2018 APPENDIX B
BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: University Storage
Address: 305 Masonic Road - Erwin, NC Zip Code 28339
Owner/Authorized Agent: Barefoot Phone # (910) 890 - 3256 E-Mail wbarefoot@yahoo.com
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City _____ ☐ County _____ ☐ State

CONTACT: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				(___) ___	
Civil				(___) ___	
Electrical				(___) ___	
Fire Alarm				(___) ___	
Plumbing				(___) ___	
Mechanical				(___) ___	
Sprinkler-Standpipe				(___) ___	
Structural	BETCO, Inc.	Gilbert	026413	(704 872-2999	chrisg@betcoinc.com
Retaining Walls >5' High				(___) ___	
Other				(___) ___	

("Others" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC CODE FOR: ☒ New Construction ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core
☐ Phased Construction – Shell/Core
☐ Renovation

2018 NC EXISTING BUILDING CODE: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use
CONSTRUCTED:(date) _____ **ORIGINAL OCCUPANCY(S)** (Ch. 3):_____
RENOVATED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3):_____
RISK CATEGORY (table 1604.5) **Current:** ☐ I ☐ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ 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 (Primary) **Flood Hazard Area:** ☐ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes

Gross Building Area:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	RENO/ALTER (SQ.FT)	SUB-TOTAL
6th Floor				
5th Floor				
4th Floor				
3rd Floor				
2nd Floor				
Mezzanine				
1st Floor		19,845		
Basement				
TOTAL		19,845		

ALLOWABLE AREA

Primary Occupancy Classification: SELECT ONE
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
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 ☐

Occupancy Revised to S-1 - CJG - 4-10-23

Accessory Occupancy Classification(s): Not Applicable
Incidental Uses (Table 509): Not Applicable
Special Uses (Chapter 4 – List Code Sections) Not Applicable
Special Provisions: (Chapter 5 – List Code Sections) Not Applicable
Mixed Occupancy: ☒ No ☐ Yes Separation: N/A Hr. Exception: Not Applicable
☐ 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 such that 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.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ___ + ___ = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[a] AREA	(C) AREA FOR FRONTAGE INCREASE[1,2]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[3,4]
1	STORAGE	19,845	26,000	N/A	26,000

[1] Frontage area increases from Section 506.3 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 = 100 [F/P - 0.25] \times W/30 = $ _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4
[a] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	SHOWN ON PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)	55	15	
Building Height in Stories (Table 504.4)	3	1	

[1] Provide code reference if the "Show on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1
[3] The maximum height of open parking garages must comply with Table 406.5.4

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING PROVIDED (HOURS)	RATING REQUIRED (HOURS) * REDUCTION	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North		>= 10 ft	0 hr.				
East		>= 10 ft	0 hr.				
West		>= 10 ft	0 hr.				
South		>= 10 ft	0 hr.				
Interior							
Nonbearing Walls and Partitions							
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction including supporting beams and joists							
Floor Ceiling Assembly							
Column Supporting Floors							
Roof Construction, including supporting beams and joints							
Roof Ceiling Assembly							
Column Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other			Ref. Table 1020.1 - Rated Corridor Not Required				
Corridor Separation		0 hr.	for Group S-1 with Occupant Load < 30				
Occupancy/Fire Barrier Separation		3 hr.		CV9	U419	N/A	N/A
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET FROM PEOPERTY LINES	DEGREES OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

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

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

☐ 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 types 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 (1006.2.1 & 2006.3.2(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 and supporting construction for a fire barrier/fire partition/smoke barrier.
☐ 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 1-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

Section/Table/Note	Title

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

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	WITH 8' ACCESS AISLE	
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATERCLOSETS			URINALS	LAVATORIES			SHOWERS / TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX		MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXIST'G										
	NEW										
	REQ'D										

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, SCO, DPI, DHHS, ICC, etc., describe below)

_____

_____

_____

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the **North Carolina Energy Conservation 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 (The remainder of this section is not applicable)

Exempt Building: ☐ No ☐ Yes (Provide Code or Statutory reference): _____

Climate Zone: ☐ 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 of insulation: _____
Skylights in each assembly: _____
U-Value of skylight: _____
Total square footage 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)
U-Value of assembly: _____
Solar heat gain coefficient: _____
Projection factor: _____
Door R-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: _____

Floors slab on grade
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Horizontal/Vertical requirement: _____
Slab Heated: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_s) 1
Seismic (I_E) 1

Live Loads: Roof 20 psf
Mezzanine N/A psf
Floor 125 psf

Ground Snow Load: 10 psf

Wind Load: Ultimate Wind Speed 119 mph (ASCE-7)
Exposure Category B

NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT
4/11/23

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 18.3 %g S_1 8.6 %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) _____ psf
Presumptive Bearing capacity 3000 psf
Pile size, type, and capacity _____

Engineer's Seal on this sheet is limited to the Structural Design information ONLY.

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: _____
summer dry bulb: _____

Interior design conditions
winter dry bulb: _____
summer dry bulb: _____
relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
Unitary
description of unit: _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per 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

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BETCO, Inc.
228 Commerce Blvd.
Statesville, NC 28625
Limited Engineering License # D-0140

REVISIONS		DATE	BY
1	GENERAL REVISIONS	04/10/2023	IS

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: APPENDIX B
DRAWING NUMBER: CV1.1

BETCO

UNIVERSITY STORAGE

ERWIN, NC

SUBMITTED TO :

UNIVERSITY STORAGE, LLC
ATTN: ROBERT BAREFOOT
165 SOMMERVILLE PARK ROAD
RALEIGH, NC 27603

WIND LOAD DESIGN DATA:

BASIC WIND SPEED:	119 (V-ult) MPH
WIND IMPORTANCE FACTOR (I):	1.0
OCCUPANCY CATEGORY:	II
WIND EXPOSURE:	B
INTERNAL PRESSURE COEFFICIENT:	± 0.18

SNOW LOAD DESIGN DATA:

GROUND SNOW LOAD (Pg):	10 psf
FLAT-ROOF SNOW LOAD (Pf):	10 psf
SNOW EXPOSURE FACTOR (Ce):	1.0
SNOW LOAD IMPORTANCE FACTOR (I):	1.0
THERMAL FACTOR (Ct):	1.2

EARTHQUAKE LOAD DESIGN DATA:

- OCCUPANCY CATEGORY: II
- SEISMIC IMPORTANCE FACTOR (I): 1.0
- SEISMIC DESIGN CATEGORY: C
- ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE (ASCE 7-10 SECTION 12.8)
- BASIC SEISMIC-FORCE-RESISTING SYSTEM: STEEL SYSTEMS NOT SPECIFICALLY DESIGNED FOR SEISMIC RESISTANCE
- SITE CLASS: D
- DESIGN BASE SHEAR (V): 10.41^{K}
- RESPONSE MODIFICATION FACTOR (R): 3.0
- SEISMIC RESPONSE COEFFICIENT (CS): 0.065
- MAPPED SPECTRAL RESPONSE ACCELERATION:

  (S_S): 18.3% G

  (S_1): 8.6% G

- SPECTRAL RESPONSE COEFFICIENTS:

  (S_{DS}): 19.5% G

  (S_{D1}): 13.7% G

BUILDING DATA :

BUILDING DESCRIPTION : METAL BUILDING BOLTED TO CONCRETE SLAB FOUNDATION.

BUILDING SIZE : 124' x 164' (VARIES) = 19,845 sq. ft. (APPROX.)

PARKING DATA : SEE SITE PLAN BY OTHERS

BUILDING CODE : THE 2018 NORTH CAROLINA STATE BUILDING CODE

DESIGN CRITERIA : THESE BUILDINGS HAVE BEEN DESIGNED TO CONFORM TO THE STRUCTURAL REQUIREMENTS OF THE 2018 NORTH CAROLINA STATE BUILDING CODE.

THESE BUILDINGS HAVE BEEN DESIGNED FOR THE FOLLOWING LIVE LOADINGS IN ADDITION TO THE DEAD LOADINGS :

ROOF LIVE LOADING :	20 PSF
FLOOR LIVE LOADING:	125 PSF
USE GROUP:	S-1
TYPE OF CONSTRUCTION	II-B

IT IS THE RESPONSIBILITY OF THE BUYER / OWNER TO VERIFY THE FIREWALL, LIVE LOAD AND WIND LOAD REQUIREMENTS WITH THE LOCAL CODE AUTHORITY.

BETCO, Inc.
228 Commerce Blvd.
Statesville, NC 28625
Limited Engineering License # D-0140

PROJECT NUMBER : NC22329

SCHEDULE OF DRAWINGS

ERECTION DRAWINGS

ERC010X		ERC200X			ERC420X			ERC619X			ERC752X	
ERC015X		ERC201X			ERC500X			ERC620X			ERC753X	
ERC016X		ERC202X			ERC505NXT			ERC621X			ERC754X	
ERC100X	X	ERC203X			ERC507NXT			ERC622X			ERC800X	
ERC105X	X	ERC204X			ERC515X			ERC623X			ERC900X	
ERC106X		ERC206X			ERC600X			ERC624X			ERC901X	
ERC110X		ERC207X			ERC601X			ERC625X			ERC902X	
ERC112X		ERC208X			ERC602X			ERC626X			ERC903X	
ERC115X	X	ERC209X			ERC603X			ERC630X			ERC904X	
ERC120X		ERC250X			ERC604X			ERC631X			ERC905X	
ERC130X		ERC250XFHP			ERC605X			ERC652X			ERC907X	
ERC150X		ERC251X			ERC606X			ERC700X			ERC908X	
ERC151X		ERC251XFHP			ERC607X			ERC710X			ERC910X	
ERC152X		ERC252X			ERC608X			ERC711X			ERC911X	
ERC153X		ERC251XFHP			ERC609X			ERC712X			ERC912X	
ERC154X		ERC253X			ERC610X			ERC713X			ERC913X	
ERC155X		ERC254X			ERC611X			ERC720X			ERC914X	
ERC175X		ERC255X			ERC612X			ERC725X			ERC915X	
ERC176X		ERC256X			ERC613X			ERC730X			ERC916X	
ERC177X		ERC257X			ERC614X			ERC731X			ERC917X	
ERC178X		ERC258X			ERC615X			ERC731XFHP			ERC918X	
ERC179X		ERC302X			ERC616X			ERC732X			ERC919X	
ERC180X		ERC303X	X		ERC617X			ERC732XFHP				
ERC181X		ERC410NXT (UD)			ERC618X			ERC750X				
ERC182X					ERC618XALT			ERC751X				

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

10/19/22

2018 APPENDIX B
BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: University Storage

Address: 305 Masonic Road - Erwin, NC Zip Code 28339

Owner/Authorized Agent: Barefoot Phone # (910) 890 - 3256 E-Mail wrbarefoot@yahoo.com

Owned By: ☐ City/County ☒ Private ☐ State

Code Enforcement Jurisdiction: ☐ City _____ ☐ County _____ ☐ State

CONTACT: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				( )	
Civil				( )	
Electrical				( )	
Fire Alarm				( )	
Plumbing				( )	
Mechanical				( )	
Sprinkler-Standpipe				( )	
Structural	BETCO, Inc.	Gilbert	026413	(704 872-2999	chrisg@betcoinc.com
Retaining Walls >5' High				( )	
Other				( )	

("Others" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC CODE FOR: ☒ New Construction ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core
☐ Phased Construction – Shell/Core
☐ Renovation

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

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

RISK CATEGORY (table 1604.5) **Current:** ☐ I ☐ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ 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 (Primary) **Flood Hazard Area:** ☐ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes

Gross Building Area:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	RENO/ALTER (SQ FT)	SUB-TOTAL
6th Floor				
5th Floor				
4th Floor				
3rd Floor				
2nd Floor				
Mezzanine				
1st Floor		19,845		
Basement				
TOTAL		19,845		

ALLOWABLE AREA

Primary Occupancy Classification: SELECT ONE

Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
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): _____
Incidental Uses (Table 509): _____
Separated Uses (Chapter 4 – List Code Sections) _____
Special Provisions: (Chapter 5 – List Code Sections): _____
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 such that 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.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

$$\frac{\quad}{\quad} + \frac{\quad}{\quad} + \frac{\quad}{\quad} = \frac{\quad}{\quad} \leq 1.00$$

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[2] AREA	(C) AREA FOR FRONTAGE INCREASE[1,2]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[3]
1	STORAGE	19,845	26,000	N/A	26,000

[1] Frontage area increases from Section 506.3 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 $I_f = 100 [F/P - 0.25] \times W/30 =$ _____ (%)

[2] Unlimited area applicable under conditions of Section 507.

[3] Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2).

[4] The maximum area of open parking garages must comply with Table 406.5.4

[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	SHOWN ON PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)	55	15	
Building Height in Stories (Table 504.4)	3	1	

[1] Provide code reference if the "Show on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1
[3] The maximum height of open parking garages must comply with Table 406.5.4

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (Indicate hourly + REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing Walls and Partitions							
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction Including supporting beams and joists							
Floor Ceiling Assembly							
Column Supporting Floors							
Roof Construction, including supporting beams and joists							
Roof Ceiling Assembly							
Column Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET FROM PERPERTY LINES	DEGREES OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

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

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

☐ 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 types 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 (1006.2.1 & 2006.3.2(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 and supporting construction for a fire barrier/fire partition/smoke barrier.
☐ 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 any code exceptions or table notes that may have been utilized regarding the items above

Section/Table/Note	Title

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING

(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES	FOR ACCESSIBLE SPACES PROVIDED				TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WIDTH	VAN SPACES WIDTH		
			5' ACCESS AISLE	132" ACCESS AISLE	8' ACCESS AISLE	
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATER CLOSETS			URINALS	LAVATORIES			SHOWERS / TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX		MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXIST'G										
	NEW										
	REQ'D										

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, SCO, DPI, DHHS, ICC, etc., describe below)

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the **North Carolina Energy Conservation 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 (The remainder of this section is not applicable)

Exempt Building: ☐ No ☐ Yes (Provide Code or Statutory reference): _____

Climate Zone: ☐ 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 of insulation: _____
Skylights in each assembly: _____
U-Value of skylight: _____
Total square footage 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)
U-Value of assembly: _____
Solar heat gain coefficient: _____
Projection factor: _____
Door R-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: _____

Floors slab on grade
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Horizontal/Vertical requirement: _____
Slab Heated: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPL.)

DESIGN LOADS:

Importance Factors: Snow (I_s) 1
Seismic (I_E) 1

Live Loads: Roof 20 psf
Mezzanine N/A psf
Floor 125 psf

Ground Snow Load: 10 psf

Wind Load: Ultimate Wind Speed 119 mph (ASCE 7-16)
Exposure Category B

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026413 ENGINEER CHRISTOPHER J GILBERT
10/19/22

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 18.3 %g S_1 8.6 %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) _____ psf
Presumptive Bearing capacity 3000 psf
Pile size, type, and capacity _____

Engineer's Seal on this sheet is limited to the Structural Design information ONLY.

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: _____
summer dry bulb: _____

Interior design conditions
winter dry bulb: _____
summer dry bulb: _____
relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
Unitary
description of unit: _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per 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

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BETCO, Inc.
228 Commerce Blvd.
Statesville, NC 28625
Limited Engineering License # D-0140

REVISIONS	DATE	BY

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: APPENDIX B
DRAWING NUMBER: CV1.1

GENERAL NOTES:

1. CONCRETE FOUNDATIONS AND FLOOR SLAB ARE TO BE SUPPLIED AND INSTALLED BY OTHERS . WEDGE ANCHORS FOR INTERIOR AND EXTERIOR FOOTINGS SUPPLIED AND INSTALLED BY BETCO.
2. EXTERIOR OPENINGS, NOT DESIGNATED AS DOOR LOCATIONS, TO BE COMPLETED USING EXTERIOR WALL PANELS FURNISHED BY BETCO.
3. USE DOW 791 SILICONE CAULK AND 1/2" WIDE BUTYL RUBBER TAPE SEALANT FOR ROOF INSTALLATION. USE DOW 799 SILICONE CAULK AT DOWNSPOUT TO GUTTER JOINT.
4. INTERIOR PARTITIONS PERPENDICULAR TO ROOF BEAM(S) MUST BE COMPLETED BEFORE ROOF PANELS ARE INSTALLED. USE PARTITION FRAMING TO PLUMB AND SQUARE COLUMNS AND HEADER SECTIONS. CHECK BUILDING WIDTH AT TOP OF COLUMNS PRIOR TO ROOF INSTALLATION.
5. THOROUGHLY SWEEP ROOF PANELS FOLLOWING INSTALLATION TO REMOVE METAL DRILLINGS.
6. THIS DESIGN IS BASED ON USING ONLY METAL BUILDING COMPONENTS WHICH ARE PROPRIETARY TO BETCO. FURTHER, THE PROFESSIONAL ENGINEER'S SEAL IS INVALID UNLESS ONLY BETCO METAL BUILDING COMPONENTS ARE UTILIZED.
7. METAL STUDS (IF APPLICABLE) MAY REQUIRE FIELD CUTTING DEPENDING UPON THE EAVE HEIGHT OF THE STRUCTURE.
8. UNIT SIZES SHOWN ARE NOMINAL. ACTUAL CLEAR DIMENSIONS INSIDE UNITS MAY VARY ACCORDING TO FINAL DESIGN OF COMPONENTS.
9. THESE DRAWINGS ARE THE PROPERTY OF BETCO, INC. AND MAY NOT BE USED OR REPRODUCED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF BETCO, INC.
10. THESE DRAWINGS SHALL BE USED IN CONJUNCTION WITH AND COORDINATED WITH THE ARCHITECTURAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.
11. THE GENERAL CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF ALL SLEEVES, PADS, DEPRESSIONS, OPENINGS, ETC. AS REQUIRED BY THE VARIOUS TRADES.

CONSTRUCTION AND SAFETY:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL SAFETY REGULATIONS, PROGRAMS AND PRECAUTIONS RELATED TO ALL WORK ON THIS PROJECT.
2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF PERSONS AND PROPERTY EITHER ON OR ADJACENT TO THE PROJECT AND SHALL PROTECT SAME AGAINST INJURY, DAMAGE OR LOSS.
3. MEANS AND METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIALS ARE SOLELY THE CONTRACTORS RESPONSIBILITY.
4. STRUCTURAL DRAWINGS ARE INTENDED TO BE USED IN CONJUNCTION WITH THE DRAWINGS OF OTHER CONSULTANTS AND TRADES. THE CONTRACTOR SHALL COORDINATE THE VARIOUS REQUIREMENTS.
5. NO OPENINGS NOR ANY CHANGES IN SIZE, DIMENSION OR LOCATION SHALL BE MADE IN ANY STRUCTURAL ELEMENTS WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
6. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED ON THE STRUCTURE. SUCH LOADS SHALL NOT EXCEED THE CAPACITY OF THE STRUCTURE AT ANY TIME.
7. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION, AND ANY TEMPORARY BRACING ENGINEERING EFFORT REQUIRED TO ACCOMMODATE THE CONTRACTORS MEANS AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
8. THE CONTRACTOR SHALL INFORM THE STRUCTURAL ENGINEER, CLEARLY AND EXPLICITLY IN WRITING, OF ANY DEVIATION OR SUBSTITUTION OF REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS NOT RELIEVED OF ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS BY VIRTUE OF THE STRUCTURAL ENGINEERS REVIEW OF SHOP DRAWINGS, PRODUCT DATA, ETC., UNLESS THE CONTRACTOR HAS CLEARLY AND EXPLICITLY INFORMED THE STRUCTURAL ENGINEER IN WRITING OF ANY DEVIATIONS OR SUBSTITUTIONS AT TIME OF SUBMISSION, AND THE STRUCTURAL ENGINEER HAS GIVEN WRITTEN APPROVAL FOR THE SPECIFIC DEVIATION OR SUBSTITUTIONS.
9. ALL THINGS WHICH, IN THE OPINION OF THE CONTRACTOR, APPEAR TO BE DEFICIENCIES, OMISSIONS,CONTRADICTIONS OR AMBIGUITIES IN THE DRAWINGS OR SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER. CORRECTIONS OR WRITTEN INTERPRETATIONS SHALL BE ISSUED BEFORE AFFECTED WORK MAY PROCEED.
10. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH NEW WORK IN AREAS AFFECTED BY THE EXISTING CONDITIONS. STRUCTURAL ENGINEER SHALL BE INFORMED IN WRITING OF CONFLICTS BETWEEN EXISTING AND PROPOSED NEW CONSTRUCTION.
11. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DIMENSIONS SHOWN ON THE CONTRACT DOCUMENTS. INCONSISTENCIES ON THE STRUCTURAL DRAWINGS OR BETWEEN THE STRUCTURAL DRAWINGS AND ANY OTHER CONTRACT, SHOP, FABRICATION, OR OTHER DRAWINGS OR INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH AFFECTED WORK.
12. DO NOT SCALE THESE DRAWINGS, USE THE DIMENSIONS SHOWN.

BRICK VENEER - STEEL STUDWALLS:

1. AIR SPACE:
   a. 2 in (51 mm) MINIMUM AIR SPACE RECOMMENDED + 1 in (24.5 mm) MINIMUM AIR SPACE REQUIRED.
   b. 4 1/2 in (114 mm) MAXIMUM DISTANCE REQUIRED BETWEEN BACK OF BRICK VENEER AND STEEL FRAMING UNLESS ANCHORS ARE RATIONALLY DESIGNED.
2. FLASHING:
   a. DO NOT STOP FLASHING BEHIND FACE OF THE BRICKWORK.
   b. PLACE FLASHING AT ALL POINTS WHERE AIR SPACE IS INTERRUPTED.
   c. EXTEND FLASHING VERTICALLY UP THE BACKING TO 8 in (203 mm) MINIMUM HEIGHT.
   d. LAP FLASHING 4 in (102 mm) MINIMUM HEIGHT UNDER WATER-RESISTANT BARRIER OR BEHIND SHEATHING ABOVE GRADE.
   e. INSTALL BASE FLASHING MINIMUM 6 in (152 mm) ABOVE GRADE.
   f. TURN UP FLASHING ENDS INTO HEAD JOINT A MINIMUM OF 1 in (25.4 mm) FOR FORM END DAM.
3. WEEPS:
   a. OPEN HEAD JOINT WEEPS SPACED AT NO MORE THAN 24 in (610 mm) O.C. RECOMMENDED.
   b. MOST BUILDING CODES PERMIT WEEPS NO LESS THAN 3/16" in (4.8 mm) DIAMETER AND SPACED NO MORE THAN 33 in (838 mm) O.C.
   c. WICK AND TUBE WEEP SPACING RECOMMENDED AT NO MORE THAN 16 in (406 mm) O.C.
4. ANCHORS:
   a. CORRUGATED ANCHORS NOT PERMITTED WITH STEEL STUD BLOCKING.
   b. MINIMUM W1.7 (9 gage) ADJUSTABLE WIRE ANCHORS, HOT-DIPPED GALVANIZED, TWO PIECE PER ASTM A153 CLASS B-2.
   c. VERTICAL SPACING: MAXIMUM 16 in (406 mm) O.C.
   d. HORIZONTAL SPACING: MAXIMUM 24 in (610 mm) O.C.
   e. SECURELY ATTACH ANCHORS TO THE STEEL STUDS THROUGH THE SHEATHING, NOT THE SHEATHING ALONE.
5. SHELF ANGLES AND LINTELS:
   a. SHELF ANGLES LOCATED ABOVE THE HEIGHT LIMIT MAY SUPPORT NO MORE THAN 1 STORY OF BRICK.
   b. SIZE HORIZONTAL LEG OF ALL SHELF ANGLES AND LINTELS TO PROVIDE A MINIMUM BEARING OF 2/3 THICKNESS OF THE BRICK WYTHE.
6. SHEATHING:
   a. EXTERIOR GRADE GLASS FIBER MAT-FACED SHEATHING OR CEMENT BOARD, MINIMUM 1/2in (12.7mm) THICK.
7. WATER-RESISTANT BARRIER: SEE ARCHITECTURAL
8. STEEL STUDS:
   a. GALVANIZED STEEL STUDS WITH MINIMUM G-90 COATING.
   b. RESTRICT ALLOWABLE OUT-OF-PLANE DEFLECTION OF STEEL STUDS TO L/600 USING SERVICE LEVEL LOADS.
   c. MINIMUM 0.043 in (18 gage + 1.09 mm) STUDS FOR EXTERIOR WALLS.
   d. DO NOT FIELD WELD STEEL STUDS.
9. MORTAR:
   a. COMPLY WITH ASTM C270.
   b. TYPE N RECOMMENDED + TYPE S ALTERNATE.
10. EXPANSION JOINTS:
    a. PROVIDE VERTICAL AND HORIZONTAL EXPANSION JOINTS THROUGH BRICK VENEER.

REINFORCING STEEL:

1. REINFORCING STEEL SHALL BE NEW BILLET STEEL, DEFORMED BARS CONFORMING TO ASTM A-615, GRADE 60 (Fy-60,000 PSI).
2. FIELD BENDING OF CONCRETE REINFORCING STEEL IS NOT PERMITTED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
3. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI SP-66 "ACI DETAILING MANUAL-1994" AND THE "CRSI MANUAL OF STANDARD PRACTICE", LATEST EDITION.
4. PLACE REINFORCEMENT AND TIES IN GROUT SPACES PRIOR TO GROUTING.
5. CONCRETE COVERAGE OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE UNLESS NOTED OTHERWISE.

A.	FOOTING AND GRADE BEAMS IN GROUND CONTACT.....	3 INCHES
B.	BEAMS AND COLUMNS.....	3 INCHES
C.	SLABS, WALLS AND JOISTS.....	1½ INCH - NOT EXPOSED TO EARTH, LIQUID OR WEATHER
	D. SLABS ON GRADE.....	2 INCHES FROM TOP
E.	FORMED SURFACES IN GROUND CONTACT.....	2 INCHES

6. DEVELOPMENT LENGTHS AND LAP SPLICES SHALL BE IN ACCORDANCE WITH ACI 318-14 CHAPTER 12 AND AS INDICATED ON THE DRAWINGS. WHERE SPLICES ARE NOT CALLED OUT ON THE DRAWINGS, USE CLASS "B", BUT IN NO CASE SHALL ANY SPLICE BE LESS THAN 12 INCHES. FOR BARS AS INDICATED BELOW THE BASIC DEVELOPMENT LENGTH SHALL BE MULTIPLIED BY THE FACTORS AS INDICATED FOR TENSION OR COMPRESSION AND THEN ROUNDED UP TO THE NEAREST WHOLE INCH. THE FACTORS INDICATED BELOW ARE CUMULATIVE FOR EACH OF THE CONDITIONS APPLICABLE.
7. WELDED WIRE MAT/FABRIC SHALL CONFORM TO ASTM A184 AND A185 RESPECTIVELY AND BE LAPPED 1-0" AT ALL SPLICES.
8. ALL REINFORCING TERMINATING AT THE TOPS OF COLUMNS AND PILASTERS SHALL BE HOOKED UNLESS OTHERWISE NOTED.
9. SUBMIT SHOP DRAWINGS FOR FABRICATION, BENDING, AND PLACEMENT OF CONCRETE REINFORCEMENT. COMPLY WITH ACI DETAILING MANUAL (SP-66) SHOWING BAR SCHEDULES, STIRRUP SPACING, DIAGRAMS OF BENT BARS, ARRANGEMENT OF CONCRETE REINFORCEMENT. INCLUDE SPECIAL REINFORCEMENT REQUIRED AT OPENINGS THROUGH CONCRETE STRUCTURES. INCLUDE ALL ACCESSORIES SPECIFIED/ REQUIRED TO SUPPORT REINFORCING.
10. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION. DRAWINGS SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
11. CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER AND TESTING AGENCY A MINIMUM OF 48 HOURS PRIOR TO ALL CONCRETE POURS IN ORDER TO PERMIT REINFORCING STEEL REVIEW AS REQUIRED BY THE INSPECTION SCHEDULE.
12. REINFORCING IN ALL CONTINUOUS STRIP FOOTINGS SHALL HAVE CORNER BARS OR DOWELS. PROVIDE AT ALL CORNERS AND INTERSECTIONS.

STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:

WIDE FLANGE SHAPES	ASTM A992, 50-65 KSI
TUBULAR SHAPES	ASTM A500 GRADE B 46 KSI
ANGLES, PLATES AND CHANNELS	ASTM A36, 236 KSI
STEEL PIPE	ASTM A53
MISCELLANEOUS	ASTM A36

2. ALL SHOP AND FIELD WELDING SHALL BE BY A CERTIFIED WELDER AND SHALL CONFORM TO AWS STANDARD D1.1.
3. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE AS MODIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS.
4. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION.
5. FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF CONNECTIONS NOT DESIGNED ON THE STRUCTURAL DRAWINGS. FOR THE PURPOSE OF CONNECTION DESIGN, FABRICATOR SHALL RETAIN A PROFESSIONAL ENGINEER.
   a. GENERALLY, CONNECTIONS SHOWN ON THE DRAWINGS ARE SCHEMATIC AND ARE INTENDED TO SHOW THE RELATIONSHIP OF THE MEMBERS.
   b. MEMBER FORCES AND REACTIONS SHOWN HAVE BEEN REDUCED IN CONFORMANCE TO CODE PROVISIONS RELATED TO COMBINATIONS OF LOADS THAT INCLUDE WIND AND SEISMIC FORCES. NO FURTHER REDUCTIONS IN FORCES OR INCREASES IN ALLOWABLE STRESSES ARE PERMITTED.
   c. CONNECTIONS MAY BE BOLTED OR WELDED, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
   d. SLIP CRITICAL CONNECTIONS WITH A325SC BOLTS SHALL BE USED IN ALL BOLTED MOMENT PLATE CONNECTIONS. OVERSIZED OR LONG-SLOTTED HOLES ARE PERMITTED.
   e. BEARING TYPE CONNECTIONS WITH A325N BOLTS SHALL BE USED FOR ALL OTHER BOLTED CONNECTIONS. OVERSIZED AND LONG-SLOTTED HOLES ARE NOT PERMITTED UNLESS OTHERWISE NOTED. IN SINGLE TAB PLATE CONNECTIONS ONLY BEARING TYPE FASTENERS ARE PERMITTED, FASTENERS SHALL NOT BE TORQUED, AND SHORT SLOTTED HOLES ARE REQUIRED.
   f. ANCHOR RODS OR OTHER RODS, WHERE INDICATED, SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE NOTED.
   g. PROTRUDING BOLT HEADS, SHAFTS OR NUTS SHALL NOT EXTEND NOR PROHIBIT THE APPLICATION OF ARCHITECTURAL FINISHES OR PLACEMENT OF STEEL DECK AT ITS CORRECT LOCATION AND ELEVATION.
   h. CONNECTION DESIGNER IS RESPONSIBLE FOR VERIFYING THE AXIAL CAPACITY AFTER A SECTION IS REDUCED FOR BOLT HOLES. MEMBER SIZE MAY BE INCREASED OR PLATES ADDED TO MAINTAIN REQUIRED CAPACITY.
   i. SHOP DRAWINGS SHALL INDICATE THE TYPE OF BOLT USED IN EACH CONNECTION. ALLOWABLE VALUES FOR THE VARIOUS BOLT TYPES AND CAPACITY OF EACH CONNECTION SHOWN.
   j. SHOP DRAWINGS SHALL INDICATE WELD TYPE, REQUIRED ELECTRODES AND CAPACITY FOR EACH CONNECTION DETAILED ON THE SHOP DRAWINGS.
6. ELECTRODES FOR WELDING SHALL COMPLY WITH THE REQUIREMENTS OF AWS D1.1 TABLE 4.1.1.
7. SPLICING OF STEEL MEMBERS, UNLESS SHOWN ON THE DRAWINGS, IS PROHIBITED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
8. NO FINAL BOLTING OR WELDING SHALL BE PERFORMED UNTIL AS MUCH OF THE STRUCTURE AS WILL BE STIFFENED THEREBY HAS BEEN PROPERLY ALIGNED.
9. MINIMUM PLATE THICKNESS SHALL BE 1/4", MINIMUM BOLT DIAMETER SHALL BE 3/4", MINIMUM SHOP WELD SHALL BE 3/16" FILLET, AND MINIMUM FIELD WELD SHALL BE 1/4" FILLET UNLESS OTHERWISE NOTED.
10. ALL RE-ENTRANT CORNERS (SUCH AS COPES AND BLOCKS) SHALL BE CUT AND SHAPED NOTCH FREE WITH A RADIUS OF AT LEAST 1/2".
11. FIELD USE OF GAS CUTTING TORCHES IS PROHIBITED FOR CORRECTING FABRICATION ERRORS IN PRIMARY STRUCTURAL FRAMING.
12. STEEL DECK SHALL BE SECURELY ATTACHED TO SUPPORTING MEMBERS AS DETAILED.
13. FABRICATE ALL BEAMS WITH MILL CAMBERS UP.

CONCRETE:

1. SUBMIT WRITTEN REPORTS OF EACH PROPOSED CONCRETE DESIGN MIX NOT LESS THAN 15 DAYS PRIOR TO THE START OF WORK. DESIGN MIXES PREPARED MORE THAN TWELVE (12) MONTHS PRIOR TO THE DATE THE SUBMITTAL ARE NOT PERMITTED.
2. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-14).
3. ALL CONCRETE SHALL BE TESTED BY AN INDEPENDENT TESTING AGENCY FOR STANDARD PARAMETERS (SLUMP, COMPRESSIVE STRENGTH, ETC.) TWO COPIES OF ALL REPORTS SHALL BE SUBMITTED TO THE ENGINEER/ ARCHITECT.
4. ALL NORMAL WEIGHT CONCRETE SHALL HAVE ASTM C-33 AGGREGATE WITH MAXIMUM UNIT WEIGHT OF 150 PCF. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3000 PSI AT 28 DAYS, MINIMUM FOR FOUNDATIONS AND SLABS ON GRADE. ALL CONCRETE FOR FLOOR SLABS ON METAL DECK FORMS SHALL BE NORMAL WEIGHT CONCRETE WITH COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. MIX DESIGNS, INCLUDING WATER CEMENT RATIOS AND SLUMPS, SHALL BE PREPARED IN ACCORDANCE WITH MOST CURRENT ACI 301 CHAPTER 3, EXCEPT WHERE NOTED OTHERWISE IN THE PROJECT SPECIFICATIONS. CEMENT SHALL COMFORM TO ASTM C 150 TYPE 1 OR AT CONTRACTOR'S OPTION, ASTM C 595 TYPE IP WHERE FLY ASH IS PERMITTED. NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C 33 AGGREGATE WITH MAXIMUM UNIT WEIGHT OF 150 PCF AND LIGHT WEIGHT CONCRETE SHALL CONFORM TO ASTM C 330 AGGREGATE. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED IN ANY CONCRETE.

   AGGREGATE SIZES SHALL BE:
   I. FORMED CONCRETE ELEMENTS, U.N.O. ..... #67 STONE (3/4" MAX)
   II. GRADE SLABS AND EARTH FORMED ELEMENTS ..... #57 STONE (1" MAX)
   III. COARSE MASONRY GROUT REQUIRED ..... #67 STONE (3/4" MAX)
   IV. FINE MASONRY GROUT REQUIRED ..... #8 STONE (3/8" MAX)
6. WATER REDUCING ADMIXTURE SHALL BE USED IN ALL CONCRETE.
7. AIR ENTRAINING ADMIXTURE IN ACCORDANCE WITH ACI 301-84 TABLE 3.4.1. SHALL BE USED IN ALL CONCRETE EXPOSED TO FREEZING AND THAWING DURING CONSTRUCTION OR SERVICE CONDITIONS.
8. WATER/CEMENT RATIO SHALL NOT EXCEED 0.45 FOR ANY CONCRETE SUBJECTED TO FREEZING/THAWING.
9. ALL PUMPED CONCRETE SHALL HAVE A WATER/CEMENT RATIO LESS THAN 0.45 AND SHALL CONTAIN A HIGH RANGE WATER REDUCING ADMIXTURE (SUPERPLASTICIZER).
10. IN NO CASE SHALL A WATER/CEMENT RATIOS EXCEED THE FOLLOWING:
    I. ALL FOUNDATION CONCRETE fc 3000 psi ..... 0.55 MAX. W/C RATIO
    II. EXTERIOR PAVING CONCRETE fc 3500 psi ..... 0.50 MAX. W/C RATIO
    III. ALL EXPOSED C.I.P. WATERTABLE, PIERS, ETC. fc 3500 psi ..... 0.45 MAX. W/C RATIO
    III. SLABS ON GRADE fc 3000 psi ..... 0.45 MAX. W/C RATIO
11. LIQUID MEMBRANE CURING COMPOUND WITH A MINIMUM 30% SOLIDS CONTENT SHALL BE APPLIED WITHIN TWO (2) HOURS AFTER COMPLETION OF FINISHING TO ALL CONCRETE FLATWORK AND WALLS, U.N.O., OTHER THAN FOOTINGS AND GRADE BEAMS.
12. FLOORS IN AREAS RECEIVING QUARRY TILE, CERAMIC TILE AND LIQUID FLOOR HARDENER SHALL BE CURED WITH DISSIPATING LIQUID MEMBRANE CURING COMPOUND OR WET CURED BY USE OF MOISTURE RETAINING COVER. DISSIPATING CURING COMPOUND SHALL BE THOROUGHLY BROOMED AND WASHED OFF PRIOR TO APPLICATION OF FLOOR FINISH.
13. USE A NON-CORROSIVE, NON-CHLORIDE ACCELERATING ADMIXTURE IN CONCRETE EXPOSED TO TEMPERATURES BELOW 40 DEGREES. UNIFORMLY HEAT THE WATER AND AGGREGATES TO A TEMPERATURE OF NOT LESS THAN 50 DEGREES. PLACE AND CURE CONCRETE IN ACCORDANCE WITH ACI 306.
14. ALL CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE UNLESS THEIR ELIMINATION IS APPROVED BY THE STRUCTURAL ENGINEER.
15. REINFORCING IN ALL ABUTTING CONCRETE, INCLUDING FOOTINGS, SHALL BE CONTINUOUS THROUGH OR AROUND ALL CORNERS OR INTERSECTIONS. DOWELS OR SPLICES SHALL BE EQUAL IN SIZE AND SPACING TO THE REINFORCING IN THE ABUTTING MEMBERS.
16. REFER TO ARCHITECTURAL DRAWINGS FOR DOOR AND WINDOW OPENINGS, DRIPS, REGLETS, WASHES, MASONRY ANCHORS, BRICK LEDGE ELEVATIONS, SLAB DEPRESSIONS AND MISCELLANEOUS EMBEDDED PLATES, BOLTS, ANCHORS, ANGLES, ETC.
17. FORMS FOR ROUND COLUMNS SHALL BE ONE PIECE FIBERGLASS FORM TO PRODUCE SMOOTH FINISH ON EXPOSED COLUMNS.
18. REFER TO ARCHITECTURAL DRAWINGS FOR CONCRETE FINISHES. WHERE FINISH IS NOT SPECIFIED, CONFORM TO REQUIREMENTS OF ACI 301.
19. BASE PLATES, ANCHOR RODS, SUPPORT ANGLES AND OTHER STEEL EXPOSED TO EARTH OR GRANULAR FILL SHALL BE COVERED WITH A MINIMUM OF 3" OF CONCRETE.
20. FINISHING TOLERANCE SHALL BE WITHIN CLASS B IN ACCORDANCE WITH ACI 301 AND CONSIDERATION SHALL BE GIVEN TO SEQUENCING OF CONCRETE PLACEMENT TO FACILITATE CONTROL OF FINISH ELEVATIONS.
21. NON-SHRINK GROUT SHALL BE PRE-MIXED, NON-CORROSIVE, NON-METALLIC, NON-STAINING CONTAINING SILICA SANDS, PORTLAND CEMENT, SHRINKAGE COMPENSATING AND WATER REDUCING AGENTS. PRODUCTS SHALL ONLY REQUIRE THE ADDITION OF WATER. MINIMUM COMPRESSIVE STRENGTH SHALL BE 5000 PSI AFTER ONE DAY AND 7000 PSI AFTER 28 DAYS. GROUT SHALL BE FREE OF GAS PRODUCING OR AIR RELEASING AND OXIDIZING AGENTS AND CONTAIN NO CORROSIVE IRON, ALUMINUM OR GYPSUM.
22. PROVIDE CONCRETE GROUT - NOT MORTAR - FOR REINFORCING MASONRY LINTEL AND BOND BEAMS WHERE INDICATED ON DRAWINGS OR AS SCHEDULED.
23. TOLERANCE FOR ANCHOR RODS AND OTHER EMBEDDED ITEMS SHALL BE PER THE AISC CODE OF STANDARD PRACTICE SECTION 7.5.
24. UNLESS OTHERWISE SHOWN IN THE ARCHITECTURAL DRAWINGS, PROVIDE 3/4" CHAMFERS AT ALL COLUMN, WALL, SLAB, OR BEAM EDGES THAT ARE EXPOSED TO VIEW IN THE FINISHED STRUCTURE.

FOUNDATIONS:

1. PRESUMED SOIL BEARING CAPACITY IS 3000psf ON FIRM VIRGIN SOIL OR COMPACTED ENGINEERED FILL. BEARING CAPACITY SHALL BE VERIFIED BY THE OWNER'S GEOTECHNICAL ENGINEER PRIOR TO PLACING FOOTINGS.
2. TOP OF FOOTING ELEVATIONS AS SHOWN ON THE DRAWINGS ARE TO BE DETERMINED BY THE CONTRACTOR IN THE FIELD IN ACCORDANCE WITH THE GUIDE LINES SET FORTH IN THE DRAWINGS AND SPECIFICATIONS.
3. FILL MATERIAL SHALL BE FREE OF ROOTS. WOOD OR OTHER ORGANIC MATERIAL AND COMPLY WITH THE REQUIREMENTS OF THE GEOTECHNICAL REPORT. MATERIALS USED FOR FILL UNDER FOOTINGS AND WITHIN BUILDING LIMITS SHALL BE TESTED AND APPROVED FOR THE USE BY THE GEOTECHNICAL TESTING AGENCY.
4. ALL FILL MATERIALS SHALL BE SELECTED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. MATERIALS SHALL BE CLEAN, LOW PLASTIC SOIL WITH A PLASTICITY INDEX OF 10 OR LESS (MAXIMUM OF 10), LIQUID LIMIT OF 45 OR LESS (MAXIMUM OF 45), UNIT WEIGHT OF 120 PCF (±5 PCF), AND SHALL BE FREE OF FIBROUS ORGANIC MATERIALS. PARTIALLY WEATHERED ROCK MATERIALS MAY BE USED FOR STRUCTURAL FILL PROVIDED THE MATERIAL CAN BE REDUCED TO MAXIMUM DIMENSIONS OF 6 INCHES.
5. FILL PLACED BELOW FOOTING BASE ELEVATION AND WITHIN THE TOP 12 INCHES OF SOIL SUB GRADE BELOW PAVEMENTS SHALL BE COMPACTED TO AT LEAST 98 PERCENT OF THE MATERIAL'S MAXIMUM DRY DENSITY PER ASTM D-698. FILL PLACED ABOVE FOOTING ELEVATION FOR SUPPORT OF THE LIGHTLY LOADED FLOOR SLABS (250 PSF OR LESS) OR MORE THAN 12 INCHES FROM THE FINISHED SUB GRADE LEVEL WITHIN THE PAVEMENT AREAS SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY PER ASTM D-698. THE FILL SHALL BE PLACED AND COMPACTED AT MOISTURE CONTENTS WITHIN A RANGE OF 1 PERCENT BELOW TO 3 PERCENT ABOVE THE MATERIAL'S OPTIMUM MOISTURE CONTENT PER ASTM D-698.
6. UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS WITHOUT THE STRUCTURAL ENGINEERS APPROVAL.
7. CONTRACTOR SHALL REMOVE AND REPLACE UNACCEPTABLE SOILS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT . ALL SOILS WITH PLASTICITY INDICES GREATER THAN 10 SHALL BE REMOVED TO A DEPTH OF NOT LESS THAN 3'-0" OR GREATER AS DIRECTED BY THE GEOTECHNICAL ENGINEER WHERE SUCH MATERIAL OCCURS BELOW FOUNDATIONS.
8. FOUNDATION WALLS RETAINING EARTH SHALL BE BRACED AGAINST BACK FILLING PRESSURES UNTIL FLOOR SLABS AT TOP AND BOTTOM ARE IN PLACE.
9. FOUNDATION WALLS OR GRADE BEAMS HAVING EARTH PLACED ON EACH SIDE SHALL HAVE BOTH FILLED SIMULTANEOUSLY TO MAINTAIN A COMMON ELEVATION.
10. DO NOT PLACE CONCRETE IN ANY EXCAVATION CONTAINING ICE, FROST, FROZEN GROUND OR FREE WATER. FROZEN SUB-GRADES MUST BE THAWED AND RECOMPACTED PRIOR TO PLACING CONCRETE.
11. EARTH FORMED FOOTINGS SHALL CONFORM TO THE SHAPE, LINES, AND DIMENSIONS AS SHOWN ON THE FOUNDATION PLAN. ALL WATER SHALL BE REMOVED BEFORE DEPOSITING CONCRETE.
12. BEFORE PLACING CONCRETE, ALL EMBEDDED ITEMS SHALL BE PROPERLY LOCATED, ACCURATELY POSITIONED, AND MAINTAINED SECURELY IN PLACE.
13. THE CONTRACTOR SHALL COORDINATE AND VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION, AND ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
14. PERIMETER FOUNDATION MUST NOT EXCEED 1/4" ELEVATION VARIATION ALONG ANY 50' DISTANCE OF BUILDING LENGTH.
15. THE AMERICAN CONCRETE INSTITUTE DOES NOT RECOGNIZE FIBERMESH AS A SUBSTITUTE FOR WIRE MESH REINFORCED CONCRETE WHEN SUBJECTED TO TENSILE STRESS.
16. SAW CUT CONTROL JOINTS IN SLAB SURFACE AS SHOWN ON PLANS . . . OFFSET CUTS 2'-6" MINIMUM FROM INTERIOR COLUMN LINES.
17. PERIMETER FOUNDATION TO EXTEND BELOW FROST LINE. VERIFY REQUIRED DEPTH WITH LOCAL BUILDING OFFICIALS PRIOR TO PROCEEDING WITH FOUNDATION WORK AND NOTIFY ENGINEER OF DEVIATION FROM DRAWING.

Table 25.3.1 - Standard hook geometry for developement of deformed bars in tension.

Type of standard hook	Bar size	Minimum inside bend diameter, in.	Straight extension[1] ℓ_{ext}, in.	Type of stand hook.
90-degree hook	No. 3 through No. 8	$6d_b$	$12d_b$	Point at which bar is developed; d_b; 90-degree bend; Diameter; ℓ_{ext}; ℓ_{dh}
	No. 9 through No. 11	$8d_b$		
	No. 14 through No. 18	$10d_b$		
180-degree hook	No. 3 through No. 8	$6d_b$	Greater of $4d_b$ and 2.5 in.	Point at which bar is developed; d_b; 180-degree bend; Diameter; ℓ_{ext}; ℓ_{dh}
	No. 9 through No. 11	$8d_b$		
	No. 14 through No. 18	$10d_b$		

[1]A standard hook for deformed bars in tension includes the specific inside bend diameter and straight extension length. It shall be permitted to use a longer straight extension at the end of a hook. A longer extension shall not be considered to increase the anchorage capacity of the hook.

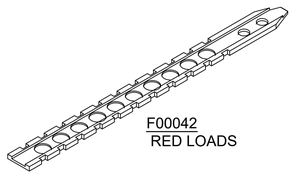
Table 25.3.2 - Minimun inside bend diameters and standard hook geometry for stirrups, ties, and hoops.

Type of standard hook	Bar size	Minimum inside bend diameter, in.	Straight extension[1] ℓ_{ext}, in.	Type of stand hook.
90-degree hook	No. 3 through No. 5	$4d_b$	Greater of $6d_b$ and 3 in.	d_b; 90-degree bend; Diameter; ℓ_{ext}
	No. 6 through No. 8	$6d_b$	$12d_b$	
135-degree hook	No. 3 through No. 5	$4d_b$	Greater of $6d_b$ and 3 in.	d_b; 135-degree bend; Diameter; ℓ_{ext}
	No. 6 through No. 8	$6d_b$		
180-degree hook	No. 3 through No. 5	$4d_b$	Greater of $4d_b$ and 2.5 in.	d_b; 180-degree bend; Diameter; ℓ_{ext}
	No. 6 through No. 8	$6d_b$		

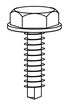
[1]A standard hook for stirrups, ties, and hoops includes the specific inside bend diameter and straight extension length. It shall be permitted to use a longer straight extension at the end of a hook. A longer extension shall not be considered to increase the anchorage capacity of the hook.

Table 7 – Tension Development and Lap Splice Lengths for Bars in Walls, Slabs and Footings (ACI 25.4.2.3)
f'_c = 3,000 psi

Bar Size	Lap Class	Concrete Cover = 0.75 in.				Concrete Cover = 1.50 in.				Concrete Cover = 2.00 in.				Concrete Cover = 3.00 in.			
		Uncoated		Epoxy-Coated		Uncoated		Epoxy-Coated		Uncoated		Epoxy-Coated		Uncoated		Epoxy-Coated	



F00042
RED LOADS



F10006
#10 X 5/8" SDF

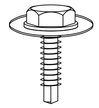
F10039
#10 X 1 1/4" SDF

F12017
#12 X 7/8" SDF

F12072
#12 X 24 X 1 1/4" SDF

F10008
#10 X 5/8" TORX HEAD SDF

F10040
"GAMCO" #760404
AYDIN MOLDED
DEVICE



F12009
#12 X 1" SDF W/ WASHER

F14010
#14 X 7/8" SDF W/ WASHER

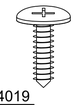
F14011
#14 X 7/8" SDF W/ WASHER
NOTE COLOR REQUIRED

F16010
#17 X 1" "FAT BOY"

F12014
GYPSUM BOARD SCREW
SHARP END

F12041
GYPSUM BOARD SCREW
DRILL END

F13046
1/8" POP RIVET
NOTE COLOR REQUIRED



F14019
#14 X 1 1/4" TAP SCREW

F19001
3/16"Ø X 3/4"
CARRIAGE BOLT

F25006
1/4"Ø X 3/4"
CARRIAGE BOLT

F19002
3/16"Ø KEPNUT

F25005
1/4"Ø KEPNUT

F38070
3/8"Ø X 3/4" BOLT

F50091
1/2"Ø X 1" BOLT

F38071
3/8"Ø NUT

F50092
1/2"Ø NUT

F38080
3/8"Ø WASHER

F50049
1/2"Ø WASHER

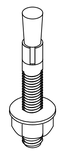
F38081
3/8"Ø STAR WASHER

F38003
3/8"Ø X 3"
WEDGE ANCHOR

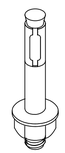
F50001
1/2"Ø X 3 3/4"
WEDGE ANCHOR

F50065
1/2"Ø X 2 3/4"
WEDGE ANCHOR

F50024
5/8"Ø X 6"
WEDGE ANCHOR



F75032
3/4"Ø X 8"
WEDGE ANCHOR



F50125
1/2"Ø X 2 1/4"
SLEEVE ANCHOR

F50018
1/2"Ø X 4"
SLEEVE ANCHOR

F88053
7/8"Ø POWDER
DRIVEN FASTENER

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

10/19/22

REVISIONS	DATE	BY

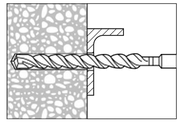
DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

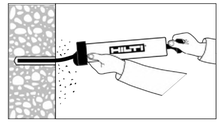
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: STANDARD FASTENERS
DRAWING NUMBER: CV6

3.3.4 KWIK Bolt TZ Expansion Anchor

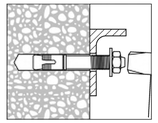
3.3.4.4 KWIK Bolt TZ Anchor Installation Instructions into normal-weight and lightweight concrete



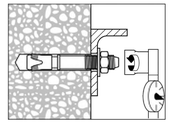
1. Hammer drill a hole to the same nominal diameter as the KWIK Bolt TZ. The minimum hole depth must conform with the instructions for use adhered to the packaging and the ICC-ES evaluation report, if applicable. The fixture may be used as a drilling template to ensure proper anchor location.



2. Clean hole.



3. Drive the KWIK Bolt TZ into the hole using a hammer. The anchor must be driven until at least 4 threads are below the surface of the fixture.

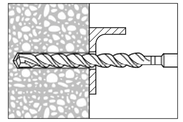


4. Tighten the nut to the installation torque.

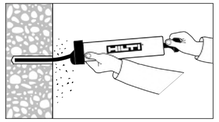
SETTING INFORMATION	Units	Normal Anchor Diameter (In.)			
		3/8	1/2	5/8	3/4
Installation torque	ft*lb	25	40	60	110
	(Nm)	34	54	81	149

KWIK Bolt 3 Expansion Anchor 3.3.6

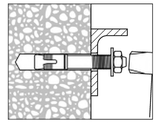
3.3.6.5 Installation Instructions



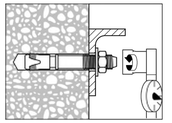
1. Hammer drill a hole to the same nominal diameter as the KWIK Bolt 3. The hole depth must exceed the anchor embedment by at least one diameter. The fixture may be used as a drilling template to ensure proper anchor location.



2. Clean hole.



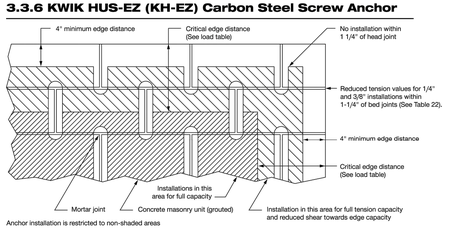
3. Drive the KWIK Bolt 3 into the hole using a hammer. The anchor must be driven until at least 6 threads are below the surface of the fixture.



4. Tighten the nut to the installation torque.

DESIGN INFORMATION	Units	Normal Anchor Diameter (In.)				
		1/4	3/8	1/2	5/8	3/4
Installation torque	ft*lb	4	20	40	60	110
	(Nm)	5	27	54	81	149

3.3.6 KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor



Anchor installation is restricted to non-shaded areas

Figure 5 – Acceptable locations (shaded areas) for Hilti KWIK HUS-EZ anchors in grout-filled concrete masonry

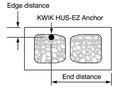


Figure 6 – Edge and end distances for the Hilti KWIK HUS-EZ anchor installed in the top of CMU masonry wall construction

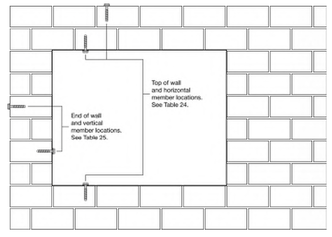


Figure 7 – Anchor locations in end of wall or wall opening applications

SETTING INFORMATION	Units	Normal Anchor Diameter (In.)									
		3/8			1/2			5/8		3/4	
Installation torque	ft*lb	40			45			85		115	
Impact wrench torque rating	ft*lb	114	450		137	450		450		450	
Normal embedment	in.	1 - 5/8	2 -1/2	3 -1/4	2 -1/4	3	4 -1/4	3 -1/4	5	4	6 -1/4
Minimum hole depth	in.	1- 7/8	2 -3/4	3 -1/2	2 -5/8	3 -3/8	4 -5/8	3 - 5/8	5 -3/8	4 -3/8	6 -5/8

KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor 3.3.5

Table 8 – KWIK HUS-EZ Allowable Loads Installed In Top of Grout-Filled Concrete Masonry Construction (lb)

Anchor Diameter (inches)	Minimum Embedment Depth (inches)[2]	Minimum Edge Distance (inches)	Minimum Spacing (inches)	Minimum End Distance (inches)	Tension	Shear	
						Perpendicular to Edge of Masonry Wall	Parallel to Edge of Masonry Wall
1/2	4 1/4	1 3/4	8	4	680	305	1110
5/8	5	1 3/4	10	5	1310	305	1165

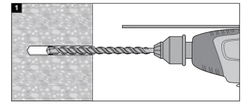
1 All values are for anchors installed in fully grouted masonry with minimum masonry prism strength of 1500psi. Concrete masonry units shall be light-weight or normal-weight.

2 Embedment depth is measured from the top of the masonry construction.

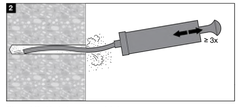
3 For combined loading: For 1/4" diameter - $\frac{T_{applied}}{T_{allowable}} + \frac{V_{applied}}{V_{allowable}} \leq 1$ For 3/8" - 3/4" diameter - $\left(\frac{T_{applied}}{T_{allowable}}\right)^{5/3} + \left(\frac{V_{applied}}{V_{allowable}}\right)^{5/3} \leq 1$

3.3.5.4 Installation Instructions

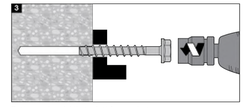
Drill holes in base material using carbide-tipped masonry drill bits complying with ANSI B212.15-1994. The nominal drill bit diameter must be equal to that of the anchor. The minimum drilled hole depth is given in Table 1. Prior to installation, dust and debris must be removed from the drilled hole using a hand pump, compressed air or a vacuum. The anchor must be installed into the predrilled hole using a powered impact wrench or installed with a torque wrench until the proper nominal embedment depth is obtained. The impact wrench torque, T_{impact}, and installation torque, T_{inst} for the manual torque wrench must be in accordance with Table 1. The KWIK HUS-EZ (KH-EZ) may be loosened by a maximum of one turn and reinstalled with a socket wrench or powered impact wrench to facilitate fixture attachment or realignment. For member thickness and edge distance restrictions for installations into the soffit of concrete on steel deck assemblies, see Figure 2.



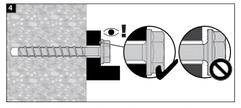
Drill hole in base material using proper diameter drill bit.



Clean drilled hole to remove debris.



Fasten anchor tightly against fastened part.



Install anchor using proper impact tool or torque wrench.

BXUV - Fire Resistance Ratings - ANSI/UL 263

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

See General Information for Fire-resistance Ratings - ANSI/UL 263

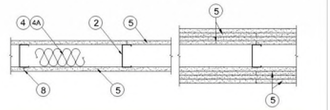
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

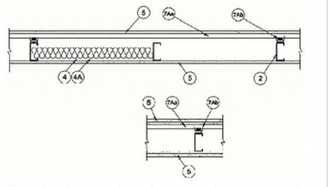
Design No. U419

April 12, 2016

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 depth to accommodate stud size, with min 1-1/4 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper25™ Track

CRACO MFG INC — SmartTrack25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™ Track

1B. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2C, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper20™ Track

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track

1C. **Framing Members* — Floor and Ceiling Runners —** (Not Shown) — In lieu of Item 1 - Channel shaped, attached to floor and ceiling with fasteners 24 in. OC. max.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV— Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

1D. **Floor and Ceiling Runners —** (Not Shown) — For use with Item 2A — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1E. **Framing Members* — Floor and Ceiling Runners —** (Not Shown, As an alternate to Item 1) — For use with Items 2E, 5F or 5G or 5I only, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC. max.
CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK

DMFCWBS L L C — ProTRAK

MBA METAL FRAMING — ProTRAK

RAM SALES L L C — Ram ProTRAK

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProTRAK

1F. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2F, proprietary channel shaped runners, minimum width to accommodate stud size, with 1- 1/8 in. long legs fabricated from min 0.015 in. (min bare metal thickness) galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
SUPER STUD BUILDING PRODUCTS — The Edge

1G. **Framing Members* - Floor and Ceiling Runner —** For use with Item 2G, proprietary channel shaped runners, minimum width to accommodate stud size attached to floor and ceiling with fasteners 24 in. OC max.
STUDCO BUILDING SYSTEMS — CROCSTUD Track

1H. **Floor and Ceiling Runners —** (Not Shown) — Channel shaped, fabricated from min 0.02 in. galv steel, min width to accommodate stud size, with min 1 in. long legs, for use with studs specified below and fabricated from min 0.02 in. galv steel or thicker, attached to floor and ceiling with fasteners spaced max 24 in. OC.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track VT100.

1I. **Framing Members* — Floor and Ceiling Runners —** (Not Shown, As an alternate to Item 1) — For use with Items 2H, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC max.
TELLING INDUSTRIES L L C — TRUE-TRACK™

1J. **Framing Members* — Floor and Ceiling Runners —** Not Shown — In lieu of Item 1 — For use with Item 2I, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.
TELLING INDUSTRIES L L C — Viper25™ Track

1K. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2J, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
TELLING INDUSTRIES L L C — Viper20™ Track

1L. **Framing Members* — Floor and Ceiling Runners —** (Not Shown) — As an alternate to Item 1 - For use with Item 2N. Channel shaped, attached to floor and ceiling with fasteners 24 in. OC. max.
BAILEY METAL PRODUCTS LTD — Type PLATINUM PLUS

1M. **Framing Members* — Floor and Ceiling Runners —** Not Shown — As an alternate to Item 1 — For use with Item 2O, proprietary channel shaped runners, min width to accommodate stud size, galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Wall Track

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

2A. **Steel Studs —** (As an alternate to Item 2, For use with Items 5B, 5E, 5H, 5J and 5K) Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, 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.

2B. **Framing Members* - Steel Studs —** (As an alternate to Item 2, For use with Items 5C, 5I or 5K) - Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a 1/2 in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper25™

CRACO MFG INC — SmartStud25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™

2C. **Framing Members* — Steel Studs —** Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.020 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper20™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™

2D. **Framing Members* — Steel Studs —** In lieu of Item 2 - Channel shaped studs, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV— Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

2E. **Framing Members* — Steel Studs —** (Not Shown, As an alternate to Item 2) —For use with Items 5F or 5G or 5I or 5K only, channel shaped studs, min depth as indicated under Item 5F, 5G or 5I, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD

DMFCWBS L L C — ProSTUD

MBA METAL FRAMING — ProSTUD

RAM SALES L L C — Ram ProSTUD

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProSTUD

2F. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, minimum width indicated under Item 5, 1-1/4 in. deep fabricated from min 0.015 in. (min bare metal thickness) galvanized steel. Studs 3/8 in. to 3/4 in. less in lengths than assembly heights.
SUPER STUD BUILDING PRODUCTS — The Edge

2G. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 - proprietary channel shaped studs, minimum width indicated under Item 5, Studs to be cut 3/8 to 3/4 in less than the assembly height.
STUDCO BUILDING SYSTEMS — CROCSTUD

2H. **Framing Members* — Steel Studs** — (Not Shown, As an alternate to Item 2) — Fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
TELLING INDUSTRIES L L C — TRUE-STUD™

2I. **Framing Members* — Steel Studs** — (As an alternate to Item 2, For use with Items 5C or 5L or 5K) - Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a 1/2 in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.
TELLING INDUSTRIES L L C — Viper25™

2J. **Framing Members* — Metal Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.020 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights
TELLING INDUSTRIES L L C — Viper20™

2K. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
EB METAL INC — EB Stud

2L. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
OLMAR SUPPLY INC — PRIMESTUD

2M. **Framing Members* — Steel Studs —** As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — StudRite™

2N. **Framing Members* — Steel Studs —** As an alternate to Item 2 — For use with Item 1L, channel shaped, min 3-5/8 in. wide, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
BAILEY METAL PRODUCTS LTD — Type PLATINUM PLUS

2O. **Framing Members* — Steel Studs —** As an alternate to Item 2 — proprietary channel shaped steel studs, min width as indicated under Item 5, galv steel. Studs to be cut 3/8 to 3/4 in. less in lengths than assembly height. Spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Lipped Wall Stud

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. When used, gypsum panels attached over OSB or plywood panels and fastener lengths for gypsum panels increased by min. 1/2 in.

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.

4B. **Batts and Blankets* —** For use with Item 5K. Placed in stud cavities, any min. 3-1/2 in. thick glass fiber 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 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:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Items 2, 2C, 2D, 2F, 2G, 2O	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 4)
1	3-1/2	1 layer, 5/8 in. thick	Optional
2	3-1/2	2 layers, 1/2 in. thick	Optional
3	3-1/2	3 layers, 1/2 in. thick	Optional
4	3-1/2	4 layers, 1/2 in. thick	Optional

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; 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, SGX, 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 BORAL ZAWAWI DRYWALL L L C SFZ — 1/2 in. Type C; 5/8 in. Types C, SCX

USG MEXICO S A DE C V — 1/2 in. Type C; 5/8 in. Types C, SCX

UNITED STATES GYPSUM CO — Type SHX.

USG MEXICO S A DE C V — Type SHX.

5B. **Gypsum Board* —** (Not Shown) — As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 in or 3/4 in. thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) — Nom 5/8 in. or ◆ in. thick type C, IP-X2, IPC-AR or ◆ in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 in. or 3/4 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. Gypsum board secured to 20 MSG steel studs Item 2A with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 11) or Lead Discs or Tabs (see Item 12).
RAY-BAR ENGINEERING CORP — Type RB-LBG

5C. **Gypsum Board* —** (For Use With Item 2B) Rating Limited to 1 Hour. 5/8 in. thick, 48 in. wide, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. (Vertical Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. Vertical joints are to be centered over studs and staggered one stud cavity on opposite sides of studs. (Horizontal Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. All horizontal joints are to be backed as outlined under section VI of Volume 1 in the Fire Resistive Directory.
CGC INC — Type SCX.

UNITED STATES GYPSUM CO — Type SCX, SGX.

USG BORAL ZAWAWI DRYWALL L L C SFZ — Type SCX

USG MEXICO S A DE C V — Type SCX.

5D. **Gypsum Board* —** (As an alternate to Item 5) — 5/8 in. thick, 48 in. wide, applied vertically or horizontally. Secured as described in Item 6. For use with Items 1 and 2 only.
CGC INC — Type USGX.

UNITED STATES GYPSUM CO — Type USGX.

USG MEXICO S A DE C V — Type USGX.

5E. **Gypsum Board* —** (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified. For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nominal 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 (or No. 6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.
NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

5F. **Gypsum Board* —** (As an alternate to Item 5) — For use with Items 1E and 2E and limited to 1 Hour Rating only, Gypsum panels with beveled, square or tapered edges, applied vertically, and fastened to the steel studs with 1 in. long Type S screws spaced 8 in. OC along vertical and bottom edges and 12 in. OC in the field. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Steel stud depth shall be a minimum 3-5/8 in.
UNITED STATES GYPSUM CO — 5/8 in. thick Type SCX, SGX.

USG BORAL ZAWAWI DRYWALL L L C SFZ — 5/8 in. thick Type SCX

5G. **Gypsum Board* —** (As an alternate to Item 5) — For use with Items 1E and 2E only, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally, as specified in the table below and fastened to the steel studs as described in Item 6. 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 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Item 2E	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 1/2 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

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or; 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

5H. **Gypsum Board* —** (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 or 3/4 in thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) - Nom 5/8 or 3/4 in. may be used as alternate to all 5/8 or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 or 3/4 in. thick lead backed 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 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) need not be staggered. The number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Items 2 through 2O	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 4B)
1	3-5/8	1 layer, 5/8 in. thick	3-1/2 in.
2	1-5/8	2 layers, 5/8 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

5I. **Gypsum Board* —** (As an alternate to Item 5) — Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 5. Steel stud minimum depth shall be as indicated in Item 5.
CGC INC — Type ULX

UNITED STATES GYPSUM CO — Type ULX

USG MEXICO S A DE C V — Type ULX

5J. **Gypsum Board* —** (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified. For direct attachment only to steel studs Item 2A, 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 gypsum panel steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 lb long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and 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 discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".
RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

5K. **Gypsum Board* —** (Not Shown) — (As an alternate to Item 5) — Nom. 5/8 in. thick 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) need not be staggered. The number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Items 2 through 2O	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 4B)
1	3-5/8	1 layer, 5/8 in. thick	3-1/2 in.
2	1-5/8	2 layers, 5/8 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

UNITED STATES GYPSUM CO — 5/8 in. thick Type ULIX

6. **Fasteners —** (Not Shown) — For use with Item 5K- 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 5K- Type S or S-12 steel screws used to attach panels to studs or furring channels (Item 7). Single layer systems: 1 in. long screws, 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 screws, spaced 16 in. OC. Second layer- 1-5/8 in. screws, spaced 8 in. OC with screws offset 8 in. from first layer. Three-layer systems: First layer- 1 in. long screws, spaced 24 in. OC. Second layer- 1-5/8 in. long screws, spaced 8 in. OC. Third layer- 2-5/8 in. long screws, spaced 8 in. OC. Screws offset min 6 in. from layer below. Four-layer systems: First layer- 1 in. long screws, spaced 24 in. OC. Second layer- 1-5/8 in. long screws, spaced 24 in. OC. Third layer- 2-5/8 in. long screws, spaced 24 in. OC. Fourth layer- 3 in. long screws, spaced 8 in. OC. Screws offset min 6 in. from layer below.

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 and 5E.

7A. **Framing Members* —** (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, 2-9/16 in. or 2-23/32 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 and 5E.

b. **Steel Framing Members* —** Used to attach furring channels (Item 7Aa) to studs (Item 2). Clips spaced max. 48 in. OC. GENIECLIPS 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. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75).

7B. **Framing Members* —** (Optional, Not Shown) — As an alternate to Item 7, for single or double layer systems, 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 vertically a max of 24 in. OC. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured together with four self-tapping No. 8x1/2 Self Drilling screws (2 per side 1 in. and 4 in. from overlap edge). Gypsum board attached to furring channels as described in Item 4. Side joint furring channels shall be attached to studs with RESILMOUNT Sound Isolation Clips - located approximately 2 in. from each end of length of channel. Both Gypsum Boards at side joints fastened into channel with screws spaced 8 in. OC, approximately 1/2 in. from joint edge. Not for use with Item 5A and 5E.

b. **Steel Framing Members* —** Resilient sound isolation clip used to attach furring channels (Item 7Da) to studs. Clips spaced 24 in. OC., and secured to studs with No. 10 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
STUDCO BUILDING SYSTEMS — RISILIENT Sound Isolation Clips - Type A237 or A237R

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 and optional at remaining stud locations. Required behind vertical joints.

11A. **Lead Batten Strips —** (Not Shown, For Use With Item 5H) Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.140 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D". Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations.

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".

12A. **Lead Discs —** (Not Shown, for use with Item 5H) Max 5/16 in. diam by max 0.140 in. thick lead discs compression fitted or adhered over steel screw heads. Lead discs to have a purity of 99.5% meeting the Federal Specification QQ-L-201f, Grades "B, C or D".

13. **Lead Batten Strips —** (Not Shown, For Use With Item 5E) Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.142 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top 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 5E) and optional at remaining stud locations.

14. **Lead Tabs —** (Not Shown, For Use With Item 5E) 2 in. wide, 5 in. long with a max thickness of 0.142 in. Tabs friction-fit around front face of stud, the stud folded back flange, and the back face of the stud. Tabs required at each location where a screw (that secures the gypsum boards, Item 5E) will penetrate the steel stud. Lead tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead tabs may be held in place with standard adhesive tape if necessary.

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

STUDS 16"OC

STUDS 24"OC

GYPSUM BOARD APPLIED VERTICALLY.
JOINTS IN FINISH LAYER TO RECEIVE
SHEETROCK TAPE AND JOINT COMPOUND

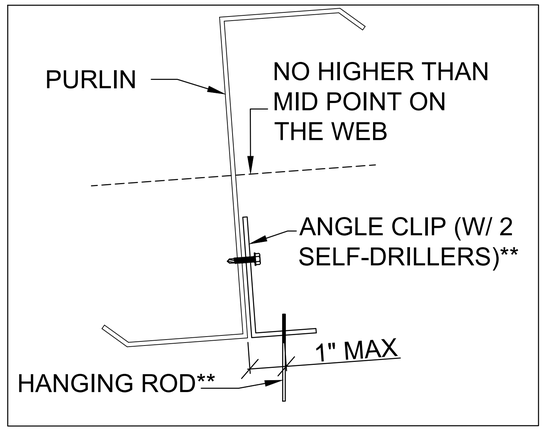
PARTITION - MULTILAYER JOINT
CONFIGURATION 2-HOUR WALL

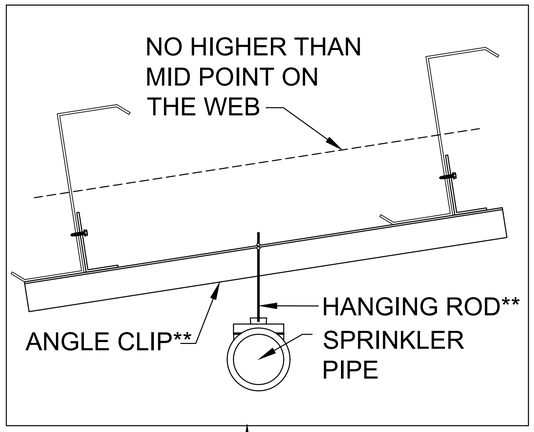
SCALE: 1/4"=1" DATE: 4/18/98

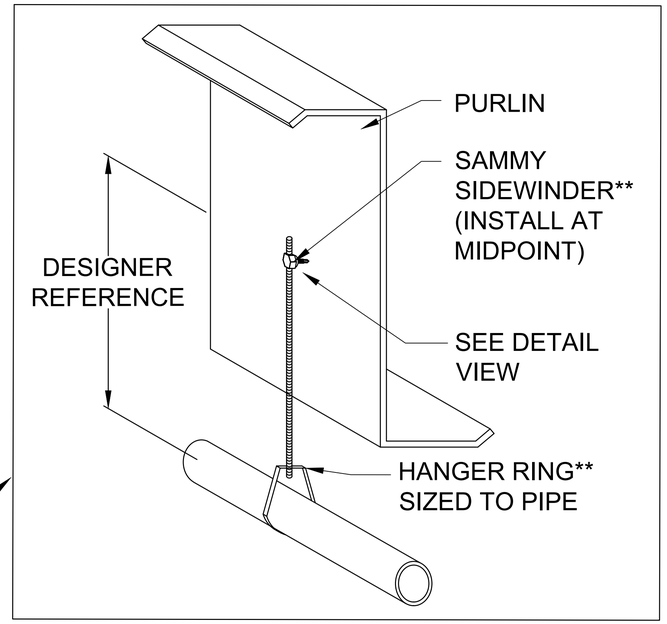
BETCO, Inc.
228 Commerce Blvd.
Statesville, NC 28625
Limited Engineering License # D-0140

N

SUGGESTED METHOD OF PURLIN ATTACHMENT
(FOR BLDG ACCESSORIES)





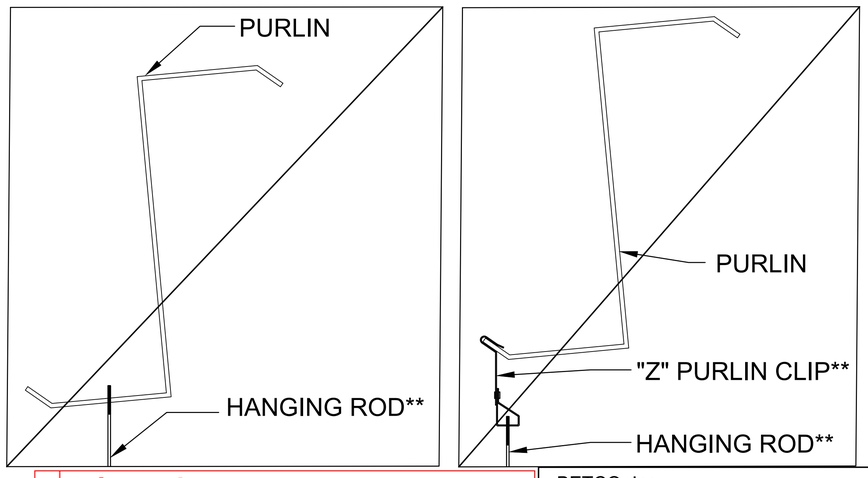


SUGGESTED METHODS
(Not by Metal Bldg Manufacturer)

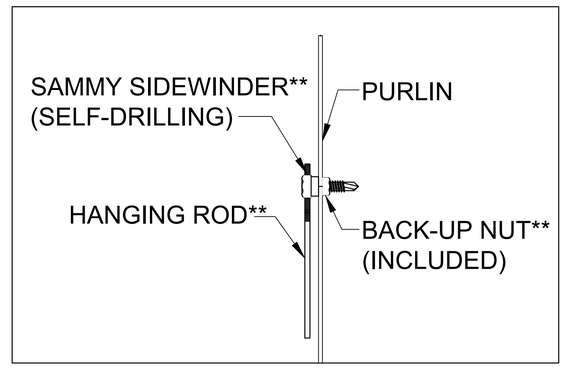
An angle is self-tapped to the web of the purlin to catch hanger rod. This method does not preclude other forms of attachment to the purlin web. The total hanger load shall not exceed the design collateral load for the building. A sample calculation is shown below:
5' (purlin spacing) x 5' (hanger spacing) x 6 psf (collateral load = 150 lbs)

Note: If this building is designed for 0 psf collateral load, then adding any suspended system (ie. duct work, piping, lights, ceilings, etc.) will correspondingly reduce the design live load.

THE INCORRECT WAYS



DETAIL VIEW



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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT
10/19/22

REVISIONS	DATE	BY

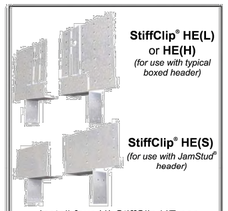
DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

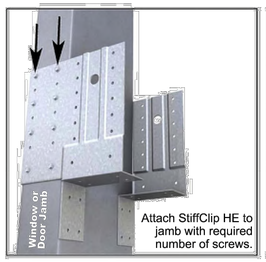
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: FIRE SPRINKLER ATTACHMENT NOTES
DRAWING NUMBER: CV12

StiffClip® HE Installation Instructions: Header Connector

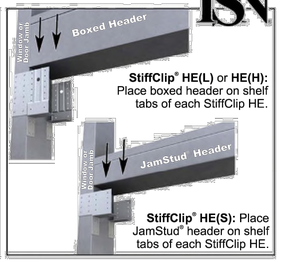
TSN



Install four (4) StiffClip HE per opening. Refer to design drawings for fastener type and quantity required.

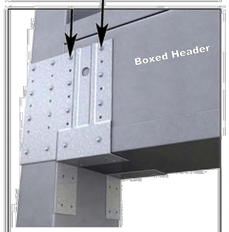


Attach StiffClip HE to jamb with required number of screws.

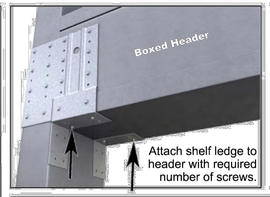


StiffClip® HE(L) or **HE(H):** Place boxed header on shelf tabs of each StiffClip HE.

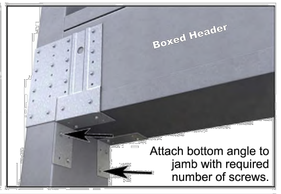
StiffClip® HE(S): Place JamStud® header on shelf tabs of each StiffClip HE.



Attach clip to header with required number of screws.



Attach shelf ledge to header with required number of screws.



Attach bottom angle to jamb with required number of screws.

Consider using TSN's JamStud® in place of all window or door jamb studs for added quality. For Installation, Technical or Submittal questions, contact The Steel Network at **(888) 474-4876** or email us at **support@steelnetwork.com.**
Visit **www.steelnetwork.com** and discover the value of each TSN solution.

Rev 2

US Patent #7,634,889

Products on this page are designed and manufactured for the specific purposes show, and should not be used in other applications unless approved by a qualified design professional. All modifications to products or changes in installation procedures should be made by a qualified design professional. The performance of such modified products or altered installation procedures is the sole responsibility of the design professional or installation contractor. The installation contractor is responsible for installing all products in accordance with relevant specifications and building codes.

PLAN ABBREVIATIONS

ABV - ABOVE
AFF - ABOVE FINISH FLOOR
ALT - ALTERNATE
AMB - AIR/MOISTURE BARRIER
BLDG - BUILDING
BM - BEAM
BOT - BOTTOM
BOS - BOTTOM OF STEEL
CJ - CONTROL JOINT
CLR - CLEAR
CMU - CONCRETE MASON UNIT
COL - COLUMN
CONC - CONCRETE
CONT - CONTINUOUS
DBL - DOUBLE
DIA - DIAMETER
DIM - DIMENSION
DN - DOWN
DSP - DOWNSPOUT
DWG - DRAWING
EA - EACH
EIFS - EXTERIOR INSULATION AND FINISH SYSTEM
EJ - EXPANSION JOINT
ELEV / EL - ELEVATION
EPDM - ETHYLENE PROPYLENE DIENE MONOMER
EQ - EQUAL
EW - EACH WAY
EXP - EXPANSION
EXT - EXTERIOR
FF - FINISH FLOOR
FLR - FLOOR
FOC - FACE OF CONCRETE
FOM - FACE OF MASONRY
FOS - FACE OF STEEL/STUD/SLAB
FT- FEET
GA - GAUGE
GALV - GALVANIZED
GYP - GYPSUM
HGT - HEIGHT
HOR - HORIZONTAL
HP - HIGHPOINT
HR - HOUR
ID - INSIDE DIAMETER
INT - INTERIOR
INSUL - INSULATION
JT - JOINT
LF - LINEAR FOOT
LLH - LONG LEG HORIZONTAL
LLV - LONG LEG VERTICAL
LP - LOW POINT
MATL - MATERIAL
MAX - MAXIMUM
MFR - MANUFACTURER
MIN - MINIMUM
MISC - MISCELLANEOUS
NTS - NOT TO SCALE
OC - ON CENTER
OD - OUTSIDE DIAMETER
OPP - OPPOSITE
QTY - QUANTITY
REINF - REINFORCEMENT
REQD - REQUIRED
REV - REVISION
RO - ROUGH OPENING
SAF - SELF ADHERED FLASHING
SF - SQUARE FOOT
SIM - SIMILAR
SPM - SINGLE PLY MEMBRANE
STD - STANDARD
STL - STEEL
TOM - TOP OF MASONRY
TOP - TOP OF PURLIN
TOS - TOP OF STEEL
TOW - TOP OF WALL
TYP - TYPICAL
UON - UNLESS OTHERWISE NOTED
VERT - VERTICAL
W/O - WITHOUT
WRB - WATER RESISTIVE BARRIER
WWF - WELDED WIRE FABRIC

DOOR SCHEDULE

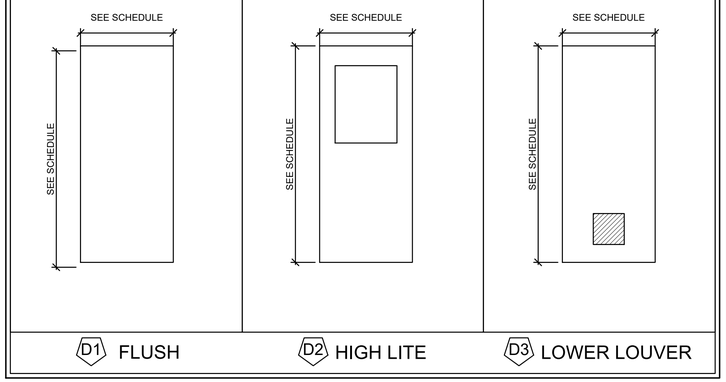
NO.	TYPE	DOOR DIMENSIONS WIDTH	DOOR DIMENSIONS HEIGHT	DOOR DIMENSIONS MATERIAL	DOOR DIMENSIONS THICK	FRAME MATERIAL	FRAME SILL	FRAME THROAT	FRAME DEPTH	LABEL	SWING	AUTOMATIC CLOSER	LOUVER	LITE KIT	HARDWARE	REMARKS
D10204	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	5 1/4"		1-1/2 HR	LH	YES	NO	NO	L-1	
D10206	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	5 1/4"		1-1/2 HR	RH	YES	NO	NO	L-1	
D10194	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	N/A	5 1/4"		1-1/2 HR	LH	YES	NO	NO	L-1	
D10205	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	N/A	5 1/4"		1-1/2 HR	RH	YES	NO	NO	L-1	
D10195	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	5 1/4"		1-1/2 HR	LH	YES	NO	NO	L-1	
D10207	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	5 1/4"		1-1/2 HR	RH	YES	NO	NO	L-1	
D10282	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	7 1/4"		1-1/2 HR	LH	YES	NO	NO	L-1	
D10283	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	7 1/4"		1-1/2 HR	RH	YES	NO	NO	L-1	
D10280	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	N/A	7 1/4"		1-1/2 HR	LH	YES	NO	NO	L-1	
D10281	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	N/A	7 1/4"		1-1/2 HR	RH	YES	NO	NO	L-1	
D10220	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	7 1/4"		1-1/2 HR	LH	YES	NO	NO	L-1	
D10221	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	7 1/4"		1-1/2 HR	RH	YES	NO	NO	L-1	
D10267	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	N/A	5 3/4"	3 HR	RH	YES	NO	NO	L-1	
D10268	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	N/A	5 3/4"	3 HR	LH	YES	NO	NO	L-1	
D10269	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	N/A	N/A	5 3/4"	3 HR	RH	YES	NO	NO	L-1	
D10270	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	N/A	N/A	5 3/4"	3 HR	LH	YES	NO	NO	L-1	
D10275	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	N/A	5 3/4"	3 HR	RH	YES	NO	NO	L-1	
D10276	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	N/A	N/A	5 3/4"	3 HR	LH	YES	NO	NO	L-1	
D31001	D2	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	RH	110 °	NO	W-1	L-1	
D31002	D2	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	LH	110 °	NO	W-1	L-1	
D31031	D2	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	RH	90 °	NO	W-1	L-1	
D31032	D2	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	LH	90 °	NO	W-1	L-1	
D31003	D2	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	RH	110 °	NO	W-1	L-1	
D31004	D2	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	LH	110 °	NO	W-1	L-1	
D31005	D2	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	RH	110 °	NO	W-1	L-1	
D31006	D2	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	LH	110 °	NO	W-1	L-1	
D31007	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	RH	110 °	NO	NO	L-1	
D31008	D1	4'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	LH	110 °	NO	NO	L-1	
D31009	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	RH	110 °	NO	NO	L-1	
D31010	D1	3'-6"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	LH	110 °	NO	NO	L-1	
D31011	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	RH	110 °	NO	NO	L-1	
D31012	D1	3'-0"	7'-0"	H.M.	1 3/4"	H.M.	S-1	N/A	5 3/4"	N/A	LH	110 °	NO	NO	L-1	
D10034	D1	3'-0"	7'-0"	R.D.C.	1"	N/A	N/A	N/A	N/A	N/A	LH	NO	NO	NO	L-2	
D10034	D1	3'-0"	7'-0"	R.D.C.	1"	N/A	N/A	N/A	N/A	N/A	RH	NO	NO	NO	L-2	
D10043	D3	3'-0"	7'-0"	S.M.	1"	N/A	N/A	N/A	N/A	N/A	LH	NO	LVR-1	NO	L-2	
D10043	D3	3'-0"	7'-0"	S.M.	1"	N/A	N/A	N/A	N/A	N/A	RH	NO	LVR-1	NO	L-2	

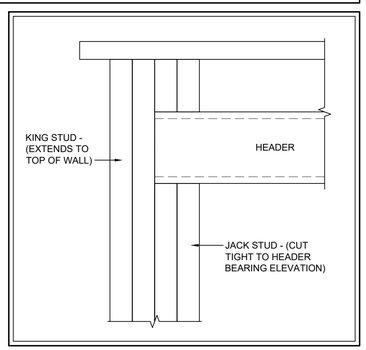
NOTE:

FIRE RATED DOORS:
TO DETERMINE RIGHT OR LEFT-HAND SWING:
AS THE DOOR OPENS TOWARDS YOU:
IF HINGES ON RIGHT - LEFT-HAND SWING
IF HINGES ON LEFT - RIGHT-HAND SWING

NON RATED DOORS:
TO DETERMINE RIGHT OR LEFT-HAND SWING:
AS THE DOOR OPENS TOWARDS YOU:
IF HINGES ON RIGHT - RIGHT-HAND SWING
IF HINGES ON LEFT - LEFT-HAND SWING

DOOR TYPES





DOOR SCHEDULE ABBREVIATIONS

H.M. - HOLLOW METAL

L-1 - LEVER/LEVER LOCKSET THAT DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING OR TWISTING OF THE WRIST TO OPERATE

L-2 - ROLL UP DOOR LATCH

LVR-1 - 12" x 12" VENTED LOUVER

LH - LEFT-HANDED

RH - RIGHT HANDED

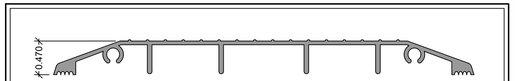
R.D.C. - ROLL UP DOOR CURTAIN

N/A - NOT APPLICABLE

S-1 - ADA COMPLIANT THRESHOLD, SEE DRAWING ON THIS SHEET.

S.M. - SHEET METAL

W-1 - 20" x 24" LITE KIT WITH TEMPERED GLASS.



S-1 (ALUMINUM THRESHOLD)
(ADA COMPLIANT)

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Statesville, NC 28625
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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

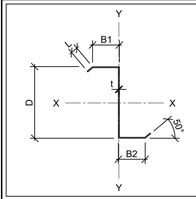
10/19/22

REVISIONS	DATE	BY

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: SCHEDULES
DRAWING NUMBER: S0.1



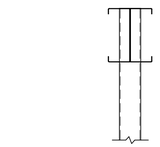
NOTES:

MATERIAL IS EITHER ASTM A653-06
GRADE 55 OR A1011-04 HSLAS GRADE 55
CI-1.

Fy = 55 ksi
Fu = 70 ksi

PURLIN SCHEDULE

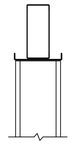
SECTION NAME	DIMENSIONAL PROPERTIES				SECTION NAME	DIMENSIONAL PROPERTIES			
	D x B1 x B2 (in)	GAGE	THICKNESS (in)	LIP (in)		D x B1 x B2 (in)	GAGE	THICKNESS (in)	LIP (in)
4.0 x 3.5 Z16	4.0 x 3.125 x 3.375	16	0.059	0.911	8.0 x 3.0 Z16	8.0 x 2.625 x 2.875	16	0.059	0.911
4.0 x 3.5 Z14	4.0 x 3.125 x 3.375	14	0.070	0.930	8.0 x 3.0 Z14	8.0 x 2.625 x 2.875	14	0.070	0.930
4.0 x 3.5 Z12	4.0 x 3.125 x 3.375	12	0.105	0.990	8.0 x 3.0 Z12	8.0 x 2.625 x 2.875	12	0.105	0.990
4.0 x 3.0 Z16	4.0 x 2.625 x 2.875	16	0.059	0.911	9.0 x 3.5 Z16	9.0 x 3.125 x 3.375	16	0.059	0.911
4.0 x 3.0 Z14	4.0 x 2.625 x 2.875	14	0.070	0.930	9.0 x 3.5 Z14	9.0 x 3.125 x 3.375	14	0.070	0.930
4.0 x 3.0 Z12	4.0 x 2.625 x 2.875	12	0.105	0.990	9.0 x 3.5 Z12	9.0 x 3.125 x 3.375	12	0.105	0.990
5.0 x 3.5 Z16	5.0 x 3.125 x 3.375	16	0.059	0.911	9.0 x 3.0 Z16	9.0 x 2.625 x 2.875	16	0.059	0.911
5.0 x 3.5 Z14	5.0 x 3.125 x 3.375	14	0.070	0.930	9.0 x 3.0 Z14	9.0 x 2.625 x 2.875	14	0.070	0.930
5.0 x 3.5 Z12	5.0 x 3.125 x 3.375	12	0.105	0.990	9.0 x 3.0 Z12	9.0 x 2.625 x 2.875	12	0.105	0.990
5.0 x 3.0 Z16	5.0 x 2.625 x 2.875	16	0.059	0.911	10.0 x 3.5 Z16	10.0 x 3.125 x 3.375	16	0.059	0.911
5.0 x 3.0 Z14	5.0 x 2.625 x 2.875	14	0.070	0.930	10.0 x 3.5 Z14	10.0 x 3.125 x 3.375	14	0.070	0.930
5.0 x 3.0 Z12	5.0 x 2.625 x 2.875	12	0.105	0.990	10.0 x 3.5 Z12	10.0 x 3.125 x 3.375	12	0.105	0.990
6.0 x 3.5 Z16	6.0 x 3.125 x 3.375	16	0.059	0.911	10.0 x 3.0 Z16	10.0 x 2.625 x 2.875	16	0.059	0.911
6.0 x 3.5 Z14	6.0 x 3.125 x 3.375	14	0.070	0.930	10.0 x 3.0 Z14	10.0 x 2.625 x 2.875	14	0.070	0.930
6.0 x 3.5 Z12	6.0 x 3.125 x 3.375	12	0.105	0.990	10.0 x 3.0 Z12	10.0 x 2.625 x 2.875	12	0.105	0.990
6.0 x 3.0 Z16	6.0 x 2.625 x 2.875	16	0.059	0.911	11.0 x 3.5 Z16	11.0 x 3.125 x 3.375	16	0.059	0.911
6.0 x 3.0 Z14	6.0 x 2.625 x 2.875	14	0.070	0.930	11.0 x 3.5 Z14	11.0 x 3.125 x 3.375	14	0.070	0.930
6.0 x 3.0 Z12	6.0 x 2.625 x 2.875	12	0.105	0.990	11.0 x 3.5 Z12	11.0 x 3.125 x 3.375	12	0.105	0.990
7.0 x 3.5 Z16	7.0 x 3.125 x 3.375	16	0.059	0.911	11.0 x 3.0 Z16	11.0 x 2.625 x 2.875	16	0.059	0.911
7.0 x 3.5 Z14	7.0 x 3.125 x 3.375	14	0.070	0.930	11.0 x 3.0 Z14	11.0 x 2.625 x 2.875	14	0.070	0.930
7.0 x 3.5 Z12	7.0 x 3.125 x 3.375	12	0.105	0.990	11.0 x 3.0 Z12	11.0 x 2.625 x 2.875	12	0.105	0.990
7.0 x 3.0 Z16	7.0 x 2.625 x 2.875	16	0.059	0.911	12.0 x 3.5 Z16	12.0 x 3.125 x 3.375	16	0.059	0.911
7.0 x 3.0 Z14	7.0 x 2.625 x 2.875	14	0.070	0.930	12.0 x 3.5 Z14	12.0 x 3.125 x 3.375	14	0.070	0.930
7.0 x 3.0 Z12	7.0 x 2.625 x 2.875	12	0.105	0.990	12.0 x 3.5 Z12	12.0 x 3.125 x 3.375	12	0.105	0.990
8.0 x 3.5 Z16	8.0 x 3.125 x 3.375	16	0.059	0.911	12.0 x 3.0 Z16	12.0 x 2.625 x 2.875	16	0.059	0.911
8.0 x 3.5 Z14	8.0 x 3.125 x 3.375	14	0.070	0.930	12.0 x 3.0 Z14	12.0 x 2.625 x 2.875	14	0.070	0.930
8.0 x 3.5 Z12	8.0 x 3.125 x 3.375	12	0.105	0.990	12.0 x 3.0 Z12	12.0 x 2.625 x 2.875	12	0.105	0.990



DOUBLE CEE HEADER

DH 6 x 2.5 C 14

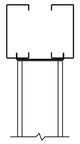
MEMBER DEPTH — FLANGE WIDTH — MEMBER GAGE



EXTERIOR DOUBLE CEE HEADER

EH 8 x 3.0 C 12

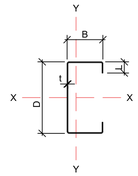
MEMBER DEPTH — FLANGE WIDTH — MEMBER GAGE



BOX HEADER

BH 8 x 3.0 C 12

MEMBER DEPTH — FLANGE WIDTH — MEMBER GAGE



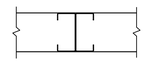
NOTES:

MATERIAL IS EITHER ASTM A653-06
GRADE 55 OR A1011-04 HSLAS GRADE 55
CI-1.

Fy = 55 ksi
Fu = 70 ksi

CEE STUD SCHEDULE

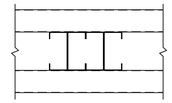
SECTION NAME	DIMENSIONAL PROPERTIES				SECTION NAME	DIMENSIONAL PROPERTIES			
	D x B (in)	GAGE	THICKNESS (in)	LIP (in)		D x B (in)	GAGE	THICKNESS (in)	LIP (in)
4.0 x 2.0 C16	4.0 x 2.0	16	0.059	0.773	9.0 x 2.5 C16	9.0 x 2.5	16	0.059	0.773
4.0 x 2.0 C14	4.0 x 2.0	14	0.070	0.800	9.0 x 2.5 C14	9.0 x 2.5	14	0.070	0.800
4.0 x 2.0 C12	4.0 x 2.0	12	0.105	0.885	9.0 x 2.5 C12	9.0 x 2.5	12	0.105	0.885
4.0 x 2.5 C16	4.0 x 2.5	16	0.059	0.773	9.0 x 3.0 C16	9.0 x 3.0	16	0.059	0.773
4.0 x 2.5 C14	4.0 x 2.5	14	0.070	0.800	9.0 x 3.0 C14	9.0 x 3.0	14	0.070	0.800
4.0 x 2.5 C12	4.0 x 2.5	12	0.105	0.885	9.0 x 3.0 C12	9.0 x 3.0	12	0.105	0.885
5.0 x 2.5 C16	5.0 x 2.5	16	0.059	0.773	10.0 x 2.0 C16	10.0 x 2.0	16	0.059	0.773
5.0 x 2.5 C14	5.0 x 2.5	14	0.070	0.800	10.0 x 2.0 C14	10.0 x 2.0	14	0.070	0.800
5.0 x 2.5 C12	5.0 x 2.5	12	0.105	0.885	10.0 x 2.0 C12	10.0 x 2.0	12	0.105	0.885
6.0 x 2.5 C16	6.0 x 2.5	16	0.059	0.773	10.0 x 2.5 C16	10.0 x 2.5	16	0.059	0.773
6.0 x 2.5 C14	6.0 x 2.5	14	0.070	0.800	10.0 x 2.5 C14	10.0 x 2.5	14	0.070	0.800
6.0 x 2.5 C12	6.0 x 2.5	12	0.105	0.885	10.0 x 2.5 C12	10.0 x 2.5	12	0.105	0.885
6.0 x 3.0 C16	6.0 x 3.0	16	0.059	0.773	10.0 x 3.0 C16	10.0 x 3.0	16	0.059	0.773
6.0 x 3.0 C14	6.0 x 3.0	14	0.070	0.800	10.0 x 3.0 C14	10.0 x 3.0	14	0.070	0.800
6.0 x 3.0 C12	6.0 x 3.0	12	0.105	0.885	10.0 x 3.0 C12	10.0 x 3.0	12	0.105	0.885
6.0 x 3.5 C16	6.0 x 3.5	16	0.059	0.773	10.0 x 3.5 C16	10.0 x 3.5	16	0.059	0.773
6.0 x 3.5 C14	6.0 x 3.5	14	0.070	0.800	10.0 x 3.5 C14	10.0 x 3.5	14	0.070	0.800
6.0 x 3.5 C12	6.0 x 3.5	12	0.105	0.885	10.0 x 3.5 C12	10.0 x 3.5	12	0.105	0.885
6.0 x 4.0 C16	6.0 x 4.0	16	0.059	0.773	10.0 x 4.0 C16	10.0 x 4.0	16	0.059	0.773
6.0 x 4.0 C14	6.0 x 4.0	14	0.070	0.800	10.0 x 4.0 C14	10.0 x 4.0	14	0.070	0.800
6.0 x 4.0 C12	6.0 x 4.0	12	0.105	0.885	10.0 x 4.0 C12	10.0 x 4.0	12	0.105	0.885
7.0 x 2.5 C16	7.0 x 2.5	16	0.059	0.773	11.0 x 2.5 C16	11.0 x 2.5	16	0.059	0.773
7.0 x 2.5 C14	7.0 x 2.5	14	0.070	0.800	11.0 x 2.5 C14	11.0 x 2.5	14	0.070	0.800
7.0 x 2.5 C12	7.0 x 2.5	12	0.105	0.885	11.0 x 2.5 C12	11.0 x 2.5	12	0.105	0.885
7.0 x 3.0 C16	7.0 x 3.0	16	0.059	0.773	11.0 x 3.0 C16	11.0 x 3.0	16	0.059	0.773
7.0 x 3.0 C14	7.0 x 3.0	14	0.070	0.800	11.0 x 3.0 C14	11.0 x 3.0	14	0.070	0.800
7.0 x 3.0 C12	7.0 x 3.0	12	0.105	0.885	11.0 x 3.0 C12	11.0 x 3.0	12	0.105	0.885
7.0 x 4.0 C16	7.0 x 4.0	16	0.059	0.773	11.0 x 3.5 C16	11.0 x 3.5	16	0.059	0.773
7.0 x 4.0 C14	7.0 x 4.0	14	0.070	0.800	11.0 x 3.5 C14	11.0 x 3.5	14	0.070	0.800
7.0 x 4.0 C12	7.0 x 4.0	12	0.105	0.885	11.0 x 3.5 C12	11.0 x 3.5	12	0.105	0.885
8.0 x 2.5 C16	8.0 x 2.5	16	0.059	0.773	12.0 x 2.5 C16	12.0 x 2.5	16	0.059	0.773
8.0 x 2.5 C14	8.0 x 2.5	14	0.070	0.800	12.0 x 2.5 C14	12.0 x 2.5	14	0.070	0.800
8.0 x 2.5 C12	8.0 x 2.5	12	0.105	0.885	12.0 x 2.5 C12	12.0 x 2.5	12	0.105	0.885
8.0 x 3.0 C16	8.0 x 3.0	16	0.059	0.773	12.0 x 3.0 C16	12.0 x 3.0	16	0.059	0.773
8.0 x 3.0 C14	8.0 x 3.0	14	0.070	0.800	12.0 x 3.0 C14	12.0 x 3.0	14	0.070	0.800
8.0 x 3.0 C12	8.0 x 3.0	12	0.105	0.885	12.0 x 3.0 C12	12.0 x 3.0	12	0.105	0.885
8.0 x 3.5 C16	8.0 x 3.5	16	0.059	0.773	12.0 x 3.5 C16	12.0 x 3.5	16	0.059	0.773
8.0 x 3.5 C14	8.0 x 3.5	14	0.070	0.800	12.0 x 3.5 C14	12.0 x 3.5	14	0.070	0.800
8.0 x 3.5 C12	8.0 x 3.5	12	0.105	0.885	12.0 x 3.5 C12	12.0 x 3.5	12	0.105	0.885
8.0 x 4.0 C16	8.0 x 4.0	16	0.059	0.773	12.0 x 4.0 C16	12.0 x 4.0	16	0.059	0.773
8.0 x 4.0 C14	8.0 x 4.0	14	0.070	0.800	12.0 x 4.0 C14	12.0 x 4.0	14	0.070	0.800
8.0 x 4.0 C12	8.0 x 4.0	12	0.105	0.885	12.0 x 4.0 C12	12.0 x 4.0	12	0.105	0.885



DOUBLE STUD

DS 4 x 2.5 C 12

MEMBER DEPTH — FLANGE WIDTH — MEMBER GAGE



GANG OF FOUR STUDS

4S 4 x 2.5 C 12

MEMBER DEPTH — FLANGE WIDTH — MEMBER GAGE

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Statesville, NC 28625
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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

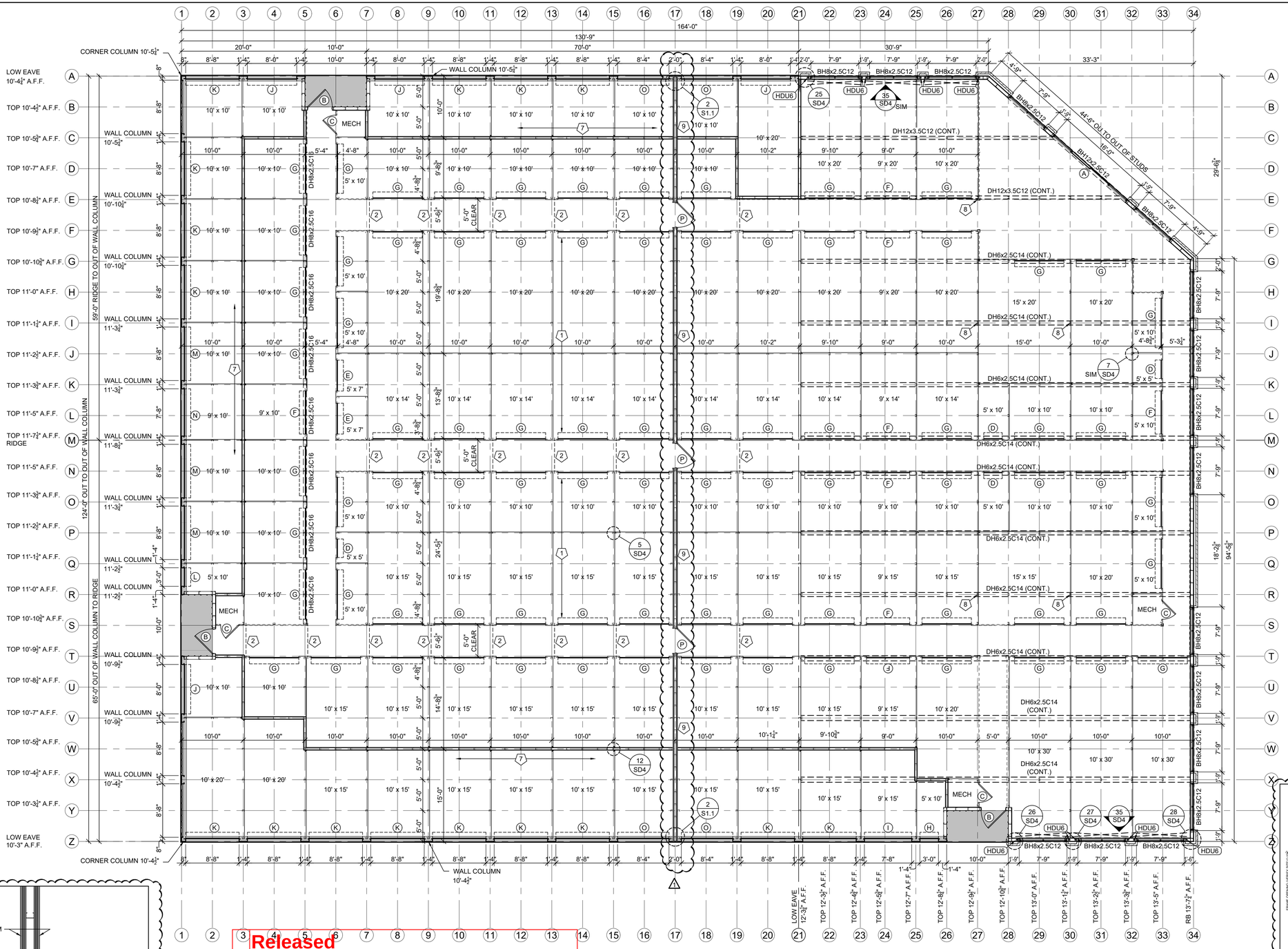
10/19/22

REVISIONS	DATE	BY

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: SCHEDULES
DRAWING NUMBER: S0.2



FLOOR FRAMING NOTES: (#)

1. 4x2.5C16GA INTERIOR POST. SECURE TO BASE CLIP (#S90012GA). ANCHOR TO SLAB WITH ¼" x 3¼" KB-TZ2 (2" EMBEDMENT).
2. 4x2.5C16GA CROSS BEAM @ HALLWAY - 5'-9" LONG (TYP.) - SECURE EACH END TO FLANGE OF INTERIOR POST WITH (3 EA) #12 SDF.
3. PERIMETER WALL STUDS SHALL BE 6x2.5C16GA AT 2'-0" O.C. MAXIMUM. PERIMETER WALLS TO HAVE 600T300-68 TOP TRACK CONTINUOUS & 600T300-54 BASE TRACK CONTINUOUS. BLOCK WALL @ 5'-0" O.C. (REF. 1/SD4).
4. PONY COLUMN FOR HEADER TO STUD CONNECTION. (REF. 24/SD5)
5. FOR ADDITIONAL TYPICAL DETAILING REQUIREMENTS OF STUD FRAMING, REF SD4 SHEETS.
6. ANCHOR ALL BASE TRACKS WITH 1/2" DIAMETER HILTI (CS) KB-TZ2 W/ 2" EFFECTIVE EMBED LOCATED 2'-6" OC AT INTERIOR AND 2'-0" OC AT EXTERIOR WALLS. INSTALLATION SHALL BE IN ACCORDANCE WITH HILTI RECOMMENDATIONS.
7. CLIMATE CONTROLLED WALLS TO BE 4x2.5C16GA @ 30" O.C. WITH 400T300-54TRACK CONTINUOUS, TOP AND BOTTOM. PROVIDE CONTINUOUS HORIZONTAL PBU LINER PANELS ON BOTH FACES FOR FULL HEIGHT OF WALL.
8. 4x2.5C12GA INTERIOR POST. SECURE TO BASE CLIP (HTT5) WITH (26) EACH #10 SDF. ANCHOR TO SLAB WITH ⅜" x 6" KB-TZ2 (4" EMBEDMENT MIN.).
9. 3-HOUR FIRE BARRIER - UL419 - FRAME WITH 4x2.5C16 STUDS @ 24" O.C. 3 LAYERS ⅝" TYPE "X" GYPSUM OF EACH SIDE OF STUD. COVER WITH 29 GAGE U PANEL LINER. REF. CV9 FOR UL.

⚠1

DOOR SCHEDULE

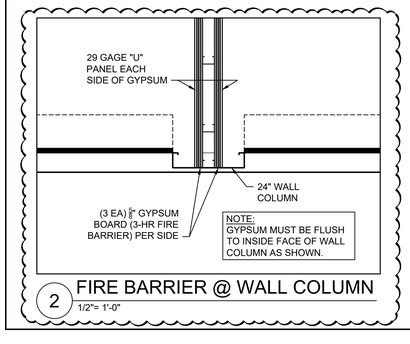
ID	DOOR SIZE	TYPE
A	3'-0" x 7'-0" MIN.	NOT BY BETCO
B	4'-0" x 7'-0"	PERSONNEL DOOR - 1/2 GLASS
C	3'-0" x 7'-0"	SWING DOOR
D	3'-0" x 7'-0"	INTERIOR ROLL-UP
E	5'-0" x 7'-0"	INTERIOR ROLL-UP
F	7'-0" x 7'-0"	INTERIOR ROLL-UP
G	8'-0" x 7'-0"	INTERIOR ROLL-UP
H	3'-0" x 8'-3"	EXTERIOR ROLL-UP
I	7'-8" x 8'-3"	EXTERIOR ROLL-UP
J	8'-0" x 8'-3"	EXTERIOR ROLL-UP
K	8'-8" x 8'-3"	EXTERIOR ROLL-UP
L	3'-0" x 9'-0"	EXTERIOR ROLL-UP
M	8'-8" x 9'-0"	EXTERIOR ROLL-UP
N	7'-8" x 9'-0"	EXTERIOR ROLL-UP
O	8'-4" x 8'-3"	EXTERIOR ROLL-UP
P	4'-0" x 7'-0"	3-HOUR FIRE RATED DOOR

⚠1

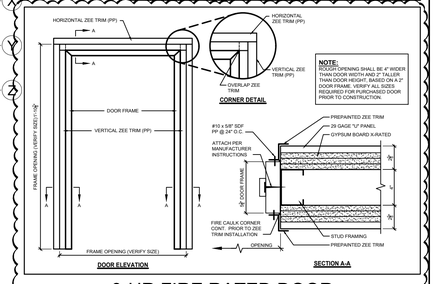
JAMB	ROLL-UP HEADER	SWING DOOR HEADER
8'-0"	12"	10 1/2"

LEGEND

C1	HSS 12x12x⅝ COLUMN
BH	BOX HEADER [REF. S0.2]
DH	DOUBLE HEADER [REF. S0.2]
X	INDICATES PLAN NOTE REFERRAL. SEE CORRESPONDING PLAN NOTE
	INDICATES WALL COLUMN, SEE PLAN FOR SIZE
TOP	TOP OF PURLIN
TOW	TOP OF WALL
	4" x 12GA "X" BRACE ON INSIDE FACE OF STUDS, COVER WITH PBU LINER
HDU6	S/HDU6 SIMPSON HOLDOWN WITH A ⅝" x 6" KB-TZ2 (4" EMBED).



2 FIRE BARRIER @ WALL COLUMN
1/2"= 1'-0"



2 3-HR FIRE RATED DOOR INSTALLATION DETAIL
1-1/2" = 1'-0"

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1 FLOOR PLAN
1/8" = 1'-0"

PROJECT NORTH / PLAN NORTH

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Statesville, NC 28625
Limited Engineering License # D-0140

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026413 CHRISTOPHER J GILBERT

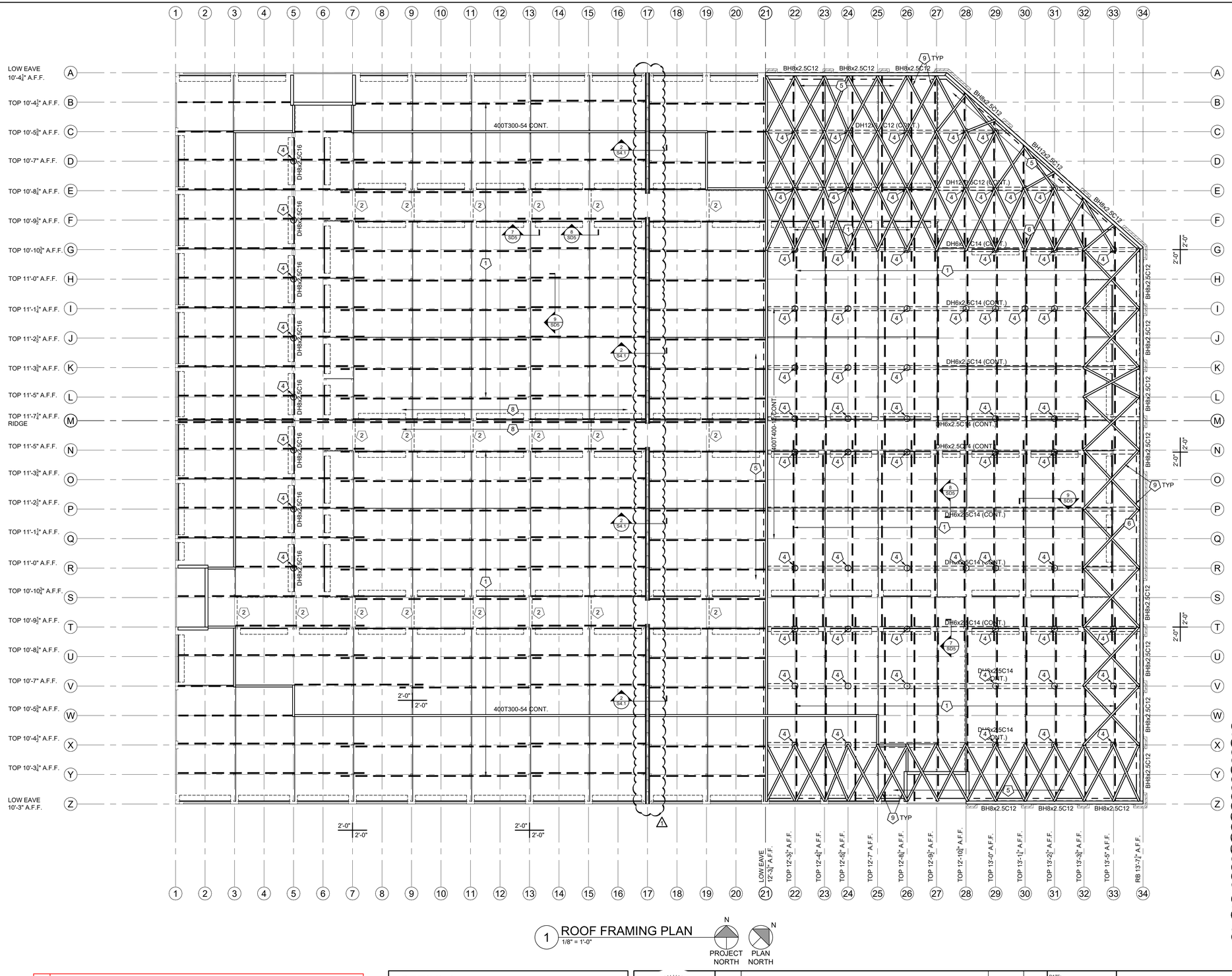
3/10/23

REVISIONS		DATE	BY
⚠1	FIREWALL ADDITION	03/10/2023	DPP

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: FLOOR PLAN
DRAWING NUMBER: S1.1



1 ROOF FRAMING PLAN
1/8" = 1'-0"

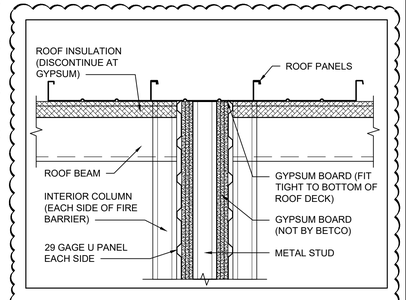
PROJECT NORTH / PLAN NORTH

ROOF FRAMING PLAN NOTES:

1. PURLINS TO BE 8x3.5Z16GA CONTINUOUS.
2. NOT USED.
3. PONY COLUMN FOR PURLIN ATTACHMENT. REF. 14/SD5
4. PURLIN END CAP TRACK - REF 11/SD5.
5. ROOF BEARING CEE - 8x2.5C16GA.
6. 8 x 3.5Z12GA
7. ROOF BEARING CEE (7x3.5C16GA)
8. ROOF BEARING CEE @ RIDGE- 8x3.5C16GA.
9. 4" x 17GA FLAT STRAP (MUST BE ISNTALED THIGHT) W/(6 EA) #12 SDF EACH END.

LEGEND

- INDICATES ROOF PURLIN
- 2'-0" / 2'-0" PURLIN LAP (REF. 6/SD5 & 7/SD5)
- ROOF BEARING CEE 7x3.5C16
- PURLIN END CAP TRACK - CHANNEL 8x3.5CH16. REF 11/SD5



2 SECTION @ FIRE BARRIER
1" = 1'-0"

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

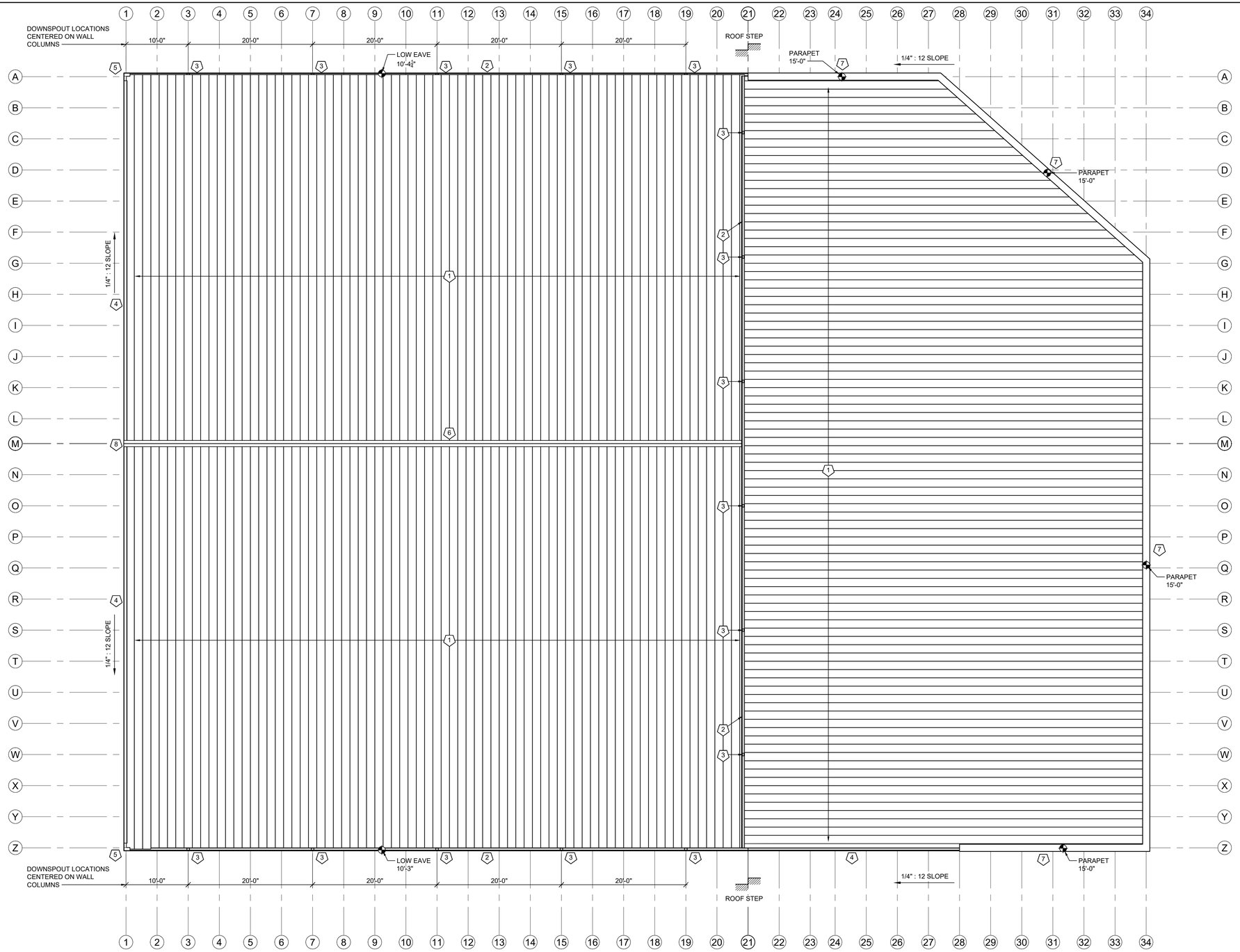
REVISIONS		DATE	BY
1	FIREWALL ADDITION	03/10/2023	DPP

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: ROOF FRAMING PLAN
DRAWING NUMBER: S4.1

3/10/23



ROOF PANEL PLAN NOTES: (#)

1. BETCO 316 ROOF PANEL - 16" WIDE x 24 GA
2. GUTTER.
3. DOWNSPOUT.
4. SCULPTURED RAKE TRIM.
5. OUTSIDE CORNER BOX.
6. RIDGE CAP.
7. PARAPET CAPS (NOT BY BETCO).
8. PEAK BOX.

1 ROOF PANEL PLAN
1/8" = 1'-0"

PROJECT NORTH / PLAN NORTH

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SCALE: AS NOTED
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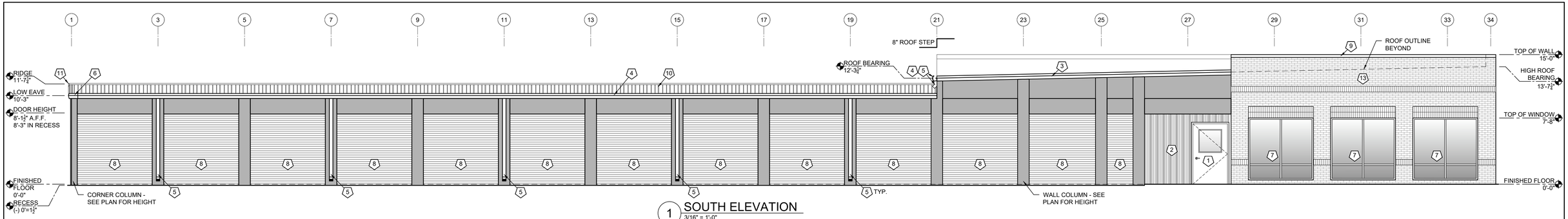
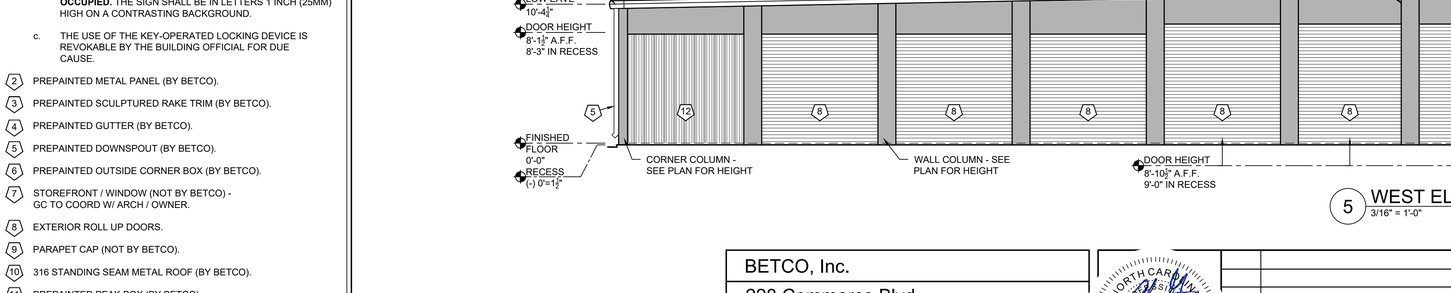
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: ROOF PANEL PLAN
DRAWING NUMBER: S5.1



1 SOUTH ELEVATION
3/16" = 1'-0"



2 EAST ELEVATION
3/16" = 1'-0"

3 NORTHEAST ELEVATION
3/16" = 1'-0"

4 NORTH ELEVATION
3/16" = 1'-0"

5 WEST ELEVATION
3/16" = 1'-0"

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NOTES:

1. PERSONNEL DOOR - (SEE PLAN FOR SIZE) DOOR TO BE EQUIPPED WITH THE FOLLOWING:
   1. LEVER/LEVER LOCKSET THAT DO NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING OR TWISTING OF THE WRIST TO OPERATE.
   2. ADA COMPLIANT THRESHOLD.
   3. HARDWARE INSTALLED BETWEEN 34" MIN. & 48" MAX ABOVE FINISHED FLOOR.
   4. LOCKSET PERMITTED TO BE EQUIPPED WITH KEY OPERATED LOCKING DEVICE FROM THE EGRESS SIDE PROVIDED:
      a. THE LOCKING DEVICE IS READILY DISTINGUISHABLE AS LOCKED.
      b. READILY VISIBLE, DURABLE SIGN IS POSTED ON THE EGRESS SIDE ON OR ADJACENT TO THE DOOR STATING: **THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED.** THE SIGN SHALL BE IN LETTERS 1 INCH (25MM) HIGH ON A CONTRASTING BACKGROUND.
      c. THE USE OF THE KEY-OPERATED LOCKING DEVICE IS REVOKABLE BY THE BUILDING OFFICIAL FOR DUE CAUSE.
2. PREPAINTED METAL PANEL (BY BETCO).
3. PREPAINTED SCULPTURED RAKE TRIM (BY BETCO).
4. PREPAINTED GUTTER (BY BETCO).
5. PREPAINTED DOWNSPOUT (BY BETCO).
6. PREPAINTED OUTSIDE CORNER BOX (BY BETCO).
7. STOREFRONT / WINDOW (NOT BY BETCO) - GC TO COORD W/ ARCH / OWNER.
8. EXTERIOR ROLL UP DOORS.
9. PARAPET CAP (NOT BY BETCO).
10. 316 STANDING SEAM METAL ROOF (BY BETCO).
11. PREPAINTED PEAK BOX (BY BETCO).
12. PREPAINTED 236R WALL PANEL (BY BETCO).
13. BRICK VENEER (NOT BY BETCO).

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

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REVISIONS	DATE	BY

DATE: 10/14/2022
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SCALE: AS NOTED
APPROVED BY:

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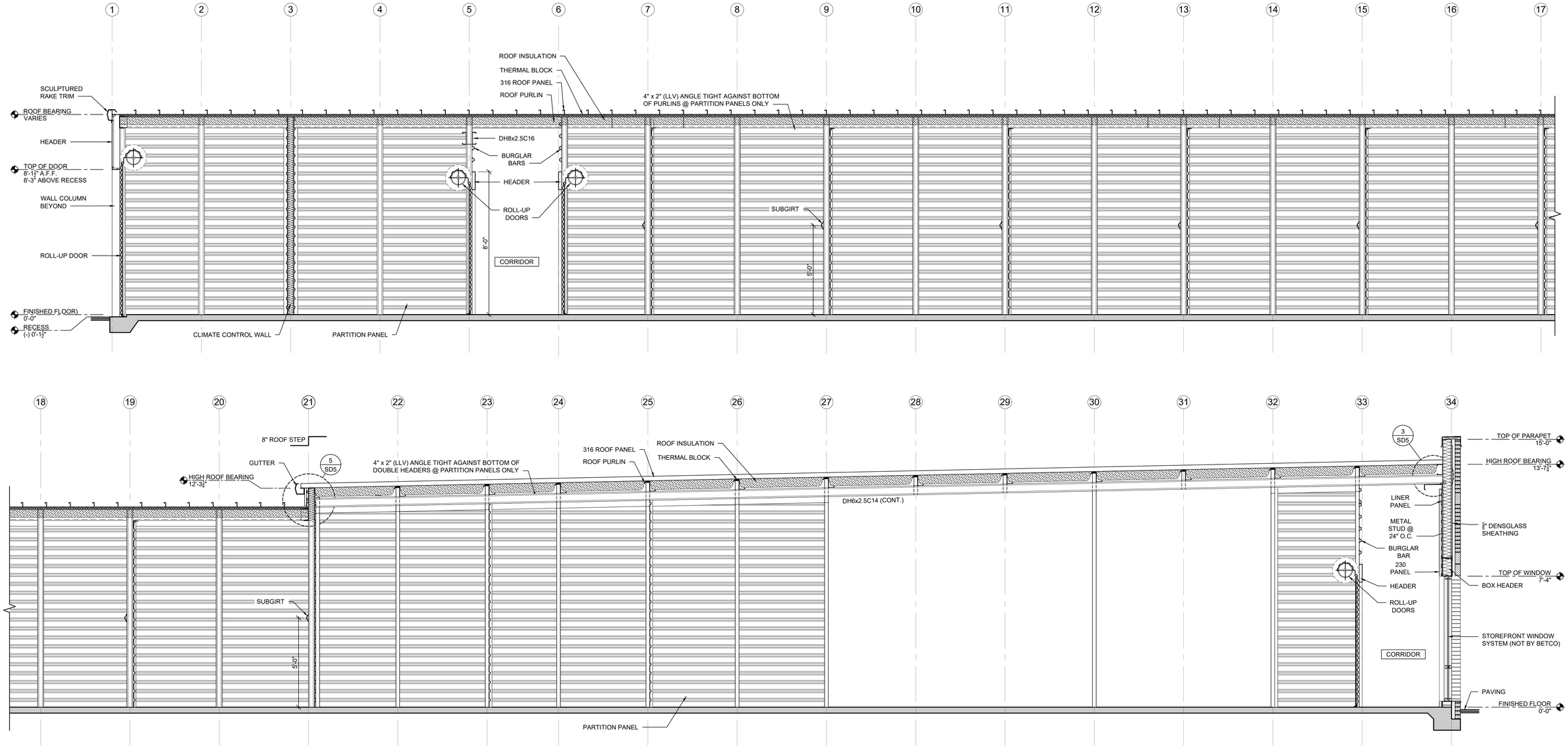
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: EXTERIOR ELEVATIONS
DRAWING NUMBER: S6.1



1 BUILDING SECTION @ GRID "J"

3/8"= 1'-0" (LOOKING NORTH)

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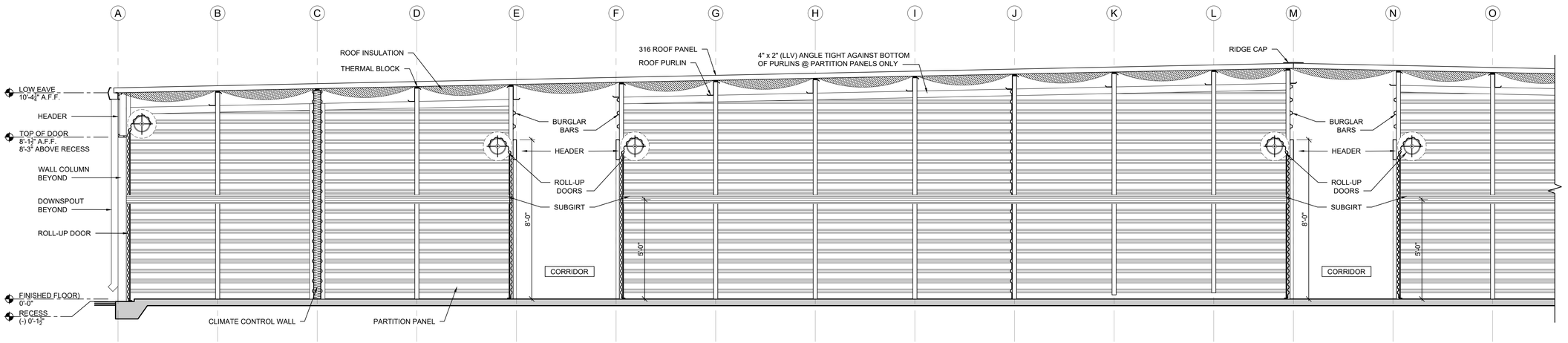
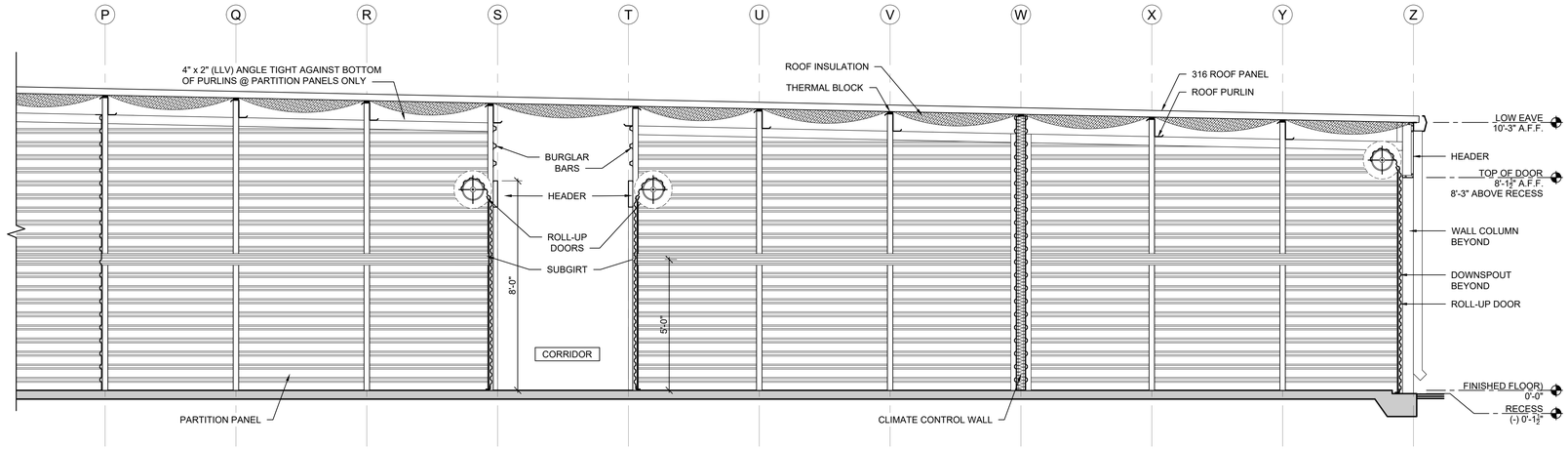
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: BUILDING SECTION
DRAWING NUMBER: S7.1





1 BUILDING SECTION @ GRID "11"
3/8"= 1'-0" (LOOKING EAST)

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REVISIONS	DATE	BY

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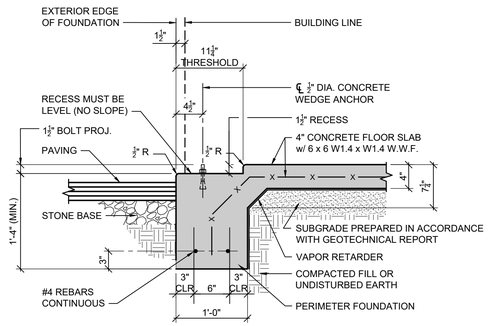
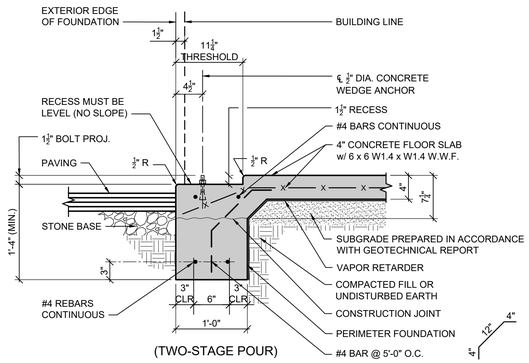
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: BUILDING SECTION
DRAWING NUMBER: S7.2



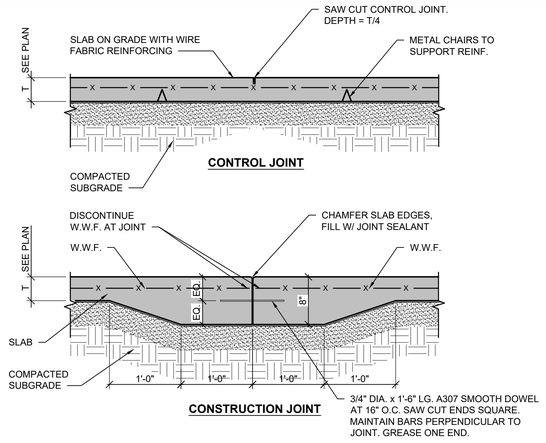
(MONOLITHIC CONCRETE PLACEMENT)

1	TYPICAL PERIMETER FOUNDATION SECTION	1" = 1'-0"

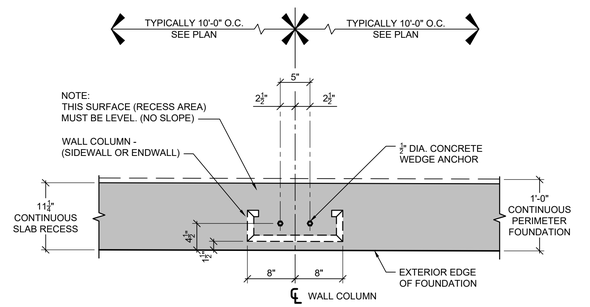


(TWO-STAGE POUR)

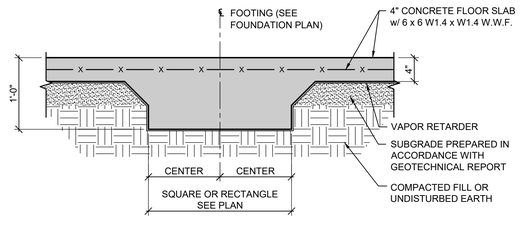
1	ALTERNATE PERIMETER FOUNDATION SECTION	1" = 1'-0"



3	CONTROL JOINT / CONSTRUCTION JOINT	1" = 1'-0"



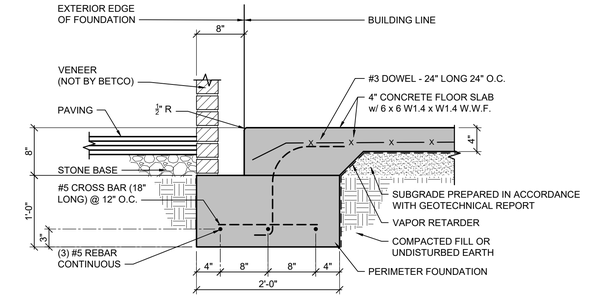
5	TYPICAL WEDGE ANCHORS @ 16" WALL COLUMN	1" = 1'-0"



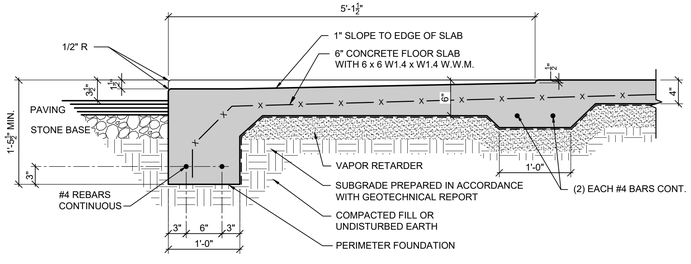
7	TYPICAL SECTION @ INTERIOR FOOTING	1" = 1'-0"

9	NOT USED	

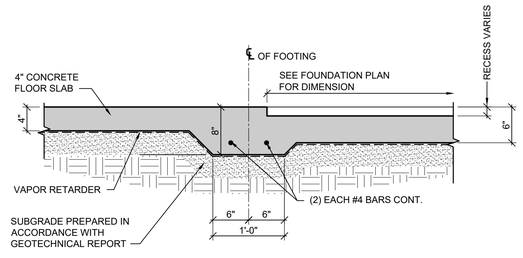
10	NOT USED	



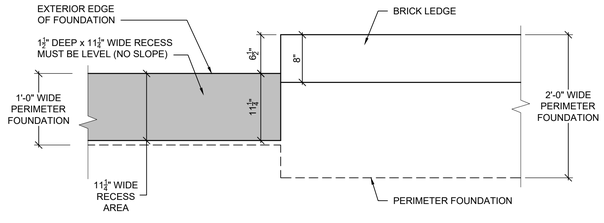
13	PERIMETER FOUNDATION @ BRICK VENEER	1" = 1'-0"



17	PERIMETER FOUNDATION SECTION AT 5'-0" HVAC AREAS	1" = 1'-0"



18	CONTINUOUS THICKENED SLAB SECTION	1" = 1'-0"



20	RECESS AT SLAB RECESS AND BRICK LEDGE	1" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

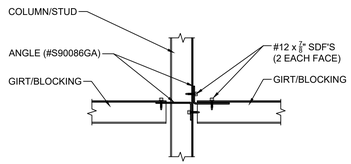
REVISIONS	DATE	BY

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

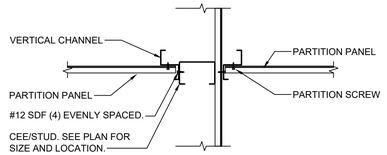
BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: FOUNDATION DETAIL 1-20
DRAWING NUMBER: SD2

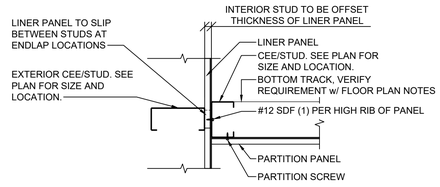
10/19/22



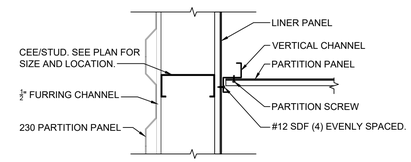
1 | GIRT / BLOCKING CONNECTION DETAIL | 3" = 1'-0"



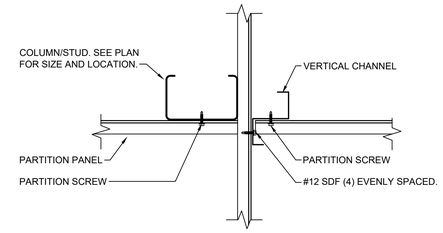
2 | INTERIOR PARTITION INTERSECTION WITH VERTICAL CHANNELS | 1 1/2" = 1'-0"



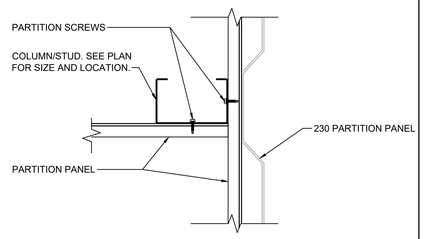
3 | PARTITION PANEL TO EXTERIOR WALL CONNECTION (STUD) | 1 1/2" = 1'-0"



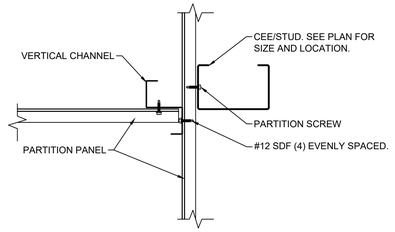
4 | PARTITION PANEL TO EXTERIOR WALL CONNECTION (VERTICAL CHANNEL) | 1 1/2" = 1'-0"



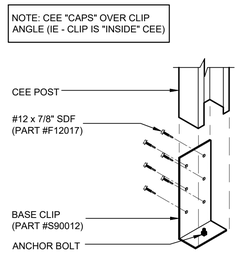
5 | PARTITION INTERSECTION | 3" = 1'-0"



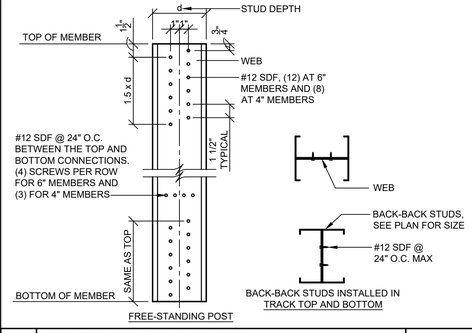
6 | PARTITION INTERSECTION | 3" = 1'-0"



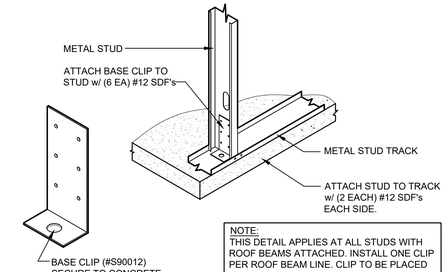
7 | PARTITION INTERSECTION | 3" = 1'-0"



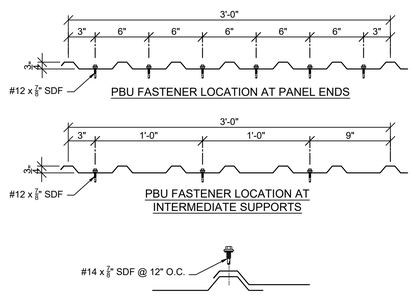
8 | BASE CLIP DETAIL AT COLUMNS | 3" = 1'-0"



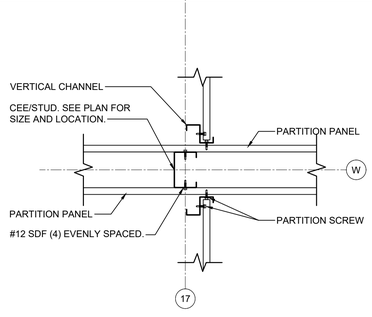
9 | DOUBLE METAL STUD MEMBERS ATTACHMENT TOGETHER | 1 1/2" = 1'-0"



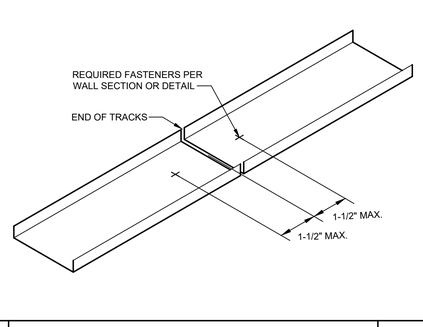
10 | ENDWALL STUD ANCHORING | 3/4" = 1'-0"



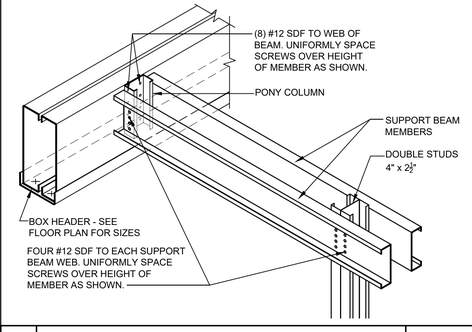
11 | HORIZONTAL PARTITION PANEL ATTACHMENT | 1" = 1'-0"



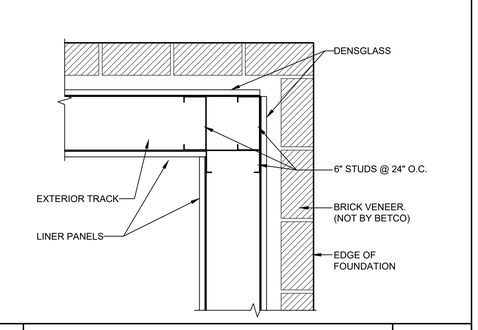
12 | NOT USED |



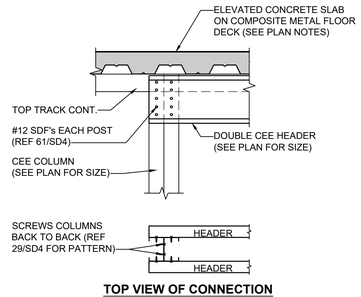
13 | BASE TRACK END ANCHORAGE | 1 1/2" = 1'-0"



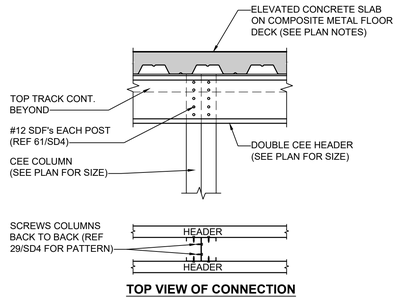
14 | BOX HEADER TO HEADER CONNECTION | 1" = 1'-0"



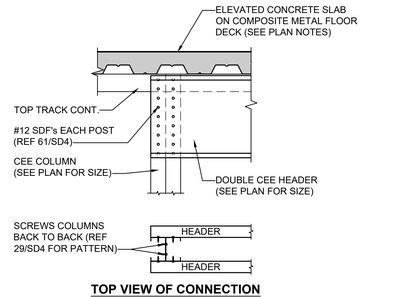
15 | CORNER FRAMING | 1 1/2" = 1'-0"



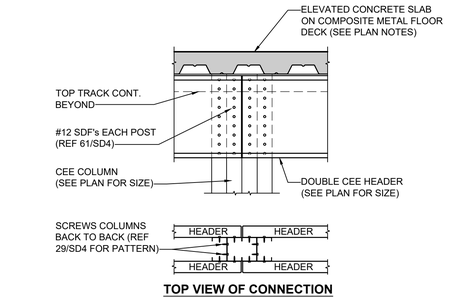
16 | HALLWAY HEADER DETAIL | 1" = 1'-0"



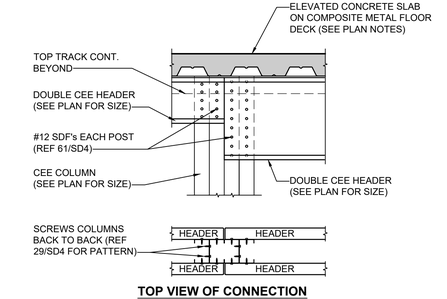
17 | HEADER DETAIL FOR CONTINUOUS HEADER | 1" = 1'-0"



18 | HEADER DETAIL WITH A DISCONTINUOUS END | 1" = 1'-0"



19 | HEADER DETAIL WITH A HEADER EACH SIDE OF COLUMN | 1" = 1'-0"



20 | HEADER DETAIL WITH A HEADER EACH SIDE OF COLUMN | 1" = 1'-0"

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Statesville, NC 28625

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

10/19/22

REVISIONS	DATE	BY

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO

228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE

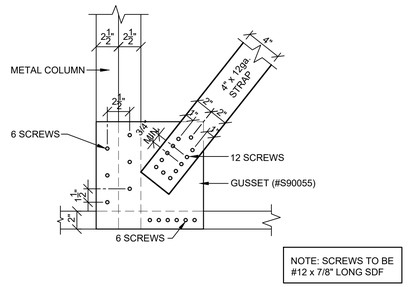
PROJECT ADDRESS: ERWIN, NC 28339

OWNER: UNIVERSITY STORAGE, LLC

PROJECT NO.: NC22329

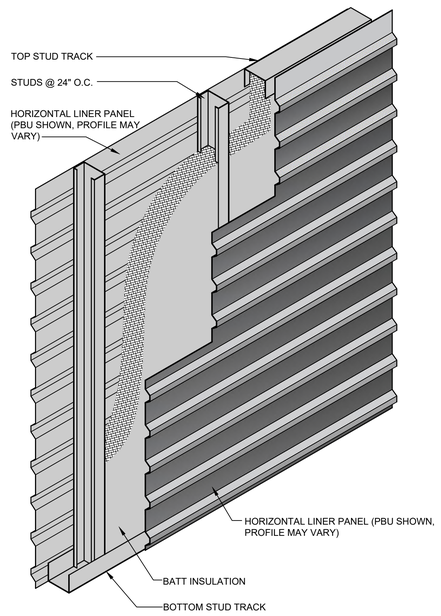
SHEET TITLE: FRAMING DETAILS 1-20

DRAWING NUMBER: SD4

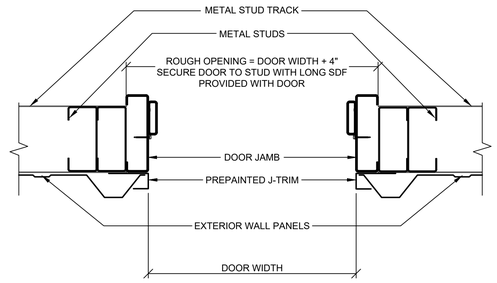


NOTE: SCREWS TO BE #12 x 7/8" LONG SDF

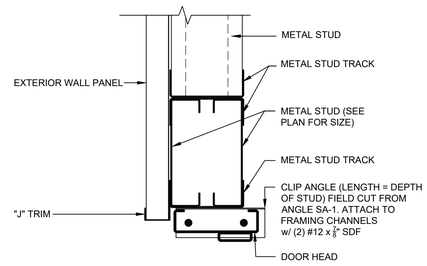
21	4" STRAP @ 12" x 12" GUSSET @ DOUBLE STUD	1 1/2"=1'-0"



22	INSULATED CLIMATE CONTROL WALL PBU PANEL	1" = 1'-0"

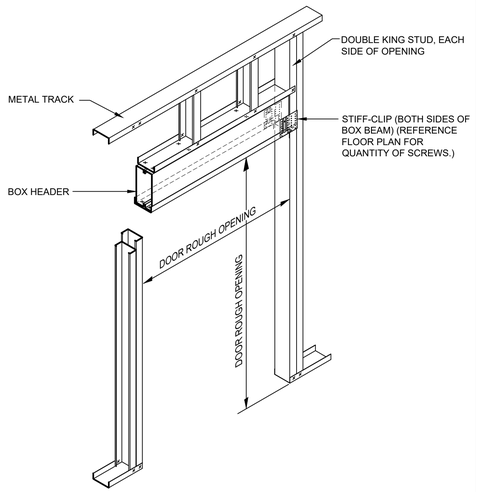


TYPICAL DOOR JAMB DETAIL
PLAN VIEW

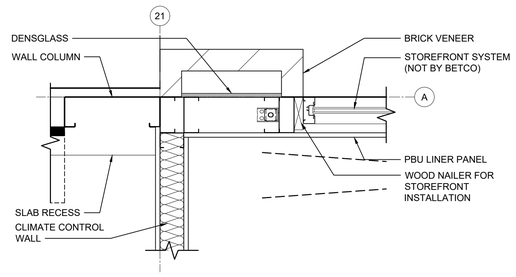


TYPICAL DOOR HEADER DETAIL
SECTION VIEW

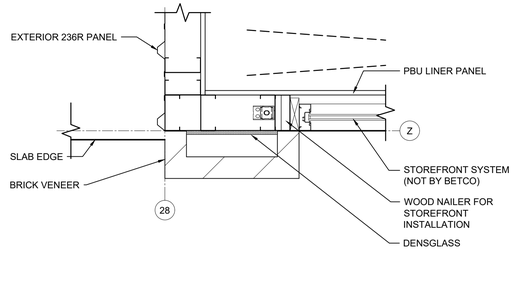
23	EXTERIOR DOOR ASSEMBLY	3" = 1'-0"



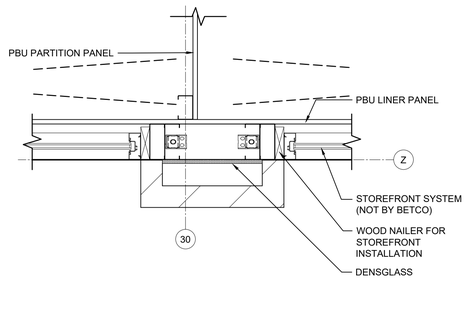
24	DOOR FRAMING BOX HEADER DETAIL (TRADITIONAL HEADER WITH STIFFCLIP SUPPORT)	1/2" = 1'-0"



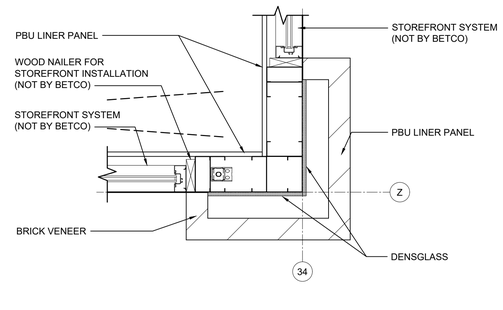
25	WALL COLUMN - STUDWALL INTERSECTION	1" = 1'-0"



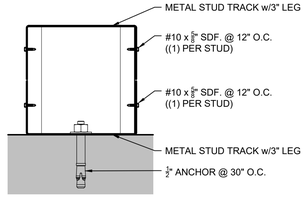
26	CORNER FRAMING AT ALCOVE	1" = 1'-0"



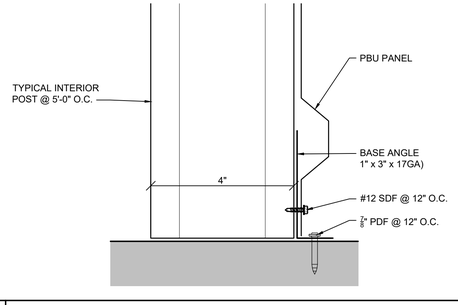
27	CORNER FRAMING AT ALCOVE	1" = 1'-0"



28	CORNER FRAMING AT ALCOVE	1" = 1'-0"



29	WINDOW SILL DETAIL	HALF SCALE



30	POST ANCHOR DETAIL	HALF SCALE

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

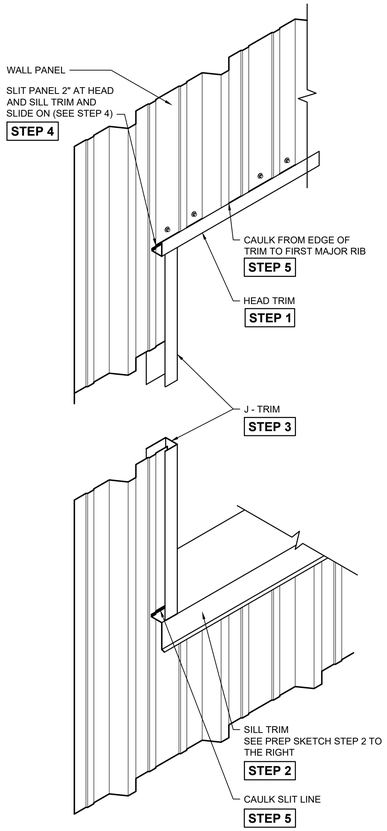
10/19/22

REVISIONS	DATE	BY

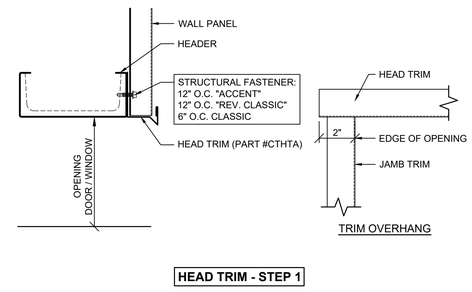
DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: FRAMING DETAILS 21-30
DRAWING NUMBER: SD4

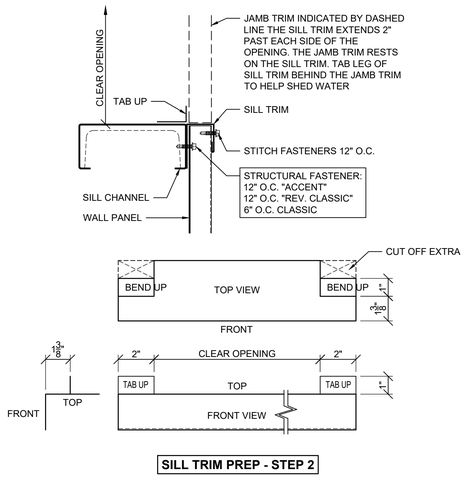


31 WINDOW FRAMED OPENING TRIM DETAIL 1 1/2"=1'-0"



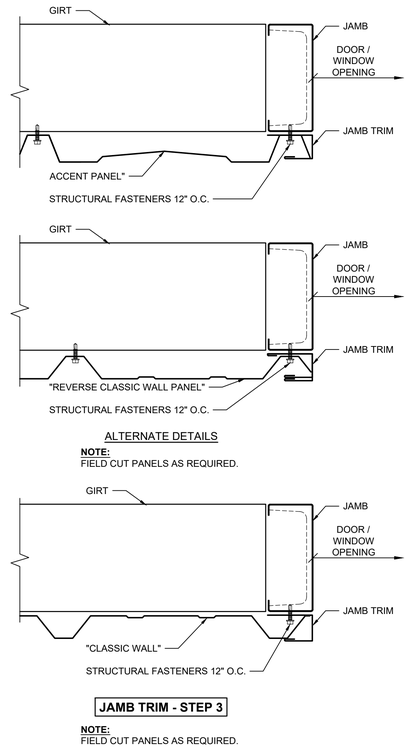
HEAD TRIM - STEP 1

32 STEP 1 - HEAD TRIM 3"=1'-0"



SILL TRIM PREP - STEP 2

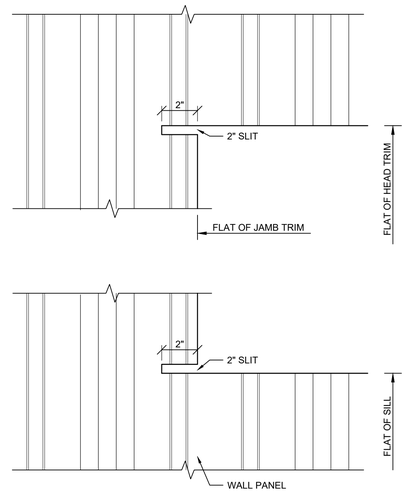
32 STEP 2 - SILL TRIM PREP 3"=1'-0"



JAMB TRIM - STEP 3

NOTE:
FIELD CUT PANELS AS REQUIRED.

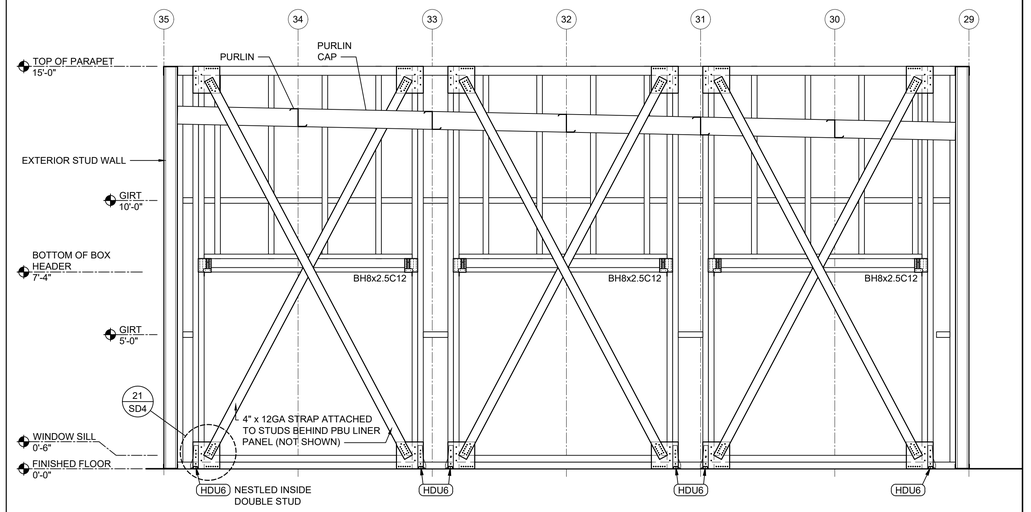
33 STEP 3 - JAMB TRIM 3"=1'-0"



PANEL SLIT - STEP 4

HEADER AND SILL SHOWN

34 STEP 4 - PANEL SLIT 3"=1'-0"



35 FRAMING ELEVATION @ PARAPET 3/8"=1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

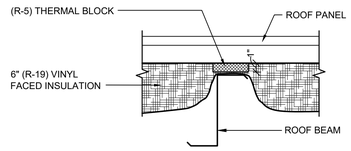
10/19/22

REVISIONS | DATE | BY

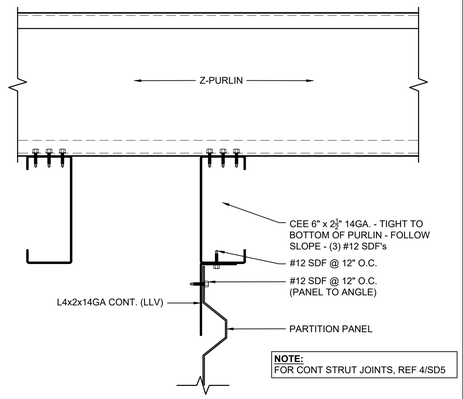
DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

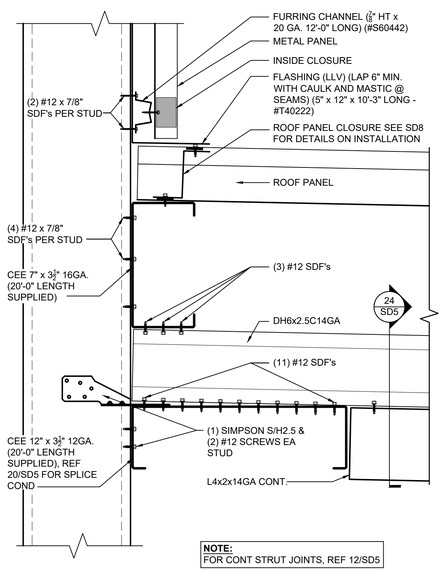
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: FRAMING DETAILS 31-35
DRAWING NUMBER: SD4



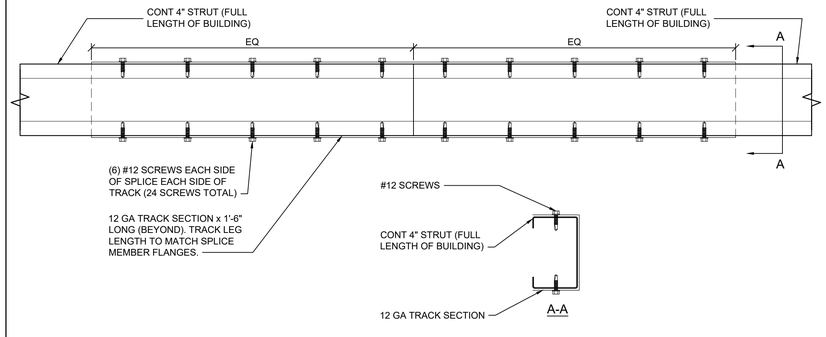
1 | INSULATION AND ROOF BEAM | 1 1/2" = 1'-0"



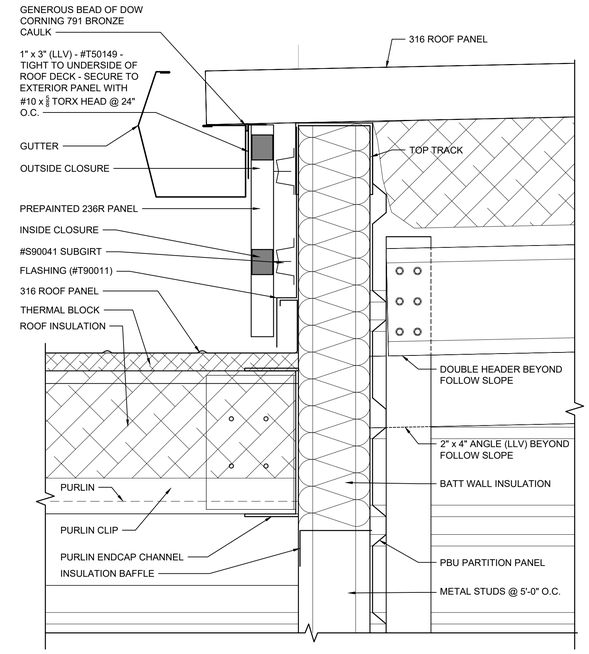
2 | PARTITION PERPENDICULAR TO PURLIN AT HIGH SIDEWALL | 3" = 1'-0"



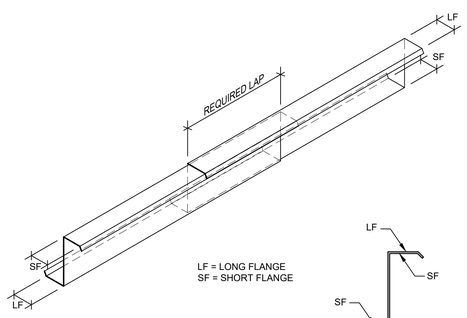
3 | ROOF SUPPORT CHANNEL AT SIDEWALL | 3" = 1'-0"



4 | TYPICAL LIGHT GAUGE COLLECTOR/STRUT SPLICE | 3" = 1'-0"

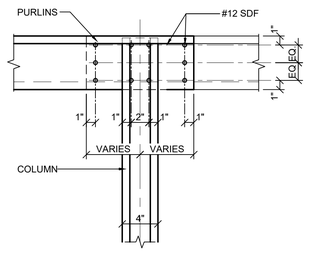


5 | ROOF STEP DETAIL | 3" = 1'-0"



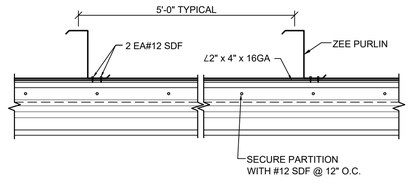
NOTES:
1. ROTATE EACH ROOF BEAM AS REQUIRED TO ALTERNATE BETWEEN LONG AND SHORT FLANGES.
2. LAP CONNECTION FASTENERS ARE OMITTED FOR CLARITY.

6 | ROOF BEAM INSTALLATION DETAIL | 1 1/2" = 1'-0"

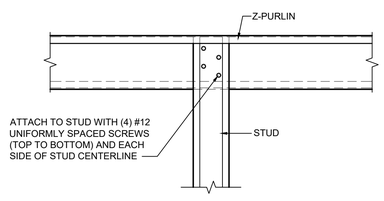


(ELEVATION VIEW)

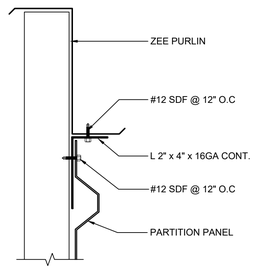
7 | COLUMN TO PURLIN AT LAP | 1 1/2" = 1'-0"



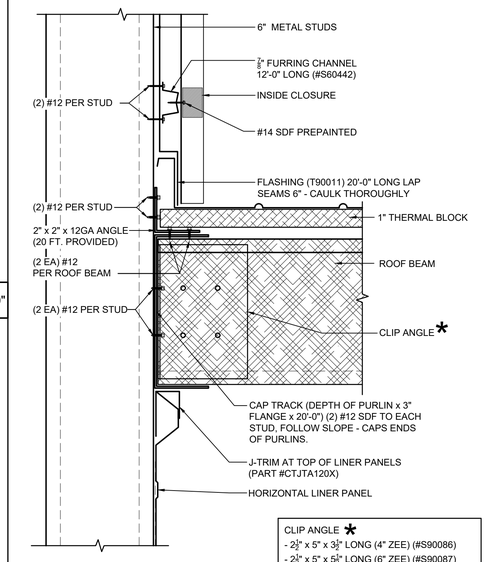
9 | PARTITION PERPENDICULAR TO PURLIN | 1" = 1'-0"



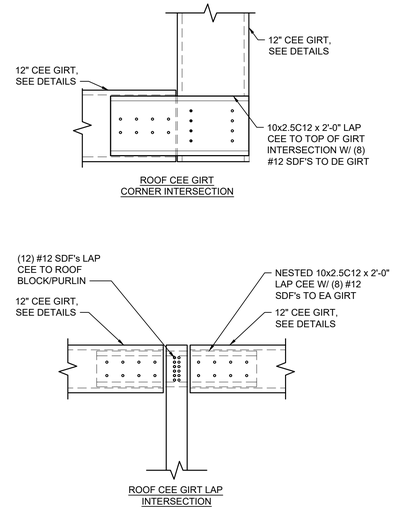
8 | DETAIL ROOF ZEE PURLIN ATTACHMENT TO STUD | 1 1/2" = 1'-0"



10 | PARTITION PARALLEL TO PURLIN | 3" = 1'-0"



11 | PURLIN SUPPORT CHANNEL AT PARAPET ENDWALL | 3" = 1'-0"



NOTES:
1. SPLICE ONLY AT RETURN BRACE/SHEAR WALLS OR AT ROOF PURLIN BRACED WITH IN-PLANE X-BRACING.
2. #12 SCREW PLACEMENT TO MAINTAIN:
   3/8" EDGE DISTANCE.
   3/4" CENTER-TO-CENTER SPACING
3. SEE 25/SD5 FOR SIM CONDITION AT CEE BLOCK (ADDT'L 3 x 3 ANGLE REQUIRED).

12 | WALL GIRT INTERSECTIONS | 1" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

10/19/22

REVISIONS	DATE	BY

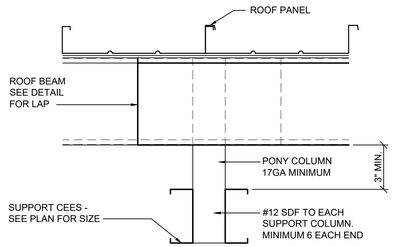
DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

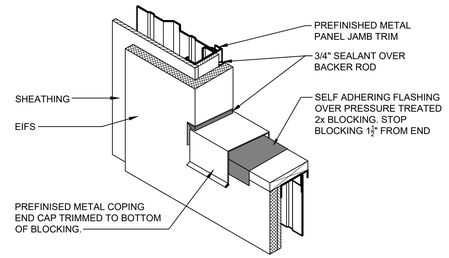
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: ROOF FRAMING DETAILS 1-12
DRAWING NUMBER: SD5

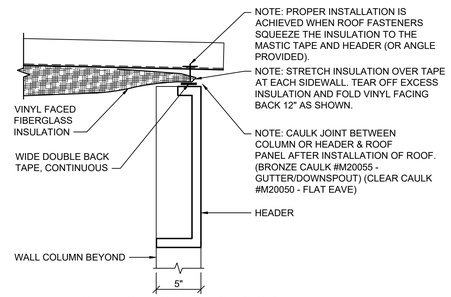
13 NOT USED

14 PONY POST WITH CROSS-BEAM SUPPORT 1" = 1'-0"

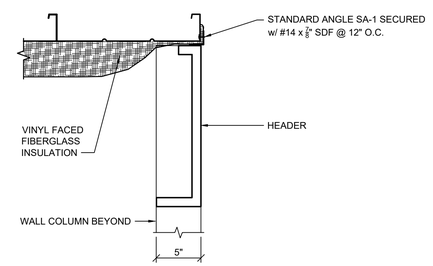


15 ABUTTING PARAPET 1" = 1'-0"





INSULATION INSTALLATION @ SIDEWALL



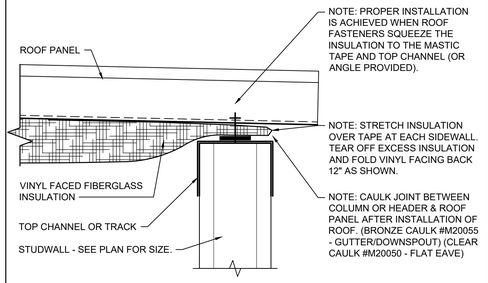
INSULATION INSTALLATION AT END WALL

16 NOT USED

17 NOT USED

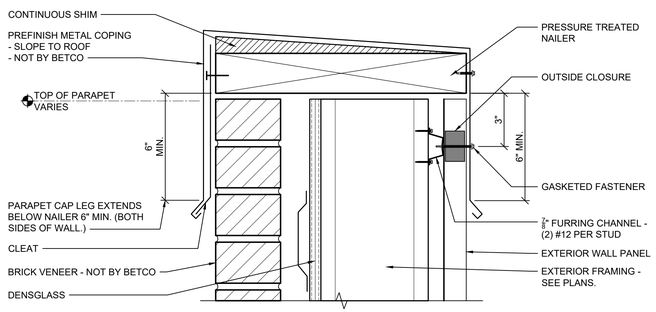
18 NOT USED

19 INSULATION INSTALLATION @ 316 ROOF - HEADER 1 1/2" = 1'-0"

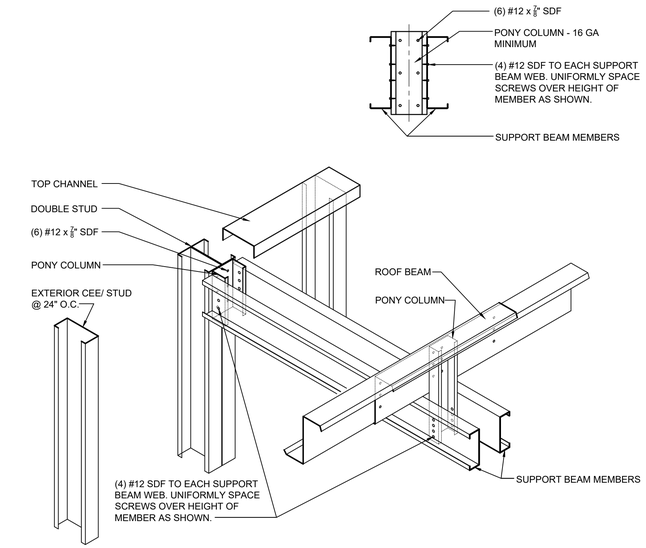


INSULATION INSTALLATION @ SIDEWALL

20 INSULATION INSTALLATION @ 316 ROOF - STUDWALL 3" = 1'-0"



21 TOP OF PARAPET 3" = 1'-0"



22 NOT USED

25 NOT USED

26 ROOF BEAM CONNECTION AT TOP OF EXTERIOR STUD WALL 1" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

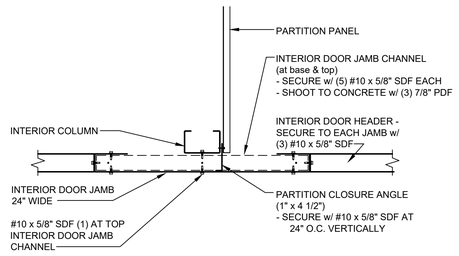
10/19/22

REVISIONS	DATE	BY

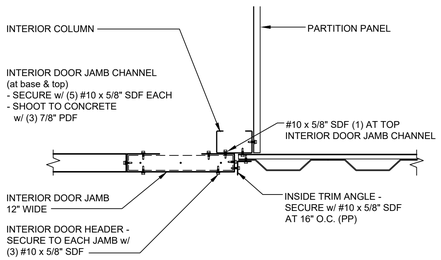
DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

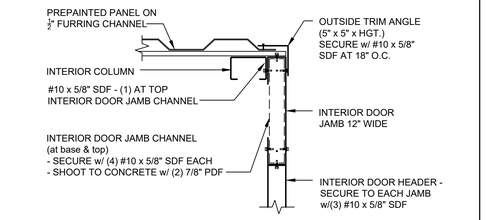
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: ROOF FRAMING DETAILS 13-26
DRAWING NUMBER: SD5



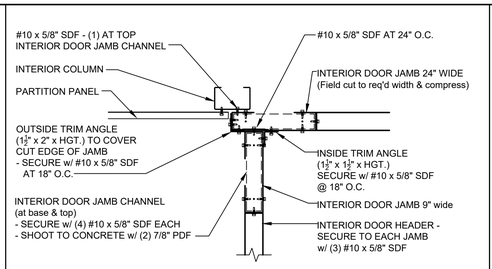
1 | DOOR JAMB CONNECTION AT INTERIOR COLUMN | 1 1/2" = 1'-0"



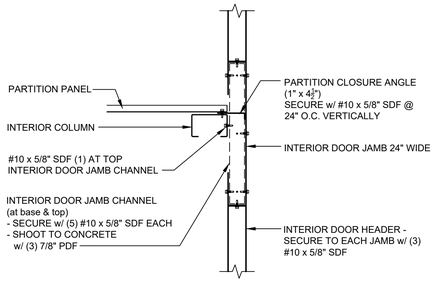
2 | DOOR JAMB CONNECTION AT INTERIOR COLUMN & PARTITON PANEL | 1 1/2" = 1'-0"



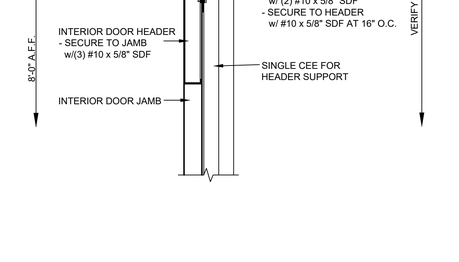
3 | DOOR JAMB CONNECTION AT OUTSIDE CORNER | 1 1/2" = 1'-0"



4 | DOOR JAMB CONNECTION AT INSIDE CORNER | 1 1/2" = 1'-0"



5 | DOOR JAMB CONNECTION AT INTERIOR COLUMN | 1 1/2" = 1'-0"



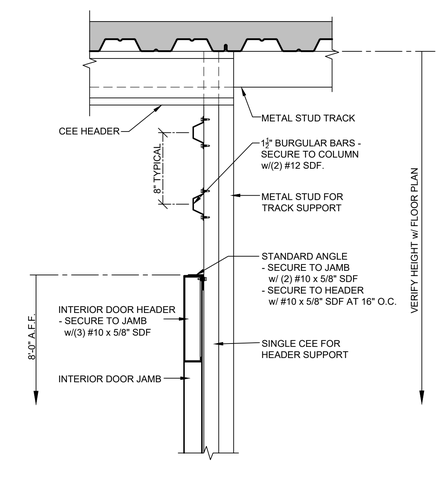
6 | DOOR JAMB CONNECTION AT INTERIOR COLUMN AND PARTITION PANEL | 1 1/2" = 1'-0"

7 | DETAIL FOR THE ADDITION OF DOOR STOPS AT AN INTERIOR SWING DOOR | 3" = 1'-0"

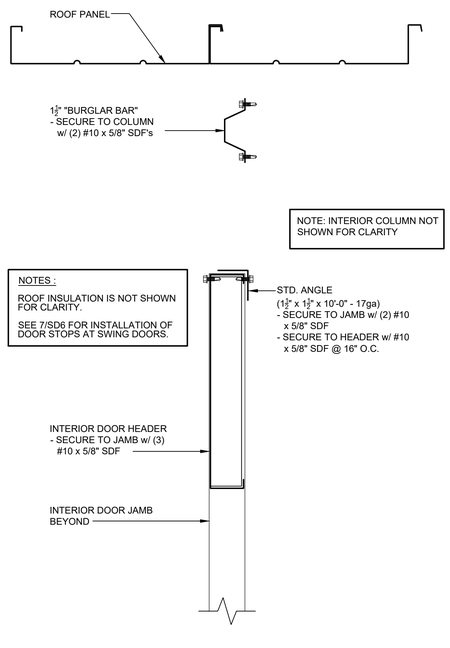
8 | DETAIL FOR THE FIELD CUTTING AND COMPRESSION OF INTERIOR DOOR JAMBS | 1 1/2" = 1'-0"

9 | ELEVATION OF INTERIOR DOOR FRAMING | 3/8" = 1'-0"

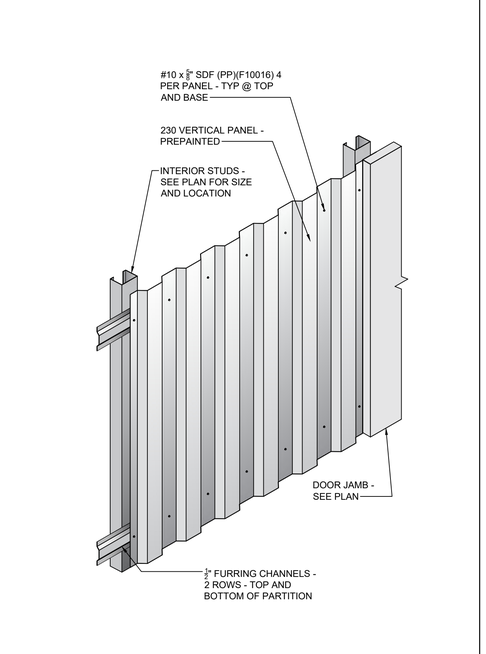
10 | ELEVATION OF INTERIOR DOOR FRAMING PERPENDICULAR TO ROOF BEAM | 3/8" = 1'-0"



11 | HEADER SECTION @ LOWER LEVEL - PERPENDICULAR TO FLOOR DECK | 1 1/2"= 1'-0"



12 | HEADER SECTION AT UPPER LEVEL | 3" = 1'-0"



13 | ISOMETRIC - 230 PARTITION PANEL @ HALLWAY | 3/4" = 1'-0"

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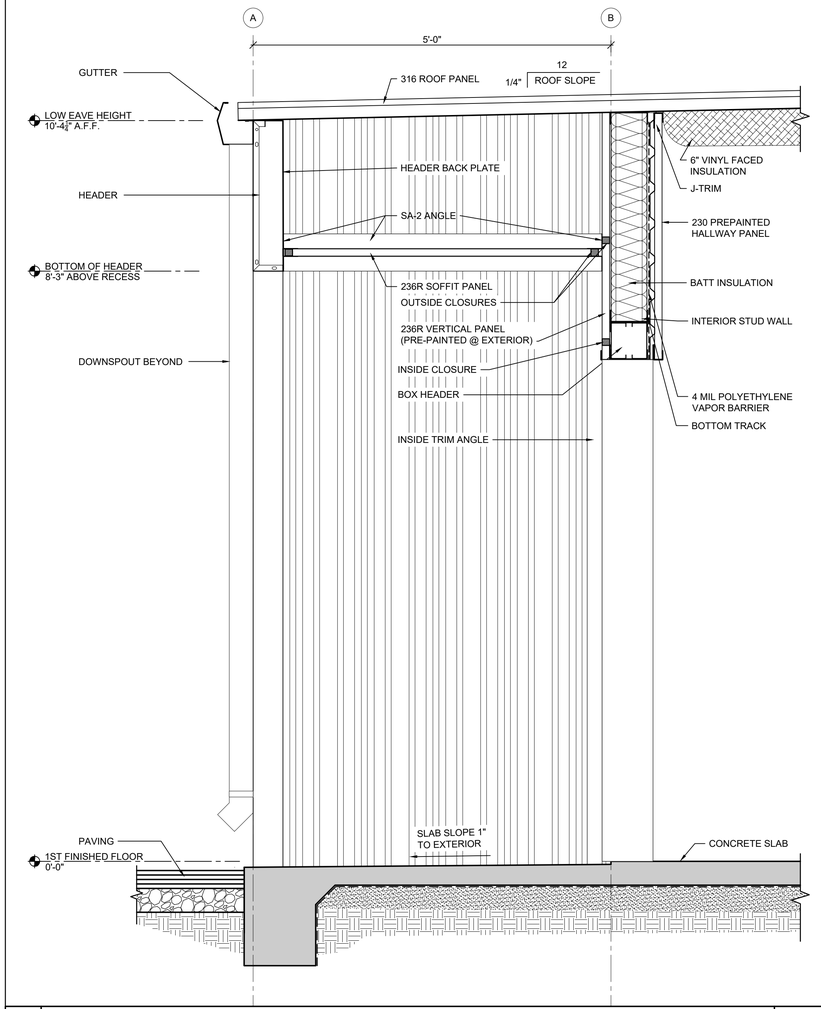
REVISIONS	DATE	BY

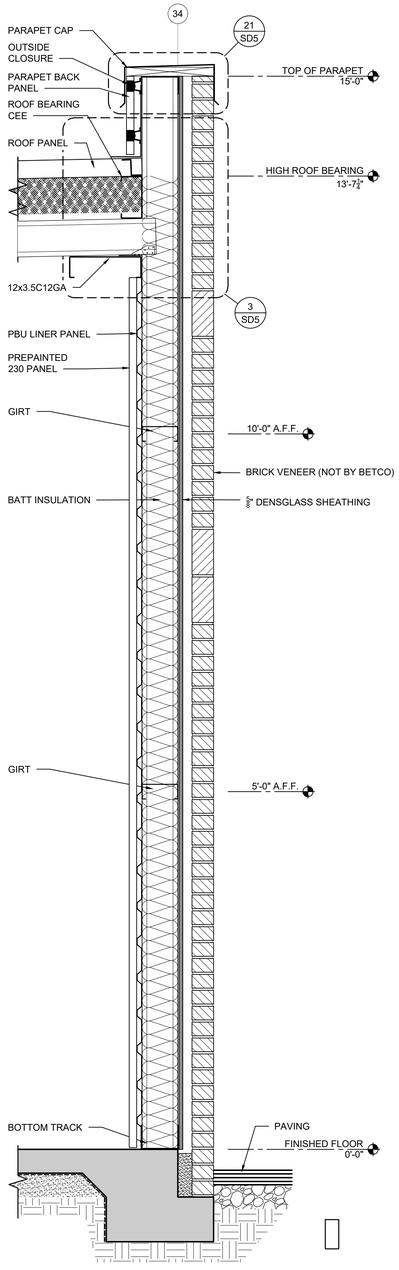
DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

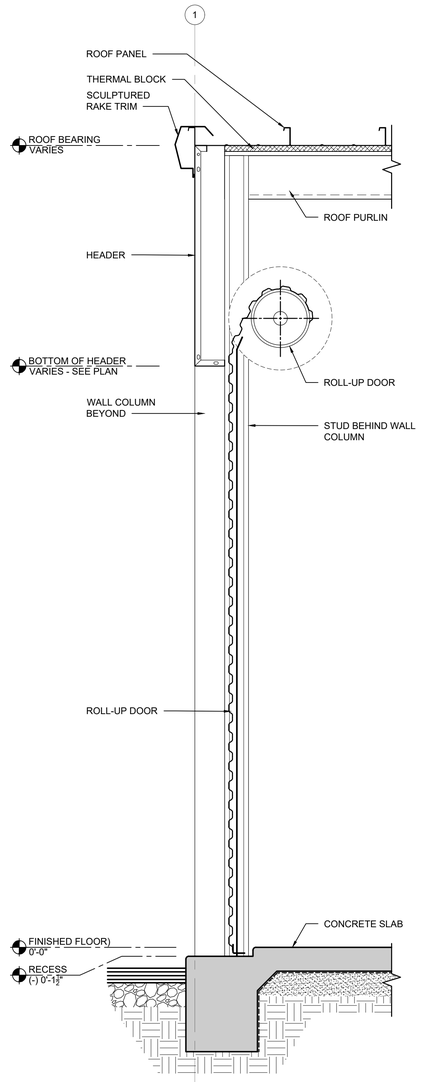
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: HALLWAY DETAILS 1-13
DRAWING NUMBER: SD6



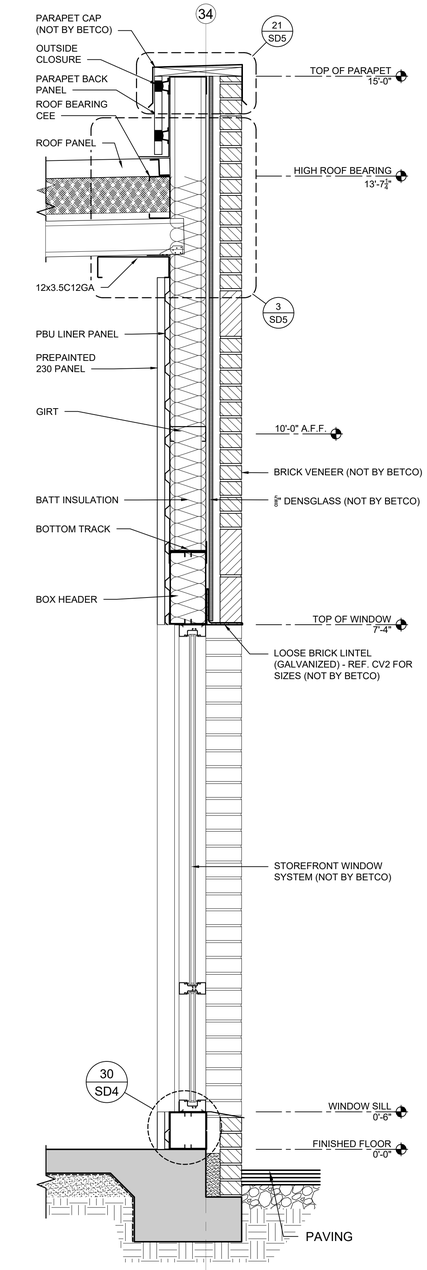
4 SIDEWALL SECTION @ ALCOVE 1" = 1'-0"



3 ENDWALL SECTION 1" = 1'-0"



2 ENDWALL SECTION AT EXTERIOR ROLL-UP DOOR 1" = 1'-0"



1 ENDWALL SECTION AT WINDOWS 1" = 1'-0"

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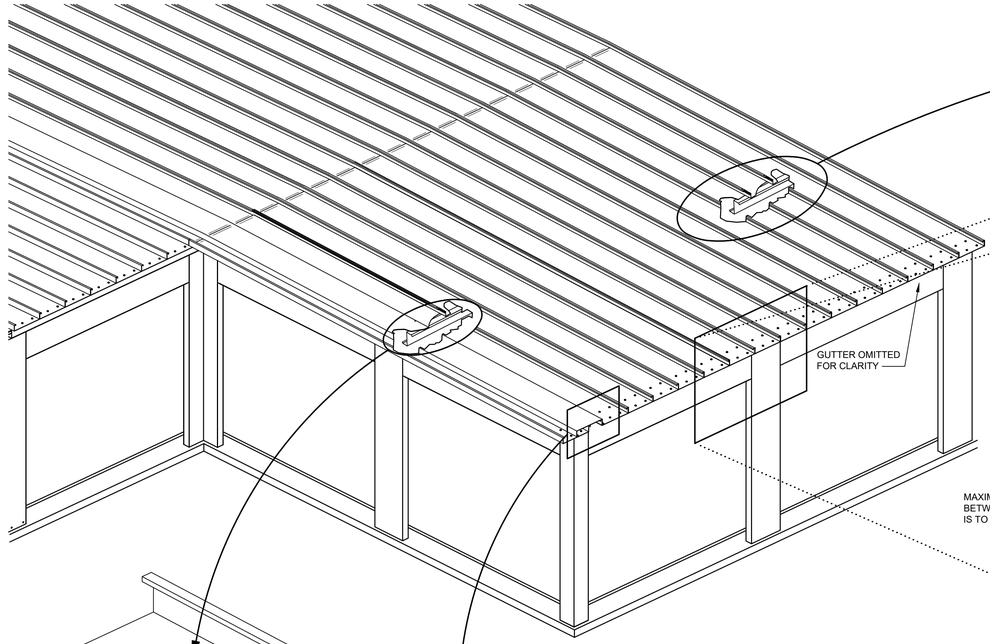
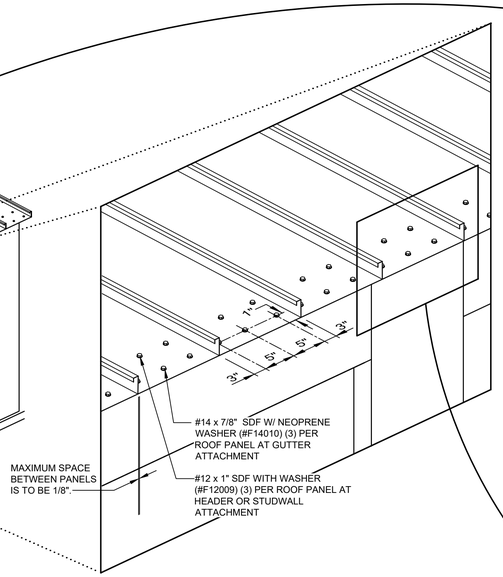
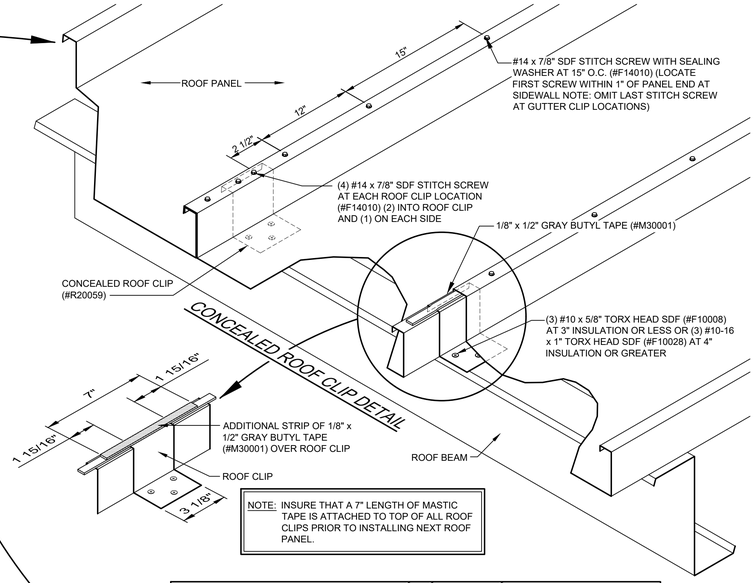
BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

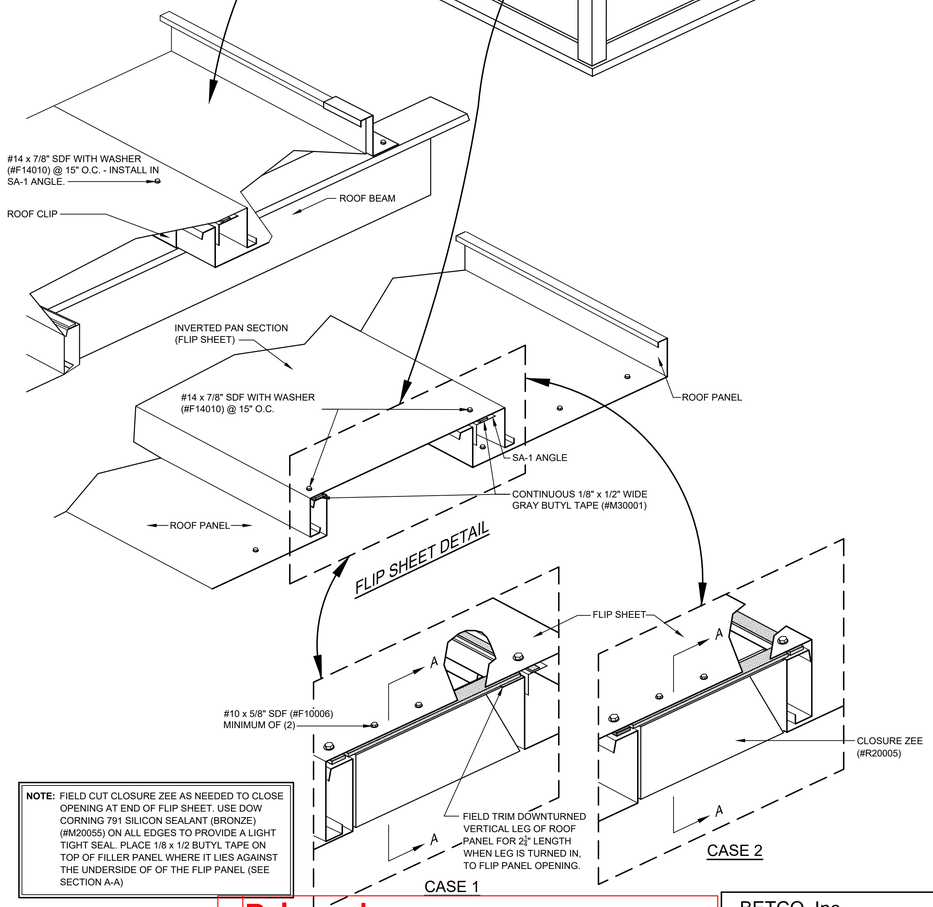
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: WALL SECTIONS 1-4
DRAWING NUMBER: SD7



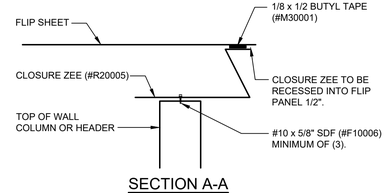




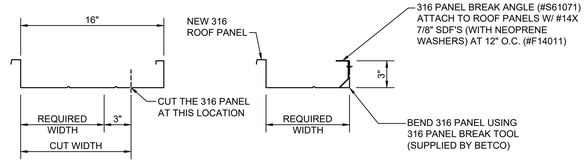
NOTE: INSURE THAT A 7" LENGTH OF MASTIC TAPE IS ATTACHED TO TOP OF ALL ROOF CLIPS PRIOR TO INSTALLING NEXT ROOF PANEL.



NOTE: FIELD CUT CLOSURE ZEE AS NEEDED TO CLOSE OPENING AT END OF FLIP SHEET. USE DOW CORNING 791 SILICON SEALANT (BRONZE) (#M20055) ON ALL EDGES TO PROVIDE A LIGHT TIGHT SEAL. PLACE 1/8 x 1/2 BUTYL TAPE ON TOP OF FILLER PANEL WHERE IT LIES AGAINST THE UNDERSIDE OF OF THE FLIP PANEL (SEE SECTION A-A)

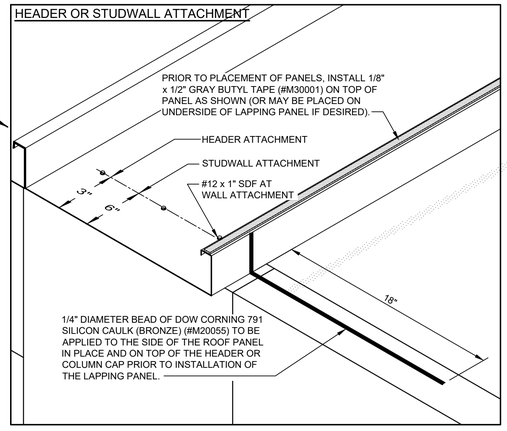


SECTION A-A



NOTE: INSTALL ENTIRE ROOF AND MEASURE THE REQUIRED WIDTH NEEDED FOR THE LAST ROOF PANEL. BEND THE LAST PANEL AS SHOWN ABOVE AND INSTALL THE NEW PANEL LIKE A TYPICAL PANEL. SEE ERC505X OR 506X FOR RAKE TRIM ATTACHMENT. SEE ERC710X OR 711X FOR STEP TRIM ATTACHMENT.

316 ROOF PANEL DETAIL @ RAKE & STEPDOWN FOR 1/4:12 - 4:12 PITCH ROOF



NOTE: NOT ALL ROOF SECTIONS REQUIRE A FLIP SHEET. IF THE ROOF SECTION LENGTH IS ON A 16" INCREMENT THEN A FLIP SHEET IS NOT REQUIRED. IT IS IMPERATIVE TO PROPERLY INSTALL ROOF PANELS AT THESE SECTIONS SO THAT A FLIP SHEET IS NOT REQUIRED. (FOR ROOF INSTALLATION SEE THE GENERAL NOTES THIS PAGE)

GENERAL NOTES:

1. 316 PANELS ARE PACKAGED WITH 14 PANELS PER BUNDLE AND IN LENGTHS FROM 10' TO 60'.
2. FULL TRUCKLOAD QUANTITIES OF PANELS WILL REQUIRE AN ALL - TERRAIN FORKLIFT WITH LIFT HEIGHT CAPABILITY OF 13'-6" OR BOOM TRUCK WITH SPREADER BAR FOR OFFLOADING.
3. PANELS STORED ON SITE SHOULD BE KEPT OFF GRADE OR PAVING WITH SKIDS OR DUNNAGE SPACED AT 15' CENTERS. BUNDLES SHOULD BE SLOPED TO ALLOW DRAINAGE OF MOISTURE. TARPING NOT NECESSARY.
4. DURING INSTALLATION, PANEL EAVE LINE WILL RUN TRUE AND STRAIGHT PROVIDING "STARTER PANEL" IS SQUARE WITH BUILDING SIDEWALL. PARTICULAR CARE IS RECOMMENDED IN POSITIONING THE STARTER PANEL IN CONJUNCTION WITH USING A STRINGLINE AT THE SIDEWALL.
5. PANEL COVERAGE SHOULD BE CHECKED AT 8' - 12' INTERVALS TO DETERMINE IF PANEL COVERAGE IS EQUAL AT BOTH SIDEWALLS. "GROWING" ONE SIDEWALL IS POSSIBLE BY ALLOWING A LESS TIGHT "FIT" WHILE MAINTAINING A TIGHT "FIT" AT THE OPPOSITE SIDEWALL. THE GAP BETWEEN VERTICAL RIBS SHOULD NOT EXCEED 1/8".
6. AVOID EXCESSIVE FOOT TRAFFIC DURING AND AFTER INSTALLATION FOR ROOF SPAN CONDITIONS GREATER THAN 8'.
7. BROOM SWEEP ROOF AFTER INSTALLATION TO REMOVE ALL METAL DEBRIS INCLUDING FASTENER DRILLINGS.

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

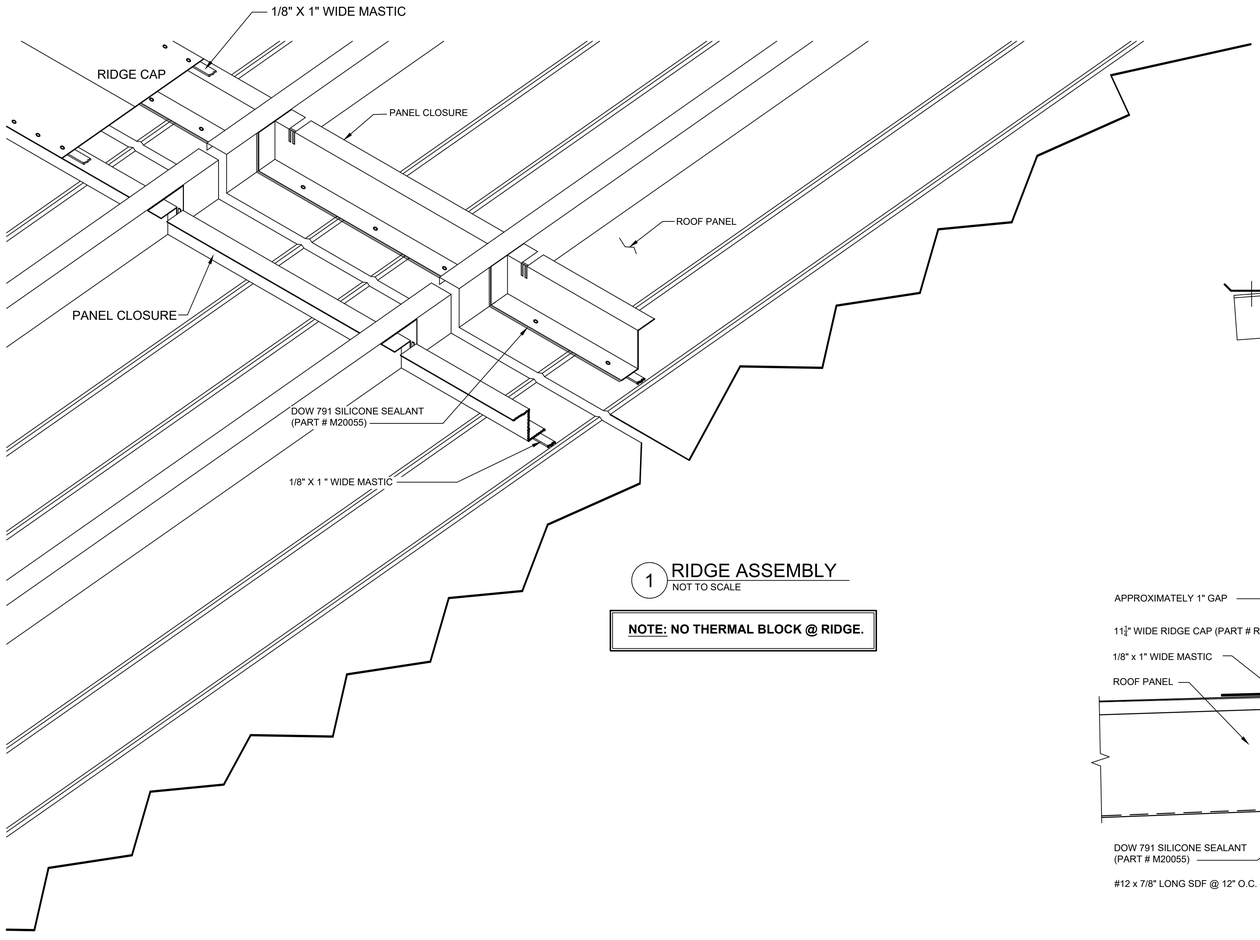
10/19/22

REVISIONS	DATE	BY

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

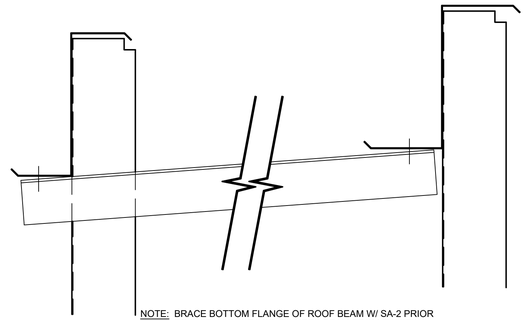
BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: 316 ROOF INSTALLATION
DRAWING NUMBER: SD8.1

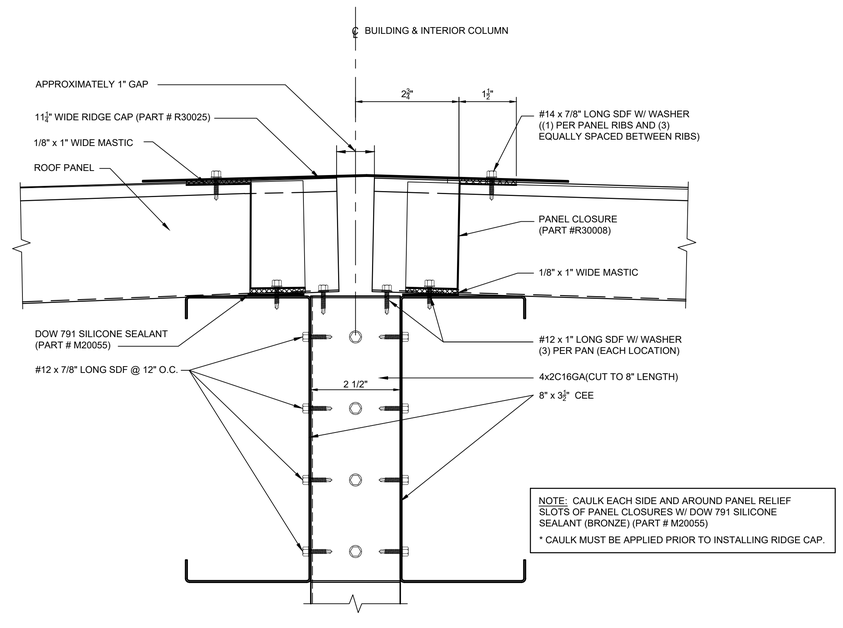


1 RIDGE ASSEMBLY
NOT TO SCALE

NOTE: NO THERMAL BLOCK @ RIDGE.



NOTE: BRACE BOTTOM FLANGE OF ROOF BEAM W/ SA-2 PRIOR TO INSTALLING ROOF, TO KEEP BEAM FROM TWISTING. BRACE CAN BE REMOVED AFTER ROOF IS INSTALLED.



NOTE: CAULK EACH SIDE AND AROUND PANEL RELIEF SLOTS OF PANEL CLOSURES W/ DOW 791 SILICONE SEALANT (BRONZE) (PART # M20055)

* CAULK MUST BE APPLIED PRIOR TO INSTALLING RIDGE CAP.

2 SECTION @ RIDGE CAP
HALF SCALE

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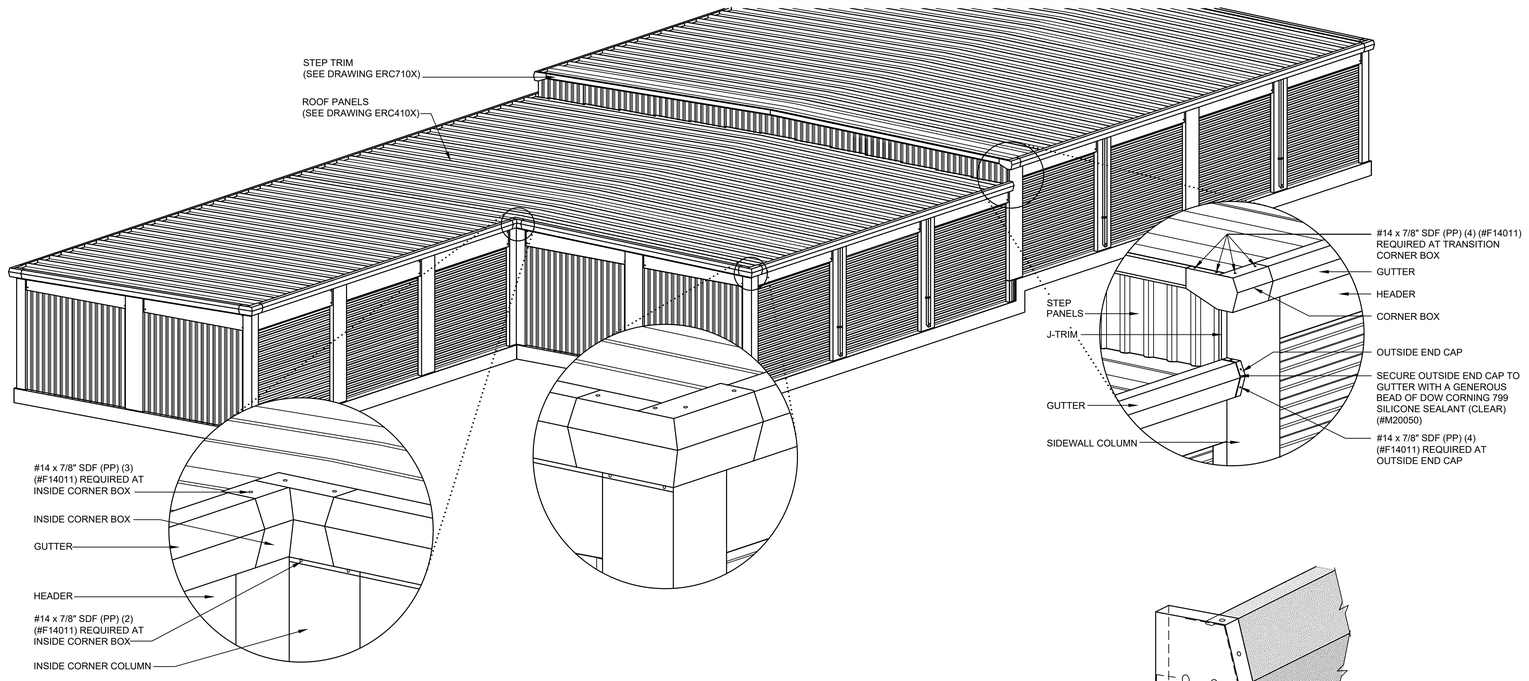
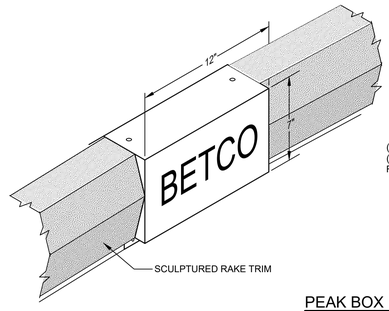
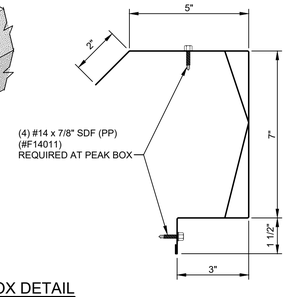
BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

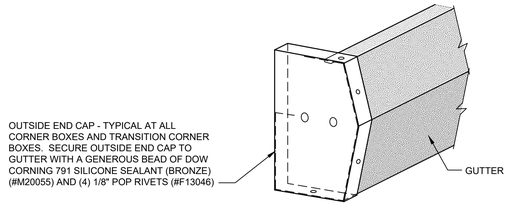
PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: 316 ROOF RIDGE INSTALLATION
DRAWING NUMBER: SD8.2



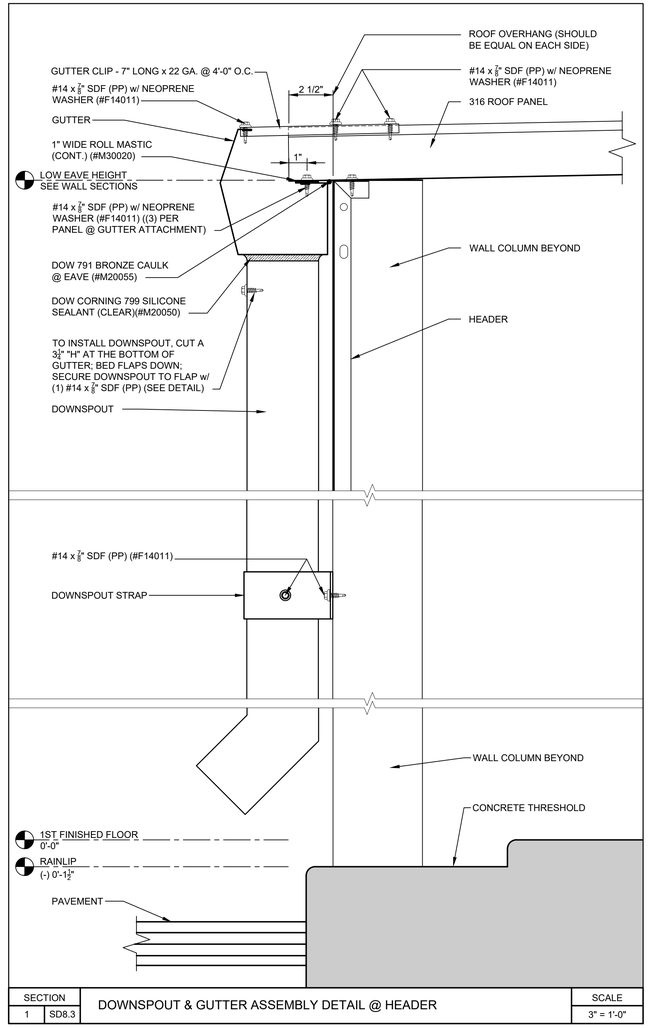




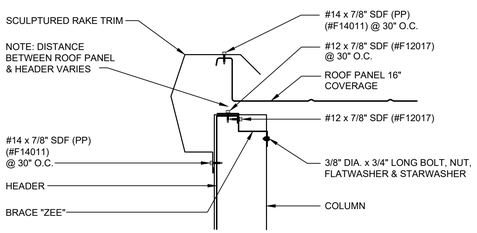
PEAK BOX DETAIL



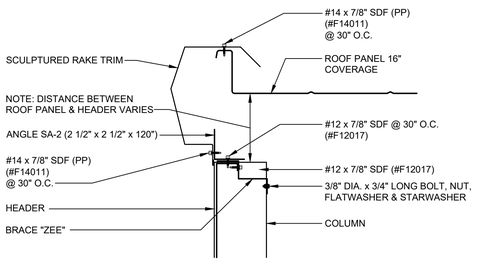
INSTALLATION DETAIL FOR OUTSIDE END CAP WITHIN CORNER BOXES



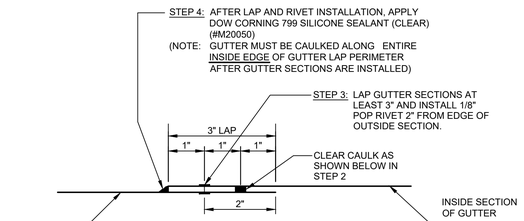
SECTION		DOWNSPOUT & GUTTER ASSEMBLY DETAIL @ HEADER	SCALE
1	SD8.3		3" = 1'-0"



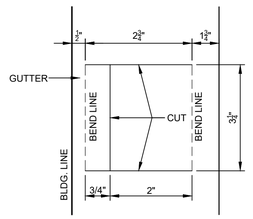
SECTION AT RAKE



SECTION AT RAKE AND ANGLE SA-2

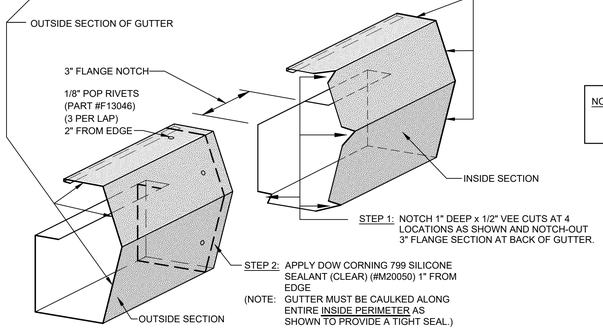


SECTION AT GUTTER LAP JOINT



TYPICAL DOWNSPOUT OPENING

NOTE: SHOWN FOR A 3" X 4" DOWNSPOUT ADJUST ACCORDINGLY PER COMPONENTS.



TYPICAL GUTTER LAP JOINT

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NORTH CAROLINA PROFESSIONAL SEAL 026413 ENGINEER CHRISTOPHER J GILBERT

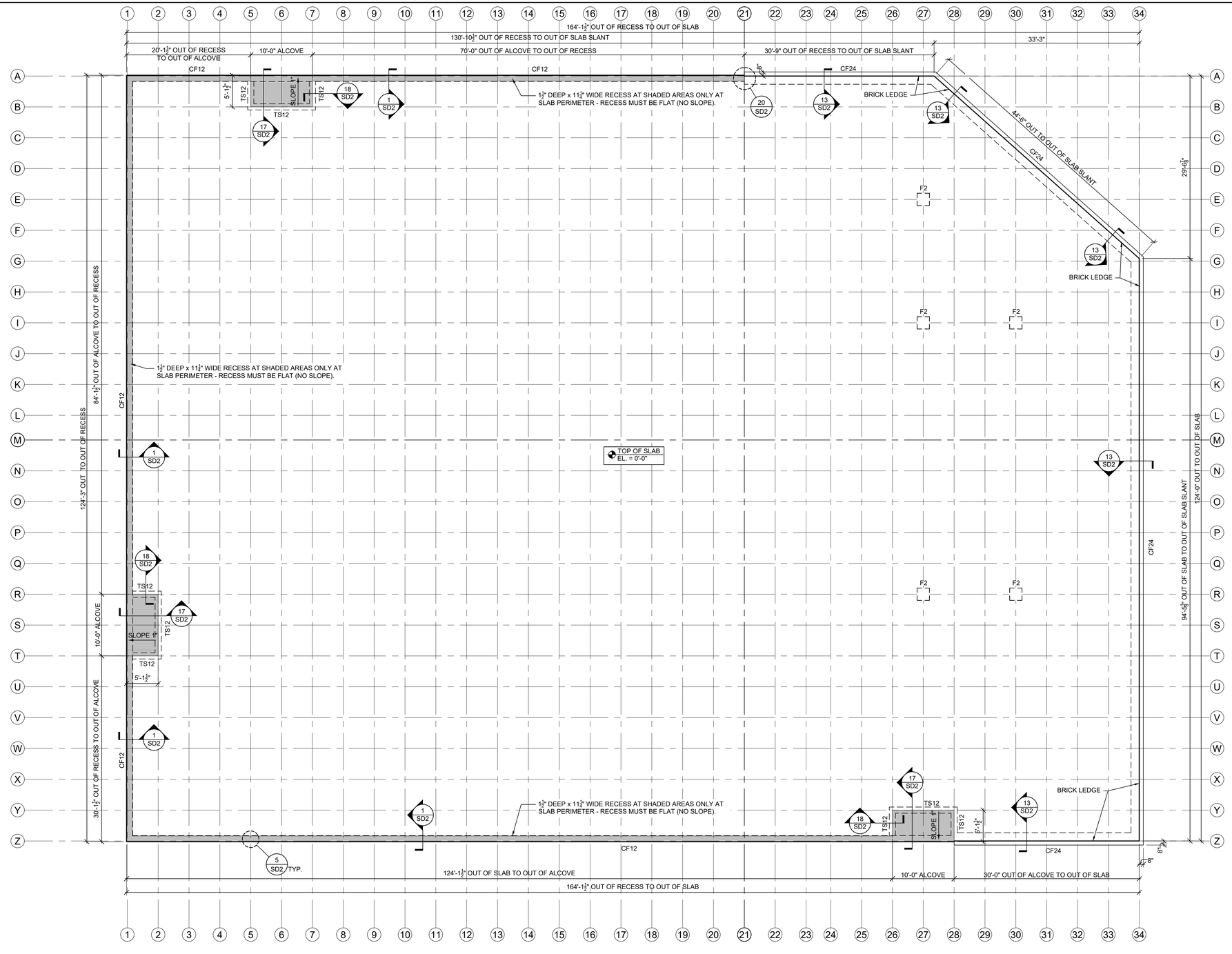
10/19/22

REVISIONS		DATE	BY

DATE: 10/14/2022
DRAWN BY: DPP
SCALE: AS NOTED
APPROVED BY:

BETCO
228 COMMERCE BLVD.
STATESVILLE, NC 28625
(800)654-7813

PROJECT NAME: UNIVERSITY STORAGE
PROJECT ADDRESS: ERWIN, NC 28339
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: GUTTER AND SCULPTURED RAKE TRIM INSTALLATION
DRAWING NUMBER: SD8.3



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

PROJECT NORTH / PLAN NORTH

FOUNDATION PLAN NOTES:

1. 4" CONCRETE SLAB WITH 6 x 6 W1.4 x W1.4 W.W.M. (UNO ON PLAN) PLACED ON 10 MIL VAPOR RETARDER. PROVIDE COMPACTED GRANULAR FILL BELOW SLAB IN ACCORDANCE WITH GEOTECHNICAL REPORT REQUIREMENTS.
2. COORDINATE ALL SLAB ON GRADE DEPRESSIONS WITH ARCHITECTURAL DRAWINGS.
3. COORDINATE ALL PLUMBING INVERTS AND LOCATIONS WITH PLUMBING AND SITE DRAWINGS.

VAPOR RETARDER NOTES:

1. MINIMUM 10 MIL PLASTIC SHEET COMPLYING WITH ASTM E1745, CLASS A. INSTALL IN ACCORDANCE WITH ASTM E1643. LAP JOINTS MINIMUM 6", AND SEAL JOINTS, PERIMETER AND PENETRATIONS WITH MANUFACTURER'S RECOMMENDED MASTIC OR TAPE.

FOOTING SCHEDULE:

CF12 =	CONTINUOUS FOOTING 1'-0" WIDE x 1'-4" MIN. DEEP WITH (2) EACH #4 BARS CONTINUOUS.
CF24 =	CONTINUOUS FOOTING 2'-0" WIDE x 1'-0" MIN. DEEP WITH (3) EACH #5 BARS CONTINUOUS AND #5 CROSS BARS @ 12" O.C.
TS12	THICKENED SLAB 1'-0" WIDE x 0'-8" DEEP WITH (2) EACH #4 BARS CONTINUOUS.
F2	INTERIOR COLUMN FOOTING. 2'-0" x 2'-0" x 1'-0" DEEP. REF 7/SD2.

ZERO DATUM FOR ALL ELEVATIONS GIVEN ON STRUCTURAL DRAWING IS TOP OF FINISHED FLOOR.REFER TO CIVIL DRAWINGS FOR ACTUAL ELEVATION.

NOTE:

FROST PROTECTION. EXCEPT WHERE OTHERWISE PROTECTED FROM FROST, FOUNDATIONS AND OTHER PERMANENT SUPPORTS OF BUILDINGS AND STRUCTURES SHALL BE PROTECTED FROM FROST BY ONE OR MORE OF THE FOLLOWING METHODS:

1. EXTENDING BELOW THE FROST LINE OF THE LOCALITY.
2. CONSTRUCTING IN ACCORDANCE WITH ASCE 32.
3. ERECTING ON SOLID ROCK.

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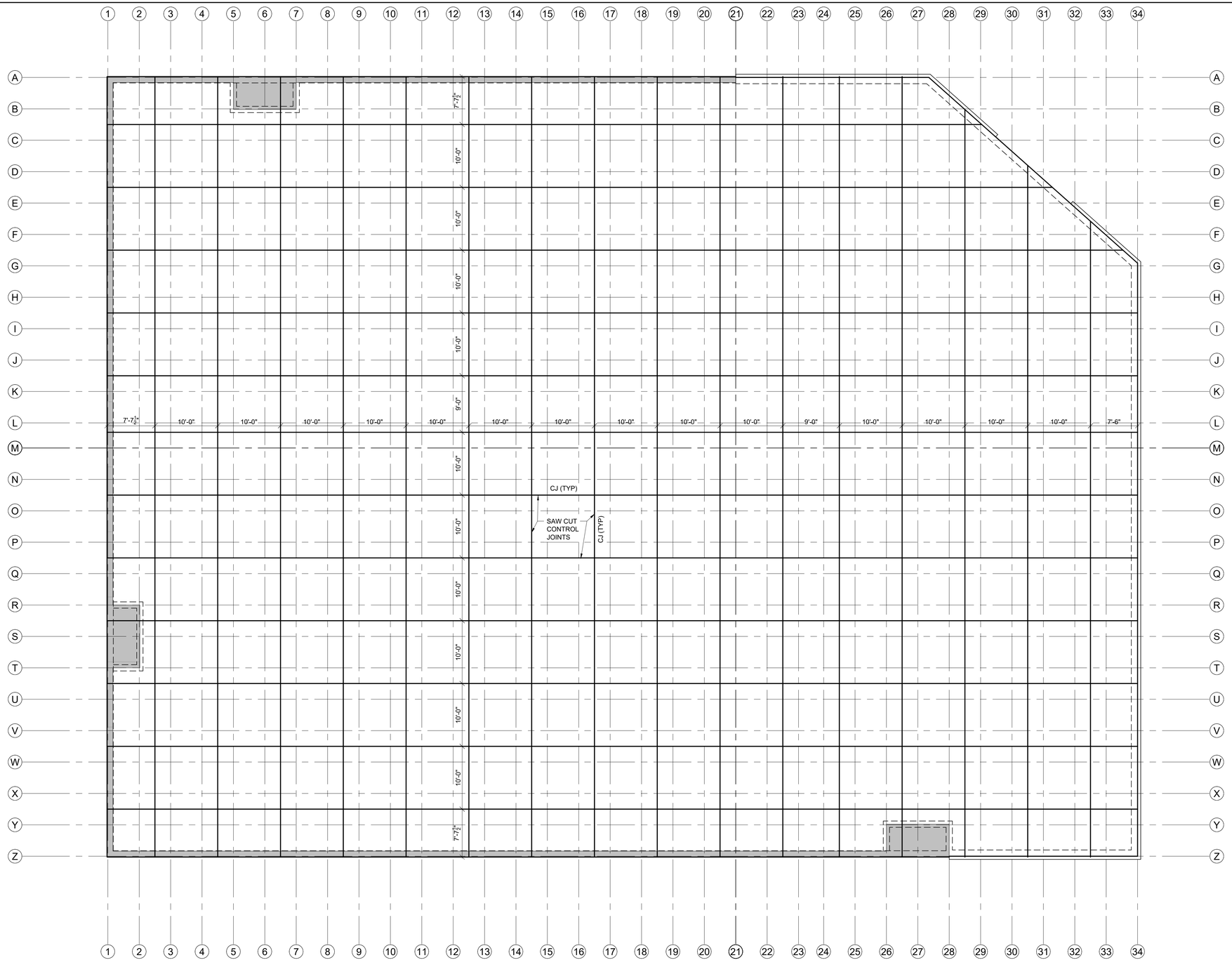
OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: FOUNDATION PLAN
DRAWING NUMBER: F1.1



NOTE TO OWNER / CONTRACTOR:

1. DO NOT CUT SAW JOINTS ALONG COLUMN LINES. DOING SO WILL REDUCE THE STRUCTURAL CAPACITY OF THE BUILDING ANCHORAGE TO THE CONCRETE AND MAY RESULT IN ADDITIONAL MATERIAL AND LABOR CHARGES. SAW CUTS MUST BE OFFSET 2'-6" MINIMUM FROM COLUMN LINES.
2. WEDGE ANCHORS ARE PROVIDED BY BETCO. CAST-IN-PLACE EMBEDDED ANCHOR BOLTS IN SLAB PROVIDED BY BETCO AND INSTALLED BY OTHERS.
3. SEE OWNER FOR BUILDING ORIENTATION ON SITE.
4. OWNER AND/OR CONTRACTOR SHALL PLACE CONTROL JOINTS/EXPANSION JOINTS IN THE RETAINING WALLS AT THEIR DISCRETION. FOUNDATION RETAINING WALLS TYPICALLY DO NOT UTILIZE THEM DUE TO WATERPROOFING CONCERNS , AND SINCE THE BELOW GRADE WALLS ARE AT RELATIVELY CONSTANT TEMPERATURE AND MOISTURE CONDITIONS.

1 SAW CUT PLAN
1/8" = 1'-0"

N PROJECT NORTH

N PLAN NORTH

SAW CUT CONTROL JOINTS IN SLAB SURFACE AT APPROXIMATELY 10'-0" INTERVALS
OFFSET CUTS 2'-6" MINIMUM FROM INTERIOR COLUMN LINES.

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OWNER: UNIVERSITY STORAGE, LLC
PROJECT NO.: NC22329
SHEET TITLE: SAW CUT PLAN
DRAWING NUMBER: F1.2