WAYNE STATE UNIVERSITY

FACULTY ADMINSTRATION BUILDING
Roof Top Unit Replacement

656 WEST KIRBY AVENUE
DETROIT, MICHIGAN
WSU# 130-252650
DSD 14-4802

DiCLEMENTE SIEGEL DESIGN INC. ENGINEERING AND ARCHITECTURE
28105 GREENFIELD ROAD
SOUTHFIELD, MICHIGAN 48076-3046
DSD PROJECT No. 14–4802

DESAI/NASR CONSULTING ENGINEERS STRUCTURAL ENGINEER
WEST BLOOMFIELD, MI

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SHEET	**DESCRIPTION**
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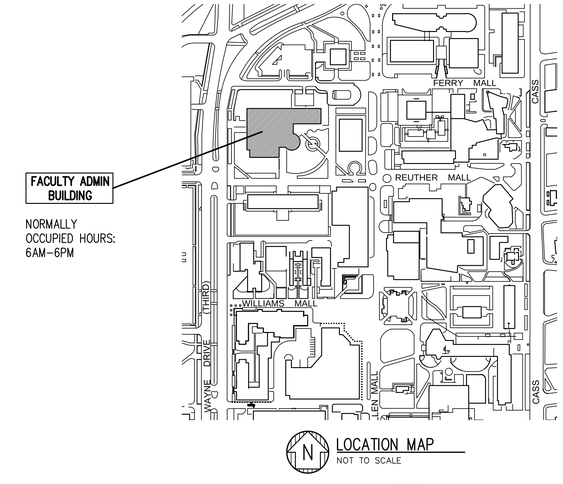
M4	TEMPERATURE CONTROLS

NOTE: ALL WORK AREAS SHALL BE KEPT CLEAN AND FREE OF DEBRIS AND SHALL BE CLEANED UP ON A REGULAR BASIS.



LOCATION MAP
NOT TO SCALE

SHEET: G1
ACADFILE: 14-4802-G1
ISSUED FOR: RE-BID
DATE: 1/28/15

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GENERAL STRUCTURAL NOTES

1. THE STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATIONS AND THE STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.
2. THE STRUCTURAL DRAWINGS FORM AN INTEGRAL PART OF CONTRACT DOCUMENTS, WHICH INCLUDE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL/SITE DRAWINGS AND SPECIFICATIONS. COORDINATE THE STRUCTURAL DRAWINGS WITH THE REQUIREMENTS SHOWN IN THE OTHER COMPONENTS OF THE CONTRACT DOCUMENTS.
3. TYPICAL DETAILS AND OTHER SECTIONS/DETAILS APPLY TO CONDITIONS THAT ARE SIMILAR TO THE CONDITIONS DESCRIBED IN THE SECTIONS/DETAILS, EVEN IF THEY ARE NOT SPECIFICALLY REFERENCED ON THE PLANS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS, METHODS SEQUENCES AND PROCEDURES OF CONSTRUCTION.
5. THE STRUCTURE IS DESIGNED TO BE SELF_SUPPORTING AND STABLE AFTER IT IS FULLY COMPLETED PER REQUIREMENTS OF CONTRACT DOCUMENTS. THIS INCLUDES THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE_DOWNS IF NECESSARY. CONTRACTOR SHALL RETAIN OWNERSHIP OF SUCH MATERIAL AFTER COMPLETION OF THE PROJECT.
6. CONSTRUCTION SHALL COMPLY FULLY WITH THE APPLICABLE PROVISIONS OF OSHA AND THE LOCAL GOVERNING CODES, CURRENT EDITION, AND ALL REQUIREMENTS SPECIFIED IN THE CODES SHALL BE ADHERED TO AS IF THEY WERE CALLED FOR OR SHOWN ON THE DRAWINGS. THIS SHALL NOT BE CONSTRUED TO MEAN THAT REQUIREMENTS SET FORTH ON THE DRAWING MAY BE MODIFIED BECAUSE THEY ARE MORE STRINGENT THAN THE CODE REQUIREMENTS OR BECAUSE THEY ARE NOT SPECIFICALLY REQUIRED BY CODE.
7. GOVERNING BUILDING CODE – MICHIGAN (INTERNATIONAL) BUILDING CODE 2009. STANDARDS LISTED IN STRUCTURAL NOTE SECTIONS REFER TO THE VERSION AND EFFECTIVE DATE IDENTIFIED IN THE REFERENCED STANDARDS CHAPTER IN THE GOVERNING BUILDING CODE.
8. WORK CONSTRUCTED PER THESE DRAWINGS SHALL BE INSPECTED BY AN INDEPENDENT TESTING AGENCY RETAINED TO ENSURE COMPLIANCE WITH THE REQUIREMENTS SHOWN ON THE DRAWINGS. SPECIAL INSPECTIONS REQUIRED BY THE GOVERNING BUILDING CODE, LOCAL BUILDING DEPARTMENT AND THE CONTRACT DOCUMENTS SHALL BE PERFORMED BY A QUALIFIED SPECIAL INSPECTOR. PROJECT SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE OR REPLACE INSPECTION.

SHOP DRAWINGS

1. SUBMIT SHOP DRAWINGS FOR REVIEW AS INDICATED IN MATERIAL SECTION OF GENERAL STRUCTURAL NOTES.
2. USE OF ENGINEERING DRAWINGS AS ERECTION DRAWINGS BY THE CONTRACTOR IS STRICTLY PROHIBITED.
3. REVIEW OF SHOP DRAWINGS AND OTHER SUBMITTALS BY THE STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO CHECK THE SHOP DRAWINGS PRIOR TO SUBMITTAL. ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS NOT CONFORMING TO THE CONSTRUCTION DOCUMENTS ARE THE RESPONSIBILITY OF THE SHOP DRAWING PREPARER.
4. CONTRACTOR SHALL VERIFY ALL RELEVANT DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATIONS AGAINST PURCHASED MANUFACTURER'S CERTIFIED EQUIPMENT DRAWINGS. CONTRACTOR SHALL COORDINATE DIMENSIONS THAT DEPEND UPON SPECIFIC EQUIPMENT, SUCH AS ELEVATOR OPENINGS, MECHANICAL EQUIPMENT SUPPORTS, ETC. PRIOR TO SUBMITTAL. SUCH DIMENSIONS SHALL BE PROVIDED ON THE SHOP DRAWINGS PRIOR TO SUBMITTAL TO THE STRUCTURAL ENGINEER. CONTRACTOR'S FAILURE TO PROVIDE SUCH DIMENSIONS ON SUBMITTED SHOP DRAWINGS WILL RESULT IN SHOP DRAWING RETURN WITHOUT REVIEW.

EXISTING CONSTRUCTION

1. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
2. EXISTING BUILDING DIMENSIONS AND CONDITIONS SHOWN ARE BASED UPON ORIGINAL DRAWINGS OR PARTIAL SURVEY AND HAVE NOT BEEN COMPLETELY FIELD VERIFIED. THE OWNER AND ARCHITECT/STRUCTURAL ENGINEER TAKE NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING DIMENSIONS SHOWN. CONTRACTOR SHALL FIELD MEASURE EXISTING DIMENSIONS PRIOR TO SHOP DRAWING PREPARATION AND FABRICATION.
3. CONTRACTOR SHALL VERIFY CONDITIONS COVERING OR AFFECTING THE STRUCTURAL WORK; OBTAIN AND VERIFY ALL DIMENSIONS AND ELEVATIONS TO ENSURE THE PROPER STRENGTH, FIT AND LOCATION OF THE STRUCTURAL WORK; REPORT TO THE ARCHITECT/STRUCTURAL ENGINEER ANY AND ALL CONDITIONS/DISCREPANCIES WHICH MAY INTERFERE WITH OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION AND COMPLETION OF THE NEW WORK IN COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS. ALL DISCREPANCIES SHALL BE FULLY RESOLVED PRIOR TO COMMENCING WORK.
4. EXISTING CONSTRUCTION NOT UNDERGOING ALTERATION IS TO REMAIN UNDISTURBED. WHERE SUCH CONSTRUCTION IS DISTURBED AS A RESULT OF THE OPERATIONS OF THIS CONTRACT, CONTRACTOR SHALL REPAIR OR REPLACE AS REQUIRED AND TO THE SATISFACTION OF THE ARCHITECT/STRUCTURAL ENGINEER AND OWNER'S REPRESENTATIVE.
5. CONTRACTOR SHALL PROVIDE FIRE WATCH DURING FIELD CUTTING AND WELDING OPERATIONS, MEETING THE OWNER'S REQUIREMENTS.
6. CONTRACTOR SHALL PROVIDE TEMPORARY PROTECTION OF EXISTING EQUIPMENT DURING EXECUTION OF WORK, SATISFYING THE OWNER'S REQUIREMENTS.
7. CONTRACTOR SHALL PROVIDE TEMPORARY PROTECTION TO PREVENT DAMAGE FROM THE WEATHER AND VANDALISM.
8. CONTRACTOR SHALL COORDINATE WORK WITH THE OWNER'S PERSONNEL TO AVOID ANY INTERFERENCE IN THEIR OPERATIONS.

STRUCTURAL STEEL

1. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS AND THE STEEL CONSTRUCTION MANUAL, ALLOWABLE STRENGTH DESIGN ASD.
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS AND MINIMUM YIELD STRENGTH:

W SHAPES	A 572 GR. 50	FY = 50 KSI
MISCELLANEOUS SHAPES AND PLATES A 36		FY = 36 KSI
SQUARE TUBES	A 500 GRADE B	FY = 46 KSI

3. ANCHOR RODS SHALL CONFORM TO ASTM F 1554 GRADE 36
4. STRUCTURAL STEEL BOLTING SHALL BE ASTM A 325 TYPE N, 3/4" DIAMETER SNUG TIGHT EXCEPT WHERE OTHER SIZE, ASTM A 490 N, PRE-TENSIONED OR SLIP CRITICAL TYPE BOLTS ARE INDICATED.
5. WELDING SHALL BE DONE WITH APPROPRIATE E70 SERIES ELECTRODES COMPATIBLE WITH THE NEW AND EXISTING STEEL. WELDS AND WELDING PROCEDURES SHALL CONFORM TO THE "STRUCTURAL WELDING CODE – STEEL" OF THE AMERICAN WELDING SOCIETY ANSI/AWS D1.1.
6. DETAILING SHALL BE PERFORMED USING RATIONAL ENGINEERING DESIGN AND STANDARD PRACTICE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE TYPICAL DETAILS SHOWN ARE APPROXIMATE ONLY AND DO NOT INDICATE THE REQUIRED NUMBER OF BOLTS OR WELD SIZES, UNLESS SPECIFICALLY NOTED.
7. CONTRACTOR SHALL SUBMIT FOR REVIEW, ENGINEERED DRAWINGS SHOWING SHOP FABRICATION DETAILS, FIELD ASSEMBLY DETAILS AND ERECTION DIAGRAMS FOR ALL STRUCTURAL STEEL. SHOW AT MINIMUM ALL DETAILS INCLUDED IN THESE CONTRACT DOCUMENTS WITH ADDITIONAL ERECTION DETAILS AS REQUIRED TO COMPLETELY DEFINE THE INTERCONNECTION OF STRUCTURAL STEEL PIECES.
8. CONTRACTOR SHALL REFERENCE ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS SHAPES AND PLATES NOT SHOWN ON STRUCTURAL DRAWINGS. THESE ITEMS SHALL BE SHOP WELDED TO THE STRUCTURAL FRAMING SECTIONS TO MINIMIZE FIELD WELDING.
9. THE LENGTH, DIMENSION AND CONNECTION DETAIL FROM NEW STRUCTURAL MEMBER TO EXISTING STRUCTURES SHALL BE FIELD VERIFIED BEFORE FABRICATION. FIELD MODIFICATIONS TO THE FABRICATED MEMBER OR CONNECTION ARE NOT ALLOWED WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER. CONTRACTOR SHALL SUBMIT SKETCHES OR SHOP DRAWINGS DETAILING PROPOSED MODIFICATIONS FOR APPROVAL.
10. NON-COMPOSITE BEAM CONNECTIONS SHALL BE CAPABLE OF SUPPORTING MINIMUM 50% OF THE MAXIMUM TOTAL UNIFORM LOAD, AISC STEEL CONSTRUCTION MANUAL, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. BEAM CONNECTIONS SHALL BE STANDARD AISC APPROVED CONNECTIONS.
11. SIMPLE SHEAR CONNECTIONS SHALL BE CAPABLE OF END ROTATION AS PER THE REQUIREMENTS OF THE AISC SPECIFICATION, SIMPLE CONNECTIONS, SPECIFICATION SECTION J1.2 AND MANUAL PART 10.
12. CONNECTIONS SHALL BE SHOP WELDED IN ACCORDANCE WITH LATEST AWS SPECIFICATIONS FOR E70XX ELECTRODES AND FIELD BOLTED WITH ASTM A 325 OR ASTM A 490 BOLTS.
13. WELDING SHALL BE DONE BY WELDERS QUALIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT "STRUCTURAL WELDING CODE _ STEEL," AMERICAN WELDING SOCIETY, AWS D1.1.
14. CONTRACTOR SHALL INSTALL A325 AND A490 BOLTS IN ACCORDANCE WITH THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS." SNUG TIGHT CONDITION SHALL BE ACHIEVED USING AN IMPACT WRENCH, TO BRING THE CONNECTED PLIES INTO FIRM CONTACT, EXCEPT WHERE NOTED AS, SLIP CRITICAL,
15. STIFFENER PLATES AND BEARING STIFFENERS ARE TO BE PROVIDED IN PAIRS.
16. CLEAN STEEL PER SSPC–SP3 AND SHALL RECEIVE ONE SHOP COAT OF PAINT. OMIT PAINT AT HOLES FOR SLIP CRITICAL TYPE CONNECTIONS, AT STRUCTURAL STEEL TO BE FIREPROOFED, ENCASED OR IN CONTACT WITH CONCRETE, AND ON TOP FLANGE OF BEAMS RECEIVING SHEAR CONNECTORS.
17. STEEL ABOVE THE ROOF AND OUTSIDE THE BUILDING ENVELOPE (EXPOSED TO WEATHER) SHALL BE CLEANED PER SSPC–SP6 AND HOT DIP GALVANIZED.
18. CONTRACTOR SHALL CONTROL ERECTION PROCEDURES AND SEQUENCES WITH RELATION TO TEMPERATURE DIFFERENTIALS, ESPECIALLY WITH RESPECT TO STRUCTURAL STEEL FRAMING INTO CONCRETE WALLS, BEAMS OR COLUMNS.
19. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AS REQUIRED TO ENSURE STABILITY OF THE STRUCTURE UNDER FULL DESIGN LOADS UNTIL THE PERMANENT BRACING IS IN PLACE. PROVIDE NECESSARY SHORING WHERE REQUIRED DURING CONSTRUCTION.
20. WELDING SHALL BE INSPECTED BY AN AWS CERTIFIED WELDING INSPECTOR (CWI).

PLAN LEGEND

SYMBOL	DESCRIPTION
	LINE FOR ITEM TO BE REMOVED
	WALL TO REMAIN
	NEW OR RELOCATED ITEM
	EXISTING ITEM

GENERAL SYMBOLS

SYMBOL	DESCRIPTION
XX	EXISTING COLUMN NUMBER IDENTIFICATION AND GRID
X / X	SECTION IDENTIFIER
X / X	DETAIL DESIGNATOR
	WORK POINT / ELEVATION ABOVE FINISHED FLOOR OR GRADE
	BREAK LINE

DESIGN CRITERIA		
Note: The structure is designed for the following live loads, in addition to the lateral loads and super-imposed dead loads self-weight of the structure. Where applicable, the live loads are reduced in accordance with the provisions of the Building Code.		
		CODE REFERENCE
RISK CATEGORY	II	MBC-Table 1604.5 ASCE Table 1.5-1
SNOW LOADS		
SNOW CRITERIA		CODE REFERENCE
Ground Snow Load	Pg = 25 PSF	ASCE Fig. 7-1
Flat Roof Snow Load	Pf = 25 PSF (Minimum)	ASCE Sec. 7.3
Exposure Factor	Ce = 1.0	ASCE Table 7-2
Importance Factor	Is = 1.0	ASCE Table 1.5-2
Thermal Factor	Ct = 1.0	ASCE Table 7-3
Note: Snow loads adjacent to vertical projections, or on lower roofs adjacent to high roofs or sloped roofs are increased for the effect of drifting.		
WIND LOADS		
WIND CRITERIA		
Ultimate Design Wind Speed (3 sec. gust)	Vult = 115 mph	ASCE Fig. 26.5-1A
Nominal Design Wind Speed	Vasd = 89 mph	MBC Sec. 1609.3.1
Exposure Category	B	ASCE Sec. 26.7.3
Internal Pressure Coefficient	+/- 0.18 (Enclosed)	ASCE Fig. 26.11-1
Components and Cladding	Per Code Requirement based on above	ASCE Chapt. 30

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR	L.P.	LOW POINT
ALUM.	ALUMINUM	MANUF.	MANUFACTURER
ARCH.	ARCHITECTURAL	MAS.	MASONRY
ASSY.	ASSEMBLY	MAX.	MAXIMUM
BD.	BOARD	MECH.	MECHANICAL
B.F.	BARRIER FREE	MET. OR MTL.	METAL
B.O.S.	BOTTOM OF STEEL	MIN.	MINIMUM
BOT.	BOTTOM	MTD.	MOUNTED
BRG.	BEARING	M.O.	MASONRY OPENING
C.J.	CONTROL JOINT	N.I.C.	NOT IN CONTRACT
CLG.	CEILING	NON. COMB.	NON COMBUSTIBLE
CLR.	CLEAR	N.T.S.	NOT TO SCALE
CLOS.	CLOSET	O.C.	ON CENTER
C.M.U.	CONCRETE MASONRY UNIT	O.H.	OVERHEAD
C.O.	CLEAN OUT	OPN'G.	OPENING
COMM.	COMMUNICATION	OPP.	OPPOSITE
COMP.	COMPACTED	PL.	PLATE
CONC.	CONCRETE	P.LAM.	PLASTIC LAMINATE
CONSTR.	CONSTRUCTION	PT.	PAINT
CONT.	CONTINUOUS	PTD.	PAINTED
CONTR.	CONTRACTOR	PR.	PAIR
CPT.	CARPET	R.	RADIUS
C.T.	CERAMIC TILE	R.A.	RETURN AIR
DET.	DETAIL	R.B.	RUBBER BASE
DIA.	DIAMETER	REINF.	REINFORCED/REINFORCING
D.O.	DOOR OPENING	REQ'D.	REQUIRED
DR.	DOOR	RM.	ROOM
DWG.	DRAWING	R.O.	ROUGH OPENING
E.J.	EXPANSION JOINT	S.C.	SOLID CORE
ELECT.	ELECTRICAL	S.F.	SQUARE FEET
EL. OR ELEV.	ELEVATION	SHT.	SHEET
ENG.	ENGINEER	SIM.	SIMILAR
EQ.	EQUAL	S.S.	STAINLESS STEEL
EQUIP.	EQUIPMENT	ST.	STONE
E.W.C.	ELECTRIC WATER COOLER	STL.	STEEL
EX.	EXISTING	STRUCT.	STRUCTURAL
EXP.	EXPANSION	SUSP.	SUSPENDED
EXT.	EXTERIOR	THK.	THICK
FIN.	FINISH	THRU	THROUGH
FL. OR FLR.	FLOOR	T.O.	TOP OF
GALV.	GALVANIZED	T.O.C.	TOP OF CURB
GA.	GAUGE	T.O. CONC.	TOP OF CONCRETE
G.C.	GENERAL CONTRACTOR	T&G	TONGUE AND GROOVE
GL.	GLASS OR GLAZING	T.S.	TUBE STEEL
GYP.	GYPSUM	T.O.S.	TOP OF STEEL
HDWR.	HARDWARE	TYP.	TYPICAL
H.D.G.	HOT–DIPPED GALVANIZED	UNEXCAV.	UNEXCAVATED
H.M.	HOLLOW METAL	U.O.N.	UNLESS OTHERWISE NOTED
HORIZ.	HORIZONTAL	V.C.T.	VINYL COMPOSITION TILE
H.P.	HIGH POINT	VERT.	VERTICAL
HT.	HEIGHT	VEST.	VESTIBULE
INSUL.	INSULATION	V.I.F.	VERIFY IN FIELD
INT.	INTERIOR	W/	WITH
JAN.	JANITOR	WD.	WOOD
JST.	JOIST	W.P.	WORK POINT
LAM.	LAMINATE		
LAV.	LAVATORY		

ARCHITECTURAL SHEET INDEX

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A1	GENERAL ARCHITECTURAL INFORMATION AND SITEPLAN
A2	ROOF PLAN – ARCHITECTURAL DEMOLITION
A3	ROOF PLAN – ARCHITECTURAL NEW WORK
A4	ARCHITECTURAL DETAILS & SCHEDULES

OVERVIEW OF ARCHITECTURAL SCOPE

THIS OVERVIEW OF SCOPE IS INCLUDED TO GIVE THE CONTRACTOR A GENERAL OVERVIEW OF THE PROJECT REQUIREMENTS. THE OVERVIEW IS NOT ALL INCLUSIVE AND IS NOT INTENDED TO, AND SHOULD NOT BE USED TO, ESTABLISH CONTRACT LIMITS OR PRICING INCLUSIONS. THE CONTRACT DOCUMENTS SHALL BE USED TO ESTABLISH CONSTRUCTION CONTRACT SCOPE.

THIS OVERVIEW OF SCOPE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

ARCHITECTURAL:
1. DEMOLISH ROOF CURBS, ROOF PAVERS, WOODEN STAIRS AND ROOFING AS INDICATED
2. PROVIDE STRUCTURAL STEEL SUPPORT FOR NEW MECHANICAL UNITS.
3. PROVIDE ROOF FLASHING AT NEW MECHANICAL UNITS, AND AT NEW AND EXISTING ROOF PENETRATIONS.
4. PROVIDE NEW INSULATION AND EPDM ROOF ON EXISTING STEEL DECK AS INDICATED..

PROJECT REQUIREMENTS

PROVIDE ALL NECESSARY PERMITS. ALL WORK SHALL BE INSTALLED TO COMPLY WITH THE OWNER'S STANDARDS, STATE AND LOCAL CODES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING CODES AND THEIR RELATED REFERENCES.

2012 MICHIGAN MECHANICAL CODE

2012 MICHIGAN PLUMBING CODE

2009 INTERNATIONAL FIRE CODE (AS REFERENCED)

2009 INTERNATIONAL FUEL GAS CODE

NFPA 101 LIFE SAFETY CODE 1997 AND 2006 (AS REFERENCED)

MICHIGAN ENERGY CODE–ASHRAE 90.1–2007

2011 NATIONAL ELECTRICAL CODE AS AMENDED BY THE 2011 MICHIGAN ELECTRICAL CODE RULES, PART 8.

2012 MICHIGAN BUILDING CODE

MANUFACTURER AND MODEL NUMBER LISTED REPRESENTS THE BASIS OF DESIGN FOR THIS PROJECT. THE CONTRACTOR SHALL BEAR ALL ADDITIONAL COSTS ASSOCIATED WITH USING EQUIPMENT AND/OR SYSTEMS BY OTHER APPROVED MANUFACTURERS INCLUDING ADDITIONAL COSTS BY OTHER TRADES.

ALL EQUIPMENT AND/OR SYSTEMS INSTALLED SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE FIELD OR PROJECT CONDITIONS DO NOT ALLOW ALL MANUFACTURER'S RECOMMENDATIONS TO BE MET, THE INSTALLING CONTRACTOR SHALL SUBMIT IN WRITING TO THE ARCHITECT THE PROPOSED DEVIATION, IN A SKETCH FORM, ACCOMPANIED BY THE MANUFACTURER'S CONCURRENCE.

GENERAL NOTES:

1. VERIFY ALL EX. DIMENSIONS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTORS TO NOTIFY ENGINEER AND/OR ARCHITECT IMMEDIATELY IF ANY CONFLICTS ARISE, TYP..
2. PROTECT ALL FINISH WORK/LANDSCAPING TO REMAIN FROM DAMAGE DURING DEMOLITION AND CONSTRUCTION, TYP.. REPAIR OF DAMAGED EXISTING FINISHES/LANDSCAPING WILL BE AT THE CONTRACTORS EXPENSE, TYP..
3. REFER TO OTHER SHEETS OF THIS DOCUMENT SET & SPECS. FOR COMPLETE CONTRACT REQUIREMENTS, TYP..
4. REFER TO MECH. AND ELEC. DWGS. FOR ADDITIONAL WORK REQUIRED. COORDINATE WORK WITH MECH. AND ELEC. CONTRACTORS. PATCH AND REPAIR ALL WALLS, FLOORS, CEILINGS AS REQUIRED TO ACCOMMODATE MECH. AND ELEC. WORK.
5. FILL ALL NEW AND EXISTING PENETRATIONS WITH FIRE RESISTANT SEALANT AND FIRE SAFE MATERIAL FOR A COMPLETE FIRE RATED WALL ASSEMBLY TYP. AT ALL FIRE RATED WALLS.
6. REFER TO NEW WORK DWGS. FOR SIZES AND EXTENT OF NEW INSTALLATIONS/LAYOUTS. PROVIDE DEMO. AS REQUIRED TO ACCOMMODATE THE ENTIRE NEW SCOPE OF WORK AS DELINEATED IN THESE DWGS.. REFER TO THE COVER SHEET FOR THE COMPLETE DRAWING INDEXES.
7. REFER TO MECH. & ELEC. DWGS. FOR EQUIP. REMOVAL & NEW LAYOUT. COORDINATE IN FIELD W/ MECH. AND/OR ELEC. CONTR. FOR FINAL LOCATIONS, PRIOR TO COMMENCEMENT OF WORK.

SHEET NOTES:

1. VERIFY AND COORDINATE CONTRACTOR STAGING AREA AND CRANE LOCATION WITH OWNER'S FACILITY MANAGER.
2. CONTRACTOR TO PROVIDE BARRIER/ PROTECTION FOR OWNER'S PERSONNEL AND GENERAL PUBLIC AS REQ'D TO KEEP EGRESS PATH OPEN THROUGHOUT CONSTRUCTION.
3. CONTRACTOR TO RESTORE ALL LANDSCAPING/SITE FEATURES IN THE STAGING AND CRANE AREAS DAMAGED DURING DEMOLITION CONSTRUCTION
4. LIFTING WORK SHALL NOT BE DONE DURING NORMALLY OCCUPIED HOURS AND SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.
5. COORDINATION OF TEMPORARY INTERFERENCE OF TRAFFIC WITH THE MUNICIPALITIES SHALL BE THE RESPONSIBILITY OF HTE CONTRACTOR.

SPECIAL INSPECTION REQUIREMENTS - STEEL CONSTRUCTION

TASK	INSPECTION FREQUENCY CONTINUOUS	INSPECTION FREQUENCY PERIODIC	REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
1. INSPECTION OF STEEL FABRICATOR:					
A. VERIFY Q.C. PROCEDURES ARE AISC COMPLIANT AND CURRENT.	–	X	AISC QUALITY CERTIFICATION	1704.2	SI
2. MATERIAL VERIFICATION OF HIGH–STRENGTH BOLTS, NUTS, AND WASHERS:			–	–	
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	–	X	AISC 360, SECTION A3.3 AND APPLICABLE ASTM MATERIAL STANDARDS	–	SI
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	–	X	–	–	
3. INSPECTION OF HIGH–STRENGTH BOLTING:					
A. SNUG–TIGHT JOINTS	–	X	AISC 360, SECTION M2.5	1704.3.3	SI/TA
B. PRETENSIONED AND SLIP–CRITICAL JOINTS USING TURN–OF–NUT WITH MATCHMARKING, TWIST–OFF BOLT OR DIRECT TENSION INDICATOR METHODS OF INSTALLATION.	–	X			
4. MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD–FORMED STEEL DECK:					
A. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360.	–	X	AISC 360, SECTION M5.5		SI/TA
B. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	–	X	APPLICABLE ASTM MATERIAL STANDARDS		
C. MANUFACTURER'S CERTIFIED TEST REPORTS.	–	X	–		
5. MATERIAL VERIFICATION OF WELD FILLER MATERIALS:			AISC 360 SECTION A3.5 AND APPLICABLE AWS A5 DOCUMENTS		
A. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS.	–	X			
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	–	X			
6. INSPECTION OF WELDING:					
A. STRUCTURAL STEEL AND COLD – FORMED STEEL DECK:					
1. COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS.	X	–	AWS D1.1	1704.3.1	SI/TA
2. MULTIPASS FILLET WELDS.	X	–			
3. SINGLEPASS FILLET WELDS > 5/16"	X	–			
4. PLUG AND SLOT WELDS	X	–			
5. SINGLEPASS FILLET WELDS < 5/16"	–	X			
6. FLOOR AND ROOF DECK WELDS.	–	X	AWS D1.3		
7. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE:			–	1704.3.2	SI
A. DETAILS SUCH AS BRACING AND STIFFENING.	–	X			
B. MEMBER LOCATIONS	–	X			
C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION.	–	X			

SPECIAL INSPECTION NOTES

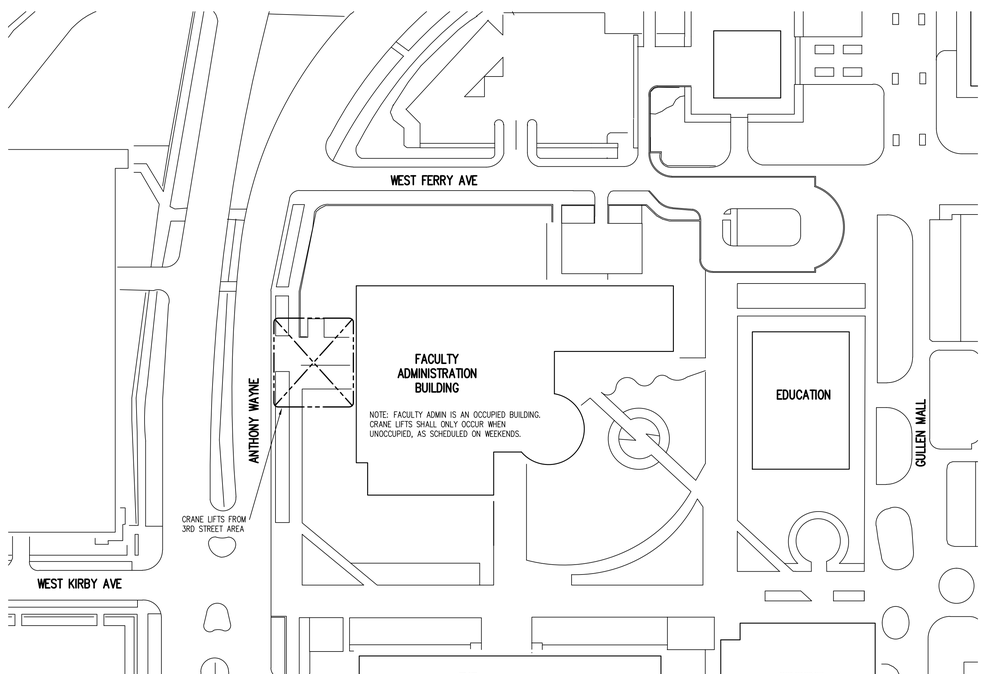
1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE 2009 MICHIGAN (INTERNATIONAL) BUILDING CODE CHAPTER 17 AND AS MODIFIED HEREIN.
2. DESIGNATIONS

   SI: SPECIAL INSPECTOR QUALIFIED WITH DEMONSTRATED COMPETENCE DOCUMENTED BY CERTIFICATIONS FROM RECOGNIZED AGENCIES SUCH AS AWS, ACI, MASONRY INSTITUTE OF MICHIGAN (MIM), ETC., AS SUBMITTED AND APPROVED BY THE BUILDING OFFICIAL. SPECIAL INSPECTOR MAY BE A FIRM WITH MULTIPLE SPECIALISTS AND A PROJECT MANAGER PROVIDING REPORTS.

   TA: TESTING AGENCY QUALIFIED TO TEST AND INSPECT MATERIALS AND ASSEMBLIES. TESTING AGENCY SHALL BE UNDER THE SUPERVISION OF THE SPECIAL INSPECTOR.

   GE: GEOTECHNICAL ENGINEER WHO PROVIDED THE ORIGINAL PROJECT GEOTECHNICAL SOILS INVESTIGATION REPORT.

   SE: SPECIALTY ENGINEER RESPONSIBLE FOR DESIGNING ASSEMBLIES SUCH AS PRECAST CONCRETE, STEEL JOISTS, COLD FORMED FRAMING ASSEMBLIES, ETC. SPECIALTY ENGINEER SHALL PROVIDE OBSERVATION OF FABRICATED AND INSTALLED ITEMS OF THEIR DESIGN, IN ADDITION TO THE SPECIAL INSPECTION.
3. TA, GE AND SE SHALL SUBMIT RECORDS OF THE INSPECTION RESULTS TO THE SI. ""THE SI SHALL COMPILE AND SUBMIT INSPECTION RECORDS TO THE ARCHITECT/ENGINEER AND BUILDING OFFICIAL. RECORDS SHALL INCLUDE STATEMENTS OF TESTS, WHETHER INSTALLED/FABRICATED ITEM COMPLIES WITH CONTRACT DOCUMENTS, REMEDIAL WORK PERFORMED, RETESTS.
4. SI SHALL PROVIDE A DAILY REPORT OF ANY DISCREPANCIES FROM THE CONTRACT DOCUMENTS FOUND ON THE SAME DAY OF THE INSPECTION TO THE ENGINEER OF RECORD. FORMAL REPORTS OF COMPLIANCE CAN FOLLOW BY A MAXIMUM OF 2 WEEKS. SI SHALL PROVIDE AND SIGN A FINAL REPORT WITH A SUMMARY OF ALL TEST PERFORMED AND RESULTS TO THE ENGINEER OF RECORD AND BUILDING OFFICIAL.
5. SI, TA & GE SHALL BE PAID BY THE OWNER IN COMPLIANCE WITH THE MICHIGAN (INTERNATIONAL) BUILDING CODE.



N SITE PLAN
SCALE: 1"=60'

WSU# 130-252650

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Facilities Planning & Management
Design Services
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MARK	ISSUE	DATE
	RE–BID	1/28/15
	BID	11/13/14
	95% OWNER REVIEW	10/31/14
	50% PROGRESS REVIEW	10/14/14

DESIGNER	DWL
DRAWN	DWL
CHECKED	JSR
DEPT MGR	LJM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

GENERAL ARCHITECTURAL INFORMATION AND SITE PLAN

WSU PROJECT #: 130–252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
A1

DSD FILE NAME
14–4802–A1

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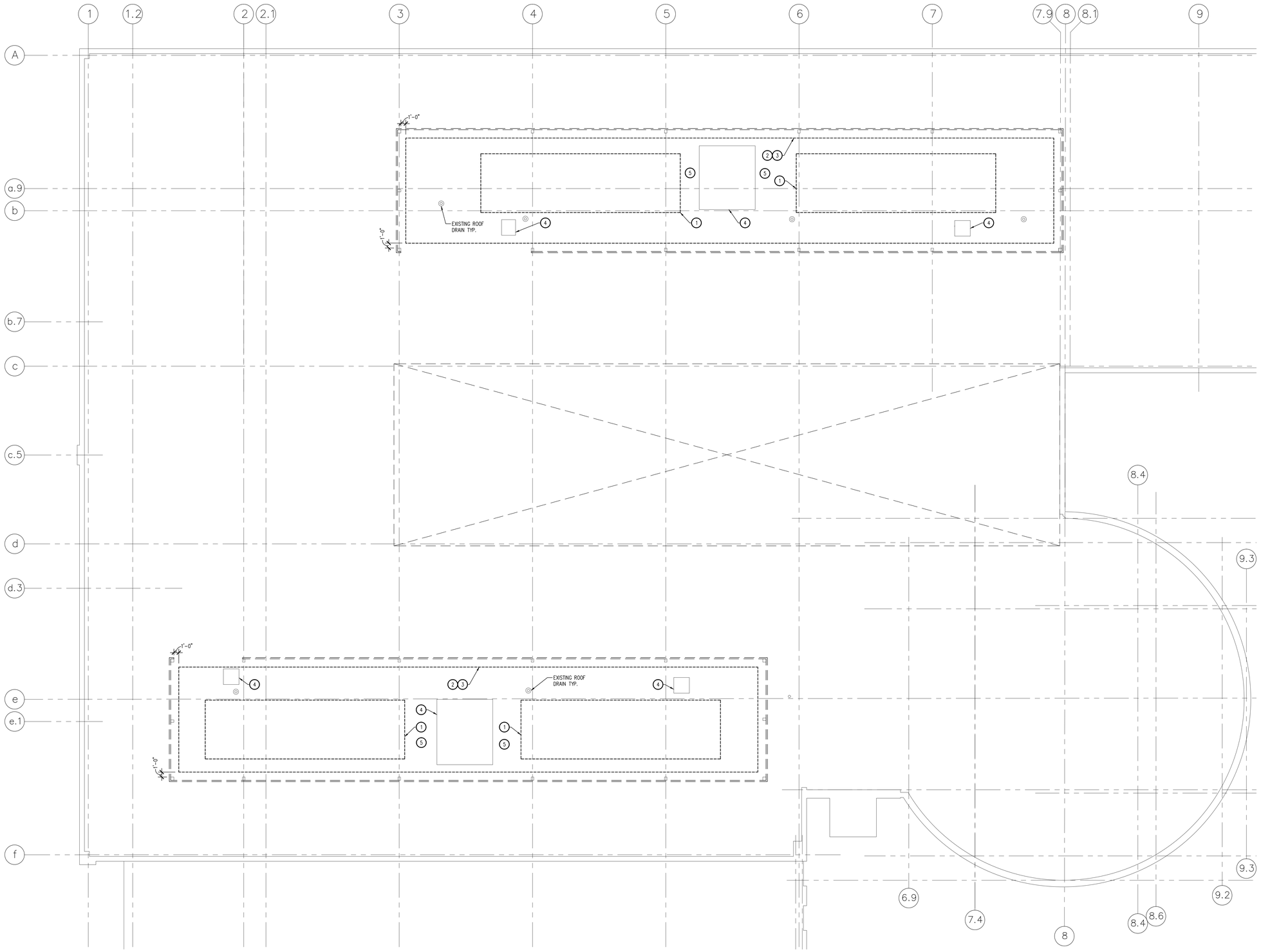

N

1 / A2 ROOF PLAN DEMOLITION

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

0 4 8 16 32

WSU# 130-252650

DEMOLITION KEYED NOTES:
(APPLICABLE THIS SHEET ONLY)

1. REMOVE ROOF CURBS, FLASHING AND WOODEN ACCESS STAIRS AT DEMOLISHED MECHANICAL EQUIPMENT.
2. REMOVE EXISTING ROOFING AND INSULATION DOWN TO ROOF DECK IN AREA INDICATED.
3. REMOVE ROOF PAVERS IN AREA INDICATED STORE FOR REUSE AFTER NEW WORK IS COMPLETE.
4. REMOVE EPDM FLASHING AT DUCT PENETRATION CURBS; CURBS AND METAL FLASHING TO REMAIN. REPAIR AS NECESSARY.
5. REMOVE ABANDONED CONDUIT PENETRATION AND PATCH ROOF DECK

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	BID	11/13/14
	95% OWNER REVIEW	10/31/14
	50% PROGRESS REVIEW	10/16/14

DESIGNER	DWL
DRAWN	DWL
CHECKED	JSR
DEPT MGR	LJM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

ROOF PLAN - ARCHITECTURAL DEMOLITION

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
A2

DSD FILE NAME
14-4802-A2

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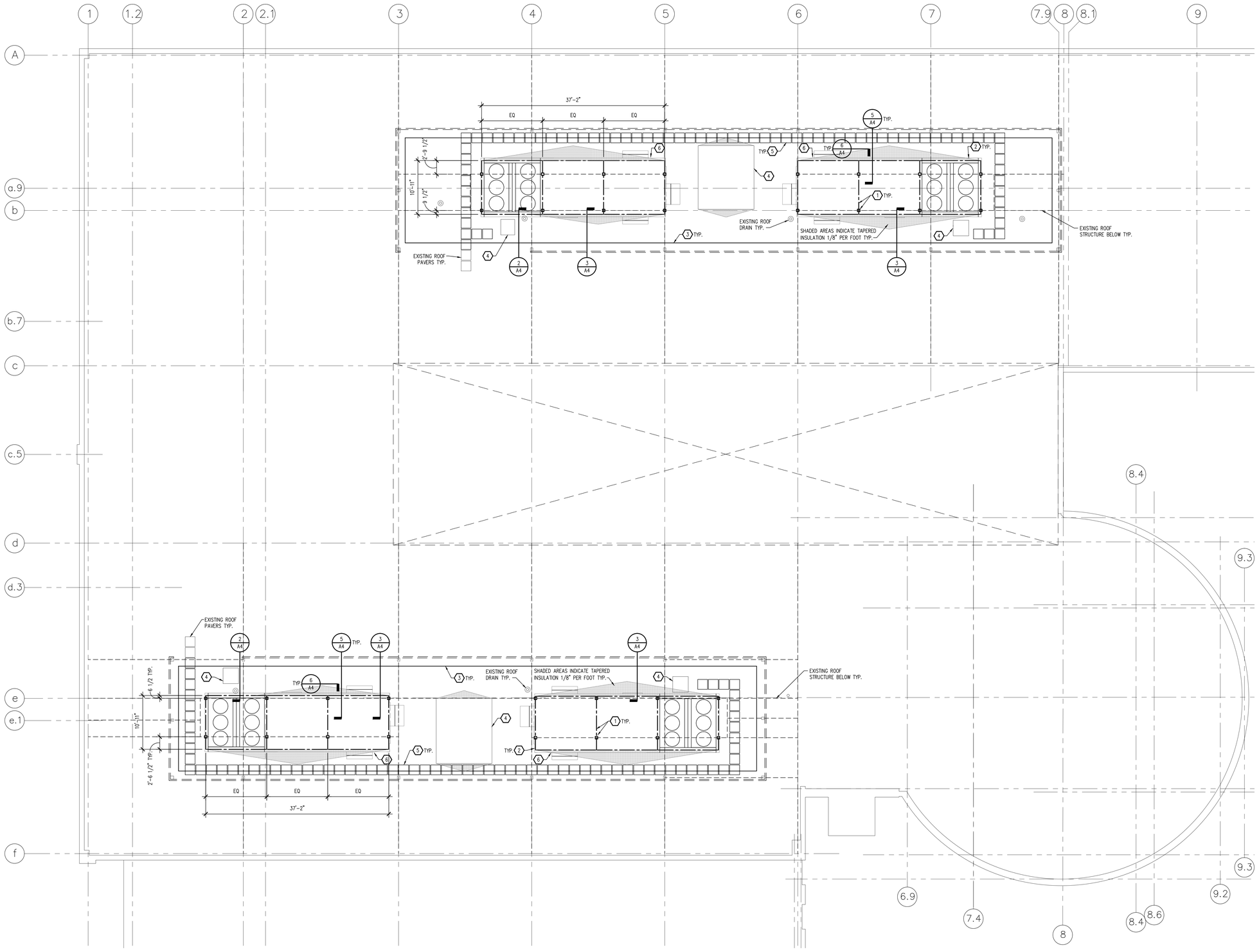

ROOF PLAN NEW WORK

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

0 4 8 16 32

WSU# 130-252650

NEW WORK KEYED NOTES:

(APPLICABLE THIS SHEET ONLY)

1. NEW SUPPORT BEAMS AND POSTS, VERIFY LOCATION WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO INSTALLATION. REFER TO DETAIL 5,6/A4 FOR MORE INFORMATION.
2. PROVIDE SHEET METAL CLOSURE AND ROOF FLASHING AT PERIMETER OF STRUCTURAL SUPPORT, REFER TO DETAIL 1/A4 FOR MORE INFORMATION UNLESS NOTED OTHERWISE.
3. NEW INSULATION AND ROOFING ON EXISTING METAL DECK. MATCH EXISTING ADJACENT CONSTRUCTION. SLOPE INSULATION TOWARDS ROOF DRAINS AND AT MECHANICAL EQUIPMENT AND ROOF PENETRATIONS AS SHOWN ON PLAN. SEE DETAIL 9/A4 FOR ROOF OVERLAP DETAIL.
4. PROVIDE NEW FLASHING AT EXISTING ROOF DUCT PENETRATION CURBS AND STRUCTURE CURB, REFER TO DETAIL 4/A4.
5. RE-INSTALL ROOF PAVERS REMOVED IN DEMOLITION PHASE. REFER TO DETAIL 7/A4 FOR MORE INFORMATION.
6. PROVIDE ROOF FLASHING AT NEW ELECTRICAL ROOF PENETRATION (1 PER AC-UNIT) REFER TO ELECTRICAL SHEETS FOR LOCATION AND TO DETAIL 11/A4.

SEE PIPE CONDUIT PENETRATION DETAIL ON SHEET A4 WHERE NEW CONDUIT STUBS UP OUTSIDE OF ROOF TOP UNIT PERIMETER.

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DEPT MGR	LJM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

ROOF PLAN - ARCHITECTURAL NEW WORK

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
A3

DSD FILE NAME
14-4802-A3

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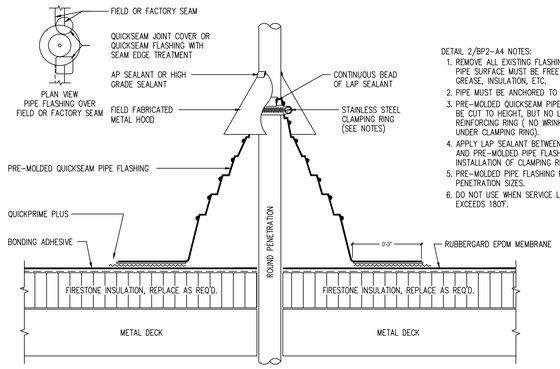
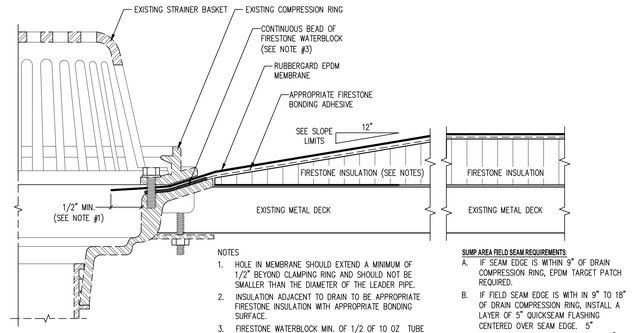


DETAIL 2/BP2-A4 NOTES:
1. REMOVE ALL EXISTING FLASHINGS, LEADS, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
2. PIPE MUST BE ANCHORED TO ENSURE STABILITY.
3. PRE-MOLDED QUICKSEAM PIPE FLASHING MAY BE CUT TO HEIGHT, BUT NO LOWER THAN REINFORCING RING (NO WRINKLES OR FOLDS UNDER CLAMPING RING).
4. APPLY LAP SEALANT BETWEEN PENETRATION AND PRE-MOLDED PIPE FLASHING PRIOR TO INSTALLATION OF CLAMPING RING.
5. PRE-MOLDED PIPE FLASHING FITS 1" – 6" PENETRATION SIZES.
6. DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F.

11/A4 REQUIRED FOR CONDUIT PENETRATIONS
PIPE PENETRATION DETAIL
NOT TO SCALE

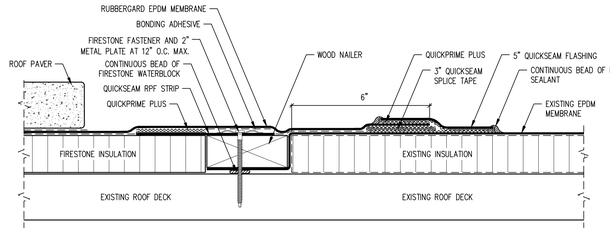


NOTES
1. HOLE IN MEMBRANE SHOULD EXTEND A MINIMUM OF 1/2" BEYOND CLAMPING RING AND SHOULD NOT BE SMALLER THAN THE DIAMETER OF THE LEADER PIPE.
2. INSULATION ADJACENT TO DRAIN TO BE APPROPRIATE FIRESTONE INSULATION WITH APPROPRIATE BONDING SURFACE.
3. FIRESTONE WATERBLOCK MIN. OF 1/2 OF 10 OZ TUBE PER 4" DRAIN. USE ADDITIONAL WATERBLOCK FOR LARGER DRAINS.
4. IN REROOF APPLICATIONS:
   –REMOVE EXISTING FLASHING DOWN TO METAL BOWL.
   –REPAIR OR REPLACE BROKEN DRAIN COMPONENTS.
   –DRILL AND TAP BROKEN DRAINS BOLTS AND REPLACE IF NECESSARY.

SUMP AREA FIELD SEAM REQUIREMENTS:
A. IF SEAM EDGE IS WITHIN 9" OF DRAIN COMPRESSION RING, EPDM TARGET PATCH REQUIRED.
B. IF FIELD SEAM EDGE IS WITH IN 9" TO 18" OF DRAIN COMPRESSION RING, INSTALL A LAYER OF 5" QUICKSEAM FLASHING CENTERED OVER SEAM EDGE. 5" QUICKSEAM FLASHING SHALL EXTEND 3" MIN. BEYOND EDGE OF SUMP TAPER AREA.

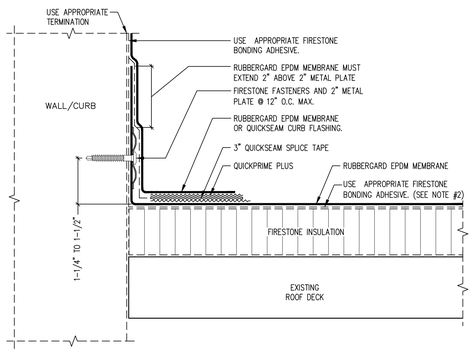
MEMBRANE SLOPE LIMITS:
A. MAXIMUM SLOPE FOR MAX MEMBRANE SHALL BE 2" – 12".
B. MAXIMUM SLOPE FOR STANDARD MEMBRANE SHALL BE 6" – 12".

10/A4
ROOF DRAIN DETAIL
NOT TO SCALE

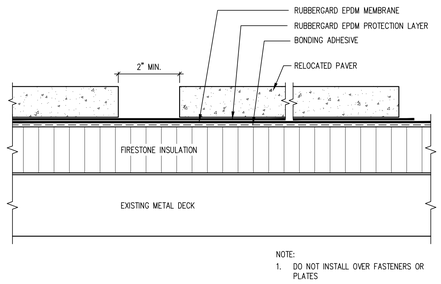


9/A4
ROOFING OVERLAP DETAIL
NOT TO SCALE

NOTE:
1. WHEN CHANGE IN ELEVATION OCCURS BETWEEN SYSTEMS, USE APPROPRIATE TAPERED INSULATION TO CREATE A SMOOTH TRANSITION.

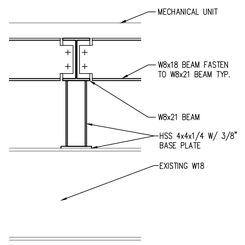


8/A4
FLASHING DETAIL @ EXISTING DUCT PENETRATION
NOT TO SCALE

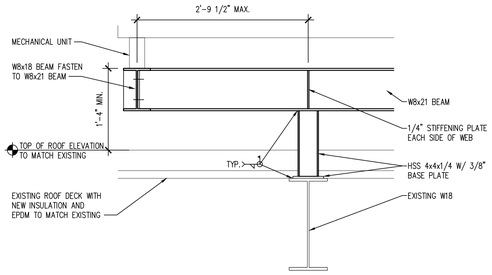


NOTE:
1. DO NOT INSTALL OVER FASTENERS OR PLATES

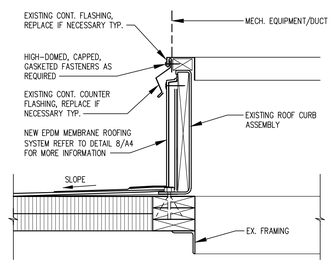
7/A4
ROOF PAVER DETAIL
NOT TO SCALE



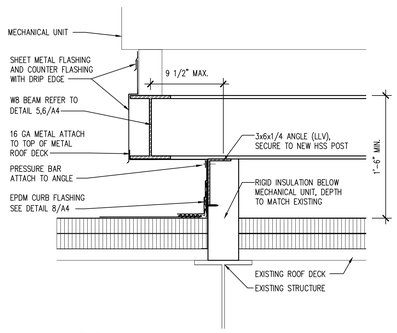
6/A4
STRUCTURAL FRAMING DETAIL
SCALE: 1" = 1'–0"
0 1 2 4



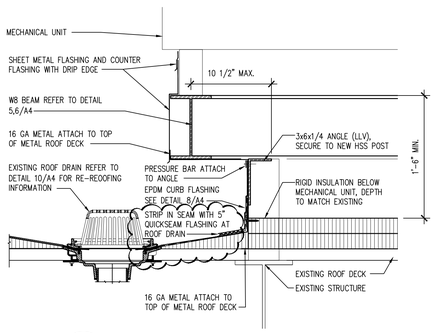
5/A4
STRUCTURAL FRAMING DETAIL
SCALE: 1" = 1'–0"
0 1 2 4



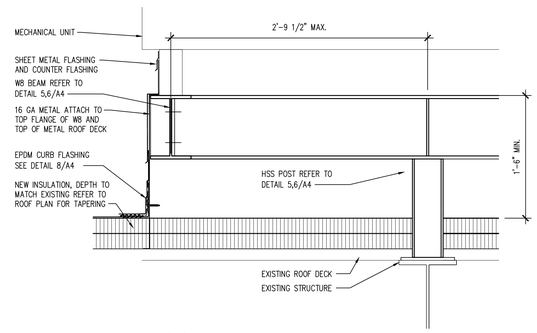
4/A4
FLASHING DETAIL AT EXISTING CURB
SCALE: 1 1/2" = 1'–0"
0 1 2



3/A4
FLASHING DETAIL AT SHORT CANTILEVER
SCALE: 1 1/2" = 1'–0"
0 1 2



2/A4
FLASHING DETAIL AT ROOF DRAIN
SCALE: 1 1/2" = 1'–0"
0 1 2



1/A4
FLASHING DETAIL AT CANTILEVER
SCALE: 1 1/2" = 1'–0"
0 1 2

WSU# 130-252650

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	ADDENDUM No.1	11/21/14
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	50% PROGRESS REVIEW	10/14/14

DESIGNER	DWL
DRAWN	DWL
CHECKED	JSR
DEPT MGR	LJM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

ARCHITECTURAL DETAILS

WSU PROJECT #: 130–252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
A4

DSD FILE NAME
14–4802–A4

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ROOFTOP HVAC UNIT SCHEDULE

MARK	LOCATION/ AREA SERVED	SUPPLY FAN INFORMATION					RETURN FAN INFORMATION					COOLING INFORMATION										UNIT INFORMATION			UNIT POWER		BASIS OF DESIGN MODEL NUMBER	REMARKS
		CFM	ESP IN.WC.	% O.A.	MOTOR H.P.	FAN RPM	CFM	ESP IN.WC.		MOTOR H.P.	FAN RPM	TOTAL MBH	SENSIBLE MBH	NOMINAL TONS	COMPRESSOR TYPE	STAGES	MAX. FACE VEL.	REFRIG. TYPE	E.D.B. °F	E.W.B. °F	L.D.B. °F	L.W.B. °F	FILTER TYPE	MERV RATING	AIR PRESS. DROP IN.WG. (DIRTY)	VOLTAGE	PHASE		
AC-1	ROOF	38,800	3"	15%MAX (CO2)	60	1701	36,800	1"		30	1323	1,296	950	108	SCROLL	MIN 2 REFRIG CKTS	500	R410A	80	67	58	58	PRE-FILTER, 2" DISPOSABLE, 85% CARTRIDGE	14/8	+1/2" DIRTY FILTER ALLOWANCE	460	3	CARRIER MODEL 50N	MAXIMUM UNIT LENGTH IS 39'-6" AT CURB BASE (FOR STRUCTURAL SUPPORT)
AC-2	ROOF	38,800	3"	15%MAX (CO2)	60	1701	36,800	1"		30	1323	1,296	950	108	SCROLL	MIN 2 REFRIG CKTS	500	R410A	80	67	58	58	PRE-FILTER, 2" DISPOSABLE, 85% CARTRIDGE		+1/2" DIRTY FILTER ALLOWANCE	460	3	CARRIER MODEL 50N	MAXIMUM UNIT LENGTH IS 39'-6" AT CURB BASE (FOR STRUCTURAL SUPPORT)
AC-3	ROOF	38,800	3"	15%MAX (CO2)	60	1701	36,800	1"		30	1323	1,296	950	108	SCROLL	MIN 2 REFRIG CKTS	500	R410A	80	67	58	58	PRE-FILTER, 2" DISPOSABLE, 85% CARTRIDGE		+1/2" DIRTY FILTER ALLOWANCE	460	3	CARRIER MODEL 50N	MAXIMUM UNIT LENGTH IS 39'-6" AT CURB BASE (FOR STRUCTURAL SUPPORT)
AC-4	ROOF	38,800	3"	15%MAX (CO2)	60	1701	36,800	1"		30	1323	1,296	950	108	SCROLL	MIN 2 REFRIG CKTS	500	R410A	80	67	58	58	PRE-FILTER, 2" DISPOSABLE, 85% CARTRIDGE		+1/2" DIRTY FILTER ALLOWANCE	460	3	CARRIER MODEL 50N	MAXIMUM UNIT LENGTH IS 39'-6" AT CURB BASE (FOR STRUCTURAL SUPPORT)

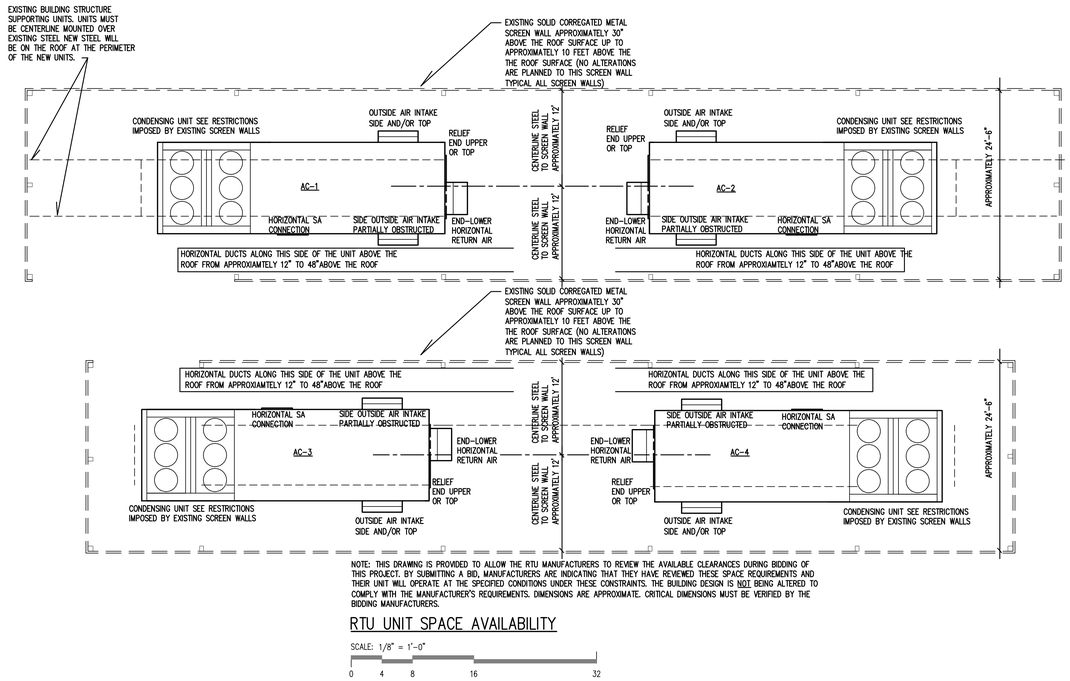
UNITS TO INCLUDE:
DISCONNECT SWITCH
CONVENIENCE OUTLET
DIGITAL COMPRESSOR
60 HP SUPPLY MOTOR
ECONOMIZER WITH RETURN FAN
30 HP RETURN FAN/POWER EXHAUST
12" MERV 14 FILTERS, 4" MERV 8 PREFILTER
BACnet COMMUNICATIONS
HORIZONTAL SUPPLY AND RETURN DISCHARGE/INLET
2 YR PARTS AND INSTALLATION WARRANTY
5 YEAR COMPRESSOR WARRANTY
105 NOMINAL TONS
(SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS)

SYMBOL LEGEND

TWO LINE SYMBOLS	SCHEMATIC SYMBOLS	DESCRIPTION
		EXISTING TO REMAIN
		EXISTING TO BE REMOVED
		NEW WORK
		NEW CONNECTION TO EXISTING
		FIRE DAMPER HORIZONTAL POSITION
		COMBINATION FIRE/SMOKE DAMPER HORIZONTAL POSITION
		FIRE DAMPER VERTICAL POSITION
		COMBINATION FIRE/SMOKE DAMPER VERTICAL POSITION
FS	FS	FIRE PROTECTION FLOW SWITCH
TS	TS	FIRE PROTECTION TAMPER SWITCH
M	M	MOTORIZED DEVICE
		SUPPLY AIR CEILING DIFFUSER
		RETURN AIR REGISTER OR GRILLE
		EXHAUST AIR REGISTER OR GRILLE
		FLEXIBLE DUCT
		SPIN-IN FITTING WITH VOLUME DAMPER (TO BOTTOM OF DUCT)
		SPIN-IN FITTING WITH VOLUME DAMPER (TO SIDE OF DUCT)
		CONCENTRIC REDUCER (PIPE OR DUCT)
		ECCENTRIC REDUCER (PIPE OR DUCT)
T	T	THERMOSTAT
H	H	HUMIDISTAT
S	S	TEMPERATURE CONTROL SENSOR

ABBREVIATIONS

SYMBOL	DESCRIPTION
ABV	ABOVE
A.F.F.	ABOVE FINISHED FLOOR
A.H.U.	AIR HANDLING UNIT
B.O.D.	BOTTOM OF DUCT
CONN.	CONNECTION
DN	DOWN
EXH.	EXHAUST
E.R.	EXHAUST REGISTER
FLR.	FLOOR
M.B.H.	THOUSAND BTU/HR (BRITISH THERMAL UNITS PER HOUR)
N.I.C.	NOT IN CONTRACT
NK.	NECK
O.A.	OUTSIDE AIR
R.A.	RETURN AIR
R.A.F.	RETURN AIR FAN
S.A.	SUPPLY AIR
SAN	SANITARY PIPE
T.A.D.	TRANSFER AIR DUCT
TYP.	TYPICAL
V	VENT
VAV	VARIABLE AIR VOLUME BOX
VAVR	VARIABLE AIR VOLUME BOX WITH HOT WATER REHEAT
VAVRE	VARIABLE AIR VOLUME BOX WITH ELECTRIC REHEAT
V.T.R.	VENT THROUGH ROOF
V.D.	VOLUME DAMPER



NOTE: THIS DRAWING IS PROVIDED TO ALLOW THE RTU MANUFACTURERS TO REVIEW THE AVAILABLE CLEARANCES DURING BIDDING OF THIS PROJECT. BY SUBMITTING A BID, MANUFACTURERS ARE INDICATING THAT THEY HAVE REVIEWED THESE SPACE REQUIREMENTS AND THEIR UNIT WILL OPERATE AT THE SPECIFIED CONDITIONS UNDER THESE CONSTRAINTS. THE BUILDING DESIGN IS NOT BEING ALTERED TO COMPLY WITH THE MANUFACTURER'S REQUIREMENTS. DIMENSIONS ARE APPROXIMATE. CRITICAL DIMENSIONS MUST BE VERIFIED BY THE BIDDING MANUFACTURERS.

RTU UNIT SPACE AVAILABILITY

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

0 4 8 16 32

ARCHITECTURAL – MECHANICAL – ELECTRICAL COORDINATION SCHEDULE

MARK	LOCATION	HP	KW	FLA	ELECTRICAL		DISCONNECT		STARTER		REMARKS
					VOLTAGE	PHASE	FURN.	INST.	FURN.	INST.	
AC-1	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)
AC-2	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)
AC-3	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)
AC-4	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)

LEGEND

S = SUPPLIER (MANUFACTURER)*
M = MECHANICAL
E = ELECTRICAL
VFD = VARIABLE FREQUENCY DRIVE

AC = ROOF TOP AIR CONDITIONING UNIT
MCA = MINIMUM CIRCUIT AMPACITY
MBS = MAXIMUM CIRCUIT BREAKER SIZE

* – ITEMS INDICATED AS SUPPLIER SHALL BE PROVIDED WITH THE ITEM/ EQUIPMENT OR BY THE CONTRACTOR PURCHASING THE ITEM/EQUIPMENT

MECHANICAL SHEET INDEX

SHEET	DESCRIPTION
M1	GENERAL MECHANICAL INFORMATION
M2	ROOF PLAN – MECHANICAL DEMOLITION
M3	ROOF PLAN – MECHANICAL NEW WORK
M4	TEMPERATURE CONTROLS

CONSTRUCTION OVERVIEW OF MECHANICAL SCOPE

THIS OVERVIEW OF SCOPE IS INCLUDED TO GIVE THE CONTRACTOR A GENERAL OVERVIEW OF THE PROJECT REQUIREMENTS. THE OVERVIEW IS NOT ALL INCLUSIVE AND IS NOT INTENDED TO, AND SHOULD NOT BE USED TO, ESTABLISH CONTRACT LIMITS OR PRICING INCLUSIONS. THE CONTRACT DOCUMENTS SHALL BE USED TO ESTABLISH CONSTRUCTION CONTRACT SCOPE.

THIS OVERVIEW OF SCOPE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

MECHANICAL:

1. DEMOLITION AND REMOVAL OF FOUR DX COOLING ONLY RTUs IN A PHASED REMOVAL (ONE AT A TIME). NOTE UNITS SUPPLY AND RETURN DUCTS ARE INTERCONNECTED AND REQUIRE ISOLATION FOR EACH PHASE.
2. DEMOLITION AND REMOVAL OF EXISTING PLUMBING, HVAC AND OTHER MECHANICAL SYSTEMS/EQUIPMENT ITEMS ASSOCIATED WITH THE HVAC UNITS.
3. PROVIDE NEW/MODIFIED PLUMBING SYSTEMS AS INDICATED TO SERVE THE NEW HVAC UNITS (OR TO FACILITATE DEMOLITION AND INSTALLATION).
4. PROVIDE NEW/MODIFIED HVAC SYSTEMS TO THE BUILDING AREAS INCLUDING EXTENSION, MODIFICATIONS AND NEW SYSTEMS.
5. PROVIDE NEW/MODIFIED DDC TEMPERATURE CONTROL SYSTEM AND COMPONENTS AS INDICATED.

PROJECT REQUIREMENTS

PROVIDE ALL NECESSARY PERMITS. ALL WORK SHALL BE INSTALLED TO COMPLY WITH THE OWNER'S STANDARDS, STATE AND LOCAL CODES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING CODES AND THEIR RELATED REFERENCES.

2012 MICHIGAN MECHANICAL CODE
2012 MICHIGAN PLUMBING CODE
2009 INTERNATIONAL FIRE CODE (AS REFERENCED)
2009 INTERNATIONAL FUEL GAS CODE
NFPA 101 LIFE SAFETY CODE 1997 AND 2006 (AS REFERENCED)
MICHIGAN ENERGY CODE–ASHRAE 90.1–2007
2011 NATIONAL ELECTRICAL CODE AS AMENDED BY THE 2011 MICHIGAN ELECTRICAL CODE RULES, PART 8.
2009 MICHIGAN BUILDING CODE
2009 MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS

MANUFACTURER AND MODEL NUMBER LISTED REPRESENTS THE BASIS OF DESIGN FOR THIS PROJECT. THE MECHANICAL CONTRACTOR SHALL BEAR ALL ADDITIONAL COST ASSOCIATED WITH USING EQUIPMENT BY OTHER APPROVED MANUFACTURERS INCLUDING ADDITIONAL COSTS BY OTHER TRADES.

ALL EQUIPMENT INSTALLED SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE FIELD OR PROJECT CONDITIONS DO NOT ALLOW ALL MANUFACTURER'S RECOMMENDATIONS TO BE MET, THE INSTALLING CONTRACTOR SHALL SUBMIT IN WRITING TO THE ENGINEER THE PROPOSED DEVIATION, IN A SKETCH FORM, ACCOMPANIED BY THE MANUFACTURER'S CONCURRENCE.

GENERAL CONTROL NOTES

1. TEMPERATURE CONTROL SUPPLIER/CONTRACTOR (TCC) TO PERFORM A DOCUMENTED STARTUP ON THE MECHANICAL CONTROLS.
2. EACH SYSTEM SHALL BE TESTED IN EACH MODE OF OPERATION.
3. DISCHARGE AIR TEMPERATURE, PRESSURE AND OTHER SYSTEM PARAMETERS ARE TO BE RECORDED DURING TESTING.
4. TEST IS TO SIMULATE VARYING SPACE DEMAND TO PROVE THE SYSTEM CONTROLS ARE AUTOMATICALLY FUNCTIONING.
5. SYSTEM SAFETY FEATURES (FREEZE THERMOSTATS, HIGH PRESSURE, ETC.) ARE TO BE TESTED TO PROVE OPERATION.
6. TCC SHALL PROVIDE A WRITTEN REPORT FOR EACH CONTROLLED COMPONENT SHOWING TESTING AND PROPER OPERATION.

SCOPE:

1. A NEW SIEMENS DDC CONTROL SYSTEM FOR THE FOUR NEW ROOF TOP AIR CONDITIONING UNITS AND THE TWO EXISTING HEATING AIR HANDLING UNITS LOCATED AT THE FIRST LEVEL MECHANICAL ROOMS.
2. THE ROOF TOP UNITS ARE BEING PREPURCHASED BY THE OWNER AND ARE BEING ASSIGNED TO THE SUCCESSFUL CONTRACTOR FOR COORDINATION OF RECEIPT, OFF LOADING AND LIFTING TO THE ROOF, ALONG WITH THE GENERAL INSTALLATION. START UP WILL BE PROVIDED BY THE UNIT SUPPLIER BUT WILL REQUIRE CONTRACTOR INVOLVEMENT AND COORDINATION.

WSU# 130-252650

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MARK	ISSUE	DATE
	RE-BID	1/28/15
	BID	11/13/14
	95% OWNER REVIEW	10/31/14
	35% PROGRESS REVIEW	9/24/14

DESIGNER	BJR
DRAWN	JNA
CHECKED	GDC
DEPT MGR	BJR
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

GENERAL MECHANICAL INFORMATION

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
M1

DSD FILE NAME
14-4802-M1

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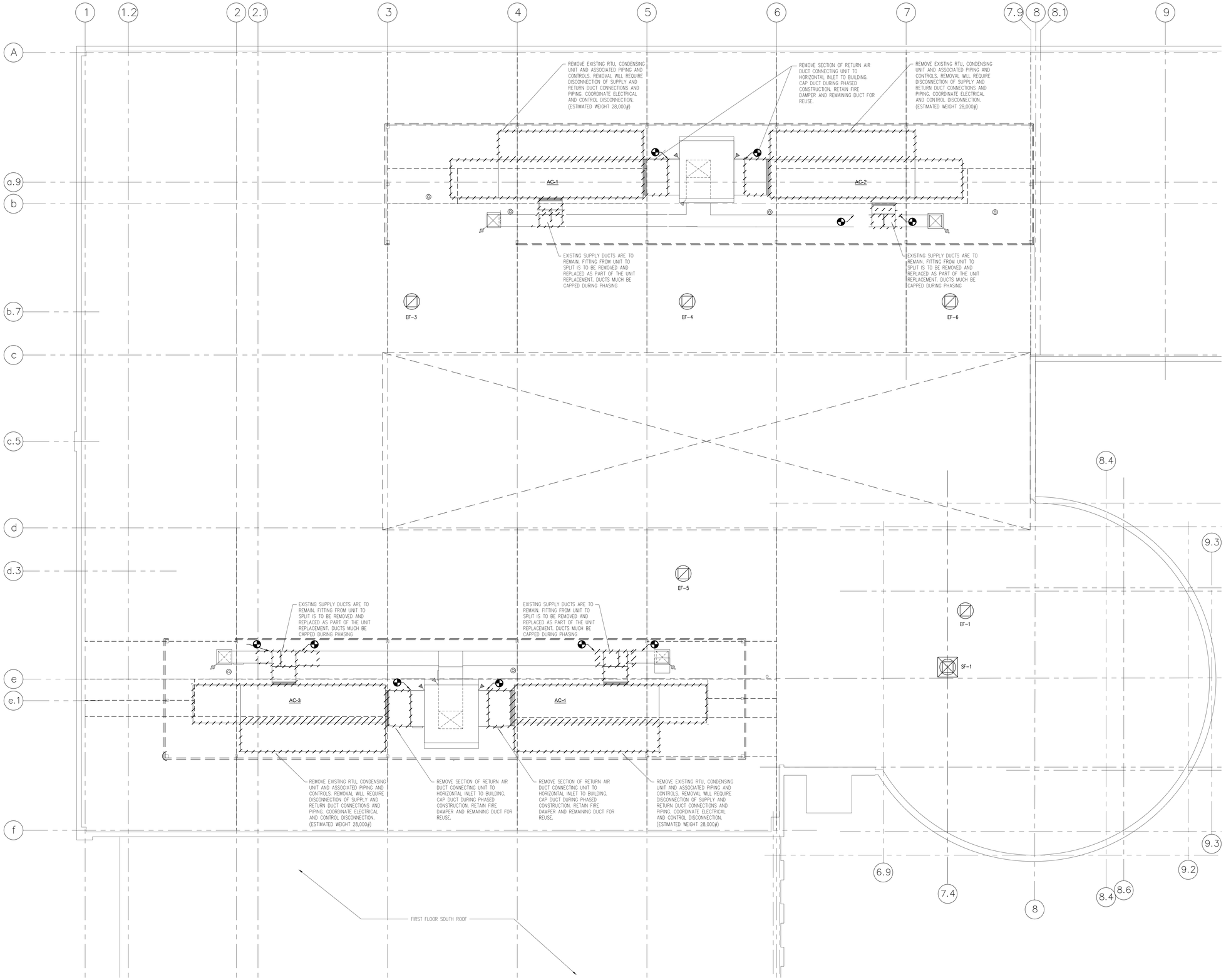

ROOF PLAN MECHANICAL DEMOLITION

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

0 4 8 16 32

SHEET NOTES:

1. REMOVE EXISTING ROOF TOP UNITS AND INDICATED DUCTS.
2. DEMOLITION AND NEW WORK IS TO BE PHASED. DUCTS ARE INTERCONNECTED WITHIN THE BUILDING. ALL OPEN DUCTS MUST BE CAPPED DURING CONSTRUCTION.
3. DUCTS ARE TO BE RE-INSULATED TO THE EXTENT OF DEMOLITION AFTER NEW INSTALLATION IS COMPLETE (AND AS NECESSARY TO MAINTAIN TEMPERATURE CONDITIONS DUE TO COLD WEATHER DURING CONSTRUCTION).

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FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
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ROOF PLAN - MECHANICAL DEMOLITION

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
M2

DSD FILE NAME
14-4802-M2

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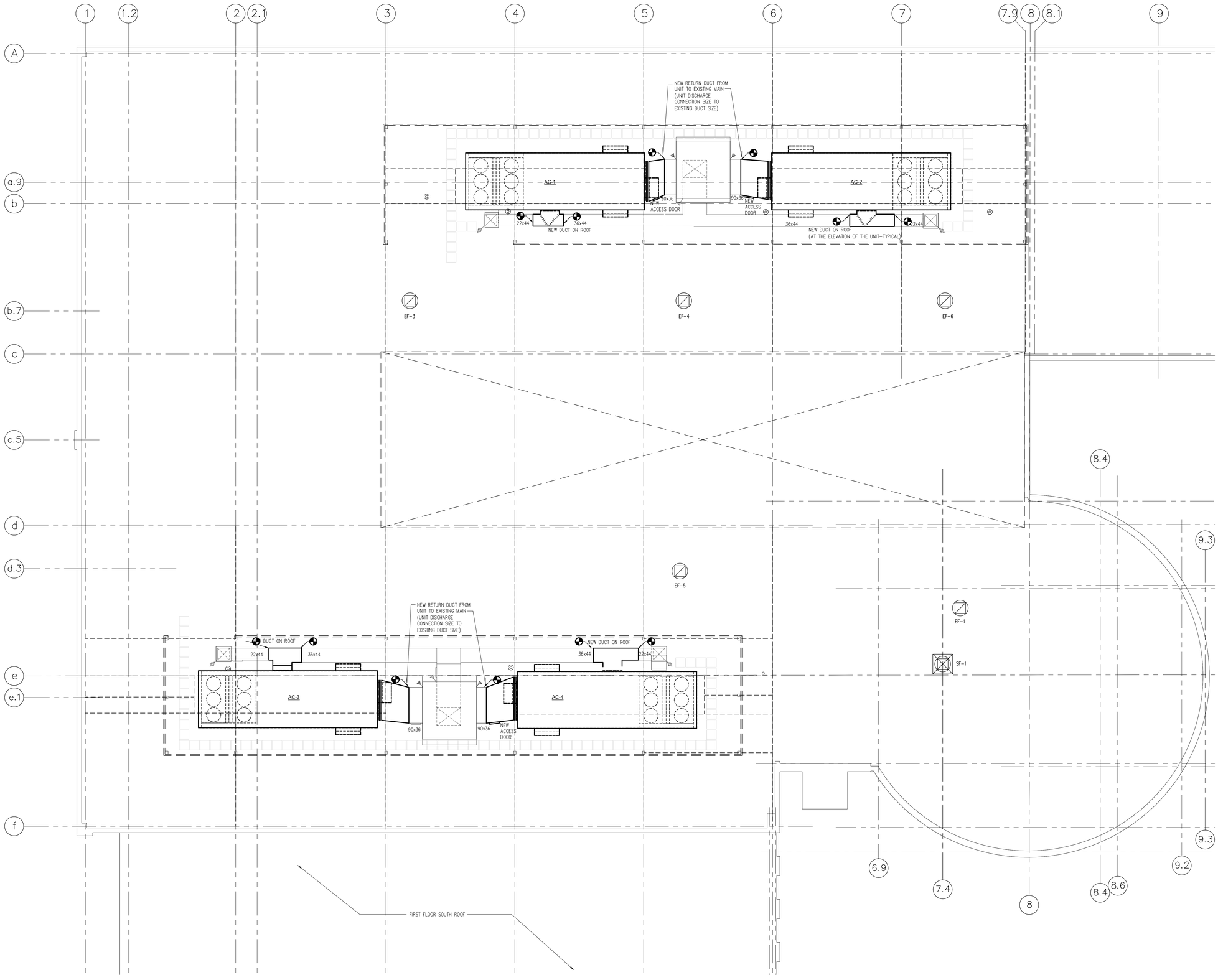

SHEET NOTES:

1. ROOF SHALL BE PROTECTED DURING WORK FOR DAMAGE.
2. ROOF TOP UNITS AND ASSOCIATED DUCTS ARE TO BE REMOVED IN A PHASED PROJECT. DUCTS SHALL BE CAPPED IN BETWEEN PHASES DUE TO THEIR INTERCONNECTION.
3. FIELD VERIFY EXACT DUCT SIZES OF EXISTING DUCTS.
4. AFTER COMPLETION, DUCTS SHALL BE INSULATED AND LABLED.
5. COORDINATE TEMPERATURE CONTROL WORK DURING CONSTRUCTION.
6. EXISTING DUCTS SCHEDULED TO REMAIN SHALL BE COORDINATED WITH NEW ROOF TOP UNIT CLEARANCES. MECHANICAL CONTRACTOR AND AIR HANDLING UNIT SUPPLIERS SHALL COORDINATE AROUND EXISTING CONDITIONS, DURING BIDDING. SUPPLIERS BIDDING THIS PROJECT SHALL HAVE REVIEWED THE EXISTING FIELD. BY BIDDING THIS PROJECT, THEY ARE ACCEPTING THE EXISTING CONDITIONS AND MEETING THE PROJECT WARRANTY REQUIREMENTS.

ROOF PLAN – MECHANICAL NEW WORK

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

0 4 8 16 32

WSU# 130-252650

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TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

ROOF PLAN - MECHANICAL NEW WORK

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
M3

DSD FILE NAME
14-4802-M3

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VARIABLE VOLUME AHU SEQUENCE OF OPERATION –BY RTU MANUFACTURER

GENERAL: THE SYSTEM SHALL OPERATE ON A TIMED–PROGRAMMED BASIS AS DETERMINED BY THE SYSTEM OPERATOR (INITIALLY SET TO START AT 7:30 AM AND STOP AT 6:30 PM, MONDAY–FRIDAY). START/STOP COMMANDS WILL BE BY THE DDC SYSTEM – HEAD END (SIEMENS). **UNIT WILL OPERATE BASED ON LAST COMMAND DURING LOSS OF COMMUNICATION AND ALLOW FOR LOCAL OVERRIDE AT THE UNIT CONTROL PANEL.**

OUTSIDE AIR, RETURN AIR, AND RELIEF AIR DAMPERS SHALL BE NORMALLY CLOSED WHEN THE UNIT IS OFF (BY MANUFACTURER).

SYSTEM OFF COMMAND: THE SUPPLY AND RETURN FANS SHALL BE OFF. THE OUTSIDE AIR DAMPER SHALL BE CLOSED. THE RETURN AIR DAMPER SHALL BE OPEN. THE COOLING COIL VALVE SHALL BE CLOSED. THE HEATING COIL VALVE SHALL MODULATE TO MAINTAIN THE MIXED AIR PLENUM TEMPERATURE AT 50 DEGREES F (ADJ.).

SYSTEM START: WHEN THE AIR–HANDLING UNIT IS COMMANDED TO OPERATE, THE UNIT CONTROLS SHALL DO THE FOLLOWING:
THE RETURN FAN SHALL START FIRST. FOLLOWING A FIVE (5)–SECOND (ADJ.) DELAY, THE SUPPLY FAN SHALL START. THE MIXED AIR DAMPERS AND THE SUPPLY/RETURN FANS SPEED DRIVES SHALL BE RAMPED TO THEIR RESPECTIVE OPERATING VALUES OVER A TIME PERIOD (ADJ., INITIALLY SET TO 5 MINUTES). UPON PROOF OF SUPPLY AND RETURN FAN OPERATION, DAMPERS AND CONTROL VALVES SHALL BE INDEXED TO THEIR "SYSTEM RUN" CONDITIONS. THE AIR HANDLER SHALL BE COMMANDED "ON" DURING THE UNOCCUPIED MODE WHEN ANY OF THE ASSOCIATED ZONES IS OUTSIDE UNOCCUPIED SETPOINT TEMPERATURE.

SUPPLY AND RETURN FAN CONTROL: THE SUPPLY FAN SPEED SHALL BE CONTROLLED TO MAINTAIN DUCT STATIC PRESSURE SETPOINT. THE RETURN FAN SPEED SHALL BE CONTROLLED TO TRACK THE SUPPLY FAN (OFFSET TO BE ADJ.). **THE STATIC SETPOINT AND STATIC READING SHALL COME FROM THE DDC SYSTEM. THE SYSTEM PROTECTION HIGH LIMITS SHALL BE PART OF THE AC UNIT AND SHALL BE PART OF THE RTU CONTROL PACKAGE.**

SYSTEM ON (UNOCCUPIED MODE): SUPPLY AND RETURN FANS SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE AT THE UNOCCUPIED HEATING OR COOLING SETPOINT (ADJ.) **AND SHALL BE DETERMINED BY THE DDC SYSTEM. WHEN COMMANDED TO BE ON IN THE NIGHT MODE, THE UNIT CONTROLS SHALL DO THE FOLLOWING:**
IN THE UNOCCUPIED HEATING MODE, THE OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED, RETURN AIR DAMPER SHALL BE FULLY OPEN, RETURN AIR DAMPER SHALL BE FULLY OPEN. UNIT IS COOLING ONLY SO HEATING MODE WILL SIMPLY RECIRCULATE BUILDING AIR TO REACH AN EQUALIZED TEMPERATURE. WHEN IN THE COOLING MODE, THE OUTDOOR AIR/RETURN AIR DAMPER POSITION AND COOLING COIL CONTROL VALVE SHALL BE OVERRIDDEN BY THE ECONOMIZER CYCLE. THE MINIMUM MIXED AIR TEMPERATURE SHALL BE 55 DEG. F.

SYSTEM ON (OCCUPIED MODE): **OCCUPIED MODE SHALL BE DETERMINED BY THE DDC SYSTEM:**
SUPPLY AND RETURN FANS SHALL START AND RUN CONTINUOUSLY. THE COOLING COIL CONTROL AND ECONOMIZER CYCLE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. THE DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE RESET UP FROM ITS MINIMUM OF 55 DEG F. AS NECESSARY TO MAINTAIN THE SUPPLY FAN AT A MINIMUM OF 80% OF ITS FULL CAPACITY. **THE DDC SYSTEM WILL COMMAND ON THE SYSTEM. THE UNIT CONTROLS SHALL DETERMINE THE COOLING STAGING AND ECONOMIZER FUNCTIONS. THE UNIT SHALL INCLUDE AN OUTDOOR AIR SENSOR TO ESTABLISH THE ECONOMIZER CONTROLS.**

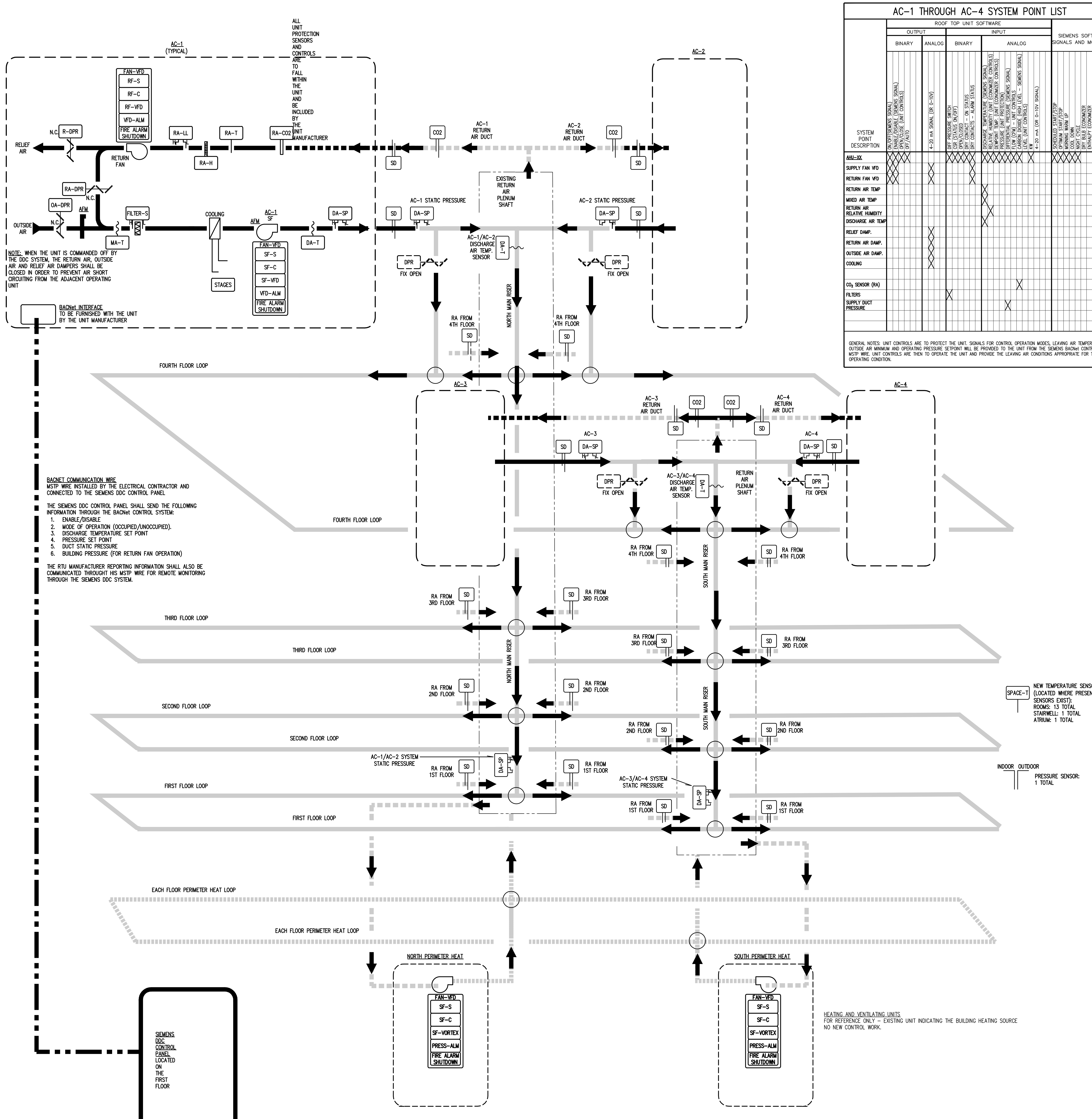
THE OUTDOOR AIR DAMPER SHALL MODULATE TO MAINTAIN THE RETURN AIR C02 SETPOINT OF 800 PPM. THE MINIMUM OUTDOOR AIR DAMPER POSITION DURING OCCUPIED TIMES SHALL BE 20% OPEN. THE OUTDOOR AIR QUANTITY SHALL BE MEASURED USING THE 4–20 mA SIGNAL PROVIDED BY THE "VENTILATION CONTROL MODULE" PROVIDED WITH THE AHU.

SYSTEM STOP **(AS COMMANDED BY THE DDC SYSTEM)**: WHEN THE AIR–HANDLING UNIT IS INDEXED TO SHUT DOWN, THE SUPPLY AND RETURN FANS SHALL STOP. DAMPERS AND CONTROL VALVE SHALL BE INDEXED TO THEIR "SYSTEM OFF" CONDITIONS.

UNIT SAFETIES AND ALARMS:
- –LOW LIMIT: MANUAL RESET LOW LIMIT THERMOSTAT SHALL STOP THE SUPPLY AND RETURN FANS, CLOSE THE OUTDOOR AIR DAMPERS AND COOLING COIL VALVE, OPEN THE HEATING COIL VALVE, AND ANNUNCIATE ALARM SHOULD THE COIL DISCHARGE AIR TEMPERATURE FALL BELOW 40 DEGREES F.
- –SMOKE CONTROL: DUCT SMOKE DETECTOR(S) SHALL STOP THE SUPPLY AND RETURN FANS AND ANNUNCIATE ALARM WHEN PRODUCTS OF COMBUSTION ARE DETECTED IN THE AIR STREAM. DAMPERS AND CONTROL VALVE SHALL BE INDEXED TO THEIR "SYSTEM OFF" CONDITIONS. THE SUPPLY AND RETURN FANS SHALL BE INTERLOCKED TO SHUT DOWN UPON A COMMAND FROM THE BUILDING FIRE ALARM SYSTEM. UPON A RETURN TO NORMAL, THE SUPPLY AND RETURN FANS SHALL START AFTER AN ADJUSTABLE DELAY TO PROVIDE A STAGGERED START OF ALL BUILDING LOADS.
- –FILTER CONDITION: MONITOR DIFFERENTIAL PRESSURE ACROSS FILTER AND ANNUNCIATE ALARM WHEN DIFFERENTIAL PRESSURE SETPOINT (ADJ.) IS EXCEEDED.
- –STATIC HIGH LIMIT: THE STATIC HIGH LIMIT SENSOR LOCATED IN THE DISCHARGE OF THE SUPPLY FAN SHALL SHUT DOWN THE UNIT AND ANNUNCIATE ALARM IF DISCHARGE STATIC EXCEEDS 3.5" W.G.(ADJ.).
- –STATIC LOW LIMIT: THE STATIC LOW LIMIT SENSOR LOCATED IN THE RETURN OF THE RETURN FAN SHALL SHUT DOWN THE UNIT AND ANNUNCIATE ALARM IF RETURN STATIC IS EXCEEDED.

UNIT FAILURE MODES: IF THE SUPPLY OR RETURN FAN FAILS TO OPERATE, BOTH FANS SHALL SHUT DOWN AND AN ALARM SHALL BE ANNUNCIATED. DAMPERS AND CONTROL VALVE SHALL BE INDEXED TO THEIR "SYSTEM OFF" CONDITIONS. UPON THE FAILURE OF AN ANALOG SENSOR, ASSOCIATED DAMPERS AND CONTROL VALVE SHALL REMAIN AT THEIR LAST POSITION AND ALARM SHALL BE ANNUNCIATED. UPON RESTORATION OF POWER FOLLOWING A POWER FAILURE, THE SUPPLY AND RETURN FANS SHALL START AFTER AN ADJUSTABLE DELAY TO PROVIDE A STAGGERED START OF ALL BUILDING LOADS. OUTDOOR AIR AND RELIEF AIR DAMPERS SHALL BE PROVIDED WITH SPRING RETURN ACTUATORS TO FAIL IN THE CLOSED POSITION. COOLING VALVE SHALL BE PROVIDED WITH SPRING RETURN ACTUATOR TO FAIL CLOSED TO THE COIL. HEATING VALVE SHALL BE PROVIDED WITH SPRING RETURN ACTUATOR TO FAIL OPEN TO THE COIL.

PRESSURE CONTROL SEQUENCE:
1. 3 DUCT STATIC SENSORS PER PAIR OF UNITS. (6 SENSORS TOTAL)
   a. 1 IN EACH MAIN SUPPLY FROM EACH PAIR OF UNITS (2 TOTAL). THESE ARE INTPUT/OUTPUT POINTS BUT WILL INITIALLY BE SET TO JUST BE INPUT REPORTING POINTS TO THE DDC SYSTEM
   b. 1 AT THE BASE OF EACH RISER THAT IS CONTROLLING EACH PAIR OF UNITS AND SHOULD INITIALLY BE SET UP AS THE CONTROLLING POINT.
2. RETURN AIR CO2 SENSORS.
   a. WE WILL HAVE A DUCT CO2 SENSOR AT THE RETURN AIR INLET TO EACH UNIT. (4 TOTAL).
   b. UNITS WILL HAVE THE DUCT RA SENSORS. BASICALLY THE OA SHOULD RAMP UP FROM DESIGN MINIMUM TO DESIGN MAXIMUM (NOT 100% BUT A SET MAXIMUM AIR FLOW) BASED ON A RISE IN CO2 ABOVE 600PPM (WHICH I BELIEVE WILL NEVER ACTUALLY HAPPEN BUT ALLOWS THE UNIVERSITY TO OPERATE AT A LOWER OA % BY CODE, SAVING OPERATING COST AND IMPROVED CONTROL).
   c. OA/IA DIFFERENTIAL PRESSURE – UNIT AC–3 AND 4 WILL OPERATE THE RAFS AT THEIR SET DIFFERENTIAL OFFSET FROM THEIR SAFS (DETERMINED DURING BALANCING). THE PRESSURE OFFSET SHALL BE INITIALLY SET UP TO MAINTAIN A 0.05" SP (ADJUSTABLE). UPON AN INCREASE IN THE BUILDING PRESSURE, THE RETURN FAN SPEED WILL INCREMENTALLY INCREASE FOR UNITS 3 AND 4 IN PARALLEL, TO REACH THE DIFFERENTIAL PRESSURE SET POINT. IN A DECREASE IN BUILDING PRESSURE, THE RETURN FANS WILL BE DECREASED IN SPEED FOR UNITS 3 AND 4 IN PARALLEL, TO REACH THE DIFFERENTIAL PRESSURE SET POINT.
3. LIGHT LOAD OPERATION
   a. AS DETERMINED BY: SCHEDULING (SO WSU CAN SCHEDULE BY DAY, TIME, MONTH, ETC.) THE SYSTEM WILL OPERATE AS A LEAD/LAG SYSTEM STARTING UNITS 1 AND 3 FIRST AND THEN BRINGING ON UNITS 2 AND 4 BASED ON A RISE IN THE TEMPERATURE 15 SENSOR GLOBALLY OR THE SYSTEMS' INABILITY TO MEET THE DISCHARGE AIR STATIC PRESSURE SET POINT. FOR THIS MODE OF OPERATION, THE STATIC PRESSURE SET POINT SHALL HAVE A DIFFERENT SETTING (ADJUSTABLE) THAN THE STANDARD SET POINT. (INITIALLY, THIS WON'T HAVE A SCHEDULE AND WILL NEED TO BE "TRIAL AND ERROR" EXPERIMENTATION BY WSU BUT ALL THE CONTROLS AND SEQUENCES ARE TO BE PROGRAMMED TO ALLOW FOR IT).



TEMPERATURE CONTROL DIAGRAM
NO SCALE

AC–1 THROUGH AC–4 SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION	ROOF TOP UNIT SOFTWARE																				SIEMENS SOFTWARE SIGNALS AND MONITORING										
	OUTPUT					INPUT																									
	BINARY				ANALOG	BINARY					ANALOG																				
	ON/OFF(SIEMENS SIGNAL)	ENABLE/DISABLE (SIEMENS SIGNAL)	OPEN/CLOSE (UNIT CONTROLS)	OFF/AUTO	4–20 mA SIGNAL (OR 0–10V)	DIFF PRESSURE SWITCH	CSR (STATUS ON/OFF)	OPEN/CLOSED	DRY CONTACT – ON STATUS	DRY CONTACTS – ALARM STATUS	DISCHARGE TEMPERATURE (SIEMENS SIGNAL)	RELATIVE HUMIDITY (UNIT ECONOMIZER CONTROLS)	DEWPOINT TEMP. (UNIT ECONOMIZER CONTROLS)	PRESSURE (UNIT PROTECTION)	DIFFERENTIAL PRESSURE (SIEMENS SIGNAL)	FLOW (CFM) – UNIT CONTROLS	CARBON DIOXIDE (HIGH LEVEL – SIEMENS SIGNAL)	LEVEL (UNIT CONTROLS)	KW	4–20 mA (OR 0–10V SIGNAL)	SCHEDULED START/STOP	OPTIMUM START/STOP	MORNING WARM UP	COOL DOWN	NIGHT CYCLE	DRY BULB ECONOMIZER	ENTHALPY ECONOMIZER	SETPOINT ADJUSTMENT	ALARM	VFD	INTERLOCK
AHU–XX	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X			X	X		
SUPPLY FAN VFD	X	X			X					X																					
RETURN FAN VFD	X	X			X					X																					
RETURN AIR TEMP											X																				
MIXED AIR TEMP											X																				
RETURN AIR RELATIVE HUMIDITY												X																			
DISCHARGE AIR TEMP											X																	X			
RELIEF DAMP.					X																										
RETURN AIR DAMP.					X																										
OUTSIDE AIR DAMP.					X																										
COOLING					X																							X			
CO_2 SENSOR (RA)																	X														
FILTERS						X																									
SUPPLY DUCT PRESSURE															X													X			

GENERAL NOTES: UNIT CONTROLS ARE TO PROTECT THE UNIT. SIGNALS FOR CONTROL OPERATION MODES, LEAVING AIR TEMPERATURE, OUTSIDE AIR MINIMUM AND OPERATING PRESSURE SETPOINT WILL BE PROVIDED TO THE UNIT FROM THE SIEMENS BACNet CONTROL MSTP WIRE. UNIT CONTROLS ARE THEN TO OPERATE THE UNIT AND PROVIDE THE LEAVING AIR CONDITIONS APPROPRIATE FOR THAT OPERATING CONDITION.

WAYNE STATE UNIVERSITY

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MARK	ISSUE	DATE
	RE–BID	1/28/15
	BID	11/13/14
	95% OWNER REVIEW	10/31/14
	35% PROGRESS REVIEW	9/24/14

DESIGNER	BJR
DRAWN	JNA
CHECKED	GDC
DEPT MGR	BJR
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

TEMPERATURE CONTROLS

WSU PROJECT #: 130–252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
M4

DSD FILE NAME
14–4802–M4

WSU# 130-252650

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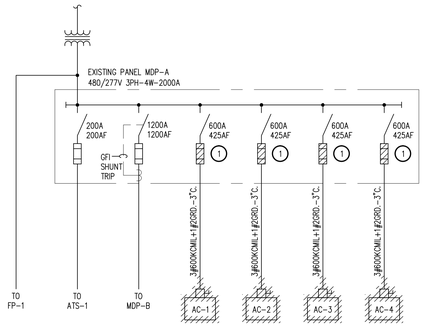
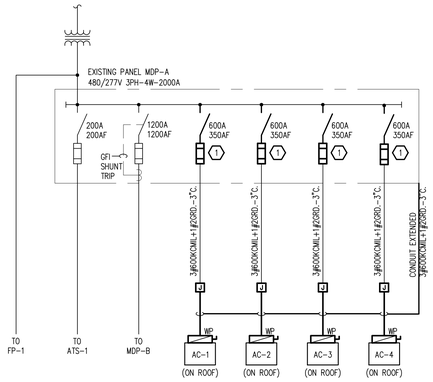


PARTIAL EXISTING ONE LINE DIAGRAM – DEMOLITION

NO SCALE 480/277 , 304-4W

DEMOLITION KEY NOTES:

1. REMOVE EXISTING FUSES AND HAND-OVER TO OWNER. SEE NEW WORK



PARTIAL EXISTING ONE LINE DIAGRAM – NEW WORK

NO SCALE 480/277 , 304-4W

NEW WORK KEY NOTES:

1. PROVIDE NEW FUSES IN EXISTING SWITCH. RATING AS INDICATED.

ARCHITECTURAL – MECHANICAL – ELECTRICAL COORDINATION SCHEDULE

MARK	LOCATION	HP	KW	FLA	ELECTRICAL		DISCONNECT		STARTER		REMARKS
					VOLTAGE	PHASE	FURN.	INST.	FURN.	INST.	
AC-1	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)
AC-2	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)
AC-3	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)
AC-4	ROOF	–	–	310MCA 350MBS	460	3	S	S	S	S	VARIABLE SPEED DRIVES FOR SUPPLY AND RETURN FANS TO BE PROVIDED WITH THE UNITS AND BE PREWIRED BACK TO THE UNIT CONTROL PANEL (OR FIELD WIRED BY MFG. AS PART OF THE BID)

LEGEND

S = SUPPLIER (MANUFACTURER)*
M = MECHANICAL
E = ELECTRICAL
VFD = VARIABLE FREQUENCY DRIVE

AC = ROOF TOP AIR CONDITIONING UNIT
MCA = MINIMUM CIRCUIT AMPACITY
MBS = MAXIMUM CIRCUIT BREAKER SIZE

* – ITEMS INDICATED AS SUPPLIER SHALL BE PROVIDED WITH THE ITEM/EQUIPMENT OR BY THE CONTRACTOR PURCHASING THE ITEM/EQUIPMENT

LIGHTING FIXTURE SCHEDULE

FLUORESCENT LIGHTING FIXTURE

TYPE		MOUNTING	WATTS
"0A"	WALL MOUNTED OUTDOOR COMPACT FLUORESCENT FIXTURE WITH DIE-CAST SINGLE PIECE HOUSING, SEGMENTED REFLECTOR, SINGLE FUSE, FORWARD THROW, WET LOCATION DOOR FOR UP ORIENTATION, ENHANCED CORROSION RESISTANT, UNIVERSAL ELECTRONIC COLD WEATHER MULTI-VOLT BALLAST FOR OUTDOOR OPERATION, 2-32W DDT LAMP, DARK BRONZE FINISH. LITHONIA CAT. No. TWH-2/32TRT-MVOLT-SF-VG OR BY ACCEPTABLE MANUFACTURER BEGA, COOPER.	SURFACE	64

SYMBOL LIST

SYMBOL	DESCRIPTION
S	SINGLE POLE SWITCH
S_P	SWITCH WITH PIOT LIGHT
	THREE PHASE MOTOR
	COMBINATION MAGNETIC STARTER / DISCONNECT SWITCH (FUSED)
	CONTROL PANEL WITH DISCONNECT SWITCH BY MECHANICAL TRADES
	LIGHTING / RECEPTACLE / EQUIPMENT PANEL
	DISCONNECT SWITCH, FUSED
J	JUNCTION BOX
P	PULL BOX
	DUPLEX RECEPTACLE OUTLET
AFF	ABOVE FINISHED FLOOR
(E)	EXISTING EQUIPMENT / DEVICE
GFI	GROUND FAULT INTERRUPTER
R	RELOCATED EQUIPMENT / DEVICE
WP	WEATHERPROOF
	DUCT SMOKE DETECTOR (R=RETURN S=SUPPLY)
	SURFACE MOUNTED FLUORESCENT LIGHT FIXTURE
	CO_2 SENSOR
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW

ELECTRICAL SHEET INDEX

SHEET	DESCRIPTION
E1	GENERAL ELECTRICAL INFORMATION AND ONE LINE DIAGRAMS
E2	ROOF PLAN – ELECTRICAL DEMOLITION
E3	ROOF PLAN – ELECTRICAL NEW WORK
E4	FIRST FLOOR PLAN– ELECTRICAL NEW WORK
E5	SECOND FLOOR PLAN– ELECTRICAL NEW WORK
E6	THIRD FLOOR PLAN– ELECTRICAL NEW WORK
E7	FOURTH FLOOR PLAN– ELECTRICAL NEW WORK

OVERVIEW OF ELECTRICAL SCOPE

THIS OVERVIEW OF SCOPE IS INCLUDED TO GIVE THE CONTRACTOR A GENERAL OVERVIEW OF THE PROJECT REQUIREMENTS. THE OVERVIEW IS NOT ALL INCLUSIVE AND IS NOT INTENDED TO, AND SHOULD NOT BE USED TO, ESTABLISH CONTRACT LIMITS OR PRICING INCLUSIONS. THE CONTRACT DOCUMENTS SHALL BE USED TO ESTABLISH CONSTRUCTION CONTRACT SCOPE.

THIS OVERVIEW OF SCOPE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

ELECTRICAL:

1. DISCONNECT AND REMOVE POWER TO MECHANICAL EQUIPMENT AS SHOWN ON DRAWING.
2. PROVIDE POWER TO NEW MECHANICAL EQUIPMENT AS SHOWN ON DRAWING.
3. PROVIDE WEATHERPROOF RECEPTACLE OUTLETS.
4. PROVIDE EXTERIOR FLUORESCENT LIGHT FIXTURES.
5. REPLACE EXISTING SIMPLEX "HARD WIRED" FIRE ALARM PANEL WITH NEW SIMPLEX ADDRESSABLE FIRE ALARM SYSTEM PANEL.
6. PROVIDE DUCT SMOKE DETECTOR CONNECTED TO NEW BUILDING FIRE ALARM SYSTEM.
7. PROVIDE ALL CINDUIT RACEWAY AND WIRING FOR SIEMANS CONTROLS AS INDICATED ON THE DRAWINGS.
8. PROVIDE ALL CONDUIT, WIRING AND BREAKERS AS INDICATED ON DRAWING.
9. PROVIDE ALL CUTTING AND PATCHING TO FACILITATE ELECTRICAL WORK.
10. PROVIDE CONTROL WIRING AND CONDUIT FOR ALL NEW CONTROL DEVICES AS INDICATED IN THE ELECTRICAL AND MECHANICAL DRAWINGS. (CONTRACTOR IS REQUIRED TO COORDINATE BETWEEN THE DRAWINGS AND THE SIEMENS REPRESENTATIVE TO ENSURE ALL CONTROL WIRING AND CONDUIT FOR THE PROJECT IS INCLUDED)

PROJECT REQUIREMENTS

PROVIDE ALL NECESSARY PERMITS. ALL WORK SHALL BE INSTALLED TO COMPLY WITH THE OWNER'S STANDARDS, STATE AND LOCAL CODES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING CODES AND THEIR RELATED REFERENCES.

2011 NATIONAL ELECTRICAL CODE AS AMENDED BY THE 2011 MICHIGAN ELECTRICAL CODE RULES, PART 8.

NFPA 101 LIFE SAFETY CODE 1997 AND 2006 (AS REFERENCED)

MICHIGAN ENERGY CODE–ASHRAE 90.1–2007

2009 INTERNATIONAL FIRE CODE (AS REFERENCED)

2009 MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS

2012 MICHIGAN MECHANICAL CODE

2012 MICHIGAN PLUMBING CODE

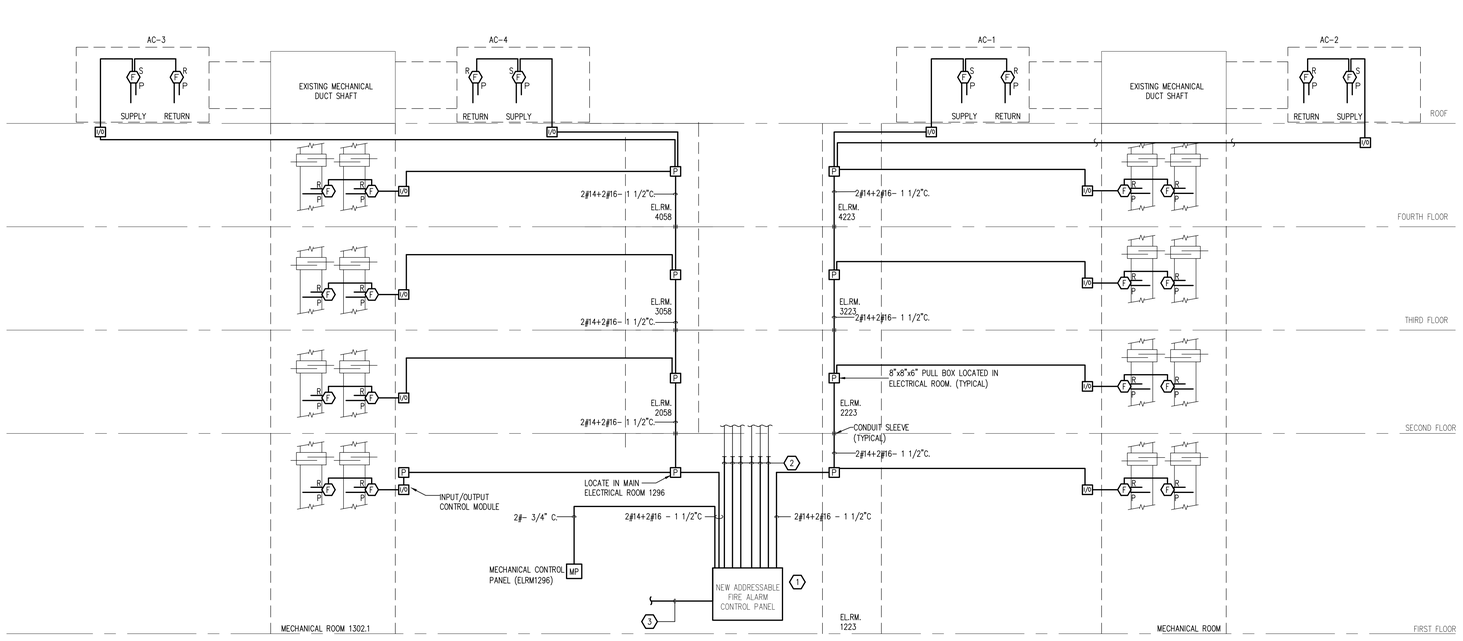
2009 INTERNATIONAL FUEL GAS CODE

MANUFACTURER AND MODEL NUMBER LISTED REPRESENTS THE BASIS OF DESIGN FOR THIS PROJECT. THE ELECTRICAL CONTRACTOR SHALL BEAR ALL ADDITIONAL COST ASSOCIATED WITH USING EQUIPMENT BY OTHER APPROVED MANUFACTURERS INCLUDING ADDITIONAL COSTS BY OTHER TRADES.

ALL EQUIPMENT INSTALLED SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE FIELD OR PROJECT CONDITIONS DO NOT ALLOW ALL MANUFACTURER'S RECOMMENDATIONS TO BE MET, THE INSTALLING CONTRACTOR SHALL SUBMIT IN WRITING TO THE ENGINEER THE PROPOSED DEVIATION, IN A SKETCH FORM, ACCOMPANIED BY THE MANUFACTURER'S CONCURRENCE.

ALL WIRING SHALL BE PLENUM RATED. CONTROL WIRING IN MECHANICAL ROOMS SHALL BE WITHIN CONDUIT. CONTROL WIRING TO NEW AND REPLACED DEVICES SHALL BE NEW.

INVESTIGATION, DEMOLITION AND NEW WIRING AND CONDUIT REQUIRED WITHIN CLOSED OFFICES AND CONFERENCE ROOMS SHALL BE PERFORMED OUTSIDE OF NORMALLY OCCUPIED HOURS AND SHALL BE COORDINATED WITH THE WSU PROJECT REPRESENTATIVE.



PARTIAL EXISTING FIRE ALARM RISER DIAGRAM – MODIFIED FOR NEW WORK

FIRE ALARM KEY NOTES:

1. NEW ADDRESSABLE FIRE ALARM PANEL. REFER TO ELECTRICAL SPECIFICATIONS.
2. EXTEND ALL EXISTING FIRE ALARM WIRING & CONDUIT AND RECONNECT TO NEW FIRE ALARM PANEL.
3. RECONNECT 120V EMERGENCY POWER . EXTEND CONDUIT AD WIRING AS REQUIRED.

FIRE ALARM GENERAL NOTES:

1. ALL WIRING SHALL BE INSTALLED IN STRICT COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF **N.E.C. ARTICLE 760**; POWER-LIMITED FIRE PROTECTIVE SIGNALING CIRCUITS.
2. ALL WIRING TO BE INSTALLED IN CONDUIT AND SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS, UNLESS OTHERWISE INDICATED.
3. SEE FLOOR PLANS FOR LOCATIONS AND QUANTITIES OF DEVICES. COORDINATE LOCATIONS OF DUCT DETECTORS IN FIELD. DEVICES SHALL BE PROVIDED AND LOCATED IN ACCORDANCE WITH APPLICABLE CODES.
4. DUCT DETECTORS SHALL BE WIRED TO SHUTDOWN AC UNITS AND RETURN AIR FANS IN ADDITION TO ACTIVATING FIRE ALARM SYSTEM.
5. ALL PROGRAMMING REQUIRED TO ACTIVATE THE FIRE ALARM SYSTEM SHALL BE PROVIDED BY THE MANUFACTURER OR THEIR TRAINED REPRESENTATIVE.
6. ARRANGEMENT OF DEVICES IS INTENDED TO SHOW GENERAL AREA AND TYPICAL LAYOUT AND IS NOT INTENDED TO DICTATE THE ORDER OF DEVICE CONNECTION OR THE NUMBER OF TAPS TO BE USED IN BRANCHING TO INDIVIDUAL DEVICES.
7. COORDINATE EXACT LOCATION OF ALL DUCT SMOKE DETECTORS, WITH MECHANICAL TRADES.
8. MINIMUM SIZE CONDUIT TO BE ¾"
9. FIRE ALARM REPRESENTATIVE SHALL BE PRESENT DURING RTU START UPS (FIVE TOTAL MEETINGS) IN ORDER TO COORDINATE RTU SMOKE DETECTION SHUTDOWN TESTING.

WSU# 130-252650

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DRAWN	HMN
CHECKED	GDC
DEPT MGR	SM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

GENERAL ELECTRICAL INFORMATION AND ONE-LINE-DIAGRAMS

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
E1

DSD FILE NAME
14-4802-E1

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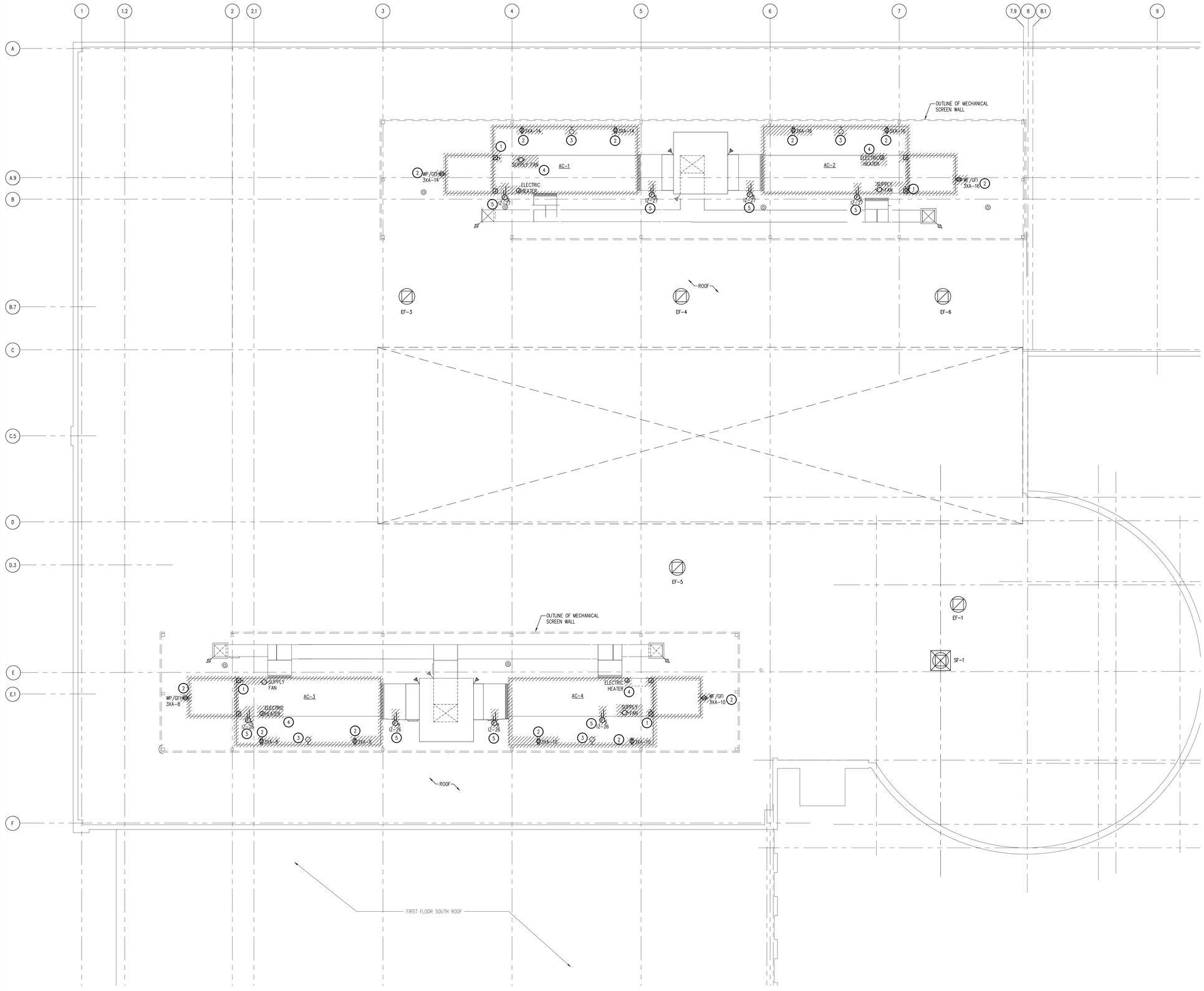

ROOF PLAN – ELECTRICAL DEMOLITION

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

WSU# 130-252650

DEMOLITION KEY NOTES:

(APPLICABLE THIS SHEET ONLY)

1. EXISTING AC UNIT TO BE REMOVED AND REPLACED WITH NEW AC UNIT BY MECHANICAL TRADES. INTERCEPT EXISTING CONDUIT AND WIRING TO AC UNIT AND TERMINATE IN A JUNCTION BOX IN 4TH FLOOR ACCESSIBLE CEILING SPACE BELOW. EXISTING SERVICE TO BE UTILIZED FOR RECONNECTION TO NEW ROOF MOUNTED AC UNITS. SEE NEW WORK.
2. DISCONNECT, MAKE SAFE AND REMOVE EXISTING OUTLETS. RETAIN EXISTING BRANCH CIRCUIT AND TERMINATE IN A JUNCTION BOX (IN THE FOURTH FLOOR ACCESSIBLE CEILING) FOR RECONNECTION TO NEW WP. RECEPTACLE OUTLETS. SEE NEW WORK.
3. DISCONNECT, MAKE SAFE AND REMOVE EXISTING LIGHT FIXTURES. RETAIN EXISTING BRANCH CIRCUIT AND TERMINATE IN A JUNCTION BOX (IN THE FOURTH FLOOR CEILING) FOR RECONNECTION TO NEW LIGHT FIXTURES. SEE NEW WORK.
4. DISCONNECT AND REMOVE ELECTRIC HEATER COMPLETE WITH ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE. COORDINATE WITH MECHANICAL TRADES.
5. DISCONNECT AND REMOVE EXISTING DUCT SMOKE DETECTORS AND ASSOCIATED WIRING BACK TO SOURCE.

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DRAWN	HMN
CHECKED	GDC
DEPT MGR	SM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

ROOF PLAN - ELECTRICAL DEMOLITION

WSU PROJECT #: 130-252650
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WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
E2

DSD FILE NAME
14-4802-E2

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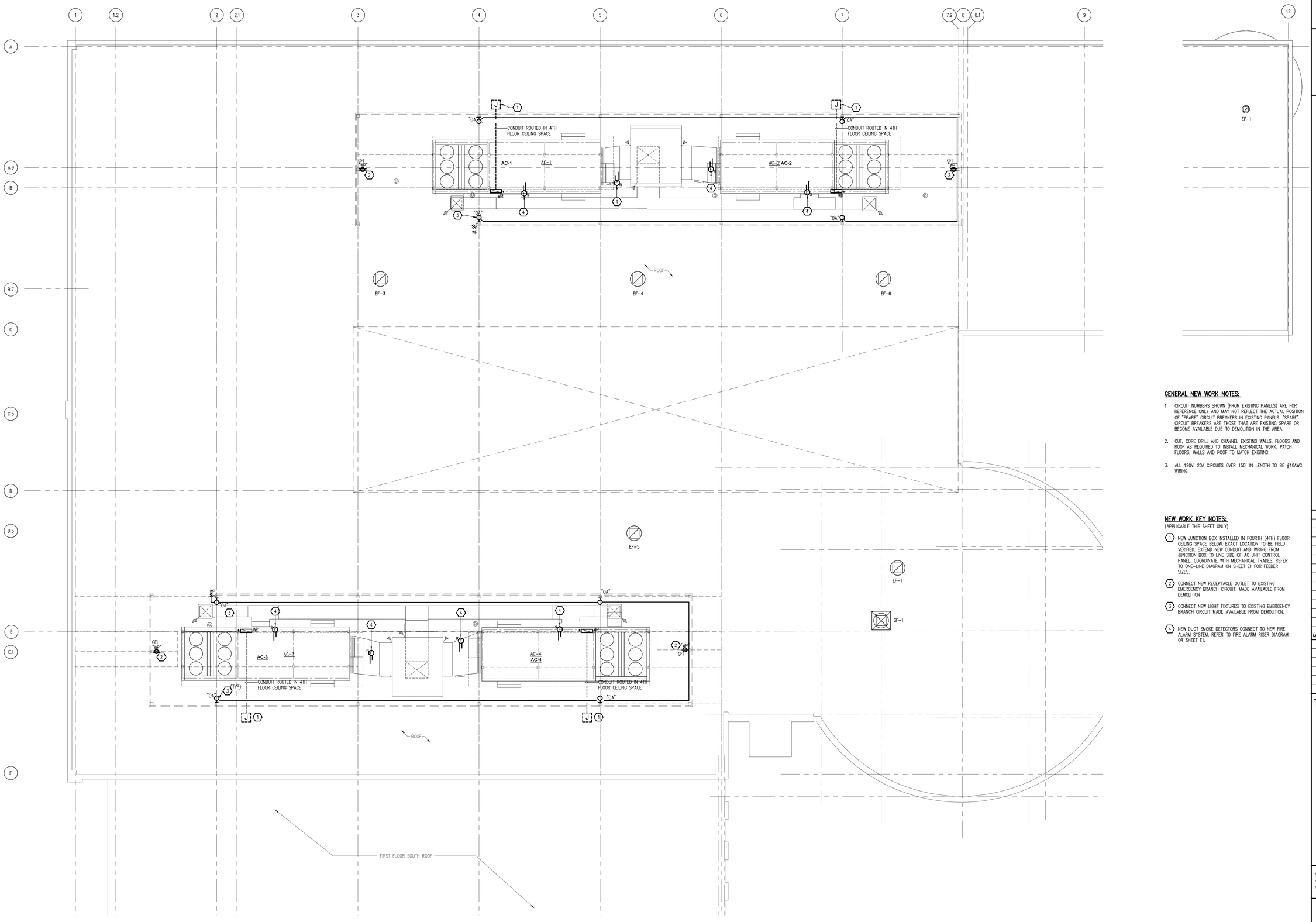

ROOF PLAN – ELECTRICAL NEW WORK

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

0 4 8 16 32

GENERAL NEW WORK NOTES:

1. CIRCUIT NUMBERS SHOWN (FROM EXISTING PANELS) ARE FOR REFERENCE ONLY AND MAY NOT REFLECT THE ACTUAL POSITION OF "SPARE" CIRCUIT BREAKERS IN EXISTING PANELS. "SPARE" CIRCUIT BREAKERS ARE THOSE THAT ARE EXISTING SPARE OR BECOME AVAILABLE DUE TO DEMOLITION IN THE AREA.
2. CUT, CORE DRILL AND CHANNEL EXISTING WALLS, FLOORS AND ROOF AS REQUIRED TO INSTALL MECHANICAL WORK. PATCH FLOORS, WALLS AND ROOF TO MATCH EXISTING.
3. ALL 120V, 20A CIRCUITS OVER 150' IN LENGTH TO BE #10AWG WIRING.

NEW WORK KEY NOTES:

(APPLICABLE THIS SHEET ONLY)

1. NEW JUNCTION BOX INSTALLED IN FOURTH (4TH) FLOOR CEILING SPACE BELOW. EXACT LOCATION TO BE FIELD VERIFIED. EXTEND NEW CONDUIT AND WIRING FROM JUNCTION BOX TO LINE SIDE OF AC UNIT CONTROL PANEL. COORDINATE WITH MECHANICAL TRADES. REFER TO ONE-LINE DIAGRAM ON SHEET E1 FOR FEEDER SIZES.
2. CONNECT NEW RECEPTACLE OUTLET TO EXISTING EMERGENCY BRANCH CIRCUIT, MADE AVAILABLE FROM DEMOLITION
3. CONNECT NEW LIGHT FIXTURES TO EXISTING EMERGENCY BRANCH CIRCUIT MADE AVAILABLE FROM DEMOLITION.
4. NEW DUCT SMOKE DETECTORS CONNECT TO NEW FIRE ALARM SYSTEM. REFER TO FIRE ALARM RISER DIAGRAM OR SHEET E1.

WSU# 130-252650

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DEPT MGR	SM
PROJECT MGR	BJR

TITLE: WSU FAB Building

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

ROOF PLAN - ELECTRICAL NEW WORK

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WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
E3

DSD FILE NAME
14-4802-E3

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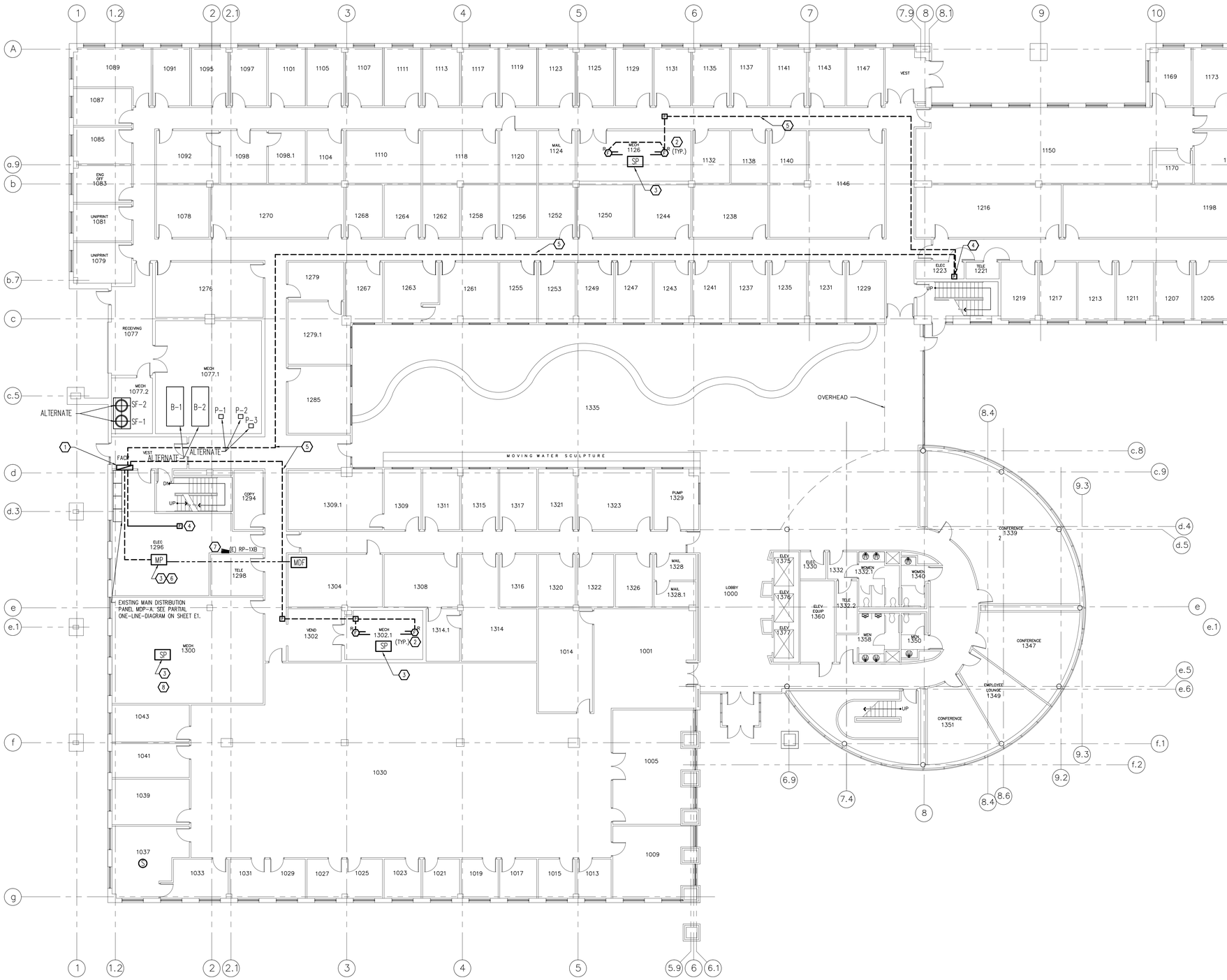

GENERAL NOTES

1. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT, AND REFER TO A/M/E COORDINATION SCHEDULE ON SHEET E1 FOR ELECTRICAL TRADES REQUIREMENTS.
2. SEAL ALL ASSOCIATED PENETRATIONS THRU FIRE RATED WALLS WITH FIRE STOP MATERIAL. SEALANT TO MATCH EXISTING FIRE RATING.
3. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING LAY-IN CEILING TILES AS REQUIRED TO FACILITATE ELECTRICAL AND FIRE ALARM WORK.
4. TEMPERATURE SENSORS ARE NEW BUT ARE TO BE LOCATED IN THE LOCATION OF PRESENT TEMPERATURE CONTROL SENSORS CONNECTED TO THE FORMER CONTROL SYSTEM. NEW WIRE IS TO BE PULLED FOR THE NEW SENSORS.

NEW WORK KEY NOTES:

1. EXISTING SIMPLEX MAIN FIRE ALARM PANEL TO BE REPLACED WITH NEW SIMPLEX 4100 ES ADDRESSABLE PANEL. CAPTURE EXISTING POWER, ALL FIRE ALARM CIRCUITS & CONDUITS & EXTEND TO NEW FIRE ALARM PANEL – SEE FIRE ALARM RISER DIAGRAM ON SHEET E1.
2. NEW DUCT SMOKE DETECTOR. SEE FIRE ALARM RISER DIAGRAM ON SHEET E1
3. PROVIDE 120V POWER TO MECHANICAL CONTROL PANEL FROM EMERGENCY PANEL BOARD RP-1XB ON A 20A-1P DEDICATED BREAKER WITH 2#12 + 1#12GND- 3/4"C. COORDINATE WITH MECHANICAL TRADES.
4. 8"X8"X6" PULL BOX FOR NEW FIRE ALARM RISER WIRING. EXACT LOCATION TO BE FIELD VERIFIED. PAINT PULL BOX RED & LABEL. SEE FIRE ALARM RISER ON SHEET E1.
5. SUGGESTED ROUTING FOR NEW FIRE ALARM CONDUIT RACEWAY/WIRING ABOVE LAY-IN CEILING. EXACT ROUTING TO BE FIELD VERIFIED. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING CEILING TILES AS REQUIRED FOR NEW FIRE ALARM WORK.
6. CONNECT "MP" MECHANICAL CONTROL PANEL TO NEW FIRE ALARM CONTROL PANEL. SEE FIRE ALARM RISER DIAGRAM ON SHEET E1.
7. PROVIDE NEW BREAKERS FOR NEW LOADS ADDED. UPDATE PANEL DIRECTORY.
8. SIEMENS TO DISCONNECT AND REMOVE EXISTING HONEYWELL CONTROL PANEL AND TURN OVER TO THE OWNER.

N

FIRST FLOOR PLAN – ELECTRICAL

SCALE: 1" = 10'-0"

0 5 10 20 40

WSU# 130-252650

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FIRST FLOOR PLAN -ELECTRICAL

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WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
E4

DSD FILE NAME
14-4802-E4

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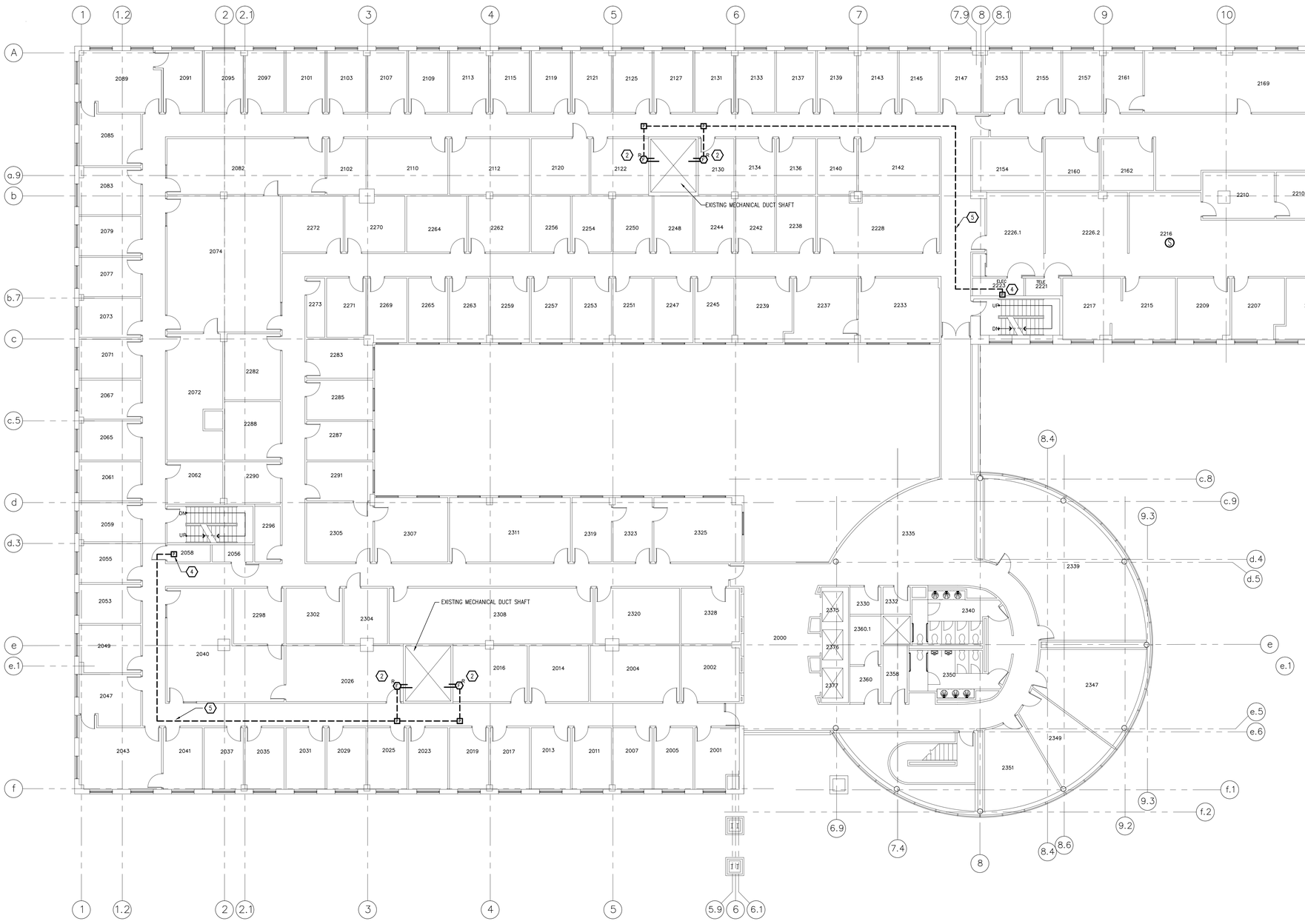

SECOND FLOOR PLAN – ELECTRICAL

SCALE: 1" = 10'-0"

0 5 10 20 40

GENERAL NOTES

1. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT, AND REFER TO A/M/E COORDINATION SCHEDULE ON SHEET E1 FOR ELECTRICAL TRADES REQUIREMENTS.
2. SEAL ALL ASSOCIATED PENETRATIONS THRU FIRE RATED WALLS WITH FIRE STOP MATERIAL, SEALANT TO MATCH EXISTING FIRE RATING.
3. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING LAY-IN CEILING TILES AS REQUIRED TO FACILITATE ELECTRICAL AND FIRE ALARM WORK.
4. TEMPERATURE SENSORS ARE NEW BUT ARE TO BE LOCATED IN THE LOCATION OF PRESENT TEMPERATURE CONTROL SENSORS CONNECTED TO THE FORMER CONTROL SYSTEM. NEW WIRE IS TO BE PULLED FOR THE NEW SENSORS.

NEW WORK KEY NOTES:

(1) NOT USED

(2) NEW DUCT SMOKE DETECTOR. SEE FIRE ALARM RISER DIAGRAM ON SHEET E1

(3) NOT USED

(4) 8"x8"x6" PULL BOX FOR NEW FIRE ALARM RISER WIRING EXACT LOCATION TO BE FIELD VERIFIED. PAINT PULL BOX RED & LABEL. SEE FIRE ALARM RISER ON SHEET E1

(5) SUGGESTED ROUTING FOR NEW FIRE ALARM CONDUIT RACEWAY/WIRING EXACT ROUTING TO BE FIELD VERIFIED. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING CEILING TILES AS REQUIRED FOR NEW FIRE ALARM WORK.

WSU# 130-252650

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MARK	ISSUE	DATE
	RE-BID	1/28/15
	BID	11/13/14
	95% OWNER REVIEW	10/31/14

DESIGNER	PA
DRAWN	JNA
CHECKED	GDC
DEPT MGR	SM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

SECOND FLOOR PLAN -ELECTRICAL

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
E5

DSD FILE NAME
14-4802-E5

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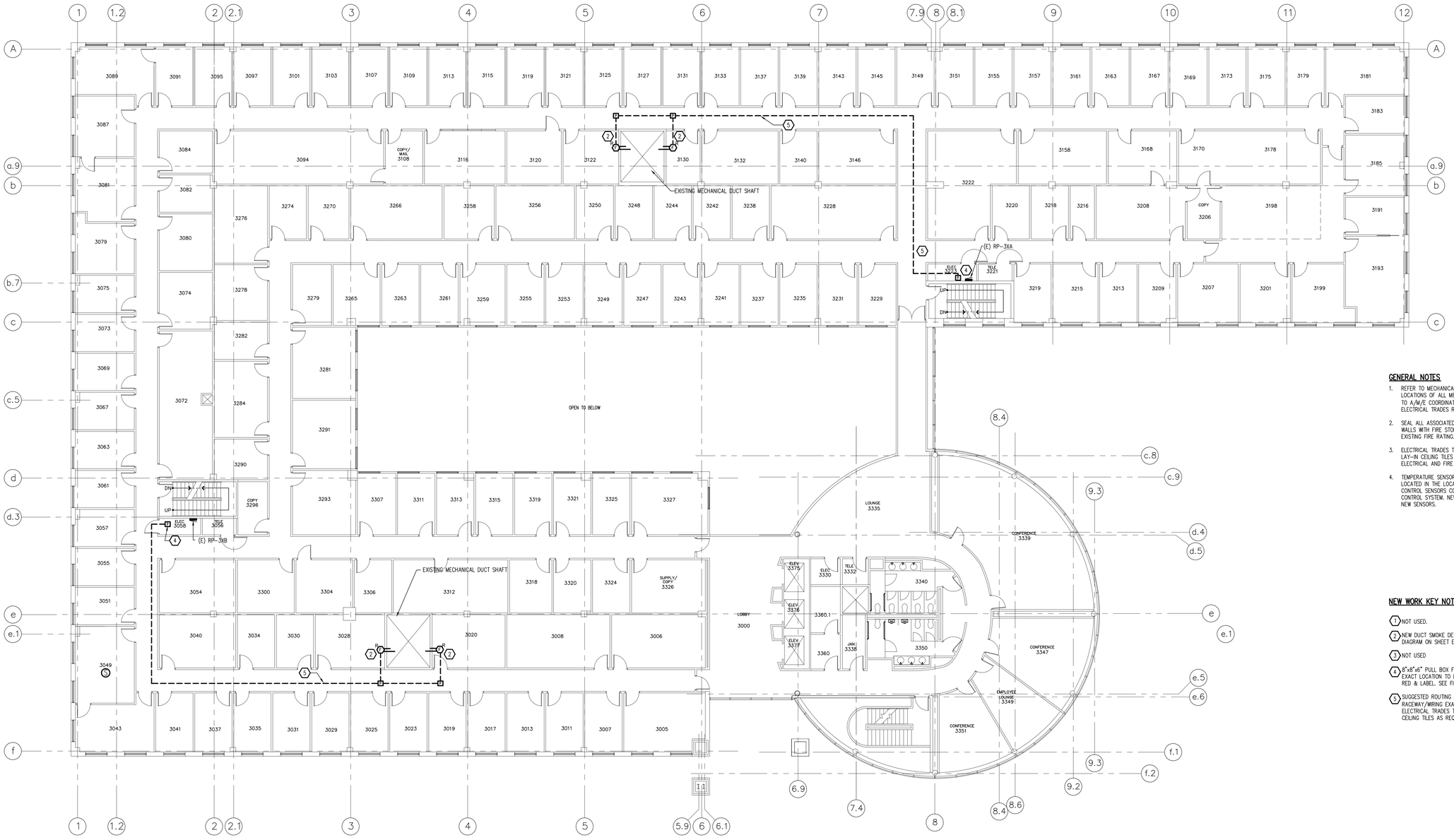

THIRD FLOOR PLAN – ELECTRICAL

SCALE: 1" = 10'-0"

0 5 10 20 40

GENERAL NOTES

1. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT, AND REFER TO A/M/E COORDINATION SCHEDULE ON SHEET E1 FOR ELECTRICAL TRADES REQUIREMENTS.
2. SEAL ALL ASSOCIATED PENETRATIONS THRU FIRE RATED WALLS WITH FIRE STOP MATERIAL. SEALANT TO MATCH EXISTING FIRE RATING.
3. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING LAY-IN CEILING TILES AS REQUIRED TO FACILITATE ELECTRICAL AND FIRE ALARM WORK.
4. TEMPERATURE SENSORS ARE NEW BUT ARE TO BE LOCATED IN THE LOCATION OF PRESENT TEMPERATURE CONTROL SENSORS CONNECTED TO THE FORMER CONTROL SYSTEM. NEW WIRE IS TO BE PULLED FOR THE NEW SENSORS.

NEW WORK KEY NOTES:

1. NOT USED.
2. NEW DUCT SMOKE DETECTOR. SEE FIRE ALARM RISER DIAGRAM ON SHEET E.
3. NOT USED
4. 8"x8"x6" PULL BOX FOR NEW FIRE ALARM RISER WIRING-- EXACT LOCATION TO BE FIELD VERIFIED. PAINT PULL BOX RED & LABEL. SEE FIRE ALARM RISER ON SHEET E1
5. SUGGESTED ROUTING FIR NEW FIRE ALARM CONDUIT RACEWAY/WIRING EXACT ROUTING TO BE FIELD VERIFIED. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING CEILING TILES AS REQUIRED FOR NEW FIRE ALARM WORK.

WSU# 130-252650

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	95% OWNER REVIEW	10/31/14

DESIGNER	PA
DRAWN	JNA
CHECKED	GDC
DEPT MGR	SM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

THIRD FLOOR PLAN -ELECTRICAL

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
E6

DSD FILE NAME
14-4802-E6

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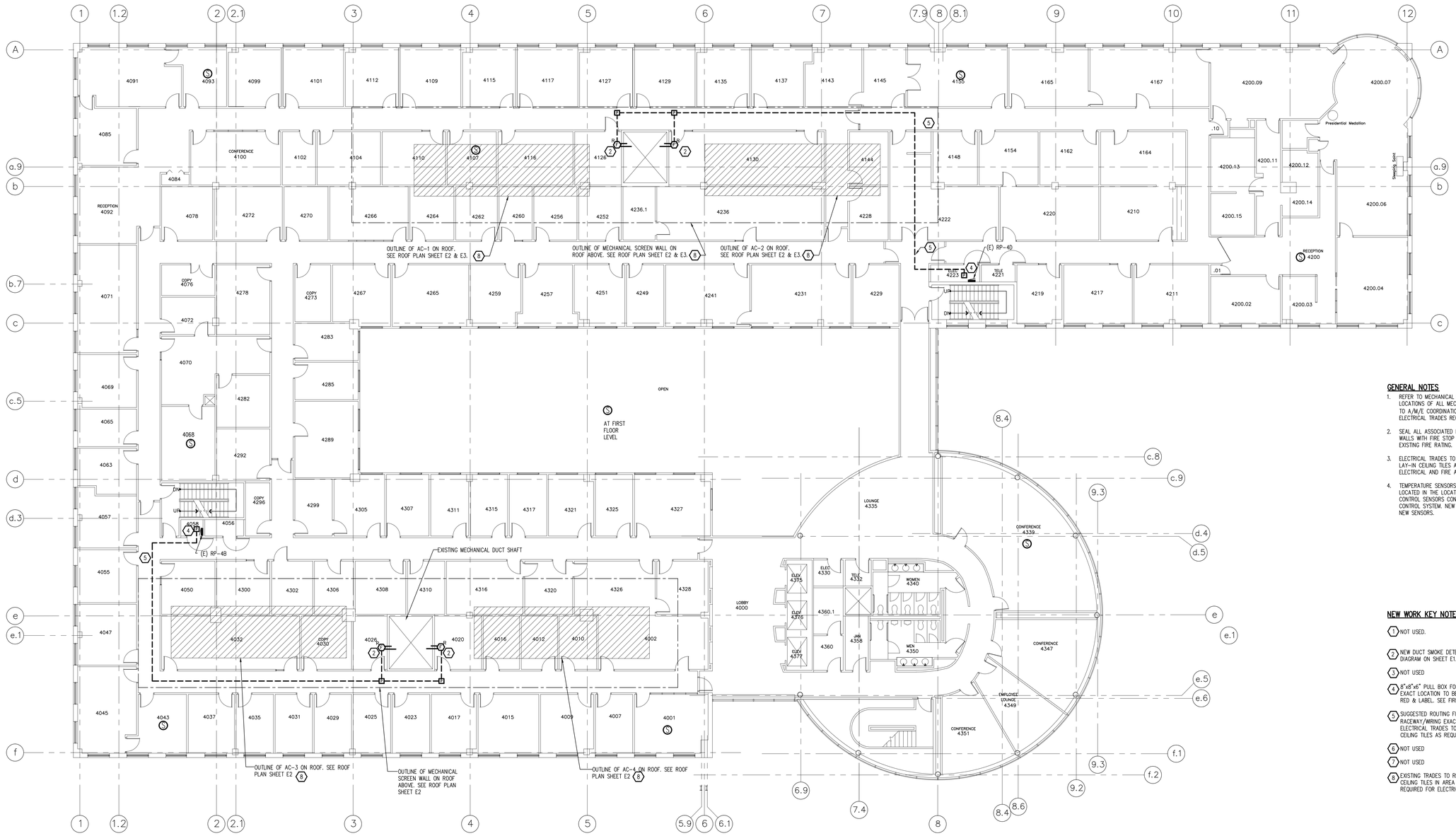

FOURTH FLOOR PLAN – ELECTRICAL

SCALE: 1" = 10'-0"

0 5 10 20 40

GENERAL NOTES

1. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT, AND REFER TO A/M/E COORDINATION SCHEDULE ON SHEET E1 FOR ELECTRICAL TRADES REQUIREMENTS.
2. SEAL ALL ASSOCIATED PENETRATIONS THRU FIRE RATED WALLS WITH FIRE STOP MATERIAL. SEALANT TO MATCH EXISTING FIRE RATING.
3. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING LAY-IN CEILING TILES AS REQUIRED TO FACILITATE ELECTRICAL AND FIRE ALARM WORK.
4. TEMPERATURE SENSORS ARE NEW BUT ARE TO BE LOCATED IN THE LOCATION OF PRESENT TEMPERATURE CONTROL SENSORS CONNECTED TO THE FORMER CONTROL SYSTEM. NEW WIRE IS TO BE PULLED FOR THE NEW SENSORS.

NEW WORK KEY NOTES:

1. NOT USED.
2. NEW DUCT SMOKE DETECTOR. SEE FIRE ALARM RISER DIAGRAM ON SHEET E1.
3. NOT USED
4. 8"x8"x6" PULL BOX FOR NEW FIRE ALARM RISER WIRING- EXACT LOCATION TO BE FIELD VERIFIED. PAINT PULL BOX RED & LABEL. SEE FIRE ALARM RISER ON SHEET E1
5. SUGGESTED ROUTING FIR NEW FIRE ALARM CONDUIT RACEWAY/WIRING EXACT ROUTING TO BE FIELD VERIFIED. ELECTRICAL TRADES TO REMOVE & REINSTALL EXISTING CEILING TILES AS REQUIRED FOR NEW FIRE ALARM WORK.
6. NOT USED
7. NOT USED
8. EXISTING TRADES TO REMOVE & REINSTALL EXISTING LAY-IN CEILING TILES IN AREA SHOWN WITH HATCHED LINES AS REQUIRED FOR ELECTRICAL DEMOLITION & NEW WORK

WSU# 130-252650

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	95% OWNER REVIEW	10/31/14

DESIGNER	PA
DRAWN	JNA
CHECKED	GDC
DEPT MGR	SM
PROJECT MGR	BJR

TITLE: **WSU FAB Building**

FACULTY/ ADMINISTRATION BUILDING

656 W. REUTHER MALL
DETROIT, MICHIGAN

FOURTH FLOOR PLAN -ELECTRICAL

WSU PROJECT #: 130-252650
WSU BLDG NAME: FACULTY/ADMIN. BLDG.
WSU BLDG #: 130

A/E PROJECT NO.
14-4802

SHEET NO.
E7

DSD FILE NAME
14-4802-E7

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