

FLOOR PLAN LEGEND

EXISTING WALL / PARTITION	NEW WALL / PARTITION, COORDINATE WITH PARTITION TYPES SHEET
EXISTING DOOR - SHOWN WITHOUT DOOR TAG	NEW DOOR - SHOWN WITH DOOR TAG, LOCATE HINGE OF DOOR 6" FROM PERPENDICULAR WALL, UNO
C DESK MARKER	 1 HOUR RATED FIRE BARRIER
	1 HOUR RATED EXTERIOR BEARING WALL - Note: This is for STRUCTURAL MEMBERS of the wall PER NCBC 704.10.
	 2 HOUR RATED FIRE BARRIER

FLOOR PLAN GENERAL NOTES

- 1. REFER TO SHEET G-301 FOR THE WALL & PARTITION TYPES SCHEDULE. . EXISTING WALLS TO REMAIN ARE INDICATED IN HALFTONE. ALL OTHER WALLS SHOWN ARE NEW. . G.C. SHALL NOTIFY OWNER AND ARCHITECT PROMPTLY OF ANY CONDITION UNCOVERED WHICH SHOWS EVIDENCE OF DETERIORATED STRUCTURE, BUILDING ENVELOPE OR LIFE SAFETY
- ELEMENT WHICH IS SLATED TO REMAIN. 4. PATCH, REWORK, SKIM, EXISTING WALLS WHERE REQ'D FOLLOWING DEMOLITION, FINISHES TO REMAIN - TOUCH UP AS NEEDED. 5. G.C. SHALL FIELD VERIFY ALL DIMENSIONS TAKEN TO EXISTING WALLS AND STRUCTURE AND
- ADVISE ARCHITECT OF ANY DISCREPANCIES. REFER TO LIFE SAFETY PLANS FOR FIRE EXTINGUISHERS AND FIRE EXTINGUISHER CABINET LOCATIONS. REFER LIFE SAFETY PLANS FOR LOCATIONS OF RATED FLOOR SLABS AND RATED
- STRUCTURAL COLUMNS, BEAMS, AND SUPPORTING STRUCTURE. DIMENSIONS ARE TAKEN TO FINISH FACE OF NEW AND EXISTING WALLS AND PARTITIONS UNLESS NOTED OTHERWISE.
- BLOCKING SHALL BE PROVIDED FOR ALL WALL AND CEILING MOUNTED ACCESSORIES, EQUIPMENT, HANDRAILS, FIXTURES, CABINETS, CASEWORK, SHELVING, ETC. SHOWN ON ANY
- 9. DOOR JAMBS SET 4" FROM FACE OF ADJACENT WALL, TYP U.N.O.
- 10. SEE EXTERIOR ELEVATIONS FOR EXTERIOR WINDOW TYPES.
- 11. ALL MASONRY DIMENSIONS ARE NOMINAL U.N.O. 12. CONTRACTOR TO INSTALL 3/4" PLYWOOD BLOCKING WITHIN WALL AT EACH LOCATION INDICATED
- TO RECEIVE OWNER PROVIDED AND INSTALLED WALL MOUNTED TELEVISIONS/DISPLAYS. COORDINATE LOCATIONS AND POSITIONS WITH OWNER PRIOR TO INSTALLATION. 13. INFILL & STUB UP ALL ABANDONED FLOOR SINKS, FLOOR DRAINS, HOLES, & PITS, UNO. SEE

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UNC CHARLOTTE RESIDENCE **DINING HALL** BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM # 1	3/16/16
2	ADDENDUM #2	3/22/16

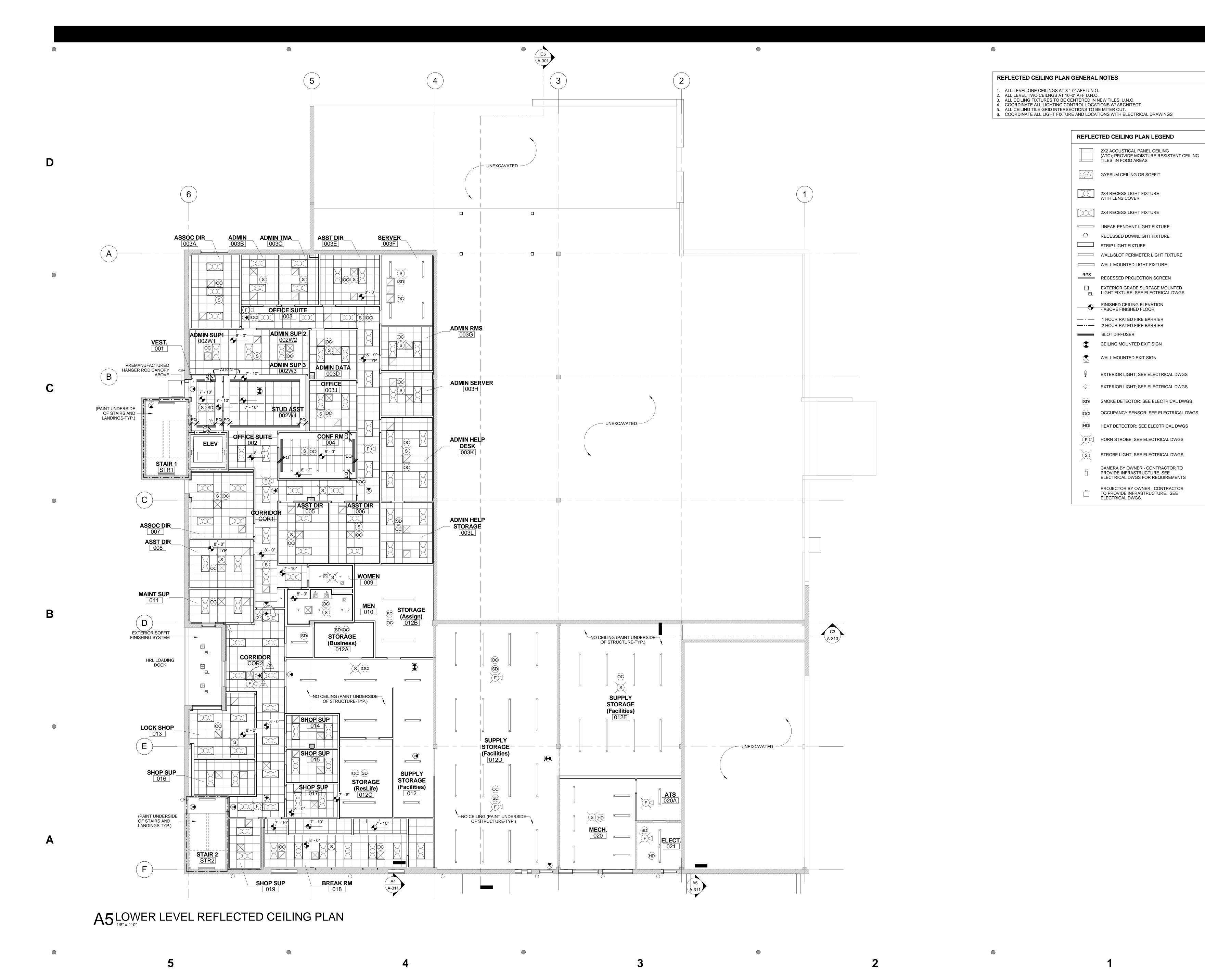
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LOWER LEVEL FLOOR PLAN



CONSTRUCTION **DOCUMENTS**



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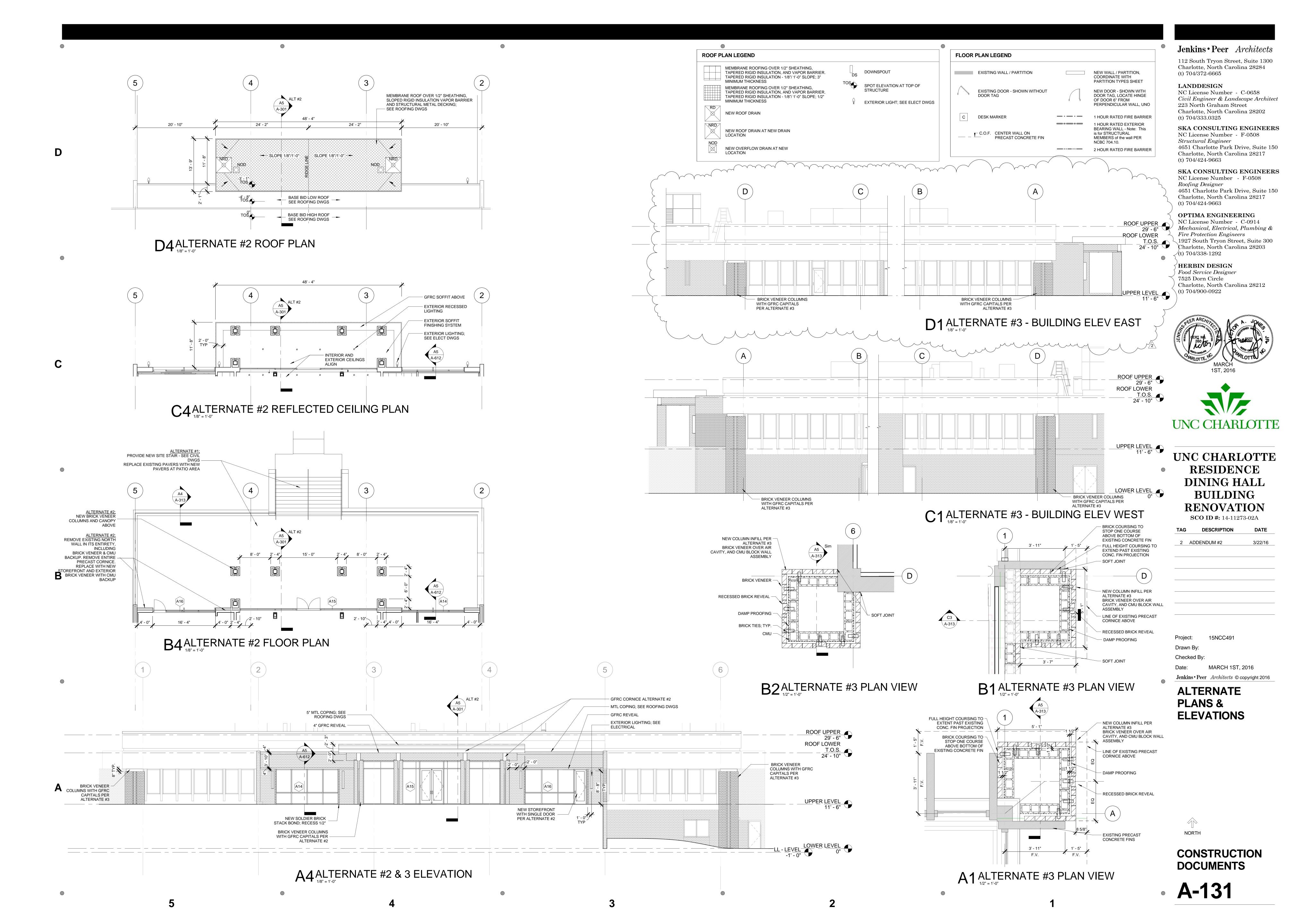
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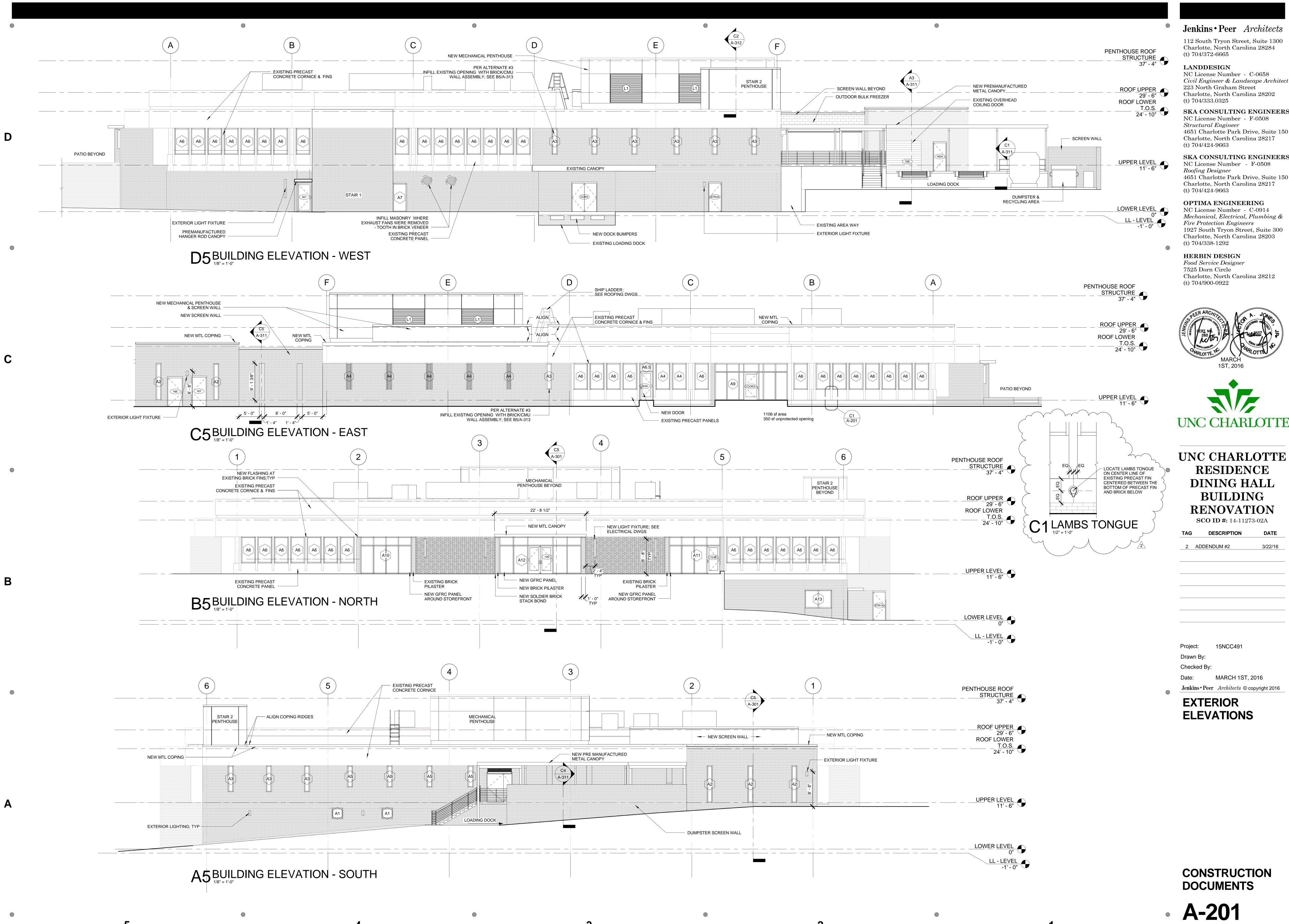
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LOWER LEVEL REFLECTED **CEILING PLAN**



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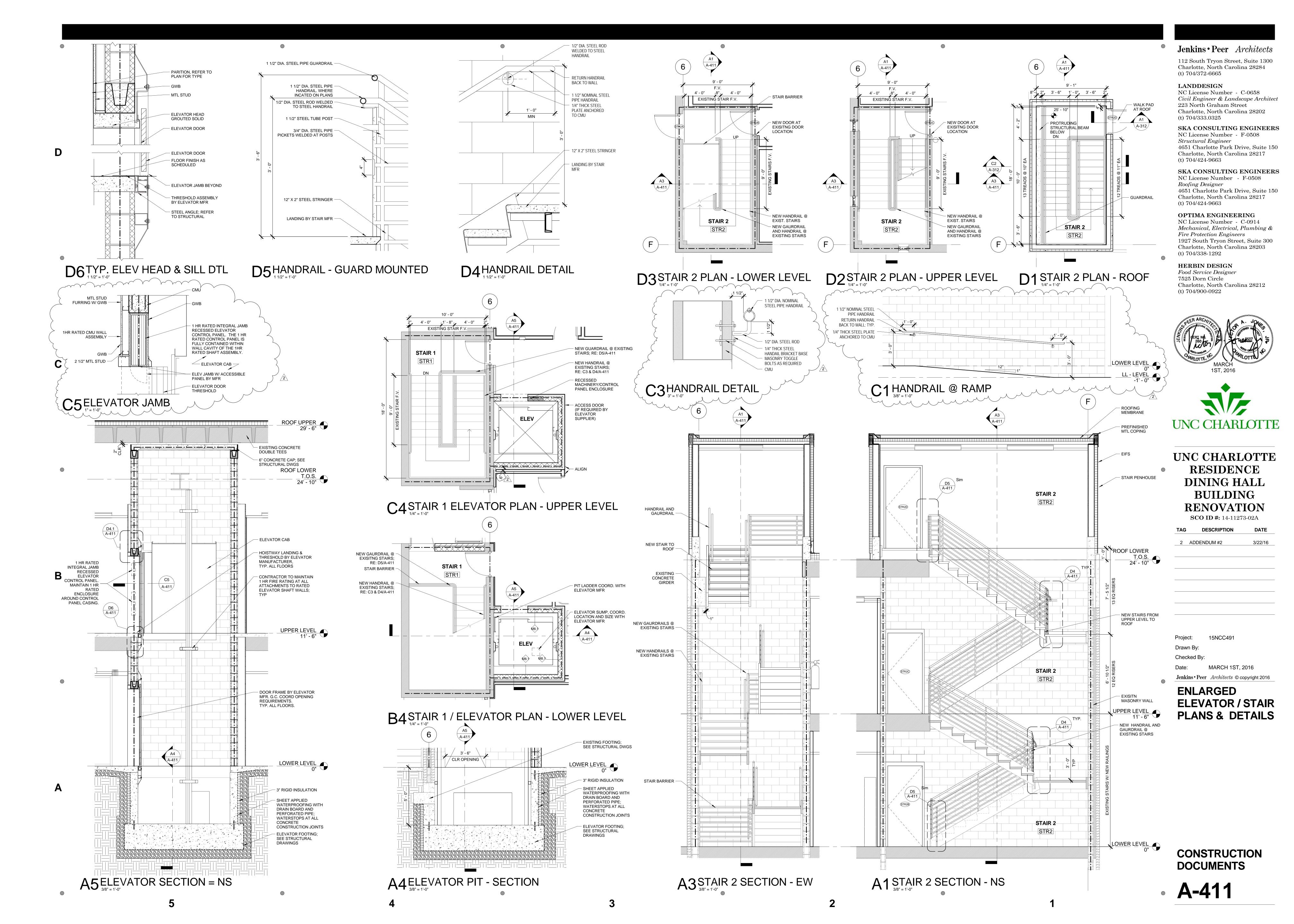
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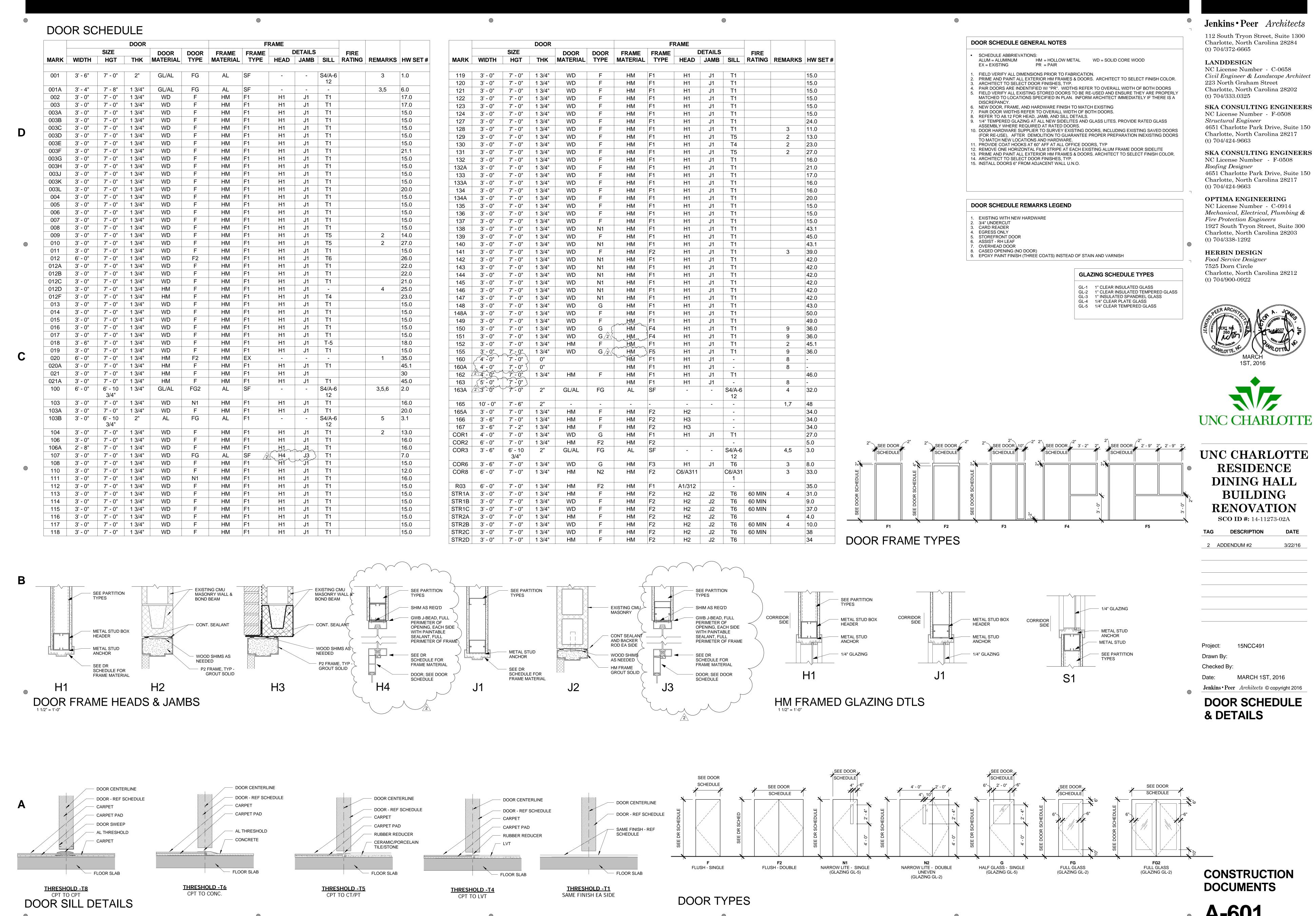
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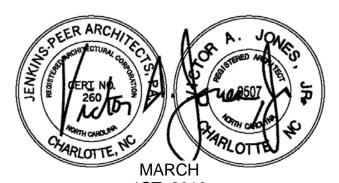


DINING HALL RENOVATION

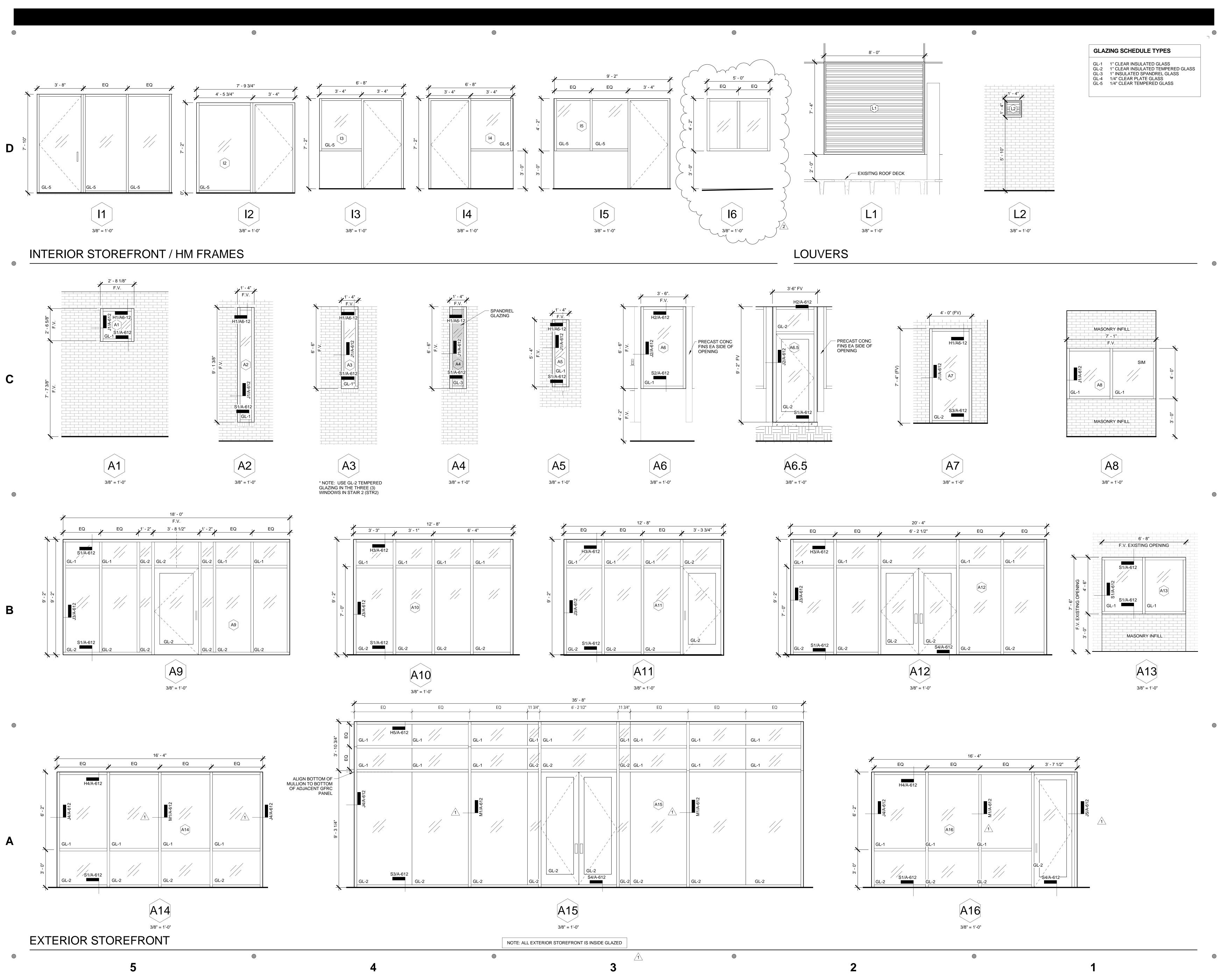




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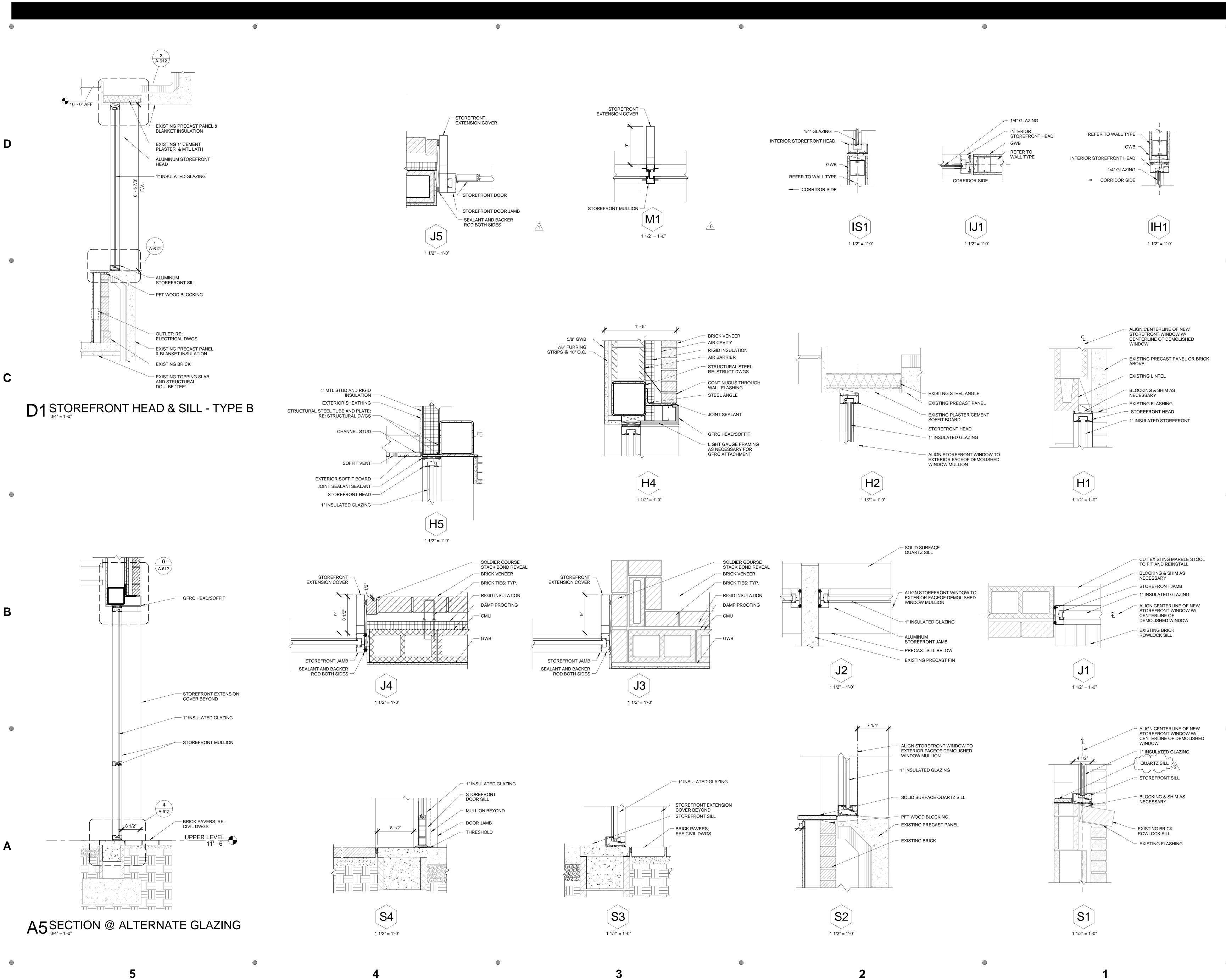
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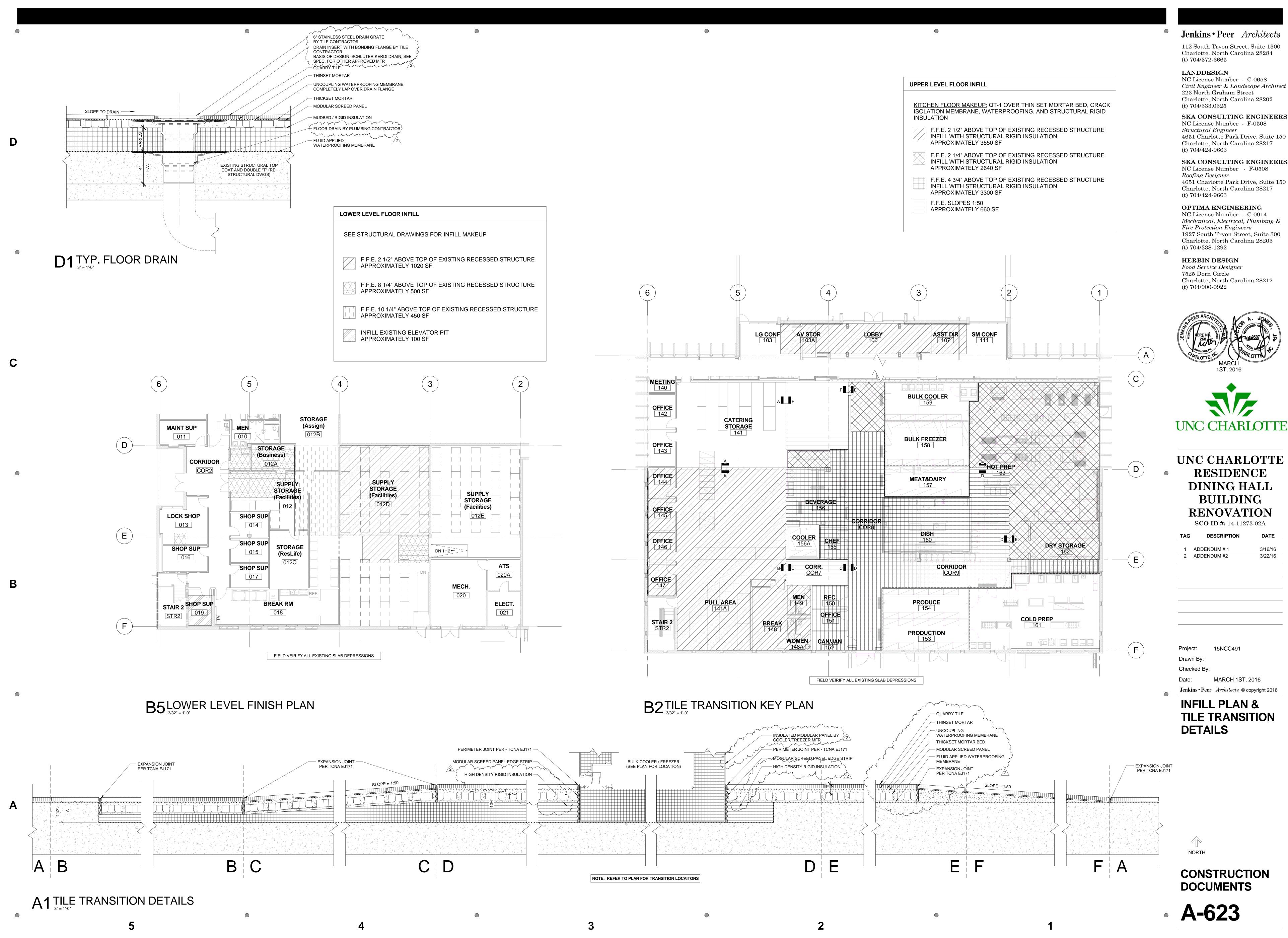
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LOUVER DETAILS

NORTH

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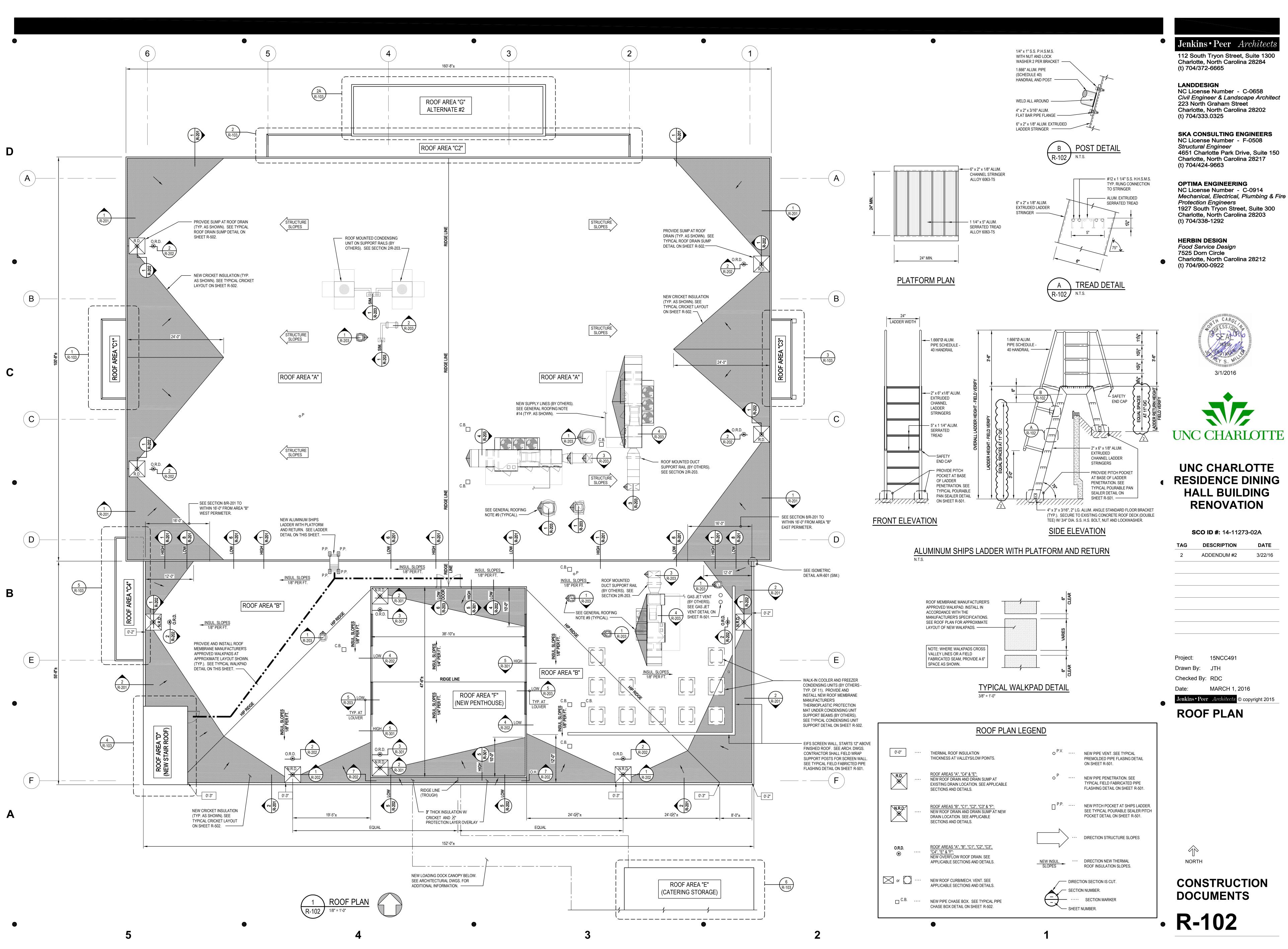


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TILE TRANSITION

CONSTRUCTION



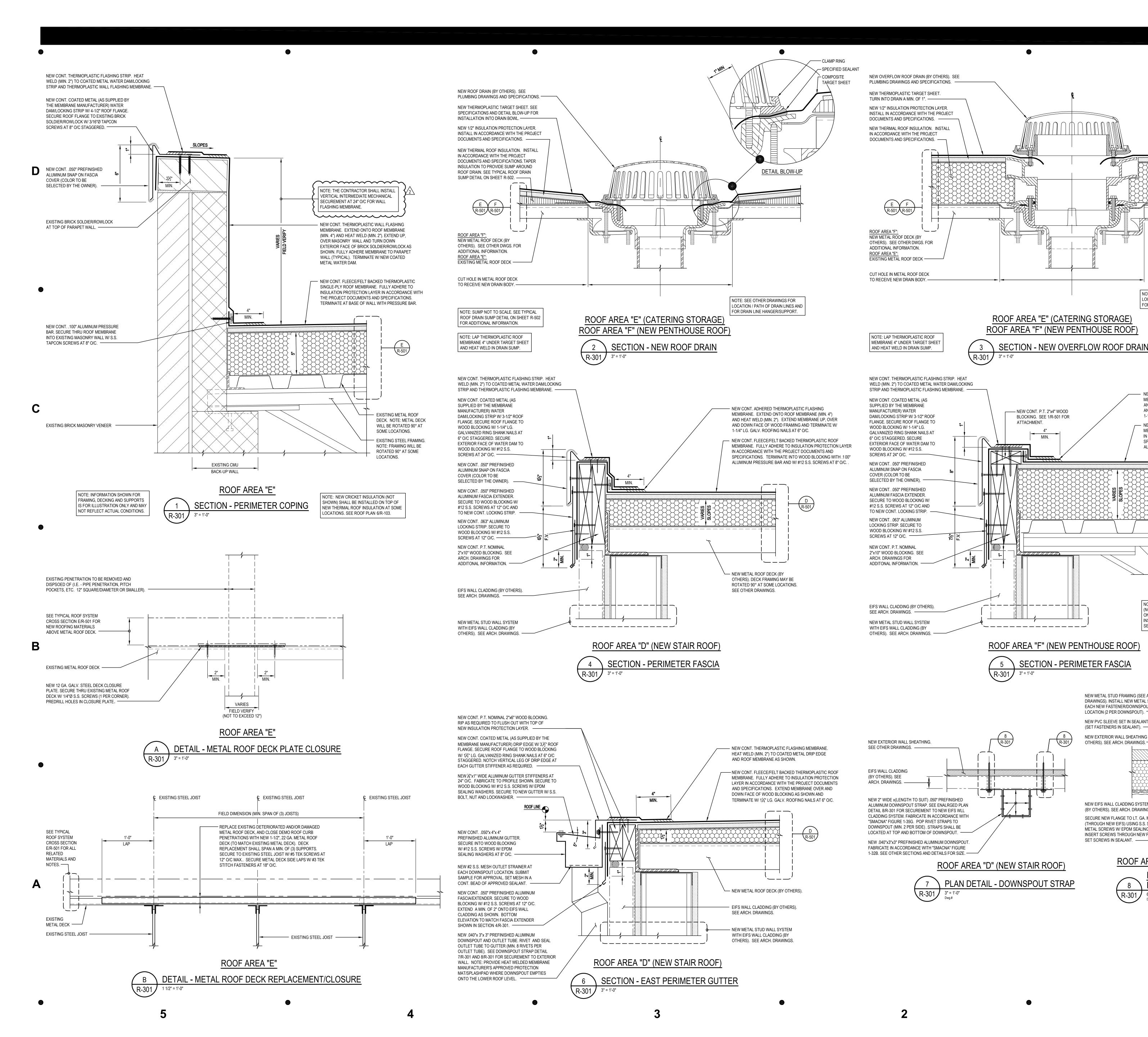
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Project: Drawn By: JTH Checked By: RDC

ROOF SECTIONS & DETAILS (ROOF AREAS

ROOF AREA "D" (NEW STAIR ROOF)

8 ENLARGED PLAN DETAIL DOWNSPOUT STRAP R-301 6" = 1'-0"

NOTE: SEE OTHER DRAWINGS FOR

FOR DRAIN LINE HANGER/SUPPORT.

LOCATION / PATH OF DRAIN LINES AND

NEW CONT. ADHERED THERMOPLASTIC FLASHING MEMBRANE. EXTEND ONTO ROOF MEMBRANE (MIN. 4")

1-1/4" LG. GALV. ROOFING NAILS AT 6" O/C.

NOTE: NEW CRICKET INSULATION

(NOT SHOWN) SHALL BE INSTALLED

ON TOP OF NEW THERMAL ROOF

INSULATION AT SOME LOCATIONS.

SEE ROOF PLAN 1/R-102.

NEW METAL STUD FRAMING (SEE ARCH.

EACH NEW FASTENER/DOWNSPOUT

LOCATION (2 PER DOWNSPOUT).

NEW PVC SLEEVE SET IN SEALANT

(SET FASTENERS IN SEALANT). —

NEW EXTERIOR WALL SHEATHING (BY

OTHERS). SEE ARCH. DRAWINGS.

NEW EIFS WALL CLADDING SYSTEM

SET SCREWS IN SEALANT. -

(BY OTHERS). SEE ARCH. DRAWINGS. -

SECURE NEW FLANGE TO LT. GA. METAL STUD

METAL SCREWS W/ EPDM SEALING WASHERS.

INSERT SCREWS THROUGH NEW PVC SLEEVES.

(THROUGH NEW EIFS) USING S.S. SELF DRILLING

DRAWINGS). INSTALL NEW METAL STUD AT

AND HEAT WELD (MIN. 2"). EXTEND MEMBRANE UP, OVER

AND DOWN FACE OF WOOD FRAMING AND TERMINATE W/

MEMBRANE. FULLY ADHERE TO INSULATION PROTECTION LAYER

SPECIFICATIONS. TERMINATE INTO WOOD BLOCKING WITH .100"

R-501

NEW METAL ROOF DECK (BY

OTHERS). DECK FRAMING

MAY BE ROTATED 90° AT SOME LOCATIONS. SEE

OTHER DRAWINGS.

NEW STEEL FRAMING (FRAMING MAY BE ROTATED

90° AT SOME LOCATIONS).

SEE OTHER DRAWINGS.

— FILL ENTIRE TUBE

FULL OF APPROVED

SEALANT PRIOR TO

PROVIDE CONTINUOUS BEAD

OF APPROVED SEALANT

BETWEEN BACK OF THE

— NEW .050" PREFINISHED

7/R-301.

FLANGE AND FACE OF EIFS

ALUMINUM DOWNSPOUT

STRAP. SEE PLAN DETAIL

INSTALLATION OF

FASTENER.

ALUMINUM PRESSURE BAR AND W/ #12 S.S. SCREWS AT 8" O/C.

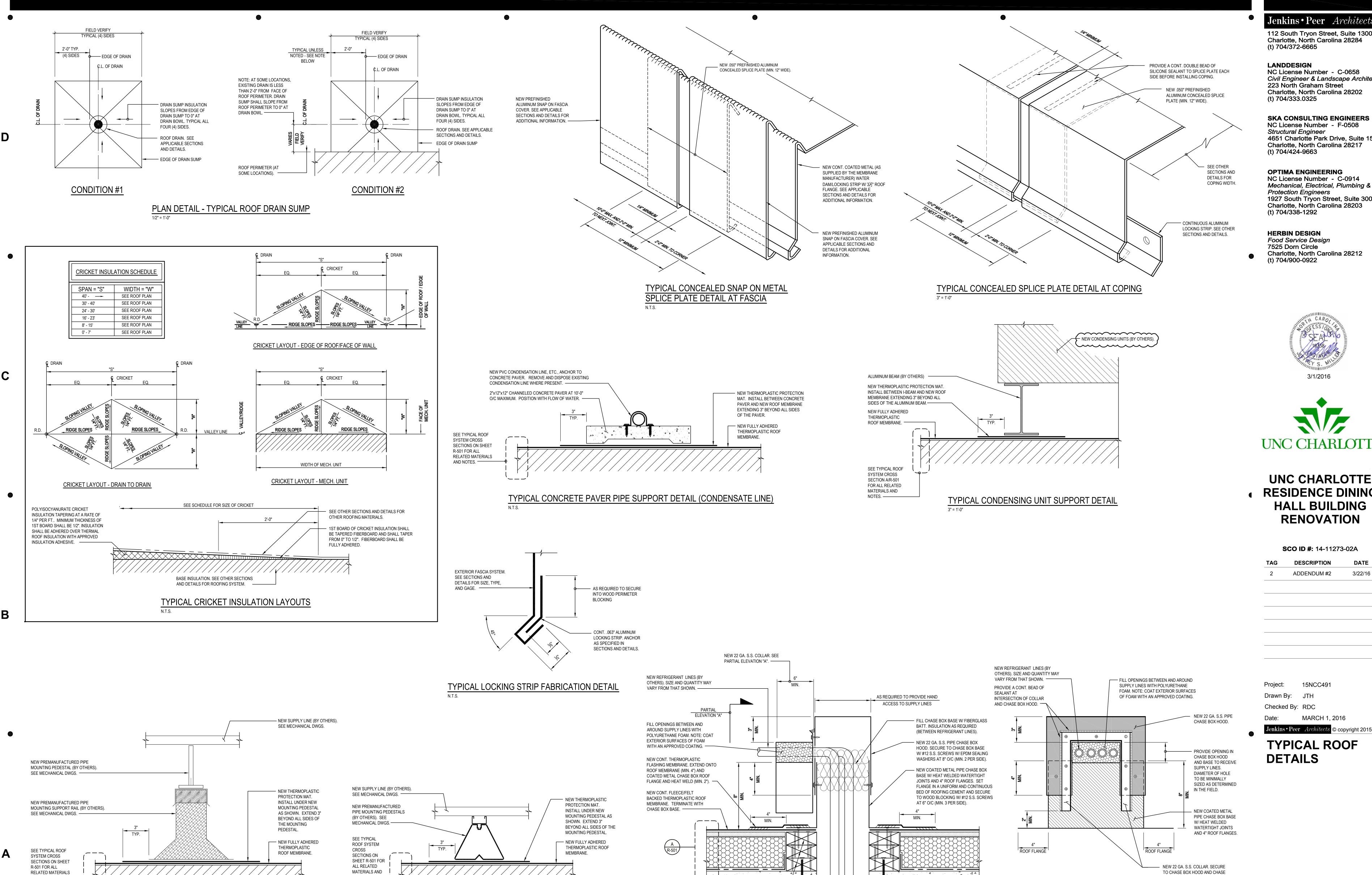
MEW CONT. FLEECE/FELT BACKED THERMOPLASTIC ROOF

IN ACCORDANCE WITH THE PROJECT DOCUMENTS AND

NORTH

CONSTRUCTION **DOCUMENTS**

• R-301



EXISTING CONCRETE ROOF DECK (DOUBLE TEE) ———

NEW CONT. P.T. 2"x4" WOOD BLOCKING TO FLUSH OUT WITH TOP OF INSULATION PROTECTION LAYER. ADD ADDITONAL

TYPICAL PIPE CHASE BOX

BLOCKING AND/OR PLYWOOD FILLER AS REQUIRED. SECURE 1st LAYER TO DECK W/ 3/16"Ø TAPCON SCREWS AT 12" O/C. SECURE FROM LAYER TO KLAYER W/ #12 S.S.

SCREWS AT 12" O/C (EACH ROW STAGGERED).

AND NOTES. —

NOTES. —

TYPICAL PIPE MOUNTING PEDESTAL DETAILS

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UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

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Drawn By: JTH

enkins • Peer Architects © copyright 2015 **TYPICAL ROOF DETAILS**



BOX BASE WITH #12 S.S. SCREWS

W/ EPDM SEALING WASHERS.

PARTIAL ELEVATION "A"

CONSTRUCTION **DOCUMENTS**

• R-502

					F	OOD SERVIO	CE PLUMBIN	IG SCHEDULE			
ITEM NUMBER	OTV	DESCRIPTION	HOT WATE R SIZE	COLD WATER SIZE	INDIRECT WASTE	DIRECT WASTE	SIZE	GAS INPUT	RI HT +AFF	CONN TYPE	REMARKS
8 3		1-Compartment Prep Sink	SIZE	SIZE	1 3/4"	0"	SIZE	INPUT	КІПІ ТАГГ	IIFE	REWARNS
8A 3		•	1/2"	1/2"	1 3/4	U					
9 2		8in Faucet With 12in Swing Nozzle Ice Maker, Water-Cooled	1/2	3/8"	0"	1/2"					
9 9B 1		Ice Maker, Air-Cooled		3/8"	0"	1/2"					
				3/0	1 3/4"	0"					
15 1		Soiled Dishtable	0"	0"	1 3/4	U					
17 2		Pre-Rinse Unit W/Bracket	U	1/2"		Oll					-
18 1		Disposer Disharahar W/Drasar	4 /0"	1/2	2"	2"					May be desired to either side of T Desire value. Diver appealts side
19 1		Dishwasher W/Dryer	1/2"		Z*	4.4/01					May be drained to either side of T-Drain valve. Plug opposite side.
23 1		Pot And Pan Washer	3/4"	4 (0)	4.4/0!!	1 1/8"					Unit comes with 4'-7" hoses
26 1		3 Compartment Pot Sink	1/2"	1/2"	1 1/2"	0"					
26A 2		8in Faucet With 12in Swing Nozzle	1/2"	1/2"		Oll					
31 4		Hand Sink W/Side Splashes & Knee Valve	1/2"	1/2"	411	2"					
31A 3		Hand Sink Floor Mount	1/2"	1/2"	1"	1"					
32A 1		8in Faucet With 12in Swing Nozzle	1/2"	1/2"			4.11	200000000000000000000000000000000000000			
36 1		Convection Steamer		3/8"	1 1/2"		1"	300000.0 Btu/h			
36A 1		Convection Steamer		3/8"	1 1/2"		I	300000.0 Btu/h			
37 1		Utility Chase Wall Type	0"	0"	0"	0"	0"	0.0 Btu/h			
38 6		Floor Trough, Anti-Spill				3"					
39A 1		40-Gal. Kettle	1/2"	1/2"			3/4"	140000.0 Btu/h			
39B 1		40-Gal. Kettle	1/2"	1/2"			3/4"	140000.0 Btu/h			
40 1		Tilting Skillet	1/2"	1/2"	1 1/2"		3/4"	200000.0 Btu/h			
40A 1		Tilting Skillet	1/2"	1/2"	1 1/2"		3/4"	125000.0 Btu/h			
41 1	1 :	2-Compartment Prep Sink			1 3/4"	0"					
41A 1	1	8in Faucet With 12in Swing Nozzle	1/2"	1/2"							
46 4	4	Prep Table W/Sink			1"						
46A 4	4	8" Deck Faucet with 10" Swing Spout									
49 1	1	Utility Chase, Island Type	0"	0"	0"	0"	0"	0.0 Btu/h			
52 2	2 (48" Open Burner Range					1"	306000.0 Btu/h			
53 2	2	Fryer Battery of 2 w/Filter					1"	217500.0 Btu/h			
55 2	2	Combi Oven-Steamer		3/4"	1 1/2"		3/4"	98000.0 Btu/h			
55A 1	1	Combi Oven-Steamer		3/4"	1 1/2"		3/4"	266000.0 Btu/h			
59D 1	1	Blast Chiller-Freezer Insert			3/4"						
63 1	11	Floor Trough				3"					
66 4		Oven, Roll-In Bake		3/4"	2"						

PLUMBING CONNECTION LEGEND HW-HOT WATER, OR CW-COLD WATER STEAM SUPPLY STEAM RETURN WASTE, DIRECT-CONNECTED UNLESS NOTED "OPEN HUB" FLOOR DRAIN FLOOR DRAIN WITH ATTACHED FUNNEL FLOOR SINK WITH HALF GRATE UNLESS NOTED OTHERWISE – FIELD CONNECTIONS cws — CONDENSER WATER SUPPLY CWR — CONDENSER WATER RETURN FCW — FILTERED COLD WATER RL— REFRIGERANT LIQUID REFRIGERANT SUCTION AFF ABOVE FINISHED FLOOR DFA DOWN FROM ABOVE BTC BRANCH TO CONNECTION P.C. PLUMBING CONTRACTOR NIC NOT IN CONTRACT

Plumbing Legend [/] 1/4" = 1'-0"

Oil Storage Tank

THIS DRAWING IS FOR REFERENCE ONLY, INTENDED TO PROVIDE INFORMATION TO BE INCLUDED ON THE SEALED ARCHITECTS / ENGINEERS DOCUMENTS. IT IS NOT INTENDED FOR, AND SHOULD NOT BE USED FOR CONSTRUCTION. FOOD SERVICE EQUIPMENT CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS & DIMENSIONS & BE RESPONSIBLE FOR FIELD FIT & QUALITY OF WORK. NO ALLOWANCES SHALL BE MADE ON BEHALF OF THE FSE CONTRACTOR FOR ANY ERROR OR NEGLECT ON THEIR PART. DIMENSIONED DRAWINGS TO BE PROVIDED BY FOOD SERVICE EQUIPMENT CONTRACTOR AFTER AWARD OF CONTRACT DURING CONSTRUCTION PHASE.

Disclaimer Note [/] 1/4" = 1'-0"

PLUMBING PLANS SHOWS ROUGH-IN AND CONNECTION LOCATIONS WITH CAPACITIES - SEE ROUGH-IN DRAWINGS FURNISHED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR FOR ACTUAL ROUGH-IN LOCATIONS. DIVISION 22 SHALL BE RESPONSIBLE FOR ROUGH-INS AND FINAL CONNECTION TO KITCHEN EQUIPMENT

EXPCEPT WHERE NOTED. ROUGH-INS FOR WATER, WWASTE, FUEL GAS AND STEAM SERVICES SHALL EXTEND 6" (220 MM) BEYOND FINISH

PLUMBING NOTES

WALLS AND ABOVE FINISH FLOORS OR EQUIPMENT PADS - ALL FLOOR PENETRATIONS SHALL BE SEALED WATER PRESSURE IN FOOD, SERVICE AND BEVERAGES AREAS SHOULD BE 50 PSIG. (344,750 N/M) MAXIMUM -

WATER PRESSURE AT DISHMACHINES, BOOSTER HEATERS, GLASS AND UTENSIL WASHERS TO BE 25 PSIG STEAM PRESSURE FOR FOOD SERVICE EQUIPMENT TO TO BE _____ UNLESS INDICATED OTHERWISE ON PLAN.

DIVISION 22 SHALL FURNISH AND INSTALL ALL NECESSARY VALVES, TRAPS, TAIL PIECES, LINE STRAINERS, PRESSURE REDUCING VALVES AND CONNECT ALL WATER, FUEL GAS, STEAM AND WASTE LINES TO FOOD SERVICE EQUIPMENT. FOOD SERVICE EQUIPMENT CONTRACTOR TO PROVIDE AND DIVISION 22 INSTALL VACUUM BREAKERS.

DIVISION 22 TO PROVIDE GAS SERVICES AT EQUIPMENT TO MAINTAIN AN 8" WATER COLUMN. FOOD SERVICE EQUIPMENT CONTRACTOR TO PROVIDE GAS PRESSURE REGULATORS AS REQUIRED BY CODE AND A.G.A. FOR INSTALLATION BY DIVISION 22 IN LINE BETWEEN BUILDING SERVICES AND EQUIPMENT.

DIVISION 22 SHALL INSTALL & CONNECT ALL FAUCETS AND DRAINS FURNISHED WITH FOOD SERVICE AND BEVERAGE EQUIPMENT.

DIVISION 22 SHALL FURNISH & INSTALL ALL INDIRECT WASTE LINES FROM FOOD SERVICE AND BEVERAGE EQUIPMENT (EXCEPT EVAPORATOR COILS IN COLD STORAGE ROOMS) TO FLOOR SINKS AND INSULATE WASTE LINES FROM ICE BINS, EVAPORATORS AND BAIN MARIES.

FOOD SERVICE EQUIPMENT CONTRACTOR SHALL FURNISH & INSTALL FIRE SUPPRESSION SYSTEM. FSE CONTRACTOR SHALL FURNISH AND DIVISION 22 SHALL INSTALL NORMALLY OPEN MECHANICALLY ACTIVATED GAS SHUT-OFF VALVE ABOVE SUSPENDED CEILING TILE.

FLOOR SINKS AND FLOOR TROUGHS SHALL BE INSTALLED FLUSH WITH FINISH FLOOR WITH GRATE COVER AS

THIS PLUMBING PLAN IS INTENDED TO SHOW DRAINAGE REQUIREMENTS FOR FOODSERVICE EQUIPMENT ONLY. IT IS THE PLUMBING ENGINEER'S RESPONSIBILITY TO CONFIRM DRAIN TYPE, CAPACITY & ELEVATION TO SATISFY LOCAL CODE REQUIREMENTS.

SEWAGE AND LIQUID WASTES (ROOF DRAINS) ARE TO BE CARRIED TO THE SEWER IN A MANNER THAT PROTECTS THE PREMISES, THE PERSONNEL AND CONTENTS WITHIN THE ESTABLISHMENT FROM CONTAMINATION. THE PLUMBING ENGINEER IS TO DESIGN WASTE PIPING SYSTEMS THAT CONFORM TO LOCAL HEALTH CODE REQUIREMENTS. PARTICULAR ATTENTION NEEDS TO BE GIVEN TO ANY LOCAL REQUIREMENTS PREVENTING WASTE PIPING (EXPOSED OR CONCEALED) FROM BEING ROUTED OVERHEAD IN AREAS USED FOR FOOD STORAGE, PREPARATION, SERVICÉ, WAREWASHING AND TRANSPORTATION.

GENERAL PURPOSE AREA DRAINS SHALL BE LOCATED AND SPECIFIED BY THE PLUMBING ENGINEER. THIS IS OF PARTICULAR IMPORTANCE WHEN LOCAL CODES REQUIRE THAT DRAINS ACCEPTING INDIRECT WASTE BE SET ABOVE THE FINISHED FLOOR.

DIVISION 22 TO RUN WASTES TO GREASE INTERCEPTOR PER LOCAL CODES. GREASE INTERCEPTOR, IF REQUIRED, IS TO BE SIZED AND LOCATED BY THE PLUMBING ENGINEER. WASTE ROUGH-IN FOR DISCHARGE PIPING FROM A SURFACE MOUNTED GREASE INTERCEPTOR IS TO BE DIMENSIONED BY THE PLUMBING

DIVISION 22 SHALL INSTALL WATER FILTER SYSTEMS PROVIDED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR TO SERVICE ICE MAKERS, COFFEE MAKERS/ URNS, SODA SYSTEMS, STEAMERS, ETC. FOOD SERVICE EQUIPMENT CONTRACTOR TO PROVIDE, DIVISION 22 TO INSTALL, QUICK DISCONNECT FLEXIBLE

HOSE CONNECTORS FOR FOOD SERVICE & BEVERAGE EQUIPMENT REQUIRING GAS, WATER & STEAM CONNECTIONS. REFER TO FOOD SERVICE PLUMBING SCHEDULE AND CONTRACT DOCUMENTS. DIVISION 22 SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING SCHEDULE 40 PIPE AND ALL PLUMBING

PIPING KIT, AND THE ASSEMBLY OF FSEC SUPPLIED FRYER AND TANK PIPING KITS. FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE AND INSTALL ALL COPPER DRAIN LINES FROM COOLER/FREEZER EVAPORATORS TO FLOOR DRAINS/FLOOR SINKS, WITH P-TRAPS OUTSIDE THE WALK-IN

FOOD SERVICE EQUIPMENT CONTRACTOR TO PROVIDE GAS PRESSURE REGULATORS AND GAS SHUT-OFFS

MECHANICAL/SPECIAL CONDITION NOTES

MECHANICAL/SPECIAL CONDITIONS PLANS SHOWS ROUGH-IN AND CONNECTION LOCATIONS WITH CAPACITIES -SEE ROUGH-IN DRAWINGS FURNISHED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR FOR ACTUAL ROUGH-

DIVISION 23 SHALL PROVIDE AND INSTALL ALL DUCTWORK, FANS AND FAN STARTERS AND MAKE FINAL CONNECTIONS TO KITCHEN EQUIPMENT EXPCEPT WHERE NOTED.

DIVISION 23 SHALL MAKE ROUGH-INS FOR EXHAUST & MAKE-UP AIR

TYPE I HOODS REQUIRE FULLY WELDED DUCTWORK PER CODE.

SOLENOID GAS SHUT-OFF VALVE ABOVE SUSPENDED CEILING TILE.

WITH EACH GAS OPERATED COOKING UNIT.

TYPE II HOODS AND VENTS ABOVE DISHWASHERS, CONVEYOR & ROLL-IN OVENS, AND OTHER GREASE, STEAM AND VAPOR PRODUCING EQUIPMENT SHALL BE PROVIDED WIRH DUCTWORK PER APPLICABLE CODE.

DIVISION 23 SHALL PROVIDE FIRE EXTINGUISHING FOR TYPE I DUCTS PER CODE.

FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE AND INSTALL ALL EXHAUST HOODS, VAPOR HOODS AND VAPOR DUCTS TO CEILING WITH COLLARS READY FOR FINAL CONNECTIONS BY DIVISION 23.

GENERAL CONTRACTOR SHALL PROVIDE FLOOR OPENINGS FOR FLOOR TROUGHS, SLAB DEPRESSIONS/PREPARATIONSS FOR WALK-IN COOLER/FREEZER AND PASS-THRU CABINET WALL OPENINGS WHERE NOTED ON FOOD SERVICE ROUGH-IN PLANS.

FOOD SERVICE EQUIPMENT CONTRACTOR SHALL FURNISH & INSTALL FIRE SUPPRESSION SYSTEM. F.S.E. CONTRACTOR SHALL FURNISH & DIVISION 23 SHALL INSTALL NORMALLY OPEN MECHANICALLY ACTIVATED • Jenkins • Peer Architects

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SCO ID 4

SCO ID #: 14-11273-02A							
DESCRIPTION	DATE						
ADDENDUM #2	03/22/16						
	DESCRIPTION						

Project Number Project:

Checked By:

Drawn By:

Date: 03/21/2016

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Plumbing Rough-In Schedule

PROJECT NORTH

TRUE NORTH

CONSTRUCTION **DOCUMENTS** • K-301

Mechanical/Special Colnditions Notes 1/4" = 1'-0"

3" drain connection for grease truck hose quick connect

PRE-ACTION SYSTEM DOUBLE INTERLOCK SYSTEM

WHERE A PRE-ACTION SYSTEM IS REQUIRED, THE FIRE PROTECTION/SPRINKLER CONTRACTOR SHALL PROVIDE DESIGN, FABRICATION AND INSTALLATION OF A HYDRAULICALLY CALCULATED AUTOMATIC, DOUBLE INTERLOCKED, PRE-ACTION SPRINKLER SYSTEM WHICH WILL MEET ALL THE APPLICABLE REQUIREMENTS OF NFPA 13. FINAL SYSTEM SELECTION AND SPECIFICATION SHALL BE BY THE FIRE PROTECTION/SPRINKLER CONTRACTOR, WITH THE APPROVAL OF THE A/E. THE SYSTEM MUST MEET AND/OR EXCEED THE FOLLOWING REQUIREMENTS:

- THIS SYSTEM MUST PROVIDE MAXIMUM PROTECTION AGAINST UNINTENTIONAL SPRINKLER SYSTEM DISCHARGE.
- FOR WATER TO FLOW INTO THE SYSTEM, TWO EVENTS MUST TAKE PLACE: A FIRE PROTECTION DEVICE MUST OPERATE AND THE LOW PRESSURE SWITCH MUST BE ACTIVATED BY THE LOSS OF SYSTEM AIR PRESSURE (INDICATING A SPRINKLER HAS OPENED). THESE TWO SIGNALS MUST BE RECEIVED SIMULTANEOUSLY AT THE RELEASING CONTROL PANEL. SO THAT THE SOLENOID RELEASING VALVE IS ENERGIZED , CAUSING WATER FLOW INTO THE SYSTEM.
- FIRE PROTECTION DEVICES AND SYSTEM AIR PRESSURE MUST PROVIDE SEPARATE SIGNALS TO A CROSS-ZONED RELEASING CONTROL PANEL.
- . IN THE EVENT THAT THE SYSTEM PIPING IS RUPTURED OR A SPRINKLER HEAD IS ACCIDENTALLY OPENED. ONLY THE LOW PRESSURE SWITCH WILL OPERATE AND AN ALARM WILL SOUND. THE DELUGE VALVE WILL NOT BE RELEASED TO FLOW SINCE THE SOLENOID RELEASING VALVE REMAINS CLOSED DUE TO THE CROSS-ZONED CONTROL PANEL CONFIGURATION.
- IN THE EVENT THAT A FIRE PROTECTION DEVICE IS FALSELY OPERATED, THE CONTROL PANEL WILL ACTIVATE AND ALARM. THE DELUGE VALVE WILL NOT BE RELEASED TO FLOW WATER SINCE THE SOLENOID VALVE REMAINS CLOSED DUE TO THE CROSS-ZONED CONTROL PANEL CONFIGURATION.
- ALL SYSTEM COMPONENTS SHALL BE NEW AND BY CURRENT MANUFACTURERS AND SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES.
- THE ELECTRICAL CONTROL PANELS USED FOR THE AUTOMATIC FIRE DETECTION AND PRE-ACTION FIRE SYSTEM SHALL BE UL/FM LISTED/APPROVED AND PROVIDED BY SPRINKLER CONTRACTOR. THE ELECTRICAL SMOKE AND HEAT DETECTORS AND WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AND WRED BY ELECTRICAL CONTRACTOR. THE CONTROL PANEL SHALL BE WIRED TO SHUT DOWN THE COMPUTER ROOM HVAC UNITS AND CLOSE DAMPERS WHEN PRE-ACTION SYSTEM IS ACTIVATED. FINAL CONNECTIONS TO RELEASING CONTROL BY SPRINKLER CONTRACTOR.
- PROVIDE A MANUAL RELEASE STATION WITH PROTECTION AGAINST ACCIDENTAL OPERATION. THE MANUAL RELEASE STATION SHALL NOT BE CONNECTED TO THE DETECTOR CIRCUIT.
- ALL MATERIALS AND WORKMANSHIP SHALL BE UL/FM APPROVED AND CONFORM TO ALL REQUIREMENTS AS LISTED IN THE LATEST EDITIONS OF THE NFPA STANDARDS.

PRE-ACTION SYSTEM SEQUENCE OF OPERATION

SYSTEM OPERATION

1. CONTRACTOR SHOULD MAKE SURE THE REMOTE RELEASE CONTROL PANEL

- SEQUENCE OF OPERATION IS PROGRAMMED TO PERFORM THE FOLLOWING: A. THE ACTIVATION OF BOTH THE DETECTION CONDITION AND THE OPENING OF AN AUTOMATIC SPRINKLER ARE NECESSARY TO CAUSE THE WATER DISCHARGE.
- B. THE ACTIVATION OF AN ELECTRICAL DETECTOR ALONE WILL SOUND AN ALARM AND ACTIVATE ALARM CONTACTS FOR AUXILIARY FUNCTIONS BUT WILL NOT CAUSE THE SYSTEM TO FILL WITH WATER.
- THE OPENING OF AN AUTOMATIC SPRINKLER OR DAMAGE TO SYSTEM PIPING WITHOUT THE DETECTION CONDITION SATISFIED WILL ACTIVATE THE VERY LOW AIR PRESSURE SWITCH ZONE, SOUND AN ALARM, AND ACTIVATE ALARM CONTACTS FOR AUXILIARY FUNCTIONS BUT WILL NOT CAUSE THE SYSTEM TO
- D. ACTIVATION OF BOTH THE DETECTION CONDITION AND THE OPENING OF AN AUTOMATIC SPRINKLER WILL ACTIVATE THE SOLENOID VALVES, OPEN THE DELUGE VALVE. AND CAUSE WATER TO DISCHARGE. THIS WILL SOUND AN ALARM AND ACTIVATE ALARM AND WATER FLOW CONTACTS FOR AUXILIARY FUNCTIONS.
- . OPERATION OF THE EMERGENCY MANUAL RELEASE WILL DEPRESSURIZE THE PRIMING CHAMBER OF THE DELUGE VALVE, CAUSING THE SYSTEM TO FILL THE PIPING NETWORK WITH WATER, AND ACTIVATE ALARM AND WATER FLOW CONTACTS FOR AUXILIARY FUNCTIONS.

F. IF THE AC POWER FAILS AND THE BATTERY BACKUP POWER EXPIRES BEFORE AN ALARM IS DETECTED. THE PRE-ACTION SYSTEM SHOULD "FAIL-SAFE" AND FUNCTION AS A DRY PIPE SYSTEM. THE OPENING OF AN AUTOMATIC SPRINKLER OR DAMAGE TO SYSTEM PIPING WILL CAUSE THE SYSTEM TO FILL AND FLOW WATER UNTIL IT IS MANUALLY SHUT-OFF.

FIRE PROTECTION DESIGN CRITERIA

SYMBOL	OCCUPANCY	TYPE	DESIGN DENSITY	HYDRAULIC	MAX. COVERAGE	HOSE S	STREAM	AREAS OF COVERAGE
SYMBOL	OCCUPANCY	TIPE	(GPM/SF)	REMOTE AREA (SF)	PER SPRINKLER HEAD (SF)	INSIDE (GPM)	OUTSIDE (GPM)	AREAS OF COVERAGE
LH	LIGHT HAZARD	WET	0.10	1500	225	100	ı	ENTIRE FACILITY, EXCEPT AS NOTED OTHERWISE
OH-1	ORDINARY HAZARD GROUP 1	WET	0.15	1500	130	100		KITCHEN AREAS MECHANICAL ROOMS, STORAGE ROOMS, ELECTRICAL ROOMS, JANITORS CLOSETS, ETC.
LH	LIGHT HAZARD	PRE- ACTION	0.15	1950	130	100	150	SERVER ROOM 003F

- THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR THE DESIGN OF THE FIRE PROTECTION SYSTEM ON THIS PROJECT:
- NORTH CAROLINA STATE BUILDING CODE - FIRE CODE, 2012 EDITION NFPA 13 — STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS — 2013 EDITION
- NFPA 20 STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS 2013 EDITION NORTH CAROLINA STATE CONSTRUCTION OFFICE - WATER BASED FIRE PROTECTION SYSTEMS GUIDELINES - MARCH 2014
- . FIRE PROTECTION WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE ABOVE PUBLICATIONS AS WELL AS WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION INCLUDING THE NC STATE FIRE MARSHAL.
- . SPRINKLER HEADS SHALL BE SPACED IN ACCORDANCE WITH NFPA 13 AND THE MANUFACTURERS APPROVAL LISTING.
- 3. COORDINATE PIPE ROUTING WITH DUCT ROUTING, EQUIPMENT LOCATIONS, ELECTRICAL INSTALLATIONS, AND BUILDING STRUCTURAL MEMBERS. AVOID PENETRATING ANY MAIN STRUCTURAL BEAM. NOTIFY ARCHITECT OF ANY CONFLICTS.
- . CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HIS OWN FIRE PROTECTION SYSTEM DESIGN AND SHOP DRAWINGS. CONTRACTOR SHALL MEET ALL REQUIREMENTS OF THE DATA LISTED ON THIS SHEET AND THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS.
- 5. SPRINKLERS SHALL BE CENTERED IN CEILING TILES IN AREAS WITH LAY—IN TILES AND VISUALLY ALIGNED IN AREAS WITH SMOOTH CEILINGS. SEE REFLECTED CEILING PLAN FOR PREFERRED LOCATION OF HEADS.
- 6. PROVIDE CONCEALED TYPE SPRINKLER HEADS FOR AREAS WITH LAY-IN CEILINGS AND GYPBOARD CEILINGS. PROVIDE UPRIGHT SPRINKLER HEADS FOR EXPOSED AREAS. COORDINATE COLOR OF CONCEALED SPRINKLER HEAD COVER-PLATE WITH ARCHITECT.
- 7. DURING DESIGN CALCULATIONS, AN ALLOWANCE SHALL BE MADE FOR A 250 GPM (COMBINED INSIDE/OUTSIDE) HOSE STREAM. 8. FIRE PROTECTION CONTRACTOR SHALL TERMINATE THE HYDRAULIC CALCULATIONS AT THE CITY CONNECTION MINIMUM. INDICATE ON DRAWINGS ALL UNDERGROUND PIPE AND FITTINGS BOTH NEW AND EXISTING.

FLOW TEST DATA

								, !
,	DATE	LOCATION	FLOW TEST	PRES	SSURE	FLOW	FLOW AT 20 PSI	
))	DATE	LOCATION	PERFORMED BY	STATIC (PSI)	RESIDUAL (PSI)	(GPM)	(GPM)	
)))		PRESSURE HYDRANT: HYDRANT#158602 ON ALUMNI WAY FLOW HYDRANT: #158603 AT INTERSEC OF SANFORD HALL LN AND ALUMI WAY	AON FIRE PROTECTION ENGINEERING CORP.	40	34	834		

SEE SITE UTILITY PLANS FOR EXACT LOCATION OF FIRE HYDRANTS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A NEW FIRE FLOW TEST ON WHICH TO BASE HIS CALCULATIONS. PER SCO GUIDELINES, HYDRAULIC CALCULATIONS SHALL INCLUDE A SAFETY FACTOR OF 10 PSI LESS FOR BOTH STATIC AND RESIDUAL PRESSURE, AND A 10% REDUCTION IN AVAILABLE FLOW.

PUMP SCHEDULE

$ \{ $	CVII	DECODIDATION	TVDE	C,	APACITY	Е	LECTRIC	AL DAT	A	SELECTION B	ASED ON	REMARKS
}	SYM	DESCRIPTION	TYPE	GPM	HEAD (FT)	HP	VOLTS	PH	HZ	MANUFACTURER	MODEL	REMARKS
$ \{[$	<u>FP1</u>	ELECTRIC FIRE PUMP	VERTICAL IN-LINE	500	104	20	480	3	60	A-C FIRE PUMP	SERIES 1580 4x4x7F	1
 }[<u>JP1</u>	JOCKEY PUMP	IN-LINE	10	300	2	480	3	60	GRUNDFOS	CR3-11	2

PROVIDE SERVICE ENTRANCE RATED WYE DELTA CLOSED FIRE PUMP CONTROLLER WITH SERVICE ENTRANCE RATED AUTOMATIC TRANSFER

PROVIDE JOCKEY PUMP CONTROLLER.

REMARKS:

GROOVED PIPING SYSTEM SPECIFICATIONS

GROOVED PIPING SYSTEM

GROOVED MECHANICAL PIPE COUPLINGS, FITTINGS, VALVES AND OTHER GROOVED COMPONENTS MAY BE USED AS AN OPTION TO WELDING, THREADING OR FLANGED METHODS. ALL GROOVED COMPONENTS SHALL BE OF ONE MANUFACTURER, AND SHALL BE UL LISTED AND/OR FM GLOBAL APPROVED. GROOVED END PRODUCT MANUFACTURER TO BE ISO-9001 CERTIFIED. GROOVED COUPLINGS SHALL MEET THE REQUIREMENTS OF NFPA-13.

PIPE/GROOVED (STANDARD/LIGHTWALL)

CARBON STEEL, A-53B/A-106B - ROLL OR CUT GROOVED-ENDS AS APPROPRIATE TO PIPE MATERIAL, WALL THICKNESS, PRESSURES, SIZE AND METHOD OF JOINING. PIPE ENDS TO BE GROOVED IN ACCORDANCE WITH CURRENT LISTED STANDARDS CONFORMING TO ANSI/AWWA C-606.

MECHANICAL COUPLINGS FOR JOINING CARBON STEEL PIPE

- MECHANICAL COUPLINGS: MANUFACTURED IN TWO SEGMENTS OF CAST DUCTILE IRON, CONFORMING TO ASTM A-536, GRADE 65-45-12. GASKETS SHALL BE PRESSURE-RESPONSIVE SYNTHETIC RUBBER, GRADE TO SUIT THE INTENDED SERVICE, CONFORMING TO ASTM D-2000. MECHANICAL COUPLING BOLTS SHALL BE ZINC PLATED (ASTM B-633) HEAT TREATED CARBON STEEL TRACK HEAD CONFORMING TO PHYSICAL PROPERTIES OF ASTM A-449, MINIMUM TENSILE STRENGTH 110,000 PSI (758450 KPA) AS PROVIDED STANDARD.
- 1) RIGID JOINTS SHALL BE DESIGNED FOR DIRECT "STAB" INSTALLATION ONTO GROOVED PIPE WITHOUT PRIOR DISASSEMBLY OF THE COUPLING. HOUSINGS SHALL BE CAST WITH OFFSETTING,
- ANGLE-PATTERN BOLT PADS. 2) STANDARD RIGID JOINTS SHALL BE CAST WITH OFFSETTING, ANGLE-PATTERN BOLT PADS TO PROVIDE SYSTEM RIGIDITY AND SUPPORT AND HANGING IN ACCORDANCE WITH NFPA 13.
- . MECHANICAL COUPLING GASKETS: PRESSURE—RESPONSIVE, SYNTHETIC RUBBER, LISTED FOR USE WITH THE HOUSINGS. FIRE PROTECTION SERVICE TEMPERATURE RANGE GASKET RECOMMENDATION: DRY SYSTEMS. AMBIENT TEMPERATURE: FLUSHSEAL, GRADE EPDM, TYPE A FREEZER APPLICATIONS -40°F TO 0°F: FLUSHSEAL, GRADE L, SILICONE WATER/WET SYSTEMS AMBIENT
- 3. FLANGE ADAPTERS: FOR USE WITH GROOVED END PIPE AND FITTINGS, FOR MATING TO ANSI CLASS 125 / 150 FLANGES.

GROOVED END FITTINGS

GRADE EPDM, TYPE A.

FITTINGS SHALL BE CAST OF DUCTILE IRON CONFORMING TO ASTM A-536, GRADE 65-45-12, FORGED STEEL CONFORMING TO ASTM A-234, GRADE WPB 0.375" WALL (9,53 MM WALL), OR FABRICATED FROM STD. WT. CARBON STEEL PIPE CONFORMING TO ASTM A-53, TYPE F, E OR S, GRADE B. FITTINGS PROVIDED WITH AN ALKYD ENAMEL FINISH OR HOT DIP GALVANIZED TO ASTM A- 153. ZINC ELECTROPLATED FITTINGS AND COUPLINGS CONFORM TO ASTM B633.

BRANCH OUTLETS

BOLTED BRANCH OUTLET: BRANCH REDUCTIONS ON 2" THROUGH 8" HEADER PIPING. BOLTED BRANCH OUTLETS SHALL BE MANUFACTURED FROM DUCTILE IRON CONFORMING TO ASTM ASTM A-536. GRADE 65-45- 12, WITH SYNTHETIC RUBBER GASKET, AND HEAT TREATED CARBON STEEL ZINC PLATED BOLTS AND NUTS CONFORMING TO PHYSICAL PROPERTIES OF ASTM A-183.

GROOVED END VALVES

1. BUTTERFLY VALVES: UL/FM GLOBAL APPROVED, 300 PSI (2065 KPA), GROOVED ENDS, POLYPHENYLENE SULFIDE (PPS) COATED DUCTILE IRON BODY (ASTM A-536, GRADE 65-45-12). DUCTILE IRON DISC. SYNTHÈTIC RUBBER ENCAPSULATED SUITED FOR THE INTENDED SERVICE. WITH INTEGRALLY CAST STEM. COMPLETE WITH WEATHERPROOF ACTUATOR AND PRE-WIRED SUPERVISORY

NOTE: REFER TO LATEST PUBLISHED VICTAULIC LITERATURE, BUTTERFLY VALVE MATERIAL SELECTION SECTION, FOR LINER/SEAT AND DISC MATERIAL RECOMMENDATIONS FOR CHEMICAL SERVICE.

2. CHECK VALVES: UL/FM GLOBAL APPROVED.

- A. 2-1/2" THROUGH 3" SIZES SPRING ASSISTED: PPS COATED DUCTILE IRON BODY, ASTM A-536, GRADE 65-45-12, ALUMINUM BRONZE NON-SLAM TILTING DISC, STAINLESS STEEL SPRING AND SHAFT, RUBBER SEAT SUITABLE FOR INTENDED SERVICE, 300 PSI (2065 KPA).
- B. 4" THROUGH 14" SIZES SPRING ASSISTED: BLACK ENAMEL COATED DUCTILE IRON BODY, ASTM A-536, GRADE 65-45-12, ELASTOMER ENCAPSULATED DUCTILE IRON DISC SUITABLE FOR INTENDED SERVICE, STAINLESS STEEL SPRING AND SHAFT, WELDED-IN NICKEL SEAT, 300 PSI (2065 KPA). DESIGNED TO ACCEPT A RISER CHECK KIT.
- . ACTUATED SYSTEM VALVE WITH DELUGE OR PREACTION TRIM: BLACK ENAMEL COATED DUCTILE IRON BODY CONFORMING TO ASTM A-536. GRADE 65-45-12. ALUMINUM BRONZE CLAPPER. LATCH AND PISTON, STAINLESS STEEL SPRING AND SHAFT, EPDM SEAL, AND NITRILE SEAT O-RINGS, VALVE INTERNAL PARTS SHALL BE REPLACEABLE WITHOUT REMOVING THE VALVE FROM THE INSTALLED POSITION. VALVE SHALL BE EXTERNALLY RESETTABLE.

SPRINKLER HEADS:

DIE-CAST BRASS FRAME. TEFLON ENCAPSULATED BELLEVILLE SPRING SEAL AND FRANGIBLE GLASS BULB. BODY CAST WITH HEX SHAPED WRENCH BOSS. QUICK OR STANDARD RESPONSE TYPE. 1. GUARDS AND ESCUTCHEONS: GUARDS AND ESCUTCHEONS SHALL BE LISTED, SUPPLIED, AND APPROVED FOR USE WITH THE SPRINKLER BY THE SPRINKLER MANUFACTURER.

FIRE PROTECTION LEGEND

FLOW SWITCH

ELECTRIC BELL

FIRE PROTECTION NOTES

PROVIDE DESIGN. FABRICATION AND INSTALLATION OF A HYDRAULICALLY CALCULATED AUTOMATIC

SPRINKLER SYSTEM. INCLUDE ALL SERVICES, MATERIALS, LABOR AND EQUIPMENT REQUIRED FOR

WITH THE REQUIREMENTS OF THE 2013 EDITION OF NFPA 13, THE OWNER'S INSURANCE

REQUIRED ITEMS AS OUTLINED IN NFPA 13 CHAPTER 22 "PLANS AND CALCULATIONS". SHOP

3. DESIGN AND HYDRAULICALLY CALCULATE THE SPRINKLER SYSTEM UTILIZING THE INFORMATION

4. OBTAIN CURRENT UP-TO-DATE WATER FLOW TEST INFORMATION BEFORE STARTING THE DESIGN.

5. THE INTENT OF THESE PLANS IS TO PROVIDE INFORMATION TO THE REVIEWING AUTHORITIES THAT

INCLUDED WITH THIS SET OF PLANS IS PROVIDED FOR COORDINATION AND AS A REFERENCE

MATERIALS DATA AND HYDRAULIC CALCULATIONS TO THE A/E FOR REVIEW. <u>EACH SET OF</u>
PRINTS AND CALCULATIONS SUBMITTED SHALL BEAR APPROVAL STAMPS FROM THE LOCAL FIRE
MARSHAL OR FIRE BUREAU CHIEF; THE OWNERS INSURANCE CARRIER REVIEW BOARD AND IF

EXAMINE THE CONSTRUCTION DOCUMENTS, INCLUDING ANY SPECIFICATIONS OR PROJECT MANUALS.

REVIEW THE JOB CONDITIONS AND VERIFY ALL MEASUREMENTS, DISTANCES, ELEVATIONS,

CLEARANCES, PIPE SIZES, ETC. PRIOR TO THE START OF CONSTRUCTION. COORDINATE THE LOCATION OF SPRINKLERS WITH THE ARCHITECTURAL PLANS. ANY CHANGES OR ALTERATIONS

REQUIRED DUE TO LACK OF COORDINATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

WHICH CLEARLY SHOW ANY CHANGES AND/OR MODIFICATIONS, ADDITIONS OR DELETIONS TO AND

FROM THE CONSTRUCTION DOCUMENTS. AND ALL WORK ADDED TO THE CONTRACT DOCUMENTS.

8. AT THE COMPLETION OF THE PROJECT, PROVIDE TO THE OWNER TWO SETS OF RECORD DRAWINGS

THE SETS SHALL BE REVIEWED BY THE A/E BEFORE TURNING THEM OVER TO THE OWNER.

REQUIRED BY BUILDING CODES WHETHER OR NOT SHOWN ON THE PLANS.

EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

UL-LISTED ANCHORS. POWER DRIVEN ANCHORS SHALL NOT BE USED.

THE FIRE PROTECTION SYSTEMS ON THIS PROJECT.

9. PROVIDE ALL NECESSARY OFFSETS, RISES OR DROPS IN THE PIPING AND AUXILIARY DRAINS AS

10. PROVIDE RECORD DRAWINGS WHICH CLEARLY SHOW ALL UNDERGROUND PIPING DIMENSIONED FROM

1. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE AMOUNT OF TIME SPECIFIED

IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM

ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE

12. MAINTAIN THE CLREAR PATH OF EGRESS IN ALL STAIRWELLS WHEN INSTALLING STANDPIPES AND

SEE "GROOVED PIPE SYSTEM" SPECIFICATIONS ON THSI SHEET FOR SYSTEM COMPONENTS FOR

PIPE HANGERS: UL-LISTED SWIVEL LOOP TYPE WITH PRE-GALVANIZED CARBON STEEL BAND,

ESCUTCHEON PLATES: PROVIDE CHROME PLATED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH FINISHED WALLS, FLOORS, OR CEILING. PROVIDE PRIME COAT PAINTED ESCUTCHEON

PLATES WHEREVER PIPES PASS THROUGH THE WALLS, FLOORS, OR CEILINGS IN UNFINISHED

TESTING AND FLUSHING: OVERHEAD SPRINKLER PIPING: TESTED FOR A PERIOD OF TWO HOURS AT A HYDROSTATIC PRESSURE OF 200 LBS. AND ALL PIPING, VALVES, HEADS,ETC. SHALL BE

HANGER RODS SIZED PER NFPA 13. UL-LISTED STEEL OR MALLEABLE IRON BEAM CLAMPS.

FIRE HOSE VALVES. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS, DIMENSIONS AND

LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND

INSTALLATION WITH THE A/E AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP,

ANY PERMANENT STRUCTURE, AND ALL WORK ADDED TO THE CONTRACT DOCUMENTS.

ONLY, AND SHALL NOT BE CONSIDERED AN ACTUAL DESIGN OR CONSTRUCTION DOCUMENT.

6. PRIOR TO THE START OF CONSTRUCTION, SUBMIT EIGHT (8) SETS OF SPRINKLER PLANS.

THE BUILDING WILL BE PROTECTED BY A SPRINKLER SYSTEM. SPRINKLER SYSTEM LAYOUT

ON THESE PLANS DOES NOT WAIVE THE CONTRACTOR'S RESPONSIBILITY TO MEET THIS

2. PROVIDE SHOP DRAWINGS FOR REVIEW BY THE A/E. INCLUDING BUT NOT LIMITED TO ALL

(UNDERWRITER AND THE LOCAL AUTHORITIES HAVING JURISDICTION.

NAME, SIGNATURE AND CERTIFICATE NUMBER.

REQUIRED, THE STATE FIRE MARSHAL.

REQUIRED CLEARANCES.

MATERIALS:

A COMPLETE WORKING SYSTEM. DESIGN, AND INSTALL SPRINKLER SYSTEM IN FULL COMPLIANCE

DRAWINGS MUST BE PREPARED BY A NICET LEVEL III TECHNICIAN (MINIMUM), INCLUDE DESIGNERS

INCLUDED HEREON. MEET ALL NFPA 13 STANDARDS WHETHER OR NOT SPECIFICALLY INDICATED

WATER FLOW TEST DATA <u>OLDER THAN 1 YEAR</u> WILL NOT BE ACCEPTED. FLOW TEST DATA NOTED

FIRE MAIN (ABOVE CEILING)

SPRINKLER MAIN OR BRANCH

FIRE SERVICE MAIN (UNDERGROUND)

FLOOR CONTROL VALVE WITH TAMPER SWITCH

FLUSH MOUNTED FIRE DEPT. CONNECTION

DESCRIPTION

ABBREVIATION

UGM

SYMBOL

____SP____

—_F

GENERAL REQUIREMENTS:

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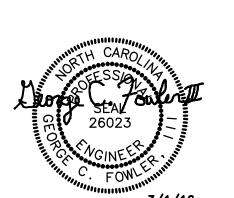
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UNC Charlotte RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM 1	3/16/16
2	ADDENDUM 2	3/22/16

Project: Drawn By: DAR

Checked By: DAR March 1st, 2016 Date:

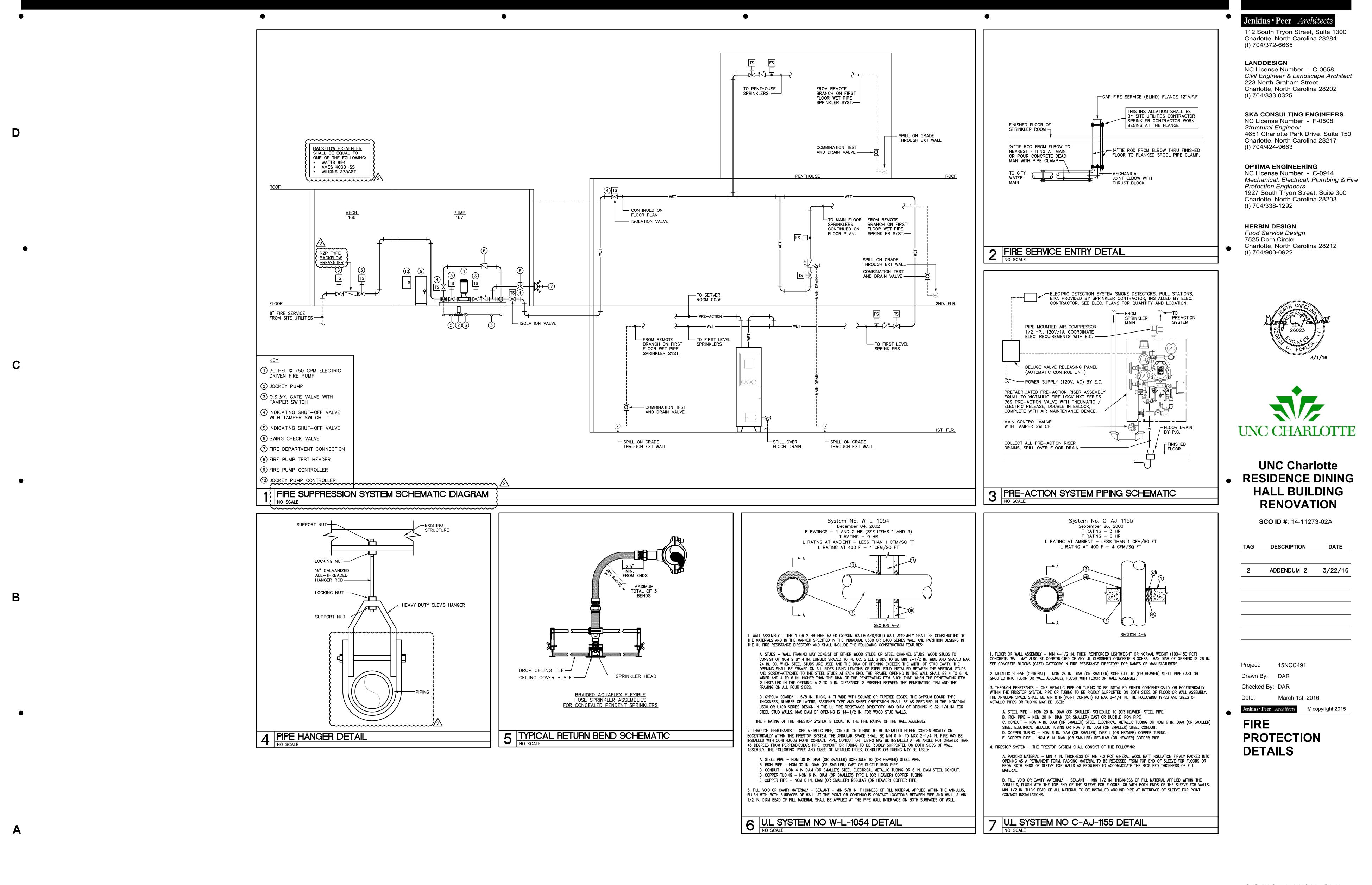
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FIRE PROTECTION LEGEND NOTES AND SPECIFICATIONS

CONSTRUCTION **DOCUMENTS**

• FP-001

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CONSTRUCTION DOCUMENTS

• FP-002

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2 OF 5 OPTIMA #: 15-0133

Jenkins • Peer Architects (t) 704/372-6665 LANDDESIGN 223 North Graham Street (t) 704/333.0325 SPLASH ONTO ROOF. PROVIDE SPLASHBLOCK — LIGHT HAZARD LIGHT HAZARD Structural Engineer (t) 704/424-9663 FROM MOST S) ← SMOKE DETECTOR BRANCH LINE -**OPTIMA ENGINEERING** ADMIN TMA ASSOC DIR ADMIN ASST DIR PROVIDE CLEAN AGENT PROVIDE CLEAN AGENT
PROTECTION AS PRIMARY
FIRE PROTECTION SYSTEM
FOR SERVER ROOM. 003C 003A 003E COMBINATION (A) ← ABORT Protection Engineers TEST AND DRAIN VALVE -1927 South Tryon Street, Suite 300 TO CLEAN AGENT M - MANUAL Charlotte, North Carolina 28203 DISCHARGE NOZZLES RELEASE ALARM (HORN IN SERVER ROOM (t) 704/338-1292 office suite AND STROBE) -TO SERVER ROOM PRE—ACTION SPRINKELR
SYSTEM. PROVIDE LIGHT HAZARD DENSITY IN DESIGN **HERBIN DESIGN** ADMIN SUP 2 Food Service Design 7525 Dorn Circle ADMIN RMS Charlotte, North Carolina 28212 ADMIN DATA (t) 704/900-0922 003D · — · — · — · ADMIN · SUP 3 002W3 PROVIDE SIDE WALL
SPRINKLER AT THE BOTTOM
OF THE ELEVATOR HOISTWAY ADMIN SERV OFFICE NOT MORE THAN 2 FT ABOVE 003H THE BOTTOM OF THE PIT. 003J OFFICE SUITE STUD ASST 002W4 ADMIN HE CONF RM DESK 004 STAIR 1 STR1 003K CORRIDOR NOTE:
PROVIDE INTEGRATED PRE—ACTION AND
CLEAN AGENT SYSTEM CONTROLS (ONE
CONTROL PANEL). INTERLOCK CONTROL
PANEL WITH CENTRAL FIRE ALARM SYSTEM.
SEE ELECTRICAL DRAWINGS. COORDINATE
WITH ELECTRICAL CONTRACTOR. ADMIN HE ASST DIR 005 j 006 ASST DIR **UNC Charlotte** — <u>PRE-ACTION SYSTEM</u> VALVE AND TRIM IN PRE-ASSEMBLED CABINET FROM LOWER LEVEL
WET PIPE SPRINKLER
SYSTEM SUPPLY MAIN ORDINARY HAZARD GROUP 1 D **SCO ID #**: 14-11273-02A CLEAN AGENT CYLINDER —— PRE-ACTION AND
CLEAN AGENT SYSTEM
CONTROL PANEL DESCRIPTION STORAGE **FIRE** MECH. **PROTECTION** FIRST LEVEL ELECT. BREAK RIM **PLAN NEW WORK** FIRE PROTECTION FIRST LEVEL - NEW WORK RATED WALL LEGEND — · — · — 1 HOUR FIRE BARRIER **DOCUMENTS** REFER TO ARCHITECTURAL DRAWINGS FOR COMPLETE WALL CONSTRUCTION AND RATING INFORMATION. -32 • FP-101

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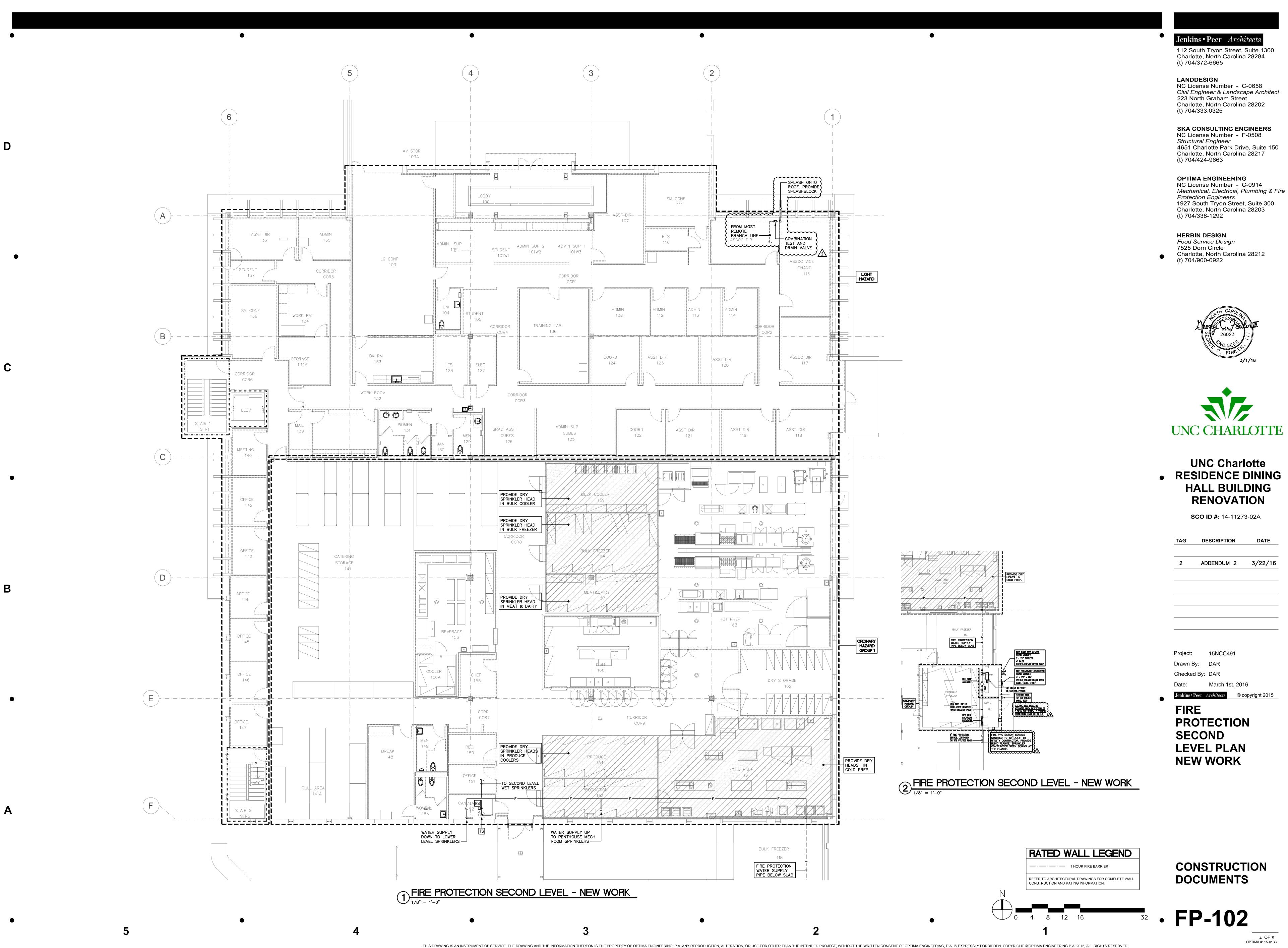


• RESIDENCE DINING HALL BUILDING RENOVATION

ADDENDUM 2 3/22/16

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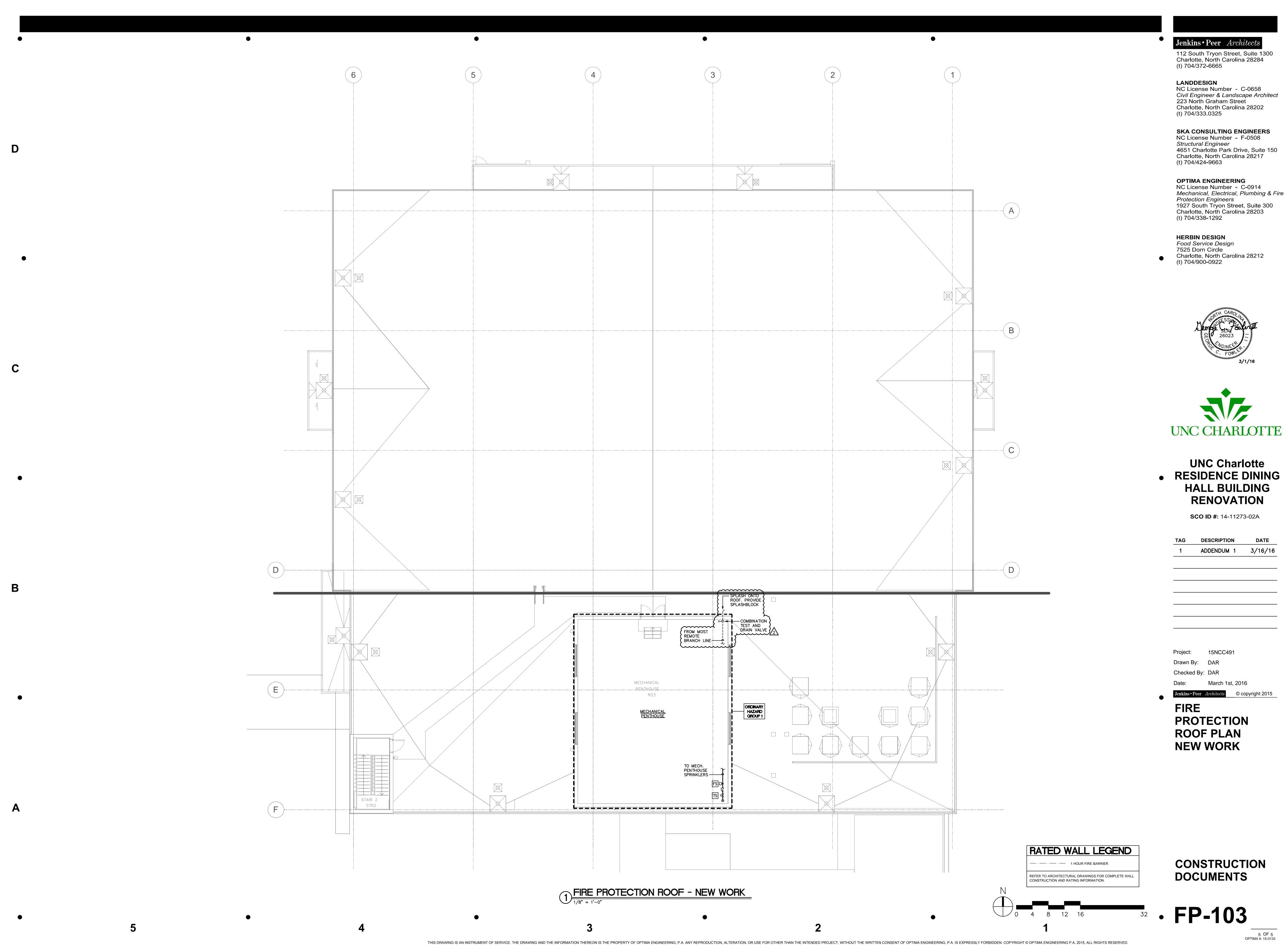
4651 Charlotte Park Drive, Suite 150

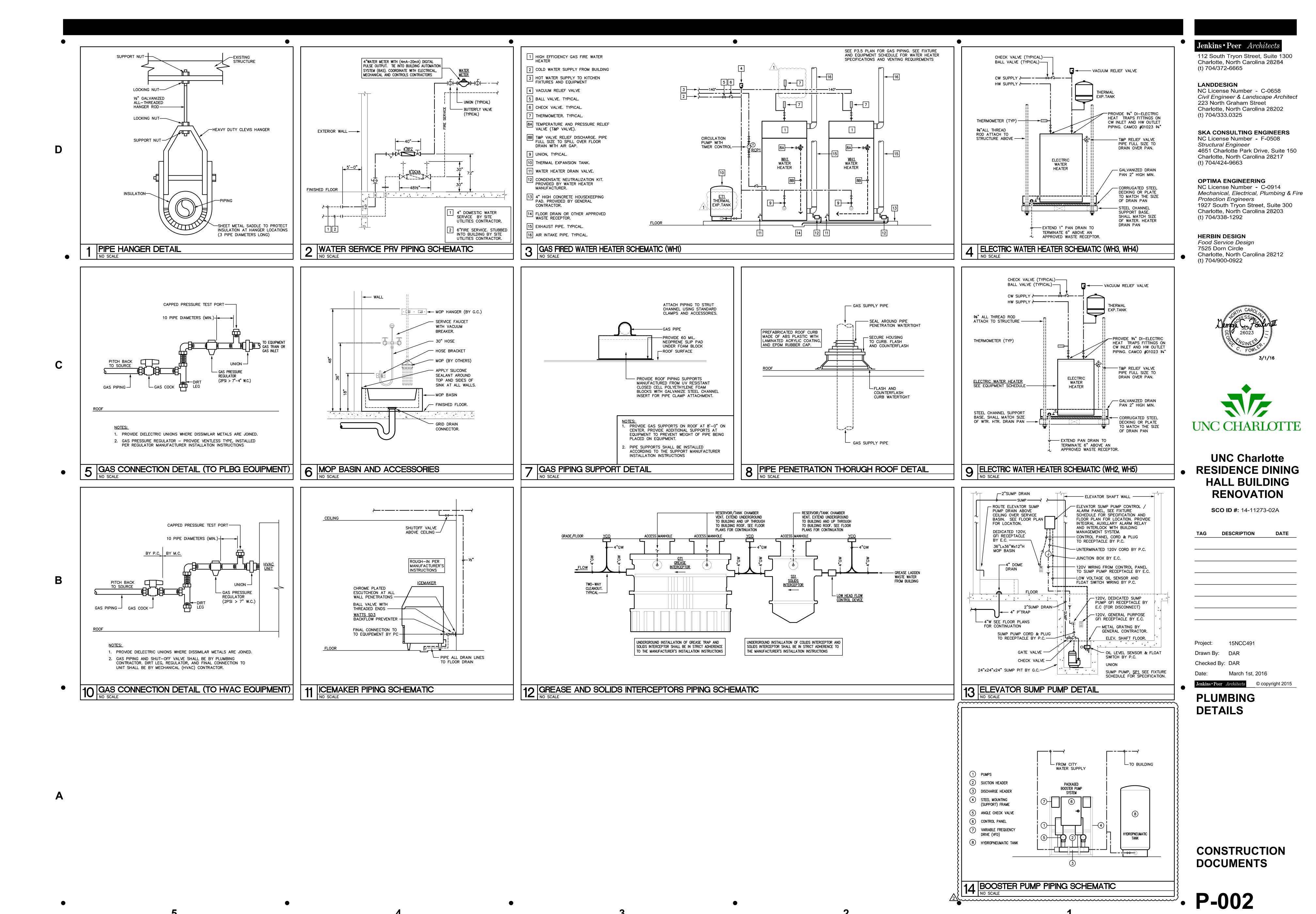
Mechanical, Electrical, Plumbing & Fire



• RESIDENCE DINING HALL BUILDING

ADDENDUM 2 3/22/16





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2 OF 22 OPTIMA #: 15-0133

		FOOD SERVICE	PLU	MBIN	G COI	NNEC	COUNTS	SCHED	ULE
		THIS SCHEDULE IS PROVIDE FOR REFERENCE O	NLY. REFER	TO FOOD S	ERVICE DRAW	NGS FOR A	CTUAL CONN	ECTION SIZES AND	REQUIREMENTS.
ITEM IUMBER	QTY	DESCRIPTION	HOT WATER SIZE	COLD WATER SIZE	INDIRECT Waste	DIRECT WASTE	SIZE	GAS INPUT	REMARKS
8	3	1-COMPARTMENT PREP SINK	SIZL	SIZL	1 3/4"	0"	SIZL	1141 01	NEMANNS
8A	3	8IN FAUCET WITH 12IN SWING NOZZLE	1/2"	1/2"	1 3/4	- 0			
9	2	ICE MAKER, WATER-COOLED	1/2	1/2"	0"	1/2"			
9B	1	ICE MAKER, AIR-COOLED		1/2"	0"	1/2"			
15	1	SOILED DISHTABLE		1/2	1 3/4"	0"			
17	2				1 3/4	0			
18	1	PRE-RINSE UNIT W/BRACKET DISPOSER		1/2"		2"			
19	1	DISHWASHER WITH DRYER	1/2"	1/2	2"	2			MAY BE DRAINED TO EITHER SIDE OF
		Joseph Marie Street	., _						T-DRAIN VALVE. PLUG OPPOSITE SID
23	1	POT AND PAN WASHER	3/4"		1 1/2"				UNIT COMES WITH 4'-7" HOSES
26	1	3 COMPARTMENT POT SINK	1/2"	1/2"	1 1/2"	0"			
26A	2	8IN FAUCET WITH 12IN SWING NOZZLE	1/2"	1/2"					
31	4	HAND SINK W/SIDE SPLASHES & KNEE VALVE	1/2"	1/2"		2"			
31A	3	HAND SINK FLOOR MOUNT	1/2"	1/2"	1"	1"			
32A	1	8IN FAUCET WITH 12IN SWING NOZZLE	1/2"	1/2"					
36	1	CONVECTION STEAMER		1/2"	1 1/2"		1"	300000.0 Btu/h	
36A	1	CONVECTION STEAMER		1/2"	1 1/2"		1"	300000.0 Btu/h	
38	6	FLOOR TROUGH, ANTI-SPILL				3"			
39A	1	40-GAL. KETTLE	1/2"	1/2"			3/4"	140000.0 Btu/h	
39B	1	40-GAL. KETTLE	1/2"	1/2"			3/4"	140000.0 Btu/h	
40	1	TILTING SKILLET	1/2"	1/2"	1 1/2"		3/4"	200000.0 Btu/h	
40A	1	TILTING SKILLET	1/2"	1/2"	1 1/2"		3/4"	125000.0 Btu/h	
41	1	2-COMPARTMENT PREP SINK			1 3/4"	0"			
41A	1	8IN FAUCET WITH 12IN SWING NOZZLE	1/2"	1/2"					
46	4	PREP TABLE W/SINK			1"				
46A	4	8" DECK FAUCET WITH 10" SWING SPOUT							
52	2	48" OPEN BURNER RANGE					1"	306000.0 Btu/h	GAS CONNECTION 6"+/-1"FROM RIGHT SIDE
53	2	FRYER BATTERY OF 2 W/FILTER					1"	217500.0 Btu/h	
55	2	COMBI OVEN-STEAMER		3/4"	1 1/2"		3/4"	98000.0 Btu/h	
55A	1	COMBI OVEN-STEAMER		3/4"	1 1/2"		3/4"	266000.0 Btu/h	
63	11	FLOOR TROUGH, ANTI-SPILL				2"			
66	4	OVEN, ROLL-IN BAKE		3/4"	2"				
67	1	OIL STORAGE TANK				_			3" DRAIN CONNECTION FOR GREASE TRUCK HOSE QUICK CONNECT

KITCHEN EQUIPMENT AND FAUCETS SHALL BE PROVIDED BY THE FOOD

2. PLUMBING CONTRACTOR AND FOOD SERVICE EQUIPMENT SUPPLIER SHALL

SERVICE EQUIPMENT SUPPLIER AND FINAL CONNECTIONS SHALL BE MADE BY

THE PLUMBING CONTRACTOR.

	SHOCK ARRESTOR TABLE												
DRAWING SYMBOL	FIXTURE UNITS	PDI WH201 STANDARD DESIGNATION	ARRESTOR SIZE	APPROVED MANUFACTURERS									
SA-A	1–11	Α	1/2"	- SIOUX CHIEF - WATTS									
SA-B	12-32	В	3/4"	- WATTS - PPP INC.									
SA-C	33-60	С	1"										
SA-D	61–113	D	11⁄4"	REMARKS									
SA-E	114–154	E	11⁄2"	INSTALL SHOCK ARRESTORS									
<u>SA-F</u>	155-330	F	2"	PER PDI WH201 GUIDELINES									

COORDINATE INSTALLATION OF KITCHEN EQUIPMENT.

WATER HEATER SCHEDULE											
STORAGE GAS BURNER DATA	FLUE	SELECTION B	BASED ON								
SYM. DESCRIPTION (GALLONS) INLET PRESS. BTU/HR GPH RECO			MODEL	REMARKS							
WH1 GAS FIRED WATER HEATER 100 8 199,900 230	30 4" CPVC	A.O. SMITH	BTH-100	1,2,3,4,5,6,7							

1. EQUIVALENT MANUFACTURERS: A.O. SMITH, BRADFORD WHITE.
2. ELECTRICAL REQUIREMENTS: 120V, 15 AMP BREAKER
3. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF

PROVIDE HEATER WITH ACID NEUTRALIZATION KIT FOR CONDENSATE.

5. INSTALL DIRECT VENT PIPING WITH CONCENTRIC VENT SIDEWALL OUTLET PER MANUFACTURERS DIRECTIONS. CPVC PIPING OR STAINLESS STEEL SHALL BE USED FOR VENT PIPING MATERIAL, 5. SET WATER HEATER TEMPERATURE AT 140°F
7. CARBON MONOXIDE DETECTOR IN ADJACENT TO GAS FIRED EQUIPMENT PROVIDE BY MECHANICAL CONTRACTOR.

	W.A	TER	HEATE	≣R	SC	HE	DU	ILE		
		STORAGE	GPH RECOVERY	Е	LECTRIC	AL DAT	Ā	SELECTION B	ASED ON	
SYM.	DESCRIPTION	(GALLONS)		KW	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL	REMARKS
<u>WH2</u>	ELECTRIC WATER HEATER	6	8	1.5	277	1	60	A.O. SMITH	DEL-6	1,2,3,4
<u>WH3</u>	ELECTRIC WATER HEATER	20	15	3.0	277	1	60	A.O. SMITH	DEL-20	1,2,3,4
<u>WH4</u>	ELECTRIC WATER HEATER	20	15	3.0	277	1	60	A.O. SMITH	DEL-20	1,2,3,4
<u>WH5</u>	ELECTRIC WATER HEATER	6	8	1.5	277	1	60	A.O. SMITH	DEL-6	1,2,3,4
REMARKS	<u>:</u>									

EQUIVALENT MANUFACTURERS: A.O. SMITH, LOCHINVAR,

 COORDINATE ELECTRICAL DISCONNECT REQUIREMENTS WITH E.C.
 WATER HEATER TEMPERATURE SETTING 120°F BRADFORD-WHITE.

WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF

	EXP	ANSIC	IAT NO	VK S	CHEDULE		
6)44	DECODIDATION	VOLUME	DIAMETER	HEIGHT	SELECTION	BASED ON	DEMARKO
SYM.	DESCRIPTION	(GALLONS)	(INCHES)	(INCHES)	MANUFACTURER	MODEL	REMARKS
<u>ET1</u>	BLADDER TYPE EXPANSION TANK	10.3	15"	19"	AMTROL	ST-25V	1
<u>ET2</u>	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1
<u>ET3</u>	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1
<u>ET4</u>	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1
<u>ET5</u>	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1
					•		

REMARKS:

. EQUIVALENT MANUFACTURERS: AMTROL, BELL & GOSSETT, WESSELS COMPANY.

		Pl	<u>JM</u>	P SC	HE	D	<u>JLE</u>					
SYM	DESCRIPTION	TYPE	C	APACITY	El	LECTRIC	AL DAT	Ā	SELECTION B	ASED ON	REMARKS	
SIM	DESCRIPTION	1176	GPM	HEAD (FT)	HP	VOLTS	PH	HZ	MANUFACTURER	MODEL	NEWAKKS	1
RCP1	HW RECIRC PUMP - 140°	IN-LINE	7	20	1/12	120	1	60	BELL & GOSSETT	PL-30	1,2,3	}
SP1	ELEVATOR SUMP PUMP	SUBMERSIBLE	50	20	1/2	120	1	60	LITTLE GIANT	14EH-CIM	4,5,6,7	}
<u>BP1</u>	DUPLEX VARIABLE SPEED WATER BOOSTER PACKAGE	END SUCTION	100 EACH	50	3 HP EACH	480	3	60	HY-FAB	MVP-630	8	

EQUIVALENT MANUFACTURERS: <u>LITTLE GIANT, GRUNDFOS, TACO</u>
 PUMP SHALL BE ALL BRONZE CONSTRUCTION.
 PUMP SHALL BE CONTROLLED BY MEANS OF BOTH AN AQUASTAT AND TIMER. COORDINATE ELECTRICAL DISCONNECT WITH E.C.
 PROVIDE BACKWATER CHECK VALVE AND SHUT-OFF VALVE ON DISCHARGE LINE.

DISCHARGE LINE.

5. PROVIDE PUMP WITH PLUG AND CORD.

6. PROVIDE OIL DETECTION SYSTEM, CONTROL PANEL WITH REMOTE AUDIBLE AND VISUAL ALARMS. OIL DETECTION SYSTEM SHALL BE EQUAL TO ALDERON IND. 7162 WITH AUXILIARY ALARM RELAY. 7. EQUIVALENT MANUFACTURERS: OIL MINDER, WEIL.

8. PROVIDE BOOSTER PUMP PACKAGE WITH 40 GALLON HYDRO-PNEUMATIC TANK.

	INT	ERC	EF	TOF	SC	HEDULI	=		
		INLET/	FLOW	CAPA	CITY	SELECTION	BASED ON		
SYM.	DESCRIPTION	OUTLET SIZE	RATE (GPM)	WATER (GALLONS)	GREASE (POUNDS)	MANUFACTURER	MODEL	REMARKS	<u></u>
<u>GT1</u>	GREASE INTERCEPTOR	4	150	274	248	THERMACO	TZ-1826	1,2,3,4	
<u>SS1</u>	SOLIDS INTERCEPTOR	4	150	_	ı	THERMACO	TSS-95-ECA	1,2,3,4	
2. EQUI' 3. PRO\	S: GREASE INTERCEPTOR BASIS OF DESIGN VALENT MANUFACTURERS: <u>THERMACO</u> , VIDE EXTENSION RING(S) AS REQUIRED BE FLUSH GRADE.	PROCEP [*]	TOR, SC	HIER	INTERCE MANUF	EPTORS SHALL BE ACTURER'S INSTALL	ION OF SOLIDS INTE IN AS DIRECTED B' ATION INSTRUCTION SURROUNDINGS IF	Y THE IS, PROVIDE SU	

	MIXING VALVE SCHEDULE									
SYM.	DESCRIPTION	MAXIMUM	MINIMUM	PRESSURE	LEAVING WATER	SELECTION	ON BASED ON	REMARKS		
51M.	DESCRIP HON	GPM	GPM	LOSS	TEMP. (°F)	MANUFACTURER	MODEL	REMARKS		
MXV1	THERMOSTATIC MIXING VALVE	1.0	0.25	_	110	LEONARD	170-LF	1,2,3		
		•	•		•	_		_		

1. EQUIVALENT MANUFACTURERS: <u>LEONARD VALVE</u>, <u>LAWLER</u>, <u>POWERS</u> 3. PROVIDE <u>MXV1</u> AT ALL LAVATORIES AND HANDSINKS LOCATED IN CATERING SPACE.

	PLUMBING FIX					IND EQUILIVIENT SCI	
SYM.	DESCRIPTION	CON	NECT V	ONS	<u></u>	SPECIFICATION	REMARKS
<u>P1</u>	WATER CLOSET, HET, ELONGATED BOWL WALL HUNG FLUSH VALVE, 1.28 GPF	4"	2"	11/4"	-	FIXTURE: AMERICAN STD. 3351.101 "AFWALL" SEAT: CHURCH 9500CT FLUSH VALVE: SLOAN ROYAL 111-1.28 SMO MATERIAL: VITREOUS CHINA COLOR: WHITE CARRIER: JAY R. SMITH 0210-0220 SERIES	SEAT HEIGHT 15" AFF
P1A	WATER CLOSET, HET, ADA COMPLIANT ELONGATED BOWL WALL HUNG FLUSH VALVE, 1.28 GPF	4"	2"	11/4"	_	FIXTURE: AMERICAN STD. 3351.101 "AFWALL" SEAT: CHURCH 9500CT FLUSH VALVE: SLOAN ROYAL 111-1.28 SMO MATERIAL: VITREOUS CHINA COLOR: WHITE CARRIER: JAY R. SMITH 0210-0220 SERIES	SEAT HEIGHT 17"-19" AFF PROVIDE FLUSH VALVE LEVER ON WIDE SIDE OF STALL.
<u>P2</u>	URINAL, HEU WALL MOUNTED FLUSH VALVE, 0.125 GPF	2"	11/2"	3/4"	-	FIXTURE: AMERICAN STD. 6590.001 "WASHBROOK" FLUSH VALVE: SLOAN ROYAL 186-0.126 SMO COLOR: WHITE MATERIAL: VITREOUS CHINA CARRIER: JAY R. SMITH 0615 SERIES	FIXTURE LIP HEIGHT 24" AFF
P2A	URINAL, HEU ADA COMPLIANT WALL MOUNTED FLUSH VALVE, 0.125 GPF	2"	11/2"	3/4"	-	FIXTURE: AMERICAN STD. 6590.001 "WASHBROOK" FLUSH VALVE: SLOAN ROYAL 186-0.126 SMO COLOR: WHITE MATERIAL: VITREOUS CHINA CARRIER: JAY R. SMITH 0615 SERIES	FIXTURE LIP HEIGHT 17" AFF
<u>P3A</u>	LAVATORY ADA COMPLIANT 20½" x 21¼" WALL HUNG WITH SHROUD 0.5 GPM BATTERY OPERATED SENSOR FAUCET	2"	11/2"	1/2"	1/2"	FIXTURE: AMERICAN STD. 0954.004EC "MURRO" FIXTURE SHROUD: AMERICAN STD. 0059.020EC GRID DRAIN: MCGUIRE 155A GRID STRAINER FAUCET: SLOAN EAF-750 P-TRAP: MCGUIRE 8902 11/4" x 11/2" STOPS: MCGUIRE 175-LK	SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT.
<u>P3B</u>	LAVATORY ADA. COMPLIANT 21¼" x 15¼" UNDERMOUNTED 0.5 GPM BATTERY OPERATED SENSOR FAUCET	2"	11/2"	1/2"	1/2"	FIXTURE: AMERICAN STD. 0614.000 "STUDIO" GRID DRAIN: MCGUIRE 155A GRID STRAINER FAUCET: <u>SLOAN EAF-750</u> P-TRAP: MCGUIRE 8902 11/4" x 11/2" STOPS: MCGUIRE 175-LK	SEE NOTE 1 BELOW. SEE ARCHITECTURAL PLAN FOR MOUNTING HEIGHT. PROVIDE 0.5 GPM AERATO
<u>P4A</u>	WATER COOLER (FILTERED) ADA COMPLIANT WITH BOTTLE FILLER HIGH/LOW DOUBLE BOWL VINYL CLAD STEEL FINISH WALL MOUNTED	2"	11/2"	1/2"	_	FIXTURE: ELKAY LZSTL8WSL2K P-TRAP: MCGUIRE 8902 11/4" x 11/2" STOPS: MCGUIRE 175 ELECTRICAL: 370 WATTS, 115V, 10	SEE ARCHITECTURAL PLAN FOR MOUNTING HEIGHT.
<u>P5A</u>	S.S. SINK ADA COMPLIANT 33"L × 22"W × 6.0"D, DOUBLE BOWL 18 GAUGE STAINLESS STEEL SELF RIMMING, COUNTER MOUNTED FAUCET WITH 1.5 GPM AERATOR	2"	11/2"	1/2"	1/2"	FIXTURE: ELKAY LRAD332260 FAUCET: MOEN 8701 (9"SWING SPOUT) STRAINER: MCGUIRE 151 (BASKET) P-TRAP: MCGUIRE B8912 (1½"x1½") STOPS: MCGUIRE 175-LK	SEE NOTE 1 BELOW. PROVIDE WATER AND WASTE CONNECTIONS FOR ADJACENT DISHWASHER.
<u>P7</u>	MOP SINK, TERRAZZO 28"L × 28L" × 12"D WITH DROP FRONT AND STANILESS STEEL THRESHOLD CAP	3"	11/2"	3/4"	3/4"	BASIN: FIAT TSBCR-1100 DRAIN: FIAT 1453-BB FAUCET: FIAT 830-AA ACCESSORIES: 832-AA HOSE & BRACKET ACCESSORIES: 889-CC MOP HANGER	
<u>P8</u>	CAN WASH, TERRAZZO 36"L x 36"W x 12"D WITH DROP FRONT AND STAINLESS STEEL THRESHOLD CAP	3"	1½"	1/2"	1/2"	BASIN: FIAT FAUCET: FIAT 830-AA DRAIN: 3" STAINLESS STEEL SLOTTED P-TRAP: 3" CAST IRON, DEEP SEAL	
<u>SA-</u>	SHOCK ARRESTOR SIZES A THRU F SEE FLOOR PLAN FOR SIZE	_	_	SEE DWG	-	EQUIPMENT: SIOUX CHIEF 650 SERIES SEE SHOCK ARRESTOR TABLE THIS SHEET	PROVIDE ACCESS DOOR F
CS- HB1	CIRCUIT SETTER, SIZES ½" THRU 2" SEE FLOOR PLAN FOR SIZE WALL HYDRANT, EXTERIOR, EXPOSED NON-FREEZE, AUTOMATIC DRAINING, VACUUM BREAKER		-	SEE DWG 3/4"	-	EQUIPMENT: CIRCUIT SOLVER CS SERIES 110 DEGREE MODEL, NSF 61 CERTIFIED EQUIPMENT: WOODFORD 65EP LOOSE KEY	PROVIDE ACCESS DOOR F CONCEALED INSTALLATION MOUNT 18" AFF.
HB2	HOSE BIBB, INTERIOR, EXPOSED, AUTOMATIC DRAINING, ANTI—SIPHON VACUUM BREAKER	-	_	3/4"	_	EQUIPMENT: WOODFORD 24 WHEEL HANDLE	MOUNT 24" AFF.
	ROOFTOP HYDRANT NON-FREEZE, AUTOMATIC DRAINING, VACUUM BREAKER	-	-	1"	-	EQUIPMENT: MAPA MPH-24FP: 24/9 FINISH: STAINLESS STEEL	
FCO	FLOOR CLEANOUT CAST IRON BODY ADJUSTABLE TOP	SEE DWG	_	_	-	CLEANOUT: JAY R. SMITH 4020 SERIES OUTLET: NO-HUB PLUG: ABS, IRON OR BRONZE WITH GASKET SEAL COVER: ROUND, NICKEL BRONZE	
<u>WCO</u>	WALL CLEANOUT CAST IRON CLEANOUT TEE COUNTERSUNK PLUG STAINLESS STEEL ACCESS COVER	SEE DWG	_	_	ı	CLEANOUT: JAY R. SMITH <u>4530Y</u> SERIES OUTLET: NO—HUB, BOTH ENDS PLUG: IRON OR BRONZE PLUG WITH GASKET SEAL	
YCO	YARD CLEANOUT ADJUSTABLE, CAST IRON BODY, COATED CAST IRON TOP	SEE DWG		1	١	CLEANOUT: JAY R. SMITH 4050 SERIES OUTLET: NO—HUB PLUG: ABS, GASKET SEAL COVER: CAST IRON, HEAVY DUTY	SET IN CONCRETE PAD 18"W x 18"L x 6"THICK
<u>CO</u>	END OF LINE PLUG CLEANOUT CAST IRON TAPERED FERRULE CAST BRONZE THREADED PLUB	-	_	1	1	CLEANOUT: JAY R. SMITH 4422 (LESS COVER)	
FD1	FLOOR DRAIN CAST IRON BODY ADJUSTABLE TOP	SEE DWG	-	-	-	DRAIN: JAY R. SMITH 2005 SERIES STRAINER: 6" DIAMETER, TYPE A, NICKEL BRONZE P-TRAP: DEEP SEAL (MATCH DRAIN SIZE)	SEE NOTE 2 BELOW
FD2	FLOOR DRAIN CAST IRON BODY ADJUSTABLE TOP	SEE DWG	-	-	-	DRAIN: JAY R. SMITH 2005 SERIES STRAINER: 7" DIA, TYPE -F37, NICKEL BRONZE P-TRAP: DEEP SEAL (MATCH DRAIN SIZE)	SEE NOTE 2 BELOW
FD3	FLOOR DRAIN CAST IRON BODY SEDIMENT BUCKET CAST IRON COVER	SEE DWG	_	-	_	DRAIN: JAY R. SMITH 2110 STRAINER: 8" DIAMETER, SLOTTED, CAST IRON P-TRAP: DEEP SEAL (MATCH DRAIN SIZE)	SEE NOTE 2 BELOW
	FLOOR SINK 12" x 12" x 6" STAINLESS STEEL BODY AND GRATE	SEE DWG	-	-	-	DRAIN: JAY R. SMITH STRAINER: 12"x12" STAINLESS STEEL (TYPE 304) P-TRAP: DEEP SEAL (MATCH DRAIN SIZE)	SEE KITCHEN EQUIP. PLAN FOR GRATE CONFIGURATIO (QUARTER, HALF, FULL)
	PRIMARY ROOF DRAIN CAST IRON BODY, SUMP RECEIVER GRAVEL STOP AND ALUMINUM DOME	SEE DWG		_	_	DRAIN: JAY R. SMITH WITH DECK PLATE AND ADJUSTABLE EXTENTION	SEE PLANS FOR SIZE
RD2	SECONDARY ROOF DRAIN	SEE DWG		_	_	DRAIN: JAY R. SMITH WITH DECK PLATE, ADJUSTABLE EXTENTION, AND 4" HIGH WATER DAM	SET WATER DAM ELEVATION 3" ABOVE THE ADJACENT FINISHED ROOF ELEVATION
<u>DN1</u>	DOWNSPOUT NOZZLE CAST BRONZE BODY CAST BRONZE FLANGE	SEE DWG		-	_	NOZZLE: JAY R. SMITH 1770 SERIES	MOUNT 18" ABOVE FINISHI GRADE. PROVIDE WITH BIR SCREEN OPTION.
<u> </u>	BACKFLOW PREVENTER STAINLESS STEEL UL/FM BUTTERFLY VALVES	مما		4"^		EQUIPMENT: AMES C400-BFG	
	_, = - : = - :	1	 -	11⁄4"	_	EQUIPMENT: AMES LF4000B	
BFP2	BACKFLOW PREVENTER COPPER ALLOY LEAD FREE						

. PROVIDE PRE-MANUFACTURED INSULATION KIT FOR EXPOSED TRIM UNDER SINK. . PROVIDE AUTOMATIC TRAP-PRIMER CONNECTION PORT AND ½" COPPER LINE TO FLOOR DRAIN FROM TRAP PRIMER. . MANUFACTURERS LISTED ON PLUMBING FIXTURE AND EQUIPMENT SCHEDULE REPRESENT BASIS OF DESIGN PRODUCTS. REFER TO DIVISION 22 SPECIFICATIONS SECTIONS FOR ACCEPTABLE MANUFACTURER LISTINGS.

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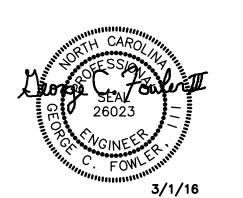
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UNC Charlotte • RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM 1	3/16/16
		_

Project: Drawn By: DAR Checked By: DAR

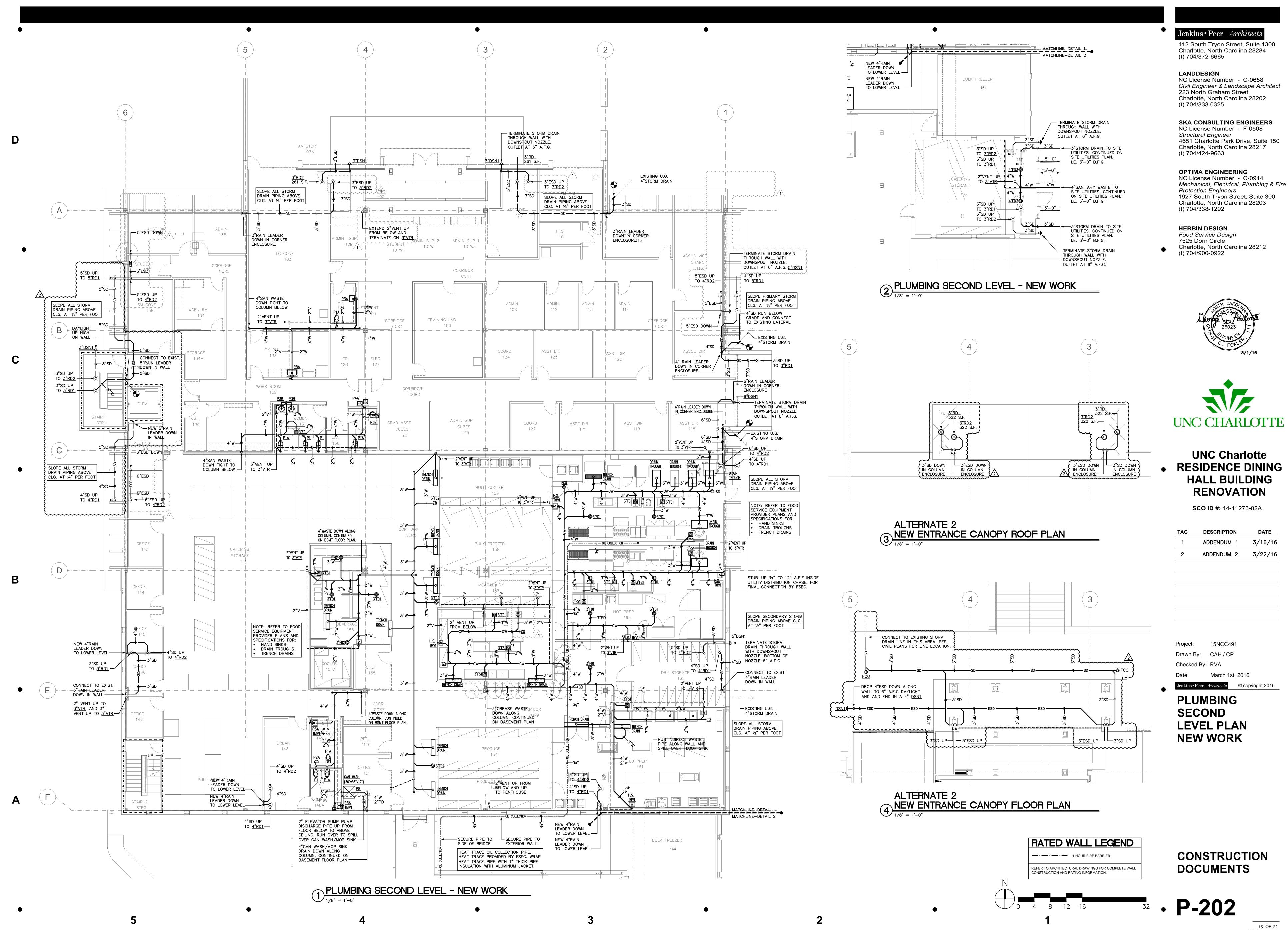
March 1st, 2016

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PLUMBING SCHEDULES

CONSTRUCTION **DOCUMENTS**

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Mechanical, Electrical, Plumbing & Fire



RESIDENCE DINING

TAG	DESCRIPTION	DATE
1	ADDENDUM 1	3/16/16
2	ADDENDUM 2	3/22/16

OPTIMA #: 15-0133

VARIABLE VOLUME AIR HANDLING UNIT SCHEDULE (CHILLED WATER COOLING WITH HOT WATER HEAT) ELECTRICAL DATA MANUFACTURER & LOCATION AREA SERVED AIR FLOW E.S.P. AIR FLOW E.S.P. MIN. OUTSIDE (IN. H₂ O) MIN. OUTSIDE OUTSIDE TOTAL RUNOUT E.W.T. L.W.T. MAX. MAX. TOTAL SENSIBLE CAPACITY GPM SIZE (°F) (°F) P.D. S.P. CAPACITY CAPACITY GPM RUNOUT E.W.T. L.W.T. MAX. MAX. SUPPLY FAN RETURN FAN NUMBER SIZE (°F) | (°F) | P.D. | S.P. | MODEL NO. | VOLTS | PHASE | Hz | (CFM) 250,000 | 17 | 1.5" | 180 | 150 | 5' | 0.14" | 585,660 | 410,580 | 75 | 2" | 43 | 59 | 10' | 0.9" PENTHOUSE ADMIN 60 DAIKIN CAH 030 PENTHOUSE KITCHEN 9,550* MAX 180 140 5' 0.10" 678,450 493,850 85 5,180* OPERATING

. AHU-1 COOLING COIL CAPACITY IS BASED ON 80° F. D.B./67° F. W.B. E.A.T. AND 54.2° F. D.B./53.9° F. W.B. L.A.T. / AHU-2 COOLING COIL CAPACITY IS BASED ON 88° F. D.B./70° F. W.B. E.A.T. AND 54.2° F. D.B./54.0° F. W.B. L.A.T.

MAXIMUM FACE VELOCITY OF COOLING COILS SHALL BE 500 FPM. 3. HEATING COIL CAPACITY IS BASED ON 40° F. E.A.T. (TYPICAL WITH RETURN AIR MIXED) THE TOTAL CAPACITY INCLUDES MAXIMUM CAPACITY REQUIRED FOR MAX OUTSIDE AIRFLOW AND NO RETURN AIRFLOW AT DESIGN WINTER CONDITIONS

4. ALL UNITS SHALL HAVE A FACTORY INSTALLED 8" HIGH BASE RAIL. MOUNT AHU ON 6" HOUSEKEEPING PADS.

CONTRACTOR SHALL INSTALL NEW BELTS AND A NEW SET OF MERV 8 PLEATED FILTERS AT SUBSTANTIAL COMPLETION, AND PROVIDE SPARE SETS OF BELTS AND FILTERS TO THE OWNER. 6. UNITS SHALL BE DOUBLE-WALL AHU CONSTRUCTION, BELT DRIVE PLENUM SUPPLY FAN WITH VARIABLE SPEED DRIVE, (SOLID STATE ENTHALPY CONTROLS, SUPPLY FAN MOTOR SPRING-TYPE VIBRATION ISOLATORS, ALL NON-LOW VOLTAGE ELECTRICAL WIRING IN METALLIC RACEWAY, DUCT MOUNTED STATIC PRESSURE CONTROLLER, NEMA PREMIUM EFFICIENCY FAN MOTORS, EXTENDED SUPPLY FAN DISCHARGE PLENUM SECTION, STANDARD FILTERS (MERV 8), DOUBLE SLOPED STAINLESS STEEL DRAIN PAN, RESETTABLE CIRCUIT BREAKERS, CONTROL PANEL WITH DISPLAY, BAS CONTROLS INTERFACE MODULE, MARINE TYPE LIGHTS IN EACH SECTION WIRED BACK TO A COMMON SWITCH. ALL ACCESS DOORS SHALL BE HINGED DOORS WITH "TOOL-LESS" ENTRY.

ALL UNITS SHALL BE U.L. LABELED. 8. PROVIDE EACH UNIT WITH A PHOTO-ELECTRIC TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUL BE INSTALLED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.

10. PROVIDE EQUIPMENT MOUNTED DUPLEX GFI SERVICE RECEPTACLE IN WEATHER TIGHT "WHILE IN USE" COVER 11. VFD SHALL BE PROVIDED BY UNIT MANUFACTURER AND SHALL BE FACTORY WIRED TO CONTROL BOX MOUNTED ON EXTERIOR OF UNIT.

12. UNIT CONDENSATE DRAIN PAN SHALL SLOPE IN TWO DIRECTIONS AND SHALL COMPLY WITH ASHRAE 62.1 TO PROVIDE COMPLETE DRAINAGE OF CONDENSATE (NO STANDING WATER). PROVIDE DRAIN PAN CONSTRUCTION DETAILS WITH UNIT SHOP DRAWING. (COOLING COILS WITH SHEET METAL BOTTOM PANELS WITH WEEP HOLES OR SLOTS ARE NOT

ACCEPTABLE). DRAIN PIPING SHALL BE TYPE "L" HARD DRAWN COPPER PIPE AND FITTINGS. 12. * — RETURN FAN SHALL BE SELECTED FOR MAX AIRFLOW FOR OPERATION WHEN HOODS ARE NOT IN USE. NOTED OPERATING AIRFLOW IS FOR WHEN ALL KITCHEN HOODS ARE OPERATING

PUMP SCHEDULE <u>MANUFACTURER</u> R.P.M. H.P. VOLTAGE VFD B&G MODEL <u>P−1</u> | CHILLED WATER | 1750 | 7.5 | 460/3/60 | YES | E - 1510 2.5BB CHILLED WATER 7.5 | 460/3/60 | YES | E - 1510 2.5BB 105 | 60 | 1750 | 5 | 460/3/60 | YES | E - 1510 2BD P-3 | HOT WATER <u>P−4</u> HOT WATER 105 | 60 | 1750 | 5 | 460/3/60 | YES | E - 1510 2BD | HOT WATER PREHEAT AHU-1 | 17 | 20 | 1725 | 1/3 | 277/1/60 | NO | SERIES E90 - 1.25AAB <u>P-6</u> | HOT WATER PREHEAT AHU-2 | 16 | 20 | 1725 | 1/3 | 277/1/60 | NO | SERIES E90 - 1.25AAB

. ALL PUMPS SHALL BE FURNISHED WITH TEFC PREMIUM EFFICIENCY MOTORS PER EPACT REQUIREMENTS.

ALL PUMPS SHALL BE SELECTED AT NON-OVERLOADING CONDITIONS FOR THE MOTOR PROVIDED

9. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

DUCTLESS SPLIT SYSTEMS (DX COOLING ONLY)

INDOOF	<u> UNII</u>	-				001000	R UNII									
VMBOL	<u>CFM</u>	ELECTR	ICAL DATA	<u>OPERATING</u>	MANUFACTURER	CAMBOI	COOLING	CAPACITY	HEATING CAPACITY	COMPRESSOR	ELECTRIC	CAL DATA	<u>OPERATING</u>	<u>MANUFACTURER</u>	ALLOWABLE LINE-SET	
YMBOL	<u>CI WI</u>	<u>MCA</u>	<u>VOLTAGE</u>	<u>WEIGHT</u>	<u>DAIKIN</u>	SYMBOL	TC (BTUH)	SHC (BTUH)	(BTUH)	<u>RLA</u>	MCA FU	SE VOLTAGE	<u>WEIGHT</u>	<u>DAIKIN</u>	<u>LENGTHS</u>	
<u> 10–1</u>	242	0.18	208V-1ø	38 LBS	FTXS12DVJU	<u>ODU-1</u>	11,500	8,625	N/A - COOL ONLY	5.87	7.9 15	5 208V-1ø	96 LBS	RXS12DVJU	98' TOTAL, 66' VERT.	
<u>1C-2</u>	242	0.18	208V-1ø	38 LBS	FTXS12DVJU	<u>ODU-2</u>	11,500	8,625	N/A - COOL ONLY	5.87	7.9 15	5 208V-1ø	96 LBS	RXS12DVJU	98' TOTAL, 66' VERT.	

---MAIN BREAKER

-15A.3P BREAKER

-BREAKER FOR LOA

TO BE MONITORED

FOR VOLTAGE

REFERENCE

GROUND BAR

CONTRACTOR

- 1. ALL UNITS SHALL BE U.L. LISTED AND HAVE A MINIMUM SEER OF 13. 2. COOLING CAPACITIES ARE BASED ON 95° AMBIENT, 80° ENTERING AIR DRY BULB, 67° ENTERING AIR WET BULB. AIRFLOWS INDICATED ARE AT 'HIGH' SPEED.
- 3. MOUNT GROUND-MOUNTED UNITS ON 6" CONCRETE PAD. MOUNT UNITS ON ROOF ON EQUIPMENT SUPPORT RAILS AS MFG. BY ROOF PRODUCTS AND SERVICE CORP. (OR EQUAL). PROVIDE MANUFACTURER'S SUGGESTED CLEARANCES AROUND UNIT.
- 5. PROVIDE UNITS WITH MANUFACTURER'S WIND BAFFLES OR LOW AMBIENT CONTROLS FOR OPERATION DOWN TO 0° F, INVERTER COMPRESSOR, 7-DAY
- PROGRAMMABLE THERMOSTAT (WALL-MOUNTED), NON-LOCKING DISCONNECT FOR INDOOR UNIT.
- 6. PROVIDE OUTDOOR UNITS WITH 6 YEAR EXTENDED COMPRESSOR WARRANTY
- 7 . SEE MANUFACTURER'S RECOMMENDATIONS FOR REQUIRED ADDITIONAL REFRIGERANT CHARGE AND RECOMMENDED LINE—SET LENGTHS.
- 8. POWER SUPPLY TO CONDENSING UNIT IS A SINGLE POINT ELECTRICAL CONNECTION FOR THE SYSTEM (A/C UNIT AND CONDENSING
- UNIT). THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER TO THE CONDENSING UNIT AND FROM THE CONDENSING UNIT TO THE A/C UNIT INCLUDING CODE REQUIRED DISCONNECT SWITCHES.
- 9. REFRIGERANT PIPING AND WIRING FOR WALL-MOUNTED INDOOR UNITS SHALL BE ROUTED IN WALL WHERE POSSIBLE. ANY EXPOSED PIPING SHALL BE PAINTED TO MATCH WALL-FINISH.
- 10. TELCOM ROOMS: MOUNT INDOOR AC UNIT 8'-0" A.F.F. COORDINATE WITH ALL DATA LADDER RACKS, UTILITIES, LIGHTS, CEILING, ETC. ELEVATOR CONTROLLER CLOSETS: MOUNT INDOOR AC UNIT 8'-0" A.F.F. COORDINATE WITH ALL UTILITIES, LIGHTS, CEILING, ETC.

UTILITY MONITORING SYSTEM NOTES

ALL BASE MOUNTED PUMPS SHALL BE FURNISHED WITH SUCTION DIFFUSER.

5. VFDS SHALL BE PROVIDED WITH GROUNDING RINGS & MANUAL BYPASS

. PROVIDE FULLY ENCAPSULATING SHAFT GUARDS FOR ALL BASE MOUNTED PUMPS

6. PROVIDE SUCTION INDUCER ON INLET OF BOILER FEED MULTISTAGE PUMP FOR LOW NPSH.

SYSTEM DESCRIPTION:

THE UTILITY RESOURCE MONITORING SYSTEM IS PROVIDED BY THE MECHANICAL CONTRACTOR. METERS AND MONITORING DEVICES ARE PROVIDED AS NOTED BELOW. THE INTENT OF THE SYSTEM IS TO CONSTANTLY MEASURE AND DISPLAY THE ENERGY (ELECTRICAL AND NATURAL GAS) AND WATER (DOMESTIC, CHILLED WATER, AND HOT WATER) BEING CONSUMED BY THE BUILDING. THE INFORMATION SHALL BE MADE PUBLIC VIA THE INTERNET AND VIA UNCC'S EXISTING UTILITY MONITORING DASHBOARD SYSTEM, PERISCOPE BY ACTIVELOGIX. THE SYSTEM INTEGRATOR (CONTROLS CONTRACTOR) IS RESPONSIBLE FOR PROVIDING TRENDS FOR INTEGRATION INTO PERISCOPE. THE SYSTEM INTEGRATOR WILL PROVIDE AN ENERGY/UTILITY DASHBOARD FOR PROJECT USING PERISCOPE. ALL ELECTRICAL CIRCUITS FOR MONITORING ELECTRICITY ARE SHOWN ON THE ELECTRICAL PANEL SCHEDULES

MAIN BUILDING

KITCHEN HVAC ELECTRICAL PANEL

KITCHEN NORMAL POWER ELECTRICAL

KITCHEN STAND-BY

POWER ELECTRICAL

TYPICAL FOR SINGLE

TO CIRCUIT TO

BE MONITORED /-

UTILITY MONITORING DETAIL

3 PHASE METER→

BY ELECTRICAL

- CATERING FLOW METER(S)

- BLDG TOTAL FLOW METER

-MAIN BUILDING WATER METER

-HOUSING/RESIDENCE LIFE METER

CONTRACTOR

METERING POINT

(METERING FOR HOUSING

RESIDENCE LIFE SHALL BE

MAIN ELECTRICAL SERVICE

TOTAL VALUES)

HOT WATER BTU METER(S)

AIR HANDLER FLOW METER(S)-

CHILLED WATER BTU

METER(S) (BY MECH.

(BY MECH. CONTR.)

AIR HANDLER FLOW METER(S) \longrightarrow (M) M

► W/PULSE OUTPUT

(BY PLBG. CONTR.)

GAS METER W/PULSE

(BY PLBG. CONTR.)

DOMESTIC WATER METER

CONTR.)

OBTAINED FROM SUBTRACTING

KITCHEN METER VALUES FROM

PANEL

-15A,3P BREAKER

-BREAKER FOR LOAD

TO BE MONITORED

FOR VOLTAGE

REFERENCE

GROUND BAR

-120/208

(METERING FOR HRL SHALL BE OBTAINED FROM

SUBTRACTING CATERING METER VALUES FROM

(METERING FOR CATERING SHALL BE OBTAINED

FROM SUBTRACTING HRL METER VALUES FROM

BUILDING TOTAL VALUES)

BUILDING TOTAL VALUES)

PANFI

ELECTRICAL SERVICE (M

MECHANICAL GENERAL NOTES:

- . PROVIDE METERS TO COLLECT ELECTRICAL POWER, WATER, NATURAL GAS, CHILLED WATER, AND HOT WATER USAGE. . CONNECT METER(S) TO ENERGY DATA LOGGER USING RS-485 SHIELDED TWISTED PAIR WIRE (LIMIT OF 32 METERS PER DATA LOGGER), OR UTILIZE THE EXISTING POWER LINES VIA A CARRIER SYSTEM.
- CONNECT ENERGY DATA LOGGER TO OWNER PROVIDED INTERNET CONNECTION. 4. SEE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ITEMS TO BE METERED. PROVIDE METERS AND DATA LOGGERS AND CONTROL WIRING FOR A COMPLETE SYSTEM
- 5. DASH BOARD SHALL BE PROVIDED ON OWNER'S EXISTING SYSTEM, PERISCOPE BY ACTIVLOGIX PROVIDE STARTUP, VERIFICATION AND TESTING SERVICES TO VERIFY PROPER OPERATION OF ENERGY REPORTING.

NIPPLE-

- PROVIDE OWNER TRAINING, MINIMUM OF 8 HOURS. PROVIDE A COMPLETE, TURNKEY METERING SYSTEM.
-). METERS MUST BE CAPABLE OF BEING CONNECTED AS INTENDED ON THESE DRAWNGS OR BACNET 10. DATA LOGGER BY RED LION, TRIDIUM JACE, ECHELON SMARTSERVER, OR EQUAL.

MULTI-CIRCUIT METER

(UP TO 18 CIRCUITS,

OR SIX 3-PHASE SET

OF CT'S)

TYPICAL FOR MULTIPLE

METERING POINTS

THE ELECTRICAL CONTRACTOR

SHALL COORDINATE WITH THE

MECHANICAL CONTRACTOR TO

METERING/MONITORING DEVICES

INTEGRATION WITH THE UTILITY

COMMUNICATION PROTOCOL

(BACNET MSTP) FOR FULL

ENSURE THAT ALL

HAVE THE PROPER

MONITORING SYSTEM

- 11. PROVIDE THREE YEARS OF DATA STORAGE IN 15 MINUTE INTERVALS 12. LOCAL DISPLAY IS REQUIRED FOR ALL METERS FOR VERIFICATION.
- 13. CONNECT TO PULSE TYPE METERS FOR WATER AND GAS. WATER AND GAS METERS SHALL INCLUDE TOTAL USAGE (GALLONS OR CUBIC FEET) AS WELL AS DEMAND (GALLONS/HOUR OR CUBIS FEET/HOUR). 14. CONTRACTOR SHALL VERIFY EACH METER WITH A HANDHELD RMS MULTI-METER. INCLUDE DOCUMENTATION WITH POINTS LIST TO OWNER.

<u>MANUFACTURER</u> <u>TYPE</u> <u>VFD</u> <u>H.P.</u> <u>MOCP</u> <u>VOLTAGE</u> <u>F-1</u> | ELECT ROOM 231 | INLINE 0.25" 1125 NO 1/4 -- 277/1/60 BSQ-90-4 A,D,E,F,G,K,L DOWNBLAST 450 0.40" BELT 1242 NO 1/4 -- 277/1/60 GB-081-6 DOWNBLAST 750 0.40" 1325 NO 1/4 -- 277/1/60 GB-091-6 A,F,G,H,I,L <u>F-3</u> <u>KEF-1</u> ROOF A,F,H,J,K,M KEF-2 ROOF 0.75" BELT UPBLAST CUBE-300-30 > A,F,H,J,K,M KEF-3 ROOF UPBLAST 8460 0.75" CUBE-300-30\ A,F,H,J,K,M UPBLAST 650 KEF-4 ROOF 0.50" 1836 NO CUBE-101HP-4**(** | A,F,H,K <u>KEF-5</u> ROOF UPBLAST 2400 0.75" BELT 1145 NO 1 -- 460/3/60 A,F,H,J,K,M CUBE-161 <u>DWEF-1</u> ROOF UPBLAST 600 1780 NO 1/3 -- 120/1/60 CUBE-101HP-4 A,F,H,I,K,L 0.50" | BELT <u>KSF-1</u> ROOF NO 2 35 460/3/60 IGX-115-H22 | NOTE 9,10,A,G,H,N <u>KSF-2</u> ROOF 50 460/3/60 IGX-118-H32 | NOTE 9,10,A,G,H,N KSF-3 ROOF IGX-118-H32 NOTE 9,10,A,G,H,N NO 3 50 460/3/60

<u>ACCESSORIES</u>

FAN SCHEDULE

G: MAGNETIC STARTER WITH AUXILIARY J: GREASE TRAP M: UL LISTED FOR GREASE A: DISCONNECT SWITCH D: HANGING BRACKETS WITH VIBRATION ISOLATION CONTACTS B: BACKDRAFT DAMPER K: INLET GUARD N: WEATHER HOOD, ALUMINUM E: BELT GUARD H: PREFAB. ROOF CURB FILTER, INLET DAMPER L: BACKDRAFT DAMPER C: ACOUSTICAL LINING F: EXTENDED LUBE LINES I: BIRDSCREEN

CONTROLS

CONTROLLED BY BUILDING AUTOMATION SYSTEM 4: INTERLOCK WITH DISHWASHER OPERATION 5: MANUAL SWITCH

2: ROOM THERMOSTAT 3: INTERLOCK WITH ASSOCIATED KITCHEN HOOD

- 1. ALL FANS SHALL BE U.L. LISTED AND LABELED AND SHALL BE AMCA CERTIFIED FOR SOUND AND AIR FLOW. ALL FANS INSTALLED INSIDE, ABOVE, OR
- ADJACENT TO OCCUPIED SPACES SHALL HAVE A MAXIMUM 9.0 INLET SONE LEVEL 2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
- 3. MECHANICAL CONTRACTOR SHALL PROVIDE MAGNETIC STARTER WITH AUXILIARY CONTACTS AS REQUIRED.
- 4. INSTALL INLINE FANS TIGHT TO BOTTOM OF STRUCTURE
- 5. BACKDRAFT DAMPER ON KITCHEN SUPPLY FANS SHALL BE MOTORIZED.
- 6. ALL KITCHEN EXHAUST FANS SHALL BE PROVIDED WITH NON-STICK COATED WHEEL (TEFLON).
- 7. KITCHEN SUPPLY FAN'S (KSF) INDICATED S.P. IS EXTERNAL STATIC ON SUPPLY SIDE ONLY, ALL OTHER FAN'S INDICATED S.P. IS APPROX. TOTAL STATIC.
- 8. ALL FANS SHALL BE INTEGRATED INTO NEW BAS TO MONITOR FAN STATUS.
- 9. GAS HEATER INFO: KSF-1 4 STAGE GAS HEATER - 350 MBH - TEMP RISE 63.2°F
- KSF-2 4 STAGE GAS HEATER 600 MBH TEMP RISE 64.9°F KSF-3 4 STAGE GAS HEATER - 600 MBH - TEMP RISE 64.9°F
- 10. PACKAGED DX INFO: (R-410A)
- KSF-1 2- SCROLL COMPRESSORS, TOTAL CAP-138.9 MBH, SENS CAP-84.0 MBH
- KSF-2 2- SCROLL COMPRESSORS, TOTAL CAP-205.9 MBH, SENS CAP-128.8 MBH KSF-3 2- SCROLL COMPRESSORS, TOTAL CAP-205.9 MBH, SENS CAP-128.8 MBH

HC	HORIZONTAL FAN COIL UNIT SCHEDULE											
CVADOL	CEM	L C D	COOLING COIL			HEATING COIL			MOTOR (ELECTRICAL DATA)		MFR — TRANE BCH	
SYMBOL	<u>CFM</u>	<u>E.S.P.</u>	TC (BTUH)	SHC (BTUH)	<u>GPM</u>	RUNOUT	<u>BTUH</u>	<u>GPM</u>	RUNOUT	윈	<u>VOLTAGE</u>	<u>UNIT_SIZE</u>
FCU-1	750	0.40"	24,000	16,800	4.0	1"	30,000	1.5	1/2"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-08
FCU-2**	900	0.40"	30,000	21,000	5.0	1"	43,000	2.2	3/4"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-10
FCU-3**	750	0.40"	30,000	21,000	5.0	1"	43,000	2.2	3/4"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-10
FCU-4**	1100	0.40"	36,000	25,200	6.0	1"	48,000	2.4	3/4"	1/2	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-12
FCU-5	900	0.40"	30,000	21,000	5.0	1"	43,000	2.2	3/4"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-10
FCU-6	800	0.40"	24,000	16,800	4.0	1"	30,000	1.5	1/2"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-08
FCU-7	900	0.40"	30,000	21,000	5.0	1"	43,000	2.2	3/4"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-10
FCU-8	900	0.40"	30,000	21,000	5.0	1"	43,000	2.2	3/4"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-10
										·		

SYMBOL

-BELDON 9841, OR EQUAL

----DATA STATION PLUS

DATA LOGGER IN NEMA 1 ENCLOSURE

LOCATE ADJACENT TO BAS CENTRAL CONTROL PANEL

(MECHANICAL ROOM 020)

----> INTERNET

(BY ELECT. CONTR.)

←QUAD RECEPTACLE

(BY ELECT. CONTR.)

CONNECTION

CONNECTION

- 1. COOLING CAPACITIES ARE BASED ON 43° F. ENTERING WATER AND 80°/67° F. ENTERING AIR.
- 2. HEATING CAPACITIES ARE BASED ON 180° F. ENTERING WATER AND 65° F. ENTERING AIR. 3. UNITS SHALL BE FURNISHED WITH FILTER RACK AND 1" FILTERS, HOT WATER HEATING COIL AND CHILLED WATER
- COOLING COIL, AS NOTED 4. PROVIDE NON FUSED INTEGRAL DISCONNECT SWITCH MOUNTED ON UNIT
- 5. DISCHARGE AIR TEMPERATURE SENSORS AND CONTROL VALVES, ROOM THERMOSTAT, FCU CONTROLLER AND BACNET INTERFACE MODULE SHALL BE FURNISHED BY THE CONTROLS CONTRACTOR
- S. HEATING COIL SHALL BE PROVIDED DOWNSTREAM OF COOLING COIL IN REHEAT POSITION

<u>CFM GPM BTUH</u>

- 7. CONTROLS CONTRACTOR SHALL PROVIDE INDIVIDUAL CONTROL POWER TRANSFORMER FOR EACH UNIT.
- 8. UNIT PRIMARY DRAIN PAN SHALL SLOPE IN TWO DIRECTIONS AND SHALL COMPLY WITH ASHRAE 62.1 TO PROVIDE COMPLETE DRAINAGE OF CONDENSATE. PROVIDE DRAIN PAN CONSTRUCTION DETAILS WITH FAN COIL UNIT SHOP DRAWING. (COOLING COILS WITH SHEET METAL BOTTOM PANELS WITH WEEP HOLES OR SLOTS ARE NOT ACCEPTABLE). SECONDARY DRAIN PAN SHALL HAVE OVERFLOW SAFETY SWITCH (FLOAT SWITCH BY FCU MANUFACTURER). ACTIVATION OF FLOAT SWITCH SHALL SHUT DOWN UNIT, CLOSE CHILLED WATER VALVE AND GENERATE AN ALARM THROUGH THE BAS.
- 9. PROVIDE 2-WAY MODULATING CHILLED & HOT WATER CONTROL VALVES
- * PROVIDE UNIT WITH SUPPLY DUCT FLANGE FOR DUCTWORK CONNECTION ** PROVIDE UNIT WITH RETURN PLENUM CONNECTION AND FILTER RACK

_	
	HOT WATER CABINET UNIT HEATER SCHEDULE

400 | 2.2 | 33,200 | 4.4 | 928 | 80 | 120/1/60 | FHVC-04 | A,B <u>CUH-2</u> STAIR-2 400 2.2 33,200 4.4 928 80 120/1/60 FHVC-04 A,B **ACCESSORIES**

1. HEATING CAPACITY BASED ON 65° F. E.A.T., 180° F. E.W.T.

- 2. MAXIMUM WATER PRESSURE DROP SHALL BE 5'. 3. SEE PLANS FOR TYPE OF THERMOSTAT REQUIRED (WALL MOUNTED) PROVIDE VENTILATED, LOCKABLE CLEAR PLASTIC COVER
- 4. UNITS SHALL BE RECESSED WALL TYPE WITH TRIM FACE PANEL KIT, MOUNT BOTTOM OF UNIT 12" A.F.F.

A: DISCONNECT SWITCH B: BUILT-IN THERMOSTAT

CRAC UNITS DESIGN CONDITIONS: 75° F. D.B., 45% R.H. <u>CRAC-1&2</u> LIEBERT MODEL PX018H-1/2 (DOWNFLOW WITH FRONT DISCHARGE) 2.800 CFM @ 0.20" E.S.P.: 60,400 BTUH TC: 60,400 BTUH SHC: ELECTRIC REHEAT -2-STAGE, 13.6 KW, 46,400 BTUH; SUPPLY FAN - 5 H.P., R-410A, PROVIDE OPTIONAL FLOOR LEVEL FRONT AND SIDE DISCHARGE GRILLE (REFER TO PLAN FOR ORIENTATION REQUIREMENTS) ELECTRICAL DATA: 460/3/60, 29.3 FLA, 35.6 WSA, 40 OPD.

CU-1&2 LIEBERT MODEL MCM-040 ELECTRICAL DATA: 460/3/60, 1.4 FLA, 1.8 WSA, 15 OPD.

FURNISH ALL UNIT(S) WITH: ICOM FACTORY CONTROLS WITH LARGE GRAPHICS DISPLAY. LOCKING DISCONNECT SWITCH, FIRESTAT, SMOKE DETECTOR, RETURN AIR TEMPERATURE AND HUMIDITY SENSORS, HIGH EFFICIENCY FILTERS (MERV-8), FILTER CLOG DETECTION ALARM, CONDENSATE PUMP, INTELLISLOT COMM CARD, LIQU-TEC-460 ZONE LEAK

NOTES:

- 1. ALL UNITS SHALL BE UL LISTED AND LABELED.
- 2. PROVIDE ICOM MICROPROCESSOR BASED CONTROL MODULE.
- 3. CAPACITIES ARE BASED ON 100°F AMBIENT TEMPERATURE 4 UNITS SHALL BE FULLY INTEGRATED WITH THE BAS. UNIT
- OPERATION SHALL BE PER THE SEQUENCE OF OPERATION.

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RESIDENCE DINING

HALL BUILDING

RENOVATION

SCO ID #: 14-11273-02A

DESCRIPTION

ADDENDUM 01

ADDENDUM 02

Project:

Drawn By:

Checked By: RVA

March 1st. 2016

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MECHANICAL

SCHEDULES

DATE

3/16/16

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SEQUENCE OF OPERATION

A COMPLETE AND OPERATIONAL DDC CONTROL SYSTEM (BAS) SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 230900) AND AS INTENDED ON THESE PLANS. ALL CONTROL POINTS AND EQUIPMENT SEQUENCES OF OPERATION LISTED IN SPECIFICATION SECTION 230900 SHALL BE CONSIDERED IN ADDITION TO THOSE LISTED HERE. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY AT THE ENGINEER'S DISCRETION.

THE NEW BAS SHALL BE INTEGRATED WITH THE OWNER'S EXISTING CAMPUS SYSTEM UTILIZING THE EXISTING GATEWAYS AND FRAMEWORK. BAS CONTRACTOR SHALL INCLUDE ALL NECESSARY HARDWARE AND SOFTWARE (EXPORT TAGGING) TO FULLY INTEGRATE NEW SYSTEM WITH THE EXISTING SYSTEM. COMMUNICATION SHALL BE PROVIDED TO THE EXISTING REGIONAL UTILITY PLAN (RUP-4) FOR CHILLED WATER AND HOT WATER SYSTEM INTEGRATION AS LISTED IN THE SEQUENCE AND POINTS LIST. EXPORT TAGGING PER THE UNIVERSITY STANDARDS SHALL BE INCLUDED TO SIMPLIFY IMPORTING JACE CONTROLS, POINTS LIST AND GRAPHICS SCREENS TO THE UNIVERSITY PLATFORM.

THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL EQUIPMENT COMMUNICATION/INTEGRATION REQUIREMENTS WITH CONTROL SYSTEM PROVIDER SUBCONTRACTOR PRIOR TO PURCHASING EQUIPMENT. ALL EQUIPMENT SUBMITTALS SHALL BE SUBMITTED TO AND APPROVED BY THE CONTROL SYSTEM PROVIDER FOR APPROVAL PRIOR TO SUBMISSION FOR REVIEW/APPROVAL BY THE DESIGN ENGINEER.

OCCUPIED, DECOUPLED MODE:

ACROSS THE BRIDGE OF 20' (ADJ.).

BUILDING AUTOMATION SYSTEM (BAS) SHALL PROVIDE PROGRAMMED/TIMED OPERATION OF THE BUILDING HVAC SYSTEM AND SYSTEM COMPONENTS BY PLACING THE SYSTEM IN "OCCUPIED" OR "UNOCCUPIED" MODES BASED ON THE OWNERS OPERATING SCHEDULE. UNOCCUPIED MODE WILL BE A MANUAL OPERATION THROUGH THE BAS, OR AS SCHEDULED BY THE OWNER.

BAS SHALL BE WEB (IP) BASED TO ALLOW INTERNET ACCESS FOR REMOTE OPERATION OF ALL SYSTEM FUNCTIONS. BAS SHALL ALLOW GLOBAL OPERATION OF COOLING AND HEATING SETPOINTS. BAS SHALL ALSO ALLOW EITHER ZONE BY ZONE OR GLOBAL OVERRIDE OF SYSTEM EQUIPMENT OPERATION WHILE IN THE UNOCCUPIED MODE. OVERRIDE SHALL ACTIVATE ALL SYSTEM EQUIPMENT, INCLUDING CENTRAL PLANT (RUP-4), REQUIRED FOR PROPER OPERATION OF OVERRIDDEN EQUIPMENT TO MAINTAIN "OCCUPIED" SPACE CONDITIONS IN THE OVERRIDE ZONE FOR A TIME PERIOD OF 3 HOURS (ADJ.), TIME PERIOD SHALL BE ADJUSTABLE THROUGH THE BAS.

ALL BAS COMPONENTS SUCH AS JACE CONTROLLERS, ERU CONTROLLERS, PUMP CONTROLLERS. ETC, SHALL BE FURNISHED WITH A LOCAL UPS WITH SURGE SUPPRESSION SIZED FOR DEVICE CONNECTED WATTAGE, VOLTAGE AND 5 MINUTE BATTERY OPERATION.

CHILLED WATER SYSTEM:
CHILLED WATER IS DISTRIBUTED THROUGHOUT THE SOUTH VILLAGE FROM THE EXISTING REGIONAL UTILITY PLANT (RUP-4) AT A SUPPLY TEMPERATURE OF 43 DEGREES. THE SYSTEM OPERATES 24 HOURS/DAY AND MAY OPERATE IN A "DECOUPLED" MODE WITH SECONDARY PUMPS IN THE REMOTE BUILDINGS (NORMAL MODE OF OPERATION) OR IN A "COUPLED" MODE WHEN REMOTE BUILDING CONDITIONS ALLOW. A DIFFERENTIAL PRESSURE SENSOR LOCATED IN EACH REMOTE BUILDING COMMUNICATES WITH RUP-4 THROUGH THE BAS NETWORK TO MAINTAIN A MINIMUM SYSTEM PRESSURE OF 20' AT THE REMOTE BUILDINGS.

FLOW METER FM-CHW1 MONITORS THE RUP CHILLED WATER FLOW TO THE BUILDING AND PROVIDES IT'S INPUT TO THE BAS THRU BTU METER BTU-CHW1. FLOW METER FM-CHW2 MONITORS THE BUILDING CHILLED WATER FLOW IN ALL OPERATING MODES AND PROVIDES IT'S INPUT TO THE BAS THRU BTU METER BTU-CHW2

OCCUPIED, DECOUPLED MODE:

IN THE "OCCUPIED" MODE, THE NORMAL OPERATING MODE OF THE SYSTEM IS THE "DECOUPLED" MODE. IN THIS MODE, THE MANUAL BRIDGE ISOLATION VALVE IS OPEN AND THE MANUAL PUMP BY-PASS VALVE IS CLOSED. BRIDGE VALVE TCV-A IS ALLOWED TO MODULATE AND SECONDARY PUMPS P-1 AND P-2 ARE ALLOWED TO OPERATE IN A LEAD/LAG SEQUENCE. LEAD/LAG SECONDARY CHILLED WATER PUMPS P-1 AND P-2 ARE PROVIDED WITH VARIABLE SPEED DRIVES TO SUPPLY CHILLED WATER TO THE BUILDING AIR HANDLING EQUIPMENT. WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 50° F. (ADJ.) AND/OR THE ANY AHU/FCU HAS A CALL FOR MECHANICAL COOLING OR HAS A CALL FOR DEHUMIDIFICATION. THE CHILLED WATER BRIDGE AUTOMATIC CONTROL VALVE, TCV-A, SHALL MODULATE OPEN AND THE LEAD SECONDARY CHILLED WATER PUMP SHALL BE STARTED. THE BRIDGE DIFFERENTIAL PRESSURE SENSOR SHALL TRANSMIT A SIGNAL TO THE REGIONAL UTLITY PLANT (RUP-4) TO CONTROL THE CENTRAL PLANT PRIMARY CHILLED WATER PUMPS VARIABLE SPEED DRIVES TO MAINTAIN A DIFFERENTIAL PRESSURE ACROSS THE BRIDGE OF 20' (ADJ.).

TCV-A SHALL MODULATE TO THE FOLLOWING ASCENDING PRIORITY ORDER: MAINTAIN FLOW SETPOINT AT FLOW METER FM-CHW1 IN THE CROSS-OVER BRIDGE OF 110% (ADJ.) OF THE BUILDING FLOW AT FLOW METER FM-CHW2 (HIGH LIMIT

- SETPOINT = $FM-CHW2 \times 1.1$). AS THE RUP/BRIDGE RETURN WATER TEMPERATURE DROPS TO 10 DEGREES (ADJ.) ABOVE THE RUP SUPPLY WATER TEMPERATURE. THE FLOW SETPOINT IN PRIORITY 1 IS OVERRIDDEN AND <u>TCV-A</u> MODULATES CLOSED TO HOLD A MINIMUM TEMPERATURE DIFFERENTIAL OF 10 DEGREES BETWEEN CHILLED WATER SUPPLY AND RETURN TEMPERATURES IN THE CROSS OVER BRIDGE (LOW LIMIT SETPOINT = CHS TEMPERATURE + 10 DEGREES).
- IF THE BUILDING CHILLED WATER SUPPLY TEMPERATURE RISES ABOVE 45 DEGREES (ADJ.), THE LOW LIMIT IN PRIORITY #2 IS OVERRIDDEN AND VALVE TCV-A MODULATES OPEN TO THE HIGH LIMIT INDICATED IN PRIORITY #1.
- . AS THE RUP/BRIDGE FLOW RISES ABOVE THE MAXIMUM FLOW OF 235 GPM (ADJ.), ALL OTHER PRIORITIES ARE OVERRIDDEN AND TCV-A MODULATES CLOSED TO LIMÍT THE RUP FLOW TO THE BUILDING MAXIMUM FLOW RATE. TCV-A SHALL NOT TO CLOSE COMPLETELY TO ALLOW TEMPERATURE SENSING AND
- FLOW MEASUREMENT. THE MINIMUM POSITION OF THE VALVE SHALL BE 5% (ADJ.) OR AS REQUIRED TO MAINTAIN THE MINIMUM FLOW REQUIREMENT FOR PROPER OPERATION OF THE FLOW METER, REGARDLESS OF THE PRIORITIES LISTED ABOVE.

SECONDARY PUMP CONTROL:
SECONDARY CHILLED WATER PUMP SPEED SHALL BE CONTROLLED BY DIFFERENTIAL PRESSURE SENSORS (2 REQUIRED, SEE PLANS FOR LOCATIONS) IN THE CHILLED WATER PIPING SYSTEM TO MAINTAIN SYSTEM PRESSURE OF 7 PSI (ADJ.). AS AIR HANDLING EQUIPMENT 2-WAY CONTROL VALVES OPEN, LEAD PUMP SPEED SHALL BE INCREASED VIA VARIABLE FREQUENCY DRIVE TO MAINTAIN SYSTEM PRESSURE SETPOINT. UPON FAILURE OF THE LEAD PUMP, THE STANDBY PUMP SHALL START AUTOMATICALLY AND AN ALARM SHALL BE GENERATED INDICATING A SECONDARY PUMP FAILURE. LEAD/STANDBY PUMPS SHALL ROTATE ON A CONTINUOUS BASIS AT TIME INTERVALS OF 168 HOURS RUNTIME (ADJ.).

UPON LOSS-OF-COMMUNICATION OR OUT-OF-RANGE CHILLED WATER LOOP DIFFERENTIAL PRESSURE SIGNAL, THE CHILLED WATER PUMP SHALL FAIL TO 75% SPEED (ADJ.) AND AN ALARM SHALL BE GENERATED INDICATING LOSS OF DIFFERENTIAL PRESSURE CONTROL.

OCCUPIED, COUPLED MODE:
THE COUPLED OPERATING MODE IS ACTIVATED AND DEACTIVATED MANUALLY BY AN OPERATOR. WHEN THE LEAD ONLY CHILLED WATER PUMP IS OPERATING AND IT'S SPEED FALLS TO 30% (ADJ.) CONTINUOUSLY FOR 30 MINUTES (ADJ.), A NOTIFICATION ALARM SHALL BE GENERATED INDICATING THAT CHILLED WATER SYSTEM "COUPLED" OPERATION IS POSSIBLE. IF THE OPERATOR CHOOSES TO SWITCH TO THE "COUPLED" MODE, OPERATOR WILL MANUALLY SHUT DOWN PUMPS $\underline{P-1}$ AND $\underline{P-2}$ BY PLACING THE PUMP VFD HOA SWITCH TO THE OFF POSITION, OPEN MANUAL PUMP BY—PASS VALVE <u>CHWMV-1</u> AND CLOSE MANUAL BRIDGE BY-PASS VALVE <u>CHWMV-2</u>. BAS SHALL ALLOW OPERATOR TO OVERRIDE THE MINIMUM FLOW THROUGH THE BAS. IN THIS MODE THE RUP-4 PUMPS ARE DIRECTLY COUPLED TO THE BUILDING AND ARE SUPPLYING CHILLED WATER DIRECTLY TO THE AIR HANDLING UNITS REQUIRING CHILLED WATER. WHEN THE BUILDING CHILLED WATER RETURN TEMPERATURE RISES ABOVE IT'S ALARM SETPOINT OF 60 DEGREES (ADJ.). AN ALARM IS GENERATED TO NOTIFY OPERATING PERSONNEL THAT THE SYSTEM NEEDS TO BE RETURNED TO THE DECOUPLED MODE. THIS ACTION SHALL BE INITIATED MANUALLY AFTER MANUAL VALVE CHWMV-2 IS OPENED, <u>CHWMV-1</u> IS CLOSED AND PUMP VFD HOA SWITCH HAS BEEN RETURNED TO THE AUTO POSITION.

IN THE "UNOCCUPIED" MODE, BUILDING PUMPS P-1 AND P-2 SHALL REMAIN OFF AND BRIDGE CONTROL VALVE <u>TCV-A</u> SHALL REMAINED CLOSED UNLESS THE BUILDING HAS A CALL FOR COOLING OR DEHUMIDIFICATION TO SATISFY UNOCC. SETPOINTS.

HOT WATER SYSTEM: HOT WATER IS DISTRIBUTED THROUGHOUT THE SOUTH VILLAGE FROM THE EXISTING REGIONAL UTILITY PLANT (RUP-4) AT A SUPPLY TEMPERATURE OF 180 DEGREES. THE SYSTEM OPERATES WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 55° AND/OR A REMOTE BUILDING AIR HANDLING UNIT HAS A CALL FOR HEATING OR A REMOTE

BUILDING HAS A CALL FOR DEHUMIDIFICATION. THE SYSTEM MAY OPERATE IN A "DECOUPLED" MODE WITH SECONDARY PUMPS IN THE REMOTE BUILDINGS (NORMAL MODE OF OPERATION) OR IN A "COUPLED" MODE WHEN REMOTE BUILDING CONDITIONS ALLOW. A DIFFERENTIAL PRESSURE SENSOR LOCATED IN EACH REMOTE BUILDING COMMUNICATES WITH RUP-4 THROUGH THE BAS NETWORK TO MAINTAIN A MINIMUM SYSTEM PRESSURE OF 20' AT THE REMOTE BUILDINGS.

FLOW METER FM-HW1 MONITORS THE RUP HOT WATER FLOW FOR THE BUILDING AND PROVIDES IT'S INPUT TO THE BAS THRU BTU METER <u>BTU-HW1</u>. FLOW METER <u>FM-HW2</u> MONITORS THE BUILDING HOT WATER FLOW IN ALL OPERATING MODES AND PROVIDES IT'S INPUT TO THE BAS THRU BTU METER <u>BTU-HW2</u>.

THE NORMAL OPERATING MODE OF THE SYSTEM IS THE "DECOUPLED" MODE. IN THIS MODE, THE MANUAL BRIDGE ISOLATION VALVE IS OPEN AND THE MANUAL PUMP BY-PASS VALVE IS CLOSED. BRIDGE VALVE TCV-B IS ALLOWED TO MODULATE AND SECONDARY PUMPS P-3 AND P-4 ARE ALLOWED TO OPERATE IN A LEAD/LAG SEQUENCE. LEAD/LAG SECONDARY CHILLED WATER PUMPS P-3 AND P-4 ARE PROVIDED WITH VARIABLE SPEED DRIVES TO SUPPLY HOT WATER TO THE BUILDING AIR HANDLING EQUIPMENT. WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 55° F. (ADJ.) AND/OR THE SYSTEM HAS A CALL FOR HEATING OR HAS A CALL FOR DEHUMIDIFICATION. THE RUP HOT WATER SYSTEM SHALL BE ACTIVATED IF NOT IN OPERATION. THE HOT WATER BRIDGE AUTOMATIC CONTROL VALVE, TCV-B, SHALL MODULATE OPEN AND THE LEAD SECONDARY HOT WATER PUMP SHALL BE STARTED. THE BRIDGE DIFFERENTIAL PRESSURE SENSOR SHALL TRANSMIT A SIGNAL TO THE

REGIONAL UTILITY PLANT (RUP-4) TO CONTROL THE CENTRAL PLANT SECONDARY HOT

TCV-B SHALL MODULATE TO THE FOLLOWING ASCENDING PRIORITY ORDER: 1. MAINTAIN FLOW SETPOINT AT FLOW METER FM-HW1 IN THE CROSS-OVER BRIDGE OF 110% (ADJ.) OF THE BUILDING FLOW AT FLOW METER FM-HW2 (SETPOINT =

WATER PUMPS VARIABLE SPEED DRIVES TO MAINTAIN A DIFFERENTIAL PRESSURE

- $FM-HW2 \times 1.1$). 2. AS THE RUP/BRIDGE RETURN WATER TEMPERATURE RISES ABOVE 150 DEGREES (ADJ.), THE FLOW SETPOINT IN PRIORITY 1 IS OVERRIDDEN AND TCV-B MODULATES CLOSED TO HOLD A MINIMUM RETURN TEMPERATURE (HIGH LIMIT) OF 150 DEGREES
- 3. IF THE BUILDING HOT WATER SUPPLY TEMPERATURE FALLS BELOW 175 DEGREES (ADJ.), THE HIGH LIMIT IN PRIORITY #2 IS OVERRIDDEN AND VALVE TCV-B MODULATES OPEN TO THE SETPOINT INDICATED IN PRIORITY #1. 4. AS THE RUP/BRIDGE FLOW RISES ABOVE THE MAXIMUM FLOW OF 105 GPM (ADJ.)
- ALL OTHER PRIORITIES ARE OVERRIDDEN AND TCV-B MODULATES CLOSED TO LIMIT THE RUP FLOW TO THE BUILDING MAXIMUM FLOW RATE. TCV-B SHALL NOT CLOSE COMPLETELY TO ALLOW TEMPERATURE SENSING AND FLOW MEASUREMENT. THE MINIMUM POSITION OF THE VALVE SHALL BE 5% (ADJ.) OR AS REQUIRED TO MAINTAIN THE MINIMUM FLOW REQUIREMENT FOR PROPER OPERATION OF THE FLOW METER, REGARDLESS OF THE PRIORITIES LISTED ABOVE.

SECONDARY HOT WATER PUMP SPEED SHALL BE CONTROLLED BY DIFFERENTIAL PRESSURE SENSORS (2 REQUIRED, SEE PLANS FOR LOCATIONS) IN THE HOT WATER PIPING SYSTEM TO MAINTAIN SYSTEM PRESSURE OF 7 PSI (ADJ.). AS AIR HANDLING EQUIPMENT 2-WAY CONTROL VALVES OPEN, LEAD PUMP SPEED SHALL BE INCREASED VIA VARIABLE FREQUENCY DRIVE TO MAINTAIN SYSTEM PRESSURE SETPOINT, UPON FAILURE OF THE LEAD PUMP, THE STANDBY PUMP SHALL START AUTOMATICALLY AND AN ALARM SHALL BE GENERATED INDICATING A SECONDARY PUMP FAILURE. LEAD/STANDBY PUMPS SHALL ROTATE ON A CONTINUOUS BASIS AT TIME INTERVALS OF 168 HOURS RUNTIME (ADJ.).

UPON LOSS-OF-COMMUNICATION OR OUT-OF-RANGE HOT WATER LOOP DIFFERENTIAL PRESSURE SIGNAL, THE HOT WATER PUMP SHALL FAIL TO 75% SPEED (ADJ.) AND AN ALARM SHALL BE GENERATED INDICATING LOSS OF DIFFERENTIAL

OCCUPIED, COUPLED MODE:
THE COUPLED OPERATING MODE IS ACTIVATED AND DEACTIVATED MANUALLY BY AN OPERATOR. WHEN THE LEAD ONLY HOT WATER PUMP IS OPERATING AND IT'S SPEED FALLS TO 30% (ADJ.) CONTINUOUSLY FOR 30 MINUTES (ADJ.), A NOTIFICATION ALARM SHALL BE GENERATED INDICATING THAT CHILLED WATER SYSTEM "COUPLED" OPERATION IS POSSIBLE. IF THE OPERATOR CHOOSES TO SWITCH TO THE "COUPLED" MODE, OPERATOR WILL MANUALLY SHUT DOWN PUMPS $\underline{P-3}$ AND $\underline{P-4}$ BY PLACING THE PUMP VFD HOA SWITCH TO THE OFF POSITION, OPEN MANUAL PUMP BY-PASS VALVE HWMV-1 AND CLOSE MANUAL BRIDGE BY-PASS VALVE <u>HWMV-2</u>. BAS SHALL ALLOW OPERATOR TO OVERRIDE THE MINIMUM FLOW THROUGH THE BAS. IN THIS MODE THE <u>RUP-4</u> PUMPS ARE DIRECTLY COUPLED TO THE BUILDING AND ARE SUPPLYING HOT WATER DIRECTLY TO THE AIR HANDLING UNITS REQUIRING HOT WATER. WHEN THE BUILDING HOT WATER RETURN TEMPERATURE FALLS BELOW IT'S ALARM SETPOINT OF 150 DEGREES (ADJ.), AN ALARM IS GENERATED TO NOTIFY OPERATING PERSONNEL THAT THE SYSTEM NEEDS TO BE RETURNED TO THE DECOUPLED MODE. THIS ACTION SHALL BE INITIATED MANUALLY AFTER MANUAL VALVE <u>HWMV-2</u> IS OPENED, <u>HWMV-1</u> IS CLOSED AND PUMP VFD HOA SWITCH HAS BEEN RETURNED TO THE AUTO POSITION.

IN THE "UNOCCUPIED" MODE, BUILDING PUMPS $\underline{P-3}$ AND $\underline{P-2}$ SHALL REMAIN OFF AND BRIDGE CONTROL VALVE $\underline{TCV-B}$ SHALL REMAIN CLOSED UNLESS THE BUILDING HAS A CALL FOR HEATING TO SATISFY UNOCCUPIED SETPOINTS.

COMPUTER ROOM AIR CONDITIONING UNITS

<u>SERVER 003:</u> (CRAC-1, 2) CRAC UNITS SHALL OPERÁTE ON A CONTINUOUS BASIS TO PROVIDE COOLING 24/7/365. FACTORY CONTROLS SHALL OPERATE UNITS TO MAINTAIN SPACE TEMPERATURE AND HUMIDITY OF 75° F. AND 50% RH (ADJ). BAS SHALL ALLOW REMOTE START/STOP, SETPOINT ADJUSTMENT AND SHALL MONITOR ALL ALARMS.

CRAC UNITS SHALL OPERATE IN LEAD/STANDBY, ONE UNIT SHALL OPERATE AS THE LEAD UNIT, WITH THE OTHER UNIT SET TO BE THE STAND-BY UNIT. LEAD UNITS SHALL BE ROTATED AUTOMATICALLY TO INCLUDE A ROTATING BASIS AT TIME INTERVALS OF 168 HOURS RUNTIME (ADJ.). SHOULD AN OPERATING UNIT FAIL, THE STAND-BY UNIT SHOULD BE STARTED AUTOMATICALLY AND ALARM SHALL BE SENT TO THE BAS. UNITS SHALL AUTOMATICALLY SHUTDOWN UPON RELEASE ANY ACTIVATION OF ROOM FIRE SUPPRESSION SYSTEM, ALL RELAY CONNECTIONS SHALL BE BY CONTROLS CONTRACTOR

LIQUID DETECTION SYSTEM LIQUID DETECTION SYSTEM SHALL BE MONITORED BY THE BAS AND PROVIDE ALARMS.

FAN POWERED BOXES

SYSTEM INTERFACE.

TERMINAL UNIT "OCCUPIED / UNOCCUPIED" SCHEDULE IS DETERMINED BY IT'S ASSOCIATED ROOFTOP UNIT SCHEDULE. TERMINAL UNITS ARE PROVIDED WITH A WALL MOUNTED TEMPERATURE SENSOR FOR CONTROL.

IN THE OCCUPIED MODE, THE SPACE TEMPERATURE SHALL BE 72° F. (ADJ). AS THE SPACE TEMPERATURE RISES ABOVE SETPOINT, THE PRIMARY AIR VALVE MODULATES OPEN TO THE MAXIMUM AIRFLOW TO MAINTAIN SETPOINT. AS SPACE TEMPERATURE DROPS TO SETPONT, THE PRIMARY AIR VALVE CLOSES TO THE MINIMUM AIRFLOW. ON A CONTINUED DROP IN SPACE TEMPERATURE. THE TERMINAL UNIT SUPPLY FAN IS STARTED, SUPPLYING PLENUM AIR TO THE SPACE, AS THE SPACE TEMPERATURE CONTINUES TO DROP BELOW SETPOINT, THE TERMINAL UNIT HOT WATER CONTROL VALVE IS MODULATED TO MAINTAIN SPACE TEMPERATURE SETPOINT.

IN THE "UNOCCUPIED MODE", THE PRIMARY AIR VALVE SHALL CLOSE TO THE MINIMUM AIRFLOW POSITION. THE SPACE TEMPERATURE SENSOR SHALL BE USED TO PROVIDE "UNOCCUPIED" TEMPERATURE SETPOINTS OF 60° F. (ADJ) FOR HEATING AND 85° F. (ADJ) FOR COOLING. IF SYSTEM IS ACTIVATED BY THE UNOCCUPIED COOLING SETPOINT THE TERMINAL UNIT SHALL OPERATE AS OUTLINED ABOVE FOR OCCUPIED COOLING. IF THE SYSTEM IS ACTIVATED BY THE UNOCCUPIED HEATING SETPOINT, TERMINAL UNIT FAN SHALL BE STARTED AND TERMINAL UNIT HEAT SHALL BE MODULATED IN STAGES AS REQUIRED TO SATISFY UNOCCUPIED SETPOINTS.

CONTROL OF NOTED 3-WAY VALVES (FULL MODULATION) SHALL BE TO ALLOW FOR FULL FLOW THROUGH REMAINING PORT ON VALVE, ALL 2-WAY CONTROL VALVES SHALL BE FULL MODULATION TYPE.

ALL FAN POWERED BOXES SHALL SHUT DOWN UPON RECEIPT FROM SIGNAL FROM THI FIRE ALARM SYSTEM VIA POINT TIED TO BAS. OR SMOKE DETECTION ASSOCIATED WITH RESPECTIVE AIR HANDLER. ALL SHUTDOWNS SHALL BE ACCOMPLISHED IN A SAFE AND COORDINATED MANNER SO AS NOT TO DAMAGE ANY EQUIPMENT. BAS SHALL PROVIDE MINIMUM AND MAXIMUM AIRFLOW ADJUSTMENTS THROUGH THE

VARIABLE VOLUME AIR HANDLING UNITS (AHU-1 & 2)

ALL UNITS SHALL BE STOPPED/STARTED ON A PROGRAMMED BASIS THROUGH THE BAS. WHILE IN THE OCCUPIED MODE, THE UNIT SUPPLY FAN SHALL OPERATE CONTINUOUSLY. SUPPLY FAN SPEED SHALL BE CONTROLLED BY A VARIABLE FREQUENCY DRIVE AND DUCT MOUNTED STATIC PRESSURE SENSOR. THE STATIC PRESSURE SENSOR SETPOINT SHALL BE RESET USING A TRIM AND RESPOND ALGORITHM BASED ON ZONE AIR FLOW REQUIREMENTS FROM A LOW SETTING OF 0.75" (ADJ.) TO A HIGH SETTING OF 1.50" (ADJ.). ON A CALL FOR MORE AIRFLOW AT THE ZONE LEVEL AND THE SPACE TEMPÉRATURE ABOVE SETPOINT, THE SETPOINT SHALL BE RESET TO THE HIGHER VALUE. AS ZONE TEMPERATURE SETPOINT IS SATISFIED AND THE AIRFLOW DEMAND DECREASES, THE SETPOINT SHALL RESET TO THE LOWER VALUE.

RETURN FAN SHALL BE STARTED AND STOPPED WITH SUPPLY FAN, AND SHALL BE MODULATED BASED ADJUSTED TO ALLOW FOR THE BUILDING PRESSURE TO REMAIN POSITIVE. BUILDING PRESSURE SHALL BE MONITORED AND AT ANY TIME THE RETURN AIR FAN SPEED SHALL BE ADJUSTED TO MAINTAIN A POSITIVE BUILDING PRESSURE. A DISCHARGE AIR SENSOR SHALL CONTROL UNIT COOLING AND HEATING CONTROL VALVES TO MAINTAIN THE ROOFTOP UNIT SUPPLY AIR TEMPERATURE PER THE FOLLOWING SUPPLY AIR TEMPERATURE (SAT) RESET SCHEDULE:

SUPPLY AIR TEMPERATURE RESET: 56° SAT WITH AN O.A. TEMPERATURE OF 70 DEGREES (OR HIGHER)

70° F. SAT WITH AN O.A. TEMPERATURE OF 50 DEGREES (OR LOWER) (SAT SHALL VARY LINEARLY BETWEEN THE HIGH AND LOW SETPOINTS. ALL SETPOINTS SHALL BE ADJUSTABLE). NOTE: SUPPLY AIR TEMPERATURE RESET SHALL BE LIMITED TO A HIGH TEMPERATURE OF 62° F IF ANY ZONE SERVED HAS A CALL FOR COOLING.

BAS SHALL PROVIDE ECONOMIZER OPERATION TO PROVIDE "FREE COOLING" WHEN OUTDOOR AIR CONDITIONS ALLOW. UPON BAS DETERMINATION THAT OUTSIDE AIR FNTHALPY IS BELOW RETURN AIR ENTHALPY IN COOLING MODE. THE OUTSIDE AIR. RETURN AIR AND RELIEF AIR DAMPERS SHALL MODULATE TO MAINTAIN UNIT DISCHARGE AIR TEMPERATURE. IF "ECONOMIZER" CONTROL IS INSUFFICIENT TO MAINTAIN DISCHARGE AIR TEMPERATURE, THE UNIT COOLING CYCLE SHALL FUNCTION AS OUTLINED ABOVE. UPON A DROP IN DISCHARGE AIR TEMPERATURE BELOW SETPOINT, THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL MODULATE CLOSED UNTIL THE MINIMUM OUTSIDE AIR POSITION IS REACHED.

CONTROLS SHALL PROVIDE FOR MORNING WARM-UP AND NIGHT SETBACK DURING UNOCCUPIED TIMES. UPON UNIT START-UP, IF RETURN AIR TEMPERATURE IS BELOW 65° F. (ADJ) OR ABOVE 75° F. (ADJ), THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED AND THE HEATING OR COOLING CONTROL VALVES SHALL OPEN TO THE HEATING OR COOLING COILS AS REQUIRED TO RAISE OR LOWER THE RETURN AIR TEMPERATURE. WHEN RETURN AIR TEMPERATURE RISES ABOVE 62° F. (ADJ) OR FALLS BELOW 78° F. (ADJ), THE UNIT SHALL BE CONTROLLED AS OUTLINED ABOVE.

WHILE IN THE UNOCCUPIED MODE, THE UNIT SUPPLY FAN SHALL BE OFF, THE CHILLED WATER AND HOT WATER CONTROL VALVES SHALL BE CLOSED TO THE UNIT AND THE TERMINAL UNIT SPACE TEMPERATURE SETPOINTS SHALL BE SET TO UNOCCUPIED SETTINGS OF 60° FOR HEATING (ADJ) AND 85° FOR COOLING (ADJ). UPON A CALL FOR HEATING OR COOLING TO MEET UNOCCUPIED SETPOINTS, THE UNIT FAN SHALL BE STARTED AND THE HEATING OR CHILLED WATER CONTROL VALVES SHALL BE OPENED TO THE HEATING OR COOLING COIL AS REQUIRED BY THE SPACE TEMPERATURE. THE BOILER PLANT OR CHILLER PLANT SHALL ALSO BE STARTED AS REQUIRED TO SATISFY SETPOINTS. THE UNIT AND ASSOCIATED CENTRAL PLANT SHALL OPERATE FOR A MINIMUM OF 30 MINUTES (OR AS REQUIRED TO SATISFY UNOCCUPIED SETPOINT) AND SHALL NOT BE ALLOWED TO RESTART FOR A MINIMUM OF 15 MINUTES FOLLOWING SATISFACTION OF UNOCCUPIED SETPOINT AND SYSTEM SHUT-DOWN.

OUTSIDE AIR INTAKE SHALL BE PROVIDED WITH A (2) MOTORIZED DAMPERS (1) SIZED FOR MINIMUM OUTSIDE (2-POSITION) AND (1) SIZED FOR THE REMAINING CO2 CONTROL AND ECONOMIZER OUTSIDE AIRFLOW (MODULATING). ON UNIT START UP. THE O.A. DAMPERS SHALL REMAIN CLOSED UNTIL THE RETURN AIR TEMPERATURE RISES ABOVE 65° (ADJ) OR FALLS BELOW 78° (ADJ). ONCE RETURN AIR TEMPERATURE IS SATISFIED, THE MINIMUM O.A. INTAKE DAMPER SHALL BE OPEN WHILE THE AIR HANDLING UNIT IS IN THE OCCUPIED MODE, DAMPER SHALL OPEN TO MAINTAIN THE MINIMUM OUTSIDE AIRFLOW. DAMPER SHALL REMAIN CLOSED WHILE THE UNIT IS IN THE UNOCCUPIED MODE. BAS SHALL BE CAPABLE OF OPENING AND CLOSING OUTSIDE AIR DAMPERS.

CO2 SENSOR MOUNTED IN THE RETURN DUCT SHALL MODULATE THE OUTSIDE AIR DAMPER FROM THE OCCUPIED MINIMUM OUTSIDE AIR AIRFLOW TO DESIGN OUTSIDE AIR AIRFLOW (SEE AHU SCHEDULE) BASED ON HIGHER MEASURED CO2 LEVELS IN THE SPACE. DAMPER SHALL MODULATE OPEN AS REQUIRED TO MAINTAIN A SPACE CO2 LEVEL OF 500 PPM (ADJ.) ABOVE THE OUTSIDE AIR CO2 LEVEL. AN ALARM SHALL BE ACTIVATED IF THE SPACE CO2 LEVEL RISES ABOVE 1200 PPM (ADJ.).

SMOKE DETECTOR SHALL BE PROVIDED IN THE RETURN DUCT (UPSTREAM OF THE OUTSIDE AIR DUCT CONNECTION). DETECTOR SHALL SHUT DOWN SUPPLY AND RETURN FAN UPON ACTIVATION.

SHUT-DOWN SUPPLY FAN IF THE MIXED AIR TEMPERATURE FALLS BELOW 38° F.

A FREEZE-STAT SHALL BE LOCATED UPSTREAM OF THE PREHEAT COIL AIR STREAM TO

UPSTREAM OF PREHEAT COIL.) STATIC PRESSURE RESET SHALL BE PROVIDED TO POLL ALL BOXES AND ADJUST STATIC

PRESSURE SETPOINT DOWN UNTIL (1) BOX IS IN FULL COOLING

FREEZE-STAT SHALL HAVE MANUAL RESET ONLY. (FREEZESTAT SHALL BE LOCATED

KITCHEN HOOD CONTROLS AND INTERLOCKS

- THE ASSOCIATED HOOD MANUAL PULL STATION, BUILDING FIRE ALARMS SYSTEM, OR HOOD FIRE CONTROL SYSTEM SHALL SHUT-DOWN KITCHEN HOOD MAKE-UP AIR FAN AND EXHAUST FAN UPON ACTIVATION OF HOOD FIRE EXTINGUISHING SYSTEM OR RECEIPT OF A GENERAL FIRE ALARM NOTIFICATION, OR MANUAL PULL STATION SIGNAL. KITCHEN HOOD EXHAUST FAN SHALL SHUT DOWN. PROVIDE INTERLOCK FOR AUTOMATIC OPERATION OF FIRE SUPPRESSION SYSTEM WITH: - SOLENOID GAS VALVE (BY PLBG. CONTR.)
- SHUNT TRIP BREAKER (BY ELEC. CONTR.) - HOOD SUPPLY AND EXHAUST FANS REMOTE MANUAL PULL STATION
- DISHWASHER EXHAUST FAN ALL ASSOCIATED AIR HANDLING UNITS
- FIRE ALARM SYSTEM NOTIFICATION (BY ELEC. CONTR.)

THE ACTUATION OF THE FIRE SUPPRESSION SYSTEM SHALL AUTOMATICALLY SHUT DOWN THE FUEL OF ELECTRICAL POWER SUPPLY TO THE COOKING EQUIPMENT. THE FUEL AND ELECTRICAL SUPPLY RESET SHALL BE MANUAL.

OVEN-1 & 2 ASSOCIATED HOOD(S) CONTROL SHALL BE INTERLOCKED TO THE KEF-5 VIA DRY CONTROL FOR OPERATION OF FAN ONLY WHEN OVENS ARE OPERATING.

CONSTANT VOLUME KITCHEN HOODS 1-9

KITCHEN HOOD EXHAUST AND SUPPLY FAN ASSOCIATED WITH ABOVE NOTED HOODS SHALL BE CONTROLLED BY A SWITCH LOCATED ON THE CONTROL PANEL LOCATED ON THE FACE OF THE EXHAUST HOOD. HOOD SHALL ALSO BE PROVIDED WITH A TEMPERATURE SENSOR TO AUTOMATICALLY START BOTH THE EXHAUST AND SUPPLY FAN. IN THE EVENT OF A FIRE EMERGENCY: THE SUPPLY FAN SHALL SHUT DOWN AND THE EXHAUST FAN SHALL CONTINUE TO OPERATE. (REFER TO KITCHEN HOOD CONTROLS AND INTERLOCKS SEQUENCE)

FAN COIL UNITS

FAN COIL UNITS SHALL BE STOPPED/STARTED ON A PROGRAMMED BASIS THROUGH THE

WHILE IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY. A WALL MOUNTED TEMPERATURE SENSOR SHALL BE UTILIZED TO MAINTAIN SPACE TEMPERATURE OF 72° (ADJ). CHILLED WATER CONTROL VALVE SHALL MODULATE OPEN TO THE COIL ON A RISE IN TEMPERATURE ABOVE SENSOR SETPOINT. AS THE SPACE TEMPERATURE FALLS BELOW SETPOINT, CHILLED WATER CONTROL VALVE SHALL CLOSE AND HOT WATER CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE

A FREEZE-STAT SHALL BE LOCATED IN THE MIXED AIR STREAM TO SHUT-DOWN SUPPLY FAN IF THE MIXED AIR TEMPERATURE FALLS BELOW 38° F. FREEZE-STAT SHALL HAVE MANUAL RESET ONLY.

CONTROL OF NOTED 3-WAY VALVES (FULL MODULATION) SHALL BE TO ALLOW FOR FULL FLOW THROUGH REMAINING PORT ON VALVE, ALL 2-WAY CONTROL VALVES SHALL BE FULL MODULATION TYPE.

CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE, 65° F. (ADJ) WITH SPACE

PROVIDE WALL SWITCHES, WALL THERMOSTATS, INTERLOCKS, ETC. AS INDICATED ON THE FAN SCHEDULE TO CONTROL FANS AS INDICATED ON PLANS.

BAS SHALL OPERATE EXHAUST FANS ON A PROGRAMMED SCHEDULE.

KITCHEN HOOD EXHAUST AND SUPPLY FAN SHALL BE CONTROLLED BY A SWITCH LOCATED ON THE CONTROL PANEL (CONTROL PANEL BY KEC) NOTED ON THE PLANS. HOOD SHALL ALSO BE PROVIDED WITH A TEMPERATURE SENSOR TO AUTOMATICALLY START BOTH THE EXHAUST AND SUPPLY FAN. IN THE EVENT OF A FIRE EMERGENCY: THE SUPPLY FAN SHALL SHUT DOWN AND THE EXHAUST FAN SHALL CONTINUE TO

FOOD SERVICE WATER HEATERS:

AND SHALL GENERATE AN ALARM ON PUMP FAILURE.

<u>DOMESTIC WATER HEATING NOTES:</u>

1. STORAGE TEMPERATURE SENSORS ARE PROVIDED BY THE PLUMBING CONTRACTOR WITH THE STORAGE TANKS. HWS AND HWR TEMPERATURE SENSORS SHALL BE FURNISHED AND INSTALLED BY THE CONTROLS CONTRACTOR. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH PLUMBING CONTRACTOR PRIOR TO INSTALLATION

UNITS SHALL PROVIDE COOLING ON A CONTINUOUS BASIS. SUPPLY FAN SHALL RUN CONTINUOUSLY AND COOLING CYCLE SHALL CYCLE WITH A CALL FOR CHAINTAINT CROOM TEMPERATURE SETPOINT OF 75° F. (ADJ.). UNITS SHALL BE PROVIDED WITH STANDALONE FACTORY CONTROLS. BAS SHALL MONITOR SYSTEM STATUS AND SHALL ALSO MONITOR ROOM TEMPERATURE WITH A WALL MOUNTED TEMPERATURE SENSOR. AN ALARM SHALL BE GENERATED UPON AN EQUIPMENT FAILURE OR IF THE ROOM TEMPERATURE RISES ABOVE 85° F. (ADJ.)

DUCT MOUNTED SMOKE DETECTORS:

SMOKE DETECTOR SHALL BE PROVIDED IN THE RETURN DUCT PRIOR TO THE OUTSIDE AIR DUCT CONNECTION. DETECTOR SHALL INTERFACE WITH FIRE ALARM SYSTEM AND SHUT-DOWN UNIT FANS UPON ACTIVATION. A NOTIFICATION ALARM SHALL BE GENERATED WHEN A SMOKE DETECTOR IS ACTIVATED. SMOKE DETECTORS SHALL BE INDICATED ON EQUIPMENT GRAPHICS WITH WHICH DETECTOR IS ASSOCIATED.

HEAT TAPE

HEAT TAPE FOR EXTERIOR PIPING. SHALL BE PROVIDED WITH EMERGENCY POWER TO CONTINUE FREEZE PROTECTION DURING A POWER OUTAGE. A TEMPERATURE SENSOR SHALL BE PROVIDED WITHIN THE INSULATION ON ALL EXTERIOR PIPING WITH HEAT TAPE TO VERIFY HEAT TAPE OPERATION. IF TEMPERATURE FALLS BELOW 35° F. (ADJ), AN ALARM SHALL BE SENT AND THE PUMPS (P-1-4) SHALL BE STARTED.

WHILE IN THE UNOCCUPIED MODE, THE UNIT SUPPLY FAN SHALL BE OFF, THE CHILLED WATER AND HOT WATER CONTROL VALVES SHALL BE CLOSED TO THE UNIT AND THE SPACE TEMPERATURE SETPOINTS SHALL BE SET TO UNOCCUPIED SETTINGS OF 60° FOR HEATING (ADJ) AND 85° FOR COOLING (ADJ). UPON A CALL FOR HEATING OR COOLING TO MEET UNOCCUPIED SETPOINTS, THE UNIT FAN SHALL BE STARTED AND THE HEATING OR CHILLED WATER CONTROL VALVES SHALL BE OPENED TO THE HEATING OR COOLING COIL AS REQUIRED BY THE SPACE TEMPERATURE. THE BOILER PLANT OR CHILLER PLANT SHALL ALSO BE STARTED AS REQUIRED TO SATISFY SETPOINTS. THE UNIT AND ASSOCIATED CENTRAL PLANT SHALL OPERATE FOR A MINIMUM OF 30 MINUTES (OR AS REQUIRED TO SATISFY UNOCCUPIED SETPOINT) AND SHALL NOT BE ALLOWED TO RESTART FOR A MINIMUM OF 15 MINUTES (ADJ.) FOLLOWING SATISFACTION OF UNOCCUPIED SETPOINT AND SYSTEM SHUT-DOWN.

MOTOR OPERATED DAMPER INSTALLED IN ASSOCIATED OUTSIDE AIR DUCT SHALL

AUTOMATICALLY CLOSED WHEN ASSOCIATED FAN COIL UNIT IS NOT IN OPERATION

A FLOAT SWITCH SHALL BE INSTALLED IN THE EMERGENCY DRAIN PAN WIRED TO SHUTDOWN THE UNIT UPON DETECTION OF WATER, AND ALARM SHALL BE SENT TO THE

A SPACE TEMPERATURE SENSOR SHALL CONTROL UNIT HEATER FAN AND HOT WATER TEMPERATURE ABOVE SETPOINT. FAN SHALL REMAIN OFF AND CÓNTROL VALVE SHALL REMAIN CLOSED. AS SPACE TEMPERATURE FALLS BELOW SETPOINT, THE FAN SHALL BE STARTED AND THE HOT WATER VALVE SHALL OPEN TO THE UNIT TO SATISFY SETPOINT.

DOMESTIC WATER HEATING SYSTEM SHALL BE STOPPED/STARTED ON A PROGRAMMED BASIS THROUGH THE BAS. IN THE "OCCUPIED" MODE, HOT WATER FACTORY INSTALLED CONTROLS AND CASCADING AND WHI HEATER SEQUENCER SHALL STAGE WATER HEATERS IN A LEAD/LAG CONTROL SEQUENCE AS REQUIRED TO MAINTAIN STORAGE TANK TEMPERATURES OF 140° F. (ADJ.). EACH TANK TEMPERATURE SHALL BE MONITORED AND AN ALARM SHALL BE GENERATED SHOULD EITHER TANK DEVIATE FROM SETPOINT BY 10° F. (ADJ.) CONTINUOUSLY FOR A PERIOD OF 15 MINUTES (ADJ.). BAS SHALL MONITOR DOMESTIC HWS TEMPERATURE FROM THE MIXING VALVE AND GENERATE AN ALARM IF THE DOMESTIC HWS DEVIATES 5° F. (ADJ.) CONTINUOUSLY FOR A PERIOD OF 15 MINUTES (ADJ.). RECIRCULATION PUMP SHALL BE ENABLED WHEN THE SYSTEM IS IN THE OCCUPIED MODE. PUMP RCP-1 SHALL BE STARTED WHEN DOMESTIC HWR TEMPERATURE FALLS BELOW A LOW SETPOINT OF 130° F. (ADJ.) CONTINUOUSLY FOR A PERIOD OF 15 MINUTES (ADJ.) AND SHALL STOP WHEN DOMESTIC HWR TEMPERATURE RISES ABOVE 135° F. (ADJ.) CONTINUOUSLY FOR A PERIOD OF 15 MINUTES (ADJ.). BAS PROVIDE RE-CIRCULATION PUMP STATUS

2. A CARBON MONOXIDE/OXYGEN DEPLETION SENSOR SHALL BE PROVIDED IN THE MECHANICAL ROOM (SEE PLANS FOR LOCATION) AND SHALL SHUT DOWN THE WATER HEATERS AND GENERATE AN ALARM IF ACTIVATED. CO DETECTOR SHALL BE PER UL 2034 AND INSTALLED PER NFPA 720

DUCTLESS SPLIT SYSTEMS:

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LANDDESIGN

<u>UTILITY MONITORING:</u> (SEE 1/M-002 FOR ADDITIONAL INFORMATION)

UTILITY MONITORING NOTES:

ECHELON SMARTSERVER.

CONTROL SYSTEM NOTES

THE INTENT OF THE SYSTEM IS TO CONSTANTLY MEASURE AND DISPLAY THE ENERGY

(ELECTRICAL AND NATURAL GAS) AND WATER (DOMESTIC, CHILLED WATER AND HOT

VIA THE INTERNET AND VIA UNC CHARLOTTE'S EXISTING UTILITY MONITORING

INTEGRATOR IS RESPONSIBLE FOR PROVIDING TRENDS FOR INTEGRATION INTO

DATA LOGGING DEVICES AS REQUIRED TO MONITOR THE BUILDING UTILITIES.

FEET (CF) TOTAL USAGE AND CUBIC FEET PER HOUR (CFH) DEMAND.

WATER) BEING CONSUMED BY THE BUILDING. THE INFORMATION SHALL BE MADE PUBLIC

DASHBOARD SYSTEM, PERISCOPE BY ACTIVELOGIX. THE CONTROLS VENDOR OR SYSTEM

PERISCOPE. THE CONTROLS CONTRACTOR (SYSTEM INTEGRATOR) WILL PROVIDE THE

1. DOMESTIC WATER AND NATURAL GAS PULSE METERS SHALL BE PROVIDED AND

INSTALLED BY THE PLUMBING CONTRACTOR. METERS SHALL PROVIDE BOTH CUBIC

2. ELECTRICAL CIRCUITS AND CT'S FOR MONITORING POWER SHALL BE PROVIDED

THE CONTROLS CONTRACTOR (SYSTEM INTEGRATOR) SHALL COORDINATE

COMMUNICATION PROTOCOL REQUIREMENTS FOR ALL MÉTERS AND MONITORING

AND INSTALLED BY THE FLECTRICAL CONTRACTOR. FLECTRICAL CONTRACTOR

SHALL ALSO PROVIDE AND INSTALL 3—PHASE AND MULTI—CIRCUIT METERS.

DEVICES WITH ALL OTHER DIVISIONS TO ENSURE SYSTEM COMPATIBILITY.

1. SEE SPECIFICATIONS (SECTION 230900) FOR ADDITIONAL REQUIREMENTS.

COMMUNICATE THE MINIMUM REQUIREMENTS AND GENERAL DESIGN INTENT TO THE

COMPLETE SEQUENCE OF OPERATION. IN THE CONTROLS SUBMITTAL THE CONTROLS

SYSTEMS IDENTIFIED AND SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, TIME

DELAYS. ALARM POINTS. ETC. AS REQUIRED TO COMPLY WITH THE DESIGN INTENT. THE

CONTROLS CONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM

RUN TIME DELAYS AND DEAD BANDS TO PREVENT SHORT CYCLING. ALL MONITORED

POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO REQUIRED

CORRECTIVE ACTIONS OR UNIT SHUT-DOWNS. CONTROL CONTRACTOR SHALL SPECIFY

TEMPERATURE AND HUMIDITY SENSORS SHALL BE PROVIDED FOR SYSTEM OPERATION

TEMPERATURE SETPOINTS SHOULD BE USED FOR ORIGINAL SYSTEM SET-UP. ANY

. FLOW SWITCHES OR ADJUSTABLE TYPE CURRENT SWITCHES SHALL BE PROVIDED IN

IONIZATION TYPE DUCT SMOKE DETECTORS SHALL BE FURNISHED AND WIRED TO THE

FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR

SHALL INSTALL DETECTORS IN THE DUCT. E.S SHALL WRE BACK TO INDIVIDUAL AHU

ELECTRICAL CONTRACTOR SHALL PROVIDE DEDICATED 120V CIRCUIT(S) IN A J-BOX

FOR CONTROL POWER, CONTROLS CONTRACTOR SHALL EXTEND 120V POWER FROM

J-BOX TO CONTROL PANELS, DAMPER ACTUATORS, TRANSFORMERS, ETC. AS

9. SYSTEM GRAPHICS SHALL INCLUDE ALL SMOKE DAMPER LOCATIONS AND SHALL

10. LOCATE MAIN DDC CONTROL PANEL(S) IN BASEMENT LEVEL MECHANICAL ROOM.

12. PROVIDE EXPORT TAGGING AND CONTROLS PROGRAMMING AS REQUIRED TO FULLY

INTEGRATE WITH THE UNIVERSITY BAS SERVER PLATFORM TO SIMPLIFY IMPORTING

COORDINATE EXACT LOCATION PANEL WITH ALL OTHER TRADES PRIOR TO

8. BAS SHALL ALLOW GLOBAL OPERATION OF HOT WATER CONTROL VALVES.

PROVIDE STATUS AND GENERATE AN ALARM UPON ACTIVATION.

JACE CONTROLS, POINTS LIST AND GRAPHIC CONTROL SCREENS.

11. PROVIDE ALL CONTROL PANELS WITH 3RD PARTY U.L. LISTING

CHANGES IN SETPOINT SETTINGS REQUIRED FOR INTENDED SYSTEM OPERATION SHALL

IN THE CONTROL SUBMITTAL FAIL SAFE POSITION FOR OUT OF RANGE, FAIL SAFE

SYSTEM SHALL USE CAMPUS SYSTEM GLOBAL OUTSIDE AIR TEMPERATURE AND

HUMIDITY SENSORS FOR PRIMARY SYSTEM OPERATION. LOCAL OUTSIDE AIR

4. ALL CONTROL SETPOINTS SHALL BE ADJUSTABLE AND TRENDABLE. INDICATED

CONTROLS CONTRACTOR AND IS NOT INTENDED TO BE A FULLY DEVELOPED OR

CONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL

2. THE SEQUENCE OF OPERATION AND POINTS LIST IS INTENDED TO

POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION.

BE NOTED ON AS-BUILT CONTROL DRAWINGS.

REQUIRED FOR OPERATION OF CONTROL SYSTEM.

THE PIPING OF EACH PUMP TO VERIFY PUMP STATUS.

CONTROL PANEL FOR UNIT SHUT-DOWN UPON ACTIVATION.

4. DATA LOGGER SHALL BE TRIDIUM JACE, RED LION OR,

NC License Number - C-0658 Civil Engineer & Landscape Architect 223 North Graham Street Charlotte, North Carolina 28202 (t) 704/333.0325

SKA CONSULTING ENGINEERS NC License Number - F-0508 Structural Engineer 4651 Charlotte Park Drive, Suite 150 Charlotte, North Carolina 28217

OPTIMA ENGINEERING

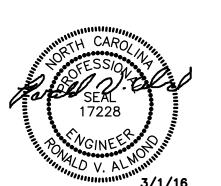
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NC License Number - C-0914 Mechanical, Electrical, Plumbing & Fire Protection Engineers 1927 South Tryon Street, Suite 300 Charlotte, North Carolina 28203 (t) 704/338-1292

HERBIN DESIGN

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UNC Charlotte RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM 01	3/16/
2	ADDENDUM 02	3/22/
	_	

Project:

Checked By: RVA

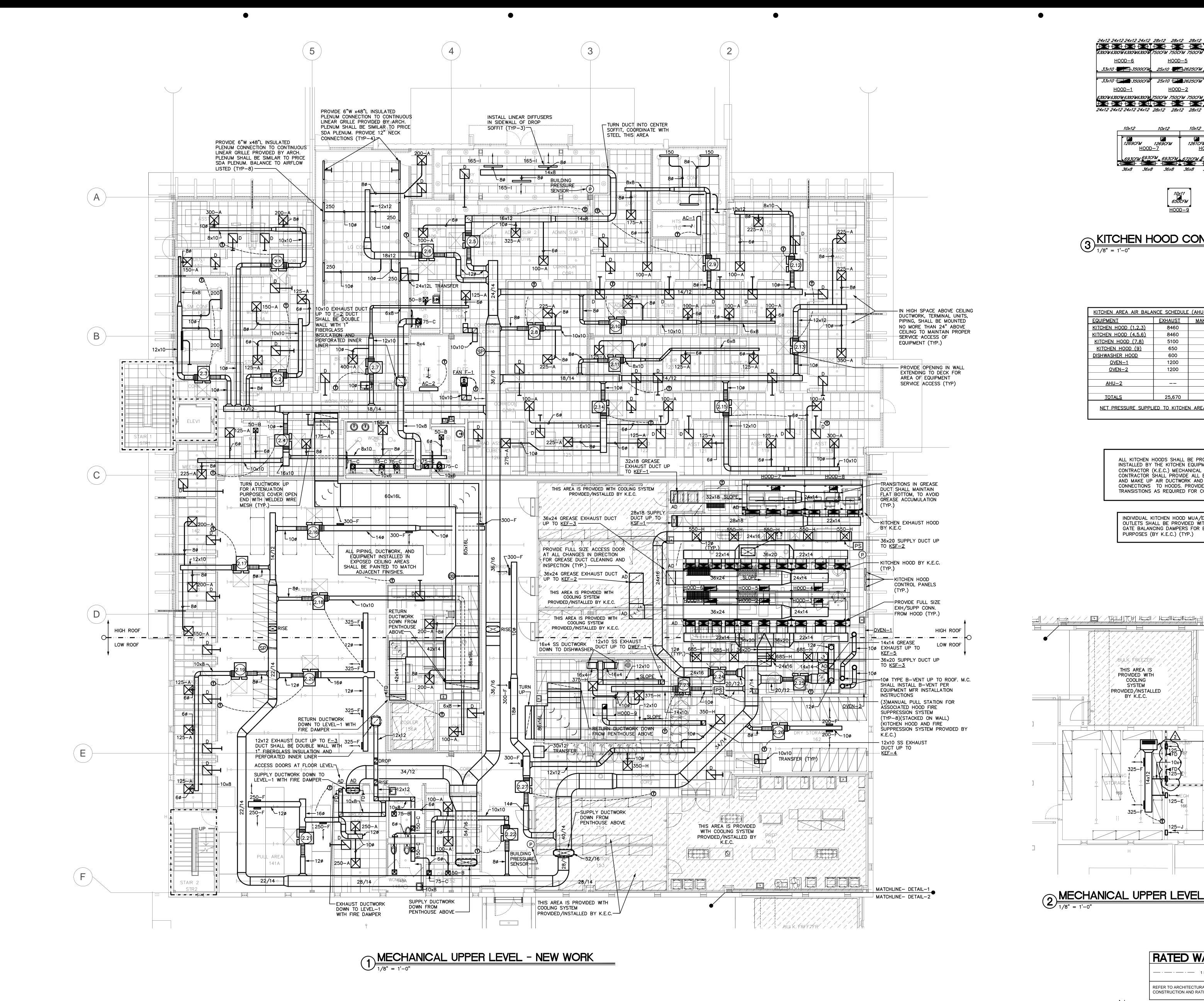
Drawn By:

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MECHANICAL SEQUENCE OF OPERATIONS

CONSTRUCTION **DOCUMENTS**

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KITCHEN AREA AIR BALANCE SCHEDULE (AHU-2)								
<u>EQUIPMENT</u>	<u>EXHAUST</u>	MAKE-UP	<u>OUTSIDE AIR</u>					
KITCHEN HOOD (1,2,3)	8460	6850						
KITCHEN HOOD (4.5.6)	8460	6850						
KITCHEN HOOD (7.8)	5100	4100	-					
KITCHEN HOOD (9)	650	0						
DISHWASHER HOOD	600							
<u>OVEN-1</u>	1200		-					
OVEN-2	1200							
<u>AHU-2</u>			8,370					
<u>TOTALS</u>	25,670	26,	170					

NET PRESSURE SUPPLIED TO KITCHEN AREA: 500 CFM (POSITIVE)

3 KITCHEN HOOD CONNECTION PLAN

1/8" = 1'-0"

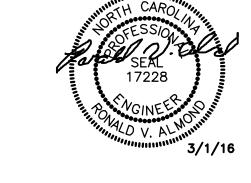
24x12 24x12 24x12 24x12 28x12 28x12 28x12 28x12 28x12 28x12 28x12 28x12

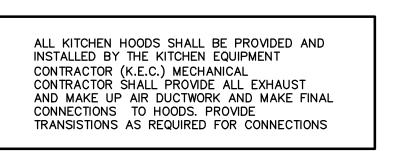
630CFM 630CFM 630CFM 630CFM Z50CFM Z50CFM 750CFM | 692CFM 692CFM 692CFM

<u> HOOD-8</u>

33x10 -3500CFM

0 - 2333CFM





MATCHLINE- DETAIL-1

MATCHLINE- DETAIL-2

(INSTALL AS HIGH AS POSSIBLE

PROVIDE SHEETMETAL SLEEVE WITH

(2) GRILLES ON EACH SIDE OF

OVERHEAD)

INDIVIDUAL KITCHEN HOOD MUA/EXHAUST OUTLETS SHALL BE PROVIDED WITH SLIDING GATE BALANCING DAMPERS FOR BALANCING PURPOSES (BY K.E.C.) (TYP.)

THIS AREA IS PROVIDED WITH

COOLING SYSTEM

PROVIDED/INSTALLED

BY K.E.C.



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MECHANICAL UPPER LEVEL PLAN NEW WORK

MECHANICAL UPPER LEVEL - NEW WORK

1/8" = 1'-0"

RATED WALL LEGEND REFER TO ARCHITECTURAL DRAWINGS FOR COMPLETE WALL CONSTRUCTION AND RATING INFORMATION.

CONSTRUCTION **DOCUMENTS**

-32 . M-202