ADDENDUM NUMBER ONE

Date: March 17, 2016

To: Plan Holders and Plan Rooms

From: **Jenkins•Peer** *Architects*
Charlotte, N.C.

Re: UNC Charlotte – Residence Dining Hall Renovation
SCO ID: 14-11273-02A
JPA Project #: 15NCC491

NOTICE TO BIDDERS:
Bidder is hereby notified that this Addendum shall hereby become a part of the Bid Set and the official Contract Documents, and shall be attached to the Project Manual for the Project.

The following items are intended to revise and clarify the Drawings and the Project Manual.

The bidder shall see that their Sub-Bidders are in full receipt of the information contained herein.

General Note:
This Addendum includes the following groups and subsequent "items" referring to various parts of the Contract Documents. Note that some "items" may refer to Bulletin Drawings or new Specification Sections which are attached at the back of the Addenda.

GENERAL REQUIREMENTS

Item 1. PRE-BID MEETING MINUTES (Meeting date March 15th 2016 – at UNC Charlotte - Cone 113)

A. Meeting minutes with Sign-In sheet of attendees attached.

Item 2. PRE-BID RFI'S AND QUESTIONS ASKED DURING BID PERIOD (Items not already addressed in the below changes or reissued drawings)

A. Bidder Question: Supplementary General Conditions, article 23, paragraph h. states completion of the project must be achieved in 308 consecutive calendar days AND by March 15th 2017. If the project does not start before May 11, 2016 through no fault of the Contractor, when do liquidated damages begin, after 308 days or after March 15th 2017? If the liquidated damages begin after March 15th 2017, is there a guaranteed start date?
   - Designer Response: The contractors will have 308 consecutive calendar days for completion, so yes if the project start date is delayed through no fault of the contractor beyond May 11, 2016, then the LD dates will shift as well.

B. Bidder Question: Detail 8/C-202 states to refer to structural drawings for wall design and footing for the parking lot retaining wall. We can't find any additional information on the structural plans, please advise.
   - Designer Response: See sheet S-204: Typical Retaining Wall Schedule

C. Bidder Question: There are some notes for the ramp area along gridline 3 that are cut off on detail A5/S-202, please advise
   - Designer Response: See sheet S-201 for requested information

D. Bidder Question: There are some discrepancies in the scaled width of the footings in the drawing versus what they are dimensioned in the details, please confirm detailed widths are correct.
   - Designer Response: Dimensions on the detail will supersede the scaled drawing. Please specify exact details in question and reissue pre-bid RFI.

E. Bidder Question: Mold doesn't appear to be addressed in the Hazardous Material Assessment. If mold is encountered, please confirm that it will be treated as an unforeseen condition.
   - Designer Response: Mold is not regulated in the same way was the Hazardous Materials listed in this report and no mold was encountered during the assessment. We confirm that if mold is encountered during the abatement or demolition phase, then it will be evaluated by the design team and its removal will be treated as an unforeseen condition.

F. Bidder Question: Due to the Easter holiday weekend, we would like to request an extension of the bid date.
   - Designer Response: This is being considered, but no decision to move the bid date has been made at this time. We intend to make a decision by Tuesday, February 22 and everyone will be informed of the decision via addendum if the bid opening date is changed.

G. Bidder Question: Is UNC Charlotte responsible for paying all permitting and plan review fees?
   - Designer Response: Yes. This is a State project, so there are no building permits or reviews with the local authorities. The only permits would be related to utilities and health department and the owner will pay for any fees associated with these items.

H. Bidder Question: Termite control - clarify it is just on new slabs.
   - Designer Response: See below for the removal of 31 31 16 Termite Control from the project.

I. Bidder Question: R-503 Typical Transition Details is missing from the set (R-601 was included by not listed).
   - Designer Response: R-503 is not to be in the set. R-601 has taken its place instead. See new included G-001 for updated drawing list.

J. Bidder Question: Is all piping to be manufactured in the USA per the general plumbing notes?
   - Designer Response: Yes, all plumbing piping and especially cast iron pipe, shall be manufactured in the USA.

K. Bidder Question: General notes call for type "L" copper for above grade domestic water. The Specs call for type "K".
   - Designer Response: Domestic water piping above grade shall be Type L copper. Specification section has been edited to reflect this.

L. Bidder Question: Please clarify make and model of SS-1. There appear to be two sizes both labeled SS-1.
   - Designer Response: The small SI1 that was shown in room Dish 160 has been deleted, revised plan P202 is included in Addendum 1. The only Solids Interceptor to be provided

is SS1 located outside, just upstream of the grease trap (GT1). It is as specified on drawing P003, Interceptor Schedule. This sheet is included in Addendum 1 as well.

M. Bidder Question: Are final connections for the Food Service equipment by the owner's food service contractor or the General Contractor's plumbing, mechanical, and electrical subcontractors?

- Designer Response: All final connections for the food service equipment that is being furnished and installed by the owner will be the responsibility of the General Contractor's plumbing, mechanical, and electrical subcontractors.

PROJECT MANUAL & TECHINCAL SPECIFICATIONS DIVISIONS

Item 3. Section 00 22 13 – SUPPLEMENTARY GENERAL CONDITIONS – Article 23, paragraph h. - Change "Three Thousand Dollars ($1000.00)" to "One Thousand Dollars ($1000.00)".

Item 4. Section 00 42 13 – FORM OF PROPOAL- Replace this section in its entirety with the attached section.

Item 5. Section 01 10 00 – SUMMARY – PART 1.5 WORK BY OWNER – Delete sub-paragraph 1.5.A. and replace with the following paragraph 1.5.A:

A. Items noted NIC (Not in Contract) will be supplied and installed by Owner after Final Acceptance, except as it relates to the Food Service equipment.
   1. The food service equipment work that is being provided by the owner's 3rd party kitchen equipment contractor (KEC) will need to be coordinated during the demolition and renovation construction and must be coordinated within the GC's construction schedule.
   2. The owner's kitchen equipment contractor is to be considered like one of the GC's subcontractors as it relates to coordination, scheduling, and access. The owner's food service contractor will reciprocate these measures.

Item 6. Section 01 21 00 – ALLOWANCES – Part 1.5 – Replace paragraphs 1.5 A. and 1.5 B. with the following:

A. **Allowance No. 1**: **Excavation of unforeseen unsuitable soil materials and off-site disposal (Imported Fill):** Include the removal of 100 cubic yards of unsuitable soils materials including all necessary equipment, material, and labor for unsuitable soil material removal and off-site disposal as designated, at associated unit price – UP-1. Provide removal of unsuitable soils and the replacement of unsuitable soil with compacted imported fill in accordance with Section 310000.

B. **Allowance No. 2**: **Trench Rock Excavation and Removal (Imported Fill):** Include the removal of 75 cubic yards of trench rock including all necessary equipment, material and labor for trench rock excavation and removal as designated, at associated unit price – UP-2. Provide the replacement of trench rock with compacted imported fill in accordance with Section 31 23 16.26.

Item 7. Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS – Part 1.11.C. – Replace Paragraph C. with the following:

C. General Contractor's Field Office: The GC shall provide and maintain, as part of the Contract, a weathertight and secure office for his daily use up until the time the hazardous material abatement has made it safe for the GC to create a field office within the existing building. The Field Office, once within the building, shall have lighting, electrical outlets, telephone, heating, cooling and be equipped with sturdy furniture, drawing rack and drawing display table. The office shall be large enough for the GC's own use and for use as a coordination office to include meeting space with tables and chairs for 12 people. All utilities, supplies, cleaning, and maintenance shall be by the GC as part of the Work

and at no additional cost. Provide telephone service as called for hereinbefore. All temporary offices and conference areas shall be smoke free.

Item 8. Section 01 78 39 – PROJECT RECORD DOCUMENTS – Replace this specification in its entirety with the attached specification. Note: This section was modified to include Record Site Utility Survey requirement.

Item 9. Section 04 20 00 – UNIT MASONRY – Change Part 2.4, Paragraph B.10. to the following: Color and Texture: Match existing brick on the RDH building; pre-approved Basis of Design is Taylor Clay #309 Pink, Wirecut.

Item 10. Section 06 82 13 – FIBERGLASS REINFORCED POLYESTER – Delete section 06 82 13 in its entirety.

Item 11. Section 07 14 00 – FLUID-APPLIED WATERPROOFING – Part 2 – Products – Add new paragraph 2.1.A.5. as follows: "W.R. Meadows; Product MEL-ROL LM."

Item 12. Section 08 41 13 – ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS – Part 2.3 A.3.– Change Glazing Plane from "front" to "center."

Item 13. Section 09 51 23 – ACOUSTICAL TILE CEILINGS – Part 2.6 – Add new paragraph H. as follows:

A. Framing members of suspended ceiling systems used to support luminaries shall be MAIN runners on BOTH sides of each fixture in all cases. Electrical contractor will be required to screw lay-in fixtures to the ceiling grid main runners.

Item 14. Section 11 13 19.19 – LOADING DOCK LEVELER – Part 1.6 A.3. – Change "hydraulic system" to "mechanical system".

Item 15. Section 11 13 19.19 – LOADING DOCK LEVELER – Part 2.2 A.1.a. – Clarification: The deck size is listed for the basis of design model as 72" x 99.5" while the drawing show a larger size. The deck size listed in the specifications is the correct dimension, the contractor is to size the pit according to the manufacturer's installation instructions to fit the approved dock leveler.

Item 16. Section 11 13 19.19 – LOADING DOCK LEVELER – Part 2.2 A.8.b. – Delete this paragraph. Clarification: The standard 16" long lip is not to be included, instead refer to paragraph 2.2 A.9. for the inclusion of the option to provide 18" long lip extension.

Item 17. Section 14 21 13 – ELECTRIC TRACTION ELEVATORS – Part 3.5 ADDITIONAL WARRANTY BID PRICE – Delete Part 3.5 in its entirety.

Item 18. Section 22 11 23 – DOMESTIC WATER PACKAGED BOOSTERS – Part 2 – Products – Add new paragraph 2.1.J.5.g as follows:

A. Provide auxiliary contacts for interface to BAS system. BAS system is indicated on HVAC plans and specifications. Coordinate appropriate communication protocol with BAS system provider. Include the following:

1. On-off status of each pump.
2. Alarm status.

Item 19. Section 22 05 03 – PLUMBING PIPE TUBE AND FITTINGS – Part 2.2 - Domestic Water Piping Above Grade: Change 2.2.A to read: Copper Tubing: ASTM B88, Type L hard drawn.

Item 20. Section 28 31 11 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM – Replace specification section 28 31 11 dated 3.1.2016 in its entirety with the attached specification dated 3.16.2016.

Item 21. Section 31 31 16 – TERMITE CONTROL – Delete this specification in its entirety. Note: Termite Control is no longer a requirement for this project.

DRAWING SHEETS:

Item 22. General Drawing Sheet G-001: Replace drawing sheet G-001 COVER SHEET VOLUMNE 1 OF 2 in its entirety with included new G-001.

Item 23. General Drawing Sheet G-002: Replace drawing sheet G-002 COVER SHEET VOLUMNE 2 OF 2 in its entirety with included new G-002.

Item 24. Civil Drawing Sheets: Replace civil drawings sheets C-101, C102, and C-602 in their entirety with the attached drawings sheets.

Item 25. Structural Drawing Sheets: See attached new drawing sheet S-201 FOUNDATION PLAN - NORTH, which was omitted from the previously issued drawing set.

Item 26. Architectural Drawing Sheet AD-102 – Replace drawing sheet AD-102 UPPER LEVEL DEMOLITION PLAN in its entirety with included new AD-102. Modifications include but are not limited to:

A. Slab demolition area modified due to adjusted blast chiller location
B. Slab demolition at norther end of the building has been reduced to coordinate with new structural footing locations
C. Clarification: Add note, “coordinate w/ new floor plans”, to Demo Key Note #19

Item 27. Architectural Drawing Sheet A-101 – Replace drawing sheet A-101 LOWER LEVEL FLOOR PLAN in its entirety with included new A-101.

Item 28. Architectural Drawing Sheet A-102 – Replace drawing sheet A-102 UPPER LEVEL FLOOR PLAN in its entirety with included new A-102. Modifications include but are not limited to:

A. Modification: enlarged details have been added
B. Blast chiller location modified
C. See plan for newly modified wall types
D. Modification: Dry Storage 162 east wall new furring added to accommodate roof drain leaders
E. Clarification: Note added: “New recessed slab location; see structural dwgs”

Item 29. Architectural Drawing Sheet A-401 – Replace drawing sheet A-401 ENLARGED RESTROOM PLANS & DETAILS in its entirety with included new A-401.

Item 30. Architectural Drawing Sheet A-501 – See attached new drawing sheet A-501 ENLARGED PLAN DETAILS, which was omitted from the drawings set.

Item 31. Architectural Drawing Sheet A-611 - Replace drawing sheet A-611 GLAZING & LOUVER SCHEDULE in its entirety with included new A-611. Clarification: See storefront elevation A14 & A16 for mullion cap extension location clarification.

Item 32. Architectural Drawing Sheet A-612 - Replace drawing sheet A-612 GLAZING & LOUVER DETAILS in its entirety with included new A-612.

Item 33. Architectural Drawing Sheet A-621 - Replace drawing sheet A-621 FINISH SCHEDULE in its entirety with included new A-621. Modifications include but are not limited to the following:

A. See Finish Schedule – Room 165 Catering Storage: modify base finish to RB-2, ceiling paint to be PNT-5, and note added: "Clean all interior walls free of all efflorescence and salts. Prep for paint."
B. See Finish Schedule Legend – QT-2 Added as an add alternate. QT-2 to replace QT-1 if alternate is accepted. QT-2 basis of design: Summitville, abrasive surface, #86 Elephant Grey

Item 34. Architectural Drawing Sheet A-623 - Replace drawing sheet A-623 INFILL PLAN & TILE TRANSITION DETAILS in its entirety with included new A-623.

Item 35. Plumbing Drawing Sheets: Replace plumbing drawings sheets P-002, P-003, P-201, P-202, P-204, and P-205 in their entirety with the attached drawings sheets.

Item 36. Mechanical Drawing Sheets: Replace mechanical drawings sheets M-001, M-002, M-004, M-005, M-202, and M-402 in their entirety with the attached drawings sheets.

Item 37. Electrical Drawing Sheet E-004: Change the following items as listed:

A. Feeder to panel 1L shall be 4-350 MCM, #2G, 3"C.;
B. The feeder between CB-S and ATS-S shall be 4-350MCM, #4G, 3"C.;
C. The feeder between CB-E and ATS-E shall be 4#3, #8g, 1-1/4"C.;
D. Keyed note 1 should read "Provide generator connection cabinet (GCC) under alternate #7, connection cabinet shall be Eaton GTB08MAMA or equal";
E. Revise feeder to T-KS to be 200A in lieu of 150A indicated

Item 38. Electrical Drawing Sheet E-008: Change the following items as listed:

A. Delete "Emergency Power System" notes, refer to specifications for requirements.

Item 32. Electrical Drawing Sheet E-502: Change the following items as listed:

A. Panel P shall be 225A MLO in lieu of 100A shown;
B. The breaker serving T-2L in panel 2H shall be 150A in lieu of 300A indicated, the conductors shall be in accordance with E004;
C. Breaker 1H-38,40,42 shall be 150A in lieu of 60A indicated.;
D. Breaker 1HS-37,39,41 shall be 225A in lieu of 100A shown, conductors shall be in accordance with E004.

END OF ADDENDUM NUMBER ONE

Attachments:

- Pre-Bid Meeting Minutes and Sign-In Sheet
- Revised Specification Sections as noted above
- Revised Drawing Sheets as noted above

Residence Dining Hall (RDH) Renovation

UNC Charlotte

SCO ID#: 14-11273-02A

JPA Project #15NCC491

Pre-Bid Meeting Minutes

March 15, 2016

UNC Charlotte - Cone 113

10:00-11:00am

Minutes

1. **Introduction of Project Team**
    a. Design Team:
        i. Jenkins Peer Architects:
            1. Dan Van Dyke – Project Manager
            2. Steve Houser – Project Architect
            3. Ronna Emerling – Project Designer
        ii. Optima Engineering – MEPFP:
            1. Ron Almond
        iii. SKA Engineering – Structural:
            1. Chuck Cardwell
        iv. Land Design – Civil:
            1. Marc Momsen
        v. Herbin Design – Food Service (owner-provided):
            1. Ralph Herbin

    b. UNC Charlotte
        i. Jeanine Bachtel – Associate Director for Capital Design
        ii. John Neilson – Associate Director for Capital Construction
        iii. Donny Edwards – Housing and Residence Life
        iv. Drew Averitt – Business Services
        v. T.L. Smith – Business Services
        vi. Donna Cox – Auxiliary Services

2. **Description of the Project**

    The project consists of the renovation of the existing building to include the relocation of Housing and Residence Life (HRL) offices paired with the relocation of the Business Services CAB catering commissary. The total size of the building is approximately 36,000 square feet – (*approximately 23,600 square feet on the main level and 12,600 square feet on the lower level.)* Existing Repurposed Dining Hall – Building will be fully gutted, loading dock at southern side of the building will be added, and adjacent boiler building will be repurposed, exterior cooler. Roof, window, & MEPFP full replacement (Northern side of building will be reworked via alternate package)

3. **Phase XIV Construction Status & Site Access**
    a. See attached photo
    b. Phase XIV fence due to come down mid-October, 2016.
        i. Until then, access to RDH will be from South & West sides

ii. Coordinate any work required to be complete before mid-October with Phase XIV through the owner's project manager.
iii. There is a possibility that an arrangement can be made with the contracting company of Phase XIV to leave the fence in place and transfer the leasing of the fence to the GC for the RDH project. Otherwise they would take down the fence and the RDH project GC would put up their own as necessary to utilize the space as necessary.

4. Parking & Contractor Offices

a. Parking Lot 8A to stay open during construction – not for the contractor's use.
b. The owner will provide remote parking for contractors at Starlight Theater during the semesters, whereas the contractors will be required to provide their own shuttling to the job site. During the summer, contractor parking will be available at Lot 6.
c. Sanford Hall Lane must remain open at all times for truck and emergency access:
    i. Coordination of Alternate #4 will require maintaining connection and safe access to Sanford, Moore, and South Village Crossing at all times.
    ii. Note: Move-in day and move out day is very busy at UNC Charlotte.
d. Contractor to utilize a temporary office trailer (not meeting room requirement) on site until the hazardous materials abatement is complete, at which point a space within the building should be utilized as the jobsite offices with a meeting room.
e. Up until the contractor can provide jobsite offices within the building, the owner will provide meeting space in one of the adjacent buildings.

5. Owner Preferred Alternates: The following owner-preferred bid alternates were opening read and discussed publicly; there were no comments regarding the owner's desire to pursue these alternates to maintain and improve functionality of these materials or systems:

a. UNC Charlotte Infrastructure System standard detailed vendor equipment specifications for Telecommunications Wiring System – Section 27 10 12
b. Simplex Grinnell to provide the fire alarm system
c. "English Edge" pavers by Pine Hall
d. Door Hardware *(two user group standards, sets: 1-27 HRL, 30-50 FM)*
    i. Schlage locksets and cylinders
    ii. Medeco door electronic cylinders
    iii. Von Duprin exit devices
    iv. Yale exit devices
    v. LCN closers

6. Food Service Contract

a. Separate bid package
b. Our project will include MEPFP final connection for food service equipment and coordination on site between trades.
c. Package will be complete at the same time; contractor will have to coordinate with Food Service Contractor.
d. As far as liquidated damages are concerned for the GC, the schedules for the FS contract and the GC's contract will need to be coordinated and completed on time. If the FS Contractor holds up completion of the work and Final Inspection beyond what was coordinated with and agreed to by the GC and owner, the owner will extend the completion date for accessing liquidated damages for the GC.

7. Hazardous Material Abatement

8. Review of Bidding Requirements:

a. Single Prime Bids only (GS 87-1). Pre-Qualified General Contractors are: DPR Construction, J.M. Thompson Company, Messer Construction Co., Monteith Construction Corp., PRO Construction Inc., Samet Corporation/SRS Incorporated, Shiel Sexton Company Inc.
b. Opening Date: March 29, 2016 at 2:00PM, Cone 111
    i. A request was made for the owner to consider moving the bid date from March 29th to the following Tuesday, April 5th, since this is typically spring break for many schools. The owner stated that this would be considered and notice given if such a bid date change is granted.
c. 5% Bid Bond
d. 30 day bid hold as referenced in the OC-15 document of Instructions to Bidders and the Notice to Bidders.
e. Bid Security, Form of Proposal, and MBE requirements must be submitted with Bid. All Contractors are cautioned to keep full records.

9. Allowances & Unit Prices:

a. Allowances are part of total base bid number.
b. Unit prices are used to establish the cost of additional work beyond the allowance quantity listed.
c. All unused portions of allowance values will be returned to the Owner via deductive change order at the end of the project.
d. Architect stated that unit prices on Form of Proposal do not match Unit Price section of the specs and that the Form of Proposal document will be revised and part of the addendum.
e. One of the bidders asked that the design team clarify the description of fill for the first two unit prices (trench rock and unsuitable soils) as one calls out for fill from imported material while the other calls out for fill from onsite material. See clarification in Addendum No. 1.

10. Time of Completion and Liquidated Damages:

a. 308 calendar days from Notice to Proceed: Completion of project on schedule is critical for UNC Charlotte. Duration of calendar days will remain the same if bid date or contract execution is delayed, to allow for the 10 months of construction.
b. Schedule: Notice of Intent: TBD; Start of Construction: TBD; Final Completion: TBD
c. Liquidated damages: $1,000 per calendar day after March 15th, 2017 & $5,000 per calendar day after May 1st, 2017

11. Proper submission of Bidder questions: Questions will be accepted via e-mail, only. All questions must be received 10 calendar days prior to Bid opening. No exceptions. Reference the Instructions to Bidders for RFI requirements. For e-mail, use shouser@jenkinspeer.com. RFI's and Substitution Requests MUST come through one of the pre-qualified General Contractors.

12. Product Substitutions: Request must be received 10 calendar days prior to Bid opening.

Incomplete substitution requests will not be reviewed. Refer to the Instructions for Bidders for complete requirements. RFI's and Substitution Requests MUST come through one of the pre-qualified General Contractors.

13. Owner comments

a. Sign In sheet from this pre-bid meeting will be posted on the university's website.
b. In regards to work hours, during the school year and over the summer, exterior work should be kept to a 8AM to Dusk (or similar schedule) since nearby residence halls will be occupied, while interior work hours will not be restricted in this manner. Communication of irregular work hours with the owner is critical and exceptions will be made for the contractor to work as needed in many cases.

14. Bidders questions

a. Will there be another time for bidders and contractors to visit the site and have access to the interior of the building? Yes, we have arranged for the RDH building to be open from 8AM to 12PM on Tuesday, March 22, for any bidder or contractor to visit the site, access the spaces, and gain access the roof. Please note, parking is NOT provided on site, so please park in the Cone Visitor Parking Deck and walk to the site from there.

15. Tour of site

a. During the site walk it was noted that the Phase XIV construction debris within the fenced access to their site will be removed prior to turning over the site, the gravel will remain south of gridline "D" and the Phase XIV project will fine grade and clean up all gravel north of gridline "D".
b. During the site walk the owner noted that all existing attic stock will be removed prior to the start of construction as well as 90% of the equipment still in the building. The stainless steel kitchen hoods in place will be the responsibility of the demolition contractor to remove.
c. The existing condition of the north plaza does not match the "existing conditions" drawing C-100 yet. The clarification was made during the site walk that the Phase XIV project construction is not yet finished with the modifications to the north wall of the plaza. The bidders are instructed to follow the drawings and understand that the existing conditions for the RDH project scope will align with C-100 when the Phase XIV project is complete.

End Meeting Minutes

Attachments:

- Aerial Photo of current site conditions
- Sign-in Sheet scan

UNC CHARLOTTE

RDH Renovation
SCO ID: 14-11273-02A
JPA Project # 15NCC491

Pre Bid Conference

Meeting Title/Topic:	RDH Pre Bid Conference
Date and Time:	15 March 2016; 10:00-11:00
Location:	UNC Charlotte Cone 113

THOSE PRESENT

NAME	REPRESENTING
Ron Wagoner	Messer Construction
Brian Armstrong	J M Thompson Co
Cees Justen	Pro Construction - proconnc@gmail.com
Barry Tucker	EHG, LLC Demo / Abatement
James McGee	DitG / Dari
Drew Averitt	UNC Charlotte, Bus. Services
Brad Green	~~UNC Charlotte Dir Svcs~~
Jason Shillingsburg	
Josh Buchan	Network Controls & electric
Tim Rowe	Clear Site Industrial
Tracy Hammond	Clear Site Industrial
Dave Comstock	~~Roebuck Iron Company~~
Tim Besier	Apex Companies LLC
Kathy Culver	Vistabution
Jeff Dowdy	NEO Corporation (Demo + Abatement)

UNC CHARLOTTE

RDH Renovation
SCO ID: 14-11273-02A
JPA Project # 15NCC491
Page 1

Pre Bid Conference

Meeting Title/Topic:	RDH Pre Bid Conference
Date and Time:	15 March 2016; 10:00-11:00
Location:	UNC Charlotte Cone 113

THOSE PRESENT

NAME	REPRESENTING
BRENT LYONS	SAMET / SRS
John Willis	Shiel Sexton
ALAN COBLE	EME INDUSTRIAL
GLENN R. GRIM SR.	PREFERRED ELEC.
DOAN DOHNING	MUNTERS
Greg Stehara	Nations Roof
David V. Allen	Oracle Elevator
Donny Edwards	UNCC
Jeanine Bachtel	UNC Charlotte
John Neilson	" "
Chuck Cardwell	SKA Consulting Engineers, Inc.
RON ALMOND	OPTIMA ENGINEERING
MARC MOMEEN	LANDDESIGN
RALPH HERBIN	HERBIN DESIGN
T.L. Smith	UNC Charlotte
Donna Cox	UNC - Charlotte
Chad Crawford	AAR of NC
Justin Stillman	DPR

F O R M OF P R O P O S A L

Residence Dining Hall Renovation — Contract: _____

The University of North Carolina at Charlotte — Bidder: _____

14-11273-02A — Date: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

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The Bidder proposes and agrees if this proposal is accepted to contract with the

The State of North Carolina through The University of North Carolina at Charlotte

in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of

The project consists of the renovation of the existing building to include the relocation of Housing and Residence Life (HRL) offices paired with the relocation of the Business Services' CAB catering commissary. The total size of the building is approximately 36,200 square feet with a finished area of approximately 23,600 square feet on the main level and 12,600 square feet on the lower level

in full, in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the State of North Carolina, and the

The University of North Carolina at Charlotte and Jenkins Peer Architect

with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sum of:

SINGLE PRIME CONTRACT: _____

Base Bid:

_____ Dollars($) _____

General Subcontractor:

_____ Lic _____

Plumbing Subcontractor:

_____ Lic _____

Mechanical Subcontractor:

_____ Lic _____

Electrical Subcontractor:

_____ Lic _____

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor's bid is later determined by the contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

ALTERNATES:

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid. (Strike out "Add" or "Deduct" as appropriate.)

GENERAL CONTRACT:

Alternate No. 1 Front Plaza Improvement
(Add) *(Deduct)* Dollars ($)

Alternate No. 2 Façade Improvements (Front Entrance Canopy)
(Add) *(Deduct)* Dollars ($)

Alternate No. 3 Additional Façade Improvements (Columns at corners and extended coping)
(Add) *(Deduct)* Dollars ($)

Alternate No. 4 Sanford Hall Lane Realignment
(Add) *(Deduct)* Dollars ($)

Alternate No. 5 Site Walkways, new walkway to bus stop
(Add) *(Deduct)* Dollars ($)

Alternate No. 6 Site Walkways, new “Y” walkway
(Add) *(Deduct)* Dollars ($)

Alternate No. 7 Generator Connection Cabinet for a portable generator
(Add) *(Deduct)* Dollars ($)

Alternate No. 8 Cover for golf cart parking
(Add) *(Deduct)* Dollars ($)

Alternate No. 9 Lightning Protection
(Add) *(Deduct)* Dollars ($)

Alternate No. 10 Owner-preferred Telecom Devices
(Add) *(Deduct)* Dollars ($)

Alternate No. 11 Owner-preferred Fire Alarm
(Add) *(Deduct)* Dollars ($)

Alternate No. 12 Owner-preferred Brick Pavers
(Add) *(Deduct)* Dollars ($)

Alternate No. 13 Owner-preferred Door Hardware for Sets #1 through #27
(Add) *(Deduct)* Dollars ($)

Alternate No. 14 Owner-preferred Door Hardware for Sets #30 through #48
(Add) *(Deduct)* Dollars ($)

UNIT PRICES

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

UP-1	Unsuitable Soils	per cubic yard	Unit Price ($)_____
UP-2	Trench Rock	per cubic yard	Unit Price ($)_____
UP-3	Masonry Repointing	per ea 5 linear feet	Unit Price ($)_____
UP-4	Roofing Wood Blocking replacement	per ea 10 board feet	Unit Price ($)_____
UP-5	Exit Light/Sign fixture	per each	Unit Price ($)_____
UP-6	Audible/Visual Fire Alarm Device	per each	Unit Price ($)_____
UP-7	Fire Alarm Pull Station	per each	Unit Price ($)_____

The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 23. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 23.

MINORITY BUSINESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify **on its bid** (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** list the good faith efforts (Affidavit **A**) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (**B)** to that effect in lieu of Affidavit (**A)** required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (**C**) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit **D** is not necessary;

*** OR ***

If less than the 10% goal, Affidavit (**D**) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit **with their bid** the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A **or** Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

Proposal Signature Page

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

_____
(Name of firm or corporation making bid)

WITNESS:

_____
(Proprietorship or Partnership)

By: _____
Signature

Name: _____
Print or type

Title _____
(Owner/Partner/Pres./V.Pres)

Address _____

_____

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

License No. _____

Federal I.D. No. _____

Email Address: _____

(CORPORATE SEAL)

Addendum received and used in computing bid (write in yes or no):

Addendum No. 1 _____ Addendum No. 2 _____ Addendum No. 3 _____ Addendum No. 4 _____

Addendum No. 5 _____ Addendum No. 6 _____ Addendum No. 7 _____ Addendum No. 8 _____

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Mark-up Record Prints to be used in developing Record Drawings.
2. Record Site Utility Survey
3. Record Specifications.
4. Record Product Data.

B. Related Sections include the following:

1. Division 01 Section "Closeout Procedures" for general closeout procedures.
2. Divisions 3 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set of marked-up Record Prints, along with digital scan of prints, to be incorporated as Record Drawings by the Designer.

B. Record Site Utility Survey: Submit digital files through the architect and engineers of record for review of compliance with these specification requirements.

C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

D. Record Product Data: Submit one copy of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies

from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Locations and depths of underground utilities.
   d. Revisions to routing of piping and conduits.
   e. Revisions to electrical circuitry.
   f. Actual equipment locations.
   g. Duct size and routing.
   h. Locations of concealed internal utilities.
   i. Changes made by Change Order or Field Work Order.
   j. Changes made following Architect's written orders.
   k. Details not on the original Contract Drawings.
   l. Field records for variable and concealed conditions.
   m. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings completely and accurately.
   a. Use of loose sheets, separate binders, booklets, etc. as supplementary information for record prints will not be acceptable.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Field Work Order numbers, alternate numbers, RFI numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD PRINT" in a prominent location.

1. Record Prints: Organize Marked-up Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2. Record Digital Scans: Once Record Prints are finalized, have sets scanned in color as digital PDF multi-page sets and deliver to the architect on DVD or Flash drive.

2.2 RECORD SITE UTILITY SURVEY

A. Preparation: Prior to utilities being buried and at completion the site utilities shall be surveyed

by a survey and location company registered in North Carolina and satisfactory to the Owner.

1. Progress as-built surveys are to be done as needed.
2. Survey shall be tied to the North Carolina State Plane Coordinate System (a.k.a. N.C. Grid).
3. Surveys shall meet NC Standards for Positional Accuracy.
4. Surveys shall include the following:
    a. Provide X, Y, and Z coordinates for all newly installed utilities.
    b. Where new utility installation occurs adjacent to or crosses exposed existing utilities, provide X, Y, Z coordinates and description of existing utilities.
    c. Gravity Piping (storm water & sanitary sewer):
        1) Locate centerline of all manhole and inlet covers and grates.
        2) Locate all piping inverts in and out of structures, including headwall and pipe outlet structures.
        3) Pipe location is not necessary for gravity piping with the exception of any tee or wye connections.
    d. Pressure Piping (water, fire, hot & chilled, and gas):
        1) Provide pipe locations at fifty-foot intervals along the top centerline of pipes, at all valves, tees, branches, and changes in direction.
    e. Duct Banks:
        1) Provide X, Y, Z locations on top edge, both sides, of the duct bank at fifty-foot intervals, all structural connections and all changes in directions.
        2) Note duct bank thickness on drawings.
    f. Telecom/Electrical Manholes:
        1) Dimensions to include structure width, length and depth.
        2) Include elevations at top and bottom of vault, top of manhole entrance and at all conduit entering and exiting the manhole.

B. Format: Digital files to be issued through the General Contractor to the Architect and Engineers of Record for review of compliance with specification requirements.

1. Digital files shall be provided as a CAD (*.dwg)file in GIS format.
2. The CAD file shall be based on the NC GRID.
3. NAD 1983 (tie to the North Carolina State Plane Coordinate System) shall be the projection delivery format.
4. All survey points shall be clearly labeled with X, Y, and Z coordinates.
5. All progress surveys for each utility type shall be merged into one file.
6. If all utility types are merged into one file they shall be separated by layer.
7. Record Survey(s) shall be submitted within 15 days of Final Acceptance.

2.3 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.4 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.5 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 01 78 39

SECTION 28 31 11 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fire-alarm control unit.
2. Manual fire-alarm boxes.
3. System smoke detectors.
4. Heat detectors.
5. Notification appliances.
6. Magnetic door holders.
7. Remote annunciator.
8. Addressable interface device.
9. System printer.

1.3 DEFINITIONS

A. LED: Light-emitting diode.

B. NICET: National Institute for Certification in Engineering Technologies.

C. Control Unit: Fire Alarm control unit

1.4 SYSTEM DESCRIPTION

A. Noncoded, UL-certified addressable system, with multiplexed signal transmission, dedicated to fire-alarm service only.

1.5 INSPECTIONS

A. The contractor shall contact the State Inspector to schedule a final inspection of the fire alarm system.

1.6 SUBMITTALS

A. General Submittal Requirements:

1. Shop Drawings shall be prepared by persons with the following qualifications:

a. Trained and certified by manufacturer in fire-alarm system design.
b. NICET-certified fire-alarm technician, Level III minimum.
c. Licensed or certified by authorities having jurisdiction.

B. Product Data: For each type of product indicated.

C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.

1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
2. Include voltage drop calculations for notification appliance circuits.
3. Include battery-size calculations.
4. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
5. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
6. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculations for voice evacuation system, and single-line connection diagram.
7. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits.

D. Qualification Data: For qualified Installer, certifications.

E. Field quality-control reports.

F. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
2. Provide signed copies of "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter. Submit copies to the Owner, NC State Construction Office and the Architect.
3. A copy of Fire Alarm System Matrix indicating the control unit response to each initiating device signal.

4. A complete copy of the North Carolina State Construction office checklist, "Fire Alarm System Checklist." Copies shall be distributed to the Owner, NC State Construction Office, and the Architect.
5. Provide an electronic copy of the control unit system program via compact disk to the Owner.
6. A complete copy of the "System Status and Programming Report" after programming and testing is complete for the whole system. The report shall include the settings for all alarm initiating devices and current sensitivity of analog addressable smoke detectors.
7. A record copy of site-specific software.
8. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:

    a. Frequency of testing of installed components.
    b. Frequency of inspection of installed components.
    c. Requirements and recommendations related to results of maintenance.
    d. Manufacturer's user training manuals.

9. Manufacturer's required maintenance related to system warranty requirements.
10. Abbreviated operating instructions for mounting at the control unit.
11. Copy of NFPA 25.

G. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.
2. Program Software Backup: On magnetic media or compact disk, complete with data files.
3. Device address list.
4. Printout of software application and graphic screens.

H. Close Out Documents:

1. To be attached to the as-built drawing set, provide a full size drawing that includes the following:
    a. Diagram illustrating the loop numbers, devices addresses, and terminal numbers to which devices connect to the control equipment
    b. Amplifier load calculations for voice evacuation system.
    c. Battery Sizing
    d. EOL voltage drop

2. Provide two bound copies of the following to the Owner:

    a. Manufacturer's maintenance requirements.
    b. Technical literature of all control equipment, power supplies, isolation modules, alarm initiating devices, notification devices, relays, etc.
    c. Training summary by factory authorized service representative.

3. Program Software Backup: On magnetic media or compact disk, complete with data files.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by authorized personnel trained and certified by the manufacturer and a minimum NICET Level III certification for technicians installing and connecting the system. All personnel performing the work shall have had training within the last 36 months.

C. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of existing system.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

1.8 PROJECT CONDITIONS

A. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

1. Notify Owner no fewer than ten normal business days in advance of proposed interruption of fire-alarm service.
2. Do not proceed with interruption of fire-alarm service without Owner's written permission.

1.9 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning with Substantial Completion, provide software support for two years.

C. Upgrade Service:

1. Update software to latest version at Project completion.

2. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.

3. Provide 30 days’ notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

4. Include software upgrades including licensing and operating systems as required for corrections or operating issues at no charge to the owner for the life of the system.

1.10 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Fuses: **Two** of each type installed in the system.
   2. Manual Fire Alarm Boxes: Quantity equal to 6 percent of amount installed.
   3. Monitor Modules (Addressable Interface): Quantity equal to 6 percent of amount installed.
   4. Isolation Modules/Bases (Addressable Interface): Quantity equal to 6 percent of amount installed.
   5. Addressable Control Relays: Quantity equal to 6 percent of amount installed.
   6. Smoke Detectors, Fire Detectors: Quantity equal to 6 percent of amount of each type installed.
   7. Speakers with Strobes: Quantity equal to 6 percent of amount of each type installed.
   8. Sounder Bases: Quantity equal to 6 percent of amount of each type installed.
   9. Lamps for Strobe Units: Quantity equal to 6 percent of amount installed.
   10. Keys and Tools: One extra set for access to locked and tamper-proofed components.
   11. Programming Equipment/Tools for system devices: Four (4) minimum required for proprietary equipment.

1.11 WARRANTY

A. Warranty: At no additional charge to the Owner, the manufacturer shall agree to fully repair and/or replace the fire alarm system equipment and components that fail because of defect in materials or workmanship within the warranty period. The warranty shall include all labor, material, testing, and recertification after repairs are complete.

B. Warranty Period: A minimum of one year from the date the system is accepted by the owner.

C. The system is considered accepted when the final inspection by the State Construction Office and recommendation of the Engineer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements for interfacing with an existing network system(Simplex), provide products by one of the following:
   1. SimplexGrinnell LP; a Tyco International Company
   2. Siemens Building Technologies, Inc.; Fire Safety Division.
   3. NOTIFIER; a Honeywell company.

B. Adding equipment to the head end of the system will not be allowed. System must be able to be interface with the existing network system.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:

1. Manual stations.
2. Heat detectors.
3. Smoke detectors.
4. Duct smoke detectors.
5. Automatic sprinkler system water flow.
6. Heat detectors in elevator shaft and pit.
7. Fire extinguishing system operation.
8. Dry system pressure flow switch.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.
2. Identify alarm at fire-alarm control unit and remote annunciators.
3. Transmit an alarm signal to Campus Security via network connection.
4. Release fire and smoke doors held open by magnetic door holders.
5. Activate voice/alarm communication system.
6. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
7. Close smoke dampers in air ducts of designated air-conditioning duct systems.
8. Activate computer room suppression system.
9. Recall elevators to primary or alternate recall floors.
10. Activate emergency shutoffs for gas and fuel supplies.
11. Record events in the system memory.
12. Record events by the system printer.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. Elevator shunt-trip supervision.
3. Smoke dampers in closed position.
4. Manual/Automatic activation of the hood suppression system.
5. High- or low-air-pressure switch of a dry-pipe or preaction sprinkler system.
6. Loss of communication with any panel on the network.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at fire-alarm control unit.
4. Ground or a single break in fire-alarm control unit internal circuits.
5. Abnormal ac voltage at fire-alarm control unit.

6. Break in standby battery circuitry.
7. Failure of battery charging.
8. Abnormal position of any switch at fire-alarm control unit or annunciator.
9. Fire-pump power failure, including a dead-phase or phase-reversal condition.
10. Low-air-pressure switch operation on a dry-pipe or pre-action sprinkler system.

E. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit and remote annunciators. Record the event on system printer.

2.3 FIRE-ALARM CONTROL UNIT

A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

B. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.

    a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
    b. Include a real-time clock for time annotation of events on the event recorder and printer.
    c. Shall be listed to control pre-action and clean agent release systems.
    d. Addressable Control Circuits for Operation of Notification Appliances and Mechanical Equipment:

2. Addressable initiation devices that communicate device identity and status.

    a. System shall automatically balance for smoke detector sensitivity changes due to ambient conditions and dust build-up within detectors. Set sensitivities prior to acceptance of the system.
    b. Smoke sensors shall additionally communicate sensitivity setting and allow for adjustment of sensitivity at fire-alarm control unit.
    c. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.

3. Addressable control circuits for operation of mechanical equipment.
    a. Provide 1” conduit to building automation panel (mechanical digital controls) and controlling circuits to integrate fan/air handling shutdown per matrix and specifications.

C. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and

supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 2 line(s) of 80 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands and to indicate control commands to be entered into the system for control of smoke-detector sensitivity and other parameters.

D. Smoke-Alarm Verification:

1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.
2. Activate an NRTL-listed and -approved "alarm-verification" sequence at fire-alarm control unit and detector.
3. Sound general alarm if the alarm is verified.
4. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.

E. Circuits:

1. Initiating Device, Notification Appliance, and Signaling Line Circuits (SLC): NFPA 72.

    a. Initiating Device Circuits: Class A, Style D.
    b. Notification Appliance Circuits: Class B, Style Y.
    c. Signaling Line Circuits: Class A, Style 6, (taps are not allowed)
        1) Install a maximum of 20 addressable devices between isolation modules for each SLC.
        2) Provide and locate an isolation module at the midpoint where fewer than 20 addressable devices are on a SLC.
    d. Provide a minimum of 20% spare capacity and addresses for future use on each SLC.

2. Serial Interfaces: Two RS-232 ports for printers.

3. Voltage drop shall not exceed 14% at EOL after 24 hours of standby plus 15 minutes of full building alarm.

F. Elevator Recall:

1. Smoke detectors at the following locations shall initiate automatic elevator recall.

    a. Elevator lobby detectors except the lobby detector on the designated floor.
    b. Smoke detector in elevator machine room.
    c. Smoke detectors in elevator hoistway.

2. Elevator lobby detectors located on the designated recall floors shall be programmed to move the cars to the alternate recall floor.
3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.

a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

G. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke barrier walls shall be connected to fire-alarm system.

H. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.

I. Fire/Smoke Damper Reset Button: Provide a single button integral at the control unit to open/close smoke dampers for the entire building.

J. Key operated and supervised “ERV Shutdown Defeat” switch: Provide an integral keyed switch at the control unit to perform as follows: When the key switch is turned to “on” position, it shall disable the automatic shutdown of the ERV units during an alarm condition. The switch shall cause a system “trouble” indication when placed in the off-normal (Shutdown Defeated) position.

K. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to Campus Security via network protocol.

L. Voice/Alarm Signaling Service: Central emergency communication system with redundant microphones, preamplifiers, amplifiers, and tone generators provided as a special module that is part of fire-alarm control unit.

1. Indicated number of alarm channels for automatic, simultaneous transmission of different announcements to different zones or for manual transmission of announcements by use of the central-control microphone. Amplifiers shall comply with UL 1711 and be listed by an NRTL.

a. Allow the application of and evacuation signal to indicated number of zones and, at same time, allow voice paging to the other zones selectively or in any combination.
b. Programmable tone and message sequence selection.
c. Standard digitally recorded messages for "Evacuation" and "All Clear."
d. Generate tones to be sequenced with audio messages of type recommended by NFPA 72 and that are compatible with tone patterns of notification appliance circuits of fire-alarm control unit.
e. Normal audio amplifier power shall be a minimum of 120% of the system design load, per channel. For the purpose of the calculation, use the amplifier’s continuous two-tone output rating and the designed power settings of each individual speaker.
f. At least one backup amplifier shall be provide for each channel, equal in power to the largest primary amplifier. Failure of any amplifier shall automatically result in defective unit being switched off-line and replaced with the backup.

2. Status Annunciator: Indicate the status of various voice/alarm speaker zones and the status of firefighters' two-way telephone communication zones.
3. Preamplifiers, amplifiers, and tone generators shall automatically transfer to backup units, on primary equipment failure.

M. Printout of Events: On receipt of signal, print alarm, supervisory, and trouble events. Identify zone, device, and function. Include type of signal (alarm, supervisory, or trouble) and date and time of occurrence. Differentiate alarm signals from all other printed indications. Also print system reset event, including same information for device, location, date, and time. Commands initiate the printing of a list of existing alarm, supervisory, and trouble conditions in the system and a historical log of events.

N. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, and supervisory signals shall be powered by 24-V dc source.

1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

O. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

1. Batteries: Sealed lead calcium.

2. Provide battery capacity to sustain a minimum of 24 hours of standby plus 15 minutes of full (whole building) alarm mode.

P. The system shall be equipped with surge protective devices to prevent damage or nuisance alarms from voltage transients, lightning strikes, or stray currents. The devices are to be provided by the fire alarm equipment supplier. Line voltage (120VAC transient) suppressors providing surge protection to the fire alarm control panel shall have dry contacts for remote monitoring of transient suppressor integrity. These contacts shall be monitored be the fire alarm control panel to indicate a trouble condition when the operating ability of the suppressor is lost.

Q. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.4 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.

1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Station Reset: Key- or wrench-operated switch.

2.5 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.
2. Detectors shall be four-wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
7. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.

    a. Rate-of-rise temperature characteristic shall be selectable at fire-alarm control unit for 15 or 20 deg F (8 or 11 deg C) per minute.
    b. Fixed-temperature sensing shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F (57 or 68 deg C).
    c. Provide multiple levels of detection sensitivity for each sensor.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Sensor range (normal, dirty, etc.).

C. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

a. Primary status.
b. Device type.
c. Present average value.
d. Present sensitivity selected.
e. Sensor range (normal, dirty, etc.).

3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

2.6 HEAT DETECTORS

A. General Requirements for Heat Detectors: Comply with UL 521.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F (180 in the boiler room) or a rate of rise that exceeds 15 deg F per minute unless otherwise indicated.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.7 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Individually addressed, connected to a signaling line circuit, equipped for mounting as indicated and with screw terminals for system connections.

B. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.

C. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch high letters on the lens.

1. Rated Light Output:

a. 15, 30, 75, 110, 177 cd as indicated on the plans.
b. 15/30/75/110 cd, selectable in the field.

2. Mounting: Wall mounted unless otherwise indicated.

3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
4. Flashing shall be in a temporal pattern, synchronized with other units.
5. Strobe Leads: Factory connected to screw terminals.
6. Mounting Faceplate: Factory finished, white.

D. Voice/Tone Notification Appliances:

1. Appliances shall comply with UL 1480 and shall be listed and labeled by an NRTL.
2. High-Range Units: Rated 2 to 15 W.
3. Low-Range Units: Rated 1 to 2 W.
4. Mounting: Flush.
5. Matching Transformers: Tap range matched to acoustical environment of speaker location.

2.8 MAGNETIC DOOR HOLDERS

A. Description: Units are equipped for wall or floor mounting as indicated and are complete with matching doorplate.

1. Electromagnet: Requires no more than 3 W to develop 25-lbf holding force.
2. Wall-Mounted Units: Flush mounted unless otherwise indicated.
3. Rating: 24-V ac or dc.

B. Material and Finish: Match door hardware.

2.9 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.

1. Mounting: Flush cabinet, NEMA 250, Type 1.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.10 ADDRESSABLE INTERFACE DEVICE

A. Monitor Module: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

B. Integral Relay: Capable of providing a direct signal switching the following conditions:
1. 24 VAC transient suppressed loads: 2A
2. 24 VAC inductive loads: 1A (such as fire/smoke dampers).
3. 120 VAC transient suppressed loads: 0.5A (such as shunt mechanism at circuit breaker).

2.11 SYSTEM PRINTER

A. Printer shall be listed and labeled by an NRTL as an integral part of fire-alarm system. Use non-thermal paper.

2.12 WIRING

A. Addressable loop (signaling line) circuits shall be wired with type FPL/FPLR/FPLP fire alarm cable, AWG 18 minimum, low capacitance, twisted shielded copper pair. Cable shield drain wires are to be connected at each device on the loop to maintain continuity, taped to insulate from ground, and terminated at the FACP. Acceptable cables include Atlas 228-18-1-1STP, BSCC S1802s19 (same as EEC 7806LC), West Penn D975, D991 (AWG 16), D995 (AWG 14), or equal wire having capacitance of 30pf/ft. maximum between conductors. Belden 5320FJ acceptable if only FPL rating needed. The cable jacket color shall be red, with red (+) and black (-) conductor insulation.
   1. Unshielded cable, otherwise equal to the above, is permitted to be used if the manufacturer's installation manual requires, or states preference for, unshielded cable.
   2. In underground conduit, use Type TC or PLTC cable (PE insulated) to avoid problems from moisture.

B. Fiber shall be 62.5/125 micron Multi-mode cable that is red in color. Provide necessary connectors as required by owner equipment. Fiber optic cable shall be per fire alarm manufacturer requirements to interface with campus system. Alarm signals shall be transmitted over campus fiber optic communication cables via digital communicator that is compatible with existing system. Alarm information shall be transmitted to all nodes on the network system for annunciation at each node.

2.13 CAMPUS NETWORK SYSTEM

A. Network System Requirements
   1. Nodes shall be intelligent, microprocess based devices that connect to network communications.
   2. Programmable selections at each node shall be accessible and public to the network.
   3. Provide graphical screen displays showing the floor plan and fire alarm initiating devices. Devices shall annunciate at each point. This point shall flash while other devices remain solid. Location of the new graphical screen shall be coordinated with the UNC Charlotte staff. Basis shall be located in the maintenance department building and one other location as indicated by UNC Charlotte staff. All alarm conditions shall be visually indicated at the owner node and at all remote annunciators as programmed.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Comply with NFPA 72 for installation of fire-alarm equipment.

B. Smoke- or Heat-Detector Spacing:
   1. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A in NFPA 72.
   2. HVAC: Locate detectors not closer than 3 feet from air-supply diffuser or return-air opening.
   3. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture.
   4. If smoke detectors are installed within 10 feet of a restroom door opening or within 10 feet from vanity/sink area, the smoke detectors shall be programmed as "verified" smoke detectors.

C. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.

D. Heat Detectors in Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

E. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.

F. Device Location-Indicating Lights: Locate in public space near the device they monitor.

G. Fire-Alarm Control Unit: Surface mounted, with tops of cabinets not more than 72 inches above the finished floor.

H. Annunciator: Install with top of panel not more than 60 inches above the finished floor.

I. Fire alarm system wiring shall be installed in EMT where not within residential suites. Install EMT in all commercial and common areas. Fire alarm rated MC cable shall be permitted in residence areas. All EMT and MC cable shall be concealed in all areas of residential suites and commercial spaces.

J. All conduits that penetrate outside walls from air conditioned space must have internal sealing (duct-seal), to prevent condensation from infiltrating humid air

K. <u>All wiring shall be color coded.</u> All the circuits in the system shall be wired with AWG 14, minimum, stranded copper, THHN/THWN conductor, installed in metallic conduits. Color Coded wires shall be in accordance with the following scheme, which shall be maintained throughout the system, without color change in any wire run:
   1. Initiating Circuits, General ---------- Red (+)/White (-)
   2. Initiating Circuits, Smoke Only ---------- Violet (+)/Gray (-)
   3. Signal Line Circuit cable ---------- Red jacket with Red(+)/Black(-)
   4. Alarm Indicating Appliance Circuits ---------- Blue (+)/Black (-)
   5. AHU Shutdown Circuits ---------- Yellow (+)/Brown (-)
   6. Door Control Circuits ---------- Orange
   7. Elevator Capture Circuits ---------- Brown

L. There shall be no splices in the system other than at device terminal blocks, or on terminal blocks in cabinets. "Wire nuts" and crimp splices will not be permitted. Permanent wire markers shall be used to identify all connections at the FACP and other control equipment, at power

supplies, and in terminal cabinets. All terminal block screws shall have pressure wire connectors of the self-lifting or box lug type.

M. Provide isolation relays (relays indirectly controlled by the fire alarm system) or 8 amp rated fire alarm system components) relays shall be used whenever 120VAc (or greater) is switched by relay contacts to control auxiliary functions

3.2 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Division 08 Section "Door Hardware." Connect hardware and devices to fire-alarm system.

1. Verify that hardware and devices are NRTL listed for use with fire-alarm system in this Section before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
1. Smoke dampers in air ducts of designated air-conditioning duct systems.
2. Alarm-initiating connection to elevator recall system and components.
3. Supervisory connections at valve supervisory switches.
4. Supervisory connections at elevator shunt trip breaker.
5. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.
6. Supervisory connections at fire-pump engine control panel.

3.3 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

B. Install permanently framed instructions in a location visible from fire-alarm control unit.

3.4 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a dedicated ground wire from local telecomm ground bar to fire-alarm control unit.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Visual Inspection: Conduct visual inspection prior to testing.

   a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
   b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

D. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

E. Fire-alarm system will be considered defective if it does not pass tests and inspections.

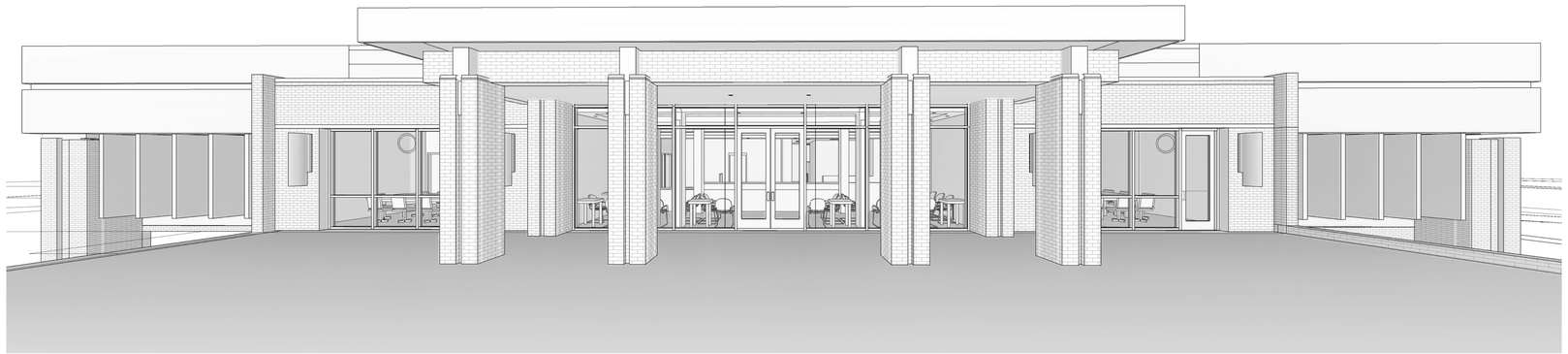
F. Prepare test and inspection reports.

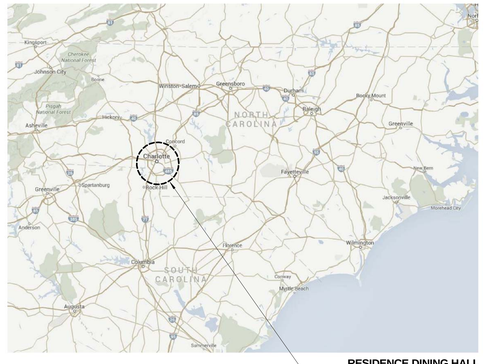
G. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

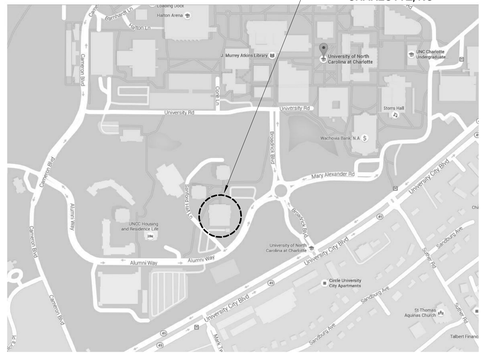
3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train the Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION 28 31 11







RESIDENCE DINING HALL RENOVATION

STATE CONSTRUCTION OFFICE ID #: 14-11273-02A

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CONSTRUCTION DOCUMENTS

MARCH 1ST, 2016

UNC CHARLOTTE

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E-305 UPPER LEVEL HVAC POWER
E-401 ELECTRICAL ENLARGED PLAN
E-402 ELECTRICAL ENLARGED PLAN
E-501 ELECTRICAL PANEL SCHEDULES
E-502 ELECTRICAL PANEL SCHEDULES
TC-100 TELECOM SYMBOL, SCHEDULE, DIAGRAMS
TC-101 TELECOM ROOMS ENLARGED PLANS
TC-102 TELECOM DETAILS

*NOTE: UNDERLINED SHEETS HAVE BEEN ADDED TO THE DRAWING LIST 1

LOCATION MAP (NTS)

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

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

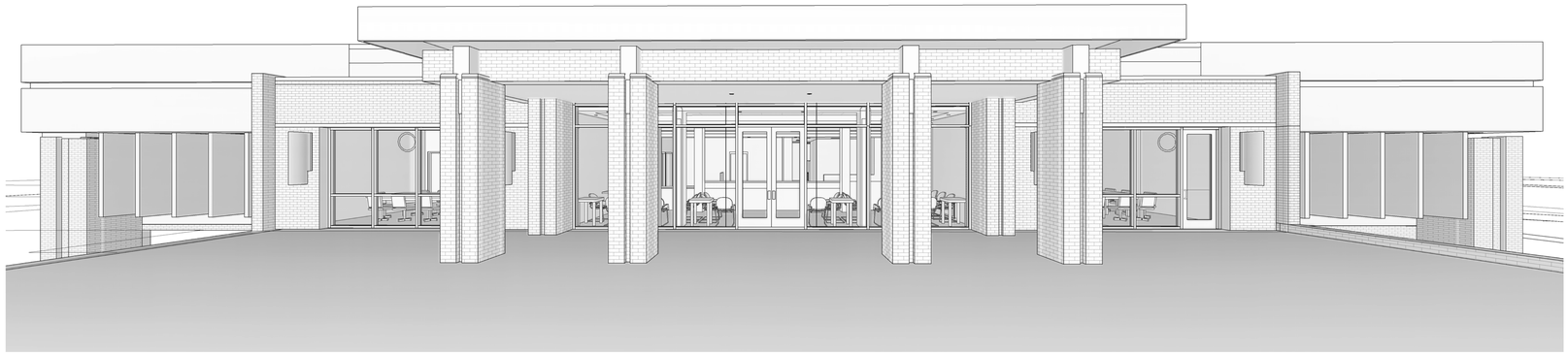
Project: 15NCC491
Drawn By:
Checked By:
Date: MARCH 1ST, 2016

COVER SHEET VOLUME 1 OF 2

NORTH

CONSTRUCTION DOCUMENTS

G-001



RESIDENCE DINING HALL RENOVATION

STATE CONSTRUCTION OFFICE ID #: 14-11273-02A

JPA PROJ. NO. : 15NCC491

CONSTRUCTION DOCUMENTS

MARCH 1ST, 2016

DRAWING LIST

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- G-201 LOWER LEVEL LIFE SAFETY PLAN
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- C-101 DEMOLTION PLAN - BASE BID
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- S-203 LEVEL 1 FRAMING PLAN - PLAN NORTH
- S-204 LEVEL 1 FRAMING PLAN - PLAN SOUTH
- S-205 ROOF FRAMING PLAN - NORTH
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- S-701 SECTIONS AND DETAILS
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- P-207 PLUMBING FIRST LEVEL PLAN - NEW WORK NATURAL GAS
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- E-008 ELECTRICAL DETAILS
- E-009 ELECTRICAL DETAILS

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- E-401 ELECTRICAL ENLARGED PLAN
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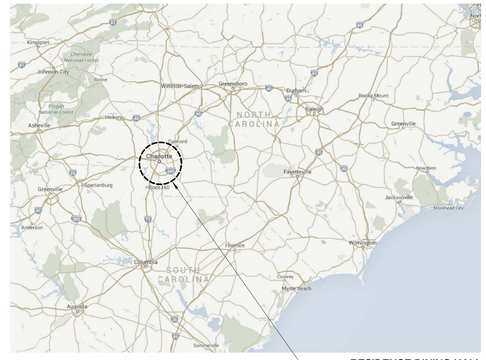
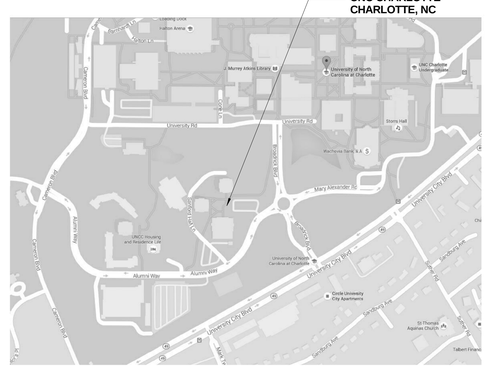
- TC-102 TELECOM DETAILS

*NOTE: UNDERLINED SHEETS HAVE BEEN ADDED TO THE DRAWING LIST

LOCATION MAP (NTS)



RESIDENCE DINING HALL
UNC CHARLOTTE
CHARLOTTE, NC



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MARCH 1ST, 2016

UNC CHARLOTTE

RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

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

Project: 15NCC491
Drawn By:
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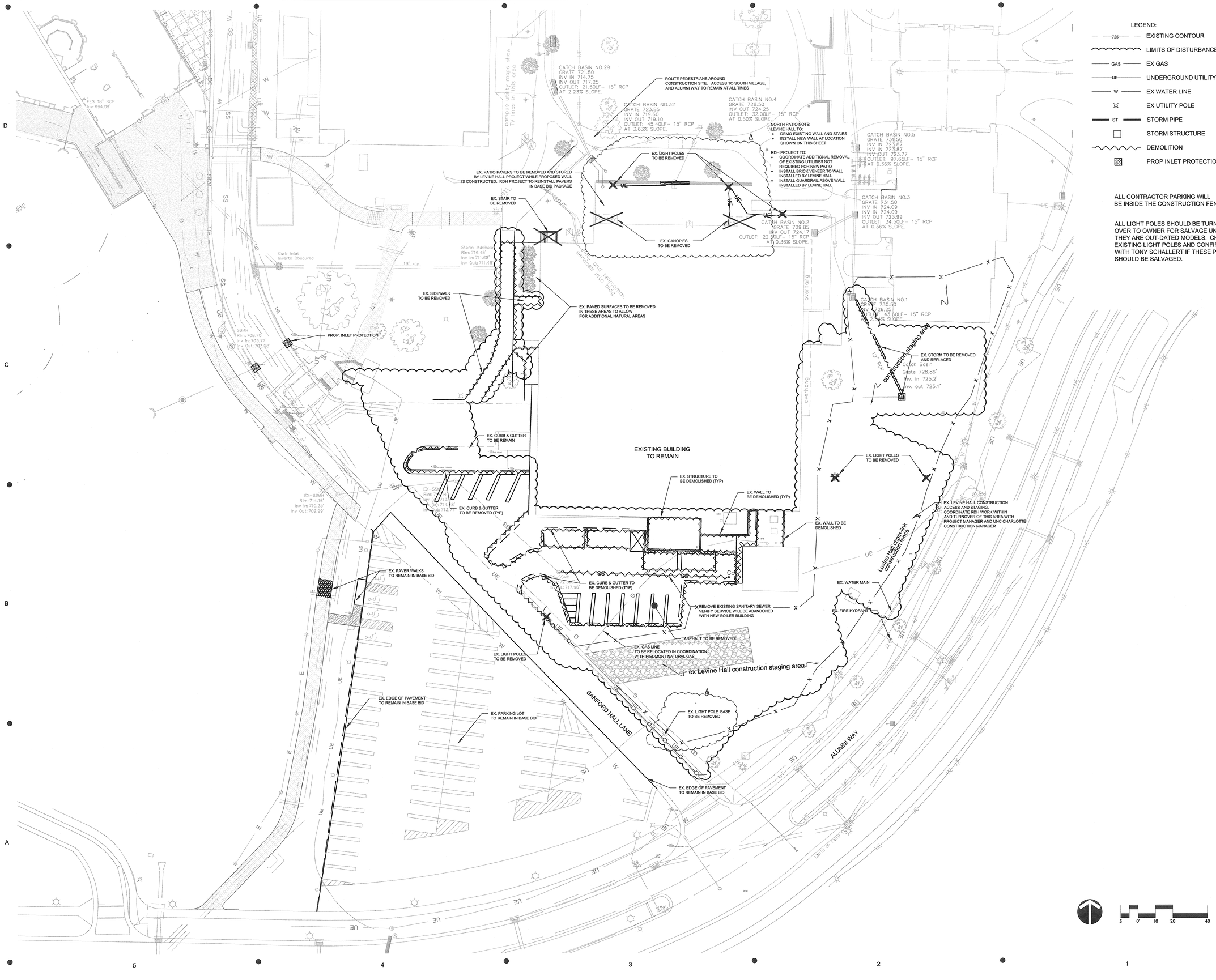
Date: MARCH 1ST, 2016

COVER SHEET VOLUME 2 OF 2

NORTH

CONSTRUCTION DOCUMENTS

G-002



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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033804 MARC D. MONSEN 3/16/16

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

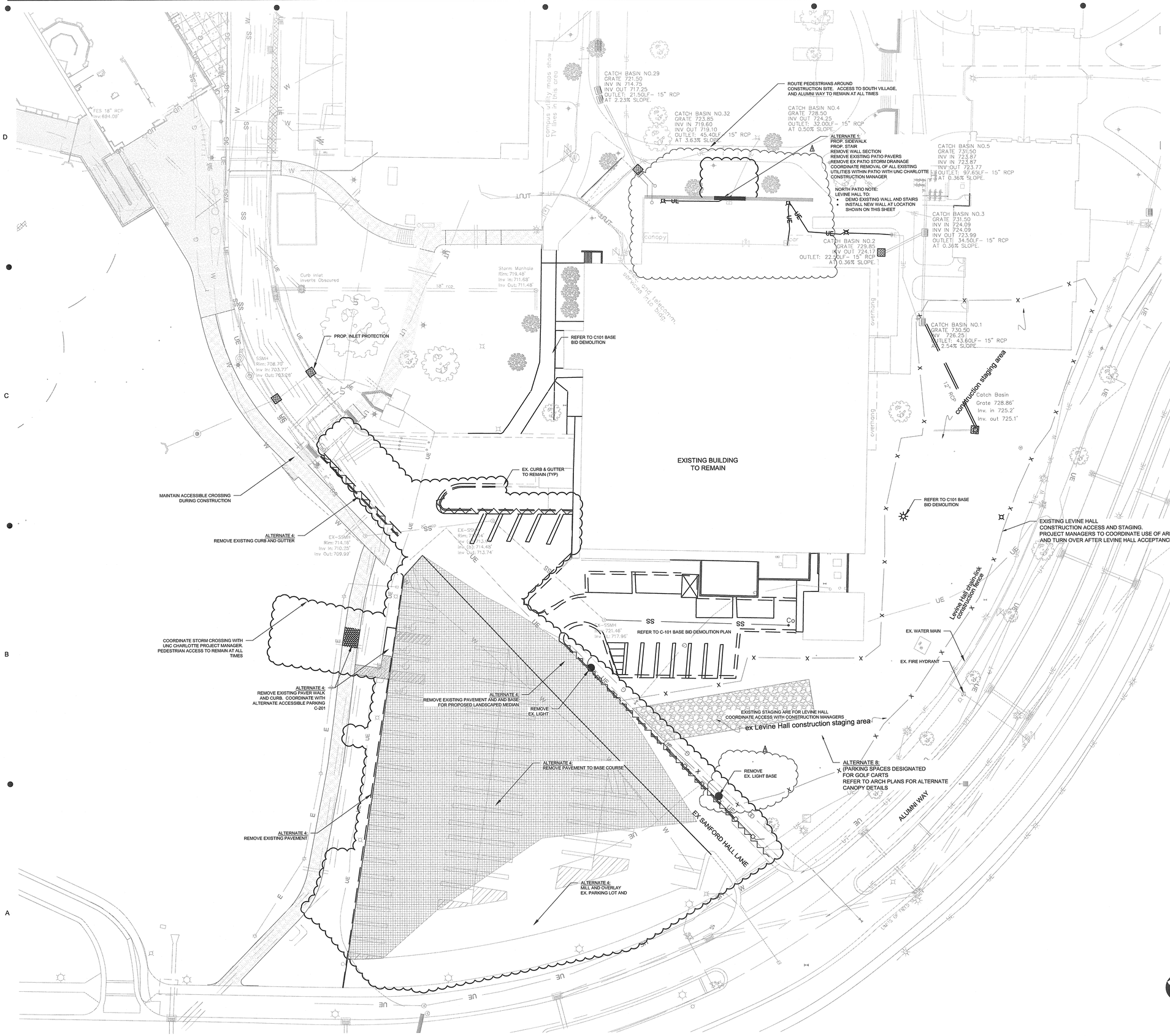
TAG	DESCRIPTION	DATE
1	ADDENDUM 1	3/16/16

Project: 15NCC491
Drawn By:
Checked By:
Date: MARCH 1ST, 2016

DEMOLITION PLAN BASE BID

CONSTRUCTION DOCUMENTS

C-101



ALL LIGHT POLES SHOULD BE TURNED OVER TO OWNER FOR SALVAGE UNLESS THEY ARE OUT-DATED MODELS. CHECK EXISTING LIGHT POLES AND CONFIRM WITH TONY SCHALLERT IF THESE POLES SHOULD BE SALVAGED.

1.4 SCHEDULE OF ALTERNATES

Alternate No. 1: Front Plaza Improvements as indicated on sheet C-201.

Alternate No. 2: Façade Improvements (Front entrance canopy) as indicated on sheets A-102, A-131, and A-201.

Alternate No. 3: Additional Façade Improvements (columns at corners and extended coping) as indicated on sheets A-101, A-102, A-131, and A-201.

Alternate No. 4: Sanford Hall Lane Realignment as indicated on sheets C-201, C-302, C-401, and L-101.

Alternate No. 5: Site walkways, new walkway to bus stop as indicated on sheets C-201, C-302, C-401, and L-101.

Alternate No. 6: Site walkways, new "Y" walkway as indicated on sheets C-201, C-302, C-401, and L-101.

Alternate No. 7: Electrical Generator with Trailer mount capability in lieu of basis bid generator without this function. Reference electrical.

Alternate No. 8: Cover for golf cart parking as indicated on sheet A-103.

Alternate No. 9: Lightning protection per specification section 26 41 13.

Alternate No. 10: (Owner Preferred): Provide a Communications Infrastructure System as shown on drawings and as specified utilizing products listed in specification section 27 01 12 in lieu of any other equivalent product.

Alternate No. 11: (Owner Preferred): Provide fire alarm by Simplex in lieu of other manufacturers listed in specification section 28 31 11.

Alternate No. 12: (Owner Preferred): Provide English Edge Pavers by Pine Hall in lieu of all other paver manufacturers specified in Section 32 14 00

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 033804 ENGINEER MARC D. MONSSEN 3/16/16

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

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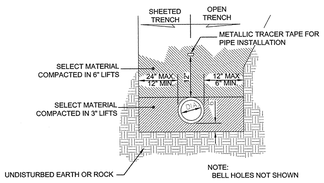
DEMOLITION PLAN - ALTERNATES

5 0' 10 20 40

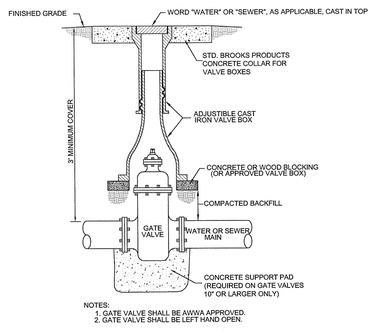
CONSTRUCTION DOCUMENTS

C-102



TYPICAL TRENCHING

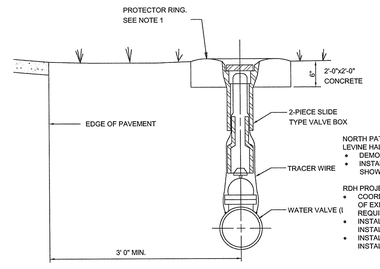
N.T.S.



NOTES:
1. GATE VALVE SHALL BE AWWA APPROVED.
2. GATE VALVE SHALL BE LEFT HAND OPEN.

TYP. VERTICAL G.V. INSTALLATION

N.T.S.

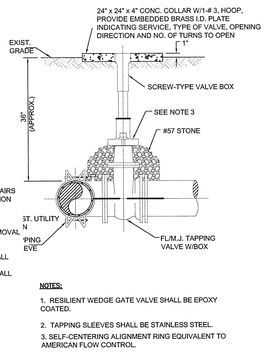


NORTH PATIO NOTE:
LEVINE HALL TO:
- DEMO EXISTING WALL AND STAIRS
- INSTALL NEW WALL AT LOCATION SHOWN ON THIS SHEET

RDH PROJECT TO:
- COORDINATE ADDITIONAL REMOVAL OF EXISTING UTILITIES NOT REQUIRED FOR NEW PATIO
- INSTALL BRICK VENEER TO WALL INSTALLED BY LEVINE HALL
- INSTALL GUARDRAIL ABOVE WALL INSTALLED BY LEVINE HALL

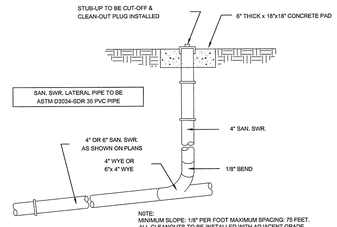
NOTE:
1. USE PROTECTION RING IN SHOULDER OF ROAD.

VALVE BOX PROTECTION



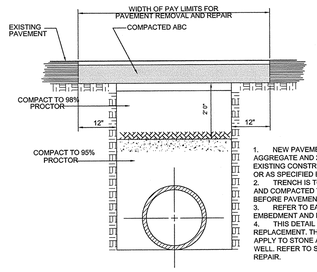
NOTES:
1. RESILIENT WEDGE GATE VALVE SHALL BE EPOXY COATED.
2. TAPPING SLEEVES SHALL BE STAINLESS STEEL.
3. SELF-CENTERING ALIGNMENT RING EQUIVALENT TO AMERICAN FLOW CONTROL.

TAPPING ACTIVE WATER LINE



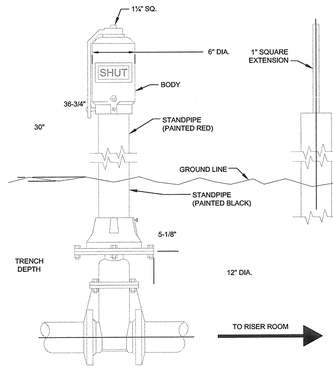
NOTE:
MINIMUM SLOPE: 1/8" PER FOOT MAXIMUM SPACING: 75 FEET.
ALL CLEANOUTS TO BE INSTALLED WITH ADJACENT GRADE.
ALL CLEANOUTS IN HARDSCAPE AREAS TO HAVE BRASS CAP

SANITARY SEWER CLEANOUT



1. NEW PAVEMENT SHALL HAVE 10" BASE COURSE AGGREGATE AND 2" SURFACE COURSE OR MATCH EXISTING CONSTRUCTION, WHICH EVER IS GREATER OR AS SPECIFIED BY THE CONTRACT DOCUMENTS.
2. TRENCH IS TO BE BACKFILLED IN 6" LAYERS AND COMPACTED TO AASTHO MAXIMUM DENSITY BEFORE PAVEMENT REPAIRS ARE MADE.
3. REFER TO EARTHWORK SPECIFICATIONS FOR EMBEDMENT AND FILL REQUIREMENTS.
4. THIS DETAIL SHOWS ASPHALT PAVEMENT REPLACEMENT. THE WIDTH OF PAY LIMITS SHALL APPLY TO STONE AND CONCRETE PAVEMENT AS WELL. REFER TO SPECIFICATIONS FOR PAVEMENT REPAIR.

PAVEMENT REPAIR



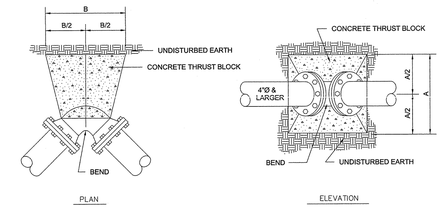
STANDARD TAPPING SLEEVE & POST INDICATOR VALVE

FIELD ADJUSTMENT INSTRUCTIONS

1. REMOVE THE BODY FROM THE TOP OF THE INDICATOR POST ASSEMBLY.
2. CUT THE REQUIRED LENGTH OFF THE BOTTOM OF THE STANDPIPE FOR THE GROUND LINE TO MATCH UP WITH STANDPIPE GROUND LINE MARK.
3. CUT THE 1" SQ. EXTENSION AT A DISTANCE OF 9" ABOVE THE TOP OF THE STANDPIPE.
4. SET THE "OPEN" AND "SHUT" TARGETS FOR THE APPROPRIATE VALVE SIZE.
5. RE-ATTACH THE BODY TO THE TOP OF THE INDICATOR POST ASSEMBLY.
6. ALL PIV(s) SHALL BE INSTALLED WITH AN ELECTRONICALLY CONTROLLED TAMPER SWITCH.

NOTE:

POST INDICATOR VALVE SHALL BE LOCATED AT A MINIMUM 40-ft FROM BUILDING



TYPICAL THRUST BLOCK FOR BENDS

N.T.S.

SIZE	11	1/4" BEND	22 1/2" BEND	45° BEND	90° BEND	TEE	PLUG
4"	A	6"	8"	9"	12"	6"	6"
	B	6"	12"	16"	22"	6"	6"
6"	A	9"	9"	15"	18"	16"	15"
	B	9"	18"	21"	32"	26"	29"
8"	A	12"	12"	18"	24"	21"	21"
	B	12"	24"	31"	43"	34"	37"
10"	A	15"	18"	21"	30"	24"	27"
	B	15"	24"	42"	54"	47"	45"
12"	A	15"	18"	27"	36"	30"	30"
	B	22"	35"	46"	64"	54"	58"
14"	A	15"	21"	30"	42"	36"	36"
	B	29"	41"	57"	75"	62"	66"
16"	A	18"	24"	32"	48"	42"	42"
	B	32"	47"	69"	86"	69"	74"
18"	A	21"	27"	40"	54"	48"	48"
	B	34"	53"	70"	96"	77"	82"
20"	A	24"	30"	48"	60"	54"	54"
	B	37"	59"	80"	107"	84"	90"
24"	A	27"	36"	54"	72"	60"	60"
	B	47"	71"	92"	127"	108"	116"

NOTES:
1. CARE SHALL BE TAKEN WHEN POURING THRUST BLOCKS TO KEEP THE FITTING BOLTS FREE FROM CONCRETE.
2. THRUST BLOCK DESIGN BASED ON SOIL COMPRESSIVE STRENGTH OF 2000 P.S.F.
3. DIMENSIONS MAY BE FIELD ADJUSTED BY THE ENGINEER TO SUIT VARYING SOIL CONDITIONS.

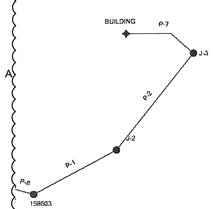
THRUST BLOCKS - DIMENSIONS "A" & "B"

AREAS REQUIRED FOR CONCRETE BLOCKING FOR TEES AND BENDS ETC.
BASED ON TEST PRESSURE OF 200 P.S.I.
ALL AREAS GIVEN ARE IN SQUARE FEET (AGAINST UNDISTURBED EARTH)
AREA(S) FOR TEES ARE INDICATED FOR APPROPRIATE BRANCH SIZE

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	EARTH LIKE CLAY 4000 LBS./FT.	SOFT CLAY 2000 LBS./FT.	GRAVEL, COARSE SAND 1500 LBS./FT.	TIE RODS REQUIRED
4-6"					
11-1/4°	1,108	1	1	1	
22-1/2°	2,207	1	2	2	
45°	4,328	2	3	3	
90°/TEE	7,996	2	4	5	
PLUG	5,665	2	3	4	2-5/8"Ø
8"					
11-1/4°	1,970	1	1	2	
22-1/2°	3,922	1	2	3	
45°	7,694	2	4	5	
90°/TEE	14,215	4	8	9	
PLUG	10,053	3	5	6	2-5/8"Ø
12"					
11-1/4°	4,433	2	3	3	
22-1/2°	8,826	3	5	6	
45°	17,312	5	9	11	
90°/TEE	31,983	8	16	19	
PLUG	22,619	6	12	14	4-3/4"Ø
16"					
11-1/4°	7,881	2	4	5	
22-1/2°	15,691	4	8	10	
45°	30,779	8	16	19	
90°/TEE	56,861	15	29	35	
PLUG	40,213	10	21	25	6-3/4"

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
USE 6" - 90° BEND VALVE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.
(2 - 5/8" Ø ROD IS ADEQUATE FOR 6" F.H. LEG)

Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
4	FALSE	1500	1375	1500	1375	20	20	20	20	J-3	20	J-3	TRUE
(N/A)	(N/A)	1500	(N/A)	(N/A)	(N/A)	20	(N/A)	20	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
(N/A)	(N/A)	1500	(N/A)	(N/A)	(N/A)	20	(N/A)	20	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
(N/A)	(N/A)	1500	(N/A)	(N/A)	(N/A)	20	(N/A)	20	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)



FLOW TEST ANALYSIS

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UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

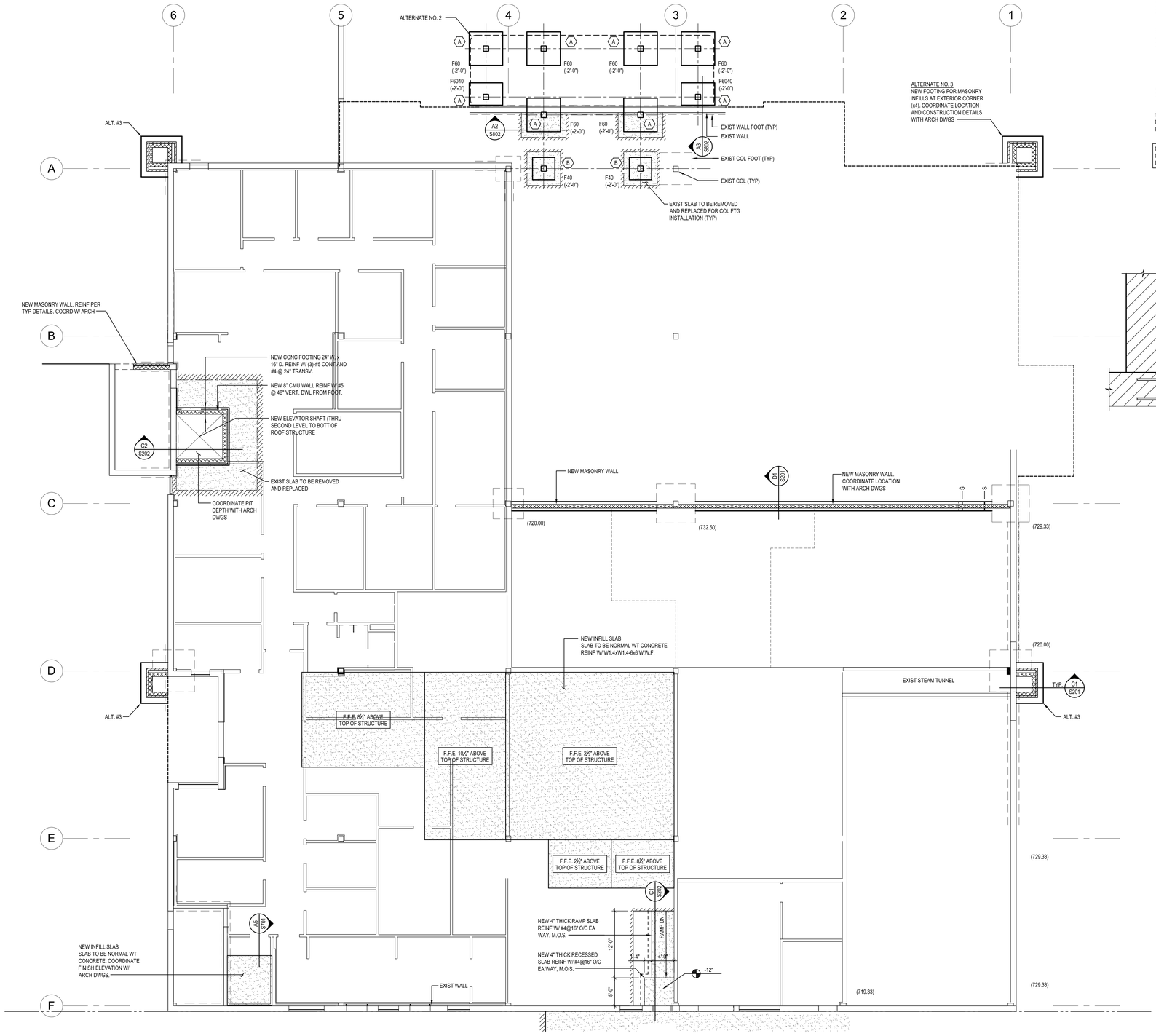
TAG	DESCRIPTION	DATE
1	ADDENDUM 1	3/16/16

Project: 15NCC491
Drawn By:
Checked By:
Date: MARCH 1ST, 2016

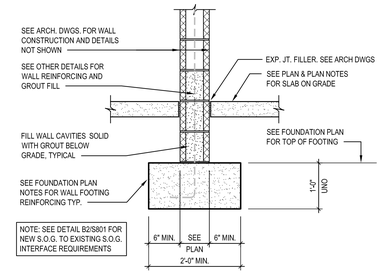
UTILITY DETAILS

CONSTRUCTION DOCUMENTS

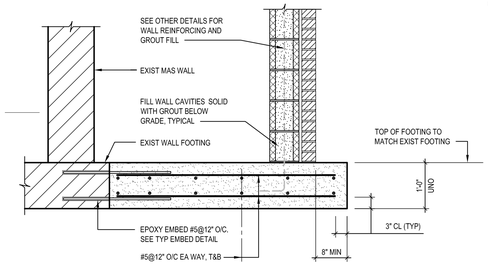
C-602



A5 FOUNDATION PLAN - PLAN NORTH
1/8" = 1'-0"



D1 SECTION
1/8" = 1'-0"



C1 SECTION
1/8" = 1'-0"

STEEL COLUMN SCHEDULE		
MARK	⟨A⟩	⟨B⟩
CAP PLATE	¾"x SIZE TO SUIT	¾"x SIZE TO SUIT
SIZE	HSS 12x12x ¼"	HSS 12x12x ¼"
BASE PLATE	1"x18x 1'-6"	¾"x18"x 1'-6"
ANCHOR BOLTS	(8)-1"ø	(4)-¾"ø
REMARKS	1	1

COLUMN SCHEDULE NOTES:
1. SEE DETAILS: TYPICAL COLUMN BASE AND FOOTING DETAIL SHOWN ON S801
2. UNLESS OTHERWISE NOTED THE TOP OF COLUMNS SHALL BE AT THE DECK BEARING ELEVATION.
3. ANCHOR BOLTS TO EXTEND TO WITHIN 3" OF BOTTOM OF FOOTING.

COLUMN SCHEDULE REMARKS:
1. COLUMN BASE PLATES SHALL BE SHOP WELDED

FOUNDATION PLAN NOTES:
File # 150102/0101DWG

1. DISTANCE TO TOP OF FINISHED FLOOR ABOVE OR BELOW ELEVATION XX IS SHOWN THUS (⟨XX⟩) ON PLAN. SEE ARCHITECTURAL DRAWINGS FOR TOP OF FINISH FLOOR SLAB ELEVATIONS NOT SHOWN.

2. THE FOLLOWING SYMBOLS ARE USED ON PLAN TO REPRESENT ELEVATIONS ABOVE OR BELOW THE REFERENCE ELEVATION OF X

(——) TOP OF FOUND. CONC. (SPREAD FOOTING, WALL FOOTING).

3. UNLESS NOTED ON PLAN, THE SLAB-ON-GRADE IS TO BE A 4-INCH THICK CONCRETE SLAB REINFORCED WITH 6 x 6 - W1.4 x W1.4 W.W.F. PLACED 1 INCH CLEAR FROM TOP. PLACE SLAB DIRECTLY ON TOP OF A VAPOR BARRIER AND OVER 4 INCHES OF CLEAN WASHED STONE. SEE SPECIFICATIONS FOR REQUIREMENTS OF VAPOR BARRIER.

4. SLAB-ON-GRADE CONTROL JOINTS ARE INDICATED ON PLAN WITH THE SYMBOL 'C.J.'. THESE JOINTS MAY BE EITHER CONSTRUCTION JOINTS OR SAWCUT JOINTS. SEE "TYPICAL SLAB-ON-GRADE CONTROL JOINT" DETAILS ON SHEET S8.1. COORDINATE ALL SLAB JOINT LOCATIONS WITH JOINTS IN ARCHITECTURAL FLOOR FINISHES TO ASSURE ALIGNMENT IS APPLICABLE.

5. TOP OF ALL EXTERIOR FOOTINGS ARE TO BE A MINIMUM OF 2'-0" BELOW FINISHED EXTERIOR GRADE.

6. SEE SHEET S-801 FOR TYPICAL DETAILS.

7. FOR GENERAL NOTES AND NOTES PERTAINING TO FOUNDATION DESIGN AND CONSTRUCTION, SEE SHEET S-101.

8. "F40" DENOTES SPREAD FOOTING 4'-0"x4'-0"x 1'-4" THICK, REINFORCED WITH (5)-#5 EACH WAY, BOTT. & TOP. "F60" DENOTES SPREAD FOOTING 6'-0" x 6'-0" x 1'-8" THICK, REINFORCED WITH (7)-#5 EACH WAY, BOTT. & TOP. "F6040 DENOTES SPREAD FOOTING 6'-0"x4'-0" x 1'-8" THICK, REINFORCED WITH #5 @ 12" O/C EACH WAY BOTT. & TOP. SEE TYPICAL DETAIL ON S-801.

9. VERIFY LOCATION AND SIZE OF WALLS SHOWN ON THE FOUNDATION PLANS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.

10. FILL ALL CMU CELLS BELOW GRADE WITH CONCRETE GROUT.

11. UNLESS OTHERWISE INDICATED ON PLAN OR IN DETAILS, ALL WALL FOOTINGS SHALL BE 12" DEEP, PROJECT 6" BEYOND EACH FACE OF THE WALL SUPPORTED, AND SHALL BE REINFORCED WITH 3-#5 BARS CONTINUOUS LONGITUDINALLY.

12. TOP OF FOOTING ELEVATIONS SHOWN ON PLAN ARE FOR ESTIMATING PURPOSES AND MAY VARY DUE TO SITE OR UTILITY CONDITIONS. FOOTINGS MAY BE VARIED FROM PLAN ELEVATION TO SUITE SITE AND/OR UTILITY CONDITIONS BY STEPPING AT A RATE OF 1 TO 2 VERTICAL TO HORIZONTAL. SEE TYPICAL DETAILS.

13. SEE DETAIL B2/S801 FOR NEW SLAB-ON-GRADE TO EXISTING SLAB-ON-GRADE INTERFACE REQUIREMENTS.

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MARCH 1ST, 2016

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE

Project: 15NCC491
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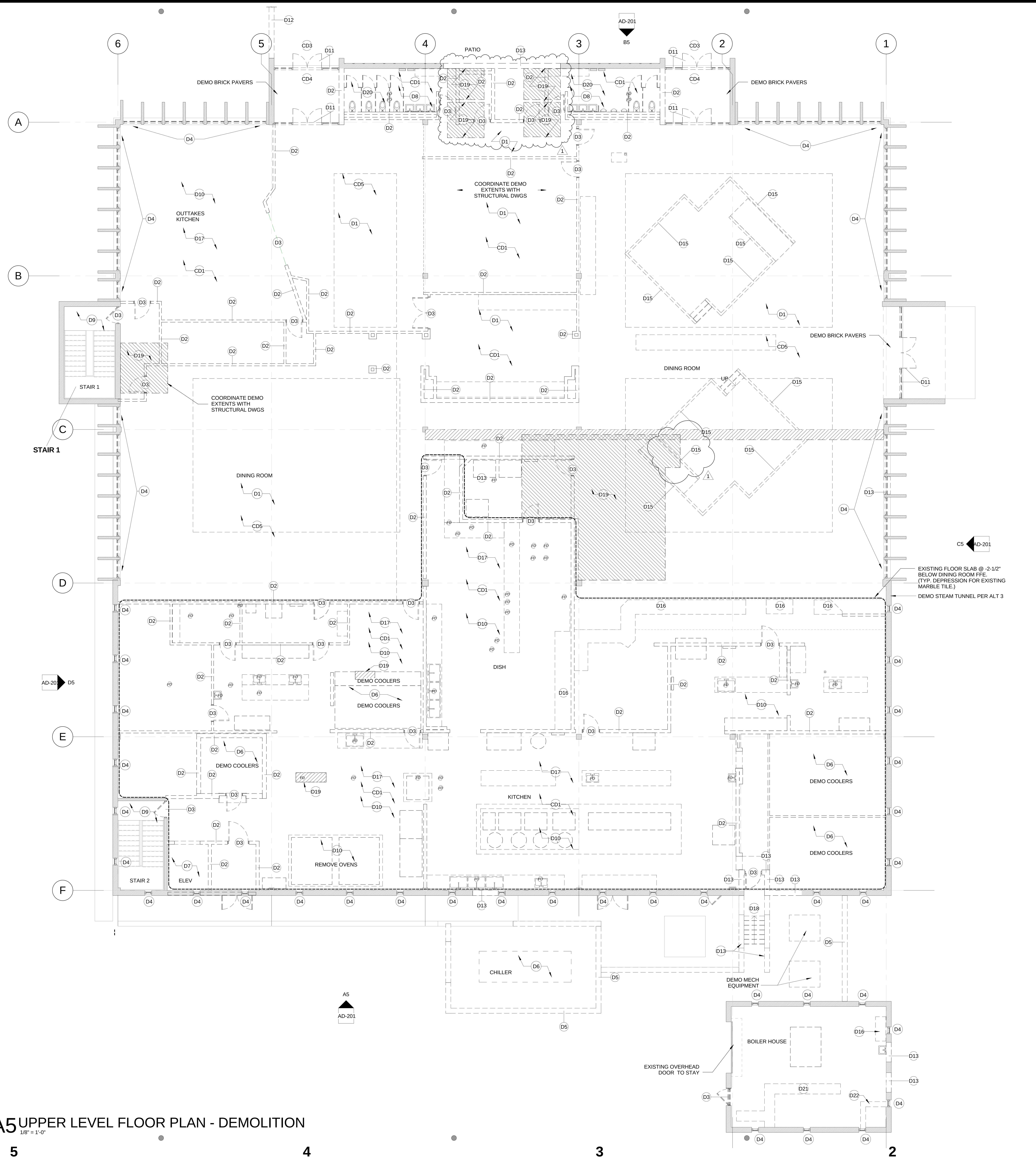
Checked By: CEC / GLO
Date: MARCH 1ST, 2016

FOUNDATION PLAN - PLAN NORTH

NORTH

CONSTRUCTION DOCUMENTS

S-201



A5 UPPER LEVEL FLOOR PLAN - DEMOLITION
1/8" = 1'-0"

DEMOLITION GENERAL NOTES

1. ELEMENTS TO BE DEMOLISHED SHOWN WITH DASHED LINES UNLESS OTHERWISE NOTED.
2. NO LOAD BEARING WALLS, STRUCTURE, STRUCTURAL FLOOR, OR STRUCTURAL ELEMENT SHALL BE WEAKENED OR REMOVED UNLESS NOTED OTHERWISE BY THE STRUCTURAL ENGINEER.
3. DO NOT DISTURB STRUCTURAL RATINGS, ALL BEAMS & COLUMN RATINGS TO BE MAINTAINED.
4. G.C. SHALL FIELD VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES OR INCONSISTENCIES BETWEEN THE CONTRACT DOCUMENTS AND THE ACTUAL EXISTING CONDITIONS SHALL BE DOCUMENTED AND NOTICE MADE TO THE ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
5. DIMENSIONS GIVEN ON DEMOLITION PLAN SHALL BE FIELD VERIFIED AND COORDINATED WITH FLOOR PLANS FOR NEW LAYOUT PRIOR TO DEMOLITION. G.C. SHALL DOCUMENT AND NOTIFY ARCHITECT OF ANY DISCREPANCIES OR INCONSISTENCIES PRIOR TO DEMOLITION.
6. ANY OPENINGS CREATED OR EXPOSED IN THE BUILDING ENVELOPE (EXISTING FLOORS, WALLS AND ROOFS) TO REMAIN SHALL BE SEALED WITH TEMPORARY WEATHERTIGHT INFILL CONSTRUCTION SIMULTANEOUS WITH DEMOLITION TO RESIST INTRUSION OF MOISTURE, WEATHER AND PESTS.
7. EXISTING STRUCTURE AND FINISHED SURFACES SCHEDULED TO REMAIN WHICH ARE DAMAGED IN THE COURSE OF DEMOLITION SHALL BE REPAIRED OR REPLACED WHERE REPAIRS ARE OBJECTIONABLE TO ARCHITECT.
8. G.C. SHALL BE RESPONSIBLE FOR COORDINATING DEMOLITION SUCH THAT DUST, SMOKE, AND OTHER CONTAMINANTS ARE NOT INTRODUCED TO ANY OCCUPIED SPACE.
9. NEWLY MADE, NEWLY UNCOVERED, EXISTING ABANDONED AND EXISTING UNPROTECTED PENETRATIONS IN FLOORS, WALLS AND PARTITIONS SHALL BE PATCHED. INFILL SHALL BE OF FIRE RATED CONSTRUCTION WHERE REQUIRED.
10. REF. MECHANICAL/PLUMBING/ELECTRICAL DRAWINGS FOR EXTENTS OF MEP DEMOLITION NOT SHOWN HERE.
11. REF. STRUCTURAL DRAWINGS FOR EXTENTS OF STRUCTURAL DEMOLITION NOT SHOWN HERE.
12. ALL ELECTRICAL, FIRE ALARM & TELECOM EQUIPMENT, WIRING, RACEWAY, FIXTURES, DEVICES, CONDUIT, HANGERS AND ASSOCIATED ITEMS WHICH ARE ACCESSIBLE OR UNCOVERED AND ARE NOT A PART OF FUNCTIONING SYSTEMS SCHEDULED TO REMAIN SHALL BE COMPLETELY REMOVED UNLESS NOTED OTHERWISE. THIS INCLUDES THOSE ON OR IN EXPOSED SURFACES, FLOOR CAVITIES, ROOFS, ATTICS AND CRAWL SPACES.
13. IN GENERAL ALL EXISTING OUTLETS, DEVICES, ETC. ON WALLS OR CEILINGS BEING REMOVED SHALL BE REMOVED WHETHER INDICATED OR NOT. REMOVE ALL CONDUIT BACK TO OUTLET BOX NEAREST THE LIGHTING PANEL.
14. SEE ABATEMENT DESIGN SPECIFICATION FOR REMOVAL OF HAZARDOUS MATERIALS

DEMOLITION KEY NOTES

- D1 REMOVE VCT IN ITS ENTIRETY.
- D2 REMOVE WALL IN ITS ENTIRETY. MAJORITY OF WALLS ARE CMU CONSTRUCTION.
- D3 REMOVE DOOR, DOOR FRAME, AND ANY SIDELITE IN ITS ENTIRETY.
- D4 REMOVE GLAZING OR LOUVER AND FRAME IN ITS ENTIRETY.
- D5 REMOVE RETAINING WALL IN ITS ENTIRETY. SEE STRUCTURAL & CIVIL DWGS
- D6 REMOVE FOOD SERVICE OR MECHANIAL EQUIPMENT IN ITS ENTIRETY.
- D7 REMOVE ELEVATOR IN ITS ENTIRETY & ALL ELEVATOR EQUIPMENT
- D8 REMOVE TILE FLOORING IN ITS ENTIRETY.
- D9 REMOVE FLOOR FINISHES.
- D10 REMOVE KITCHEN EQUIPMENT IN ITS ENTIRETY.
- D11 REMOVE STOREFRONT IN ITS ENTIRETY; INCLUDING ANY ASSOCIATED DOORS.
- D12 REMOVE PORTION OF RETAINING WALL NECESSARY FOR NEW CONSTRUCTION; SEE STRUCTURAL & CIVIL DWGS
- D13 REMOVE PORTION OF EXTERIOR WALL NECESSARY FOR NEW CONSTRUCTION.
- D14 REMOVE STAIR IN ITS ENTIRETY.
- D15 REMOVE LOW WALLS IN ITS ENTIRETY.
- D16 REMOVE MILLWORK IN ITS ENTIRETY IN THIS AREA
- D17 REMOVE STONE TILE FLOORING & SETTING BED IN ITS ENTIRETY.
- D18 REMOVE EXTERIOR STAIR IN ITS ENTIRETY
- D19 REMOVE FLOOR SLAB AND/OR STRUCTURAL CONCRETE TEES IN THIS AREA; COORDINATE W/ NEW FLOOR PLANS; RE: STRUCTURAL DWGS — [hatch] = REMOVAL EXTENT
- D20 REMOVE ALL RESTROOM FIXTURES
- D21 REMOVE TRENCH GRATE AND ASSOCIATED HARDWARE.
- D22 REMOVE GUARDRAIL
- CD1 REMOVE CEILING TILES, GRID AND ASSOCIATED FIXTURES IN ITS ENTIRETY.
- CD2 REMOVE EXTERIOR CEILING GRID SYSTEM IN ITS ENTIRETY. OVERHANG TO REMAIN.
- CD3 REMOVE EXTERIOR CANOPY.
- CD4 REMOVE GYPSUM SOFFIT IN ITS ENTIRETY.
- CD5 REMOVE GYPSUM COVE CEILING AND ASSOCIATED FIXTURES IN ITS ENTIRETY.
- RD1 REMOVE PORTION OF ROOF DECK AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE WITH FLOOR PLANS.
- RD2 REMOVE MECHANICAL PENTHOUSE AND ALL EQUIPMENT IN ITS ENTIRETY.
- RD3 REMOVE ROOF DRAINS, DRAIN LINES AND DRAIN SUMPS.
- RD4 REMOVE ROOF DRAINS, DRAIN LINES, DRAIN SUMPS AND ALL ASSOCIATED PLUMBING LINES.
- RD5 REMOVE ALL MECHANICAL UNITS AND EQUIPMENT.

*NOTE: UNDERLINED NOTES HAVE BEEN ADJUSTED (1)

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MARCH 1ST, 2016

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

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

Project: 15NCC491
Drawn By:
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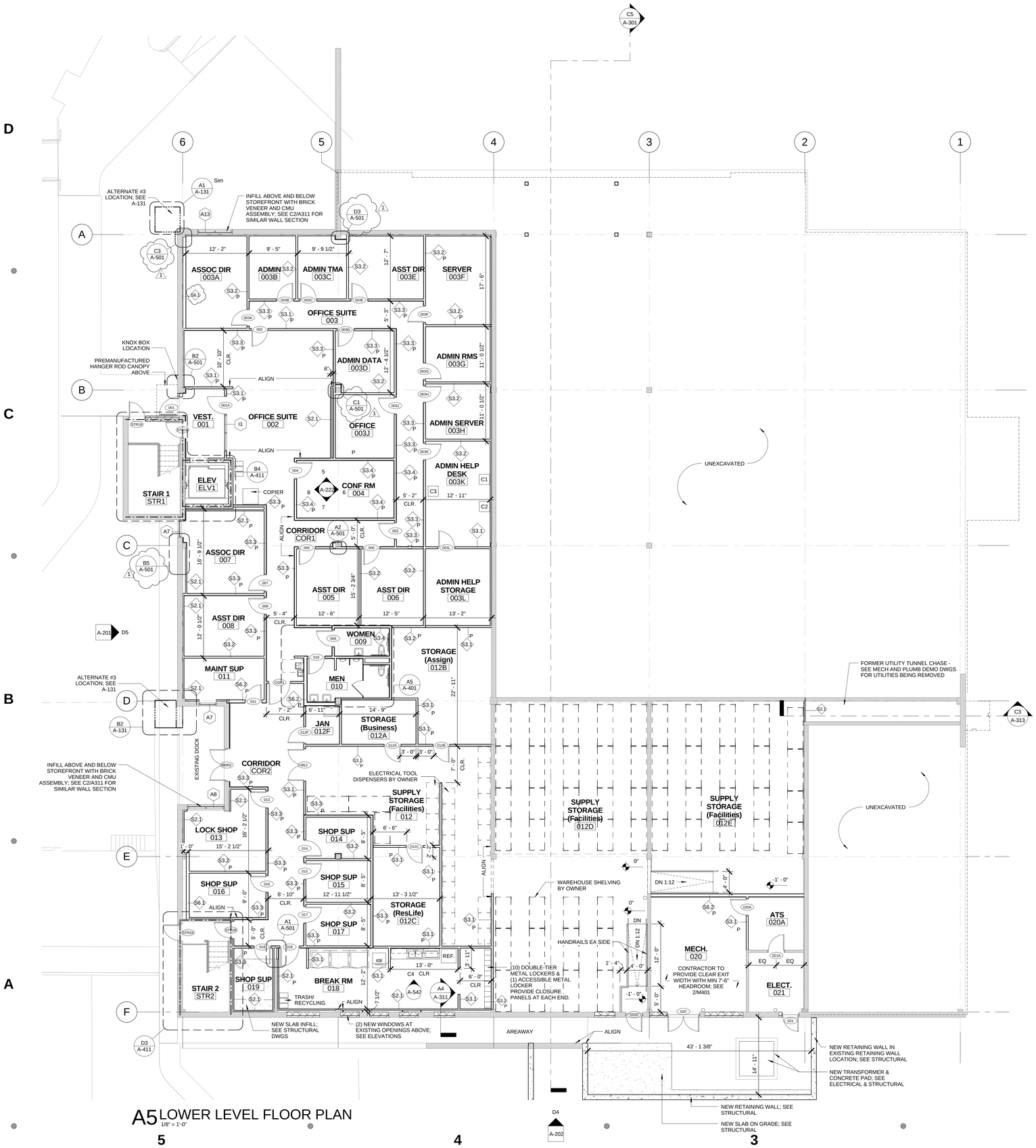
UPPER LEVEL DEMOLITION PLAN

NORTH

CONSTRUCTION DOCUMENTS

AD-102



A5 LOWER LEVEL FLOOR PLAN
1/8" = 1'-0"

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.
- C.O.F. CENTER WALL ON PRECAST CONCRETE FIN
- 2 HOUR RATED FIRE BARRIER

FLOOR PLAN GENERAL NOTES

1. REFER TO SHEET G-301 FOR THE WALL & PARTITION TYPES SCHEDULE.
2. EXISTING WALLS TO REMAIN ARE INDICATED IN HALFTONE. ALL OTHER WALLS SHOWN ARE NEW.
3. 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.
6. 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.
7. DIMENSIONS ARE TAKEN TO FINISH FACE OF NEW AND EXISTING WALLS AND PARTITIONS UNLESS NOTED OTHERWISE.
8. BLOCKING SHALL BE PROVIDED FOR ALL WALL AND CEILING MOUNTED ACCESSORIES, EQUIPMENT, HANDRAILS, FIXTURES, CABINETS, CASEWORK, SHELVING, ETC. SHOWN ON ANY DRAWING.
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 PLUMBING DWGS

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MARCH
1ST, 2016

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

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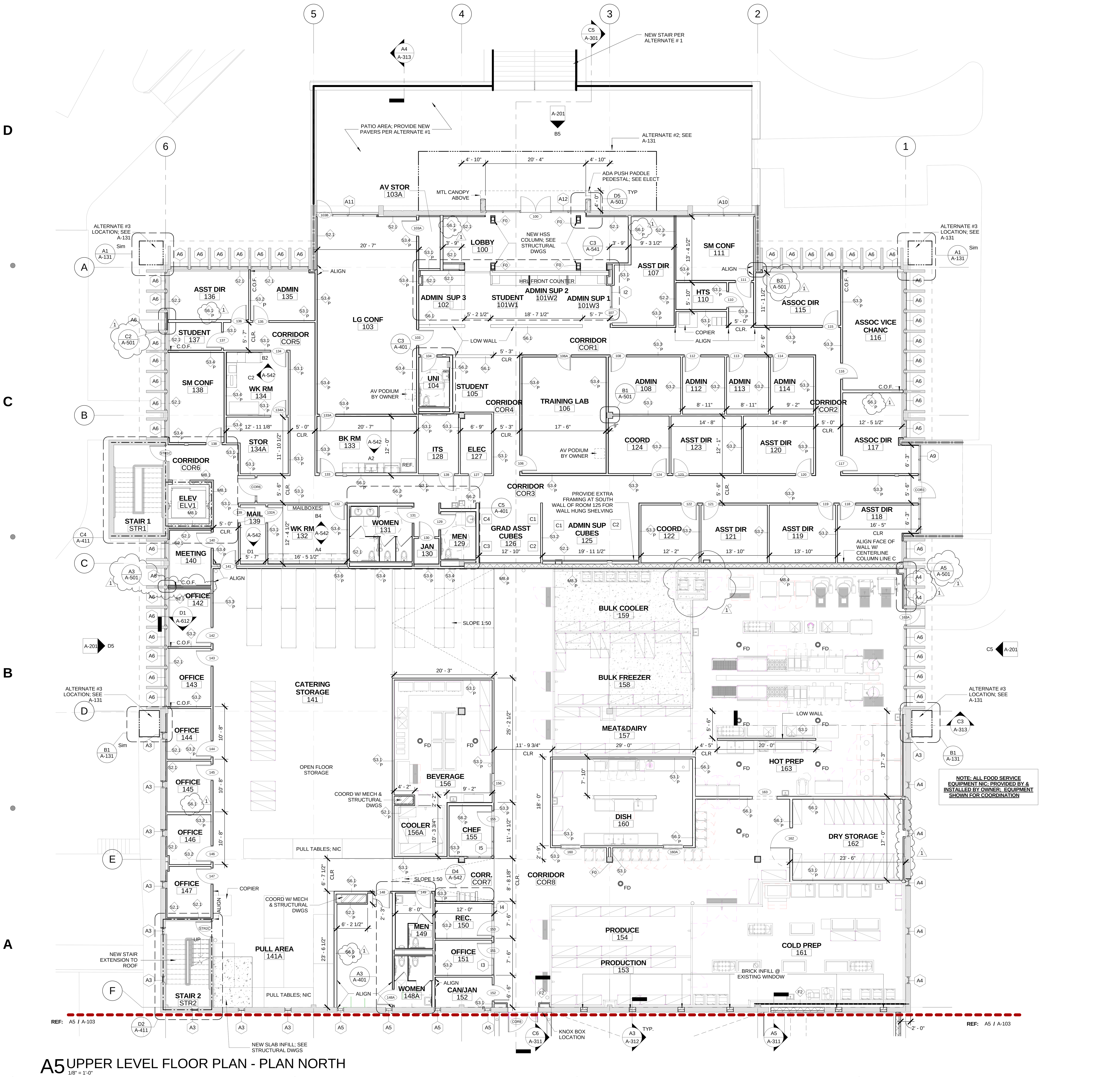
LOWER LEVEL FLOOR PLAN

NORTH

CONSTRUCTION DOCUMENTS

A-101



A5 UPPER LEVEL FLOOR PLAN - PLAN NORTH
1/8" = 1'-0"

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
C.O.F. CENTER WALL ON PRECAST CONCRETE FIN	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.
2. EXISTING WALLS TO REMAIN ARE INDICATED IN HALFTONE. ALL OTHER WALLS SHOWN ARE NEW.
3. 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.
6. 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.
7. DIMENSIONS ARE TAKEN TO FINISH FACE OF NEW AND EXISTING WALLS AND PARTITIONS UNLESS NOTED OTHERWISE.
8. BLOCKING SHALL BE PROVIDED FOR ALL WALL AND CEILING MOUNTED ACCESSORIES, EQUIPMENT, HANDRAILS, FIXTURES, CABINETS, CASEWORK, SHELVING, ETC. SHOWN ON ANY DRAWING.
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 PLUMBING DWGS

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MARCH 1ST, 2016

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

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

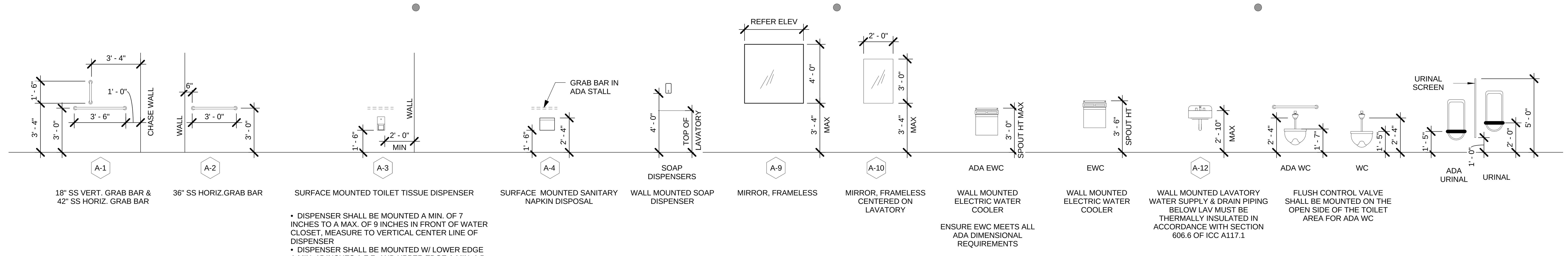
Project: 15NCC491
Drawn By:
Checked By:
Date: MARCH 1ST, 2016

UPPER LEVEL FLOOR PLAN - PLAN NORTH

NORTH

CONSTRUCTION DOCUMENTS

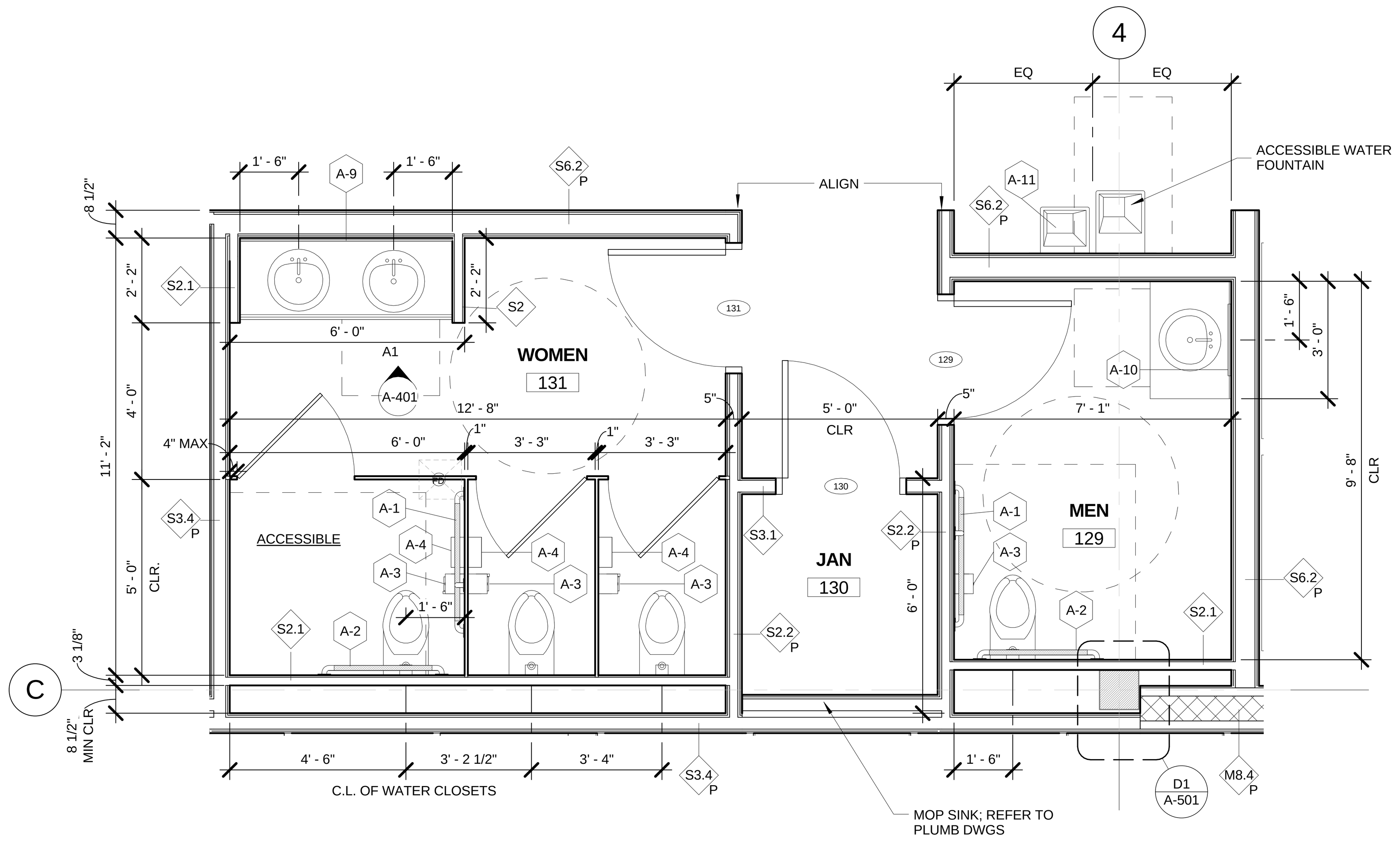
A-102



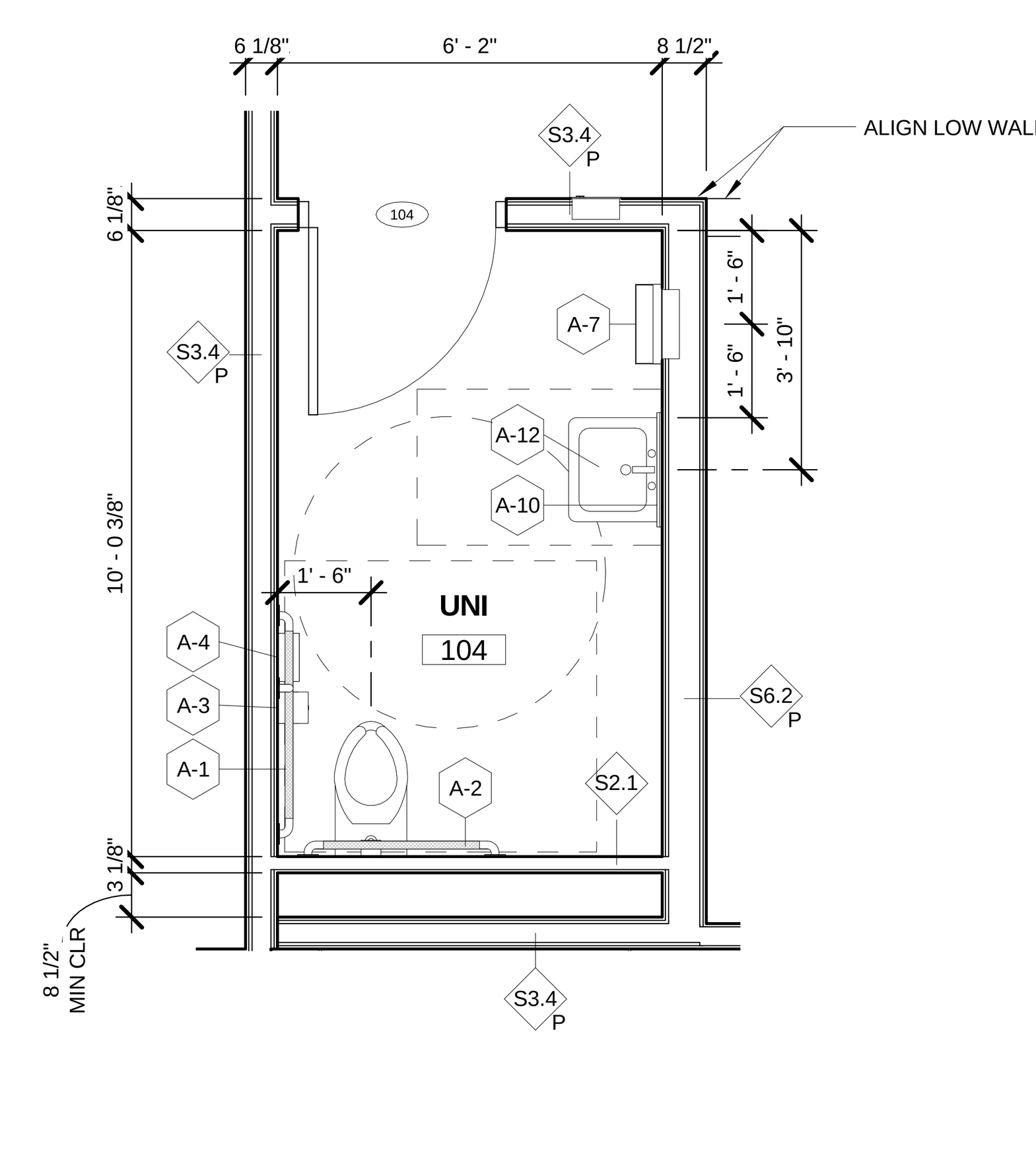
TYPICAL MOUNTING HEIGHTS
1/4" = 1'-0"

RESTROOM PLAN GENERAL NOTES

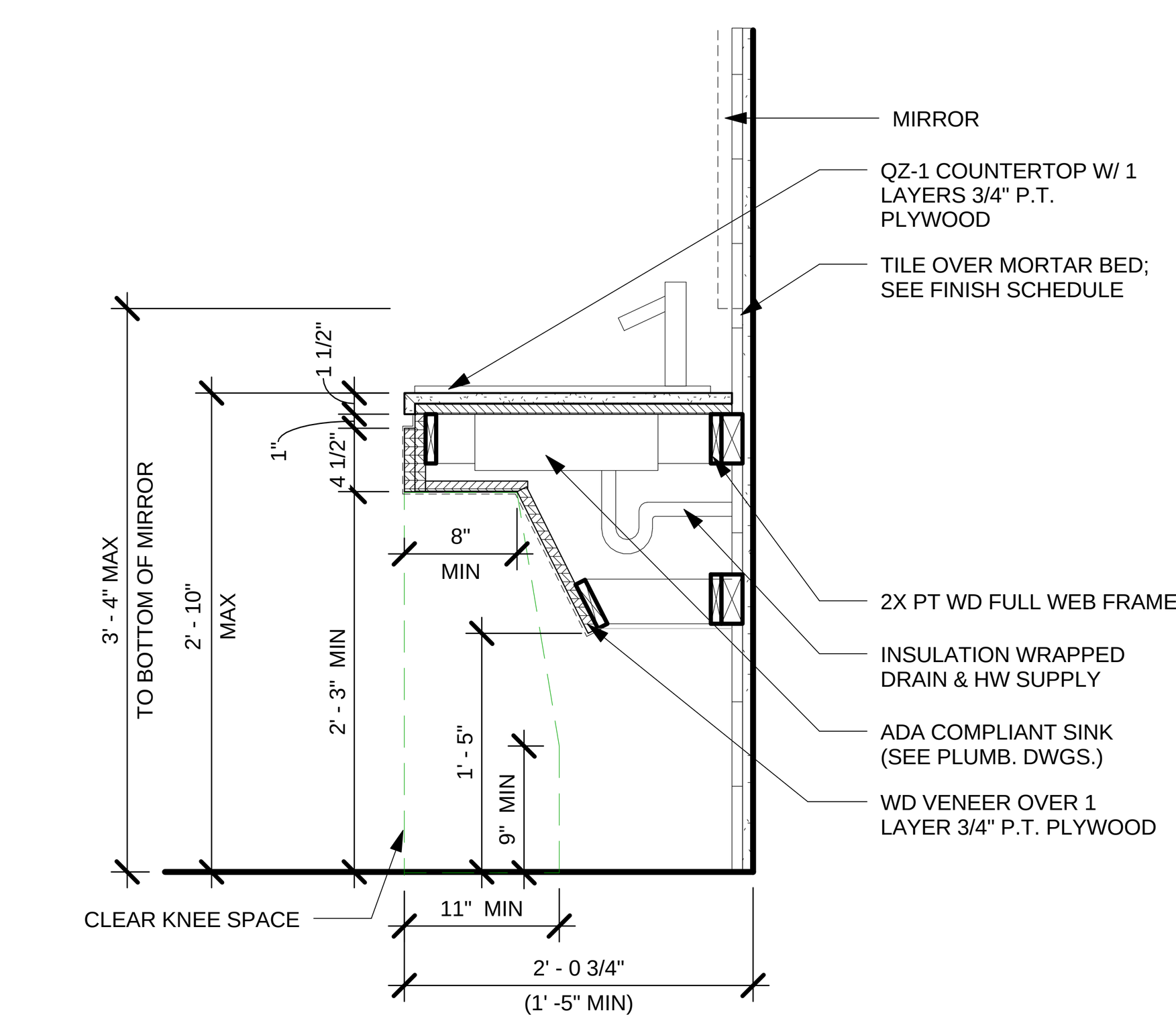
1. USE TILE BACKER BOARD FOR ALL WALLS TO RECEIVE TILE.
2. FLUSH CONTROL VALVES IN TOILET STALLS SHALL BE MOUNTED ON THE WIDE SIDE OF THE TOILET AREA AND NO MORE THAN 44" AFF
3. SEE ACCESSIBLE TOILET STALL DETAILS FOR REQUIRED MOUNTING HEIGHTS.
4. CENTER ALL URINALS AND WATER CLOSETS WITHIN STALL, U.N.O.
5. CAULK CONTROL JOINT LOCATIONS @ TILE FLOOR FINISH, TYPICAL
6. ALL RESTROOM DIMENSIONS SHOWN ARE TO FACE OF FINISH, U.N.O.
7. COORDINATE WITH SPECIFICATIONS FOR TOILET ACCESSORIES.
8. SEE FINISH SCHEDULE FOR FINISH ABBREVIATIONS
9. PROVIDE COAT HOOK AT ALL RESTROOM DOORS



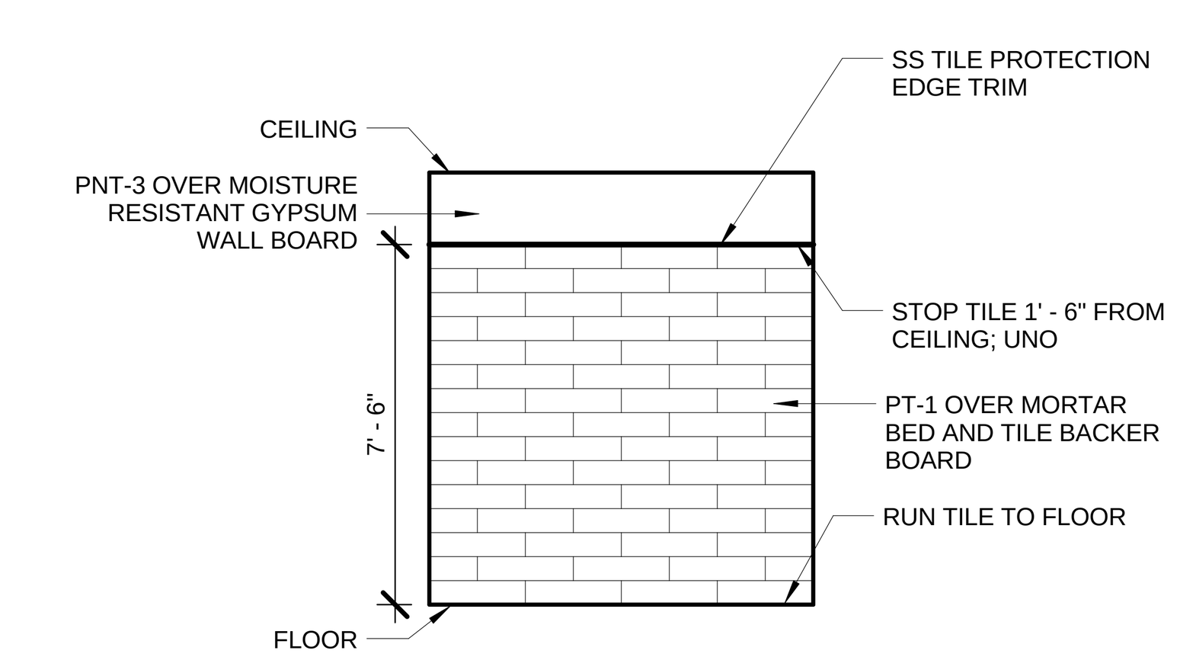
C5 UPPER LEVEL ENLARGED MEN AND WOMEN TOILET PLAN
3/8" = 1'-0"



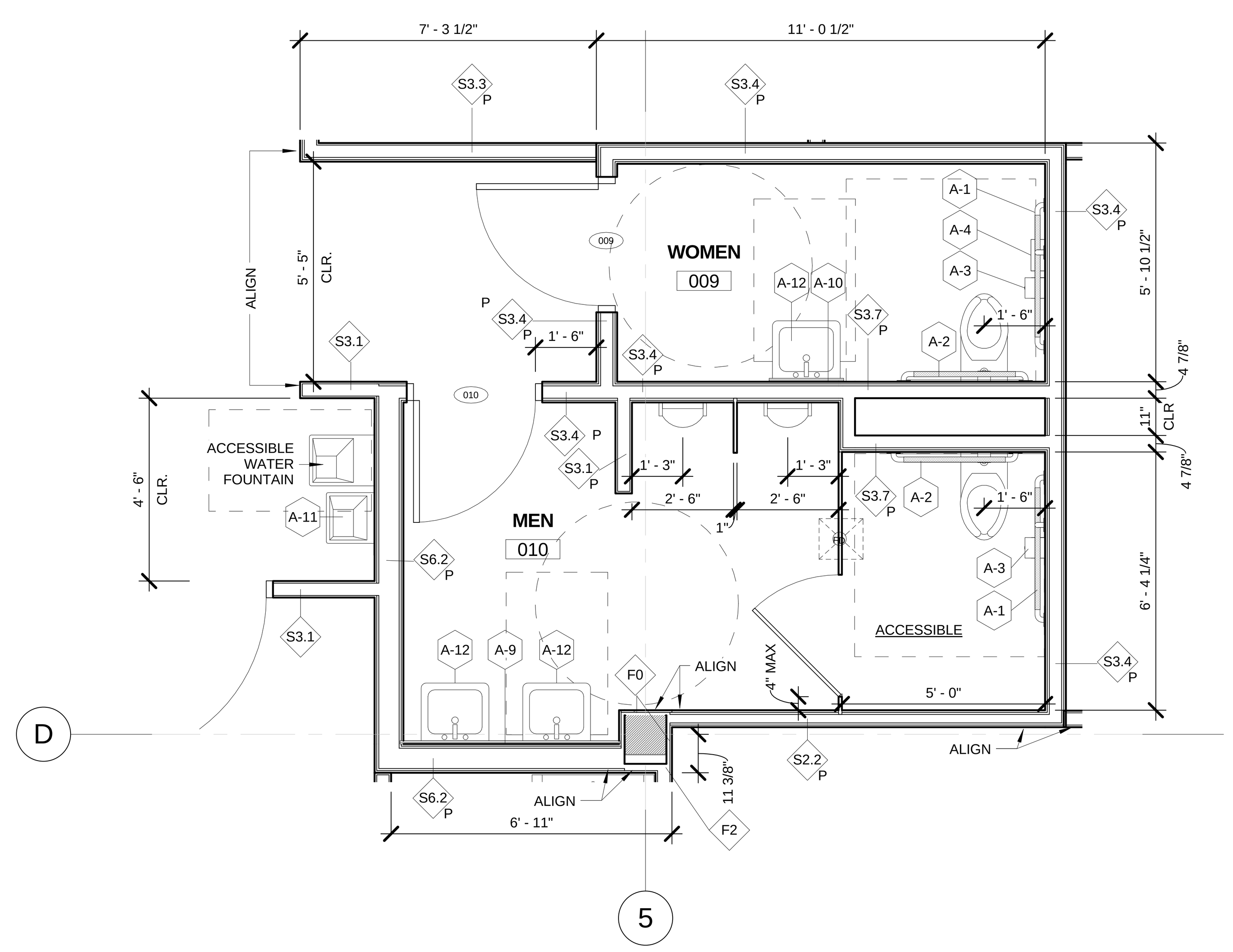
C3 UPPER LEVEL UNISEX TOILET PLAN
3/8" = 1'-0"



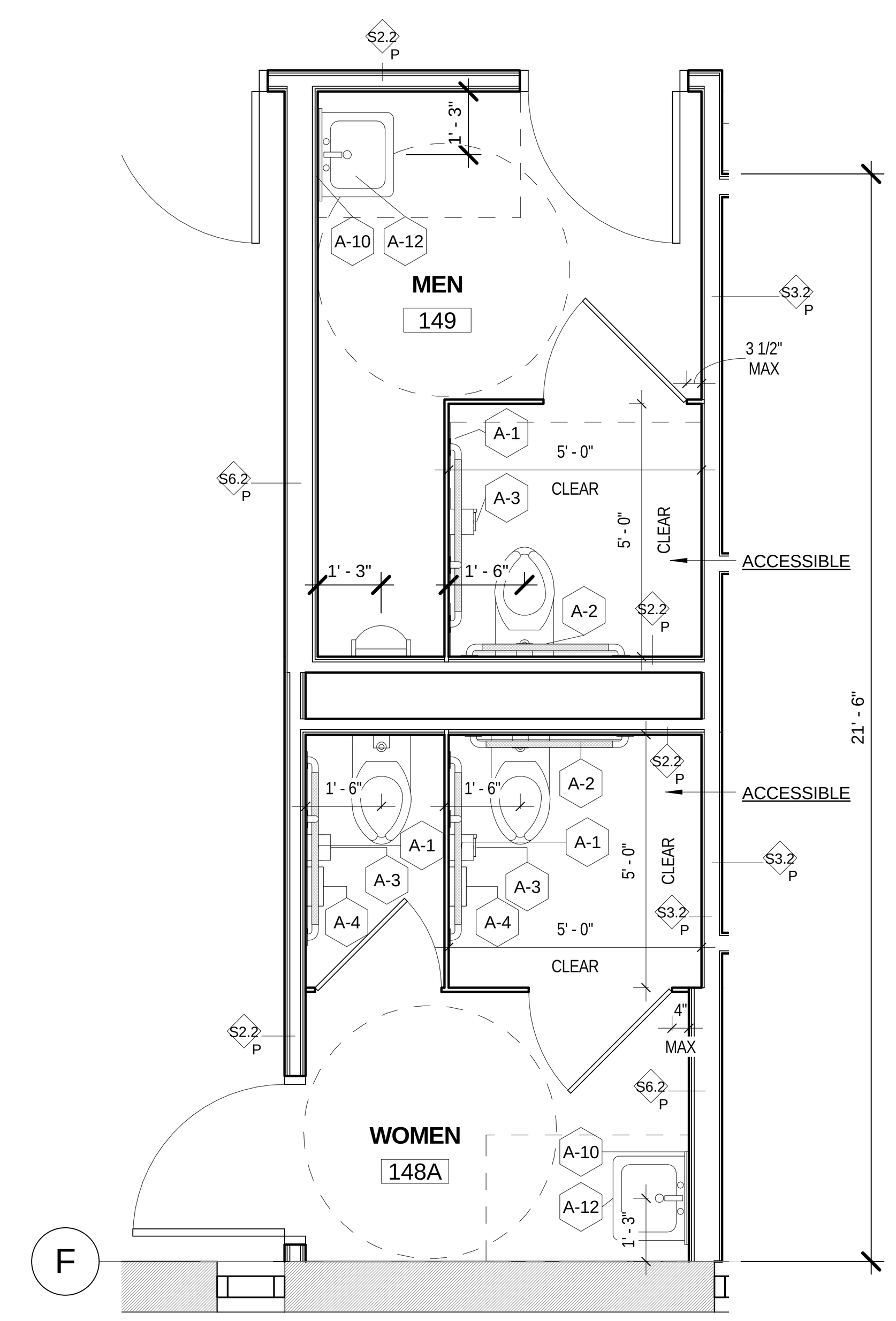
C1 ADA KNEE CLEARANCE
1" = 1'-0"



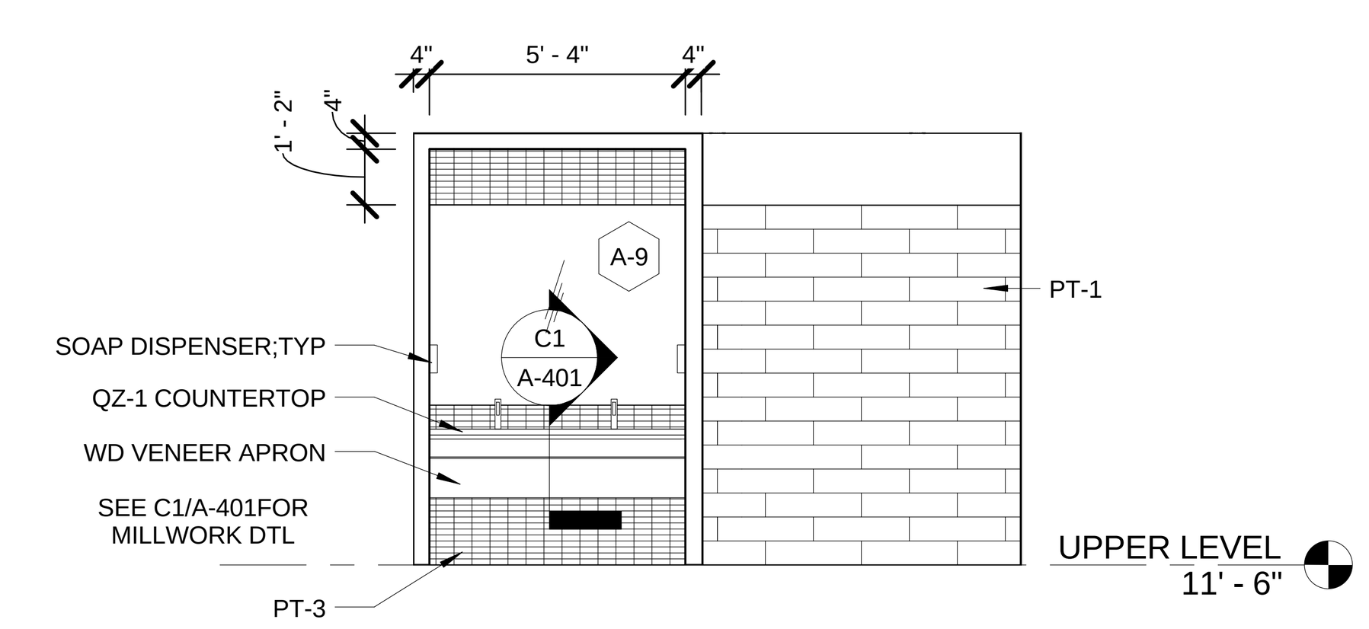
B1 TYP TILE ELEVATION DTL @ RESTROOMS
1/4" = 1'-0"



A5 LOWER LEVEL ENLARGED MEN AND WOMEN TOILET PLAN
3/8" = 1'-0"



A3 UPPER LEVEL ENLARGED IND. TOILET PLANS
3/8" = 1'-0"



A1 RESTROOM 131 NORTH ELEVATION
1/4" = 1'-0"

NORTH

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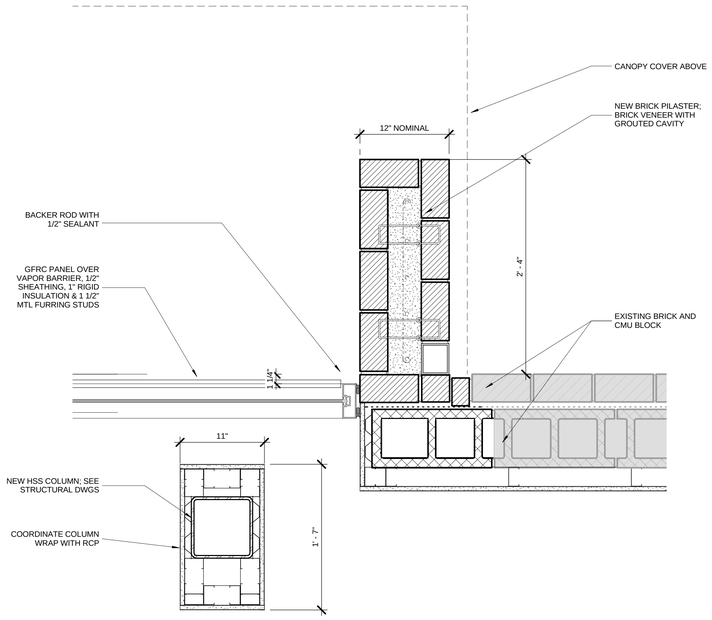
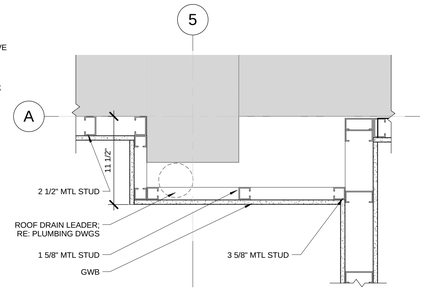
ENLARGED RESTROOM PLANS & DETAILS

CONSTRUCTION DOCUMENTS

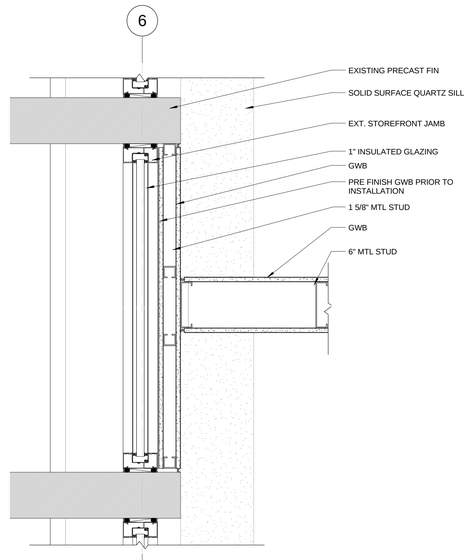
A-401



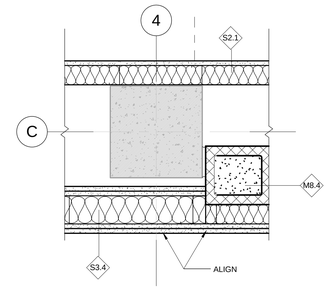
D5 PLAN DTL @ HRL ENTRANCE - BASE BID
1 1/2" = 1'-0"



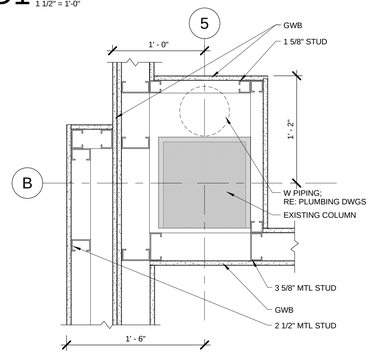
D3 PLAN DTL @ CL A-5
1 1/2" = 1'-0"



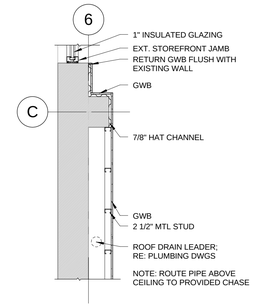
C2 PLAN DTL @ WINDOW-WALL CONDITION
1 1/2" = 1'-0"



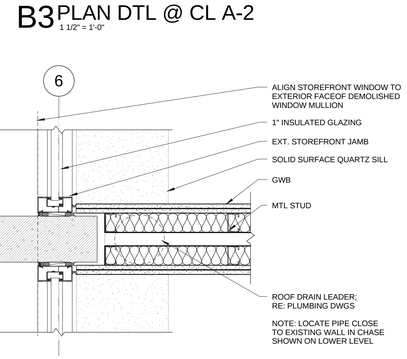
D1 PLAN DTL @ CL C-4
1 1/2" = 1'-0"



C1 PLAN DTL @ CL B-5
1 1/2" = 1'-0"



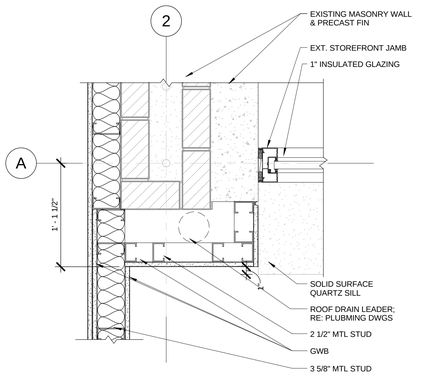
B5 PLAN DTL @ CL C-6
1/2" = 1'-0"



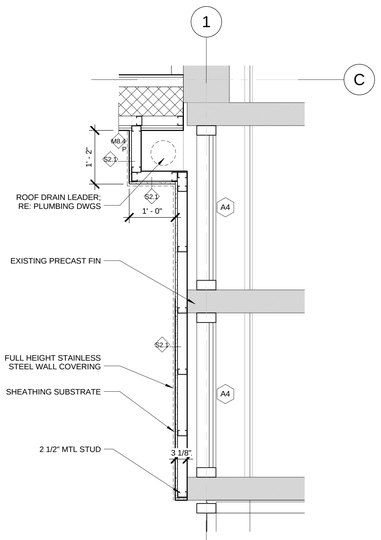
C3 PLAN DTL @ CL A-6
1 1/2" = 1'-0"

B2 PLAN DTL @ VEST 001
1 1/2" = 1'-0"

B1 PLAN DTL @ CL B-3
1 1/2" = 1'-0"

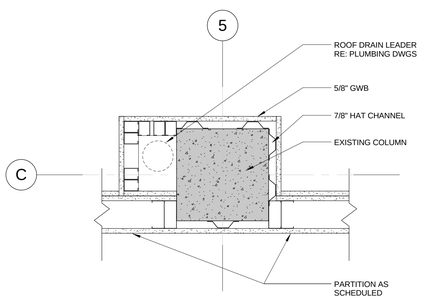


B3 PLAN DTL @ CL A-2
1 1/2" = 1'-0"

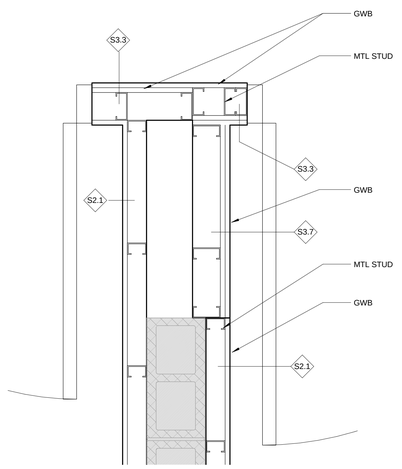


A5 PLAN DTL @ CL C-1
3/4" = 1'-0"

A3 PLAN DTL @ FIN & RD LEADER
1 1/2" = 1'-0"



A2 PLAN DTL @ CL C-5
1 1/2" = 1'-0"



A1 PLAN DTL @ BREAK RM
1 1/2" = 1'-0"

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ENLARGED PLAN DETAILS

NORTH

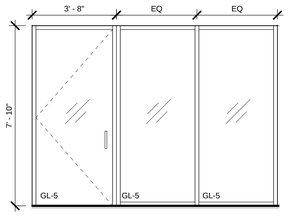
CONSTRUCTION DOCUMENTS

A-501

1 SHEET ADDED

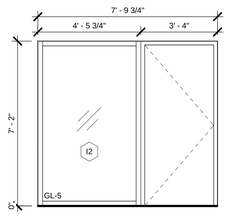
5 4 3 2 1

D



I1

3/8" = 1'-0"



I2

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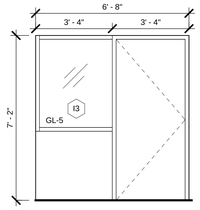

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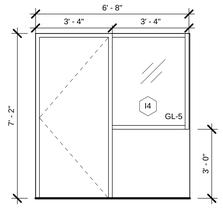
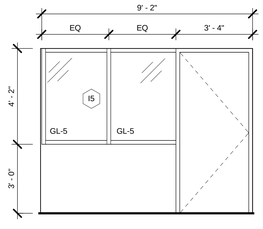


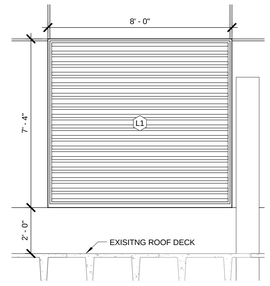
I4

3/8" = 1'-0"



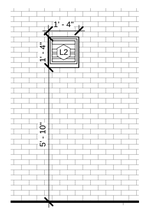
I5

3/8" = 1'-0"



L1

3/8" = 1'-0"



L2

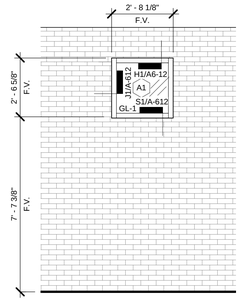
3/8" = 1'-0"

GLAZING SCHEDULE TYPES

GL-1	1" CLEAR INSULATED GLASS
GL-2	1" CLEAR INSULATED TEMPERED GLASS
GL-3	1" INSULATED SPANDREL GLASS
GL-4	1/4" CLEAR PLATE GLASS
GL-5	1/4" CLEAR TEMPERED GLASS

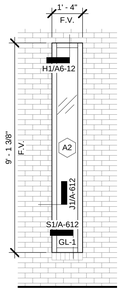
C

INTERIOR STOREFRONT



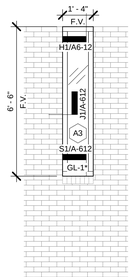
A1

3/8" = 1'-0"



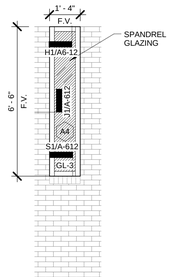
A2

3/8" = 1'-0"



A3

* NOTE: USE GL-2 TEMPERED GLAZING IN THE THREE (3) WINDOWS IN STAIR 2 (STR2)



A4

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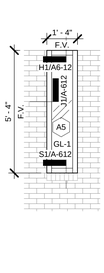
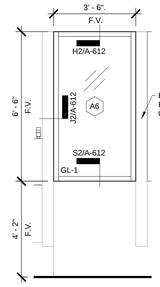


A5

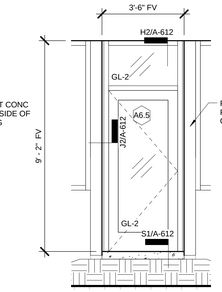
3/8" = 1'-0"



PRECAST CONC FINS EA SIDE OF OPENING

A6

3/8" = 1'-0"

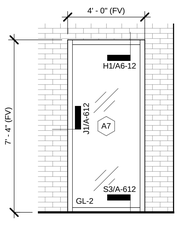


PRECAST CONC FINS EA SIDE OF OPENING

A6.5

3/8" = 1'-0"

LOUVERS



A7

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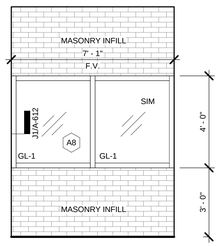
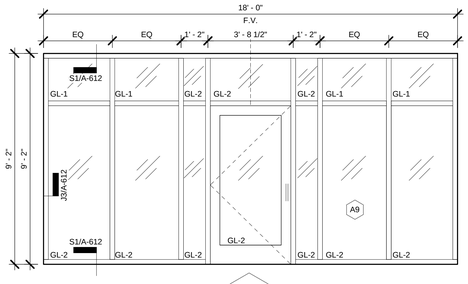


A8

3/8" = 1'-0"

B



A9

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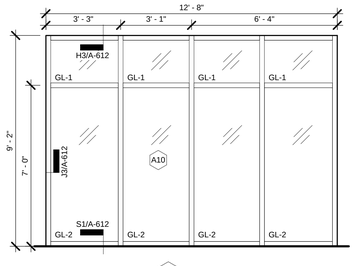

A10

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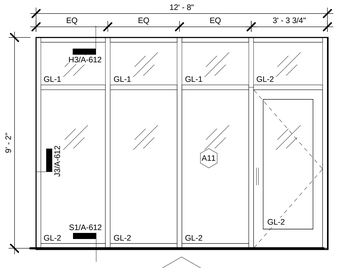

A11

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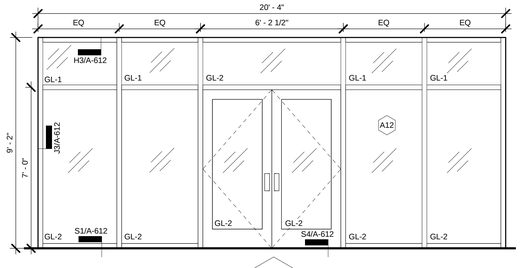

A12

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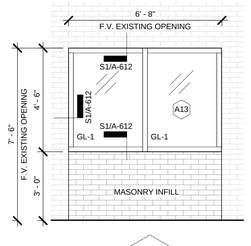
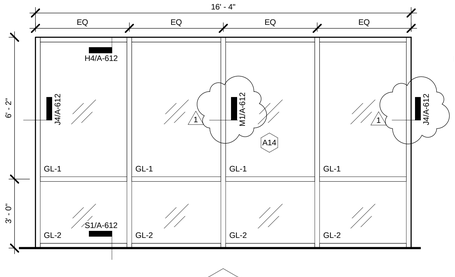


A13

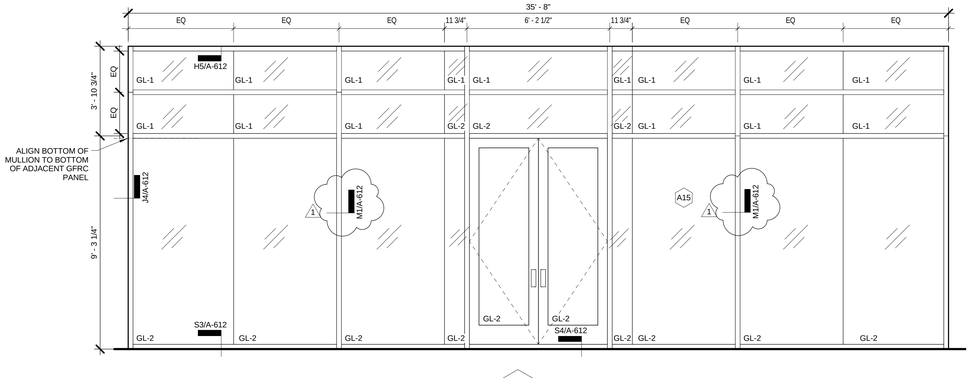
3/8" = 1'-0"

A



A14

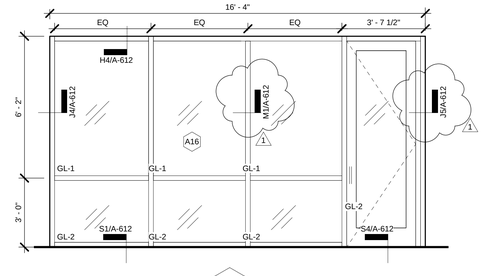
3/8" = 1'-0"



A15

3/8" = 1'-0"

NOTE: ALL EXTERIOR STOREFRONT IS INSIDE GLAZED



A16

3/8" = 1'-0"

EXTERIOR STOREFRONT

5 4 3 2 1

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MARCH
1ST, 2016

UNC CHARLOTTE

UNC CHARLOTTE
RESIDENCE DINING HALL BUILDING RENOVATION
SCO ID #: 14-11273-02A

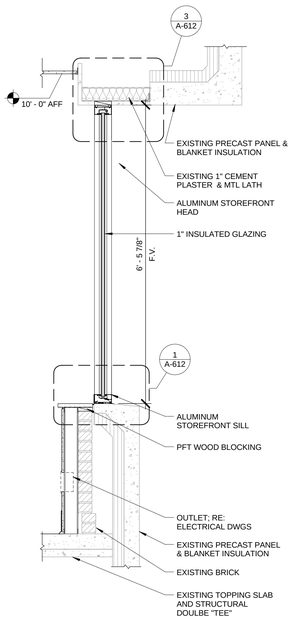
TAG	DESCRIPTION	DATE
1	ADDENDUM # 1	3/16/16

Project: 15NCC491
Drawn By:
Checked By:
Date: MARCH 1ST, 2016

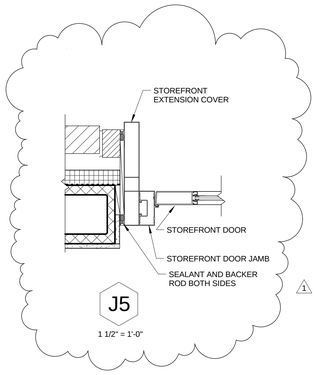
GLAZING & LOUVER SCHEDULE

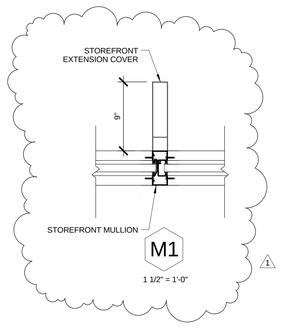
CONSTRUCTION DOCUMENTS

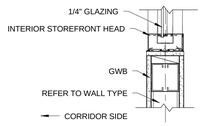
A-611

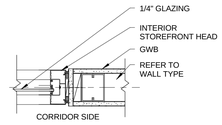


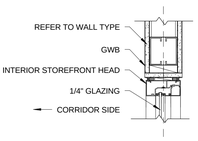
D1 STOREFRONT HEAD & SILL - TYPE B
3/4" = 1'-0"

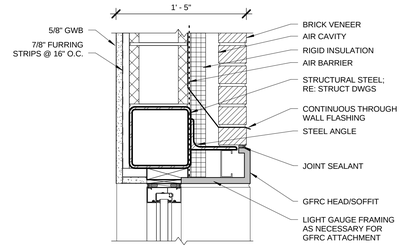


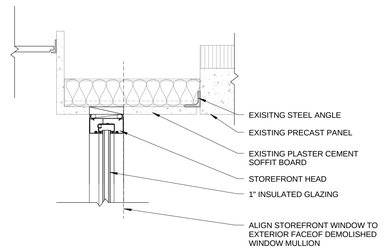


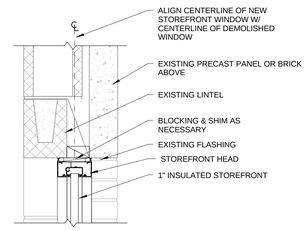


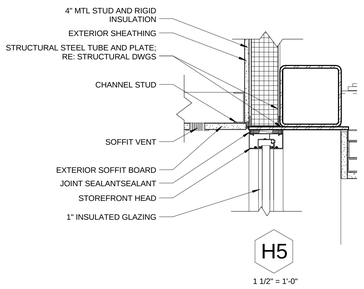


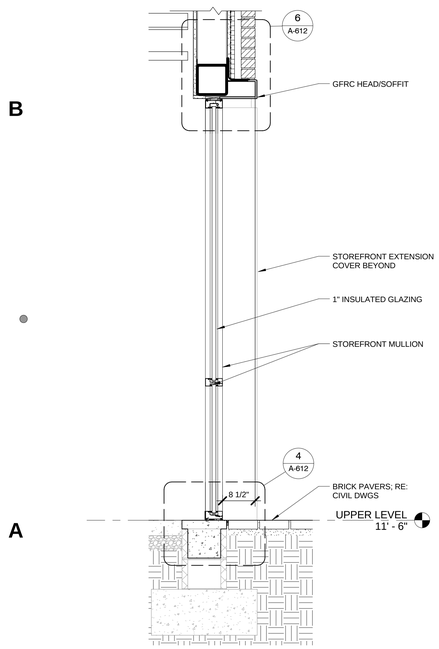




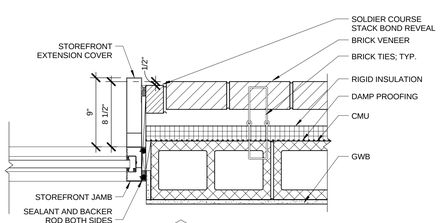


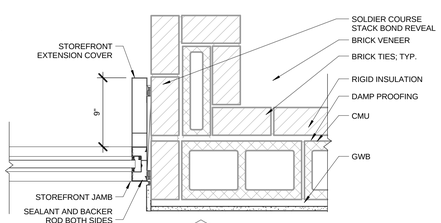


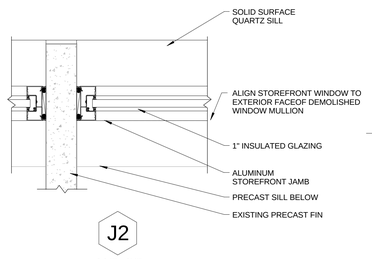


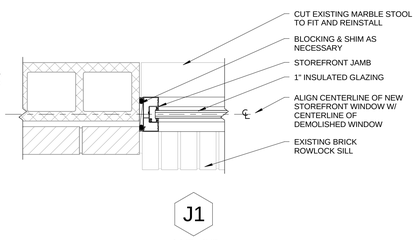


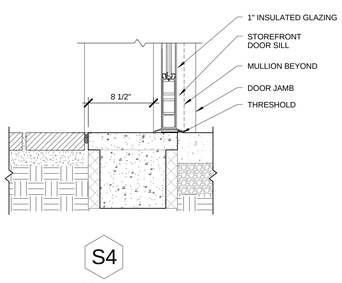
A5 SECTION @ ALTERNATE GLAZING
3/4" = 1'-0"

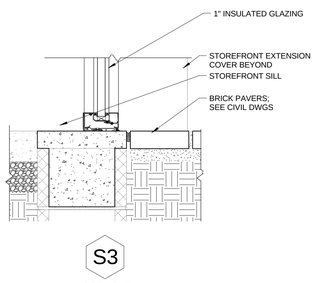


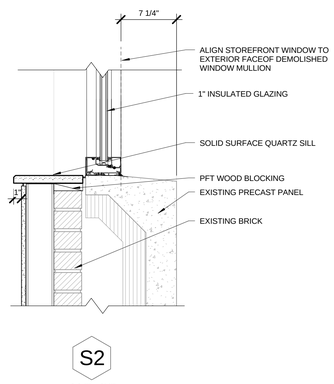


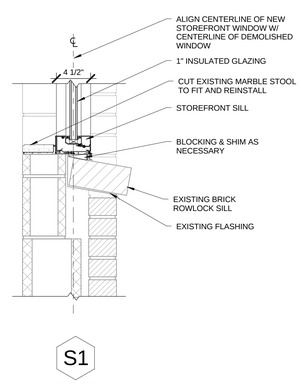












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MARCH
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UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

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1	ADDENDUM # 1	3/16/16

Project: 15NCC491
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Date: MARCH 1ST, 2016

GLAZING & LOUVER DETAILS

CONSTRUCTION DOCUMENTS

A-612

D
C
B
A

5 4 3 2 1

ROOM FINISH SCHEDULE

RM NUMBER	RM NAME	WALL FINISH	BASE FINISH	FLOOR FINISH	CEILING FINISH	ADDITIONAL INFORMATION
001	VEST.	PNT-1	RB-1	CPT-2	ACT-1 & GWB	SEE RCP
002	OFFICE SUITE	PNT-1	RB-1	CPT-2	ACT-1 & GWB	SEE RCP
002W1	ADMIN SUP1	PNT-1	RB-1	CPT-2	ACT-1 & GWB	SEE RCP
002W2	ADMIN SUP 2	PNT-1	RB-1	CPT-2	ACT-1 & GWB	SEE RCP
002W3	ADMIN SUP 3	PNT-1	RB-1	CPT-2	ACT-1 & GWB	SEE RCP
002W4	STUD ASST	PNT-1	RB-1	CPT-2	ACT-1 & GWB	SEE RCP
003	OFFICE SUITE	PNT-1	RB-1	CPT-2	ACT-1	
003A	ASSOC DIR	PNT-1	RB-1	CPT-3	ACT-1	
003B	ADMIN	PNT-1	RB-1	CPT-3	ACT-1	
003C	ADMIN TMA	PNT-1	RB-1	CPT-3	ACT-1	
003D	ADMIN DATA	PNT-1	RB-1	CPT-3	ACT-1	
003E	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
003F	SERVER	PNT-1	RB-2	LVT-1	N/A	
003G	ADMIN RMS	PNT-1	RB-1	CPT-3	ACT-1	
003H	ADMIN SERVER	PNT-1	RB-1	CPT-3	ACT-1	
003J	OFFICE	PNT-1	RB-1	CPT-3	ACT-1	
003K	ADMIN HELP DESK	PNT-1	RB-1	CPT-3	ACT-1	
003L	ADMIN HELP STORAGE	PNT-1	RB-2	LVT-1	ACT-1	
004	CONF RM	PNT-1	RB-1	CPT-2	ACT-1 & GWB	SEE RCP
005	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
006	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
007	ASSOC DIR	PNT-1	RB-1	CPT-3	ACT-1	
008	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
009	WOMEN	PNT-4 & PT-1	PT-1	PT-2	GWB	SEE ELEVATIONS FOR WALL TILE LOCATIONS
010	MEN	PNT-4 & PT-1	PT-1	PT-2	GWB	SEE ELEVATIONS FOR WALL TILE LOCATIONS
011	MAINT SUP	PNT-1	RB-1	CPT-4	ACT-1	
012	SUPPLY STORAGE (Facilities)	PNT-5	RB-1	SEALED CONC	PNT	PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
012A	STORAGE (Business)	PNT-5	RB-1	CPT-4	PNT	PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
012B	STORAGE (Assign)	PNT-5	RB-1	CPT-4	PNT	PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
012C	STORAGE (ResLife)	PNT-5	RB-1	CPT-4	PNT	PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
012D	SUPPLY STORAGE (Facilities)	PNT-5	RB-1	SEALED CONC	PNT	PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
012E	SUPPLY STORAGE (Facilities)	PNT-5	RB-1	SEALED CONC	PNT	PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
012F	JAN	FRP & PNT-5	RB-2	LVT-1	N/A	FRP UP TO 5'-0" AFF
013	LOCK SHOP	PNT-1	RB-1	CPT-4	ACT-1	
014	SHOP SUP	PNT-1	RB-1	CPT-4	ACT-1	
015	SHOP SUP	PNT-1	RB-1	CPT-4	ACT-1	
016	SHOP SUP	PNT-1	RB-1	CPT-4	ACT-1	
017	SHOP SUP	PNT-1	RB-1	CPT-4	ACT-1	
018	BREAK RM	PNT-1	RB-2	LVT-1	ACT-1	
019	SHOP SUP	PNT-1	RB-1	CPT-4	ACT-1	
020	MECH.	PNT-5	N/A	SEALED CONC	N/A	
020A	ATS	PNT-5	N/A	SEALED CONC	N/A	
021	ELECT.	PNT-5	N/A	SEALED CONC	N/A	
100	LOBBY	PNT-3	RB-1	CPT-1	ACT-1 & GWB	SEE RCP
101W1	STUDENT	PNT-1	RB-1	CPT-2	ACT-1	
101W2	ADMIN SUP 2	PNT-1	RB-1	CPT-2	ACT-1	
101W3	ADMIN SUP 1	PNT-1	RB-1	CPT-2	ACT-1	
102	ADMIN SUP 3	PNT-1	RB-1	CPT-2	ACT-1	
103	LG CONF	PNT-1	RB-1	CPT-1	ACT-1 & GWB	SEE RCP
103A	AV STOR	PNT-1	RB-1	CPT-2	ACT-1	
104	UNI	PNT-4 & PT-1	PT-1	PT-2	GWB	SEE ELEVATIONS FOR WALL TILE LOCATIONS
105	STUDENT	PNT-1	RB-1	CPT-2	ACT-1	
106	TRAINING LAB	PNT-1	RB-1	CPT-2	ACT-1	
107	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
108	ADMIN	PNT-1	RB-1	CPT-3	ACT-1	
110	HTS	PNT-1	RB-2	LVT-1	N/A	
111	SM CONF	PNT-1	RB-1	CPT-1	ACT-1 & GWB	SEE RCP
112	ADMIN	PNT-1	RB-1	CPT-3	ACT-1	
113	ADMIN	PNT-1	RB-1	CPT-3	ACT-1	
114	ADMIN	PNT-1	RB-1	CPT-3	ACT-1	
115	ASSOC DIR	PNT-1	RB-1	CPT-3	ACT-1	
116	ASSOC VICE CHANC	PNT-1	RB-1	CPT-3	ACT-1	
117	ASSOC DIR	PNT-1	RB-1	CPT-3	ACT-1	
118	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
119	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
120	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
121	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
122	COORD	PNT-1	RB-1	CPT-3	ACT-1	
123	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
124	COORD	PNT-1	RB-1	CPT-3	ACT-1	
125	ADMIN SUP CUBES	PNT-1	RB-1	CPT-2	ACT-1	
126	GRAD ASST CUBES	PNT-1	RB-1	CPT-2	ACT-1	
127	ELEC	PNT-1	RB-2	LVT-1	N/A	
128	ITS	PNT-1	RB-2	LVT-1	N/A	
129	MEN	PNT-4 & PT-1	PT-1	PT-2	GWB	
130	JAN	FRP & PNT-5	RB-2	LVT-1	N/A	FRP UP TO 5'-0" AFF
131	WOMEN	PNT-4 & PT-1	PT-1	PT-2	GWB	
132	WK RM	PNT-1	RB-1	CPT-2	ACT-1	
133	BK RM	PNT-1	RB-2	LVT-1	ACT-1	
134	WK RM	PNT-1	RB-1	CPT-2	ACT-1	
134A	STOR	PNT-1	RB-1	CPT-2	ACT-1	
135	ADMIN	PNT-1	RB-1	CPT-3	ACT-1	
136	ASST DIR	PNT-1	RB-1	CPT-3	ACT-1	
137	STUDENT	PNT-1	RB-1	CPT-3	ACT-1	
138	SM CONF	PNT-1	RB-1	CPT-1	ACT-1 & GWB	SEE RCP
139	MAIL	PNT-1	RB-1	CPT-2	ACT-1	
140	MEETING	PNT-1	RB-1	CPT-2	ACT-1	
141	CATERING STORAGE	PNT-5 & FRP	QT-1	QT-1	PNT	SEE FINISH PLANS FOR FRP LOCATIONS; PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
141A	PULL AREA	PNT-5 & FRP	QT-1	QT-1	PNT	SEE FINISH PLANS FOR FRP LOCATIONS; PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
142	OFFICE	PNT-5	QT-1	QT-1	ACT-1	
143	OFFICE	PNT-5	QT-1	QT-1	ACT-1	
144	OFFICE	PNT-5	QT-1	QT-1	ACT-1	
145	OFFICE	PNT-5	QT-1	QT-1	ACT-1	
146	OFFICE	PNT-5	QT-1	QT-1	ACT-1	
147	OFFICE	PNT-5	QT-1	QT-1	ACT-1	
148	BREAK	PNT-5	QT-1	QT-1	ACT-1	
148A	WOMEN	FRP & PNT-5	QT-1	QT-1	GWB	
149	MEN	FRP & PNT-5	QT-1	QT-1	GWB	
150	REC.	PNT-5	QT-1	QT-1	ACT-1	
151	OFFICE	PNT-5	QT-1	QT-1	ACT-1	
152	CAN/JAN	FRP & PNT-5	QT-1	QT-1	ACT-2	
153	PRODUCTION	N/A	N/A	N/A	N/A	N/A - PART OF FOOD SERVICE PACKAGE
154	PRODUCE	N/A	N/A	N/A	N/A	N/A - PART OF FOOD SERVICE PACKAGE
155	CHEF	PNT-5	QT-1	QT-1	ACT-1	
156	BEVERAGE	FRP & PNT-5	QT-1	QT-1	ACT-2	
156A	COOLER	N/A	N/A	N/A	N/A	N/A - PART OF FOOD SERVICE PACKAGE
157	MEAT&DAIRY	N/A	N/A	N/A	N/A	N/A - PART OF FOOD SERVICE PACKAGE
158	BULK FREEZER	N/A	N/A	N/A	N/A	N/A - PART OF FOOD SERVICE PACKAGE
159	BULK COOLER	N/A	N/A	N/A	N/A	N/A - PART OF FOOD SERVICE PACKAGE
160	DISH	FRP & PNT-5	QT-1	QT-1	ACT-2	
161	COLD PREP	N/A	N/A	N/A	N/A	N/A - PART OF FOOD SERVICE PACKAGE
162	DRY STORAGE	PNT-5	QT-1	QT-1	N/A	
163	HOT PREP	FRP & PNT-5	QT-1	QT-1	ACT-2	SEE FINISH PLANS FOR FRP & SS PANEL LOCATIONS
164	BULK FREEZER	N/A	N/A	N/A	N/A	
165	CATERING STORAGE	PNT-5	RB-2	SEALED CONC	PNT-5	CLEAN ALL INTERIOR WALLS FREE OF ALL EFFLORESCENCE AND SALTS. PREP FOR PAINT
166	MECH	PNT-5	N/A	SEALED CONC	N/A	
167	FIRE PUMP	PNT-5	N/A	SEALED CONC	N/A	
COR1	CORRIDOR	PNT-1	RB-1	CPT-2	ACT-1	(UPPER LEVEL)
COR1	CORRIDOR	PNT-1	RB-1	CPT-2	ACT-1	(LOWER LEVEL)
COR2	CORRIDOR	PNT-1	RB-2	LVT-1	ACT-1	(LOWER LEVEL)
COR2	CORRIDOR	PNT-1	RB-1	CPT-2	ACT-1	(UPPER LEVEL)
COR3	CORRIDOR	PNT-1	RB-1	CPT-2	ACT-1	
COR4	CORRIDOR	PNT-1	RB-1	CPT-2	ACT-1	
COR5	CORRIDOR	PNT-1	RB-1	CPT-2	ACT-1	
COR6	CORRIDOR	PNT-1	RB-1	CPT-2	ACT-1	
COR7	CORR.	FRP & PNT-5	QT-1	QT-1	PNT	SEE FINISH PLANS FOR FRP LOCATIONS; PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
COR8	CORRIDOR	FRP & PNT-5	QT-1	QT-1	PNT	SEE FINISH PLANS FOR FRP LOCATIONS; PNT ALL EXPOSED MECH, CONDUIT, ETC TO MATCH CEILING FINISH
COR9	CORRIDOR	FRP & PNT-5	QT-1	QT-1	ACT-2	SEE FINISH PLANS FOR FRP LOCATIONS
ELV1	ELEV	PLAM	PLAM	CPT-2	PLAM	
STR1	STAIR 1	PNT-5	RB	RF-1	ACT-1	
STR2	STAIR 2	PNT-5	RB	RF-1	ACT-1	

GENERAL NOTES:

1. CEMENT TILE BACKER BOARD AT WALLS W/CERAMIC TILE -REFER TO ENLARGED RESTROOM PLANS AND ELEVATIONS FOR LOCATIONS
2. MOISTURE RESISTANT GYPSUM WALL BOARD AT WALLS ABOVE TILE WAINSCOT
3. ENSURE ALL TILE & GROUT IS SEALED
4. PROVIDE MINI BLINDS AT ALL INTERIOR AND EXTERIOR GLAZING EXCEPT IN AREAS WITH WINDOW SHADES AND LOBBY 100
5. SEE SPEC FOR OTHER ACCEPTABLE MANUFACTURERS. MANUFACTURERS LISTED BELOW ARE ONLY BASIS OF DESIGN
6. SEE FINISH PLANS FOR ACCENT PNT LOCATIONS

FINISH SCHEDULE LEGEND-BASIS OF DESIGN

FINISH	DESCRIPTION	MANUFACTURER	STYLE #	COLOR	FINISH	NOTES
ACT-1	ACOUSTIC CEILING TILE	ARMSTRONG	ULTIMA 1911	WHITE	FINE	24" x 24" x 3/4"BEVELED TEGULAR MINERAL FIBER FINE TEXTURED PANEL; GRID: 15/16"
ACT-2	ACOUSTIC CEILING TILE - KITCHEN	ARMSTRONG	CERAMAGUARD FINE FISSURED 607	WHITE	FINE	24" x 24" x 3/4"BEVELED TEGULAR MINERAL FIBER FINE TEXTURED PANEL; GRID: 15/16"
CPT-1	CARPET TILE 24" x 24"	SHAW CONTRACT GROUP	INTERACT 5T085	HEATHER ALE 84530		
CPT-2	CARPET TILE 24" x 24"	SHAW CONTRACT GROUP	STEP 5T084	HEATHER ALE 84530		
CPT-3	CARPET BROADLOOM	SHAW CONTRACT GROUP	EFFECT 5A192	ALLOY 92761		
CPT-4	CARPET TILE 24" x 24"	SHAW CONTRACT GROUP	PATH 5T034	PORTABELLA 34761		
LVT-1	LUXURY VINYL TILE 18" X 36"	SHAW CONTRACT GROUP	STRAND 0516V	WOOL 16115		20 MIL THICKNESS
PNT-1	PAINT	SHERWIN WILLIAMS	TBD BY ARCH	TBD BY ARCH		
PNT-2	PAINT	SHERWIN WILLIAMS	TBD BY ARCH	TBD BY ARCH		
PNT-3	PAINT - ACCENT	SHERWIN WILLIAMS	TBD BY ARCH	TBD BY ARCH		
PNT-4	EPOXY PAINT	SHERWIN WILLIAMS	TBD BY ARCH	TBD BY ARCH		
PNT-5	EPOXY PAINT	SHERWIN WILLIAMS	TBD BY ARCH	TBD BY ARCH		
PNT-6	PAINT - ACCENT #2	SHERWIN WILLIAMS	TBD BY ARCH	TBD BY ARCH		
PT-1	PORCELAIN TILE - 6"X24" AT WALLS	CROSSVILLE	SHADES BY CROSSVILLE	FROST AV241		
PT-2	PORCELAIN TILE - 12"X24" AT FLOOR	CROSSVILLE	BASALT	MAGMA AV295		
PT-3	PORCELAIN TILE - 1"X3" MOSAIC	CROSSVILLE	SHADES BY CROSSVILLE	WHITES SBC3		
QT-1	QUARRY TILE - 4"X4"	SUMMITVILLE	QUARRY ABRASIVE SURFACE	#33 FALCON GREY		
QT-2	QUARRY TILE - 4"X4"	SUMMITVILLE	QUARRY ABRASIVE SURFACE	#86 ELEPHANT GREY		ADD ALTERNATE; IF ACCEPTED WILL REPLACE QT-1
QZ-1	QUARTZ	DUPONT ZODIAQ		SNOW FLURRY		1
QZ-2	QUARTZ - AT BREAKROOMS	DUPONT ZODIAQ		TBD BY ARCH		
RB-1	RUBBER BASE	JOHNSONITE		TBD BY ARCH		
RB-2	RUBBER BASE	JOHNSONITE		TBD BY ARCH		
RF-1	RUBBER FLOORING / TREADS	JOHNSONITE		TBD BY ARCH		
PLAM-1	LAMINATE - RESTROOM PARTITIONS	PIONITE		GRAVEYARD OF THE ATLANTIC		
PLAM-2	LAMINATE	WILSONART		TBD BY ARCH		
PLAM-3	LAMINATE	TBD BY ARCH		TBD BY ARCH		
WD-1	WOOD VENEER			STAIN TBD	CHERRY	

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JENKINS-PEER ARCHITECTS PROFESSIONAL CORPORATION REGISTERED ARCHITECTURAL FIRM P-0260 CHARLOTTE, NC

VICTOR A. JONES JR. REGISTERED LANDSCAPE ARCHITECT 850 CHARLOTTE, NC

MARCH
1ST, 2016

UNC CHARLOTTE

UNC CHARLOTTE RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

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

Project: 15NCC491
Drawn By:
Checked By:
Date: MARCH 1ST, 2016

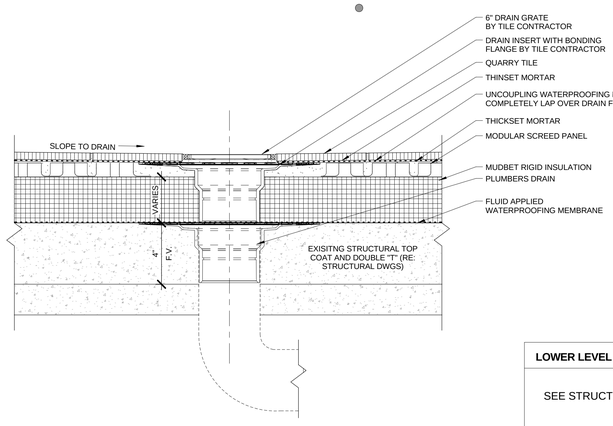
FINISH SCHEDULE

CONSTRUCTION DOCUMENTS

A-621

5 4 3 2 1

D C B A



D

D1 TYP. FLOOR DRAIN
3" = 1'-0"

LOWER LEVEL FLOOR INFILL

SEE STRUCTURAL DRAWINGS FOR INFILL MAKEUP

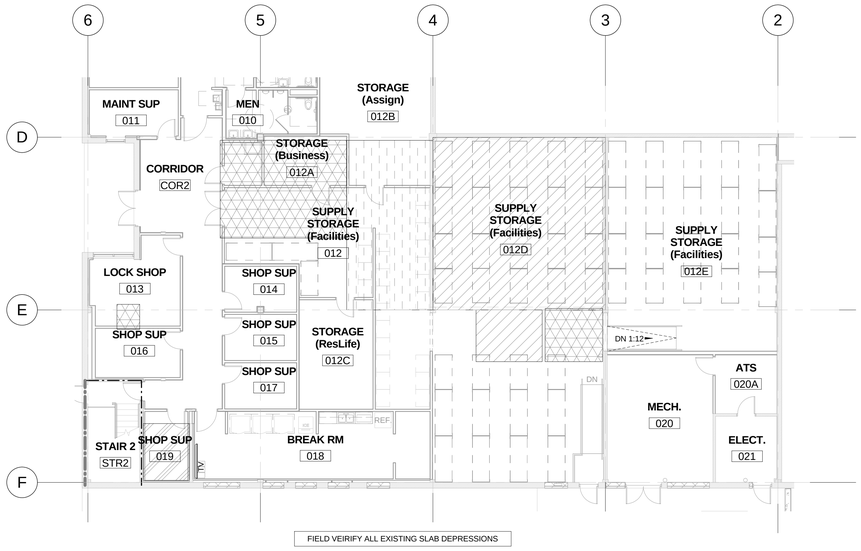
- F.F.E. 2 1/2" ABOVE TOP OF EXISTING RECESSED STRUCTURE APPROXIMATELY 1020 SF
- F.F.E. 8 1/4" ABOVE TOP OF EXISTING RECESSED STRUCTURE APPROXIMATELY 500 SF
- F.F.E. 10 1/4" ABOVE TOP OF EXISTING RECESSED STRUCTURE APPROXIMATELY 450 SF
- INFILL EXISTING ELEVATOR PIT APPROXIMATELY 100 SF

UPPER LEVEL FLOOR INFILL

KITCHEN FLOOR MAKEUP: QT-1 OVER THIN SET MORTAR BED, CRACK ISOLATION MEMBRANE, WATERPROOFING, AND STRUCTURAL RIGID INSULATION

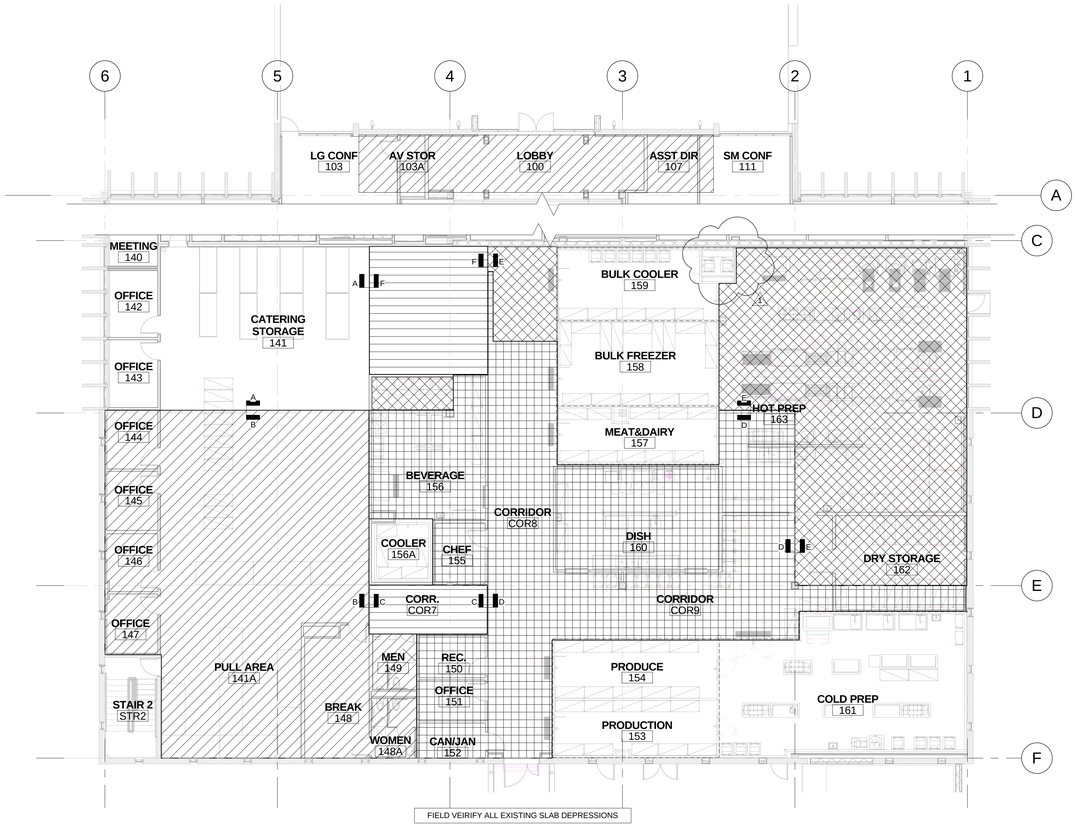
- F.F.E. 2 1/2" ABOVE TOP OF EXISTING RECESSED STRUCTURE INFILL WITH STRUCTURAL RIGID INSULATION APPROXIMATELY 3550 SF
- F.F.E. 2 1/4" ABOVE TOP OF EXISTING RECESSED STRUCTURE INFILL WITH STRUCTURAL RIGID INSULATION APPROXIMATELY 2640 SF
- F.F.E. 4 3/4" ABOVE TOP OF EXISTING RECESSED STRUCTURE INFILL WITH STRUCTURAL RIGID INSULATION APPROXIMATELY 3300 SF
- F.F.E. SLOPES 1:50 APPROXIMATELY 660 SF

C



FIELD VEIRIFY ALL EXISTING SLAB DEPRESSIONS

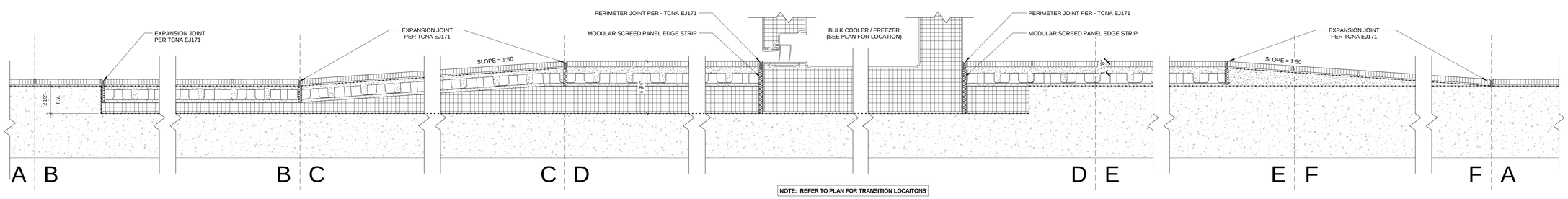
B5 LOWER LEVEL FINISH PLAN
3/32" = 1'-0"



FIELD VEIRIFY ALL EXISTING SLAB DEPRESSIONS

B2 TILE TRANSITION KEY PLAN
3/32" = 1'-0"

A



NOTE: REFER TO PLAN FOR TRANSITION LOCAITONS

A1 TILE TRANSITION DETAILS
3" = 1'-0"

5 4 3 2 1

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MARCH
1ST, 2016

UNC CHARLOTTE

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SCO ID #: 14-11273-02A

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

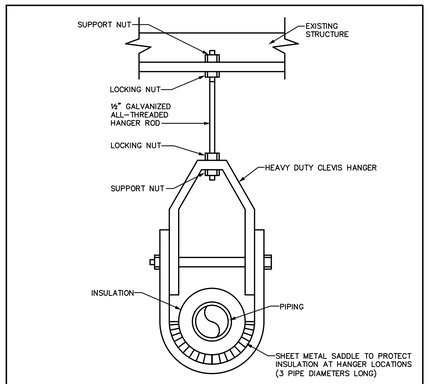
Project: 15NCC491
Drawn By:
Checked By:
Date: MARCH 1ST, 2016

INFILL PLAN & TILE TRANSITION DETAILS

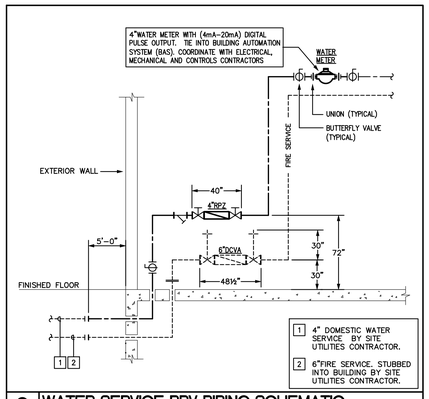
NORTH

CONSTRUCTION DOCUMENTS

A-623

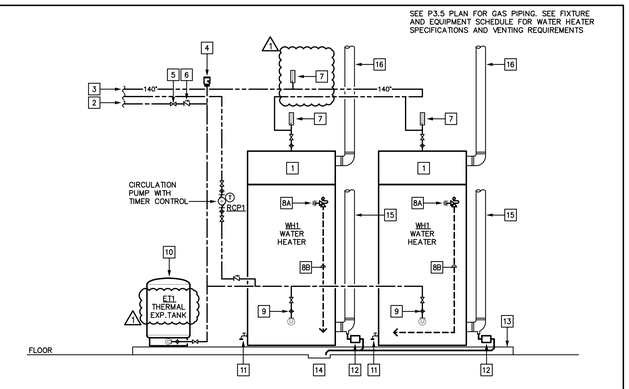


1 PIPE HANGER DETAIL
NO SCALE

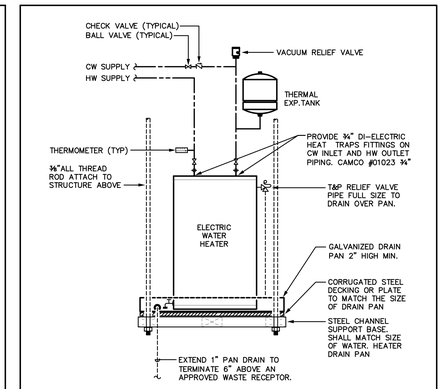


2 WATER SERVICE PRV PIPING SCHEMATIC
NO SCALE

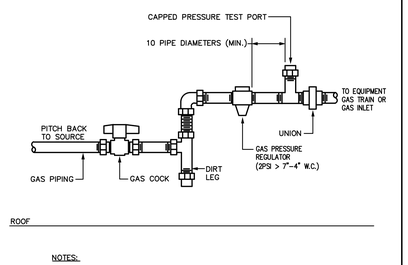
1 HIGH EFFICIENCY GAS FIRE WATER HEATER
2 COLD WATER SUPPLY FROM BUILDING
3 HOT WATER SUPPLY TO KITCHEN FIXTURES AND EQUIPMENT
4 VACUUM RELIEF VALVE
5 BALL VALVE. TYPICAL.
6 CHECK VALVE. TYPICAL.
7 THERMOMETER. TYPICAL.
8A TEMPERATURE AND PRESSURE RELIEF VALVE (T&P VALVE).
8B T&P VALVE RELIEF DISCHARGE. PIPE FULL SIZE TO SPILL OVER FLOOR DRAIN WITH AIR GAP.
9 UNION, TYPICAL.
10 THERMAL EXPANSION TANK.
11 WATER HEATER DRAIN VALVE.
12 CONDENSATE NEUTRALIZATION KIT. PROVIDED BY WATER HEATER MANUFACTURER.
13 4" HIGH CONCRETE HOUSEKEEPING PAD. PROVIDED BY GENERAL CONTRACTOR.
14 FLOOR DRAIN OR OTHER APPROVED WASTE RECEPTOR.
15 EXHAUST PIPE. TYPICAL.
16 AIR INTAKE PIPE. TYPICAL.



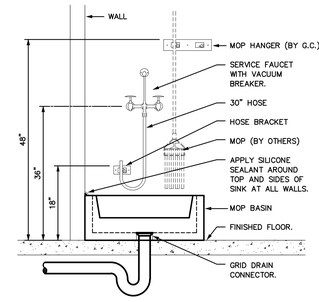
3 GAS FIRED WATER HEATER SCHEMATIC (WH1)
NO SCALE



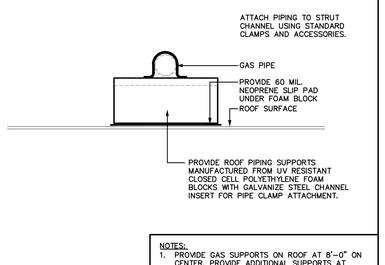
4 ELECTRIC WATER HEATER SCHEMATIC (WH3, WH4)
NO SCALE



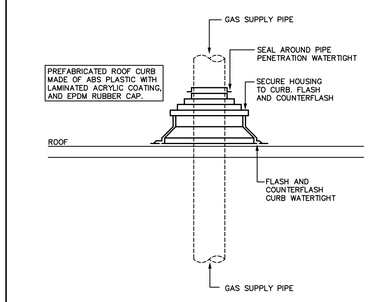
5 GAS CONNECTION DETAIL (TO PLBG EQUIPMENT)
NO SCALE



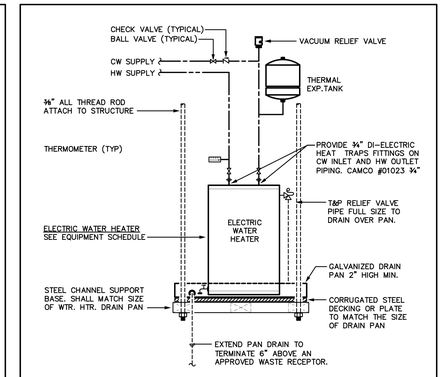
6 MOP BASIN AND ACCESSORIES
NO SCALE



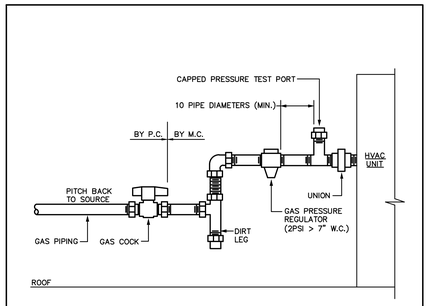
7 GAS PIPING SUPPORT DETAIL
NO SCALE



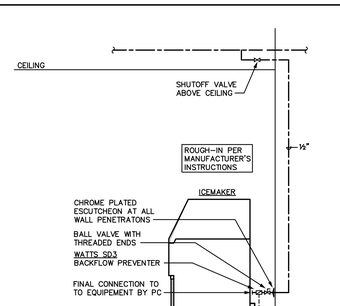
8 PIPE PENETRATION THORUGH ROOF DETAIL
NO SCALE



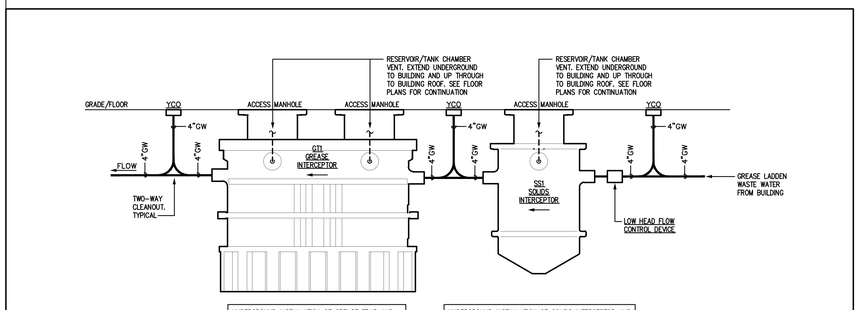
9 ELECTRIC WATER HEATER SCHEMATIC (WH2, WH5)
NO SCALE



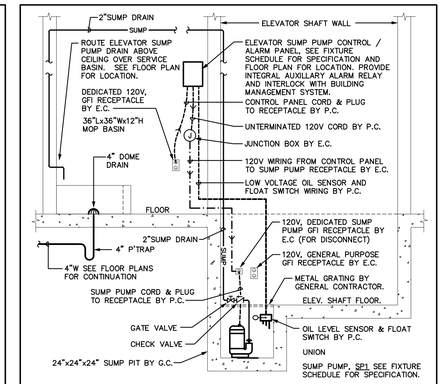
10 GAS CONNECTION DETAIL (TO HVAC EQUIPMENT)
NO SCALE



11 ICEMAKER PIPING SCHEMATIC
NO SCALE



12 GREASE AND SOLIDS INTERCEPTORS PIPING SCHEMATIC
NO SCALE



13 ELEVATOR SUMP PUMP DETAIL
NO SCALE

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26023 GEORGE C. FOWLER, III
3/1/16

UNC CHARLOTTE

UNC Charlotte RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE

Project: 15NCC491
Drawn By: DAR
Checked By: DAR
Date: March 1st, 2016

PLUMBING DETAILS

CONSTRUCTION DOCUMENTS

P-002

FOOD SERVICE PLUMBING CONNECTION SCHEDULE

THIS SCHEDULE IS PROVIDE FOR REFERENCE ONLY. REFER TO FOOD SERVICE DRAWINGS FOR ACTUAL CONNECTION SIZES AND REQUIREMENTS.

ITEM NUMBER	QTY	DESCRIPTION	HOT WATER	COLD WATER	INDIRECT WASTE	DIRECT WASTE	GAS		REMARKS
			SIZE	SIZE			SIZE	INPUT	
8	3	1-COMPARTMENT PREP SINK			1 3/4"	0"			
8A	3	8IN FAUCET WITH 12IN SWING NOZZLE	1/2"	1/2"					
9	2	ICE MAKER, WATER-COOLED		1/2"	0"	1/2"			
9B	1	ICE MAKER, AIR-COOLED		1/2"	0"	1/2"			
15	1	SOILED DISHTABLE			1 3/4"	0"			
17	2	PRE-RINSE UNIT W/BRACKET							
18	1	DISPOSER		1/2"		2"			
19	1	DISHWASHER WITH DRYER	1/2"		2"				MAY BE DRAINED TO EITHER SIDE OF T-DRAIN VALVE. PLUG OPPOSITE SIDE.
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

NOTES:

1. KITCHEN EQUIPMENT AND FAUCETS SHALL BE PROVIDED BY THE FOOD SERVICE EQUIPMENT SUPPLIER AND FINAL CONNECTIONS SHALL BE MADE BY THE PLUMBING CONTRACTOR.
2. PLUMBING CONTRACTOR AND FOOD SERVICE EQUIPMENT SUPPLIER SHALL COORDINATE INSTALLATION OF KITCHEN EQUIPMENT.

SHOCK ARRESTOR TABLE

DRAWING SYMBOL	FIXTURE UNITS	PDI WH201 STANDARD DESIGNATION	ARRESTOR SIZE	APPROVED MANUFACTURERS
SA-A	1-11	A	½"	– SIOUX CHIEF – WATTS – PPP INC.
SA-B	12-32	B	¾"	
SA-C	33-60	C	1"	
SA-D	61-113	D	1¼"	REMARKS
SA-E	114-154	E	1½"	INSTALL SHOCK ARRESTORS PER PDI WH201 GUIDELINES
SA-F	155-330	F	2"	

WATER HEATER SCHEDULE

SYM.	DESCRIPTION	STORAGE (GALLONS)	GAS BURNER DATA			FLUE SIZE	SELECTION BASED ON		REMARKS
			INLET PRESS. (IN. W.C.)	BTU/HR INPUT	GPH RECOVERY @ 100°F RISE		MANUFACTURER	MODEL	
WH1	GAS FIRED WATER HEATER	100	8	199,900	230	4" CPVC	A.O. SMITH	BTH-100	1,2,3,4,5,6,7

REMARKS:

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 ASHRAE 90.1.
4. 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.
6. SET WATER HEATER TEMPERATURE AT 140°F
7. CARBON MONOXIDE DETECTOR IN ADJACENT TO GAS FIRED EQUIPMENT PROVIDE BY MECHANICAL CONTRACTOR.

WATER HEATER SCHEDULE

SYM.	DESCRIPTION	STORAGE (GALLONS)	GPH RECOVERY @ 80°F RISE	ELECTRICAL DATA				SELECTION BASED ON		REMARKS
				KW	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL	
WH2	ELECTRIC WATER HEATER	6	8	1.5	277	1	60	A.O. SMITH	DEL-6	1,2,3,4
WH3	ELECTRIC WATER HEATER	20	15	3.0	277	1	60	A.O. SMITH	DEL-20	1,2,3,4
WH4	ELECTRIC WATER HEATER	20	15	3.0	277	1	60	A.O. SMITH	DEL-20	1,2,3,4
WH5	ELECTRIC WATER HEATER	6	8	1.5	277	1	60	A.O. SMITH	DEL-6	1,2,3,4

REMARKS:

1. EQUIVALENT MANUFACTURERS: A.O. SMITH, LOCHINVAR, BRADFORD-WHITE
2. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE 90.1.
3. COORDINATE ELECTRICAL DISCONNECT REQUIREMENTS WITH E.C.
4. WATER HEATER TEMPERATURE SETTING 120°F

EXPANSION TANK SCHEDULE

SYM.	DESCRIPTION	VOLUME (GALLONS)	DIAMETER (INCHES)	HEIGHT (INCHES)	SELECTION BASED ON		REMARKS
					MANUFACTURER	MODEL	
ET1	BLADDER TYPE EXPANSION TANK	10.3	15"	19"	AMTROL	ST-25V	1
ET2	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1
ET3	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1
ET4	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1
ET5	BLADDER TYPE EXPANSION TANK	2.0	8"	13"	AMTROL	ST-5	1

REMARKS:

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

PUMP SCHEDULE

SYM	DESCRIPTION	TYPE	CAPACITY		ELECTRICAL DATA				SELECTION BASED ON		REMARKS
			GPM	HEAD (FT)	HP	VOLTS	PH	HZ	MANUFACTURER	MODEL	
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
BP1	DUPLEX VARIABLE SPEED WATER BOOSTER PACKAGE	END SUCTION	100 EACH	50	3 HP EACH	480	3	60	HY-FAB	MVP-630	8

REMARKS:

1. EQUIVALENT MANUFACTURERS: LITTLE GIANT, GRUNDFOS, TACO
2. PUMP SHALL BE ALL BRONZE CONSTRUCTION.
3. PUMP SHALL BE CONTROLLED BY MEANS OF BOTH AN AQUASTAT AND TIMER. COORDINATE ELECTRICAL DISCONNECT WITH E.C.
4. PROVIDE BACKWATER CHECK VALVE AND SHUT-OFF VALVE ON 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.

INTERCEPTOR SCHEDULE

SYM.	DESCRIPTION	INLET/ OUTLET SIZE	FLOW RATE (GPM)	CAPACITY		SELECTION BASED ON		REMARKS
				WATER (GALLONS)	GREASE (POUNDS)	MANUFACTURER	MODEL	
GT1	GREASE INTERCEPTOR	4	150	274	248	THERMACO	TZ-1826	1,2,3,4
SS1	SOLIDS INTERCEPTOR	4	150	–	–	THERMACO	TSS-95-ECA	1,2,3,4

REMARKS:

1. SEE GREASE INTERCEPTOR BASIS OF DESIGN, THIS SHEET.
2. EQUIVALENT MANUFACTURERS: THERMACO, PROCEPTOR, SCHIER
3. PROVIDE EXTENSION RING(S) AS REQUIRED TO BRING INLET/TOP UP TO BE FLUSH GRADE.
4. UNDERGROUND INSTALLATION OF SOLIDS INTERCEPTOR AND GREASE INTERCEPTORS SHALL BE IN AS DIRECTED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, PROVIDE SUPPORT CONCRETE BASE AND/OR SURROUNDINGS IF INDICATED.

MIXING VALVE SCHEDULE

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

REMARKS:

1. EQUIVALENT MANUFACTURERS: LEONARD VALVE, LAWLER, POWERS
2. ASSE 1070, ASSE 1017 LISTED.
3. PROVIDE MXV1 AT ALL LAVATORIES AND HANDSINKS LOCATED IN CATERING SPACE.

PLUMBING FIXTURE AND EQUIPMENT SCHEDULE

SYM.	DESCRIPTION	CONNECTIONS (IN.)				SPECIFICATION	REMARKS
		W	V	CW	HW		
P1	WATER CLOSET, HET, ELONGATED BOWL WALL HUNG FLUSH VALVE, 1.28 GPF	4"	2"	1¼"	–	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"	1¼"	–	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.
P2	URINAL, HEU WALL MOUNTED FLUSH VALVE, 0.125 GPF	2"	1½"	¾"	–	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"	1½"	¾"	–	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
P3A	LAVATORY ADA COMPLIANT 20½" x 21⅛" WALL HUNG WITH SHROUD 0.5 GPM BATTERY OPERATED SENSOR FAUCET	2"	1½"	½"	½"	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 1¼" x 1½" STOPS: MCGUIRE 175-LK	SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT.
P3B	LAVATORY ADA COMPLIANT 21¼" x 15⅛" UNDERMOUNTED 0.5 GPM BATTERY OPERATED SENSOR FAUCET	2"	1½"	½"	½"	FIXTURE: AMERICAN STD. 0614.000 "STUDIO" GRID DRAIN: MCGUIRE 155A GRID STRAINER FAUCET: SLOAN EAF-750 P-TRAP: MCGUIRE 8902 1¼" x 1½" STOPS: MCGUIRE 175-LK	SEE NOTE 1 BELOW. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE 0.5 GPM AERATOR
P4A	WATER COOLER (FILTERED) ADA COMPLIANT WITH BOTTLE FILLER HIGH/LOW DOUBLE BOWL VINYL CLAD STEEL FINISH WALL MOUNTED	2"	1½"	½"	–	FIXTURE: ELKAY LZSTL8WSL2K P-TRAP: MCGUIRE 8902 1¼" x 1½" STOPS: MCGUIRE 175 ELECTRICAL: 370 WATTS, 115V, 1ø	SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT.
P5A	S.S. SINK ADA COMPLIANT 33"L x 22"W x 6.0"D, DOUBLE BOWL 18 GAUGE STAINLESS STEEL SELF RIMMING, COUNTER MOUNTED FAUCET WITH 1.5 GPM AERATOR	2"	1½"	½"	½"	FIXTURE: ELKAY LRAD332260 FAUCET: MOEN 8701 (9"SWING SPOUT) STRAINER: MCGUIRE 151 (BASKET) P-TRAP: MCGUIRE 8891Z (1½"x1½") STOPS: MCGUIRE 175-LK	SEE NOTE 1 BELOW. PROVIDE WATER AND WASTE CONNECTIONS FOR ADJACENT DISHWASHER.
P7	MOP SINK, TERRAZZO 28"L x 28L" x 12"D WITH DROP FRONT AND STAINLESS STEEL THRESHOLD CAP	3"	1½"	¾"	¾"	BASIN: FIAT TSBOP-1100 DRAIN: FIAT 1453-BB FAUCET: FIAT 830-AA ACCESSORIES: 832-AA HOSE & BRACKET ACCESSORIES: 889-CC MOP HANGER	
P8	CAN WASH, TERRAZZO 36"L x 36"W x 12"D WITH DROP FRONT AND STAINLESS STEEL THRESHOLD CAP	3"	1½"	½"	½"	BASIN: FIAT FAUCET: FIAT 830-AA DRAIN: 3" STAINLESS STEEL SLOTTED P-TRAP: 3" CAST IRON, DEEP SEAL	
SA–	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 FOR CONCEALED INSTALLATIONS
CS–	CIRCUIT SETTER, SIZES ½" THRU 2" SEE FLOOR PLAN FOR SIZE	–	–	SEE DWG	–	EQUIPMENT: CIRCUIT SOLVER CS SERIES 110 DEGREE MODEL, NSF 61 CERTIFIED	PROVIDE ACCESS DOOR FOR CONCEALED INSTALLATIONS
HB1	WALL HYDRANT, EXTERIOR, EXPOSED NON-FREEZE, AUTOMATIC DRAINING, VACUUM BREAKER	–	–	¾"	–	EQUIPMENT: WOODFORD 65EP LOOSE KEY	MOUNT 18" AFF.
HB2	HOSE BIBB, INTERIOR, EXPOSED, AUTOMATIC DRAINING, ANTI-SIPHON VACUUM BREAKER	–	–	¾"	–	EQUIPMENT: WOODFORD 24 WHEEL HANDLE	MOUNT 24" AFF.
HB3	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	
WCO	WALL CLEANOUT CAST IRON CLEANOUT TEE COUNTERSUNK PLUG STAINLESS STEEL ACCESS COVER	SEE DWG	–	–	–	CLEANOUT: JAY R. SMITH 4530Y 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	–	–	–	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
CO	END OF LINE PLUG CLEANOUT CAST IRON TAPERED FERRULE CAST BRONZE THREADED PLUB	–	–	–	–	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
FS1	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. PLANS FOR GRATE CONFIGURATION (QUARTER, HALF, FULL)
BFP1	BACKFLOW PREVENTER STAINLESS STEEL UL/FM BUTTERFLY VALVES	–	–	4"	–	EQUIPMENT: AMES C400-BFG	
BFP2	BACKFLOW PREVENTER COPPER ALLOY LEAD FREE	–	–	1¼"	–	EQUIPMENT: AMES LF4000B	
DWM1	DOMESTIC WATER METER TURBINE TYPE NSF 61 COMPLIANT	–	–	2"	–	METER: BADGER RECORDALL 200 SERIES	PROVIDE METER WITH BAS CONNECTION CAPABILITY

NOTES:

1. PROVIDE PRE-MANUFACTURED INSULATION KIT FOR EXPOSED TRIM UNDER SINK.
2. PROVIDE AUTOMATIC TRAP-PRIMER CONNECTION PORT AND ½" COPPER LINE TO FLOOR DRAIN FROM TRAP PRIMER.
3. 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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3/1/16

UNC CHARLOTTE

UNC Charlotte RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

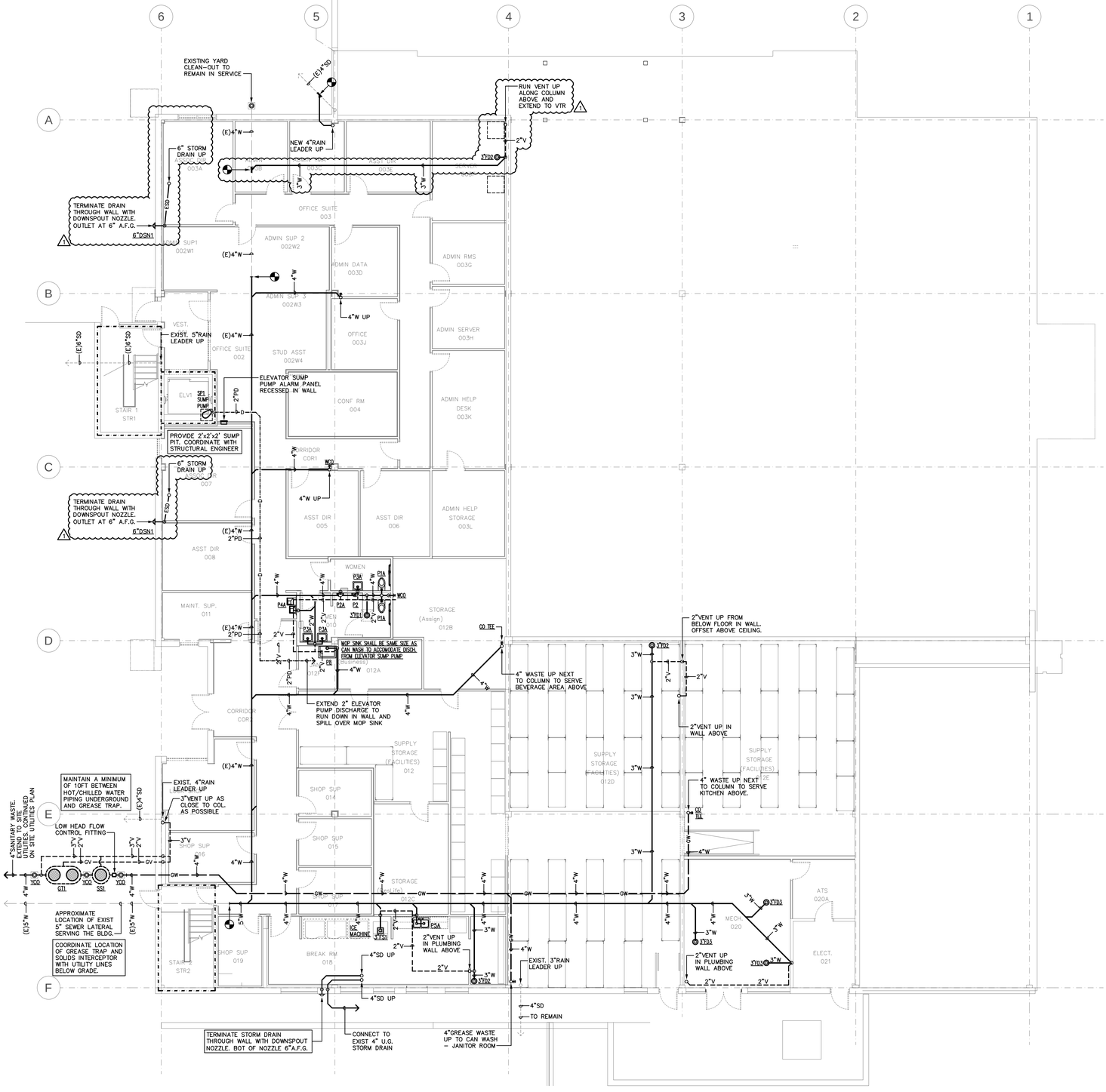
TAG	DESCRIPTION	DATE
1	ADDENDUM 1	3/16/16

Project: 15NCC491
Drawn By: DAR
Checked By: DAR
Date: March 1st, 2016

PLUMBING SCHEDULES

CONSTRUCTION DOCUMENTS

P-003



1 PLUMBING FIRST LEVEL - NEW WORK
1/8" = 1'-0"

RATED WALL LEGEND	
— · — · — · —	1 HOUR FIRE BARRIER
REFER TO ARCHITECTURAL DRAWINGS FOR COMPLETE WALL CONSTRUCTION AND RATING INFORMATION.	

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Project: 15NCC491
Drawn By: CAH / CP
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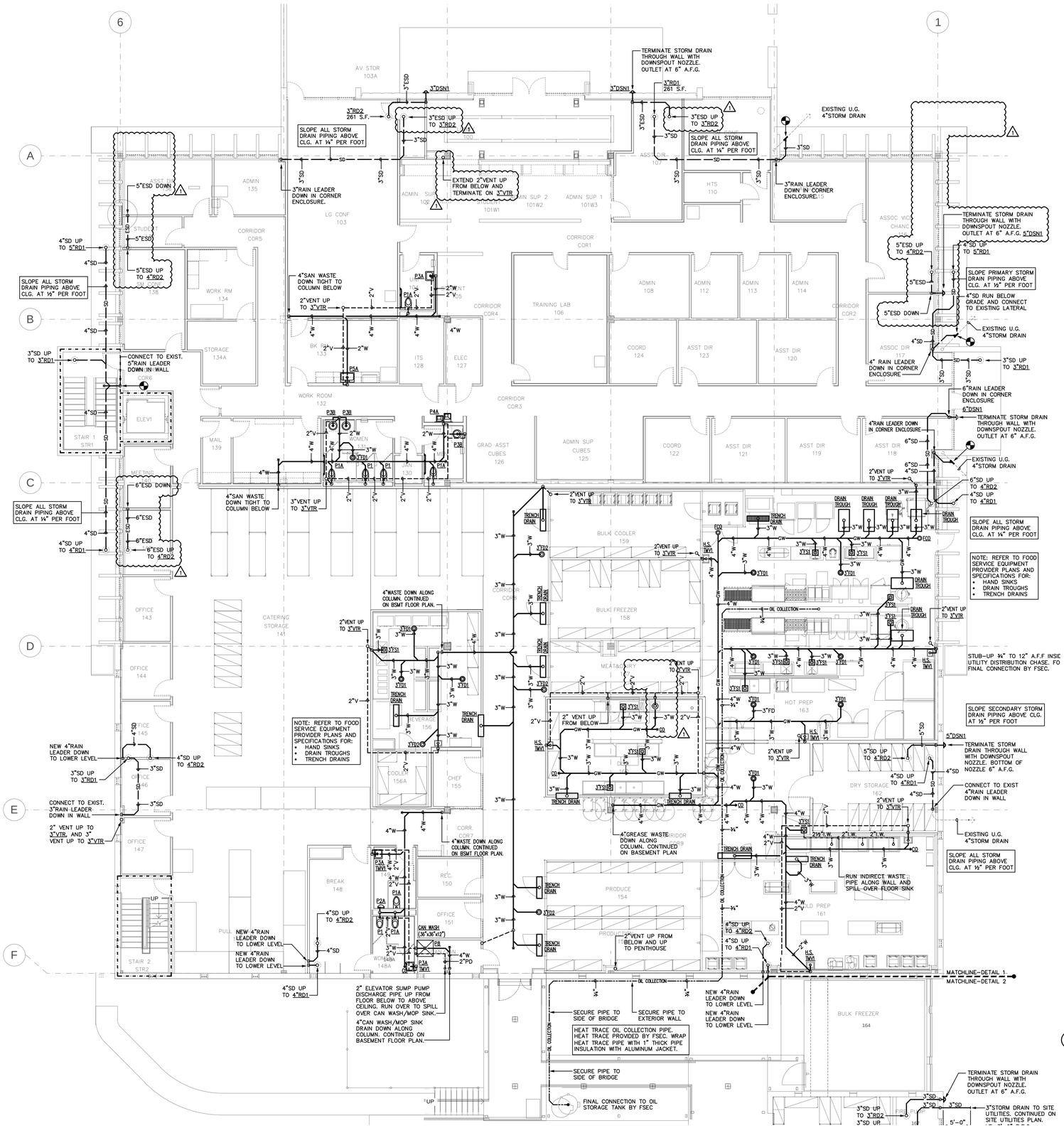
PLUMBING FIRST LEVEL PLAN NEW WORK

CONSTRUCTION DOCUMENTS

P-201



1 PLUMBING SECOND LEVEL - NEW WORK
1/8" = 1'-0"

2 PLUMBING SECOND LEVEL - NEW WORK
1/8" = 1'-0"

RATED WALL LEGEND

1 HOUR FIRE BARRIER

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

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Project: 15NCC491
Drawn By: CAH / CP
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Date: March 1st, 2016

PLUMBING SECOND LEVEL PLAN NEW WORK

CONSTRUCTION DOCUMENTS

P-202

15 OF 22
OPTIMA #: 15-0133

1 PLUMBING FIRST LEVEL - NEW WORK
1/8" = 1'-0"

RATED WALL LEGEND	
— · — · —	1 HOUR FIRE BARRIER
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SCO ID #: 14-11273-02A

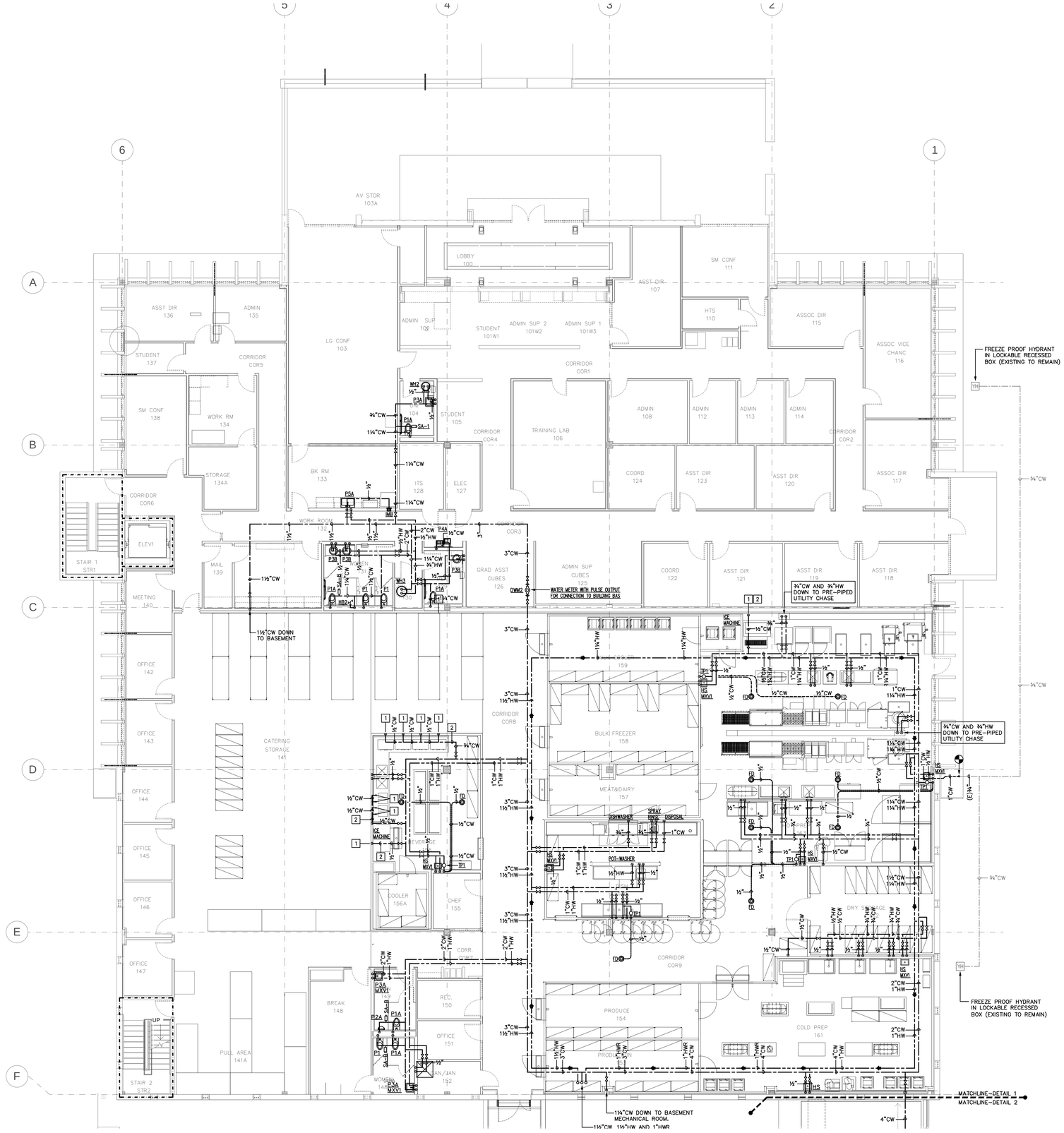
TAG	DESCRIPTION	DATE
1	ADDENDUM 1	3/16/16

Project: 15NCC491
Drawn By: DAR
Checked By: DAR
Date: March 1st, 2016

PLUMBING FIRST LEVEL PLAN NEW WORK WATER SUPPLY

CONSTRUCTION DOCUMENTS

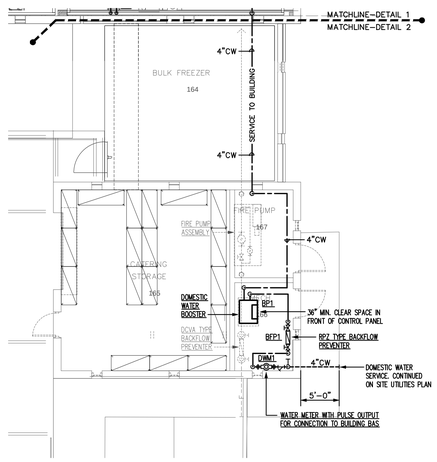
P-204



1 PLUMBING SECOND LEVEL - NEW WORK
1/8" = 1'-0"

KEYED NOTES

1. PROVIDE BACKFLOW PREVENTER EQUAL TO WATTS SD3 ON WATER CONNECTION TO ICE-MAKERS, COFFEE BREWERS AND TEA BREWERS
2. COORDINATE WITH FOOD SERVICE EQUIPMENT CONTRACTOR FOR LOCATION OF WATER FILTRATION EQUIPMENT TO SERVE THE WATER SUPPLY TO ICE-MAKERS AND BREWERS. REFER TO K SERIES DRAWINGS. WATER FILTER ASSEMBLIES FURNISHED BY FSEC AND INSTALLED BY PLUMBING CONTRACTOR



2 PLUMBING SECOND LEVEL - NEW WORK
1/8" = 1'-0"

RATED WALL LEGEND

1 HOUR FIRE BARRIER

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

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PLUMBING SECOND LEVEL PLAN NEW WORK WATER SUPPLY

CONSTRUCTION DOCUMENTS

P-205

GRILLE AND DIFFUSER SCHEDULE

SYMBOL	SERVICE	CFM RANGE	FACE SIZE	NECK SIZE	TYPE	OBD	PRICE
A	SUPPLY	51–125	24x24	6"	SQ. PLAQUE	YES	SPD
		126–225	24x24	8"	SQ. PLAQUE	YES	SPD
		226–350	24x24	10"	SQ. PLAQUE	YES	SPD
		351–425	24x24	12"	SQ. PLAQUE	YES	SPD
B	SUPPLY	0 – 125	12x12	6"	SQ. PLAQUE	YES	SPD
C	EXHAUST	0 – 125	12x12	6"/6x6	PERF	NO	PDDR
	EXHAUST	126–175	12x12	8"	PERF	NO	PDDR
D*	RETURN	51–125	24x24	8"	PERF	NO	PDDR
		126–225	24x24	10"	PERF	NO	PDDR
		226–350	24x24	12"	PERF	NO	PDDR
		351–425	24x24	14"	PERF	NO	PDDR
E	SUPPLY	0–175	10x4	10x4	DBL. DEFL.	YES	620
		176–300	12x6	12x6	DBL. DEFL.	YES	620
F	SUPPLY	0 – 225	13x6	N/A	SIDEWALL	NO	LINDAB RGS-3
		226–290	17x6	N/A	SIDEWALL	NO	LINDAB RGS-3
		291–360	21x6	N/A	SIDEWALL	NO	LINDAB RGS-3
G	RETURN	0–1800	24x24	22x22	PERF	NO	PRFR
H	SUPPLY	51–125	24x24	6"	4–WAY	YES	AMD
		126–225	24x24	8"	4–WAY	YES	AMD
		226–350	24x24	10"	4–WAY	YES	AMD
		351–425	24x24	12"	4–WAY	YES	AMD
I	SUPPLY	0–100	(1) .5" SLOT 36"L (6" INLET)		LINEAR SLOT	YES	SDA–50
		101 – 185	(2) .75" SLOT 48"L (8" INLET)		LINEAR SLOT	YES	SDA–75
J	RETURN	0–175	10x4	10x4	DBL. DEFL.	NO	520
		176–300	12x6	12x6	DBL. DEFL.	NO	520

NOTES:

1. ALL DEVICES SHALL BE FURNISHED WITH AN ENAMEL OFF–WHITE FINISH, PROVIDE COLOR SAMPLE SELECTIONS TO ARCH FOR REVIEW.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED.
3. PROVIDE MINIMUM FACE SIZE WITH SPECIFIED NECK SIZE FOR ALL AIR DISTRIBUTION EXPOSED OR LOCATED IN HARD CEILINGS. PROVIDE SHEET–METAL RUN–OUTS (NO FLEX) FOR ALL EXPOSED AIR DISTRIBUTION.
4. PROVIDE OBD FOR ALL AIR DISTRIBUTION WHERE RUNOUT DUCTS ARE LOCATED ABOVE HARD CEILINGS. OBD ADJUSTMENT SCREW SHALL BE CONCEALED BEHIND THE BLADES OF

*RETURN AIR GRILLE AIRFLOW IS BASED OF SUPPLY AIRFLOW PROVIDED TO ROOM

COMMISSIONING NOTE

MECHANICAL CONTRACTOR SHALL COORDINATE WITH OWNER'S COMMISSIONING AGENT AND PROVIDE ALL NECESSARY TIME, MATERIALS, AND PROCEDURES REQUIRED FOR A FULLY COMMISSIONED PROJECT.

EQUIVALENT MANUFACTURERS LISTING

LISTING OF MANUFACTURER'S NAME DOES NOT GUARANTEE APPROVAL. ALL EQUIPMENT MUST MEET OR EXCEED QUALITY AND CAPACITIES OF SPECIFIED EQUIPMENT. FINAL APPROVAL WILL BE BASED ON EQUIPMENT SUBMITTALS. ANY MANUFACTURER NOT LISTED BUT WISHING TO BID THIS PROJECT SHALL SUBMIT A WRITTEN REQUEST A MINIMUM OF 14 DAYS PRIOR TO BID DATE OR AS INDICATED IN THE SPECIFICATIONS, PRIOR APPROVAL IS REQUIRED FOR ALL MANUFACTURERS NOT LISTED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIRMENTS.

FANS: COOK, GREENHECK, PENN, TWIN CITY, CAPTIVE AIRE (KITCHEN EQUIP. ONLY) 1

AIR DISTRIBUTION: CARNES, METAL*AIRE, NAILOR, PRICE, TITUS, ACUTHERM

FIRE DAMPERS: NAILOR, RUSKIN, POTTORFF, PREFCO, SAFE–AIRE

DUCTLESS SPLIT SYSTEMS: DAIKIN, MITSUBISHI, PANASONIC

DDC CONTROLS: HOFFMAN BUILDING TECHNOLOGIES, SCHNEIDER ELECTRIC CONTROLS, UNITED AUTOMATION CORPORATION, MECHANICAL SYSTEMS & SERVICES, JOHNSON CONTROLS (SEE SPECIFICATIONS FOR ADDITIONAL REQUIRMENTS)

PUMPS & HYDRONIC EQUIPMENT: PEERLESS, BELL & GOSSETT, TACO, PATTERSON 1

FAN COIL UNITS: CARRIER, INTERNATIONAL, TRANE, YORK 1

FACTORY ASSEMBLED MODULAR AIR HANDLERS: DAIKIN MCQUAY, TRANE, CARRIER, YORK 1

UNIT HEATERS: MCQUAY, TRANE, CARRIER, PRICE

VARIABLE FREQUENCY DRIVES: ABB, CUTLER HAMMER, DANFOSS, SQUARE D

TERMINAL UNITS: PRICE, NAILOR, METAL*AIRE, TITUS, YORK 1

NOTE:
ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

PARALLEL FAN-POWERED BOX SCHEDULE (HOT WATER HEAT)

SYMBOL	PRIMARY CFM		FAN CFM	ELECTRICAL DATA		HOT WATER COIL			ENVIRO–TEC VFR–WC	RUNOUT SIZE
	MAXIMUM	MINIMUM		FAN H.P.	VOLTAGE	BTUH	GPM	RUNOUT		
1.1	525	140	210	1/13	277V–1PH	12000	0.8	1/2	0804	10
1.2	320	80	130	1/13	277V–1PH	7000	0.5	1/2	0604	8
1.3	450	120	180	1/13	277V–1PH	10000	0.7	1/2	0804	10
1.4	425	110	170	1/13	277V–1PH	10000	0.7	1/2	0804	10
1.5	415	110	170	1/13	277V–1PH	10000	0.7	1/2	0804	8
1.6	375	100	150	1/13	277V–1PH	9000	0.6	1/2	0804	8
1.7	495	130	200	1/13	277V–1PH	11000	0.8	1/2	0804	10
1.8	475	120	190	1/13	277V–1PH	11000	0.8	1/2	0804	10
1.9	400	100	160	1/13	277V–1PH	9000	0.6	1/2	0804	8
1.10	575	150	230	1/13	277V–1PH	13000	0.9	1/2	0804	10
1.11	750	190	300	1/6	277V–1PH	16000	1.1	1/2	1008	10
2.1	550	140	220	1/13	277V–1PH	12000	0.8	1/2	0804	10
2.2	400	100	160	1/13	277V–1PH	9000	0.6	1/2	0804	8
2.3	550	140	220	1/13	277V–1PH	12000	0.8	1/2	0804	10
2.4	775	200	310	1/6	277V–1PH	17000	1.2	1/2	1008	12
2.5	1025	260	410	1/4	277V–1PH	22000	1.5	1/2	1011	12
2.6	1200	300	480	1/4	277V–1PH	26000	1.8	1/2	1211	12
2.7	575	150	230	1/13	277V–1PH	13000	0.9	1/2	0804	10
2.8	450	120	180	1/13	277V–1PH	10000	0.7	1/2	0804	10
2.9	575	150	230	1/13	277V–1PH	13000	0.9	1/2	0804	10
2.10	450	120	180	1/13	277V–1PH	10000	0.7	1/2	0804	10
2.11	375	100	150	1/13	277V–1PH	9000	0.6	1/2	0804	8
2.12	325	80	130	1/13	277V–1PH	7000	0.5	1/2	0604	8
2.13	800	200	320	1/6	277V–1PH	17000	1.2	1/2	1008	12
2.14	825	210	330	1/6	277V–1PH	18000	1.2	1/2	1008	12
2.15	650	170	260	1/6	277V–1PH	14000	1.0	1/2	1008	10
2.16	900	590	360	1/6	277V–1PH	31000	2.1	3/4	1008	12
2.17	550	360	220	1/13	277V–1PH	19000	1.3	1/2	0804	10
2.18	500	330	200	1/13	277V–1PH	18000	1.2	1/2	0804	10
2.19	375	250	150	1/13	277V–1PH	13000	0.9	1/2	0804	8
2.20	1300	850	520	1/4	277V–1PH	45000	3.0	3/4	1211	14
2.21	1250	820	500	1/4	277V–1PH	43000	2.9	3/4	1211	14
2.22	425	280	170	1/13	277V–1PH	15000	1.0	1/2	0804	10
2.23	750	490	300	1/6	277V–1PH	26000	1.8	1/2	1008	10
2.24	2750	1790	1100	3/4	277V–1PH	94000	6.3	1	1621	SEE PLAN
2.25	2750	1790	1100	3/4	277V–1PH	94000	6.3	1	1621	SEE PLAN
2.26	400	260	160	1/13	277V–1PH	14000	1.0	1/2	0804	8
2.27	1600	1040	640	1/4	277V–1PH	55000	3.7	3/4	1211	14

NOTES:

1. MINIMUM INLET PRESSURE TO BOX SHALL BE .75" W.G.
2. MAXIMUM PRESSURE DROP THRU BOX (INCLUDING COIL) SHALL BE .25" S.P.
3. FURNISH BOXES WITH: DDC CONTROLS, ACOUSTICAL LINING, FILTER AND FRAME, THERMOSAT, CONTROL VOLTAGE TRANSFORMER, U.L. LABEL.
4. FAN SHALL PROVIDE 0.25" E.S.P., NOT INCLUDING HOT WATER COIL.
5. BOXES SHALL BE PROVIDED WITH NIGHT SET BACK AND MORNING WARM UP CONTROLS.
6. DDC CONTROLS SHALL BE FURNISHED TO THE BOX MANUFACTURER BY THE CONTROLS VENDOR. BOX MANUFACTURER SHALL FACTORY MOUNT AND WIRE CONTROLS. INSTALLATION OF CONTROLS SHALL INCLUDE CONTROLS TRANSFORMER, FAN RELAY, HEAT RELAY (ONE OR TWO STAGE AS REQUIRED), AIR FLOW PROBE, CONTROL COVER, AND ALL WIRING AND LABOR FOR A COMPLETE AND OPERATIONAL SYSTEM.
7. EACH FAN BOX SHALL BE WIRED TO ITS ASSOCIATED ROOFTOP UNIT SMOKE DETECTOR TO SHUT–DOWN UPON SMOKE SIGNAL ALONG WITH ROOFTOP UNIT.
8. THE ABOVE NOTED HEATING VALUES ARE BASED ON E.A.T. OF 60°F AND A L.A.T. OF 95°F, DUE TO MIXING OF PLENUM RETURN AIR
9. TERMINAL UNITS 1.1, 1.11, 2.3, 2.13, 2.20. 2.25 SHALL BE PROVIDE WITH 3–WAY CONTROL VALVES, ALL OTHER UNITS SHALL BE PROVIDED WITH 2–WAY CONTROLS VALVES.

2012 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY – MECHANICAL SUMMARY

501.1 METHOD OF COMPLIANCE

☐ 2012 NCECC CHAPTER 5

☐ NC SPECIFIC COMCHECK PROVIDED

■ (EQUAL TO ASHRAE 90.1–2010)

501.2 APPLICATION COMPLIANCE

☐ 506.2.1 EFFICIENT MECH EQUIPMENT

■ 506.2.2 REDUCED LTG DENSITY

☐ 506.2.3 ENERGY RECOVERY SYSTEMS

☐ 506.2.4 HI EFFICIENCY DOMESTIC HW

☐ 506.2.5 ONSITE RENEWABLE ENERGY

☐ 506.2.6 DAYLIGHTING CONTROLS

301.1 CLIMATE ZONE 3A – MECKLENBURG COUNTY, NORTH CAROLINA

DESIGN CONDITIONS

EXTERIOR (ASHRAE 90.1–2010 TABLE D–1)

WINTER DRY BULB	18° F.
SUMMER DRY BULB	91° F.
SUMMER WET BULB	74° F.

INTERIOR (2012 NCECC SECTION 302.1)

WINTER DRY BULB	72° F.
SUMMER DRY BULB	75° F.

*PROVIDE 5°F DEADBAND PER 503.2.4.2

503.2 HEATING & COOLING LOADS AND EQUIPMENT & SYSTEM SIZING

BUILDING HEATING LOAD	1,110,000 BTUH (PEAK)
BUILDING COOLING LOAD	1,300,000 BTUH (PEAK)
INSTALLED HEATING CAPACITY	1,575,000 BTUH
INSTALLED COOLING CAPACITY	1,410,000 BTUH

503.2.3 & 506.2.1 – REQUIRED & INCREASED HVAC EQUIPMENT PERFORMANCE

SYSTEM DESCRIPTION – 4 PIPE CHW /HW AHUS WITH TERMINAL UNITS WITH HW REHEAT & 4 PIPE FCUS

■ MINIMUM HVAC EQUIPMENT EFFICIENCY COMPLIANCE – TABLE 503.2.3

☐ INCREASED HVAC EQUIPMENT EFFICIENCY COMPLIANCE – TABLE 506.2.1

EQUIP TYPE	SIZE CATEGORY (BTUH)	SUBCATEGORY	503.2.3 MINIMUM EFFICIENCY (b)	506.2.1 INCREASED EFFICIENCY	DESIGN EFFIC.
TABLE 5.3.2.3(1) – UNITARY AIR CONDITIONERS AND CONDENSING UNITS					
AIR COND, AIR COOLED	< 65,000 (<= 5 TONS)	SPLIT SYSTEM & SINGLE PACKAGE	13.0 SEER	15.0 SEER 12.5 EER	SEE SCHEDULE
AIR COND, AIR COOLED	>= 65,000 & < 135,000	SPLIT SYSTEM & SINGLE PACKAGE	11.2 EER (c)	12.0 EER 12.4 IPLV	SEE SCHEDULE
AIR COND, AIR COOLED	>= 135,000 & < 240,000	SPLIT SYSTEM & SINGLE PACKAGE	11.0 EER (c)	12.0 EER 12.4 IPLV	SEE SCHEDULE

b. IPLVS ARE ONLY APPLICABLE TO EQUIPMENT WITH CAPACITY MODULATION.
c. DEDUCT 0.2 FROM THE REQUIRED EERS AND IPLVS FOR UNITS WITH A HEATING SECTION OTHER THAN ELECTRIC RESISTANCE HEAT.

503.2.4 THRU 503.2.9

■ HVAC SYSTEMS ARE FULLY COMPLIANT WITH THE REQUIREMENTS FOR HVAC SYSTEM CONTROL, VENTILATION, ENERGY RECOVERY, DUCT AND PLENUM INSULATION AND SEALING, PIPING INSULATION, AND SYSTEM COMPLETION.

503.2.10 – AIR SYSTEM DESIGN AND CONTROL

☐ ALL FANS INSTALLED ON THE PROJECT ARE BELOW 5 HP AND ARE EXEMPT FROM THESE REQUIREMENTS.

■ FANS ABOVE 5 HP MEET THE CFM LIMITATIONS SHOWN BELOW:

OPTION 1 – FAN SYSTEM MOTOR NAMEPLATE HP – TABLE 503.2.10.1(1)

SYSTEM/UNIT	ALLOWABLE MOTOR BRAKE HP	DESIGN MOTOR BRAKE HP	DESIGN CFM
AHU–1 SUPPLY	––	––	SEE SCHEDULE
AHU–1 RETURN	––	––	SEE SCHEDULE
AHU–2 SUPPLY	––	––	SEE SCHEDULE
AHU–2 RETURN	––	––	SEE SCHEDULE

503.3 – SIMPLE HVAC SYSTEMS AND EQUIPMENT (PRESCRIPTIVE)

☐ PROJECT CONSISTS OF ONLY DX SINGLE ZONE SYSTEMS FULLY COMPLIANT WITH THE SIMPLE PRESCRIPTIVE REQUIREMENTS OF 503.3.

503.4 – COMPLEX HVAC SYSTEMS AND EQUIPMENT (PRESCRIPTIVE)

■ PROJECT CONSISTS OF HVAC SYSTEMS FULLY COMPLIANT WITH THE COMPLEX PRESCRIPTIVE REQUIREMENTS OF 503.4.

ELECTRICAL/MECHANICAL DEMARCATION

REFER TO DETAIL 10/M–502 FOR MECHANICAL CONTRACTOR'S RESPONSIBILITIES RELATED TO ELECTRICAL DISCONNECTS, STARTERS AND WIRING OF MECHANICAL EQUIPMENT. ALL DISCONNECTS, STARTERS AND WIRING (LOAD SIDE OF DISCONNECTS) SHALL BE FURNISHED AND INSTALLED BY M.C. UNLESS OTHERWISE NOTED IN DETAIL 10/M–502. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH E.C. PRIOR TO ASSEMBLING SHOP DRAWING SUBMITTALS OR ORDERING EQUIPMENT.

COORDINATION DRAWINGS

PER SPECIFICATION SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION, THE MECHANICAL CONTRACTOR SHALL WORK WITH THE GC TO ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF COORDINATION DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA, AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS AND COORDINATION DRAWINGS:

1. ALL COORDINATION DRAWINGS WILL BE PRODUCED AT 1/4"= 1'–0" SCALE
2. COORDINATION DRAWINGS WILL BE DISTRIBUTED ON REPRODUCIBLE MATERIAL 48"x36"
3. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
4. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

THE USE OF BUILDING INFORMATION MODELING (BIM) THROUGHOUT THE CONSTRUCTION PROCESS IS A REQUIREMENT FOR THIS PROJECT TO HELP REDUCE OR ELIMINATE FIELD DETECTED CONFLICTS, IMPROVE CONSTRUCTION QUALITY AND MAINTAIN AN AGGRESSIVE SCHEDULE. THE CONTRACTOR WILL BE RESPONSIBLE FOR CREATING THE MODEL AND MANAGING THE COORDINATION AND COLLISION DETECTION PROCESS. THE MODEL MUST CONTAIN COMPLETE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION SYSTEMS CONSISTENT WITH THE DESIGN AND FABRICATION DRAWINGS.

MECHANICAL GENERAL NOTES

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
2. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED R–VALUE OF 5.0. TRANSFER DUCTS SHALL BE LINED WITH 1" THICK CLOSED CELLULAR FOAM LINER FOR ACOUSTICAL PURPOSES. DUCT DIMENSIONS ON PLANS ARE FREE AREA SIZE.
4. ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE 2012 NCMC CODE. SEAL LOW PRESSURE SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4, REFER TO SPECIFICATION SECTION 233113 FOR PRESSURE CLASSIFICATION SYSTEM REQUIREMENTS.
5. ALL LOW PRESSURE DUCTWORK MAINS AND DUCTS CONCEALED IN SHAFTS WILL BE SUBJECT TO PRESSURE TESTING PER SMACNA GUIDELINES (REGARDLESS OF DUCT PRESSURE CLASSIFICATION). SUPPLY AND EXHAUST MAINS IN SHAFTS, CORRIDORS INCLUDING TAPS TO ROOMS SHALL BE TESTED AS A COMPLETE SYSTEM.
6. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
7. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
8. TEST AND BALANCE CONTRACTOR WILL BE PROVIDED BY THE GENERAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL EQUIPMENT, VALVES, DAMPERS AND ACCESSORIES REQUIRED TO BALANCE THE SYSTEM WATER AND AIR FLOWS AS SPECIFIED. THE MECHANICAL CONTRACTOR AND SHALL ASSIST THE TEST AND BALANCE CONTRACTOR CONTRACTED BY THE CONSTRUCTION MANAGER DURING TESTING AND BALANCING. ALL MECHANICAL SYSTEMS SHALL BE BALANCED TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS, ANY EQUPMENT OR SYSTEM FOUND TO BE DEFICIENT WILL BE CORRECTED AND RETESTED AT NO COST TO THE OWNER. TEST AND BALANCE CONTRACTOR WILL BE AABC OR NEBB CERTIFIED.
9. UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION IN ACCORDANCE WITH DIVISION 01 OF THE SPECIFICATIONS INCLUDING BUT NOT BE LIMITED TO: RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED), O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS.
10. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
11. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
12. CONDENSATE DRAIN PIPING SHALL BE BE SCHEDULE TYPE "L" HARD DRAWN COPPER AND SHALL BE INSULATED PER THE SPECIFICATIONS. DRAINS FROM ALL COOLING COILS SHALL BE TRAPPED. DRAIN SIZE SHALL BE EQUIPMENT DRAIN CONNECTION SIZE (3/4" MINIMUM) WITH A MINIMUM DEPTH OF 4" OR 1.5 TIMES THE UNIT FAN TSP, WHICHEVER IS GREATER.
13. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE. SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
14. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.
15. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'–0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION. ANY DEVICE ON A PERIMETER WALL SHALL BE MOUNTED ON A FOAM–FILLED ELECTRICAL BOX, WITH ALL GAPS BETWEEN BOX AND WALL SEALED TO PREVENT INFILTRATION.
16. MECHANICAL CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 20'–0" FROM ANY OUTSIDE AIR INTAKE.
17. CHILLED WATER PIPING AND FITTINGS BELOW GRADE SHALL BE FACTORY PREINSULATED AS MANUFACTURED BY THERMACOR(OR EQUAL). CARRIER PIPE SHALL BE SCHEDULE 40 ASTM A53 GRADE B BEVELED FOR WELDING. INSULATION SHALL BE FOAMED IN–PLACE CLOSED CELL POLYURETHANE FOAM COMPLETELY FILLING THE ANNULUS BETWEEN THE CARRIER PIPE AND HPDE JACKETING. OUTER JACKETING SHALL BE HDPE.
18. ALL CHILLED WATER, AND HOT WATER PIPING SHALL MEET THE REQUIREMENTS OF SECTION 232113. ALL PIPING SHALL BE INSULATED PER SPECIFICATION SECTION 230700. ALL PIPING JACKETING, LABELING AND IDENTIFICATION SHALL MEET THE REQUIREMENTS OF SECTION 230553 (COLOR–CODED PVC JACKETING REQUIRED IN MECHANICAL ROOMS). MINIMUM PIPE SIZE SHALL BE 3/4".
19. ALL BRANCH CHILLED WATER AND HOT WATER PIPING SHALL PITCH UP IN DIRECTION OF FLOW WITH MANUAL AIR VENTS AT ALL HIGH POINTS AND 1/2" DRAIN VALVES AT ALL LOW POINTS.
20. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
21. PROVIDE NON–CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
22. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS, DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER. COORDINATE WITH OWNER/CM FOR ANY FILTER MAINTENANCE PROGRAM REQUIREMENTS.
23. ALL EQUIPMENT CONCRETE PAD SIZES FOR MECHANICAL EQUIPMENT SHALL BE CONFIRMED WITH APPROVED SHOP DRAWING SUBMITTALS AND ASSOCIATED UNIT MANUFACTURER ANCHOR LOCATIONS PRIOR TO FABRICATION/INSTALLATION. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL COORDINATE THE EXACT LOCATION OF MECHANICAL EQUIPMENT HOUSEKEEPING PADS WITH THE FLOOR DRAIN LOCATIONS PRIOR TO INSTALLATION OF DRAINS.
24. ALL PIPING AND DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS, AND FURTHER SUPPORTS OR HANGERS SHALL BE PROVIDED AS REQUIRED TO PREVENT THE WEIGHT OF PIPING BEING PLACED ON EQUIPMENT.
25. DUCTWORK AND PIPING PASSING THROUGH/ABOVE ELECTRICAL ROOMS SHALL BE CLOSELY COORDINATED WITH THE ELECTRICAL CONTRACTOR. DUCTWORK OR PIPING SHALL NOT BE LOCATED ABOVE ELECTRICAL PANELS.
26. EXTEND ALL DRAIN LINES TO NEAREST FLOOR DRAIN OR AS INDICATED SO ROUTED AS TO AVOID INTERFERENCE WITH PASSAGEWAYS AND MAINTENANCE.
27. ALL VALVES AND SPECIALTIES SHALL BE LINE SIZE UNLESS NOTED OTHERWISE, USING ECCENTRIC REDUCERS (FLAT ON BOTTOM) WHENEVER PIPING TRANSITIONS ARE REQUIRED. AT INLINE PUMP SUCTION THE ECCENTRIC REDUCER SHALL BE FLAT ON TOP OF PIPE.
28. REFER TO SPECIFICATIONS FOR KITCHEN GREASE DUCT REQUIREMENTS
29. PRIOR TO TURNING ALL HYDRONIC SYSTEMS OVER TO THE OWNER SYSTEMS, A SYSTEM FLUSHING CONNECTING TO EXTG RUP–4 PIPING AND CHEMICAL TREATMENT REPORT SHALL BE PROVIDED AND VERIFIED BY THE OWNERS COMMISSIONING AGENT.
30. CONTROLS VALVES, DAMPERS, AND BAS CONTROLLERS SHALL BE INSTALLED A MAXIMUM OF 2 FEET ABOVE THE CEILING AND WHERE INSTALLED ABOVE AN INACCESSIBLE CEILING A MINIMUM OF 2'x2' ACCESS DOOR SHALL BE PROVIDED. COORDINATE WITH ARCHITECTURAL PLANS FOR LOCATIONS AND CEILING TYPES.
31. VALVES MOUNTED 12' OR GREATER A.F.F SHALL BE PROVIDED WITH CHAIN OPERATORS.
32. ALL MOTORS PROVIDED FOR EQUIPMENT IN MECHANICAL ROOM SHALL BE PROVIDED WITH A T.E.F.C. ARRANGEMENT.
33. ALL CLOSED LOOP PIPING SYSTEMS SHALL BE FLUSHED USING PRODUCT AND SERVICES BY THE UNIVERSITIES CHEMICAL TREATMENT PROVIDER.
34. REFER TO SPECIFICATIONS FOR GAS PIPING REQUIREMENTS
35. PROVIDE SHAFT GROUNDING RINGS ON ALL MOTORS SERVED BY A VFD, ALL VFDS SHALL BE 6 PULSE, ALL MOTORS FED FROM A VFD SHALL BE INVERTER DUTY RATED
36. MECHANICAL CONTRACTOR SHALL CONFIRM ALL SCCR RATINGS OF EQUIPMENT PROVIDED MATCHES THE REQUIREMENTS OF THE ELECTRICAL BREAKER RATINGS SHOWN ON THE ELECTRICAL PLANS.
37. ALL EXPOSED DUCTWORK, EQUIPMENT, PIPING, HANGERS, ETC. TO MATCH CEILING FINISH MECHANICAL CONTRACTOR SHALL COORDINATE PAINTING WORK, TO ENSURE NO AREAS/SURFACES ARE PAINTED THAT WOULD AFFECT UNIT IDENTIFICATION OR OPERATION.
38. THE MECHANICAL CONTRACTOR SHALL PERFORM A PERFORMANCE, CAPTURE AND CONTAINMENT, AND LIGHT TEST (AS REQUIRED BY THE MECHANICAL CODE) FOR ALL JOINTS AND SEAMS IN THE PRESENCE OF THE ENGINER OF RECORD PRIOR TO CONCEALING KITCHEN HOOD EXHAUST DUCTWORK. (PER NCMC 506.3.2.5, NCMC 507.16 & NCMC 507.16.1)

MECHANICAL DRAWING INDEX

SHEET#	SHEET TITLE
M–001	MECHANICAL LEGEND, NOTES, & SCHEDULES
M–002	MECHANICAL SCHEDULES
M–003	MECHANICAL VENTILATION SCHEDULES
M–004	MECHANICAL SEQUENCE OF OPERATIONS
M–005	MECHANICAL POINTS LIST
M–010	MECHANICAL SITE PLAN
M–101	MECHANICAL LOWER LEVEL PLAN – DEMOLITION
M–102	MECHANICAL UPPER LEVEL PLAN – DEMOLITION
M–103	MECHANICAL ROOF PLAN – DEMOLITION
M–201	MECHANICAL LOWER LEVEL PLAN – NEW WORK
M–201P	MECHANICAL LOWER LEVEL PLAN – PIPING – NEW WORK
M–202	MECHANICAL UPPER LEVEL PLAN – NEW WORK
M–202P	MECHANICAL UPPER LEVEL PLAN – PIPING – NEW WORK
M–203	MECHANICAL ROOF PLAN – NEW WORK
M–401	MECHANICAL ENLARGED PENTHOUSE & LOWER LEVEL MER NEW WORK
M–402	MECHANICAL ENLARGED PLANS DETAILS
M–501	MECHANICAL DETAILS
M–502	MECHANICAL DETAILS

MECHANICAL PROJECT NOTE

THIS PROJECT UTILIZES AN ABOVE CEILING PLENUM RETURN:

ALL MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE–DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84E

MECHANICAL LEGEND

SYMBOL	DESCRIPTION	ABBR.
—— CHS ——	CHILLED WATER SUPPLY	CHS
—— CHR ——	CHILLED WATER RETURN	CHR
—— HWS ——	HOT WATER SUPPLY	HWS
—— HWR ——	HOT WATER RETURN	HWR
—— D ——	CONDENSATE DRAIN	D
—— PD ——	PUMPED CONDENSATE	PD
—— – —— CW ——	COLD WATER MAKE–UP	CW
	BUTTERFLY VALVE	
	3–PIECE BALL VALVE	
	GATE VALVE	
	CHECK VALVE	
	STRAINER WITH BLOWDOWN VALVE WITH HOSE CONN.	
	BALANCING VALVE	
	B&G CIRCUIT SETTER	
	UNION	
	THERMOMETER	
P	PRESSURE GAGE & COCK	
	GAGE COCK	
	FLOW SWITCH	
	ECCENTRIC REDUCER	
	CONCENTRIC REDUCER	
	CONTROL VALVE	
DP	DIFFERENTIAL PRESSURE SENSOR	
T	TEMPERATURE GAUGE	
FM	COMBINATION FLOW / BTU METER	
	PRESSURE REDUCING/REGULATING VALVE	
S	SOLENOID VALVE	
3WV	3–WAY VALVE	
Ⓣ	THERMOSTAT / TEMP SENSOR (4'–0" AFF TO TOP)	
Ⓗ	HUMIDISTAT (4'–0" AFF TO TOP)	
Ⓢ	SWITCH (4'–0" AFF TO TOP)	
Ⓟ	BAROMETRIC PRESSURE SENSOR	
⊠	SUPPLY AIR DIFFUSER (4–WAY)	
⧅	RETURN AIR GRILLE	
⧅	RETURN AIR GRILLE WITH SOUND ATTENUATION (SEE DETAIL)	
⧄	EXHAUST AIR GRILLE	
	DOUBLE LINE DUCTWORK	
	SINGLE LINE DUCTWORK	
FD	FIRE DAMPER W/ ACCESS DOOR (SEE DETAIL)	
FSD	COMBINATION FIRE/SMOKE DAMPER W/ ACCESS DOOR (SEE DETAIL)	
20/14	20"x14" FLAT OVAL DUCT	
20x14	20"x14" RECTANGULAR DUCT	
20x14L	20"x14" RECTANGULAR DUCT LINED	
8Ø	8" DIAMETER ROUND DUCT	
DD	DUCT MOUNTED SMOKE DETECTOR W/ ACCESS DOOR	
SP	STATIC–PRESSURE SENSOR	
M	MOTORIZED DAMPER	
BD	BACKDRAFT DAMPER	
Ⓒ	CARBON MONOXIDE SENSOR	
CO2	CARBON DIOXIDE SENSOR	
U	UNDERCUT DOOR	
M.C.	MECHANICAL CONTRACTOR	
E.C.	ELECTRICAL CONTRACTOR	
P.C.	PLUMBING CONTRACTOR	
N.I.C.	NOT IN CONTRACT	
AFF	ABOVE FINISHED FLOOR	
DN	DOWN	
UP	UP	

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RONALD V. ALMOND
3/1/16

UNC CHARLOTTE

UNC Charlotte
RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM 01	3/16/16

Project: 15NCC491
Drawn By: CAH/CP
Checked By: RVA
Date: March 1st, 2016

MECHANICAL LEGEND, NOTES & SCHEDULES

CONSTRUCTION DOCUMENTS

M-001

VARIABLE VOLUME AIR HANDLING UNIT SCHEDULE (CHILLED WATER COOLING WITH HOT WATER HEAT)

UNIT NUMBER	LOCATION	AREA SERVED	SUPPLY FAN		RETURN FAN		OCCUPIED MIN. OUTSIDE AIRFLOW (CFM)	DESIGN OUTSIDE AIRFLOW (CFM)	PREHEAT COIL						COOLING COIL								ELECTRICAL DATA				MANUFACTURER & MODEL NO.
			AIR FLOW (CFM)	E.S.P. (IN. H_2O)	AIR FLOW (CFM)	E.S.P. (IN. H_2O)			TOTAL CAPACITY	GPM	RUNOUT SIZE	E.W.T. (°F)	L.W.T. (°F)	MAX. P.D.	MAX. S.P.	TOTAL CAPACITY	SENSIBLE CAPACITY	GPM	RUNOUT SIZE	E.W.T. (°F)	L.W.T. (°F)	MAX. P.D.	MAX. S.P.	SUPPLY FAN (H.P.)	RETURN FAN (H.P.)	VOLTS	PHASE	Hz	
AHU-1	PENTHOUSE	ADMIN	14,750	2.50"	11,750	1.25"	2,650	3,000	250,000	17	1.5"	180	150	5'	0.14"	585,660	410,580	75	2"	43	59	10'	0.9"	20	7.5	460	3	60	DAIKIN CAH 030
AHU-2	PENTHOUSE	KITCHEN	13,550	2.50"	9,550* MAX 5,180* OPERATING	1.25"	3,375	8,370	320,000	16	1.5"	180	140	5'	0.10"	678,450	493,850	85	3"	43	59	10.9'	0.95"	15	7.5	460	3	60	DAIKIN CAH 030

NOTES:
1. (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.
2. 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.
5. 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 CONTROL) VAV 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.
7. 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 SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED 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.
9. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
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.
13. • -- 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

SYMBOL	SERVICE	GPM	HEAD	ELECTRICAL				MANUFACTURER
				R.P.M.	H.P.	VOLTAGE	VFD	B&G MODEL
P-1	CHILLED WATER	235	60	1750	7.5	460/3/60	YES	E - 1510 2.5BB
P-2	CHILLED WATER	235	60	1750	7.5	460/3/60	YES	E - 1510 2.5BB
P-3	HOT WATER	105	60	1750	5	460/3/60	YES	E - 1510 2BD
P-4	HOT WATER	105	60	1750	5	460/3/60	YES	E - 1510 2BD
P-5	HOT WATER PREHEAT AHU-1	17	20	1725	1/3	277/1/60	NO	SERIES E90 - 1.25AAB
P-6	HOT WATER PREHEAT AHU-2	16	20	1725	1/3	277/1/60	NO	SERIES E90 - 1.25AAB

NOTES:
1. ALL PUMPS SHALL BE FURNISHED WITH TEFC PREMIUM EFFICIENCY MOTORS PER EPACT REQUIREMENTS.
2. ALL BASE MOUNTED PUMPS SHALL BE FURNISHED WITH SUCTION DIFFUSER.
3. ALL PUMPS SHALL BE SELECTED AT NON-OVERLOADING CONDITIONS FOR THE MOTOR PROVIDED
4. PROVIDE FULLY ENCAPSULATING SHAFT GUARDS FOR ALL BASE MOUNTED PUMPS
5. VFDS SHALL BE PROVIDED WITH GROUNDING RINGS & MANUAL BYPASS
6. PROVIDE SUCTION INDUCER ON INLET OF BOILER FEED MULTISTAGE PUMP FOR LOW NPSH.

DUCTLESS SPLIT SYSTEMS (DX COOLING ONLY)

INDOOR UNIT						OUTDOOR UNIT										
		ELECTRICAL DATA		OPERATING	MANUFACTURER		COOLING CAPACITY		HEATING CAPACITY	COMPRESSOR	ELECTRICAL DATA			OPERATING	MANUFACTURER	ALLOWABLE LINE-SET
SYMBOL	CFM	MCA	VOLTAGE	WEIGHT	DAIKIN	SYMBOL	TC (BTUH)	SHC (BTUH)	(BTUH)	RLA	MCA	FUSE	VOLTAGE	WEIGHT	DAIKIN	LENGTHS
AC-1	242	0.18	208V-1ø	38 LBS	FTXS12DVJU	ODU-1	11,500	8,625	N/A - COOL ONLY	5.87	7.9	15	208V-1ø	96 LBS	RXS12DVJU	98' TOTAL, 66' VERT.
AC-2	242	0.18	208V-1ø	38 LBS	FTXS12DVJU	ODU-2	11,500	8,625	N/A - COOL ONLY	5.87	7.9	15	208V-1ø	96 LBS	RXS12DVJU	98' TOTAL, 66' VERT.

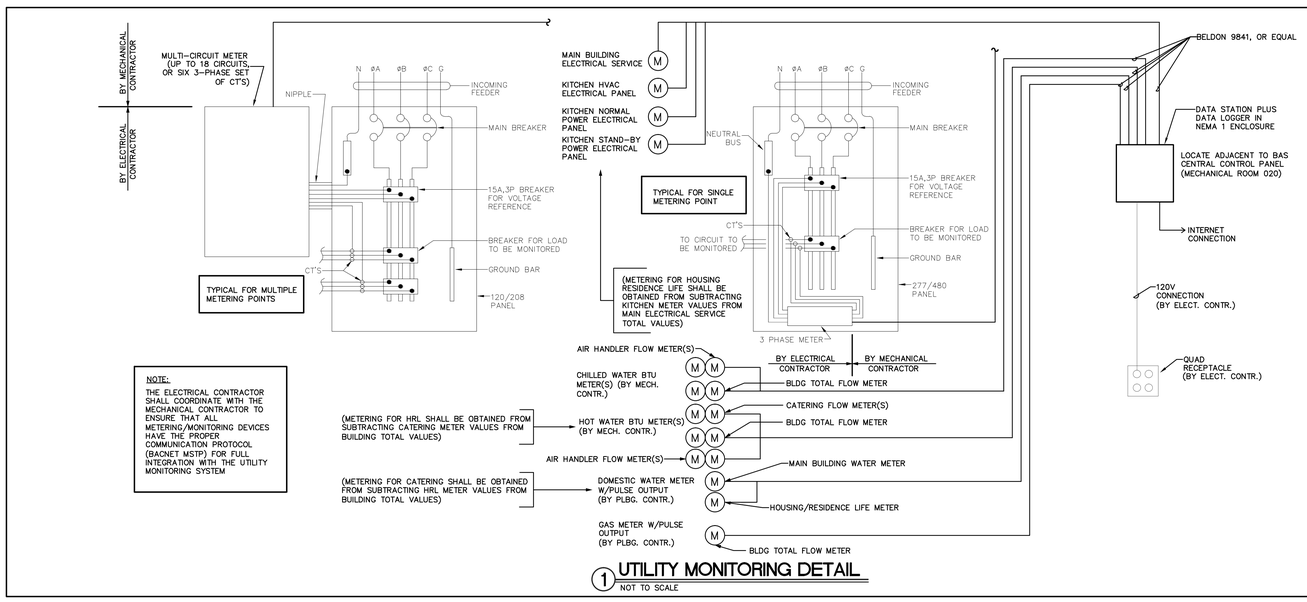
NOTES:
1. ALL UNITS SHALL BE U.L. LISTED AND HAVE A MINIMUM SEER OF 13.
2. COOLING CAPACITIES ARE BASED ON 95° AMBIENT, 80° ENTERING AIR DRY BULB, 67° ENTERING AIR WET BULB. AIRFLOWS INDICATED ARE AT 'HIGH' SPEED.
3. MOUNT GROUND-MOUNTED UNITS ON 6" CONCRETE PAD. MOUNT UNITS ON ROOF ON EQUIPMENT SUPPORT RAILS AS MFG. BY ROOF PRODUCTS AND SERVICE CORP. (OR EQUAL).
4. 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

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.

MECHANICAL GENERAL NOTES:
1. PROVIDE METERS TO COLLECT ELECTRICAL POWER, WATER, NATURAL GAS, CHILLED WATER, AND HOT WATER USAGE.
2. 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.
3. 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
6. PROVIDE STARTUP, VERIFICATION AND TESTING SERVICES TO VERIFY PROPER OPERATION OF ENERGY REPORTING.
7. PROVIDE OWNER TRAINING, MINIMUM OF 8 HOURS.
8. PROVIDE A COMPLETE, TURNKEY METERING SYSTEM.
9. METERS MUST BE CAPABLE OF BEING CONNECTED AS INTENDED ON THESE DRAWINGS OR BACNET.
10. DATA LOGGER BY RED LION, TRIDIUM JACE, ECHELON SMARTSERVER, OR EQUAL.
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.



1 UTILITY MONITORING DETAIL
NOT TO SCALE

FAN SCHEDULE

SYMBOL	LOCATION	TYPE	CFM	APPROX. S.P.	DRIVE	FAN RPM	ELECTRICAL DATA				MANUFACTURER	ACCESSORIES	CONTROLS
							VFD	H.P.	MOCP	VOLTAGE	GREENHECK		
F-1	ELECT ROOM 231	INLINE	500	0.25"	BELT	1125	NO	1/4	--	277/1/60	BSQ-90-4	A,D,E,F,G,K,L	2
F-2	--	DOWNBLAST	450	0.40"	BELT	1242	NO	1/4	--	277/1/60	GB-081-6	A,F,G,H,I,L	1
F-3	--	DOWNBLAST	750	0.40"	BELT	1325	NO	1/4	--	277/1/60	GB-091-6	A,F,G,H,I,L	1
KEF-1	ROOF	UPBLAST	5100	0.75"	BELT	1143	NO	2	--	460/3/60	CUBE-200-20	A,F,H,J,J,K,L,M	3
KEF-2	ROOF	UPBLAST	8460	0.75"	BELT	686	NO	3	--	460/3/60	CUBE-300-30	A,F,H,J,J,K,L,M	3
KEF-3	ROOF	UPBLAST	8460	0.75"	BELT	686	NO	3	--	460/3/60	CUBE-300-30	A,F,H,J,J,K,L,M	3
KEF-4	ROOF	UPBLAST	650	0.50"	BELT	1836	NO	1/3	--	120/1/60	CUBE-101HP-4	A,F,H,J,K,L	3
KEF-5	ROOF	UPBLAST	2400	0.75"	BELT	1145	NO	1	--	460/3/60	CUBE-161	A,F,H,J,J,K,L,M	3
DWEF-1	ROOF	UPBLAST	600	0.50"	BELT	1780	NO	1/3	--	120/1/60	CUBE-101HP-4	A,F,H,J,K,L	4
KSF-1	ROOF	MUA	4100	0.50"	BELT	714	NO	2	35	460/3/60	IGX-115-H22	NOTE 9,10,A,G,H,N	3
KSF-2	ROOF	MUA	6850	0.50"	BELT	690	NO	3	50	460/3/60	IGX-118-H32	NOTE 9,10,A,G,H,N	3
KSF-3	ROOF	MUA	6850	0.50"	BELT	690	NO	3	50	460/3/60	IGX-118-H32	NOTE 9,10,A,G,H,N	3

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

CONTROLS
1: CONTROLLED BY BUILDING AUTOMATION SYSTEM
2: ROOM THERMOSTAT
3: INTERLOCK WITH ASSOCIATED KITCHEN HOOD
4: INTERLOCK WITH DISHWASHER OPERATION
5: MANUAL SWITCH

NOTES:
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

HORIZONTAL FAN COIL UNIT SCHEDULE

SYMBOL	CFM	E.S.P.	COOLING COIL				HEATING COIL			MOTOR (ELECTRICAL DATA)		MFR - TRANE BCH
			TC (BTUH)	SHC (BTUH)	GPM	RUNOUT	BTUH	GPM	RUNOUT	HP	VOLTAGE	UNIT SIZE
FCU-1	750	0.40"	24,000	16,800	4.0	1"	30,000	1.5	½"	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	¾"	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	¾"	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	¾"	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	¾"	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	½"	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	¾"	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	¾"	1/3	277/1/60	HORIZONTAL EXPOSED CABINET SIZE-10

NOTES:
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
6. HEATING COIL SHALL BE PROVIDED DOWNSTREAM OF COOLING COIL IN REHEAT POSITION
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

SYMBOL	LOCATION	CFM	GPM	BTUH	WPD	MOTOR			MANUFACTURER	ACCESSORIES
						R.P.M.	WATTS	VOLTAGE	MCQUAY	
CUH-1	STAIR-1	400	2.2	33,200	4.4	928	80	120/1/60	FHVC-04	A,B
CUH-2	STAIR-2	400	2.2	33,200	4.4	928	80	120/1/60	FHVC-04	A,B

NOTES:
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.

ACCESSORIES
A: DISCONNECT SWITCH
B: BUILT-IN THERMOSTAT

CRAC UNITS

DESIGN CONDITIONS: 75° F. D.B., 45% R.H.

CRAC-1&2 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 DETECTION SYSTEM

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

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3/1/16

UNC CHARLOTTE

UNC Charlotte RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM 01	3/16/16

Project: 15NCC491
Drawn By: CAH/CP
Checked By: RVA
Date: March 1st, 2016

MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

M-002

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.

GENERAL:

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:

1. 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 x 1.1).
2. 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 TCV–A 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).
3. 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.
4. 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 LIMIT THE RUP FLOW TO THE BUILDING MAXIMUM FLOW RATE.
5. 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 P–1 AND P–2 BY PLACING THE PUMP VFD HOA SWITCH TO THE OFF POSITION, OPEN MANUAL PUMP BY–PASS VALVE CHWMV–1 AND CLOSE MANUAL BRIDGE BY–PASS VALVE CHWMV–2. 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, CHWMV–1 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 TCV–A 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 BTU–HW1. FLOW METER FM–HW2 MONITORS THE BUILDING HOT WATER FLOW IN ALL OPERATING MODES AND PROVIDES IT'S INPUT TO THE BAS THRU BTU METER BTU–HW2.

OCCUPIED, DECOUPLED 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–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 WATER PUMPS VARIABLE SPEED DRIVES TO MAINTAIN A DIFFERENTIAL PRESSURE ACROSS THE BRIDGE OF 20' (ADJ.).

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 = FM–HW2 x 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 (ADJ.).
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.
5. 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 PUMP CONTROL:

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 P–3 AND 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 HWMV–2. 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 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 HWMV–2 IS OPENED, HWMV–1 IS CLOSED AND PUMP VFD HOA SWITCH HAS BEEN RETURNED TO THE AUTO POSITION.

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

COMPUTER ROOM AIR CONDITIONING UNITS

SERVER 003: (CRAC–1, 2)

CRAC UNITS SHALL OPERATE 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

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 THE 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 SYSTEM INTERFACE.

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 TEMPERATURE 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 ENTHALPY 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.

A FREEZE–STAT SHALL BE LOCATED UPSTREAM OF THE PREHEAT COIL AIR STREAM TO SHUT–DOWN SUPPLY FAN IF THE MIXED AIR TEMPERATURE FALLS BELOW 38° F. FREEZE–STAT SHALL HAVE MANUAL RESET ONLY. (FREEZESTAT SHALL BE LOCATED 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

KITCHEN HOOD CONTROLS AND INTERLOCKS

THE HOOD FIRE CONTROL SYSTEM SHALL SHUT–DOWN KITCHEN HOOD MAKE–UP AIR FAN UPON ACTIVATION OF FIRE EXTINGUISHING SYSTEM. KITCHEN HOOD EXHAUST FAN SHALL CONTINUE TO OPERATE. 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 ASSOCAITED 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 BAS.

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 TEMPERATURE.

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.

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.

MOTOR OPERATED DAMPER INSTALLED IN ASSOCIATED OUTSIDE AIR DUCT SHALL AUTOMATICALLY CLOSED WHEN ASSOCIATED FAN COIL UNIT IS NOT IN OPERATION

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.

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 BAS

UNIT HEATERS

A SPACE TEMPERATURE SENSOR SHALL CONTROL UNIT HEATER FAN AND HOT WATER CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE, 65° F. (ADJ) WITH SPACE TEMPERATURE ABOVE SETPOINT, FAN SHALL REMAIN OFF AND CONTROL 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.

MISC EXHAUST FANS

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

TOILET EXHAUST FANS

BAS SHALL OPERATE EXHAUST FANS ON A PROGRAMMED SCHEDULE.

TOILET EXHAUST FANS

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 OPERATE.

FOOD SERVICE WATER HEATERS:

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 WH1 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 AND SHALL GENERATE AN ALARM ON PUMP FAILURE.

DOMESTIC WATER HEATING NOTES:

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
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:

UNITS SHALL PROVIDE COOLING ON A CONTINUOUS BASIS. SUPPLY FAN SHALL RUN CONTINUOUSLY AND COOLING CYCLE SHALL CYCLE WITH A CALL FOR COOLING TO MAINTAIN ROOM 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.

UTILITY MONITORING: (SEE 1/M–002 FOR ADDITIONAL INFORMATION)

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 UNC CHARLOTTE'S EXISTING UTILITY MONITORING DASHBOARD SYSTEM, PERISCOPE BY ACTIVELOGIX. THE CONTROLS VENDOR OR SYSTEM INTEGRATOR IS RESPONSIBLE FOR PROVIDING TRENDS FOR INTEGRATION INTO PERISCOPE. THE CONTROLS CONTRACTOR (SYSTEM INTEGRATOR) WILL PROVIDE THE DATA LOGGING DEVICES AS REQUIRED TO MONITOR THE BUILDING UTILITIES.

UTILITY MONITORING NOTES:

1. DOMESTIC WATER AND NATURAL GAS PULSE METERS SHALL BE PROVIDED AND INSTALLED BY THE PLUMBING CONTRACTOR. METERS SHALL PROVIDE BOTH CUBIC FEET (CF) TOTAL USAGE AND CUBIC FEET PER HOUR (CFH) DEMAND.
2. ELECTRICAL CIRCUITS AND CT'S FOR MONITORING POWER SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE AND INSTALL 3–PHASE AND MULTI–CIRCUIT METERS.
3. THE CONTROLS CONTRACTOR (SYSTEM INTEGRATOR) SHALL COORDINATE COMMUNICATION PROTOCOL REQUIREMENTS FOR ALL METERS AND MONITORING DEVICES WITH ALL OTHER DIVISIONS TO ENSURE SYSTEM COMPATIBILITY.
4. DATA LOGGER SHALL BE TRIDIUM JACE, RED LION OR, ECHELON SMARTSERVER.

CONTROL SYSTEM NOTES

1. SEE SPECIFICATIONS (SECTION 230900) FOR ADDITIONAL REQUIREMENTS.
2. THE SEQUENCE OF OPERATION AND POINTS LIST IS INTENDED TO COMMUNICATE THE MINIMUM REQUIREMENTS AND GENERAL DESIGN INTENT TO THE CONTROLS CONTRACTOR AND IS NOT INTENDED TO BE A FULLY DEVELOPED OR COMPLETE SEQUENCE OF OPERATION. IN THE CONTROLS SUBMITTAL THE CONTROLS CONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL 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 IN THE CONTROL SUBMITTAL FAIL SAFE POSITION FOR OUT OF RANGE, FAIL SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION.
3. SYSTEM SHALL USE CAMPUS SYSTEM GLOBAL OUTSIDE AIR TEMPERATURE AND HUMIDITY SENSORS FOR PRIMARY SYSTEM OPERATION. LOCAL OUTSIDE AIR TEMPERATURE AND HUMIDITY SENSORS SHALL BE PROVIDED FOR SYSTEM OPERATION UPON LOSS OF NETWORK COMMUNICATION.
4. ALL CONTROL SETPOINTS SHALL BE ADJUSTABLE AND TRENDABLE. INDICATED TEMPERATURE SETPOINTS SHOULD BE USED FOR ORIGINAL SYSTEM SET–UP. ANY CHANGES IN SETPOINT SETTINGS REQUIRED FOR INTENDED SYSTEM OPERATION SHALL BE NOTED ON AS–BUILT CONTROL DRAWINGS.
5. FLOW SWITCHES OR ADJUSTABLE TYPE CURRENT SWITCHES SHALL BE PROVIDED IN THE PIPING OF EACH PUMP TO VERIFY PUMP STATUS.
6. 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 WIRE BACK TO INDIVIDUAL AHU CONTROL PANEL FOR UNIT SHUT–DOWN UPON ACTIVATION.
7. 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 REQUIRED FOR OPERATION OF CONTROL SYSTEM.
8. BAS SHALL ALLOW GLOBAL OPERATION OF HOT WATER CONTROL VALVES.
9. SYSTEM GRAPHICS SHALL INCLUDE ALL SMOKE DAMPER LOCATIONS AND SHALL PROVIDE STATUS AND GENERATE AN ALARM UPON ACTIVATION.
10. LOCATE MAIN DDC CONTROL PANEL(S) IN BASEMENT LEVEL MECHANICAL ROOM. COORDINATE EXACT LOCATION PANEL WITH ALL OTHER TRADES PRIOR TO INSTALLATION.
11. PROVIDE ALL CONTROL PANELS WITH 3RD PARTY U.L. LISTING
12. PROVIDE EXPORT TAGGING AND CONTROLS PROGRAMMING AS REQUIRED TO FULLY INTEGRATE WITH THE UNIVERSITY BAS SERVER PLATFORM TO SIMPLIFY IMPORTING JACE CONTROLS, POINTS LIST AND GRAPHIC CONTROL SCREENS.

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UNC CHARLOTTE

UNC Charlotte RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM 01	3/16/16

Project: 15NCC491
Drawn By: CAH/CP
Checked By: RVA
Date: March 1st, 2016

Jenkins • Peer Architects

MECHANICAL SEQUENCE OF OPERATIONS

CONSTRUCTION DOCUMENTS

M-004

INPUT/OUTPUT SUMMARY

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS: ANALOG MEASURED: TEMPERATURE	HUMIDITY	AIR FLOW	WATER FLOW	CURRENT	HERTZ	VOLTS	AMPS	ANALOG CALC.: ENTHALPY	RUN TIME	EFFICIENCY	PERCENTAGE	BINARY: STATUS	SMOKE	FIRE	AIR FLOW	METER	OVER-RIDE	OUTPUTS: DIGITAL: OFF-ON	OFF-HI-LO	OPEN-CLOSE	ANALOG: DAMPER, POS.	VALVE POS.	SETPOINT ADJ.	STEP CONTROL	SYSTEM FEATURES: ALARMS: HI ANALOG	LO ANALOG	HI BINARY	LO BINARY	PROGRAM SWITCH POS.	PROGRAMS: TIME SCHEDULING	DUAMD LIMITING	DUTY CYCLE	START/STOP OPT.	ENTHALPY OPT.	SMOKE ON T.	TREND	ALARM INSTRUCT	MAIN. WK. ORD.	GENERAL: COLOR GRAPHIC	SUPPLEMENTAL NOTES
CHILLED WATER LOOP																																								X	
PUMP P-1 VFD ON/OFF																			X																					
PUMP P-1 VFD SPEED																						X																		
PUMP P-1 VFD STATUS													X													X														
PUMP P-2 VFD ON/OFF																			X																				
PUMP P-2 VFD SPEED																						X																	
PUMP P-2 VFD STATUS													X													X													
SECONDARY CHILLED WATER SUPPLY TEMP	X																																						
SECONDARY CHILLED WATER RETURN TEMP	X																																						
BUILDING LOOP DIFFERENTIAL PRESSURE		X																								X												
RUP-4 BRIDGE DIFFERENTIAL PRESSURE		X																								X												
HOT WATER LOOP																																						X	
PUMP P-3 VFD ON/OFF																			X																				
PUMP P-3 VFD SPEED																						X																	
PUMP P-3 VFD STATUS													X													X													
PUMP P-4 VFD ON/OFF																			X																				
PUMP P-4 VFD SPEED																						X																	
PUMP P-4 VFD STATUS													X													X													
SECONDARY HOT WATER SUPPLY TEMP	X																																						
SECONDARY HOT WATER RETURN TEMP	X																																						
BUILDING LOOP DIFFERENTIAL PRESSURE		X																								X												
RUP-4 BRIDGE DIFFERENTIAL PRESSURE																										X												
FAN COIL UNITS AND UNIT HEATERS																																						X	
SUPPLY FAN													X						X																				
CHW VALVE																						X																	
HW VALVE																						X																	
SPACE TEMP	X																																						
SUPPLY TEMP	X																																						
SETPOINT ADJUST																						X																	
RETURN AIR SMOKE (BY ELECT. CONTR.)														X																		X						WHERE INDICATED	
DRAIN PAN FLOAT ALARM																											X												
AIR HANDLER																																						X	
SUPPLY FAN													X							X																				
VFD ON/OFF																			X																				VFD BY UNIT MFR	
VFD SPEED																						X																	VFD BY UNIT MFR	
VFD STATUS													X													X													VFD BY UNIT MFR	
RETURN FAN													X							X																				
VFD ON/OFF																			X																				
VFD SPEED																						X																	
VFD STATUS													X													X													
SUPPLY STATIC PRESSURE		X																										X										
HW VALVE (PREHEAT)																						X																	
PREHEAT COIL DISCH. TEMP / HUMIDITY	X	X																																					
CHW VALVE																						X																	
COOLING COIL DISCH. TEMP / HUMIDITY	X	X																																					
SUPPLY TEMP & HUMIDITY	X	X																																					
RETURN TEMP	X																																						
RETURN CO2			X																									X										
RETURN RH		X																																					
MIXED AIR TEMP	X																																						
OA DAMPER (MIN & ECON DAMPERS)																						X																	
RETURN DAMPER																						X																	
RELIEF DAMPER																						X																	
SMOKE DETECTOR														X																		X						BY ELECT. CONTR.	
FREEZESTAT														X																									
FILTER STATUS													X																										
OVER-RIDE															X																								
SPACE HUMIDITY		X																																					
SUPPLY AIRFLOW			X																																				
RETURN AIRFLOW			X																																				
PUMP P-5 & 6 STATUS																			X																					
FANS																																						X	
GENERAL EXHAUST FANS																			X																				
KITCHEN EXHAUST FANS																			X																				
KITCHEN SUPPLY FANS																			X																				
COOLING COIL DISCH. TEMP / HUMIDITY	X	X																																					
UNIT SUPPLY TEMP	X																																						

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS: ANALOG MEASURED: TEMPERATURE	PRESSURE	RH	AIR FLOW	WATER FLOW	HERTZ	RPM	VOLTS	AMPS	ANALOG CALC.: ENTHALPY	RUN TIME	EFFICIENCY	PERCENTAGE	BINARY: STATUS	FILTER	SMOKE	FIRE/STAT	AIR FLOW	METER	OVER-RIDE	OUTPUTS: DIGITAL: OFF-ON	OFF-AUTO-ON	OPEN-CLOSE	ANALOG: DAMPER POS.	VALVE POS.	SETPOINT ADJ.	STEP CONTROL	SYSTEM FEATURES: ALARMS: HI ANALOG	LO ANALOG	HI BINARY	LO BINARY	PROGRAM SWITCH POS.	PROGRAMS: TIME SCHEDULING	DUAMD LIMITING	DUTY CYCLE	START/STOP OPT.	ENTHALPY OPT.	SMOKE ON T.	TREND	ALARM INSTRUCT	MAIN. WK. ORD.	GENERAL: COLOR GRAPHIC	SUPPLEMENTAL NOTES
VAV Fan Powered Boxes																																								
SUPPLY FAN														X							X							X					X						X	
HOT WATER VALVE POSITIION																									X	X														
SPACE TEMP	X																																							
SUPPLY TEMP	X																																							
OVER-RIDE																			X																					
INDUCTION FAN														X							X												X							
OVER-RIDE																			X																					
DAMPER POSITION																									X															
DX SPLIT SYSTEM																																							
INDOOR AC UNIT														X							X							X					X						X	
OUTDOOR UNIT														X							X							X					X							
SPACE TEMP	X																																						
SUPPLY TEMP	X																																						
SETPOINT ADJUST																									X														
ALARMS																																							
DOMESTIC H.W.			X			X																																	
REOIRCULATION PUMP														X							X							X					X							
DOMESTIC COLD WATER TEMP	X																																						
DOMESTIC HWS TEMP	X																																						TYPICAL OF 2
DOMESTIC HWR TEMP	X																																						TYPICAL OF 2
STORAGE TANK(S)	X																																						TYPICAL OF 2
ELECTRICAL SYSTEMS																																						X	
TOTAL ELECT DEMAND																	X														X								
DEMAND																	X																						
CONSUMPTION			X							X																													
EXTERIOR LIGHTING														X						X										X									
CRAC UNITS																																X		X				X	
SPACE TEMP	X																										X								X				
DISCH. TEMP	X																										X											
RETURN TEMP	X																																		X				
SUPPLY FAN														X							X							X											
SMOKE DETECTOR															X																									
FILTER STATUS														X																									
SPACE HUMIDITY		X																									X								X				
FIRESTAT ALARMS																																							
LIQUID DETECTION SYSTEM														X																									
MISC. POINTS																																							
OA TEMP	X									X																													
DEW POINT	X									X																													
DOMESTIC WATER METERS																	X																						BY P.C.
GAS METER																	X																						BY P.C.
FIRE ALARM STATUS																	X																						
GENERATOR ALARMS																																		X					
FUEL OIL LEAK DETECTION																																		X					
DOMESTIC WATER BOOSTER PUMP		X															X																						
CO DETECTORS																																		X					
ELEVATOR SUMP PUMPS																	X																						
COOLER TEMPERATURES (ALL)	X									X																													
UNIT FREEZSTATS																																						X	
DOMESTIC WATER HEATER & RCPS																	X				X																	X	Recirc. Pumps
HEAT TRACE	X																																						

NOTES:
1. INPUT/OUTPUT SUMMARY IS A GENERAL LIST OF CONTROL POINTS REQUIRED FOR THE OPERATION OF THE MECHANICAL SYSTEM. IN ADDITION TO CONTROL POINTS INDICATED, THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL POINTS AS REQUIRED FOR OPERATION OF THE MECHANICAL SYSTEM AS SPECIFIED AND OUTLINED IN THE SEQUENCE OF OPERATION, AND TO COMPLY WITH THE SPECIFICATIONS.

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NORTH CAROLINA PROFESSIONAL SEAL 17228 ENGINEER RONALD V. ALMOND
3/1/16

UNC CHARLOTTE

UNC Charlotte RESIDENCE DINING HALL BUILDING RENOVATION

SCO ID #: 14-11273-02A

TAG	DESCRIPTION	DATE
1	ADDENDUM 01	3/16/16

Project: 15NCC491
Drawn By: CAH/CP
Checked By: RVA
Date: March 1st, 2016

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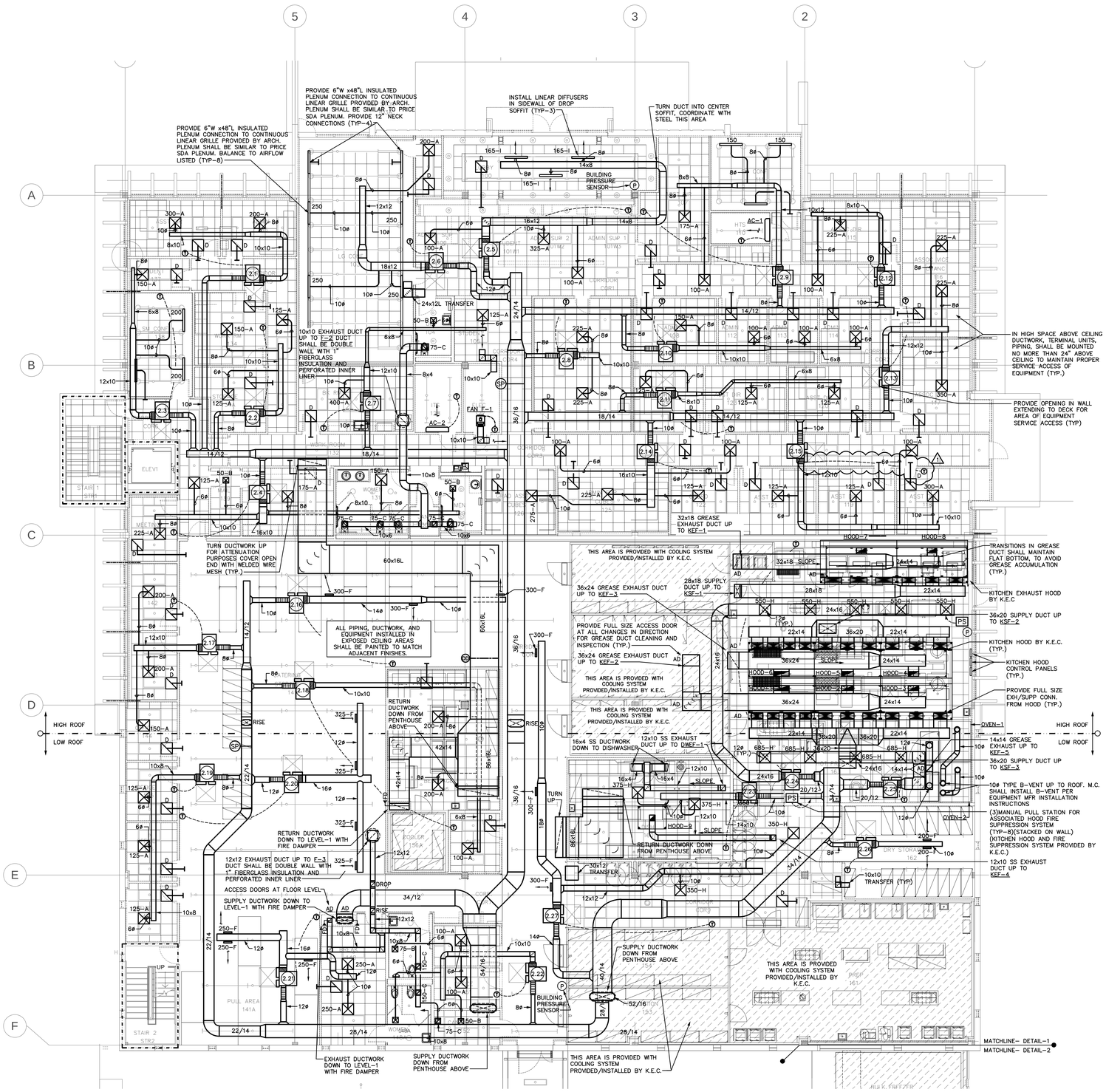
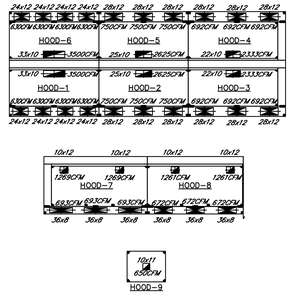
MECHANICAL POINTS LIST

CONSTRUCTION DOCUMENTS

M-005



① MECHANICAL UPPER LEVEL - NEW WORK
1/8" = 1'-0"

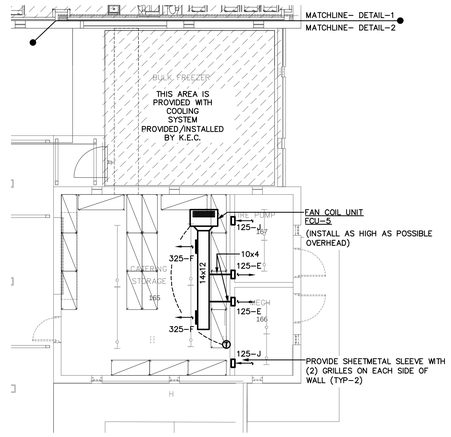


③ KITCHEN HOOD CONNECTION PLAN
1/8" = 1'-0"

KITCHEN AREA AIR BALANCE SCHEDULE (AHU—2)			
EQUIPMENT	EXHAUST	MAKE—UP	OUTSIDE AIR
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	——	——
OVEN—1	1200	——	——
OVEN—2	1200	——	——
AHU—2	——	——	8,370
TOTALS	25,670	26,170	
NET PRESSURE SUPPLIED TO KITCHEN AREA: 500 CFM (POSITIVE)			

ALL KITCHEN HOODS SHALL BE PROVIDED AND INSTALLED BY THE KITCHEN EQUIPMENT CONTRACTOR (K.E.C.) MECHANICAL CONTRACTOR SHALL PROVIDE ALL EXHAUST AND MAKE UP AIR DUCTWORK AND MAKE FINAL CONNECTIONS TO HOODS. PROVIDE TRANSISTIONS AS REQUIRED FOR CONNECTIONS

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



② MECHANICAL UPPER LEVEL - NEW WORK
1/8" = 1'-0"

RATED WALL LEGEND	
1 HOUR FIRE BARRIER	
REFER TO ARCHITECTURAL DRAWINGS FOR COMPLETE WALL CONSTRUCTION AND RATING INFORMATION.	

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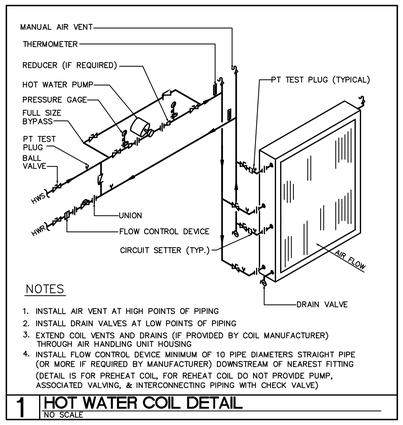
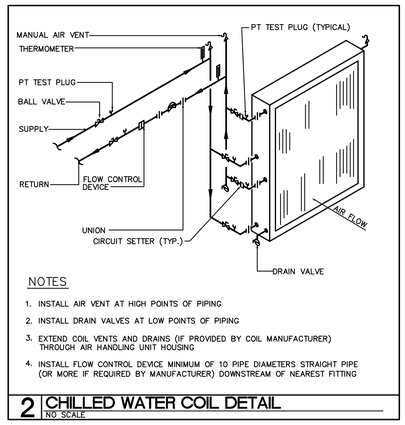
MECHANICAL UPPER LEVEL PLAN NEW WORK

CONSTRUCTION DOCUMENTS

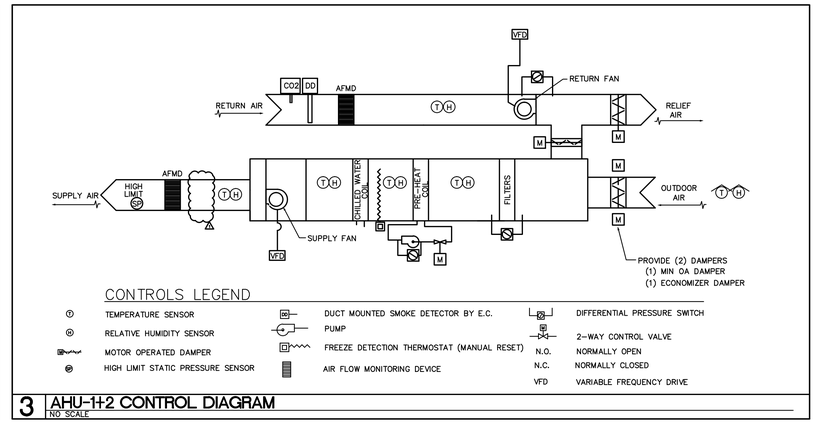
M-202



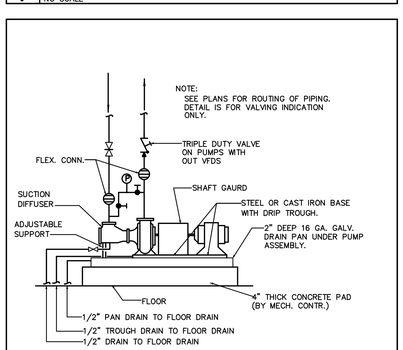
1 HOT WATER COIL DETAIL
NO SCALE



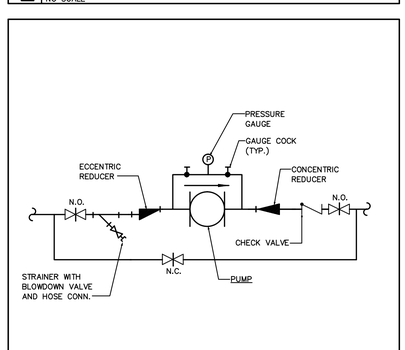
2 CHILLED WATER COIL DETAIL
NO SCALE



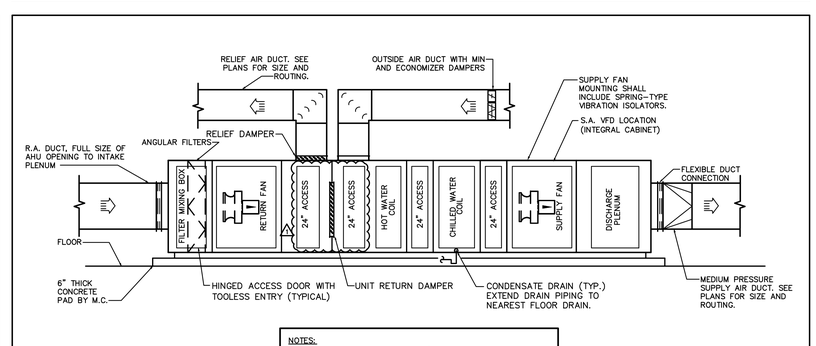
3 AHU-1+2 CONTROL DIAGRAM
NO SCALE



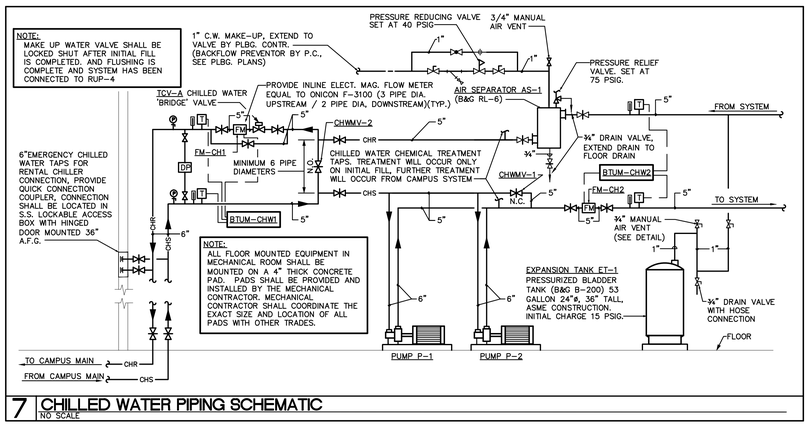
4 PUMP PIPING DETAIL (P-1 THRU P-4)
NO SCALE



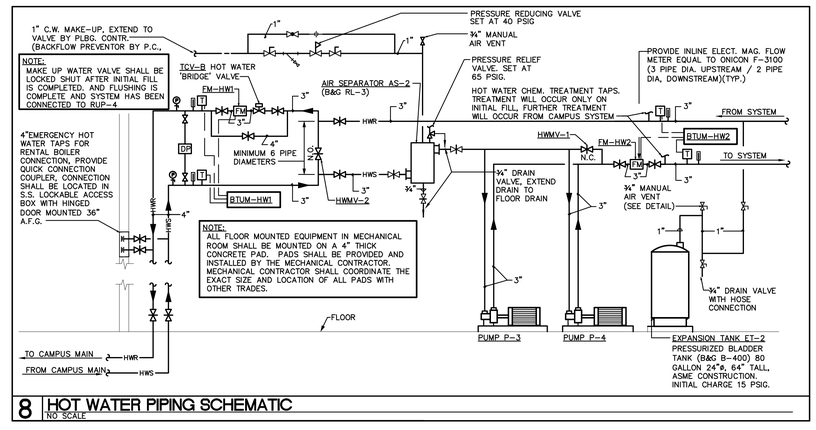
5 INLINE PUMP DETAIL
NO SCALE



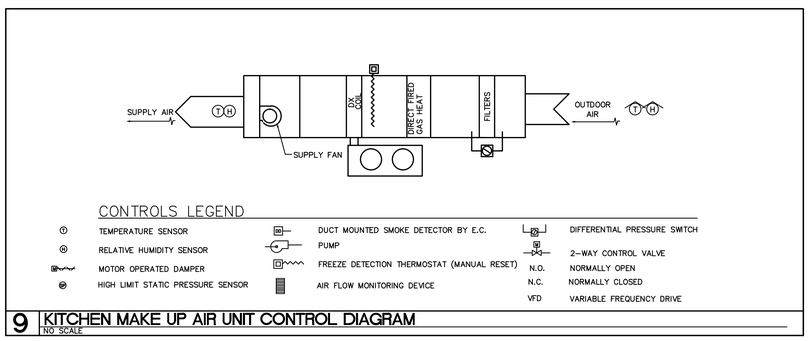
6 AIR HANDLER AHU-1+2 DETAIL
NO SCALE



7 CHILLED WATER PIPING SCHEMATIC
NO SCALE



8 HOT WATER PIPING SCHEMATIC
NO SCALE



9 KITCHEN MAKE UP AIR UNIT CONTROL DIAGRAM
NO SCALE

RATED WALL LEGEND

1 HOUR FIRE BARRIER

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

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MECHANICAL ENLARGED PLANS DETAILS

CONSTRUCTION DOCUMENTS

M-402