



# CLARK NEXSEN

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## Addenda:

## UNCC - CID Phase II Wi-Fi

### DATE:

April 23, 2015

## BID ADDENDA No. 02

### PROJECT:

University of NC at Charlotte  
CID Phase II Wi-Fi

*This ADDENDUM is to be a part of the contract documents and modifies and takes precedence over the original bid documents, as noted in the attached documents. Original items of the plans and specifications that have been modified, amended, voided or suspended through previous addendums, shall remain in effect. It is the responsibility of the Bidder to notify and/or distribute this ADDENDUM to those sub-bidders who have received prints. Acknowledge receipt of this ADDENDUM in the space provided on the Bid Form.*

### COMMISSION NUMBER:

Clark Nexsen Comm. No. 5462  
State Project ID: 13-10724-01A  
Code: 41326 Item: 307

### GENERAL INFORMATION

- All "T" series sheets issued for construction will bear the RCDD seal of Paul Dooley (shown below) and Mike Phillips.



- BIM MODELING:** BIM modeling is not required for this project. DELETE all references pertaining to BIM.

### DRAWING MODIFICATIONS:

#### Sheet A-001

- DEMOLITION NOTES, Note # 12: REPLACE with the flowing:  
Existing carpet flooring finishes are to be removed where new ITS rooms are to be constructed. Remove any remaining adhesives or residues in preparation for concrete sealer. Hard flooring finishes which do not contain hazardous materials can remain.

#### Sheet AE700

- GENERAL SIGNAGE NOTES: DELETE note #2.
- GENERAL SIGNAGE NOTES: ADD note #8: 8. Include pricing for two (2) additional room signs for each building. Locations, room numbers, and verbiage to be determined.

#### Sheet M-001

- SPLIT SYSTEM SCHEDULE COOLING ONLY, ADD note #7: 7. Provide and install a temperature sensor inside each room served by split system cooling for connection to the campus BAS. The University will contract separately for the



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final connection to the BAS.

**Sheet FP-001**

- SYSTEM NO. C-AJ-1070 - Vertical UL pipe penetration detail: Delete detail
- GENERAL NOTES, Note #1: REVISE to read: "furnish and install a complete automatic sprinkler system in the renovated areas of the building, including (but not limited to) waterflow alarm switches, valve supervisory switches, check valves, control valves, piping, hangers, sprinklers, associated equipment, and appurtenances. Installation of sprinkler system shall conform to the provisions of the North Carolina Fire Prevention Code-2012 edition, NFPA 13-2007 edition and division 21 specifications."
- GENERAL NOTES, Note #2: REVISE to read "submit six (6) copies of sealed shop drawings that include the size, type and location of sprinklers and sprinkler piping, plus hydraulic calculations and equipment data to the architect/engineer for review in accordance with NFPA 13."
- GENERAL NOTES, Note #9: DELETE
- SPRINKLER SYSTEM DESIGN DATA, Note #1: REVISE to read: "The fire protection contractor shall use the existing water flow and pressure conditions from the existing fire pump test data. This information shall be obtained from the monthly fire pump test data. If a current fire pump test report is not available the contractor shall provide a current fire pump test. The contractor shall provide a new hydrant test to confirm the water pressure and flow has not substantially diminished to a point that would affect the system performance. The new hydrant flow test shall be submitted with the shop drawings."
- FIRE SPRINKLER CONTRACTOR NOTE – REPLACE with the following:

Shop drawings should include and be in accordance with working plan requirements of chapter 22 of NFPA 13. Product data shall include and identify all material, equipment, and accessory selections to be installed.

A copy of the contractor's hydrant flow test shall be included. The hydraulic calculations and shop drawings shall be signed by the fire sprinkler designer and include the NC fire sprinkler contractor (FS) license number.

The construction documents are a performance design. The fire sprinkler contractor, as the designer and contractor, must provide all necessary materials and labor for a system fully compliant with all applicable NFPA requirements and the construction documents at no additional cost to the owner. Any discrepancies should be brought to the attention of the engineer of record.

An updated hydrant flow and pressure test is to be obtained by the fire sprinkler contractor to be used for the working plan design and calculations.

The hydrant flow test used for the working plan design should be performed as indicated in NFPA 13 and NFPA 291 which uses two hydrants; a pressure hydrant and a flow hydrant. The two hydrants should be as close to the point of connection as possible. A copy of the flow test and test hydrant locations shall be submitted with the shop drawing package.

As a factor of safety to account for fluctuations in water supply, the design calculations shall be based on an available water supply of 10 psi less static pressure, 10 psi less residual pressure and 10% less residual flow than measured."



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### Electrical General

- Where feeder conductors are larger in size than circuit breaker or other device terminals will accept, transition to largest conductor that device terminals will accept immediately prior to termination. Conductor size transitions shall occur immediately adjacent to terminating device and splices required to make transitions shall be performed in a separate enclosure outside panelboard, circuit breaker or other terminating device enclosure. Pull boxes in which splices are housed shall be sized per NEC requirements.

### Sheet E-001

- Symbol description for receptacles mounted above roof decks (under POWER DEVICES) has been revised to read, "DUPLEX CONVENIENCE RECEPTACLE, MOUNTED ABOVE ROOF DECK, 20A, 125VAC. PROVIDE SUPPORT PER NEC."
- Symbol description for pullbox (under DISTRIBUTION) has been revised to read, "PULLBOX. SIZE PER NEC REQUIREMENTS. PLAN LOCATIONS ARE APPROXIMATE. FIELD VERIFY EXISTING CONDITIONS AND COORDINATE INSTALLATION WITH EXISTING COMPONENTS ABOVE CEILING. CONTACT ENGINEER IF LOCATION ADJUSTMENTS ARE REQUIRED."
- General Note #7 has been revised to read, "WHERE PENETRATIONS ARE MADE THROUGH A REQUIRED FIRE-RESISTIVE WALL, FLOOR, OR PARTITION FOR THE PURPOSE OF RUNNING RACEWAY CARRYING ELECTRICAL, TELEPHONE, VIDEO, OR LOCAL COMMUNICATION AND/OR SIGNALING CIRCUITS, THE OPENING AROUND THE RACEWAY SHALL BE FIRE STOPPED PER U.L. SUBMIT PROPOSED U.L. PENETRATION DETAILS TO ENGINEER FOR REVIEW AND APPROVAL."

### Sheets E202, E203 and E204

- Note pointing at drinking fountain outside rooms 280A, 379A and 480A has been revised to read, "...electrical water cooler..." in lieu of, "...drinking fountain..."

### Sheet E203

- Construction Note #4 used at light switch in Closet 321B has been revised to Note #3.

### Sheet E301

- In mechanical room 145, there are two existing disconnect switches labeled, "D1-XT1FL". The disconnect located plan north of transformer XT1FL has been revised to "D2-XT1FL".

### Sheet E303

- 2x4 luminaires in workrooms 347A and 361A are existing, and symbols for these luminaires have been revised to dashed line types. Branch circuitry is still shown new and remains unchanged.

### Sheet E500 (See Bulletin Drawings BD-02 and BD-03)

- Detail #4, ALTERNATE #2 KING – ROOM 121 has been renumbered to detail #3.
- Detail #5, ALTERNATE #2 KING – DEMOLITION PLAN has been renumbered to Detail #4.
- New work added to Work Room 119B.
- Construction Note #16 added to dual light switches in Office 119.

### Sheet E701, Cameron Single-Line Diagram (See Bulletin Drawing BD-04)

- Transformer XTC1 has been revised to XT1C.
- New 110A FDP in MSB1 shall utilize Distribution Section "C" in lieu of "A".
- Feeder between ECB-T1CB and T1C-MAIN has been revised to 4#300, #2G, 2-1/2"C.



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- Feeder for panel T2C has been revised to 4#250, #2G, 2-1/2"C.

### Sheet E701, Fretwell Single-Line Diagram (See Bulletin Drawing BD-05)

- New 175A FDP in MSB shall utilize Distribution Section "B" in lieu of "A".
- 100A Circuit breaker T3FL-MAIN upstream of Panel T2FL has been revised to T2FL-MAIN.

### Sheet E701, Friday Single-Line Diagram (See Bulletin Drawing BD-06)

- Feeder between new 50A breaker in Switchboard SA and new ECB-T2FYA has been revised to 3#6, #10G, 1"C.
- Feeder between ECB-T2FYA and X2TFY has been revised to 3#6, #10G, 1"C.
- Feeder between D2-XT1FL and T-MAIN has been revised to indicate existing.

### Sheet E701, Smith Single-Line Diagram (See Bulletin Drawing BD-07)

- Feeder between XT2S and ECB-T2S2 has been revised to 4#1/0, #6G, 2"C.

### Sheet E702

- Circuit T3FL-29 - Provide #8 phase conductors and #8 ground. Transition to #12 phase conductors and #12 ground within 10 feet of receptacle.
- Circuit T3FY-37 - Provide #6 phase conductors and #6 ground. Transition to #12 phase conductors and #12 ground within 10 feet of receptacle.

### Sheet T900

- ADD: General Note: Refer to T-001 for more information regarding IT installation. All wall penetrations require conduit sleeves

### Sheet T901

- ADD: General Note: Use existing conduits in ITS Room 148D for new optical/copper backbone cables

## **SPECIFICATION MODIFICATIONS:**

### **FORM OF PROPOSAL**

#### ADD:

#### GENERAL CONTRACT

Alternate No. 10 Replacement of Corridor Ceilings in King

#### ADD:

Unit Cost No. 15: Cost of demolishing existing ceiling and replacing with 2x2 lay-in tile ceiling and grid in King Building corridors. See also Alternate #10:

\$\_\_\_\_\_ per sq. ft.





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### SECTION 011000 - SUMMARY

1.8 WORK RESTRICTIONS, B: REVISE to read as follows: Limit work in the building and site to be following work hours.

Work will be after hours only and are established by the summer schedules as follows:

Building	NTP – 5/17	5/18 – 6/28	6/29 – 8/5	8/6 – 8/21
Cameron	6p – 7a	7p – 7a	6p – 7a	6p – 7a
Colvard		8p – 7a	10p – 7a	
Fretwell		10p – 7a	9p – 7a	
Friday		10p – 7a		
King		6p – 7a		
Smith		11p – 7a	8p – 8a	

In all buildings, the nightly work will include cleaning and all areas should be restored to operational conditions. This will not include replacing removed ceiling tile on a daily basis, but will include removal of all construction materials, equipment, debris, dust, etc. Any work performed by University staff to clean up after the contractor will be charged to the contractor in the form of a deductive Change Order.

- Hours for Utility Shutdown: Arrange with Owner 10 days prior to shut down.
- Hours for: Refueling and start-up of heavy equipment will start after 8:00 a.m.
- Owner will notify the contractor in advance of work restrictions to accommodate University functions. This will be discussed further in the preconstruction conference.

### SECTION 12200 – UNIT PRICES

3.1 LIST OF UNIT PRICES: ADD paragraph O to read: O. Unit Cost No. 15: Cost of demolishing existing ceiling and replacing with 2x2 lay-in tile ceiling.

### SECTION 12300 – ADD ALTERNATES

3.1 SCHEDULE OF ALTERNATES, A: ADD the following: – See revised specification attached to this addenda -

6. Alternate No. 6: UNC Charlotte Telecommunications Cabling Infrastructure (Bid Alternate) Specifications List. (Owner preferred Alternate.

7. Alternate No. 7: UNC Charlotte Telecommunications Cabling Infrastructure (Bid Alternate) Specifications List. (Owner preferred Alternate.

8. Alternate No. 8: UNC Charlotte Telecommunications Cabling Infrastructure (Bid Alternate) Specifications List. (Owner preferred Alternate.

9. Alternate No. 9: UNC Charlotte Telecommunications Cabling Infrastructure (Bid Alternate) Specifications List. (Owner preferred Alternate.

10. Alternate No. 10: Replacement of existing corridor ceilings in King Building. Provide pricing to demolish existing and replace with new 2x2 Lay-in acoustical ceiling tile and grid. Ceiling Allowance: 3,000 SF. Also see Unit Prices section 3.1.



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See attached specification section 095113.

### **SECTION 078413 - PENETRATION FIRESTOPPING**

1.6 COORDINATION, C: DELETE paragraph.

### **SECTION 260416 PANELBOARDS**

3.2.G: REVISE reference to "(27-GRC)" to "EMT".

### **SECTION 260519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

2.1.A.1 DELETE Alcan Products Corporation from list of acceptable manufacturers.

### **SECTION 260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

3.3.B: REVISE reference to "Division 03 Section "Cast-in-Place Concrete"" to "Division 03 Section "Miscellaneous Cast-in-Place Concrete""

### **SECTION 265100 INTERIOR LIGHTING**

2.3.B: DELETE paragraph in its entirety.

### **SECTION 27 00 00 – COMMUNICATIONS GENERAL**

1.10, D: ADD sub paragraph 3 to read as follows:

3. A hard copy of the record drawing plans of the cabling as-built port locations is to be posted inside each ITS room which labels each port on the floorplan as they relate to the corresponding labeled locations in the patch panels. The plans are to be laminated both front and back. The final location of these drawings inside the rooms will be determined in the field by an Owner's representative.

### **SECTION 27 05 00 – COMMON WORK RESULTS FOR COMMUNICATIONS**

1.3.B: DELETE paragraph in its entirety.

1.6EE: REVISE reference to "Division 26" to "Division 7".

2.5.A: REVISE paragraph to read, "Division 27 Product Specifications for TMGB and TGB bars shall supersede any given in Division 26."

2.13: DELETE paragraph in its entirety.

2.14: DELETE paragraph in its entirety.

2.15: DELETE paragraph in its entirety.

2.16: REVISE reference to "26 05 11" to "26 05 00".

2.17: DELETE paragraph in its entirety.

2.19: DELETE paragraph in its entirety.

2.22.B: REVISE paragraph to read, "For floor penetrations thicker than 8", the use of metallic conduit shall be approved. Metallic conduit sleeves shall be 4" minimum. The CO shall pre-approve the size, quantity, and locations of the pathways.

3.12.B: DELETE paragraph in its entirety.

3.15: DELETE paragraph in its entirety.

3.16: DELETE paragraph in its entirety.

3.17: DELETE paragraph in its entirety.

3.19: DELETE paragraph in its entirety.

**Addenda #2: UNCC - CID Phase II Wi-Fi****ADDED SPECIFICATION SECTION:**

Specification section 095113 – Acoustical Panel Ceilings

Specification section 27 05 29 – Hangers and Supports for Communications Systems.

Specification section 27 05 36 – Cables Trays for Communications Systems.

**REQUEST FOR SUBSTITUTION:**

NONE

**QUESTIONS AND ANSWERS:**

No.	Questions	Response
1.	<b><u>Buildings constructed of masonry (block walls)</u></b> - It is assumed that it is acceptable to install surface-mounted raceway and device box (Wiremold or equal), for the added data devices. (a) please confirm this is the intent) (b) please confirm the type, style and color of the surface-mounted product, so it is crystal clear to bidders as to what product(s) are acceptable to use, so that they bid accordingly.	Basis of design products are listed on drawing T-001 Note#2 – Locations with 3 cables use Wiremold V2000; Locations with 4 cables use Wiremold V2400; Locations with 5 cables user Wiremold V3000.
2a.	<b><u>Box Eliminator</u></b> - For buildings where the wall construction is drywall, please clarify if it is acceptable to utilize a “box eliminator” (i.e. install a plaster ring and the data device faceplate, with no backbox and no raceway to above ceiling) or if a backbox and raceway to above ceiling, with pullstring, is required.	Box eliminators are not acceptable and should not be a part of the bid. Telecom cabling inside wall cavities shall be routed through a raceway (concealed within wall) to a recessed junction box. EMT with pullstring shall be used for new walls. FMC and ENT with pull strings are acceptable raceways for existing walls. Minimum size for FMC and ENT shall be 1”, but in no case shall fill ratio excel 40%. Raceways, boxes and all associated fittings shall be U.L. listed for the applications for which they are used.
2b.	<b><u>Back Box and Raceway</u></b> - If backbox and raceway behind wall is required, please verify that the raceway behind the wall can be steel flex, and please specify a size (1/2”, ¾”, etc.).	EMT shall be used for branch circuit wiring unless otherwise noted. Minimum size shall be per Contract Documents. FMC may be used for branch circuit wiring in existing wall cavities. Minimum size for FMC shall be ¾” where used for branch circuit wiring. See response to question 2a above for telecommunications raceway requirements.
2c.	<b><u>Steel Flex</u></b> - If steel flex cannot be used, and EMT must be used, please note this will require the walls to be cut, repaired, and repainted at each device location.	See responses to 2a and 2b above.



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3.	<b><u>Construction schedule</u></b> – the UNCC Capital Projects Supplemental General Conditions, paragraph 1.10 Article 14 C 1 calls for dollar values for each spec section, completed dollar value each month, etc. There is little benefit of this requirement on short – duration projects, will increase schedule creation cost, which will increase bid cost. QUESTION --please confirm “cost loading” the schedule is not required.	Cost Loading will not be required.
4.	<b><u>Construction schedule</u></b> – the UNCC Capital Projects <b><u>Supplemental General Conditions</u></b> , paragraph 1.10 Article 14 C 2 states that the “construction Schedule shall be a schedule....and shall depict sequence of operations mutually agreeable to the Owner, designer, and each of the Prime Sub-Contractors.” Given that this is an 82 day duration project, as dictated by UNCC, and known to all subcontract bidders, the sequencing and duration of activities should be up to the General Contractor, who should not have to have “agreement” with the Owner and subcontractors. QUESTION --Please confirm the construction schedule activity logic and durations shall be left up to the General Contractor to determine.	Durations will be the contractor’s determination but may be adjusted at the Owner’s request prior to baseline schedule approval.
5.	<b><u>Construction schedule</u></b> – the UNCC Capital Projects Supplemental General Conditions, page 11, states “manpower loading for each activity” is required. There is little benefit of this requirement on short – duration projects, will increase schedule creation cost, which will increase bid cost. QUESTION --Due to the short 82 day duration, please confirm “manpower loading” is not required.	Manpower Loading is not required.
6.	<b><u>Temporary walls</u></b> – during the walk-thru that followed the prebid meeting, it was observed that interior construction /demo/build-out was in progress, and that no temporary walls or plastic sheeting was erected to separate students from the construction space. QUESTION – please confirm temporary walls (plywood or gyp walls) are not required, and that plastic sheeting to separate construction from college students is acceptable.	The areas will be left unattended due to night work hours. All public areas should be cleaned up in accordance with the work hour requirements. If the work area cannot be returned to a functional condition, temporary partitions should be used.

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7.	<b>Construction Trailer</b> – if a trailer is not required, associated cost will be saved by the Owner. We believe classroom(s) could be utilized for this purpose. QUESTION --due to the nature of this project, duration, and lack of specified laydown area, please confirm it is acceptable for the general contractor to not supply a construction office furnished with power, internet, and rest rooms	There is no requirement for a jobsite trailer for this project.
8.	<b>Toilet facilities</b> - Work is potentially spread over 6 different buildings. QUESTION - please clarify if the Owner is requiring temporary toilets to be furnished by the GC for each of the 6 buildings, or if the workers will be allowed to utilize facilities within the buildings they are working within. Note – if temporary toilets are to be required, please furnish acceptable locations, noting these facilities will need to be serviced by a large truck, on a weekly basis.	As the work is occurring over the summer and the buildings will be only partially occupied it is acceptable for workers to utilize the toilet facilities inside the buildings where work is occurring. If, however, the workers create issues in the normal operation of the building or create undo work for housekeeping personnel then the cost for additional housekeeping services will be charged back to the contractor via deductive Change Order.
9.	<b>Wall types</b> – refer to drawing AE101 – room 193 – new walls are shown but there is no wall type. Are we to assume 3 5/8" stud, 16" O.C. with 5/8" X type for any new drywall walls (unless noted to be rated)?	See note #4 and #7 respectively on drawing sheet A-001 under <i>Construction Notes</i> .
10.	<b>Wall heights</b> – as new IT closets do not have ceilings, please clarify that all new walls (drywall or CMU) will need to extend to the deck above.	All walls surrounding ITS rooms, existing and new, are to extend to the underside of the deck above. See note #4 and #7 respectively on drawing sheet A-001 under <i>Construction Notes</i> .
11.	<b>Drawing AE602</b> – room 210 – has ACM-containing flooring per the report in the spec. Are we to remove the flooring in this room (abatement?) do we remove the flooring in room 202B as well?	As there will be drilling into the floor slab in order to set new racks the existing flooring will be disturbed and will need to be abated from both rooms prior to work.
12.	<b>Dry-chemical fire suppression</b> – drawing AE602 notes this system is present in room 253 and room 249. Please confirm UNCC will divide this system and that there is no scope for the GC to perform related to this system.	There is no fire suppression system in room 249. Follow the note on sheet AE602 which states: ALL ELEMENTS OF THE SYSTEM ARE TO REMAIN IN PLACE INCLUDING TANKS, PIPING, DISCHARGE HEADS, DETECTORS, ACTUATORS, ETC. While the system will be divided to serve two separate rooms (ITS 253 & Storage 249G), its operation will not be modified in any aspect. There is no work to be performed on this system.

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13.	<b><u>Fire detection equipment</u></b> - In multiple areas, fire detection equipment (heat or smoke devices) will need to be removed and replaced, or relocated. These need to be removed and relocated by the company currently operating the system in the respective buildings. Please advise which company(s) are responsible for the fire detection in each building, so they can be contacted to bid this work.	Simplex.
14.	<b><u>Asbestos abatement</u></b> – drawing AE603, room 312 – this room appears to have ACM flooring per the report in the spec. Please clarify is this flooring is to be removed, or remain.	As there will be drilling into the floor slab in order to set new racks the existing flooring will be disturbed and will need to be abated prior to work.
15.	<b><u>Rated wall ID</u></b> – drawing AE 700 – note 1 calls for fire rated wall stencil on all rated walls. We interpret this to apply to any newly constructed walls only, as there is no way to tell if existing walls have this signage or not. Please confirm this is for newly constructed walls only	The requirement for stenciling rated walls only pertains to new walls.
16.	<b><u>Monitoring of space temperature by BAS</u></b> - note 6 under split systems calls for space temp monitoring by BAS. It is not clear what BAS system controls each building. Please clarify what scope the mechanical contractor for this project is to perform, with regard to integrating the split system and/or room temperature to the BAS. Are special temperature sensors required in IT rooms that can integrate with current BAS systems? If so, please specify.	These temperature sensors will transmit wirelessly per ITS. Contractor is to install transmitter and receiver. The University will contract separately for the final connection.
17.	<b><u>Roof walk pads</u></b> – it appears many of the new roof-mounted condensing units are in locations where there are not walk-pads leading to these units. Are additional walk pads to these units desired? Add alternate?	Provide 400 LF of roof walkway pad, 30 inches wide. Basis of design: Firestone Building Product: X-Tred Walkway Pad Other acceptable manufactures include: WR Meadows: Carlisle Snytec Systems Johns Manville
18.	<b><u>Drawing M-001</u></b> – general note 12 calls for reinforced 4” concrete pad for on –grade equipment. Is a prefabricated pad acceptable? There is little to no concrete work on the project.	A prefabricated concrete equipment pad is acceptable for on-grade condenser units.
19.	<b><u>Drawing M-001</u></b> – general note 14 states mech equipment requiring power be installed with disconnects. Please clarify that the mechanical sub is to furnish all code-required disconnect, switches, and starters.	The mechanical contractor is required to provide starters, disconnects, etc. as indicated in General Notes 14 and 17 on sheet M-001, and as indicated in specification section 230250 “Division of Work.”

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20.	<b>Construction signage</b> – typically UNCC requires construction signs. Are typical signs required for this project? If so, for each building?	Construction signs are not required as a part of this project.
21.	<b>Firestopping</b> – refer to drawing A-001. Construction note #10 states that penetrations shall be protected to match the wall ratings. Please see the attached product, that maintains fire ratings while also leaving void space, allowing UNCC to add or remove cable at a later date while rated penetration protection is maintained. This type of device adds value to the project, and flexibility to UNCC for years into the future. QUESTION - Please confirm this device ( or similar) is to be used on main bundle penetrations in/out of IT rooms	High capacity firestopping devices such as STI EZ-Path Series 44 or approved equivalent should be included in the bid in locations where cabling exits ITS rooms through fire-rated partitions or floors. They are not required in areas beyond the ITS rooms.
22.	<b>Conduit Stub-up</b> - Can you please clarify if every communications drop location will require at a minimum a conduit stub-up to accessible ceiling area and an outlet box?	Yes, each drop location requires a conduit/tube/raceway run to above the ceiling and a junction box for the devices.
23.	<b>Building Riser Diagram sheets</b> - (example T-903), do we assume in the MDF that cables marked as “existing” that the components (termination points such as; 72 port fiber enclosure and voice termination wall block) are existing as well? Or do we need to provide these?	Correct – If cables are marked as “existing” then the termination points in the MDF are also existing and are to be utilized.
24.	<b>Alternate #1 – Colvard</b> - Please clarify if there is only one drawing sheet T-401 for Alternate #1 – Colvard North Building? Not seeing anything showing a <u>communications</u> closet layout or a riser diagram for that building.	There is only one sheet (T-401) for Alternate #1 – Colvard North. As described during the pre-bid conference tour of the buildings, all cabling for the 5000 level will terminate into the existing racks inside telecom room 2003 on the 2000 level. For reference, the location of room 2003 can be found on the code summary sheet for Colvard North (GI400).  The bids should include new patch panels for the cabling serving the 5000 level. The exact locations for the new patch panels inside the racks are to be Owner directed in the field.
25.	<b>Signage</b> - Refer to (AE700) – a sign schedule has been provided indicating specific scope. The general notes below (item #2) call for “ <u>All Rooms (to) receive signage whether specifically indicated or not.</u> ”  Please confirm we are to disregard this note #2 for the purpose of this project and produce signage <u>per the schedule on this drawing.</u>	Delete the note in question and follow the signage schedule on sheet AE700.

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26.	<b>Signage</b> - Note calls for signage to meet UNCC design guideline Annex D, campus sign standard, but then another note calls to match signs in each existing building. Please confirm that in case of conflict, the type, style and color of the signs in each building will govern.	All new signage is to match the type, style and color in each building even if this conflicts with the current campus standards.
27.	<b>Firestop question</b> -Spec 078413 – section 1.6 coordination, line C- states to notify owner's testing agency 7 days in advance of firestop installation. Please provide the contact information for the testing agency, or if this requirement is not applicable.	Third-party observation and testing of firestopping systems is not required. The State Construction Office will review this during overhead inspections. It is both the designers and contractor responsibility that the design is appropriate for the condition and that the codes are met.
28.	<b>Requirement of sleeves</b> through walls etc. – spec 211313 – wet pipe sprinkler, paragraph 3.1 E – states to install sleeves for piping penetrations in walls, floors, and ceilings. We cannot find this requirement for mechanical, plumbing, or electrical, nor for low voltage. Please clarify if sleeves are required for: <ul style="list-style-type: none"> <li>*all penetrations, whether through rated or non-rated systems, or</li> <li>*only required for fire sprinkler piping, or</li> <li>*not required at fire sprinkler nor anywhere else</li> </ul>	<p>Sleeves are required for all locations where telecommunications cabling is routed through any wall whether rated or non-rated.</p> <p>Penetrations for branch circuits and feeders do not require sleeves.</p> <p>All penetrations through rated partitions shall be firestopped in accordance with U.L.</p> <p>For non-rated partitions. Raceways shall be supported per NEC requirements.</p> <p>Contractor shall submit proposed U.L. firestopping details to Engineer for review and approval.</p>
29.	<b>Chase/ Sleeve Locations</b> - Please show on the prints for all the buildings where the chase/sleeve locations are (for backbone cabling from the MDF/IDF between floors) for the purposes of estimating the distances for the fiber and copper backbone cable.	Chase / Sleeve Locations – Have been added to Telecom Room Enlarged plans (700 series drawings) when located within the telecom rooms and to the building floor plans when not located within a telecom room.
30.	<b>Demolishing of existing telecom/ IDF Rooms</b> - Please clarify that UNCC is responsible for moving or demoing existing telecom/IDF rooms where there is existing cabling already in place to make room for the new telecom/IDF rooms.	There is to be no demolition of existing cabling or equipment by any entity during this project. The new work is to be installed in parallel with the existing in order to maintain a fully operational network throughout the duration of the project.
31.	<b>Working Hours</b> - On the prebid agenda working hours were not defined. Please define the working hours. Are classes held in these rooms during the day? Can cable be strung down hallways during the day when students are in the classroom buildings?	Working hours are defined above. Classes will be in session in all but King Building. No activities will be permitted outside the stated work hours.



**Addenda #2: UNCC - CID Phase II Wi-Fi**

32.	<b>Subcontractor Parking</b> – Pre-bid agenda lists Starlight Theater as parking for subs. Is there space for a foreman vehicle to park on campus? Is ALL parking off site? Can one truck per trade park on campus that has miscellaneous parts, etc.?	Parking passes may be purchased from Parking Transportation Services for any vehicles. During the summer (May 11 – August 21). Lot 6 may be used at no additional charge.
33.	<b>HUB</b> - Are main subs required to use HUB subs or suppliers? DO we have to disclose this on our bid form?	No, main subs are not required to use HUB subs or suppliers. The bid form only asks the GC to list their main subcontractors for General, Plumbing, Mechanical and Electrical. However, if one of the main subs happens to be a HUB firm, then the GC would also list the firm on the Identification of HUB Certified/Minority Business Participation form. On single prime projects the GC is required to obtain 10% MBE participation either through subcontractors or suppliers. Subcontractors on single prime projects are not required to have minority participation, however, if they happen to use minority subcontractors or suppliers, they need to submit the Appendix E form with their pay application to the GC so the University can capture that participation.
34.	<b>Fire Alarm Subcontractor</b> - Who is the fire alarm sub on each building, since devices need to move?	Simplex
35.	<b>Demolition</b> - Can demo work in Fretwell (glass block) be done during regular 8-5 hours?	Work will not be permitted outside of the designated hours.
36.	<b>King Building</b> – appears to have spline ceiling that must be taken down for cabling to occur. Ceiling looks to be in marginal shape. Is there a plan to address this if we cannot reinstall properly?	See Bid Alternate #10 and Unit Prices #15.
37.	<b>Demolition</b> – We assume new walls will match existing ie CMU with new CMU, drywall with new drywall. Please confirm.	All new wall construction is to be in accordance with note #4 and #7 on drawing sheet A-001 under <i>Construction Notes</i> . There is no new CMU construction.
38.	<b>After Hours Access</b> - Will UNCC provide after-hours access to the buildings for work after hours, and if so, will security also be provided, and will all workers need to show ID before entering the building?	A set of keys will be signed out to a project representative. Any individuals can request a Contractor ID card than can have access rights assigned. No additional security beyond campus police will be provided. Campus police will be notified of Contractor's work hours so no check-in will be required.
39.	<b>Out Door Project Signs</b> - UNCC normally requires outdoor project signs---could not find this in the spec---is an outdoor construction sign(s) required? If so please include template so we can price properly, one for the project or one sign for each building where work is being done	No outdoor sign will be required for this project.

**Addenda #2: UNCC - CID Phase II Wi-Fi**

40.	<b>Fully Developed Drawings by GC and Subs</b> - General requirements 010000-8 top of the page Paragraph B calls for fully developed coordination drawings by GC and the SUBS. Since this is a recabling project, please clarify this does not apply. We can provide as-builts of the routing of mini – split piping installed.	In lieu of Coordination Drawings, layout drawings shall be submitted to the Engineer for review. Layout drawings shall be drawn to scale and shall indicate major telecommunications pathways and feeder routes for electrical distribution (including pull box locations). Layout drawings shall also show electrical and telecommunications equipment layouts drawn to scale. Layouts for system components that deviate from the Contract Documents are acceptable, but require approval by the Engineer.  Complete As-Builts are required for all disciplines showing all work performed.
41.	<b>Lead abatement</b> – page 6 of the Terracon report indicates lead above acceptable levels in paint on CMU – please clarify if this is to be completely abated, or only for the area affected by demo. Can abatement occur while students are in building?	Abate only where paint will be impacted by anchoring plywood or other attachments. No work of any kind is permitted during operational hours. Work is only permitted during the specified work hours.
42.	<b>Fastening of Rooftop Mini-splits</b> - Mechanical RFI – project calls for fastening the rooftop mini-splits to the “roof”. Please clarify what the design intent is , for attaching the rooftop equipment to each building, so we (mech) can bid properly, and the roofer probably needs to know also	See Addenda #1, Drawing Modifications, Sheets MH104, MH 205, MH304, and MH604.

**ATTACHMENTS:****SPECIFICATIONS**

Form of Proposal

Specification section 12300 – ADD ALTERNATES

Specification section 095113 – Acoustical Panel Ceilings

Specification section 27 05 29 – Hangers and Supports for Communications Systems.

Specification section 27 05 36 – Cables Trays for Communications Systems.

**DRAWINGS**

AE500 - Alternate #2 King Basement, First and Second Floor

T-001 – Telecommunications Symbols and Legends

T-101 – Alternate #4 Cameron First Floor Telecommunications

T-102 – Alternate #4 Cameron Second Floor Telecommunications

T-103 – Alternate #4 Cameron Third Floor Telecommunications

T-201 – Fretwell First Floor Telecommunications

T-202 – Fretwell Second Floor Telecommunications



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## **Addenda #2: UNCC - CID Phase II Wi-Fi**

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T-203 – Fretwell Third Floor Telecommunications  
T-204 – Fretwell Fourth Floor Telecommunications

T-301 – Friday First Floor Telecommunications  
T-302 – Friday Second Floor Telecommunications  
T-303 – Friday Third Floor Telecommunications

T-401 – Alternate #1 Covard North 5000 Level Telecommunications

T-501 – Alternate #2 King Basement and First Floor Telecommunications  
T-502 – Alternate #2 King North Second Level Telecommunications

T-602 – Alternate #3 Smith Second Floor Telecommunications  
T-603 – Alternate #3 Smith Third Floor Telecommunications

T-720 – Fretwell Enlarged Telecommunications Plans  
T-721 – Fretwell Enlarged Telecommunications Plans

T-730 – Friday Enlarged Telecommunications Plans  
T-731 – Friday Enlarged Telecommunications Plans

T-750 – Alternate #3 Smith Enlarged Telecommunications Plans

T-900 – Network Riser Diagram  
T-901 – Alternate #4 Cameron IT Building Riser

Bulletin Drawing – BD-01  
Bulletin Drawing – BD-02  
Bulletin Drawing – BD-03  
Bulletin Drawing – BD-04  
Bulletin Drawing – BD-05  
Bulletin Drawing – BD-06  
Bulletin Drawing – BD-07

**End of Addenda #02**

## FORM OF PROPOSAL

CID Phase II Campus Wifi  
The University of North Carolina at Charlotte  
SCO ID #:13-10724-01A,

Contract: \_\_\_\_\_  
Bidder: \_\_\_\_\_  
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).

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

### **This Multi-Building Telecom Cabling Infrastructure Project**

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

### **University of North Carolina at Charlotte**

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 All work associated with Colvard North Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 2 All work associated with King Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 3 All work associated with Smith Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 4 All work associated with Cameron Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 5 UNC Charlotte Telecommunications Cabling Infrastructure Bid Alternate Specifications List (Owner Preferred Alternate) – Base Bid (Friday Building and Fretwell Building)

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 6 UNC Charlotte Telecommunications Cabling Infrastructure Bid Alternate Specifications List (Owner Preferred Alternate) – Colvard North Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 7 UNC Charlotte Telecommunications Cabling Infrastructure Bid Alternate Specifications List (Owner Preferred Alternate) – King Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 8 UNC Charlotte Telecommunications Cabling Infrastructure Bid Alternate Specifications List  
(Owner Preferred Alternate) – Smith Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 9 UNC Charlotte Telecommunications Cabling Infrastructure Bid Alternate Specifications List  
(Owner Preferred Alternate) – Cameron Building

(Add) \_\_\_\_\_ Dollars (\$)

**GENERAL CONTRACT:**

Alternate No. 10 Alternate 10: Replacement of existing corridor ceilings in King Building. Provide pricing to demolish existing and replace with new 2x2 lay-in acoustical ceiling tile and grid. Ceiling allowance: 3,000 sf. Also see Unit Prices section 3.1.

(Add) \_\_\_\_\_ 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.

Unit Price No. 1: Roof patch per square foot at existing membrane roof:

\$ \_\_\_\_\_ per sq ft.

Unit Price No. 2: Price to patch and repair 8"x8" penetration in existing membrane roof:

\$ \_\_\_\_\_ per penetration.

Unit Price No. 3: Fire seal existing fire rated walls to deck, per linear foot, using rated fire sealant per a UL approved detail:

\$ \_\_\_\_\_ per linear ft.

Unit Price No. 4: Core drill 4" round hole in existing CMU wall.

\$ \_\_\_\_\_ per hole.

Unit Price No. 5: Core drill 4" round hole in existing concrete floor slabs.

\$ \_\_\_\_\_ per hole.

Unit Price No.6: Provide and install a N1B, N2B, N3B, N4B, N9B, N10B, or N11B telecommunication outlet with 125' of CAT 6 cabling. Include boxes and conduits for the outlet.

\$ \_\_\_\_\_ per outlet.

Unit Price No.7: Provide and install a N1D, N2D, N3D, N4D, N9D, N10D, or N11D telecommunication outlet with 125' of CAT 6 cabling. Include boxes and conduits for the outlet.

\$ \_\_\_\_\_ per outlet.

Unit Price No.8: Provide and install a N1F, N2F, N3F, N4F, N6F, N10F, or N11F telecommunication outlet with 125' of CAT 6 cabling. Include boxes and conduits for the outlet.

\$ \_\_\_\_\_ per outlet.

Unit Price No.9: Provide and install a N5B and N6B telecommunication outlet with 125' of CAT 6 cabling. Include boxes, conduit, and 4' of 2 channel wiremold.

\$ \_\_\_\_\_ per outlet.

Unit Price No.10: Provide and install a N5D and N6D telecommunication outlet with 125' of CAT 6 cabling. Include boxes, conduit, and 4' of 2 channel wiremold.

\$ \_\_\_\_\_ per outlet.

Unit Price No.11: Provide and install a N5F and N6F telecommunication outlet with 125' of CAT 6 cabling. Include boxes, conduit, and 4' of 2 channel wiremold.

\$ \_\_\_\_\_ per outlet.

Unit Price No.12: Provide and install a 48 port patch panel.

\$ \_\_\_\_\_ per patch panel.

Unit Price No.13: Provide and install a horizontal cable manager, rack mounted.

\$ \_\_\_\_\_ per horizontal manager.

Unit Cost No.14: Interior Exit Sign Installation Including Labor and Materials to furnish and Install.

\$ \_\_\_\_\_ per sign.

Unit Cost No.15: Cost of demolishing existing ceiling and replacing with 2x2 lay-in tile ceiling grid in King Building corridors. See also Alternate No. 10.

\$ \_\_\_\_\_ per sq. ft.

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**

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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:

By: \_\_\_\_\_

Signature

\_\_\_\_\_  
(Proprietorship or Partnership)

Name: \_\_\_\_\_  
Print or type

Title \_\_\_\_\_  
(Owner/Partner/Pres./V.Pres)

Address \_\_\_\_\_

ATTEST:

\_\_\_\_\_

By: \_\_\_\_\_

License No. \_\_\_\_\_

Title: \_\_\_\_\_  
(Corp. Sec. or Asst. Sec. only)

Federal I.D. No. \_\_\_\_\_

Email Address: \_\_\_\_\_

(CORPORATE SEAL)

Addendum received and used in computing bid:

Addendum No. 1 \_\_\_\_\_ Addendum No. 3 \_\_\_\_\_ Addendum No. 5 \_\_\_\_\_ Addendum No. 6 \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_ Addendum No. 4 \_\_\_\_\_ Addendum No. 6 \_\_\_\_\_ Addendum No. 7 \_\_\_\_\_

## SECTION 012300 – ADD ALTERNATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

#### 1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost for each alternate is the net addition to the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.
  - 3. The Contractor shall review all addenda, drawings, and specifications to fully appraise the extent of each alternate.

#### 1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternates as required to ensure that the Project can be bid within the funds available. This list is provided below:

1. Alternate No. 1 Colvard North Building
  - a. All work for all disciplines related to the Colvard North building.
  - b. Base bid includes No work in Colvard North Building
2. Alternate No. 2 King Building.
  - a. All work for all disciplines related to the King Building.
  - b. Base bid includes No work in King Building
3. Alternate No. 3 Smith Building.
  - a. All work for all disciplines related to the Smith Building.
  - b. Base bid includes No work in Smith Building.
4. Alternate No. 4 Cameron Building.
  - a. All work for all disciplines related to the Smith Building.
  - b. Base bid includes No work in Smith Building.
5. Alternate No. 5: UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification (Owner Preferred Alternate).
  - a. Provide telecommunications hardware and cabling components as indicated in attached document, "UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification List"
  - b. Base Bid Includes: Telecommunications Hardware and Cabling as specified by manufacturers listed as acceptable in the Specifications.
6. Alternate 6: UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification – Colvard North Building.
  - a. Provide telecommunications hardware and cabling components as indicated in attached document, "UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification List"
  - b. Base Bid Includes: Telecommunications Hardware and Cabling as specified by manufacturers listed as acceptable in the Specifications.

7. Alternate 7: UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification – King Buildings.
  - a. Provide telecommunications hardware and cabling components as indicated in attached document, “UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification List”
  - b. Base Bid Includes: Telecommunications Hardware and Cabling as specified by manufacturers listed as acceptable in the Specifications.
8. Alternate 8: UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification – Smith Building.
  - a. Provide telecommunications hardware and cabling components as indicated in attached document, “UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification List”
  - b. Base Bid Includes: Telecommunications Hardware and Cabling as specified by manufacturers listed as acceptable in the Specifications.
9. Alternate 9: UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification – Cameron Building.
  - a. Provide telecommunications hardware and cabling components as indicated in attached document, “UNC Charlotte Telecommunications Cabling List Infrastructure (Bid Alternate) Specification List”
  - b. Base Bid Includes: Telecommunications Hardware and Cabling as specified by manufacturers listed as acceptable in the Specifications.
10. Alternate 10: Replacement of existing corridor in King Building. Provide pricing to demolish existing and replace with new 2x2 lay-in acoustical ceiling tile and grid. Ceiling allowance: 3,000 sf. Also see Unit Prices section 3.1.

Attachment:

**UNC Charlotte Telecommunications Cabling Infrastructure (Bid Alternate) Specifications List**

## SECTION 095113 - ACOUSTICAL PANEL CEILINGS

### 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 acoustical panels and exposed suspension systems for ceilings.
- B. Related Requirements:
  - 1. Section 095123 "Acoustical Tile Ceilings" for ceilings consisting of mineral-base acoustical tiles used with concealed suspension systems, stapling, or adhesive bonding.
- C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
  - 1. Acoustical Panel: Set of 6-inch- (150-mm-) square Samples of each type, color, pattern, and texture.
  - 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- (150-mm-) long Samples of each type, finish, and color.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

#### 1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

## 1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
  - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
  - 2. Smoke-Developed Index: 50] or less.

### 2.2 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations:
  - 1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
  - 2. Suspension System: Obtain each type from single source from single manufacturer.
- B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.
- C. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.
- D. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.

- E. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

## 2.3 ACOUSTICAL PANELS

- A. Basis of design product: Armstrong Cortega square 2x2 lay-in tiles.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Armstrong World Industries, Inc.
  - 2. Chicago Metallic Corporation
  - 3. United States Gypsum (USG) Company
- C. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
  - 1. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
- D. Color: White.
- E. LR: Not less than 0.90.
- F. NRC: Not less than 0.70.
- G. Edge/Joint Detail: Square.
- H. Thickness: 5/8 inch (15 mm).
- I. Modular Size: 24 by 24 inches (610 by 610 mm).

## 2.4 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.
- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
  - 1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
    - a. Type: Postinstalled expansion anchors.
    - b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.

- c. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 Alloy 304 or 316 for bolts; Alloy 304 or 316 for anchor.
  - d. Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B 164 for UNS No. N04400 alloy.
- 2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.
- C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
  - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
  - 2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.
- D. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04-inch- (1-mm-) thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.

## 2.5 METAL SUSPENSION SYSTEM

- A. Basis of design product: Armstrong Prelude XL, 15/16"
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Armstrong World Industries, Inc.
  - 2. Chicago Metallic Corporation
  - 3. United States Gypsum (USG) Company
- C. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 (Z90) coating designation; with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges.
  - 1. Structural Classification: Intermediate-duty system.
  - 2. End Condition of Cross Runners: Override (stepped) type.
  - 3. Face Design: Flat, flush.
  - 4. Cap Material: Steel cold-rolled sheet.
  - 5. Cap Finish: Painted white.



## 2.6 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
  - 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
  - 2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

### 3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
  - 1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.
- B. Suspend ceiling hangers from building's structural members and as follows:
  - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.

2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
  4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
  5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
  6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
  7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
  8. Do not attach hangers to steel deck tabs.
  9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
  10. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
  11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.
  2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. Arrange directionally patterned acoustical panels as follows:
    - a. Install panels with pattern running in one direction parallel to long axis of space.

2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.

#### 3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 27 05 29  
HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS

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
- B. Section 27 00 00 – Communications General
- C. Section 27 05 00 – Common Work Results for Communications
- D. Section 27 05 36 – Cable Trays for Communications Systems
- E. Section 27 11 16 – Communications Cabinets, Racks, Frames, and Enclosures
- F. Section 27 11 19 – Communications Backbone Termination Hardware
- G. Section 27 11 20 – Communications Horizontal Termination Hardware
- H. Section 27 11 23 – Communications Cable Management and Runway
- I. Section 27 13 13 – Communications Copper Backbone Cabling
- J. Section 27 13 23 – Communications Optical Fiber Backbone Cabling
- K. Section 27 15 13 – Communications Horizontal Cabling
- L. Section 27 15 43 – Communications Faceplates and Connectors

1.2 SUMMARY

- A. This Section includes secure support from the building structure for technology items by means of hangers, supports, anchors, sleeves, inserts, seals and associated fastenings.
- B. All support shall utilize threaded fasteners for all technology/attachments
  - 1. Exception:
    - a. Spring steel fasteners may be used in lieu of threaded fasteners only for ¾" raceways above suspended ceilings.
- C. Types of supports, anchors, sleeves and seals specified in this section include the following:
  - 1. C-clamps
  - 2. Clevis hangers
  - 3. Conduit straps

4. I-beam clamps
5. Lead expansion anchors
6. Riser clamps
7. Round steel rods
8. Toggle bolts
9. Wall and floor seals

- D. Supports, anchors, sleeves and seals furnished as part of factory-fabricated equipment, are specified as part of that equipment assembly or as specified in Division 26.

### 1.3 SUBMITTALS

- A. Submit the following in accordance with Conditions of Contract and Supplementary Conditions Specifications Sections.
1. Product Data: Submit manufacturer's data on supporting devices including catalog cuts, specifications, and installation instructions, for each type of support, anchor, sleeve and seal.
  2. Where multiple products are shown on one cut sheet, circle product to be used.
  3. Shop Drawings: Submit dimensioned drawings of fabricated products, indicating details of fabrication and materials.

### 1.4 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in manufacture of supporting devices, of types, sizes, and ratings requires, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Contractor Qualifications: Firm shall have at least 3 years of successful installation experience with projects utilizing electronic/electrical supporting device work similar to that required for this project.
- C. NEC Compliance: Comply with NEC requirements as applicable to construction and installation of supporting devices.
- D. MSS Compliance: Comply with applicable MSS standard requirements pertaining to fabrication and installation practices for pipe hangers and supports.
- E. UL Compliance: Provide components that are UL listed and labeled.
- F. FS Compliance: Comply with Federal Specification FF-S-760 pertaining to retaining straps for conduit, pipe and cable.
- G. Components shall be listed and labeled by ETL, CSA, or other approved, nationally recognized testing and listing agency that provides third-party certification follow-up services.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Major items of equipment shall have manufacturer's name, address and catalog number on a plate securely attached. All equipment or apparatus of any one system must be the product of one manufacturer, or approved equivalent products of a number of manufacturer's that are suitable for use in a unified system.
- B. All materials and equipment for which Underwriter's Laboratories have established standards shall bear a UL label of approval.
- C. Where proprietary names are used, whether or not followed by the words "or as approved", they shall be subject to substitution only as approved by the Architect, Technology Consultant, and Owner.
- D. Where the Contractor proposes substitute equipment, contractor shall submit acceptable evidence to indicate compliance with all requirements of the documents, including performance rating, size and resistance to wear and deterioration equivalent to the specified item. In instances where substituted equipment requires additional material or work beyond that shown or required by the specified item, said additional material or work, shall be the responsibility of this Contractor, regardless of the trade involved.

## PART 3 - EXECUTION

### 3.1 DELIVERY, STORAGE, AND HANDLING

- A. Provide supporting devices that comply with manufacturer's standard materials. Install in accordance with published product information, and as required for a complete installation; and as herein specified. Where more than one type of supporting device meets indicated requirements, selection is Contractor's option.
- B. Install hangers, anchors, sleeves and seals as indicated, in accordance with manufacturer's written instructions and with recognized industry practices to insure supporting devices comply with requirements. Comply with requirements of NEC for installations of supporting devices.
- C. Support all technology cables a minimum of every 4ft. with J-hooks, unless other supports are available.
- D. Coordinate with the building structural system and electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices with other work.
- E. Do not fasten supports to pipes, ducts, mechanical equipment and conduit.
- F. Obtain approval from the Architect before drilling or cutting structural members.
- G. Install surface-mounted cabinets and panels with minimum of four anchors.

### 3.2 MISCELLANEOUS SUPPORTS

- A. Support miscellaneous technology components as required to produce the same structural safety factors as specified for raceway supports. Install metal channel racks for mounting cabinets, panels, control enclosures, pull boxes, junction boxes and other devices.

### 3.3 FASTENING

- A. Unless otherwise indicated, fasten technology items and their supporting hardware securely to the building structure, including but not limited to conduits, raceways, cables, cable trays, cabinets, panels, boxes and control components in accordance with the following:
  - 1. Fasten by means of wood screws or screw-type nails on wood, toggle bolts on hollow masonry units, concrete inserts or expansion bolts on concrete or solid masonry, and machine screws, welded threaded studs, or spring-tension clamps on steel. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts and machine or wood screws. Do not weld conduit, pipe straps, or items other than threaded studs to steel structures. In partitions of light steel construction, use sheet metal screws.
- B. Holes cut into reinforced concrete beams or in concrete shall not cut reinforcing bars. If the Contractor cuts into any reinforcing bars, stop work and notify the Technology Consultant immediately. Fill all holes that are not used.
- C. Ensure that the load applied to any fastener does not exceed 25% of the proof test load. Use vibration-and shock-resistant fasteners for attachments to concrete slabs.

### 3.4 TESTS

- A. Test pull-out resistance of one of each type, size and anchorage material for the following fastener types:
  - 1. Expansion anchors.
  - 2. Toggle bolts.
  - 3. Powder-driven threaded studs.
- B. Provide all jacks, jigs, fixtures, and calibrated indicating scales required for reliable testing. Obtain and submit the Structural Engineer's signed approval before transmitting loads to the structure. Test to 90% of rated proof load for fastener. If fastening fails test, revise all similar fastener installations and retest until satisfactory results are achieved.

END OF SECTION 27 05 29

SECTION 27 05 36  
CABLES TRAYS FOR COMMUNICATIONS SYSTEMS

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
- B. Section 27 00 00 – Communications General
- C. Section 27 05 00 – Common Work Results for Communications
- D. Section 27 05 29 – Hangers and Supports for Communications Systems
- E. Section 27 11 16 – Communications Cabinets, Racks, Frames, and Enclosures
- F. Section 27 11 19 – Communications Backbone Termination Hardware
- G. Section 27 11 20 – Communications Horizontal Termination Hardware
- H. Section 27 11 23 – Communications Cable Management and Runway
- I. Section 27 13 13 – Communications Copper Backbone Cabling
- J. Section 27 13 23 – Communications Optical Fiber Backbone Cabling
- K. Section 27 15 13 – Communications Horizontal Cabling
- L. Section 27 15 43 – Communications Faceplates and Connectors

1.2 SECTION INCLUDE

- A. Continuous, rigid, welded steel or stainless steel wire mesh cable management system.
- B. Cable tray systems are defined to include, but are not limited to, straight sections, supports and accessories.
- C. References:
  - 1. IEC 61537 (2001) - Cable Tray Systems and Cable Ladder Systems for Cable Management
  - 2. NEMA VE 1-2002/CSA C22.2 No. 126.1-02 - Metal Cable Tray Systems
  - 3. ANSI/NFPA 70 (2005) - National Electrical Code (NEC)
  - 4. TIA 569-A (1998) - Commercial Building Standard for Telecommunications Pathways & Spaces
  - 5. ASTM A 510 - Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel



6. ASTM A 380 - Specification for Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems
7. ASTM B 633 - Specification for Electrodeposited Coatings of Zinc on Iron and Steel
8. ASTM A 123 - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
9. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality

### 1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data sheets for cable tray indicating dimensions, materials, and finishes, including UL Classification and NEMA/CSA Certification.
- B. Shop Drawings: Submit shop drawings indicating materials, finish, dimensions, accessories, layout, supports, splices, and installation details.
- C. Design Calculations: Verify loading capacities for supports.
- D. Coordination Drawings: Include floor plans and sections drawn to scale. Include scaled cable tray layout and relationships between components and adjacent structural and mechanical elements. Data presented on these drawings are as accurate as preliminary surveys and planning can determine. Field verification of all dimensions, routing, etc., is directed.
- E. Factory-certified test reports of specified products, complying with IEC 61537, NEC, and NEMA VE 1/CSA C22.2 No. 126.1.
- F. Submit manufacturer's certification indicating ISO 9001 quality certified.
- G. Submit training procedure for certifying cable tray installers.

### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain cable tray components through one source from a single manufacturer.
- B. Approval and Labeling: Provide cable trays and accessories specified in this Section that are approved and labeled.
  1. The Terms "Classified" pertaining to cable trays (rather than "Listed") and "Labeled": As defined in NFPA 70, Article 100, including painted trays.
  2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
- C. Comply with NFPA 70, National Electrical Code, Article 392: Cable Trays; provide UL Classification and labels.
- D. Comply with IEC 61537, Cable Tray Systems and Cable Ladder Systems for Cable Management.
- E. Comply with NEMA VE 1/CSA C22.2 No. 126.1, Metal Cable Tray Systems, for materials, sizes, and configurations; provide CSAus Certificate and labels.

- F. Provide documentation of the following certifications:
1. ISO 9001 quality certification.
  2. American Bureau of Shipping (ABS) Product Design Assessment certification.
  3. E 90 Fire Testing certification.
  4. VDE certification.

## 1.5 COORDINATION

- A. Coordinate layout and installation of cable tray with other installations.
1. Revise locations and elevations from those indicated as required to suit field conditions and as approved by the Architect.
  2. Storage and Handling: Avoid breakage, denting and scoring finishes. Damaged products will not be installed. Store cable trays and accessories in original cartons and in clean dry space; protect from weather and construction traffic. Wet materials will be unpacked and dried before storage.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS: Subject to compliance with requirements, provide products by the following:

- A. Cablofil, Inc., 8319 State Route 4, Mascoutah, IL, 62258. Phone: (618) 566-3230. Toll-Free: (800) 658-4641. Fax: (618) 566-3250. Website: [www.cablofil.com](http://www.cablofil.com). Email: [Info@cablofil.com](mailto:Info@cablofil.com).

### 2.2 MATERIALS AND FINISHES:

- A. Cable Tray Materials: select one of the following:
1. Carbon steel wire, ASTM A 510, Grade 1008. Wire welded, bent, and surface treated after manufacture.
- B. Cable Tray Finishes:
1. Finish for Carbon Steel Wire after welding and bending of mesh; select one of the following:
    - a. Electrodeposited Zinc Plating: ASTM B 633, Type III, SC-1.
  2. Finish for Stainless Steel Wire: According to ASTM B 380.
- C. Cable tray will consist of continuous, rigid, welded steel wire mesh cable management system, to allow continuous ventilation of cables and maximum dissipation of heat, with UL Classified splices where tray(including UL Classified painted tray) acts as Equipment Grounding Conductor (EGC). Wire mesh cable tray will have continuous Safe-T-Edge T-welded top side wire to protect cable insulation and installers.
- D. Provide splices, supports, and other fittings necessary for a complete, continuously grounded system.
1. Straight Section Lengths: 120 inches (3,000 mm).
  2. Wire Diameter: Patented design includes varying wire sizes to meet application load requirements; to optimize tray strength; and to allow tray to remain lightweight.

3. Safe-T-Edge: Patented Safe-T-Edge technology on side wire to protect cable insulation and installers' hands.
4. Fittings: Wire mesh cable tray fittings are field-fabricated from straight tray sections, in accordance with manufacturer's instructions and Item 2.3.
5. Flextray Cable Tray Size:
  - a. Depth: Cable tray depth will be 4 inches:
  - b. Width: Cable tray width will be 6, 8, 12, 16, 18, 20 & 24 inches (unless otherwise shown on drawings):
  - c. Length: Cable tray section length will be 120 inches (3000mm) unless otherwise shown on drawings.
  - d. Fill Ratio: Cable tray may be filled to total fill capacity per NEC. Minimum 40% spare capacity recommended accommodates future cabling changes or additions.
  - e. Load Span Criteria:
    - 1) Cable tray will be capable of carrying a uniformly distributed load of 50 pounds per foot on an 8 ft support span, according to load tests of standard shown in Item A above.
6. Cablofil cable basket/tray part numbers:
  - a. CF 105/150: 4 inches height x 6 inches width x 120 inches length
  - b. CF 105/200: 4 inches height x 8 inches width x 120 inches length
  - c. CF 105/300: 4 inches height x 12 inches width x 120 inches length
  - d. CF 105/450: 4 inches height x 18 inches width x 120 inches length
  - e. CF 105//500: 4 inches height x 20 inches width x 120 inches length
  - f. CF 105/600: 4 inches height x 24 inches width x 120 inches length
  - g. Or Approved Equals

## 2.3 CABLE TRAY SUPPORTS & ACCESSORIES

- A. Fittings/Supports: Wire mesh cable tray fittings are field-fabricated from straight tray sections, in accordance with manufacturer's instructions. Supports will include the FAS (Fast Assembly System) where possible so that screws, bolts, and additional tools are not required for cable tray mounting; installation time is reduced; and tray path can adapt to installation obstacles without the need for additional parts. Place supports so that support span does not exceed that shown on the drawings.
1. FAS system support methods to mount from ceiling and wall structures with 1/4", 3/8" or 5/8" threaded rod, where applicable
  2. Splices including those approved for electrical continuity (bonding), as recommended by cable tray manufacturer. Select one of the following splicing methods, if applicable:
    - a. UL: Classified FTSTLC Tab-Loc Connectors: No hardware required
    - b. UL Classified FTSCH: Connecting Hardware Swaged set for splicing, turns, bends and tees
    - c. UL Classified SPLICE BAR Universal Splice Bar: Cut & bend to fit any configuration
    - d. Preclick Splice: Bolted connection optional
    - e. UL Classified FTSBK Splice Plate: Bolted connection
    - f. UL Classified CE 25 & CE 30 Square Splice Washers: Use with EZ BN 1/4" Nut & Bolt
    - g. UL Classified CE 40 Square Splice Washer: Use with EZ BN 1/4" to splice trays on bends, adjustable tees
    - h. FASLock Splice: For sweeps and bends with tray 12" (300mm) and wider.
    - i. UL Classified 90 DEGREEKIT: For Tees and 90s

- j. UL Classified RADT90 kit: For 5-1/2" radius Tees and 90s
- k. Cable Routing Accessories:
  - 1) Dropout: Bolt to tray; slotted design.
  - 2) Cablexit: No additional hardware needed.
- l. GROUND BOLT: Grounding Clamp to ground cable tray.

## 2.4 EQUIPMENT GROUNDING CONDUCTOR FUNCTION & GROUNDING

- A. UL Classified cable trays (including painted tray) may act as Equipment Grounding Conductors.
  - 1. Use UL Classified splicing methods to ensure cable tray is electrically continuous and bonded as recommended by COOPER B-Line.
    - a. Ground cable trays at each joining section and end of continuous run.
  - 2. Test cable tray system per NFPA70B, Chapter 18 to verify grounding less than 1 ohm.
  - 3. Ground cable trays against fault current, noise, lightning, and electromagnetic interference by mounting grounding wire to each 10' cable tray section with grounding clamp. COOPER B-Line GROUND BOLT.

## PART 3 - EXECUTION

### 3.1 EXAMINATION:

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of cable trays. Do not proceed with installation until unsatisfactory conditions have been corrected.

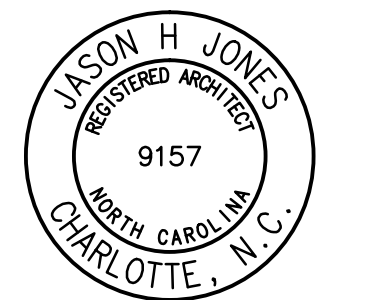
### 3.2 INSTALLATION

- A. Install cable tray level and plumb according to manufacturer's written instructions, Coordination Drawings, original design, and referenced standards.
  - 1. Cutting: Field-fabricate changes in direction & elevation by cutting & bending cable tray.
    - a. Cut cable tray wires in accordance with manufacturer's instructions.
    - b. Cable tray wires must be cut with side-action bolt cutters with offset head to ensure integrity of protective galvanic layer.
    - c. Remove burrs and sharp edges from cable trays.
  - 2. Certified Installers: Cable tray installers must have successfully completed Manufactures Certified Installer program.

END OF SECTION 27 05 36



NC ENGINEERING LICENSE #: C-1028



**UNC CHARLOTTE**  
SCO ID #: 13-10724-01A  
CODE: 41326  
ITEM: 307  
BID DOCUMENTS

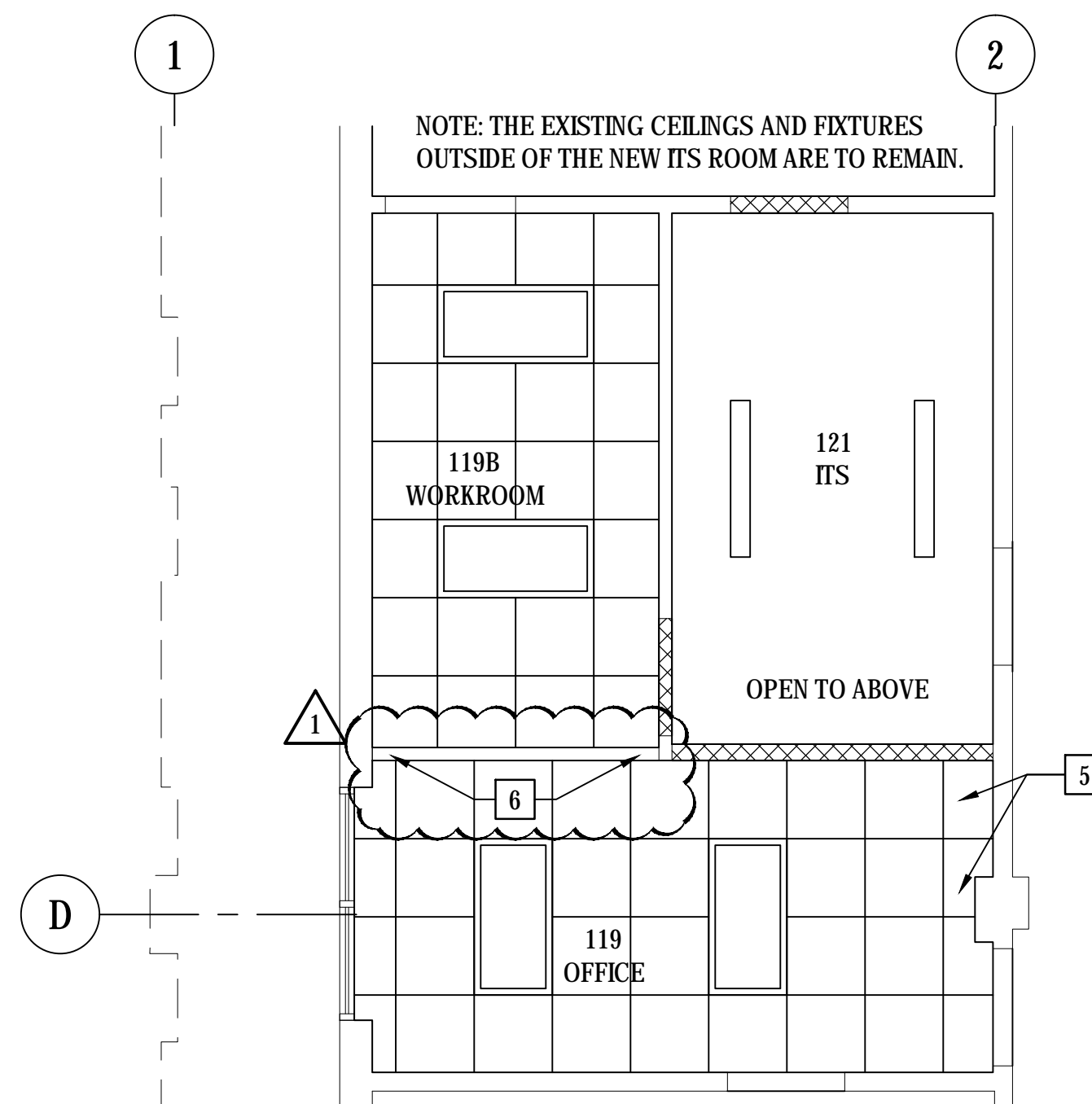
UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH

9201 UNIVERSITY CITY BOULEVARD, CHARLOTTE, NC 28223

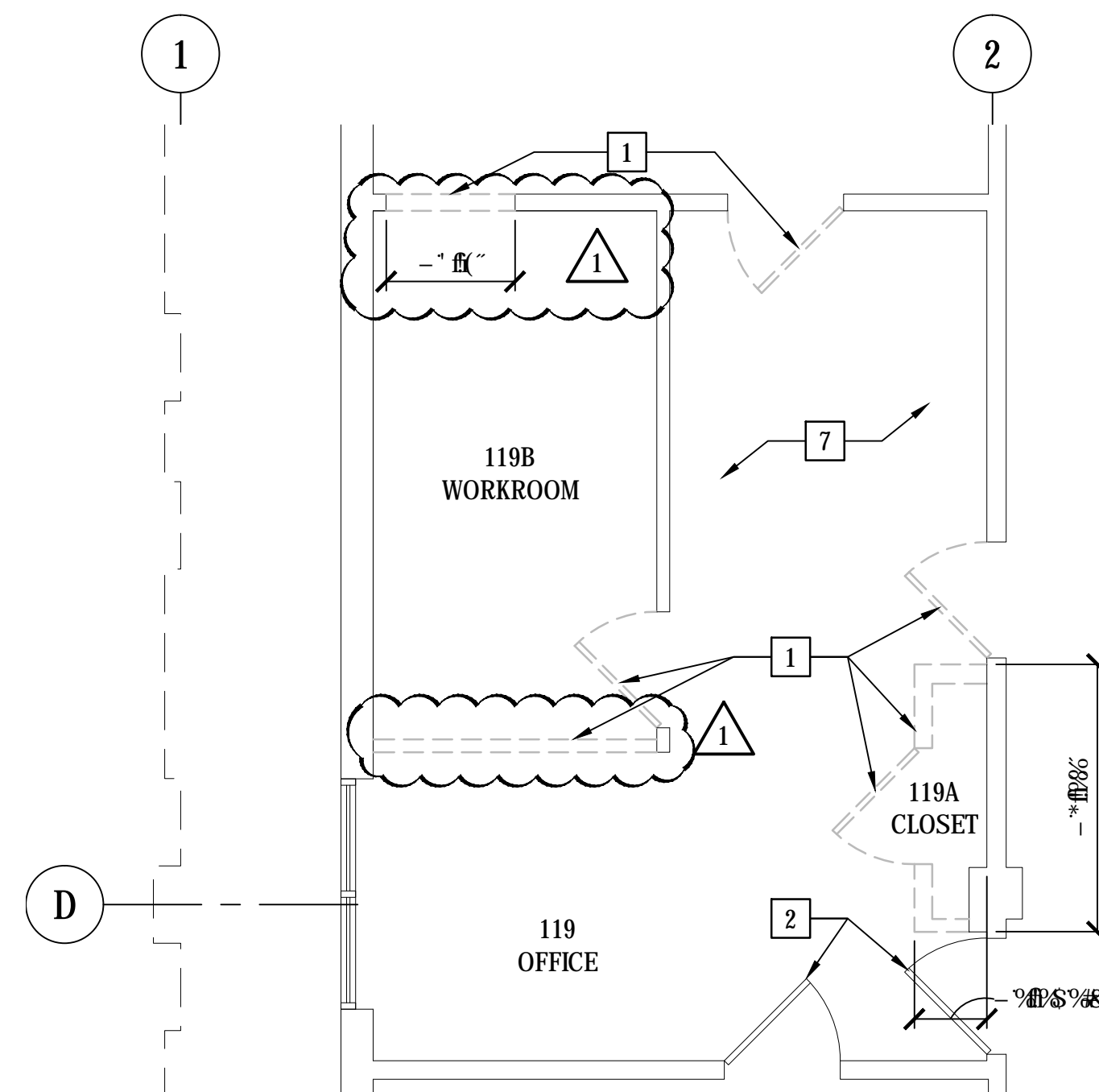
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DATE: 3/31/2015  
DESIGN: KSB  
DRAWN: KSB  
REVIEW: JHJ  
REVISIONS  
No. Date Description By  
1 4/23/2015 ADDENDUM 2

ALTERNATE #2  
KING BASEMENT,  
FIRST & SECOND  
FLOOR PLANS

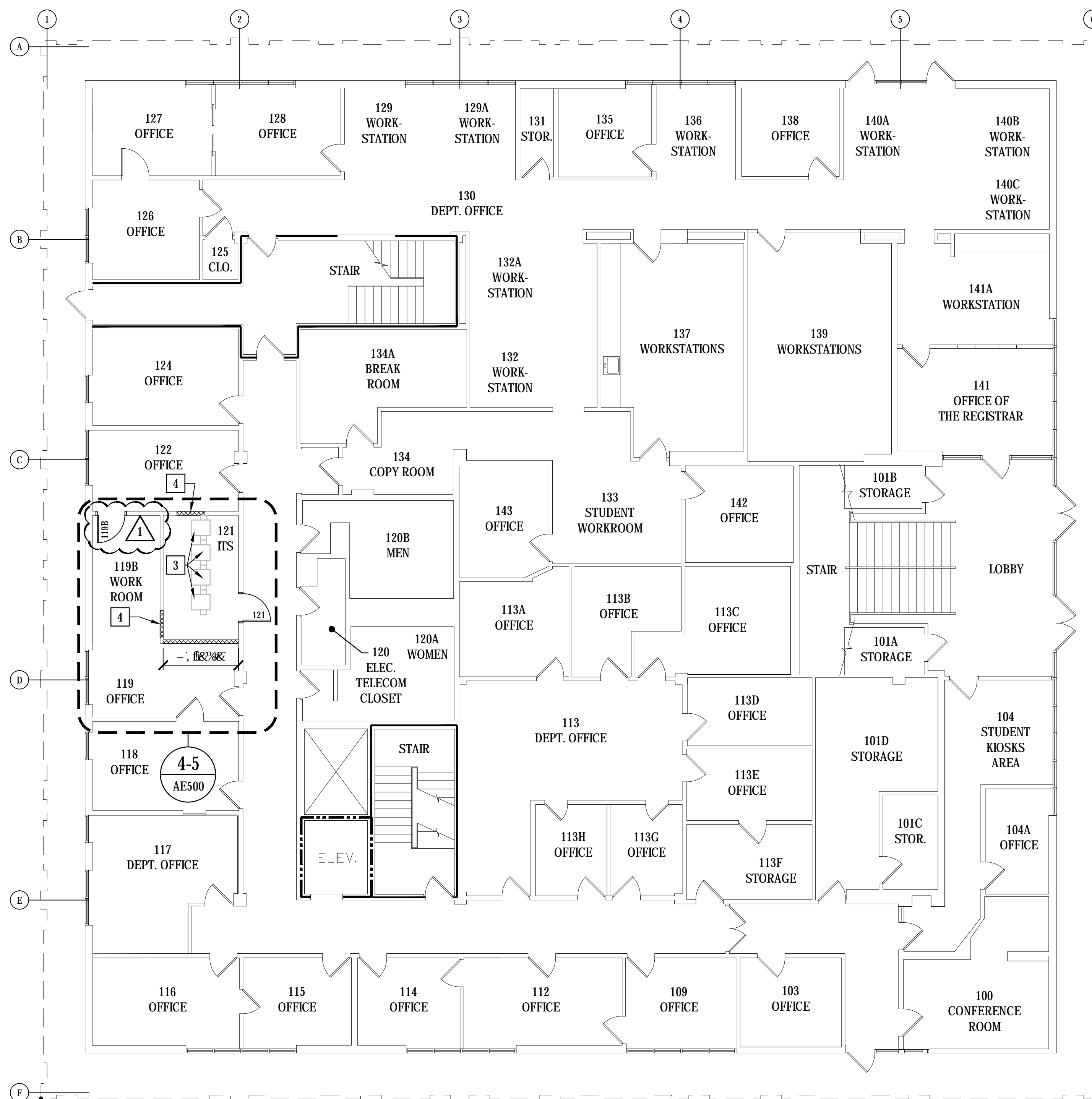
AE500



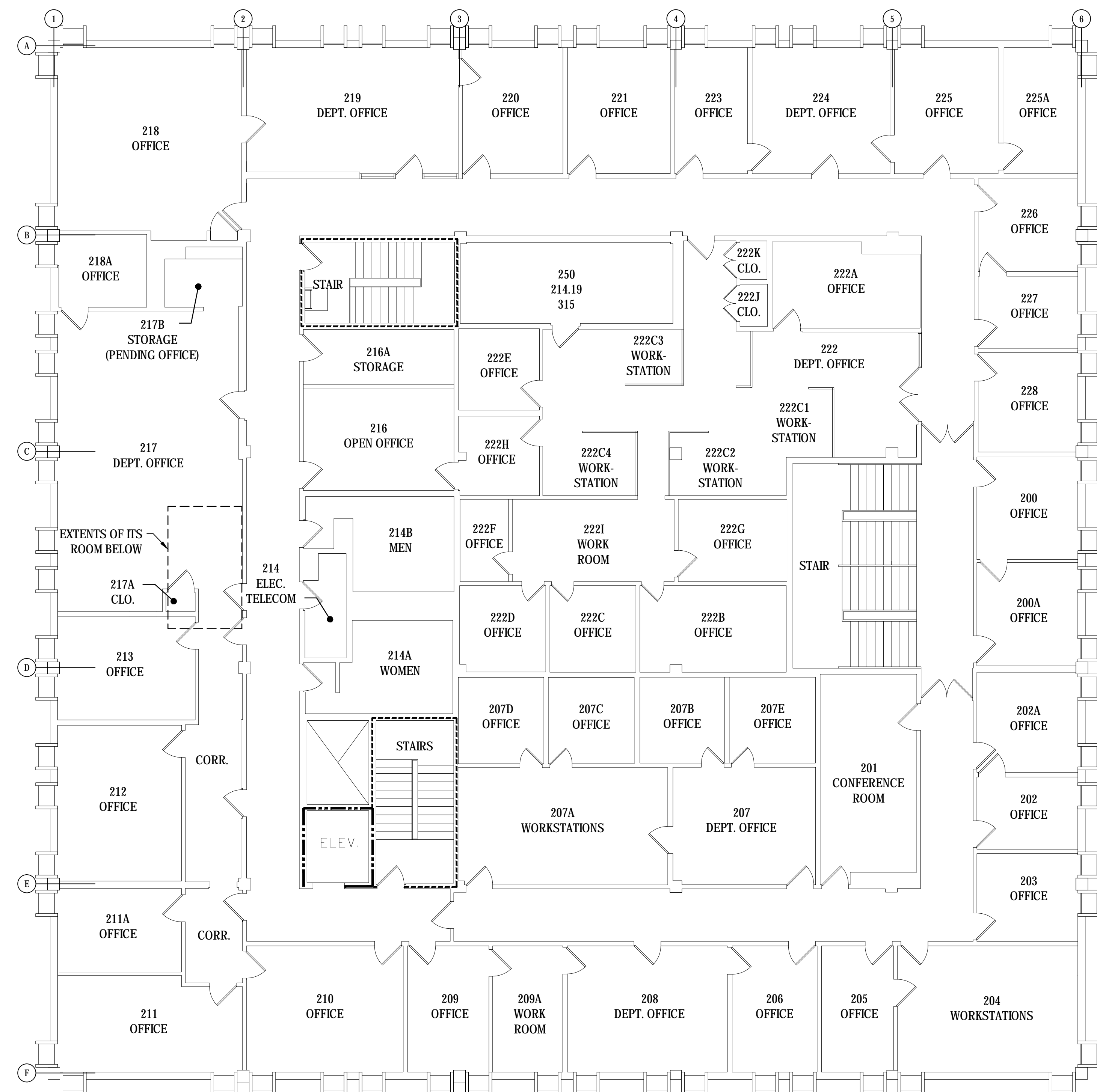
5 REFLECTED CEILING PLAN  
1/4"=1'-0"



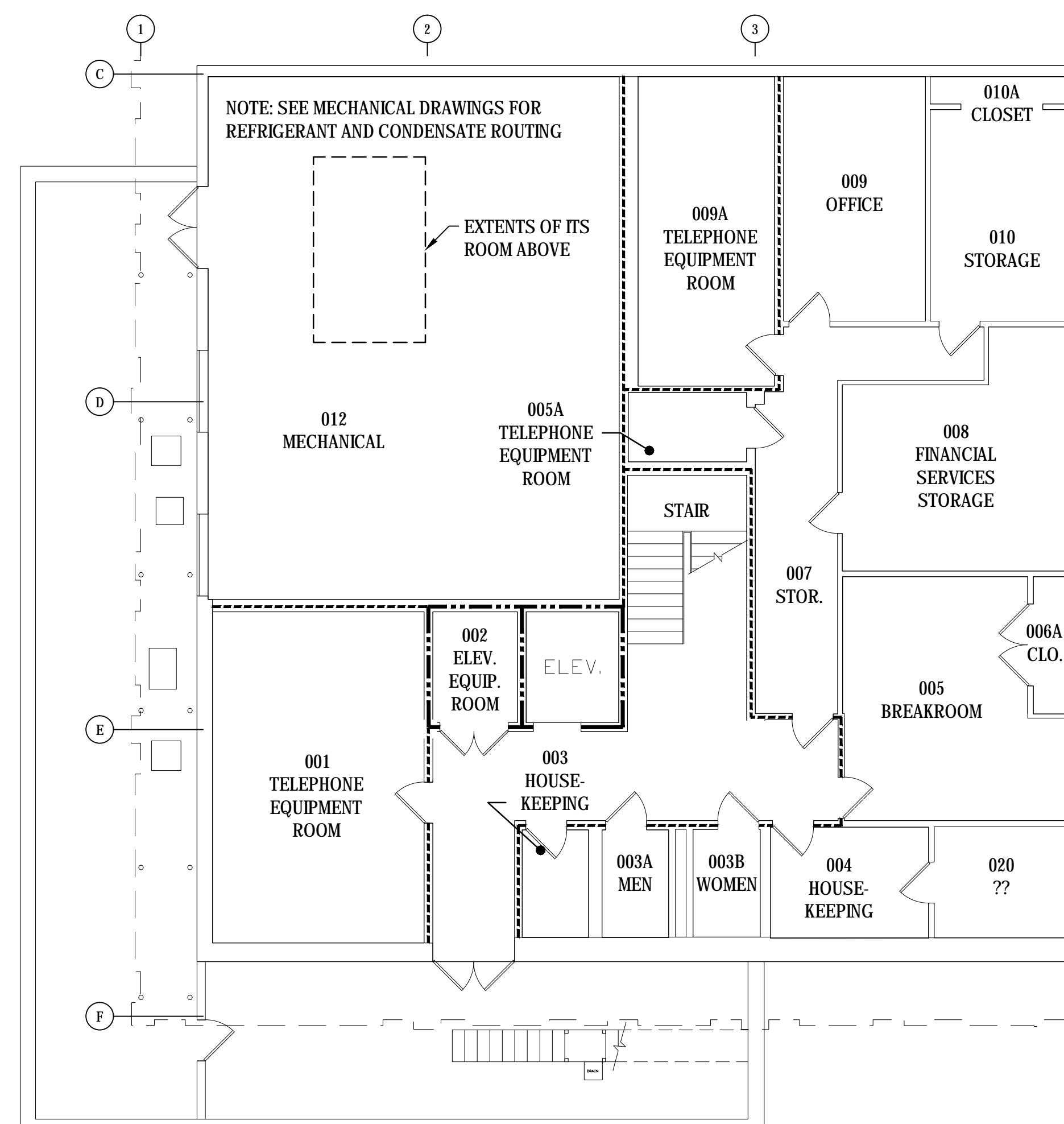
4 DEMOLITION PLAN  
1/4"=1'-0"



2 ALTERNATE #2 KING - FIRST FLOOR PLAN  
1/8"=1'-0"



3 ALTERNATE #2 KING - SECOND FLOOR PLAN - FOR INFORMATION ONLY  
1/8"=1'-0"



1 ALTERNATE #2 KING - BASEMENT PLAN  
1/8"=1'-0"

SEE SHEET A-001 FOR GENERAL DEMOLITION AND CONSTRUCTION NOTES

## KEYNOTE LEGEND

- 1 REMOVE WALL/DOOR/FRAME INDICATED WITH DASHED LINES.
- 2 EXISTING DOOR & HARDWARE TO REMAIN
- 3 CABLING/EQUIPMENT RACK - SEE TELECOM SHEETS
- 4 INFILL DOOR OPENING WITH NEW WALL CONSTRUCTION. FINISH TO MATCH EXISTING WALL.
- 5 INFILL CEILING AREA WHERE CLOSET WALLS WERE REMOVED.
- 6 GYPSUM BULKHEAD 6" BELOW CEILING.
- 7 REMOVE EXISTING CEILING GRID, TILES, AND TWO LIGHT FIXTURES IN THE AREA THAT IS TO BE THE NEW ITS ROOM

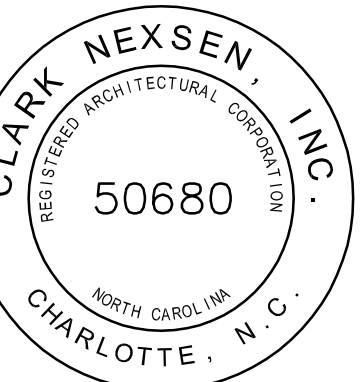
WALL RATINGS LEGEND  
===== EXISTING 1-HOUR RATED FIRE PARTITION  
----- EXISTING 2-HOUR RATED FIRE BARRIER  
===== NEW 1-HOUR RATED PARTITION

PROJECT  
NORTH  
MAGNETIC  
NORTH









NC ENGINEERING LICENSE # C-1026



**UNC CHARLOTTE**  
SCO ID #: 13-10724-01A  
CODE: 41326  
ITEM: 307  
BID DOCUMENTS

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FRETWELL, FRIDAY, KING, & SMITH

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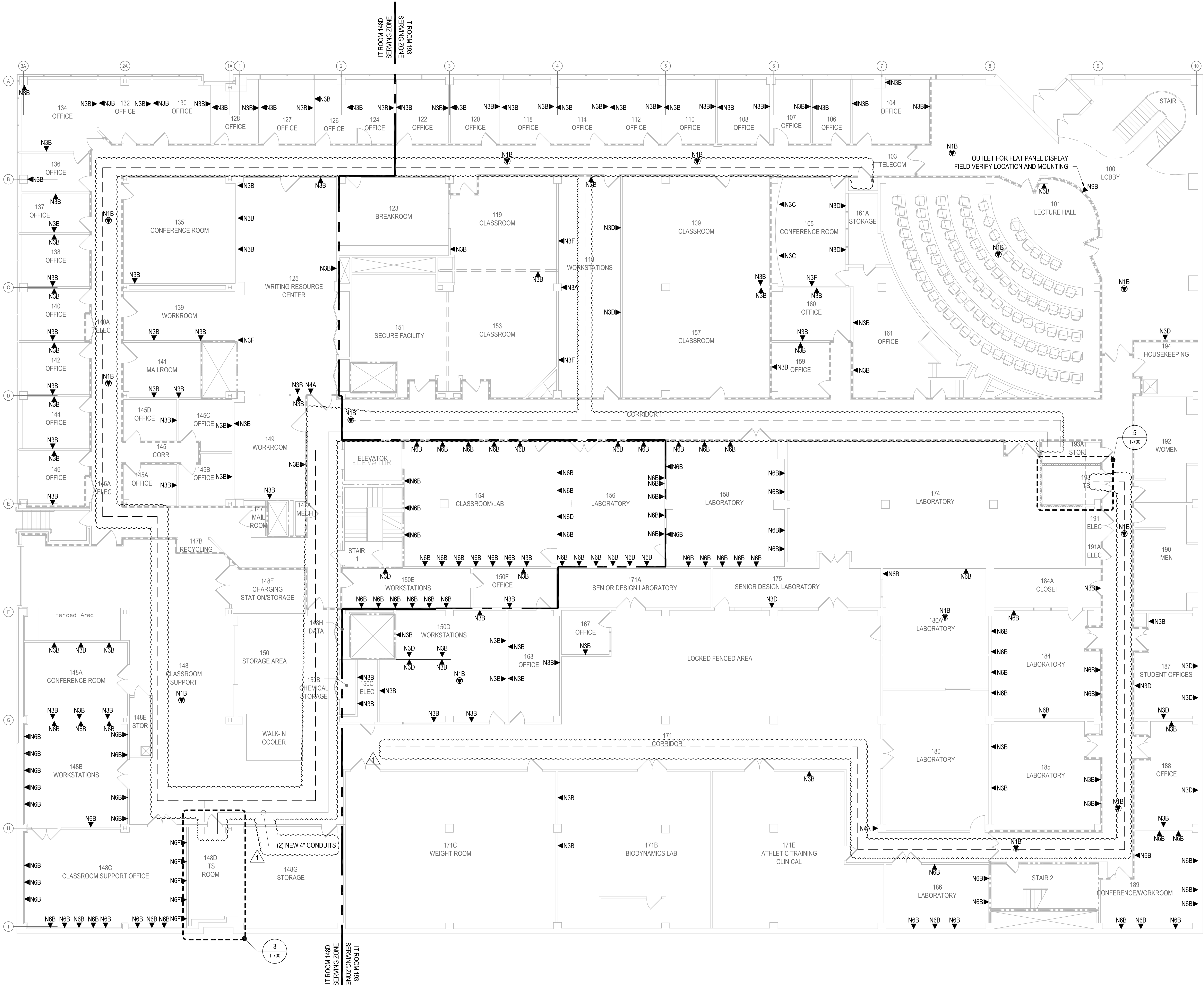
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DATE: 3/31/2015  
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REVISIONS  
No. Date Description By  
1 2015-04-23 BID ADDENDUM #2

ALTERNATE #4  
CAMERON  
FIRST FLOOR  
TELECOMMUNICATIONS

T-101

WALL RATINGS LEGEND

- EXISTING 1-HOUR RATED FIRE PARTITION
- EXISTING 2-HOUR RATED FIRE BARRIER
- NEW 1-HOUR RATED PARTITION



TELECOMMUNICATIONS - CAMERON - 1ST LEVEL  
SCALE: 1/8"=1'-0"





NC ENGINEERING LICENSE # C-1026



**UNC CHARLOTTE**  
SCO ID #: 13-10724-01A  
CODE: 41326  
ITEM: 307  
BID DOCUMENTS

UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS W-LFI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH

9201 UNIVERSITY CITY BOULEVARD, CHARLOTTE, NC 28223

CN NO: 5462  
DATE: 3/31/2015  
DESIGN: PB  
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REVIEW: PP

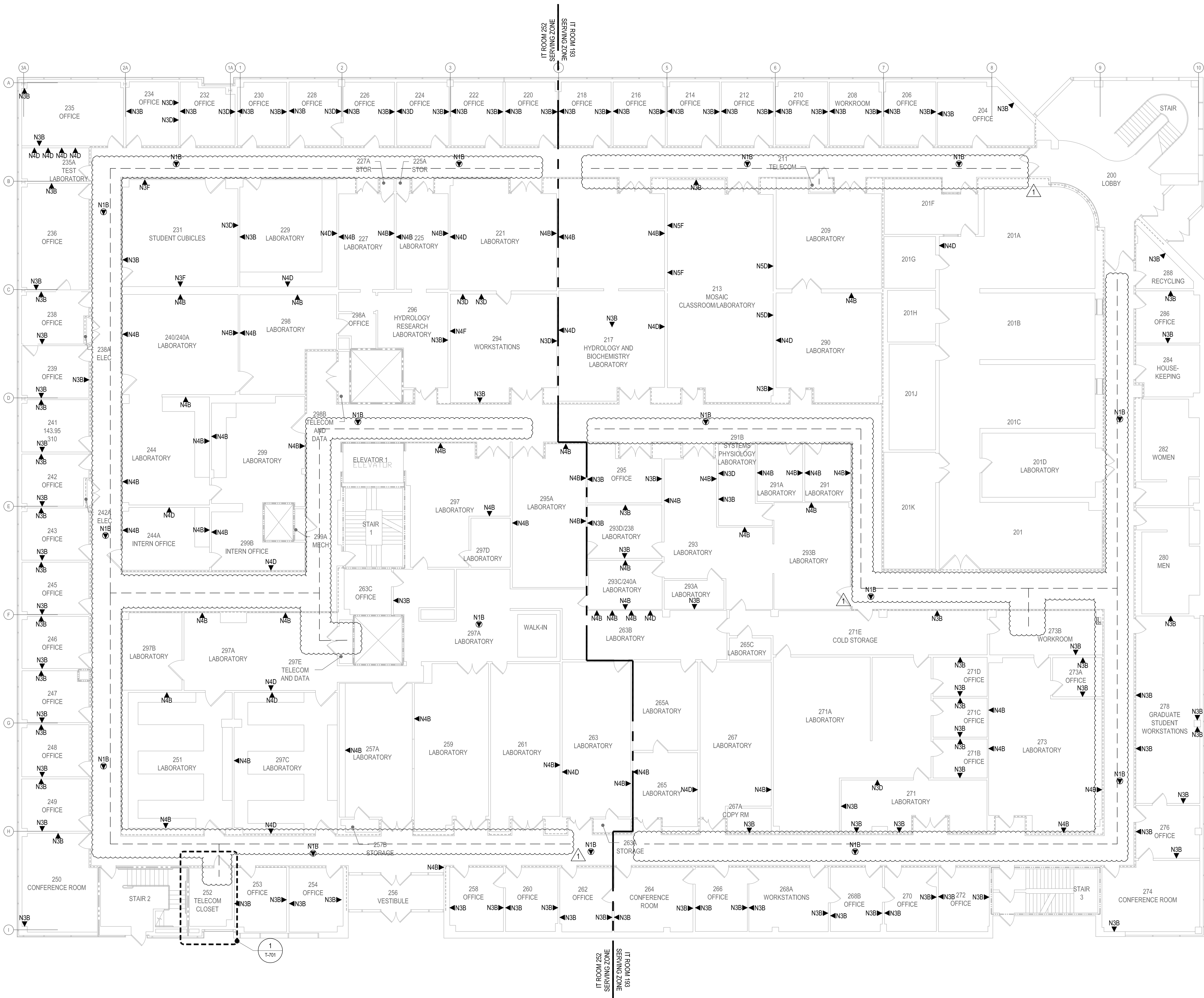
REVISIONS  
No. Date Description By  
1 2015-04-23 BID ADDENDUM #2

ALTERNATE #4  
CAMERON  
SECOND FLOOR  
TELECOMMUNICATIONS

T-102

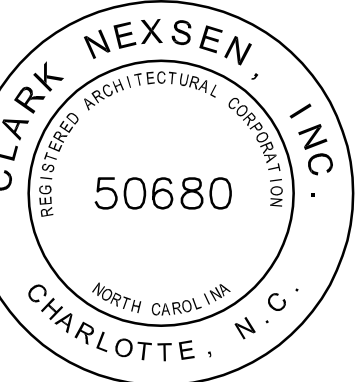
WALL RATINGS LEGEND

- EXISTING 1-HOUR RATED FIRE PARTITION
- EXISTING 2-HOUR RATED FIRE BARRIER
- NEW 1-HOUR RATED PARTITION



TELECOMMUNICATIONS - CAMERON - 2ND LEVEL  
SCALE: 1/8"=1'-0"





NC ENGINEERING LICENSE # C-1026

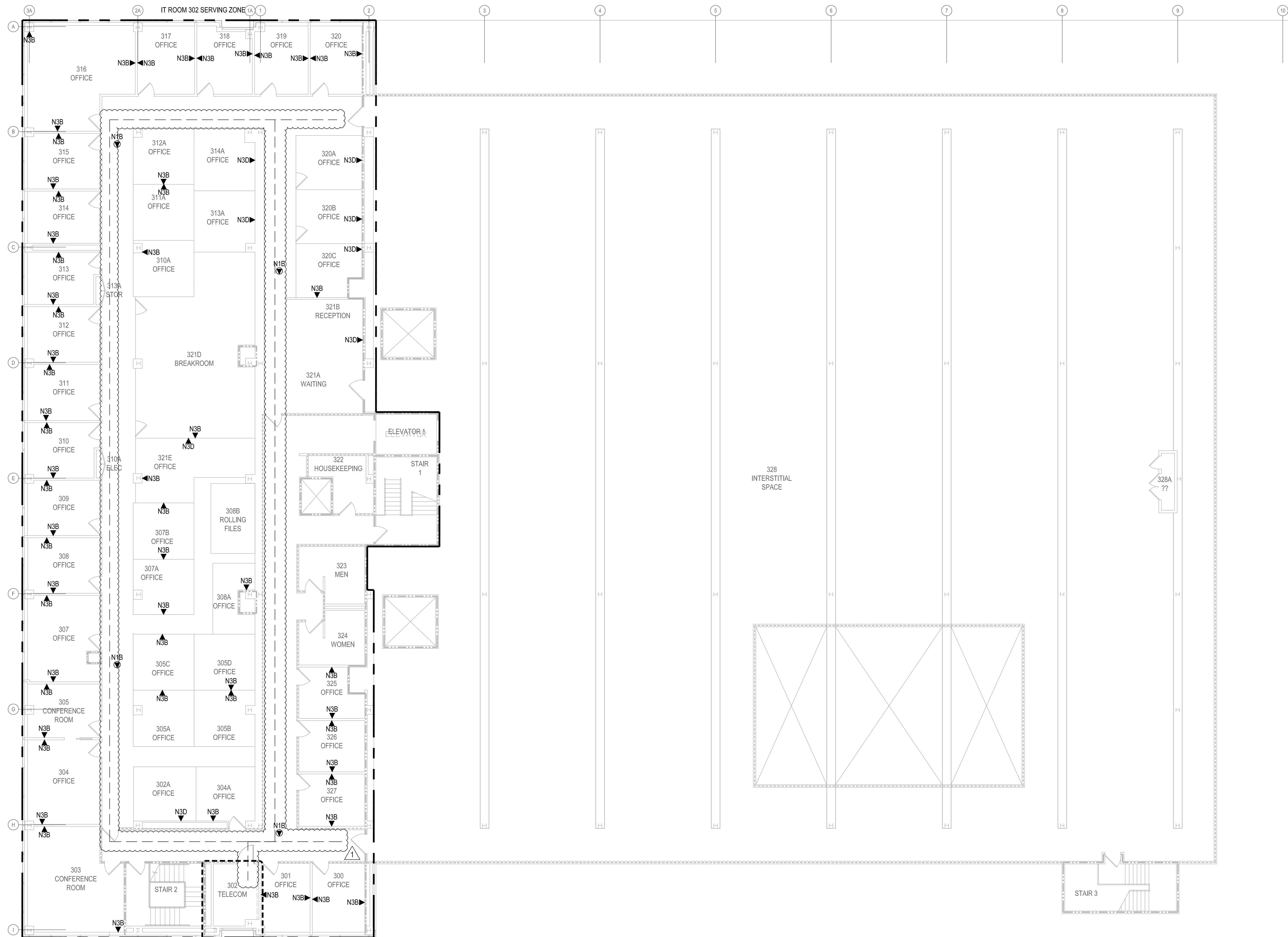


UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH  
9201 UNIVERSITY CITY BOULEVARD, CHARLOTTE, NC 28223

CN NO: 5462  
DATE: 3/31/2015  
DESIGN: PB  
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REVIEW: PP  
REVISIONS  
No. Date Description By  
1 2015-04-23 BID ADDENDUM #2

ALTERNATE #4  
CAMERON  
THIRD FLOOR  
TELECOMMUNICATIONS

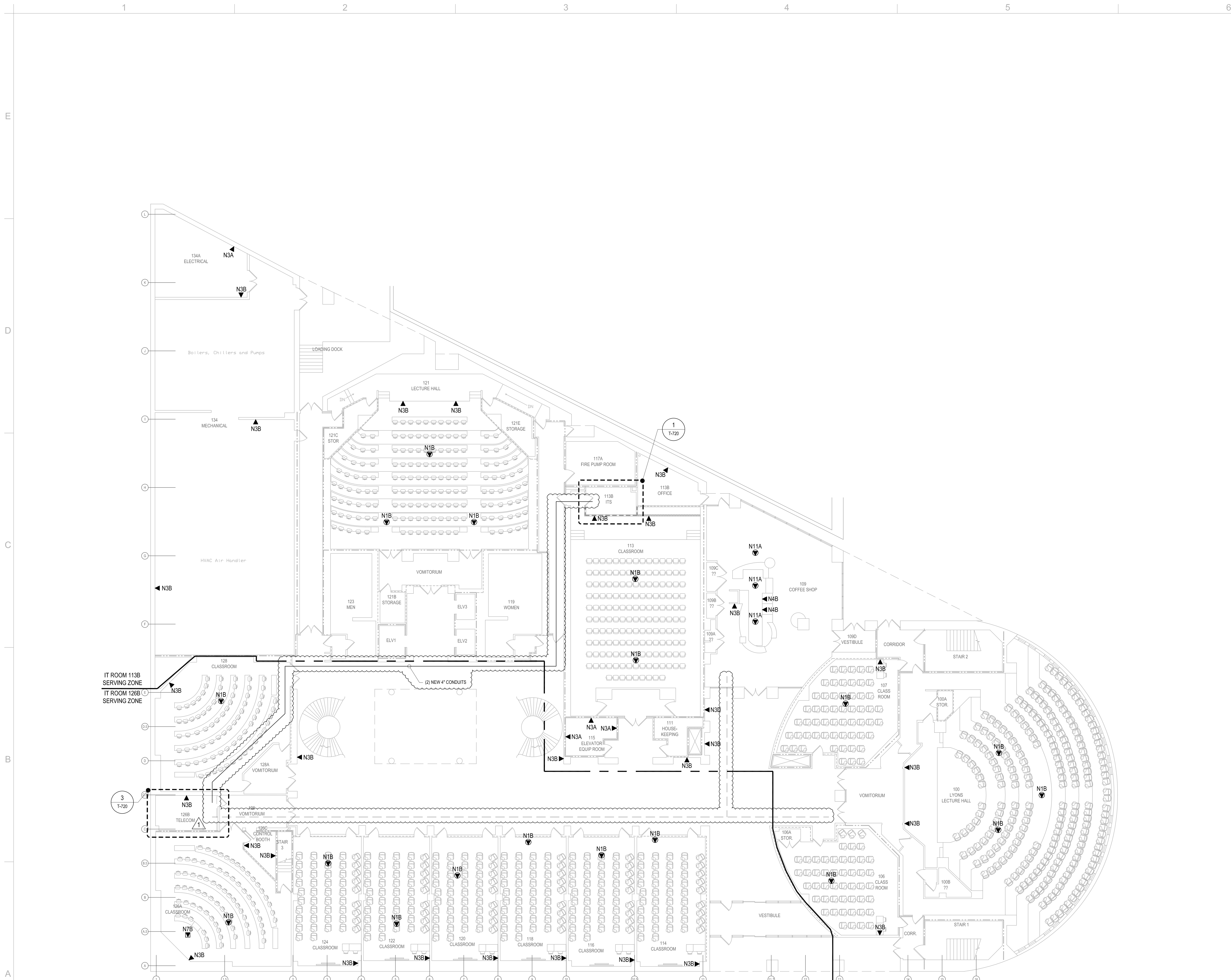
T-103



TELECOMMUNICATIONS - CAMERON - 3RD LEVEL  
SCALE: 1/8"=1'-0"

WALL RATINGS LEGEND  
--- EXISTING 1-HOUR RATED FIRE PARTITION  
==== EXISTING 2-HOUR RATED FIRE BARRIER  
- - - - NEW 1-HOUR RATED PARTITION





TELECOMMUNICATIONS - FRETWELL - 1ST LEVEL  
SCALE: 3/32"=1'-0"

WALL RATINGS LEGEND		
	EXISTING 1-HOUR RATED FIRE PARTITION	
	EXISTING 2-HOUR RATED FIRE BARRIER	
	NEW 1-HOUR RATED PARTITION	

1523 ELIZABETH AVENUE  
SUITE 300  
CHARLOTTE, NC 28204  
704-377-8800 FAX 704-358-1037  
WWW.CLARKNEXSEN.COM



NC ENGINEERING LICENSE # C-1026



UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH

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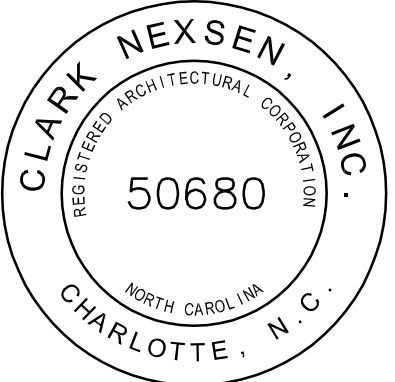
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DESIGN: PB  
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REVIEW: PP

REVISIONS		
No.	Date	Description
1	2015-04-23	BID ADDENDUM #2

FRETWELL  
FIRST FLOOR  
TELECOMMUNICATIONS

T-201





NC ENGINEERING LICENSE # C-1026



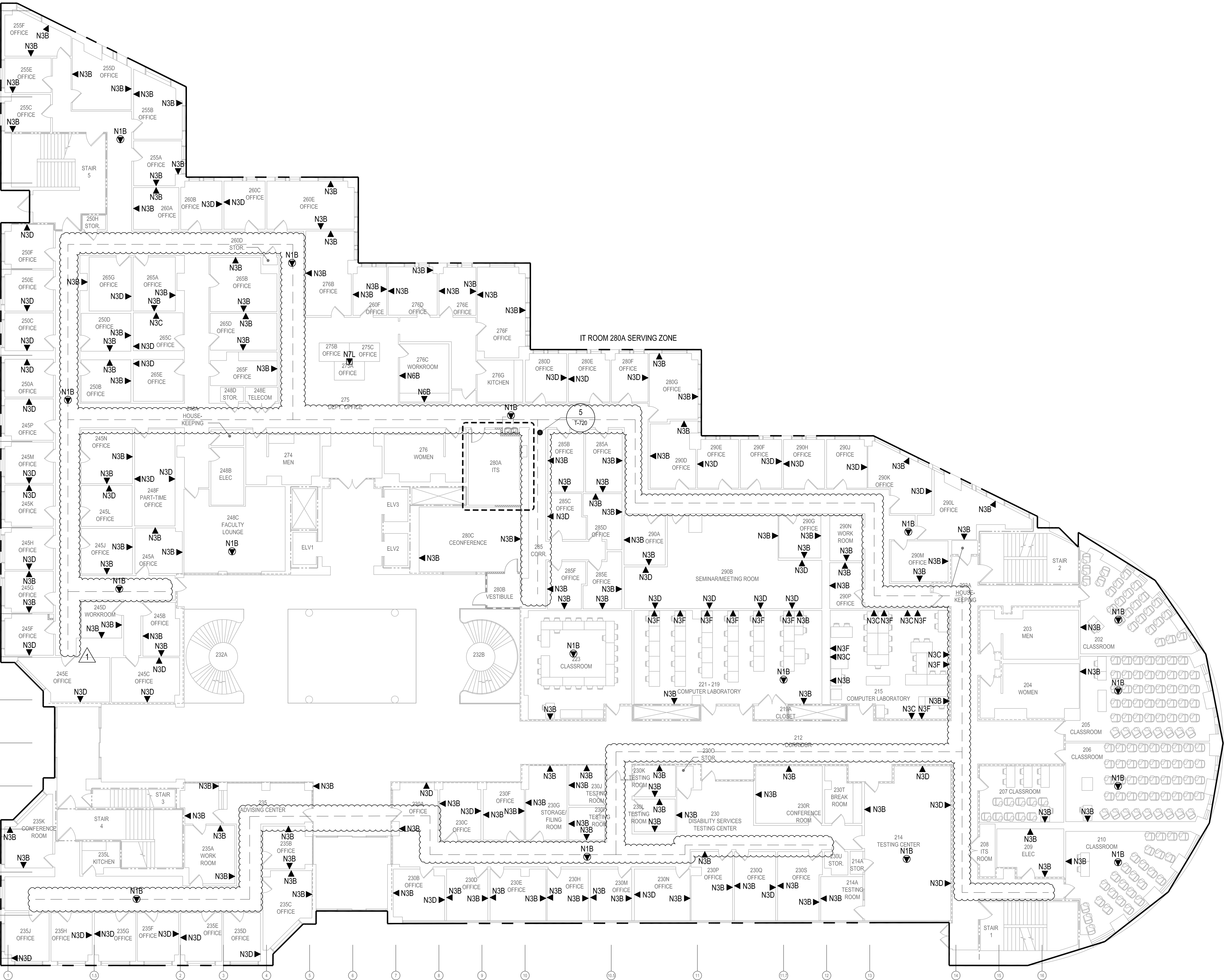
UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH  
9201 UNIVERSITY CITY BOULEVARD, CHARLOTTE, NC 28223

CN NO: 5462  
DATE: 3/31/2015  
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REVIEW: PP  
REVISIONS  
No. Date Description By  
1 2015-04-23 BID ADDENDUM #2

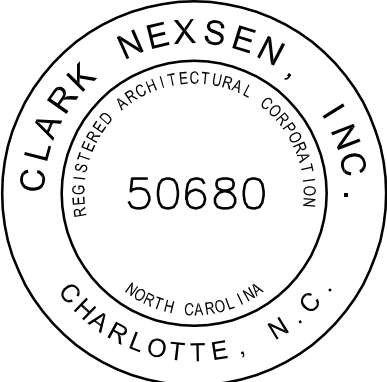
FRETWELL  
SECOND FLOOR  
TELECOMMUNICATIONS

T-202

WALL RATINGS LEGEND  
EXISTING 1-HOUR RATED FIRE PARTITION  
EXISTING 2-HOUR RATED FIRE BARRIER  
NEW 1-HOUR RATED PARTITION







NC ENGINEERING LICENSE # C-1026



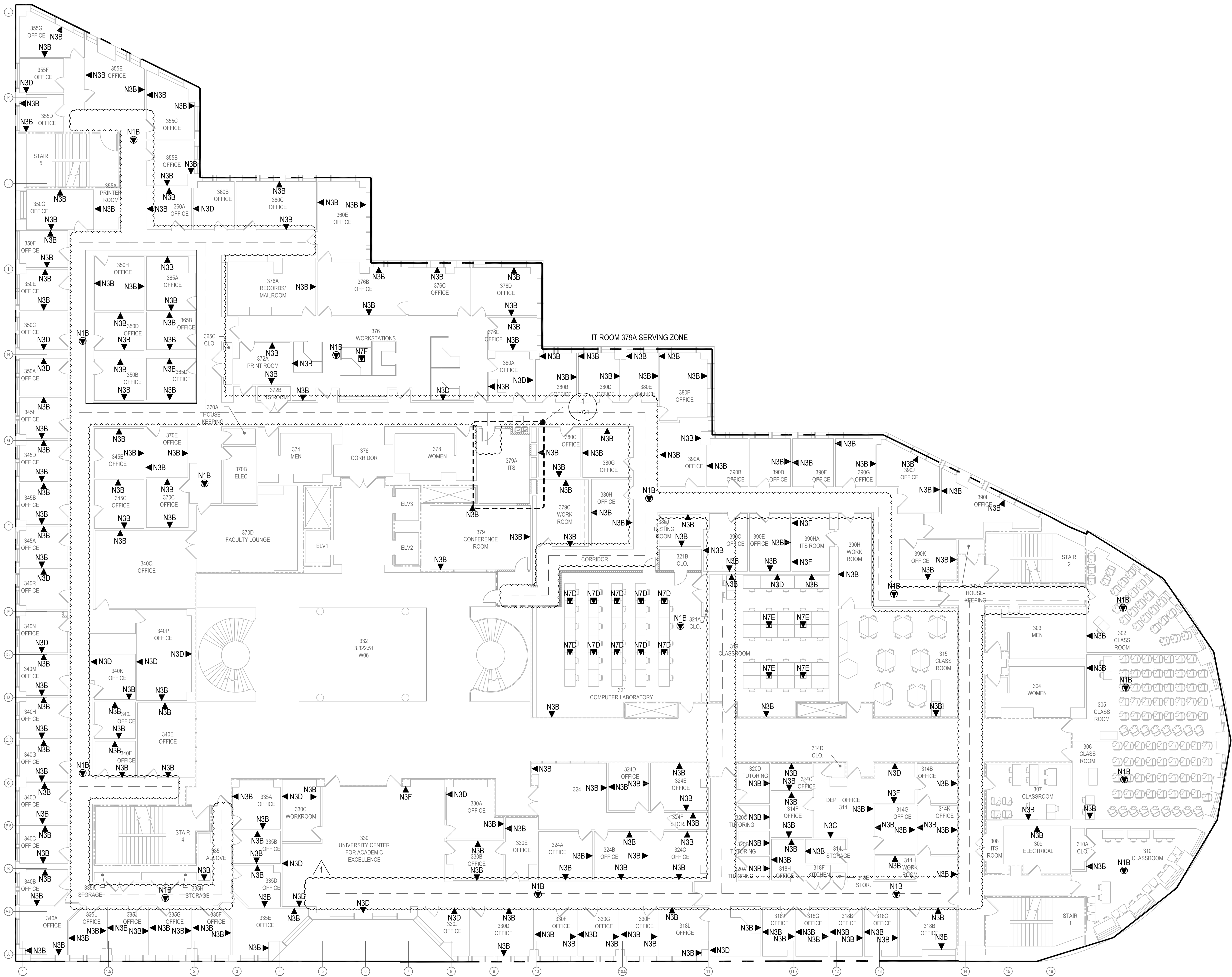
UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH  
9201 UNIVERSITY CITY BOULEVARD, CHARLOTTE, NC 28223

CN NO: 5462  
DATE: 3/31/2015  
DESIGN: PB  
DRAWN: PB  
REVIEW: PP  
REVISIONS  
No. Date Description By  
1 2015-04-23 BID ADDENDUM #2

FRETWELL  
THIRD FLOOR  
TELECOMMUNICATIONS

T-203

WALL RATINGS LEGEND  
EXISTING 1-HOUR RATED FIRE PARTITION  
EXISTING 2-HOUR RATED FIRE BARRIER  
NEW 1-HOUR RATED PARTITION





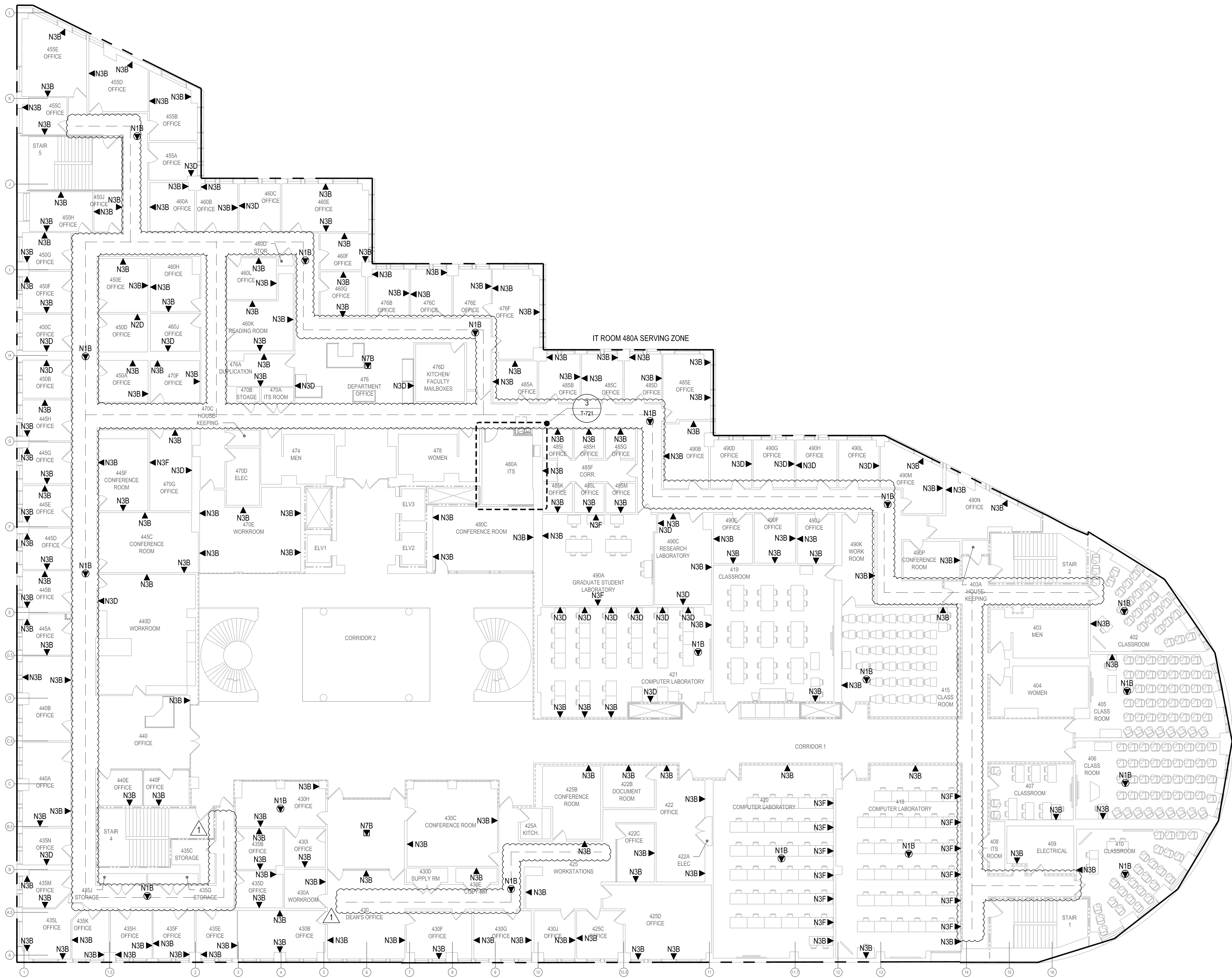
E

D

C

B

A



TELECOMMUNICATIONS - FRETWELL - 4TH LEVEL  
SCALE: 3/32"=1'-0"

WALL RATINGS LEGEND  
EXISTING 1-HOUR RATED FIRE PARTITION  
EXISTING 2-HOUR RATED FIRE BARRIER  
NEW 1-HOUR RATED PARTITION

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UNC CHARLOTTE  
SCO ID #: 13-10724-01A  
CODE: 41326  
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BID DOCUMENTS

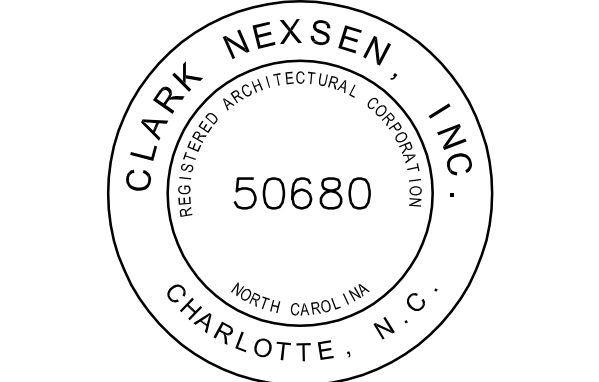
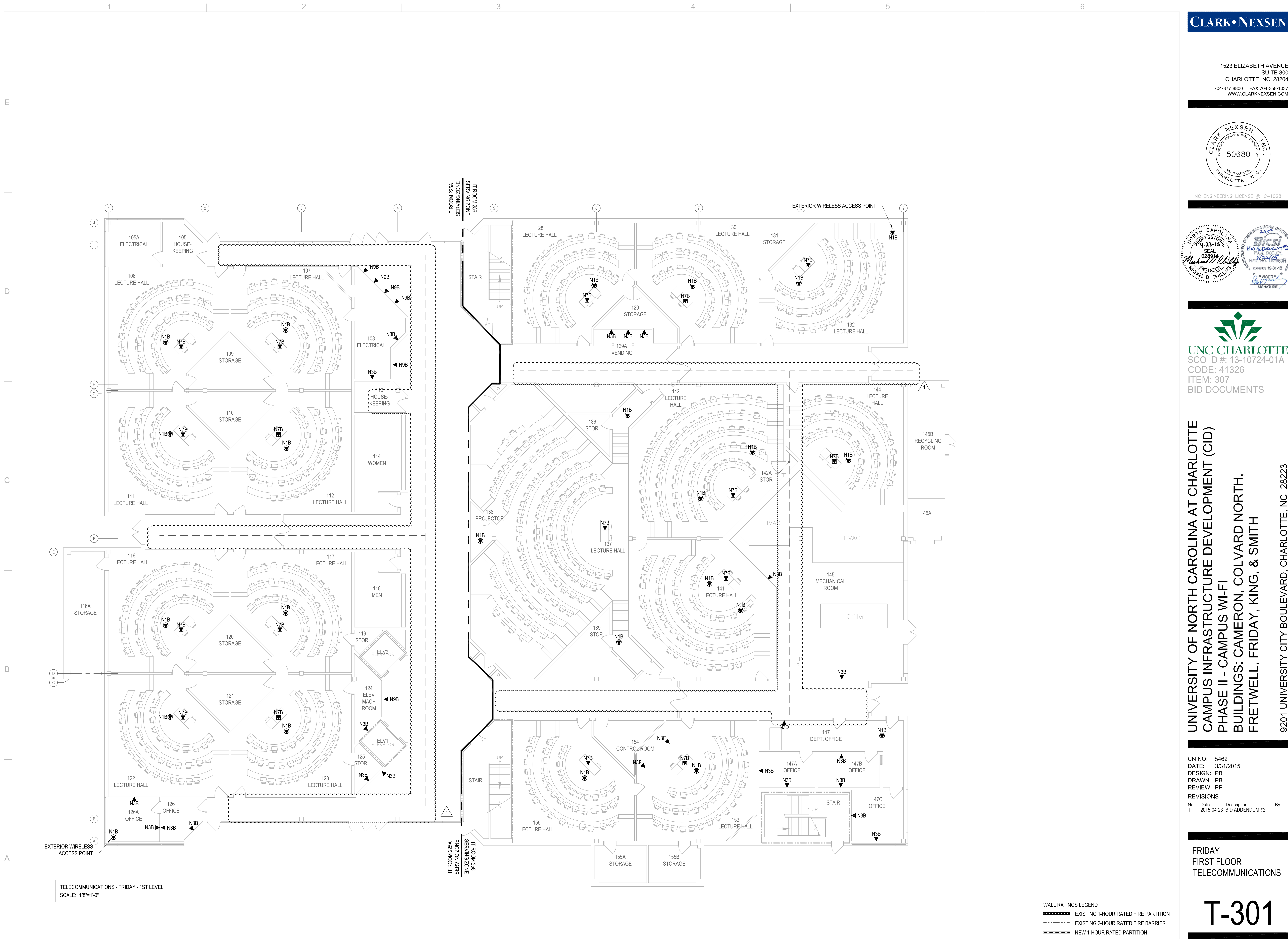
UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH  
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CN NO: 5462  
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No. Date Description By  
1 2015-04-23 BID ADDENDUM #2

FRETWELL  
FOURTH FLOOR  
TELECOMMUNICATIONS

T-204





UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH  
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CN NO: 5462  
DATE: 3/31/2015  
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REVIEW: PP

REVISIONS

No.	Date	Description	By
1	2015-04-23	BID ADDENDUM #2	

FRIDAY  
FIRST FLOOR  
TELECOMMUNICATIONS

T-301





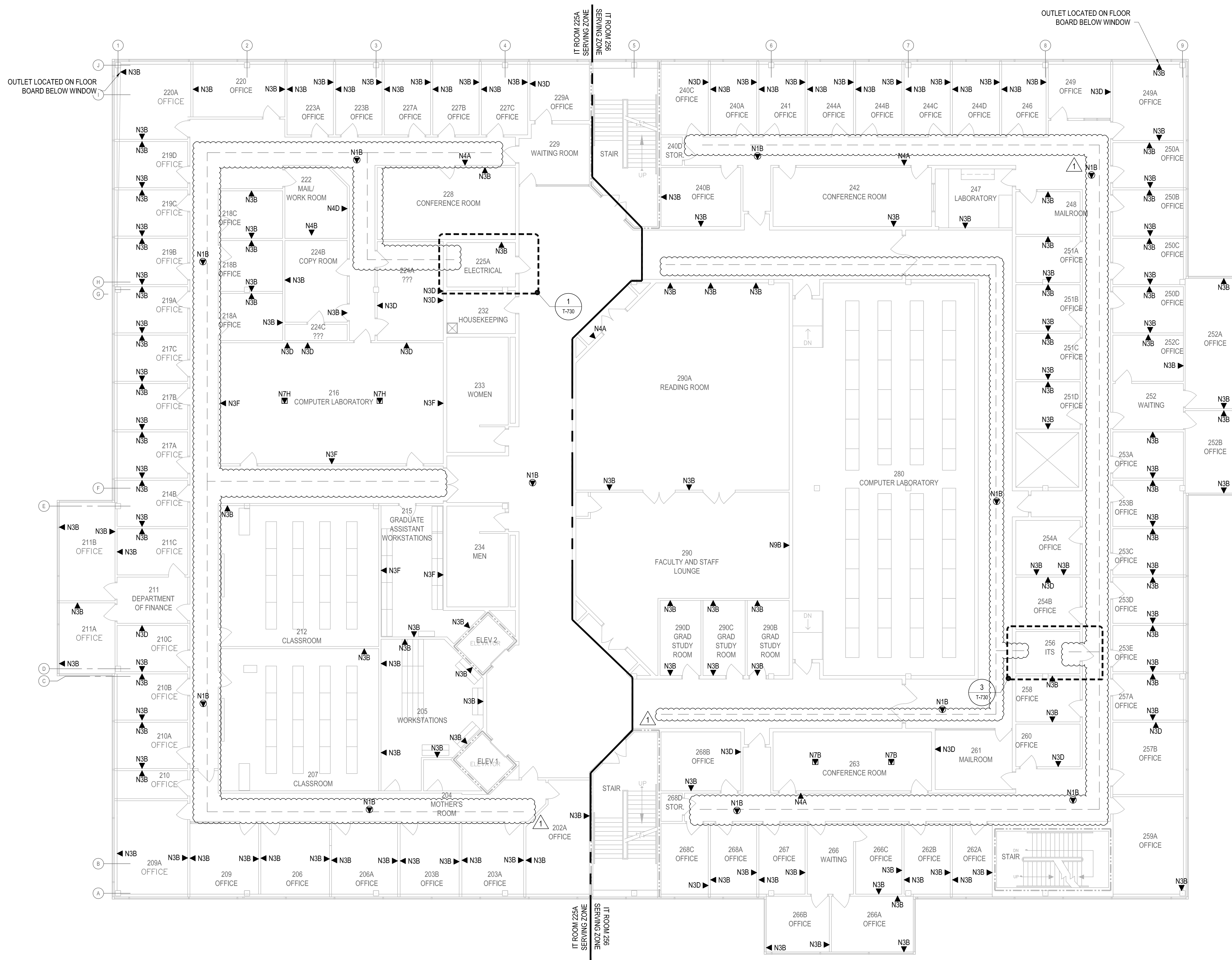
UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH

CN NO: 5462  
DATE: 3/31/2015  
DESIGN: PB  
DRAWN: PB  
REVIEW: PP  
REVISIONS

No.	Date	Description	By
1	2015-04-23	BID ADDENDUM #2	

FRIDAY  
SECOND FLOOR  
TELECOMMUNICATIONS

# T-302

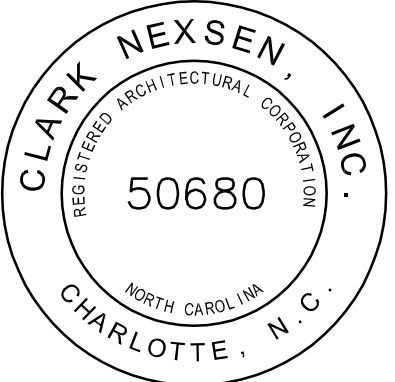


TELECOMMUNICATIONS - FRIDAY - 2ND LEVEL  
SCALE: 1/8"=1'-0"

**WALL RATINGS LEGEND**

	EXISTING 1-HOUR RATED FIRE PARTITION
	EXISTING 2-HOUR RATED FIRE BARRIER
	NEW 1-HOUR RATED PARTITION





NC ENGINEERING LICENSE # C-1026



UNC CHARLOTTE  
SCO ID #: 13-10724-01A  
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BID DOCUMENTS

UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
CAMPUS INFRASTRUCTURE DEVELOPMENT (CID)  
PHASE II - CAMPUS WI-FI  
BUILDINGS: CAMERON, COLVARD NORTH,  
FRETWELL, FRIDAY, KING, & SMITH

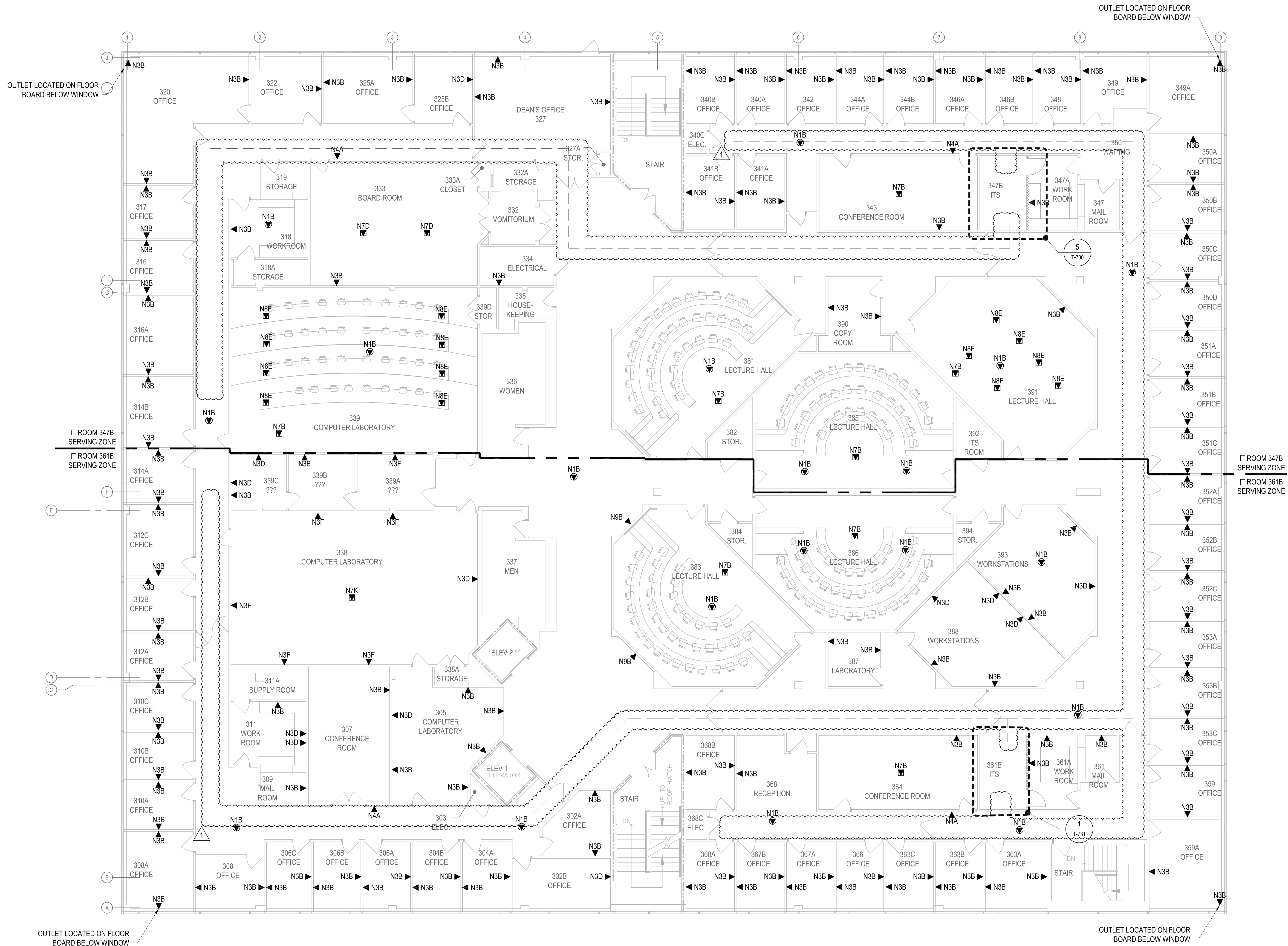
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DATE: 3/31/2015  
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REVISIONS  
No. Date Description By  
1 2015-04-23 BID ADDENDUM #2

FRIDAY  
THIRD FLOOR  
TELECOMMUNICATIONS

T-303



WALL RATINGS LEGEND  
EXISTING 1-HOUR RATED FIRE PARTITION  
EXISTING 2-HOUR RATED FIRE BARRIER  
NEW 1-HOUR RATED PARTITION