RANDALL LIBRARY RENOVATION & EXPANSION

PACKAGE A - BID DOCUMENTS
LS3P: 7202-197980
SCO Project ID: 18-19656-02A

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

LS3P SHEPLEY BULFINCH
NORRIS & TUNSTALL CONSULTING ENGINEERS P.C.
ColeJenest & Stone
STEWART
AEI Affiliated Engineers
waveguide

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE

SHEET INDEX - GENERAL

NUMBER	NAME	REV#	DATE
G-001A	SHEET INDEX	1	2022.04.08
G-002	APPENDIX B	C	2022.03.23
G-101	LIFE SAFETY PLAN- LEVEL 1	B	2022.03.23
G-102	LIFE SAFETY PLAN- LEVEL 2	B	2022.03.23
G-103	LIFE SAFETY PLAN- LEVELS 3 & 4	B	2022.03.23

SHEET INDEX - ARCHITECTURAL

*ARCHITECTURAL FLOOR & ROOF PLANS PROVIDED FOR REFERENCE.

NUMBER	NAME	REV#	DATE
A-005	UL ASSEMBLIES	A	2022.03.23
A-006	UL ASSEMBLIES	1	2022.04.08
A-007	UL ASSEMBLIES	1	2022.04.08
A-008	UL ASSEMBLIES	1	2022.04.08
A-009	ARCHITECTURAL FIRE-RATED FRAMING PLANS	1	2022.04.08
A-011	ARCHITECTURAL EDGE OF SLAB PLAN - LEVEL 1	1	2022.04.08
A-012	ARCHITECTURAL EDGE OF SLAB PLAN - LEVEL 2	1	2022.04.08
A-013	ARCHITECTURAL EDGE OF SLAB - LEVEL 3	1	2022.04.08
A-101	FLOOR PLAN - LEVEL 1 - OVERALL	C	2022.03.23
A-102	FLOOR PLAN - LEVEL 2 - OVERALL	C	2022.03.23
A-103	FLOOR PLAN- LEVEL 3 - OVERALL	C	2022.03.23
A-104	FLOOR PLAN- LEVEL 4 - OVERALL	A	2022.03.23
A-151	ROOF PLAN- OVERALL	C	2022.03.23
A-406	ELEVATOR PLAN & SECTION DETAILS	A	2022.03.23

SHEET INDEX - CIVIL

NUMBER	NAME	REV#	DATE
C-100.1	SURVEY		
C-100.2	SURVEY		
C-100.3	SURVEY		
C-100.4	SURVEY		
C-100.5	SURVEY		
C-100.6	SURVEY		
C-101	INVENTORY SITE PLAN		
C-102	OVERALL SITE PLAN		
C-103	DEMOLITION PLAN		
C-104	TREE REMOVAL PLAN		
C-105	GRADING, DRAINAGE AND EROSION CONTROL PLAN		
C-106	UTILITY SITE PLAN		
C-106A	FIRE SERVICE PLAN		
C-107	NOTES AND DETAILS		
C-108	NOTES AND DETAILS		
C-109	NOTES AND DETAILS		

SHEET INDEX - STRUCTURAL

NUMBER	NAME	REV#	DATE
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S-001	GENERAL NOTES, ABBREV, SYMBOLS		
S-010	STATEMENT OF SPECIAL INSPECTIONS		
S-011	STATEMENT OF SPECICAL INSPECTION		
SD-100	STRUCTURAL DEMO PLANS		
S-101A	LEVEL 1 FOUNDATION PLAN AREA A		
S-101BC	LEVEL 1 FOUNDATION PLAN AREA A AND C		
S-102A	LEVEL 2 FRAMING PLAN AREA A		
S-102B	LEVEL 2 FRAMING PLAN AREA B		
S-103A	LEVEL 3 FRAMING PLAN AREA A		
S-103B	LEVEL 3 FRAMING PLAN AREA B		
S-104	MECH FLOOR FRAMING PLAN		
S-105	ROOF FRAMING PLAN		
S-211	BUILDING SECTIONS		
S-212	BUILDING SECTIONS		
S-213	BUILDING SECTIONS		
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S-251	VERTICAL FRAME ELEVATIONS		
S-252	VERTICAL FRAME ELEVATIONS		
S-253	VERTICAL FRAME ELEVATIONS AND DETAILS		
S-260	TRUSS ELEVATIONS		
S-270	STAIR SECTIONS AND DETAILS		
S-301	SLAB ON GRADE DETAILS		
S-303	FOUNDATION DETAILS		
S-304	FOUNDATION DETAILS		
S-305	FOUNDATION DETAILS		
S-311	FOUNDATION DETAILS		
S-401	CMU DETAILS		
S-402	CMU DETAILS		
S-501	STEEL FRAMING DETAILS		
S-502	STEEL FRAMING DETAILS		
S-503	STEEL ROOF DETAILS		
S-505	STEEL COLUMN DETAILS AND SCHEDULES		
S-506	STEEL COLUMN DETAILS AND SCHEDULES		
S-511	STEEL DETAILS		

SHEET INDEX - MECH

NUMBER	Sheet Name	REV#	DATE
MU001	SYMBOLS AND ABBREVIATIONS		
MU002	WESTSIDE CEP CHILLED WATER DISTRBUTION PLAN		
MU003	WESTSIDE CEP HOT WATER DISTRIBUTION PLAN		
MU100	OVERALL MECHANICAL SITE PLAN		
MU101	CHILLED WATER PARTIAL PLAN		
MU102	CHILLED WATER PARTIAL PLAN		
MU103	HOT WATER PARTIAL PLAN		
MU104	HOT WATER PARTIAL PLAN		
MU500	MECHANICAL DETAILS		
MU600	MECHANICAL SCHEDULES		

SHEET INDEX - ELECTRICAL

NUMBER	Sheet Name	REV#	DATE
E101	ELECTRICAL GROUNDING SITE PLAN		
E400	ELECTRICAL ONE-LINE DIAGRAM - MAIN EQUIPMENT		
E602	ELECTRICAL SCHEDULES & ELEVATIONS		
EU001	SYMBOLS AND ABBREVIATIONS		
EU100	CAMPUS MEDIUM-VOLTAGE DISTRUTION		
EU101	EXISTING CAMPUS MEDIUM-VOLTAGE DISTRUTION		
EU102	ELECTRICAL SITE PLAN - DEMOLITION WORK		
EU103	ELECTRICAL SITE PLAN - NEW WORK		
EU104	ELECTRICAL PARTIAL SITE PLAN		
EU105	ELECTRICAL PARTIAL SITE PLAN		
EU106	ELECTRICAL PARTIAL SITE PLAN		
EU107	ELECTRICAL PARTIAL SITE PLAN		
EU108	POWER PLAN - UNDERGROUND - ELEC. ROOM & YARD		
EU400	PARTIAL MV SINGLE LINE DIAGRAM & SEQUENCE OF CONSTRUCTION		
EU401	PARTIAL UNCW CAMPUS MV SINGLE LINE DIAGRAM - EXISTING		
EU402	PARTIAL UNCW CAMPUS MV SINGLE LINE DIAGRAM - NEW WORK		
EU500	ELECTRICAL DETAILS		
EU501	ELECTRICAL DETAILS		

SHEET INDEX - TECHNOLOGY

NUMBER	Sheet Name	REV#	DATE
TU001	SYMBOLS AND ABBREVIATIONS		
TU100	TELECOM SITE PLAN - NEW WORK		
TU101	TELECOM SITE PLAN - DEMOLITION		
TU102	TECHNOLOGY SITE DETAILS		

SHEET INDEX - PLUMBING

NUMBER	Sheet Name	REV#	DATE
P000	PLUMBING SYMBOLS AND ABBREVIATIONS		
P200	PLUMBING PLAN - UNDERFLOOR		
P200.1	PLUMBING PLAN - UNDERFLOOR - BUILDING LINK		

UDS SHEET DESIGNATORS AND SHEET ORDER

LEVEL 1 - DISCIPLINE DESIGNATORS

G	GENERAL	F	FIRE PROTECTION
H	HAZARDOUS MATERIALS	P	PLUMBING
V	SURVEY / MAPPING	M	MECHANICAL
B	GEOTECHNICAL	E	ELECTRICAL
C	CIVIL	T	TELECOM
L	LANDSCAPE	R	RESOURCE
S	STRUCTURAL		
A	ARCHITECTURAL		
I	INTERIORS		
Q	EQUIPMENT		

LEVEL 3 - SHEET TYPE DESIGNATORS

0	GENERAL / OVERALL
1	PLANS
2	ELEVATIONS
3	SECTIONS
4	LARGE SCALE VIEWS
5	DETAILS
6	SCHEDULES & DIAGRAMS
7	USER DEFINED
8	USER DEFINED
9	3D REPRESENTATIONS

LEVEL 4 - PLAN TYPE DESIGNATORS

0	DEMOLITION PLAN
1	CONSTRUCTION PLAN
2	REFLECTED CEILING PLAN
3	FINISH PLAN
4	FURNITURE PLAN
5	OUTLET LOCATION PLAN
6	EQUIPMENT PLAN
7	INTERIOR SIGNAGE
8	ACCESS FLOOR GRID PLAN
9	BUILDING AUTOMATION PLAN

A-121

LEVEL 1 LEVEL 2 LEVEL 3 LEVEL 4 SEQUENCE

MATERIAL LEGEND

(NOT ALL MATERIALS APPLICABLE)

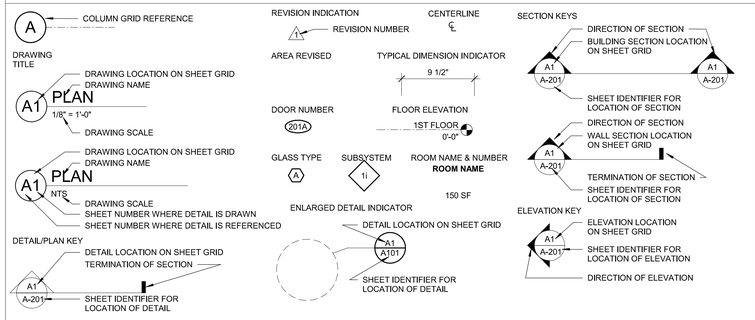
PLAN AND SECTION

EARTH
POROUS FILL (STONE OR GRAVEL)
ROCK
LIGHTWEIGHT CONCRETE (OR CONCRETE FILL)
STRUCTURAL CONCRETE (CAST IN PLACE, ETC.)
BRICK (COMMON OR FACE)
CONC. MASONRY UNITS (C.M.U.)
PLASTER, CEMENT, SAND, GROUT
STEEL, IRON
ALUMINUM
WOOD (FINISH)
WOOD (ROUGH)
WOOD BLOCKING
PLYWOOD
SPRAY-ON FIREPROOFING
BATT/LOOSE FILL INSULATION
EXTRUDED POLYSTYRENE
ACOUSTICAL TILE
GYPSUM WALLBOARD
CARPET AND PAD

ELEVATION

BRICK
CERAMIC TILE
CONCRETE / PLASTER / STUCCO
GLASS
SHINGLES/SIDING

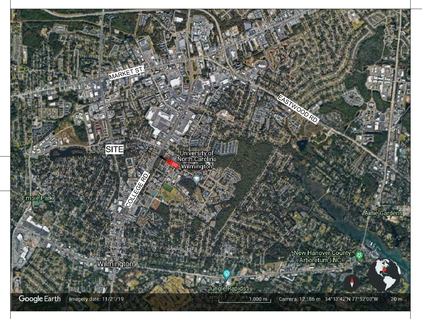
GRAPHIC SYMBOL LEGEND



ABBREVIATIONS

A/C	AIR CONDITION(ING)	EXT	EXTERIOR	MR	MOISTURE RESISTANT	TFF	TOP OF FINISH FLOOR
ADMIN	ADMINISTRATION	F/F	FACE TO FACE	MTD	MOUNTED	THK	THICKNESS
AFF	ABOVE FINISHED FLOOR	FD	FLOOR DRAIN	MTG	MOUNTING	THRU	THROUGH
ALT	ALTERNATE	FE	FIRE EXTINGUISHER	MTL	METAL	TO	TOP OF
ALUM	ALUMINUM	FEC	FIRE EXTINGUISHER CABINET	N	NORTH	TOB	TOP OF BEAM
APPROX	APPROXIMATE(LY)	FF EL	FINISH FLOOR ELEVATION	NIC	NOT IN CONTRACT	TOC	TOP OF CONCRETE, CURB
ARCH	ARCHITECT(URAL)	FHC	FIRE HOSE CABINET	NOM	NOMINAL	TOF	TOP OF FOOTING
AUTO	AUTOMATIC	FIN FLR	FINISHED FLOOR	NON COMB	NON-COMBUSTIBLE	TOJ	TOP OF JOIST
AUX	AUXILIARY	FLR	FLOOR, FILLER	NTS	NOT TO SCALE	TOM	TOP OF MASONRY
AV	AUDIOVISUAL	FOC	FACE OF CURB	OC	ON CENTER	TOP	TOP OF PARAPET
BITUM	BITUMINOUS	FOF	FACE OF FINISH	OD	OUTSIDE DIAMETER	TOS	TOP OF SLAB
BL	BUILDING LINE	FOM	FACE OF MASONRY	OPP	OPPOSITE	TOW	TOP OF WALL
BLDG	BUILDING	FOS	FACE OF SLAB	OPT	OPTION(AL)	TRTD	TREATED
BN	BULL NOSE	FOW	FACE OF WALL	PCF	POUNDS PER CUBIC FEET	TV	TELEVISION
BOS	BOTTOM OF STEEL	FT	FOOT, FEET	PLAM	PLASTIC LAMINATE	TYP	TYPICAL
BOT	BOTTOM	FTG	FOOTING	PLF	POUNDS PER LINEAR FEET	UL	UNDERWRITERS LABORATORIES
CAB	CABINET	FURN	FURNISH, FURNITURE	PLYWD	PLYWOOD		
CJ	CONTROL JOINT	GA	GAGE	PNL	PANEL	UNO	UNLESS NOTED OTHERWISE
CL	CENTER LINE	GALV	GALVANIZED	PR	PAIR	VERT	VERTICAL
CLG	CEILING	GC	GENERAL CONTRACTOR	PREFAB	PREFABRICATED	VEST	VESTIBULE
CLG HT	CEILING HEIGHT	GYP BD	GYPSUM BOARD	PREFIN	PREFINISH	VIF	VERIFY IN FIELD
CLO	CLOSET	GYP PLAS	GYPSUM PLASTER	PRKG	PARKING	W	WEST, WIDE
CLR	CLEAR(ANCE)	HC	HANDICAP	PSF	POUNDS PER SQUARE FOOT	W/	WITH
CMU	CONCRETE MASONRY UNIT	HD	HEAVY DUTY	PSI	POUNDS PER SQUARE INCH	W/O	WITHOUT
COL	COLUMN	HDWD	HARDWOOD	PT	PAINT, POST-TENSIONED, PRE-TREATED	W/W	WALL TO WALL
CONC	CONCRETE	HDWR	HARDWARE			WC	WATER CLOSET
CONF	CONFERENCE	HM	HOLLOW METAL	PVC	POLYVINYL CHLORIDE (PLASTIC)	WD	WOOD
CONT	CONTINUE. CONTINUOUS	HORIZ	HORIZONTAL	QTR	QUARTER	WP	WORKING POINT, WATERPROOFING
CORR	CORRIDOR	HT	HEIGHT	QTY	QUANTITY		
CU FT	CUBIC FOOT	HVAC	HEATING, VENTILATION & AIR CONDITIONING	R	RADIUS, RISER	WR	WATER REPELLENT
CU YD	CUBIC YARD			RCP	REFLECTED CEILING PLAN	WT	WEIGHT
DEMO	DEMOLISH	ID	INSIDE DIAMETER	RD	ROOF DRAIN	WWF	WELDED WIRE FABRIC
DEPT	DEPARTMENT	INCL	INCLUDE(D), (ING)	REF	REFRIGERATOR, REFERENCE	YD	YARD
DET	DETAIL	INFO	INFORMATION	REQD	REQUIRED		
DF	DRINKING FOUNTAIN	INSUL	INSULATION	RL	ROOF LEADER		
DIA	DIAMETER	INT	INTERIOR	RM	ROOM		
DIAG	DIAGONAL	JAN CLO	JANITOR CLOSET	RO	ROUGH OPENING		
DIM	DIMENSION	KIT	KITCHEN	ROW	RIGHT OF WAY		
DIV	DIVISION	KO	KNOCKOUT	S	SOUTH		
DS	DOWNSPOUT	LAB	LABORATORY	SC	SOLID CORE		
E	EAST	LAM	LAMINATE	SD	STORM DRAIN		
EA	EACH	LAU	LAUNDRY	SECT	SECTION		
EIFS	EXTERIOR INSULATION & FINISH SYSTEM	LAV	LAVATORY	SF	SQUARE FEET		
		LF	LINEAR FEET	SIM	SIMILAR		
EJ	EXPANSION JOINT	LVR	LOUVER	SPEC	SPECIFICATION		
EL	ELEVATION	MAINT	MAINTENANCE	SPKR	SPEAKER		
ELEC	ELECTRIC(AL)	MATL	MATERIAL	SQ	SQUARE		
ELEV	ELEVATOR	MAX	MAXIMUM	SS	STAINLESS STEEL		
ENCL	ENCLOSE(D)	MECH	MECHANICAL	STD	STANDARD		
EOS	EDGE OF SLAB	MEZZ	MEZZANINE	STOR	STORAGE		
EQ	EQUAL	MFG	MANUFACTURING	SUSP	SUSPENDED		
EQUIP	EQUIPMENT	MFR	MANUFACTURER	SYS	SYSTEM		
EWC	ELECTRIC WATER COOLER	MIN	MINIMUM	T	TREAD		
EXIST	EXISTING	MISC	MISCELLANEOUS	TEL	TELEPHONE		
EXP JT	EXPANSION JOINT	MO	MASONRY OPENING	TEMP	TEMPORARY		

VICINITY MAP



AREA MAP

UNCW

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WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
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99 CHAUNCY STREET FLOOR 4
BOSTON, MASSACHUSETTS 02111
TEL. 617.423.1700
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LS3P ASSOCIATES LTD
REGISTERED ARCHITECTURAL COMPANY
CERT. NO. 50417
WILMINGTON, NORTH CAROLINA
NORTH CAROLINA

LAURA LYNN MILLER
REGISTERED ARCHITECT
0488
NORTH CAROLINA
WILMINGTON, N.C.

2022.04.08 13:14:42-04'00'

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

SHEET NAME:
SHEET INDEX

ORIG SUBMISSION: 03/09/22
CURRENT: 2022.04.08
ADDENDUM 1

SHEET:
G-001A

PACKAGE A - BID DOCUMENTS

4/7/2022 4:43:03 PM

E D C B A

1 2 3 4 5 6

2018 APPENDIX B BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE FULL SIZE SHEET

Name of Project: UNCW RANDALL LIBRARY RENOVATION AND EXPANSION
Address: 5162 RANDALL DRIVE, WILMINGTON, NC Zip Code: 28403
Owner / Agent: RACHEL PATRICK Phone #: 910-962-3869 Email: PATRICKRW@UNCW.EDU
Owned By: ☐ City/County ☐ Private ■ State
Code Enforcement Jurisdiction: ☐ City: ☐ County: ■ State

CONTACT: LAURA L. MILLER, AIA, LEED AP - LAURAMILLER@LS3P.COM, 910-409-1105

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #
Architectural	LS3P ASSOCIATES LTD.	LAURA L. MILLER	9888	910-409-1105
Civil	NORRIS & TUNSTALL CONSULTING ENG.	JOHN S. TUNSTALL	19851	910-343-9653
Electrical	AFFILIATED ENGINEERS, INC.	WILLIAM D. HENNEN	23265	919-913-4324
Fire Alarm	AFFILIATED ENGINEERS, INC.	WILLIAM D. HENNEN	23265	919-913-4324
Plumbing	AFFILIATED ENGINEERS, INC.	JOHN J DUFFY, JR.	22793	919-913-4321
Mechanical	AFFILIATED ENGINEERS, INC.	JOHN J DUFFY, JR.	22793	919-913-4321
Sprinkler-Standpipe	AFFILIATED ENGINEERS, INC.	JOHN J DUFFY, JR.	22793	919-913-4321
Structural	STEWART ENGINEERING INC.	THOMAS W. McLANE	46260	919-866-4727
Retaining Walls>5' High	N/A			
Landscape Architecture	COLEJENEST & STONE, PA	ROBERT T. BEALE	1902	919-719-1800
Land Surveyor	MICHAEL UNDERWOOD & ASSOC., PA	MICHAEL N. UNDERWOOD	L-2962	910-815-0650

GROSS BUILDING AREA TABLE

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
4th Floor		21,475	21,475
3rd Floor		29,305	29,305
2nd Floor	86,390	33,575	119,965
1st Floor	86,390	33,575	119,965
TOTAL	172,780	117,970	290,710

SPECIAL APPROVALS
Special Approval: (Local Jurisdiction, Department of Insurance, OCS, DPI, DHHS, ICC, etc., Describe Below)
STATE CONSTRUCTION OFFICE

ACCESSIBLE PARKING (SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES	# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED / PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
EXISTING LOT D	UNCW HAS A CAMPUS-WIDE SHARED PARKING SYSTEM. THE EXISTING PARKING LOT D ADJACENT TO THE EXISTING RANDALL LIBRARY INCLUDES 198 PARKING SPACES, INCLUDING 2 REGULAR ACCESSIBLE SPACES AND 2 VAN SPACES.				
TOTAL					

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: G-101 THRU G-103

■ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations (if not on the site plan)
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
■ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
■ Occupant loads for each area
■ Exit access travel distances (1017)
■ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
■ Dead end lengths (1020.4)
■ Clear exit widths for each exit door
■ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
■ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
■ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note and code exceptions or table notes that may have been utilized regarding the items above

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LAURA LYNN MILLER REGISTERED ARCHITECT 9888 NORTH CAROLINA WILMINGTON, NC

2022.02.16 14:48:33-05'00'

NEW BUILDING - EXPANSION

2018 NC BUILDING CODE: ■ New Building ☐ Addition ☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: ■ N/A ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): _____
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): _____

RISK CATEGORY (Table 1604.5): **Current:** ☐ N/A ☐ I ☐ II ☐ III ☐ IV
Proposed: ☐ N/A ☐ I ☐ II ☐ III ☐ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ■ II-A ☐ III-A ☐ IV ☐ V-A
☐ I-B ☐ II-B ☐ III-B ☐ V-B
Sprinklers: ☐ No ☐ Partial ■ Yes ■ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☐ No ■ Yes **Class** ☐ I ☐ II ■ III ■ Wet ☐ Dry
Fire District: ■ No ☐ Yes **Flood Hazard Area:** ☐ No ■ Yes
Special Inspections Required: ☐ No ■ Yes

ALLOWABLE AREA

Primary Occupancy Classification(s):

Assembly ☐ A-1 ☐ A-2 ■ A-3 ☐ A-4 ☐ A-5
Business ☐ B
Educational ☐ E
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ■

Accessory Occupancy Classification(s): N/A
Incidental Uses (Table 509): N/A
Special Uses (Chapter 4 - List Code Sections): N/A
Special Provisions (Chapter 5 - List Code Sections): N/A
Mixed Occupancy: ☐ No ■ Yes Separation: ___ Hr. Exception: _____

■ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be suchthat the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

Actual Area of Occupancy A / Allowable Area of Occupancy A + Actual Area of Occupancy B / Allowable Area of Occupancy B ≤ 1

_____ + _____ = ____ + ____ = ____ ≤ 1

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2 AREA	(C) AREA FOR FRONTAGE INCREASE[1]	(E) ALLOWABLE AREA PER STORY OR UNLIMITED[2]
01	A-3	33,575	46,500	10,230	66,730
02	A-3	33,575	46,500	10,230	66,730
03	A-3	29,305	46,500	10,230	66,730
04	U[3]	21,475	46,500	10,230	66,730

[1] Frontage area increases from Section 506.2 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width, 798' (F).
b. Total Building Perimeter = 873' (P)
c. Ratio (F/P) = .91 (F/P)
d. W = Minimum width of public way = 30' (W)
e. Percent of frontage increase I = [F/P - 0.25 x] W / 30 = 66 (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Calculation for (A), (B), and (C) based on A-3 as the most restrictive.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS
Building Height in Feet (Table 504.3)	85'	81'-9"
Building Height in Stories (Table 504.4)	4	4

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

	LEVEL	WATERCLOSETS			URINALS	LAVATORIES			SHOWERS /TUBS	DRINKING FNTNS.	
		MALE	FEMALE	UNI SEX		MALE	FEMALE	UNI SEX		REG.	ACCESS.
01	PROVIDED	2	4	1	2	3	3	1	0	2	1
	REQUIRED	4	7	0	0	3	3	0	0	2	1
02	PROVIDED	2	4	1	2	2	2	1	0	1	1
	REQUIRED	2	3	0	0	2	2	0	0	1	1
03	PROVIDED	2	4	1	2	2	2	1	0	1	1
	REQUIRED	2	4	0	0	2	2	0	0	1	1

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ■ Yes
Exit Signs: ☐ No ■ Yes
Fire Alarm: ☐ No ■ Yes
Smoke Detection Systems: ☐ No ■ Yes ■ Partial _____
Carbon Monoxide Detection: ☐ No ■ Yes

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING** REQ'D	RATING** PROVIDED (w/ * Reduct.)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENE-TRATION	DESIGN # FOR RATED JOINTS
Structural Frame, Including Columns, Girders, Trusses		1 HR	1 HR		X732		
Bearing Walls							
Exterior		1 HR	N/A				
North		1 HR	N/A				
East		1 HR	N/A				
West		1 HR	N/A				
South		1 HR	N/A				
Interior		1 HR	N/A				
Nonbearing Walls and Partitions							
Exterior Walls							
North	>30'	0 HR	0 HR				
East	>30'	0 HR	0 HR				
West	>30'	0 HR	0 HR				
South	>30'	0 HR	0 HR				
Interior Walls / Partitions		0 HR	0 HR				
Floor Construction, Including Supporting Beams and Joists		1 HR	1 HR				
Floor Ceiling Assembly		1 HR	1 HR	5/A-001	N852		
Columns Supporting Floors		1 HR	1 HR		X732, X661**		
Roof Construction, Including Supporting Beams and Joists		1 HR	1 HR				
Roof Ceiling Assembly		1 HR	1 HR	6,7,8/A-001	P719, P521		
Columns Supporting Roof		1 HR	1 HR		X732		
Shaft Enclosures - Exit		2 HR	2 HR	A-002	U415		
Shaft Enclosures - Other		2 HR	2 HR	A-002	U415		
Corridor Separation		0 HR	0 HR				
Occupancy / Fire Barrier Separation		0 HR	0 HR				
Party / Fire Wall Separation		3 HR	3 HR	A-352	U904		
Smoke Barrier Separation		0 HR	0 HR				
Smoke Partition		0 HR	0 HR				
Tenant / Dwelling / Unit / Sleeping Unit Separation		0 HR	0 HR				
Incidental Use Separation		1 HR	1 HR	A-002	U419 U905		

* Indicates section number permitting reduction
**Vertical Frame VF2, wind beam/hangers at the west entrance curtainwall, and wind beam at Link curtainwall (north side) to receive intumescent paint per UL X661. All other primary steel members (beams, columns, cross bracing, steel trusses) to receive spray-applied fireproofing per the UL details listed for each assembly.

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL AREA SHOWN ON PLANS (%)
>30'	UP, S	NO LIMIT	

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (remainder of this section is not applicable)
Exempt Building: ■ No ☐ Yes
Climate Zone: ☐ N/A ■ 3A ☐ 4A ☐ 5A
Method of Compliance: ■ Energy Code ☐ Performance ■ Prescriptive
☐ ASHRAE 90.1 ☐ Performance ☐ Prescriptive
☐ (If "Other" specify source here)

THERMAL ENVELOPE: (Prescriptive Method Only)

Roof/Ceiling Assembly (each assembly)
Description of assembly: ASPHALT SHINGLE ON SHEATHING ON INSULATION
U-Value of total assembly: 0.04 (MEETS REQUIREMENT OF .039)
R-Value in each assembly: R-25
U-Value of skylight: N/A
Total percentage of skylights in each assembly: N/A
Exterior Walls (each assembly)
Description of assembly: BRICK MASONRY ON METAL STUD
U-Value of total assembly: 0.44 (EXCEEDS REQUIREMENT OF .064)
R-Value of insulation: R-19+R-7.5ci
Openings (windows or doors with glazing): 40 % of above grade walls
U-Value of assembly: .38
Solar heat gain coefficient: .22-.24
Projection Factor: 0
Door U-Values: .77
Walls below grade (each assembly)
Description of assembly: N/A
U-Value of total assembly: N/A
R-Value of insulation: N/A
Floors over unconditioned space (each assembly)
Description of assembly: N/A
U-Value of total assembly: N/A
R-Value of insulation: N/A
Floor slabs on grade (each assembly)
Description of assembly: CONCRETE SLAB
U-Value of total assembly: .2
R-Value of insulation: N/A
Horizontal/Vertical requirement: N/A
Slab Heated: NO

STRUCTURAL DESIGN

DESIGN LOADS:

Importance Factors: Snow (I_S) 1.1 Seismic (I_E) 1.25

Live Loads: Roof 20 psf
Mezzanine N/A psf
Floor
Typical 100 psf
Special Collections 300 psf
Mechanical 150 psf
Stairs 100 psf

Ground Snow Load: 10 psf

Wind Load: Ultimate Wind Speed 155 mph (ASCE-7)
Exposure Category B

SEISMIC DESIGN CATEGORY: ☐ A ■ B ☐ C ☐ D
Provide the following Seismic Design Parameters
Risk Category (Table 1604.5) ☐ I ☐ II ■ III ☐ IV
Spectral Response Acceleration S_S 15.3 %g S_1 6.7 %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ■ D ☐ E ☐ F
Data Source ■ Field Test ☐ Presumptive ☐ Historical Data
Basic Structural System ☐ Bearing Wall ☐ Dual w/ Special Moment Frame
■ Building Frame ☐ Dual w/ Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ■ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored ☐ Yes ■ No

LATERAL DESIGN CONTROL: ☐ Earthquake ■ Wind

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) 3,000 psf
Presumptive Bearing Capacity _____ psf
Pile size, type, and capacity _____

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
Thermal Zone
winter dry bulb: 20.4F
summer dry bulb: 95F

Interior design conditions
winter dry bulb: 70F
summer dry bulb: 75F
relative humidity: 50%

Building heating load: 1,165 MBH

Building cooling load: 3,960 MBH

Mechanical Spacing Conditioning System
Unitary
description of unit: N/A - CONNECTED TO CENTRAL PLANT
heating efficiency: N/A - CONNECTED TO CENTRAL PLANT
cooling efficiency: N/A - CONNECTED TO CENTRAL PLANT
size of unit: N/A - CONNECTED TO CENTRAL PLANT
Boiler
Size category, If oversized, state reason.: N/A - CONNECTED TO CENTRAL PLANT
Chiller
Size category, If oversized, state reason.: N/A - CONNECTED TO CENTRAL PLANT

List equipment efficiencies: REFER TO SCHEDULES

ELECTRICAL SUMMARY

ELECTRICAL SYSTEMS AND EQUIPMENT
Method of Compliance: Energy Code: ■ Prescriptive ☐ Performance
ASHRAE 90.1 ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type) N/A - NO LIGHTING SCOPE IN PACKAGE A
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage pre fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
■ C406.2 More Efficient Mechanical Equipment
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating

EXISTING BUILDING & WEST ENTRANCE (ALT. BID NO. 2)

2018 NC BUILDING CODE: ☐ New Building ☐ Addition ☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: ☐ N/A ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ■ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) 1966, 1985 **CURRENT OCCUPANCY(S)** (Ch. 3): A-3
RENOVATED: (date) 1998, 1999, 2013 **PROPOSED OCCUPANCY(S)** (Ch. 3): A-3

RISK CATEGORY (Table 1604.5): **Current:** ☐ N/A ☐ I ☐ II ■ III ☐ IV
Proposed: ☐ N/A ☐ I ☐ II ■ III ☐ IV

BASIC BUILDING DATA
Construction Type: ■ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
☐ I-B ☐ II-B ☐ III-B ☐ V-B
Sprinklers: ■ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☐ No ■ Yes **Class** ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ■ No ☐ Yes **Flood Hazard Area:** ☐ No ■ Yes
Special Inspections Required: ■ No ☐ Yes

ALLOWABLE AREA

Primary Occupancy Classification(s):

Assembly ☐ A-1 ☐ A-2 ■ A-3 ☐ A-4 ☐ A-5
Business ☐ B
Educational ☐ E
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☐

Accessory Occupancy Classification(s): N/A
Incidental Uses (Table 509): N/A
Special Uses (Chapter 4 - List Code Sections): N/A
Special Provisions (Chapter 5 - List Code Sections): N/A
Mixed Occupancy: ■ No ☐ Yes Separation: ___ Hr. Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be suchthat the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

Actual Area of Occupancy A / Allowable Area of Occupancy A + Actual Area of Occupancy B / Allowable Area of Occupancy B ≤ 1

_____ + _____ = ____ + ____ = ____ ≤ 1

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2 AREA	(C) AREA FOR FRONTAGE INCREASE[1]	(E) ALLOWABLE AREA PER STORY OR UNLIMITED[2]
01	A-3	86,390	UL	N/A	UL
02	A-3	86,390	UL	N/A	UL

[1] Frontage area increases from Section 506.2 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width, _____(F).
b. Total Building Perimeter = _____(P)
c. Ratio (F/P) = _____(F/P)
d. W = Minimum width of public way = _____(W)
e. Percent of frontage increase I = [F/P - 0.25 x] W / 30 = _____(%)
[2] Unlimited area applicable under conditions of Section 507.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS
Building Height in Feet (Table 504.3)	UL	33'-0"
Building Height in Stories (Table 504.4)	UL	2

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

	LEVEL	WATERCLOSETS			URINALS	LAVATORIES			SHOWERS /TUBS	DRINKING FNTNS.	
		MALE	FEMALE	UNI SEX		MALE	FEMALE	UNI SEX		REG.	ACCESS.
01	EXISTING	5	14	2	3	5	7	2	0	1*	1*
	REQUIRED	10	11	0	0	7	7	0	0	4	4
02	EXISTING	3	11	1	2	3	5	1	0	1*	1*
	REQUIRED	5	7	0	0	4	4	0	0	2	2

*WE WILL ADD ADDITIONAL DRINKING FOUNTAINS TO BRING THE EXISTING BUILDING UP TO CODE.

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ■ Yes
Exit Signs: ☐ No ■ Yes
Fire Alarm: ☐ No ■ Yes
Smoke Detection Systems: ☐ No ■ Yes ■ Partial _____
Carbon Monoxide Detection: ☐ No ☐ Yes

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING** REQ'D	RATING** PROVIDED (w/ * Reduct.)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENE-TRATION	DESIGN # FOR RATED JOINTS
Structural Frame, Including Columns, Girders, Trusses		3 HR	3 HR		N708		
Bearing Walls							
Exterior		3 HR	3 HR				
North		3 HR	3 HR				
East		3 HR	3 HR				
West		3 HR	3 HR				
South		3 HR	3 HR				
Interior		3 HR	3 HR				
Nonbearing Walls and Partitions							
Exterior Walls							
North	>30'	0 HR	0 HR				
East	>30'	0 HR	0 HR				
West	>30'	0 HR	0 HR				
South	>30'	0 HR	0 HR				
Interior Walls / Partitions		0 HR	0 HR				
Floor Construction, Including Supporting Beams and Joists		2 HR	2 HR		P251		
Floor Ceiling Assembly		2 HR	2 HR		P251		
Columns Supporting Floors		2 HR	2 HR				
Roof Construction, Including Supporting Beams and Joists		1 1/2 HR	1 1/2 HR				
Roof Ceiling Assembly		1 1/2 HR	1 1/2 HR				
Columns Supporting Roof		1 1/2 HR	1 1/2 HR				
Shaft Enclosures - Exit		2 HR	2 HR		U904		
Shaft Enclosures - Other		2 HR	2 HR		U904		
Corridor Separation		0 HR	0 HR				
Occupancy / Fire Barrier Separation		0 HR	0 HR				
Party / Fire Wall Separation		3 HR	3 HR	A-352	U904		
Smoke Barrier Separation		0 HR	0 HR				
Smoke Partition		0 HR	0 HR				
Tenant / Dwelling / Unit / Sleeping Unit Separation		0 HR	0 HR				
Incidental Use Separation		N/A	N/A				

* Indicates section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL AREA SHOWN ON PLANS (%)
>30'	UP, S	NO LIMIT	

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (remainder of this section is not applicable)
Exempt Building: ☐ No ☐ Yes:
Climate Zone: ☐ N/A ☐ 3A ☐ 4A ☐ 5A
Method of Compliance: ☐ Energy Code ☐ Performance ☐ Prescriptive
☐ ASHRAE 90.1 ☐ Performance ☐ Prescriptive
☐ (If "Other" specify source here)

THERMAL ENVELOPE: (Prescriptive Method Only)

Roof/Ceiling Assembly (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value in each assembly:
U-Value of skylight:
Total percentage of skylights in each assembly:
Exterior Walls (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Openings (windows or doors with glazing): % of grade walls
U-Value of assembly:
Solar heat gain coefficient:
Projection Factor:
Door U-Values:
Walls below grade (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Floors over unconditioned space (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Floor slabs on grade (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Horizontal/Vertical requirement:
Slab Heated:

EXISTING

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME:
APPENDIX B

ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET:
G-002

PACKAGE A - BID DOCUMENTS

2/16/2022 2:47:28 PM

1 2 3 4 5 6

A B C D E

LIFE SAFETY- OCCUPANCY- LEVEL 1 EXPANSION

NUMBER	NAME	AREA	AREA FUNCTION (OLF)	AREA PER OCCUPANT	OCCUPANTS_ CALCULATED
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM					
1058A/B	JAN/IDF	249.59 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	1
1058D	ELEC.	164.94 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	1
1062A	SCANNING	141.89 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	1
1070A/B	STORAGE	411.34 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	2
1079	MECHANICAL	2575.39 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	9
(IBC2015) ASSEMBLY- FIXED SEATS					
1059	SCHOLARLY RES.	739.31 SF	(IBC2015) ASSEMBLY- FIXED SEATS	0.00 SF	24
1060	DIG. CREATION	737.81 SF	(IBC2015) ASSEMBLY- FIXED SEATS	0.00 SF	24
1062	DIGI LAB	284.26 SF	(IBC2015) ASSEMBLY- FIXED SEATS	0.00 SF	7
1067	COMPUTING	2115.53 SF	(IBC2015) ASSEMBLY- FIXED SEATS	0.00 SF	68
(IBC2015) ASSEMBLY- NO FIXED SEATS- CONCENTRATED (CHAIRS ONLY)					
1070	EVENTS	1634.30 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- CONCENTRATED (CHAIRS ONLY)	7.00 SF	234
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED					
1001C1	GROUP STUDY	467.86 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	32
1001C5	GRUP STUDY	467.86 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	32
1051	LINK	740.68 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	50
1051	LINK	589.16 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	40
1057A/D	GROUP STUDY	467.19 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	32
1071	EXHIBITS	1054.37 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	71
1077A/F	GROUP STUDY	635.97 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	43
(IBC2015) BUSINESS AREAS					
1057	MOTHER'S	74.68 SF	(IBC2015) BUSINESS AREAS	100.00 SF	1
1064	OFFICE	163.84 SF	(IBC2015) BUSINESS AREAS	100.00 SF	2
1066	DESK	141.61 SF	(IBC2015) BUSINESS AREAS	100.00 SF	2
(IBC2015) EDUCATIONAL- SHOPS AND OTHER VOCATIONAL ROOM AREAS					
1061/3/5	MAKERSPACE/VR/PODCAST	1893.21 SF	(IBC2015) EDUCATIONAL- SHOPS AND OTHER VOCATIONAL ROOM AREAS	50.00 SF	38
1072	VISI LAB	1125.56 SF	(IBC2015) EDUCATIONAL- SHOPS AND OTHER VOCATIONAL ROOM AREAS	50.00 SF	23
(IBC2015) LIBRARY- READING ROOMS					
	OPEN SEATING	443.58 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	9
	LOBBY SEATING	118.48 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	3
	LOBBY SEATING	118.48 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	3
	LOBBY SEATING	312.47 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	7
	LOBBY SEATING	312.47 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	7
1056	OPEN SEATING	705.05 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	15
1077	OPEN SEATING	1260.75 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	26
		20147.63 SF			807

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL SCALE

LIFE SAFETY- OCCUPANCY- LEVEL 1 EXISTING RANDALL LIBRARY

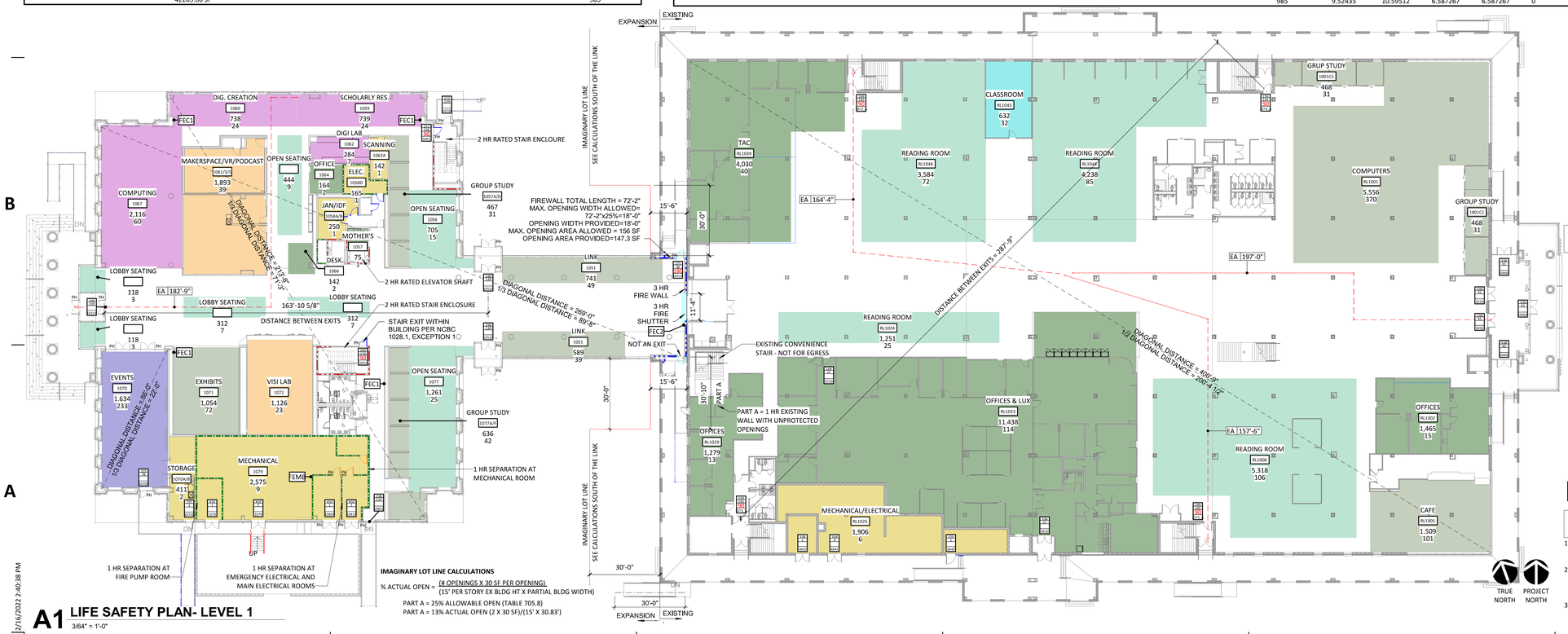
NUMBER	NAME	AREA	AREA FUNCTION (OLF)	AREA PER OCCUPANT	OCCUPANTS_ CALCULATED
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM					
RL1025	MECHANICAL/ELECTRICAL	1906.24 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	7
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED					
RL1001	COMPUTERS	5556.32 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	371
RL1005	CAFE	1508.66 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	101
(IBC2015) BUSINESS AREAS					
RL1002	OFFICES	1465.19 SF	(IBC2015) BUSINESS AREAS	100.00 SF	15
RL1023	OFFICES & LUX	11437.67 SF	(IBC2015) BUSINESS AREAS	100.00 SF	115
RL1029	OFFICES	1278.56 SF	(IBC2015) BUSINESS AREAS	100.00 SF	13
RL1039	TAC	4030.03 SF	(IBC2015) BUSINESS AREAS	100.00 SF	41
(IBC2015) EDUCATIONAL- CLASSROOM AREA					
RL1045	CLASSROOM	631.88 SF	(IBC2015) EDUCATIONAL- CLASSROOM AREA	20.00 SF	32
(IBC2015) LIBRARY- READING ROOMS					
RL1006	READING ROOM	5318.35 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	107
RL1024	READING ROOM	1250.70 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	26
RL1044	READING ROOM	4238.43 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	85
RL1046	READING ROOM	3583.58 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	72
		42205.60 SF			985

PLUMBING FIXTURES REQUIRED- LEVEL 1 EXPANSION

NUMBER	NAME	PLUMBING OCCUPANCY KEY	OCCUPANTS	WATER CLOSETS MALE	WATER CLOSETS FEMALE	LAVS MALE	LAVS FEMALE	BATHING	DRINKING
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM									
1058A/B	JAN/IDF	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	1	0.005	0.005	0.005	0.005		0.001
1058D	ELEC.	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	1	0.005	0.005	0.005	0.005		0.001
1062A	SCANNING	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	1	0.005	0.005	0.005	0.005		0.001
1070A/B	STORAGE	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	2	0.01	0.01	0.01	0.01		0.002
1079	MECHANICAL	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	9	0.045	0.045	0.045	0.045		0.009
(IBC2015) ASSEMBLY- FIXED SEATS									
1059	SCHOLARLY RES.	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	24	0.096	0.184615	0.06	0.06		0.048
1060	DIG. CREATION	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	24	0.096	0.184615	0.06	0.06		0.048
1062	DIGI LAB	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	7	0.028	0.053846	0.0175	0.0175		0.014
1067	COMPUTING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	68	0.272	0.523077	0.17	0.17		0.136
(IBC2015) ASSEMBLY- NO FIXED SEATS- CONCENTRATED (CHAIRS ONLY)									
1070	EVENTS	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	234	0.936	1.8	0.585	0.585		0.468
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED									
1001C1	GROUP STUDY	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	32	0.426667	0.426667	0.306667	0.306667		0.4
1001C5	GRUP STUDY	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	32	0.426667	0.426667	0.306667	0.306667		0.4
1051	LINK	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50	0.2	0.384615	0.125	0.125		0.1
1051	LINK	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	40	0.16	0.307692	0.1	0.1		0.08
1057A/D	GROUP STUDY	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	32	0.128	0.246154	0.08	0.08		0.064
1071	EXHIBITS	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	71	0.284	0.546154	0.1775	0.1775		0.142
1077A/F	GROUP STUDY	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	43	0.172	0.330769	0.1075	0.1075		0.086
(IBC2015) BUSINESS AREAS									
1057	MOTHER'S	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	1	0.02	0.02	0.0125	0.0125		0.0125
1064	OFFICE	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	2	0.04	0.04	0.025	0.025		0.025
1066	DESK	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	2	0.04	0.04	0.025	0.025		0.025
(IBC2015) EDUCATIONAL- SHOPS AND OTHER VOCATIONAL ROOM AREAS									
1061/3/5	MAKERSPACE/VR/PODCAST	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	38	0.152	0.292308	0.095	0.095		0.076
1072	VISI LAB	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	23	0.092	0.176923	0.0575	0.0575		0.046
(IBC2015) LIBRARY- READING ROOMS									
	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	9	0.036	0.069231	0.0225	0.0225		0.018
	LOBBY SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	3	0.012	0.023077	0.0075	0.0075		0.006
	LOBBY SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	3	0.012	0.023077	0.0075	0.0075		0.006
	LOBBY SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	7	0.028	0.053846	0.0175	0.0175		0.014
	LOBBY SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	7	0.028	0.053846	0.0175	0.0175		0.014
1056	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	15	0.06	0.115385	0.0375	0.0375		0.03
1077	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	26	0.104	0.2	0.065	0.065		0.052
			807	3.919333	6.592564	2.555833	2.555833	0	2.3245

PLUMBING FIXTURES REQUIRED- LEVEL 1 EXISTING RANDALL LIBRARY

NUMBER	NAME	PLUMBING OCCUPANCY KEY	OCCUPANTS	WATER CLOSETS MALE	WATER CLOSETS FEMALE	LAVS MALE	LAVS FEMALE	BATHING	DRINKING
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM									
RL1025	MECHANICAL/ELECTRICAL	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	7	0.035	0.035	0.035	0.035		0.007
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED									
RL1001	COMPUTERS	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	371	4.496017	4.496017	3.104767	3.104767		4.6375
RL1005	CAFE	A-2: RESTAURANTS, BANQUET HALLS, FOOD COURTS	101	0.673333	0.673333	0.2525	0.2525		0.202
(IBC2015) BUSINESS AREAS									
RL1002	OFFICES	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	15	0.231522	0.231522	0.175272	0.175272		0.1875
RL1023	OFFICES & LUX	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	115	1.775	1.775	1.34375	1.34375		1.4375
RL1029	OFFICES	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	13	0.200652	0.200652	0.151902	0.151902		0.1625
RL1039	TAC	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	41	0.632826	0.632826	0.479076	0.479076		0.5125
(IBC2015) EDUCATIONAL- CLASSROOM AREA									
RL1045	CLASSROOM	E: EDUCATIONAL FACILITIES	32	0.32	0.32	0.32	0.32		0.32
(IBC2015) LIBRARY- READING ROOMS									
RL1006	READING ROOM	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	107	0.428	0.823077	0.2675	0.2675		0.214
RL1024	READING ROOM	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	26	0.104	0.2	0.065	0.065		0.052
RL1044	READING ROOM	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	85	0.34	0.653846	0.2125	0.2125		0.17
RL1046	READING ROOM	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	72	0.288	0.553846	0.18	0.18		0.144
			985	9.52435	10.59512	6.587267	6.587267	0	8.0465



IMAGINARY LOT LINE CALCULATIONS

% ACTUAL OPEN = (# OPENINGS X 30 SF PER OPENING) / (15' PER STORY EX BLDG HT X PARTIAL BLDG WIDTH)

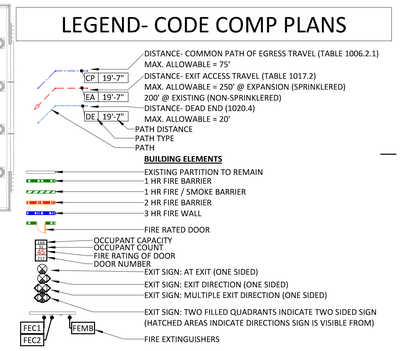
PART A = 25% ALLOWABLE OPEN (TABLE 705.8)

PART A = 13% ACTUAL OPEN (2 X 30 SF)/(15' X 30.83')

TRUE NORTH

PROJECT NORTH

LEGEND- CODE COMP PLANS



GENERAL NOTES- CODE PLANS

1. FIRE RESISTANCE RATINGS SHOWN ARE MINIMUM RATINGS REQUIRED. REFER TO PARTITION TYPES ON A0.11, AND SPECIFICATIONS, FOR MORE INFORMATION
2. FIRE RESISTANCE RATINGS IN PARTITIONS ARE SHOWN WHERE PARTITIONS ARE NOT CUT BY DOORS, WINDOWS, STOREFRONTS, OR OTHER OBJECTS. RATED PARTITION MAY EXIST ABOVE OBJECTS.
3. PH = PANIC HARDWARE

OCCUPANCY TYPES

- (IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
- (IBC2015) ASSEMBLY- FIXED SEATS
- (IBC2015) ASSEMBLY- NO FIXED SEATS- CONCENTRATED (CHAIRS ONLY)
- (IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED
- (IBC2015) BUSINESS AREAS
- (IBC2015) EDUCATIONAL- CLASSROOM AREA
- (IBC2015) EDUCATIONAL- SHOPS AND OTHER VOCATIONAL ROOM AREAS
- (IBC2015) LIBRARY- READING ROOMS

A1 **LIFE SAFETY PLAN- LEVEL 1**
3/64" = 1'-0"

2/16/2022 2:40:38 PM

UNCW
LS3P
101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
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LS3P ASSOCIATES LTD.
REGISTERED ARCHITECTURAL COMPANY
CERT. NO. 50417
WILMINGTON, NORTH CAROLINA
NORTH CAROLINA
LAURA LYNN MILLER
REGISTERED ARCHITECT
NORTH CAROLINA
WILMINGTON, NC
2022.02.16 14:43:51-05'00'

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME: LIFE SAFETY PLAN- LEVEL 1

ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET: G-101

PACKAGE A - BID DOCUMENTS

LIFE SAFETY- OCCUPANCY- LEVEL 2 EXPANSION

NUMBER	NAME	AREA	AREA FUNCTION (OLF)	AREA PER OCCUPANT	OCCUPANTS_ CALCULATED
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM					
2092	ELEC/IDF/STOR	515.71 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	2
2094	SC SHELL	581.94 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	2
2101	ELEC	104.05 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	1
2103	SC STORAGE	11028.91 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	37
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED					
2093A/B	GROUP STUDY	192.93 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	13
(IBC2015) BUSINESS AREAS					
2099	OFFICES	1661.40 SF	(IBC2015) BUSINESS AREAS	100.00 SF	17
(IBC2015) EDUCATIONAL- CLASSROOM AREA					
2088	CLASSROOM	952.96 SF	(IBC2015) EDUCATIONAL- CLASSROOM AREA	20.00 SF	48
2097	CLASSROOM	960.56 SF	(IBC2015) EDUCATIONAL- CLASSROOM AREA	20.00 SF	49
(IBC2015) LIBRARY- READING ROOMS					
2085	LINK	3026.65 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	61
2086	OPEN SEATING	520.75 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	11
2093	OPEN SEATING	772.32 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	16
2095	READING ROOM	605.39 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	13
		20923.58 SF			270

LIFE SAFETY- OCCUPANCY- LEVEL 2 EXISTING RANDALL LIBRARY

NUMBER	NAME	AREA	AREA FUNCTION (OLF)	AREA PER OCCUPANT	OCCUPANTS_ CALCULATED
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM					
RL2011	STORAGE	655.04 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	3
(IBC2015) ASSEMBLY- FIXED SEATS					
RL2047	LECTURE HALL	1076.04 SF	(IBC2015) ASSEMBLY- FIXED SEATS	0.00 SF	
(IBC2015) BUSINESS AREAS					
RL2014	OFFICES	11313.43 SF	(IBC2015) BUSINESS AREAS	100.00 SF	114
RL2058	OFFICES	1381.98 SF	(IBC2015) BUSINESS AREAS	100.00 SF	14
RL2076	OFFICES	1595.98 SF	(IBC2015) BUSINESS AREAS	100.00 SF	16
(IBC2015) EDUCATIONAL- CLASSROOM AREA					
RL2010	CLASSROOM	1203.30 SF	(IBC2015) EDUCATIONAL- CLASSROOM AREA	20.00 SF	61
(IBC2015) LIBRARY- READING ROOMS					
RL2001	OPEN SEATING	2484.00 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	50
RL2002	OPEN SEATING	562.46 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	12
RL2003	OPEN SEATING	396.93 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	8
RL2006	OPEN SEATING	890.04 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	18
RL2008	READING ROOM - GRADUATE	936.92 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	19
RL2048	NW READING ROOM	1688.70 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	34
RL2052	STUDY ROOMS - NORTH	2459.66 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	50
RL2065	STUDY ROOMS - EAST	832.11 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	17
(IBC2015) LIBRARY- STACK AREA					
RL2000	STACKS - GEN. COLL. GOV. DOCS	3536.60 SF	(IBC2015) LIBRARY- STACK AREA	100.00 SF	36
RL2004	STACKS - GEN. COLL. Q-Z	5172.57 SF	(IBC2015) LIBRARY- STACK AREA	100.00 SF	52
RL2005	STACKS - GEN. COLL. A-K	9458.57 SF	(IBC2015) LIBRARY- STACK AREA	100.00 SF	95
RL2007	STACKS - GEN. COLL. L-N	1443.28 SF	(IBC2015) LIBRARY- STACK AREA	100.00 SF	15
RL2009	STACKS - GEN. COLL. P	4902.56 SF	(IBC2015) LIBRARY- STACK AREA	100.00 SF	50
		51990.18 SF			664

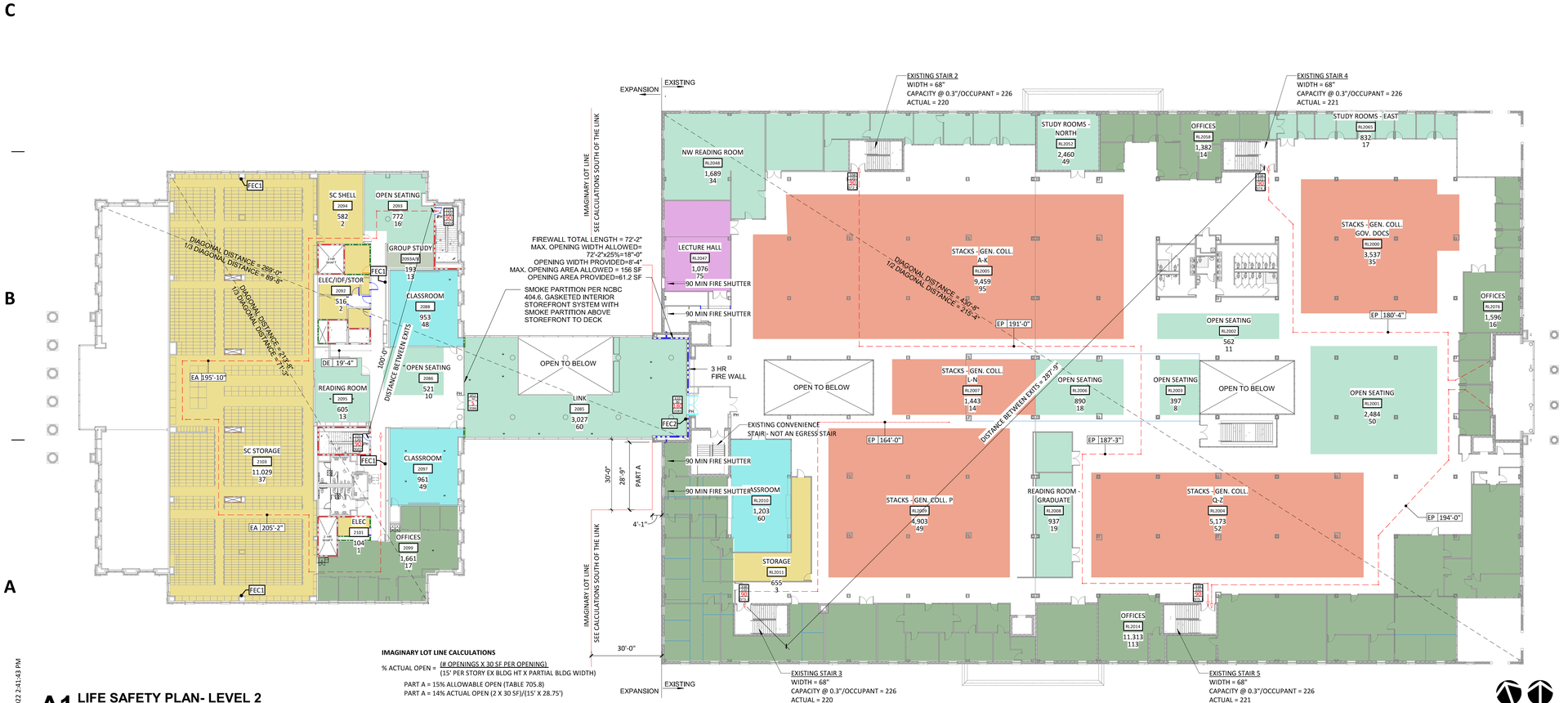
PLUMBING FIXTURES REQUIRED- LEVEL 2 EXPANSION

(N)

NUMBER	NAME	PLUMBING OCCUPANCY KEY	AREA PER OCCUPANT	OCCUPANTS	WATER CLOSETS MALE	WATER CLOSETS FEMALE	LAVS MALE	LAVS FEMALE	BATHING	DRINKING
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM										
2092	ELEC/IDF/STOR	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	300.00 SF	2	0.01	0.01	0.01	0.01		0.002
2094	SC SHELL	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	300.00 SF	2	0.01	0.01	0.01	0.01		0.002
2101	ELEC	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	300.00 SF	1	0.005	0.005	0.005	0.005		0.001
2103	SC STORAGE	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	300.00 SF	37	0.185	0.185	0.185	0.185		0.037
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED										
2093A/B	GROUP STUDY	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	15.00 SF	13	0.052	0.1	0.0325	0.0325		0.026
(IBC2015) BUSINESS AREAS										
2099	OFFICES	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	100.00 SF	17	0.34	0.34	0.2125	0.2125		0.2125
(IBC2015) EDUCATIONAL- CLASSROOM AREA										
2088	CLASSROOM	E: EDUCATIONAL FACILITIES	20.00 SF	48	0.48	0.48	0.48	0.48		0.48
2097	CLASSROOM	E: EDUCATIONAL FACILITIES	20.00 SF	49	0.49	0.49	0.49	0.49		0.49
(IBC2015) LIBRARY- READING ROOMS										
2085	LINK	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	61	0.244	0.469231	0.1525	0.1525		0.122
2086	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	11	0.044	0.084615	0.0275	0.0275		0.022
2093	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	16	0.064	0.123077	0.04	0.04		0.032
2095	READING ROOM	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	13	0.052	0.1	0.0325	0.0325		0.026
				270	1.976	2.396923	1.6775	1.6775	0	1.4525

PLUMBING FIXTURES REQUIRED- LEVEL 2 EXISTING RANDALL LIBRARY

NUMBER	NAME	PLUMBING OCCUPANCY KEY	AREA PER OCCUPANT	OCCUPANTS	WATER CLOSETS MALE	WATER CLOSETS FEMALE	LAVS MALE	LAVS FEMALE	BATHING	DRINKING
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM										
RL2011	STORAGE	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	300.00 SF	3	0.015	0.015	0.015	0.015		0.003
(IBC2015) ASSEMBLY- FIXED SEATS										
RL2047	LECTURE HALL	A-1: THEATERS, PERFORMING ARTS, MOTION PICTURES	0.00 SF							
(IBC2015) BUSINESS AREAS										
RL2014	OFFICES	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	100.00 SF	114	1.931667	1.931667	1.425	1.425		1.425
RL2058	OFFICES	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	100.00 SF	14	0.237222	0.237222	0.175	0.175		0.175
RL2076	OFFICES	B: BUSINESSES, PROFESSIONAL SERVICES, MERCHANDISING, OFFICE BUILDINGS, LIGHT INDUSTRIAL	100.00 SF	16	0.271111	0.271111	0.2	0.2		0.2
(IBC2015) EDUCATIONAL- CLASSROOM AREA										
RL2010	CLASSROOM	E: EDUCATIONAL FACILITIES	20.00 SF	61	0.61	0.61	0.61	0.61		0.61
(IBC2015) LIBRARY- READING ROOMS										
RL2001	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	50	0.2	0.384615	0.125	0.125		0.1
RL2002	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	12	0.048	0.092308	0.03	0.03		0.024
RL2003	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	8	0.032	0.061538	0.02	0.02		0.016
RL2006	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	18	0.072	0.138462	0.045	0.045		0.036
RL2008	READING ROOM - GRADUATE	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	19	0.076	0.146154	0.0475	0.0475		0.038
RL2048	NW READING ROOM	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	34	0.136	0.261538	0.085	0.085		0.068
RL2052	STUDY ROOMS - NORTH	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	50	0.2	0.384615	0.125	0.125		0.1
RL2065	STUDY ROOMS - EAST	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	50.00 SF	17	0.068	0.130769	0.0425	0.0425		0.034
(IBC2015) LIBRARY- STACK AREA										
RL2000	STACKS - GEN. COLL. GOV. DOCS	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	100.00 SF	36	0.144	0.276923	0.09	0.09		0.072
RL2004	STACKS - GEN. COLL. Q-Z	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	100.00 SF	52	0.208	0.4	0.13	0.13		0.104
RL2005	STACKS - GEN. COLL. A-K	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	100.00 SF	95	0.38	0.730769	0.2375	0.2375		0.19
RL2007	STACKS - GEN. COLL. L-N	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	100.00 SF	15	0.06	0.115385	0.0375	0.0375		0.03
RL2009	STACKS - GEN. COLL. P	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	100.00 SF	50	0.2	0.384615	0.125	0.125		0.1
				664	4.889	6.572692	3.565	3.565	0	3.325



IMAGINARY LOT LINE CALCULATIONS

% ACTUAL OPEN = (# OPENINGS X 30 SF PER OPENING) / (15' PER STORY EX BLDG HT X PARTIAL BLDG WIDTH)

PART A = 15% ALLOWABLE OPEN (TABLE 705.8)

PART A = 14% ACTUAL OPEN (2 X 30 SF)/(15' X 28.75')

TRUE NORTH

PROJECT NORTH

OCCUPANCY TYPES

- (IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
- (IBC2015) ASSEMBLY- FIXED SEATS
- (IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED
- (IBC2015) BUSINESS AREAS
- (IBC2015) EDUCATIONAL- CLASSROOM AREA
- (IBC2015) LIBRARY- READING ROOMS
- (IBC2015) LIBRARY- STACK AREA

LEGEND- CODE COMP PLANS

- CP 19'-7" — DISTANCE- COMMON PATH OF EGRESS TRAVEL (TABLE 1006.2.1) MAX. ALLOWABLE = 75'
- EA 19'-7" — DISTANCE- EXIT ACCESS TRAVEL (TABLE 1017.2) MAX. ALLOWABLE = 250' @ EXPANSION (SPRINKLERED) 200' @ EXISTING (NON-SPRINKLERED)
- DE 19'-7" — DISTANCE- DEAD END (1020.4) MAX. ALLOWABLE = 20'
- PATH DISTANCE
- PATH TYPE
- PATH

BUILDING ELEMENTS

- EXISTING PARTITION TO REMAIN
- 1 HR FIRE BARRIER
- 1 HR FIRE / SMOKE BARRIER
- 2 HR FIRE BARRIER
- 3 HR FIRE WALL
- FIRE RATED DOOR
- OCCUPANT CAPACITY
- OCCUPANT COUNT
- FIRE RATING OF DOOR
- DOOR NUMBER
- EXIT SIGN: AT EXIT (ONE SIDED)
- EXIT SIGN: EXIT DIRECTION (ONE SIDED)
- EXIT SIGN: MULTIPLE EXIT DIRECTION (ONE SIDED)
- EXIT SIGN: TWO FILLED QUADRANTS INDICATE TWO SIDED SIGN (HATCHED AREAS INDICATE DIRECTIONS SIGN IS VISIBLE FROM)
- FEC1 / FEC2 FEMB — FIRE EXTINGUISHERS

GENERAL NOTES- CODE PLANS

1. FIRE RESISTANCE RATINGS SHOWN ARE MINIMUM RATINGS REQUIRED. REFER TO PARTITION TYPES ON A0.11, AND SPECIFICATIONS, FOR MORE INFORMATION
2. FIRE RESISTANCE RATINGS IN PARTITIONS ARE SHOWN WHERE PARTITIONS ARE NOT CUT BY DOORS, WINDOWS, STOREFRONTS, OR OTHER OBJECTS. RATED PARTITION MAY EXIST ABOVE OBJECTS.
3. PH = PANIC HARDWARE

UNCW

LS3P

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TEL. 910.790.9901 FAX 910.790.3111
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SHEPLEY BULFINCH

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BOSTON, MASSACHUSETTS 02111
TEL. 617.423.1700
WWW.SHEPLEYBULFINCH.COM

LS3P ASSOCIATES LTD. REGISTERED ARCHITECTURAL COMPANY CERT. NO. 50417 NORTH CAROLINA WILMINGTON, NORTH CAROLINA

LAURA LYNN WILLIS REGISTERED ARCHITECT NORTH CAROLINA 31128 WILMINGTON

2022.02.16 14:43:30-05'00'

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME: LIFE SAFETY PLAN- LEVEL 2

ORIG SUBMISSION: 2022.02.14

CURRENT:

SHEET: G-102

PACKAGE A - BID DOCUMENTS

A1 LIFE SAFETY PLAN- LEVEL 2
3/64" = 1'-0"

2/16/2022 2:41:43 PM

THE LINE SHOWN ABOVE IS EXACTLY ONE (ONE) LONG AT THE FULL DIMENSION PLOT SIZE

1 2 3 4 5 6

A B C D E

LIFE SAFETY- OCCUPANCY- LEVEL 3

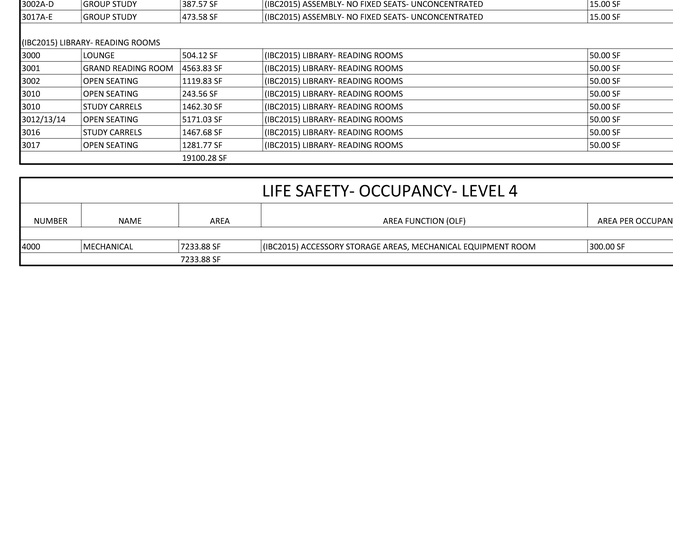
NUMBER	NAME	AREA	AREA FUNCTION (OLF)	AREA PER OCCUPANT	OCCUPANTS_ CALCULATED
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM					
3004/5/6/7/8	ELEC/JAN/IDF/STOR	503.78 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	2
3025A	ELEC	103.07 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	1
(IBC2015) ASSEMBLY- FIXED SEATS					
3011	COMPUTERS	909.12 SF	(IBC2015) ASSEMBLY- FIXED SEATS	0.00 SF	38
3015	COMPUTERS	909.05 SF	(IBC2015) ASSEMBLY- FIXED SEATS	0.00 SF	38
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED					
3002A-D	GROUP STUDY	387.57 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	26
3017A-E	GROUP STUDY	473.58 SF	(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED	15.00 SF	32
(IBC2015) LIBRARY- READING ROOMS					
3000	LOUNGE	504.12 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	11
3001	GRAND READING ROOM	4563.83 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	92
3002	OPEN SEATING	1119.83 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	23
3010	OPEN SEATING	243.56 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	5
3010	STUDY CARRELS	1462.30 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	30
3012/13/14	OPEN SEATING	5171.03 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	104
3016	STUDY CARRELS	1467.68 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	30
3017	OPEN SEATING	1281.77 SF	(IBC2015) LIBRARY- READING ROOMS	50.00 SF	26
		19100.28 SF			458

LIFE SAFETY- OCCUPANCY- LEVEL 4

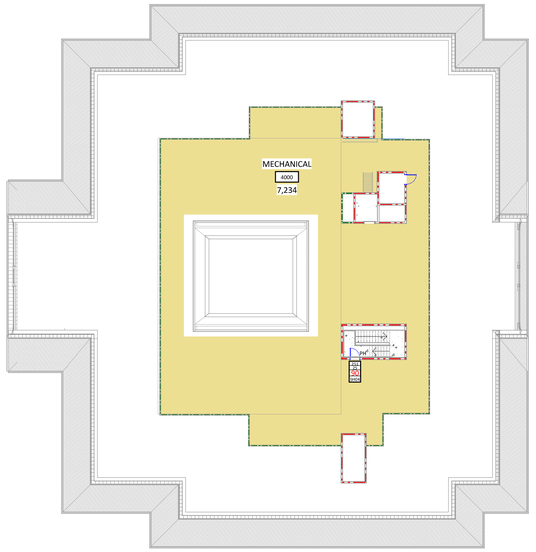
NUMBER	NAME	AREA	AREA FUNCTION (OLF)	AREA PER OCCUPANT	OCCUPANTS_ CALCULATED
4000	MECHANICAL	7233.88 SF	(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300.00 SF	25
		7233.88 SF			25

PLUMBING FIXTURES REQUIRED- LEVEL 3

NUMBER	NAME	PLUMBING OCCUPANCY KEY	OCCUPANTS	WATER CLOSETS		LAVS		BATHING	DRINKING
				MALE	FEMALE	MALE	FEMALE		
(IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM									
3004/5/6/7/8	ELEC/JAN/IDF/STOR	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	2	0.010	0.010	0.01	0.01		0.002
3025A	ELEC	S-1, S-2: STORAGE, WAREHOUSES, FRIEG DEPOTS, LOW AND MODERATE HAZARDS	1	0.005	0.005	0.005	0.005		0.001
(IBC2015) ASSEMBLY- FIXED SEATS									
3011	COMPUTERS	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	38	0.152	0.292	0.095	0.095		0.076
3015	COMPUTERS	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	38	0.152	0.292	0.095	0.095		0.076
(IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED									
3002A-D	GROUP STUDY	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	26	0.104	0.200	0.065	0.065		0.052
3017A-E	GROUP STUDY	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	32	0.128	0.246	0.08	0.08		0.064
(IBC2015) LIBRARY- READING ROOMS									
3000	LOUNGE	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	11	0.044	0.085	0.0275	0.0275		0.022
3001	GRAND READING ROOM	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	92	0.368	0.708	0.23	0.23		0.184
3002	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	23	0.092	0.177	0.0575	0.0575		0.046
3010	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	5	0.020	0.038	0.0125	0.0125		0.01
3010	STUDY CARRELS	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	30	0.120	0.231	0.075	0.075		0.06
3012/13/14	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	104	0.416	0.800	0.26	0.26		0.208
3016	STUDY CARRELS	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	30	0.120	0.231	0.075	0.075		0.06
3017	OPEN SEATING	A-3: AUDITORIUMS WITHOUT FIXED SEATS, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES, GYMNASIUMS	26	0.104	0.200	0.065	0.065		0.052
			458	1.835	3.515	1.1525	1.1525	0	0.913



A1 LIFE SAFETY PLAN- LEVEL 3
3/64" = 1'-0"

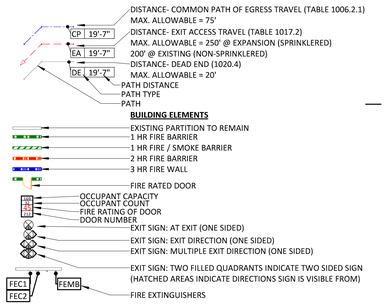


A3 LIFE SAFETY PLAN- LEVEL 4
3/64" = 1'-0"

OCCUPANCY TYPES

- (IBC2015) ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
- (IBC2015) ASSEMBLY- FIXED SEATS
- (IBC2015) ASSEMBLY- NO FIXED SEATS- UNCONCENTRATED
- (IBC2015) LIBRARY- READING ROOMS

LEGEND- CODE COMP PLANS



DISTANCE- COMMON PATH OF EGRESS TRAVEL (TABLE 1006.2.1)
MAX. ALLOWABLE = 75'
DISTANCE- EXIT ACCESS TRAVEL (TABLE 1017.2)
MAX. ALLOWABLE = 250' @ EXPANSION (SPRINKLERED)
200' @ EXISTING (NON-SPRINKLERED)
DISTANCE- DEAD END (1020.4)
MAX. ALLOWABLE = 20'
PATH DISTANCE
PATH TYPE
PATH

BUILDING ELEMENTS

EXISTING PARTITION TO REMAIN
1 HR FIRE BARRIER
1 HR FIRE / SMOKE BARRIER
2 HR FIRE BARRIER
3 HR FIRE WALL
FIRE RATED DOOR
OCCUPANT CAPACITY
OCCUPANT COUNT
FIRE RATING OF DOOR
DOOR NUMBER
EXIT SIGN: AT EXIT (ONE SIDED)
EXIT SIGN: EXIT DIRECTION (ONE SIDED)
EXIT SIGN: MULTIPLE EXIT DIRECTION (ONE SIDED)
EXIT SIGN: TWO FILLED QUADRANTS INDICATE TWO SIDED SIGN (HATCHED AREAS INDICATE DIRECTIONS SIGN IS VISIBLE FROM)
FIRE EXTINGUISHERS

GENERAL NOTES- CODE PLANS

1. FIRE RESISTANCE RATINGS SHOWN ARE MINIMUM RATINGS REQUIRED. REFER TO PARTITION TYPES ON A0.11, AND SPECIFICATIONS, FOR MORE INFORMATION
2. FIRE RESISTANCE RATINGS IN PARTITIONS ARE SHOWN WHERE PARTITIONS ARE NOT CUT BY DOORS, WINDOWS, STOREFRONTS, OR OTHER OBJECTS. RATED PARTITION MAY EXIST ABOVE OBJECTS.
3. PH = PANIC HARDWARE

TRUE NORTH
PROJECT NORTH

UNCW

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LS3P ASSOCIATES LTD. REGISTERED ARCHITECTURAL COMPANY CERT. NO. 50417 NORTH CAROLINA WILMINGTON, NORTH CAROLINA

LAURA LYNN MILLER REGISTERED ARCHITECT 9888 NORTH CAROLINA WILMINGTON, NC

2022.02.16 14:43:10-05'00'

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME:
LIFE SAFETY PLAN- LEVELS 3 & 4

ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET:
G-103

PACKAGE A - BID DOCUMENTS

2/16/2022 2:42:20 PM

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE

1 2 3 4 5 6

A B C D E

THE LINE SHOWN ABOVE IS TEN INCHES ORIGINAL LONG SIZE

NORTH CAROLINA
NEW HANOVER COUNTY

I, MICHAEL N. UNDERWOOD, CERTIFY TAHT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DESCRIPTION AS SHOWN ON THE FACE OF THIS PLAT RATIO OF PRECISION AS CALCULATED BY COMPUTER IS 1/10,000 + THAT THE BOUNDARIES NOT SURVEYED ARE SHOWN BY BROKEN LINES PLOTTED FROM INFORMATION REFERENCED THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH "THE STANDARDS OF PRACTICE FOR LAND SURVEYING IN NORTH CAROLINA" WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL THIS 9TH DAY OF MARCH A.D., 2022

MICHAEL N. UNDERWOOD, P.L.S.
LICENSE NUMBER L-2982
SEAL OR STAMP

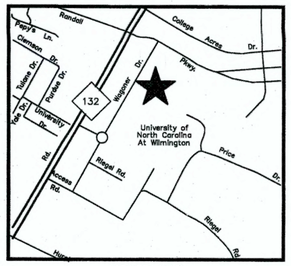
NORTH CAROLINA PROFESSIONAL SEAL L-2982 LAND SURVEYOR MICHAEL N. UNDERWOOD

UTILITY STATEMENT
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED UNDERGROUND UTILITIES.

LEGEND

CO	CLEANOUT
SS	SANITARY SEWER
WV	WATER VALVE
WM	WATER METER
SD	STORM DRAIN
LP	LIGHT POLE
GV	GAS VALVE
FO	FIBER OPTIC
UGE	UNDERGROUND ELECTRIC
UGT	UNDERGROUND TELEPHONE
CW	COLD WATER
HW	HOT WATER
TH	TEST HOLE

GRAPHIC SCALE: 1"=20'
0 20 40 60 80



VICINITY MAP
NO SCALE

ASBUILT SURVEY

UNIVERSITY OF NORTH CAROLINA AT WILMINGTON
RANDALL LIBRARY

WILMINGTON TOWNSHIP NEW HANOVER COUNTY
WILMINGTON, NC

CLIENT: NORRIS & TUNSTALL CONSULTING ENGINEERS, P.C.
ATTN: JOHN S. TUNSTALL, P.E.
2602 IRON GATE DR., SUITE 102
WILMINGTON, NC 28412

MICHAEL UNDERWOOD and ASSOCIATES, PA
102 CINEMA DRIVE, SUITE A
WILMINGTON, NC 28403
PHONE: 910-815-0650
FAX: 910-815-0393
E-MAIL: mua@bizec.rr.com Firm License #C-0815

SURVEYED: DC		APPROVED: MNU
DRAWN BY: TRM		DATE: OCT. 21
CHECKED BY: MNU		SCALE: 1"=20'

I:\Dorlene Buddy 2019\Norris and Tunstall\UNCW Randall Library\dwg\Randall 2.dwg

SHEET 1 OF 6

TEST HOLE INFORMATION TAKEN FROM REPORT PREPARED BY KCI ASSOCIATES OF NC, DATED DECEMBER, 2021.

TH-1D
11"WIDE X 6" DEEP CONCRETE DUCTBANK
TOP @ 2.06'
INV. 2.56'
TH-2D
11"WIDE X 9" DEEP CONCRETE DUCTBANK
TOP @ 1.70'
INV. 2.45'
TH-3D
11"WIDE X 8" DEEP CONCRETE DUCTBANK
TOP @ 2.12'
INV. 2.71'
TH-4D
14"WIDE X 8" DEEP CONCRETE DUCTBANK
TOP @ 2.01'
INV. 2.63'

TEST HOLE INFORMATION TAKEN FROM REPORT PREPARED BY KCI ASSOCIATES OF NC, DATED OCTOBER, 2021.

TH-1
12" x 27" WIDE CONCRETE DUCTBANK
TOP @ 3.06'
INV @ 4.04'
TH-2
10" INSULATED PIPE
TOP @ 5.03'
TH-2B
10" INSULATED PIPE
TOP @ 5.11'
TH-3
2" PLASTIC GAS MAIN
TOP @ 2.26'
TH-4
12" x 36" WIDE CONCRETE DUCTBANK
TOP @ 2.82'
INV @ 3.82'
TH-5
24" x 32" WIDE CONCRETE DUCTBANK
TOP @2.99'
INV @ 4.97'
TH-6
6" CAST IRON WATER MAIN
TOP @ 3.19'
TH-7
6" CAST IRON WATER MAIN
TOP @ 2.59'
TH-9
6" PLASTIC GAS MAIN
TOP @ 2.01'
TH-10
6" CAST IRON WATER MAIN
TOP @ 1.77'
TH-11
36" x 18" DEEP CONCRETE MONUMENT
TOP @ 4.14'
INV @ 5.58'
TH-12
2 x 1/2" HDPE CONDUITS
TOP @ 3.46
TH-13
1 1/2" HDPE CONDUITS
TOP @ 2.94'
TH-16
10" CAST IRON WATER MAIN
TOP @ 3.09'
TH-17
6" CAST IRON WATER MAIN
TOP @ 3.59'
TH-18
6" CAST IRON WATER MAIN
TOP @ 2.99'
TH-19
6" PLASTIC GAS MAIN
TOP @ 6.24'
TH-19B
6" STEEL PIPE
TOP @ 2.53'
TH-20
6" x 12" WIDE CONCRETE DUCTBANK
TOP @ 1.15'

WAGONER DRIVE

CURB INLET GUT 39.28
CURB INLET GUT 39.24

SS MANHOLE
RIM 41.47
INV 37.72(4")
INV 37.32(8")
INV 37.17(8")
INV 37.47(8")

DROP INLET TOP 40.48 INV 37.87
DROP INLET TOP 41.13 INV 36.81

GAS LINE LOCATION TAKEN FROM UTILITY PLAN PROVIDED BY UNCW. UNKNOWN TO SURVEYOR EXACT LOCATION OF GAS LINES.

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RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
601 SOUTH COLLEGE ROAD
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202.197980

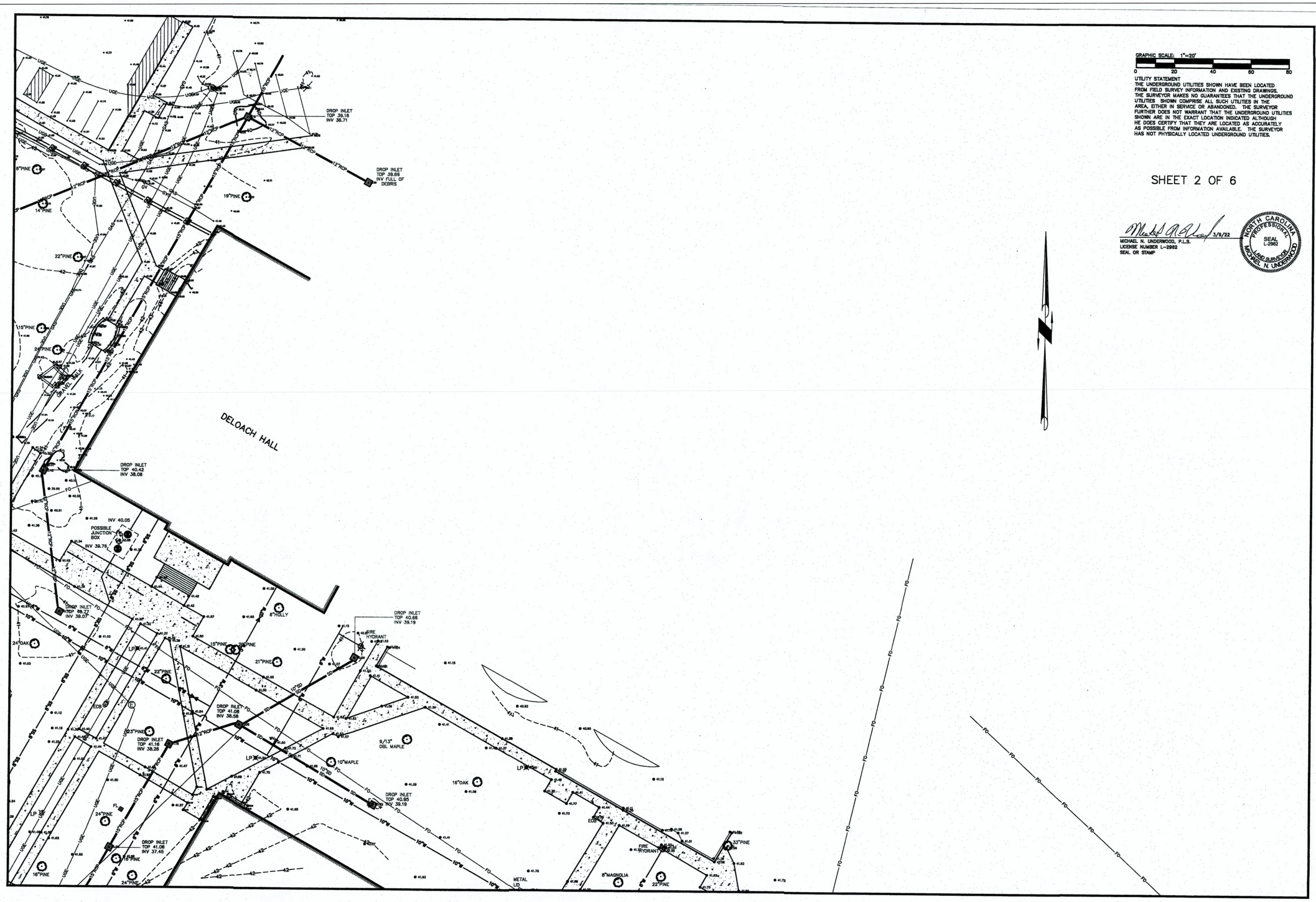
Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
D	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
SURVEY

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-100.1
20077

THE LINE SHOWN ABOVE IS ONE INCH LONG ON THIS SHEETS ORIGINAL IMAGE SIZE



GRAPHIC SCALE: 1"=20'

0 20 40 60 80

UTILITY STATEMENT
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED UNDERGROUND UTILITIES.

SHEET 2 OF 6

3/9/22

MICHAEL N. UNDERWOOD, P.L.S.
LICENSE NUMBER L-2962
SEAL OR STAMP

NORTH CAROLINA PROFESSIONAL SEAL L-2962 LAND SURVEYOR MICHAEL N. UNDERWOOD

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SHEET NAME:
SURVEY

ORIG SUBMISSION: 2020.10.21
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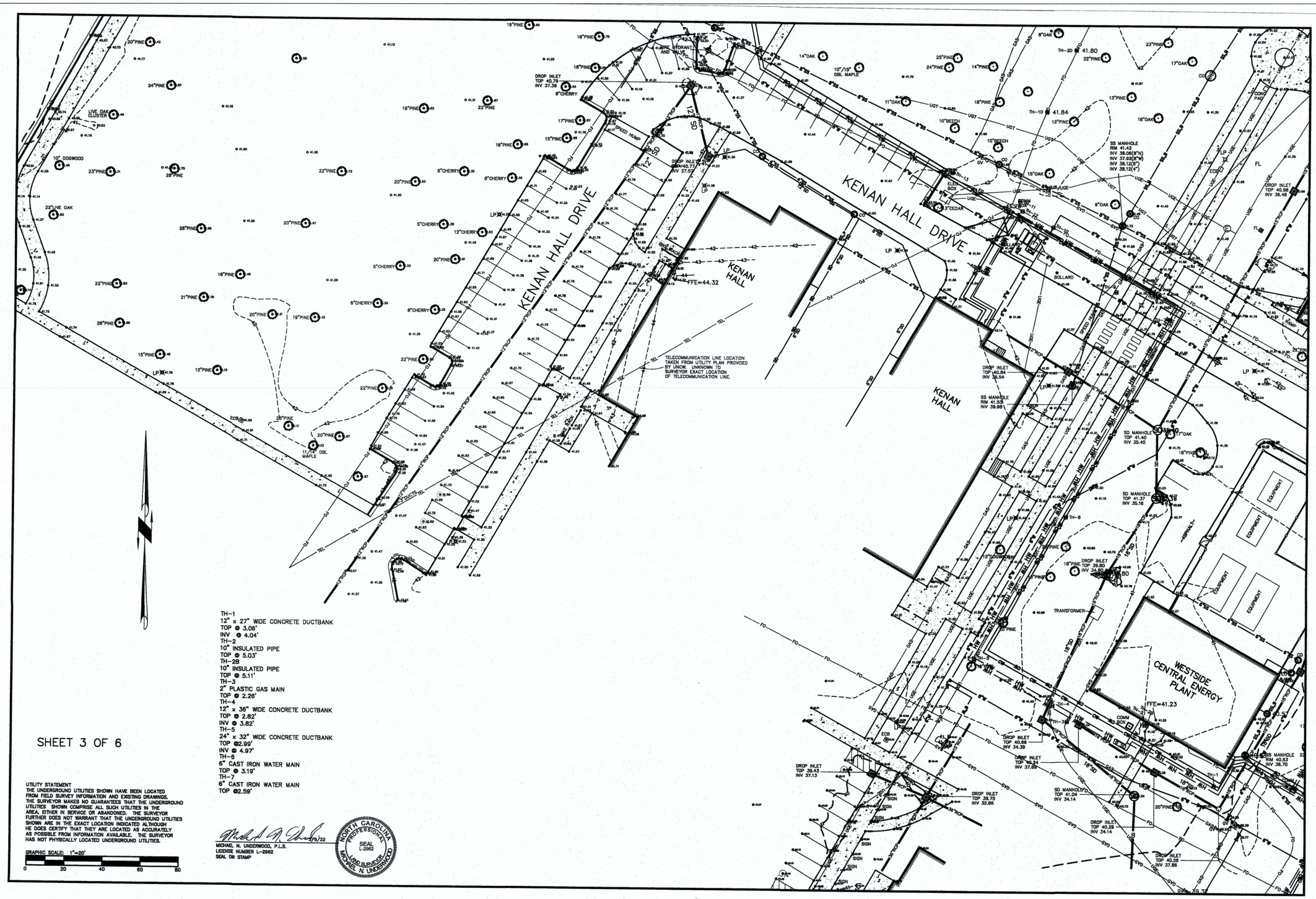
BID DOCUMENTS

SHEET:
C-100.2

20077



TH-1
12" x 27" WIDE CONCRETE DUCTBANK
TOP @ 3.06'
INV @ 4.04'
TH-2
10" INSULATED PIPE
TOP @ 5.03'
TH-2B
10" INSULATED PIPE
TOP @ 5.11'
TH-3
2" PLASTIC GAS MAIN
TOP @ 2.26'
TH-4
12" x 36" WIDE CONCRETE DUCTBANK
TOP @ 2.82'
INV @ 3.82'
TH-5
24" x 32" WIDE CONCRETE DUCTBANK
TOP @2.99'
INV @ 4.97'
TH-6
6" CAST IRON WATER MAIN
TOP @ 3.19'
TH-7
6" CAST IRON WATER MAIN
TOP @2.59'

SHEET 3 OF 6

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0 20 40 60 80

9/9/22
MICHAEL N. UNDERWOOD, P.L.S.
LICENSE NUMBER L-2962
SEAL OR STAMP

NORTH CAROLINA PROFESSIONAL SEAL L-2962 LAND SURVEYOR MICHAEL N. UNDERWOOD

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	2022.04.08	ADDENDUM 1

SHEET NAME:
SURVEY

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-100.3
20077

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL HALF SIZE

E

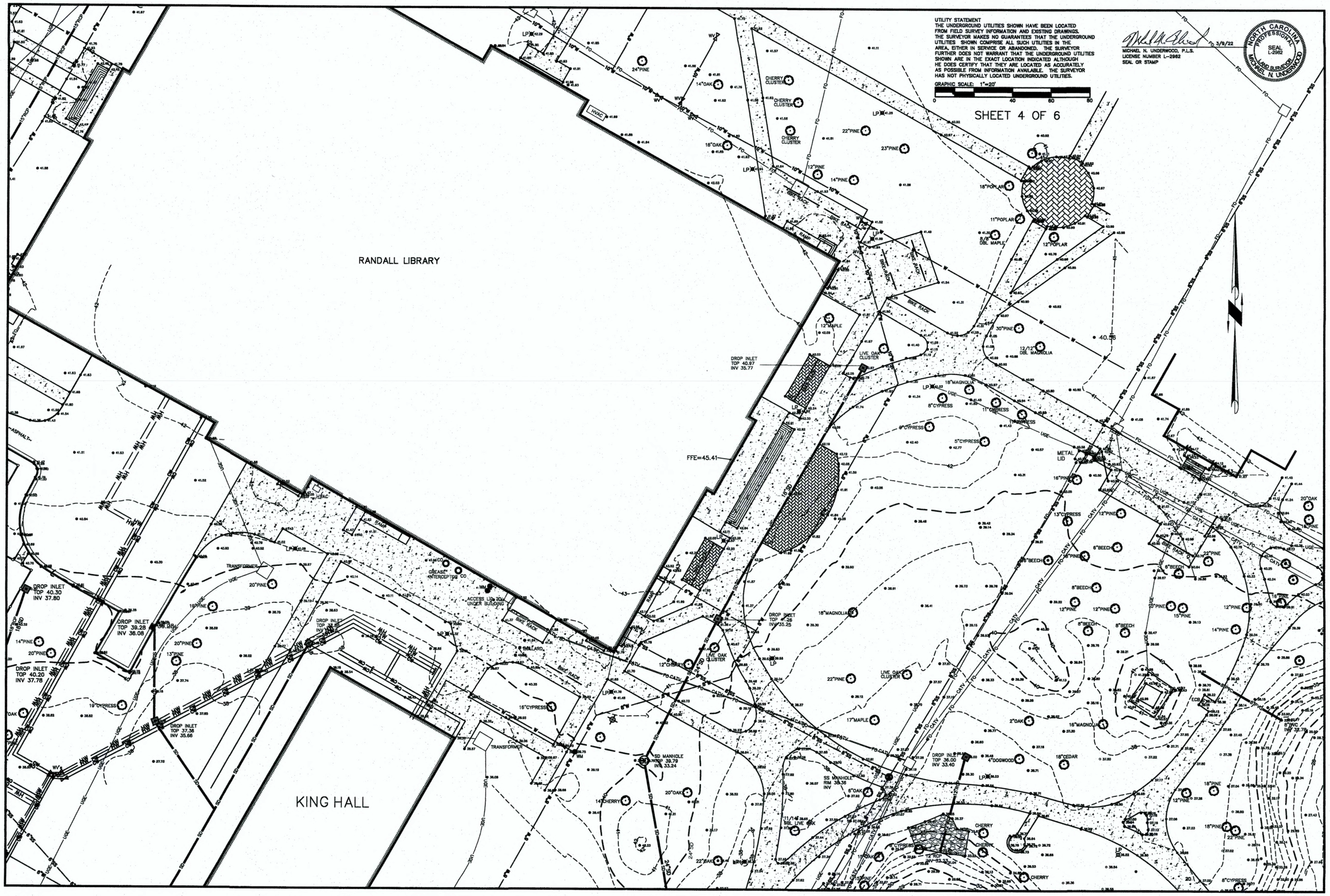
D

C

B

A

1 2 3 4 5 6



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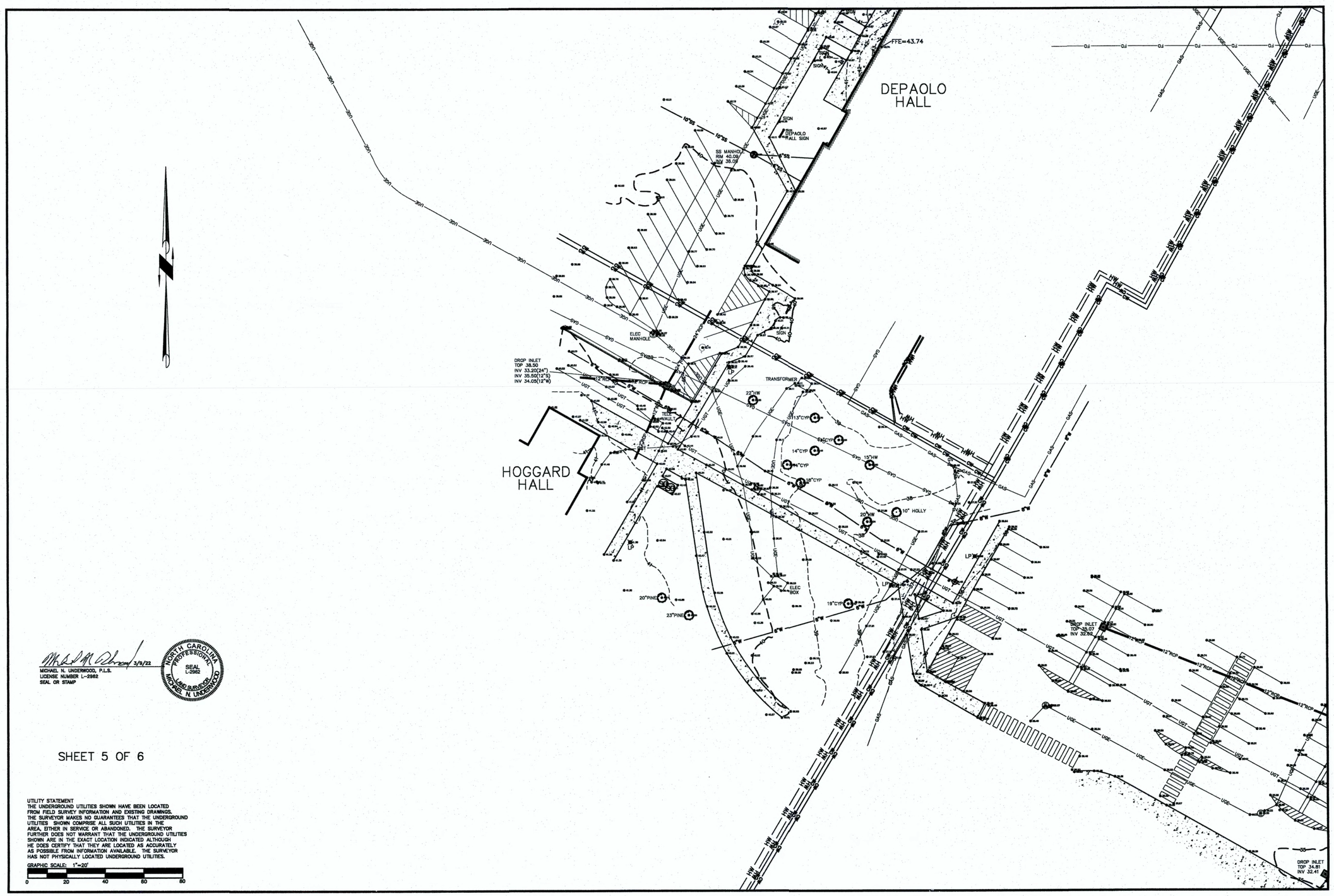
SHEET NAME:
SURVEY

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-100.4
20077



MICHAEL N. UNDERWOOD, P.L.S.
LICENSE NUMBER L-2982
SEAL OR STAMP

3/9/22

NORTH CAROLINA PROFESSIONAL SEAL L-2982 LAND SURVEYOR MICHAEL N. UNDERWOOD

SHEET 5 OF 6

UTILITY STATEMENT
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	2022.04.08	ADDENDUM 1

SHEET NAME:
SURVEY

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-100.5
20077

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LICENSE NUMBER L-2982
SEAL OR STAMP

NORTH CAROLINA PROFESSIONAL SEAL L-2982 LAND SURVEYOR MICHAEL N. UNDERWOOD

FISHER STUDENT UNION

UNIVERSITY UNION

SHEET 6 OF 6

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SHEET NAME:
SURVEY

ORIG SUBMISSION: 2020.10.21
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SHEET:
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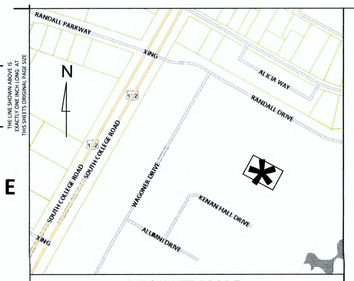


VICINITY MAP NTS

INDEX OF SHEETS

C-100.1–C-100.6:	SURVEY
C-101:	INVENTORY SITE PLAN
C-102:	OVERALL SITE PLAN
C-103:	DEMOLITION PLAN
C-104:	TREE REMOVAL PLAN
C-105:	GRADING, DRAINAGE, AND EROSION CONTROL PLAN
C-106:	UTILITY SITE PLAN
C-106A:	FIRE SERVICE PLAN
C-107:	DRAINAGE PLAN
C-108:	NOTES AND DETAILS
C-109:	NOTES AND DETAILS
C-110:	NOTES AND DETAILS

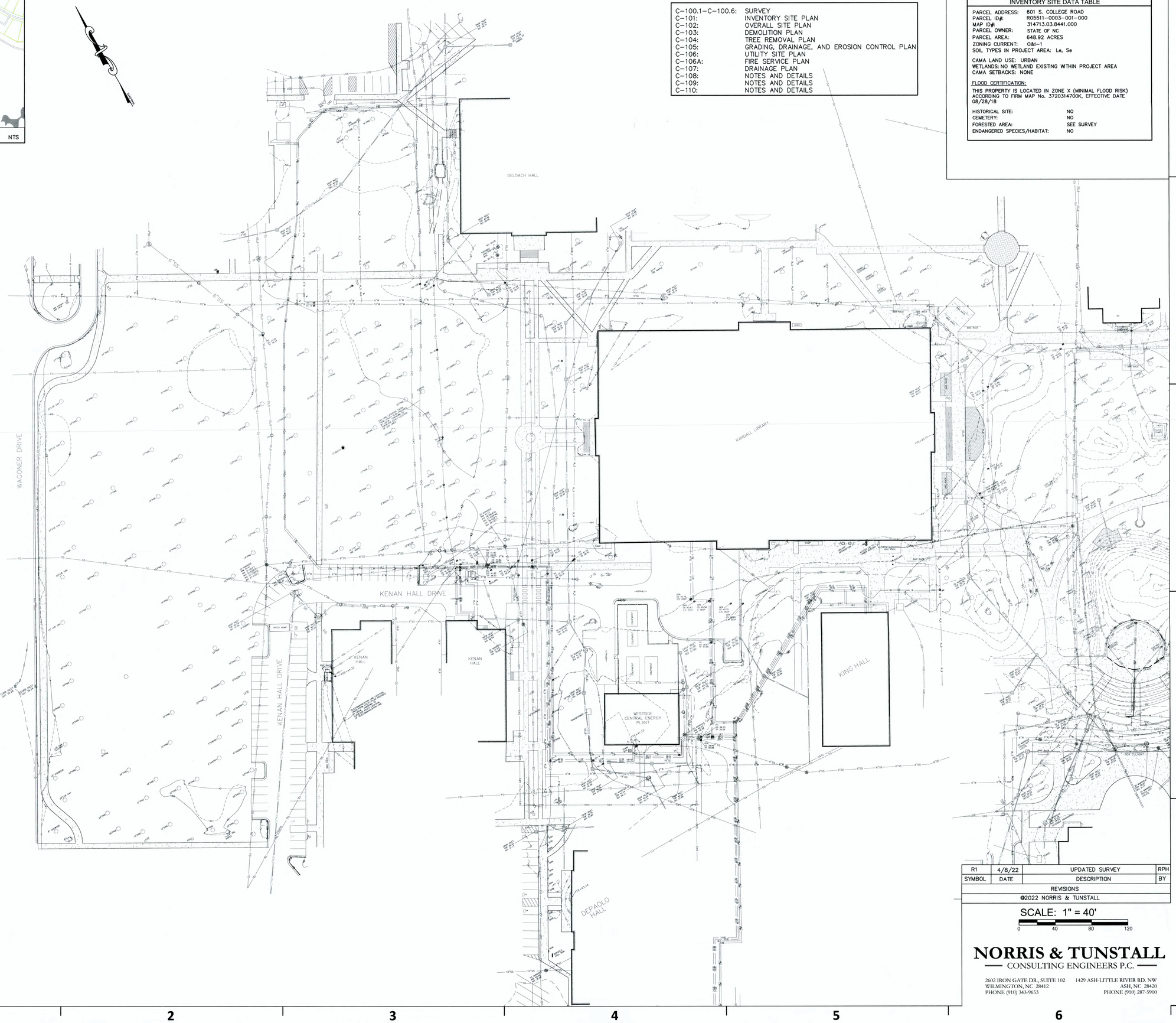
INVENTORY SITE DATA TABLE

PARCEL ADDRESS:	601 S. COLLEGE ROAD
PARCEL ID#:	R05511-003-001-000
MAP ID#:	314713.03.8441.000
PARCEL OWNER:	STATE OF NC
PARCEL AREA:	648.92 ACRES
ZONING CURRENT:	O&I-1
SOIL TYPES IN PROJECT AREA:	Le, Se

CAMA LAND USE: URBAN
WETLANDS: NO WETLAND EXISTING WITHIN PROJECT AREA
CAMA SETBACKS: NONE

FLOOD CERTIFICATION:
THIS PROPERTY IS LOCATED IN ZONE X (MINIMAL FLOOD RISK) ACCORDING TO FIRM MAP No. 3720314700K, EFFECTIVE DATE 08/28/18

HISTORICAL SITE:	NO
CEMETERY:	NO
FORESTED AREA:	SEE SURVEY
ENDANGERED SPECIES/HABITAT:	NO



SYMBOL	DATE	DESCRIPTION	BY
R1	4/8/22	UPDATED SURVEY	RPH

REVISIONS

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SCALE: 1" = 40'
0 40 80 120

SURVEY BY:
MICHAEL UNDERWOOD and ASSOCIATES, PA
102 CINEMA DRIVE, SUITE A
WILMINGTON, NC 28403
PHONE: 910-815-0650
FAX: 910-815-0393
E-MAIL: mua@bizec.rr.com Firm License # C-0615

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NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 19851 JOHN S TUNSTALL

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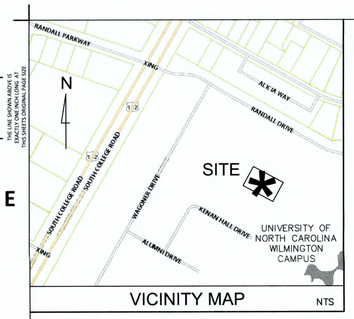
	2022.04.08	ADDENDUM 1

SHEET NAME:
INVENTORY SITE PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-101
20077



VICINITY MAP NTS

LEGEND

	PROPERTY LINE
LOL LOL	DISTURBED AREA LIMITS
35	PROPOSED CONTOUR
X X TSF	TEMPORARY SILT FENCE
SD SD	PROPOSED STORMDRAIN PIPE
8W	PROPOSED WATERLINE
SS	PROPOSED SANITARY SEWER
41.35	PROPOSED SPOT ELEVATION FLOW LINE
41.85	PROPOSED SPOT ELEVATION TOP OF CURB
41.85	PROPOSED SPOT ELEVATION FINISH GRADE
	FLARED END SECTION WITH RIP-RAP ENERGY DISSIPATOR
	DROP INLET WITH INLET PROTECTION (DI)
	CURB INLET WITH INLET PROTECTION (CI)
	JUNCTION BOX WITH INLET PROTECTION (JB)
	PROPOSED FIRE HYDRANT
49	EXISTING CONTOUR
13"PINE	EXISTING TREE TO BE SAVED
13"PINE	EXISTING TREE TO BE REMOVED
TP TP TP TP TP	TREE PROTECTION FENCING
	PERVIOUS CONCRETE
	PERVIOUS PAVERS
	CONCRETE PAVERS. SEE LANDSCAPE PLAN
	CONCRETE

IMPERVIOUS AREA WITHIN SITE PROJECT AREA*:

EXISTING IMPERVIOUS AREA:	
BUILDING:	87,540 SF
SIDEWALK:	49,919 SF
ASPHALT/CONC./C&G:	33,265 SF
TOTAL:	170,724 SF TOTAL
PERCENT IMP.:	38.11%
EXISTING IMPERVIOUS AREA REMOVED:	
SIDEWALK/CONC.:	11,235 SF
ASPHALT/C&G:	10,179 SF
PROPOSED IMPERVIOUS AREA ADDED:	
BUILDING ADDITION:	33,500 SF
SIDEWALK:	26,001 SF
ASPHALT/CONC./C&G:	7,374 SF
WASHED STONE:	1,720 SF
TOTAL:	68,595 SF TOTAL
TOTAL IMPERVIOUS AT BUILD OUT:	
BUILDING:	121,040 SF
SIDEWALK/CONC:	64,685 SF
ASPHALT/C&G:	30,460 SF
WASHED STONE:	1,720 SF
TOTAL:	
PERCENT IMPERVIOUS WITHIN PROJECT AREA*	217,905 SF TOTAL 48.65%
PERVIOUS CONCRETE:	3,560 SF
PERVIOUS PAVERS:	4,282 SF

*PROJECT AREA WAS ESTABLISHED FOR ACCOUNTING FOR NEW IMPERVIOUS AREA OF THE PROJECT. EROSION CONTROL LIMITS OF DISTURBANCE IS DIFFERENT THAN PROJECT AREA.

SITE DATA

SITE DATA:
ZONING: O&I--1; OFFICE AND INSTITUTIONAL
PARCEL NUMBER: R05511--0003--001--000
PARCEL ID NUMBER: 314713.03.8441.00
PARCEL OWNER: STATE OF NC
ADDRESS: 601 S. COLLEGE ROAD
SITE AREA: 648.92 AC
PROJECT AREA: 10.28 ACRES (447,929 SF)

BUILDING DATA:
BUILDING USE: INSTITUTIONAL (LIBRARY)
EXISTING BUILDING FOOTPRINT: 87,540 SF
1ST FLOOR: 72,822 SF / 2ND FLOOR: 84,721 SF
EXISTING BUILDING HEIGHT: 33' (2 STORY)
NEW BUILDING FOOTPRINT: 33,500 SF
1ST FLOOR: 22,064 SF / 2ND FLOOR: 19,392 SF / 3RD FLOOR: 21,764 SF
NEW BUILDING HEIGHT: 70.67' (3 STORY)
BUILDING CONSTRUCTION TYPE:

CAMA LAND CLASSIFICATION: URBAN

SITE DISTURBANCE:
TOTAL AREA OF DISTURBANCE = 295,565 SF (6.79 AC.)

LANDSCAPING REQUIREMENTS: (REFER TO LANDSCAPE PLAN)

PROJECT AREA
NEW BUILDING ADDITION FFE=45.41' MATCH EXISTING RANDALL LIBRARY 33,500 SF (ROOF AREA)
EXISTING RANDALL LIBRARY 87,540 SF (ROOF AREA)
BUS STOP, CURB & GUTTER, SIDEWALK, AND BUS SHELTER PAD INCLUDED IN ALTERNATE BID #05
DELOACH HALL
KENAN HALL DRIVE
WAGONER DRIVE
KENAN HALL
KENAN HALL
WESTSIDE CENTRAL ENERGY PLANT
KING HALL
DEPAOLO HALL
EQUIPMENT
GAS
WATER
SANITARY SEWER

SYMBOL	DATE	DESCRIPTION	BY
R1	4/8/22	MOVED BUS STOP AND REMOVED PART OF SIDEWALK	RPH

REVISIONS

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SCALE: 1" = 40'
0 40 80 120

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NORTH CAROLINA PROFESSIONAL SEAL 19851 ENGINEER RICHARD P. HOLT

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SHEET NAME:
OVERALL SITE PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS R1

SHEET:
C-102
20077

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PROJECT AREA

PROJECT AREA

PROJECT AREA

PROJECT AREA

PROJECT AREA

PROJECT AREA

WAGONER DRIVE

DELOACH HALL

RANDALL LIBRARY

KENAN HALL

KENAN HALL

KENAN HALL DRIVE

KING HALL

WESTSIDE CENTRAL ENERGY PLANT

PROPOSED BUILDING

CONSTRUCTION ENTRANCE

CONSTRUCTION ENTRANCE

PERVIOUS PAVERS

REMOVE EXISTING SIDEWALK AND CONCRETE

REMOVE EXIST. CONCRETE.

REMOVE EXISTING SIDEWALK

REMOVE EXIST. CONCRETE.

REMOVE EXIST. GAS LINE.

REMOVE EXIST. FIBER OPTIC CABLE.

REMOVE EXISTING SIDEWALK

REMOVE EXIST. 6" WL

REMOVE EXIST. CONCRETE.

REMOVE EXISTING SIDEWALK AND CONCRETE

REMOVE EXIST. SEWER. SEE UTILITY PLAN

REMOVE EXIST. CONCRETE.

REMOVE EXIST. ASPHALT

REMOVE EXIST. CONCRETE WALK AND CURB & GUTTER

REMOVE EXIST. CONCRETE.

PROPOSED IMPROVEMENTS

APPROXIMATE DEMOLITION AREA. CONFIRM ACTUAL LIMITS WITH CONSTRUCTION OF BUILDING, SIDEWALKS AND UNDER GROUND UTILITIES.

SYMBOL	DATE	DESCRIPTION	BY
R1	4/8/22	UPDATED DEMO AREAS FOR NEW LAYOUT	RPH

REVISIONS

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SCALE: 1" = 30'

0 30 60 90

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19851 JOHN S. TUNSTALL

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
601 SOUTH COLLEGE ROAD
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
D	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
DEMOLITION PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
R1 BID DOCUMENTS

SHEET:
C-103
20077

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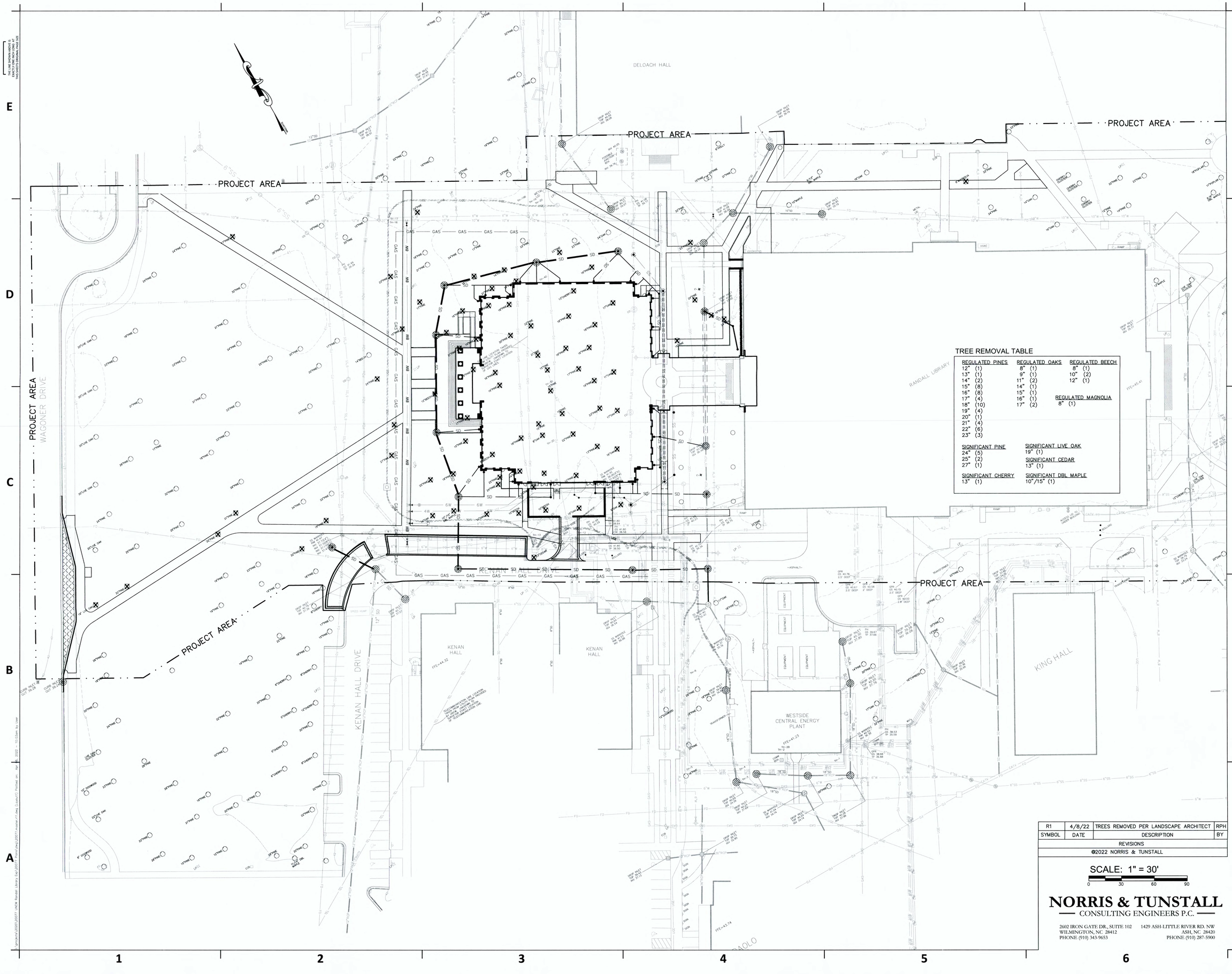

TREE REMOVAL TABLE

REGULATED PINES	REGULATED OAKS	REGULATED BEECH
12" (1)	8" (1)	8" (1)
13" (1)	9" (1)	10" (2)
14" (2)	11" (2)	12" (1)
15" (8)	14" (1)	
16" (8)	15" (1)	
17" (4)	16" (1)	REGULATED MAGNOLIA
18" (10)	17" (2)	8" (1)
19" (4)		
20" (1)		
21" (4)		
22" (6)		
23" (3)		

SIGNIFICANT PINE	SIGNIFICANT LIVE OAK
24" (5)	19" (1)
25" (2)	SIGNIFICANT CEDAR
27" (1)	13" (1)
SIGNIFICANT CHERRY	SIGNIFICANT DBL MAPLE
13" (1)	10"/15" (1)

SYMBOL	DATE	DESCRIPTION	BY
R1	4/8/22	TREES REMOVED PER LANDSCAPE ARCHITECT	RPH

REVISIONS

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SCALE: 1" = 30'

0 30 60 90

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SCO ID: 18-19656-02A
L3SP PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
D	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
TREE REMOVAL SITE PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
R1 BID DOCUMENTS

SHEET:
C-104
20077

THE LINE SHOWN ABOVE IS 1" LONG ON ORIGINAL PAPER SIZE. IF NOT 1" ADJUST SCALE ACCORDINGLY

E
D
C
B
A
1 2 3 4 5 6

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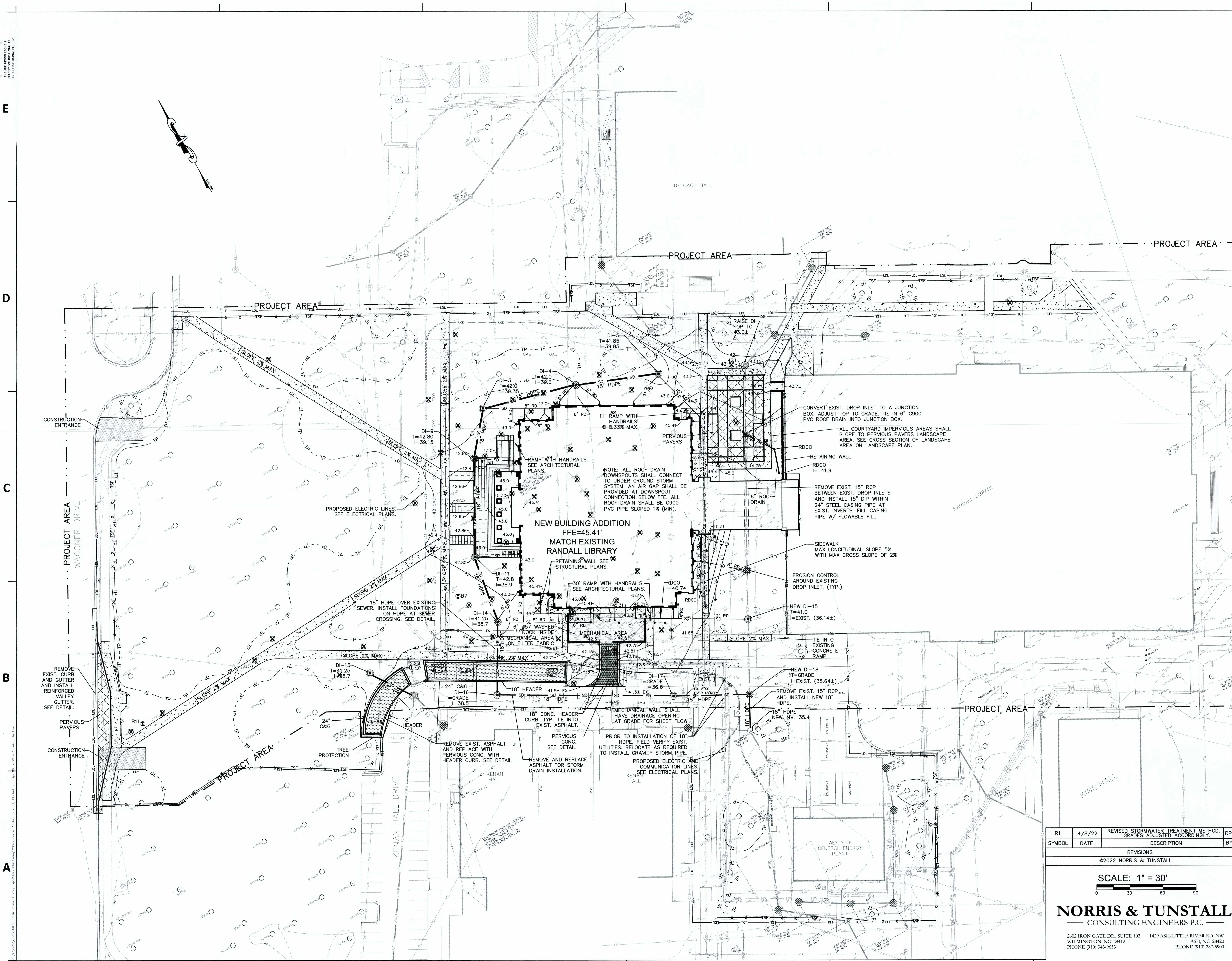

R1	4/8/22	REVISED STORMWATER TREATMENT METHOD. GRADES ADJUSTED ACCORDINGLY.	RPH
SYMBOL	DATE	DESCRIPTION	BY

REVISIONS

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SCALE: 1" = 30'

0 30 60 90

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19851 JOHN S. TUNSTALL 4/8/22

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	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
GRADING, DRAINAGE AND EROSION CONTROL PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

R1

SHEET:
C-105
20077

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TWO DIFFERENT DRAWING SCALES

DELOACH HALL

RANDALL LIBRARY

KING HALL

WESTSIDE CENTRAL ENERGY PLANT

KENAN HALL

WAGONER DRIVE

KENAN HALL DRIVE

EX. FH

EX. FH

EX. FH

EX. FH

CONNECT TO EXIST. 6" GAS LINE. ONCE CONNECTION IS MADE AND NEW GAS PIPING IS IN SERVICE, REMOVE EXIST. GAS LINE

PROPOSED 6" GAS.

10"X 8" TAPPING SLEEVE AND 8" G.V.

8" C900 PVC WL

PROPOSED 6" GAS.

PROPOSED ELECTRIC LINES. SEE ELECTRICAL PLANS.

SSMH 4 T=GRADE INV. EXIST.=39.07 NEW INV. IN=39.07 FIELD VERIFY AND NOTIFY ENGINEER.

REMOVE EXIST. GAS LINE.

REMOVE EXIST. FIBER OPTIC CABLE.

175 LF 8" DIP SS @ 0.40% MIN. 100 LF CONTAINED WITHIN 16" STEEL CASING PIPE. FILL CASING PIPE W/ FLOWABLE FILL

NEW BUILDING ADDITION FFE=45.41' MATCH EXISTING RANDALL LIBRARY

HOT/COLD WATER LINES. SEE MECHANICAL PLANS

6" DIP FW BELOW STORM PIPE. 2' SEPARATION MIN.

WATER UNDER 6" SEWER

6" C900 DR18 PVC SS @1.0% MIN.

FDC

SSCO I=40.20

SSCO I=39.2

SSCO I=40.83

6" OVERFLOW INV: 43.41

8"X 6" TEE 6" G.V.

8"X 4" TEE 4" G.V.

8"X 6" TEE 6" G.V.

CUT IN 6"X 6" TEE 6" G.V. 8"X6" RED.

6"PIV

6"RJ DIP FW

4"C900 PVC DW

PH

CONNECT 10" WL TO EXIST. 6" WL WITH 10x6 TAPPING SLEEVE & 6" GV

SSMH 3 T=GRADE I=38.91

* 1. 4" RPZ BACKFLOW PREVENTOR WITHIN BUILDING.
2. 6" DCDA BACKFLOW PREVENTOR WITHIN BUILDING.

REMOVE EXIST. 6" WL

4" SS @ 1% SLOPE

SSCO

RE-LOCATE EXIST. UNDERGROUND ELECTRIC. REFER TO ELECTRICAL PLANS. (TYP.)

AFTER WATER SERVICE TO EXIST. RANDALL LIBRARY INSTALL 6" MJ CAP ON EXISTING 6" WL.

SSMH 2 T=44.5± I=38.21

SSMH 1 T=GRADE INV. EXIST.=38.05 NEW 8" INV. IN=38.05 NEW 6" INV. IN=39.00 FIELD VERIFY AND NOTIFY ENGINEER.

CONTRACTOR TO CONFIRM THE 2 EXISTING WATERLINES ARE CONNECTED. CONTACT ENGINEER WITH CONFIRMATION.

EXISTING WATER SERVICE.

8" 8" C900 DR18 PVC

PROPOSED 6" GAS. REMOVE AND REPLACE EXIST. ASPHALT AS REQUIRED TO INSTALL GAS LINE

CONNECT TO EXIST. 6" GAS LINE. ONCE CONNECTION IS MADE AND NEW GAS PIPING IS IN SERVICE, REMOVE EXIST. GAS LINE

PROPOSED ELECTRIC AND COMMUNICATION LINES. SEE ELECTRICAL PLANS.

R1	4/8/22	ADJUSTED WATER AND SEWER LOCATIONS.	RPH
SYMBOL	DATE	DESCRIPTION	BY
REVISIONS			

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SCALE: 1" = 30'

0 30 60 90

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D	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
UTILITY SITE PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-106
20077

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THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TWO FEET DOWNSCALE FACTOR

RANDALL DRIVE

FIRE ACCESS

SOUTH COLLEGE ROAD

FIRE ACCESS

FIRE ACCESS

FIRE ACCESS

FIRE ACCESS

FIRE ACCESS

FH

FH

FH

FH

FH

FH

DELOACH HALL

RANDALL LIBRARY

EXPANSION

RANDALL LIBRARY

FDC

PROPOSED FH

FH

FIRE ACCESS

KENAN HALL DRIVE

FH

WAGNER DRIVE

FIRE ACCESS

KENAN HALL

KENAN HALL

KENAN HALL DRIVE

FIRE ACCESS

WESTSIDE CENTRAL ENERGY PLANT

KING HALL

FH

FH

FIRE ACCESS

HAMILTON DRIVE

DEPAOLO HALL

UNION

ALUMNI DRIVE

FH

ALUMNI DRIVE

WL 30.6

SYMBOL	DATE	DESCRIPTION	BY
REVISIONS			
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SCALE: 1" = 50'

0 50 100 150

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SCO ID: 18-19656-02A
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	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
FIRE SERVICE PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-106A
20077

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SYMBOL	DATE	DESCRIPTION	BY
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SCALE: 1" = 30'
0 30 60 90

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SHEET NAME:
DRAINAGE PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-107
20077

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

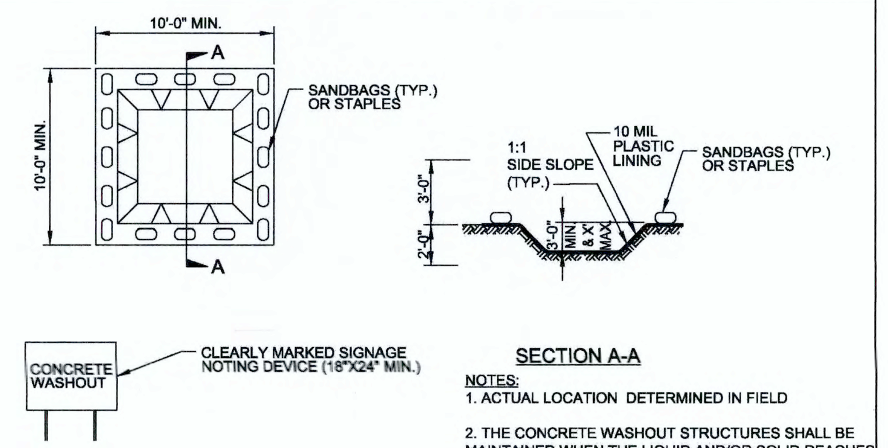
1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NORTH CAROLINA Environmental Quality

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



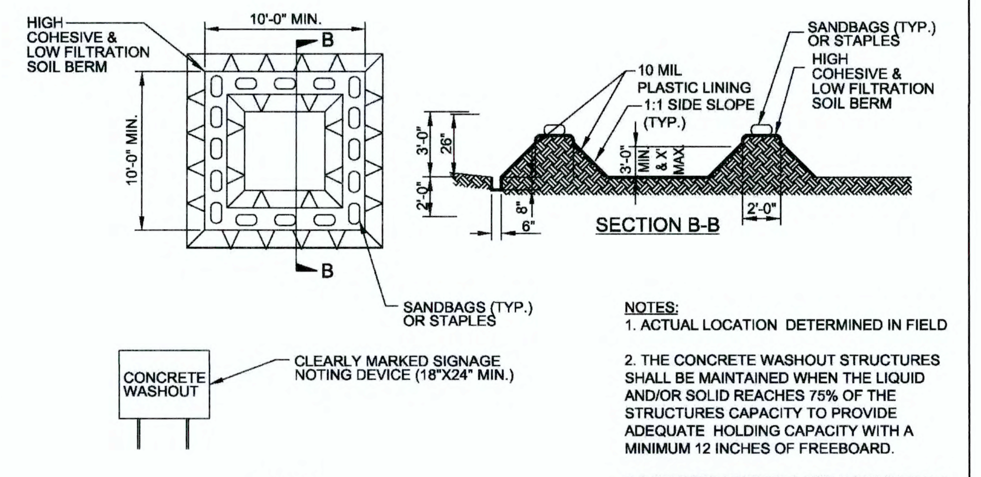
SECTION A-A

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

PLAN

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



SECTION B-B

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

PLAN

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

EROSION CONTROL NOTES AND MAINTENANCE PLAN:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL, BUT IN NO CASE, LESS THAN ONCE EVERY WEEK AND WITHIN 24 HOURS OF EVERY HALF-INCH RAINFALL.

2. ALL POINTS OF EGRESS WILL HAVE CONSTRUCTION ENTRANCES THAT WILL BE PERIODICALLY TOP-DRESSED WITH AN ADDITIONAL 2 INCHES OF #4 STONE TO MAINTAIN PROPER DEPTH. THEY WILL BE MAINTAINED IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. IMMEDIATELY REMOVE OBJECTIONABLE MATERIAL SPILLED WASHED OR TRACKED ONTO THE CONSTRUCTION ENTRANCE OR ROADWAYS.

3. SEDIMENT WILL BE REMOVED FROM HARDWARE CLOTH AND GRAVEL INLET PROTECTION, BLOCK AND GRAVEL INLET PROTECTION, ROCK DOUGHNUT INLET PROTECTION AND ROCK PIPE INLET PROTECTION WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS AS DESIGNED. DEBRIS WILL BE REMOVED FROM THE ROCK AND HARDWARE CLOTH TO ALLOW PROPER DRAINAGE. SILT SACKS WILL BE EMPTIED ONCE A WEEK AND AFTER EVERY RAIN EVENT. SEDIMENT WILL BE REMOVED FROM AROUND WATTLES, BEAVER DAMS, DANDY SACKS AND SOCKS ONCE A WEEK AND AFTER EVERY RAIN EVENT.

4. DIVERSION DITCHES WILL BE CLEANED OUT IMMEDIATELY TO REMOVE SEDIMENT OR OBSTRUCTIONS FROM THE FLOW AREA. THE DIVERSION RIDGES WILL ALSO BE REPAIRED. SWALES MUST BE TEMPORARILY STABILIZED WITHIN 21 CALENDAR DAYS OF CEASE OF ANY PHASE OF ACTIVITY ASSOCIATED WITH A SWALE.

5. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES HALF FILLED. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER. STAKES MUST BE STEEL. STAKE SPACING WILL BE 6 FEET MAX. WITH THE USE OF EXTRA STRENGTH FABRIC, WITHOUT WIRE BACKING. STAKE SPACING WILL BE 8 FEET MAX. WHEN STANDARD STRENGTH FABRIC AND WIRE BACKING ARE USED. IF ROCK FILTERS ARE DESIGNED AT LOW POINTS IN THE SEDIMENT FENCE, THE ROCK WILL BE REPAIRED OR REPLACED IF IT BECOMES HALF-FULL OF SEDIMENT, NO LONGER DRAINS AS DESIGNED OR IS DAMAGED.

6. SEDIMENT WILL BE REMOVED FROM SEDIMENT TRAPS WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. THE ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR WHEN THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED AND KEPT CLEAN WEEKLY.

7. SEDIMENT WILL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE DESIGN STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR IF THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED FROM BAFFLES WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED WEEKLY AND WILL BE KEPT CLEAN.

8. LAND QUALITY REQUIRES:
ALL SEEDED AREAS WILL BE FERTILIZED, RESEEDED AS NECESSARY, AND MULCHED, ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN, TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER. ALL SLOPES WILL BE STABILIZED WITHIN 21 CALENDAR DAYS. ALL OTHER AREAS WILL BE STABILIZED WITHIN 15 WORKING DAYS.
WATER QUALITY REQUIRES:
ALL SEEDED AREAS WILL BE FERTILIZED, RESEEDED AS NECESSARY AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER. ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, ALL SLOPES STEEPER THAN 3' HORIZONTAL TO 1' VERTICAL (3:1) AND ALL HIGH QUALITY WATER (HQW) ZONES SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN SEVEN (7) CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY. ALL OTHER DISTURBED AREAS SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN 14 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY.

9. FLOCCULANTS WILL BE USED TO ADDRESS TURBIDITY ISSUES. THE PUMPS, TANKS, HOSES AND INJECT SYSTEMS WILL BE CHECKED FOR PROBLEMS OR TURBID DISCHARGES DAILY.

10. BASIN OUTLET STRUCTURES AND SKIMMERS SHALL WITHDRAW WATER FROM THE SURFACE.

11. CONCRETE WASHOUTS SHOULD BE INSPECTED DAILY AND AFTER HEAVY RAINS. DAMAGES SHOULD BE REPAIRED PROMPTLY. IF FILLED TO OVER 75% CAPACITY WITH RAIN WATER IT SHOULD BE VACUUMED OR ALLOWED TO EVAPORATE TO AVOID OVERFLOWS. BEFORE HEAVY RAINS THE CONTAINERS LIQUID LEVEL SHOULD BE LOWERED OR THE CONTAINER COVERED TO AVOID AN OVER FLOW DURING RAIN. WHEN SOLIDS HAVE HARDENED THEY SHOULD BE REMOVED AND RECYCLED.

SEEDING MIXTURE

SPECIES	RATE (lb/acre)	
TALL FESCUE	80	1.84
PENSACOLA BAHIAGRASS	50	1.15
SERICEA LESPEDEZA	30	0.69
KOBE LESPEDEZA	10	0.23

SEEDING NOTES:
1. FROM SEPT. 1 THRU MAR. 1, USE UNSCARIFIED SERICEA SEED.
2. ON POORLY DRAINED SITES OMIT SERICEA AND INCREASE KOBE TO 30 lbs/acre.
3. WHERE A NEAT APPEARANCE IS DESIRED, OMIT SERICEA AND INCREASE KOBE TO 40 lbs/acre.

NURSE PLANTS: BETWEEN APR. 15 AND AUG. 15, ADD 10 lbs/acre GERMAN MILLET OR 15 lbs/acre SUDANGRASS. PRIOR TO MAY 1 OR AFTER AUG. 15 ADD 25 lbs/acre RYE (GRAIN).

SEEDING DATES:	BEST	POSSIBLE
EARLY SPRING:	FEB 15–MAR. 20	FEB.15–APR. 30
FALL:	SEPT. 1–SEPT. 30	SEPT. 1–OCT. 31

SOIL AMENDMENTS:
APPLY LIME AND FERTILIZE ACCORDING TO SOIL TESTS, OR APPLY 3,000–5,000 lbs/acre (68.9–114.8 lbs/1,000 sf) GROUND AGRICULTURAL LIMESTONE (USE THE LOWER RATE ON SANDY SOILS) AND 1,000 lbs/acre (22.9 lbs/1,000 sf) 10–10–10 FERTILIZER.
MULCH:
APPLY 4,000 lb/acre (91.8 lbs/1,000 sf) GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR ROVING OR BY CRIMPING WITH A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.
MAINTENANCE:
IF GROWTH IS LESS THAN FULLY ADEQUATE, REFERTILIZE IN THE SECOND YEAR, ACCORDING TO SOIL TESTS OR TOPDRESS WITH 500 lbs/acre (11.5 lbs/1,000 sf) 10–10–10 FERTILIZER. MOW AS NEEDED WHEN SERICEA IS OMITTED FROM THE MIXTURE. RESEED, FERTILIZE, AND MULCH DAMAGED AREAS IMMEDIATELY.

SEEDING MIXTURE

SPECIES	RATE (lb/acre)	
PENSACOLA BAHIAGRASS	50	1.15
SERICEA LESPEDEZA	30	0.69
COMMON BERMUDA	10	0.23
GERMAN MILLET	10	0.23

SEEDING NOTES:
1. WHERE A NEAT APPEARANCE IS DESIRED, OMIT SERICEA.
2. USE COMMON BERMUDAGRASS ONLY ON ISOLATED SITES WHERE IT CANNOT BECOME A PEST. BERMUDAGRASS MAY BE REPLACED WITH 5 lbs/acre CENTIPEDEGRASS.

SEEDING DATES:
APRIL 1–JULY 15
SOIL AMENDMENTS:
APPLY LIME AND FERTILIZE ACCORDING TO SOIL TESTS, OR APPLY 3,000 lbs/acre (68.9 lbs/1,000 sf) GROUND AGRICULTURAL LIMESTONE AND 500 lbs/acre (11.5 lbs/1,000 sf) 10–10–10 FERTILIZER.
MULCH:
APPLY 4,000 lb/acre (91.8 lbs/1,000 sf) GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR ROVING OR BY CRIMPING WITH A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.
MAINTENANCE:
REFERTILIZE THE FOLLOWING APRIL WITH 50 lbs/acre (1.15 lbs/1,000 sf) NITROGEN. REPEAT AS GROWTH REQUIRES. MAY BE MOWED ONLY ONCE A YEAR. WHERE A NEAT APPEARANCE IS DESIRED, OMIT SERICEA AND MOW AS OFTEN AS NEEDED.

SEEDING MIXTURE

SPECIES	RATE (lb/acre)
RYE (GRAIN)	120

SEEDING DATES:
MOUNTAINS – AUG. 15 – DEC. 15
COASTAL PLAIN AND PIEDMONT – AUG. 15 – DEC. 15
SOIL AMENDMENTS:
FOLLOW SOIL TEST OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 1,000 lb/acre 10–10–10 FERTILIZER.
MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.
MAINTENANCE:
REPAIR AND REFERTILIZE DAMAGE AREAS IMMEDIATELY. TOP DRESS WITH 50 lb/acre OF NITROGEN IN MARCH, IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 lb/acre KOBE (PIEDMONT AND COASTAL PLAIN) OR KOREAN (MOUNTAINS) LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be documented in the manner described:

Item to Document	Documentation Requirements
(a) Each E&SC Measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC Plan.	Initial and date each E&SC Measure on a copy of the approved E&SC Plan or complete, date and sign an inspection report that lists each E&SC Measure shown on the approved E&SC Plan. This documentation is required upon the initial installation of the E&SC Measures or if the E&SC Measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC Plan.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC Measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC Measures.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation

In addition to the E&SC Plan documents above, the following items shall be kept on the site
and available for agency inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This general permit as well as the certificate of coverage, after it is received.

(b) Records of inspections made during the previous 30 days. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

(c) All data used to complete the Notice of Intent and older inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

SECTION C: REPORTING

1. Occurrences that must be reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(a) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(b) Anticipated bypasses and unanticipated bypasses.

(c) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

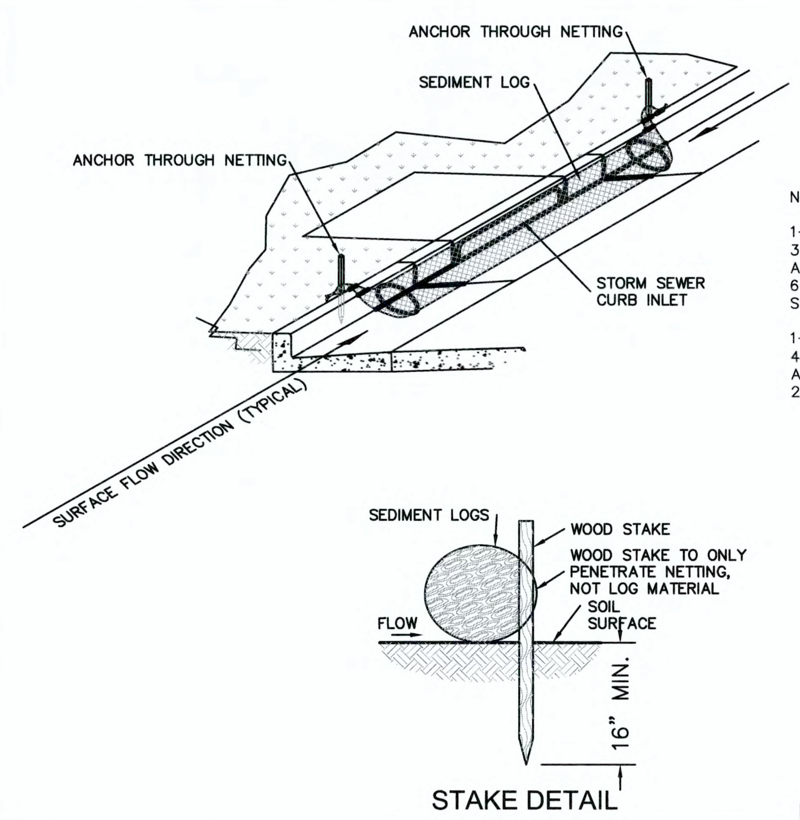
After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible.*** The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

NORTH CAROLINA Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19



NOTES:
1–1/8" X 1–1/8" X 30" WOODEN STAKES ARE RECOMMENDED FOR 6", 9", AND 12" SEDIMENT LOGS.
1–1/8" X 1–1/8" X 48" WOODEN STAKES ARE RECOMMENDED FOR 20" SEDIMENT LOGS.

STAKE DETAIL

NOT TO SCALE

1 SEDIMENT LOG AT CURB INLET DETAIL

SEEDING MIXTURE

SPECIES	RATE (lb/acre)
GERMAN MILLET	40

IN THE PIEDMONT AND MOUNTAINS, A SMALL-STEMMED SUDANGRASS MAY BE SUBSTITUTED AT A RATE OF 50 lb/acre.

SEEDING DATES:
MOUNTAINS – MAY 15 – AUG. 15
PIEDMONT – MAY 1 – AUG. 15
COASTAL PLAIN – APR. 15 – AUG. 15
SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER.
MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.
MAINTENANCE:
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

SEEDING MIXTURE

SPECIES	RATE (lb/acre)
RYE (GRAIN)	120
ANNUAL LESPEDEZA (KOBE IN PIEDMONT AND COASTAL PLAIN, KOREAN IN MOUNTAINS)	50

OMIT ANNUAL LESPEDEZA WHEN DURATION OF TEMPORARY COVER IS NOT TO EXTEND BEYOND JUNE.

SEEDING DATES:
MOUNTAINS – ABOVE 2,500 FEET: FEB. 15 – MAY 15
BELOW 2,500 FEET: FEB. 1 – MAY 1
PIEDMONT – JAN. 1 – MAY 1
COASTAL PLAIN – DEC. 1 – APRIL 15
SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER.
MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.
MAINTENANCE:
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

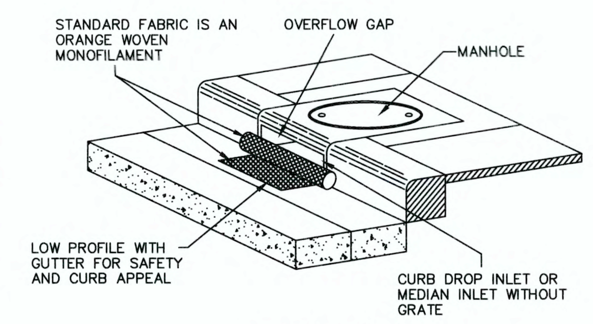
TRUE DAM®

Installation and Maintenance Guidelines

Installation: Place True Dam® on ground with aggregate pouch on street side near the inlet on which it will be installed. Open Velcro access pouch located on the street side edge of the unit. If using optional absorbents, place absorbent sock in pouch and push to back of pouch. Fill pouch with aggregate to a level that will keep the unit in place during a rain event and create a seal between the True Dam® and the surface of the street. Reseal Velcro access. Center the unit against a curb or median inlet opening so that the curb side of the unit creates a seal with the curb and inlet structure. There should be an equal length of the True Dam® overhanging on each side of the opening.

Maintenance: Remove all accumulated sediment and debris from surface and vicinity of unit after each storm event. If using optional oil absorbents; remove and replace absorbent pillow when near saturation.

TRUE DAM®



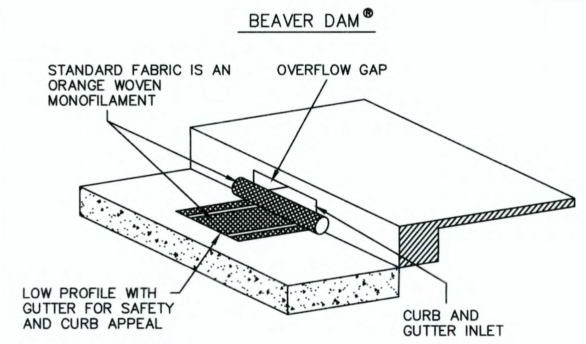
BEAVER DAM®

Installation and Maintenance Guidelines

Installation: The empty Beaver Dam® should be placed over the grate as the grate stands on end. If using optional oil absorbents; place absorbent pillow on pouch, on the bottom (below-grade side) of the unit. Attach absorbent pillow to tether loop. Tuck the enclosure flap inside to completely enclose the grate. Holding the lifting devices (do not rely on lifting devices to support the entire weight of the grate), place the grate into its frame (street side first), then lower back edge with dam into place. The Beaver Dam® should be partially blocking the curb hood when installed properly.

Maintenance: Remove all accumulated sediment and debris from surface and vicinity of unit after each storm event. Remove sediment that has accumulated within the containment area of the Beaver Dam® as needed. If using optional oil absorbents; remove and replace absorbent pillow when near saturation.

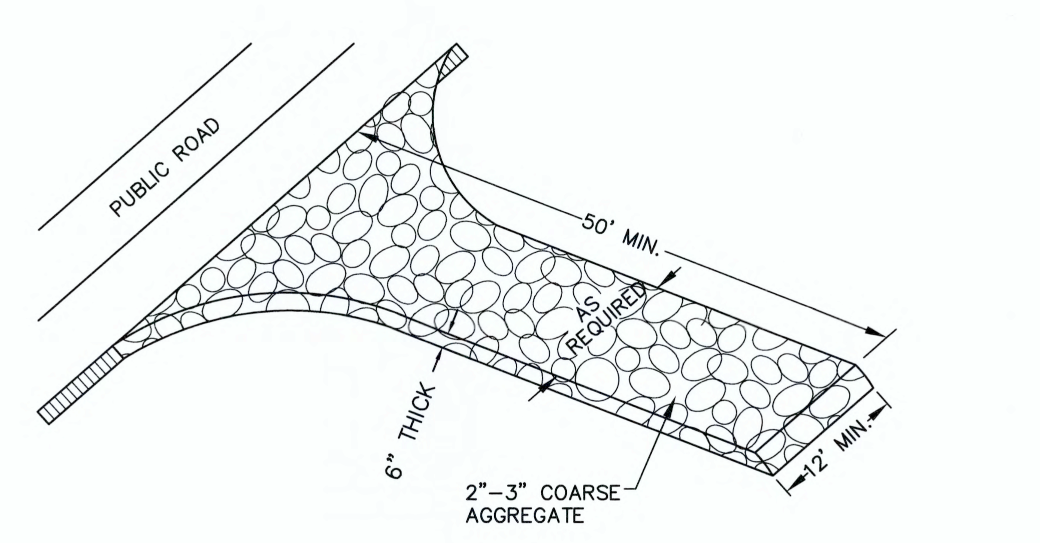
BEAVER DAM®



DESIGN CONFORMS TO ALL SHAPES OF CONCRETE CURBS

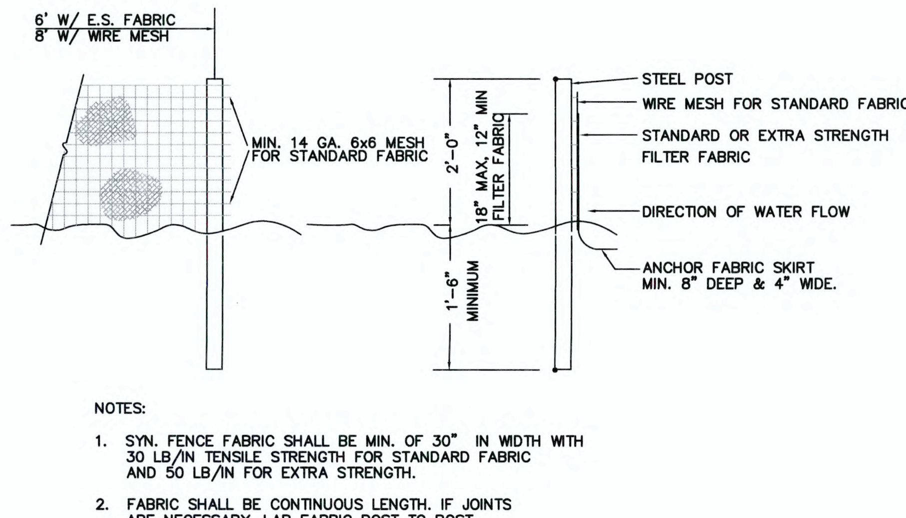
EROSION CONTROL INLET PROTECTION

* USE AT EXISTING CURB INLETS IN PAVED AREAS. NTS



NOT TO SCALE

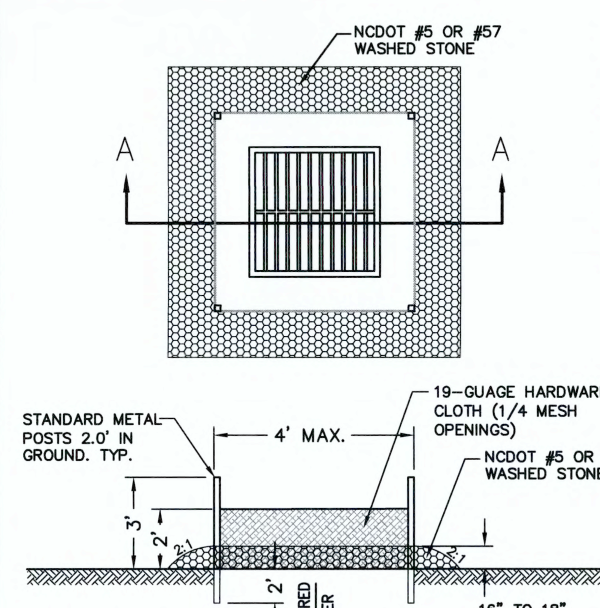
2 TEMPORARY GRAVELLED CONSTRUCTION ENTRANCE



NOTES:
1. SYN. FENCE FABRIC SHALL BE MIN. OF 30" IN WIDTH WITH 30 LB/IN TENSILE STRENGTH FOR STANDARD FABRIC AND 50 LB/IN FOR EXTRA STRENGTH.
2. FABRIC SHALL BE CONTINUOUS LENGTH. IF JOINTS ARE NECESSARY, LAP FABRIC POST TO POST.
3. STEEL POST SHALL BE MIN 4' IN HEIGHT AND BE OF THE SELF-FASTENER STEEL ANGLE TYPE.

NOT TO SCALE

3 TEMPORARY SILT FENCE



CONSTRUCTION SEQUENCE:
1. UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET.
2. DRIVE 5' STEEL POST 2' INTO THE GROUND SURROUNDING THE INLET. SPACE POST EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4' APART.
3. SURROUND THE POST WITH WIRE MESH HARDWARE CLOTH. SECURE THE WIRE MESH TO THE STEEL POST AT THE TOP, MIDDLE AND BOTTOM. PLACING A 2' FLAP OF THE WIRE MESH UNDER THE GRAVEL FOR ANCHORING IS RECOMMENDED.
4. PLACE CLEAN GRAVEL (NCDOT #5 OR #57 STONE) ON A 2:1 SLOPE WITH A HEIGHT OF 16" TO 18" AROUND THE WIRE, AND SMOOTH TO AN EVEN GRADE.
5. ONCE THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE ACCUMULATED SEDIMENT, AND ESTABLISH FINAL GRADING ELEVATIONS.
6. COMPACT THE AREA PROPERLY AND STABILIZE IT WITH GROUNDCOVER.

MAINTENANCE:
INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT. CLEAR THE MESH WIRE OF ANY DEBRIS OR OTHER OBJECTS TO PROVIDE ADEQUATE FLOW FOR SUBSEQUENT RAINS. TAKE CARE NOT TO DAMAGE OR UNDERCUT THE WIRE MESH DURING SEDIMENT REMOVAL. REMOVE SEDIMENT WHEN ACCUMULATION REACHES HALF THE DEPTH OF ROCK. REPLACE STONE WHEN IT NO LONGER DRAINS AS DESIGNED.

NOT TO SCALE

4 HARDWARE CLOTH AND GRAVEL INLET PROTECTION

NORRIS & TUNSTALL
CONSULTING ENGINEERS P.C.
2602 IRON GATE DR., SUITE 102, WILMINGTON, NC 28412, PHONE (910) 343-9653
1429 ASH-LITTLE RIVER RD. NW, ASH, NC 28420, PHONE (910) 287-5900

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19851 JOHN S. TUNSTALL 4/6/22

UNCW
LS3P
101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
WWW.LS3P.COM
SHEPLEY BULFINCH
2 SEAPORT LANE FLOOR 12
BOSTON, MASSACHUSETTS 02210
TEL. 617.423.1700
WWW.SHEPLEYBULFINCH.COM

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
601 SOUTH COLLEGE ROAD
WILMINGTON, NC 28403
SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
D	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
NOTES AND DETAILS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-108

20077

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE
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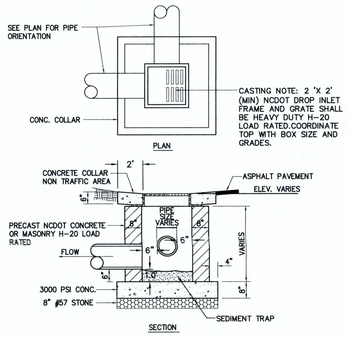
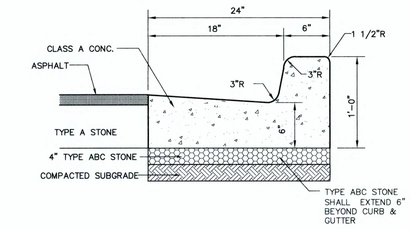
IF NOT SHOWN ABOVE, EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAPER SIZE



NOT TO SCALE

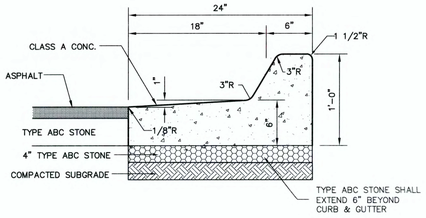
1 DROP INLET DETAIL



NOTE: CURB TYPE DEPENDS ON GRADES SHOWN ON GRADING PLAN. GRADES INDICATING FALL AWAY FROM CURB SHALL BE SPILL OFF TYPE CURB. GRADES INDICATING CURB ACCEPTING FLOW SHALL BE FLOW LINE TYPE.

NOT TO SCALE

4 24" CURB AND GUTTER SECTION (FLOW-LINE)



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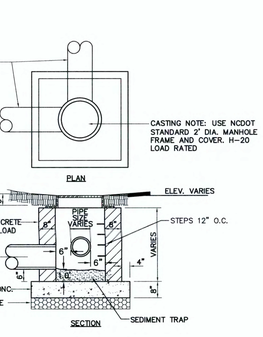
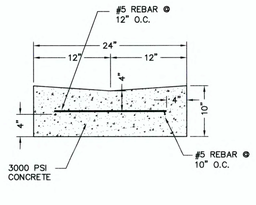
NOT TO SCALE

8 24" CURB AND GUTTER SECTION (SPILL-OFF)



NOT TO SCALE

2 JUNCTION BOX DETAIL



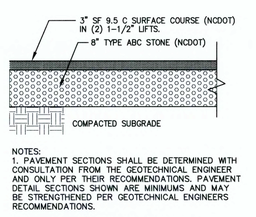
NOT TO SCALE

5 REINFORCED VALLEY GUTTER DETAIL

NOTE: CURB TYPE DEPENDS ON GRADES SHOWN ON GRADING PLAN. GRADES INDICATING FALL AWAY FROM CURB SHALL BE SPILL OFF TYPE CURB. GRADES INDICATING CURB ACCEPTING FLOW SHALL BE FLOW LINE TYPE.

NOT TO SCALE

8 24" CURB AND GUTTER SECTION (SPILL-OFF)

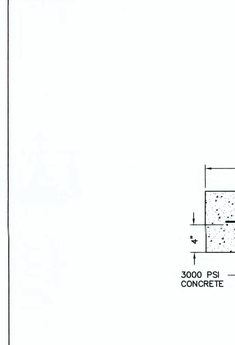


NOTES:
1. PAVEMENT SECTIONS SHALL BE DETERMINED WITH CONSULTATION FROM THE GEOTECHNICAL ENGINEER AND ONLY PER THEIR RECOMMENDATIONS. PAVEMENT DETAIL SECTIONS SHOWN ARE MINIMUMS AND MAY BE STRENGTHENED PER GEOTECHNICAL ENGINEERS RECOMMENDATIONS.

2. REFERENCE GEOTECHNICAL REPORT FOR UNDERCUTTING IN AREAS OF PROPOSED PARKING AND DRIVE AREAS. CONSULT WITH GEOTECHNICAL ENGINEER TO DETERMINE REQUIRED SUBGRADE UNDERCUTTING AND REPLACEMENT.

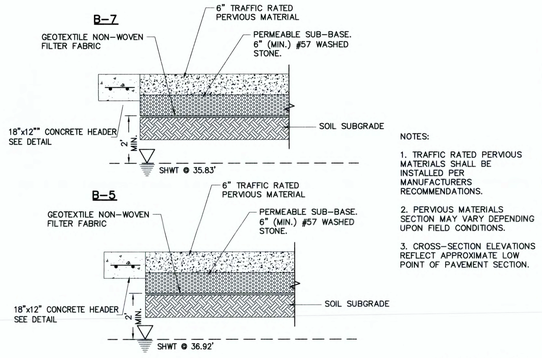
NOT TO SCALE

9 ASPHALT PAVEMENT SECTION



NOT TO SCALE

3 REINFORCED HEADER CURB DETAIL



NOTES:

1. TRAFFIC RATED PERVIOUS MATERIALS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

2. PERVIOUS MATERIALS SECTION MAY VARY DEPENDING UPON FIELD CONDITIONS.

3. CROSS-SECTION ELEVATIONS REFLECT APPROXIMATE LOW POINT OF PAVEMENT SECTION.

NOT TO SCALE

6 PERVIOUS CONCRETE PAVEMENT SECTIONS

PERMEABLE PAVEMENT CONSTRUCTION SEQUENCE:

The following is a typical construction sequence to properly install pervious concrete. The means and methods of installation shall be determined by the contractor and shall be installed per the manufacturer recommendations, product standards and industry guidelines.

Step 1. Construction of the permeable pavement shall only begin after the entire contributing drainage area has been stabilized. The proposed site should be checked for existing utilities prior to any excavation. Do not install the system in rain or snow.

Step 2. Temporary erosion and sediment (E&S) controls (silt fence) are needed during installation to divert stormwater away from the permeable pavement area until it is completed. The proposed permeable pavement area must be kept free from sediment during the entire construction process. Construction materials that are contaminated by sediments must be removed and replaced with clean materials.

Step 3. Where possible, excavators or backhoes should work from the sides to excavate the aggregate layer to its appropriate design depth and dimensions.

Step 4. In-situ soil testing shall be done after excavation to verify existing infiltration rate. Soils testing shall be conducted by an appropriately qualified professional, the testing can be done by the contractor, the designer, or a third party hired by owner. The results of the testing shall be given to the designer of record for review. If results show a lower infiltration rate than the rate of design the depth of aggregate must be revised.

Step 5. The native soils along the bottom and sides of the permeable pavement system should be scarified or tilled to a depth of 3 to 4 inches prior to the placement of the filter layer or filter fabric.

Step 6. Filter fabric should be installed on the bottom and the sides of the aggregate layer.

Step 7. Place observation wells as shown on plans.

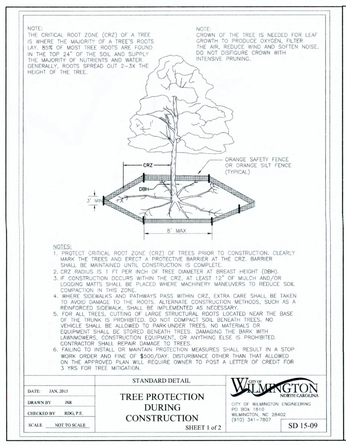
Step 8. Inspect all aggregate prior to placement. Ensure aggregate is clean, free of fines and conform to the plans and specifications. All aggregate shall be spread (not dumped). Moisten and spread the washed stone without driving on the soil subgrade, being careful not to damage the observation wells. Follow compaction recommendations by the permeable pavement manufacturer or that from industry guidelines.

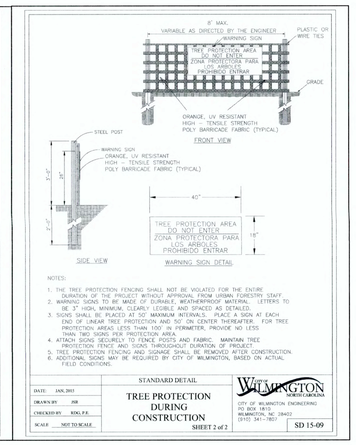
Step 9. Ensure edge restraints and barriers between permeable pavement are installed per design.

Step 10. Contractor is to follow standard installation procedures for the specific type of pervious pavement that is being installed. For this project pervious concrete will be installed. Only certified and experienced contractors shall install the pervious concrete and installation shall be per the manufacturer recommendations, product standards and industry guidelines. Pervious concrete shall be constructed in accordance with the latest version of ACI 522.1, Specifications for Pervious Concrete.

Step 11. After installation, protect the installed pervious concrete until project completion, including routing construction traffic away from the installed pervious concrete. Contractor shall provide protection techniques including mats, plastic sheeting and barriers to ensure the pervious concrete remains protected until project completion.

7 PERMEABLE PAVEMENT CONST. SEQUENCE:





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NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 19851 JASON S. TUNSTALL

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
601 SOUTH COLLEGE ROAD
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
D	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
	2022.02.14	BID DOCUMENTS
	2022.04.08	ADDENDUM 1

SHEET NAME:
NOTES AND DETAILS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
BID DOCUMENTS

SHEET:
C-109
20077

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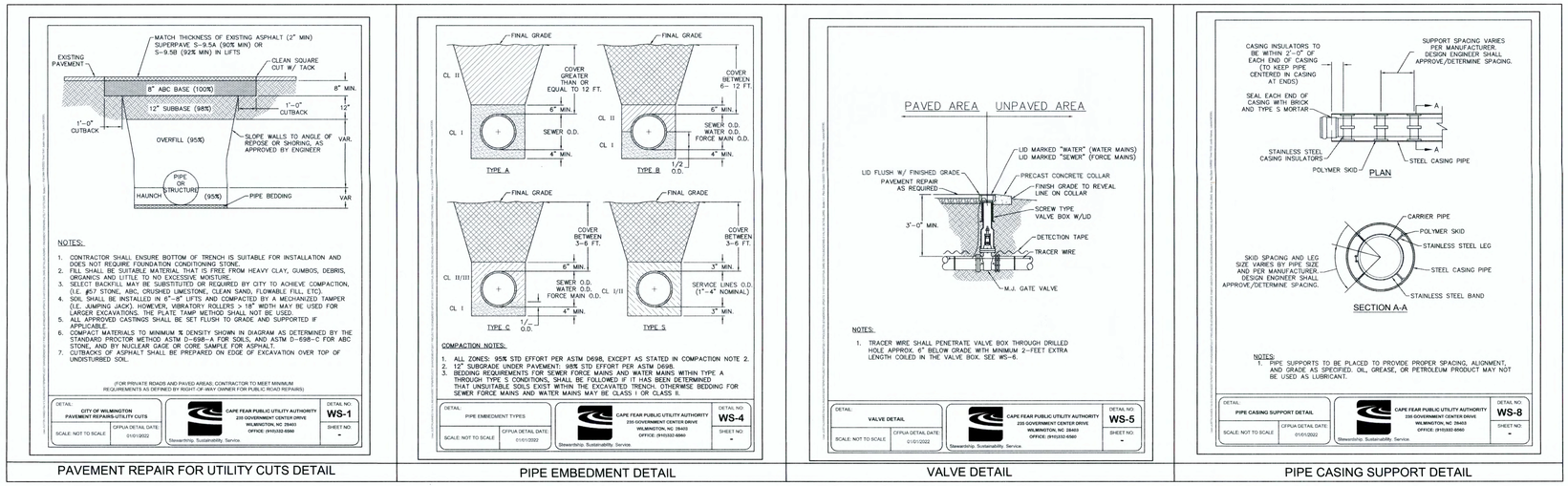
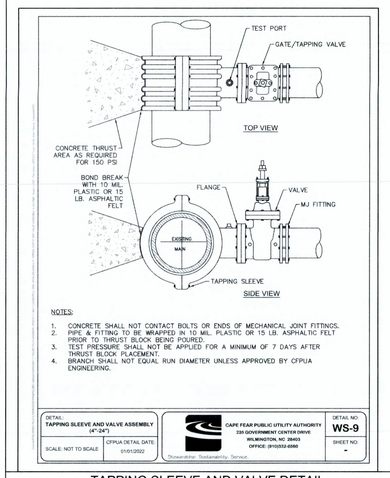


PAVEMENT REPAIR FOR UTILITY CUTS DETAIL

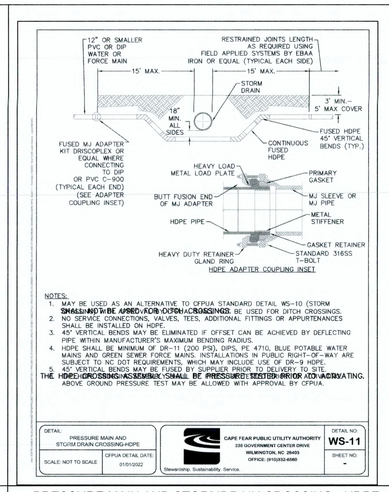
PIPE EMBEDMENT DETAIL

VALVE DETAIL

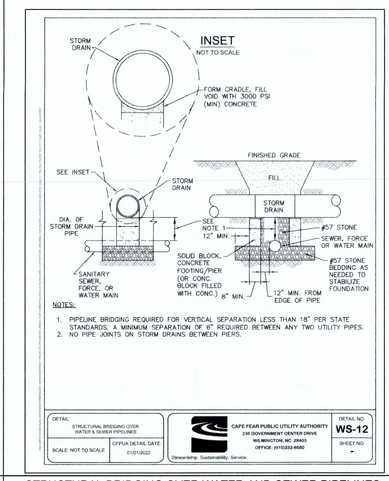
PIPE CASING SUPPORT DETAIL



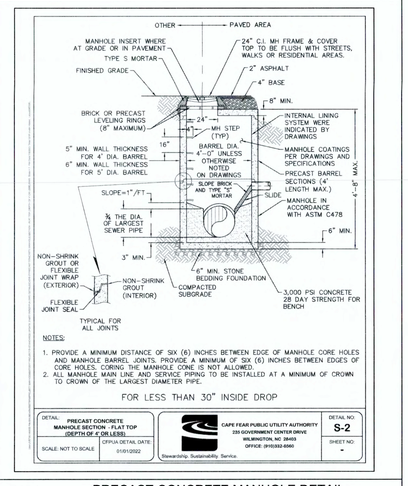
TAPPING SLEEVE AND VALVE DETAIL



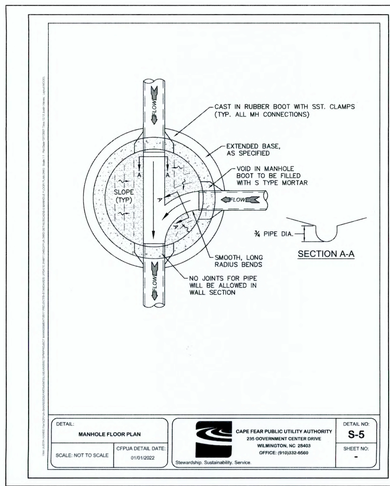
PRESSURE MAIN AND STORMDRAIN CROSSING - HDPE



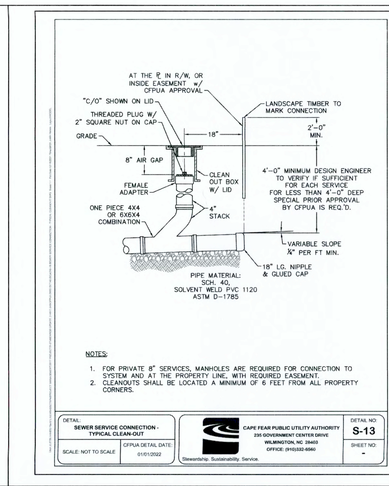
STRUCTURAL BRIDGING OVER WATER AND SEWER PIPELINES



PRECAST CONCRETE MANHOLE DETAIL



MANHOLE FLOOR PLAN DETAIL



SEWER CLEAN-OUT DETAIL

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SCO ID: 18-19656-02A
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A	2020.10.21	SD SUBMISSION
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ASH, NC 28420
PHONE (910) 287-5900

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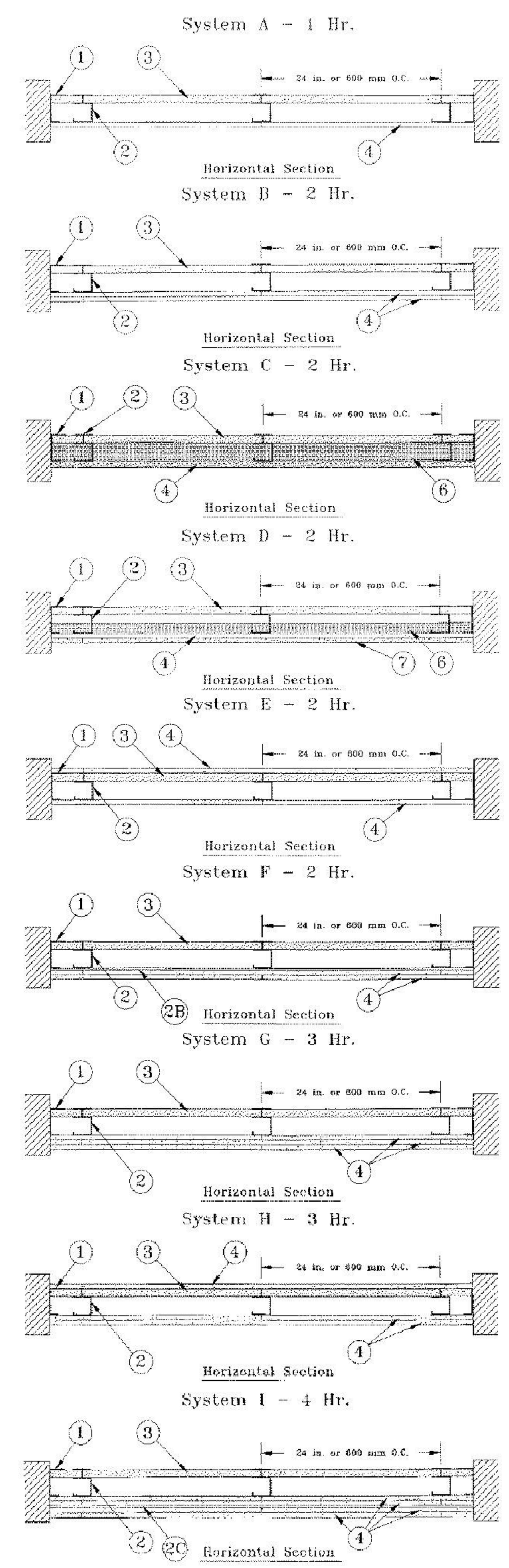
Design No. U415

Nonbearing Wall Ratings — 1, 2, 3 or 4 Hr



1. Floor, Side and Ceiling Runners — "J" - shaped runner, min 2-1/2 in. deep (min 4 in. deep when System C is used), with unequal legs of 1 in. and 2 in., fabricated from min 24 MSG (min 20 MSG when Item 4A or 7 are used) galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC. "E" - shaped studs (Item 2A) may be used as side runners in place of "J" - shaped runners.

2. Steel Studs — "C-H" - shaped studs, min 2-1/2 in. deep (min 4 in. deep when System C is used), fabricated from min 25 MSG (min 20 MSG when Items 2D, 5C, or 7 is used) galv steel. Cut to lengths 3/8 to 1/2 in. less than floor-to-ceiling height and spaced 24 in. or 600 mm OC.

2A. Steel Studs — (Not Shown) — "E" - shaped studs installed back to back in place of "C-H" - shaped studs (Item 2) "E" - shaped studs secured together with steel screws spaced a maximum 12 in. OC. Fabricated from min 25 MSG (min 20 MSG when Item 2D or Item 7 is used) galv steel, min 2-1/2 in. deep (min 4 in. deep when System C is used), with one leg 1 in. long and two legs 3/4 in. long. Shorter legs 1 in. apart to engage gypsum liner panels. Cut to lengths 3/8 to 1/2 in. less than floor to ceiling heights.

2B. Furring Channels — (Optional, not shown) — For use with single or double layer systems. Resilient furring channels fabricated from min 25MSG corrosion protected steel, installed horizontally, and spaced vertically a max 24 in. OC. Flange portion of channel attached to each intersecting "C-H" or "E" stud on side of stud opposite the 1 in. liner panels with 1/2 in. long Type S or S-12 pan-head steel screws. When furring channels are used, wallboard to be installed vertically only. Not to be used with Type FRX or FRX-G gypsum wallboard (Item 4A) or cementitious backer units (Item 7).

2C. Furring Channels — For use with System I - "Hat" - shaped, 25 MSG galv steel furring channels attached directly over the inner layers of wallboard to each stud with 2 in. long Type S pan head steel screws. Screws alternate from top flange to bottom flange at each stud intersection. Furring channels spaced vertically max 24 in. OC.

2D. Steel Framing Members* — (Optional, not shown) — For use with single or double layer systems. Furring channels and Steel Framing Members as described below. Not to be used with Type FRX or FRX-G gypsum wallboard (Item 4A) or cementitious backer units (Item 7):
a. Furring Channels — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board installed vertically only and attached to furring channels as described in Item 3.
b. Steel Framing Members* — Used to attach furring channels (Item 2Da) to studs (Item 2 or 2A). Clips spaced max. 24 in. OC., and secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.
PAC INTERNATIONAL INC — Type RSIC-1.

3. Gypsum Board* — Gypsum liner panels, nom 1 in. thick, 24 in. or 600 mm (for metric spacing) wide. Panels cut 1 in. less in length than floor to ceiling height. Vertical edges inserted in "H" portion of "C-H" studs or the gap between the two 3/4 in. legs of the "E" studs. Free edge of end panels attached to long leg of vertical "J" - runners with 1-5/8 in. long Type S steel screws spaced not greater than 12 in. OC. When wall height exceeds liner panel length, liner panel may be butted to extend to the full height of the wall. Horizontal joints need not be backed by steel framing. In System I, butt joints in liner panels are staggered min 36 in. Butt joints backed with 6 in. by 22 in. strips of 3/4 in. thick gypsum wallboard (Item 4). Wallboard strips centered over butt joints and secured to liner panels with six 1-1/2 in. long Type G steel screws, three screws along the 22 in. dimension at the top and bottom of the strips.

CANADIAN GYPSUM COMPANY — Type SLX
UNITED STATES GYPSUM CO — Type SLX
USG MEXICO S A DE C V — Type SLX

4. Gypsum Board* —
System A - 1 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. when installed vertically or 8 in OC when installed horizontally. Horizontal joints need not be backed by steel framing.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO — Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System B - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in two layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Outer or face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 12 in. OC when installed vertically and staggered 12 in. from base layer screws or 8 in. OC when installed horizontally and staggered 8 in. from base layer screws. Horizontal joints between inner and outer layers staggered a min of 12 in. Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in.

CANADIAN GYPSUM COMPANY — 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO — 1/2 in. Types C, IP-X2, IPC-AR, or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V — 1/2 in. Types C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System C - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 3/4 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, secured with 1-1/4 in. long Type S steel screws spaced 8 in. OC along vertical edges and 12 in. OC in the field when installed vertically or 8 in. OC along the vertical edges and in the field when installed horizontally. Horizontal joints need not be backed by steel framing. Screws along side joints offset 4 in. Requires min 4 in. deep framing per Items 1, 2 and 3. Requires min 3 in. thick mineral wool batts per Item 6.

CANADIAN GYPSUM COMPANY — Types IP-X3, or ULTRACODE
UNITED STATES GYPSUM CO — Types IP-X3, or ULTRACODE
USG MEXICO S A DE C V — Types IP-X3, or ULTRACODE

System D - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached directly to studs with 1 in. long Type S steel screws spaced 24 in. when installed vertically or 16 in. OC when installed horizontally. . Horizontal joints need not be backed by steel framing. Requires face layer of 1/2 or 5/8 in. thick cementitious backer units per Item 7 and min 1-1/2 in. thick mineral wool batts per Item 6.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO — Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System E - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. OC when installed vertically or 8 in. when installed horizontally. Horizontal joints need not be backed by steel framing.

CANADIAN GYPSUM COMPANY — 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO — 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V — 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System F - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically in two layers. Inner or base layer attached to resilient furring channels (Item 2B) with 1 in. long Type S steel screws spaced 24 in. OC. Outer or face layer attached to resilient furring channels (Item 2B) with 1-5/8 in. long Type S steel screws spaced 12 in. OC and staggered 12 in. from base layer screws. Joints between inner and outer layers staggered 24 in.

CANADIAN GYPSUM COMPANY — 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO — 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V — 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System G - 3 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in three layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in OC when installed horizontally. Middle layer attached to studs with 1-5/8 in. long Type S steel screws spaced 24 in. when installed vertically or 16 in. OC when installed horizontally. Outer or face layer attached to studs with 2-1/4 in. long Type S steel screws spaced 16 in. when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. . Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CANADIAN GYPSUM COMPANY — Types C, IP-X2, IPC-AR, WRC
UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, WRC
USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR, WRC

System H - 3 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, two layers over the flange of the "C" section of the studs, one layer over the flange of the "H" section of the studs. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 16 in. when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CANADIAN GYPSUM COMPANY — Types C, IP-X2, IPC-AR, WRC
UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, WRC
USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR, WRC

System I - 4 Hr
Gypsum panels, with beveled, square or tapered edges, nom 3/4 in. thick, 4 ft wide (or 1200 mm for metric spacing) wallboard with square or tapered edges. Total of four layers to be used. First and second (inner) layers applied vertically or horizontally over the steel studs. Horizontal joints need not be backed by steel framing. When applied vertically, joints centered over studs and staggered min 24 in., otherwise all joints staggered min 12 in. First layer secured to studs with 1-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 24 in. OC. Second layer secured to studs with 2-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. Third layer applied vertically over the furring channels (Item 2C) with a 1-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. Fourth layer applied vertically or horizontally with 2-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. When applied vertically, joints to be staggered min 24 in. from third layer, otherwise all joints staggered min 12 in.

CANADIAN GYPSUM COMPANY — Types IP-X3, or ULTRACODE
UNITED STATES GYPSUM CO — Types IP-X3, or ULTRACODE
USG MEXICO S A DE C V — Types IP-X3, or ULTRACODE

4A. Gypsum Board* — (As an alternate to Item 4 Systems A, B, C, D, E, F, G, H, and I when used as the base layer, For direct attachment only) - Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.
RAY-BAR ENGINEERING CORP — Type RB-LBG

5. Joint Tape and Compound — (Not Shown)
Systems A, B, C, E, F, G, H, I
Joints on outer layers of gypsum boards (Item 4 and 4A) covered with paper tape and joint compound. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges. Exposed screw heads covered with joint compound.

6. Batts and Blankets* —
Systems A, B, E, F, G, H, I
(Optional) — Mineral wool or glass fiber batts partially or completely filling stud cavity. Any mineral wool or glass fiber batt mineral bearing the UL Classification Marking as to Fire Resistance.

Systems C & D
Min 3 in. (System C) and min 1-1/2 in. (System D) thick mineral wool batts, friction fitted between the studs and floor and ceiling runners.

THERMAFIBER INC — Type SAFB

7. Cementitious Backer Units* — (System D) — Nom 1/2 or 5/8 in. thick panels, square edge, attached to studs over gypsum wallboard with 1-5/8 in. long, Type S-12, corrosion resistant steel screws spaced 8 in. OC and staggered 8 in. from gypsum wall board screws. Joints covered with glass fiber mesh tape. Vertical joints staggered one stud cavity from gypsum wallboard joints. Horizontal joints staggered a min of 12 in. from the gypsum wallboard joints.
UNITED STATES GYPSUM CO — DUROCK Exterior Cement Board or DUROCK Brand Cement Board.

8. Laminating Adhesive* — (Optional, Not Shown) — Used to bond outer layer of Cementitious Backer Units (Item 7) to inner layers of Gypsum Board (Item 4) in System D. ANSI A136.1 Type 1 organic adhesive applied with 1/4 in. square notched trowel. See Adhesives (BYWR) in the Fire Resistance Directory or Adhesives (BJLZ) in the Building Materials Directory for names of Classified companies.

9. Lead Batten Strips — (Not Shown, For Use With Item 4A) - Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 4A) and optional at remaining stud locations. Required behind vertical joints.

10. Lead Discs or Tabs — (Not Shown, For Use With Item 4A) - Used in lieu of or in addition to the lead batten strips (Item 9) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 4A) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".
*Bearing the UL Classification Mark

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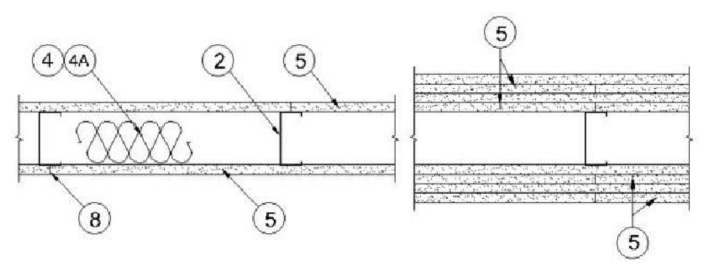
Design No. U419

October 23, 2015
Nonbearing Wall Ratings — 1, 2, 3 or 4 Hr (See Items 4 & 5 through 5K)
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Floor and Ceiling Runners** — (Not shown) — For use with Item 2 - Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Floor and Ceiling Runners*** — Not shown - In lieu of Item 1 — For use with Item 2A, proprietary channel shaped, min. 3-5/8 in. wide with 1 in. long legs, fabricated from min. 0.0150 in. (0.0146 in., min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC max.

DIETRICH INDUSTRIES INC — UltraSTEEL®.

1B. **Floor and Ceiling Runners** — (Not shown - In lieu of Item 1) — For use with Item 2A, proprietary channel shaped, min. 2-9/16 in. wide with 1-3/16 in. wide flanges, fabricated from min. 0.0150 in. galvanized steel, attached to floor and ceiling fasteners 24 in. OC. max.

DIETRICH INDUSTRIES INC — UltraSTEEL®.

2. **Steel Studs** — Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width as indicated under Item 5, min 1-1/4 in. flanges and 1/4 in. return, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

2A. **Steel Studs*** — In lieu of Item 2 - Proprietary channel shaped studs, min. width as indicated under Item 5, min. 1-1/4 in. long legs and 1/4 in. long folded back return flange legs, fabricated from min. 0.0155 in. (0.0149 in., min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height. Allowable use of studs is shown in the table below. For direct attachment of gypsum board only.

DIETRICH INDUSTRIES INC — UltraSTEEL®.

2B. **Steel Studs** — (As an alternate to Item 2, For use with Item 5B) Channel shaped, fabricated from min 20 MSG (0.0327 in. thick) corrosion-protected or galv steel, 3-1/2 in. min width, min 1-1/2 in. flanges and 1/4 in. return, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

3. **Wood Structural Panel Sheathing** — (Optional, For use with Item 5 Only.)- (Not Shown) - 4 ft wide, 7/16 in. thick oriented strand board (OSB) or 15/32 in. thick structural 1 sheathing (plywood) complying with DOC PS1 or PS2, or APA Standard PRP-108, manufactured with exterior glue, applied horizontally or vertically to the steel studs. Vertical joints centered on studs, and staggered one stud space from wallboard joints. Attached to studs with flat-head self-drilling tapping screws with a min. head diam. of 0.292 in. at maximum 6 in. OC. in the perimeter and 12 in. OC. in the field.

4. **Batts and Blankets*** — (Required as indicated under Item 5) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 5. See **Batts and Blankets (BKNV or BZJZ) Categories** for names of Classified companies.

4A. **Batts and Blankets*** — (Optional) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See **Batts and Blankets (BKNV or BZJZ) Categories** for names of Classified companies.

5. **Gypsum Board*** — Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Wallboard Protection on Each Side of Wall

RATING	MIN. STUD DEPTH	NO. OF LAYER & THKNS OF PANEL	MIN. THKNS. OF INSULATION (ITEM 3)
1	3-1/2	1 LAYER, 5/8 IN THINK	OPTIONAL
1	2-1/2	1 LAYER, 1/2 IN THICK	1-1/2 IN.
1	1-5/8	1 LAYER, 3/4 IN THICK	OPTIONAL
2	1-5/8	2 LAYERS, 1/2 IN THICK	OPTIONAL
2	1-5/8	2 LAYERS, 5/8 IN THICK	OPTIONAL
2	3-1/2	1 LAYER, 3/4. IN THICK	3 IN.
3	1-5/8	3 LAYERS, 1/2 IN THICK	OPTIONAL
3	1-5/8	2 LAYERS, 3/4 IN THICK	OPTIONAL
3	1-5/8	3 LAYERS, 5/8 IN THICK	OPTIONAL
4	1-5/8	4 LAYERS, 5/8 IN THICK	OPTIONAL
4	1-5/8	4 LAYERS, 1/2 IN THICK	OPTIONAL
4	2-1/2	2 LAYERS, 3/4 IN THICK	2 IN.

CANADIAN GYPSUM COMPANY — 1/2 in. thick Type C, IP-X2 or IPC-AR; WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX or WRC; 3/4 in. thick Types IP-X3 or ULTRACODE

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR ; 3/4 in. thick Types IP-X3 or ULTRACODE

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX, WRC or; 3/4 in. thick Types IP-X3 or ULTRACODE

When Item 7B, Steel Framing Members*, is used, Nonbearing Wall Rating is limited to 1 Hr. Min. stud depth is 3-1/2 in., min. thickness of insulation (Item 4) is 3 in., and two layers of gypsum board panels (1/2 in. or 5/8 in. thick) shall be attached to furring channels as described in Item 6. One layer of gypsum board panels (1/2 in. or 5/8 in. thick) attached to opposite side of stud without furring channels as described in Item 6.

5A. Gypsum Board* — (As an alternate to Item 5) — 5/8 in. thick, 24 to 54 in. wide, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 6.

CANADIAN GYPSUM COMPANY — Type SHX.

UNITED STATES GYPSUM CO — Type FRX-G, SHX.

USG MEXICO S A DE C V — Type SHX.

5B. Gypsum Board* — (As an alternate to Item 5 when used as the base layer on one or both sides of wall, For direct attachment only, not to be used with Item 3) - Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

RAY-BAR ENGINEERING CORP — Type RB-LBG

6. Fasteners — (Not shown) — For use with Item 2 - Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 7). Single layer systems: 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. Two layer systems: First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. Three-layer systems: First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. Four-layer systems: First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

6A. Fasteners — (Not shown) —For use with Item 2A - Type S or S-12 steel screws used to attach panels to studs (Item 2). Single layer systems: 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8-1/2 in. OC with additional screws 1 in. and 2-1/2 in. from edges of the board when panels are horizontally. or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. Two layer systems applied vertically: First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. Two layer systems applied horizontally: First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC starting 8 in. from each edge of the board with an additional screw placed 1-1/4 in. from each edge of the board. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC starting 8 in. from each edge of the board with an additional screw placed 1-1/4 in. from each edge of the board with screws offset 8 in. from first layer. Three-layer systems: First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. For all layers, an additional screw shall be placed 1-1/4 in. from each edge of the board. Four-layer systems: First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. For all layers, an additional screw shall be placed 1-1/4 in. from each edge of the board.

7. Furring Channels - (Optional, not shown, for single or double layer systems) - Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 5A.

7A. Steel Framing Members (Not Shown)* - (Optional on one or both sides, not shown, for single or double layer systems) - As an alternate to Item 7, furring channels and Steel Framing Members as described below:
a. Furring Channels - Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.
b. Steel Framing Members* - Used to attach furring channels (Item 7Aa) to studs (Item 2). Clips spaced max. 48 in. OC. RSIC-1 clips secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. RSIC-V clips secured to studs with No. 8 x 9/16 in. minimum self-drilling, S-12 steel screw through the center hole. Furring channels are friction fitted into clips.

PAC INTERNATIONAL INC - Types RSIC-1, RSIC-V.

7B. Steel Framing Members (Optional, Not Shown)* - As an alternate to Item 7, furring channels and Steel Framing Members on only one side of studs as described below:
a. Furring Channels - Formed of No. 25 MSG galv steel, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Batts and Blankets placed in stud cavity as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 5. Not for use with Item 5A.
b. Steel Framing Members* - Used to attach furring channels (Item 7Ba) to one side of studs (Item 2) only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.

KINETICS NOISE CONTROL INC - Type Isomax

8. Joint Tape and Compound - Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square edge.

9. Siding, Brick or Stucco - (Optional, not shown) - Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

10. Caulking and Sealants* - (Optional, not shown) - A bead of acoustical sealant applied around the partition perimeter for sound control.

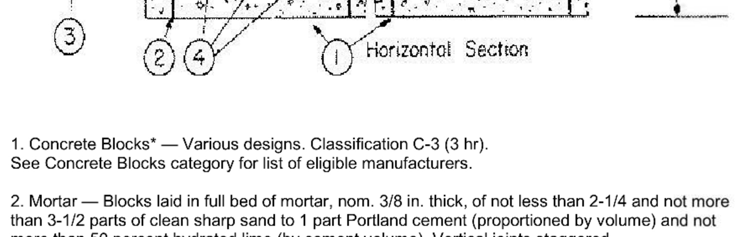
UNITED STATES GYPSUM CO - Type AS

11. Lead Batten Strips - (Not Shown, For Use With Item 5B) - Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5B) and optional at remaining stud locations. Required behind vertical joints.

12. Lead Discs or Tabs - (Not Shown, For Use With Item 5B) - Used in lieu of or in addition to the lead batten strips (Item 11) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 5B) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

***Bearing the UL Classification Mark**

Design No. U904
Bearing Wall Rating — 3 HR.
Nonbearing Wall Rating — 3 HR
Load Restricted for Canadian Applications — See Guide BXUV7



1. Concrete Blocks* — Various designs. Classification C-3 (3 hr).
See Concrete Blocks category for list of eligible manufacturers.

2. Mortar — Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.

3. Portland Cement Stucco or Gypsum Plaster — Add 1/2 hr to Classification if used. Attached to concrete blocks (Item 1).

4. Loose Masonry Fill — If all core spaces are filled with loose dry expanded slag, expanded clay or shale (Rotary Kiln Process), water repellant vermiculite masonry fill insulation, or silicone treated perlite loose fill insulation add 1 hr to classification.

5. Foamed Plastic* — (Optional-Not Shown) — 1-1/2 in. thick max, 4 ft wide sheathing attached to concrete blocks (Item 1).

THE DOW CHEMICAL CO — Type Thermax

*Bearing the UL Classification Mark

Last Updated on 2004-03-17

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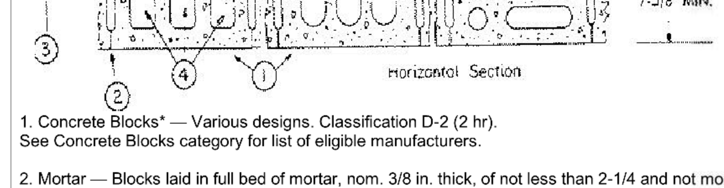
Design No. U905

Bearing Wall Rating — 2 HR.
Nonbearing Wall Rating — 2 HR
Load Restricted for Canadian Applications — See Guide BXUV7



1. Concrete Blocks* — Various designs. Classification D-2 (2 hr).
See Concrete Blocks category for list of eligible manufacturers.

2. Mortar — Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.

3. Portland Cement Stucco or Gypsum Plaster — Add 1/2 hr to classification if used. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max. Classification of 1-1/2 hr. Attached to concrete blocks (Item 1).

4. Loose Masonry Fill — If all core spaces are filled with loose dry expanded slag, expanded clay or shale (Rotary Kiln Process), water repellant vermiculite masonry fill insulation, or silicone treated perlite loose fill insulation add 2 hr to classification.

5. Foamed Plastic* — (Optional-Not Shown) — 1-1/2 in. thick max, 4 ft wide sheathing attached to concrete blocks (Item 1).

THE DOW CHEMICAL CO — Type Thermax

*Bearing the UL Classification Mark

Last Updated on 2004-03-17

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. N852

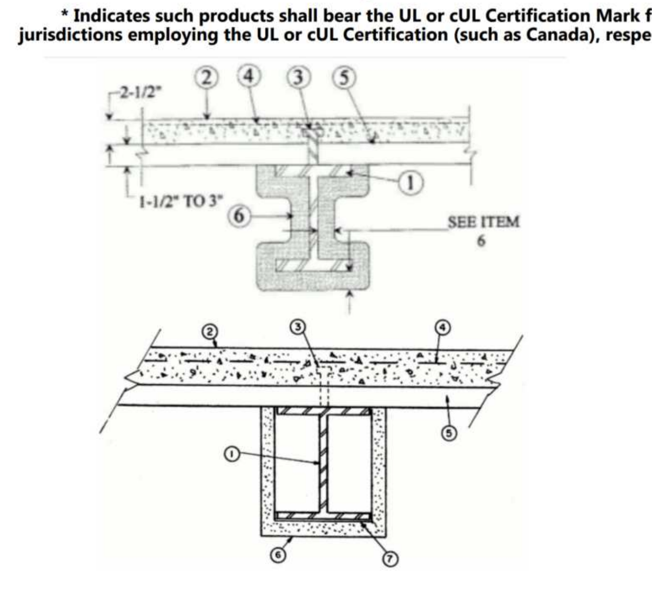
July 13, 2017

Restrained Beam Ratings — 1, 1-1/2, 2, 3 and 4 Hr

Unrestrained Beam Ratings — 1, 1-1/2, 2, 3 and 4 Hr

Loading Determined by Allowable Stress Design Method or Load and Resistance Factor Design Method published by the American Institute of Steel Construction, or in accordance with the relevant Limit State Design provisions of Part 4 of the National Building Code of Canada

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Steel Beam** — W8x28 min size.

2. **Normal Weight Concrete** — Compressive strength, 4000 psi. Either carbonate or siliceous aggregate may be used. Unit weight, 145 +/- 3 pcf.

2A. **Light Weight Concrete** — Compressive strength, 3000 psi. Either expanded shale, clay or slate aggregate by rotary-kiln method. Unit weight, 110 +/- 3 pcf.

3. **Shear Connector** — (Optional) — Studs, 3/4 in. diam headed type or equivalent per AISC specifications. Welded to the top flange of beam through the steel floor units.

4. **Welded Wire Fabric** — (Optional) — 6x6-10/10 SWG.

5. **Steel Floor and Form Units*** — 1-5/16 in. deep corrugated units; or 1-1/2 to 3 in. deep fluted or cellular units welded to beam.

6. **Spray-Applied Fire Resistive Materials*** — Applied by mixing with water and spraying in more than one coat to the beam to the final thicknesses shown below. Crest areas shall be filled with Spray-Applied Fire Resistive Materials above the beam. Beam surfaces must be clean and free of dirt, loose scale and oil. Min average and min ind. density of 15/14 pcf respectively. Min avg and min ind density of 22/19 pcf respectively for Types Z-106, Z-106/HY , Z-106/G. Min avg and min ind density of 40/36 pcf respectively for Types AV650, Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of 50/45 pcf respectively for Types AV800, Z-156, Z-156T and Z-156PC. For method of density determination, see Design Information Section.
The thickness of Spray-Applied Fire Resistive Materials shown in the table below are only applicable when the beams are supporting floor assemblies containing only fluted floor and form units, topped with normal weight concrete (Item 2).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	5/16	5/16
1-1/2	7/16	9/16
2	11/16	13/16
2(+)	9/16	3/4
3	1-3/16	1-5/16
3(#)	1-1/16	1-1/4
4	1-11/16	1-7/8

(+) Rating applicable only when a minimum of 4-1/2 in. of normal weight concrete provided over deck crests.

(#) Rating applicable only when a minimum of 5-1/4 in. of normal weight concrete provide over deck crests.

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are only applicable when the beams are supporting floor assemblies containing corrugated or cellular floor and form units, topped with normal weight concrete (Item 2).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	3/8	3/8
1-1/2	9/16	11/16
2	7/8	1-1/16
2(+)	3/4	15/16
3	1-9/16	1-11/16
3(#)	1-7/16	1-9/16
4	2-1/4	2-7/16

(+) Rating applicable only when a minimum of 4-1/2 in. of normal weight concrete provided over deck crests.

(#) Rating applicable only when a minimum of 5-1/4 in. of normal weight concrete provide over deck crests.

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with normal weight concrete (Item 2).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	3/8	3/8
1-1/2	7/16	5/8
2	11/16	7/8
2(+)	9/16	13/16
3	1-3/16	1-7/16
3(#)	1-1/16	1-3/8
4	1-11/16	1-15/16

(+) Rating applicable only when a minimum of 4-1/2 in. of normal weight concrete provided over deck crests.

(#) Rating applicable only when a minimum of 5-1/4 in. of normal weight concrete provide over deck crests.

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing corrugated or cellular floor or form units with normal weight concrete (Item 2).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	1/2	1/2
1-1/2	9/16	13/16
2	7/8	1-1/8
2(+)	3/4	1-1/16
3	1-9/16	1-7/8
3(#)	1-7/16	1-13/16
4	2-1/4	2-9/16

(+) Rating applicable only when a minimum of 4-1/2 in. of normal weight concrete provided over deck crests.

(#) Rating applicable only when a minimum of 5-1/4 in. of normal weight concrete provide over deck crests.

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are only applicable when the beams are supporting floor assemblies containing only fluted floor and form units, topped with light weight concrete (Item 2A).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	3/8	3/8
1-1/2	8/16	5/8
2	13/16	15/16
3	1-5/16	1-9/16
4	1-7/8	2-1/8

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are only applicable when the beams are supporting floor assemblies containing cellular or corrugated floor and form units, topped with light weight concrete (Item 2A).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	1/2	1/2
1-1/2	5/8	13/16
2	1-1/16	1-3/16
3	1-11/16	2
4	2-7/16	2-13/16

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with light weight concrete (Item 2A).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	1/2	1/2
1-1/2	9/16	3/4
2	7/8	1-1/16
3	1-3/8	1-11/16
4	1-15/16	2-1/4

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing corrugated or cellular floor or form units with light weight concrete (Item 2A).

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing corrugated or cellular floor or form units with light weight concrete (Item 2A).

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	5/8	11/16
1-1/2	11/16	1
2	1-1/8	1-3/8
3	1-3/4	2-3/16
4	2-1/2	3

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, Z-106, Z-106/G, Z-146 investigated for exterior use. Types AV650 and AV800 investigated for external use.

GCP KOREA INC — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, Z-106, Z-106/G, Z-106/HY, Z-146 investigated for exterior use.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, RG, Z-106, Z-106/G, Z-106/HY, Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC investigated for exterior use.

7. **Metal Lath** — (Optional for contour applications, required for boxed applications) — 3.4 lb/sq yd expanded steel. May be tied to lath hangers with No. 18 SWG steel wire spaced 6 in. OC max. or fastened directly to the steel with welds, screws, or powder actuated fasteners.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2017-07-13

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UL ASSEMBLIES

ORIG SUBMISSION: 2022.02.14
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SHEET:
A-005

1 / A-005 **FIRE RATED ASSEMBLY- UL-DETAILS-1**

12" = 1'-0"

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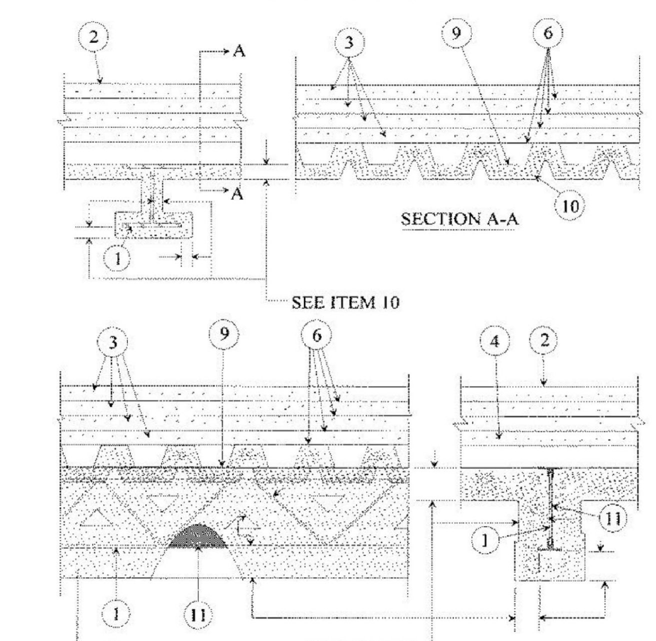
Design No. P732

December 16, 2021

Restrained Assembly Ratings — 1, 1-1/2, 2 or 3 Hr (See Item 10)
Unrestrained Assembly Ratings — 3/4, 1, 1-1/2, 2 or 3 Hr (See Item 10)
Unrestrained Beam Ratings — 1, 1-1/2, 2 or 3 Hr (See Item 10)
Restricted Load Condition — See Items 1 and 10C
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Beam** — Min W6x16 or W8x28 or Steel Joist — 10K1 or 16K2 min size with a max tensile stress of 30,000 psi or 12K3 or 12K5 min size with a max tensile stress of 24,000 psi.

2. **Roof Covering*** — Consisting of hot mopped or cold application bituminous materials compatible with the insulation(s) described herein which provide Class A, B or C coverings. See Roofing Materials and Systems Directory — Roof Covering Materials (TEVT).

2A. **In lieu of Item 2, roof covering consisting of single-ply Roofing Membrane*** — that is either ballasted, adhered or mechanically attached as permitted under the respective manufacturer's Classification. See Fire Resistance Directory — Roof Membrane (CHCI).

2B. **Metal Roof Deck Panels*** — (Not shown) — In addition to or in lieu of Item 2 or 2A, the roof covering may consist of a mechanically fastened metal roof deck panel assembly. See Fire Resistance Directory — Metal Roof Deck Panels (CETW).

3. **Roof Insulation — Foamed Plastic** — Polyisocyanurate foamed plastic insulation boards nom 48 by 48 or 96 in., to be applied in one or more layers. Boards to be installed with end joints staggered a min of 6 in. Min thickness shall be selected from the Table below. No limit on max overall thickness.

Restrained or Unrestrained Assembly Rating Hr	Min Insulation Thkns In. With Gypsum Wallboard	Without Gypsum Wallboard
1	1	2
1-1/2	1-1/2	3
2	2	3
3	2	3

ATLAS ROOFING CORP — Type ACFoam II, Tapered ACFoam II, ACFoam II NH, Tapered ACFoam II NH, ACFoam III, ACFoam III NH, Tapered ACFoam III NH, ACFoam IV, ACFoam Supreme, ACFoam Supreme NH, AC Foam Recover Board, ACFoam Recover Board NH

MULE-HIDE PRODUCTS CO INC — POLY ISO 2

CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — Types HP, HP-H, HP-N, HP-W, SecurShield CD, InsulBase NH, SecurShield NH, SecurShield HD Composite NH, Polyiso HP-F NH, InsulBase RL, SecurShield RL, Polyiso HP-F

DOW ROOFING SYSTEMS L L C — "Dow Termico Polyisocyanurate Insulation", "Dow Termico ISO 3000 Insulation", "Dow Termico ISO HP-FR".

FIRESTONE BUILDING PRODUCTS CO L L C — "ISO 95+ GL", "ISO 95+ FK", "ISO 95+ CAN", "ISO 95+ GL NH", "ISOGARD HD Composite Board", "RESISTA", "ISOGARD GL", "ISOGARD CG".

GAF — EnergyGuard™ RA

HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — H Shield, H-Shield-F, H-Shield-CG, H-Shield-C, H-Shield Premier, H-Shield HD Composite, H-Shield HD Composite CG, H-Shield RL, H-Shield CG RL, H Shield NH, H-Shield-F NH, H-Shield-CG NH, H-Shield-C NH, H-Shield Premier NH, H-Shield HD Composite CG NH

MULE-HIDE PRODUCTS CO INC — Poly ISO 1, Tapered Poly ISO 1, Poly ISO 1-DWD, Tapered Poly ISO 1-DWD, Poly ISO 1-HD, Poly ISO 1-HD90, Poly ISO 1-HD-Composite

JOHNS MANVILLE — ENRGY 3 25 psi, ENRGY 3, Tapered ENRGY 3, Tapered ENRGY 3 25 psi, ENRGY 3 AGF, Tapered ENRGY 3 AGF, ENRGY 3 25 psi AGF, Tapered ENRGY 3 25 psi AGF, ENRGY 3 CGF, Tapered ENRGY 3 CGF, ENRGY 3 25 psi CGF, Tapered ENRGY 3 25 psi CGF, ISO-3, Tapered ISO-3, ValuTherm, Tapered ValuTherm, ValuTherm 25 psi, Tapered ValuTherm 25 psi, ValuTherm AGF, Tapered ValuTherm AGF, ValuTherm 25 psi AGF, Tapered ValuTherm 25 psi AGF, ValuTherm CGF, Tapered ValuTherm CGF, ValuTherm 25 psi CGF, Tapered ValuTherm 25 psi CGF.

LOADMASTER SYSTEMS INC — Type Loadmaster polyisocyanurate insulation

MARTIN FIREPROOFING CORP — "Perform-A-Deck I"

RMAX, A BUSINESS UNIT OF SIKA CORPORATION — Type Multi-Max-3, Multi-Max FA-3, Ultra-Max, Ultra-Max Plus, Tapered Ultra-Max Plus, Tapered Thermaroof-3, Tapered Thermaroof FA-3, Tapered Ultra-Max.

SIKA SARNAFIL INC — Sarnatherm-R Insulation, Sarnatherm-R CG Insulation, Sarnatherm-R Tapered Insulation, Sarnatherm-R CG Tapered Insulation.

SOPREMA INC — Sopra-ISO s, Sopra-ISO s Tapered, Sopra-ISO+ s, Sopra-ISO+ s Tapered, Sopra-ISO H+ s, Sopra-ISO H+ s Tapered

VERSICO INC — SecurShield HD Composite, WeatherBond XFP HD Composite, VersiCore MP-H NH, WeatherBond XP NH, SecurShield NH, WeatherBond XFP NH, VersiCore RL, SecurShield RL, Polyiso MP-HF NH

3A. **Building Units*** — Not Shown — As an alternate to Item 3, composite polyisocyanurate foamed plastic insulation board with an adhered nailing surface, nom 48 by 48 or 96 in. may be used with the following limitations. These composite building units have ventilation slots internal to the panels. The thickness of the panel depends upon the thinnest portion of the polyisocyanurate insulation. The following dimensions apply to the polyisocyanurate insulation, min thickness is as measured in accordance with Item 3. There is no limit on the max insulation thickness.
JOHNS MANVILLE — Type ISO VENT.

3B. **Building Units*** — Polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with oriented strand board or plywood. Min thickness of the polyisocyanurate core is per Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows. Adhesive (Item 6) may be applied between the building units and the vapor retarder (or gypsum wallboard if vapor retarder is not used).
ATLAS ROOFING CORP — ACFoam Nail Base Insulation, ACFoam Nail Base Insulation NH, Vented R, ACFoam CrossVent, ACFoam CrossVent NH, ACFoam III Nail Base Insulation, ACFoam III Nail Base Insulation NH, ACFoam III CrossVent, ACFoam III CrossVent NH.

FIRESTONE BUILDING PRODUCTS CO L L C — Hailgard, "ISOGARD HG".

SOPREMA INC — Sopra-ISO CV s.

3C. **Roof Insulation-Mineral and Fiber Boards*** — (Not Shown) — Optional, Applied in one or more layers over the Foamed Plastic (Item 3) to be applied with adhesive (Item 6), asphalt or coal tar pitch (Item 7) or mechanically fastened (Item 8).
JOHNS MANVILLE

ROCKWOOL — MonoBoard™, MonoBoard™ Plus, "MonoBoard Plus S", TopRock® DD, TopRock® DD Plus or TopRock DD Plus S.

SOPREMA INC — SopraRock®DD and SopraRock®DD Plus.

3D. **Building Units*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with oriented strand board. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.
HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — H-Shield-NB, H-Shield-NB NH

JOHNS MANVILLE — Nailboard.

3E. **Building Units*** — As an alternate to Item 3. polyisocyanurate foamed plastic insulation boards faced on the underside (or both sides) with mineral fiber board. Min thickness of the polyisocyanurate core is 1.3 in. for the 1 hr rating without gypsum wallboard (Item 4) and for the 1-1/2 and 2 hr ratings with wallboard and 2.6 in. for the 1-1/2 hr ratings without gypsum wallboard. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. adjacent rows. Adhesive (Item 6) may be applied between the building units and the vapor retarder (or gypsum wallboard if vapor retarder is not used).
FIRESTONE BUILDING PRODUCTS CO L L C — "ISO 95+ Composite"

JOHNS MANVILLE — Fesco-Foam.

3F. **Building Units*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards faced on the underside with wood fiber board. Min thickness of the polyisocyanurate core is 1.3 in. for the 1 hr rating without gypsum wallboard (Item 4) and for the 1-1/2 and 2 hr ratings with wallboard and 2.6 in. for the 1-1/2 hr ratings without gypsum wallboard. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.
FIRESTONE BUILDING PRODUCTS CO L L C — "ISO 95+ Composite".

JOHNS MANVILLE — ENRGY-2 Plus.

3G. **Building Units*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with gypsum board. Min thickness of the polyisocyanurate core is 1.3 in. for 1 hr rating without gypsum wallboard (Item 4) and for the 1-1/2 and 2 hr ratings with wallboard (Item 4) and 2.6 in. for the 1-1/2 ratings without gypsum wallboard (Item 4). No limit on overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows. Adhesive (Item 6) may be applied between the building units and the vapor retarder (or gypsum wallboard if vapor retarder is not used).
JOHNS MANVILLE — ENRGY 2 Gypsum Composite.

3H. **Roof Insulation — Mineral and Fiber Boards*** — As an alternate to Item 3 , to be applied in one or more layers with or without adhesive applied between vapor barrier and roof deck units, vapor barrier and board and each layer of board. When more than one layer is required, each layer of board to be offset in both directions from layer below a min of 6 in. in order to lap all joints. Min thickness is 2 in. when Item 2A or 2B is used. Min thickness is 1 in. otherwise.
GAF — GARTEMP Perlite.

JOHNS MANVILLE – Types Fesco, Retro-Fit, RetroPlus

3I. **Roof Insulation - Foamed Plastic*** — (Not Shown) As an alternate to Item 3 through 3H, polystyrene foamed plastic insulation boards, applied in one or more layers over gypsum wallboard. Min. thickness is 1.0 in. with no max overall thickness max density 2.5 pcf. When applied in more than one layer, each layer to be offset in both directions from layer below a min. of 6 in. in order to lap all joints. Boards secured to gypsum wallboard (Item 4) with asphalt glaze coat or adhesive (Item 6). Adhesive and/or asphalt glaze coat may be omitted when Item 2A is used. See Foamed Plastic (BRYX) category in the Building Materials Directory or Foamed Plastic (CCVW) category in the Fire Resistance Directory of for names of manufacturers.

3J. **Fiber, Sprayed*** — (Not Shown) — For 1 hr rating only — As an alternate to Items 3 through 3I, Spray applied cellulose insulation material. The fiber is applied with water to a min. thickness of 10 in. as measured from the top plane of the roof deck in accordance with the application instructions supplied with the product. Minimum density of 2.6 pcf. Gypsum board not required over steel roof deck. Min. 1 in. thickness of Spray-Applied Fire Resistive Material* (Items 10, 10A, 10B) required on underside of steel deck. When Item 3J is used, Roof Covering (Items 2, 2A and 2B) shall not be directly applied over sprayed fiber.
U S GREENFIBER L L C — Cocoon stabilized cellulose insulation

3K. **Foamed Plastic*** — Optional — (Not Shown) - Used in addition to the foam insulation required to achieve fire rating:

3Ka. **Foamed Plastic*** — Optional — (Not Shown) A minimum of 1/4 in. thick - Placed over minimum 1-1/2 in. thick polyisocyanurate Foamed Plastic (Item 3) to be applied with adhesive (Item 6), asphalt or coat tar pitch (Item 7) or mechanically fastened (Item 8). Boards to be installed with end joints to be offset in both directions from layer below a min of 6 in. in order to lap all joints.
JOHNS MANVILLE — Invinsa

3Kb. **Foamed Plastic*** — Optional - (Not Shown) - Maximum 1 in. thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.
FIRESTONE BUILDING PRODUCTS CO L L C — "ISOGARD HD"

3Kc. **Foamed Plastic*** — Optional — (Not Shown) — Maximum 5/8 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.
RMAX, A BUSINESS UNIT OF SIKA CORPORATION — "Ultra-Max HD"

SIKA SARNAFIL INC — Sarnatherm Roof Board-R

3Kd. **Foamed Plastic*** — Optional — (Not Shown) — Maximum 1/2 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.
CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — SecurShield HD, SecurShield HD Plus, SecurShield HD NH, SecurShield HD Plus NH, SecurShield HD RL

HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — H-Shield HD, H-Shield HD90, H-Shield HD RL, H-Shield HD NH, H-Shield HD90 NH

VERSICO INC — SecurShield HD Plus, WeatherBond XFP HD Plus Cover Board, SecurShield HD NH, WeatherBond XFP HD NH Cover Board, SecurShield HD Plus NH, WeatherBond XFP HD Plus NH Cover Board, SecurShield HD RL

3Ke. **Foamed Plastic*** — Optional — (Not Shown) — Maximum 1 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.
ATLAS ROOFING CORP — ACFoam HD CoverBoard and ACFoam CoverBoard FR

3L. **Foamed Plastic*** — As an alternate to Items 3 - 3J. polyurethane foamed plastic roof insulation. When used, gypsum board (item 4) is required. Formed by the simultaneous spraying of two liquid components applied over the gypsum board (item 4) in accordance with the manufacturer's instructions. Min thickness shall be selected from the table above. No limit on max overall thickness.

BASF CORP — Types FE348-2.5, FE348-2.7, FE348-2.8, FE348-3.0, ELASTOSPRAY 81255, ELASTOSPRAY 81285, ELASTOSPRAY 81305, SKYTITE C1

BASF CORP — Elastospray 5100-2.0, Elastospray 5100-2.5, Elastospray 81302, Elastospray 81272, Elastospray Alpha System, Elastospray 81252

3M. **Building Units*** — Not Shown — As an alternate to Item 3, When used, all ratings are reduced by 1/2 hr when used with gypsum board or reduced by 1 hr without gypsum board. Composite polyisocyanurate foamed plastic insulation board with an adhered nailing surface, nom 48 by 48 or 96 in. These composite building units have ventilation slots internal to the panels. The thickness of the panel depends upon the thinnest portion of the polyisocyanurate insulation. The following dimensions apply to the polyisocyanurate insulation, min thickness as measured in accordance with Item 3. There is no limit on the max insulation thickness.
GAF — "ThermaCal® 1" and "ThermaCal® 2"

3N. **Building Units*** — Not Shown - As an alternate to Item 3, When used, all ratings are reduced by 1/2 hr when used with gypsum board or reduced by 1 hr without gypsum board. Polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with oriented strand board or plywood. Min thickness of the polyisocyanurate core as measured in accordance with Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows. Adhesive (Item 6) may be applied between the building units and the vapor retarder (or gypsum wallboard if vapor retarder is not used).
GAF — "ThermaCal®"

3L. **Building Units*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with wood fiber board. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.
HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — H-Shield-P, H-Shield-RP, H-Shield-P NH, H-Shield-RP NH

3M. **Building Units*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with perlite composite board. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.
HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — H-Shield-P, H-Shield-RP, H-Shield-P NH, H-Shield-RP NH

3N. **Building Units*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with glass mat faced gypsum panel. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.
CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — Polyiso HP-HDD, Polyiso HP-HDD NH

HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — H-Shield-DD, H-Shield-DD NH

VERSICO INC — MP-HDD, MP-HDD NH

3O. **Mineral and Fiber Board*** — (Optional — Not Shown) — Used in addition to the foam insulation required to achieve fire rating. Maximum 1 in. thick mineral and fiber insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

JOHNS MANVILLE — Fesco, Retro-fit, RetroPlus, DuraBoard (1/2"), DuraBoard (3/4"), DuraBoard (1"), Fesco HD

4. **Gypsum Board** — (Not shown) — (Classified or Unclassified) — May be used to obtain various Restrained or Unrestrained Assembly Ratings as described in Item 10. Supplied in sheets nom 4 by 8 or 12 ft by 5/8 in. thick. Min weight 2.2 psf. Applied perpendicular to steel roof deck direction with end joints staggered 2 ft in adjacent rows. End joints to occur over crests of steel roof units.
CABOT MANUFACTURING ULC (View Classification) — CKNX.R25370

AMERICAN GYPSUM CO (View Classification) — CKNX.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) — CKNX.R19374

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R18482

GEORGIA-PACIFIC GYPSUM L L C (View Classification) — CKNX.R2717

LOADMASTER SYSTEMS INC (View Classification) — CKNX.R11809

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) — CKNX.R7094

PANEL REY S A (View Classification) — CKNX.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) — CKNX.R19262

THAI GYPSUM PRODUCTS PCL (View Classification) — CKNX.R27517

UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG MEXICO S A DE C V (View Classification) — CKNX.R16089

5. **Vapor Retarder — Sheathing Material*** — (Optional) — (Not shown) — Vinyl film or paper scrim vapor barrier, applied to steel roof deck or gypsum wallboard with adhesive (Item 6), hot asphalt (Item 7) or laid loosely, overlapped approx 2 in. on adjacent sheets. See **Sheathing Material** (CHIZ) category for names of manufacturers.

5A. **Sheathing Material*** — (Optional) — In lieu of Item 5, a self-adhered rubberized asphalt roofing underlayment membrane which may be placed on top of steel roof deck, gypsum wallboard or on the roof insulation.
GCP APPLIED TECHNOLOGIES INC — Grace Ice and Water Shield, Grace Ice and Water Shield-HT®, Grace Select, Grace Ultra, and Grace Basik.

6. **Adhesive* — (Optional)** — The vapor retarder, the gypsum wallboard or the first layer of roof insulation may be secured with adhesive to the steel crest surfaces. Also used to attach the vapor retarder to gypsum wallboard, the first layer of insulation to vapor retarder or gypsum wallboard and each additional layer of insulation. Applied in 1/2 in. wide ribbons 6 in. OC at 0.4 gal/100 sq ft. See **Adhesives** (BYWR) category for names of manufacturers.

6A. **Adhesive* -(Optional)** — - (Bearing the UL Classification Marking for Roof Systems (TGFU)) - When FAST 100 adhesive is used, the Unrestrained Assembly Ratings are limited to 1, 1-1/2 and 2 hr. The vapor retarder, the gypsum wallboard or the first layer of roof insulation may be secured with adhesive to the steel crest surfaces. Also used to attach the vapor retarder to gypsum wallboard, the first layer of insulation to vapor retarder or gypsum wallboard and each additional layer of insulation. Applied at a max rate of 19.8 g/ft². When FAST 100 adhesive is used, additional **Spray-Applied Fire Resistance Materials* (CHPX)** is required on the deck for the 1-1/2 and 2 hr Unrestrained Assembly Ratings. The thickness specified for the deck shall be increased by 1/16 in. for 1-1/2 hr Unrestrained Assembly Rating and 1/4 in. for 2 hr Unrestrained Assembly Rating.
CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — FAST 100

7. **Asphalt or Coal Tar Pitch*** — (Optional) — (Not shown) — The vapor retarder, the gypsum wallboard of the first layer of roof insulation may be secured with asphalt or coal tar pitch to the steel crest surfaces at a max rate of 15 lb/100 sq ft. Also used to attach the vapor retarder to gypsum wallboard, the first layer of insulation to vapor retarder or gypsum wallboard and each additional layer of roof insulation, applied at a max rate of 25 lb/100 sq ft.

8. **Mechanical Fasteners — (Optional)** — (Not shown) — Mechanical screw-type fastener with metal or plastic washer designed for the purpose may be used to attach one or more layers of insulation to steel roof deck.

9. **Steel Roof Deck** — (Unclassified) — Min 1-1/2 in. deep and 36 in. wide galv fluted steel deck. Min gauge is No. 22 MSG. Ends overlapped at supports a min 1-1/2 in. and welded to supports 12 in. OC and at side laps. Side laps fastened with 1/2 in. long hex head, self-drilling, self-tapping steel screws spaced a max of 36 in. OC. **Classified Steel Floor and Form Units*** — Noncomposite 1-1/2 to 3 in. deep, 24 - 36 in. wide, min 22 MSG galvanized steel fluted units. Ends overlapped at supports a min 1-1/2 in. and welded to supports 12 in. OC and at side laps. Side laps fastened with 3/4 in. long No. 12 self-drilling, self-tapping steel screws at 36 in. OC. As alternate to screw fasteners adjacent units may be button-punched or welded together 36 in. OC along side joints.

ASC STEEL DECK, DIV OF ASC PROFILES L L C — Types BH-36, BHN-36, BHN-35-1/4, DGB-36, B-36, BN-36, BN-35-1/4, NH-32, NHN-32, DGN-32, N-32 and NN-32. All units may be galvanized or Prime Shield™. Non-cellular decks may be vented designated with a "V" suffix to the product name.

CANAM GROUP INC — Type P-3606, P-3615, P-2436, and P-2404 noncomposite; 36 in. wide Types 1.5B, 1.5BI.

CANAM STEEL CORP — Types B, F, N. Units may be phos./ptd or ptd/ptd.

NEW MILLENNIUM BUILDING SYSTEMS L L C — Types B, BD, BI, F, FD, N, ND, NW32 and NW32I. Units may be phos/painted, ptd/ptd, or galvanized. Painted units may be used for ratings up to 2 h.

VERCO DECKING INC - A NUCOR CO — Deck types PLB, HSB, PLN3, HSN3, PLN, N; FORMLOK™ deck types PLB, B, PLN3, N3, PLN, N. Units may be galvanized or phos./ptd. Deck may be vented or non-vented.

VULCRAFT, DIV OF NUCOR CORP — Types BW, F, High Strength B, High Strength BW, N, ptd/ptd units may be used for ratings up to 2 h.

VULCRAFT, DIV OF NUCOR CORP — Galv Types 1.5B, 1.5BI, 1.5PLB, 1.5F, 3N, 3NI, 3.0PLN, 3NL-32, 3NI-32, 3PLN-32, ptd/ptd units may be used for ratings up to 2 h.

Note: Type Z-106 Spray-Applied Fire Resistive Materials to be used with galv steel roof units only.

10. **Spray-Applied Resistive Material*** — Applied by mixing with water and spraying in more than one coat to final thicknesses as shown in the illustration above and in the table below to steel surfaces which must be clean and free of dirt, loose scale and oil. Steel deck surface must be "spatter" coated with Type SK-3 Spray-Applied Fire Resistive Materials prior to application of spray-applied resistive material. Type SK-3 spray-applied resistive material applied in accordance with the manufacturer's application instructions. When steel deck is used the area between the steel deck and the beams top flange shall be filled. Min average and min individual density of 15/14 pcf, respectively. For method of density determination, see Design Information Section. Thickness of the spatter coat is included in the total final thickness of the protection material.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Steel deck thickness # with Gypsum Wallboard	Without Gypsum Wallboard	Beam Thickness full flange W8x28 Beam	1/2 flange## W8x28 Beam
1	0@	1	N/A	1	7/16	1/2
1	1	1	9/16 ***	1	7/16	1/2
1	1	1	5/8	1	7/16	1/2
1	1	1	1 *	1-5/8 *	7/16	1/2
1 1/2	1	1	3/4	1 1/4	9/16	13/16
1 1/2	1 1/2	1 1/2	13/16	1 3/8	5/8	13/16
1 1/2	1 1/2	1 1/2	1 1/2 *	2 1/8 *	5/8	13/16
2	1	1	1	1 1/2	3/4	1 1/16
2	1 1/2	1 1/2	1	1 1/2	3/4	1 1/16
2	2	2	1 1/8	1 11/16	7/8	1 1/16
2	2	2	2 *	2 5/8 *	7/8	1 1/16
3	1 1/2	1 1/2	1 1/2	2 1/8	1 3/16	1 5/8
3	2	2	1 1/2	2 1/8	1 3/16	1 5/8
3	3	3	1 5/8	2 3/8	1 3/8	1 5/8

\# The required minimum thickness of Spray-Applied Fire Resistive Materials on the steel deck is increased by 1/16 inch for 1-1/2 hr Un-restrained assembly rating and 1/4 inch for 2 hr Unrestrained Assembly rating when Item 6A is used.

\## When the thickness applied to the lower flange edges is reduced by one half, the 1/2 flange thickness is applicable.

* No minimum insulation thickness required

*** Minimum insulation thickness (Item 3) 2 inches.

@ When the maximum clear span of the steel decking is 5 ft. 2 in. or less, the Unrestrained Assembly Rating is 1-hour.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Joist thickness 10K1 more than 4 ft OC	10K1 less than 4 ft OC	16K2 more than 4 ft OC	16K2 less than 4 ft OC
1	0@	1	1 1/8	1	15/16	15/16
1	1	1	1 1/8	1	15/16	15/16
1 1/2	1	1	1 5/16	1 5/16	1 1/4	1 3/16
1 1/2	1 1/2	1 1/2	1 7/16	1 7/16	1 1/4	1 3/16
2	1	1	1 7/16	1 7/16	1 9/16	1 1/2
2	1 1/2	1 1/2	1 7/16	1 7/16	1 9/16	1 1/2
2	2	2	2 3/16	2 3/16	1 9/16	1 1/2
3	1 1/2	1 1/2	3 1/4	2 13/16	2 1/4	2 1/8
3	2	2	3 1/4	2 13/16	2 1/4	2 1/8
3	3	3	3 1/4	2 13/16	2 1/4	2 1/8

@ When the maximum clear span of the steel decking is 5 ft. 2 in. or less, the Unrestrained Assembly Rating is 1-hour.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	W6x16 Beam Thickness
1	1	1	9/16
1 1/2	1	1	5/8
1 1/2	1 1/2	1 1/2	13/16
2	1	1	7/8
2	1 1/2	1 1/2	7/8
2	2	2	1 1/16
3	1 1/2	1 1/2	1 1/4
3	2	2	1 1/4
3	3	3	1 1/2

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, SK-3.

GCP KOREA INC — Types MK-6/HY, MK-6/HY Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set, SK-3.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6/HY Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set, RG, SK-3.

10A. **Alternate Spray-Applied Fire Resistive Materials*** — Applied by mixing with water and spraying in one or more coats to final thicknesses as shown in the table below to steel beam surfaces which must be clean and free of dirt, loose scale and oil. When Type Z-106/G is used, the steel deck surface must be "spatter" coated with Type SK-3 Spray-Applied Fire Resistive Materials prior to application of spray-applied resistive material. Type SK-3 spray-applied resistive material applied in accordance with the manufacturer's application instructions. When steel deck is used the area between the steel deck and the beams top flange shall be filled. Min avg and min ind density of 22/19 pcf, respectively. For method of density determination, refer to Design Information Section.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Steel deck thickness # with Gypsum Wallboard	Without Gypsum Wallboard	Beam Thickness full flange W8x28 Beam	1/2 flange## W8x28 Beam
1	0@	1	N/A	1	7/16	1/2
1	1	1	9/16 ***	1	7/16	1/2
1	1	1	5/8	1	7/16	1/2
1	1	1	1 *	1-5/8 *	7/16	1/2
1 1/2	1	1	3/4	1 1/4	9/16	13/16
1 1/2	1 1/2	1 1/2	13/16	1 3/8	5/8	13/16
1 1/2	1 1/2	1 1/2	1 1/2 *	2 1/8 *	5/8	13/16
2	1	1	1	1 1/2	3/4	1 1/16
2	1 1/2	1 1/2	1	1 1/2	3/4	1 1/16
2	2	2	1 1/8	1 11/16	7/8	1 1/16
2	2	2	2 *	2 5/8 *	7/8	1 1/16
3	1 1/2	1 1/2	1 1/2	2 1/8	1 3/16	1 5/8
3	2	2	1 1/2	2 1/8	1 3/16	1 5/8
3	3	3	1 5/8	2 3/8	1 3/8	1 5/8

\# The required minimum thickness of Spray-Applied Fire Resistive Materials on the steel deck is increased by 1/16 inch for 1-1/2 hr Un-restrained assembly rating and 1/4 inch for 2 hr Unrestrained Assembly rating when Item 6A is used.

\## When the thickness applied to the lower flange edges is reduced by one half, the 1/2 flange thickness is applicable.

* No minimum insulation thickness required

*** Minimum insulation thickness (Item 3) 2 inches.

@ When the maximum clear span of the steel decking is 5 ft. 2 in. or less, the Unrestrained Assembly Rating is 1-hour.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Joist thickness 10K1 more than 4 ft OC	10K1 less than 4 ft OC	16K2 more than 4 ft OC	16K2 less than 4 ft OC
1	0@	1	1 1/8	1	15/16	15/16
1	1	1	1 1/8	1	15/16	15/16
1 1/2	1	1	1 5/16	1 5/16	1 1/4	1 3/16
1 1/2	1 1/2	1 1/2	1 7/16	1 7/16	1 1/4	1 3/16
2	1	1	1 7/16	1 7/16	1 9/16	1 1/2
2	1 1/2	1 1/2	1 7/16	1 7/16	1 9/16	1 1/2
2	2	2	2 3/16	2 3/16	1 9/16	1 1/2
3	1 1/2	1 1/2	3 1/4	2 13/16	2 1/4	2 1/8
3	2	2	3 1/4	2 13/16	2 1/4	2 1/8
3	3	3	3 1/4	2 13/16	2 1/4	2 1/8

@ When the maximum clear span of the steel decking is 5 ft. 2 in. or less, the Unrestrained Assembly Rating is 1-hour.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	W6x16 Beam Thickness
1	1	1	9/16
1 1/2	1	1	5/8
1 1/2	1 1/2	1 1/2	13/16
2	1	1	7/8
2	1 1/2	1 1/2	7/8
2	2	2	1 1/16
3	1 1/2	1 1/2	1 1/4
3	2	2	1 1/4
3	3	3	1 1/2

ARABIAN VERMICULITE INDUSTRIES — Types Z-106, Z-106/G, Z-106/HY.

GCP KOREA INC — Types Z-106, Z-106G, Z-106/HY.

GCP APPLIED TECHNOLOGIES INC — Types Z-106, Z-106G, Z106/HY.

10B. **Alternate Spray-Applied Fire Resistive Materials*** — Applied by mixing with water and spraying in one or more coats to final thicknesses as shown in the table below to steel beam surfaces which must be clean and free of dirt, loose scale and oil. When steel deck is used, the area between the steel deck and the beams top flange shall be filled. Application to steel roof deck requires the installation of expanded metal lath. See Item 11A. Min avg and min ind density of 40/36 pcf respectively for Types Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of 50/45 pcf respectively for Types Z-156, Z-156T and Z-156PC. For method of density determination, refer to Design Information Section.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Steel deck thickness # with Gypsum Wallboard	Without Gypsum Wallboard	Beam Thickness full flange W8x28 Beam	1/2 flange## W8x28 Beam
1	0@	1	N/A	1-1/16	7/16	1/2
1	1	1	9/16 ***	1	7/16	1/2
1	1	1	5/8	1	7/16	1/2
1	1	1	1 *	1-7/16*	7/16	1/2
1 1/2	1	1	3/4	1 1/4	9/16	13/16
1 1/2	1 1/2	1 1/2	13/16	1 3/8	5/8	13/16
1 1/2	1 1/2	1 1/2	1 1/2 *	1-7/8*	5/8	13/16
2	1	1	1	1 1/2	3/4	1 1/16
2	1 1/2	1 1/2	1	1 1/2	3/4	1 1/16
2	2	2	1 1/8	1 11/16	7/8	1 1/16
2	2	2	2 *	2-5/16*	7/8	1 1/16
3	1 1/2	1 1/2	1 1/2	2 1/8	1 3/16	1 5/8
3	2	2	1 1/2	2 1/8	1 3/16	1 5/8
3	3	3	1 5/8	2 3/8	1 3/8	1 5/8

\# The required minimum thickness of Spray-Applied Fire Resistive Materials on the steel deck is increased by 1/16 inch for 1-1/2 hr Un-restrained assembly rating and 1/4 inch for 2 hr Unrestrained Assembly rating when Item 6A is used.

\## When the thickness applied to the lower flange edges is reduced by one half, the 1/2 flange thickness is applicable.

* No minimum insulation thickness required

*** Minimum insulation thickness (Item 3) 2 inches.

@ When the maximum clear span of the steel decking is 5 ft. 2 in. or less, the Unrestrained Assembly Rating is 1-hour.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Joist thickness 10K1 more than 4 ft OC	10K1 less than 4 ft OC	16K2 more than 4 ft OC	16K2 less than 4 ft OC
1	0@	1	1 1/8	1	15/16	15/16
1	1	1	1 1/8	1	15/16	15/16
1 1/2	1	1	1 5/16	1 5/16		1 3/16
1 1/2	1 1/2	1 1/2	1 7/16	1 7/16	1 1/4	1 3/16
2	1	1	1 7/16	1 7/16		1 1/2
2	1 1/2	1 1/2	1 7/16	1 7/16		1 1/2
2	2	2	2 3/16	2 3/16	1 9/16	1 1/2
3	1 1/2	1 1/2	3 1/4	2 13/16		2 1/8
3	2	2	3 1/4	2 13/16		2 1/8
3	3	3	3 1/4	2 13/16	2 1/4	2 1/8

@ When the maximum clear span of the steel decking is 5 ft. 2 in. or less, the Unrestrained Assembly Rating is 1-hour.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	W6x16 Beam Thickness
1	1	1	9/16
1 1/2	1	1	5/8
1 1/2	1 1/2	1 1/2	13/16
2	1	1	7/8
2	1 1/2	1 1/2	7/8
2	2	2	1 1/16
3	1 1/2	1 1/2	1 1/4
3	2	2	1 1/4
3	3	3	1 1/2

ARABIAN VERMICULITE INDUSTRIES — Type Z-146 investigated for exterior use.

GCP KOREA INC — Type Z-146 investigated for exterior use.

GCP APPLIED TECHNOLOGIES INC — Type Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC investigated for exterior use.

10C. **Alternate Spray-Applied Fire Resistive Materials*** — Applied by mixing with water and spraying in more than one coat to final thicknesses as shown in the illustration above and in the table below to steel surfaces which must be clean and free of dirt, loose scale and oil. When steel deck is used the area between the steel deck and the beams top flange shall be filled. For minimum and maximum density of: Types MK-6/HY, MK-6/HY Extended Set , MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set, SK-3, RG, SK-3 see Item 10; Types Z-106, Z-106/G, Z-106/HY, Z-106/G see Item 10A; Type Z-146 see Item 10B.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Joist thickness** 12K3 more than 4 ft OC	12K3 less than 4 ft OC
1	0@	1	15/16	15/16
1	1	1	15/16	15/16
1 1/2	1 1/2	1 1/2	1 1/4	1 3/16
2	2	2	1 9/16	1 1/2
3	3	3	2 1/4	2 1/8

** Design load shall stress the 12K3 joist to a maximum tensile strength of 24,000 psi, which represents 80% of the maximum allowable design loading. Based on the Steel Joist Institute (SJI) Publication, "Catalog of Standard Specifications and Load Tables for Steel Joists and Joist Girders" for guidance on how to increase the design loading accordingly.

@ When the maximum clear span of the steel decking is 5 ft. 2 in. or less, the Unrestrained Assembly Rating is 1-hour.

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/HY, MK-6/HY Extended Set , MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set, SK-3, Z-106, Z-106/G, Z-106/HY, Type Z-146 investigated for exterior use.

GCP KOREA INC — Types MK-6/HY, MK-6/HY Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set, SK-3, Types Z-106, Z-106/G, Z-106/HY, Type Z-146 investigated for exterior use.
GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6/HY Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set, RG, SK-3, Types Z-106, Z-106/G, Z106/HY, Type Z-146 investigated for exterior use.

10D. **Sprayed Fiber*** — (Optional, Not Shown) Sprayed Fiber, Classified for Surface Burning Characteristics (BNST), having a maximum applied density of 3.5 pcf applied over Spray-Applied Fire Resistive Material (Item 10 through 10C) on Steel Roof Deck or Steel Floor and Form Units (Item 9) and Beams (Item 1) in accordance with the following tables:

Allowable Sprayed Fiber Thickness over SFRM applied to Steel Roof Deck or Steel Floor and Form Units (Item 9)

Installed SFRM Thickness (in.) on Deck	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
9/16	8	8	8	8
5/8	8	8	8	8
3/4	8	8	8	8
13/16	7-3/4	8	8	8
1	6-15/16	8	8	8
1-1/16	6-11/16	8	8	8
1-1/8	6-7/16	8	8	8
1-1/4	5-7/8	8	8	8
1-3/8	5-3/8	7-7/8	8	8
1-7/16	5-1/16	7-7/16	8	8
1-1/2	4-13/16	7-1/16	8	8
1-5/8	4-5/16	6-5/16	8	8
1-11/16	4	5-7/8	7-7/8	8
1-7/8	3-3/16	4-11/16	5-11/16	7-1/8
2	2-11/16	3-15/16	4-5/16	5-3/8
2-1/8	2-1/8	3-1/8	2-7/8	3-9/16
2-5/16	1-5/16	1-15/16	11/16	7/8
2-3/8	1-1/16	1-9/16	0	0
2-5/8	0	0	0	0

Allowable Sprayed Fiber Thickness over SFRM applied to Beams (Item 1)

Installed SFRM Thickness (in.) on Beam	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
7/16	8	8	8	8
1/2	8	8	8	8
9/16	8	8	8	8
5/8	8	8	8	8
3/4	8	8	8	8
13	8	8	8	8
/16	8	8	8	8
7/8	8	8	8	8
1-1/16	8	8	8	8
1-3/16	8	8	8	8
1-1/4	8	8	8	8
1-3/8	7-1/2	8	8	8
1-1/2	6-15/16	8	8	8
1-5/8	6-7/16	8	7-7/8	8

Allowable Sprayed Fiber Thickness over SFRM applied to Joists (Item 1)

Installed SFRM Thickness (in.) on Joist	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
15/16	8	8	8	8
1	8	8	8	8
1-1/8	8	8	8	8
1-3/16	8	8	8	8
1-1/4	8	8	8	8
1-5/16	8	8	8	8
1-7/16	7-3/4	8	8	8
1-1/2	7-1/2	8	8	8
1-9/16	7-1/4	8	8	8
2-1/8	4-13/16	7-1/16	8	8
2-3/16	4-9/16	6-11/16	8	8
2-1/4	4-5/16	6-5/16	8	8
2-13/16	1-7/8	2-3/4	5	6-1/4
3-1/4	0	0	0	0

INTERNATIONAL CELLULOSE CORP — Type K13, URE-K, or SonaSpray FC

10E. **Sprayed Fiber*** — (Optional, Not Shown) Sprayed Fiber, Classified for Surface Burning Characteristics (BNST), having a maximum applied density of 2.8 pcf applied over Spray-Applied Fire Resistive Material (Item 10 through 10C) on Steel Roof Deck or Steel Floor and Form Units (Item 9) and Beams (Item 1) in accordance with the following tables:

Allowable Sprayed Fiber Thickness over SFRM applied to Steel Roof Deck or Steel Floor and Form Units (Item 9)

Installed SFRM Thickness (in.) on Deck	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
9/16	5	5	5	5
5/8	5	5	5	5
3/4	5	5	5	5
13/16	5	5	5	5
1	5	5	5	5
1-1/16	5	5	5	5
1-1/8	5	5	5	5
1-1/4	5	5	5	5
1-3/8	5	5	5	5
1-7/16	5	5	5	5
1-1/2	4 13/16	5	5	5
1-5/8	4 5/16	5	5	5
1-11/16	4	5	5	5
1-7/8	3 3/16	4 11/16	5	5
2	2 11/16	3 15/16	4 5/16	5
2-1/8	2 1/8	3 1/8	2 7/8	3 9/16
2-5/16	1 5/16	1 15/16	11/16	7/8
2-3/8	1 1/16	1 9/16	0	0
2-5/8	0	0	0	0

Allowable Sprayed Fiber Thickness over SFRM applied to applied to Beams (Item 1)

Installed SFRM Thickness (in.) on Beam	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
7/16	5	5	5	5
1/2	5	5	5	5
9/16	5	5	5	5
5/8	5	5	5	5
3/4	5	5	5	5
13	5	5	5	5
/16	5	5	5	5
7/8	5	5	5	5
1-1/16	5	5	5	5
1-3/16	5	5	5	5
1-1/4	5	5	5	5
1-3/8	5	5	5	5
1-1/2	5	5	5	5
1-5/8	5	5	5	5

Allowable Sprayed Fiber Thickness over SFRM applied to applied to to Joists (Item 1)

Installed SFRM Thickness (in.) on Joist	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
15/16	5	5	5	5
1	5	5	5	5
1-1/8	5	5	5	5
1-3/16	5	5	5	5
1-1/4	5	5	5	5
1-5/16	5	5	5	5
1-7/16	5	5	5	5
1-1/2	5	5	5	5
1-9/16	5	5	5	5
2-1/8	5	5	5	5
2-3/16	5	5	5	5
2-1/4	5	5	5	5
2-13/16	2 3/8	3 7/16	5	5
3-1/4	0	0	0	0

MONOGLASS INC — Type Monoglass

10F. **Sprayed Fiber*** — (Optional, Not Shown) Sprayed Fiber, Classified for Noncombustible Building Materials (BICW), having a maximum applied density of 3.5 pcf applied over Spray-Applied Fire Resistive Material (Item 10 through 10C) on Steel Roof Deck or Steel Floor and Form Units (Item 9) and Beams (Item 1) in accordance with the following tables:

Allowable Sprayed Fiber Thickness over SFRM applied to Steel Roof Deck or Steel Floor and Form Units (Item 9)

Installed SFRM Thickness (in.) on Deck	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
9/16	5	5	5	5
5/8	5	5	5	5
3/4	5	5	5	5
13/16	5	5	5	5
1	5	5	5	5
1-1/16	5	5	5	5
1-1/8	5	5	5	5
1-1/4	5	5	5	5
1-3/8	5	5	5	5
1-7/16	5	5	5	5
1-1/2	4-13/16	5	5	5
1-5/8	4-5/16	5	5	5
1-11/16	4	5	5	5
1-7/8	3-3/16	4-11/16	5	5
2	2-11/16	3-15/16	4-5/16	5
2-1/8	2-1/8	3-1/8	2-7/8	3-9/16
2-5/16	1-5/16	1-15/16	11/16	7/8
2-3/8	1-1/16	1-9/16	0	0
2-5/8	0	0	0	0

Allowable Sprayed Fiber Thickness over SFRM applied to Beams (Item 1)

Installed SFRM Thickness (in.) on Beam	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
7/16	5	5	5	5
1/2	5	5	5	5
9/16	5	5	5	5
5/8	5	5	5	5
3/4	5	5	5	5
13	5	5	5	5
/16	5	5	5	5
7/8	5	5	5	5
1-1/16	5	5	5	5
1-3/16	5	5	5	5
1-1/4	5	5	5	5
1-3/8	5	5	5	5
1-1/2	5	5	5	5
1-5/8	5	5	5	5

Allowable Sprayed Fiber Thickness over SFRM applied to Joists (Item 1)

Installed SFRM Thickness (in.) on Joist	SFRM Density (lb/ft³) 15 — Sprayed Fiber Thickness (in.)	22	40	50
15/16	5	5	5	5
1	5	5	5	5
1-1/8	5	5	5	5
1-3/16	5	5	5	5
1 1/4	5	5	5	5
1-5/16	5	5	5	5
1-7/16	5	5	5	5
1-1/2	5	5	5	5
1-9/16	5	5	5	5
2-1/8	4-13/16	5	5	5
2-3/16	4-9/16	5	5	5
2-1/4	4-5/16	5	5	5
2-13/16	1-7/8	2-3/4	5	5
3-1/4	0	0	0	0

THERMACOUSTIC IND. — Type TC-417

11. **Nonmetallic Fabric Mesh** — (Optional) — As an alternate to the optional use of metal lath, glass fiber fabric mesh, weighing approx 2.5 oz/sq yd, polypropylene fabric mesh, weighing approx 1.25 oz/sq yd or equivalent, may be used to facilitate the spray application. The mesh is secured to one side of each joist web member. The method of attaching the mesh must be sufficient to hold the mesh and the spray applied Spray-Applied Fire Resistive Materials material in place during application until it has cured. An acceptable method to attach the mesh is by embedding the mesh in min 1/4 in. long beads of hot melted glue. The beads of glue shall be spaced a max of 12 in. OC along the top chord of the bar joist. Another method to secure the mesh is by 1-1/4 in. long by 1/2 in. wide hairpin clips formed from No. 18 SWG or heavier steel wire.
The method of attaching the mesh must be sufficient to hold the mesh and the spray applied Spray-Applied Fire Resistive Materials material in place during application until it has cured. An acceptable method to attach the mesh is by embedding the mesh in min 1/4 in. long beads of hot melted glue. The beads of glue shall be spaced a max of 12 in. OC along the top chord of the bar joist Another method to secure the mesh is by 1-1/4 in. long by 1/2 in. wide hairpin clips formed from No. 18 SWG or heavier steel wire.

11A. **Metal Lath** — (Not Shown) (Required with Item 10B, otherwise optional) Metal lath shall be 3/8 in. expanded diamond mesh, weighing 2.5 lb per sq yd. Secured to underside of steel deck with No. 12 by 3/8 in. pan head self-drilling, self-tapping screws and steel washers with an outside diam of 1/2 in. screws spaced 12 in. OC in both directions with lath edges overlapped approx 3 in.

11B. **Metal Lath** — (Not Shown) — (Required on both sides of joists with Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC, otherwise optional) — Metal lath may be used to facilitate the spray application of Spray-Applied Fire Resistive Materials on steel bar joists and trusses. The diamond mesh, 3/8 in. expanded steel lath, 1.7 to 3.4 lb/sq yd is secured to one side of each steel joist with No. 18 SWG galv steel wire at joist web and bottom chord members spaced 15 in. OC max. When used, the metal lath is to be fully covered with Spray-Applied Fire Resistive Materials with no min thickness requirements.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2021-12-16

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	2022.02.14	PACKAGE A BID DOCUMENTS
A	2022.03.23	PKG. C CONSTRUCTION DOCS.
1	2022.04.08	ADDENDUM 1

SHEET NAME:
UL ASSEMBLIES

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.04.08
ADDENDUM 1

SHEET:
A-006

1
A-006
FIRE RATED ASSEMBLY- UL-DETAILS-2

12" = 1'-0"

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PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. X661

December 11, 2013

Ratings - 1, 1-1/2, 2, and 3 Hr. (See Item 3 and 4)

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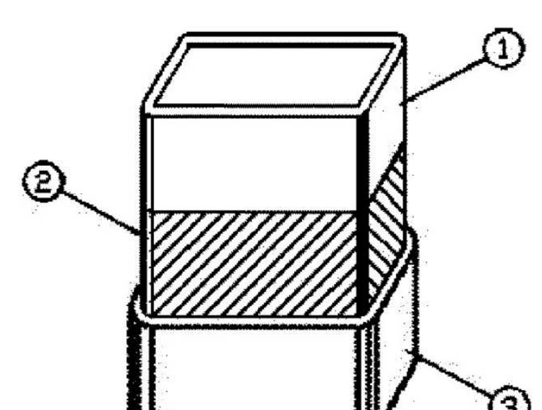

1. **Steel Tube Column** — Hollow structural steel columns with the minimum sizes shown in the tables below. Columns shall be free of dirt, loose scale and oil.

2. **Primer Coating** — Two Component Epoxy or Phenolic Modified Alkyd applied at 0.002 in. dry film thickness.

3. **Mastic & Intumescent Coating*** — Coating spray or brush applied in accordance with the manufacturer's instructions at the minimum average dry thickness shown in the table below. The thickness shown does not include primer thickness.

Size	A/P	1 Hr. In.	1-1/2 Hr. In.	2 Hr. In.	3 Hr. In.
TS4x4x 1/4	0.24	0.073	0.226	0.367	NR
TS4.5x4.5x 1/4	0.24	0.073	0.226	0.367	NR
TS5x4x 1/4	0.24	0.073	0.226	0.367	NR
TS5x5x 1/4	0.24	0.073	0.226	0.367	NR
TS6x4x 1/4	0.24	0.073	0.226	0.367	NR
TS5.5x5.5x 1/4	0.24	0.073	0.226	0.367	NR
TS6x5x 1/4	0.24	0.073	0.226	0.367	NR
TS7x4x 1/4	0.24	0.073	0.226	0.367	NR
TS6x6x 1/4	0.24	0.073	0.226	0.367	NR
TS7x5x 1/4	0.24	0.073	0.226	0.367	NR
TS8x4x 1/4	0.24	0.073	0.226	0.367	NR
TS7x7x 1/4	0.24	0.073	0.226	0.367	NR
TS8x6x 1/4	0.24	0.073	0.226	0.367	NR
TS9x5x 1/4	0.24	0.073	0.226	0.367	NR
TS10x4x 1/4	0.24	0.073	0.226	0.367	NR
TS10x5x 1/4	0.24	0.073	0.226	0.367	NR
TS8x8x 1/4	0.24	0.073	0.226	0.367	NR
TS9x7x 1/4	0.24	0.073	0.226	0.367	NR
TS10x6x 1/4	0.24	0.073	0.226	0.367	NR
TS12x4x 1/4	0.24	0.073	0.226	0.367	NR
TS9x9x 1/4	0.24	0.073	0.226	0.367	NR
TS10x8x 1/4	0.24	0.073	0.226	0.367	NR
TS12x6x 1/4	0.24	0.073	0.226	0.367	NR
TS14x4x 1/4	0.24	0.073	0.226	0.367	NR
TS10x10x 1/4	0.24	0.073	0.226	0.367	NR
TS12x8x 1/4	0.24	0.073	0.226	0.367	NR
TS14x6x 1/4	0.24	0.073	0.226	0.367	NR
TS16x4x 1/4	0.24	0.073	0.226	0.367	NR
TS12x10x 1/4	0.25	0.069	0.212	0.348	NR
TS12x12x 1/4	0.25	0.069	0.212	0.348	NR
TS14x10x 1/4	0.25	0.069	0.212	0.348	NR
TS16x8x 1/4	0.25	0.069	0.212	0.348	NR
TS18x6x 1/4	0.25	0.069	0.212	0.348	NR
TS20x4x 1/4	0.25	0.069	0.212	0.348	NR
TS16x16x 1/4	0.25	0.069	0.212	0.348	NR
TS4x4x 5/16	0.29	0.056	0.160	0.273	NR
TS4.5x4.5x 5/16	0.29	0.056	0.160	0.273	NR
TS5x4x 5/16	0.29	0.056	0.160	0.273	NR
TS5x5x 5/16	0.30	0.055	0.157	0.267	NR
TS6x4x 5/16	0.30	0.055	0.157	0.267	NR
TS5.5x5.5x 5/16	0.30	0.055	0.157	0.267	NR
TS6x5x 5/16	0.30	0.055	0.157	0.267	NR
TS7x4x 5/16	0.30	0.055	0.157	0.267	NR
TS6x6x 5/16	0.30	0.055	0.157	0.267	NR
TS7x5x 5/16	0.30	0.055	0.157	0.267	NR
TS8x4x 5/16	0.30	0.055	0.157	0.267	NR
TS7x7x 5/16	0.30	0.055	0.157	0.267	NR
TS8x6x 5/16	0.30	0.055	0.157	0.267	NR
TS9x5x 5/16	0.30	0.055	0.157	0.267	NR
TS10x4x 5/16	0.30	0.055	0.157	0.267	NR
TS10x5x 5/16	0.30	0.055	0.157	0.267	NR
TS8x8x 5/16	0.30	0.055	0.157	0.267	NR
TS9x7x 5/16	0.30	0.055	0.157	0.267	NR
TS10x6x 5/16	0.30	0.055	0.157	0.267	NR
TS12x4x 5/16	0.30	0.055	0.157	0.267	NR
TS9x9x 5/16	0.30	0.055	0.157	0.267	NR
TS10x8x 5/16	0.30	0.055	0.157	0.267	NR
TS12x6x 5/16	0.30	0.055	0.157	0.267	NR
TS14x4x 5/16	0.30	0.055	0.157	0.267	NR
TS10x10x 5/16	0.30	0.055	0.157	0.267	NR
TS12x8x 5/16	0.30	0.055	0.157	0.267	NR
TS14x6x 5/16	0.30	0.055	0.157	0.267	NR
TS16x4x 5/16	0.30	0.055	0.157	0.267	NR
TS12x10x 5/16	0.31	0.053	0.151	0.258	NR
TS12x12x 5/16	0.31	0.053	0.151	0.258	NR
TS14x10x 5/16	0.31	0.053	0.151	0.258	NR
TS16x8x 5/16	0.31	0.053	0.151	0.258	NR
TS18x6x 5/16	0.31	0.053	0.151	0.258	NR
TS20x4x 5/16	0.31	0.053	0.151	0.258	NR
TS14x14x 5/16	0.31	0.053	0.151	0.258	NR
TS16x12x 5/16	0.31	0.053	0.151	0.258	NR
TS20x8x 5/16	0.31	0.053	0.151	0.258	NR
TS18x12x 5/16	0.31	0.053	0.151	0.258	NR
TS16x16x 5/16	0.31	0.053	0.151	0.258	NR
TS20x12x 5/16	0.31	0.053	0.151	0.258	NR
TS20x16x 5/16	0.31	0.053	0.151	0.258	NR
TS20x18x 5/16	0.31	0.053	0.151	0.258	NR
TS4x4x 3/8	0.34	0.047	0.128	0.224	NR
TS4.5x4.5x 3/8	0.35	0.047	0.128	0.224	NR
TS5x4x 3/8	0.35	0.047	0.128	0.224	NR
TS5x5x 3/8	0.35	0.047	0.128	0.224	NR
TS6x4x 3/8	0.35	0.047	0.128	0.224	NR
TS5.5x5.5x 3/8	0.35	0.047	0.128	0.224	NR
TS6x5x 3/8	0.35	0.047	0.128	0.224	NR
TS7x4x 3/8	0.35	0.047	0.128	0.224	NR
TS6x6x 3/8	0.36	0.046	0.123	0.217	NR
TS7x5x 3/8	0.36	0.046	0.123	0.217	NR
TS8x4x 3/8	0.36	0.046	0.123	0.217	NR
TS7x7x 3/8	0.36	0.046	0.123	0.217	NR
TS8x6x 3/8	0.36	0.046	0.123	0.217	NR
TS9x5x 3/8	0.36	0.046	0.123	0.217	NR
TS10x4x 3/8	0.36	0.046	0.123	0.217	NR
TS10x5x 3/8	0.36	0.046	0.123	0.217	NR
TS8x8x 3/8	0.36	0.046	0.123	0.217	NR
TS9x7x 3/8	0.36	0.046	0.123	0.217	NR
TS10x6x 3/8	0.36	0.046	0.123	0.217	NR
TS12x4x 3/8	0.36	0.046	0.123	0.217	NR
TS9x9x 3/8	0.36	0.046	0.123	0.217	NR
TS10x8x 3/8	0.36	0.046	0.123	0.217	NR
TS12x6x 3/8	0.36	0.046	0.123	0.217	NR
TS14x4x 3/8	0.36	0.046	0.123	0.217	NR
TS10x10x 3/8	0.36	0.046	0.123	0.217	NR
TS12x8x 3/8	0.36	0.046	0.123	0.217	NR
TS14x6x 3/8	0.36	0.046	0.123	0.217	NR
TS16x4x 3/8	0.36	0.046	0.123	0.217	NR
TS12x10x 3/8	0.36	0.046	0.123	0.217	NR
TS12x12x 3/8	0.37	0.045	0.119	0.211	NR
TS14x10x 3/8	0.37	0.045	0.119	0.211	NR
TS16x8x 3/8	0.37	0.045	0.119	0.211	NR
TS18x6x 3/8	0.37	0.045	0.119	0.211	NR
TS20x4x 3/8	0.37	0.045	0.119	0.211	NR
TS14x12x 3/8	0.37	0.045	0.119	0.211	NR
TS14x14x 3/8	0.37	0.045	0.119	0.211	NR
TS16x12x 3/8	0.37	0.045	0.119	0.211	NR
TS20x8x 3/8	0.37	0.045	0.119	0.211	NR
TS18x12x 3/8	0.37	0.045	0.119	0.211	NR
TS16x16x 3/8	0.37	0.045	0.119	0.211	NR
TS20x12x 3/8	0.37	0.045	0.119	0.211	NR
TS18x16x 3/8	0.37	0.045	0.119	0.211	NR
TS18x18x 3/8	0.37	0.045	0.119	0.211	NR
TS20x16x 3/8	0.37	0.045	0.119	0.211	NR
TS20x18x 3/8	0.37	0.045	0.119	0.211	NR
TS20x20x 3/8	0.37	0.045	0.119	0.211	NR
TS4x4x 1/2	0.45	0.038	0.097	0.175	0.319
TS4.5x4.5x 1/2	0.45	0.038	0.097	0.175	0.319
TS5x4x 1/2	0.45	0.038	0.097	0.175	0.319
TS5x5x 1/2	0.46	0.037	0.094	0.172	0.319
TS6x4x 1/2	0.46	0.037	0.094	0.172	0.319
TS6x5x 1/2	0.46	0.037	0.094	0.172	0.319
TS7x4x 1/2	0.46	0.037	0.094	0.172	0.319
TS6x6x 1/2	0.46	0.037	0.094	0.172	0.319
TS7x5x 1/2	0.46	0.037	0.094	0.172	0.319
TS8x4x 1/2	0.46	0.037	0.094	0.172	0.319
TS7x7x 1/2	0.47	0.037	0.092	0.163	0.319
TS8x6x 1/2	0.47	0.037	0.092	0.163	0.319
TS9x5x 1/2	0.47	0.037	0.092	0.168	0.319
TS10x4x 1/2	0.47	0.037	0.092	0.168	0.319
TS8x8x 1/2	0.47	0.037	0.092	0.168	0.319
TS9x7x 1/2	0.47	0.037	0.092	0.168	0.319
TS10x6x 1/2	0.47	0.037	0.092	0.168	0.319
TS12x4x 1/2	0.47	0.037	0.092	0.168	0.319
TS9x9x 1/2	0.48	0.036	0.091	0.166	0.319
TS10x8x 1/2	0.48	0.036	0.091	0.166	0.319
TS12x6x 1/2	0.48	0.036	0.091	0.166	0.319
TS14x4x 1/2	0.48	0.036	0.091	0.166	0.319
TS10x10x 1/2	0.48	0.036	0.091	0.166	0.319
TS12x8x 1/2	0.48	0.036	0.091	0.166	0.319
TS14x6x 1/2	0.48	0.036	0.091	0.166	0.319
TS16x4x 1/2	0.48	0.036	0.091	0.166	0.319
TS12x10x 1/2	0.48	0.036	0.091	0.166	0.319
TS12x12x 1/2	0.48	0.036	0.091	0.166	0.319
TS14x10x 1/2	0.48	0.036	0.091	0.166	0.319
TS16x8x 1/2	0.48	0.036	0.091	0.166	0.319
TS18x6x 1/2	0.48	0.036	0.091	0.166	0.319
TS20x4x 1/2	0.48	0.036	0.091	0.166	0.319
TS14x12x 1/2	0.48	0.036	0.091	0.166	0.319
TS14x14x 1/2	0.49	0.036	0.089	0.164	0.319
TS16x12x 1/2	0.49	0.036	0.089	0.164	0.319
TS20x8x 1/2	0.49	0.036	0.089	0.164	0.319
TS18x12x 1/2	0.49	0.036	0.089	0.164	0.319
TS16x16x 1/2	0.49	0.036	0.089	0.164	0.319
TS20x12x 1/2	0.49	0.036	0.089	0.164	0.319
TS18x16x 1/2	0.49	0.036	0.089	0.164	0.319
TS18x18x 1/2	0.49	0.036	0.089	0.164	0.319
TS20x16x 1/2	0.49	0.036	0.089	0.164	0.319
TS20x18x 1/2	0.49	0.036	0.089	0.164	0.319
TS20x20x 1/2	0.49	0.036	0.089	0.164	0.319
TS6x6x 5/8	0.57	0.033	0.078	0.146	0.319
TS7x5x 5/8	0.57	0.033	0.078	0.146	0.319
TS8x4x 5/8	0.57	0.033	0.078	0.146	0.319
TS7x7x 5/8	0.58	0.032	0.078	0.145	0.319
TS9x5x 5/8	0.58	0.032	0.078	0.145	0.319
TS10x4x 5/8	0.58	0.032	0.078	0.145	0.319
TS8x8x 5/8	0.58	0.032	0.078	0.145	0.319
TS9x7x 5/8	0.58	0.032	0.078	0.145	0.319
TS10x6x 5/8	0.58	0.032	0.078	0.145	0.319
TS12x4x 5/8	0.58	0.032	0.078	0.145	0.319
TS9x9x 5/8	0.59	0.032	0.076	0.143	0.319
TS10x8x 5/8	0.59	0.032	0.076	0.143	0.319
TS12x6x 5/8	0.59	0.032	0.076	0.143	0.319
TS14x4x 5/8	0.59	0.032	0.076	0.143	0.319
TS10x10x 5/8	0.59	0.032	0.076	0.143	0.319
TS12x8x 5/8	0.59	0.032	0.076	0.143	0.319
TS14x6x 5/8	0.59	0.032	0.076	0.143	0.319
TS12x12x 5/8	0.60	0.032	0.076	0.141	0.319
TS14x10x 5/8	0.60	0.032	0.076	0.141	0.319
TS16x8x 5/8	0.60	0.032	0.076	0.141	0.319
TS18x6x 5/8	0.60	0.032	0.076	0.141	0.319
TS14x14x 5/8	0.60	0.032	0.076	0.141	0.319
TS16x12x 5/8	0.60	0.032	0.076	0.141	0.319
TS20x8x 5/8	0.60	0.032	0.076	0.141	0.319
TS18x12x 5/8	0.60	0.032	0.076	0.141	0.319
TS16x16x 5/8	0.61	0.031	0.075	0.140	0.319
TS20x12x 5/8	0.61	0.031	0.075	0.140	0.319
TS18x16x 5/8	0.61	0.031	0.075	0.140	0.319
TS18x18x 5/8	0.61	0.031	0.075	0.140	0.319
TS20x16x 5/8	0.61	0.031	0.075	0.140	0.319
TS20x18x 5/8	0.61	0.031	0.075	0.140	0.319
TS20x20x 5/8	0.61	0.031	0.075	0.140	0.319
TS12x5x 3/4	0.70	0.029	0.068	0.129	0.319
TS16x16x 1	0.95	0.026	0.058	0.112	0.319
TS16x16x 1.5	1.38	0.023	0.050	0.099	0.319

CARBOLINE CO — TYPE THERMO-SORB, THERMO-SORB VOC. Investigated for Interior Conditioned Space and Interior General Purpose.

4. **Carbon Fiber Mesh** — (Optional, Not Shown) For three hour rating. Nom. 3/16 in. by 3/16 in. 3.50 oz/sq yd carbon fiber mesh to cover the entire surface. The depth at which the reinforcing mesh is placed shall be approximately 0.120 inches from the steel substrate.

5. **Top Coat** — (Not Shown) - No topcoat required for Interior Conditioned Space. Finishing topcoat for Interior General Purpose, Types Carboguard 893 SG or Santile 655 applied at 0.006 in. dry film thickness or Carbocrylic 3350 or Carbocoat 30R applied at 0.003 in. dry film thickness.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2013-12-11

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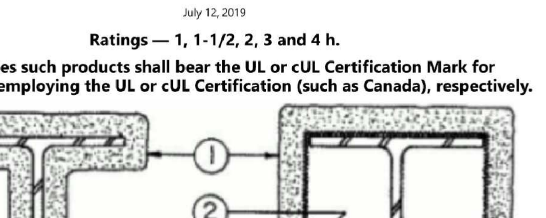
Design No. X854

July 12, 2019

Ratings — 1, 1-1/2, 2, 3 and 4 h.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Spray-Applied Fire Resistive Materials*** — Applied by mixing with water and spraying in more than one coat to the thicknesses shown below, to steel surfaces which are clean and free of dirt, loose scale, and oil. Min avg and min ind density of 15/14 pcf respectively. Min avg and min ind density of 22/19 pcf respectively for Types Z-106, Z-106/G, Z-106/HY. Min avg and min ind density of 40/36 pcf respectively for Types Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of 50/45 pcf respectively for Types Z-156, Z-156T and Z-156PC. For method of density determination, see Design Information Section, Sprayed Material.
The thickness of Spray-Applied Fire Resistive Materials to be applied to all surfaces of the column (Item 1) required for rating periods of 1 h, 1-1/2 h, 2 h, 3 h, 4 h may be determined by the equation:

$$h = \frac{R}{1.05\,(W/D) + 0.61}$$

Where:

h = Spray-Applied Fire Resistive Materials thickness in the range 0.25-3.875 in.

R = Fire resistance rating in hours (1 - 4 h)

D = Heated perimeter of steel column in inches

W = Weight of steel column in lbs per foot

W/D = 0.338 to 6.76

As an alternate to the equation, the minimum thickness of Spray-Applied Fire Resistive Materials required for various fire resistance ratings of contour sprayed or boxed columns may be determined from the table below:

TABLE 1

		Min Thk (In.)				
Col Size	W/D	1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
W4x13	0.556	11/16	1-3/16	1-5/8	2-1/2	3-3/8
W5x16	0.55	11/16	1-3/16	1-5/8	2-1/2	3-3/8
W5x19	0.644	5/8	1-1/8	1-7/16	2-5/16	3-1/8
W6x9	0.338	15/16	1-1/2	2	2-1/2	3-13/16
W6x12	0.448	13/16	1-3/8	1-13/16	2-1/2	3-3/4
W6x15	0.431	13/16	1-3/8	1-13/16	2-1/2	3-13/16
W6x16	0.584	11/16	1-3/16	1-9/16	2-7/16	3-5/16
W6x20	0.563	11/16	1-3/16	1-9/16	2-1/2	3-3/8
W6x25	0.696	5/8	1-1/16	1-3/8	2	2-11/16
W8x13	0.421	13/16	1-3/8	1-7/8	2-1/2	3-13/16
W8x15	0.481	3/4	1-5/16	1-3/4	2-1/2	3-5/8
W8x18	0.499	3/4	1-1/4	1-11/16	2-1/2	3-1/2
W8x21	0.577	11/16	1-3/16	1-9/16	2-1/2	3-5/16
W8x24	0.591	11/16	1-1/8	1-9/16	2-7/16	3-5/16
W8x28	0.688	5/8	1-1/16	1-3/8	2	2-11/16
W8x31	0.665	5/8	1-1/16	1-7/16	2-5/16	3-1/16
W8x35	0.749	9/16	1	1-5/16	2	2-11/16
W8x40	0.849	9/16	3/4	1-1/8	1-11/16	2-1/2
W8x48	1	1/2	3/4	1	1-11/16	2-5/16
W8x58	1.2	7/16	3/4	13/16	1-3/8	1-15/16
W8x67	1.37	3/8	5/8	3/4	1-1/4	1-11/16
W10x12	0.347	7/8	1-1/2	2	2-1/2	3-13/16
W10x15	0.429	13/16	1-3/8	1-7/8	2-1/2	3-13/16
W10x17	0.482	3/4	1-5/16	1-3/4	2-1/2	3-5/8
W10x19	0.538	3/4	1-1/4	1-5/8	2-1/2	3 7/16
W10x22	0.523	3/4	1-1/4	1-11/16	2-1/2	3-1/2
W10x26	0.612	11/16	1-1/8	1-1/2	2-3/8	3-1/4
W10x30	0.699	5/8	1-1/16	1-3/8	2	2-11/16
W10x33	0.661	5/8	1-1/16	1-7/16	2-5/16	3-1/8
W10x39	0.78	9/16	1	1-1/4	2	2-11/16
W10x45	0.888	1/2	3/4	1-1/8	1-11/16	2-1/2
W10x49	0.84	9/16	3/4	1-1/8	1-11/16	2-1/2
W10x54	0.922	1/2	3/4	1-1/16	1-11/16	2-1/2
W10x60	1.01	1/2	3/4	1	1-5/8	2-5/16
W10x68	1.15	7/16	3/4	7/8	1-7/16	2
W10x77	1.28	7/16	11/16	3/4	1-5/16	1-13/16
W10x88	1.45	3/8	5/8	11/16	1-3/16	1-5/8
W10x100	1.64	3/8	9/16	11/16	1-1/8	1-1/2
W10x112	1.81	5/16	1/2	11/16	1-1/8	1-1/2
W12x14	0.363	7/8	1-1/2	2	2-1/2	3-13/16
W12x16	0.41	13/16	1-7/16	1-7/8	2-1/2	3-13/16
W12x19	0.485	3/4	1-5/16	1-3/4	2-1/2	3-5/8
W12x22	0.56	11/16	1-3/16	1-5/8	2-1/2	3-3/8
W12x26	0.531	3/4	1-1/4	1-5/8	2-1/2	3 7/16
W12x30	0.607	11/16	1-1/8	1-1/2	2-7/16	3-1/4
W12x35	0.703	5/8	1-1/16	1-3/8	2	2-11/16
W12x40	0.734	5/8	1	1-5/16	2	2-11/16
W12x45	0.829	9/16	15/16	1-3/16	1-15/16	2-11/16
W12x50	0.909	1/2	3/4	1-1/16	1-11/16	2-1/2
W12x53	0.855	9/16	3/4	1-1/8	1-11/16	2-1/2
W12x58	0.925	1/2	3/4	1-1/16	1-11/16	2-7/16
W12x65	0.925	1/2	3/4	1-1/16	1-11/16	2-7/16
W12x72	1.02	1/2	3/4	15/16	1-5/8	2-1/4
W12x79	1.11	7/16	3/4	7/8	1-1/2	2-1/8
W12x87	1.22	7/16	11/16	13/16	1-3/8	1-15/16
W12x96	1.34	3/8	11/16	3/4	1-1/4	1-3/4
W12x106	1.47	3/8	5/8	11/16	1-3/16	1-5/8
W12x120	1.65	5/16	9/16	11/16	1-1/8	1-1/2
W12x136	1.86	5/16	1/2	11/16	1-1/8	1-1/2
W12x152	2.04	5/16	1/2	11/16	1-1/16	1-7/16
W12x170	2.26	1/4	7/16	5/8	15/16	1-5/16
W12x190	2.5	1/4	5/16	9/16	7/8	1-3/16
W12x210	2.73	1/4	5/16	1/2	13/16	1-1/8
W12x230	2.96	1/4	5/16	1/2	3/4	1-1/16
W12x252	3.2	1/4	5/16	7/16	3/4	1
W12x279	3.5	1/4	5/16	7/16	11/16	7/8
W12x305	3.76	1/4	5/16	3/8	5/8	7/8
W12x336	4.06	1/4	1/4	3/8	9/16	13/16
W14x22	0.476	3/4	1-5/16	1-3/4	2-1/2	3-5/8
W14x26	0.559	11/16	1-3/16	1-5/8	2-1/2	3-3/8
W14x30	0.562	11/16	1-3/16	1-9/16	2-1/2	3-3/8
W14x34	0.633	5/8	1-1/8	1-7/16	2-3/8	3 3/16
W14x38	0.706	5/8	1-1/16	1-3/8	2	2-11/16
W14x43	0.752	9/16	1	1-5/16	2	2-11/16
W14x48	0.835	9/16	15/16	1-3/16	1-15/16	2-11/16
W14x53	0.915	1/2	3/4	1-1/16	1-11/16	2-1/2
W14x61	0.928	1/2	3/4	1-1/16	1-11/16	2-7/16
W14x68	1.04	1/2	3/4	15/16	1-5/8	2-1/4
W14x74	1.12	7/16	3/4	7/8	1-1/2	2-1/16
W14x82	1.23	7/16	11/16	13/16	1-3/8	1-7/8
W14x90	1.08	7/16	3/4	7/8	1-9/16	2-1/8
W14x99	1.18	7/16	3/4	13/16	1-7/16	2
W14x109	1.29	7/16	11/16	3/4	1-5/16	1-13/16
W14x120	1.42	3/8	5/8	3/4	1-3/16	1-11/16
W14x132	1.56	3/8	9/16	11/16	1-1/8	1-9/16
W14x145	1.64	3/8	9/16	11/16	1-1/8	1-1/2
W14x159	1.78	5/16	9/16	11/16	1-1/8	1-1/2
W14x176	1.96	5/16	1/2	11/16	1-1/16	1-1/2
W14x193	2.14	5/16	7/16	5/8	1	1-3/8
W14x211	2.32	1/4	7/16	5/8	15/16	1-5/16
W14x233	2.55	1/4	5/16	9/16	7/8	1-3/16
W14x257	2.78	1/4	5/16	1/2	13/16	1-1/8
W14x283	3.03	1/4	5/16	1/2	3/4	1
W14x311	3.3	1/4	5/16	7/16	11/16	15/16
W14x342	3.58	1/4	5/16	7/16	5/8	7/8
W14x370	3.84	1/4	5/16	3/8	5/8	13/16
W14x398	4.09	1/4	1/4	3/8	9/16	13/16
W14x426	4.32	1/4	1/4	3/8	9/16	3/4
W14x455	4.59	1/4	1/4	5/16	1/2	11/16
W14x500	4.95	1/4	1/4	5/16	1/2	11/16
W14x550	5.34	1/4	1/4	5/16	7/16	5/8
W14x605	5.82	1/4	1/4	1/4	7/16	9/16
W14x665	6.21	1/4	1/4	1/4	3/8	9/16
W14x730	6.76	1/4	1/4	1/4	3/8	1/2
W16x26	0.499	3/4	1-1/4	1-11/16	2-1/2	3-1/2
W16x31	0.592	11/16	1-1/8	1-9/16	2-7/16	3-1/4
W16x36	0.617	11/16	1-1/8	1-1/2	2-3/8	3 3/16
W16x40	0.686	5/8	1-1/16	1-3/8	2-1/4	3-1/16
W16x45	0.767	9/16	1	1-1/4	2	2-11/16
W16x50	0.846	9/16	3/4	1-1/8	1-11/16	2-1/2
W16x57	0.963	1/2	3/4	1	1-11/16	2-3/8
W16x67	0.936	1/2	3/4	1-1/16	1-11/16	2-7/16
W16x77	1.07	7/16	3/4	15/16	1-9/16	2-3/16
W16x89	1.22	7/16	11/16	13/16	1-3/8	1-15/16
W16x100	1.37	3/8	5/8	3/4	1-1/4	1-11/16
W18x35	0.602	11/16	1-1/8	1-1/2	2-7/16	3-1/4
W18x40	0.688	5/8	1-1/16	1-3/8	2	2-11/16
W18x46	0.786	9/16	15/16	1-1/4	2	2-11/16
W18x50	0.778	9/16	1	1-1/4	2	2-11/16
W18x55	0.85	9/16	3/4	1-1/8	1-11/16	2-1/2
W18x60	0.923	1/2	3/4	1-1/16	1-11/16	2-7/16
W18x65	0.997	1/2	3/4	1	1-11/16	2-5/16
W18x71	1.08	7/16	3/4	7/8	1-9/16	2-1/8
W18x76	0.971	1/2	3/4	1	1-11/16	2-3/8
W18x86	1.09	7/16	3/4	7/8	1-9/16	2-1/8
W18x97	1.22	7/16	11/16	13/16	1-3/8	1-15/16
W18x106	1.33	3/8	11/16	3/4	1-1/4	1-3/4
W18x119	1.48	3/8	5/8	11/16	1-3/16	1-5/8
W21x44	0.672	5/8	1-1/16	1-3/8	2-1/4	3-1/16
W21x50	0.754	9/16	1	1-1/4	2	2-11/16
W21x57	0.857	9/16	3/4	1-1/8	1-11/16	2-1/2
W21x62	0.846	9/16	3/4	1-1/8	1-11/16	2-1/2
W21x68	0.926	1/2	3/4	1-1/16	1-11/16	2-7/16
W21x73	0.989	1/2	3/4	1	1-11/16	2-5/16
W21x83	1.12	7/16	3/4	7/8	1-1/2	2-1/16
W21x93	1.24	7/16	11/16	13/16	1-3/8	1-7/8
W21x101	1.13	7/16	3/4	7/8	1-1/2	2-1/16
W21x111	1.24	7/16	11/16	13/16	1-3/8	1-7/8
W21x122	1.35	3/8	11/16	3/4	1-1/4	1-3/4
W21x132	1.45	3/8	5/8	11/16	1-3/16	1-5/8
W21x147	1.61	3/8	9/16	11/16	1-1/8	1-1/2
W24x55	0.749	9/16	1	1-5/16	2	2-11/16
W24x62	0.844	9/16	3/4	1-1/8	1-11/16	2-1/2
W24x68	0.837	9/16	15/16	1-3/16	1-15/16	2-11/16
W24x76	0.933	1/2	3/4	1-1/16	1-11/16	2-7/16
W24x84	1.02	1/2	3/4	15/16	1-5/8	2-1/4
W24x94	1.14	7/16	3/4	7/8	1-1/2	2-1/16
W24x104	1.07	7/16	3/4	15/16	1-9/16	2-3/16
W24x117	1.2	7/16	3/4	13/16	1-3/8	1-15/16
W24x131	1.33	3/8	11/16	3/4	1-1/4	1-3/4
W24x146	1.48	3/8	5/8	11/16	1-3/16	1-5/8
W24x162	1.63	3/8	9/16	11/16	1-1/8	1-1/2
W27x84	0.921	1/2	3/4	1-1/16	1-11/16	2-1/2
W27x94	1.03	1/2	3/4	15/16	1-5/8	2-1/4
W27x102	1.11	7/16	3/4	7/8	1-1/2	2-1/8
W27x114	1.23	7/16	11/16	13/16	1-3/8	1-7/8
W27x146	1.35	3/8	11/16	3/4	1-1/4	1-3/4
W27x161	1.48	3/8	5/8	11/16	1-3/16	1-5/8
W27x178	1.63	3/8	9/16	11/16	1-1/8	1-1/2
W30x99	1	1/2	3/4	1	1-11/16	2-5/16
W30x108	1.09	7/16	3/4	7/8	1-9/16	2-1/8
W30x116	1.16	7/16	3/4	13/16	1-7/16	2
W30x124	1.24	7/16	11/16	13/16	1-3/8	1-7/8
W30x132	1.32	3/8	11/16	3/4	1-1/4	1-3/4
W30x173	1.47	3/8	5/8	11/16	1-3/16	1-5/8
W30x191	1.62	3/8	9/16	11/16	1-1/8	1-1/2
W30x211	1.76	5/16	9/16	11/16	1-1/8	1-1/2
W33x118	1.08	7/16	3/4	7/8	1-9/16	2-1/8
W33x130	1.18	7/16	3/4	13/16	1-7/16	2
W33x141	1.28	7/16	11/16	3/4	1-5/16	1-13/16
W33x152	1.37	3/8	5/8	3/4	1-1/4	1-11/16
W33x201	1.58	3/8	9/16	11/16	1-1/8	1-1/2
W33x221	1.73	5/16	9/16	11/16	1-1/8	1-1/2
W33x241	1.87	5/16	1/2	11/16	1-1/8	1-1/2
W36x135	1.15	7/16	3/4	7/8	1-7/16	2
W36x150	1.27	7/16	11/16	3/4	1-5/16	1-7/8
W36x160	1.35	3/8	11/16	3/4	1-1/4	1-3/4
W36x170	1.43	3/8	5/8	3/4	1-3/16	1-5/8
W36x182	1.52	3/8	5/8	11/16	1-1/8	1-9/16
W36x194	1.62	3/8	9/16	11/16	1-1/8	1-1/2
W36x210	1.74	5/16	9/16	11/16	1-1/8	1-1/2
W36x230	1.69	5/16	9/16	11/16	1-1/8	1-1/2
W36x245	1.79	5/16	9/16	11/16	1-1/8	1-1/2
W36x260	1.9	5/16	1/2	11/16	1-1/8	1-1/2
W36x280	2.03	5/16	1/2	11/16	1-1/16	1-7/16
W36x300	2.17	1/4	7/16	5/8	1	1-3/8

The thicknesses contained in the table below are applicable when the Spray-Applied Fire Resistive Materials applied to columns' flange tips are reduced to one-half that shown in the table below:

TABLE 2

Member		Half Flange Tip Thickness				
Min Col Size	W/D	1 hr	1.5 hr	2 hr	3 hr	4 hr
W4x13	0.556	7/8	1 5/16	1-11/16	2 9/16	3 3/8
W5x16	0.550	7/8	1 5/16	1-11/16	2 9/16	3 3/8
W5x19	0.644	13/16	1 3/16	1 9/16	2 3/8	3 1/8
W6x9	0.338	1-1/8	1 5/8	2 1/16	3 1/8	4 3/16
W6x12	0.448	15/16	1 7/16	1 7/8	2 13/16	3-13/16
W6x15	0.431	1	1 7/16	1-15/16	2 7/8	3-14/16
W6x16	0.584	7/8	1 1/4	1-11/16	2 1/2	3 5/16
W6x20	0.563	7/8	1 1/4	1-11/16	2 1/2	3 3/8
W6x25	0.696	3/4	1 1/8	1 1/2	2 1/4	2 15/16
W8x13	0.421	1	1 7/16	1-15/16	2 7/8	3-14/16
W8x15	0.481	15/16	1 3/8	1-13/16	2 3/4	3 11/16
W8x18	0.499	15/16	1 3/8	1-13/16	2-11/16	3 9/16
W8x21	0.577	7/8	1 1/4	1-11/16	2 1/2	3 5/16
W8x24	0.591	7/8	1 1/4	1-11/16	2 1/2	3 5/16
W8x28	0.688	13/16	1 3/16	1 1/2	2 1/4	2 15/16
W8x31	0.665	13/16	1 3/16	1 9/16	2 5/16	3 1/16
W8x35	0.749	3/4	1 1/8	1 7/16	2 3/16	2 7/8
W8x40	0.849	11/16	1	1 3/8	2	2-11/16
W8x48	1.000	5/8	15/16	1 1/4	1-13/16	2 7/16
W8x58	1.200	9/16	13/16	1 1/8	1 5/8	2 3/16
W8x67	1.370	1/2	3/4	1	1 1/2	2
W10x12	0.347	1-1/16	1 9/16	2 1/16	3 1/8	4 3/16
W10x15	0.429	1	1 7/16	1-15/16	2 7/8	3-14/16
W10x17	0.482	15/16	1 3/8	1-13/16	2 3/4	3 11/16
W10x19	0.538	7/8	1 5/16	1 3/4	2 9/16	3 7/16
W10x22	0.523	7/8	1 5/16	1 3/4	2 5/8	3 1/2
W10x26	0.612	13/16	1 1/4	1 5/8	2 7/16	3 1/4
W10x30	0.699	3/4	1 1/8	1 1/2	2 1/4	2 15/16
W10x33	0.661	13/16	1 3/16	1 9/16	2 5/16	3 1/8
W10x39	0.780	3/4	1 1/16	1 7/16	2 1/8	2 13/16
W10x45	0.888	11/16	1	1 5/16	2	2 5/8
W10x49	0.840	11/16	1 1/16	1 3/8	2 1/16	2-11/16
W10x54	0.922	11/16	1	1 5/16	1-15/16	2 9/16
W10x60	1.010	5/8	15/16	1 1/4	1-13/16	2 7/16
W10x68	1.150	9/16	7/8	1 1/8	1-11/16	2 1/4
W10x77	1.280	9/16	13/16	1 1/16	1 9/16	2 1/16
W10x88	1.450	1/2	3/4	1	1 7/16	1-15/16
W10x100	1.640	7/16	11/16	7/8	1 5/16	1 3/4
W10x112	1.810	7/16	5/8	13/16	1 1/4	1 5/8
W12x14	0.363	1-1/16	1 9/16	2 1/16	3 1/16	4 1/8
W12x16	0.410	1	1 1/2	1-15/16	2 15/16	3-15/16
W12x19	0.485	15/16	1 3/8	1-13/16	2-11/16	3 5/8
W12x22	0.560	7/8	1 5/16	1-11/16	2 9/16	3 3/8
W12x26	0.531	7/8	1 5/16	1 3/4	2 5/8	3 7/16
W12x30	0.607	13/16	1 1/4	1 5/8	2 7/16	3 1/4
W12x35	0.703	3/4	1 1/8	1 1/2	2 1/4	2 15/16
W12x40	0.734	3/4	1 1/8	1 1/2	2 3/16	2 15/16
W12x45	0.829	11/16	1 1/16	1 3/8	2 1/16	2 3/4
W12x50	0.909	11/16	1	1 5/16	1-15/16	2 9/16
W12x53	0.855	11/16	1	1 3/8	2	2-11/16
W12x58	0.925	11/16	1	1 5/16	1-15/16	2 9/16
W12x65	0.925	11/16	1	1 5/16	1-15/16	2 9/16
W12x72	1.020	5/8	15/16	1 1/4	1-13/16	2 7/16
W12x79	1.110	5/8	7/8	1 3/16	1 3/4	2 5/16
W12x87	1.220	9/16	13/16	1 1/16	1 5/8	2 1/8
W12x96	1.340	1/2	3/4	1	1 1/2	2
W12x106	1.470	1/2	3/4	15/16	1 7/16	1 7/8
W12x120	1.650	7/16	11/16	7/8	1 5/16	1 3/4
W12x136	1.860	7/16	5/8	13/16	1 3/16	1 9/16
W12x152	2.040	3/8	9/16	3/4	1 1/8	1 1/2
W12x170	2.260	3/8	9/16	11/16	1 1/16	1 3/8
W12x190	2.500	5/16	1/2	5/8	15/16	1 1/4
W12x210	2.730	5/16	7/16	5/8	7/8	1 3/16
W12x230	2.960	5/16	7/16	9/16	13/16	1 1/8
W12x252	3.200	5/16	7/16	9/16	13/16	1 1/16
W12x279	3.500	1/4	3/8	1/2	3/4	15/16
W12x305	3.760	1/4	3/8	1/2	11/16	15/16
W12x336	4.060	1/4	5/16	7/16	5/8	7/8
W14x22	0.476	15/16	1 3/8	1-13/16	2 3/4	3 11/16
W14x26	0.559	7/8	1 5/16	1-11/16	2 9/16	3 3/8
W14x30	0.562	7/8	1 1/4	1-11/16	2 1/2	3 3/8
W14x34	0.633	13/16	1 3/16	1 5/8	2 3/8	3 3/16
W14x38	0.706	3/4	1 1/8	1 1/2	2 1/4	2 15/16
W14x43	0.752	3/4	1 1/8	1 7/16	2 3/16	2 7/8
W14x48	0.835	11/16	1 1/16	1 3/8	2 1/16	2 3/4
W14x53	0.915	11/16	1	1 5/16	1-15/16	2 9/16
W14x61	0.928	11/16	1	1 5/16	1-15/16	2 9/16
W14x68	1.040	5/8	15/16	1 3/16	1-13/16	2 3/8
W14x74	1.120	9/16	7/8	1 1/8	1-11/16	2 1/4
W14x82	1.230	9/16	13/16	1 1/16	1 5/8	2 1/8
W14x90	1.080	5/8	7/8	1 3/16	1 3/4	2 5/16
W14x99	1.180	9/16	13/16	1 1/8	1 5/8	2 3/16
W14x109	1.290	9/16	13/16	1 1/16	1 9/16	2 1/16
W14x120	1.420	1/2	3/4	1	1 7/16	1-15/16
W14x132	1.560	1/2	11/16	15/16	1 3/8	1-13/16
W14x145	1.640	7/16	11/16	7/8	1 5/16	1 3/4
W14x159	1.780	7/16	5/8	13/16	1 1/4	1 5/8
W14x176	1.960	3/8	9/16	3/4	1 1/8	1 1/2
W14x193	2.140	3/8	9/16	3/4	1 1/16	1 7/16
W14x211	2.320	3/8	1/2	11/16	1	1 3/8
W14x233	2.550	5/16	1/2	5/8	15/16	1 1/4
W14x257	2.780	5/16	7/16	5/8	7/8	1 3/16
W14x283	3.030	5/16	7/16	9/16	13/16	1 1/16
W14x311	3.300	1/4	3/8	1/2	3/4	1
W14x342	3.580	1/4	3/8	1/2	11/16	15/16
W14x370	3.840	1/4	3/8	7/16	11/16	7/8
W14x398	4.090	1/4	5/16	7/16	5/8	7/8
W14x426	4.320	1/4	5/16	7/16	5/8	13/16
W14x455	4.590	1/4	5/16	3/8	9/16	3/4
W14x500	4.950	1/4	5/16	3/8	9/16	3/4
W14x550	5.340	1/4	1/4	3/8	1/2	11/16
W14x605	5.820	1/4	1/4	5/16	1/2	5/8
W14x665	6.210	1/4	1/4	5/16	7/16	9/16
W14x730	6.760	1/4	1/4	5/16	7/16	9/16
W16x26	0.499	15/16	1 3/8	1-13/16	2-11/16	3 9/16
W16x31	0.592	13/16	1 1/4	1 5/8	2 7/16	3 1/4
W16x36	0.617	13/16	1 1/4	1 5/8	2 7/16	3 3/16
W16x40	0.686	13/16	1 3/16	1 9/16	2 5/16	3 1/16
W16x45	0.767	3/4	1 1/16	1 7/16	2 1/8	2 7/8
W16x50	0.846	11/16	1 1/16	1 3/8	2 1/16	2-11/16
W16x57	0.963	5/8	15/16	1 1/4	1 7/8	2 1/2
W16x67	0.936	11/16	1	1 5/16	1-15/16	2 9/16
W16x77	1.070	5/8	7/8	1 3/16	1 3/4	2 5/16
W16x89	1.220	9/16	13/16	1 1/16	1 5/8	2 1/8
W16x100	1.370	1/2	3/4	1	1 1/2	2
W18x35	0.602	13/16	1 1/4	1 5/8	2 7/16	3 1/4
W18x40	0.688	13/16	1 3/16	1 1/2	2 1/4	2 15/16
W18x46	0.786	3/4	1 1/16	1 7/16	2 1/8	2 13/16
W18x50	0.778	3/4	1 1/16	1 7/16	2 1/8	2 13/16
W18x55	0.850	11/16	1	1 3/8	2	2-11/16
W18x60	0.923	11/16	1	1 5/16	1-15/16	2 9/16
W18x65	0.997	5/8	15/16	1 1/4	1-13/16	2 7/16
W18x71	1.080	5/8	7/8	1 3/16	1 3/4	2 5/16
W18x76	0.971	5/8	15/16	1 1/4	1 7/8	2 1/2
W18x86	1.090	5/8	7/8	1 3/16	1 3/4	2 5/16
W18x97	1.220	9/16	13/16	1 1/16	1 5/8	2 1/8
W18x106	1.330	1/2	3/4	1	1 1/2	2
W18x119	1.480	1/2	3/4	15/16	1 7/16	1 7/8
W21x44	0.672	13/16	1 3/16	1 9/16	2 5/16	3 1/16
W21x50	0.754	3/4	1 1/8	1 7/16	2 3/16	2 7/8
W21x57	0.857	11/16	1	1 3/8	2	2-11/16
W21x62	0.846	11/16	1 1/16	1 3/8	2 1/16	2-11/16
W21x68	0.926	11/16	1	1 5/16	1-15/16	2 9/16
W21x73	0.989	5/8	15/16	1 1/4	1 7/8	2 7/16
W21x83	1.120	9/16	7/8	1 1/8	1-11/16	2 1/4
W21x93	1.240	9/16	13/16	1 1/16	1 5/8	2 1/8
W21x101	1.130	9/16	7/8	1 1/8	1-11/16	2 1/4
W21x111	1.240	9/16	13/16	1 1/16	1 5/8	2 1/8
W21x122	1.350	1/2	3/4	1	1 1/2	2
W21x132	1.450	1/2	3/4	1	1 7/16	1-15/16
W21x147	1.610	7/16	11/16	7/8	1 5/16	1 3/4
W24x55	0.749	3/4	1 1/8	1 7/16	2 3/16	2 7/8
W24x62	0.844	11/16	1 1/16	1 3/8	2 1/16	2-11/16
W24x68	0.837	11/16	1 1/16	1 3/8	2 1/16	2-11/16
W24x76	0.933	11/16	1	1 5/16	1-15/16	2 9/16
W24x84	1.020	5/8	15/16	1 1/4	1-13/16	2 7/16
W24x94	1.140	9/16	7/8	1 1/8	1-11/16	2 1/4
W24x104	1.070	5/8	7/8	1 3/16	1 3/4	2 5/16
W24x117	1.200	9/16	13/16	1 1/8	1 5/8	2 3/16
W24x131	1.330	1/2	3/4	1	1 1/2	2
W24x146	1.480	1/2	3/4	15/16	1 7/16	1 7/8
W24x162	1.630	7/16	11/16	7/8	1 5/16	1 3/4
W27x84	0.921	11/16	1	1 5/16	1-15/16	2 9/16
W27x94	1.030	5/8	15/16	1 3/16	1-13/16	2 3/8
W27x102	1.110	5/8	7/8	1 3/16	1 3/4	2 5/16
W27x114	1.230	9/16	13/16	1 1/16	1 5/8	2 1/8
W27x146	1.350	1/2	3/4	1	1 1/2	2
W27x161	1.480	1/2	3/4	15/16	1 7/16	1 7/8
W27x178	1.630	7/16	11/16	7/8	1 5/16	1 3/4
W30x99	1.000	5/8	15/16	1 1/4	1-13/16	2 7/16
W30x108	1.090	5/8	7/8	1 3/16	1 3/4	2 5/16
W30x116	1.160	9/16	7/8	1 1/8	1-11/16	2 1/4
W30x124	1.240	9/16	13/16	1 1/16	1 5/8	2 1/8
W30x132	1.320	9/16	13/16	1 1/16	1 9/16	2 1/16
W30x173	1.470	1/2	3/4	15/16	1 7/16	1 7/8
W30x191	1.620	7/16	11/16	7/8	1 5/16	1 3/4
W30x211	1.760	7/16	5/8	7/8	1 1/4	1-11/16
W33x118	1.080	5/8	7/8	1 3/16	1 3/4	2 5/16
W33x130	1.180	9/16	13/16	1 1/8	1 5/8	2 3/16
W33x141	1.280	9/16	13/16	1 1/16	1 9/16	2 1/16
W33x152	1.370	1/2	3/4	1	1 1/2	2
W33x201	1.580	1/2	11/16	15/16	1 3/8	1-13/16
W33x221	1.730	7/16	5/8	7/8	1 1/4	1-11/16
W33x241	1.870	7/16	5/8	13/16	1 3/16	1 9/16
W36x135	1.150	9/16	7/8	1 1/8	1-11/16	2 1/4
W36x150	1.270	9/16	13/16	1 1/16	1 9/16	2 1/16
W36x160	1.350	1/2	3/4	1	1 1/2	2
W36x170	1.430	1/2	3/4	1	1 7/16	1-15/16
W36x182	1.520	1/2	11/16	15/16	1 3/8	1 7/8
W36x194	1.620	7/16	11/16	7/8	1 5/16	1 3/4
W36x210	1.740	7/16	5/8	7/8	1 1/4	1-11/16
W36x230	1.690	7/16	11/16	7/8	1 5/16	1-11/16
W36x245	1.790	7/16	5/8	13/16	1 1/4	1 5/8
W36x260	1.900	7/16	5/8	13/16	1 3/16	1 9/16
W36x280	2.030	3/8	9/16	3/4	1 1/8	1 1/2
W36x300	2.170	3/8	9/16	3/4	1 1/16	1 7/16

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/HY, MK-6/HY Extended Set, MK-6/GF, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, Z-106, Z-106/G, Z-106/HY.

GCP KOREA INC — Types MK-6/HY, MK-6/HY Extended Set, MK-6/GF, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, Z-106, Z-106/G, Z-106/HY.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6/HY Extended Set, MK-6/GF, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, RG, Z-106, Z-106/G, Z-106/HY, MK-1000/HB, MK-1000/HB Extended Set, Z-146, Z-146PC, Z-146T, Z-156, Z-156T and Z-156PC (Types Z-146, Z-146PC, Z-146T, Z-156, Z-156PC, Z-156T also investigated for exterior use).

2. **Metal Lath** — (Required for box application - Optional for contour application) — 3.4 lb/sq yd galvanized or painted expanded steel lath. For box applications, lath shall be lapped 1 in. and tied together with No. 18 SWG galvanized steel; wire spaced vertically 6 in. O.C. For contour applications, lath is installed vertically with joints butted together and secured to the column with powder actuated fasteners located 18 inches on center at joints and as necessary to have the lath follow the column contour. As an alternate, either welded fixing or high temperature adhesive referenced "HTA Adhesive" (supplied by HTA Ltd), fixing of pins to steel column are permitted.

3. **Steel Column** — Wide flange steel columns (36 ksi yield), min/max sizes as specified above.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2019-07-12

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1 / A-007 **FIRE RATED ASSEMBLY- UL- BLANK 4**

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WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
WWW.LS3P.COM

SHEPLEY BULFINCH
99 CHAUNCY STREET FLOOR 4
BOSTON, MASSACHUSETTS 02111
TEL. 617.423.1700
WWW.SHEPLEYBULFINCH.COM

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Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS
A	2022.03.23	PKG. C CONSTRUCTION DOCS.
1	2022.04.08	ADDENDUM 1

SHEET NAME: UL ASSEMBLIES

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.04.08
ADDENDUM 1

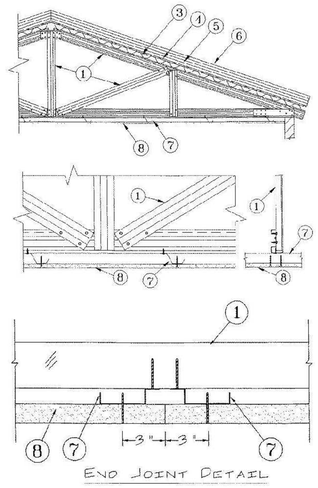
SHEET: A-007

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TIMES NEW ROMAN FULL SIZE

Design No. P521
October 09, 2017
Restrained Assembly Rating — 1, 1-1/2 and 2 Hr. (See Items 3A, 5, 5A, 5B, 5C, 5D, 8 and 8A)
Unrestrained Assembly Rating — 1, 1-1/2 and 2 Hr. (See Items 3A, 5, 5A, 5B 5C, 5D, 8 and 8A)
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively**



1. Structural Steel Members* — Pre-fabricated light gauge steel truss system consisting of cold-formed, galvanized steel chord and web sections. Trusses fabricated in various sizes, depths, and from various steel thickness. Trusses spaced a max of 48 in. OC.
AEGIS METAL FRAMING, DIV OF MITEK — Ultra-Span, Pre-fabricated Light Gauge Steel Truss System

2. Bridging — (Not Shown) — Location of lateral bracing for truss chord and web sections to be specified on truss engineering.

3. Steel Floor and Form Units — (Classified or Unclassified) — Corrugated or fluted steel form units, min 22 MSG painted or galv steel, welded or mechanically fastened max 12 in. OC to truss-top chords.

4. Cementitious Backer Units* — Nom 1/2 or 5/8 in. thick sheets. End-joists to occur over crests of steel roof deck with end-joints staggered in adjacent rows. Units loosely laid, adhered or mechanically attached to steel roof deck.
UNITED STATES GYPSUM CO — Type DCB.

4A. Gypsum Board — (Classified or Unclassified) — (Not Shown) — As an alternate to Item 4, Gypsum sheathing, min 1/2 in. thick, applied perpendicular to steel roof deck. End joints to occur over crests of steel roof deck. Sheathing loosely laid, adhered or mechanically attached to steel roof deck. See Gypsum Board (GKNX) category for names of Classified companies.

5. Roof Insulation — Foamed Plastic* — Any polyisocyanurate foamed plastic insulation boards bearing the UL Classification Marking. Min thickness is 1 in. for the 1 hr assembly ratings, 2 in. for the 1-1/2 hr assembly ratings and 4 in. for the 2 hr ratings, with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the end-joints staggered in adjacent rows. When applied in more than one layer, each layer of board to be offset in both directions from layer below in order to lap all joints. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing, and to steel roof deck (Item 3). See Foamed Plastic (CCVW) Category in the Fire Resistance Directory.

5A. Roof Insulation — Foamed Plastic* — (Not Shown) — As an alternate to Item 5 — For 1 and 1-1/2 hr ratings only — Any polystyrene foamed plastic insulation boards bearing the UL Classification Marking. Min thickness is 1 in. for the 1 hr assembly ratings, and 2 in. for the 1-1/2 hr assembly ratings, with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the end-joints staggered in adjacent rows. When applied in more than one layer, each layer or board to be offset in both directions from layer below in order to lap all joints. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing, and to steel roof deck (Item 3). See Foamed Plastic (BRYX) category in the Building Materials Directory or Foamed Plastic (CCVW) category in the Fire Resistance Directory.

5B. Roof Insulation — Mineral and Fiber Boards* — (Not Shown) — As an alternate to Item 5 — Mineral wool, glass fiber or perlite insulation boards, 24 by 48 in. min size, applied in one or more layers, Min thickness is 1 in. for the 1 hr assembly ratings, 2 in. for the 1-1/2 hr assembly rating and 4 in. for the 2 hr ratings, with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the end-joints staggered in adjacent rows. When applied in more than one layer, each layer of board to be offset in both directions from layer below in order to lap all joints. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing, and to steel roof deck (Item 3).
See Mineral and Fiber Boards (BQXR) Category in the Building Materials Directory or Mineral and Fiber Boards (CERZ) Category in the Fire Resistance Directory.

5C. Roof Insulation —Building Units* — (Not Shown) — As an alternate to Item 5—Any polyisocyanurate foamed plastic insulation faced on the top surface with oriented strand board or faced on the underside or both sides with wood fiber board, bearing the UL Classification Marking for Fire Resistance. No min thickness of the polyisocyanurate foamed plastic core required for the 1 hr assembly ratings, min 2 in. polyisocyanurate foamed plastic core for the 1-1/2 hr assembly ratings and min 4 in. polyisocyanurate foamed plastic core for the 2 hr rating with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the end-joints staggered in adjacent rows. When applied in more than one layer, each layer of board to be offset in both directions from layer below in order to lap all joints. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing and to steel roof deck (Item 3). See Building Units (BZXX) category in the Fire Resistance Directory.

5D. Roof Insulation — Foamed Plastic* — (Not Shown) — For use with Item 8A, Any polyisocyanurate foamed plastic insulation boards bearing the UL Classification Marking. Min thickness is 1 in. for the 1 hr. Assembly Ratings and 3 in. for the 1-1/2 hr and 2 hr. Assembly Ratings, with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4), with the end-joints staggered in adjacent rows. When applied in more than one layer, each layer of board to be offset from layer below in order to lap all joints. Boards loosely laid, adhered or mechanically fastened to cementitious backer units (Item 4). See Foamed Plastic (CCVW) Category in the Fire Resistance Directory.

6. Roof Covering* — Consisting of hot-mopped or cold-application materials compatible with insulation(s) described herin which provide Class A, B or C coverings. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).

6A. Roofing Membrane* — (Not Shown) — In lieu of Item 6, single-ply membrane that is either ballasted, adhered or mechanically attached to the insulation(s) described herin as permitted under the respective company's Classification. See Fire Resistance Directory-Roofing Membranes (CHCI) Category.

6B. Metal Roof Deck Panels* — In Lieu of or in addition to Items 6 and 6A, the roof covering may consist of mechanically fastened galv or painted steel roof deck panels. Panels may be installed above a steel purlin assembly per metal roof deck manufacturer's specifications. Steel purlin assembly to be installed transverse to steel roof trusses (Item 1). A line of sealant or tape may be used at panel side and end laps. See Metal Roof Deck Panels Category in the Roofing Materials and Systems Directory (TJPV) or Fire Resistance Directory (CETW) for names of manufacturers.

6C. Roof Covering* — In Lieu of Item 6 —Any UL Class A, B or C Prepared Roof Covering (TFWZ) acceptable for use over plywood sheathing or nonveneer APA Rated Series Sheathing. Sheathing mechanically fastened through roof insulation to top chord of steel trusses with fasteners spaced a max of 12 in. OC. As an alternate to the plywood sheathing or nonveneer APA Rated Series Sheathing, the Prepared Roof Covering (TFWZ) may be applied directly to the Building Units* (Item 5C) if the building units also carry the UL Classification Marking for Prepared Roofing Accessories (TGDY). Fasteners to be of sufficient length to penetrate top chord of truss by 3/8 in.

7. Resilient Channels — Resilient channels formed of 25 MSG galv steel, installed perpendicular to the trusses (Item 1) when steel trusses are spaced a max 24 in. OC., Resilient channels spaced a max of 16 in. OC. Channels oriented opposite at wallboard butt-joints. Channel spices overlapped 4 in. beneath steel trusses. Channels secured to each truss with Type S-12 by 1/2 in. long screws.

7A. Furring Channels — (Not Shown) — As an alternate to Item 7 — Hat chanels min 20 MSG galv steel, min 2-5/8 in. wide by min 7/8 in. deep, installed perpendicular to the trusses (Item 1) spaced a max of 16 in. OC. Two courses of channel positioned 6 in. OC at wallboard butt-joints (3 in. from each end of wallboard), Channel splices overlapped 6 in. beneath steel trusses. Channels secured to each truss with No. 18 SWG steel wire double strand saddle ties. Channels tied together with double strand of No.18 SWG steel wire at each end overlap.

7B. Resilient Channels — (Not Shown) — As an alternate to Items 7 and 7A, resilient channels, double legged formed of 25 MSG galv steel, 2-7/8 in. wide by 1/2 in. deep, perpendicular to steel trusses (Item 1) when steel trusses are spaced a max 24 in. OC, Resilient channels spaced a max of 16 in. OC. Two courses of resilient channel positioned 6 in. OC at wallboard butt-joints (3 in, from each end of wallboard). Channel splices overlapped 4 in. beneath steel trusses. Channels secured to each truss with Type S12 by 1/2 in. long screws or with No. 18 SWG galv steel wire double strand saddle ties. Channels tied together with double strand of No. 18 SWG galv steel wire at each end overlap.

8. Gypsum Board* — For all ratings except the 2 Hr Assembly Ratings — One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trusses. Attached to the resilient channels using 1 in. long Type S bugle-head screws spaced 12 in. OC along butted end-joints and 12 in. OC in the field, For the 2 Hr Ratings — Two layers of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trussses. Base layer attached as described above. Face layer attached to the resilient channels using 1-5/8 in. long Type S bugle-head screws spaced 12 in. OC along butted end-joints and 12 in. OC in the field. Screws staggered from base layer screws. Face layer side and end joints offset a minimum 16 in. from base layer side and end joints.
CGC INC — Types C, IP-X2, IPC-AR.
UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR.
USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR.

8A. Gypsum Board* — (Not Shown) — For use with Item 5D. For all ratings except the 2 Hr Assembly Ratings - One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trusses. Attached to the furring channels using 1 in. long Type S bugle-head screws spaced 8 in. OC along butted end-joints and in the field. For the 2 Hr Ratings — Two layers of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trusses, Base layer attached as described above. Face layer attached to the resilient channels using 1-5/8 in. long Type S bugle-head screws spaced 8 in. OC along butted end-joints and 8 in. OC in the field. Screws staggered from base layer screws. Face layer side and end joints offset a min 8 in. from base layer side and end joints.
UNITED STATES GYPSUM CO — Type ULIX

9. Finishing System — (Not Shown) — Vinyl, dry of premixed joint compound, applied in two coats to joints and screw heads, paper tape, 2 in. wide, embedded in first layer of compound over all joints.
Alternate Ceiling Membrane — (Not shown).

10. Steel Framing Members —
a. Main runners — Installed perpendicular to Structural Steel Members — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft OC. Main runners hung a min of 2 in. from bottom chord of Structural Steel Members with 12 SWG galv steel wire. Wires located a max of 48 in, OC.
b. Cross tees or channels — Nom 4 ft long, 15/16 in. or 1-1/2 in. wide face or cross channels, nom 4 ft long, 1-1/2 in. wide face, installed perpendicular to the main runners, spaced 16 in. OC, Additional cross tees or channels used at 8 in. from each side of butted wallboard end joints, The cross tees or channels may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation,
c. Wall angles or channels — Used to support steel framing member ends and for screw-attachment of the gypsum wallboard — Min 0.016 in. thick painted or galvanized steel angle with 1 in. legs or min. 0.016 in.thick painted or galvanized steel channel with a 1 by 1-1/2 by 1 in. profile, attached to walls at perimeter of ceiling with fasteners 16 in. OC.
CGC INC — Type DGL or RX.
USG INTERIORS LLC — Type DGL or RX.

10A. Alternate Steel Framing Members* — (Not Shown) — As an alternate to Item 10 — For the 1 and 1-1/2 hr ratings only. Main runners nom 12 ft long, spaced 72 in. OC. Main runners hung a min of 2 in. from bottom chord of Structural Steel Members with 12 SWG galv steel wire. Wires located a max of 48 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
USG INTERIORS LLC — Type DGL or RX

11. Gypsum Board* — For use with Steel Framing Members (Item 10) — For the 1 and 1-1/2 hr ratings — One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to the main runners. Wallboard fastened to each cross tee or channel with five wallboard screws, with one screw located at the midspan of the cross tee or channel, one screw located 12 in. from and on each side of the cross tee or channel mid span and one screw located 1-1/2 in. from each wallboard side joint. Except at wallboard end joints, wallboard screws shall be located on alternating sides of cross tee flange. At wallboard end joints, wallboard screws shall be located 1/2 in. from the joint. Wallboard fastened to main runners with wallboard screws 1/2 in. from side joints, midway between intersections with cross tees or channels (16 in. OC). End joints of adjacent wallboard sheets shall be staggered not less than 32 in. Wallboard sheets screw attached to leg of wall angle with wallboard screws spaced 12 in. OC. Joints treated as described in Item 8, For the 2 hr rating — Two layers of nominal 5/8 in. thick by 48 in. wide boards. Inner layer installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Inner layer fastened to cross tees with 1-1/4 in. long Type S bugle-head steel screws spaced 8 in. OC along buted end joints and 12 in. OC in the field of the board. End joints of adjacent wallboard sheets shall be staggered not less than 4 ft OC. Outer layer attached to the cross tees through inner layer using 1-7/8 in. long Type S bugle-head steel screws spaced 8 in. OC at butted end joints and 12 in. OC in the field. Butted end joints to be centered along cross tees and be offset a min of 32 in. from end joints of inner layer. Rows of screws on both sides of butted end joints of each layer shall be located 3/8 to 1/2 in. from end joints. Butted side joints of outler layer to be offset a min of 18 in. from butted side joints of inner layer. Joints treated as described in Item 8.
CGC INC — Type C or IP-X2
UNITED STATES GYPSUM CO — Type C or IP-X2
USG BORAL DRYWALL SFZ LLC — Type C
USG MEXICO S A DE C V — Type C or IP-X2

11A. Gypsum Board* — For use with Steel Framing Members (Item 10A) — For the 1 and 1-1/2 hr ratings — One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension (side joints) perpendicular to the 6 ft long cross tees with the end joints staggered min 4 ft and centered between cross tees which are spaced 8 in. OC. Gypsum board side joints may occur beneath or between main runners. Prior to installation of the gypsum board sheets, backer strips consisting of nom 7-3/4 in. wide pieces of gypsum board are to be laid atop the cross tee flanges and centered over each butted end joint location. The backer strips are to be secured to the flanges of the cross tees at opposite corners of the backer strip with hold down clips to prevent the backer strips from being uplifted during screw-attachment of the gypsum board sheets. Gypsum board fastened to cross tees with 1 in. drywall screws spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board. The butted end joints are to be secured to the backer strip with No. 10 by 1-1/2 in. long Type G laminating screws located 1 in. from each side of the butted end joint and spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board.
CGC INC — Type C or IP-X2
UNITED STATES GYPSUM CO — Type C or IP-X2
USG BORAL DRYWALL SFZ LLC — Type C
USG MEXICO S A DE C V — Type C or IP-X2

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Design No. U497
October 13, 2020
Nonbearing Wall Rating — 2 Hr
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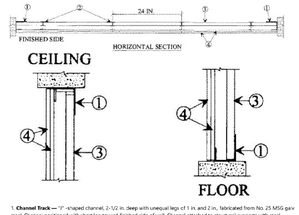

1. **Channel Track —** "I" -shaped channel, 2-1/2 in. deep with unequal legs of 1 in. and 2 in., fabricated from No. 25 MSG galv steel. Channel positioned with short leg toward finished side of wall. Channel attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC.

2. **Steel Studs —** "I" -shaped studs, min 2-1/2 in. deep by 1-1/2 in. wide, fabricated from min 25 MSG galv steel. Cut to lengths 1/2 in. less than floor to ceiling height and spaced 24 in. OC.

2A. **Steel Studs —** (Not Shown) — "C-H" -shaped studs, min 2-1/2 in. deep by 1-1/2 in. wide, fabricated from min 25 MSG galv steel. Cut to lengths 1/2 in. less than floor to ceiling height and spaced 24 in. OC.

2B. **Steel Studs —** (Not Shown) — "C-T" - shaped studs, min 2-1/2 in. deep by 1-1/2 in. wide, fabricated from min 25 MSG galv steel. Cut to lengths 1/2 in. less than floor to ceiling height and spaced 24 in. OC.

2C. **Furring Channels —** (Optional, not shown) - Resilient furring channels fabricated from min. 25 MSG corrosion protected steel, installed horizontally, and spaced vertically a max. 24 in. OC. Flange portion of channel attached to each intersecting stud on side of stud opposite the 1 in. liner panels with 1/2 in. long Type S or S-12 pan-head steel screws. When furring channels are used, wallboard to be installed vertically.

3. **Gypsum Board* —** 1 in. thick gypsum wallboard liner panels, supplied in nom 24 in. widths. Panels cut 1 in. less in length than floor to ceiling heights. Vertical edges inserted in "I" studs. Free edge of end panels attached to long leg of channel track with 1-5/16 in. long Type S self-drilling, self-tapping bugle head steel screws spaced 1 in. in from both edges.
NATIONAL GYPSUM CO — Types FSW, FSW-F, FSW-T, FSW-9

4. **Gypsum Board* —** 1/2 in. thick, 4 ft wide wallboard applied vertically in two ayers. Inner or base layer attached to studs with 1 in. long Type S self-drilling, self-tapping bugle head steel screws spaced 24 in. OC along the edges and in the field of the boards. Outer or face layer attached to studs and channel track with 1-1/8 in. long Type S self-drilling, self-tapping bugle head steel screws spaced 12 in. along the edges and in the field of the boards, staggered from screws in inner layer. When Furring Channels (Item 2C are used, inner or base layer attached to furring channels with 1 in. long Type S self-drilling, self-tapping bugle head steel screw. Outer or face layer attached to furring channels with 1-1/8 in. long Type S self-drilling, self-tapping bugle head steel screws spaced 12 in. OC and staggered 12 in. from base layer screws. Joints between inner and outer layers staggered. Outer layer joints covered with paper tape and joint compound. Exposed screw heads covered with joint compound.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C

CGC INC — Types C, IP-X2, IPC-AR

CERTAINTEED GYPSUM INC — Type USPC-CJA

GEORGIA -PACIFIC GYPSUM L L C — Types EAPC, TG-C

NATIONAL GYPSUM CO — Types eXP-C, FSK-C, FSW-G, FSW-C ,TGMR-C

PANEL REY S A — Type PPC

SAINT-GOBAIN GYPROC MIDDLE EAST FZE — Type Gyproc FireStop, Gyproc FireStop NR, Gyproc FireStop M/TECH, Gyproc FireStop ACTIVAir, Gyproc FireStop NR ACTIVAir, Gyproc FireStop M/TECH ACTIVAir

THAI GYPSUM PRODUCTS PCL — Type C

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR.

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR.

4A. **Gypsum Board* —** (As an alternate to Item 4) — 5/8 in. thick. Two layers installed as described in Item 4
CGC INC — Type SUX

NATIONAL GYPSUM CO — Types eXP-C, FSMR-C, FSK-C, FSK-G, FSL, FSW-C, 15W-G, FSW, FSW-3, FSW-5, FSW-6, and FSW-8

UNITED STATES GYPSUM CO — Type ULIX

4B. **Gypsum Board* —** (As an alternate to Items 4 and 4A) — Nominal 5/8 in. thick, 4 ft wide panels, two layers applied vertically only and secured as described in Item 4.
NATIONAL GYPSUM CO — SBW8

5. **Batts and Blankets* —** (Optional, not shown)-Mineral wool or glass fiber batts partially or completely filling stud cavity. Any mineral wool or glass fiber batts bearing the UL Classification Marking as to Fire Resistance. See **Batts and Blankets** (BZJZ) category for names of Classified companies.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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	2022.02.14	PACKAGE A BID DOCUMENTS
A	2022.03.23	PKG. C CONSTRUCTION DOCS.
1	2022.04.08	ADDENDUM 1

SHEET NAME: UL ASSEMBLIES

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.04.08
ADDENDUM 1

SHEET: A-008

PACKAGE A - BID DOCUMENTS

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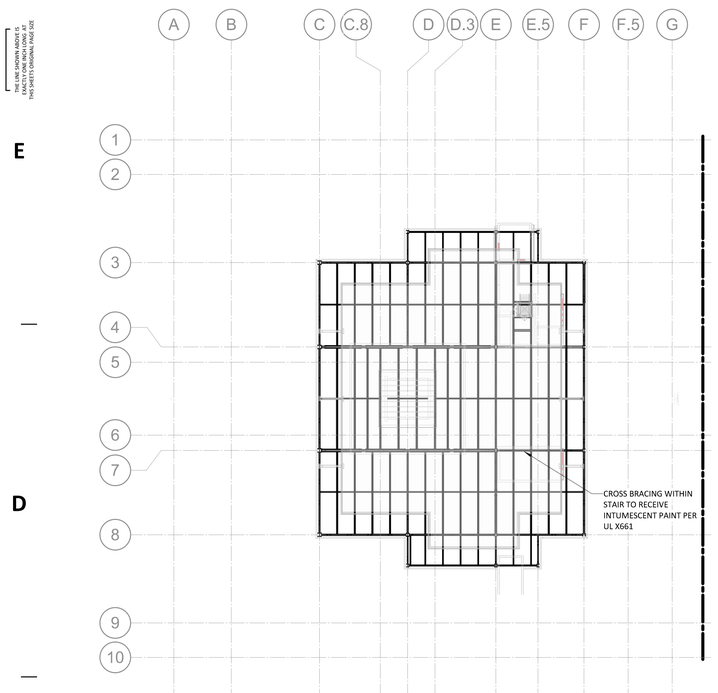
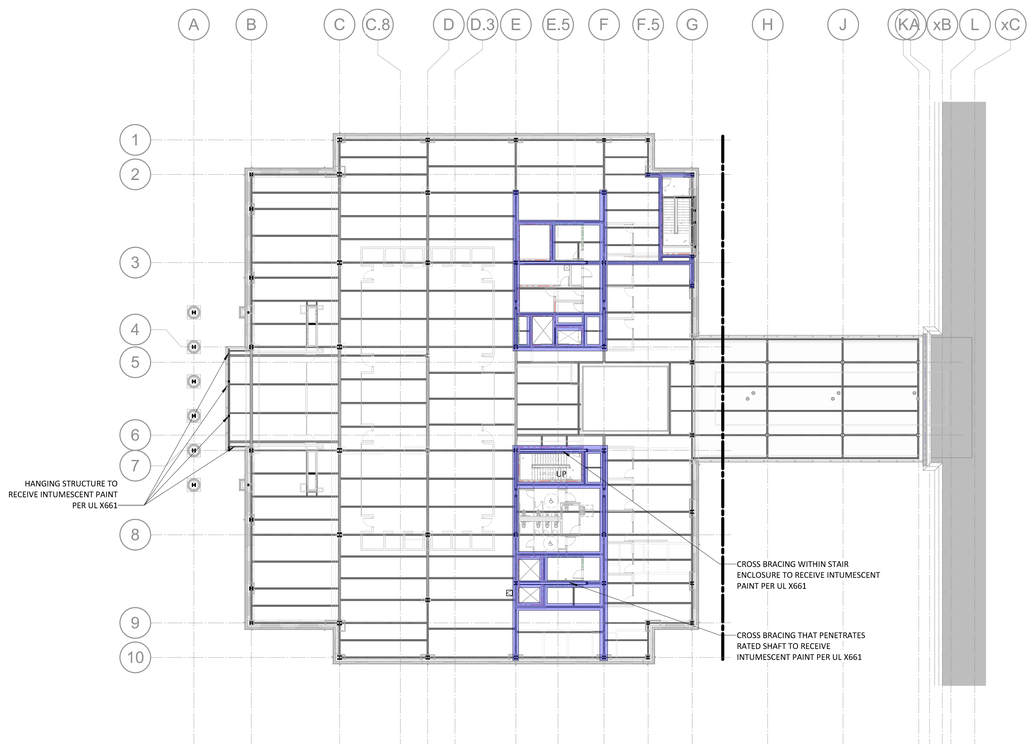
1
A-008
FIRE RATED ASSEMBLY- UL-DETAILS-2
12" = 1'-0"

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE PLOT SCALE SHOWN ABOVE



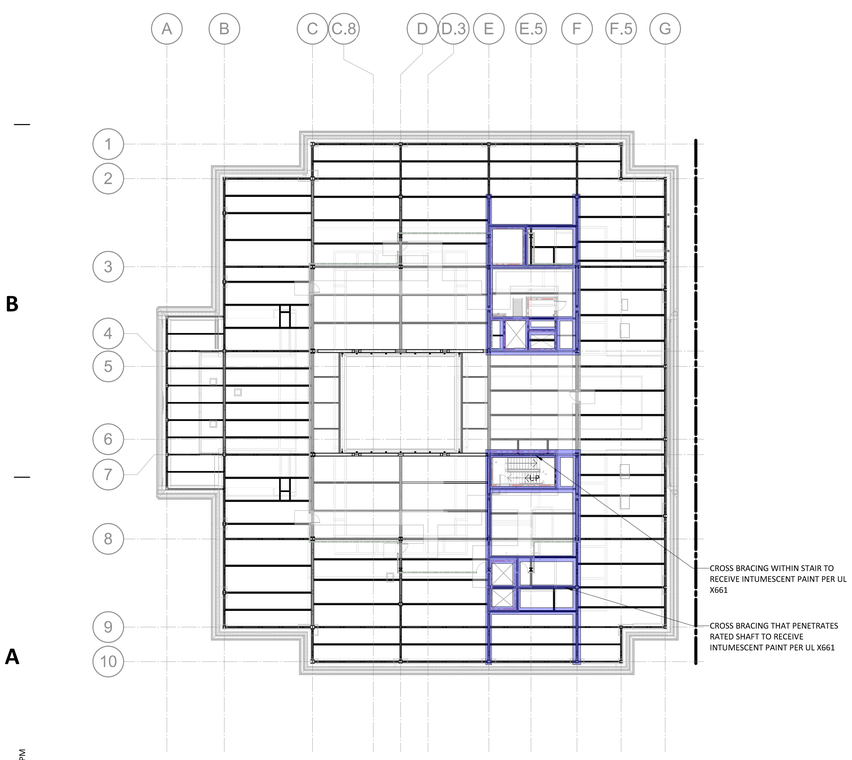
C1 ARCHITECTURAL FIRE-RATED ROOF FRAMING PLAN - ROOF

3/64" = 1'-0"



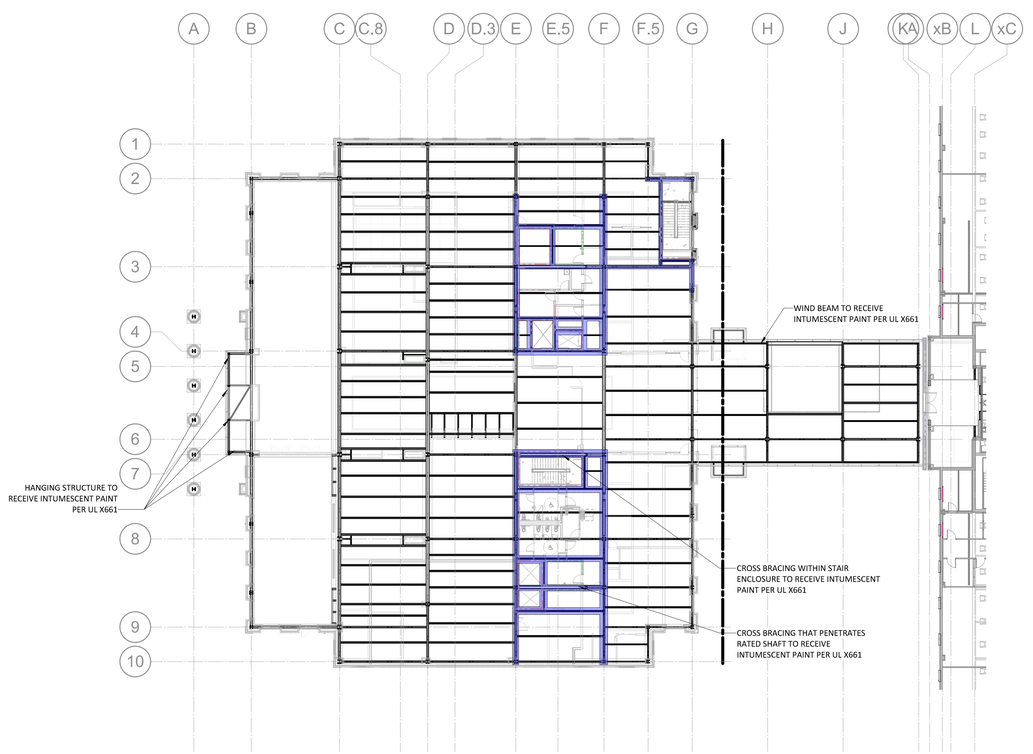
C3 ARCHITECTURAL FIRE-RATED ROOF FRAMING PLAN - LEVEL 03

3/64" = 1'-0"



A1 ARCHITECTURAL FIRE-RATED ROOF FRAMING PLAN - LEVEL 04

3/64" = 1'-0"



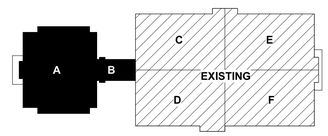
A3 ARCHITECTURAL FIRE-RATED ROOF FRAMING PLAN - LEVEL 02

3/64" = 1'-0"

FIRE-RATED STRUCTURE NOTES

1. COLUMNS, BEAMS, AND BRACING WITHIN HATCHED AREAS TO BE 2-HOUR PROTECTED. ALL OTHER COLUMNS, BEAMS, AND BRACING TO BE 1-HOUR PROTECTED.
2. STEEL THAT IS TO RECEIVE INTUMESCENT PAINT IS NOTED ON THESE PLANS. ALL OTHER RATED STEEL TO RECEIVE SPRAY-APPLIED FIREPROOFING.
3. SEE SHEET G-002 FOR APPENDIX B INFORMATION.
4. SEE SHEETS A-005 THROUGH A-007 FOR UL ASSEMBLY DETAILS.

KEY PLAN



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LAURA LYNN MILLER REGISTERED ARCHITECT SEAL 31188 NORTH CAROLINA WILMINGTON, NC

2022.04.08 12:09:07-04'00'

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UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202.197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS
A	2022.03.23	PKG. C CONSTRUCTION DOCS.
1	2022.04.08	ADDENDUM 1

SHEET NAME:
ARCHITECTURAL FIRE-RATED FRAMING PLANS

ORIG SUBMISSION: 03/09/22
CURRENT: 2022.04.08
ADDENDUM 1

SHEET: A-009

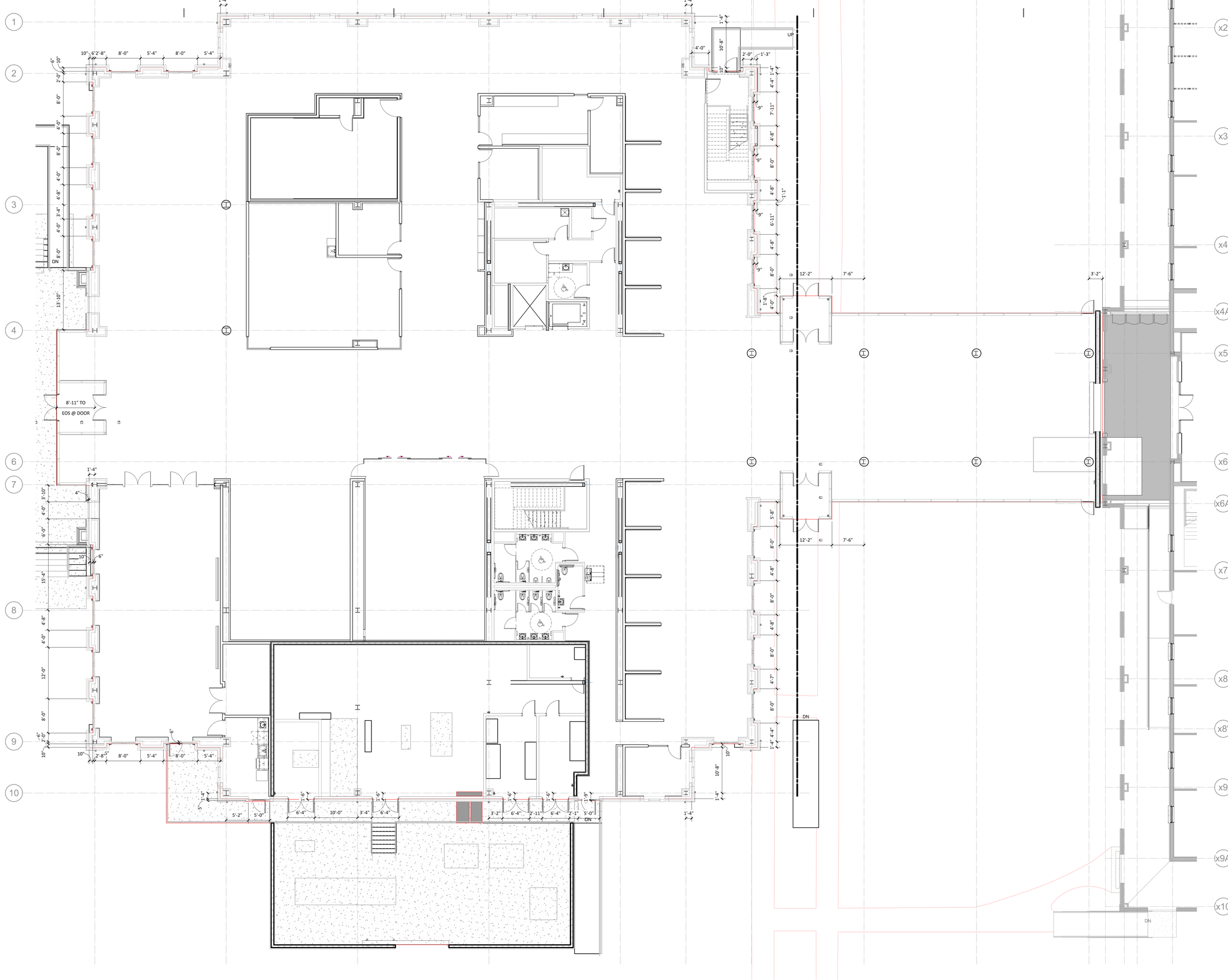
PACKAGE A - BID DOCUMENTS

TRUE NORTH PROJECT NORTH

4/7/2022 4:40:53 PM

1 2 3 4 5 6

A B C D



THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE DATE OF ORIGINAL ISSUE

A1 SLAB EDGE PLAN- LEVEL 1
1/8" = 1'-0"

4/7/2022 4:41:03 PM

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LAURA LYNN MILLER
REGISTERED ARCHITECT
6488
NORTH CAROLINA
WILMINGTON, NC

2022.04.08 12:07:49-04'00'

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
1	2022.04.08	ADDENDUM 1

SHEET NAME:
ARCHITECTURAL
EDGE OF SLAB PLAN
- LEVEL 1

ORIG SUBMISSION: 03/29/22
CURRENT: 2022.04.08
ADDENDUM 1

SHEET:
A-011

PACKAGE A - BID DOCUMENTS

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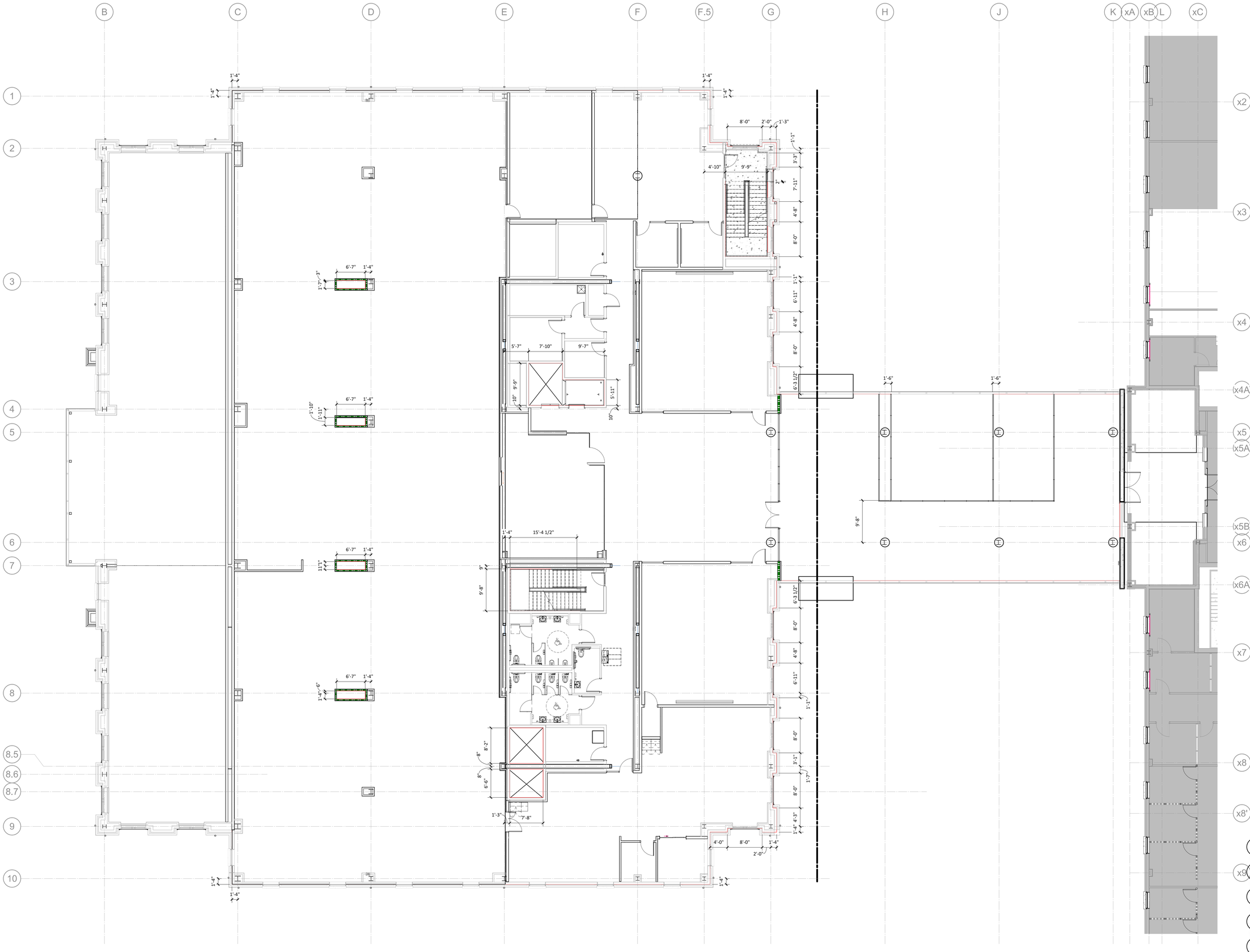

A1 SLAB EDGE PLAN- LEVEL 2

1/8" = 1'-0"

4/7/2022 4:41:11 PM

1 2 3 4 5 6

UNCW

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LAURA LYNN MILLER REGISTERED ARCHITECT 9188 NORTH CAROLINA WILMINGTON, NC

2022.04.08 12:06:14-04'00'

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
1	2022.04.08	ADDENDUM 1

SHEET NAME:
ARCHITECTURAL EDGE OF SLAB PLAN - LEVEL 2

ORIG SUBMISSION: 03/30/22
CURRENT: 2022.04.08
ADDENDUM 1

SHEET:
1 A-012

PACKAGE A - BID DOCUMENTS

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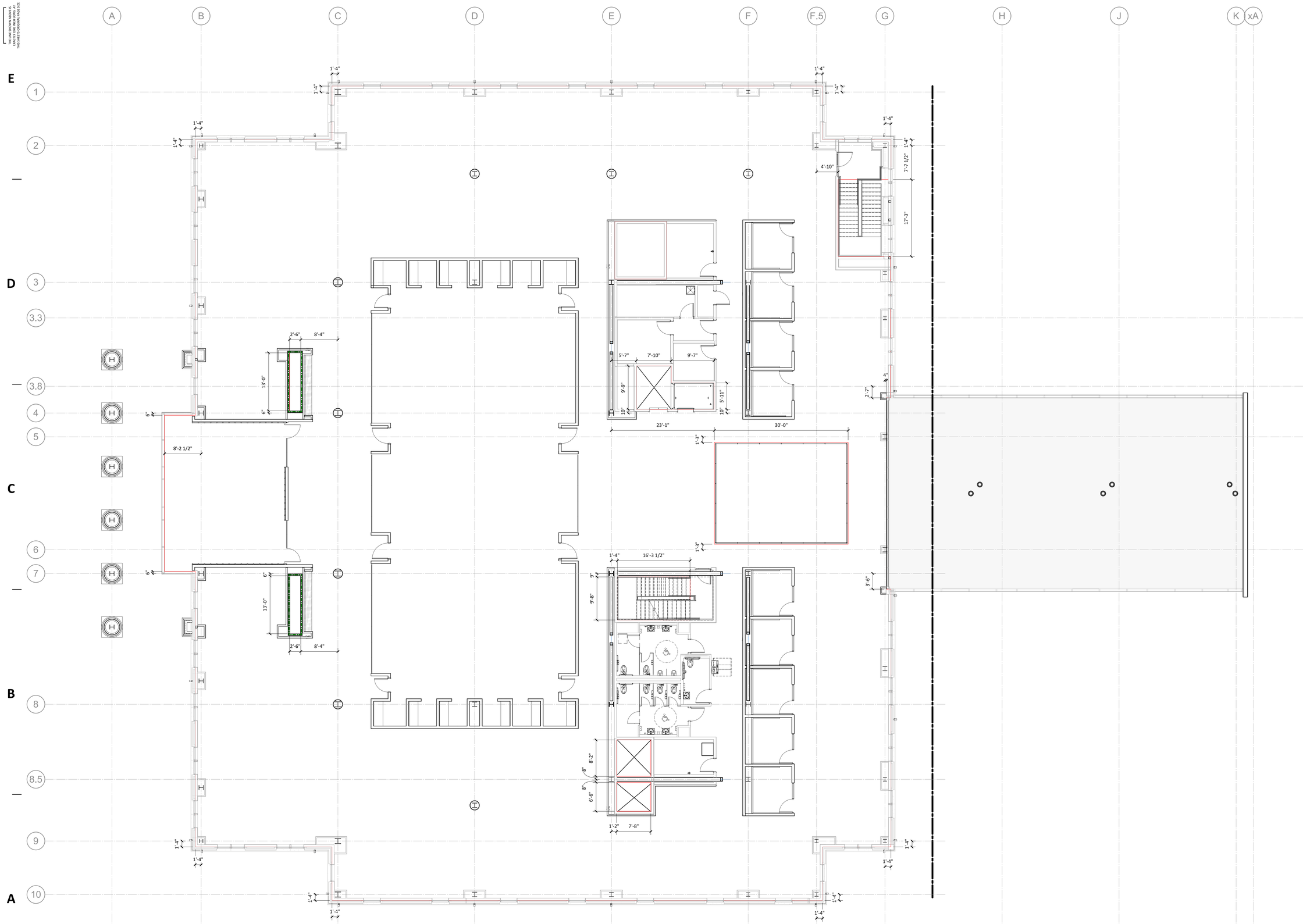

A B C D E F F.5 G H J K xA

1 2 3 3.3 3.8 4 5 6 7 8 8.5 9 10

A1 SLAB EDGE PLAN- LEVEL 3
1/8" = 1'-0"

1 2 3 4 5 6

4/7/2022 4:41:19 PM

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LAURA LYNN MILLER 9452 REGISTERED ARCHITECT NORTH CAROLINA WILMINGTON, NC

2022.04.08 12:04:33-04'00'

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WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
1	2022.04.08	ADDENDUM 1

SHEET NAME:
ARCHITECTURAL EDGE OF SLAB - LEVEL 3

ORIG SUBMISSION: 03/11/22
CURRENT: 2022.04.08
ADDENDUM 1

SHEET: A-013

PACKAGE A - BID DOCUMENTS

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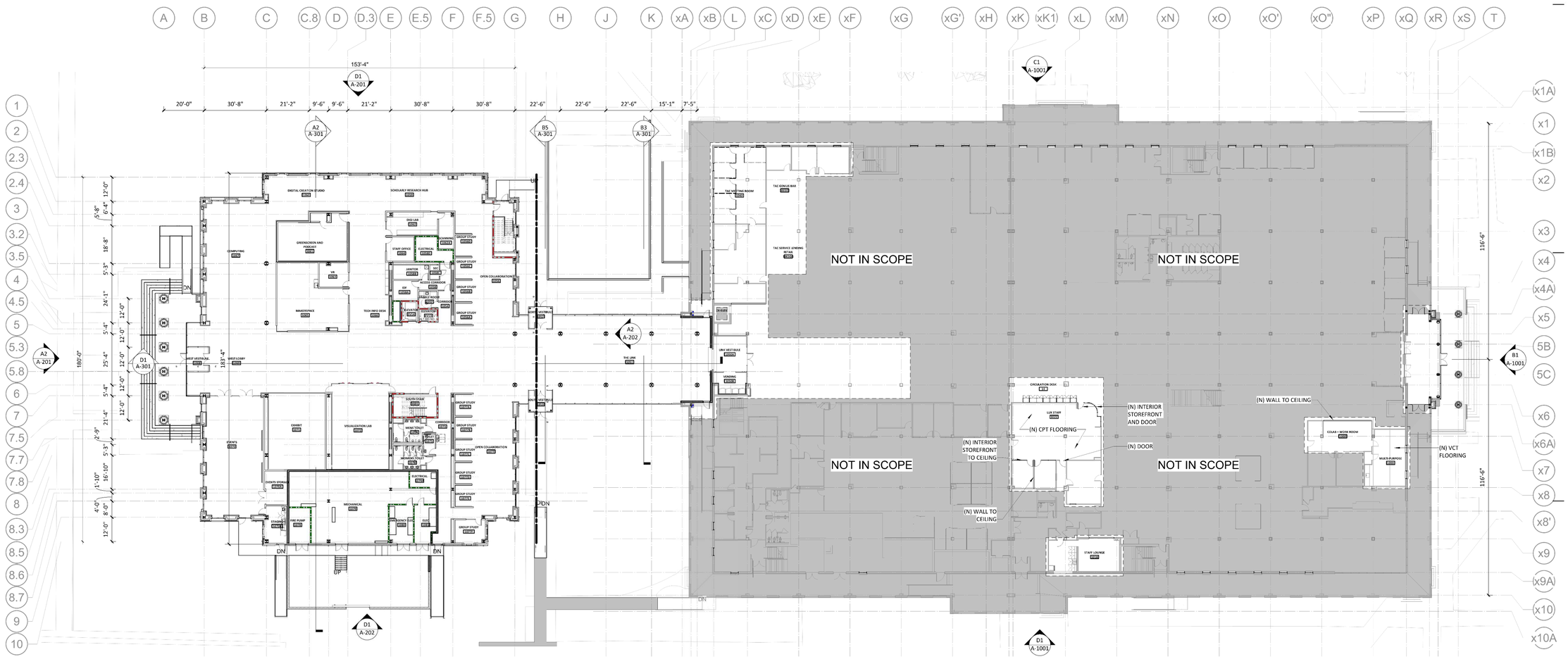

B1 OVERALL FLOOR PLAN- LEVEL 1

3/64" = 1'-0"

0'5'10' 20' 40'

TRUE NORTH PROJECT NORTH

2/15/2022 5:24:04 PM

UNCW

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REGISTERED ARCHITECTURAL COMPANY
CERT. NO. 50417
WILMINGTON, NORTH CAROLINA
NORTH CAROLINA

LAURA LYNN MILLER
REGISTERED ARCHITECT
9988
NORTH CAROLINA
WILMINGTON, NC

2022.02.16 14:21:22-05'00'

RANDALL LIBRARY RENOVATION & EXPANSION

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5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

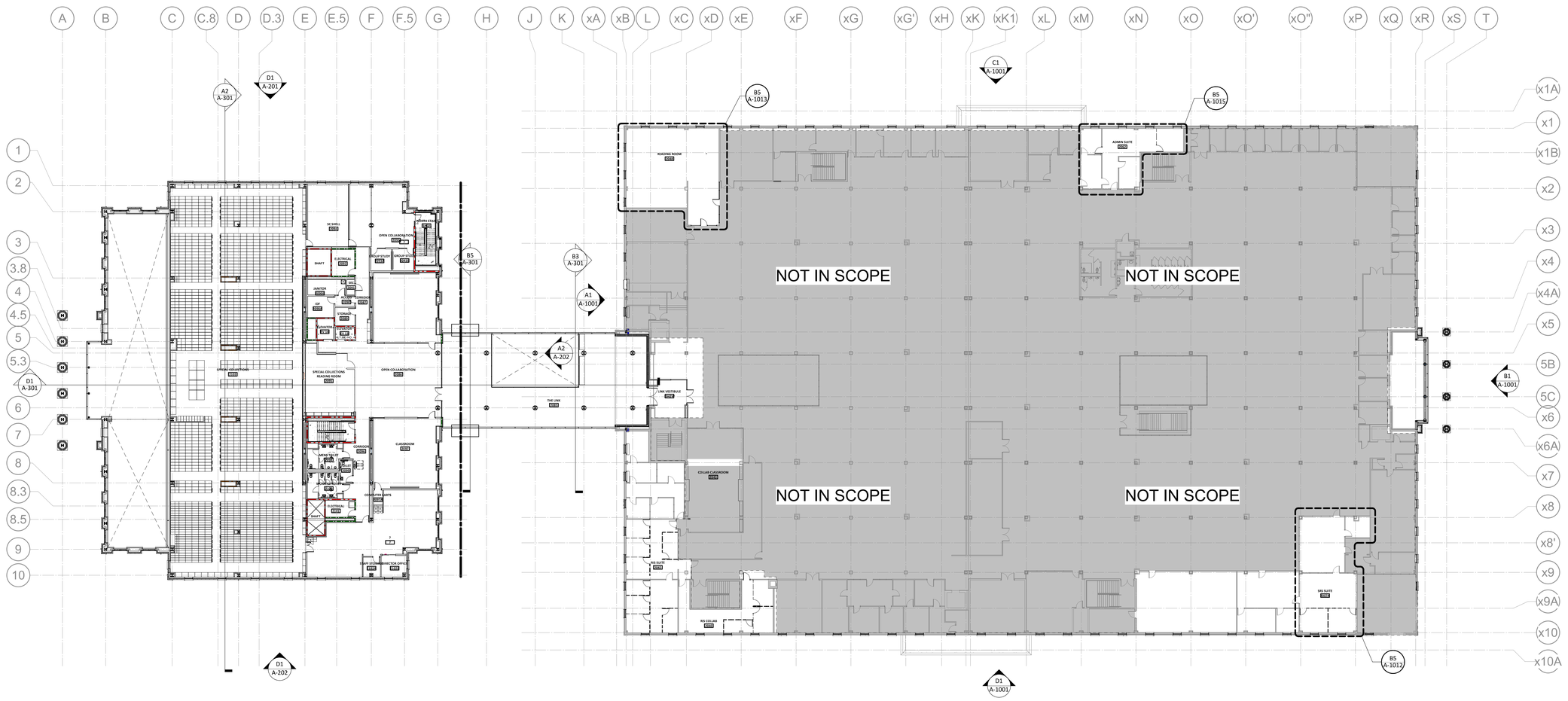
Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME:
FLOOR PLAN - LEVEL 1 - OVERALL

ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET:
A-101

PACKAGE A - BID DOCUMENTS



B1 OVERALL FLOOR PLAN- LEVEL 2
3/64" = 1'-0"

0'5'10' 20' 40'

TRUE NORTH PROJECT NORTH

UNCW

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LAURA LYNN MILLER 9980 REGISTERED ARCHITECT NORTH CAROLINA WILMINGTON, NC

2022.02.16 14:21:06-05'00'

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

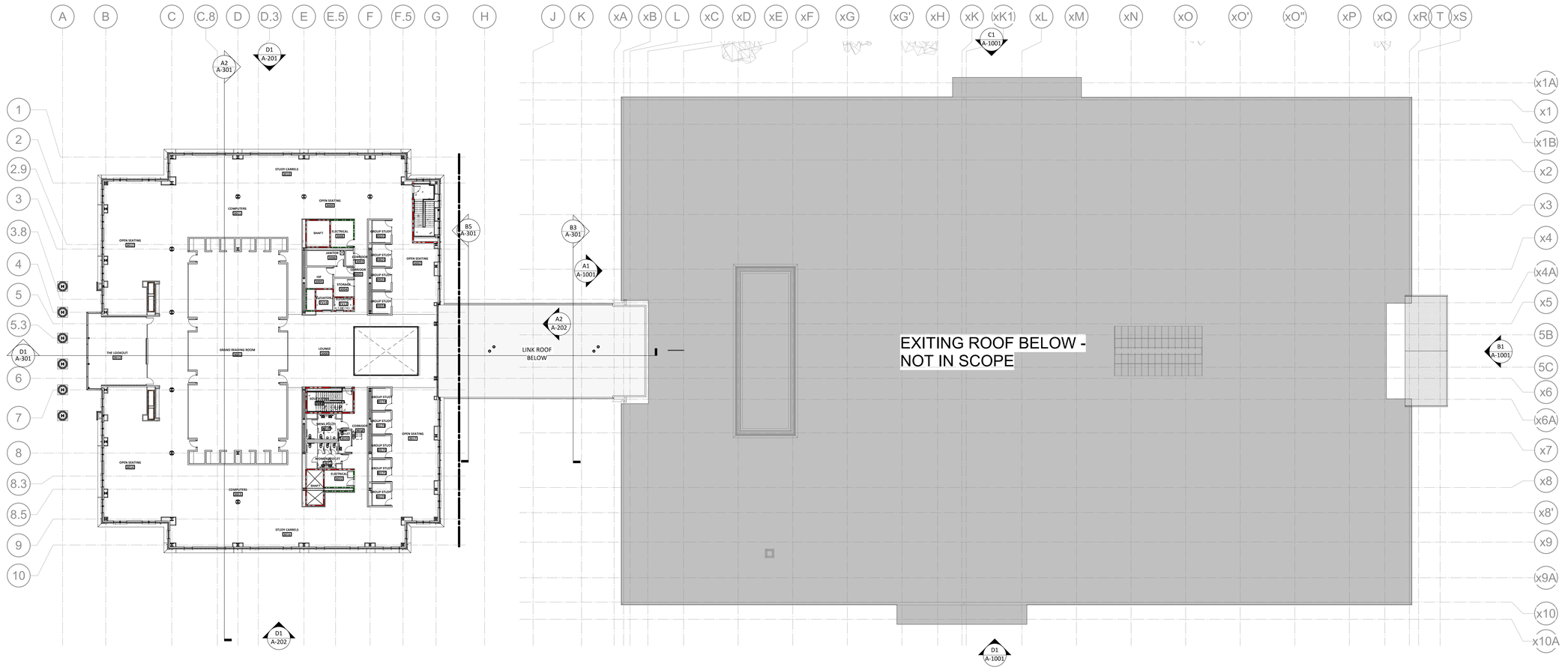
SHEET NAME:
FLOOR PLAN - LEVEL 2 - OVERALL

ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET:
A-102

PACKAGE A - BID DOCUMENTS

2/15/2022 5:24:44 PM



B1 OVERALL FLOOR PLAN- LEVEL 3

3/64" = 1'-0"

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ARCHITECTURAL SCALE

2/15/2022 5:25:03 PM

0'5' 10' 20' 40'

TRUE NORTH PROJECT NORTH

UNCW

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2022.02.16 14:19:58-05'00'

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

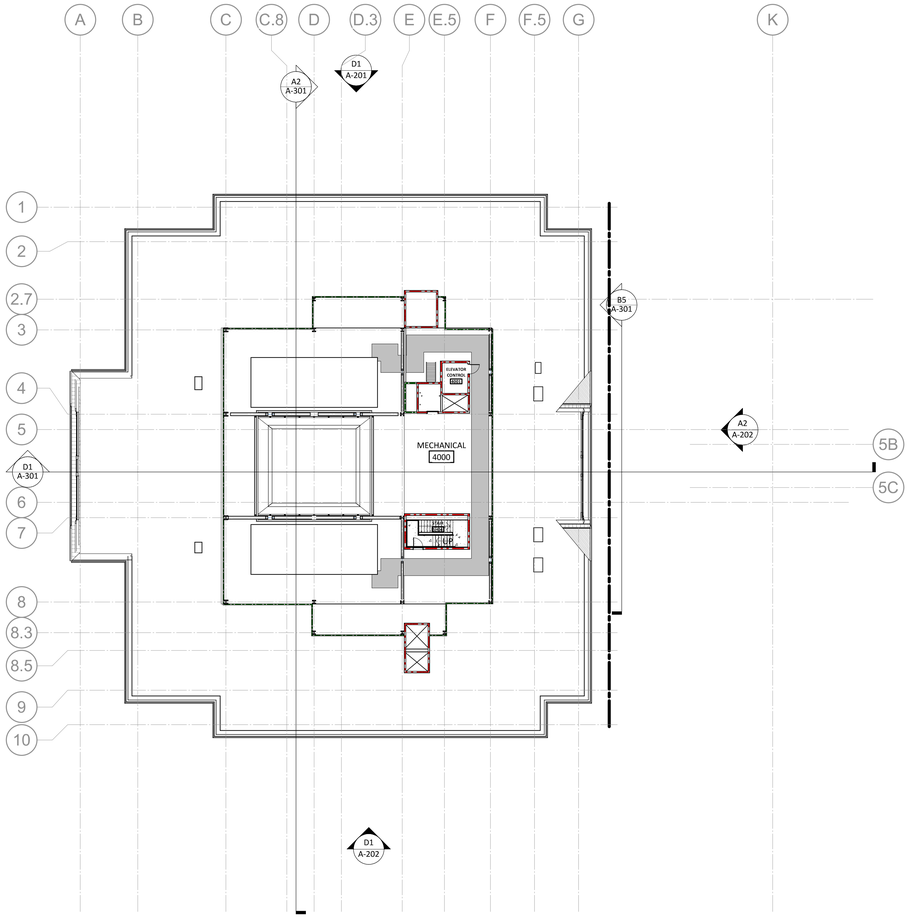
SHEET NAME:
FLOOR PLAN- LEVEL 3 - OVERALL

ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET:
A-103

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



B1 **OVERALL FLOOR PLAN- LEVEL 4**
3/64" = 1'-0"

UNCW

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LAURA LYNN MILLER REGISTERED ARCHITECT 6488 NORTH CAROLINA WILMINGTON, NC

2022.02.16 14:20:54-05'00'

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME:
FLOOR PLAN- LEVEL 4 - OVERALL

ORIG SUBMISSION: 2022.02.14
CURRENT:

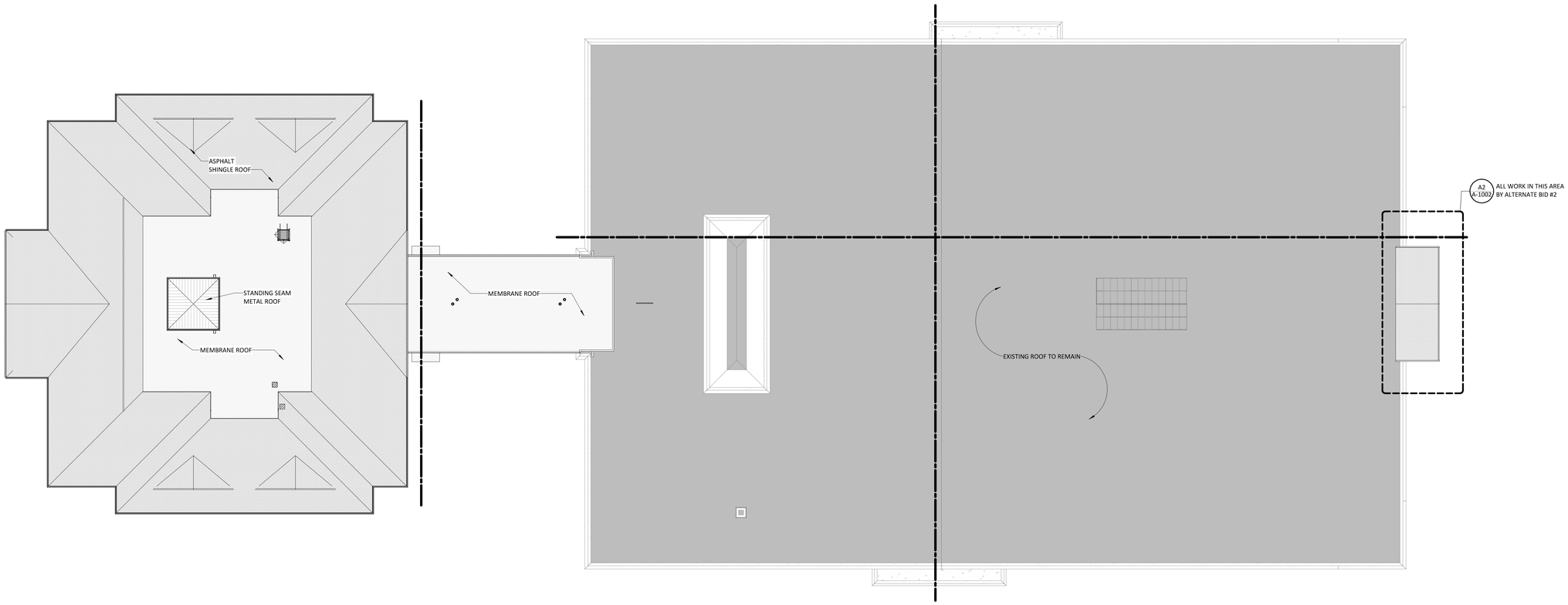
SHEET: A-104

PACKAGE A - BID DOCUMENTS

0' 5' 10' 20' 40'
TRUE NORTH
PROJECT NORTH

2/15/2022 5:48:28 PM

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



B1 OVERALL ROOF PLAN
3/64" = 1'-0"

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2022.02.16 14:22:16-05'00'

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME:
ROOF PLAN- OVERALL

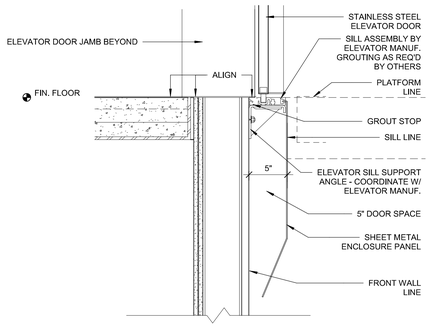
ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET:
A-151

PACKAGE A - BID DOCUMENTS

0'5' 10' 20' 40'
TRUE NORTH PROJECT NORTH

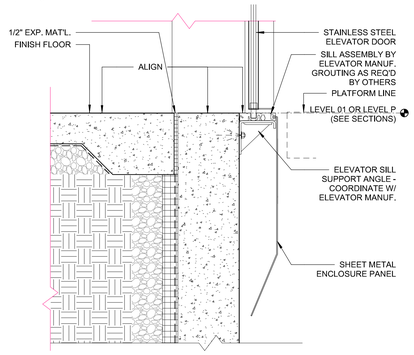
2/15/2022 5:25:24 PM



ADEQUATE SUPPORT AT ALL FASTENING POINTS OF ENTRANCE ASSEMBLY REQUIRED. MUST WITHSTAND A HORIZONTAL PULL-OUT FORCE OF 140LBS. @ EA. FASTENING POINT (8 @ EA. ENTRANCE) INCLUDING SUPPORTS FOR CENTRAL SILL SUPPORT BRACKET (NOT BY ELEVATOR MANUF.)

E1 ELEVATOR SILL DETAILS

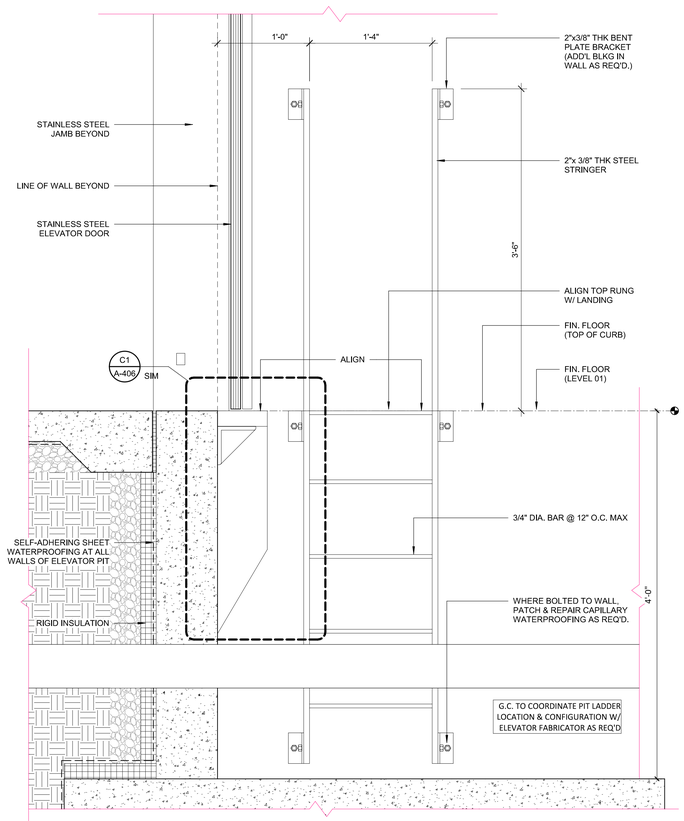
1 1/2" = 1'-0"



ADEQUATE SUPPORT AT ALL FASTENING POINTS OF ENTRANCE ASSEMBLY REQUIRED. MUST WITHSTAND A HORIZONTAL PULL-OUT FORCE OF 140LBS. @ EA. FASTENING POINT (8 @ EA. ENTRANCE) INCLUDING SUPPORTS FOR CENTRAL SILL SUPPORT BRACKET (NOT BY ELEVATOR MANUF.)

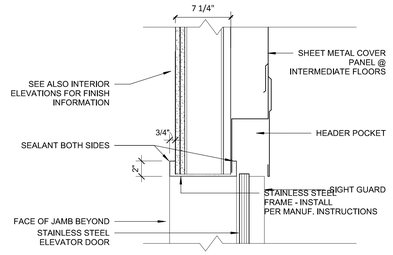
C1 ELEVATOR SILL DETAILS @ GRADE

1 1/2" = 1'-0"



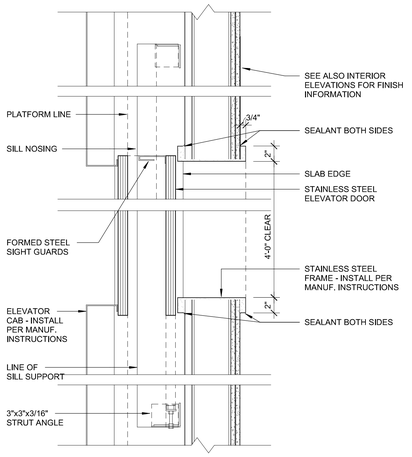
A1 ELEVATOR PIT LADDER DETAILS

1 1/2" = 1'-0"



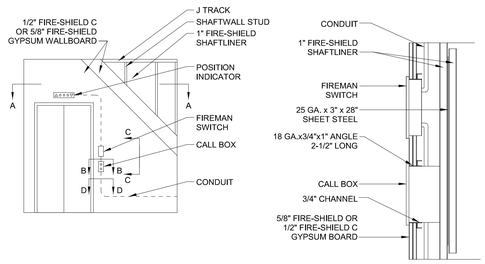
E3 ELEVATOR HEAD DETAILS

1 1/2" = 1'-0"



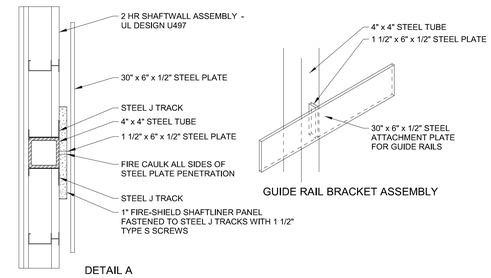
C3 ELEVATOR JAMB DETAILS

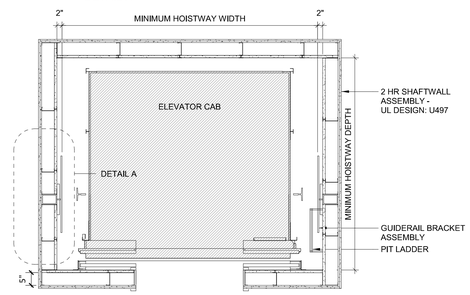
1 1/2" = 1'-0"



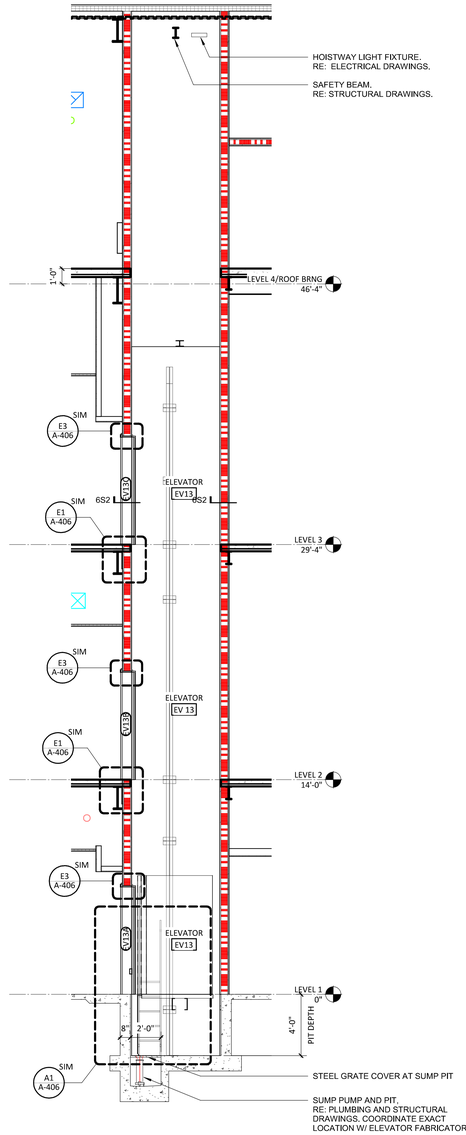
TEST REFERENCE:
FM WP-612
FM WP-621

DATE: 11/05/13	POSITION INDICATOR AND CONTROL BOX PROTECTION IN ELEVATOR SHAFTWALL	© National Gypsum Properties, LLC
SCALE: 1 1/2"=1'-0"	DETAIL: EV 102	



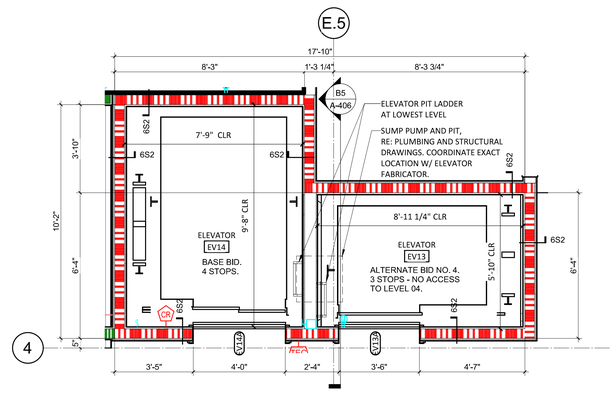


DATE: 11/05/13	ELEVATOR SHAFT ENCLOSURE PLAN	© National Gypsum Properties, LLC
SCALE: 1/2"=1'-0"	DETAIL: EV 101	



B5 ELEVATOR SECTION

1/4" = 1'-0"



A5 ENLARGED PLAN - LEVEL 1 - ELEVATOR

3/8" = 1'-0"

UNCW

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Δ	DATE	DESCRIPTION
	2022.02.14	PACKAGE A BID DOCUMENTS

SHEET NAME:
ELEVATOR PLAN & SECTION DETAILS

ORIG SUBMISSION: 2022.02.14
CURRENT:

SHEET:
A-406

PACKAGE A - BID DOCUMENTS

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GENERAL

1. THESE GENERAL NOTES ARE NOT INTENDED TO REPLACE SPECIFICATIONS (IF PROVIDED). SEE SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO THE GENERAL NOTES.
2. DO NOT SCALE DIMENSIONS FROM DRAWINGS. THE CONTRACTOR SHALL REQUEST NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS.
3. WHERE A DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS EVEN THOUGH NOT SPECIFICALLY REFERENCED ON THE DRAWINGS.
4. WHERE A CONFLICT BETWEEN DRAWINGS AND SPECIFICATIONS OCCURS THE MORE STRINGENT REQUIREMENT SHALL APPLY.
5. IF ANY BIDDER IS IN DOUBT AS TO THE INTENT OF THE DRAWINGS OR SPECIFICATIONS, THEY SHALL REQUEST AN INTERPRETATION IN WRITING PRIOR TO THE SCHEDULED BID DATE.
6. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND GRADE CONDITIONS (BOTH NEW AND EXISTING), REPORTING ANY DISCREPANCIES TO THE ENGINEER OF RECORD PRIOR TO FABRICATION OR PROCEEDING WITH STRUCTURAL WORK.
7. THE CONTRACTOR SHALL COMPARE THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL DRAWINGS, AND REPORT ANY DISCREPANCIES TO THE ENGINEER OF RECORD PRIOR TO FABRICATION OR PROCEEDING WITH STRUCTURAL WORK.
8. SEE ARCHITECTURAL DRAWINGS FOR FLOOR ELEVATIONS, FLOOR SLOPES, AND THE LOCATION OF DEPRESSED FLOOR AREAS.

CONTRACTOR RESPONSIBILITY

1. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS (IF PROVIDED) REPRESENT THE FINISHED STRUCTURE, AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCE. ALL APPLICABLE SAFETY REGULATIONS TO BE FOLLOWED STRICTLY.
2. THE STRUCTURE HAS BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS A COMPLETED STRUCTURE. APPLICATIONS OF CONSTRUCTION LOADS TO THE PARTIALLY COMPLETED STRUCTURE SHALL BE CONSIDERED BY THE CONTRACTOR AND SO INCLUDED IN THE DESIGN OF SHORING, BRACING, FORMWORK, AND ANY OTHER SUPPORTING ELEMENTS PROVIDED FOR CONSTRUCTION OF THE STRUCTURE. DURING ERECTION AND UNTIL ALL PERMANENT CONNECTIONS ARE MADE, THE CONTRACTOR MUST PROVIDE TEMPORARY BRACING FOR THE STRUCTURE IN ALL DIRECTIONS UNTIL THE STRUCTURAL WORK IS COMPLETE.
3. ALL INTERIOR HANGING COMPONENTS (CEILING, DUCTWORK, PIPING, EQUIPMENT, ETC.) SHALL BE COORDINATED BY THE CONTRACTOR TO ENSURE LOADS APPLIED TO THE STRUCTURE DO NOT EXCEED THE LIMITS SHOWN IN THE DESIGN CRITERIA OR ELSEWHERE IN THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY OF THE CONNECTIONS TO THE SUPPORTING STRUCTURAL ELEMENTS AND THE ADEQUACY OF THE HANGING SYSTEM TO SUPPORT THE COMPONENTS.
4. ALL ARCHITECTURAL, ELECTRICAL, MECHANICAL, AND PLUMBING COMPONENTS NOT SHOWN ON THE STRUCTURAL DRAWINGS, THAT FRAME TO THE UNDERSIDE OF STRUCTURE ABOVE, SHALL BE DETAILED AND FRAMED BY THE CONTRACTOR TO ALLOW FOR DEFLECTION OF THE STRUCTURAL FRAMING. SEE THE DESIGN CRITERIA FOR THE LIMITS USED IN THE DESIGN.
5. PRINCIPAL OPENINGS IN THE STRUCTURE ARE SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ALL REQUIRED OPENINGS. SUPPORT FRAMING FOR ALL OPENINGS SHALL BE PROVIDED AND INSTALLED PER TYPICAL DETAILS HEREIN WHETHER SHOWN ON THESE DRAWINGS OR NOT. THE CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH ALL SUBCONTRACTORS AND THEIR APPROVED SHOP DRAWINGS PRIOR TO CONSTRUCTION.
6. ALL EXTERIOR WALL AND ROOF COMPONENTS AND CLADDING ENGINEERED BY THE COMPONENT MANUFACTURER ARE TO BE DESIGNED BY THE MANUFACTURER'S ENGINEER FOR COMPONENTS AND CLADDING WIND LOADS NOTED IN THE DESIGN CRITERIA.
7. ALL ARCHITECTURAL, ELECTRICAL, MECHANICAL, AND PLUMBING COMPONENTS ARE TO BE ATTACHED AS REQUIRED BY ASCE/SEI 7 CHAPTER 13, "SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS". EACH INDIVIDUAL CONTRACTOR RESPONSIBLE FOR THE COMPONENT MUST PROVIDE PROJECT SPECIFIC DESIGN AND DOCUMENTATION PREPARED BY AN ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA. CHAPTER 13 DEFINES THE FORCE REQUIRED TO SUPPORT THE COMPONENT FOR THE ANCHORAGE AND BRACING. THE COST OF PREPARING THIS INFORMATION AND DESIGN SHALL BE INCLUDED IN EACH CONTRACTOR'S BID THAT IS PROVIDING THE COMPONENT.
8. SEVERAL ITEMS NOTED HEREIN (WHERE CHECKED) AND IN THE SPECIFICATIONS REQUIRE THE CONTRACTOR TO ENGAGE A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA, TO PROVIDE DESIGN AND/OR DETAILING OF STRUCTURAL ELEMENTS. SEE INDIVIDUAL NOTES AND SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. DELEGATED DESIGN ELEMENTS INCLUDE, BUT ARE NOT LIMITED TO:
   - SPECIALTY FOUNDATION SYSTEM
   - ☐ POST-TENSIONED CONCRETE
   - ☐ STRUCTURAL PRECAST CONCRETE
   - ☒ ARCHITECTURAL PRECAST CONCRETE
   - ☒ STRUCTURAL STEEL (CONNECTIONS)
   - ☐ PREFABRICATED METAL BUILDING
   - ☒ STEEL STAIRS AND RAILINGS
   - ☐ STEEL JOISTS AND STEEL JOIST GIRDERS
   - ☐ ROOF ANCHORS
   - ☒ NON-LOAD BEARING COLD-FORMED STEEL
   - ☒ LOAD BEARING COLD-FORMED STEEL
   - ☒ LIGHT GAUGE COLD-FORMED STEEL TRUSSES
   - ☐ PREFABRICATED WOOD TRUSSES
9. THIS PROJECT REQUIRES SPECIAL INSPECTIONS AS DESCRIBED IN CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE. SEE STATEMENT OF SPECIAL INSPECTIONS FOR REQUIRED INSPECTIONS. CONTRACTOR SHALL COORDINATE WITH SPECIAL INSPECTOR ALL WORK REQUIRING SPECIAL INSPECTIONS AND TESTING.

DESIGN CRITERIA

1. PROJECT LOCATION: [5162 RANDALL DRIVE | WILMINGTON, NC 28403]
2. APPLICABLE CODES:
   - 2018 NORTH CAROLINA BUILDING CODE (2015 INTERNATIONAL BUILDING CODE WITH REVISIONS)
   - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE/SEI 7-16)
   - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14)
   - BUILDING CODE REQUIREMENTS|SPECIFICATIONS FOR MASONRY STRUCTURES (ACI 530|530.1-13)
   - SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 360-10)
   - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (ANSI/AWC NDS-2015)
   - NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS (AISI S100-12)
3. RISK CATEGORY: III
4. DEFLECTION:

FLOOR FRAMING	L/240 FOR TOTAL LOADING (1.50" FOR 30' SPAN), L/360 FOR LIVE LOADING (1.00" FOR 30' SPAN)
ROOF FRAMING	L/180 FOR TOTAL LOADING (2.00" FOR 30' SPAN), L/240 FOR LIVE LOADING (1.50" FOR 30' SPAN)
MEMBERS SUPPORTING BRICK	L/600 FOR LIVE LOADING (0.60" FOR 30' SPAN)

5. LIVE LOADS:

	UNIFORM (PSF)	CONCENTRATED (LB)
TYPICAL FLOOR	100 (LLR)	2,000
MECHANICAL	150	NA
ROOF	20	300
STAIRS	100	300
SPECIAL COLLECTIONS	300	2,000

(LLR) INDICATES AREAS WHERE LIVE LOAD REDUCTION IS UTILIZED PER NCBC 1607.10

6. SNOW LOAD:

GROUND SNOW LOAD	p_g = 10 PSF
IMPORTANCE FACTOR	I_s = 1.10
SNOW EXPOSURE FACTOR	C_e = 0.70
THERMAL FACTOR	C_t = 1.00
FLAT SNOW ROOF LOAD	p_f = 10 PSF

7. WIND LOAD:

ULTIMATE DESIGN WIND SPEED	V_{ult} = 155 MPH (NOMINAL DESIGN WIND SPEED, V_{asd} = 120 MPH)	
SERVICEABILITY WIND SPEED	V = 80 MPH (MEAN RECURRENCE INTERVAL OF 10 YEARS)	
EXPOSURE CATEGORY	B	
INTERNAL PRESSURE COEFFICIENTS	±0.18	
BASE SHEAR (1.0xW)	V_x = 491k	V_y = 617k

COMPONENTS AND CLADDING -

ALL EXTERIOR WALL AND ROOF COMPONENTS AND CLADDING ENGINEERED BY THE COMPONENT MANUFACTURER ARE TO BE DESIGNED BY THE MANUFACTURER'S ENGINEER FOR COMPONENTS AND CLADDING WIND LOADS AS DETERMINED PER THE GOVERNING BUILDING CODE FOR THE ULTIMATE DESIGN WIND SPEED AND EXPOSURE CATEGORY LISTED ABOVE. ALTERNATIVELY, THE COMPONENT MANUFACTURER MAY USE THE LARGER OF THE 16 PSF MINIMUM (PER ASCE/SEI 7 30.2.2) AND THE WORST-CASE PRESSURES (PSF) BELOW:

ZONE		EFFECTIVE WIND AREA (SF)			
		10	50	100	500
ROOF	1	+8 -72	+8 -63	+8 -58	+8 -49
ROOF	2	+8 -113	+8 -100	+8 -95	+8 -81
ROOF	3	+8 -154	+8 -136	+8 -132	+8 -113
WALL	4	+49 -49	+45 -47	+42 -45	+36 -40
WALL	5	+49 -90	+45 -81	+42 -72	+36 -54

8. SEISMIC LOAD:

DESIGN METHOD - EQUIVALENT LATERAL FORCE PROCEDURE

S_S	15.3 %g	
S_1	6.7 %g	
S_{DS}	16.3 %g	
S_{D1}	10.8 %g	
IMPORTANCE FACTOR	I_e = 1.25	
SITE CLASS	D	
SEISMIC DESIGN CATEGORY	B	

SEISMIC FORCE-RESISTING SYSTEM -

STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE, EXCLUDING CANTILEVER COLUMN SYSTEMS

RESPONSE MODIFICATION COEFFICIENT	R_x = 3	R_y = 3
DEFLECTION AMPLIFICATION FACTOR	C_{dx} = 3	C_{dy} = 3
SEISMIC RESPONSE COEFFICIENT	C_{sx} = 0.057	C_{sy} = 0.068
BASE SHEAR (1.0xE)	V_x = 450k	V_y = 535k

9. FUTURE LOADS:

UNLESS SPECIFICALLY NOTED, THERE ARE NO PROVISIONS MADE FOR FUTURE FLOORS, ROOFS, OR OTHER LOADS.

FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT BY: ECS, DATED OCTOBER 1, 2020 (PROJECT #22-2933, ADD 1 AND ADD 2) THE DESIGN NET ALLOWABLE SOIL BEARING PRESSURE IS 3,000 PSF BASED ON THIS REPORT.
2. ALL RECOMMENDATIONS AS OUTLINED IN THE GEOTECHNICAL INVESTIGATION REPORT AND AS NOTED ON THE DRAWINGS MUST BE FOLLOWED IN PREPARATION OF THE SUBGRADE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER OF RECORD. THE CONTRACTOR SHALL OBTAIN THE REPORT FROM THE OWNER AND BE FAMILIAR WITH THE RECOMMENDATIONS CONTAINED THEREIN PRIOR TO THE START OF CONSTRUCTION. IF CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE DESCRIBED IN THE REPORT, THE OWNER SHALL NOTIFY THE GEOTECHNICAL ENGINEER OF RECORD SO THE RECOMMENDATIONS CAN BE REEVALUATED.
3. FOOTINGS SHALL BE CARRIED TO LOWER ELEVATIONS THAN THOSE SHOWN ON THE DRAWINGS IF REQUIRED BY THE GEOTECHNICAL ENGINEER OR TESTING LAB TO REACH SOIL CAPABLE OF PROVIDING THE DESIGN NET ALLOWABLE SOIL BEARING PRESSURE. ALL EXPANSIVE AND/OR LOOSE SOILS BELOW STRUCTURAL FOUNDATIONS SHALL BE REMOVED AND REPLACED AS DIRECTED HEREIN.
4. MINIMUM SUBGRADE PREPARATION REQUIREMENTS ARE AS FOLLOWS:
   1. PREPARE SUBGRADE AND UNDERFLOOR FILL TO A POINT THAT EXTENDS 10'-0" (MINIMUM) BEYOND THE LIMITS OF THE FOUNDATIONS.
   2. COMPACT ALL FILL UNDER BUILDING TO 98% MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698.
   3. PLACE IN LIFTS OF 8" (MAXIMUM) LOOSE THICKNESS WHEN USING LARGE RIDING COMPACTORS (REDUCE THICKNESS AS NECESSARY FOR SMALLER EQUIPMENT).
   4. SLABS ON GRADE SHALL BE SUPPORTED ON A BASE LAYER OF POROUS FILL (WASHED STONE OR CLEAN SAND) WITH A MINIMUM THICKNESS OF 6".
5. FIELD COMPACTION SHALL BE VERIFIED WITH AT LEAST ONE TEST PER 2,000 SQUARE FEET PER LIFT (AT LEAST ONE PER LIFT), IN ACCORDANCE WITH ASTM D1556 (SAND-CONE METHOD), ASTM D6938 (NUCLEAR METHODS, SHALLOW DEPTH), ASTM D2167 (RUBBER BALLOON METHOD), AND/OR ASTM D2937 (DRIVE-CYLINDER METHOD). SEE SPECIFICATIONS FOR OTHER TESTING REQUIREMENTS.
6. WALLS RETAINING SOIL SHALL BE TEMPORARILY BRACED DURING BACKFILLING AND UNTIL ALL SUPPORTING SOIL AND SLABS ARE IN PLACE AND ARE AT DESIGN STRENGTH UNLESS NOTED OTHERWISE ON PLANS AND DETAILS.
7. WALLS RETAINING SOIL HAVE BEEN DESIGNED UTILIZING THE FOLLOWING PARAMETERS:

MOIST SOIL UNIT WEIGHT	115 PCF
ACTIVE PRESSURE COEFFICIENT	0.31
AT-REST PRESSURE COEFFICIENT	0.47
PASSIVE PRESSURE COEFFICIENT	3.39
COEFFICIENT OF FRICTION	0.40
MIN WALL EMBEDMENT BELOW GRADE	24"
ALLOWABLE BEARING PRESSURE	3,000 PSF

8. UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER. CONTRACTOR SHALL SUBMIT DETAILED DRAWINGS OF ALL SUCH CONDITIONS PRIOR TO CONSTRUCTION.

CONCRETE | REINFORCING STEEL

1. ALL CONCRETE DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REFERENCED EDITION OF THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318).
2. CONCRETE MIXTURES AS REQUIRED (BASED ON CLASS DESIGNATION):

CLASS A - FOOTINGS, GRADE/TIE BEAMS	NWC	3,000 PSI	
CLASS B - FOUNDATION WALLS	NWC	4,500 PSI	
CLASS C - INTERIOR SLABS ON GRADE	NWC	3,000 PSI	
CLASS D - INTERIOR NWC SLABS ON METAL DECK	NWC	4,000 PSI	
CLASS E - INTERIOR LWC SLABS ON METAL DECK	LWC	4,000 PSI	
CLASS F - EXTERIOR SLABS ON GRADE, PADS, TOPPINGS	NWC	4,500 PSI	
CLASS H - PIERS	NWC	4,000 PSI	
CLASS I - INTERIOR METAL PAN STAIRS/LANDINGS	NWC	2,500 PSI	(SEE **STEEL STAIRS AND RAILINGS** NOTES)
CLASS J - EXTERIOR RETAINING WALLS	NWC	4,500 PSI	

3. REINFORCING:
   - TYPICAL - ASTM A615, GRADE 60
   - REINFORCING TO BE WELDED - ASTM A706
   - DEFORMED BAR ANCHORS - ASTM A496
   - WELDED WIRE FABRIC - ASTM A1064 (FLAT SHEETS ONLY)
4. GROUT UNDER BASE PLATES TO BE HIGH STRENGTH (5,000 PSI), NON-SHRINK.
5. REFER TO THE DRAWINGS FOR REINFORCING LAP REQUIREMENTS. WHERE LAP SPLICES ARE NOT SHOWN, LAP PER ACI 318 OR CRSI STANDARDS.
6. LAP WELDED WIRE FABRIC SHEETS 8" MINIMUM.
7. CLEAR COVER FROM FACE OF CONCRETE:

CAST IN PLACE CONCRETE (MEASURE TO OUTERMOST REINFORCING) -

CONCRETE CAST AGAINST AND EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH/WEATHER	2" FOR #6 BARS AND LARGER, 1 1/2" ELSE
CONCRETE NOT EXPOSED TO EARTH/WEATHER	3/4" FOR SLABS AND WALLS, 1 1/2" (TO TIES) FOR BEAMS AND COLUMNS

8. PROVIDE REINFORCING IN SLABS ON GRADE, 1-1/2" FROM TOP OF SLAB:

4" SLABS	6x6-W2.1xW2.1
5" SLABS	6x6-W2.9xW2.9
6" SLABS	#3@12"OC EACH WAY

9. WHERE SCHEDULED BARS ARE NOT PRESENT, PROVIDE CONTINUOUS #5 TOP AND BOTTOM BARS TO SUPPORT STIRRUPS AS REQUIRED FOR THE LENGTH OF THE STIRRUP SPACING IN ALL BEAMS.
10. WALL FOOTING REINFORCING SHALL BE CONTINUOUS THROUGH ADJACENT COLUMN FOOTINGS.
11. PROVIDE VERTICAL DOVETAIL SLOTS AT 24"OC WITH TIES AT 16"OC VERTICALLY IN ALL CONCRETE WALLS BACKING-UP MASONRY VENEER.
12. BAR SUPPORTS FOR CONCRETE EXPOSED TO VIEW SHALL HAVE PLASTIC COATED LEGS OR BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. MECHANICAL AND ELECTRICAL CONDUIT IN SLABS ON GRADE AND ELEVATED SLABS SHALL RUN UNDER TOP LAYER OF SLAB REINFORCING. PROVIDE A MINIMUM OF 1-1/2" CLEAR BETWEEN CONDUITS AND BETWEEN REINFORCING AND ADJACENT CONDUITS PARALLEL TO REINFORCING. IF MAXIMUM SIZE OF CONDUIT EXCEEDS ONE THIRD OF THE SLAB DEPTH, ADDITIONAL FRAMING OR REINFORCING MAY BE NECESSARY AT ENGINEER'S DISCRETION.
14. MECHANICAL AND ELECTRICAL CONDUIT IN ELEVATED SLABS ON METAL DECK IS NOT ALLOWED UNLESS SPECIFICALLY REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO PLACEMENT.
15. HEADED CONCRETE ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A108, GRADES 1010, 1015, 1017, OR 1020. STUDS SHALL BE AUTOMATICALLY END WELDED IN THE SHOP OR FIELD IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
16. EMBED PLATES MUST BE SET IN THE FORM BEFORE POURING CONCRETE, NOT PLACED INTO TOP OF WET CONCRETE. THE CONTRACTOR SHALL CONTACT THE ARCHITECT FOR CORRECTIVE DETAILS FOR ANY EMBED PLATES LEFT OUT OF CONCRETE POURS.
17. FOR SLABS ON GRADE, SLAB AND FOOTING REINFORCING SHALL BE HELD IN PLACE BY BAR SUPPORTS WITH SAND PLATES, OR PRECAST CONCRETE BAR SUPPORTS AS DESCRIBED IN CHAPTER 3 OF THE CRSI MANUAL OF STANDARD PRACTICE. BAR SUPPORTS SHALL BE SPACED AT A MAXIMUM OF 4'-0"OC BOTH WAYS. ROCKS, CMU, OR CLAY BRICK WILL NOT BE USED AS SUPPORTS.
18. THE CONTRACTOR SHALL ASSUME CONCRETE OVERAGES IN ELEVATED DECK POURS DUE TO MEMBER AND DECK DEFLECTIONS. UNLESS SHOWN ON PLANS, BEAMS ARE NOT CAMBERED. CONCRETE OVERAGES MAY BE CALCULATED BY THE CONTRACTOR FOR BEAM DEFLECTIONS EQUALING L/300 INCLUDING ADDITIONAL DEFLECTIONS DUE TO PONDING AND DECK DEFLECTIONS PER SDI.
19. REBAR SHALL NOT BE HEATED WITH A TORCH IN THE FIELD.
20. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER FAR ENOUGH IN ADVANCE (48 HOURS) OF EACH CONCRETE POUR TO ALLOW AMPLE TIME TO CHECK THE LAYOUT OF THE STEEL BEFORE THE BEGINNING OF THE ACTUAL POUR, BUT NOT PRIOR TO 90% OF THE STEEL HAVING BEEN PLACED.

CONCRETE CONSTRUCTION JOINTS

1. CONTRACTOR SHALL PROVIDE NECESSARY CONSTRUCTION JOINTS IN MONOLITHIC CONCRETE POURS SO THAT THE QUALITY OF PLACEMENT AND FINISH MEETS THE REQUIREMENTS OF PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT A PLAN SHOWING THE LOCATION OF ALL CONSTRUCTION JOINTS TO THE STRUCTURAL ENGINEER FOR APPROVAL.
2. THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS. ALL VERTICAL CONSTRUCTION JOINTS IN SLABS AND BEAMS SHALL BE MADE WITH BULKHEADS. ADDITIONAL REINFORCING AT CONSTRUCTION JOINTS SHALL BE AS SPECIFIED BY THE STRUCTURAL ENGINEER. SEE TYPICAL CONSTRUCTION JOINT DETAILS.

ARCHITECTURAL PRECAST CONCRETE

1. PRECAST CONCRETE DESIGN AND FABRICATION SHALL CONFORM TO THE REFERENCED EDITION OF BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318) AND "ARCHITECTURAL PRECAST CONCRETE" (MNL-122-07) BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE. THE DESIGN SHALL BE PERFORMED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA. DESIGN CALCULATIONS, STAMPED BY THE REGISTERED ENGINEER, SHALL BE SUBMITTED FOR REVIEW OF THE ENGINEER UPON REQUEST.
2. THE DESIGN AND DETAILING OF ALL ARCHITECTURAL PRECAST CONCRETE AND ITS CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE PRECAST FABRICATOR. THIS SHALL INCLUDE ALL BOLTS, PLATES, BRACES, REINFORCING, WELD SIZES, AND ANY EMBEDDED ITEMS IN BOTH PRECAST AND THE STRUCTURAL FRAME FOR ALL CONNECTIONS BETWEEN THE PRECAST AND THE SUPPORT FRAME. ALL CONNECTIONS SHOWN ON THE DRAWINGS ARE CONCEPTUAL IN NATURE AND FOR BIDDING PURPOSES ONLY.
3. ALL PRECAST MEMBERS SHALL HAVE AT LEAST TWO CONNECTIONS PER MEMBER. MAXIMUM SPACING OF CONNECTIONS SHALL BE 36"OC. ALL EXPOSED CONNECTORS SHALL BE HOT-DIP GALVANIZED OR STAINLESS STEEL. ADDITIONAL REINFORCING SHALL BE ADDED TO PRECAST MEMBERS AS REQUIRED FOR ERECTION STRESSES AS WELL AS STRESSES INDUCED BY THE CONNECTIONS.
4. DESIGN MODIFICATIONS MAY BE MADE ONLY AS NECESSARY TO MEET FIELD CONDITIONS AND TO ENSURE PROPER FITTING OF THE WORK, AND ONLY AS ACCEPTABLE TO THE ENGINEER. MAINTAIN GENERAL DESIGN CONCEPT SHOWN WITHOUT INCREASING OR DECREASING SIZES OF MEMBERS OR ALTERING PROFILES AND ALIGNMENT SHOWN.

STRUCTURAL MASONRY

1. ALL MASONRY DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REFERENCED EDITION OF THE BUILDING CODE REQUIREMENTS|SPECIFICATIONS FOR MASONRY STRUCTURES (ACI 530|530.1).
2. LOAD BEARING MASONRY WALLS, PILASTERS, PIERS, RETAINING WALLS, FOUNDATION WALLS AND ANY OTHER MASONRY SO DESIGNATED ON DRAWINGS IS CONSIDERED HERE TO BE STRUCTURAL MASONRY.
3. REQUIRED COMPRESSIVE STRENGTH OF MASONRY UNITS:
   - SOLID CLAY UNITS - 6,200 PSI
   - CONCRETE UNITS - 2,000 PSI ON NET AREA
4. CONCRETE MASONRY UNITS (CMU) SHALL BE LIGHT WEIGHT (105 PCF) CONFORMING TO ASTM C90. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR UNIT SIZE, FACE, COLOR, JOINTING, ETC.
5. MORTAR SHALL BE TYPE S, ASTM C270.
6. GROUT FOR REINFORCED MASONRY SHALL BE FINE GROUT, ASTM C476. MINIMUM 28-DAY COMPRESSIVE STRENGTH SHALL BE 2,000 PSI.
7. MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'_m) OF THE MASONRY WALLS SHALL BE 2,000 PSI. MASONRY STRENGTH SHALL BE DETERMINED BY THE UNIT STRENGTH METHOD OR THE PRISM TEST METHOD AS DESCRIBED BY ACI 530.
8. REINFORCING:
   - TYPICAL - ASTM A615, GRADE 60
   - ALL REINFORCING TO BE WELDED - ASTM A706
9. REFER TO THE DRAWINGS FOR REINFORCING LAP TYPICAL DETAIL AND SCHEDULE REQUIREMENTS.
10. MAXIMUM HEIGHT TO WHICH MASONRY SHALL BE LAID BEFORE GROUTING IS 5 FEET ABOVE CONSTRUCTION SURFACE OR PREVIOUSLY GROUTED MASONRY. IF GROUT POUR HEIGHT EXCEEDS 5 FEET, THEN "HIGH LIFT" GROUTING PROCEDURE MUST BE FOLLOWED. PROVIDE CLEANOUT OPENINGS AT THE BOTTOM OF EACH GROUT POUR HEIGHT. CLEANOUT OPENINGS SHALL BE PROVIDED AT EACH CELL TO BE FILLED WITH GROUT.
11. ALL GROUT PLACED OVER 12" IN HEIGHT SHALL BE MECHANICALLY CONSOLIDATED DURING GROUTING. GROUT SHALL BE RECONSOLIDATED BY MECHANICAL VIBRATION AFTER INITIAL WATER LOSS AND SETTLEMENT HAS OCCURRED.
12. MAXIMUM GROUT LIFT (GROUT POURED IN ONE CONTINUOUS OPERATION) IS 5 FEET. THIS LIMIT ALSO APPLIES TO "HIGH LIFT" GROUTING.
13. REINFORCE MASONRY WHERE SHOWN ON STRUCTURAL DRAWINGS. TIE REINFORCING IN POSITION AND PLACE GROUT AROUND REINFORCING. DO NOT PUSH REINFORCING DOWN INTO PREVIOUSLY PLACED GROUT FILL. SET BOLTS SIMILARLY.
14. TIE MASONRY WYTHES WITH HORIZONTAL REINFORCING AS SPECIFIED.
15. PROVIDE VERTICAL BARS, SIZE MATCHING WALL REINFORCING, AT ALL CORNERS, ENDS OF WALLS, EACH SIDE OF CONTROL JOINTS AND EACH SIDE OF WALL OPENINGS. TIE EACH BAR TO THE FOUNDATION WITH A MATCHING DOWEL.
16. ALL CORNERS OF STRUCTURAL MASONRY WALLS SHALL BE CONSTRUCTED BY INTERLOCKING COURSES. AT INTERSECTIONS WHERE SEQUENCING OR BLOCK COURSING PROHIBITS INTERLOCKED CONSTRUCTION SEE ALTERNATE DETAILS HEREIN.
17. ALL LINTELS TO BEAR 8" MINIMUM EACH SIDE OF OPENING, UNLESS NOTED OTHERWISE.
18. GROUT ALL MASONRY WALLS AND CAVITY BELOW GRADE SOLID. GROUT ALL WALLS ABOVE GRADE AT THE REINFORCED CELLS (MINIMUM) OR AS INDICATED IN SPECIFIC SECTIONS.
19. ONE 3/4"Ø (MAXIMUM) VERTICAL CONDUIT ALLOWED IN ANY REINFORCED CELL PROVIDED 1" CLEAR IS MAINTAINED BETWEEN REINFORCING AND CONDUIT. NO OTHER VERTICAL OR HORIZONTAL CONDUITS, PIPES, OR SLEEVES SHALL BE LOCATED IN REINFORCED CELLS UNLESS OTHERWISE APPROVED BY THE STRUCTURAL ENGINEER. CONTRACTOR SHALL COORDINATE LAYOUT TO AVOID REINFORCED CELLS.

STRUCTURAL STEEL

1. DESIGN, FABRICATION, AND ERECTION SHALL BE PER THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 360).
2. STRUCTURAL STEEL:
   - WIDE FLANGE SHAPES (W SECTIONS) - ASTM A992, GRADE 50 (FY=50 KSI)
   - CHANNELS, ANGLES, RODS, AND BARS - A36 (FY=36 KSI)
   - PLATES - ASTM A36 (FY=36 KSI) OR ASTM A572, GRADE 50 (FY=50 KSI)
   - SQUARE AND RECTANGULAR TUBES - ASTM A500, GRADE B (FY=46 KSI)
   - PIPES OR ROUND TUBES - ASTM A53, GRADE B (FY=35 KSI) OR ASTM A500, GRADE B (FY=42 KSI)
3. ANCHOR BOLTS AND THREADED RODS SHALL CONFORM TO ASTM F1554, GRADE 36, UNO.
4. BEAM SIMPLE SHEAR AND BRACED FRAME CONNECTIONS NOT DETAILED ON STRUCTURAL DRAWINGS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY THE STEEL SUPPLIER AND REGISTERED IN THE STATE OF NORTH CAROLINA. CONNECTIONS SHALL BE MADE WITH ASTM A325 3/4"Ø BOLTS (MINIMUM), TIGHTENED TO A SNUG-TIGHT CONDITION PER AISC REQUIREMENTS.
5. THE CONNECTIONS FOR NON-COMPOSITE BEAMS SHALL BE DESIGNED FOR REACTIONS SHOWN ON DRAWINGS OR FOR REACTIONS DETERMINED BY USING THE MAXIMUM TOTAL UNIFORM LOAD TABULATED IN PART 3 OF THE AISC STEEL CONSTRUCTION MANUAL FOR THE SECTION, SPAN AND STRENGTH OF STEEL SPECIFIED.
6. THE CONNECTIONS FOR COMPOSITE BEAMS SHALL BE DESIGNED FOR REACTIONS SHOWN ON DRAWINGS OR AS DICTATED BY THE TYPICAL COMPOSITE SLAB DETAIL.
7. THE CONNECTION ENGINEER SHALL SUBMIT A SIGNED AND SEALED LETTER STATING THEY HAVE REVIEWED THE STEEL SHOP DRAWINGS AND THE CONNECTIONS ARE CONSISTENT WITH THEIR CALCULATIONS AND INTENT.
8. WHERE STEEL MEMBERS ARE WELDED AND NO SIZE IS SPECIFIED, PROVIDE FULL LENGTH FILLET WELDS BOTH SIDES OF MEMBER. WELD SIZES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

MEMBER THICKNESS	WELD SIZE
3/16" - 5/16"	3/16"
3/8" - 7/16"	1/4"
1/2"	5/16"
9/16"	3/8"
5/8"	7/16"

9. SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MADE. ANY MEMBER HAVING A SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.
10. ALL WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE. USE E70 SERIES ELECTRODES FOR ALL STRUCTURAL STEEL WELDS.
11. SEE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL ITEMS REQUIRED TO BE HOT-DIP GALVANIZED AFTER FABRICATION.
12. STRUCTURAL STEEL SHALL BE PUNCHED FOR WOOD BLOCKING, NAILERS, CLIPS AND TIES IN ACCORDANCE WITH ARCHITECTURAL/STRUCTURAL DETAILS.
13. UNLESS SPECIFICALLY NOTED OTHERWISE, CAP ALL OPEN HSS OR PIPE MEMBERS OUTSIDE THE BUILDING ENVELOPE WITH A 1/4" (MINIMUM) FITTED PLATE.
14. ULTRASONIC INSPECTION BY THE TESTING LABORATORY SHALL BE PROVIDED FOR ALL WELDS CALLED FOR ON THE STRUCTURAL DRAWINGS OR SHOP DRAWINGS AS FULL PENETRATION WELDS.
15. ALL STEEL EXPOSED TO VIEW SHALL BE CLASSIFIED AS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) AS DEFINED BY THE AISC CODE OF STANDARD PRACTICE AND SHALL BE TREATED AS SUCH. SEE VF2 ELEVATION, HANGERS/BEAMS AT WEST ENTRANCE, AND HSS BEAM AT CONNECTOR LEVEL 2 FOR LOCATION OF AESS.

STEEL STAIRS AND RAILINGS

1. STEEL STAIRS AND LANDINGS AND ALL CONNECTIONS SHALL BE DESIGNED BY THE SUPPLIER FOR A LIVE LOAD OF 100 PSF. TREADS SHALL BE DESIGNED FOR A 300 POUND POINT LOAD DISTRIBUTED OVER 4 SQUARE INCHES. ALL STAIR SHOP DRAWINGS SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA. CALCULATIONS SHALL BE SUBMITTED FOR REVIEW WITH THE STAIR SHOP DRAWINGS.
2. ALL RAILINGS (STEEL OR OTHERWISE) AND THEIR CONNECTIONS SHALL BE DESIGNED FOR A LATERAL LOAD OF 50 PLF APPLIED TO THE TOP OF THE RAIL OR A 200 POUND LOAD AT ANY POINT IN ANY DIRECTION, WHICHEVER GOVERNS THE DESIGN. ALL RAILING SHOP DRAWINGS SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA. CALCULATIONS SHALL BE SUBMITTED FOR REVIEW WITH THE RAILING SHOP DRAWINGS.
3. INTERIOR STAIRS THAT USE CONCRETE FILL FOR THE LANDINGS AND/OR TREADS SHALL BE REINFORCED WITH EITHER MICROSYNTHETIC MONOFILAMENT FIBERS (AT A MINIMUM DOSAGE RATE OF 1.0 LBS/CY) OR 4x4-W1.4xW1.4 WELDED WIRE FABRIC. THE CONTRACTOR SHALL COORDINATE THIS SCOPE BETWEEN THE CONCRETE AND STEEL STAIR SUPPLIERS.

NON-LOAD BEARING COLD-FORMED STEEL (METAL STUDS)

1. ALL STRUCTURAL MEMBERS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REFERENCED EDITION OF THE NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS BY THE AMERICAN IRON AND STEEL INSTITUTE.
2. ALL COLD-FORMED LIGHT GAUGE METAL FRAMING AND CONNECTIONS SHALL BE DESIGNED BY THE SUPPLIER'S ENGINEER. AT ARCHITECT'S OR ENGINEER'S REQUEST CONTRACTOR SHALL SUBMIT CALCULATIONS FOR ALL COLD-FORMED METAL FRAMING USED TO SUPPORT CEILINGS AND EXTERIOR CLADDING.
3. ALL MEMBERS SHALL HAVE A MINIMUM YIELD STRENGTH OF 33 KSI AND BE FORMED FROM STEEL HAVING A G-60 GALVANIZED COATING MEETING THE REQUIREMENTS OF ASTM A653 AND C955.
4. ALL THE COLD-FORMED STEEL STRUCTURAL MEMBERS SHALL COME FROM A SINGLE SOURCE MANUFACTURER. ONLY MANUFACTURERS WHO ARE MEMBERS OF THE STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) OR THE STEEL FRAMING INDUSTRY ASSOCIATION (SFIA) WILL BE ACCEPTED. THE INSTALLATION SHALL COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS.
5. SUBMIT SHOP DRAWINGS FOR ALL COLD-FORMED METAL FRAMING USED TO SUPPORT CEILINGS AND EXTERIOR CLADDING. SHOP DRAWINGS SHALL INDICATE PLACING OF ALL FRAMING MEMBERS SHOWING TYPE, SIZE, GAUGE, NUMBER, LOCATION AND SPACING. THEY SHALL ALSO INDICATE SUPPLEMENTAL STRAPPING, BRACING, SPLICES, BRIDGING, ACCESSORIES AND DETAILS REQUIRED FOR PROPER INSTALLATION.
6. SHOP DRAWINGS SHALL SHOW SIZE AND LENGTH OF WELDS FOR ALL WELDED CONNECTIONS AND TYPE, SIZE AND NUMBER OF SCREWS FOR ALL SCREWED CONNECTIONS. SUBMIT MANUFACTURER'S DATA GIVING STRENGTH VALUES FOR SCREWS USED.
7. SHOP DRAWINGS SUBMITTED MUST BE PREPARED UNDER THE SUPERVISION OF AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED.
8. ALL STRUCTURAL FRAMING ACCESSORIES SHALL BE FORMED FROM STRUCTURAL QUALITY STEEL WITH A MINIMUM YIELD STRENGTH OF 50 KSI AND HAVE MINIMUM PROTECTIVE COATING EQUAL TO ASTM A653 G-60 GALVANIZED COATING.
9. VERTICAL DEFLECTION CLIPS ARE REQUIRED TO BE CAPABLE OF ACCOMMODATING UPWARD AND DOWNWARD VERTICAL DISPLACEMENT OF THE STRUCTURE THROUGH POSITIVE MECHANICAL ATTACHMENT TO STUD WEB. MECHANICAL ATTACHMENT TO STRUCTURE AND SCREW ATTACHMENT TO STUD WEB USING STEP-BUSHINGS TO PERMIT FRICTIONLESS VERTICAL MOVEMENT. CONNECTORS MUST BE TESTED IN ACCORDANCE TO ICC AC261 CRITERIA AND HOLD A VALID ICC-ES EVALUATION SERVICE REPORT TO BE ACCEPTED.

EARLY STEEL AND FOUNDATION NOTES:

1. PACKAGE INCLUDES FOUNDATIONS, REBAR, ANCHOR BOLTS, BASEPLATES, MAIN BUILDING COLUMNS, MAIN BUILDING FLOOR BEAMS AND MAIN BUILDING BRACES.
2. PACKAGE DOES NOT INCLUDE FINAL DESIGN FOR MISC. STEEL INCLUDING FACADE EMBED PLATES, CURTAIN WALL ATTACHMENTS, BENT PLATE KICKERS, BOTTOM FLANGE BRACES, DOOR OPENING FRAMING, LOOSE LINTELS, ELEVATOR FRAMING, FLOOR OPENING FRAMING, BRICK RELIEF FRAMING.
3. LIGHT GAUGE TRUSSES AND FRAMING ARE NOT INCLUDED IN PACKAGE A (EARLY STEEL AND FOUNDATION).
4. PRECAST IS NOT INCLUDED IN THIS PACKAGE. PRECAST IS APART OF PACKAGE C.
5. SPECIAL INSPECTIONS ARE FOR THE ENTIRE PROJECT, COORDINATE SCOPE OF EACH REQUIREMENT BETWEEN PACKAGE A AND PACKAGE C.
5. PROVIDE ADDITIONAL 20 CY OF CONCRETE FOR BID ALLOWANCE FOR DESIGN CONTINGENCY. THIS IS ADDITIONAL TO CONTRACTOR CONTINGENCY.
6. PROVIDE ADDITIONAL 10 TONS (ERECTED, NOT MATERIAL) OF STRUCTURAL STEEL (BEAMS, ANGLES, CHANNELS, PLATES, HSS) FOR BID ALLOWANCE FOR DESIGN CONTINGENCY. THIS IS ADDITIONAL TO CONTRACTOR CONTINGENCY.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046260 THOMAS WILLIAM MCLANE
02/14/2022

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME: GENERAL NOTES

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET: S-000

PACKAGE A - CONSTRUCTION DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE FULL SCALE DRAWING SIZE

LIGHT GAUGE COLD-FORMED STEEL TRUSSES

1. ALL TRUSSES AND STRUCTURAL MEMBERS SHALL CONFORM TO THE REFERENCED BUILDING CODE AND SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REFERENCED EDITION OF THE NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS BY THE AMERICAN IRON AND STEEL INSTITUTE.
2. ROOF TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING MINIMUM LOADS:
   TOP CHORD DL = 10 PSF (AT ROOF)
   LL = SEE DESIGN CRITERIA
   BOTTOM CHORD DL = 10 PSF
   DL = 250 LB AT ANY POINT (NFPA-13)
3. TRUSS SUPPLIER SHALL CALCULATE UPLIFT LOADS BASED ON THE WIND LOAD CRITERIA LISTED IN THESE GENERAL NOTES. AT A MINIMUM THE TRUSSES SHALL BE DESIGNED FOR A WIND UPLIFT INDICATED IN THE WIND PRESSURE TABLE UNLESS NOTED OTHERWISE.
4. GABLE END WALL TRUSSES SHALL BE DESIGNED FOR THE COMPONENTS AND CLADDING LOADS INDICATED IN WIND PRESSURE TABLE. DEFLECTION OF THE VERTICAL SUPPORT MEMBERS SHALL BE LESS THAN L/360. SUPPLY BRACING AS REQUIRED FOR LOADS AND DEFLECTION. SEALED CALCULATIONS SHALL BE PROVIDED BY THE TRUSS ENGINEER FOR ALL GABLE END WALL TRUSSES.
5. ALL STEEL SHALL CONFORM TO ASTM A446 WITH G-60 GALVANIZING.
6. ALL REQUIRED BRIDGING SHALL BE DESIGNED AND SUPPLIED BY THE TRUSS MANUFACTURER.
7. SUBMIT SHOP DRAWINGS FOR ALL COLD-FORMED STEEL TRUSSES. SHOP DRAWINGS SHALL INDICATE PLACING OF ALL FRAMING MEMBERS SHOWING TYPE, SIZE, GAUGE, NUMBER, LOCATION AND SPACING. THEY SHALL ALSO INDICATE SUPPLEMENTAL STRAPPING, BRACING, SPLICES, BRIDGING, ACCESSORIES AND DETAILS REQUIRED FOR PROPER INSTALLATION.
8. SHOP DRAWINGS SHALL SHOW SIZE AND LENGTH OF WELDS FOR ALL WELDED CONNECTIONS AND TYPE, SIZE AND NUMBER OF SCREWS FOR ALL SCREWED CONNECTIONS. SUBMIT MANUFACTURER'S DATA GIVING STRENGTH VALUES FOR SCREWS USED.
9. SHOP DRAWINGS SUBMITTED MUST BE PREPARED UNDER THE SUPERVISION OF AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA.
10. ALL LIGHT GAUGE COLD-FORMED STEEL TRUSSES AND CONNECTIONS SHALL BE DESIGNED BY THE SUPPLIER'S ENGINEER, LICENSED IN THE STATE OF NORTH CAROLINA.
11. TEMPORARY BRACING, WHERE REQUIRED, SHALL BE PROVIDED UNTIL THE ERECTION IS COMPLETE.

ADHESIVE AND MECHANICAL POST-INSTALLED ANCHORS

1. ANCHOR BOLTS, REINFORCING STEEL, THREADED RODS, STAIR HANDRAILS, AND OTHER EMBEDDED STEEL ITEMS SHALL BE SET INTO HARDENED CONCRETE WITH ADHESIVE OR MECHANICAL POST-INSTALLED ANCHORS ONLY WHERE DETAILED ON THE DRAWINGS OR WHERE APPROVED BY THE ENGINEER OF RECORD.
2. PRE-APPROVED MANUFACTURERS ARE HILTI, SIMPSON STRONG-TIE, AND DEWALT. WHERE DETAILS INDICATE SPECIFIC ADHESIVE OR MECHANICAL POST-INSTALLED ANCHORS, IT IS ACCEPTABLE AT THE CONTRACTOR'S OPTION TO SUBMIT AN ALTERNATE SIMILAR PRODUCT PROVIDED BY A DIFFERENT MANUFACTURER AS LONG AS THE MANUFACTURER'S DATA PROVIDES EQUIVALENT LOAD CAPACITY TO THE ANCHOR SPECIFIED. THE CONTRACTOR SHALL PROVIDE SIGNED AND SEALED CALCULATIONS THAT DEMONSTRATE THE ALTERNATE PRODUCT IS CAPABLE OF MEETING THE PERFORMANCE OF THE SPECIFIED ANCHOR. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC-ESR SHOWING COMPLIANCE WITH THE GOVERNING BUILDING CODE FOR SEISMIC USE, LOAD RESISTANCE, INSTALLATION CATEGORY, AND THE AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, MOISTURE CONDITION OF CONCRETE, AND DRILLING METHODS.
3. BASIS OF DESIGN FOR ADHESIVE ANCHORS DETAILED ON THE DRAWINGS INCLUDES THE FOLLOWING PARAMETERS: CRACKED CONCRETE; WATER-SATURATED CONCRETE; BASE MATERIAL BETWEEN 25 AND 100 DEGREES FAHRENHEIT; AND HOLES MADE BY HAMMER DRILL, HOLLOW DRILL BIT SYSTEM, OR CORE-DRILLING.
4. INSTALL ANCHORS PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING. HEED ALL LABEL WARNINGS. INSTALL IN ACCORDANCE WITH APPLICABLE SAFETY LAWS. ALL HOLES SHALL BE DRILLED WITH A DIAMETER NO LARGER THAN 1/8" GREATER THAN THE DIAMETER OF THE ANCHOR BEING INSTALLED. ALL HOLES SHALL BE CLEANED WITH COMPRESSED AIR AND SHALL BE DRY PRIOR TO INSTALLATION OF ADHESIVE. HOLES SHALL BE FREE OF ALL DELETERIOUS MATERIAL SUCH AS LAITANCE, DUST, DIRT, AND OIL.
5. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
6. WHERE ADHESIVE ANCHORS ARE TO BE INSTALLED IN HOLLOW MATERIAL WITH UNKNOWN CAPACITY, THE CONTRACTOR SHALL INSTALL THE ANCHOR IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. THE ADHESIVE SHALL BE INSTALLED IN THE HOLLOW BASE MATERIAL USING SCREEN TUBES SUPPLIED BY THE MANUFACTURER. THE ADHESIVE SHALL BE CAPABLE OF SUSTAINING MINIMUM TENSION AND SHEAR LOAD CAPACITIES NOTED ON THE DRAWINGS MULTIPLIED BY A FACTOR OF SAFETY OF 4. ALL HARDWARE AND MATERIAL SHALL BE SUPPLIED BY THE ANCHOR MANUFACTURER.
7. CONTRACTOR PERFORMING ADHESIVE WORK SHALL BE AN APPROVED CONTRACTOR BY THE MANUFACTURER FURNISHING THE ADHESIVE MATERIALS, AND SHALL HAVE NO LESS THAN FIVE YEARS EXPERIENCE IN THE VARIOUS TYPES OF ADHESIVE RELATED WORK REQUIRED IN THIS PROJECT. ALTERNATIVELY, THE CONTRACTOR SHALL ARRANGE FOR A REPRESENTATIVE OF THE ANCHOR MANUFACTURER TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. DOCUMENTATION THAT ALL PERSONNEL INSTALLING ANCHORS ARE TRAINED SHALL BE SUBMITTED TO THE ENGINEER OR RECORD PRIOR TO THE COMMENCEMENT OF ANCHOR INSTALLATION.

DEMOLITION

1. THE CONTRACTOR SHALL NOTIFY ALL LOCAL AGENCIES HAVING JURISDICTION, AND SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED FOR THE DEMOLITION AND REMOVAL OF THE DEBRIS RESULTING FROM THE DEMOLITION.
2. CONTRACTOR SHALL RETAIN, AT THEIR EXPENSE, A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA, TO DETERMINE ALL CONSTRUCTION PHASE SHORING REQUIREMENTS. CONTRACTOR SHALL SUBMIT TO THE OWNER AND THE ENGINEER OF RECORD, SIGNED AND SEALED DRAWINGS, OUTLINING OPERATIONAL SEQUENCES, SHORING CONCEPTUAL PLANS, METHODS USED FOR THE PROTECTION OF STRUCTURES TO REMAIN AND NEIGHBORING STRUCTURES.
3. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION AND STABILITY OF EXISTING AND NEW STRUCTURES DURING CONSTRUCTION.
4. BEFORE UNDERTAKING ANY DEMOLITION WORK OR ORDERING MATERIAL, ASCERTAIN BY SURVEY THE EXISTING CONDITIONS OF THE PROPERTIES AND BUILDINGS ADJOINING OR IN CLOSE PROXIMITY TO THE PREMISES. THE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCY.
5. PROVIDE AND MAINTAIN BRACING AND SHORING AS NEEDED. KEEP SUPPORTING STRUCTURE IN PLACE DURING NEW CONSTRUCTION AND UNTIL NEW STRUCTURE IS COMPLETED.
6. STORE AND PROTECT ALL MATERIAL TO BE REMOVED AND REUSED.
7. IF SAFETY OR INTEGRITY OF STRUCTURAL SYSTEM APPEARS TO BE COMPROMISED, CEASE OPERATIONS IMMEDIATELY AND NOTIFY THE OWNER AND THE ENGINEER. PROPERLY BRACE AND SUPPORT STRUCTURE BEFORE RESUMING OPERATIONS.
8. ANY DAMAGE OCCURRING TO THE EXISTING STRUCTURE, ADJACENT STRUCTURES, STREETS, SIDEWALKS, UTILITY LINES OR ANY OTHER PUBLIC OR PRIVATE PROPERTIES, SHALL BE REINSTALLED TO THE ORIGINAL CONDITION BY THE CONTRACTOR AT NO COST TO THE OWNER OR THE ENGINEER.
9. ALL OPENINGS IN EXISTING CONSTRUCTION SHALL BE SAW CUT OR DRILLED.
10. ALL EXISTING INFORMATION SHOWN IS REFERENCED FROM EXISTING DRAWINGS PREPARED BY:
    LESLIE N. BONEY ARCHITECTS, DATED 1966.

EXISTING CONSTRUCTION

1. EXISTING FRAMING INFORMATION SHOWN ON THE STRUCTURAL DRAWINGS HAS BEEN PREPARED BASED ON SITE VISITS AND/OR EXISTING DRAWINGS. IN LOCATIONS WHERE NEW FRAMING IS CONNECTING TO EXISTING FRAMING, THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITION PRIOR TO SHOP DRAWING CREATION, MATERIAL FABRICATION, OR WORK BEING PERFORMED. SELECTIVE DEMOLITION SHALL BE INCLUDED IF REQUIRED TO VERIFY EXISTING CONDITIONS.
2. DETAILS NOTED ON THE STRUCTURAL DRAWINGS ARE DERIVED FROM THE INFORMATION NOTED HEREIN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD MEASURE EXISTING MEMBERS AT POINT OF CONNECTION, ELEVATIONS, AND LOCATIONS TO ENSURE EXISTING CONSTRUCTION MATCHES DETAILS PROVIDED IN THE STRUCTURAL DRAWINGS.
3. ANY DIMENSIONS SHOWN FROM NEW FRAMING TO EXISTING FRAMING ARE APPROXIMATED AND MUST BE FIELD VERIFIED. ALL DIMENSIONS THAT RELATE TO MEMBER DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. STEEL CONNECTION DESIGN OF NEW FRAMING, UNLESS SPECIFICALLY SHOWN, IS ASSUMED TO BE SIMPLE SHEAR CONNECTIONS AND TO BE WELDED TO THE EXISTING STEEL. DESIGN AND DETAILING OF THE STEEL CONNECTIONS ARE THE RESPONSIBILITY OF THE FABRICATOR, AND ARE COVERED FURTHER IN THE STRUCTURAL STEEL SECTION OF THESE GENERAL NOTES. EXISTING MEMBERS SUPPORTING NEW FRAMING HAVE BEEN REVIEWED BY THE ENGINEER OF RECORD AND ARE CAPABLE (WITH ADDED REINFORCING WHERE DETAILED) OF SUPPORTING THE NEW FRAMING.

REPRODUCTION

1. THE USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREIN AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HERE ON.

ABBREVIATIONS

@	AT	HD	HEADED
&	AND	HI	HIGH
Ø	DIAMETER	HORIZ	HORIZONTAL
AB	ANCHOR BOLTS	HSS	HOLLOW STRUCTURAL SECTION
ACI	AMERICAN CONCRETE INSTITUTE	INT	INTERIOR
ADDL	ADDITIONAL	JT	JOINT
ADH	ADHESIVE	K	KIP(S)
AFF	ABOVE FINISHED FLOOR	KB	KNEE BRACE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	KSI	KIPS PER SQUARE INCH
AISI	AMERICAN IRON AND STEEL INSTITUTE	LB	LONG BAR
ALT	ALTERNATE	LBS	POUNDS
ARCH	ARCHITECTS / ARCHITECTURAL	LLH	LONG LEG HORIZONTAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	LLV	LONG LEG VERTICAL
AWS	AMERICAN WELDING SOCIETY	LO	LOW
B/ or BOT	BOTTOM	LOC	LOCATION
BCX	BOTTOM CHORD EXTENSION	LSH	LONG SIDE HORIZONTAL
BFB	BOTTOM FLANGE BRACE	LSV	LONG SIDE VERTICAL
BFF	BELOW FINISHED FLOOR	LWC	LIGHT WEIGHT CONCRETE
BLDG	BUILDING	MAX	MAXIMUM
BM	BEAM	MC	MOMENT CONNECTION
BOS	BOTTOM OF STEEL	MCJ	MASONRY CONTROL JOINT
BRG	BEARING	MECH	MECHANICAL
BTWN	BETWEEN	MFR	MANUFACTURER
CANT	CANTILEVER	MID	MIDDLE
CJ	CONTROL JOINT	MIN	MINIMUM
CL	CENTERLINE	MISC	MISCELLANEOUS
CLR	CLEAR	MOW	MIDDLE OF WALL
CMU	CONCRETE MASONRY UNIT	MP	MASONRY PILASTER
COL	COLUMN	No or #	NUMBER
CONC	CONCRETE	NS	NEAR SIDE
CONN	CONNECTION	NTS	NOT TO SCALE
CONST JT	CONSTRUCTION JOINT	NWC	NORMAL WEIGHT CONCRETE
CONT	CONTINUOUS	OC	ON CENTER
CONTR	CONTRACTOR	OPNG	OPENING
COORD	COORDINATE	OPP	OPPOSITE HAND
CTRD	CENTERED	PAF	POWDER ACTUATED FASTENER
d	NAILS (PENNY)	PED	PEDESTAL
DBA	DEFORMED BAR ANCHOR	PL	PLATE
DEFL	DEFLECTION	PSF	POUNDS PER SQUARE FOOT
DEPR	DEPRESSION / DEPRESSED	PSI	POUNDS PER SQUARE INCH
DET	DETAIL	PT	PRESSURE TREATED
DIAG	DIAGONAL	P-T	POST-TENSIONED
DIM	DIMENSION	REF	REFERENCE
DIST	DISTANCE	REINF	REINFORCING
DWG(S)	DRAWING(S)	REQD	REQUIRED
DWL(S)	DOWEL(S)	SB	SHORT BAR
EA	EACH	SCHD	SCHEDULE
EE	EACH END	SIM	SIMILAR
EF	EACH FACE	SOG	SLAB ON GRADE
EJ	EXPANSION JOINT	SPEC(S)	SPECIFICATION(S)
ELEV	ELEVATION	SQ	SQUARE
EMBED	EMBEDDED / EMBEDMENT	STD	STANDARD
ENGR	ENGINEER	STIFF	STIFFENER
EOD	EDGE OF DECK	STIRR	STIRRUP(S)
EOS	EDGE OF SLAB	STL	STEEL
EQ	EQUAL	STR	STRUCTURAL
EQUIP	EQUIPMENT	T/	TOP
EW	EACH WAY	TCX	TOP CHORD EXTENSION
EXIST	EXISTING	TOC	TOP CHORD CONCRETE
EXP	EXPANSION	TOF	TOP OF FOOTING
EXT	EXTERIOR	TOS	TOP OF STEEL
FDN	FOUNDATION	TOW	TOP OF WALL
FFE	FINISHED FLOOR ELEVATION	TYP	TYPICAL
FOM	FACE OF MASONRY	UNO	UNLESS NOTED OTHERWISE
FOW	FACE OF WALL	VERT	VERTICAL
FS	FAR SIDE	VIF	VERIFY IN FIELD
FTG	FOOTING	W/	WITH
GA	GAUGE	WWF	WELDED WIRE FABRIC
GALV	GALVANIZED	WP	WORK POINT

SYMBOL LEGEND

SYMBOL	MEANING	REFERENCE
<No>	TOP OF FOOTING, GRADE BEAM, PILE CAP, OR DRILLED PIER. ELEVATION RELATIVE TO REFERENCE ELEVATION.	---
<No> <No>	STEP IN TOP OF FOOTING ELEVATION. ELEVATION RELATIVE TO REFERENCE ELEVATION.	SEE 3/S-303
No	DEPRESSED OR RAISED SLAB ELEVATION. ELEVATION RELATIVE TO FINISHED FLOOR ELEVATION.	---
	SLOPED | STEPPED SLAB.	SEE 3/S-301
[No]	TOP OF WALL OR PEDESTAL. ELEVATION RELATIVE TO REFERENCE ELEVATION.	SEE 13/S-303
F#	SPREAD FOOTING TYPE.	SEE 5/S-303
P#	CONCRETE PEDESTAL TYPE.	SEE 13/S-303
GB# WxD	CONCRETE GRADE BEAM TYPE. "W" INDICATES BEAM WIDTH AND "D" INDICATES BEAM DEPTH (IN INCHES).	SEE 4/S-304
	SPOT ELEVATION. ELEVATION RELATIVE TO REFERENCE ELEVATION.	---
D1	SPAN DIRECTION OF METAL ROOF DECK. CONSTRUCTION SHALL BE 1 1/2"-18GA METAL ROOF DECK.	SEE 1/S-503
D2	SPAN DIRECTION OF METAL ROOF DECK. CONSTRUCTION SHALL BE 3"-18GA METAL ROOF DECK.	SEE 9/S-503
S1	SPAN DIRECTION OF COMPOSITE SLAB. CONSTRUCTION SHALL BE 3 1/4" LIGHT WEIGHT CONCRETE ON 2"-18GA COMPOSITE METAL DECK (5 1/4" TOTAL THICKNESS). TOP OF STEEL ELEVATION 5 1/4" BELOW FINISHED FLOOR ELEVATION, UNO.	SEE 1/S-501
S2	SPAN DIRECTION OF COMPOSITE SLAB. CONSTRUCTION SHALL BE 4 1/2" NORMAL WEIGHT CONCRETE ON 2"-20GA COMPOSITE METAL DECK (6 1/2" TOTAL THICKNESS). TOP OF STEEL ELEVATION 6 1/2" BELOW FINISHED FLOOR ELEVATION, UNO.	SEE 1/S-501
(No) | [+No]	TOP OF STEEL/JOIST BEARING ELEVATION | TOP OF STEEL ABOVE STEEL/JOIST BEARING ELEVATION.	---
W10	COMPOSITE W10x15 STEEL BEAM WITH HEADED STUDS @24"OC.	SEE 1/S-501
W12	COMPOSITE W12x16 STEEL BEAM WITH HEADED STUDS @24"OC.	SEE 1/S-501
V# M# H# A# T#	STEEL BEAM DESIGN END REACTIONS (WHERE APPLICABLE). "V" INDICATES VERTICAL SHEAR, "M" INDICATES BENDING MOMENT, "H" INDICATES HORIZONTAL SHEAR, "A" INDICATES AXIAL TENSION/COMPRESSION, AND "T" INDICATES TORSION. ALL LOADS PROVIDED ARE FACTORED FOR STRENGTH DESIGN IN UNITS OF KIP AND KIP-FEET, AND ALL LOADS SHALL BE CONSIDERED REVERSIBLE, UNO.	---
ML#	MASONRY LINTEL TYPE.	SEE 12/S-401
MC#	MOMENT CONNECTION TYPE.	---
VF#	VERTICAL FRAME TYPE.	S-251

UNCW

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TEL (919) 380-8750
PROJ # S20141
FIRM LICENSE #C-1051

NORTH CAROLINA PROFESSIONAL SEAL 046260 ENGINEER THOMAS WILLIAM MCLANE

02/14/2022

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
601 SOUTH COLLEGE ROAD
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
GENERAL NOTES, ABBREV, SYMBOLS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-001

PACKAGE A - CONSTRUCTION DOCUMENTS

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A B C D E

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

STATEMENT OF SPECIAL INSPECTIONS

THIS STATEMENT OF SPECIAL INSPECTIONS IS SUBMITTED AS A CONDITION FOR PERMIT ISSUANCE IN ACCORDANCE WITH THE SPECIAL INSPECTION REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE. IT INCLUDES A SCHEDULE OF SPECIAL INSPECTION SERVICES APPLICABLE TO THIS PROJECT, THE NAME OF THE SPECIAL INSPECTOR, THE IDENTITY OF OTHER APPROVED AGENCIES RETAINED FOR CONDUCTING SPECIAL INSPECTIONS, AND THE REQUIRED INSPECTOR QUALIFICATIONS. THIS STATEMENT OF SPECIAL INSPECTIONS WAS PREPARED BY THE DESIGNERS OF RECORD.

THE SPECIAL INSPECTOR SHALL KEEP RECORDS OF ALL SPECIAL INSPECTIONS AND TESTS AND SHALL FURNISH REPORTS TO THE CONTRACTOR, OWNER, AND THE DESIGNERS OF RECORD. REPORTS SHALL INDICATE IF THE WORK INSPECTED OR TESTED WAS OR WAS NOT COMPLETED IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS. DISCOVERED DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF SUCH DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND THE DESIGNERS OF RECORD. THE SPECIAL INSPECTIONS PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF HIS OR HER RESPONSIBILITIES. JOB SITE SAFETY AND MEANS AND METHODS OF CONSTRUCTION ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

MONTHLY INTERIM REPORTS SHALL BE SUBMITTED TO THE CONTRACTOR, OWNER, AND THE DESIGNERS OF RECORD. A FINAL REPORT OF SPECIAL INSPECTIONS DOCUMENTING COMPLETION OF ALL REQUIRED SPECIAL INSPECTIONS, TESTING, AND CORRECTION OF ANY DISCREPANCIES SHOULD BE SUBMITTED PRIOR TO ISSUANCE OF A CERTIFICATE OF USE AND OCCUPANCY.

PROJECT INFORMATION

CODE ENFORCEMENT PROJECT #:	18-19656-02A
PERMIT #:	---
PROJECT NAME:	UNCW RANDALL LIBRARY EXPANSION & RENOVATION
PROJECT ADDRESS:	5162 RANDALL DRIVE, WILMINGTON, NC 28403
OWNER:	UNC WILMINGTON
OWNER ADDRESS:	601 SOUTH COLLEGE ROAD, WILMINGTON, NC 28403
SPECIAL INSPECTOR OF RECORD:	TBD
SPECIAL INSPECTOR ADDRESS:	STREET ADDRESS | CITY, STATE ZIP

DESIGN TEAM

STRUCTURAL (RDPIRC) FIRM:	STEWART	ENGINEER OF RECORD:	THOMAS W MCLANE, PE
ARCHITECTURAL FIRM:	LS3P ASSOCIATES	ARCHITECT OF RECORD:	LAURA L. MILLER, AIA
MECHANICAL FIRM:	AFFILIATED ENGINEERS	ENGINEER OF RECORD:	JOHN J DUFFY, JR, PE

SCHEDULE OF SPECIAL INSPECTIONS

THE INSPECTION AND TESTING AGENTS SHALL BE ENGAGED BY THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT, AND NOT BY THE CONTRACTOR OR SUBCONTRACTOR WHOSE WORK IS TO BE INSPECTED OR TESTED. ANY CONFLICT OF INTEREST MUST BE DISCLOSED TO THE OWNER, PRIOR TO COMMENCING WORK.

PRIOR TO STARTING WORK THE OWNER SHALL BE PROVIDED WITH THE NAME AND RESUME FOR THE DESIGNATED SPECIAL INSPECTOR FOR THE PROJECT. THE DESIGNATED SPECIAL INSPECTOR SHALL BE A PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT LICENSED IN THE STATE OF NORTH CAROLINA AND BE APPROVED BY THE OWNER. INDIVIDUALS PROVIDING INSPECTIONS SHALL MEET THE FOLLOWING MINIMUM CRITERIA OF CERTIFICATION AND/OR DOCUMENTED EXPERIENCE. WORK EXPERIENCE MUST BE RELATED TO THE FIELD FOR WHICH THE INSPECTOR IS BEING UTILIZED. WORK EXPERIENCE MAY BE GAINED BY WORKING FOR AN INSPECTION/TESTING AGENCY, AN ENGINEERING FIRM, OR A CONTRACTOR AS A TECHNICIAN, INSPECTOR OR ENGINEER.

THE DESIGNATED SPECIAL INSPECTOR SHALL BE RESPONSIBLE FOR COLLECTING AND APPROVING DOCUMENTATION OF QUALIFICATIONS FOR ALL INSPECTORS. COPIES OF DOCUMENTATION OF QUALIFICATIONS, INCLUDING THE QUALIFICATIONS OF THE INDEPENDENT TESTING LABORATORY IF THEY ARE PROVIDING SPECIAL INSPECTION SERVICES, SHALL BE MAINTAINED BY THE SPECIAL INSPECTOR AND BE MADE AVAILABLE FOR OWNER REVIEW AS REQUESTED.

THE FOLLOWING TABLES COMPRISE THE REQUIRED SCHEDULE OF SPECIAL INSPECTIONS FOR THIS PROJECT. THE INSPECTION FREQUENCY INDICATED ON THE TABLES ARE "C" CONTINUOUS, "P" PERIODIC, AND "O" RANDOMIZED ON A DAILY BASIS. THE CONSTRUCTION DIVISIONS WHICH REQUIRE SPECIAL INSPECTIONS FOR THIS PROJECT ARE AS FOLLOWS:

REQD	ITEM	DIVISION	PRIMARY INSPECTOR/SUPERVISOR
☒	IT-1	SPECIAL CASES AND SPECIFIC ELEMENTS ALWAYS REQUIRED	AS IDENTIFIED BY THE RDPIRC
☒	IT-2A	STRUCTURAL STEEL AND HIGH-STRENGTH BOLTING	ICC STRUCTURAL STEEL AND BOLTING INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☒	IT-2B	WELDING OF STRUCTURAL STEEL	ICC STRUCTURAL WELDING SPECIAL INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE), OR AWS D1.1 CERTIFIED WELDING INSPECTOR, OR NDT LEVEL III CERTIFICATE
☒	IT-2C	COLD-FORMED STEEL DECKING	ICC STRUCTURAL STEEL AND BOLTING INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE), OR ICC STRUCTURAL WELDING SPECIAL INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE), OR ICC COMMERCIAL BUILDING INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☐	IT-2D	OPEN-WEB STEEL JOISTS AND JOIST GIRDERS	ICC STRUCTURAL STEEL AND BOLTING INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☒	IT-2E	COLD-FORMED STEEL FRAMING	ICC STRUCTURAL STEEL AND BOLTING INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE), OR ICC STRUCTURAL WELDING SPECIAL INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE), OR ICC COMMERCIAL BUILDING INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☒	IT-3	CONCRETE CONSTRUCTION	ICC REINFORCED CONCRETE SPECIAL INSPECTOR CERTIFICATE AND ACI CONCRETE FIELD TESTING TECHNICIAN CERTIFICATE, GRADE 1, OR ACI CONCRETE CONSTRUCTION SPECIAL INSPECTOR CERTIFICATE, OR NICET CONCRETE TECHNICIAN LEVEL III CERTIFICATE IN CONSTRUCTION MATERIALS TESTING
☒	IT-4	MASONRY CONSTRUCTION	ICC STRUCTURAL MASONRY SPECIAL INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☐	IT-5	WOOD CONSTRUCTION	ICC COMMERCIAL BUILDING INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☒	IT-6	SOILS	NICET SOILS TECHNICIAN LEVEL II CERTIFICATE IN CONSTRUCTION MATERIALS TESTING, OR NICET GEOTECHNICAL ENGINEERING TECHNICIAN LEVEL II CONSTRUCTION OR GENERALIST CERTIFICATE, OR ICC SOILS SPECIAL INSPECTOR CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE), OR ENGINEER-IN-TRAINING (EIT) WITH ONE YEAR OF RELATED EXPERIENCE, OR GEOLOGIST-IN-TRAINING (GIT) WITH ONE YEAR OF RELATED EXPERIENCE
☐	IT-7	DRIVEN DEEP FOUNDATIONS	NICET SOILS TECHNICIAN LEVEL II CERTIFICATE IN CONSTRUCTION MATERIALS TESTING, OR NICET GEOTECHNICAL ENGINEERING TECHNICIAN LEVEL II CONSTRUCTION OR GENERALIST CERTIFICATE, OR ENGINEER-IN-TRAINING (EIT) WITH ONE YEAR OF RELATED EXPERIENCE, OR GEOLOGIST-IN-TRAINING (GIT) WITH ONE YEAR OF RELATED EXPERIENCE
☐	IT-8	CAST-IN-PLACE DEEP FOUNDATIONS	SEE IT-7
☐	IT-9A	HELICAL PILE FOUNDATIONS	SEE IT-7
☐	IT-9B	RAMMED AGGREGATE PIERS AND STONE COLUMNS	SEE IT-7
☒	IT-10	FABRICATED ITEMS	AS NOTED HEREIN FOR EACH COMPONENT TYPE
☒	IT-11	WIND RESISTANCE	AS NOTED HEREIN FOR EACH COMPONENT TYPE
☐	IT-12	SEISMIC RESISTANCE	AS NOTED HEREIN FOR EACH COMPONENT TYPE
☐	IT-13A	SEISMIC RESISTANCE, STRUCTURAL STEEL AND HIGH-STRENGTH BOLTING	AS NOTED HEREIN FOR EACH COMPONENT TYPE
☐	IT-13B	SEISMIC RESISTANCE, WELDING OF STRUCTURAL STEEL	AS NOTED HEREIN FOR EACH COMPONENT TYPE
☐	IT-13C	SEISMIC RESISTANCE, NON-DESTRUCTIVE TESTING OF WELDED JOINTS	AS NOTED HEREIN FOR EACH COMPONENT TYPE
☐	IT-13D	SEISMIC RESISTANCE, STEEL DRIVEN DEEP FOUNDATIONS (H-PILES)	AS NOTED HEREIN FOR EACH COMPONENT TYPE
☒	IT-14	SPRAYED FIRE-RESISTANT MATERIALS	ICC SPRAY-APPLIED FIREPROOFING SPECIAL INSPECTOR CERTIFICATE, OR ICC FIRE INSPECTOR I CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☒	IT-15	MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS	SEE IT-14
☐	IT-16	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)	AWCI EIFS INSPECTOR CERTIFICATE
☒	IT-17	FIRE-RESISTANT PENETRATIONS AND JOINTS	ICC FIRE INSPECTOR I CERTIFICATE (PLUS ONE YEAR OF RELATED EXPERIENCE)
☐	IT-18	SMOKE CONTROL	REGISTERED PROFESSIONAL ENGINEER (MECHANICAL OR FIRE PROTECTION) AND CERTIFICATION AS AIR BALANCER, OR AABC TECHNICIAN CERTIFICATION (PLUS ONE YEAR OF RELATED EXPERIENCE)

IT-1: SPECIAL CASES AND SPECIFIC ELEMENTS ALWAYS REQUIRED

	INSPECTION TASK	FREQ	REFERENCE
☐	1. CONSTRUCTION MATERIALS AND SYSTEMS THAT ARE ALTERNATIVES TO MATERIALS AND SYSTEMS PRESCRIBED BY THE IBC.	P	IBC 1705.1.1.1
☐	2. UNUSUAL DESIGN APPLICATIONS OF MATERIALS DESCRIBED IN THE IBC.	P	IBC 1705.1.1.2
☐	3. MATERIALS AND SYSTEMS REQUIRED TO BE INSTALLED IN ACCORDANCE WITH ADDITIONAL MANUFACTURER'S INSTRUCTIONS THAT PRESCRIBE REQUIREMENTS NOT CONTAINED IN THE IBC OR IN STANDARDS REFERENCED BY THE IBC.	P	IBC 1705.1.1.3
☒	4. PILES, PIERS, AND SPECIAL FOUNDATIONS	P	IBC 1705.1.2.1
☒	5. SPRAYED FIRE-RESISTANT MATERIALS	P	IBC 1705.1.2.2
☒	6. MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS	P	IBC 1705.1.2.3
☐	7. SMOKE CONTROL AND SMOKE EXHAUST SYSTEMS	P	IBC 1705.1.2.4
☐	8. RETAINING WALLS (>5' IN HEIGHT OF UNBALANCED BACKFILL)		IBC 1705.1.2.5
	A. VERIFY FOUNDATION SUPPORT SYSTEM IS ADEQUATE FOR THE INTENDED SITE CONDITIONS.	P	IBC 1807.2.5.1
	B. VERIFY THAT RETAINING WALL MATERIALS AND INSTALLATIONS ARE IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.	P	IBC 1807.2.5.2
	C. VERIFY THAT ACTUAL SOIL CONDITIONS ARE SIMILAR TO THOSE ANTICIPATED BY THE APPROVED ENGINEERED DESIGN.	P	IBC 1807.2.5.3
	D. EXAMINE BACKFILL MATERIALS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.	P	IBC 1807.2.5.4
	E. CONFIRM THAT ALL SUBSOIL DRAINAGE PIPING IS UNDAMAGED, DRAINS FREELY TO THE DESIGNATED OUTLET OR STRUCTURE, AND HAS BEEN INSTALLED PER THE APPROVED ENGINEERED DESIGN.	P	IBC 1807.2.5.4

FOR SOILS PERFORM ADDITIONAL TESTS AND INSPECTIONS PER IBC 1705.6 AND THE APPLICABLE SCHEDULES HEREIN. FOR CONCRETE WALLS AND FOOTINGS PERFORM ADDITIONAL TESTS AND INSPECTIONS PER IBC 1705.3 AND THE APPLICABLE SCHEDULES HEREIN. FOR MASONRY WALLS PERFORM ADDITIONAL TESTS AND INSPECTIONS PER IBC 1705.4 AND THE APPLICABLE SCHEDULES HEREIN.

IT-2A: STRUCTURAL STEEL AND HIGH-STRENGTH BOLTING

INSPECTION TASK	FREQ	REFERENCE
1. FABRICATOR CERTIFICATION/VERIFICATION OF QUALITY CONTROL PROCEDURES		
A. VERIFY FABRICATOR QUALIFICATIONS.	C	IBC 1704.2.5.1
B. REVIEW MATERIAL TEST REPORTS AND CERTIFICATIONS.	C	AISC 360 N5.2
C. COLLECT CERTIFICATES OF COMPLIANCE FROM THE STEEL FABRICATOR AT COMPLETION OF FABRICATION.	C	IBC 1704.5
2. INSPECTIONS PRIOR TO HIGH-STRENGTH BOLTING AT PRE-TENSIONED AND SLIP-CRITICAL JOINTS:		
A. COLLECT MANUFACTURER'S CERTIFICATIONS FOR FASTENER MATERIALS.	C	AISC 360 TABLE N5.6-1
B. VERIFY FASTENERS ARE MARKED PER ASTM REQUIREMENTS.	P	AISC 360 TABLE N5.6-1
C. ENSURE CORRECT FASTENERS AND BOLTING PROCEDURES ARE SELECTED FOR JOINT DETAILS. VERIFY GRADE, TYPE, AND BOLT LENGTH (IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE).	P	AISC 360 TABLE N5.6-1
D. VERIFY CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION (WHEN SPECIFIED), COMPLY WITH THE CONTRACT DOCUMENTS.	P	AISC 360 TABLE N5.6-1
E. OBSERVE AND DOCUMENT PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL FOR FASTENER ASSEMBLIES AND METHODS.	P	AISC 360 TABLE N5.6-1
F. VERIFY THE PROTECTED STORAGE FOR BOLTS, NUTS, WASHERS, AND OTHER FASTENER COMPONENTS.	P	AISC 360 TABLE N5.6-1
3. INSPECTIONS DURING HIGH-STRENGTH BOLTING AT PRE-TENSIONED AND SLIP-CRITICAL JOINTS:		
A. ENSURE CORRECT FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS/NUTS (WHEN SPECIFIED) ARE POSITIONED AS REQUIRED.	P	AISC 360 TABLE N5.6-2
B. VERIFY JOINT BROUGHT TO SNUG-TIGHT CONDITION PRIOR TO PRE-TENSIONING.	P	AISC 360 TABLE N5.6-2
C. VERIFY FASTENER COMPONENTS NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING.	P	AISC 360 TABLE N5.6-2
D. ENSURE FASTENERS ARE PRE-TENSIONED IN ACCORDANCE WITH RCSC, PROGRESSING FROM THE MOST RIGID POINT TOWARDS FREE EDGES.	P	AISC 360 TABLE N5.6-2
4. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS AFTER HIGH-STRENGTH BOLTING IS COMPLETE.	C	AISC 360 TABLE N5.6-3
5. STRUCTURAL DETAILS		
A. VERIFY DIAMETER, GRADE, TYPE, AND LENGTH OF ANCHOR RODS AND OTHER EMBEDDED ITEMS. THE EXTENT OR DEPTH OF EMBEDMENT INTO THE CONCRETE SHALL BE VERIFIED AND DOCUMENTED PRIOR TO PLACEMENT OF CONCRETE.	P	AISC 360 N5.7
B. INSPECT THE FABRICATED STEEL OR ERECTED STEEL FRAME TO VERIFY COMPLIANCE WITH THE DETAILS SHOWN ON THE CONTRACT DOCUMENTS.	P	AISC 360 N5.7

IT-2B: WELDING OF STRUCTURAL STEEL

INSPECTION TASK	FREQ	REFERENCE
1. INSPECTIONS PRIOR TO WELDING:		AISC 360 N5.4
A. COLLECT AND REVIEW WELDING PROCEDURE SPECIFICATION (WPS) AND VERIFY MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES.	C	AISC 360 TABLE N5.4-1
B. CONFIRM WELD MATERIAL TYPE AND GRADE.	P	AISC 360 TABLE N5.4-1
C. CONFIRM METHOD OF WELDER IDENTIFICATION. REVIEW WELDER QUALIFICATION AND CONTINUITY RECORDS.	P	AISC 360 TABLE N5.4-1
D. INSPECT FIT-UP FOR GROOVE AND FILLET WELDS, INCLUDING JOINT GEOMETRY.	P	AISC 360 TABLE N5.4-1
E. INSPECT FIT-UP FOR CJP GROOVE WELDS OF HSS T-, Y-, AND K- JOINTS WITHOUT BACKING, INCLUDING JOINT GEOMETRY.	P	AISC 360 TABLE N5.4-1
F. INSPECT CONFIGURATION AND FINISH OF ACCESS HOLES.	P	AISC 360 TABLE N5.4-1
G. CHECK WELDING EQUIPMENT.	C	AISC 360 TABLE N5.4-1
2. INSPECTIONS DURING WELDING:		AISC 360 N5.4
A. VERIFY WELDER QUALIFICATIONS.	P	AISC 360 TABLE N5.4-2
B. VERIFY PROPER CONTROL AND HANDLING OF WELDING CONSUMABLES, INCLUDING PACKAGING AND EXPOSURE.	P	AISC 360 TABLE N5.4-2
C. MONITOR THAT ENVIRONMENTAL CONDITIONS, INCLUDING WIND SPEED, PRECIPITATION AND TEMPERATURE, ARE WITHIN DEFINED LIMITS.	P	AISC 360 TABLE N5.4-2
D. MONITOR PROPER IMPLEMENTATION OF WPS, INCLUDING SETTINGS ON WELDING EQUIPMENT, TRAVEL SPEED, SELECTED WELDING MATERIALS, SHIELDING GAS TYPE/FLOW RATE, PREHEAT APPLIED, INTERPASS TEMPERATURE MAINTAINED, AND PROPER POSITION.	P	AISC 360 TABLE N5.4-2
E. INSPECT WELDING TECHNIQUES, INCLUDING INTERPASS AND FINAL CLEANING, EACH PASS WITHIN PROFILE LIMITATIONS, EACH PASS MEETING QUALITY REQUIREMENTS, AND NO WELDING OVER CRACKED TACK WELDS.	P	AISC 360 TABLE N5.4-2
F. INSPECT PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS.	C	AISC 360 TABLE N5.4-2
3. INSPECTIONS AFTER WELDING:		AISC 360 N5.4, N5.5
A. VERIFY WELDS HAVE BEEN CLEANED.	P	AISC 360 TABLE N5.4-3
B. CONFIRM THE INSTALLED SIZE, LENGTH, AND LOCATION OF WELDS MATCHES THE CONTRACT DOCUMENTS.	C	AISC 360 TABLE N5.4-3
C. VERIFY WELDS MEET VISUAL ACCEPTANCE CRITERIA, INCLUDING CRACK PROHIBITION, WELD/BASE-METAL FUSION, CRATER CROSS SECTION, WELD PROFILES, WELD SIZE, UNDERCUT, AND POROSITY.	C	AISC 360 TABLE N5.4-3
D. CONFIRM ARC STRIKES COMPLY WITH PART 5.28 OF AWS D1.1.	C	AISC 360 TABLE N5.4-3
E. VISUALLY OBSERVE WEB K-AREA FOR CRACKS WITHIN 3" OF WELDED DOUBLER PLATES, CONTINUITY PLATES, AND STIFFENERS.	C	AISC 360 TABLE N5.4-3
F. INSPECT WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES FOR CRACKS.	C	AISC 360 TABLE N5.4-3
G. FOR RISK CATEGORY III OR IV STRUCTURES, CONDUCT ULTRASONIC TESTING (UT) OF CJP GROOVE WELDS IN MATERIALS ≥ 5/16" AT BUTT, T-, AND CORNER JOINTS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING.	C	AISC 360 N5.5b, N5.5e
H. FOR RISK CATEGORY II STRUCTURES, CONDUCT ULTRASONIC TESTING (UT) OF CJP GROOVE WELDS IN MATERIALS ≥ 5/16" AT BUTT, T-, AND CORNER JOINTS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING.	P	AISC 360 N5.5b, N5.5f
I. CONDUCT MAGNETIC PARTICLE TESTING (MT) OR LIQUID PENETRANT TESTING (PT) AT THERMALLY CUT SURFACES OF ACCESS HOLES FOR ROLLED SECTIONS WITH tf > 2" AND BUILT-UP SHAPES WITH tw > 2".	C	AISC 360 N5.5c
J. PROVIDE RADIOGRAPHIC/ULTRASONIC INSPECTION AT JOINTS SUBJECT TO FATIGUE.	C	AISC 360 N5.5d, TABLE A-3.1
K. VERIFY BACKING AND WELD TABS ARE REMOVED (AS REQUIRED) PER CONTRACT DOCUMENTS.	C	AISC 360 TABLE N5.4-3
L. OBSERVE AND INSPECT WELD REPAIR ACTIVITIES.	C	AISC 360 TABLE N5.4-3
M. DOCUMENT ACCEPTANCE/REJECTION OF WELDED JOINTS AND MEMBERS.	C	AISC 360 TABLE N5.4-3, N5.5g

IT-2C: COLD-FORMED STEEL DECKING

INSPECTION TASK	FREQ	REFERENCE
1. PRIOR TO DECK PLACEMENT, VERIFY DECK AND ACCESSORIES (INCLUDING PROFILES, MATERIAL PROPERTIES, AND BASE MATERIAL THICKNESS) COMPLY WITH THE CONTRACT DOCUMENTS. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES.	C	SDI QA/QC TABLE 1.1
2. INSPECTION TASKS AFTER DECK PLACEMENT:		
A. VERIFY THE INSTALLATION OF DECK AND ACCESSORIES COMPLIES WITH THE CONTRACT DOCUMENTS.	C	SDI QA/QC TABLE 1.2
B. VERIFY THAT DECK MATERIAL MILL CERTIFICATIONS COMPLY WITH THE CONTRACT DOCUMENTS.	C	SDI QA/QC TABLE 1.2
C. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES.	C	SDI QA/QC TABLE 1.2
3. INSPECTION TASKS PRIOR TO DECK WELDING:		
A. COLLECT WELDING PROCEDURE SPECIFICATION (WPS).	P	SDI QA/QC TABLE 1.3
B. COLLECT MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES.	P	SDI QA/QC TABLE 1.3
C. VERIFY MATERIAL TYPE AND GRADE.	P	SDI QA/QC TABLE 1.3
D. CHECK WELDING EQUIPMENT.	P	SDI QA/QC TABLE 1.3
4. INSPECTION TASKS DURING DECK WELDING:		
A. VERIFY WELDER QUALIFICATIONS.	P	SDI QA/QC TABLE 1.4
B. VERIFY PROPER CONTROL AND HANDLING OF WELDING CONSUMABLES.	P	SDI QA/QC TABLE 1.4
C. MONITOR ENVIRONMENTAL CONDITIONS.	P	SDI QA/QC TABLE 1.4
D. MONITOR PROPER IMPLEMENTATION OF WPS.	P	SDI QA/QC TABLE 1.4
5. INSPECTION TASKS AFTER DECK WELDING:		
A. VERIFY SIZE AND LOCATION OF WELDS, INCLUDING SUPPORT, SIDELAP AND PERIMETER WELDS.	C	SDI QA/QC TABLE 1.5
B. VERIFY WELDS MEET VISUAL ACCEPTANCE CRITERIA.	C	SDI QA/QC TABLE 1.5
C. OBSERVE WELD REPAIR ACTIVITIES.	C	SDI QA/QC TABLE 1.5
D. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES.	C	SDI QA/QC TABLE 1.5
6. INSPECTION TASKS PRIOR TO MECHANICAL FASTENING:		
A. VERIFY MANUFACTURER INSTALLATION INSTRUCTIONS AVAILABLE FOR MECHANICAL FASTENERS.	P	SDI QA/QC TABLE 1.6
B. VERIFY PROPER TOOLS AVAILABLE FOR FASTENER INSTALLATION.	P	SDI QA/QC TABLE 1.6
C. VERIFY PROPER STORAGE OF MECHANICAL FASTENERS.	P	SDI QA/QC TABLE 1.6
7. INSPECTION TASKS DURING MECHANICAL FASTENING:		
A. OBSERVE FASTENER SPACING AND POSITION.	P	SDI QA/QC TABLE 1.7
B. VERIFY FASTENERS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.	P	SDI QA/QC TABLE 1.7
8. INSPECTION TASKS AFTER MECHANICAL FASTENING:		
A. VERIFY SPACING, TYPE AND INSTALLATION OF SUPPORT, SIDELAP, AND PERIMETER FASTENERS.	C	SDI QA/QC TABLE 1.8
B. VERIFY REPAIR ACTIVITIES.	C	SDI QA/QC TABLE 1.8
C. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES.	C	SDI QA/QC TABLE 1.8

IT-2E: COLD-FORMED STEEL FRAMING

INSPECTION TASK	FREQ	REFERENCE
1. FABRICATOR CERTIFICATION/VERIFICATION OF QUALITY CONTROL PROCEDURES		
A. VERIFY FABRICATOR QUALIFICATIONS.	C	IBC 1704.2.5.1
B. COLLECT CERTIFICATES OF COMPLIANCE FROM THE STEEL FABRICATOR AT COMPLETION OF FABRICATION.	C	IBC 1704.5
2. FOR TRUSSES CLEAR SPANNING 60 FEET OR MORE, VERIFY THAT THE TEMPORARY INSTALLATION RESTRAINT/BRACING AND THE PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT/BRACING ARE INSTALLED IN ACCORDANCE WITH THE APPROVED TRUSS SUBMITTAL PACKAGE.	P	IBC 1705.2.4

IT-3: CONCRETE CONSTRUCTION

	INSPECTION TASK	FREQ	REFERENCE
☒	1. INSPECT REINFORCEMENT, INCLUDING POST-TENSIONING TENDONS (IF APPLICABLE), AND VERIFY PLACEMENT.	P	IBC 1908.4 | ACI 318 20, 25.2, 25.3, 26.6.1-26.6.3
☒	2. REINFORCING BAR WELDING:		
	A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706 AND COLLECT REPORTS.	P	IBC 1704.5 | ACI 318 26.6.4
	B. INSPECT SINGLE-PASS FILLET WELDS ≤ 5/16".	P	ACI 318 26.6.4
	C. INSPECT ALL WELDS OTHER THAN SINGLE-PASS FILLET WELDS ≤ 5/16".	C	ACI 318 26.6.4
☒	3. CONCRETE ANCHORS:		
	A. INSPECT ANCHORS CAST IN CONCRETE.	P	ACI 318 17.8.2
	B. INSPECT ADHESIVE ANCHORS INSTALLED IN HARDENED CONCRETE WITH HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS THAT RESIST SUSTAINED TENSION LOADS. PERIODIC INSPECTION REQUIRED FOR ALL OTHER CONDITIONS.	C	ACI 318 17.8.2, 17.8.2.4
	C. INSPECT MECHANICAL ANCHORS INSTALLED IN HARDENED CONCRETE.	P	ACI 318 17.8.2
☒	4. COLLECT MIX DESIGNS AND VERIFY THE CORRECT MIX USED DURING INSTALLATION.	P	IBC 1904.1, 1904.2, 1908.2, 1908.3 ACI 318 19, 26.4.3, 26.4.4
☒	5. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	C	IBC 1908.10 | ACI 318 26.4, 26.12 ASTM C31, C172
☒	6. INSPECT CONCRETE AND SHOTCRETE (IF APPLICABLE) PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	C	IBC 1908.6-1908.8 | ACI 318 26.5
☐	7. COLLECT REPORTS OF PRECONSTRUCTION TESTS FOR SHOTCRETE WHEN PRECONSTRUCTION TESTS ARE REQUIRED BY IBC 1908.4.	C	IBC 1704.5, 1908.5
☒	8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	P	IBC 1908.9 | ACI 318 26.5.3-26.5.5
☐	9. INSPECTIONS FOR POST-TENSIONED CONCRETE:		
	A. OBSERVE APPLICATION OF POST-TENSIONING FORCE.	C	ACI 318 26.10
	B. INSPECT GROUTING OF BONDED POST-TENSIONING TENDONS.	C	ACI 318 26.10
☐	10. VERIFY CONCRETE STRENGTH PRIOR TO STRESSING OF POST-TENSIONING TENDONS AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM POST-TENSIONED/MILD BEAMS AND STRUCTURAL SLABS.	P	ACI 318 26.11.2
☐	11. INSPECT ERECTION OF PRECAST MEMBERS.	P	ACI 318 26.9
☒	12. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	P	ACI 318 26.11.1.2(b)
☐	13. COLLECT MILL TEST REPORTS FOR ASTM A615 REBAR USED IN SPECIAL REINFORCED CONCRETE MOMENT FRAMES AND SPECIAL REINFORCED CONCRETE SHEAR WALLS.	C	IBC 1704.5 | ACI 318 20.2.2.5
☒	14. SOUNDING OF CONRETE TOPPING SLAB AT THE SPECIAL COLLECTIONS ROOM.	C	

IT-4: MASONRY CONSTRUCTION (LEVEL B)

INSPECTION TASK	FREQ	REFERENCE
1. TEST AND VERIFY SLUMP FLOW AND VISUAL STABILITY INDEX AS DELIVERED TO SITE FOR SELF-CONSOLIDATING GROUT.	C	ACI 530 TABLE 3.1.2 | ACI 530.1 1.5B.1.b.3
2. TEST AND VERIFY f'_m AND f'_{AAC} PRIOR TO CONSTRUCTION.	C	ACI 530 TABLE 3.1.2 | ACI 530.1 1.4B
3. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS.	P	ACI 530 TABLE 3.1.2 | ACI 530.1 1.5
4. AS MASONRY CONSTRUCTION BEGINS, VERIFY COMPLIANCE FOR THE FOLLOWING:		
A. PROPORTIONS OF SITE-PREPARED MORTAR.	P	ACI 530.1 2.1, 2.6A
B. CONSTRUCTION OF MORTAR JOINTS.	P	ACI 530.1 3.3B
C. LOCATION OF REINFORCEMENT AND CONNECTORS.	P	ACI 530.1 3.4, 3.6A
D. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY. CONTINUOUS INSPECTION REQUIRED FOR FIRST 5,000 SF.	P	ACI 530.1 2.1C
5. PRIOR TO GROUT, VERIFY COMPLIANCE FOR THE FOLLOWING:		
A. GROUT SPACE IS CLEAN, AND CLEANOUTS ARE PROVIDED WHEN REQUIRED.	P	ACI 530.1 3.2D, 3.2F
B. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS.	P	ACI 530 6.1 | ACI 530.1 2.4, 3.4
C. PLACEMENT OF REINFORCEMENT AND CONNECTORS.	P	ACI 530 6.1, 6.2.1, 6.2.6, 6.2.7 ACI 530.1 3.2E, 3.4, 3.6A
D. PROPORTIONS OF SITE-PREPARED MORTAR AND GROUT.	P	ACI 530.1 2.4G.1b, 2.6B
E. CONSTRUCTION AND SIZE OF MORTAR JOINTS.	P	ACI 530.1 3.3B
6. DURING CONSTRUCTION, VERIFY COMPLIANCE FOR THE FOLLOWING:		
A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS.	P	ACI 530.1 3.3F
B. TYPE, SIZE, AND LOCATION OF ANCHORS INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION.	P	ACI 530 1.2.1(e), 6.1.4.3, 6.2.1
C. WELDING OF REINFORCEMENT.	C	ACI 530 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)
D. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD (< 40°F) WEATHER OR HOT (> 90°F) WEATHER.	P	ACI 530.1 1.8C, 1.8D
E. PLACEMENT OF GROUT.	C	ACI 530.1 3.5, 3.6C
F. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS. CONTINUOUS INSPECTION REQUIRED FOR FIRST 5,000 SF.	P	ACI 530.1 3.3B.9, 3.3F.1.b
7. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS.	P	ACI 530.1 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4

LEVEL B INSPECTION IS REQUIRED FOR EMPIRICALLY/PRESCRIPTIVELY DESIGNED MASONRY IN RISK CATEGORY IV STRUCTURES. LEVEL B INSPECTION IS REQUIRED FOR ENGINEERED MASONRY IN RISK CATEGORY I, II, OR III STRUCTURES. ENGINEERED MASONRY STRUCTURES ARE THOSE DESIGNED IN ACCORDANCE WITH PORTIONS OF ACI 530 OTHER THAN PART 4 OR APPENDIX A

IT-6: SOILS

INSPECTION TASK	FREQ	REFERENCE
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	P	IBC 1705.6
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	P	IBC 1705.6
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	P	IBC 1705.6
4. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT HEIGHTS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	C	IBC 1705.6
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PREPARED PROPERLY.	P	IBC 1705.6

IT-10: FABRICATED ITEMS

INSPECTION TASK	FREQ	REFERENCE
1. INSPECT DURING FABRICATION: STRUCTURAL, LOAD-BEARING, OR LATERAL LOAD-RESISTING MEMBERS AND/OR ASSEMBLIES.	P	IBC 1704.2.5, 1705.10

INSPECTION IS NOT REQUIRED IF THE FABRICATOR MEETS THE EXCEPTIONS OF IBC 1704.2.5 #1 OR #2, OR IF THE FABRICATOR IS APPROVED PER IBC 1704.2.5.1.

IT-11: WIND RESISTANCE

	INSPECTION TASK	FREQ	REFERENCE
☒	1. PRIOR TO ANY WORK TAKING PLACE, EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A WIND FORCE-RESISTING SYSTEM (WFRS) OR COMPONENT SHALL SUBMIT A WRITTEN STATEMENT OF CONTRACTOR RESPONSIBILITY.	C	IBC 1704.4
☐	2. STRUCTURAL WOOD		
	A. VERIFY FIELD GLUING OPERATIONS OF ELEMENTS OF THE WFRS.	C	IBC 1705.11.1
	B. INSPECT NAILING, ANCHORING, AND FASTENING OF COMPONENTS WITHIN THE WFRS INCLUDING SHEAR WALLS, DIAPHRAGMS, DRAG STRUTS, BRACES, AND HOLD-DOWNS.	P	IBC 1705.11.1
☒	3. COLD-FORMED STEEL FRAMING CONSTRUCTION		
	A. INSPECT WELDING OPERATIONS AT ELEMENTS OF THE WFRS.	P	IBC 1705.11.2
	B. INSPECT SCREW ATTACHMENT, BOLTING, ANCHORING, AND FASTENING OF ELEMENTS WITHIN THE WFRS INCLUDING SHEAR WALLS, BRACES, DIAPHRAGMS, COLLECTORS, DRAG STRUTS, AND HOLD-DOWNS.	P	IBC 1705.11.2
☒	4. WIND-RESISTING COMPONENTS		
	A. INSPECT THE FASTENING OF ROOF COVERING, ROOF DECK, AND SUPPORTING ROOF FRAMING CONNECTIONS.	P	IBC 1705.11.3.1
	B. INSPECT THE FASTENING OF EXTERIOR WALL COVERINGS AND THE WALL CONNECTIONS TO THE ROOF/FLOOR DIAPHRAGMS AND FRAMING MEMBERS.	P	IBC 1705.11.3.2

INSPECTION IS REQUIRED IN EXPOSURE CATEGORY B WHERE V_{asd} ≥ 120 MPH, OR IN EXPOSURE CATEGORIES C AND D WHERE V_{asd} ≥ 110 MPH. INSPECTION IS NOT REQUIRED FOR SHEAR WALLS, SHEAR WALL PANELS, AND DIAPHRAGMS WHERE THE FASTENER SPACING > 4"OC.

WIND FORCE-RESISTING SYSTEMS AND COMPONENTS/CONNECTIONS SUBJECT TO INSPECTION INCLUDE:

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B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
STATEMENT OF SPECIAL INSPECTIONS

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IT-14: SPRAYED FIRE-RESISTANT MATERIALS		
INSPECTION TASK	FREQ	REFERENCE
1. PRIOR TO THE APPLICATION OF SPRAYED ON FIRE-RESISTANT MATERIALS, VERIFY STRUCTURAL MEMBER SURFACES ARE PREPARED IN ACCORDANCE WITH THE APPROVED FIRE-RESISTANCE DESIGN AND THE WRITTEN INSTRUCTIONS OF THE APPROVED MANUFACTURER.	P	IBC 1705.14.2
2. DURING THE APPLICATION OF SPRAYED ON FIRE-RESISTANT MATERIALS, VERIFY THE FOLLOWING ARE IN COMPLIANCE:		
A. SUBSTRATE HAS MINIMUM AMBIENT TEMPERATURE BEFORE AND AFTER APPLICATION AS SPECIFIED BY THE APPROVED FIRE-RESISTANCE DESIGN AND THE WRITTEN INSTRUCTIONS OF THE APPROVED MANUFACTURER.	P	IBC 1705.14.3
B. WORK AREA PROPERLY VENTILATED DURING AND AFTER APPLICATION.	P	IBC 1705.14.3
C. THICKNESS OF SPRAYED ON MATERIAL CONFORMS WITH THE APPROVED FIRE-RESISTANCE DESIGN AND IBC MINIMUMS.	P	IBC 1705.14.4 | ASTM E605
D. DENSITY OF SPRAYED ON MATERIAL IS NOT LESS THAN THE REQUIREMENTS OF THE APPROVED FIRE-RESISTANCE DESIGN.	P	IBC 1705.14.5
E. COHESIVE/ADHESIVE BOND STRENGTH IS NOT LESS THAN 150 PSF.	P	IBC 1705.14.6 | ASTM E736
INSPECTIONS SHALL BE PERFORMED AFTER THE ROUGH INSTALLATION OF ELECTRICAL, SPRINKLER, MECHANICAL, AND PLUMBING SYSTEMS, AS WELL AS THE SUSPENSION SYSTEMS FOR CEILINGS.		

IT-15: MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS		
INSPECTION TASK	FREQ	REFERENCE
1. PRIOR TO APPLICATION, VERIFY PREPARATION OF SUBSTRATE AND SUITABILITY OF PRIMERS (IF PRESENT) ARE IN ACCORDANCE WITH APPROVED FIRE RESISTANCE DESIGN, APPROVED MANUFACTURER'S WRITTEN INSTRUCTIONS, AND THE REQUIREMENTS OF AWCI 12-B.	P	IBC 1705.15 | AWCI 12-B
2. OBSERVE THE APPLICATION OF FIRE-RESISTANT COATINGS ENSURING COMPLIANCE WITH APPROVED FIRE RESISTANCE DESIGN, APPROVED MANUFACTURER'S WRITTEN INSTRUCTIONS, AND THE REQUIREMENTS OF AWCI 12-B.	P	IBC 1705.15 | AWCI 12-B
3. AFTER ADEQUATE DRYING BUT PRIOR TO THE APPLICATION OF ANY TOPCOAT, MEASURE THE FINAL MASTIC/INTUMESCENT MATERIAL THICKNESS ENSURING COMPLIANCE WITH THE CONTRACT DOCUMENTS AND APPROVED MATERIAL/INSTALLATION SUBMITTALS. MEASUREMENTS MUST CONSIDER THE THICKNESS OF PRIMERS OR OTHER EXISTING COATINGS ON THE SURFACE OF THE SUBSTRATE.	P	IBC 1705.15 | AWCI 12-B

IT-17: FIRE-RESISTANT PENETRATIONS AND JOINTS		
INSPECTION TASK	FREQ	REFERENCE
1. INSPECT THROUGH-PENETRATION FIRESTOP SYSTEMS AT FIRE WALLS, FIRE BARRIERS, SMOKE BARRIERS AND FIRE PARTITION WALLS IN ACCORDANCE WITH ASTM E2174.	P	IBC 714.3.1.2, 1705.17.1
2. INSPECT PENETRATION FIRESTOP SYSTEMS AT PENETRATIONS THROUGH MEMBRANES THAT ARE PART OF A HORIZONTAL ASSEMBLY IN ACCORDANCE WITH ASTM E2174.		
A. VERIFY MATERIALS BEFORE INSTALLATION.	P	IBC 714.4.2, 1705.17.1
B. VERIFY INSTALLATION AGAINST THE CONTRACT DOCUMENTS AND APPROVED MATERIAL/INSTALLATION SUBMITTALS.	P	IBC 714.4.2, 1705.17.1
C. FOR EACH TYPE OF FIRESTOP, WITNESS 10% OF INSTALLATIONS - OR DESTRUCTIVE TESTING ON 2% OF INSTALLATIONS FOR 10,000 SF FLOOR AREA.	P	IBC 714.4.2, 1705.17.1
3. INSTALLATION OF FIRE-RESISTANT JOINT SYSTEMS IN ACCORDANCE WITH ASTM E2393		
A. VERIFY MATERIALS BEFORE INSTALLATION.	P	IBC 715.3, 715.4, 1705.17.2
B. VERIFY INSTALLATION AGAINST THE CONTRACT DOCUMENTS AND APPROVED MATERIAL/INSTALLATION SUBMITTALS.	P	IBC 715.3, 715.4, 1705.17.2
C. FOR EACH TYPE OF JOINT SYSTEM, WITNESS INSTALLATION OF A MINIMUM OF 5% OF THE TOTAL LINEAL FEET BEING INSTALLED – OR DESTRUCTIVE TESTING, DISASSEMBLY, OR VISUAL INSPECTION AT LEAST THE RATE OF 1 SAMPLE FOR EVERY 500 LINEAL FEET BEING INSTALLED.	P	IBC 715.3, 715.4, 1705.17.2
INSPECTION IS ONLY REQUIRED FOR HIGH-RISE BUILDINGS OR BUILDINGS ASSIGNED TO RISK CATEGORY III OR IV. ADDITIONS, CHANGES OF USE, EVALUATIONS PER CHAPTER 14 OF THE IEBC, AND LEVEL 3 ALTERATIONS WITHIN EXISTING HIGH-RISE BUILDINGS OR BUILDINGS ASSIGNED TO RISK CATEGORY III OR IV SHALL ALSO REQUIRE THESE INSPECTIONS.		

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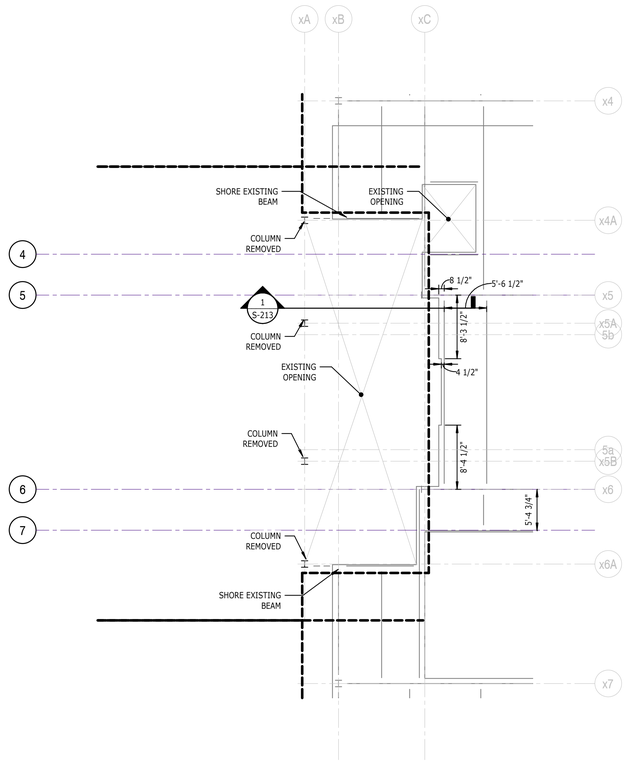
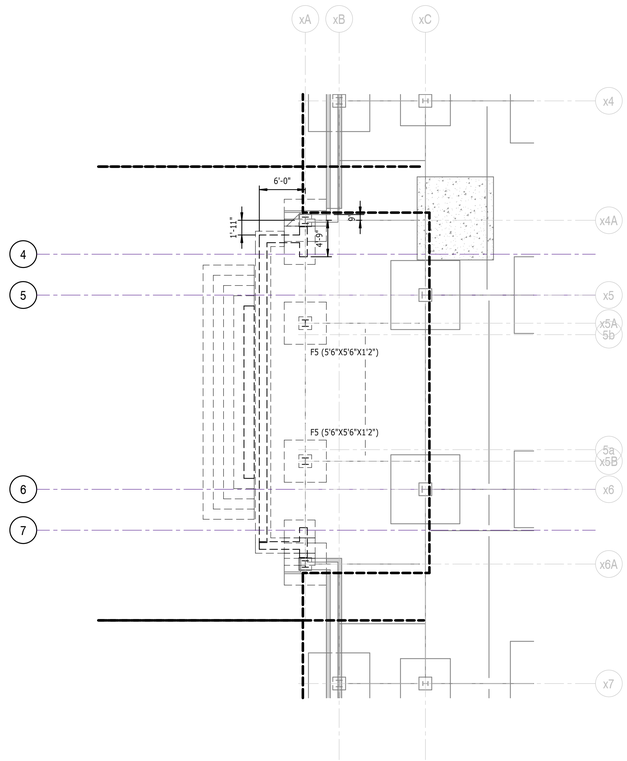
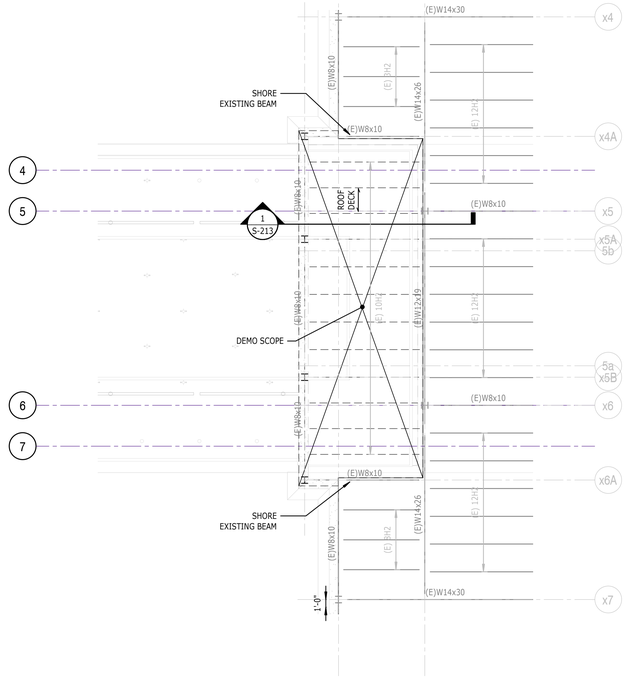


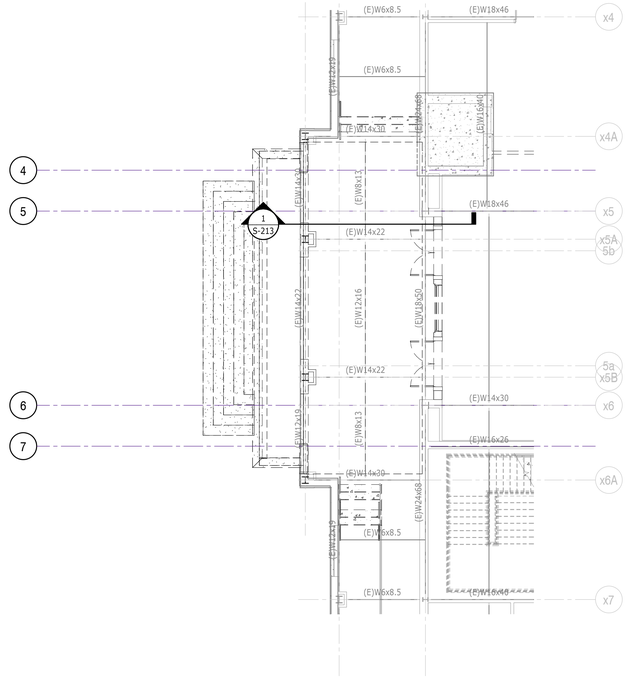
3 SD-100 EXISTING LEVEL 2 FRAMING PLAN WEST ENTRANCE
1/8" = 1'-0"



1 SD-100 EXISTING LEVEL 1 FOUNDATION WEST ENTRANCE
1/8" = 1'-0"



4 SD-100 EXISTING LEVEL 3/ROOF FRAMING PLAN WEST ENTRANCE
1/8" = 1'-0"



2 SD-100 EXISTING LEVEL 1 ELEVATED SLAB PLAN WEST ENTRANCE
1/8" = 1'-0"

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SD-100

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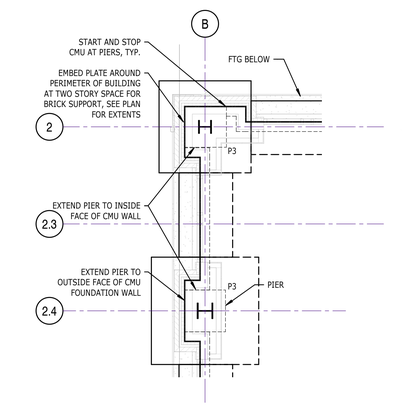
CONTRACTOR SHALL PROVIDE CONTROL JOINTS IN SLAB ON GRADE AT COLUMNS AND AT 12'-0" OC MAX. SEE 1/S-301 AND 10/S-301.

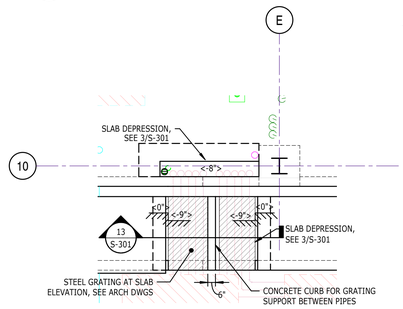
SOIL STABILIZATION:
AS NOTED IN THE GEOTECHNICAL REPORT AND MODIFICATION ISSUED ON 2/3/2022, THE AREA NEAR BORING S9 REQUIRES POLYMER INJECTION TO A DEPTH OF 12' TO 13.5' AND DESIGNED BY A SPECIALTY CONTRACTOR. ALTERNATELY A LOW-MOBILITY GROUT MAY BE INJECTED IN THE VICINITY OF S9. IT IS ANTICIPATED THE INJECTION WILL BE ISOLATED TO A FEW FOOTINGS BETWEEN APPROXIMATELY COLUMN LINES 8.7 AND 10.

1 S-101A LEVEL 1 FOUNDATION PLAN AREA A
1/8" = 1'-0"

NOTES:
1. SEE S-000 AND S-001 FOR GENERAL NOTES, ABBREVATIONS, AND SYMBOLS.
2. SEE S-301 FOR TYPICAL SLAB CONSTRUCTION DETAILS.
3. SEE S-505 AND S-506 FOR STEEL COLUMN SCHEDULE.
4. CONTRACTOR TO COORDINATE ALL THICKENED SLAB LOCATIONS UNDER CMU PARTITIONS WITH ARCHITECTURAL DRAWINGS.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ALL WALL LOCATIONS AND DIMENSIONS.
6. SLOPE EXTERIOR SLABS, SIDEWALKS, AND PAVING AS INDICATED ON THE ARCHITECTURAL DRAWINGS.



3 S-101A FOUNDATION PART PLAN AT PIERS
1/4" = 1'-0"



NOTE: NOTCH EDGE OF CONCRETE FOR GRATE BEARING AS REQUIRED BY MANUF.

2 S-101A SLAB DEPRESSION FOR PIPING PART PLAN
1/4" = 1'-0"

FLOOR ELEVATION TABLE
LEVEL 1 ELEVATION 45.41', UNO (=REFERENCE ELEVATION 0'-0")

LEVEL	TARGET	ELEVATION ABOVE REFERENCE ELEVATION
CUPOLA ROOF	TOP OF DECK	72'-10"
ROOF	TOP OF DECK*	64'-6 1/2"
MECH FLOOR	TOP OF SLAB	46'-4"
LEVEL 3	TOP OF SLAB	29'-4"
LEVEL 2	TOP OF SLAB	14'-0"
LEVEL 1	TOP OF SLAB	0'-0"

*ELEVATION MAY VARY WITH SLOPING

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NORTH CAROLINA PROFESSIONAL SEAL 046250 ENGINEER THOMAS WILLIAM MCLANE
02/14/2022

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
LEVEL 1 FOUNDATION PLAN AREA A

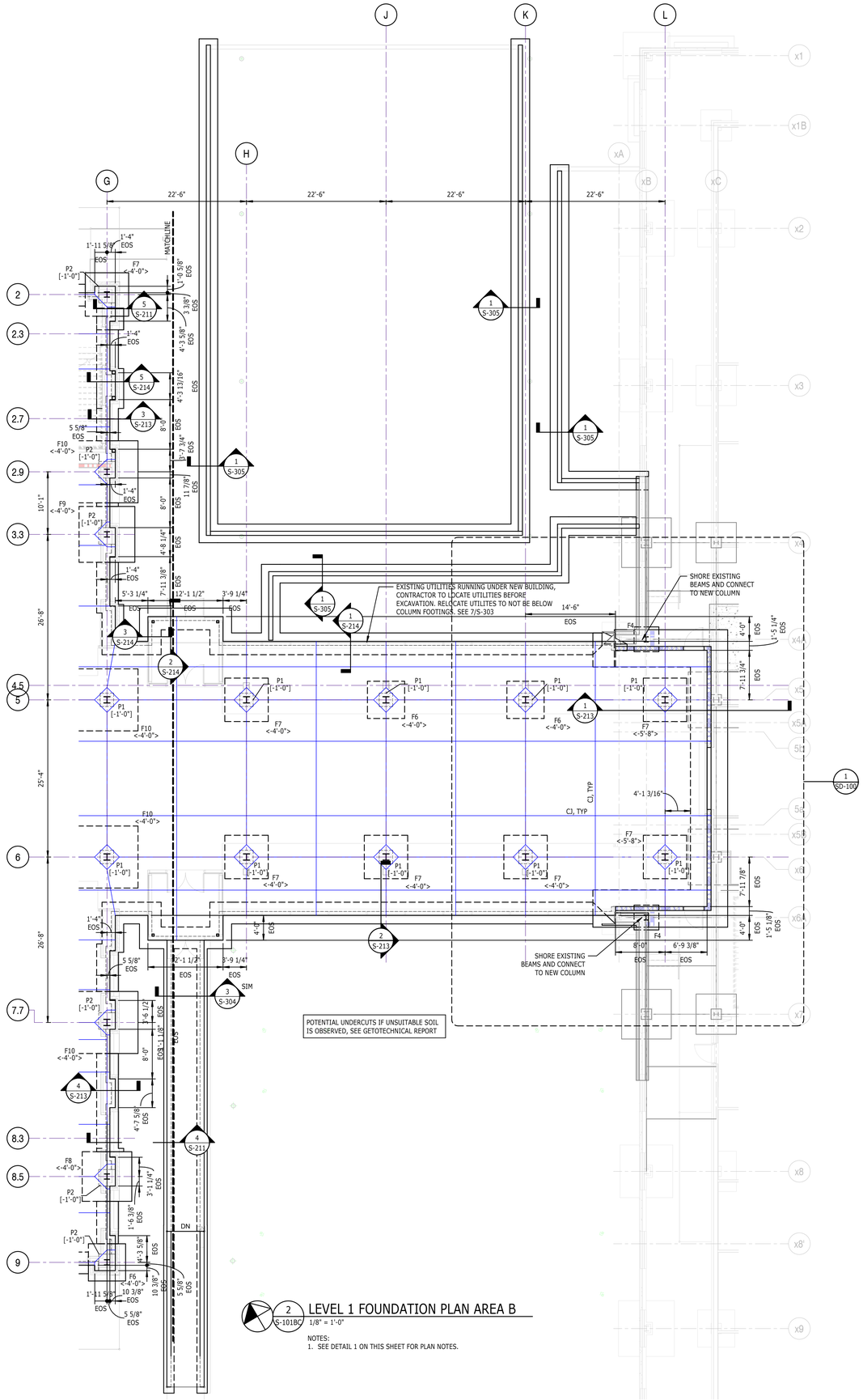
ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-101A

PACKAGE A - CONSTRUCTION DOCUMENTS

2/15/2022 10:48:33 PM

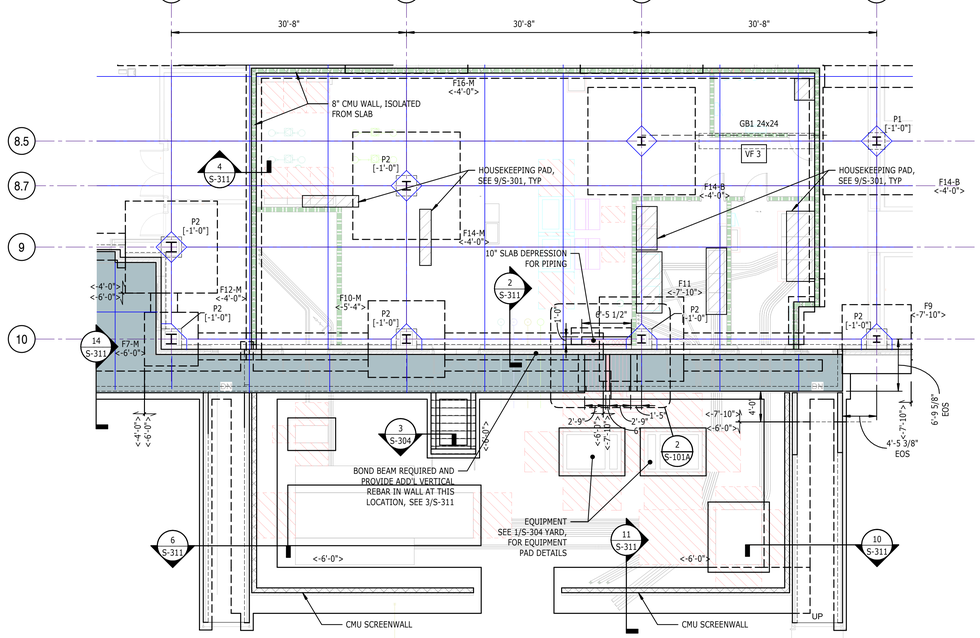
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



2 S-101BC LEVEL 1 FOUNDATION PLAN AREA B

1/8" = 1'-0"

NOTES:
1. SEE DETAIL 1 ON THIS SHEET FOR PLAN NOTES.



1 S-101BC LEVEL 1 FOUNDATION PLAN AREA C

1/8" = 1'-0"

NOTES:
1. SEE S-000 AND S-001 FOR GENERAL NOTES, ABBREVATIONS, AND SYMBOLS.
2. SEE S-301 FOR TYPICAL SLAB CONSTRUCTION DETAILS.
3. SEE S-505 AND S-506 FOR STEEL COLUMN SCHEDULE.
4. CONTRACTOR TO COORDINATE ALL THICKENED SLAB LOCATIONS UNDER CMU PARTITIONS WITH ARCHITECTURAL DRAWINGS.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ALL WALL LOCATIONS AND DIMENSIONS.
6. SLOPE EXTERIOR SLABS, SIDEWALKS, AND PAVING AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

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PROJ # S20141
FIRM LICENSE #C-1051

NORTH CAROLINA PROFESSIONAL SEAL 046250 ENGINEER THOMAS WILLIAM MCLANE

02/14/2022

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LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
LEVEL 1 FOUNDATION PLAN AREA B AND C

ORIG SUBMISSION: 09/17/21
CURRENT: 2022.02.14
BID DOCUMENTS

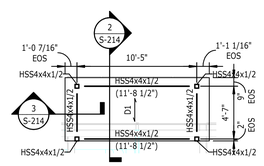
SHEET:
S-101BC

PACKAGE A - CONSTRUCTION DOCUMENTS

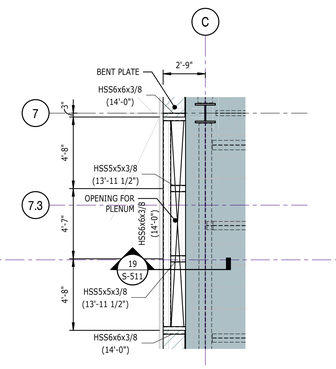
2/15/2022 10:48:37 PM

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ARCHITECTURAL SCALE

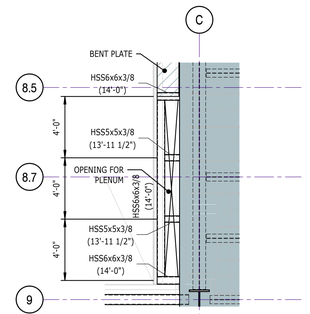
MOMENT CONNECTION FORCES	
W16x26, W16x36	150 K-FT
W18x40 W21x44	250 K-FT
W21x55 W24x55	375 K-FT
W21x62	540 K-FT
W21x93 W24x76, W24x84	700 K-FT
W24x94 W27x84, W27x94 W30x90	800 K-FT
W24x117 W30x108, W30x116 W33x118	1150 K-FT
W24X162, W24x176 W27x194	1600 K-FT



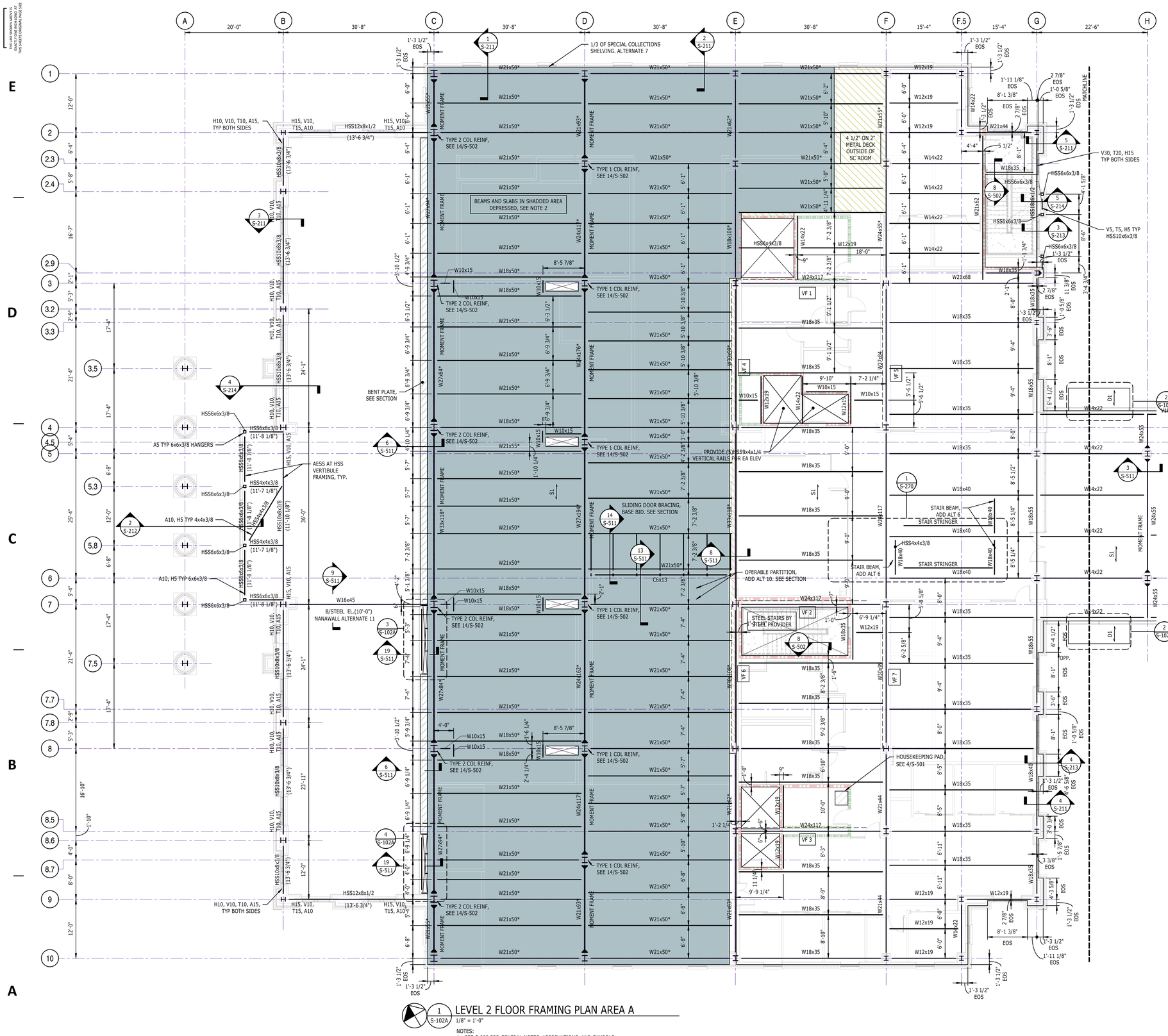
2 S-102A VESTIBULE PART PLAN
3/16" = 1'-0"



3 S-102A PLENUM OPENING PART PLAN 1
1/4" = 1'-0"



4 S-102A PLENUM OPENING PART PLAN 2
1/4" = 1'-0"



1 S-102A LEVEL 2 FLOOR FRAMING PLAN AREA A
1/8" = 1'-0"

NOTES:
1. SEE S-000 FOR GENERAL NOTES, ABBREVATIONS, AND SYMBOLS.
2. FRAMING SIZES WITH THE SUFFIX " * " ARE DEPRESSED 1-3/4" BELOW TYPICAL BEAM ELEVATION ON THAT FLOOR. CONCRETE TOPPING TO BE APPLIED PER SPECIFICATIONS. PROVIDE CONTROL JOINTS INT EH TOPPING SLAB. CONTRACTOR TO PROVIDE CONTROL JOINT PLKAN BEFORE THE CONCRETE POUR IN COORDINATION WITH THE SHLEVING APPROVED SHOP DRAWINGS AND RAIL LAYOUTS IN THE FLOOR.
3. FRAMING IN SHADED/DEPRESSED SLAB AREA DESIGNED FOR 300PSF LIVE LOAD, DENOTED BY
4. PROVIDE (1) STUD PER FOOT ON ALL BEAMS SUPPORTING SLAB ON METAL DECK UNLESS OTHERWISE NOTED ON PLANS.
5. SEE S-505 AND S-506 FOR STEEL COLUMN SCHEDULE.
6. COORDINATE ALL SLAB OPENINGS AND PENETRATIONS WITH ARCH AND MEP DWGS AND PROVIDE APPROPRIATE REBAR AND STEEL PER TYPICAL SLAB PENETRATION DETAIL.

FLOOR ELEVATION TABLE		
LEVEL 1 ELEVATION 45.41', UNO (=REFERENCE ELEVATION 0'-0")		
LEVEL	**TARGET**	**ELEVATION ABOVE REFERENCE ELEVATION**
CUPOLA ROOF	TOP OF DECK	72'-10"
ROOF	TOP OF DECK*	64'-6 1/2"
MECH FLOOR	TOP OF SLAB	46'-4"
LEVEL 3	TOP OF SLAB	29'-4"
LEVEL 2	TOP OF SLAB	14'-0"
LEVEL 1	TOP OF SLAB	0'-0"

*ELEVATION MAY VARY WITH SLOPING

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046250 THOMAS WILLIAM MCLANE
02/14/2022

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B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

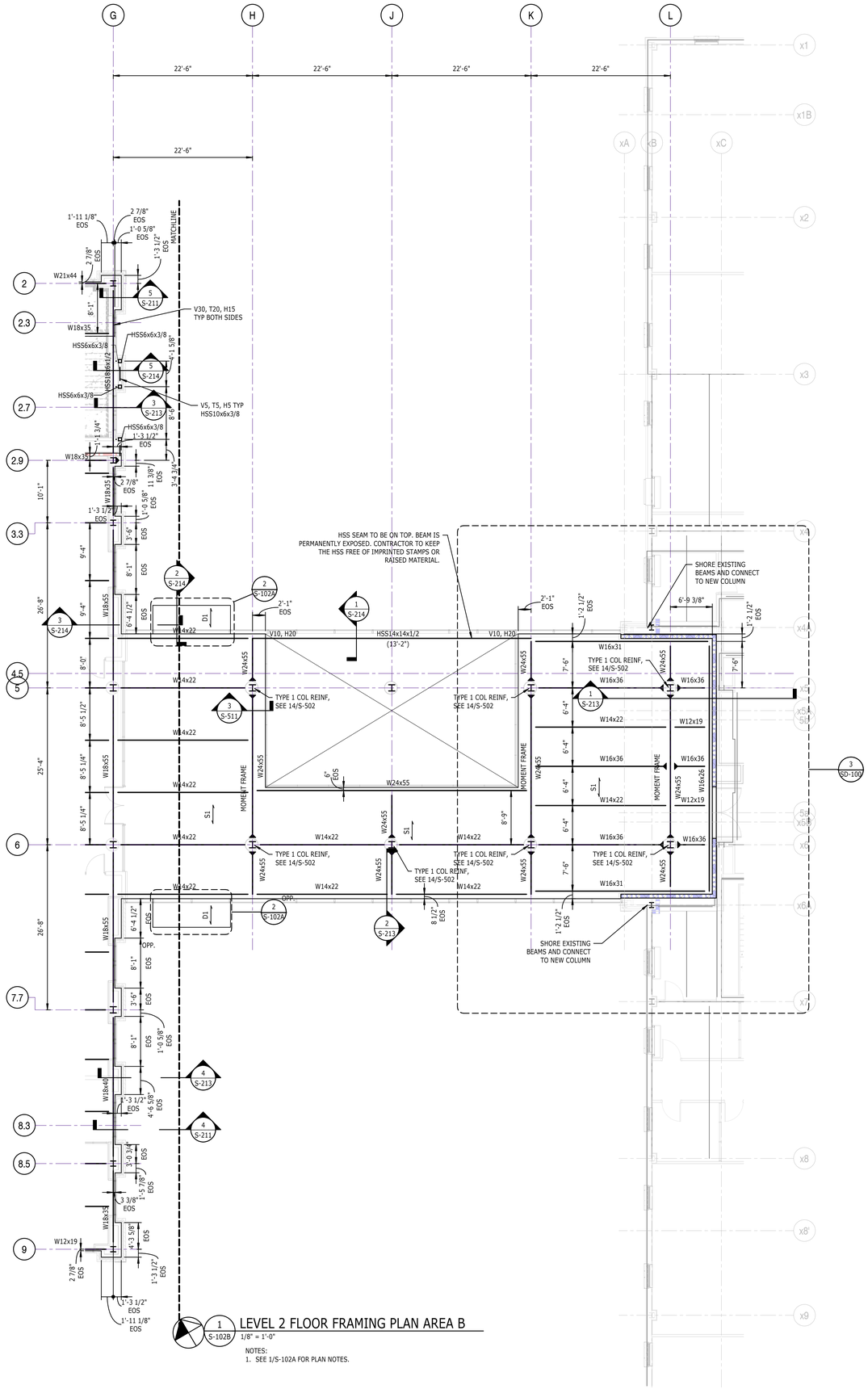
SHEET NAME:
LEVEL 2 FRAMING PLAN AREA A

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-102A

PACKAGE A - CONSTRUCTION DOCUMENTS

2/15/2022 10:48:48 PM



FLOOR ELEVATION TABLE		
LEVEL 1 ELEVATION 45.41', UNO (=REFERENCE ELEVATION 0'-0")		
LEVEL	**TARGET**	**ELEVATION ABOVE REFERENCE ELEVATION**
CUPOLA ROOF	TOP OF DECK	72'-10"
ROOF	TOP OF DECK*	64'-6 1/2"
MECH FLOOR	TOP OF SLAB	46'-4"
LEVEL 3	TOP OF SLAB	29'-4"
LEVEL 2	TOP OF SLAB	14'-0"
LEVEL 1	TOP OF SLAB	0'-0"

*ELEVATION MAY VARY WITH SLOPING

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ASSIGNED DRAWING SCALE

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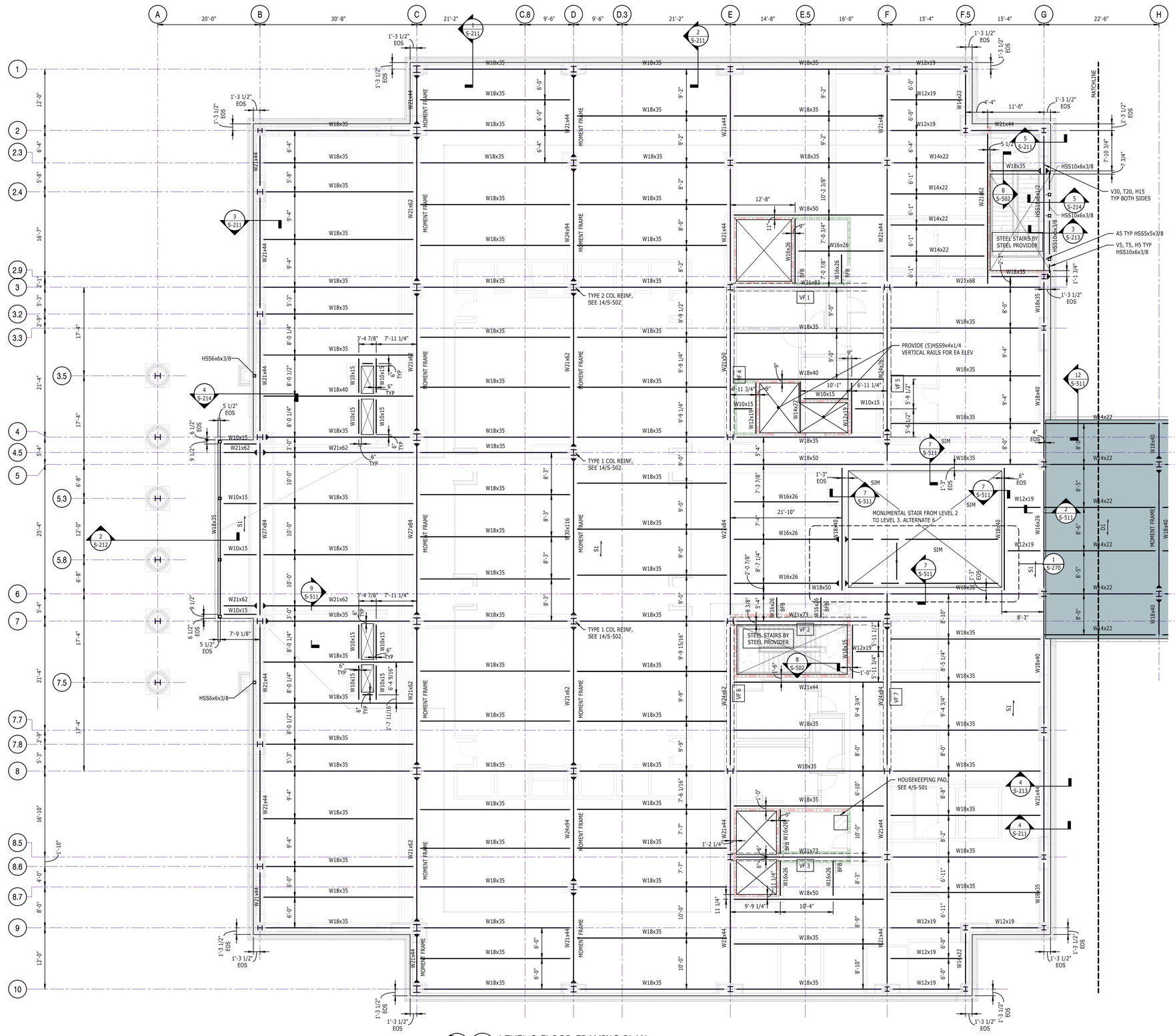
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
LEVEL 2 FRAMING PLAN AREA B

ORIG SUBMISSION: 09/17/21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-102B

PACKAGE A - CONSTRUCTION DOCUMENTS



LEVEL 3 FLOOR FRAMING PLAN

1/8" = 1'-0"

FLOOR FRAMING PLAN NOTES:

1. SEE S-000 FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS.
2. SEE S-501 FOR TYPICAL SLAB CONSTRUCTION DETAILS.
3. SEE S-505 AND S-506 FOR STEEL COLUMN SCHEDULE.
4. DIMENSIONS ARE TO OUTSIDE FACE OF FRAMING, UNO. REFER TO ARCHITECTURAL DRAWINGS FOR ALL WALL LOCATIONS AND DIMENSIONS.
5. COORDINATE ALL SLAB OPENINGS AND PENETRATIONS WITH ARCH AND MEP DWGS AND PROVIDE APPROPRIATE REBAR AND STEEL PER TYPICAL SLAB PENETRATION DETAIL.
6. PROVIDE (1) STUD PER FOOT ON ALL BEAMS SUPPORTING SLAB ON METAL DECK UNLESS OTHERWISE NOTED ON PLANS.

FLOOR ELEVATION TABLE

LEVEL 1 ELEVATION 45.41', UNO (=REFERENCE ELEVATION 0'-0")

LEVEL	TARGET	ELEVATION ABOVE REFERENCE ELEVATION
CUPOLA ROOF	TOP OF DECK	72'-10"
ROOF	TOP OF DECK*	64'-6 1/2"
MECH FLOOR	TOP OF SLAB	46'-4"
LEVEL 3	TOP OF SLAB	29'-4"
LEVEL 2	TOP OF SLAB	14'-0"
LEVEL 1	TOP OF SLAB	0'-0"

*ELEVATION MAY VARY WITH SLOPING

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046260 THOMAS WILLIAM MCLANE
02/14/2022

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B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

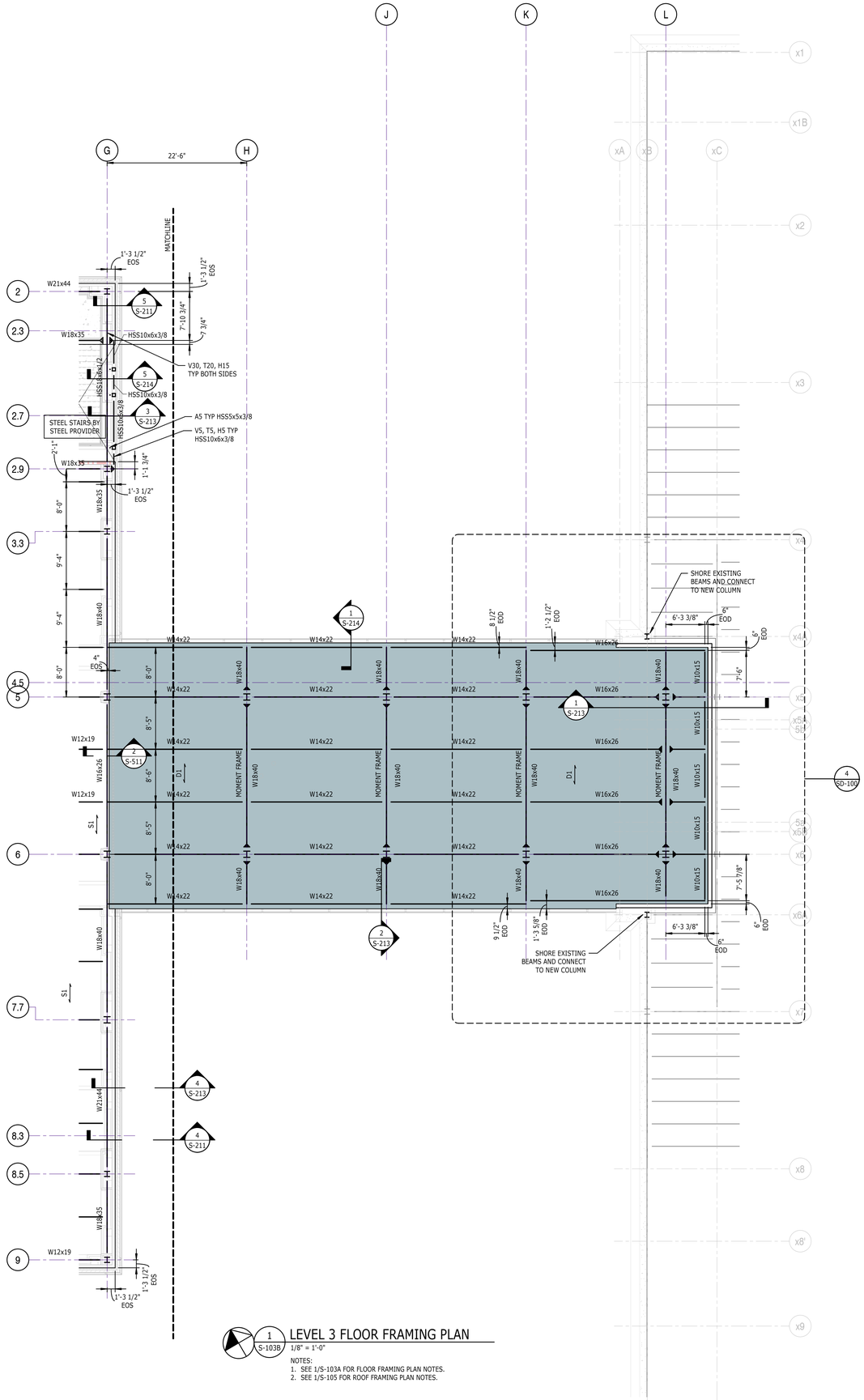
SHEET NAME:
LEVEL 3 FRAMING PLAN AREA A

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-103A

PACKAGE A - CONSTRUCTION DOCUMENTS

2/15/2022 10:48:52 PM



1 S-103B LEVEL 3 FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:
1. SEE 1/S-103A FOR FLOOR FRAMING PLAN NOTES.
2. SEE 1/S-105 FOR ROOF FRAMING PLAN NOTES.

FLOOR ELEVATION TABLE

LEVEL 1 ELEVATION 45.41', UNO (=REFERENCE ELEVATION 0'-0")

LEVEL	TARGET	ELEVATION ABOVE REFERENCE ELEVATION
CUPOLA ROOF	TOP OF DECK	72'-10"
ROOF	TOP OF DECK*	64'-6 1/2"
MECH FLOOR	TOP OF SLAB	46'-4"
LEVEL 3	TOP OF SLAB	29'-4"
LEVEL 2	TOP OF SLAB	14'-0"
LEVEL 1	TOP OF SLAB	0'-0"

*ELEVATION MAY VARY WITH SLOPING

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046250 THOMAS WILLIAM MCLANE

02/14/2022

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LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
LEVEL 3 FRAMING PLAN AREA B

ORIG SUBMISSION: 09/17/21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-103B

PACKAGE A - CONSTRUCTION DOCUMENTS

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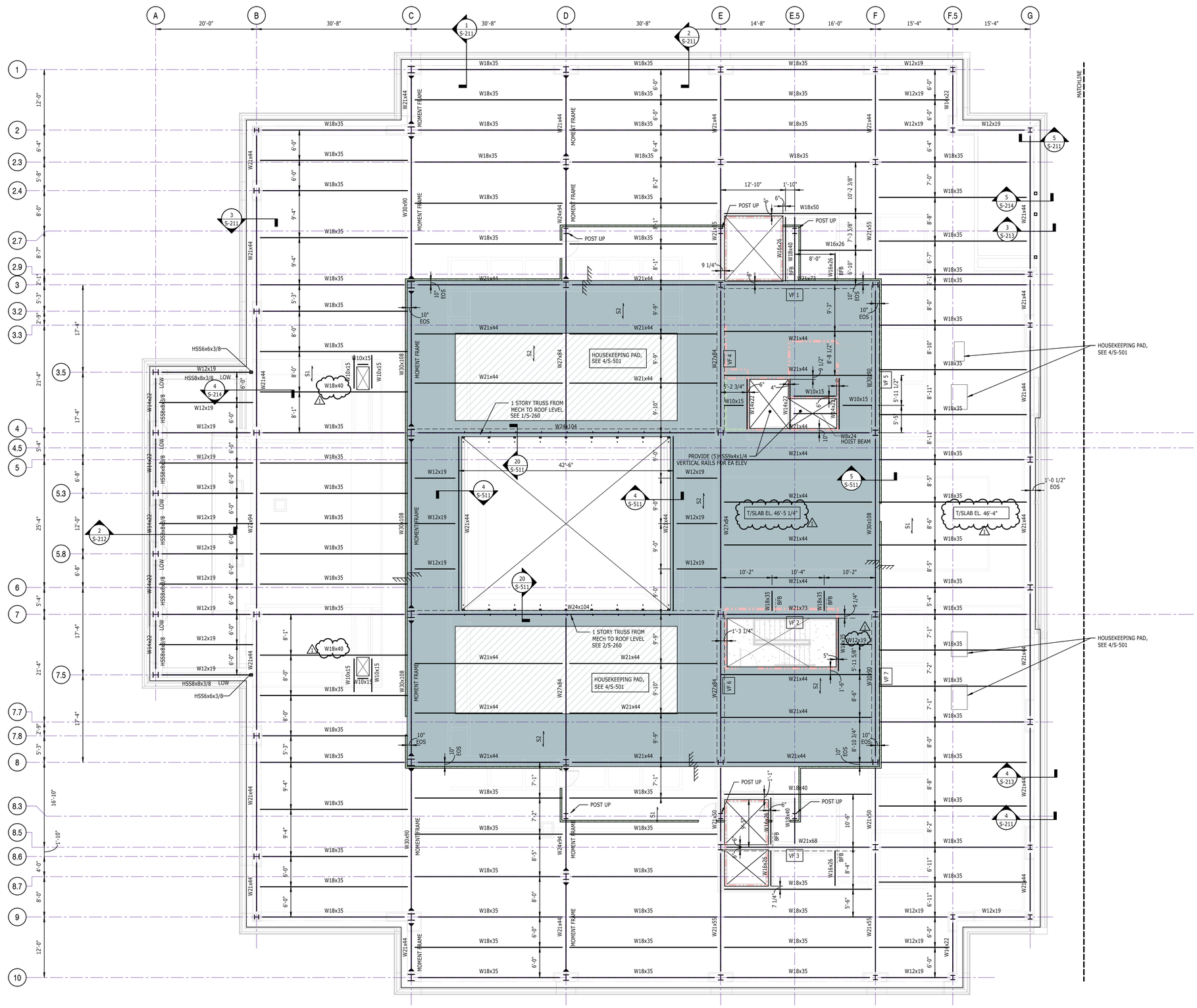
E D C B A

1 2 3 4 5 6



MECH FLOOR FRAMING PLAN

1/8" = 1'-0"

FLOOR FRAMING PLAN NOTES:

1. SEE S-000 FOR GENERAL NOTES, ABBREVATIONS, AND SYMBOLS.
2. SEE S-501 FOR TYPICAL SLAB CONSTRUCTION DETAILS.
3. SEE S-505 AND S-506 FOR STEEL COLUMN SCHEDULE.
4. DIMENSIONS ARE TO OUTSIDE FACE OF FRAMING, UNO. REFER TO ARCHITECTURAL DRAWINGS FOR ALL WALL LOCATIONS AND DIMENSIONS.
5. COORDINATE ALL SLAB OPENINGS AND PENETRATIONS WITH ARCH AND MEP DWGS AND PROVIDE APPROPRIATE REBAR AND STEEL PER TYPICAL SLAB PENETRATION DETAIL.
6. PROVIDE (1) STUD PER FOOT ON ALL BEAMS SUPPORTING SLAB ON METAL DECK UNLESS OTHERWISE NOTED ON PLANS.
7. PROVIDE CURBS AROUND ALL OPENINGS AND SLAB PERIMETERS, SEE ARCH DWGS AND DETAIL SEE 8/S-501

FLOOR ELEVATION TABLE

LEVEL 1 ELEVATION 45.41', UNO (=REFERENCE ELEVATION 0'-0")

LEVEL	TARGET	ELEVATION ABOVE REFERENCE ELEVATION
CUPOLA ROOF	TOP OF DECK	72'-10"
ROOF	TOP OF DECK*	62'-8"
MECH FLOOR	TOP OF SLAB	46'-4"
LEVEL 3	TOP OF SLAB	29'-4"
LEVEL 2	TOP OF SLAB	14'-0"
LEVEL 1	TOP OF SLAB	0'-0"

*ELEVATION MAY VARY WITH SLOPING

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046260 WILLIAM MCLAWHORN
04.08.22

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C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS
1	2022.04.15	ADDENDUM 2

SHEET NAME:
MECH FLOOR FRAMING PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.15
ADDENDUM 2

SHEET:
S-104

PACKAGE C - CONSTRUCTION DOCUMENTS

4/7/2022 3:56:40 PM

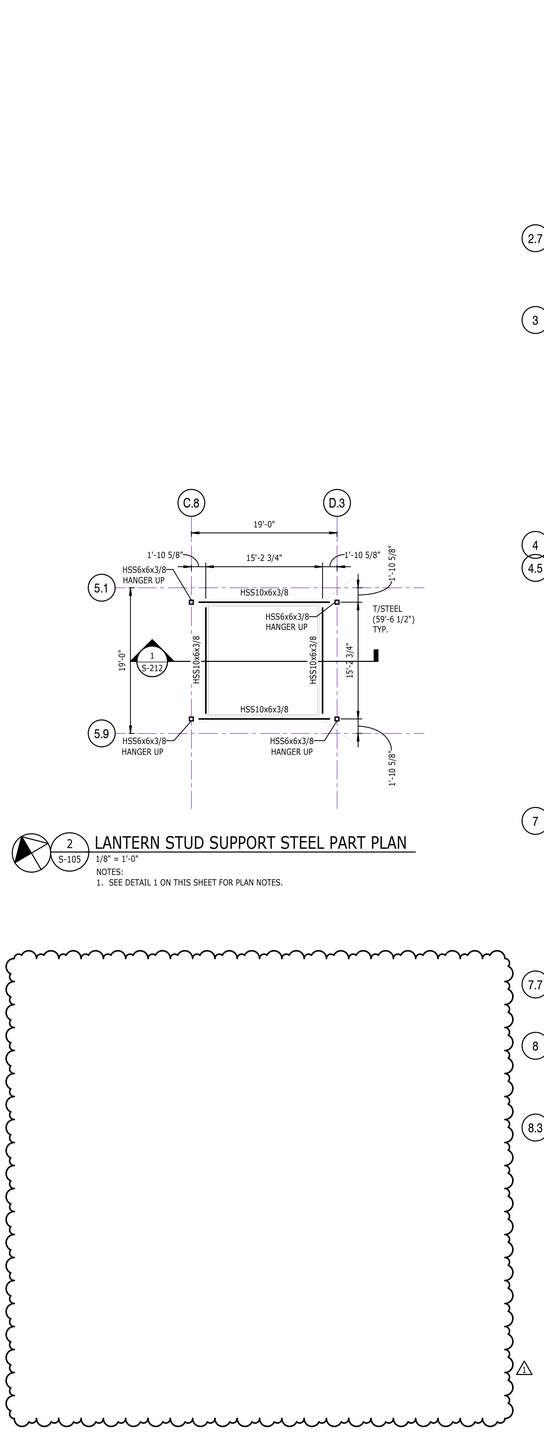
THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE

2 S-105 LANTERN STUD SUPPORT STEEL PART PLAN

1/8" = 1'-0"

NOTES:

1. SEE DETAIL 1 ON THIS SHEET FOR PLAN NOTES.



1 S-105 ROOF FRAMING PLAN

1/8" = 1'-0"

ROOF FRAMING PLAN NOTES:

1. SEE S-000 FOR GENERAL NOTES, ABBREVATIONS, AND SYMBOLS.
2. SEE S-502 AND S-503 FOR TYPICAL STEEL ROOF FRAMING DETAILS.
3. SEE S-505 AND S-506 FOR STEEL COLUMN SCHEDULE.
4. SEE ARCHITECTURAL DRAWINGS FOR ALL ROOF SLOPES.

FLOOR ELEVATION TABLE

LEVEL 1 ELEVATION 45.41', UNO (=REFERENCE ELEVATION 0'-0")

LEVEL	TARGET	ELEVATION ABOVE REFERENCE ELEVATION
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ROOF	TOP OF DECK*	62'-8"
MECH FLOOR	TOP OF SLAB	46'-4"
LEVEL 3	TOP OF SLAB	29'-4"
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*ELEVATION MAY VARY WITH SLOPING

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04.08.22

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D	2022.02.14	BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

SHEET NAME:
ROOF FRAMING PLAN

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.04.08
ADDENDUM 1

SHEET:
S-105

PACKAGE C - CONSTRUCTION DOCUMENTS

4/7/2022 3:56:43 PM

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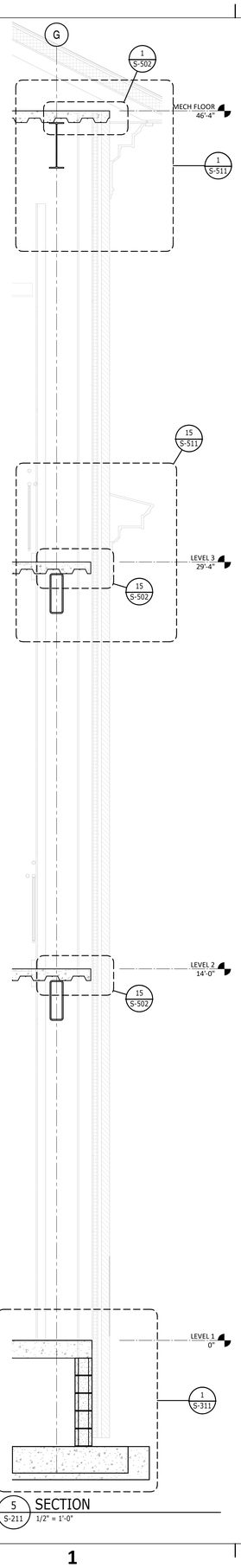
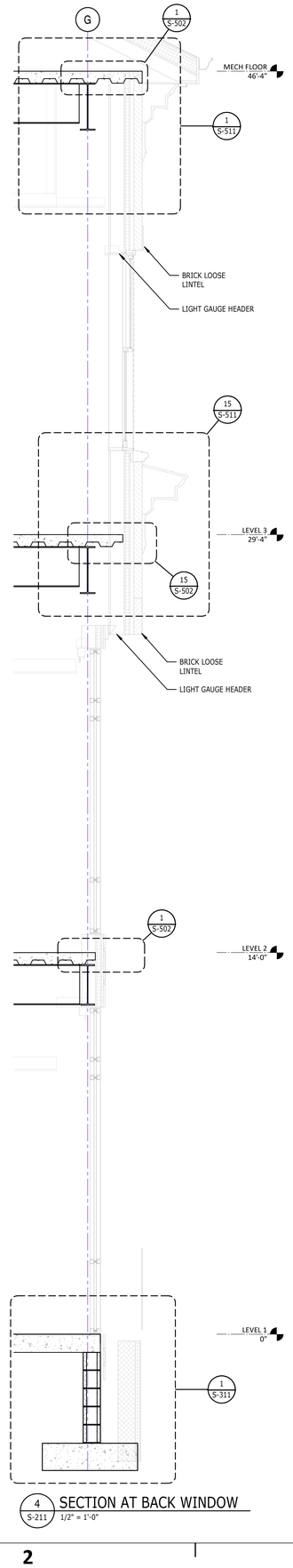
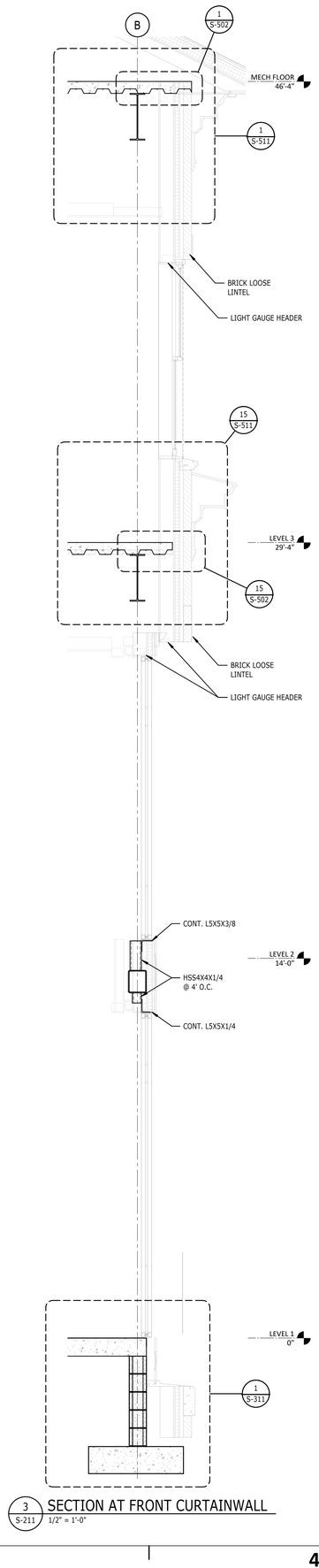


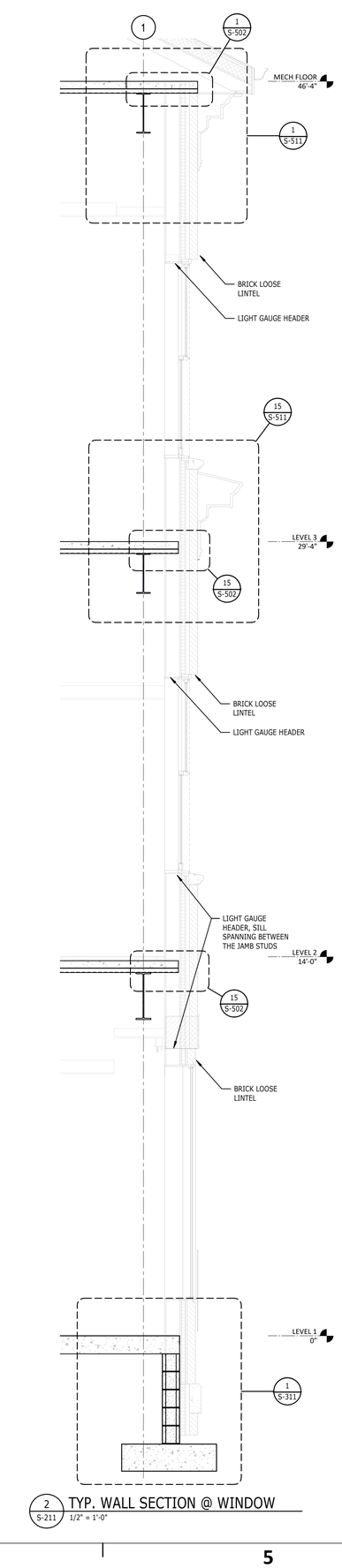
5 S-211 SECTION
1/2" = 1'-0"



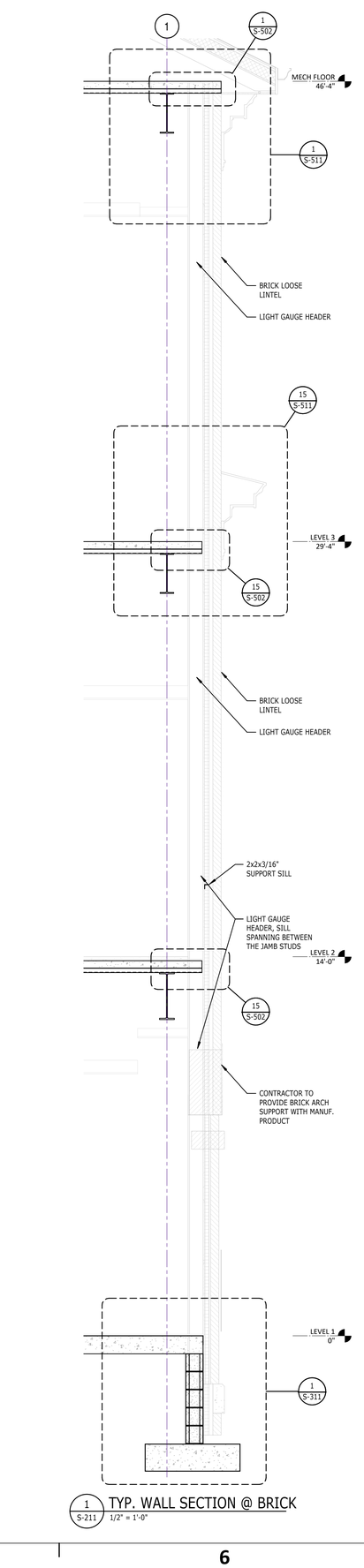
4 S-211 SECTION AT BACK WINDOW
1/2" = 1'-0"



3 S-211 SECTION AT FRONT CURTAINWALL
1/2" = 1'-0"



2 S-211 TYP. WALL SECTION @ WINDOW
1/2" = 1'-0"



1 S-211 TYP. WALL SECTION @ BRICK
1/2" = 1'-0"

1 2 3 4 5 6

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Δ	DATE	DESCRIPTION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

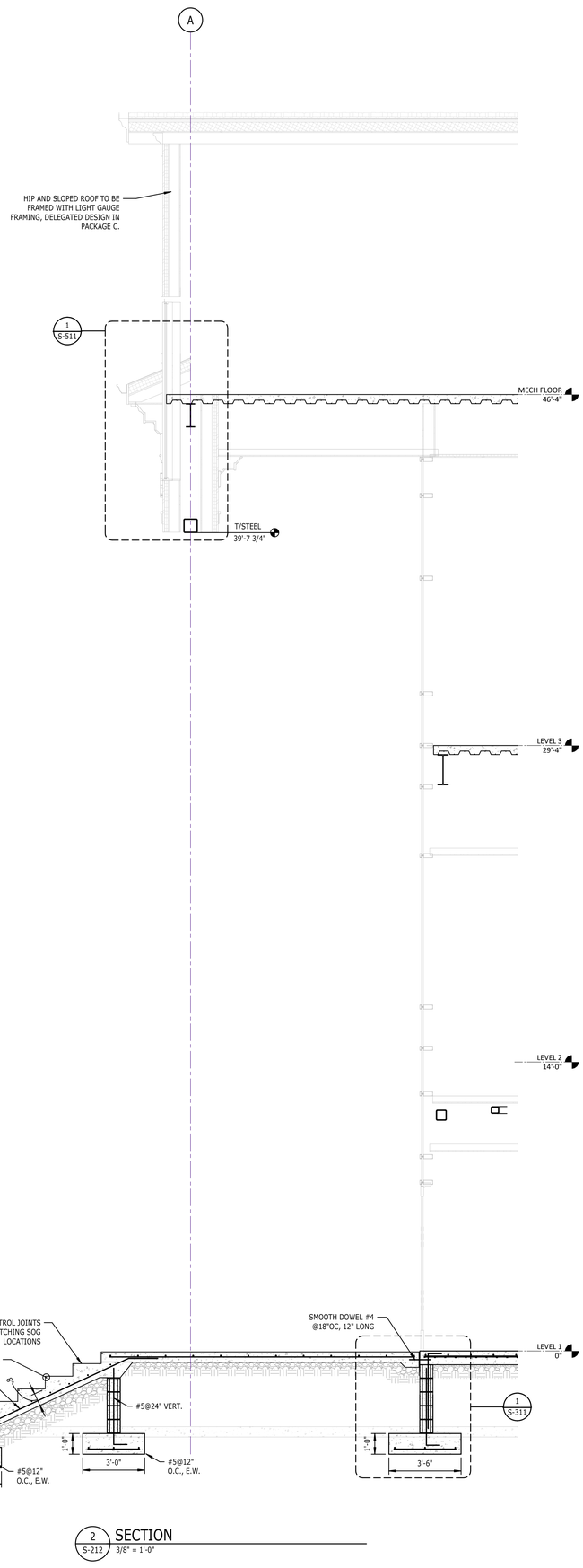
SHEET NAME:
BUILDING SECTIONS

ORIG SUBMISSION: 01/11/21
CURRENT: 2022.02.14
BID DOCUMENTS

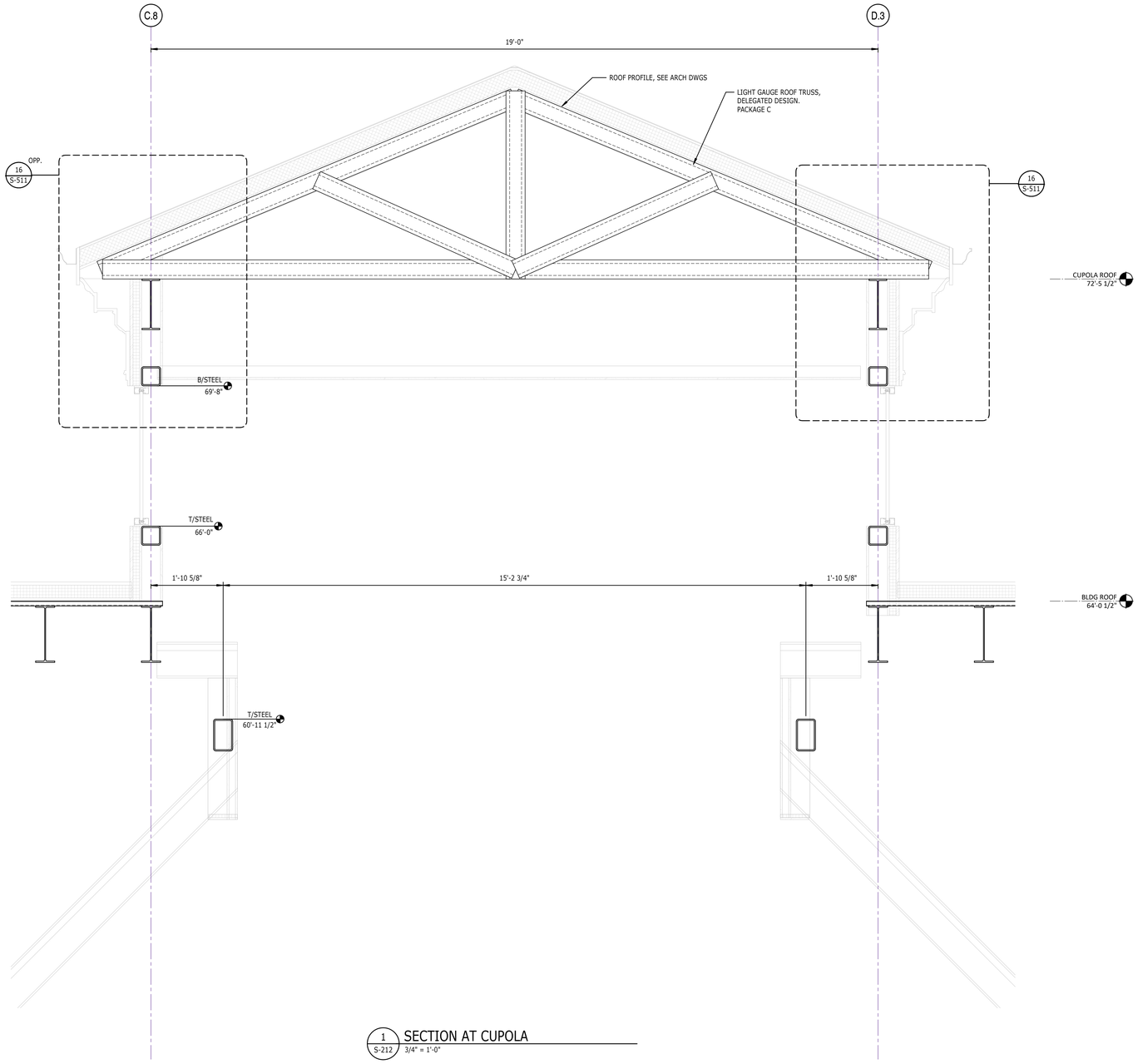
SHEET:
S-211

PACKAGE A - CONSTRUCTION DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



2 S-212 SECTION
3/4" = 1'-0"



1 S-212 SECTION AT CUPOLA
3/4" = 1'-0"

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E D C B A

1 2 3 4 5 6

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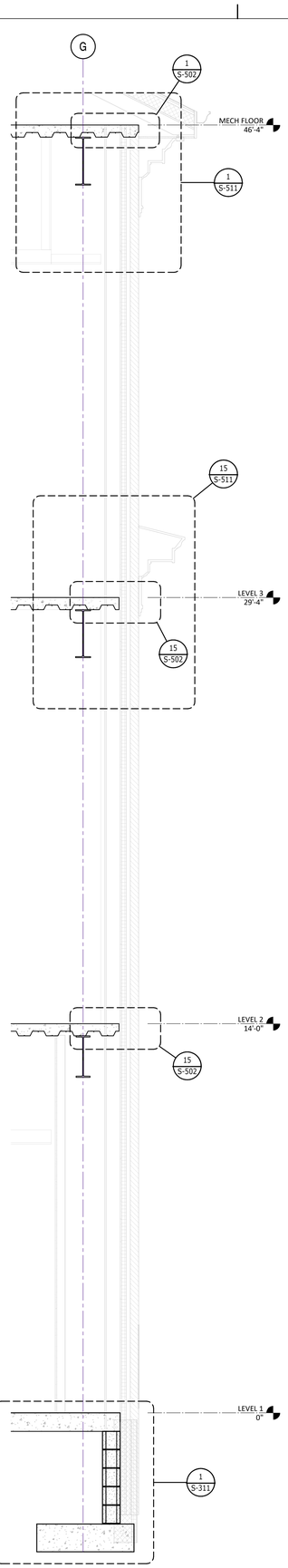
Δ	DATE	DESCRIPTION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
BUILDING SECTIONS

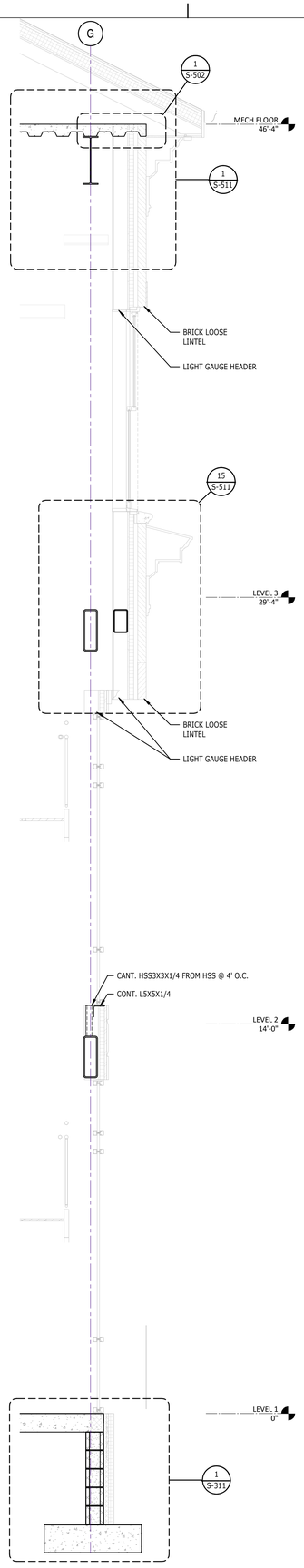
ORIG SUBMISSION: 01/20/21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-212

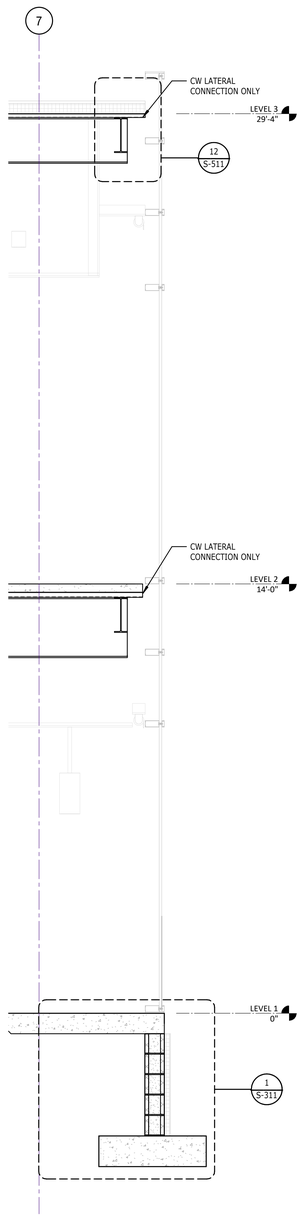
PACKAGE A - CONSTRUCTION DOCUMENTS



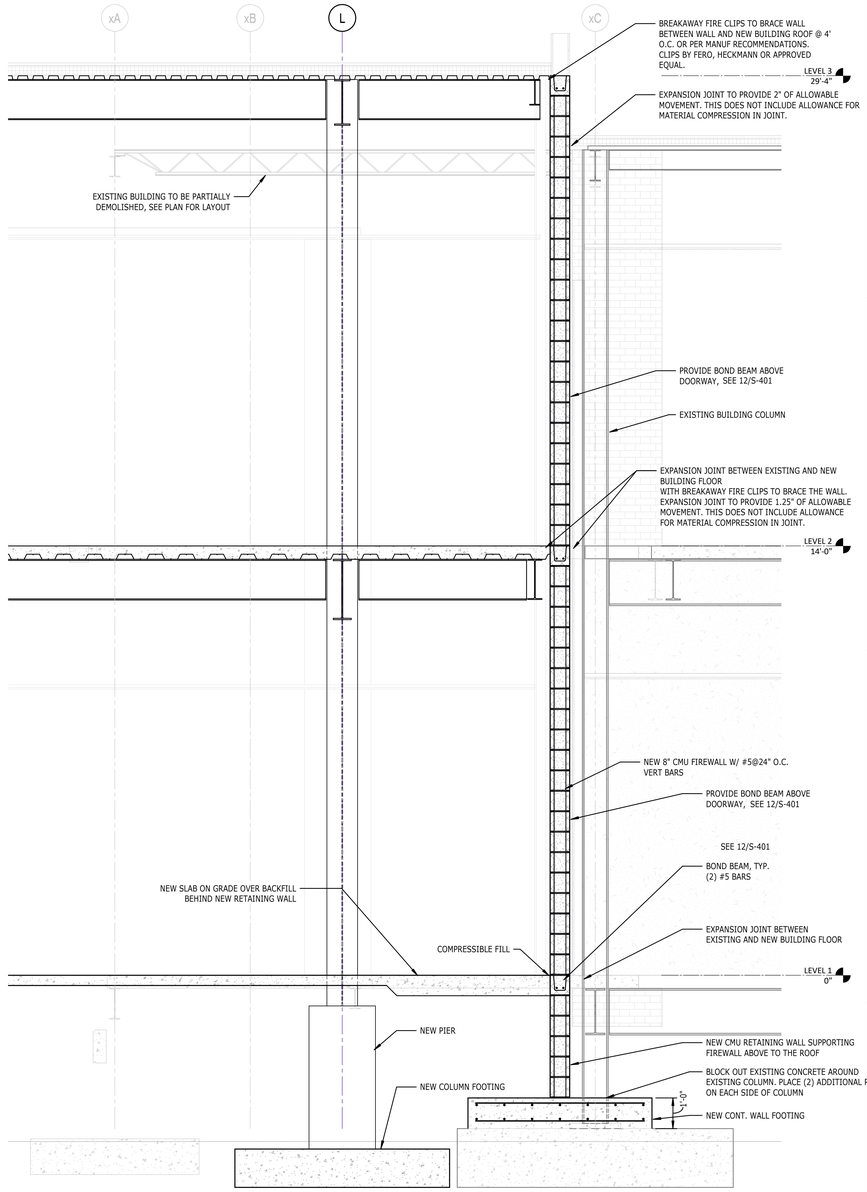
4 S-213 SECTION AT BRICK
1/2" = 1'-0"



3 S-213 SECTION AT STAIR
1/2" = 1'-0"



2 S-213 SECTION AT LINK FACADE
1/2" = 1'-0"



1 S-213 SECTION BETWEEN NEW AND EXISTING
1/2" = 1'-0"

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE SIZE IT SHOULD APPEAR ON YOUR SET.

E
D
C
B
A

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046250 THOMAS WILLIAM MCKANE

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SCO ID: 18-19656-02A
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Δ	DATE	DESCRIPTION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

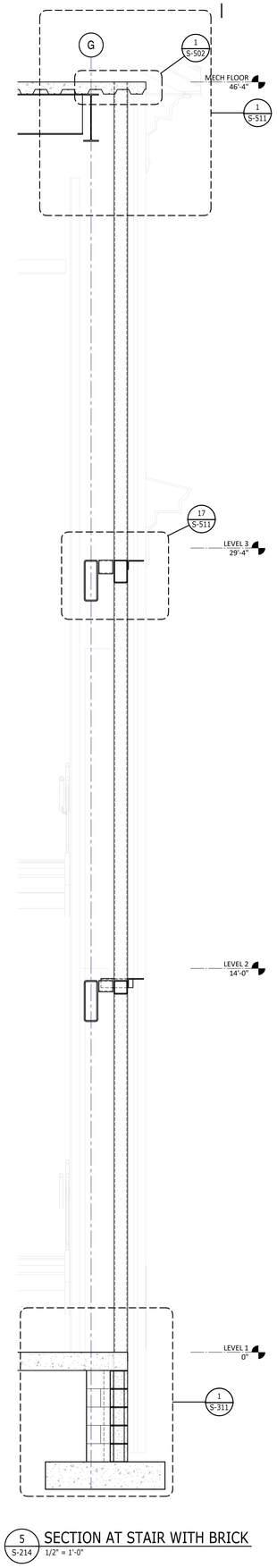
SHEET NAME:
BUILDING SECTIONS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

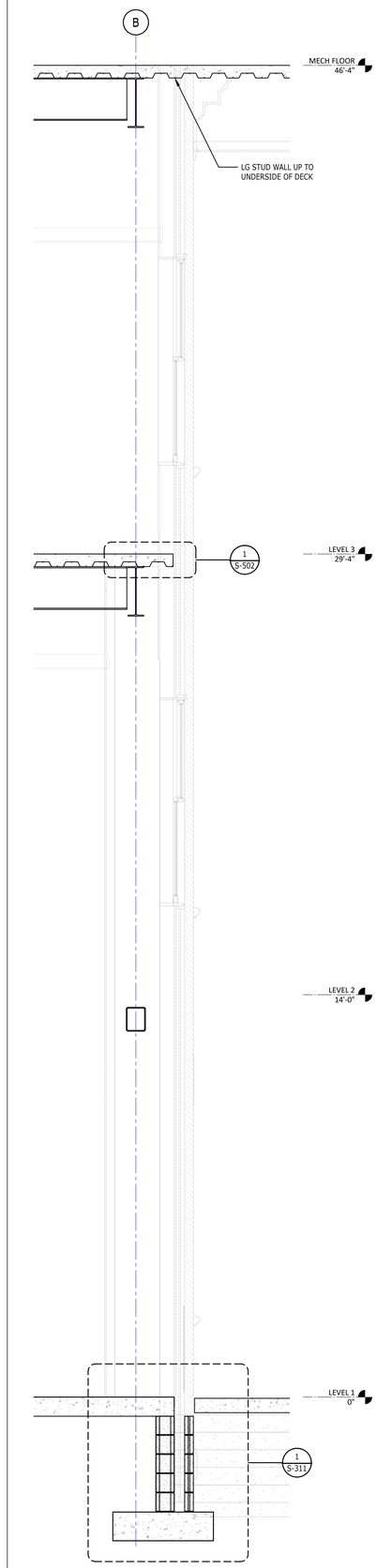
SHEET:
S-213

PACKAGE A - CONSTRUCTION DOCUMENTS

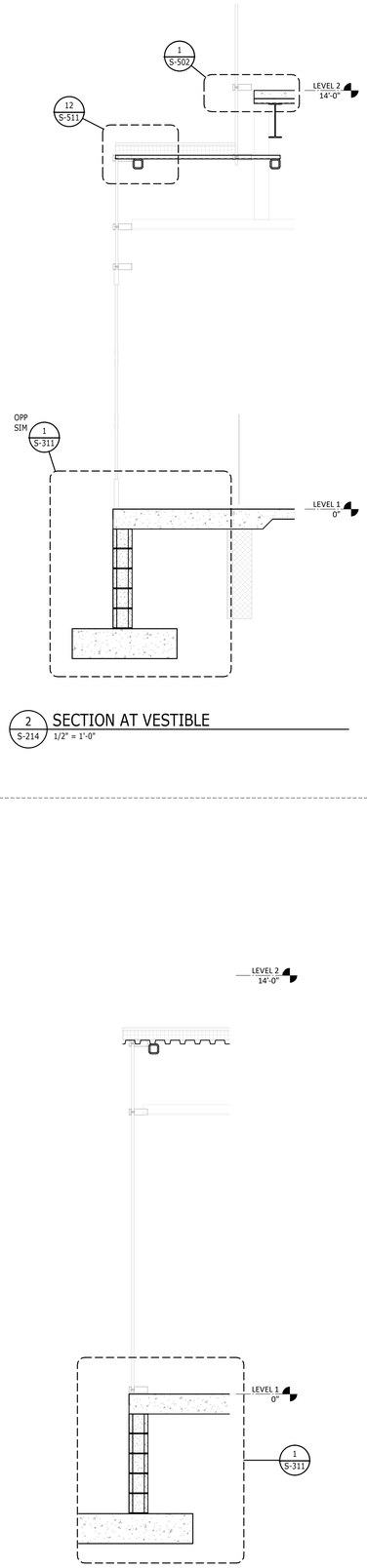
THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE



5 S-214 SECTION AT STAIR WITH BRICK
1/2" = 1'-0"

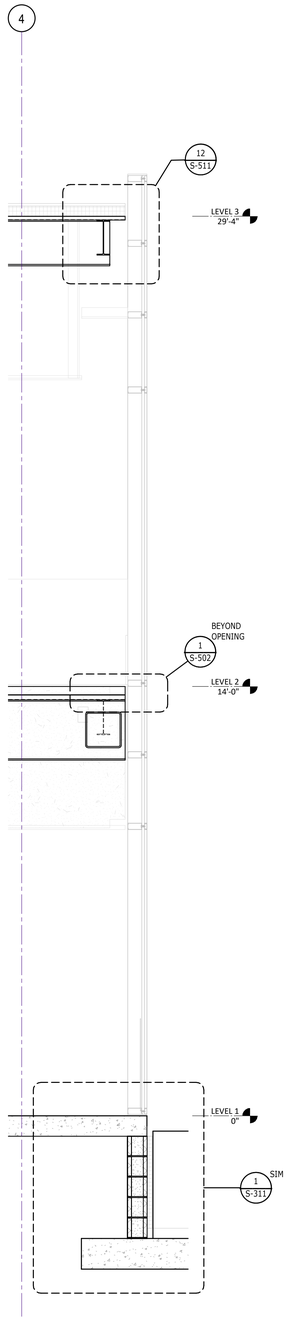


4 S-214 SECTION AT FRONT WINDOW
1/2" = 1'-0"



2 S-214 SECTION AT VESTIBLE
1/2" = 1'-0"

3 S-214 SECTION AT VESTIBLE
1/2" = 1'-0"



1 S-214 SECTION AT TWO STORY LINK
1/2" = 1'-0"

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
BUILDING SECTIONS

ORIG SUBMISSION: 10/07/21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-214

PACKAGE A - CONSTRUCTION DOCUMENTS

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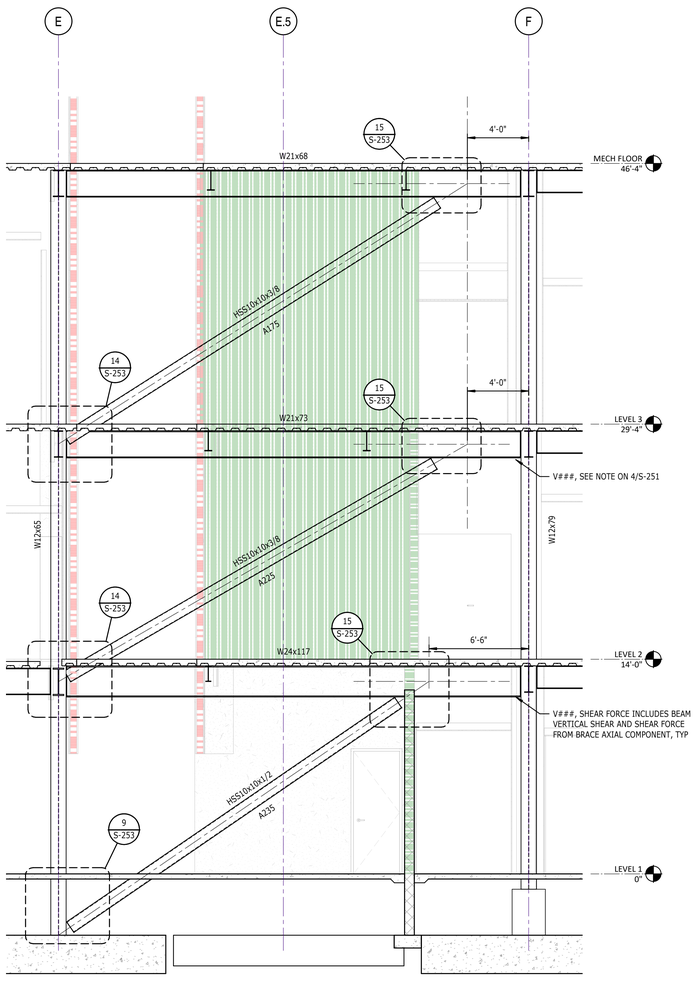
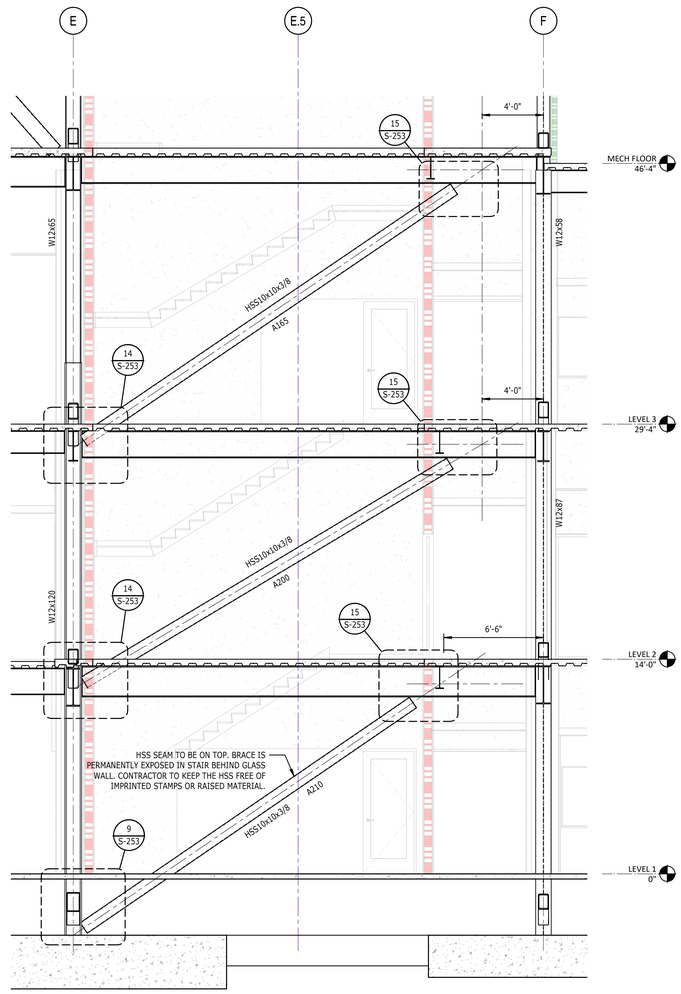
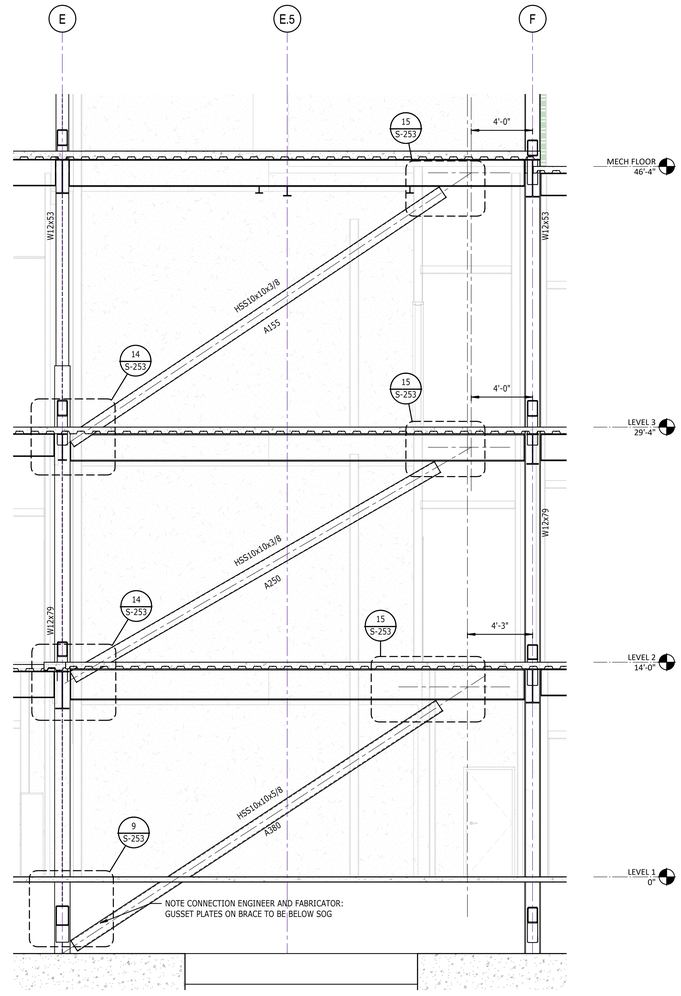
1 2 3 4 5 6



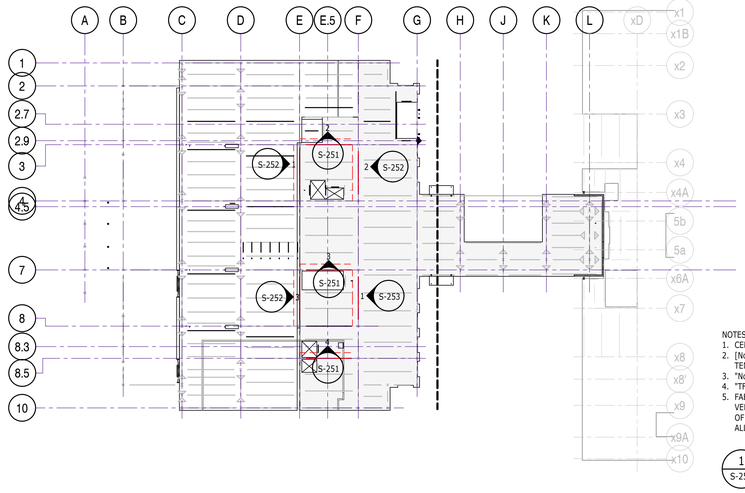
4 S-251 VF 3 ALONG GRID 8.5
1/4" = 1'-0"



3 S-251 VF 2 ALONG GRID 7
1/4" = 1'-0"



2 S-251 VF 1 ALONG GRID 3
1/4" = 1'-0"



NOTES:
1. CENTROIDS OF MEMBERS SHALL COINCIDE, UNO.
2. [No] INDICATES BRACE AXIAL FORCE (IN KIPS). "T" DENOTES THE BRACE IS IN TENSION, "C" DENOTES THE BRACE IS IN COMPRESSION.
3. "No" INDICATES BEAM REACTION (IN KIPS).
4. "TF" INDICATES TRANSFER FORCE (IN KIPS) FROM ADJACENT BEAM.
5. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE PLUS THE BEAM REACTION SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

1 S-251 VERTICAL FRAME ELEVATIONS
3/16" = 1'-0"

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE

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A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
VERTICAL FRAME ELEVATIONS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-251

PACKAGE A - CONSTRUCTION DOCUMENTS

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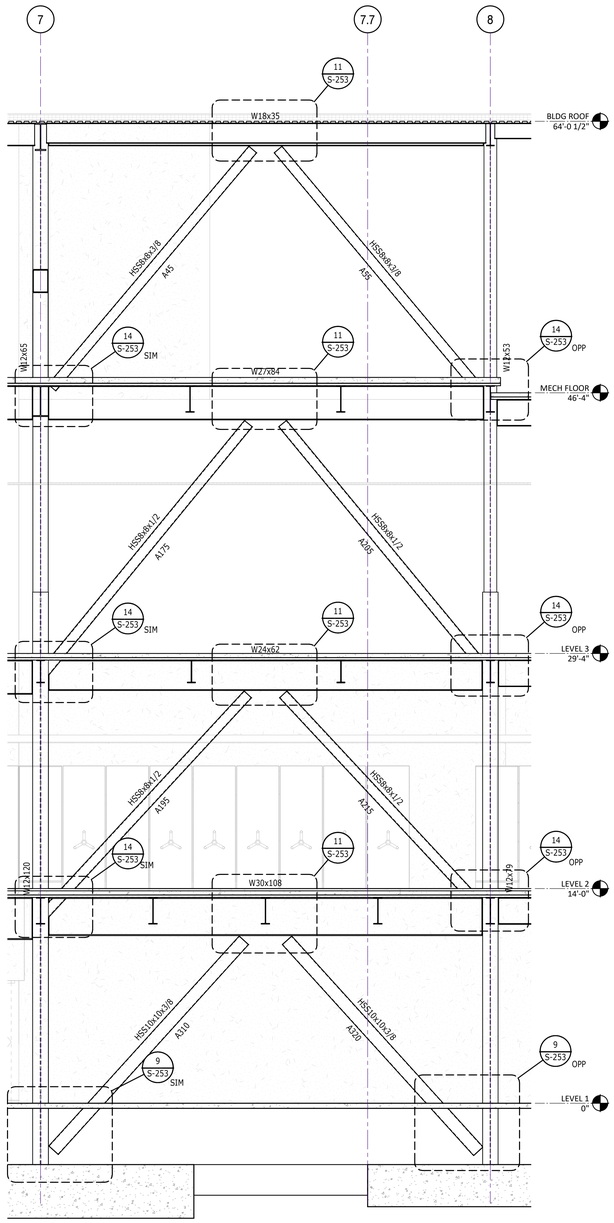
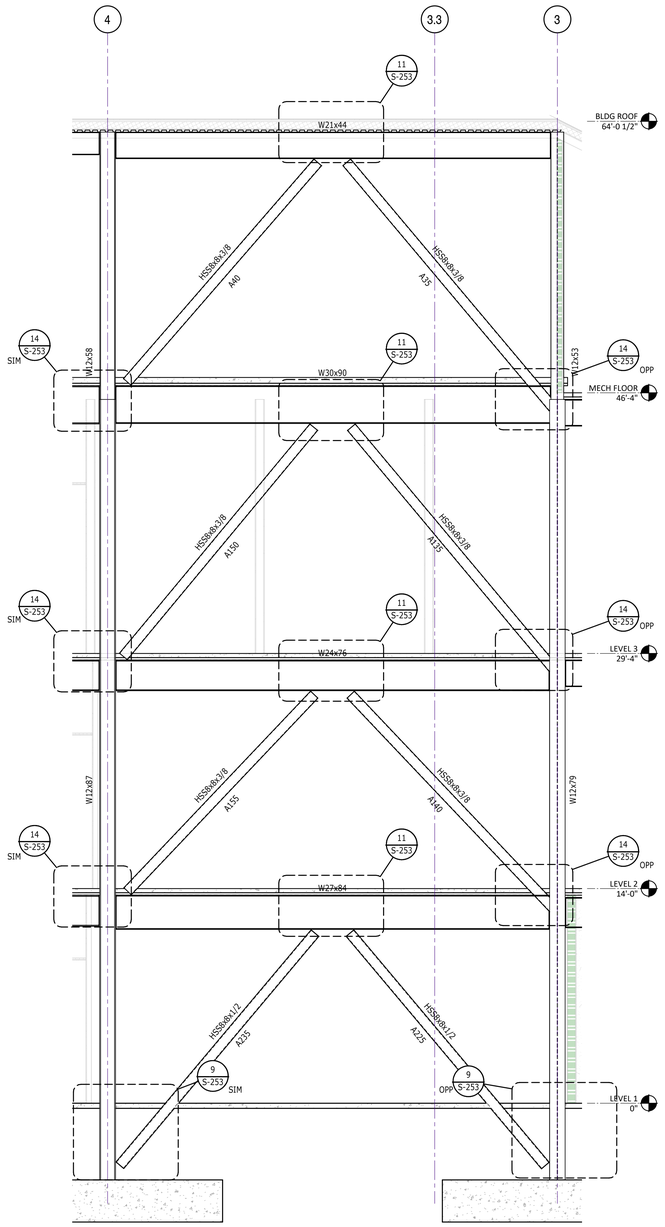
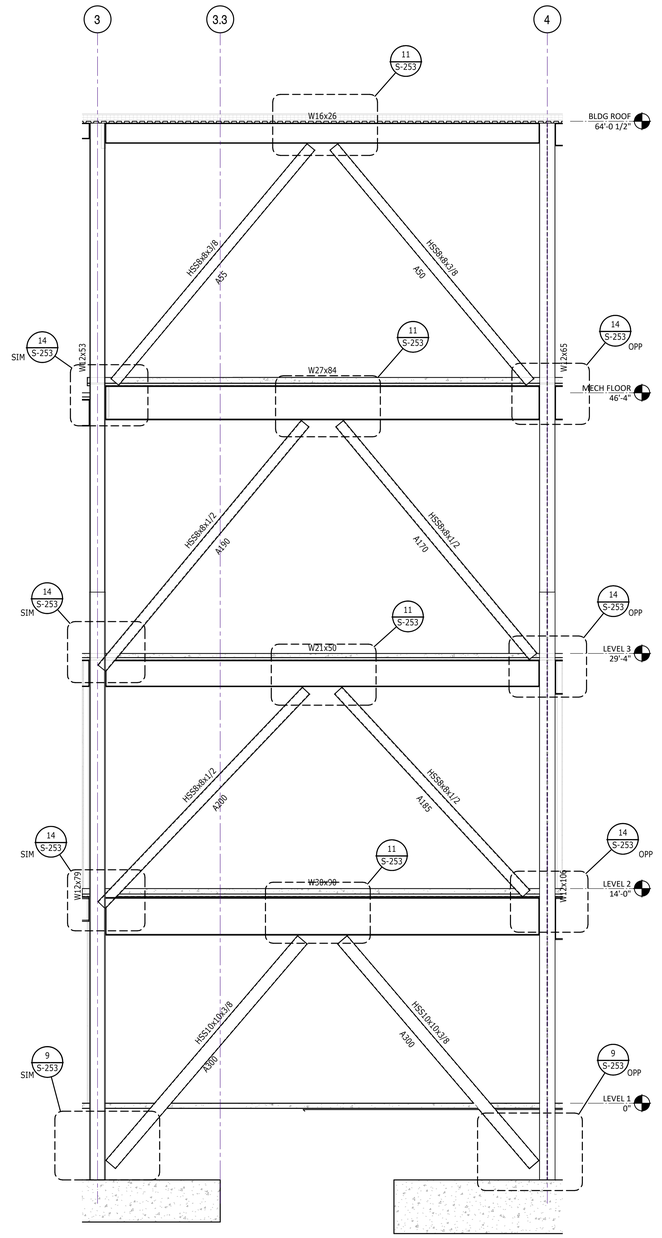


3 S-252 VF 6 ALONG GRID E
1/4" = 1'-0"



2 S-252 VF 5 ALONG GRID F
1/4" = 1'-0"



1 S-252 VF 4 ALONG GRID E
1/4" = 1'-0"

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02/14/2022

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Δ	DATE	DESCRIPTION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
VERTICAL FRAME ELEVATIONS

ORIG SUBMISSION: 12/18/20
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-252

PACKAGE A - CONSTRUCTION DOCUMENTS

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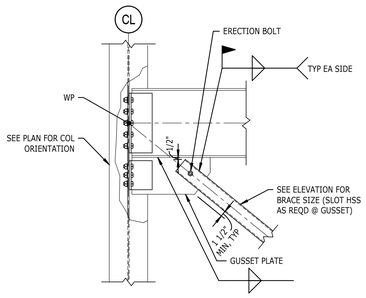
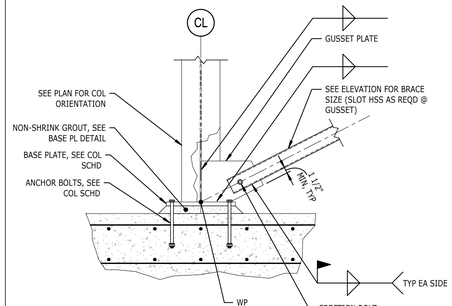


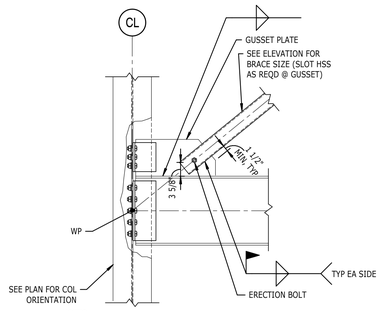
NOTES:
1. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS, GUSSET PLATES, AND WELDS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE PLUS THE BEAM REACTION SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

13 S-253 TYPICAL BRACE CONNECTION AT BEAM
3/4" = 1'-0"



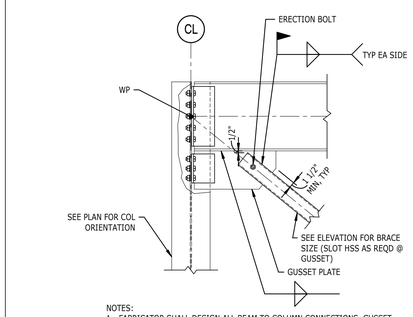
NOTES:
1. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS, GUSSET PLATES, AND WELDS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE PLUS THE BEAM REACTION SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

9 S-253 TYPICAL BRACE CONNECTION AT BASE
3/4" = 1'-0"



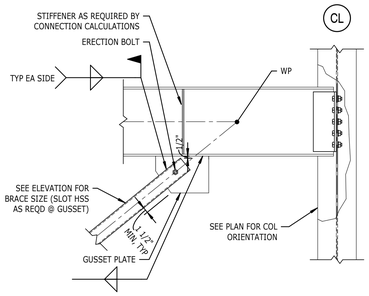
NOTES:
1. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS, GUSSET PLATES, AND WELDS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE PLUS THE BEAM REACTION SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

14 S-253 TYPICAL BRACE CONNECTION AT BEAM
3/4" = 1'-0"



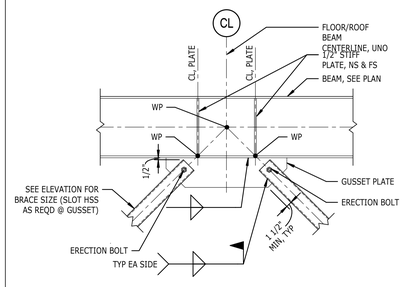
NOTES:
1. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS, GUSSET PLATES, AND WELDS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE PLUS THE BEAM REACTION SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

10 S-253 TYPICAL BRACE CONNECTION AT BEAM
3/4" = 1'-0"



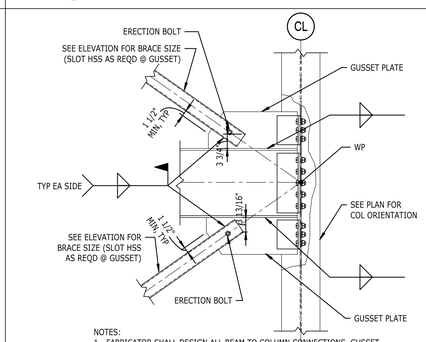
NOTES:
1. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS, GUSSET PLATES, AND WELDS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE. THE BEAM REACTION SHOWN ON THE ELEVATION OR PLAN INCLUDES THE BRACE FORCE VERTCICAL COMPONENT. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

15 S-253 TYPICAL ECC BRACE CONNECTION AT BEAM
3/4" = 1'-0"



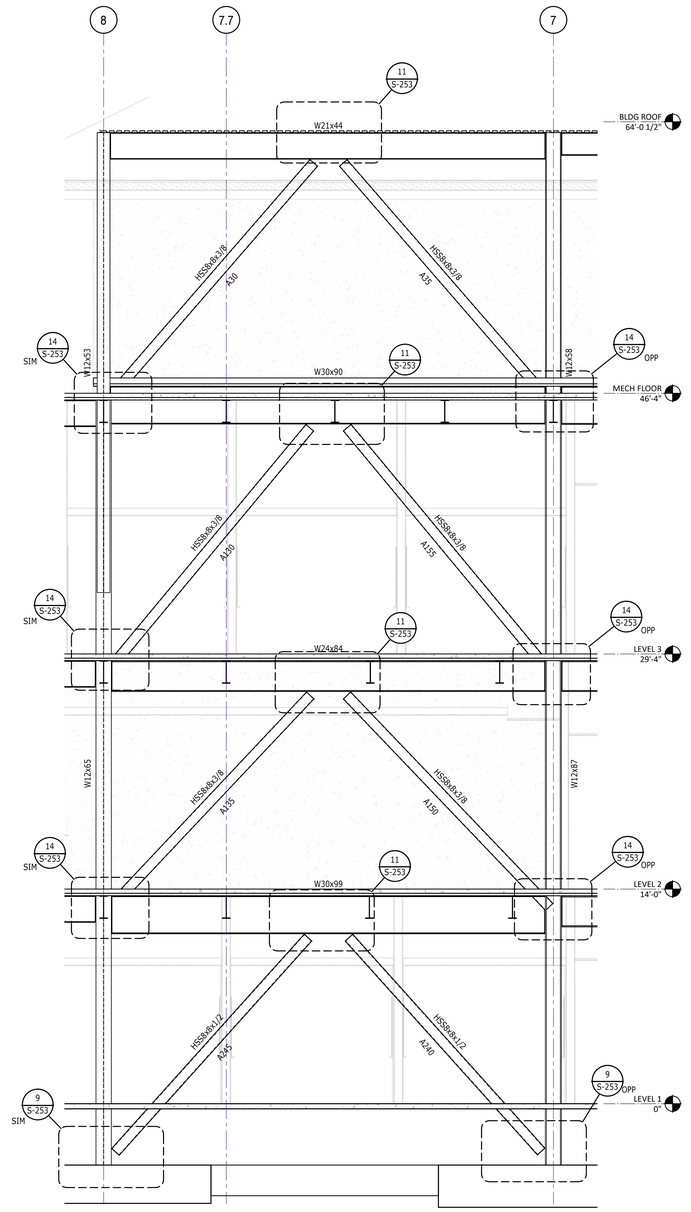
NOTES:
1. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS, GUSSET PLATES, AND WELDS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE PLUS THE BEAM REACTION SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.
2. "WP" INDICATES WORK POINT FOR MEMBER CENTROIDS.

11 S-253 TYPICAL BRACE CONNECTION AT BEAM
3/4" = 1'-0"



NOTES:
1. FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS, GUSSET PLATES, AND WELDS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE PLUS THE BEAM REACTION SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

12 S-253 TYPICAL BRACE CONNECTION AT BEAM
3/4" = 1'-0"



1 S-253 VF 7 ALONG GRID F
1/4" = 1'-0"

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Δ	DATE	DESCRIPTION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
VERTICAL FRAME ELEVATIONS AND DETAILS

ORIG SUBMISSION: 12/18/20
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-253

PACKAGE A - CONSTRUCTION DOCUMENTS

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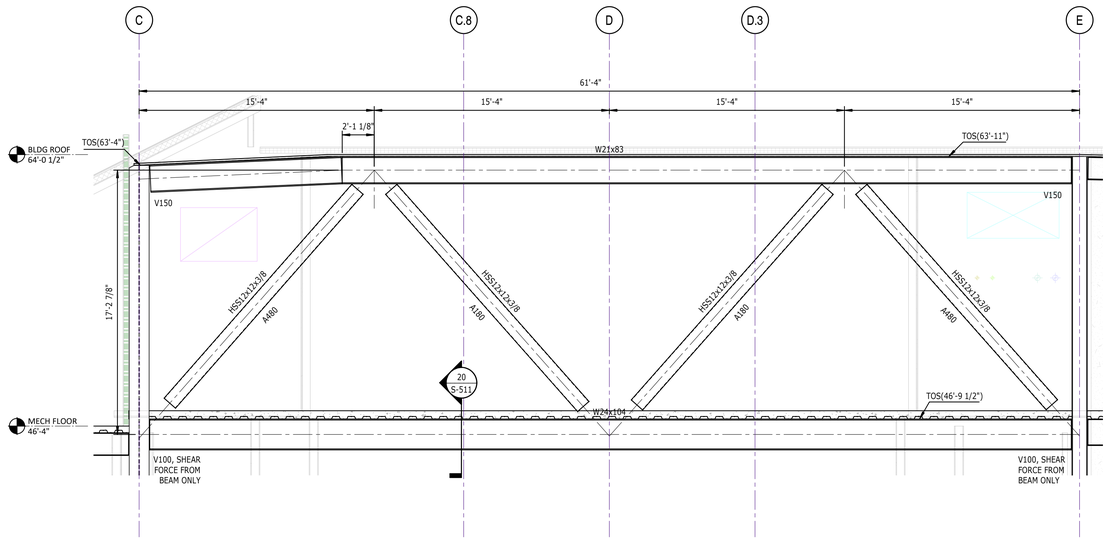
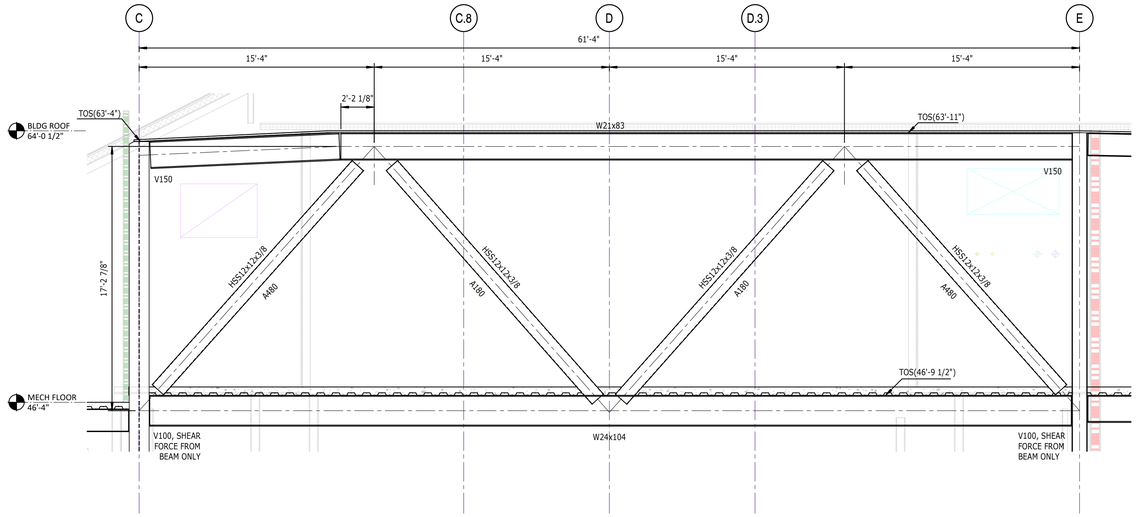
E D C B A

1 2 3 4 5 6

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE



1 S-260 TRUSS ELEVATION AT GRID 4
1/4" = 1'-0"



2 S-260 TRUSS ELEVATION AT GRID 7
1/4" = 1'-0"

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Δ	DATE	DESCRIPTION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
TRUSS ELEVATIONS

ORIG SUBMISSION: 12/01/20
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-260

PACKAGE A - CONSTRUCTION DOCUMENTS

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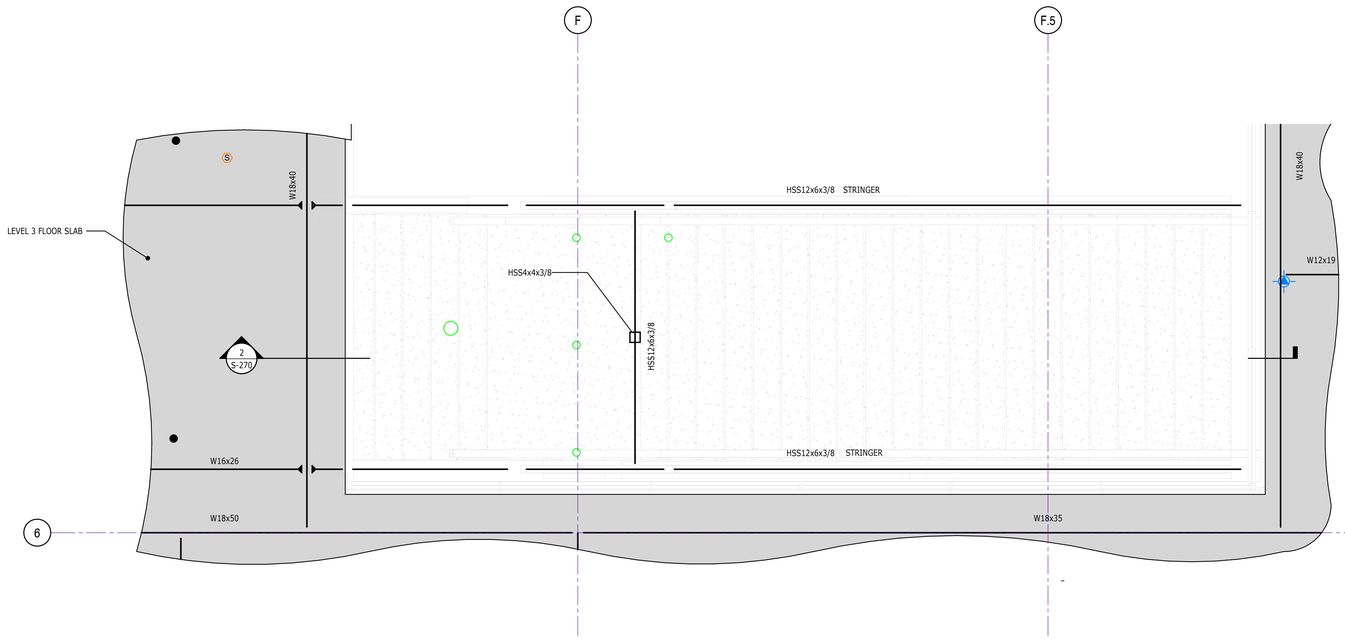
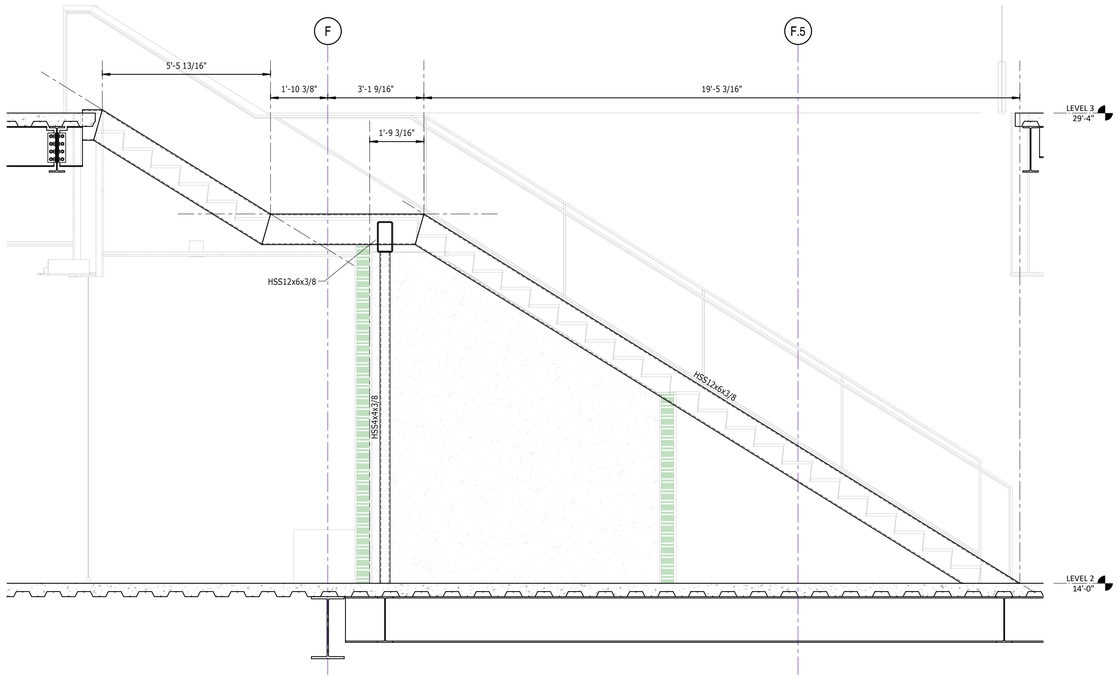
THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



1 S-270 BUILDING STAIR PLAN

1/2" = 1'-0"

NOTES:
1. STAIR IS ALTERNATE 06.



2 S-270 SECTION AT BUILDING STAIR

1/2" = 1'-0"

NOTES:
1. STAIR IS ALTERNATE 06.

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D	2022.02.14	BID DOCUMENTS

SHEET NAME:
STAIR SECTIONS AND DETAILS

ORIG SUBMISSION: 01/15/21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-270

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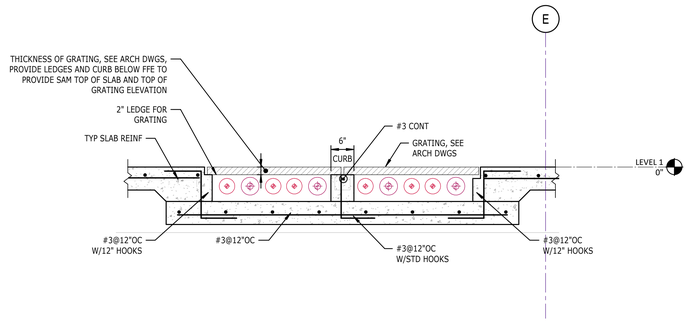
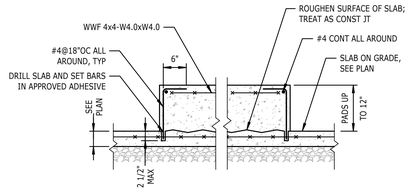
E D C B A

1 2 3 4 5 6

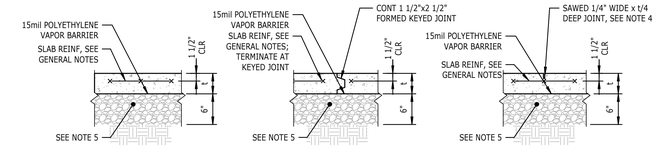


13 S-301 SECTION AT DEPRESSION FOR PIPING
3/4" = 1'-0"



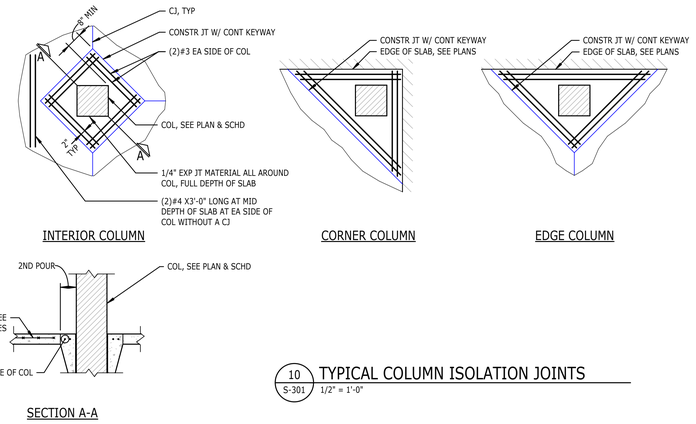
NOTES:
1. THE EXACT SIZE, SHAPE, AND LOCATION OF EQUIPMENT (HOUSEKEEPING) PAD(S) SHALL BE DETERMINED BY THE CONTRACTOR AFTER APPROVAL OF EQUIPMENT SHOP DRAWINGS. ANCHOR BOLTS WHERE REQUIRED SHALL BE SIZED AND LOCATED ACCORDING TO MANUFACTURER'S REQUIREMENTS.

9 S-301 TYPICAL EQUIPMENT PAD
3/4" = 1'-0"

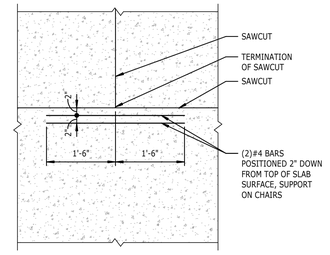


NOTES:
1. 't' DENOTES SLAB THICKNESS, SEE PLANS.
2. LOCATION OF SLAB ON GRADE CONSTRUCTION JOINTS SHALL BE DETERMINED BY THE CONTRACTOR. JOINT LOCATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
3. SEE PLANS FOR LOCATION OF CONTROL JOINTS. WHERE NOT SHOWN ON PLAN, CONTACT THE ENGINEER.
4. SAW CUT CONTROL JOINTS WITHIN 8 HOURS OF SLAB POUR.
5. 6" OF COMPACTED STONE OR CLEAN SAND.

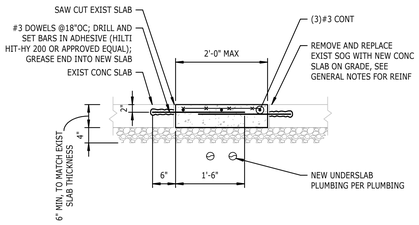
1 S-301 TYPICAL SLAB ON GRADE
1" = 1'-0"



10 S-301 TYPICAL COLUMN ISOLATION JOINTS
1/2" = 1'-0"

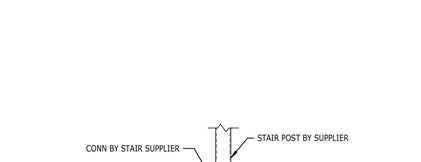


6 S-301 TYPICAL AT CONTROL JOINT TERMINATION
3/4" = 1'-0"

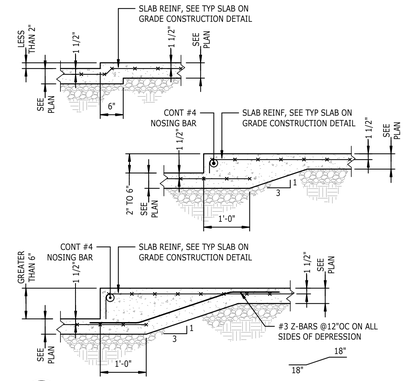


NOTES:
1. SEE ARCHITECTURAL AND PLUMBING DRAWINGS FOR LOCATIONS WHERE EXISTING SLAB REMOVAL AND REPLACEMENT IS REQUIRED.
2. INFILL ANY TRENCHES REQUIRED FOR UPFIT WITH COMPACTED #57 STONE PRIOR TO REPLACING SLAB ON GRADE.
3. SEAL JOINT IN NEW VAPOR BARRIER WITH EXISTING.

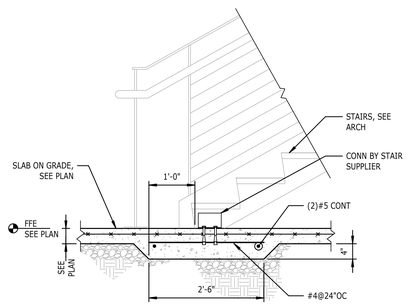
2 S-301 TYPICAL SLAB ON GRADE REPAIR
3/4" = 1'-0"



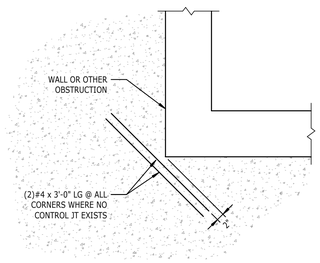
7 S-301 TYPICAL THICKENED SLAB AT STAIR POST
3/4" = 1'-0"



3 S-301 TYPICAL DEPRESSION IN SLAB ON GRADE
3/4" = 1'-0"



8 S-301 TYPICAL THICKENED SLAB AT STAIR STRINGER
3/4" = 1'-0"



4 S-301 TYPICAL SLAB AT CORNERS
3/4" = 1'-0"

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C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
SLAB ON GRADE DETAILS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-301

PACKAGE A - CONSTRUCTION DOCUMENTS

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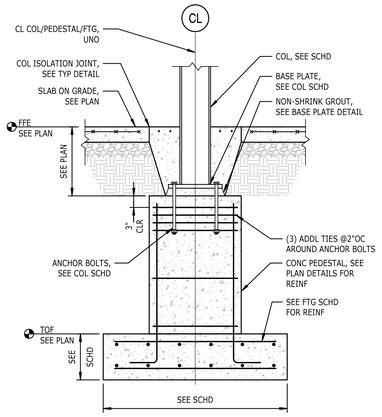
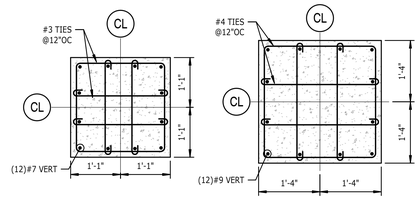
1 2 3 4 5 6
A B C D E



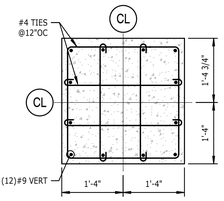
NOTES:
1. PROVIDE STANDARD ACI 90° HOOK AT BOTTOM END OF ALL VERTICAL BARS IN PEDESTAL.

13 S-303 TYPICAL FOOTING AT PEDESTAL
3/4" = 1'-0"

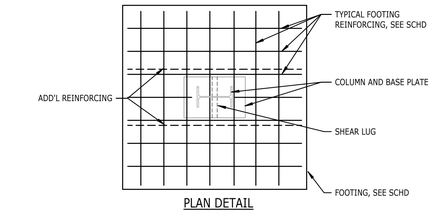


PEDESTAL P1

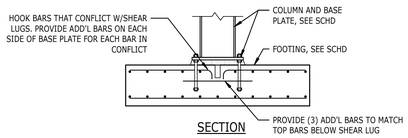
PEDESTAL P2



PEDESTAL P3



PLAN DETAIL



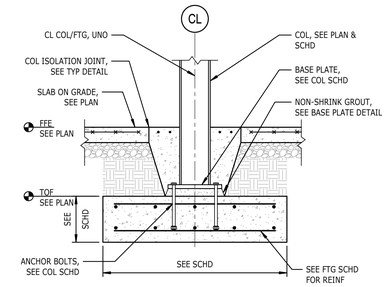
SECTION

9 S-303 TYP REBAR LAYOUT IN SPREAD FTG AT SHEAR LUG
1/2" = 1'-0"

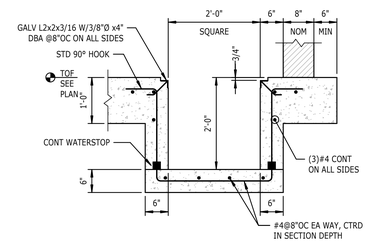
FOOTING SCHEDULE

MARK	SIZE WIDTH	SIZE LENGTH	SIZE DEPTH	REINFORCEMENT (EACH WAY) TOP	REINFORCEMENT (EACH WAY) BOTTOM
F4	4'-0"	4'-0"	1'-2"	NA	(5)#5
F5	5'-0"	5'-0"	1'-2"	NA	(6)#5
F6	6'-0"	6'-0"	1'-2"	NA	(7)#5
F7	7'-0"	7'-0"	1'-3"	NA	(8)#7
F7-M	7'-0"	7'-0"	1'-3"	(6)#4	(8)#7
F8	8'-0"	8'-0"	1'-6"	NA	(9)#7
F9	9'-0"	9'-0"	1'-9"	NA	(10)#7
F10	10'-0"	10'-0"	2'-0"	NA	(11)#7
F10-M	10'-0"	10'-0"	2'-0"	(8)#4	(11)#7
F11	11'-0"	11'-0"	2'-0"	NA	(12)#7
F12-M	12'-0"	12'-0"	2'-3"	(9)#4	(13)#7
F13	13'-0"	13'-0"	2'-6"	NA	(14)#7
F14-B	14'-0"	14'-0"	2'-6"	(15)#5	(15)#8
F14-M	14'-0"	14'-0"	2'-6"	(10)#4	(15)#8
F15-B	15'-0"	15'-0"	2'-9"	(16)#5	(16)#8
F15-M	15'-0"	15'-0"	2'-9"	(11)#4	(16)#8
F16-B	16'-0"	16'-0"	2'-9"	(16)#5	(16)#8
F16-M	16'-0"	16'-0"	2'-6"	(11)#4	(16)#8
F17-M	17'-0"	17'-0"	3'-0"	(12)#4	(18)#8
F20-B	20'-0"	20'-0"	3'-6"	(21)#5	(21)#8

5 S-303 SPREAD FOOTING SCHEDULE
3/4" = 1'-0"



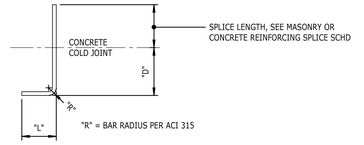
1 S-303 TYPICAL FOOTING AT STEEL COLUMN
3/4" = 1'-0"



10 S-303 TYPICAL ELEVATOR SUMP PIT
3/4" = 1'-0"

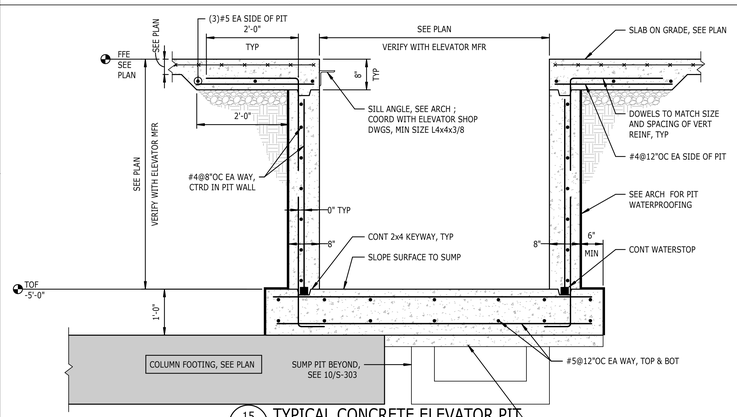
CONCRETE REINFORCING DOWEL EMBEDMENT

BAR SIZE	LEG DIM, "L"	EMBEDMENT, "D" f'c = 3,000 PSI	EMBEDMENT, "D" f'c = 4,000 PSI	EMBEDMENT, "D" f'c = 5,000 PSI
#3	6"	6"	6"	6"
#4	8"	8"	7"	6"
#5	10"	10"	9"	8"
#6	12"	12"	10"	9"
#7	14"	14"	12"	11"
#8	16"	16"	14"	12"
#9	19"	18"	15"	14"
#10	22"	20"	17"	15"
#11	24"	22"	19"	17"

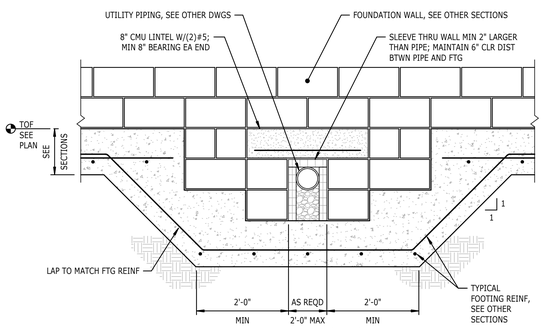


NOTES:
1. FOR CONCRETE STRENGTHS NOT PROVIDED, USE THE EMBEDMENT LENGTH FOR THE LOWER CONCRETE STRENGTH AS SHOWN IN THE TABLE.
2. DOWEL LENGTHS BASED ON NORMAL WEIGHT CONCRETE. FOR LIGHT WEIGHT, INCREASE DOWEL LENGTH "D" BY 30%.
3. SIDE COVER ON BARS MUST BE GREATER THAN 2 1/2". END COVER ON 90° HOOKED BARS MUST BE GREATER THAN 2".
4. FOR EPOXY-COATED BARS, INCREASE THE DOWEL LENGTH "D" BY 20%.

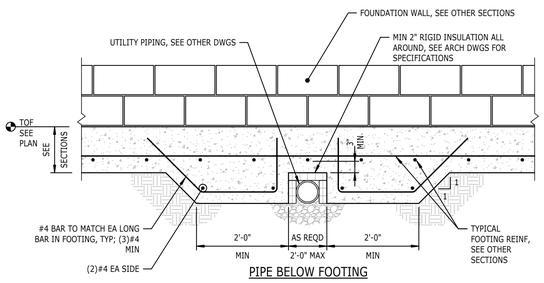
2 S-303 DOWEL EMBEDMENT LENGTH SCHEDULE
3/4" = 1'-0"



15 S-303 TYPICAL CONCRETE ELEVATOR PIT
3/4" = 1'-0"

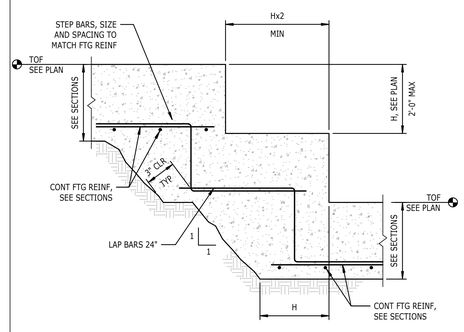


PIPE THRU FOOTING

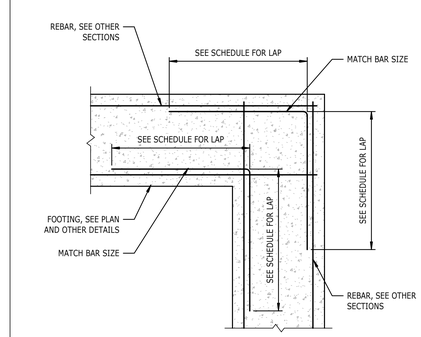


PIPE BELOW FOOTING

7 S-303 TYPICAL UTILITY BELOW FOOTING
3/4" = 1'-0"



3 S-303 TYPICAL STEP IN WALL FOOTING
3/4" = 1'-0"



4 S-303 TYPICAL FOOTING CORNER
3/4" = 1'-0"

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WILMINGTON, NC 28403
SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
FOUNDATION DETAILS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-303

PACKAGE A - CONSTRUCTION DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE

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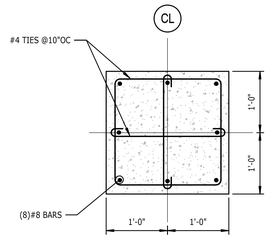
E D C B A

1 2 3 4 5 6

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE



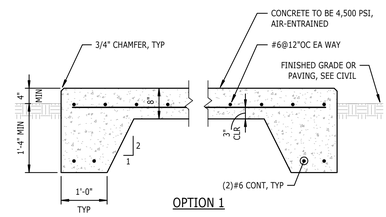
GRADE BEAM GB1

9 S-304 SECTION AT GRADE BEAM
1" = 1'-0"

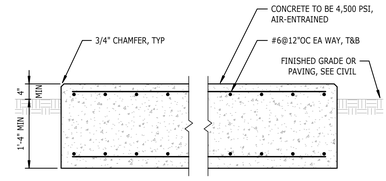
CONCRETE REINFORCING SPLICE LENGTH SCHEDULE												
	f'c = 3,000 PSI				f'c = 4,000 PSI				f'c = 5,000 PSI			
BAR SIZE	HORIZ BARS		OTHER BARS		HORIZ BARS		OTHER BARS		HORIZ BARS		OTHER BARS	
	CASE		CASE		CASE		CASE		CASE		CASE	
	I	II	I	II	I	II	I	II	I	II	I	II
#3	28"	42"	22"	32"	24"	36"	19"	28"	22"	33"	17"	25"
#4	37"	56"	29"	43"	32"	48"	25"	37"	29"	43"	22"	33"
#5	47"	70"	36"	54"	40"	60"	31"	47"	36"	54"	28"	42"
#6	56"	84"	43"	64"	48"	72"	37"	56"	43"	65"	33"	50"
#7	81"	122"	63"	94"	70"	106"	54"	81"	63"	94"	49"	73"
#8	93"	139"	72"	107"	80"	121"	62"	93"	72"	108"	55"	83"
#9	105"	157"	81"	121"	91"	136"	70"	105"	81"	122"	63"	94"
#10	118"	177"	91"	136"	102"	153"	79"	118"	91"	137"	70"	105"
#11	131"	196"	101"	151"	113"	170"	87"	131"	101"	152"	78"	117"
CATEGORY					CASE I				CASE II			
BEAMS AND COLUMNS					clr ≥ d_b, s ≥ $2d_b$, AND STIRRUPS PROVIDED OVER ENTIRE SPLICE LENGTH				clr < d_b AND s < $2d_b$			
OTHER MEMBERS					clr > d_b AND s ≥ $3d_b$				clr < d_b OR s < $3d_b$			

NOTES:
1. FOR CONCRETE STRENGTHS NOT PROVIDED, USE THE SPLICE LENGTH FOR THE LOWER CONCRETE STRENGTH AS SHOWN IN THE TABLE.
2. SPLICE LENGTHS BASED ON NORMAL WEIGHT CONCRETE. FOR LIGHT WEIGHT, INCREASE SPLICE LENGTH BY 30%.
3. AVOID SPLICES IN REGIONS OF MAXIMUM MOMENT. IF THIS IS NOT POSSIBLE STAGGER SPLICES SO THAT NOT MORE THAN 50% OF THE BARS ARE SPLICED WITHIN A REQUIRED SPLICE LENGTH. OTHERWISE INCREASE SPLICE LENGTH BY 30%.
4. "HORIZ" BARS ARE ANY HORIZONTAL BARS PLACED WITH MORE THAN 12" OF CONCRETE IN THE MEMBER BELOW THE SPLICE.
s = C-C SPACING OF BARS BEING DEVELOPED OR SPLICED.
clr = CLEAR COVER OF BARS.

5 S-304 SPLICE AND EMBEDMENT LENGTH SCHEDULE
3/4" = 1'-0"



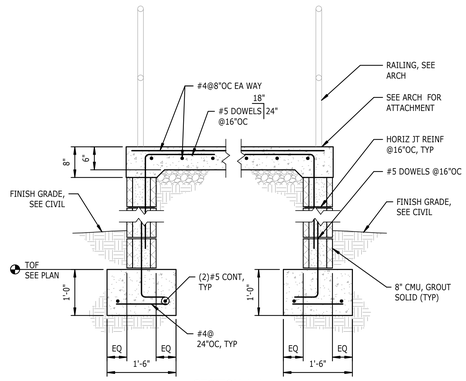
OPTION 1



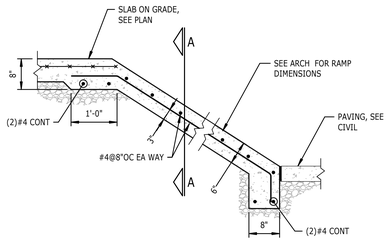
OPTION 2

NOTES:
1. THE EXACT SIZE, SHAPE, AND LOCATION OF EQUIPMENT PADS SHALL BE DETERMINED BY THE CONTRACTOR AFTER APPROVAL OF EQUIPMENT SHOP DRAWINGS. ANCHOR BOLTS WHERE REQUIRED SHALL BE SIZED AND LOCATED ACCORDING TO MANUFACTURER'S REQUIREMENTS.

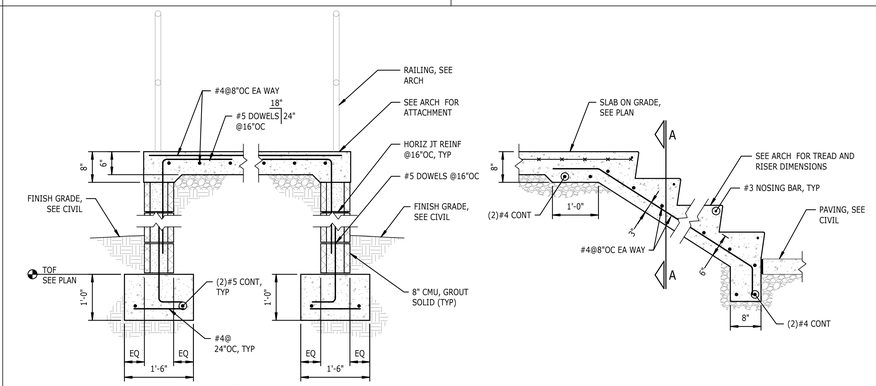
1 S-304 TYPICAL EXTERIOR EQUIPMENT PAD
3/4" = 1'-0"



SECTION A-A

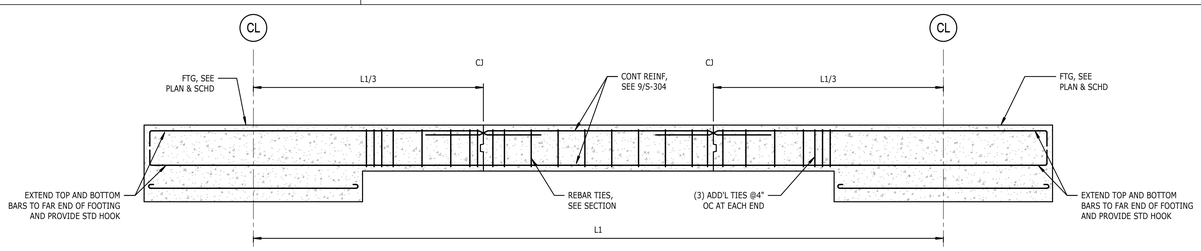


10 S-304 TYPICAL RAMP WITH CMU WALLS
3/4" = 1'-0"



SECTION A-A

3 S-304 TYPICAL STEPS WITH CMU WALLS
3/4" = 1'-0"



NOTES:
1. "CJ" INDICATES CONSTRUCTION JOINT. IF CONSTRUCTION JOINTS ARE REQUIRED, LOCATIONS INDICATED ARE ACCEPTABLE. SEE TYPICAL DETAIL FOR BEAM CONSTRUCTION JOINT DETAILING.
2. SLEEVED PENETRATIONS THROUGH THE TOP HALF OF GRADE BEAM SHALL BE PERMITTED AS FOLLOWS: LOCATION OCCURS BETWEEN THE 1/3 POINTS OF SPAN AS INDICATED; MAXIMUM DIAMETER SHALL NOT EXCEED 10" AND ONLY (1) PENETRATION IS PERMITTED; AND PENETRATION OCCURS IN TOP HALF OF GRADE BEAM WITH 6" MINIMUM COVER TO TOP OF BEAM.
3. SLEEVED PENETRATIONS THROUGH THE BOTTOM HALF OF GRADE BEAM SHALL BE PERMITTED AS FOLLOWS: LOCATION OCCURS BETWEEN THE 1/3 POINTS OF SPAN AS INDICATED; MAXIMUM DIAMETER SHALL NOT EXCEED 10" AND ONLY (1) PENETRATION IS PERMITTED; AND PENETRATION OCCURS IN BOTTOM HALF OF GRADE BEAM WITH 6" MIN COVER TO BOTTOM OF BEAM.
4. TOP AND BOTTOM REINFORCING SHALL BE CONTINUOUS AS INDICATED.

4 S-304 TYPICAL GRADE BEAM ELEVATION
3/8" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 046250 ENGINEER THOMAS WILLIAM MCLANE

02/14/2022

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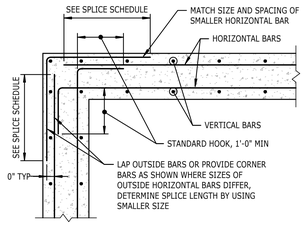
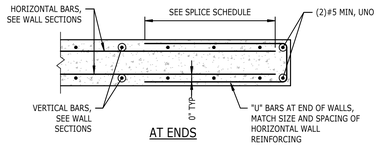
S-304

PACKAGE A - CONSTRUCTION DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TIME OF ORIGINAL PLOTTING SIZE



AT CORNERS



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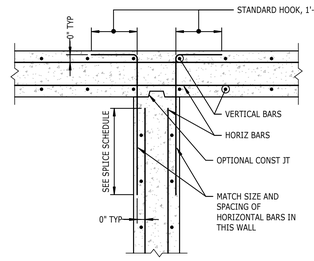
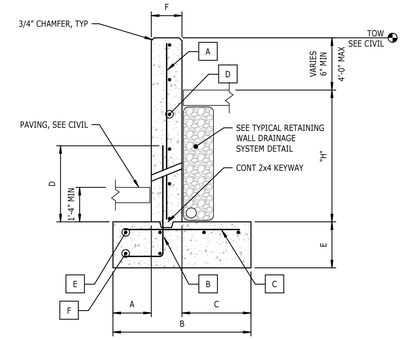


AT INTERSECTIONS

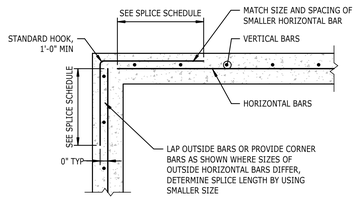
9 S-305 TYPICAL HORIZONTAL WALL REINFORCING
3/4" = 1'-0"



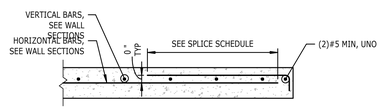
MAX HEIGHT "H"	DIMENSIONS						REINFORCEMENT					
	A	B	C	D	E	F	A	B	C	D	E	F
4'-0"	1'-0"	4'-0"	2'-4"	1'-8"	1'-0"	8"	#4@12"OC	#4@12"OC	#4@12"OC	#4@12"OC	(5)#4	(2)#4
6'-0"	1'-0"	5'-0"	3'-4"	2'-0"	1'-0"	8"	#5@12"OC	#5@12"OC	#4@12"OC	#4@12"OC	(6)#4	(2)#4
8'-0"	1'-3"	7'-6"	5'-10"	2'-6"	1'-4"	8"	#6@8"OC	#6@8"OC	#5@12"OC	#5@12"OC	(8)#5	(3)#4

NOTES:
1. SEE 4/S-305 FOR DETAIL OF CONCRETE WALL JOINTS.
2. SEE ARCHITECTURAL WALL ELEVATIONS FOR PATTERNS IN CONCRETE SITE WALLS.

1 S-305 CONCRETE RETAINING WALL SCHEDULE
3/4" = 1'-0"



AT CORNERS



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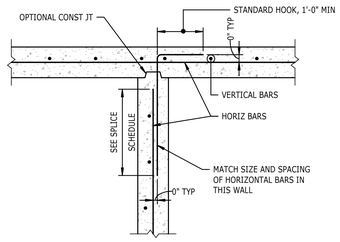
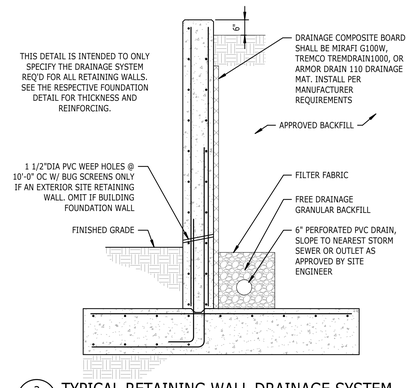
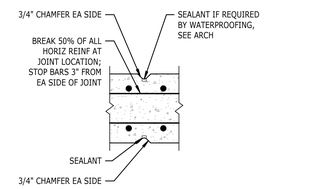


AT INTERSECTIONS

7 S-305 TYPICAL HORIZONTAL WALL REINFORCING
3/4" = 1'-0"



3 S-305 TYPICAL RETAINING WALL DRAINAGE SYSTEM
1/2" = 1'-0"



CONTROL JOINT (CJ)

(CONSTRUCTION JOINT SIMILAR)
(SPACE CONTROL JOINTS @ 15'-0"OC)

NOTES:
1. FOAM JOINT FILLER TO BE CLOSED CELL NEOPRENE FOAM.
2. SEALANT TO BE "TREMCO DYMERIC" OR EQUAL.
3. SUBMIT SAMPLES OF JOINT FILLER & SEALANT FOR APPROVAL.
4. CHAMFER ALL CORNERS AND EDGES OF EXPOSED FACE OF WALL.
5. DO NOT INSTALL CONTROL JOINTS IN CONCRETE SHEAR WALLS, STAIR OR ELEVATOR TOWERS OR WITHIN 10'-0" OF A CORNER.

4 S-305 TYPICAL JOINTS IN CONCRETE WALLS
3/4" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 046250 ENGINEER THOMAS WILLIAM MCLANE

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S-305

PACKAGE A - CONSTRUCTION DOCUMENTS

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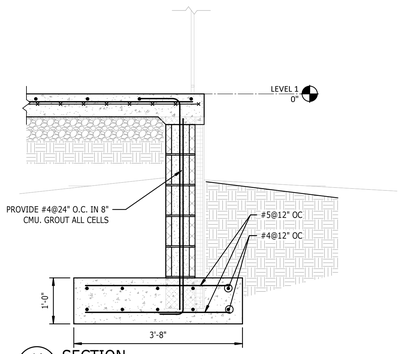
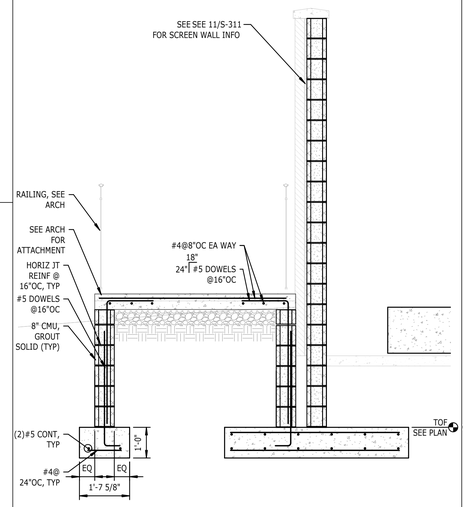
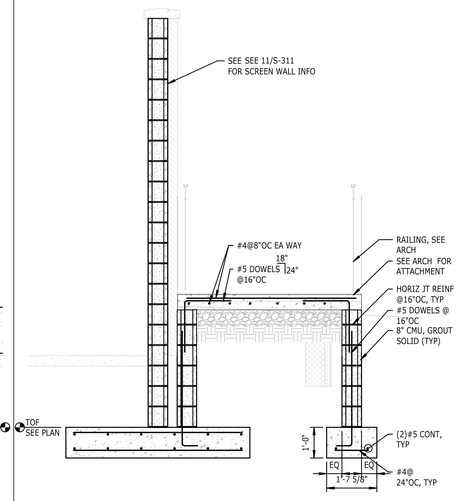


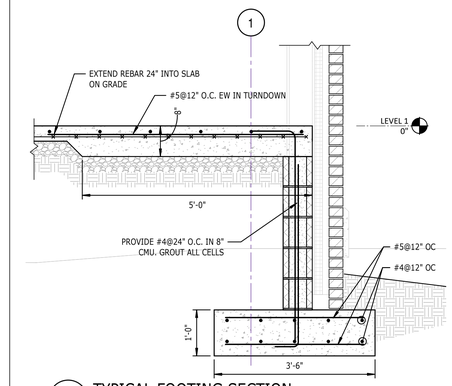
14 S-311 SECTION
3/4" = 1'-0"



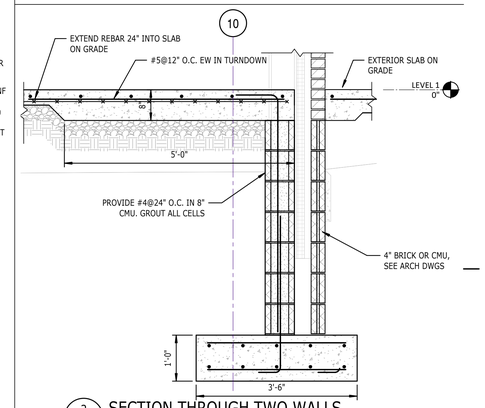
10 S-311 SCREEN WALL & RAMP
1/2" = 1'-0"



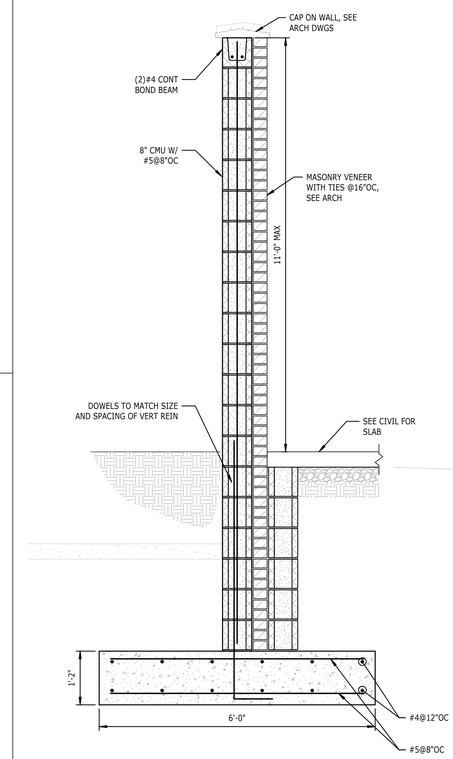
6 S-311 SECTION AT SCREEN WALL & RAMP
1/2" = 1'-0"



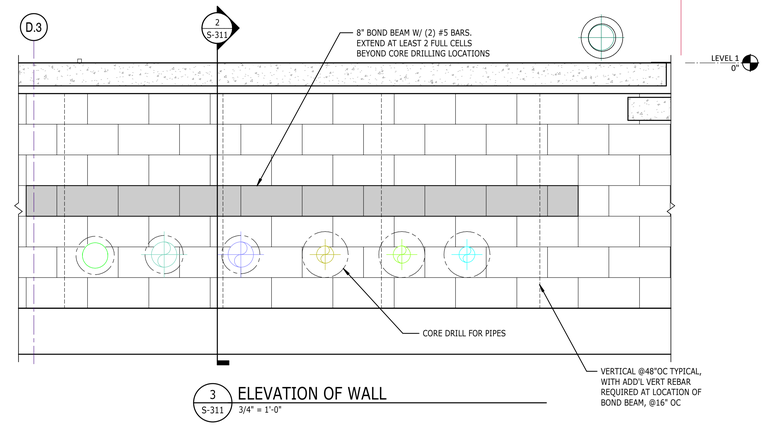
1 S-311 TYPICAL FOOTING SECTION
3/4" = 1'-0"



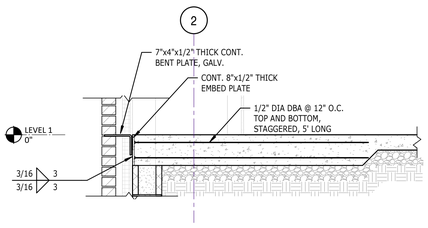
2 S-311 SECTION THROUGH TWO WALLS
3/4" = 1'-0"



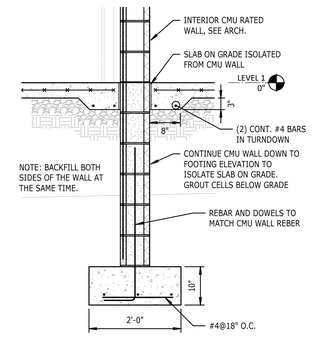
11 S-311 SECTION AT CMU SCREEN WALL
3/4" = 1'-0"



3 S-311 ELEVATION OF WALL
3/4" = 1'-0"



8 S-311 TYP. SECTION AT SOG BRICK SUPPORT
3/4" = 1'-0"



4 S-311 SECTION AT TYP. INTERIOR CMU WALLS
3/4" = 1'-0"

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE FULL SIZE PRINTING SCALE

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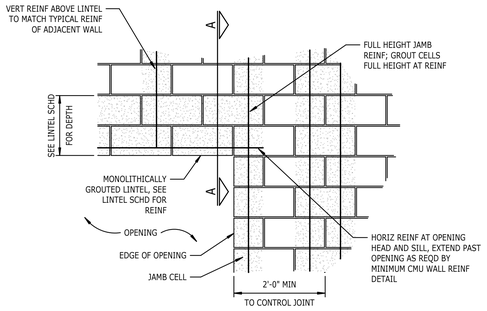
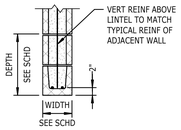
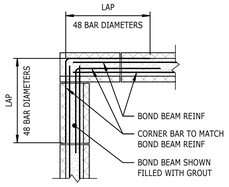




SECTION A-A

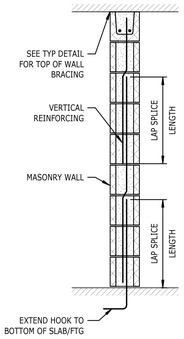
NOTES:
1. TYPICAL WALL REINFORCING AND CONTROL JOINT REINFORCING NOT SHOWN FOR CLARITY.

13 S-401 TYPICAL LINTEL|JAMB CONSTRUCTION
3/4" = 1'-0"

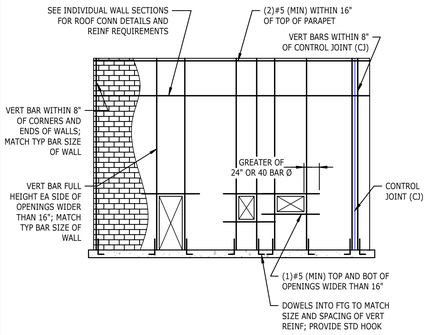


9 S-401 TYPICAL BOND BEAM CORNER
3/4" = 1'-0"

MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE	
BAR SIZE	LAP SPLICE
#3	27"
#4	36"
#5	45"
#6	54"
#7	63"
#8	72"

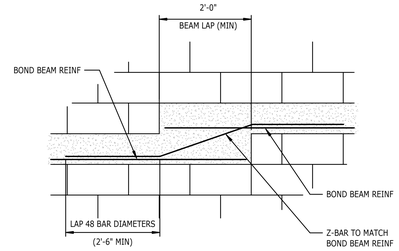


5 S-401 SPLICE AND EMBEDMENT LENGTH SCHEDULE
3/4" = 1'-0"

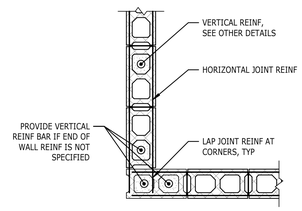


NOTES:
1. REINFORCING SHOWN IS A MINIMUM REQUIREMENT, INDIVIDUAL WALL SECTION REINFORCING REQUIREMENTS (SUCH AS NUMBER OR SIZE OF BARS) SHALL TAKE PRECEDENCE OVER THE REQUIREMENTS SHOWN HEREIN. SEE INDIVIDUAL WALL SECTIONS AND SCHEDULES FOR VERTICAL REINFORCING REQUIREMENTS.
2. ALL DISCONTINUOUS REINFORCEMENT SHALL BE LAPPED PER MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE.
3. VERTICAL STEEL MUST BE SECURED IN PLACE BEFORE THE BLOCKS ARE LAID. ALL VERTICAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH MASONRY LINTELS AND BOND BEAMS, UNO.
4. AT OPENINGS WHERE STEEL BEAM LINTELS ARE PROVIDED, REINFORCE THE JAMB CELL TO THE BEARING ELEVATION OF THE LINTEL, AND REINFORCE THE NEXT ADJACENT CELL PAST THE END OF THE BEAM FULL HEIGHT AS SHOWN IN THIS DETAIL.
5. DETAIL DOES NOT APPLY TO INTERIOR NON-LOAD BEARING PARTITION WALLS.
6. PROVIDE MINIMUM (2) LEGS OF W1.7 HORIZONTAL JOINT REINFORCING @ 16"OC VERTICALLY.

1 S-401 MINIMUM WALL REINFORCING
3/4" = 1'-0"

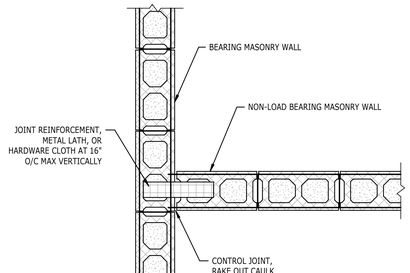


10 S-401 TYPICAL STEP IN BOND BEAM
3/4" = 1'-0"



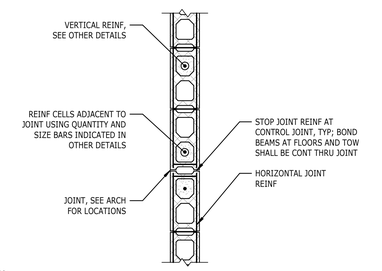
NOTES:
1. PROVIDE DOWELS TO FOUNDATION MATCHING SIZE OF VERTICAL REINFORCING, TYPICAL. SEE GENERAL NOTES OR MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE FOR LAP REQUIREMENTS.

6 S-401 TYPICAL WALL CORNER
3/4" = 1'-0"



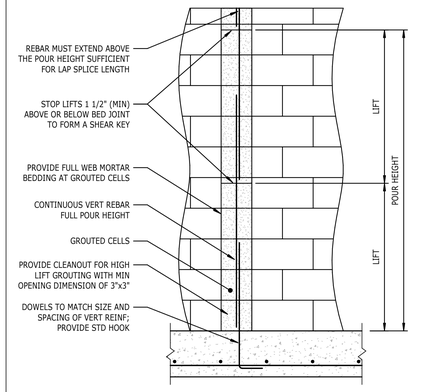
NOTE:
1. WALL REINFORCEMENT PER SCHEDULE.

11 S-401 TYPICAL NON-BEARING WALL INTERSECTION
1" = 1'-0"



NOTES:
1. PROVIDE DOWELS TO FOUNDATION MATCHING SIZE OF VERTICAL REINFORCING, TYPICAL. SEE GENERAL NOTES OR MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE FOR LAP REQUIREMENTS.
2. ALL CONTROL JOINT LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS. FOR INTERIOR PARTITION WALLS, JOINTS SHALL HAVE A MAXIMUM SPACING DETERMINED FROM THE LESSER OF 1 1/2 TIMES THE WALL HEIGHT AND 25 FEET. FOR STRUCTURAL WALLS, CONTACT THE ENGINEER OF RECORD IF JOINTS ARE NOT LOCATED ON PLAN.
3. DO NOT LOCATE ANY CONTROL JOINT IN STAIR OR ELEVATOR TOWERS.
4. CMU CONTROL JOINTS ARE NOT NECESSARILY LOCATED AT BRICK CONTROL JOINTS. DO NOT JUST INSTALL BEHIND BRICK CONTROL JOINTS.

7 S-401 TYPICAL WALL CONTROL JOINT
3/4" = 1'-0"



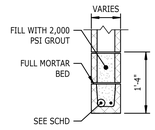
GENERAL GROUTING REQUIREMENTS:
1. ALL REINFORCED CELLS SHALL BE GROUTED SOLID.
2. REINFORCING BARS SHALL BE IN PROPER POSITION PRIOR TO PLACEMENT OF GROUT, NOT PUSHED DOWN INTO PREVIOUSLY PLACED GROUT. SAME REQUIREMENT APPLIES FOR EMBEDDED BOLTS AND FASTENERS.
3. MORTAR BEDDING UNDER THE FIRST COURSE OF BLOCK CELLS TO BE GROUTED SHALL PERMIT GROUT TO COME INTO DIRECT CONTACT WITH FOUNDATION.
4. PLACE MORTAR ON CROSS WEBS ADJACENT TO ALL GROUTED CELLS.
5. MORTAR THAT PROJECTS MORE THAN 1/2" INTO CELLS THAT ARE TO BE GROUTED SHALL BE REMOVED.
6. GROUTED CELLS SHALL BE MECHANICALLY VIBRATED DURING PLACEMENT OF GROUT. TEN MINUTES AFTER PLACING GROUT, EACH GROUTED CELL SHALL BE RECONSOLIDATED WITH A VIBRATOR.
7. METAL LATH SHALL BE PLACED UNDER ALL BOND BEAMS IN ORDER TO CONTAIN GROUT. FELT OR OTHER BOND BREAKING MATERIAL IS NOT PERMITTED. AS AN ALTERNATIVE TO THIS, "U"-SHAPED LINTEL BLOCKS MAY BE USED FOR BOND BEAMS.
8. EITHER LOW LIFT GROUTING OR HIGH LIFT GROUTING PROCEDURES MAY BE UTILIZED, AT THE CONTRACTOR'S OPTION.

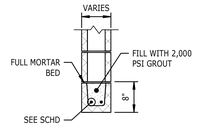
LOW LIFT GROUTING PROCEDURE:
1. LAY WALL TO MAXIMUM OF 5'-0".
2. CLEAN MORTAR AND OTHER DEBRIS FROM CELLS TO BE GROUTED.
3. PLACE REINFORCING BARS IN PROPER POSITION.
4. PLACE GROUT UP TO LIFT HEIGHT AND VIBRATE.

HIGH LIFT GROUTING PROCEDURE:
1. CLEANOUT OPENINGS SHALL BE PROVIDED IN THE FACE SHELLS OF THE BOTTOM COURSE OF ALL CELLS TO BE GROUTED. OPENINGS SHALL BE LARGE ENOUGH TO ALLOW REMOVAL OF DEBRIS.
2. LAY WALL TO MAXIMUM POUR HEIGHT AND CLEAN DEBRIS FROM OPENINGS. PLACE REINFORCING BARS IN PROPER POSITION.
3. CLEAN MORTAR AND OTHER DEBRIS FROM CELLS TO BE GROUTED.
4. MASONRY SHALL CURE A MINIMUM OF 4 HOURS PRIOR TO GROUTING.
5. PLACE GROUT TO THE FOLLOWING HEIGHTS: MAXIMUM LIFT HEIGHT IS 5'-0"; MAXIMUM POUR HEIGHT IS 12'-0" UNLESS EXPRESSLY COORDINATED WITH THE STRUCTURAL ENGINEER.
6. AFTER THE LIFT IS POURED, VIBRATE TO ELIMINATE ALL AIR VOIDS. WAIT BETWEEN 3 AND 10 MINUTES, THEN RECONSOLIDATE BY VIBRATING AGAIN. CONTINUE THIS PROCEDURE FOR FULL POUR HEIGHT. RECONSOLIDATE THE PRIOR LIFT BY EXTENDING THE VIBRATOR THROUGH THE CURRENT LIFT INTO THE PREVIOUS LIFT.
7. GROUT SLUMP MUST BE MAINTAINED BETWEEN 10 AND 11 INCHES FOR HIGH LIFT GROUTING.

3 S-401 TYPICAL MASONRY GROUT REQUIREMENTS
3/4" = 1'-0"

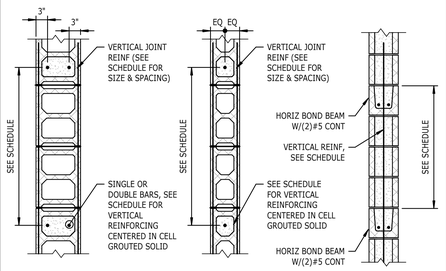
NON-LOAD BEARING CMU LINTEL SCHEDULE							
LINTEL SIZE OPENING SIZE	4"x8"	6"x8"	6"x16"	8"x8"	8"x16"	12"x8"	12"x16"
3'-4"	(1)#3	(1)#3	NA	(1)#3	NA	(2)#4	NA
4'-0"	(1)#3	(1)#4	NA	(2)#3	NA	(2)#4	NA
4'-8"	(1)#4	(1)#4	NA	(2)#4	NA	(2)#4	NA
5'-4"	(1)#4	(2)#4	NA	(2)#4	NA	(2)#5	NA
6'-0"	(1)#5	(2)#4	(1)#4	(2)#4	(2)#4	(2)#5	(2)#4
6'-8"	NA	NA	(1)#5	NA	(2)#4	NA	(2)#4
7'-4"	NA	NA	(1)#5	NA	(2)#4	NA	(2)#5
8'-0"	NA	NA	(1)#6	NA	(2)#4	NA	(2)#5
8'-8"	NA	NA	(1)#6	NA	(2)#5	NA	(2)#6
9'-4"	NA	NA	(1)#7	NA	(2)#5	NA	(2)#6





NOTES:
1. THIS SCHEDULE APPLIES TO OPENINGS IN ALL NON-LOAD BEARING WALLS AND PARTITIONS.
2. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF OPENINGS.
3. PROVIDE 8" OF BEARING AT EACH END OF ALL OPENINGS.
4. DO NOT PLACE CONTROL JOINT IN CMU LINTEL OR WITHIN 8" OF JAMB.

12 S-401 NON-BEARING LINTEL SCHEDULE
3/4" = 1'-0"



PLAN 12" CMU PLAN 8" CMU SECTION

8 S-401 TYPICAL WALL REINFORCING
3/4" = 1'-0"

UNCW
LS3P
101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
WWW.LS3P.COM
SHEPLEY BULFINCH
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223 S. WEST ST. SUITE 1100
RALEIGH, NC 27603
TEL (919) 380-8750
PROJ # S20141
FIRM LICENSE #C-1051

NORTH CAROLINA PROFESSIONAL SEAL 046250 ENGINEER THOMAS WILLIAM MCLANE

02/14/2022

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LS3P PROJECT: 7202.197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
CMU DETAILS

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SHEET:
S-401

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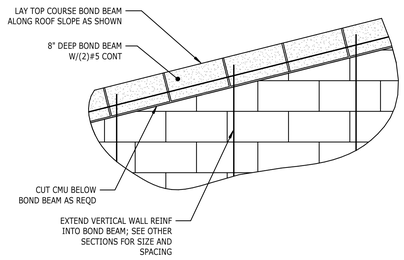
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE

E D C B A

1 2 3 4 5 6

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



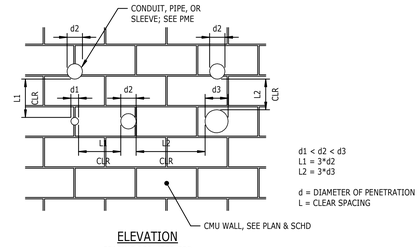
5 S-402 TYPICAL SLOPED BOND BEAM
3/4" = 1'-0"

MASONRY WALL SCHEDULE				
	BRACED WALL HEIGHT	VERTICAL REINFORCING		HORIZONTAL REINFORCING
		8" CMU		
		VERTICAL REINFORCING	END WALL REINFORCING	
INTERIOR PARTITION WALLS	UP TO 16'-0"	#6@48"OC	(1)#6	9 GA LADDER TYPE @16"OC
	OVER 16'-0" TO 24'-0"	#7@32"OC	(1)#7	9 GA LADDER TYPE @16"OC

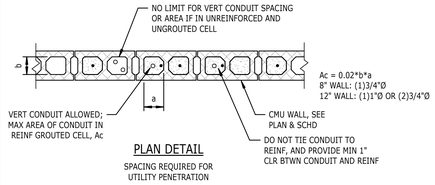
NOTES:
1. PROVIDE DOWELS EXTENDING INTO FOUNDATIONS FOR ALL VERTICAL REINFORCING BARS. SIZE AND LOCATION OF DOWELS TO MATCH VERTICAL REINFORCING.
2. DRILL AND SET IN ADHESIVE ALL VERTICAL REINFORCING FOR INTERIOR NON-BEARING WALLS WITH 2 1/2" EMBED INTO CONCRETE SLAB.
3. ALL NON-LOAD BEARING, NON-SHEAR WALLS, INTERIOR PARTITION WALLS SHALL SPAN EITHER VERTICALLY OR HORIZONTALLY. SEE GUIDELINES BELOW FOR HORIZONTAL AND VERTICAL SPANNING WALLS IN DETAILS.
4. REFER TO PLAN FOR SHEAR WALL LOCATIONS. ENDS OF SHEAR WALLS OCCUR AT WALL INTERRUPTIONS DUE TO COLUMNS, WINDOWS, DOORS, END OF WALLS, CONTROL JOINTS, EXPANSION JOINTS, ETC. REFER TO DETAILS FOR END OF WALL REINFORCING.
5. PROVIDE (2)#5 BARS IN BOND BEAM AT EACH ELEVATED FLOOR LEVEL AT TOPS OF WALLS AND AS INDICATED IN SECTIONS AND SCHEDULES.
6. ALL MASONRY TO BE CONSTRUCTED IN RUNNING BOND BEAM PATTERN WITH INTERLOCKING CORNERS.

VERTICAL SPANNING WALLS:
1. ALL VERTICAL SPANNING WALLS ARE TO BE ANCHORED TO STEEL STRUCTURE PER OTHER DETAILS.
2. ALL WALLS NOT EXTENDING TO STRUCTURE SHALL BE LATERALLY BRACED IN ACCORDANCE WITH OTHER DETAILS.

6 S-402 WALL REINFORCING SCHEDULE
3/4" = 1'-0"



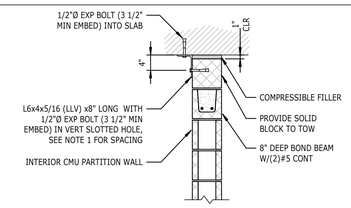
ELEVATION
SPACING REQUIRED FOR UTILITY PENETRATION



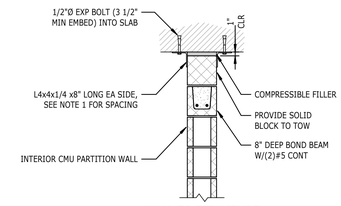
PLAN DETAIL
SPACING REQUIRED FOR UTILITY PENETRATION

NOTES:
1. REFER TO PME DRAWINGS FOR ALL TELECOM, CONDUIT, AND PIPES 8"Ø AND SMALLER. CONTRACTOR TO FOLLOW DETAIL SPACING REQUIREMENTS FOR LAYOUT. IF SPACING CANNOT BE MAINTAINED, PENETRATIONS MUST BE GROUPED BELOW CMU LINTEL. SEE ADDITIONAL TYPICAL DETAILS.
2. CONDUITS SHALL NOT PENETRATE BOND BEAMS NOR LINTELS.
3. PIPES WITH LIQUID, GAS, OR VAPORS HIGHER THAN 150ºF ARE NOT PERMITTED VERTICALLY WITHIN WALLS.
4. PIPES WITH PRESSURE IN EXCESS OF 55 PSI ARE NOT PERMITTED VERTICALLY WITHIN WALLS.
5. PIPES WITH WATER OR LIQUID SUBJECT TO FREEZING ARE NOT PERMITTED VERTICALLY WITHIN WALLS.
6. SEE ARCH DWGS FOR TOP OF WALL CONDITION IN PACKAGE C.

1 S-402 ALLOWABLE WALL CONDUIT PENETRATIONS
3/4" = 1'-0"



WALL TO STRUCTURE AT SLAB
(ONE SIDED)



WALL TO STRUCTURE AT SLAB
(TWO SIDED)

NOTES:
1. TOPS OF ALL INTERIOR PARTITION WALLS SHALL BE BRACED PER THIS DETAIL AT A SPACING NOT TO EXCEED 24'-0" FOR 8" CMU OR LARGER, 18'-0" FOR 6" CMU, AND 12'-0" FOR 4" CMU. INTERSECTING WALLS BUILT WITH INTERLOCKING BLOCKS OR DETAILED PER THE TYPICAL INTERSECTION AT NON-LOAD BEARING WALLS DETAIL (NOT EXCEEDING THE SPACING NOTED) MAY ALSO BE CONSIDERED TO BRACE THE PARTITION.
2. SEE ARCHITECTURAL DRAWINGS FOR TOP OF WALL ELEVATIONS.
3. USE L2x2x1/4 FOR LENGTHS LESS THAN 6'-0", L3x3x1/4 FOR LENGTHS UP TO 9'-0", AND L4x4x1/4 FOR LENGTHS UP TO 12'-0".

3 S-402 TYPICAL INTERIOR PARTITION BRACING
3/4" = 1'-0"

UNCW

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NORTH CAROLINA PROFESSIONAL SEAL 046250 ENGINEER THOMAS WILLIAM MCLANE

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S-402

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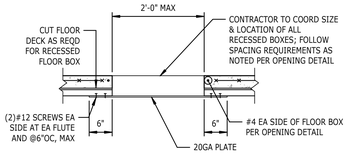
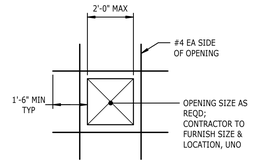
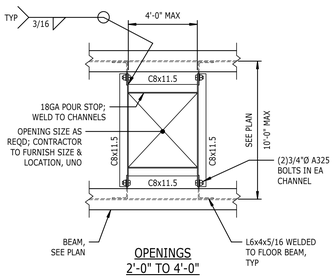


RECESSED FLOOR BOX



OPENINGS
10" TO 2'-0"

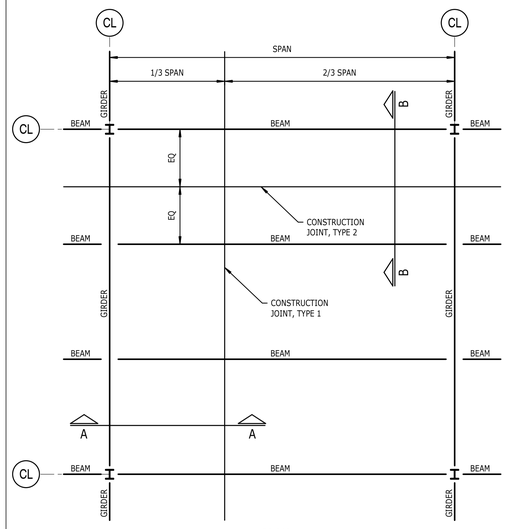
NOTES:
1. PROVIDE REINFORCING AROUND ALL DUCT PENETRATIONS, CHASES, ELECTRICAL BOXES, PLUMBING PIPES, AND OTHER OPENINGS IN SLABS, FOR OPENINGS FROM 10"x10" (OR 10"Ø) TO 2'-0"x2'-0" (OR 24"Ø).
2. OPENINGS THAT ARE SPACED CLOSER THAN (2) TIMES THE OPENING SIZE SHALL BE CONSIDERED ONE OPENING.
3. MINIMUM CLEAR DISTANCE BETWEEN OPENINGS IS 2'-0".
4. ALL OPENINGS 10" TO 2'-0" MAY NOT BE SHOWN ON STRUCTURAL DRAWINGS.
5. OPENINGS GREATER THAN 2'-0" NOT SHOWN ON STRUCTURAL DRAWINGS REQUIRE APPROVAL BY THE ENGINEER OF RECORD.



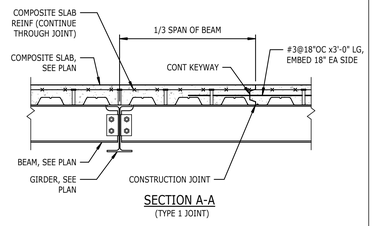
OPENINGS
2'-0" TO 4'-0"

NOTES:
1. PROVIDE CHANNEL FRAMING AROUND ALL DUCT PENETRATIONS, CHASES, ELECTRICAL BOXES, PLUMBING PIPES, AND OTHER OPENINGS IN SLABS, FOR OPENINGS LARGER THAN 2'-0"x2'-0" (OR 24"Ø).
2. OPENINGS THAT ARE SPACED CLOSER THAN (2) TIMES THE OPENING SIZE SHALL BE CONSIDERED ONE OPENING.
3. MINIMUM CLEAR DISTANCE BETWEEN OPENINGS IS 1'-0".
4. OPENINGS GREATER THAN 2'-0" NOT SHOWN ON STRUCTURAL DRAWINGS REQUIRE APPROVAL BY THE ENGINEER OF RECORD.

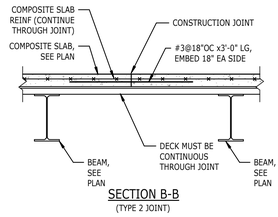
17 S-501 TYPICAL FRAMING AROUND SLAB OPENINGS
3/4" = 1'-0"



PLAN



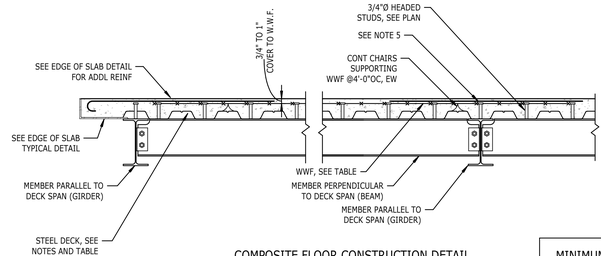
SECTION A-A
(TYPE 1 JOINT)



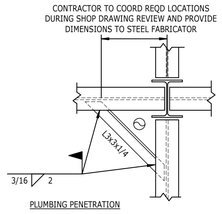
SECTION B-B
(TYPE 2 JOINT)

NOTES:
1. CONTRACTOR SHALL SUBMIT LOCATION OF ALL CONSTRUCTION JOINTS FOR APPROVAL PRIOR TO CONSTRUCTION AND FABRICATION.

9 S-501 TYPICAL JOINTS IN COMPOSITE SLABS
3/4" = 1'-0"



COMPOSITE FLOOR CONSTRUCTION DETAIL



PLUMBING PENETRATION

NOTES:
1. THIS DETAIL APPLIES TO DECK SUPPORTED COMPOSITE SLABS, AS INDICATED ON PLANS.
2. WELD DECK TO SUPPORTS PER FLOOR DECKING ATTACHMENT DETAIL.
3. COMPOSITE SLABS HAVE BEEN DESIGNED AS "UNSHORED CONSTRUCTION".
4. DECK SHALL BE CONTINUOUS OVER (2) OR MORE SPANS, TYPICAL. IF A SINGLE SPAN CONDITION IS REQUIRED AND SUPPORT BEAM SPACING EXCEEDS VALUE IN TABLE, CONTRACTOR SHALL SHORE AREA.
5. PROVIDE #4@12"OC x6'-0" LONG TOP BARS CENTERED OVER ALL GIRDERS RUNNING PARALLEL TO DECK SPAN. PLACE BARS OVER WWF AND PROVIDE 3/4" MINIMUM COVER. PROVIDE SUPPORT CHAIRS @4'-0"OC EACH WAY. ROTATE CHAIRS IF REQUIRED TO FIT IN SLAB THICKNESS.
6. THE CONTRACTOR SHALL ASSUME CONCRETE OVERAGES IN ELEVATED DECK POURS DUE TO MEMBER AND DECK DEFLECTIONS. UNLESS SHOWN ON PLANS, BEAMS ARE NOT CAMBERED. CONCRETE OVERAGES MAY BE CALCULATED BY THE CONTRACTOR FOR BEAM DEFLECTIONS EQUALING L/300 INCLUDING ADDITIONAL DEFLECTIONS DUE TO PONDING AND DECK DEFLECTIONS PER SDI.
7. SUPPORT DECK AROUND COLUMNS WITH COLUMN CLOSURE. WHERE PLUMBING LINES ARE ADJACENT TO COLUMNS, PROVIDE ANGLES TO SUPPORT DECK PER PLUMBING PENETRATION DETAIL.
8. CONCRETE SLAB TO BE POURED FLAT WHICH WILL RESULT IN VARYING SLAB THICKNESS WHICH SHALL BE INCLUDED IN CONCRETE QUANTITIES.

MINIMUM STEEL BEAM DESIGN END REACTIONS

W8	16k	W21x62-93	150k
W10	16k	W24x55-104	100k
W12	25k	W24x117-176	315k
W14	35k	W27x84-94	150k
W16	45k	W27x194	315k
W18	70k	W30	160k
W21x44-55	85k	W33	180k

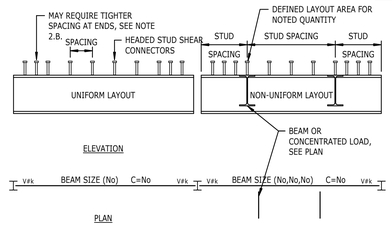
"V#k" INDICATES STEEL BEAM DESIGN END REACTION IN KIPS. LOADS PROVIDED ARE FOR STRENGTH DESIGN (LRFD). WHERE REACTIONS ARE OMITTED ON PLAN, THE CONNECTION ENGINEER SHALL DESIGN FOR THE MINIMUM REACTIONS SHOWN IN THE TABLE HEREIN.

MINIMUM COMPOSITE STEEL DECK PROPERTIES

DEPTH	GAGE	Ip	In	Sp	Sn	Fy
2"	22 GA	0.324 in⁴/ft	0.321 in³/ft	0.263 in³/ft	0.346 in³/ft	50 ksi
2"	20 GA	0.409 in⁴/ft	0.406 in³/ft	0.341 in³/ft	0.346 in³/ft	50 ksi
2"	18 GA	0.559 in⁴/ft	0.558 in³/ft	0.495 in³/ft	0.504 in³/ft	50 ksi
3"	22 GA	0.730in⁴/ft	0.729 in³/ft	0.414 in³/ft	0.426 in³/ft	50 ksi
3"	20 GA	0.920 in⁴/ft	0.919 in³/ft	0.534 in³/ft	0.551 in³/ft	50 ksi
3"	18 GA	1.254 in⁴/ft	1.252 in³/ft	0.770 in³/ft	0.797 in³/ft	50 ksi

MINIMUM UNSHORED COMPOSITE STEEL DECK SPANS

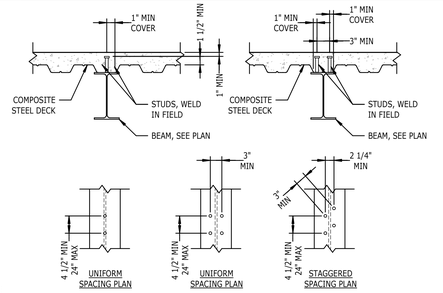
SLAB TYPE	TOTAL DEPTH	DECK DEPTH	DECK GAGE	CONC WEIGHT	SINGLE SPAN	TWO SPAN	THREE SPAN	FIRE RATING RESTRAINED	WWF
S1	5 1/4"	2"	18 GA	LW	10'-5" MAX	12'-5" MAX	12'-5" MAX	2HR	6x6-W1.4xW1.4
--	6 1/4"	2"	20 GA	LW	7'-9" MAX	9'-10" MAX	10'-2" MAX	3HR	6x6-W1.4xW1.4
--	5 1/2"	2"	20 GA	NW	7'-5" MAX	9'-5" MAX	9'-9" MAX	1HR	6x6-W1.4xW1.4
S2	6 1/2"	2"	20 GA	NW	7'-8" MAX	8'-6" MAX	8'-9" MAX	2HR	6x6-W1.4xW1.4
--	6 1/2"	3"	20 GA	NW	9'-3" MAX	11'-5" MAX	11'-9" MAX	1HR	6x6-W1.4xW1.4
--	5 1/2"	3"	20 GA	LW	11'-3" MAX	13'-7" MAX	14'-0" MAX	1HR	6x6-W1.4xW1.4



STUD LAYOUT

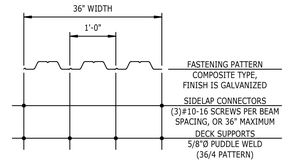
NOTES:
1. ALL STUDS SHALL BE FIELD WELDED TO CENTERLINE OF BEAMS, UNO.
2. UNIFORM LAYOUT:
   A. METAL DECK IS PARALLEL WITH BEAM - UNIFORMLY SPACE ALL STUDS EQUALLY ALONG THE ENTIRE LENGTH OF BEAM. FOLLOW MAXIMUM AND MINIMUM SPACING NOTED.
   B. METAL DECK IS PERPENDICULAR TO BEAM - TAKE THE TOTAL QUANTITY OF STUDS NOTED AND COMPARE TO THE NUMBER OF RIBS IN THE DECK. IF THE QUANTITY IS LESS THAN THE NUMBER OF RIBS, THEN LOCATE ONE STUD IN EVERY OTHER RIB ALONG THE LENGTH OF THE BEAM. THEN, STARTING AT THE SECOND RIB FROM THE END AT BOTH ENDS OF THE BEAM, LAYOUT THE REMAINING STUDS IN THE OPEN RIBS WORKING YOUR WAY TOWARD THE CENTER. YOU WILL END UP WITH A TIGHTER SPACING NEAR THE SUPPORTS IF THE QUANTITY OF STUDS EXCEED THE NUMBER OF RIBS, THEN A DOUBLE ROW OF STUDS WILL BE REQUIRED NEAR THE ENDS OF THE BEAM. LOCATE ONE STUD IN EACH RIB ALONG THE LENGTH OF THE BEAM, KEEPING IN MIND THE CLEARANCES FOR A DOUBLE STUD INSTALLATION NEAR THE ENDS. THEN LOCATE THE ADDITIONAL STUDS STARTING AT THE FIRST RIB FROM THE SUPPORT AS A DOUBLE STUD INSTALLATION, WORKING YOUR WAY TOWARD THE CENTER FROM BOTH ENDS. IF DOUBLE STUDS ARE REQUIRED, FLANGE THICKNESS TO BE 5/16" OF THICKER. INCREASE BEAM SIZE IF NEEDED TO MEET MINIMUM SLAB THICKESS.
3. NON-UNIFORM LAYOUT:
   A. METAL DECK IS PARALLEL WITH BEAM - UNIFORMLY SPACE THE NOTED QUANTITY OF STUDS EQUALLY BETWEEN TWO FRAMING BEAMS OR CONCENTRATED LOADS BOUNDING THE AREA. FOLLOW MAXIMUM AND MINIMUM SPACINGS NOTED. ADDITIONAL STUDS MAY BE NEEDED TO MEET THE MAXIMUM STUD SPACING.
   B. METAL DECK IS PERPENDICULAR TO BEAM - FOLLOW THE SAME PROCEDURE NOTED IN ITEM 2.B. ABOVE. HOWEVER, THE LAYOUT OF THE STUDS FOR EACH QUANTITY IS LOCATED BETWEEN TWO FRAMING BEAMS OR CONCENTRATED LOADS BOUNDING THE AREA.
4. "(No)" INDICATES NUMBER OF SHEAR STUDS REQUIRED FOR ENTIRE BEAM LENGTH IF ONLY ONE QUANTITY IS NOTED. IF MULTIPLE QUANTITIES ARE NOTED, THEN NON-UNIFORM SPACING WILL BE REQUIRED.
5. "V#k" INDICATES STEEL BEAM DESIGN END REACTION IN KIPS. LOADS PROVIDED ARE FOR STRENGTH DESIGN (LRFD). WHERE REACTIONS ARE OMITTED ON PLAN, THE CONNECTION ENGINEER SHALL DESIGN FOR THE MINIMUM REACTIONS SHOWN IN THE TABLE HEREIN.
6. "C=No" INDICATES REQUIRED BEAM CAMBER IN INCHES.

1 S-501 TYPICAL COMPOSITE SLAB DETAILS
3/4" = 1'-0"

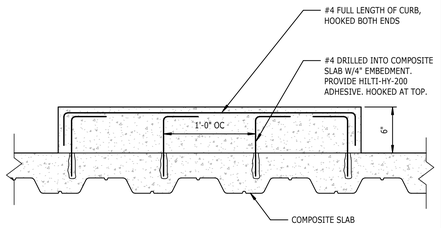


STUD CLEARANCES AND SPACING

NOTES:
1. BEAM PARALLEL TO DECK CONDITION SHOWN. BEAM PERPENDICULAR TO DECK CONDITION IS SIMILAR WITH STUDS AT FLUTES OF DECK ONLY.
2. WHEN DOUBLE ROW OF STUDS IS REQUIRED, USE A STAGGERED PATTERN IF SPACING PERMITS. SEE UNIFORM AND STAGGERED SPACING PLANS.

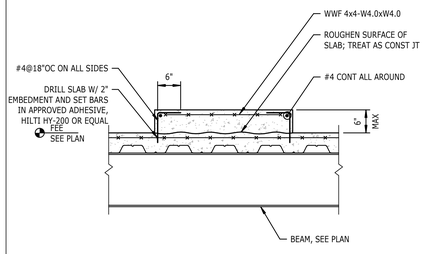


FLOOR DECK ATTACHMENT DETAIL



NOTE: PROVIDE CONCRETE CURB AROUND ALL OPENINGS AT MECHANICAL SPACES. SEE ARCH DWGS FOR LOCATIONS

8 S-501 CONCRETE CURB DETAIL
1 1/2" = 1'-0"



NOTES:
1. THE EXACT SIZE, SHAPE, AND LOCATION OF EQUIPMENT/HOUSEKEEPING PADS SHALL BE DETERMINED BY THE CONTRACTOR AFTER APPROVAL OF EQUIPMENT SHOP DRAWINGS. ANCHOR BOLTS, WHERE REQUIRED, SHALL BE SIZED AND LOCATED ACCORDING TO THE MANUFACTURER'S REQUIREMENTS.

4 S-501 TYPICAL EQUIPMENT PAD
3/4" = 1'-0"

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101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
WWW.LS3P.COM
SHEPLEY BULFINCH
2 SEAPORT LANE FLOOR 12
BOSTON, MASSACHUSETTS 02210
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223 S. WEST ST. SUITE 1100
RALEIGH, NC 27603
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Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
STEEL FRAMING DETAILS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-501

PACKAGE A - CONSTRUCTION DOCUMENTS

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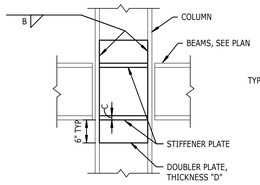
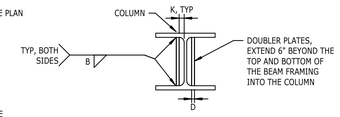
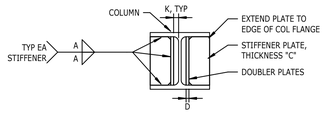




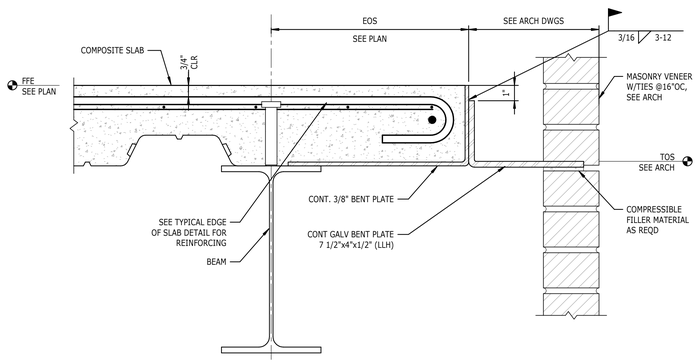
TYPE 2: DOUBLER PLATE ONLY



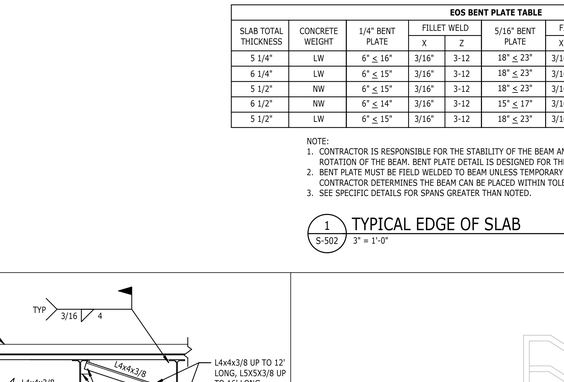
COLUMN SIZE	W12x65	W12x120	W14x159
WELD SIZE "A"	3/16"	3/8"	3/16"
WELD SIZE "B"	3/16"	1/4"	3/16"
PLATE THICKNESS "C"	1/2"	1"	1 1/4"
PLATE THICKNESS "D"	3/8"	1 1/4"	1/2"

TYPE 1: STIFFENER AND DOUBLER PLATE

14 / S-502 STEEL COLUMN AND BASE PLATE SCHEDULE
3/4" = 1'-0"



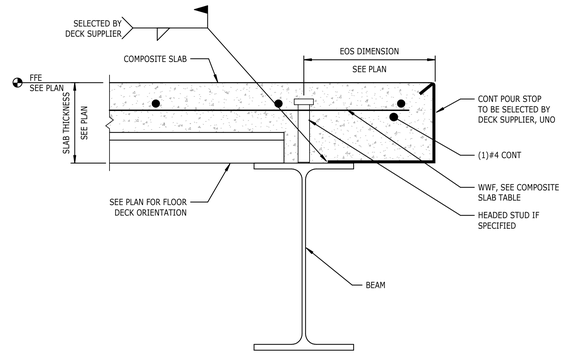
15 / S-502 TYPICAL BRICK RELIEF SUPPORT CONNECTION
3" = 1'-0"



PART PLAN
N.T.S.

EXTERIOR EOS

NOTE:
1. SEE BENT PLATE TABLE FOR PLATE SIZE AND ATTACHMENT INFO.
2. THIS DETAIL DOES NOT APPLY IF THERE IS A SLAB OPENING IN THE BACK SPAN OF THE SLAB WITHIN 5'-0" FROM CENTERLINE OF BEAM.



INTERIOR EOS UP TO 6"

NOTE:
1. ALL SLAB EDGES AROUND OPENINGS NOT CALLED OUT ON STRUCTURAL OR ARCHITECTURAL PLANS ARE 6" FROM BEAM CENTERLINE. CONTRACTOR TO VERIFY SLAB OPENING DIMENSIONS WITH ARCHITECTURAL DRAWINGS, MEP DRAWINGS APPROVED SHOP DRAWING AND CUTSHEETS.
2. LIGHT GAUGE POUR STOP IS NOT TO BE USED AT ELEVATOR SHAFTS, EDGE OF SLAB WITH ATTACHEMENTS TO TOP, BOTTOM OR SIDE OF SLAB EDGE, STAIR OPENINGS, AND WHEREVER SHOWN IN DRAWINGS TO BE BENT PLATE.
3. SEE INTERIOR EDGE OF SLAB DETAIL >6" AND SUPPORTING ATTACHMENTS, SEE DETAIL BELOW.

INTERIOR EOS >6" AND SUPPORTING ATTACHMENTS

NOTES:
1. AT EOS UP TO 12" WITHOUT ATTACHMENT OR LOADING OF ONLY A STUD WALL.
   A. PROVIDE LIGHT GAUGE POUR STOP ONLY W/ SLAB WWF
   B. LIGHT GAUGE POUR STOP IS NOT TO BE USED AT ELEVATOR SHAFTS, EDGE OF SLAB WITH ATTACHMENTS TO TOP, BOTTOM OR SIDE OF SLAB EDGE, STAIR OPENINGS, AND WHEREVER SHOWN IN DRAWINGS TO BE BENT PLATE.
2. AT EOS WITH ATTACHMENTS TO BENT PLATE OR EOS > 12"
   A. PROVIDE BENT PLATE PER TABLE AND 1/2"Ø x2'-6" LONG DBAs @12"OC
   B. PROVIDE CONT. REBAR PARALLEL TO EOS, EXTEND 24" PAST OPENING, EACH SIDE
3. EOS SHALL NOT EXCEED VALUE IN BENT PLATE TABLE

EOS BENT PLATE TABLE												
SLAB TOTAL THICKNESS	CONCRETE WEIGHT	1/4" BENT PLATE	FILLET WELD X	FILLET WELD Z	5/16" BENT PLATE	FILLET WELD X	FILLET WELD Z	3/8" BENT PLATE	FILLET WELD X	FILLET WELD Z	1/2" BENT PLATE	FILLET WELD X	FILLET WELD Z
5 1/4"	LW	6" ≤ 16"	3/16"	3-12	18" ≤ 23"	3/16"	3-12	≤ 24"	3/16"	3-12		3/16"	3-12
6 1/4"	LW	6" ≤ 15"	3/16"	3-12	18" ≤ 23"	3/16"	3-12	≤ 24"	3/16"	3-12		3/16"	3-12
5 1/2"	NW	6" ≤ 15"	3/16"	3-12	18" ≤ 23"	3/16"	3-12	≤ 24"	3/16"	3-12		3/16"	3-12
6 1/2"	NW	6" ≤ 14"	3/16"	3-12	15" ≤ 17"	3/16"	3-12	18" ≤ 23"	3/16"	3-12	≤ 24"	3/16"	3-12
5 1/2"	LW	6" ≤ 15"	3/16"	3-12	18" ≤ 23"	3/16"	3-12						

NOTE:
1. CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE BEAM AND BENT PLATE BEFORE THE CONCRETE IS POURED TO PREVENT ROTATION OF THE BEAM. BENT PLATE DETAIL IS DESIGNED FOR THE FINAL LOADING CONDITION.
2. BENT PLATE MUST BE FIELD WELDED TO BEAM UNLESS TEMPORARY SHORING IS PROVIDED TO PREVENT BEAM ROTATION OR CONTRACTOR DETERMINES THE BEAM CAN BE PLACED WITHIN TOLERANCES WITH PLATE ATTACHED AND WITHOUT SHORING.
3. SEE SPECIFIC DETAILS FOR SPANS GREATER THAN NOTED.

1 / S-502 TYPICAL EDGE OF SLAB
3" = 1'-0"

NOTES:
1. PROVIDE ELEVATOR RAIL SUPPORT POSTS WHERE FLOOR-TO-FLOOR HEIGHT EXCEEDS ELEVATOR MANUFACTURER'S LIMITATION FOR RAIL MAXIMUM UNSUPPORTED HEIGHT. VERIFY LOCATION WITH ELEVATOR MANUFACTURER.
2. LOCATION OF RAILS WILL BE COORDINATED ONCE APPROVED SHOP DRAWINGS ARE PROVIDED BY THE MANUFACTURER.

16 / S-502 TYPICAL ELEVATOR RAIL SUPPORTS
3/4" = 1'-0"

BEAM BOTTOM FLANGE BRACE

GIRDER BOTTOM FLANGE BRACE AT CONNECTION

GIRDER BFB FORCE	
SIZE	FORCE
W18	4 KIPS
W21	4 KIPS
W24	13 KIPS
W27	4 KIPS

12 / S-502 TYPICAL BOTTOM FLANGE BRACE DETAIL (BFB)
3/4" = 1'-0"

8 / S-502 SECTION AT TOP OF STAIR
3/4" = 1'-0"

STEEL LOOSE LINTEL ANGLE SUPPORTING MASONRY VENEER	
CLEAR OPENING	LOOSE LINTEL ANGLE
UP TO 5'-0"	L4x4x3/8
5'-1" TO 8'-0"	L6x4x3/8 (LLV)
8'-1" TO 10'-0"	L7x4x3/8 (LLV)
10'-1" TO 12'-0"	L8x4x1/2 (LLV)

NOTES:
1. ALL LOOSE LINTELS SHALL BE GALVANIZED, PRIMED AND PAINTED SEE ARCHITECTURAL DRAWINGS.
2. PROVIDE 6" MINIMUM BEARING FOR OPENINGS UP TO 8'-0" WIDE. PROVIDE 8" MINIMUM BEARING FOR OPENINGS OVER 8'-0" WIDE.
3. SEE ARCHITECTURAL DRAWINGS FOR ANGLE PLACEMENT AND FLASHING.
4. LOOSE LINTEL ANGLES ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR ALL LOCATIONS OF OPENINGS REQUIRING ANGLES.
5. FOR CLEAR OPENING DIMENSIONS GREATER THAN THOSE SHOWN IN THE SCHEDULE, SEE OTHER DETAILS OR CONTACT THE ENGINEER OF RECORD.

4 / S-502 STEEL LOOSE LINTEL SCHEDULE
3/4" = 1'-0"

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SHEET:
S-502

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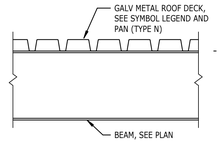
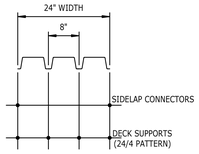


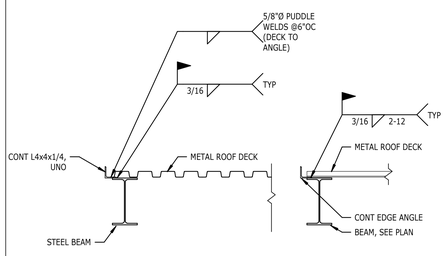


ROOF DECK ATTACHMENT DETAIL

NOTES:
1. ATTACH DECK TO SUPPORTING MEMBERS WITH SELF-DRILLING SELF-TAPPING HEX WASHER HEAD SCREWS. USE #12-24 FOR DECK ATTACHMENT TO SUPPORTS AND #10-16 FOR SIDELAP ATTACHMENT.
2. AT DECK BEARING SUPPORTS, PROVIDE SCREWS @8"OC (24/4 PATTERN).
3. AT SUPPORTS PARALLEL TO DECK SPAN, PROVIDE SCREWS @12"OC, TYPICAL.
4. AT DECK SIDELAPS/PERIMETER EDGE, PROVIDE SCREWS @12"OC, TYPICAL. WELDING OF SIDELAPS IS NOT PERMITTED FOR 22GA DECK.
5. DECK SECTION MINIMUM PROPERTIES: SEE TABLE BELOW.
6. DECK SHALL BE CONTINUOUS OVER (2) OR MORE SPANS, TYPICAL.
7. 5/8"Ø PUDDLE WELDS MAY BE USED FOR DECK ATTACHMENT TO SUPPORTS AT SAME SPACING SPECIFIED ABOVE. SIDELAP FASTENING MUST BE SCREWED AS DESCRIBED ABOVE.
8. CONTRACTOR OPTION TO SUBMIT MECHANICAL FASTENERS BY HILTI, SIMPSON STRONG-TIE, OR APPROVED EQUAL. SUBSTITUTION REQUESTS FOR PRODUCTS MAY BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER-OF-RECORD (EOR) FOR REVIEW. SUBSTITUTIONS WILL ONLY BE CONSIDERED FOR PRODUCTS THAT MEET THE CODE REQUIREMENTS FOR DECK ATTACHMENT, POSSESS A FM GLOBAL APPROVAL AND POSSESS A CODE REPORT (ICC-ES) RECOGNIZING THE PRODUCT FOR THE APPROPRIATE APPLICATION. SUBSTITUTION REQUESTS SHALL INCLUDE CALCULATIONS THAT DEMONSTRATE THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE EQUIVALENT PERFORMANCE VALUES OF THE DESIGN BASIS PRODUCT. CONTRACTOR SHALL CONTACT MANUFACTURER'S REPRESENTATIVE FOR PRODUCT INSTALLATION TRAINING AND A LETTER SHALL BE SUBMITTED TO THE EOR INDICATING TRAINING HAS TAKEN PLACE. FASTENERS SHALL BE COLLATED AND INSTALLED USING THE MANUFACTURER'S DELIVERY TOOL AND FOLLOWING MANUFACTURER'S INSTRUCTIONS.

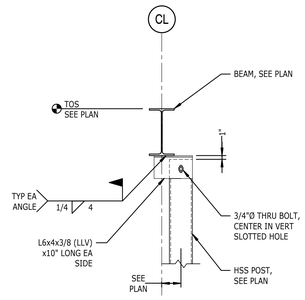
DECK TYPE	DESIGN THICKNESS (in)	DECK WEIGHT (psf)	I_p (in⁴/ft)	S_p (in³/ft)	I_n (in⁴/ft)	S_n (in³/ft)	V_r (lbs/ft)	F_y (ksi)
N22	0.0295	2.26	0.659	0.382	0.884	0.433	2232	33
N20	0.0358	2.71	0.848	0.501	1.079	0.552	3287	33
N19	0.0418	3.15	1.045	0.597	1.260	0.659	4217	33
N18	0.0474	3.56	1.238	0.688	1.430	0.749	4771	33
N16	0.0598	4.46	1.683	0.893	1.807	0.944	5988	33

9 S-503 TYPICAL 3" ROOF CONSTRUCTION
3/4" = 1'-0"



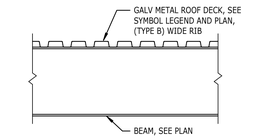
NOTES:
1. SEE OTHER DETAILS FOR INFORMATION NOT SHOWN.

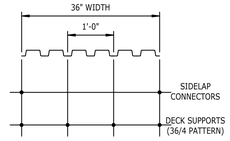
5 S-503 TYPICAL EDGE OF DECK
3/4" = 1'-0"



NOTES:
1. DO NOT WELD CLIP ANGLES TO HSS POST.

6 S-503 TYPICAL STEEL POST SLIP CONNECTION
3/4" = 1'-0"



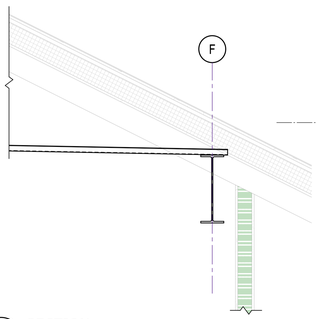


ROOF DECK ATTACHMENT DETAIL

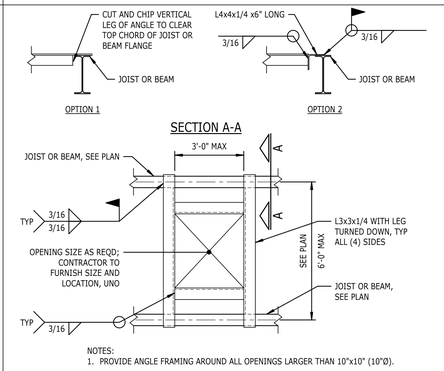
NOTES:
1. ATTACH DECK TO SUPPORTING MEMBERS WITH SELF-DRILLING SELF-TAPPING HEX WASHER HEAD SCREWS. USE #12-24 FOR DECK ATTACHMENT TO SUPPORTS AND #10-16 FOR SIDELAP ATTACHMENT.
2. AT DECK BEARING SUPPORTS, PROVIDE SCREWS @12"OC (36/4 PATTERN).
3. AT SUPPORTS PARALLEL TO DECK SPAN, PROVIDE SCREWS @12"OC, TYPICAL.
4. AT DECK SIDELAPS/PERIMETER EDGE, PROVIDE SCREWS @12"OC, TYPICAL. WELDING OF SIDELAPS IS NOT PERMITTED FOR 22GA DECK.
5. DECK SECTION MINIMUM PROPERTIES: SEE TABLE BELOW.
6. DECK SHALL BE CONTINUOUS OVER (2) OR MORE SPANS, TYPICAL.
7. 5/8"Ø PUDDLE WELDS MAY BE USED FOR DECK ATTACHMENT TO SUPPORTS AT SAME SPACING SPECIFIED ABOVE. SIDELAP FASTENING MUST BE SCREWED AS DESCRIBED ABOVE.
8. CONTRACTOR OPTION TO SUBMIT MECHANICAL FASTENERS BY HILTI, SIMPSON STRONG-TIE, OR APPROVED EQUAL. SUBSTITUTION REQUESTS FOR PRODUCTS MAY BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER-OF-RECORD (EOR) FOR REVIEW. SUBSTITUTIONS WILL ONLY BE CONSIDERED FOR PRODUCTS THAT MEET THE CODE REQUIREMENTS FOR DECK ATTACHMENT, POSSESS A FM GLOBAL APPROVAL AND POSSESS A CODE REPORT (ICC-ES) RECOGNIZING THE PRODUCT FOR THE APPROPRIATE APPLICATION. SUBSTITUTION REQUESTS SHALL INCLUDE CALCULATIONS THAT DEMONSTRATE THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE EQUIVALENT PERFORMANCE VALUES OF THE DESIGN BASIS PRODUCT. CONTRACTOR SHALL CONTACT MANUFACTURER'S REPRESENTATIVE FOR PRODUCT INSTALLATION TRAINING AND A LETTER SHALL BE SUBMITTED TO THE EOR INDICATING TRAINING HAS TAKEN PLACE. FASTENERS SHALL BE COLLATED AND INSTALLED USING THE MANUFACTURER'S DELIVERY TOOL AND FOLLOWING MANUFACTURER'S INSTRUCTIONS.

DECK TYPE	DESIGN THICKNESS (in)	DECK WEIGHT (psf)	I_p (in⁴/ft)	S_p (in³/ft)	I_n (in⁴/ft)	S_n (in³/ft)	V_r (lbs/ft)	F_y (ksi)
B24	0.0239	1.46	0.107	0.120	0.135	0.131	2634	60
B22	0.0295	1.78	0.155	0.186	0.183	0.192	1818	33
B20	0.0358	2.14	0.201	0.234	0.222	0.247	2193	33
B19	0.0418	2.49	0.246	0.277	0.260	0.289	2546	33
B18	0.0474	2.82	0.289	0.318	0.295	0.327	2870	33
B16	0.0598	3.54	0.373	0.408	0.373	0.411	3578	33

1 S-503 TYPICAL 1 1/2" ROOF CONSTRUCTION
3/4" = 1'-0"

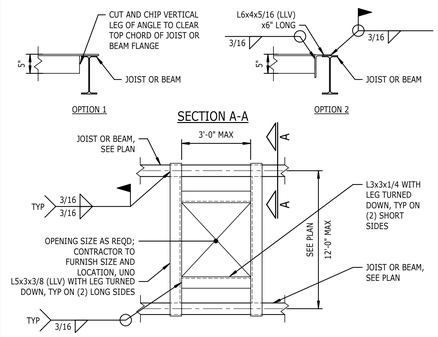


7 S-503 SECTION
3/4" = 1'-0"



NOTES:
1. PROVIDE ANGLE FRAMING AROUND ALL OPENINGS LARGER THAN 10"x10" (10"Ø).

3 S-503 TYPICAL FRAMING AT 1 1/2" DECK OPENINGS
3/4" = 1'-0"



NOTES:
1. PROVIDE ANGLE FRAMING AROUND ALL OPENINGS LARGER THAN 10"x10" (10"Ø).

4 S-503 TYPICAL FRAMING AT 3" DECK OPENINGS
3/4" = 1'-0"

UNCW
LS3P
101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
WWW.LS3P.COM
SHEPLEY BULFINCH
2 SEAPORT LANE FLOOR 12
BOSTON, MASSACHUSETTS 02210
TEL. 617.423.1700
WWW.SHEPLEYBULFINCH.COM
STEWART
223 S. WEST ST. SUITE 1100
RALEIGH, NC 27603
TEL (919) 380-8750
PROJ # S20141
FIRM LICENSE #C-1051
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046250 THOMAS WILLIAM MCNAIR
02/14/2022

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UNCW
601 SOUTH COLLEGE ROAD
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202.197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
STEEL ROOF DETAILS

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-503

PACKAGE A - CONSTRUCTION DOCUMENTS

2/15/2022 10:49:53 PM

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ARCHITECTURAL D SIZE

STEEL COLUMN SCHEDULE

	A-3.5	A-4	A-5.3	A-5.8	A-7	A-7.5	B-2	B-2.4	B-3.2	B-4	B-7	B-7.8	B-8.6	B-9	C-1	C-2	C-3	C-4	C-7	C-8	C-9	C-10	C.8-5.1	C.8-5.9	D-1	D-2.3	D-2.7	D-3	D-4.5	D-7	D-8	D-8.3	D-8.7	D-10	D.3-5.1	D.3-5.9	E-1	E-2.3	E-2.7	E-3	E-4	
CUPOLA ROOF																																									CUPOLA ROOF
72'-5 1/2" BLDG ROOF																							HSS6x6x3/8	HSS6x6x3/8										HSS6x6x3/8	HSS6x6x3/8						72'-5 1/2" BLDG ROOF
64'-0 1/2" MECH FLOOR																	W14x159	W14x159	W14x159	W14x159							W12x53	W12x120			W12x120	W12x53						W12x53	W12x53	W12x65	64'-0 1/2" MECH FLOOR
46'-4" LEVEL 3																																									46'-4" LEVEL 3
29'-4" LEVEL 2	W12x65	W12x65	W12x65	W12x65	W12x65	W12x65	W10x49	W12x65	W12x65	W12x96	W12x96	W12x65	W12x65	W10x49	W14x159	W14x159	W14x159	W14x159	W14x159	W14x159	W14x159	W14x159			W12x120	W12x120		W12x120		W12x120		W12x120	W12x120			W12x65	W12x79		W12x79	W12x106	29'-4" LEVEL 2
14'-0" LEVEL 1																																									14'-0" LEVEL 1
0"																																									0"
Column Locations																																									

STEEL COLUMN SCHEDULE

	E-7	E-8	E-8.3	E-8.5	E-10	E.5-2.7	E.5-8.3	F-1	F-2.3	F-3	F-4	F-7	F-8	F-8.5	F-10	F.5-1	F.5-2	F.5-9	F.5-10	G-2	G-2.9	G-3.3	G-5	G-6	G-7.7	G-8.5	G-9	H-5	H-6	J-5	J-6	K-5	K-6	L-5	L-6	T-5a	T-x4A	T-x6A	x4A-xB	x6A-xB	
CUPOLA ROOF																																									CUPOLA ROOF
72'-5 1/2" BLDG ROOF																																									72'-5 1/2" BLDG ROOF
64'-0 1/2" MECH FLOOR	W12x65	W12x53	W12x53			W12x53	W12x53			W12x53	W12x58	W12x58	W12x53																													64'-0 1/2" MECH FLOOR
46'-4" LEVEL 3																																									46'-4" LEVEL 3
29'-4" LEVEL 2	W12x120	W12x79		W12x65	W12x65			W10x49	W12x65	W12x79	W12x87	W12x87	W12x65	W12x79	W10x49	W10x49	W10x49	W10x49	W10x49	W10x49	W10x49	W10x49	W12x65	W12x65	W12x65	W10x49	W10x49	W12x65	W12x65	W12x65	W12x65	W12x65	W12x65	W12x65	W12x65	W10x49	W10x49				29'-4" LEVEL 2
14'-0" LEVEL 1																																									14'-0" LEVEL 1
0"																																									0"
Column Locations																																									

1 S-505 STEEL COLUMN SCHEDULE
1/8" = 1'-0"
NOTE:
1. SEE S506 FOR COLUMN DETAILS

2/15/2022 10:49:54 PM

UNCW

LS3P
101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
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223 S. WEST ST. SUITE 1100
RALEIGH, NC 27603
TEL (919) 380-8750
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FIRM LICENSE #C-1051

NORTH CAROLINA PROFESSIONAL SEAL 046250 ENGINEER THOMAS WILLIAM MCLANE
02/14/2022

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UNCW
601 SOUTH COLLEGE ROAD
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202.197980

Δ	DATE	DESCRIPTION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
STEEL COLUMN DETAILS AND SCHEDULES

ORIG SUBMISSION: 01/15/21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-505

PACKAGE A - CONSTRUCTION DOCUMENTS

1 2 3 4 5 6

A B C D E

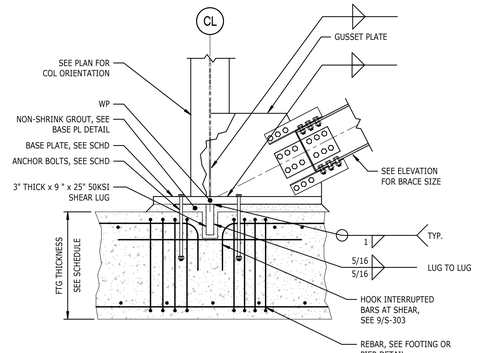
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE

STEEL COLUMN BASE PLATE SCHEDULE

LOCATION	SIZE	BASE PLATE SIZE A x B	ANCHOR BOLTS	PATTERN TYPE	EMBEDMENT DEPTH
A-3.5	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
A-4	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
A-5.3	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
A-5.8	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
A-7	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
A-7.5	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
B-2	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"
B-2.4	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
B-3.2	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
B-4	W12x96	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
B-7	W12x96	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
B-7.8	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
B-8.6	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
B-9	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"
C-1	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C-2	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C-3	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C-4	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C-7	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C-8	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C-9	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C-10	W14x159	2"x25"x25"	(4)1 1/2"Ø	TYPE 1	9"
C.8-5.1	HSS6x6x3/8	3/4"x13"x7"	(4)3/4"Ø	TYPE 4	0"
C.8-5.9	HSS6x6x3/8	3/4"x13"x7"	(4)3/4"Ø	TYPE 4	0"
D-1	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D-2.3	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D-2.7	W12x53	1"x19"x11"	(4)3/4"Ø	TYPE 4	0"
D-3	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D-4.5	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D-7	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D-8	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D-8.3	W12x53	1"x19"x11"	(4)3/4"Ø	TYPE 4	0"
D-8.7	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D-10	W12x120	2 1/4"x23"x23"	(4)1 1/2"Ø	TYPE 1	9"
D.3-5.1	HSS6x6x3/8	3/4"x13"x7"	(4)3/4"Ø	TYPE 4	0"
D.3-5.9	HSS6x6x3/8	3/4"x13"x7"	(4)3/4"Ø	TYPE 4	0"
E-1	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
E-2.3	W12x79	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
E-2.7	W12x53	1"x19"x11"	(4)3/4"Ø	TYPE 4	9"
E-3	W12x79	2 1/2"x25"x25"	(4)2"Ø	TYPE 3	22"
E-4	W12x106	2 1/2"x25"x25"	(4)2"Ø	TYPE 2	22"
E-7	W12x120	2 1/2"x25"x25"	(4)2"Ø	TYPE 3	22"
E-8	W12x79	2 1/2"x25"x25"	(4)2"Ø	TYPE 2	22"
E-8.3	W12x53	1"x19"x11"	(4)3/4"Ø	TYPE 4	9"
E-8.5	W12x65	2 1/2"x25"x25"	(4)2"Ø	TYPE 2	22"
E-10	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
E.5-2.7	W12x53	1"x19"x11"	(4)3/4"Ø	TYPE 4	0"
E.5-8.3	W12x53	1"x19"x11"	(4)3/4"Ø	TYPE 4	0"
F-1	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"
F-2.3	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
F-3	W12x79	2 1/2"x25"x25"	(4)2"Ø	TYPE 2	22"
F-4	W12x87	2 1/2"x25"x20"	(4)2"Ø	TYPE 2	22"
F-7	W12x87	2 1/2"x25"x25"	(4)2"Ø	TYPE 2	22"
F-8	W12x65	2 1/2"x25"x25"	(4)2"Ø	TYPE 2	22"
F-8.5	W12x79	2 1/2"x25"x25"	(4)2"Ø	TYPE 1	22"
F-10	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"
F.5-1	W10x49	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
F.5-2	W10x49	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
F.5-9	W10x49	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
F.5-10	W10x49	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
G-2	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"
G-2.9	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"

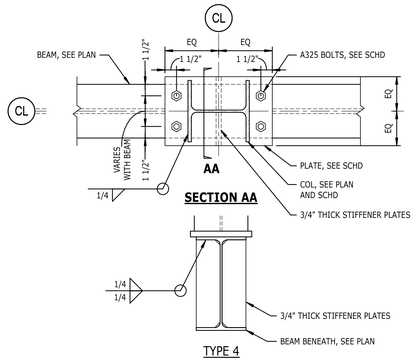
STEEL COLUMN BASE PLATE SCHEDULE

LOCATION	SIZE	BASE PLATE SIZE A x B	ANCHOR BOLTS	PATTERN TYPE	EMBEDMENT DEPTH
G-3.3	W10x49	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
G-5	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
G-6	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
G-7.7	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
G-8.5	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"
G-9	W10x49	1 1/4"x18"x18"	(4)3/4"Ø	TYPE 1	9"
H-5	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
H-6	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
J-5	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
J-6	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
K-5	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
K-6	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
L-5	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"
L-6	W12x65	1 3/4"x20"x20"	(4)3/4"Ø	TYPE 1	9"



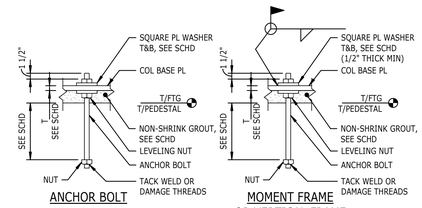
NOTE: WHERE SHEAR LUG IS IN BOTH DIRECTIONS, PROVIDE DETAIL FOR BOTH SHEAR LUGS

SHEAR LUG DETAIL



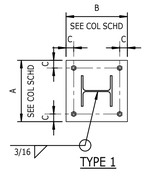
TYPE 4

TYPICAL COLUMN BEARING ON BEAM

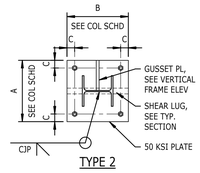


ANCHOR BOLT

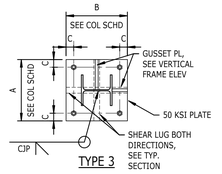
MOMENT FRAME OR VERTICAL FRAME ANCHOR BOLT



TYPE 1



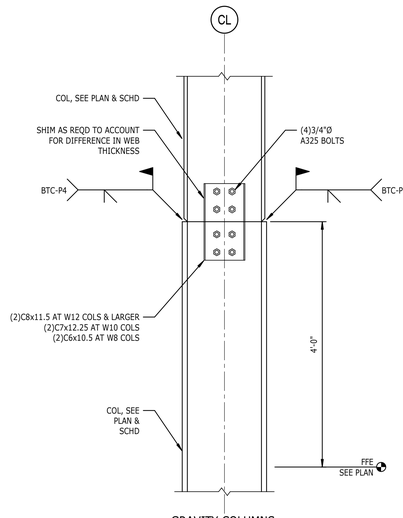
TYPE 2



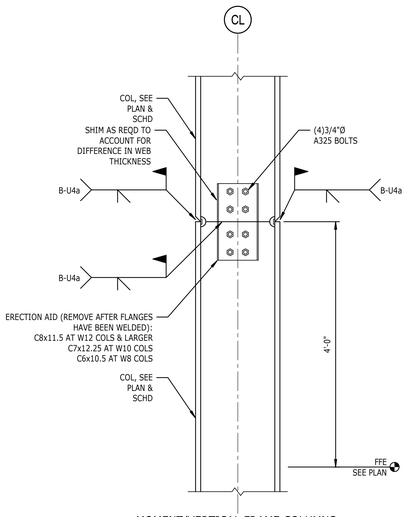
TYPE 3

BOLT SIZE	3/4"Ø	1"Ø	1 1/4"Ø	1 1/2"Ø	1 3/4"Ø	2"Ø
DIMENSION "C"	1 1/2"	2"	2"	2 1/4"	2 1/2"	2 3/4"
SQUARE PL WASHER SIZE	1/4"x2"	3/8"x3"	1/2"x3"	1/2"x3 1/2"	5/8"x4"	3/4"x5"
GROUT THICKNESS	2"	2"	2"	3"	3"	3"

1 S-506 STEEL COLUMN AND BASE PLATE SCHEDULE
3/4" = 1'-0"



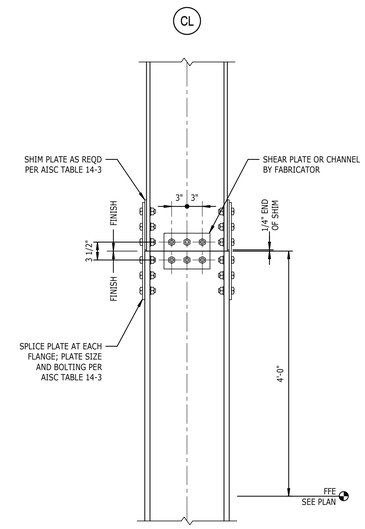
GRAVITY COLUMNS
(NON-MOMENT/VERTICAL FRAME COLUMNS)



MOMENT/VERTICAL FRAME COLUMNS

NOTES:
1. BTC-P4 REFERS TO A (SINGLE BEVEL GROOVE) PARTIAL JOINT PENETRATION WELD.
2. B-U4a REFERS TO A (SINGLE BEVEL GROOVE) FULL PENETRATION WELD.
3. SEE AISC MANUAL FOR WELD DETAILS AND FIT-UP REQUIREMENTS.
4. PROVIDE ULTRASONIC TESTING FOR FULL PENETRATION WELDS.
5. REMOVE BACKING BARS FOR STRUCTURES IN SEISMIC DESIGN CATEGORY D OR HIGHER, OR WHERE REQUIRED FOR ULTRASONIC TESTING.

7 S-506 TYPICAL WELDED COLUMN SPLICE
1" = 1'-0"



NOTES:
1. DETAIL ONLY APPLIES TO GRAVITY COLUMNS. SEE WELDED COLUMN SPLICE DETAIL FOR ALL MOMENT AND VERTICAL FRAME COLUMNS.

3 S-506 TYPICAL BOLTED COLUMN SPLICE
1" = 1'-0"

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RALEIGH, NC 27603
TEL (919) 380-8750
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046250 THOMAS WILLIAM MCLANE
02/14/2022

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202.197980

Δ	DATE	DESCRIPTION
A	2020.10.21	SD SUBMISSION
B	2021.03.16	DESIGN DEVELOPMENT SUBMISSION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
STEEL COLUMN DETAILS AND SCHEDULES

ORIG SUBMISSION: 2020.10.21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-506

PACKAGE A - CONSTRUCTION DOCUMENTS

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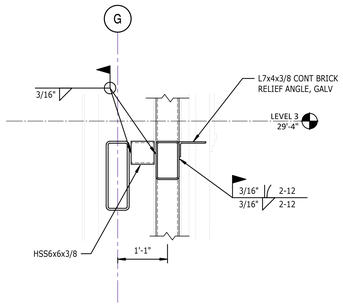
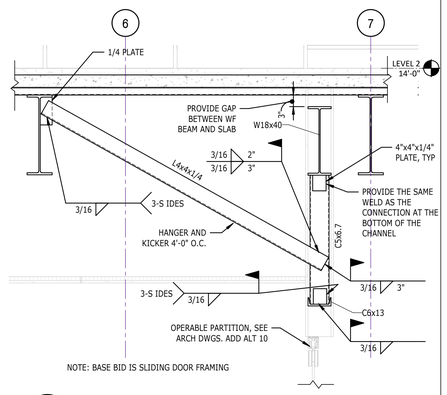
E D C B A

1 2 3 4 5 6

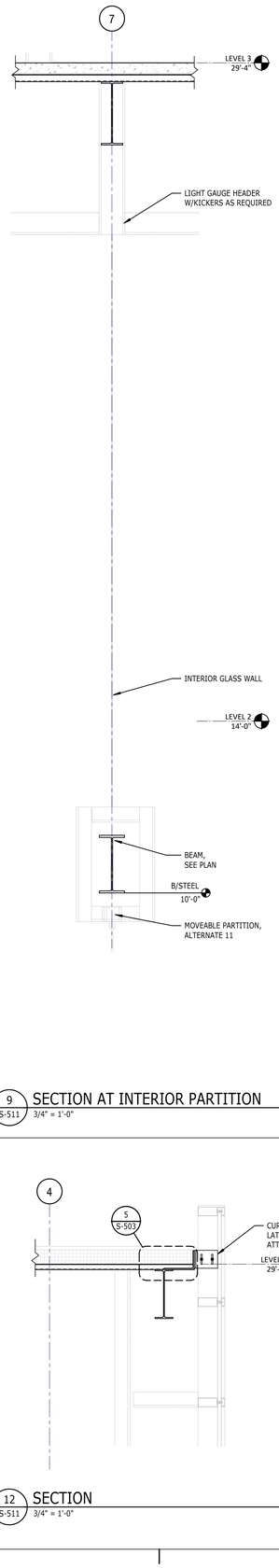
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE SCALE SHOWN ON THIS SHEET

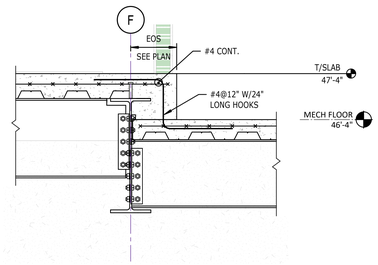


17 S-511 SECTION
3/4" = 1'-0"

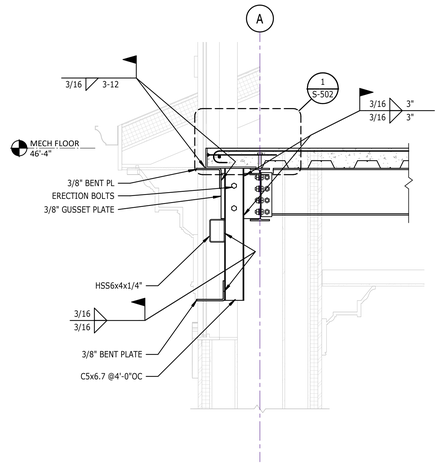


13 S-511 SECTION AT OPERABLE PARTITION
3/4" = 1'-0"

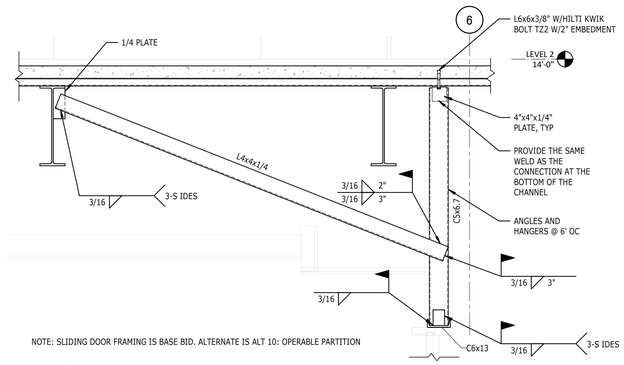




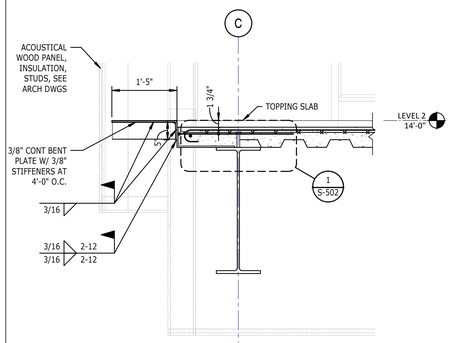
5 S-511 SECTION AT MECH SLAB STEP
3/4" = 1'-0"



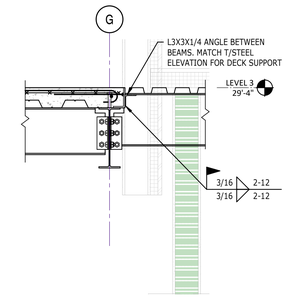
1 S-511 SECTION AT GFRP CORNICE - ROOF - TYPICAL
3/4" = 1'-0"



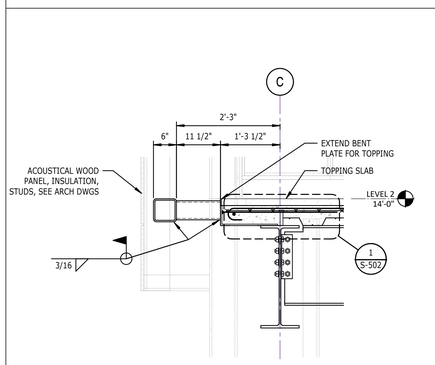
14 S-511 SECTION AT SLIDING DOOR FRAMING
3/4" = 1'-0"



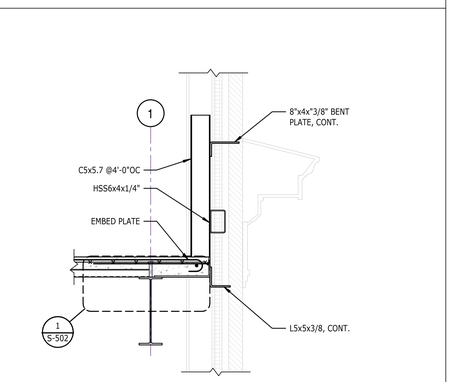
6 S-511 SECTION AT EOS AT WOOD WALL
3/4" = 1'-0"



2 S-511 SECTION AT LINK ROOF
3/4" = 1'-0"

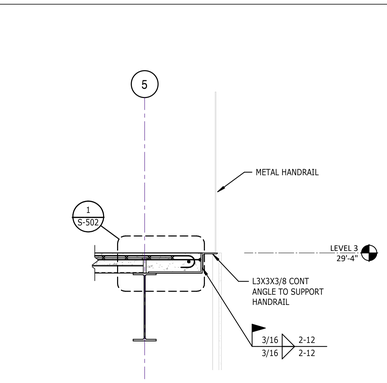


19 S-511 SECTION AT WOOD WALL PLENUM
3/4" = 1'-0"

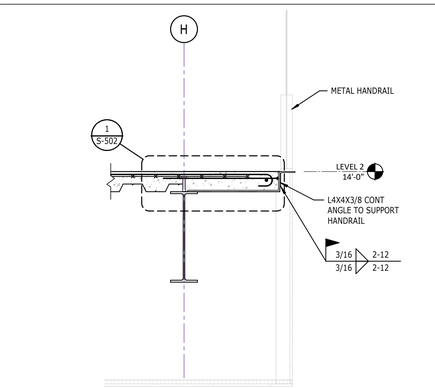


15 S-511 SECTION AT GFRP CORNICE - LEVEL 03 - TYPICAL
3/4" = 1'-0"

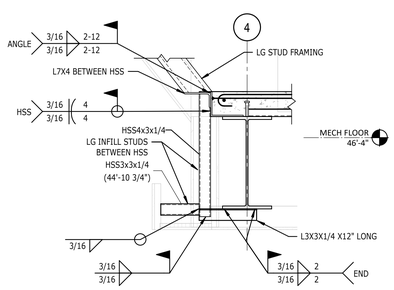
9 S-511 SECTION AT INTERIOR PARTITION
3/4" = 1'-0"



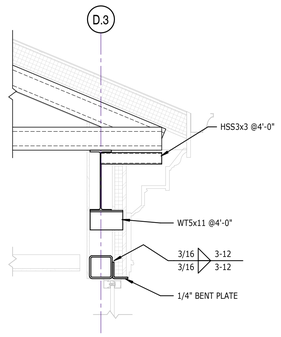
7 S-511 SECTION
3/4" = 1'-0"



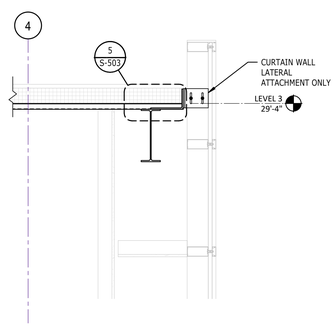
3 S-511 SECTION AT EOS WITH HANDRAIL
3/4" = 1'-0"



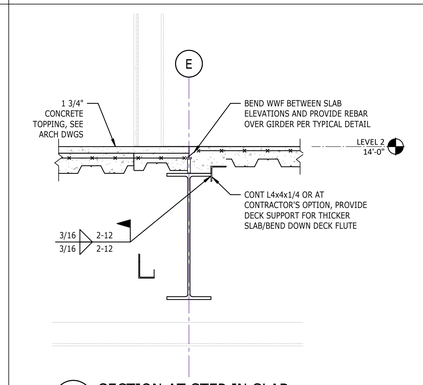
20 S-511 SECTION OF LANTERN FRAMING AT TRUSS
3/4" = 1'-0"



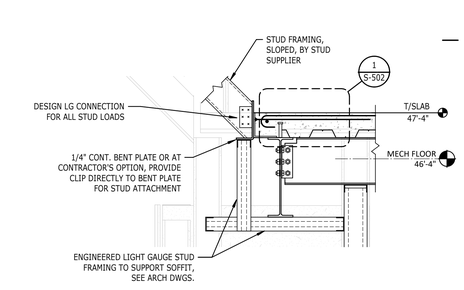
16 S-511 SECTION AT GFRP CORNICE - CUPOLA - TYPICAL
3/4" = 1'-0"



12 S-511 SECTION
3/4" = 1'-0"



8 S-511 SECTION AT STEP IN SLAB
3/4" = 1'-0"



4 S-511 SECTION AT LANTERN NOT AT TRUSS
3/4" = 1'-0"

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LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
C	2021.10.18	CONSTRUCTION DOCUMENTS
D	2022.02.14	BID DOCUMENTS

SHEET NAME:
STEEL DETAILS

ORIG SUBMISSION: 10/04/21
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
S-511

PACKAGE A - CONSTRUCTION DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE

VALVES

- BUTTERFLY VALVE
- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- SHUTOFF VALVE (BUTTERFLY VALVE FOR 2 1/2" AND LARGER, BALL VALVE FOR 2" AND SMALLER)
- GAUGE VALVE
- PLUG VALVE
- BALANCING VALVE
- THERMAL EXPANSION VALVE
- SPRING CHECK VALVE
- SWING CHECK VALVE
- DIAPHRAGM VALVE
- 2-WAY SOLENOID VALVE
- 2-WAY CONTROL VALVE (VALVE BODY AS SPECIFIED)
- 3-WAY MIXING VALVE WITH ARROW INDICATING FAIL POSITION
- 3-WAY DIVERTING VALVE WITH ARROW INDICATING FAIL POSITION
- 4-WAY VALVE WITH ARROW INDICATING FAIL POSITION
- TRIPLE DUTY VALVE
- DRAIN VALVE
- DRAIN VALVE WITH CAP
- LOCKSHIELD VALVE
- PRESSURE REDUCING VALVE–PRV (DOWNSTREAM SETPOINT)
- AIR–LOADED PRESSURE REDUCING VALVE–PRV (DOWNSTREAM SETPOINT)
- PRESSURE REDUCING VALVE–PRV (UPSTREAM SETPOINT)
- GAS REGULATOR
- REDUCED PRESSURE BACKFLOW PREVENTER (RPBP)
- PRESSURE RELIEF VALVE (RV) OR SAFETY VALVE (SV)
- VACUUM RELIEF/VACUUM BREAKER
- RUPTURE DISK PRESSURE RELIEF
- RUPTURE DISK VACUUM RELIEF
- FLOAT OPERATED VALVE
- QUICK OPENING VALVE
- GAS SHUTOFF VALVE
- ANGLE VALVE

(XX)=DEFINES FAIL POSITION OR NORMAL POSITION
FC=FAIL CLOSED (CONTROL VALVE OR DAMPER)
FO=FAIL OPEN (CONTROL VALVE OR DAMPER)
NC=NORMALLY CLOSED (CONTROL VALVE OR DAMPER)
NO=NORMALLY OPEN (CONTROL VALVE OR DAMPER)

COMMON INSTRUMENTATION DEVICES

- PI OR PRESSURE INDICATOR (PRESSURE GAUGE) WITH GAUGE VALVE
- GAUGE CONNECTION WITH GAUGE VALVE
- PDI PRESSURE DIFFERENTIAL INDICATOR
- FE OR FLOW ELEMENT (FLOW SENSOR)
- PDT BLIND PRESSURE TRANSMITTER
- SC BLIND SPEED CONTROLLER
- FI FLOW INDICATOR/FLOW METER
- FS OR FLOW SWITCH
- TI OR TEMPERATURE INDICATOR (THERMOMETER) WITH THERMOWELL
- TI TEMPERATURE INDICATOR (THERMOMETER) WITHOUT WELL (DIRECT INSERTION)
- HS BLIND HAND CONTROLLER
- TE TEMPERATURE ELEMENT (DIRECT INSERTION)
- TS STRAP ON PIPE TEMPERATURE INSTRUMENT (AQUASTAT)
- TT
- TE TEMPERATURE ELEMENT WITH TRANSMITTER AND THERMOWELL
- FQT
- FQE FLOW ELEMENT WITH TRANSMITTER
- TCV TEMPERATURE CONTROL VALVE
- TY TEMPERATURE VALVE

GENERAL

ADJ	ADJUSTABLE	LWT	LEAVING WATER TEMPERATURE
AFF	ABOVE FINISHED FLOOR	MBH	THOUSANDS OF BTU PER HOUR
AL	ALUMINUM	MC	MECHANICAL CONTRACTOR
ALT	ALTERNATE	MEP	MECHANICAL, ELECTRICAL AND PIPING
AP	ACCESS PANEL	MER	MECHANICAL EQUIPMENT ROOM
BOD	BOTTOM OF DUCT	NA	NOT APPLICABLE
BOP	BOTTOM OF PIPE	NC	NORMALLY CLOSED
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
BTUH	BRITISH THERMAL UNITS PER HOUR	NO	NORMALLY OPEN
CA	COMBUSTION AIR	NPS	NOMINAL PIPE SIZE
CAV	CONSTANT AIR VOLUME	NPT	NATIONAL PIPE THREAD
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	NTS	NOT TO SCALE
		OA	OUTSIDE AIR
CFM	CUBIC FEET PER MINUTE	OC	ON CENTER
CL	CONSTRUCTION LIMITS	OED	OPEN END DUCT
CLG	CEILING	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
COND	CONDENSATE/CONDENSER		
COP	CENTER OF PIPE	OFOI	OWNER FURNISHED, OWNER INSTALLED
CS	CARBON STEEL		
CTRD	CENTERED	OV	OUTLET VELOCITY
CU	COPPER	PA	PLANT AIR
DB	DRY BULB	PC	PLUMBING CONTRACTOR
DDC	DIRECT DIGITAL CONTROL	PCF	POUNDS PER CUBIC FOOT
DSB	DENTAL SCIENCE BUILDING	PD	PRESSURE DROP
DX	DIRECT EXPANSION	PH	PHASE
		PNL	PANEL
EA	EXHAUST AIR	PPR-CT	POLYPROPYLENE RANDOM CO–POLYMER
EAT	ENTERING AIR TEMPERATURE	PSF	POUNDS PER SQUARE FOOT
EC	ELECTRICAL CONTRACTOR	PSI	POUNDS PER SQUARE INCH
EDR	EQUIVALENT DIRECT RADIATION	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
EL	ELEVATION	PSIG	POUNDS PER SQUARE INCH GAUGE
ESP	EXTERNAL STATIC PRESSURE	PVC	POLYVINYL CHLORIDE
ETR	EXISTING TO REMAIN	RA	RETURN AIR
EWT	ENTERING WATER TEMPERATURE	RGS	RIGID GALVANIZED STEEL
EXH	EXHAUST	RPM	REVOLUTIONS PER MINUTE
FA	FRESH AIR INTAKE/ FIELD ADJUSTABLE	SA	SUPPLY AIR
		SCH	SCHEDULE
FAT	FINAL AIR TEMPERATURE	SOG	SLAB ON GRADE
FC	FAIL CLOSED	SP	STATIC PRESSURE
FE	FUME HOOD EXHAUST	SS	STAINLESS STEEL
FLA	FULL LOAD AMPS	TA	TRANSFER AIR
FLR	FLOOR	TBR	TO BE REMOVED
FO	FAIL OPEN	TC	TEMPERATURE CONTROL
FPM	FEET PER MINUTE	TOB	TOP OF BEAM
FPS	FEET PER SECOND	TOD	TOP OF DUCT/TOP OF DECK
FTG	FOOTING	TOJ	TOP OF JOIST
FRP	FIBERGLASS REINFORCED PLASTIC	TOP	TOP OF PIPE
		TOS	TOP OF SLAB
GA	GAUGE	TSP	TOTAL STATIC PRESSURE
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GE	GENERAL EXHAUST	V	VOLTS
GPM	GALLONS PER MINUTE	VAV	VARIABLE AIR VOLUME
GS	GALVANIZED STEEL	VP	VELOCITY PRESSURE
HDPE	HIGH DENSITY POLYETHYLENE	VTR	VENT THRU ROOF
IA	INSTRUMENT AIR	WB	WET BULB
IE	INVERT ELEVATION	WC	WATER COLUMN
KO	KNOCK–OUT	WG	WATER GAUGE
LAT	LEAVING AIR TEMPERATURE	X	EXISTING
LP	LOW POINT		

EQUIPMENT

AC	AIR CONDITIONING UNIT/ AIR COMPRESSOR	H	HUMIDIFIER
		HB	HOSE BIBB
ACC	AIR COOLED CONDENSER	HC	HEATING COIL
ACCU	AIR COOLED CONDENSING UNIT	HP	HEAT PUMP
ACU	AIR CONDITIONING UNIT	HRC	HEAT RECOVERY COIL
AHU	AIR HANDLING UNIT	HR	HOSE REEL
AMD	AIR MIXING DEVICE	HRD	HEAT RECLAIM DEVICE
AR	AIR RECEIVER	HT	HEAT TRACE
AS	AIR SEPARATOR	HX	HEAT EXCHANGER
AT	AIR TERMINAL DEVICE	IH	INTAKE HOOD
B	BOILER	JS	JANITOR SINK
BBS	BOILER BLOWDOWN SEPARATOR	LAV	LAVATORY
BFS	BOILER FEEDWATER SYSTEM	MCC	MOTOR CONTROL CENTER
BH	BOOSTER HUMIDIFIER	P	PUMP
BT	BATHTUB	PP	PLUMBING PUMP
C	CONVECTOR	RAH	ROOFTOP AIR HANDLING UNIT
CC	COOLING COIL	RC	REHEAT COIL
CH	CHILLER	RCP	RADIANT CEILING PANEL
CP	CONDENSATE PUMP/ CONTROL PANEL	REF	ROOF EXHAUST FAN
		RF	RETURN FAN
CS	CLINICAL SINK	RH	RELIEF HOOD
CT	COOLING TOWER	SAD	SOUND ATTENUATING DEVICE
CUH	CABINET UNIT HEATER	SD	SUCTION DIFFUSER
CV	CONVERTOR	SF	SUPPLY FAN
D	DAMPER	SH	SHOWER
DC	DUST COLLECTOR	SR	SERVICE RECEPTOR
DH	DEHUMIDIFIER	ST	STORAGE TANK/STEAM TRAP
DS	DOWNSPOUT	T	TANK
EF	EXHAUST FAN	TD	TRENCH DRAIN
EH	EXHAUST HOOD/ ELECTRIC HEATER	TP	TRAP PRIMER
		TXV	THERMAL EXPANSION VALVE
EJ	EXPANSION JOINT	UH	UNIT HEATER
ET	EXPANSION TANK	UR	URINAL
EV	EXHAUST VALVE	UST	UNDERGROUND STORAGE TANK
F	FILTER	UV	UNIT VENTILATOR
FCO	FLOOR CLEANOUT	V	VALVE
FCU	FAN COIL UNIT	VFD	VARIABLE FREQUENCY DRIVE
FD	FLOOR DRAIN	WC	WATER CLOSET
FOP	FUEL OIL PUMP	WCC	WATER COOLED CONDENSER
FOT	FUEL OIL TANK	WCO	WALL CLEANOUT
FR	FIN TUBE RADIATION	WF	WATER FILTER
FT	FLASH TANK	WH	WATER HEATER
FU	FURNACE	YCO	YARD CLEANOUT

PIPING SYSTEM LABELS

–LPS(XX)–	LOW PRESSURE STEAM	—180° R—	POTABLE HOT WATER RETURN 180°
—LPC—	LOW PRESSURE CONDENSATE	—HT—	HEAT TRACE HOT WATER
–MPS(XX)–	MEDIUM PRESSURE STEAM		VENT
—MPC—	MEDIUM PRESSURE CONDENSATE	—CRV—	CORROSION RESISTANT VENT
–HPS(XX)–	HIGH PRESSURE STEAM	—D—	DRAIN
—HPC—	HIGH PRESSURE CONDENSATE	—SS—	SANITARY SEWER
–CPD(XX)–	CONDENSATE PUMP DISCHARGE		WASTE OR SOIL LINE
—HWS—	HOT WATER SUPPLY	—SD—	STORM DRAIN
—HWR—	HOT WATER RETURN	—G—	LOW PRESSURE GAS
—CHS—	CHILLED WATER SUPPLY	–HPG(XX)–	HIGH PRESSURE GAS
—CHR—	CHILLED WATER RETURN	—LP—	LIQUIFIED PETROLEUM GAS
—TWS—	TOWER WATER SUPPLY	—FS—	FUEL SUPPLY
—TWR—	TOWER WATER RETURN	—FR—	FUEL RETURN
—BF—	BOILER FEED	—FOS—	FUEL OIL SUPPLY
—BBD—	BOILER BLOW DOWN	—FOR—	FUEL OIL RETURN
—PCWS—	PROCESS COOLING WATER SUPPLY	—FOV—	FUEL OIL VENT
—PCWR—	PROCESS COOLING WATER RETURN	—FOF—	FUEL OIL FILL
	POTABLE COLD WATER	—FOG—	FUEL OIL GAUGE
	POTABLE HOT WATER	—LOS—	LUBRICATION OIL SUPPLY
	POTABLE HOT WATER RETURN	—LOR—	LUBRICATION OIL RETURN
—180°—	POTABLE HOT WATER 180°	—RCW—	RECLAIM WATER

(XX) = SYSTEM PRESSURE IN PSIG

SITE SYSTEMS

NEW	EXISTING		NEW	EXISTING	
—DW—	—XDW—	WATER LINE	● MH	○ MH	MANHOLE
—SS—	—XSS—	SANITARY SEWER	● FH	○ FH	FIRE HYDRANT
—SD—	—XSD—	STORM SEWER	■ CB/INL	□ CB/INL	CATCH BASIN OR INLET
—FM—	—XFM—	FORCE MAIN	⬒ CI	⊟ CI	CURB INLET
—FW—	—XFW—	FIRE MAIN	PIV	PIV	
—G—	—G—	SHUTOFF VALVE			POST INDICATOR VALVE
—UE—	—X–UE—	UNDERGROUND ELECTRIC			
—UT—	—X–UT—	UNDERGROUND TELECOM			
—W—	—XW—	WATER, CHILLED WATER OR HOT WATER (ON SURVEY)			
—G—	—XG—	LOW PRESSURE NATURAL GAS			

SPECIAL DESIGNATION

- P-1 EQUIPMENT (PUMP INDICATED)
- 2 SPECIALTY ITEMS (I.E. GAUGE FILTER, ETC.)
- REFER M–1 PLAN CONTINUATION REFERENCE
- 1 M–1 SECTION DESIGNATION (TOP DESIGNATES SECTION NUMBER, BOTTOM DESIGNATES ON WHICH SHEET SECTION APPEARS)
- MATCHLINE DESIGNATION
- OR MAGNETIC NORTH
- 2 M–1 DETAIL REFERENCE (TOP=DETAIL NO., BOTTOM=DRAWING NO. SHOWN ON)
- A/15B–6 OR A 15B–6 DETAIL REFERENCE (TOP= DETAIL NO., BOTTOM=SHEET NO. IN DETAIL MANUAL)
- 1 REVISION REFERENCE
- 1 GENERAL OR SPECIAL NOTES REFERENCE
- 1001 CONSTRUCTION BULLETIN REVISION NUMBER
- WALL–MOUNTED LUMINAIRE TYPE A1 TO BE CAST ALUMINUM, VAPOR–PROOF INDUSTRIAL BY GUTH, LSI, SPERO, OR RIG–A–LITE WITH 100W A–LAMP.

SITE UTILITY GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS WITH REGARD TO TOPOGRAPHY, SITE DRAINAGE, UTILITIES, EXISTING FOLIAGE, ETC., PRIOR TO BIDDING.
2. IF THE DIMENSIONS NOTED AND THE SCALED DIMENSIONS DO NOT AGREE, THE NOTED DIMENSION SHALL GOVERN.
3. CONSTRUCTION FENCES WITH FABRIC WINDSCREEN SHALL BE PROVIDED AROUND ALL UTILITY CONSTRUCTION AREAS AND ALONG ACCESS ROADS TO LIMIT PEDESTRIANS ACCESS TO THE AREA. THIS SHALL INCLUDE ALL AREAS WHERE CONSTRUCTION RELATED MATERIALS ARE STORED OR WHERE CONSTRUCTION RELATED ACTIVITIES ARE OCCURRING. PLASTIC SAFETY FENCING WILL ONLY BE ALLOWED WHERE APPROVED BY THE OWNER. REFER TO SECTION 01500.
4. ALL EXISTING UNDERGROUND CHILLED WATER UTILITIES (STORM WATER, SANITARY SEWER, GAS, ELECTRIC, TELEPHONE, STEAM, CONDENSATE, WATER, ETC.) SHOWN ON PLANS AND CORRESPONDING PROFILES HAVE BEEN BASED ON SURVEYS, PREVIOUS PLANS AND THE BEST AVAILABLE INFORMATION, BUT SHOULD NOT BE ASSUMED TO BE ACCURATE. THE CONTRACTOR SHALL CALL LOCATING SERVICE AT LEAST 72 HOURS (THREE BUSINESS DAYS) PRIOR TO DIGGING. CONTRACTOR SHALL HAND DIG TO DETERMINE ACTUAL LOCATION OF ALL UTILITIES SHOWN ON PLANS OR FIELD LOCATED.
5. CONTRACTOR SHALL VERIFY FIELD EXISTING CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND NOTIFY ENGINEER IMMEDIATELY IF ANY DISCREPANCIES OR CONFLICTS EXIST BETWEEN THE CONSTRUCTION PLAN AND THE ACTUAL FIELD CONDITIONS THAT WOULD AFFECT THE INSTALLATION OF NEW MATERIALS. THIS SHALL INCLUDE LOCATING EXISTING UTILITIES 200 FEET MINIMUM IN FRONT OF THE INSTALLATION OF NEW TUNNELS.
6. ALL EXISTING UTILITY LINES SHALL BE FULLY PROTECTED DURING EXCAVATION. CONTRACTOR SHALL PROVIDE SUPPORT AND SHORING TO KEEP UTILITIES IN SERVICE AND PREVENT DAMAGE. WHERE UNDERGROUND UTILITIES ARE TO BE INSTALLED BELOW EXISTING UTILITIES, SUPPORT EXISTING UTILITIES IN PLACE.
7. ALL DAMAGED EXISTING UTILITIES MUST BE REPAIRED THE SAME DAY THAT THE DAMAGE OCCURRED. IF APPROPRIATE MATERIALS FOR PERMANENT REPAIR ARE NOT AVAILABLE, CONTRACTOR SHALL PROVIDE WHATEVER MATERIALS NECESSARY TO TEMPORARILY RESTORE UTILITY TO SERVICE AND SCHEDULE SHUT DOWN TO MAKE PERMANENT REPAIRS. THE OWNER RESERVES THE RIGHT TO MAKE REPAIRS TO DAMAGED UTILITIES IF THE CONTRACTOR DOES NOT PROVIDE TIMELY REPAIRS. ALL COSTS FOR THESE REPAIRS WILL BE WITHHELD FROM AMOUNTS DUE TO THE CONTRACTOR.
8. CONNECTION TO EXISTING CAMPUS STEAM SYSTEMS SHALL BE PERFORMED BY THE CONTRACTOR AND WITNESSED BY UNCW FACILITY PERSONNEL.
9. ALL EXCAVATIONS SHALL BE BACK FILLED, COMPACTED AND EROSION CONTROL MEASURES OR FINAL PAVING/FINISHES INSTALLED AS SOON AS POSSIBLE. ALL TRENCH EXCAVATIONS LEFT OPEN OVERNIGHT SHALL BE PROPERLY BARRICADED.
10. ACCESS TO ALL FIRE HYDRANTS AND BUILDING FIRE SERVICE CONNECTIONS MUST BE MAINTAINED AT ALL TIMES. PROVIDE AND MAINTAIN TEMPORARY WALKWAYS, BRIDGES, ETC. AROUND OR ACROSS CONSTRUCTION AREAS AS REQUIRED. ANY TEMPORARY BRIDGE STRUCTURES MUST BE A MINIMUM OF 4 FEET WIDE AND BE CAPABLE OF SUPPORTING A 1000 POUND LIVE LOAD.
11. NO MATERIAL OR EQUIPMENT SHALL BE STORED ON, OR RESTRICT ACCESS TO VALVE BOXES, MANHOLES, VAULTS OR UTILITY SYSTEMS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DUST CONTROL ON THE PROJECT. ALL DAMAGE RESULTING FROM DUST SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
12. THE CONTRACTOR SHALL ADHERE TO ALL O.S.H.A. REQUIREMENTS.
13. CONTRACTOR SHALL HAVE ADEQUATE MATERIALS ON–SITE TO CONTINUE PROGRESS OF PIPELINE INSTALLATION IN A CONTINUOUS FASHION. CONTRACTOR SHALL PROVIDE PIPING, CONDUIT, SUFFICIENT ELBOWS AND FITTINGS AS NECESSARY TO MAKE ADJUSTMENTS FOR FIELD CONDITIONS.
14. PRIOR TO STARTING ANY SHUTDOWN WORK, THE CONTRACTOR(S) SHALL RECEIVE APPROVAL FOR ALL ASSOCIATED MATERIAL SUBMITTALS AND ALL MATERIALS AND EQUIPMENT MUST BE ON–SITE OR STORED WITHIN THE TOWN LIMITS OF WILMINGTON. THIS INCLUDES ALL VALVES, PIPING, RESTRAINING DEVICES, ETC. THE OWNER AND DESIGNER RESERVE THE RIGHT TO POSTPONE THIS WORK IF THESE CONDITIONS ARE NOT SATISFIED.
15. WORK HOURS FOR ALL DEMOLITION AND NEW WORK IN BUILDINGS TO BE COORDINATED WITH OWNER PRIOR TO CONSTRUCTION

PIPING SPECIALTIES

- GENERAL PIPELINE STRAINER WITHOUT DRAIN
- GENERAL PIPELINE STRAINER WITH DRAIN
- STEAM & CONDENSATE PIPELINE STRAINER
- WATER SYSTEM PIPELINE STRAINER
- SUCTION DIFFUSER
- DUPLEX STRAINER
- BASKET STRAINER
- FLANGE
- UNION
- 2" AND SMALLER, CAP OR PLUG 2–1/2" AND LARGER, BLIND FLANGE
- INVERTED BUCKET TRAP
- FLOAT AND THERMOSTATIC TRAP
- THERMOSTATIC TRAP
- EXPANSION JOINT
- PIPE FLEXIBLE CONNECTION
- BALL JOINT
- NOISE SUPPRESSOR
- WATER PIPING CONNECTION
- SHOCK SUPPRESSOR
- HEAT TRACE TERMINATION POINT
- HEAT TRACE POWER CONNECTION POINT
- MEDICAL GAS TERMINAL (MG) OR LAB GAS TERMINAL (LG)
- VALVES IN A BOX (VIB)
- P FIRE SPRINKLER HEAD (LETTER DESIGNATES TYPE–SEE SCHEDULE)
- FIRE SPRINKLER HEAD (SIDEWALL)
- FHC FIRE HOSE CABINET (FHC)
- FVC FIRE VALVE CABINET (FVC)
- STP FIRE STANDPIPE (STP)
- FILTER/REGULATOR
- THERMOMETER
- PRESSURE GAUGE (WITH GAUGE VALVE)
- FLOW SENSOR
- FLOW SWITCH
- AUTOMATIC AIR VENT
- MANUAL AIR VENT
- THERMOSTATIC AIR VENT
- TEST PLUG (PRESSURE/TEMP.)
- CONCENTRIC OR ECCENTRIC REDUCER
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- DIRECTION OF PITCH (DOWN)
- DIRECTION OF FLOW
- PIPE GUIDE
- PIPE SLEEVE
- ANCHOR
- WH WALL HYDRANT (WH)
- HB HOSE BIBB (HB)
- FD FLOOR DRAIN (FD)
- RD ROOF DRAIN (RD)
- HD HUB DRAIN (HD)
- FIXTURE WASTE TRAP
- P–TRAP
- CO CLEANOUT (CO)
- SOIL, STORM, OR WASTE PIPE PLUG
- SLIDE

PIPING

SINGLE	DOUBLE	
		ELBOW DOWN
		ELBOW UP
		BOTTOM CONNECTION (45° OR 90°)
		TOP CONNECTION (45° OR 90°)
D	D	45° PIPE RISE(R) /DROP(D)
	N/A	TEE (REFER TO SPECIFICATION FOR SIDE, TOP OR BOTTOM TEE)
		EXISTING PIPING TO REMAIN
		EXISTING PIPING TO BE REMOVED
		FLOW DIRECTION DESIGNATION
		LINE CONTINUATION BREAK

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02/14/22

RANDALL LIBRARY RENOVATION & EXPANSION

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WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202.197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
SYMBOLS AND ABBREVIATIONS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

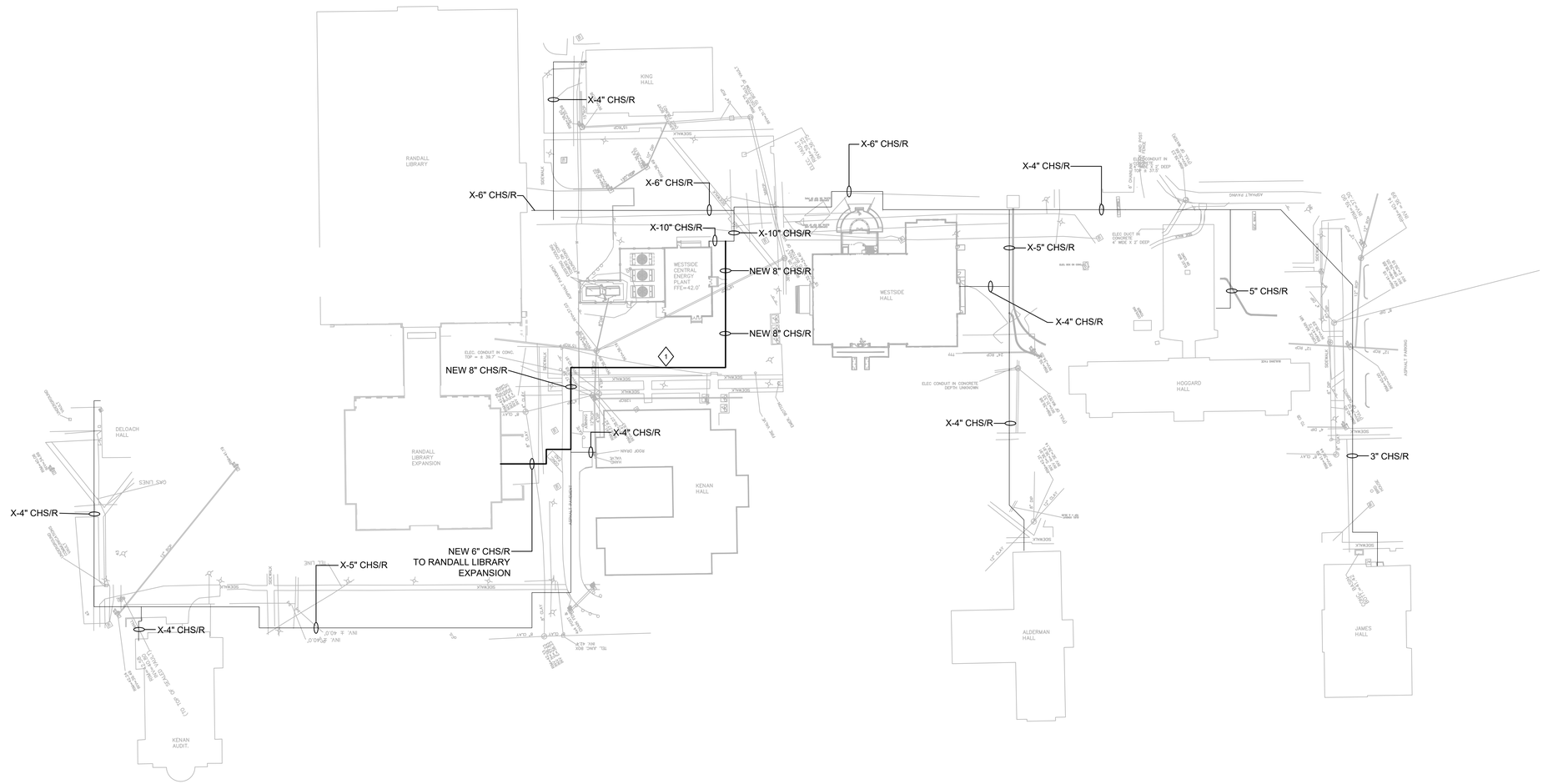
SHEET:
MU001

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TWENTY SCALE WHEN PLOTTED

SHEET KEYNOTES:

1 DEMOLITION OF EXISTING CHILLED WATER AND INSTALLATION OF NEW CHILLED WATER PIPING BETWEEN THE WESTSIDE CEP AND THE RANDALL LIBRARY EXPANSION TO BE INSTALLED BETWEEN NOVEMBER AND APRIL TO HAVE MINIMAL IMPACT TO THE WESTSIDE CEP CHILLED WATER DISTRIBUTION SYSTEM. COORDINATE WITH UNCW TO PROVIDE TEMPORARY COOLING IF NECESSARY TO KENAN HALL, KENAN AUDITORIUM AND DELOACH HALL.



1 **CHILLED WATER DISTRIBUTION PLAN**
SCALE: 1" = 60'-0"

75 0 37 75 150
GRAPHIC SCALE (IN FEET)

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

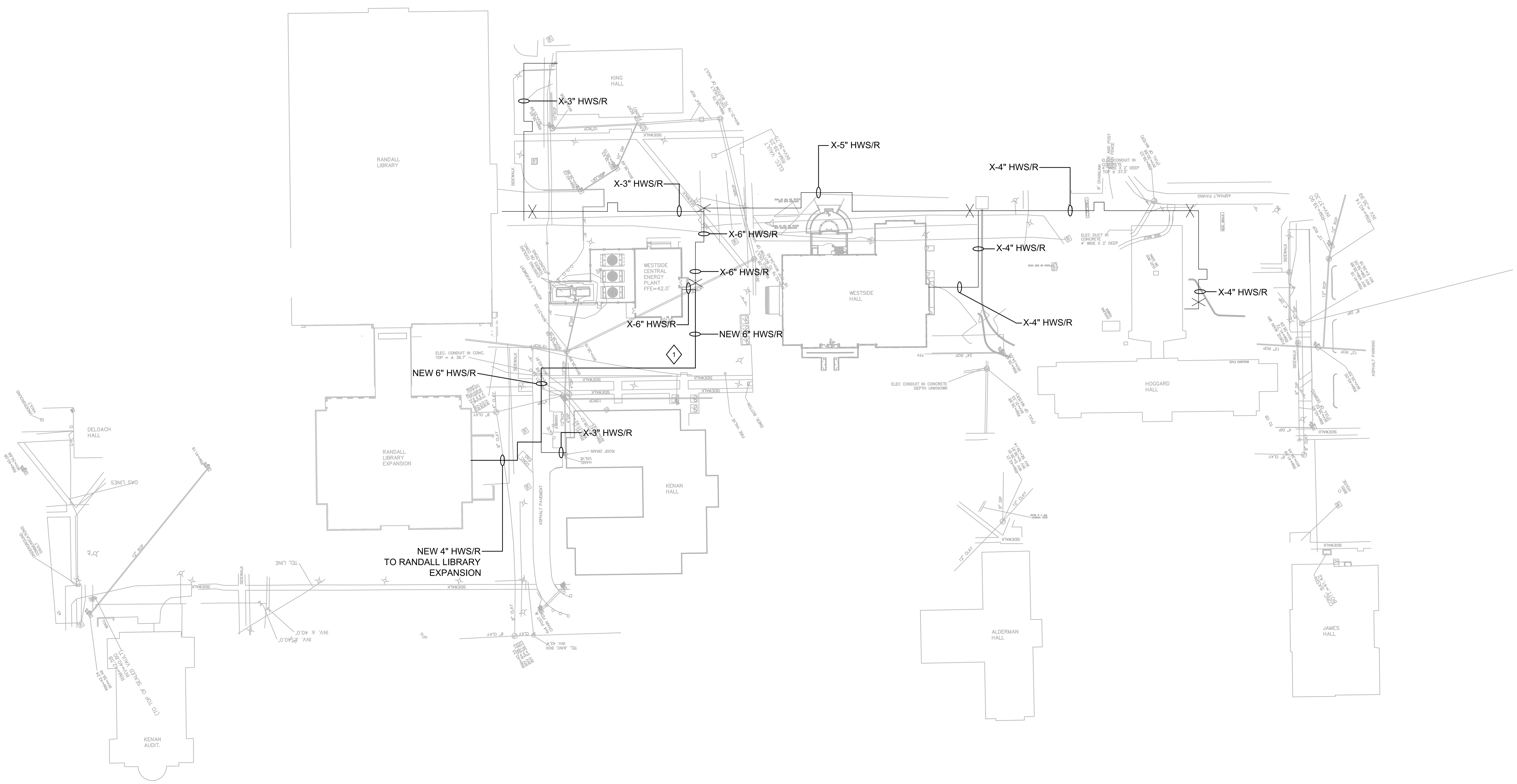
Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
WESTSIDE CEP CHILLED WATER DISTRIBUTION PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
MU002

PACKAGE A - BID DOCUMENTS



1 HOT WATER DISTRIBUTION PLAN

SCALE: 1" = 60'-0"

75 0 37 75 150
GRAPHIC SCALE (IN FEET)

SHEET KEYNOTES:

1. DEMOLITION OF EXISTING HOT WATER AND INSTALLATION OF NEW HOT WATER PIPING BETWEEN THE WESTSIDE CEP AND THE RANDALL LIBRARY EXPANSION TO BE INSTALLED BETWEEN NOVEMBER AND APRIL. PROVIDE TEMPORARY SKID MOUNTED HOT WATER BOILER AND PUMP TO PROVIDE HEATING TO KENAN HALL.

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
WESTSIDE CEP
HOT WATER
DISTRIBUTION PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
MU003

PACKAGE A -
BID DOCUMENTS

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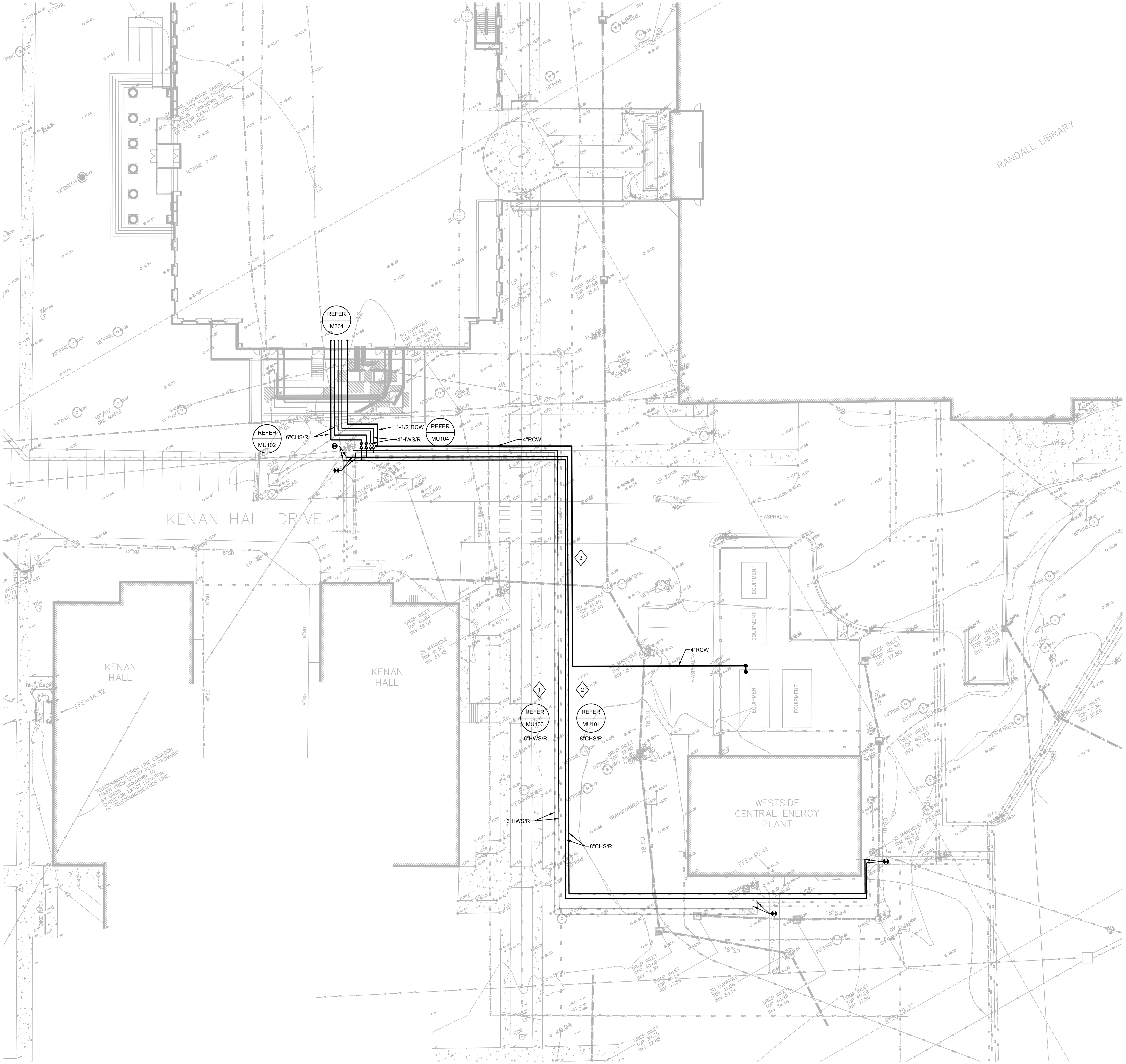

1 **OVERALL MECHANICAL SITE PLAN**

SCALE: 1" = 20'-0"

20 0 10 20 40

GRAPHIC SCALE (IN FEET)

SHEET KEYNOTES:

1. DEMOLISH EXISTING 3" HOT WATER SUPPLY AND RETURN PIPING BETWEEN THE WESTSIDE CEP AND THE BUILDING ISOLATION VALVE AT KENAN HALL AND REPLACE WITH NEW 6" HOT WATER SUPPLY AND RETURN PIPING.
2. DEMOLISH EXISTING 6" CHILLED WATER SUPPLY AND RETURN PIPING BETWEEN THE WESTSIDE CEP AND THE BUILDING ISOLATION VALVE AT KENAN HALL AND REPLACE WITH NEW 8" CHILLED WATER SUPPLY AND RETURN PIPING.
3. AS PART OF ALTERNATE 16A, PROVIDE 1-1/2" RECLAIM WATER PIPING FROM THE RANDALL LIBRARY EXPANSION TO THE MAIN IN THE STREET. PROVIDE 4" RECLAIM WATER PIPING AS SHOWN BACK EXISITNG COOLING TOWER #1 AT THE WESTSIDE CEP. PIPE TO TERMINATE WITH A GOOSENECK OVER THE EDGE OF THE TOWER BASIN, ABOVE THE WATERLINE. RECLAIM WATER PIPING SHOWN IN THE SAME TRENCH AS THE CHILLED WATER AND HOT WATER SHALL MATCH ELEVATIONS. UNDERGROUND RECLAIM WATER MINIMUM DEPTH OF COVER IS 3'-0". REFER TO SPECIFICATION 33 5110 MECHANICAL SITE UTILITY PIPE AND PIPE FITTINGS FOR FURTHER DETAILS REGARDING THE RECLAIM WATER.

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
OVERALL MECHANICAL SITE PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
MU100

PACKAGE A - BID DOCUMENTS

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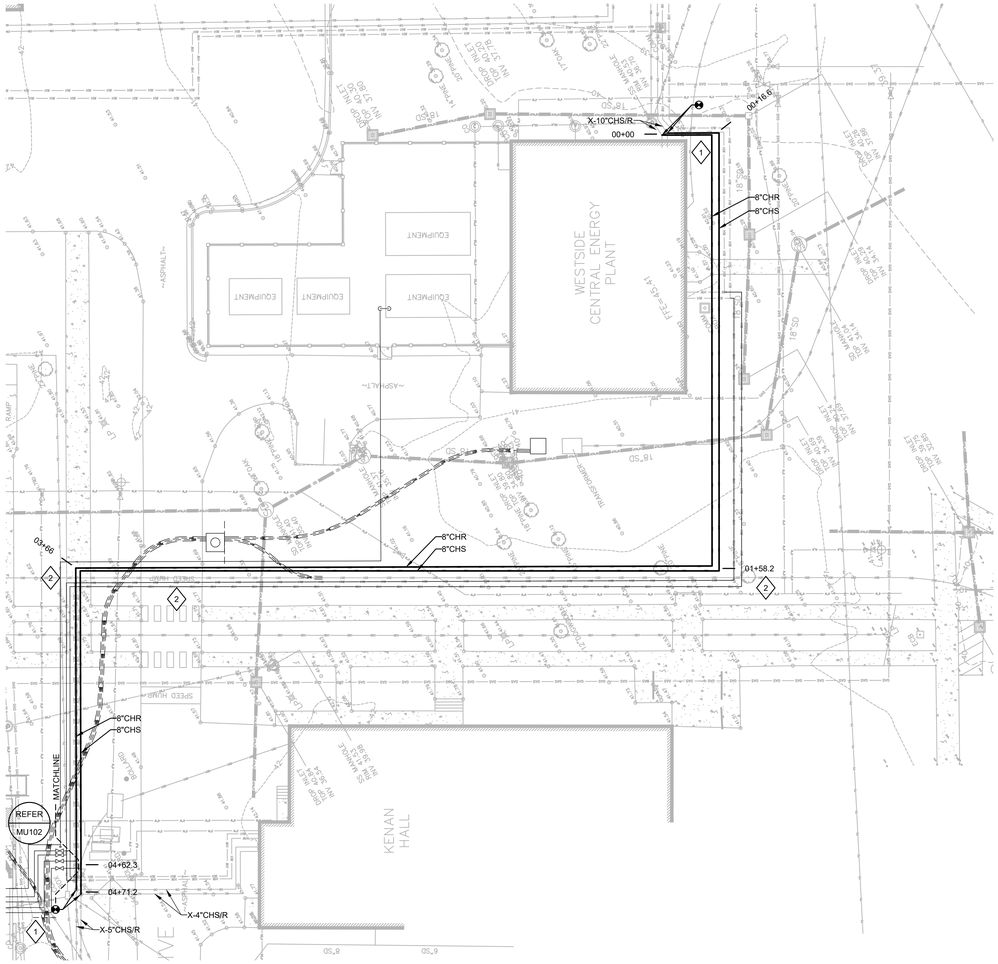
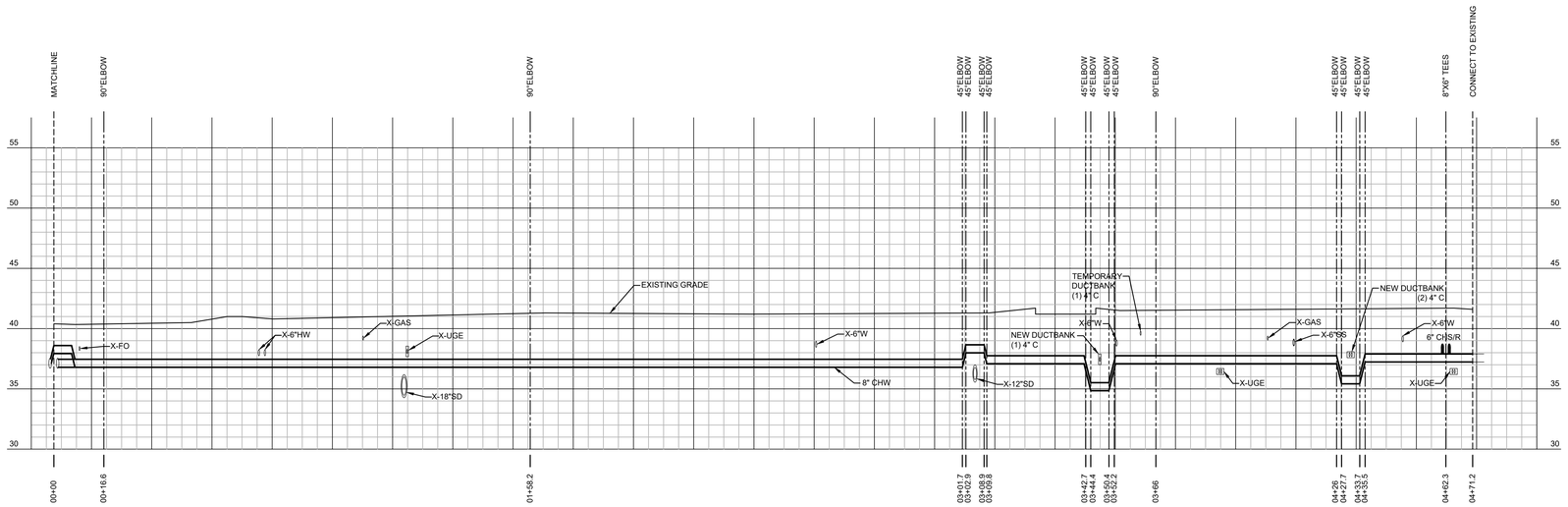


SHEET KEYNOTES:

1. DEMOLISH EXISTING 6" CHILLED WATER SUPPLY AND RETURN PIPING BETWEEN THE WESTSIDE CEP AND THE KENAN HALL BRANCH AND REPLACE WITH NEW 8" HDPE CHILLED WATER SUPPLY AND RETURN PIPING.CONFIRM EXISTING MAIN LINE VALVES AT KENAN HALL BRANCH ARE IN WORKING ORDER PRIOR TO SHUTDOWN.
2. REFER TO EU SHEETS FOR DEMOLITION OF EXISTING DUCTBANK BETWEEN EXISTING HOT WATER AND CHILLED WATER UTILITIES.

20 0 10 20 40
GRAPHIC SCALE (IN FEET)



1 **CHILLED WATER PARTIAL PLAN AND PROFILE**
SCALE: 1"=20'-0" HORZONTAL
1"=5'-0" VERTICAL
1"=20'-0" SITE

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
CHILLED WATER PARTIAL PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
MU101

PACKAGE A - BID DOCUMENTS

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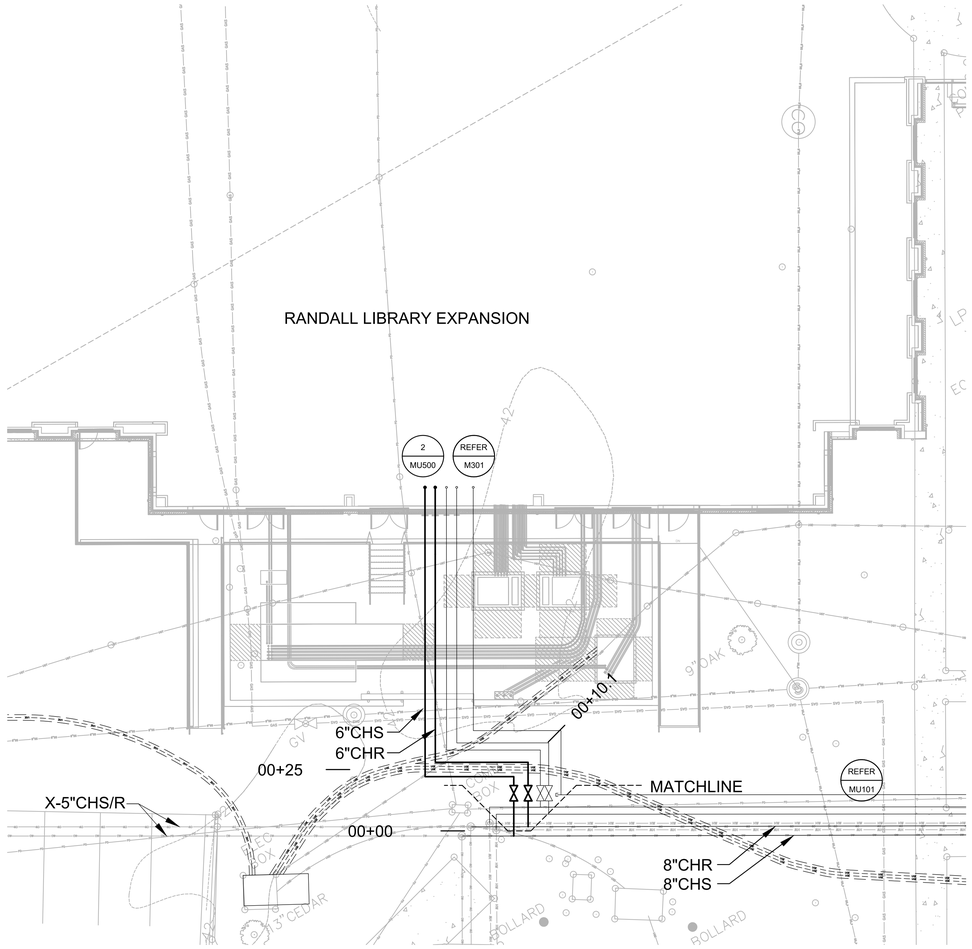

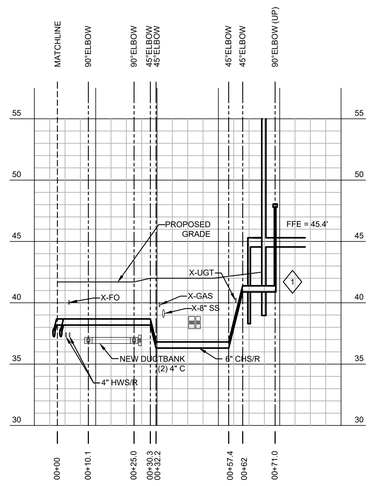

1 **CHILLED WATER PARTIAL PLAN AND PROFILE**
SCALE: 1"=20'-0" HORZONTAL
1"=5'-0" VERTICAL
1"=10'-0" SITE

SHEET KEYNOTES:

1 REFER TO DETAIL 2 ON MU500 FOR FURTHER INFORMATION REGARDING BUILDING PENETRATION.

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

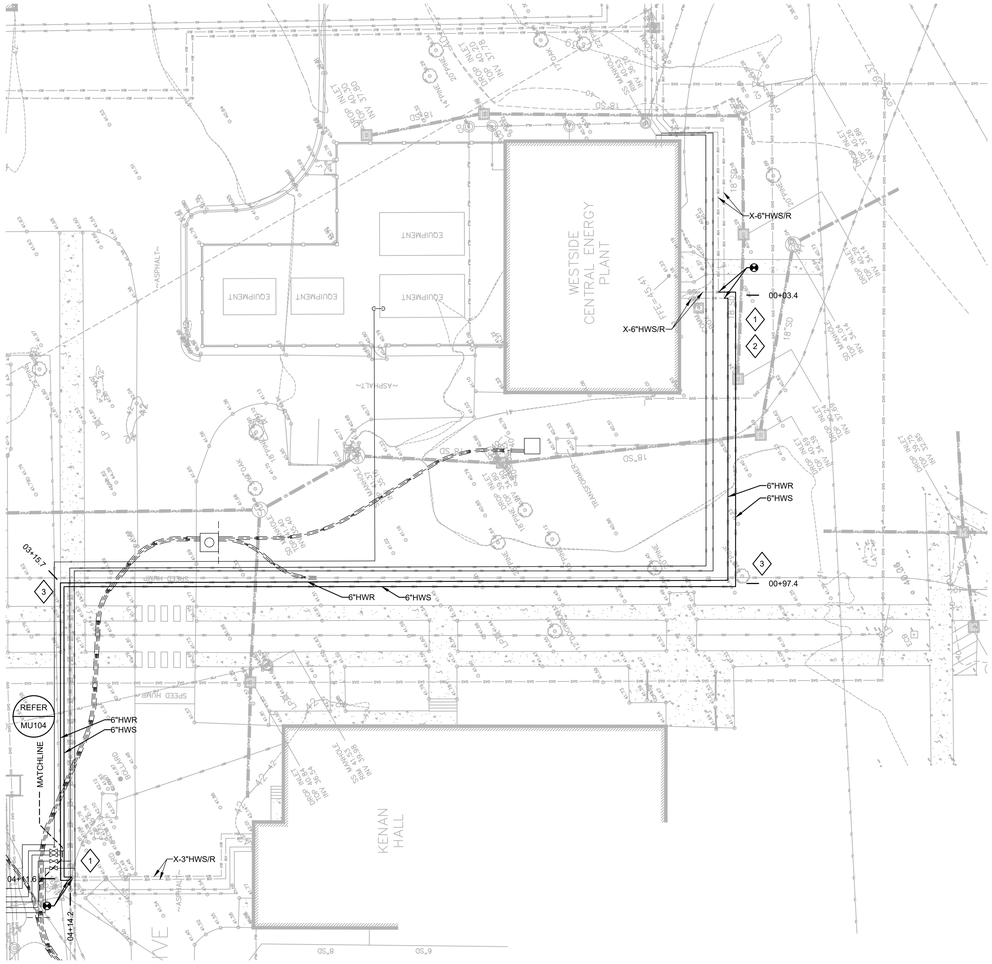
SHEET NAME:
CHILLED WATER PARTIAL PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

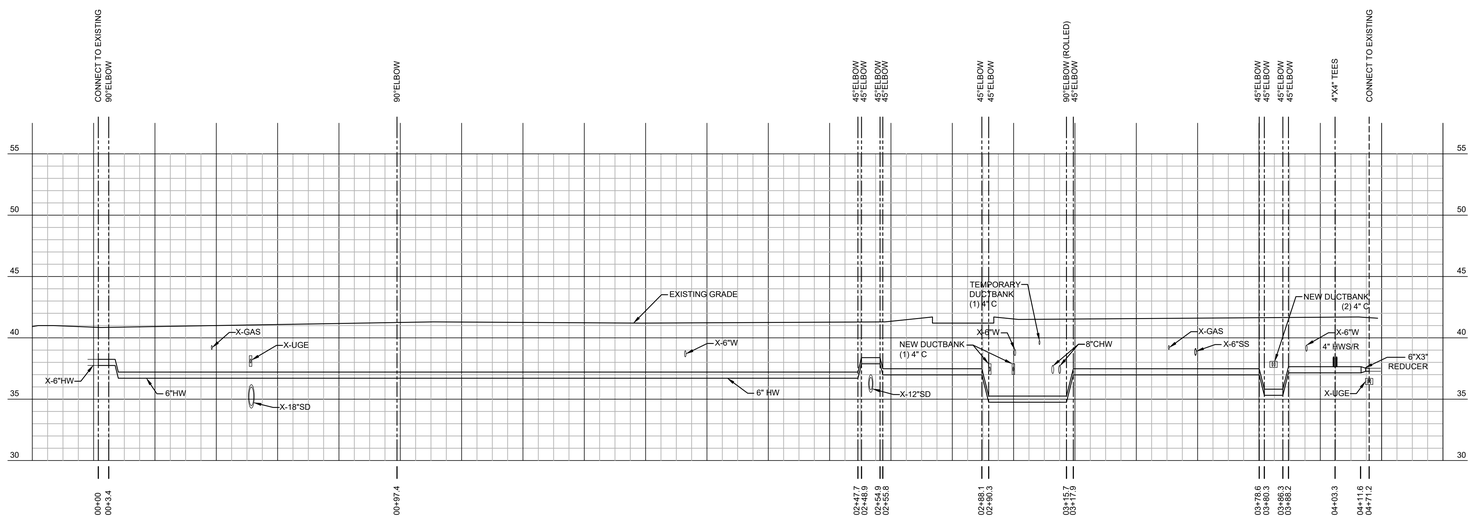
SHEET:
MU102

PACKAGE A -
BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



20 0 10 20 40
GRAPHIC SCALE (IN FEET)



1 **HOT WATER PARTIAL PLAN AND PROFILE**
SCALE: 1"=20'-0" HORZONTAL
1"=5'-0" VERTICAL
1"=20'-0" SITE

SHEET KEYNOTES:

1. DEMOLISH EXISTING 3" HOT WATER SUPPLY AND RETURN PIPING BETWEEN THE WESTSIDE CEP AND THE KENAN HALL AND REPLACE WITH NEW 6" PPR HOT WATER SUPPLY AND RETURN PIPING. EXISTING VALVES AT KENAN HALL BRANCH WILL BE REPLACED BY THE OWNER PRIOR TO THE START OF CONSTRUCTION.
2. HOT WATER PIPE TO BE PP-R/PP-RCT CARRIER PIPE WITH FRP JACKET. SEE SPECIFICATION FOR FURTHER DETAILS.
3. REFER TO EU SHEETS FOR DEMOLITION OF EXISTING DUCTBANK BETWEEN EXISTING HOT WATER AND CHILLED WATER UTILITIES.

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NC LIC. NO. C-2982

NORTH CAROLINA PROFESSIONAL SEAL 022793 ENGINEER JOHN C. DUFFY JR.
02/14/22

RANDALL LIBRARY RENOVATION & EXPANSION
UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403
SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

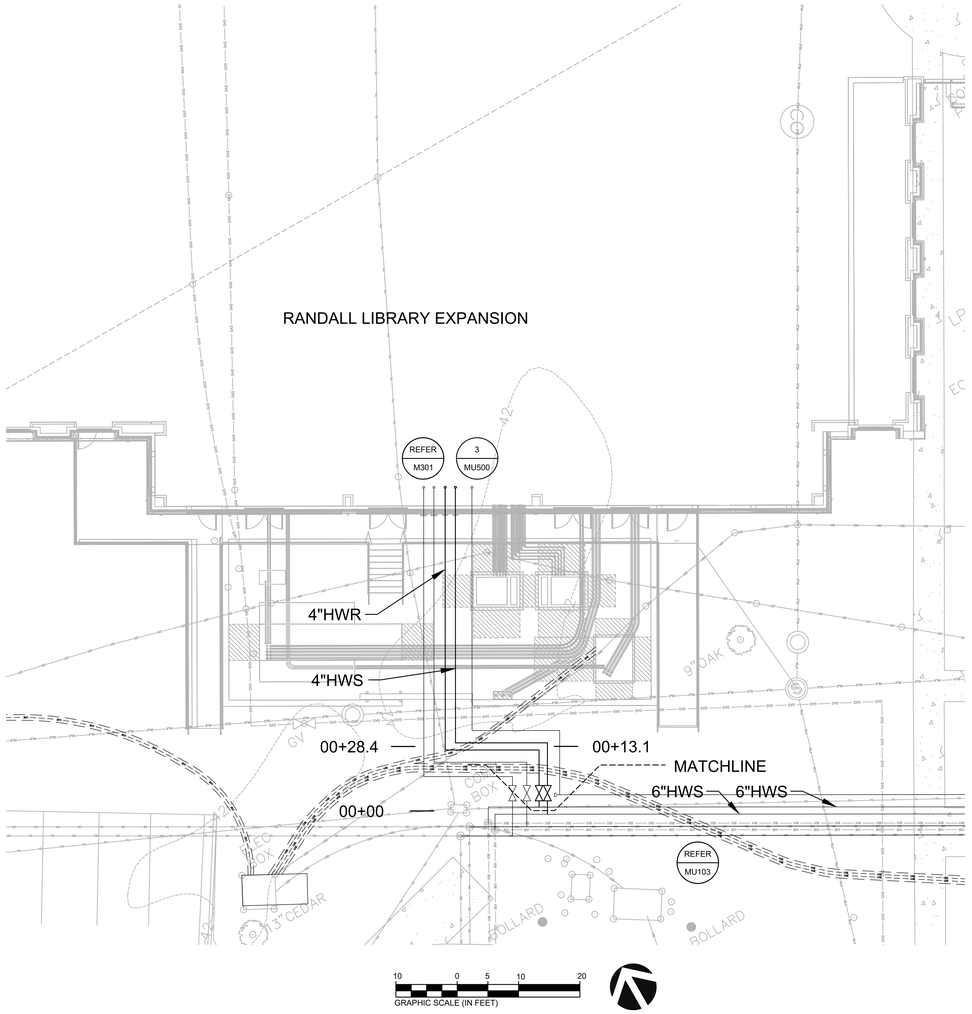
SHEET NAME:
HOT WATER PARTIAL PLAN

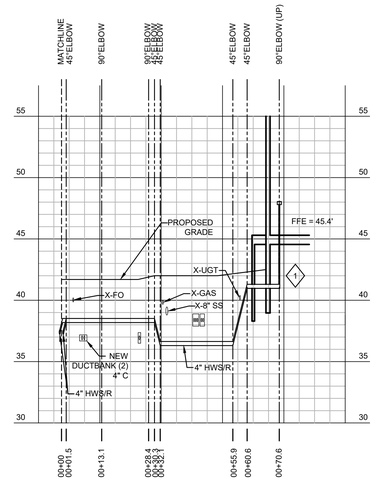
ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
MU103

PACKAGE A -
BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE





1 **HOT WATER PARTIAL PLAN AND PROFILE**
SCALE: 1"=20'-0" HORZONTAL
1"=5'-0" VERTICAL
1"=10'-0" SITE

SHEET KEYNOTES:

1 REFER TO DETAIL 3 ON MU500 FOR FURTHER INFORMATION REGARDING BUILDING PENETRATION.

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

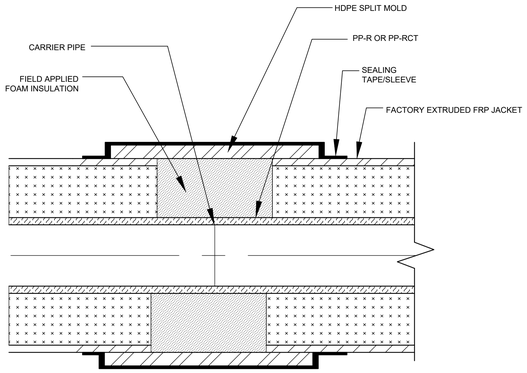
Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
HOT WATER PARTIAL PLAN

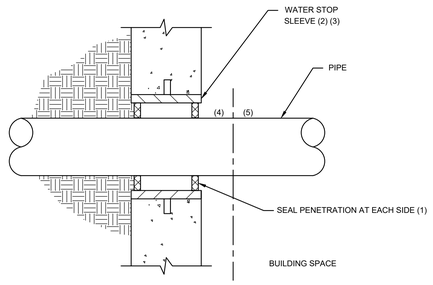
ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
MU104

PACKAGE A -
BID DOCUMENTS

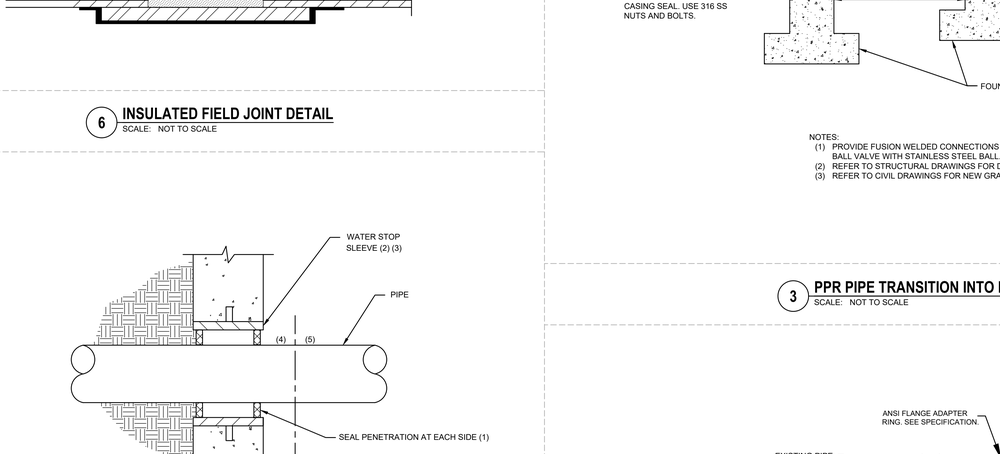


6 INSULATED FIELD JOINT DETAIL
SCALE: NOT TO SCALE



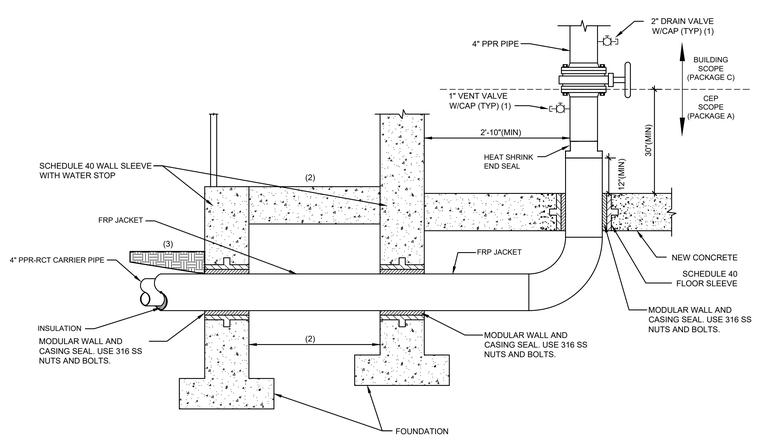
NOTES:
(1) "LINK SEAL" MODULAR WALL SEAL BY GPT. USE 316 SS NUTS AND BOLTS. INSTALL WITH ADJUSTMENT NUTS TO INTERIOR SIDE.
(2) REFER TO SPECIFICATION SECTION 20 0000 FOR ADDITIONAL REQUIREMENTS.
(3) FOR CORE DRILLED DOLE, INSTALL "LINK SEAL" SEAL BETWEEN PIPE AND OPENING WITHOUT SLEEVE. SIZE OPENING AS RECOMMENDED BY SEAL MANUFACTURER.
(4) UNDERGROUND PIPE INCLUDING PRE-INSULATED PIPE IF USED.
(5) INDOOR PIPE.

7 PLUMBING PIPE THRU FOUNDATION WALL IN BUILDING SPACE
SCALE: NOT TO SCALE



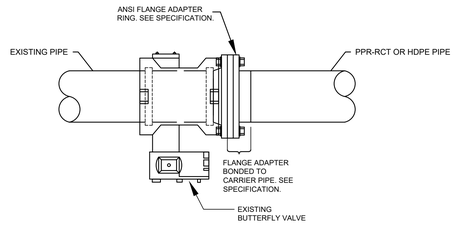
NOTES:
(1) UTILITY LAYOUT IS SHOWN FACING THE BUILDING.
(2) CONTRACTOR TO COORDINATE CORE HOLE SIZES BASED ON LINK SEAL MANUFACTURER'S RECOMMENDATIONS.
(3) REFER TO STRUCTURAL DRAWINGS FOR DIMENSIONS ON THE BUILDING FOOTERS AND WALKWAY.
(4) REFER TO MECHANICAL DRAWINGS FOR ROUTING OF UTILITIES WITHIN THE MECHANICAL ROOM.

5 BUILDING WALL PIPE PENETRATIONS
SCALE: NOT TO SCALE

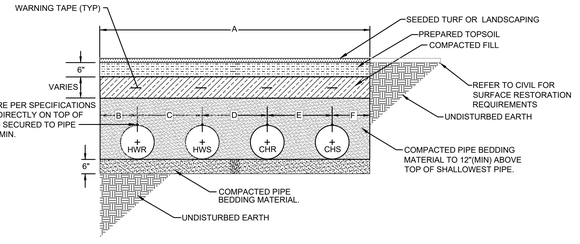


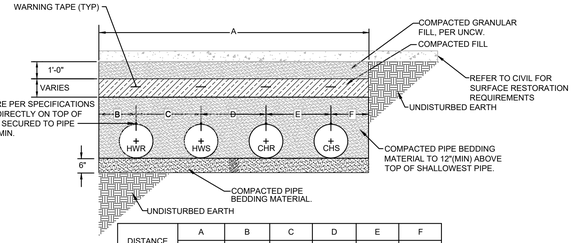
NOTES:
(1) PROVIDE FUSION WELDED CONNECTIONS FOR BALL VALVE. PROVIDE TWO PIECE, BRONZE BODY BALL VALVE WITH STAINLESS STEEL BALL. SEE BUILDING SPEC 23 2118.
(2) REFER TO STRUCTURAL DRAWINGS FOR DIMENSIONS ON THE BUILDING FOOTERS AND WALKWAY.
(3) REFER TO CIVIL DRAWINGS FOR NEW GRADE ELEVATIONS IN THE EQUIPMENT YARD.

3 PPR PIPE TRANSITION INTO BUILDING (HOT WATER)
SCALE: NOT TO SCALE



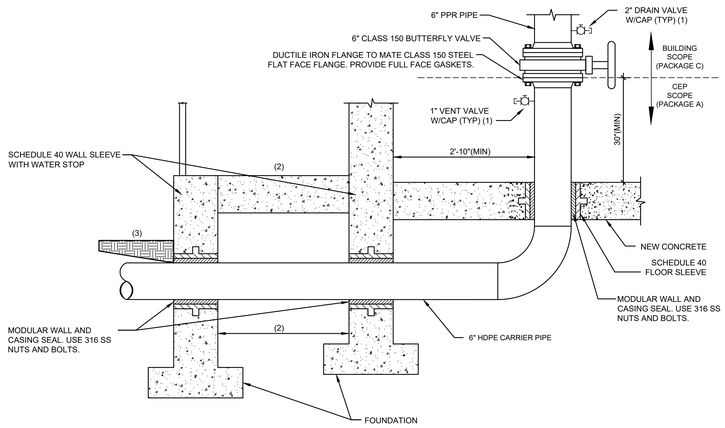
4 PPR-CT OR HDPE TO EXISTING TRANSITION
SCALE: NOT TO SCALE





DISTANCE	A	B	C	D	E	F
	9'-5"	2'-0"	1'-2"	2'-0"	2'-3"	2'-0"

1 TYPICAL CHILLED WATER TRENCH DETAIL
SCALE: NOT TO SCALE



NOTES:
(1) PROVIDE FUSION WELDED CONNECTIONS FOR BALL VALVE. PROVIDE TWO PIECE, BRONZE BODY BALL VALVE WITH STAINLESS STEEL BALL. SEE BUILDING SPEC 23 2118.
(2) REFER TO STRUCTURAL DRAWINGS FOR DIMENSIONS ON THE BUILDING FOOTERS AND WALKWAY.
(3) REFER TO CIVIL DRAWINGS FOR NEW GRADE ELEVATIONS IN THE EQUIPMENT YARD.

2 HDPE/PPR PIPE TRANSITION INTO BUILDING (CHILLED WATER)
SCALE: NOT TO SCALE

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ARCHITECTURAL SCALE

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
MECHANICAL DETAILS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
MU500

PACKAGE A -
BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE FULL SIZED DRAWING SHEET

SEMI-CUSTOM AIR HANDLING UNITS

23 7313

MARK	LOCATION	SERVICE	UNIT AIRFLOW (1)				PREHEAT COIL							COOLING COIL										PRE-FILTER (2)			FILTER (2)			BASIS OF DESIGN		REMARKS
			CFM	MIN. OA (CFM)	SUPPLY ESP ("WG)	RETURN ESP ("WG)	EAT (°F)	LAT (°F)	TOTAL CAPACITY (MBH)	GPM	EWT (°F)	LWT (°F)	MAX. WATER PD	MAX FACE VEL (FPM)	MAX. AIR PD ("WG)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	GPM	EWT (°F)	LWT (°F)	MIN. WATER VEL (FPS)	MAX. WATER PD (FT)	MAX. FACE VEL (FPM)	MAX. AIR PD ("WG)	MERV RATING	MEDIA LENGTH (IN)	AVE AIR PD ("WG)	MERV RATING	MEDIA LENGTH (IN)	AVE AIR PD ("WG)	MANUFUACTUER	MODEL	
AHU-1	LEVEL 4	LIBRARY EXPANSION	37,000	9,250	2.0	1.5	40.0	55.0	600	41	130	100	10	450	0.08	77.1	68.3	52.0	52.0	1,855	1,027	185	42.0	62.0	4.0	30	400	0.8	8	2	0.65	13	12	0.90	XNRGY	-	(3)
AHU-2	LEVEL 4	LIBRARY EXPANSION	37,000	9,250	2.0	1.5	40.0	55.0	600	41	130	100	10	450	0.08	77.1	68.3	52.0	52.0	1,855	1,027	185	42.0	62.0	4.0	30	400	0.8	8	2	0.65	13	12	0.90	XNRGY	-	(3)

REMARKS:
(1) REFER TO UNIT MOUNTED FAN SCHEDULE FOR FAN REQUIREMENTS.
(2) USE AVERAGE FILTER PRESSURE DROP FOR CALCULATING TOTAL STATIC PRESSURE.
(3) PROVIDE UV-C LIGHT DOWNSTREAM OF COOLING COIL.

SPLIT-SYSTEM AIR HANDLING UNITS

23 8126

MARK	LOCATION	SERVICE	SA FAN				MOTOR			DX COOLING COIL (1)								HOT GAS REHEAT COIL				FILTER (2)			ELECTRICAL				ASSOCIATED	BASIS OF DESIGN		REMARKS
			CFM	MIN. OA (CFM)	ESP ("WG)	QTY (N)	MAX BHP EACH FAN	HP EACH FAN	ECM	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	MAX. FACE VEL (FPM)	MAX. AIR PD ("WG)	REF. TYPE	EAT (°F)	LAT (°F)	CAPACITY (MBH)	MAX. FACE VEL (FPM)	MAX. AIR PD ("WG)	MERV RATING	MEDIA LENGTH (IN)	AVE AIR PD ("WG)	FLA	PH	VOLT	GENERATOR POWER	CONDENSING UNIT (1)	MANUFUACTURER	MODEL	
AHU-3	MECH 1079	SPECIAL COLLECTIONS	7,000	0	2.5	2	5.7	8.0	YES	64.3	56.3	48.5	48.5	201	146	405	0.6	R-410A	45.0	55.0	75.0	500	0.1	15	4	1.00	17.0	3	460	YES	CU-3	AAON	V3	(3) (4)
AHU-4	MECH 1079	SPECIAL COLLECTIONS	7,000	0	2.5	2	5.7	8.0	YES	64.3	56.3	48.5	48.5	201	146	405	0.6	R-410A	45.0	55.0	75.0	500	0.1	15	4	1.00	17.0	3	460	YES	CU-4	AAON	V3	(3) (4)

REMARKS:
(1) REFER TO SPLIT SYSTEM CONDENSING UNIT SCHEDULE FOR CONDESNING UNIT REQUIREMENTS. DX COOLING COIL PERFORMANCE IS RATED AT 95°F DB / 75°F WB AMBIENT CONDITIONS. APPROXIMATE REFRIGERANT LINE DISTANCES: 40'-0" HORIZONTAL, 15'-0" VERTICAL UP, 8'-0" VERTICAL DOWN, 10 ELBOWS.
(2) USE AVERAGE FILTER PRESSURE DROP FOR CALCULATING TOTAL STATIC PRESSURE.
(3) PROVIDE UV-C LIGHT DOWNSTREAM OF COOLING COIL.
(4) UNITS DESIGNED FOR 100% REDUNDANCY.

UNIT MOUNTED FANS

23 7323

MARK	LOCATION	SERVICE	CFM (PER FAN) (N)	TSP ("WG) (1)	FAN		WHEEL TYPE		MAX FAN RPM	FAN CLASS	DAMPER	MOTOR					MAX SOUND POWER								BASIS OF DESIGN		REMARKS
					TYPE	DRIVE	TYPE	MIN. DIA. (IN)				MAX BHP EACH FAN	HP EACH FAN	ECM	PH	VOLT	GENERATOR POWER	FREQUENCY (HZ) 63	125	250	500	1000	2000	4000	8000	MANUFACTURER	MODEL	
SF-1-1 THRU 4	AHU-1	SUPPLY	9,250	5.2	PLENUM	DIRECT	AF	22	2,600	II	BACKDRAFT	11.3	16.0	YES	3	460	NO	17	92	103	101	103	97	97	89	EBM PAPST	K3G560	(2)
SF-2-1 THRU 4	AHU-2	SUPPLY	9,250	5.2	PLENUM	DIRECT	AF	22	2,600	II	BACKDRAFT	11.3	16.0	YES	3	460	NO	17	92	103	101	103	97	97	89	EBM PAPST	K3G560	(2)
RF-1-1 THRU 4	AHU-1	RETURN	9,250	2.1	PLENUM	DIRECT	AF	25	1,750	I	BACKDRAFT	4.5	9.5	YES	3	460	NO	77	75	89	84	81	78	74	67	EBM PAPST	K3G630	(3)
RF-2-1 THRU 4	AHU-2	RETURN	9,250	2.1	PLENUM	DIRECT	AF	25	1,750	I	BACKDRAFT	4.5	9.5	YES	3	460	NO	77	75	89	84	81	78	74	67	EBM PAPST	K3G630	(3)

REMARKS:
(1) COORDINATE TOTAL STATIC PRESSURE WITH AIR HANDLER REQUIREMENTS.
(2) SUPPLY FAN ARRAY SHALL CONSIST OF 4 FANS, MINIMUM.
(3) RETURN FAN ARRAY SHALL CONSIST OF 4 FANS, MINIMUM.

SPLIT-SYSTEM CONDENSING UNIT

23 8126

MARK	LOCATION	SERVICE	NOMINAL COOLING (MBH)	COMPRESSOR				ELECTRICAL				BASIS OF DESIGN		REMARKS
				QTY	TYPE	REF TYPE	EER	FLA	PH	VOLT	GENERATOR POWER	MANUFACTURER	MODEL	
CU-3	EQPT YARD	AHU-3	240	2	SCROLL	R-410A	11.5	37	3	460	YES	AAON	CFA	(1)
CU-4	EQPT YARD	AHU-4	240	2	SCROLL	R-410A	11.5	37	3	460	YES	AAON	CFA	(1)

REMARKS:
(1) COMPRESSORS SHALL BE CAPABLE OF MODULATING UNIT CAPACITY FROM 10-100%.

PUMPS

23 2123

MARK	LOCATION	SERVICE	TYPE	CAP. (GPM)	DISCH. HEAD (FT)	MIN. NPSH REQ'D (FT)	MIN. EFF. (%)	MAX. BHP	SIZE (IN) SUCT.	DISCH.	IMPELLER DIA.	MOTOR HP	RPM	VOLT	PH	VFD	GENERATOR POWER	BASIS OF DESIGN MANUFACTURER	MODEL	REMARKS
P-CHW-1	MECHANICAL 1079	CHILLED WATER	VERTICAL INLINE	280	75	11.0	73.1	7.3	3.0	3.0	9.5	10.0	1,750	460	3	YES	NO	B&G	e-80SC	(1) (3)
P-CHW-2	MECHANICAL 1079	CHILLED WATER	VERTICAL INLINE	280	75	11.0	73.1	7.3	3.0	3.0	9.5	10.0	1,750	460	3	YES	NO	B&G	e-80SC	(1) (3)
P-HW-1	MECHANICAL 1079	HEATING HOT WATER	VERTICAL INLINE	160	75	5.2	67.3	4.5	2.5	2.5	9.5	7.5	1,750	460	3	YES	NO	B&G	e-80SC	(2) (3)
P-HW-2	MECHANICAL 1079	HEATING HOT WATER	VERTICAL INLINE	160	75	5.2	67.3	4.5	2.5	2.5	9.5	7.5	1,750	460	3	YES	NO	B&G	e-80SC	(2) (3)
P-FP-1	AHU-1 PREHEAT COIL	AHU-1 FREEZE PROTECTION	VERTICAL INLINE	41	20	4.1	54.2	0.4	1.5	1.5	8.4	0.75	1,127	208	1	NO	NO	B&G	e-80SC	
P-FP-2	AHU-2 PREHEAT COIL	AHU-2 FREEZE PROTECTION	VERTICAL INLINE	41	20	4.1	54.2	0.4	1.5	1.5	8.4	0.75	1,127	208	1	NO	NO	B&G	e-80SC	

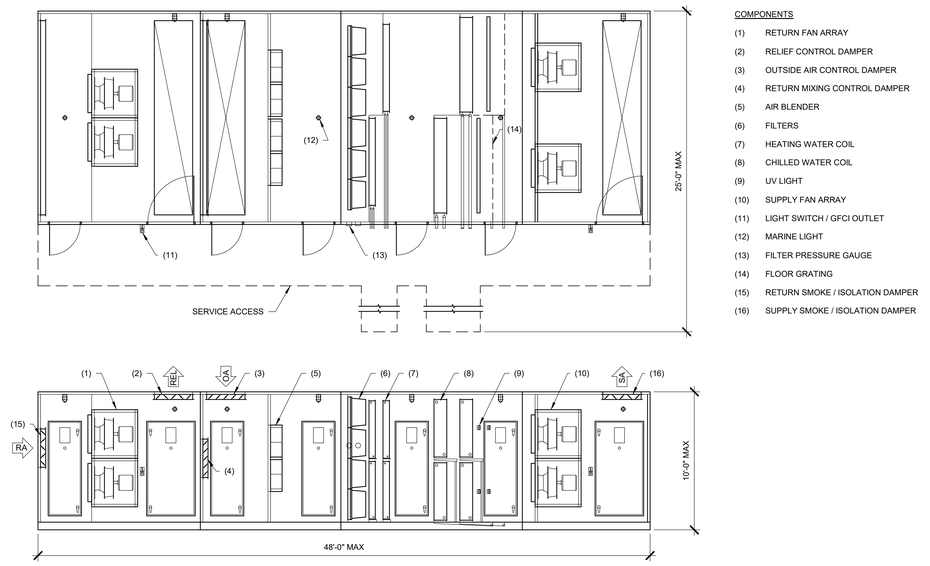
REMARKS:
(1) SYSTEM SIZED FOR (2) PUMPS AT 70%
(2) SYSTEM SIZED FOR (2) PUMPS AT 70%
(3) PUMP TO BE PROVIDED WITH BASE PLATE FOR ATTACHMENT TO FLOOR MOUNTED PIPE STAND STEEL PLATE. REFER TO MECHANICAL DETAILS FOR ADDITIONAL INFORMATION.

VARIABLE FREQUENCY DRIVES

23 0515

MARK	EQUIPMENT	TOTAL HP	VOLTS / PHASE	INPUT LINE REACTOR	OUTPUT DV/DT FILTER	FVNR BYPASS	HARMONIC TRAP	SINGLE ENCLOSURE	REMARKS
VFD-P-CHW-1	P-CHW-1	10	460 / 3	Y	N	Y	N	Y	
VFD-P-CHW-2	P-CWH-2	10	460 / 3	Y	N	Y	N	Y	
VFD-P-HW-1	P-HW-1	7.5	460 / 3	Y	N	Y	N	Y	
VFD-P-HW-2	P-HW-2	7.5	460 / 3	Y	N	Y	N	Y	

REMARKS:



COMPONENTS
(1) RETURN FAN ARRAY
(2) RELIEF CONTROL DAMPER
(3) OUTSIDE AIR CONTROL DAMPER
(4) RETURN MIXING CONTROL DAMPER
(5) AIR BLENDER
(6) FILTERS
(7) HEATING WATER COIL
(8) CHILLED WATER COIL
(9) UV LIGHT
(10) SUPPLY FAN ARRAY
(11) LIGHT SWITCH / GFCI OUTLET
(12) MARINE LIGHT
(13) FILTER PRESSURE GAUGE
(14) FLOOR GRATING
(15) RETURN SMOKE / ISOLATION DAMPER
(16) SUPPLY SMOKE / ISOLATION DAMPER

1 **AHU-1,2 DETAIL**
SCALE: NOT TO SCALE
AHU-2 SHOWN ABOVE, AHU-1 IS MIRRORED CONFIGURATION

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05/14/22

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202.197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

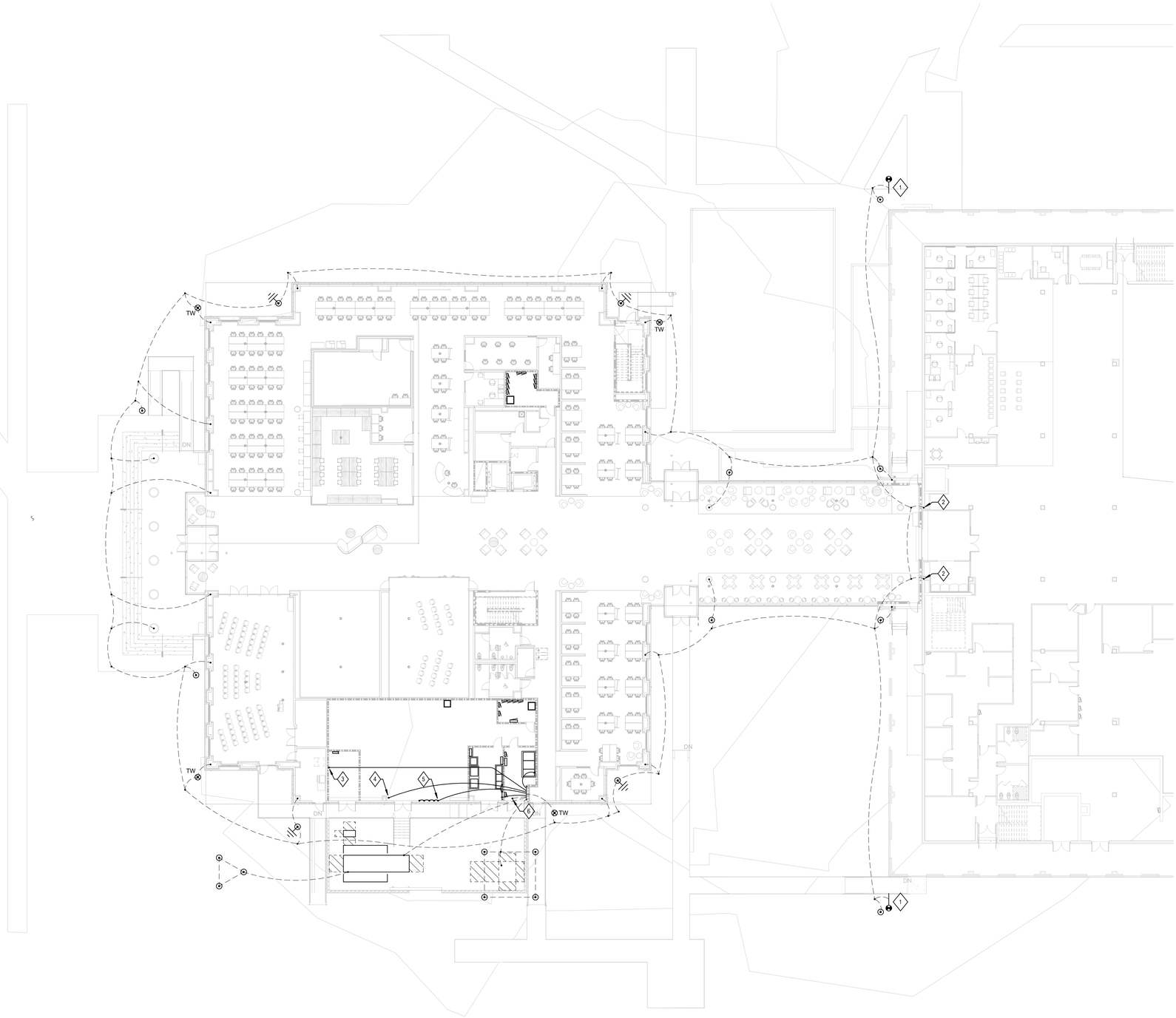
SHEET NAME:
MECHANICAL SCHEDULES

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
M600

PACKAGE A - BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE



#	SHEET KEYNOTES
1.	CONNECT TO EXISTING GROUND LOOP.
2.	TIE NEW GROUNDING SYSTEM INTO EXISTING RANDALL LIBRARY STRUCTURAL STEEL. COORDINATE THIS WORK WITH EXISTING LIBRARY RENOVATION.
3.	GROUND CONNECTION FOR FIRE PUMP CONTROLLER.
4.	GROUND CONNECTION FOR GAS METER.
5.	GROUND CONNECTION FOR BUILDING WATER ENTRANCE. ALL METAL PIPES ENTERING THE BUILDING SHALL BE BONDED TOGETHER AND TIED INTO THE GROUNDING SYSTEM.
6.	GROUND CONNECTION TO REBAR WITHIN BUILDING FOOTING.

1 **ELECTRICAL GROUNDING SITE PLAN**
SCALE: 1/16" = 1'-0"

8 0 4 8 16
GRAPHIC SCALE IN FEET

UNCW

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NORTH CAROLINA PROFESSIONAL SEAL 023265 ENGINEER WILLIAM D. HERMEN
02/14/22

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC

SCO ID: 18-19655-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

KEY PLAN:

PROJECT NORTH

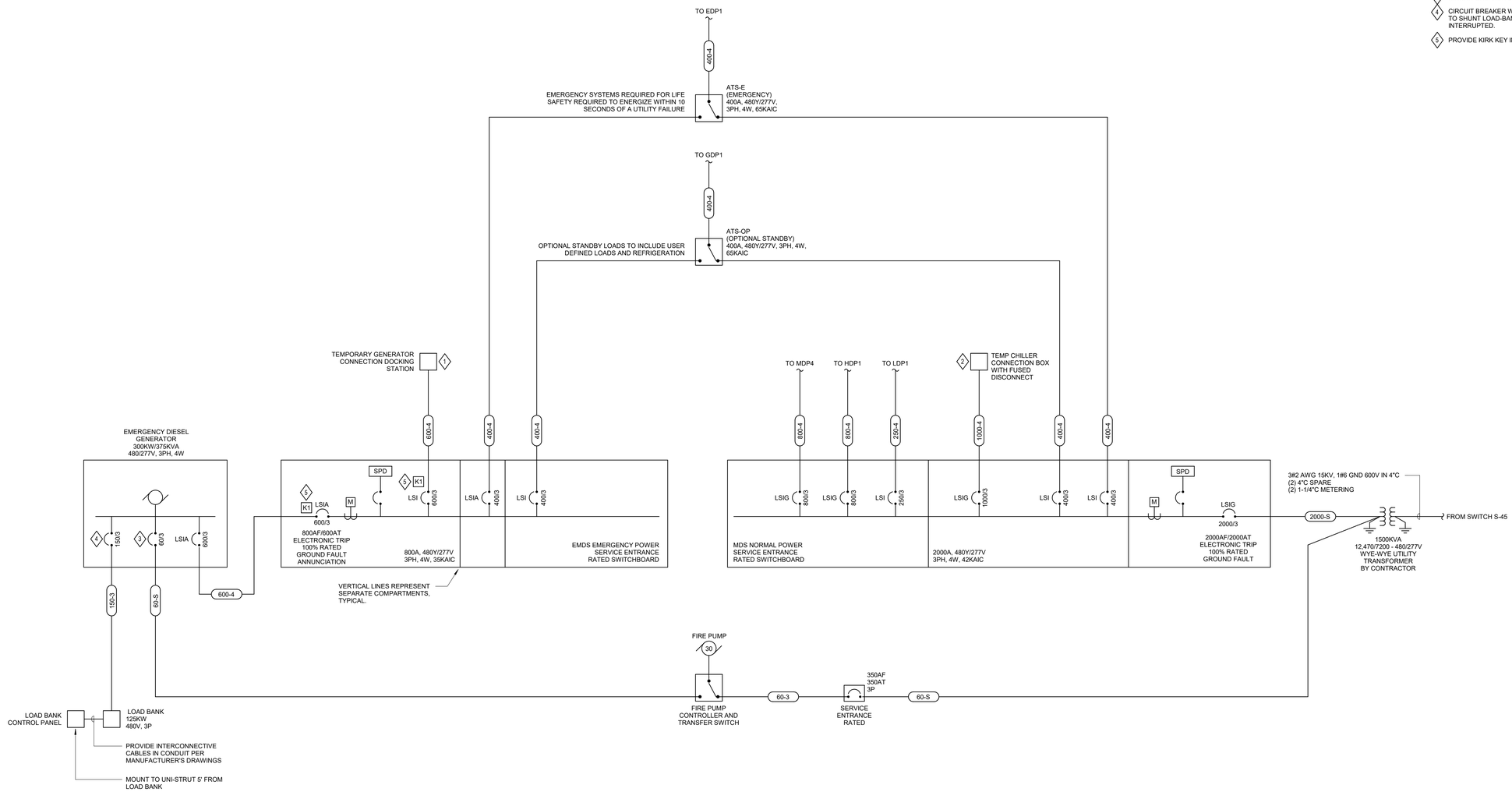
SHEET NAME:
ELECTRICAL GROUNDING SITE PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
E101

PACKAGE A - BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TWENTY SCALE WHEN PLOTTED



GENERAL NOTES:

1. TRANSFORMERS SHALL BE GROUNDED PER NEC AND SPECIFICATIONS.
2. GENERATOR IS REQUIRED TO START AND ENERGIZE TRANSFER SWITCH 'E' WITHIN 10 SECONDS OF A UTILITY POWER FAILURE AND SWITCH 'OP' WITHIN 60 SECONDS.

SHEET KEYNOTES:

1. PROVIDE CAM-STYLE CONNECTORS AND A HINGED BOTTOM COVER FOR TEMPORARY GENERATOR CONNECTION.
2. LOCATE TEMP CHILLER CONNECTION BOX NEAR PIPING CONNECTION PER MECHANICAL DRAWINGS.
3. CIRCUIT BREAKER SHALL BE INSTANTANEOUS-ONLY.
4. CIRCUIT BREAKER WITH SHUNT-TRIP FUNCTIONALITY TO SHUNT LOAD-BANK WHEN UTILITY POWER IS INTERRUPTED.
5. PROVIDE KIRK KEY INTERLOCK.

Cu FEEDER SCHEDULE - SEPARATELY DERIVED SYSTEMS

FEEDER TAG	# OF SETS	CURRENT CARRYING CONDUCTORS	GROUND CONDUCTOR	CONDUIT SIZE	FEEDER AMPACITY	GEC	COMMENTS
50-T	1	4 # 6	1 # 8	1"	55	1 # 8	
100-T	1	4 # 1	1 # 6	1-1/2"	130	1 # 6	
150-T	1	4 # 1/0	1 # 4	2"	175	1 # 4	
225-T	1	4 # 4/0	1 # 2	2-1/2"	230	1 # 2	

Cu FEEDER SCHEDULE - SERVICES

FEEDER TAG	# OF SETS	CURRENT CARRYING CONDUCTORS	GROUND CONDUCTOR	CONDUIT SIZE	FEEDER AMPACITY	GEC	COMMENTS
60 - S	1	4 # 4	-	2"	70	1 # 8	
2000 - S	6	4 # 400 KCMIL	-	4"	2010	1 # 3/0	PROVIDE (2) 4"C. & (3) 1-1/4" SPARE

Cu FEEDER SCHEDULE - 3 WIRE AND GROUND

FEEDER TAG	# OF SETS	CURRENT CARRYING CONDUCTORS	GROUND CONDUCTOR	CONDUIT SIZE	FEEDER AMPACITY	COMMENTS
30 - 3	1	3 # 10	1 # 10	3/4"	30	
60 - 3	1	3 # 4	1 # 8	1"	70	
80 - 3	1	3 # 3	1 # 8	1-1/4"	85	
90 - 3	1	3 # 2	1 # 8	1-1/4"	95	
150 - 3	1	3 # 1/0	1 # 6	1-1/2"	150	
175 - 3	1	3 # 2/0	1 # 6	2"	175	
225 - 3	1	3 # 4/0	1 # 4	2"	230	

Cu FEEDER SCHEDULE - 4 WIRE AND GROUND

FEEDER TAG	# OF SETS	CURRENT CARRYING CONDUCTORS	GROUND CONDUCTOR	CONDUIT SIZE	FEEDER AMPACITY	COMMENTS
100 - 4	1	4 # 2	1 # 8	1-1/2"	115	
225 - 4	1	4 # 4/0	1 # 4	2-1/2"	230	
250 - 4	1	4 # 250 KCMIL	1 # 4	3"	255	
400 - 4	2	4 # 3/0	1 # 3	2-1/2"	400	
600 - 4	2	4 # 350 KCMIL	1 # 1	3-1/2"	620	
800 - 4	3	4 # 300 KCMIL	1 # 1/0	3"	855	
1000 - 4	3	4 # 400 KCMIL	1 # 2/0	3"	1005	

THIS SHEET IS FOR REFERENCE FOR PRE-PURCHASED EQUIPMENT ONLY

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
ELECTRICAL ONE-LINE DIAGRAM

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
E400

PACKAGE A - BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE FULL SCALE PRINTING SIZE

SHEET KEYNOTES

1 DEDICATED SECTION FOR EMERGENCY ATS

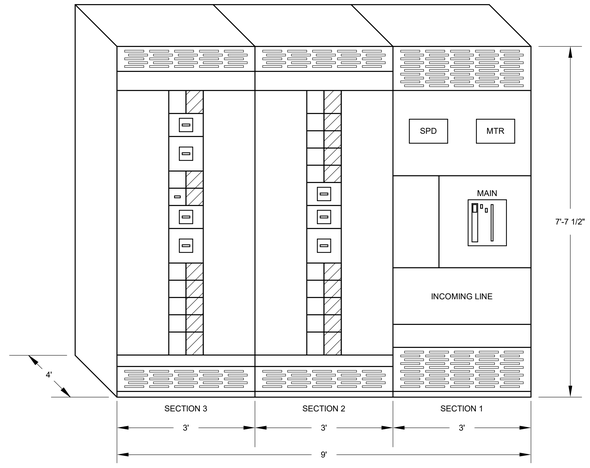
SWITCHBOARD MDS

MAIN TYPE MCB
MAIN RATING 2000 A
BUS RATING 2000 A
VOLTAGE 480/277 Wye
3 PHASE **4 WIRE**
MOUNTING Free-Standing
ENCLOSURE NEMA 1
LOCATION LEVEL 1,
FED FROM
SCCR kA
CALCULATED AVAILABLE FAULT... 30.3 kA

REMARKS:

SPACE	DESCRIPTION	CONNECTED LOAD (kVA)	FRAME	TRIP	POLES	BRKR NOTES	NOTES
1	ATS-E	13.688 kVA	400 A	400 A	3		
2	ATS-OP	207.680 kVA	400 A	400 A	3		
3	TEMPORARY CHILLER CONNECTION	625.000 kVA	1000 A	1000 A	3		
4	LDP1	51.697 kVA	250 A	250 A	3		
5	MDP4	18.456 kVA	800 A	800 A	3		
6	HDP1	219.434 kVA	400 A	400 A	3		
7	Spare	0.000 kVA	--	800 A	3		
8	Spare	0.000 kVA	--	400 A	3		
9	Space	0.000 kVA	--	--	--	--	
10	Space	0.000 kVA	--	--	--	--	
11	Space	0.000 kVA	--	--	--	--	
12	Space	0.000 kVA	--	--	--	--	
13	Space	0.000 kVA	--	--	--	--	
14	Space	0.000 kVA	--	--	--	--	
15	Space	0.000 kVA	--	--	--	--	
16	Space	0.000 kVA	--	--	--	--	
17	Space	0.000 kVA	--	--	--	--	
18	Space	0.000 kVA	--	--	--	--	
19	Space	0.000 kVA	--	--	--	--	
20	SPD	0.000 kVA	--	100 A	3		

LOAD CLASSIFICATION	CONNECTED (KVA)	DEMAND FACTOR	DEMAND (KVA)
POWER	668.936 kVA	100%	668.936 kVA
LIGHTING	61.145 kVA	125%	76.431 kVA
MOTOR	239.950 kVA	125% LARGEST, 100% OTHER	250.405 kVA
RECEPTACLES	165.924 kVA	100% FIRST 10KVA, 50% OTHER	87.962 kVA
HEATING	0.000 kVA	125%	0.000 kVA
TOTAL LOAD	1135.955 kVA		1083.734 kVA
TOTAL AMPS	1366 A		1304 A



1 **SWITCHBOARD MDS ELEVATION**
SCALE: NOT TO SCALE

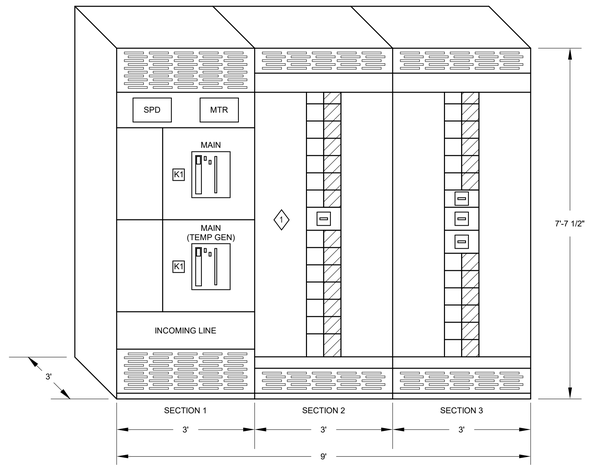
SWITCHBOARD EMDS

MAIN TYPE MCB
MAIN RATING 600 A
BUS RATING 800 A
VOLTAGE 480/277 Wye
3 PHASE **4 WIRE**
MOUNTING FLOOR
ENCLOSURE NEMA 1
LOCATION LEVEL 1,
FED FROM
SCCR 35 kA
CALCULATED AVAILABLE FAULT... 29.5 kA

REMARKS:

SPACE	DESCRIPTION	CONNECTED LOAD (kVA)	FRAME	TRIP	POLES	BRKR NOTES	NOTES
1	TEMP GENERATOR CONNECTION	0.000 kVA	--	600 A	3		
2	ATS-E	13.688 kVA	400 A	400 A	3		
3	ATS-OP	207.680 kVA	400 A	400 A	3		
4	Spare	0.000 kVA	--	400 A	3		
5	Spare	0.000 kVA	--	250 A	3		
6	Space	0.000 kVA	--	--	--	--	
7	Space	0.000 kVA	--	--	--	--	
8	Space	0.000 kVA	--	--	--	--	
9	Space	0.000 kVA	--	--	--	--	
10	Space	0.000 kVA	--	--	--	--	
11	Space	0.000 kVA	--	--	--	--	
12	Space	0.000 kVA	--	--	--	--	
13	Space	0.000 kVA	--	--	--	--	
14	Space	0.000 kVA	--	--	--	--	
15	Space	0.000 kVA	--	--	--	--	
16	Space	0.000 kVA	--	--	--	--	
17	Space	0.000 kVA	--	--	--	--	
18	Space	0.000 kVA	--	--	--	--	
19	Space	0.000 kVA	--	--	--	--	
20	SPD	0.000 kVA	--	100 A	3		

LOAD CLASSIFICATION	CONNECTED (KVA)	DEMAND FACTOR	DEMAND (KVA)
POWER	25.480 kVA	100%	25.480 kVA
LIGHTING	9.448 kVA	125%	11.810 kVA
MOTOR	183.200 kVA	125% LARGEST, 100% OTHER	193.655 kVA
RECEPTACLES	3.240 kVA	100% FIRST 10KVA, 50% OTHER	3.240 kVA
HEATING	0.000 kVA	125%	0.000 kVA
TOTAL LOAD	221.368 kVA		234.185 kVA
TOTAL AMPS	266 A		282 A



2 **SWITCHBOARD EMDS ELEVATION**
SCALE: NOT TO SCALE

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
ELECTRICAL SCHEDULES & ELEVATIONS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
E602

PACKAGE A - BID DOCUMENTS

ELECTRICAL SYMBOLS AND ABBREVIATIONS

NOTES: ALL DIMENSIONS ARE CENTERLINE MEASURED FROM FINISHED FLOOR UNLESS OTHERWISE NOTED.

SHEET SYMBOLS

- SCHEDULED EQUIPMENT DESIGNATION. -TOP INDICATES EQUIPMENT ABBREVIATION -BOTTOM INDICATES EQUIPMENT NUMBER REFER TO EQUIPMENT SCHEDULES
- SPECIALTY ITEMS (I.E. GAUGE FILTER, ETC.) REFER TO EQUIPMENT LIST
- PLAN CONTINUATION REFERENCE. -BOTTOM INDICATES ON WHICH SHEET CONTINUATION APPEARS
- SECTION DESIGNATION. -TOP INDICATES SECTION NUMBER, -BOTTOM INDICATES ON WHICH SHEET SECTION APPEARS
- DETAIL REFERENCE. -TOP INDICATES SECTION NUMBER, -BOTTOM INDICATES ON WHICH SHEET SECTION APPEARS
- A/15B-6 DETAIL REFERENCE. -TOP INDICATES SECTION NUMBER, -BOTTOM INDICATES ON WHICH SHEET SECTION APPEARS
- MATCHLINE DESIGNATION
- ELEVATION DESIGNATION. REFERENCE OFFICIAL PROJECT DATUM
- REVISION REFERENCE. REFER TO SHEET REVISION BLOCK
- SHEET KEYNOTE REFERENCE
- ROOM NAME & NUMBER DESIGNATION
- CONSTRUCTION BULLETIN REVISION NUMBER
- POINT OF NEW CONNECTION TO EXISTING
- HALFTONE LIGHT LINE INDICATES EXISTING WORK
- HEAVY DASHED LINE WITH HATCH INDICATES EXISTING WORK TO BE DEMOLISHED
- HEAVY LINE INDICATES NEW WORK

BRANCH CIRCUIT SCHEDULE

BRANCH CIRCUIT	BREAKER SIZE	WIRE	CONDUIT
SINGLE POLE - SINGLE PHASE	20A-1P	2#12+1#12G	3/4"C
	30A-1P	2#10+1#10G	3/4"C
	40A-1P	2#8+1#10G	3/4"C
	50A-1P	2#6+1#10G	3/4"C
	60A-1P	2#4+1#10G	1 1/4"C
TWO POLE - SINGLE PHASE	20A-2P	2#12+1#12G	3/4"C
	30A-2P	2#10+1#10G	3/4"C
	40A-2P	2#8+1#10G	3/4"C
	50A-2P	2#6+1#10G	3/4"C
	60A-2P	2#4+1#10G	1 1/4"C
TWO POLE - SINGLE PHASE WITH NEUTRAL	20A-2P	3#12+1#12G	3/4"C
	30A-2P	3#10+1#10G	3/4"C
	40A-2P	3#8+1#10G	3/4"C
	50A-2P	3#6+1#10G	3/4"C
	60A-2P	3#4+1#10G	1 1/4"C
THREE POLE - THREE PHASE	20A-3P	3#12+1#12G	3/4"C
	30A-3P	3#10+1#10G	3/4"C
	40A-3P	3#8+1#10G	3/4"C
	50A-3P	3#6+1#10G	3/4"C
	60A-3P	3#4+1#10G	1 1/4"C
THREE POLE - THREE PHASE 4-WIRE WITH NEUTRAL	20A-3P	4#12+1#12G	3/4"C
	30A-3P	4#10+1#10G	3/4"C
	40A-3P	4#8+1#10G	3/4"C
	50A-3P	4#6+1#10G	1"C
	60A-3P	4#4+1#10G	1 1/4"C

ONE LINE DIAGRAM

- TRANSFORMER
- ELECTROSTATIC SHIELDED ISOLATION TRANSFORMER
- METER WITH CURRENT TRANSFORMER
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- MOLDED CASE CIRCUIT BREAKER
- LOW VOLTAGE DRAW-OUT AIR CIRCUIT BREAKER
- MEDIUM-VOLTAGE DRAW-OUT VACUUM CIRCUIT BREAKER
- SWITCH
- GROUNDED "Y" SYSTEM
- DELTA SYSTEM
- AUTOMATIC TRANSFER SWITCH
- PANELBOARD
- ENGINE GENERATOR SET
- FEEDER TAG
- FUSE
- DRAW-OUT FUSE
- SWITCHGEAR, SWITCHBOARD, DISTRIBUTION BOARD ENCLOSURE
- BATTERY

LIGHTING

- UNSHADED REGION DESIGNATES LUMINAIRE FOR NORMAL OPERATION
- SHADED REGION DESIGNATES LUMINAIRE FOR LIFE SAFETY OPERATION
- SHADED REGION DESIGNATES LUMINAIRE FOR CRITICAL OPERATION

LUMINAIRE ID - SEE LUMINAIRE SCHEDULE

X#

##/xx

CIRCUIT/SWITCH

SUFFIX	DESCRIPTION
E	BATTERY PACK/INVERTER

ARROW ADDED TO LUMINAIRE SYMBOL TO INDICATE DIRECTION TOWARDS WHICH THE LUMINAIRE IS TO POINT.

LUMINAIRE SYMBOLS - REFER TO LUMINAIRE SCHEDULE FOR MORE INFORMATION

SMALL PROFILE LUMINAIRE

LIGHTING TRACK

TRACK HEAD

CEILING MOUNTED LUMINAIRES

RECESSED

SURFACE MOUNTED

PENDANT/SUSPENDED

WALL MOUNTED LUMINAIRES

RECESSED

SURFACE MOUNTED

FLOOR OR GRADE MOUNTED LIGHTS

- SINGLE HEAD POLE LIGHT
- DOUBLE HEAD POLE LIGHT
- QUAD HEAD POLE LIGHT
- PEDESTRIAN POLES/POST TOPS
- BOLLARD OR GROUND MOUNTED LUMINAIRE
- INGRADE/IN-SLAB LUMINAIRE

EXIT SIGNS - CEILING MOUNTED

SINGLE FACE — DOUBLE FACE — DIRECTIONAL ARROW

EXIT SIGNS - WALL MOUNTED

SINGLE FACE — DOUBLE FACE — DIRECTIONAL ARROW

EMERGENCY FIXTURE WITH BATTERY PACK

SINGLE HEAD — DOUBLE HEAD

LIGHTING CONTROL

- CONTROL STATION. X = MOUNTING LOCATION: WALL, MOUNTING HEIGHT: 3'-6", y=SWITCH DESIGNATION (lower case), XX= STATION TYPE: TC = TIMECLOCK, PC = PHOTOCELL, LC#= LIGHTING CONTROL STATION, X = TYPE DEFINITION (SEE BELOW)
- SWITCH. X = MOUNTING LOCATION: WALL, MOUNTING HEIGHT: 3'-6", y=SWITCH DESIGNATION (lower case), X=TYPE DEFINITION (SEE BELOW)

TYPE DEFINITION:

X=TYPE DEFINITION
= SINGLE POLE
3 = THREE-WAY SWITCH
4 = FOUR-WAY SWITCH
2 = TWO POLE SWITCH
2P = 2 POLE, DUAL RELAY
I = INDICATOR
K = KEY SWITCH
MC = MOMENTARY CONTACT
D = DIMMER
P = SWITCH WITH PILOT LIGHT
TS = TIMER SWITCH
LV,LV# = LOW VOLTAGE
LV-M = LOW VOLTAGE "M"-MASTER SWITCH
DM = REMOTE CONTROL FOR MOTORIZED DAMPER

- LIGHTING CONTACTOR. MOUNTING LOCATION: WALL, MOUNTING HEIGHT: AS NOTED
- SENSOR SWITCH FOR LIGHTING CONTROL. MOUNTING LOCATION: WALL, MOUNTING HEIGHT: 3'-6", y = SWITCH DESIGNATION (lower case), Z = SENSOR TYPE DESIGNATION (SEE BELOW)
- SENSOR FOR LIGHTING CONTROL. Z MOUNTING LOCATION: CEILING, y = SWITCH DESIGNATION (lower case), Z = SENSOR TYPE DESIGNATION (SEE BELOW)
- SENSOR FOR LIGHTING CONTROL. MOUNTING LOCATION: WALL, MOUNTING HEIGHT: 8'-0", y = SWITCH DESIGNATION (lower case), Z = SENSOR TYPE DESIGNATION (SEE BELOW)

SENSOR TYPE DEFINITION:

Z = SENSOR TYPE DESIGNATION

OCCUPANCY MODE: AUTO ON, AUTO OFF

PIR = PASSIVE INFRARED
PIR/D = PASSIVE INFRARED WITH DIMMER
PIRA = PASSIVE INFRARED WITH AMBIENT LIGHT
2P = 2 POLE, DUAL RELAY
U = ULTRASONIC
DT = DUAL TECHNOLOGY

VACANCY MODE: MANUAL ON, AUTO OFF

VPIR = PASSIVE INFRARED
VPIR/D = PASSIVE INFRARED WITH DIMMER
VPIRA = PASSIVE INFRARED WITH AMBIENT LIGHT
VDT = DUAL TECHNOLOGY

AMBIENT LIGHT

AL = AMBIENT LIGHT SENSOR
PC = PHOTOCELL

DAYLIGHT ZONES

PRIMARY ZONE — SECONDARY ZONE

RECEPTACLES

X = RECEPTACLE TYPE, REFER TO CHART BELOW
Y = NEMA CONFIGURATION, REFER TO CHART BELOW

MOUNTING LOCATION: WALL
MOUNTING HEIGHT: 1'-6"

- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE, EMERGENCY CIRCUIT
- DUPLEX RECEPTACLE, UPPER HALF SWITCHED, LOWER HALF HOT
- SINGLE RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE, EMERGENCY CIRCUIT
- LOCKING RECEPTACLE

ABOVE CASEWORK OR 2" ABOVE COUNTERTOP BACKSPLASH
MOUNTING LOCATION: WALL
MOUNTING HEIGHT: FIELD VERIFY

- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE, EMERGENCY CIRCUIT
- DOUBLE DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE, EMERGENCY CIRCUIT

MOUNTING LOCATION: CEILING

- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE, EMERGENCY CIRCUIT
- DOUBLE DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE, EMERGENCY CIRCUIT

FLOOR BOX
MOUNTING LOCATION: FLOOR

- DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- MULTI-TRADE FLOOR BOX AV, POWER & DATA

RECEPTACLE TYPE DESIGNATION CHART

X = TYPE
AF = AFCI RECEPTACLE
CR = CONTROLLED RECEPTACLE
DR = DEDICATED RECEPTACLE
IG = ISOLATED GROUND RECEPTACLE
GF = GFCI RECEPTACLE
SP = SURGE PROTECTION RECEPTACLE
SR = SPECIAL PURPOSE RECEPTACLE
TR = TAMPER RESISTANT RECEPTACLE
US = USB RECEPTACLE
WP = WEATHERPROOF, GFCI RECEPTACLE

POKE THRU
MOUNTING LOCATION: FLOOR

- DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- MULTI-TRADE AV, POWER & DATA

FIXED EQUIPMENT CONNECTION
MOUNTING HEIGHT/LOCATION: COORDINATE W/ EQUIPMENT

- FIXED EQUIPMENT CONNECTION
- FIXED EQUIPMENT CONNECTION, EMERGENCY CIRCUIT
- FIXED EQUIPMENT CONNECTION, WALL MOUNT
- FIXED EQUIPMENT CONNECTION, WALL MOUNT, EMERGENCY CIRCUIT

MOUNTING LOCATION: SURFACE MOUNTED RACEWAY

- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE, EMERGENCY CIRCUIT
- POWER OUTLET
- POWER OUTLET, EMERGENCY CIRCUIT
- OUTLETS INSTALLED IN SURFACE MOUNTED RACEWAY

POWER OUTLET

- WALL MOUNT, MOUNTING HEIGHT: 1'-6"
- EMERGENCY CIRCUIT, WALL MOUNT MOUNTING HEIGHT: 1'-6"
- CEILING MOUNT
- EMERGENCY CIRCUIT, CEILING MOUNT

NEMA CONFIGURATION CHART

Y = NEMA CONFIGURATION
A = 20A, 125V, NEMA 5-20R
B = 20A, 125V, NEMA L5-20R
C = 30A, 125V, NEMA 5-30R
D = 30A, 125V, NEMA L5-30R
E = 50A, 125V, NEMA 5-50R
F = 50A, 125V, NEMA L5-50R
G = 20A, 250V, NEMA 6-20R
H = 20A, 250V, NEMA L6-20R
J = 30A, 250V, NEMA 6-30R
K = 30A, 250V, NEMA L6-30R
L = 50A, 250V, NEMA 6-50R
M = 50A, 250V, NEMA L6-50R
N = 20A, 250V, NEMA 15-20R
P = 20A, 250V, NEMA L15-20R
Q = 30A, 277V, NEMA 7-30R
R = 30A, 277V, NEMA L7-30R
S = 20A, 125/250V, NEMA 14-20R
T = 20A, 125/250V, NEMA L14-20R
U = 30A, 125/250V, NEMA 14-30R
V = 30A, 125/250V, NEMA L14-30R
W= 50A, 125/208V, NEMA 18-50R
Y = 30A, 125/250V, NEMA 15-30R

EQUIPMENT AND WIRING

- MOTOR
- TRANSFORMER
- PANELBOARD SURFACE MOUNTED
- PANELBOARD FLUSH MOUNTED
- DISTRIBUTION PANELBOARD (NOT TO SCALE)
- MOTOR CONTROL CENTER
- VARIABLE FREQUENCY DRIVE
- AUTOMATIC TRANSFER SWITCH
- PANEL DIVISION ARROW
- PANEL DIVISION LINE
- CABLE TAP BOX
- BUSWAY PLUG-IN UNIT
- REMOTE GENERATOR ANNUNCIATOR
- SURFACE JUNCTION BOX
- SURFACE JUNCTION BOX - WALL
- FLUSH JUNCTION BOX - CEILING
- FLUSH JUNCTION BOX - WALL
- FLUSH JUNCTION BOX - FLOOR
- RELAY - TYPE AS NOTED
- KIRK KEY INTERLOCK
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- ENCLOSED CIRCUIT BREAKER
- MAGNETIC MOTOR STARTER
- COMBINATION MOTOR STARTER
- PUSH BUTTON
- PUSH BUTTON - DOUBLE
- GROUND CONNECTION
- REMOTE GROUND INDICATOR
- ROOM REFERENCE GROUND POINT
- AIR TERMINAL
- GROUND ROD
- GROUND ROD WITH TEST WELL

HOMERUN

A-1,3,5

- INDICATES NUMBER OF CONDUCTORS
- INDICATES NEUTRAL CONDUCTOR
- INDICATES GROUND CONDUCTOR

A-1,3,5 = PANEL AND CIRCUITS: PANEL A, CIRCUITS 1,3,5

FIRE ALARM

NOTES:

1. WALL MOUNTED NOTIFICATION DEVICES MOUNTING HEIGHT: 80" AFF TO BOTTOM OF FACEPLATE OR 6" FROM TOP OF FACEPLATE TO CEILING, WHICH EVER IS LOWER.
2. ALL CEILING MOUNTED DEVICES MOUNTED IN HARD LID CEILING TO BE CENTER CENTERED ON TILE, UNO.
3. ALL CEILING MOUNTED DEVICES MOUNTED IN HARD LID CEILING TO BE CENTER ALIGNED WITH OTHER NEARBY CEILING EQUIPMENT, UNO.
4. PULL STATIONS TO BE MOUNTED 4'-0" AFF, UNO.

- MANUAL FIRE ALARM BOX TYPES XX=TYPE: CO2 = CARBON DIOXIDE, DC = DRY CHEMICAL, DH = DOOR HOLDER, HL = HALON, F = PULL STATION/FIRE ALARM BOX, FO = FOAM, WC = WET CHEMICAL, CA = CLEAN AGENT, WM = WATER MIST, DL = DELUGE FIRE SPRINKLER, PRE = PREACTION, MB = FIRE ALARM MASTER BOX, DK = DRILL KEY, DS = DOOR HOLDER W/ SMOKE DETECTOR
- SWITCH XX=TYPE: M = MANUAL RELEASING SWITCH, TS = TAMPER SWITCH, WF = FLOW DETECTOR/SWITCH, PS = PRESSURE DETECTOR/SWITCH, LS = LEVEL DETECTOR/SWITCH, TSS = TEMPERATURE SUPERVISORY SWITCH, HT = HIGH TEMPERATURE SWITCH, LT = LOW TEMPERATURE SWITCH, VS = VALVE SUPERVISORY SWITCH
- VALVE WITH SUPERVISORY SWITCH
- ABORT SWITCH XX=TYPE: A = ABORT SWITCH, CO2 = CARBON DIOXIDE, DC = DRY CHEMICAL, HL = HALON, FO = FOAM, WC = WET CHEMICAL, CA = CLEAN AGENT, WM = WATER MIST, DL = DELUGE FIRE SPRINKLER, PRE = PREACTION
- HEAT DETECTOR/SENSOR XX=TYPE: R/F = COMBINATION RATE OF RISE / FIXED TEMPERATURE, R/C = RATE COMPENSATION, F = FIXED TEMPERATURE, R = RATE OF RISE ONLY
- SMOKE DETECTOR/SENSOR XX=TYPE: AS = AIR SAMPLING, P = PHOTOELECTRIC, I = IONIZATION, R = RELAY BASE, SS = SINGLE STATION, SB = SOUNDER BASE, ID = IN DUCT, BT = BEAM TRANSMITTER, BR = BEAM RECEIVER
- SMOKE DETECTOR/SENSOR FOR DUCT
- GAS DETECTOR/SENSOR XX=TYPE: CO2 = CARBON DIOXIDE, CO = CARBON MONOXIDE, HCL = HYDROGEN CHLORIDE, CH4 = METHANE
- FLAME DETECTOR/SENSOR XX=TYPE: UV = ULTRAVIOLET, IR = INFRARED, UV/IR = COMBINATION UV / INFRARED, VR = VISIBLE RADIATION
- WATER DETECTOR
- MODULES XXX = TYPE: AIM = ADDRESSABLE INPUT MONITOR MODULE, AOM = ADDRESSABLE OUTPUT CONTROL MODULE, IO = ISOLATION MODULE, AIO = ADDRESSABLE INPUT/ OUTPUT MONITOR MOUDLE

# DENOTES NUMBER OF INPUTS/OUTPUTS

- HORN ONLY
- MINI-HORN
- CHIME - ELECTRONIC
- SPEAKER ONLY
- COMBINATION HORN/STROBE
- COMBINATION SPEAKER/VISIBLE cd = CANDELA RATING/SETTING
- EMERGENCY SPEAKER/VISIBLE cd = CANDELA RATING/SETTING
- BELL - VIBRATING
- BELL - SINGLE STROKE
- BELL - TROUBLE
- BELL - GONG
- BELL - CHIME

FOR THE ABOVE SYMBOLS: C=CEILING MOUNTED, W=WALL MOUNTED

- VISIBLE ONLY (STROBE) WALL MOUNT cd = CANDELA RATING/SETTING
- VISIBLE ONLY (STROBE) CEILING MOUNT cd = CANDELA RATING/SETTING
- EMERGENCY VISIBLE ONLY (STROBE) WALL MOUNT cd = CANDELA RATING/SETTING
- EMERGENCY VISIBLE ONLY (STROBE) CEILING MOUNT cd = CANDELA RATING/SETTING
- REMOTE INDICATOR
- CEILING MOUNT INDICATOR
- ROTATING BEACON
- REMOTE ALARM INDICATING AND TEST SWITCH
- FIRE SERVICE OR EMERGENCY PHONE STATION - ACCESSIBLE
- FIRE SERVICE OR EMERGENCY PHONE STATION - BASIC SHAPE
- FIRE SERVICE OR EMERGENCY PHONE STATION - HANDSET
- FIRE SERVICE OR EMERGENCY PHONE STATION - JACK
- FLOOR WARDEN STATION
- CONTROL PANELS/UNITS XXXX=TYPE: FACP = FIRE ALARM CONTROL PANEL, FAA = FIRE ALARM ANNUNCIATOR, FACU = FIRE ALARM CONTROL UNIT, FATC = FIRE ALARM TERMINAL CABINET, ECCU = EMERGENCY COMMUNICATIONS CONTROL UNIT, FSCP = FIRE SUPPRESSION CONTROL PANEL, FSCU = FIRE SUPPRESSION CONTROL UNIT, FAC = FIRE ALARM COMMUNICATOR, SAP = SPRINKLER ALARM PANEL, WCU = WIRELESS CONTROL UNIT, MFACU = MASTER FIRE ALARM CONTROL UNIT, BATT = BATTERY CABINET, EVAC = VOICE EVACUATION CONTROL UNIT, NPS = NOTIFICATION POWER SUPPLY, GAP = GRAPHIC ANNUNCIATOR PANEL, ARCM = AREA OF REFUGE MASTER UNIT, ARCR = AREA OF REFUGE REMOTE UNIT

ELECTRICAL EQUIPMENT DESIGNATION CODE

01NPLA2

LEVEL:
0G - GROUND
01 - LEVEL 1
02 - LEVEL 2
03 - LEVEL 3
04 - LEVEL 4
05 - LEVEL 5
0R - ROOF

APPLICATION:
N - NORMAL BRANCH
Z - EQUIPMENT BRANCH - PRIORITY "0"
C - CRITICAL BRANCH - PRIORITY "1"
S - LIFE SAFETY BRANCH - PRIORITY "1"
E - EQUIPMENT BRANCH - PRIORITY "2"
O - OPTIONAL EQUIPMENT BRANCH - PRIORITY "3"
U - UNINTERUPTABLE POWER SUPPLY (UPS)
G - GENERATOR (NON-TRANSFER SWITCH)

PANEL:
1
2
3
4
...ETC

AREA:
A - ELECTRICAL ROOM
B - ELECTRICAL ROOM
...ETC

VOLTAGE:
V - 15KV (UTILITY)
H - 480V, 480Y/277V
L - 240V, 208Y/120V

EQUIPMENT:
M - MEDIUM VOLTAGE GEAR
G - SWITCHGEAR
S - SWITCHBOARD
D - DISTRIBUTION PANEL
P - BRANCH CIRCUIT PANELBOARD
A - AUTOMATIC TRANSFER SWITCH
T - TRANSFORMER
B - BUSWAY
LCP - LIGHTING CONTROL PANEL
U - UNINTERRUPTIBLE POWER SUPPLY
I - ISOLATION POWER PANEL

ELECTRICAL ABBREVIATIONS

A	- AMPERES	LAN	- LOCAL AREA NETWORK
AC	- ABOVE CEILING / ALTERNATING CURRENT	LED	- LIGHT EMITTING DIODE
ADO	- AUTOMATIC DOOR OPENER	LI	- LONG-TIME/INSTANTANEOUS
AF	- AMPERE FRAME	LSI	- LONG-TIME/SHORT-TIME/ INSTANTANEOUS
AFCI	- ARC FAULT CIRCUIT INTERRUPTER	LSIA	- LONG-TIME/SHORT-TIME/ INSTANTANEOUS/GROUND
AFF	- ABOVE FINISHED FLOOR	ALARM	
AIC	- AMP INTERRUPTING CAPACITY	LSIG	- LONG-TIME/SHORT-TIME/ INSTANTANEOUS/GROUND
ALT	- ALTERNATE	LTCP	- LOCAL TEMPERATURE CONTROL PANEL
ARCH	- ARCHITECTURAL	LTG	- LIGHTING
ASC	- ABOVE SUSPENDED CEILING	LTS	- LIGHTS
AT	- AMPERE TRIP	LV	- LOW VOLTAGE
ATC	- ASTRONOMIC TIME CLOCK		
ATS	- AUTOMATIC TRANSFER SWITCH	MATV	- MASTER ANTENNA TELEVISION
AUTO	- AUTOMATIC	MC	- MECHANICAL CONTRACTOR
BC	- BARE COPPER	MCB	- MAIN CIRCUIT BREAKER
BFC	- BELOW FINISH CEILING	MCC	- MOTOR CONTROL CENTER
BFL	- BELOW FLOOR LEVEL	MCP	- MOTOR CIRCUIT PROTECTOR
BLDG	- BUILDING	MER	- MECHANICAL EQUIPMENT ROOM
BPIP	- BOILER PLANT INSTRUMENTATION PANEL	MH	- MANHOLE
BRKR	- BREAKER	MLO	- MAIN LUGS ONLY
		MPTB	- MUSIC & PAGE TERMINAL BOX
C	- CONDUIT	MTD	- MOUNTED
CB	- CIRCUIT BREAKER	MTG	- MOUNTING
CCTV	- CLOSED CIRCUIT TELEVISION	MTG HGT	- MOUNTING HEIGHT
CFCI	- CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	MTR	- MOTOR / METER
		MV	- MEDIUM VOLTAGE
CGL	- CEILING		
CKT	- CIRCUIT	NA	- NOT APPLICABLE
CO	- CONDUIT ONLY	NAC	- NOTIFICATION APPLIANCE CIRCUIT
CONTR	- CONTRACTOR	NC	- NORMALLY CLOSED
CORR	- CORRIDOR	NEC	- NATIONAL ELECTRICAL CODE
CR	- CONTROL RELAY	NIC	- NOT IN CONTRACT
CT	- CURRENT TRANSFORMER	NO	- NORMALLY OPEN
		NTS	- NOT TO SCALE
DB	- DIRECT BURIAL		
DC	- DIRECT CURRENT	OC	- ON CENTER
DED	- DEDICATED	OFCI	- OWNER FURNISHED, CONTRACTOR INSTALLED
DET	- DETAIL	OFOI	- OWNER FURNISHED, OWNER INSTALLED
DIA	- DIAMETER		
DISC	- DISCONNECT	P	- POLE
DN	- DOWN	PA	- PUBLIC ADDRESS
DP	- DISTRIBUTION PANEL	PB	- PULL BOX / PUSHBUTTON
DS	- DISCONNECT SWITCH	PC	- PLUMBING CONTRACTOR / PHOTOCELL
EC	- ELECTRICAL CONTRACTOR	PDU	- POWER DISTRIBUTION UNIT
EDB	- ELECTRIC DUCT BANK	PF	- POWER FACTOR
EGC	- EQUIPMENT GROUND CONDUCTOR	PH	- PHASE
EGS	- ENGINE GENERATOR SET	PLBG	- PLUMBING
EJ	- EXPANSION JOINT	PNL	- PANEL
ELEC	- ELECTRIC / ELECTRICAL	POD	- POWER OPERATED DAMPER
ELL	- EMERGENCY LIFE SAFETY LIGHTING	PS	- POWER SUPPLY
ELP	- EMERGENCY LIFE SAFETY POWER	PT	- POTENTIAL TRANSFORMER
EM/EMER	- EMERGENCY	PTRV	- POWER TYPE ROOF VENTILATOR
EMI	- ELECTROMAGNETIC INTERFERENCE	PWR	- POWER
EMT	- ELECTRICAL METALLIC TUBING		
EQUIP	- EQUIPMENT	REC	- RECESSED
ESM	- ELECTRIC STRIP MOLD	RECEP	- RECEPTACLE
ETR	- EXISTING TO REMAIN	REL	- RELOCATE
EWC	- ELECTRIC WATER COOLER	REQD	- REQUIRED
		RMC	- RIGID METAL CONDUIT
FA	- FIRE ALARM	RVAT	- REDUCED VOLTAGE AUTO TRANSFORMER
FACP	- FIRE ALARM CONTROL PANEL		
FCU	- FAN COIL UNIT	SCCR	- SHORT CIRCUIT CURRENT RATING
FDR	- FEEDER	SHT	- SHEET
FDS	- FUSED DISCONNECT SWITCH	SIG	- SIGNAL
FIXT	- FIXTURE	SIM	- SIMILAR
FL	- AT FLOOR LINE	SPD	- SURGE PROTECTIVE DEVICE
FLA	- FULL LOAD AMPERES	SPEC	- SPECIFICATION
FLEX	- FLEXIBLE	SS	- SAFETY SWITCH
FLR	- FLOOR	SSBJ	- SUPPLY SIDE BONDING JUMPER
FLUOR	- FLUORESCENT	STA	- STATION
FS	- FLOW SWITCH	STR	- STARTER
FSCP	- FLAME SAFEGUARD CONTROL PANEL	SW	- SWITCH
FVNR	- FULL VOLTAGE NON-REVERSING	SWBD	- SWITCHBOARD
		SWGR	- SWITCHGEAR
GC	- GENERAL CONTRACTOR		
GEN	- GENERATOR	TEL	- TELEPHONE
GFCI	- GROUND FAULT CIRCUIT INTERRUPTER	TFA	- TO FLOOR ABOVE
GFI	- GROUND FAULT INTERRUPTER	TFB	- TO FLOOR BELOW
GFP	- GROUND FAULT PROTECTION	TS	- TAMPER SWITCH / TIME SWITCH
GND	- GROUND	TV	- TELEVISION
GTB	- GROUND TERMINAL BOX	TVTC	- TELEVISION TERMINAL CABINET
		TYP	- TYPICAL
HH	- HANDHOLE		
HOA	- HAND OFF AUTOMATIC	UC	- UNDER COUNTER
HP	- HORSE POWER	UG	- UNDERGROUND
HT	- HEIGHT / HEAT TRACE	UH	- UNIT HEATER
HV	- HIGH VOLTAGE	UNO	- UNLESS NOTED OTHERWISE
		UPS	- UNINTERRUPTED POWER SUPPLY
IMC	- INTERMEDIATE METAL CONDUIT		
INV	- INVERTER	V	- VOLTAGE
J or JB	- JUNCTION BOX	VFD	- VARIABLE FREQUENCY DRIVE
		VP	- VAPOR PROOF
KV	- KILOVOLT		
KVA	- KILOVOLT-AMPERES	W	- WIRE
KW	- KILOWATTS	W/	- WITH
KWH	- KILOWATT HOURS	WP	- WEATHERPROOF
		WS	- WALL SURFACE
		WT	- WATER TIGHT
		XFMR	- TRANSFORMER
		XP	- EXPLOSION PROOF

ANSI DEVICE FUNCTION NUMBERS

25	= SYNC CHECK	51N	= NEUTRAL TIME OVERCURRENT
26	= LIQUID THERMAL RELAY	51G	= GROUND TIME OVERCURRENT
27	= UNDERVOLTAGE	52	= CIRCUIT BREAKER
32	= REVERSE POWER	59	= OVERVOLTAGE
47	= PHASE SEQUENCE	63	= SUDDEN PRESSURE RELAY
49	= WINDING THERMAL RELAY	71	= LIQUID LEVEL RELAY
50	= INSTANTANEOUS OVERCURRENT	81U	= UNDER-FREQUENCY
50N	= NEUTRAL INSTANTANEOUS OVERCURRENT	81O	= OVER-FREQUENCY
50G	= GROUND INSTANTANEOUS OVERCURRENT	83	= CONTROL POWER AUTO-TRANSFER
51	= TIME OVERCURRENT	86	= LOCKOUT RELAY
		87	= DIFFERENTIAL

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NORTH CAROLINA PROFESSIONAL SEAL 023265 ENGINEER WILLIAM W. D. HERMAN

02/14/22

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
SYMBOLS AND ABBREVIATIONS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU001

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TIA-ESTA STANDARD PAPER SIZE

1 **CAMPUS MEDIUM-VOLTAGE DISTRIBUTION**
SCALE: 1" = 50'-0"

SHEET KEYNOTES:

1. CONNECTION TO EXISTING DUCTBANK.
2. NOT USED.
3. RUN APPROXIMATELY 220-FT OF NEW DUCTBANK AND 870-FT OF NEW CABLE FROM NEW SWITCH S-45 TO EXISTING SWITCH S-2N THROUGH EXISTING MANHOLE MH-30 AND NEW MANHOLE MH-31.
4. RUN APPROXIMATELY 300-FT OF NEW DUCTBANK AND NEW MEDIUM-VOLTAGE CABLE FROM NEW SWITCH S-45 TO NEW TRANSFORMER T-45 THROUGH NEW MANHOLE MH-31.
5. RUN APPROXIMATELY 75-FT OF NEW DUCTBANK AND NEW MEDIUM-VOLTAGE CABLE FROM NEW SWITCH S-45 TO NEW TRANSFORMER T-45B.
6. RUN APPROXIMATELY 570-FT OF NEW DUCTBANK AND MEDIUM-VOLTAGE CABLE FROM NEW SWITCH S-45 TO EXISTING MANHOLE X-MH-33. SPLICE NEW CONDUCTORS INTO EXISTING CONDUCTORS SUPPLIED FROM X-S-5 WITHIN X-MH-33. BID ALTERNATE #3 RUN ALL NEW CABLE (APPROX. 1075-FT) FROM S-45 TO X-S-5.

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH (1.000") AT TRUE SCALE WHEN PLOTTED AT 24x36

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

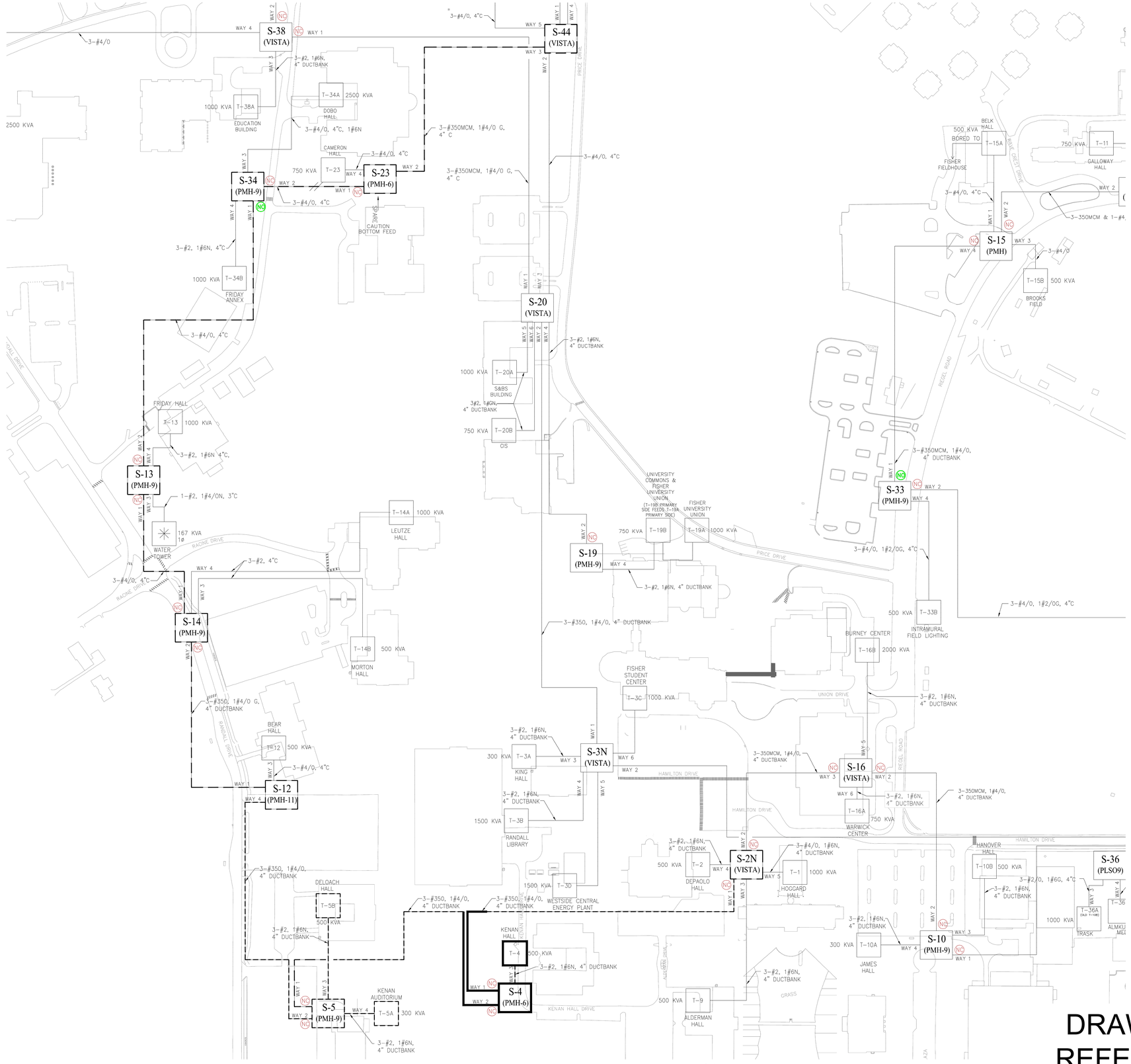
SHEET NAME:
CAMPUS MEDIUM-VOLTAGE DISTRIBUTION

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU100

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TRUE SCALE WHEN PLOTTED ON ANSI E SIZE



1 EXISTING CAMPUS MEDIUM-VOLTAGE DISTRIBUTION
SCALE: NOT TO SCALE

LINETYPE LEGEND:

UTILITIES INCLUDED IN SCOPE OF WORK

UTILITIES NOT INCLUDED IN BUT IMPACTED BY SCOPE OF WORK

DRAWING IS FOR REFERENCE ONLY

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
EXISTING CAMPUS MEDIUM-VOLTAGE DISTRIBUTION

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU101

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE

1 **ELECTRICAL SITE PLAN - DEMOLITION WORK**
SCALE: 1" = 30'

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT, DUCTBANKS, LIGHTING, ETC. ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.
2. EXISTING DUCBANK SHOWN WITH HATCHING SHALL BE DEMOLISHED.
3. ELECTRICAL SERVICE TO EXISTING BUILDINGS SHALL BE MAINTAINED THROUGHOUT THE PROJECT.
4. NEW DUCTBANK FOR 15KV POWER AND DATA SHALL BE INSTALLED BEFORE EXISTING DUCTBANKS ARE DEMOLISHED WHERE APPLICABLE. REFER TO SHEET EU400 FOR SEQUENCING NOTES.
5. ALL EXISTING EQUIPMENT, DUCTBANKS, LIGHTING, ETC. ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE. SPLICE AND REWORK EXISTING SITE LIGHTING CIRCUITS AS REQUIRED TO MAINTAIN CONTINUOUS SERVICE TO AREAS OUTSIDE OF PROJECT SCOPE AS REQUIRED.

SHEET KEYNOTES:

1. EXISTING LIGHT POLE TO REMAIN. PRESERVE EXISTING CIRCUITING IN-PLACE AND PROTECT OR TEMPORARILY REMOVE EXISTING LIGHT POLE DURING CONSTRUCTION.
2. PARTIALLY DEMOLISH EXISTING DUCTBANK AS INDICATED AND PRESERVE IN-PLACE EXISTING DUCTBANK TO REMAIN. COORDINATE DEMOLITION WORK WITH OTHER TRADES.
3. EXISTING MEDIUM-VOLTAGE MANHOLE TO BE DEMOLISHED.
4. EXISTING PMH-6 SWITCH TO BE DEMOLISHED. REFER TO SHEET EU400 FOR SEQUENCING INFORMATION.
5. LIGHT FIXTURES ON EXISTING BUILDING FACADE TO BE DEMOLISHED. REMOVE ALL CIRCUITING AND CONDUIT AS REQUIRED TO MAKE SAFE.
6. NOT USED
7. EXISTING LIGHT POLE TO BE REMOVED. DEMOLISH EXISTING CIRCUIT AND STORE EXISTING POLE AND FIXTURE FOR REUSE AS SHOWN ON SHEET EL100 OF BUILDING DRAWINGS.
8. DEMOLISH EXISTING FLOODLIGHT AND ASSOCIATED CIRCUIT.
9. EXISTING CIRCUIT FED FROM PANEL "FL" IN EXISTING RANDALL LIBRARY BUILDING. REWORK EXISTING CIRCUIT AS REQUIRED TO ACCOMMODATE OTHER TRADES.
10. EXISTING TRANSFORMER TO BE DEMOLISHED AND REPLACED. PRESERVE EXISTING CONDUCTORS IN-PLACE DURING CONSTRUCTION.
11. PARTIALLY DEMOLISH EXISTING CONDUIT TO 'X-T-4' AS REQUIRED TO REFEED FROM NEW SWITCH 'S-45'. REFER TO SHEETS EU103 & EU400 FOR ADDITIONAL INFORMATION.

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LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

SHEET NAME:
ELECTRICAL SITE PLAN - DEMOLITION WORK

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU102

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE

1 **ELECTRICAL SITE PLAN - NEW WORK**
SCALE: 1' = 30'

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT, DUCTBANKS, LIGHTING, ETC. ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.
2. ALL NEW WORK IS SHOWN WITH BOLD LINEWORK.
3. ELECTRICAL SERVICE TO EXISTING BUILDINGS SHALL BE MAINTAINED THROUGHOUT THE PROJECT.
4. NEW DUCTBANK FOR 15KV POWER AND DATA SHALL BE INSTALLED BEFORE EXISTING DUCTBANKS ARE DEMOLISHED WHERE APPLICABLE. REFER TO SHEET EU400 FOR SEQUENCING NOTES.

SHEET KEYNOTES:

1. PROVIDE NEW MEDIUM-VOLTAGE DUCTBANK. REFER TO SHEETS EU104-EU107, EU400, & EU501 FOR ADDITIONAL INFORMATION. COORDINATE ROUTING WITH OTHER TRADES.
2. NEW MEDIUM-VOLTAGE MANHOLE. REFER TO DETAIL #1 ON SHEET EU500 FOR ADDITIONAL INFORMATION.
3. EXTEND EXISTING MEDIUM-VOLTAGE DUCTBANK TO NEW MANHOLE MH-31.
4. NEW MEDIUM-VOLTAGE DUCTBANK TO SHARE TRENCH WITH TELECOM DUCTBANK. REFER TO TU SERIES DRAWINGS FOR ADDITIONAL INFORMATION.
5. REFER TO DETAIL #2 ON SHEET EU501 FOR DUCTBANK SECTION.
6. REFER TO DETAIL #3 ON SHEET EU501 FOR DUCTBANK SECTION. PROVIDE REBAR REINFORCEMENT FOR DUCTBANKS WITHIN 10' OF MANHOLES AND UNDER ROADWAYS.
7. REFER TO DETAIL #4 ON SHEET EU501 FOR DUCTBANK SECTION. PROVIDE REBAR REINFORCEMENT FOR DUCTBANKS WITHIN 10' OF MANHOLES AND UNDER ROADWAYS.
8. REFER TO DETAIL #5 ON SHEET EU501 FOR DUCTBANK SECTION.
9. REFER TO DETAIL #6 ON SHEET EU501 FOR DUCTBANK SECTION.
10. REFER TO DETAIL #7 ON SHEET EU501 FOR DUCTBANK SECTION. PROVIDE REBAR REINFORCEMENT FOR DUCTBANKS WITHIN 10' OF MANHOLES AND UNDER ROADWAYS.
11. REFER TO DETAIL #9 ON SHEET EU501 FOR DUCTBANK SECTION. PROVIDE REBAR REINFORCEMENT FOR DUCTBANKS WITHIN 10' OF MANHOLES AND UNDER ROADWAYS.
12. PROVIDE (7) 4" CONDUIT FROM 'T-45' SECONDARY WINDOW AND EXTEND BEYOND PAD AND CAP.
13. PROVIDE (1) 4" CONDUIT FROM PRIMARY WINDOW OF 'T-45' TO STUB OUT FROM 'X-T-3D' PRIMARY.
14. NEW TRANSFORMER 'T-3B' TO REPLACE EXISTING TRANSFORMER 'X-T-3B' SERVING EXISTING RANDALL LIBRARY. PROVIDE NEW PAD IN EXISTING LOCATION. COORDINATE LOCATION WITH EXISTING CONDUIT STUB-UPS.

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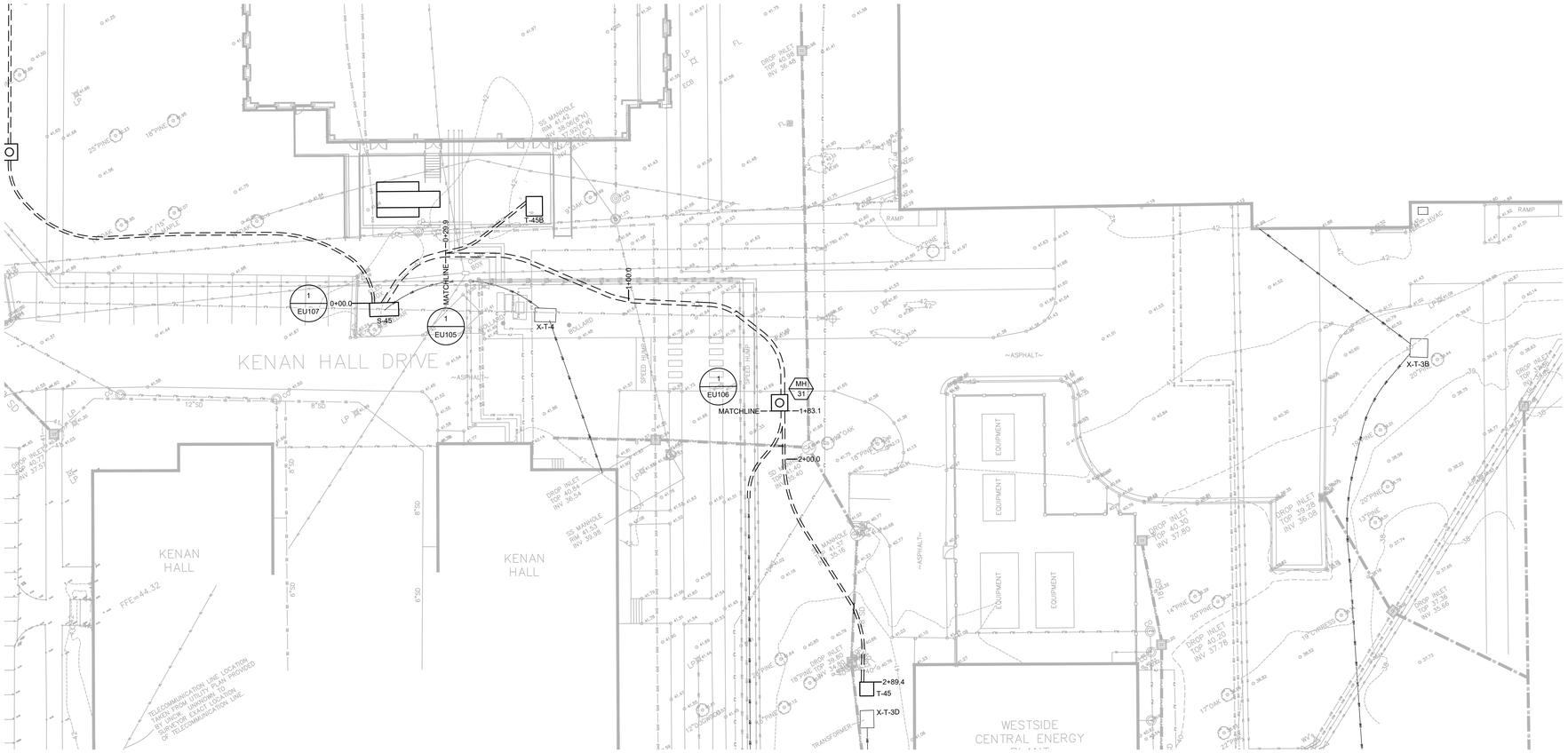
0	2022.02.14	BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

SHEET NAME:
ELECTRICAL SITE PLAN - NEW WORK

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU103

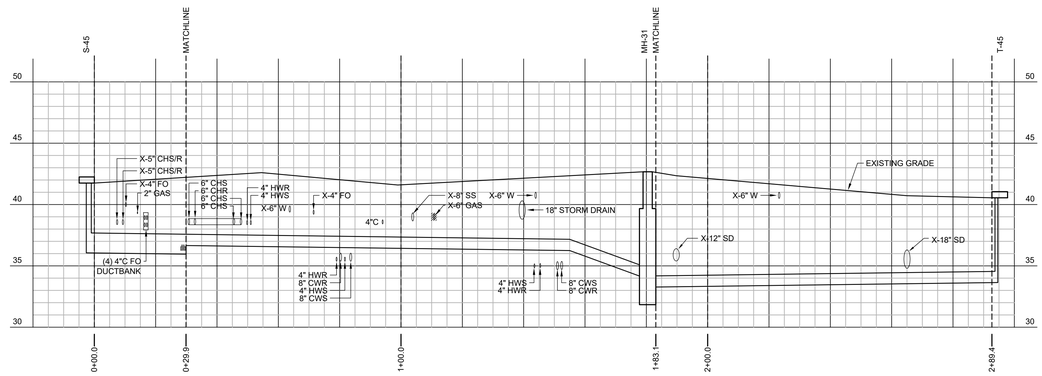
PACKAGE A -
BID DOCUMENTS



1 PARTIAL PLAN: ELECTRIC DUCTBANK

SCALE: 1"=20'-0"

GRAPHIC SCALE (IN FEET): 20 0 10 20 40



2 PARTIAL PLAN & PROFILE: ELECTRIC DUCTBANK

SCALE: 1"=20'-0" HORIZONTAL
1"=5'-0" VERTICAL

GENERAL NOTES:

1. CONTRACTOR TO FIELD-VERIFY ALL EXISTING CONDITIONS SHOWN ON PLANS PRIOR TO COMMENCING WORK.
2. ALL NEW DUCTBANK SHALL SLOPE DOWNWARDS TOWARDS MANHOLES AT A MINIMUM OF 4" OVER 100'.

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NORTH CAROLINA PROFESSIONAL SEAL 023265 ENGINEER WILLIAM D. HENNEN
02/14/22

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

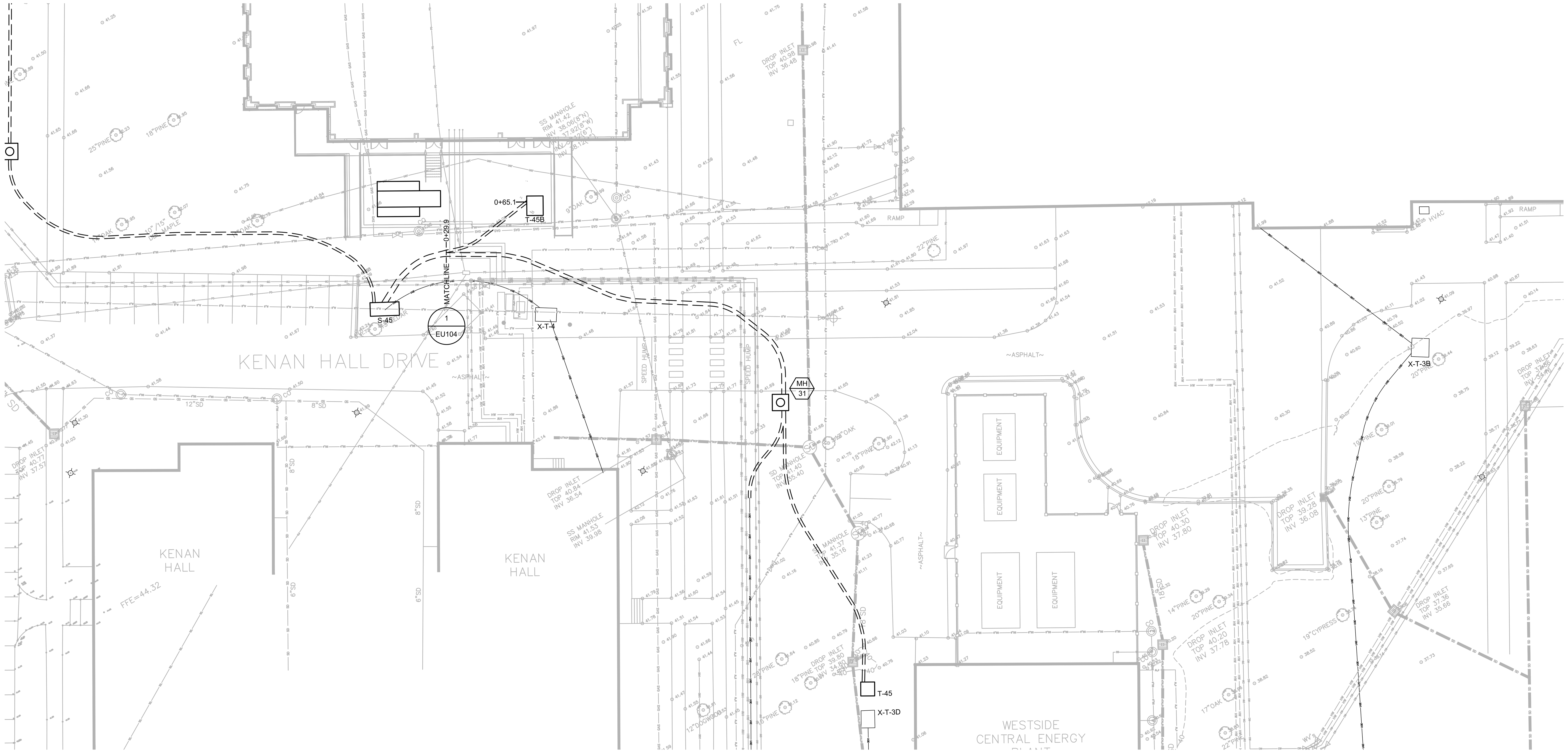
Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
ELECTRICAL PARTIAL SITE PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU104

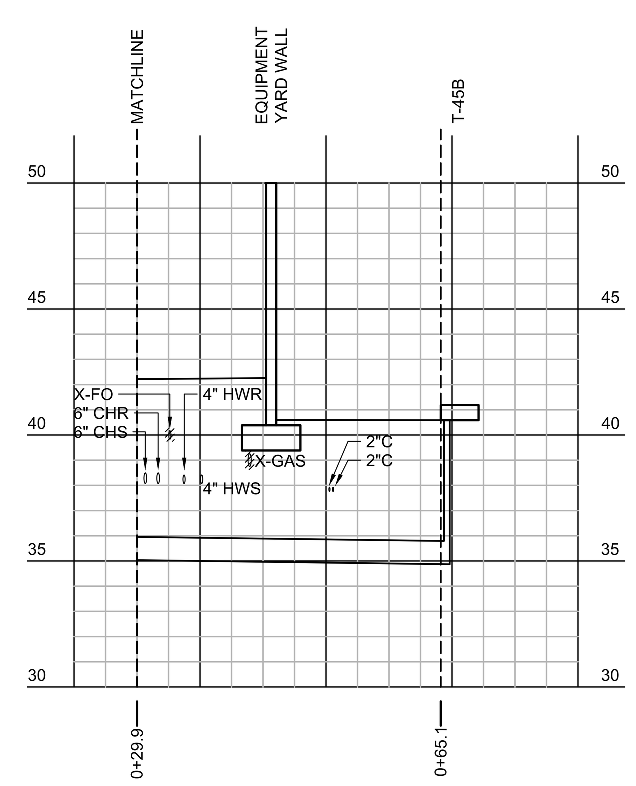
PACKAGE A - BID DOCUMENTS



1 PARTIAL PLAN: ELECTRIC DUCTBANK

SCALE: 1"=20'-0"

GRAPHIC SCALE (IN FEET) 20 0 10 20 40



2 PARTIAL PLAN & PROFILE: ELECTRIC DUCTBANK

SCALE: 1"=20'-0" HORIZONTAL
1"=5'-0" VERTICAL

GENERAL NOTES:

1. CONTRACTOR TO FIELD-VERIFY ALL EXISTING CONDITIONS SHOWN ON PLANS PRIOR TO COMMENCING WORK.

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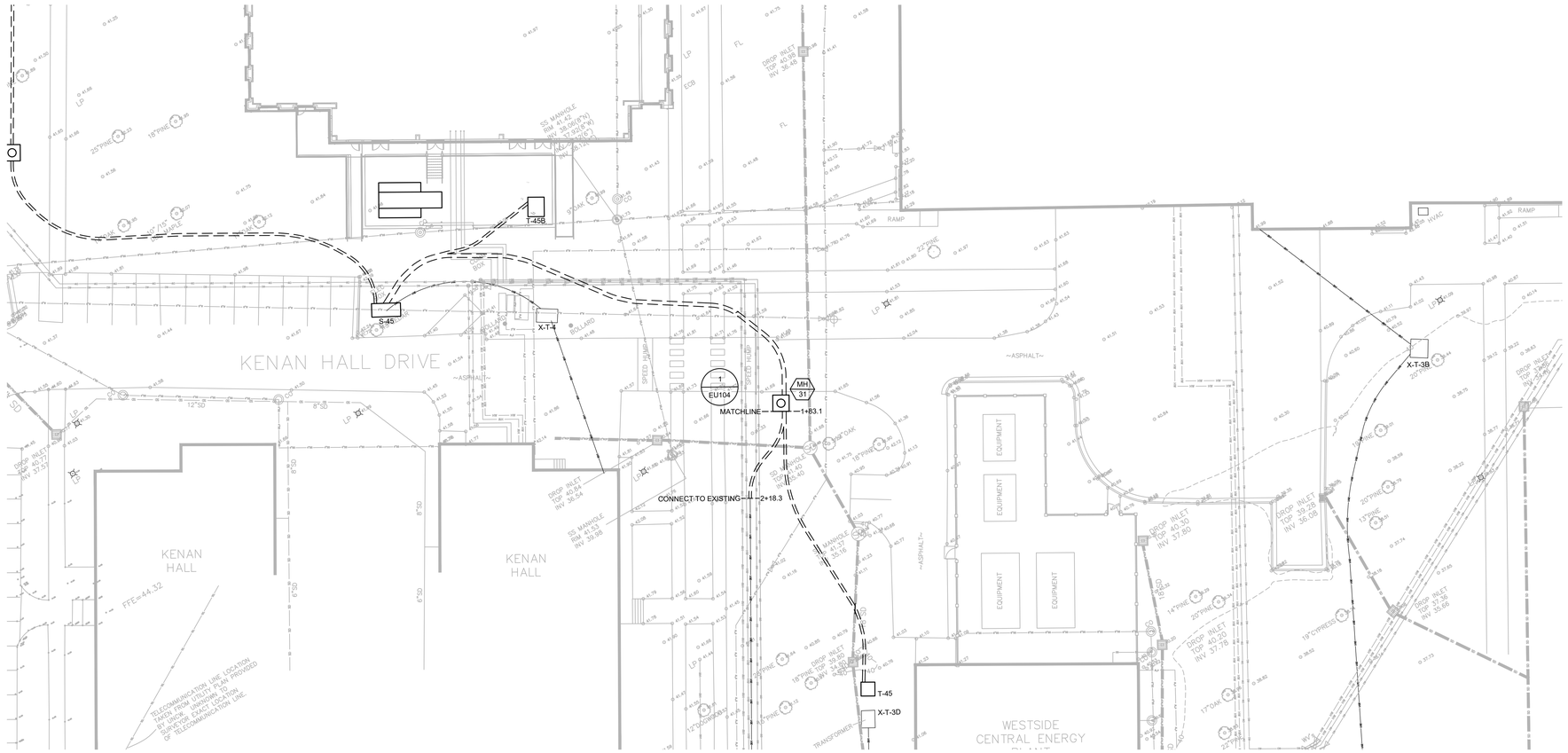
Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
ELECTRICAL PARTIAL SITE PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU105

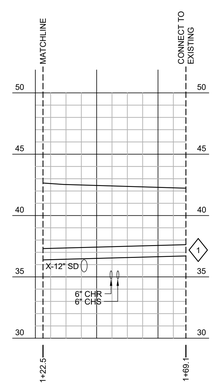
PACKAGE A - BID DOCUMENTS



1 PARTIAL PLAN: ELECTRIC DUCTBANK

SCALE: 1"=20'-0"

GRAPHIC SCALE (IN FEET)



2 PARTIAL PLAN & PROFILE: ELECTRIC DUCTBANK

SCALE: 1"=20'-0" HORIZONTAL
1"=5'-0" VERTICAL

GENERAL NOTES:

1. CONTRACTOR TO FIELD-VERIFY ALL EXISTING CONDITIONS SHOWN ON PLANS PRIOR TO COMMENCING WORK.
2. ALL NEW DUCTBANK SHALL SLOPE DOWNWARDS TOWARDS MANHOLES AT A MINIMUM OF 4" OVER 100'.

SHEET KEYNOTES:

1 MATCH EXISTING DUCTBANK ELEVATION.

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SCO ID: 18-19656-02A
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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

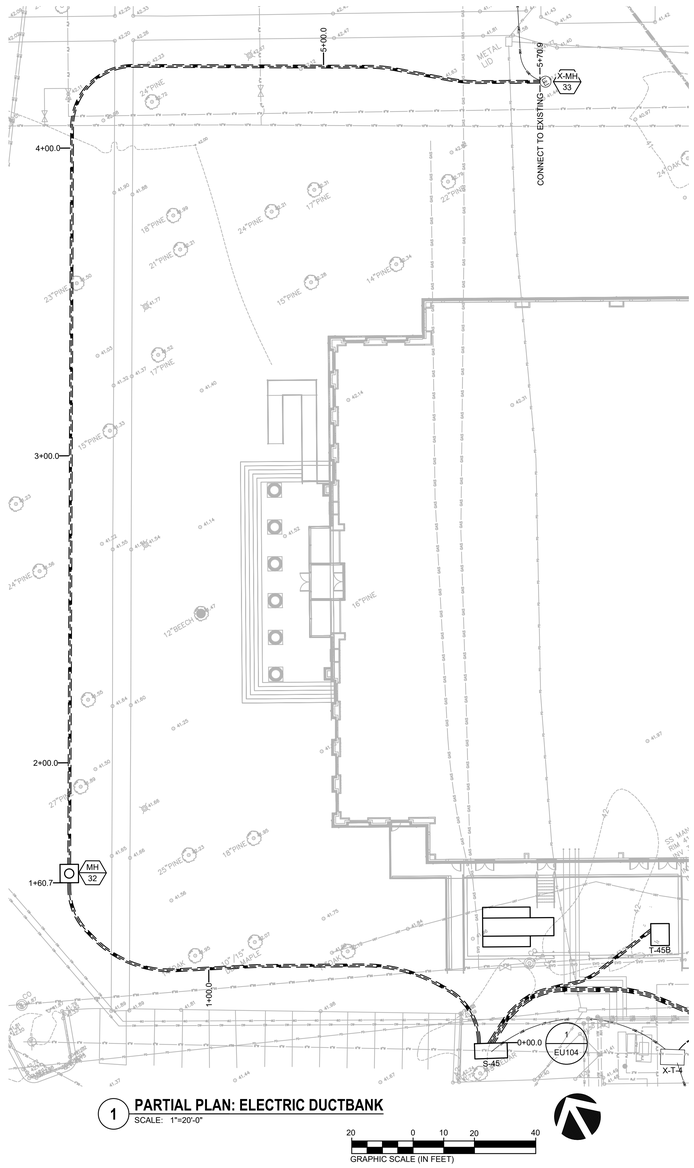
SHEET NAME:
ELECTRICAL PARTIAL SITE PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU106

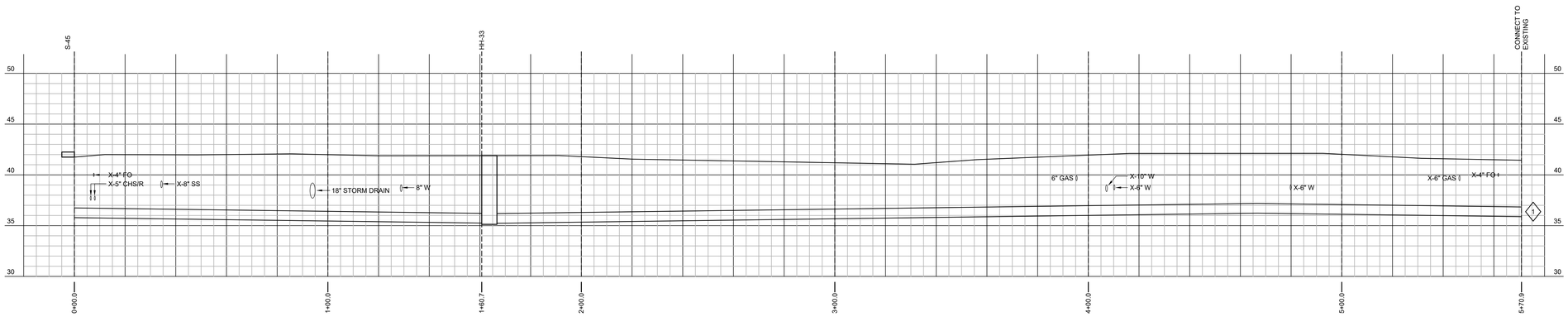
PACKAGE A -
BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TWENTY SCALE WHEN PLOTTED



1 **PARTIAL PLAN: ELECTRIC DUCTBANK**
SCALE: 1"=20'-0"

20 0 10 20 40
GRAPHIC SCALE (IN FEET)



2 **PARTIAL PLAN & PROFILE: ELECTRIC DUCTBANK**
SCALE: 1"=20'-0" HORIZONTAL
1"=5'-0" VERTICAL

GENERAL NOTES:

1. CONTRACTOR TO FIELD-VERIFY ALL EXISTING CONDITIONS SHOWN ON PLANS PRIOR TO COMMENCING WORK.
2. ALL NEW DUCTBANK SHALL SLOPE DOWNWARDS TOWARDS MANHOLES AT A MINIMUM OF 4" OVER 100'.

SHEET KEYNOTES:

1 COORDINATE CONNECTION TO X-MH-33 WITH EXISTING ELEVATION AND ORIENTATION.

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
ELECTRICAL PARTIAL SITE PLAN

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

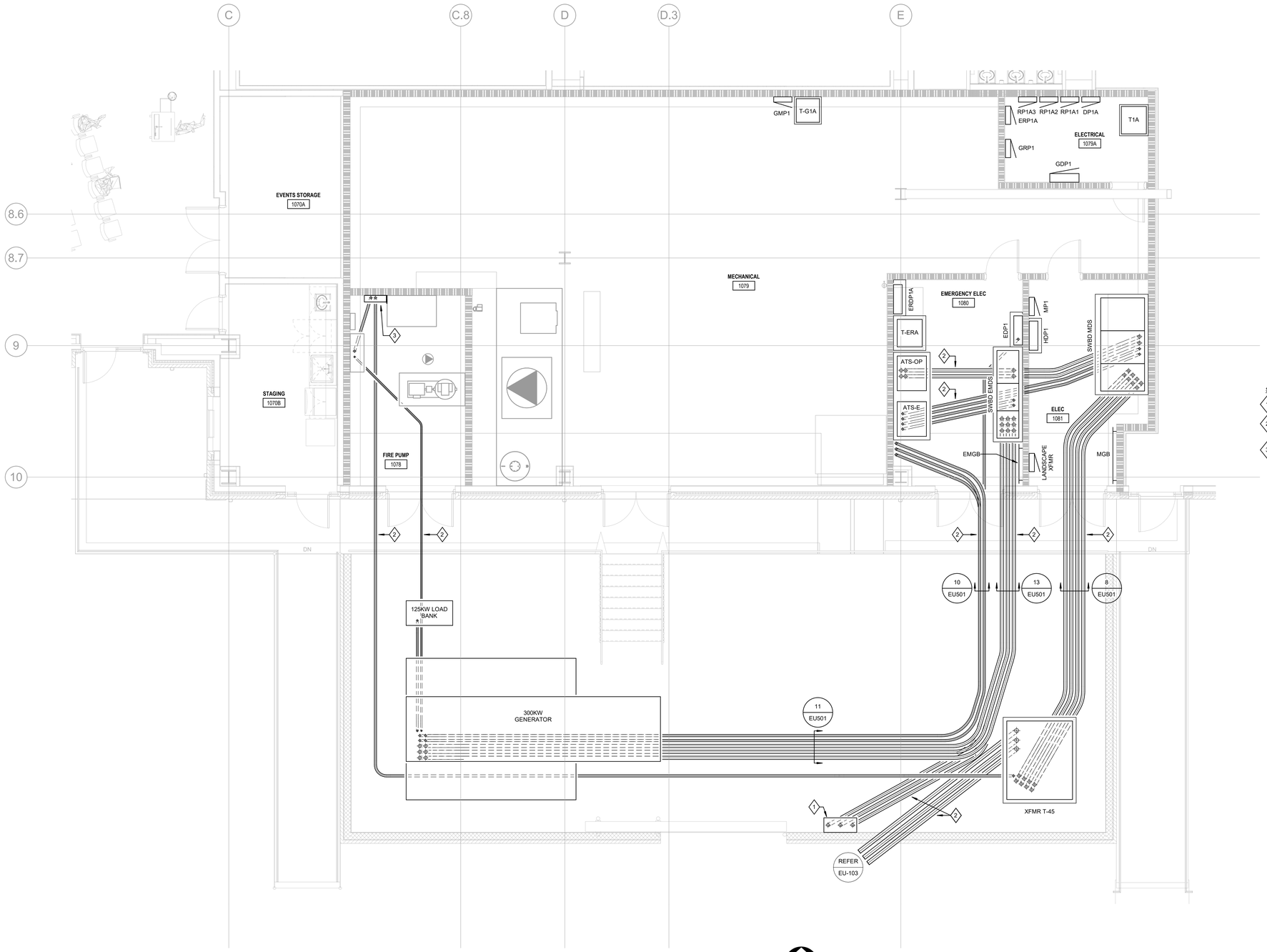
SHEET:
EU107

PACKAGE A -
BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SIZE

GENERAL NOTES:

1. PROVIDE MINIMUM 24" OF COVERAGE ABOVE ALL DUCTBANK IN THE EQUIPMENT YARD. COORDINATE ELEVATIONS WITH OTHER UTILITIES.



1 **POWER PLAN - UNDERGROUND - ELECTRICAL ROOM & YARD**
SCALE: 1/4" = 1'-0"

SHEET KEYNOTES

1. DOCKING STATION IN NEMA-3R ENCLOSURE FOR TEMPORARY GENERATOR CONNECTION.
2. UNDERGROUND CONDUITS IN CONCRETE-ENCASED DUCTBANK. REFER TO FEEDER SCHEDULE ON SHEET E400 FOR ADDITIONAL INFORMATION.
3. SERVICE ENTRANCE RATED DISCONNECT FOR INCOMING NORMAL POWER FEED TO FIRE PUMP. CIRCUIT BREAKER SHALL PROVIDE GROUND FAULT PROTECTION ONLY. REFER TO SHEET E400 FOR ADDITIONAL INFORMATION.

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02/14/22

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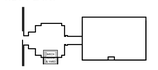
WILMINGTON, NC

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

KEY PLAN:



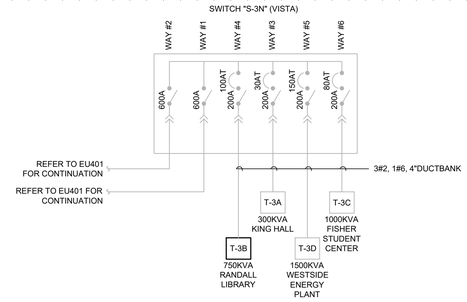
PROJECT NORTH

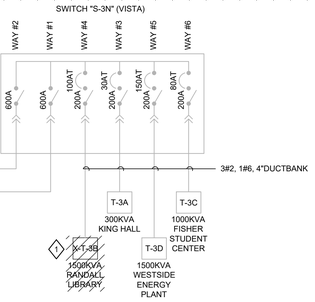
SHEET NAME:
POWER PLAN - UNDERGROUND - ELEC. ROOM & YARD

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
EU108

PACKAGE A - BID DOCUMENTS





SHEET KEYNOTES:

1. EXISTING 1500KVA PAD-MOUNTED TRANSFORMER AND PAD TO BE DEMOLISHED. PRESERVE CONDUCTORS IN-PLACE DURING CONSTRUCTION FOR CONNECTION TO NEW TRANSFORMER.
2. EXISTING PMH-6 TO BE DEMOLISHED AND REPLACED WITH NEW 6-WAY SWITCH.
3. NEW 15KV MANHOLE.
4. EXTEND CONDUITS/DUCTBANK BEYOND SWITCH PAD FOR CONNECTION IN A FUTURE PHASE.
5. PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT.
6. CONNECT TO EXISTING DUCTBANK.
7. DEMOLISH EXISTING 15KV MANHOLE.
8. NEW PAD-MOUNTED TRANSFORMER AND PAD. COORDINATE NEW TRANSFORMER LOCATION TO ALIGN WITH EXISTING CONDUIT STUB-UPS. PROVIDE TAP EXTENDERS ON SECONDARY LUGS AS REQUIRED TO ACCOMMODATE SLIGHT DIFFERENCES IN CABLE LENGTH.

GENERAL NOTES:

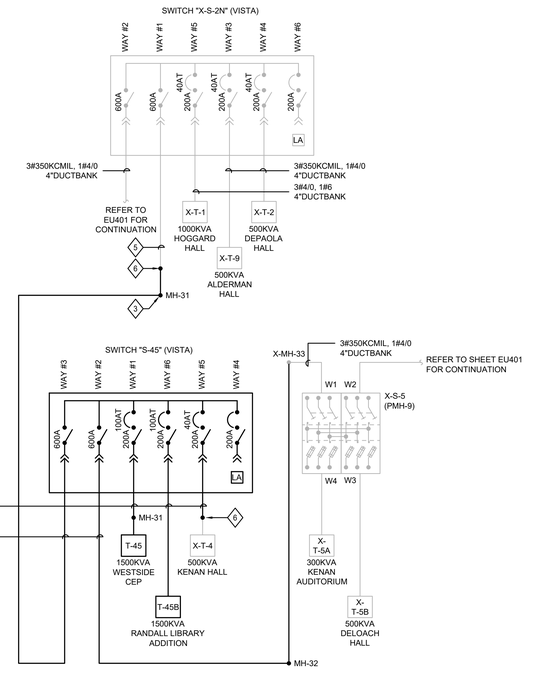
1. EXACT LOCATIONS OF NEW MV EQUIPMENT TO BE COORDINATED IN THE FIELD.
2. REFER TO POSSIBLE SEQUENCE OF CONSTRUCTION NOTES (DETAIL #5 ON THIS SHEET) FOR DESCRIPTION OF REQUIRED WORK NOT SHOWN GRAPHICALLY ON DETAILS #1-4

LINETYPE LEGEND:

- EXISTING TO REMAIN
- EXISTING TO BE DEMOLISHED
- NEW WORK

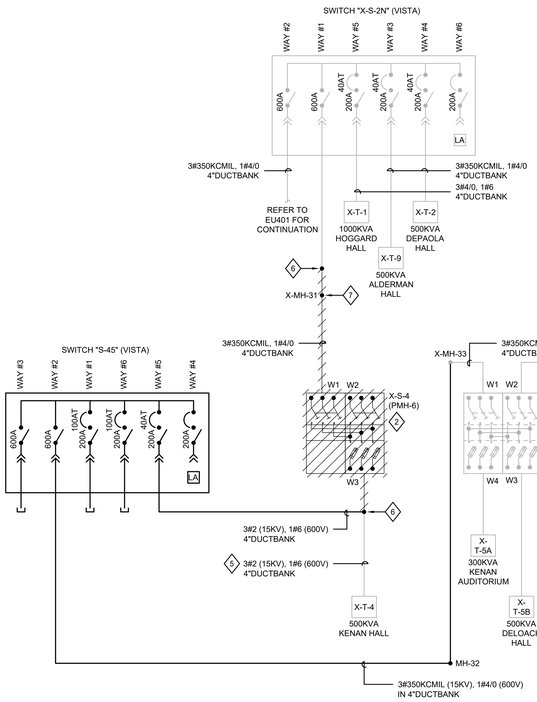
1 REPLACE EXISTING TRANSFORMER 'X-T-3B' (PHASE 0)

SCALE: NOT TO SCALE



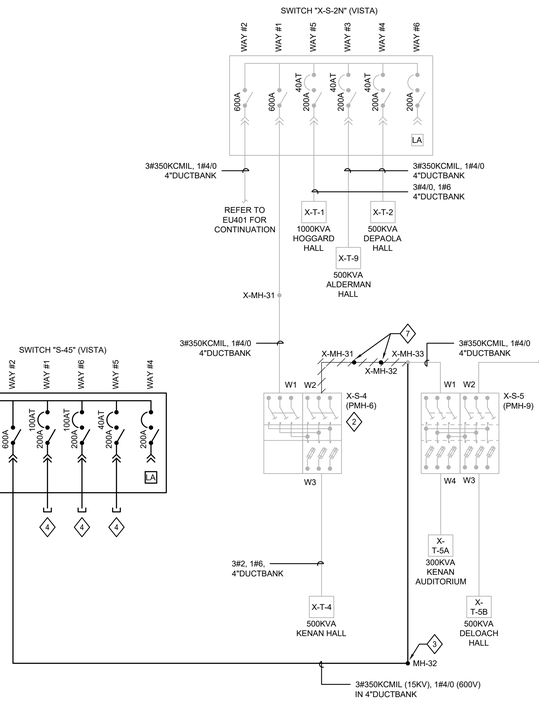
4 INSTALL FEEDER FROM 'X-S-2N' TO 'S-45' & INSTALL NEW TRANSFORMERS (PHASE III)

SCALE: NOT TO SCALE



3 REFEED 'X-T-4' FROM NEW SWITCH 'S-45' (PHASE II)

SCALE: NOT TO SCALE



2 PREPARATORY WORK & NEW SWITCH 'S-45' INSTALLATION (PHASE I)

SCALE: NOT TO SCALE

PHASE VI: FINAL CONFIGURATION

1. REENERGIZE 'S-45'.
   - 1.a. CLOSE WAY 1 OF 'X-S-2N'
   - 1.b. CLOSE WAY 3 OF 'S-45'
2. TRANSFER POWER SOURCE FOR 'X-S-5' BACK TO ORIGINAL CONFIGURATION
   - 2.a. COORDINATE OUTAGE FOR BUILDINGS SERVED BY SWITCHES AFFECTED BY THIS SEQUENCE
   - 2.b. OPEN WAY 1 OF 'X-S-44'
   - 2.c. CLOSE WAY 1 OF 'X-S-5'
   - 2.d. CLOSE WAY 2 OF 'S-45'
   - 2.e. CONFIRM POWER HAS BEEN RESTORED TO ALL BUILDINGS SERVED BY SWITCHES AFFECTED BY THIS SEQUENCE

PHASE III: INSTALL FEEDER FROM 'X-S-2N' TO 'S-45' & INSTALL NEW TRANSFORMERS

1. INSTALL NEW PADS FOR TRANSFORMERS 'T-45' & 'T-45B'.
   - 1.a. INSTALL CONDUIT FROM TRANSFORMER PRIMARY & SECONDARY WINDOWS TO BEYOND THE EDGE OF THE PAD AND CAP PRIOR TO INSTALLING TRANSFORMER.
2. INSTALL NEW TRANSFORMERS 'T-45' & 'T-45B'.
3. EXTEND DUCTBANK FROM 'S-45' TO NEW TRANSFORMERS 'T-45' & 'T-45B' AND NEW MANHOLE 'MH-31'.
   - 3.a. EXTEND EXISTING DUCTBANK FROM 'X-S-2N' TO 'MH-31' AS INDICATED ON SHEET EU103.
4. INSTALL NEW CONDUCTORS FROM 'X-S-2N' TO 'S-45'
   - 4.a. COORDINATE REQUIRED HOT-WORK TO TAKE PLACE DURING THIS PHASE WITH THE UNIVERSITY. HOT WORK WILL LIKELY BE REQUIRED AT 'X-S-2N' & 'X-MH-30'.
   - 4.b. TERMINATE CONDUCTORS ON WAY 1 OF 'X-S-2N' (LEAVE WAY 1 OPEN)
   - 4.b. COORDINATE OUTAGE FOR KENAN HALL. OPEN WAY 1 OF 'X-S-5' SERVING 'S-45'.
   - 4.c. TERMINATE CONDUCTORS ON WAY 3 OF 'S-45' (LEAVE WAY 3 OPEN)
   - 4.d. CLOSE WAY 1 OF 'X-S-5' SERVING 'S-45' TO REENERGIZE SWITCH 'S-45' AND TRANSFORMER 'X-T-4' SERVING KENAN HALL.
5. PULL NEW CONDUCTORS FROM 'S-45' TO 'T-45'
   - 5.a. COORDINATE OUTAGE FOR KENAN HALL. OPEN WAY 1 OF 'X-S-5' SERVING 'S-45'.
   - 5.b. TERMINATE CONDUCTORS ON WAY 1 OF 'S-45' (LEAVE WAY 1 OPEN)
   - 5.c. TERMINATE CONDUCTORS ON PRIMARY LUGS OF 'T-45'
   - 5.d. CLOSE WAY 1 OF 'X-S-5' SERVING 'S-45' TO REENERGIZE SWITCH 'S-45' AND TRANSFORMER 'X-T-4' SERVING KENAN HALL.
6. PULL NEW CONDUCTORS FROM 'S-45' TO 'T-45B'
   - 6.a. COORDINATE OUTAGE FOR KENAN HALL. OPEN WAY 1 OF 'X-S-5' SERVING 'S-45' (LEAVE WAY 1 OPEN). REFER TO PHASE IV FOR REENERGIZATION OF 'S-45' AND 'X-T-4' SERVING KENAN HALL.
   - 6.b. TERMINATE CONDUCTORS ON WAY 6 OF 'S-45' (LEAVE WAY 6 OPEN)
   - 6.c. TERMINATE CONDUCTORS ON PRIMARY LUGS OF 'T-45B'
   - 6.d. COORDINATE ENERGIZATION OF 'T-45B' WITH THE BUILDING EXPANSION PHASE.

PHASE II: REFEED 'X-T-4' FROM NEW SWITCH 'S-45'

1. DEENERGIZE 'X-T-4' SERVING KENAN HALL.
   - 1.a. COORDINATE OUTAGE FOR KENAN HALL.
   - 1.b. OPEN WAY 3 OF 'X-S-4' SERVING 'X-T-4'.
   - 1.c. CONFIRM 'X-T-4' HAS BEEN DEENERGIZED.
2. DEENERGIZE SWITCH 'X-S-4'.
   - 2.a. OPEN WAY 1 OF 'X-S-2N' SERVING 'X-S-4'.
   - 2.b. CONFIRM 'X-S-4' HAS BEEN DEENERGIZED.
3. DEMOLISH EXISTING CONDUCTORS FROM 'X-S-4' TO 'X-T-4'.
4. PARTIALLY DEMOLISH EXISTING DUCTBANK FROM 'X-S-4' TO 'X-T-4' AND EXTEND TO 'S-45'.
   - 4.a. DEMOLISH EXISTING DUCTBANK FROM 'X-S-4' TO 'X-MH-31' AS REQUIRED TO ACCOMMODATE NEW WORK.
5. PULL NEW MEDIUM-VOLTAGE CONDUCTORS FROM 'S-45' TO 'X-T-4'
6. ENERGIZE 'S-45' AND 'X-T-4'
   - 6.a. CLOSE WAY 1 OF 'X-S-5' SERVING 'S-45'
   - 6.b. CLOSE WAY 2 OF 'S-45'
   - 6.c. CLOSE WAY 5 OF 'S-45' SERVING 'X-T-4'
   - 6.d. CONFIRM POWER HAS BEEN RESTORED TO KENAN HALL.
7. DEMOLISH 'X-S-4' & 'X-MH-31'.
   - 7.a. PARTIALLY DEMOLISH DUCTBANK FROM 'X-S-4' TO 'X-S-2N' AS INDICATED ON SHEET EU102.
   - 7.b. DEMOLISH EXISTING CONDUCTORS BACK TO 'X-S-2N'
   - 7.c. CAP EXISTING CONDUIT FOR REUSE IN PHASE III.

PHASE 0: REPLACE EXISTING TRANSFORMER 'X-T-3B'

WORK UNDER THIS PHASE CAN BE PERFORMED INDEPENDENTLY OF OTHER PHASES. COORDINATE OUTAGE FOR EXISTING LIBRARY WITH UNIVERSITY'S REPRESENTATIVE PRIOR TO COMMENCING WORK.

1. DEENERGIZE TRANSFORMER 'X-T-3B'.
   - 1.a. OPEN WAY 4 OF 'X-S-3N'.
2. DEMOLISH EXISTING TRANSFORMER 'X-T-3B' AND PAD.
3. INSTALL NEW TRANSFORMER 'T-3B' AND PAD.
4. TERMINATE EXISTING CONDUCTORS ON NEW XFMR LUGS.
5. ENERGIZE TRANSFORMER 'T-3B'.
   - 5.a. CLOSE WAY 4 OF 'X-S-3N'.

PHASE I: PREPARATORY WORK & NEW SWITCH 'S-45' INSTALLATION

1. INSTALL NEW SWITCH 'S-45'.
2. INSTALL NEW MANHOLE 'MH-32'.
3. INSTALL DUCT BANK FROM 'X-MH-33' TO NEW SWITCH 'S-45'.
4. TRANSFER SOURCE SERVING 'X-S-5' FROM 'X-S-2N' TO 'X-S-44'.
   - 4.a. COORDINATE OUTAGE FOR BUILDINGS SERVED BY SWITCHES AFFECTED BY THIS SEQUENCE.
   - 4.b. CONFIRM CONDITIONS SHOWN ON CONTRACT DOCUMENTS FOR MEDIUM-VOLTAGE CIRCUIT FROM 'X-S-44' TO 'X-S-5'.
   - 4.c. OPEN WAY 1 OF 'X-S-5'
   - 4.d. CLOSE WAY 1 OF 'X-S-34'.
   - 4.e. CONFIRM ALL WAYS OF 'X-S-23' ARE CLOSED
   - 4.f. CONFIRM WAY 2 OF 'X-S-44' IS OPEN.
   - 4.g. CONFIRM WAY 3 OF 'X-S-44' IS CLOSED.
   - 4.h. CLOSE WAY 1 OF 'X-S-44'
5. CONFIRM POWER HAS BEEN RESTORED TO ALL BUILDINGS SERVED BY SWITCHES AFFECTED BY THIS SEQUENCE.
6. DEENERGIZE CONDUCTORS FROM 'X-S-4' TO 'X-S-5'.
   - 6.a. OPEN WAY 2 OF 'X-S-4'
   - 6.b. 'X-S-4' SHALL REMAIN FED FROM 'X-S-2N'
7. DEMOLISH MEDIUM-VOLTAGE CONDUCTORS FROM 'X-S-4' TO 'X-S-5' BACK TO 'X-MH-33'
8. EXTEND MEDIUM-VOLTAGE CIRCUIT FROM 'X-S-5' TO 'S-45'.
   - 8.a. SPLICE CONDUCTORS IN 'X-MH-33'.
   - 8.b. TERMINATE NEW CONDUCTORS ON WAY 2 OF 'S-45'
   - 8.c. LEAVE ALL SWITCH WAYS OPEN UNTIL INSTRUCTED OTHERWISE.

GENERAL:

1. WORK FOR THIS PROJECT INCLUDES REMOVAL, RELOCATION, AND PERMANENT INSTALLATIONS OF EQUIPMENT ALONG WITH COMPLEX SEQUENCING OF THE WORK IN ORDER TO RETAIN SERVICES TO THE EXISTING FACILITIES. ALL SERVICES SHALL REMAIN FULLY FUNCTIONAL THROUGHOUT THE CONSTRUCTION PROCESS WITH ONLY MINIMAL DOWNTIME DURING SCHEDULED CUTOVERS.
2. TO HELP CONVEY THE COMPLEXITY OF THE REQUIRED SEQUENCING THE FOLLOWING GENERAL POSSIBLE SEQUENCE OF CONSTRUCTION HAS BEEN DEVELOPED. THE INTENT OF THIS SEQUENCE IS TO IDENTIFY SOME OF THE CRITICAL ELEMENTS IN THIS PROJECT. THE SEQUENCE OUTLINES ONE POSSIBLE WAY, BUT NOT NECESSARILY THE ONLY WAY, OF PHASING THE RENOVATION OF THE ELECTRICAL SYSTEMS WHILE RETAINING THE FUNCTIONALITY OF THE SERVICES.
3. THE CONTRACTOR SHALL PROVIDE ITS OWN DETAILED SEQUENCE OF CONSTRUCTION AND PREPARE A CONSTRUCTION SCHEDULE THAT SATISFIES THE REQUIREMENTS OF THE PROJECT AND SHALL SUBMIT THOSE FOR REVIEW WITHIN 3 WEEKS AFTER THE NOTICE TO PROCEED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE FINAL CONSTRUCTION SEQUENCING THAT IS USED AND ALL NECESSARY EQUIPMENT NEEDED FOR ITS IMPLEMENTATION. ALL EQUIPMENT AND INSTALLATIONS SHALL COMPLY WITH THE APPLICABLE BUILDING CODES AND STANDARDS.
4. PROPER JUDGMENT MUST BE EXERCISED IN EXECUTING THE WORK SO AS TO SECURE A SAFE WORKING ENVIRONMENT. ALL WORK THAT CANNOT BE CONDUCTED SAFELY WHILE SYSTEMS ARE ACTIVE SHALL BE COORDINATED WITH THE UNIVERSITY'S REPRESENTATIVE TO BE PERFORMED OVER THE WEEKEND OR EXTENDED BREAK/HOLIDAY WHEN THE SYSTEM COMPONENTS MAY BE DE-ENERGIZED. SCHEDULE THIS WORK WELL IN ADVANCE AND PROVIDE ALL NECESSARY EQUIPMENT AND PERSONNEL TO COMPLETE THIS WORK DURING THE SHUTDOWN. SHUTDOWNS SHALL NOT EXCEED 8 HOURS, AND THE SYSTEMS SHALL BE IMMEDIATELY RESTORED TO FULL OPERATION. NOTIFY THE UNIVERSITY'S REPRESENTATIVE IN WRITING OF ANY DISCREPANCIES FOUND AND REQUEST GUIDANCE.
5. PRIOR TO REMOVING OR RELOCATING ANY EXISTING EQUIPMENT, FIELD VERIFY AND DOCUMENT THE ACCURACY OF CONTRACT DOCUMENTS WITH EXISTING CONDITIONS AND DETERMINE THE RELATIONSHIPS AND FUNCTIONALITIES TO THE EXISTING SYSTEMS.
6. COORDINATE ALL MODIFICATIONS TO THE CAMPUS MEDIUM-VOLTAGE DISTRIBUTION SYSTEM WITH THE RELEVANT AUTHORITIES AT THE UNIVERSITY PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR SHALL CONFIRM THE ACCURACY OF THE CONTRACT DOCUMENTS WITH EXISTING CONDITIONS AND NOTIFY THE DESIGNER OF ANY DISCREPANCIES FOUND AND REQUEST GUIDANCE.
7. THE CONTRACTOR SHALL NOTIFY THE UNIVERSITY'S REPRESENTATIVE IN WRITING WITHIN 24 HOURS IF ANY SYSTEM ANOMALIES OCCUR DURING CONSTRUCTION (OPENED BREAKERS, GROUND FAULTS, OVERLOADS, SHORT CIRCUITS, ETC.).
8. REFER TO SPECIFICATIONS FOR TESTING PROCEDURES BEFORE ENERGIZING MEDIUM-VOLTAGE EQUIPMENT OR CABLES.

5 UNCW CAMPUS MEDIUM VOLTAGE DISTRIBUTION POSSIBLE SEQUENCE OF CONSTRUCTION

SCALE: NOT TO SCALE

UNCW
LS3P
101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
WWW.LS3P.COM

Affiliated Engineers
Affiliated Engineers, Inc.
1414 Raleigh Road, Suite 305
Chapel Hill, North Carolina 27517
Tel 919.419.9802 Fax 919.913.4301
www.aeieng.com
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NORTH CAROLINA PROFESSIONAL SEAL 023265 ENGINEER WILLIAM D. HERMEN
04/08/22

RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
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WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

SHEET NAME:
PARTIAL MV SINGLE LINE DIAGRAM & SEQUENCE OF CONSTRUCTION

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU400

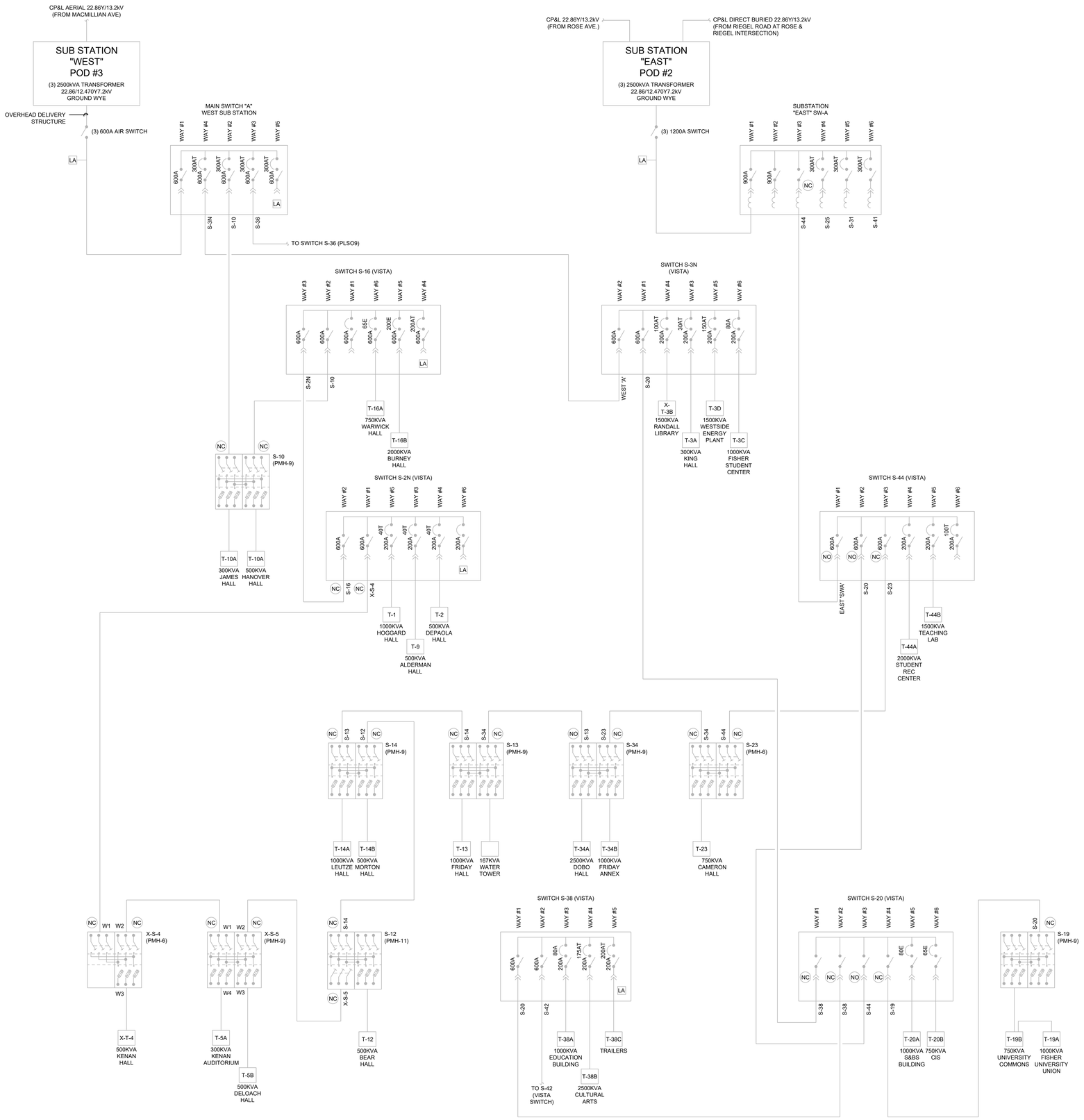
PACKAGE A - BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT FULL SIZED DRAWING SHEET

E D C B A

1 2 3 4 5 6

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TRUE SCALE WHEN PLOTTED



1 **PARTIAL UNCW CAMPUS MEDIUM-VOLTAGE SINGLE LINE DIAGRAM - EXISTING**
SCALE: NOT TO SCALE

UNCW

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101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

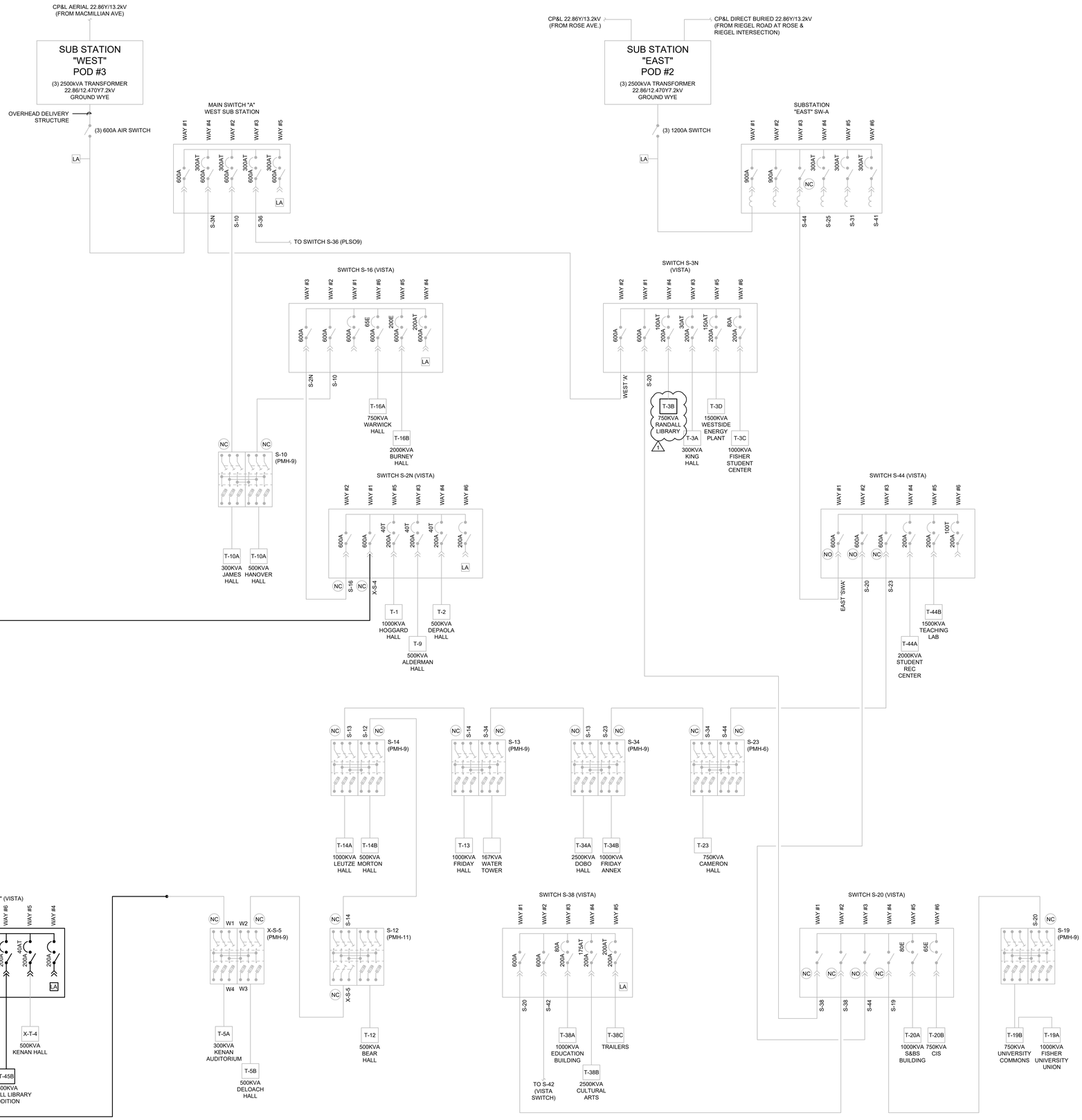
SHEET NAME:
PARTIAL UNCW CAMPUS MV SINGLE LINE DIAGRAM - EXISTING

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU401

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TWENTY-FOUR SCALE



1 PARTIAL UNCW CAMPUS MEDIUM-VOLTAGE SINGLE LINE DIAGRAM - NEW WORK
SCALE: NOT TO SCALE

UNCW

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101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
TEL. 910.790.9901 FAX 910.790.3111
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04/08/22

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

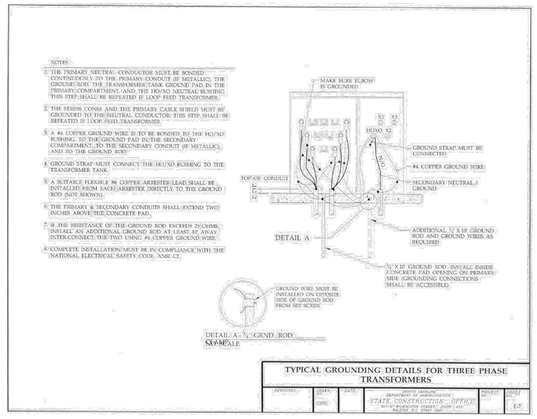
Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

SHEET NAME:
PARTIAL UNCW CAMPUS MV SINGLE LINE DIAGRAM - NEW WORK

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU402

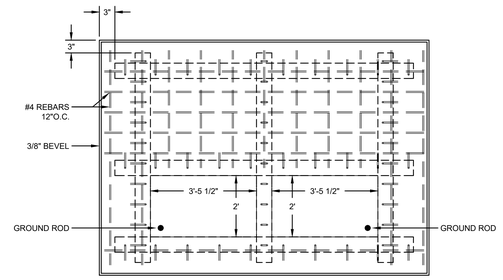
PACKAGE A -
BID DOCUMENTS



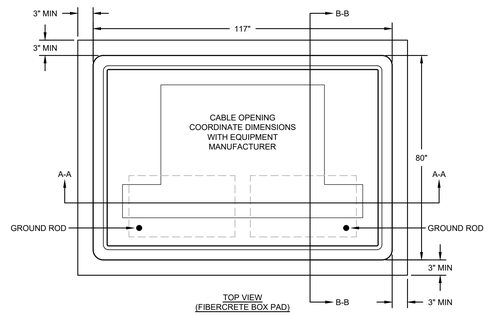
3 TRANSFORMER GROUNDING DETAIL
SCALE: NOT TO SCALE

BOX PAD SPECIFICATION:

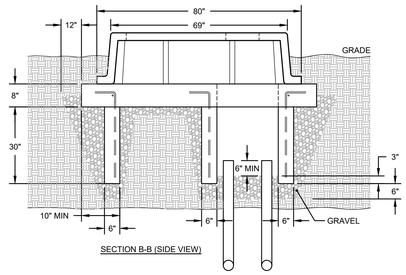
1. PROVIDE GLASS FIBER REINFORCED CONCRETE (GFRC) BOX PAD. BOX PAD SHALL BE MODULAR TO COORDINATE WITH 6-WAY PADMOUNT SWITCHGEAR. REFER TO SWITCH MANUFACTURER'S SUBMITTAL FOR DIMENSIONS.
2. PROVIDE PRODUCT SUBMITTAL FOR APPROVAL INDICATING MANUFACTURER'S DESIGN DIMENSIONS.
3. THE BOX PAD SHALL BE DESIGNED AND CONSTRUCTED TO PROVIDE A SERVICEABLE LIFE OF 35 YEARS AND WARRANTIED FOR 5 YEARS WHEN INSTALLED OUTDOORS IN FULL SUNLIGHT AND WITHOUT ANY PROTECTION FROM THE WEATHER.
4. THE SUPPLIER SHALL DESIGN, CONSTRUCT, PERFORM DIMENSIONAL AND QUALITY CONTROL TESTS, AND PREPARE THE PADS FOR TRUCK SHIPMENT. SHIPPING AND DELIVERY RESPONSIBILITIES SHALL BE DEFINED IN THE PROJECT SPECIFIC PURCHASE DOCUMENTS.
5. THE TOLERANCES OF THE DIMENSIONS OF EACH BOX PAD SHALL NOT EXCEED +/-1/8". THESE TOLERANCES APPLY TO THE COMPONENTS WHEN READY FOR SHIPPING, WHEN SET ON A FLAT AND LEVEL SURFACE WITH NO LOADS APPLIED TO IT.
6. PROVIDE CAST-IN THREADED INSERTS, FOR LIFTING PAD. MOUNTING HOLES MUST BE ADEQUATELY REINFORCED TO AVOID DAMAGING THE PAD AND TO PROVIDE AN ULTIMATE STRENGTH OF AT LEAST 5 TIMES THE PAD WEIGHT WHEN THE PART IS LIFTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. BOX PADS SHALL BE AT LEAST TWO PIECES; CONSTRUCTED WITH INTERNAL SUPPORT COLUMNS EXTENDING THE ENTIRE DEPTH OF THE BOX PAD TO ENSURE FULL SUPPORT OF THE UPPER LIP OF THE BOX PAD. INTERNAL SUPPORT COLUMNS SHALL ALSO SPAN THE WIDTH OF THE BOX PAD BENEATH THE TOP SURFACE.
8. THE BOX PAD SHALL BE DESIGNED AND CONSTRUCTED SO THAT IT AND ANY RELATED HARDWARE WILL NOT TRAP OR HOLD WATER WHEN REQUIRED, AND SO THAT IT SHALL BE ABLE TO WITHSTAND REPEATED FREEZE AND THAW CYCLES.
9. THE BOX PAD COLOR SHALL BE A NATURAL CONCRETE GRAY.
10. THE BOX PAD SHALL HAVE A TOP SURFACE LIP SIZED TO PERMIT SECURE FASTENING OF EQUIPMENT ALL AROUND.
11. THE BOX PAD SHALL BE DESIGNED TO SUPPORT SPECIFIC EQUIPMENT AND APPLICATIONS.
12. THE PRECAST COMPONENTS ARE DESIGNED TO CONFORM TO REQUIREMENTS STATED IN ASTM C857-07 "PRACTICE FOR MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES, ASTM C858-07 "SPECIFICATIONS FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES".
13. ALL BOX PADS SHALL BE COMPOSED OF CEMENT MORTAR REINFORCED BY ALKALI RESISTANT GLASS FIBERS.
14. FINE AGGREGATES SHALL CONFORM TO ASTM C33 "SPECIFICATION FOR CONCRETE AGGREGATES".
15. MECHANICAL PROPERTIES AFTER 28 DAYS OF AGE:
    - 15.1. MINIMUM COMPRESSIVE STRENGTH OF 7500 PSI
    - 15.2. FLEXURAL STRENGTH OF 3200 PSI
    - 15.3. SHEAR STRENGTH: MATERIAL SHALL MEET OR EXCEED THE FOLLOWING RESULTS WHEN TESTED UNDER ASTM D695-08.
      - 15.3.1. PEAK LOAD-1,187 LBF
      - 15.3.2. PEAK STRESS-2,125 PSI
      - 15.3.3. MODULUS-391 KSI
    - 15.4. STRENGTH AND DEFLECTION: BOX PADS SHALL MEET OR EXCEED THE FOLLOWING WHEN TESTED SIMULATING EQUIPMENT FOOTPRINT AND SHOW NO SIGNS OF FAILURE OR SIGNIFICANT DEFLECTION.;LARGE BOX PADS (LARGE SWITCHGEAR, 3 PHASE TRANSFORMERS) SHALL WITHSTAND 28,000 LBS.
    - 15.5. SIDEWALL LOADING: BOX PADS SHALL MEET OR EXCEED A SIDEWALL DEFLECTION OF .037" WITH 2,000 LBS. APPLIED.3-E CHEMICAL RESISTANCE: MATERIAL SHALL SHOW NO SIGNS OF SWELLING, CRAZING, BLISTERING, CRACKING, DEFORMATION, EROSION OR LOSS OF 25% OR MORE OF THE INITIAL FLEXURAL STRENGTH WHEN EXPOSED TO THE FOLLOWING CHEMICAL UNDER NORMAL SERVICE CONDITIONS.• 5% CALCIUM CHLORIDE-CACl2• 0.1 N SODIUM SULFATE-NA2SO4
16. WITH EQUIPMENT INSTALLED; THE BOX PAD SHALL BE CAPABLE OF WITHSTANDING TEMPERATURE VARIATIONS OF -40° FAHRENHEIT TO 149°FAHRENHEIT WITHOUT CRACKING, SPLITTING, OR OTHERWISE DEFORMING. MATERIAL SHALL BE HAVE BEEN TESTED AND CONFORM TO ASTM C666/C666M-03
17. THE BOX PAD MUST NOT WARP, RUST, BE UV DEGRADABLE, OR SUSTAIN COMBUSTION.
18. FIRE RESISTANCE: PER ASTM E-84 SURFACE BURNING TEST MUST PROVIDE CLASS A LEVEL WITH A FLAME SPREAD INDEX OF 0 AND SMOKE DEVELOPED INDEX IS ALSO 0.
19. INSTALLATION REQUIREMENTS
    - 19.1. INSTALL PER MANUFACTUER'S GUIDELINES.
    - 19.2. PLACE EQUIPMENT ON LEVEL COMPACTED BACKFILL MATERIAL. BEDDING REQUIREMENTS SHALL INCLUDE MECHANICAL COMPACTION OF SAND AND GRAVEL MATERIAL. A 6 INCH GRANULAR BASE OF COMPACTED CRUSHED ROCK OR GRANULAR MATERIALS; AT WHICH 100% PASSES A 3/8 INCH SIEVE; AND A MAXIMUM OF 5% PASSES A NUMBER 10 SIEVE SHALL BE PLACED ON COMPACTED SUB GRADE UNDER THE PROPOSED BOX PAD UNIT.
    - 19.3. ALL BOX PAD EXCAVATIONS SHALL BE BACKFILLED TO RESTORE TO THE FINAL GRADE AS IDENTIFIED ON THE DRAWINGS.
    - 19.4. PROVIDE A MINIMUM 6 INCH GRAVEL BASE EXTENDING AROUND THE PERIMETER OF THE BOX PAD A MINIMUM OF 12 INCHES.



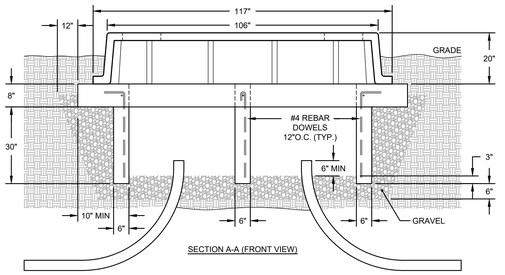
TOP VIEW (CONCRETE PAD)



TOP VIEW (FIBERCRETE BOX PAD)

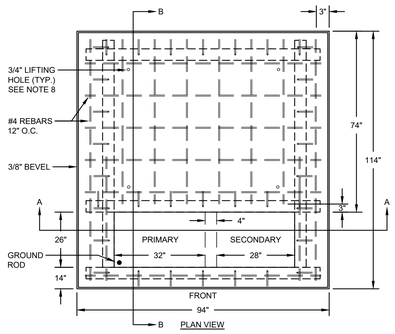


SECTION B-B (SIDE VIEW)



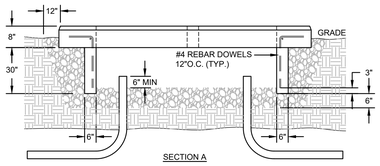
SECTION A-A (FRONT VIEW)

1 MEDIUM-VOLTAGE PAD-MOUNT SWITCH PAD DETAIL
SCALE: NOT TO SCALE

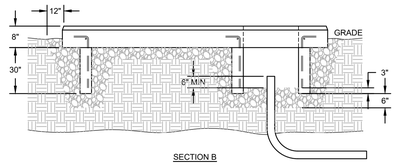


NOTES:

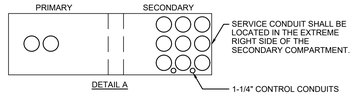
1. TRANSFORMER PADS SHALL BE INSTALLED IN A LOCATION TO REMAIN READILY ACCESSIBLE FOR LINE TRUCKS. PADS SHALL HAVE A MINIMUM CLEARANCE FROM OBSTRUCTIONS AND BUILDINGS IN COMPLIANCE WITH APPLICABLE CODES. MINIMUM WORKING CLEARANCES SHALL BE: TEN (10) FEET ON THE FRONT (DOOR SIDE) FOUR (4) FEET ON SECONDARY SIDE THREE (3) FEET ON REAR & PRIMARY SIDE
2. SOIL UNDERNEATH PADS SHALL BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS AND BE THOROUGHLY TAMPED TO PREVENT WASHING. EXERCISE CARE IN BACKFILLING AND GRADING AROUND PAD.
3. REINFORCE WITH #4 REBARS ON A 12" [30.5cm] x 12" [30.5cm] GRID TIED SECURELY 3" [7.6] ABOVE BASE ON CLEAN CONCRETE OR BRICK SUPPORTS. END OF REBARS TO BE 3" [7.6cm] FROM OUTSIDE EDGE OF PAD.
4. CONCRETE TO BE 5-1/2% AIR-ENTRAINED WITH A MINIMUM 28 DAY STRENGTH OF 3000 PSI. [20685 dynes/m] MIXTURE TO BE 1:2:4 PROPORTIONS OF CEMENT, SAND, AND GRAVEL. USE NO MORE THAN 6 GALLONS [22.71] OF WATER PER SACK OF CONCRETE.
5. TOP SURFACE TO BE LEVEL, SMOOTH, AND BEVELED APPROXIMATELY 3/8" [0.95cm]
6. SERVICE CONDUIT SHALL BE LOCATED IN THE EXTREME RIGHT SIDE OF THE SECONDARY COMPARTMENT.



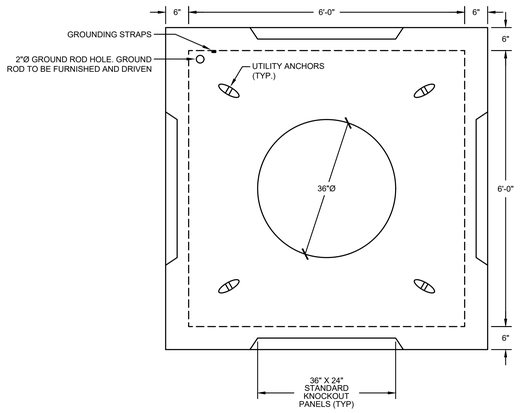
SECTION A



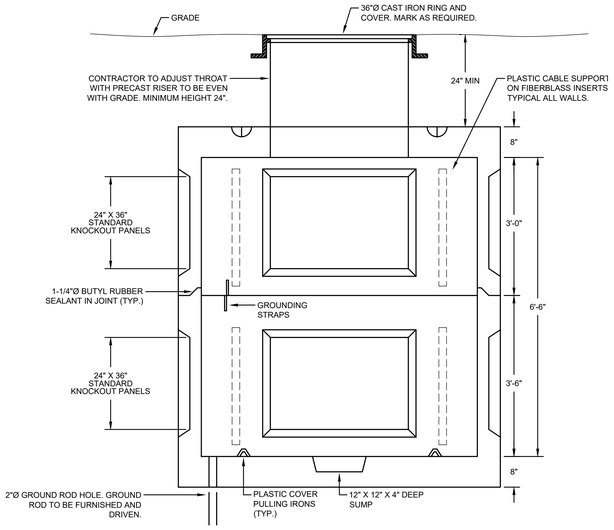
SECTION B



4 TRANSFORMER PAD DETAIL
SCALE: NOT TO SCALE



PLAN VIEW



FRONT VIEW

2 ELECTRICAL MANHOLE DETAIL
SCALE: NOT TO SCALE

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02/04/22

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SCO ID: 18-19656-02A
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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
ELECTRICAL DETAILS

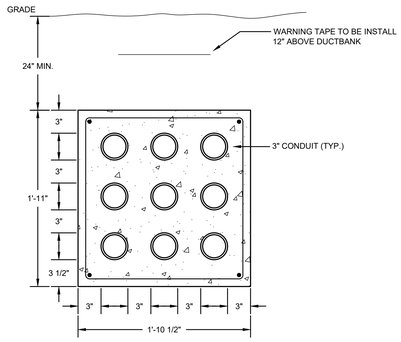
ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU500

PACKAGE A -
BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE FULL SCALE DRAWING SIZE

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



13 DUCTBANK DETAIL
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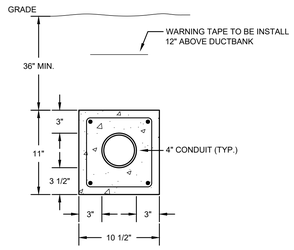

9 DUCTBANK DETAIL
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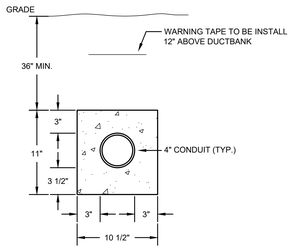

5 DUCTBANK DETAIL
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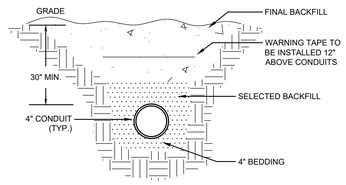

1 DIRECT BURIED CONDUIT DETAIL
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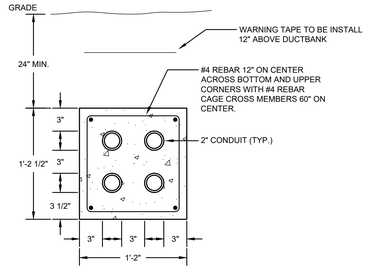

10 DUCTBANK DETAIL
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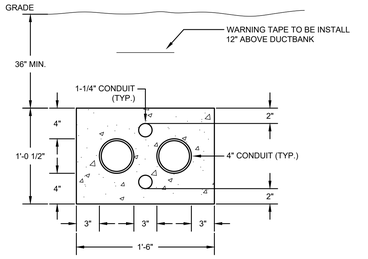

6 DUCTBANK DETAIL
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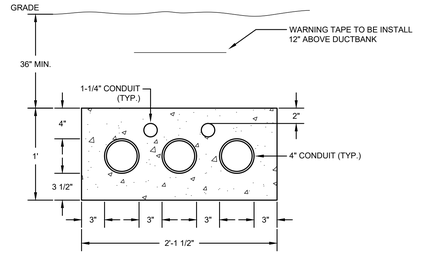

2 DUCTBANK DETAIL
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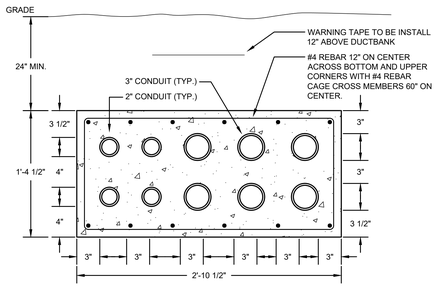

11 DUCTBANK DETAIL
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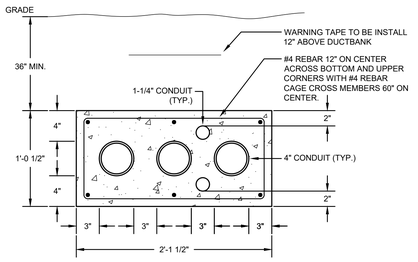

7 DUCTBANK DETAIL
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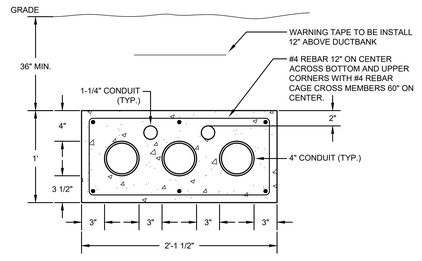

3 DUCTBANK DETAIL
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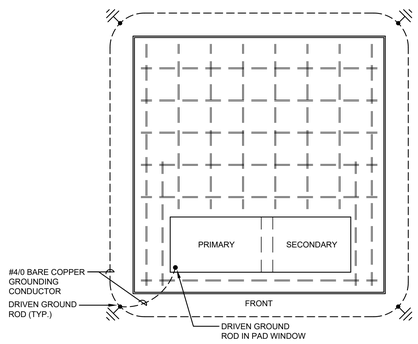
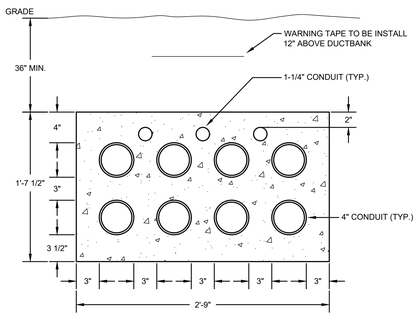


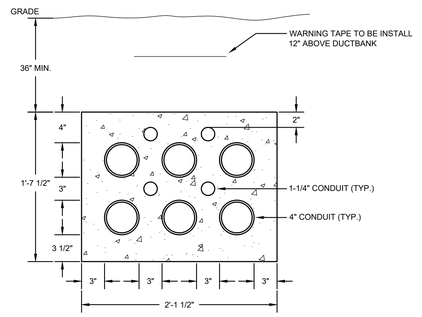
NOTES:

1. GROUND ROD TO BE 3/4 IN. DIAMETER X 10 FT. LONG COPPER CLAD STEEL.
2. GROUND ROD IN PAD WINDOW TO BE 4 INCHES FROM EACH SIDE OF THE CORNER.
3. GROUNDING CONDUCTOR TO BE #4/0 BARE COPPER MINIMUM.
4. GROUNDING CONDUCTOR DEPTH TO BE 30 INCHES MINIMUM.
5. MECHANICAL/ELECTRICAL CONNECTIONS IN THE GROUND SHALL BE EXOTHERMIC WELDS (EX. CADWELD).
6. GROUNDING CONDUCTOR TO BE 2 FT. FROM THE EDGE OF THE CONCRETE PAD.

14 PAD GROUNDING DETAIL
SCALE: NOT TO SCALE



8 DUCTBANK DETAIL
SCALE: NOT TO SCALE



4 DUCTBANK DETAIL
SCALE: NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL SEAL 023265 ENGINEER WILLIAM D. HENNEN
02/14/22

RANDALL LIBRARY RENOVATION & EXPANSION

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LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
ELECTRICAL DETAILS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
EU501

PACKAGE A -
BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE DATE OF ORIGINAL ISSUE

SHEET SYMBOLS

- EQ / # — SCHEDULED EQUIPMENT REFERENCE. TOP INDICATES EQUIPMENT TYPE IDENTIFIER. BOTTOM INDICATES EQUIPMENT NUMBER.
- 2 — SPECIALTY ITEMS (E.G., GAUGE FILTER, ETC.) REFER TO EQUIPMENT LIST
- REFER / M-1 — PLAN CONTINUATION REFERENCE. BOTTOM INDICATES SHEET ON WHICH CONTINUATION APPEARS.
- 1 / M-1 — SECTION REFERENCE. TOP INDICATES SECTION NUMBER. BOTTOM INDICATES SHEET ON WHICH SECTION APPEARS.
- 2 / M-1 — DETAIL REFERENCE. TOP INDICATES DETAIL NUMBER. BOTTOM INDICATES SHEET ON WHICH DETAIL APPEARS.
- A/15B-6 — DETAIL REFERENCE, INDICATING DETAIL NUMBER, SHEET ON WHICH DETAIL APPEARS.
- ELEVATION DESIGNATION. REFERENCE OFFICIAL PROJECT DATUM
- 1 — REVISION REFERENCE. REFER TO SHEET REVISION BLOCK
- 1 — SHEET KEYNOTE REFERENCE
- ROOM NAME / 101 — ROOM NAME & NUMBER DESIGNATION
- 1001 — CONSTRUCTION BULLETIN REVISION NUMBER
- 2 — POINT OF NEW CONNECTION TO EXISTING
- HALFTONE LIGHT LINE INDICATES EXISTING WORK
- HEAVY DASHED LINE WITH HATCH INDICATES EXISTING WORK TO BE DEMOLISHED
- HEAVY LINE INDICATES NEW WORK
- DASHED LINE INDICATES CONCEALED WORK
- X/XXX — SHEET REFERENCE
- MATCHLINE

SITE SYMBOLS

- VT — TELECOMMUNICATION VAULT
- EXISTING TELECOMMUNICATIONS MANHOLE TO BE DEMOLISHED
- NEW TELECOMMUNICATION DUCT BANK
- TELECOMMUNICATION DUCT BANK TO BE DEMOLISHED

TECHNOLOGY SYMBOLS AND ABBREVIATIONS

NOTE: SYMBOLS INDICATED HERE AND NOT USED IN THE CONTRACT DOCUMENTS DO NOT APPLY TO THIS PROJECT. ADDITIONAL SYMBOLS MAY BE INDICATED IN THE CONTRACT DOCUMENTS. UNLESS OTHERWISE NOTED, DIMENSIONS LISTED ARE MEASURED FROM FINISHED FLOOR TO CENTERLINE.

GENERAL NOTES

1. VERIFY IF ANY EXISTING UTILITIES EXIST IN THE VICINITY OF THE NEW WORK SHOWN. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND LOCATING ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. PROVIDE MINIMUM CODE SEPARATION OF NEW PATHWAYS FROM EXISTING OR NEW UTILITIES. PROVIDE SEPARATION ACCORDING TO INDIVIDUAL UTILITY PROVIDER WHERE REQUIREMENTS ARE GREATER OR MORE STRINGENT.
3. THIS SITE DRAWING REPRESENTS A DIAGRAMMATIC OVERVIEW OF THE TELECOMMUNICATION SITE PATHWAYS INFRASTRUCTURE. REFER TO CIVIL DRAWINGS FOR PLACEMENT AND INSTALLATION REQUIREMENTS.
4. PROVIDE CONDUIT SEALING PLUGS IN OSP TELECOM CONDUITS. PROVIDE PLUG CONFORMING TO THE CABLE AND/OR INNERDUCT USED. PROVIDE BLANK PLUGS FOR UNUSED CONDUITS.
5. PROVIDE IDENTIFICATION TAGS FOR TELECOM CONDUITS AND BACKBONE FIBER CABLING. LOCATE AT EACH END OF THE CONDUIT IDENTIFYING THE DESTINATION AND USE AS "COMMUNICATIONS". LOCATE AT EACH END OF THE CABLE IDENTIFYING THE DESTINATION, CABLE COUNTS AND QUANTITIES.
6. ALL CABLING SHALL BE PROTECTED BY CONDUIT UNLESS OTHERWISE NOTED.

DUCTBANKS

A. PROVIDE SCHEDULE 40 (WITH CONCRETE ENCASEMENT) OR SCHEDULE 80 (WITHOUT CONCRETE ENCASEMENT) PVC TYPE CONDUIT. IN CASES WHERE THE CONDUIT BANK RUNS PARALLEL TO A 4KV OR HIGHER VOLTAGE DISTRIBUTION SYSTEM FOR MORE THAN TEN (10) FEET, ANY CONDUIT WITH LESS THAN A FOUR (4) FOOT SEPARATION FROM THE HIGH VOLTAGE CONDUIT SYSTEM MUST BE RIGID METAL CONDUIT (RMC), AND GROUNDED IN AT LEAST ONE OF THE ATTACHED COMMUNICATIONS VAULTS (CV).
B. PROVIDE RIGID METAL CONDUIT (RMC) FROM 5 FEET OUTSIDE BUILDING LINE AND INTO THE EF OR BDF, WHICHEVER IS APPLICABLE FOR THE PROJECT, UNLESS ENTRANCE CONDUITS STUB INTO BASEMENT LEVEL ROOM, THEN PROVIDE MANUFACTURED LONG SWEEP ELBOW BENDS AT THE POINT THE CONDUIT TURNS UP INTO THE BUILDING'S S ENTRANCE FACILITY (EF), STOPPING FOUR-INCHES ABOVE THE FINISHED FLOOR OF THE EF.
C. PROVIDE LINKSEAL ASSEMBLY WHEN DUCT BANK IS GOING THROUGH BUILDING OR VAULT WALLS. IF PRE-MANUFACTURED TERM-A-DUCT ARE USED IN VAULTS, LINKSEAL ASSEMBLY IS NOT REQUIRED.
D. PROVIDE A PULL-POINT AFTER EVERY FOUR 45-DEGREE BENDS AND AFTER 250-FOOT CONDUIT RUNS CONTAINING ONE OR MORE BENDS.
E. PROVIDE A PULL-POINT AT ANY STRAIGHT RUN OF CONDUIT 300 FEET IN LENGTH.
F. PROVIDE A MINIMUM 35 INCHES OF GROUND COVER OVER THE DUCT BANK. IF DUCT HAS AREAS LESS THEN 24 INCHES, ENCASE THOSE AREAS IN CONCRETE. PROVIDE A METAL IMPREGNATED DETECTABLE MARKER TAPE AT 18 INCHES ABOVE THE DUCT BANK ALONG THE CENTERLINE OF THE DUCT BANK THROUGH ITS ENTIRE LENGTH.
G. PROVIDE 3-INCH-WIDE, METAL IMPREGNATED, WARNING TAPE ABOVE TELECOMMUNICATION CONDUIT(S) THE LENGTH OF THE TRENCH. TELECOMMUNICATION AND ELECTRICAL CONDUITS MAY SHARE THE SAME TRENCH WHERE BOTH TRAVEL THE SAME ROUTE, BUT WITH A MINIMUM OF 12-INCH SEPARATION OF PACKED EARTH, OR 3-INCH SEPARATION WITHIN A CONCRETE ENCASED DUCT BANK.
H. FOR CONCRETE ENCASED DUCT BANK(S), PROVIDE #4 REBAR AROUND THE DUCT BANK EVERY 24 INCHES ON CENTER AND ALONG EACH CORNER AND ALONG CENTER LINE OF EACH SIDE AT THE PERIMETER OF THE ENCASEMENT, LEAVING NO CAPS. OVERLAP ENDS OF REBAR A MINIMUM OF 2 INCHES AT ALL ENDS AND WRAP WITH WIRE TO SECURE IN PLACE. ALL INTERSECTIONS OF PERPENDICULAR REBAR AND OVERLAPS MUST BE AFFIXED TO EACH OTHER WITH WIRE TO PREVENT MOVEMENT WHEN CONCRETE IN POURED. THE CONCRETE SHALL HAVE A 28-DAY STRENGTH OF 4,000 PSI AND A SLUMP OF NO MORE THAN THREE (3) INCHES WHEN PLACED.
I. CONDUITS SHALL ENTER AND EXIT A VAULT/PULL BOX FROM OPPOSITE ENDS OF THE SHORT SIDES OF THE VAULT/PULL BOX, ENTERING IN TWO BANKS OF CONDUITS TOWARD THE OUTER EDGES OF THE VAULT/PULL BOX SIDES AND NO CLOSER THAN 12 INCHES TO THE EDGE OF THE LONG WALLS OF THE VAULT/PULLBOX.
J. CONDUITS SHALL MAKE A MINIMUM 8-FOOT RADIUS SWEEP, USING FACTORY BENDS ONLY, WHEN CHANGING DIRECTION WHERE POSSIBLE, BUT NOT LESS THAN 5 FEET TO MINIMIZE THE FRICTION WHEN PULLING CABLE. CONDUITS SHALL NOT SWEEP IN OPPOSITE DIRECTIONS WITHIN TWENTY FEET OF EACH OTHER AND NO MORE THAN A 90 DEGREE BEND.
K. IF A DUCT BANK IS NOT ENCASED IN CONCRETE, PROVIDE A MINIMUM 3-INCH CONCRETE ON THE INSIDE B END TO PREVENT BURN-THROUGH WHEN PULLING CABLE.
L. PROVIDE 4 INCH CONDUITS IN DUCT BANKS SPACED 3 INCHES APART TO ALL SIDES USING SUPPORT SEPARATORS DESIGNED FOR MAINTAINING CONSISTENT SPACING BETWEEN CONDUITS ALONG THE ENTIRE PATHWAY.
M. SEAL ALL JOINTS PRIOR TO POURING ANY SLURRY OR CONCRETE ENCASEMENT TO PREVENT MOISTURE FROM PENETRATING OVER THE LIFE OF THE DUCT BANK.
N. PROVIDE TWO PULL ROPES IN EACH CONDUIT. PULL ROPE BETWEEN PULL POINTS MUST BE UNIDIRECTIONAL, SUCH AS DUPONT KEVLAR PULLING TAPE WITH UP TO 1,250 LBS. OF TENSILE STRENGTH. PROVIDE ADDITIONAL 10 FEE OF PULL ROPE SLACK AT EACH PULL POINT, COILING THE SLACK WITHIN THE END OF THE CONDUIT, JUST BEHIND THE DUCT PLUG.

INNERDUCTS

A. FABRIC TYPE INNERDUCT SHALL BE USED TO PROVIDE SUB-DUCTING FOR ADDITIONAL CABLING WITH A MINIMUM OF THREE 1-1/4" CELLS PER FOUR-INCH CONDUIT. EACH WITH A DIFFERENT COLOR IDENTIFIER AND PULL STRING. EACH INNERDUCT SHALL BE SEALED TO PREVENT LEAKAGE INTO THE BUILDING.

VAULTS

A. PROVIDE VAULTS 6 FEET BY 4 FEET IN PLAIN VIEW, AND 7 FEET DEEP MINIMUM, WITH A PRE-MANUFACTURED BASE.
B. THE SHORTER SIDES ARE TYPICALLY USED FOR MAIN CONDUIT BANK PENETRATIONS FOR THE NORMAL FLOW OF CABLE ROUTING. THE LONGER SIDES ARE USED FOR FEEDER CONDUIT BRANCHING OFF THE MAIN BANK.
C. LOCATE CONDUITS BRANCHING OFF ON THE LONGER SIDE NEAR THE EDGES OF THE VAULT WALL FOR PROPER CABLE MANAGEMENT AND TO KEEP CABLING OUT OF THE CENTRAL AREA OF THE VAULT. CABLES ROUTING THROUGH THE LONG WALL MUST EXIT THE VAULT/PULL BOX AT THE OPPOSITE END OF THE VAULT THAN WHERE IT ENTERS.
D. LOCATE CONDUITS BRANCHING OFF ON THE LONG SIDE WALLS AT THE FARTHEST POINT FROM THE DIRECTION OF THE CABLE RUN TO THE TARGET BUILDING.
E. ANY VAULT/PULL BOX WITHIN A POTENTIAL TRAFFIC AREA MUST USE A TRAFFIC RATED (H-20) LID.
F. VAULT LOCATION SHALL NOT BE PLACED IN OR UNDER A PUBLIC NOR PRIVATE ROADWAY.
G. WHERE VAULTS MUST BE LOCATED AT A HIGHER ELEVATION THAN THE PENETRATION POINT OF A BUILDING. THE VAULTS MUST CONTAIN A SUMP HOLE ON THE BOTTOM. WITH A PUMP THAT DRAINS DIRECTLY TO THE AREAS NEAREST STORM DRAINAGE SYSTEM. THE VAULT MUST ALSO HAVE GFCI PROTECTED POWER TO OPERATE THE VAULT'S PUMP. THE PUMP MUST BE PROTECTED BY A CAST IRON GRATE. FOR VAULTS, NOT IN USE, WHOSE BASE IS LOCATED BELOW THE WATER TABLE. PROVIDE A DRAIN CAP TO PREVENT GROUNDWATER INFILTRATION.
H. PROVIDE P-3200 SERIES CHANNEL PRECAST IN THE SIDEWALLS OF THE VAULT ALONG THE LONG SIDES (ENTIRE LENGTH OF THE VAULT WALL UP TO 18 INCHES FROM EDGES(IN THREE ROWS TWO FEED APART, CENTERED VERTICALLY ON THE WALL FOR RACKING CABLES, SPLICE CASES AND CABLE SLACK. PROVIDE MINIMUM 18 INCH STANDOFFS RACK UNITS.
I. PROVIDE 120V POWER TO EACH VAULT REQUIRING A PUMP. CONFER WITH UNCW IT FOR VAULTS REQUIRING POWER FOR MISCELLANEOUS USE SUCH AS LIGHTING. IN THIS CASE, PROVIDE GFI RECEPTACLES WITH WEATHER COVERS AFFIXED TO THE UNDERSIDE OF THE VAULT CEILING. PROVIDE A HOOK FOR THE HANGING OF A PORTABLE LIGHT.
J. PROVIDE A REMOVABLE RUNG LADDER FROM THE CENTER ACCESS OF THE VAULT TO THE FLOOR, RESTING THE WEIGHT OF THE LADDER AND OCCUPANTS AT THE FLOOR. TOP OF LADDER MUST AFFIX TO AN ANCHORING SYSTEM WHILE IN USE, BUT REMOVABLE TO ALLOW FOR CABLE PULLING WITHIN THE VAULT.
K. PROVIDE PULL-EYES AT THE FLOOR AND AT THE WALL, FOR PULLING CABLE. PULL-EYE MUST BE PRE-CAST INTO THE VAULTS FLOOR AND BOTH END WALLS.
L. PROVIDE WHITE FOR INTERIOR, BLACK FOR EXTERIOR, EPOXY BASED PAINT FOR WATER PROOFING OF THE VAULT/PULL BOX SURFACES. PENETRATIONS INTO A SIDEWALL MUST BE FLUSH WITH THE INTERIOR WALL. ANY NEW PENETRATION MUST BE CLEANLY BORED AND SEALED AT THE EXTERIOR WITH EPOXY FILLER OR ROOM TEMPERATURE VULCANIZING (RTV) ALONG WITH LINKSEAL ASSEMBLY.

TECHNOLOGY ABBREVIATIONS

ABV	- ABOVE
AC	- ABOVE CEILING
ACP	- ACCESS CONTROL PANEL
ACT	- ACOUSTICAL CEILING TILE
AFF	- ABOVE FINISHED FLOOR
ALT	- ALTERNATE
AP	- ACCESS POINT
ARCH	- ARCHITECTURAL
ASC	- ABOVE SUSPENDED CEILING
AUTO	- AUTOMATIC
AWG	- AMERICAN WIRE GAUGE
BAS	- BUILDING AUTOMATION SYSTEM
BCS	- BUILDING CONTROL SYSTEM
BEF	- BUILDING ENTRANCE FACILITY
BFC	- BELOW FINISH CEILING
BFL	- BELOW FLOOR LEVEL
BLDG	- BUILDING
C	- CONDUIT
CAB	- CABINET
CAT	- CATEGORY
CATV	- COMMUNITY ACCESS TELEVISION
CCTV	- CLOSED CIRCUIT TELEVISION
CFCI	- CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CO	- CONDUIT ONLY
CONTR	- CONTRACTOR
CORR	- CORRIDOR
CP	- CONSOLIDATION POINT
CT	- CABLE TRAY
CU	- COPPER
D	- DATA
DB	- DIRECT BURIAL
DC	- DIRECT CURRENT
DED	- DEDICATED
DET	- DETAIL
DIA	- DIAMETER
DIG	- DIGITAL
DN	- DOWN
EC	- ELECTRICAL CONTRACTOR
EDB	- ELECTRIC DUCT BANK
EF	- ENTRANCE FACILITY
EG	- EQUIPMENT GROUND
EIDF	- EQUIPMENT INTERMEDIATE DISTRIBUTION FACILITY
EJ	- EXPANSION JOINT
ELEC	- ELECTRIC / ELECTRICAL
ELEV	- ELEVATOR
EMER	- EMERGENCY
EMI	- ELECTROMAGNETIC INTERFERENCE
EMT	- ELECTRICAL METALLIC TUBING
EQ	- EQUAL
EQUIP	- EQUIPMENT
ER	- EQUIPMENT ROOM
ETR	- EXISTING TO REMAIN
F/FC	- FLUSH WITH FINISHED CEILING
F/FF	- FLUSH WITH FINISHED FLOOR
F/FW	- FLUSH WITH FINISHED WALL
FA	- FIRE ALARM
FACP	- FIRE ALARM CONTROL PANEL
FATC	- FIRE ALARM TERMINAL CABINET
FB	- FLOOR BOX
FL	- AT FLOOR LINE
FLEX	- FLEXIBLE / FLEXIBLE CONDUIT
FLR	- FLOOR
FO	- FIBER OPTIC
FOE	- FIBER OPTIC ENCLOSURE
G	- GROUND
GC	- GENERAL CONTRACTOR
GND	- GROUND
GRC	- GALVANIZED RIGID CONDUIT
HH	- HANDHOLE
HT	- HEIGHT
IC	- INSTALLED BY CONTRACTOR
IDF	- INTERMEDIATE DISTRIBUTION FACILITY
IH	- IMAGE HEIGHT
IMC	- INTERMEDIATE METAL CONDUIT
IT	- INFORMATION TECHNOLOGY
JB	- JUNCTION BOX
KO	- KNOCK-OUT
LA	- LINE LEVEL AUDIO
LAN	- LOCAL AREA NETWORK
LGT	- LIGHT
LV	- LOW VOLTAGE
MDF	- MAIN DISTRIBUTION FACILITY
MER	- MAIN EQUIPMENT ROOM
MH	- MAINTENANCE HOLE
MM	- MULTIMODE
MTD	- MOUNTED
MTG	- MOUNTING
MTG HGT	- MOUNTING HEIGHT
NA	- NOT APPLICABLE
NIC	- NOT IN CONTRACT
NO	- NORMALLY OPEN
NTS	- NOT TO SCALE
OC	- ON CENTER
OFCI	- OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	- OWNER FURNISHED OWNER INSTALLED
OSP	- OUTSIDE PLANT
P	- POLE
P-P	- POINT TO POINT
PB	- PULL BOX / PUSH-BUTTON
PBX	- PRIVATE BRANCH EXCHANGE
PC	- PHOTOCELL
PDU	- POWER DISTRIBUTION UNIT
PH	- PHASE
PNL	- PANEL
PROW	- PUBLIC RIGHT OF WAY
PWR	- POWER
QTY	- QUANTITY
R	- RACK
RC	- RELAY CONTACT
REC	- RECESSED
RECEP	- RECEPTACLE
REL	- RELOCATE
REQD	- REQUIRED
RS	- RECOMMENDED STANDARD
RSVD	- RESERVED
RU	- RACK UNIT
SHT	- SHEET
SIG	- SIGNAL
SIM	- SIMILAR
SIO	- STANDARD INFORMATION OUTLET
SM	- SINGLE MODE
SPEC	- SPECIFICATION
STD	- STANDARD
STA	- STATION
SW	- SWITCH
SYS	- SYSTEM
TBB	- TELECOMMUNICATIONS BACKBONE
TELE	- TELECOMMUNICATIONS
TELECOM	- TELECOMMUNICATIONS
TFA	- TO FLOOR ABOVE
TFB	- TO FLOOR BELOW
T(M)GB	- TELECOMMUNICATIONS (MAIN) GROUND BUSBAR
TO	- TELECOMMUNICATIONS OUTLET
TP	- TAMPER PROOF
TR	- TELECOM ROOM
TS	- TAMPER SWITCH
TYP	- TYPICAL
UC	- UNDER COUNTER
UF	- UNDER FLOOR
UG	- UNDERGROUND
UON	- UNLESS OTHERWISE NOTED
V	- VOICE / VOLTAGE
WP	- WEATHERPROOF
WS	- WALL SURFACE
WT	- WATER TIGHT

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
SYMBOLS AND ABBREVIATIONS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
TU001

PACKAGE A - BID DOCUMENTS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE

1 **CAMPUS COMMUNICATIONS DISTRIBUTION**
SCALE: 1" = 100'-0"

GENERAL NOTES:

1. THE INFORMATION PROVIDED ON THESE DOCUMENTS IS BASED ON INFORMATION PROVIDED BY OTHERS AND DOES NOT NECESSARILY REFLECT ACTUAL EXISTING OR AS-BUILT CONDITIONS.
2. COORDINATE OPENINGS FOR CONDUIT PENETRATIONS AT BUILDING EXTERIOR WITH ARCHITECT AND STRUCTURAL ENGINEER. PROVIDE APPROVED WATERTIGHT PENETRATION THROUGH BUILDING OPENING. REFER TO AND COORDINATE WITH INTERIOR DRAWING PACKAGE FOR LOCATION AND ROUTING OF INTERIOR CONDUIT AND TRANSITION POINT TO EXTERIOR CONDUIT.
3. PROVIDE NEW TELECOMMUNICATIONS MANHOLE AT LOCATIONS AS SHOWN AND NOT TO EXCEED A DISTANCE OF 200 L.F. BETWEEN. MANHOLES SHALL BE 6'X4'X7" IN SIZE WITH A TRAFFIC RATED LID.
4. NEW DUCTBANKS SHALL BE QTY (4) 4" CONDUITS EACH. REFER TO SHEET TU102.
5. COORDINATE SCHEDULE AND RE-TERMINATION OF ALL SERVICES WITH UNC IT PRIOR TO COMMENCEMENT OF WORK. VALIDATE CONDITIONS IN FIELD TO ENSURE PROPER LENGTH OF EXISTING CABLING SHALL ALLOW RE-TERMINATION.
6. REFER TO ELECTRICAL SITE PLANS FOR SHARED-TRENCH AND DUCTBANK PROFILE INFORMATION.

SHEET KEYNOTES:

1. NEW 4'X6' COMMUNICATIONS VAULT 1A. FOR FUTURE REPLACEMENT OF EXISTING MANHOLE #16. PROVIDE NEW TRAFFIC RATED LID AT TOP OF PAVEMENT.
2. NEW COMMUNICATIONS DUCTBANK. PROVIDE (4) 4" PVC SCHEDULE 40 CONDUITS FROM VAULT 1A TO VAULT 1B.
3. NEW 4'X6'X7' COMMUNICATIONS VAULT 1B.
4. NEW COMMUNICATIONS DUCTBANK. PROVIDE (4) 4" PVC SCHEDULE 40 CONDUITS FROM VAULT 1B TO VAULT 1C.
5. PROVIDE NEW 4'X6'X7' COMMUNICATIONS VAULT 1C.
6. NEW COMMUNICATIONS DUCTBANK. PROVIDE (4) 4" PVC SCHEDULE 40 CONDUITS FROM VAULT 1C TO VAULT 1D.
7. PROVIDE NEW 4'X6'X7' COMMUNICATIONS VAULT 1D. FOR REPLACEMENT OF EXISTING MANHOLE #17.
8. EXISTING COMMUNICATIONS DUCTBANK FROM HOGGARD HALL TO RANDALL LIBRARY. INSTALL (1) 96-STRAND SINGLEMODE OPTICAL FIBER IN EXISTING INFRASTRUCTURE TO SUPPORT LIBRARY ADDITION. TERMINATE CABLING IN EXISTING MDF 1032 IN RANDALL LIBRARY. UNCW IT TO VERIFY EXISTING CONDUIT AND MANHOLE CAPACITIES PRIOR TO INSTALLATION.
9. EXISTING MANHOLE 33A1
10. REFER TO DETAIL #1 ON SHEET TU500 FOR DUCTBANK SECTION, TYP.
11. EXISTING COMMUNICATIONS DUCTBANK WITH (1) 3" CONDUIT TO REMAIN.
12. EXISTING COMMUNICATIONS DUCTBANK WITH (2) 3" CONDUITS TO REMAIN.
13. EXISTING MANHOLE 33A3
14. EXISTING MANHOLE 33A4
15. EXISTING HANDHOLE 30
16. EXISTING MANHOLE 31
17. THIS WORK TO BE COMPLETED UNDER SEPARATE CONTRACT BY UNCW

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS
1	2022.04.08	ADDENDUM 1

SHEET NAME:
TELECOM SITE PLAN - NEW WORK

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
TU100

PACKAGE A - BID DOCUMENTS

1 **EXISTING TELECOM SITE PLAN**
SCALE: 1" = 30'

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE FULL SHEET SIZE SCALE

GENERAL NOTES:

1. THE INFORMATION PROVIDED ON THESE DOCUMENTS IS BASED ON INFORMATION PROVIDED BY OTHERS AND DOES NOT NECESSARILY REFLECT ACTUAL EXISTING OR AS-BUILT CONDITIONS.
2. COORDINATE SCHEDULE AND RE-TERMINATION OF ALL SERVICES WITH UNC IT PRIOR TO COMMENCEMENT OF WORK. VALIDATE CONDITIONS IN FIELD TO ENSURE PROPER LENGTH OF EXISTING CABLING SHALL ALLOW RE-TERMINATION.
3. COORDINATE AND TEST ALL NEW CABLING AND DUCTBANK BEFORE DEMOLITION.
4. CONTRACTOR MUST BE A CERTIFIED INSTALLER FOR THE APPROVED MANUFACTURER'S CABLING SOLUTION. REFER TO SPECIFICATION SECTION 271300 FOR ADDITIONAL REQUIREMENTS.

SHEET KEYNOTES:

1. 18-STRAND SINGLE MODE FIBER, 36-STRAND MULTI-MODE FIBER, 650 PAIR COPPER CABLE TO BE DEMOLISHED REMOVED BETWEEN MANHOLE #16 AND MANHOLE #17. CABLE SHALL BE CUT AT EACH MANHOLE LOCATION WHILE LEAVING SERVICE LOOPS IN PLACE.
2. EXISTING COMMUNICATIONS MANHOLE #16 TO BE REPLACED WITH VAULT 1A.
3. EXISTING COMMUNICATIONS MANHOLE #17 TO BE REPLACED WITH VAULT 1D.
4. EXISTING COMMUNICATIONS DUCTBANK TO BE REMOVED AFTER INSTALLATION AND ACCEPTANCE OF NEW DUCTBANK.

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WILMINGTON, NC 28403

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

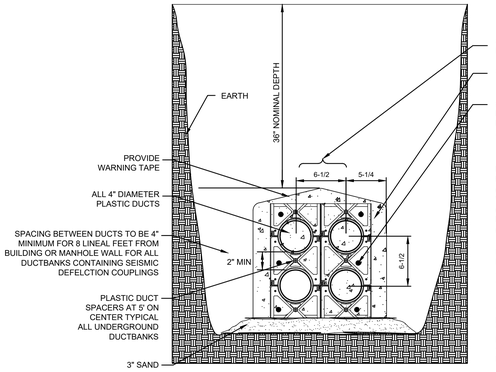
SHEET NAME:
TELECOM SITE PLAN - DEMOLITION

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

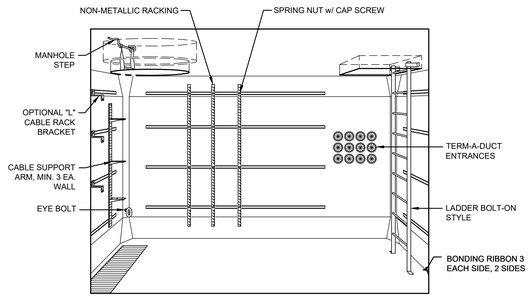
SHEET:
TU101

PACKAGE A -
BID DOCUMENTS

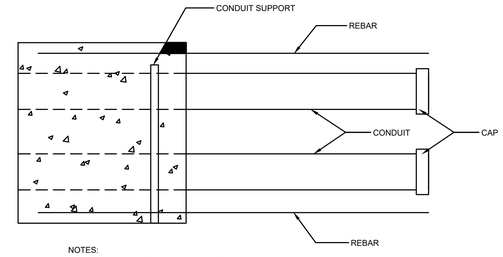
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



1 TYPICAL DUCT BANK CONSTRUCTION DETAIL
SCALE: NONE



2 TYPICAL COMMUNICATIONS VAULT CONSTRUCTION DETAIL
SCALE: NONE

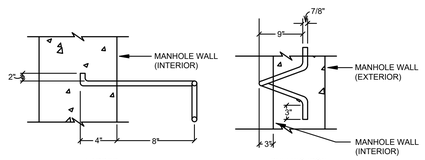


NOTES:
(1) COORDINATE CONDUIT SIZE AND QUANTITY WITH PLANS
(2) PROVIDE A MINIMUM OF 5' 0" OF REBAR AND CONDUIT BEYOND CONCRETE.

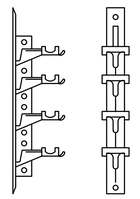
3 TYPICAL CONDUIT CAP DETAIL
SCALE: NONE

GENERAL NOTES:

1. THE INFORMATION PROVIDED ON THESE DOCUMENTS IS BASED ON INFORMATION PROVIDED BY OTHERS AND DOES NOT NECESSARILY REFLECT ACTUAL EXISTING OR AS-BUILT CONDITIONS.
2. COORDINATE OPENINGS FOR CONDUIT PENETRATIONS AT BUILDING EXTERIOR WITH ARCHITECT AND STRUCTURAL ENGINEER. PROVIDE APPROVED WATERTIGHT PENETRATION THROUGH BUILDING OPENING. REFER TO AND COORDINATE WITH INTERIOR DRAWING PACKAGE FOR LOCATION AND ROUTING OF INTERIOR CONDUIT AND TRANSITION POINT TO EXTERIOR CONDUIT.
3. PROVIDE NEW TELECOMMUNICATIONS MANHOLE AT LOCATIONS AS SHOWN AND NOT TO EXCEED A DISTANCE OF 200 L.F. BETWEEN. MANHOLES SHALL BE 4'X6'X7" IN SIZE WITH A TRAFFIC RATED LID.

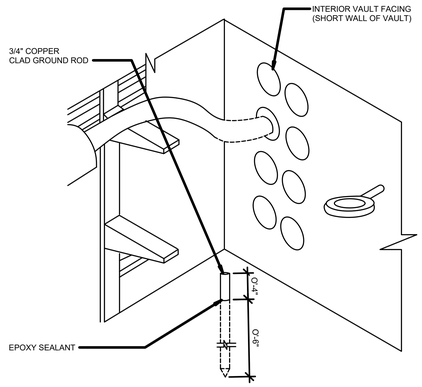


LADDER PULLING IRON

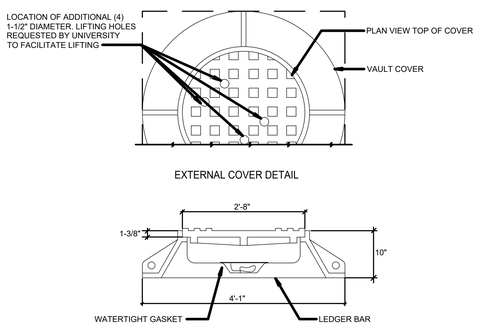


NOTES:
(1) FASTEN TO WALLS OF MANHOLE BY MEANS OF BOLTS AND EXPANSION SHIELDS. PROVIDE 8 EACH ON SIDE WALLS AND 4 EACH ON END WALLS.

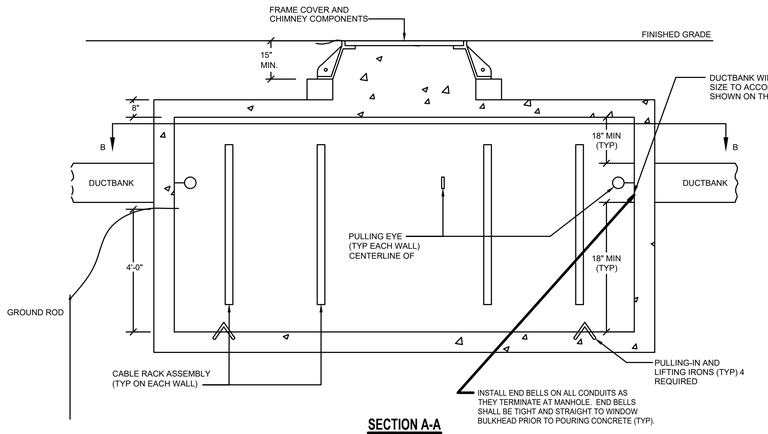
4 TYPICAL VAULT HARDWARE DETAIL
SCALE: NONE



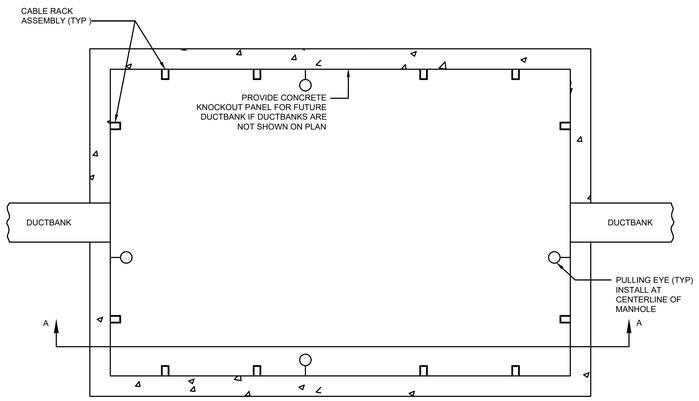
5 TYPICAL VAULT GROUNDING ROD DETAIL
SCALE: NONE



6 TYPICAL VAULT HARDWARE DETAIL
SCALE: NONE



SECTION A-A



SECTION B-B

7 TYPICAL COMMUNICATIONS VAULT DETAIL
SCALE: NONE

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

SHEET NAME:
TECHNOLOGY SITE DETAILS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14

SHEET:
TU102

PACKAGE A - BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TIMES TEN ORIENTATION SHEET

PIPING SYMBOLS AND ABBREVIATIONS

NOTE: SYMBOLS AND ABBREVIATIONS INDICATED HERE AND NOT USED IN THE CONTRACT DOCUMENTS DO NOT APPLY TO THIS PROJECT. ADDITIONAL SYMBOLS MAY BE INDICATED IN THE CONTRACT DOCUMENTS.

PIPE FITTINGS

SINGLE LINE	DOUBLE LINE		SINGLE LINE	DOUBLE LINE	
		FLANGE			ELBOW DOWN
		UNION			ELBOW UP
		ANCHOR			TEE DOWN
		PIPE GUIDE			TEE UP
		PIPE SLEEVE			45° PIPE RISE /DROP
		ECCENTRIC REDUCER			PIPE CAP
		CONCENTRIC REDUCER			SOIL, STORM, OR WASTE PLUG
					PIPE CLEANOUT

PIPE VALVES AND SPECIALTIES

SINGLE LINE	DOUBLE LINE		SINGLE LINE	DOUBLE LINE	
		GAS SHUT OFF VALVE			PIPE FLEXIBLE CONNECTION
		GATE VALVE			EXPANSION JOINT
		DIAPHRAGM VALVE			FLOW SENSING DEVICE
		BALL VALVE			PRESSURE OR VACUUM SWITCH
		BUTTERFLY VALVE			THERMOMETER
		BALANCING VALVE			
		CHECK VALVE			PRESSURE GAUGE (WITH VALVE)
		PRESSURE REDUCING VALVE			FILTER
S		SOLENOID VALVE			WALL HYDRANT
		PRESSURE RELIEF VALVE			HOSE BIBB
		THERMOSTATIC MIXING VALVE			MECHANICAL SHOCKSTOP
		BACKWATER VALVE			GAS REGULATOR VALVE
		VALVE IN VERTICAL	ZVB		ZONE VALVE BOX LABEL IS SHOWN ON FRONT OF VALVE BOX TO INDICATE ORIENTATION
BFP		REDUCED PRESSURE BACKFLOW PREVENTER	AAP OR MAP		AREA OR MASTER ALARM PANEL LABEL IS SHOWN ON FRONT OF PANEL TO INDICATE ORIENTATION
		DOUBLE CHECK BACKFLOW PREVENTER			
		PIPELINE STRAINER			

DRAINS AND CLEANOUTS

	FLOOR DRAIN/FLOOR SINK		FIXTURE WASTE TRAP
	ROOF DRAIN		CLEANOUT
	HUB DRAIN		FLOOR CLEANOUT

FIXTURE INSTALLATION

FIXTURE	BARRIER FREE DESIGN	NON-BARRIER FREE
WATER CLOSET	FLOOR TO RIM 17"	FLOOR TO RIM 15"
URINAL	FLOOR TO RIM 17" MIN. ONE PER ROOM	FLOOR TO RIM 24"
LAVATORY	FLOOR TO RIM 34" MAX. FLOOR TO UNDER APRON 27"	FLOOR TO RIM 31"
DRINKING FOUNTAIN	FLOOR TO SPOUT 36" MAX. FLOOR TO UNDER APRON 27"	FLOOR TO SPOUT 43" MAX
SHOWER VALVE	FLOOR TO VALVE 42"	FLOOR TO VALVE 48"
SHOWER HEAD	FLOOR TO HEAD 60" ON HOSE ADJ. 48"	FLOOR TO HEAD 78" VARIES

SHOCK ARRESTOR SCHEDULE		
PDI SIZE	N.P.T.	FIXTURE UNITS
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	155-330

DOMESTIC WATER SUPPLY FIXTURE UNITS			
FIXTURE	QUANTITY	SFU'S PER FIXTURE	TOTAL SFU'S
WATER CLOSET	18	10	180
URINAL	6	5	30
LAVATORY	17	2	34
MOP BASIN	3	3	9
DRINKING FOUNTAIN	3	0.25	0.75
HOSE BIBB	1	2.5	2.5
HOSE BIBB EACH ADDITIONAL	10	1.0	10
SINK	5	4	20
EMERGENCY EYE WASH	1	4	4
		TOTAL	290.25

290.25 SUPPLY FIXTURE UNITS = 108 GPM (PEAK).

SANITARY DRAINAGE FIXTURE UNITS			
FIXTURE	QUANTITY	DFU'S PER FIXTURE	TOTAL DFU'S
WATER CLOSET	18	4	72
URINAL	6	2	12
LAVATORY	17	1	17
MOP BASIN	3	2	6
DRINKING FOUNTAIN	3	0.5	1.5
FLOOR DRAIN	15	2	30
FLOOR SINK	11	6	66
SINKS	5	2	10
		TOTAL	214.5

NOTE: 214.5 DRAINAGE FIXTURE UNITS = 6" MAIN.

PIPING SYSTEM LABELS

NEW	EXISTING	DOUBLE LINE	
DCW	X-DCW	DCW	DOMESTIC COLD WATER
DHW	X-DHW	DHW	DOMESTIC HOT WATER
DHR	X-DHR	DHR	DOMESTIC HOT WATER RETURN
CS	X-CS	CS	COLD SOFT WATER
HT	X-HT	HT	HEAT TRACE HOT WATER
NP	X-NP	NP	NON-POTABLE WATER
DI	X-DI	DI	DEIONIZED WATER
ROS	X-ROS	ROS	REVERSE OSMOSIS WATER SUPPLY
ROR	X-ROR	ROR	REVERSE OSMOSIS WATER RETURN
PUW	X-PUW	PUW	PURE WATER
PCW	X-PCW	PCW	PROCESS COLD WATER
PHW	X-PHW	PHW	PROCESS HOT WATER
PHR	X-PHR	PHR	PROCESS HOT WATER RETURN
LCW	X-LCW	LCW	LAB COLD WATER
LHW	X-LHW	LHW	LAB HOT WATER
LHR	X-LHR	LHR	LAB HOT WATER RETURN
TF	X-TF	TF	TRAP FILLER LINE
W	X-W	W	WATER MAIN
WGE	X-WGE	WGE	WASTE GAS EVACUATION
LA	X-LA	LA	LAB COMPRESSED AIR
MA	X-MA	MA	MEDICAL COMPRESSED AIR
CA	X-CA	CA	PROCESS COMPRESSED AIR
LVAC	X-LVAC	LVAC	LAB VACUUM
MV	X-MV	MV	MEDICAL VACUUM

NEW	EXISTING	DOUBLE LINE	
SAN	X-SAN	SAN	SANITARY
SD	X-SD	SD	SUBSOIL DRAIN LINE
S	X-S	S	STORM
OD	X-OD	OD	OVERFLOW DRAIN LINE
FM	X-FM	FM	FORCE MAIN
CWW	X-CWW	CWW	CLEARWATER WASTE
IW	X-IW	IW	INDIRECT WASTE
CRW	X-CRW	CRW	CORROSION RESISTANT WASTE
GW	X-GW	GW	GREASE WASTE
LW	X-LW	LW	LAB WASTE
PW	X-PW	PW	PROCESS WASTE
			UNDERFLOOR FOR WASTE OR SOIL, SUBSOIL, STORM & FORCE MAIN
V	X-V	V	SANITARY VENT
CWV	X-CWV	CWV	CLEARWATER VENT
CRV	X-CRV	CRV	CORROSION RESISTANT VENT
GWV	X-GWV	GWV	GREASE WASTE VENT
PV	X-PV	PV	PROCESS VENT
LWV	X-LWV	LWV	LAB WASTE VENT
VC	X-VC	VC	VACUUM CLEANING
H2	X-H2	H2	HYDROGEN
O2	X-O2	O2	OXYGEN
N2	X-N2	N2	NITROGEN
NG	X-NG	NG	NATURAL GAS
SGS	X-SGS	SGS	SOLAR GLYCOL SUPPLY
SGR	X-SGR	SGR	SOLAR GLYCOL RETURN

REFERENCE SYMBOLS

REFER / SHT #	GENERAL REFERENCE DESIGNATES SHEET NUMBER
# / X0.0	DETAIL REFERENCE TOP DESIGNATES SECTION NUMBER BOTTOM DESIGNATES SHEET NUMBER
# / X0.0	SHEET REFERENCE TOP DESIGNATES SECTION NUMBER BOTTOM DESIGNATES SHEET NUMBER
	ELEVATION SYMBOL
	NEW CONNECTION TO EXISTING
NAME / #	EQUIPMENT NAME AND NUMBER
#	SHEET KEYNOTE NUMBER
#	REVISION NUMBER

GENERAL NOTES

1. THE PIPING CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS, RISERS OR DROPS AS REQUIRED BY BUILDING CONDITIONS AND SHALL COORDINATE THE INSTALLATION WITH ALL OTHER TRADES.
2. OFFSET PIPING WHERE REQUIRED TO ALLOW ADEQUATE ACCESSIBILITY TO EQUIPMENT PROVIDED BY THIS CONTRACTOR AND ALL OTHER TRADES.
3. REFER TO ARCHITECTURAL DRAWINGS FOR ALL MILLWORK AND DETAILS SHOWING EXACT LOCATIONS AND TYPE OF ALL FIXTURES AND TRIM.
4. EACH DISCIPLINE SHALL COORDINATE EXACT LOCATIONS OF THEIR WORK WITH ALL OTHER DISCIPLINES PRIOR TO AND DURING INSTALLATION OF ALL SERVICES. ALL SYSTEMS SHALL BE INSTALLED IN COMPLIANCE WITH DESIGN INTENT WHILE MEETING ALL CODE REQUIREMENTS, EQUIPMENT CLEARANCE REQUIREMENTS, ACCESS SPACE REQUIREMENTS NECESSARY FOR MANUFACTURER SPECIFIED EQUIPMENT OPERATION, AND OSHA COMPLIANCE FOR NORMAL BUILDING MAINTENANCE.
5. COORDINATE AND SEAL AROUND ALL PIPING PENETRATIONS THROUGH WALLS BASED ON THE REQUIRED SPECIFICATION FOR EACH WALL TYPE. REFER TO ARCHITECTURAL PLANS FOR WALL TYPES AND DETAILS.
6. THE CONTRACTOR SHALL VERIFY EXACT LOCATION AND INVERT ELEVATION OF EXISTING SANITARY/STORM PIPING PRIOR TO CONSTRUCTION AND ENSURE THAT SANITARY/STORM PIPING CAN BE PROPERLY CONNECTED AND INSTALLED WITH MIN. SLOPE AS REQUIRED BY NC PLUMBING CODE.
7. PLUMBING CONTRACTOR TO INSTALL THE ISOLATION VALVES NO MORE THAN 2'-0" ABOVE THE CEILING AND IN ACCESSIBLE LOCATIONS. THE CONTRACTOR SHALL INSTALL ACCESS DOORS FOR SHUT OFF VALVES LOCATED ABOVE HARD CEILING.
8. THE CONTRACTOR SHALL COORDINATE SINKS DIMENSIONS AND SPACE REQUIREMENTS WITH ARCHITECTURAL CABINETS, AND OBTAIN WRITTEN APPROVAL FROM CABINET FABRICATOR THAT SINKS WILL FIT INTO CABINETS, PRIOR TO ORDERING SINKS.
9. MECHANICAL ROOM FLOOR SHALL SLOPE TO THE FLOOR DRAIN/SINK. MECHANICAL ROOM SHALL BE PROVIDED WITH HOIST BEAMS FOR THE REMOVAL OF EQUIPMENT.
10. PROVIDE A CLEANOUT AT BASE OF ALL SANITARY RISER STACKS.
11. REFER TO UNCW DESIGN AND CONSTRUCTION GUIDLINES FOR MORE REQUIREMENTS.

ABBREVIATIONS

A	-	AIR
AAP	-	AREA ALARM PANEL
ACC	-	ACCESS
ACFM	-	ACTUAL CUBIC FEET PER MINUTE
ADB	-	ACID DILUTION BASIN
ADJ	-	ADJUSTABLE
AFF	-	ABOVE FINISHED FLOOR
ALT	-	ALTERNATE
AMPS	-	AMPERES
AP	-	ACCESS PANEL
APPROX	-	APPROXIMATE
ARCH	-	ARCHITECTURAL
ASME	-	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASSY	-	ASSEMBLY
BHP	-	BRAKE HORSEPOWER
BLDG	-	BUILDING
BOP	-	BOTTOM OF PIPE ELEVATION
BOT	-	BOTTOM
BT	-	BATHTUB
BTU	-	BRITISH THERMAL UNIT
BTUH	-	BRITISH THERMAL UNITS PER HOUR
BTWN	-	BETWEEN
CA	-	COMPRESSED AIR
CFCI	-	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFM	-	CUBIC FEET PER HOUR
CLG	-	CEILING
CMU	-	CONCRETE MASONRY UNIT
CO	-	CLEANOUT
CO2	-	CARBON DIOXIDE
CONN	-	CONNECTION / CONNECT
CONTR	-	CONTRACTOR
CORR	-	CORRIDOR
CS	-	CLINICAL SINK / COLD SOFT WATER
CTR	-	CENTER
CU	-	COPPER
CRVTR	-	CORROSIVE VENT THROUGH ROOF
CWW	-	CLEARWATER WASTE
D	-	DEPTH / DRAIN LINE
DCW	-	DOMESTIC COLD WATER
DET	-	DETAIL
DFU	-	DRAINAGE FIXTURE UNIT
DHR	-	DOMESTIC HOT WATER RETURN
DHW	-	DOMESTIC HOT WATER
DIA	-	DIAMETER
DIM	-	DIMENSION
DISCH	-	DISCHARGE
DN	-	DOWN
DS	-	DOWNSPOUT
DWG	-	DRAWING
DIS	-	DI WATER SUPPLY
DIR	-	DI WATER RETURN
EA	-	EACH
EEW	-	EMERGENCY EYEWASH
EFF	-	EFFICIENCY
EJ	-	EXPANSION JOINT
ELEC	-	ELECTRICAL
ELEV	-	ELEVATION
EQUIP	-	EQUIPMENT
ET	-	EXPANSION TANK
ETR	-	EXISTING TO REMAIN
ES	-	EMERGENCY SHOWER
EWC	-	ELECTRIC WATER COOLER
EWT	-	ENTERING WATER TEMPERATURE
EXP	-	EXPANSION
EXT	-	EXTERIOR
°F	-	FAHRENHEIT
FCO	-	FLOOR CLEANOUT
FD	-	FLOOR DRAIN
FLA	-	FULL LOAD AMPERES
FLR	-	FLOOR
FM	-	FORCE MAIN
FP	-	FIREPROOF
FPM	-	FEET PER MINUTE
FT	-	FEET
FTHD	-	FEET HEAD
FTG	-	FOOTING
G	-	GAS
GA	-	GAUGE
GAL	-	GALLON
GALV	-	GALVANIZED
GPH	-	GALLONS PER HOUR
GPM	-	GALLONS PER MINUTE
GW	-	GREASE WASTE
GWV	-	GREASE WASTE VENT
HB	-	HOSE BIBB
HD	-	HUB DRAIN
HP	-	HORSEPOWER
HR	-	HOSE REEL
HT	-	HEAT TRACE HOT WATER
HTR	-	HEATER
HVAC	-	HEATING VENTILATING & AIR CONDITIONING
HZ	-	HERTZ
ID	-	INSIDE DIAMETER
IE	-	INVERT ELEVATION
IN	-	INCHES
IN WC	-	INCHES WATER COLUMN
IW	-	INDIRECT WASTE
KW	-	KILOWATT
L	-	LENGTH
LA	-	LABORATORY AIR
LAV	-	LAVATORY
LBS	-	POUNDS
LTG	-	LIGHTING
LV	-	LABORATORY VACUUM
LWT	-	LEAVING WATER TEMPERATURE
MAP	-	MASTER ALARM PANEL
MAX	-	MAXIMUM
MB	-	MOP BASIN
MBH	-	ONE THOUSAND BTUH
MEZZ	-	MEZZANINE
MFR	-	MANUFACTURER
MH	-	MANHOLE
MIN	-	MINIMUM/MINUTE
MISC	-	MISCELLANEOUS
MTD	-	MOUNTED
MTG	-	MOUNTING
NC	-	NORMALLY CLOSED
NIC	-	NOT IN CONTRACT
NO	-	NUMBER
NOM	-	NOMINAL
NPSH	-	NET POSITIVE SUCTION HEAD
NPT	-	NATIONAL PIPE THREAD
NTS	-	NOT TO SCALE
OC	-	ON CENTER
OD	-	OUTSIDE DIAMETER / OVERFLOW DRAIN
OFCI	-	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	-	OWNER FURNISHED OWNER INSTALLED
P	-	PUMP
PH	-	PHASE
PIV	-	POST INDICATOR VALVE
PLBG	-	PLUMBING
PRESS	-	PRESSURE
PRV	-	PRESSURE REDUCING VALVE
PSF	-	POUNDS PER SQUARE FOOT
PSI	-	POUNDS PER SQUARE INCH
PSIG	-	POUNDS PER SQUARE INCH GAUGE
PW	-	PURE WATER
R	-	RADIUS
RAD	-	REFRIGERATED AIR DRYER
REC	-	RECESSED
RECPT	-	RECEPTACLE
REF	-	REFERENCE
REQD	-	REQUIRED
RI	-	ROUGH-IN
RPM	-	REVOLUTIONS PER MINUTE
RV	-	RELIEF VALVE
S	-	STORM
SA	-	MECHANICAL SHOCK ARRESTOR
SAN	-	SANITARY
SCH	-	SCHEDULE
SCFM	-	STANDARD CUBIC FEET PER MINUTE
SD	-	SUBSOIL DRAIN
SF	-	SQUARE FEET
SGS	-	SOLAR GLYCOL SUPPLY
SGR	-	SOLAR GLYCOL RETURN
SH	-	SHOWER
SHT	-	SHEET
SPEC	-	SPECIFICATION
SQ	-	SQUARE
SR	-	SERVICE RECEPTOR
S/S	-	STAINLESS STEEL
STD	-	STANDARD
STRM	-	STORM
STRU	-	STRUCTURAL / STRUCTURE
SUCT	-	SUCTION
TD	-	TRENCH DRAIN
TDH	-	TOTAL DYNAMIC HEAD
TEMP	-	TEMPERATURE
TMV	-	THERMOSTATIC MIXING VALVE
TOB	-	TOP OF BEAM
TOD	-	TOP OF DECK
TOJ	-	TOP OF JOIST
TOS	-	TOP OF SLAB/TOP OF STEEL
TF	-	TRAP FILLER
TP	-	TRAP PRIMER
TYP	-	TYPICAL
UR	-	URINAL
V	-	VENT / VACUUM / VOLTS
VAC	-	VACUUM
VEL	-	VELOCITY
VFD	-	VARIABLE FREQUENCY DRIVE
VIB	-	VALVE-IN-BOX
V/V	-	VALVE-IN-VERTICAL
VOL	-	VOLUME
VTR	-	VENT THROUGH ROOF
W	-	WASTE / WATER
W/	-	WITH
W/O	-	WITHOUT
WC	-	WATER CLOSET
WCO	-	WALL CLEANOUT
WGE	-	WASTE GAS EXHAUST
WH	-	WALL HYDRANT
WSFU	-	WATER SUPPLY FIXTURE UNIT
X	-	EXISTING

UNCW

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SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

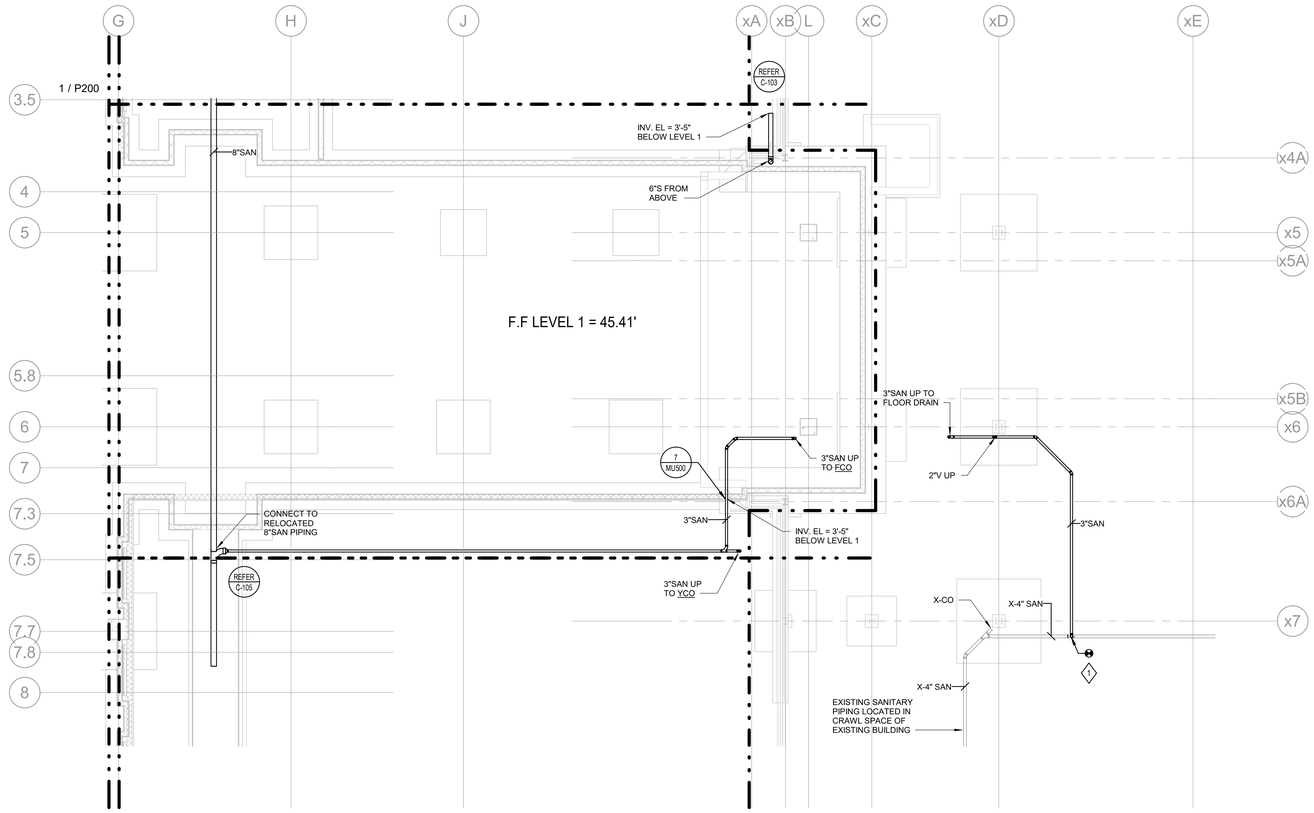
SHEET NAME:
PLUMBING SYMBOLS AND ABBREVIATIONS

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
P000

PACKAGE A - BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT TIME OF ORIGINAL PLOTTING



1 **PLUMBING PLAN - UNDERFLOOR - BUILDING LINK**

SCALE: 1/8" = 1'-0"

8 0 4 8 16

GRAPHIC SCALE IN FEET

SHEET KEYNOTES

1	CONNECT NEW 3"SAN PIPING TO EXISTING SANITARY PIPING IN CRAWL SPACE OF EXISTING BUILDING. THE CONTRACTOR SHALL VERIFY EXACT LOCATION AND INVERT ELEVATION OF EXISTING SANITARY PIPING PRIOR TO CONSTRUCTION AND ENSURE THAT SANITARY PIPING CAN BE PROPERLY CONNECTED AND INSTALLED WITH MIN. SLOPE AS REQUIRED BY NC PLUMBING CODE.

UNCW

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101 NORTH THIRD STREET SUITE 500
WILMINGTON, NORTH CAROLINA 28401
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NORTH CAROLINA PROFESSIONAL SEAL 022793 ENGINEER JOHN D. DUFFY JR.
02/14/22

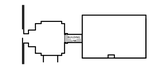
RANDALL LIBRARY RENOVATION & EXPANSION

UNCW
5162 RANDALL DRIVE
WILMINGTON, NC

SCO ID: 18-19656-02A
LS3P PROJECT: 7202-197980

Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

KEY PLAN:



PROJECT NORTH

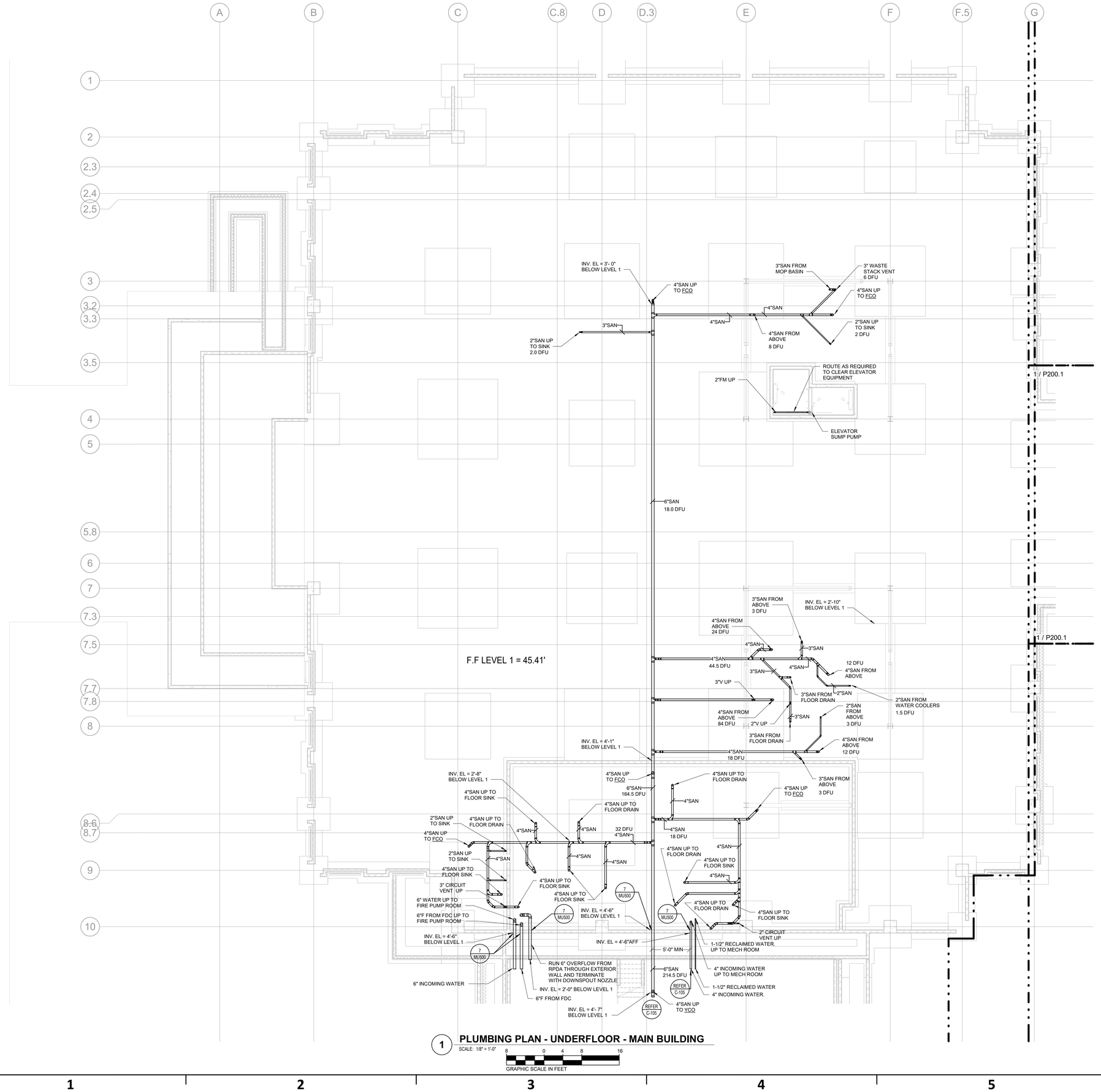
SHEET NAME:
PLUMBING PLAN - UNDERFLOOR - BUILDING LINK

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
P200.1

PACKAGE A - BID DOCUMENTS

THIS LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THE ORIGINAL DRAWING SCALE



1 **PLUMBING PLAN - UNDERFLOOR - MAIN BUILDING**

SCALE: 1/8" = 1'-0"

8 0 4 8 16

GRAPHIC SCALE IN FEET

LIFE SAFETY LEGEND

BUILDING ELEMENTS
EXISTING PARTITION TO REMAIN
TEMPORARY PARTITION
SMOKE BARRIER
1 HR FIRE BARRIER
1 HR FIRE / SMOKE BARRIER
2 HR FIRE BARRIER
2 HR FIRE / SMOKE BARRIER
3 HR FIRE BARRIER
3 HR FIRE / SMOKE BARRIER
4 HR FIRE BARRIER
4 HR FIRE / SMOKE BARRIER

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Δ	DATE	DESCRIPTION
0	2022.02.14	BID DOCUMENTS

KEY PLAN:

PROJECT NORTH

SHEET NAME:
PLUMBING PLAN - UNDERFLOOR

ORIG SUBMISSION: 2022.02.14
CURRENT: 2022.02.14
BID DOCUMENTS

SHEET:
P200

PACKAGE A - BID DOCUMENTS