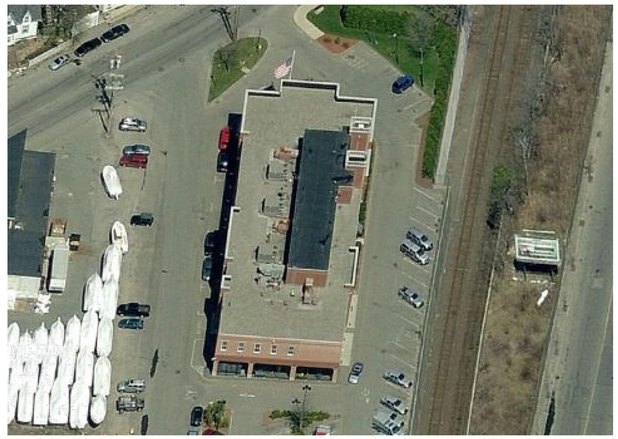
SALEM POLICE DEPARTMENT
ROOF REPAIR PROJECT

95 MARGIN STREET
SALEM, MASSACHUSETTS
RBA PROJECT # 2016051



JANUARY 11, 2017

DRAWING INDEX

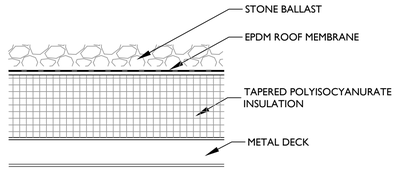
NO | DATE | BY | DESCRIPTION

RUSSO, BARR ASSOCIATES
55 Sixth Road, Suite 206, Woburn, MA 01801

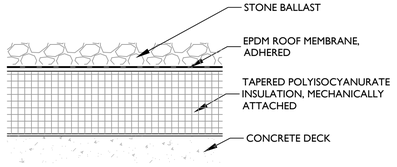
ROOF REPAIR PROJECT
SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS
TITLE SHEET

DATE 01.11.2017
SCALE AS NOTED
DRAWN BY / CHECKED BY JL / JR
PROJECT NO 2016051
DRAWING NO T-1

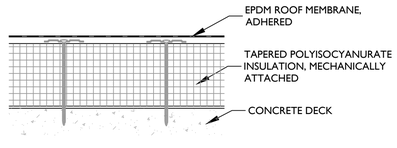
EXISTING ROOF COMPOSITIONS



TYPICAL EXISTING CROSS SECTION @ LOWER ROOF AREA 1
SCALE: 3" = 1'-0"

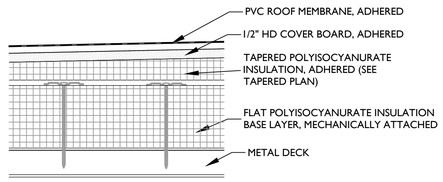


TYPICAL EXISTING CROSS SECTION @ LOWER ROOF AREA 1A & 3
SCALE: 3" = 1'-0"

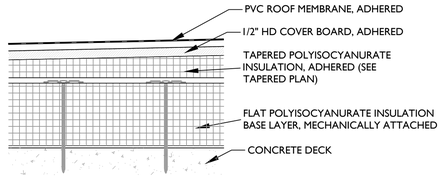


TYPICAL EXISTING CROSS SECTION @ UPPER ROOF AREAS 2, 4 & 5
SCALE: 3" = 1'-0"

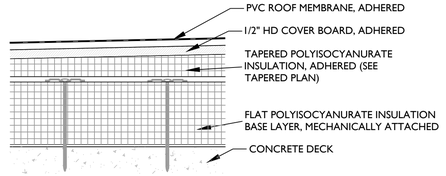
NEW ROOF COMPOSITION



TYPICAL NEW CROSS SECTION @ LOWER ROOF AREA 1
SCALE: 3" = 1'-0"



TYPICAL NEW CROSS SECTION @ LOWER ROOF AREA 1A & 3
SCALE: 3" = 1'-0"



TYPICAL NEW CROSS SECTION @ UPPER ROOF AREAS 2, 4 & 5
SCALE: 3" = 1'-0"

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS, MEASUREMENTS, DIMENSIONS, PENETRATIONS AND RELATED WORK ITEMS. NOTIFY ENGINEER IMMEDIATELY IF DISCREPANCIES IN DOCUMENTS ARE FOUND.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND LICENSES, PAY ALL FEES, AND COMPLY WITH ALL REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION RELATING TO THE BUILDING OR PRESERVATION OF PUBLIC HEALTH AND SAFETY.
3. ALL WORK TO COMPLY WITH THE MASSACHUSETTS STATE BUILDING CODES, 8TH EDITION AND OTHER PERTINENT LOCAL BUILDING REGULATIONS, CODES, MANUFACTURER'S REQUIREMENTS, AND INDUSTRY STANDARDS.
4. CONTRACTOR TO LEGALLY DISPOSE OF ALL MATERIALS OFF-SITE AND IN ACCORDANCE WITH LOCAL REGULATIONS. USE OF ON-SITE OWNER DUMPSTERS SHALL BE PROHIBITED. LOCATION OF THE CONTRACTOR'S DUMPSTER SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.
5. ALL ROOFING WORK SHALL BE IN ACCORDANCE WITH THE PROJECT MANUAL AND DRAWINGS. THE WRITTEN REQUIREMENTS OF THE ROOFING SYSTEM MANUFACTURER SHALL ALSO BE ADHERED TO. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE MANUFACTURER OF THE PROJECT, OBTAINING REQUIRED APPROVAL LETTERS AND SUBMITTALS, AND PERFORMING THE WORK ACCORDING TO THE REQUIREMENTS AS STIPULATED.
6. ACCESS TO THE INTERIOR OF THE BUILDINGS SHALL NOT BE ALLOWED WITHOUT PROPER NOTIFICATION.
7. CONTRACTORS SET-UP AND DISPOSAL AREAS SHALL NOT BLOCK FIRE LANES NOR INHIBIT ACCESS INTO OR OUT OF THE BUILDINGS. OVERHEAD PROTECTION SHALL BE PROVIDED AT ALL DOORWAYS LOCATED BELOW ACTIVE WORK AREAS. INTERIOR PROTECTION AND CLEAN UP SHALL BE PROVIDED AS NECESSARY AND AS REQUIRED ON A DAILY BASIS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LEAVING THE SITE IN A CLEAN AND UNOBSTRUCTED MANNER AT THE END OF EACH DAY OF WORK.
9. AT THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE TO THE OWNER ALL REQUIRED PROJECT CLOSE-OUT PAPERWORK INCLUDING THE SPECIFIED CONTRACTOR'S GUARANTEE AND ROOFING SYSTEM MANUFACTURER'S FULL SYSTEM WARRANTY.
10. CONTRACTOR SHALL INSTALL NEW ROOFING ON A DAILY BASIS. TEMPORARY OR PHASED ROOFING IS NOT ALLOWED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF A DAILY "TIE-IN" BETWEEN EXISTING AND NEW ROOF AREAS SO AS TO MAINTAIN COMPLETE WATERTIGHTNESS. CONTRACTOR SHALL COORDINATE ALL WORK WITH TENANTS AND OTHER TRADES ON A DAILY BASIS TO MINIMIZE DISRUPTION AND TO PREVENT EXPOSURE OF THE BUILDING TO INCLEMENT WEATHER, ROOF RELATED DEBRIS, AND LEAKS AT ALL TIMES.
11. ALL ITEMS ARE NEW UNLESS DESIGNATED EXISTING

NO	DATE	BY	DESCRIPTION

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ROOF REPAIR PROJECT

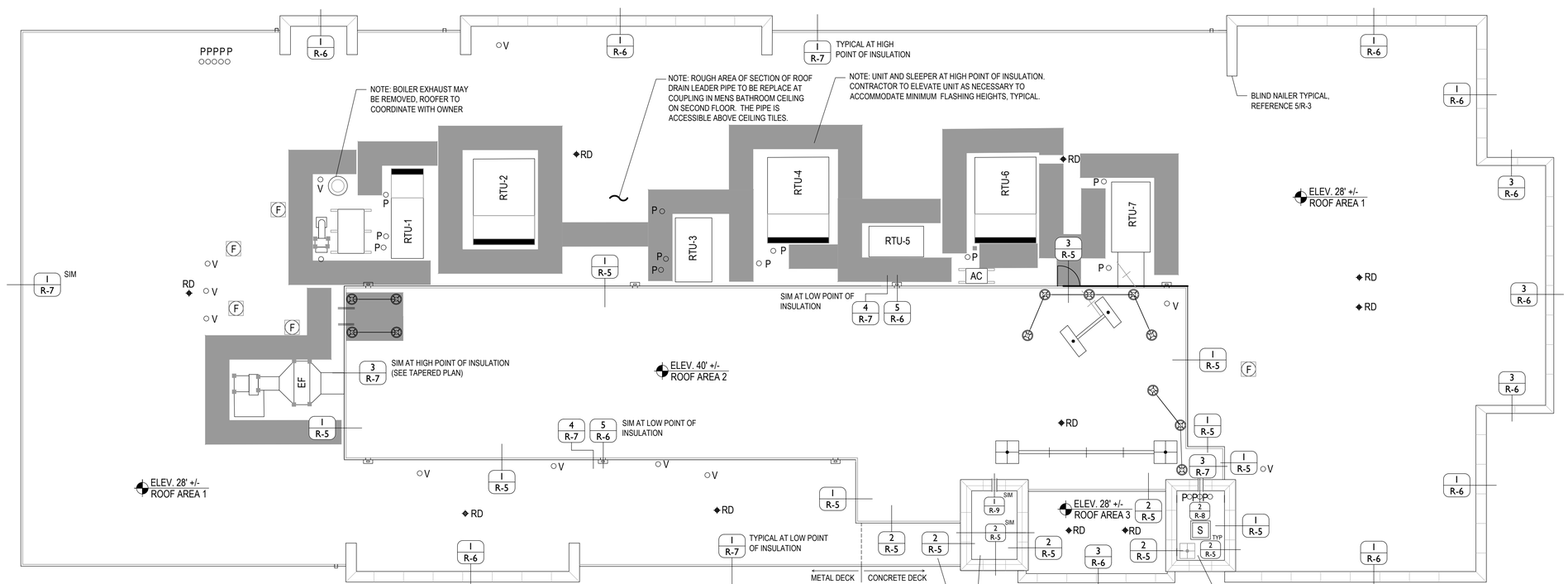
SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS

GENERAL NOTES, EXIST. & NEW ROOF COMPOSITIONS

DATE 01.11.2017
SCALE AS NOTED
DRAWN BY / CHECKED BY JL / JR
PROJECT NO 2016051
DRAWING NO T-2

CALLED NORTH

LEGEND		DETAIL
SYMBOL	DESCRIPTION	DETAIL REF.
◆RD	ROOF DRAIN	7/R-3
○V	VENT THROUGH ROOF	1/R-3
○P	PIPE PENETRATION	3/R-3
(F)	EXHAUST FAN	2/R4
▫	PITCH POCKET	9/R-3
S	SKYLIGHT	1/R-4
→	ROOF SLOPE DIRECTION	
RTU	ROOF TOP UNIT	3/R-4
	TOP OF MEMBRANE ELEVATION	
	SCUPPER W/ COLLECTOR BOX & DOWNSPOUT	5/R-6
	EMERGENCY OVERFLOW SCUPPER	4/R-6
	UNIT ON SLEEPER	
	ANTENNA ON BASE	
	FLASHED UNIT SLEEPER	6/R-3
	THRU-WALL SCUPPER	2/R-8
	BOILER VENT TO BE REMOVED (SEE NOTE)	
	ROOF RAIL	
	PIPE SUPPORT DETAIL (5' O.C. MAX)	4/R-4
	WALKWAY PAD	



ROOF AREA PLAN

SCALE: 1/8" = 1'0"

NO	DATE	BY	DESCRIPTION

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ROOF REPAIR PROJECT

SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS

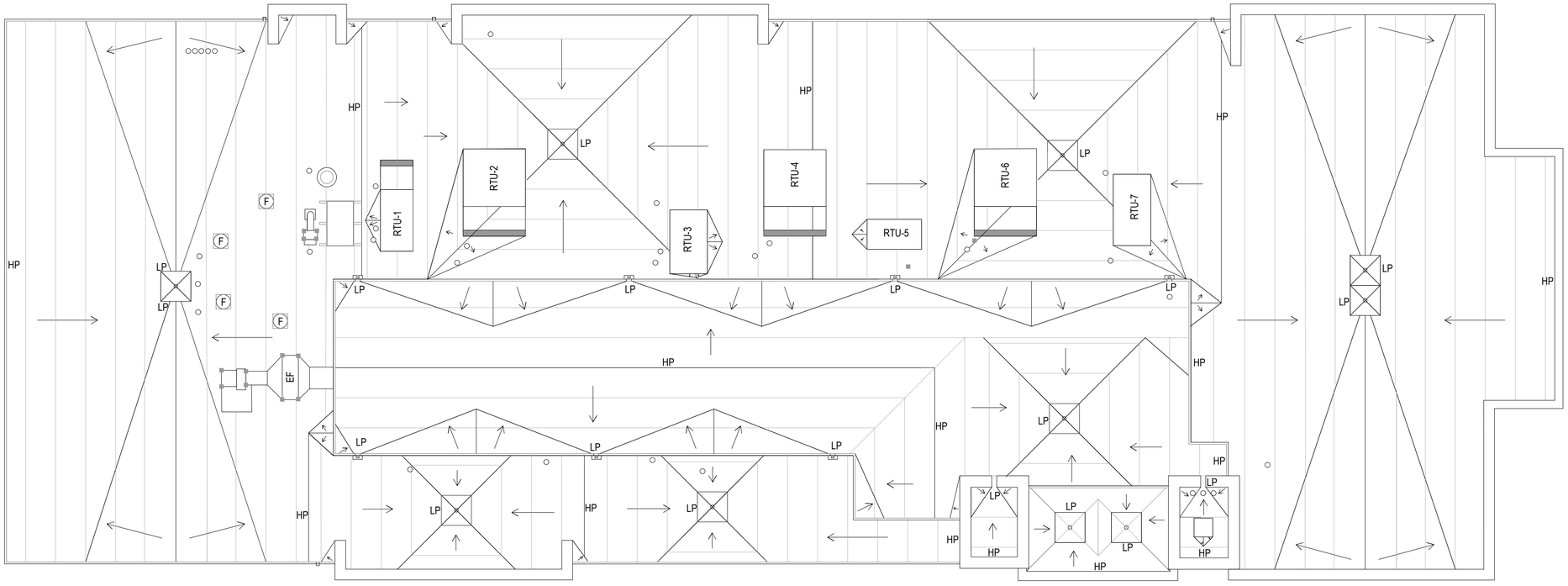
ROOF AREA PLAN

DATE: 01.11.2017
SCALE: AS NOTED
DRAWN BY / CHECKED BY: JL / JR
PROJECT NO: 2016051
DRAWING NO: R1

CALLED NORTH

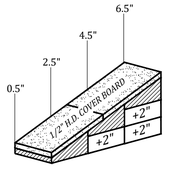
GENERAL NOTES

1. PROVIDE TAPERED INSULATION (1/4" PER FOOT) AS INDICATED ON THE DRAWINGS. THE MINIMUM R-VALUE SHALL EQUAL 25.
2. PROVIDE TAPERED INSULATION CRICKETS (1/2" PER FOOT) WHERE INDICATED.
3. PROVIDE MANUFACTURERS TAPERED SHOP DRAWINGS FOR REVIEW AND APPROVAL.
4. CONTRACTOR SHALL INSTALL CLAPBOARD AT THE PERIMETER OF ALL CRICKETS. CLAPBOARD SHALL BE MECHANICALLY FASTENED WITH A FASTENER AND INSULATION PLATE AT 16" O.C.
5. TAPERED INSULATION PANELS (SUMPS) ARE TO BE INSTALLED AT ALL ROOF DRAINS AS INDICATED. SLOPE INTO ROOF DRAIN SHALL BE MINIMUM 1/2" PER FOOT.

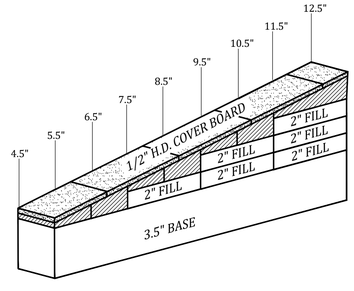


ROOF AREA PLAN

SCALE: 1/8" = 1'0"



1/2" /FT TAPERED ISO PROFILE - N.T.S.
NOTE: STAGGER ALL JOINTS



1/4" /FT TAPERED ISO PROFILE - N.T.S.
NOTE: STAGGER ALL JOINTS

NO	DATE	BY	DESCRIPTION

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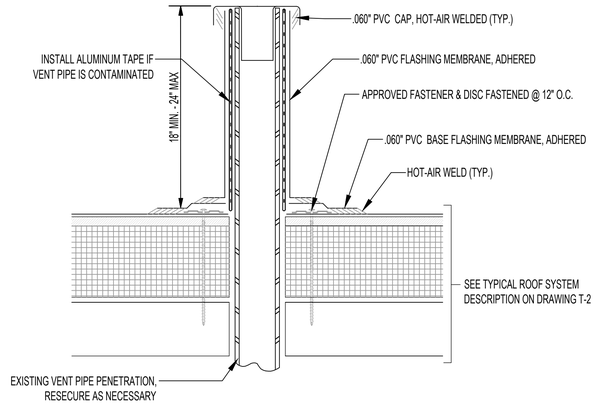
ROOF REPAIR PROJECT

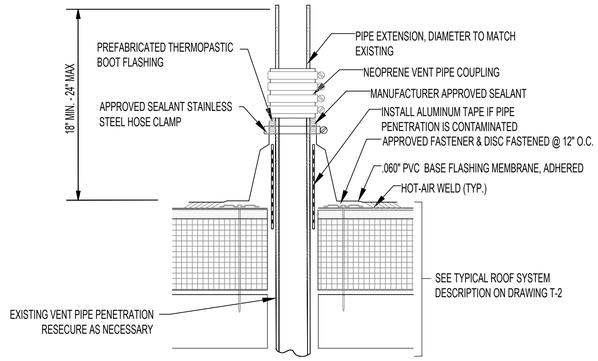
SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS

CONCEPTUAL ROOF TAPERED PLAN

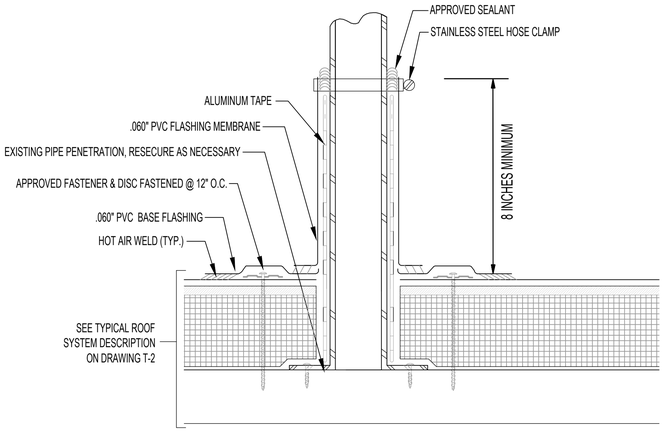
DATE 01.11.2017
SCALE AS NOTED
DRAWN BY / CHECKED BY JL / JR
PROJECT NO 2016051
DRAWING NO **R2**



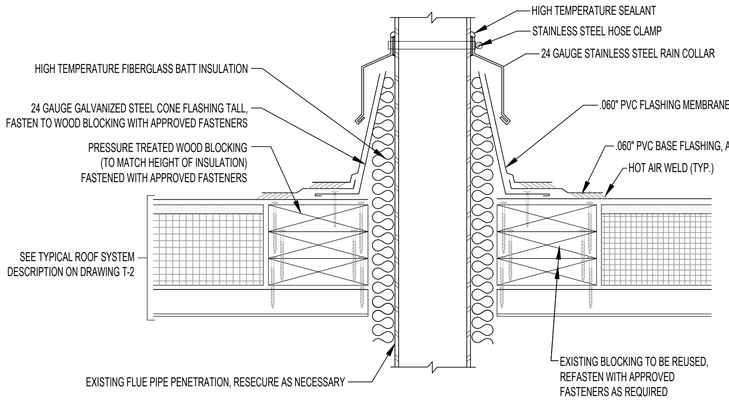
1 R-3 VENT PIPE FLASHING DETAIL
SCALE: 3" = 1'-0"



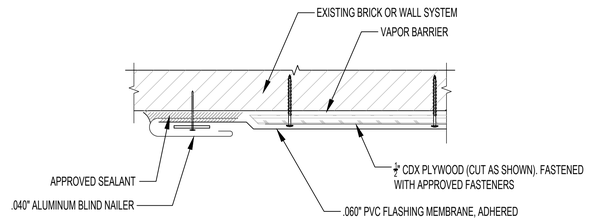
2 R-3 VENT PIPE EXTENSION
SCALE: 3" = 1'-0"



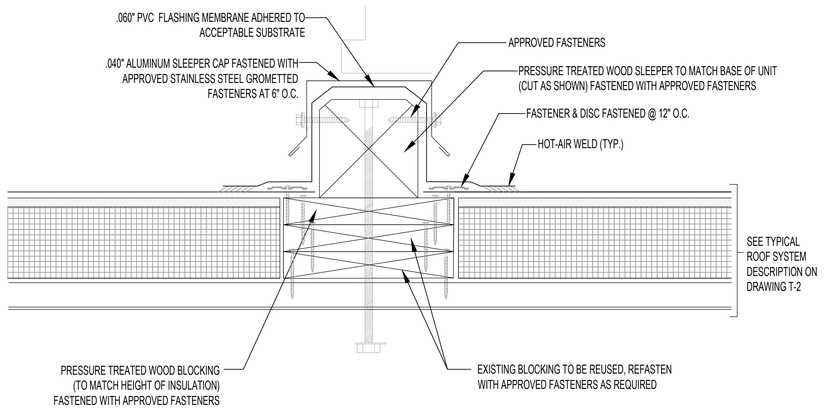
3 R-3 PIPE PENETRATION DETAIL
SCALE: 3" = 1'-0"



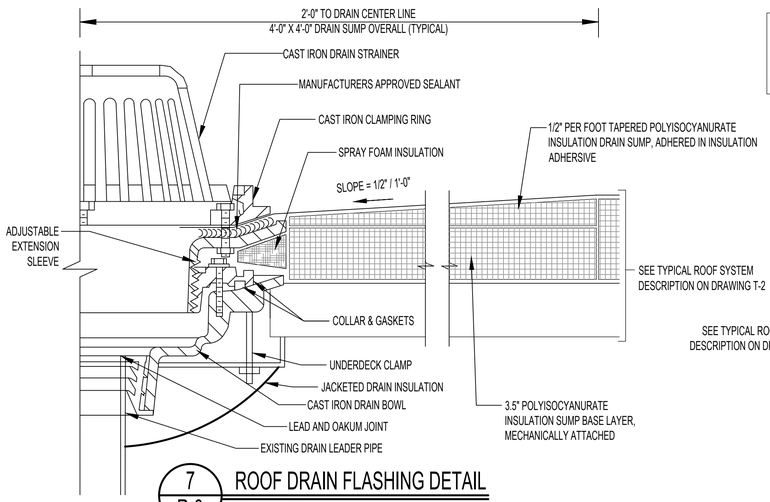
4 R-3 FLUE PIPE FLASHING DETAIL
SCALE: 3" = 1'-0"



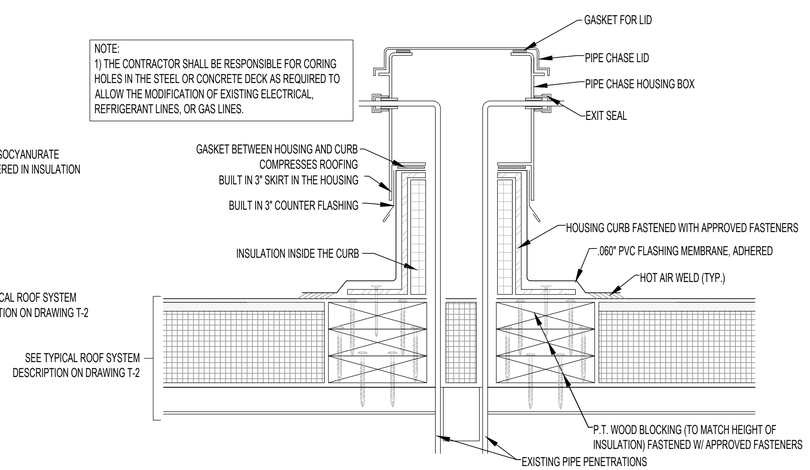
5 R-3 BLIND NAILER FLASHING DETAIL
SCALE: 3" = 1'-0"



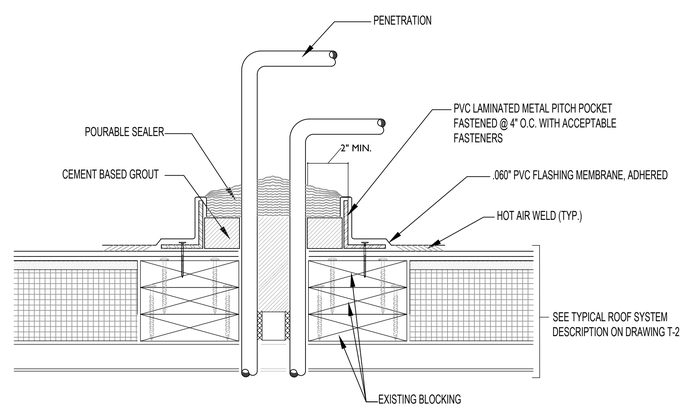
6 R-3 UNIT SLEEPER FLASHING DETAIL
SCALE: 3" = 1'-0"



7 R-3 ROOF DRAIN FLASHING DETAIL
SCALE: 3" = 1'-0"



8 R-3 PIPE ENCLOSURE BOX
SCALE: 3" = 1'-0"



9 R-3 PITCH POCKET DETAIL
SCALE: 3" = 1'-0"

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SALEM, MASSACHUSETTS

ROOF DETAILS

DATE 01.11.2017
SCALE AS NOTED
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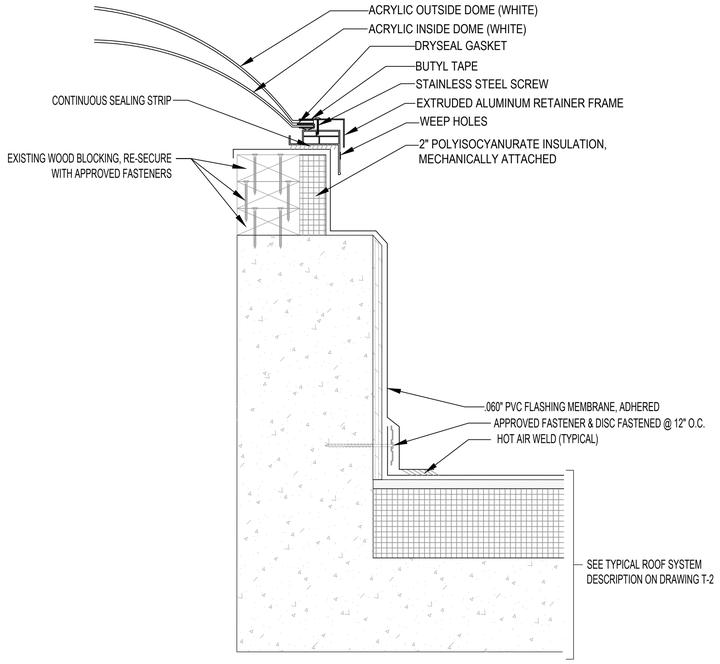
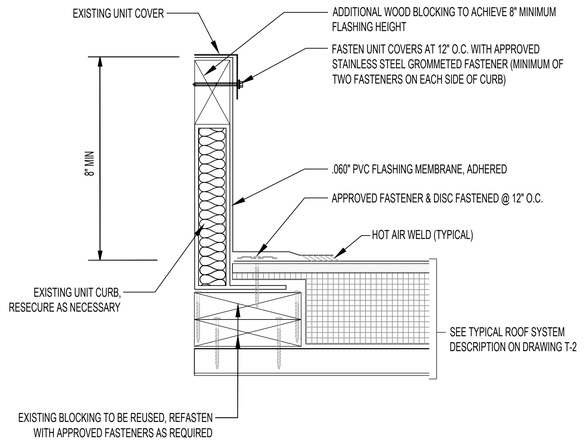
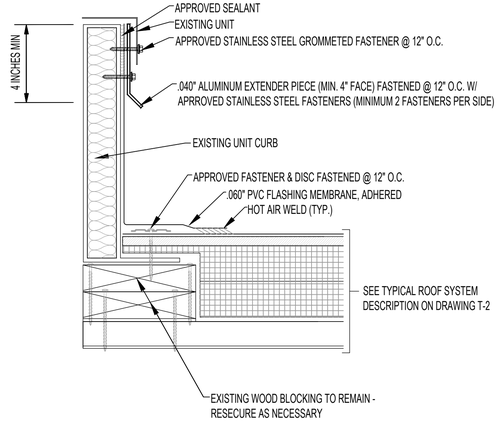
PROJECT NO 2016051
DRAWING NO R3



1 R-4 SKYLIGHT CURB FLASHING DETAIL
SCALE: 3" = 1'-0"

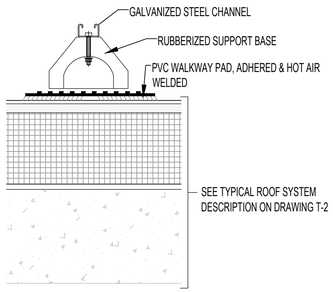


2 R-4 REMOVABLE CURB FLASHING DETAIL
SCALE: 3" = 1'-0"

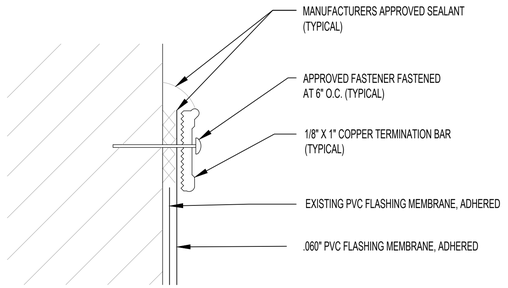


3 R-4 NON REMOVABLE CURB DETAIL
SCALE: 3" = 1'-0"

NOTES:
1) PROVIDE THE APPROPRIATE STRAPS/CLAMPS FOR THE PIPING.
2) PIPE SUPPORTS ARE TO BE SPACED NO MORE THAN 5'-0" O.C.



4 R-4 PIPE SUPPORT DETAIL
SCALE: 3" = 1'-0"



5 R-4 TERMINATION BAR DETAIL
SCALE: NTS

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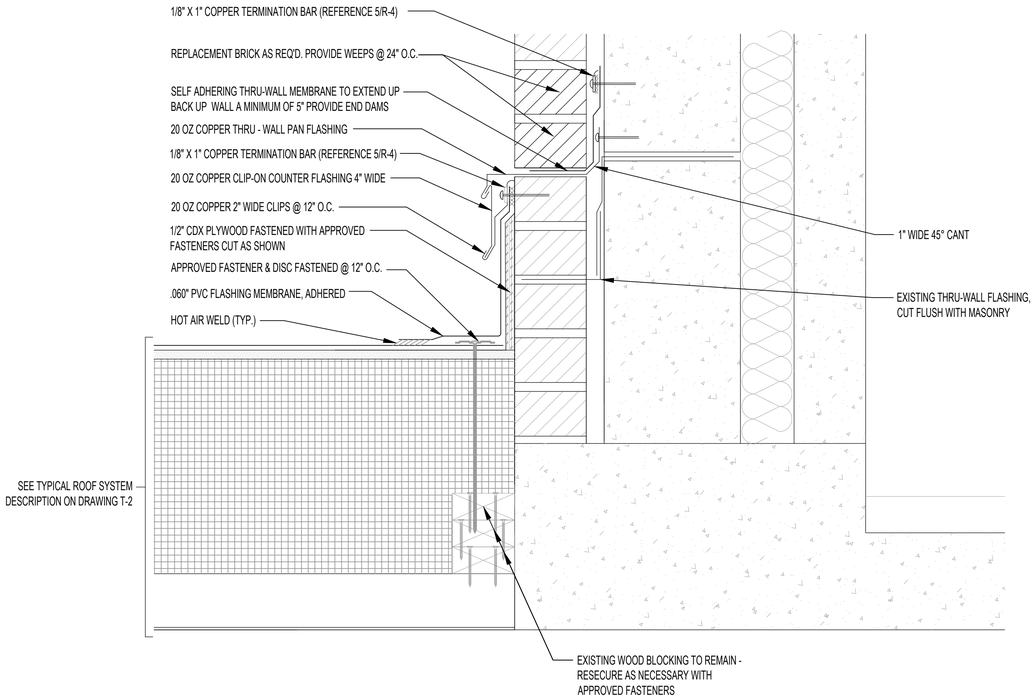
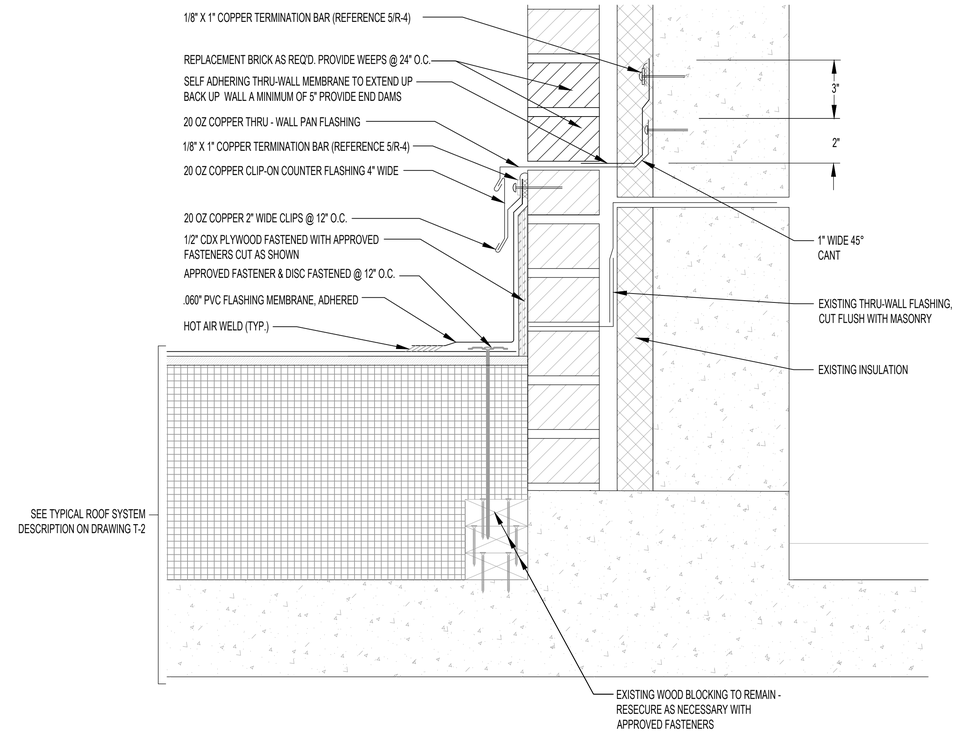


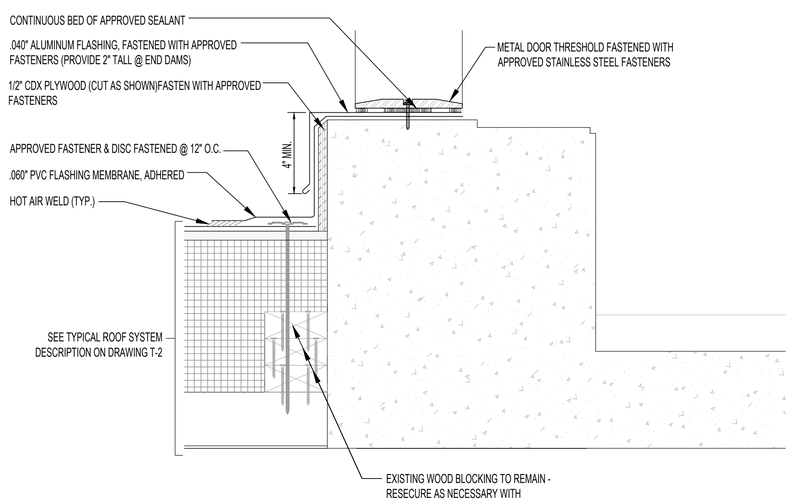
1 R-5 BASE WALL FLASHING & THRU-WALL FLASHING DETAIL

SCALE: 3" = 1'-0"



2 R-5 BASE WALL FLASHING & THRU-WALL FLASHING DETAIL

SCALE: 3" = 1'-0"



3 R-5 DOOR THRESHOLD DETAIL

SCALE: 3" = 1'-0"

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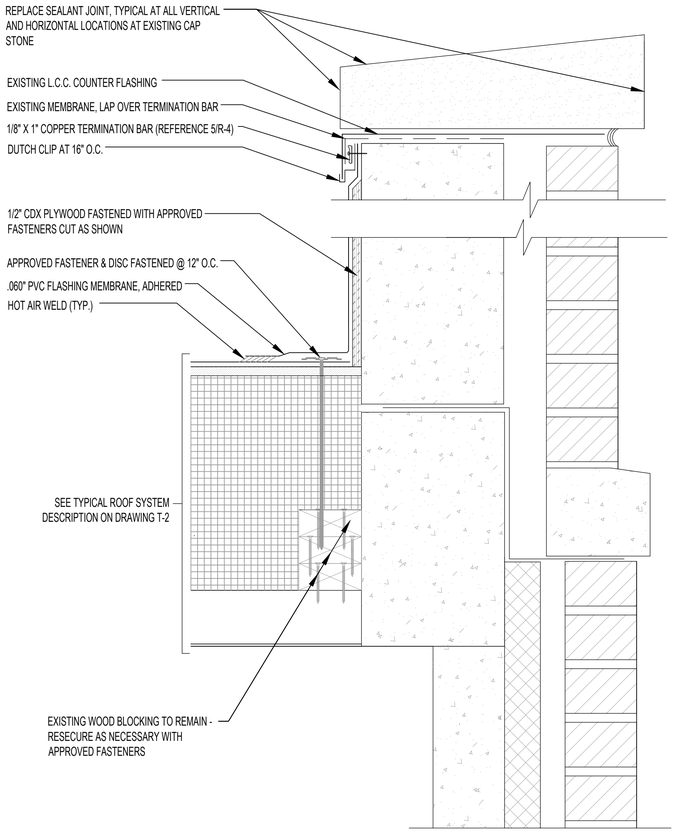
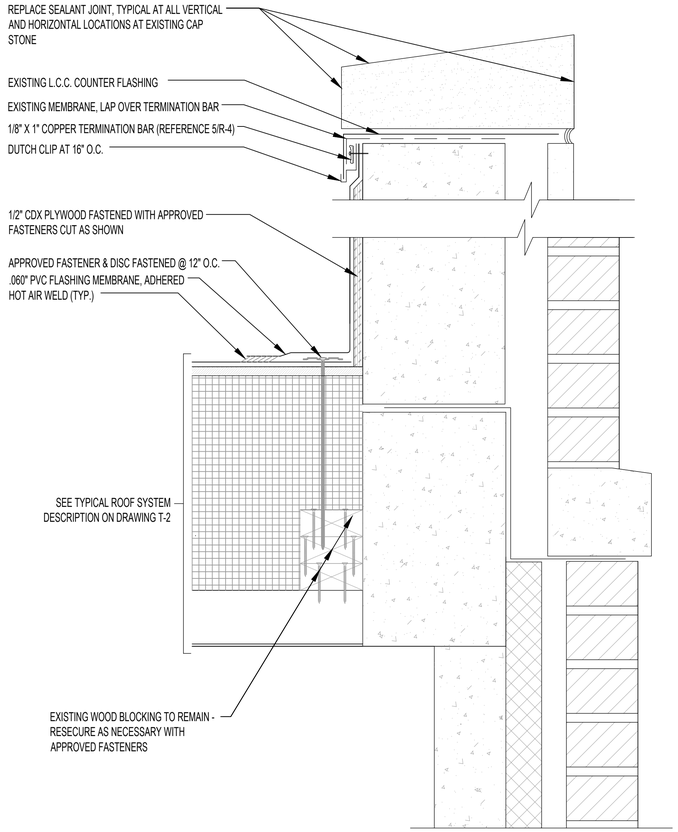
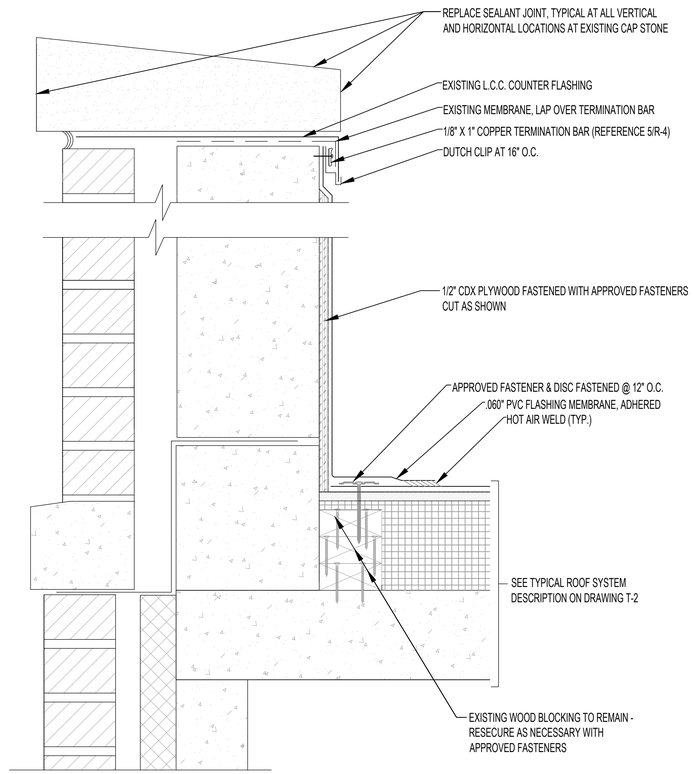
R5



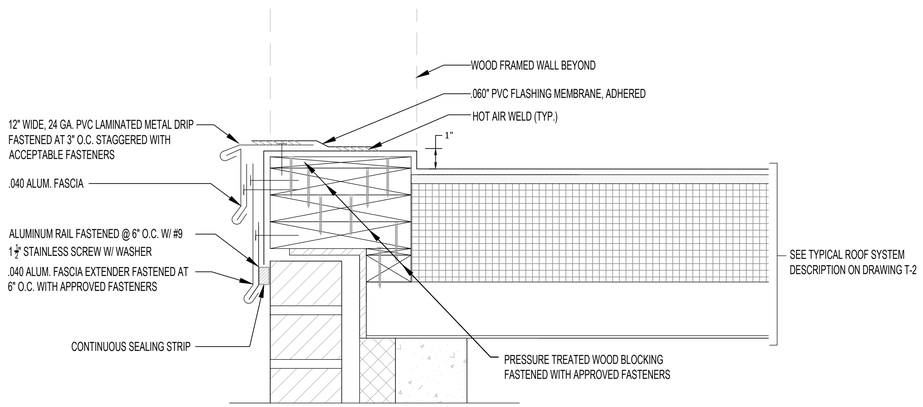
1 R-6 PARAPET DETAIL @ ROOF AREA "1"
SCALE: 3" = 1'-0"



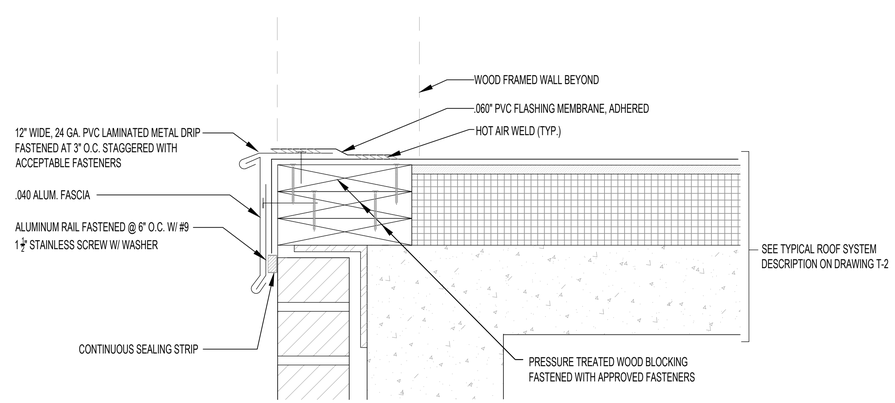
2 R-6 PARAPET DETAIL @ ENTRANCE OVERHANG
SCALE: 3" = 1'-0"



3 R-6 PARAPET DETAIL @ CONCRETE DECK ON ROOF AREA "3 "
SCALE: 3" = 1'-0"



4 R-6 EMERGENCY OVERFLOW SPUPPER DETAIL @ ROOF AREA "1"
SCALE: 3" = 1'-0"



5 R-6 SCUPPER DETAIL @ ROOF AREA "2"
SCALE: 3" = 1'-0"

NO	DATE	BY	DESCRIPTION

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55 Sixth Road, Suite 200, Woburn, MA 01801

ROOF REPAIR PROJECT
SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS

ROOF DETAILS

DATE 01.11.2017
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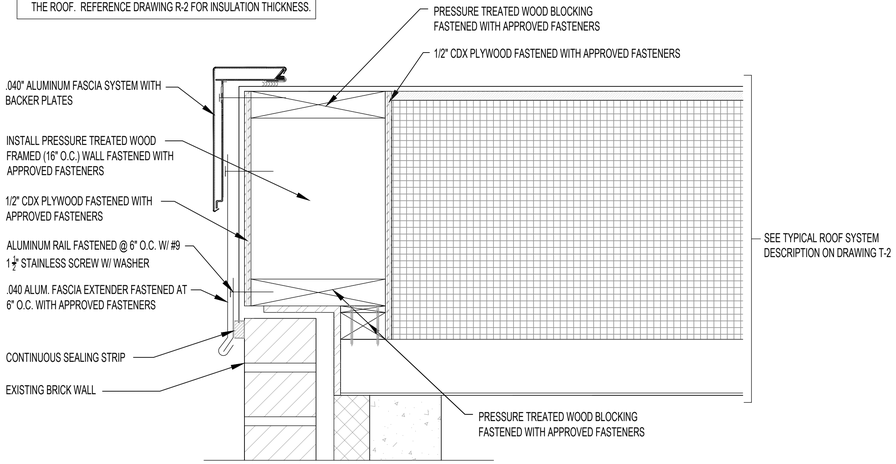
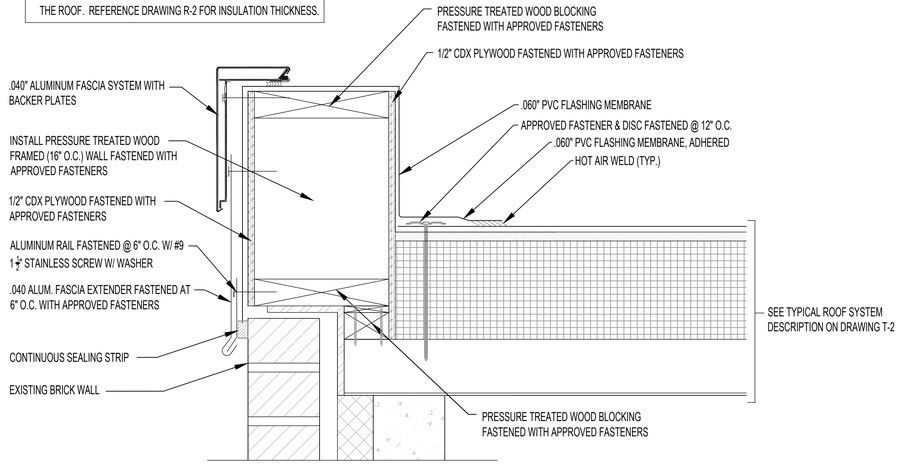
PROJECT NO 2016051
DRAWING NO R6

NOTE:
1) HEIGHT OF PRESSURE TREATED WOOD BLOCKING SHALL BE BASED ON THE THICKNESS INSULATION POINT ON THE ROOF. THE THICKEST POINT SHALL BE USED FOR THE ENTIRE PERIMETER OF THE ROOF. REFERENCE DRAWING R-2 FOR INSULATION THICKNESS.



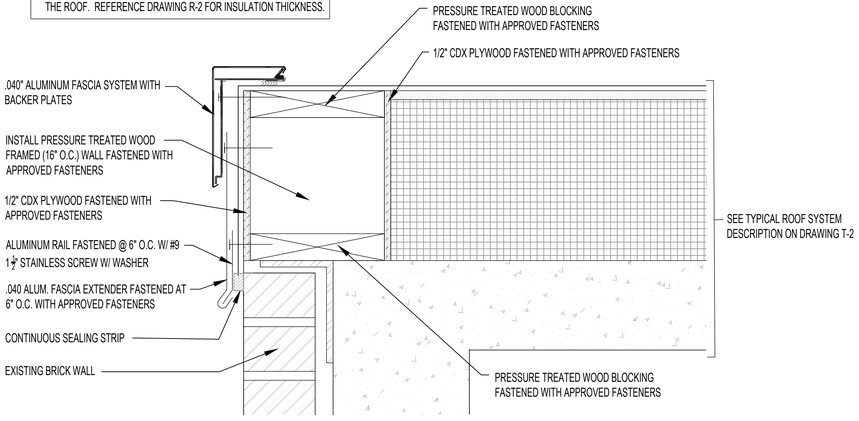
1 / R-7 EDGE DETAIL @ ROOF AREA "1"
SCALE: 3" = 1'-0"

NOTE:
1) HEIGHT OF PRESSURE TREATED WOOD BLOCKING SHALL BE BASED ON THE THICKNESS INSULATION POINT ON THE ROOF. THE THICKEST POINT SHALL BE USED FOR THE ENTIRE PERIMETER OF THE ROOF. REFERENCE DRAWING R-2 FOR INSULATION THICKNESS.



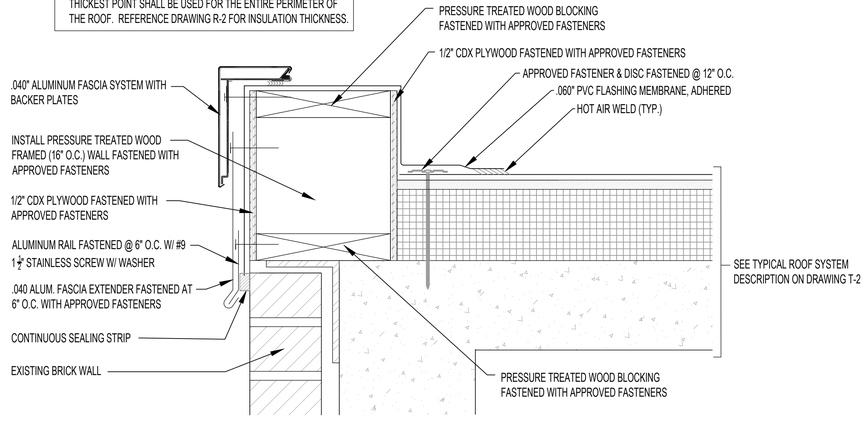
2 / R-7 EDGE DETAIL @ ROOF AREA "1"
SCALE: 3" = 1'-0"

NOTE:
1) HEIGHT OF PRESSURE TREATED WOOD BLOCKING SHALL BE BASED ON THE THICKNESS INSULATION POINT ON THE ROOF. THE THICKEST POINT SHALL BE USED FOR THE ENTIRE PERIMETER OF THE ROOF. REFERENCE DRAWING R-2 FOR INSULATION THICKNESS.



3 / R-7 EDGE DETAIL @ ROOF AREA "2"
SCALE: 3" = 1'-0"

NOTE:
1) HEIGHT OF PRESSURE TREATED WOOD BLOCKING SHALL BE BASED ON THE THICKNESS INSULATION POINT ON THE ROOF. THE THICKEST POINT SHALL BE USED FOR THE ENTIRE PERIMETER OF THE ROOF. REFERENCE DRAWING R-2 FOR INSULATION THICKNESS.



4 / R-7 EDGE DETAIL @ ROOF AREA "2"
SCALE: 3" = 1'-0"

NO	DATE	BY	DESCRIPTION

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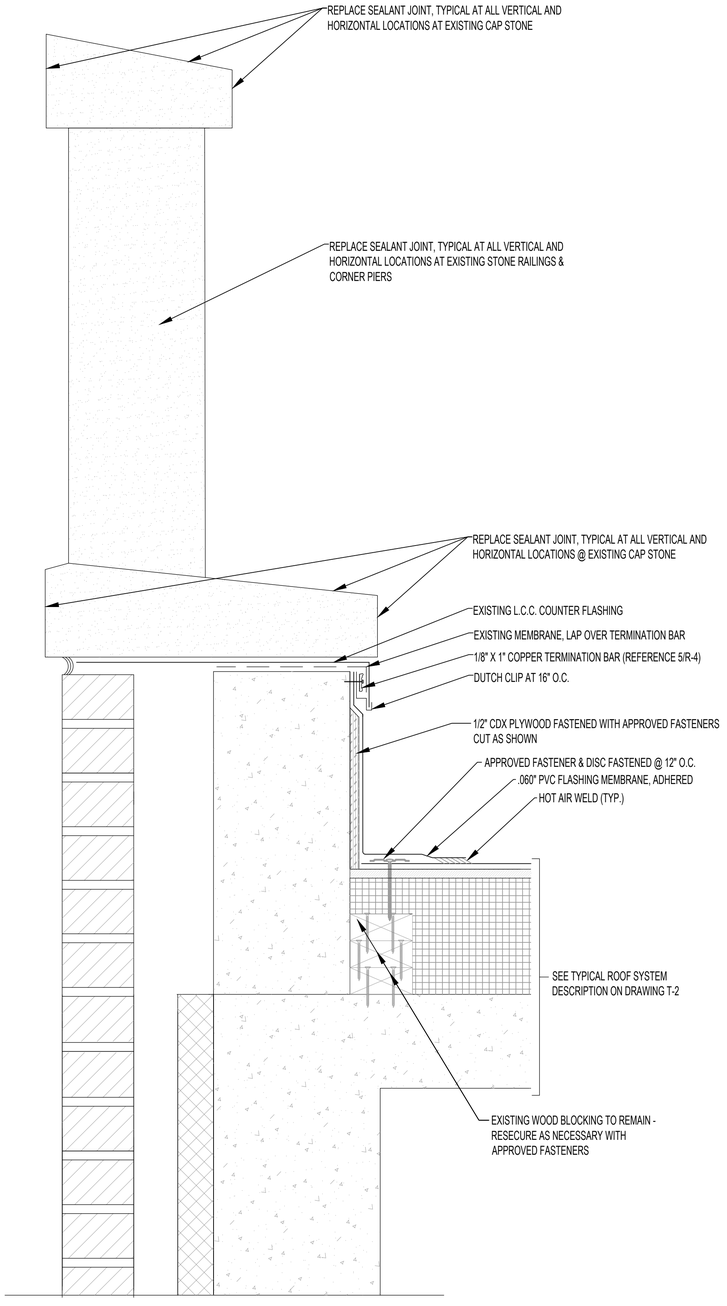
ROOF REPAIR PROJECT
SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS

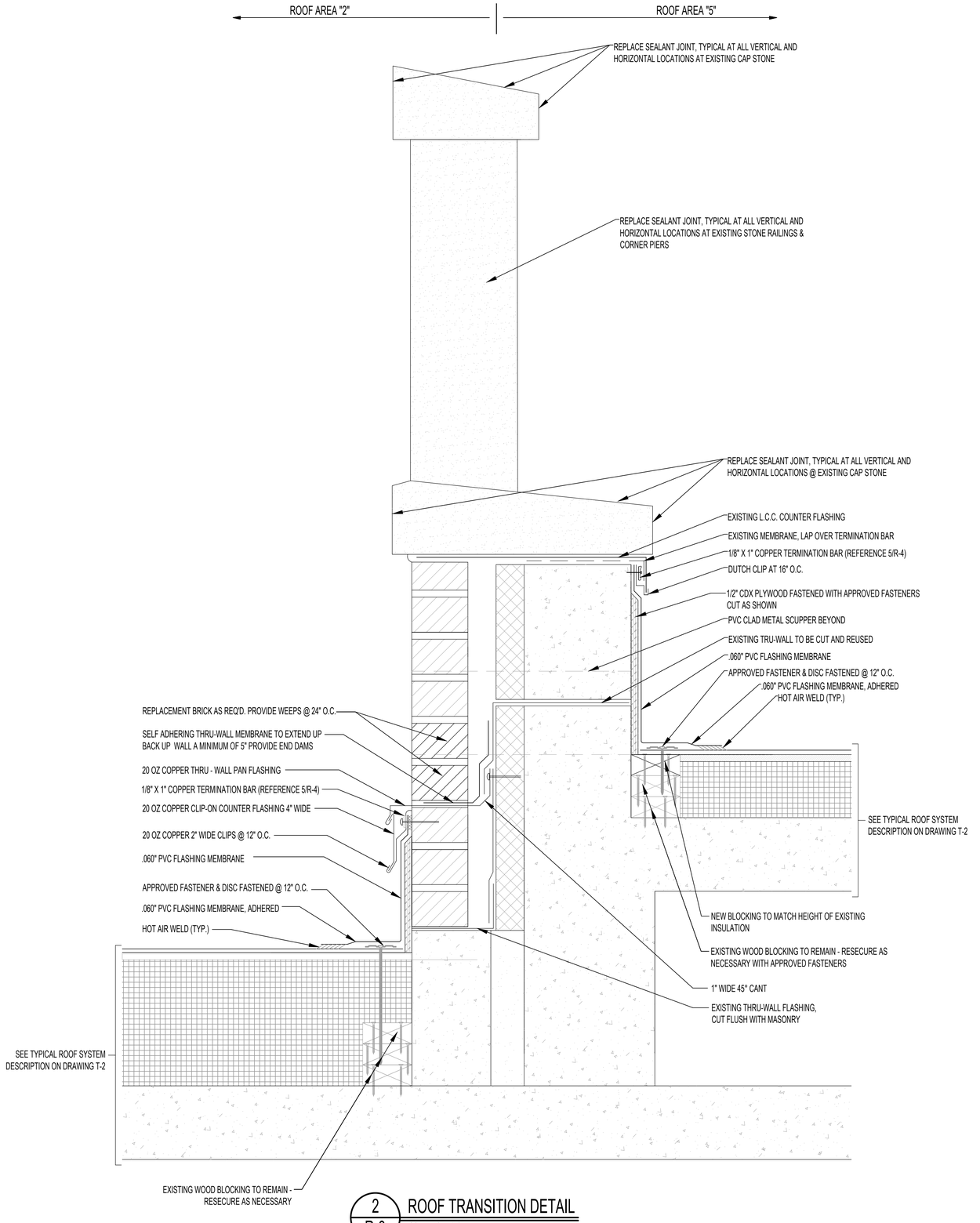
ROOF DETAILS

DATE 01.11.2017
SCALE AS NOTED
DRAWN BY / CHECKED BY JL / JR
PROJECT NO 2016051
DRAWING NO R7



1 R-8 PARAPET DETAIL @ ROOF AREAS "4" & "5"

SCALE: 3" = 1'-0"



2 R-8 ROOF TRANSITION DETAIL

SCALE: 3" = 1'-0"

NO	DATE	BY	DESCRIPTION

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ROOF REPAIR PROJECT

SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS

ROOF DETAILS

DATE 01.11.2017

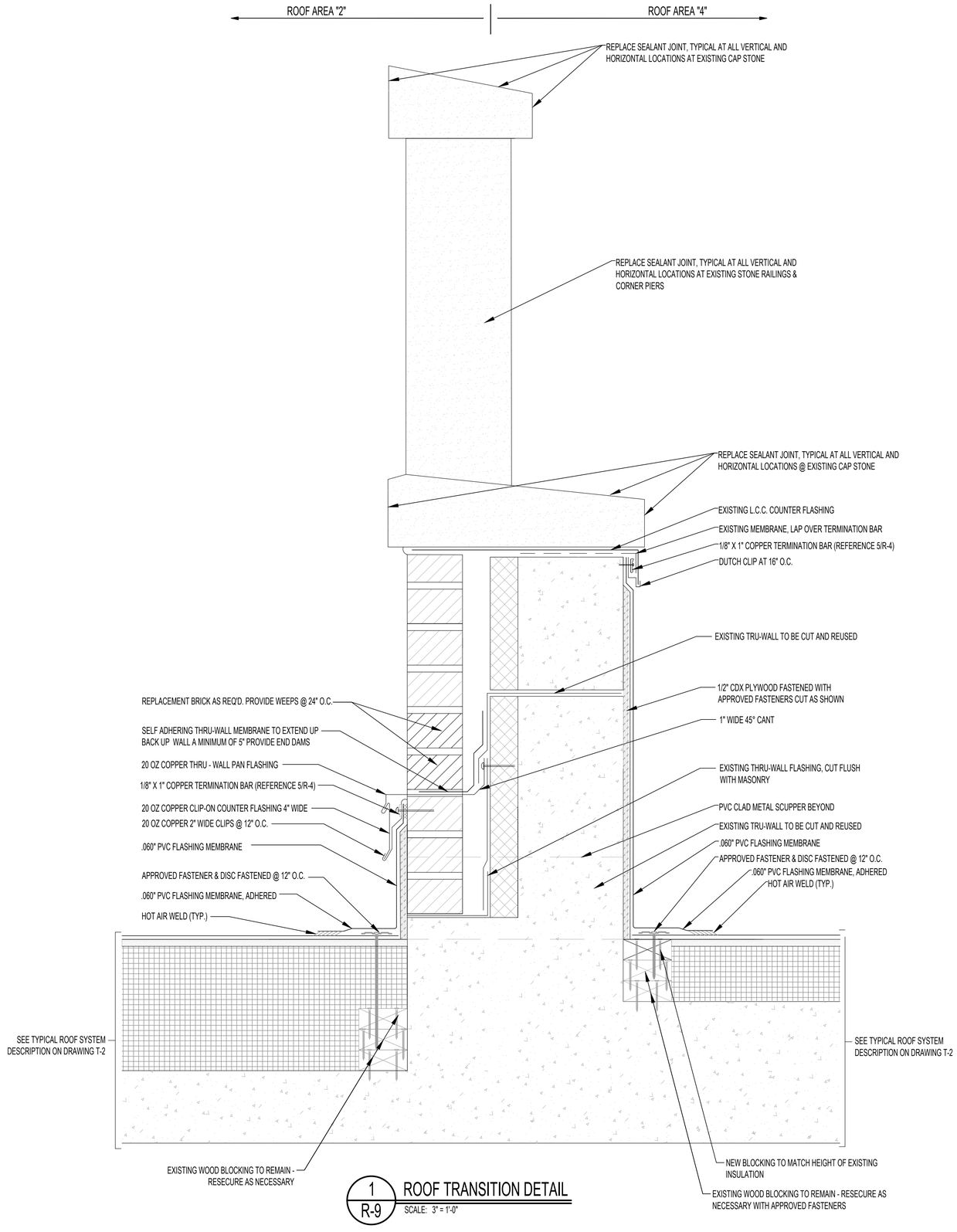
SCALE AS NOTED

DRAWN BY / CHECKED BY JL / JR

PROJECT NO 2016051

DRAWING NO

R8



1/R-9 ROOF TRANSITION DETAIL
SCALE: 3" = 1'-0"

NO	DATE	BY	DESCRIPTION

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ROOF REPAIR PROJECT

SALEM POLICE DEPARTMENT
95 MARGIN STREET
SALEM, MASSACHUSETTS

ROOF DETAILS

DATE 01.11.2017
SCALE AS NOTED
DRAWN BY / CHECKED BY JL / JR
PROJECT NO 2016051
DRAWING NO R9

MECHANICAL NOTES

1. ALL PIPING AND DUCTWORK SHOWN IS DIAGRAMMATIC ONLY. DETERMINE THE EXACT LOCATION IN THE FIELD.
2. REFER TO DRAWINGS FOR NEW MECHANICAL ROOM CONSTRUCTION DETAILS.
3. REVIEW ALL DRAWINGS BEFORE STARTING ANY WORK TO BECOME FAMILIAR WITH THE DETAILS OF CONSTRUCTION, AND COORDINATE WITH OTHER TRADES TO ELIMINATE CONFLICTS.
4. OBTAIN ALL REQUIRED PERMITS. COST OF PERMITS SHALL BE BY CONTRACTOR.
5. PROVIDE ALL NECESSARY PIPING, EQUIPMENT AND SUPPORTS AS WELL AS ANY ADDITIONAL EQUIPMENT, ETC. NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS BUT NECESSARY TO PROVIDE COMPLETE AND WORKABLE SYSTEMS.
6. PROVIDE ACCESS TO ALL EQUIPMENT REQUIRING PERIODIC SERVICE AND MAINTENANCE.
7. INSTALL ALL WORK IN ACCORDANCE WITH STATE AND LOCAL CODES.
8. DO NOT SCALE THESE DRAWINGS. TAKE ALL MEASUREMENTS IN THE FIELD IN COORDINATION WITH ALL EQUIPMENT AS APPROVED AND WITH ALL OTHER TRADES.
9. ALL WATER PIPING SHALL BE INSULATED IN ACCORDANCE WITH THE MASSACHUSETTS STATE BUILDING CODE.
10. DETAILS SHOWN ARE APPLICABLE TO ALL EQUIPMENT, EXCEPT WHERE INDICATED.
11. CONTRACTOR SHALL VERIFY PIPING AND EQUIPMENT LOCATIONS FOR INTERFERENCE BEFORE INSTALLATION.

MECHANICAL LEGEND

- SUPPLY/OUTSIDE AIR DUCT UP
- SUPPLY/OUTSIDE AIR DUCT DOWN
- MOTOR–OPERATED DAMPER
- PIPE TURNING UP
- PIPE TURNING DOWN
- HOT WATER SUPPLY
- HOT WATER RETURN
- D — DRAIN PIPING
- CW — COLD WATER
- PW — PROTECTED WATER
- G — NATURAL GAS
- GV — GAS VENT
- V — VENT
- DIRECTION OF FLOW IN PIPE
- CONCENTRIC REDUCER
- PRESSURE GAUGE
- THERMOMETER OR TEMPERATURE GAUGE
- TEMPERATURE SENSOR
- BALL VALVE
- COMBINATION BALANCING/SHUT–OFF VALVE
- TWO–WAY VALVE CONTROL VALVE
- THREE–WAY VALVE CONTROL VALVE
- STRAINER
- UNION
- HOSE END DRAIN VALVE
- SWING CHECK VALVE
- TRIPLE DUTY VALVE
- PRESSURE REDUCING VALVE
- GAS SHUT–OFF VALVE
- P&T RELIEF VALVE
- FLEXIBLE PIPE CONNECTION
- AV — MANUAL AIR VENT
- CONNECT TO EXISTING
- EXISTING TO BE REMOVED
- GLOBE VALVE

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AMB	AMBIENT
AMP	AMPERE
APD	AIR PRESSURE DROP
AS	AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROL
AV	AIRVENT
B	BOILER
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
CA	COMBUSTION AIR
CAP	CAPACITY
CF	COMBUSTION FAN
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CTU	CONDENSATE TRANSFER UNIT
CW	COLD WATER
DEG	DEGREE
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DIA	DIAMETER
DIFF	DIFFERENCE OR DELTA
DN	DOWN
DWH	DOMESTIC WATER HEATER
EL	ELEVATION, ELBOW
ESP	EXTERNAL STATIC PRESSURE
EXIST'G	EXISTING
EXP.	EXPANSION LINE
F	FAHRENHEIT
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET
G	GAS
GA	GAGE
GPM	GALLONS PER MINUTE
GV	GAS VENT
HR	HOUR
HP	HORSEPOWER
HR	HOUR
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
HZ	FREQUENCY (CYCLES PER SECOND)
ID	INSIDE DIAMETER
IN	INCH
LBS	POUNDS
LF	LINEAR FEET
LRA	LOCKED ROTOR AMPS
MAX	MAXIMUM
MBH	THOUSAND BTUH
MIN	MINIMUM
MO	MOTOR–OPERATED
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NUMBER OR NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
P	PUMP
PH	PHASE (ELECTRICAL)
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAGE
PW	PROTECTED WATER
RLA	RUNNING LOAD AMPS
RPM.	REVOLUTIONS PER MINUTE
T.B.R.	TO BE REMOVED
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
V	VOLT (ELECTRICAL)
WC	WATER COLUMN

MECHANICALSCHEDULES

ROOF TOP UNIT SCHEDULE

TAG No.	LOCATION SERVED	MANUFACTURER (AS STANDARD)	MODEL NO. (AS STANDARD)	SUPPLY FAN DATA					EXHAUST FAN DATA			GAS HEATING				DX COOLING								ELECTRICAL				WEIGHT (LBS)	REMARKS
												SUPPLY AIR		GAS FURNACE		SUPPLY AIR					DX COOLING COIL									
																EAT		LAT		TOT	SENS	PD							
				TOTAL CFM	O.A. CFM	ESP (IN W.C.)	RPM	HP	TOTAL CFM	ESP (IN W.C.)	HP	EAT DB(F)	LAT DB(F)	MBH OUTPUT	MBH INPUT	DB(F)	WB(F)	DB(F)	WB(F)	MBH	MBH	"W.C.	VOLTS	PHASE	MCA	MOCP		
RTU–3	BOOKING/CELLS	YORK	JMDA–150	2,400	2,400	1.0	---	2.0	---	---	--	0	92.6	240.0	300.0	87	73	55	54	145.9	96.12	0.5	208	3	83.6	100	3,200	PROVIDE SUPPLY FAN, HOT GAS BYPASS FOR HUMIDICATION CONTROL, DISCONNECT SWITCH, SINGLE POINT POWER CONNECTION, MERV 8 FILTERS, GFCI OUTLET, LIGHT FOR SERVICE, 24" HIGH SPRING ISOLATION CURB
RTU–7	FIRING RANGE	REZNOR	RPBL–800	8,000	8,000	0.75	---	7.5	---	---	--	0	74.0	600.0	800.0	--	--	--	--	--	--	--	208	3	FLA 24.2	--	2,193	PROVIDE SUPPLY FAN, OUTDOOR DAMPER. EXHAUST DAMPER, DISCONNECT SWITCH, SINGLE POINT POWER CONNECTION, MERV 8 FILTERS, GFCI OUTLET, FIELD MOUNTED CONTROLS AND LIGHT FOR SERVICE, 24" HIGH SPRING ISOLATION CURB

FAN SCHEDULE

TAG No.	LOCATION(S) SERVED	MANUFACTURER (AS STANDARD)	MODEL No. (AS STANDARD)	TYPE	FAN DATA			ELECTRICAL DATA			REMARKS
					CFM	RPM	TSP(IN)	VOLTS	PHASE	HP	
EF–1	BUILDING	GREENHECK	GB–180–10	ROOF	3,425	1,160	1.0	208	3	1	PROVIDE WITH 18" ROOF CURB, DISCONNECT, BIRDSCREEN, SHAFT GROUNDING
EF–3	BUILDING	GREENHECK	GB–141–5	ROOF	1,100	1275	1.0	208	3	1/2	PROVIDE WITH 18" ROOF CURB, DISCONNECT, BIRDSCREEN, SHAFT GROUNDING
EF–4	BUILDING	GREENHECK	GB–101–4	ROOF	810	1650	1.0	120	1	1/4	PROVIDE WITH 18" ROOF CURB, DISCONNECT, BIRDSCREEN, SHAFT GROUNDING
EF–5*	BUILDING	GREENHECK	SWB–208–4	UTILITY	860	1600	1.0	120	1	1/4	CLASS 2 FAN WITH VIBRATION ISOLATORS, DISCONNECT, DISCHARGE HOOD, SHAFT GROUNDING
EF–6	BUILDING	GREENHECK	GB–081–4	ROOF	450	1310	0.5	120	1	1/4	PROVIDE WITH 18" ROOF CURB, DISCONNECT, BIRDSCREEN, SHAFT GROUNDING
EF–7	BUILDING	GREENHECK	SWB–334–30	UTILITY	8,000	1100	1.25	208	3	3	PROVIDE WITH ROOF CURB, DISCONNECT, BIRDSCREEN, SHAFT GROUNDING
EF–8	BUILDING	GREENHECK	GB–101–4	ROOF	830	1620	1.0	120	1	1/4	CLASS 2 FAN WITH VIBRATION ISOLATORS, DISCONNECT, DISCHARGE HOOD, SHAFT GROUNDING

*CLASS 2 FAN

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NO	DATE	BY	DESCRIPTION

RUSSO·BARR ASSOCIATES

ROOF REPAIR PROJECT

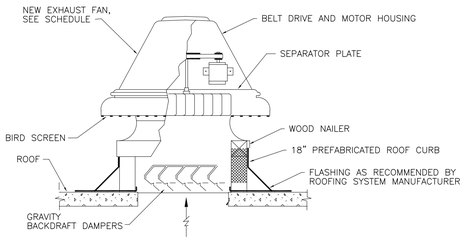
SALEM POLICE DEPARTMENT
93 MARGIN STREET
SALEM, MASSACHUSETTS

HVAC LEGENDS, NOTES & SCHEDULES

DATE: JANUARY 11, 2017
SCALE: AS NOTED
DRAWN BY / CHECKED BY: KRB/KRB
PROJECT NO: 16331.00
DRAWING NO: H1

MECHANICAL DETAILS

1

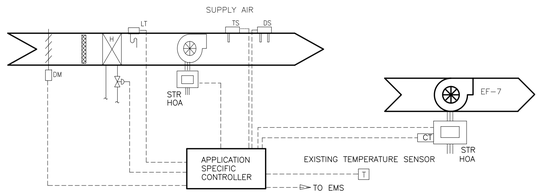


ROOF MOUNTED EXHAUST FAN DETAIL

– NO SCALE –

MECHANICAL SEQUENCES OF CONTROL

1



APPLICATION TABLE	
ROOFTOP UNIT (S)	EXHAUST FAN(S)
RTU-7	EF-7

SHOOTING RANGE ROOFTOP UNIT AND EXHAUST FANS SEQUENCE OF CONTROL

THE ROOFTOP UNIT FAN SHALL BE CONTROLLED THROUGH THE EXISTING EMS SYSTEM. THE SEQUENCE LISTED BELOW IS REVERSIBLE UNLESS NOTED OTHERWISE. PROVIDE INTERCONNECTION TO EXISTING JOHNSON METASYS EMS INCLUDING NEW DYNAMIC GRAPHICS FOR MONITORING AND CONTROL OF NEW EQUIPMENT IN ACCORDANCE WITH THE LISTED SEQUENCE OF OPERATION.

OCCUPIED HOURS: THE ROOFTOP FAN SHALL BE ENERGIZED AND OPERATE CONTINUOUSLY; THE UNIT'S GAS HEATING CONTROL VALVE SHALL BE CLOSED; THE UNIT'S OUTDOOR AIR DAMPER SHALL BE OPEN.

UPON A CALL FOR HEAT FROM THE SUPPLY AIR TEMPERATURE SENSOR, THE GAS CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN AIR SUPPLY TEMPERATURE SETPOINT RESET BY THE SPACE TEMPERATURE SETPOINT, 68° F (ADJUSTABLE).

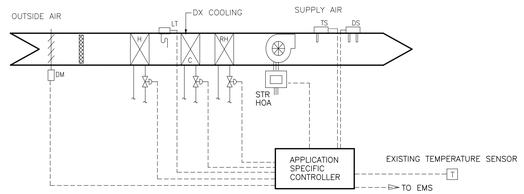
GENERAL EXHAUST FAN (EF-7) SHALL BE INTERLOCKED TO OPERATE CONTINUOUSLY RUN CONTINUOUSLY WITH THE ROOFTOP UNIT.

UNOCCUPIED HOURS: THE ROOFTOP UNIT SUPPLY FAN SHALL BE DEENERGIZED; THE GAS CONTROL VALVE SHALL CLOSED; THE OUTDOOR AIR DAMPER SHALL BE CLOSED. UPON A CALL FOR THE HEAT FROM THE SPACE TEMPERATURE SENSOR, THE UNIT'S SUPPLY FAN SHALL BE ENERGIZED, THE OUTSIDE AIR DAMPER SHALL OPEN, THE EXHAUST FAN SHALL BE ENERGIZED AND THE UNIT SHALL OPERATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT RESET BY THE UNOCCUPIED HOURS SPACE TEMERATURE SETPOINT 55° F (ADJUSTABLE). COOLING SHALL BE LOCKED OUT DURING UNOCCUPIED HOURS.

WHEN THE UNIT'S FREEZESTAT SENSES A LOW TEMPERATURE CONDITION OR THE EXISTING DUCT SMOKE DETECTOR SENSES A SMOKE CONDITION, THE UNIT'S SUPPLY AIR FAN SHALL BE DE-ENERGIZED, THE GAS CONTROL VALVE SHALL CLOSE; THE UNIT'S OUTDOOR AIR DAMPER SHALL BE CLOSED; THE EXHAUST FAN SHALL BE DEENGIZED; AND THE APPROPRIATE ALARM SIGNAL SHALL BE TRANSMITIED TO EMS.

OPTIMUM START-UP:
BEFORE THE UNITS STARTS ITS OCCUPIED OPERATION, THE SUPPLY FAN SHALL ENERGIZED; THE EXHAUST FAN SHALL BE ENERGIZED; THE OUTDOOR AIR DAMPER SHALL OPEN; AND GAS CONTROL VALVE SHALL MODULATE OPEN TO PREHEAT THE SPACE TO OCCUPIED SETPOINT. ONCE THE SPACE TEMPERATURE REACHES SETPOINT THE ROOF TOP UNIT AND EXHAUST FAN SHALL BEGIN ITS OCCUPIED OPERATION. THE EMS SHALL OPTIMIZE BASED ON OUTDOOR AIR TEMPERATURE AND UNIT OPERATIONAL HISTORY.

2



APPLICATION TABLE
ROOFTOP UNIT (S)
RTU-3

ROOFTOP UNIT SEQUENCE OF CONTROL

THE ROOFTOP UNIT SHALL BE CONTROLLED THROUGH THE EXISTING EMS SYSTEM. THE SEQUENCE LISTED BELOW IS REVERSIBLE UNLESS NOTED OTHERWISE. PROVIDE INTERCONNECTION TO EXISTING JOHNSON METASYS EMS INCLUDING NEW DYNAMIC GRAPHICS FOR MONITORING AND CONTROL OF NEW EQUIPMENT IN ACCORDANCE WITH THE LISTED SEQUENCE OF OPERATION.

OCCUPIED HOURS: THE ROOFTOP FAN SHALL BE ENERGIZED AND OPERATE CONTINUOUSLY; THE UNIT'S GAS HEATING CONTROL VALVE SHALL BE CLOSED; DX COOLING SHALL BE DEENERGIZED; AND THE UNIT'S OUTDOOR AIR DAMPER SHALL BE OPEN.

UPON A CALL FOR HEAT FROM THE SUPPLY AIR TEMPERATURE SENSOR, THE GAS CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN AIR SUPPLY TEMPERATURE SETPOINT RESET BY THE SPACE TEMPERATURE SETPOINT, 68° F (ADJUSTABLE).

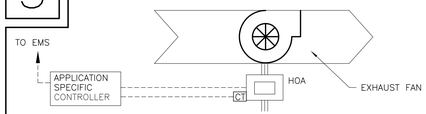
IF COOLING IS REQUIRED BY THE SUPPLY AIR TEMPERATURE SENSOR THE STAGES OF DX COOLING AND HOT GAS REHEAT SHALL OPERATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT TO MAINTAIN THE SPACE TEMPERATURE SETPOINT, 78 F (ADJUSTABLE).

UNOCCUPIED HOURS: THE ROOFTOP UNIT SUPPLY FAN SHALL BE DEENERGIZED; THE GAS CONTROL VALVE SHALL CLOSED; THE OUTDOOR AIR DAMPER SHALL BE CLOSED. UPON A CALL FOR THE HEAT FROM THE SPACE TEMPERATURE SENSOR, THE UNIT'S SUPPLY FAN SHALL BE ENERGIZED, THE OUTSIDE AIR DAMPER SHALL OPEN, THE EXHAUST FAN SHALL BE ENERGIZED AND THE UNIT SHALL OPERATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT RESET BY THE UNOCCUPIED HOURS SPACE TEMERATURE SETPOINT 55° F (ADJUSTABLE). COOLING SHALL BE LOCKED OUT DURING UNOCCUPIED HOURS.

WHEN THE UNIT'S FREEZESTAT SENSES A LOW TEMPERATURE CONDITION OR THE EXISTING DUCT SMOKE DETECTOR SENSES A SMOKE CONDITION, THE UNIT'S SUPPLY AIR FAN SHALL BE DE-ENERGIZED, THE GAS CONTROL VALVE SHALL CLOSE; THE UNIT'S OUTDOOR AIR DAMPER SHALL BE CLOSED; AND THE APPROPRIATE ALARM SIGNAL SHALL BE TRANSMITIED TO EMS.

OPTIMUM START-UP:
BEFORE THE UNITS STARTS ITS OCCUPIED OPERATION, THE SUPPLY FAN SHALL ENERGIZED; THE OUTDOOR AIR DAMPER SHALL OPEN; AND GAS CONTROL VALVE SHALL MODULATE OPEN TO PREHEAT OR THE STAGES OF DX COOLING/HOT GAS REHEAT SHALL PRECOOL THE SPACE TO OCCUPIED SETPOINT. ONCE THE SPACE TEMPERATURE REACHES SETPOINT THE ROOF TOP UNIT SHALL BEGIN ITS OCCUPIED OPERATION. THE EMS SHALL OPTIMIZE BASED ON OUTDOOR AIR TEMPERATURE AND UNIT OPERATIONAL HISTORY.

3



APPLICATION TABLE
EXHAUST FAN(S)
EF-1, 3, 4, 6 & 8

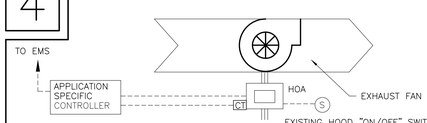
EXHAUST FAN SEQUENCE OF OPERATION

THE BUILDING GENERAL/TOILET EXHAUST FANS SHALL BE CONTROLLED THROUGH THE EXISTING EMS. THE SEQUENCE LISTED BELOW SHALL BE REVERSIBLE. PROVIDE INTERCONNECTION TO EXISTING JOHNSON METASYS EMS INCLUDING NEW DYNAMIC GRAPHICS FOR MONITORING AND CONTROL OF NEW EQUIPMENT IN ACCORDANCE WITH THE LISTED SEQUENCE OF OPERATION.

DURING OCCUPIED HOURS, THE EXHAUST FANS SHALL BE ENERGIZED AND RUN CONTINUOUSLY. DURING UNOCCUPIED HOURS, THE EXHAUST FANS SHALL BE DE-ENERGIZED.

THE EMS SHALL MONITOR FAN STATUS.

4



APPLICATION TABLE
EXHAUST FAN(S)
EF- 5

LABORATORY EXHAUST FAN SEQUENCE OF OPERATION

THE LABORATORY EXHAUST FANS SHALL BE CONTROLLED THROUGH THE EXISTING EMS. THE SEQUENCE LISTED BELOW SHALL BE REVERSIBLE. PROVIDE INTERCONNECTION TO EXISTING JOHNSON METASYS EMS INCLUDING NEW DYNAMIC GRAPHICS FOR MONITORING AND CONTROL OF NEW EQUIPMENT IN ACCORDANCE WITH THE LISTED SEQUENCE OF OPERATION.

THE EXHAUST FAN SHALL BE CONTROLLED BY THE EXISTING HOOD "ON/OFF" SWITCH.

THE EMS SHALL MONITOR FAN STATUS.

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NO	DATE	BY	DESCRIPTION

RUSSO·BARR ASSOCIATES

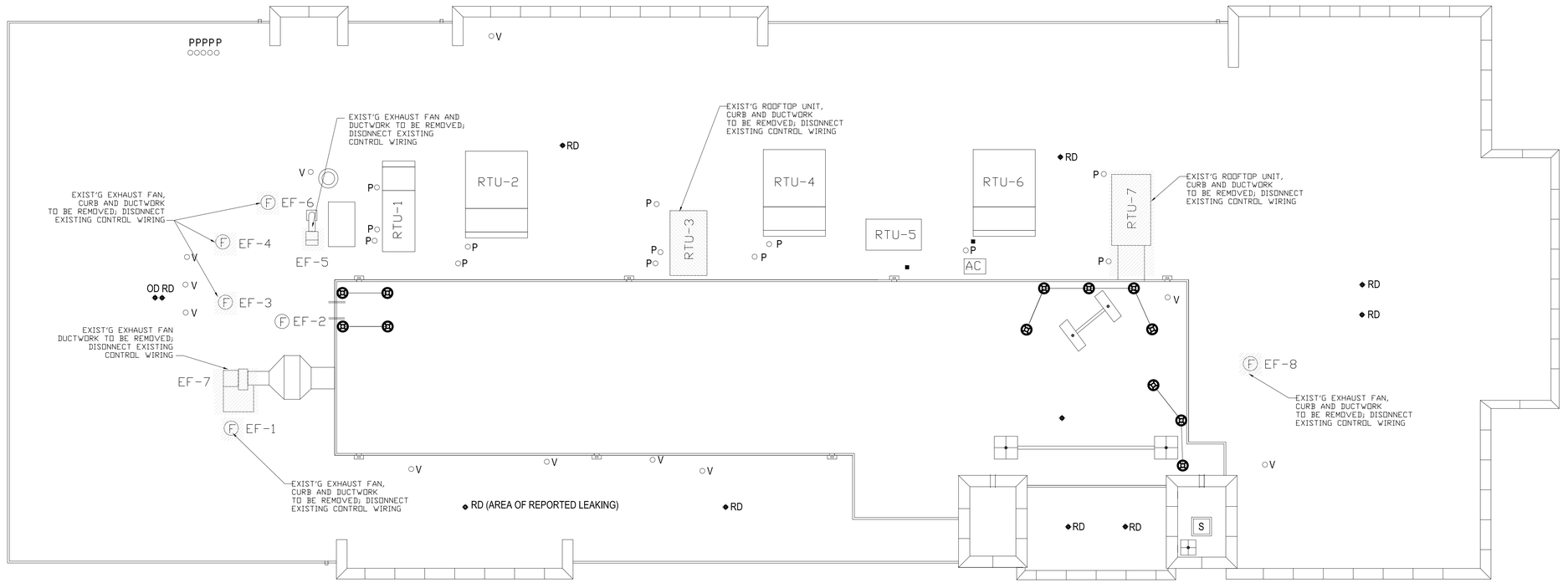
ROOF REPAIR PROJECT

SALEM POLICE DEPARTMENT
93 MARGIN STREET
SALEM, MASSACHUSETTS

HVAC DETAILS & SEQUENCES OF CONTROL

DATE: JANUARY 11, 2017
SCALE: AS NOTED
DRAWN BY / CHECKED BY: KRB/KRB
PROJECT NO: 16331.00
DRAWING NO: H2

CALLED NORTH



HVAC - ROOF DEMOLITION PLAN

SCALE: 1/8" = 1'0"

RTU-3 DEMOLITION NOTES

1. REMOVE EXISTING ROOFTOP UNIT, CURB & DUCT CONNNECTIONS
2. DISCONNECT EXISTING CONTROL WIRING TO BE RECONNECTED TO NEW EQUIPMENT
3. DISCONNECT EXIST'G GAS PIPING TO UNDERSIDE OF ROOF FOR NEW ROOF PENETRATION TO NEW EQUIPMENT

RTU-7 DEMOLITION NOTES

1. REMOVE EXISTING ROOFTOP UNIT, CURB & DUCT CONNNECTIONS
2. DISCONNECT EXISTING CONTROL WIRING TO BE RECONNECTED TO NEW EQUIPMENT
3. DISCONNECT EXIST'G GAS PIPING FOR RECONNECTION TO NEW EQUIPMENT

EF-2, 3, 4, 6 & 8 DEMOLITION NOTES

1. REMOVE EXISTING EXHAUST FAN, CURB & APPURTENANCES
2. DISCONNECT EXISTING CONTROL WIRING TO BE RECONNECTED TO NEW EQUIPMENT

EF-5, 7 DEMOLITION NOTES

1. REMOVE EXISTING EXHAUST FAN, CURB & APPURTENANCES
2. DISCONNECT EXISTING CONTROL WIRING TO BE RECONNECTED TO NEW EQUIPMENT
3. MAINTAIN EXISTING SUPPORTS TO BE MODIFIED FOR NEW EQUIPMENT

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NO	DATE	BY	DESCRIPTION

RUSSO·BARR ASSOCIATES

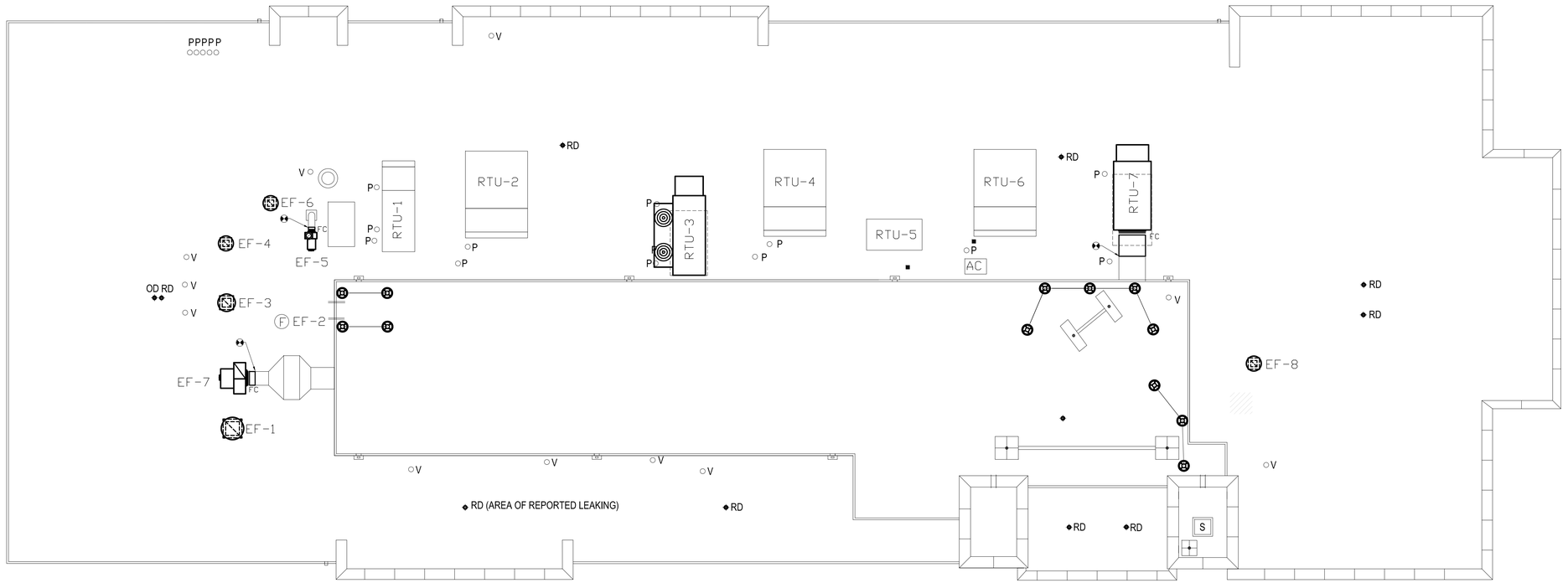
ROOF REPAIR PROJECT

SALEM POLICE DEPARTMENT
93 MARGIN STREET
SALEM, MASSACHUSETTS

HVAC ROOF DEMOLITION PLAN

DATE: JANUARY 11, 2017
SCALE: AS NOTED
DRAWN BY / CHECKED BY: KRB/KRB
PROJECT NO: 16300.00
DRAWING NO: H3

CALLED NORTH



HVAC - ROOF NEW WORK PLAN

SCALE: 1/8" = 1'0"

RTU-3 NEW WORK

1. INSTALL NEW ROOFTOP UNIT, CURB & DUCT CONNNECTION INCLUDING NEW FLEXIBLE CONNECTION TO EXISTING VERTICAL THROUGH ROOF CURB (LINE UP UNIT DISCHARGE WITH EXISTING ROOF PENETRATION)
2. EXTEND EXISTING CONTROL WIRING TO TO NEW EQUIPMENT
3. EXTEND EXIST'G 1-1/4" GAS PIPING FROM UNDERSIDE OF ROOF THROUGH NEW ROOF PENETRATION TO NEW EQUIPMENT; PROVIDE NEW SHUT OFF VALVE

RTU-7 NEW WORK

1. INSTALL NEW ROOFTOP UNIT, CURB & DUCT CONNNECTION INCLUDING NEW FLEXIBLE CONNECTION TO EXISTING 48"WX24"H SILENCER
2. EXTEND EXISTING CONTROL WIRING TO TO NEW EQUIPMENT
3. EXTEND EXIST'G 2" GAS PIPING TO NEW EQUIPMENT

EF-2, 3, 4, 6 & 8 NEW WORK

1. INSTALL EXHAUST FAN, CURB, GRAVITY BACKDRAFT DAMPER & APPURTENANCES
2. EXTEND EXISTING CONTROL WIRING TO TO NEW EQUIPMENT

EF-5, 7 NEW WORK

1. INSTALL EXHAUST FAN ON EXISTING SUPPORTS; MODIFY AS REQUIRED TO SUIT NEW FAN
2. EF-5: PROVIDE NEW FLEXIBLE CONNECTION AND DUCTWORK TO EXISTING 10" INLET DUCTWORK; PROVIDE DISCHARGE RAIN HOOD
3. EF-7: PROVIDE NEW FLEXIBLE CONNECTION AND DUCTWORK TO EXISTING 20" INLET DUCTWORK; PROVIDE DUCT DISCHARGE RAIN HOOD
4. EXTEND EXISTING CONTROL WIRING TO TO NEW EQUIPMENT

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NO	DATE	BY	DESCRIPTION

RUSSO·BARR ASSOCIATES

ROOF REPAIR PROJECT

SALEM POLICE DEPARTMENT
93 MARGIN STREET
SALEM, MASSACHUSETTS

HVAC ROOF NEW WORK PLAN

DATE: JANUARY 11, 2017
SCALE: AS NOTED
DRAWN BY / CHECKED BY: KRB/KRB
PROJECT NO: 16300.00
DRAWING NO: H4

CALLED NORTH

GENERAL SPECIFICATIONS

1. CONDITIONS OF THE CONTRACT AND DIVISION 1, GENERAL REQUIREMENTS APPLY TO WORK SHOWN ON THESE DRAWINGS. EXAMINE DRAWINGS AND OTHER SPECIFICATIONS FOR REQUIREMENTS THAT AFFECT WORK SHOWN ON THESE DRAWINGS.
2. PROVIDE ITEMS REFERRED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS IN QUANTITIES NECESSARY TO COMPLETE WORK.
3. VISIT SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED. REPORT ADVERSE CONDITIONS IN WRITING TO ARCHITECT. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS INCLUDING PREPARATORY WORK DONE BY OTHERS.
4. PERFORM WORK AND PROVIDE MATERIALS AND EQUIPMENT AS SHOWN ON DRAWINGS. COORDINATE ELECTRICAL WORK WITH WORK SHOWN ON THESE DRAWINGS.
5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
6. PERFORM WORK AS REQUIRED BY CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION.
7. MATERIAL AND EQUIPMENT SHALL BE UL, NEMA, ANSI, IEEE, ADA & CBM APPROVED FOR INTENDED SERVICE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND STATE ELECTRICAL CODE.
8. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE, CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.
9. GUARANTEE WORK IN WRITING FOR ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO OWNER. CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO COST TO OWNER.
10. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERPRETED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.
11. UTILIZE MOLDED CASE CIRCUIT BREAKERS. MINIMUM INTERRUPTING CAPACITY SHALL BE 10,000 AMPS SYMMETRICAL AT 240 VOLTS.
12. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.
13. SUBMIT SHOP DRAWINGS AND PRODUCT DATA WITHIN THIRTY (30) DAYS AFTER AWARD OF CONTRACT. CHECK, STAMP AND MARK WITH PROJECT NAMES SUBMITTALS BEFORE TRANSMITTING TO ARCHITECT. INDICATE DEVIATIONS FROM CONTRACT DOCUMENTS. SHOP DRAWINGS SHALL BE PROVIDED FOR ALL EQUIPMENT SHOWN ON THE DRAWINGS. PROVIDE SHOP DRAWINGS ON CIRCUIT BREAKERS, CONDUIT, WIRING DEVICES, CABLE AND CONDUCTORS.
14. DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE, OR OTHER CAUSE.
15. SCHEDULE AT LEAST TEN (10) WORKING DAYS, EXCLUSIVE ON TRANSMITTAL TIME FOR SUBMITTAL REVIEW.
16. ALL WIRING SHALL BE RUN CONCEALED UNLESS SPECIFIED OTHERWISE.
17. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE.
18. LOCATION OF MECHANICAL EQUIPMENT THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THE MECHANICAL DRAWINGS.
19. ALL RACEWAY RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
20. CONDUIT HOMERUNS SHOWN ON THE DRAWING WITH MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. THE CONTRACTOR SHALL NOT INSTALL MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS IN A RACEWAY UNLESS DONE SO STRICTLY BY THE NATIONAL ELECTRICAL CODE AS AMENDED BY THE STATE.
21. THE ELECTRICAL CONTRACTOR SHALL CONSULT AND COOPERATE WITH CONTRACTORS OF OTHER TRADES TO AVOID ANY INTERFERENCE IN THE INSTALLATION OF THEIR RESPECTIVE EQUIPMENT. CONTRACTOR SHALL REVIEW ALL TRADES' CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT. COORDINATE EXACT MOUNTING LOCATIONS WITH THE ARCHITECT
22. BRANCH CIRCUIT WIRING MAY NOT BE SHOWN GRAPHICALLY ON DRAWINGS AND MAY BE INDICATED BY CIRCUIT NUMBERS BESIDE FIXTURES, DEVICES AND EQUIPMENT. PROVIDE COMPLETE WIRING SYSTEM WHETHER OR NOT INDICATED GRAPHICALLY. UTILIZE AVAILABLE SPACE OR PROVIDE ADDITIONAL BREAKERS AND PANELBOARDS AS NECESSARY.
23. ALL NEW WIRING SHALL BE TYPE THHN/THWN RATED 75-90°C, 600V. WET-DRY LOCATIONS. MINIMUM BRANCH CIRCUIT WIRING SHALL BE NO. 12 AWG SOLID COPPER. BRANCH CIRCUITS LONGER THAN 150 FEET FOR 120 VOLTS. SHALL BE AT LEAST NO. 10 AWG FROM PANEL TO LAST OUTLET.
24. ALL NEW EXPOSED INTERIOR WIRING ABOVE 8'-0" NOT EXPOSED TO DAMAGE SHALL BE INSTALLED IN ELECTRIC METALLIC TUBING. ALL WIRING IN CONCRETE SLABS OR EXPOSED IN ROOM BELOW 8'-0" OR EXPOSED TO DAMAGE SHALL BE INSTALLED IN RIGID STEEL CONDUIT. EXTERIOR WIRING SHALL BE IN GALVANIZED RIGID METALLIC CONDUIT.
25. INTERRUPTIONS TO EXISTING ELECTRIC SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE ARCHITECT OR OWNER. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS, TWENTY-FOUR (24) HOUR NOTICE IS REQUIRED.
26. ALL GROUNDING SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AS AMENDED BY THE STATE OF MASSACHUSETTS.
27. SYSTEM FEEDERS AND BRANCH CIRCUITS THAT PASS THROUGH ALTERED AREAS AND SERVE OTHER AREAS SHALL BE MAINTAINED.
28. UPDATE TYPED IDENTIFICATION DIRECTORY IN PANELBOARDS INDICATING CIRCUIT FUNCTION OR EQUIPMENT SERVED. LABEL ALL DISCONNECT SWITCHES WITH ENGRAVED VINYL PLATES. NAMEPLATE LETTERING SHALL BE 1/4" MINIMUM.
29. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC, BOLT-ON. PANELBOARDS AND BREAKERS SHALL BE CUTLER HAMMER TO MATCH EXISTING.
30. ALL WIRING (LOW VOLTAGE, TEL/DATA, FIRE ALARM, POWER BRANCH CIRCUIT) SHALL BE PLENUM RATED; NO EXCEPTIONS. NON-PLENUM RATED CABLES OF ANY KIND SHALL NOT BE PROVIDED.

POWER NOTES

1. ALL CONDUIT, WIRING AND ELECTRICAL EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST STANDARDS OF THE NATIONAL & STATE ELECTRICAL CODES AND ANY APPLICABLE LOCAL REGULATIONS.
2. ALL CONDUITS ARE SHOWN DIAGRAMMATICALLY. EXACT LOCATION AND METHOD OF SUPPORT SHALL BE DETERMINED IN THE FIELD, EXCEPT WHERE SPECIFIC DIMENSIONS AND DETAILS ARE SHOWN. ALL CONDUIT RUNS SHALL BE RIGIDLY SUPPORTED.
3. NO CONDUIT SMALLER THAN 3/4 INCH ELECTRICAL TRADE SIZE SHALL BE USED, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS.
4. PERFORM WORK AND PROVIDE MATERIALS AND EQUIPMENT TO MAKE INSTALLATION COMPLETE IN EVERY DETAIL UNDER THIS CONTRACT WHETHER OR NOT SPECIFICALLY SHOWN ON DRAWINGS.
5. CONDUCTORS AND CABLE SHALL BE MINIMUM #12 AWG, 600 VOLT, COPPER WITH TYPE THHN/THWN INSULATION. PROVIDE SEPARATE GREEN GROUND IN ALL FEEDERS. WIRE SIZE #8 AWG AND LARGER SHALL BE STRANDED, #10 AWG AND SMALLER SHALL BE SOLID. COLOR CODE CONDUCTORS BLACK, RED, BLUE, WITH WHITE NEUTRAL AND GREEN GROUND EXCEPT AS NOTED FOR 120 VOLT

GENERAL NOTES

1. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR MOUNTING HEIGHTS AND EXACT LOCATIONS OF ALL DEVICES.
2. ALL FLOOR, MASONRY WALLS AND STRUCTURAL CEILING PENETRATIONS SHALL BE SLEEVED.
3. PROVIDE FIRE/MOISTURE SEAL FOR WALL, FLOOR OR CEILING PENETRATIONS.
4. DO NOT LAY CABLES OR RACEWAY ON, OR SUPPORT FROM SUSPENDED CEILING OR PIPING AND DUCTWORK.
5. ALL WIRING WITHIN UTILITY CLOSETS MAY BE IN SURFACE MOUNTED CONDUIT. EMT MAY BE UTILIZED.
6. FLEXIBLE CONDUIT CONNECTIONS SHALL BE A MAXIMUM OF 6'-0".

DEMOLITION NOTES

1. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE FULL EXTENT OF THE SCOPE OF DEMOLITION. DISCONNECT AND MAKE SAFE ALL ELECTRICAL EQUIPMENT IDENTIFIED FOR REMOVAL ON THE HVAC PLANS. THE ELECTRICAL SCOPE MAY EXTEND BEYOND THE AREA DEFINED BY THE ARCHITECTURAL DEMOLITION LIMITS TO FULLY COMPLY WITH VARIOUS REQUIREMENTS DEFINED BY THESE NOTES.
2. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
3. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF THE WORK. DAMAGE SHALL INCLUDE BUT NOT BE LIMITED TO DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR TO BE SALVAGED.
4. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION.
5. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
6. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
7. THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN FULLY FUNCTIONAL DURING THE ENTIRE DEMOLITION AND CONSTRUCTION PERIOD. ALL REQUIRED SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE AND THE AUTHORITY HAVING JURISDICTION.

ABBREVIATIONS

A/AMP	AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	APRERE INTERRUPTING CAPACITY
AL	ALUMINUM
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CKT	CIRCUIT
CB	CIRCUIT BREAKER
CU	COPPER
CL	CENTERLINE
DC	DIRECT CURRENT
DE	DUAL ELEMENT
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EMH	ELECTRICAL MANHOLE
EWC	ELECTRIC WATER COOLER
EMT	ELECTRIC METALLIC CONDUIT
FLMT	FLEXIBLE LIQUID TIGHT METALLIC TUBING
GC	GENERAL CONTRACTOR
GND	GROUND
GF	GROUND FAULT CIRCUIT BREAKER
GFI	GROUND FAULT INTERRUPTING
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HP	HORSEPOWER
IMC	INTERMEDIATE METALLIC CONDUIT
JB	JUNCTION BOX
KVA	KILOVOLT-AMPERE
KW	KILOWATT
LTG	LIGHTING
PWR	POWER
MCB	MAIN CIRCUIT BREAKER
MEC	MASSACHUSETTS ELECTRICAL CODE
MLO	MAIN LUGS ONLY
MTG	MOUNTING
MTD	MOUNTED
MCC	MOTOR CONTROL CENTER
NEC	NATIONAL ELECTRICAL CODE
NS	NON-SYSTEM
NTS	NOT TO SCALE
No., #	NUMBER
PC	PLUMBING CONTRACTOR
RPM	REVOLUTIONS PER MINUTE
RMS	ROOT MEAN SQUARE VALUE
RGS	RIGID STEEL CONDUIT
SF	SQUARE FOOT
SN	SOLID NEUTRAL
ST	SHUT TRIP CIRCUIT BREAKER
SWBD	SWITCHBOARD
TYP	TYPICAL
V	VOLTS
VA	VOLT-AMPERE
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF

BRANCH CIRCUIT AND FEEDER SYMBOLS

BRANCH CIRCUIT OR FEEDER CONCEALED UNLESS OTHERWISE NOTED. BRANCH CIRCUIT DIAGONAL LINES INDICATE NUMBER OR CONDUCTORS, NO DIAGONAL LINES INDICATES TWO (2) CONDUCTORS (1 PHASE AND 1 NEUTRAL). GROUND WIRE(S) NOT INDICATED. MINIMUM SIZE CONDUCTOR #12 AWG AND 3/4" CONDUIT, UNLESS OTHERWISE NOTED

4#1,1#6G-1¼"C — INDICATES (3) #1 AWG(PHASE), (1)#1 AWG(NEUTRAL), (1) #6 GROUND IN A 1-1/2" CONDUIT

FLEXIBLE CONNECTION TO MOTOR OR EQUIPMENT

PP1-1 20A/1P — HOMERUN TO PANELBOARD 'P1' CIRCUIT NUMBER 1. DIAGONAL LINES INDICATE (1) PHASE AND (1) NEUTRAL CONDUCTOR. (1) GROUNDING CONDUCTOR UNDERSTOOD.

PP1-1,3 (2)20A/1P — HOMERUN TO PANELBOARD 'P1' CIRCUIT NUMBER 1 & 3. DIAGONAL LINES INDICATE (2) PHASE AND (2) NEUTRAL CONDUCTOR. (2) GROUNDING CONDUCTOR UNDERSTOOD.

PP1-1,3,5 (3)20A/1P — HOMERUN TO PANELBOARD 'P1' CIRCUIT NUMBER 1, 3 & 5. DIAGONAL LINES INDICATE (3) PHASE AND (3) NEUTRAL CONDUCTOR. (3) GROUNDING CONDUCTOR UNDERSTOOD.

PP1-1,3,5 20A/3P — HOMERUN TO PANELBOARD 'P1' CIRCUIT NUMBER 1, 3 & 5. DIAGONAL LINES INDICATE (3) PHASE AND (1) NEUTRAL CONDUCTOR. (1) GROUNDING CONDUCTOR UNDERSTOOD.

PP1-1,3,5 20A/3P — HOMERUN TO PANELBOARD 'P1' CIRCUIT NUMBER 1, 3 & 5. DIAGONAL LINES INDICATE (3) PHASE CONDUCTORS. NEUTRAL CONDUCTOR NOT REQUIRED. (1) GROUNDING CONDUCTOR UNDERSTOOD.

EXISTING EQUIPMENT DESIGNATIONS

X	EXISTING TO BE REMOVED. REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS.
XM	EXISTING TO REMAIN.
XN	EXISTING EQUIPMENT TO BE REPLACED WITH NEW. CONNECT NEW EQUIPMENT TO EXISTING CIRCUIT.
XR	EXISTING EQUIPMENT TO BE RELOCATED. JUNCTION AND EXTEND EXISTING CONDUIT AND CONDUCTORS.
XL	NEW LOCATION FOR EXISTING EQUIPMENT. JUNCTION AND EXTEND CONDUIT AND CONDUCTORS AS REQUIRED.

MOTOR AND CONTROLS

1.5 — MOTOR, NUMERAL INDICATES HORSEPOWER

3R — DISCONNECT SWITCH, NON-FUSIBLE TYPE, RATED 30A/3P, IN NEMA TYPE "1" ENCLOSURE, UNLESS OTHERWISE NOTED. "3R" DENOTES NEMA TYPE ENCLOSURE

30AF 20AT — DISCONNECT SWITCH, FUSED TYPE, RATED 30A, 20A FUSE, 3 POLE IN NEMA TYPE "1" ENCLOSURE, UNLESS OTHERWISE NOTED. FURNISHED BY HVAC, INSTALLED AND WIRED BY EC.

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NO	DATE	BY	DESCRIPTION

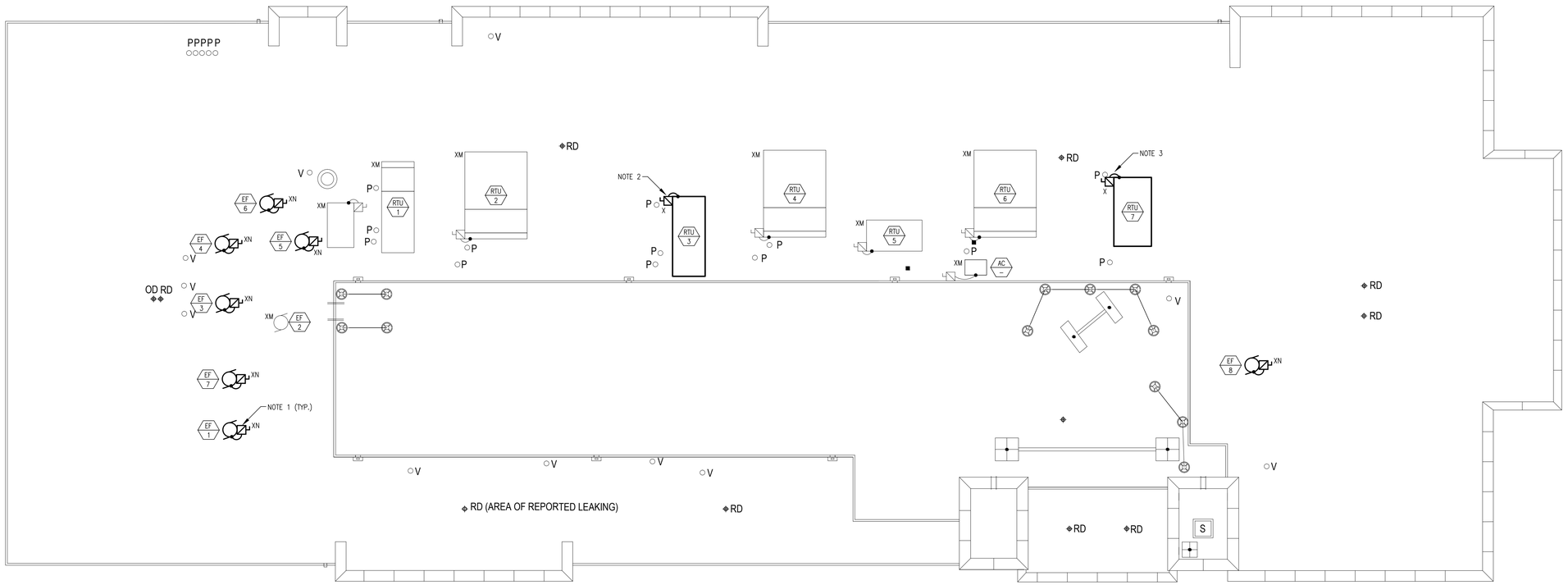
RUSSO-BARR ASSOCIATES

ROOF REPAIR PROJECT
SALEM POLICE DEPARTMENT
93 MARGIN STREET
SALEM, MASSACHUSETTS

ELECTRICAL LEGEND, NOTES & SCHEDULES

DATE: JANUARY 11, 2017
SCALE: AS NOTED
DRAWN BY / CHECKED BY: MCB/JCP
PROJECT NO: 16331.00
DRAWING NO: EI

CALLED NORTH



ELECTRICAL - ROOF DEMOLITION PLAN

SCALE: 1/8" = 1'0"

NOTES:

1. EC SHALL MAKE SAFE ELECTRICALLY ALL EXHAUST FANS, FOR REMOVAL BY HVAC. EC SHALL RECONNECT EXISTING BRANCH CIRCUITRY TO NEW EXHAUST FANS. TYPICAL FOR 7.
2. EC SHALL DISCONNECT BRANCH CIRCUIT FROM RTU-3, FOR REMOVAL BY HVAC. EC SHALL REMOVE BRANCH CIRCUIT TO ITS POWER SOURCE.
3. EC SHALL DISCONNECT BRANCH CIRCUIT FROM RTU-7, FOR REMOVAL BY HVAC. EC SHALL RETAIN BRANCH CIRCUIT FOR RECONNECTION TO NEW RTU-7.

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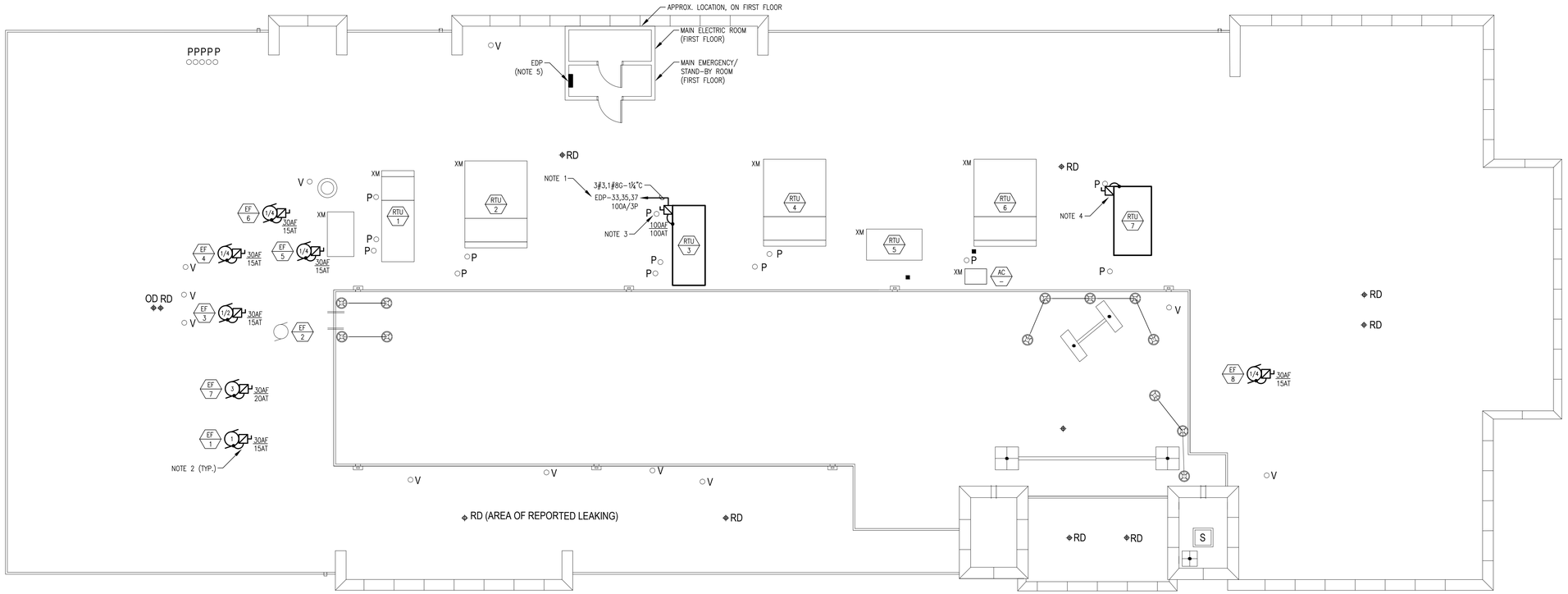
SALEM, MASSACHUSETTS

ELECTRICAL ROOF DEMOLITION PLAN

DATE: JANUARY 11, 2017
SCALE: AS NOTED
DRAWN BY / CHECKED BY: MCB/JCP
PROJECT NO: 16331.00
DRAWING NO: E2

CALLED NORTH



ELECTRICAL - ROOF NEW WORK PLAN

SCALE: 1/8" = 1'0"

NOTES:

1. CKT BREAKER IS SPARE. PANEL EDP IS LOCATED ON FIRST FLOOR, IN THE EMERGENCY ELECTRICAL CLOSET.
2. EC SHALL CONNECT EXISTING BRANCH CIRCUITRY TO NEW EXHAUST FAN. TYPICAL FOR 7.
3. GC SHALL PROVIDE PROPER PENETRATION THROUGH ROOF, FOR INSTALLATION OF NEW 1¼"C. EC SHALL COORDINATE PENETRATION LOCATION WITH MECHANICAL CONTRACTOR AND GENERAL CONTRACTOR.
4. EC SHALL CONNECT EXISTING BRANCH CIRCUITRY TO NEW RTU-7. EC SHALL REPLACE EXISTING 30 AMP 3-POLE CIRCUIT BREAKER IN FEEDER PANEL WITH NEW 40 AMP 3-POLE, 208 VOLT CIRCUIT BREAKER.
5. EXISTING PANEL EDP IS LOCATED IN EMERGENCY/STAND-BY ROOM.

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ROOF REPAIR PROJECT

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ELECTRICAL ROOF NEW WORK PLAN

DATE: JANUARY 11, 2017
SCALE: AS NOTED
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PROJECT NO: 16331.00
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