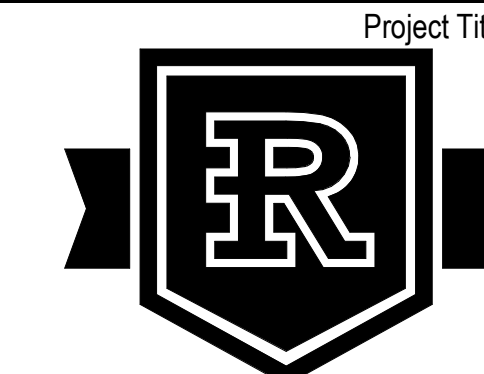


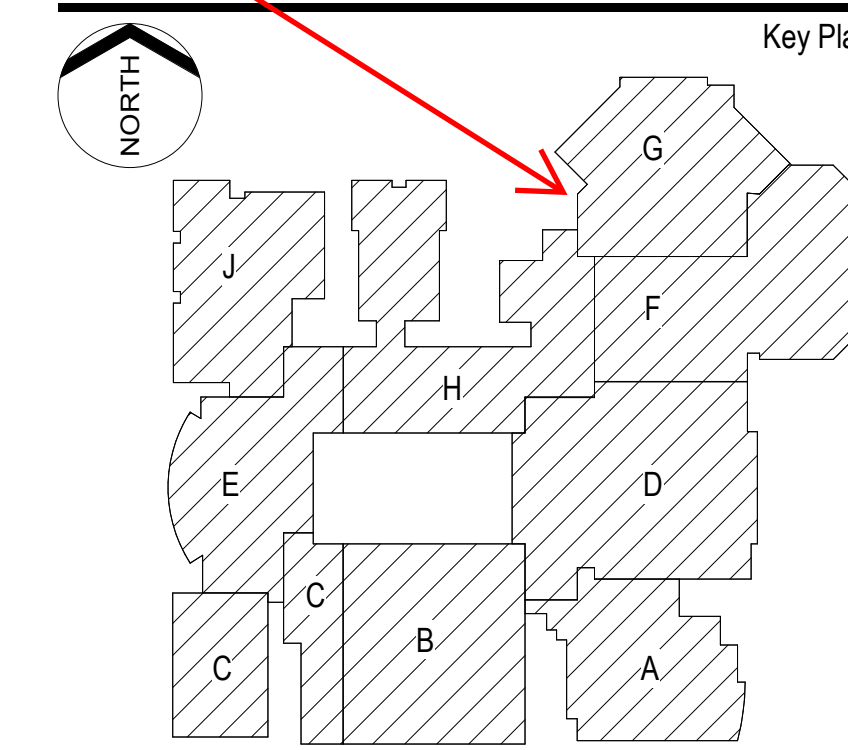
MR.0



Romeo Community Schools

New Romeo Middle School

11091 32 Mile Rd. Romeo, MI 48065



Project Administrator	M. Beck
Project Designer	B. Cornell / D. Greene
Project Architect / Engineer	J. Schwartz
Drawn By	B. Cornell / D. Greene
Q.M. Review	D. DiCuccio
Approved	D. DiCuccio
Drawing Scale	3/64" = 1'-0"
Issued for	Issue Date
Design Development	11-19-2018
Design Development (Revised)	05-17-2019
Quality Management Review	06-28-2019
Bids	09-05-2019
Addendum No. 1	09-25-2019
Bulletin No. 2	01-27-2020

First Floor Composite Plan

SAMPLE-COMPOSITE PLAN W/ AREAS

IDS Project Number
16175-5000
Drawing Number
M0.1

NOTE:
FOR ADDITIONS AND NEW
CONSTRUCTION PROVIDE
OVERALL BUILDING AND
COLUMN DIMENSIONS

NO DRAWINGS USED IN
THIS AREA. NO NEED TO
FILL OUT AREA N.I.C.

LOCATE MATCHLINES AND
INDICATE ASSOCIATED DRAWING
NUMBERS

USE IDS SPACE TAGS FOR
COMPOSITE PLANS

INDICATE AREAS ON KEY PLAN

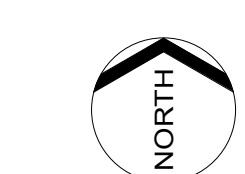
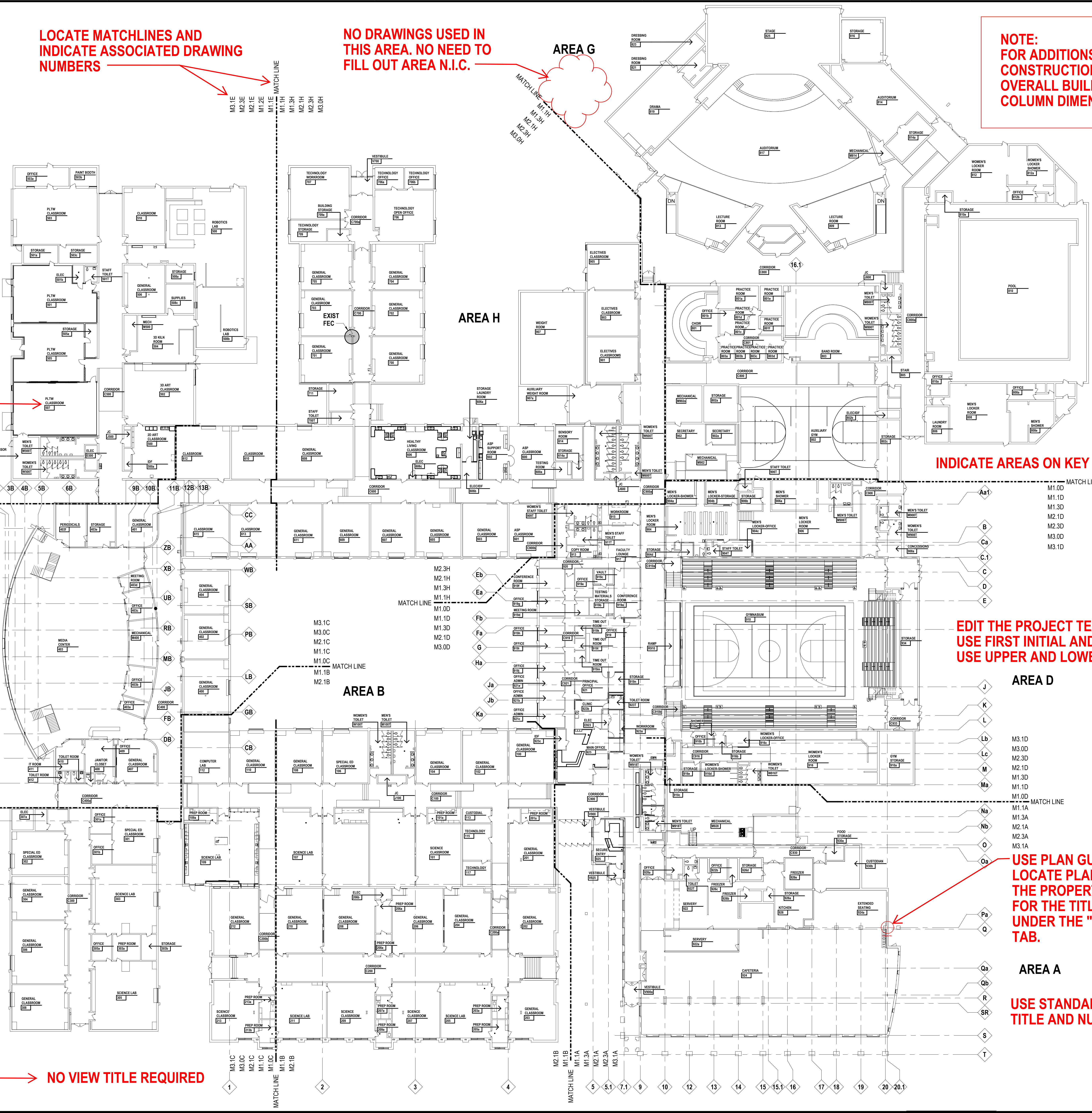
EDIT THE PROJECT TEAM NAMES
USE FIRST INITIAL AND LAST NAME
USE UPPER AND LOWER CASE

USE PLAN GUIDE POINT TO
LOCATE PLAN. LOCATED IN
THE PROPERTIES SECTION
FOR THE TITLE BLOCK
UNDER THE "EDIT TYPE"
TAB.

USE STANDARD DRAWING
TITLE AND NUMBERING

NO VIEW TITLE REQUIRED

NOTE:
THE STANDARD SHEET TITLE
TAKES THE PLACE OF THE
VIEW TITLE WHEN ONLY ONE
VIEW IS PLACED ON THE
SHEET. ADDING VIEW TITLE
IS REDUNDANT



ARCHITECTURAL BACKGROUND IS
DASHED FOR THE UNDERGROUND
PLANS. INCLUDE ROOM NAMES.

NOTE:
THIS APPROACH TO KEYNOTES IS THE
CORRECT WAY. THEY ARE NOW A NEW
SCHEDULE LOCATED IN THE PROJECT
BROWSER.

KEYNOTES

NOTE: NOT ALL KEYNOTES MAY BE USED

LEGEND SYMBOL INDICATOR

D1 REMOVE DUCTWORK, DIFFUSERS, ASSOCIATED HANGERS AND
SUPPORTS COMPLETELY WHERE INDICATED.

D2 REMOVE CEILING MOUNTED RETURN EXHAUST GRILLE, HANGERS
AND SUPPORTS COMPLETELY.

D3 REMOVE FLOOR DRAINS, FLOOR CLEANOUT, TRAP AND PIPING AS
INDICATED.

D4 REMOVE PLUMBING/HVAC PIPING, HANGERS AND SUPPORTS
COMPLETELY.

D5 REMOVE PLUMBING FIXTURES, SUPPORTS AND PIPING
COMPLETELY.

D6 REMOVE CABINET UNIT HEATER, UNIT HEATER, UNIT VENTILATOR
AND FIN TUBE. REMOVE SUPPORTS, VALVES, HWHS & R BRANCH
PIPING TO UNIT, AND CAP AT MAIN.

D7 CARRIERS, SUPPORTS AND SUPPLY PIPING TO REMAIN. REMOVE
FIXTURE ONLY.

D8 DEMOLISH DUCTWORK UP TO ROOF. DEMOLISH ASSOCIATED
EXHAUST FAN, CONTROLS, AND ACCESSORIES.

D9 REMOVE HOOD, DUCTWORK, EXHAUST FAN, AND ACCESSORIES
COMPLETE.

LOCATE MATCHLINES AND
INDICATE ASSOCIATED
DRAWING NUMBERS

TURN ON THE KEY PLAN,
NORTH
ARROW AND ONLY THE AREA THAT
APPLIES TO THIS DRAWING UNDER
VISIBILITY IN THE PROPERTIES MENU

EQUIPMENT TO
BE DEMOLISHED
GETS HATCHED

NOTE:
THE STANDARD SHEET TITLE
TAKES THE PLACE OF THE
VIEW TITLE WHEN ONLY ONE
VIEW IS PLACED ON THE
SHEET. ADDING VIEW TITLE
IS REDUNDANT

NO VIEW TITLE REQUIRED

USE STANDARD DRAWING
TITLE AND NUMBERING



INTEGRATED design SOLUTIONS
architecture engineering interiors & technology

1441 west long lake, suite 200
troy, michigan 48098

5211 cascade road SE, suite 300
grand rapids, michigan 49546

AQUATICS DESIGN CONSULTANT

COUNSILMAN-HUNSAKER
10733 SUNSET OFFICE DR. SUITE 400
ST. LOUIS, MO 63127

314-894-1245
www.counsilmanhunsaker.com

CIVIL ENGINEER

SPALDING DEDECKER
905 SOUTH BLVD. EAST
ROCHESTER HILLS, MI 48307

800-598-1600
www.sda-eng.com

STRUCTURAL ENGINEER

DESAINASR CONSULTING ENGINEERS, INC.
6765 DALY ROAD
WEST BLOOMFIELD, MI 48322

248-932-2010
www.desainasr.com

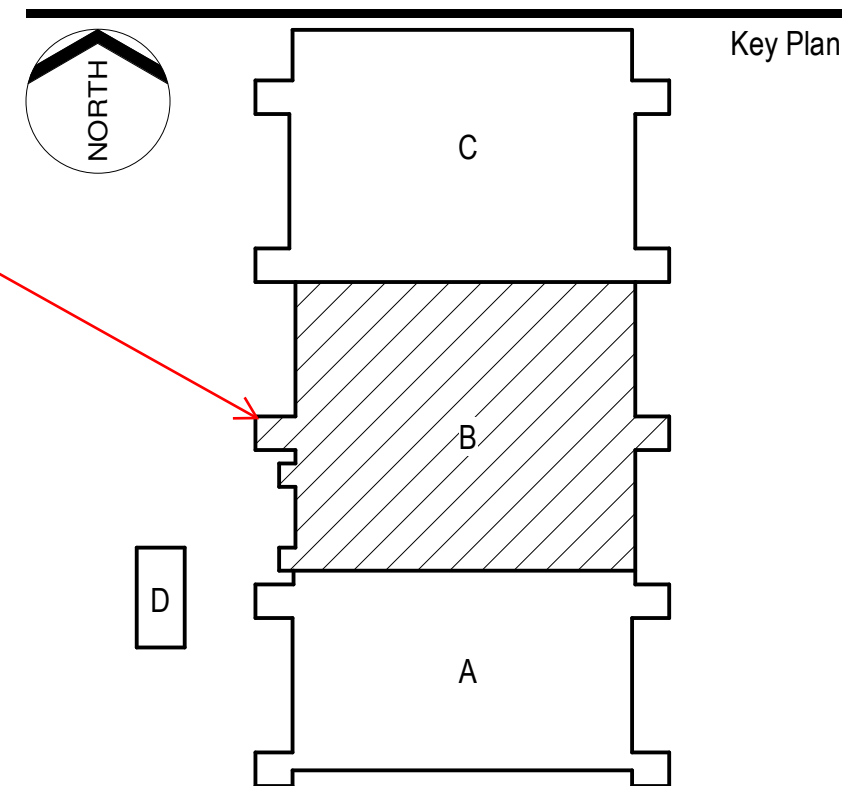
Project Title



City of Farmington Hills

Farmington Hills
Community Center

29995 W 12 Mile Rd, Farmington Hills, MI 48334



Project Administrator

J. Zona

Project Designer

P. Willis

Project Architect / Engineer

M. Perez

Drawn By

P. Willis

Q.M. Review

D. DiCiuccio

Approved

D. DiCiuccio

Drawing Scale

1/8" = 1'-0"

Issued for

Issue Date

Design Development 05-24-2019

Bid Pack 1 Quality Management Review 07-12-2019

Bid Pack 1 Bids 07-26-2019

Bid Pack 1 Addendum No 2 08-08-2019

RFI No. 108 03-17-2020

© 2019 INTEGRATED design SOLUTIONS, LLC

IDS Drawing Title

Underground Demolition Plan - Area B

SAMPLE - UG DEMO PLAN W/ AREAS

108 Project Number Drawing Number

18234-1000 M1.0UB

LOCATE MATCHLINES AND
INDICATE ASSOCIATED
DRAWING NUMBERS

NOTE:
THIS APPROACH TO
KEYNOTES IS THE
CORRECT WAY. THEY
ARE NOW A NEW
SCHEDULE LOCATED IN
THE PROJECT BROWSER.

- KEYNOTES
- DEMOLITION
- NOTE: NOT ALL KEYNOTES MAY BE USED
- 8

LEGEND SYMBOL INDICATOR
- D1 REMOVE SANITARY PIPE AND CAP AT MAIN.
- D2 RADIATOR AND ASSOCIATED THERMOSTATIC CONTROL VALVE TO REMAIN. ASSOCIATED STEAM TRAP SHALL BE REMOVED. SEE NEW WORK DRAWINGS FOR REPLACEMENT.
- D3 REMOVE STEAM TRAP. SEE NEW WORK DRAWINGS FOR REPLACEMENT.
- D4 REMOVE WATER CLOSET AND ASSOCIATED FLUSH VALVE. REMOVE ASSOCIATED COLD WATER, WASTE AND VENT PIPING AND CAP AT MAIN.
- D5 REMOVE URINAL, ASSOCIATED FLUSH VALVE AND CARRIER. REMOVE ASSOCIATED COLD WATER, WASTE AND VENT PIPING AND CAP AT MAIN.
- D6 REMOVE LAVATORY, ASSOCIATED FAUCET AND SUPPORT. REMOVE ASSOCIATED COLD WATER, WASTE AND VENT PIPING AND CAP AT MAIN.
- D7 REMOVE STEAM HEATING BOILER, ASSOCIATED VALVES AND CONTROLS COMPLETE.
- D8 REMOVE DOMESTIC WATER HEATER, ASSOCIATED DOMESTIC WATER PIPING, VALVES AND CONTROLS COMPLETE.
- D9 REMOVE DOMESTIC HOT WATER STORAGE TANK, ASSOCIATED DOMESTIC WATER PIPING AND VALVES COMPLETE.
- D11 REMOVE CIRCULATING PUMP, ASSOCIATED PIPING, VALVES AND CONTROLS COMPLETE.
- D13 REMOVE AIR COMPRESSOR, ASSOCIATED AIR DRYER AND ACCESSORIES COMPLETE.
- D14 REMOVE DUCTWORK, ASSOCIATED HANGERS AND SUPPORTS COMPLETE.
- D15 REMOVE SUPPLY AIR DIFFUSER/RETURN/EXHAUST AIR GRILLE.
- D17 REMOVE AIR HANDLING UNIT, ASSOCIATED DUCTWORK, STEAM & CONDENSATE PIPING, SUPPORTS AND CONTROLS COMPLETE.
- D18 REMOVE WATER-COOLED CHILLER, ASSOCIATED PIPING, CONTROLS AND SUPPORTS COMPLETE.
- D19 REMOVE CHILLED WATER PIPING, ASSOCIATED HANGERS AND SUPPORTS COMPLETE.
- D20 REMOVE ROOF MOUNTED EXHAUST FAN AND ASSOCIATED DUCTWORK, CONTROLS AND ROOF CURB COMPLETE.
- D21 REMOVE WALL-MOUNTED EXHAUST FAN AND ASSOCIATED CONTROLS COMPLETE.
- D22 REMOVE HOT WATER GENERATOR AND ASSOCIATED PIPING AND SUPPORTS COMPLETE.
- D23 REMOVE MIXING BOX AND ASSOCIATED DUCTWORK, CONTROLS AND SUPPORTS COMPLETE.
- D24 REMOVE STEAM RADIATOR AND ASSOCIATED STEAM AND CONDENSATE PIPING BACK TO MAIN AND CAP.
- D25 REMOVE ELECTRIC WATER COOLER AND ASSOCIATED COLD WATER, WASTE AND VENT PIPING BACK TO MAIN AND CAP.
- D26 REMOVE LABORATORY GAS SHUTOFF AND ASSOCIATED GAS PIPED COMPLETE.
- D27 REMOVE STEAM/CONDENSATE RETURN PIPING, ASSOCIATED HANGERS AND SUPPORTS COMPLETE.
- D28 REMOVE WATER COOLER, ASSOCIATED CIRCULATING PUMP, PIPING, CONTROLS AND SUPPORTS COMPLETE.



INTEGRATED design SOLUTIONS
architecture engineering interiors & technology
1441 west long lake, suite 200
troy, michigan 48098
5211 cascade road SE, suite 300
grand rapids, michigan 49546
248.823.2100
www.ids-michigan.com

DESIGN ARCHITECT
PLY+
305 WEST LIBERTY
ANN ARBOR, MI 48103
734.827.2238
www.plyplus.com

STRUCTURAL ENGINEER
IMEG
6765 DALY ROAD
WEST BLOOMFIELD, MI
248.8473241
www.imegcorp.com

Project Title

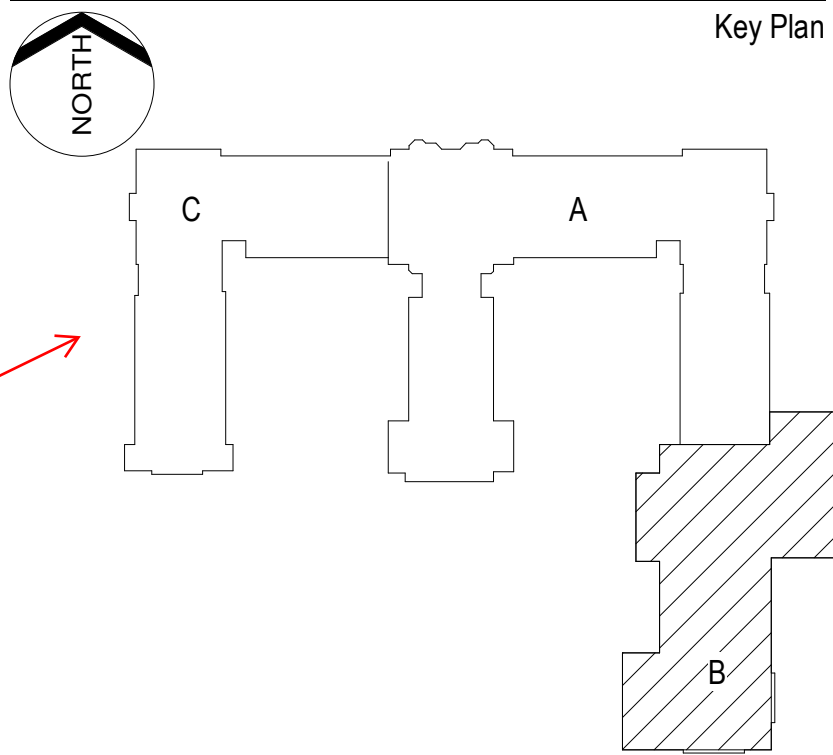


Marygrove Conservancy

Liberal Arts Renovation

8425 W. McNichols Rd
Detroit, MI 48221

Key Plan



Project Administrator

J. Zona

Project Designer

S. Marra

Project Architect / Engineer

M. Perez

Drawn By

S. Marra

Q.M. Review

J. Schwartz

Approved

D. DiCiuccio

Drawing Scale

1/8" = 1'-0"

Issued for

Issue Date

Design Development 6-19-20

Quality Management Review 8-21-20

Bids 9-18-20

© 2020 INTEGRATED design SOLUTIONS, LLC

IDS Drawing Title

Basement Demolition Plan - Area B

SAMPLE-DEMOLITION PLAN W/ AREAS

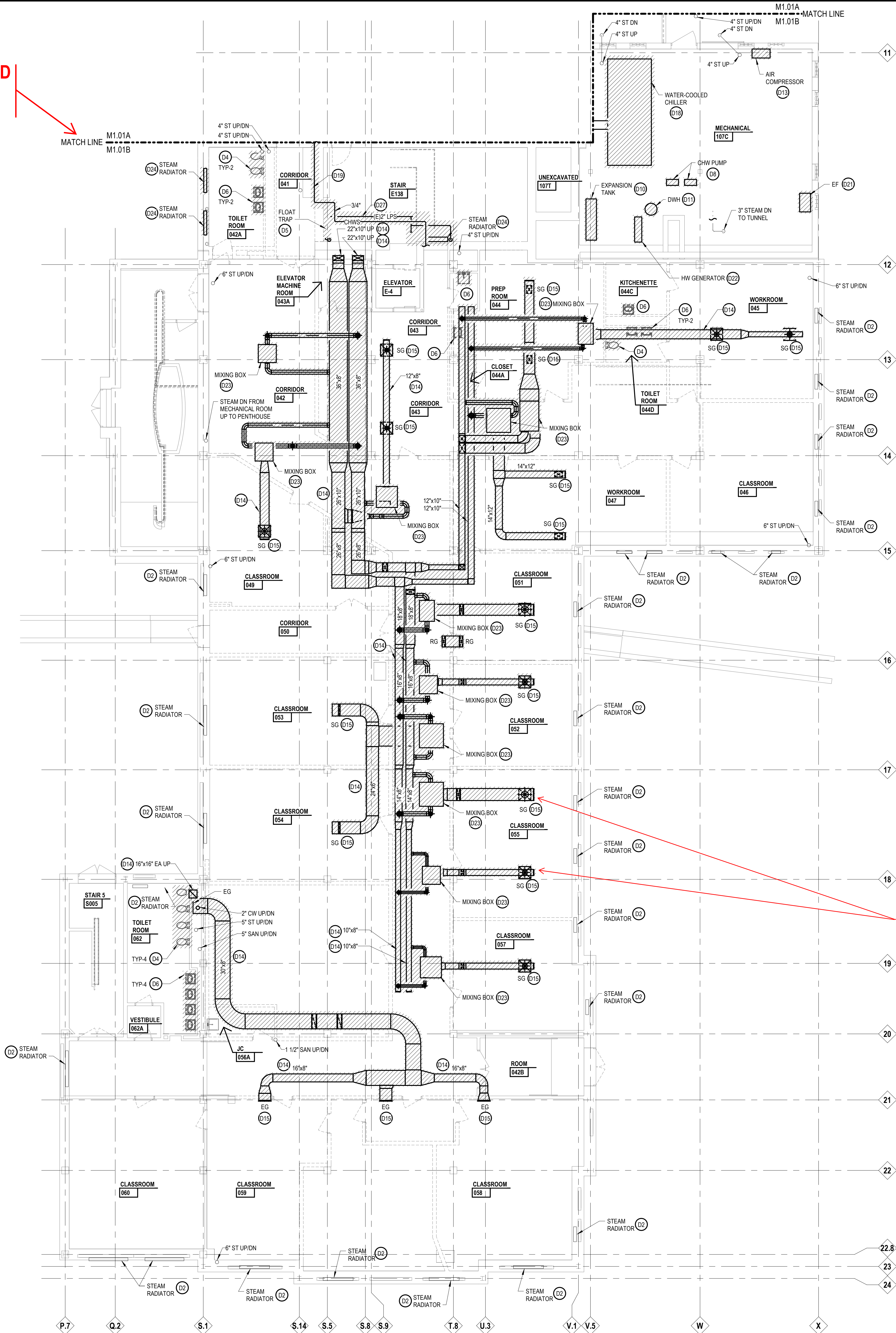
105 Project Number Drawing Number

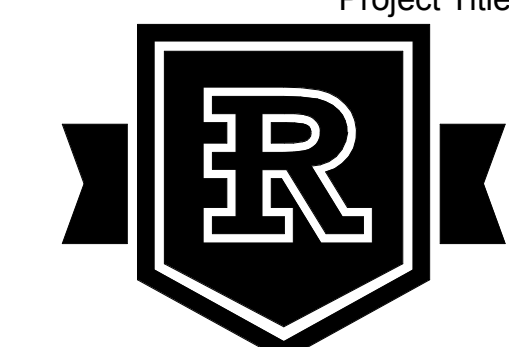
20108-1000 M1.01B

USE STANDARD DRAWING
TITLE AND NUMBERING

TURN ON THE KEY PLAN, NORTH
ARROW AND ONLY THE AREA THAT
APPLIES TO THIS DRAWING UNDER
VISIBILITY IN THE PROPERTIES MENU

MECHANICAL
ELEMENTS TO
BE DEMOLISHED
GET HATCHED



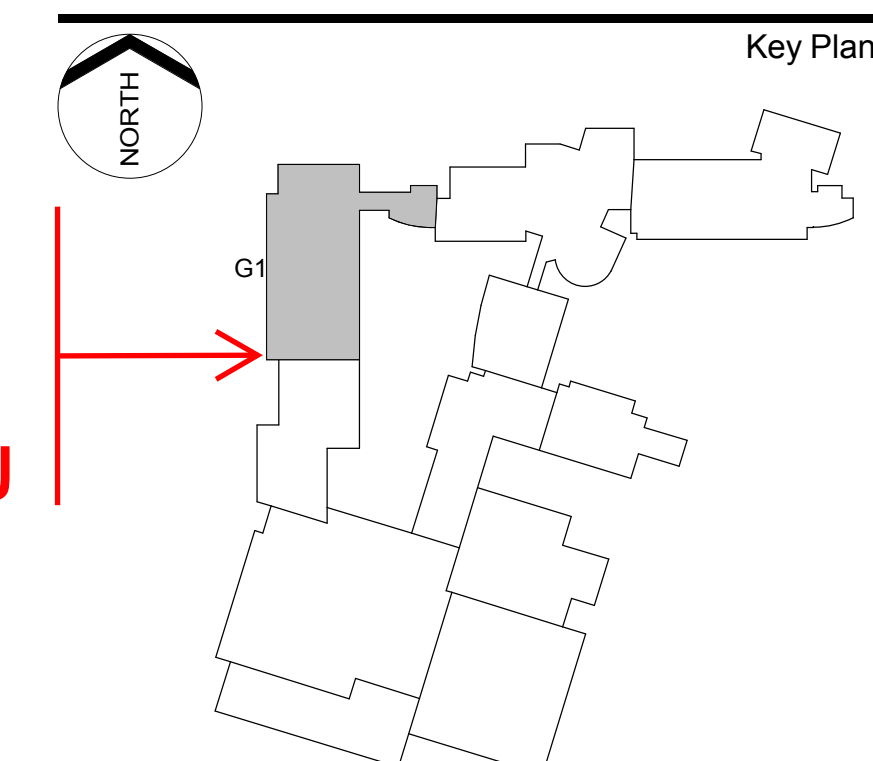


New Romeo
High School

Romeo Community Schools

62300 Jewell Rd.

Washington, MI 48094



Second Floor HVAC Plan -
Area G1

SAMPLE-SHEET METAL PLAN W/ AREAS

NO NEED TO TAG ROUND
BRANCH DUCTWORK OUT TO
DIFFUSER. HANDLED IN THE
SPECIFIC DIFFUSER TAG.

TAG DUCTWORK "UP" TO
A PIECE OF EQUIPMENT AS
SHOWN IN THIS CASE. THIS
WILL HAVE TO BE TEXT IN
LIEU OF A SMART TAG

TURN ON THE KEY PLAN, NORTH
ARROW AND ONLY THE AREA THAT
APPLIES TO THIS DRAWING UNDER
VISIBILITY IN THE PROPERTIES MENU

TYPICAL TAG FOR
DIFFUSERS.
TYPE, INLET SIZE,
CFM VALUE AND
QUANTITY

KEYNOTES

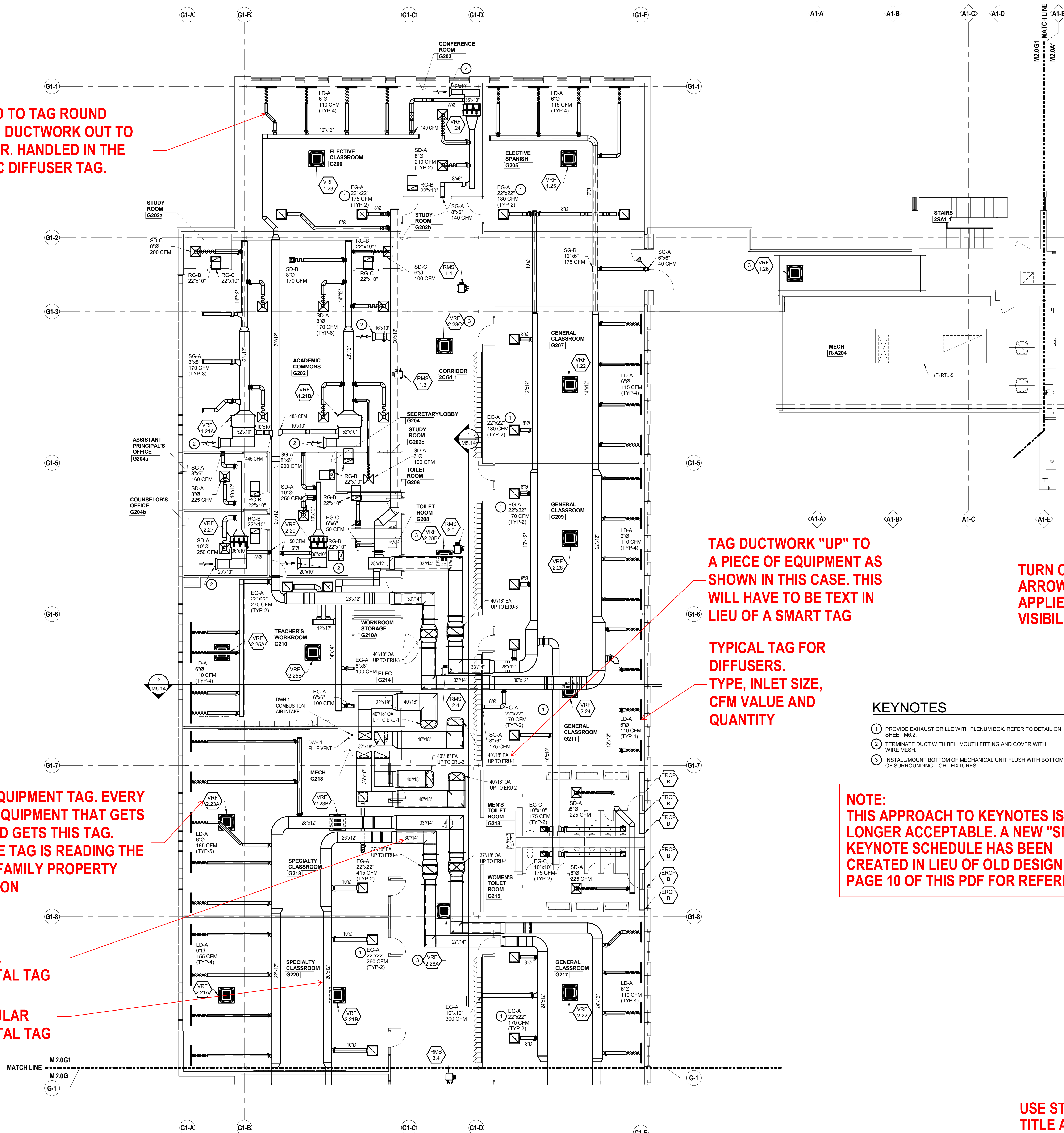
- 1 PROVIDE EXHAUST GRILLE WITH PLENUM BOX. REFER TO DETAIL ON SHEET M8.2.
- 2 TERMINATE DUCT WITH BELLMOUTH FITTING AND COVER WITH WIRE MESH.
- 3 INSTALL MOUNT BOTTOM OF MECHANICAL UNIT FLUSH WITH BOTTOM OF SURROUNDING LIGHT FIXTURES.

NOTE:
THIS APPROACH TO KEYNOTES IS NO
LONGER ACCEPTABLE. A NEW "SMART"
KEYNOTE SCHEDULE HAS BEEN
CREATED IN LIEU OF OLD DESIGN. SEE
PAGE 10 OF THIS PDF FOR REFERENCE.

TYPICAL EQUIPMENT TAG. EVERY
PIECE OF EQUIPMENT THAT GETS
SCHEDULED GETS THIS TAG.
MAKE SURE TAG IS READING THE
CORRECT FAMILY PROPERTY
INFORMATION

TYPICAL
FLAT OVAL
SHEET METAL TAG
TYPICAL
RECTANGULAR
SHEET METAL TAG

USE STANDARD DRAWING
TITLE AND NUMBERING



- KEYNOTES
- NEW WORK
- 1 PROVIDE HEAT TRACE IN GUTTER WHERE INDICATED, RAYCHEM MODEL GM-2X.
- 2 PROVIDE HEAT TRACE IN VERTICAL DOWNSPOUT, APPROXIMATE LENGTH AS NOTED ON PLAN, RAYCHEM MODEL GM-2X.
- 3 FOR COORDINATION OF ROOF SUMP CONNECTION TO GUTTER SEE SHEET A5.2

NOTE:
THIS APPROACH TO KEYNOTES IS NO LONGER ACCEPTABLE. A NEW "SMART" KEYNOTE SCHEDULE HAS BEEN CREATED IN LIEU OF OLD DESIGN. SEE PAGE 10 OF THIS PDF FOR REFERENCE.

iDS

INTEGRATED design SOLUTIONS
architecture engineering interiors & technology

1441 west long lake, suite 200
troy, michigan 48068

5211 cascade road SE, suite 300
grand rapids, michigan 49546

248-823-2100
www.ids-troy.com

PROJECT ARCHITECT AND MEP
INTEGRATED DESIGN SOLUTIONS
1441 WEST LONG LAKE RD., SUITE 200
TROY, MI 48068
248-823-2100
www.ids-troy.com

DESIGN ARCHITECT
WORKSHOP ARCHITECTS
201 E. PITTSBURGH AVE., SUITE 301
MILWAUKEE, WI 53204
414-272-8822
www.workshoparchitects.com

DESIGN ARCHITECT
HARTMAN-COX ARCHITECTS
1074 THOMAS JEFFERSON ST. NW
WASHINGTON, DC 20007
202-333-6446
www.hartmancox.com

STRUCTURAL ENGINEER
STRUCTURAL DESIGN INCORPORATED
275 EAST LIBERTY ST
ANN ARBOR, MI 48101
734-213-6091
www.strutedesign.com

LANDSCAPE ARCHITECT
BECKETT & RAEDER INCORPORATED
535 WEST WILLIAM ST., SUITE 101
ANN ARBOR, MI 48103
734-663-2822
www.bria2.com

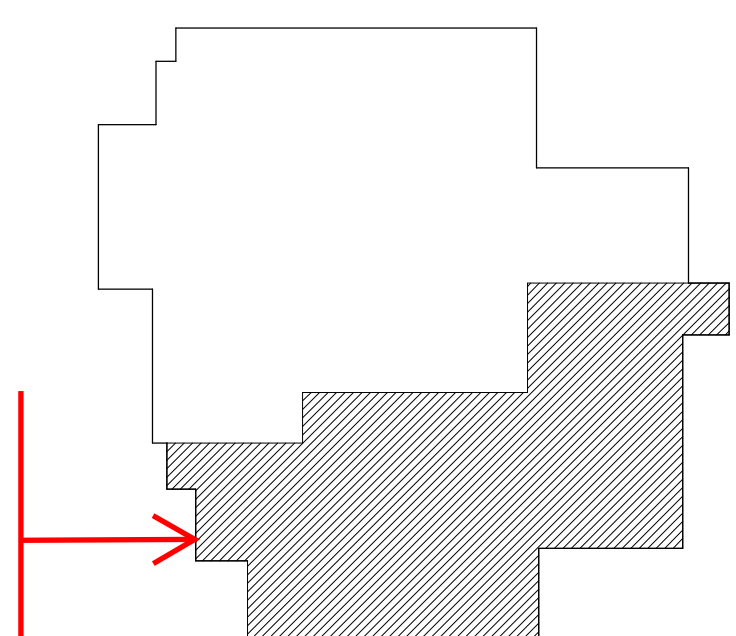
FOOD SERVICES
E.F. WHITNEY, INC.
1000 S. OLD WOODWARD AVENUE
SUITE 200
BIRMINGHAM, MI 48009
248-644-0800
www.efwhitney.com



Michigan Union
Renovations

530 S. State St
Ann Arbor, MI 48109

Key Plan



Seal:

Project Administrator	A. Everett
Project Designer	D. Greene
Project Architect / Engineer	D. DiCiuccio/J. Schwartz
Drawn By	D. Greene
Q.M. Review	T. Verduynse
Approved	D. DiCiuccio
Drawing Scale	1/8" = 1'-0"

Issued for	Issue Date
95% Owner Review	12-08-17
99% Owner Review	02-09-18
Bids	02-27-18
Construction Set	07-31-18

© 2018 INTEGRATED design SOLUTIONS, LLC
IDS Drawing Title

Mechanical New Work
Plan - Roof - Area B

SAMPLE-ROOF PLAN W/ AREAS

Reference Finish Floor Elevation: XXX'-X"

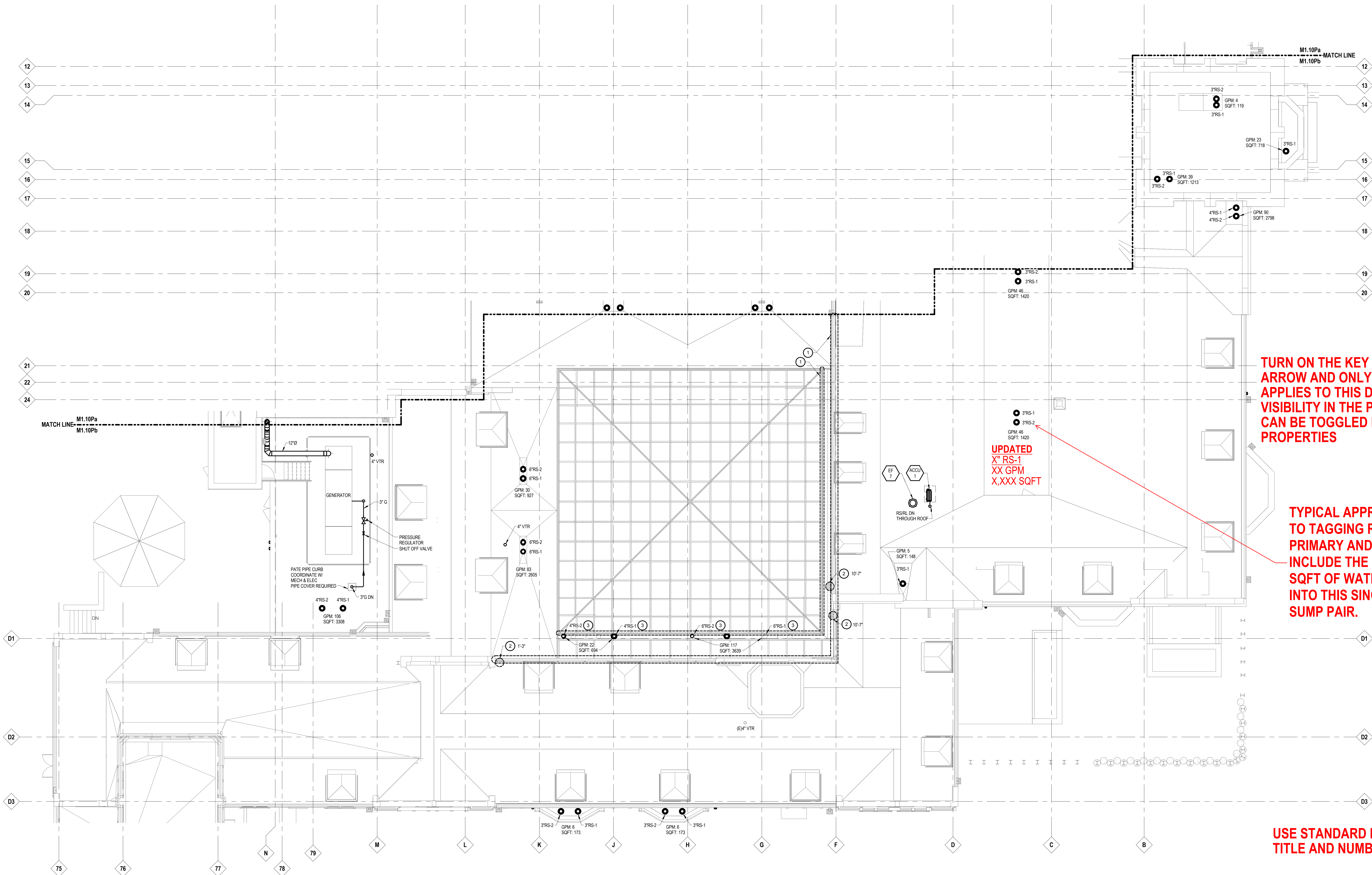
101 Project Number
Drawing Number
15203-1000
U-M Project Number
P00007758

M2.60B

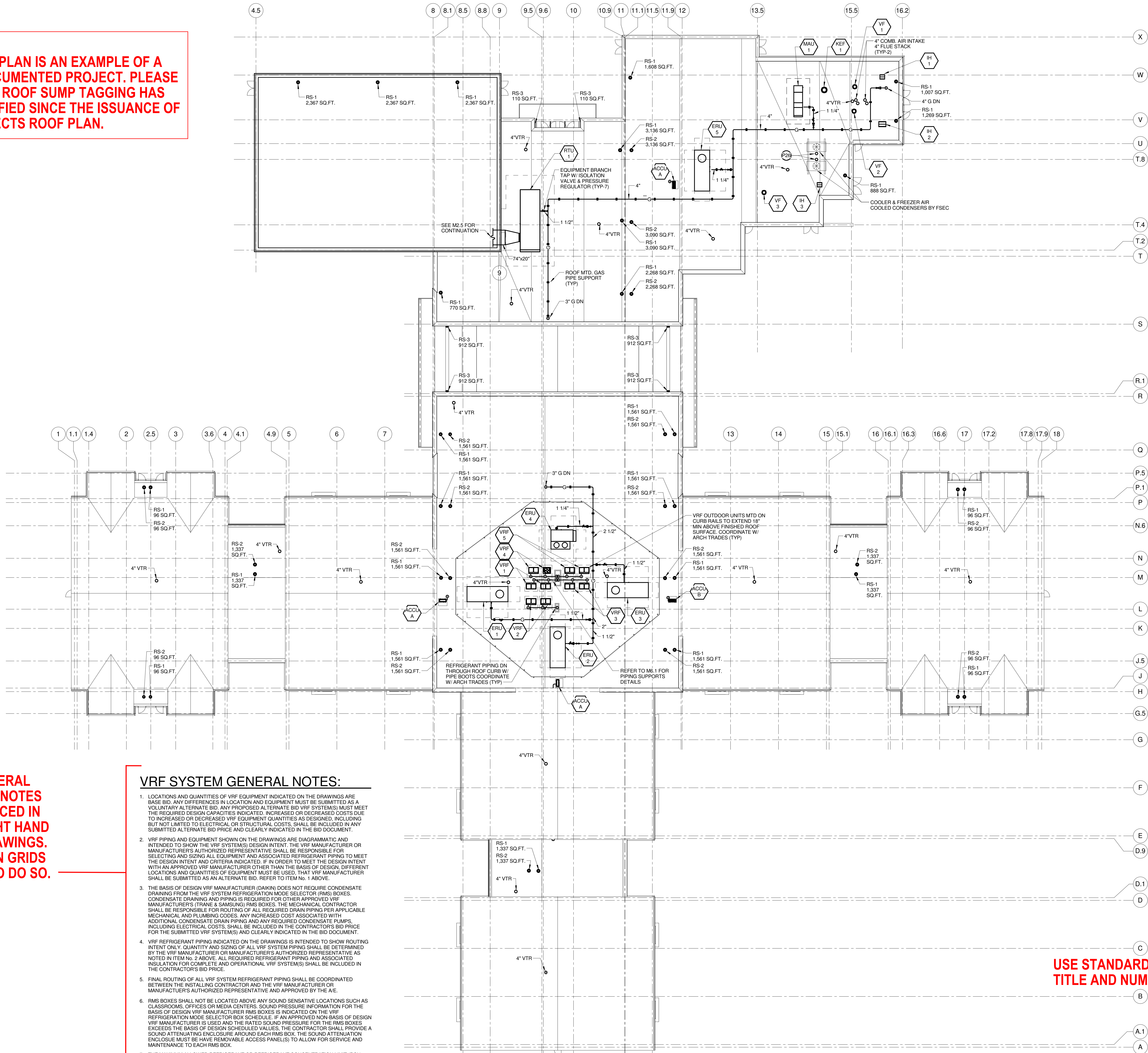
USE STANDARD DRAWING
TITLE AND NUMBERING

TURN ON THE KEY PLAN, NORTH
ARROW AND ONLY THE AREA THAT
APPLIES TO THIS DRAWING UNDER
VISIBILITY IN THE PROPERTIES MENU.
CAN BE TOGGLED IN THE BORDER
PROPERTIES

UPDATED
X" RS-1
XX GPM
X,XXX SQFT



NOTE:
THIS ROOF PLAN IS AN EXAMPLE OF A GREAT DOCUMENTED PROJECT. PLEASE NOTE THAT ROOF SUMP TAGGING HAS BEEN MODIFIED SINCE THE ISSUANCE OF THIS PROJECTS ROOF PLAN.



TYPICALLY GENERAL NOTES AND KEYNOTES SHOULD BE PLACED IN THE UPPER RIGHT HAND CORNER OF DRAWINGS. MODIFY COLUMN GRIDS AS REQUIRED TO DO SO.

VRF SYSTEM GENERAL NOTES:

1. LOCATIONS AND QUANTITIES OF VRF EQUIPMENT INDICATED ON THE DRAWINGS ARE BASE BID. ANY DIFFERENCES IN LOCATION AND EQUIPMENT MUST BE SUBMITTED AS A VOLUNTARY ALTERNATE BID. ANY PROPOSED ALTERNATE BID VRF SYSTEM(S) MUST MEET THE REQUIRED DESIGN CAPACITIES INDICATED. INCREASED OR DECREASED COSTS DUE TO INCREASED OR DECREASED VRF EQUIPMENT QUANTITIES AS DESIGNED, INCLUDING BUT NOT LIMITED TO ELECTRICAL OR STRUCTURAL COSTS, SHALL BE INCLUDED IN ANY SUBMITTED ALTERNATE BID PRICE AND CLEARLY INDICATED IN THE BID DOCUMENT.
2. VRF PIPING AND EQUIPMENT SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE VRF SYSTEM(S) DESIGN INTENT. THE VRF MANUFACTURER OR MANUFACTURER'S AUTHORIZED REPRESENTATIVE SHALL BE RESPONSIBLE FOR SELECTING AND SIZING ALL EQUIPMENT AND ASSOCIATED REFRIGERANT PIPING TO MEET THE DESIGN INTENT AND CRITERIA INDICATED. IF IN ORDER TO MEET THE DESIGN INTENT WITH AN APPROVED VRF MANUFACTURER OTHER THAN THE BASIS OF DESIGN, DIFFERENT LOCATIONS AND QUANTITIES OF EQUIPMENT MUST BE USED. THAT VRF MANUFACTURER SHALL BE SUBMITTED AS AN ALTERNATE BID. REFER TO ITEM No. 1 ABOVE.
3. THE BASIS OF DESIGN VRF MANUFACTURER (DAIKIN) DOES NOT REQUIRE CONDENSATE DRAINING FROM THE VRF SYSTEM REFRIGERATION MODE SELECTOR (RMS) BOXES. CONDENSATE DRAINING AND PIPING IS REQUIRED FOR OTHER APPROVED VRF MANUFACTURERS (TRANE & SAMSUNG) RMS BOXES. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING OF ALL REQUIRED DRAIN PIPING PER APPLICABLE MECHANICAL AND PLUMBING CODES. ANY INCREASED COST ASSOCIATED WITH ADDITIONAL CONDENSATE DRAIN PIPING AND ANY REQUIRED CONDENSATE PUMPS, INCLUDING ELECTRICAL COSTS, SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE FOR THE SUBMITTED VRF SYSTEM(S) AND CLEARLY INDICATED IN THE BID DOCUMENT.
4. VRF REFRIGERANT PIPING INDICATED ON THE DRAWINGS IS INTENDED TO SHOW ROUTING INTENT ONLY. QUANTITY AND SIZING OF ALL VRF SYSTEM PIPING SHALL BE DETERMINED BY THE VRF MANUFACTURER OR MANUFACTURER'S AUTHORIZED REPRESENTATIVE AS NOTED IN ITEM No. 2 ABOVE. ALL REQUIRED REFRIGERANT PIPING AND ASSOCIATED INSULATION FOR COMPLETE AND OPERATIONAL VRF SYSTEM(S) SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.
5. FINAL ROUTING OF ALL VRF SYSTEM REFRIGERANT PIPING SHALL BE COORDINATED BETWEEN THE INSTALLING CONTRACTOR AND THE VRF MANUFACTURER OR MANUFACTURER'S AUTHORIZED REPRESENTATIVE AND APPROVED BY THE A/E.
6. RMS BOXES SHALL NOT BE LOCATED ABOVE ANY SOUND SENSITIVE LOCATIONS SUCH AS CLASSROOMS, OFFICES OR MEDIA CENTERS. SOUND PRESSURE INFORMATION FOR THE BASIS OF DESIGN VRF MANUFACTURER RMS BOXES IS INDICATED ON THE VRF REFRIGERATION MODE SELECTOR BOX SCHEDULE. IF AN APPROVED NON-BASIS OF DESIGN VRF MANUFACTURER IS USED AND THE RATED SOUND PRESSURE FOR THE RMS BOXES EXCEEDS THE BASIS OF DESIGN SCHEDULED VALUES, THE CONTRACTOR SHALL PROVIDE A SOUND ATTENUATING ENCLOSURE AROUND EACH RMS BOX. THE SOUND ATTENUATION ENCLOSURE MUST BE HAVE REMOVABLE ACCESS PANEL(S) TO ALLOW FOR SERVICE AND MAINTENANCE TO EACH RMS BOX.
7. THE MAXIMUM ALLOWED REFRIGERANT OR REFRIGERANT CONCENTRATION LIMIT (RCL) FOR EACH VRF SYSTEM AND EACH INDIVIDUAL VRF ZONE IS INDICATED ON THE VRF EQUIPMENT SCHEDULES. ALL FINAL VRF SYSTEM SUBMITTALS MUST INDICATE THE TOTAL AMOUNT OF REFRIGERANT IN EACH SYSTEM. THE TOTAL REFRIGERANT FOR ANY VRF SYSTEM MUST NOT EXCEED THE MAXIMUM ALLOWED REFRIGERANT AMOUNT INDICATED.

USE STANDARD DRAWING TITLE AND NUMBERING

SAMPLE-ROOF PLAN W/ AREAS

Mechanical
Roof Plan

Reference Finish Floor Elevation: 100'-0"
105 Project Number Drawing Number

15137-3300

M2.6

iDS

INTEGRATED design SOLUTIONS
architecture engineering interiors & technology
1441 west long lake, suite 200
troy, michigan 48068
248.823.2100
www.ids-troy.com

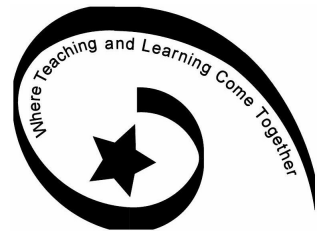
CIVIL ENGINEER
HUBBELL, ROTH & CLARK, INCORPORATED
555 HULET DR
BLOOMFIELD HILLS, MI 48302
248-454-6380
www.hrc-engr.com

STRUCTURAL ENGINEER
STRUCTURAL DESIGN INCORPORATED
275 E. LIBERTY ST
ANN ARBOR, MICHIGAN 48104
734-213-6091
sdstructures.com

LANDSCAPE ARCHITECT
db CONSULTING GROUP, LLC
1089 CHESTNUT LANE
SOUTH LYON, MICHIGAN 48178
248-912-7903

FOOD SERVICES
E.F. WHITNEY, INC
568 ANN ST
BIRMINGHAM, MICHIGAN 48009
248-644-0990
efwhitney.com

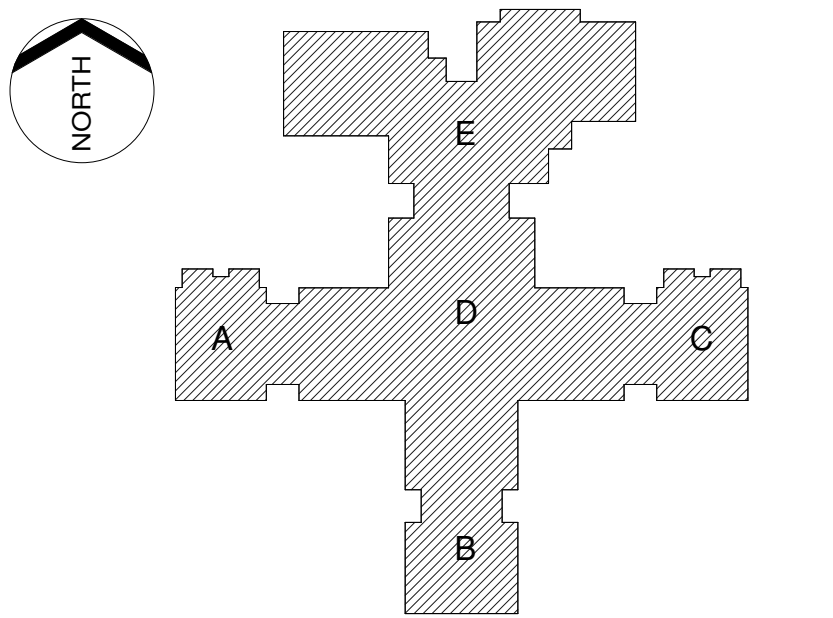
Project Title



South Lyon Community
Schools

William A. Pearson
Elementary School
57900 Eleven Mile Rd
South Lyon, MI 48178

Key Plan



Project Administrator

C. Lewis/ A. Green

Project Designer

K. Kurtz / P. Willis

Project Architect / Engineer

J. Schwartz

Drawn By

P. Willis

Q.M. Review

M. Perez

Approved

D. DiCiuccio

Drawing Scale

1/16"=1'-0"

Issued for Issue Date

Design Development 11-20-2015

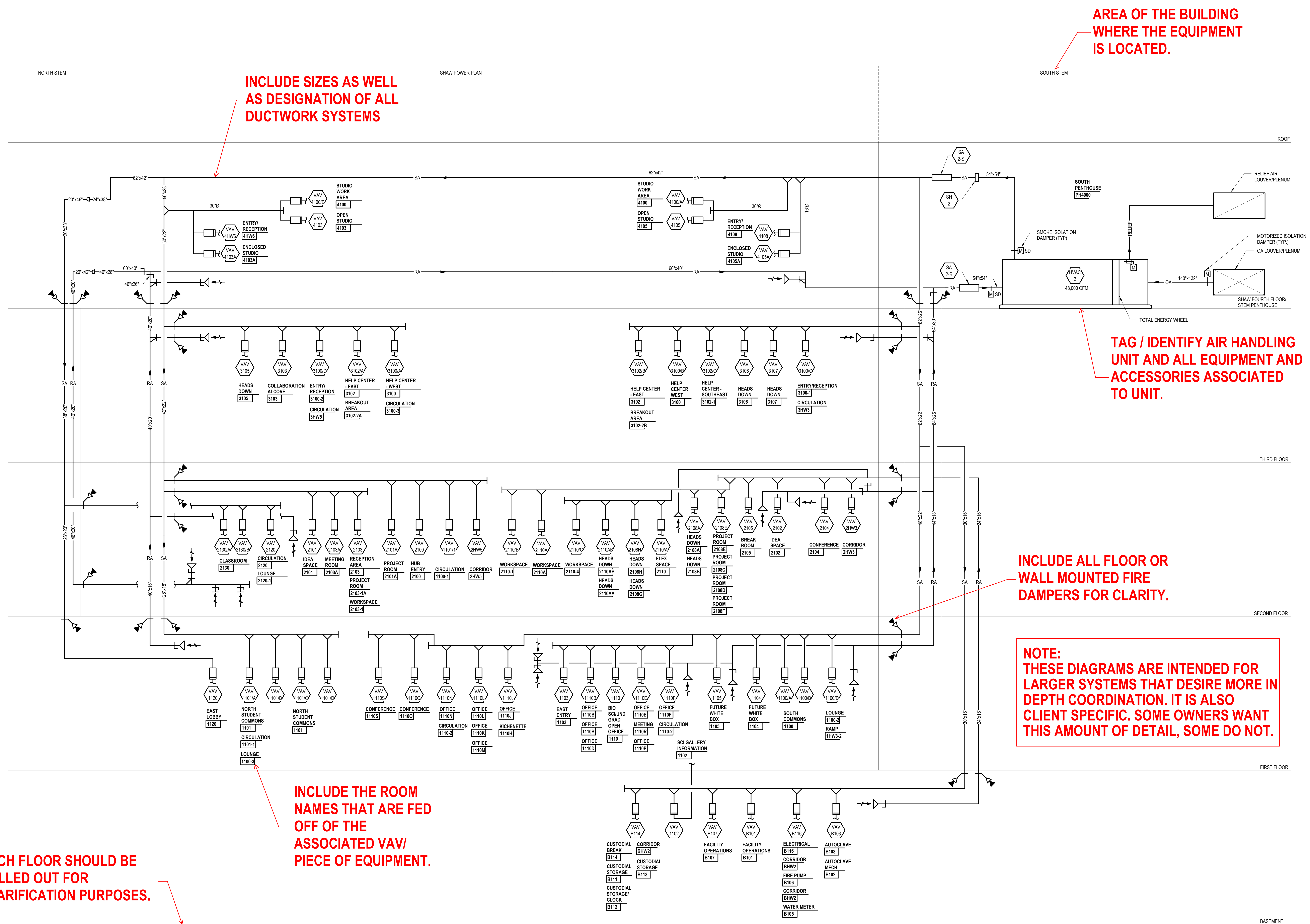
CD 95% Owner Review 01-15-2016

Bids 02-12-2016

©2016 INTEGRATED design SOLUTIONS, LLC

IDS Drawing Title

9/16/2019 9:43:22 AM
B:\362\NSU STEM Facility\17225 NSU STEM Teaching Bldg-M18.rvt



STEM - Addition 2 and Renovations to Shaw Lane Power Plant

CAPITAL PROJ. NO. CP17133	
LEAD K. Gottschalk	CIVIL S. Gardner
ARCH. J. Kasdorf	L.A. D. Kinney
INT. C. Lockwood	REP. K. Gottschalk
MECH. S. Hopper	APPR. J. Lefevre
ELEC. G. Halsey	
SCALE As Noted	DATE
Project Administrator: C. Azar	Project Designer: M. Koehler / D. Raphael
Project Arch/Eng: J. Schwartz	Drawn By: B. Cornell
Q.M. Review: QM	Approved: D. DiCiuccio

Issued for	Issue Date
DR #3C Level 500 Submittal	09-04-2018
Design Release #3C Bids	09-14-2018
Design Assist	08-28-2019
Clarification #27	09-16-2019

© 2018 Integrated Design Solutions, LLC

IDS Project Number

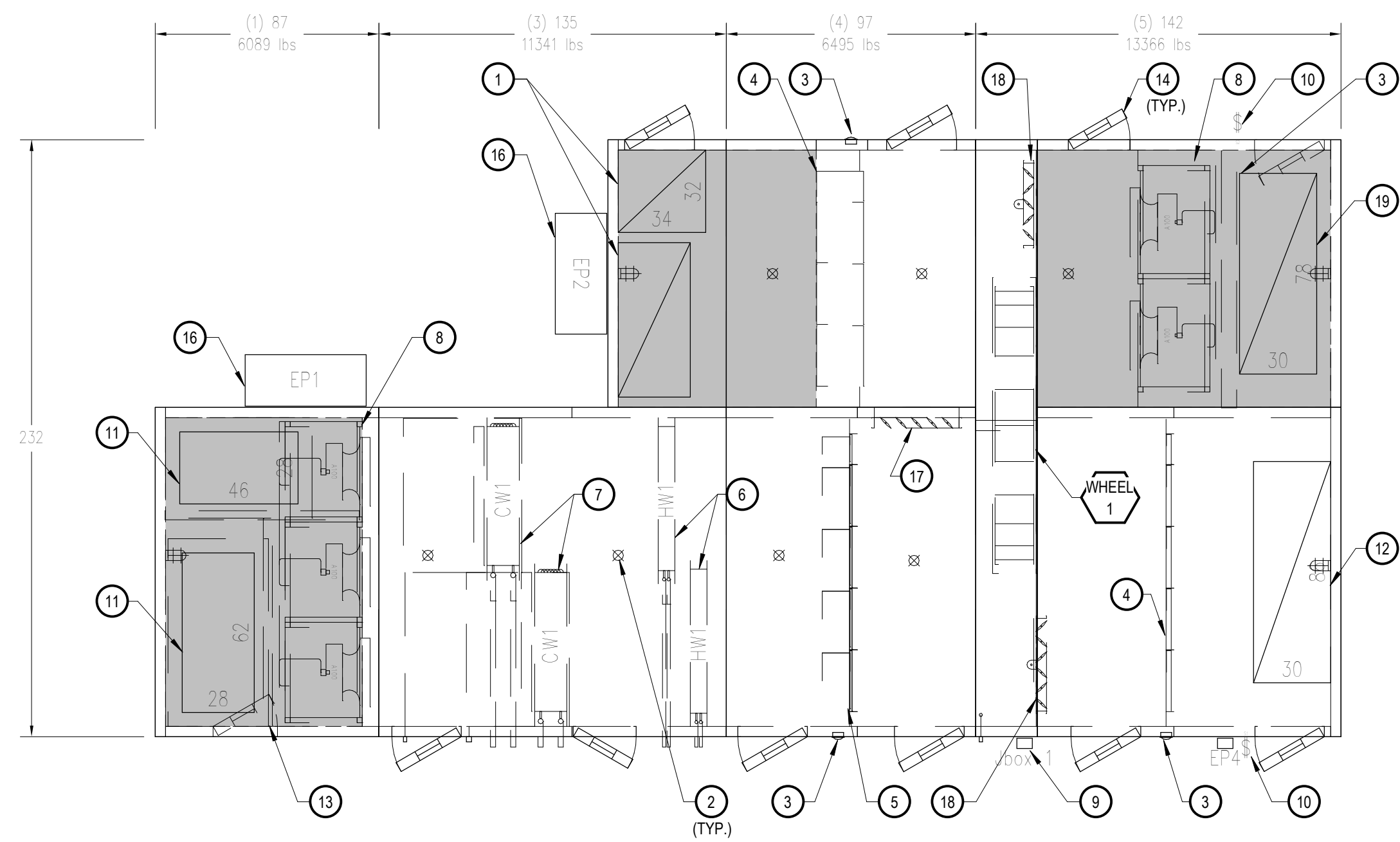
17225-1000

HVAC-2 Air Flow Diagram

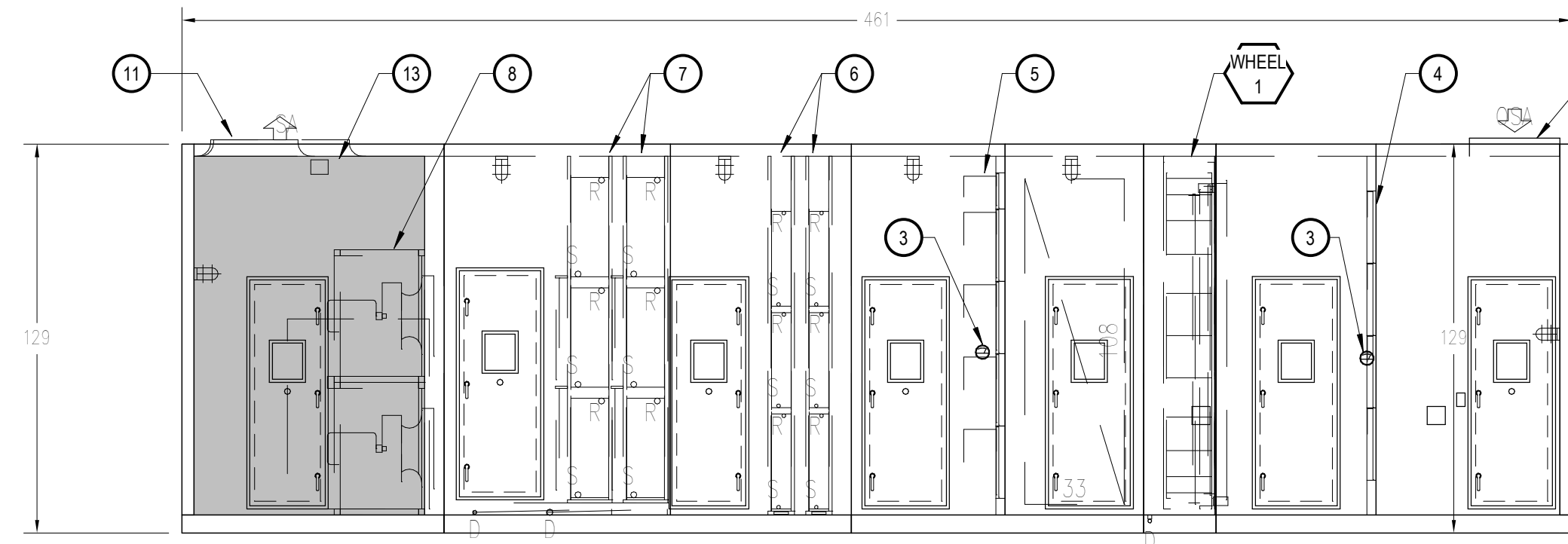
SAMPLE-HVAC DIAGRAM PLAN

M2.11

OF



HVAC-1 PLAN VIEW
1/4" = 1'-0"



HVAC - 1 ELEVATION VIEWS
1/4" = 1'-0"

NOTE:
THESE DETAILS ARE REQUIRED PER
SPECIFIC SENIOR PROJECT ENGINEERS.
SOME OWNERS ALSO LIKE THIS AMOUNT
OF DETAIL FOR THEIR UNITS. SIMPLY
UNDERSTAND WHAT IS REQUIRED.

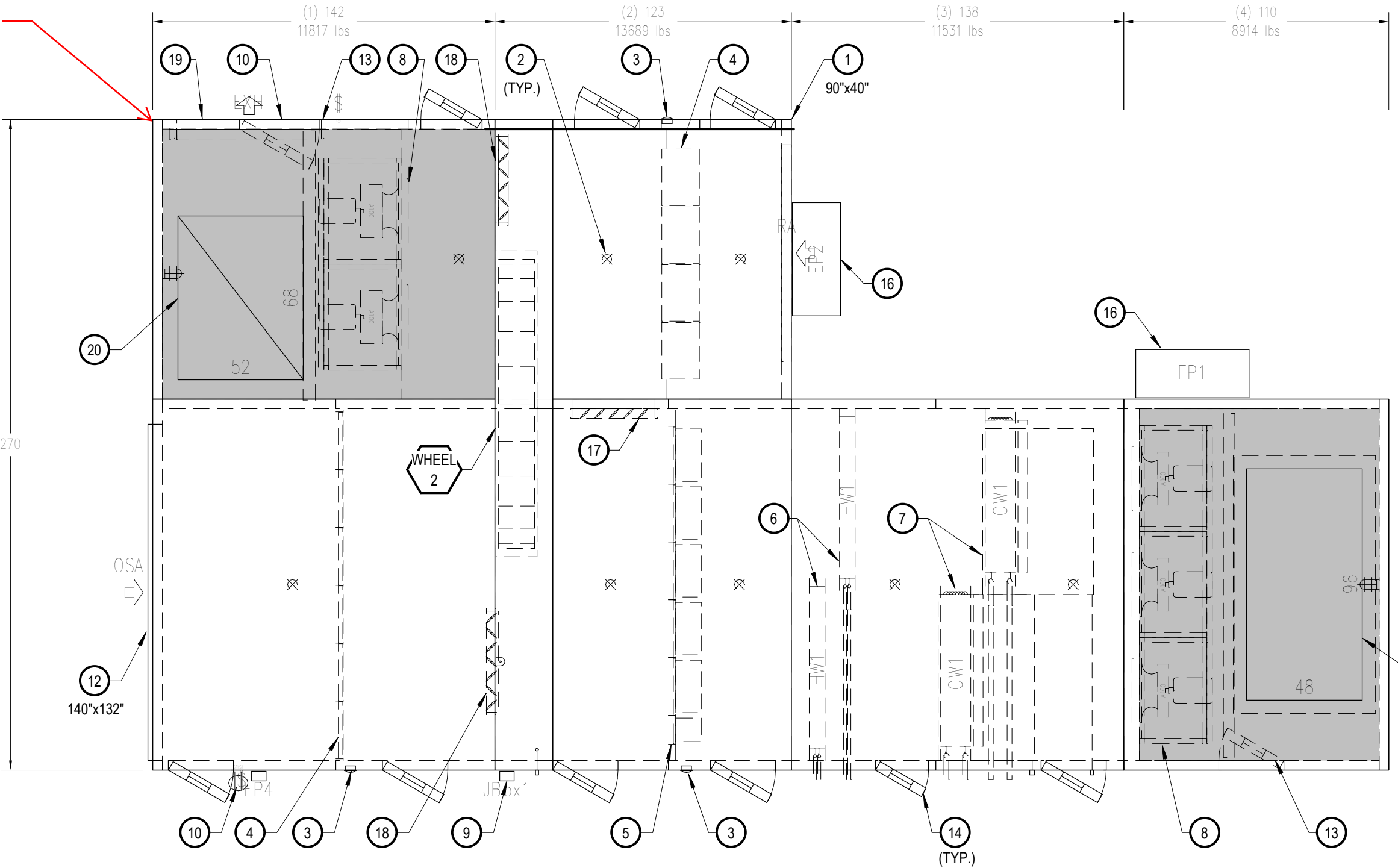
**EACH KEYNOTE
CALLS OUT SPECIFIC
ITEMS INCLUDED IN
THEIR ASSOCIATED
AIR HANDLING UNIT**

KEYNOTES HVAC - 1

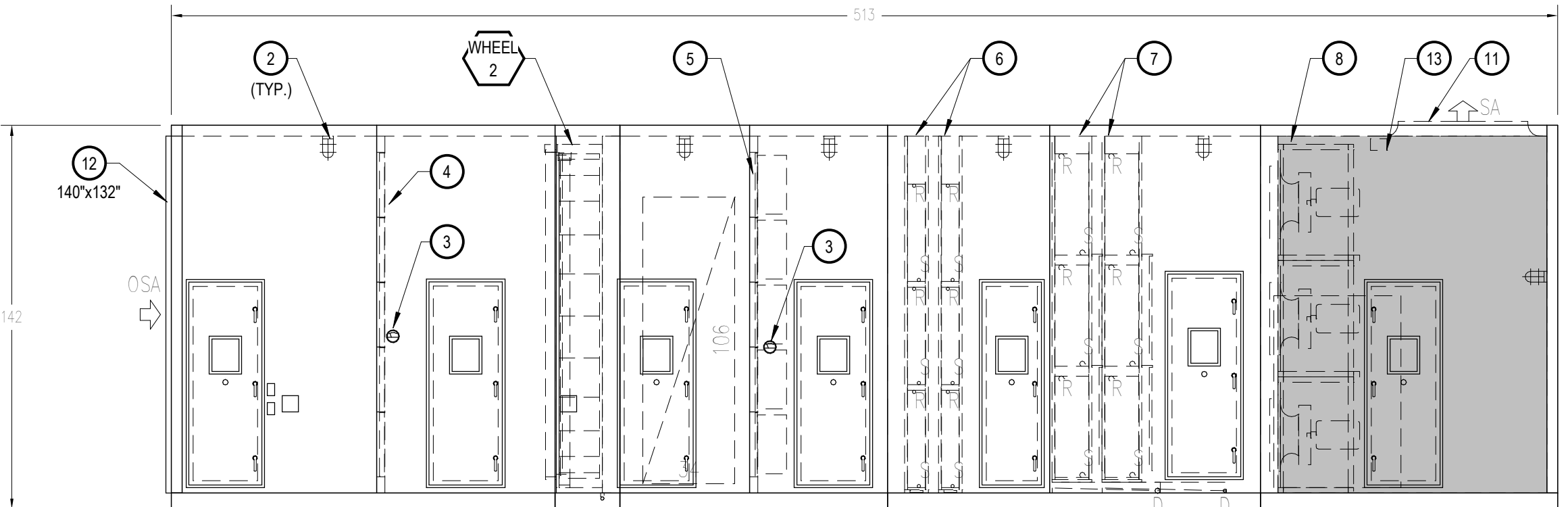
- 1 RETURN AIR INTAKE
- 2 LIGHT
- 3 FILER GAUGE
- 4 PRE - FILTERS
- 5 FINAL FILTERS
- 6 HW HEATING COIL
- 7 CHW COOLING COIL WITH DRAIN PAN ABOVE UNIT BASE
- 8 FAN ARRAY. PROVIDE WITH INDIVIDUAL VARIABLE SPEED DRIVES.
- 9 JUNCTION BOX
- 10 LIGHT SWITCH
- 11 SUPPLY AIR OUTLET WITH BELLMOUTH
- 12 OUTSIDE AIR INTAKE
- 13 TROLLY BEAM
- 14 ACCESS DOOR
- 15 GRAVITY BACKDRAFT DAMPER (ONE PER FAN INLET)
- 16 FAN ARRAY MOTOR CONTROL PANEL W/ FAN VSD'S & DISCONNECT SWITCH
- 17 RETURN AIR DAMPER
- 18 WHEEL BYPASS DAMPER
- 19 EXHAUST AIR OUTLET WITH DAMPER

NOTE:
SHADED AREAS INDICATE PORTIONS OF UNIT WITH
PERFORATED INNER LINER ON WALL AND ROOF PANELS

**EACH AIR HANDLING UNIT
DETAIL SHALL INCLUDE A
PLAN AS WELL AS TWO
ELEVATION VIEWS.**



HVAC - 2 PLAN VIEW
1/4" = 1'-0"



HVAC - 2 ELEVATION VIEWS
1/4" = 1'-0"

**EACH KEYNOTE
CALLS OUT SPECIFIC
ITEMS INCLUDED IN
THEIR ASSOCIATED
AIR HANDLING UNIT**

**THERE ARE SPECIFIC
KEYNOTES FOR EACH
AIR HANDLING UNIT**

KEYNOTES HVAC -2

- 1 RETURN AIR INTAKE
- 2 LIGHT
- 3 FILER GAUGE
- 4 PRE - FILTERS
- 5 FINAL FILTERS
- 6 HW HEATING COIL
- 7 CHW COOLING COIL WITH DRAIN PAN ABOVE UNIT BASE
- 8 FAN ARRAY. PROVIDE WITH INDIVIDUAL VARIABLE SPEED DRIVES.
- 9 JUNCTION BOX
- 10 LIGHT SWITCH
- 11 SUPPLY AIR OUTLET WITH BELLMOUTH
- 12 OUTSIDE AIR INTAKE
- 13 TROLLY BEAM
- 14 ACCESS DOOR
- 15 GRAVITY BACKDRAFT DAMPER (ONE PER FAN INLET)
- 16 FAN ARRAY MOTOR CONTROL PANEL W/ FAN VSD'S & DISCONNECT SWITCH
- 17 RETURN AIR DAMPER
- 18 WHEEL BYPASS DAMPER
- 19 EXHAUST AIR OUTLET WITH DAMPER
- 20 RELIEF AIR DAMPER OUTLET WITH DAMPER

NOTE:
SHADED AREAS INDICATE PORTIONS OF UNIT WITH
PERFORATED INNER LINER ON WALL AND ROOF PANELS

**USE STANDARD DRAWING
TITLE AND NUMBERING**

**STEM - Addition 2
and Renovations to
Shaw Lane Power Plant**

CAPITAL PROJ. NO.
CP17133

LEAD	K. Gottschalk	CIVIL	S. Gardner
ARCH.	J. Kasdorf	REP.	D. Kinney
INT.	C. Lockwood	MECH.	K. Gottschalk
ELEC.	S. Hopper	APPR.	J. Lefevre
SCALE	G. Halsey	DATE	
Project Administrator:	C. Azar	Project Designer:	M. Koehler / D. Raphael
Project Arch/Eng:	J. Schwartz	Drawn By:	B. Cornell
Q.M. Review:	QM	Approved:	D. DiCiuccio

Issued for	Issue Date
DTMB 400 Draft Submittal	07-06-2018
DR #3C Level 500 Submittal	09-04-2018
Design Release #3C Bids	09-14-2018
Design Assist	08-28-2019
Clarification #27	09-16-2019

© 2018 Integrated Design Solutions, LLC

IDS Project Number

17225-1000

HVAC-1 & HVAC-2 Unit Detail

SAMPLE-AIR HANDLING
DETAIL PLAN

M2.20

SELECT A LOCATION FOR GENERAL NOTES AND KEYNOTES AT UPPER RIGHT CORNER OF BORDER. BE CONSISTENT. USE THIS LOCATION TO PLACE NOTES ON REMAINING FLOOR PLAN DRAWINGS

NOTE: THIS APPROACH TO KEYNOTES IS THE CORRECT WAY OUR DEPARTMENT IS DOING KEYNOTES NOW. A NEW "SMART" KEYNOTE SCHEDULE.

GENERAL NOTES

1. VERIFY ALL CONDITIONS IN FIELD BEFORE START OF CONSTRUCTION. NOTIFY ARCHITECT/ENGINEER OF DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS.
2. COORDINATE ALL WORK WITH APPROPRIATE TRADES.
3. COORDINATE ANY REQUIRED SHUTDOWN OF SERVICES OR EQUIPMENT WITH OWNER'S REPRESENTATIVE.
4. PROVIDE ALL MISC. STEEL AND ITEMS REQUIRED FOR THE PROPER INSTALLATION OF ALL PIPE, SHEET METAL AND EQUIPMENT.
5. COORDINATE FLOOR, WALL & ROOF PENETRATIONS ETC. WITH ARCHITECTURAL TRADES.
6. ALL HOT WATER FIN TUBE RADIATION COVERS SHALL RUN WALL TO WALL (OR COLUMN).
7. DO NOT RUN ANY PIPING OR DUCTWORK INTO AN ELECTRICAL ROOM THAT DOES NOT SERVE THAT ROOM.
8. MINIMUM PIPE SIZE, INCLUDING BRANCH RUN-OUT PIPING TO EQUIPMENT, SHALL BE 1/2" UNLESS OTHERWISE NOTED. TRANSITION PIPE SIZE AT EQUIPMENT/COIL CONNECTIONS TO FINAL CONNECTION SIZES.

KEYNOTES

- NOT ALL NOTES MAY BE USED ON THIS SHEET
- LEGEND SYMBOL INDICATOR
- H1 ROUTE 3/4" CONDENSATE DOWN WALL AND TERMINATE AT CODE REQUIRED DISTANCE ABOVE FLOOR DRAIN
 - H2 ROUTE 1 1/2" CONDENSATE DOWN WALL AND TERMINATE AT CODE REQUIRED DISTANCE ABOVE FLOOR DRAIN
 - H3 1" CHWSR, 3/4" HWHSR, AND 1" CONDENSATE TO FCU
 - H4 3/4" HWHS AND 3/4" HWHR PIPING STACKED BEHIND COLUMN.
 - H5 FTR ZONE CONTROL VALVE LOCATION.
 - H6 2 1/2" SMSR TO SNOWMELT SYSTEM MAINFOLDS. REFER TO M3.00 FOR MAINFOLD LOCATIONS.
 - H7 SNOW MELT AREA #3 AND #4 MAINFOLD LOCATION.
 - H8 1 1/2" CONDENSATE DRAIN TO SPILL 1'-6" ABOVE FINISHED GRADE. TERMINATE WITH 90 DEGREE ELBOW TURNED DOWN WITH INSET SCREEN. SEAL ANNUAL SPACE AROUND PIPE AT WALL PENETRATION WEATHER TIGHT WITH SILICONE-BASED SEALANT.
 - H9 UNIT TO INCLUDE INTERNAL CONDENSATE PUMP. PUMP TO BE PROVIDED BY APPROVED SHOP DRAWING SUPPLIER AND INSTALLED BY MECHANICAL CONTRACTOR WITHIN UNIT ENCLOSURE.

LOCATE MATCHLINES AND INDICATE ASSOCIATED DRAWING NUMBERS

TYPICAL APPROACH TO TAGGING FIN TUBE. INCLUDE TYPE, ACTIVE LENGTH, MBH AS WELL AS GPM.

IF PIPING IS SPACED THE STANDARD 9" ON CENTER. PIPE TAGS SHOULD BE STACKED ON TOP OF EACH OTHER. STAGGER AS NEEDED.

NOTE THIS IS A CLIENTS BORDER. SIMILAR BUT NOT THE IDS BORDER.

THIS IS THE STANDARD ON HOW TO TAG FTR.

IF THE SIZE OF THE BRANCH RUN OUT PIPE IS COVERED IN THE SCHEDULE. DO NOT TAG ON DRAWINGS. REASON IS FOR LESS OF A CHANCE FOR ERROR.

TERMINATE HYDRONIC PIPING LIKE SHOWN HERE TO ALL EQUIPMENT. SPECIFIC PIPING LAYOUT TO EQUIPMENT IS COVERED IN DETAILS.

THE HVAC PIPING PLAN IS WHERE YOU CALL OUT THE THERMOSTAT FOR ASSOCIATED HEATING EQUIPMENT. INCLUDE A DASHED LINE FROM THE EQUIPMENT TO T-STAT. IF THE SPLINE IS TO LONG TO THE EQUIPMENT, SIMPLY INCLUDE A SMALL SPLINE WITH THE EQUIPMENT CALLED OUT.

THIS IS THE STANDARD ON HOW TO PIPE BRANCH HYDRONIC PIPING. OFF THE BOTTOM.

TYPICAL TAG FOR "NEW" EQUIPMENT THAT IS SCHEDULED FOR THE PROJECT.

THIS IS THE STANDARD ON HOW TO TAG EQUIPMENT WITH AN ADDITIONAL KEYNOTES

DEMO EXAMPLE (REFERENCE)

USE STANDARD DRAWING TITLE AND NUMBERING

STEM - Addition 2 and Renovations to Shaw Lane Power Plant

CAPITAL PROJ. NO.
CP17133

LEAD	K. Gottschalk	CIVIL	S. Gardner
ARCH.	J. Kasdorf	L.A.	D. Kinney
INT.	C. Lockwood	REP.	K. Gottschalk
MECH.	S. Hopper	APPR.	J. Lefevre
ELEC.	G. Halsey		
Project Administrator:	C. Azar	Project Designer:	M. Koehler / D. Raphael
Project Arch/Eng:	J. Schwartz	Drawn By:	
Author		Approved:	
Q.M. Review:	QM	D. DiCiccio	

Issued for	Issue Date
DTMB 400 Draft Submittal	07-06-2018
DR #3C Level 500 Submittal	09-04-2018
Design Release #3C Bids	09-14-2018
Design Release #3C Addendum 2	10-12-2018
Design Release #3C Addendum 6	10-31-2018
Design Assist	02-18-2019
Design Assist	03-18-2019
Design Assist	07-15-2019
Design Assist	08-28-2019
Design Assist	09-09-2019
Clarification #27	09-16-2019

© 2018 Integrated Design Solutions, LLC

IDS Project Number

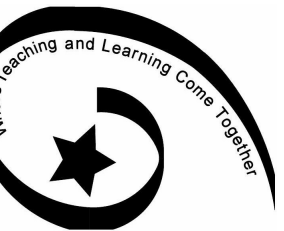
17225-1000

South STEM First Floor Piping New Work Plan

SAMPLE-HVAC PIPING PLAN

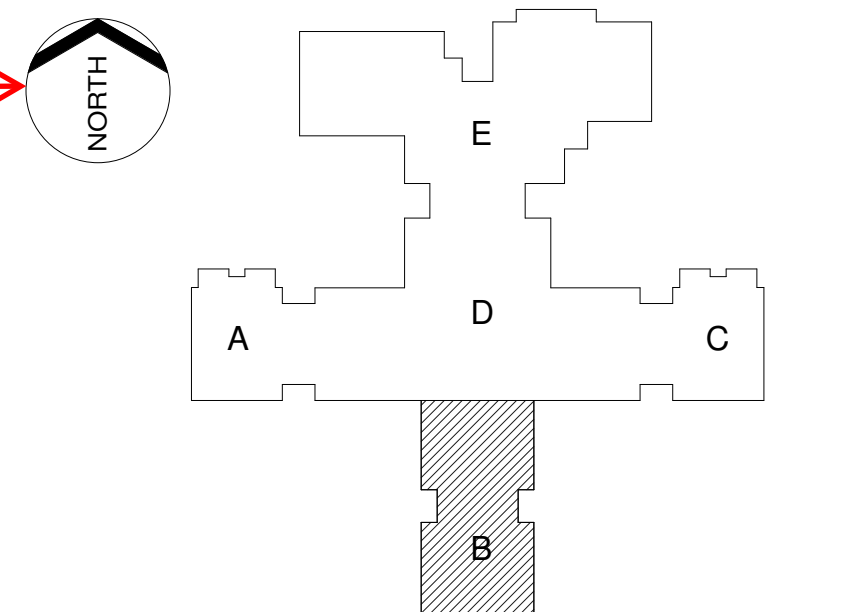
M3.1C

OF



South Lyon Community Schools

William A. Pearson
Elementary School
57900 Eleven Mile Rd
South Lyon, MI 48178



C. Lewis/ A. Green

P. Willis

J. Schwartz

P. Willis

M. Perez

D. DiCiuccio

1/8"=1'-0"

Issue Date

Design Development 11-20-2015

CD 95% Owner Review 01-15-2016

Bids 02-12-2016

USE STANDARD DRAWING
TITLE AND NUMBERING

Underground
Plumbing Floor
Plan - Area B

SAMPLE-UNDERGROUND
PLUMBING PLAN - W/ AREAS

NOTE:
EACH UNDERGROUND PLAN SHOWS THE
ASSOCIATED FLOOR ABOVE DASHED. IT
HELPS TO CLARIFY THE PIPING AND
EQUIPMENT ABOVE MORE CLEARLY.

LOCATE MATCHLINES AND
INDICATE ASSOCIATED
DRAWING NUMBERS

IDENTIFY BOTTOM OF PIPE
INVERT ELEVATIONS FOR
COORDINATION WITH THE
CIVIL ENGINEER TO KNOW
WHERE TO PLACE PIPING.

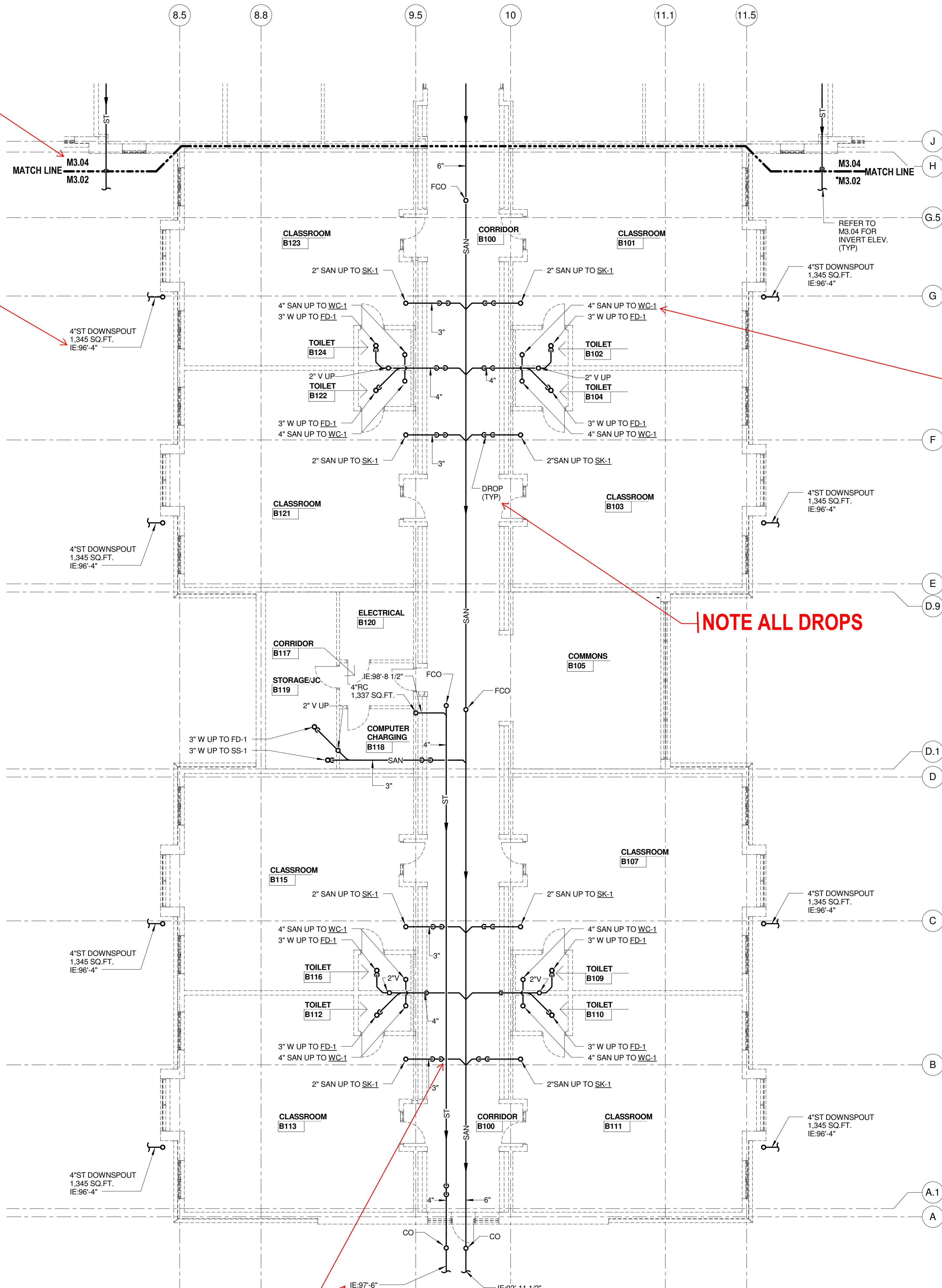
CALL OUT PIPING "UP" TO THE
ASSOCIATED FIXTURE OR EQUIPMENT
ABOVE FOR CLARIFICATION. NOTE
ALL UNDERLINED EQUIPMENT IS NEW
AND CALLED OUT IN THE PROJECT
SPECIFICATIONS.

NOTE ALL DROPS

TURN ON THE KEY PLAN, NORTH
ARROW AND ONLY THE AREA THAT
APPLIES TO THIS DRAWING UNDER
VISIBILITY IN THE PROPERTIES MENU

TAG INVERTS (IE) AT EVERY
SPOT LEAVING THE
BUILDING AS WELL AS AT
EVERY LOCATION PIPING
CROSS OVER EACH OTHER.

ALL PIPING THAT IS 5 FEET AWAY
FROM THE BUILDING IS THE CIVIL
TRADES SCOPE. CALL OUT SIZE,
ELEVATION AND EITHER DFU OR
GPM/SQFT FOR SPECIFIC SYSTEM
TYPE.



SELECT A LOCATION FOR GENERAL NOTES AND KEYNOTES AT UPPER RIGHT CORNER OF BORDER. BE CONSISTENT. USE THIS LOCATION TO PLACE NOTES ON REMAINING FLOOR PLAN DRAWINGS

NOTE: THIS APPROACH TO KEYNOTES IS THE CORRECT WAY OUR DEPARTMENT IS DOING KEYNOTES NOW. A NEW "SMART" KEYNOTE SCHEDULE.

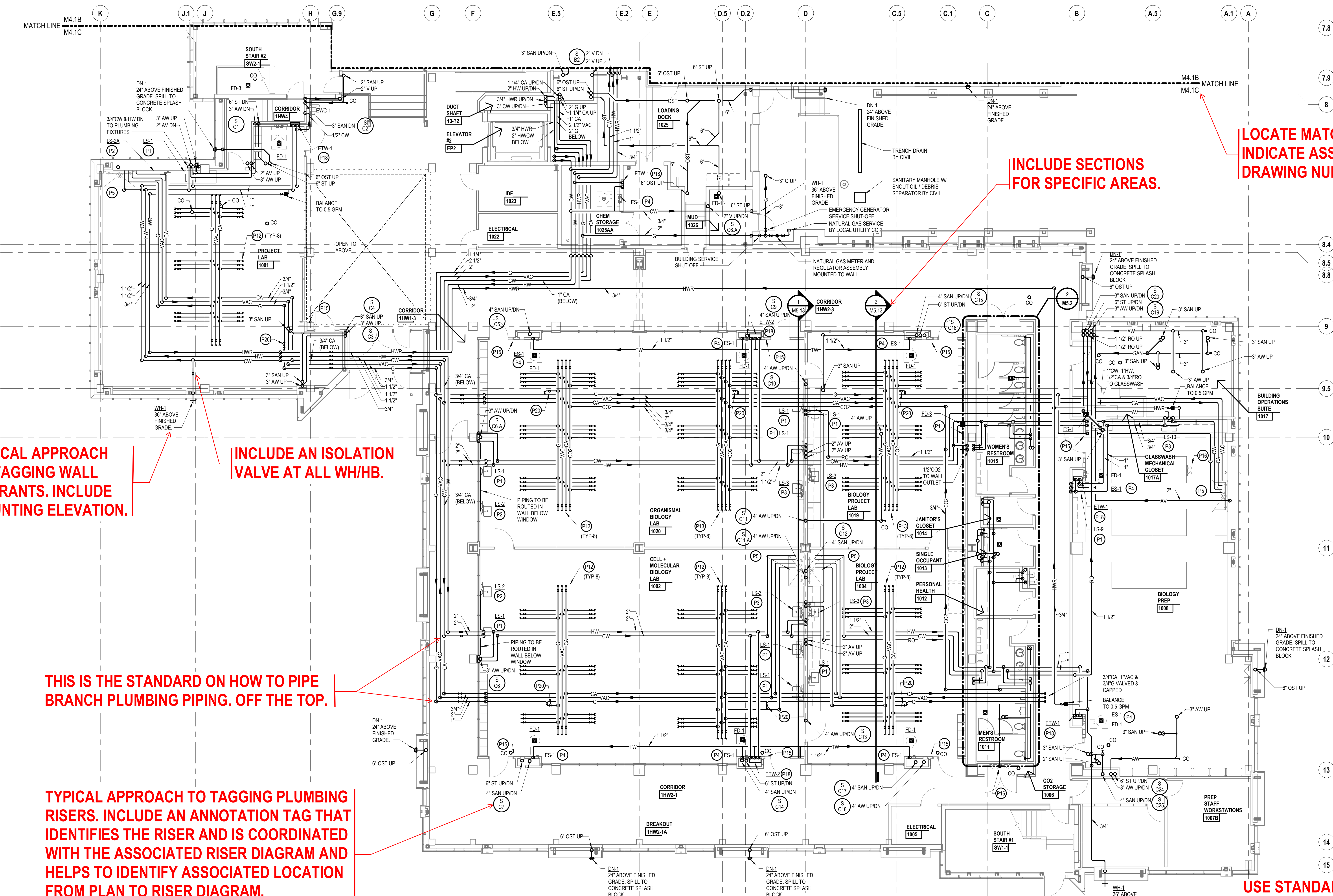
GENERAL NOTES

1. REFER TO LAB EQUIPMENT PLANS (Q-SERIES) FOR ADDITIONAL EQUIPMENT INFORMATION. PLUMBING ROUGH-IN AND CONNECTION REQUIREMENTS.
2. LAB EQUIPMENT PROVIDED BY LAB EQUIPMENT CONTRACTOR. PLUMBING TO EQUIPMENT BY PLUMBING TRADES.
3. VERIFY ALL CONDITIONS IN FIELD BEFORE START OF CONSTRUCTION. NOTIFY ARCHITECT/ENGINEER OF DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS.
4. COORDINATE ALL WORK WITH APPROPRIATE TRADES.
5. COORDINATE ANY REQUIRED SHUTDOWN OF SERVICES OR EQUIPMENT WITH OWNER'S REPRESENTATIVE.
6. PROVIDE ALL MISC. STEEL AND ITEMS REQUIRED FOR THE PROPER INSTALLATION OF ALL PIPE, SHEET METAL AND EQUIPMENT.
7. COORDINATE FLOOR, WALL & ROOF PENETRATIONS ETC. WITH ARCHITECTURAL TRADES.
8. DO NOT RUN ANY PIPING OR DUCTWORK INTO AN ELECTRICAL ROOM THAT DOES NOT SERVE THAT ROOM.
9. ALL RO PIPING SHOWN ON PLUMBING FLOOR PLANS ARE BASE BID. REFER TO SHEET M4.23 FOR DEDUCT ALTERNATE RO SYSTEM.

KEYNOTES

NOT ALL NOTES MAY BE USED ON THIS SHEET
LEGEND SYMBOL INDICATOR

- P1 1/2" HW AND 1/2" CW TO SINK. 1 1/2" SAN DN AND 1 1/2" V FROM SINK.
- P2 1/2" HW AND 1/2" CW TO SINK. 1/2" CW & HW TO EMERGENCY EYEWASH. 1 1/2" SAN DN AND 1 1/2" V FROM SINK.
- P3 1/2" HW, 1/2" CW AND 1/2" RO TO SINK. 1/2" CW & HW TO EMERGENCY EYEWASH. 1 1/2" SAN DN AND 1 1/2" V FROM SINK.
- P4 1 1/4" TW TO EMERGENCY SAFETY STATION.
- P5 FUME HOOD - 1/2" CA, 3/4" VAC, 1/2" G AND 1/2" CW TO FUME HOOD. 2" AW & 2" V FROM FUME HOOD SINK.
- P8 POLISHER - 1/2" RO TO POLISHER.
- P9 GRINDER - 1/2" CW TO GRINDER.
- P10 BELT SANDER - 1/2" RO TO BELT SANDER.
- P11 ICE MACHINE - 1/2" CW DOWN INSIDE WALL. COMPLETE WITH BALL VALVE SHUT-OFF, BACKFLOW PREVENTER (AS MFRD BY ZURN-WILKINS MODEL 740), FILTER (AS MFRD BY C-PURE #790 FILTER TO KIT WITH EXTRA FILTER CARTRIDGE), AND 3/4" DRAIN WITH AIR GAP TO FLOOR DRAIN WITH FUNNEL.
- P12 1/2" CA, 3/4" VAC AND 1/2" G VALVED AND TERMINATE WITH MALE THREADED FITTING. COORDINATE SIZE OF THREADED OUTLET WITH LAB UTILITY COLUMN. PIPING TO BE TERMINATED WITH QUICK DISCONNECT FITTING PROVIDED BY OVERHEAD UTILITY GRID SUPPLIER.
- P13 1/2" CA, 3/4" VAC, 1/2" G AND 1/2" CO2 VALVED AND TERMINATED WITH MALE THREADED FITTING. COORDINATE SIZE OF THREADED OUTLET WITH LAB UTILITY COLUMN. PIPING TO BE TERMINATED WITH QUICK DISCONNECT FITTING PROVIDED BY OVERHEAD UTILITY GRID SUPPLIER.
- P14 1/2" CA & 1/2" N2 VALVED AND TERMINATED WITH MALE THREADED FITTING. COORDINATE SIZE OF THREADED OUTLET WITH LAB UTILITY COLUMN. PIPING TO BE TERMINATED WITH QUICK DISCONNECT FITTING PROVIDED BY OVERHEAD UTILITY GRID SUPPLIER.
- P15 EMERGENCY NATURAL GAS PUSH-BUTTON TO ELECTRICALLY OPERATED SHUT-OFF VALVE.
- P16 3/4" CO2 DOWN TO GAS MANIFOLD PROVIDED BY LAB GAS SUPPLIER. CONNECTION TO AND MOUNTING OF MANIFOLD BY MECHANICAL.
- P17 3/4" N2 DOWN TO GAS MANIFOLD PROVIDED BY LAB GAS SUPPLIER. CONNECTION TO AND MOUNTING OF MANIFOLD BY MECHANICAL.
- P18 EMERGENCY THERMOSTATIC MIXING VALVE MOUNTED IN RECESSED, LOCKABLE CABINET, FURNISHED BY ARCH. TRADES.
- P19 1/2" HW, 1/2" CW AND 1/2" RO TO SINK. 1 1/2" SAN DN AND 1 1/2" V FROM SINK AND 1 1/2" V FROM SINK.
- P20 ELECTRONICALLY OPERATED NATURAL GAS SHUT-OFF VALVE.



LOCATE MATCHLINES AND INDICATE ASSOCIATED DRAWING NUMBERS

INCLUDE SECTIONS FOR SPECIFIC AREAS.

TYPICAL APPROACH TO TAGGING WALL HYDRANTS. INCLUDE MOUNTING ELEVATION.

INCLUDE AN ISOLATION VALVE AT ALL WH/HB.

THIS IS THE STANDARD ON HOW TO PIPE BRANCH PLUMBING PIPING. OFF THE TOP.

TYPICAL APPROACH TO TAGGING PLUMBING RISERS. INCLUDE AN ANNOTATION TAG THAT IDENTIFIES THE RISER AND IS COORDINATED WITH THE ASSOCIATED RISER DIAGRAM AND HELPS TO IDENTIFY ASSOCIATED LOCATION FROM PLAN TO RISER DIAGRAM.

USE STANDARD DRAWING TITLE AND NUMBERING

STEM - Addition 2 and Renovations to Shaw Lane Power Plant

CAPITAL PROJ. NO.
CP17133

LEAD	K. Gottschalk	CIVIL	S. Gardner
ARCH	J. Kasdorf	L.A.	D. Kinney
INT.	C. Lockwood	REP.	K. Gottschalk
MECH.	S. Hopper	APPR.	J. Lefevre
ELEC.	G. Halsey		
SCALE		DATE	
Project Administrator:	C. Azar	Project Designer:	M. Koehler / D. Raphael
Project Arch/Eng:	J. Schwartz	Drawn By:	D. Raphael
Q.M. Review:	Q.M.	Approved:	D. DiCiuccio

Issued for	Issue Date
DTMB 400 Draft Submittal	07-06-2018
DR #3C Level 500 Submittal	09-04-2018
Design Release #3C Bids	09-14-2018
Design Release #3C Addendum 3	10-18-2018
Design Assist	02-18-2019
Design Assist	04-22-2019
Design Assist	06-03-2019
Design Assist	06-10-2019
Design Assist	07-15-2019
Design Assist	08-05-2019
Design Assist	08-19-2019
Design Assist	08-28-2019
Clarification #27	09-16-2019

© 2018 Integrated Design Solutions, LLC

iDS Project Number

17225-1000

South STEM First Floor Plumbing
New Work Plan

SAMPLE - PLUMBING PLAN

M4.1C

OF

NOTE:
RISER DIAGRAMS ARE NOT REQUIRED FOR ALL
PROJECTS. THEY ARE REQUIRED FOR CERTAIN
CLIENTS THOUGH. THEY ASSIST IN CLARIFYING ALL
THE PIPING NEEDED FOR EACH FIXTURE OR PIECE
OF EQUIPMENT AS ALL THE PIPING ON THE FLOOR
PLANS ARE NOT ALWAYS SHOWN.

**CALL OUT EVERY
FLOOR ASSOCIATED
TO THE PROJECT.**

**TAG EACH RISER WITH A
RISER TAG. FOLLOW
THAT THROUGH TO EACH
FLOOR PLAN FOR
SIMPLE COORDINATION.**

**SHOW ALL
ASSOCIATED
EQUIPMENT FOR
COORDINATION.**

**USE STANDARD DRAWING
TITLE AND NUMBERING**

Soat:	Project Administrator A. Everett
	Project Designer P. Willis
	Project Architect/Engineer D. DiCuccio/J. Schwartz
	Drawn By P. Willis
	Checked By O.M. Review
	Approved T. Verculisse
	Approved D. DiCuccio
	Drawing Scale No Scale
Issued for	Issue Date
Schematic Design	11-23-16
Design Development	05-26-17
95% Owner Review	12-08-17
99% Owner Review	02-09-18
Bids	02-27-18
Construction Set	07-31-18

PROJECT ARCHITECT AND MEP

INTEGRATED DESIGN SOLUTIONS
1441 WEST LONG LAKE RD., SUITE 200
TROY, MI 48068

248-823-2100
www.ids-troy.com

DESIGN ARCHITECT

WORKSHOP ARCHITECTS
201 E. PITTSBURGH AVE., SUITE 301
MILWAUKEE, WI 53204

414-272-8822
www.workshoparchitects.com

DESIGN ARCHITECT

HARTMAN-COX ARCHITECTS
1074 THOMAS JEFFERSON ST. NW
WASHINGTON, DC 20007

202-333-6446
www.hartmancox.com

STRUCTURAL ENGINEER

STRUCTURAL DESIGN INCORPORATED
275 EAST LIBERTY ST
ANN ARBOR, MI 48101

734-213-6091
www.strutedesign.com

LANDSCAPE ARCHITECT

BECKETT & RAEDER INCORPORATED
535 WEST WILLIAM ST., SUITE 101
ANN ARBOR, MI 48103

734-663-2822
www.bria2.com

FOOD SERVICES

E.F. WHITNEY, INC
1000 S. OLD WOODWARD AVENUE
SUITE 200
BIRMINGHAM, MI 48009

248-644-0800
www.efwhitney.com

Project Title



Michigan Union
Renovations

530 S. State St
Ann Arbor, MI 48109

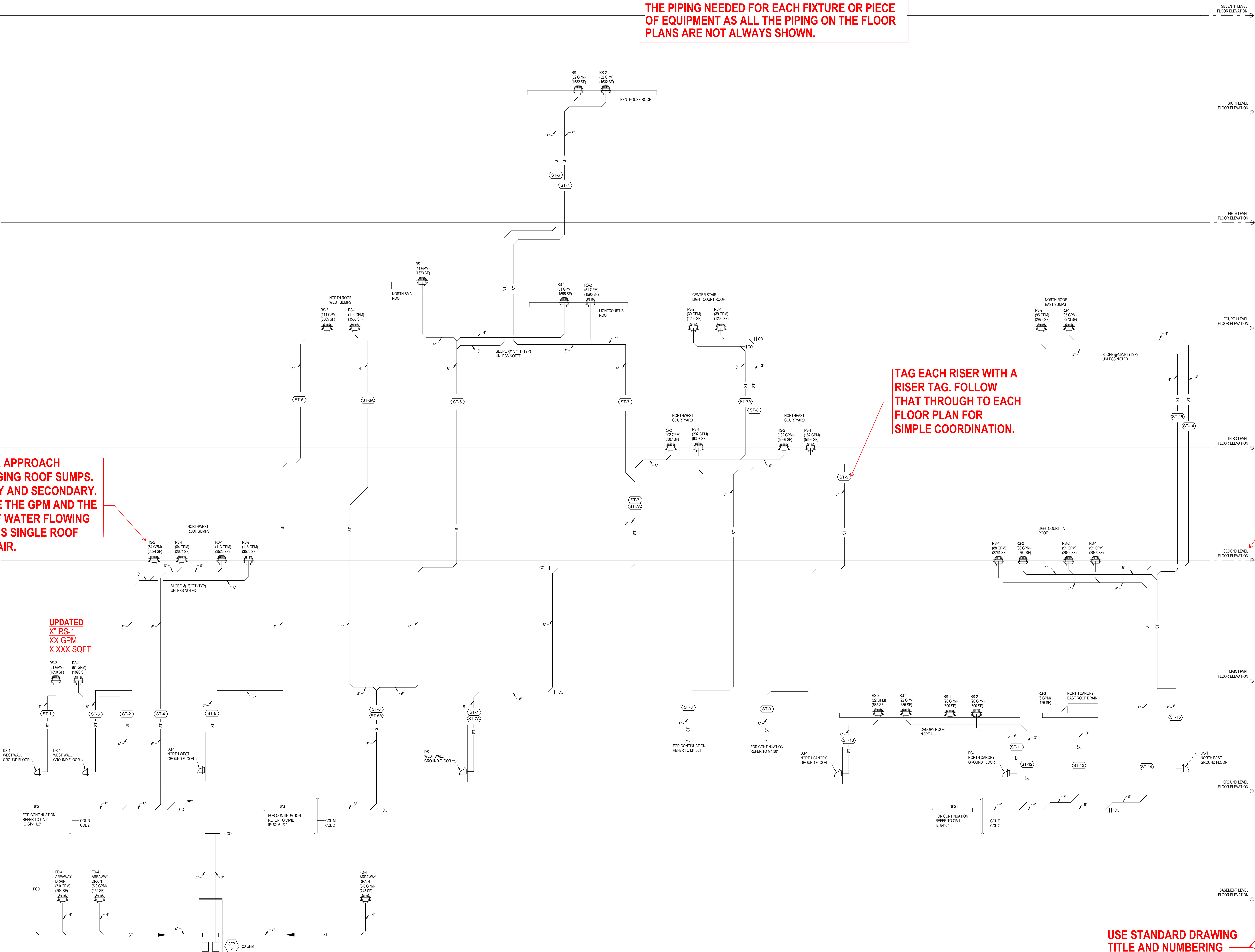
Key Plan

CALL OUT EVERY
FLOOR ASSOCIATED
TO THE PROJECT.

TAG EACH RISER WITH A
RISER TAG. FOLLOW
THAT THROUGH TO EACH
FLOOR PLAN FOR
SIMPLE COORDINATION.

TYPICAL APPROACH
TO TAGGING ROOF SUMPS.
PRIMARY AND SECONDARY.
INCLUDE THE GPM AND THE
SQFT OF WATER FLOWING
INTO THIS SINGLE ROOF
SUMP PAIR.

UPDATED
X" RS-1
XX GPM
X,XXX SQFT



Seal:	Project Administrator A. Everett
	Project Designer D. Greene
	Project Architect / Engineer D. DiCiuccio / J. Schwartz
	Drawn By D. Greene
	Q.M. Review T. Verculysse
	Approved D. DiCiuccio
	Drawing Scale No Scale

Issued for	Issue Date
95% Owner Review	12-08-17
99% Owner Review	02-09-18
Bids	02-27-18
Construction Set	07-31-18

© 2018 INTEGRATED design SOLUTIONS, LLC
IDS Drawing Title

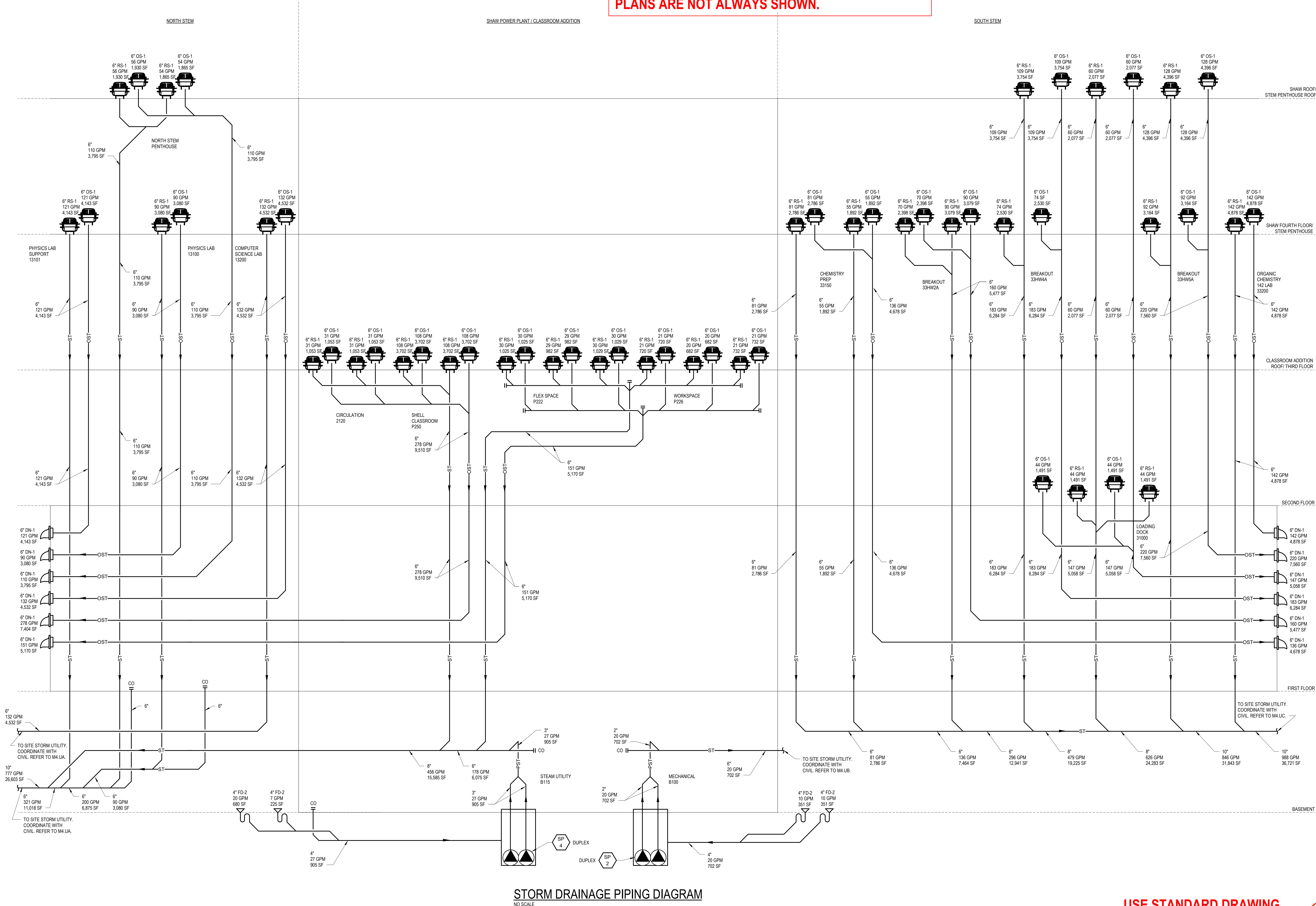
Storm Drainage Flow
Diagram - Area A

SAMPLE - RISER DIAGRAM PLAN

USE STANDARD DRAWING
TITLE AND NUMBERING

Reference Finish Floor Elevation: XXX'-X"	
101 Project Number	Drawing Number
15203-1000	M4.300
U-M Project Number P00007758	

NOTE:
RISER DIAGRAMS ARE NOT REQUIRED FOR ALL
PROJECTS. THEY ARE REQUIRED FOR CERTAIN
CLIENTS THOUGH. THEY ASSIST IN CLARIFYING ALL
THE PIPING NEEDED FOR EACH FIXTURE OR PIECE
OF EQUIPMENT AS ALL THE PIPING ON THE FLOOR
PLANS ARE NOT ALWAYS SHOWN.



USE STANDARD DRAWING
TITLE AND NUMBERING

STEM - Addition 2 and Renovations to Shaw Lane Power Plant

CAPITAL PROJ. NO.
CP17133

LEAD	K. Gottschalk	CIVIL	S. Gardner
ARCH.	J. Kasdorf	L.A.	D. Kinney
INT.	C. Lockwood	REP.	K. Gottschalk
MECH.	S. Hopper	APPR.	J. Lefevre
ELEC.	G. Halsey		
SCALE	None	DATE	
Project Administrator:	C. Azar	Project Designer:	M. Koehler / D. Raphael
Project Arch/Eng:	J. Schwartz	Drawn By:	D. Raphael
Q.M. Review:	QM	Approved:	D. DiCiuccio

Issued for	Issue Date
DTMB 400 Draft Submittal	07-06-2018
DR #3C Level 500 Submittal	09-04-2018
Design Release #3C Bids	09-14-2018
Clarification #27	09-16-2019

© 2018 Integrated Design Solutions, LLC

iDS Project Number

17225-1000

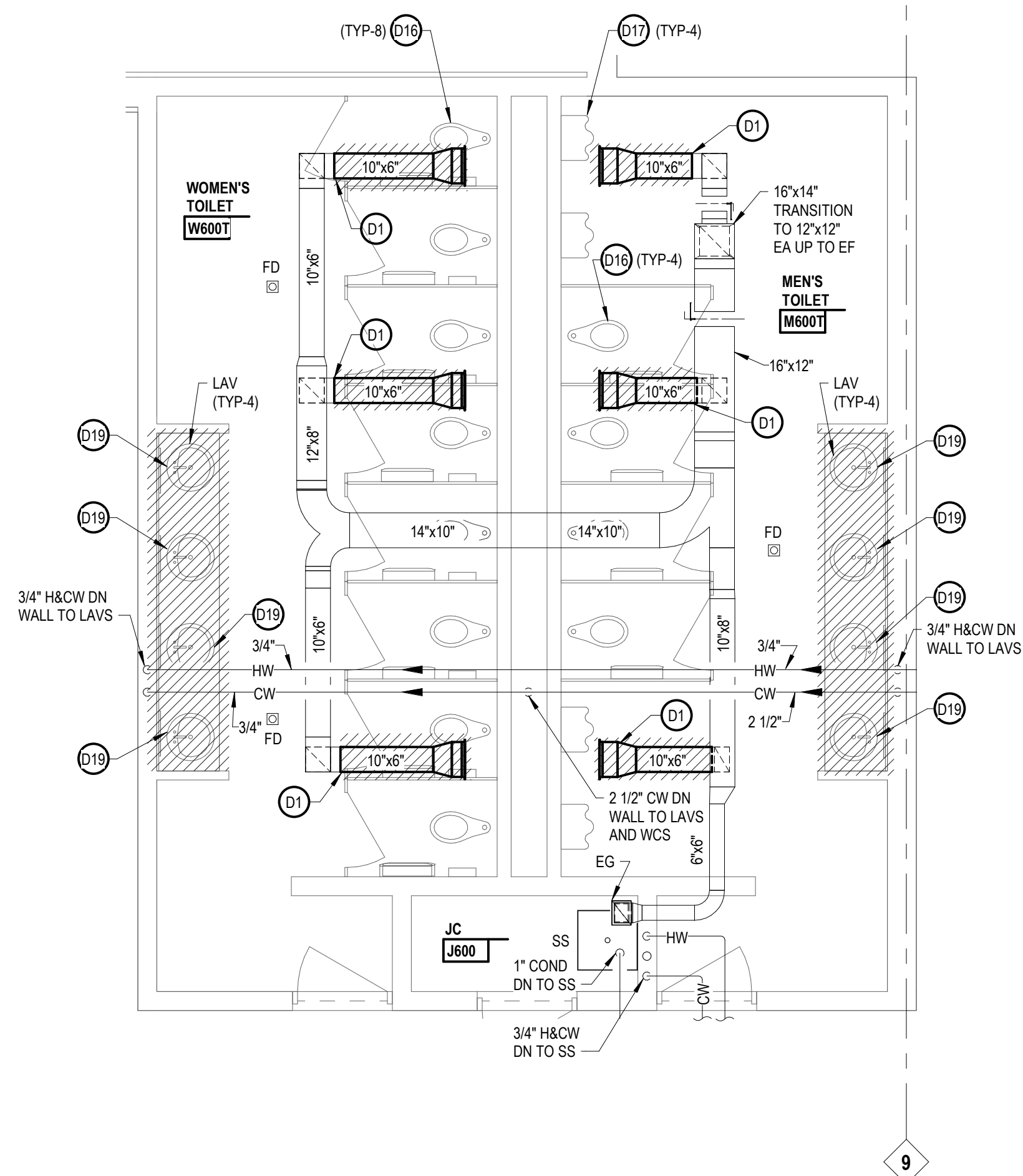
Storm Drainage Piping Diagram

SAMPLE - RISER DIAGRAM PLAN

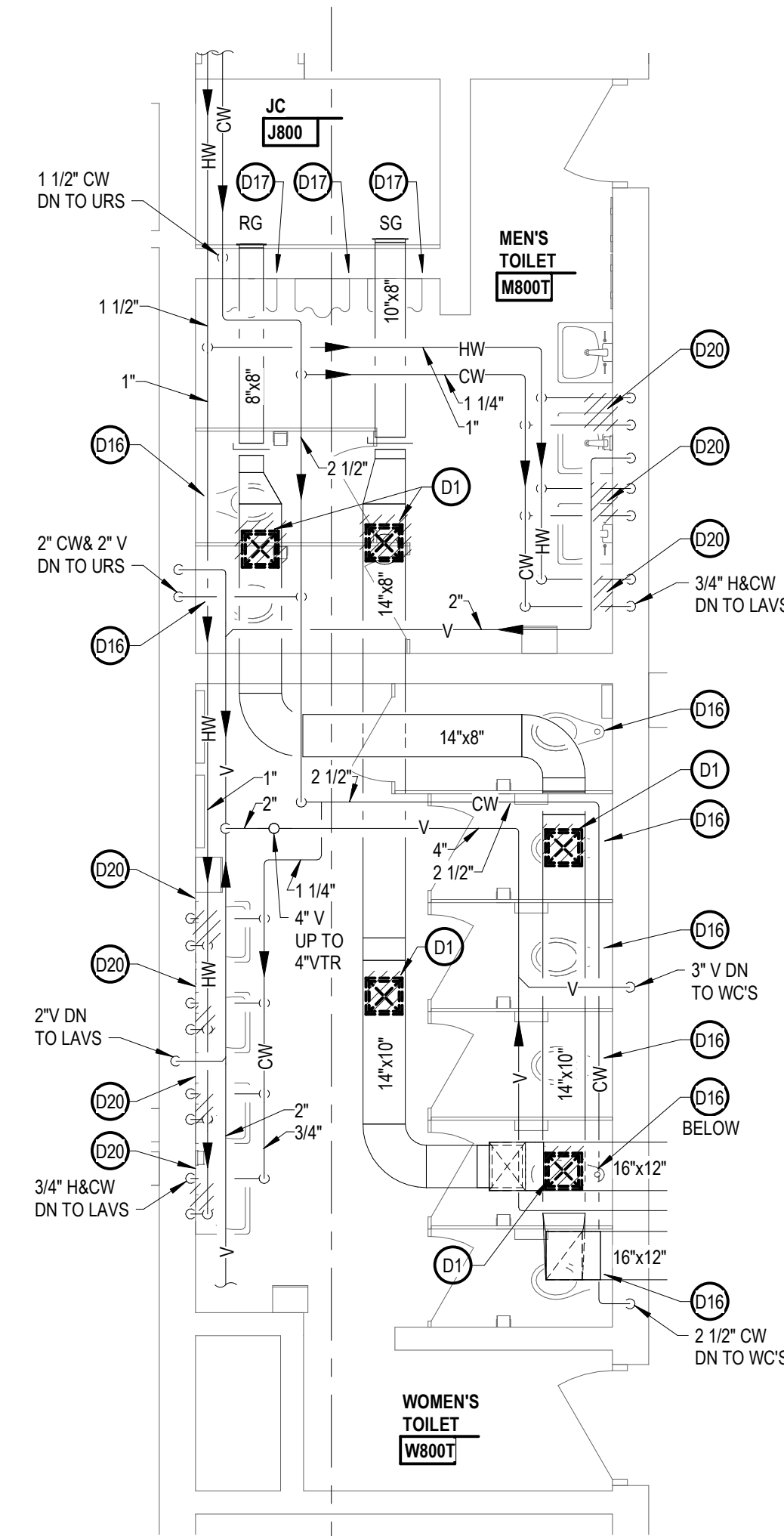
M4.22

OF

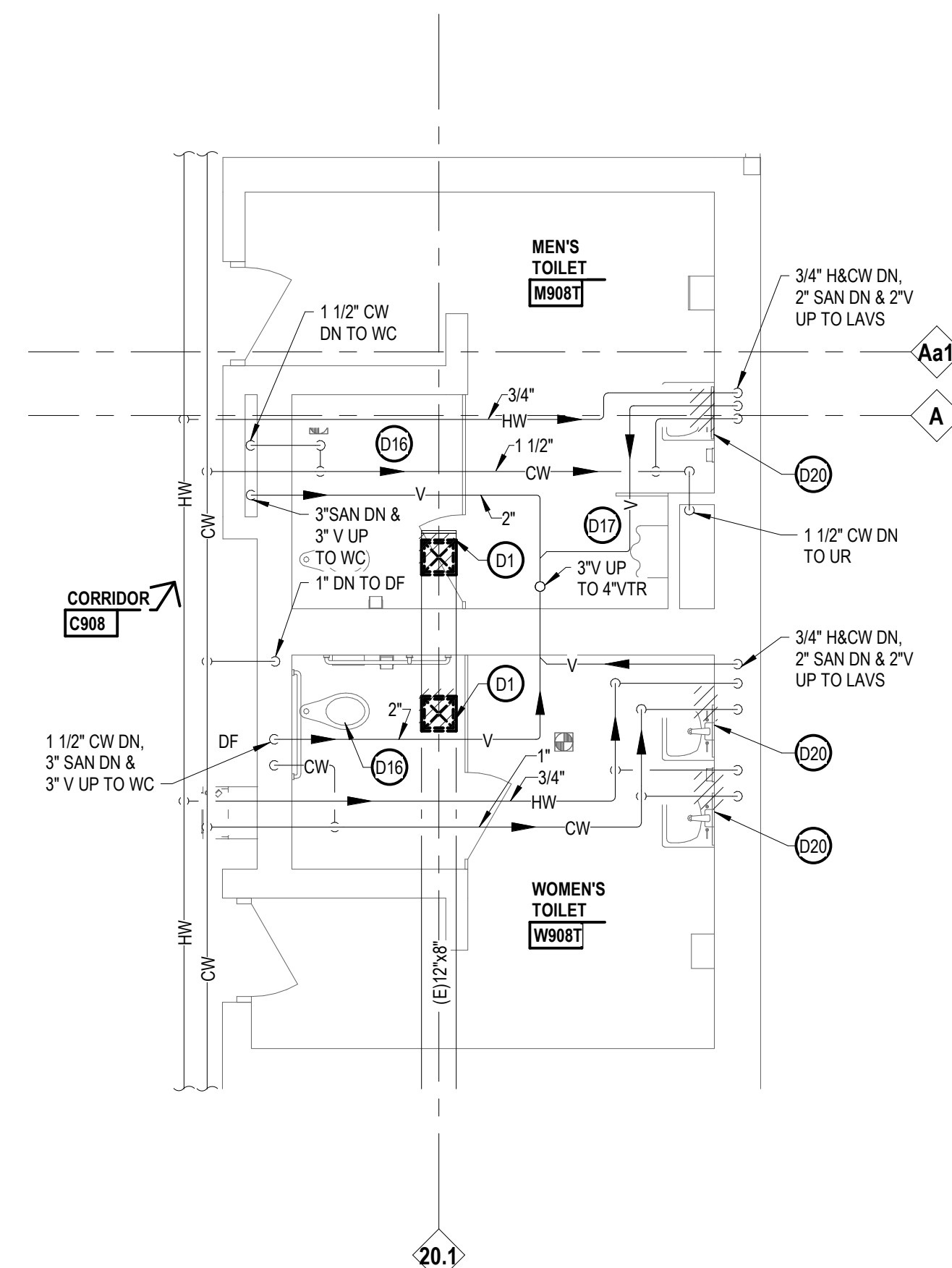
NOTE:
ENLARGED PLANS ARE DESIGNED TO HELP CLARIFY CONGESTED SMALLER SCALE DRAWINGS AT A LARGER SCALE.



6 AREA H - TOILET ROOM DEMOLITION PLAN
M0.1
M1.1H
1/4" = 1'-0"

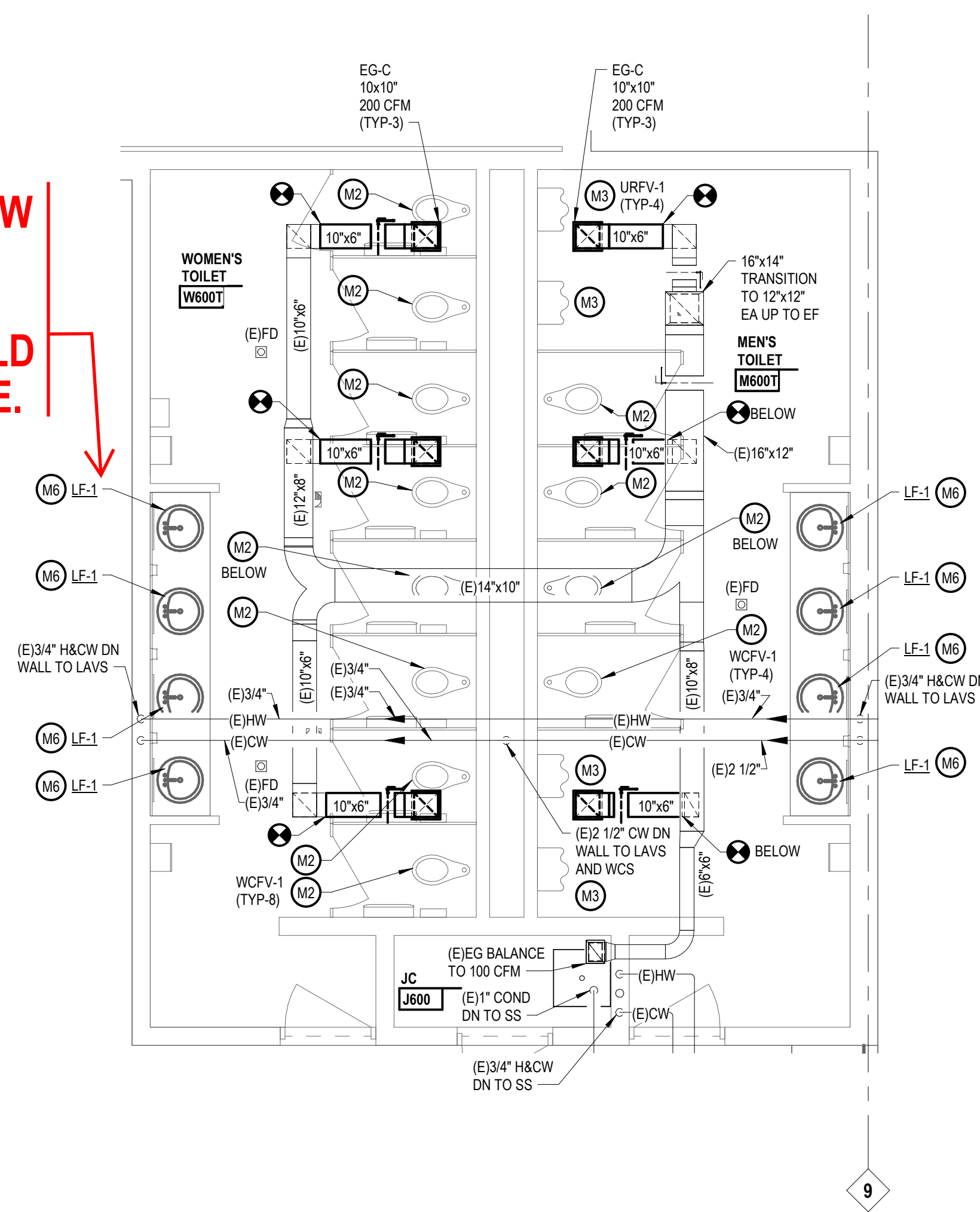


4 AREA F - TOILET ROOM DEMOLITION PLAN
M0.1
1/4" = 1'-0"

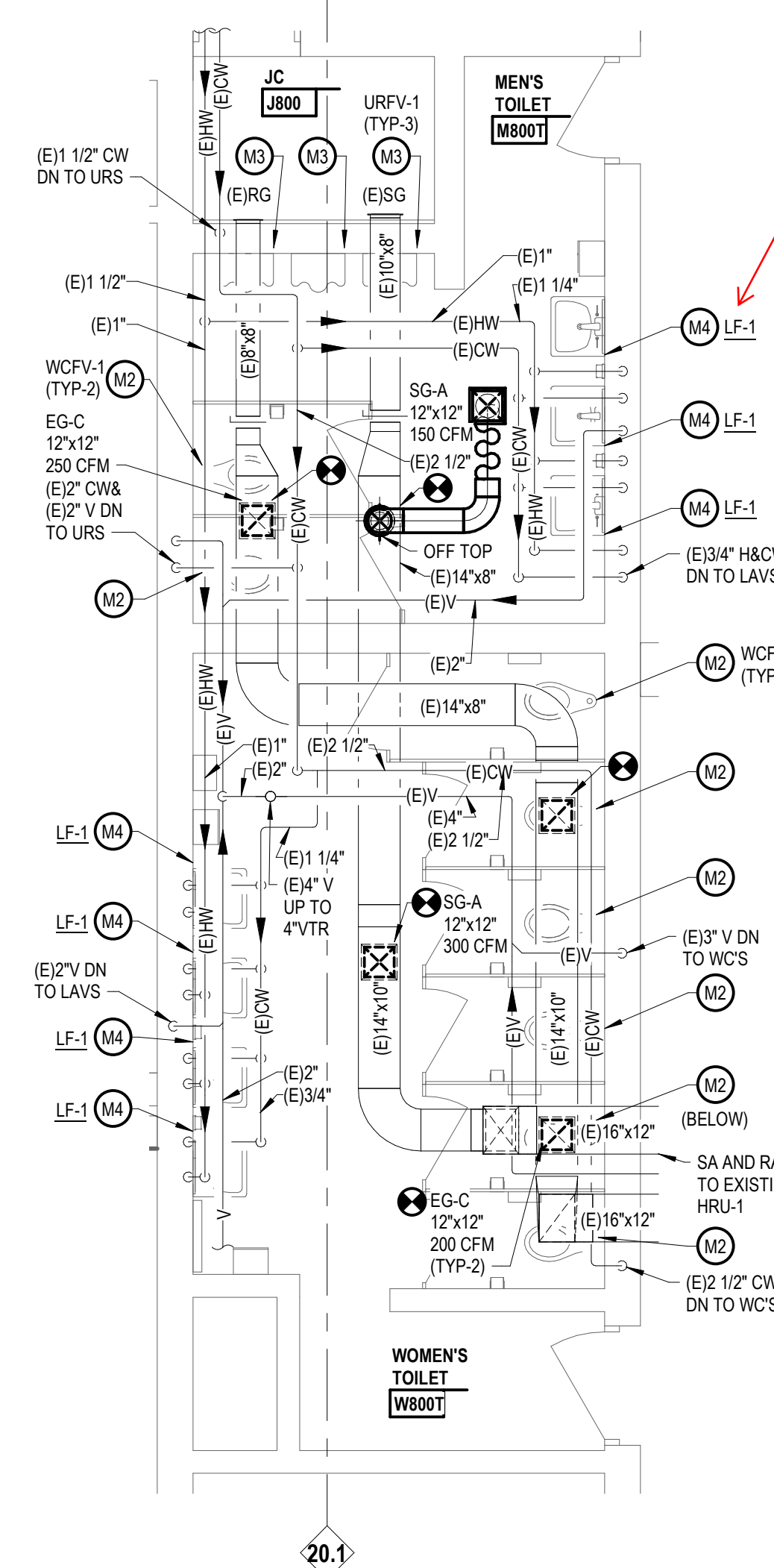


2 AREA D - TOILET ROOM DEMOLITION PLAN
M0.1
M1.1D
1/4" = 1'-0"

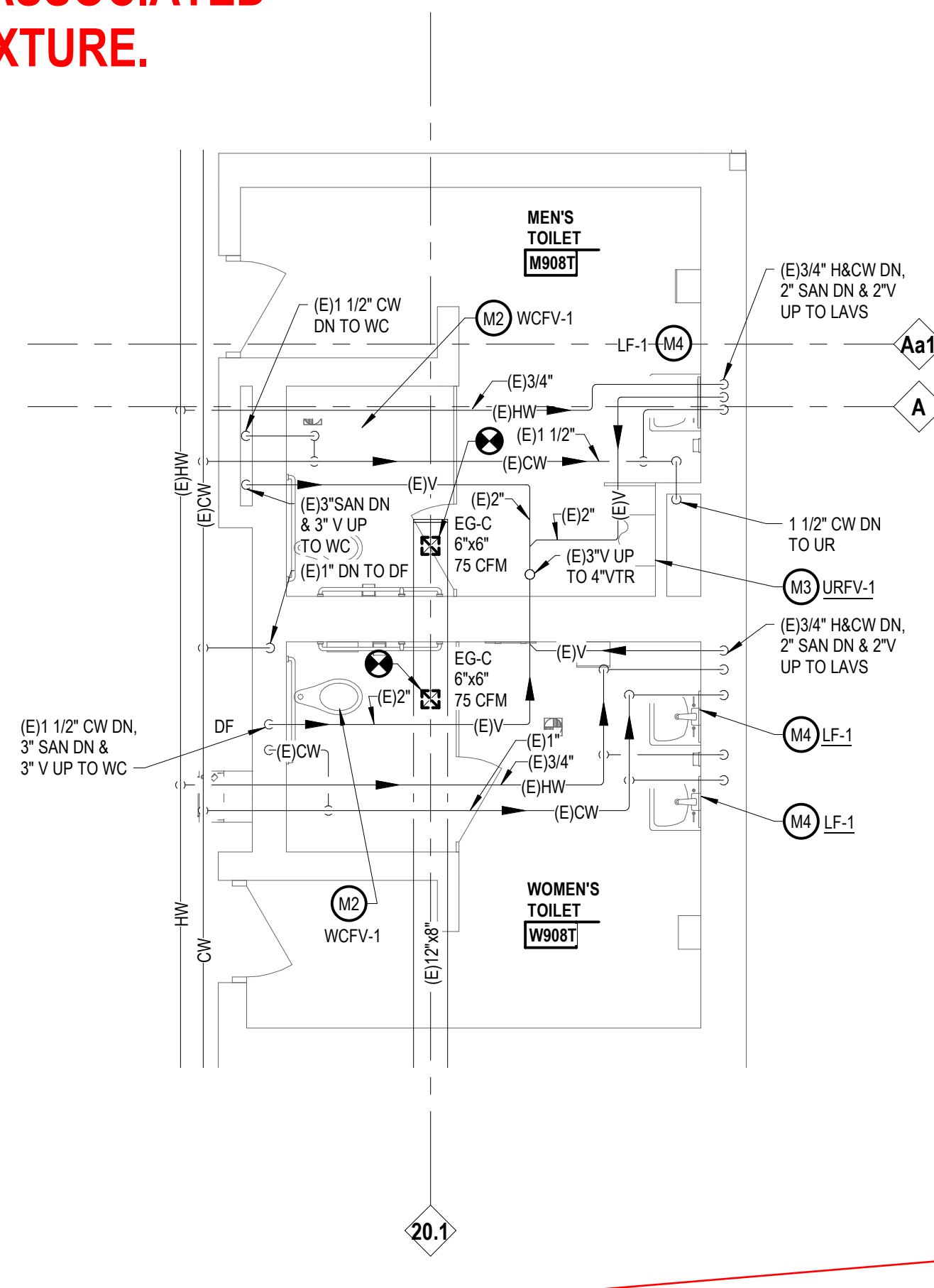
**TAG EACH FIXTURE OR
PIECE OF EQUIPMENT.
INCLUDE ALL SPECIFIED
EQUIPMET ASSOCIATED
TO EACH FIXTURE.**



5 AREA H - TOILET ROOM NEW WORK PLAN
M0.1
M2.1H
M3.1H
1/4" = 1'-0"



4 AREA F - TOILET ROOM NEW WORK PLAN
M0.1
1/4" = 1'-0"



1 AREA D - TOILET ROOM NEW WORK PLAN
M0.1
M2.1D
M3.1D
1/4" = 1'-0"

**SELECT A LOCATION FOR GENERAL
NOTES AND KEYNOTES AT UPPER
RIGHT CORNER OF BORDER. BE
CONSISTENT. USE THIS LOCATION TO
PLACE NOTES ON REMAINING FLOOR
PLAN DRAWINGS**

KEYNOTES

DEMOLITION
NOTE: NOT ALL KEYNOTES MAY BE USED

- LEGEND SYMBOL INDICATOR
- REMOVE DUCTWORK, DIFFUSERS, ASSOCIATED HANGERS AND SUPPORTS COMPLETELY WHERE INDICATED.
- REMOVE WALL MOUNTED THERMOSTAT AND ASSOCIATED WIRING.
- REMOVE CEILING MOUNTED RETURN/EXHAUST GRILLE, HANGERS AND SUPPORTS COMPLETELY.
- REMOVE FAN POWERED BOX, ASSOCIATED HOT WATER REHEAT COIL, PIPING, CONTROLS, HANGERS AND SUPPORTS COMPLETELY. REMOVE HWH PIPING AS INDICATED AND CAP.
- REMOVE INLINE EXHAUST FAN, CONTROLS AND ACCESSORIES COMPLETELY. INFILL ROOF CURB WITH INSULATION AND CAP.
- REMOVE SINK, ASSOCIATED PIPING, ACCESSORIES & SUPPORTS COMPLETELY.
- REMOVE FLOOR DRAIN/FLOOR CLEANOUT, ASSOCIATED TRAP AND PIPING AS INDICATED.
- REMOVE INDICATED PLUMBING/HVAC PIPING, HANGERS AND SUPPORTS COMPLETELY.
- REMOVE PLUMBING FIXTURES, ASSOCIATED SUPPORTS AND PIPING COMPLETELY.
- REMOVE INDOOR AIR HANDLING UNIT ASSOCIATED DUCTWORK, ASSOCIATED ROOF CURB, CURB RAIL AND
- REMOVE GRAVITY HOOD. CAP EXISTING ROOF CURB TO REMAIN.
- CAP EXHAUST DUCTWORK UNDER ROOF CURB. EXISTING DUCTWORK TO BE ABANDONED IN PLACE.
- REMOVE REFRIGERANT PIPING UP TO ASSOCIATED CONDENSER UNIT.
- REMOVE CEILING RECESSED UNIT VENTILATOR, ASSOCIATED PIPING, VALVES, CONTROLS, SUPPORTS AND HANGERS COMPLETELY.
- REMOVE CONDENSATE PUMP, ASSOCIATED PIPING AS INDICATED, SUPPORTS AND HANGERS COMPLETELY.
- REMOVE WATER CLOSET TOILET SEAT, FLUSH VALVE AND ASSOCIATED PIPING BACK TO WALL.
- REMOVE URINAL FLUSH VALVE AND ASSOCIATED PIPING BACK TO WALL.
- REMOVE ROOF MOUNTED EXHAUST FAN. EXISTING CURB TO REMAIN.
- REMOVE LAVATORY, ASSOCIATED FAUCET, CW & HW PIPING BACK TO WALL. P-TRAP AND TAIL PIECE.
- REMOVE LAVATORY FAUCET. SEE NEW WORK PLANS FOR COORDINATION.
- DISCONNECT AND REMOVE DIFFUSERS/REGISTERS/GRILLES. BRANCH DUCTWORK TO REMAIN.
- REMOVE OIL INTERCEPTOR AND ASSOCIATED PIPING. REFER TO ARCHITECTURAL DRAWINGS FOR PATCHING.
- REMOVE CONDENSING UNIT, ASSOCIATED REFRIGERANT PIPING AND CONTROLS COMPLETELY. REMOVE ABOVE ROOF STRUCTURAL SUPPORTS COMPLETELY.
- REMOVE ROOF MOUNTED AIR COOLED CONDENSING UNIT COMPLETELY, INCLUDING ALL RELATED REFRIGERANT PIPING, VALVES, FITTINGS, HANGERS AND INSULATION. REMOVE PIPE BOOT AND CAP. ROOF CURB TO REMAIN.
- REMOVE INTAKE/RELIEF HOOD, AND ASSOCIATED DUCTWORK AND ROOF CURB COMPLETELY.
- REMOVE FLEX DUCTWORK BACK TO ROUND BRANCH DIFFUSER TO BE SALVAGED AND RELOCATED. REFER TO SHEET M2.1H FOR NEW LOCATION.
- REMOVE ELECTRIC WATER COOLER AND ASSOCIATED PIPING, HANGERS AND SUPPORTS BACK TO WALL.
- REMOVE 42" OIL INTERCEPTOR, ASSOCIATED PIPING & SUPPORTS. CONTRACTOR TO VERIFY DEPTH OF INTERCEPTOR. SEE ARCHITECTURAL DRAWINGS FOR INFILL DETAILS.
- REMOVE HSW UNIT, ASSOCIATED DUCTWORK, HANGERS AND SUPPORTS COMPLETELY.
- REMOVE UNIT HEATER, ASSOCIATED PIPING, HANGERS AND SUPPORTS COMPLETELY.
- REMOVE HOSE REEL, ASSOCIATED DUCTWORK, HANGERS AND SUPPORTS COMPLETELY.
- REMOVE PACKAGED ROOFTOP UNIT AND ASSOCIATED CONTROLS COMPLETELY. EXISTING ROOF CURB AND ASSOCIATED DUCTWORK TO REMAIN.
- REMOVE ROOF MOUNTED UTILITY SET EXHAUST FAN, ALL ASSOCIATED DUCTWORK AND ROOF SUPPORTS COMPLETELY.
- REMOVE UNIT HEATER FLUE VENT AND ASSOCIATED SUPPORTS COMPLETELY.
- REMOVE EXHAUST STACK AND ASSOCIATED SUPPORTS COMPLETELY.
- REMOVE SPRINKLER HEADS WITHIN INDICATED AREA TO ACCOMMODATE CEILING REMOVAL AND REPLACEMENT. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS.
- REMOVE SPRINKLER HEADS AND ASSOCIATED PIPING BACK TO MAINS AND CAP.

KEYNOTES

TOILET ROOM NEW WORK

SHADED ITEMS HAVE BEEN REVISED FROM PREVIOUS

NOTE: NOT ALL KEYNOTES MAY BE USED

- LEGEND SYMBOL INDICATOR
- PROVIDE NEW TOILET SEAT, FLUSH VALVE, ASSOCIATED PIPING BACK TO WALL AND ESCUTCHEON.
- PROVIDE NEW FLUSH VALVE, ASSOCIATED PIPING BACK TO WALL AND ESCUTCHEON.
- PROVIDE NEW LAV FAUCET AND ASSOCIATED PIPING.
- MOUNT NEW FAN TO EXISTING CURB. PROVIDE CURB ADAPTOR AND CONNECT TO EXISTING DUCTWORK.

**TAGGING FOR ENLARGED PLANS
START WITH THE BOTTOM RIGHT
CORNER WITH 1, THEN ABOVE 2
AND THEN TRANSITIONS TO
LOWER LEFT 3 ETC.**

**USE STANDARD DRAWING
TITLE AND NUMBERING**

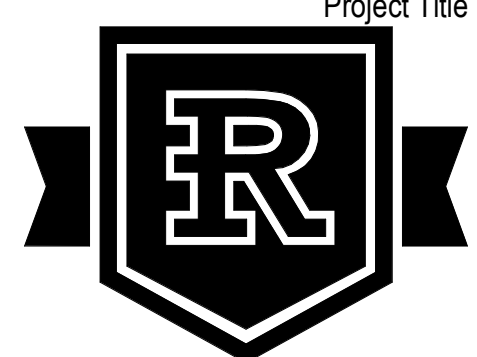


INTEGRATED design SOLUTIONS
architecture engineering interiors & technology

1441 west long lake, suite 200
troy, michigan 48098
5211 cascade road SE, suite 300
grand rapids, michigan 49546
248.823.2100
www.ids-michigan.com

STRUCTURAL ENGINEER
DESAINASR CONSULTING ENGINEERS, INC.
6765 DALY ROAD
WEST BLOOMFIELD, MICHIGAN, 48322
248-932-2010
www.desainasr.com

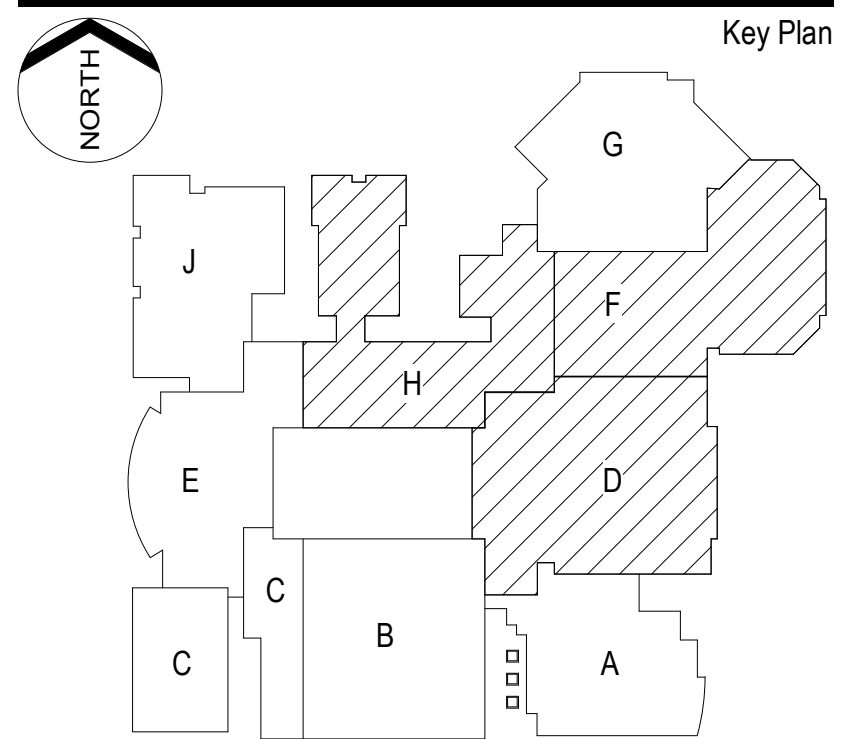
CONSTRUCTION MANAGER
BARTON MALOW
26500 AMERICAN DRIVE
SOUTHFIELD, MICHIGAN, 48034
248-436-5000
www.bartonmalow.com



Romeo Community Schools

New Romeo Middle School

11091 32 Mile Rd. Romeo, MI 48065



Project Administrator	
M. Beck	
Project Designer	
B. Cornell / D. Greene	
Project Architect / Engineer	
J. Schwartz	
Drawn By	
B. Cornell / D. Greene	
Q.M. Review	
D. DiCiuccio	
Approved	
D. DiCiuccio	
Drawing Scale	
As Noted	

Issued for		Issue Date	
Design Development (Revised)		05-17-2019	
Quality Management Review		06-28-2019	
Bids		09-05-2019	

KEYNOTES	
TOILET ROOM NEW WORK	
SHADED ITEMS HAVE BEEN REVISED FROM PREVIOUS	
NOTE: NOT ALL KEYNOTES MAY BE USED	
LEGEND SYMBOL INDICATOR	
PROVIDE NEW TOILET SEAT, FLUSH VALVE, ASSOCIATED PIPING BACK TO WALL AND ESCUTCHEON.	
PROVIDE NEW FLUSH VALVE, ASSOCIATED PIPING BACK TO WALL AND ESCUTCHEON.	
PROVIDE NEW LAV FAUCET AND ASSOCIATED PIPING.	
MOUNT NEW FAN TO EXISTING CURB. PROVIDE CURB ADAPTOR AND CONNECT TO EXISTING DUCTWORK.	

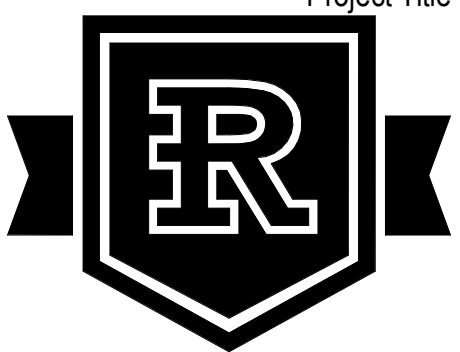
© 2019 INTEGRATED design SOLUTIONS, LLC
IDS Drawing Title

Enlarged Plans - Toilet Rooms

**SAMPLE - ENLARGED
TOILET ROOM PLAN**

103 Project Number Drawing Number

16175-5000 → **M5.4**

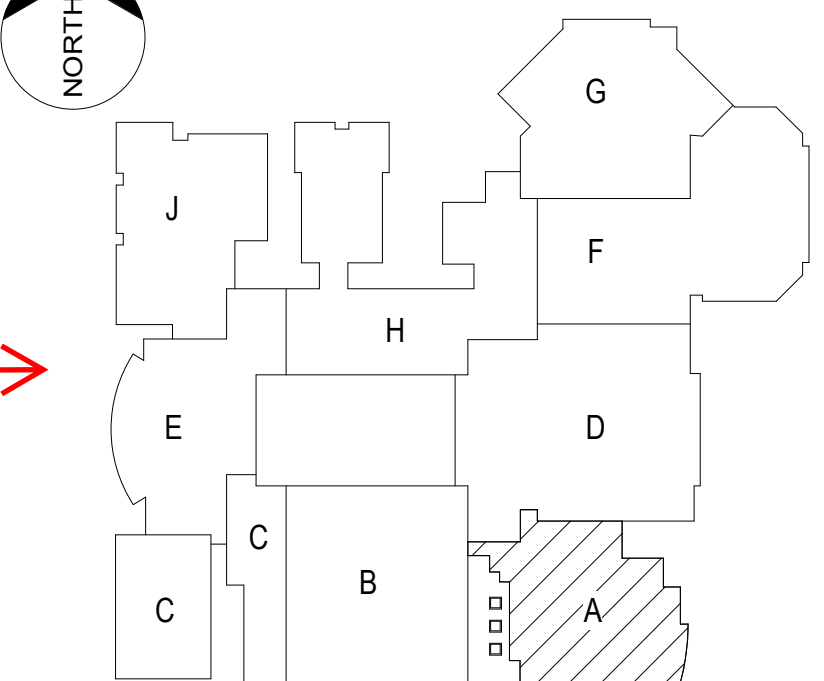


Romeo Community Schools

New Romeo Middle School

11091 32 Mile Rd. Romeo, MI 48065

Key Plan



**TURN ON THE KEY PLAN, NORTH
ARROW AND ONLY THE AREA THAT
APPLIES TO THIS DRAWING UNDER
VISIBILITY IN THE PROPERTIES MENU**

KEYNOTES

MECHANICAL
SHADED ITEMS HAVE BEEN REVISED FROM PREVIOUS
NOTE: NOT ALL KEYNOTES MAY BE USED

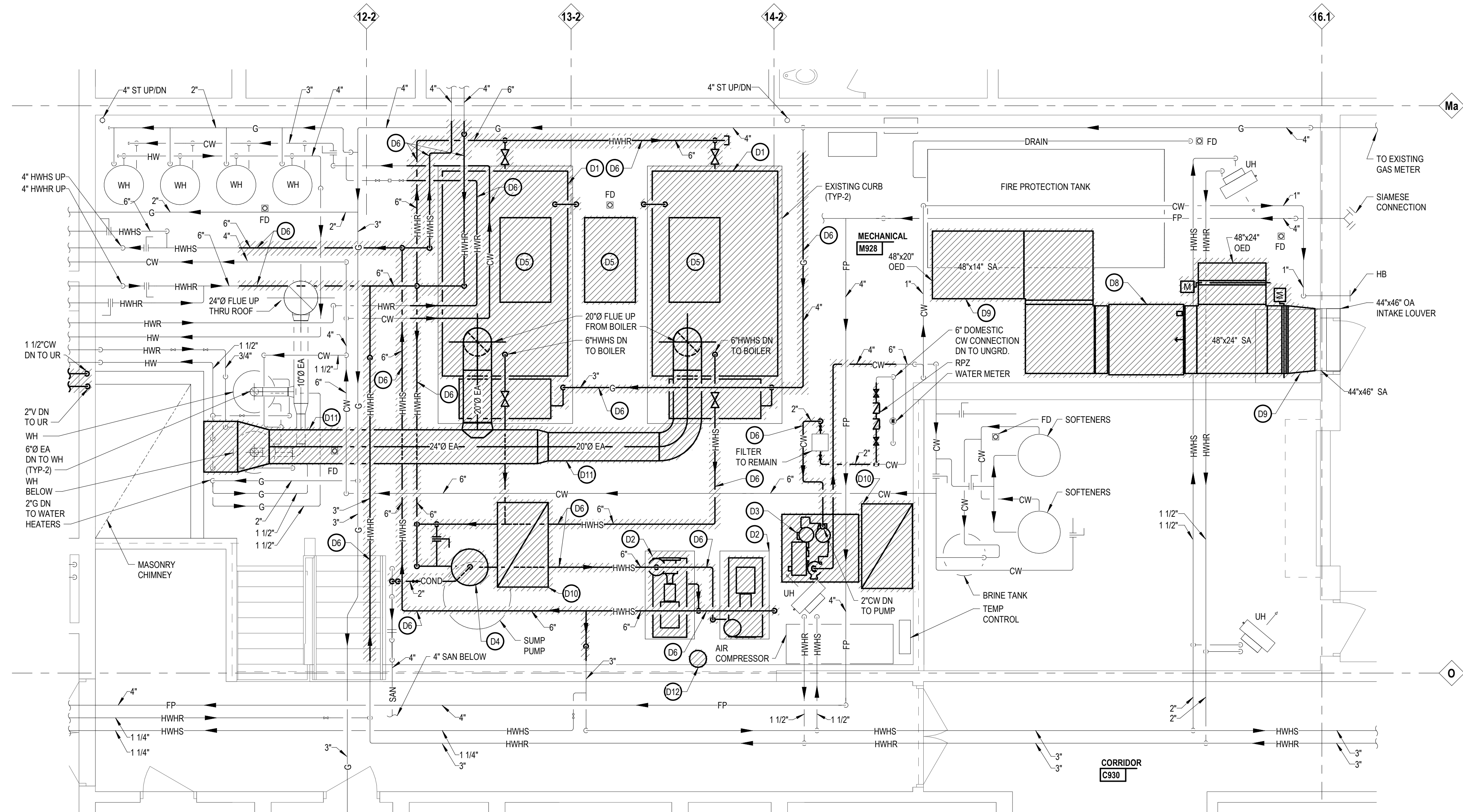
LEGEND SYMBOL INDICATOR

- M1 INSTALL 14"0 FLUE VENT UP TO 14" DUCT THROUGH ROOF.
- M2 INSTALL 14"0 COMBUSTION AIR DUCTWORK UP TO 14" DUCT THROUGH ROOF.
- M3 INSTALL UNISTRUT SUPPORT FOR VARIABLE FREQUENCY DRIVES AND TEMPERATURE CONTROLS PANEL. TOP OF PANELS TO BE MOUNTED 5'-0" AFF.
- M4 INSTALL UNISTRUT SUPPORT FOR VARIABLE FREQUENCY DRIVES AND TEMPERATURE CONTROLS PANEL. TOP OF PANELS TO BE MOUNTED 5'-0" AFF.

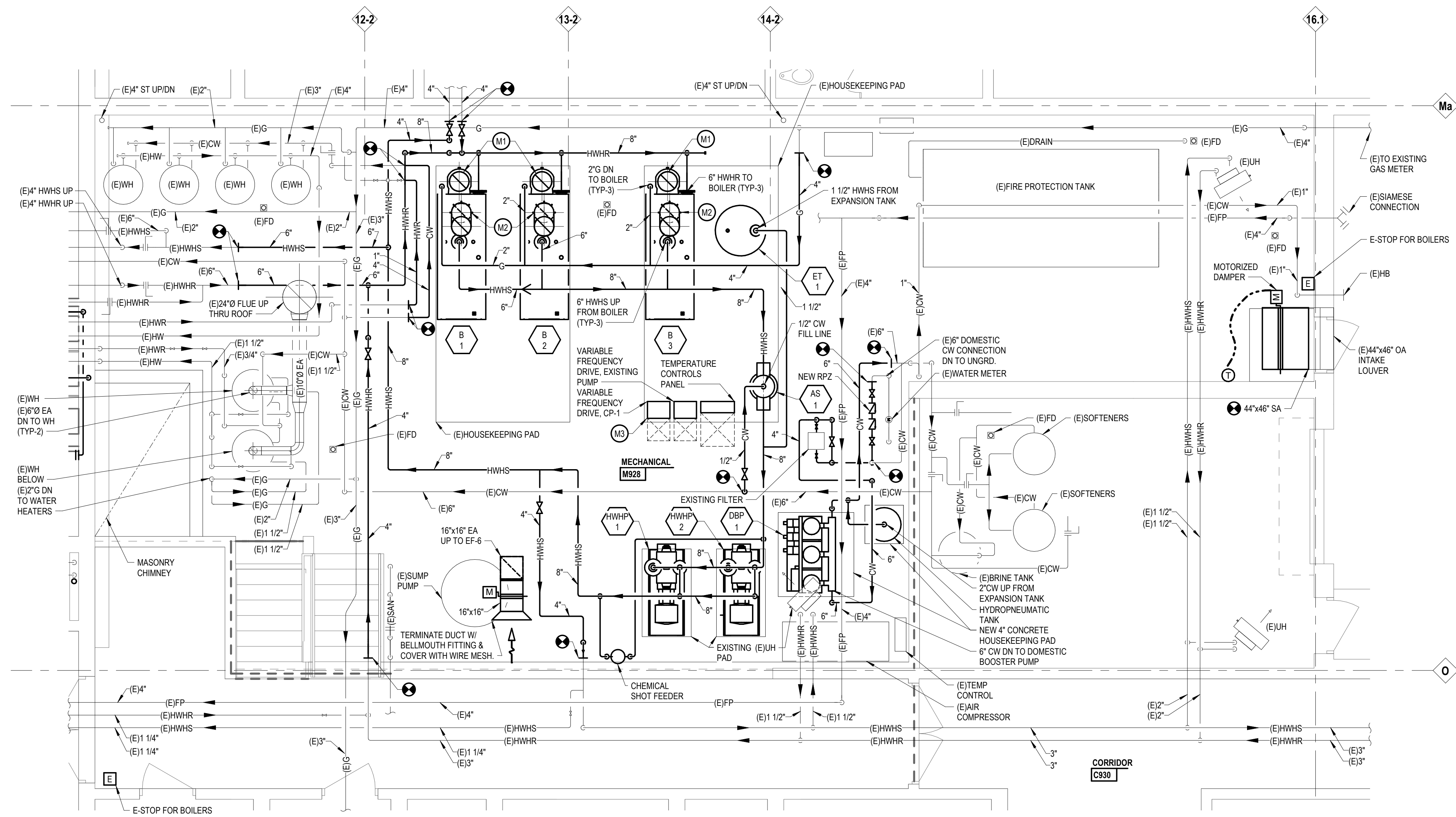
Issued for	Issue Date
Design Development	11-19-2018
Design Development (Revised)	05-17-2019
Quality Management Review	06-28-2019
Bids	09-05-2019

**USE STANDARD DRAWING
TITLE AND NUMBER** → **Enlarged Plans**

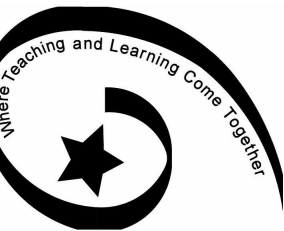
**SAMPLE - ENLARGED
MECHANICAL ROOM PLAN**



1 AREA A - BOILER ROOM MECHANICAL DEMOLITION PLAN
M0.1
M1.1A
1/4" = 1'-0"



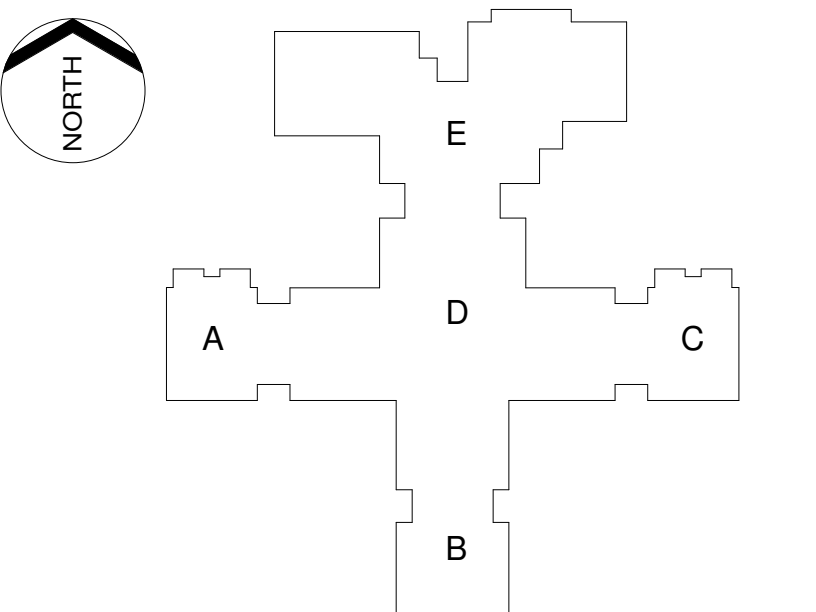
2 AREA A - BOILER ROOM MECHANICAL NEW WORK PLAN
M0.1
M2.1A
M3.1A
1/4" = 1'-0"



South Lyon Community
Schools

William A. Pearson
Elementary School
57900 Eleven Mile Rd
South Lyon, MI 48178

Key Plan



Project Administrator
C. Lewis/ A. Green

Project Designer
K. Kurtz / P. Willis

Project Architect / Engineer
J. Schwartz

Drawn By
K. Kurtz

Q.M. Review
M. Perez

Approved
D. DiCiuccio

Drawing Scale
As Noted

Issued for
CD 95% Owner Review

Issue Date
01-15-2016

Bids
02-12-2016

©2016 INTEGRATED design SOLUTIONS, LLC

IDS Drawing Title

Sections

SAMPLE - MECHANICAL SECTION PLAN

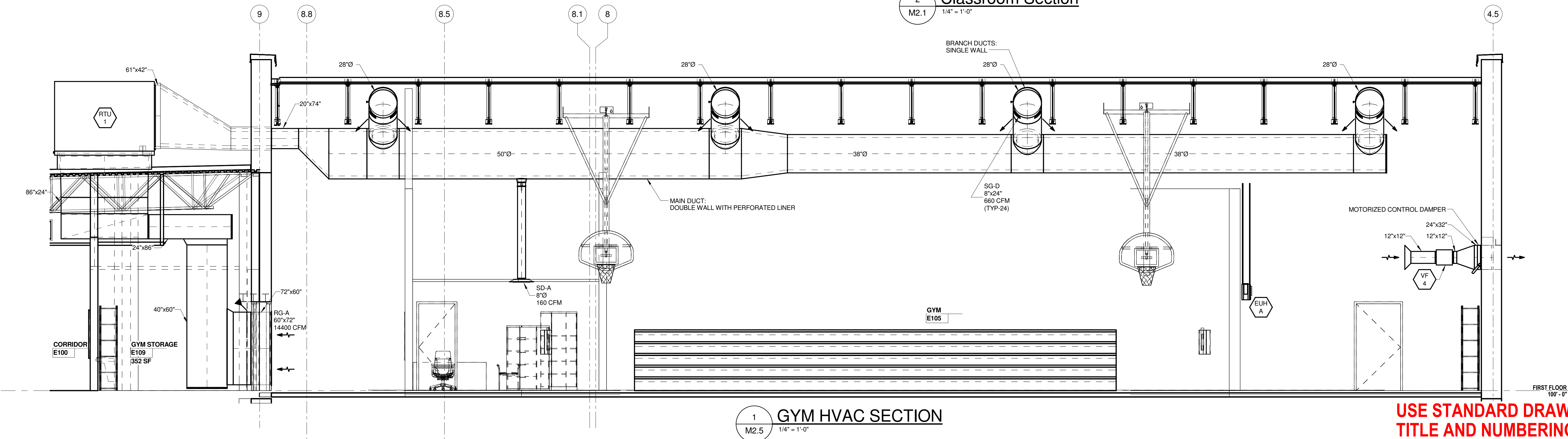
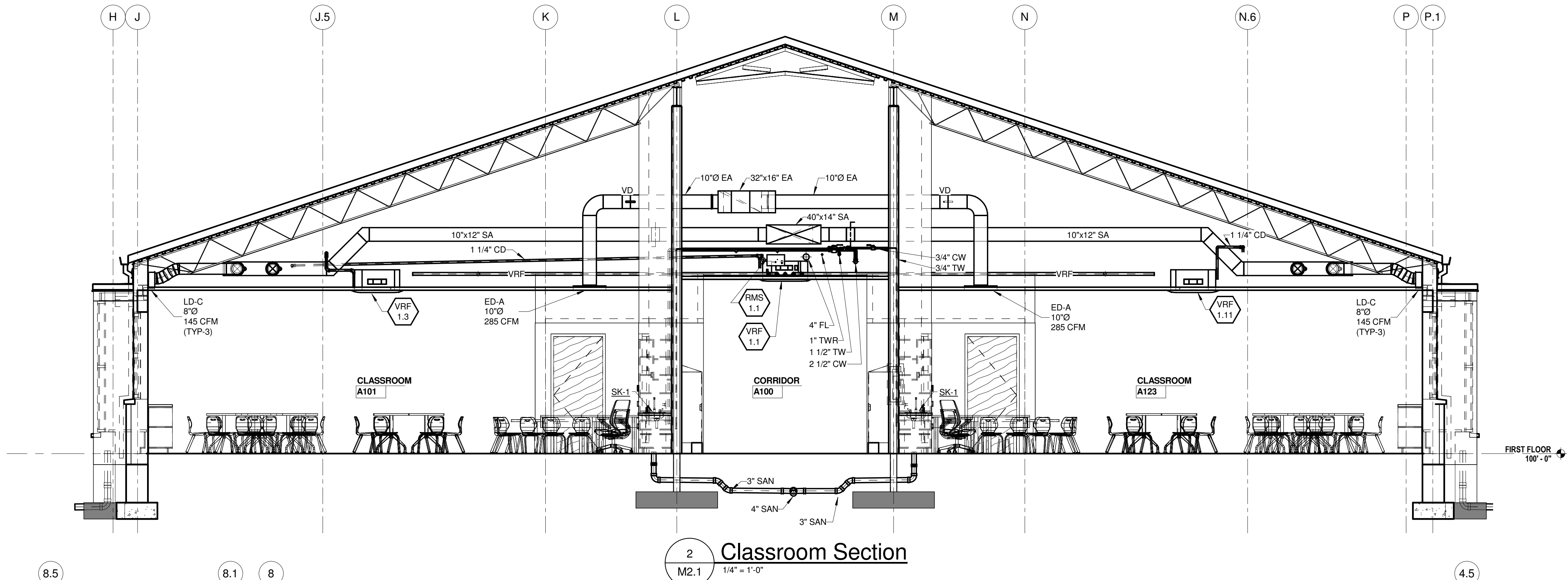
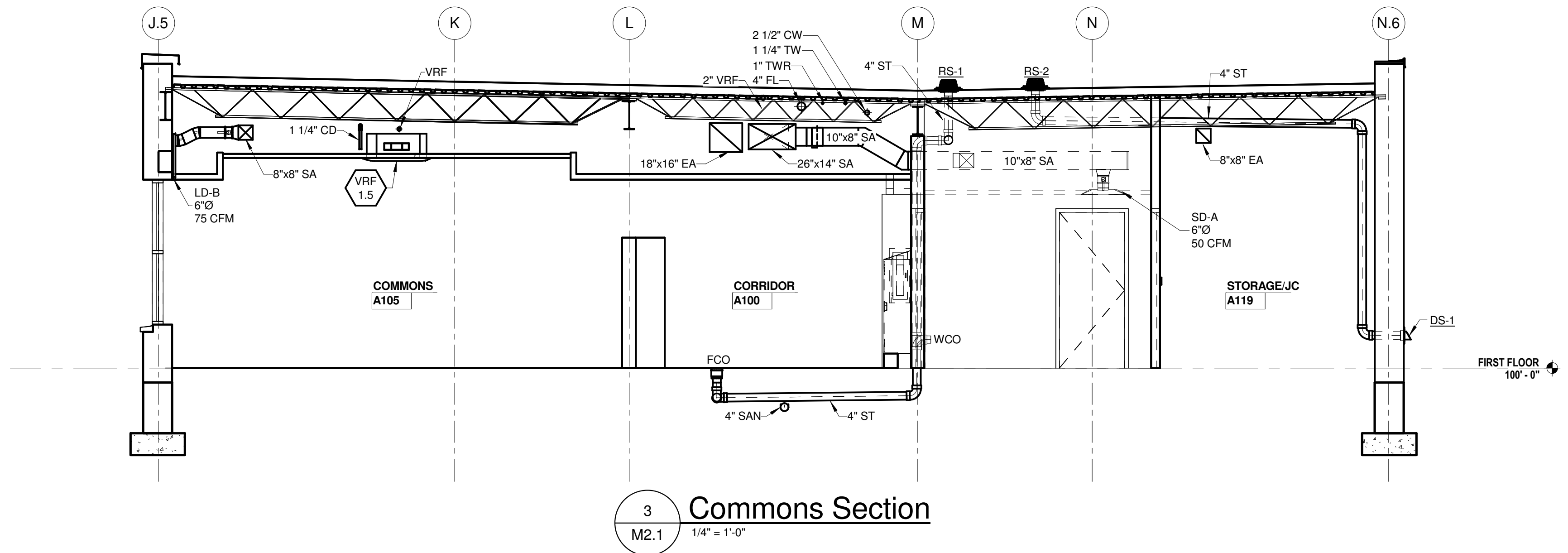
Reference Finish Floor Elevation: 100'-0"

Project Number
137-3300

Drawing Number

M5.1

NOTE:
MECHANICAL SECTIONS ARE DESIGNED
TO HELP CLARIFY ELEVATIONS OF
SPECIFIC EQUIPMENT, THE PATH OF
PIPING AND OR SHEET METAL AND
COORDINATION FOR ALL DISIPLINES.



USE STANDARD DRAWING
TITLE AND NUMBERING

A detailed cross-sectional diagram of a pipe saddle support assembly. The diagram shows a central pipe with a saddle-shaped support structure. The pipe is surrounded by a thick layer of insulation, which is in turn enclosed by a steel pipe jacket. The saddle support is made of a material with a cross-hatched pattern, representing aluminum silicate insulation. It is held in place by a threaded rod that passes through the pipe jacket and the saddle. The rod is secured with a weld and a nut. A load distribution plate is positioned between the saddle and the pipe jacket. The entire assembly is supported by a two-rod hanger. Labels with leader lines point to various components: ALUMINUM SILICATE INSULATION, SAME LENGTH AS SADDLE; PIPE: SIZE PER PLAN; PIPE: ALUMINIZED STEEL PIPE JACKET (SEE NOTE 1); PIPE SHIELD INCORPORATED MODEL A 5000 & LOWER; THREADED ROD; WELD; TWO ROD HANGER; LOAD DISTRIBUTION PLATE.

ALUMINIZED STEEL PIPE JACKET (SEE NOTE 1)

PIPE: SIZE PER PLAN

ALUMINUM SILICATE INSULATION, SAME LENGTH AS SADDLE

PIPE SHIELD INCORPORATED MODEL A 5000 & LOWER

THREADED ROD

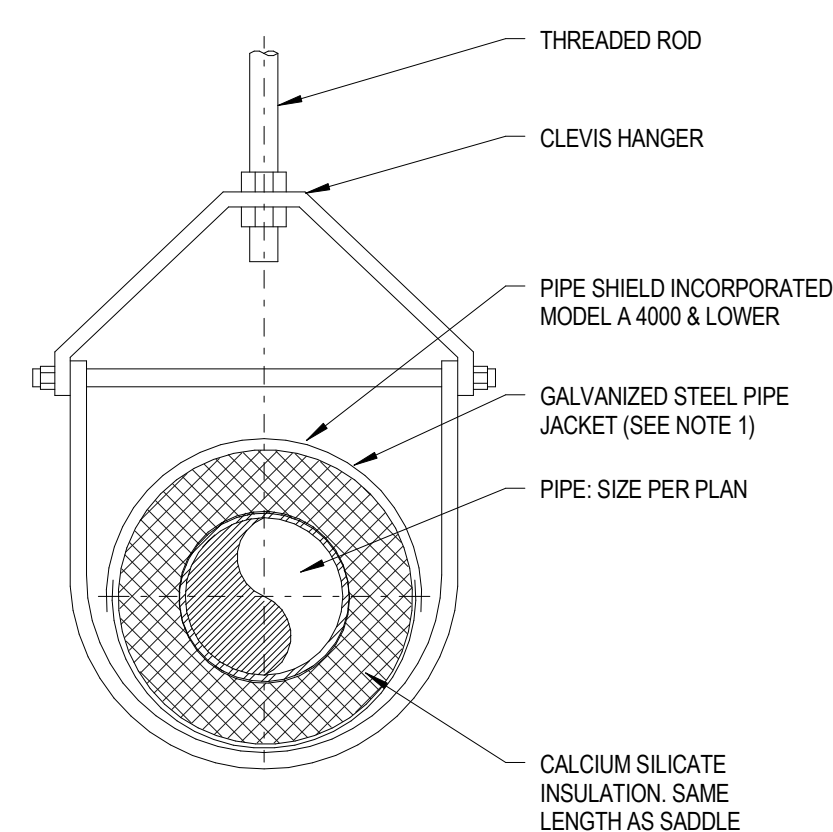
WELD

TWO ROD HANGER

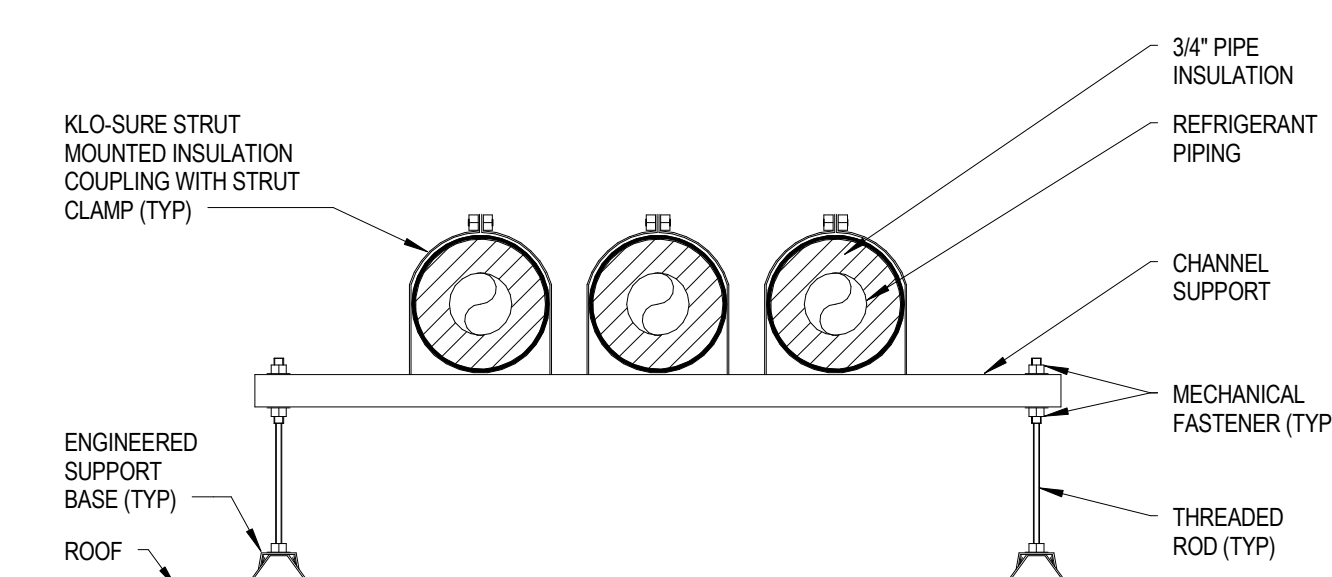
LOAD DISTRIBUTION PLATE

NO SCALE

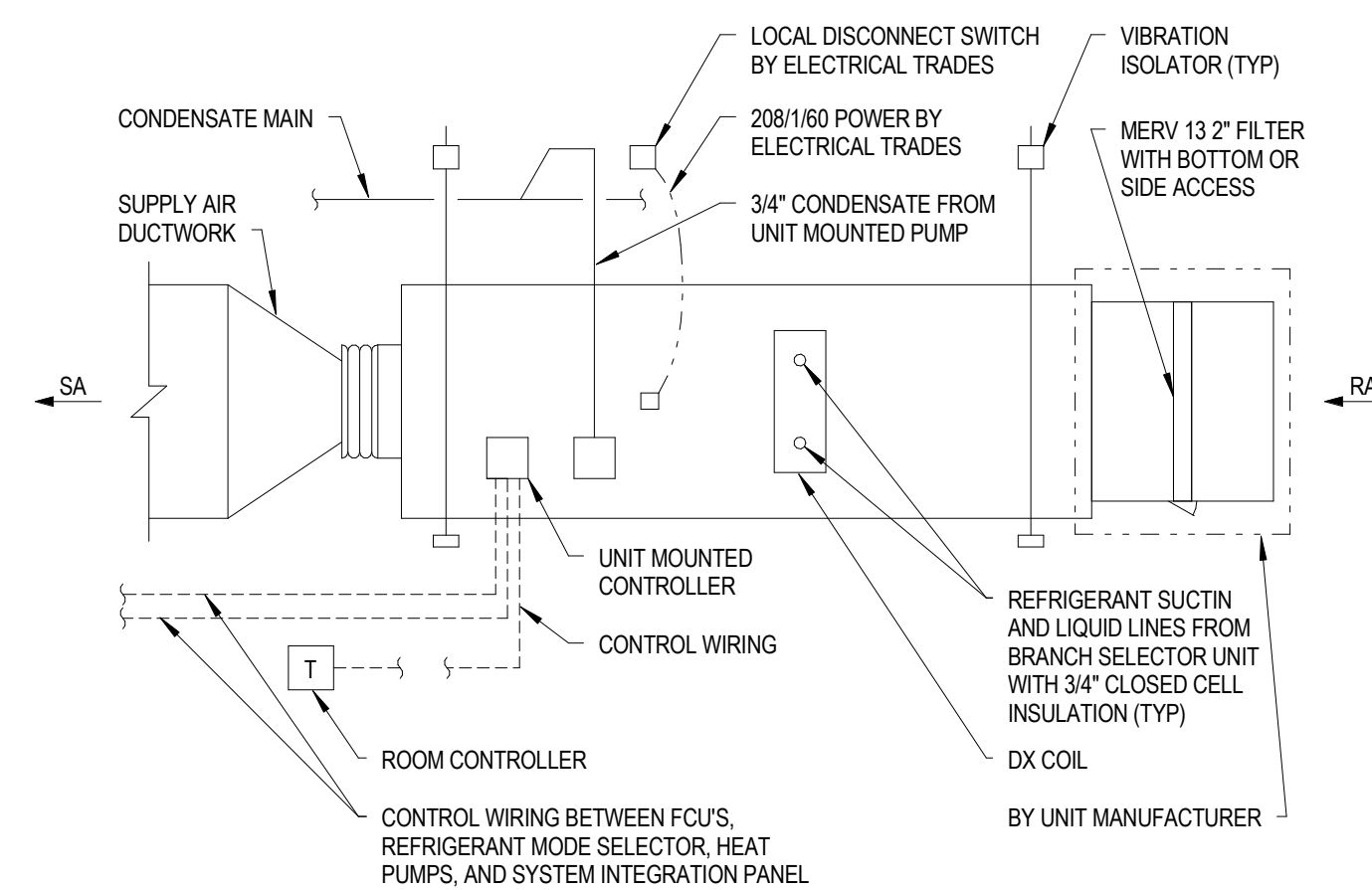
NO SCALE



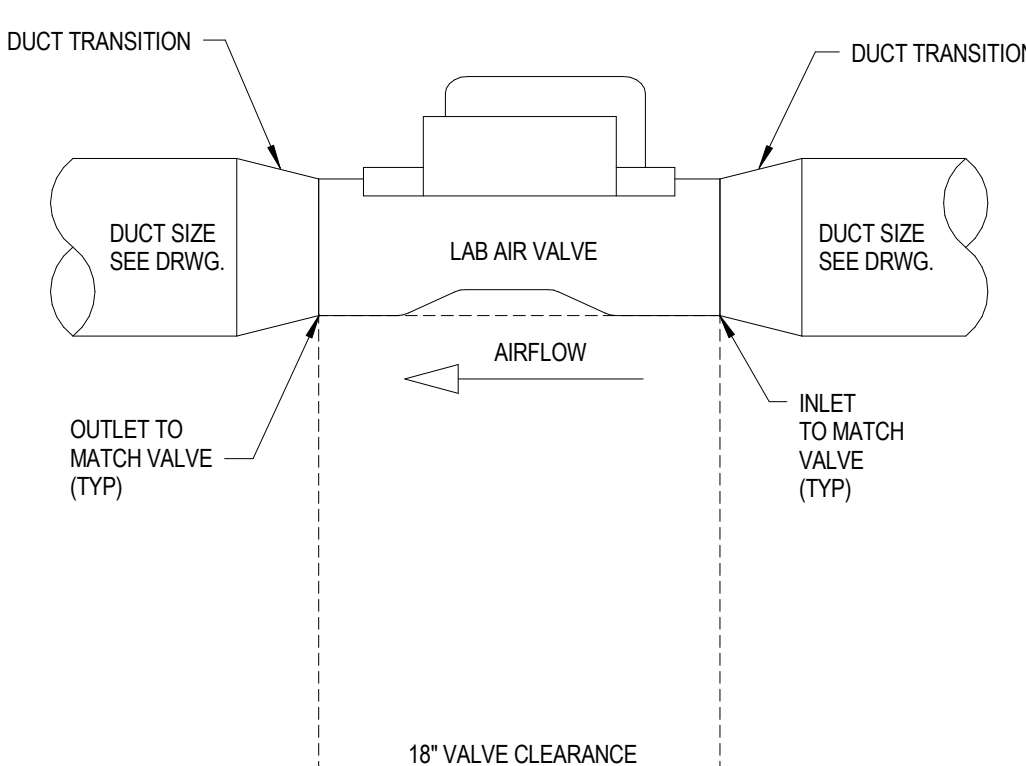
NO SCALE



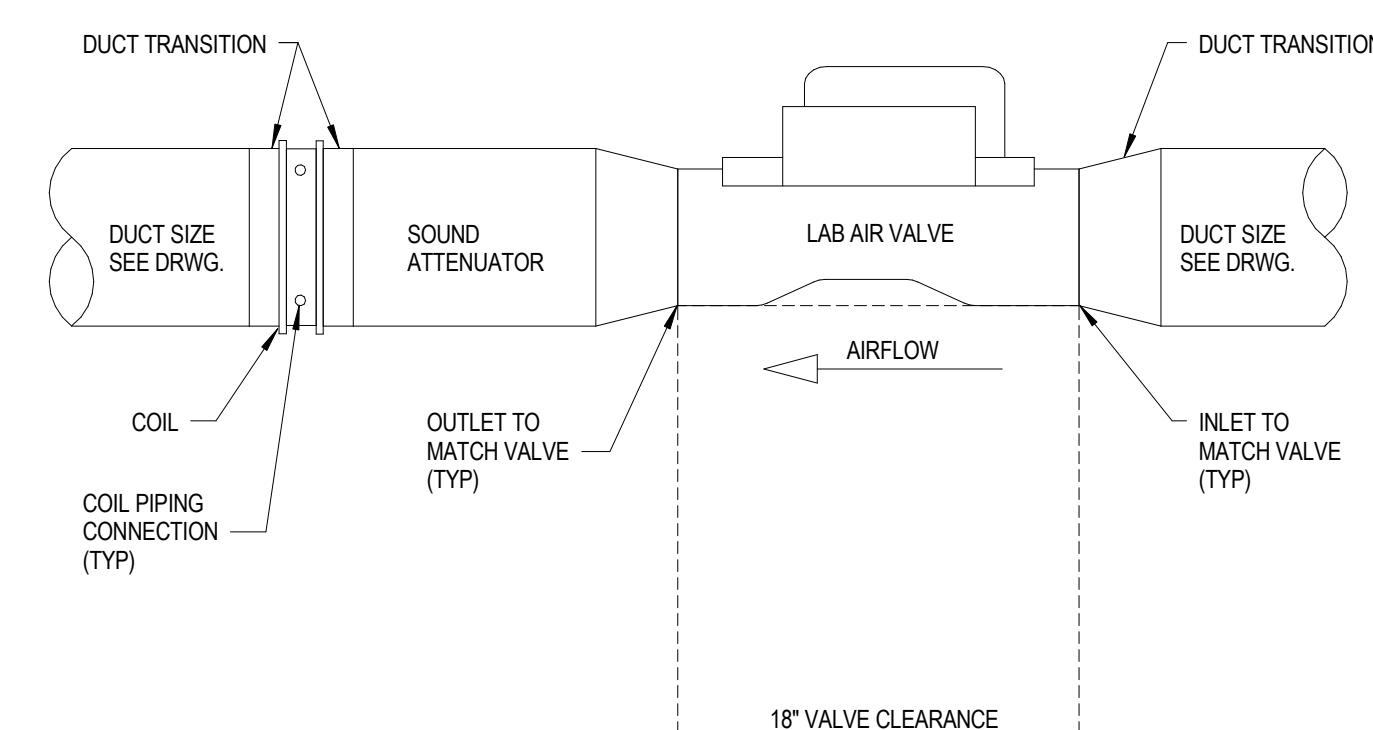
NO SCALE



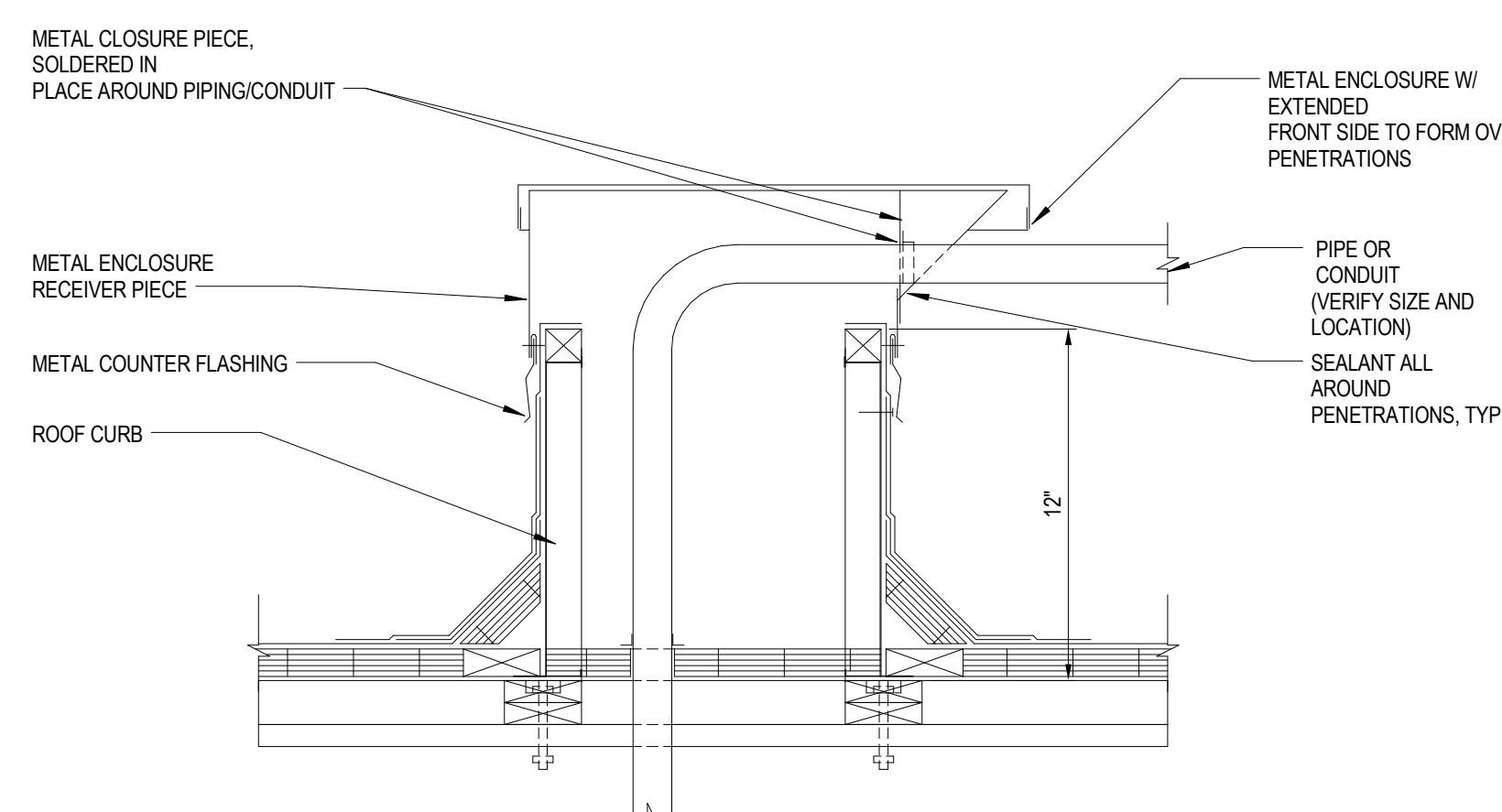
NO SCALE



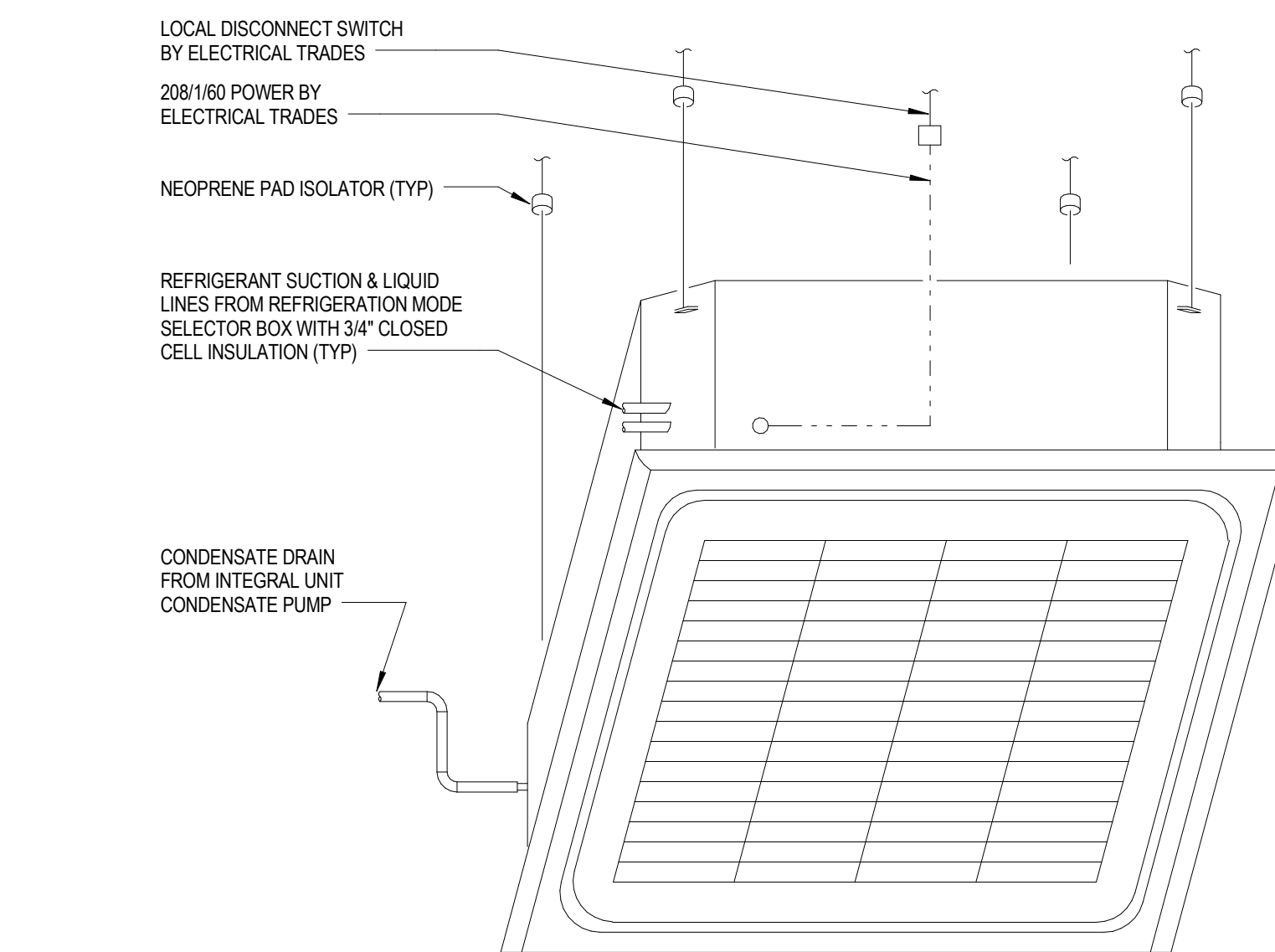
NO SCALE



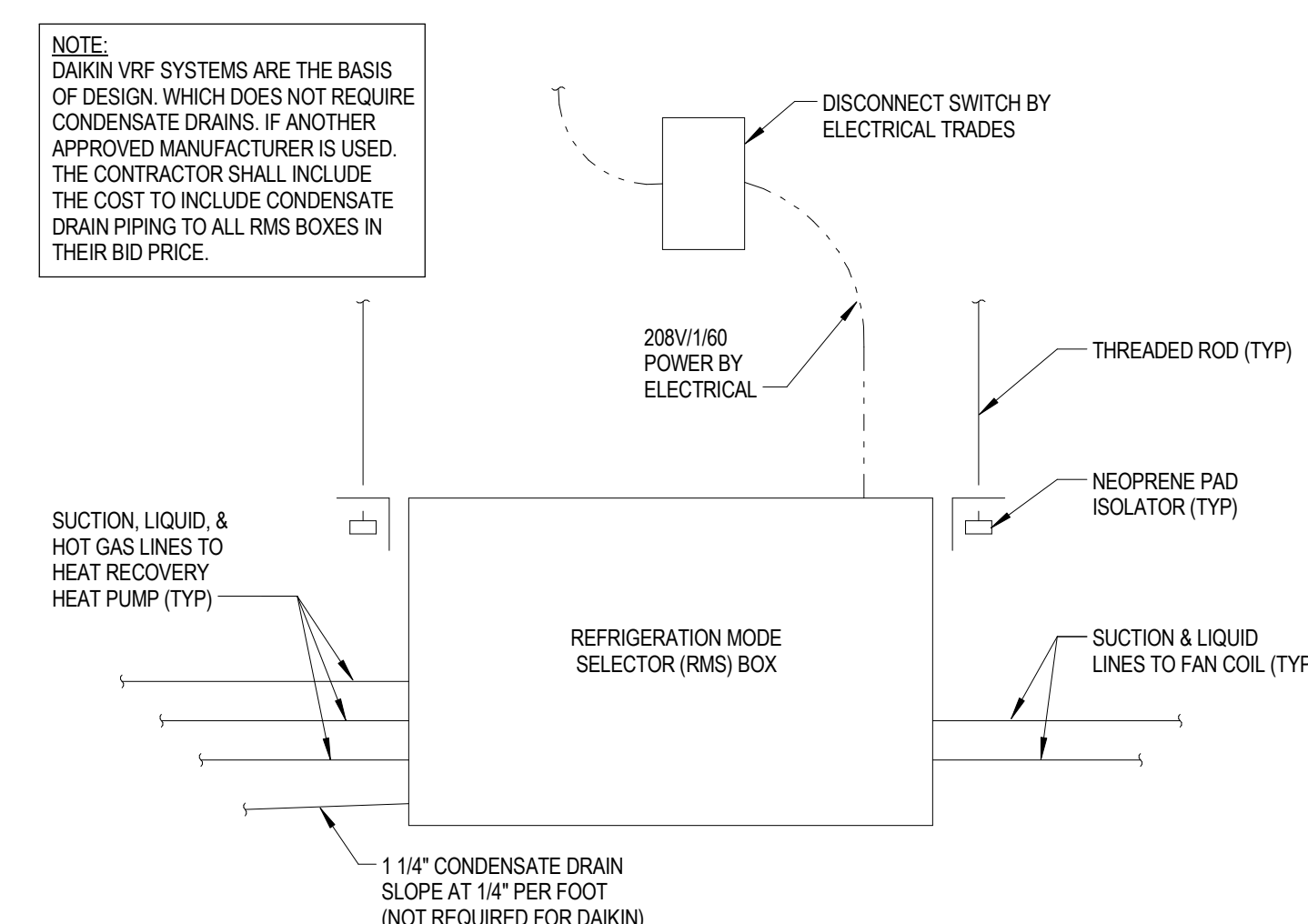
NO SCALE



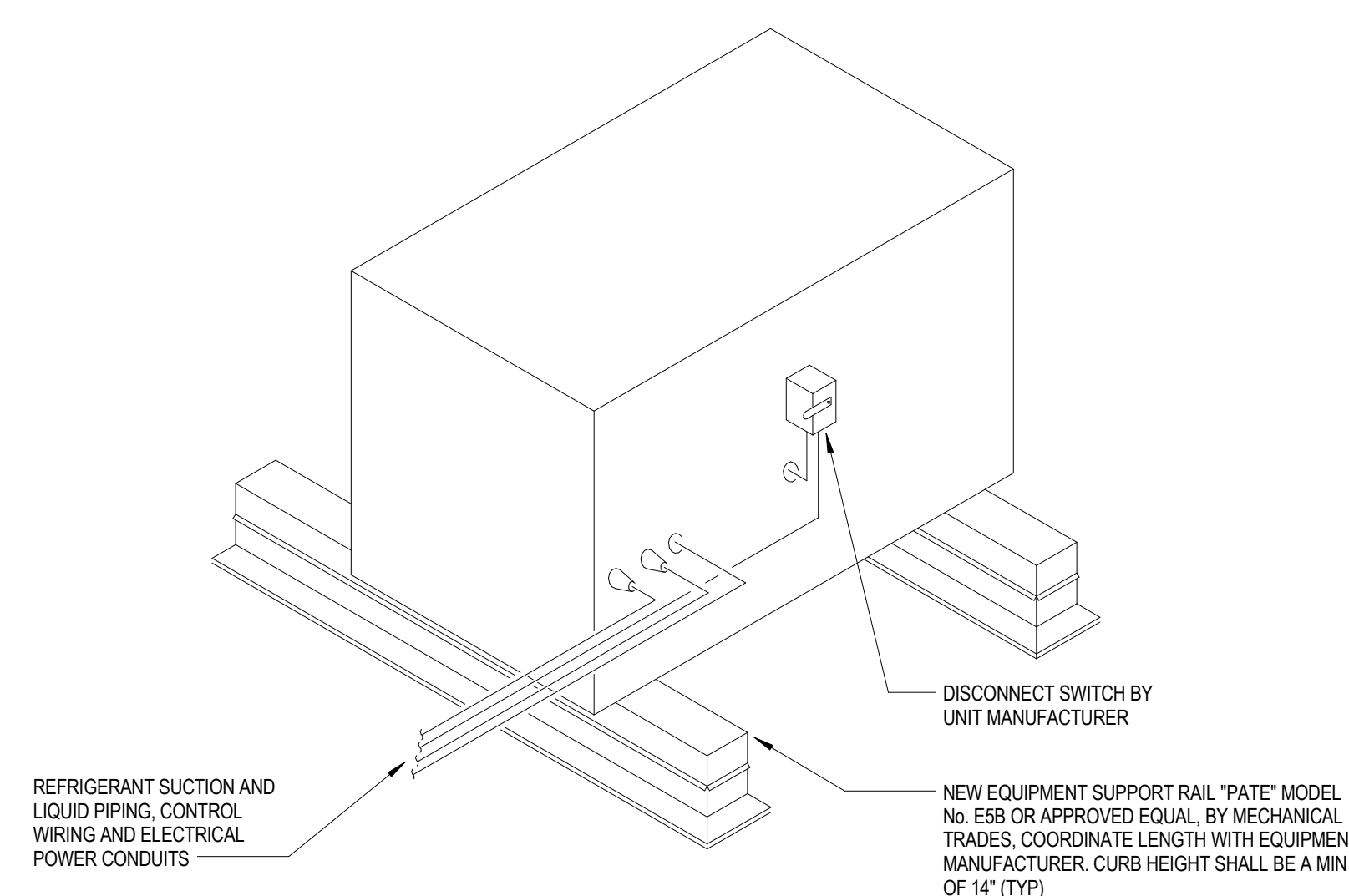
NO SCALE



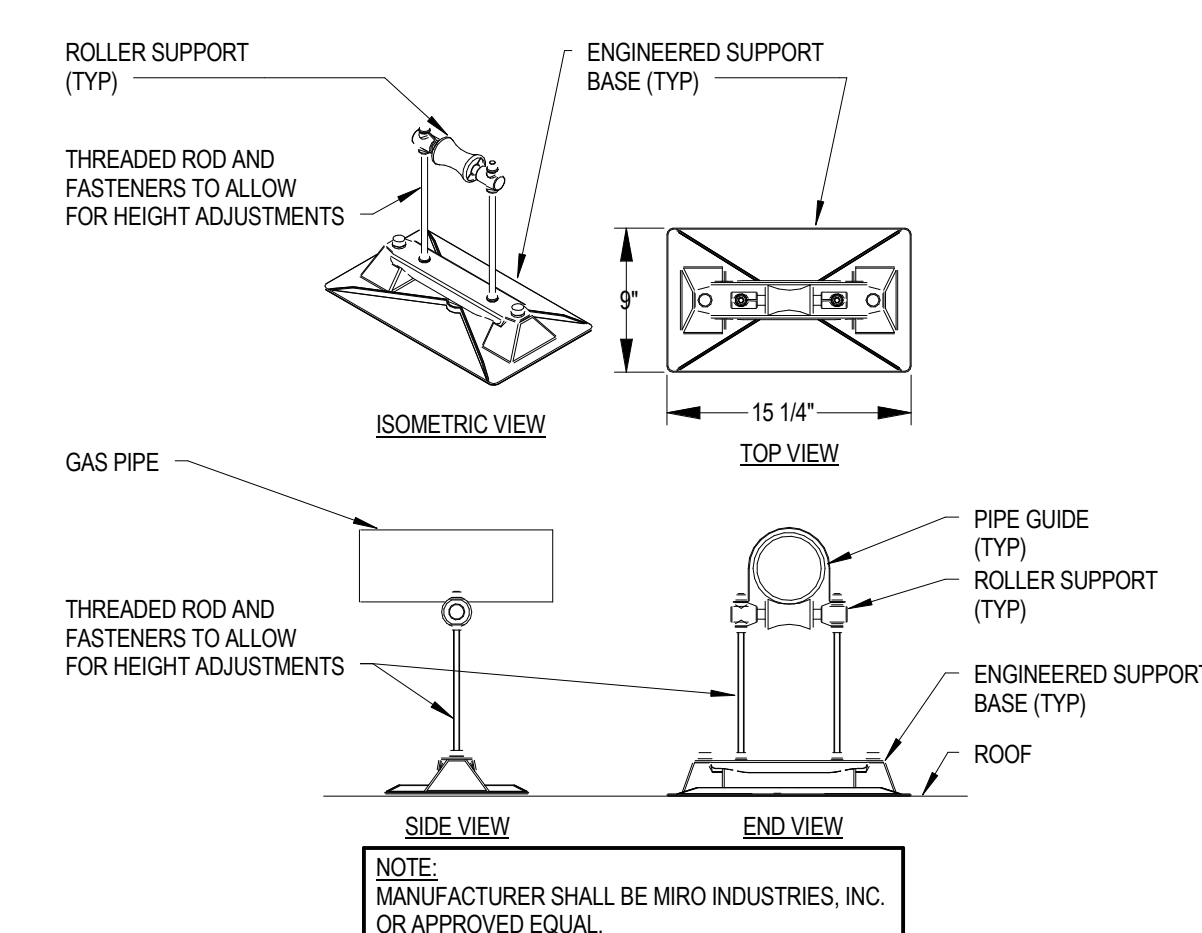
NO SCALE



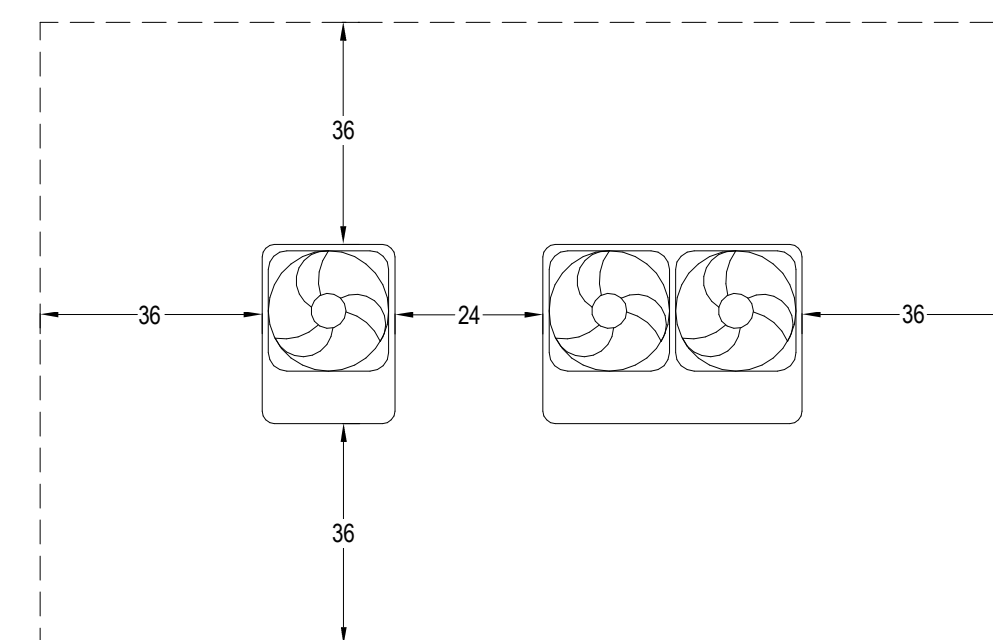
NO SCALE



NO SCALE

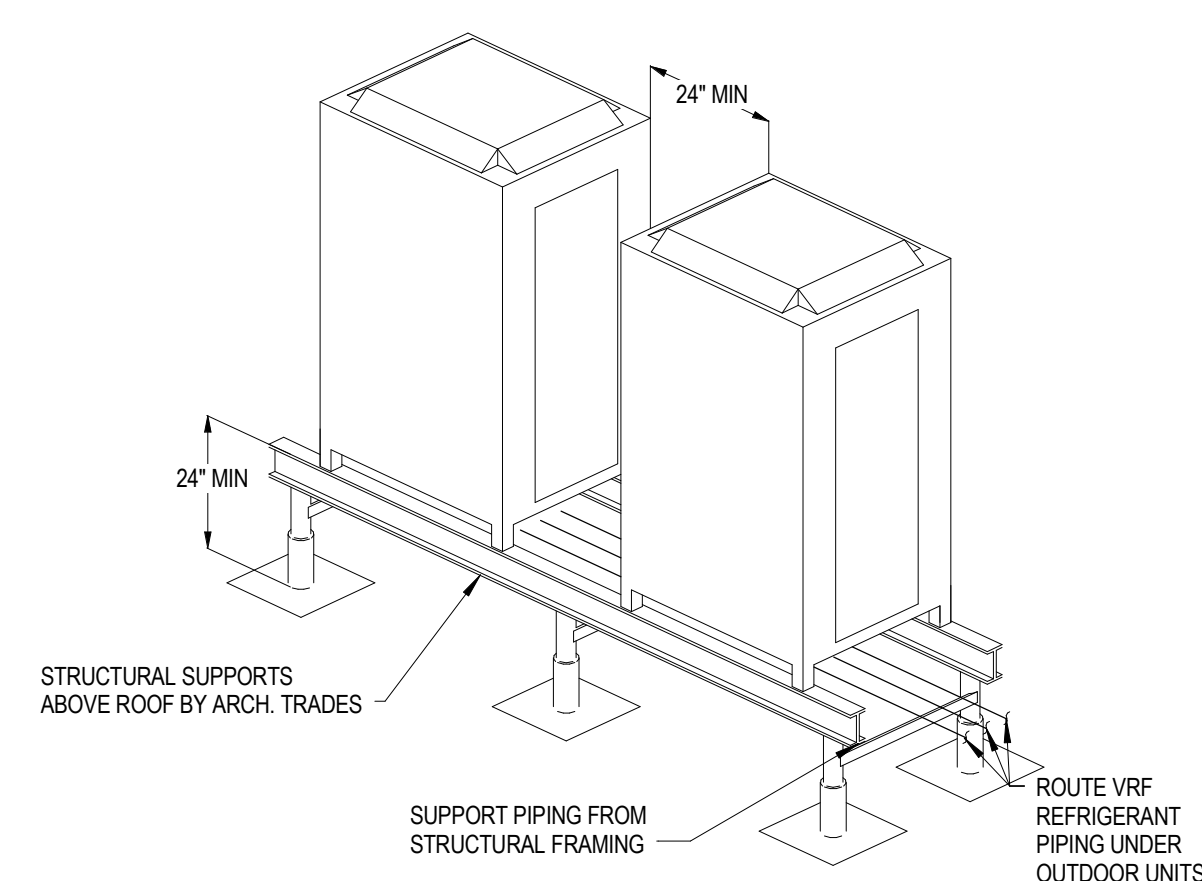


NO SCALE

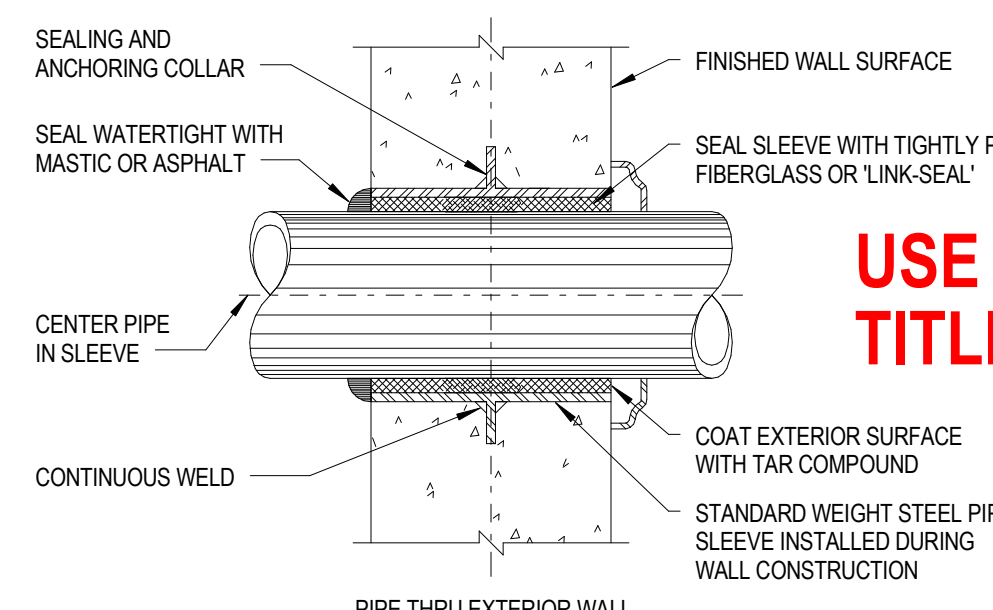
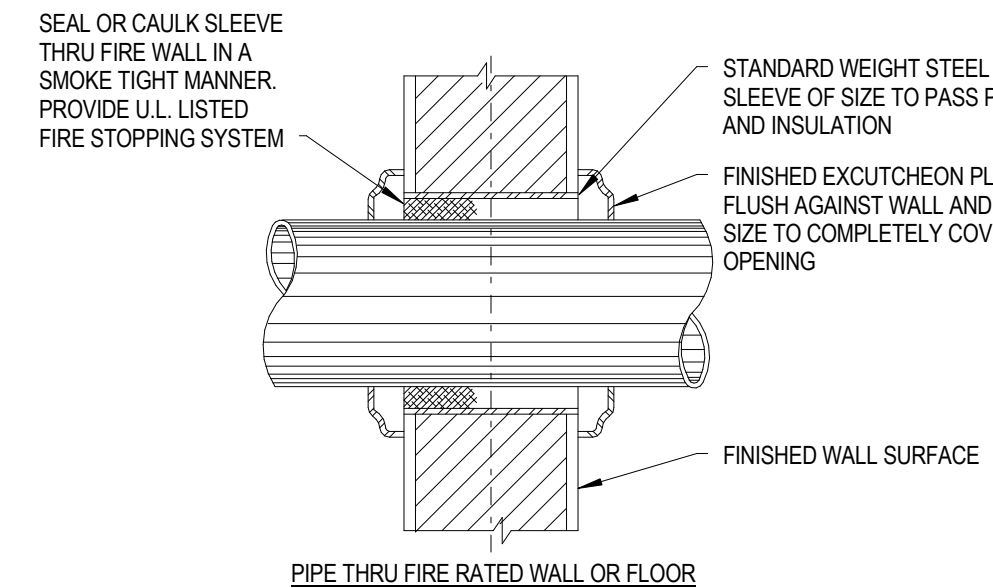
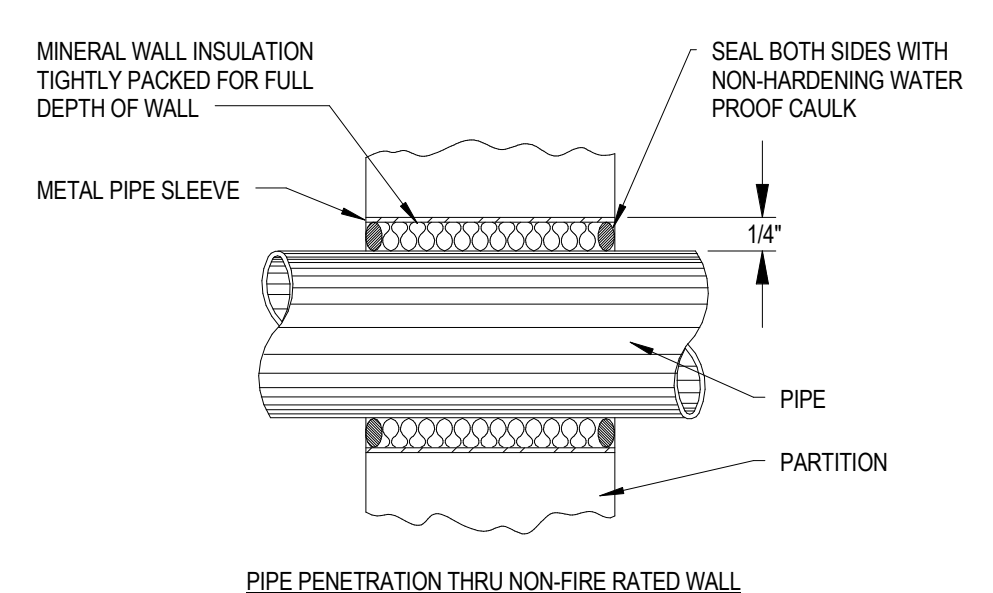


VRF OUTDOOR UNIT MINIMUM SERVICE CLEARANCES DETAIL

NO SCALE



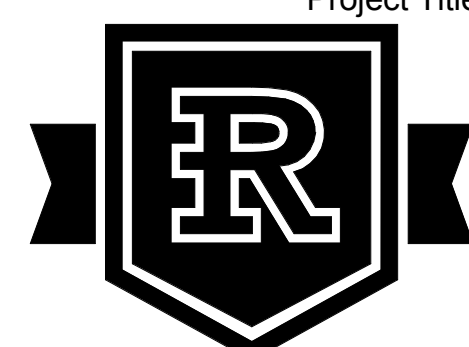
NO SCALE



NO SCALE

SAMPLE - MECHANICAL DETAILS PLAN

Project Title



**New Romeo
High School**
Romeo Community Schools
62300 Jewell Rd.
Washington, MI 48094

Key Plan

[illegible]

©2017 INTEGRATED design SOLUTIONS, LLC

Project Number Drawing Number

16175-1000

M6.1

NOTE:
SCHEDULES ARE INCLUDED ON PROJECTS TO ADD SPECIFIC ENGINEERED VALUED REQUIREMENTS FOR EACH PIECE OF EQUIPMENT ON THE PROJECT. OTHER INFORMATION FOR THESE PIECES OF EQUIPMENT SHOULD BE SPECIFIED AS WELL.

ALIGN SCHEDULES ON THE RIGHT SIDE OF THE SHEET, RIGHT JUSTIFIED. THEN ALIGN THE SCHDULES ON THE LEFT SIDE OF THE SHEET, LEFT JUSTIFIED.

EXPANSION TANK SCHEDULE

MARK	SYSTEM SERVED	SYSEM VOLUME (GALLONS)	FILL PRESSURE (PSIG)	MAX TANK PRESSURE (PSIG)	PRV SETPOINT (PSIG)	TANK ACCEPTANCE (GALLONS)	TANK DIM. DIA. - HEIGHT (INCHES)	"BELL & GOSSETT" MODEL No.	REMARKS
ET-1	35% EG CHILLED WATER	4000	15	85	95	80	24 - 50 7/8	B-300	
ET-2	HOT WATER HEATING	5400	35	85	95	422	48 - 69 1/8	B-1600	

STEAM PUMPED CONDENSATE RETURN UNIT SCHEDULE

MARK	TYPE	DIMENSIONS (IN.)			STEAM PRESS. (PSIG)	CAPACITY EACH UNIT (LBS/HR)	FILL PRESS. INCHES	"ARMSTRONG" MODEL No.	REMARKS
		HEIGHT	LENGTH	WIDTH					
PPP-1	DUPLEX	54	72	48	50	17,340	6	DPT-300LBRP-12	

HOT WATER UNIT HEATER SCHEDULE

MARK	TYPE	HEATING CAPACITY (MBH)	FLUID FLOW (GPM)	FAN		MOTOR HP	FINAL AIR TEMP. (°F)	"STERLING" MODEL No.	REMARKS
				RPM	CFM				
UH-A	HORIZONTAL	52.3	5.3	1,000	1,100	1/20	104	HS-72	

- NOTES:**
1. ALL MOTORS 115V, SINGLE PHASE UNLESS OTHERWISE NOTED.

2. 65°F ENTERING AIR TEMPERATURE, UNLESS OTHERWISE NOTED.

3. PROIDE WITH FACTORY MOUNTED AND WIRED DISCONNECT.

4. TOP OF UNIT HEATER TO BE 8" BELOW FLOOR SLAB ABOVE.

5. 180°F EWT, 160°F LWT.

SIDE STREAM FILTER SCHEDULE

MARK	LOCATION	SYSTEM SERVED	TYPE	PUMP				FILTRATION LEVEL	"LAKOS" MODEL No.	REMARKS
				GPM	HP	VOLTS	PHASE			
SSF-1	NORTH PENTHOUSE	CHILLED WATER	END SUCTION	110	3	460	3	44	eTCX-0110	
SSF-2	SHAW BASEMENT	HOT WATER HEATING	END SUCTION	67	3	460	3	44	eTCX-0080	

- NOTES:**
1. INCLUDE DRAIN / ZERO LIQUID LOSS PURGE AND ACCESSIBLE SEPARATOR OPTIONS.

MICROBUBBLE AIR/DIRT SEPARATOR SCHEDULE

MARK	SYSTEM	TYPE	INLET/ OUTLET SIZE (INCHES)	SYSTEM FLOW (GPM)	VELOCITY (FPS)	PRESS. DROP CLEAN (FT. WG)	MAX FLOW (GPM)	MAX PRESS. DROP CLEAN (FT. WG)	OPERATING WEIGHT (LBS)	"SPIROTHERM" MODEL NO.	REMARKS
SEP-1	35% EG CHILLED WATER	HIGH VELOCITY	8	1,100	7.1	4.5	1,550	9	820	VHN-800	
SEP-2	HOT WATER HEATING	HIGH VELOCITY	8	670	4.3	1.6	1,550	9	820	VHN-800	

STANDARD SCHEDULES AND "How to Use Excel Schedules" CAN BE FOUND IN THE FOLLOWING LOCATION :
<https://F/OVHD/std00/Mech/Equipment%20Schedules>

STEAM DOMESTIC WATER HEATER SCHEDULE

MARK	LOCATION	SERVICE	GPM	HEATING ELEMENT		STORAGE GALLONS	EWT (°F)	LWT (°F)	"CEMLINE" MODEL No.	REMARKS
				LBS/HR	PSIG TO CV					
WH-STM-1	SHAW BASEMENT	BUILDING 140" DHW	61	3,144	10	60	40	140	V60SSH1236-DW	SEMI-INSTANTANEOUS
WH-STM-2	SHAW BASEMENT	BUILDING 140" DHW	61	3,144	10	60	40	140	V60SSH1236-DW	SEMI-INSTANTANEOUS

- NOTES:**
1. WATER HEATERS SHALL BE DOUBLE WALL CONSTRUCTION.

2. FOULING FACTOR 0.001

3. PROVIDE WITH ASME EXPANSION TANK MODEL B&G PTA-60V

STEAM HUMIDIFIER SCHEDULE

MARK	SYSTEM	CAPACITY (LBS/HR)	TYPE	DUCT WIDTH (IN.)	DUCT HEIGHT (IN.)	AIRFLOW (CFM)	PRESS. DROP (IN. WG)	EAT (°F)	LAT (°F)	DOWNSTREAM MIN - MAX RH (%)	ABSORPTION DISTANCE (IN.)	STEAM PRESS. (PSI)	CONTROL VALVE TYPE	CONTROL TURN DOWN	ARMSTRONG MODEL No.	REMARKS
SH-1A	ERU-1	533.9	STEAM INJECTION	62	28	22,000	0.34	54.5	55	30-60	24	10	ELECTRIC ACV-06-BLEM	MODULATING	CENTIFEED	
SH-1B	ERU-1	363.1	STEAM INJECTION	40	28	13,000	0.29	54.5	55	30-60	24	10	ELECTRIC ACV-04-BLEF	MODULATING	CENTIFEED	
SH-2	ERU-2	512.5	STEAM INJECTION	54	72	48,000	0.04	54.5	55	30-60	24	10	ELECTRIC ACV-06-BLEM	MODULATING	CENTIFEED	
SH-3A	ERU-3	395.1	STEAM INJECTION	40	38	17,000	0.08	54.5	55	30-60	24	10	ELECTRIC ACV-04-BLEF	MODULATING	CENTIFEED	
SH-3B	ERU-3	245.6	STEAM INJECTION	30	36	13,000	0.10	54.5	55	30-60	24	10	ELECTRIC ACV-03-BLEF	MODULATING	CENTIFEED	
SH-4A	ERU-4	523.2	STEAM INJECTION	64	36	26,000	0.09	54.5	55	30-60	24	10	ELECTRIC ACV-06-BLEM	MODULATING	CENTIFEED	
SH-4B	ERU-4	245.6	STEAM INJECTION	30	36	13,000	0.10	54.5	55	30-60	24	10	ELECTRIC ACV-03-BLEF	MODULATING	CENTIFEED	
SH-5	ERU-5	811.6	STEAM INJECTION	68	48	39,000	0.14	54.5	55	30-60	24	10	ELECTRIC ACV-06-BLEM	MODULATING	CENTIFEED	
SH-6	ERU-6	224.2	STEAM INJECTION	42	20	6,000	0.13	54.5	55	30-60	24	10	ELECTRIC ACV-03-BLEF	MODULATING	CENTIFEED	

SNOW MELTING SYSTEM SCHEDULE

MARK	GLYCOL	OUTSIDE AIR TEMP	WIND SPEED	PRIMARY AREA (SQ FT)	REQUIRED BTU/HR	STEAM HX		MAX SUPPLY TEMP	DELTA T	GPM	NO. OF CIRCUITS	PUMP HP	PUMP VOLTAGE	PUMP MODEL	MANUFACTURER	REMARKS
						LBS/HR	PSIG TO CV									
SMP-1	40% PROPYLENE	-10	10	4,300	745,000	819	8	120°F	30	57	21	2	460	E-90 2AB	BELL & GOSSETT	

- NOTES:**
1. SYSYTEM TO BE COMPLETE FACTORY ASSEMBLED SKID-MOUNT PACKAGE CONSISTING OF SHELL AND TUBE HEAT EXCHANGER, INLINE PUMP, AIR SEPARATOR, EXPANSION TANK, MAKE-UP FILL, VALVES, SENSORS, ACCESSORIES AND ELECTRICAL/CONTROL PANEL WITH MOTOR STARTER AND DISCONNECT CONFIGURED FOR SINGLE POINT POWER CONNECTION.

STEAM PRESSURE REDUCING VALVE SCHEDULE

MARK	LOCATION	VALVE TYPE	VALVE SIZE (IN)	UPSTREAM PIPE SIZE (IN)	DOWNSTREAM PIPE SIZE (IN)	PRESSURE (PSIG)		CAPACITY (LBS/HR)		SOUND PRESS. (dBA)	NOISE PLATE	RELIEF CAPACITY (LBS/HR)	RELIEF SETTING (PSIG)	"ARMSTRONG" MODEL No.	REMARKS
						IN	OUT	MIN	MAX						
PRV-1A	STEAM UTILITY	EXTERNALLY PILOTED	2 1/2	4	6	90	15	342	6,847	85	8"	23,468	25	GP-2000 (150#)	
PRV-1B	STEAM UTILITY	EXTERNALLY PILOTED	4	6	8	90	15	683	13,653		10"			GP-2000 (150#)	
PRV-2	STEAM UTILITY	EXTERNALLY PILOTED	3/4	1	2	90	50	18	360	55	-	788	60	GP-2000 (150#)	

- NOTES:**
1. PRV-1A/1B: #6252 KQP - 6x8 KUNKLE SAFETY RELEIF VALVE W/ #299P - 6x8 KUNKLE DRIP PAN ELBOW.

2. PRV-2: #6010 DD - 3/4x3/4 KUNKLE SAFETY RELEIF VALVE W/ KECKLEY DRIP PAN ELBOW.

SHELL & TUBE HEAT EXCHANGER SCHEDULE

MARK	LOCATION	TUBE SIDE					SHELL SIDE		SIZE (INCHES)		HEATING SURFACE AREA (SQ. FT.)	"BELL & GOSSETT" MODEL No.	REMARKS
		FLOW RATE (GPM)	FLUID TEMP. (°F)		MAXIMUM PRESSURE DROP (FT. HD.)	MBH	STEAM TO SHELL						
			ENTERING	LEAVING			LBS/HR	PSI	LENGTH	DIAMETER			
HX-1	SHAW BASEMENT	670	143.4	180	5	12,000	12,487	8	109	16	311.6	SU-168-2	SIZED AT 100% LOAD
HX-2	SHAW BASEMENT	670	143.4	180	5	12,000	12,487	8	109	16	311.6	SU-168-2	SIZED AT 100% LOAD

- NOTES:**
1. FOULING FACTOR .0005.

HOT WATER FINNED TUBE RADIATION SCHEDULE

MARK	BTUH PER LINEAL FT.	ENCLOSURE DIM. (IN.)		ENCLOSURE TYPE	ELEMENT DIMENSIONS (IN.)			FINS PER FOOT	No. TIERS	"VULCAN" MODEL No.	REMARKS
		HEIGHT	DEPTH		TUBE	FIN WIDTH	FIN HEIGHT				
FTR-A	750	14 3/16	4 5/8	WALL MOUNTED	3/4	3 1/4	3 1/4	40	1	VC3/4-34	DURAVANE II - JDV3 14
FTR-B	710	11	4 9/16	PEDESTAL	3/4	3 1/4	3 1/4	40	1	VC3/4-34	DURAVANE II - JDVP31
FTR-C	740	-	-	BARE ELEMENT	3/4	3 1/4	3 1/4	40	1	VC3/4-34	LINOVECTOR II

- NOTES:**
1. 180°F ENTERING WATER TEMPERATURE.

2. 160°F LEAVING WATER TEMPERATURE.

3. 65°F ENTERING AIR TEMPERATURE UNLESS NOTED OTHERWISE.

4. 0.5 GPM MINIMUM FLOW RATE.

5. SEE FINISH SCHEDULE FOR ENCLOSURE COLORS.

6. PROVIDE ADDITIONAL HANGERS FOR HEATING RETURN PIPING INSIDE COVER.

HOT WATER CABINET UNIT HEATER SCHEDULE

MARK	MIN HEATING CAPACITY (MBH)	FLUID FLOW (GPM)	FAN			FINAL AIR TEMP. (°F)	ENCLOSURE	FILTER		ELECTRICAL	"STERLING" MODEL No.	REMARKS
			CFM	HP	RPM		L x D x H (IN.)	TYPE	AREA (SF)	AMPS		
CUH-A	35	4.0	420	1 @ 1/10	1050	110	47 x 9-1/2 x 25	PERM	1.9	1.40	RC-1200-04	
CUH-B	35	4.0	420	1 @ 1/10	1050	110	47 x 9-1/2 x 25	PERM	1.9	1.40	RWI-1130-04	

- NOTES:**
1. 180°F ENTERING WATER TEMPERATURE.

2. 160°F LEAVING WATER TEMPERATURE.

3. 65°F ENTERING AIR TEMPERATURE.

4. ALL MOTORS 115V, SINGLE PHASE UNLESS OTHERWISE NOTED.

5. PROVIDE WITH FACTORY MOUNTED AND WIRED DISCONNECT.

USE STANDARD DRAWING TITLE AND NUMBERING

CAPITAL PROJ. NO.
CP17133

LEAD ARCH. J. Kasdorf	CIVIL S. Gardner
INT. C. Lockwood	REP. K. Gottschalk
MECH. S. Hopper	APPR. J. Lefevre
ELEC. G. Halsey	
SCALE No Scale	DATE
Project Administrator: C. Azar	Project Designer: M. Koehler / D. Raphael
Project Arch/Eng: J. Schwartz	Drawn By: B. Cornell
Q.A. Review: QM	Approved: D. DiCiuccio

Issued for	Issue Date
DTMB 400 Draft Submittal	07-06-2018
DR #3C Level 500 Submittal	09-04-2018
Design Release #3C Bids	09-14-2018
Design Release #3C Addendum 2	10-12-2018
Design Assist	02-18-2019
Design Assist	05-20-2019
Design Assist	09-09-2019
Clarification #27	09-16-2019

© 2018 Integrated Design Solutions, LLC

iDS Project Number

17225-1000

Schedules
SAMPLE - MECHANICAL SCHEDULES PLAN

M8.02

OF

ABBREVIATIONS

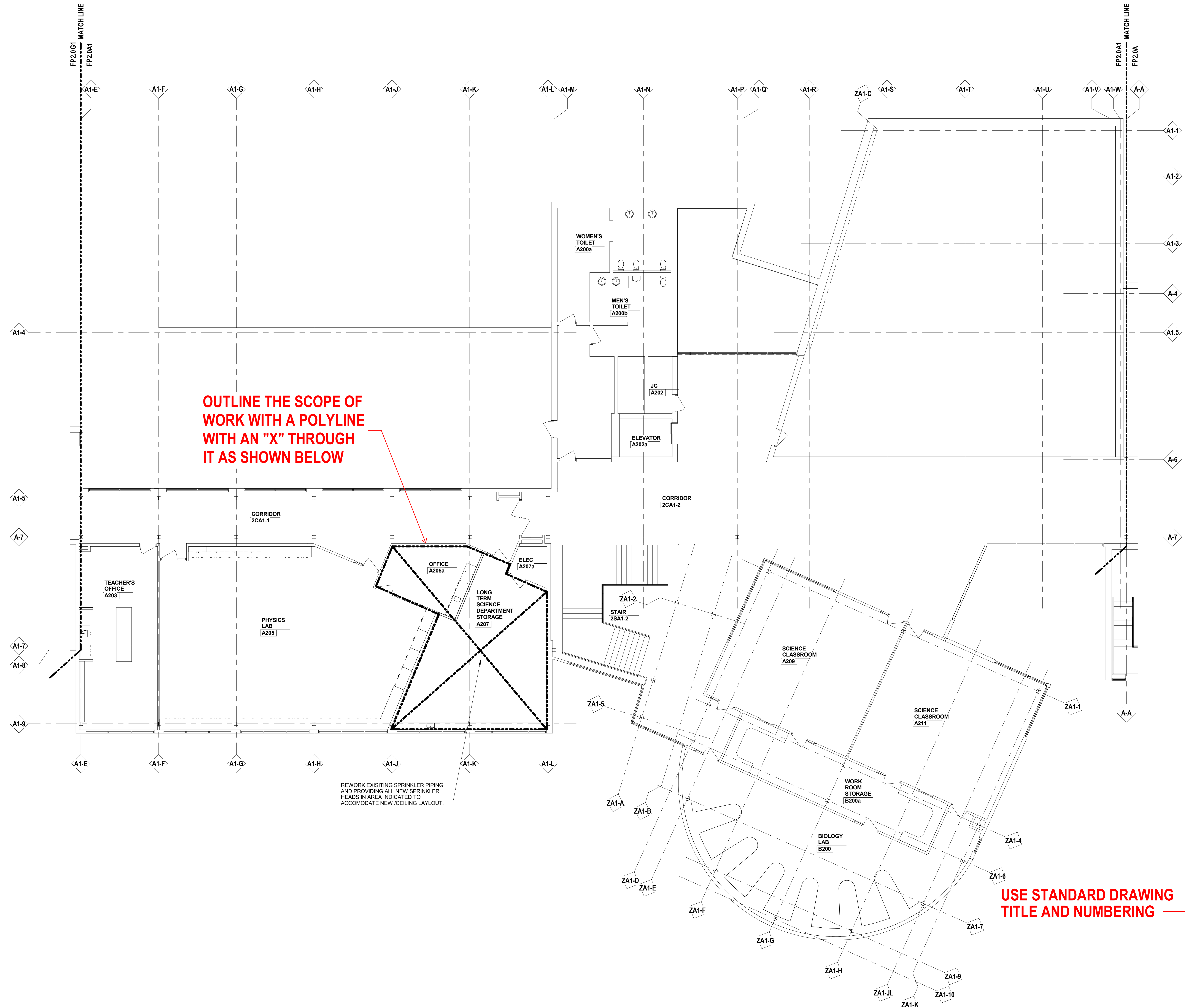
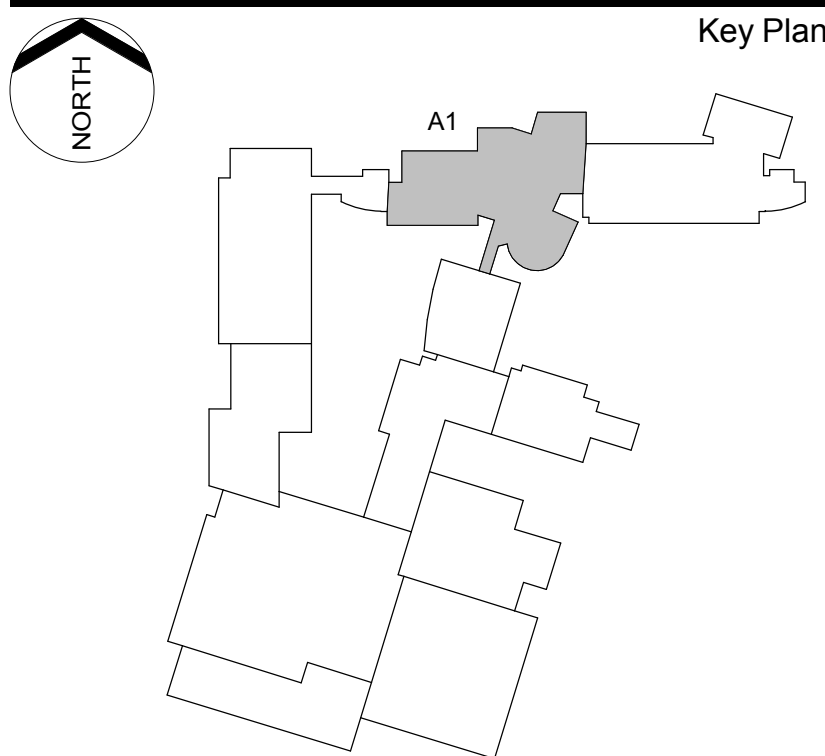
A	AMP, AMPERES	E	EAST EACH
A-E	ARCHITECT - ENGINEER	EA	ENTERING AIR TEMPERATURE
AC	AIR CONDITIONING	EAT	ENTHALPY CONTROLLER
ACC	AIR COMPRESSOR	EC	ECCENTRIC
ACCU	ALTERNATING CURRENT	ECCN	ECONOMIZER
ACV	AIR COOLED CONDENSING UNIT	ED	EXHAUST DIFFUSER
AD	AIR CONDITIONING & VENTILATING	EDW	ENTERING DRY BULB
ADA	AMERICAN DISABILITIES ACT	EEW	EMERGENCY EYE WASH
ADJ	ADJUSTABLE	EEWS	EMERGENCY EYE WASH AND SHOWER
AF	AIR FLOW	EF	AIR FLOW
AFF	ABOVE FINISHED FLOOR	EFF	EFFICIENCY
AHU	AIR HANDLING UNIT	EHC	ELECTRIC HEATING COIL
AI	ANALOG INPUT	EIH	ELECTRIC INFRARED HEATER
ALT	ALTERNATE	EJ	EXPANSION JOINT
ALUM	ALUMINUM	EL	ELEVATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	ELEC	ELECTRICAL, ELECTRONIC
AO	ANALOG OUTPUT	ELL	ELBOW
AP	ACCESS PANEL	EMS	ENERGY MANAGEMENT SYSTEM
APD	AIR PRESSURE DROP	ENCL	ENCLOSURE, ENCLOSED
APPROX	APPROXIMATE	ENT	ENTERING
AQST	AQUASTAT	EP	ELECTRIC-PNEUMATIC
ARCH	ARCHITECTURAL	EQ	EQUAL
ARGENT	ARRANGEMENT	EQUIP	EQUIPMENT
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS	ER	EXHAUST REGISTER
ASTM	AUTOMATIC SPRINKLER RISER	ERC	ENERGY RECOVERY COIL
ATM	ATMOSPHERE	ERR	ENERGY RECOVERY SUPPLY
AUTO	AUTOMATIC	ES	EMERGENCY SHOWER
AUX	AUXILIARY	ESP	EXTERNAL STATIC PRESSURE
AVG	AVERAGE	ET	EXPANSION TANK
AVAIL	AVAILABLE	EWB	ENTERING WET BULB
B		EWG	ELECTRIC WATER COOLER
BC	BACKWARD CURVED	EWV	ENTERING WATER TEMPERATURE
BAS	BUILDING AUTOMATION SYSTEM	EX	EXISTING
BF	BARRIER FREE	EXH	EXHAUST
BF	BOILER FEED	EXP	EXPANSION
BH	BACK FLOW PREVENTER	F	FAHRENHEIT
BHP	BOILER HORSEPOWER	F&BP	FACE AND BY PASS
BI	BACKWARDLY INCLINED	F&T	FLOAT AND THERMOSTATIC
BLDG	BUILDING	FB	FILTER BANK
BOD	BOTTOM OF DUCT	FCH	FIRE HOSE CURVED
BOF	BOTTOM OF PIPE	FHA	FP FLOOR CONTROL
BSMT	BASEMENT	FCO	FLOOR CLEANOUT
BTU	BRITISH THERMAL UNIT	FCD	FAN COIL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR	FD	FIRE DAMPER
BWV	BACKWATER VALVE	FDC	FLOOR DRAIN
C		FDE	FIRE DEPARTMENT CONNECTION
CAB	CENTIGRADE - CELSIUS	FES	FIRE EXTINGUISHER
CAP	CAPACITY	FEC	FIRE EXTINGUISHER CABINET
CAV	CONSTANT AIR VOLUME	FH	FIRE HYDRANT
CB	CATCH BASIN	FHC	FIRE HOSE CABINET
CC	COOLING COIL	FHE	FIRE HOSE KACKREEL
CCW	COUNTER CLOCKWISE	FHV	FIRE HOSE VALVE
CFH	CUBIC FEET PER HOUR	FIN	FINISH, FINISHED
CFM	CUBIC FEET PER MINUTE	FLA	FULL LOAD AMPS
CH	CHILLER	FLEX	FLEXIBLE
CHWR	CHILLED WATER RETURN	FMS	FLOOR
CHWS	CHILLED WATER SUPPLY	FM	FACTORY MUTUAL
CI	CAST IRON	FP	FLOW MEASURING STATION
CIRC	CIRCLE, CIRCULAR, CIRCULATION	FR	FIRE PROTECTION
CL	CENTER LINE	FS	FEET PER MINUTE
CLG	CEILING	FRP	FIBERGLASS REINFORCED PLASTIC
CM	CENTIMETER	FSH	FLOOR SWITCH
CO	CLEANOUT	FT	FOOT, FEET
CO2	CARBON DIOXIDE	FT	FINNED TUBE RADIATION
COEFF	COEFFICIENT	FUT	FUTURE
COL	COLUMN	FV	FACE VELOCITY
CONC	CONCRETE	G	
COND	CONDENSATE	G	GAS (NATURAL)
CONN	CONNECTION	G	GRAM
CONST	CONSTRUCTION	GA	GAUGE
CONT	CONTINUATION, CONTINUE, CONTINUOUS	GB	GALLON
CONTR	CONTRACTOR	GALV	GALVANIZED
CONV	CONVECTOR	GEN	GENERAL
COOL	COOLING	GI	GALVANIZED IRON
COORD	COORDINATE	GLY	GLYCOL
CORR	CORRIDOR	GPD	GALLONS PER DAY
CP	CONDENSATE PUMP	GPM	GALLONS PER HOUR
CP	CONTROL PANEL	GPP	GALLONS PER MINUTE
CPVC	CENTRAL PROCESSING UNIT	GR	GRADE
CS	CHLORINATED POLYVINYL CHLORIDE	GRAV	GRAVITY
CST	CLEAN STEAM	H	
CT	COOLING TOWER	H	HIGH, HEIGHT
CU	COPPER	H	HUMIDIFIER
CUB	CUBIC	H	HUMIDISTAT
CUH	CABINET UNIT HEATER	H	HOSE BIBB
CV	CONTROL VALVE	HC	HEATING COIL
CW	CAPACITY INDEX	HD	HEAT DETECTOR
CX	CLOCKWISE	HD	HOT DECK
CW	COLD WATER	HEPA	HIGH EFFICIENCY PARTICULATE AIR
CWR	CONDENSER WATER RETURN	HHL	HUMIDITY HIGH LIMIT
CWS	CONDENSER WATER SUPPLY	HOA	HAND-OFF-AUTO
D		HORIZ	HORIZONTAL, HORIZONTALLY
D	DEEP, DEPTH	HP	HORSEPOWER
D	DROP	HP	HIGH PRESSURE
DA	DIRECT ACTING	HPC	HIGH PRESSURE CONDENSATE
DAT	DISCHARGE AIR TEMP	HPS	HIGH PRESSURE STEAM
D&T	DRIP AND TRAP	HS	HUMIDITY SENSOR
DB	DECEMBER	HTD	HIGH TEMP DETECTOR
DC	DIRECT CURRENT	HTG	HEATING
DDC	DIRECT DIGITAL CONTROL	HTP	HEAT TRANSFER PACKAGE
DEG	DEGREE	HTR	HEATER
DEMO	DEMOLISH, DEMOLITION	HV	HVAC/HEATING, VENTILATING AND AIR CONDITIONING
DEPT	DEPARTMENT	HW	HOT WATER
DET	DETAIL	HWHR	HOT WATER HEATING RETURN
DF	DRINKING FOUNTAIN	HWR	HOT WATER RETURN
DI	DIGITAL INPUT	HYD	HYDRANT
DIA	DIAMETER	I	INPUT/OUTPUT
DIFF	DIFFUSER	ID	INSIDE DIAMETER
DIFF	DIFFERENTIAL	IE	INVERT ELEVATION
DIM	DIMENSION	IN	INCH, INCHES
DISC	DISCONNECT	INC	INCREASER
DISCH	DISCHARGE	INCL	INCLUDING, INCLUSIVE
DIV	DIVISION	INSUL	INSULATION, INSULATED
DN	DOWNDRAFT	INT	INTERIOR, INTERNAL
DOM	DOMESTIC	INV	INVERT
DP	DRIP ROCKET	ISD	IONIZATION SMOKE DETECTOR
DPR	DRY PENDANT	ISP	INTERNAL STATIC PRESSURE
DPT	DIFFERENTIAL PRESSURE GAUGE	ISW	INDIRECT WASTE
DPT	DEW POINT TEMPERATURE	IW	
DS	DRAIN	K	
DW	DRAIN TILE	K	KIP (1000 POUNDS)
DXT	DRAWING	K	KILOGRAM
DX	DIRECT EXPANSION	KV	KILOVOLT
		KVA	KILOVOLT AMPERES
		KWH	KILOWATT HOUR
		L	
		L	LONG, LENGTH
		LAB	LABORATORY
		LAV	LAVATORY
		LE	LEFT HAND
		LH	LEFT HAND
		LIT	LITERS
		LUC	LOW LIMIT CONTROLLER
		LP	LIQUID PROPANE
		LPC	LOW PRESSURE CONDENSATE
		LPS	LOW PRESSURE STEAM
		LRA	LOCKED ROTOR AMPS
		LTD	LOW TEMP DETECTOR
		LWA	LOW WATER ALARM
		LWT	LOW WATER TEMPERATURE
		M	
		M	METER
		M	MOTOR, MOTORIZED
		MA	MILLIAMPERE
		MA	MIXED AIR
		MAC	MAKE-UP AIR CONTROLLER
		MACH	MACHINE
		MAN	MANUAL
		MATL	MATERIAL
		MAX	MAXIMUM
		MCC	MODULAR BUILDING CONTROLLER
		MCH	MOTOR CONTROL CENTER
		MD	MOTORIZED DAMPER
		ME	MOTOR STARTER
		MEZZ	MEZZANINE
		MFG	MANUFACTURING
		MFR	MANUFACTURER
		MH	MANHOLE
		MIN	MINIMUM
		MISC	MISCELLANEOUS
		MM	MILLIMETER
		MP	MEDIUM PRESSURE
		MPC	MEDIUM PRESSURE CONDENSATE
		MPS	MEDIUM PRESSURE STEAM
		MS	MOTOR
		MUA	MAKE UP AIR
		N	
		N	NORTH
		NATL	NATIONAL
		NC	NOISE CRITERIA
		NC	NORMALLY CLOSED
		NE	NORTHEAST
		NEC	NATIONAL ELECTRICAL CODE
		NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
		NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
		NIC	NOT IN CONTRACT
		NO	NORMALLY OPEN
		NOM	NOMINAL
		NPH	NET POSITIVE SUCTION HEAD
		NW	NOT TO SCALE
		O	
		O	OUTSIDE AIR
		OAL	OUTSIDE AIR TEMPERATURE SENSOR
		OATS	ON CENTER
		OD	OUTSIDE DIAMETER
		OFF	OFFICE
		OPR	OPERATOR, OPERATED, OPERATIONAL
		OPER	OPERATOR, OPERATED, OPERATIONAL
		ORIG	ORIGINAL
		OSEH	OUTSIDE SCREW AND YOKER
		OSHA	OCCUPATIONAL SAFETY AND HEALTH ACT
		OZ	OUNCE
		P	
		P	PRESSURE DIFFERENTIAL
		PA	PUMP
		P&A	PRE-ACTION FIRE PROTECTION PIPING
		PC	PROGRAMMABLE CONTROLLER
		PC	PUSH BUTTON
		PD	PUMPED CONDENSATE
		PE	PRESSURE DROP
		PERF	PNEUMATIC-ELECTRIC
		PERM	PENDANT
		PH	PERFORATED
		PH	PIPE GUIDE
		PH	PHASE
		PHC	PREHEAT COIL
		PNEU	PNEUMATIC
		PM	POSITION
		PMS	POUNDS PER SQUARE INCH
		PREFAB	PARTS PER MILLION
		PREP	PREFABRICATED
		PRES	PRESENT
		PROG	PROCESS, PROCESSING
		PRV	PRESSURE REDUCING VALVE
		PSF	POUNDS PER SQUARE FOOT
		PSI	POUNDS PER SQUARE INCH
		PSIG	POUNDS PER SQUARE INCH ABSOLUTE
		PVC	POLYVINYL CHLORIDE
		PWR	POWER
		PWS	PROCESS WATER RETURN
		QTY	QUANTITY
		R	
		R	RADIUS
		RA	RISE, RISER
		RA	RETURN AIR
		RA	REVERSE ACTING
		RC	RADIATOR, RADIATION
		RC	RAINWATER CONDUCTOR
		RC	ROOM CRITERION
		RCV	RADIANT CEILING PANEL
		RCP	REINFORCED CONCRETE PIPE
		RD	RETURN DIFFUSER
		RED	RECIROULATION
		R	
		REF	REFERENCE
		REFRIG	REFRIGERANT, REFRIGERATION, REFRIGERATOR
		REG	REGISTER
		REM	REMARKS
		REQD	REQUIRED
		RET	RETURN
		REV	REVISION
		RH	RETURN FAN
		RG	RETURN GRILLE
		RH	RELATIVE HUMIDITY
		RH	RELIEF HOOD
		RH	RIGHT HAND
		RHC	REHEAT COIL
		RM	ROOM
		RBPB	REDUCED PRESSURE BACKFLOW PREVENTER
		RPC	ROOM PRESSURE CONTROLLER
		RPM	REVOLUTIONS PER MINUTE
		RR	RETURN REGISTER
		RSD	RESISTANCE TEMPERATURE DETECTOR
		S	
		S	SOUTH
		S&T	SHELL AND TUBE
		SA	SOUND ATTENUATOR
		SA	SUPPLY AIR
		SAN	SANITARY SEWER
		SCFM	STANDARD CUBIC FEET PER MINUTE
		SCHD	SCHEDULE
		SCU	STAND ALONE COMPUTER UNIT
		SD	SOFTENED COLD WATER
		SD	SMOKE DETECTOR
		SE	SOUTHEAST
		SE	STATIC EFFICIENCY
		SEC	SECOND
		SEL	SELECTOR
		SENS	SENSIBLE
		SEP	SEPARABLE
		SF	SUPPLY FAN
		SG	STEAM GENERATOR
		SH	SUPPLY GRILLE
		SH	SHOWER
		SHT	SHEET
		SIM	SIMILAR
		SP	STEAMPIPE
		SP	STATIC PRESSURE
		SPEC	SPECIFICATION
		SQ	SQUARE
		SS	STAINLESS STEEL
		SSCV	STAINLESS STEEL CHECK VALVE
		ST	STAINLESS STEEL
		ST	STATION
		STA	STANDARD
		STD	STEEL
		STL	STEAM
		STOR	STORAGE
		STR	STRAINER
		STRUCT	STRUCTURAL
		SW	SUPPLY
		SW	SOUTHWEST
		SW	SWITCH
		SY	SYMMETRICAL
		SY	SYSTEM
		T	
		T	TRAP
		TAB	TESTING, ADJUSTING, AND BALANCING
		TAP	TEMPERATURE AND PRESSURE
		TB	THRUST BLOCK
		TC	TEMPERATURE CONTROLS
		TD	TEMPERATURE
		TDH	TOTAL DYNAMIC HEAD
		TEMP	TEMPERATURE
		THC	TRANSFORMER
		TOT	TOTAL
		TSTAT	THERMOSTAT
		TSP	TOTAL STATIC PRESSURE
		TV	TURNING VANES
		TYP	TYPICAL
		U	
		U	UNDERGROUND
		UL	UNIT HEATER
		UPS	UNINTERRUPTIBLE POWER SYSTEM
		UR	URINAL
		USGS	UNITED STATES GEOLOGICAL SURVEY
		UV	UNIT VENTILATOR
		V	
		V	VENT
		V	VALVE
		VAC	VACUUM
		VAR	VARIABLE
		VAV	VARIABLE AIR VOLUME
		VB	VACUUM BREAKER
		VD	VOLUME DAMPER
		VE	VELOCITY
		VENT	VENTILATING, VENTILATION
		VF	VERTICAL
		VIF	VERIFY IN FIELD
		VOL	VOLUME
		VOLT	VOLTAZ
		VSD	VARIABLE SPEED DRIVE
		VTR	VENT THROUGH ROOF
		W	
		W	WEST
		W	WIDE, WIDTH
		W	WITHOUT
		WV	WASTE AND VENT
		WB	WET BULB
		WBT	WET BULB TEMPERATURE
		WC	WATER CLOSET
		WCO	WALL CLEANOUT
		WG	WATER GAUGE
		WH	WALL HYDRANT
		WH	WATER HEATER
		WPD	WATER PRESSURE DROP
		WT	WEIGHT
		X	
		XFMR	TRANSFORMER
		XH	EXTRA HEAVY
		XP	EXPLOSION PROOF
		Y	
		Y	YARD
		YH	YARD HYDRANT

K	KIP (1000 POUNDS)	R	REFERENCE
K	KILOGRAM	REFRIG	REFRIGERANT, REFRIGERATION, REFRIGERATOR
KV	KILOVOLT	REG	REGISTER
KVA	KILOVOLT AMPERES	REM	REMARKS
KVAR	KILOVOLT AMPERE REACTIVE	REQD	REQUIRED
KW	KILOWATTS	RET	RETURN
KWH	KILOWATT HOUR	REV	REVISION
L		RH	RETURN FAN
L	LONG, LENGTH	RG	RETURN GRILLE
LAB	LABORATORY	RH	RELATIVE HUMIDITY
LAT	LABORATORY	RH	RELIEF HOOD
LAV	LAVATORY	RH	RIGHT HAND
LBS	POUNDS	RHC	REHEAT COIL
LEV	LEVEL	RM	ROOM
LH	LEFT HAND	RBPB	REDUCED PRESSURE BACKFLOW PREVENTER
LIT	LITERS	RPC	ROOM PRESSURE CONTROLLER
LUC	LOW LIMIT CONTROLLER	RPM	REVOLUTIONS PER MINUTE
LP	LIQUID PROPANE	RR	RETURN REGISTER
LPC	LOW PRESSURE CONDENSATE	RSD	RESISTANCE TEMPERATURE DETECTOR
LPS	LOW PRESSURE STEAM	S	
LRA	LOCKED ROTOR AMPS	S	SOUTH
LTD	LOW TEMP DETECTOR	S&T	SHELL AND TUBE
LWT	LOW WATER TEMPERATURE	SA	SOUND ATTENUATOR
LWA	'A' WEIGHING SOUND POWER LEVEL	SA	SUPPLY AIR
LWT	WEIGHING WATER TEMPERATURE	SAN	SANITARY SEWER WASTE
M		SCFM	STANDARD CUBIC FEET PER MINUTE
M	METER	SCHD	SCHEDULE
M	MOTOR, MOTORIZED	SCU	STAND ALONE COMPUTER UNIT
MA	MILLIAMPERE	SD	SOFTENED COLD WATER
MA	MIXED AIR	SD	SMOKE DETECTOR
MAC	MAKE-UP AIR CONTROLLER	SE	SUPPLY DIFFUSER
MACH	MACHINE	SE	SOUTHEAST
MACH	MACHINE	SE	STATIC EFFICIENCY
MAN	MANUAL	SEC	SECOND
MATL	MATERIAL	SEL	SECTION
MAX	MAXIMUM	SENS	SENSIBLE
MBC	MODULAR BUILDING CONTROLLER	SEP	SEPARATOR
MCH	THOUSAND BRITISH THERMAL UNITS PER HOUR	SF	SUPPLY FAN
MD	MOTOR CONTROL CENTER	SG	STEAM GENERATOR
ME	MOTORIZED DAMPER	SH	SUPPLY GRILLE
MECH	MECHANICAL	SH	SHOWER
MEZZ	MEZZANINE	SHT	SHEET
MFG	MANUFACTURING	SIM	SIMILAR
MFR	MANUFACTURER	SP	STEAMPIPE
MH	MANHOLE	SP	STATIC PRESSURE
MIN	MINIMUM	SPEC	SPECIFICATION
MISC	MISCELLANEOUS	SQ	SQUARE
MM	MILLIMETER	SS	STAINLESS STEEL
MP	MEDIUM PRESSURE	SS	SUPPLY REGISTER
MPC	MEDIUM PRESSURE CONDENSATE	SS	SERVICE SINK
MPS	MEDIUM PRESSURE STEAM	SSCV	STAINLESS STEEL CHECK VALVE
MS	MOTOR STARTER	ST	STAINLESS STEEL
MUA	MAKE UP AIR	ST	STATION
N		STA	STANDARD
N	NORTH	STD	STEEL
NATL	NATIONAL	STL	STEAM
NC	NOISE CRITERIA	STOR	STORAGE
NC	NORMALLY CLOSED	STR	STRAINER
NE	NORTHEAST	STRUCT	STRUCTURAL
NEC	NATIONAL ELECTRICAL CODE	SW	SOUTHWEST
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	SW	SWITCH
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	SYM	SYMMETRICAL
NC	NOT IN CONTRACT	SYS	SYSTEM
NO	NORMALLY OPEN	T	
NOM	NOMINAL	T	TRAP
NPSH	NET POSITIVE SUCTION HEAD	T&B	TESTING, ADJUSTING, AND BALANCING
N	NOT TO SCALE	TAP	TEMPERATURE AND PRESSURE
NW	NORTHWEST	TB	THRUST BLOCK
O		TC	TEMPERATURE CONTROLLER
O	OUTSIDE AIR	TD	TRANSFER DIFFUSER
OA	OUTSIDE AIR	TEMP	TOTAL DYNAMIC HEAD
OAS	OUTSIDE AIR INTAKE	TEMP	TEMPERATURE
OC	OUTSIDE AIR TEMPERATURE SENSOR	TRF	TRANSFER GRILLE
OD	ON CENTER	TRM	TERMINAL HEATING COIL
OFF	OUTSIDE DIAMETER	TSP	THERMOSTAT
OPP	OPPOSITE	TST	TOTAL STATIC PRESSURE
OPER	OPERATOR, OPERATED, OPERATIONAL	TU	TURNING VANS
ORIG	ORIGINAL	TYP	TYPICAL
OSBY	OUTSIDE SCREW AND YOKE	U	
OSHY	OCCUPATIONAL SAFETY AND ENVIRONMENTAL HEALTH	U	UNDERGROUND
OSHA	OCCUPATIONAL SAFETY AND HEALTH ACT	UB	UNIT HEATER
O	OUTLET VELOCITY	UL	UNDERWRITERS LABORATORIES
OV	OUNCE	UN	UNINTERRUPTIBLE POWER SUPPLY
P		UR	URNAL
P	PRESSURE DIFFERENTIAL	USGS	UNITED STATES GEOLOGICAL SURVEY
P	PRESSURE	U	UNIT VENTILATOR
PA	PUMP	V	
PB	PUSH BUTTON	VA	VENT
PC	PROGRAMMABLE CONTROLLER	VB	VALVE
PE	PUMPED CONDENSATE	VAC	VACUUM
PENF	PNEUMATIC-ELECTRIC	VAR	VARIABLE
PERD	PERDAMT	VAV	VARIABLE AIR VOLUME
PERM	PERFORATED	VBC	VACUUM BREAKER
PERM	PERMANENT	VD	VOLUME DAMPER
PH	PIPE GUIDE	VEL	VELOCITY
PH	PHASE	VENT	VENTILATING, VENTILATION
PHC	PREHEAT COIL	VERT	VERTICAL
PLBG	PLUMBING	VF	VERIFY IN FIELD
PNEU	PNEUMATIC	VOL	VOLUME
POS	POSITION	VOLT	VOLTAGE
PPH	POUNDS PER HOUR	VPD	VARIABLE SPEED DRIVE
PPM	PARTS PER MILLION	VTR	VENT THROUGH ROOF
PREFAB	PREFABRICATED	W	
PREP	PREPARATION	W	WEST
PRS	PRESENT	W	WITH
PROC	PROCESS, PROCESSING	WO	WITHOUT
PRV	PRESSURE REDUCING VALVE	W&T	WASTE AND VENT
PSF	POUNDS PER SQUARE FOOT	WB	WET BULB
PSI	POUNDS PER SQUARE INCH	WBT	WET BULB TEMPERATURE
PSIG	POUNDS PER SQUARE INCH ABSOLUTE	W	WATER CLOSET
PVC	POLYVINYL CHLORIDE	WCO	WALL CLEANOUT
PWR	POWER	WH	WALL HYDRANT
PWS	PROCESS WATER RETURN	WH	WALL WATER HEATER
PWR	PROCESS WATER SUPPLY	WPD	WATER PRESSURE DROP
Q		WT	WEIGHT
Q	QUANTITY	X	
R		X	TRANSFORMER
R	RADIUS	XFMR	
R	RISE, RISER	XI	EXTRA HEAVY
RA	RETURN AIR	Y	EXPLOSION PROOF
RA	REVERSE ACTING	Y	
RAD	RADIATOR, RADIATION	YD	YARD
RAD	RAINWATER CONDUCTOR	YH	YARD HYDRANT
RC	ROOF CRITERION		
RCP	RADIANT CEILING PANEL		
RCP	REINFORCED CONCRETE PIPE		
RD	RETURN DIFFUSER		
RDR	ROOF DRAIN		



New Romeo High School

Romeo Community Schools
62300 Jewell Rd.
Washington, MI 48094

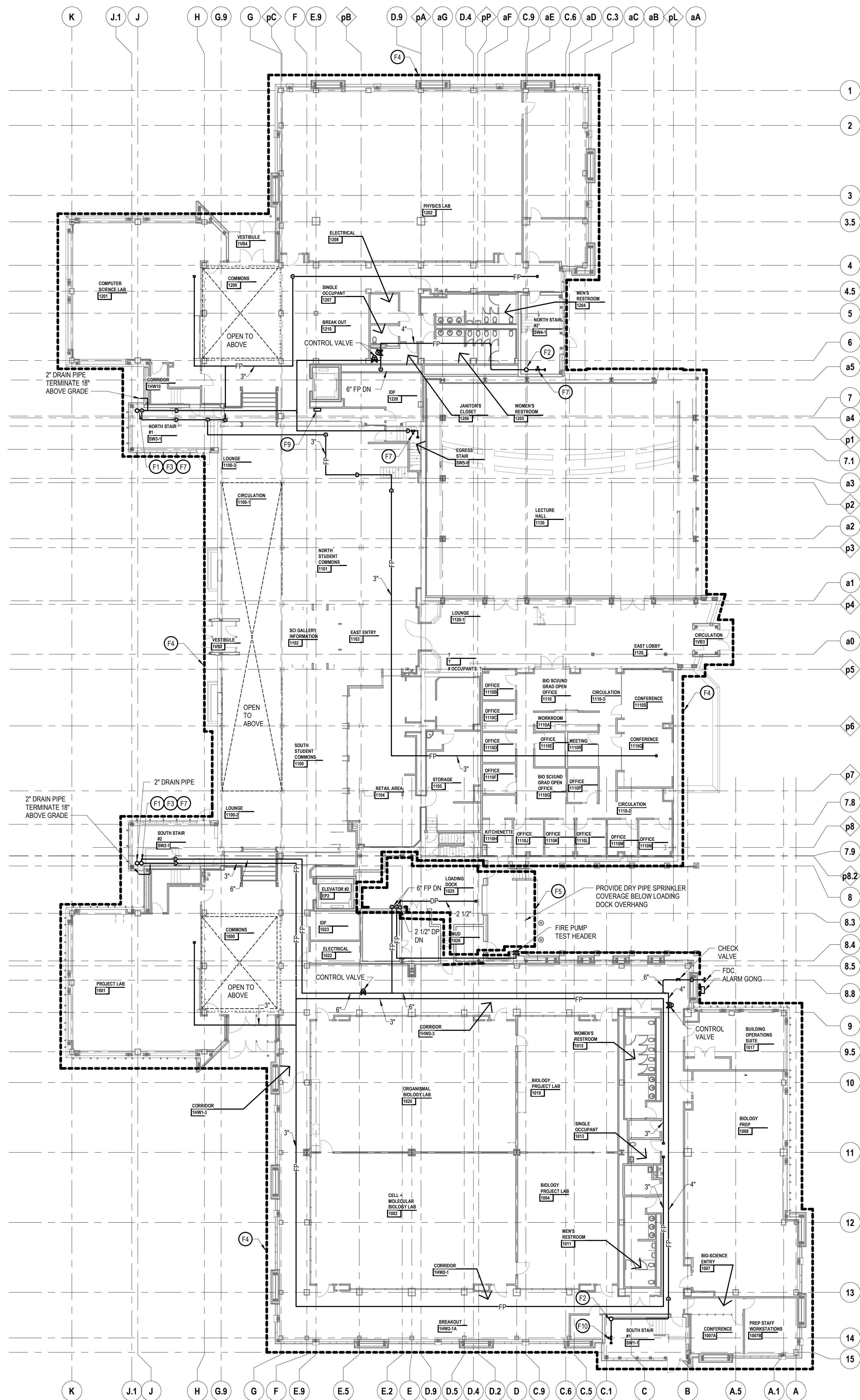


USE STANDARD DRAWING
TITLE AND NUMBERING

Second Floor Fire Protection
Plan - Area A1

SAMPLE - STANDARD FIRE
PROTECTION FLOOR PLAN

9/16/2019 9:46:46 AM
B:\362 - MSU STEM Facility\17225 MSU STEM Teaching Bldg-M18.rvt



GENERAL NOTES

- FIRE PROTECTION**
1. ALL DESIGN, INSTALLATIONS AND MATERIALS SHALL CONFORM TO NFPA 13, NFPA 14, NFPA 20, FACTORY MUTUAL GUIDELINES, AND ALL STATE AND LOCAL CODES.
 2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED. VERIFY ALL CONDITIONS. NOTIFY ARCHITECT/ENGINEER OF DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS. COORDINATE ALL WORK WITH APPROPRIATE TRADES.
 3. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE CODES. PROVIDE ALL FITTINGS, TRANSITIONS, VALVES, MISC. STEEL, AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
 4. APPROPRIATE SIGNAGE SHALL BE AFFIXED TO ALL FIRE PROTECTION EQUIPMENT AND A MAINTENANCE MANUAL SHALL BE PROVIDED TO OWNER.
 5. PROVIDE FLUSH TYPE ACCESS DOORS OR PANEL NO SMALLER THAN 12"x12" AND NO LARGER THEN 30"x30" FOR ALL VALVES OR APPARATUS LOCATED IN CHASES, WALLS AND ABOVE NON ACCESSIBLE CEILINGS.
 6. PROVIDE ACCESS LADDER TO ALL SPRINKLER FLOOR CONTROL ASSEMBLIES LOCATED MORE THEN 7'-0" ABOVE FLOOR.
 7. ALL PIPE SIZES SHOWN ON DRAWINGS ARE APPROXIMATE AND ARE SHOWN ONLY TO ASSIST THE DESIGN.
 8. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 9. SPRINKLER HEAD TYPES TO BE USED. REFER TO SPRINKLER HEAD SCHEDULE.
 10. PENDENT TYPE SPRINKLER HEADS LOCATED IN SUSPENDED CEILING TILES, SHALL BE CENTERED IN CEILING TILE.
 11. PROVIDE SPRINKLER PROTECTION INSIDE ELEVATOR MACHINE ROOMS AND PITS WITH SHUT-OFF AND TAMPER SWITCH AND VALVE IN BOX WITH GLASS DOOR.
 12. PROVIDE SPRINKLER HEAD CAGES AT ALL ELECTRIC AND MECHANICAL EQUIPMENT ROOMS.
 13. COORDINATE ANY REQUIRED SHUTDOWN OF SERVICES OR EQUIPMENT WITH OWNER'S REPRESENTATIVE.

FIRE STANDPIPE/SPRINKLER
DESIGN CRITERIA

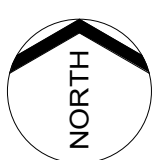
- FIRE PROTECTION**
1. SYSTEMS SHALL BE DESIGNED TO PROVIDE A DENSITY/AREA OF COVERAGE AS FOLLOWS:
A. OFFICES - 10 GPM OVER THE MOST REMOTE 1500 SQ. FT. WITH 250 GPM HOSE ALLOWANCE.
B. LABS & MECHANICAL ROOMS - 20 GPM OVER THE MOST REMOTE 2500 SQ. FT. WITH 250 GPM FOR HOSE ALLOWANCE.
 2. THE ENTIRE FIRE STANDPIPE SYSTEM SHALL BE DESIGNED, LOCATED, INSTALLED AND MAINTAINED THROUGHOUT THE BUILDING IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 14 FACTORY MUTUAL DATA SHEET 4-4N AND ALL STATE AND LOCAL CODES AND AUTHORITY HAVING JURISDICTION.
 3. THE STANDPIPE SYSTEM SHALL BE DESIGNED TO PROVIDE 100 PSI. AT THE TOP OF THE STANDPIPE.
 4. HOSE VALVE STATION SHALL BE UNOBSTRUCTED AND INSTALLED BETWEEN 3 FEET AND NOT MORE THAN 5 FEET ABOVE THE FINISHED FLOOR. PROVIDE VALVE CABINET WHERE INDICATED.
 5. HOSE VALVE STATION SHALL BE EQUIPPED WITH 2-1/2" FIRE DEPARTMENT VALVE & CAP.
 6. FIRE DEPARTMENT CONNECTIONS SHALL BE PROVIDED AND LOCATED IN ACCORDANCE WITH NFPA 13 FACTORY MUTUAL GUIDELINES AND ALL STATE AND LOCAL CODES. REQUIREMENTS AND AUTHORITY HAVING JURISDICTION.
 7. SPRINKLER HEADS SHALL BE SIZED IN ACCORDANCE WITH FACTORY MUTUAL DATA SHEET 3-26.

KEYNOTES

- NOT ALL NOTES MAY BE USED ON THIS SHEET
- ① LEGEND SYMBOL INDICATOR
- F1 6" COMBINATION STANDPIPE AND 2" DRAIN RISER
- F2 4" STANDPIPE RISER
- F3 SPRINKLER CONTROL VALVE ASSEMBLY
- F4 PROVIDE WET SPRINKLER FIRE PROTECTION COVERAGE TO AREA INDICATED. SEE ADDITIONAL FIRE PROTECTION NOTES ON THIS DRAWING.
- F5 PROVIDE DRY-PIPE SPRINKLER FIRE PROTECTION COVERAGE TO AREA INDICATED
- F6 HIGH TEMPERATURE SPRINKLERS
- F7 2 1/2" ANGLE FIRE HOSE VALVE
- F8 DRY PIPE SYSTEM
- F9 SPRINKLER SHUT-OFF WITH TAMPER SWITCH IN VALVE BOX WITH GLASS DOOR
- F10 SPRINKLER CONTROL VALVE WITH TAMPER SWITCH AND DRAIN DOWN

NOTE:
LARGER CLIENTS LIKE MSU AND UOFM EXPECT US TO SHOW MORE ON THE DRAWINGS THAN A NORMAL CLIENT WOULD. OUR STANDARD FIRE PROTECTION DRAWINGS ONLY INCLUDE POLYLINES REPRESENTING THE SCOPE BOUNDARIES OF WORK, WHERE THESE SETS OF DRAWINGS INCLUDE RISERS AS WELL AS ADDITIONAL INFORMATON.

USE STANDARD DRAWING
TITLE AND NUMBERING



**STEM - Addition 2
and Renovations to
Shaw Lane Power Plant**

CAPITAL PROJ. NO.
CP17133

LEAD K. Gottschalk	CIVIL S. Gardner
ARCH. J. Kasdorf	L.A. D. Kinney
INT. C. Lockwood	REP. K. Gottschalk
MECH. S. Hopper	APPR. J. Lefevre
ELEC. G. Halsey	
SCALE 1/16" = 1'-0"	DATE
Project Administrator: C. Azar	Project Designer: B. Cornell
Project Arch/Eng: J. Schwartz	Drawn By: B. Cornell
Q.M. Review: QM	Approved: D. DiCiccio

Issued for	Issue Date
DTMB 400 Draft Submittal	07-06-2018
DR #3C Level 500 Submittal	09-04-2018
Design Release #3C Bids	09-14-2018
Design Release #3C Addendum 3	10-18-2018
Clarification #27	09-16-2019

© 2018 Integrated Design Solutions, LLC

iDS Project Number

17225-1000

First Floor Fire Protection New Work
Plan

SAMPLE - UNIVERSITY FIRE
PROTECTION FLOOR PLAN

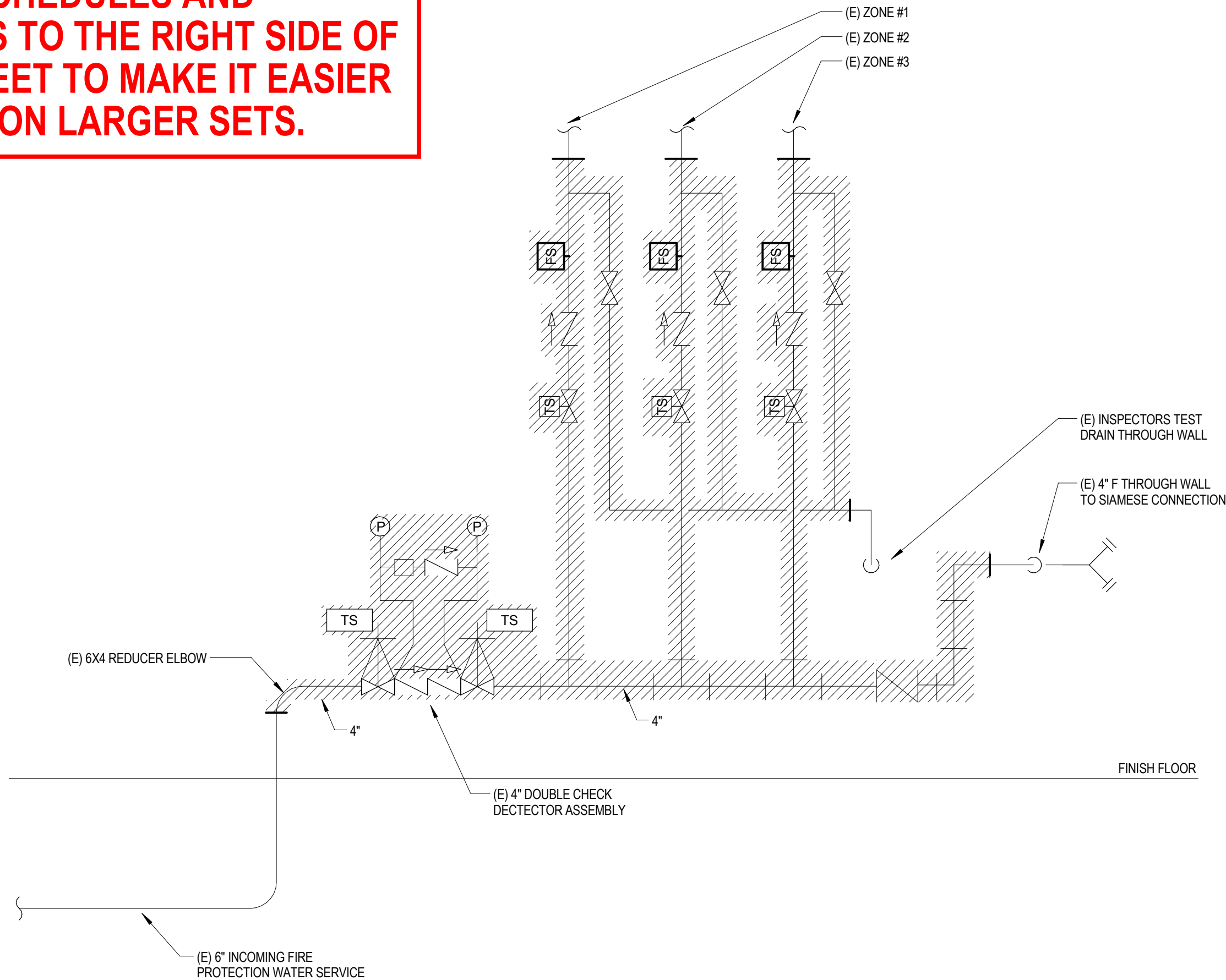
FP2.1

OF

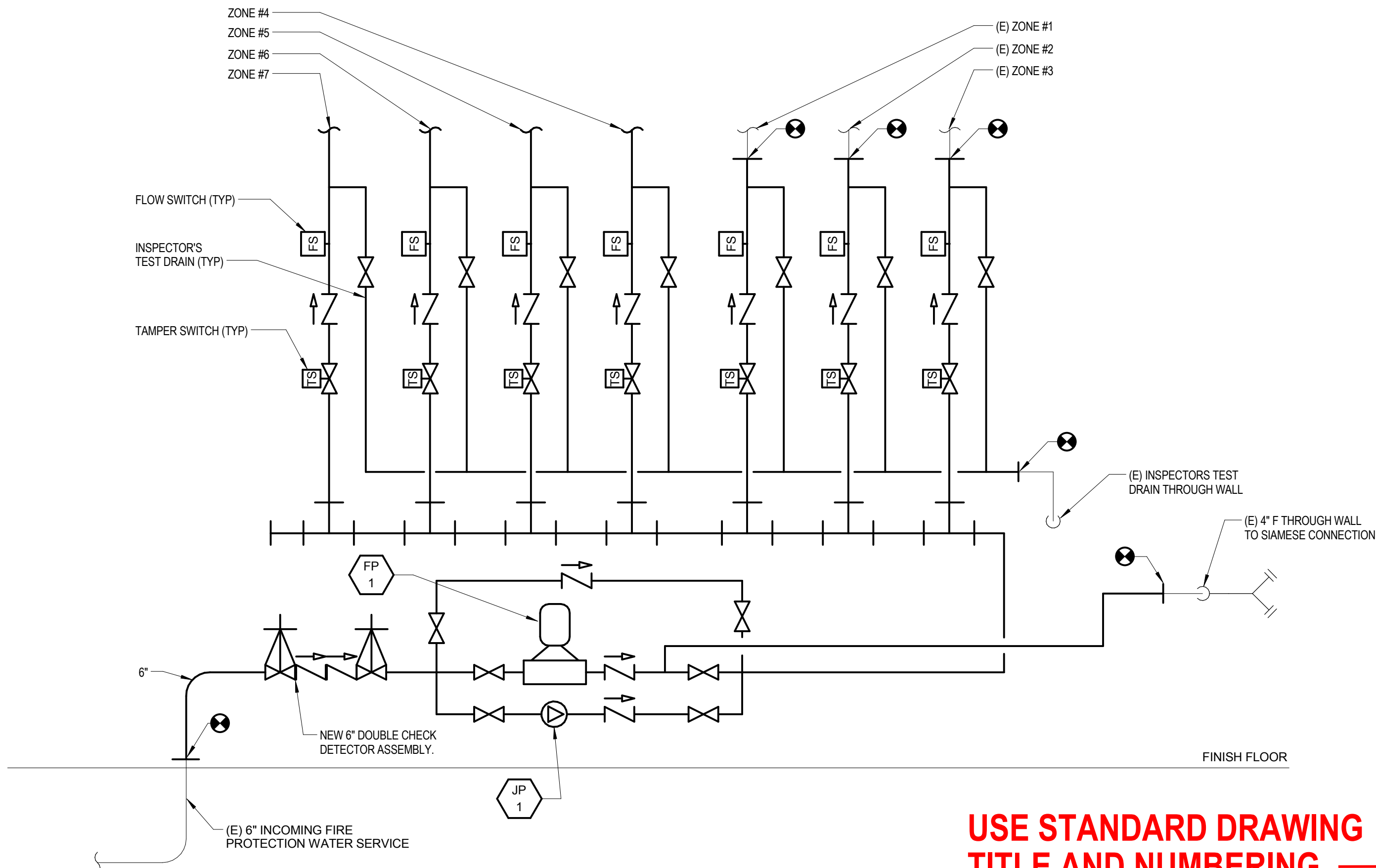
FIRE PUMP SCHEDULE												
MARK	LOCATION	SYSTEM SERVED	TYPE	PUMP			MOTOR			MANUFACTURER	MODEL No.	REMARKS
				GPM	TDH (PSIG)	RPM	HP	VOLTS	PH			
FP-1	C115 MECH	SPRINKLER SYSTEM & STAGE FHV	M-STAGE CENT	500	95	3,600	50	460	3	AC FIRE PUMP	4x4x9.5F	
JP-1	C115 MECH	MAINTAINING SYSTEM PRESSURE	JOCKEY	5	105	3,600	1	460	3	GOULDS	1SV10	

- NOTES:
1. CONTRACTOR SHALL PERFORM WATER FLOW TEST AND SHALL CONFIRM FIRE PUMP TDH REQUIRED BASED ON WATER FLOW TEST DATA
 2. FIRE PUMP SHALL HAVE CHARACTERISTIC PUMP CURVE THAT DOES NOT EXCEED 120% OF RATED PRESSURE AT RATED FLOW (AT PUMP CHURN)
 3. FIRE PUMP TDH PRESSURE REQUIRED IS BASED ON ACHIEVING 100 PSIG RESIDUAL PRESSURE AT THE HYDRAULICALLY MOST DEMANDING HOSE VALVE
 4. FIRE PUMP CONTROL PANEL: FIRETROL FTA1000 W/ ATS
 5. JOCKEY PUMP CONTROL PANEL: FTA550F

KEEP SCHEDULES AND
DETAILS TO THE RIGHT SIDE OF
THE SHEET TO MAKE IT EASIER
TO SEE ON LARGER SETS.



EXISTING FIRE PROTECTION SYSTEM RISER DIAGRAM



NEW FIRE PROTECTION SYSTEM RISER DIAGRAM

USE STANDARD DRAWING
TITLE AND NUMBERING

Details and Riser Diagram

SAMPLE - STANDARD FIRE
PROTECTION FLOOR PLAN

105 Project Number Drawing Number

16175-1000

FP6.1

i D S

INTEGRATED design SOLUTIONS
architecture engineering interiors & technology

1441 west long lake, suite 200
troy, michigan 48098

5211 cascade road so, suite 300
grand rapids, michigan 49546

248.823.2100
www.ids-troy.com

STRUCTURAL ENGINEER

DESAI/NASR CONSULTING ENGINEERS, INC.
6765 DALY ROAD
WEST BLOOMFIELD, MICHIGAN 48322
248-932-2010
www.desainasr.com

FOOD SERVICES

E.F. WHITNEY, INC.
1000 SOUTH OLD WOODWARD AVENUE, SUITE 200
BIRMINGHAM, MICHIGAN 48009
248-644-0990
www.efwhitney.com

THEATRICAL CONSULTANT

ASSOCIATED CONTROLS + DESIGN
6850 GUION ROAD
INDIANAPOLIS, INDIANA 46268
317-298-3961
www.acdtheatrical.com

Project Title



New Romeo
High School

Romeo Community Schools

62300 Jewell Rd.

Washington, MI 48094

Key Plan

Project Administrator

M. Beck

Project Designer

B. Cornell / I. Francisco / S. Schmidt / C. VanOverbeke

Project Architect / Engineer

J. Schwartz

Drawn By

I. Francisco

Q.M. Review

A. Veneklaase

Approved

D. DiCiuccio

Drawing Scale

No Scale

Issued for Issue Date

Design Development 03-03-2017

BP-3C Quality Managment Review 08-11-2017

BP-3C Bids 09-15-2017

©2017 INTEGRATED design SOLUTIONS, LLC