ADDENDUM NO. 2

December 22, 2023

Jeffersonville High School Aquatic Center – New Facility
2315 Allison Ln
Jeffersonville, IN 47130

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated November 20, 2023, by Fanning Howey Associates, Inc. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 2-1 through ADD 2-2 and attached Fanning Howey Associates Addendum No. 2, dated December 21, 2023, consisting of 2 pages, and Addendum 2 Drawings: A1.02, A6.03, A6S.01, A9.21, M0.02, M0.03, M1.03, and E1.02.

A. SPECIFICATION SECTION 00 00 10 – TITLE PAGE

BIDDERS' CONTACTS:

Revise as follows:
Project Manager: Tim Brown
Phone: 317-694-5434

B. SPECIFICATION SECTION 00 10 00 – INSTRUCTIONS TO BIDDERS

1.05 Approval Before Bidding

Revise the following:

D. Requests for product approval shall be submitted on the sample form following this Section and to: **The Skillman Corporation, attention Tim Brown tdbrown@skillman.com**

C. SPECIFICATION SECTION 01 12 00 – MULTIPLE CONTRACT SUMMARY

1. Paragraph 3.03 Bid Categories

A. Bid Category No. 1 – Earthwork & Site Utilities

Add the following Clarifications:

10. Provide all site sanitary and storm complete per the Civil Drawing requirements.

B. Bid Category No. 2 – General Trades

Add the following Clarifications:

18. Provide all exterior fencing, handrails, and bollards as referenced in the Civil Drawings.

E. Bid Category No. 5 – Structural Steel

Add the following Clarifications:

3. Exterior fencing, handrails, and bollards to be provided by Bid Category 2.

A D D E N D U M N O. 2

Jeffersonville High School Natatorium

Greater Clark County Schools
Jeffersonville, Indiana

Project No. 222038.00

Index of Contents

Addendum No. 2, 5 items, 2 pages
Revised Drawing Sheets: A1.02, A6.03, A6S.01, A9.21, M0.02, M0.03, M1.03, and E1.02

Date: December 21, 2023

I hereby certify that this Addendum was prepared by me or under my direct supervision and that I am a duly registered Architect/Engineer under the Laws of the State of Indiana.

FANNING/HOWEY ASSOCIATES, INC.
ARCHITECTS/ENGINEERS/CONSULTANTS

Paul A. Miller, License No. AR10800161
Expiration Date: 12/31/2023

TO: ALL BIDDERS OF RECORD

ADDENDUM NO. to Drawings and Project Manual, dated November 20, 203, for Jeffersonville High School Natatorium for Greater Clark County Schools, 2112 Utica-Sellersburg Road, Jeffersonville, Indiana 47130; as prepared by Fanning/Howey Associates, Inc., Indianapolis, Indiana.
This Addendum shall hereby be and become a part of the Contract Documents the same as if originally bound thereto.

The following clarifications, amendments, additions, revisions, changes, and modifications change the original Contract Documents only in the amount and to the extent hereinafter specified in this Addendum.

Each bidder shall acknowledge receipt of this Addendum in his proposal or bid.

NOTE: Bidders are responsible for becoming familiar with every item of this Addendum. (This includes miscellaneous items at the very end of this Addendum.)

RE: ALL BIDDERS

ITEM NO. 1. PROJECT MANUAL, SECTION 07 25 00 – WEATHER BARRIERS

A. Replace 2.1, A., 1., e., as follows:

"e. Wrapshield IT ; VaproShield LLC"

ITEM NO. 2. PROJECT MANUAL, SECTION 09 51 13 – ACOUSTICAL PANEL CEILINGS

A. Replace 2.6, C., 3., as follows:

"3. Profile and Size: "Elevation Change" profile in size as indicated on Drawings."

ITEM NO. 3. PROJECT MANUAL, SECTION 10 28 00 – TOILET, BATH, AND LAUNDRY ACCESSORIES

A. Delete 2.6, A., 1., in its entirety.

ITEM NO. 4. ACCEPTABLE MANUFACTURERS

The following manufacturers are to be considered acceptable manufacturers (suppliers and fabricators) for the Sections of the Specifications listed. Listed manufacturers are required to bid on products equal in type and design, size, function, and quality to that originally specified. Final decision as to equality of products specified versus those proposed shall be made by the Architect.

Section 09 67 12 – Fluid-Applied Epoxy Flooring
- PPG Flooring

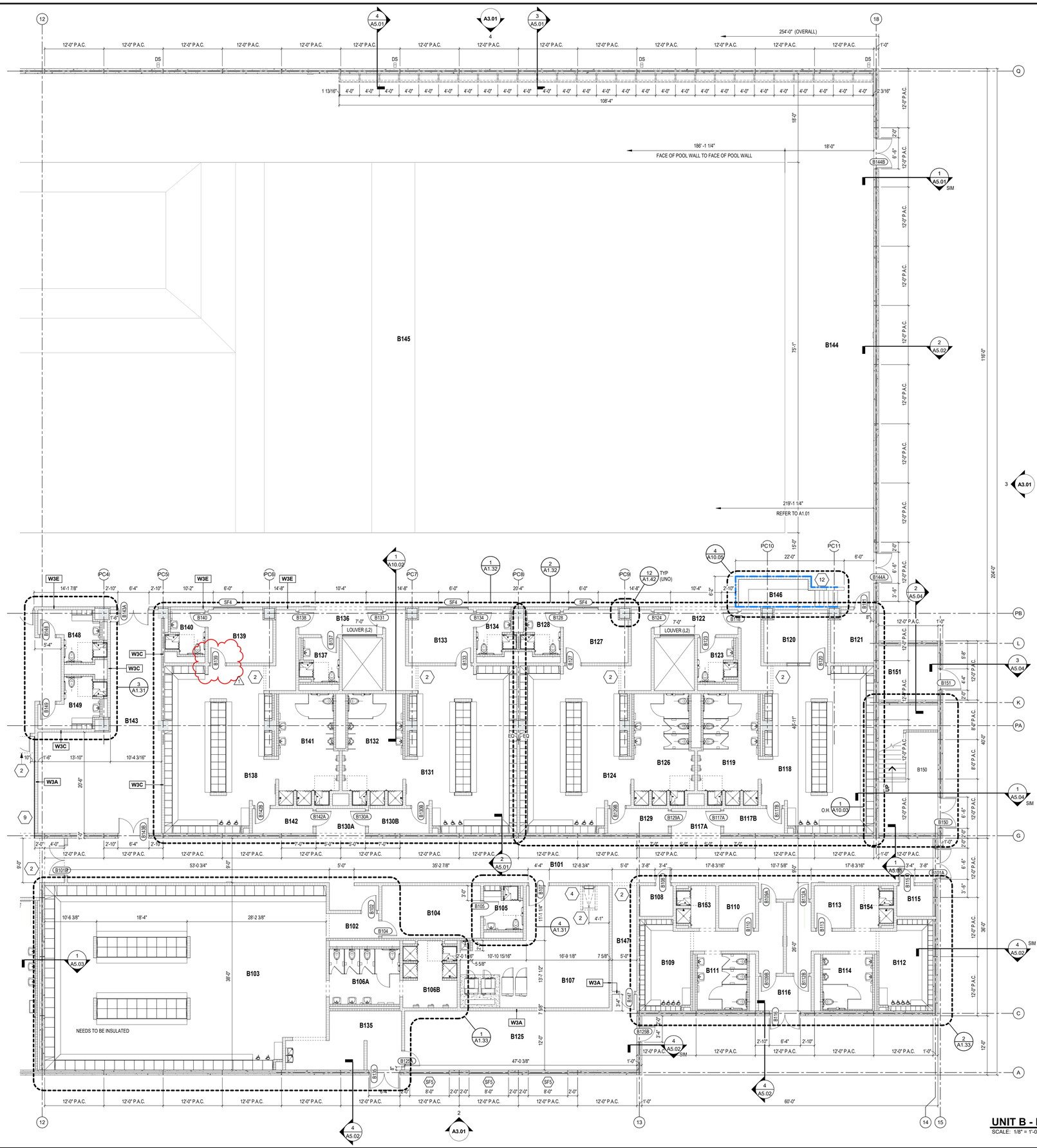
Section 09 67 23 – Decorative Resinous Flooring
- PPG Flooring

Section 22 11 19 – Domestic Water Piping Specialties
- Powers, Watts, Zurn (Thermostatic Mixing Valves)

ITEM NO. 5. REVISED DRAWING SHEET

A. Drawing Sheets A1.02, A6.03, A6S.01, A9.21, M0.02, M0.03, M1.03, and E1.02 have been revised, dated 12/21/23, and are included with and hereby made a part of this Addendum. These Drawings supersede the original documents.

END OF ADDENDUM



ROOM LEGEND - FIRST FLOOR UNIT B

ROOM NO.	OWNER ROOM NO.	ROOM NAME	AREA (SF)
B101		CORRIDOR	1667 SF
B102		ALCOVE	53 SF
B103		FOOTBALL LOCKERS	1533 SF
B104		OFFICE	213 SF
B105		RESTROOM	61 SF
B106A		RESTROOM	159 SF
B106B		SHOWERS	137 SF
B107		LAUNDRY/STORAGE	596 SF
B108		ELECTRICAL PANEL	42 SF
B109		GIRLS TRACK	265 SF
B110		OFFICE	64 SF
B111		RESTROOM	113 SF
B112		BOYS TRACK	276 SF
B113		OFFICE	64 SF
B114		RESTROOM	112 SF
B115		TECHNOLOGY	45 SF
B116		VESTIBULE	74 SF
B117A		ALCOVE	50 SF
B117B		ALCOVE	61 SF
B118		GIRLS SWIM	675 SF
B119		RESTROOM	253 SF
B120		OFFICE	134 SF
B121		TIMING ROOM	89 SF
B122		ALCOVE	85 SF
B123		RESTROOM	65 SF
B124		GIRLS PE SWIM	664 SF
B125		TRAINING	581 SF
B126		RESTROOM	253 SF
B127		OFFICE	137 SF
B128		RESTROOM	64 SF
B129		ALCOVE	61 SF
B130A		ALCOVE	50 SF
B130B		ALCOVE	61 SF
B131		BOYS PE SWIM	666 SF
B132		RESTROOM	253 SF
B133		OFFICE	137 SF
B134		RESTROOM	64 SF
B135		VESTIBULE	229 SF
B136		ALCOVE	85 SF
B137		RESTROOM	65 SF
B138		BOYS SWIM	664 SF
B139		OFFICE	137 SF
B140		RESTROOM	64 SF
B141		RESTROOM	253 SF
B142		ALCOVE	61 SF
B143		STORAGE	774 SF
B144		COMPETITION POOL DECK	6583 SF
B145		COMPETITION POOL	11263 SF
B146		TIMING PLATFORM	132 SF
B147		CORRIDOR	110 SF
B148		RESTROOM	96 SF
B149		RESTROOM	96 SF
B150		STAIR B	197 SF
B151		WATER SERVICE	132 SF
B153		SHOWERS	61 SF
B154		SHOWERS	61 SF
Grand total: 56			30940 SF

UNIT B - FIRST FLOOR ARCHITECTURAL PLAN

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

ARCHITECTURAL PLAN GENERAL NOTES

A. ALL CMU WALLS THAT DO NOT LAY OUT IN FULL OR HALF LENGTHS SHOULD BE BALANCED SO AS NOT TO HAVE ANY PIECES LESS THAN 4" IN SIZE EXPOSED TO VIEW.
B. WHERE DISSIMILAR FLOOR MATERIALS MEET, THEY SHALL DO SO UNDER THE CENTERLINE OF THE DOOR, UNLESS NOTED OTHERWISE.
C. THE BASE FLOOR ELEVATION INDICATED FOR THE PROJECT IS 100'-0". REFER TO SITE PLAN FOR CORRELATION TO USGS DATUM.
D. ALL INTERIOR MASONRY WALLS THAT RUN TO UNDERSIDE OF DECK ABOVE SHALL HAVE A 2" JOINT (U.N.O.) AT THE DECK TO BE FILLED WITH FIRE STOPPING AT RATED WALLS PER PROJECT MANUAL, AND MINERAL WOOL AT THE NON-RATED WALLS, TO ALLOW FOR DEFLECTION. REFER TO SHEET A1.41
E. FOR TYPICAL COMMON JOINT DETAILS AND CONSTRUCTION MOVEMENT JOINT DETAILS REFER TO DETAILS ON SHEET A1.42
F. ALL DIMENSIONS ON FLOOR PLANS ARE TO FINISH FACE OF CMU, CONCRETE, BRICK OR FINISH FACE OF GWB AT METAL STUD WALLS, UNLESS NOTED OTHERWISE. EXCEPTION: EXTERIOR METAL STUD WALLS ARE TO FACE OF METAL STUDS.
G. HINGE SIDE DOOR JAMB AT WALLS WILL TYPICALLY BE LOCATED 4" MINIMUM FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
H. ALL EXPOSED CONCRETE MASONRY UNITS (CMU) CORNERS ARE TO BE BULLNOSE, EXCEPT AT WINDOW JAMBS, BULKHEADS, WINDOW AND DOOR HEADS.
I. SEE REFLECTED CEILING PLANS (R.C.P.) FOR BULKHEAD LOCATIONS AND DETAIL REFERENCES.
J. REFER TO ROOM FINISH SCHEDULE AND EQUIPMENT PLANS FOR LOCATION AND EXTENT OF FINISH FLOOR MATERIALS UNLESS NOTED OTHERWISE.
K. PROVIDE WOOD BLOCKING, AS REQUIRED, WITHIN METAL STUD WALLS FOR WALL MOUNTED ITEMS.
L. REFER TO MASTERCODE PLANS FOR CODE INFORMATION AND FIRE RATED WALL LOCATIONS.
M. PROVIDE SPRAY FOAM INSULATION AND THERMAL BARRIER CONTINUOUS AT INTERSECTION OF EXTERIOR WALLS AND DECK.
N. SF = GLAZED ALUMINUM STOREFRONT SYSTEM. REFER TO FLOOR PLANS AND A6.02
O. CW = GLAZED ALUMINUM CURTAIN WALL SYSTEM. REFER TO FLOOR PLANS AND A6.02
P. L = ALUMINUM FIXED LOUVER WITH S.S. ANCHORS. REFER TO FLOOR PLANS, MECHANICAL DRAWINGS AND A6.02
Q. WW = GLAZED ALUMINUM WINDOW WALL SYSTEM. REFER TO FLOOR PLANS AND A6.02
R. ALL EXPOSED STEEL COLUMNS TO BE PAINTED, UNLESS NOTED OTHERWISE.
S. PRECAST ARCHITECTURAL CONCRETE WALL PANEL - PROVIDE 3/4" CHAMFER ON EXPOSED CORNERS (TYP) **DELETE CHAMFER WHEN FINISH MATERIALS, RE: WALLS AND OR CEILINGS, ALIGN / ABUT AN EXPOSED CORNER OR WHEN AN EXPOSED CORNER IS HIDDEN FROM VIEW AND AT OPENINGS WHERE FRAMES, TRACKS, GUIDES OR EQUIPMENT ARE MOUNTED. REFER TO WALL SECTIONS, DETAILS, HEADS, JAMBS AND SILLS ETC..

ARCHITECTURAL PLAN NOTES

(X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

W### — INDICATES WALL TYPE. REFER TO DRAWING A1.41 FOR WALL THICKNESS, HEIGHT AND COMPOSITION.

NO.	DESCRIPTION
1	PROVIDE A 84" WIDE x 18" HIGH OPENING AT 2' AFF IN PRECAST WALL FOR MECHANICAL PIPING. INFILL OPENING WITH 4" EIFS ON 5/8" SHEATHING ON 3 5/8" METAL STUDS WITH IFS ON 1/2" GYP SHEATHING. COORDINATE PIPE PENETRATIONS WITH MECHANIAL DRAWINGS.
2	DASHED LINE INDICATES BULKHEAD/SOFFIT ABOVE. REFER TO CEILING PLANS.
3	EXPOSED STRUCTURAL COLUMN, PAINT.
4	ROOF HATCH WITH FIXED ACCESS LADDER (SIM TO O'KEEFFE'S #500). REFER TO ROOF PLAN AND 6-A2.03
5	MECHANICAL YARD SCREEN WALL. REFER TO CIVIL DRAWINGS
6	TRANSFORMER SCREEN WALL. REFER TO CIVIL DRAWINGS
7	PROVIDE A LOCK BOX IN METAL PLATE WALL PANEL.
8	PROVIDE A 52" WIDE x 18" HIGH OPENING AT 2' AFF IN PRECAST WALL FOR MECHANICAL PIPING. INFILL OPENING WITH 4" EIFS ON 5/8" SHEATHING ON 3 5/8" METAL STUDS WITH IFS ON 1/2" GYP SHEATHING. COORDINATE PIPE PENETRATIONS WITH MECHANIAL DRAWINGS.
9	PROVIDE 5/8" GWB (LEVEL 5 FINISH) ON 7/8" FURRING CHANNELS 16" O.C. TO 4" ABOVE CEILING.
10	ALIGN FACE OF GWB WITH FACE OF PRECAST COLUMN
11	RECORDS BOARD, REFER TO INTERIOR ELEVATIONS
12	DAMP PROOFING W/ PROTECTION COURSE.
13	SCORE BOARD, REFER TO INTERIOR ELEVATIONS
14	DASHED LINE INDICATES FACE OF WALL ABOVE.
15	42" x 20" ADA BENCH, REFER TO A7 SERIES DETAILS
16	REFER TO SHEET A7S.01 FOR TROPHY CASE DETAILS.

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

JEFFERSONVILLE HIGH SCHOOL NATATORIUM

2315 ALLISON LN.
JEFFERSONVILLE, IN 47130

GREATER CLARK COUNTY SCHOOLS

GCCS

ARCHITECT

FANNING HOWEY

317-848-0966 WWW.FHAI.COM
350 EAST NEW YORK ST.

A B

KEY PLAN

NORTH

ISSUED FOR CONSTRUCTION

PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

PROJECT MANAGER: JM
DRAWN BY: BMD
PROJECT NUMBER: 222038.00
PROJECT ISSUE DATE: 11/20/2023

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #2	12/21/2023

UNIT B - FIRST FLOOR ARCHITECTURAL PLAN

A1.02

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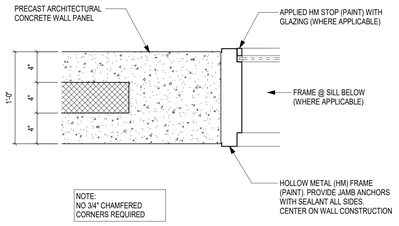

22 JAMB

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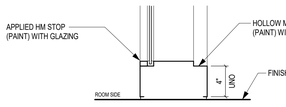

23 SILL

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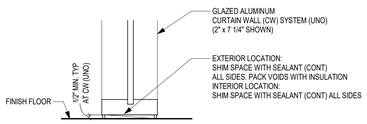

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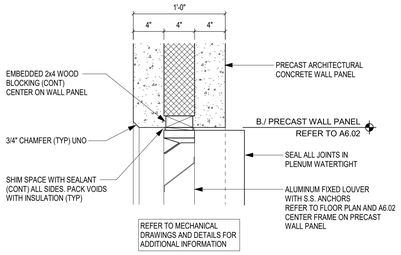

25 HEAD

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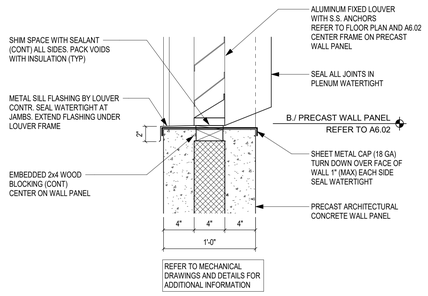

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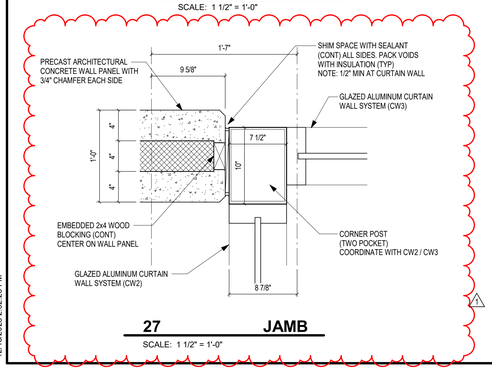

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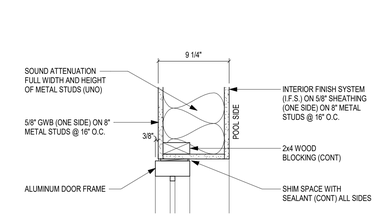

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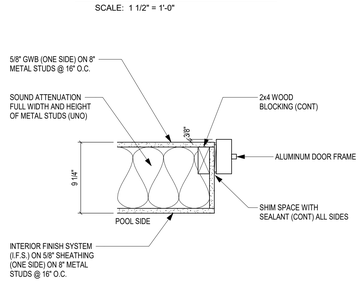

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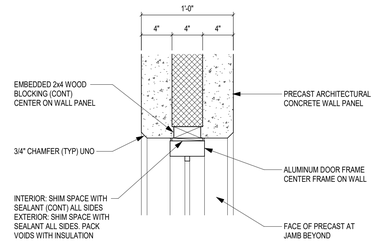

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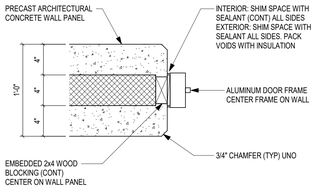

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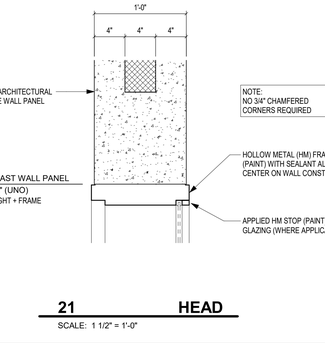

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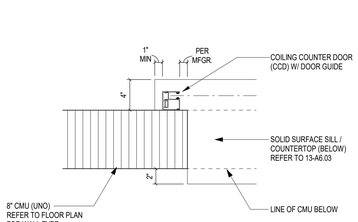

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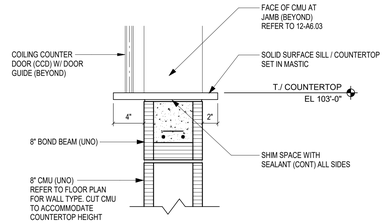

13 SILL (CCD)

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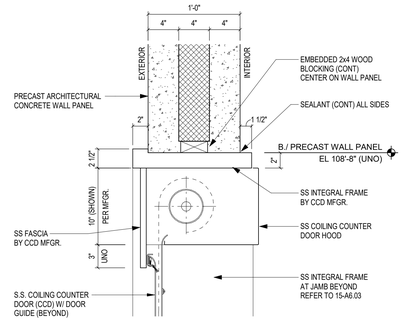

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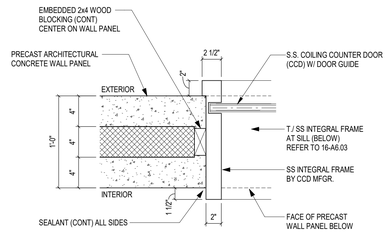

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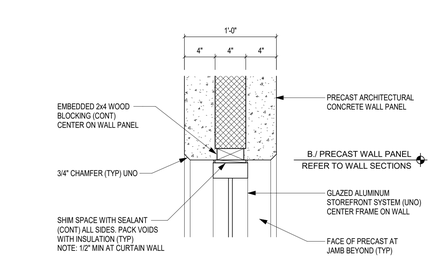

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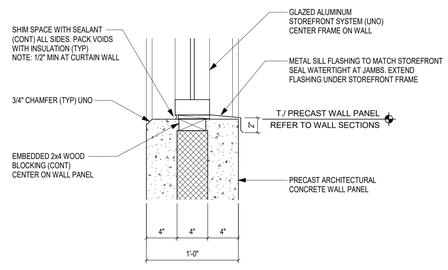

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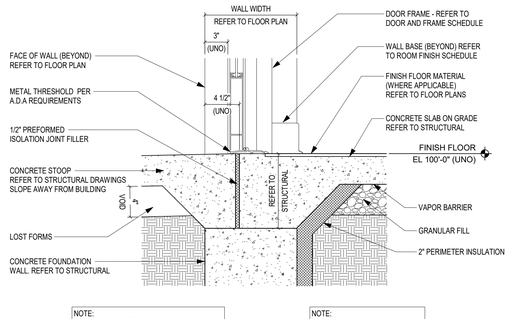

10 SILL - CONCRETE STOOP

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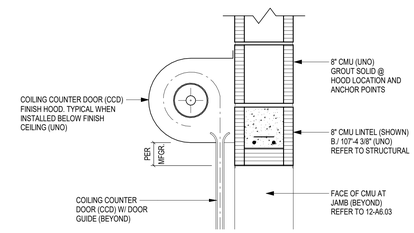

16 SILL (CCD)

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11 HEAD (CCD)

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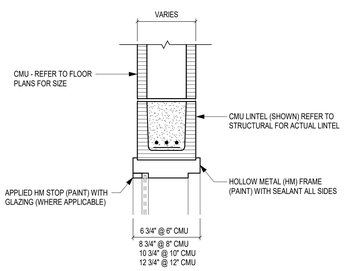

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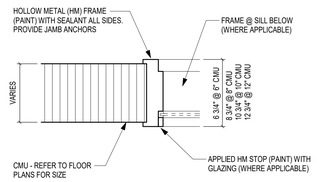

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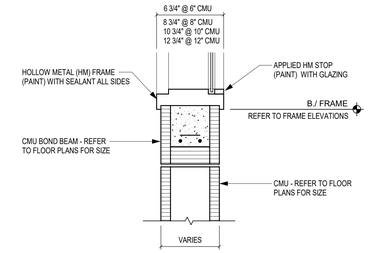

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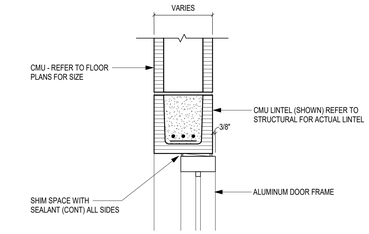

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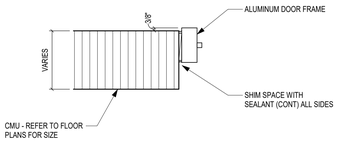

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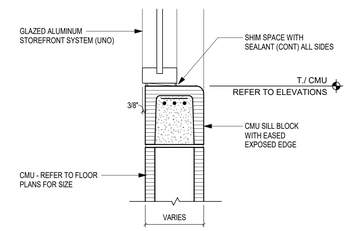

6 SILL

SCALE: 1 1/2" = 1'-0"

JEFFERSONVILLE HIGH SCHOOL NATATORIUM

2315 ALLISON LN.
JEFFERSONVILLE, IN 47130

GREATER CLARK COUNTY SCHOOLS

GCCS

ARCHITECT

FANNING HOWEY

317-848-0966 WWW.FHAI.COM
350 EAST NEW YORK ST.

ISSUED FOR CONSTRUCTION

PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

PROJECT MANAGER: JM
DRAWN BY: MDM
PROJECT NUMBER: 222038.00
PROJECT ISSUE DATE: 11/20/2023

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #2	12/21/2023

FRAME DETAILS

A6.03

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DOOR AND FRAME SCHEDULE - A2

DOOR NUMBER	DOORS		FRAME			DETAILS			FIRE RATING IN MINS.	HARDWARE		STC RATING	REMARKS	DOOR NUMBER
	DOOR SIZE (WxH)	DOOR TYPE	FRAME MATERIAL	FRAME ELEVATION	JAMB DEPTH	HEAD	JAMB	SILL		SET NO.	KEYSIDE ROOM			
A204	PR 3'-0" x 7'-2"	F WD	AL	AL2	4 1/2"	19-A6.03	20-A6.03	-	-	18.0	A204	-		A204

DOOR AND FRAME SCHEDULE - B2

DOOR NUMBER	DOORS		FRAME			DETAILS			FIRE RATING IN MINS.	HARDWARE		STC RATING	REMARKS	DOOR NUMBER
	DOOR SIZE (WxH)	DOOR TYPE	FRAME MATERIAL	FRAME ELEVATION	JAMB DEPTH	HEAD	JAMB	SILL		SET NO.	KEYSIDE ROOM			
B202	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	4-A6.03	5-A6.03	-	-	12.0	B202	-		B202
B203	PR 3'-0" x 7'-2"	F WD	AL	AL2	4 1/2"	19-A6.03	20-A6.03	-	-	19.0	B203	-		B203
B204	PR 3'-0" x 7'-2"	F WD	HM	HM2	8 3/4"	1-A6.03	2-A6.03	-	-	18.0	B202	50		B204

DOOR AND FRAME SCHEDULE - A3

DOOR NUMBER	DOORS		FRAME			DETAILS			FIRE RATING IN MINS.	HARDWARE		STC RATING	REMARKS	DOOR NUMBER
	DOOR SIZE (WxH)	DOOR TYPE	FRAME MATERIAL	FRAME ELEVATION	JAMB DEPTH	HEAD	JAMB	SILL		SET NO.	KEYSIDE ROOM			
A302	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	A302	-		A302
A303	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	A303	-		A303
A304	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	36.0	A304	-		A304
A307A	8'-0" x 4'-4"	CCD	SS	-	2"	11-A6.03	12-A6.03	13-A6.03	-	40.0		-		A307A
A307B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	27.0	A305	-		A307B
A308	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	26.0	A308	-		A308
A309	PR 3'-0" x 7'-2"	F WD	AL	AL2	4 1/2"	19-A6.03	20-A6.03	-	-	19.0	A309	-		A309
A310A	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	17-A6.03	18-A6.03	-	-	14.0	A305	-		A310A
A310B	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	-	-	13.0	A301	-		A310B
A310C	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	-	-	13.0	A301	-		A310C
A310D	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	-	-	13.0	A301	-		A310D

DOOR AND FRAME SCHEDULE - B3

DOOR NUMBER	DOORS		FRAME			DETAILS			FIRE RATING IN MINS.	HARDWARE		STC RATING	REMARKS	DOOR NUMBER
	DOOR SIZE (WxH)	DOOR TYPE	FRAME MATERIAL	FRAME ELEVATION	JAMB DEPTH	HEAD	JAMB	SILL		SET NO.	KEYSIDE ROOM			
B303	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	19-A6.03	20-A6.03	-	-	19.0	B303	-		B303

DOOR AND FRAME SCHEDULE - A1

DOOR NUMBER	DOORS		FRAME			DETAILS			FIRE RATING IN MINS.	HARDWARE		STC RATING	REMARKS	DOOR NUMBER
	DOOR SIZE (WxH)	DOOR TYPE	FRAME MATERIAL	FRAME ELEVATION	JAMB DEPTH	HEAD	JAMB	SILL		SET NO.	KEYSIDE ROOM			
A101A	PR 3'-0" x 7'-2"	FGAL2	AL	CW1	7 1/4"	1-A5.02	13-A1.42	10-A6.03 24-A6.03	-	3.0	EXT	-	REMOVABLE MULLION	A101A
A101B	PR 3'-0" x 7'-2"	FGAL2	AL	CW1	7 1/4"	1-A5.02	13-A1.42	10-A6.03 24-A6.03	-	1.0	EXT	-		A101B
A101C	PR 3'-0" x 7'-2"	FGAL2	AL	CW1	7 1/4"	1-A5.02	13-A1.42	10-A6.03 24-A6.03	-	1.0	EXT	-		A101C
A101D	PR 3'-0" x 7'-2"	FGAL2	AL	CW3	7 1/4"	1-A5.02	27-A6.03	24-A6.03	-	16.0	EXT	-		A101D
A101E	PR 3'-0" x 7'-2"	FGAL2	AL	CW3	7 1/4"	1-A5.02	27-A6.03	24-A6.03	-	15.0	EXT	-		A101E
A101F	PR 3'-0" x 7'-2"	FGAL2	AL	CW3	7 1/4"	1-A5.02	27-A6.03	24-A6.03	-	15.0	EXT	-		A101F
A105	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	27.0	A103	-		A105
A106	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	20.0	A103	-	PANIC HARDWARE	A106
A107	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	27.0	A103	-		A107
A108	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	23.0	A109	-		A108
A110	PR 3'-0" x 7'-2"	FG2 WD	HM	HM2	8 3/4"	1-A6.03	2-A6.03	-	-	17.0		-		A110
A111	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	31.0	A111	-		A111
A112	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	28.0	A112	-		A112
A113A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	A113	-		A113A
A113B	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	1-A6.04	2-A6.04	-	-	10.0	EXT	-		A113B
A114A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	A114	-		A114A
A114B	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	1-A6.04	2-A6.04	-	-	10.0	EXT	-		A114B
A116A	8'-0" x 4'-4"	CCD	SS	-	2"	11-A6.03	12-A6.03	13-A6.03	-	40.0	A116	-		A116A
A116B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	29.0	A116	-		A116B
A116C	8'-0" x 5'-8"	CCD	SS	-	2"	14-A6.03	15-A6.03	16-A6.03	-	40.0	A116	-		A116C
A116D	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	7.0	EXT	-		A116D
A118A	PR 3'-0" x 7'-2"	FG2 WD	HM	HM2	8 3/4"	1-A6.03	2-A6.03	-	-	17.0	A109	-		A118A
A118B	3'-0" x 7'-2"	FGAL2	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	33.0	A127	-		A118B
A119	PR 3'-0" x 7'-2"	F WD	HM	HM2	8 3/4"	1-A6.03	2-A6.03	-	-	24.0	A118	-		A119
A120A	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	5.0	EXT	-	FIXED CENTER MULLION	A120A
A120B	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	5.0	EXT	-	FIXED CENTER MULLION	A120B
A120C	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	4-A6.03	5-A6.03	-	-	12.0	A110	-		A120C
A123A	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	4-A6.03	5-A6.03	-	-	9.0	A120	-		A123A
A123B	4'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	8.0	EXT	-		A123B
A124	4'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	11.0	A123	-		A124
A125	4'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	11.0	A123	-		A125
A126	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	5.0	EXT	-	FIXED CENTER MULLION	A126

DOOR AND FRAME SCHEDULE - B1

DOOR NUMBER	DOORS		FRAME			DETAILS			FIRE RATING IN MINS.	HARDWARE		STC RATING	REMARKS	DOOR NUMBER
	DOOR SIZE (WxH)	DOOR TYPE	FRAME MATERIAL	FRAME ELEVATION	JAMB DEPTH	HEAD	JAMB	SILL		SET NO.	KEYSIDE ROOM			
B101A	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	4.0	EXT	-	FIXED CENTER MULLION	B101A
B101B	PR 3'-0" x 7'-2"	N WD	HM	HM2	8 3/4"	1-A6.03	2-A6.03	-	-	21.0		-		B101B
B102	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B102	-		B102
B104	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	31.0	B102	-		B104
B105	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	35.0	B104	-		B105
B107	4'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	31.0	B101	-		B107
B108	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	20.0	B108	-		B108
B109A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B101	-		B109A
B109B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B116	-		B109B
B110	3'-0" x 7'-2"	FG WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	30.0	B110	-		B110
B112A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B101	-		B112A
B112B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B116	-		B112B
B113	3'-0" x 7'-2"	FG WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	30.0	B113	-		B113
B115	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	23.0	B115	-		B115
B116	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	2.0	EXT	-		B116
B117A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B117A	-		B117A
B117B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B117B	-		B117B
B118	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	39.0	B122	-		B118
B120	3'-0" x 7'-2"	F WD	HM	HM5	8 3/4"	1-A6.03	2-A6.03	3-A6.03	-	30.0	B120	-		B120
B121	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	32.0	B144	-		B121
B123	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	37.0	B122	-		B123
B124	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	39.0	B122	-		B124
B125A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	31.0	B135	-		B125A
B125B	3'-0" x 7'-2"	FGAL2	AL	AL1	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	6.0	EXT	-		B125B
B127	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	30.0	B124	-		B127
B128	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	34.0	B127	-		B128
B129A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B117A	-		B129A
B129B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B129	-		B129B
B130A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B130A	-		B130A
B130B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B130B	-		B130B
B131	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	39.0	B136	-		B131
B133	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	30.0	B131	-		B133
B134	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	34.0	B133	-		B134
B135	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	2.0	EXT	-		B135
B137	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	37.0	B136	-		B137
B136	3'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	4-A6.03	5-A6.03	-	-	39.0	B136	-		B136
B139	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	30.0	B138	-		B139
B140	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	34.0	B139	-		B140
B142A	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B130A	-		B142A
B142B	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	38.0	B142	-		B142B
B143A	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	4-A6.03	5-A6.03	-	-	25.0	B143	-		B143A
B143B	PR 3'-0" x 7'-2"	N WD	HM	HM2	1'-0 3/4"	21-A6.03	22-A6.03	-	-	22.0	B143	-		B143B
B144A	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	5.0	EXT	-	FIXED CENTER MULLION	B144A
B144B	PR 3'-0" x 7'-2"	FGAL2	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	5.0	EXT	-	FIXED CENTER MULLION	B144B
B147	3'-0" x 7'-2"	FG2 WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	31.0	B125	-		B147
B148	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	36.0	B148	-		B148
B149	3'-0" x 7'-2"	F WD	HM	HM1	8 3/4"	1-A6.03	2-A6.03	-	-	36.0	B149	-		B149
B150	PR 3'-0" x 7'-2"	F FRP	AL	AL2	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	5.0	EXT	-	FIXED CENTER MULLION	B150
B151	4'-0" x 7'-2"	F FRP	AL	AL1	4 1/2"	19-A6.03	20-A6.03	10-A6.03	-	8.0	EXT	-		B151

JEFFERSONVILLE HIGH SCHOOL NATATORIUM

2315 ALLISON LN.
JEFFERSONVILLE, IN 47130

GREATER CLARK COUNTY SCHOOLS

GCCS

ARCHITECT

FANNING HOWEY

317-848-0966 WWW.FHAI.COM
350 EAST NEW YORK ST.

ISSUED FOR CONSTRUCTION

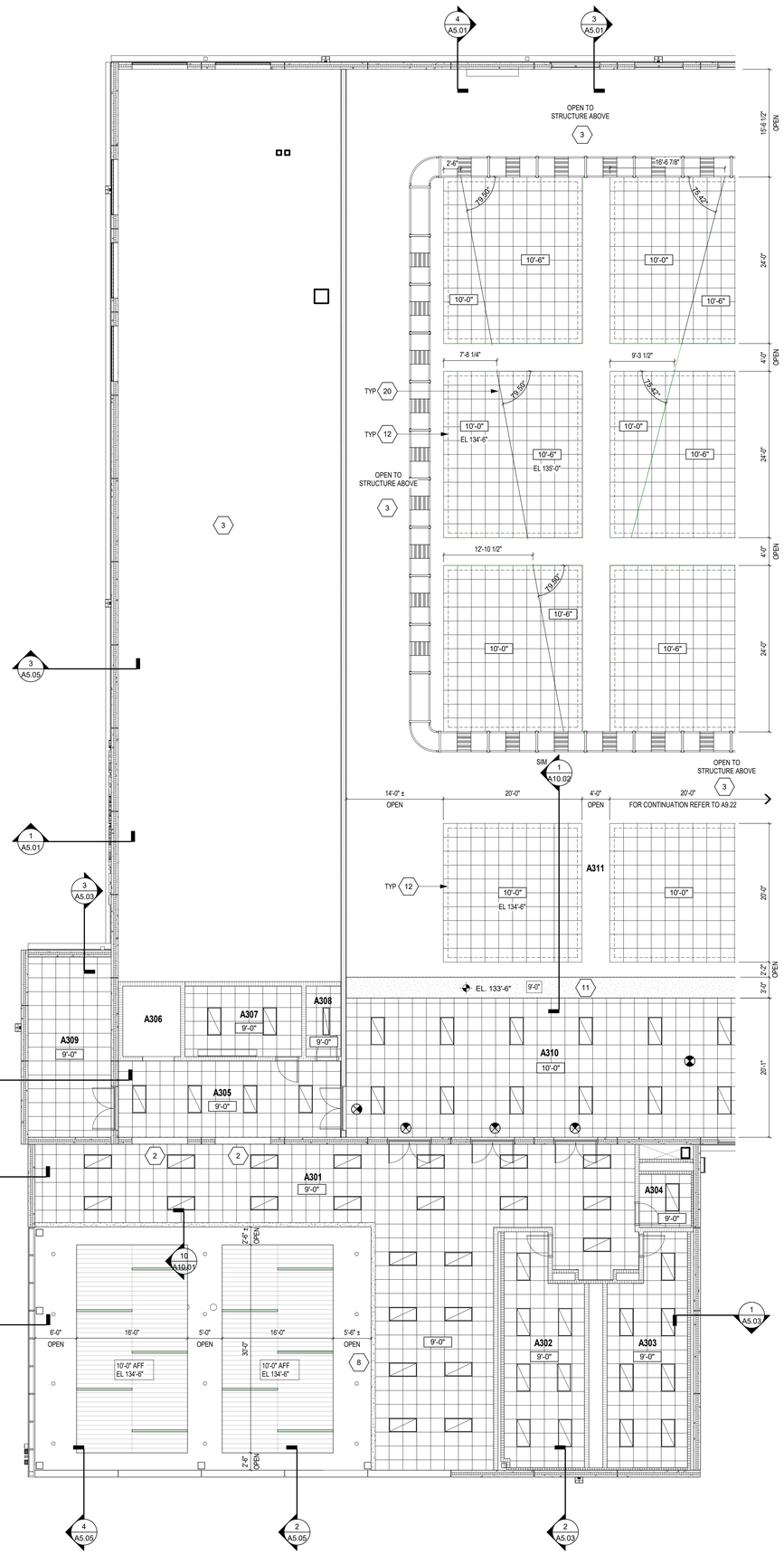
PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

PROJECT MANAGER: JM
DRAWN BY: BMD MDM
PROJECT NUMBER: 222038.00
PROJECT ISSUE DATE: 11/20/2023

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #2	12/21/2023

DOOR AND FRAME SCHEDULE

A6S.01



UNIT A - SECOND FLOOR REFLECTED CEILING PLAN

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

ROOM LEGEND - SECOND FLOOR UNIT A

ROOM NO.	ROOM NAME	AREA (SF)	Class Abbreviation
A301	UPPER BALCONY	1093 SF	U
A302	RESTROOM	354 SF	U
A303	RESTROOM	355 SF	U
A304	FAMILY RESTROOM	58 SF	U
A305	UPPER LOBBY	353 SF	U
A306	ELEVATOR	85 SF	U
A307	UPPER CONCESSIONS	171 SF	CB
A308	JANITOR	51 SF	U
A309	STAIR A	312 SF	U
A310	CONCOURSE	1151 SF	U
A311	BLEACHERS	1158 SF	A4
Grand total: 11		5142 SF	

REFLECTED CEILING PLAN LEGEND

A. BULKHEAD FRAMING SHALL BE ATTACHED TO STRUCTURAL SUPPORTS AND NOT TO THE ROOF DECK. CEILING GRIDS SHALL BE CONFIGURED SO AS TO NOT HAVE ANY GRIDS SMALLER THEN 6" ± AROUND PERIMETER OF ROOM (UNO)

REFLECTED CEILING PLAN NOTES

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

1. GWB BULKHEAD - B / 10'-0" REFER TO 10-A10.01 (SIM) AND 7-A10.03
2. PRECAST WALL PANEL LINTEL - REFER TO FLOOR PLAN AND 2-A9.31
3. EXPOSED STRUCTURE (PAINT)
4. GWB BULKHEAD - REFER TO 3-A9.31
5. GWB BULKHEAD - REFER TO 4-A9.31
6. CMU LINTEL - B / 108'-0 3/8"
7. INTERIOR FINISH SYSTEM (I.F.S.) BULKHEAD - REFER TO 5-A9.31
8. GWB BULKHEAD - REFER TO 10-A10.01 SIM. ALIGN FACE OF GWB WITH FACE OF GWB BELOW
9. GWB BULKHEAD - REFER TO 6-A9.31
10. INTERIOR FINISH SYSTEM (I.F.S.) CEILING / BULKHEAD - REFER TO 7-A9.31
11. INTERIOR FINISH SYSTEM (I.F.S.) BULKHEAD - REFER TO 1-A10.02
12. DASHED LINE INDICATES 30" x 30" LOOSE LAID ACOUSTIC PADS ON TOP OF CEILING TILE. SET ACOUSTIC PADS AWAY FROM EDGE OF CLOUD APPROXIMATELY 8 INCHES.
13. METAL PLATE WALL PANEL SOFFIT - REFER TO WALL SECTIONS
14. PRECAST WALL PANEL LINTEL - B / 107'-4"
15. GWB BULKHEAD - REFER TO 8-A9.31
16. CMU LINTEL - T / 108'-0"
17. GWB BULKHEAD AT ROOF HATCH. REFER TO 9-A9.31
18. TROPHY CASE - REFER TO SHEET A7S.01 FOR DETAILS
19. GWB BULKHEAD WITH SOUND ATTENUATION - REFER TO 14-A10.06
20. CEILING TRANSITION, TYP. REFER TO LIST OF FINISHES SHEET A9S.01
21. PROVIDE ACOUSTICAL SEMI-RIGID INSULATION BOARD ON UNDERSIDE OF FLOOR SLAB ABOVE.

REFLECTED CEILING PLAN LEGEND

- 10'-4" — INDICATES ELEVATION HEIGHT
- 9'-0" — INDICATES CEILING HEIGHT
- A 9'-0" — INDICATES ACOUSTIC PANEL CEILING TYPE AND HEIGHT. REFER TO PROJECT MANUAL FOR "TYPE"
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- CLOCK - REFER TO TECHNOLOGY DRAWINGS
- 2" SOFFIT VENT (CONT). HOLD 6" FROM ANY VERTICAL IMPEDIMENT (UNO). REFER TO WALL SECTIONS
- MECHANICAL DIFFUSER - REFER TO MECHANICAL DRAWINGS
- MECHANICAL RETURN AIR GRILLE - REFER TO MECHANICAL DRAWINGS
- CEILING MOUNTED MECHANICAL UNIT - REFER TO MECHANICAL DRAWINGS
- MECHANICAL UNIT HEATER - REFER TO MECHANICAL DRAWINGS
- IC — RECESSED CEILING SPEAKER
- M — MOTION DETECTOR
- CEILING MOUNTED EXIT LIGHT
- CAM — CEILING MOUNTED CAMERA
- W — WIRELESS ACCESS POINT (WAP)
- CJ — CONTROL JOINT IN GYPSUM BOARD CEILING OR BULKHEAD
- S — SOUND REINFORCEMENT SPEAKER
- H — FIRE ALARM HEAT DETECTOR
- F — FIRE ALARM HORN STROBE
- S — FIRE ALARM SPEAKER STROBE
- FIRE ALARM STROBE
- P — FIRE ALARM SMOKE DETECTOR
- OCCUPANCY SENSOR
- ACOUSTICAL CEILING TILE (ACT)
- ACOUSTICAL CEILING TILE (ACT)
- GYPSUM WALL BOARD BULKHEAD / CEILING EXTERIOR FINISH SYSTEM (E.F.S.) EXTERIOR INSULATION FINISH SYSTEM (E.I.F.S.)
- INTERIOR FINISH SYSTEM (I.F.S.)
- LINEAR METAL CEILING

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

JEFFERSONVILLE HIGH SCHOOL NATATORIUM

2315 ALLISON LN.
JEFFERSONVILLE, IN 47130

GREATER CLARK COUNTY SCHOOLS

GCCS

ARCHITECT

FANNING HOWEY

317-848-0966 WWW.FHAI.COM
350 EAST NEW YORK ST.

A | B

KEY PLAN

NORTH

ISSUED FOR CONSTRUCTION

PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

PROJECT MANAGER: JM
DRAWN BY: BMD
PROJECT NUMBER: 222038.00
PROJECT ISSUE DATE: 11/20/2023

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #2	12/21/2023

UNIT A - SECOND FLOOR REFLECTED CEILING PLAN

A9.21

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GENERAL MECHANICAL REQUIREMENTS

1 GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, SPECIAL CONDITIONS, INSTRUCTIONS TO BIDDERS AND ALL OTHER CONTRACT DOCUMENTS APPLY TO THIS BRANCH OF WORK AS DO ALL OTHER SECTIONS OF THE SPECIFICATIONS.

2 EACH SUB-CONTRACTOR SHALL BE GOVERNED BY ANY ALTERNATES AND UNIT PRICES CALLED FOR IN THE "FORM OF PROPOSAL" INSOFAR AS THEY AFFECT THEIR PORTION OF WORK.

3 THIS SECTION (GENERAL MECHANICAL REQUIREMENTS) APPLIES EQUALLY TO HEATING, VENTILATING, AND AIR CONDITIONING.

4 WORK COVERED BY THIS DIVISION OF SPECIFICATIONS CONSISTS OF FURNISHING ALL MATERIALS, LABOR EQUIPMENT, INCIDENTALS, AND PERFORMING ALL OPERATIONS REQUIRED FOR A COMPLETE INSTALLATION OF ALL MECHANICAL SYSTEMS IN ACCORDANCE WITH APPLICABLE DRAWINGS AND SPECIFICATIONS.

5 MECHANICAL CONTRACTOR SHALL FURNISH ALL EQUIPMENT, MATERIAL, AND LABOR MENTIONED IN THIS SPECIFICATION, UNLESS IT IS SPECIFICALLY STATED OTHERWISE.

6 MENTION HEREIN OR INDICATION ON DRAWINGS OF ARTICLES, MATERIALS OR METHODS REQUIRES MECHANICAL CONTRACTOR FOR THIS WORK TO FURNISH AND INSTALL EACH ARTICLE OR MATERIAL MENTIONED OR INDICATED OF QUALITY OR ACCORDING TO QUALIFICATIONS NOTED, PERFORM EACH OPERATION CALLED FOR ACCORDING TO METHOD OR CONDITION PRESCRIBED, AND PROVIDE ALL NECESSARY LABOR, EQUIPMENT, AND INCIDENTALS.

7 MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL MISCELLANEOUS EQUIPMENT, MATERIAL, AND LABOR WHICH (THOUGH NOT SPECIFICALLY CALLED FOR IN THIS SPECIFICATION) IS NECESSARY FOR A COMPLETE AND SATISFACTORY OPERATING INSTALLATION. MECHANICAL CONTRACTOR SHALL LEAVE HIS WOK IN OPERATING CONDITION.

8 FOR PURPOSE OF CLEARNESS AND LEGIBILITY, DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. ALTHOUGH SIZE AND LOCATION OF EQUIPMENT IS DRAWN TO SCALE WHEREVER POSSIBLE.

9 DRAWINGS AND SPECIFICATIONS ARE INTENDED TO COVER ALL WORK ENUMERATED UNDER THE RESPECTIVE HEADINGS. SUB-CONTRACTORS SHALL NOT TAKE ADVANTAGE OF CONFLICT OR ERROR BETWEEN DRAWINGS AND SPECIFICATIONS, BUT SHALL REQUEST A CLARIFICATION OF SUCH BEFORE MAKING HIS PROPOSAL SHOULD THIS CONDITION EXIST.

10 MECHANICAL CONTRACTOR SHALL OBTAIN A SET OF ARCHITECTURAL AND STRUCTURAL DRAWINGS AND SPECIFICATIONS, AND CONSULT WITH ARCHITECT AND GENERAL CONTRACTOR AS TO GENERAL CONSTRUCTION OF THE BUILDING, HEAD ROOM OF PIPE CHASES, LOCATION OF WALLS, PARTITIONS, BEAMS, ETC., SWING OF DOORS, AND ORDER AND TIME OF PLACEMENT OF ALL MECHANICAL WORK.

11 DRAWINGS ACCOMPANYING THESE SPECIFICATIONS DETERMINE GENERAL DESIGN OF EQUIPMENT. EXACT DISPOSITION OF EQUIPMENT IS SUBJECT TO REQUIREMENTS AND CONSTRUCTION OF MANUFACTURER'S STANDARD, BUT SPACE OCCUPIED AND GENERAL DESIGN SHALL CORRESPOND TO THAT SHOWN ON THE PLANS.

12 NO CONTRACTOR SHALL UNDER ANY CIRCUMSTANCES SCALE DRAWINGS FOR LOCATION OF EQUIPMENT AND WORK.

13 DRAWINGS INDICATE SIZE AND POINTS OF TERMINATION OF PIPES AND DUCTS, AND SUGGEST PROPER ROUTING TO CONFORM TO STRUCTURE, AVOID OBSTRUCTIONS AND PRESERVE CLEARANCES. IT IS NOT THE INTENTION OF THE DRAWINGS TO INDICATE ALL NECESSARY OFFSETS. INSTALL WORK IN A MANNER TO CONFORM TO STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEADROOM, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR WITHOUT FURTHER INSTRUCTIONS OR COST.

14 IT IS INTENDED THAT MATERIALS SHALL BE LOCATED SYMMETRICALLY WITH ARCHITECTURAL ELEMENT, ALTHOUGH LOCATIONS INDICATED BY DRAWINGS MAY BE DISTORTED FOR CLEARNESS OR PRESENTATION.

15 DRAWINGS PERTAINING TO INSTALLATIONS AND SERVICES GENERALLY INDICATE LOCATION OF ACCESSORIES, PIPING, DUCTWORK, ETC., AND OTHER DETAILS NECESSARY TO COMPLETE INSTALLATION OF EACH BRANCH OF WORK. BIDDERS ARE URGED TO ACQUAINT THEMSELVES WITH WORKING CONDITIONS AND REQUIREMENTS AT THE BUILDING SITE AS ANY AND ALL CONTRACTS FOR THIS WORK WILL BE BASED UPON FURNISHING ALL LABOR AND MATERIALS TO ENTIRELY COMPLETE EACH INSTALLATION READY FOR USE.

16 EACH CONTRACTOR IS URGED BEFORE SUBMITTING A PROPOSAL TO VERIFY SIZE AND LOCATION OF ALL SERVICES, AND LIMITATIONS OF EACH.

17 MATERIALS AND EQUIPMENT USED THROUGHOUT SHALL BE NEW AND THE BEST OF THEIR RESPECTIVE KINDS. NO SUBSTITUTIONS (OTHER THAN THOSE SPECIFIED) SHALL BE USED UNLESS APPROVED BY THE ENGINEER. ALL WORK SHALL BE EXECUTED WITH SPEED AND CONSISTENT WITH SAFETY AND GOOD WORKMANSHIP.

18 COMPETENT WORKMEN SHALL BE EMPLOYED ON ALL PHASES OF WORK. POOR WORKMANSHIP WILL BE REJECTED AND WILL CONSTITUTE CAUSE FOR REMOVAL OF THE INDIVIDUAL PERFORMING THE WORK.

19 SHOULD ANY DISPUTE ARISE AS TO THE QUALITY OR FITNESS OF MATERIALS, EQUIPMENT OR WORKMANSHIP, THE DECISION RESTS STRICTLY WITH THE OWNER AND ENGINEER.

20 SEE REQUIREMENTS FOR "SHOP DRAWINGS" IN BOTH GENERAL CONDITIONS AND DIVISION 1.

21 EACH SUB-CONTRACTOR SHALL SUBMIT TO THE GENERAL CONTRACTOR FOR APPROVAL WITHIN THIRTY (30) DAYS AFTER THE DATE OF THE CONTRACT, SIX (6) SETS OF COMPLETE CATALOG DATA AND/OR SHOP DRAWINGS FOR EACH ITEM OF MATERIAL OR PIECE OF EQUIPMENT. CATALOG DATA SHALL INCLUDE NAME OF MANUFACTURER, CATALOG NUMBERS, TRADE NAMES, PERFORMANCE DATA, DESCRIPTIVE MATERIAL (SUFFICIENT TO IDENTIFY EACH ITEM), AND SPECIFY PERFORMANCE OF PRODUCTS. SHOP DRAWINGS SHALL INCLUDE PROJECT SPECIFIC CATALOGUE DATA AND SHALL SHOW EQUIPMENT IN DETAIL, ARRANGEMENT AND DISPOSITION FOR THIS PARTICULAR PROJECT DESIGN. GENERIC CATALOG DATA IS UNACCEPTABLE.

22 SUBMIT FOR APPROVAL SIX (6) COPIES OF BROCHURES, TECHNICAL DATA AND SHOP DRAWINGS OF THE FOLLOWING EQUIPMENT:
- A. AIR COOLED CONDENSING UNITS (ACCU)
- B. AIR HANDLING UNITS (AHU)
- C. BOILERS (BLR)
- D. BOILER PUMPS (BLRP)
- E. CABINET UNIT HEATERS (CUH)
- F. ENERGY RECOVERY UNIT (ERV)
- G. ELECTRIC UNIT HEATERS (EUH)
- H. EXHAUST FANS (EF)
- I. HEAT EXCHANGERS (HX)
- J. HEATING HOT WATER PUMPS (HWP)
- K. HOT WATER UNIT HEATERS (UH)
- L. LOUVERS (IAL)
- M. POOL DEHUMIDIFICATION UNITS (PDH)
- N. REMOTE FLUID COOLERS (FC)
- O. SPLIT SYSTEMS (DHLS/DLSCU)
- P. VAV TERMINAL UNITS (VAV)

23 ALL EQUIPMENT SUBMITTALS SHALL SPECIFY ELECTRICAL CHARACTERISTICS AND HORSEPOWER.

24 ENGINEER'S CHECKING AND APPROVING OF CONTRACTOR'S AND SUB-CONTRACTOR'S DRAWINGS OR EQUIPMENT DETAILS DOES NOT RELIEVE CONTRACTOR OF SUB-CONTRACTORS FROM RESPONSIBILITY FOR ERRORS, OMISSIONS OR EQUIPMENT FURNISHED IN ACCORDANCE WITH SUCH CHECKED OR APPROVED DRAWINGS. WHERE SUCH ERRORS OR OMISSIONS ARE LATER DISCOVERED, THEY SHALL BE MADE GOOD BY THE RESPECTIVE SUB-CONTRACTOR (IRRESPECTIVE OF ANY APPROVAL BY ENGINEER).

25 IN THE INSTALLATION CALLED FOR IN THESE CONTRACTS, SPECIAL ATTENTION SHALL BE GIVEN TO ACCESSIBILITY OF PARTS AND EQUIPMENT. ADEQUATE SPACE MUST BE GIVEN FOR OPERATION AND REMOVAL OF ANY PARTS THAT MAY HAVE TO BE EXAMINED AT FUTURE PERIODS.

26 NO WORK OF ANY KIND SHALL BE COVERED UP BEFORE IT HAS BEEN TESTED, EXAMINED AND APPROVED.

27 IT SHALL BE THE RESPONSIBILITY OF RESPECTIVE SUB-CONTRACTORS TO DETERMINE THAT EQUIPMENT (WHICH THEY PROPOSE TO FURNISH) CAN BE INSTALLED IN AVAILABLE SPACE AND CAN BE BROUGHT INTO THE BUILDING. EQUIPMENT MUST BE INSTALLED SO THAT ALL PARTS ARE READILY ACCESSIBLE FOR INSPECTION AND MAINTENANCE. NO EXTRA COMPENSATION WILL BE ALLOWED FOR DISMANTLING OF EQUIPMENT TO INSTALL IN AVAILABLE SPACE OR TO OBTAIN ENTRANCE INTO THE BUILDING.

28 SUB-CONTRACTOR SHALL USE EXTREME CARE IN SELECTION OF EQUIPMENT AND ITS INSTALLATION TO ENSURE THAT NOISES AND VIBRATION WILL BE HELD TO A MINIMUM. IT IS THE INTENTION THAT THE ENTIRE SYSTEM SHALL OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF OBJECTIONABLE NOISE OR VIBRATION DOES DEVELOP. IT SHALL BE CORRECTED BY SUB-CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITHOUT ADDITIONAL COMPENSATION.

29 MECHANICAL APPLIANCES ARE REQUIRED TO BE LISTED AND LABELED FOR THE APPLICATION IN WHICH THEY ARE TO BE INSTALLED AND USED. MANUFACTURER'S INSTRUCTIONS MUST BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION.

30 NO PIPING SHALL BE INSTALLED IN ANY PART OF THE BUILDING WHERE DANGER OF FREEZING DURING CONSTRUCTION MAY EXIST WITHOUT ADEQUATE PROTECTION BEING GIVEN BY THE CONTRACTOR INSTALLING THE PIPE. ALL DAMAGES RESULTING FROM LEAKING PIPES SHALL BE BORNE BY CONTRACTOR WHOSE WORK IS AT FAULT.

31 ALL WORK SHALL BE PROTECTED AT ALL TIMES. ALL PIPE AND DUCT OPENINGS SHALL BE CLOSED WITH CAPS OR PLUGS DURING CONSTRUCTION. ALL EQUIPMENT ACCESSORIES AND OPENINGS SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER OR OTHER INJURY DURING THE PERIOD OF THE RESPECTIVE CONTRACT.

32 IF IT SHOULD BE NECESSARY TO OPERATE EQUIPMENT BEFORE A FINAL ACCEPTANCE, OWNER SHALL BE ALLOWED TO DO SO BUT ONLY AFTER PROPER ADJUSTMENT AND TRIAL OPERATION AS HEREINAFTER SPECIFIED.

33 OWNER SHALL BE RESPONSIBLE FOR PROPER CARE AND SUPERVISION OF OPERATION OF EQUIPMENT USED BEFORE ACCEPTANCE AND SAFEGUARD EQUIPMENT IN EVERY WAY.

34 OWING TO THE NATURE OF THE CONSTRUCTION INVOLVED AND TO PREVENT CONFUSION AND DISCREPANCIES. ONLY APPROXIMATE OR GENERAL DIMENSIONS ARE GIVEN IN SEVERAL CASES. IT BEING INTENDED THAT IN SOME INSTANCES A REASONABLE LIMIT OF VARIATION BE PERMITTED IN ORDER THAT THE MAKING AND ERECTION OF THE WORK OF THE SUB-CONTRACTORS MAY BE THEREBY EXPEDITED AND BEST INTERESTS OF THE WORK AS A WHOLE BE SERVED. SUB-CONTRACTORS WILL BE REQUIRED TO ESTABLISH THEIR OWN DIMENSIONS (EACH BY PROMPT CONSULTATION AS TO METHODS AND SIZE OF CONSTRUCTION, TIME OF BEGINNING AND SEQUENCE OF OPERATIONS, AND EXCHANGE OF DRAWINGS AND DETAILS) WITH ONE ANOTHER AS The E GREATEST MEASURE OF COOPERATION AMONG THE INTERESTS INVOLVED WILL BE DEMANDED AND EXPECTED BY THE OWNER AT ALL TIMES.

35 ALL MECHANICAL AND ELECTRICAL SUB-CONTRACTORS SHALL CONSULT FULLY WITH GENERAL CONTRACTOR'S SUPERINTENDENT REGARDING ALL MATTERS AFFECTING THEIR WORK.

36 COOPERATE WITH OTHER TRADES TO OBTAIN MOST PRACTICAL ARRANGEMENT OF WORK.

37 MAKE KNOWN TO OTHER TRADES INTENDED POSITIONING OF MATERIALS AND INTENDED ORDER OF WORK. COORDINATE WORK WITH OTHER TRADES AND PROCEED WITH INSTALLATION TO ASSURE NO DELAYS TO OTHER TRADES. DETERMINE INTENDED POSITIONS OF WORK OF OTHER TRADES AND INTENDED ORDER OF INSTALLATION.

38 AGREE TO MOST PRACTICAL ARRANGEMENT OF WORK WITHIN REQUIREMENTS OF CONTRACT AND CONSULT WITH ARCHITECT/ENGINEER WHEN THERE ARE REASONS FOR DEVIATIONS FROM DRAWINGS OR SPECIFICATIONS, DIFFERENCES OF OPINION BETWEEN CONTRACTORS, OR QUESTIONS CONCERNING INTENT OF DRAWINGS OR SPECIFICATIONS.

39 FAILURE OF CONTRACTOR TO MAKE KNOWN HIS NEEDS OR DETERMINE REQUIREMENTS OF OTHERS WILL NOT BE CAUSE FOR ADDITIONAL COMPENSATION TO CORRECT INTERFERENCES.

40 IT IS NOT INCUMBENT UPON THE ENGINEER TO NOTIFY SUB-CONTRACTOR WHEN TO BEGIN, TO CEASE OR RESUME WORK, NOR TO GIVE EARLY NOTIFICATION OF REJECTION OF FAULTY WORK, NOR IN ANY WAY TO SUPERINTEND TO RELIEVE SUB-CONTRACTOR OF RESPONSIBILITY OR OF ANY CONSEQUENCE OF CARELESSNESS BY HIM OR HIS SUBORDINATES.

41 ALL MATERIALS AND LABOR SHALL BE FURNISHED AT SUCH TIMES (SHALL BE TO THE BEST INTEREST OF ALL CONTRACTORS AND SUB-CONTRACTORS CONCERNED) TO THE END THAT THE COMBINED WORK MAY BE PROPERLY AND FULLY COMPLETED ON CONTRACT TIME.

42 ALL PERMITS NECESSARY FOR COMPLETE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS SHALL BE OBTAINED BY MECHANICAL CONTRACTOR FROM AUTHORITIES GOVERNING THE WORK. COST OF ALL PERMITS SHALL BE BORNE BY THE CONTRACTOR.

43 HEATING, VENTILATING, AND AIR CONDITIONING WORK SHALL BE DONE IN ACCORDANCE WITH RULES AND REGULATIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), LATEST STANDARDS RECOGNIZED BY THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, PER THE LATEST EDITION ENFORCED FOR STATE AND LOCAL MECHANICAL CODE.

44 ALL WORK SHALL MEET REQUIREMENTS OF THE LIFE SAFETY CODE, STATE AND CITY FIRE MARSHALS, DEPARTMENT OF HOUSING, BUILDINGS AND CONSTRUCTION.

45 ALL WORK MUST BE APPROVED BY ENGINEER BEFORE FINAL PAYMENT WILL BE MADE.

46 HEATING, VENTILATING, AND AIR CONDITIONING CONTRACTOR SHALL FURNISH ENGINEER WITH A CERTIFICATE OF INSPECTION AND APPROVAL FROM INSPECTING AGENCIES, FREE OF CHARGE, BEFORE CERTIFICATE OF SUBSTANTIAL COMPLETION IS GRANTED. FINAL PAYMENT SHALL BE CONTINGENT UPON THIS CERTIFICATE.

47 RESPECTIVE CONTRACTOR SHALL NOTIFY INSPECTORS, IN WRITING, IMMEDIATELY UPON THE START OF HIS WORK AND A COPY OF NOTICE SENT TO THE ENGINEER.

48 ALL COST INCIDENTAL TO INSPECTIONS SHALL BE BORNE BY RESPECTIVE CONTRACTOR.

49 INSPECTION SHALL BE SCHEDULED FOR ROUGH AS WELL AS FINISHED WORK. ROUGH INSPECTION SHALL BE DIVIDED INTO AS MANY INSPECTIONS AS MAY BECOME NECESSARY TO COVER ALL ROUGH-INS.

50 ALL INSPECTIONS TO BE BY INSPECTOR HAVING JURISDICTION.

51 EACH CONTRACTOR IS TO REMOVE HIS OWN RUBBISH, BUT IN CASE OF DISPUTE, ENGINEER SHALL HAVE THE RIGHT TO ORDER GENERAL CONTRACTOR TO REMOVE SAID RUBBISH AND COST OF REMOVING SAME SHALL BE CHARGED TO THE GUILTY PARTY AS MAY BE DECIDED BY THE ENGINEER. RUBBISH SHALL BE REMOVED IMMEDIATELY WHEN ORDERED BY OWNER'S REPRESENTATIVE. BUILDING SHALL BE KEPT AS CLEAN AS POSSIBLE DURING THE PROGRESS OF THE WORK.

52 WHEN ANY WORK INCLUDED IN THESE SPECIFICATIONS IS COMPLETED, AND AT SUCH TIME AS DIRECTED BY THE ENGINEER, RESPECTIVE EQUIPMENT MANUFACTURER OR CONTRACTOR SHALL CAREFULLY ADJUST ALL PARTS OF AND EQUIPMENT OF THE COMPLETED SYSTEM, ADVISING ENGINEER WHEN SAME IS COMPLETE AND READY FOR FINAL TESTS.

53 RESPECTIVE CONTRACTORS SHALL, AFTER WORK IS COMPLETED, FULLY AND CAREFULLY INSTRUCT OWNER'S OPERATOR HAVING CHARGE OF THE SYSTEM AS TO ADJUSTMENT, AND EFFICIENT AND PROPER METHODS OF OPERATION OF THE SYSTEM AND VARIOUS APPARATUS.

54 BIDDERS SHALL CAREFULLY EXAMINE GENERAL CONSTRUCTION DRAWINGS AND ASSURE THEMSELVES OF MATERIAL TYPES USED THROUGHOUT THE BUILDING THAT MAY IN ANY WAY AFFECT WORK TO BE INSTALLED UNDER THEIR CONTRACT AND PROPER PREPARATION OF THEIR PROPOSALS, AS NO CONTRACT ALLOWANCE WILL BE MADE FOR BIDDERS' FAILURE TO ACQUAINT THEMSELVES WITH THE TYPES OF CONSTRUCTION.

55 LOCATIONS OF ALL PIPING, CONDUITS, CABLES, UTILITIES AND MAN-HOLES, EXISTING TEMPORARILY OR OTHERWISE THAT COME WITHIN THE CONTRACT CONSTRUCTION SITE, SHALL BE SUBJECT TO CONTINUOUS UNINTERRUPTED MAINTENANCE WITH NO OTHER EXCEPTION THAN OWNER'S PERMISSION TO CUT SAME IF THE NEED ARISES.

56 CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT ALL OF THESE UTILITIES AND LINES ARE NOT INDICATED ON THE DRAWINGS; HOWEVER, IT IS REQUIRED THAT PRIOR TO ANY EXCAVATION BEING PERFORMED, THAT THE CONTRACTOR CONSULT OWNER'S PERSONNEL TO ASCERTAIN WHETHER ANY UTILITIES OR LINES ARE ENDANGERED BY EXCAVATION.

57 IF AFOREMENTIONED UTILITIES OR LINES OCCUR IN THE EARTH WITHIN THE CONSTRUCTION SITE, IT IS SUGGESTED THAT THE CONTRACTOR FIRST PROBE AND MAKE EVERY EFFORT TO LOCATE LINES PRIOR TO EXCAVATING IN RESPECTIVE AREA.

58 MECHANICAL CONTRACTOR SHALL WARRANT SYSTEMS, EQUIPMENT, AND APPARATUS TO BE PROPERLY BALANCED, AND FREE FROM ANY DEFECTS IN MATERIAL OR WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE.

59 ANY NECESSARY STARTERS OR OVERLOAD PROTECTION FOR MECHANICAL EQUIPMENT, SHALL BE FURNISHED BY MECHANICAL CONTRACTOR FOR EQUIPMENT FURNISHED BY HIM OR OWNER, UNLESS OTHERWISE SPECIFIED ELSEWHERE.

60 MECHANICAL CONTRACTOR SHALL (REGARDLESS OF VOLTAGE) FURNISH AND INSTALL ALL TEMPERATURE CONTROL WIRING, AND ALL INTERLOCK WIRING, AND EQUIPMENT CONTROL WIRING FOR EQUIPMENT THAT MECHANICAL CONTRACTOR FURNISHES. UNLESS OTHERWISE SPECIFIED, MECHANICAL CONTRACTOR SHALL FURNISH STARTERS FOR ALL EQUIPMENT FURNISHED BY HIM TO ELECTRICAL CONTRACTOR FOR INSTALLATION. MECHANICAL CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR ALL STARTER HEATERS THAT MECHANICAL CONTRACTOR FURNISHES.

61 SUB-CONTRACTORS SHALL TAKE THE PREMISES AS THEY NOW ARE AND WILL BE REQUIRED TO DO ALL WORK SHOWN OR IMPLIED IN THE PLANS AND SPECIFICATIONS SO THAT WHEN BUILDING IS COMPLETED, IT SHALL BE COMPLETE IN EVERY RESPECT, EXCEPT SUCH PARTS AS ARE DISTINCTLY MENTIONED AS NOT BEING COVERED UNDER THESE SPECIFICATIONS.

62 FURNISH MARKED-UP PRINTS AND SHOP DRAWINGS OF MECHANICAL SYSTEMS AND EQUIPMENT TO GENERAL CONTRACTOR FOR INCLUSION IN BOUND SETS OF AS-BUILT DRAWINGS.

63 AS-BUILT DRAWINGS SHALL SHOW ALL CHANGES, ADDITIONS, DELETIONS AND DEVIATIONS FROM CONTRACT DRAWINGS NOTED PLAINLY THEREON. SPECIAL EMPHASIS IS PLACED ON RECORDING EXACT LOCATION OF ALL UNDERGROUND UTILITIES BY OFFSET DISTANCES TO BUILDING CORNERS, WALLS, CURBS, ETC.

64 MECHANICAL CONTRACTOR SHALL INSTRUCT OWNER'S REPRESENTATIVE IN PROPER OPERATION OF ALL EQUIPMENT. FURNISH LITERATURE PROVIDED BY MANUFACTURER. PRINTED INSTRUCTION AND MAINTENANCE DATA SHALL BE BOUND WITH COVER IN DUPLICATE AND DELIVERED TO ENGINEER. BOUND COVER SHALL LIST NAME OF PROJECT AND NAME, ADDRESS, PHONE NUMBER OF ARCHITECT, ENGINEER, AND CONTRACTOR.

65 EACH GROUP SHALL INCLUDE A COMPLETE CONTROL DIAGRAM AND A SEQUENCE OF OPERATION. CONTROL DIAGRAM AND ASSOCIATED SEQUENCE OF OPERATION CHARTS SHALL BE ON SAME SHEET. EACH GROUP SHALL INCLUDE A COMPLETE WIRING OF THE GROUP, INCLUDING PANEL WIRING, COLOR CODING, NUMBER CODING, OILING OR GREASING CHARTS, MAINTENANCE OF OPERATIONS LISTING SUGGESTED OPERATING METHODS AND PERIODS. EACH DEVICE LISTED AND IDENTIFIED AS GIVEN ABOVE AND COMPLETELY DESCRIBED AS TO MANUFACTURER'S NAME, TYPE, NUMBER, WORKING LIMITATIONS, ETC. PARTS OR REPAIR LISTS SHALL BE GIVEN FOR EACH DEVICE.

66 PROVIDE START, TEST, AND CHECK OF MECHANICAL SYSTEM TO ENSURE SYSTEM OPERATES AS DESIGNED.

67 PROVIDE DOCUMENTATION OF OPERATING PARAMETERS AT TIME OF STARTUP, AS PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS. DATA TO INCLUDE EQUIPMENT OPERATING PARAMETERS AS WELL AS AMBIENT CONDITIONS AND DATE AND TIME OF START-UP.

68 CONTRACTORS MUST HAVE FIVE (5) YEARS MINIMUM EXPERIENCE, HAS A SATISFACTORY WORK RESUME WITH COMPARABLE PROJECTS LISTED, HAS A SOUND FINANCIAL BASIS, AND IS TECHNICALLY COMPETENT.

69 EQUIPMENT MANUFACTURERS MUST HAVE EIGHT (8) YEARS OF SUCCESSFUL EXPERIENCE, BE TECHNICALLY COMPETENT, AND BE INDUSTRIAL FINANCIALLY STABLE.

70 OWNER RESERVES THE RIGHT TO REVIEW AND DETERMINE IF CONTRACTORS AND MANUFACTURERS MEET ABOVE CATEGORIES TO HIS SATISFACTION. OWNER HAS THE AUTHORITY TO REJECT ANY EQUIPMENT AND BIDS IF ABOVE STANDARDS ARE NOT MET.

71 ALL FASTENERS SHALL BE STAINLESS STEEL OR MADE OF ANTI-CORROSIVE MATERIAL COMPATIBLE AND INTENDED FOR THE USE WITH THE MATERIAL BEING FASTENED.

1.0 BASIC MECHANICAL MATERIALS AND METHODS

1.1 ALL PIPING SHALL HAVE LABELS STATING CONTENTS AND DIRECTIONAL ARROWS INDICATING FLOW. LABELS SHALL BE APPLIED 50 FEET O.C. IN STRAIGHT RUNS EXCEPT NO MORE THAN 25 FEET O.C. IN EQUIPMENT ROOMS. LABELS SHALL BE APPLIED ON BOTH SIDES OF A WALL WHERE PIPE PASSES THROUGH SAME. LABELS SHALL BE SIMILAR TO SETON NAMEPLATE CORP. - SETMARK TYPE SNA OR STR.

1.2 INSTALL NUMBERED VALVE TAGS ON ALL VALVES. FURNISH DIRECTORY OF VALVES GIVING FLUID HANDLED, FUNCTION, SIZE, AREA SER VED, NAME AND NUMBER OF ROOM IN WHICH A VALVE IS LOCATED, ETC. TAGS SHALL BE MINIMUM 3 INCH X 1 INCH' LAMINATED ENGRAVED PLASTIC WITH STAINLESS STEEL CHAIN. TAGS SHALL INDICATE FLUID HANDLED AND FUNCTION OF VALVE.

1.3 INSTALL EQUIPMENT LABELS AT EACH MAJOR ITEM OR EQUIPMENT. LABELS SHALL BE LAMINATED ENGRAVED PLASTIC AND SHALL INCLUDE COMPLETE IDENTIFICATION OF EQUIPMENT INCLUDING AREA SERVED, IDENTIFYING NUMBERS AND TAGS USED ON THE DRAWINGS.

1.4 INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE OR APPROVED IN WRITING BY ENGINEER.

1.5 INSTALL UNIONS, IN PIPING 2 INCHES AND SMALLER, ADJACENT TO EACH VALVE AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT. LOCATE UNIONS AND VALVES TO ALLOW FOR REMOVAL OF PIPING DOWNSTREAM FOR EQUIPMENT ACCESS AND SERVICING.

1.6 INSTALL FLANGES IN PIPING 2-1/2 INCHES AND LARGER, ADJACENT TO FLANGED VALVES AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT. LOCATE FLANGES AND VALVES TO ALLOW FOR REMOVAL OF PIPING DOWNSTREAM FOR EQUIPMENT ACCESS AND SERVICING.

1.7 INSTALL DIELECTRIC COUPLING AND NIPPLE FITTINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS. INSTALL SHUTOFF VALVES IN BRANCH PIPING AT DIELECTRIC COUPLINGS TO PROVIDE FOR SERVICING.

1.8 IT SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO REVIEW THE GAS SERVICE AND ENSURE THAT EQUIPMENT IS SUPPLIED WITH THE APPROPRIATE GAS PRESSURES AND VOLUME. THIS WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, A LARGER SERVICE OR PRESSURE CHANGES, ADDITIONAL GAS PRESSURE REDUCING VALVES/REGULATORS, INCREASING THE SIZE OF THE GAS SERVICE LINES AS REQUIRED. ALL NEW PRVS SHALL BE OF TYPE AND SPECIFICATION AS RECOMMENDED BY THE RESPECTIVE EQUIPMENT MANUFACTURER. THE LINE BETWEEN THE PRV AND THE EQUIPMENT GAS TRAIN SHALL PROVIDE A SUFFICIENT AMOUNT OF VOLUME TO PREVENT THE PRV/REGULATOR FROM PULSATING (COORDINATE REQUIREMENTS WITH THE EQUIPMENT MANUFACTURER).

1.9 GAS TRAINS SHALL BE PROVIDED WITH GAS VENT LINES FOR ALL DIAPHRAGM DEVICES AND DEDICATED VENTS FOR DOUBLE BLOCK AND VENT GAS TRAINS. GAS TRAINS SHALL BE AN APPROVED UL INSTALLATION. ALL GAS PIPING AND GAS VENTS ARE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR.

1.10 THERE SHALL BE NO COPPER PIPING OR TUBING IN THE ENTIRE GAS SYSTEM INCLUDING VENT LINES. VENTS SHALL TERMINATE OUTSIDE THE BUILDING THROUGH APPROVED GAS VENTS, SIMILAR TO FISHERS Y602 SERIES VENT FITTINGS. DIAPHRAGM VENTS AND RELIEF VENTS SHALL NOT TERMINATE IN THE SAME FITTING. VENT LINES SHALL NOT BE COMBINED AND/OR MANIFOLDED TOGETHER.

1.11 FLUE PIPE LAYOUT, INSTALLATION AND COORDINATION WITH THE BOILER FLUE SUPPLIER SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THE ROUTING OF FLUE PIPE FOR ALL NEW EQUIPMENT SHALL HAVE PRIORITY OVER ALL OTHER WORK INSTALLED. ALL EQUIPMENT SHALL BE LOCATED AND ARRANGED IN A MANNER WHICH PERMITS AS STRAIGHT OF A ROUTE FOR THE FLUE AS POSSIBLE.

1.12 INSTALL MANUAL AIR VENTS AT ALL HIGH POINTS IN HEATING HOT WATER, AND CHILLED WATER PIPING SYSTEMS.

1.13 ROUTE REFRIGERANT PRESSURE RELIEF VALVES TO EXTERIOR OF BUILDING.

1 14 PRIOR TO EQUIPMENT INSTALLATION, VERIFY THERE IS SPACE TO PROVIDE SLOPE IN PIPING OFF OF COOLING COIL CONDENSATE DRAIN PAN.

1 15 FOR REFRIGERANT PIPING SYSTEMS INSTALL CHARGING VALVES AND INSTALL OIL LIFTING TRAPS BASED ON SYSTEM REQUIREMENTS. INSTALL AND SUPPORT PIPING WITH ALLOWANCE FOR EXPANSION, CONTRACTION, AND VIBRATION.

1.16 INSTALL ACCESS PANELS IN MECHANICAL CHASES WHERE REQUIRED. ACCESS PANELS SHALL BE A MINIMUM OF 12 INCHES SQUARE AND 14 GAUGE STEEL. ACCESS PANELS WILL BE PAINTED BY GENERAL CONTRACTOR TO MATCH ADJACENT FINISHES.

1.17 MECHANICAL CONTRACTOR SHALL SIZE ROOM LEVEL DUCTWORK, DIFFUSERS AND BRANCH PIPING SYSTEMS NOT SHOWN ON THE DRAWINGS BASED ON THE ASSOCIATED EQUIPMENT SCHEDULES AND THE FOLLOWING CRITERIA;
- A. CHILLED WATER AND HEATING HOT WATER PIPING - LESS THAN 4 FEET OF FRICTION PER 100 FOOT OF PIPE FOR, BUT NOT LESS THAN 3/4 INCHES IN SIZE, AND NOT MORE THAN 8 FT/SEC. FLUID VELOCITY.
- B. SUPPLY DUCTS - LESS THAN 0.08 INCHES STATIC PRESSURE DROP PER 100 FEET OF DUCT AND LESS THAN 1,200 FPM VELOCITY.
- C. RETURN DUCTS - LESS THAN 0.05 INCHES STATIC PRESSURE DROP PER 100' OF DUCT AND LESS THAN 1,200 FPM VELOCITY.
- D. SUPPLY AIR FLOW TO BE EQUALLY SPLIT BETWEEN DIFFUSERS IN EACH CORRESPONDING ROOM BUT NO MORE THAN 300 CFM PER DIFFUSER.

1.18 CLEAN EQUIPMENT THOROUGHLY TO ENSURE IT IS FREE OF DIRT, SCALE, WASTE, DEBRIS, ETC. PAINT DAMAGED OR SCRATCHED FACTORY FINISH WITH TOUCHUP PAINT MATCHING FACTORY FINISH.

1.19 INSTALL EQUIPMENT PLUMB ANO LEVEL. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, LOCAL CODES AND RECOGNIZED INDUSTRY PRACTICES. INSTALL PUMPS, AIR HANDLING UNIT, CHILLERS, ETC. ON NEOPRENE ISOLATION PADS. ARRANGE INSTALLATION OF EQUIPMENT TO PROVIDE ACCESS AROUND UNIT FOR SERVICE AND MAINTENANCE. ROOFTOP EQUIPMENT SHALL BE INSTALLED ON CURBS IN A WEATHER TIGHT MANNER. COORDINATE ANY REQUIRED PREP WORK OTHER TRADES PRIOR TO INSTALLATION OF EQUIPMENT.

1.20 RELEASE/ REMOVE SHIPPING BOLTS ON FANS, PUMPS, COMPRESSORS, ETC. BEFORE STARTING EQUIPMENT. COORDINATE CHECK-OUT OF MOTOR ROTATION WITH ELECTRICAL SUBCONTRACTOR. DISCONNECT PUMPS FROM MOTORS BEFORE CHECKING ROTATION, RECONNECT AFTER CHECK OUT.

1.21 CHECK LUBRICATION OF BEARINGS ON FANS, PUMPS, MOTORS, ETC. PRIOR TO STARTUP. CHECK ALIGNMENT OF COUPLINGS AND FAN BELTS. ROUTE DRAINS TO FLOOR DRAIN IN AREA.

1.22 CONNECT PIPES AND DUCTS TO EQUIPMENT WITH FLEXIBLE CONNECTORS. ALL PIPING AND DUCTWORK SHALL BE SUPPORTED INDEPENDENT OF EQUIPMENT.

1.23 INSTALL BOILERS, CHILLERS, AND PUMPS ON CONCRETE BASES. ANCHOR EQUIPMENT TO CONCRETE BASES. INSTALL MISCELLANEOUS STRUCTURAL STEEL ON FLOORS, IN CEILINGS OR ON ROOFS TO SUPPORT EQUIPMENT NOT INSTALLED ON CONCRETE BASE.

1.24 INSTALL AND ANCHOR TERMINAL EQUIPMENT TIGHT AND SECURE TO FLOORS AND WALLS.

1.25 REFRIGERANT PIPING SYSTEMS, INCLUDING STRAINERS AND DRYER/FILTERS, ETC., SHALL BE CLEANED AND DEHYDRATED. PRESSURE TEST REFRIGERANT SYSTEM FOR LEAKAGE IN MANNER RECOMMENDED BY MANUFACTURER, UTILIZE AN ELECTRONIC OR HALIDE LEAK DETECTOR FOR LEAK CHECKS. PROVIDE AND CHARGE CHILLER OR DX CONDENSING SYSTEM WITH REFRIGERANT IN THE QUANTITY AND MIX RECOMMENDED BY THE EQUIPMENT MANUFACTURER AND UNDER THEIR SUPERVISION. BLEED OUT NONCONDENSABLE GASES. ALL REFRIGERANT WORK SHALL MEET OR EXCEED REQUIREMENTS OF EPA TITLE VI, SUBMIT RECORDS OF REFRIGERANT INSTALLATION TO ENGINEER.

1.26 CHECK AND STRAIGHTEN FINS ON ALL COILS IN EQUIPMENT PRIOR TO STARTUP.

1.27 INSTALL AIR FILTERS IN EQUIPMENT ONLY AFTER ALL CLEANING HAS BEEN COMPLETED AND PRIOR TO TESTING AND BALANCING. PREVENT PASSAGE OF UNFILTERED AIR AROUND FILTERS WITH FELT, RUBBER OR NEOPRENE GASKETS. INSTALL FILTER GAUGES ON OUTSIDE OF FILTER SECTIONS IN AN ACCESSIBLE POSITION, INSTALL STATIC PRESSURE TIPS UPSTREAM AND DOWNSTREAM OF FILTERS

1.28 THOROUGHLY CLEAN ALL PIPING SYSTEMS AND EQUIPMENT. FLUSH FREE OF DIRT, SCALE, OIL, WASTE, BLOW DOWN STRAINERS WHEN FLUSHING.

1.29 PROVIDE AND INSTALL VALVES IN ALL SYSTEMS AS REQUIRED TO FACILITATE THE OPERATION OF VARIOUS SYSTEMS AND THE WORK OF OTHER TRADES DURING CONSTRUCTION.

1.30 THOROUGHLY TEST FOR LEAKS, OPERATION, ETC. EACH SYSTEM, DEVICE AND ITEM OF EQUIPMENT INSTALLED AS PART OF THE WORK.

1.31 INSTALL PIPING COMPONENTS WITH PRESSURE RATINGS EQUAL TO OR GREATER THAN SYSTEM OPERATING PRESSURE.

1.32 INSTALL PIPING FREE OF SAGS OR BENDS.

2.0 HANGERS AND SUPPORTS

2.1 ALL HANGER AND SUPPORT INSTALLATIONS SHALL MEET THE REQUIREMENTS OF ALL APPLICABLE CODES, ALONG WITH THE FOLLOWING MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY STANDARDS:
- A. MSS-SP53 PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN AND MANUFACTURER.
- B. MSS-SP69 PIPE HANGERS AND SUPPORTS - SELECTION AND APPLICATION.
- C. MSS-SP89 PIPE HANGERS AND SUPPORTS - FABRICATION AND INSTALLATION PRACTICES.
- D. MSS TYPE 39 - HARDWOOD BLOCKING SADDLES.
- E. MSS TYPE 40 - PROTECTIVE SHIELDS.

2.2 HANGERS AND SUPPORTS EXPOSED IN NATATORIUM, LOCKER ROOMS, KITCHENS, HIGH HUMIDITY AREAS, OR OUTDOORS TO BE STAINLESS STEEL OR EPOXY COATED. HANGAR RODS, SUPPORTS, AND OTHER EXPOSED COMPONENTS IN THESE AREAS THAT ARE NOT STAINLESS STEEL SHALL HAVE AN EPOXY COATING FIELD APPLIED TO ALL EXPOSED SURFACES AFTER INSTALLATION. HANGERS AND SUPPORTS IN OTHER AREAS SHALL BE GALVANIZED STEEL.

2.3 CUT EXCESS ALL-THREAD OFF DIRECTLY BELOW FASTENERS ON EQUIPMENT AND PIPING SUPPORTS.

2.4 INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED THERMAL AND SEISMIC MOVEMENT OF PIPING SYSTEMS, TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, AND TO FACILITATE ACTION OF EXPANSION.

2.5 INSTALL HANGERS AND SUPPORTS SO THAT PIPING LIVE AND DEAD LOADS AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.

2.6 INSTALL PROTECTIVE SHIELDS FOR INSULATION ON ALL INSULATED PIPING SYSTEMS

2.7 PROVIDE COPPER PLATED HANGERS AND SUPPORTS FOR COPPER PIPING.

2.8 ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL PIPING SUPPORTED TOGETHER ON FIELD-FABRICATED, HEAVY DUTY TRAPEZE HANGERS WHERE POSSIBLE.

2.9 SUPPORT HORIZONTAL PIPING AS FOLLOWS:

PIPE SIZE, IN	MAX HANGER SPACING, FT	HANGER ROD DIAMETER, IN
1/2 TO 1-1/2	6	3/8
2	10	3/8
2-1/2 TO 3	10	1/2
4 TO 6	10	5/8

2.10 GROOVED PIPE SYSTEMS SHALL BE SUPPORTED AT HANGER SPACINGS RECOMMENDED BY MANUFACTURER, BUT IN NO CASE FARTHER APART THAN CHART ABOVE.

2.11 PLACE A HANGER WITHIN 12 INCHES OF EACH HORIZONTAL ELBOW.

2.12 SUPPORT VERTICAL PIPING AT EVERY FLOOR.

2.13 SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.

3.0 MECHANICAL INSULATION

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3.1 MECHANICAL INSULATION SHALL COMPLY WITH THE REQUIREMENTS OF THE CURRENT INDIANA ENERGY CODE (ANSI / ASHRAE / IESNA STANDARD 90.1- 2013 WITH INDIANA AMENDMENTS.)

3.2 INSULATE INDOOR SUPPLY AIR, OUTSIDE AIR, AND COMBUSTION AIR DUCTWORK WITH NOMINAL 2 INCHES OF THICK GLASS FIBER BLANKET INSULATION, ASTM C553, TYPE 11, K-VALUE OF 0.27 AT 75F, 0.75 LBS/CUBIC FOOT MINIMUM DENSITY, WITH ALL-SERVICE JACKET, VAPOR BARRIER TYPE, MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL AND VINYL FILM. PROVIDE NOMINAL 2 INCH THICK INSULATION IN UNHEATED ATTICS AND CRAWL SPACES. OVERLAP INSULATION FACING AT SEAMS AND SEAL WITH VAPOR-RETARDER MASTIC AND PRESSURE-SENSITIVE TAPE HAVING SAME FACING AS INSULATION.

3.3 INSULATE THE FOLLOWING TYPES OF PIPING WITH GLASS FIBER FACTORY MOLDED RIGID INSULATION, ASTM C547 TYPE I, K-VALUE OF 0.24 AT 75F, WITH ALL-SERVICE JACKET, VAPOR BARRIER TYPE. THICKNESS AS LISTED BELOW. OVERLAP INSULATION FACING AT SEAMS AND SEAL WITH VAPOR-RETARDER MASTIC AND PRESSURE SENSITIVE TAPE HAVE SAME FACING AS INSULATION.
- A. CONDENSATE DRAINS: FIRST 10 FEET FROM EVAPORATOR WITH 1/2 INCH THICKNESS MOLDED FIBERGLASS OR 1/2 INCH ELASTOMERIC.
- B. HEATING HOT WATER UP TO 2 INCH PIPE SIZE - 1'' THICKNESS; 2-1/2 INCHES AND LARGER PIPE SIZE – 1-1/2 INCH THICKNESS.

3.4 INSULATE THE FOLLOWING TYPES OF PIPING WITH FLEXIBLE ELASTOMERIC CLOSED-CELL INSULATION, ASTM C534, TYPE I, K-VALUE OF 0.27 AT 75F, FOR TUBULAR MATERIALS. ADHESIVE AND ULTRAVIOLET-PROTECTIVE COATING AS RECOMMENDED BY THE INSULATION MANUFACTURER. SEAL ALL JOINTS AND SEAMS WITH VAPOR-RETARDER MASTIC AS RECOMMENDED BY THE INSULATION MANUFACTURER. APPLY TWO COATS OF FINISH IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AS REQUIRED TO PROVIDE A WEATHERPROOF FINISH FOR EXTERIOR INSTALLATION.
- A. REFRIGERANT SUCTION AND HOT GAS: 3/4 INCH THICKNESS

3.5 INSULATE THE FOLLOWING TYPES OF PIPING WITH FLEXIBLE ELASTOMERIC CLOSED-CELL INSULATION, ASTM C534, TYPE I, K-VALUE OF 0.27 AT 75F OR GLASS FIBER FACTORY MOLDED RIGID INSULATION, ASTM C547 TYPE I, K-VALUE OF 0.24 AT 75F, WITH ALL-SERVICE JACKET, VAPOR BARRIER TYPE, FOR TUBULAR MATERIALS. ADHESIVE AND ULTRAVIOLET-PROTECTIVE ALUMINUM OR PVC JACKET AS RECOMMENDED BY THE INSULATION MANUFACTURER. SEAL ALL JOINTS AND SEAMS WITH VAPOR-RETARDER MASTIC AS RECOMMENDED BY THE INSULATION MANUFACTURER. APPLY TWO COATS OF FINISH IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AS REQUIRED TO PROVIDE A WEATHERPROOF FINISH FOR EXTERIOR INSTALLATION.
- A. EXTERIOR CONDENSER WATER: 3/4 INCH THICKNESS

3.6 APPLY INSULATION OVER FITTINGS, VALVES, AND SPECIALTIES WITH CONTINUOUS THERMAL AND VAPOR-RETARDER INTEGRITY. SEAL PENETRATIONS IN INSULATION AT HANGERS, SUPPORTS, ANCHORS, AND OTHER PROJECTIONS WITH VAPOR-RETARDER MASTIC. APPLY INSULATION CONTINUOUSLY THROUGH HANGERS AND AROUND ANCHOR ATTACHMENTS. EXTEND INSULATION ON ANCHOR LEGS AT LEAST 12 INCHES FROM POINT OF ATTACHMENT TO PIPE AND TAPER INSULATION ENDS. SEAL TAPERED ENDS WITH A COMPOUND RECOMMENDED BY THE INSULATION MATERIAL MANUFACTURER TO MAINTAIN VAPOR RETARDER.

3.7 APPLY PIPE INSULATION CONTINUOUSLY THROUGH WALLS AND FLOORS. APPLY DUCT INSULATION CONTINUOUSLY THROUGH WALLS AND PARTITIONS, EXCEPT FIRE-RA TED WALLS ANO PARTITIONS (TERMINATE DUCT INSULATION AT FIRE/ SMOKE DAMPER SLEEVES). TERMINATE DUCT INSULATION AT UNDERSIDE OF FLOOR ASSEMBLY AND AT FLOOR SUPPORT AT TOP OF FLOOR. TAPER TERMINATION AND SEAL INSULATION ENDS WITH VAPOR-RETARDER MASTIC.

3.8 ALL INSULATION SHALL HAVE A FLAME SPREAD INDEX RATING OF 25 OR LESS, AND A SMOKE DEVELOPED INDEX RATING OF 50 OR LESS.

3.9 INSTALL ALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3.10 PUMP BODY, EQUIPMENT, STRAINERS, ETC., INSULATION SHALL BE INSTALLED IN SUCH A MANNER THAT IT CAN BE EASILY REMOVED AND REPLACED WITHOUT DAMAGE.

4.0 VALVES

4.1 VALVES IN STEEL PIPING SHALL BE SCREWED 2 INCH AND SMALLER OR FLANGED END 2- 1/ 2 INCH AND LARGER. VALVES IN COPPER TUBING SHALL BE BRONZED BODY, WITH SOLDERED OR BRAZED ENDS.

4.2 ALL VALVES SHALL BE DRIP-TIGHT, RATED FOR CONTINUOUS DUTY FOR A MINIMUM OF 25 PSIG AND 25 DEG F. HIGHER THAN DUTY IMPOSED. MINIMUM PRESSURE/TEMPERATURE RATING: 125 PSIG/250 DEG. F. FOR FLUIDS 99 PSIG AND LESS, 250 PSIG/350 DEG. F. FOR FLUIDS 100 PSIG AND HIGHER.

4.3 CHECK VALVES: NON-SLAM GLOBE TYPE. IRON OR SEMI-STEEL BODY, STAINLESS STEEL SPRING, BRONZE TRIM. 2 INCH AND SMALLER, THREADED OR SOLDERED ENDS. 2-1/ 2 INCH AND LARGER, FLANGED OR GROOVED END.

4.4 BALL VALVES: 400 PSIG WOG CONSTRUCTION, 250 DEG. F. MINIMUM TEMPERATURE RATING, EQUIPPED WITH REINFORCED TEFLON SEATS ANO SEALS, ANTI-BLOWOUT STEM AND FULL PORT (LINE SIZE PORT), CHROME PLATED BALL, BRONZE OR BRASS BODY, SCREWED/ SOLDERED PATTERN.

4.5 BUTTERFLY VALVES: LUG OR GROOVED PATTERN WAFER TYPE, RATED 250 PSIG/350 DEG. F., STAINLESS STEEL SHAFTS ANO DISC, FLANGE SEALS INTEGRAL WITH SEAT OR SEPARATE 0-RINGS AND BRONZE DISC, CAST IRON BODY, EQUIPPED WITH REPLACEABLE SEATS. OPERATOR FOR 6 INCH AND SMALLER VALVES SHALL BE TEN (10) POSITION HANDLE. OPERATOR FOR 8 INCH AND LARGER VALVES SHALL BE ENCLOSED GEAR POSITIONER WITH DIAL INDICATOR AND HANDWHEEL WITH SPINNER.

	DATE	BY	ISSUE/REVISION
	11-20-23	DJN	ISSUED FOR CONSTRUCTION
1	12-21-23	DJN	ADDENDUM #2

	DATE	BY	ISSUE/REVISION

WILLIAM JOHN ALBRECHT, JR. REGISTERED PE10607213 STATE OF INDIANA PROFESSIONAL ENGINEER

ESTD 1951 PERFECTION GROUP

HVAC SPECIFICATIONS

GREATER CLARK COUNTY SCHOOLS
JEFFERSONVILLE HIGH SCHOOL NATATORIUM
2315 ALLISON LANE
JEFFERSONVILLE, IN 47130

JOB NO.: 23084T
SCALE: AS NOTED
DATE: 11-20-2023
DRAWN BY: DJN
APPROVED BY: TC
DRAWING NUMBER:
M0.02
REVISION NO.: 1

4.6 GATE AND GLOBE VALVES: CLASS 125. 150 PSIG WOG CONSTRUCTION: 2 INCH AND SMALLER, BRONZE, SCREWED PATTERN WITH RISING STEM, UNION BONNET, SINGLE WEDGE DISC. 2- 1/ 2 INCH AND LARGER, CAST IRON, OS&Y, FLANGED PATTERN WITH BOLTED BONNET, RISING STEM, BRONZE SEATS, STEM AND DISC FACES. GATE VALVES SHALL NOT BE USED ON HVAC PIPING SYSTEMS

4.7 BALL VALVES AND BUTTERFLY VALVES INSTALLED IN CHILLED WATER, HOT WATER AND MAKE-UP SYSTEMS SHALL HAVE AN EXTENDED HANDLE WHICH OFFERS VAPOR SEAL ADJUSTABLE MEMORY STOP AND VALVE PACKING MAINTENANCE WITHOUT DISTURBING THE INSULATION

4.8 INSTALL VALVES WITH UNIONS OR FLANGES AT EACH PIECE OF EQUIPMENT ARRANGED TO ALLOW SERVICING, MAINTENANCE, AND EQUIPMENT REMOVAL WITHOUT SYSTEM SHUT-DOWN.

5.0 PIPING AND SPECIALTIES

5.1 HOT WATER, CHILLED WATER, AND CONDENSER WATER SYSTEMS PIPING 2 INCHES AND SMALLER SHALL BE EITHER:
1. SCHEDULE 40 BLACK STEEL PIPE WITH THREADED OR PRESSURE SEALED JOINTS.
2. TYPE L COPPER WITH SOLDERED OR PRESSURE SEALED JOINTS.

HOT WATER, CHILLED WATER, AND CONDENSER WATER SYSTEMS PIPING 2-1/2 INCHES AND LARGER SHALL BE:
1. SCHEDULE 40 BLACK STEEL PIPE WITH WELDED OR OR FLANGED CONNECTIONS INSIDE MECHANICAL EQUIPMENT ROOMS.
2. SCHEDULE 40 BLACK STEEL PIPE WITH GROOVED OR FLANGED CONNECTIONS OUTSIDE MECHANICAL EQUIPMENT ROOMS.

A. TEE DRILLING MUST BE APPROVED BY ENGINEER PRIOR TO BEGINNING WORK AND WILL ONLY BE ALLOWED ON A LIMITED BASIS WHEN IT IS THE ONLY VIABLE OPTION.
B. DIELECTRIC FITTINGS SHALL BE ZINC PLATED WITH DIELECTRIC THERMOPLASTIC LINING MEETING ASTM F492-77
C. ALTERNATIVE FOR CONDENSER WATER SYSTEMS PIPING SHALL BE SCHEDULE 80 PVC IN COMPLIANCE WITH CURRENT ASTM STANDARDS.

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5.2 TYPE L COPPER: ASTM 888, DRAWN-TEMPER COPPER TUBING.

5.3 TYPE K COPPER: ASTM B88, ANNEALED-TEMPER COPPER TUBING.

5.4 CAST IRON PIPE: ASTM A74; CISPI 301 HUBLESS SOIL PIPE.

5.5 STRAINERS: Y-PATTERN, STAINLESS STEEL SCREEN, CAST IRON BODY IN STEEL PIPING SYSTEM, BRONZE BODY IN COPPER PIPING SYSTEM, 250 PSIG SERVICE RATING. PROVIDE BLOW-OFF CONSISTING OF NIPPLE, BALL VALVE, NIPPLE AND CAP ON ALL STRAINERS.

5.6 EXPANSION TANKS: BLADDER TYPE PRESSURIZED TANK CONSTRUCTED OF WELDED BLACK STEEL, ASME CONSTRUCTED AND LABELED FOR MINIMUM 250 PSIG WATER WORKING PRESSURE AND 375F OPERATING TEMPERATURE. HYDROSTATICALLY TESTED AT MINIMUM OF 1-1/2 TIMES WORKING PRESSURE, TAPPED OPENINGS AS REQUIRED, RUSTPROOF EXTERIOR COATING.

5.7 AIR SEPARATOR: CONSTRUCTED OR WELDED BLACK STEEL, ASME CONSTRUCTED AND LABELED FOR MINIMUM 250 PSIG WA TER WORKING PRESSURE AND 375F OPERATING TEMPERATURE. TANGENTIAL TYPE, DESIGNED TO DIRECT RELEASED AIR INTO ATMOSPHERE, WITH THREADED BLOWDOWN CONNECTION.

5.8 AIR ELIMINATOR VALVE: CAST IRON BODY, STAINLESS STEEL AIR SEPARATING TRAP, HIGH REMOVAL RATE AT LOW PRESSURE DIFFERENTIAL, MINIMUM 250 PSIG WATER WORKING PRESSURE, MINIMUM 250F OPERATING TEMPERATURE.

5.9 MANUAL AIR VENT: MINIMUM 250 PSIG WATER WORKING PRESSURE MINIMUM 225F OPERATING TEMPERATURE, WITH MANUAL SHUTOFF. BRONZE BODY, SCREWED OR SOLDERED BALL TYPE.

5.10 FLEXIBLE CONNECTORS: PUMPS/CHILLERS; MINIMUM 250 PSIG WATER WORKING PRESSURE. NYLON REINFORCED NEOPRENE RUBBER WITH STEEL FLANGES. TERMINAL EQUIPMENT: MINIMUM 250 PSIG WATER WORKING PRESSURE, KEVLAR REINFORCED EPDM WITH STAINLESS STEEL BRAID HOSE WITH THREADED, FLANGED, OR SOLDERED CONNECTIONS.

5.11 PUMP SUCTION DIFFUSERS: COMBINATION REDUCING ELBOW AND INLET DIFFUSER, FLANGED CAST IRON BODY, STAINLESS STEEL INLET VANES, 304 STAINLESS STEEL ORIFICE CYLINDER, START-UP STRAINER, 250 PSIG WATER WORKING PRESSURE, ADJUSTABLE FOOT SUPPORT, GAUGE PORT ANO PLUG ON OUTLET FLANGE.

5.12 AUTOMATIC BALANCE VALVES: AUTOMATIC BALANCE VALVE ASSEMBLY SHALL INCLUDE ONE OR MORE PRECISION SCULPTURED BRASS OR POLYPHENYLSULFONE ORIFICE WITH AN ELASTOMERIC DIAPHRAGM. EACH AUTOMATIC BALANCE VALVE WILL AUTOMATICALLY CONTROL THE FLOW RATE TO WITHIN +/- 10% OF RATED FLOW OVER A TEMPERATURE RANGE OF 32 TO 225F AND A PRESSURE DIFFERENTIAL RANGE OF 2 TO 80 PSIG. THREADED VALVES SHALL BE CONSTRUCTED OF HOT FORGED BRASS UNS C37700 PER ASTM B-283 LATEST REVISION OR UNS C36000 PER ASTM B 16 LATEST REVISION. THESE VALVE BODIES ARE SUITABLE TO 600 PSIG. FLANGED VALVES SHALL BE CONSTRUCTED OF CARBON STEEL SUITABLE TO 400 PSIG.

5.13 THERMOMETERS: 12 INCHES MERCURY-FREE LIQUID IN GLASS, ADJUSTABLE ANGLE DIRECT MOUNT, DIE CAST ALUMINUM FLANGELESS CASE, WITH ¾ INCH NPT BRASS SOCKET, INSERTION LENGTH SHALL BE 1/2 PIPE OR DUCT DIAMETER. USE OF TO 120F RANGE FOR CHILLED WATER PIPING, AND 30F TO 240F FOR HEATING HOT WATER. USE OF TO 120F RANGE FOR DUCTS, PROVIDE DUCT FLANGE ADAPTER FOR MOUNTING. SOLAR POWERED DIGITAL THERMOMETERS WITH 1/2 INCH LCD DISPLAY ANO 1% ACCURACY MAY ALSO BE USED.

5.14 PRESSURE GAUGES: 3-1/2 INCH DIAL, BLACK CAST FLANGELESS CASE, WHITE DIAL WITH BLACK MARKINGS, RED TIPPED ADJUSTABLE POINTER, BRONZE BUSHED BRASS MOVEMENT, PHOSPHOR BRONZE BOURDON TUBE, 1% ACCURACY CLASS " A", 1/4 INCH NPT LOWER CONNECTION, BRASS SOAKER, 0-100 PSI RANGE FOR CLOSED LOOP HYDRONIC SYSTEMS. INSTALL PRESSURE GAUGES WHERE SHOWN ON THE DRAWINGS.

5.15 FLUSH HYDRONIC PIPING SYSTEMS WITH CLEAN WATER, FLUSH FREE OF DIRT, SCALE, OIL, WASTE, ETC. REMOVE AND CLEAN OR REPLACE ALL STRAINER SCREENS. AFTER CLEANING AND FLUSHING HYDRONIC PIPING SYSTEMS, BUT BEFORE BALANCING, REMOVE DISPOSABLE FINE-MESH STRAINERS IN PUMP SUCTION DIFFUSERS AND REPLACE WITH MESH SUITABLE FOR NORMAL OPERATION.

5.16 THOROUGHLY CLEAN AND FLUSH SYSTEM PIPING USING MARATHON #659- H WATER TREATMENT CHEMICAL DETERGENT.

5.17 SUBJECT PIPING SYSTEM TO HYDROSTATIC TEST PRESSURE THAT IS NOT LESS THAN 1.5 TIMES THE SYSTEM'S WORKING PRESSURE. TEST PRESSURE SHALL NOT EXCEED MAXIMUM PRESSURE FOR ANY VESSEL, PUMP, VALVE, OR OTHER COMPONENT IN SYSTEM UNDER TEST. AFTER HYDROSTATIC TEST PRESSURE HAS BEEN APPLIED FOR AT LEAST 10 MINUTES, EXAMINE PIPING, JOINTS, AND CONNECTIONS FOR LEAKAGE OR LOSS OF PRESSURE. ELIMINATE LEAKS BY TIGHTENING, REPAIRING, OR REPLACING COMPONENTS, AND REPEAT HYDROSTATIC TEST. WHEN NO LEAKS ARE PRESENT AND THERE IS NO LOSS OF SYSTEM PRESSURE AFTER 10 MINUTES MAINTAIN SYSTEM TEST PRESSURE FOR 6 HOURS TO ENSURE SYSTEM IS LEAK FREE.

6.0 REFRIGERANT PIPING AND SPECIALTIES

6.1 TYPE ACR COPPER: ASTM B280, HARD-DRAWN STRAIGHT LENGTHS AND SOFT-ANNEALED COILS, SEAMLESS COPPER TUBING. WROUGHT COPPER FITTINGS AND SILVER SOLDERED JOINTS. MECHANICAL FITTINGS (CRIMP OR FLAIR) ARE NOT PERMITTED ON SYSTEMS OVER 3-1/2 TONS OF NOMINAL CAPACITY.

6.2 REFRIGERANT PIPING SPECIALTIES:

6.3 BALL VALVES: 500 PSIG MAXIMUM PRESSURE, TEMP. RANGE -40 DEG F TO 300 DEG F, FORGED BRASS BODY, BRASS BALL WITH EQUALIZING ORIFICE, TEFLON BALL SEALS, STEM STOP FOR BALL PORT POSITION, SEALED BLOW OUT PROOF STEM.

6.4 GLOBE VALVES: 450 PSIG MAXIMUM PRESSURE, 275 DEG F MAX. TEMP., CAST BRONZE OR FORGED BRASS, BOLTED BONNET, REPLACEABLE SEAT DISC, SOLDER-END CONNECTIONS.

6.5 CHECK VALVES: 450 PSIG MAXIMUM PRESSURE 300 DEG F MAX. TEMP., CAST BRONZE BODY WITH BOLTED BONNET, FLOATING PISTON WITH MECHANICALLY RETAINED TEFLON SEAT DISC.

6.6 STRAINERS: 500 PSIG MAXIMUM PRESSURE FORGED BRASS BODY WITH MONEL 80-MESH SCREEN, SCREWED CLEANOUT PLUG, SOLDER END CONNECTIONS.

6.7 MOISTURE/ LIQUID INDICATORS: 500 PSIG MAXIMUM PRESSURE, 200 DEG F MAX. TEMP., FORGED BRASS BODY, SOLDERED END CONNECTIONS, REPLACEABLE POLISHED OPTICAL VIEWING WINDOW.

6.8 FILTER-DRIERS: 500 PSIG MAXIMUM PRESSURE, STEEL SHELL, FLANGE RING, DUCTILE IRON COVER PLATE, WROUGHT COPPER FITTINGS FOR SOLDER END CONNECTIONS, REPLACEABLE FILTER-DRIER CORE KIT.

6.9 FLEXIBLE CONNECTORS: 500 PSIG MAXIMUM PRESSURE, SEAMLESS TIN BRONZE OR STAINLESS-STEEL CORE, HIGH TENSILE BRONZE BRAIDS, SOLDER CONNECTION, DEHYDRATED, MINIMUM 7 INCH LENGTH.

7.0 EQUIPMENT

7.1 EQUIPMENT SCHEDULES ON MECHANICAL DRAWINGS LISTS BASIS OF DESIGN AND PERFORMANCE REQUIRED FOR EACH TYPE OF EQUIPMENT. MODEL NUMBER OF LISTED EQUIPMENT ESTABLISHES MINIMUM CONSTRUCTION AND OPERATING STANDARD REQUIRED FOR SUBSTITUTION. OTHER MANUFACTURER'S MAY BE SUBSTITUTED WITH WRITTEN PERMISSION OF ENGINEER. SUBMIT PROJECT SPECIFIC PERFORMANCE AND CONSTRUCTION DATA SEPARATELY FOR EACH PROPOSED SUBSTITUTION HIGHLIGHTING ANY DEVIATIONS FROM SPECIFIED EQUIPMENT.

7.2 ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BEAR UL OR ETL LABEL.

7.3 HOUSEKEEPING PADS FOR FLOOR MOUNTED EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY GENERAL CONTRACTOR AND AS DETAILED ON MECHANICAL DRAWINGS.

7.4 CERTIFY FAN PERFORMANCE RATINGS, INCLUDING FLOW RATE, PRESSURE, POWER, AIR DENSITY, SPEED OF ROTATION, AND EFFICIENCY BY FACTORY TESTS ACCORDING TO AMCA 210, "LABORATORY METHODS OF TESTING FANS FOR AERODYNAMIC PERFORMANCE RATING." LABEL FANS WITH THE AMCA-CERTIFIED RATINGS SEAL.

7.5 CERTIFY SOUND-POWER LEVEL RATINGS ACCORDING TO AMCA 301, "METHODS FOR CALCULATING FAN SOUND RATINGS FROM LABORATORY TEST DATA." FACTORY TEST FANS ACCORDING TO AMCA 300, "REVERBERANT ROOM METHOD FOR SOUND TESTING OF FANS." LABEL FANS WITH THE AMCA-CERTIFIED RATINGS SEAL.

7.6 AHRI 260: AIR-HANDLING UNIT FAN SOUND RATINGS SHALL COMPLY WITH AMCA 301, "METHODS FOR CALCULATING FAN SOUND RATINGS FROM LABORATORY TEST DATA," OR AHRI 260, "SOUND RATING OF DUCTED AIR MOVING AND CONDITIONING EQUIPMENT." AND SHALL BE LISTED AND LABELED BY AHRI.

7.7 AHRI 410: WATER COILS: FACTORY TESTED TO 300 PSIG (2070 KPA) ACCORDING TO AHRI 410 AND ASHRAE 33.

7.8 AHRI 430 CERTIFICATION: AIR-HANDLING UNITS AND THEIR COMPONENTS SHALL BE FACTORY TESTED ACCORDING TO AHRI 430 AND SHALL BE LISTED AND LABELED BY AHRI.

7.9 AHRI 550/590: CHILLER UNIT PERFORMANCE SHALL BE RATED PER AHRI STANDARD 550/590 LATEST EDITION (U.S.A.) AT STANDARD RATING CONDITIONS AND SHALL BE LISTED AND LABELED BY AHRI. ALL UNITS SHALL BE ASHRAE 90.1-2016 COMPLIANT. UNIT CONSTRUCTION SHALL COMPLY WITH ANSI /ASHRAE 15 SAFETY STANDARD (LATEST REVISION) AND NATIONAL ELECTRICAL CODE.

7.10 AHRI 880: VARIABLE AIR VOLUME BOXES SHALL BE TESTED IN ACCORDANCE TO AHRI 880. LABEL EACH AIR TERMINAL UNIT WITH PLAN NUMBER, NOMINAL AIRFLOW, MAXIMUM AND MINIMUM FACTORY-SET AIRFLOWS, COIL TYPE, AND AHRI CERTIFICATION SEAL.

7.11 AHRI 910: POOL DEHUMIDIFICATION UNIT PERFORMANCE SHALL BE RATED PER AHRI STANDARD 910 LATEST EDITION (USA) AT STANDARD RATING CONDITIONS AND SHALL BE LISTED AND LABELED BY AHRI. UNIT CONSTRUCTION SHALL COMPLY WITH ANSI/ASHRAE SAFETY STANDARD (LATEST REVISION) AND NATIONAL ELECTRICAL CODE.

7.12 AHRI 1060: ENERGY RECOVERY PERFORMANCE SHALL BE RATED PER AHRI STANDARD 1060 LATEST EDITION AT STANDARD RATING CONDITIONS AND SHALL BE LISTED AND LABELED BY AHRI. ENERGY RECOVERY VENTILATOR SHALL MEET NFPA 90A AND 90B REQUIREMENTS FOR A MAXIMUM FLAM SPREAD INDEX OF 25 AND A MAXIMUM SMOKE DEVELOPED INDEX OF 50.

7.13 VARIABLE FREQUENCY DRIVES SHALL HAVE A MINIMUM MEAN TIME BETWEEN FAILURE (MTBF) RATING OF NOT LESS THAN 28 YEARS (245,280 HOURS).

7.14 FACTORY ADJUST CONDENSING BOILER BURNER TO ELIMINATE EXCESS OXYGEN, CARBON DIOXIDE, OXIDES OF NITROGEN EMISSIONS, AND CARBON MONOXIDE IN FLUE GAS AND TO ACHIEVE COMBUSTION EFFICIENCY AND PERFORM HYDROSTATIC TEST.

7.15 TEST AND INSPECT FACTORY-ASSEMBLED BOILERS, BEFORE SHIPPING, ACCORDING TO CURRENT ASME BOILER AND PRESSURE VESSEL CODE AND AHRI STANDARDS.

7.16 EQUIPMENT LOCATED OUTDOORS SHALL WITHSTAND 1,000 HOURS IN CONSTANT NEUTRAL SALT SPRAY UNDER ASTM B117 CONDITIONS WITH A 1MM SCRIBE PER ASTM D1654. AFTER TEST, PAINTED PARTS SHALL SHOW NO SIGNS OF WRINKLING OR CRACKLING, NO LOSS OF ADHESION, NO EVIDENCE OF BLISTERING, AND THE MAIN CREEPAGE SHALL NOT EXCEED 1/4 IN. (RATING ^{3} 4 PER ASTM D1654) ON EITHER SIDE OF THE SCRIBE LINE.

8.0 TESTING / BALANCING AND COMMISSIONING

8.1 PERFORM TOTAL SYSTEM BALANCE IN ACCORDANCE WITH NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS.

8.2 ADJUST MOTORS, SHAFTS, PULLEYS TO PROPER ALIGNMENT AND TO RUN VIBRATION FREE.

8.3 SUBMIT FIVE (5) COPIES OF COMPLETE TESTING AND BALANCING REPORT TO ENGINEER FOR REVIEW AND APPROVAL.

8.4 THE PURPOSE OF THE COMMISSIONING PROCESS IS TO PROVIDE THE OWNER WITH A HIGH LEVEL OF ASSURANCE THAT THE NEW MECHANICAL SYSTEMS, EQUIPMENT AND COMPONENTS HAVE BEEN INSTALLED IN THE PRESCRIBED MANNER, AND OPERATE WITHIN THE PERFORMANCE GUIDELINES SET IN THE CONTRACT DOCUMENTS. COMMISSIONING IS INTENDED TO ENHANCE THE QUALITY OF SYSTEM START-UP AND AID IN THE ORDERLY TRANSFER OF SYSTEMS FOR BENEFICIAL USE BY THE OWNER

8.5 THE INSTALLING CONTRACTOR WILL COMPLETE, AND DOCUMENT, PRE-FUNCTIONAL TESTING. COMMISSIONING AGENT (CXA) CONDUCTS FUNCTIONAL TESTING WITH ASSISTANCE OF INSTALLING CONTRACTOR.

8.6 ALL FINDINGS FROM THESE INSPECTIONS ARE DOCUMENTED AND ARE POSTED TO THE MASTER FINDINGS LIST.

8.7 RESPONSIBLE CONTRACTOR WILL CORRECT FINDING(S) AND PROVIDE WRITTEN CONFIRMATION THAT THE FINDING(S) HAVE/HAS BEEN CORRECTED. IF FINDING WAS NOT CORRECTED, CONTRACTOR PROVIDES WRITTEN EXPLANATION.

8.8 ONCE WRITTEN RESPONSES ARE PROVIDED FOR EACH FINDING, THE CXA WILL RE-INSPECT. THE CONTRACTOR WILL BE BACK-CHARGED AT A RATE NOT TO EXCEED THE CXA CONTRACT HOURLY RATE FOR ANY FINDING(S) THAT WAS/WERE REPORTED TO HAVE BEEN RESOLVED AND THAT ARE FOUND TO BE UNRESOLVED UPON RE-INSPECTION.

8.9 STATUS WILL BE TRACKED FOR EACH FINDING AND THE MASTER FINDINGS LIST WILL BE UPDATED ACCORDINGLY.

8.10 ONCE ALL FINDINGS HAVE BEEN RESOLVED AND THE JOB IS COMPLETED, A FINAL REPORT WILL BE GENERATED AND A FINAL COMMISSIONING MEETING WILL BE HELD.

9.0 DUCTWORK AND SHEET METAL ACCESSORIES

9.1 CONSTRUCT RECTANGULAR DUCT OF FIRST QUALITY MATERIALS IN ACCORDANCE WITH CURRENT SMACNA HVAC DUCT CONSTRUCTION STANDARDS, NFPA 90A, NFPA 908, NFPA 96, ASHRAE AND ALL APPLICABLE CODES. CROSS BREAK SHEET METAL, EXCEPT WHERE RIGID INSULATION IS SPECIFIED.
A. GALVANIZED MATERIALS SHALL BE LOCK FORMING QUALITY: COMPLYING WITH ASTM A653/A653M AND HAVING A MINIMUM OF A G60 COATING DESIGNATION; DUCTS SHALL HAVE MILL- PHOSPHATIZED FINISH WHERE EXPOSED IN FINISHED SPACES. PROVIDE "GALVANNEAL" OR " PAINT-GRIP" IF DUCTWORK IS TO BE PAINTED.
B. SINGLE WALL ROUND AND FLAT OVAL SPIRAL DUCT: SPIRAL LOCKSEAM CONSTRUCTION WITH AN INTERLOCKING HELICAL SEAM RUNNING LENGTH OF DUCT.
C. DOUBLE WALL ROUND AND FLAT OVAL SPIRAL DUCT: SPIRAL LOCKSEAM CONSTRUCTION WITH A PERFORATED INNER LINER, A 1-INCH, OR AS SPECIFIED, LAYER OF FIBERGLASS INSULATION AND AN OUTER PRESSURE SHELL.
D. SEALANT: NON-HARDENING, WATER RESISTANT, NON-TOXIC, NON-FLAMMABLE, FIRE RESISTIVE, COMPATIBLE WITH MATING MATERIALS. LIQUID USED ALONE OR WITH TAPE, OR HEAVY MASTIC.
E. SEAL ALL LOW PRESSURE DUCTWORK IN ACCORDANCE WITH SMACNA SEAL CLASS 'B' (TRANSVERSE JOINTS AND LONGITUDINAL SEAMS SEALED). SEAL ALL MEDIUM PRESSURE DUCTWORK AND DUCTS INSTALLED OUTDOORS IN ACCORDANCE WITH SMACNA SEAL CLASS ' A' (ALL TRAVERSE JOINTS, LONGITUDINAL SEAMS AND DUCT PENETRATIONS SEALED).

9.2 FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA - HVAC DUCT CONSTRUCTION STANDARDS AND ASHRAE HANDBOOKS, EXCEPT WHERE INDICATED OTHERWISE. PROVIDE DUCT MATERIAL, GAUGES, REINFORCING AND SEALING FOR OPERATING PRESSURES INDICATED. REFER TO TABLE ENTITLED "DUCT SEALING REQUIREMENTS" IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS.

9.3 STATIC PRESSURE CLASSIFICATIONS: UNLESS OTHERWISE INDICATED, CONSTRUCT DUCTS TO THE FOLLOWING:
A SUPPLY DUCTWORK UPSTREAM OF VAV TERMINAL UNITS: 6 INCH W.G.
B. SUPPLY DUCTWORK DOWNSTREAM OF VAV TERMINAL UNITS AND SINGLE- ZONE AIR HANDLING UNITS: 3 INCH W.G.
C. RETURN AIR DUCTS AND OUTDOOR AIR INTAKE DUCTS: 2 INCH W.G., NEGATIVE PRESSURE.
D. EXHAUST DUCTS: 2 INCH W.G., NEGATIVE PRESSURE.

9.4 FITTINGS: INSTALL FABRICATED FITTINGS FOR CHANGES IN DIRECTION, CHANGES IN SIZE, CHANGES IN SHAPE, AND FOR CONNECTIONS.
A. ELBOWS (DUCT VELOCITY 1500 FPM OR LESS): RADIUS ELBOW WITH CENTERLINE RADIUS OF MINIMUM 8 TIMES WIDTH OF DUCT OR MITERED ELBOW WITH TURNING VANES.
B. ELBOWS (DUCT VELOCITY GREATER THAN 1500 FPM): RADIUS ELBOW WITH CENTERLINE RADIUS OF MINIMUM 1.5 TIMES WIDTH OF DUCT. MITERED ELBOWS ARE NOT PERMITTED.
C. CONVERGING TRANSITIONS: SIDE OF DUCT SHALL NOT EXCEED 30 DEGREE ANGLE TO PROJECTED SAME SIDE.
D. DIVERGING TRANSITIONS: SIDE OF DUCT SHALL NOT EXCEED 20 DEGREE ANGLE TO PROJECTED SAME SIDE.
E. BRANCH TAKE-OFFS (VAV DUCT SYSTEMS UPSTREAM OF VAV TERMINAL AND DUCTS WITH VELOCITIES GREATER THAN 1500 FPM): 45 DEGREE CONICAL WYE OR 90 DEGREE CONICAL TEE.
F. BRANCH TAKE-OFFS (VAV DUCT SYSTEMS DOWNSTREAM OF VAV TERMINALS AND DUCTS WITH VELOCITIES 1500 FPM OR LESS): 45 DEGREE TAPERED TAP.

9.5 BRACE ALL DUCTWORK AS REQUIRED TO PREVENT NOISE AND VIBRATION UNDER ALL OPERATING CONDITIONS

9.6 RECTANGULAR SHEET METAL DUCTWORK: ALL LONGITUDINAL JOINTS SHALL BE "PITTSBURGH" TYPE.

9.7 DUCT SIZES: SIZE SHOWN ON DRAWINGS IS THE FREE AREA DIMENSION, AND SHALL BE INCREASED TO ACCOMMODATE ACOUSTICAL LINER WHERE REQUIRED.

9.8 FLEXIBLE CONNECTIONS (FC): PROVIDE AT EACH INLET AND OUTLET DUCT CONNECTION ON FAN EQUIPMENT. FABRIC FASTENED TO METAL W/DOUBLE LOCK SEAM. FABRIC FOR ORDINARY HVAC USES TO BE WATERPROOF, FIRE RETARDANT SUITABLE FOR TEMPERATURES OF 200 DEG. F. MANUFACTURERS: DURO- DYNE; VENTFABRICS OR APPROVED EQUAL.

9.9 FLEXIBLE DUCT: SPIRAL-WOUND SPRING STEEL WITH FLAMEPROOF VINYL SHEATHING, OR CORRUGATED ALUMINUM, COMPLYING WITH NFPA 90A AND UL 181. INSTALL 1 INCH THICK CONTINUOUS FLEXIBLE FIBERGLAS SHEATH WITH VINYL OR ALUMINUM VAPOR BARRIER JACKET. CLAMPS SHALL BE STAINLESS STEEL WITH HEX SCREW WITH WORM GEAR OR HEAVY NYLON ADJUSTABLE SELF- LOCKING CLAMPS. INSULATION ENDS SHALL BE SEALED WITH VAPOR BARRIER DUCT TAPE. FLAME SPREAD RATING NOT GREATER THAN 25 AND SMOKE DEVELOPED RATING NO HIGHER THAN 50.
A. WORKING PRESSURE: 10 INCH W.G. POSITIVE, 1 INCH W.G. NEGATIVE. RATED VELOCITY AT 4000 FPM.

9.10 FIRE DAMPERS: DAMPERS SHALL BE DYNAMIC RATED FOR PRESSURE LEVEL OF SYSTEM BEING INSTALLED, UL 555 LABELED, 1- 1/ 2 HOUR RATED UNLESS INDICATED OTHERWISE, MIN. 21 GAUGE GALVANIZED STEEL FRAME WITH MOUNTING SLEEVE, ROLL FORMED INTERLOCKING BLADES, 165 DEG. F. REPLACEABLE FUSIBLE LINK.

9.11 AIR DIFFUSERS, REGISTERS AND GRILLES: PROVIDE DEVISES THAT PROVIDE THE THROW, PRESSURE DROP, ANO NOISE CRITERIA RATINGS EQUAL TO OR BETTER THAN THAT INDICATED ON THE DRAWINGS. BORDER STYLES SHALL BE COMPATIBLE WITH ADJACENT CEILING TYPE. FINISH SHALL BE BAKED ENAMEL WHITE UNLESS INDICATED OTHERWISE.

9.12 BALANCING DAMPERS: FURNISH AND INSTALL WHERE SHOWN ON DRAWINGS. CONSTRUCTION SHALL BE GALVANIZED STEEL, GAUGES HEAVIER THAN DUCT. SHAFT SHALL BE STEEL W/BRASS BEARINGS. BLADES SHALL BE STEEL. DAMPER SHALL NOT EXCEED 12 INCHES WIDE OR 48 INCHES LONG. FRAMES OF SAME GAUGE METAL ARE REQUIRED WHERE TWO BLADES OR MORE ARE USED. CHECK THAT DAMPERS ARE FREE AND OPERABLE AFTER INSTALLATION.

9.13 ACCESS DOORS: UL LISTED, 20 GAUGE GALVANIZED STEEL DOOR AND FRAME, 1 INCH THICK INSULATION, 1/2 INCHES WIDE GASKET, CAM LOCK LATCH FOR SIZES LESS THAN 12 INCHES, CONTINUOUS ALUMINUM HINGE FOR SIZES 12 INCHES AND LARGER. DOORS DOWNSTREAM OF FIRE OR SMOKE DAMPERS SHALL BE NEGATIVE PRESSURE RELIEF TYPE FOR DUCTS OVER 2000 FPM. INSTALL ACCESS DOORS IN DUCTWORK AT EACH INACCESSIBLE MOTORIZED DAMPER LOCATION, NEXT TO FIRE DAMPERS, SMOKE DAMPERS, FIRE/ SMOKE DAMPERS, MOTORIZED CONTROL DAMPERS, DUCT MOUNTED COILS, HUMIDIFIERS.

9.14 DAMPER OPERATORS: BALANCING DAMPERS TO HAVE LOCK-TYPE DAMPER OPERATOR LINKAGE AS BEST SUITS CONSTRUCTION AND ACCESS CONDITIONS. DAMPERS W/ ACCESSIBLE OPERATORS TO BE PROVIDED W/ LOCKING DAMPER QUADRANTS COMPLETE W/ LOCKING NUTS AND GRADUATED SCALE. DAMPERS W/NON-ACCESSIBLE OPERATORS PROVIDED W/ YOUNG SERIES 300 CONCEALED REGULATOR AND COVERPLATE COMPLETE W/WORM GEAR OR LINKAGE AS REQUIRED FOR SMOOTH DAMPER OPERATION.

9.15 TURNING VANES: DOUBLE WALL VANE CONSTRUCTION SHALL BE CONSTRUCTED AND SPACED AS CALLED FOR IN HVAC DUCT CONSTRUCTION STANDARDS.

9.16 INSTALL DUCTS WITH FEWEST POSSIBLE JOINTS. USE FABRICATED FITTINGS FOR CHANGES IN DIRECTION, SIZE AND SHAPE AND FOR CONNECTIONS. INSTALL DUCTS PARALLEL AND PERPENDICULAR TO BUILDING LINES; AVOID DIAGONAL RUNS. INSTALL DUCTS WITH A CLEARANCE OF 1 INCH, PLUS ALLOWANCE FOR INSULATION. COORDINATE LAYOUT WITH CEILINGS, FIRE AND SMOKE DAMPERS, LIGHT FIXTURE LAYOUTS, FIRE PROTECTION SPRINKLERS, ETC. SEAL ALL JOINTS AND SEAMS. DO NOT ROUTE DUCTS OVER ELECTRICAL PANELS.

9.17 CLEAN AND REMOVE SURFACE CONTAMINANTS AND DEPOSITS FROM DUCTS, DIFFUSERS, GRILLES, FANS, INTERNAL SURFACES OF AIR HANDLING UNITS, AND COILS PRIOR TO BALANCING.

10.0 NONMETAL DUCTWORK AND ACCESSORIES

10.1 CONSTRUCT FABRIC DUCT OF A WOVEN FIRE RETARDANT FABRIC. FABRIC DUCT SHALL HAVE THE FOLLOWING CHARACTERISTICS:
A. STANDARD COLOR FINISH AS SELECTED BY THE OWNER / ARCHITECT.
B. 100 PERCENT FLAME RETARDANT AS CLASSIFIED BY UL IN ACCORDANCE WITH FLAME SPREAD / SMOKE DEVELOP REQUIREMENTS OF NFPA 90-A.
C. MACHINE WASHABLE ANTI-MICROBIAL AGENT SHALL BE FACTORY APPLIED. ANTI-MICROBIAL AGENT SALL BE 99 PERCENT EFFECTIVE AFTER 10 LAUNDRY CYCLES PER AATC TEST METHOD 100.
D. FABRIC AIR DISPERSION SYSTEM (FOR AREAS WITH HIGH MOISTURE)

10.2 AIR DISPERSION ACCOMPLISHED BY LINEAR VENT AND PERMEABLE FABRIC. LINEAR VENT IS TO CONSIST OF AN ARRAY OF OPEN ORIFICES. LINEAR VENTS SHALL BE DESIGNED TO MINIMIZE DUSTING. SIZE OF VENT OPENINGS AND LOCATION OF LINEAR VENTS TO BE SPECIFIED AND APPROVED BY MANUFACTURER.

10.3 INLET CONNECTION TO METAL DUCT VIA FABRIC DRAW BAND WITH ANCHOR PATCHES AS SUPPLIED BY MANUFACTURER. ANCHOR PATCHES TO BE SECURED TO METAL DUCT VIA FASTENERS BY CONTRACTOR.
A. INLET CONNECTION INCLUDES ZIPPER FOR EASY REMOVAL/MAINTENANCE.
B. LENGTHS TO INCLUDE REQUIRED ZIPPERS AS SPECIFIED BY MANUFACTURER.
C. SYSTEM TO INCLUDE ADJUSTABLE FLOW DEVICES TO BALANCE TURBULENCE, AIRFLOW AND DISTRIBUTION AS NEEDED. FLOW RESTRICTION DEVICE SHALL INCLUDE ABILITY TO ADJUST THE AIRFLOW RESISTANCE FROM 0.06 – 0.60 IN W.G. STATIC PRESSURE.
D. INCLUDE END CAPS FOR ZIPPERS.
E. FABRIC SYSTEM SHALL INCLUDE CONNECTORS TO ACCOMMODATE MANUFACTURER SUPPLIED SUSPENSION SYSTEM.
F. ANY DEVIATION FROM A STRAIGHT RUN SHALL BE MADE USING A GORED ELBOW OR AN EFFICIENCY TEE. NORMAL 90 DEGREE ELBOWS ARE 5 GORES AND THE RADIUS OF THE ELBOW IS 1.5 TIMES THE DIAMETER OF THE FABRIC DUCT.

10.4 DO NOT USE FABRIC DUCT IN CONCEALED LOCATIONS.

10.5 FABRIC DUCT SUSPENSION HARDWARE
A. SUSPENDED TRACK AND INTERNAL HOOPS SYSTEM SHALL INCLUDE A SINGLE ROW, ALUMINUM TRACK SYSTEM AND INTERNAL HOOPS. HARDWARE TO INCLUDE SECTIONS OF TRACK, SPLICE CONNECTORS, TRACK ENDCAPS AND VERTICAL CABLE SUPPORTS INCLUDING ALL RADIUS SECTIONS.
B. FABRIC/TRACK ATTACHMENT FOR SNAP TABS ARE A DETACHABLE SLIDING TAB POSITIONED A MINIMUM OF EVERY 24 INCHES ALONG THE LENGTH OF THE SYSTEM (ALL DIAMETERS).
C. PROVIDE 316 STAINLESS STEEL COMPONENTS INCLUDING COUPLER ASSEMBLY, VERTICAL CABLE SUPPORT AND CABLE CONNECTOR.

10.5 THERMOSET FRP DUCTS
A. GLASS-FIBER-REINFORCED PLASTIC WITH A MINIMUM OF 3/16-INCH WALL.
B. MAXIMUM OPERATING STATIC PRESSURE: 10-INCH W.G.
C. STRAIGHT, RECTANGULAR-DUCT SEAMS: GLASS TAPE AND RESIN REINFORCED.
D. ROUND DUCTS: MOLDED ON MANDREL WITH CONTINUOUS WOUND GLASS FILAMENTS.
E. SECTION AND FITTING CONNECTORS SHALL BE SLEEVES OR BELLED ENDS, AND EPOXY.

10.6 THERMOSET FRP FITTING FABRICATION:
A. ROUND ELBOWS: FIVE-PIECE, MITERED CONSTRUCTION WITH CENTERLINE RADIUS AT LEAST TWO TIMES THE DIAMETER.
B. RECTANGULAR ELBOWS: MITERED WITH TURNING VANES.
C. BRANCH CONNECTIONS TO MAIN DUCTS: 45 DEGREES FROM CENTERLINES OF MAIN DUCTS.
D. REDUCERS, ROUND-TO-RECTANGULAR TRANSFORMATIONS: MINIMUM TAPER OF 3:1 LENGTH CHANGE TO DIAMETER.
E. OFFSETS: 45 DEGREES FROM CENTERLINES OF STRAIGHT DUCTS.

10.7 THERMOSET FRP FLANGE FABRICATION:
A. ADHERED TO DUCTS WITH EPOXY.
B. FABRICATED FROM 1/4-INCH THICK FRP AT LEAST 2 INCHES WIDE.
C. GASKETS: FULL FACE, 1/8 INCH THICK.
D. FLANGE BOLTS, NUTS, AND WASHERS: 9/32 INCH IN DIAMETER; TYPE 316, STAINLESS ADHERED WITH EPOXY TO OUTSIDE OF DUCTS.

10.8 THERMOSET FRP FLEXIBLE CONNECTORS:
A. MATERIAL: HYPALON.
B. LENGTH: 4 INCHES BETWEEN BOTH PARTS TO BE CONNECTED, WITH ENOUGH SLACK MATERIAL TO PREVENT VIBRATION TRANSMISSION WHEN SYSTEM IS IN OPERATION.
C. CLAMPS: TWO STAINLESS-STEEL, GEAR-DRIVE BANDS.

10.9 INSTALL FABRIC DUCT SUSPENSION SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUFACTURER. INSTALL DUCTS WITH FEWEST POSSIBLE JOINTS. INSTALL DUCTS, UNLESS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY AND PARALLEL AND PERPENDICULAR TO BUILDING LINES; AVOID DIAGONAL RUNS. INSTALL DUCTS WITH A CLEARANCE OF 1 INCH.

10.10 INSTALL THERMOSET FRP DUCTS, FITTINGS, AND ACCESSORIES ACCORDING TO CURRENT VERSION OF NFPA 91, NAIMA AH116; AND SMACNA'S "THERMOSET FRP DUCT CONSTRUCTION MANUAL.". INSTALL THERMOSET FRP DUCTS SO THAT NO METALS PENETRATE DUCT SYSTEM. SUPPORT VERTICAL DUCTS AT EVERY FLOOR AND AT ROOF. SUPPORT HORIZONTAL DUCTS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS--METAL AND FLEXIBLE." SUPPORT EXHAUST FANS, FUME HOODS, AND HEAVY ACCESSORIES INDEPENDENT OF DUCTS. INSTALL FLEXIBLE CONNECTORS WITH ENOUGH SLACK TO PREVENT VIBRATION TRANSMISSION WHEN FAN IS IN OPERATION. INSTALL AND BRACE RAINSTACK EXHAUST TERMINALS WITH STAYS FIRMLY ANCHORED TO ROOF. SLOPE EXHAUST DUCTS BACK TO INLET.

10.11 IF FABRIC DUCT SYSTEMS BECOME SOILED DURING INSTALLATION, THEY SHOULD BE REMOVED AND CLEANED FOLLOWING THE MANUFACTURERS RECOMMENDATIONS AND IN ACCORDANCE WITH NAIMA AH122.

11.0 DIRECT DIGITAL CONTROL SYSTEM

11.1 THE BAS CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL SYSTEM THAT WILL PERFORM THE SEQUENCES OF OPERATION AS DESCRIBED HEREIN.

11.2 ALL NETWORKED CONTROL PRODUCTS PROVIDED FOR THIS PROJECT SHALL BE COMPRISED OF AN INDUSTRY STANDARD OPEN PROTOCOL INTERNETWORK. COMMUNICATION INVOLVING CONTROL COMPONENTS (I.E. ALL TYPES OF CONTROLLERS AND OPERATOR INTERFACES) SHALL CONFORM TO ASHRAE 135-2010 BACNET STANDARD. NETWORKS AND PROTOCOLS PROPRIETARY TO ONE COMPANY OR DISTRIBUTED BY ONE COMPANY ARE PROHIBITED.

11.3 THE PRIMARY BACKBONE NETWORK BETWEEN THE BUILDING LEVEL CONTROLLERS, BAS SERVER AND OPERATOR WORKSTATIONS SHALL BE BASED UPON BACNET/IP. ETHERNET NETWORK SWITCHES SHALL BE STRATEGICALLY PLACED THROUGH THE BUILDING TO COVER SEVERAL FLOORS OR SEVERAL MECHANICAL ROOMS THAT ARE WITHIN 300 FT WIRING-FEET OF EACH OTHER.

11.4 PROVIDE A TCP/IP COMPATIBLE COMMUNICATION PORT FOR CONNECTION TO THE OWNER'S NETWORK FOR REMOTE COMMUNICATIONS. PROVIDE COORDINATION WITH THE OWNER FOR ADDRESSING AND ROUTER CONFIGURATION ON BOTH ENDS OF THE REMOTE NETWORK.

11.5 DDC SYSTEM SOFTWARE SHALL BE BASED ON SERVER THIN-CLIENT ARCHITECTURE, DESIGNED AROUND OPEN STANDARDS OF WEB TECHNOLOGY. DDC SYSTEM SERVER SHALL BE ACCESSED USING A WEB BROWSER OVER DDC SYSTEM NETWORK, USING OWNER'S LAN, AND REMOTELY OVER INTERNET THROUGH OWNER'S LAN. INTENT OF THIN-CLIENT ARCHITECTURE IS TO PROVIDE OPERATORS COMPLETE ACCESS TO DDC SYSTEM VIA A WEB BROWSER. NO SPECIAL SOFTWARE OTHER THAN A WEB BROWSER SHALL BE REQUIRED TO ACCESS GRAPHICS, POINT DISPLAYS, AND TRENDS; TO CONFIGURE TRENDS, POINTS, AND CONTROLLERS; AND TO EDIT PROGRAMMING. WEB ACCESS SHALL BE PASSWORD PROTECTED.

11.6 INCLUDE A FULL INTERACTIVE GRAPHICAL SELECTION MEANS OF ACCESSING AND DISPLAYING SYSTEM DATA TO OPERATOR. INCLUDE AT LEAST FIVE LEVELS WITH THE PENETRATION PATH OPERATOR ASSIGNABLE (FOR EXAMPLE, SITE, BUILDING, FLOOR, AIR-HANDLING UNIT, AND SUPPLY TEMPERATURE LOOP). NATIVE LANGUAGE DESCRIPTORS ASSIGNED TO MENU ITEMS ARE TO BE OPERATOR DEFINED AND MODIFIABLE UNDER PASSWORD CONTROL.

11.7 ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE WITH COMPLETE KNOWLEDGE OF PROJECT-SPECIFIC SYSTEM INSTALLED TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN DDC SYSTEM.

11.8 CONTROL WIRING IN PLENUM SPACES SHALL BE PLENUM RATED CABLE. EXPOSED WIRING BELOW 10'-0" AS MEASURED FROM FINISHED FLOOR IN EXPOSED AREAS INCLUDING EQUIPMENT ROOMS SHALL BE RAN IN EMT CONDUIT SIZED FOR NUMBER OF CONDUCTORS REQUIRED. EXPOSED WIRING ABOVE 10'-0" AS MEASURED FROM FINISHED FLOOR SHALL BE SUPPORTED BY BRIDAL RINGS OR BEAM CLAMPS ATTACHED TO BUILDING STRUCTURE. CONTROL WIRING SHALL NOT BE SUPPORTED ON BUILDING STRUCTURE OR LAY-IN CEILING SUSPENSION WIRES.

11.9 DO NOT RUN WIRING NEAR LIGHTING OR OTHER HIGH VOLTAGE DEVICES, DO NOT RUN PARALLEL TO HIGH VOLTAGE CONDUIT.

11.10 ALL LINE VOLTAGE WIRING MUST BE KEPT SEPARATE FROM LOW VOLTAGE WIRING. LINE AND LOW VOLTAGE WIRING MUST NOT BE RUN IN THE SAME CONDUIT. LINE AND LOW VOLTAGE WIRING MUST BE KEPT SEPARATED IN CONTROL PANELS.

11.11 LABEL ALL WIRES AT THE CONTROLLER AND AT THE END DEVICES WITH THE TAG SHOWN ON THE WIRING DIAGRAMS.

11.12 OBSERVE PROPER POLARITY AS SHOWN ON THE WIRING DIAGRAMS, WHEN CONNECTING 24VAC TO CONTROLLERS AND OTHER DEVICES.

11.13 NOTE THAT ALL TRANSFORMER SECONDARY COMMONS WILL BE TIED TO CHASSIS GROUND AS SHOWN IN THE WIRING DIAGRAMS UNLESS OTHERWISE NOTED.

11.14 ALL INPUT SHIELDS MUST BE TIED TO CHASSIS GROUND AT THE CONTROLLER ONLY, NETWORK SHIELDS WILL BE TERMINATED PER SYSTEM NETWORK DRAWINGS.

11.15 COORDINATE WITH OWNER/GENERAL CONTRACTOR FOR CONTROL PANEL MOUNTING LOCATIONS.

11.16 COORDINATE WITH OWNER/GENERAL FOR MOUNTING LOCATION AND HEIGHT OF ALL ROOM TEMPERATURE SENSORS OR THERMOSTATS.

11.17 WIRING PASSING THROUGH WALLS AND FLOORS WILL BE SLEEVED WITH CONDUIT AND FIRE STOPPED WHERE REQUIRED. ANY TIME A WIRE PASSES THROUGH METAL STUDS PLASTIC BUSHINGS WILL BE INSTALLED TO PREVENT DAMAGE TO THE WIRE.

11.18 ALL LOW VOLTAGE TRANSFORMERS WILL HAVE A CIRCUIT BREAKER, FUSE OR BE INHERENTLY LIMITED.

11.19 ALL NETWOWRK WIRING WILL BE TERMINATED DIRECTLY TO THE DEVICE SPLICES AND TERMINAL BLOCKS ARE NOT PERMITTED.

	DATE	BY	ISSUE/REVISION
	11-20-23	DJN	ISSUED FOR CONSTRUCTION
1	12-21-23	DJN	ADDENDUM #2

	DATE	BY	ISSUE/REVISION

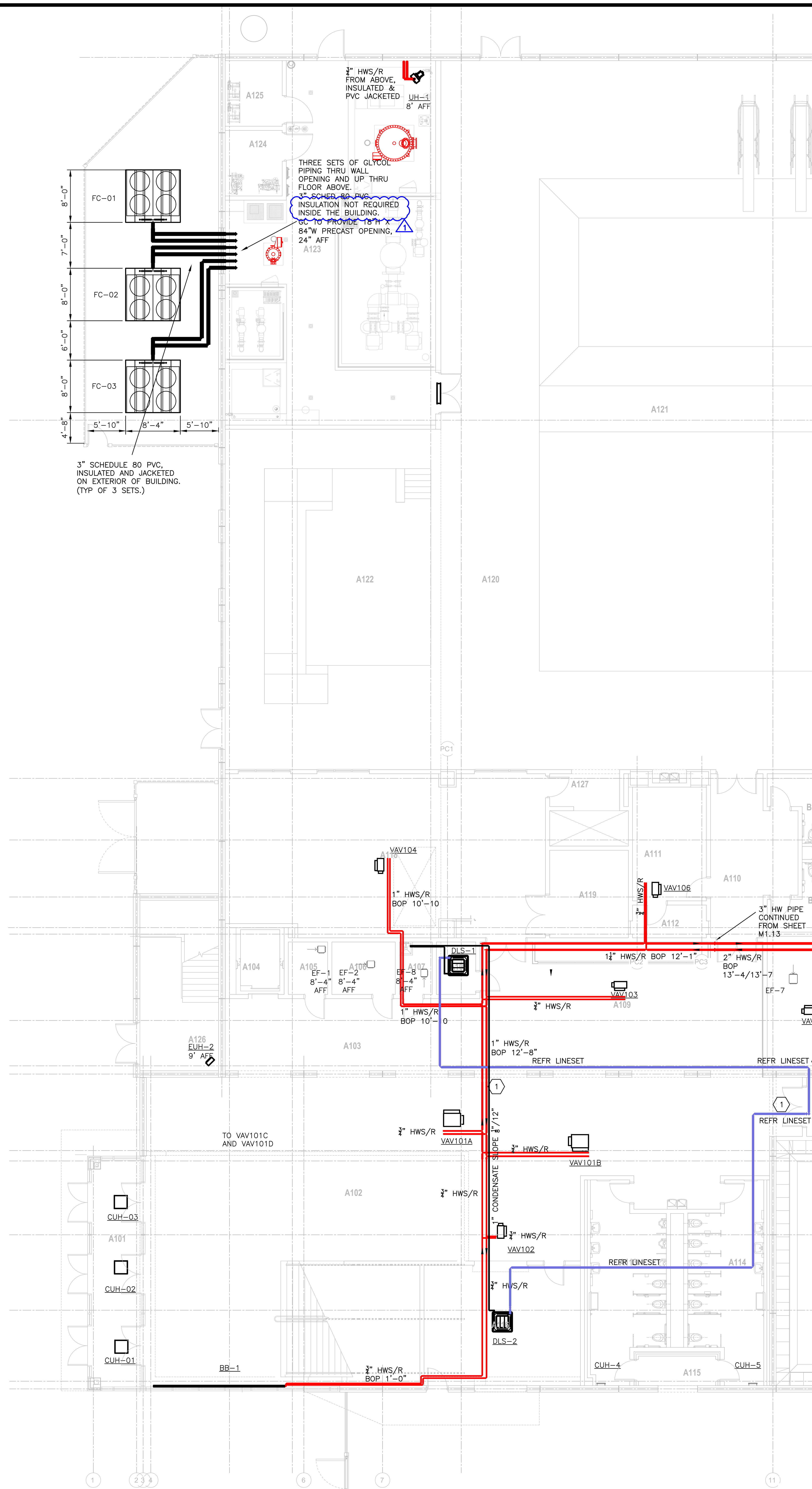
WILLIAM JOHN ALBRECHT, JR.
REGISTERED
PE10607213
STATE OF INDIANA
PROFESSIONAL ENGINEER

ESTD 1951
PERFECTION GROUP

HVAC SPECIFICATIONS

GREATER CLARK COUNTY SCHOOLS
JEFFERSONVILLE HIGH SCHOOL NATATORIUM
2315 ALLISON LANE
JEFFERSONVILLE, IN 47130

JOB NO.: 23084T
SCALE: AS NOTED
DATE: 11-20-2023
DRAWN BY: DJN
APPROVED BY: TC
DRAWING NUMBER:
M0.03
REVISION NO.: 1



UNIT A - FIRST FLOOR PIPING PLAN - HVAC

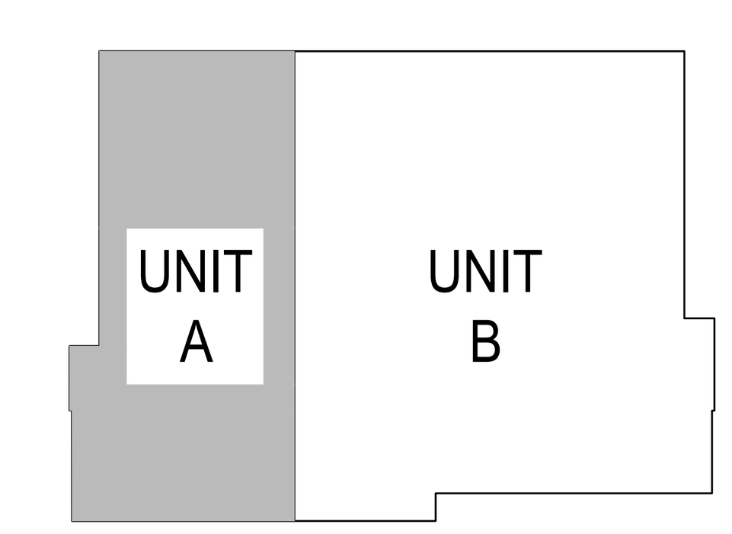
1/8"=1'-0"

KEYNOTES

1. PIPE PENETRATION THROUGH PRECAST PANEL. COORDINATE OPENING SIZE AND LOCATION WITH ARCHITECT AND GENERAL CONTRACTOR.

DRAWING NOTES

SEE PIPE SIZING ON PIPING SCHEMATIC DRAWING, SHEET M5.02



KEY PLAN

DATE	BY	ISSUE/REVISION
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UNIT A - FIRST FLOOR PIPING PLAN - HVAC

GREATER CLARK COUNTY SCHOOLS
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JOB NO.: 23084T
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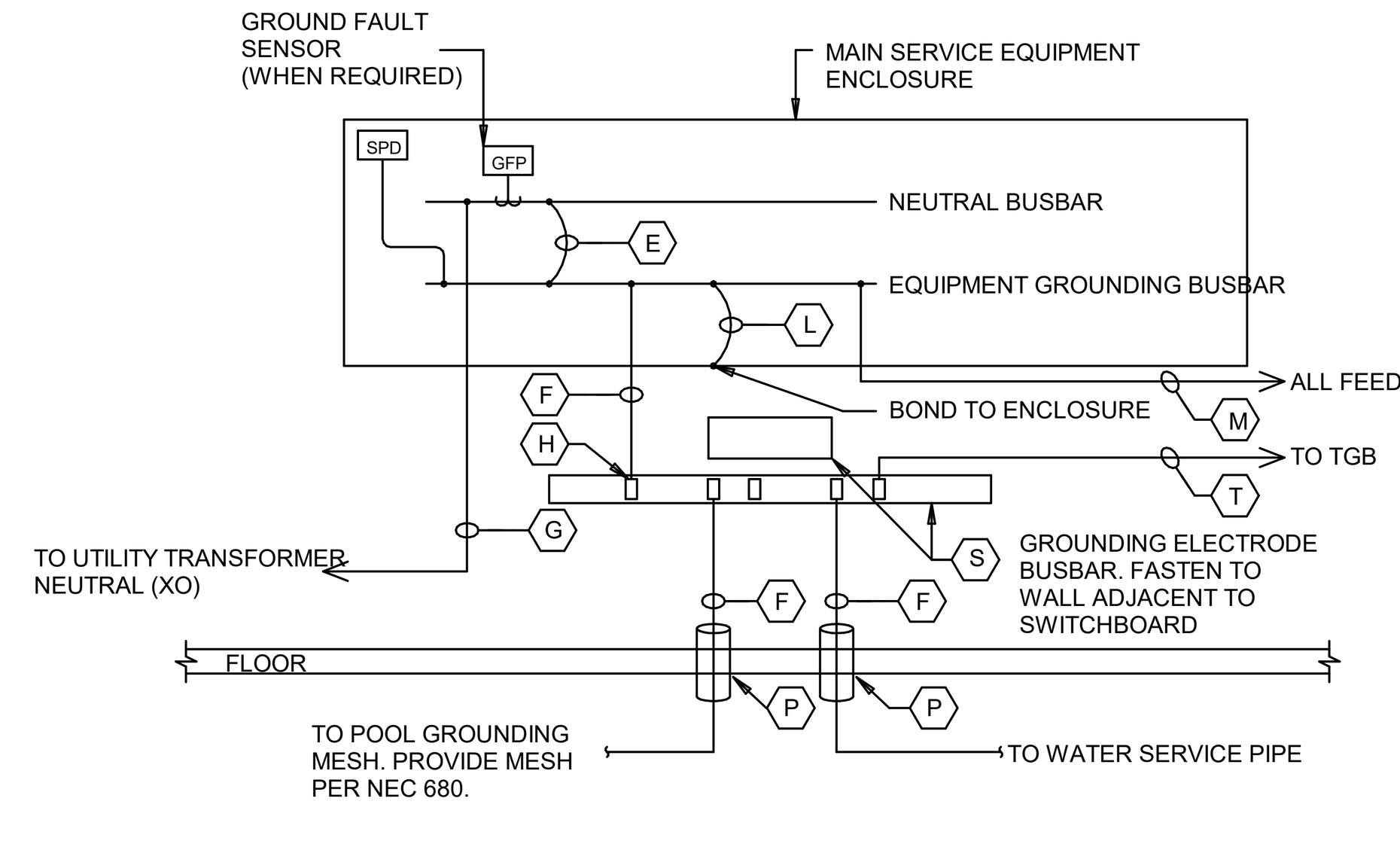
M1.03

REVISION NO.: 1

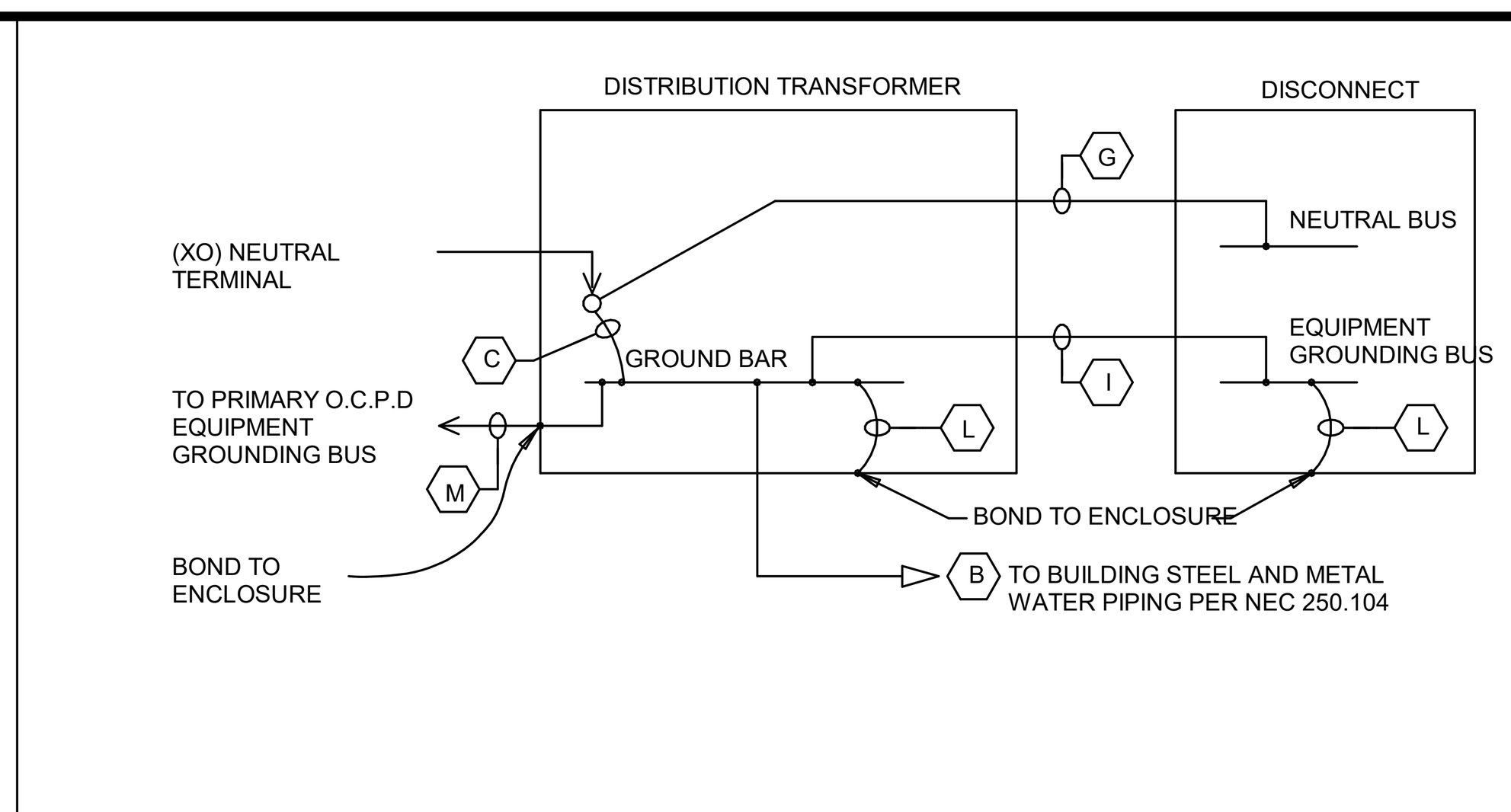
30X42_11/28/18

GROUNDING CODED NOTES:

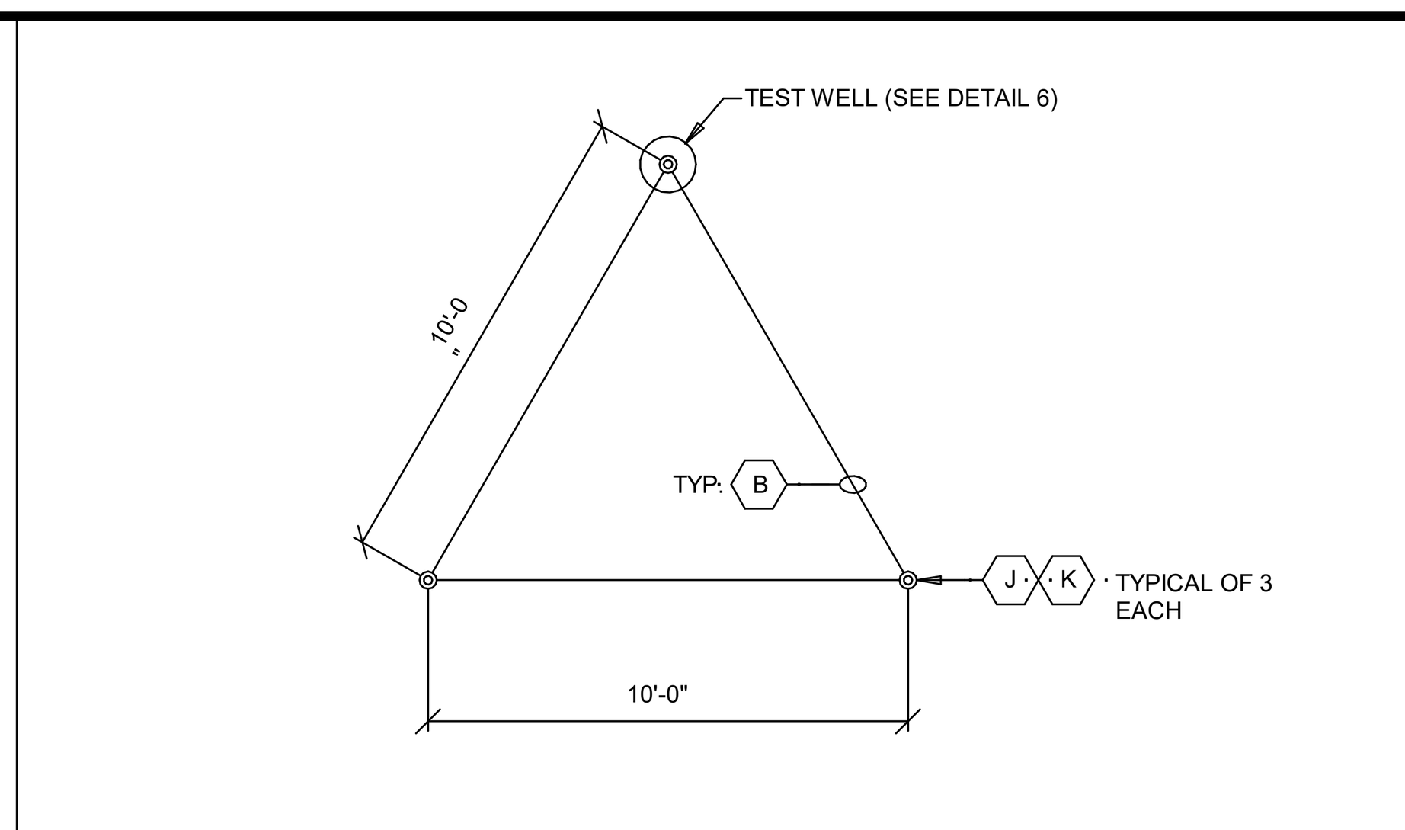
- (A) GROUNDING ELECTRODE CONDUCTOR. BARE, TINNED, STRANDED, COPPER-CONDUCTOR. (30 INCHES BELOW GRADE, MIN.) (24 INCHES FROM FOUNDATION, MIN.) FOR ELECTRICAL SERVICE OF 800 AMP OR LESS USE #2/0 AWG. FOR ELECTRICAL SERVICE GREATER THAN 800 AMP USE #4/0 AWG.
- (B) GROUNDING CONDUCTOR. 2/0 AWG BARE, TINNED, STRANDED, COPPER-CONDUCTOR.
- (C) IRREVERSIBLE, COPPER, COMPRESSION CONNECTOR. (CABLE TO CABLE)
- (D) IRREVERSIBLE, COPPER, COMPRESSION CONNECTOR. (CABLE TO TRAY) BOND EACH SECTION, TRANSISTION, RISER, TEE, ETC.
- (E) MAIN BONDING JUMPER PROVIDED BY MANUFACTURER AS PART OF LISTED AND LABELED SERVICE EQUIPMENT. IF NOT PROVIDED BY MANUFACTURER, PROVIDE #4/0 BARE, TINNED, STRANDED, COPPER-CONDUCTOR.
- (F) GROUNDING ELECTRODE CONDUCTOR: #4/0 AWG STRANDED, BARE, COPPER IN PVC CONDUIT.
- (G) GROUNDED CONDUCTOR (NEUTRAL): (REFER TO ONE-LINE DIAGRAM FOR CONDUCTOR SIZE).
- (H) PROVIDE UL 467 LISTED COMPRESSION CONNECTORS, TWO-HOLE LUGS.
- (I) SYSTEM BONDING JUMPER CONDUCTOR. SYSTEM BONDING JUMPER CONDUCTOR TO BE RUN IN EACH CONDUIT CONTAINING PHASE CONDUCTORS BETWEEN TRANSFORMER AND MAIN SECONDARY DISCONNECT. (REFER TO ONE-LINE DIAGRAM FOR CONDUCTOR SIZE)
- (JJ) 10 FOOT BY 3/4" COPPER WELD GROUND ROD. TOP OF RAD SHALL BE 12" MINIMUM BELOW FINISHED GRADE.
- (J) 8 FOOT BY 5/8" COPPER WELD GROUND ROD. TOP OF ROD SHALL BE 12" MINIMUM BELOW FINISHED GRADE.
- (K) PROVIDE EXOTHERMIC WELD FOR ALL CABLE TO ROD, CABLE TO CABLE, OR CABLE TO STEEL CONNECTIONS.
- (L) EQUIPMENT BONDING JUMPER STRANDED, BARE, COPPER. (<110A USE #6, <410A USE #2, <810A USE #2/0, <2100A USE #4/0) SCREW OF BUSBAR MAY BE USED WHEN PROVIDED AS PART OF LISTED SERVICE EQUIPMENT.
- (M) EQUIPMENT GROUNDING CONDUCTOR (REFER TO ONE LINE DIAGRAM FOR CONDUCTOR SIZE).
- (N) TELECOMMUNICATIONS BONDING BACKBONE: #4/0 AWG STRANDED BARE COPPER.
- (O) BONDING CONDUCTOR: 6 AWG STRANDED BARE COPPER.
- (P) 1" PVC SLEEVE FOR ALL GROUNDING CONDUCTORS THROUGH FLOOR SLABS. NEVER ROUTE GROUNDING CONDUCTORS IN A METAL CONDUIT.
- (Q) PROVIDE UL 467 LISTED, ELECTRO-TIN-PLATED COPPER BUSBAR, 4" x 20" x 1/4" WITH (2) 2-INCH INSULATED STANDOFF SUPPORTS. PROVIDE ENGRAVED NAMEPLATE, SCREWED TO WALL, 6" ABOVE GROUNDING BUS BAR WHICH READS "IF THESE CONNECTORS OR CABLES ARE LOOSE OR MUST BE REMOVED, PLEASE CALL THE BUILDING TELECOMMUNICATIONS MANAGER".
- (R) PROVIDE UL 467 LISTED, ELECTRO-TIN-PLATED COPPER BUSBAR, 2" x 12" x 1/4" WITH (2) 2-INCH INSULATED STANDOFF SUPPORTS. PROVIDE ENGRAVED NAMEPLATE SCREWED TO WALL, 6" ABOVE GROUNDING BUS BAR WHICH READS, "IF THESE CONNECTORS OR CABLES ARE LOOSE OR MUST BE REMOVED, PLEASE CALL THE BUILDING TELECOMMUNICATIONS MANAGER".
- (S) PROVIDE UL 467 LISTED, ELECTRO-TIN-PLATED COPPER BUSBAR, 4" x 20" x 1/4" WITH (2) 2-INCH INSULATED STANDOFF SUPPORTS. PROVIDE ENGRAVED NAMEPLATE, SCREWED TO WALL, 6" ABOVE GROUNDING BUS BAR WHICH READS "WARNING - SHOCK HAZARD EXISTS IF GROUNDING ELECTRODE CONDUCTOR OR BONDING JUMPER CONNECTION IN THIS EQUIPMENT IS REMOVED WHILE ALTERNATE SOURCE (GENERATOR) IS ENERGIZED".
- (T) CONTINUOUS, UNSPLICED BONDING CONDUCTOR FOR TELECOMMUNICATIONS: 2/0 AWG BARE, TINNED, STRANDED, COPPER-CONDUCTOR IN CABLE TRAYS.
- (U) BRAIDED ALUMINUM CABLE FOR LIGHTING DOWNRUNNER. SUPPORT SPACING PER NFPA 780.
- (V) CONNECT GROUND CABLE TO EXISTING SERVICE GROUNDING ELECTRODE AT UTILITY TRANSFORMER OR MAIN SWITCHBOARD GROUND BAR.
- (W) CONNECT TO EXISTING BUILDING GROUND LOOP IF FOUND, DISTURBED, OR DAMAGED, PROVIDE (K) AT ALL SPLICES AND NEW CABLE CONNECTIONS.
- (X) WELD A MINIMUM 6" x 3" x 1/4" STEEL PLATE TO UNDERSIDE OF BOTTOM FLANGE OF ROOF JOIST. THE STEEL PLATE SHALL BE WELDED TO THE BOTTOM FLANGE USING A NORMAL WELDING PROCEDURE WITH WELDS PARALLEL TO THE BOTTOM FLANGE ALONG THE EDGE. THEN BOND THE GROUNDING CONDUCTOR TO THE STEEL PLATE AT LEAST 1" AWAY FROM FLANGE, USING AN EXOTHERMIC WELD.
- (Y) PROVIDE WRAP AROUND PLASTIC LABEL ON EACH CONDUCTOR AT GROUND BAR. IDENTIFY WHAT THE CABLE IS CONNECTED TO.



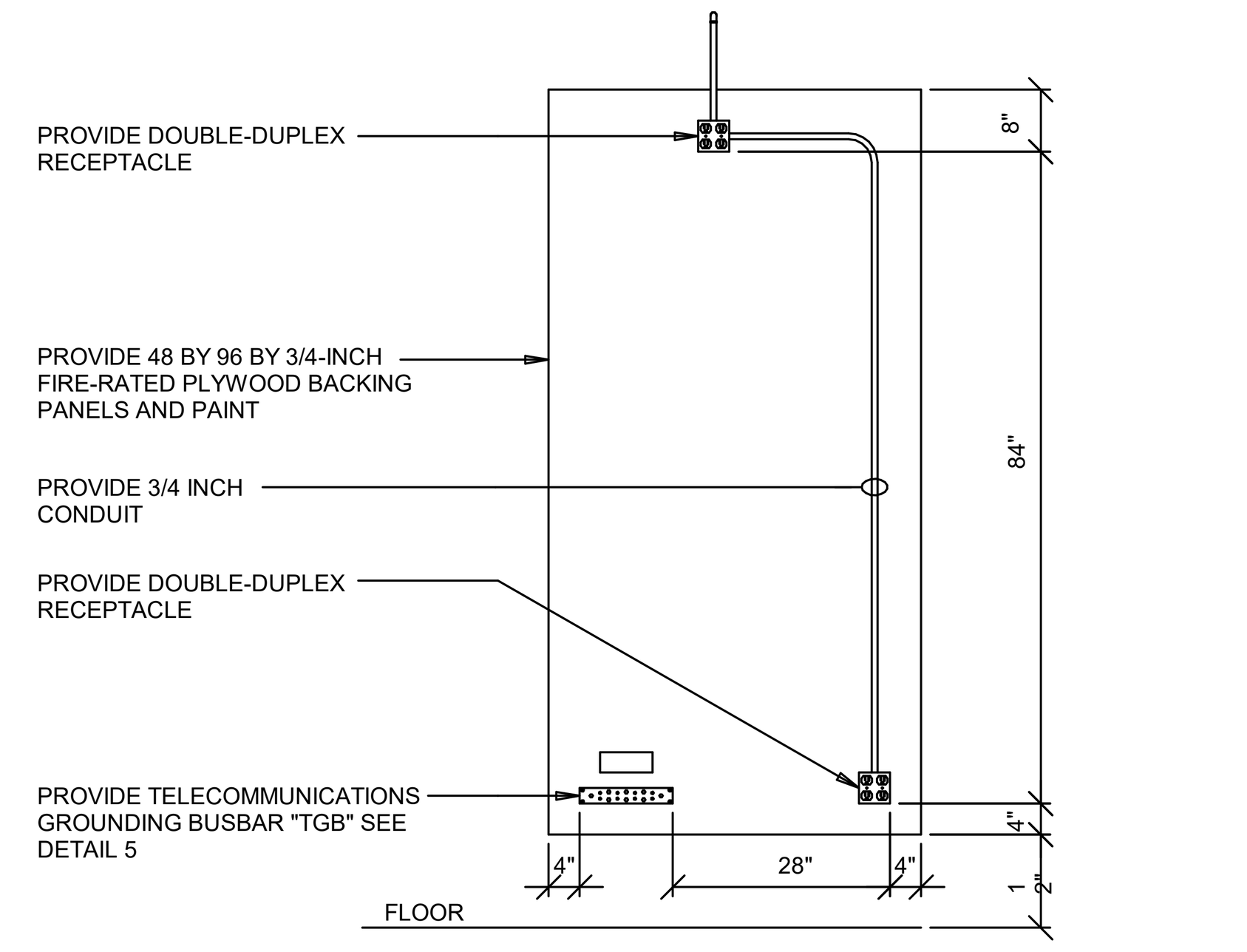
1 MAIN SERVICE GROUNDING ELECTRODE BUSBAR DETAIL
NO SCALE



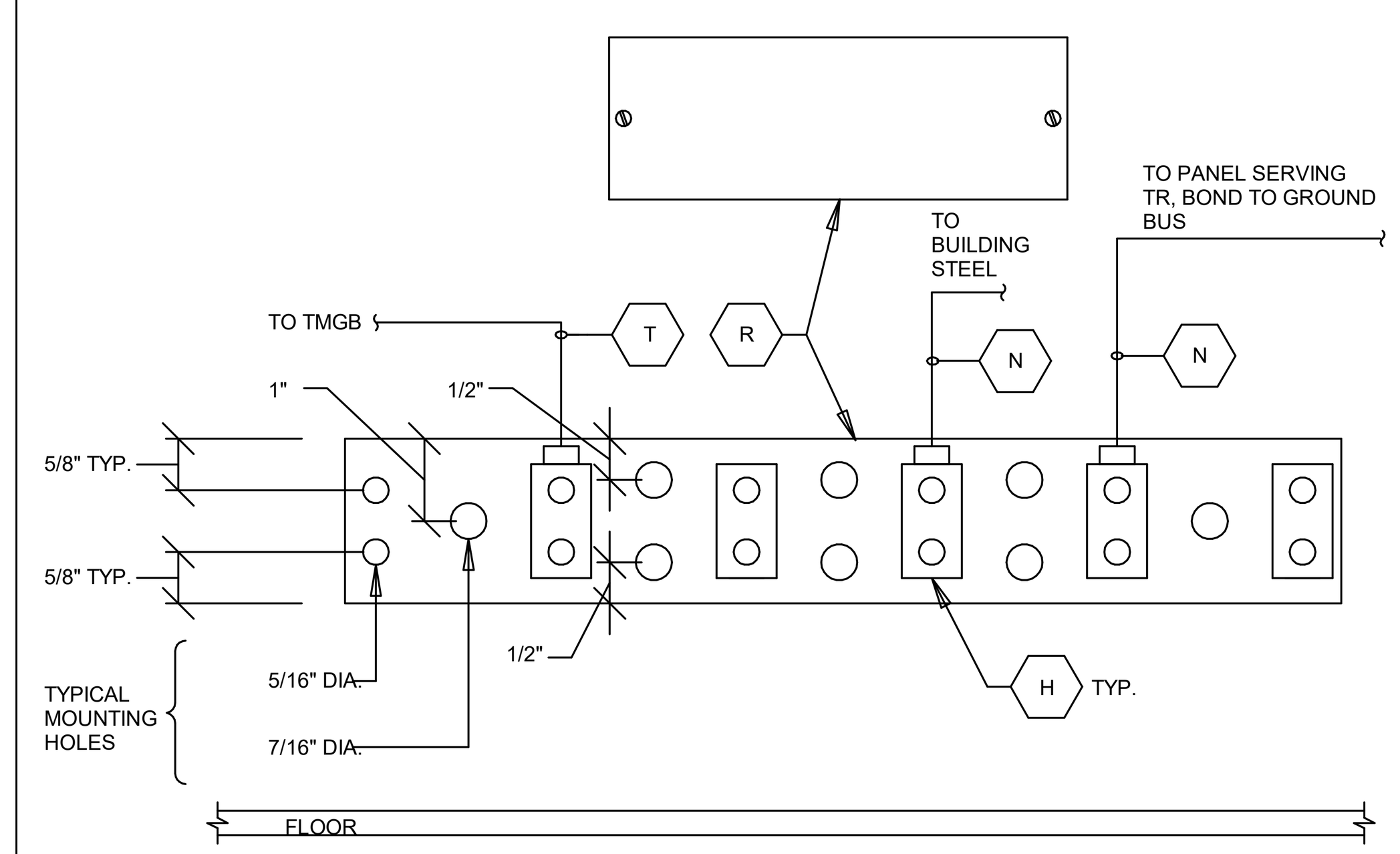
2 DISTRIBUTION TRANSFORMER GROUNDING DETAIL
NO SCALE



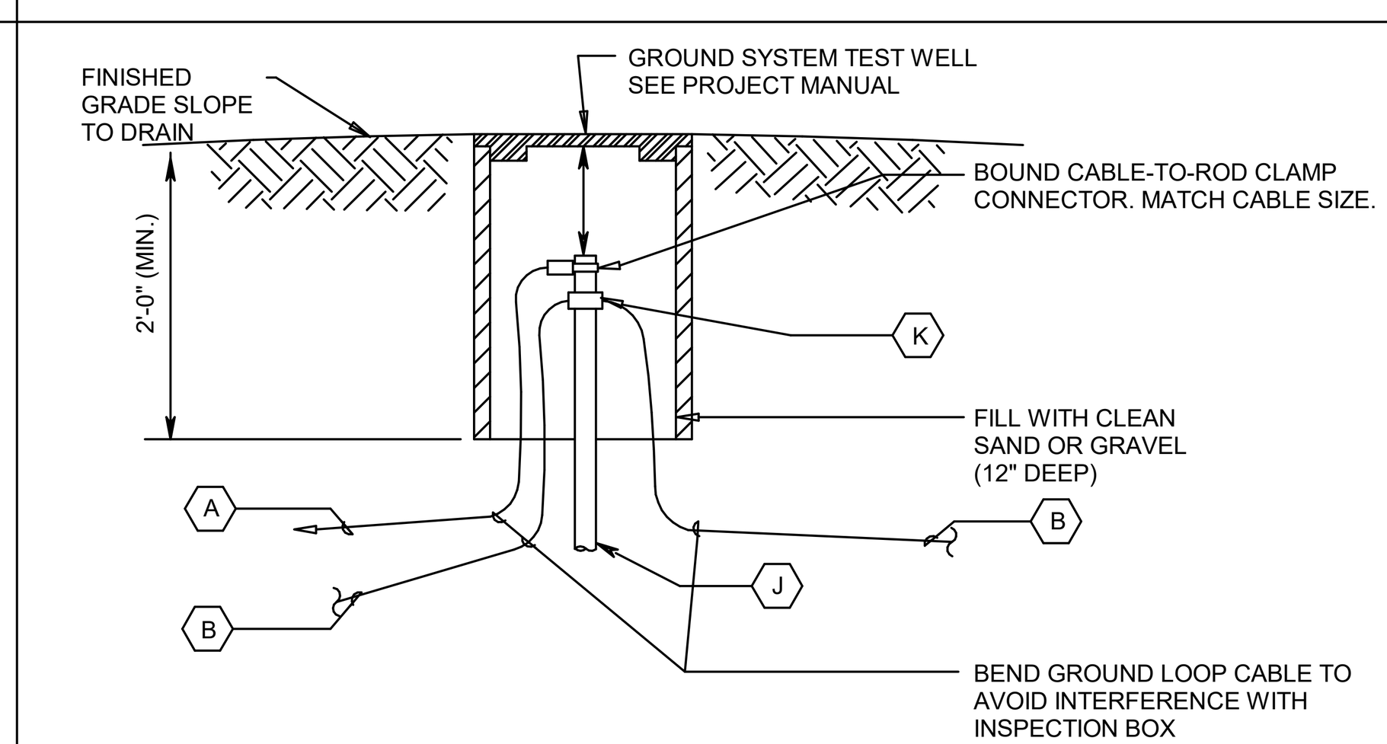
3 TYPICAL GROUNDING TRIANGLE DETAIL
INSTALL NEAR SERVICE TRANSFORMER
NO SCALE



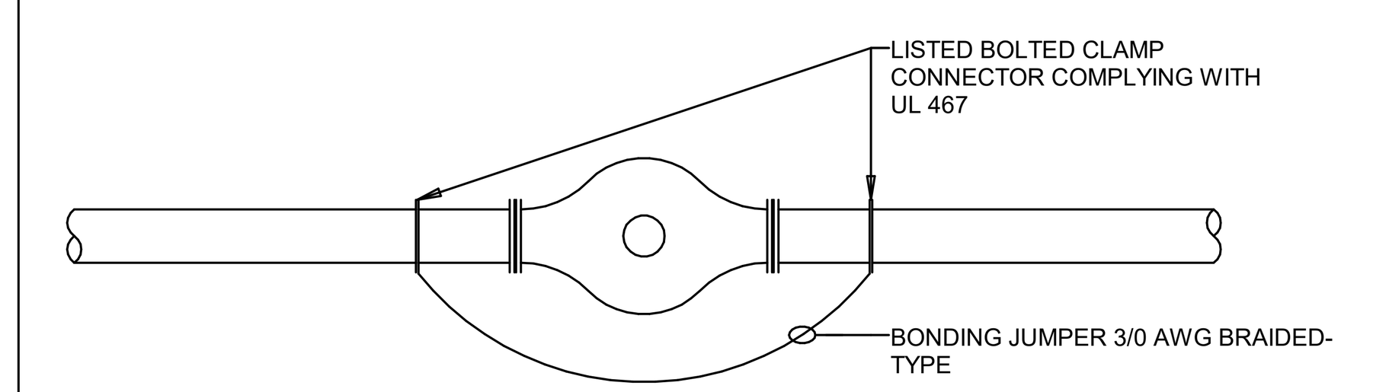
4 TYPICAL TR BACKBOARD
NO SCALE



5 TYPICAL TR TELECOMMUNICATIONS GROUNDING BUSBAR (TGB) DETAIL
NO SCALE

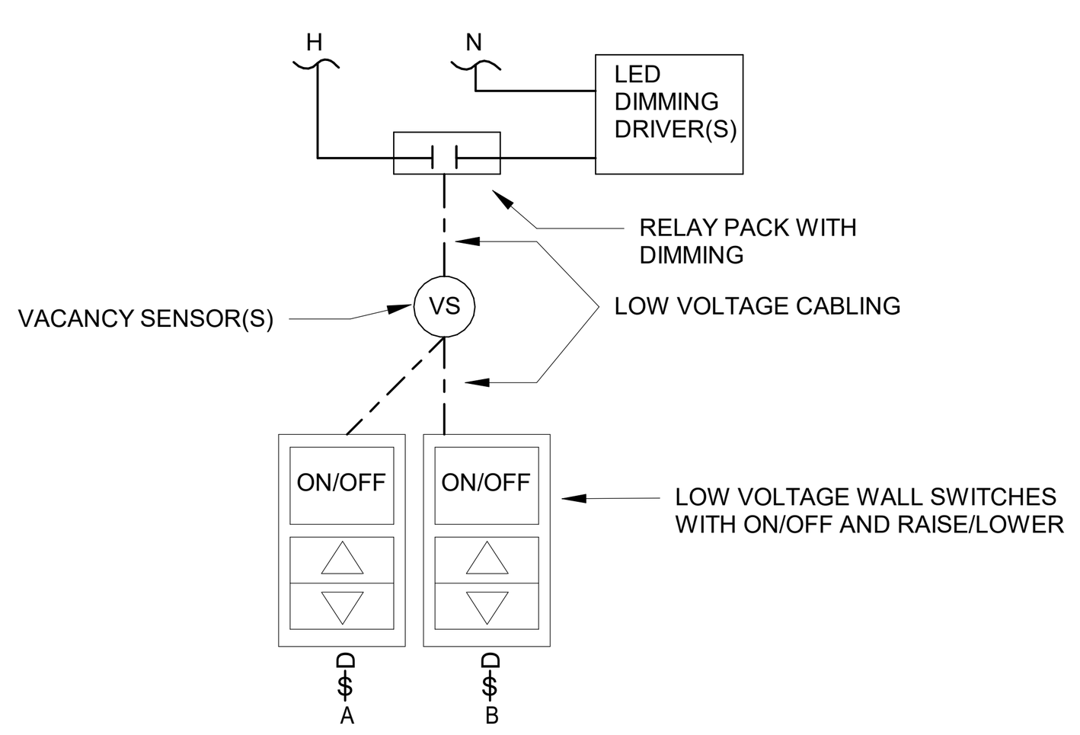


6 GROUND TEST WELL DETAIL
GROUND RESISTANCE AS MEASURED BY A GROUND MEGGER SHALL NOT BE GREATER THAN 5 OHMS
NO SCALE



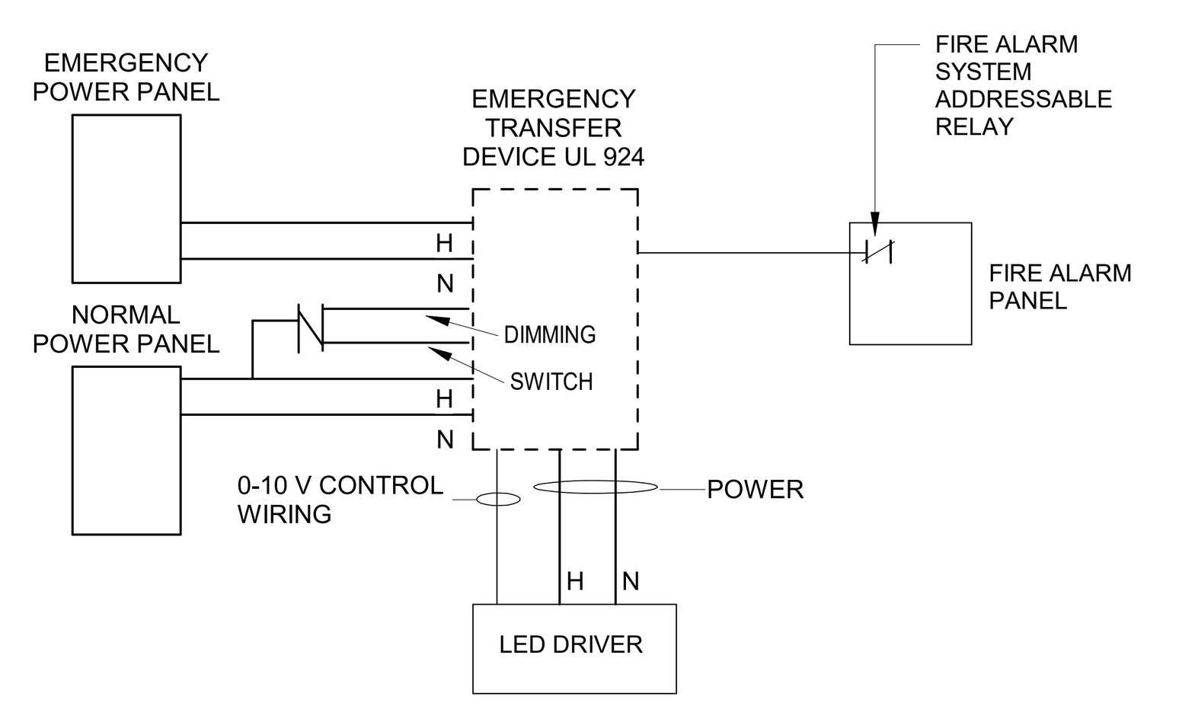
7 TYPICAL BONDING JUMPER AT EACH WATER METER
NO SCALE

1. SYSTEM SHALL BE SET UP SUCH THAT LIGHTING IS MANUALLY SWITCHED ON AND AUTOMATICALLY SWITCHED OFF BY VACANCY SENSOR AFTER 15 MINUTES OF ROOM VACANCY.
2. A - CONTROLS TEACHING WALL FIXTURES.
3. B - CONTROLS REST OF ROOM FIXTURES.
4. ONCE LIGHTING IS SWITCHED ON, LIGHTS MAY BE DIMMED THROUGH RAISE/LOWER BUTTONS ON WALL SWITCH.



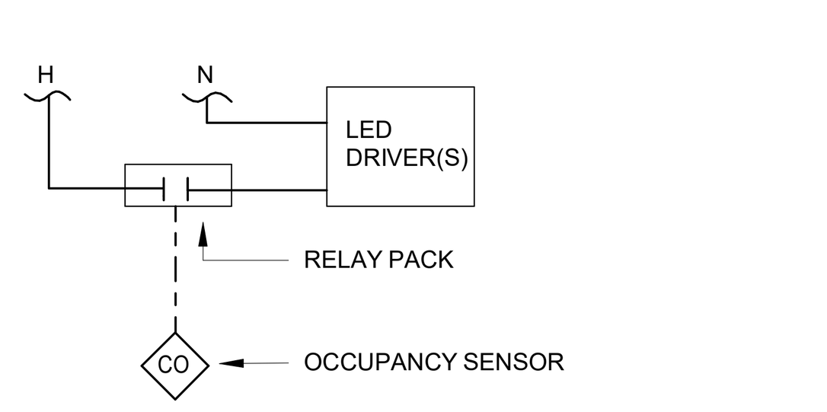
8 LIGHTING CONTROL - CLASSROOM
NO SCALE

1. SYSTEM SHALL BE SET UP SUCH THAT LIGHTING SHALL OPERATE WITH THE CONTROLS OF THE NORMAL LIGHTING IN THE SPACE.
2. SYSTEM SHALL BE SET UP SUCH THAT WHEN A FIRE ALARM OR POWER LOSS IS INITIATED THE EMERGENCY FIXTURES WILL BE ON AT 100%.



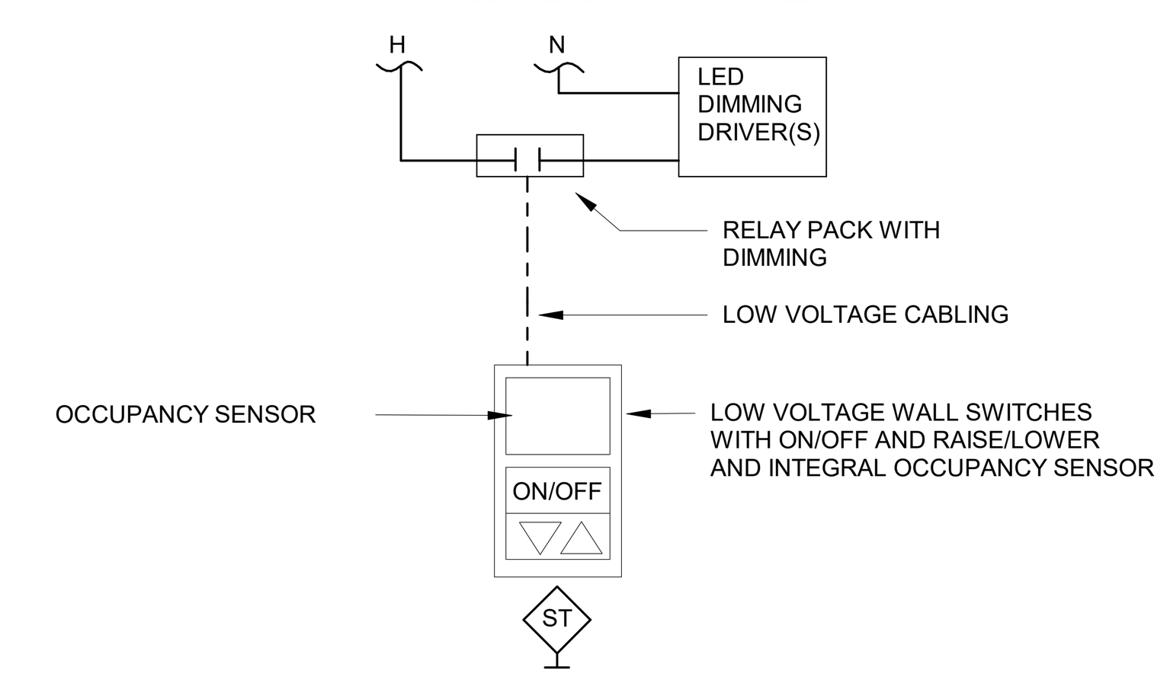
9 LIGHTING CONTROL - EMERGENCY/FIRE ALARM
NO SCALE

1. SYSTEM SHALL BE SET UP SUCH THAT LIGHTING IS SWITCHED ON BY OCCUPANCY SENSOR AND SWITCHED OFF AFTER 15 MINUTES OF VACANCY.
2. EMERGENCY FIXTURES SHALL OPERATE AS DESCRIBED ABOVE DURING NORMAL OPERATIONS. IN EMERGENCY SCENARIO OR WHEN FIRE ALARM IS TRIGGERED, FIXTURES WILL COME ON AT 100% OUTPUT. THIS CAN BE ACHIEVED WITH FULL CIRCUIT GENERATOR TRANSFER DEVICE.

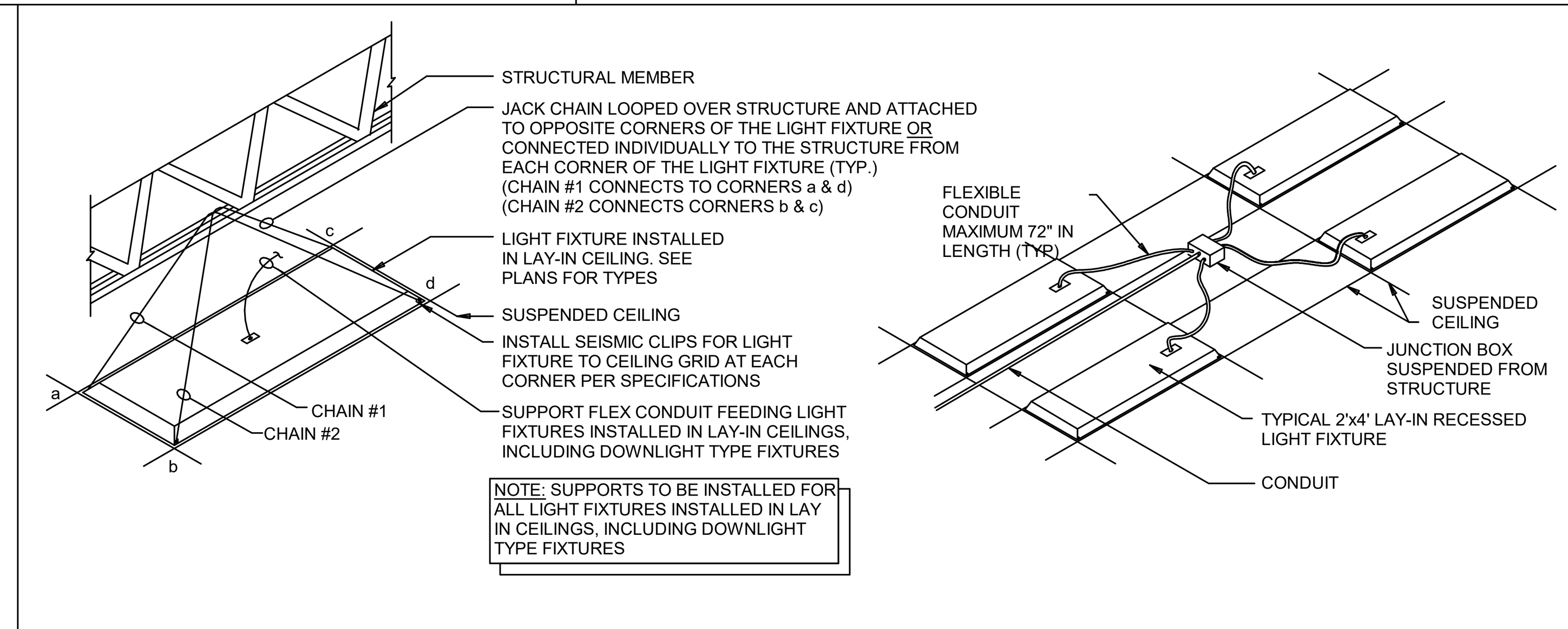


10 LIGHTING CONTROL - CORRIDOR
NO SCALE

1. SYSTEM SHALL BE SET UP SUCH THAT LIGHTING IS MANUALLY SWITCHED ON. LIGHTING IS THEN EITHER SWITCHED OFF MANUALLY OR BY OCCUPANCY SENSOR AFTER 15 MINUTES OF ROOM VACANCY.
2. ONCE LIGHTING IS SWITCHED ON, LIGHTS MAY BE DIMMED THROUGH RAISE/LOWER BUTTONS ON WALL SWITCH.



11 LIGHTING CONTROL - OFFICES
NO SCALE



12 RECESSED LIGHT FIXTURE SUPPORT
NO SCALE

LUMINAIRE SCHEDULE - GENERAL NOTES

1. SEE SPECIFICATIONS FOR DRIVER REQUIREMENTS.
2. FOR ALL DOWNLIGHTING FIXTURES, PROVIDE REQUIRED MOUNTING HARDWARE FOR MOUNTING IN LAY-IN TYPE CEILINGS.
3. CONTRACTOR TO VERIFY TYPES AND QUANTITY OF LIGHT FIXTURES REQUIRING EMERGENCY TRANSFER DEVICES AND PROVIDE REQUIRED QUANTITY OF EMERGENCY TRANSFER DEVICES, LABOR, MATERIAL, ETC. IN THE PROJECT BID FOR INSTALLATION OF EMERGENCY TRANSFER DEVICES.
4. LIGHT FIXTURE SUBMITTALS TO INCLUDE DATA SHEETS FOR ALL FIXTURE TYPES, INCLUDING ADDITIONAL DATA SHEETS FOR DRIVER COMBINATIONS REQUIRED TO MEET THE INSTALLATION REQUIREMENTS OF THE VARIOUS FIXTURE TYPES INDICATED IN THE REMARKS COLUMN OF THE FIXTURE SCHEDULES OR ON THE DRAWINGS. SUBMITTALS SHALL ALSO INDICATE COLOR FOR ANY CUSTOM COLOR LIGHT FIXTURES.

LUMINAIRE SCHEDULE

PLAN TYPE	MANUFACTURER/CATALOG	MOUNTING	LAMPS TYPE	LAMPS LUMENS	APPLIED VOLTAGE	DESCRIPTION	VA LOAD
LD61	HALO HC6 SERIES LITHONIA LDN6 SERIES PRESCOLITE LF6LED SERIES H.E. WILLIAMS 6CR SERIES	RECESSED	LED	1500 lm	277 V	6-INCH ROUND APERTURE OPEN REFLECTOR LED DOWNLIGHT, MEDIUM DISTRIBUTION, WHITE SPECULAR FINISH, WHITE FLANGE, SELF-FLANGED, 0-10VDC DIMMING, 4000K, BAR HANGER ACCESSORY.	22 VA
LD61X	HALO HC6 SERIES LITHONIA LDN6 SERIES PRESCOLITE LF6LED SERIES H.E. WILLIAMS 6CR SERIES	RECESSED	LED	1500 lm	277 V	6-INCH ROUND APERTURE OPEN REFLECTOR LED DOWNLIGHT, MEDIUM DISTRIBUTION, WHITE SPECULAR FINISH, WHITE FLANGE, SELF-FLANGED, 0-10VDC DIMMING, 4000K, BAR HANGER ACCESSORY. PROVIDE WITH EMERGENCY TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER.	22 VA
LD81	HALO HC8 SERIES LITHONIA LDN8 SERIES (1) MAXILUME HH8 SERIES H.E. WILLIAMS 8CR SERIES	RECESSED	LED	6000 lm	277 V	8-INCH ROUND APERTURE OPEN REFLECTOR LED DOWNLIGHT, MEDIUM DISTRIBUTION, WHITE SPECULAR FINISH, WHITE FLANGE, SELF-FLANGED, 0-10VDC DIMMING, 4000K, BAR HANGER ACCESSORY.	50 VA
LD81X	HALO HC8 SERIES LITHONIA LDN8 SERIES MAXILUME HH8 SERIES (1) H.E. WILLIAMS 8CR SERIES	RECESSED	LED	6000 lm	277 V	8-INCH ROUND APERTURE OPEN REFLECTOR LED DOWNLIGHT, MEDIUM DISTRIBUTION, WHITE SPECULAR FINISH, WHITE FLANGE, SELF-FLANGED, 0-10VDC DIMMING, 4000K, BAR HANGER ACCESSORY. PROVIDE WITH EMERGENCY TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER.	50 VA
LDW61	LITHONIA LDN6 SERIES PRESCOLITE LFR-6RD SH SERIES H.E. WILLIAMS 6DR SERIES PORTFOLIO LD6B SERIES	RECESSED	LED	1000 lm	277 V	6-INCH ROUND APERTURE LED SHOWER LIGHT WITH REGRESSED LENS REFLECTOR, WHITE REFLECTOR AND TRIM, SELF-FLANGED, IP65 WET LOCATION LISTED.	8 VA
LDW61X	LITHONIA LDN6 SERIES PRESCOLITE LFR-6RD SH SERIES H.E. WILLIAMS 6DR SERIES PORTFOLIO LD6B SERIES	RECESSED	LED	1000 lm	277 V	6-INCH ROUND APERTURE LED SHOWER LIGHT WITH REGRESSED LENS REFLECTOR, WHITE REFLECTOR AND TRIM, SELF-FLANGED, IP65 WET LOCATION LISTED.	8 VA
LE1X	LITHONIA AFB SERIES EVENLITE WEATHERWAY SERIES COMPASS CUW SERIES BIG BEAM EXCELITE SERIES	SURFACE WALL	LED	1000 lm	277 V	OUTDOOR EMERGENCY LIGHT FIXTURE, DIE-CAST ALUMINUM HOUSING, SELF-DIAGNOSTICS, WIRED NORMALLY OFF, EMERGENCY TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER, WET LOCATION, 3200K, DARK BRONZE. MOUNT AT +8'-0" A.F.G UNLESS NOTED OTHERWISE	11 VA
LE2	LITHONIA DSXW2 SERIES GARDCO PWS SERIES McGRAW-EDISON GWC SERIES BEACON GEOPAK 2 SERIES CREE EDGE SERIES	SURFACE WALL	LED	10890 lm (1)	277 V	WALL MOUNTED LED LUMINAIRE WITH DIE CAST ALUMINUM HOUSING, BOTTOM DIFFUSER FLUSH WITH THE DIE CASTING, TYPE 2 DISTRIBUTION, 4000K, 70 CRI LEDs, BLACK FINISH. MOUNT ONTO JUNCTION BOX. PROVIDE WITH INTEGRAL PHOTOCELL AND OCCUPANCY SENSOR. FIXTURES TO BE ON/OFF TO 50% BY PHOTOCELL AND INCREASED TO 100% WHEN FIXTURE IS ON. VANDAL RESISTANT.	110 VA (1)
LE3	LITHONIA DSXW2 SERIES GARDCO PWS SERIES McGRAW-EDISON GWC SERIES BEACON GEOPAK 2 SERIES CREE EDGE SERIES	SURFACE WALL	LED	6200 lm	277 V	WALL MOUNTED LED LUMINAIRE WITH DIE CAST ALUMINUM HOUSING, BOTTOM DIFFUSER FLUSH WITH THE DIE CASTING, TYPE 2 DISTRIBUTION, 4000K, 70 CRI LEDs, BLACK FINISH. MOUNT ONTO JUNCTION BOX. PROVIDE WITH INTEGRAL PHOTOCELL AND OCCUPANCY SENSOR. FIXTURES TO BE ON/OFF TO 50% BY PHOTOCELL AND INCREASED TO 100% WHEN FIXTURE IS ON. VANDAL RESISTANT.	54 VA
LF1	LITHONIA CPX SERIES EATON METALUX CGT SERIES COLUMBIA CFP SERIES ABOVE ALL SBFLP SERIES	RECESSED	LED	3000 lm	277 V	1 BY 4-FOOT, BACK LIT FLAT PANEL WITH ALUMINUM FRAME, 4000K, 80+ CRI, 0-10V DIMMING.	27 VA
LF1X	LITHONIA CPX SERIES EATON METALUX CGT SERIES COLUMBIA CFP SERIES ABOVE ALL SBFLP SERIES	RECESSED	LED	3000 lm	277 V	1 BY 4-FOOT, BACK LIT FLAT PANEL WITH ALUMINUM FRAME, 4000K, 80+ CRI, 0-10V DIMMING. PROVIDE WITH TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER.	27 VA
LF2	LITHONIA CPX SERIES EATON METALUX CGT SERIES COLUMBIA CFP SERIES ABOVE ALL SBFLP SERIES	RECESSED	LED	4000 lm	277 V	2 BY 4-FOOT, BACK LIT FLAT PANEL WITH ALUMINUM FRAME, 4000K, 80+ CRI, 0-10V DIMMING.	36 VA
LF2X	LITHONIA CPX SERIES EATON METALUX CGT SERIES COLUMBIA CFP SERIES ABOVE ALL SBFLP SERIES	RECESSED	LED	4000 lm	277 V	2 BY 4-FOOT, BACK LIT FLAT PANEL WITH ALUMINUM FRAME, 4000K, 80+ CRI, 0-10V DIMMING. PROVIDE WITH TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER.	36 VA
LN4	LUMENWERX VIA 4 SERIES MARK ARCHITECTURAL SLOT 4 SERIES LITECONTROL MOD 4 LED SERIES	SUSPENDED	LED	3900 lm	277 V	LENGTH AS INDICATED BY 4" SLOT TYPE INDIRECT/DIRECT PENDANT HUNG FIXTURE. ONE PERCENT DIMMING, HIGH LUMEN OUTPUT, SQUARE CANOPY, AIR CRAFT CABLE SUSPENSION AND WHITE POWER CORD. MOUNT AT 8'-6" ABOVE FINISH FLOOR UNLESS NOTED OTHERWISE.	36 VA
LN4X	LUMENWERX VIA 4 SERIES MARK ARCHITECTURAL SLOT 4 SERIES LITECONTROL MOD 4 LED SERIES	SUSPENDED	LED	3900 lm	277 V	LENGTH AS INDICATED BY 4" SLOT TYPE INDIRECT/DIRECT PENDANT HUNG FIXTURE. ONE PERCENT DIMMING, HIGH LUMEN OUTPUT, SQUARE CANOPY, AIR CRAFT CABLE SUSPENSION AND WHITE POWER CORD. MOUNT AT 8'-6" ABOVE FINISH FLOOR UNLESS NOTED OTHERWISE. PROVIDE WITH EMERGENCY TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER.	36 VA

LUMINAIRE SCHEDULE

PLAN TYPE	MANUFACTURER/CATALOG	MOUNTING	LAMPS TYPE	LAMPS LUMENS	APPLIED VOLTAGE	DESCRIPTION	VA LOAD
LR4	METALUX WNLED SERIES LITHONIA SBL SERIES COLUMBIA LAW SERIES H.E. WILLIAMS 17 SERIES	SUSPENDED	LED	6000 lm	277 V	4-FOOT WRAP LED AROUND FIXTURE, ACRYLIC PRISMATIC DIFFUSER, 0-10VDC DIMMING. IF SUSPENDED, INSTALL AT 8-FOOT AFF WITH CONDUIT STEMS (UNO).	55 VA
LR4X	METALUX WNLED SERIES LITHONIA SBL SERIES COLUMBIA LAW SERIES H.E. WILLIAMS 17 SERIES	SUSPENDED	LED	6000 lm	277 V	4-FOOT WRAP LED AROUND FIXTURE, ACRYLIC PRISMATIC DIFFUSER, 0-10VDC DIMMING, WITH EMERGENCY TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER. IF SUSPENDED, INSTALL AT 8-FOOT AFF WITH CONDUIT STEMS (UNO).	55 VA
LT8	SPI LIGHTRUSS LED SERIES PROVIDE AN ALLOWANCE OF $375,000 FOR MATERIAL ONLY. ADD LABOR REQUIRED FOR INSTALLATION. CONTACT BRUCE FELDMAN WITH SPECIFIED LIGHITNG (317)-313-7441 WITH ANY QUESTIONS.	TRUSS	LED	109807 lm	277 V	LIGHTRUSS GEN 2 LED 33.5" FIXTURE HEAD. 33.5" TRUSS SYSTEM, 7' LONG TRUSS SECTIONS, 4000K, 0-10V DIMMING, INSTALL WITH AN 8 DEGREE TILT.	866 VA
LT8X	SPI LIGHTRUSS LED SERIES REFER TO FIXTURE TYPE LT8 FOR ALLOWANCE TOTAL FOR MATERIAL ONLY. ADD LABOR REQUIRED FOR INSTALLATION CONTACT BRUCE FELDMAN WITH SPECIFIED LIGHITNG (317)-313-7441 WITH ANY QUESTIONS.	TRUSS	LED	109807 lm	277 V	LIGHTRUSS GEN 2 LED 33.5" FIXTURE HEAD. 33.5" TRUSS SYSTEM, 7' LONG TRUSS SECTIONS, 4000K, 0-10V DIMMING, INSTALL WITH AN 8 DEGREE TILT. PROVIDE WITH EMERGENCY TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER.	866 VA
LWBS2X	METALUX SWLED SERIES LITHONIA WL4 SERIES COLUMBIA MPS SERIES H.E WILLIAMS SLF SERIES	SURFACE WALL	LED	3800 lm	277 V	4-FOOT WALL BRACKET TYPE LED STAIRWELL FIXTURE, FROSTED ACRYLIC LENS, INTEGRAL OCCUPANCY SENSOR,4000K, 80+ CRI, BLACK FINISH. PROVIDE WITH DRIVER AS REQUIRED FOR AUTOMATIC DIMMING TO 50% OUTPUT DURING UNOCCUPIED TIMES. PROVIDE WITH TRANSFER DEVICE COMPATIBLE WITH CENTRAL BATTERY INVERTER.	32 VA
LWBS2XA	METALUX SWLED SERIES LITHONIA WL4 SERIES COLUMBIA MPS SERIES H.E WILLIAMS SLF SERIES	SURFACE WALL	LED	3800 lm	120 V	4-FOOT WALL BRACKET TYPE LED STAIRWELL FIXTURE, FROSTED ACRYLIC LENS, INTEGRAL OCCUPANCY SENSOR,4000K, 80+ CRI, BLACK FINISH. PROVIDE WITH DRIVER AS REQUIRED FOR AUTOMATIC DIMMING TO 50% OUTPUT DURING UNOCCUPIED TIMES. PROVIDE WITH EMERGENCY BATTERY INVERTER.	32 VA
TL1	CONTECH TLT SERIES KLUS DESIGN STRIP LED	SURFACE	LED	248 lm	277 V	LED TAPE LIGHT, 12V POWER SUPPLY, CUTTABLE, 0-10V DIMMING. LUMENS AND WATTAGE ARE PER FOOT.	2 VA
XC	SURE-LITES CX SERIES BIG BEAM DCL SERIES LITHONIA SIGNATURE SERIES DUAL-LITE SEMPRA SERIES	SURFACE CEILING	RED LED	0 lm	277 V	CAST ALUMINUM AC ONLY EXIT SIGN, SINGLE FACE, DIRECTIONAL ARROWS INDICATED, WHITE HOUSING. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.	3 VA
XVC	SURE-LITES UX SERIES CHLORIDE 60 LINE SERIES LITHONIA LV SERIES DUAL-LITE SEWL SERIES	SURFACE CEILING	RED LED	0 lm	277 V	CAST ALUMINUM, VANDAL RESISTANT AC ONLY EXIT SIGN, SINGLE FACE, DIRECTIONAL ARROWS INDICATED, WHITE HOUSING, LISTED FOR WET LOCATIONS. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.	3 VA
XVW	SURE-LITES UX SERIES CHLORIDE 60 LINE SERIES LITHONIA LV SERIES DUAL-LITE SEWL SERIES	SURFACE WALL	RED LED	0 lm	277 V	CAST ALUMINUM, VANDAL RESISTANT AC ONLY EXIT SIGN, SINGLE FACE, DIRECTIONAL ARROWS INDICATED, WHITE HOUSING, LISTED FOR WET LOCATIONS. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.	3 VA
XW	SURE-LITES CX SERIES BIG BEAM DCL SERIES LITHONIA SIGNATURE SERIES DUAL-LITE SEMPRA SERIES	SURFACE WALL	RED LED	0 lm	277 V	CAST ALUMINUM AC ONLY EXIT SIGN, SINGLE FACE, DIRECTIONAL ARROWS INDICATED, WHITE HOUSING. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.	3 VA

JEFFERSONVILLE HIGH SCHOOL NATATORIUM

2315 ALLISON LN.
JEFFERSONVILLE, IN 47130

GREATER CLARK COUNTY SCHOOLS

GCCS

ARCHITECT

FANNING HOWEY

(317) 848-0966 WWW.FHAI.COM
350 E NEW YORK ST, SUITE 300 INDIANAPOLIS, IN 46204

ISSUED FOR CONSTRUCTION

BRIAN W. BUTLER REGISTERED No. PE1... STATE OF ... PROFESSIONAL ENGINEER

DRAWN BY: AMN
PROJECT NUMBER: 222038.00
PROJECT ISSUE DATE: 11/20/2023

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #2	12/21/2023

ELECTRICAL DETAILS

E1.02

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