976



1 LOCATION MAP
N.T.S.

NORTH



2 DRAWING SYMBOLS
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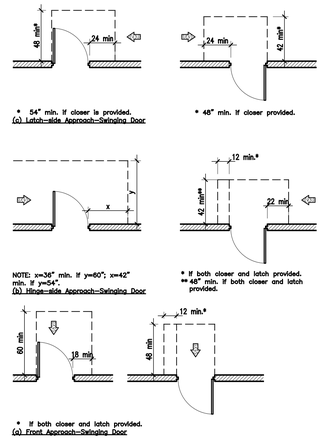

3 DOOR MANEUVERING CLEARANCES
N.T.S.

AFF	Above Finished Floor	FA	Fire Alarm	NIC	Not In Contract
ACT	Acoustic Ceiling Tile	FE	Fire Extinguisher	NTS	Not To Scale
ADJ	Adjustable	FT	Fin Tube	No.#/#	Number
ALUM	Aluminum	FOB	Face of Block/Brick	NOM	Nominal
&	And	FOW	Face of Wall		
∠	Angle	FI	Finish, Finished	OC	On Center
APPROX	Approximate	FIX	Fixture	OPG	Opening
ARCH	Architect(ural)	FH	Full Height	OD	Outside Diameter
@	At	FP	Fireproof, Fireproofing	OPP SIM	Opposite Similar
AUX	Auxiliary	FR	Fire Rated	OPP HND	Opposite Handed
		FL/FLR	Floor	PNL	Panel
BET	Between	FD	Floor Drain	PTD	Painted
BM	Beam	FOUND	Foundation	PLYWD/PLWD	Plywood
BLDG	Building	FTG	Footing	P LAM	Plastic Laminate
BLK	Block			PREP	Preparation
BLKG	Blocking	G	Gas	PSI	Pounds Per Square Inch
BD	Board	GA	Gauge	PSF	Pounds Per Square Foot
BOT	Bottom	GC	General Contractor		
B.O.	Bottom of	GEN	General	R	Riser
		GL	Glass	RD	Roof Drain
CAB	Cabinet	GR	Grade	REC	Recessed/Reception
CAT	Catalog	GWB/GYP BD	Gypsum Wall Board	RCP	Reflected Ceiling Plan
CLG	Ceiling	GFCI	Ground Fault Current Interrupt	REINF	Reinforce(d) (ing)
CJ	Control Joint			RELOC	Relocate
CL/ ℄	Center Line	HC	Handicapped	REQ/REQD	Required
C.O.	Clean Out	HDWR	Hardware	RES	Resilient
CLO	Closet	HDWD	Hardwood	RM	Room
CLR	Clear			RO	Rough Opening
CMU	Concrete Masonry Unit	HVAC	Heating,Ventilation & Air Conditioning		
CONC	Concrete	H/HT	Height	SCH	Schedule
COORD	Coordinate	HM	Hollow Metal	SEP	Separate
CORR	Corridor	HR	Hour	SIM	Similar
CW	Cold Water	HOR/HORIZ	Horizontal	SPEC	Specification
COL	Column	HTR	Heater	SF	Square Feet
CONST	Construction	HW	Hot Water	ST STL	Stainless Steel
CONT	Continuous			STL	Steel
CONTR	Contractor	ID	Inside Diameter	STR	Structural, Structure
CER	Ceramic	INSUL	Insulation	SW	Switch
		INT	Interior	SQ	Square
D	Deep	INCL	Include (d)(ing)	SUSP	Suspended
DN	Down	INV	Invert	SYN	Synthetic
DET	Detail/Detector				
DIA/Ø	Diameter	JT	Joint	THK	Thick
DIM	Dimension	J-BOX	Junction Box	T.O.	Top Of
DWG	Drawing			T	Tread
DIAG	Diagonal	LBS	Pounds	TYP	Typical
DISP	Dispenser	LLV	Long Leg Vertical	TEMP	Tempered
		LT	Light		
E	East	LAM	Laminate	UNO	Unless Noted Otherwise
ELEC	Electric, Electrical			UL	Underwriter's Laboratories
EL	Elevation (Feet & Inches)	MAS	Masonry		
ELEV	Elevator	MATL	Material	VERT	Vertical
EQUIP	Equipment	MTL	Metal	VIF	Verify In Field
EQ	Equal	MIN	Minimum	VCT	Vinyl Composite Tile
EA	Each	MAX	Maximum		
EXT	Exterior	MFR	Manufacturer	W	Wide
EXTG	Existing	MTD	Mounted	WWF	Welded Wire Fabric
EJ	Expansion Joint			W/, W/O	With, Without
EXT	Exterior			WD	Wood
EIFS	Exterior Insulation Finish System			WP	Work Point

4 ABBREVIATIONS
N.T.S.

ARCHITECTURAL

G.1	LOCATION MAP, SYMBOLS, DOOR MANEUVERING CLEARANCES, ABBREVIATIONS, DRAWING LIST
G.2	CODE REVIEW AND EGRESS PLAN
A.1	PARTIAL DEMOLITION PLAN AND PARTIAL CONSTRUCTION PLAN
A.2	PARTIAL ROOF PLAN AND PARTIAL REFLECTED CEILING PLAN
A.3	PARTIAL CONSTRUCTION PLAN AND PARTIAL REFLECTED CEILING PLAN
A.4	EXTERIOR ELEVATIONS
A.5	EXTERIOR ELEVATIONS
A.6	BUILDING SECTIONS
A.7	ENLARGED PLANS
A.8	ENLARGED PLANS
A.9	DOOR, WINDOW AND STOREFRONT SCHEDULES AND DETAILS
A.10	PARTIAL FINISH PLAN AND SPECIFICATIONS
A.11	SIGNAGE LOCATION PLAN, SCHEDULE AND ELEVATIONS

PLUMBING

P.001	PLUMBING DEMOLITION PLAN
P.101	PLUMBING PLANS
P.102	PLUMBING GAS PLAN
P.201	PLUMBING RISER DIAGRAMS
P.301	PLUMBING DETAILS
P.401	PLUMBING SPECIFICATIONS

MECHANICAL

M.001	MECHANICAL DEMOLITION PLAN
M.101	MECHANICAL PLAN
M.201	MECHANICAL SCHEDULES
M.202	MECHANICAL PIPING AND WIRING DIAGRAMS
M.203	MECHANICAL DETAILS
M.301	MECHANICAL SPECIFICATIONS

ELECTRICAL

E.001	ELECTRICAL DEMOLITION PLAN
E.101	ELECTRICAL LIGHTING PLAN
E.102	ELECTRICAL POWER PLAN
E.201	ELECTRICAL SPECIFICATIONS

FIRE ALARM

FA.101	FIRE ALARM PLAN

5 DRAWING LIST
N.T.S.

SCOREBOARD
BASKETBALL BACKSTOPS AND EQUIPMENT
VOLLEYBALL NET AND EQUIPMENT
BLEACHERS
LOCKERS
GYMNASIUM FLOOR PREP, FLOOR COATING, STRIPING
VENDING MACHINES
GOLF SIMULATOR EQUIPMENT
WINDOW TREATMENT
GYM WALL PADDING

6 OWNER SUPPLIED ITEMS
N.T.S.

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08.25.23 FOR PERMIT

HALLEL BUILDING
GYMNASIUM ALTERATION

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LOCATION PLAN, SYMBOLS, DOOR MANEUVERING CLEARANCES, ABBREVIATIONS & DRAWING LIST

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\G.1 General Info

G.1

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CODE REVIEW

Project Name: Hallel Building Gymnasium Alteration

Location: 175 Route 340
Sparkill, NY 10976

Architects: Arcari & Iovino Architects
One Katherine Street
Little Ferry, NJ 07643
201.641.0600

Applicable Code:
2020 Building Code of New York State
2017 ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities
2020 Fire Code of New York State
2020 Energy Conservation Code of New York State
2020 Mechanical Code of New York State
2020 Plumbing Code of New York State
2020 Fuel Gas Code of New York State
2017 National Electrical Code

Description of Work:

Area: 8,394 sq. feet Height: 1 Story

2020 Building Code of New York State

CHAPTER 3 - USE AND OCCUPANCY CLASSIFICATION

303.6	Use Group	A-4, B
	Min. Construction Type Req.	IIIB
	Construction Type Proposed	IIIB (Non-Sprinklered)

CHAPTER 5 - GENERAL BUILDING LIMITATIONS

Tables 504.3, 504.4, 506.2- Allowable Building Heights & Areas

Group	A-4, B		
Construction Type	IIIB		
		Allowed	Proposed
Height (max. height)		55'-0"	31'-2"
Number of Stories (See 504.4)		2	1
Area per Floor		9,500 SF	8,394 SF
Total area			8,394 SF

Height Modifications (Not Required)
Area Modifications (Not Required)

CHAPTER 6 - TYPES OF CONSTRUCTION

Table 601- Fire Resistant Ratings Required (Type IIIB)

	Required	Proposed
Structural Frame:	0 hrs	0 hrs
Bearing Walls:		
Exterior:	2 hrs	2 hrs
Interior:	0 hrs	0 hrs
Nonbearing Walls		
Partitions Exterior:	0 hrs	0 hrs
Partitions Interior:	0 hrs	0 hrs
Floor Construction:	0 hrs	0 hrs
Roof Construction:	0 hrs	0 hrs

Table 602- Fire Resistant Rating for exterior walls based on sep. distance

$\geq$ 30'-0"	0 Req.	0 Proposed

CHAPTER 7 - FIRE RESISTANT MATERIALS AND CONSTRUCTION

705 Exterior Walls
705.8 Maximum Area of Exterior Wall Openings Based on Fire Separation Distance and Degree of Opening Protection
30' or greater - unprotected, nonsprinklered - No Limit
705.8.5 Vertical Separation of Openings - Not Applicable
Exception 1 - Less than 3 Stories
705.11 Parapets - Not Applicable
Exception 1 - Not Req. in accordance with Table 602 because of fire separation distance
706 Fire Walls - Not Applicable
707 Fire Barriers - Not Applicable
708 Fire Partitions - Not Applicable
709 Smoke Barriers - Not Applicable
710 Smoke Partitions - Not Applicable

CHAPTER 8 - Interior Finishes

Table 803.13 - Interior Wall Ceiling Finish Req. by OCC. (A-4 use, Non-sprinklered)

Exit Enclosure/ Exit Passageway	Class A
Corridors	Class A
Rooms/ Enclosed Spaces	Class C

CHAPTER 9 - FIRE PROTECTION SYSTEMS

903 Automatic Sprinkler System
Required: No
Provided: No

906 Fire Extinguishers
Required: Yes
Provided: Yes

Table 906.3(1):	Required	Provided
Min. Extinguisher Rating:	2-A	Complies
Max. Floor Area Per Unit of A:	3,000 SF	Complies
Max. Floor Area for Extinguisher:	11,250 SF	Complies
Max. Travel Distance To Extinguisher:	75 FT	Complies

CHAPTER 10 - MEANS OF EGRESS

1003.2	Ceiling Height	7'-6" AFF min.
1004	Occupant Load	Table 1004.5
	First Floor:	319 People
	Total:	319 People

		Required	Provided
1005.3	Egress Width		
1005.3.2	Other Egress Components	.2" Min	Complies
1006	Number of Exits/ Continuity Table 1006.3.1 (1-500 occupants)	Min 2 exits/flr	Complies
1006.2.1	Common path of egress travel, Group B, Non-Sprinklered	OL>30: 75 ft Max	32 ft actual
1008.3	Emergency power for illumination	90 minutes min.	Complies
1017	Exit Access Travel Distance Table 1017.2 (non-sprinklered)	200'-0" Max	95'-11" Max
1020	Corridors		
	Table 1020.1 Fire-Resistance Rating	0 (<30 occ.)	0
	1020.2 Corridor Width	36" (<50 occ.)	44" Min
	1020.4 Dead ends	20' max	13'-9"

2020 Plumbing Code of New York State

403.1 Minimum # of Required Plumbing Fixtures

Total Occupant Load (Based on Egress) - 319
319 x.5 = 160 each sex

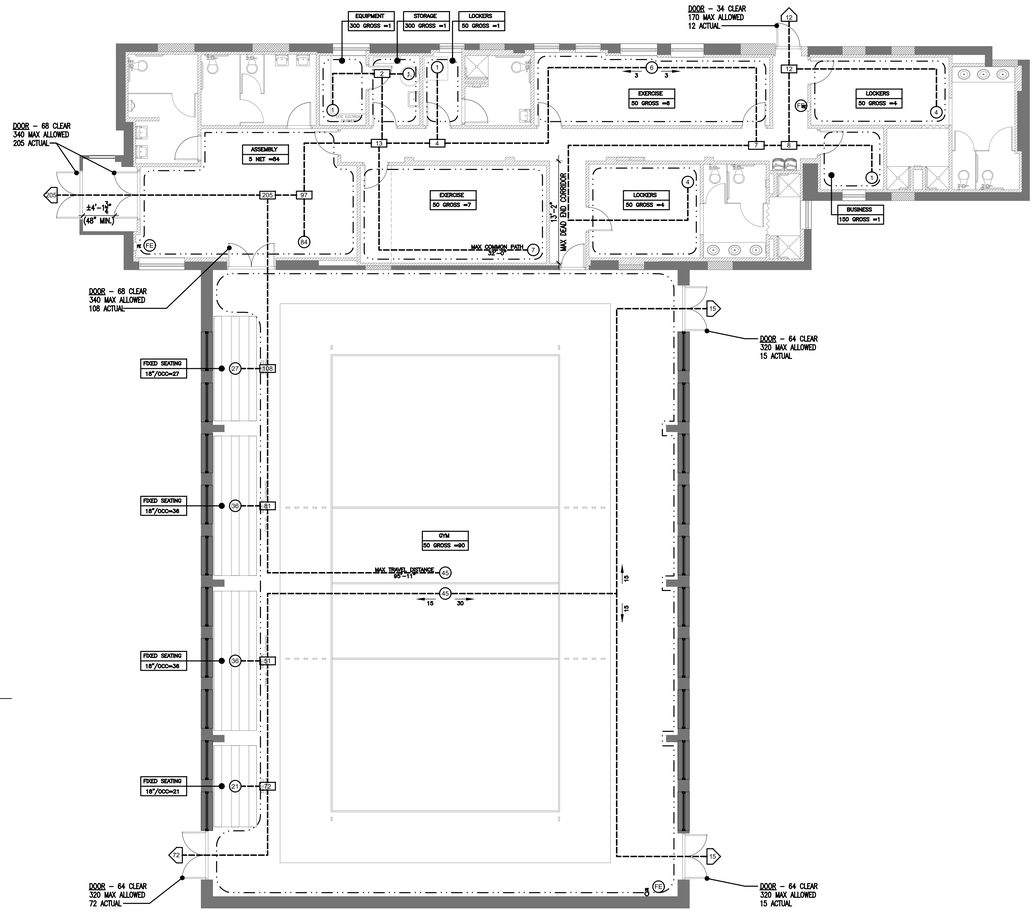
Classification - Assembly (Indoor sporting events and activities)

Required

	WC		LAV		Drinking Fountain	Service Sink
	M	W	M	W		
	1per 75 for 1st 1,500	1 per 40 for 1st 1,520	1 per 200	1 per 150	1 per 1,000	1 service sink
TOTAL	3	4	1	2	1 drinking fountain	1 service sink

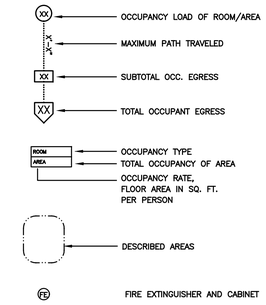
Proposed

	WC		LAV		Drinking Fountain	Service Sink
	M	W	M	W		
TOTAL	3	6	3	8	2 drinking fountain (1 ada, 1 non-ada)	1 service sink



1 EGRESS PLAN
1/8" = 1'-0"

EGRESS LEGEND



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CODE REVIEW AND EGRESS PLAN

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\G.2 Code & Egress

G.2

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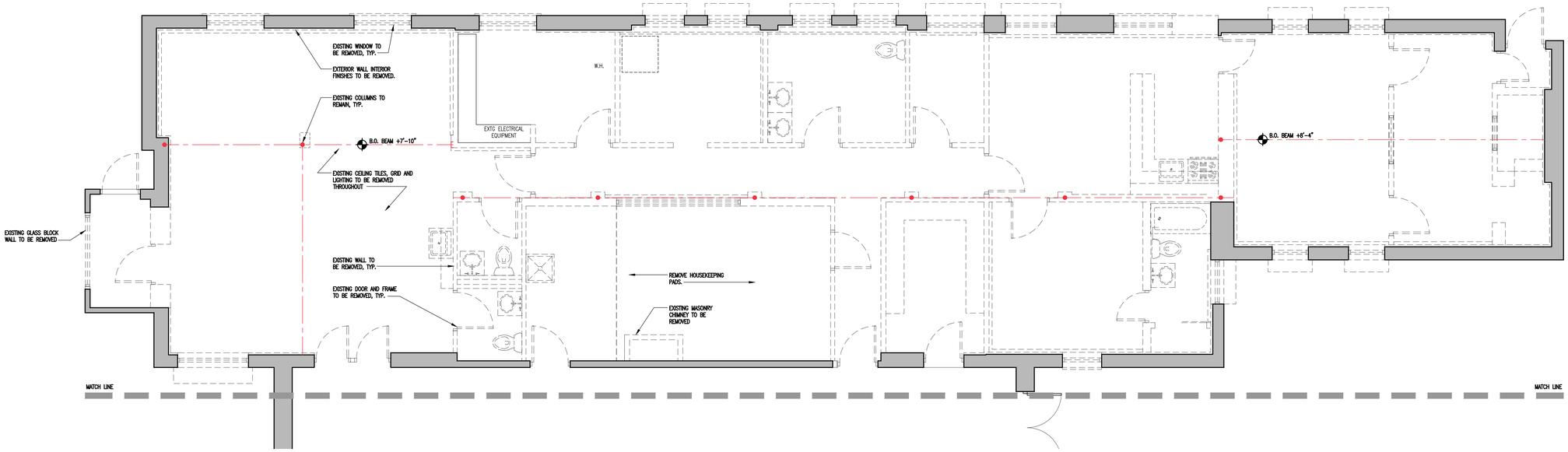
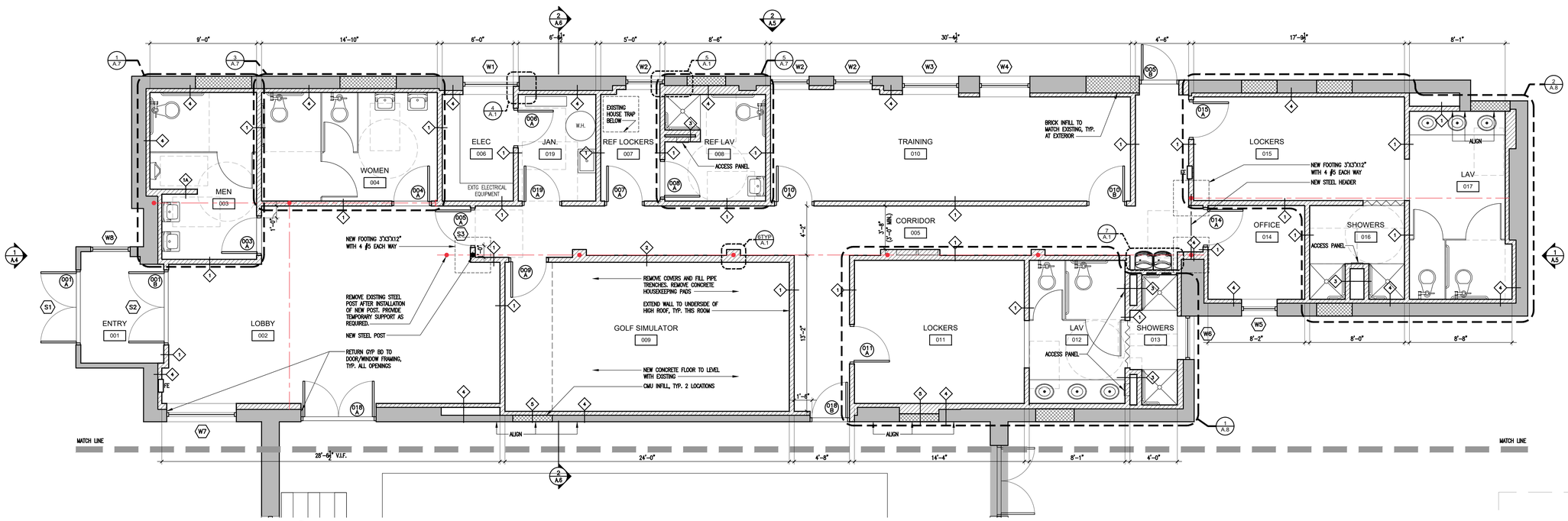
FIRE EXTINGUISHER CABINET

BASIS OF DESIGN:
LARSEN'S STAINLESS STEEL 2409-5R 1 $\frac{3}{4}$" SEMI RECESSED CABINET, VERTICAL DUO DOOR, TEMPERED SAFETY GLASS, BLACK VERTICAL DIE WHITE LETTERING, RECESSED HANDLE AND MP5 MULTIPURPOSE DRY CHEMICAL EXTINGUISHER

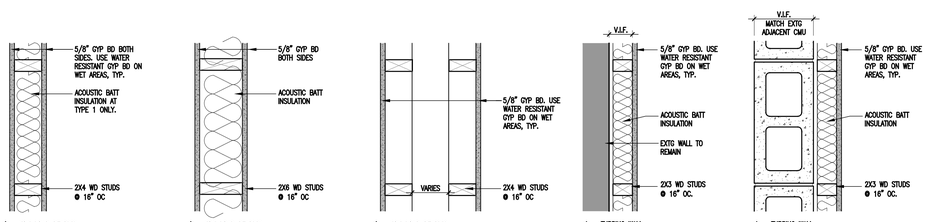


1 PARTIAL DEMOLITION PLAN
1/4" = 1'-0"

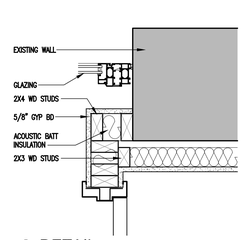
NOTE: DEMOLITION WORK UNDER SEPARATE CONTRACT. SHOWN FOR INFORMATION ONLY.



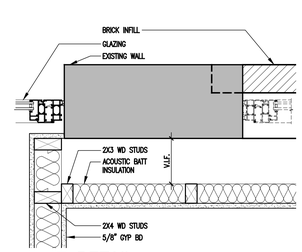
2 PARTIAL CONSTRUCTION PLAN
1/4" = 1'-0"



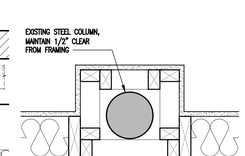
3 WALL TYPES
1 1/2" = 1'-0"



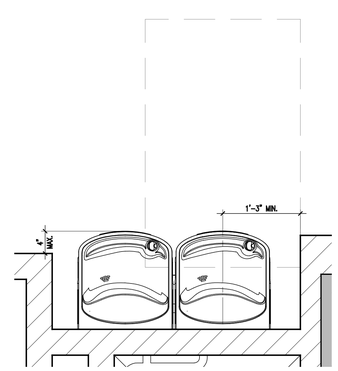
4 DETAIL
1 1/2" = 1'-0"



5 DETAIL
1 1/2" = 1'-0"



6 DETAIL
1 1/2" = 1'-0"



7 DETAIL AT DRINKING FOUNTAIN
1" = 1'-0"

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PARTIAL DEMOLITION PLAN AND PARTIAL CONSTRUCTION PLAN

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.1-A.2 Support Plans

A.1

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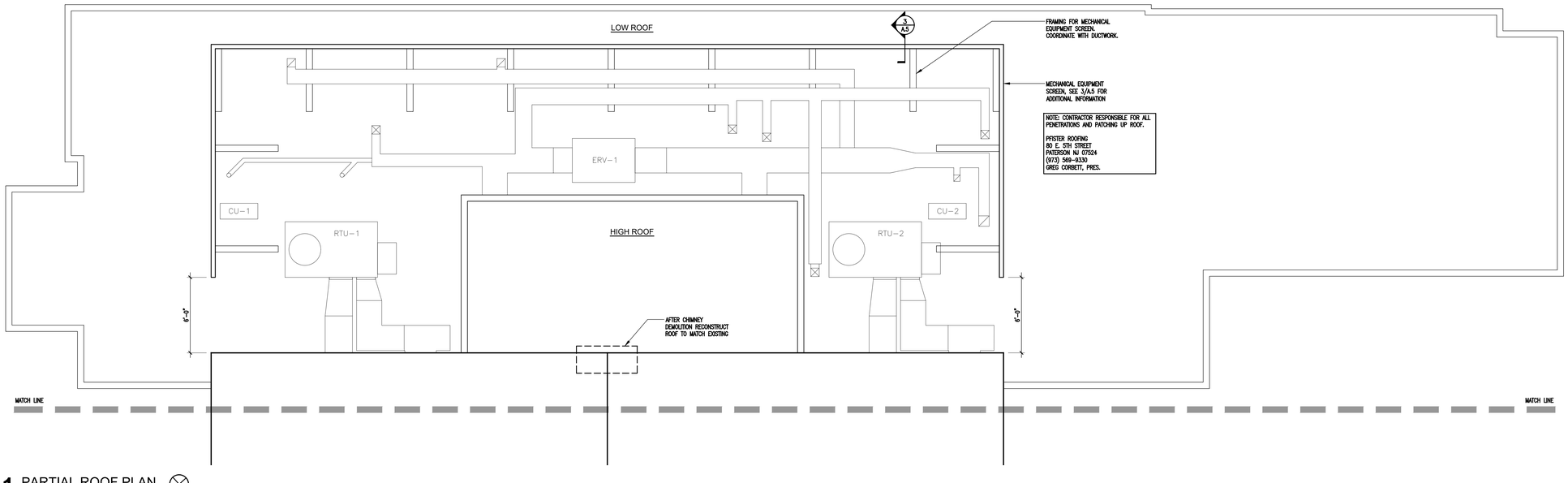
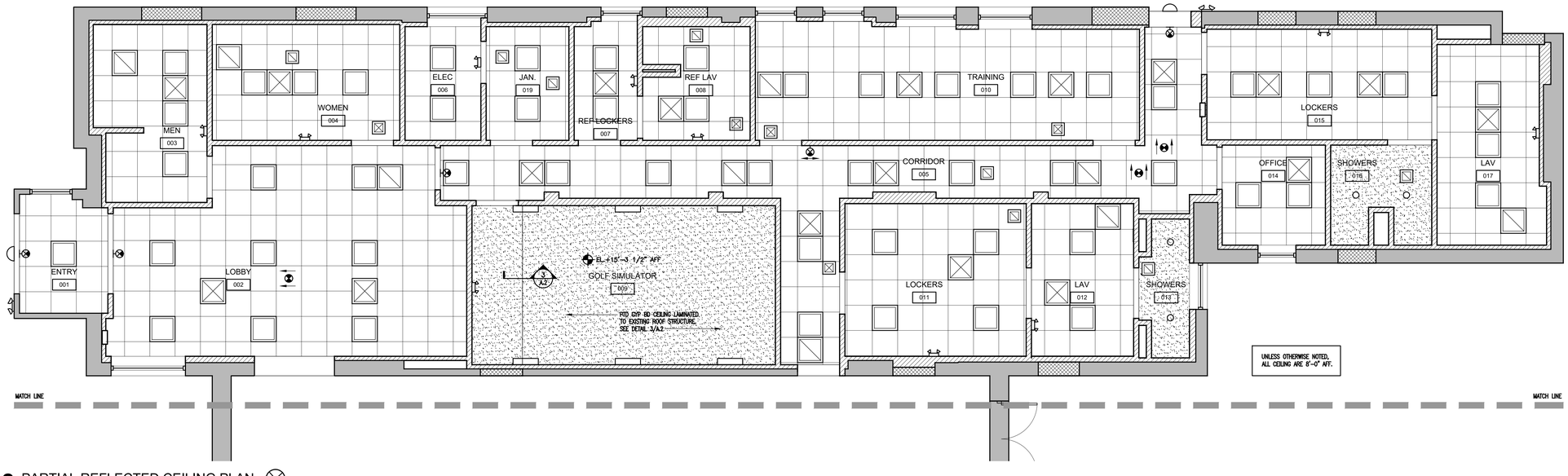
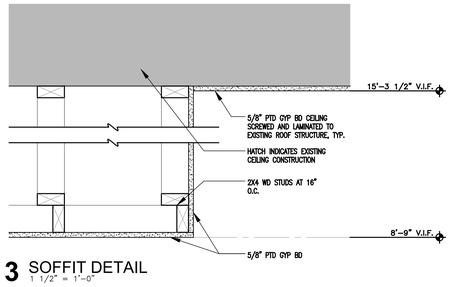


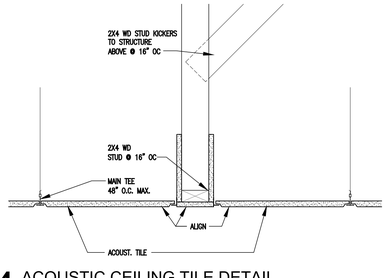
1 PARTIAL ROOF PLAN
1/4" = 1'-0"



2 PARTIAL REFLECTED CEILING PLAN
1/4" = 1'-0"



3 SOFFIT DETAIL
1 1/2" = 1'-0"



4 ACOUSTIC CEILING TILE DETAIL
1 1/2" = 1'-0"

CEILING LEGEND

- ANGLED TEGULAR CEILING TILE IN 15/16" SUSPENDED GRID. GRID TO BE CENTERED IN ROOM UNLESS OTHERWISE NOTED. SEE FINISHES FOR SPECIFICATION.
- PAINTED GYPSUM BOARD
- 2'x2' RECESSED LED
- WALL MOUNTED LED
- 6" LED DOWNLIGHT
- EXTERIOR LED WALL SCONCE
- INTERIOR EMERGENCY LIGHT
- EXTERIOR EMERGENCY LIGHT
- EX EMERGENCY EXIT FIXTURE
- ARROW INDICATES FACE

SEE ELECTRICAL DRAWING FOR THE COMPLETE LIGHTING FIXTURE SCHEDULE

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PARTIAL ROOF PLAN AND
PARTIAL REFLECTED CEILING PLAN

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.1-A.2 Support Plans

A.2

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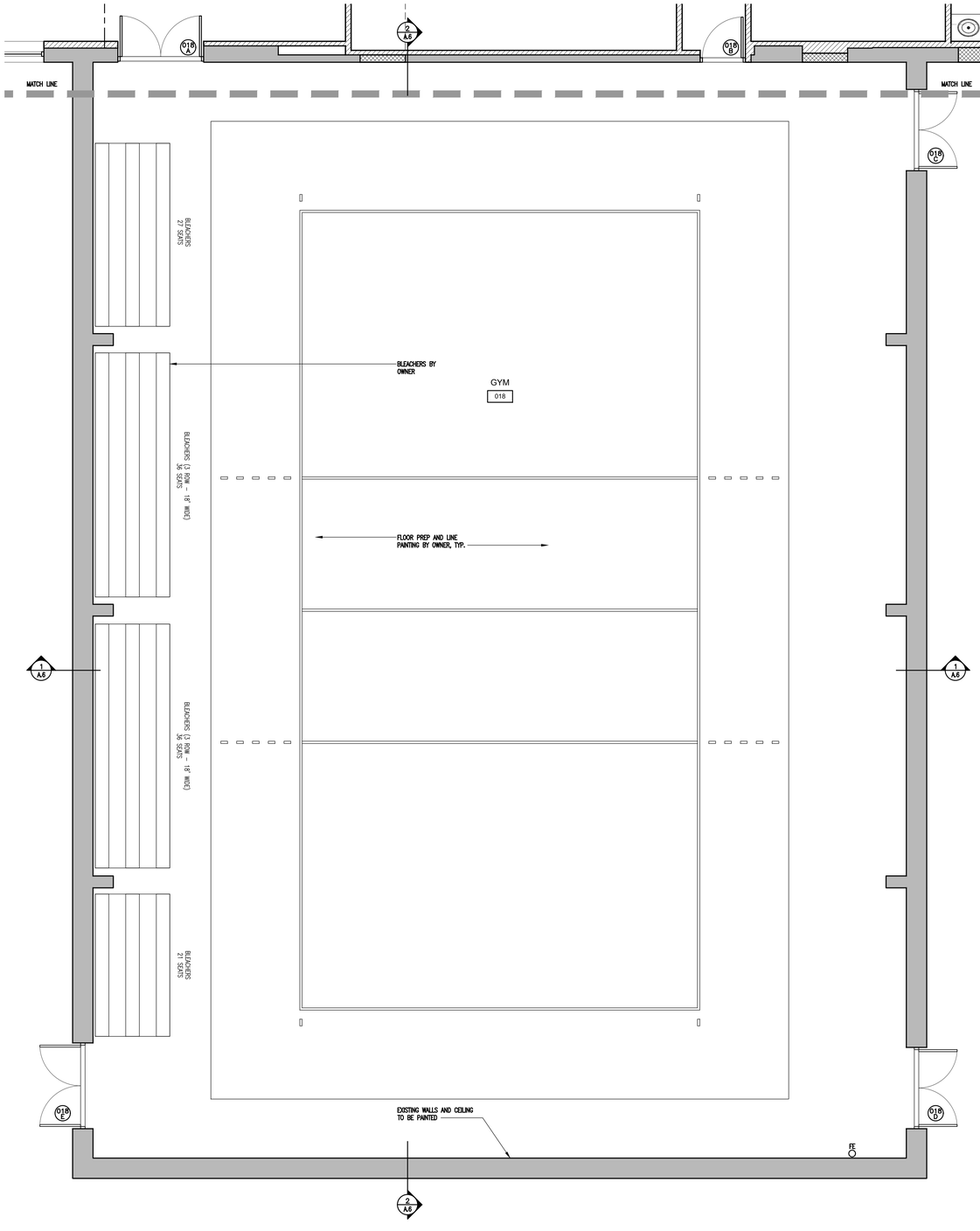

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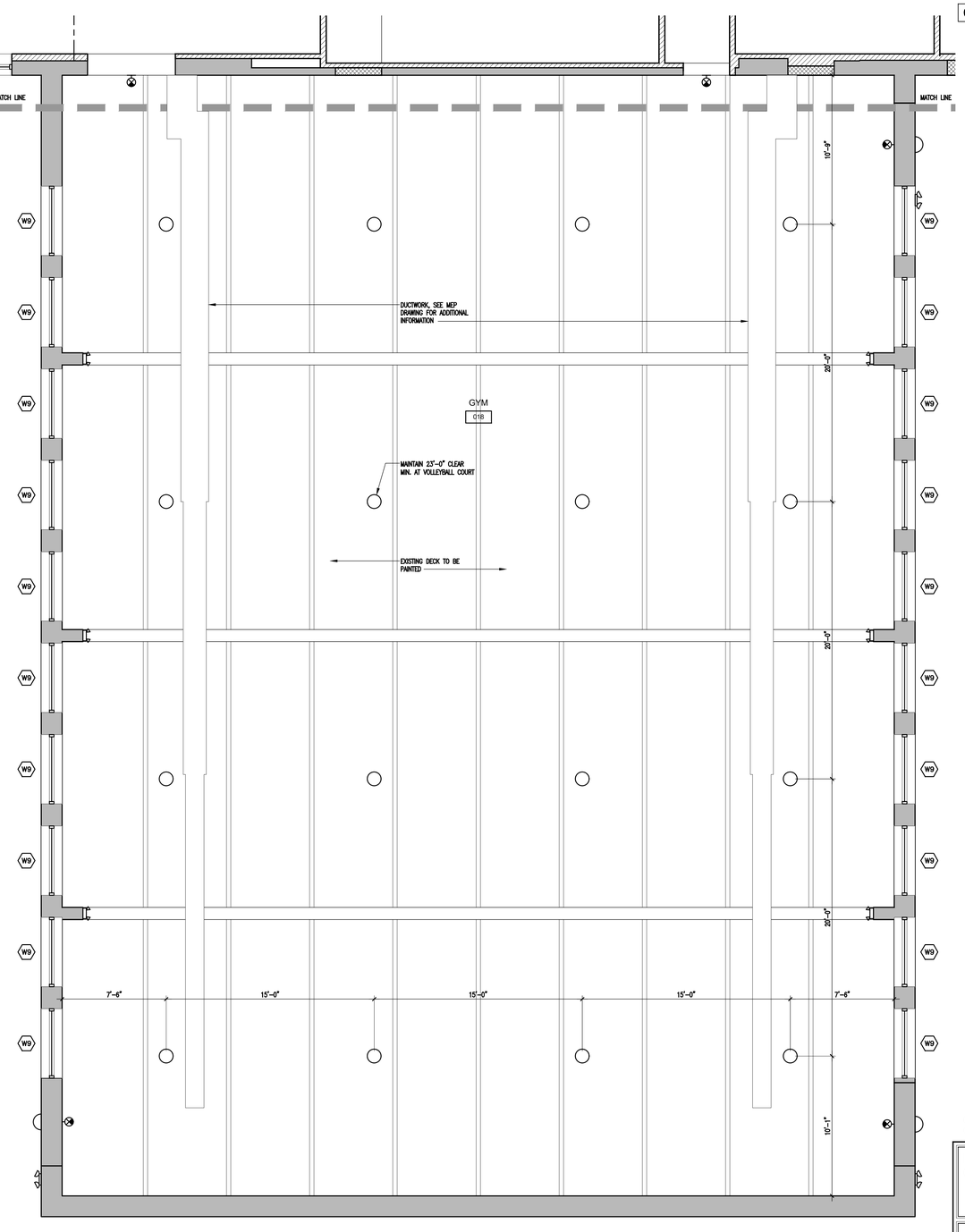
1/4" = 1'-0"



2 PARTIAL REFLECTED CEILING PLAN
1/4" = 1'-0"

CEILING LEGEND

- LED PENDANT
- EXTERIOR LED WALL SCONCE
- INTERIOR EMERGENCY LIGHT
- EXTERIOR EMERGENCY LIGHT
- EX EMERGENCY EXIT FIXTURE
- ARROW INDICATES FACE

SEE ELECTRICAL DRAWING FOR THE COMPLETE LIGHTING FIXTURE SCHEDULE

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PARTIAL CONSTRUCTION PLAN AND PARTIAL REFLECTED CEILING PLAN

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.3 Gym Plans

A.3

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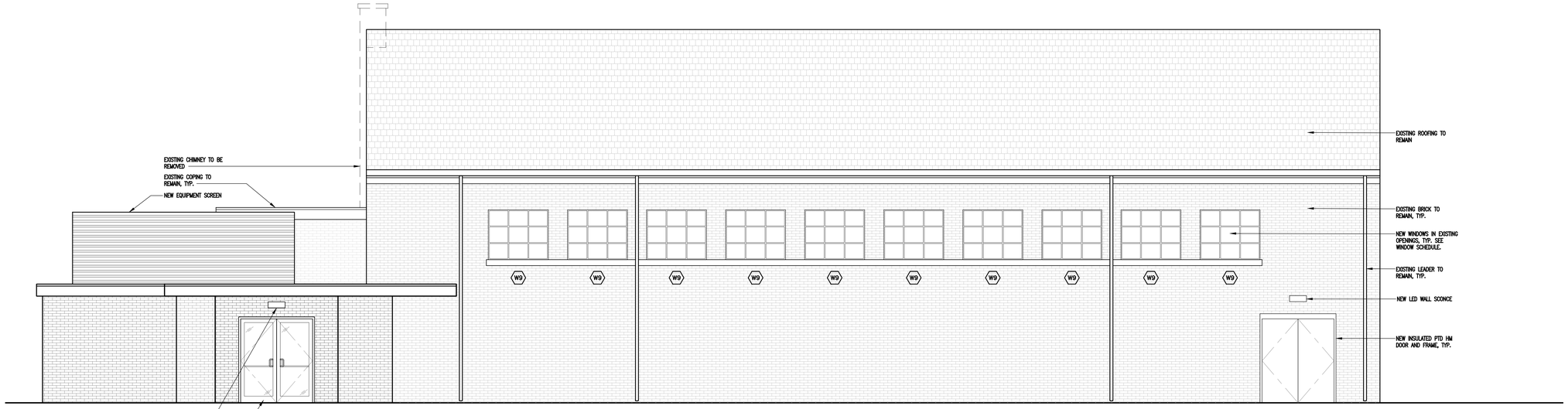
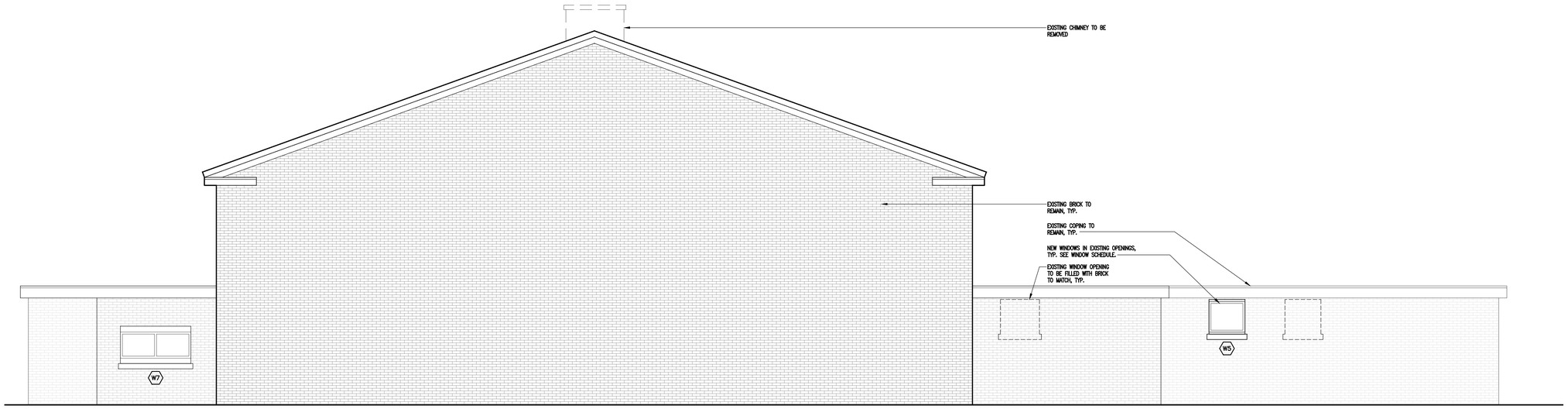


1 SOUTHEAST ELEVATION
1/4" = 1'-0"



2 NORTHEAST ELEVATION
1/4" = 1'-0"

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HALLEL BUILDING
GYMNASIUM ALTERATION

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Consulting Engineers
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Midland Park, NJ 07432-1811
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BUILDING ELEVATIONS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.4 Ext Elevations

A.4

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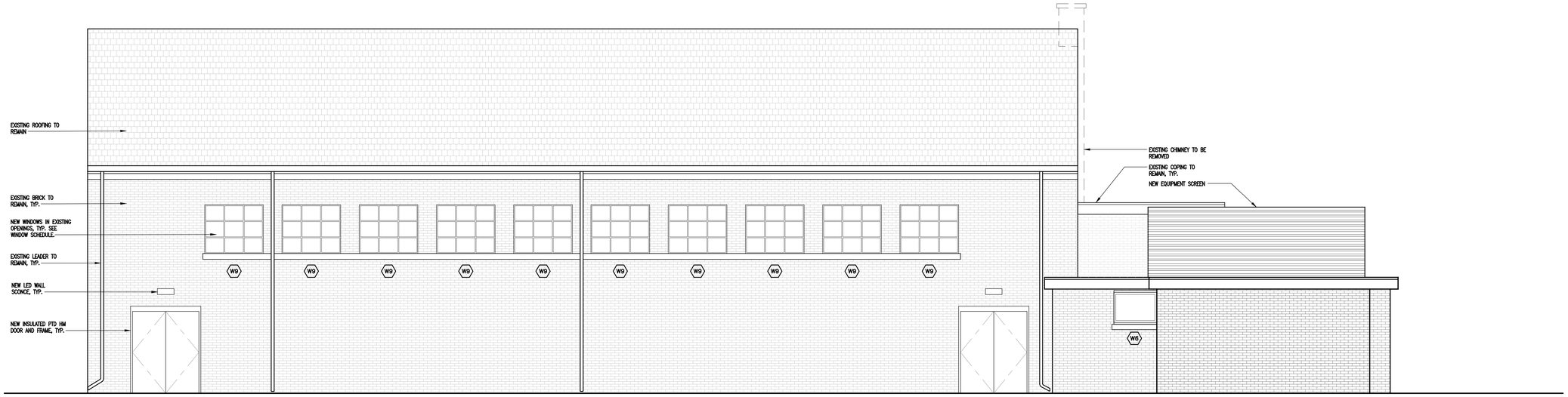
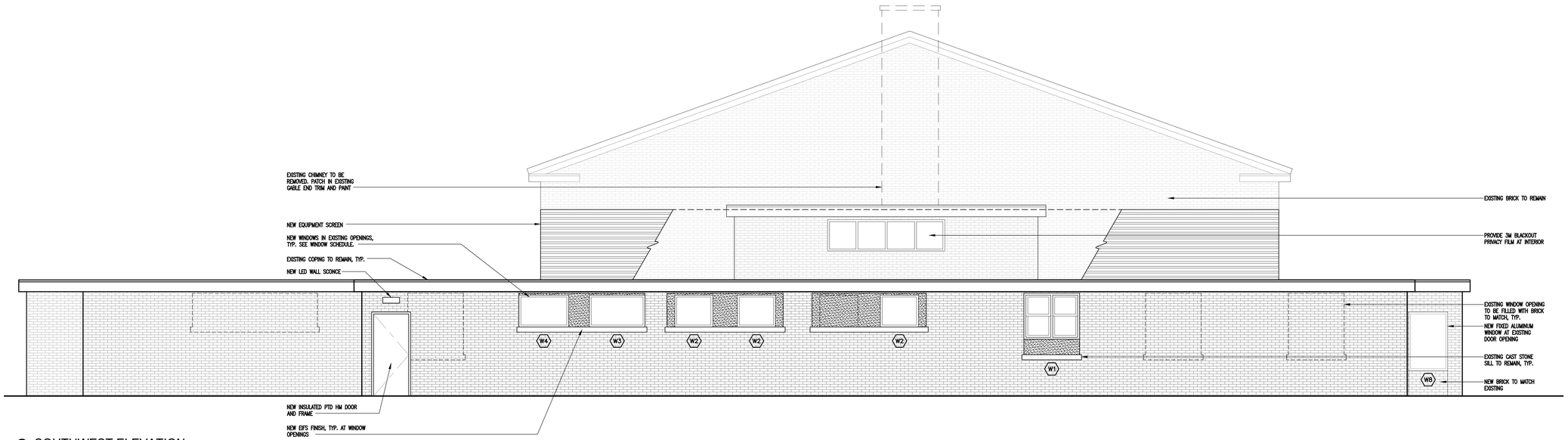
EQUIPMENT SCREEN

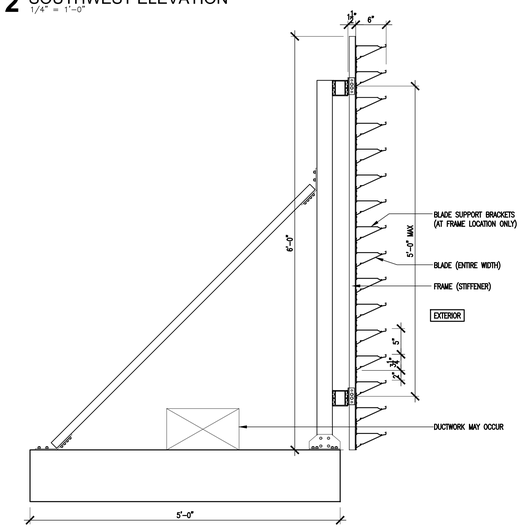
ARCHITECTURAL LOUVERS V6JN5 6" DEEP NARROW BLADE EXTRUDED ALUMINUM SCREEN WITH STURDISTRUCT ROOFTOP FRAMING SYSTEM FOR LOUVERED EQUIPMENT SCREENS



1 NORTHWEST ELEVATION
1/4" = 1'-0"



2 SOUTHWEST ELEVATION
1/4" = 1'-0"



3 EQUIPMENT SCREEN SECTION
1" = 1'-0"

SEE MARGIN FOR BASIS OF DESIGN

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BUILDING ELEVATIONS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.4 Ext Elevations

A.5

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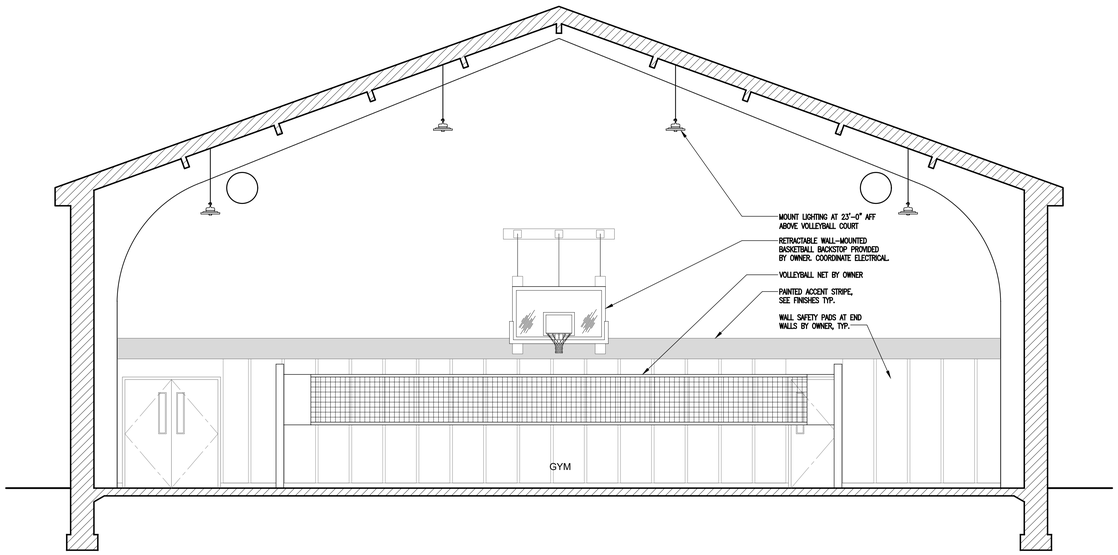
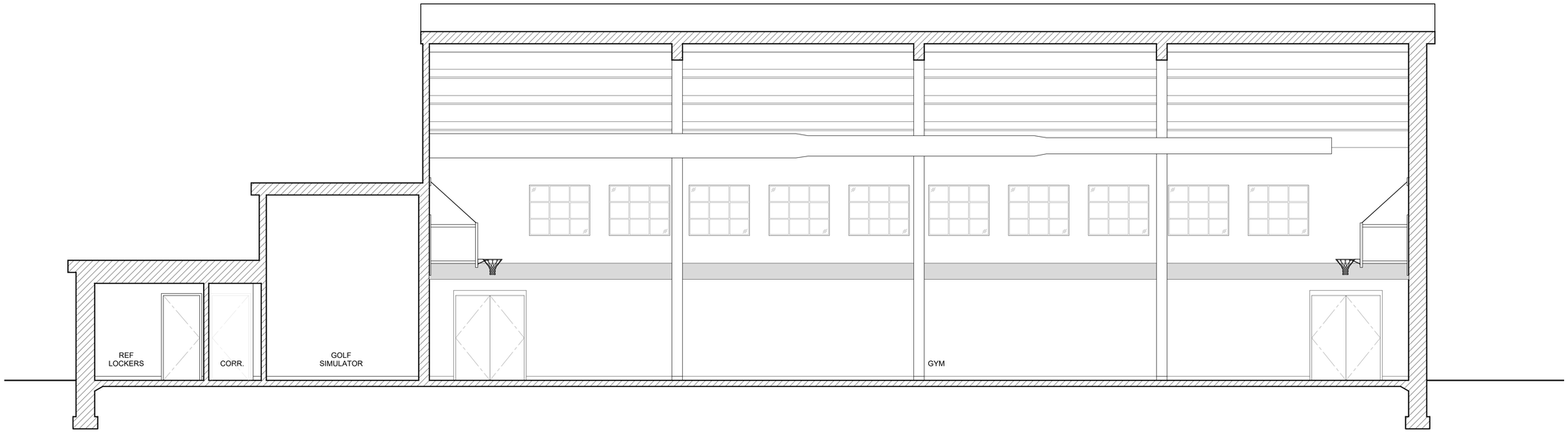


1 SECTION
1/4" = 1'-0"



2 SECTION
1/4" = 1'-0"

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BUILDING SECTIONS

SCALE: AS NOTED	A.6
DATE: 08.25.2023	
FILE: 2260\Current\A.6 Sections	

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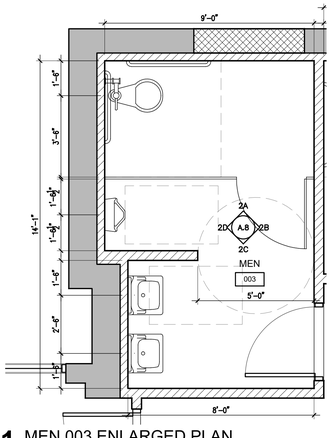
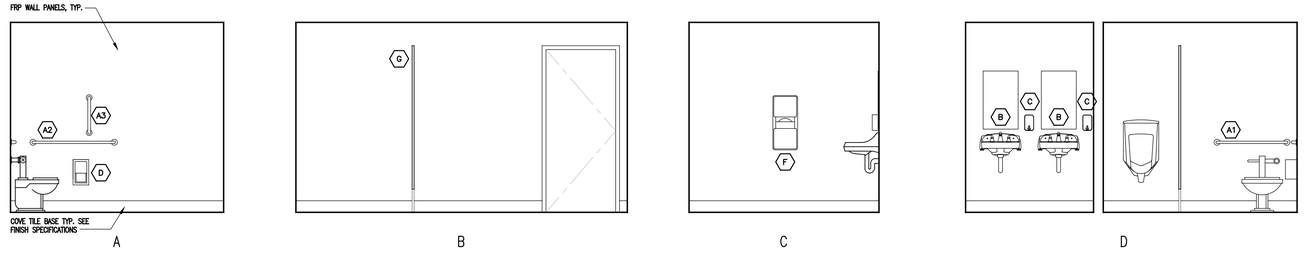
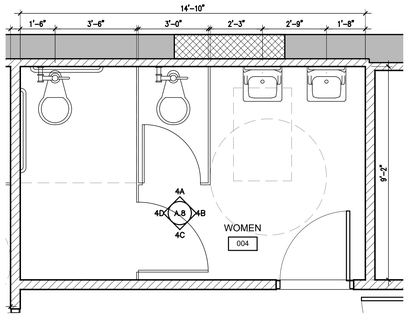


1 MEN 003 ENLARGED PLAN
3/8" = 1'-0"

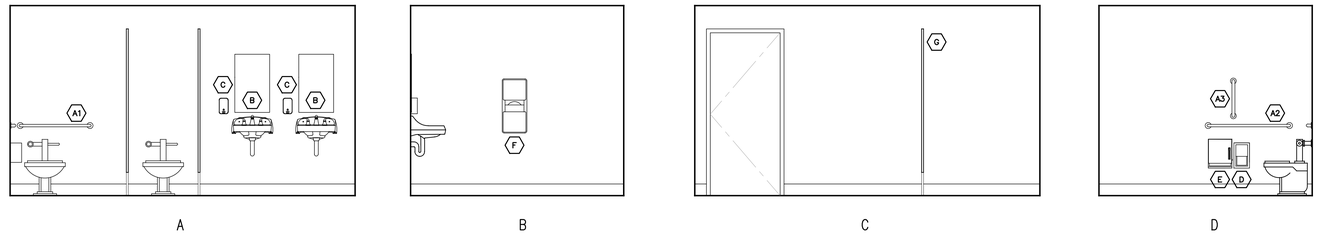


2 MEN 003 ELEVATIONS
3/8" = 1'-0"

NOTES ARE TYPICAL FOR ALL ELEVATIONS

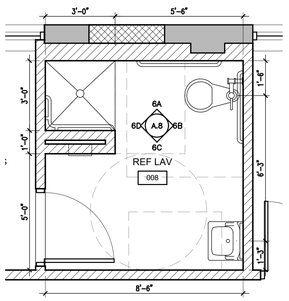


3 WOMEN 004 ENLARGED PLAN
3/8" = 1'-0"

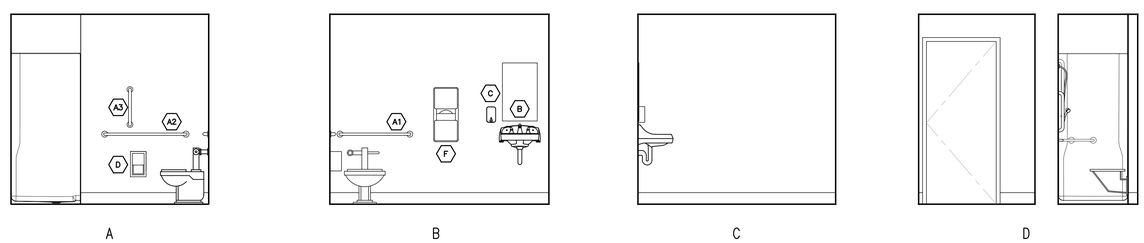


4 WOMEN 004 ELEVATIONS
3/8" = 1'-0"

SEE 2A FOR TYPICAL NOTES

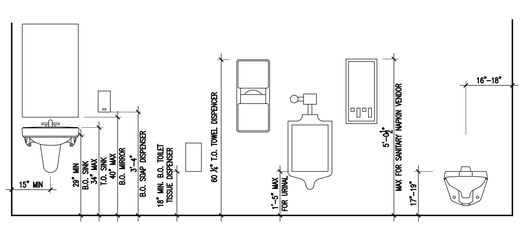


5 REF LOCKERS 007 ENLARGED PLAN
3/8" = 1'-0"

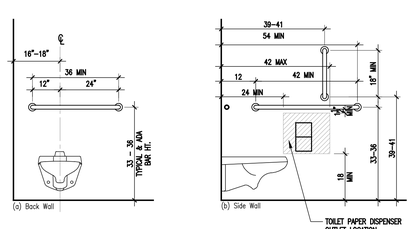


6 REF LOCKERS 007 ELEVATIONS
3/8" = 1'-0"

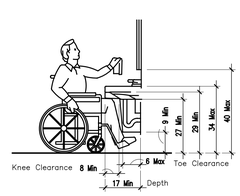
SEE 2A FOR TYPICAL NOTES



7 ADA MOUNTING HEIGHTS
1/2" = 1'-0"



8 TOILET HEIGHT
1/2" = 1'-0"



9 MIN ADA CLEARANCES AT LAVS.

ACCESSORY SCHEDULE

ITEM	MOUNTING	DESCRIPTION	BASIS OF DESIGN MODEL NO.	NOTES
A1	–	1-1/4"ø STAINLESS STEEL GRAB BARS WITH SNAP FLANGE, 36" LONG	BOBRICK B-5806	SATIN FINISH STAINLESS STEEL
A2	–	1-1/4"ø STAINLESS STEEL GRAB BARS WITH SNAP FLANGE, 42" LONG	BOBRICK B-5806	SATIN FINISH STAINLESS STEEL
A3	–	1-1/4"ø STAINLESS STEEL GRAB BARS WITH SNAP FLANGE, 18" LONG	BOBRICK B-5806	SATIN FINISH STAINLESS STEEL
B	–	24"X36" WALL-MOUNTED MIRROR	BOBRICK B-165-2436	SATIN FINISH STAINLESS STEEL
C	–	SURFACE-MOUNTED SOAP DISPENSER	BOBRICK B-2013	SATIN FINISH STAINLESS STEEL
D	–	TOILET TISSUE DISPENSER	BOBRICK B-4288	SATIN FINISH STAINLESS STEEL
E	–	SANITARY NAPKIN DISPENSER	BOBRICK B-254	SATIN FINISH STAINLESS STEEL
F	–	PAPER TOWEL DISPENSER AND WASTE RECEPTACLE	BOBRICK B-4369(9)	SATIN FINISH STAINLESS STEEL
G	–	PARTITIONS	BOBRICK DURALINE SERIES	SATIN FINISH STAINLESS STEEL

FOR MOUNTING OPTIONS, S = SURFACE MOUNTED, SR = SEMI-RECESSED, R = RECESSED

PLUMBING NOTES

1) INSTALL WATERPROOFING AT ALL TILE FLOORS
2) COORDINATE LAYOUT TO INSURE THAT COVE BASE ALIGNS AROUND ENTIRE ROOM (NO CUT TILE ACCEPTABLE)
3) PROVIDE BLOCKING AT ALL ACCESSORIES. COORDINATE REQUIRED LOCATIONS WITH MANUFACTURES INSTALLATION INSTRUCTIONS.
4) PROVIDE PORCELAIN TILE ACCESSORIES TO ENSURE FULL FLOOR AND WALL INSTALLATION (INCLUDING AND NOT LIMITED TO INSIDE AND OUTSIDE TILE CORNERS)
5) INSTALL PIPE WRAP AT ALL EXPOSED PIPING, TYP. SEE PLUMBING DRAWINGS FOR SPECIFICATION.
6) ALL PLUMBING ACCESSORIES AND SPECIFICATIONS ARE BASIS OF DESIGN
7) SEE MEP DRAWINGS FOR ADA-COMPLIANT BARRIER-FREE SHOWER, TRANSFER SHOWER, AND SHOWER ACCESSORIES. INSTALL PER MFR'S RECOMMENDATIONS FOR FULL ADA COMPLIANCE.

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ENLARGED PLANS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.7 Enlarged Plans

A.7

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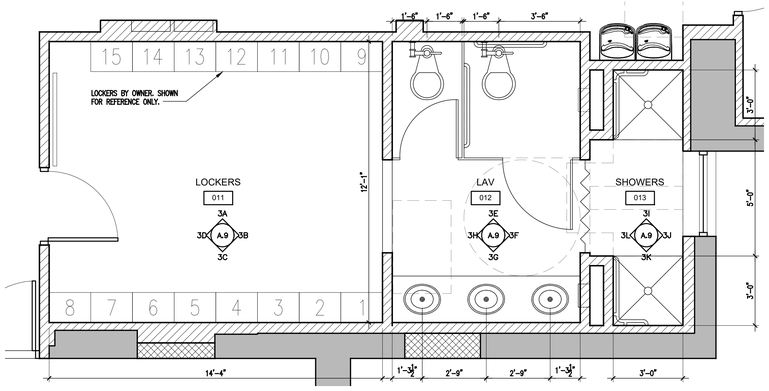
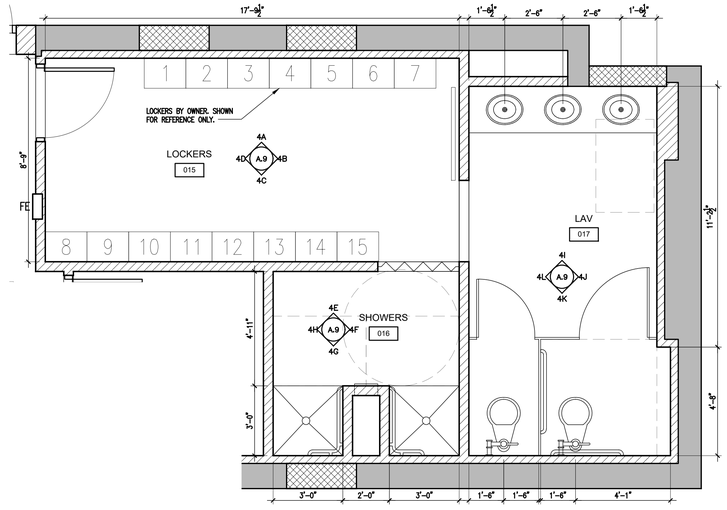
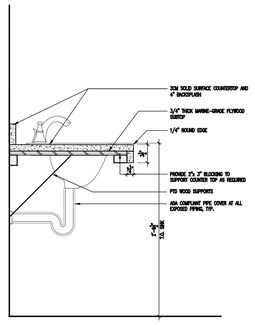


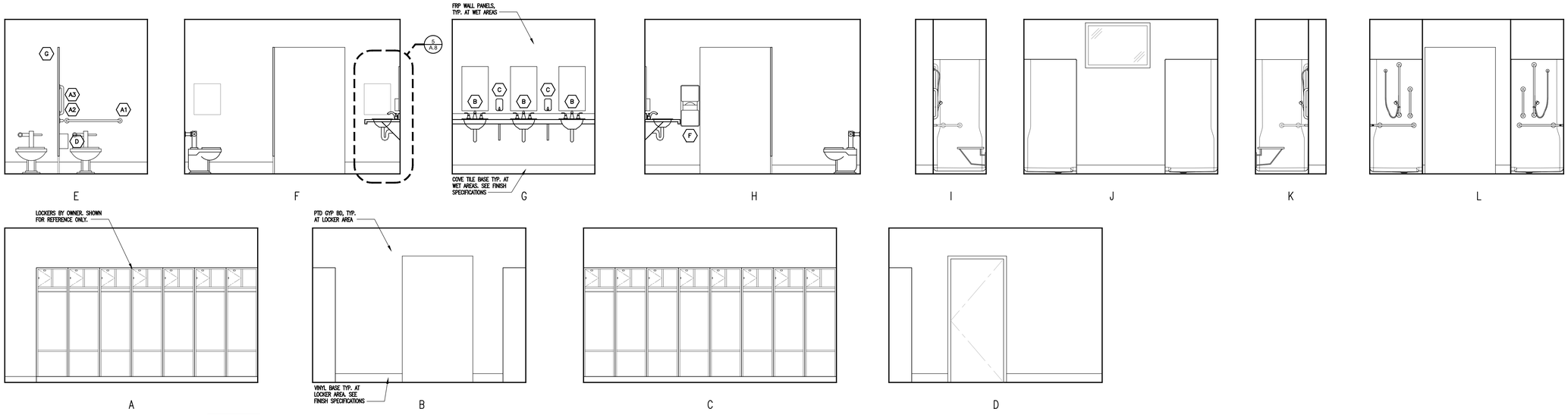
1 LOCKERS 011 ENLARGED PLAN
3/8" = 1'-0"



2 LOCKERS 015 ENLARGED PLAN
3/8" = 1'-0"

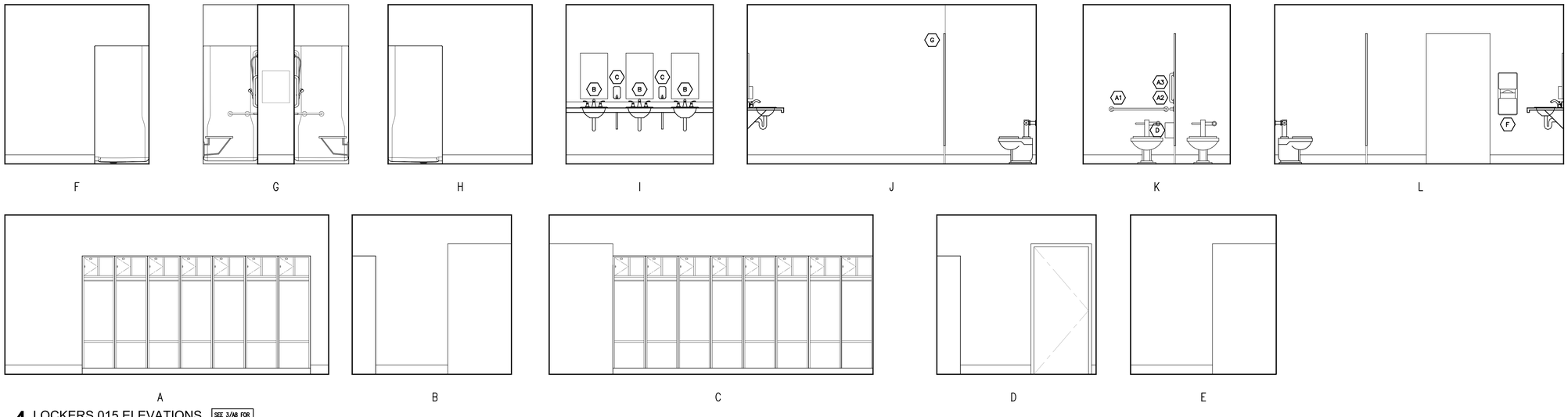


5 TYPICAL SECTION AT SINK COUNTER
1" = 1'-0"



3 LOCKERS 011 ELEVATIONS
3/8" = 1'-0"

NOTES ARE TYPICAL FOR ALL ELEVATIONS



4 LOCKERS 015 ELEVATIONS
3/8" = 1'-0"

SEE 3/A8 FOR TYPICAL NOTES

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ENLARGED PLANS

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FILE: 2260\Current\A.7 Enlarged Plans

A.8

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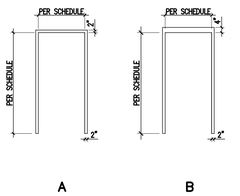
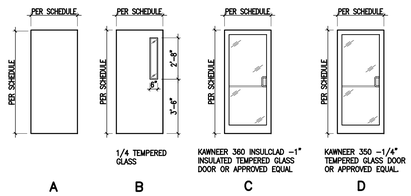
DOOR SCHEDULE

NO.	LOCATION FROM	LOCATION TO	DOOR EXTERIOR	DOOR INTERIOR	DOOR SINGLE	DOOR PAIR	DOOR SWING	DOOR TYPE	DOOR MAT'L	DOOR THK.	DOOR WIDTH (LEAF)	DOOR HEIGHT (LEAF)	FRAME TYPE	FRAME MAT'L	FRAME WALL MAT'L	FRAME DEPTH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	FIRE RATING	HARDWARE LOCK FUNCTION	HARDWARE HINGES	HARDWARE LOCKSET	HARDWARE EXIT DEVICE	HARDWARE CLOSER	HARDWARE PULLUPUSH	HARDWARE FLUSH BOLTS	HARDWARE ASTRAGALS	HARDWARE WEATHERSTRIP	HARDWARE THRESHOLDS	HARDWARE KICK PLATE	HARDWARE SILENCERS	HARDWARE DOOR STOP	HARDWARE COAT HOOK	REMARKS	NO.
001A	001	EXT	○	–	–	○	RH/LH	C	HM	1–3/4"	3'–0"	7'–0"	S1	AL	MAS	4 1/2"	SEE S1		6A	–	A	B	A	C	A	–	–	B	B	B	B	–	A	–	–		001A
001B	001	002	–	○	–	○	RHR/LHR	D	HM	1–3/4"	3'–0"	7'–0"	S2	AL	GYP	4 1/2"	SEE S2		6A	–	E	B	A	C	A	–	–	B	B	B	B	–	A	–	–		001B
003A	002	003	–	○	○	–	LH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	6C	–	B	A	A	–	B	–	–	–	–	–	A	A	A	–		003A
004A	002	004	–	○	○	–	RH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	6C	–	B	A	A	–	B	–	–	–	–	–	A	A	A	–		004A
005A	002	005	–	○	○	–	LHR	D	HM	1–3/4"	3'–0"	7'–0"	S3	AL	GYP	4 1/2"	SEE S3		–	–	A	B	A	–	A	–	–	–	–	–	–	A	A	–	PROVIDE HOLD–OPEN OPTION	005A
005B	005	EXT	○	–	○	–	LH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	MAS	5 3/4"	4C	5C	6A	–	A	C	A	–	A	–	–	A	A	A	A	–	–			005B
006A	019	006	–	○	○	–	RHR	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	C	A	A	–	–	–	–	–	–	–	A	A	B	–		006A
007A	005	007	–	○	○	–	LH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	A	A	A	–	B	–	–	–	–	–	A	A	A	A		007A
008A	007	008	–	○	○	–	RH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	6C	–	D	A	A	–	–	–	–	–	–	–	A	A	A	A		008A
009A	005	009	–	○	○	–	RH	B	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	6B	–	B	A	A	–	B	–	–	–	–	–	–	A	A	–	PROVIDE HOLD–OPEN OPTION	009A
010A	005	010	–	○	○	–	LH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	A	A	A	–	–	–	–	–	–	–	–	A	A	–		010A
010B	005	010	–	○	○	–	RH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	A	A	A	–	–	–	–	–	–	–	–	A	A	–		010B
011A	005	011	–	○	○	–	RH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	B	A	A	–	B	–	–	–	–	–	–	A	B	–	PROVIDE HOLD–OPEN OPTION	011A
014A	005	014	–	○	○	–	LH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	A	A	A	–	–	–	–	–	–	–	–	A	A	–		014A
015A	005	015	–	○	○	–	LH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	B	A	A	–	B	–	–	–	–	–	–	A	A	–	PROVIDE HOLD–OPEN OPTION	015A
018A	002	018	–	○	–	○	RHR/LHR	B	HM	1–3/4"	3'–0"	7'–0"	A	HM	CMU	5 3/4"	4B	5B	6A	–	B	A	A	B	A	–	–	–	–	–	A	A	–	–	PROVIDE HOLD–OPEN OPTION	018A
018B	005	018	–	○	○	–	LHR	B	HM	1–3/4"	3'–0"	7'–0"	A	HM	CMU	5 3/4"	4B	5B	6A	–	B	A	A	–	A	–	–	–	–	–	A	A	A	–	PROVIDE HOLD–OPEN OPTION	018B
018C	018	EXT	○	–	–	○	RH/LH	A	HM	1–3/4"	3'–0"	7'–0"	B	HM	MAS	5 3/4"	4D	5C	6A	–	A	C	A	B	A	–	–	A	A	A	–	A	–	–	PROVIDE HOLD–OPEN OPTION	018C
018D	018	EXT	○	–	–	○	RH/LH	A	HM	1–3/4"	3'–0"	7'–0"	B	HM	MAS	5 3/4"	4D	5C	6A	–	A	C	A	B	A	–	–	A	A	A	–	A	–	–	PROVIDE HOLD–OPEN OPTION	018D
018E	018	EXT	○	–	–	○	RH/LH	A	HM	1–3/4"	3'–0"	7'–0"	B	HM	MAS	5 3/4"	4D	5C	6A	–	A	C	A	B	A	–	–	A	A	A	–	A	–	–	PROVIDE HOLD–OPEN OPTION	018E
019A	005	019	–	○	○	–	LH	A	HM	1–3/4"	3'–0"	7'–0"	A	HM	GYP	5 3/4"	4A	5A	–	–	C	A	A	–	–	–	–	–	–	–	A	A	A	–		019A

1 DOOR SCHEDULE
NTS



2 DOOR FRAMES
1/4"=1'-0"



3 DOOR TYPES
1/4"=1'-0"

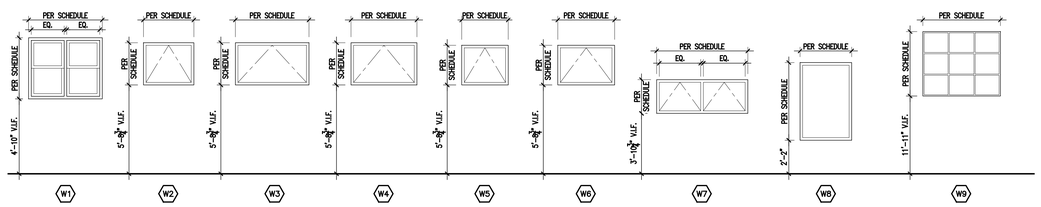
WINDOW SCHEDULE

NO.	WINDOW TYPE	INTERIOR/EXTERIOR	GLASS TYPE	WINDOW SIZE (NOM) WIDTH V.I.F.	WINDOW SIZE (NOM) HEIGHT V.I.F.	JAMB	HEAD	SILL	REMARKS	NO.
W1	DOUBLE HUNG	EXT	GL–1	4'–9"	3'–11 1/4"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W1
W2	AWNING	EXT	GL–1	3'–3"	2'–8 3/4"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W2
W3	AWNING	EXT	GL–1	4'–9"	2'–8 3/4"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W3
W4	AWNING	EXT	GL–1	4'–3"	2'–8 3/4"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W4
W5	AWNING	EXT	GL–1	3'–0"	2'–6 3/4"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W5
W6	AWNING	EXT	GL–1	3'–8"	2'–6 3/4"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W6
W7	AWNING	EXT	GL–1	5'–10 1/2"	2'–2"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W7
W8	FIXED	EXT	GL–1	3'–4"	5'–0"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W8
W9	FIXED	EXT	GL–1	5'–0"	4'–2"	9A	9C	9B	EXISTING MASONRY OPENING, V.I.F.	W9

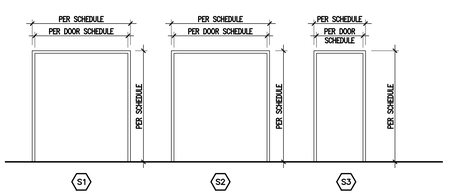
STOREFRONT SCHEDULE

NO.	TYPE	INTERIOR/EXTERIOR	GLASS TYPE	SIZE (NOM) WIDTH V.I.F.	SIZE (NOM) HEIGHT V.I.F.	JAMB	HEAD	SILL	REMARKS	NO.
S1	STOREFRONT	EXT	GL–1	6'–4"	7'–2"	11A	11D	11C		S1
S2	STOREFRONT	INT	GL–2	6'–4"	7'–2"	11B	11E	11C		S2
S3	STOREFRONT	INT	GL–2	3'–4"	7'–2"	11B	11E	11C		S3

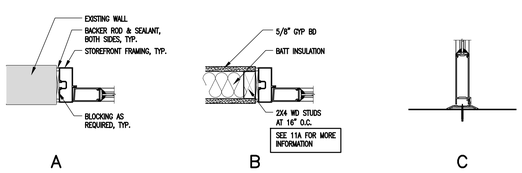
7 WINDOW & STOREFRONT SCHEDULE
NTS



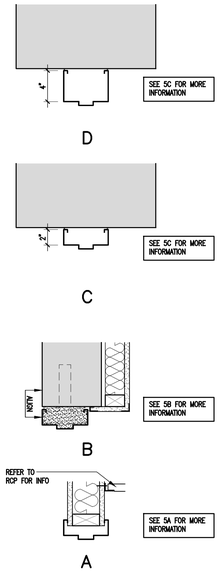
8 WINDOW TYPES
1/4"=1'-0"



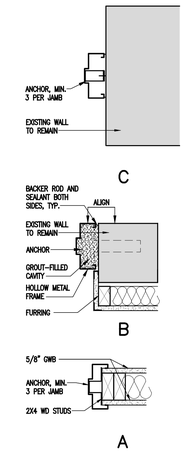
10 STOREFRONT TYPES
1/4"=1'-0"



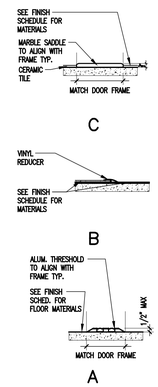
11 STOREFRONT DETAILS
1 1/2"=1'-0"



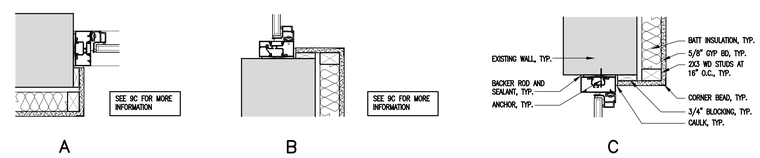
4 DOOR HEAD DETAILS
1 1/2"=1'-0"



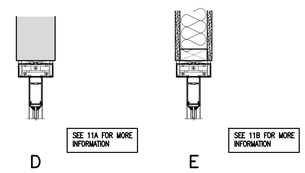
5 DOOR JAMB DETAILS
1 1/2"=1'-0"



6 SILL DETAILS
1 1/2"=1'-0"



9 WINDOW DETAILS
1 1/2"=1'-0"



DOOR HARDWARE

LOCK FUNCTION
- A ENTRANCE/OFFICE LOCK
- B CLASSROOM LOCK
- C STOREROOM LOCK
- D PRIVACY LOCK
- E PASSAGE LOCK

HINGES
- A STANDARD WEIGHT BALL BEARING FIVE KNUCKLE FULL MORTISE HINGES. FINISH: US26D. (3) PER LEAF
- B CONTINUOUS GEAR HINGE
- C CONTINUOUS HINGE

BASIS OF DESIGN:
HEAVY DUTY HINGES
ASSA ABLOY, MCKINNEY. FINISH: US26D

LOCKSET
- A CYLINDER LOCKSET, LEVER

BASIS OF DESIGN:
ASSA ABLOY, SARGENT 10 LINE, US26D FINISH

EXIT DEVICE
- A NOT USED
- B SURFACE VERTICAL ROD PANIC HARDWARE WITH LEVER AT EXTERIOR, LESS BOTTOM ROD
- C CONCEALED VERTICAL ROD PANIC HARDWARE WITH LEVER AT EXTERIOR

BASIS OF DESIGN:
ASSA ABLOY, NARROW DESIGN SARGENT 80 SERIES

CLOSER
- A PUSH SIDE PARALLEL ARM CLOSER
- B PULL SIDE CLOSER

BASIS OF DESIGN:
ASSA ABLOY, SARGENT 351 POWERSLIDE, US26D FINISH (PROVIDE 1 PER LEAF)

PULL/PUSH
- A ROCKWOOD BF15747 (PROVIDE 1 PER LEAF)

FLUSH BOLTS
- A ROCKWOOD 555 WITH 570 DUSTPROOF STRIKE

ASTRAGALS
- A PEMKO 303AV ASTRAGALS
- B BY DOOR MANUFACTURER

WEATHERSTRIP
- A PEMKO 345AP DOOR SWEEP W/ PEMKO 297AS PERIMETER GASKETTING
- B DOOR MANUFACTURER

THRESHOLD
- A PEMKO 254X4 AFG 9⅝" THERMALLY BROKEN THRESHOLD
- B BY DOOR MANUFACTURER

KICK PLATE
- A PEMKO 8" HIGH KICK PLATE. FINISH: US26D

SILENCERS
- A ROCKWOOD 608 SILENCERS

DOOR STOP
- A ROCKWOOD 401 DOOR STOP. FINISH: US26D
- B SARGENT 1540S OVERHEAD STOP. FINISH: US26D

COAT HOOK
- A ROCKWOOD RM810. FINISH: US26D

GLASS TYPE

GL–1: VITRO SOLARBAN72 INSULATED GLASS WITH ARGON FILL
GL–2: 1/4" FULLY TEMPERED FLOAT GLASS

WINDOW SYSTEM

BASIS OF DESIGN:
KAWNEER TRIFAB VG 451T GLASSVENT
PROJECT–OUT/OUTSWING CASEMENT AS INDICATED ON WINDOW SCHEDULE
THERMALLY BROKEN WINDOW OR APPROVED EQUAL WITH INSECT SCREENS

STOREFRONT SYSTEM

BASIS OF DESIGN:
EXTERIOR FRAMING
KAWNEER TRIFAB VG 451T THERMALLY BROKEN FRAMING SYSTEM OR APPROVED EQUAL.

INTERIOR FRAMING
KAWNEER TRIFAB VG 450 NON THERMALLY BROKEN FRAMING SYSTEM OR APPROVED EQUAL.

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DOOR, WINDOW AND STOREFRONT SCHEDULES AND DETAILS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.9 Doors & Windows

A.9

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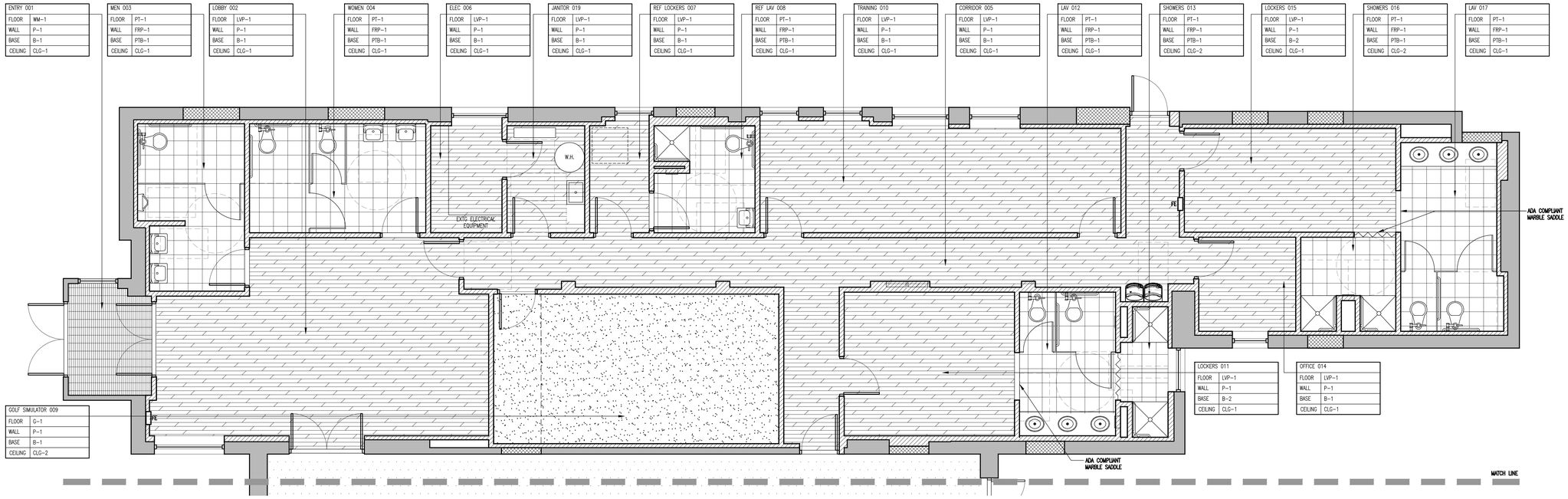

1 PARTIAL FINISH PLAN
1/4" = 1'-0"

FLOOR FINISHES

PORCELAIN TILE:

PT-1 PORCELAIN TILE
CROSSVILLE COLORBLOX 2.0
SIZE: 12"X12"
COLOR: TBD
GROUT: TBD

LUXURY VINYL PLANK:

LVP-1 LUXURY VINYL PLANK
MANNINGTON CITY PARK
LUXURY VINYL PLANK
SIZE: 6"X48"
COLOR: TBD

WALK-OFF MAT

WM-1 WALK OFF MAT
MATSINC
AMARCO ARENA TILE
COLOR: TBD
THICKNESS: 1/2"

GOLF GREEN

G-1 GOLF GREEN
SYNLAWN PRECISION
PUTT MAT

WALL FINISHES

WALL BASE:

B-1 VINYL BASE
JOHNSONITE TRADITIONAL VINYL BASE
4" COVE STYLE
COLOR: TBD

B-2 VINYL BASE
JOHNSONITE TRADITIONAL VINYL BASE
6" COVE STYLE
COLOR: TBD

PTB-1 PORCELAIN CERAMIC TILE BASE
CROSSVILLE COLORBLOX 2.0
SIZE: 6"X12"
COLOR: TBD

FRP:

FRP-1 FRP
MARLITE STANDARD FRP, SMOOTH
COLOR: TBD

PAINT:

P-1 GENERAL
BENJAMIN MOORE
COLOR: TBD
FINISH: TBD

P-2 DOORS & WINDOW FRAMES
BENJAMIN MOORE
COLOR: TBD
FINISH: TBD

CEILING FINISHES

GENERAL ACOUSTIC CLG TILE:

CLG-1 STYLE: ARMSTRONG ULTIMA HIGH NRC
COLOR: WHITE
SIZE: 24" X 24" X 7/8"
GRID: 15/16" PRELUDE EXPOSED TEE
GRID COLOR: BLIZZARD WHITE

PAINTED GYP BOARD:

CLG-2 GENERAL
BENJAMIN MOORE
COLOR: TBD
FINISH: TBD

NOTE: ENTIRE FLOOR TO RECEIVE 1" LAYER OF GYPCRETE AS FLOOR PREP. CHOP EXISTING FLOORS AT DOOR THRESHOLDS TO ALLOW FOR SMOOTH TRANSITIONS

2 FINISH SPECIFICATIONS
NTS

FLOOR: BY OWNER

STRIPING: BY OWNER

WALLS:
UPPER: BENJAMIN MOORE
COLOR: TBD
FINISH: TBD

LOWER: BENJAMIN MOORE
COLOR: STAC RED

ACCENT STRIPE: BENJAMIN MOORE
COLOR: STAC GOLD

3 GYM FINISHES
NTS

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PARTIAL FINISH PLAN
AND SPECIFICATIONS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.10 Finishes

A.10

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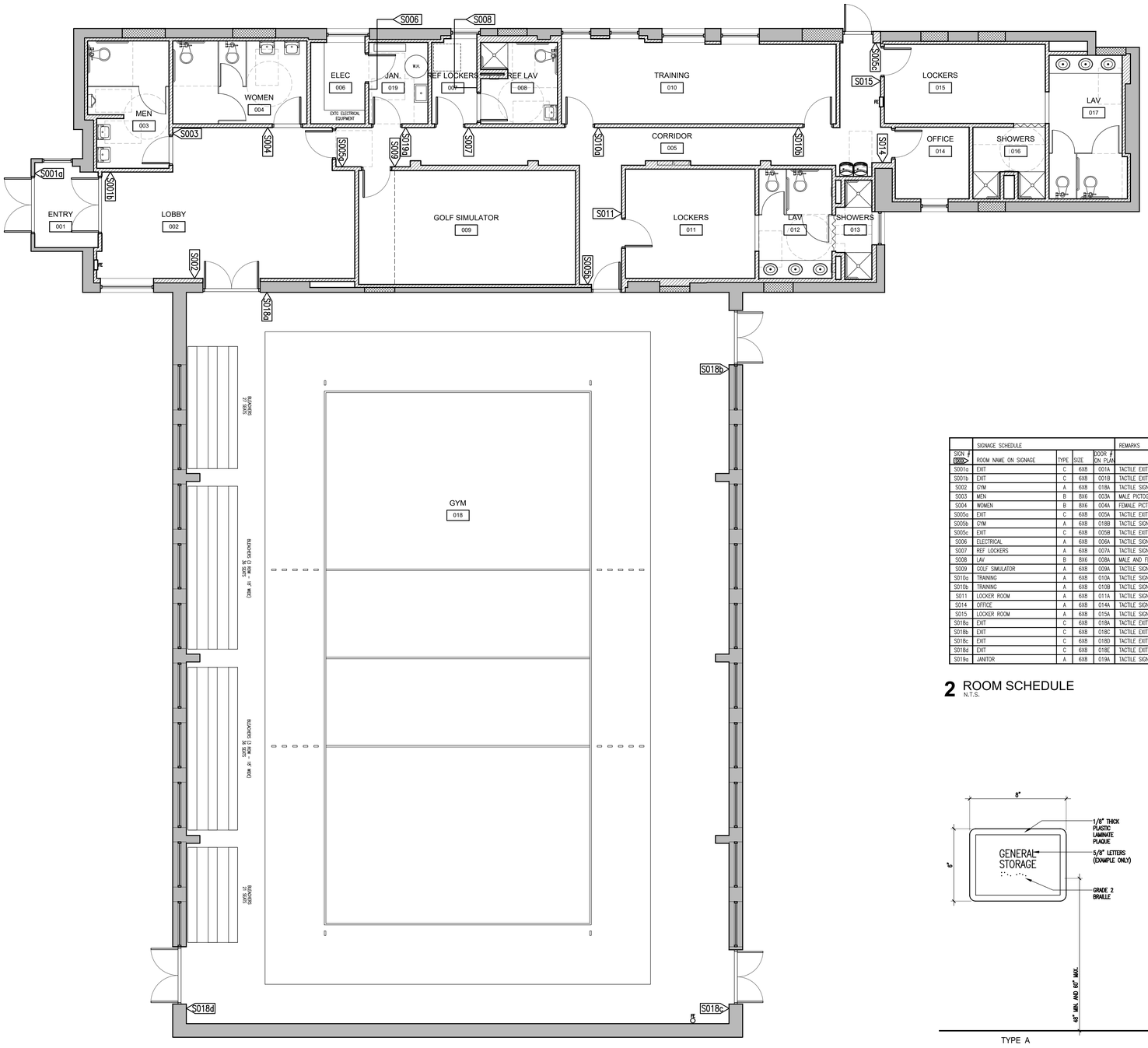
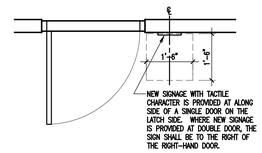


1 SIGNAGE PLAN
1/8" = 1'-0"

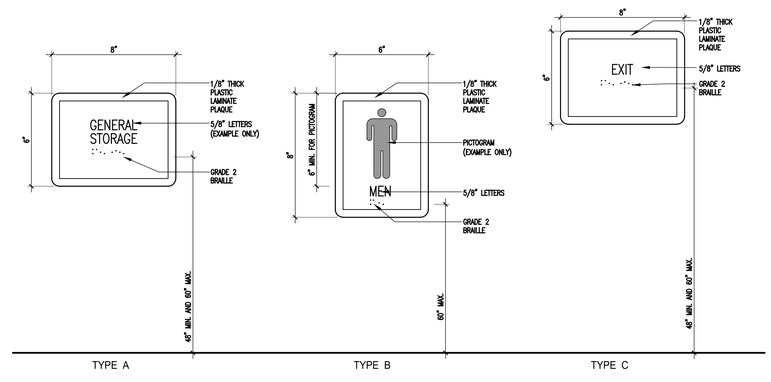
	SIGNAGE SCHEDULE				REMARKS
SIGN # (XXX)	ROOM NAME ON SIGNAGE	TYPE	SIZE	DOOR # ON PLAN	
S001a	EXIT	C	6X8	001A	TACTILE EXIT SIGNAGE
S001b	EXIT	C	6X8	001B	TACTILE EXIT SIGNAGE
S002	GYM	A	6X8	018A	TACTILE SIGNAGE
S003	MEN	B	8X6	003A	MALE PICTOGRAM
S004	WOMEN	B	8X6	004A	FEMALE PICTOGRAM
S005a	EXIT	C	6X8	005A	TACTILE EXIT SIGNAGE
S005b	GYM	A	6X8	018B	TACTILE SIGNAGE
S005c	EXIT	C	6X8	005B	TACTILE EXIT SIGNAGE
S006	ELECTRICAL	A	6X8	006A	TACTILE SIGNAGE
S007	REF LOCKERS	A	6X8	007A	TACTILE SIGNAGE
S008	LAV	B	8X6	008A	MALE AND FEMALE PICTOGRAM
S009	GOLF SIMULATOR	A	6X8	009A	TACTILE SIGNAGE
S010a	TRAINING	A	6X8	010A	TACTILE SIGNAGE
S010b	TRAINING	A	6X8	010B	TACTILE SIGNAGE
S011	LOCKER ROOM	A	6X8	011A	TACTILE SIGNAGE
S014	OFFICE	A	6X8	014A	TACTILE SIGNAGE
S015	LOCKER ROOM	A	6X8	015A	TACTILE SIGNAGE
S018a	EXIT	C	6X8	018A	TACTILE EXIT SIGNAGE
S018b	EXIT	C	6X8	018C	TACTILE EXIT SIGNAGE
S018c	EXIT	C	6X8	018D	TACTILE EXIT SIGNAGE
S018d	EXIT	C	6X8	018E	TACTILE EXIT SIGNAGE
S019a	JANITOR	A	6X8	019A	TACTILE SIGNAGE

2 ROOM SCHEDULE
N.T.S.



NEW SIGNAGE WITH TACTILE CHARACTER IS PROVIDED AT ALONG SIDE OF A SINGLE DOOR ON THE LATCH SIDE. WHERE NEW SIGNAGE IS PROVIDED AT DOUBLE DOOR, THE SIGN SHALL BE TO THE RIGHT OF THE RIGHT-HAND DOOR.

3 ROOM SIGNAGE PLAN
1/2" = 1'-0"



4 SIGNAGE ELEVATION
3" = 1'-0"

NOTES

1) CONTRACTOR TO COORDINATE THE EXACT ROOM NAME AND ROOM NUMBER TO BE PLACED ON EACH SIGN PRIOR TO FABRICATION

ROOM SIGNAGE BASIS OF DESIGN

BEST SIGNAGE SYSTEMS HC 300 ADA SYSTEM WITH TACTILE CHARACTERS/SYMBOLS AND GRADE 2 BRAILLE. RESTROOM SIGNS ARE TO BE 6"X 8" AND ROOM SIGNS TO BE 8" X 6". PROVIDE 1/2" RADIUS CORNER AND MOUNT AS REQUIRED FOR ADA COMPLIANCE. VERIFY ALL ROOM DESIGNATIONS LISTED IN SCHEDULE PRIOR TO FABRICATION. NO ROOM NUMBERS WILL BE INCLUDED ON SIGNS.

EACH AREA OF REFUGE, PROVIDE SIGNAGE TO MEET REQUIREMENTS OF IBC SECTION 1007.6.4. SIGNS TO BE MOUNTED IN COMPLIANCE WITH ADA REQUIREMENTS.

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SIGNAGE LOCATION PLAN, SCHEDULE AND ELEVATIONS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\A.11 Signage

A.11

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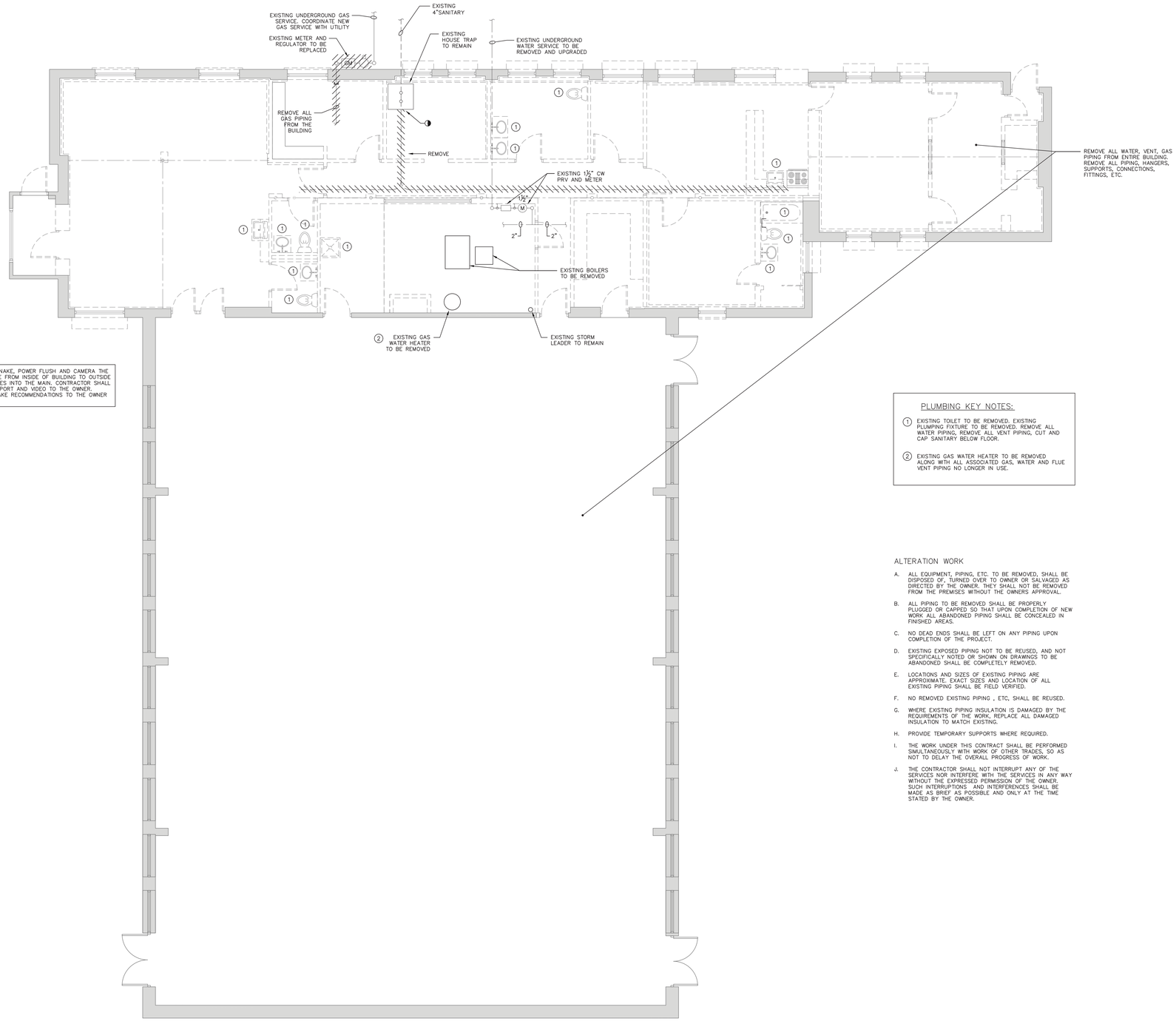

CONTRACTOR SHALL; SNAKE, POWER FLUSH AND CAMERA THE EXISTING SANITARY LINE FROM INSIDE OF BUILDING TO OUTSIDE WHERE THE LATERAL TIES INTO THE MAIN. CONTRACTOR SHALL PROVIDE A WRITTEN REPORT AND VIDEO TO THE OWNER. CONTRACTOR SHALL MAKE RECOMMENDATIONS TO THE OWNER BASED ON FINDINGS.

PLUMBING KEY NOTES:

1. EXISTING TOILET TO BE REMOVED. EXISTING PLUMPING FIXTURE TO BE REMOVED. REMOVE ALL WATER PIPING, REMOVE ALL VENT PIPING, CUT AND CAP SANITARY BELOW FLOOR.
2. EXISTING GAS WATER HEATER TO BE REMOVED ALONG WITH ALL ASSOCIATED GAS, WATER AND FLUE VENT PIPING NO LONGER IN USE.

ALTERATION WORK

A. ALL EQUIPMENT, PIPING, ETC. TO BE REMOVED, SHALL BE DISPOSED OF, TURNED OVER TO OWNER OR SALVAGED AS DIRECTED BY THE OWNER. THEY SHALL NOT BE REMOVED FROM THE PREMISES WITHOUT THE OWNERS APPROVAL.

B. ALL PIPING TO BE REMOVED SHALL BE PROPERLY PLUGGED OR CAPPED SO THAT UPON COMPLETION OF NEW WORK ALL ABANDONED PIPING SHALL BE CONCEALED IN FINISHED AREAS.

C. NO DEAD ENDS SHALL BE LEFT ON ANY PIPING UPON COMPLETION OF THE PROJECT.

D. EXISTING EXPOSED PIPING NOT TO BE REUSED, AND NOT SPECIFICALLY NOTED OR SHOWN ON DRAWINGS TO BE ABANDONED SHALL BE COMPLETELY REMOVED.

E. LOCATIONS AND SIZES OF EXISTING PIPING ARE APPROXIMATE. EXACT SIZES AND LOCATION OF ALL EXISTING PIPING SHALL BE FIELD VERIFIED.

F. NO REMOVED EXISTING PIPING , ETC, SHALL BE REUSED.

G. WHERE EXISTING PIPING INSULATION IS DAMAGED BY THE REQUIREMENTS OF THE WORK, REPLACE ALL DAMAGED INSULATION TO MATCH EXISTING.

H. PROVIDE TEMPORARY SUPPORTS WHERE REQUIRED.

I. THE WORK UNDER THIS CONTRACT SHALL BE PERFORMED SIMULTANEOUSLY WITH WORK OF OTHER TRADES, SO AS NOT TO DELAY THE OVERALL PROGRESS OF WORK.

J. THE CONTRACTOR SHALL NOT INTERRUPT ANY OF THE SERVICES NOR INTERFERE WITH THE SERVICES IN ANY WAY WITHOUT THE EXPRESSED PERMISSION OF THE OWNER. SUCH INTERRUPTIONS AND INTERFERENCES SHALL BE MADE AS BRIEF AS POSSIBLE AND ONLY AT THE TIME STATED BY THE OWNER.

1 DEMOLITION PLAN
3/16" = 1'-0"

NORTH

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PLUMBING DEMOLITION PLAN

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

P.001

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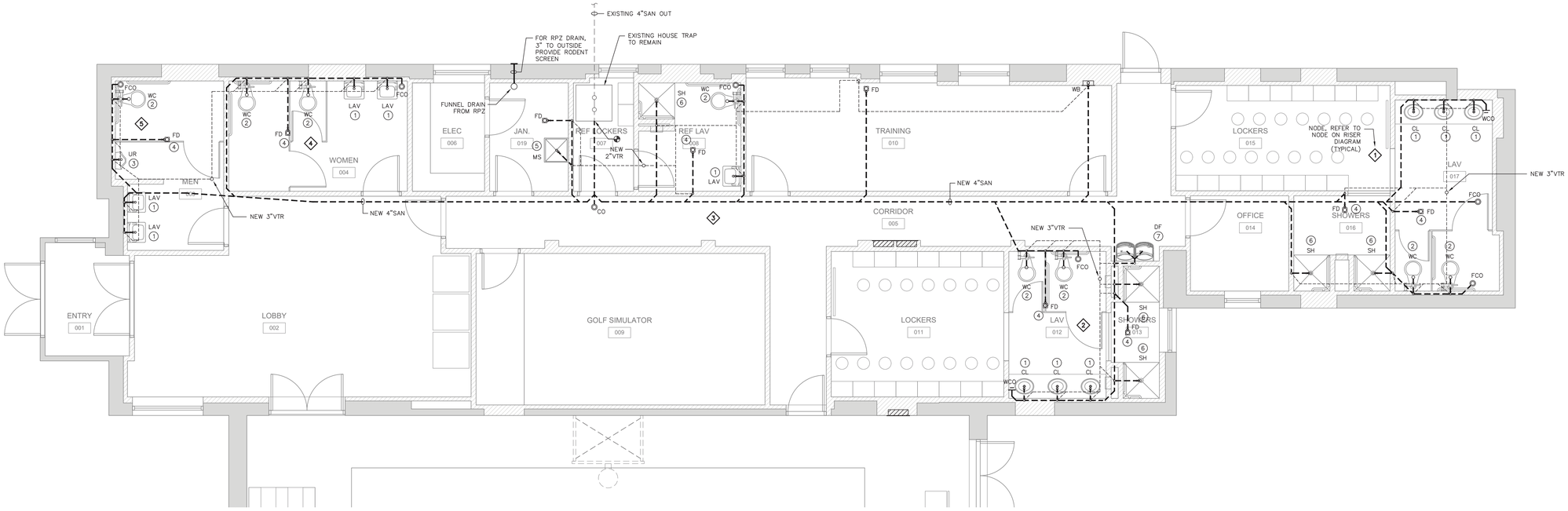
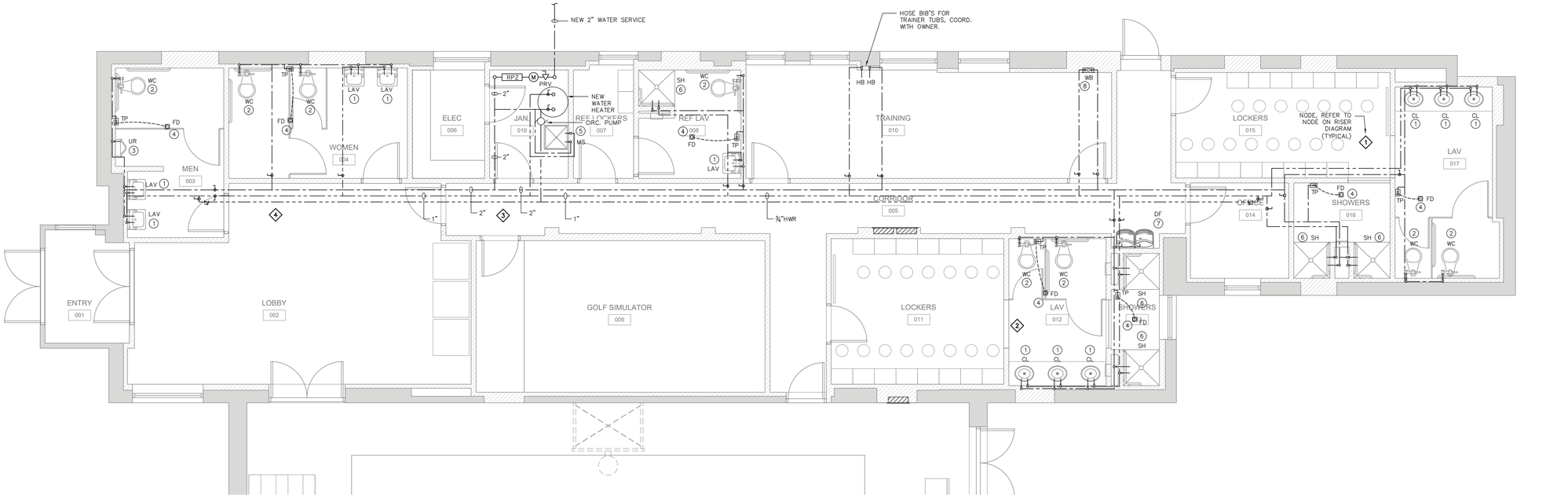


1 PARTIAL PLUMBING WASTE PLAN
1/4" = 1'-0"



2 PARTIAL PLUMBING WATER PLAN
1/4" = 1'-0"

PLUMBING KEY NOTES:

1. PROVIDE 1½" WASTE, 1¼"V RISE, ½" HW/CW CONNECTIONS FOR SINK.
2. PROVIDE 3" WASTE, 2"V RISE, 1"CW CONNECTIONS FOR WATER CLOSET.
3. PROVIDE 2" WASTE, 1½"V RISE, ¾"CW CONNECTIONS FOR URINAL.
4. PROVIDE 2" WASTE, 1½"V RISE, ½"TP (FROM TRAP PRIMER) FOR FLOOR DRAIN.
5. PROVIDE 3" WASTE, 1½"V RISE, ½" HW/CW CONNECTION FOR MOP SINK.
6. PROVIDE 2" WASTE, 1½"V RISE, ½" HW/CW CONNECTIONS FOR SHOWER.
7. PROVIDE 1½" WASTE, 1¼"V RISE, ½" CW CONNECTIONS FOR DRINKING FOUNTAIN.
8. PROVIDE 2" WASTE, 1½"V RISE, ½" HW/CW WITH SHUT-OFFS FOR CLOTHES WASHER.

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HALLEL BUILDING
GYMNASIUM ALTERATION

175 ROUTE 340 SPARKILL, NY 10976

arcari + iovino ARCHITECTS PC
ONE KATHERINE STREET
LITTLE FERRY, NJ 07643
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EDWARD ARCARI NY#020765 ANTHONY IOVINO NY#023349

Omdex Incorporated Consulting Engineers
21 Cross Avenue
Midland Park, NJ 07432-1811
(201) 444-0753 FAX (201) 444-0839

PLUMBING PLANS

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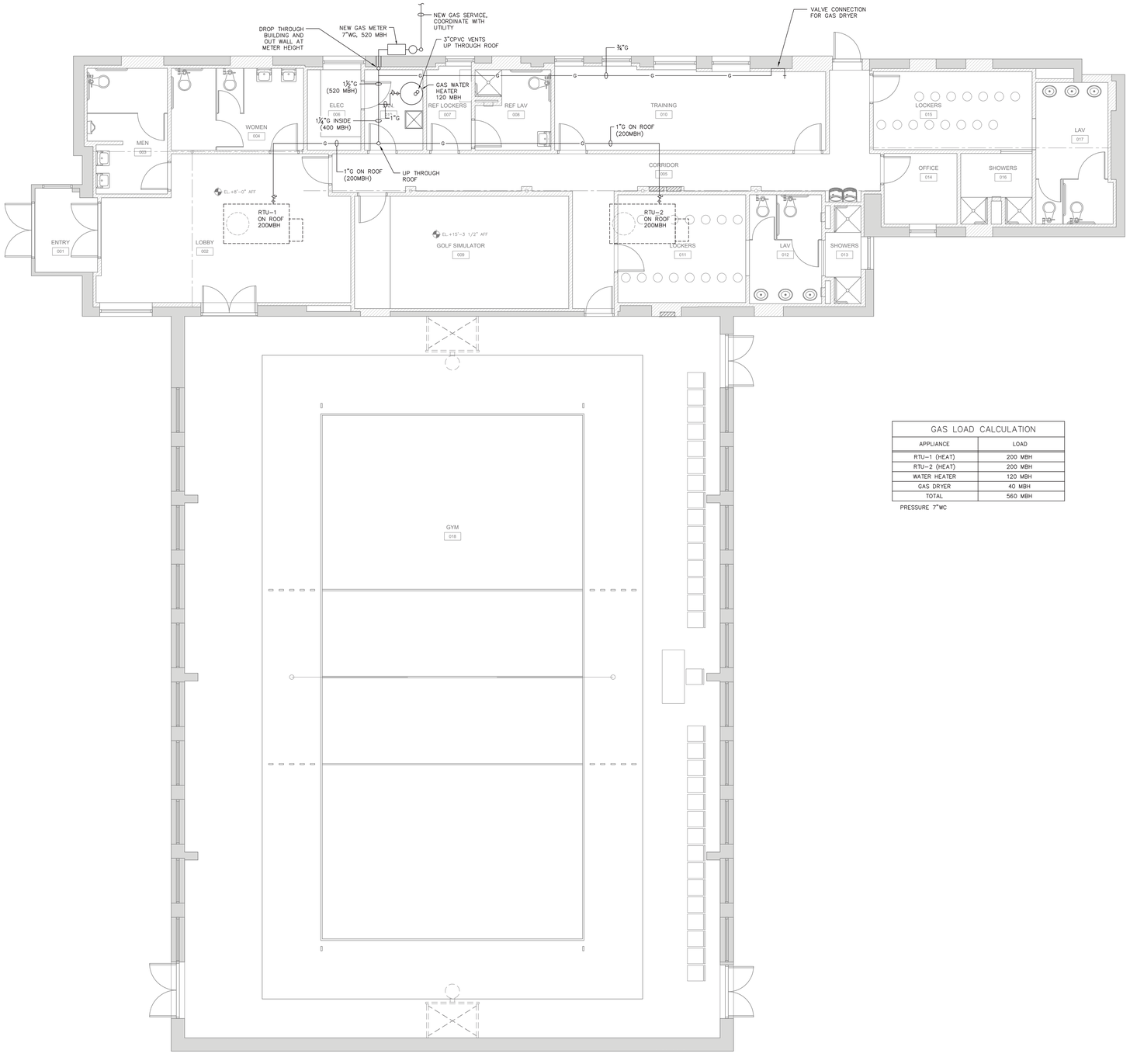

GAS LOAD CALCULATION	
APPLIANCE	LOAD
RTU-1 (HEAT)	200 MBH
RTU-2 (HEAT)	200 MBH
WATER HEATER	120 MBH
GAS DRYER	40 MBH
TOTAL	560 MBH

PRESSURE 7"WC

1 FLOOR PLAN
3/16" = 1'-0"

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PLUMBING GAS PLAN

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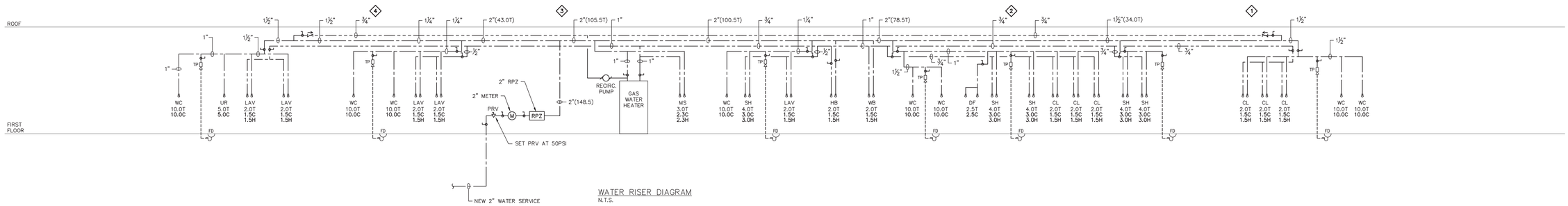
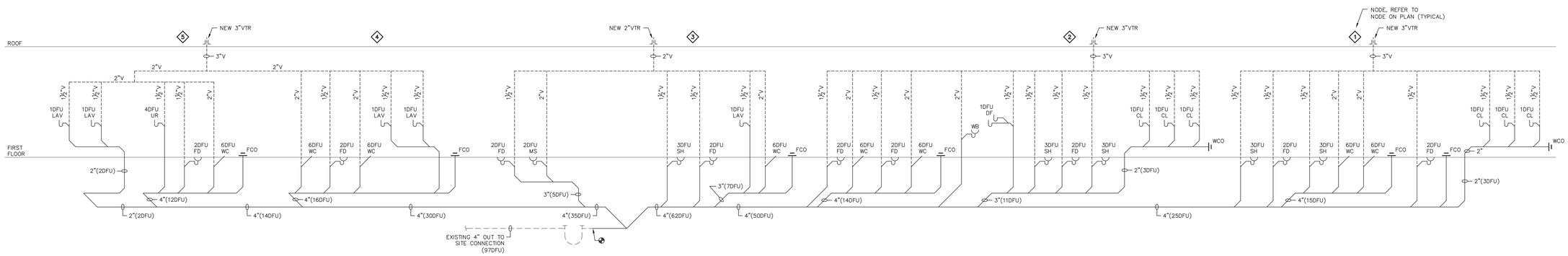


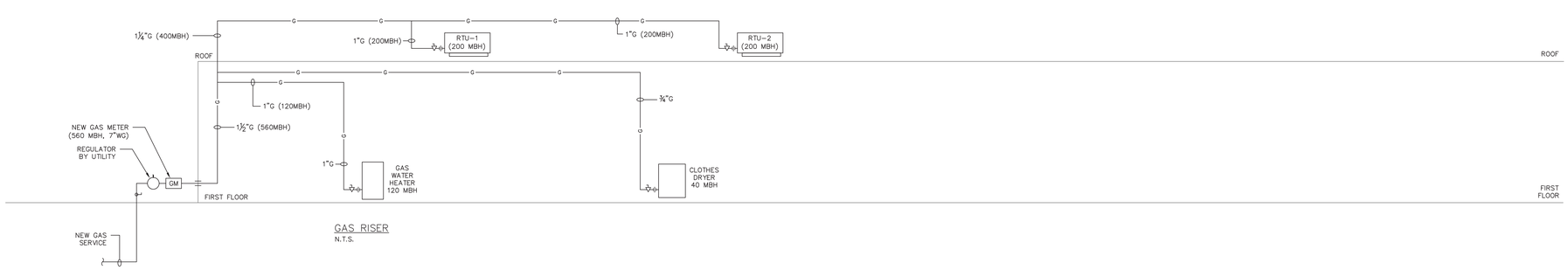
WATER RISER DIAGRAM
N.T.S.

T = WATER SUPPLY FIXTURE UNITS TOTAL
H = WATER SUPPLY FIXTURE UNITS HOT WATER
C = WATER SUPPLY FIXTURE UNITS COLD WATER

WATER SIZING NOTES
- WATER DESIGN IS BASED ON 2020 NYS PLUMBING CODE.
- WSFU'S (WATER SERVICE FIXTURE UNITS) BASED ON TABLE E103.3(2)
- PIPE SIZES BASED TYPE L COPPER, AT 60PSI AT SUPPLY.



SANITARY RISER DIAGRAM
N.T.S.
- ALL SANITARY AND VENT PIPING ABOVE GROUND SHALL BE CAST IRON.
- ALL SANITARY AND VENT PIPING BELOW GROUND SHALL BE PVC.
- ALL HORIZONTAL PIPING SHALL BE RUN AT MINIMUM OF ⅛" SLOPE UNLESS OTHER WISE NOTED.



GAS RISER
N.T.S.

GAS PIPE SIZES BASED ON 2020 NYS IFGC TABLE 402.4(2) SCHEDULE 40 METALLIC PIPE LENGTH OF 80 FEET FROM METER, INLET PRESSURE LESS THAN 2 PSI, PRESSURE DROP OF 6.0" W.C. AND SPECIFIC GRAVITY OF 0.60.

AS PER 2020 NYS IFGC 408.4 SEDIMENT TRAPS SHALL BE INSTALLED DOWNSTREAM OF THE APPLIANCE SHUT-OFF VALVE AS CLOSE TO THE THE APPLIANCE INLET AS PRACTICAL. THE SEDIMENT TRAP SHALL BE A TEE FITTING HAVING A CAPPED NIPPLE INSTALLED VERTICALLY IN THE BOTTOMMOST OPENING OF THE TEE.

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PLUMBING RISER DIAGRAMS

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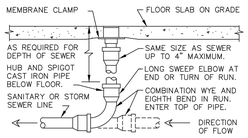
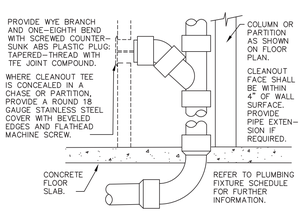
PROVIDE ROUND SECURED NICKEL BRONZE ADJUSTABLE TOP WITH "CO" CAST IN COVER. PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORIATED FOR UNFINISHED FLOORS). PROVIDE BRONZE PLUG IN CAST IRON BODY.



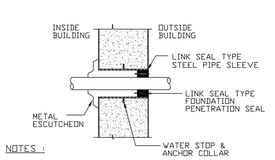
LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50' INTERVALS ON STRAIGHT RUNS, AND WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.

FLOOR CLEANOUT
NTS



PROVIDE WCO WHERE SHOWN ON PLAN, AND ON SANITARY WASTE BRANCHES NOT SERVED WITH A FLOOR CLEANOUT: LOCATE ABOVE FIXTURE FLOOD RIM WITHIN 4' OF FLOOR. CONSULT LOCAL CODES FOR OTHER WCO REQUIREMENTS.

WALL CLEANOUT
NTS



NOTES :

1.- USE FOR ALL PIPING EXCEPT GAS PIPING PENETRATING FOUNDATION WALL.

2.- FOR SLEEVE DIAMETER USE MANUFACTURERS SIZE RECOMENDATIONS.

3.- FOR GAS PIPING REFER TO GAS COMPANY REQUIREMENTS.

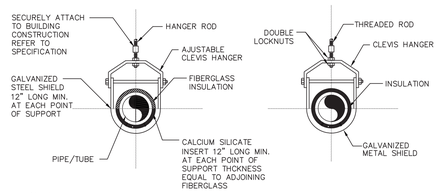
4.- COORDINATE WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.

PIPE PENETRATION – FOUNDATION WALL BELOW GRADE
NOT TO SCALE

WITH INCOMPRESSIBLE INSULATING BLOCK AT HANGER		
PIPE DIAMETER	SHIELD LENGTH	SHIELD THICKNESS USSG
UP TO 3"	6"	18
4" TO 6"	8"	16
8" & LARGER	12"	16

WITHOUT INCOMPRESSIBLE INSULATING BLOCK AT HANGER		
PIPE DIAMETER	SHIELD LENGTH	SHIELD THICKNESS USSG
UP TO 3"	12"	18
4"	15"	16
5"	18"	16
6"	21"	16
8" & LARGER	24"	14

NOTES:
HANGER, ROD & INSERT SHALL BE DIPPED IN ZINC CHROMATE PRIMER PRIOR TO INSTALLATION

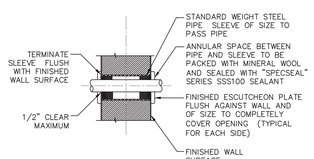


NOTE :

1.- USE THIS DETAIL WHEN SUPPORTING INSULATED PIPING AND TUBING LARGER THAN ONE (1) INCH.

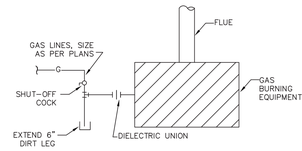
ADJUSTABLE CLEVIS PIPE SUPPORT
NOT TO SCALE

TYPICAL INSULATED PIPE SUPPORT
NOT TO SCALE

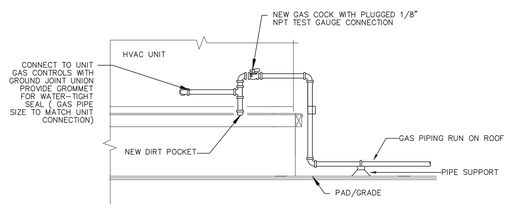


SEAL OR CAULK SLEEVES THRU FIRE WALLS IN SMOKE TIGHT MANINER.

DETAIL OF PIPE PENETRATING THRU FIRE RATED WALL/FLOOR/CEILING



TYPICAL GAS PIPING CONNECTION
N.T.S.

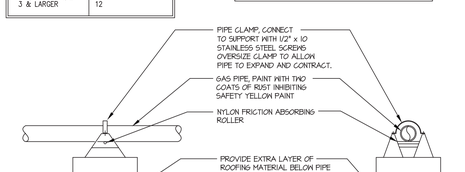


NOTE:
CONTRACTOR SHALL VERIFY ALL MECHANICAL GAS FIRED EQUIPMENT CONNECTION LOCATIONS IN THE FIELD PRIOR TO INSTALLING ANY GAS PIPE MAINS OR BRANCHES.

NEW HVAC UNIT GAS PIPING CONNECTION
NTS

NATURAL GAS PIPING RECOMMENDED SUPPORT SPACING FOR SCHEDULE 40 PIPE	
PIPE SIZE (IN)	DISTANCE BETWEEN SUPPORTS (FT)
1/2	6
3/4 - 1	8
1-1/4 TO 2-1/2	10
3 & LARGER	12

ROOF PIPE SUPPORT AS MANUFACTURED BY MIRO INDUSTRIES. "PILLOW BLOCK" PIPE STAND. MODEL #3-R STAND WILL ACCOMODATE PIPE UP TO 3" IN DIAMETER: MODEL #4-RAH, ROLLER TYPE, FOR SIZES TO 4". MODEL #6-RAH FOR PIPES UP TO 6" DIAMETER. FOR INFO: 1-800-768-6978.



ROOFGAS PIPE SUPPORT DETAIL
SCALE: NONE

PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE/ITEM	MODEL	VALVE/FAUCET	FIXTURE CONNECTIONS HOT WTR	COLD WTR	DRAIN	VENT	COMMENTS
WC	FLOOR MOUNTED BARRIER FREE WATER CLOSET	KOHLER HIGHCLIFF K-96057-0 W/ K-4670 SEAT	SLOAN OPTIMA Plus 8111-1.28 BATTERY POWERED FLUSHOMETER	–	1"	3"	2"	PROVIDE WATER HAMMER ARRESTER ON BRANCH
UR	URINAL	KOHLER BARDON K-4991-ET-0	SLOAN OPTIMA Plus 8186-1.0 BATTERY POWERED FLUSHOMETER	–	3/4"	2"	1 1/2"	REFER TO ARCH. FOR MOUNTING HTS.
LAV	WALL-MOUNTED LAVATORY	KOHLER KINGSTON K-2005 W/ CONCEALED-ARM CARRIER	SLOAN OPTIMA EBF-85-4-BDT BATTERY POWERED FAUCET W/ ETF-1027-A 2.2 GPM AERATOR	1/2"	1/2"	1 1/2"	1 1/4"	W/ THERMOSTATIC MIXING VALVE & ETF-460-A STRAINER, REFER TO ARCH. FOR MOUNTING HTS.
CL	COUNTER-MOUNTED LAVATORY	KOHLER PENNINGTON K-2196-1	SLOAN OPTIMA EBF-85-4-BDT BATTERY POWERED FAUCET W/ ETF-1027-A 2.2 GPM AERATOR	1/2"	1/2"	1 1/2"	1 1/4"	W/ THERMOSTATIC MIXING VALVE & ETF-460-A STRAINER, REFER TO ARCH. FOR MOUNTING HTS.
MS	MOP SINK	FIAT TSB-700 36x24x12	FIAT 830-AA	1/2"	1/2"	3"	1 1/2"	
FD	FLOOR DRAIN	JR SMITH 2005-A	PRECISION PLUMBING PRODUCTS MODEL P1-500	–	1/2"	2"	1 1/2"	
SH	BARRIER FREE TRANSFER SHOWER	CLARION BATHWARE MP3837LBF34 (LEFT) MP3837RBF34 (RIGHT)	DELTA T13H152-2 W/ R10000-UNWS MIXING VALVE, HANDSHOWER 1.7 GPM, 24" S/S SLIDE BAR & CP S/S HOSE	1/2"	1/2"	2"	1 1/2"	REFER TO NOTE NUMBER 3
DF	DRINKING FOUNTAIN WITH BOTTLE FILLER	HAWS 1011/6700.4/ 1920/BP32	–	–	1/2"	1 1/2"	1 1/4"	
WB	WASHER WALL BOX WASHER BY OTHERS		WATTS DWB DuoClozure WALL BOX 2-M2 DWB	1/2"	1/2"	2"	2"	

NOTES:
1. COORDINATE ALL COLORS & FINISHES WITH ARCHITECT
2. PROVIDE McGUIRE PRO-WRAP INSULATING KIT ON TRAPS AND DOMESTIC WATER SUPPLIES TO ALL LAVATORIES.
3. PROVIDE THE FOLLOWING CLARION BATHWARE TRANSFER SHOWER ACCESSORIES:
   A. #503218 GRAB BAR
   B. #660 SOAP DISH
   C. #400-33.5"-SDL FOLDING SEAT
   D. BRASS DRAIN
   E. #CR-59 ¾ CURTAIN ROD
   F. CURTAIN
   G. COLLAPSIBLE THRESHOLD KIT 2.5a

PLUMBING GENERAL NOTES:

1. RUN HOT AND COLD WATER LINES DOWN IN WALLS OR CHASES – BRANCH TO FIXTURES AS REQUIRED.
2. ALL DOMESTIC WATER LINES ABOVE GROUND, TYPE "L" COPPER UNLESS NOTED OTHERWISE.
3. INSULATE ALL HOT AND COLD WATER PIPING ABOVE GROUND AND CEILINGS WITH 1" THICK FIBERGLASS INSULATION FOR PIPES UP TO 1½" AND 1½" THICK FIBERGLASS INSULATION FOR PIPES 2" AND UP. PROVIDE WITH A FACTORY APPLIED VAPOR BARRIER UNLESS NOTED OTHERWISE.
4. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE LOCAL CODE OFFICIAL PRIOR TO EXECUTION OF ANY WORK OR PURCHASE OF ANY EQUIPMENT.
5. INSTALL PIPING AFTER DUCTWORK HAS BEEN PLACED.
6. COORDINATE ALL WORK WITH THAT OF OTHER TRADES; ELECTRICAL, ETC.
7. DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL ARRANGEMENT OF PIPING AND EQUIPMENT.
8. PROVIDE WATER HAMMER ARRESTORS. NO SITE BUILT ARRESTORS ARE ALLOWED.
9. PROVIDE ALL REQUIRED CUTTING AND TRENCHING OF EXISTING FLOOR. BACKFILL AND PATCH FLOOR TO MATCH EXISTING.
10. EXACT LOCATIONS OF ITEMS NOTED AS BEING EXISTING SHALL BE VERIFIED IN THE FIELD.
11. APPROXIMATE LOCATIONS OF EXISTING HW, CW, HWR, VENTS, WASTE, GAS, AND STORM WATER PIPING IN CEILING. WHERE REQUIRED IN ORDER TO ACCOMMODATE NEW WORK, RAISE OR LOWER OR RELOCATE PIPING TO SUIT NEW CONDITIONS.
12. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER CONSTRUCTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE INDICATED ON THE DRAWINGS.

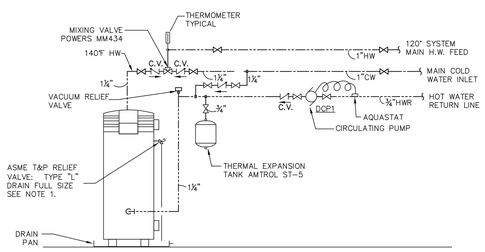
PLUMBING LEGEND

	4" SAN ROUGHING IN FLOOR
CW	COLD WATER PIPING
E CW	EXISTING COLD WATER PIPING
HW	HOT WATER PIPING
E HW	EXISTING HOT WATER PIPING
SAN	NEW SAN PIPING
E SAN	EXISTING SAN PIPING
V	VENT PIPING
E V	EXISTING VENT PIPING
G	NEW GAS PIPING
EG	EXISTING GAS PIPING
(E)	DENOTES EXISTING
	VALVE
CO	CLEAN OUT (FLOOR MOUNTED)
WCO	CLEAN OUT (WALL MOUNTED)
	NEW CONNECTION TO EXISTING
	ELBOW UP
	ELBOW DOWN

GAS WATER HEATER								
UNIT	CAP (GAL)	MBH INPUT	GPH @100°F	DIMENS	AIR INTAKE	FLUE EXHAUST	GAS CONN.	A.O.SMITH MODEL
GWH	60	120	138	28"ø x 56"	3"CPVC	3" CPVC	3/4"	BTH-120

DOMESTIC HOT WATER CIRCULATING PUMP							
UNIT	GPM	PD	RPM	VOLTS	FLANGE	AMPS	TACO MODEL
DCP	12	8'	3250	115/1	3/4"	1.0	007

PROVIDE TACO "00" TIMER AQUASTAT

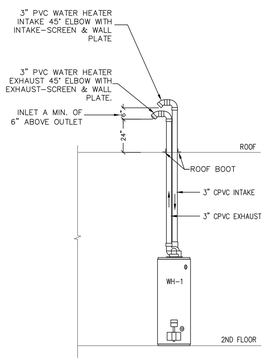


SCHEMATIC FOR DOMESTIC HOT WATER SYSTEM-GWH-2
N.T.S.

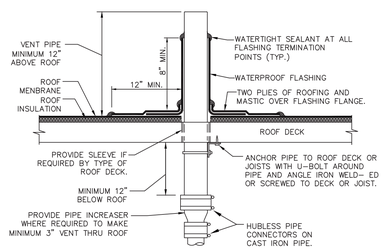
NOTE:

1. T & P RELIEF VALVE PIPING SHALL BE ROUTED TO FLOOR DRAIN

COLD WATER LINE
HOT WATER LINE
HOT WATER RETURN LINE



WATER HEATER FLUE THRU ROOF DETAIL
N.T.S.



REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MINIMUM THREE FEET FROM PROPERTY LINE, OR TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, OR ONE FOOT FROM ANY VERTICAL SURFACE. PROVIDE 1/2" FIBERGLASS INSULATION WITH ALL-SERVICE JACKET ON VENT PIPE INSIDE BUILDING WITHIN TEN FEET OF VENT THRU ROOF LOCATION. AT CONTRACTOR'S OPTION, HE MAY USE A NEOPRENE OR FLEXIBLE PVC COUPLING CLAMPED TO FLASHING AND PIPE WITH SS SCREW CLAMPS. VERIFY FLASHING AND COUNTERFLASHING WITH ROOFING CONTRACTOR.

VENT THRU ROOF (VTR)
NTS

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SECTIONS 15000
PLUMBING GENERAL CONDITIONS

1.1 GENERAL CONDITIONS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this Section; consult them in detail for applicable instructions.

B. Manufacturers referenced in the technical specifications are for the purpose of establishing a standard of quality.

1.2 CODES AND STANDARDS

A. All workmanship and material shall conform to the rules and regulations of the current editions of the regulating agencies listed below and regulations of the local utility companies. These rules, regulations and codes shall govern as a minimum standard. In the event of conflict with the Contract drawings or specifications requiring workmanship or material of a higher quality than required by the above-mentioned rules, regulations and codes, the most stringent shall apply.

ADA - Americans with Disabilities Act
2020 NYS Building Code
2020 NYS Fuel Gas Code
2020 NYS Mechanical Code
2020 NYS Plumbing Code
2020 NYS Energy Conservation Code
NFPA - National Fire Protection Association
AMCA - Air Movement and Control Association, Inc.
SMACNA - Sheet Metal and Air Conditioning Contractors National Association, Inc.
ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers
IPCEA - Insulated Power Cables Engineers Association
NEC - National Electrical Code of the NFPA
NEMA - National Electric Manufacturers Association
National Board of Fire Underwriters
AABC - Associated Air Balance Council
ARI - Air Conditioning and Refrigeration Institute
UL - Underwriter's Labs.
Local Utility Requirements
PDI Plumbing and Drainage Institute
ASSE American Society of Sanitary Engineering
ASTM American Society for Testing Materials
The Owner's Insurance Underwriter

During this work, this Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by the OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970. The Engineer shall be held harmless for any accident, injury, or any other incident resulting from non-conformance with these or any other standards.

1.3 QUALITY ASSURANCE

A. The Contractor shall use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of these Sections.

B. Without additional cost to the Owner, the Contractor shall provide such other labor and materials as are required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. Engineering Drawings are symbolic and diagrammatic in nature and are intended to show only the general scheme, equipment involved, and the approximate locations and dimensions of the equipment. For exact locations and dimensions, the Contractor shall review all Drawings provided; including, Architectural and Structural Drawings, Reflected Ceiling Plans, Plumbing, Fire Protection, Electrical and HVAC Drawings to confirm all requirements. It is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Architect and the Engineer for clarification. No extras or allowances will be made for such items after bid submission.

D. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make such examination.

E. During the execution of work under this Contract the Contractor shall be responsible for protecting any equipment or structures in the work and adjacent areas.

F. Secure and pay for required authorizations from governmental agencies having jurisdiction.

G. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.

H. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the Contractor's expense.

I. EXPOSED PIPING: There shall be no exposed piping of any sort; plumbing, fire protection, whether implied by the MEP drawings or not, unless expressly approved by the Architect.

1.4 SUBMITTALS

A. Comply with pertinent provisions of General Documents.

B. PRODUCT DATA: Within the designated time period after the Contractor has received the Owner's Notice to Proceed, submit:
1. Materials list of items proposed to be provided under this Section with sources of supply and manufacture.
2. Manufacturer's specifications, catalog cuts, and other data needed to prove compliance with the specified requirements.
3. Product substitutions are to be requested in writing, within 20 calendar days of the Notice to Proceed (NTP). At the time of submission of cuts for review for all substitutions, clearly indicate Specification Section, provide complete information on the original product and the proposed product for approval, and all deviations.
a. Any substitutions requested by a contractor are to include all costs for related changes by other contractors. It is the responsibility of the contractor requesting the change to coordinate with any other trade impacted by the substitution.

C. SAMPLES
1. When so requested by the Engineer, promptly provide samples of items scheduled to be exposed in the final structure.
2. When specifically so requested by the Contractor and authorized by the Engineer, authorized samples will be returned to the Contractor for installation on the Work.

D. Shop Drawings:
1. PLUMBING: Before fabrication or purchase of any equipment or controls, prepare and submit for review, shop drawings of layout and design of the complete hot and cold domestic water piping systems, vents, sanitary and storm piping systems, and equipment, for approval before starting any work, at a scale not smaller than 1/4" = 1'-0". Include all access provisions, etc. Coordinate all of the above with all other trades.
2. Clearly identify by circle and by note "DEVIATION" and by note "INTERFERENCE", in large bold lettering, and deviations from Drawings and Specifications and any potential or unresolved interference condition and assume full responsibility for failure to do so.
3. Submittal shall confirm fabrication and installation is in accordance with recommendations and applicable standards.
4. For mandatory coordination of all work, including that which penetrates structural members, consult General Conditions.

E. Corrections or comments made on shop drawings and submittals during review do not relieve the Contractor from compliance with requirements of the drawings and specifications. This check will only be for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor shall be responsible for; confirming and correlating all quantities and dimensions, selecting fabrication process and techniques of construction, coordinating his work with that of all other trades, and performing his work in a safe and satisfactory manner.

F. STERILIZATION CERTIFICATE: Upon completion of water line sterilization, deliver two copies of an acceptable "Certificate of Performance" to the Engineer.

G. MANUALS: Upon completion of the work of this Section, the Contractor shall deliver to the Architect four copies of an operation and maintenance manual compiled in accordance with the provisions of General Conditions, and these Specifications.
1. Include within each manual a copy of the Project Record Documents showing all work of the Section.
2. Include detailed operating and maintenance instructions.

H. AS-BUILT DRAWINGS: concurrent with the progress of the work, the Contractor shall maintain a set of as-built record sepia drawings noting in red all changes in the work. Upon completion of the work this sepia set is to be turned over to the Owner for his records.

I. All required permits, fees and inspections shall be arranged and paid for by the Contractor. The Contractor shall present to the Owner, properly signed, all required certificates of final inspection and approval before the work will be accepted as complete.

1.5 TRENCHING AND BACKFILLING

A. Perform trenching, backfilling and compaction in strict accordance with applicable codes and standards.

B. Cut bottom of trenches to grade. Make trenches 12" wider than the greatest dimension of the pipe.

C. Bedding and backfilling:
1. Install piping promptly after trenching. Keep trenches open as short a time as practicable.
2. Under the building, install pipes on a 6" bed of damp compacted sand. Backfill to bottom of slab with damp sand, compacted in 6" layers.
3. Outside the building, install underground piping on a 6" bed of damp sand, compacted. Backfill to within 12" of finish grade with damp sand, compacted. Backfill remainder with native soil placed in 6" layers, then compacted.
4. Do not backfill until installation has been authorized and until Project Record Documents have been properly annotated.

1.7 GAS EQUIPMENT SEISMIC CONNECTIONS

Final connection of gas piping to any equipment subject to vibration or movement shall utilize flexible stainless steel high BTU application gas connectors with PVC coating, Dormont Series 40, 50 or 60 by Dormont Mfg. Co., Export, PA or authorized equivalent.

1.8 SMOKE DETECTORS

Where applicable, duct smoke detectors shall be installed in the return ductwork only in accordance with 1996 International Mechanical BOCA Code Section 606.

1.9 INTUMESCENT FIRE BARRIER PLASTIC PIPE CAULKING

A. Provide where plastic pipe penetrates a rated wall, intumescent-type sealant complying with UL Fire Resistance Directory and ULC Volume 3 Fire Resistance Ratings, UL classified for use with PVC, CPVC, CCPVC, ABS, CCABS, PVDF, PP, PB and FRPP, HILTI FS-ONE or authorized equal.

1.10 INSTRUCTION

A. After all work is completed, the Contractor shall instruct employees designated by the Owner in the proper operation and maintenance of the equipment and systems installed under this Contract.

1.11 GUARANTEE

The Contractor shall guarantee his work for a period of one year after date of completion as witnessed by receipt of final payment. The Contractor shall promptly repair and make good any damage to the work of any other Contractor, during that period, that may be caused by defective materials or workmanship. Any defects in materials and workmanship shall be corrected by the Contractor without further expense to the Owner. He shall deliver to the Architect or Owner said written guarantee upon receipt of final payment.

1.12 DEBRIS REMOVAL

Routinely remove, in an orderly and efficient manner, (and cart away and dispose of, by legal means, off the site and premises), all debris related to work of this Section; worksite and staging areas shall be kept clear of all debris on a daily basis; permit no debris accumulation which poses any threat to life, safety or property. Non-conformance with the foregoing Contract requirements will be subject to all remedies established by the Project General Conditions.

END OF SECTION

SECTION 15400
PLUMBING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. WORK INCLUDED: Provide all labor, materials, equipment, paint, tools, and management services for proper and complete execution of all Plumbing work. Without restricting the generality of the foregoing, the following items of work are included:
1. Remove existing fixtures and cap and seal piping.
2. Provide all new domestic water piping for new fixtures from existing sources.
3. Complete new drain, waste and vent systems; connections including escutcheons, connections, cleanouts and connection to building sanitary.
4. Purchase, installation and connection/piping of Plumbing Fixtures as specified on the drawings, with fittings, dielectric fittings, stops and traps, in the locations and quantities shown on the Drawings.
5. Insulation of hot and cold water piping, as well as exposed P-traps and drain piping.
6. Perform all cutting & patching, and fire caulking/sealing for plumbing installation.
7. Plumbing Contractor shall be responsible for coordination of all work with all other trades to avoid conflicts.
8. Temporary water service as required to perform the Work.
9. Sleeves for pipes passing through walls and partitions.
10. Perform cleaning and protection of your work.
11. Access doors where required in walls and ceilings for installation by appropriate surface Contractor.
12. Seismic provisions, as required by code, for ALL plumbing systems and components.
13. Removal of all debris and rubbish related to this work.
14. Gas piping from existing gas service to new rooftop units.
15. Complete compressed air piping system, including all piping, fittings, hangers required. Provide connections to owner provide air compressor equipment including dryer

PART 2 - PRODUCTS

2.1 PLUMBING FIXTURES

A. Provide plumbing fixtures as shown on the Drawings with all hangers, supports and stops as required by code for a complete installation.

B. Provide handicapped flush valves to wide side of stalls as required by code.

2.2 SERVICE CONNECTIONS/METERS

A. Provide all water and sanitary utility connections.

B. Provide and install meters and pressure regulators if not provided by local utilities.

C. Coordinate all work with local utilities.

D. Provide controls and control wiring if applicable, coordinate with Electrical Contractor.

2.3 MATERIALS

A. All materials entering into this work shall be new and shall be of the best of their respective kinds and shall be installed in a neat and workmanlike manner. The Contractor shall be entirely responsible for all apparatus, equipment, and appurtenances furnished by him or his Sub-Contractors in connection with this work and special care shall be taken to protect all parts thereof in such manner as may be necessary or as directed. This protection shall include covers, crating, sheds, or other means to prevent dirt, plaster, grit or other foreign substances from entering piping, fixtures or equipment. Special care shall be taken to keep all open ends of pipes, etc. closed while in storage or during installation. The Contractor shall be responsible for and shall make good any damages without additional cost.

B. SOIL, VENT AND WASTE PIPING
1. All above ground sanitary piping shall be cast iron "No Hub" pipe (Cast Iron Soil Pipe Standard 301), with neoprene gasket, stainless steel band, and clamp (Cast Iron Soil Pipe Institute Standard 310).
2. All below ground sanitary piping shall be PVC.

C. GALVANIZED OR BLACK STEEL PIPE
1. Provide standard weight complying with ASTM-A-12.
2. Provide Service weight fittings complying with ASTM-A-126 or ASTM-A-197.

D. COPPER HOT AND COLD WATER DOMESTIC SERVICE
1. Provide type L complying with ASTM-B-88.
2. Fittings shall be 150 psi rated cast brass soldered type.
3. Soldered joints shall be made with a LEAD FREE SOLDER.
4. All under-slab copper piping shall be soft, type K with NO JOINTS.

E. DIELECTRIC PIPE FITTINGS
1. Provide at all connections between dissimilar metals (e.g. steel, copper, iron), nylon insulator, Buna-N gasket, maximum temperature 210º F, 250 psig pressure rating, conforming to ANSI B16.39, B2.1 and B1.201 and Federal Specification WWU-531E and WWU-516B.

F. GAS PIPING
1. Provide black steel, schedule 40, minimum 150 PSI, screwed malleable iron fittings, ASTM-A-120, (Standards are in 2015 International Fuel Gas Code).
2. Provide seismic restraints for all piping hangers longer than 12". All seismic restraints shall be in accordance with 2015 International Fuel Gas Code.
3. Construction must meet International Fuel Gas Code, American Gas Association, OSHA, UL and all other local and applicable codes.
4. Above ground gas piping 5" and larger, shall be Schedule 40 seamless steel pipe with steel welding fittings. Piping and fitting shall comply with gas company standards.
5. Above ground gas piping 4" and smaller shall be Schedule 40 seamless steel pipe and galvanized threaded malleable iron fittings.

G. COMPRESSED AIR PIPING
1. Type "K" or "L" copper tube, ASTM B88, drawn, with wrought copper fittings conforming to ANSI B16.22.
2. Unions: Factory-fabricated bronze assembly, for 1725-kPa (250 psi) minimum working pressure at 82 deg C (180 deg F).
3. Solder: ASTM B32, 50/50, special alloy, lead free, with non_corrosive flux. No purging with nitrogen is required.
4. Silver Brazing Alloy: AWS A5.8, Classification BCuP.
5. Apply piping identification in accordance with ANSI A13.1

2.4 VALVE AND PIPING IDENTIFICATION

A. Identify piping with pipe identification labels.

B. Valves shall be designated by distinguishing numbers and/or letters on required chart(s) and/or diagram(s).

2.5 VALVES

A. GATE VALVES: Provide solid wedge disc, rising stem, 200# WOG; non-rising stem valves may be used only where there is insufficient clearance.
1. 3" and smaller, rising stem: Provide Crane #428, bronze, screwed.
2. 3" and smaller, non-rising stem: Provide Crane #438, bronze, screwed.
3. 4" and larger: Provide Crane #465-1/2, IBBM, flanged, non-rising stem.

B. GLOBE VALVES: Provide replaceable composition disc suitable for 200° F water:
1. 2" and smaller: Provide Crane #7, bronze, screwed.
2. 2-1/2" and larger: Provide Crane #359, iron body, flanged, 200# WOG.

C. CHECK VALVES:
1. 3" and smaller: Provide Crane #37, bronze, screwed, Y-pattern, 200# WOG, swing check type.
2. 4" and larger: provide Crane #373, IBBM, flanged, 200# WOG.

D. STRAINERS: Provide Y-pattern, 200# WOG, 20 mesh monel screen:
1. 3" and smaller: Provide Crane #988-1/2, screwed.
2. 4" and larger: Provide Crane #989-1/2, flanged.

E. PARTITION STOP VALVES: Provide Chicago Faucet #1771, loose key type.

F. BALANCING COCKS: Provide DeZurick #400.

G. CLEANOUTS: Provide cleanouts on all soil, waste and roof drain lines, at ends of all lines, at all changes in direction exceeding 45 degrees, where leaving the building, and not over 50 ft. apart at all horizontal or vertical runs.
1. Floors:
a. Provide Smith #4023 or Josam #8330 with round nickel-bronze top in finished room floors.
b. Provide Smith #4223 or Josam #8090-CAL with round cast iron top in unfinished room floors.
c. Provide "flush-with-floor" type cleanouts, with adjustable watertight covers and integral anchoring flange with clamping collar where waterproofing membrane is used.
2. Finished walls:
a. Provide Smith #4532 or Josam #8790-4 with round chrome plated or stainless steel access plate and screw.
3. Provide cleanout plugs of extra heavy bronze.

H. VENT LINES: Where small vent lines pass through roof structures, provide pipe increasers as required by local code.

2.6 PIPE HANGERS

A. WATER PIPING:
1. Provide VMC (Vibration Mountings & Controls Inc.) Series SH spring flex hangers with appropriate split ring or trapeze type connectors.
2. Provide seismic restraints for all hangers longer than 12" as required by code.

2.7 INSULATION

A. ALL horizontal roof drain lines are to be insulated with 1" thick Owens-Corning Fiberglas "25ASJ/SSL".

B. Insulate all hot and cold water piping above ground and ceilings with 1" thick Owens-Corning Fiberglas "25asj/ssl" insulation for pipes up to 1½" and 1½" thick fiberglass insulation for pipes 2" and up. Provide with a factory applied vapor barrier unless noted otherwise.

C. For exposed water piping and drains in lavatories, provide "Handy Shield" or authorized equal prefabricated insulation.

2.8 SLEEVES

A. Where pipes pass through concrete, masonry, or stud walls, provide "Sperzel" rustproof "Crete-Sleeve" of the size required.

2.9 WATER HAMMER ARRESTORS

A. Provide water hammer arrestors on hot and cold water lines, Smith Hydrotrol 5000 series.
1. Install in upright position at all quick closing valves, solenoids, isolated plumbing fixtures, and supply headers at plumbing fixture groups.
2. Locate and size in accordance with Plumbing and Drainage Institute Standard WH-201.
3. Install water hammer arrestors behind access panels.

2.10 FLOOR DRAINS

A. Provide 3 inch of the size, type and location shown on the Drawings, and connect to cast iron "P" traps. All floor drains shall include trap primer option.

2.11 ACCESS DOORS

A. Access panels in ceramic tile, gypsum wallboard, or other finished surface, required for access to valves, etc. on plumbing lines, will be furnished by this Contractor and installed by the Contractor for the applicable surface.

B. It shall be the Plumbing Contractor's responsibility to take a count of all such panels required, transmit this information to the respective Contractor and see that they are installed where required, so that no plumbing equipment is left in an inaccessible location.

2.12 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the authorization of the Engineer.

B. Provide flashing and counter-flashing for all vent piping extended to exterior.

PART 3 - EXECUTION

3.1 TEMPORARY POWER AND LIGHTING

A. It is the Contractor's responsibility to run power from point of availability as provided in the Electrical Contract, to the point of use. Provide local temporary lighting as required for performance of the work in this section.

3.2 EXISTING CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.3 PREPARATION

A. Coordination:
1. Coordinate as necessary with other Sections to assure proper and adequate provision in the work of those Sections for interface with the work of this Section.
2. Coordinate the installation of items with the schedule for work of other trades to prevent unnecessary delays in the total work.

B. Data indicated on the Drawings and in these Specifications intended to convey the Engineer's intentions only, as such their accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

C. Where devices are not specifically located on the Drawings, locate as determined in the field by the Engineer. Where devices are installed without such specific direction, relocate as directed by the Engineer, at no additional cost to the Owner.

3.4 INSTALLATION OF PIPING AND EQUIPMENT

A. GENERAL:
1. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.
2. Cut pipe accurately, and work into place without springing or forcing, properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.
3. Show no tool marks or threads on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.
4. Make changes in directions with fittings; make changes in main sizes with eccentric reducing fittings. Unless otherwise noted, install water supply and return piping with straight side of eccentric fittings at top of the pipe.
5. All drainage piping shall be run as straight as possible. Run horizontal sanitary and storm drainage piping at a uniform grade of 1/8" per ft. unless otherwise noted. Make change in direction of drainage piping by appropriate use of 45° wyes, long turn tee wyes, long sweep quarter, sixth, eight, or sixteenth bends except where space conditions require, short turn sanitary tees may be used on vertical lines only.
6. Provide sufficient swing joints, ball joints, expansion loops, and devices necessary for a flexible piping system.
7. Support piping independently at pumps, coils, tanks, and similar locations, so that weight of pipe will not be supported by the equipment.
8. Securely bolt all equipment, isolators, hangers, and similar items in place.
9. Support each item independently from other pipes. Do not use wire for hanging or strapping pipes.
10. Provide complete dielectric insulating couplings between ferrous and non-ferrous metals.
11. Provide union and shut off valves suitably located to facilitate maintenance and removal of equipment and apparatus. and
12. All water piping shall be concentrated and run as direct as possible but parallel to construction and ABOVE CEILING in all finished rooms. Water supply lines to wall hung fixtures, or to fixtures set near or against the wall shall be stubbed through the wall and not up through the floor.
13. Water supply pipes throughout the building shall be located within the building in such a manner as to provide thorough protection from freezing.
14. All water piping shall be run level and generally free of traps and unnecessary bends arranged to conform to the building requirements and to suit the necessities of clearances for other mechanical and electrical work.
15. All piping shall have reducing or increasing fittings where any change in the pipe sizes occur. No bushings of any nature will be allowed.
16. No valve stems shall be installed below the centerline of the piping it serves.
17. Run vent piping with elbows at changes of direction or grade to drain out condensation.
18. Cleanouts shall be provided where required by code. Cleanouts shall be installed at all changes in direction, at the base of all leaders and where shown on the Drawings.
19. Underground cleanouts shall be extended to the finished floor with long radius fittings.

B. CHASES, SLOTS, AND OPENINGS
1. Chases, slots and openings in floor, walls, or partitions will be built in by each Contractor in his respective material as shown on the drawings and as directed as the work progresses. This Contractor shall familiarize himself with the size of chases, slots, and openings to be provided by other Contractors, to receive his work and shall see that they are properly located and of proper size. This Contractor shall provide all chase access doors for installation by Drywall or Masonry Contractor. If these chases have to be cut after walls are built he shall provide same as required. This Contractor shall install his work sufficiently in advance of the building construction to permit his work to be built into walls, floors, and partitions to eliminate unnecessary cutting of construction work.
2. He shall not cut any chases or any structural members without first securing the approval of the Architect and Engineer.

C. EQUIPMENT ACCESS: Install piping, equipment, and accessories to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to the Owner.

3.5 PIPE JOINTS

A. COPPER TUBING
1. Cut square, remove burrs, and clean inside of female fitting to a bright finish.
a. Apply solder flux with brush to tubing.
b. Remove internal parts of solder-end valves prior to soldering.
2. Provide dielectric unions at points of connection of copper tubing to ferrous piping and equipment.
3. For joining copper tubing, use:
a. Water piping 3" and smaller: 95-5 solder.
b. Water piping larger than 3": Sil-fos* brazing.
4. Use only LEAD-FREE SOLDER.

B. SCREWED PIPING
1. Deburr cuts.
a. Do not ream exceeding internal diameter of the pipe.
b. Thread to requirements of ANSI B2.1.
2. Use teflon tape on male thread prior to joining other services.

C. LEAKY JOINTS
1. Remake with new material.
2. Remove leaking section and/or fitting as directed.
3. Do not use thread cement or sealant to tighten joints.

3.6 PIPE SUPPORTS

A. Support suspended piping with clevis or trapeze hangers and rods.

B. Space hangers and support for horizontal steel pipes according to the following schedule:

Pipe size:	Maximum spacing on centers:
3/4" and smaller:	10'-0"
1" and greater	12'-0"

C. Space hangers and supports for horizontal copper tubing according to the following schedule:

Tube size:	Maximum spacing on centers:
1 1/4" and smaller:	6'-0"
1-1/2" and over	10'-0"

D. Cast Iron Soil Pipe: at 5 foot intervals and behind every hub.

E. Space hangers and supports for horizontal PVC pipe six feet maximum for all sizes.

F. Provide sway bracing on hangers longer than 18".

G. Support vertical piping with riser clamps secured to the piping and resting on the building structure.

H. Provide insulation continuous through hangers and rollers. Protect insulation by galvanized steel shields.

I. Arrange pipe supports to prevent excessive deflection, and to avoid excessive bending stress.

J. It is the option of the Contractor to fasten piping directly to walls above ceilings, support from walls above ceilings or support it from building structures above ceilings.

K. MATERIALS
1. All hangers and supports shall be as manufactured by the F & S Company as follows:
a. All bare horizontal piping shall be hung with fig. #86 or Fig. #86F adjustable galvanized steel clevis hanger.
b. All insulated horizontal piping shall be hung with Fig. #86S adjustable galvanized steel clevis hanger.
c. All hangers, clamps and anchors for copper pipe shall be copper clad.
d. Beam clamps and C clamps shall have steel retaining clips.
e. All vertical lines shall be supported by means of authorized galvanized steel clamps.

L. Support gas piping on roof with pre-fabricated pillow block pipestands, one piece molded plastic with rounded base edges vented to prevent condensate buildup, round cradle with roller in Teflon base, by Miro Industries, sized to fit individual pipe diameters.

3.7 SLEEVES AND OPENINGS

A. Provide sleeves for each pipe passing through walls, partitions, floors and ceilings.
1. For uninsulated pipe, provide sleeves two pipe sizes larger than the pipe passing through, or provide a minimum of 1/2" clearance between inside and outside of the pipe.
2. For insulated pipe, provide sleeves of adequate size to accommodate the full thickness of pipe covering, with clearance for packing and caulking.

B. FINISH AND ESCUTCHEONS
1. Smooth up rough edges around sleeves with plaster or spackling compound.
2. Provide 1" wide chrome or nickel plated escutcheons on all pipes exposed to view where passing through walls, floors, partitions, ceilings, and similar locations.
a. Size the escutcheons to fit pipe and a covering.
b. Hold escutcheons in place with set screws.

C. Provide all cutting and patching, and fire caulking/sealing. Caulk the space between sleeve and pipe or pipe covering, using a non-combustible, permanently plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack with noncombustible cotton, rope, or fiberglass to within 1/2" of both wall faces.

3.8 CLEANOUTS

A. Secure the Architect's approval of locations for cleanouts in finished areas prior to installation.

B. Provide cleanouts of same nominal size as the pipes they serve; except where cleanouts are required in pipes 4" and larger, provide 4" cleanouts.

C. Make cleanouts accessible. After pressure tests are made and authorized, thoroughly graphite the cleanout threads.

D. Provide cleanouts every 50' on 5" pipe and under, and every 100' on 6" pipe and larger.

3.9 VALVES

A. Provide valves in water and gas systems. Locate and arrange so as to give complete regulation of apparatus, equipment, and fixtures.

B. Provide valves in at least the following locations:
1. In branches and/or headers of water piping servicing a group of fixtures.
2. On both sides of all apparatus and equipment.
3. For shutoff of risers and branch mains.
4. For flushing and sterilizing the system.
5. Where shown on the Drawings.
6. At all low points of each water system.

C. Locate valves for easy accessibility and maintenance.

D. Identify all valves with brass, die stamped identification tags.

3.10 BACKFLOW PREVENTION

A. General: Provide backflow preventers for domestic water system.

B. Protect plumbing fixtures, faucets with hose connections, and other equipment having plumbing connections, against possible back-siphonage.

C. Arrange for testing of backflow devices as required by the governmental agencies having jurisdiction.

D. For flush valves, provide diaphragm type, complete with authorized vacuum breaker provided by the manufacturer of the valve.

3.11 DISINFECTION AND STERILIZATION OF WATER SYSTEMS

A. DISINFECT HOT AND COLD WATER SYSTEMS
1. The domestic water system shall be filled with a water solution containing 200 parts per million of available chlorine and allowed to stand for 1 hour before thoroughly flushing and returning to service.
2. Perform disinfecting under the Engineer's observation. Notify the Construction Manager at least 48 hours prior to start of the disinfecting process.
3. Upon completion of disinfecting, secure and submit the Certificate of Performance, stating system capacity, disinfectant used, time and rate of disinfectant applied, and resultant residuals in ppm at completion.

B. When disinfecting operation is completed, and after final flushing, secure analysis by laboratory authorized by Engineer, based on water samples from the system, showing test negative for coli-aerogene organisms. Provide a total plate count of less than 100 bacteria per cc, or equal to the control sample.

C. If analysis results are not satisfactory, repeat the disinfection procedures and retest until specified standards are achieved.

3.12 OTHER TESTING AND ADJUSTING

A. Provide personnel and equipment, and arrange for and pay the costs of, all required tests and inspections required by governmental agencies having jurisdiction.

B. Where tests show materials or workmanship deficient, replace or repair as necessary, and repeat the tests until the specified standards are achieved at no extra cost to Owner.

C. Adjust the system to optimum standards of operation.

D. TESTING OF SANITARY DRAINAGE SYSTEM
1. Upon completion of all rough plumbing, wastes and vents, this Contractor shall test same to roof. The entire new drainage system must be tested by the Plumbing Contractor who shall close the end of the house drain, all vertical lines and branches, to fixtures to points above the finished floors and beyond the finished face of the walls and partitions. If the drain or any part of the system is to be tested separately, there must be a head of water at least 10 feet above all parts of the work so tested, held for a minimum of one (1) hour, and special provision must be made for all parts including all joints and connections in at least one test.

E. TESTING OF WATER PIPING
1. All water piping shall be thoroughly flushed to remove all foreign material after the roughing-in is completed. After the fixtures have been connected, the supply line shall be flushed again.
2. Piping shall be hydrostatically tested at a pressure of 150 psi. Test pressure shall be maintained for a period of 4 hours with a pressure drop not to exceed 5 psi. This test shall be made before fixtures are connected. The test shall be repeated at 60 psi after the fixtures have been connected. During the tests, all valves shall be carefully checked for leakage around the stem.
3. Relief and regulating valves shall be set and checked to see that they operate properly. Relief valves shall be tested to determine that they open at the proper pressure and temperature.
4. Water heaters shall be tested and checked to determine that they operate in compliance with the specifications. All controls shall be properly adjusted.

F. TESTING GAS PIPING
1. Testing of gas piping system shall comply with the Fuel Gas Code section 406.

G. GENERAL REQUIREMENTS FOR TESTING
1. Should a leak occur during any test, the system shall be drained, the leaking fitting removed, the pipe thoroughly cleaned, and new fittings installed according to these specifications. Reheating leaking fittings in the line will not be permitted.
2. All defects disclosed as the result of tests shall be remedied and defective work or material shall be replaced and tests repeated.
3. All tests shall be performed as required and until satisfactory results are achieved, and no pipe shall be concealed until authorized by the Architect.
4. Expense involved in making a separate test or tests shall be paid for by the PC when it is required to separately test any of the plumbing system so as to advance the progress of the construction work. Any test made will not be construed as an acceptance of any material so tested or will it affect the guarantee of the work. All leaks which appear because of these tests shall be repaired by the Plumbing Contractor.

All testing shall be completed before insulation is applied, and underground piping shall be tested before any backfilling.

END OF SECTION

09.14.23 ISSUED FOR BID
08.25.23 FOR PERMIT

HALLEL BUILDING
GYMNASIUM ALTERATION

175 ROUTE 340 SPARKILL, NY 10976

arcari + iovino ARCHITECTS PC

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PLUMBING SPECIFICATIONS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

P.401

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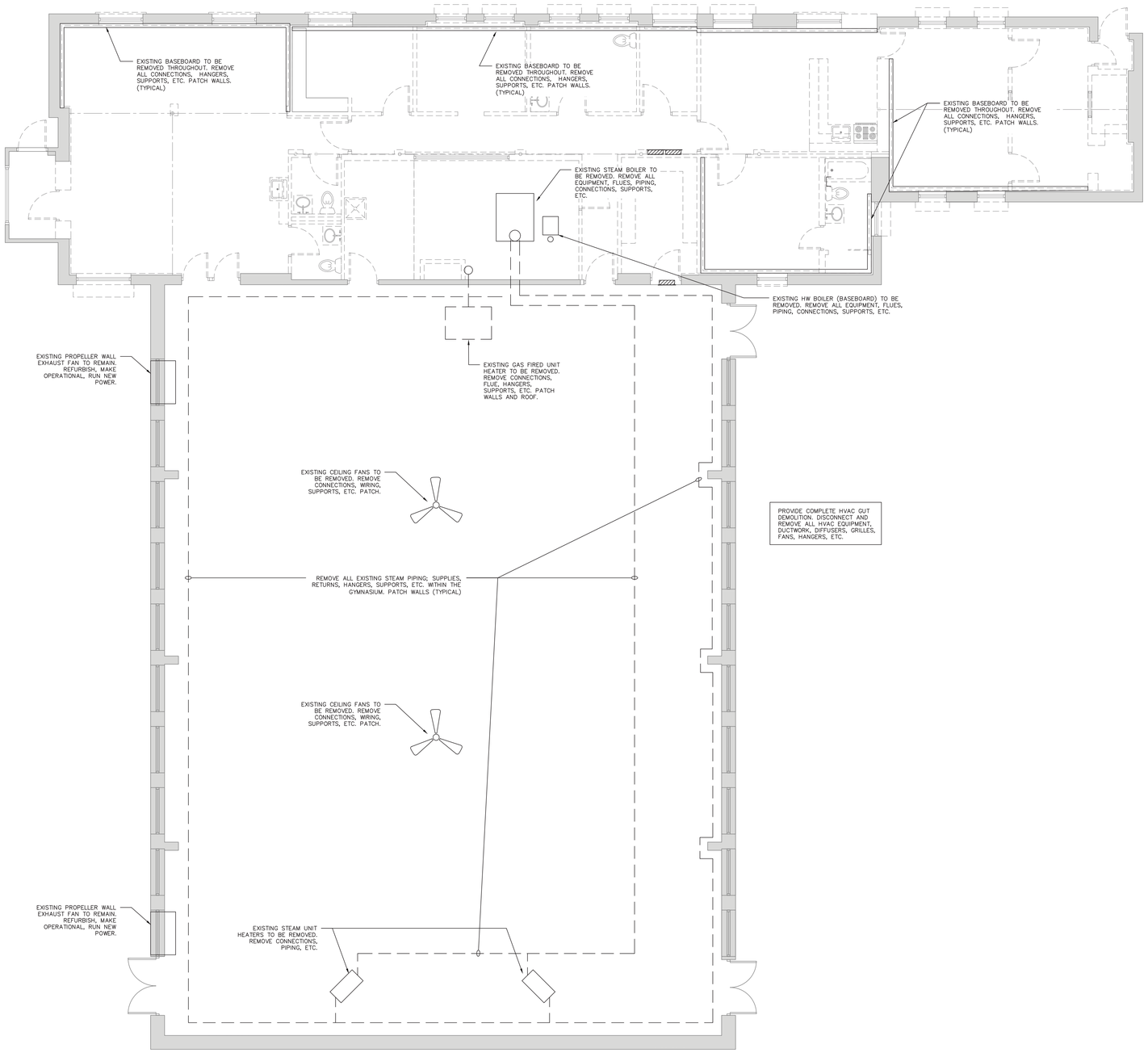

1 DEMOLITION PLAN
3/16" = 1'-0"

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MECHANICAL DEMOLITION PLAN

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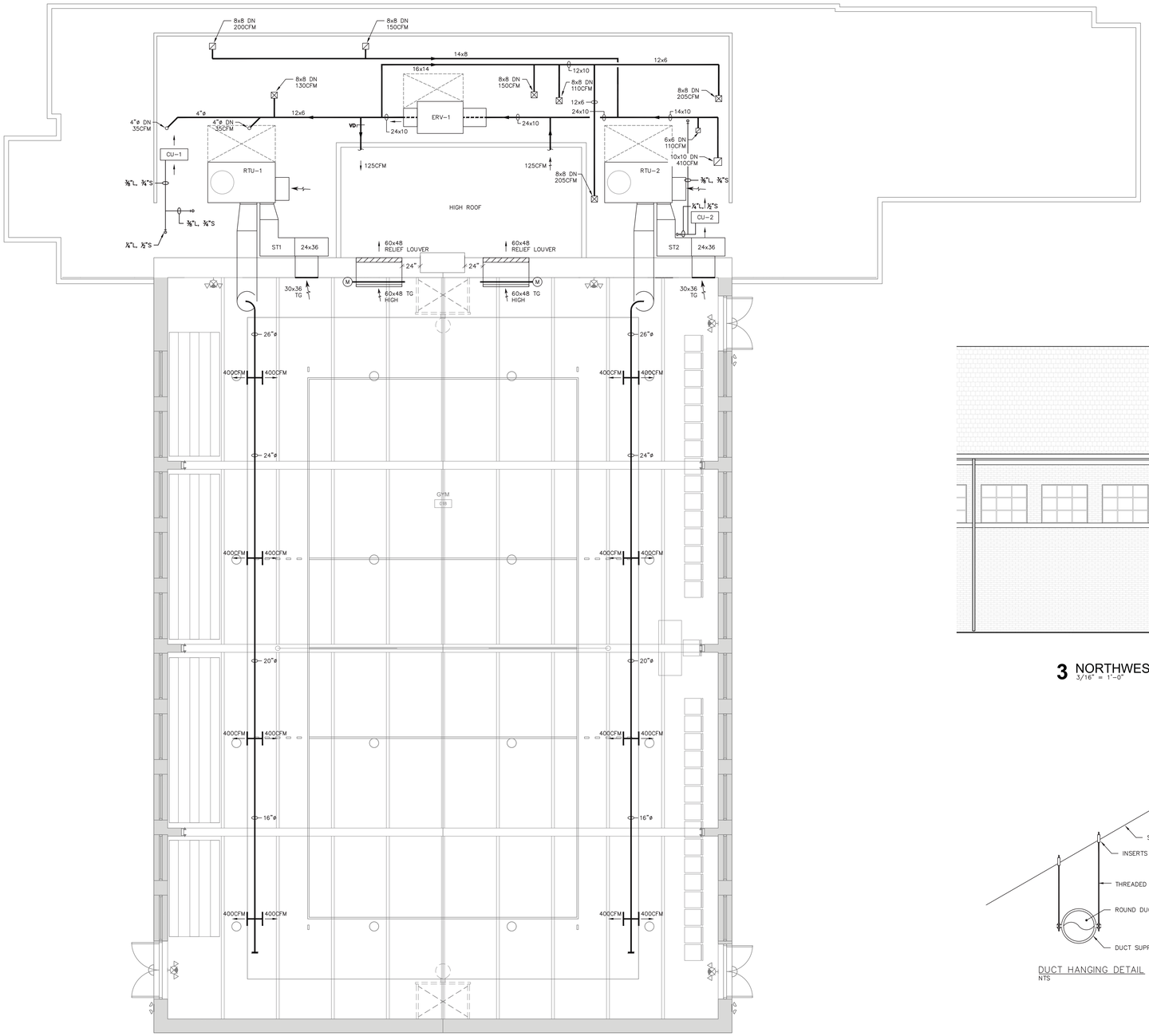
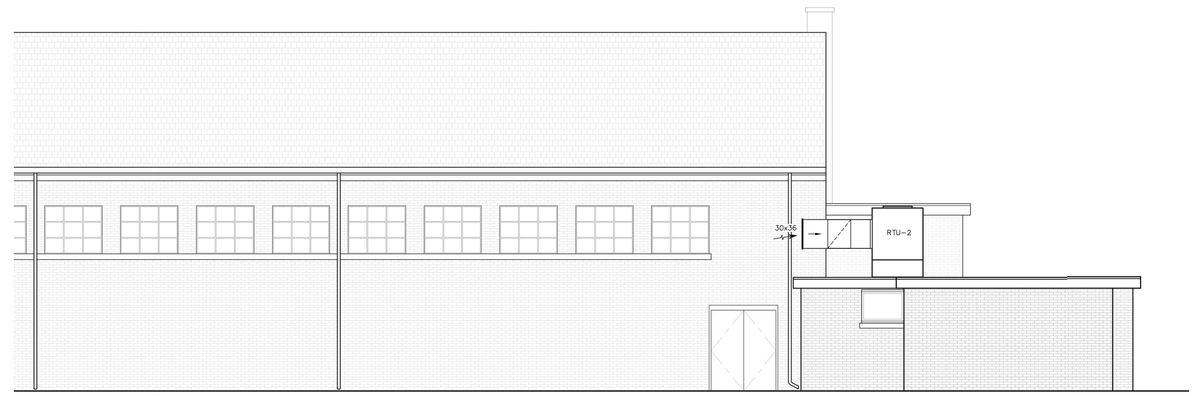
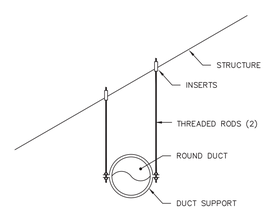


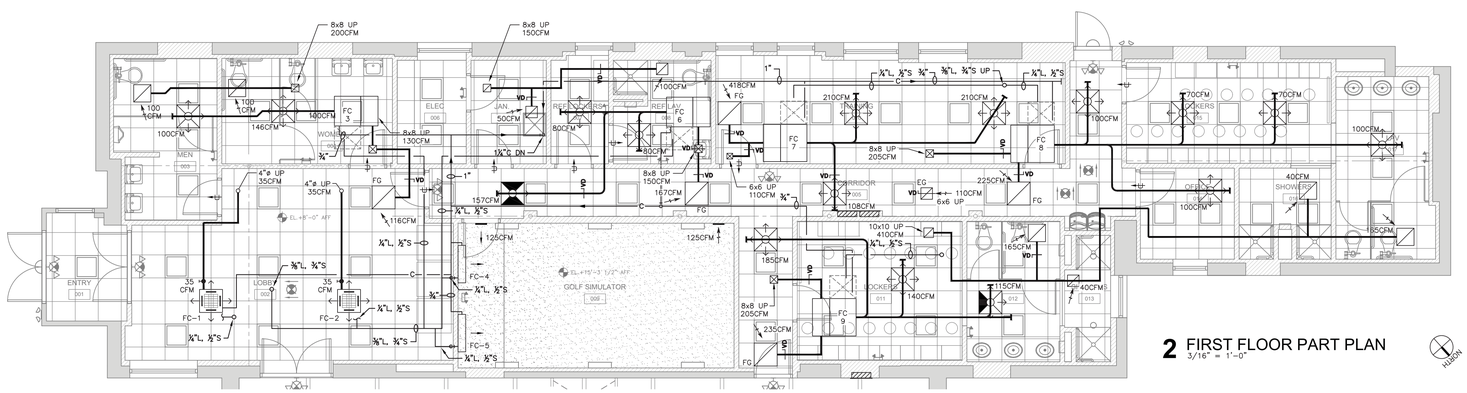
1 FIRST FLOOR PLAN
3/16" = 1'-0"



3 NORTHWEST PARTIAL ELEVATION
3/16" = 1'-0"



DUCT HANGING DETAIL
NTS



2 FIRST FLOOR PART PLAN
3/16" = 1'-0"

NOTES:
ALL VOLUME DAMPERS AT FAN COIL OUTSIDE AIR INTAKES WITH THIS SYMBOL SHALL BE CONTINENTAL FAN IRIS BALANCING DAMPER SIZE INDICATED BELOW AND CFM AS INDICATED ON THE DRAWING.

1-35 CFM 4"

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MECHANICAL PLAN

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FAN SCHEDULE

UNIT No.	SERVICE	LOCATION	TOTAL AIR CAP. CFM	EXTERNAL S.P. IN INCHES OF W.G.	FAN RPM	MOTOR HP / WATT	BHP	SONES	TYPE OF FAN	TYPE OF DRIVE	INTERLOCK WITH	VOLTS/PH/HZ	MANUFACTURER	MODEL No.	SEE NOTES
TEF-A	PUBLIC TOILETS	IN CEILING	100	0.25	650	29.7W	–	2.0	CEILING	DIRECT	RTU-1 & 2	120/1/60	GREENHECK	SPB1105S	1,2
TEF-B	LOCKER ROOM TOILETS	IN CEILING	205	0.375	1000	67W	–	2.0	IN-LINE	DIRECT	RTU-1 & 2	120/1/60	GREENHECK	CSP-A250	1,3

1. MULTIPLE UNITS, SEE PLAN.
2. CONTINUOUS VENTILATION COMPATIBLE.
3. WC-8x8 HOODED WALL CAP.

SCHEDULE FOR CEILING MOUNTED SUPPLY AIR DIFFUSERS

CFM RANGE	NECK SIZE INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE INCHES	MANUFACTURER	MODEL No.
0-100	6"ø	600	24"x24"	TITUS	OMNI
101-200	8"ø	↓	↓	↓	↓
201-320	10"ø	↓	↓	↓	↓

NOTES:
ALL DIFFUSERS TO HAVE EQUALIZING GRID; NO DAMPER
2 WAY 3 WAY DIFFUSERS NECK
SIZE BASED ON 200% & 133% OF INDICATED CFM RESPECTIVELY.

SYMBOL LIST AND ABBREVIATIONS

ABBREVIATION	SYMBOL	DESCRIPTION	ABBREVIATION	SYMBOL	DESCRIPTION
		FLEXIBLE DUCTWORK	TR		TOP REGISTER
		NEW DUCTWORK	AHU		AIR HANDLING UNIT
		DUCTWORK WITH INTERNAL ACOUSTIC LINING	EF		EXHAUST FAN
		SUPPLY AIR DUCTWORK	CU		CONDENSING UNIT
		RETURN AIR DUCTWORK	SP		STATIC PRESSURE
		SPLITTER DAMPER	UH		UNIT HEATER
		90 DEGREES DUCT ELBOW WITH DOUBLE TURNING VANES	ESP		EXTERNAL STATIC PRESSURE
		SUPPLY DUCT RISER UP	OA		OUTSIDE AIR
		SUPPLY DUCT RISER DOWN	FF		FINISH FLOOR
		RETURN/EXHAUST DUCT RISER UP	AFF		ABOVE FINISH FLOOR
		RETURN/EXHAUST DUCT RISER DOWN	HC		HUNG CEILING
CD		FOUR WAY BLOW CEILING DIFFUSER	NIC		NOT IN CONTRACT
CD		THREE WAY BLOW CEILING DIFFUSER	FPM		FEET PER MINUTE
CD		TWO WAY BLOW CEILING DIFFUSER	NTS		NOT TO SCALE
CD		TWO WAY BLOW CEILING DIFFUSER	CFM		CUBIC FEET PER MINUTE
CR		CEILING REGISTER		S	DUCT MOUNTED SMOKE DETECTOR
VD		MANUAL VOLUME DAMPER	AD		ACCESS DOOR
FC	FC	FLEXIBLE CONNECTION	FD		FIRE DAMPER
BG		BOTTOM GRILLE		C	CARBON DIOXIDE SENSOR
DO		DUCT OPENING ABOVE HUNG CLG.		T	THERMOSTAT
SQ.FT.		RETURN AIR PATH MIN. SQ. FT. OPEN IF WALL GOES UP TO SLAB			
		DOOR LOUVER	CFM		CUBIC FEET PER MINUTE
		1" DOOR UNDERCUT			
TD		TRANSFER DUCT & GRILLE	SD	S / S	SMOKE DAMPER
TD		TRANSFER OPENING	MD		MOTORIZED DAMPER

NEW ROOFTOP UNIT SCHEDULE

DESIGNATION	RTU-1	RTU-2
SERVES	GYM	GYM
DISCHARGE	HORIZONTAL	HORIZONTAL
CONTROL	THREE STAGE COOLING MULTI SPEED FAN	THREE STAGE COOLING MULTI SPEED FAN
FAN:		
AIR QUANTITY (CFM)	3200	3200
EXT. S.P. (IN. WG)	1.6	1.6
DRIVE	DIRECT DRIVE 3 HP MOTOR	DIRECT DRIVE 3 HP MOTOR
COOLING COIL:		
EAT DB/WB (°F)	80/67	80/67
LAT DB/WB (°F)	57.2/55.5	57.2/55.5
TOTAL LOAD (MBH)	120	120
SENSIBLE LOAD (MBH)	86	86
OUTSIDE AIR (CFM)	800	800
HEATING CAPACITY:		
TYPE	GAS	GAS
HEATING INPUT (MBH)	200	200
HEATING OUTPUT (MBH)	162	162
NO. OF STAGES	2	2
ELECTRICAL DATA:		
VOLTS/PHASE/HZ	208/3/60	208/3/60
COMPRESSOR NO. 1 (RLA)	25.8	25.8
COMPRESSOR NO. 2 (RLA)	9.7	9.7
OUTDOOR FAN QTY.	1	1
OUTDOOR FAN (FLA EA.)	2.8	2.8
INDOOR FAN (FLA)	8.8	8.8
MCA (AMPS) (UNIT)	54	54
MAX. FUSE SIZE (AMPS)	70	70
APPROX. WEIGHT (LBS.)	1300	1300
EER / SEER OR IEER	11.0/14.6	11.0/14.6
MANUFACTURER MODEL NUMBER	TRANE YSJ120A350M	TRANE YSJ120A350M
SEE NOTES	1 THROUGH 11	1 THROUGH 11

NOTES:

Included System Options
1. MODULATING HOT GAS REHEAT – FAC
2. HINGED ACCESS DOORS – FAC
3. 2 IN MERV 8 FILTERS – FAC
4. STANDARD ECONOMIZER – FAC
5. BAROMETRIC RELIEF BY CONTRACTOR
6. DISCONNECT – FAC
7. MULTISTAGE VOLUME – FAC
8. ROOF CURB
9. HUMIDITY SENSOR – FLD
10. GFCI – FLD WIRED/FAC
11. BACNET COMPATIBLE 7-DAY PROGRAMMABLE THERMOSTAT

Standard Features
1. Crankcase Heater

SCHEDULE FOR SIDEWALL SUPPLY AIR GRILLES

CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
125	8x8	600	9-3/4" X 9-3/4"	TITUS	300RS

SCHEDULE FOR NON DUCTED TRANSFER AIR GRILLES T.G.

SYMBOL	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
	22x22	250	24x24	TITUS	350RL

SCHEDULE FOR SPIRAL DUCT MOUNTED SUPPLY GRILLES (SG)

CFM	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
400	12"x10"	600	13-3/4" X 11-3/4"	TITUS	S300 FS

WITH EXTRACTOR SET AT 45° DN.

SCHEDULE FOR DUCT SYSTEM RETURN/EXHAUST AIR REGISTERS

CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
0-75	6"X6"	400	7-3/4" X 7-3/4"	TITUS	355RL
76-140	8"X8"	↓	9-3/4" X 9-3/4"	↓	↓
141-300	12"X12"	↓	13-3/4" X 13-3/4"	↓	↓
315-705	22"X22"	↓	23-3/4" X 23-3/4"	↓	↓
3000	30"X30"	550	31-3/4" X 31-3/4"	↓	↓

SCHEDULE OF ELBOW SILENCERS

NO.	SERVICE	AIR QTY. CFM	MAXIMUM P.D. IN INCHES OF W.G.	TRAP SIZE W x H IN.	MANUFACTURER	MODEL NO.	DYNAMIC INSERTION LOSS DB OCTAVE BAND 1	2	3	4	5	6	7	8
ST-1	RTU-1 RETURN	3200	0.13	24 x 32	BRD HUSHCORE	HD-EZ40MRE	10	15	18	20	26	31	30	25
ST-2	RTU-2 RETURN	3200	0.13	24 x 32	BRD HUSHCORE	HD-EZ40MRE	10	15	18	20	26	31	30	25

IAC 3ELBM-LFM ELBOW SILENCERS ARE APPROVED EQUAL.

SCHEDULE OF ENERGY RECOVERY VENTILATOR

BASED ON CONSERV NEWTON METALLO 732-893-8585

UNIT NO.	SERVICE	LOCATION	SUPPLY RETURN AIR CAPACITY CFM	OUTSIDE AIR DB/WB COOLING	OUTSIDE AIR DB/WB HEATING	RETURN AIR DB/WB COOLING	RETURN AIR DB/WB HEATING	LEAVING AIR TEMP DB/WB COOLING	LEAVING AIR TEMP DB/WB HEATING	TOTAL CAPACITY MBH COOLING	TOTAL CAPACITY MBH HEATING	ELECTRICAL DATA VOLTS/PH/HZ	MCA	MOCP	UNIT MODEL No.	WT. LBS	SEE NOTES
ERV-1	OUTSIDE AIR	ROOF	995/995	95/75	10	75/63	70	80.4/66.6	54	32	47	208/1/60	12	15	N2XH	700	1-4

NOTES:
1. PROVIDE ECM MOTORS, MOTORIZED DAMPERS STARTER WITH MANUAL ADJUSTMENT, NON-FUSED DISCONNECT, 24v TRANSFORMER/RELAY PACKAGE.
2. MERV 8 TA FILTERS.
3. INSTALL ON ROOF CURB
4. INTERLOCK WITH TRANE CONTROL PANEL

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF INDOOR UNIT SCHEDULE

	System Tag	System 1	System 1	System 1	System 1	System 1	System 1	System 2	System 2	System 2
	Tag Reference	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6	FC-7	FC-8	FC-9
Nominal Data	Room Name									
	M-NET Address	1	2	3	4	5	6	7	8	9
	Model	TPLFYP008FM140A	TPLFYP008FM140A	TPEFYP006MS140C	TPKFYP008HM142A	TPKFYP008HM142A	TPEFYP006MS140C	TPEFYP018MS140C	TPEFYP018MS140C	TPEFYP018MS140C
	Type	Ceiling-Cassette (Four-Way)	Ceiling-Cassette (Four-Way)	Ceiling-Concealed (Ducted)	Wall -Mounted	Wall -Mounted	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)
	Nominal Cooling Capacity (BTU/h)	8,000	8,000	6,100	8,000	8,000	6,100	18,100	18,100	18,100
	Nominal Heating Capacity (BTU/h)	9,000	9,000	6,800	9,000	9,000	6,800	20,100	20,100	20,100
Design Conditions	Cooling Design Entering Temp DB/WB (°F) / [Water in temp]	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0
	Heating Design Entering Temp DB/WB (°F) / [Water in temp]	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
	Cooling Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Heating Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Refrig Pipe Dim Liquid/Suction (inch)	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2
Performance Data	Cooling Total Capacity (BTU/h)	8,010.7	8,010.7	6,108.1	8,010.7	8,010.7	6,108.1	18,124.1	18,124.1	18,124.1
	Cooling Sensible Capacity (BTU/h)	6,221.6	6,221.6	5,143.2	6,815.5	6,815.5	5,143.2	12,805.8	12,805.8	12,805.8
	Heating Capacity (BTU/h)	8,996.1	8,996.1	6,797.1	8,996.1	8,996.1	6,797.1	20,091.3	20,091.3	20,091.3
	Estimated Cooling Coil LAT (°F) / [LWT]	61.3	61.3	60.3	64.4	64.4	60.3	57.2	57.2	57.2
	Estimated Heating Coil LAT (°F) / [LWT]	96.5	96.5	95.5	90.2	90.2	95.5	105.1	105.1	105.1
Fan / Water Flow Data	Fan Speed Setting	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
	Peak Fan Airflow (cfm) / [Design gpm]	315	315	247	413	413	247	530	530	530
	Max Fan ESP Setting 208V/230V (IN WG)			0.2/0.2			0.2/0.2	0.2/0.2	0.2/0.2	0.2/0.2
	Sound Pressure Per Fan Speed 208V/230V (dBA)	26-30-33	26-30-33	22-24-28/22-24-28	34-39-43	34-39-43	22-24-28/22-24-28	30-34-37/30-34-37	30-34-37/30-34-37	30-34-37/30-34-37
Electrical Data	Voltage / Phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase
	Power Cooling 208V/230V (kW)	0.020	0.020	0.050	0.030	0.030	0.050	0.090	0.090	0.090
	Power Heating 208V/230V (kW)	0.02	0.02	0.03	0.03	0.03	0.03	0.07	0.07	0.07
	Electrical MCA/MFS	0.28/0.28/15	0.28/0.28/15	0.47/0.50/15	0.38(208V)/0.38(230V)/15	0.38(208V)/0.38(230V)/15	0.47/0.50/15	1.20/1.33/15	1.20/1.33/15	1.20/1.33/15
	Condensate Removal Rate (gal/hr)	0.25	0.25	0.12	0.15	0.15	0.12	0.66	0.66	0.66
	Actual Port Assignments									
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
3 See outdoor unit schedule for outdoor ambient conditions, connected capacity, and other factors associated with corrected capacities
4 See schematic piping/control diagram for indication of required indoor unit remote controllers, system controllers, and integration devices.
5 Full demand corrected capacity includes de-rate associated with indoor vs. outdoor connected capacity indicated on outdoor unit schedule for associated system.
Partial corrected capacity assumes sufficient diversity exists such that the connected capacity de-rate does not apply.
It is the designer's responsibility to ensure "Diamond System Builder" is set in the appropriate output capacity setting (full demand/partial demand) prior to generating this schedule.
6 It is recommended to always base heating corrected capacity on full demand.
7 Provide Condensate Pump for Wall Mounted Indoor Units up to 120,000 BTUs 100-240VAC

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF OUTDOOR UNIT SCHEDULE

	System Tag	System 1	System 2
	Tag Reference	ACCU-1	ACCU-2
Nominal Data	M-NET Address	51	57
	Model Number	NTXMSM60A182AA	NTXMSM60A182AA
	Modules	P60	P60
	Nominal Cooling Capacity (BTU/h)	60,000	60,000
	Nominal Heating Capacity (BTU/h)	66,000	66,000
	Cooling Efficiency IEER/EER [SEER]	0 / 12.2 [18.9]	0 / 12.2 [18.9]
	Heating COP @ 47°F [HSPF]	3.9 [11.35]	3.9 [11.35]
	Nom System Connected Capacity (% of NOM)	73.3 %	90.0 %
Design Conditions	Design Cooling Outdoor Temp DB (°F)	95.0	95.0
	Design Heating Outdoor Temp WB (°F)	43.0	43.0
	Max Pipe Length from BC or 1st Joint (feet)	0.0	0.0
	Refrig Pipe Dim High/Low Pressure (inch) (See Note 4)	3/8 / 3/4	3/8 / 3/4
Performance Data	Corrected Cooling Total Capacity (BTU/h)	60,080.0	60,080.0
	Corrected Heating Capacity (BTU/h)	64,652.0	64,652.0
	Sound Pressure (dBA)	58/59	58/59
Compressor Data	Compressor Type	SCROLL	SCROLL
	Compressor Quantity	1	1
	Preliminary Added Field Charge (See Note 5)	5.6	5.6
Electrical Data	Voltage / Phase	208/230V / 1-phase	208/230V / 1-phase
	MCA 208/230 or [460V]	36	36
	Recommended Fuse Size (RFS)	40	40
	MOCP	50	50
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
3 Efficiency values for EER, IEER, COP are based on AHRI 1230 test method for mixture of ducted & non-ducted indoor units.
4 For systems with multiple modules, refrigerant pipe dimensions indicate total system combined piping downstream of module twinning.
5 Added field charge listed is in addition to factory charge, this must be updated based upon final as-built piping layout.
6 Factory representatives shall review the project prior to and throughout the installation of CITY MULTI equipment
7 Factory representatives shall startup and commission CITY MULTI equipment upon completion of equipment installations
8 Factory representatives shall provide on-site assistance for the BMS integration of the CITY MULTI equipment
9 Factory representatives shall provide end-user training on the CITY MULTI equipment upon completion of the installation of equipment

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MECHANICAL SCHEDULES

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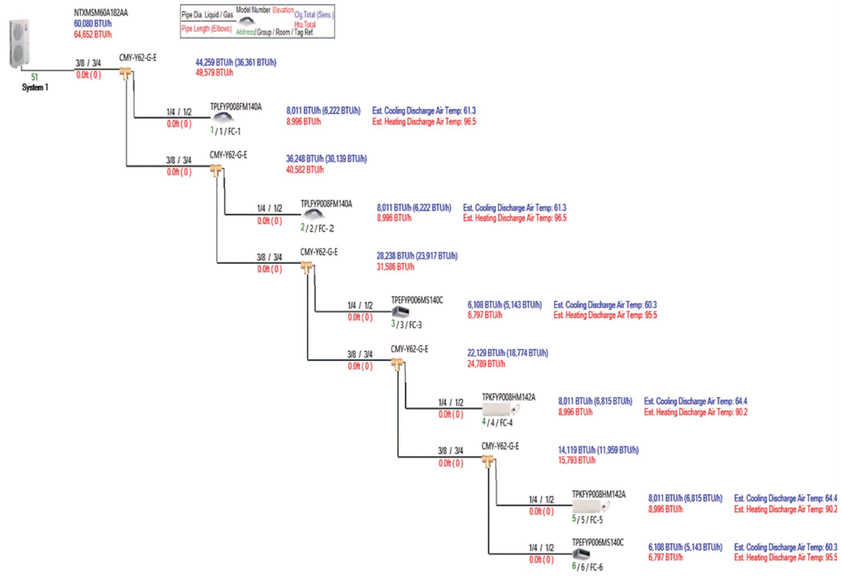
Centralized System - 1 : System 1

Piping Diagram Image (Design View)



Centralized System - 1 : System 2

Piping Diagram Image (Design View)

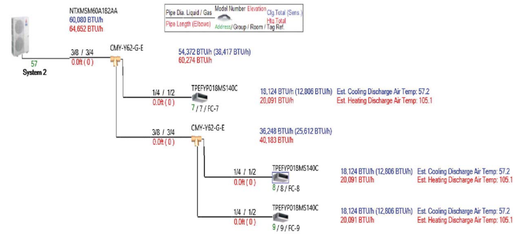


DIAGRAM SYMBOL LEGEND	
DISPLAY	DESCRIPTION
—#/#—	POWER WIRE
———	CONTROL WIRE
— — —	REF. PIPE

CONT.No	PAGE

CITY MULTI

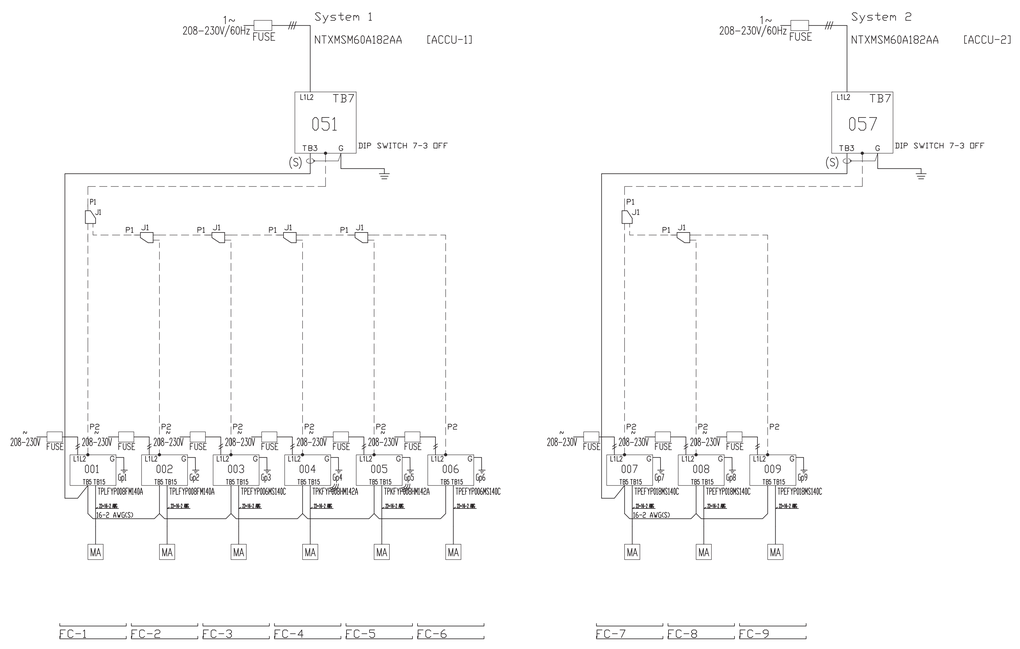
SYSTEM SCHEMATIC DWG.

This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.

1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

PIPING AND CONTROLS	
SYMBOL	BRANCH PIPE MODEL NAME
J1	CMY-Y62-G-E
SYMBOL	LIQUID PIPE/GAS PIPE SIZE
P1	3/8 / 3/4
P2	1/4 / 1/2
SYMBOL	MODEL NUMBER
MA	TAC-KMA24J



Diamond System Builder
sw: 4.5.4.7 ddb: 4.5.2.12
8/18/2023 1:38 PM

REMARKS
Comments

09.14.23 ISSUED FOR BID
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HALLEL BUILDING
GYMNASIUM ALTERATION

175 ROUTE 340 SPARKILL, NY 10976

arcari + iovino
ARCHITECTS PC

ONE KATHERINE STREET
LITTLE FERRY, NJ 07643
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EDWARD ARCARI NY#020765 ANTHONY IOVINO NY#023349

Omdex Incorporated
Consulting Engineers

21 Cross Avenue
Midland Park, NJ 07432-1811
(201) 444-0753 FAX (201) 444-0839

MECHANICAL PIPING
AND WIRING DIAGRAMS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

M.202

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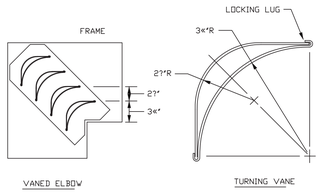
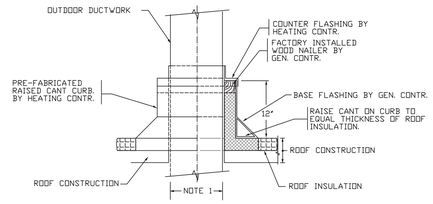


NOTES:
1. LOCKING LUGS INTEGRAL WITH VANE.
2. MAXIMUM UNSUPPORTED VANE LENGTH 48".
3. FRAMES - BOLTED OR RIVETED TO ELBOW.
4. VANES AND FRAMES - SAME GAUGE AS ELBOW.

DOUBLE THICKNESS TURNING VANES FOR SQUARE ELBOW

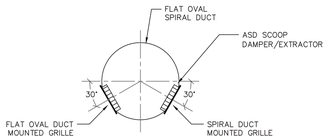
NOT TO SCALE:



NOTE:
ROOF OPENING TO BE 2" LARGER THAN DUCT DIMENSIONS INDICATED ON PLANS.

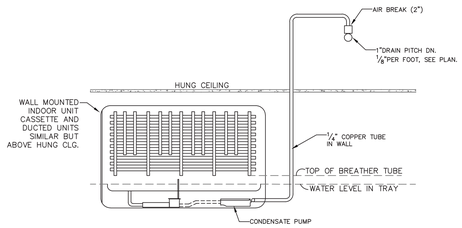
ROOF CURB DETAIL FOR DUCT PENETRATION

NOT TO SCALE:



EXPOSED DUCT GRILLE MOUNTING

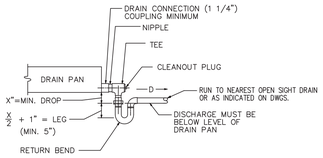
N.T.S.



ENSURE THAT END OF DISCHARGE TUBE IS HIGHER THAN WATER LEVEL IN EVAPORATOR DRAIN PAN. END OF TUBE MUST EMPTY INTO LARGER DIAMETER DRAIN PIPE AND MUST HAVE AIR BREAK TO PREVENT SIPHONING.

INDOOR UNIT CONDENSATE REMOVAL DETAIL

NO SCALE

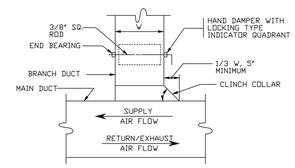


X = NEGATIVE INTERNAL STATIC PRESSURE AT FAN INLET.

NOTES:
1. ALLOW SUFFICIENT SPACE BELOW DRAIN PAN FOR TRAP
2. PITCH DRAIN FOR PROPER RUN - OFF.
3. MANUALLY, PRIME FILL TRAP BEFORE START-UP TO FORM INITIAL DRAIN SEAL.
4. SUPPORT LENGHTY DRAIN LINES TO PREVENT SAG AND CONDENSATE OVERFLOW.

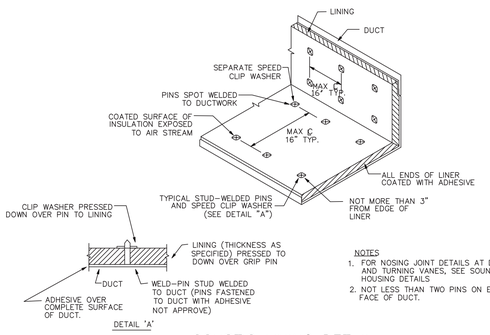
DRAIN PAN WATER SEAL PIPING DRAW THRU UNIT

NOT TO SCALE



RECTANGULAR DUCT TAP WITH VOLUME DAMPER

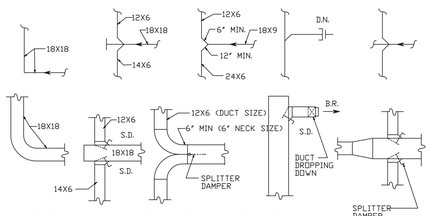
NOT TO SCALE:



NOTES
1. FOR NOSING JOINT DETAILS AT DAMPER AND TURNING VANES, SEE SOUND LINING HOUSING DETAILS
2. NOT LESS THAN TWO PINS ON EACH FACE OF DUCT.

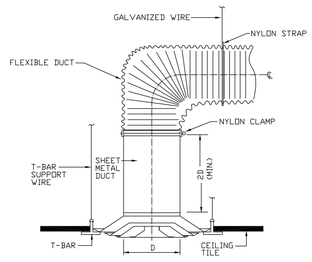
ACOUSTIC LINING DETAIL

NOT TO SCALE:



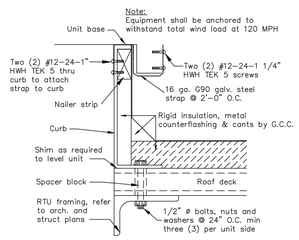
TYPICAL SINGLE LINE DUCT DETAILS

NOT TO SCALE



FLEXIBLE DUCT CONNECTION TO DIFFUSER

NOT TO SCALE



EQUIPMENT/CURB ANCHORING

N.T.S.
PROVIDE BLOCKING AND/OR OTHER LEVELING METHOD FOR PITHED ROOF.

09.14.23 ISSUED FOR BID
08.25.23 FOR PERMIT

HALLEL BUILDING
GYMNASIUM ALTERATION

175 ROUTE 340 SPARKILL, NY 10976

arcari + iovino ARCHITECTS PC

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(201) 444-0753 FAX (201) 444-0839

MECHANICAL DETAILS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

M.203

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PART 1 _ GENERAL

1.1 GENERAL CONDITIONS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this Section; consult them in detail for applicable instructions.

B. Manufacturers referenced in the technical specifications are for the purpose of establishing a standard of quality. Alternate manufacturers providing the same quality equipment will be given consideration by the Engineer and Architect if they are notified in writing.

1.2 DESCRIPTION

A. WORK INCLUDED: Provide all labor, materials, equipment, plant, tools, and management services for proper and complete execution of all HVAC work. Without restricting the generality of the foregoing, the following items of work are included:

1. Furnish and install (2) two electric cooling gas heating RTUs for the volleyball court.
2. Furnish and install (2) two variable refrigerant flow systems for the first floor lobby, locker rooms and golf simulator consisting of two separate outdoor heat pumps, (9) nine fan coil units and one rooftop energy recovery unit.
3. Furnish and install all ductwork, duct insulation and air outlets as shown on the drawings or as specified.
4. Furnish and install Fire Dampers and ceiling radiation dampers in all fire rated walls and ceilings whether or not shown on drawings.
5. Furnish and install volume dampers as shown on the drawings and/or as required to balance system.
6. Furnish and install all refrigerant and condensate piping, drain pans, accessories, traps and insulation.
7. Furnish and install elbow silencers.
8. Provide shop drawings for all ductwork, controls, mechanical equipment and accessories being installed.
9. Furnish and install all necessary sleeves, inserts, hanger and supports.
10. Furnish and install complete electric/electronic automatic control systems including all wiring as specified.
11. Cutting and rough patching.
12. Obtaining and paying for all necessary permits, inspections and certificates required in connection with this work.
13. Guarantee all work for a period of one year from the final date of acceptance.
14. As built drawings.

1.3 CODES AND QUALITY ASSURANCE

A. The Contractor is responsible for performing all work in a neat, workmanlike manner. All operating procedures shall be strictly adhered to. Each Bidder shall visit the site and become informed as to the conditions of the premises and the extent and character of the work required. No consideration will be granted for any alleged misunderstanding of the Work to be done.
B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

C. All HVAC work, equipment and apparatus shall conform to the most recent requirements of the following:

NY2020 – Building Code of New York State
2018 International Building Code
2018 International Mechanical Code
2018 International Fuel Gas Code
2018 International Energy Conservation Code
ADA – Americans with Disabilities Act
Local Codes and Utility Requirements
NFPA – National Fire Protection Association
NSPC – National Standard Plumbing Code
AMCA _ Air Movement and Control Association, Inc.
SMACNA _ Sheet Metal and Air Conditioning Contractors National Association, Inc.
ASHRAE _ American Society of Heating, Refrigerating, and Air_Conditioning Engineers, Inc.
ASTM _ American Society for Testing and Materials
NEC – National Electrical Code of the NFPA 2005
ASME – American Society of Mechanical Engineers
ADC – Air Diffusion Council
AABC – Associated Air Balance Council
ARI – Air Conditioning and Refrigeration Institute
National Board of Fire Underwriters
UL – Underwriters' Labs.
Requirements of the Owner's Insurance Underwriter

Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the regulations of the current editions of these codes, and the requirements of governmental agencies having jurisdiction, regardless of whether such materials and labor are called for elsewhere in these Specifications. These rules, regulations and codes shall govern as a minimum standard. In the event of conflict with the Contract Drawings or Specifications requiring workmanship or material of a higher quality than required by the above_mentioned rules, regulations, codes and authorities, the most stringent of these documents shall govern.

D. During this work, the Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by the OCCUPATIONAL SAFETY AND HEALTH ACT of 1970. The Engineer and Architect shall be held harmless for any accident, injury, or any other incident resulting from non_compliance with these or any other standards.

E. Drawings are schematic with regard to exact locations and dimensions. Review all Drawings provided, including; Architectural and Structural Drawings, reflected ceiling plans, Plumbing, HVAC, and Electrical Drawings, to confirm all requirements and identify all constraints. The Contractor shall coordinate his work with that of all other trades to avoid conflicts. It is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Architect and Engineer for clarification. Refer to the actual dimensions on the Architectural Drawings and successive related shop drawings. Exact locations of diffusers, registers, thermostats shall be directed by Architect.
F. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make such examination.

G. During the execution of work under this Contract the Contractor shall be responsible for protecting any equipment or structures in the work and adjacent areas.
H. Secure and pay for required authorizations from governmental agencies having jurisdiction.

I. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.

J. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the Contractor's expense.

K. EXPOSED PIPING, DUCTWORK AND CONDUIT: There shall be no exposed piping, ductwork or conduit of any sort; plumbing, fire protection, HVAC or electrical, whether implied by the MEP drawings or not, unless expressly approved by the Architect.

1.4 SUBMITTALS

A. Comply with pertinent provisions of the General Conditions.

B. Product data: In accordance with procedures outlined in the General Conditions, submit:
1. Materials list of items proposed to be provided under this Section, with sources of supply and manufacture;
2. Manufacturers' specifications, catalog cuts and other data needed to prove compliance with the specified requirements. Include shop standards for ductwork fabrication, cuts of duct hangers, clips, supports, attachments, anchors, etc., labeled as to the respective conditions or locations to which they apply.
3. Product substitutions are to be requested in writing, and only in conformance with General Condition's procedures. At the time of submission of cuts for review for all substitutions, clearly indicate Specification Section; provide complete information on the original product and the proposed product for review, and all deviations.
a. Designs are based on a particular manufacturer as shown on the drawing. The structural design, equipment layout, electric systems, gas piping, efficiencies, rebates and aesthetic considerations, are based upon the manufacturer shown on the drawings. While other manufacturers equipment which is mentioned in the specifications may have the same output (tons, CFM, BTUH etc.) they may not have the same weight, dimensions, efficiencies or electrical or gas requirements.

Therefore, if ANY equipment is submitted OTHER THAN those models shown ON THE DRAWINGS, the contractor shall be required to pay for ALL designs, material, labor and equipment required to modify structure, equipment layout, electric, gas, aesthetic, efficiencies (including extra operating costs over a 25 year period) and rebates which are incurred by using said equipment.

C. Samples:
1. Provide Samples of items scheduled to be exposed in the final structure.
2. When specifically so requested by the Contractor and permitted by the Engineer, authorized samples will be returned to the Contractor for installation in the Work.

D. Shop Drawings:
1. Before fabrication or purchase of any work, major equipment or controls, prepare and submit for review, shop drawings of ductwork and major equipment in accordance with "General Conditions". Include all fire dampers, access provisions, etc. Coordinate all of the above with all other trades.
2. Prepare and submit Shop Drawings, showing at a scale not smaller than ¼" = 1'_0" all details of items to be shop fabricated under this Section. Maximum sheet size 30" x 42".
3. Clearly identify by circle and by note "DEVIATION" and by note "INTERFERENCE", in large bold lettering, and deviations from Drawings and Specifications and any potential or unresolved interference condition and assume full responsibility for failure to do so.
4. Submittal shall confirm fabrication and installation is in accordance with recommendations and applicable standards.

5. For mandatory coordination of all work, including that which penetrates structural members, consult General Conditions.

E. Installation Requirements: Furnish and erect all ductwork, hangers, dampers, and all accessories specified, indicated on the drawings or required to assure proper operation of all systems installed under this Section and of all connected equipment furnished under other Sections of these Specifications but requiring services furnished under this Section.

F. Manuals: Upon completion of this portion of the Work, and as a condition of its acceptance, deliver to the Engineer four copies of an operation and maintenance manual compiled in accordance with the provisions of the General Conditions, and these Specifications. Include in each manual:
1. Copy of the authorized Record Documents of this portion of the Work.
2. Copies of all warranties and guarantees.

G. As_built Drawings (maintain in accordance with "General Conditions"): Concurrent with the progress of the Work, the Contractor shall maintain a set of as_built record prints noting in red all changes in the Work. Upon completion of the Work this marked up set of prints is to be turned over to the Owner for his records.

H. All required permits, fees and inspections shall be arranged and paid for by the Contractor. The Contractor shall present to the Owner, properly signed, all required certificates of final inspection and authorization before the Work will be accepted as complete.

1.5 PRODUCT HANDLING

A. General Protection: Do not allow equipment, insulation material, or associated items to become wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 – PRODUCTS

2.1 GENERAL

A. Provide only materials that are new, of the type and quality specified. Where no standards have been established for such materials, provide only materials bearing the UL Label.
2.2 RECTANGULAR DUCTWORK

A. Sheet metal construction shall conform to this Section and applicable requirements of:

SMACNA 15D	High Pressure Duct Construction Standards
SMACNA 15D	Low Pressure Duct Construction Standards
SMACNA	Ducted Electric Heat Guide for Air Handling Systems
SMACNA	Fire Damper Guide for Air Handling Systems

B. Except where noted otherwise, sheet metal ductwork shall be constructed of galvanized steel sheets, ASTM A525, A527 and A90.

C. Ductwork shall be detailed and fabricated to keep resistance losses to a minimum. Provide double thickness airfoil type turning vanes for square elbows and use gradual transformations and offsets. Where radius type elbows are used, minimum throat radius shall be equal to the duct width.

D. Duct, plenum and casing access doors, whether or not shown on the Drawings, shall be provided for access to control and indicating instruments, dampers, both sides of coils and filters and to any other device requiring inspection or maintenance. Hardware shall be as manufactured by Ventfabrics, Inc. or authorized equal.

E. Provide splitter dampers to adjust the air volume in the branch ductwork of all duct systems. Dampers shall have an indicating and locking device. Dampers in rectangular ductwork shall be blade type. Provide single blade damper up to 12" size and opposed blade type dampers in ducts over 12" size. Damper construction shall be as recommended in the applicable SMACNA duct manual.

F. Provide test openings with covers for taking pressure and velocity readings as required for balancing and adjusting the air system.

G. Fans and air handling units shall be isolated from ductwork and casings with waterproof and fire resistant fabric connections, Ventfabrics Inc. or authorized equal. Connectors shall have minimum of 3" between metal ends with approximately 1_1/2" of slack and shall be arranged to prevent vibration transmission from fans and units to the ductwork or casing.

H. Rectangular ductwork shall be constructed in accordance with SMACNA LP Duct Manual and SMACNA Standards 15d for minimum of 2" W.G. static pressure positive, and 2" W.G. negative, including metal gauges, reinforcing, fittings, connections, access doors and other accessories.

I. Where space permits, duct elbows shall have a centerline radius and 1_1/2 times the dimensions of the duct in the plane of the bend. Where space does not permit use of this radius, a minimum radius of 1.25 may be used without using concentric splitters, or else turning vanes with square elbows shall be used. Turning vanes shall be of the double walled type of Tuttle & Bailey, or authorized equal make, spaced in accordance with duct size. Shop fabricated turning vanes may be submitted for authorization before erection. Ducts up to 13" deep shall have 2" radius blades on 2" centers; ducts from 13" to 24" shall have 3" radius blades on 3" centers. Where concentric splitters are used, the radii of the bends shall be carefully located for low loss elbows. All elbows shall be made to produce no greater air resistance than elbow with a1.25 radius.

J. Interior of return air duct shall be painted black at areas inside return air grilles only.

2.3 ROUND AND OVAL DUCTWORK

A. Provide double–wall, internally insulated factory fabricated equal to United McGill Corp., United Sheet Metal Division, Acoustl–k27, thermal conductivity 0.27 BTU/hr./SF/Deg. F at 75 F. Except where noted otherwise, sheet metal ductwork shall be constructed of galvanized steel sheets, ASTM A527–67.

B. Branch connections shall be conical tees or laterals. Straight tees or laterals will not be permitted.

C. Round ductwork and fittings shall have lock type spiral construction.

D. Insulation shall be minimum 1" thick. Flame spread 10–20; fuel contributed 10–15, smoke developer 0–20, all per UL ratings.

E. Joints in round and oval ductwork shall be designed to be airtight without the use of tape. Total allowable duct leakage shall conform to Section 4.06 of these specifications.

F. Sheet metal construction shall conform to this Section and applicable requirements of:

SMACNA 15D	High Pressure Duct Construction Standards
SMACNA 15D	Low Pressure Duct Construction Standards
SMACNA	Ducted Electric Heat Guide for Air Handling Systems
SMACNA	Fire Damper Guide for Air Handling Systems.

G. Provide splitter dampers to adjust the air volume in the branch ductwork of all duct systems. Dampers shall have an indicating and locking device. Dampers in rectangular ductwork shall be blade type. Provide single blade damper up to 12" size and opposed blade type dampers in ducts over 12" size. Damper construction shall be as recommended in the applicable SMACNA duct manual.

H. Provide test openings with covers for taking pressure and velocity readings as required for balancing and adjusting the air system.

I. Fans and air handling units shall be isolated from ductwork and casings with waterproof and fire resistant fabric connections, Ventfabrics Inc. or authorized equal. Connectors shall have minimum of 3" between metal ends with approximately 1_1/2" of slack and shall be arranged to prevent vibration transmission from fans and units to the ductwork or casing.

2.4 FLEXIBLE DUCTWORK

A. Flexible ductwork may be used for heating/cooling, exhausting or cooling only applications and shall be as manufactured by Thermoflex, Wiremold, Genflex, or authorized equal. Duct shall be continuous and insulated with 1" thick fiberglass insulation having an outer moisture barrier consisting of a reinforced metalized Mylar/Neoprene laminate with integral attaching devices. Minimum pressure rating shall be 6" W.G. positive and 1" W.G. negative. Operating temperature range shall be –20 to +250° F. Thermal conductance: 0.23 BTU/hr/SF/°F at 75° F.

B. Duct shall be UL listed under UL–181 as Class I Air Duct and shall be IMC authorized for installation in ceiling return air plenum.

C. Use flexible ductwork to connect rigid sheet metal elbow at supply registers to metal supply ductwork. Install using maximum length of 5 feet of flexible ductwork with minimum centerline radius of bends not less than twice duct diameter and with no more offsets than an equivalent 90 degree elbow. Provide band strap hangers with saddle supports under flexible duct runs to keep supports from sagging. Stretch duct enough to smooth out internal corrugations.

D. Connect flexible ductwork to collars of rigid ductwork and air delivery devices with locking clamps and "3M Brand" EC800 tape or authorized equal.

2.5 INTERIOR DUCTWORK INSULATION

A. Provide insulation (R–8) for all concealed supply and return ductwork. Ductwork located in attic shall be considered concealed.

B. Insulate with a flexible fiberglass insulation. "Ductwrap", 2–1/4" thick, 3/4 pound per cubic foot density, "K" value at 75° F, maximum 0.26 BTU/HR/SF/degrees F/HR with factory applied reinforced multi–purpose black polyethylene vapor barrier

C. Insulation for concealed ductwork shall be secured to the ductwork with adhesive, Benjamin Foster 81–91, or authorized equal. Apply adhesive in strips with a minimum 50% coverage. Seal all joints with 3" wide strips of the facing material applied using Benjamin Foster 81–91 on both surfaces.

D. Acceptable Manufacturers:
1. Certainteed Corp., Valley Forge, PA
2. Owens–Corning Fiberglas Corp., Toledo, OH
3. Armstrong Cork Co., Lancaster, PA

E. Adhesives and insulation materials: composite fire and smoke hazard ratings maximum 25 for Flame Spread and 50 for Fuel Contributed and Smoke Developed. Adhesives to be waterproof.

2.6 PIPING

A. A/C unit drain: Type "L" copper pipe with wrought copper 95–5 soldered fittings.
B. Refrigerant: ACR copper tubing with 300 lb. brazed fittings.
C. Combustion Exhaust & Intake: Schedule 40 PVC as recommended by Furnace Manufacturer.

2.7 PIPE INSULATION

A. All insulation shall have composite (insulation, jacket facing and adhesive used to adhere jacket or facing to the insulation) fire an smoke hazard ratings as tested by Procedure ASTM E–84, NFPA 255 and UL 73, not exceeding flame spread of 24, fuel contributed of 50 and smoke developed of 50. Accessories such as adhesives, mastics, cements, tapes and cloths for fittings shall have component ratings as listed above.
B. The materials as specified below have been selected from the catalog of Owens–Corning Fiberglass Corporation and are representative of the quality, design and finish as desired. Insulation as manufactured by other manufacturers may be submitted for approval, provided the products meet fully in all respects (such as density, moisture absorption, alkalinity, thermal–conductivity, jacket, etc.) to the materials as delineated below.
C. Insulate AC unit drain piping runouts with 1/2" thick section fiberglass pipe insulation with all service jacket.
D. Insulate all refrigerant piping with 1" thick Armaflex.

2.8 FIRE STOPPING

A. Packing of openings, where ducts and pipes penetrate fire barriers, shall be done with Rockwool insulation as made by United States Gypsum Co. or 3M Fire Barrier 2001 Silicone RTV Foam.

B. Insulation shall comply with Fed. Spec. HH–I–558, Form A, Class 4, K=0.24, melting point 2000 degrees F.

2.9 DIELECTRIC PIPE FITTINGS

A. Provide at all connections between dissimilar metals (e.g. steel, copper, iron, etc.), nylon insulator, Buna–N gasket, maximum temperature 210° F, 250 psig pressure rating, conforming to ANSI B16.39, B2.1 and B1.201 and Federal Specification WWU–531E and WWU–516B.

2.10 OTHER MATERIALS

A. Provide all other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the authorization of the Engineer.

PART 3 _ FANS AND HVAC EQUIPMENT

3.1 GENERAL REQUIREMENTS

A. The following requirements apply in general to all equipment specified. Certain items may not appropriately apply to every piece of equipment.

B. Provide required copies of manufacturers catalog or data sheets for each piece of equipment showing illustrations, details, sizes, dimensions, performance characteristics, wiring diagrams, controls and other pertinent details.

C. All main service supplies shall match the characteristics in the Drawings.

D. All equipment wires, and electrical fittings shall be copper only except the internal wire of control transformers which may be aluminum, if copper termination is provided.

E. All motors shall be built and tested in accordance with the latest standards of NEMA, ANSI, IEEE and the National Electric Code, as applicable, and shall be energy efficient motors of NEMA Design A or B. Minimum motor full load power factor shall be 85%. Motors shall be capable of a minimum 20 second stall at locked rotor without damaging the insulation or windings.

F. Based on 1800 RPM, 3 phase operation for all HVAC equipment, motors shall be guaranteed by the motor manufacturer and when tested in accordance with IEEE Test #112A, Method B, shall be as follows:

TEFC HORSEPOWER RATING	DRIP PROOF EFFICIENCY	EFFICIENCY
1 _ 3	86.5%	88.5%
3	86.5%	88.5%
5	87.5%	88.5%
7 1/2 _ 10	89.5%	91.0%
15 _ 20	91.0%	91.7%
25 _ 40	93.0%	93.0%
50 _ 75	94.1%	94.5%

G. Provide gaskets installed to prevent leakage between each filter and between the filter and its supporting frame. Filter efficiencies shall be average atmospheric dust spot efficiencies tested in accordance with ASHRAE Standard 52_76.
H. Fans shall be tested and rated in accordance with the applicable AMCA Standard Test Code and Certified Ratings Program, and shall bear the AMCA Certified Rating Seal.

I. Motor drives shall be protected by belt guards furnished by the equipment manufacturer in accordance with SMACNA and OSHA requirements.

3.2 MOTOR STARTERS

A. Furnish motor starters for every item which requires a starter, furnished under this Section.

PART 4 _ EXECUTION

4.1 TEMPORARY HEAT, POWER AND LIGHTING

A. Provide temporary heat to allow all sections to work unencumbered at a temperature minimum of 55 F, 24/7. Heating equipment and fuel source shall be independent of the Owner's system and shall be at the expense of this contractor only. Owner's heating system and fuel source shall not be used during construction.

B. It is the Contractor's responsibility to run power from point of availability as provided in the Electrical Contract, to the point of use. Provide local temporary lighting as required for performance of the work in this section.

4.2 EXISTING CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
4.3 PREPARATION

A. Coordination:
1. Coordinate as necessary with other Sections to assure proper and adequate provision in the work of those Sections for interface with the work of this Section.
2. Coordinate the installation of air distribution items with the schedule for work of other trades to prevent unnecessary delays in the total work.
3. Where ductwork and other air distribution items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports and ductwork to clear the encroachment.
4. Coordinate fire damper locations and sizes with trades responsible for constructing the walls, floors and ceilings in which they are to be mounted.
5. Demolition: Contractor shall perform all demolition of the existing installation as required to complete construction as indicated on the Drawings. Coordinate all work with Owner.
B. Data indicated on the Drawings and in these Specifications are intended to convey the Engineer's intentions only, as such their accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

C. Where devices are not specifically located on the Drawings, locate as determined in the field by the Architect or Engineer. Where devices are installed without such specific direction, relocate as directed by the Architect or Engineer, at no additional cost to the Owner.

D. Verify all measurements at the site. No extra compensation will be allowed because of differences between work shown on the Drawings and actual measurements at the site of construction.

E. Provide all cutting and patching, fire caulking and sealing to standards of applicable Sections of these Specifications.

F. The HVAC Drawings are diagrammatic, but are required to be followed as closely as actual construction and work of other Sections will permit. Where deviations are required to conform with actual construction and the work of other Sections, make such deviations without additional cost to the Owner.

4.4 INSTALLATION

A. Ductwork and Register Installation:
1. Ductwork shall be suspended or supported in accordance with SMACNA, latest edition.
2. Unless indicated otherwise, branch connections to the main shall be "Boot" type connections.
3. Ductwork in back of registers and grilles shall be painted flat black as ductwork is being installed.
4. Paint inside of all air outlets and connecting plenums with one coat of black paint, or provide all such items factory pre–painted.
5. Paint exposed duct runs, to standards of the Architect.
6. Cap duct openings to exclude dirt until registers and equipment are installed. Vacuum clean all ductwork prior to installation of registers, etc.
7. Clean all registers and diffusers.

B. Sleeves or holes in masonry: Provide and install accurately dimensioned and shaped to permit passage of items of this Section.

C. Install draft stops to seal all openings in floors and walls around piping and ductwork. Draft stops shall be neatly fitted to completely seal all openings, securely fastened to the piping, ductwork and building construction, and adequately braced, where required. Draft stop material and construction shall be in accordance with latest applicable NFPA requirements, local building codes and shall have a fire resistive rating as required by the authority having jurisdiction or of the construction penetrated, whichever is more stringent.

D. Equipment Access
1. Install piping, equipment, doors and accessories to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to Owner.
2. Provide access doors for installation by others where valves, motors, coils; or equipment requiring access for maintenance is located in walls or above ceilings. Coordinate location of access doors with Architect and other trades as required.
3. Provide and install access doors where required in ductwork.

E. Pipe Supports
1. Support suspended piping with clevis or trapeze hangers and rods.
2. Space hangers and support for horizontal steel pipes according to the following schedule:

Pipe size:	Maximum spacing on centers:
¾"and smaller:	10'_0"
1" and greater:	12'_0"

3. Space hangers and supports for horizontal copper tubing according to the following schedule:

Tube size:	Maximum spacing on centers:
1 ¼"and smaller:	6'_0"
1 ½"and over:	10'_0"

4. Paint all hangers and rods with 2 coats of an authorized Rustoleum or equal LEAD FREE product, with each coat of a different color or shade. Coordinate colors with Architect.
5. Cast Iron Soil Pipe: at 5 foot intervals and behind every hub.

F. Touch up scratches and abrasions to be invisible to the unaided eye from a distance of 5'_0".

G. For electrically operated equipment, verify the electrical characteristics actually available for the work of this Section and provide equipment meeting those characteristics.
H. Penetration Caulking: caulk all floor and wall penetrations with fire retardant material meeting ASTM B14 and UL 1479 Fire Test Standards. Metcaulk or authorized equal.

I. Control Wiring: provide control wiring as required, to the standards and workmanship of all applicable codes.

J. FIRE BARRIER PLASTIC PIPE CAULKING: Provide where plastic pipe penetrates a rated wall, intumescent–type sealant complying with UL Fire Resistance Directory and ULC Volume 3 Fire Resistance Ratings, UL classified for use with PVC, CPVC, CCPVC, ABS, CCABS, PVDF, PP, PB and FRPP, HILTI FS–ONE or authorized equal.

4.5 PROTECTION AND CLEANING

A. Maintenance of Systems during Temporary Use
1. Lubricate bearings in HVAC Work systems during temporary use.
2. Maintain limit controls, overload devices, and safety controls in operating condition during use.

B. Clean work furnished and installed as part of the Work, including but not limited to equipment, control panels and devices.

C. Comply with requirements for cleaning during construction.
1. Remove debris, leftover piping, tubing, ducting, metal, insulation, cartons, papers, etc., resulting from the Work.
2. Remove all rust, dirt, etc., from Work to be painted and maintain in condition ready for painting.

4.6 TESTING, BALANCING AND ADJUSTING

A. Supply and return air ductwork shall be tested during installation and before application of any exterior insulation or enclosing of the ductwork. Total leakage shall not exceed 5% of design cfm. Provide services of an independent testing and balancing agency; perform work in accordance with Associated Air Balance Council Field Measurement and Instrument form No. 12173, Volume II. All leak testing shall be done in accordance with SMACNA "HVAC AIR DUCT LEAKAGE TEST MANUAL" 15d, First Edition 1985, leakage class 12, seal class C, Table 4–1 and Appendix E for round metal duct. All outlets shall be temporarily capped and sealed securely for leak testing. Test setup shall be as per Figure 3–1 in manual.

B. Filters:
1. Assure that all filters are clean prior to conducting of any testing and balancing.
2. Provide a new set of filters on all HVAC equipment prior to official opening of building.

C. Test and adjust each piece of equipment and each system as required to assure proper balance and operation:
1. Test and regulate ventilation and air conditioning systems to conform to the air volumes shown on the authorized shop drawings.
2. Make tests and adjustments in apparatus and ducts for securing the proper volume and face distribution of air for each grille and ceiling outlet, test and reset each fire damper.
3. Where required, provide pulleys for fans at no additional cost to the Owner, set to drive the fans at speed needed to give the indicated volume.
4. For each system, take the following data in tabulated form:
a. Air volumes at all supply, return, and exhaust outlets;
b. Total cfm supplied;
c. Total cfm returned;
d. Total static pressure at each fan and at each system;
e. Motor speed, fan speed, and input ampere rating for each fan.
f. Documented changes after each trial balance.
g. Noise level both in dba and NC, in each room.
h. Date of each set of data collected shall be indicated on each page of report.
i. Minimum CFM of outside air required by Code, CFM specified, CFM actual.

D. Submit six (6) sets of test and balance reports to the Engineer for review and authorization.

E. Eliminate noise and vibration, and assure proper function of all controls, maintenance of temperature, and operation in accordance with the authorized requirements and applicable codes and standards.
F. Secure required authorization from governmental agencies having jurisdiction, and furnish copies of such to Owner and Architect.

4.7 INSTRUCTION AND DEMONSTRATION

A. Prior to Final Completion, thoroughly demonstrate and instruct Owner's designated representatives in care and operation of all heating and ventilating systems and equipment provided in Heating Work Prime Contract. Provide necessary skilled labor to operate all systems for not less than 5 days and provide required instruction.

B. In addition to Prime Contractor's instruction, arrange for technically qualified factory representatives to train Owner's representative in care, maintenance, and operation of following manufacturer's equipment and systems.

1. Temperature controls.
2. Central Station air handling equipment and units.
3. Unit heaters
4. Exhaust Fans
5. Air conditioning units and equipment

C. Coordinate and schedule time and place of all training through Architect at Owner's convenience.

D. Submit letters verifying satisfactory completion of all instruction including date of instruction, names of persons in attendance and countersigned by authorized representative of Owner.

E. Until final acceptance, Prime Contractor retains full responsibility for systems, even though operated by Owner's personnel during instruction, unless otherwise agreed in writing.
F. During instruction, provide list, sealed in clear plastic, outlining operating, maintenance, and starting precautions and procedures to be followed by Owner for operating systems and equipment.

4.8 GUARANTEE
A. Guarantee all HVAC work for a period of one year after date of completion as measured from date of acceptance by the Owner. Promptly repair and make good any damage to his or the work of other Contractors or Subcontractors during that period that may be caused by defective materials or workmanship. Correct any defects in materials and workmanship without further expense to the Owner. Deliver said written guarantee at time of Owner's acceptance.

4.9 DEBRIS REMOVAL

A. Routinely remove, in an orderly and efficient manner, (and cart away and dispose of, by legal means, off the site and premises), all debris related to work of this Section; worksite and staging areas shall be kept clear of all debris on a daily basis; permit no debris accumulation which poses any threat to life, safety or property. Non–conformance with the foregoing Contract requirements will be subject to all remedies established by the Project General Conditions.

END OF SECTION

09.14.23 ISSUED FOR BID
08.25.23 FOR PERMIT

HALLEL BUILDING
GYMNASIUM ALTERATION

175 ROUTE 340 SPARKILL, NY 10976

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MECHANICAL
SPECIFICATIONS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

M.301

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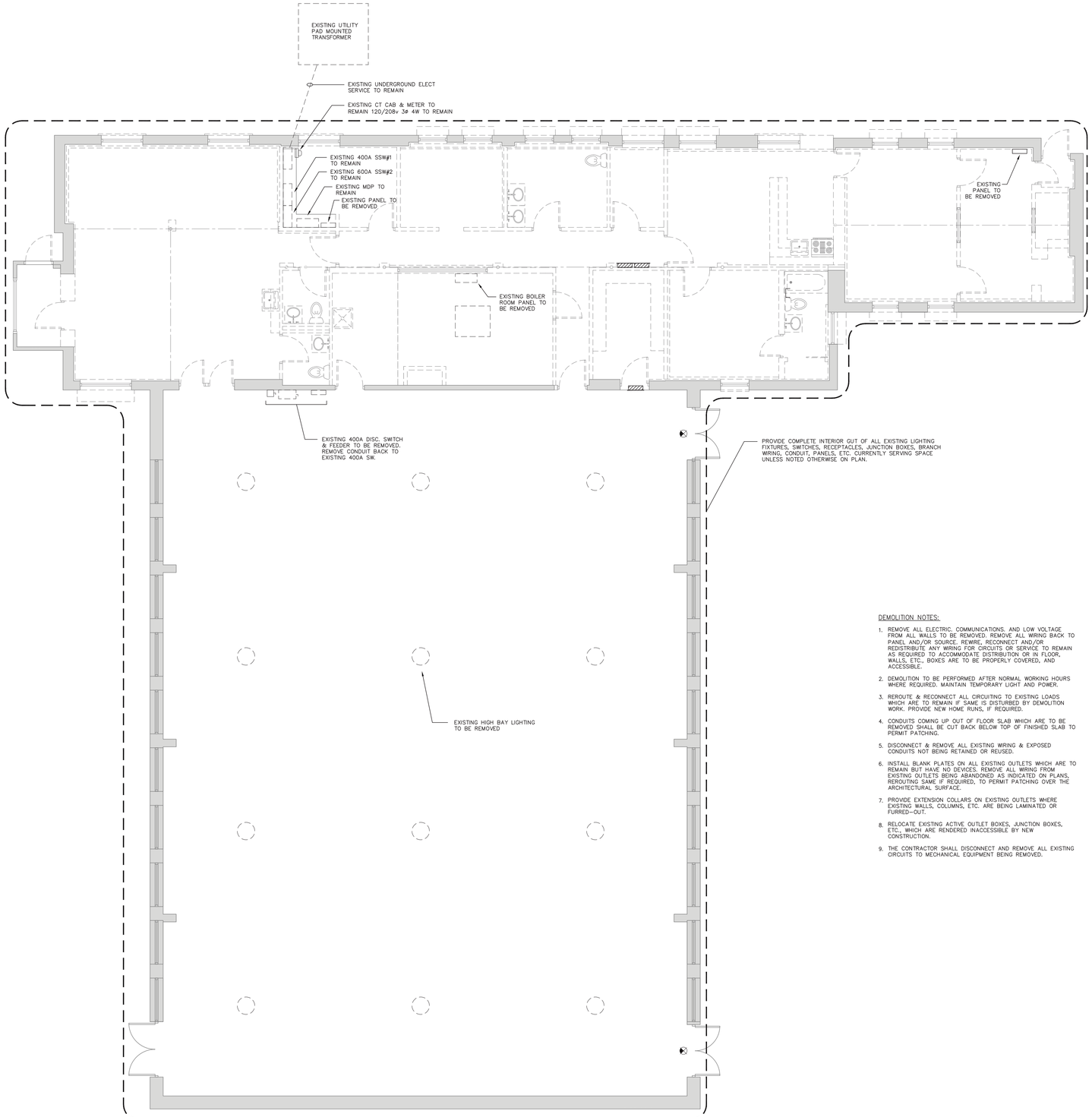

DEMOLITION NOTES:

1. REMOVE ALL ELECTRIC, COMMUNICATIONS, AND LOW VOLTAGE FROM ALL WALLS TO BE REMOVED. REMOVE ALL WIRING BACK TO PANEL AND/OR SOURCE. REWIRE, RECONNECT AND/OR REDISTRIBUTE ANY WIRING FOR CIRCUITS OR SERVICE TO REMAIN AS REQUIRED TO ACCOMMODATE DISTRIBUTION OR IN FLOOR, WALLS, ETC., BOXES ARE TO BE PROPERLY COVERED, AND ACCESSIBLE.
2. DEMOLITION TO BE PERFORMED AFTER NORMAL WORKING HOURS WHERE REQUIRED. MAINTAIN TEMPORARY LIGHT AND POWER.
3. REROUTE & RECONNECT ALL CIRCUITING TO EXISTING LOADS WHICH ARE TO REMAIN IF SAME IS DISTURBED BY DEMOLITION WORK. PROVIDE NEW HOME RUNS, IF REQUIRED.
4. CONDUITS COMING UP OUT OF FLOOR SLAB WHICH ARE TO BE REMOVED SHALL BE CUT BACK BELOW TOP OF FINISHED SLAB TO PERMIT PATCHING.
5. DISCONNECT & REMOVE ALL EXISTING WIRING & EXPOSED CONDUITS NOT BEING RETAINED OR REUSED.
6. INSTALL BLANK PLATES ON ALL EXISTING OUTLETS WHICH ARE TO REMAIN BUT HAVE NO DEVICES. REMOVE ALL WIRING FROM EXISTING OUTLETS BEING ABANDONED AS INDICATED ON PLANS, REROUTING SAME IF REQUIRED, TO PERMIT PATCHING OVER THE ARCHITECTURAL SURFACE.
7. PROVIDE EXTENSION COLLARS ON EXISTING OUTLETS WHERE EXISTING WALLS, COLUMNS, ETC. ARE BEING LAMINATED OR FURRED–OUT.
8. RELOCATE EXISTING ACTIVE OUTLET BOXES, JUNCTION BOXES, ETC., WHICH ARE RENDERED INACCESSIBLE BY NEW CONSTRUCTION.
9. THE CONTRACTOR SHALL DISCONNECT AND REMOVE ALL EXISTING CIRCUITS TO MECHANICAL EQUIPMENT BEING REMOVED.

JOB CONDITIONS NOTES:

1. WHERE EXISTING WIRING & CIRCUITRY WHICH IS TO REMAIN IS LEFT EXPOSED BY DEMOLITION & REMOVAL OF PARTITION & /OR HUNG CEILINGS, REROUTE SUCH WIRING TO MAINTAIN THE CIRCUIT CONTINUITY.
2. WHERE EXISTING WIRING & CIRCUITRY IS TO REMAIN IS LEFT STUBBED UP FROM FLOOR BY THE DEMOLITION & REMOVAL OF PARTITIONS REROUTE SUCH WIRING AS REQUIRED TO MAINTAIN CIRCUIT CONTINUITY & CUT BACK CONDUIT BELOW TOP OF FINISHED SLAB TO PERMIT PATCHING.
3. WHERE EXISTING CIRCUITRY IS BEING UTILIZED FOR CONNECTION OF NEW LOAD OR BEING RETAINED FOR EXISTING LOADS & SUCH CIRCUITRY IS NOT EXACTLY AS INDICATED ON PLANS, MAKE SUCH MODIFICATIONS AS MAY BE REQUIRED TO WIRING TO ACCOMPLISH THE DESIGN INTENT.
4. WHERE EXISTING LIGHTING, EQUIPMENT, WIRING, ETC. IS INDICATED AS REMAINING & SUCH ITEMS INTERFERE WITH THE INSTALLATION OR THE DEMOLITION WORK OF OTHER TRADES, DISCONNECT, REMOVE, RELOCATE TO AVOID CONFLICTS REINSTALL & RECONNECT SUCH ITEMS AS REQUIRED.
5. WHERE EXISTING FIXTURES ARE BEING REMOVED & SUCH REMOVAL DISTURBED THE CIRCUITRY TO FIXTURES WHICH ARE TO REMAIN, PROVIDE ALL NECESSARY MODIFICATIONS & ADDITIONS TO WIRING AS REQUIRED TO RETAIN SERVICE & SWITCH CONTROL FOR REMAINING FIXTURES.
6. FOR PANELS TO REMAIN IN EXISTING AND NEW AREAS CONFIRM ALL CIRCUITS. PROVIDE NEW TYPE WRITTEN PANEL SCHEDULES AND PLASTIC LAMINATED TAGS IN ACCORDANCE WITH SPECIFICATIONS.
7. VERIFY INTEGRITY OF EXISTING WIRING & REPLACE EXISTING OUTLET WITH NEW.

1 DEMOLITION PLAN
3/16" = 1'–0"

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ELECTRICAL DEMOLITION PLAN

SCALE: AS NOTED
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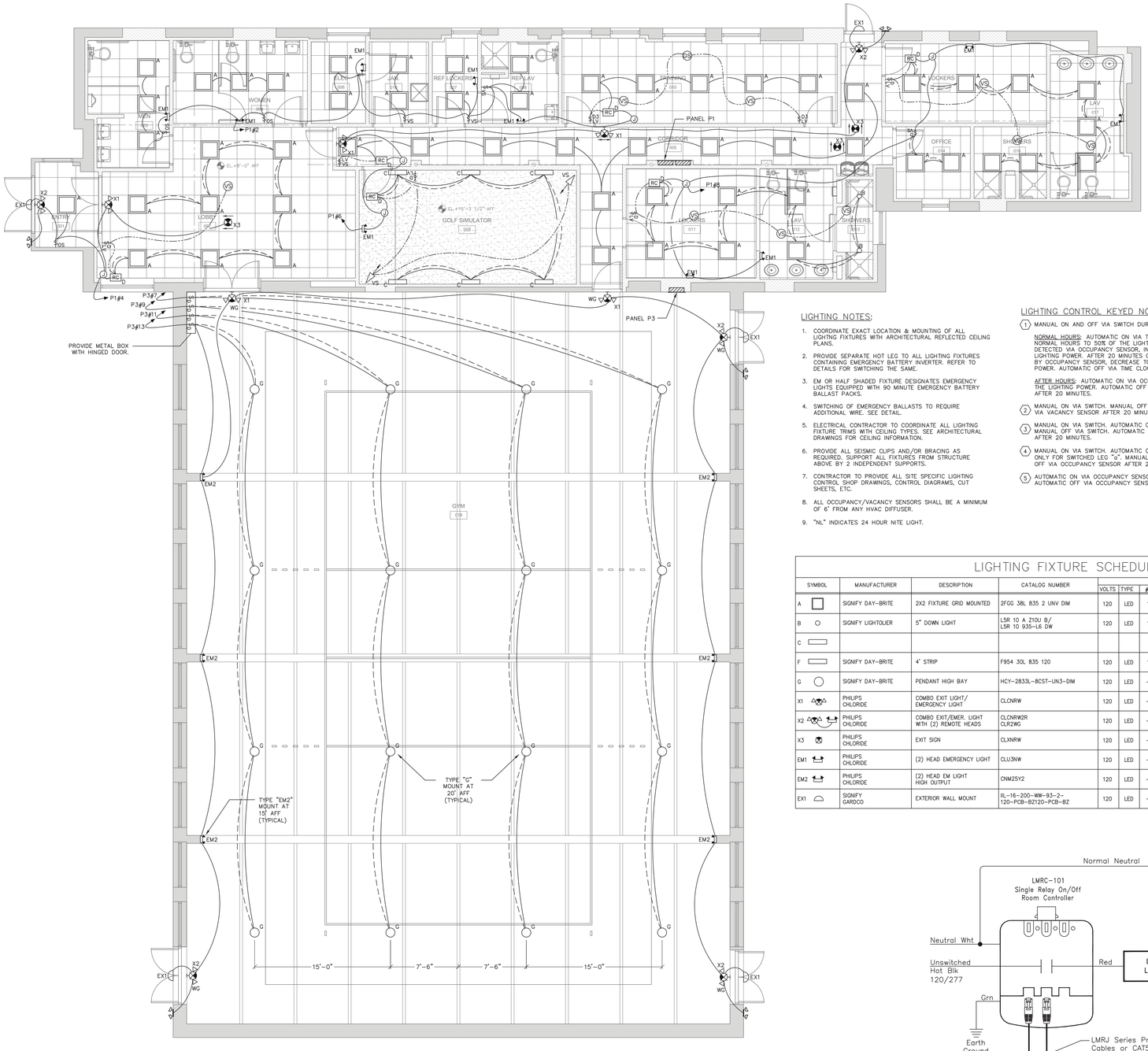


1 FLOOR PLAN
3/16" = 1'-0"

LIGHTING LEGEND

OS U	CEILING MOUNTED LOW VOLTAGE ULTRASONIC OCCUPANCY SENSOR WATTSTOPPER LMUC-100
OS P	CEILING MOUNTED LOW VOLTAGE PASSIVE INFRARED OCCUPANCY SENSOR WATTSTOPPER LMPC-100
OS D	CEILING MOUNTED LOW VOLTAGE DUAL-TECH OCCUPANCY SENSOR WATTSTOPPER LMDC-100
VS U	CEILING MOUNTED LOW VOLTAGE ULTRASONIC VACANCY SENSOR WATTSTOPPER LMUC-100
VS P	CEILING MOUNTED LOW VOLTAGE PASSIVE INFRARED VACANCY SENSOR WATTSTOPPER LMPC-100
VS D	CEILING MOUNTED LOW VOLTAGE DUAL-TECH VACANCY SENSOR WATTSTOPPER LMDC-100
OS	CORNER MOUNTED LOW VOLTAGE DUAL-TECH OCCUPANCY SENSOR WATTSTOPPER LMDX-100
VS	CORNER MOUNTED LOW VOLTAGE DUAL-TECH VACANCY SENSOR WATTSTOPPER LMDX-100
PS	MILTI-ZONE ON/OFF AND DIMMING OPEN LOOP PHOTOSENSOR, WATTSTOPPER LMLS-400 (PRIMARY ZONE ONLY) LMLS-500 (PRIMARY/SECONDARY ZONES)
———	NORMAL WIRING
—·—·—	EMERGENCY WIRING
— — —	LOW VOLTAGE WIRING X2
—··—··—	CAT5 CABLING
- - - - - -	MS/TP CABLING
WG	PROVIDE WIRE GUARD
$	TOGGLE SWITCH, 120/277V 20A DECORA STYLE
$LV	LOW VOLTAGE 1-BUTTON WALL SWITCH, WATTSTOPPER LMSW-101
$3LV	LOW VOLTAGE 3-WAY 1-BUTTON WALL SWITCH, WATTSTOPPER LMSW-101
$2LV	LOW VOLTAGE 3-WAY 2-BUTTON DIMMING WALL SWITCH, WATTSTOPPER LMSW-102
$DLV	LOW VOLTAGE 1-BUTTON DIMMING WALL SWITCH, WATTSTOPPER LMDM-101
$VS	LINE VOLTAGE 1-BUTTON VACANCY SENSOR WALL SWITCH, WATTSTOPPER DW-101
$OS	LINE VOLTAGE 1-BUTTON OCCUPANCY SENSOR WALL SWITCH, WATTSTOPPER DW-101
$VS	LINE VOLTAGE DIMMING VACANCY SENSOR WALL SWITCH, WATTSTOPPER DW-311
$3/4VS	LINE VOLTAGE 1-BUTTON 3-WAY/ 4-WAY VACANCY SENSOR WALL SWITCH, WATTSTOPPER DSW-301
RC 1	LOW VOLTAGE ON/OFF ROOM CONTROLLER WITH 1 RELAY, WATTSTOPPER LMRC-101
RC 2	LOW VOLTAGE ON/OFF ROOM CONTROLLER WITH 2 RELAYS, WATTSTOPPER LMRC-102
RC D	LOW VOLTAGE ON/OFF/0-10V DIMMING ROOM CONTROLLER WITH 3 RELAYS AND 3 0-10V DIMMING OUTPUTS, WATTSTOPPER LMRC-213
RC U	UNIVERSAL DIMMING ROOM CONTROLLER WITH 1 RELAY AND 1 FORWARD PHASE DIMMING OUTPUT, WATTSTOPPER LMRC-221
LMZC	ZONE CONTROLLER WITH ENCLOSURE, WATTSTOPPER LMZC-301
LMBC	NETWORK BRIDGE, WATTSTOPPER LMBC-300

LIGHTING NOTES:

1. COORDINATE EXACT LOCATION & MOUNTING OF ALL LIGHTING FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLANS.
2. PROVIDE SEPARATE HOT LEG TO ALL LIGHTING FIXTURES CONTAINING EMERGENCY BATTERY INVERTER. REFER TO DETAILS FOR SWITCHING THE SAME.
3. EM OR HALF SHADED FIXTURE DESIGNATES EMERGENCY LIGHTS EQUIPPED WITH 90 MINUTE EMERGENCY BATTERY BALLAST PACKS.
4. SWITCHING OF EMERGENCY BALLASTS TO REQUIRE ADDITIONAL WIRE. SEE DETAIL.
5. ELECTRICAL CONTRACTOR TO COORDINATE ALL LIGHTING FIXTURE TRIMS WITH CEILING TYPES. SEE ARCHITECTURAL DRAWINGS FOR CEILING INFORMATION.
6. PROVIDE ALL SEISMIC CLIPS AND/OR BRACING AS REQUIRED. SUPPORT ALL FIXTURES FROM STRUCTURE ABOVE BY 2 INDEPENDENT SUPPORTS.
7. CONTRACTOR TO PROVIDE ALL SITE SPECIFIC LIGHTING CONTROL SHOP DRAWINGS, CONTROL DIAGRAMS, CUT SHEETS, ETC.
8. ALL OCCUPANCY/VACANCY SENSORS SHALL BE A MINIMUM OF 6' FROM ANY HVAC DIFFUSER.
9. "NL" INDICATES 24 HOUR NITE LIGHT.

LIGHTING CONTROL KEYED NOTES:

1. MANUAL ON AND OFF VIA SWITCH DURING ALL HOURS.

   NORMAL HOURS: AUTOMATIC ON VIA TIME CLOCK AT START OF NORMAL HOURS TO 50% OF THE LIGHTING POWER. WHEN MOTION IS DETECTED VIA OCCUPANCY SENSOR, INCREASE TO 100% OF THE LIGHTING POWER. AFTER 20 MINUTES OF NO MOTION BEING DETECTED BY OCCUPANCY SENSOR, DECREASE TO 50% OF THE LIGHTING POWER. AUTOMATIC OFF VIA TIME CLOCK AT END OF NORMAL HOURS.

   AFTER HOURS: AUTOMATIC ON VIA OCCUPANCY SENSOR TO 100% OF THE LIGHTING POWER. AUTOMATIC OFF VIA OCCUPANCY SENSOR AFTER 20 MINUTES.
2. MANUAL ON VIA SWITCH. MANUAL OFF VIA SWITCH. AUTOMATIC OFF VIA VACANCY SENSOR AFTER 20 MINUTES.
3. MANUAL ON VIA SWITCH. AUTOMATIC ON VIA OCCUPANCY SENSOR. MANUAL OFF VIA SWITCH. AUTOMATIC OFF VIA OCCUPANCY SENSOR AFTER 20 MINUTES.
4. MANUAL ON VIA SWITCH. AUTOMATIC ON VIA OCCUPANCY SENSOR ONLY FOR SWITCHED LEG "a". MANUAL OFF VIA SWITCH. AUTOMATIC OFF VIA OCCUPANCY SENSOR AFTER 20 MINUTES.
5. AUTOMATIC ON VIA OCCUPANCY SENSOR. AUTOMATIC OFF VIA OCCUPANCY SENSOR AFTER 20 MINUTES.

LIGHTING CONTROLS:

GENERAL:

1. ALL LIGHTING CONTROLS SHALL BE IN CONFORMANCE WITH NEC, ASHRAE AND ALL LOCAL CODES.
2. ALL LIGHTING CONTROLS SHALL BE OF ONE MANUFACTURER.

PRODUCTS:

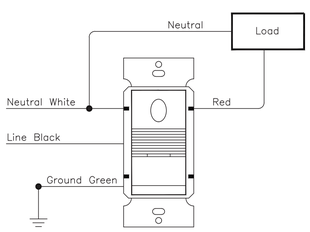
1. ALL PRODUCTS SHALL BE UL LISTED.

SUBMITTALS:

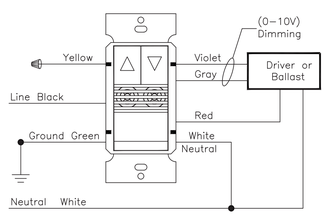
1. CONTRACTOR SHALL OBTAIN THE SERVICES OF A LIGHTING CONTROL VENDOR.
2. VENDOR SHALL PREPARE SITE SPECIFIC FLOOR PLANS AND WIRING DIAGRAMS.
3. PRODUCT DATA SHEETS SHALL BE SUBMITTED ALONG WITH PLANS AND WIRING DIAGRAMS.
4. THE BASIS OF DESIGN IS PER WATTSTOPPER LIGHTING CONTROLS. CONTACT RON LEWERT AT SLS LIGHTING AND CONTROLS FOR SUBMITTAL AND PRICING, 732.815.6931.
5. PROVIDE MANUFACTURERS PROGRAMMING & START-UP & TRAINING.

LIGHTING FIXTURE SCHEDULE

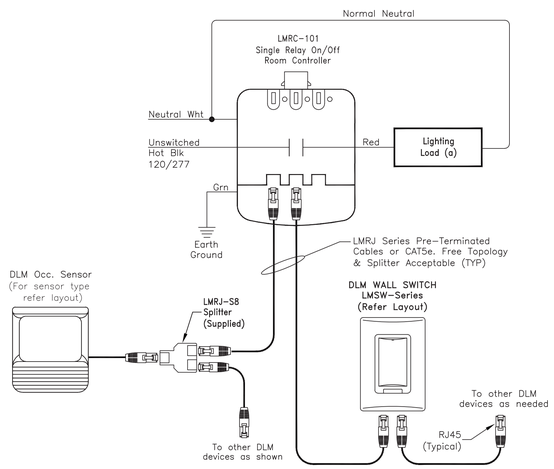
SYMBOL	MANUFACTURER	DESCRIPTION	CATALOG NUMBER	LAMPS VOLTS	TYPE	#	WATTS	MODEL/COMMENTS	REMARKS
A	SIGNIFY DAY-BRITE	2X2 FIXTURE GRID MOUNTED	2FGG 38L 835 2 UNV DIM	120	LED	1	31	–	3500K
B	SIGNIFY LIGHTOLIER	5" DOWN LIGHT	L5R 10 A Z10U B/ L5R 10 935-L6 DW	120	LED	1	12	–	3500K
C									
F	SIGNIFY DAY-BRITE	4' STRIP	F954 30L 835 120	120	LED	1	22	–	
G	SIGNIFY DAY-BRITE	PENDANT HIGH BAY	HCY-2833L-8CST-UN3-DIM	120	LED	–	197	–	
X1	PHILIPS CHLORIDE	COMBO EXIT LIGHT/ EMERGENCY LIGHT	CLCNRW	120	LED	–	–	–	INTEGRAL BATTERY BACK-UP
X2	PHILIPS CHLORIDE	COMBO EXIT/EMER. LIGHT WTH (2) REMOTE HEADS	CLCNRW2R CLR2WG	120	LED	–	–	–	INTEGRAL BATTERY BACK-UP
X3	PHILIPS CHLORIDE	EXIT SIGN	CLXNRW	120	LED	–	–	–	INTEGRAL BATTERY BACK-UP
EM1	PHILIPS CHLORIDE	(2) HEAD EMERGENCY LIGHT	CLU3NW	120	LED	–	–	–	INTEGRAL BATTERY BACK-UP
EM2	PHILIPS CHLORIDE	(2) HEAD EM LIGHT HIGH OUTPUT	CNM25Y2	120	LED	–	–	–	MOUNT @ 15'
EX1	SIGNIFY GARDCO	EXTERIOR WALL MOUNT	IL-16-200-WW-93-2-120-PCB-BZ120-PCB-BZ	120	LED	–	12	–	PHOTO CELL CONTROL



DSW-301 WIRING DIAGRAM

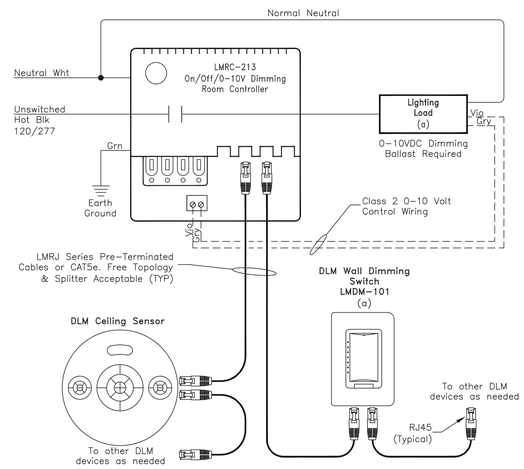


DW-311 WIRING DIAGRAM



TYP. LMRC-101 WIRING DIAGRAM

NOTE: Refer to layout for exact quantity and model number of devices.



TYP. LMRC-211 WIRING DIAGRAM

NOTE: Refer to layout for exact quantity and model number of devices.

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ELECTRICAL LIGHTING PLAN

SCALE: AS NOTED
DATE: 08.25.2023
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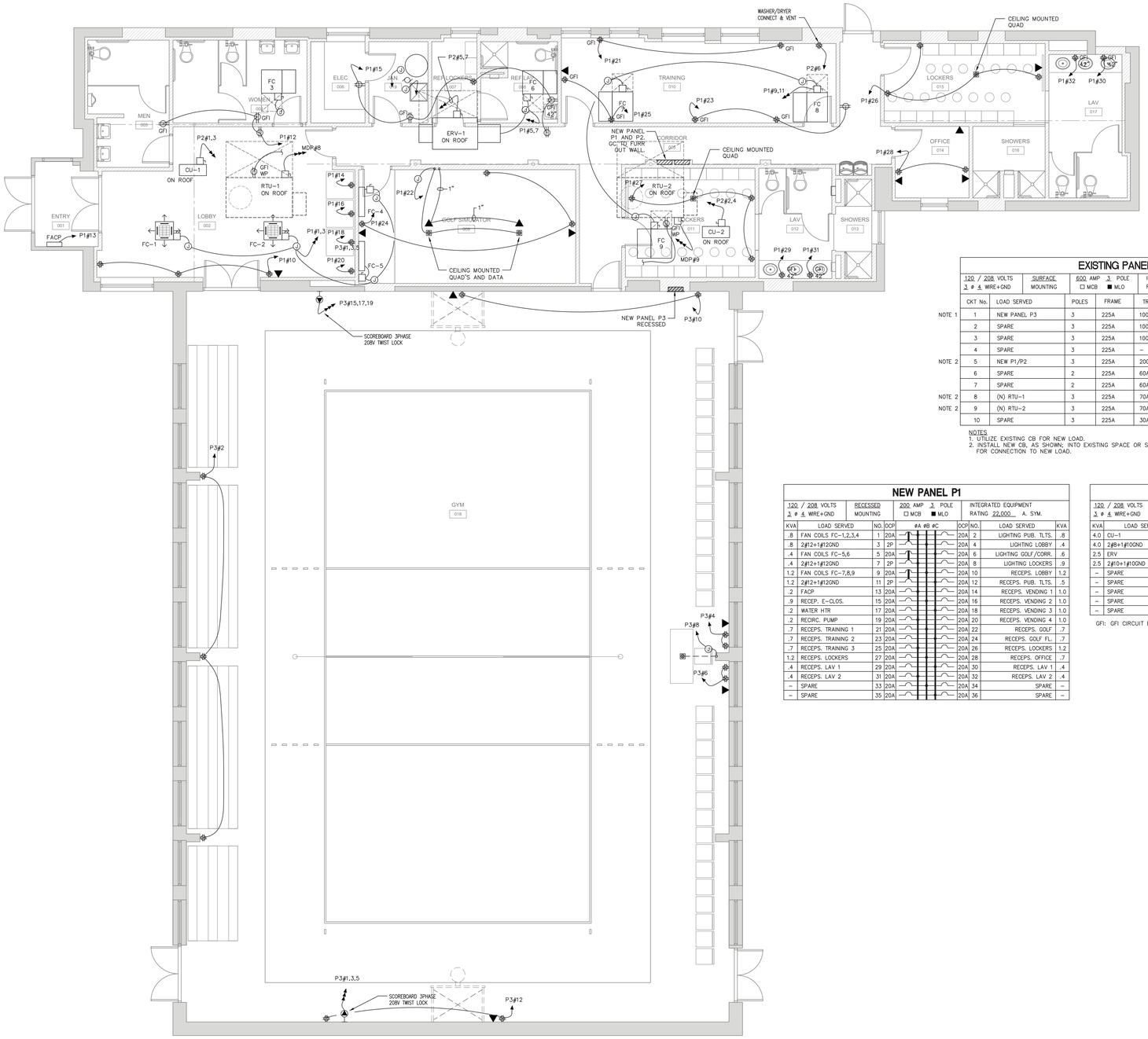


1 FLOOR PLAN
3/16" = 1'-0"

ELECTRICAL LEGEND

20A DUPLEX 125V	
GFI 20A GFCI DUPLEX OUTLET 125V	
TV 20A DUPLEX 125v FOR WALL MOUNTED TV. REFER TO TELECOMMUNICATIONS DRAWINGS FOR BACK BOX SPECIFICATIONS AND MOUNTING HEIGHTS	
20A QUAD OUTLET 125V	
20A DUPLEX 125V RED RECEPTACLE, WIRED TO UPS	
20A QUAD 125V RED RECEPTACLE, WIRED TO UPS	
RECEPTACLE-SPECIAL	
JUNCTION BOX	
CEILING MOUNTED QUAD RECEPTACLE	
3/4" CONDUIT & SINGLE GANG BOX FOR TELEPHONE AND DATA. CONDUIT STUBBED ABOVE HUNG CEILING, PROVIDE NYLON BUSHING & PULL CORD	
	WG WITH GUARD
	WP WEATHER PROOF
	BC BELOW CEILING
	DISCONNECT SWITCH
	COMBINATION STARTER/ DISCONNECT SWITCH
	COMBINATION STARTER/DISCONNECT SWITCH WITH OCP
	PANEL
	CIRCUIT DESIGNATION (PANEL-#)
	C ELECTRICAL CONTACTOR
	HD ELECTRIC HAND DRYER

EXISTING PANEL MDP

120 / 208 VOLTS, 3 ø 4 WIRE+GND — SURFACE MOUNTING — 600 AMP 3 POLE ☐ MCB ■ MLO — INTEGRATED EQUIPMENT RATING 42,000 A. SYM.

	CKT No.	LOAD SERVED	POLES	FRAME	TRIP	LOAD	FEEDER
NOTE 1	1	NEW PANEL P3	3	225A	100A	30.0 KVA	4#3+1#8GND-1¼"C
	2	SPARE	3	225A	100A	–	–
	3	SPARE	3	225A	100A	–	–
	4	SPARE	3	225A	–	–	–
NOTE 2	5	NEW P1/P2	3	225A	200A	–	–
	6	SPARE	2	225A	60A	–	–
	7	SPARE	2	225A	60A	–	–
NOTE 2	8	(N) RTU-1	3	225A	70A	18.0 KVA	3#4+1#8GND-1¼"C
NOTE 2	9	(N) RTU-2	3	225A	70A	18.0 KVA	3#4+1#8GND-1¼"C
	10	SPARE	3	225A	30A	–	–

NOTES
1. UTILIZE EXISTING CB FOR NEW LOAD.
2. INSTALL NEW CB, AS SHOWN; INTO EXISTING SPACE OR SPARE LOCATION FOR CONNECTION TO NEW LOAD.

NEW PANEL P1

120 / 208 VOLTS, 3 ø 4 WIRE+GND — RECESSED MOUNTING — 200 AMP 3 POLE ☐ MCB ■ MLO — INTEGRATED EQUIPMENT RATING 22,000 A. SYM.

KVA	LOAD SERVED	NO.	OCP	øA	øB	øC	OCP	NO.	LOAD SERVED	KVA
.8	FAN COILS FC-1,2,3,4	1	20A				1	20A	2	LIGHTING PUB. TLTS.	.8
.8	2#12+1#12GND	3	2P					20A	4	LIGHTING LOBBY	.4
.4	FAN COILS FC-5,6	5	20A					20A	6	LIGHTING GOLF/CORR.	.6
.4	2#12+1#12GND	7	2P					20A	8	LIGHTING LOCKERS	.9
1.2	FAN COILS FC-7,8,9	9	20A					20A	10	RECEPS. LOBBY	1.2
1.2	2#12+1#12GND	11	2P					20A	12	RECEPS. PUB. TLTS.	.5
.2	FACP	13	20A					20A	14	RECEPS. VENDING 1	1.0
.9	RECEP. E-CLOS.	15	20A					20A	16	RECEPS. VENDING 2	1.0
.2	WATER HTR	17	20A					20A	18	RECEPS. VENDING 3	1.0
.2	RECIRC. PUMP	19	20A					20A	20	RECEPS. VENDING 4	1.0
.7	RECEPS. TRAINING 1	21	20A					20A	22	RECEPS. GOLF	.7
.7	RECEPS. TRAINING 2	23	20A					20A	24	RECEPS. GOLF FL.	.7
.7	RECEPS. TRAINING 3	25	20A					20A	26	RECEPS. LOCKERS	1.2
1.2	RECEPS. LOCKERS	27	20A					20A	28	RECEPS. OFFICE	.7
.4	RECEPS. LAV 1	29	20A					20A	30	RECEPS. LAV 1	.4
.4	RECEPS. LAV 2	31	20A					20A	32	RECEPS. LAV 2	.4
–	SPARE	33	20A					20A	34	SPARE	–
–	SPARE	35	20A					20A	36	SPARE	–

NEW PANEL P2

120 / 208 VOLTS, 3 ø 4 WIRE+GND — RECESSED MOUNTING — 200 AMP 3 POLE ☐ MCB ■ MLO — INTEGRATED EQUIPMENT RATING 22,000 A. SYM.

KVA	LOAD SERVED	NO.	OCP	øA	øB	øC	OCP	NO.	LOAD SERVED	KVA
4.0	CU-1	1	50A				50A	2	CU-2	4.0
4.0	2#8+1#10GND	3	2P				2P	4	2#8+1#10GND	4.0
2.5	ERV	5	30A				20A	6	WASH/DRY	1.5 GFI
2.5	2#10+1#10GND	7	2P				–	8	SPACE	–
–	SPARE	9	20A				–	10	SPACE	–
–	SPARE	11	20A				–	12	SPACE	–
–	SPARE	13	20A				–	14	SPACE	–
–	SPARE	15	20A				–	16	SPACE	–
–	SPARE	17	20A				–	18	SPACE	–

GFI: GFI CIRCUIT BREAKER

NEW PANEL P3

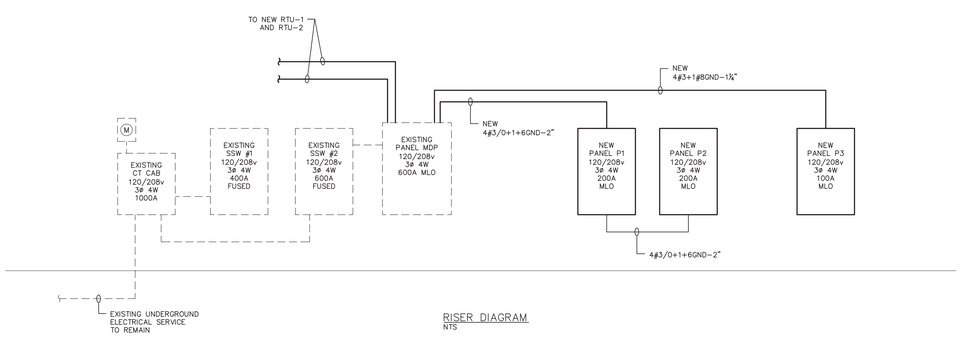
120 / 208 VOLTS, 3 ø 4 WIRE+GND — SURFACE MOUNTING — 100 AMP 3 POLE ☐ MCB ■ MLO — INTEGRATED EQUIPMENT RATING 10,000 A. SYM.

KVA	LOAD SERVED	NO.	OCP	øA	øB	øC	OCP	NO.	LOAD SERVED	KVA
1.0	SCOREBOARD	1	20A				20A	2	RECEPS. BLEACHERS	1.2
1.0	4#10+1#10GND	3	3P				20A	4	RECEPS. SCORE 1	.7
1.0	–	5	–				20A	6	RECEPS. SCORE 2	.7
.8	LIGHTING GYM 1	7	20A				20A	8	RECEPS. FLOOR OUT	.4
.8	LIGHTING GYM 2	9	20A				20A	10	RECEPS. SOUTH WALL	.7
.8	LIGHTING GYM 3	11	20A				20A	12	RECEPS. NORTH WALL	.7
.8	LIGHTING GYM 4	13	20A				20A	14	SPARE	–
1.0	SCOREBOARD	15	20A				20A	16	SPARE	–
1.0	4#10+1#10GND	17	3P				20A	18	SPARE	–
1.0	–	19	–				20A	20	SPARE	–
–	SPARE	21	20A				20A	22	SPARE	–
–	SPARE	23	20A				20A	24	SPARE	–

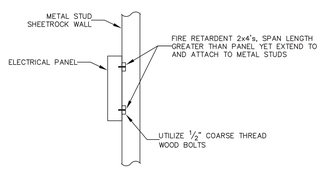
NEW BUILDING SERVICE LOAD

LIGHTING LOAD 5.9 KVA x 125% = 7.4 KVA
RECEP. LOAD 10.0 KVA x 100% = 10.0 KVA
RECEP. LOAD 9.8 KVA x 50% = 4.9 KVA
AC LOAD 52.0 KVA x 100% = 52.0 KVA
MISC. EQUIPMENT LOAD 10.2 KVA x 100% = 10.2 KVA
TOTAL LOAD 84.5 KVA

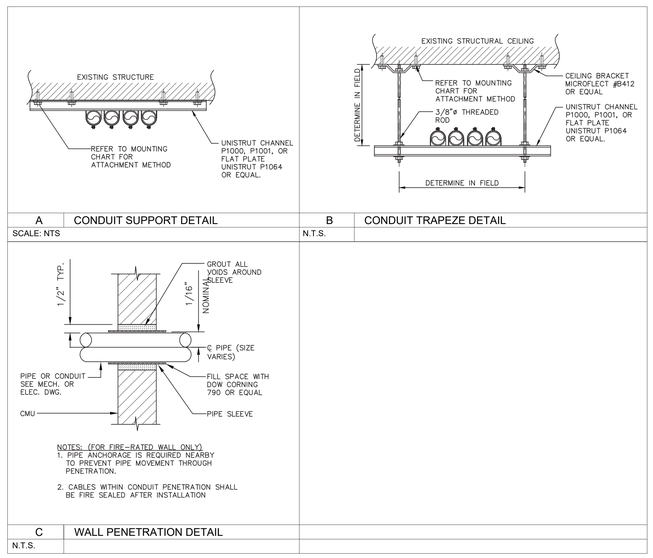
Ø120/208v 3ø 4W = 235 AMPS



RISER DIAGRAM
NTS



ELECTRICAL PANEL MOUNTING DETAIL
SCALE: NONE



CONDUIT SUPPORT DETAILS
SCALE: NONE

09.14.23 ISSUED FOR BID
08.25.23 FOR PERMIT

HALLEL BUILDING
GYMNASIUM ALTERATION

175 ROUTE 340 SPARKILL, NY 10976

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ELECTRICAL POWER PLAN

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

E.102

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SECTION 16000 – ELECTRICAL WORK

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all electrical work for this project, as required by the schedules and drawings, including but not limited to the following:

NOTE: – All holes or voids created to extend electrical systems through fire-related floors and walls shall be firestopped.

B. WORK INCLUDED:
1. Utilize existing 120/208v 3phase 4wire electrical service, new panels.
2. New branch circuits.
3. New power and lighting.
4. New individual battery emergency code required emergency lighting and exit signs where shown or required.
5. New MC cable branch circuits where run concealed, EMT conduit where exposed (Gymnasium).
6. Outlets, receptacles, and switches,
7. Power wiring of HVAC, plumbing and Owner supplied equipment.
8. Hangers, anchors, cutting, patching, pass through and watertight sleeves, chases, supports for fixtures, backboards, and other electrical materials and equipment, including fire cut offs, in association therewith.
9. Lighting fixtures, wiring and controls.
10. Disconnects (Fused and Safety) for motors, HVAC equipment, transformers and other equipment.
11. Motor starters for all equipment including exhaust fans when not otherwise provided. Coordinate with other trades and Owner supplied equipment vendors.
12. Temporary power and lighting for all construction and all trades.
13. Lighting fixtures, feeds, final connections, etc., for all exterior building mounted lighting.
14. Extension of existing fire alarm system including, smoke detectors, duct detectors, audio, visual alarms, manual pull boxes, etc.
15. Maintenance and removal of temporary light and power.
16. Pipe sleeves and Firestopping:
a. Provide for all pipes, conduits and other elements passing through floors, walls, partitions and structural elements, sleeves of adequate diameter to allow for a minimum of ¾ inches clear all around sleeve and pipe.
When pipe, conduit or other such element penetrates other than fire rated assembly and is insulated, insulation shall pass continuously through sleeves with ½ inch clearance between insulation and sleeve.
b. Where pipes, conduits and other such elements penetrate fire rated assemblies, (walls, floors, ceilings, structure, etc.).
17. Furnish access doors, to the Contractor for installation where required in finished walls, partitions and the like for access to junction boxes, controls, etc., concealed behind finished construction.
a. Submit location drawings for approval.
18. All written operating and maintenance instructions.
19. Arrange and pay for all required permits, fees and inspections.
20. Record drawings indicating all work installed or modified, contractor shall update daily or when significant amount of work is complete. Record drawings shall be maintained and ready for engineering review within 2 days notice during the entire construction period.

B. RELATED WORK included in other Sections:
1. HVAC work and Controls.
2. Fire Protection.
3. Plumbing.

1.02 CODES AND QUALITY ASSURANCE

_A. The contractor shall have the work of this section performed by vendors and mechanics experienced and skilled in its implementation or by a "Specialist", "Specialty Contractor' or "Specialty Subcontractor" under contractual agreement with the Contractor. These terms shall mean an individual or firm of established reputation, or, if newly organized, whose personnel have previously established a reputation in the same field, which is regularly engaged in, and which maintains a regular force of workmen skilled in either manufacturing or fabricating items required by the Contract, installing items required by the Contract, or otherwise performing work required by the Contract.

Where the Contract Specifications require installation by a "Specialist", that term shall also be deemed to mean either the manufacturer of the item, an individual or firm licensed by the manufacturer, an individual or firm who will perform such work under the manufacturer's direct supervision.

B. The Contractor is responsible for performing all work in a neat, workmanlike manner. All operating procedures shall be strictly adhered to. Each Bidder shall visit the site and become informed as to the conditions of the premises and the extent and character of the work required. No consideration will be granted for any alleged misunderstanding of the Work to be done.

C. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

D. All work, equipment and apparatus shall conform to the most recent requirements of the following:

NYSBC – New York State Building Code
IBC – International Building Code
CABO/ANSI
NFPA 70, 90A, 91, and 101 – National Fire Protection Association, and any other applicable NFPA standards.
NEC – National Electrical Code of NFPA
NEMA – National Electric Manufacturers Association
Local Electrical Utility Standards
Local Codes and Governmental Agencies
NBFU – National Board of Fire Underwriters
ANSI – American National Standards Institute
IPCEA – Insulated Power Cables Engineers Association
ASTM – American Society for Testing and Materials
UL – Underwriters' Laboratories
Requirements of the Owner's Insurance Underwriter

Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the regulations of the current editions of these codes, and the requirements of governmental agencies having jurisdiction, regardless of whether such materials and labor are called for elsewhere in these Specifications. These rules, regulations and codes shall govern as a minimum standard. In the event of conflict with the Contract Drawings or Specifications requiring workmanship or material of a higher quality than required by the above-mentioned rules, regulations, codes and authorities, the most stringent of these documents shall govern.

E. During this work, the Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by the OCCUPATIONAL SAFETY AND HEALTH ACT of 1970. The Engineer and Architect shall be held harmless for any accident, injury, or any other incident resulting from non-compliance with these or any other standards.

F. Engineering Drawings are schematic with regard to exact locations and dimensions. Review all Drawings provided, including; Architectural and Structural Drawings, reflected ceiling plans, Plumbing, HVAC, Fire Protection and Electrical Drawings, to confirm all requirements and identify all constraints. The Contractor shall coordinate his work with that of all other trades to avoid conflicts. It is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Architect and Engineer for clarification. Refer to the actual dimensions on the Architectural Drawings and successive related shop drawings. Exact locations of diffusers, registers, thermostats shall be directed by Architect.

_G. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make such examination.

_H. During the execution of work under this Contract the Contractor shall be responsible for protecting any equipment or structures in the work and adjacent areas.

I. Secure and pay for required authorizations from governmental agencies having jurisdiction.

J. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.

K. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the Contractor's expense.

L. EXPOSED PIPING, DUCTWORK AND CONDUIT: There shall be no exposed piping, ductwork or conduit of any sort; plumbing, fire protection, HVAC or electrical, whether implied by the MEP drawings or not, unless expressly approved by the Architect.

1.03 SUBMITTALS

A. Shop drawings and samples shall be submitted in accordance with the general conditions and special requirements, and all other applicable documents and shall consist of the following.

B. Product data: In accordance with procedures outlined in the General Conditions, submit:
(1) Materials list of items proposed to be provided under this Section, with sources of supply and manufacture;
(2) Manufacturers' specifications, catalog cuts and other data needed to prove compliance with the specified requirements. Include shop standards for fabrication, cuts of hangers, clips, supports, attachments, anchors, etc., labeled as to the respective conditions or locations to which they apply.
(3) Product substitutions are to be requested in writing, and only in conformance with General Conditions procedures. At the time of submission of cuts for review for all substitutions, clearly indicate Specification Section, provide complete information on the original product and the proposed product for review, and all deviations.
a. Any substitutions requested by a contractor are to include all costs for related changes by other contractors. It is the responsibility of the contractor requesting the change to coordinate with any other trade impacted by the substitution.

1.04 PRODUCT HANDLING

A. Provide material and equipment in accordance with the project documents.

B. General Protection Recommendations: Do not allow equipment, insulation material, piping or associated items to become wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

1.05 LABELING OF PANELS AND CIRCUITS

A. Mount a typewritten directory behind glass or plastic on the inside of each panel door and, on the directory, show the circuit number and complete description of all outlets on each circuit. Coordinate all labeling with HVAC, Plumbing and other trades to assure uniform nomenclature.

B. On face of all panels and electrical apparatus provide black plastic laminate name tag, securely fastened with screw or rivet fastener, glue or adhesive not allowed, and showing complete identification.

C. Provide 1/2" high letters on each panel and cabinets and 3/4" on switchboards, indicating voltage present.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide only materials that are new, of the type and quality specified. Where standards have been established for such materials, provide only materials bearing the UL Label, or complying with NEMA and NEC standards.

B. PRODUCT HANDLING: General Protection: Do not allow products and materials to become wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

2.02 SERVICE

A. Provide service to school from existing land lord switchboard.

2.03 GROUNDING SYSTEM

A. Ground all equipment, including service entrances, switches, panelboards, transformers, conduit systems, motors, and other apparatus, by conduit or conductor to cold water main or to independent grounding electrode, using ground clamps manufactured by Burndy or T&B, and authorized by the power company and/or local code official. NOTE: EMT tubing is not acceptable as a ground path.

B. Ground all electrical equipment in accordance with all provisions of the National Electrical Code, including lighting fixtures, motors, conduits, panelboards, transformers, and all other Non-Current carrying parts of electrical equipment.

C. Make meg ground tests to measure ground resistance, and provide not more than 10 ohms resistance, adding ground rods as required to achieve that level. Make ground rods accessible for inspection.

D. Interior systems equipment grounding electrode conductors shall be sized per National Electrical Code Section 250-95, for runs less than 100 feet. When run exceeds 100 feet, grounding conductor size shall be increased to the next larger size. Busway grounds shall be sized equal or greater than bus ground conductor and as shown.

E. Transformer Grounding: All connections to dry type transformers shall be made with flexible metallic conduit with ground conductor within, of copper wire to assure continuous ground. Transformer case and secondary neutral shall be tied together with bare copper wire, and grounded to the ground conductor.

F. Special Grounding connections for telephone system, signal systems, portable equipment and similar systems shall be as recommended by the manufacturers.

G. Grounding conductors shall be 600 volt, type "T" green. Equipment grounding connections shall be bare copper in accordance with the latest revision of A.S.T.M. designations B3 and B8. All open bare grounding cable (#6 A.W.G. minimum) shall be secured in place with cast, one hole, malleable, clamps and clamp backs and bolts.

H. All grounding connections shall be executed with the same thorough workmanship as the connections for normal current carrying parts.

I. Ground wires shall be run in any P.V.C. conduit and sized per Article 250 of the N.E.C. Ground wires shall be terminated to the metallic enclosures of the panels, disconnects, throughs, main switchboard, and outlet boxes. For site work, provide ground conductors complete from each panel to each site connection location.

2.04 DISTRIBUTION SYSTEM

A. Identification/locations:
1. Identify all panelboards, cabinets, safety switches, and other apparatus used for operation and control of circuits, appliances, and equipment.
2. Provide plastic laminate nameplates, black face with white core letters, showing proper and complete identification.

B. Branch circuit panels: (provide for locks on all panels)
1. Provide branch circuit panels for lighting, power and general electrical service. Panels to be surface mounted, covers should not extend or project beyond box. Flush mounted panels to provide adequate overlap to completely cover electrical panel wall opening.
2. Provide panels, Cutler Hammer/Westinghouse type Pow R Line C Pow R Line 3a or 4 (depending on branch breaker and main sizes), Square D, Siemens or authorized equal for over 400 Amp capacity or with over 100 Amp branch circuit. 25 KAIC minimum.
a. 600 VAC or 240 VAC as indicated.
b. 3 phase, 4 wire, amperages as indicated, copper bus.
c. Main circuit breakers as indicated.
3. Low Voltage Panel, provide Cutler Hammer/Westinghouse type Pow R Line C, Pow R Line 1, Siemens, Square D or authorized equal.
a. 120/208 KVAC 3 phase, 4 wire
b. 100/225 AMP main breakers, or main lugs as indicated, full copper bus, maximum branch circuit 100 amps.
c. pole spaces as indicated on schedules
4. All breakers shall be molded case, quick-make quick-break, thermal magnetic trip, or inverse time (for motor loads), bolted-in type. Multipole breakers shall be of the common trip type. Breakers used as light switches shall be marked "SWD". Minimum circuit breaker interrupting capacity shall be 14,000 AMPS for high voltage and 10,000 AMPS for low voltage or as required by loaded equipment. Provide ground fault breakers where required. Install Cutler Hammer, Square D, or Westinghouse circuit breakers or authorized equal.
e, 5. Provide 2 spare single pole breakers at every panel.

C. Wiring devices:
1. Provide heavy duty, back wired duplex receptacles of 3-pole grounding type with the third pole U-shaped and grounded to the conduit system.
2. Receptacles to be as specified or authorized equal. Receptacles shall be of a grounding type, all units to be U.L. authorized.
3. Outlets are to be recessed whenever possible.
4. Provide tumbler switches of commercial-industrial type, 20 amp, 120/277 V ac.
5. Switches are to be recessed.
6. Device Plates: Cover plates shall be provided for all outlets and designed for the particular device being used. In all finished areas, plates shall be nylon. Color white with beveled edges, and stainless steel semi-flush head fastening screws. At locations where more than one switch and/or outlet occur, cover plates shall be ganged or combination type as required. Weatherproof receptacles shall have flush cast box and hinged gasketed cover, Pass & Seymour No. 3780-SC, or authorized equal.
7. Floor boxes are to be completely flush type.
8. Provide ground fault receptacles or circuit breakers where noted and indicated on drawings.

D. Above floor raceways:
1. Provide E.M.T. with set screw type fittings, for all conduit run exposed.
2. Type "MC" cable shall be used for branch circuiting run concealed in walls and ceilings were applicable.
3. Provide deep boxes with 1" and larger conduit.
4. For lighting outlets, provide standard 4" octagon or square units, with 3/8" malleable iron fixture studs and box hangers where required.
5. For switches and receptacles, provide standard gang switch boxes or architectural surface mounted boxes with non- conductive plastic covers; except for non-Architectural exposed work provide pressed steel boxes with galvanized or cadmium plated steel covers.
6. Provide boxes 4" square by 1-1/2" deep, except for boxes at ends of run where containing a single device. These may be No. 180 handy boxes if permitted by the governing code.
7. For pull boxes, provide galvanized code-gage sheet steel units built from authorized Drawings, with screwed-on covers, of size and shape required to accommodate wires without crowding, and to suit the location.
8. All troughs and gutters are to be as manufactured by Square "D". No troughs, wireways, or gutters shall be fabricated by the Contractor without submitting drawings showing details of construction, method of fastening, gauge of metal, paint specifications, etc., for approval.
9. Provide sleeves, chases and fire stops where conduits pass through floors and walls, and where required.
10. Where shown on Drawings, provide empty conduits for future Owner, telephone company, or others' use.
11. Provide pull wires and junction boxes or LBs in ALL empty conduit runs. Place junction boxes so that 100' of fish line can be used to pull wires if required.

E. Conductors:
1. For line voltages, provide 600 V insulated copper wire and cable, NEC standard, of types specified below for different applications, with UL label, and color coded as required by governmental agencies having jurisdiction.
2. With conductors No. 4 and larger, provide insulating bushings or insulating sleeves.
3. For all wire and cable provide THWN insulation, 90° C. Identify feeder neutrals with white tape.
4. Where branch circuit wiring is installed in wiring channels of continuous row-mounted fixtures, provide UL type RHH or other authorized 105° C wires, rated at 600 V.
5. Provide stranded wire, in all sizes.
6. For wire in conduits subjected to direct, sunlight, provide XHHW.
7. Use only copper wires and cables.
8. Install plenum wire and cable wherever required by code.
9. For all 20 AMP circuits over 100 feet, use #10 AWG only, over 200 feet use #8 AWG only.

F. Exterior and Water Tight Junction Boxes
1. At all termination and intermediate junction points on exterior conduits, but not greater than 100 feet apart, provide a watertight/raintight Crouse Hinds type WDB box.
2. Install boxes flush with surface and provide appropriate conduit openings.
3. Seal all conduits entering box.

2.05 LIGHTING FIXTURES

A. Provide all lighting fixtures required in accordance with the schedule as shown on the drawings.

2.06 GENERAL LIGHTING FIXTURE INSTRUCTIONS

A. Provide all accessories, such as strips, yokes, mounting plates, frames, nipples or brackets, shall be provided for proper and complete installation.

B. Recessed fixtures:
1. Provide units having an attached pull box, and with UL label.
2. Provide local label in addition if so required by governmental agencies having jurisdiction.
3. Provide fixtures authorized for direct contact with insulation where in direct contact with insulation.
4. Orient fixtures with elliptical beamspreads with the long axis oriented as recommended by the manufacturer for each specific condition.
5. All ballasts must have low noise ratings.
6. Provide all lamps rated at 130 Volts.

2.07 EMERGENCY LIGHTING SYSTEMS

A. In exit hallways and other areas as indicated on the drawings, provide built in emergency lighting option with light fixtures, wired to operate on power failure only. NOTE: In most cases this will require an extra conductor connected ahead of the contactor. (garage building only)

B. Provide fixtures equipped with Bodine B-50 Fluorescent Emergency Ballast wired to operate on power failure only.

2.08 LIGHTING SWITCHING

A. Provide individual light switches where indicated on Drawings.

B. NOTE: for all fixtures with built-in emergency ballasts, these ballasts must be wired to supply ahead of control contactors. In most cases, this will require an additional conductor.

C. Provide timers and contactors for lighting as required or as shown on the drawings.

2.09 MOTOR STARTERS

A. Provide magnetic motor starters when required and not supplied by the equipment manufacturers. Coordinate with all other Contracts. HVAC units are to be supplied with integral starters. Exhaust fans are to be provided with magnetic motor starters by the Electrical Contractor. Confirm status for all other equipment.

B. Units are to be NEMA rated as motor starters and sized to the proper horsepower with thermal overloads on all three legs.

C. Units are to be in NEMA 1 (Indoor) or NEMA 3 (Outdoor) enclosures with stop/start buttons in the proper locations when required. OL resets to be in cover.

D. Control circuits to be a maximum of 120 V when push buttons are used. Lower voltage coils may be required in specialized control circuits. Supply transformers as needed.

E. Provide auxiliary contacts for control circuits as required.

2.10 SAFETY SWITCHES

A. Provide fusible and non-fusible safety switches of heavy duty type, horsepower rated, quick-make and quick-break design, externally operated with provision for padlocking.

B. Provide enclosures clearly marked for maximum voltage, current, and horsepower rating, and use:
1. Indoor: NEMA type 1.
2. Outdoor: NEMA type 3R, raintight.

C. For switches having dual ratings (higher rating when used with dual-element fuses), provide ratings indicated on a metal plate riveted or otherwise permanently fastened to the enclosure.

D. Provide at all rooftop units, exhaust fans, unit heaters, hot water heaters, pumps and other HVAC equipment, as required to comply with local codes. Coordinate with HVAC Contractor to confirm equipment type being provided and to assure completeness of final installation.

E. Provide at supply of transformers only when transformer is not in the same room as the supply circuit breaker.

2.11 POWER WIRING OF EQUIPMENT

A. Provide feeders, connection and disconnects for all HVAC equipment including air handlers, condensers, and fans.

B. Air conditioning and low voltage heating equipment (below 110V) controls, panels, motor controls, thermostats, and control devices will be under HVAC work, provide 115V feeds where required for controllers, control panels and other mechanical equipment requiring the same, coordinate with HVAC Contractor.

C. Provide feeders and switches when required, and connection for all equipment provided by others, including motorized doors, partitions, bleachers etc.

2.12 EMPTY CONDUITS

A. Where indicated on drawings, provide empty conduits and pull wires with J Box above ceiling. Conduit and box sizes per drawings

B. Provide main mounting panel consisting of 3/4" x 8' x 4' fire retardant plywood panels, secured to wall, with a minimum of 4 anchoring bolts of an approved type.

2.13 FIRE ALARM AND SMOKE DETECTION SYSTEM

A. Provide new fire alarm system as shown on the plans.

2.15 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect and/or Engineer.

PART 3 – EXECUTION

3.01 PREPARATION

A. Coordinate:
1. Coordinate as necessary with other Sections.
2. Coordinate the installation of electrical items with the schedule for work of other Sections to prevent unnecessary delays in the total Work.
3. Where lighting fixtures and other electrical items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports and wiring to clear the encroachment.

B. Data indicated on the Drawings and in these Specifications are as exact as could be secured, but their absolute accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

C. Where outlets and equipment are not specifically located on the Drawings, locate as determined in the field by the Architect. Where outlets and equipment are installed without such specific direction, relocate as directed by the Architect and at no additional cost to the Owner.

D. Verify all measurements at the Building. No extra compensation will be allowed because of differences between work shown on the Drawings and actual measurements at the site of construction.

E. The Electrical Drawings are diagrammatic, but are required to be followed as closely as actual construction and work of other Sections will permit. Where deviations are required to conform with actual construction and the work of other Sections, make such deviations without additional cost to the Owner.

3.02 TEMPORARY POWER AND LIGHTING

A. GENERAL: In coordination with and in addition to the General Conditions of these Specifications provide the following:

1. Provide temporary power and lighting to all areas of construction. All work areas must have (2) 120V Duplex GFI outlets available within 80 feet.
2. Provide three phase and single phase power for construction as required.
3. Provide temporary power to all site construction trailers as required. Provide transformers as required.
4. Minimum lighting level to be 40 F.C. at work areas.

B. MAINTENANCE:
1. The temporary wiring system shall be maintained by the Electrical Contractor, including lamp replacement, fuses, circuit breakers, sockets, plugs, receptacles, etc. as required during construction of the project shall be maintained by the Electrical Contractor. In addition, Contractor shall insure that temporary wiring is not used for heating.
2. Should any part of the permanent electric system be used during building operations, the Electrical Contractor shall make all replacements made necessary by such use and shall be responsible for all damage to existing electric systems used, and shall make good such damage to the satisfaction of the Engineer.
3. When the electrical lines are no longer required, they shall be removed and any part or parts of the grounds or building disturbed or damaged shall be brought back to their original condition.
4. All temporary electrical equipment (feeders, wiring, panels, lighting, outlets, distribution equipment, etc.) shall be removed.

C. WIRING:
1. All wire shall be insulated and shall be installed without hazardous conditions of any nature. Installation shall be in accordance with article 305 of the NEC and the Federal Register Safety and Health Regulations for construction. Wire sizes shall provide a minimum of 110 volts at all outlets under all conditions of operation.
2. GROUND: Provide ground fault protection per code for all receptacles either via GFI circuit breakers or GFI receptacles.
3. VOLTAGE DROP: Feeders and branches shall be of sufficient size to insure correct operation of all connected equipment and to meet code.
4. POWER OUTLETS: 208 Volts, 3 phase power outlets shall be provided as required.

3.03 MASONRY AND OTHER PENETRATIONS

A. Provide sleeves and or patching for each conduit passing through walls, partitions, floors, roofs, and ceilings.
1. Set conduit sleeves in place before concrete is placed, wherever possible.
2. Provide sleeves two pipe sizes larger than the conduit passing through, or provide a minimum of 1/2" clearance between inside and outside of the conduit.
3. Provide waterproof installation for sleeves in floors, see Drawing details.

B. Caulk the space between sleeve or wall and conduit, using a noncombustible, permanently plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack with noncombustible mineral wool, or fiberglass to within 1/2" of both wall faces, and provide the waterproof compound described herein. Smooth up rough edges around sleeves.

C. Provide all cutting and patching, fire caulking and sealing, to standards of other Sections and Divisions and all applicable codes.

D. Where conduits and other work of this section pass through fire rated walls, provide proper fire stops to maintain rating in accordance with local codes.

E. Where conduits pierce the roof, provide 24 gage galvanized iron roof jacks and flashing collar brazed onto the conduits and covering the top of the roof jacks.
F. Caulk all floor penetrations with fire retardant material meeting ASTME-814 and UL 1479 Fire Test Standards. Metcaulk or authorized equal.

G. Do not run conduit in the cavity of any exterior brick or block walls, masonry or masonry veneer walls.

3.04 INSTALLATION OF RACEWAYS AND FITTINGS

A. Where conduit is installed concealed in walls or above the ceiling, or exposed in work areas, provide EMT conduit where appropriate.

B. Where conduit is exposed in work areas, provide EMT. Coordinate all exposed conduit with Architect.

C. Run all conduit parallel to or at right angle with lines of the building.
1. Make bends with standard conduit elbows or conduit bent to not less than the same radius.
2. Make bends free from dents and flattening.

D. Securely and rigidly support conduits throughout the Work.

E. Exposed conduit and raceway on truss work shall be mounted above chords or held tight to truss, mount on least populous side of member. Special care shall be taken to conceal all raceways in all areas.

F. All conduit shall be 10' lengths and each 10' length shall contain the Underwriter's label showing the conduit has been manufactured for that purpose. Conduit shall be sized as required by latest National or Local Code applicable for equivalent number of THW conductors. The type to be used and their installation shall be as in item G below.

G. In general, provide all conduit to 5'-0" beyond building for outside work (except service), and provide junction box of suitable size, with cover on nearest convenient, interior and location, generally shown, cap conduit or interconnect outboard to the sitework conduit.

H. Expansion Fittings: All conduit crossing expansion joints shall be provided with expansion fittings located adjacent to the point of their crossing such joints. Expansion fittings shall be of the same size as the conduit in which they occur. Conduits shall be solidly anchored within 24" of both ends of all expansion fittings, and jumpered with O.Z. type "BJ" bonding jumper.

I. PVC Conduits: With proper size equipment ground wires and PVC elbows, for the panel feeder conduits, branch circuit conduits and telephone conduits, under the floor slab.

3.05 INSTALLATION OF LIGHTING FIXTURES AND LAMPS

A. General:
1. Lighting and Fixtures shall, by definition, include all fluorescent, incandescent, wall bracket, chandelier, and/or other lighting assemblies used for general, accent, or decorative illumination. Lighting fixtures and lamps shall be furnished and installed by the Electrical Contractor. The Electrical Contractor shall be completely responsible for all lighting fixtures and lamps from the time of receipt until the finished building is turned over to the Owner (See Electrical Drawings for fixture and lamp location, type, manufacturer, etc.)
2. The Electrical Contractor shall obtain shop drawings, approvals, order and receive all lighting fixtures and lamps that are delivered to the job site, inspect same, and refer all claims for shortage and/or damage to the shipper immediately for all required adjustments.
3. All damaged and/or missing fixtures and lamps shall be replaced and repaired by the Electrical Contractor at his expense. All lighting fixtures and lamps shall be stored in one area. The Electrical Contractor shall coordinate with the General Contractor's Job Superintendent to establish this storage area in the best possible location.
4. The Electrical Contractor shall keep the fixture supplier informed so that all fixtures and lamps can be delivered to the job site when required.

B. Install lighting fixtures complete and ready for service in accordance with the Drawings:
1. Continuous row fluorescent fixtures shall be wired from one outlet located at the end of the specific row and wired through the chassis connecting the indicated circuit as shown on the drawings. The Electrical Contractor shall be responsible for investigation with the Electrical Inspection Authorities to assure that through-chassis wiring is permitted. If through-chassis wiring is permitted, no compensation for error of drawings as to the actual number of outlets required.
2. Wire fixtures with fixture wiring of at least 105° C rating. Where fixtures are mounted in continuous rows, provide conductors in wiring channels of the same size as the circuit wires supplying the row of fixtures.
3. Use only bonderized, galvanized, or sherardized steel for fixture installation for protection against rust and corrosion, and install fluorescent fixtures straight and true with reference to walls.
4. Install all lighting fixtures, so that the weight of the fixture is supported, either directly or indirectly, by a sound and safe structural member of the building, using adequate number and type of hangers and fasteners to assure safe installation.
a. Screwed fastenings and toggle bolts through ceiling material or wall paneling are not acceptable.
b. Do not support from sub-purlins of panelized roof systems.
5. Single fixtures shall have an outlet box provided for each fixture unless within 4'-0" of outlet box, accessible per code.
6. Special Mounting: When mounting fixtures to rocklath, acoustical or gypsum board ceilings, the Electrical Contractor shall provide and install mounting hardware or angles and secure the fixtures to framework above. When mounting surface or pendant type fixture to metal lath and plaster, they shall be secured per code. When locating outlets in suspended grid ceilings, the Electrical Contractor shall consult and cooperate with the Acoustical Contractor to assure correct placement of fixtures in the grid. Authorized slips may be used as fixture support below suspended grid ceilings when the "T" bars are adequate to support the load, with the cost of such additional support by the Electrical Contractor. For gypsum board ceilings, coordinate location with reflected ceiling plans.
7. Plaster Rings, when recessed fixtures require plaster frame or ring, the Electrical Contractor shall deliver them to the General Contractor 30 days prior to the lathing operation.
8. Recessed Fluorescents: The Electrical Contractor shall not install any fixtures until the ceiling Contractor has provided adequate support to the suspended ceiling, as necessary. In the event of inadequate support, the job superintendent shall be notified by the Electrical Contractor. After adequate support has been provided, the Electrical Contractor may proceed to install fixtures. Adequate support means a minimum of a wire on the grid at each corner of fixture.

9. Recessed Fixtures: Fixtures shall not leak light to below and all trim shall be tight to ceiling.
10. Adjust all adjustable type, to highlight, "appointments" generally in direction of arrows on plan.
11. Ballasts: The Electrical Contractor shall be responsible for replacing all defective fluorescent fixture ballasts during the construction period and guarantee period. Ballasts shall be of the UL Class "P" type with high power factor, low energy loss, Jefferson or equal, with Klixon overwarrant protection. Ballasts shall supply not more than two lamps, but may utilize a two-lamp ballast, where practical, in lieu of single lamp ballasts. Interwire to suit, where necessary.
12. Lamps: Provide lamps per schedule on drawings for all fixtures and replace all units burned out during construction. If utilized for general lighting, all 750-hour lamps shall be replaced new at time of turnover. Fluorescent lamps shall be, "warm white", of the 34 or 35 watt energy saver type, G.E. "Watt-Miser", or equal and similar for the 36" lengths.

3.06 INSTALLATION OF POWER EQUIPMENT

A. Provide power wiring for panels and equipment as shown on the Drawings or as required for a complete installation.

B. Connections to miscellaneous building equipment:
1. Wire to, and connect to, all items of building equipment provided under this and other sections of this contract not specifically described but to which electrical power is required.
2. Coordinate as necessary with other trades and suppliers to verify types, numbers, and locations of equipment.

C. Provide motor starters and switches mounted in NEMA type 1 or type 3R enclosures for Exhaust Fans and any other equipment not provided with starters by the manufacturer.

3.07 INSTALLATION OF CONDUCTORS

A. Except for alarm and signaling systems and unless otherwise shown on the Drawings, the minimum conductor size will be No. 12 for all branch circuits. When necessary use larger wire sizes to prevent voltage drops.
1. Where wire size is not shown, install conductors sized to loads.
2. Where conduit size is not shown, size to wire and load.
3. Provide code-sized conduit for number and size wires shown or required, unless a larger size conduit is shown on the Drawings.
4. Support all conduit, junction boxes, etc., from building structure only.
5. Color code: Insulation is to be colored as follows:
a. 120/208 volt system:
"A" phase – Black
"B" phase – Red
"C" phase – Blue
b. Neutral Conductor (120/208 systems) – White
c. Equipment Ground Conductor(all systems) – Green

B. All branch circuits to be MC Cable in accordance with other Sections of this Specification.

C. Use identified (white) neutrals and color-coded phase wires for all branch circuit wiring.
1. Make splices electrically and mechanically secure with pressure-type connectors.
a. For wires size 6 AWG and smaller, provide "Scotch-Lock" type connectors.
b. For wire size 4 AWG and larger, provide Burndy "Versitaps" and heavy-duty connectors, or T & B "Lock Tite" connectors.
2. Insulate splices with a minimum of three half-lapped layers of Scotch Brand No.33 vinyl-plastic electrical tape where insulation is required.

D. Tape all joints with rubber tape 1-1/2 times the thickness of the conductor insulation, then cover with the friction tape or the vinyl-plastic electrical tape specified above.

E. The Drawings are a general indication of the direction of home runs. Continue all such home runs to the panel as though the routes were shown completely.

3.08 INSTALLATION OF WIRING DEVICES

A. Mounting Height: (Outlets) – The Electrical Contractor is to coordinate locations of all outlets on walls, columns, etc. with field conditions, so that the outlet does not occur at junction of different materials in wall finishes, on molding, break in wall surface, or other unsuitable locations. The following mounting heights shall be used unless indicated otherwise on Drawings. Note: Mounting height is the distance from finished floor line to center line of outlet. All heights and locations shall be verified with Architect before installation.

B. All outlet and switch devices in ADA compliant areas to be mounted a minimum of 15" and a maximum of 48" AFF.

3.09 INSTALLATIONS OF OUTLETS AND BOXES

A. Outlets:
1. Install to bear evenly and truly, secured on axis of supporting members.
2. Where boxes are back of finished surface, use recessed boxes and proper length screws, of size to form shoulder at exact point to retain switch in position. Use no wooden wedges, shims or blocks for truing up.

B. Outlet Boxes:
1. Locations indicated for local wall switches are subject to modifications. At or near doors install switch on side opposite hinge. Verify final door hinge location in field prior to switch outlet installation.
2. Set boxes square and true with building finish. Erect wall and switch outlets in advance of furring and fireproofing. Secure to building structure or steel by adjustable strap irons.
3. Verify locations of outlets and switches in finished rooms with drawings of interior details and finish. In centering outlets and locating boxes allow for overhead pipes, ducts and mechanical equipment, variations in fireproofing and plastering, window and door trim, paneling, hung ceilings, and the like, and correct any inaccuracy resulting from failure to do so without expense to Owner.

C. Ceiling Outlet Boxes:
1. Install flush with ceiling. Bar hangers or chain suspension from the joists shall be used in the stock areas. Pull chain cords shall be continuous, complete with bell and no more than 6'-0" from floor.
2. Boxes shall be secured with lead anchors or beam clamps as required with all thread rod or authorized equal. A workmanlike installation shall prevail.

D. Junction and Pull Boxes:
1. Provide pull boxes wherever necessary to facilitate pulling of wire and/or as indicated on Drawings. Coordinate location with other trades to assure that covers will be fully accessible, free from any and all obstruction when building is complete.
2. Junction and pull boxes shall be located so as not to be exposed in finished areas. (Preferred location in accessible ceiling spaces).
3. Support junction and pull boxes directly to building structure with no weight bearing on conduits.
4. Outlet boxes for lighting fixtures recessed in hung ceilings shall be accessible through opening created by removal of fixture or adjacent ceiling tile.

3.10 SUPPORTS, INSERTS AND HANGERS

A. The Electrical Contractor shall provide all supports, inserts, and hangers for conduits, cables, lighting fixtures, cabinets and other electrical equipment. Inserts and hangers shall be Powerstrut, Kindorf, Unistrut, or Elcen.

B. Pipe straps shall be used for wall mounting conduit. Pipe straps shall be used for wall mounting conduit. Pipe straps shall be steel, single hole type. Pipe straps, fixtures and cabinets shall be secured to the wall by means of screws, toggle bolts, lag screws in metal expansion shield or other authorized method. Wooden plugs shall not be used.

C. All overhead conduit shall be supported from the structural beams. Grouped conduit supports shall be steel channel attached to structural beams with proper size beam clamps. Channel may be suspended below structural beams with proper size beam clamps and 3/8" continuous threaded hanger rods installed (maximum) 2'-0" on center for the entire length of channel. Conduit shall be secured to channel with single bolt 2 piece channel pipe clamps for 1-1/4" and larger conduits and strut clips similar to "Caddy" number 12MFA clips for 1" and smaller conduits. Individually supported conduits shall be secured to structural beams with proper size beam clamps and one piece pipe hanger clamps with closure bolt similar to "Kindorf" 6HB series, for 1-1/4" and larger conduits, and combination conduit hanger clamps similar to "Caddy" #16-M-5-8 for 1" and smaller conduits.

D. Welded studs may be used for attachment to steel members, but conduits shall not be welded directly. Tie wire shall not be used to support or secure conduit.

E. Transformers may not be hung from the bottom cord of bar joists unless a authorized in writing by the structural engineer on the project.

F. Authorized manufacturers of channel are Powerstrut, Unistrut, and Kindorf. Authorized manufacturers of conduit clamps are Powerstrut, Unistrut, Kindorf, Minerallac, and Caddy.

G. NOTE: Electrical Contractor shall be responsible for determining proper size clamps for the various conduit sizes and beam flange thickness encountered.

H. Conduits shall not be supported by ceiling grid. They shall be supported directly by the building structure.

I. Pass raceways over water, steam or other piping where pull boxes are not required. No raceway within three inches of steam and hot water pipes, or appliances, except at crossings where raceway shall be at least one inch from pipe cover. Install raceway to prevent collection of trapped condensation and be devoid of traps.

3.11 INSTALLATION OF PANELS

A. Unless otherwise shown on the Drawings, install panels with the top of the trim 6'-3" above the finished floor.

B. Mount a typewritten directory behind glass or plastic on the inside of each panel door and, on the directory, show the circuit number and complete description of all outlets on each circuit.

C. Panelboard Spare Conduits shall be furnished and installed by the Electrical Contractor when a panel is either recessed, or furred-in. These conduits shall be sized to provide capacity for future wiring of all spares within the panel. Run conduits from panel to accessible ceiling space. Provide a minimum of 3 1" conduits per panel.

D. Cabinets for relays may be appended to panels cabinets or may be separate. Where necessary, they shall be full width. Cabinets shall include hinged door and latch.

E. Panels shall be recessed in corridors and wherever possible.

3.12 TESTING AND INSPECTION

A. Provide personnel and equipment, make required tests, and secure required approvals from the Engineer and governmental agencies having jurisdiction.

B. Make written notice to the Engineer adequately in advance of each of the following stages of construction:
1. When all rough-in is complete, but not covered;
2. At completion of the work of this Section.

C. When material and/or workmanship is found not in compliance with the specified requirements, then within three days after receipt of notice of such noncompliance, remove the non-complying items from the job site and replace them with items complying with the specified requirements, all at no additional cost to the Owner.

D. Upon completion of work, test installation for ground and short circuits. Test all feeders and 10%ectrical E of each of other electrical system wiring. If tests indicate faults, further tests shall be conducted as required by the Engineer. Resistance between conductors and between conductors and ground:

No. 12	1,000,000 OHMS
No. 10 & No. 8	250,000 OHMS
No. 6, 4, & 3	100,000 OHMS
No. 2, 1, 1/0, 2/0 & 3/3	50,000 OHMS
No. 4/0, 250,300,350 & 500 MCM	25,000 OHMS
No. 750 MCM and larger	12,000 OHMS

3.13 DEBRIS REMOVAL

A. Provide in accordance with general conditions.

3.14 PROJECT COMPLETION

A. Upon completion of the work of this Section, thoroughly clean all exposed portions of the electrical installation, removing all traces of soil, labels, grease, oil, and other foreign material, and using only the type cleaner recommended by the manufacturer of the item being cleaned.

B. Thoroughly indoctrinate the Owner's operation and maintenance personnel in the operation and maintenance of all equipment installed under this Section. As a minimum, a one day session is to be scheduled at the conclusion of this project for this purpose.

09.14.23 ISSUED FOR BID
08.25.23 FOR PERMIT

HALLEL BUILDING
GYMNASIUM ALTERATION

175 ROUTE 340 SPARKILL, NY 10976

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(201) 444-0753 FAX (201) 444-0839

ELECTRICAL SPECIFICATONS

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

E.201

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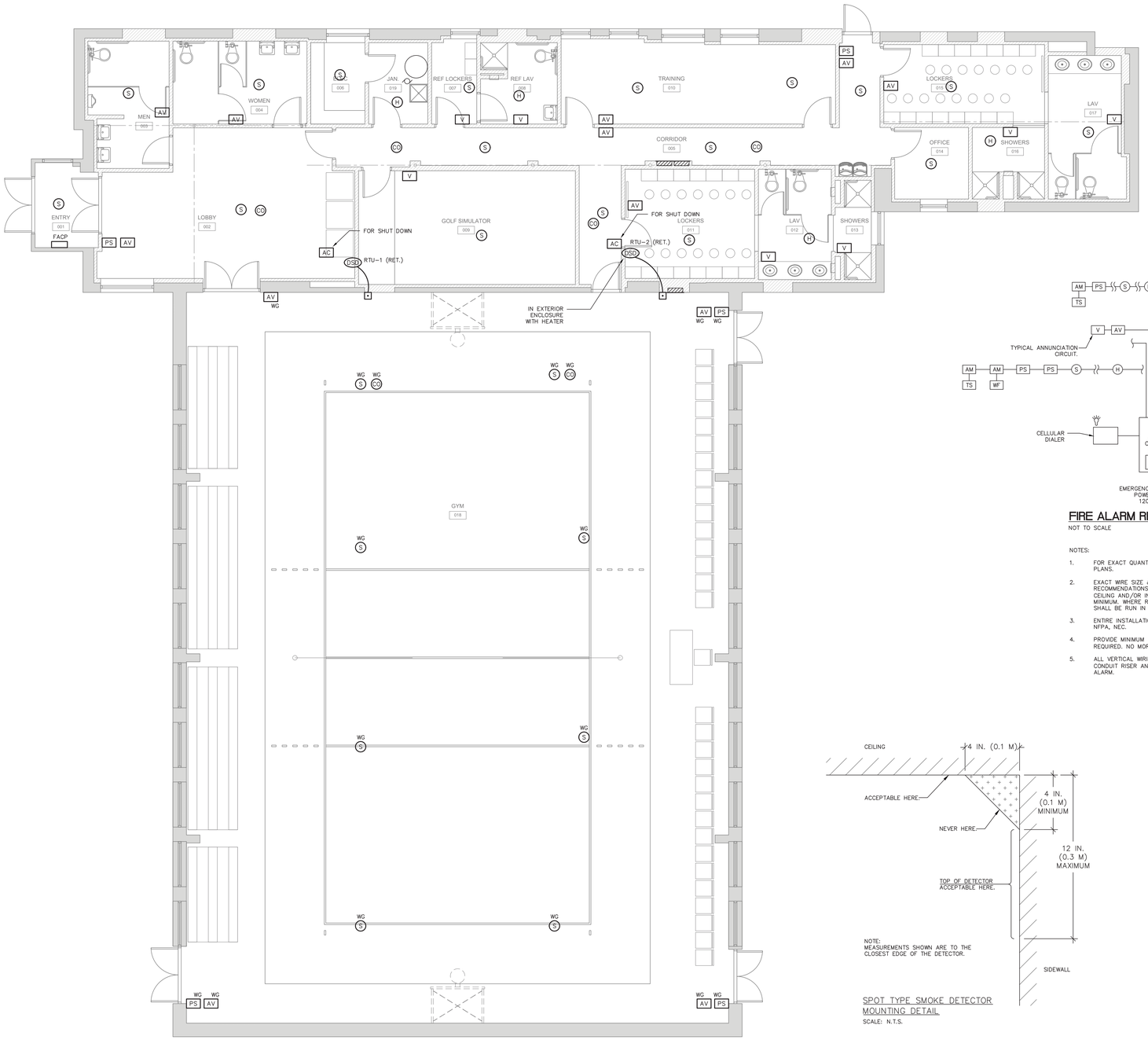
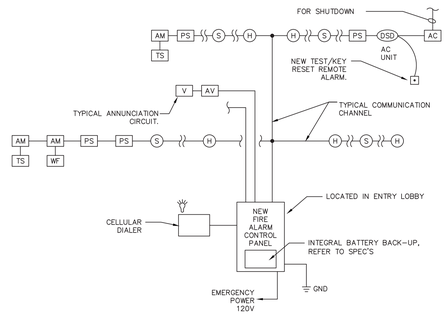


1 FLOOR PLAN
3/16" = 1'-0"



FIRE ALARM RISER DIAGRAM

NOT TO SCALE

NOTES:

1. FOR EXACT QUANTITY AND LOCATION OF ALL DEVICES REFER TO FLOOR PLANS.
2. EXACT WIRE SIZE & QUANTITY SHALL BE PER SYSTEM MANUFACTURER'S RECOMMENDATIONS. ALL WIRING SHALL BE RUN CONCEALED ABOVE THE CEILING AND/OR IN WALLS. SHALL HAVE INSULATION TYPE FPLP AS A MINIMUM. WHERE RUN IN EXPOSED AREAS i.e.. MECHANICAL ROOMS, WIRING SHALL BE RUN IN EMT CONDUIT.
3. ENTIRE INSTALLATION SHALL BE IN CONFORMANCE WITH NYS BUILDING CODE, NFPA, NEC.
4. PROVIDE MINIMUM 2 VISUAL STROBE CIRCUITS PER FLOOR, MORE IF REQUIRED. NO MORE THAN (10) STROBES PER CIRCUIT.
5. ALL VERTICAL WIRING RISERS SHALL BE RUN WITHIN CONDUIT RISER. PAINT CONDUIT RISER AND FA.B'S FIRE ENGINE RED, OIL BASE PAINT STENCIL FIRE ALARM.

NOTE:
MEASUREMENTS SHOWN ARE TO THE CLOSEST EDGE OF THE DETECTOR.

SPOT TYPE SMOKE DETECTOR MOUNTING DETAIL

SCALE: N.T.S.

FIRE ALARM LEGEND

DSD	F.A. DUCT MOUNTED SMOKE DETECTOR	FACP	FIRE ALARM CONTROL PANEL
S	F.A. SMOKE DETECTOR	ANN	FIRE ALARM REMOTE ANNUNCIATOR (FLUSH MOUTED)
H	F.A. HEAT DETECTOR	AC	F.A. ADDRESSABLE CONTROL MODULE
CO	F.A. CARBON MONOXIDE DETECTOR WITH SOUNDER BASE	AM	F.A. ADDRESSABLE MONITORING MODULE
PS	F.A. PULL STATION	WG	WITH GUARD
AV	F.A. WALL MOUNTED AUDIO/VISUAL		
V	F.A. WALL MOUNTED VISUAL		
AV	F.A. CEILING MOUNTED AUDIO/VISUAL		
⊡	DUCT MOUNTED DETECTOR TEST/KEY RESET REMOTE ALARM		

GENERAL FIRE ALARM NOTES:

1. CIRCUIT RUNS SHOWN DIAGRAMMATIC. CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS, DIMENSIONS, & ARRANGEMENTS PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR SHALL IDENTIFY INTERFERENCES BETWEEN WORK IN OTHER AREAS.
2. THE DUST COVERS FURNISHED WITH THE SMOKE DETECTORS MUST BE INSTALLED WITH EACH DEVICE UNTIL FINAL CHECKOUT.
3. INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE NATIONAL ELECTRIC CODE, LOCAL CODE(S). AND/OR AUTHORITY HAVING JURISDICTION.
4. INSTALLATION MATERIAL (I.E. CONDUIT WIRE, FITTINGS, HANGERS & STANDARD ELECTRICAL BOXES) ARE NOT SUPPLIED BY SIEMENS FIRE SAFETY DIVISION.
5. WIRING SHALL BE PER PLAN WITH RESPECT TO CONDUCTOR SIZE, TYPE, & QUANTITY. CONDUCTORS SHALL BE PERMANENTLY MARKED FOR FUTURE IDENTIFICATION. PERMANENT WIRE MARKERS SHALL BE USED TO IDENTIFY THE TERMINATIONS OF ALL CONDUCTORS WITHIN THE FACP, PULL BOXES AND OTHER PANELS.
6. ALL CABLE AND WIRING SHALL BE COLOR CODED. DIFFERENT COLOR CODES SHALL BE USED FOR INITIATING, NOTIFICATION, CONTROL, AND COMMUNICATION CIRCUITS. CIRCUITS WHERE POLARITY MUST BE OBSERVED, TWO DIFFERENT COLORS SHALL BE USED.
7. THE NUMBER OF SPLICES SHALL BE HELD TO AN ABSOLUTE MINIMUM. WHERE SPLICES CANNOT BE AVOIDED AND AT THE TERMINATION OF ALL EQUIPMENT WHICH INCORPORATE PIGTAIL CONNECTING WIRES, EITHER PHENOLIC TERMINAL BLOCKS OR PRESSURE TYPE CONNECTORS SHALL BE UTILIZED. WIRE NUTS SHALL NOT BE USED. ALL SUCH SPLICES SHALL TAKE PLACE WITH JUNCTION BOXES. WHERE PRESSURE TYPE CONNECTORS ARE UTILIZED, BREAK THE WIRE RUN FOR PROPER SUPERVISION. DO NOT LOOP THE WIRE.
8. ALL FIRE ALARM SYSTEM JUNCTION BOXES, AND PULL BOXES SHALL BE PAINTED RED. COVER PLATES SHALL BE PAINTED RED & MARKED 'FA'.
9. IF CONDUIT IS UTILIZED, THE MINIMUM SIZE SHALL BE PROVIDED AS REQUIRED BY TABLE 4 CHAPTER , OF THE NATIONAL ELECTRIC CODE, USING ACTUAL CROSS SECTION AREA OF THE WIRING TO BE INSTALLED.
10. DEDICATED 120vac POWER:
    - A) 120vac POWER SHALL NOT BE ALLOWED IN THE SAME CONDUIT AS 24vdc.
    - B) ALL 120vac POWER CIRCUITS THAT FEED THE FIRE ALARM EQUIPMENT SHALL BE SHOWN ON THE AS BUILTS DRAWINGS WITH THE CIRCUIT NUMBER & BREAKER PANEL LOCATION.
    - C) FIRE ALARM CONTROL PANEL 120vac POWER SHALL BE ON EMERGENCY POWER CIRCUITS & IN ADDITION BE PROVIDED WITH LOCKS ON THE CIRCUIT BREAKER TO PREVENT ACCIDENTAL POWER TURN OFF.
    - D) 120vac POWER SHALL NOT BE APPLIED TO FIRE ALARM PANEL WITHOUT DIRECT SUPERVISION OF TECHNICIAN.
    - E) AUXILIARY SURGE PROTECTION IS RECOMMENDED.
    - F) AC WIRING SHALL NOT BE RUN IN THE SAME CONDUIT AS POWER LIMITED WIRING.
    - G) WITHIN ENCLOSURES, MAINTAIN 2 INCHES BETWEEN AC AND POWER LIMITED WIRING.
11. DIGITAL COMMUNICATOR:

    INSTALLATION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS & THE FOLLOWING:
    - A) A DIALER IS USED FOR USE IN OFF-PREMISES MONITORING OF THE CONTROL PANEL.
    - B) TO MEET NFPA 72 REQUIREMENTS, TWO TELEPHONE LINES MUST BE INSTALLED. ONE OF THESE LINES MUST BE DEDICATED FOR THE FIRE ALARM SYSTEM.
    - C) THE DACT UTILIZES SPECIAL DIALER JACKS. THE TELEPHONE COMPANY WILL INSTALL THESE RJ31X TYPE PHONE JACKS UPON REQUEST.
    - D) USE A MINIMUM OF 18 GAUGE TWISTED SHIELDED PAIR WITH 6 TWISTS PER FOOT FOR THE WIRING BETWEEN THE DIALER AND THE PANEL.
    - E) ALL WIRING SHALL BE CONTINUOUS, NO T-TAPPING (PARALLEL WIRING).
12. ALL HORIZONTRAL FIRE ALARM WIRING NOT IN CONDUIT SHALL BE TIED AND SUPPORTED AT 5'-0" (MAX.) INTERVALS.
13. ALL FIRE WALL AND/ OR MASONRY WALL PENETRATIONS SHALL BE DRILLED, SLEEVED, BUSHED AT BOTH ENDS, AND SEALED WITH THE REQUIRED FIRE RATED CAULK OR FIRE STOPPING MATERIAL TO MAINTAIN THE FIRE RATING.
14. IF NOT IN CONDUIT, ALL CABLE SHALL BE PLENUM RATED IN COMPLIANCE WITH UL-910, AND NEC (NFPA-70), ARTICLE 800.
15. THE INSTALLER IS RESPONSIBLE FOR METERING ALL WIRES TO ENSURE THAT THEY ARE FREE AND CLEAR OF GROUNDS, OPENS, SHORTS, CORRECT RESISTANCE, CAPACITANCE, AND PROPER SUPPORT PRIOR TO TERMINATION ON ANY FIRE ALARM EQUIPMENT. SIEMENS WILL NOT BEGIN CHECKOUT WITHOUT WRITTEN DOCUMENTATION CONFIRMING THIS WORK BEING PERFORMED. IF GROUNDS AND/OR SHORT ARE FOUND ON THE SYSTEM WIRING UPON INITIAL CHECKOUT, THAT INITIAL CHECKOUT WILL BE DISCONNECTED UNTIL ALL WIRING IS CORRECTED.
16. TEE BARS SHALL BE USED TO SUPPORT JUNCTION BOXES OF ALL SUSPENDED CEILING MOUNTED DEVICES.
17. INSTALLING CONTRACTOR SHALL RETURN ONE SET OF ACCURATELY MARKED DRAWINGS FOR "AS BUILT" PURPOSES, WITH ACTUAL WIRE RUNS AND EQUIPMENT LOCATIONS.
18. FOR ADDITIONAL INSTALLATION INSTRUCTIONS, REFER TO CATALOG CUT SHEETS AND/OR INSTALLATION INSTRUCTIONS.

CONTROL MODULES:
- A) ALL CONTROL MODULES SHALL BE CLEARLY MARKED IN THE FIELD, AS WELL AS ON THE AS BUILT DRAWINGS. THEY SHOULD BE MARKED WITH THE TYPE OF FUNCTION THEY PERFORM & THE MODULE ADDRESS.
- B) THEY SHALL BE READILY ACCESSIBLE WHERE INSTALLED.
- C) ALL MODULES SHALL BE MOUNTED WITH A BACKBOX.
- D) IF THE MODULE IS USED TO INTERRUPT 24vdc/120vac POWER THE INSTALLER SHALL VERIFY THE CONTACT RATING IS NOT EXCEEDED.

NOTIFICATION APPLIANCE CIRCUITS – INDICATING (SIGNAL) APPLIANCES:

INSTALLATION OF INDICATING CIRCUITS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS & THE FOLLOWING:
- A) ALL CIRCUITS SHALL BE CONTINUOUS, NO T-TAPPING (PARALLEL WIRING).
- B) WHEN SHIELDED CABLE IS UTILIZED, THE SHIELDING SHALL BE THE CONTINUOUS, AND THE SHIELD SHALL ONLY BE GROUNDED AT ITS POINT OF ORIGIN. SEE THE RISER DIAGRAM FOR MORE INFORMATION.
- C) EACH CIRCUIT SHALL HAVE AN END OF LINE DEVICE (SUPPLIED).
- D) WIRE UTILIZED SHALL BE MINIMUM #14 AWG & IN ACCORDANCE WITH NEC 70.

SIGNAL LINE CIRCUITS (SLC) – INITIATING LOOPS FOR ADDRESSABLE DEVICES:

INSTALLATION OF INITIATING LOOPS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS & THE FOLLOWING:
- A) WHERE T-TAPPING (PARALLEL WIRING) IS ALLOWED, THE FOLLOWING CONDITIONS MUST BE OBSERVED: ALL T-TAPS SHALL BE DONE IN A SEPARATE BOX & TERMINATED ON A TERMINAL STRIP. NO T-TAPS ON CLASS A SYSTEMS.
- B) EACH BOX SHALL BE MARKED IN THE FIELD & ON AS BUILT DRAWINGS. RECORD THE LOOP NUMBER ALONG WITH ALL THE DEVICES TO BE LISTED IN SEQUENTIAL ORDER.
- C) MINIMUM WIRE SIZE SHALL BE #18 AWG & MAXIMUM #14 AWG, AS REQUIRED IN ACCORDANCE WITH NEC 70.
- D) THE MAXIMUM LINE RESISTANCE:
  1. STYLE 4 (CLASS B) LOOP (BOTH WIRES): 100 OHMS
- E) THE MAXIMUM LINE CAPACITANCE:
  1. 0.4 UF LINE TO LINE
  2. 0.8 UF LINE TO GROUND
- F) THE SHIELD SHOULD NOT BE ALLOWED TO BE ATTACHED TO ANY DEVICE IN THE FIELD.
- G) IF THERE IS ANY CONNECTION OF THE SHIELD THAT IS NOT INSULATED, A PIECE OF TAPE SHOULD BE APPLIED AROUND THE SHIELD SO THAT IT CANNOT TOUCH ANYTHING.
- H) NO END OF LINE RESISTOR ON THE SLC.

SEQUENCE OF OPERATION:

1. UPON INITIATION OF ANY SMOKE DETECTOR, HEAT DETECTOR, PULL STATION, FIRE DEPARTMENT SHALL BE DISPATCHED; ALL HORNS & STROBES SHALL ANNUNCIATE.

CARBON MONOXIDE NOTE

ACCEPTANCE TESTING OF THE CARBON MONOXIDE DETECTORS SHALL BE IN ACCORDANCE WITH THE REFERENCED STANDARDS, 2015 NFPA 720–8.4.1

CONTRACTOR SHALL PROVIDE SUBMITTALS IN ACCORDANCE WITH THE FOLLOWING CRITERIA. DOCUMENTS FOR FIRE ALARM SYSTEMS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE AUTHORITY HAVING JURISDICTION PRIOR TO SYSTEM INSTALLATION. SUBMITTALS SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL OF THE FOLLOWING:

1. A FLOOR PLAN.
2. LOCATIONS OF ALARM–INITIATING AND NOTIFICATION APPLIANCES.
3. ALARM CONTROL AND TROUBLE SIGNALING EQUIPMENT.
4. ANNUNCIATION.
5. POWER CONNECTION.
6. BATTERY CALCULATIONS.
7. CONDUCTOR TYPE AND SIZES.
8. VOLTAGE DROP CALCULATIONS.
9. MANUFACTURERS, MODEL NUMBERS AND LISTING INFORMATION FOR EQUIPMENT, DEVICES AND MATERIALS.
10. DETAILS OF CEILING HEIGHT AND CONSTRUCTION.
11. THE INTERFACE OF FIRE SAFETY CONTROL FUNCTIONS.

ALL PLANS AND CALCULATIONS SUBMITTED SHALL BE SIGNED & SEALED BY A REGISTERED, LICENSED ENGINEER. AND SUBMITTED TO AHJ FOR APPROVAL AND SIGN-OFF.

09.14.23 ISSUED FOR BID
08.25.23 FOR PERMIT

HALLEL BUILDING
GYMNASIUM ALTERATION

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FIRE ALARM PLAN

SCALE: AS NOTED
DATE: 08.25.2023
FILE: 2260\Current\

FA.101

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