Bid Addendum 02

CLARKNEXSEN

1523 Elizabeth Ave, Suite 300
Charlotte, NC 28204

Project: UNC Charlotte Science Building: STEM

Date: May 16, 2019

COMM #: SCO ID #: 16-14335-02D
Code: 46626 Item: 301
Clark Nexsen #: 6222A

Prepared by: Mike Romot, AIA, LEED BD+C

This ADDENDUM is to be a part of the contract documents and modifies and takes precedence over the original bid documents, as noted below and in any 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 or digital files. The Bidder is to acknowledge receipt of this ADDENDUM in the space provided on the Bid Form.

DRAWING MODIFICATIONS

- Replace the following sheets with the attached revised sheets:
    - S-003 - STRUCTURAL BASE BID AND ALTERNATES
    - SB101 - FOUNDATION PLAN
    - SB301 - FOUNDATION SECTIONS
    - SB502 - TYPICAL FOUNDATION DETAILS
    - SB503 - TYPICAL CONCRETE AND MASONRY DETAILS
    - SF103 - LEVEL 3 FRAMING PLAN
    - SF502 - TYPICAL FRAMING AND DECK DETAILS
    - A0.02 – TYPICAL ASSEMBLIES
    - A8.22 – EXTERIOR WALL SECTIONS
    - A8.23 – EXTERIOR WALL SECTIONS
    - A8.25 – EXTERIOR WALL SECTIONS
    - A8.27 – EXTERIOR WALL SECTIONS
    - A8.40 – MAIN ENTRY CANOPY DETAILS
    - A8.41 – WEST ENTRY CANOPY DETAILS
    - TC3.01 TELECOM PLAN LEVEL 1
    - TC3.02 TELECOM PLAN LEVEL 2
    - TC3.03 TELECOM PLAN LEVEL 3
    - TC4.01 TELECOM ENLARGED PLANS

Bid Addendum 02

- Add the following sheets to the drawing set:
    - N/A

PROJECT MANUAL MODIFICATIONS

- Replace the following specification sections in their entirety:
    - 012300 – ALTERNATES
    - 321400 – UNIT PAVERS
- Add the following specification sections to the Project Manual:
    - N/A

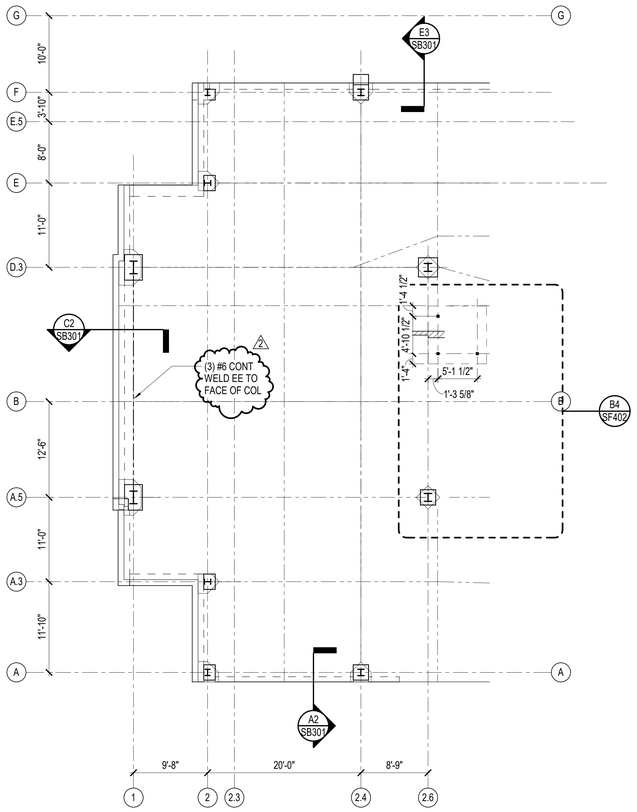
ATTACHMENTS

- RFI Responses
- Drawings
- Specifications

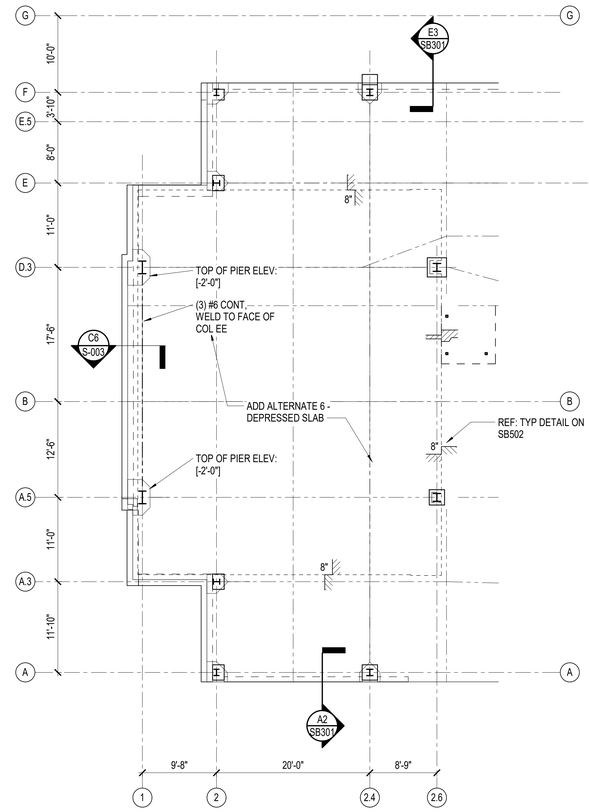
END OF BID ADDENDA 02

Addendum 2 - 5/16/2019				
#	Addendum	Page / Sheet / S	Bidder Question / Comments	Response
25	Addendum 2		Corrosion inhibitor is listed in the 033000 specs- please verify if this is required and for which mixes/ conditions.	No mix designs presently in the Science Building require corrosion inhibitor. Refer also to Civil drawings.
26	Addendum 2		Epoxy coated rebar and galvanized wire mesh are listed in 033000 specs- please verify if either of these apply to this project and where this may be required.	Neither galvanized wire mesh nor epoxy-coated reinforcing bars are indicated at any location within the Science Building. If such products are used in exterior elements, refer to Civil documentation or to indicated requirements in details.
27	Addendum 2		Please provide CIP wall types area A along 1 line and 2 line between A and F at <-6'-4"> footings (reference C2/SB301). Also please provide elevation for brick shelf as required here.	The requested information has been added to a revised SB101 and a schedule for building concrete walls that do not retain earth has been added to SB503. Top of shelf is indicated [-2'-0"] on SB101. Refer to Addendum #2 drawings.
28	Addendum 2		What CIP wall type(s) applies to 8" CIP along A line between 2 and 2.4. Detail A2/SB301 does not indicate rebar and states max wall height that does not work with all top of footings here. Also, reference A1&A2/SB504.	The detail A2/SB301 is modified in a revised drawing to remove the height limit. Wall type is indicated (CW-1) and reference made to a Building Concrete Wall schedule on SB503. Refer to Addendum #2 drawings.
29	Addendum 2		Along 2 line at A, A.3, E, & F, there are two footing designations- please confirm what should be used CF7.0 or F19.0 x 7.0 or what intent is having two footing types here.	At each of the two referenced locations, the footing design is updated as follows: Footing is F20.0x7.0, 20'-0" x 7'-0" x 1'8" thick. Reinforcing is updated as indicated. Refer to Addendum #2 drawings.
30	Addendum 2		Please verify which structural details are to be used for cast in place concrete indicated on the Civil drawings. 5/C-510 shows an 8" CIP wall with brick ledge at stair cheek walls. What structural section should be used for this footing and wall?	Typical Site wall section on sheet SB501 applies to the walls beside site stairs.
31	Addendum 2		Please verify which structural details are to be used for cast in place concrete indicated on the Civil drawings. 8/C-512 shows a 1'-8" cast in place wall with brick ledges. SB501 Typical Site Wall Section appears to be the appropriate detail for the seat walls on level grade, but this shows CMU in lieu of a cast in place wall. Please advise what structural detail should be used for these seat walls and whether these will be CMU or cast in place walls behind veneer.	Typical Site wall section on sheet SB501 must be used to construct the wall shown in detail 8 on civil sheet C-512. Interior (structural) portion of wall is shown as reinforced masonry.
32	Addendum 2		Please verify which structural details are to be used for cast in place concrete indicated on the Civil drawings. Please provide top of wall elevation for the site retaining wall near the loading dock on C-502. Verify we should use detail "Site Retaining Wall" on SB503 and that this will be 12" thick exposed concrete with no veneer or other finish.	Site Retaining Wall Detail on sheet SB503 must be used to construct the CIP retaining wall near the loading dock. Detail has been modified to include cast stone cap and veneer. Concrete is not exposed. Refer to Addendum #2, sheet SB503.
33	Addendum 2		What is top of pier at L/8? Is this 1'-4" below level 0 finished floor?	The correct top of pier elevation at L-8 is [-15'-10"], which is 1'-0" below Level 0 finished floor. Top of footing elevation at this location is [-19'-2"]. Refer to SB101 on Addendum #2 drawings.
34	Addendum 2		What is the required depth of depression in the slab on grade for alternate 6 to accommodate raised access flooring?	Depression is 8" to accommodate electrical floor boxes. Refer to Addendum #2, S-003 and SB502.
35	Addendum 2		Verify diaphragm reinforcing bar size and quantity at level 2 and 3 per Framing note 6 on SF102 and SF103. Level 1 indicates (4) #7 per Key Note 4 on SF101. Level 4 is (4) #5 per key note 6 which is pointing at dashed line per Framing Note 7 on SF104.	Size and Quantity have been added to SF103 using keynotes. Refer to Addendum #2 drawings.

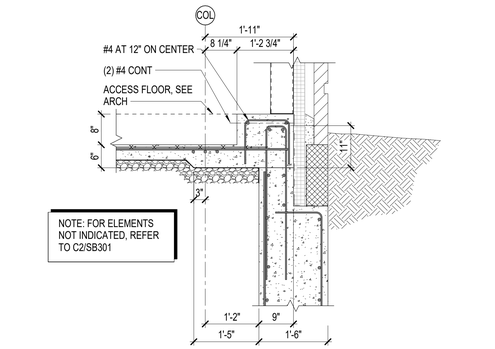
Addendum 2 - 5/16/2019				
#	Addendum	Page / Sheet / S	Bidder Question / Comments	Response
36	Addendum 2		Verify height of concrete curbs at level 4- structural detail on SF502 and 41/A7.13 both indicate 6"x 6". D4/A8.22 shows 6" x 1'-6" high curb. Please verify if any other level 4 curbs require waterstop as indicated in 32/A7.05.	Curbs on level 4 do not require waterstop. Locations of 18" tall curbs have been indicated on SF104 and a typical detail added to SF502. Refer to Addendum #2 drawings.
47	Addendum 2		Please verify that all exposed cast in place walls at level 0 are intended to receive rubbed finish regardless of room.	Yes, all exposed concrete walls at Level 0 should receive a rubbed finish.
50	Addendum 2		Details 11 & 12 have a note that call for resilient treads and risers with an integral contrast nosing. However, in looking at the finish plans, we cannot locate where this floor finish is called for on the finish plans. Please confirm if resilient treads and risers are required at any of the stairs and if so, please provide locations. Also, please confirm if cast-in metal stair nosings are required at any stairs. These details appear to show nosings in cast treads but the note calls for resilient treads.	The resilient treads were removed from the project. All but Stair 1 should be exposed concrete stairs in metal pans with cast-in metal stair nosings.



PARTIAL LEVEL 1 SLAB PLAN
BASE BID
1/8" = 1'-0"



PARTIAL LEVEL 1 SLAB PLAN
ADDITIVE ALTERNATE
1/8" = 1'-0"



C6 SECTION - ALTERNATE SLAB EDGE
3/4" = 1'-0"

UNC CHARLOTTE
SCIENCE BUILDING

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SCO ID Number: 16-14355-02D
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SEALS

NORTH CAROLINA PROFESSIONAL SEAL 32215 ENGINEER MATTHEW S. HICKEY
2019.05.16 14:05:14-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
APRIL 26, 2019
BID SET

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN

SHEET
STRUCTURAL BASE BID AND ALTERNATES

S-003

DESIGN: -
DRAWN: MSH
REVIEW: -

CN 6222

FOUNDATION PLAN

1/8" = 1'-0"

GRAPHIC SCALE(S)

1/8" = 1' - 0" 0 5' 10' 15' 30'

KEY NOTES

1. GRADE BEAM - 2'-4" WIDE x 2'-4" DEEP, (6) #6 TOP AND BOTTOM FL, #3 CLOSED TIES AT 8" OC FL
2. CONTINUE FOOTING THICKNESS AND REINFORCING OF BW3 FOOTING AT ELEVATOR PIT FOUNDATION.
3. REFER TO "TYPICAL PIPE SLEEVE BENEATH FOOTING" ON SB502.

FOUNDATION PLAN NOTES

1. REFER TO SHEETS S-001 AND S-002 FOR GENERAL NOTES AND ABBREVIATIONS.
2. ELEVATIONS ARE AS INDICATED THUS [x'-x] RELATIVE TO TOP OF SLAB DATUM ELEVATION 0'-0" AT LEVEL 1, UNLESS OTHERWISE INDICATED.
3. FOOTING STEPS SHOWN ARE AT APPROXIMATE LOCATIONS. SEE TYPICAL DETAIL ON SB502.
4. COORDINATE WITH OTHER DISCIPLINE DRAWINGS AND FINAL TRADE COORDINATION DRAWINGS THE LOCATIONS AND DIMENSIONS OF OPENINGS, RECESSES, SLEEVES, AND PIPING.
5. DESIGN ALLOWABLE BEARING PRESSURE IS AS FOLLOWS:
   A. ALL FOOTINGS: 3000 PSF, UON
   B. FOOTINGS BELOW [-12'-0"]: 5000 PSF
      WHERE INDICATED: ALLOWABLE PRESSURE / 1/3 INCREASE PRESSURE
6. SLAB-ON-GRADE AT LEVEL 0 IS 6" THICK WITH 6x6-W2.1 x W2.1 WWR OVER 4" POROUS FILL, UNLESS OTHERWISE NOTED.
7. REFER TO COLUMN SCHEDULES ON SF601 AND SF602 FOR CONCRETE PIER SCHEDULE. TYPICAL TOP OF PIER ELEVATION IS 1'-4" BELOW TOP OF SLAB-ON-GRADE.
8. SPREAD FOOTING SIZES ARE INDICATED THUS: FX.X. WALL FOOTING SIZES ARE INDICATED THUS: WFX.X. REFER TO SPREAD FOOTING SCHEDULE AND CONTINUOUS FOOTING SCHEDULE ON SB502 FOR DIMENSIONS AND REINFORCING. FOOTINGS FOR EARTH-RETAINING WALLS ARE SCHEDULED FOR THE CORRESPONDING WALL ON THE RETAINING WALL SCHEDULE ON SB503.

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SEALS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32215 MATTHEW S. HOEKE
2019.05.16 14:00:37 -04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

APRIL 26, 2019
BID SET

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN

SHEET

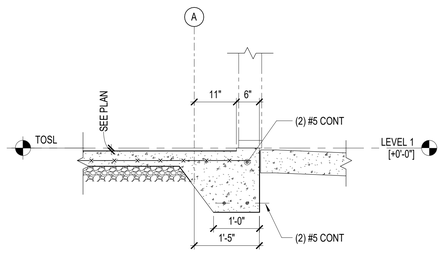
FOUNDATION PLAN

SB101

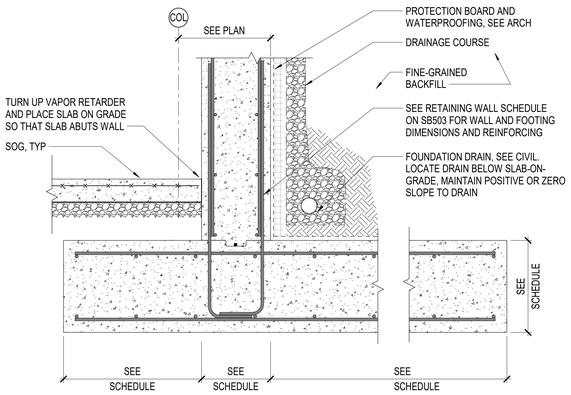
DESIGN: MSH
DRAWN: YW
REVIEW: ECW

CN 6222

5/16/2019 12:20:00 PM
BIM 360://UNC Charlotte Science/8222_Science Central_S17.rvt



E1 SECTION
3/4" = 1'-0"



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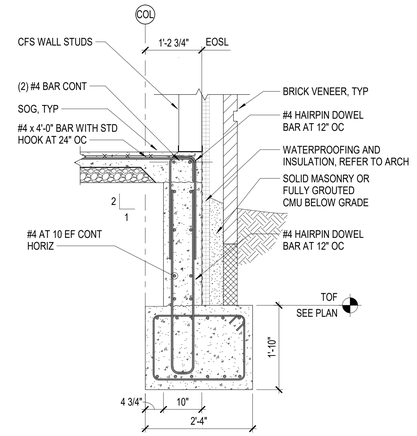

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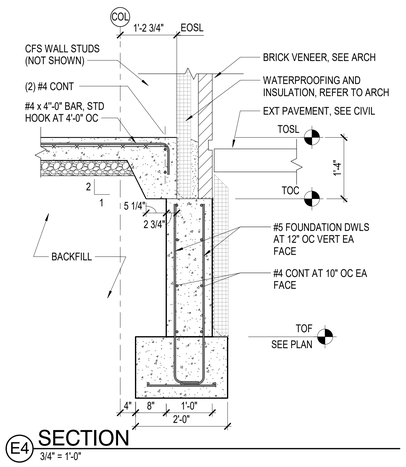

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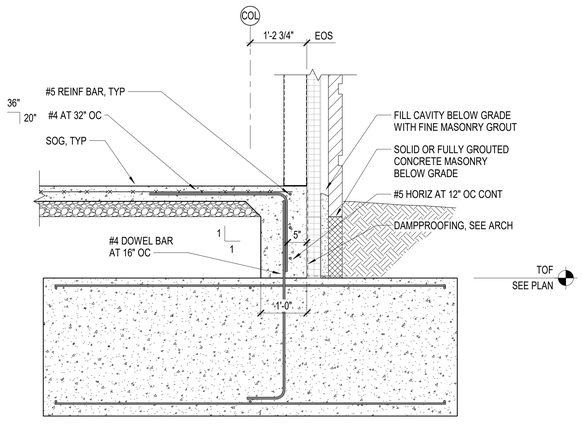
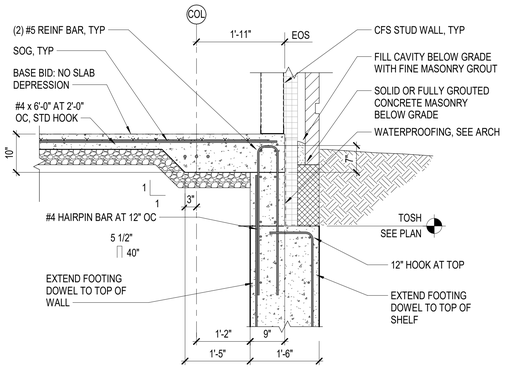


C1 SECTION
3/4" = 1'-0"



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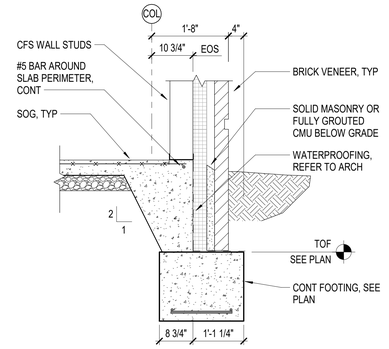

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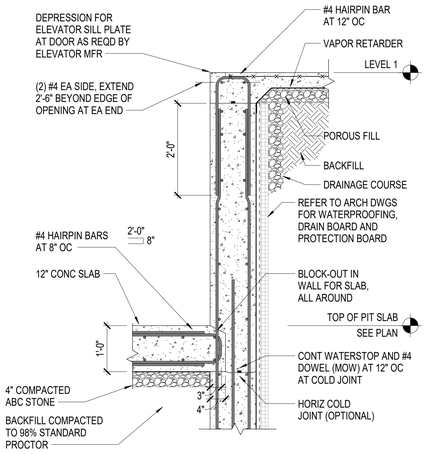
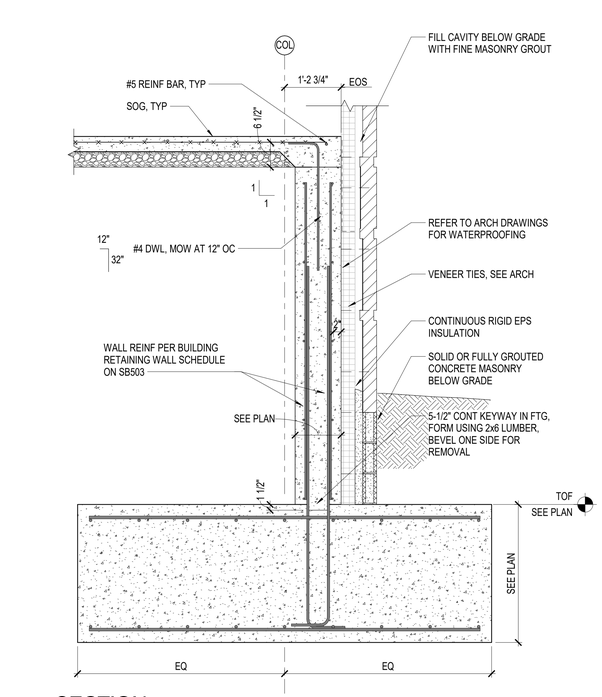
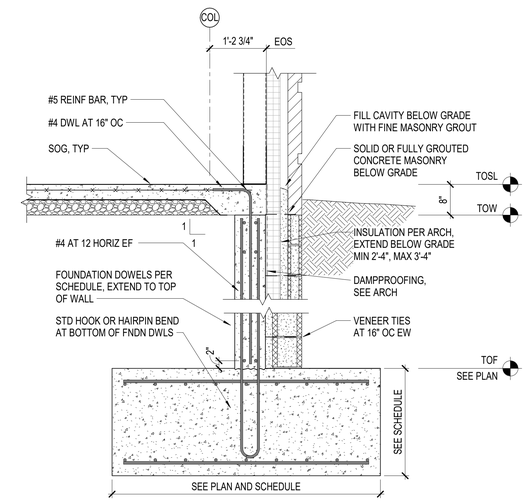


C4 SECTION - ELEVATOR PIT
3/4" = 1'-0"



A1 SECTION
3/4" = 1'-0"



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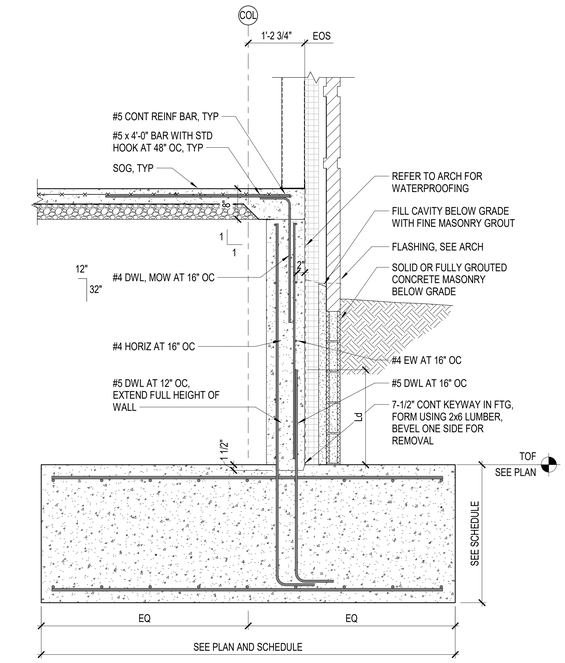
3/4" = 1'-0"



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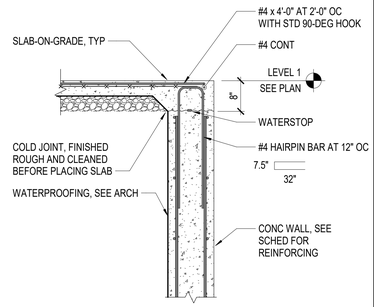
3/4" = 1'-0"



A4 SECTION
3/4" = 1'-0"

GRAPHIC SCALE(S)

3/4" = 1' - 0" 0 6" 1' 2' 3' 4' 5'

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SEALS

NORTH CAROLINA PROFESSIONAL SEAL 32215 ENGINEER MATTHEW S. HICKS
2019.05.16 14:00:55-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

APRIL 26, 2019
BID SET

Issue	Date	
2	5/16/2019	Addendum 2

KEY PLAN

SHEET

FOUNDATION SECTIONS

SB301

DESIGN: MSH
DRAWN: MSH
REVIEW: ECW

CN 6222

SPREAD FOOTING SCHEDULE

MARK	DIMENSIONS W	L	T	REINFORCING 'A' BARS	'B' BARS	'C' BARS	'D' BARS	NOTES
BWF2	9'-0"	CONT	2'-0"	-	-	-	-	SEE RW SCHED
BWF3	12'-0"	CONT	2'-0"	-	-	-	-	SEE RW SCHED
F3.0	3'-0"	3'-0"	1'-0"	(6) #4	(6) #4	-	-	
F6.0	6'-0"	6'-0"	1'-6"	(7) #6	(7) #6	-	-	
F6.0A	6'-0"	6'-0"	2'-0"	(7) #6	(7) #6	-	-	
F7.0	7'-0"	7'-0"	1'-10"	(9) #7	(9) #7	-	-	
F8.0	8'-0"	8'-0"	2'-0"	(10) #7	(10) #7	-	-	
F9.0A	9'-0"	9'-0"	2'-0"	(12) #7	(12) #7	(12) #7	(12) #7	
F10.0	10'-0"	10'-0"	2'-4"	(9) #9	(9) #9	-	-	
F10.0A	10'-0"	10'-0"	2'-4"	(10) #9	(10) #9	(10) #7	(10) #7	
F11.0	11'-0"	11'-0"	2'-0"	(9) #9	(9) #9	-	-	
F12.0	12'-0"	12'-0"	2'-6"	(10) #9	(10) #9	-	-	
F15.0	15'-0"	15'-0"	2'-6"	(12) #9	(12) #9	(12) #7	(12) #7	4
F20.0x7.0	7'-0"	20'-0"	1'-8"	(7) #8	(22) #7	(8) #6	(22) #6	
F26.0x12.0	12'-0"	26'-0"	2'-6"	(10) #9	(20) #9	(10) #7	(22) #7	
F31.0x12.0	12'-0"	31'-0"	3'-6"	(10) #9	(30) #9	(10) #6	(26) #6	

2

CONTINUOUS FOOTING SCHEDULE

MARK	DIMENSIONS W	T	REINFORCING 'A' BARS	'B' BARS	'C' BARS	'D' BARS	NOTES
CF2.0	2'-0"	1'-2"	(4) #4	#4 AT 24	-	-	
CF4.0	4'-0"	1'-4"	(5) #5	#5 AT 12	(4) #5	#5 AT 24	
CF6.0	6'-0"	1'-8"	(6) #7	#7 AT 8	(6) #6	#6 AT 12	W IS TYPICAL DIM,SEE PLAN
CF7.0	7'-0"	2'-6"	(7) #7	#7 AT 8	(7) #6	#6 AT 8	2
CF9.0	9'-0"	3'-0"	(18) #9	#7 AT 8	(7) #9	#7 AT 10	
CF10.0	10'-0"	3'-0"	(11) #9	#7 AT 8	(7) #8	#7 AT 8	
CF11.0	11'-0"	3'-0"	(11) #9	#9 AT 12	(8) #9	#9 AT 16	

2

DEVELOPMENT LENGTH Ld	CONCRETE f'c 3000 PSI	4000 PSI	5000 PSI
#3	17"	15"	13"
#4	22"	19"	17"
#5	28"	24"	22"
#6	33"	29"	26"
#7	48"	42"	37"
#8	55"	48"	43"
#9	62"	54"	48"
#10	70"	61"	54"
#11	78"	67"	60"

LAP SPLICE Ls	CONCRETE f'c 3000 PSI		4000 PSI		5000 PSI	
	CLASS A	CLASS B	CLASS A	CLASS B	CLASS A	CLASS B
#3	17"	22"	15"	19"	13"	17"
#4	22"	29"	19"	25"	17"	22"
#5	28"	36"	24"	31"	22"	28"
#6	33"	43"	29"	37"	26"	33"
#7	48"	63"	42"	54"	37"	49"
#8	55"	72"	48"	62"	43"	55"
#9	62"	81"	54"	70"	48"	63"
#10	70"	91"	61"	79"	54"	70"
#11	78"	101"	67"	87"	60"	78"

BOTTOM BAR TENSION REINFORCING

DEVELOPMENT LENGTH Ld	CONCRETE f'c 3000 PSI	4000 PSI	5000 PSI
#3	22"	19"	17"
#4	29"	25"	22"
#5	36"	31"	28"
#6	43"	37"	33"
#7	63"	54"	49"
#8	72"	62"	55"
#9	81"	70"	63"
#10	91"	79"	70"
#11	101"	87"	78"

LAP SPLICE Ls	CONCRETE f'c 3000 PSI		4000 PSI		5000 PSI	
	CLASS A	CLASS B	CLASS A	CLASS B	CLASS A	CLASS B
#3	22"	28"	19"	24"	17"	22"
#4	29"	37"	25"	32"	22"	29"
#5	36"	47"	31"	40"	28"	36"
#6	43"	56"	37"	48"	33"	43"
#7	63"	81"	54"	71"	49"	63"
#8	72"	93"	62"	81"	55"	72"
#9	81"	105"	70"	91"	63"	81"
#10	91"	118"	79"	102"	70"	91"
#11	101"	131"	87"	113"	78"	101"

TOP BAR TENSION REINFORCING

SIZE	STANDARD HOOKS 90° L=12 d_b	180° L=4 d_b	STIRRUPS AND TIES L=6 d_b/12 d_b	BEND DIAMETERS TYP d	STIRRUPS AND TIES d
#3	4 1/2"	2 1/2"	2 1/2"	2 1/4"	1 1/2"
#4	6"	2 1/2"	3"	3"	2"
#5	7 1/2"	2 1/2"	4"	3 3/4"	2 1/2"
#6	9"	3"	9"	4 1/2"	4 1/2"
#7	10 1/2"	3 1/2"	10 1/2"	5 1/4"	5 1/4"
#8	12"	4"	12"	6"	6"
#9	13 1/2"	4 1/2"	N/A	9 1/2"	N/A
#10	15"	5"	N/A	10 3/4"	N/A
#11	16 1/2"	5 1/2"	N/A	12"	N/A

HOOKED TENSION REINFORCING

DEVELOPMENT OF HOOKED BARS Ldh 90° 180°	CONCRETE f'c 3000 PSI	4000 PSI	5000 PSI
#3	7"	6"	5"
#4	8"	7"	7"
#5	10"	9"	8"
#6	12"	11"	10"
#7	14"	12"	11"
#8	16"	14"	12"
#9	18"	16"	14"
#10	20"	18"	16"
#11	22"	19"	17"

COMPRESSION REINFORCING

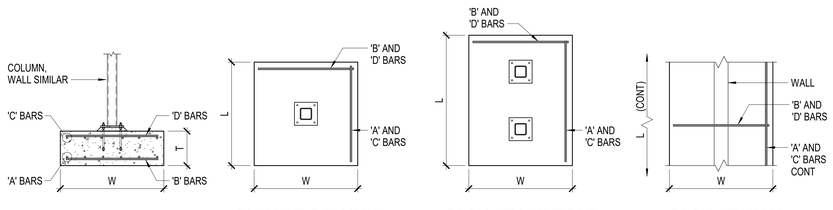
DEVELOPMENT LENGTH Ld	CONCRETE f'c 3000 PSI	4000 PSI	5000 PSI	LAP SPLICE Ls 30db ALL f'c
#3	9"	8"	7"	13"
#4	11"	10"	9"	15"
#5	14"	12"	12"	19"
#6	17"	14"	14"	23"
#7	20"	17"	16"	27"
#8	22"	19"	18"	30"
#9	25"	22"	21"	34"
#10	28"	24"	23"	39"
#11	31"	27"	26"	43"

NOTES:

1. DESIGN METHOD IS BASED ON ACI 318-08.
2. TOP BAR IS WHERE HORIZONTAL REINFORCING IS PLACED SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH OR SPLICE.
3. BOTTOM BAR IS WHERE HORIZONTAL REINFORCING IS PLACED SUCH THAT LESS THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH OR SPLICE.
4. LAP SPLICES OF DEFORMED BARS AND DEFORMED WIRE IN TENSION SHALL BE CLASS B SPLICES EXCEPT THAT CLASS A SPLICES ARE ALLOWED WHEN:
   A. TWICE THE AREA OF REQUIRED REINFORCING CANNOT BE ASSUMED UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE DRAWINGS; AND
   B. ONE-HALF OR LESS OF THE TOTAL REINFORCING IS SPLICED WITHIN THE REQUIRED LAP LENGTH.
5. MINIMUM LENGTHS AND BENDS INDICATED, BENDS SHALL COMPLY WITH ACI 318.
6. INDICATED BEND DIAMETERS ARE MEASURED ON THE INSIDE OF THE BAR.

DETAILS OF CONCRETE REINFORCING

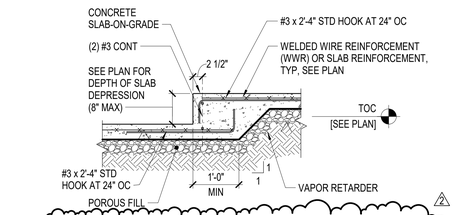
NOT TO SCALE



SECTION | PLAN AT COLUMN | PLAN AT MULTIPLE COLUMNS | PLAN AT WALL

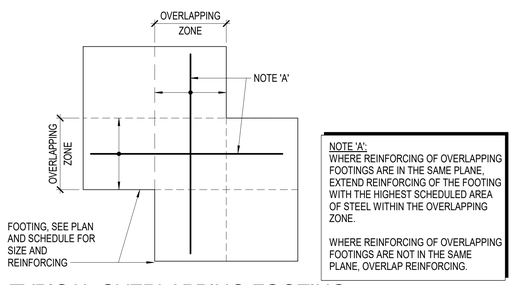
TYPICAL FOOTING REINFORCING DIAGRAM AND SCHEDULES

NOT TO SCALE



TYPICAL SLAB DEPRESSION (SD) (2" MIN, 8" MAX)

NOT TO SCALE

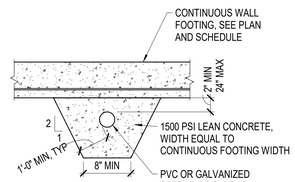


NOTE 'A':
WHERE REINFORCING OF OVERLAPPING FOOTINGS ARE IN THE SAME PLANE, EXTEND REINFORCING OF THE FOOTING WITH THE HIGHEST SCHEDULED AREA OF STEEL WITHIN THE OVERLAPPING ZONE.

WHERE REINFORCING OF OVERLAPPING FOOTINGS ARE NOT IN THE SAME PLANE, OVERLAP REINFORCING.

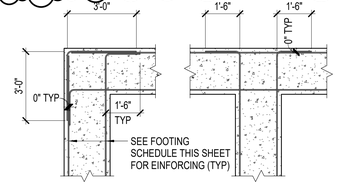
TYPICAL OVERLAPPING FOOTING

NOT TO SCALE



TYPICAL PIPE SLEEVE BENEATH FOOTING

NOT TO SCALE

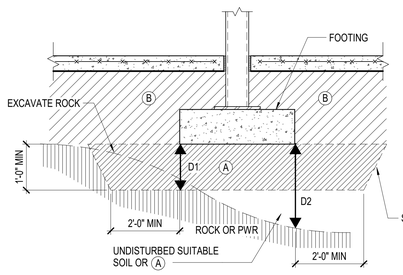


PLAN AT CORNER | PLAN AT INTERSECTION

NOTES:
1. WHERE THREE BARS OCCUR, CENTER BAR SHALL BE TREATED AS AN INNER FACE BAR.
2. 'B' AND 'D' BARS NOT SHOWN FOR CLARITY.

TYPICAL CONTINUOUS FOOTING REINFORCING

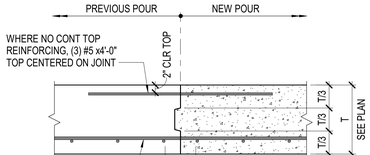
NOT TO SCALE



NOTES:
1. REFER TO FOUNDATION NOTE #4 ON S-001 FOR COMPACTION REQUIREMENTS:
   A STRUCTURAL FILL, 98% MAX DENSITY PER ASTM D698, 6" LIFTS
   B STRUCTURAL FILL, 95% MAX DENSITY WITH LAST 1'-0" AT 98% MAX DENSITY PER ASTM D698
2. OVER-EXCAVATE ROCK AND VERY HARD PARTIALLY-WEATHERED ROCK (PWR) SUCH THAT THE MINIMUM DEPTH TO ROCK, D1 IS NOT LESS THAN 1/3 THE MAXIMUM DEPTH D2.

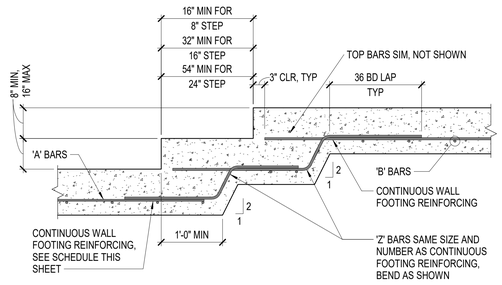
TYPICAL FOOTING SUBGRADE AT ROCK AND PWR

NOT TO SCALE



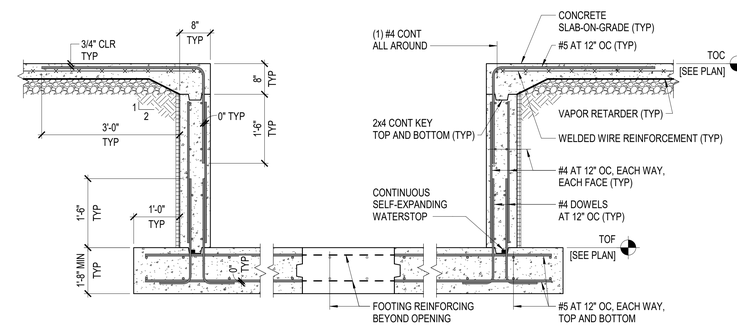
TYPICAL CONCRETE FOOTING CONSTRUCTION JOINT

NOT TO SCALE



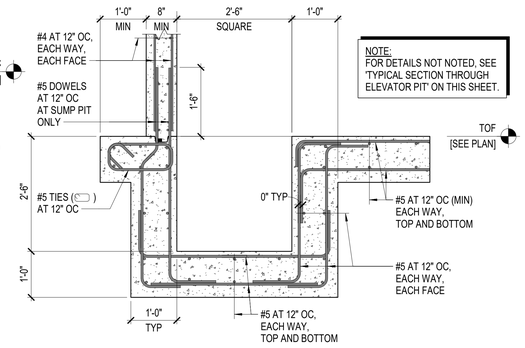
TYPICAL STEPPED FOOTING

NOT TO SCALE



TYPICAL SECTION THROUGH ELEVATOR PIT

NOT TO SCALE



NOTE:
FOR DETAILS NOT NOTED, SEE 'TYPICAL SECTION THROUGH ELEVATOR PIT' ON THIS SHEET.

TYPICAL ELEVATOR SUMP PIT

NOT TO SCALE

UNC CHARLOTTE
SCIENCE BUILDING

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Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

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LandDesign
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SEALS

NORTH CAROLINA PROFESSIONAL SEAL 32215 ENGINEER MATTHEW S. HICKEY
2019.05.16 14:01:14-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
APRIL 26, 2019
BID SET

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN

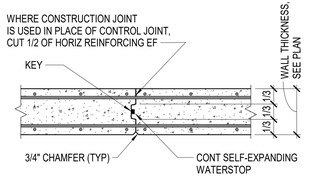
SHEET
TYPICAL FOUNDATION DETAILS

SB502

DESIGN: MSH
DRAWN: MSH
REVIEW: EOW

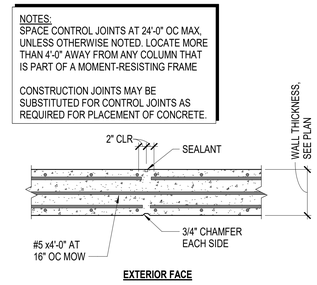
CN 6222

5/16/2019 12:20:05 PM
BIM 360://UNC Charlotte Science/6222_Science Central_S17.rvt



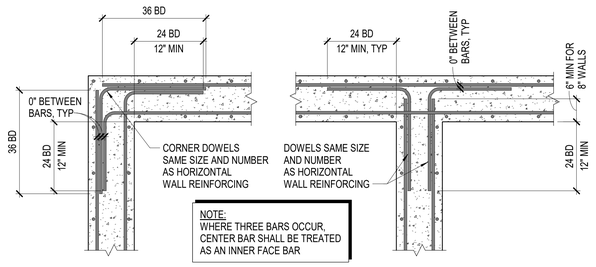
TYPICAL CONCRETE WALL CONSTRUCTION JOINT

NOT TO SCALE



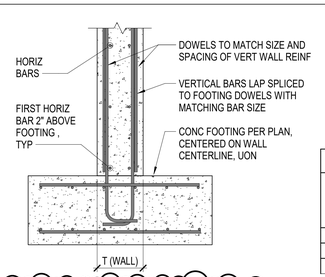
TYPICAL CONCRETE WALL CONTROL JOINT

NOT TO SCALE



TYPICAL CONTINUOUS WALL REINFORCING

NOT TO SCALE



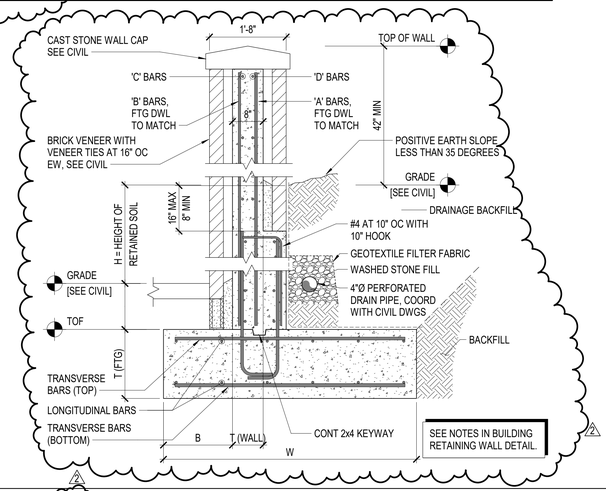
NOTE:
THIS DETAIL IS FOR WALLS NOT INTENDED TO RETAIN UNBALANCED FILL LOADS. DURING CONSTRUCTION, DO NOT EXCEED AN IMBALANCE GREATER THAN 2'-6" BETWEEN ONE SIDE OF WALL AND THE OTHER

BUILDING CONCRETE WALL SCHEDULE

MARK	T(WALL)	WALL REINFORCING		NOTES
		VERTICAL (EF)	HORIZONTAL (EF)	
CW-1	0'-8"	#4 AT 12" OC	#4 AT 12" OC	
CW-2	0'-10"	#4 AT 12" OC	#4 AT 10" OC	
CW-3	1'-6"	#5 AT 12" OC	#5 AT 12" OC	

BUILDING CONCRETE WALL DETAIL AND SCHEDULE

NOT TO SCALE



SITE RETAINING WALL SCHEDULE

MAX. HEIGHT OF RETAINED SOIL, H	DIMENSIONS				FOOTING REINFORCING			WALL REINFORCING				DRAIN	NOTE
	W	B	T(FTG)	T(WALL)	LONGITUDINAL	TRANSVERSE BOTTOM	TRANSVERSE TOP	A	B	C	D		
3'-0"	5'-6"	1'-6"	1'-6"	1'-0"	(6) #5 CONT, T&B	#7 AT 10" OC	#6 AT 10" OC	#6 AT 10" OC	#5 AT 10" OC	#5 AT 16" OC	#5 AT 16" OC	YES	

NOTE: MAX HEIGHT MAY BE TAKEN AS 5'-0" WHERE POSITIVE SLOPE OF EARTH BEHIND WALL IS LESS THAN 5 DEGREES, OR WHERE EARTH SLOPES AWAY FROM WALL. 2

SITE RETAINING WALL DETAIL AND SCHEDULE

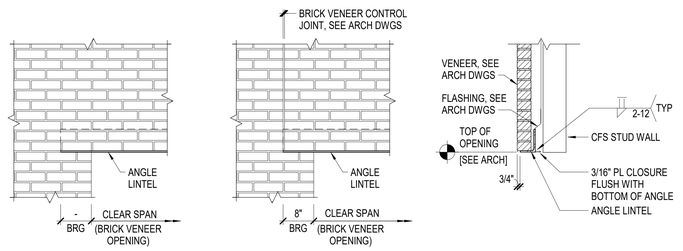
3/4" = 1'-0"

BUILDING RETAINING WALL SCHEDULE

MARK	DIMENSIONS				FOOTING REINFORCING			KEY	WALL REINFORCING				DRAIN	NOTE
	W	B	T(FTG)	T(WALL)	LONGITUDINAL	TRANSVERSE BOTTOM	TRANSVERSE TOP		A	B	C	D		
BW1	11'-0"	3'-9"	2'-0"	18"	(11) #7 CONT, T&B	#7 AT 12" OC	#7 AT 12" OC	NO	#6 AT 8" OC	#6 AT 12" OC	#4 AT 10" OC	#4 AT 10" OC	YES	MAX BACKFILL 2/3
BW2	9'-0"	2'-9"	2'-0"	18"	(9) #7 CONT, T&B	#7 AT 12" OC	#7 AT 12" OC	NO	#6 AT 8" OC	#6 AT 12" OC	#4 AT 10" OC	#4 AT 10" OC	YES	MAX BACKFILL 2/3
BW3	12'-0"	3'-6"	2'-0"	18"	(13) #7 CONT, T&B	#7 AT 12" OC	#7 AT 12" OC	NO	#6 AT 8" OC	#7 AT 10" OC	#5 AT 12" OC	#5 AT 12" OC	YES	MAX BACKFILL 2/3
RW2	-	-	-	12"	-	-	-	NO	#5 AT 8" OC	#4 AT 12" OC	#4 AT 10" OC	#4 AT 12" OC	NO	REF PLAN FOR FOOTING
RW3	-	-	-	10"	-	-	-	NO	#5 AT 12" OC	#4 AT 16" OC	#4 AT 16" OC	#4 AT 16" OC	NO	REF PLAN FOR FOOTING
RW4	-	-	-	12"	-	-	-	NO	#5 AT 12" OC	#4 AT 16" OC	#5 AT 10" OC	#5 AT 10" OC	YES	AT ELEVATOR

ANGLE LINTEL SCHEDULE FOR BRICK VENEER

CLEAR SPAN	ANGLE	BEARING LENGTH
0'-8" - 5-0"	L4x4x5/16	4"
5'-1" - 8'-0"	L6x4x5/16 (LLV)	6"
8'-1" - 10'-0"	L6x4x3/8 (LLV)	8"

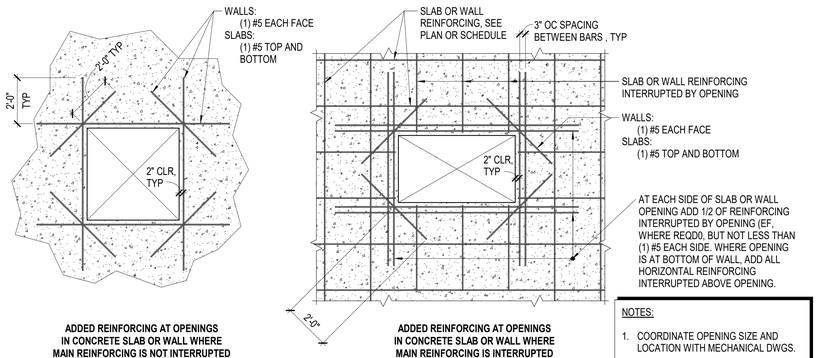


NOTES:

1. LOCATE TOE OF ANGLE 3/4" FROM FACE OF BRICK.
2. FOR EXACT SIZE AND LOCATION OF WALL OPENINGS, COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. ANGLE LINTEL SIZE APPLIES ONLY TO ANGLE LINTELS NOT OTHERWISE SHOWN ON THE STRUCTURAL DRAWINGS.
4. ANGLE LINTELS IN EXTERIOR WALLS SHALL BE HOT-DIP GALVANIZED, PREPARED FOR PRIMER, AND SHOP-PRIMED FOR PAINTING.
5. AT BRICK VENEER CONTROL JOINT, FORM SLIP PLANE BY PLACING FLASHING ABOVE AND BELOW ANGLE. PROVIDE 1/4" GAP AT EACH END OF ANGLE FOR THERMAL EXPANSION.

TYPICAL BRICK ANGLE LINTEL

NOT TO SCALE

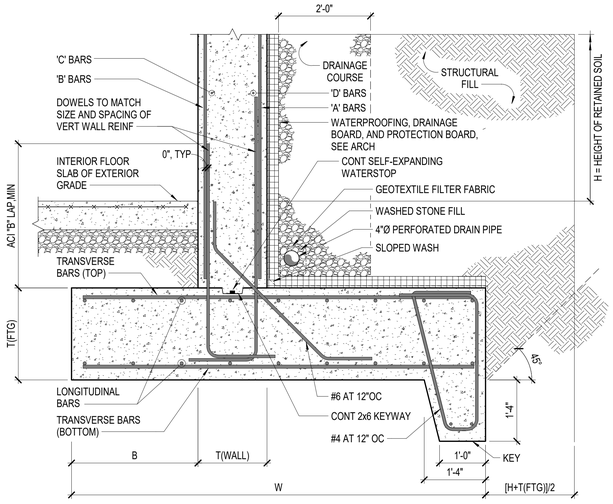


NOTES:

1. COORDINATE OPENING SIZE AND LOCATION WITH MECHANICAL DWGS.
2. NO SPECIAL REINFORCING REQUIRED FOR OPENINGS 4" OR LESS.
3. REINFORCING FOR ROUND OPENINGS SIMILAR.

TYPICAL SLAB AND WALL OPENING

NOT TO SCALE



NOTES

1 DOWEL MATCHING "A" VERTICAL BARS ON EARTH FACE OF WALL: EXTEND ABOVE FOOTING ACI "B" LAP SPLICE LENGTH PLUS 2'-4", OR UP TO 2" CLEAR OF SHELF, WHERE THIS LENGTH IS NOT AVAILABLE. WHERE "B" LAP SPLICE IS NOT AVAILABLE, CONTACT ENGINEER OF RECORD.

2. FOOTING DOWELS: MATCH SIZE AND SPACING OF VERT WALL REINF, UON.
3. WHERE WALL EXTENDS LESS THAN 5'-0" ABOVE TOP OF FOOTING AND WHERE INDICATED, DOWEL BARS MUST EXTEND FULL HEIGHT OF WALL, AND ADDITIONAL LAP-SPLICED VERTICAL BARS ARE NOT REQUIRED.
3. PERFORATED DRAIN MUST BE CONTINUOUS ALONG THE FOOTING, REMAINING BELOW THE ELEVATION OF THE ADJACENT SLAB-ON-GRADE ON THE INTERIOR OF THE BUILDING. MAINTAIN POSITIVE OR ZERO SLOPE; DO NOT REVERSE-SLOPE DRAIN.
4. WHERE DRAIN IS LOCATED MORE THAN 6" ABOVE TOP OF FOOTING TO MAINTAIN SLOPE, COMPACTED STRUCTURAL FILL SHALL BE PLACED BELOW DRAIN AND DRAINAGE COURSE.
5. REFER ALSO TO "EARTH RETAINING WALL NOTES" ON SHEET S-001.

BUILDING RETAINING WALL DETAIL AND SCHEDULE

NOT TO SCALE

UNC CHARLOTTE
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SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

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SEALS
NORTH CAROLINA PROFESSIONAL SEAL 32215 ENGINEER MATTHEW S HICKEY
2019.05.16 13:59:10-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
APRIL 26, 2019
BID SET

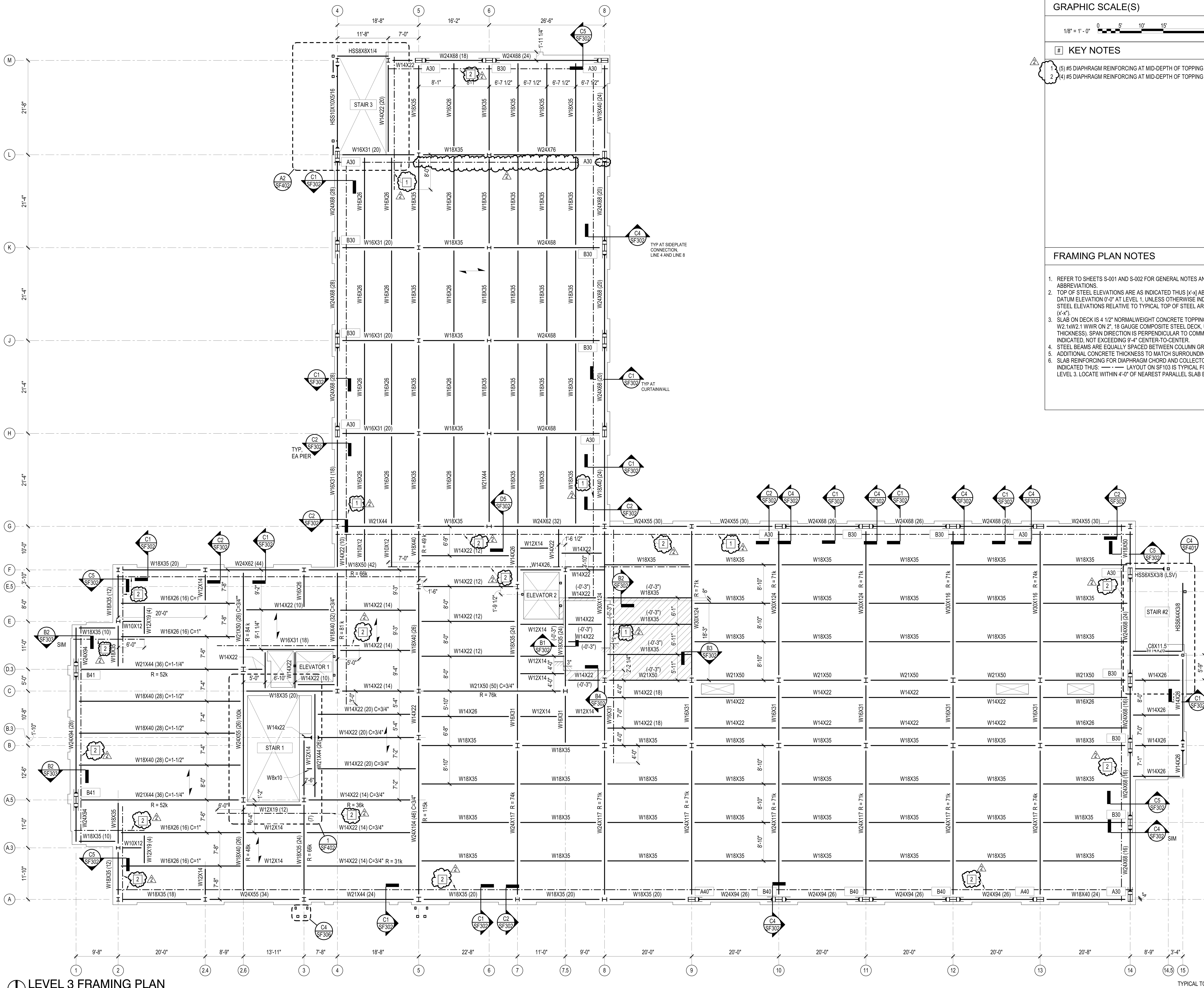
Issue Date
2 5/16/2019 Addendum 2

KEY PLAN

SHEET
TYPICAL CONCRETE AND MASONRY DETAILS

SB503

DESIGN: MSH
DRAWN: -
REVIEW: ECW
CN 6222



GRAPHIC SCALE(S)

1/8" = 1' - 0" 0 5' 10' 15' 30'

KEY NOTES

1. (5) #5 DIAPHRAGM REINFORCING AT MID-DEPTH OF TOPPING SLAB, CONT
2. (4) #5 DIAPHRAGM REINFORCING AT MID-DEPTH OF TOPPING SLAB, CONT

FRAMING PLAN NOTES

1. REFER TO SHEETS S-001 AND S-002 FOR GENERAL NOTES AND ABBREVIATIONS.
2. TOP OF STEEL ELEVATIONS ARE AS INDICATED THUS [x'-x] ABOVE TOP OF SLAB DATUM ELEVATION 0'-0" AT LEVEL 1, UNLESS OTHERWISE INDICATED. TOP OF STEEL ELEVATIONS RELATIVE TO TYPICAL TOP OF STEEL ARE INDICATED THUS (x'-x").
3. SLAB ON DECK IS 4 1/2" NORMALWEIGHT CONCRETE TOPPING WITH 6x6-W2.1xW2.1 WWR ON 2", 18 GAUGE COMPOSITE STEEL DECK, UON (6 1/2" TOTAL THICKNESS). SPAN DIRECTION IS PERPENDICULAR TO COMMON BEAMS OR AS INDICATED, NOT EXCEEDING 9'-4" CENTER-TO-CENTER.
4. STEEL BEAMS ARE EQUALLY SPACED BETWEEN COLUMN GRID LINES, UON.
5. ADDITIONAL CONCRETE THICKNESS TO MATCH SURROUNDING SLAB:
6. SLAB REINFORCING FOR DIAPHRAGM CHORD AND COLLECTOR ELEMENTS ARE INDICATED THUS: —·— LAYOUT ON SF103 IS TYPICAL FOR LEVEL 2 AND LEVEL 3. LOCATE WITHIN 4'-0" OF NEAREST PARALLEL SLAB EDGE.

UNC CHARLOTTE

SCIENCE BUILDING

9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

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SEALS

NORTH CAROLINA PROFESSIONAL SEAL 32215 ENGINEER MATTHEW S. HICKEY
2019.05.16 14:10:34-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

APRIL 26, 2019
BID SET

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN

SHEET

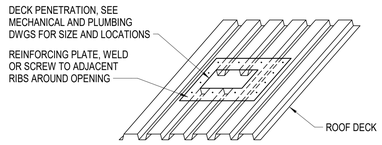
LEVEL 3 FRAMING PLAN

SF103

DESIGN: MSH
DRAWN: YW
REVIEW: ECW

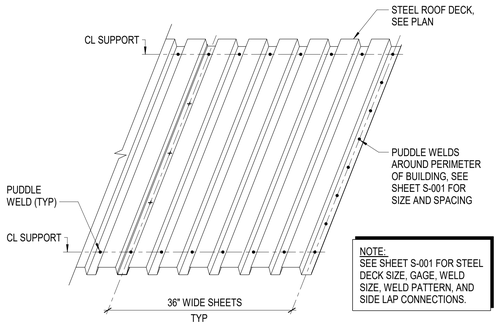
CN 6222

5/16/2019 2:10:05 PM
BIM 360://UNC Charlotte Science/6222_Science Central_S17.rvt



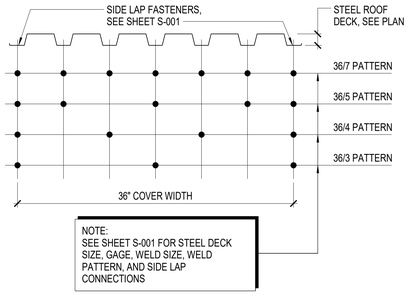
OPENING SIZE	REINFORCING	NOTES
UP TO 6" DIA	NOT REQUIRED	NOT REQUIRED
6" TO 12"	16 GA PLATE	SEE DETAIL ABOVE
OVER 12"	SEE "TYPICAL FRAMED DECK OPENING DETAIL", THIS SHEET	

TYPICAL ROOF DECK REINFORCEMENT
NOT TO SCALE



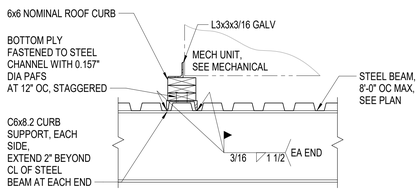
NOTE:
SEE SHEET S-001 FOR STEEL DECK SIZE, GAGE, WELD SIZE, WELD PATTERN, AND SIDE LAP CONNECTIONS.

TYPICAL ROOF DECK ATTACHMENT
NOT TO SCALE

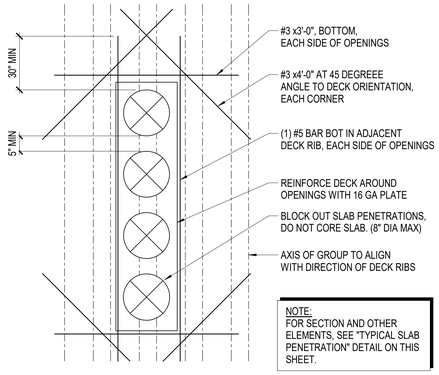


NOTE:
SEE SHEET S-001 FOR STEEL DECK SIZE, GAGE, WELD SIZE, WELD PATTERN, AND SIDE LAP CONNECTIONS

METAL DECK FASTENING
NOT TO SCALE



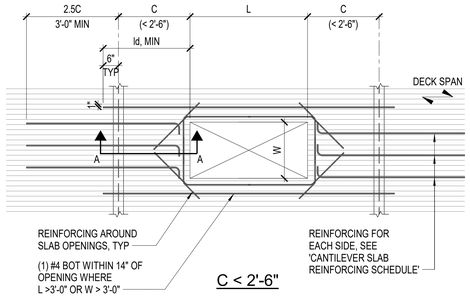
TYPICAL MECHANICAL UNIT CURB SUPPORT
NOT TO SCALE



NOTE:
FOR SECTION AND OTHER ELEMENTS, SEE "TYPICAL SLAB PENETRATION" DETAIL ON THIS SHEET.

TYPICAL SLAB PENETRATION - MULTIPLE OPENINGS
NOT TO SCALE

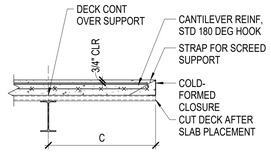
CANTILEVER SLAB REINFORCING SCHEDULE	
W	REINFORCING
≤ 1'-10"	(2) #3
1'-10" - 2'-6"	(3) #3
2'-6" -	#4 AT 12" OC



C < 2'-6"

TYPICAL REINFORCING FOR SLAB CANTILEVERS AT OPENINGS
NOT TO SCALE

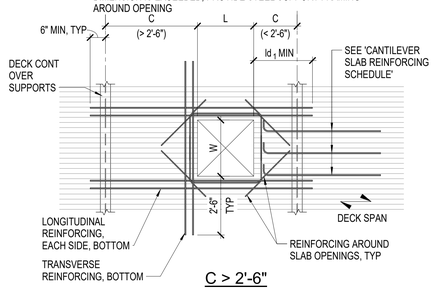
NOTES:
1. REINFORCE EACH SIDE OF OPENING BASED ON CANTILEVER LENGTH FOR THAT SIDE.
2. PLACE SLAB ON UNCUT STEEL DECK, WITH OPENINGS BLOCKED OUT. CUT DECK AFTER SLAB PLACEMENT.
3. FORM PERIMETER OF OPENING SUCH THAT THERE ARE NO VOIDS IN THE FINISHED SLAB AND ALL DECK FLUTES AROUND OPENING ARE FILLED TO FULL DEPTH.



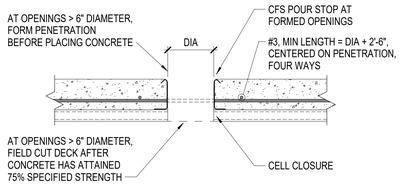
SECTION 'A-A'

SLAB REINFORCING SCHEDULE WHERE C > 2'-6"		
W	REINFORCING	
	TRANSVERSE	LONGITUDINAL
≤ 2'-0"	(2) #4	(2) #4
2'-0" - 2'-6"	(3) #4	(3) #4

NOTE: DIMENSION "W" MAY NOT EXCEED 2'-6". WHERE THIS DIMENSION IS EXCEEDED, PROVIDE STEEL SUPPORT FRAMING AROUND OPENING

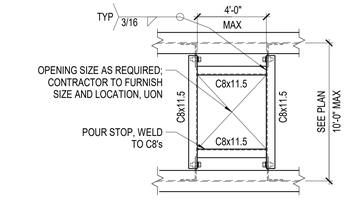


C > 2'-6"



NOTES:
1. INDIVIDUAL PENETRATIONS NOT EXCEEDING 6" DIAMETER MAY BE CUT USING A CORE DRILL AFTER CONCRETE PLACEMENT.
2. FOR ALL PENETRATIONS EXCEEDING 2" DIAMETER, OR WHERE MORE THAN 1 PENETRATION IS PRESENT, PROVIDE REINFORCING SHOWN.
3. ALLOWABLE PENETRATION C-C SPACING: 6" OC MIN, NOT LESS THAN 3.5 x DIAMETER
4. MAINTAIN 3" CLEAR FROM ANY STEEL FRAMING.
5. WHERE MULTIPLE OPENINGS ARE LOCATED IN A GROUP, SEE "TYPICAL SLAB PENETRATION - MULTIPLE OPENINGS," THIS SHEET.
6. REINFORCING BARS RUNNING PARALLEL TO A GROUP OF OPENINGS MAY BE CONTINUOUS ALONG THE LENGTH OF THE GROUP.
7. FOR PENETRATIONS EXCEEDING 12" DIAMETER, SEE "TYPICAL REINFORCING FOR SLAB CANTILEVERS," THIS SHEET.

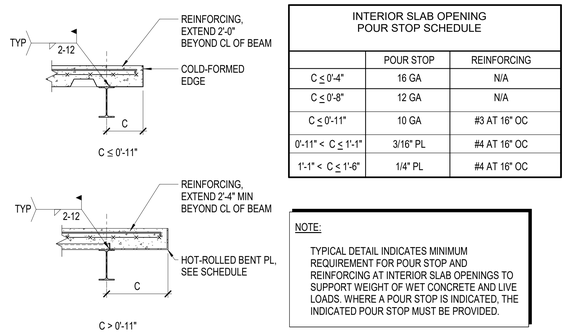
TYPICAL INDIVIDUAL SLAB PENETRATION
NOT TO SCALE



FOR OPENINGS 2'-0" TO 4'-0"

NOTES:
1. PROVIDE CHANNEL FRAME AROUND ALL DUCT PENETRATIONS, CHASES, ELECTRICAL BOXES, PLUMBING PIPES AND OTHER OPENINGS IN SLABS, FOR OPENINGS WHICH EXCEED LIMITATIONS OF TYPICAL DETAILS ON THIS SHEET FOR OPENINGS WITHOUT FRAMING SUPPORT, AND WHERE INDICATED.
2. OPENINGS THAT ARE SPACED CLOSER THAN 2x THE OPENING SIZE ARE CONSIDERED ONE OPENING.
3. MINIMUM DISTANCE BETWEEN FRAMES IS 1'-0".
4. OPENINGS NOT SHOWN ON PLAN REQUIRE APPROVAL OF THE ENGINEER. SUBMIT SUCH OPENINGS FOR APPROVAL.

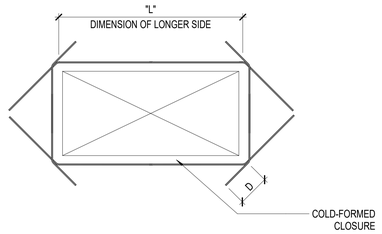
TYPICAL FRAMING AROUND SLAB OPENINGS
NOT TO SCALE



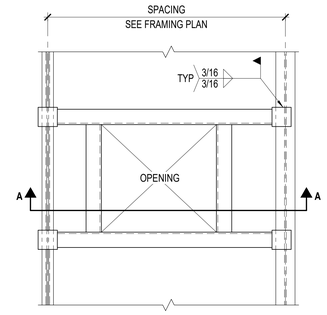
INTERIOR SLAB OPENING POUR STOP SCHEDULE		
	POUR STOP	REINFORCING
C ≤ 0'-4"	16 GA	N/A
C ≤ 0'-8"	12 GA	N/A
C ≤ 0'-11"	10 GA	#3 AT 16" OC
0'-11" < C ≤ 1'-1"	3/16" PL	#4 AT 16" OC
1'-1" < C ≤ 1'-6"	1/4" PL	#4 AT 16" OC

NOTE:
TYPICAL DETAIL INDICATES MINIMUM REQUIREMENT FOR POUR STOP AND REINFORCING AT INTERIOR SLAB OPENINGS TO SUPPORT WEIGHT OF WET CONCRETE AND LIVE LOADS. WHERE A POUR STOP IS INDICATED, THE INDICATED POUR STOP MUST BE PROVIDED.

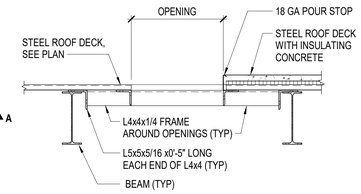
TYPICAL POUR STOP AT FRAMED SLAB OPENINGS
NOT TO SCALE



TYPICAL SLAB REINFORCING AROUND FRAMED SLAB OPENINGS
NOT TO SCALE

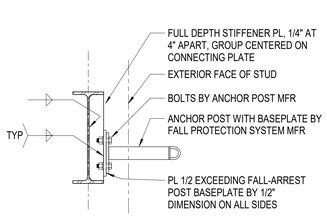


PLAN

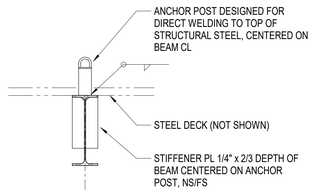


SECTION A-A

TYPICAL DECK SUPPORT AT ROOF OPENINGS
NOT TO SCALE

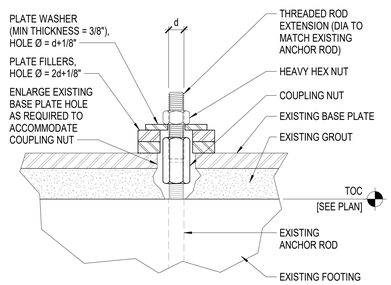


POST MOUNTED TO SIDE OF BEAM

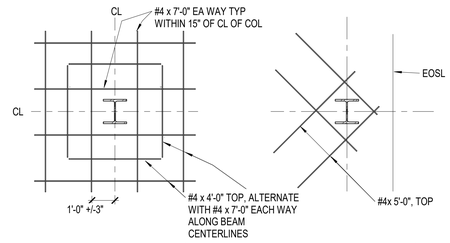


POST MOUNTED TO TOP OF BEAM

DETAIL - LIFE SAFETY POST ANCHORAGE TO STRUCTURAL STEEL
NOT TO SCALE

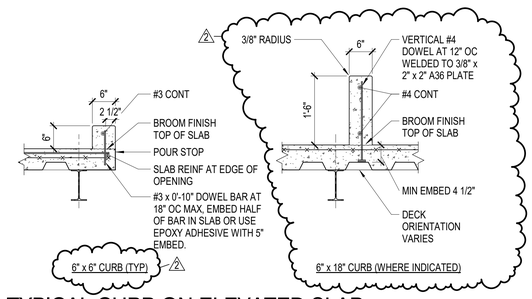


TYPICAL ANCHOR ROD EXTENSION
NOT TO SCALE



INTERIOR COLUMNS PERIMETER COLUMNS

TYPICAL SLAB REINFORCING AT STEEL COLUMNS
NOT TO SCALE



TYPICAL CURB ON ELEVATED SLAB
NOT TO SCALE

UNC CHARLOTTE
SCIENCE BUILDING
9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

DESIGNERS
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704.377.8800

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NC License # F-1071
LandDesign
223 North Graham Street
Charlotte, NC 28202

SEALS
NORTH CAROLINA PROFESSIONAL SEAL 32215 ENGINEER MATTHEW S. HICKS
2019.05.16 13:59:46-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
APRIL 26, 2019
BID SET

Issue Date		
2	5/16/2019	Addendum 2

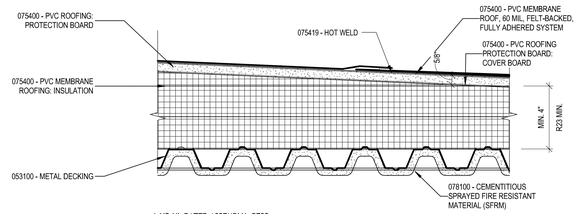
KEY PLAN

SHEET
TYPICAL FRAMING AND DECK DETAILS

SF502

DESIGN: MSH
DRAWN: SMS
REVIEW: ECW

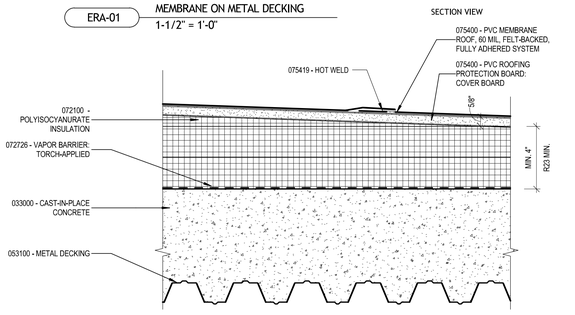
CN 6222



1-HR UL RATED ASSEMBLY: P732

SECTION VIEW

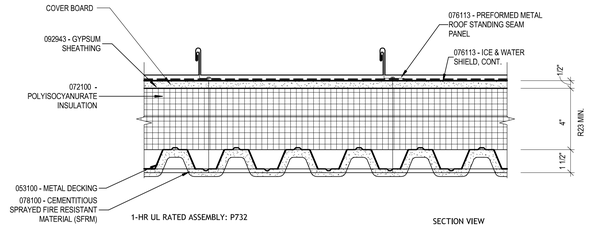
ERA-01 MEMBRANE ON METAL DECKING
1-1/2" = 1'-0"



1-HR UL RATED ASSEMBLY: S735

SECTION VIEW

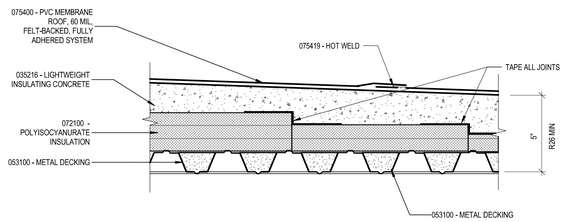
ERA-02 MEMBRANE ON CONCRETE DECKING
3" = 1'-0"



1-HR UL RATED ASSEMBLY: P732

SECTION VIEW

ERA-03 STANDING SEAM MTL ROOF
3" = 1'-0"

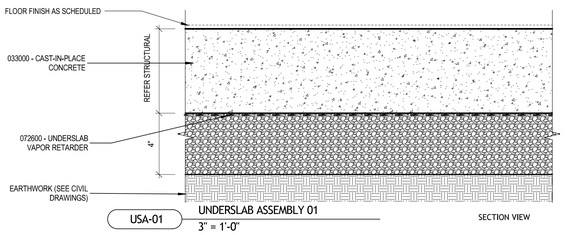


1-HR UL RATED ASSEMBLY: D916

SECTION VIEW

ERA-04 LIGHTWEIGHT INSULATING CONCRETE
3" = 1'-0"

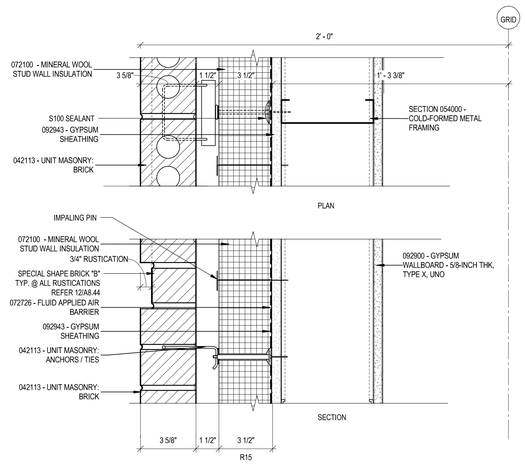
EXTERIOR ROOF ASSEMBLIES



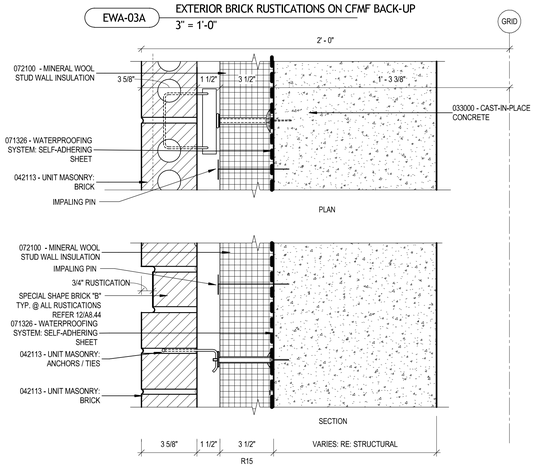
SECTION VIEW

USA-01 UNDERSLAB ASSEMBLY 01
3" = 1'-0"

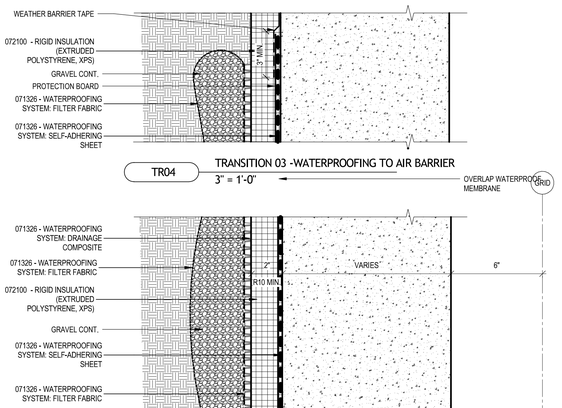
UNDER SLAB ASSEMBLIES



EWA-03A EXTERIOR BRICK RUSTICATIONS ON CFMF BACK-UP
3" = 1'-0"



EWA-03B EXTERIOR BRICK RUSTICATIONS ON CONCRETE
3" = 1'-0"

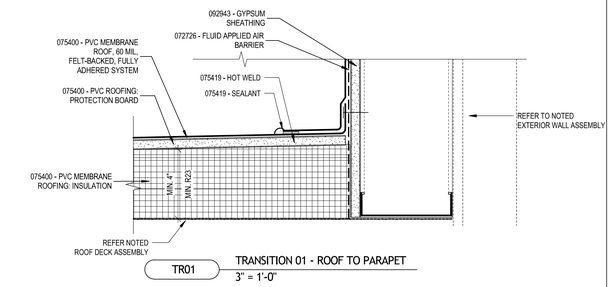


TR04 TRANSITION 03 -WATERPROOFING TO AIR BARRIER
3" = 1'-0"

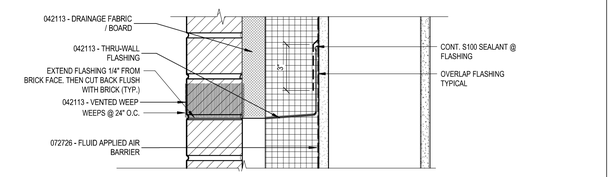
EWA-04 MEMBRANE WATERPROOFING - CONCRETE
3" = 1'-0"

EXTERIOR WALL ASSEMBLIES & TRANSITIONS

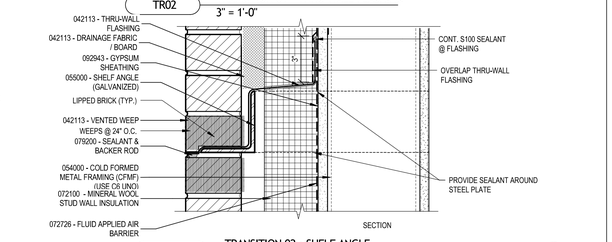
GENERAL NOTE:
ANY SCREW TYPE ANCHORAGE THAT PENETRATE THE WEATHER BARRIER AND EXTERIOR SHEATHING. IF THE INTENDED COLD FORMED METAL FRAMING STUD IS MISSED THE SCREW SHOULD BE LEFT IN PLACE OR PATCHED TO AVOID LEAVING A HOLE INTHE WEATHER BARRIER AND SHEATHING. WEATHER BARRIER IS SELF HEALING.



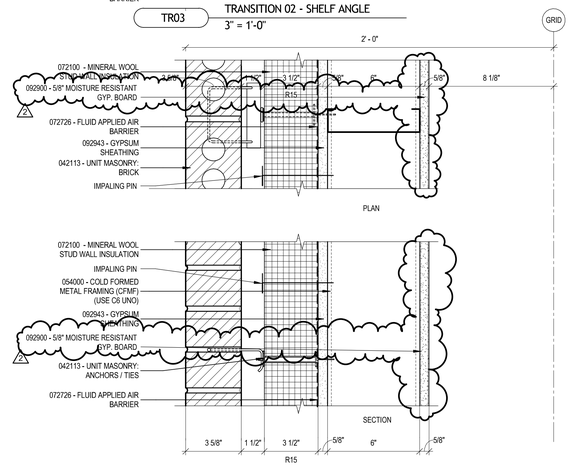
TR01 TRANSITION 01 - ROOF TO PARAPET
3" = 1'-0"



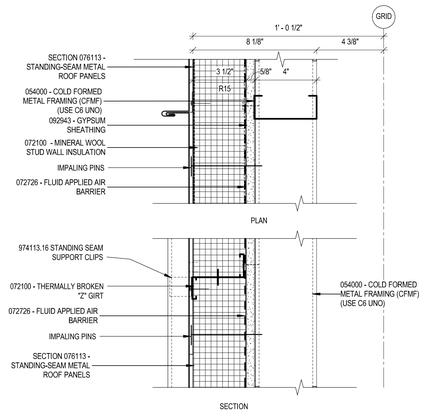
TR02 TRANSITION 01 - THRU WALL FLASHING
3" = 1'-0"



TR03 TRANSITION 02 - SHELF ANGLE
3" = 1'-0"



EWA-01 EXTERIOR BRICK VENEER ON CFMF BACKUP
3" = 1'-0"



EWA-02 STANDING SEAM METAL PANEL
3" = 1'-0"

UNC CHARLOTTE
SCIENCE BUILDING
9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

DESIGNERS
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NC License # F-1071
LandDesign
223 North Graham Street
Charlotte, NC 28202

SEALS

CLARK, NEXSEN, INC. CERT NO. 50680 CHARLOTTE, INC.

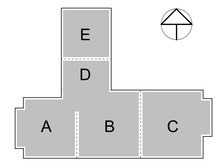
JASON H JONES REGISTERED ARCHITECT 9157 NORTH CAROLINA
Date: 2019.05.15 16:37:55-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
26 APRIL, 2019
BID DOCUMENTS

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN



SHEET
TYPICAL ASSEMBLIES

SCALE 3" = 1'-0"

A0.02

DESIGN: Designer
DRAWN: Author
REVIEW: Checker

CN 6222

5/14/2019 6:49:32 AM
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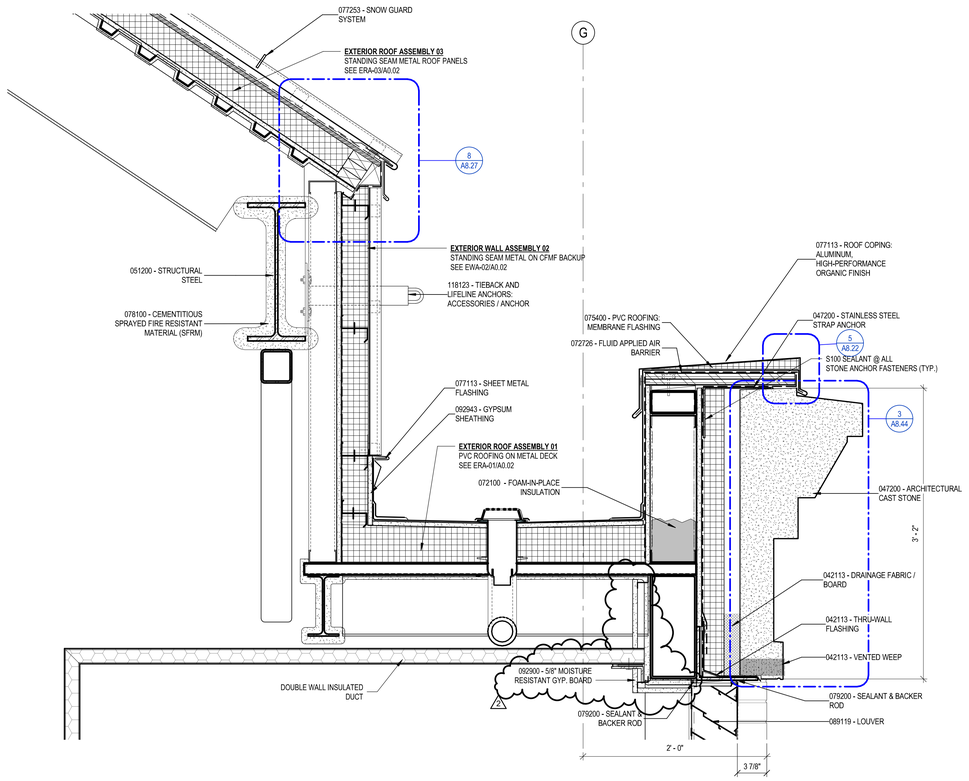
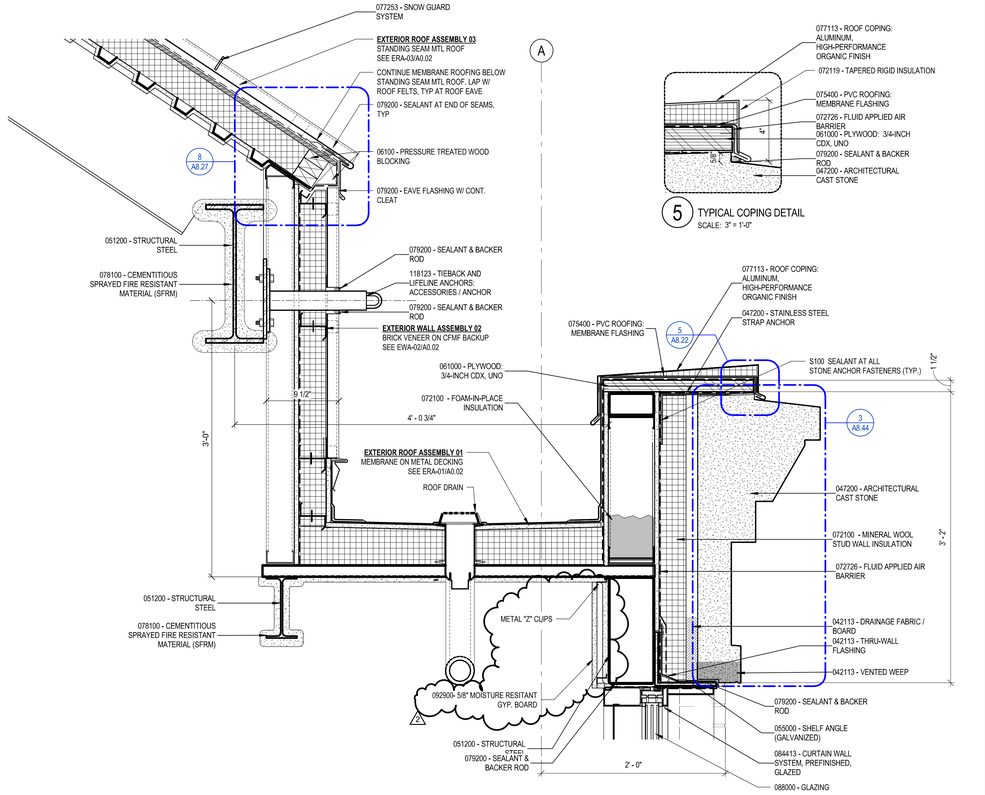
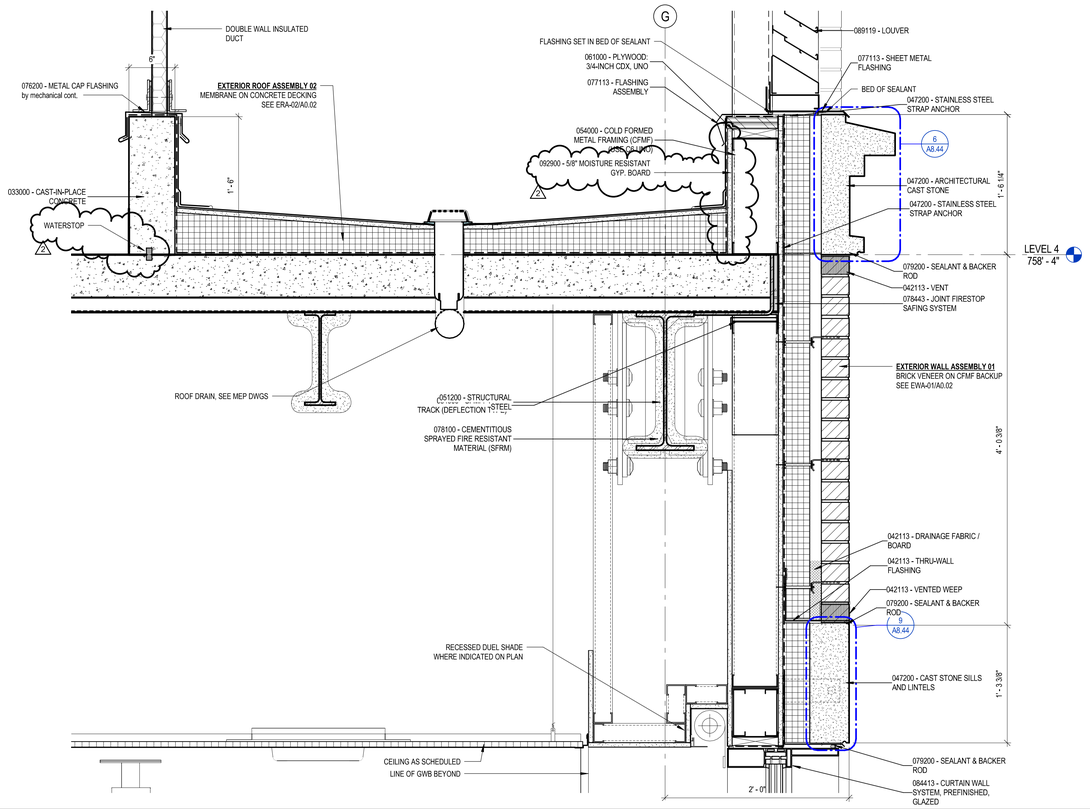
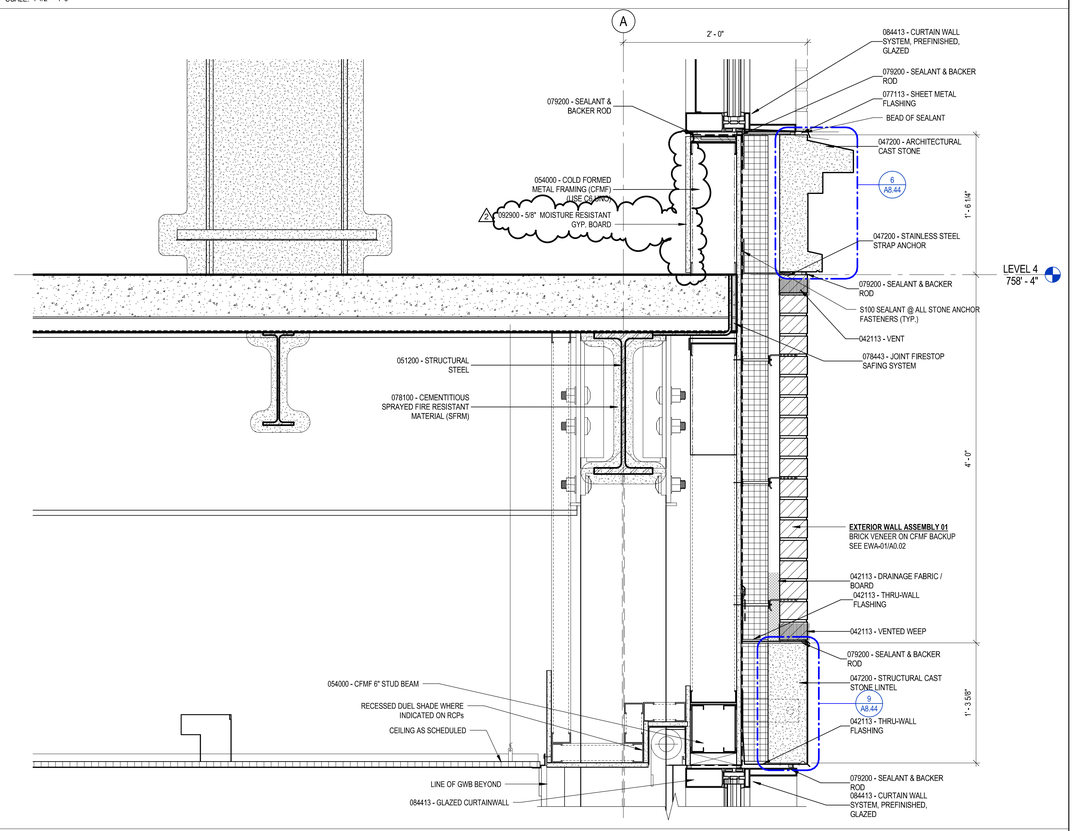




2 WALL SECTION - NORTH - LOUVER
SCALE: 1 1/2" = 1'-0"



1 SECTION DETAIL - ROOF TRANSITION AT STANDING SEAM
SCALE: 1 1/2" = 1'-0"



4 SECTION DETAIL - PARAPET AT AIR INTAKE LOUVERS
SCALE: 1 1/2" = 1'-0"

3 SECTION DETAIL - PARAPET DETAIL AT GLAZING
SCALE: 1 1/2" = 1'-0"

UNC CHARLOTTE
SCIENCE BUILDING
9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

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704.377.8800

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NC License # F-1071

LandDesign
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Charlotte, NC 28202

SEALS

CLARK NEXSEN, INC. CERT NO. 5068D CHARLOTTE, N.C.

JASON H JONES REGISTERED ARCHITECT 9157 NORTH CAROLINA

Date: 2019.05.15 16:32:20-04'00'

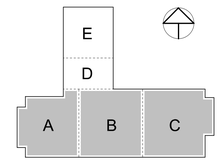
CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

26 APRIL, 2019
BID DOCUMENTS

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN



SHEET

EXTERIOR SECTION DETAILS

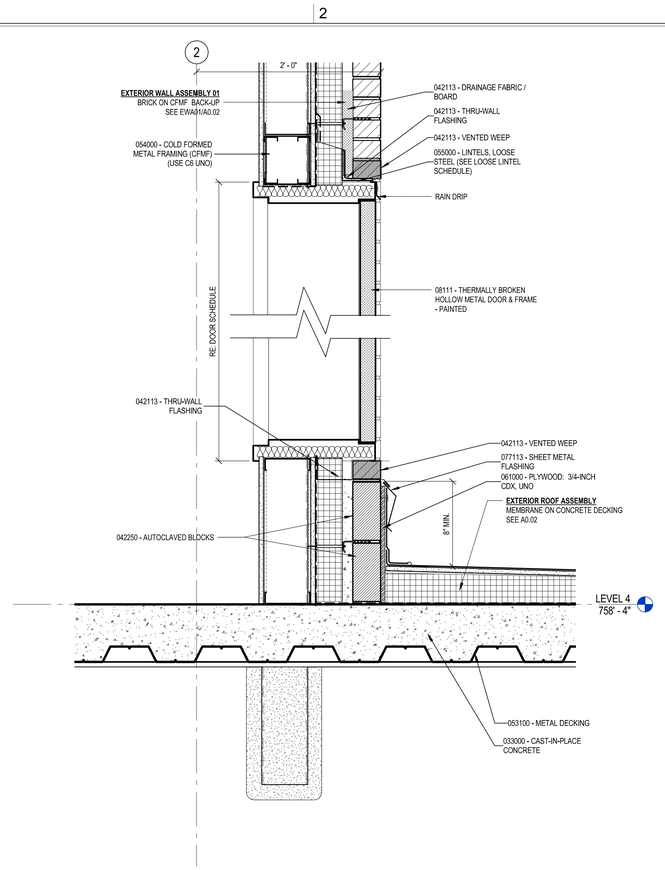
SCALE As indicated

A8.22

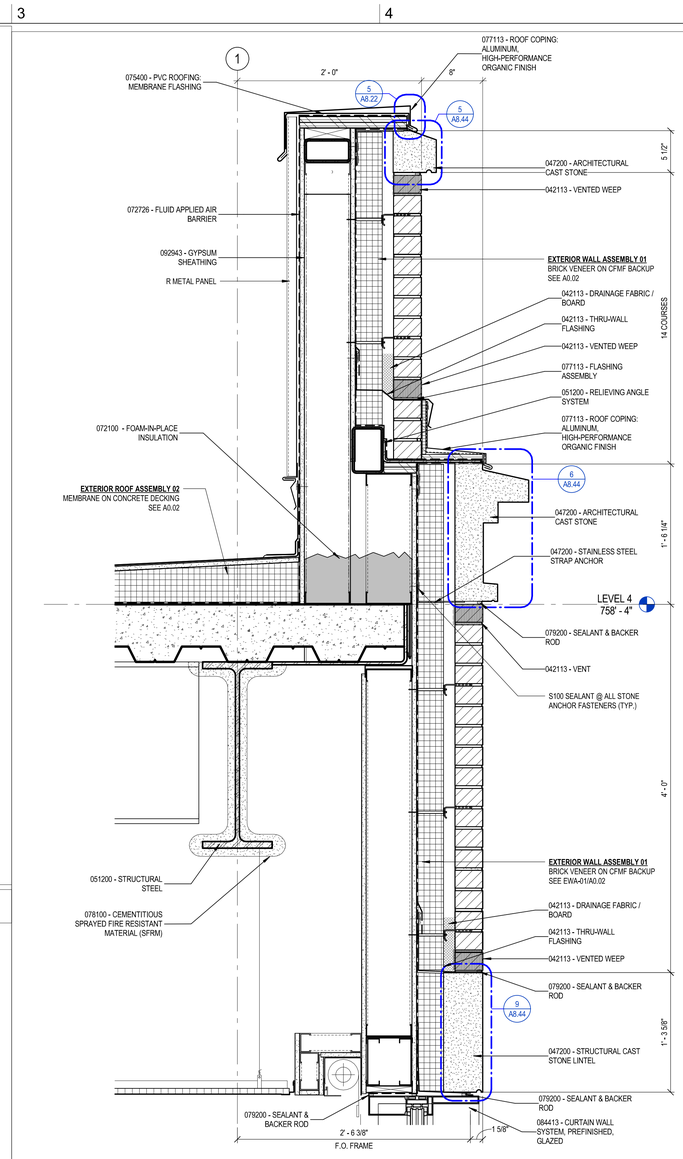
DESIGN: Designer
DRAWN: Author
REVIEW: Checker

CN 6222

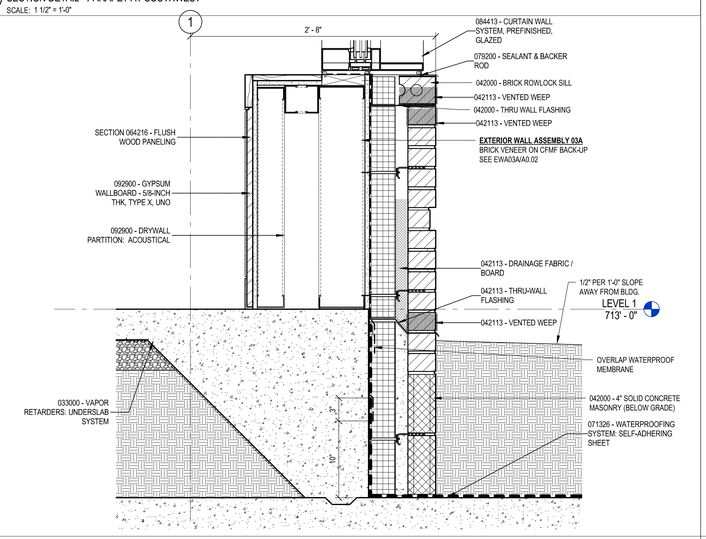
5/14/2019 8:59:52 AM
A380-UNC Charlotte Science\8222_Science Central_A17.rvt



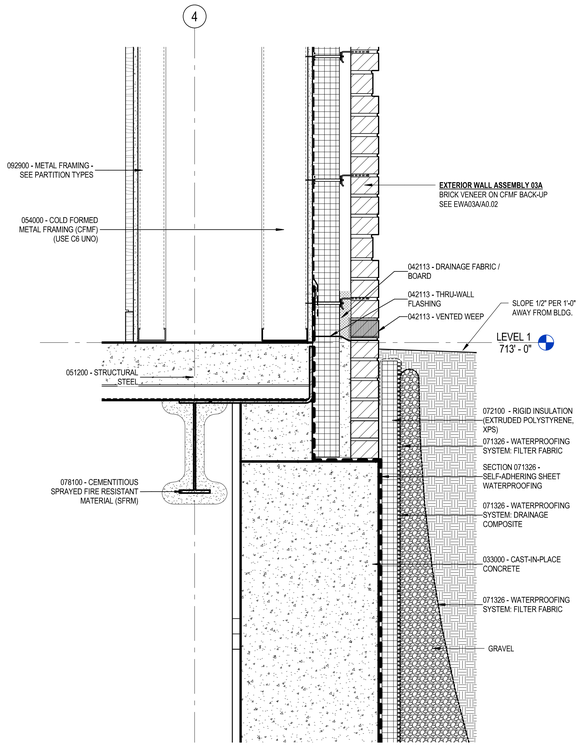
4 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



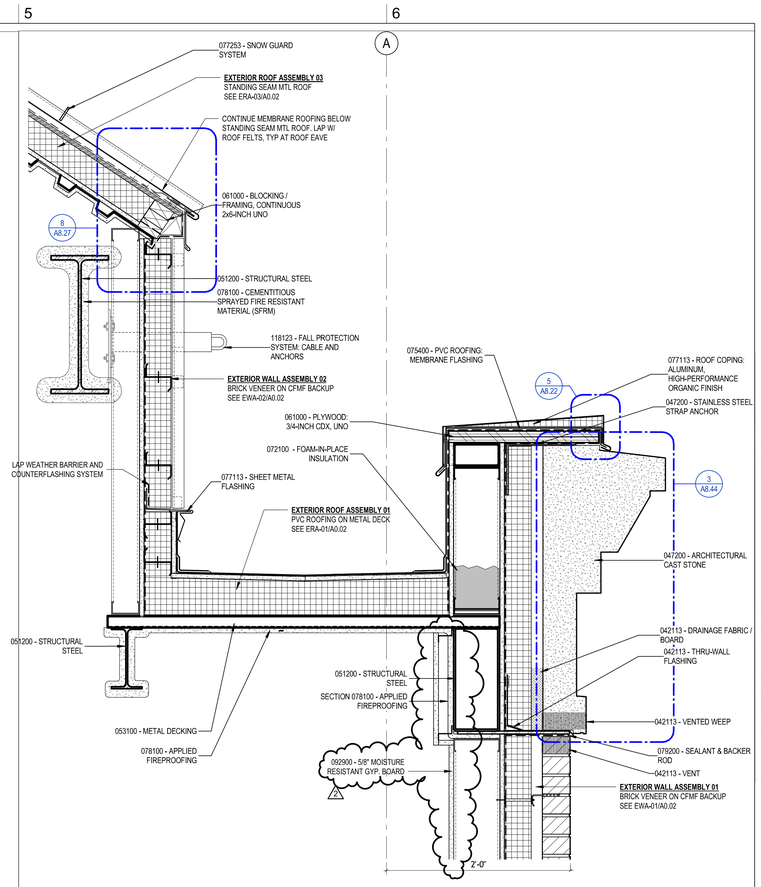
3 SECTION DETAIL - PARAPET AT SOUTHWEST
SCALE: 1 1/2" = 1'-0"



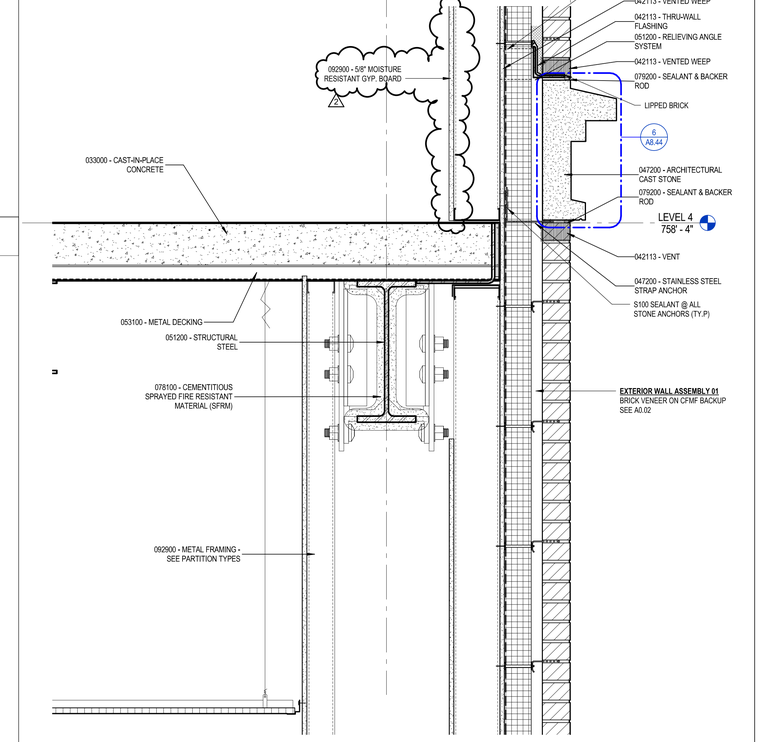
5 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



6 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



1 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



2 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"

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A360://UNC Charlotte Science/8222_Science Central_A17.rvt

UNC CHARLOTTE

SCIENCE BUILDING

9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

DESIGNERS

CLARKNEXSEN
1523 Elizabeth Avenue, Suite 300
Charlotte, NC 28204
704.377.8800

CONSULTANT

PAYETTE
290 Congress Street, 5th Floor
Boston, MA 02201

VANDERWEIL
274 Summer Street
Boston, MA 02201
NC License # F-1071

LandDesign
223 North Graham Street
Charlotte, NC 28202

SEALS

CLARK NEXSEN, INC. CERT NO. 50680 CHARLOTTE, N.C.

JASON H JONES REGISTERED ARCHITECT 9157 NORTH CAROLINA
Date: 2019.05.15 18:34:38-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

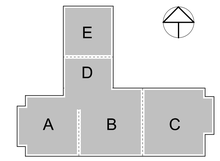
SUBMITTAL

26 APRIL, 2019
BID DOCUMENTS

Issue Date

2	5/16/2019	Addendum 2

KEY PLAN



SHEET

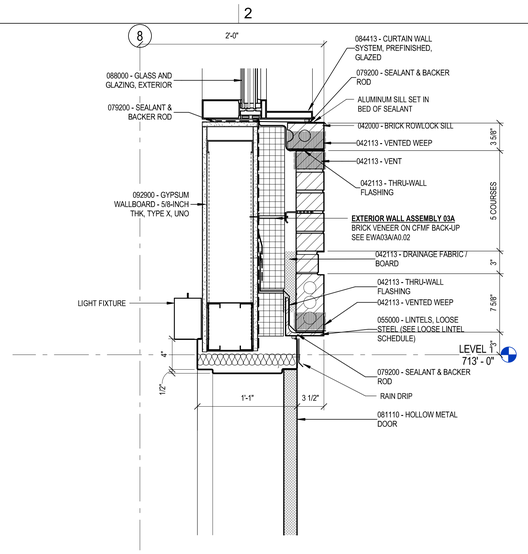
EXTERIOR SECTION DETAILS

SCALE 1 1/2" = 1'-0"

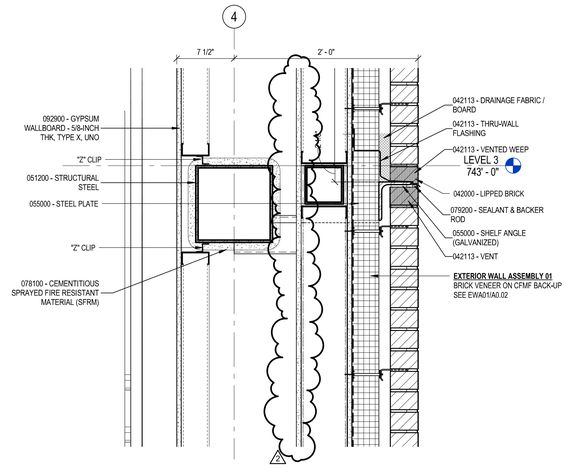
A8.23

DESIGN: Designer
DRAWN: Author
REVIEW: Checker

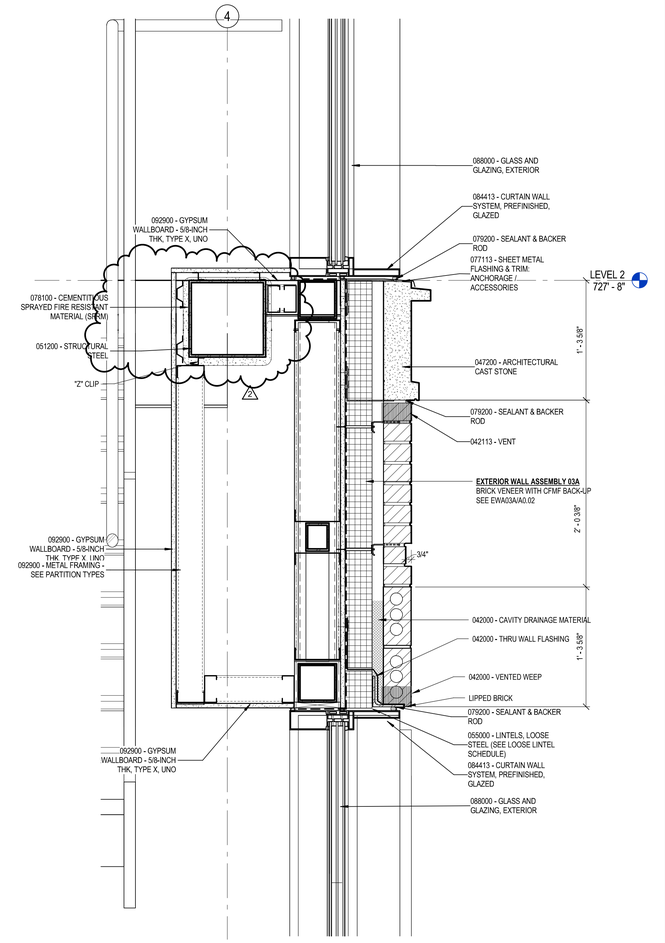
CN 6222



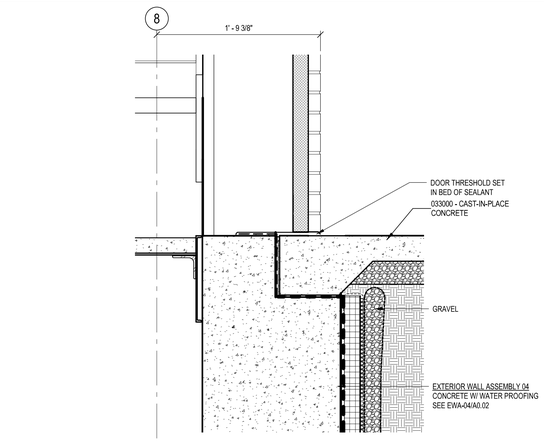
4 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



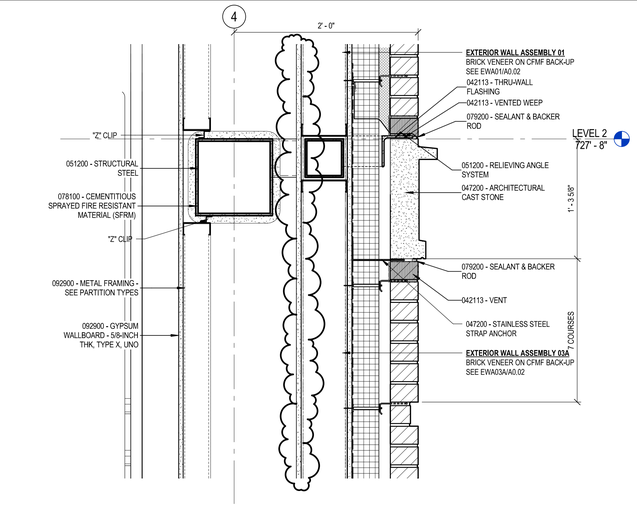
3 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



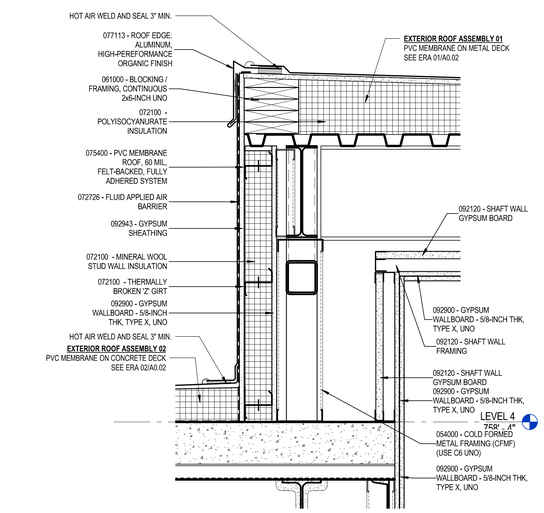
1 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



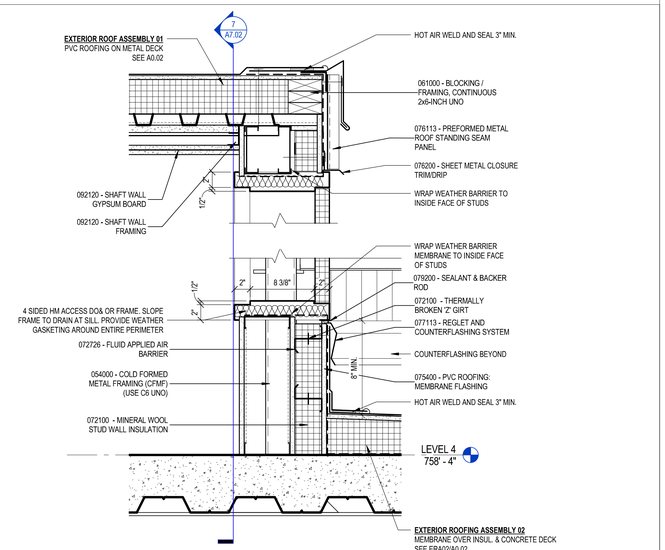
6 Detail 18
SCALE: 1 1/2" = 1'-0"



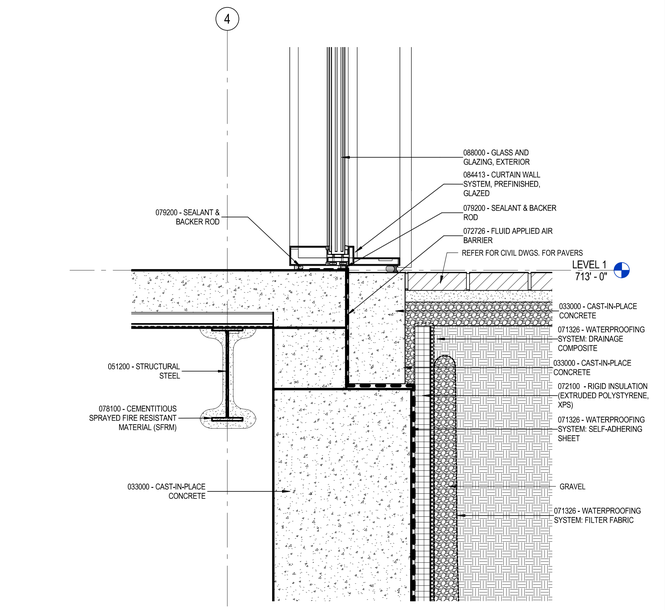
5 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



8 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



7 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



2 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"

UNC CHARLOTTE
SCIENCE BUILDING

9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

DESIGNERS
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NC License # F-1071

LandDesign
223 North Graham Street
Charlotte, NC 28202

SEALS

CLARK NEXSEN, INC. CERT NO. 5068O CHARLOTTE, N.C.

JASON H JONES REGISTERED ARCHITECT 9157 NORTH CAROLINA CHARLOTTE

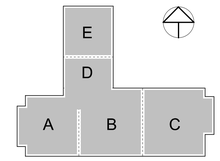
Date: 2019.05.15 16:34:59-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
26 APRIL, 2019
BID DOCUMENTS

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN



SHEET
EXTERIOR SECTION DETAILS

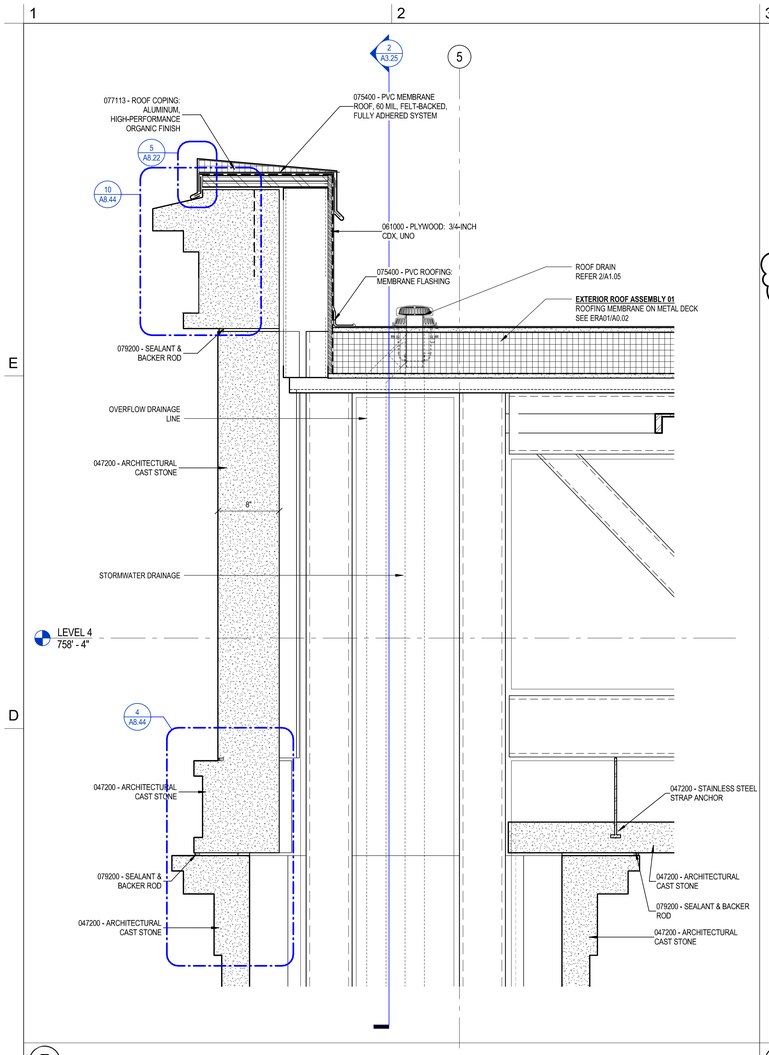
SCALE 1 1/2" = 1'-0"

A8.25

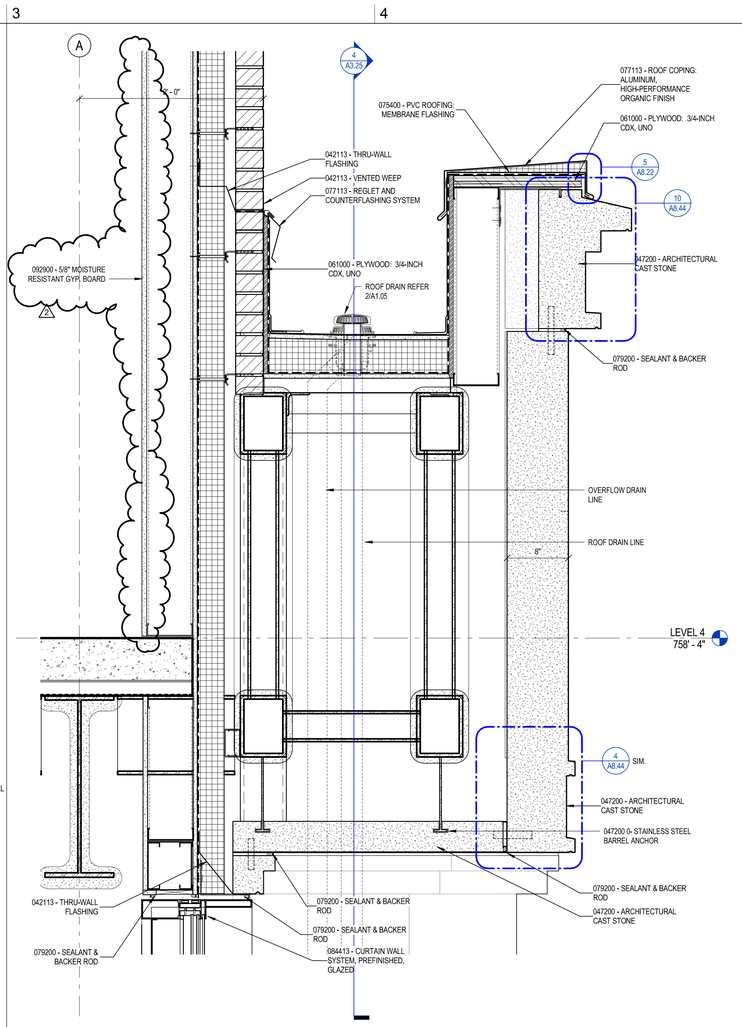
DESIGN: Designer
DRAWN: Author
REVIEW: Checker

CN 6222

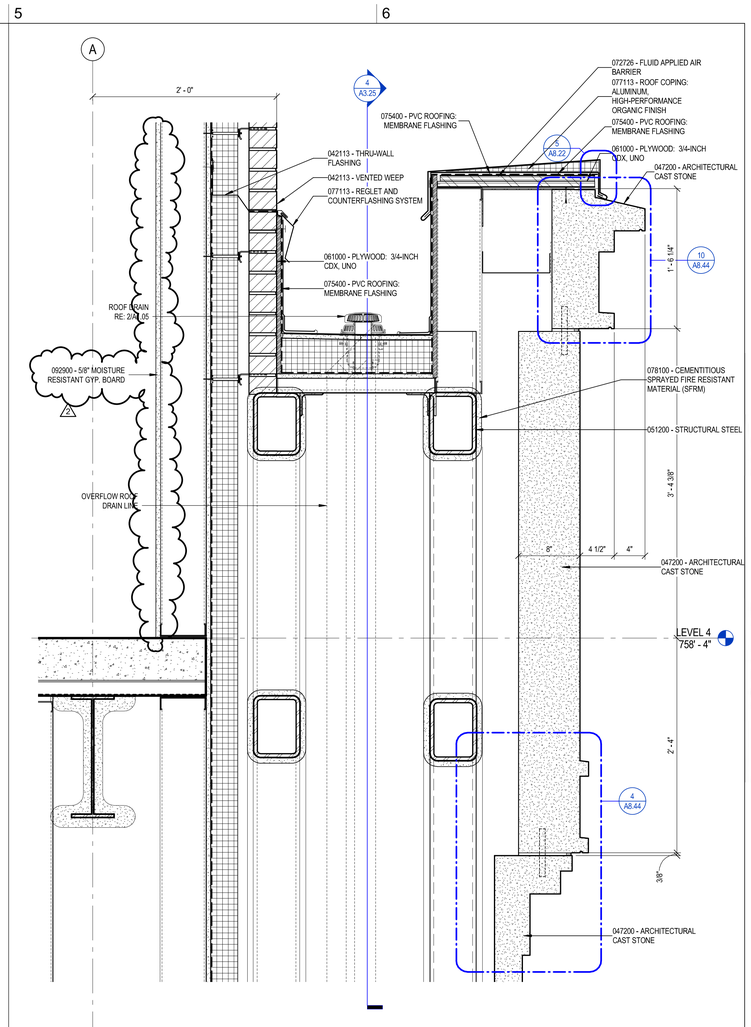
5/14/2019 7:42:07 AM
A360://UNC Charlotte Science/6222_Science Central_A17.rvt



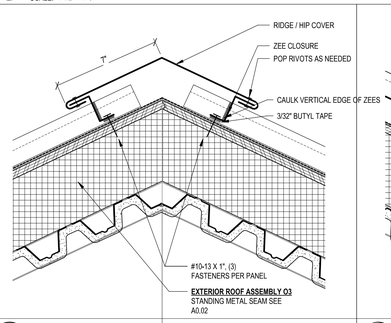
7 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



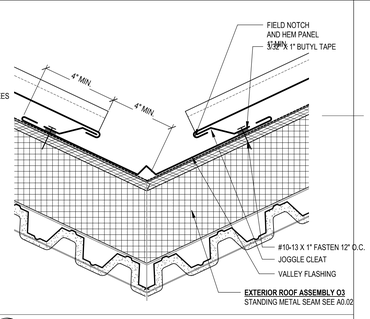
4 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



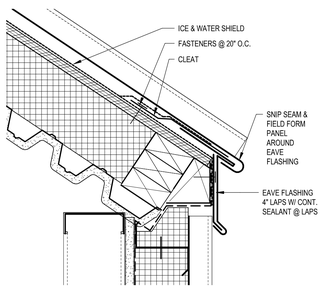
1 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



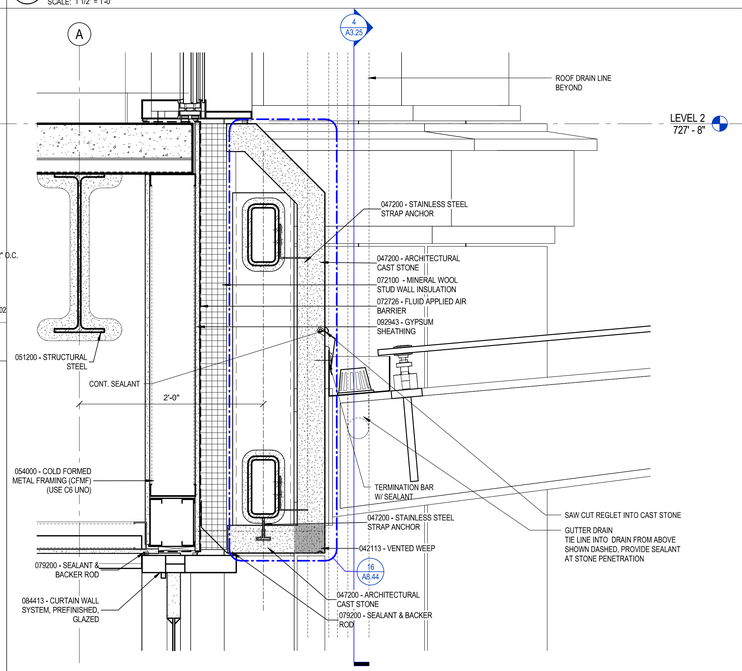
3 METAL ROOF RIDGE DETAIL
SCALE: 3" = 1'-0"



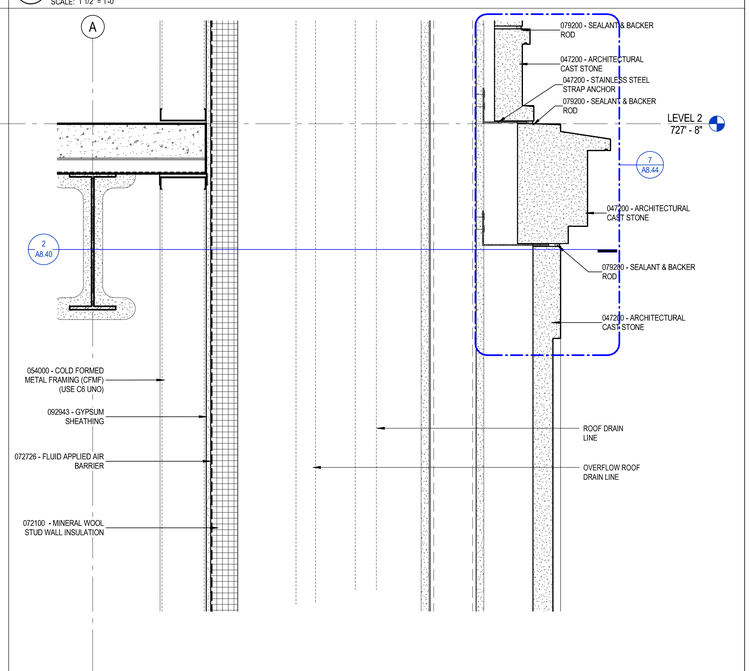
2 METAL ROOF VALLEY DETAIL
SCALE: 3" = 1'-0"



8 METAL ROOF EAVE DETAIL
SCALE: 3" = 1'-0"



5 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



6 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"

UNC CHARLOTTE
SCIENCE BUILDING
9201 University City Blvd
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SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

DESIGNERS
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704.377.8800

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Boston, MA 02201

VANDERWEIL
274 Summer Street
Boston, MA 02201
NC License # F-1071

LandDesign
223 North Graham Street
Charlotte, NC 28202

SEALS

CLARK NEXSEN, INC. CERT NO. 50680 CHARLOTTE, N.C.

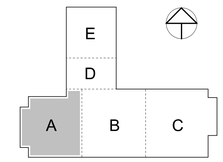
JASON H JONES REGISTERED ARCHITECT 9157 NORTH CAROLINA
Date: 2019.05.15 16:35:53-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
26 APRIL, 2019
BID DOCUMENTS

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN



SHEET
EXTERIOR SECTION DETAILS

SCALE As indicated

A8.27

DESIGN: Designer
DRAWN: Author
REVIEW: Checker

CN 6222

5/14/2019 9:00:49 AM
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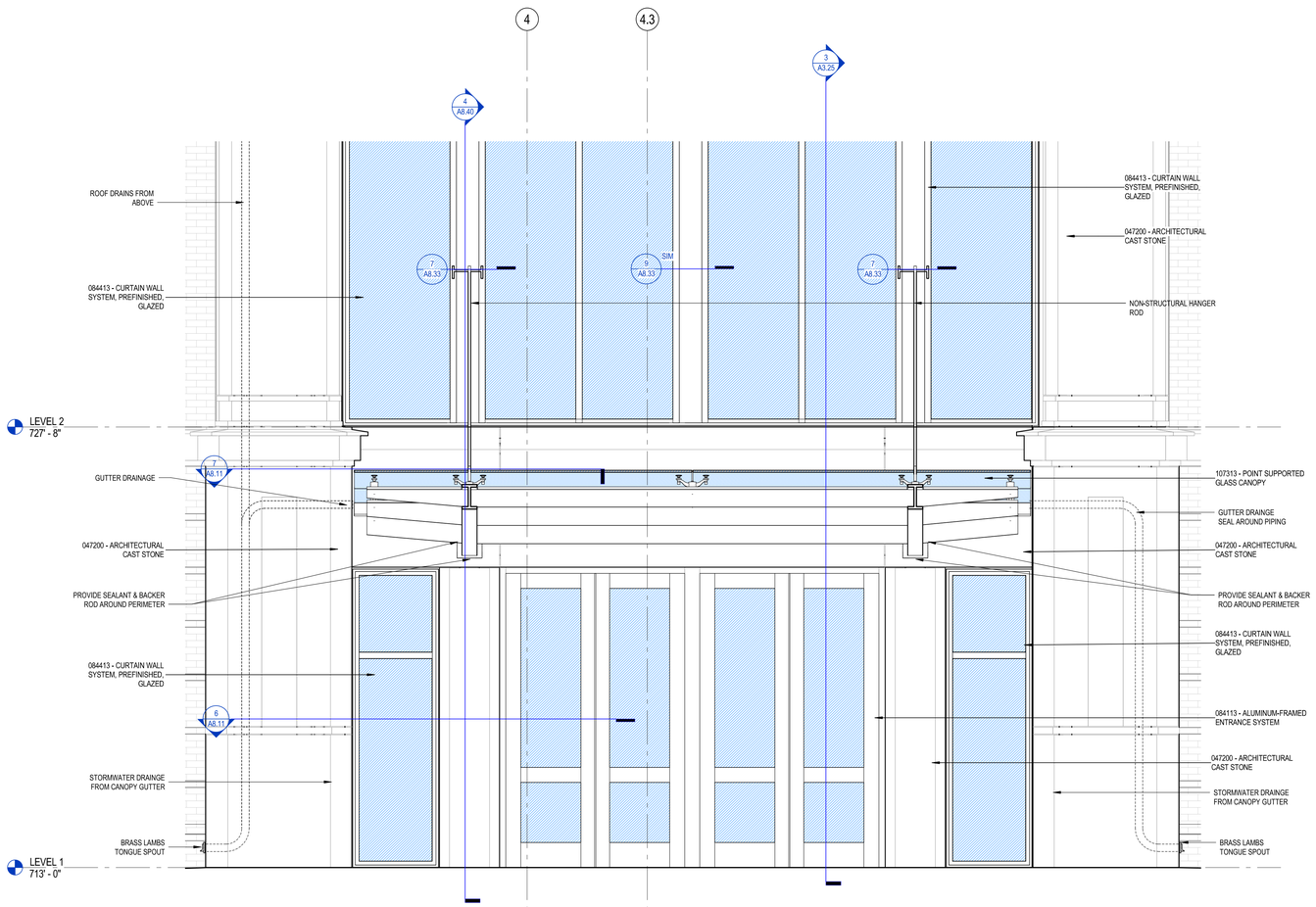
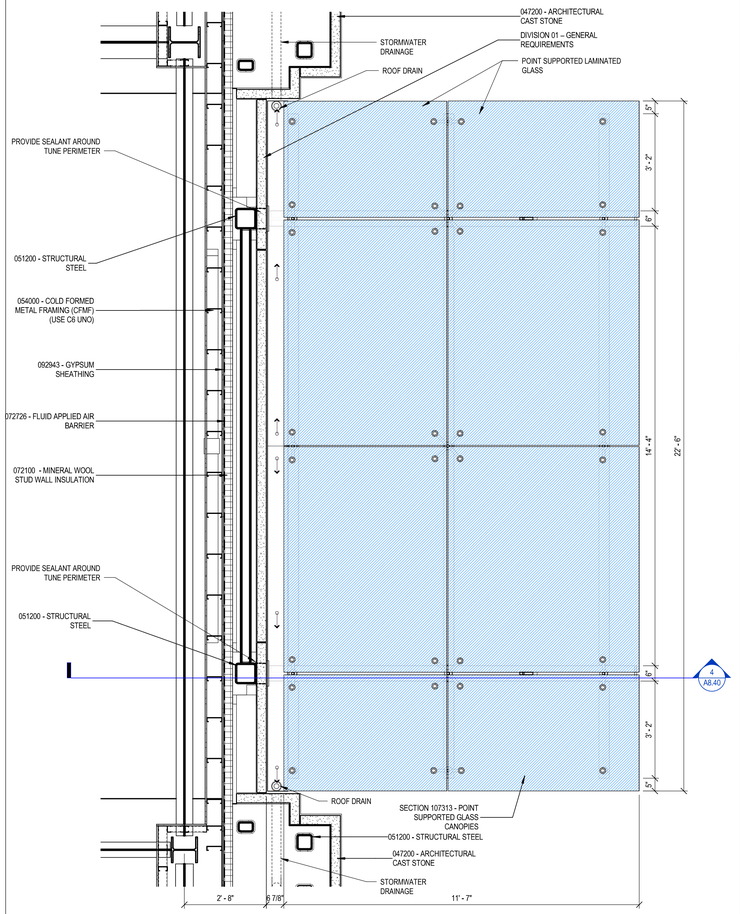
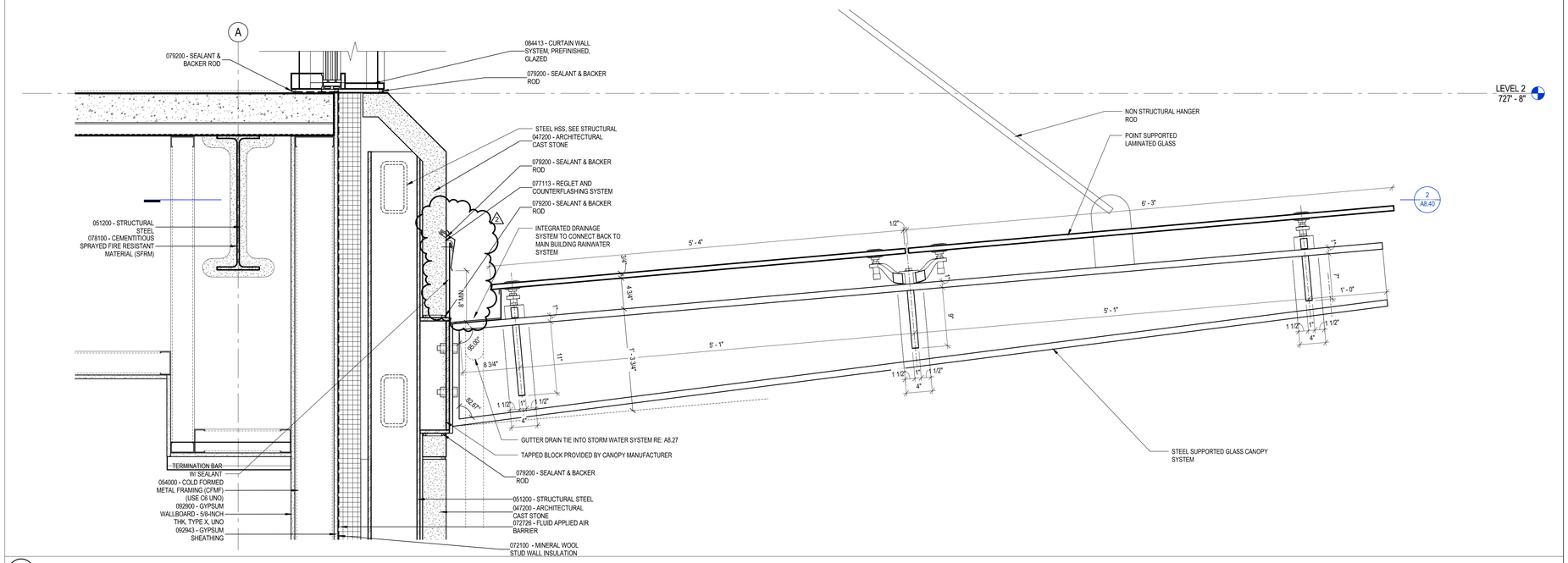


3 CANOPY AT MAIN ENTRY - ENLARGED ELEVATION
SCALE: 1/2" = 1'-0"



2 MAIN ENTRY CANOPY - PLAN DETAIL
SCALE: 1/2" = 1'-0"



4 MAIN ENTRY CANOPY - SECTION DETAIL
SCALE: 1 1/2" = 1'-0"

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UNC CHARLOTTE
SCIENCE BUILDING

9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

DESIGNERS

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Charlotte, NC 28204
704.377.8800

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VANDERWEIL
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NC License # F-1071

LandDesign
223 North Graham Street
Charlotte, NC 28202

SEALS

CLARK NEXSEN, INC. CERT NO. 50680 CHARLOTTE, N.C.

JASON H JONES REGISTERED ARCHITECT 9157 NORTH CAROLINA CHARLOTTE, N.C.

Date: 2019.05.15 16:36:12-04'00'

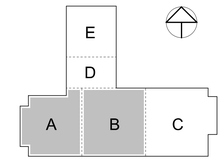
CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

26 APRIL, 2019
BID DOCUMENTS

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN



SHEET

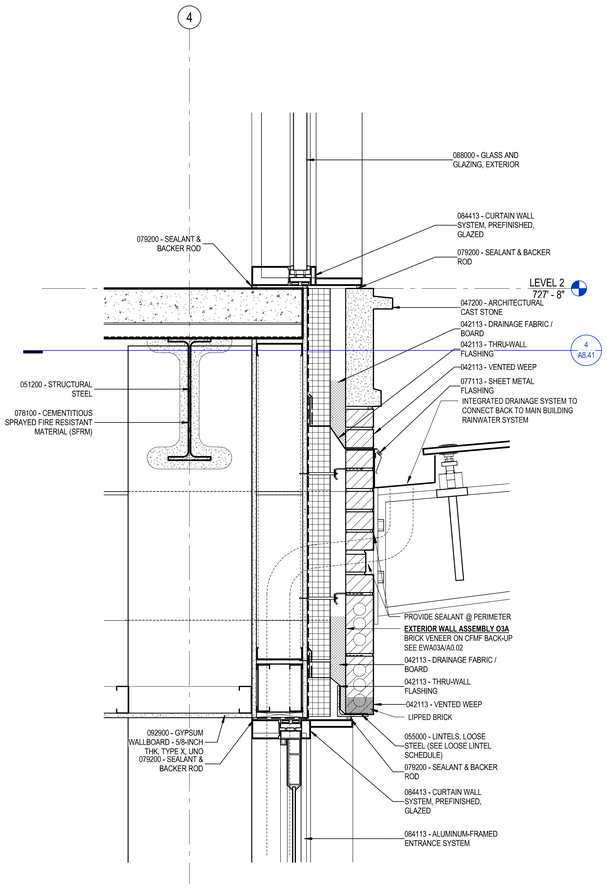
MAIN ENTRY CANOPY DETAILS

SCALE As indicated

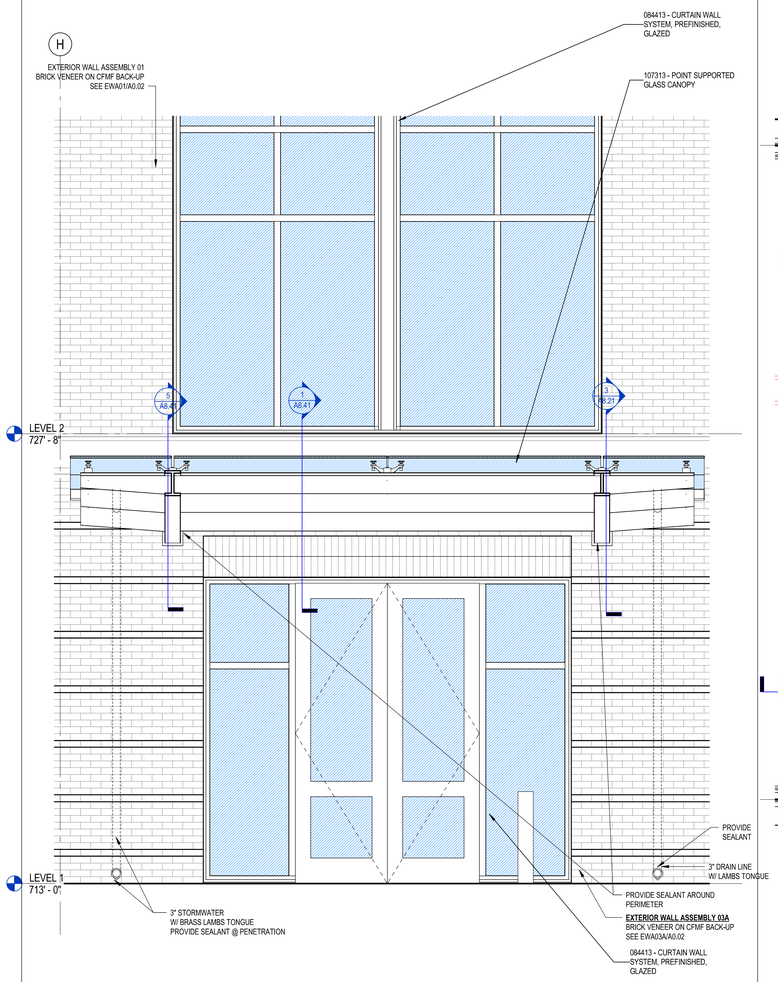
A8.40

DESIGN: Designer
DRAWN: Author
REVIEW: Checker

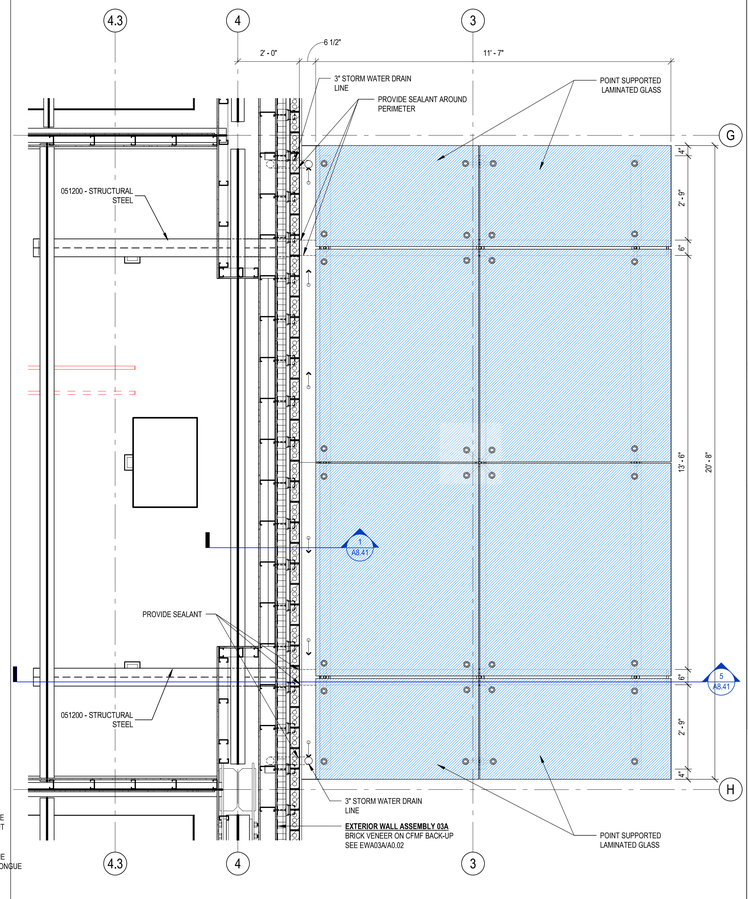
CN 6222



1 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



3 CANOPY AT WEST ENTRY - ENLARGED ELEVATION
SCALE: 1/2" = 1'-0"



4 WEST ENTRY CANOPY - PLAN DETAIL
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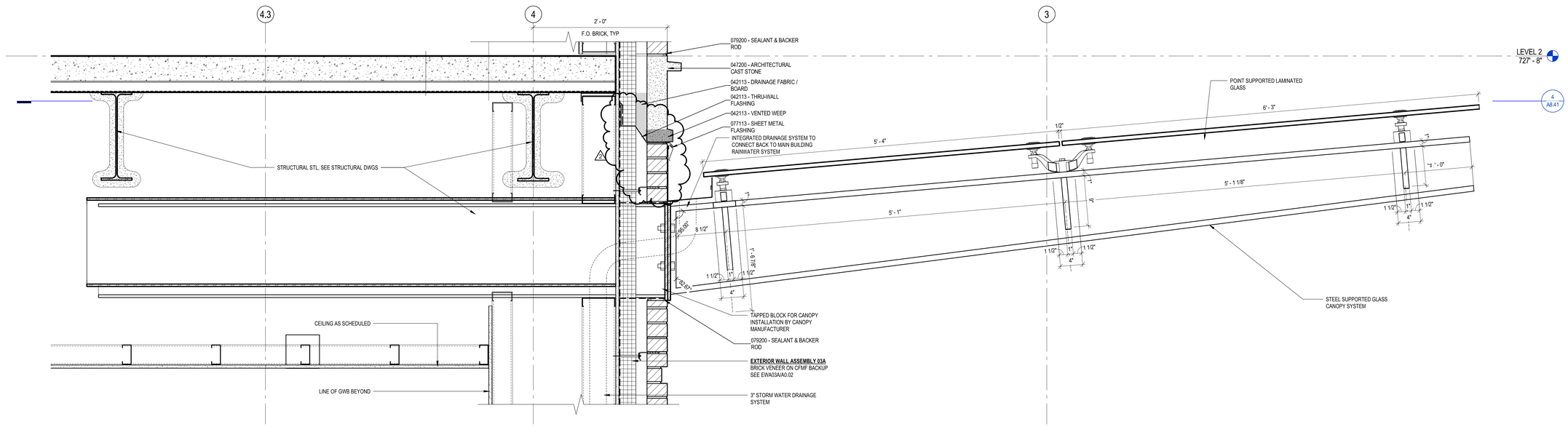

5 WEST ENTRY CANOPY - SECTION DETAIL
SCALE: 1 1/2" = 1'-0"

UNC CHARLOTTE
SCIENCE BUILDING
9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
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SEALS

CLARK NEXSEN, INC. CERT NO. 50680 CHARLOTTE, N.C.

JASON H JONES REGISTERED ARCHITECT 9157 NORTH CAROLINA

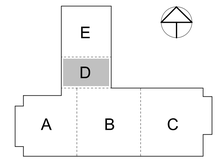
Date: 2019.05.15 16:36:39-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
26 APRIL, 2019
BID DOCUMENTS

Issue Date		
2	5/16/2019	Addendum 2

KEY PLAN



SHEET
WEST ENTRY CANOPY DETAILS

SCALE As indicated

A8.41

DESIGN: Designer
DRAWN: Author
REVIEW: Checker

CN 6222

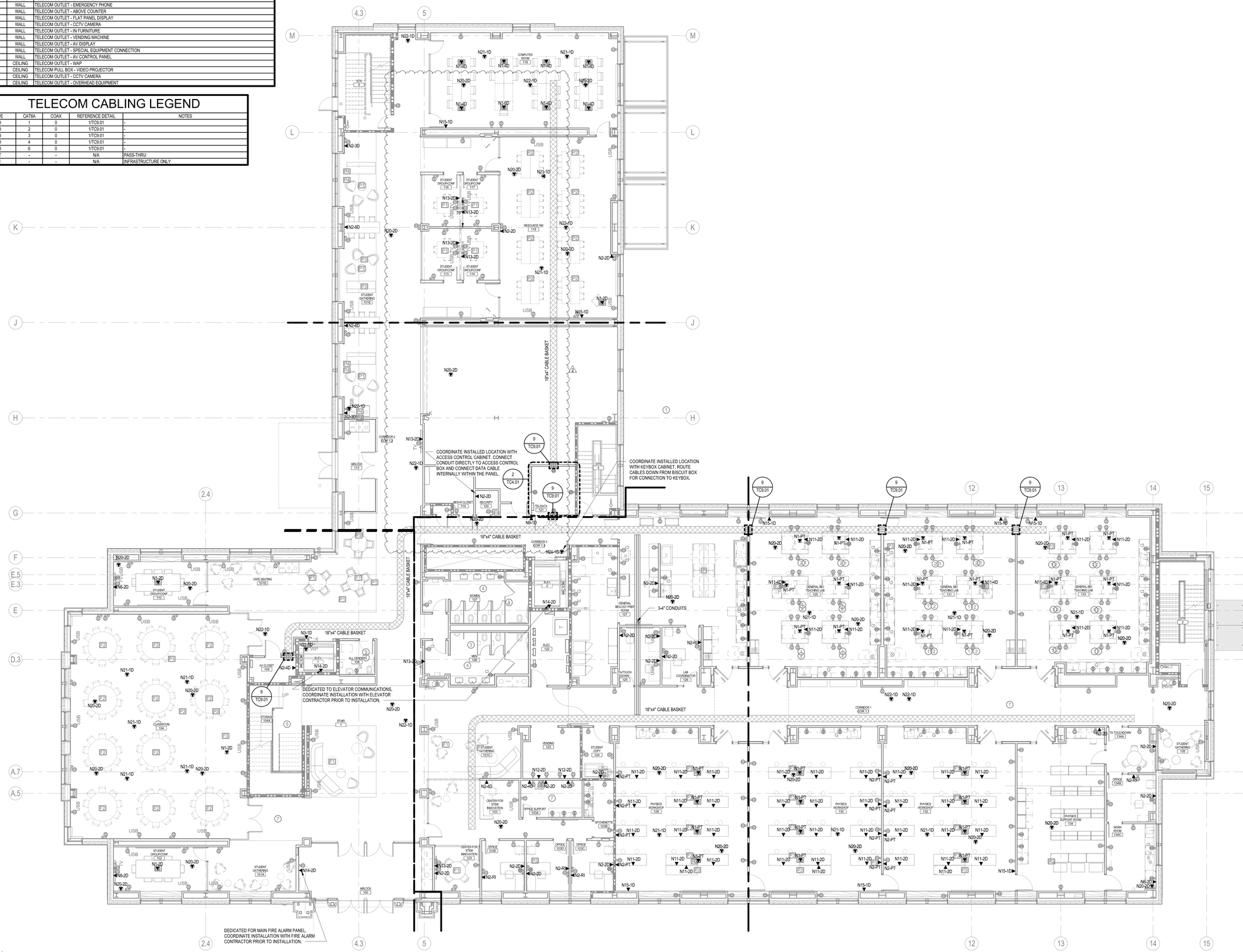
5/14/2019 8:01:17 AM
A360://UNC Charlotte Science/6222_Science Central_A17.rvt

TELECOM JUNCTION BOX LEGEND

TYPE		FUNCTION
SYM	STYLE	
N1	FLOOR	TELECOM OUTLET - FLOOR
N2	WALL	TELECOM OUTLET - STANDARD
N3	WALL	TELECOM OUTLET - EMERGENCY PHONE
N6	WALL	TELECOM OUTLET - ABOVE COUNTER
N8	WALL	TELECOM OUTLET - FLAT PANEL DISPLAY
N9	WALL	TELECOM OUTLET - CCTV CAMERA
N11	WALL	TELECOM OUTLET - IN FURNITURE
N12	WALL	TELECOM OUTLET - VENDING MACHINE
N13	WALL	TELECOM OUTLET - AV DISPLAY
N14	WALL	TELECOM OUTLET - SPECIAL EQUIPMENT CONNECTION
N15	WALL	TELECOM OUTLET - AV CONTROL PANEL
N20	CEILING	TELECOM OUTLET - WAP
N21	CEILING	TELECOM PULL BOX - VIDEO PROJECTOR
N22	CEILING	TELECOM OUTLET - CCTV CAMERA
N24	CEILING	TELECOM OUTLET - OVERHEAD EQUIPMENT

TELECOM CABLING LEGEND

TYPE	CAT6A	COAX	REFERENCE DETAIL	NOTES
-1D	1	0	1/TC9.01	-
-2D	2	0	1/TC9.01	-
-3D	3	0	1/TC9.01	-
-4D	4	0	1/TC9.01	-
-6D	6	0	1/TC9.01	-
-PT	-	-	N/A	PASS-THRU
-RI	-	-	N/A	INFRASTRUCTURE ONLY



TELECOM PLAN LEVEL 1
1/8" = 1'-0"

5/15/2019 4:36:59 PM
BIM 360://UNC Charlotte Science/8222_Science Central_T17.rvt

UNC CHARLOTTE
SCIENCE BUILDING
9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

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NC License # F-1071

LandDesign.
223 North Graham Street
Charlotte, NC 28202

THE SEXTANT GROUP, INC.
700 WATERFRONT DRIVE
SUITE 200
PITTSBURGH, PA 15222
412.323.8580
IT CONSULTANT

SEALS

CLARK, NEXSEN, INC. CERT NO. 5068O CHARLOTTE, NC

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER Bicsi Terry A Rabinette BICSI ID # 128219 Expires 10-31

NORTH CAROLINA PROFESSIONAL SEAL 028914 ENGINEER Michael C Phillips

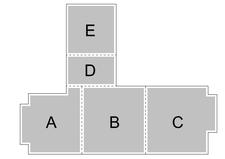
2019.05.16 07:44:14-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL
26 APRIL, 2019
BID DOCUMENTS

2	05/16/2019	ADDENDUM #2

KEY PLAN



SHEET
TELECOM PLAN LEVEL 1

SCALE 1/8" = 1'-0"

TC3.01

DESIGN: TR/SO
DRAWN: TR/SO
REVIEW: AA

TELECOM JUNCTION BOX LEGEND

TYPE		FUNCTION
SYM	STYLE	
N1	FLOOR	TELECOM OUTLET - FLOOR
N2	WALL	TELECOM OUTLET - STANDARD
N3	WALL	TELECOM OUTLET - EMERGENCY PHONE
N6	WALL	TELECOM OUTLET - ABOVE COUNTER
N8	WALL	TELECOM OUTLET - FLAT PANEL DISPLAY
N9	WALL	TELECOM OUTLET - CCTV CAMERA
N11	WALL	TELECOM OUTLET - IN FURNITURE
N12	WALL	TELECOM OUTLET - VENDING MACHINE
N13	WALL	TELECOM OUTLET - AV DISPLAY
N14	WALL	TELECOM OUTLET - SPECIAL EQUIPMENT CONNECTION
N15	WALL	TELECOM OUTLET - AV CONTROL PANEL
N20	CEILING	TELECOM OUTLET - WAP
N21	CEILING	TELECOM PULL BOX - VIDEO PROJECTOR
N22	CEILING	TELECOM OUTLET - CCTV CAMERA
N24	CEILING	TELECOM OUTLET - OVERHEAD EQUIPMENT

TELECOM CABLING LEGEND

TYPE	CAT6A	COAX	REFERENCE DETAIL	NOTES
-1D	1	0	1/TC9.01	-
-2D	2	0	1/TC9.01	-
-3D	3	0	1/TC9.01	-
-4D	4	0	1/TC9.01	-
-6D	6	0	1/TC9.01	-
-PT	-	-	N/A	PASS-THRU
-RI	-	-	N/A	INFRASTRUCTURE ONLY

TELECOM PLAN LEVEL 2
1/8" = 1'-0"

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BIM 360://UNC Charlotte Sciences/8222_Science Central_T17.rvt

UNC CHARLOTTE
SCIENCE BUILDING

9201 University City Blvd
Charlotte, NC 28223

SCO ID Number: 16-14355-02D
CODE: 46626
ITEM: 301

DESIGNERS

CLARKNEXSEN
1523 Elizabeth Avenue, Suite 300
Charlotte, NC 28204
704.377.8800

CONSULTANT

PAYETTE
290 Congress Street, 5th Floor
Boston, MA 02201

VANDERWEIL
274 Summer Street
Boston, MA 02201
NC License # F-1071

LandDesign.
223 North Graham Street
Charlotte, NC 28202

THE SEXTANT GROUP, INC.
700 WATERFRONT DRIVE
SUITE 200
PITTSBURGH, PA 15222
412.323.8580

IT CONSULTANT

SEALS

CLARK NEXSEN, INC. CERT NO. 50680 CHARLOTTE, NC

BICSI Terry A Robinette BICSI ID # 128219 Expires 12-31-21

NORTH CAROLINA PROFESSIONAL SEAL 028914 ENGINEER Michael D. Phillips

2019.05.16 07:44:35-04'00'

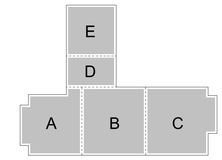
CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

26 APRIL, 2019
BID DOCUMENTS

2	05/16/2019	ADDENDUM #2

KEY PLAN



SHEET

TELECOM PLAN LEVEL 2

SCALE 1/8" = 1'-0"

TC3.02

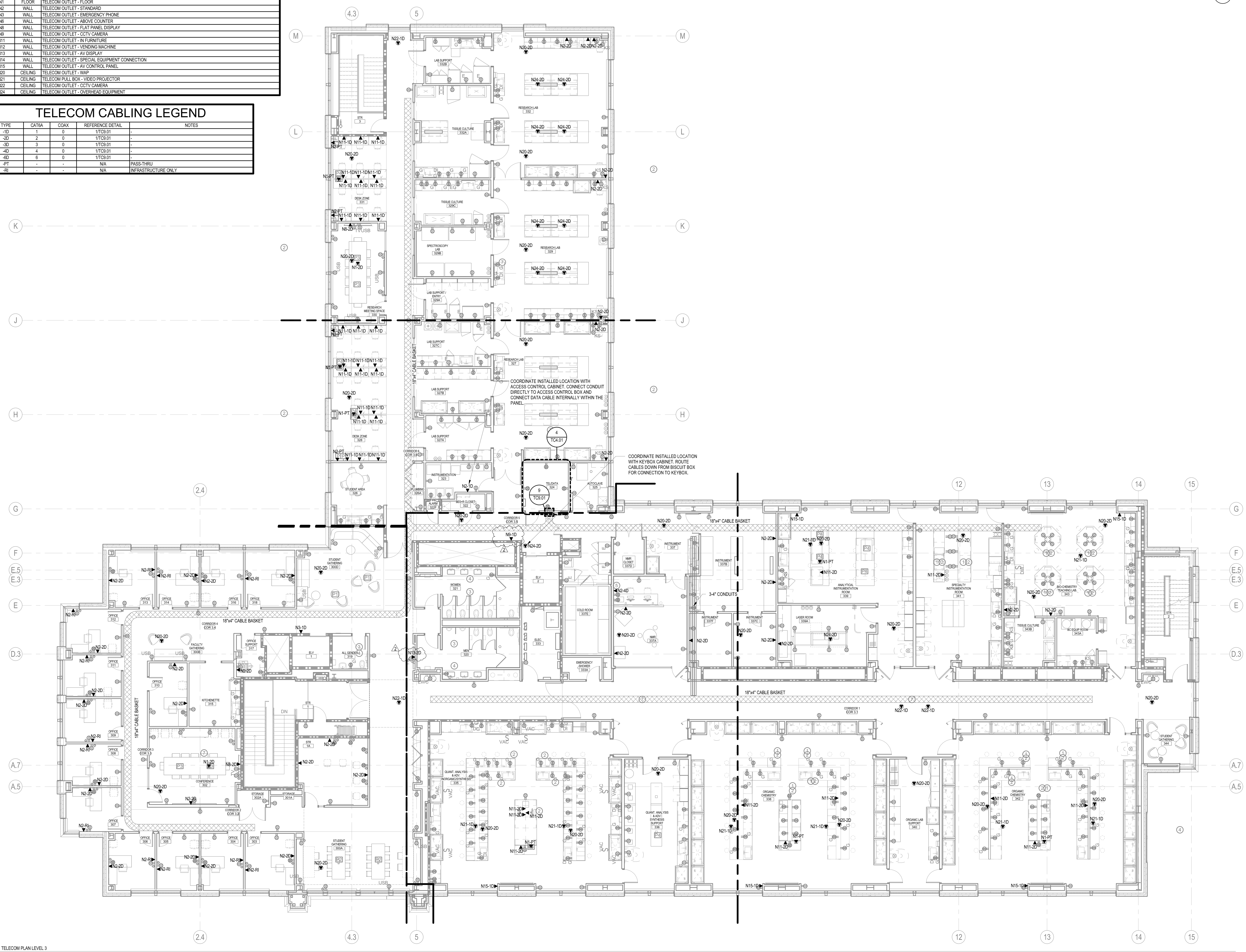
DESIGN: TR/SO
DRAWN: TR/SO
REVIEW: AA

TELECOM JUNCTION BOX LEGEND

TYPE		FUNCTION
SYM	STYLE	
N1	FLOOR	TELECOM OUTLET - FLOOR
N2	WALL	TELECOM OUTLET - STANDARD
N3	WALL	TELECOM OUTLET - EMERGENCY PHONE
N6	WALL	TELECOM OUTLET - ABOVE COUNTER
N8	WALL	TELECOM OUTLET - FLAT PANEL DISPLAY
N9	WALL	TELECOM OUTLET - CCTV CAMERA
N11	WALL	TELECOM OUTLET - IN FURNITURE
N12	WALL	TELECOM OUTLET - VENDING MACHINE
N13	WALL	TELECOM OUTLET - AV DISPLAY
N14	WALL	TELECOM OUTLET - SPECIAL EQUIPMENT CONNECTION
N15	WALL	TELECOM OUTLET - AV CONTROL PANEL
N20	CEILING	TELECOM OUTLET - WAP
N21	CEILING	TELECOM PULL BOX - VIDEO PROJECTOR
N22	CEILING	TELECOM OUTLET - CCTV CAMERA
N24	CEILING	TELECOM OUTLET - OVERHEAD EQUIPMENT

TELECOM CABLING LEGEND

TYPE	CAT6A	COAX	REFERENCE DETAIL	NOTES
-1D	1	0	1/TC9.01	-
-2D	2	0	1/TC9.01	-
-3D	3	0	1/TC9.01	-
-4D	4	0	1/TC9.01	-
-6D	6	0	1/TC9.01	-
-PT	-	-	N/A	PASS-THRU
-RI	-	-	N/A	INFRASTRUCTURE ONLY



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UNC CHARLOTTE

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IT CONSULTANT

SEALS

CLARK NEXSEN, INC. CERT NO. 50680 CHARLOTTE, N.C.

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER Bicsi Terry A Robinette BICSI ID # 128219 Expires 12-31-21 RCDD

NORTH CAROLINA PROFESSIONAL SEAL 028914 ENGINEER MICHAEL D. PHILLIPS

[illegible]
2019.05.16 07:44:47-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

26 APRIL, 2019
BID DOCUMENTS

2	05/16/2019	ADDENDUM #2

KEY PLAN

E D A B C

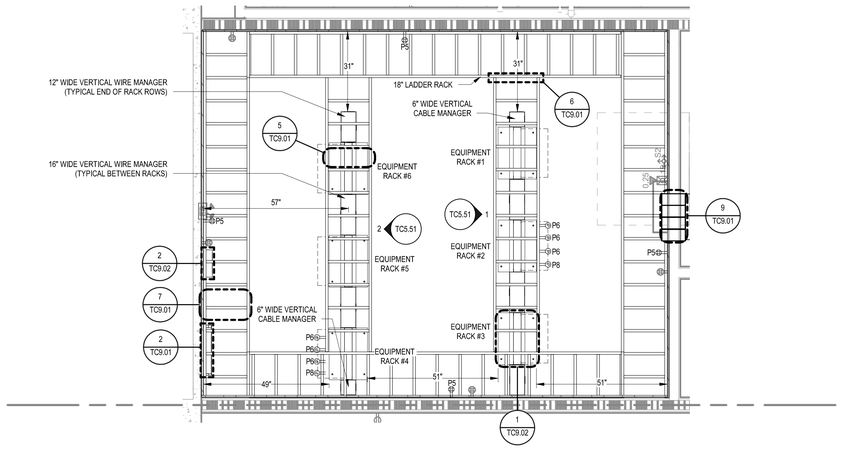
SHEET

TELECOM PLAN LEVEL 3

SCALE 1/8" = 1'-0"

TC3.03

DESIGN: TR/SO
DRAWN: TR/SO
REVIEW: AA



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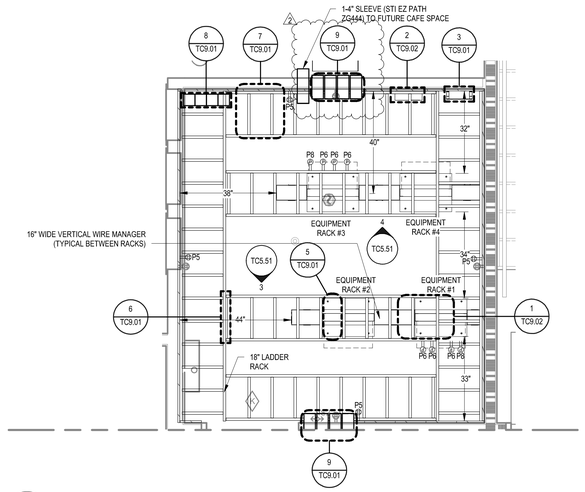

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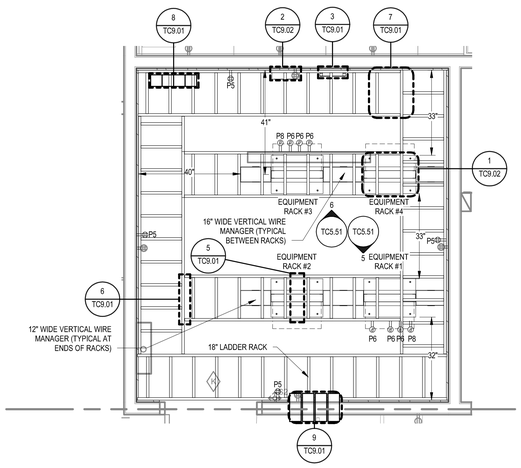

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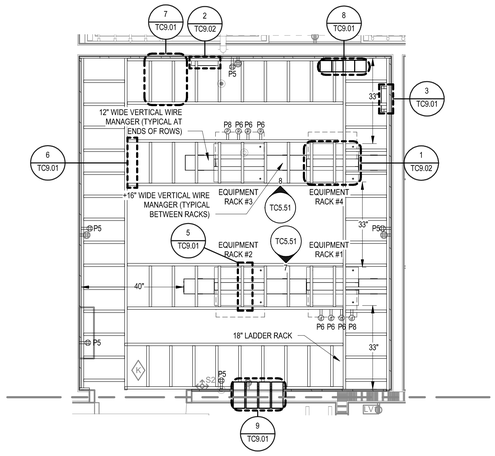

4 TC4.01 TEL/DATA 324
1/2" = 1'-0"

UNC CHARLOTTE

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BICSI Terry A Robinette BICSI ID # 128219 Expires 12-31-21

NORTH CAROLINA PROFESSIONAL SEAL 028914 ENGINEER

2019.05.16 07:45:01-04'00'

CLARKNEXSEN LICENSE NUMBER: C-1028

SUBMITTAL

26 APRIL, 2019
BID DOCUMENTS

2	05/16/2019	ADDENDUM #2

KEY PLAN

SHEET

TELECOM ENLARGED PLANS

SCALE 1/2" = 1'-0"

TC4.01

DESIGN: TR/SO
DRAWN: TR/SO
REVIEW: AA

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SECTION 012300 - 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 or deducted from 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 or credit for each alternate is the net addition to or deduction from 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 related items incidental to or required for a complete installation whether or not indicated as part of alternate.

2. Selection of the identified alternate does not eliminate any coordination requirements, compatibility requirements, requirements for communicating with

the existing system, or any of the requirements in the technical specification section unless otherwise specifically stated.

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

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

1. **Alternate No. 1**: Provide build-out of warm shell north wing research and support spaces at Level 2 only as indicated on the drawings. Refer to sheet A0.01, FA0.03, FP0.03, and H0.03 for Base Bid scope of work.

2. **Alternate No. 2**: Provide build-out of warm shell north wing research and support spaces at Level 3 only as indicated on the drawings. Refer to sheet A0.01, FA0.03, FP0.03, and H0.03, for Base Bid scope of work.

3. **Alternate No. 3**: Provide build-out of warm shell south wing "core lab" suite of instrument rooms and cold room on Level 3 as indicated on the drawings. Refer to sheet A0.01, FA0.03, FP0.03, and H0.03 for Base Bid scope of work.

4. **Alternate No. 4**: Provide build-out of warm shell (1) organic chemistry lab at south wing on Level 3. Refer to sheet A0.01, FA0.03, FP0.03, and H0.03 for Base Bid scope of work.

5. **Alternate No. 5**: Omit resilient flooring in South wing corridors and replace with porcelain tile Type 1 to match lobby spaces. Refer to sheet A9 Series drawings.

6. **Alternate No. 6**: Recess concrete slab for installation of raised access flooring. Provide raised access floor per specification section 096910 ACCESS FLOORING. Refer to sheet A0.01 for Base Bid scope of work.

7. **Alternate No. 7**: (Owner Preferred Alternate): Provide Schneider Electric controls (digital and BAS) equipment, installed by Schneider Electric. Schneider Invensys I/A series BACnet.

8. **Alternate No. 8**: (Owner Preferred Alternate): Provide the following door hardware in lieu of approved equals listed in specification section 087100 DOOR HARDWARE.

    a. Access Controls – Open Options
    b. Interior Cylinders – Schlage IC large format cores
    c. Exterior Cylinders – Schlage Primus with IC large format cores
    d. Locks/levers – Schlage ND Series
    e. Overhead Closer – LCN 4040 XP
    f. Exit Devices – Von Duprin 98/35

9. **Alternate No. 9:** (Owner Preferred Alternate): Provide additional card readers as indicated in door hardware column on Door Schedule sheet A9.10.

10. **Alternate No. 10**: Replace all sheet flooring in North Wing corridors of Levels 2 and 3 with polished concrete. Refer to Room Finish Plans on sheet A9.0 through A9.4 for locations and specification section 033515 CONCRETE FINISHING.

11. **Alternate No. 11**: For all R2 roller shade locations indicated on the drawings, provide dual motorized roller shades with room darkening shades on tracks and solar controlling shades per the drawings. *Base Bid: For all type R2 roller shade locations indicated on the drawings, provide single motorized roller shade with room darkening fabric and tracks only.*

12. **Alternate No. 12**: Provide pipe joining methods for all mechanical (Division 23) piping per specification section 232113 HYDRONIC PIPING.

13. **Alternate No. 13:** (Owner Preferred Alternate): Provide digital addressable fire alarm system and components as manufactured by SimplexGrinnell LP; a Johnson Controls company. Fire alarm control unit shall be model 4100ES. Refer to specification section 283111 DIGITAL, ADDRESSIBLE FIRE-ALARM SYSTEM.

14. **Alternate No. 14**: NOT USED.

15. **Alternate No. 15**: Mill 1.5 inch existing asphalt pavement and replace with new surface course and pavement markings per 321216 ASPHALT PAVING. Refer to sheet C-500 for alternate scope of work.

16. **Alternate No. 16**: NOT USED.

17. **Alternate No. 17:** (Owner Preferred Alternate): Provide telecommunications hardware, cabling, and connectivity components as referenced in section 003100 – "University of North Carolina at Charlotte Design and Construction Manual, Section 2, Division 27 – Communications; Attachment 3, UNC Charlotte – Bid Alternate Materials List (Category 6A UTP cabling)".

18. ***Alternate No. 18:*** ***Provide turnkey pricing as outlined in the Bid Form to install an in-place lab mockup for Rooms 327 and 327C for owner review and approval. The limits of the mockup are from the inside face of stud (or inside face of curtainwall) on all sides of the rooms and from slab to ceiling, including interstitial space rough – in and penetrations. Doors frames and hardware are also to be included. The mockup will be used for the basis of decision for product and material samples for finishes (including review of fit & finish consistency), lab casework, lab equipment, ceilings, lighting, MEP rough-ins, controls, life safety and quality of construction. The extent of the lab mockup shall include everything included within the construction documents with the exception of final mechanical, electrical and plumbing services. Lighting shall be provided in the space to review the space by the electrical subcontractor and shall be consistent with lumens, tone, and hue of the final lighting for the project. The timing of the installation of the mockup will be once the floor slab and structure can accommodate the mockup. The Mechanical Contractor is to provide semi-conditioned spaces to reduce damage to products and will be responsible to maintain and monitor approved relative humidity requirements for the mockup space(s). Any products that can be removed without demolition shall be removed after owner review and acceptance by the respective installing subcontractor and shall be disposed of in accordance with the project requirements. Should the owner request the mockup material be turned over upon review of the mockup, each subcontractor will be responsible to catalog these items and transmit to the owner within 15 days after the mock – up review and in good working order. Each subcontractor shall be responsible for their own joint sealants and caulking as part of the mockup, colors and product must be approved prior to installation. Any products subjected to weather or moisture damage must be demolished after the mockup has been reviewed by the respective installing subcontractor. The installation of products for the mockup will be removed once review has been completed and will not be part of the warranted installation. The subcontractor's approach to the construction of the mock-up is to include all provisions for coordination between trades, review of substrates prior to adherence of each respective scope of work. Additionally, it will be the responsibility of each subcontractor to approach quality control and quality assurance in commiseration with the project specifications, requirements, and industry standards.***

19. ***<u>Alternate No. 19</u> (Owner Preferred Alternate): To ensure consistency with the face brick of Phase 2 of the Science project, EP2 RUP and Early Site Package, provide cost to provide the same brick being supplied for Phase 2. The face brick shall be modular size Special Morrocroft brick by Meridian Brick, Salisbury Plant to comply with the physical property requirements of ASTM C216, Type FBS and Grade SW. Refer to specification section 042113 BRICK MASONRY VENEER for additional requirements.***

20. ***<u>Alternate No. 20</u> (Owner Preferred Alternate): Provide Pine Hall Brick, English Edge Pavers, (no substitutions), repressed lugged, chamfered, ASTM C 902. Provide brick without frogs or cores in surfaces exposed to view in the completed Work. This product shall match style found of UNC Charlotte campus. Refer to specification section 321400 UNIT PAVERS for additional requirement.***

END OF SECTION 012300

SECTION 321400 – UNIT PAVERS

PART 1 - GENERAL:

1.1 SUMMARY

A. This Section includes the following:

1. Brick pavers set on aggregate base.
2. Interlocking concrete pavers set on aggregate base.
3. Bedding and joint sand.
4. Edge restraints

1.2 REFERENCED SECTIONS

A. Section 310000 Earthwork

B. Section 321313 Concrete Pavement

C. Section 321373 Joint Sealants

1.3 RELATED DOCUMENTS

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

1.4 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1. ASTM C 33, Standard Specification for Concrete Aggregates.
2. C 67, Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8, Freezing and Thawing.
3. ASTM C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
4. ASTM C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

5. ASTM C 144, Standard Specification for Aggregate for Masonry Mortar.

6. ASTM C 936, Standard Specification for Solid Concrete Interlocking Paving Units.

7. ASTM C 979, Standard Specification for Pigments for Integrally Colored Concrete.

8. ASTM D 698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft3 (600 kN-m/m3)).

9. ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

10. ASTM D 2940, Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.

B. Interlocking Concrete Pavement Institute (ICPI):

1. ICPI Tech Spec Technical Bulletins

1.5 SUBMITTALS

A. In accordance with Conditions of the Contract and Division 1 submittal Procedures

B. Product Data: For materials other than water and aggregates.

C. Product Data: For the following:

1. Heavy Duty Concrete Pavers, Heavy Duty Vehicular Brick Pavers, Regular Duty Pedestrian Brick Pavers:

a. Representative full-size samples of each paver type, thickness, color, and finish that indicate the range of color variation and texture expected in the finished installation. Color(s) selected by Owner from manufacturer's available colors.

b. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.

c. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

D. Paver Installation Subcontractor:

1. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

E. Sieve Analysis: For aggregate setting-bed materials, according to ASTM C 136.

F. Samples for Initial Selection: For the following:

1. Each type of unit paver indicated.

2. Joint materials involving color selection.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of unit paver, and setting material from one source with resources to provide materials and products of consistent quality in appearance and physical properties.

B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Final Acceptance.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store liquids in tightly closed containers protected from freezing.

1.8 PROJECT CONDITIONS

A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

B. Environmental Requirements

1. Do not install sand or pavers during heavy rain or snowfall.

2. Do not install sand and pavers over frozen base materials.

3. Do not install frozen sand or saturated sand.

PART 2 - PRODUCTS

2.1 BRICK PAVERS

A. Brick Pavers

1. Paving brick; repressed lugged, chamfered, ASTM C 902, manufacturer TBD by Owner's representative. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.

   a. Products: Brick pavers shall match style found on UNC Charlotte campus at the following locations:
      1) UNC Charlotte Football Stadium.
      2) EPIC Building.
      3) Hunt Hall Residence Hall.

   b. Thickness: As indicated on detail sheets & by Owner's representative.

   c. Face Size: As indicated on detail sheets & by Owner's representative.

   d. Color: As indicated on detail sheets & by Owner's representative.

   e. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.

   f. Freeze/Thaw Resistance (ASTM C 67): Resistant to 50 freeze/thaw cycles with no greater than 1% loss of material. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.

2. ***Alternate No. 20 (Owner Preferred Alternate):*** ~~Alternate No. P2:~~ Provide Pine Hall Brick, English Edge Pavers, (no substitutions), repressed lugged, chamfered, ASTM C 902. Provide brick without frogs or cores in surfaces exposed to view in the completed Work. ***This product shall match style found on UNC Charlotte campus.***

   a. Products: Brick pavers shall match style found on UNC Charlotte campus at the following locations:
      1) UNC Charlotte Football Stadium.
      2) EPIC Building.

3) Hunt Hall Residence Hall.

b. Thickness: As indicated on detail sheets & by Owner's representative.

c. Face Size: As indicated on detail sheets & by Owner's representative.

d. Color: As indicated on detail sheets & by Owner's representative.

e. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.

f. Freeze/Thaw Resistance (ASTM C 67): Resistant to 50 freeze/thaw cycles with no greater than 1% loss of material. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.

B. INTERLOCKING CONCRETE PAVERS

1. Concrete paving units; repressed lugged, as indicated on detail sheets.

a. Manufacturers:
1) Pavestone Interlocking Concrete Pavers
2) Hanover Pavers
3) Unilock Paving

b. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

c. Products: Subject to compliance with requirements, provide one of the following:
1) Manufacturer TBD by Owner's representative.

d. Thickness: As indicated on detail sheets & by Owner's representative.

e. Face Size: As indicated on detail sheets & by Owner's representative.

f. Color: As indicated on detail sheets & by Owner's representative.

g. Average Compressive Strength (C140): 8000 psi (55 MPa) with no individual unit under 7200 psi (50 MPa) per ASTM C 140.

h. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.

i. Freeze/Thaw Resistance (ASTM C 67): Resistant to 50 freeze/thaw cycles with no greater than 1% loss of material. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.

2.2 ACCESSORIES

A. Felt Underlayment: 30-pound asphalt roofing felt.

B. Expansion Joint Material: Asphalt impregnated fiber board, manufactured explicitly for such use and shall comply with NCDOT Specification 420-12(c). Black “house sheathing” material is not acceptable.

C. Mortar & Grout: Type S for exterior, or work, ASTM C-270.

2.3 AGGREGATE SETTING-BED MATERIALS

A. Graded Aggregate for Base: Sound, crushed stone or gravel complying with requirements in Division 2 Section "Earthwork" for base course.

B. Provide bedding and joint sand as follows:
1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
2. Do not use limestone screenings, stone dust, or sand for the bedding sand material that does not conform to conform to the grading requirements of ASTM C 33.
3. Do not use mason sand or sand conforming to ASTM C 144 for the bedding sand.
4. Where concrete pavers are subject to vehicular traffic, utilize sands that are as hard as practically available.
5. Sieve according to ASTM C 136.
6. Bedding Sand Material Requirements: Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 1.

Table 1
Grading Requirements for Bedding Sand
ASTM C 33

Sieve Size	Percent Passing
3/8 in.(9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075 mm)	0 to 1

Note: Coarser sand than that specified in Table 2 below may be used for joint sand including C 33 material as shown in Table 1. Use material where the largest sieve size easily enters the smallest joints. For example, if the smallest paver joints are 2 mm wide, use sand 2 mm and smaller in particle size. If C 33 sand is used for joint sand, extra effort may be required in sweeping material and compacting the pavers in order to completely fill the joints.

7. Joint Sand Material Requirements: Conform to the grading requirements of ASTM C 144 as shown with modifications in Table 2 below:

Table 2
Grading Requirements for Joint Sand

Sieve Size	ASTM C 144 Natural Sand Percent Passing	ASTM C 144 Manufactured Sand Percent Passing
No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 100
No. 50 (0.300 mm)	10 to 35	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075 mm)	0 to 1	0 to 10

C. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications; made from polyolefins or polyesters, with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
   1. Survivability: Class 2; AASHTO M 288.
   2. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D 4751.
   3. Permittivity: 0.02 per second, minimum; ASTM D 4491.
   4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

D. Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
   1. Survivability: Class 2; AASHTO M 288.
   2. Apparent Opening Size: No. 40 (0.425-mm) sieve, maximum; ASTM D 4751.
   3. Permittivity: 0.5 per second, minimum; ASTM D 4491.
   4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas indicated to receive paving, with Installer and Owner’s representative present, for compliance with requirements for installation tolerances and other conditions affecting performance.

   1. Proceed with installation only after unsatisfactory conditions have been corrected.

2. Where pavers are to be installed over waterproofing, examine waterproofing installation, with waterproofing Installer present, for protection from paving operations. Examine areas where waterproofing system is turned up or flashed against vertical surfaces and horizontal waterproofing. Proceed with installation only after protection is in place.

3.2 PREPARATION

A. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.

B. Clean concrete substrates to remove dirt, dust, debris, and loose particles.

C. Proof-roll prepared subgrade according to requirements in Division 2 Section "Earthwork" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive subbase and base course for unit pavers.

3.3 IRRIGATION CONDUIT

A. Before placing pavers, install irrigation 4-inch PVC irrigation conduit in locations identified on the Layout and Irrigation Plans.

B. After installation of conduit, include a minimum of 4-inch length of rebar within each end of the conduit for future locating purposes.

C. Within the pavers above each end of the irrigation conduit, saw cut an “I” into the paver for identifying the location of the underground conduit.

3.4 INSTALLATION, GENERAL

A. Do not use unit pavers with chips, cracks, voids, discolorations, and other defects that might be visible in finished work.

B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.

C. For pavers to be placed along Alumni Way, reuse existing brick where possible. If additional brick is needed, mix newly delivered brick pavers with existing brick pavers to ensure the brick pavers are mixed as they are placed to produce a uniform blend of colors and textures.

D. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

E. Exercise care in handling coated brick pavers to prevent coated surfaces from contacting backs or edges of other units. Remove coating from bonding surfaces before setting brick.

F. Joint Pattern: As indicated on plans.

G. Pavers over Waterproofing: Exercise care in placing pavers and setting materials over waterproofing so protection materials are not displaced and waterproofing is not punctured or otherwise damaged. Carefully replace protection materials that become displaced and arrange for repair of damaged waterproofing before covering with paving.

1. Provide joint filler at waterproofing that is turned up on vertical surfaces; provide temporary filler or protection until paver installation is complete.

H. Tolerances: do not exceed 1/32-inch unit-to-unit offset from flush (lippage) or 1/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.

I. Provide edge restraints as indicated. Install edge restraints after placing unit pavers.

1. Install job-built concrete edge restraints to comply with requirements in Division 3 Section "Cast-in-Place Concrete."

3.5 AGGREGATE BASE APPLICATIONS | AGGREGATE SETTING BED

A. Aggregate Base Applications

1. Compact soil subgrade uniformly to at least 98 percent of ASTM D 698 or ASTM D 1557 laboratory density.

2. Proof-roll prepared subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

3. Place separation geotextile over prepared subgrade, overlapping ends and edges at least 12 inches.

4. Place aggregate base, compact to 100 percent of ASTM D 1557 maximum laboratory density, and screed to depth indicated.

5. Place drainage geotextile over compacted base course, overlapping ends and edges at least 12 inches.

6. Place leveling course and screed to a thickness of 1 to 1-1/2 inches, taking care that moisture content remains constant and density is loose and constant until pavers are set and compacted.

7. Set pavers with a minimum joint width of 1/16 inch and a maximum of 1/8 inch, being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines. Fill gaps between units that exceed 3/8 inch with pieces cut to fit from full-size unit pavers.

    a. When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.

8. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf compaction force at 80 to 90 Hz. Perform at least three passes across paving with vibrator. Vibrate under the following conditions:

    a. After edge pavers are installed and there is a completed surface or before surface is exposed to rain.

    b. Before ending each day's work, fully compact installed concrete pavers to within 36 inches of the laying face. Cover pavers that have not been compacted, and leveling course on which pavers have not been placed, with nonstaining plastic sheets to protect them from rain.

9. Spread dry sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess sand. Leave a slight surplus of sand on the surface for joint filling.

10. Do not allow traffic on installed pavers until sand has been vibrated into joints.

11. Repeat joint-filling process 30 days later.

3.6 BRICK BORDERS / EDGING

A. When occurring adjacent to concrete pavement, the concrete shall be prior to brick installation.

B. When shown to curve, brick borders shall be laid against poured and set concrete work. Mortar joints in curves may vary from 2” to 1” in a single joint to achieve a smooth curve. Bricks must be saw cut, if necessary, to stay within these tolerances and achieve the desired curve.

3.7 REPAIRING, POINTING, AND CLEANING

A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

B. Pointing: During tooling of joints, enlarged voids or holes and completely fill with grout. Point up joints at sealant joints to provide a neat, uniform appearance, properly prepared for sealant application.

C. Cleaning: Remove temporary protective coating from brick pavers as recommended by protective coating manufacturer and as acceptable to unit paver and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

END OF SECTION 321400