

# BK Associates Mixed Use Building

**cahoon+kasten**  
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## ABBREVIATIONS

1R1S	(1) ROD + (1) SHELF	NCSBC	NORTH CAROLINA STATE BUILDING CODE
ACI	AMERICAN CONCRETE INSTITUTE	N.I.C.	NOT IN CONTRACT
ACT	ACOUSTICAL CEILING TILE	NO.	NUMBER
AFF	ABOVE FINISH FLOOR	NOM.	NOMINAL
AFG	ABOVE FINISH GRADE	O.C.	ON CENTER
AHU	AIR HANDLING UNIT	O.D.	OVERFLOW DRAIN/OUTSIDE DIAMETER
ALUM.	ALUMINUM	O.H.	OPPOSITE HAND
AM	ANTE MERIDEN	OPNG.	OPENING
ARCH.	ARCHITECTURAL	O/S	OUTSIDE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	OTB	OPEN TO BELOW
BFE	BASE FLOOD ELEVATION	PC	PLUMBING CONTRACTOR
B.O.	BOTTOM OF	PH	PHASE
CJ	CONTROL JOINT	PJ	PANEL JOINT
CAB.	CABINET	PL	POINT LOAD
CLG.	CEILING	P-LAM	PLASTIC LAMINATE
CMU	CONCRETE MASONRY UNIT	PME	PLUMBING, MECHANICAL, & ELECTRICAL
CO	CLEANOUT	PP	PUSH PAD
CONC.	CONCRETE	PSF	POUNDS PER SQUARE FOOT
CONT.	CONTINUOUS	PSI	POUNDS PER SQUARE INCH
CPET	COMMON PATH OF EXIT TRAVEL	PSL	PARALLEL STRAND LUMBER
CW	COLD WATER	P.T.	PRESSURE TREATED
DBL	DOUBLE	PNTD	PAINTED
DR.	DOOR	P.W. / PWD	PLYWOOD
DWG.	DRAWING	RC	REINFORCED CONCRETE
DWV	DRAIN/WASTE/VENT	RCP	REFLECTED CEILING PLAN
DS	DOWNSPOUT	RD	ROOF DRAIN
DTL.	DETAIL	REINF	REINFORCED OR REINFORCING
EC	ELECTRICAL CONTRACTOR	REQD	REQUIRED
EJ	EXPANSION JOINT	RL	ROOF LEADER
ELECT.	ELECTRICAL	RUB	RUBBER
ELEV.	ELEVATION	SAN	SANITARY
ETC.	ETCETERA	SF	SQUARE FOOT OR SQUARE FEET
E.T.R.	EXISTING TO REMAIN	SIM	SIMILAR
EWC	ELECTRIC WATER COOLER	SP	SOUTHERN PINE
EXIST.	EXISTING	SPF	SPRUCE/ PINE/ FIR
EXT.	EXTERIOR	SS	STAINLESS STEEL
FBGLS.	FIBERGLASS	STOR	STOREFRONT
FDP	FIBER CEMENT PANEL	STL.	STEEL
FD	FLOOR DRAIN	TD	TRAVEL DISTANCE
FF	FINISH FLOOR	TME	TO MATCH EXISTING
FEC	FIRE EXTINGUISHER CABINET	T.O.	TOP OF
FJ	FALSE JOINT	T.O.P.	TOP OF PLATE
FLR.	FLOOR	TRD.	TREAD
GC	GENERAL CONTRACTOR	TYP.	TYPICAL
GA	GUAGE	U.N.O.	UNLESS NOTED OTHERWISE
GALV.	GALVANIZED	V	VOLTY VOLTAGE
GEN	GENERAL	VCT	VINYL COMPOSITE TILE
GS	GANG STUD	VERT.	VERTICAL
GWB	GYPSPUM WALL BOARD	VIF	VERIFY IN FIELD
H/C	HANDICAPPED	WI	WITH
HDWR	HARDWARE	WGL	WIRE GLASS
HM	HOLLOW METAL	WD	WOOD
HORIZ.	HORIZONTAL		
HP	HEAT PUMP		
IM	ICEMAKER		
INSUL.	INSULATION		
INT.	INTERIOR		
KW	KILOWATT		
LOCS.	LOCATIONS		
LSL	LAMINATED STRAND LUMBER		
MAX.	MAXIMUM		
MBT	MARBLE THRESHOLD		
MC	MECHANICAL CONTRACTOR		
MCJ	MASONRY CONTROL JOINT		
MEJ	MASONRY EXPANSION JOINT		
MECH.	MECHANICAL		
MFR.	MANUFACTURER		
MIN.	MINIMUM		
MT	METAL THRESHOLD		
MTL.	METAL		



1 Southwest Perspective



2 Northwest Perspective

DRAWING NUMBER  
View Name  
1/8" = 1'-0"

DRAWING TITLE

DRAWING NUMBER  
A101

SHEET NUMBER

EXTERIOR ELEVATION KEY

DRAWING NUMBER  
A101

SHEET NUMBER

INTERIOR ELEVATION KEY

Name  
Elevation

LEVEL CALLOUT

1

DOOR TAG

A

WINDOW TAG

A

WALL TAG

Room name  
101

ROOM TAG

5'-0"

DIMENSION (FACE OF STUD U.N.O.)

SIM

SECTION KEY

SIM

DETAIL KEY

SIM

ENLARGED PLAN OR DETAIL KEY

Drawing Symbols  
1/4" = 1'-0"

Project: **BK Associates Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy Nags Head, NC 27959**  
Title: **Cover Sheet**  
Date: **December 23, 2022**  
Scale: **1/4" = 1'-0"**

## GENERAL CONSTRUCTION NOTES

- THESE DRAWINGS CONTAIN THE MINIMUM INFORMATION NECESSARY FOR ANY REPUTABLE CONTRACTOR TO UNDERTAKE CONSTRUCTION. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE COMPLETION OF THE PROJECT. HE SHALL COMPLETE THE WORK IN THE BEST AND MOST WORKMANLIKE MANNER, AND DO EVERYTHING PROPERLY INCIDENTAL THERETO, AS SHOWN ON THE PLANS, REQUIRED BY ALL APPLICABLE CODES, AS RECOMMENDED BY PRODUCT MANUFACTURERS, AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- ALL WORK SHALL BE IN COMPLIANCE WITH THE CURRENT NORTH CAROLINA BUILDING CODE.
- THE CONTRACTOR SHALL VERIFY DIMENSIONS BEFORE BEGINNING WORK. DIMENSIONS FOR NEW CONSTRUCTION SHOULD BE HELD TO THE MAXIMUM EXTENT POSSIBLE.
- PREMISES OF THE ENTIRE JOB SITE WILL BE MAINTAINED IN A NEAT AND ORDERLY CONDITION DURING THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL CONFORM TO ALL REQUIREMENTS OF OSHA.
- PRIOR TO THE FINAL PAYMENT THE CONTRACTOR SHALL GIVE TO THE OWNER A LABELED BINDER CONTAINING A LIST OF ALL SUPPLIERS AND SUBCONTRACTORS WITH ADDRESSES AND PHONE NUMBERS, GUARANTEES, AND OPERATION AND MAINTENANCE MANUALS OF ALL EQUIPMENT. THE CONTRACTOR SHALL WARRANT THE WORK FOR A PERIOD OF ONE YEAR.
- IF A PORTION OF THE WORK HAS BEEN COVERED WHICH THE ARCHITECT HAS NOT SPECIFICALLY REQUESTED TO OBSERVE PRIOR TO ITS BEING COVERED, THE ARCHITECT MAY REQUEST TO SEE SUCH WORK AND IT SHALL BE UNCOVERED BY THE CONTRACTOR, IF SUCH WORK IS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. COSTS OF UNCOVERING AND REPLACEMENT SHALL, BY APPROPRIATE CHANGE ORDER, BE CHARGED TO THE ARCHITECT. IF SUCH WORK IS NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PAY SUCH COSTS UNLESS THE CONDITION WAS CAUSED BY THE OWNER OR A SEPARATE CONTRACTOR IN WHICH EVENT THE OWNER SHALL BE RESPONSIBLE FOR PAYMENT OF SUCH COSTS. THE CONTRACTOR SHALL PROMPTLY CORRECT THE WORK REJECTED BY THE ARCHITECT OR FAILING TO CONFORM TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- ALL CONCRETE SHALL BE 3000 PSI MINIMUM, AND ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE ACI AND ASTM.
- LIGHT GAUGE STEEL FRAMING SHALL BE IN ACCORDANCE WITH THE LIGHT-GAUGE STEEL FRAMING CONSTRUCTION MANUAL AND AS PER ASTM A448, A570, OR A611.
- REINFORCING BARS FOR CONCRETE WORK SHALL BE GRADE #6, DEFORMED AS PER ASTM A615.
- WELDED WIRE FABRIC SHALL BE AS PER ASTM A185 OF SIZES AND TYPE AS SHOWN ON DRAWINGS.
- METAL TIE DOWN STRAPS, ANCHORS AND CLIPS SHALL BE AS PER "SIMPSON STRONGTIE" OR EQUAL.
- WOOD FRAMING AND BLOCKING SHALL BE #2 SPF OF THE SIZES INDICATED AND SHALL HAVE A MIN. F<sub>b</sub> VALUE OF 1200 PSI.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOFING IN ACCORDANCE WITH NRCA REQUIREMENTS AND THE ROOFING PRODUCT MANUFACTURER'S RECOMMENDATIONS INCLUDING WATERPROOFING OF ALL PENETRATIONS AND SUPPORTS FOR MECHANICAL EQUIPMENT, AND AS SHOWN ON DRAWINGS.
- THE CONTRACTOR SHALL DETERMINE BEFORE BEGINNING WORK WHETHER AN ELEVATION CERTIFICATE WILL BE REQUIRED AND SHALL OBTAIN THE CERTIFICATE AT THE EARLIEST OPPORTUNITY. ONE COPY MUST BE PROVIDED FOR THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSULATION. INSULATION SHALL BE INSTALLED IN FULL CONTACT WITH SHEATHING AND GWB OF WALL CAVITY. FLOOR AND CEILING INSULATION SHALL BE IN FULL CONTACT WITH GWB. INSULATION SHALL BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS, WITH NO SUBSTANTIAL GAPS, VOIDS, COMPRESSION OR WIND INTRUSION.
- SOIL SHALL BE FREE OF ORGANIC MATERIAL AND CONSOLIDATED TO BE CAPABLE OF 1,500 PSF AND LIMIT LONG TERM SETTLEMENT.
- CAULK ALL GAPS IN FRAMING AND SHEATHING AT FRAMING ROUGH-IN. CAULK GAPS IN GWB NOT SEALED BY TAPE AND JOINT COMPOUND. AIR TIGHTNESS SHALL BE LESS THAN OR EQUAL TO .30 CFM50 PER SQUARE FOOT OF CONDITIONED ENVELOPE AREA.

Drawing Index	
Sheet Number	Sheet Name
A000	Town Submittal
A001	Cover Sheet
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A003	Wall, Floor & Ceiling Types and UL Details
A004	Wall, Floor, & Roof Types
A005	Life Safety Plans
A101	Ground Floor Plan
A102	Second Floor Plan
A103	Third Floor Plan
A104	Fourth Floor Plan
A105	Tower & Roof Plans
A201	Elevations
A301	Building Sections
A302	Building Sections
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A503	Details
S101	Foundation Plan
S102	Second Floor Framing Plan
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S105	Roof Framing Plan
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S301	Framing Details
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S303	Framing Details
S401	Structural Notes
S402	Schedules

The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.



Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File:

# A001

**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: BK Associates Mixed Use Building  
 Address: 4413 S Croatan Hwy  
Nags Head, NC 27959  
 Owner/Authorized Agent: Harry Bawa  
 E-Mail: dhangu99@hotmail.com  
 Phone #: \_\_\_\_\_  
 Owned By:  City/County  Private  State  
 Code Enforcement Jurisdiction:  City Nags Head  County \_\_\_\_\_

**CONTACT:** Benjamin Cahoon, FAIA

DESIGNER	FIRM	NAME	LIC #	TELEPHONE #	E-MAIL
Architectural	Cahoon + Kasten Architects	Ben Cahoon	5413	252.441.0271	ben@ckarchitects.com
Civil	Albermarle and Associates, LTD	Mike Morway	028572	252.441.2113	mikem@albermarleassociates.com
Electrical	Lu + S ENGINEERS, PLLC	Dawen Lu		804.925.2600	dlu@lsengineers.net
Fire Alarm					
Plumbing	Lu + S ENGINEERS, PLLC	Dawen Lu		804.925.2600	dlu@lsengineers.net
Mechanical	Lu + S ENGINEERS, PLLC	Dawen Lu		804.925.2600	dlu@lsengineers.net
Sprinkler-Standpipe					
Structural	RPA Engineering, P.A.	Mark Roy	17348	252.321.6027	mark.roy@rpaengineering.com
Retaining Walls >5h					
Other					

**2018 NC BUILDING CODE:**  New Building  Addition  1st Time Interior Completion  
 Shell / Core\*  Phased Construction\*

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

**CONSTRUCTED:** (date) --                      **CURRENT OCCUPANCY(S)** (Ch. 3): --                       
**RENOVATED:** (date) --                      **PROPOSED OCCUPANCY(S)** (Ch. 3): S-2,B,R-2  
**RISK CATEGORY** (Table 1604.5): **Current:** II **Proposed:** II

**BASIC BUILDING DATA**  
**Construction Type** (check all that apply)  I-A  II-A  III-A  IV  V-A  
 I-B  II-B  III-B  V-B  
**Sprinklers:**  No  Partial  NFPA 13  NFPA 13R  NFPA 13D  
**Standpipes:**  No  Class  I  II  III  Wet  Dry  
**Primary Fire District:**  No  Yes **Food Hazard Area:**  No  Yes  
**Special Inspections Required:**  No  Yes If special inspections are required, contact the local inspection jurisdiction for additional procedures and requirements.

Gross Building Area Table			
FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
4th Floor		3,409 SF	3,409 SF
3rd Floor		3,640 SF	3,640 SF
2nd Floor		3,640 SF	3,640 SF
Mezzanine			
1st Floor		3,640 SF	3,640 SF
Basement			
<b>Total</b>		<b>14,329 SF</b>	<b>14,329 SF</b>

**ALLOWABLE AREA**

**Primary Occupancy Classification(s):**  
 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 Defflagrate  H-3 Combust  H-4 Health  H-5 HPM  
 Institutional  I-1  I-2  I-1 & I-2 Condition  1  2  
 I-3  I-4  I-3 Condition  1  2  3  4  5  
 Mercantile   
 Residential  R-1  R-2  R-3  R-4  
 Storage  S-1 Moderate  S-2 Low  High Pile  
 Parking Garage  Open  Enclosed  Repair Garage  
 Utility and Miscellaneous

**Accessory Occupancy Classification(s):** \_\_\_\_\_  
**Incidental Uses** (Table 509): \_\_\_\_\_  
**Special Uses** (Chapter 4 - List Code Sections): 406.5  
**Special Provisions** (Chapter 5 - List Code Sections): 510.7  
**Mixed Occupancy:**  No  Yes Separation: 1 Hr. Exception:                       
 Non-Separated Use (508.3)  
 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.

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

STORY #	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 506.2.4 AREA	(C) AREA FOR FRONTAGE INCREASE <sup>1,5</sup>	(D) ALLOWABLE AREA PER STORY OR UNLIMITED <sup>2,3</sup>
1	S-2 OPEN GARAGE	3,640 SF	78,000 SF		36000 SF
2	B	3,640 SF	54,000 SF		36000 SF
3	R-2	3,640 SF	36000 SF		36000 SF
4	R-2	3,409 SF	36000 SF		36000 SF
	<b>Building Area</b>	<b>14,329 SF</b>	<b>Maximum Allowable Building Area</b>		<b>144,000 SF</b>

- Frontage area increases from Section 506.3 are computed thus:
  - Perimeter which fronts a public way or open space having 20 feet minimum width = \_\_\_\_\_ (F)
  - Total Building Perimeter = \_\_\_\_\_ (P)
  - Ratio (F/P) = \_\_\_\_\_ (F/P)
  - W = Minimum width of public way = \_\_\_\_\_ (W)
  - Percent of frontage increase If = 100 [ F/P - 0.25 ] x W/30 = \_\_\_\_\_ (%)
- Unlimited area applicable under conditions of Section 507.
- Maximum Building Area = total number of stories in the building x D (maximum 3 stories)(506.2).
- The maximum area of open parking garages must comply with Table 406.5.4.
- Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT			
	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE <sup>1</sup>
Building Height in Feet (Table 504.3) <sup>2</sup>	70'	42'	
Building Height in Stories (Table 504.4) <sup>3</sup>	4	4	

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

PERCENTAGE OF WALL OPENING CALCULATIONS				
WALL	FIRE SEPARATION DISTANCE FROM PROPERTY LINES (FEET)	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
North	>30 FT	UP, S	NL %	11.4 %
South	15 FT	UP, S	45 %	13.3 %
East	>30 FT	UP, S	NL %	19.8 %
West	15 FT	UP, S	45 %	19.8 %

FIRE PROTECTION REQUIREMENTS							
BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQD	PROVIDED (W/_____* REDUCTION)	DETAIL# AND SHEET#	DESIGN# FOR RATED ASSEMBLY	SHEET# FOR RATED PENETRATION	SHEET# FOR RATED JOINTS
Structural frame, including columns, girders, & trusses		1	1		IP <sup>1</sup>		
Bearing walls							
Exterior							
North		1	1		16-1.3		
East		1	1		16-1.3		
West		1	1		16-1.3		
South		1	1		16-1.3		
Interior		1	1		15-1.14		
Nonbearing walls and partitions							
Exterior walls							
North		0	0				
East		0	0				
West		0	0				
South		0	0				
Interior walls and partitions		0	0				
Floor construction including supporting beams and joists		1	1		D798		
Floor Ceiling Assembly		1	1		D798		
Columns Supporting Floors		1	1		IP <sup>1</sup>		
Roof Construction, including supporting beams and joists		1	1		21-1.1		
Roof Ceiling Assembly		1/2*	1/2*		21-1.1 / P571*		
Columns Supporting Roof		1	1		IP <sup>1</sup>		
Shafts Enclosures - Exit		2	2		U905		
Shafts Enclosures - Other		2	2		U905		
Corridor Separation							
Occupancy/ Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation		.5	.5		UL U340		
Incidental Use Separation							

\* Indicate section number permitting reduction 1. Intumescent Paint (IP) MFR to provide testing documentation. (\* @ shaft ceiling only)

**LIFE SAFETY SYSTEM REQUIREMENTS**  
 Emergency Lighting:  No  Yes  
 Exit Signs:  No  Yes  
 Fire Alarm:  No  Yes  
 Smoke Detection Systems:  No  Yes  Partial R-2 ONLY  
 Carbon Monoxide Detection:  No  Yes

**LIFE SAFETY PLAN REQUIREMENTS**  
 Life Safety Plan Sheet #: A003  
 Fire and/or smoke rated wall locations (Chapter 7)  
 Assumed and real property line locations (if not on the site plan)  
 Exterior wall opening area with respect to distance to assumed property lines (705.8)  
 Occupancy Use for each area as it relates to occupant load calculations (Table 1004.1.2)  
 Occupant loads for each area  
 Exit access travel distances (1017)  
 Common path of travel distances (1006.2.1 & 1006.3.2(1))  
 Dead end lengths (1020.4)  
 Clear exit widths for each exit door  
 Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)  
 Actual occupant load for each exit door  
 A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation  
 Location of doors with panic hardware (1010.1.10)  
 Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)  
 Location of doors with electromagnetic egress locks (1010.1.9.9)  
 Location of doors equipped with hold-open devices  
 Location of emergency escape windows (1030)  
 The square footage of each fire area (202)  
 The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)  
 Note any code exceptions or table notes that may have been utilized regarding the items above

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
4					4	4	4

ACCESSIBLE PARKING (SECTION 1106)						
LOT OR PARKING AREA	TOTAL # OF PARKING SPACES REQUIRED	PROVIDED	# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
			REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	8' ACCESS AISLE	
	14	14			1	1
<b>TOTAL</b>						

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1) (EACH B UNIT)												
USE	WATERCLOSETS			URINALS			LAVATORIES			SHOWERS/ DRINKING FOUNTAINS		
	MALE	FEMALE	UNISEX	MALE	FEMALE	UNISEX	/TUBS	REGULAR	ACCESSIBLE	REGULAR	ACCESSIBLE	
EXISTING												
NEW	1	1					1	1			1	1
REQD	1	1					1	1			1	1

**SPECIAL APPROVALS**  
**Special approval:** (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHA, etc., describe below)  
 NONE

**ENERGY SUMMARY**

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

**Existing building envelope complies with code:**  (If checked the remainder of this section is not applicable.)

**Exempt Building:**  Provide code or statutory reference: \_\_\_\_\_

**Climate Zone:**  3A  4A  5A

**Method of Compliance:**  
 Energy Code  Performance  Prescriptive  
 ASHRAE 90.1  Performance  Prescriptive  
 Other  Performance (specify source) \_\_\_\_\_

**THERMAL ENVELOPE** (Prescriptive method only)

**Roof/Ceiling Assembly** (each assembly)  
 Description of assembly: MTL. ROOFING OR ASPHALT SHINGLES, P.W., WOOD TRUSSES, FBGLS. BATT. INSUL. G.W.B.  
 U-Value of total assembly:  
 R-Value of insulation: R-38  
 Skylights in each assembly:  
 U-Value of skylights:  
 total s.f. of skylights in each assembly:

**Exterior Walls** (each assembly)  
 Description of assembly: SYNTHETIC SIDING, ASPHALTIC FELT, P.W. WOOD STUDS, FBGLS. BATT. INSUL., G.W.B.  
 U-Value of total assembly:  
 R-Value of insulation: R-20  
 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: N/A  
 U-Value of total assembly:  
 R-Value of insulation:

**Floors over unconditioned space** (each assembly) 4" REINF. CONC. SLAB ON COMPOSITE DECKING, STL W-JOISTS, MINERAL WOOL INSUL. G.W.B.  
 Description of assembly:  
 U-Value of total assembly:  
 R-Value of insulation: R-30

**Floors slab on grade**  
 Description of assembly: N/A  
 U-Value of total assembly:  
 R-Value of insulation:  
 Horizontal/vertical requirement:  
 Slab heated:

**STRUCTURAL DESIGN** SEE STRUCTURAL

**DESIGN LOADS**

**Importance Factors:** Wind (I<sub>w</sub>) \_\_\_\_\_  
 Snow (I<sub>s</sub>) \_\_\_\_\_  
 Seismic (I<sub>e</sub>) \_\_\_\_\_

**Live Loads:** Roof \_\_\_\_\_ psf  
 Mezzanine \_\_\_\_\_ psf  
 Floor \_\_\_\_\_ psf

**Ground Snow Load:** \_\_\_\_\_ psf

**Wind Load:** Basic Wind Speed \_\_\_\_\_ mph (ASCE-7)  
 Exposure Category \_\_\_\_\_

**SEISMIC DESIGN CATEGORY:**  A  B  C  D  
 Provide the following Seismic Design Parameters:  
**Occupancy Category** (Table 1604.5)  I  II  III  IV  
**Spectral Response Acceleration** S<sub>s</sub> \_\_\_\_\_ %g S<sub>1</sub> \_\_\_\_\_ %g  
**Site Classification** (ASCE-7)  A  B  C  D  E  F  
 Data Source:  Field Test  Presumptive  Historical Data  
**Basic structural system** (check one)  
 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 \_\_\_\_\_ psf  
 Pile size, type, and capacity \_\_\_\_\_

**MECHANICAL SUMMARY** SEE MECHANICAL

**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:** \_\_\_\_\_

**ELECTRICAL SUMMARY** SEE ELECTRICAL

**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 HVAC Equipment Performance
  - 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

**Project:** **BK Associates Mixed Use Building**  
**Project No:** **21068**  
**Location:** **4413 S Croatan Hwy Nags Head, NC 27959**  
**Title:** **Appendix B**  
**Date:** **December 23, 2022**  
**Scale:**

The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.



**Revisions:**

No.	Description	Date

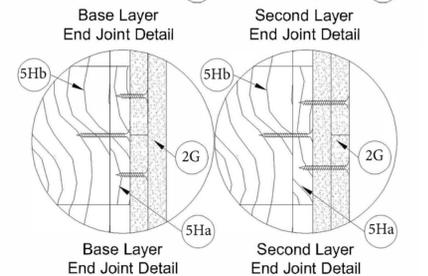
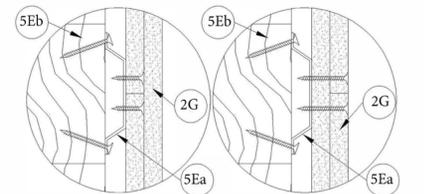
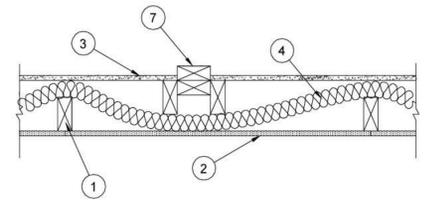
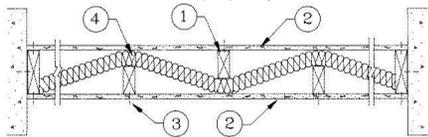
Design No. U340

October 7, 2022

Bearing Wall Rating — 1 Hr. Finish Rating — See Item 2

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



1. Wood Studs — Nom 2 by 4 in. alternating on opposite sides of nom 2 by 6 in. wood plates. Spaced 24 in. OC max on each side of wood plates, staggered 12 in. OC for staggered equally if less than 24 in. OC on opposite side.

2. Gypsum Board\* — 5/8 in. thick gypsum board, paper or vinyl faced with beveled, square, tapered or rounded edges. Gypsum board nailed to each stud 7 in. OC with 6d cement coated nails, 1-7/8 in. long, 0.0915 in. Shank diam and 1/4 in. diam head. As an alternate, No. 6 bugle head drywall screws, 1-7/8 in. long, may be substituted for the 6d cement coated nails. When used in widths other than 48 in., gypsum board to be installed horizontally.

When Steel Framing Members\* (Item 5 or any alternate clips) are used, gypsum board attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC.

AMERICAN GYPSUM CO — Types AG-C.

CERTAINTEED GYPSUM INC — Type C

CGC INC — Types C, IP-X2 (Finish rating 26 min).

CERTAINTEED GYPSUM INC — Type LGFC-C/A.

GEORGIA-PACIFIC GYPSUM L L C — Types 5 (Finish rating 26 min), DAPC, TG-C.

NATIONAL GYPSUM CO — Types FSK-C, FSW-C, FSW-G.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type C or PG-C.

THAI GYPSUM PRODUCTS PCL — Type C.

UNITED STATES GYPSUM CO — Types C, IP-X2 (Finish rating 26 min).

2A. Gypsum Board\* — (As an alternate to Item 2) — Nominal 5/8 in. thick, 4 ft. wide panels, applied vertically to studs and bearing plates on one side of the assembly with 1-5/8 in. long Type S screws spaced 12 in. OC at perimeter of panels and 8 in. OC in the field. Horizontal joints of vertically applied panels need not be backed by studs. Panel joints covered with paper tape and two layers of joint compound. Screwheads covered with two layers of joint compound. Batts and Blankets placed in stud cavity as described in Item 4B. Not evaluated for use with Steel Framing Members, Furring Channels or Fiber, Sprayed.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 530 (finish rating 23 min).

2B. Gypsum Board\* — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths of other than 48 in., gypsum boards are to be installed horizontally.

AMERICAN GYPSUM CO — Types AGX-1, M-Glass or AG-C, LightRoc

NATIONAL GYPSUM CO — Type FSK, Type FSK-G, Type FSW, Type FSW-3, Type FSW-5, Type FSW-G, Type FSK-C, Type FSW-C, Type FSMR-C, Type FSW-6, Type FS

2C. Gypsum Board\* — (As an alternate to Item 2) — Nominal 5/8 in. thick, 4 ft. wide panels, applied vertically. Panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. Shank diam and 1/4 in. diam heads. Horizontal joints of vertically applied panels to be backed by studs.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock ES.

2D. Wall and Partition Facings and Accessories\* — (As an alternate to Item 2) — Nominal 5/8 in. thick, 4 ft. wide panels, applied vertically. Panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. Shank diam and 1/4 in. diam heads. Horizontal joints of vertically applied panels to be backed by studs.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 527.

2E. Gypsum Board\* — (As an alternate to Item 2) — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305 — Nom. 5/8 in. thick gypsum board, paper or vinyl faced with beveled, square, tapered or rounded edges. Gypsum board nailed to each stud 7 in. OC with 6d cement coated nails, 1-7/8 in. long, 0.0915 in. Shank diam and 1/4 in. diam head. As an alternate, No. 6 bugle head drywall screws, 1-7/8 in. long, may be substituted for the 6d cement coated nails. When used in widths other than 48 in., gypsum board to be installed horizontally. Batts and Blankets placed in stud cavity as described in Item 4B.

When Steel Framing Members\* (Item 5) are used, gypsum board attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC.

CABOT MANUFACTURING UL (View Classification) — CKNX.R25370

AMERICAN GYPSUM CO (View Classification) — CKNX.R14196

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

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R18482

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

LOADMASTER SYSTEMS INC (View Classification) — CKNX.R1809

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

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

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

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

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

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

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

2F. Gypsum Board\* — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a maximum 10 in. OC with the last two screws 4 and 1 in. from the edges of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally.

CERTAINTEED GYPSUM INC — Type LGFC6A (finish rating 21 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLLX

2G. Gypsum Board\* — (For use with Item 5E and 5H) - Any 5/8 in. thick, 4 ft. wide, gypsum board UL Classified for Fire Resistance (CKNX) eligible for use in Design No. G512. Two layers, applied vertically and attached to wood studs (Item 1) and furring (Item 5E or 5H). Vertical gypsum board side joints offset 24 inches between layers. Vertical joints staggered one stud cavity on opposite sides of studs. Type W steel screws used for wood framing. Type S steel screws used for steel framing. Attachment to furring channels - First layer - 1-1/4 in. long, 3, 6 and 18 inches from each board end, spaced 12 inch OC with first fastener 2 in. from vertical board edge. Direct attachment to framing - First layer (to plates) - 1-1/4 in. long, 3, 6 and 18 inches from each board edge. First layer (to studs) - 1-1/4 in. long, 3, 6 and 18 inches board ends and 24 in. OC thereafter. Second layer - 1-7/8 in. long, spaced 2 inch from each board edge and 12 in. OC thereafter.

2H. Gypsum Board\* — (As an alternate to Item 2) — 5/8 in. thick, 4 ft. wide, paper surfaced applied vertically or horizontally and secured with 1-1/4 in. Type W coarse thread gypsum panel steel screws spaced a maximum of 12 in. OC.

CERTAINTEED GYPSUM INC — Type SilentFX

3. Joints and Nailheads — Gypsum board joints covered with tape and joint compound. Nail heads covered with joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to entire surface of Classified veneer baseboard. Joints reinforced.

4. Batts and Blankets\* — (Optional) Required when Item 5E or 5H is used. Any thickness glass or mineral fiber batt insulation friction-fit into stud cavities.

See Batts and Blankets (BZJZ) category for list of Classified companies.

ROCKWOOL — Type SAFESOUND, min. 1.69 pcf.

4A. Fiber, Sprayed\* — As an alternate to Batts and Blankets (Item 4) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with a nominal dry density of 2.7 lbs/ft3. Alternate Application Method. The fiber is applied without water or adhesive at a nominal dry density of 3.5 lbs/ft3, in accordance with the application instructions supplied with the product. When Item 5, 5A, 5B, 5C or 5D is used, Fiber, Sprayed shall be INS735, INS745, INS765LD or INS770LD.

U S GREENFIBER L L C — INS735, INS745 and INS750LD for use with wet or dry application. INS515LD, INS541LD, INS735, INS765LD, and INS773LD are to be used for dry application only.

4B. Batts and Blankets\* — (Required for use with Wall and Partition Facings and Accessories, Item 2A and Gypsum Board Item 2E) — Glass fiber insulation, nom 3-1/2 in. thick, min. density of 0.80 pcf, with a flame spread of 25 or less and a smoke developed of 50 or less, friction-fitted to completely fill the stud cavities. See Batts and Blankets Category (BKNV) for names of manufacturers.

4C. Fiber, Sprayed\* — As an alternate to Batts and Blankets (Item 4) — Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft3.

INTERNATIONAL CELLULOSE CORP — Celbar-RL

4D. Fiber, Sprayed\* — As an alternate to Batts and Blankets (Item 4) — Spray-applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. To facilitate the installation of the material, any thin, woven or non-woven netting may be attached by any means possible to the outer face of the studs. The material shall reach equilibrium moisture content before the installation of materials on either face of the studs. The minimum dry density shall be 5.79 lbs/ft3.

APPLEGATE HOLDINGS L L C — Applegate Advanced Stabilized Cellulose Insulation

5. Steel Framing Members\* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below:

A. Furring Channels — Formed of No. 25 MSG galv steel, 2-9/16 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item B. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

B. Steel Framing Members\* — Used to attach furring channels (Item A) to studs (Item 1). Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (275) clip for use with 2-3/32 in. wide furring channels.

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75).

5A. Steel Framing Members\* — (Optional, Not Shown, As an alternate to Item 5) — Furring channels and Steel Framing Members as described below:

A. Furring Channels — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item B. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

B. Steel Framing Members\* — Used to attach furring channels (Item A) to studs. Clips spaced 48 in. OC. Genie clips secured to studs with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.

PLITEQ INC — Type Genie Clip

5B. Steel Framing Members\* — (Optional, Not Shown, As an alternate to Item 5) — Furring channels and Steel Framing Members as described below:

A. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item B. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2.

B. Steel Framing Members\* — Used to attach furring channels (Item 5BA) to studs. Clips spaced 48 in. OC, and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

5C. Steel Framing Members\* — (Optional, Not Shown, As an alternate to Item 5) — Furring channels and Steel Framing Members as described below:

A. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 5Cb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2.

B. Steel Framing Members\* — Used to attach furring channels (Item 5Ca) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.

REGUPOL AMERICA — Type SonusClip

5D. Steel Framing Members\* — (Optional, Not Shown, As an alternate to Item 5) — Resilient channels and Steel Framing Members as described below:

a. Resilient Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 2.

b. Steel Framing Members\* — Used to attach resilient channels (Item 5Da) to studs (Item 1). Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1 1/2 in. pan-head self-drilling screw.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

5E. Steel Framing Members\* — (Optional, Not Shown, As an alternate to Item 5) — Resilient channels and Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. First channel centered max. 3 in. from end of studs. Channels secured to studs with two angled 1-1/4 inch (No. 6) Type W drywall screws. One on each side of the channel. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Two layers of gypsum board attached to furring channels as described in Item 2G.

b. Framing Members\* — Used to attach resilient channels (Item 5Ea) to studs (Item 1). Rafts secured to each stud, spaced a maximum of 48 in. OC vertically. Staggered 24 inch on center vertically on each adjacent stud. At the beginning or end of furring channel runs, additional rafts installed to support the ends of all furring channels. At stud ends, rafts may be installed on plates to achieve required furring channel spacing. Secured with two 1-5/8 inch (No. 6) Type W drywall screws. One on each side of the core. Fasteners should not be placed closer than 1/4 inch to the edges of the mounts.

BCD LLC — Type HushFrame Raft Connector

5F. Steel Framing Members\* — (Optional, Not Shown) — Resilient channels and Steel Framing Members as described below:

a. Resilient Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to resilient channels as described in Item 2.

b. Steel Framing Members\* - Used to attach resilient channels to wall studs. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels to the studs. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the studs with the screws supplied with the accessory and per the accessory manufacturer's installation instructions.

PAC INTERNATIONAL L L C — Type RC-1 Boost

5G Steel Framing Members\* — (Optional, Not Shown, As an alternate to Item 5) — Furring channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-3/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members\* — Used to attach furring channels (Item 5Ga) to studs. Clips spaced maximum 48 in. OC. Clips secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

2f. Framing Members - (Optional, Not Shown, As an alternative to Item 2) — Furring channels and Framing Members as described below:

a. Furring Strips — Nominal 1 in. deep by 3 in. wide wooden furring strips, spaced 24 in. OC perpendicular to studs. First channel centered max. 3 in. from end of studs. Furring secured with one 2 in. long, Type W screw into the rafts. Ends of adjoining furring butted, between studs, and joined with an overlapping 12 in. furring strip fastened with two 2 in. long Type W screws equally spaced on both sides of the butt joint. Two layers of gypsum board attached to furring strips as described in Item 3A.

b. Framing Members\* — Used to attach furring channels (Item 2fa) to studs (Item 1). Rafts secured to each stud, spaced a maximum of 48 in. OC, vertically. Staggered 24 inch on center vertically on each adjacent stud. At the beginning or end of furring channel runs, additional rafts installed to support the ends of all furring channels. At stud ends, rafts may be installed on plates to achieve required furring channel spacing. Secured with two 1-5/8 inch (No. 6) Type W drywall screws. One on each side of the core. Fasteners should not be placed closer than 1/4 inch to the edges of the mounts.

BCD LLC — Type HushFrame Raft Connector

6. Furring Channel — Optional — Not Shown — For use on one side of the wall with Item 2B - Resilient channels, 25 MSG galv steel, spaced vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped point, double lead Phillips head steel screws.

7. Non-Bearing Wall Partition Intersection — (Optional) — Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed together with two 3in. long 10d nails spaced a max. 16 in. OC, vertically and fastened to one side of the minimum 2 by 4 in. stud with 3 in. long 10d nails spaced a max 16 in. OC, vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC, vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

8. Wall and Partition Facings and Accessories\* — (Optional, Not Shown) — Nominal 1/2 in. thick, 4 ft. wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-500 or QR-510 panel is installed between the wood framing and the UL Classified gypsum board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-500 and QR-510

9. Mineral and Fiber Board\* — (Optional, Not Shown) — For use with Items 9A-9D — For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft. wide with long dimension parallel and centered over studs. Attached to studs and top and bottom bearing plates with minimum 1-3/8 in. long ring shanked nails or 1-1/4 in. long Type W steel screws, spaced 12 in. OC and 24 in. OC along all intermediate framing. The required UL Classified gypsum board layer (Item 9D) is to be installed over the Mineral and Fiber Boards. Glass Fiber Insulation, Item 9A, or Batts and Blankets, Item 9B, and Adhesive, Item 9C, are required.

HOMASOTE CO — Homasote Type 440-32

9A. Glass Fiber Insulation\* — (For use with Item 9) 5-1/2 in. thick glass fiber batts bearing the UL Classification Marking as to Surface Burning and/or Fire Resistance, placed to completely fill the interior of the wall. Use Batts and Blankets (BKNV or BZJZ) categories for names of Classified companies.

9B. Batts and Blankets\* — (As an alternate to Item 9A, for use with Item 9), 5-1/2 in. thick mineral wool batts, placed to completely fill interior of wall.

THERMAFIBER INC — Type SAFB, SAFB FF

9C. Adhesive — (For use with Item 9) — Construction grade adhesive applied in vertical, serpentine, nominal 3/8 in. wide beads down the length of both vertical edges of Mineral and Fiber Board (Item 9).

9D. Gypsum Board\* — (For use with Item 9) — 5/8 in. thick, 4 ft. wide, applied vertically over Mineral and Fiber Board (Item 9) with vertical joints located anywhere over stud cavities. Secured to mineral and fiber boards with 1-1/2 in. Type G Screws spaced 9 in. OC along edges of each vertical joint and 12 in. OC in intermediate field of the Mineral and Fiber Board (Item 9). Secured to outermost studs and bearing plates with 2 in. long Type S screws spaced 8 in. OC. Gypsum Board joints covered with paper tape and joint compound. Screw heads covered with joint compound. Finish Rating 30 Min.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C

CGC INC — Types C, IP-X2, IPC-AR

CERTAINTEED GYPSUM INC — Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C

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

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-C

PANEL REY S A — Type PRC

THAI GYPSUM PRODUCTS PCL — Type C

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

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

10. Mineral and Fiber Board\* — (Optional, Not Shown) - For optional use as an additional layer on one side of wall. Nominal 1/2 in. thick, 4 ft. wide, square edge fiber boards applied with long dimension parallel and centered over studs, in between the studs and the UL Classified Gypsum Board. Fiber boards installed with 1-1/4 in. long, Type W, bugle head, gypsum board screws spaced 12 in. OC. The required UL Classified Gypsum Board is to be installed over the Mineral and Fiberboard. Gypsum board installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layers of UL Classified Gypsum Board.

BLUE RIDGE FIBERBOARD INC — Type SoundStop

\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively. Last Updated on 2022-10-07

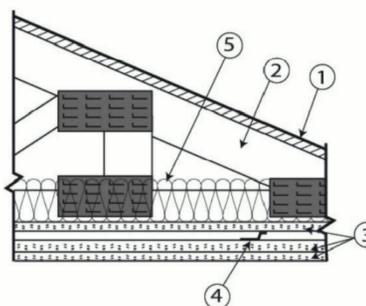
Design No. P571

June 9, 2022

Unrestrained Assembly Rating — 2 Hr.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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

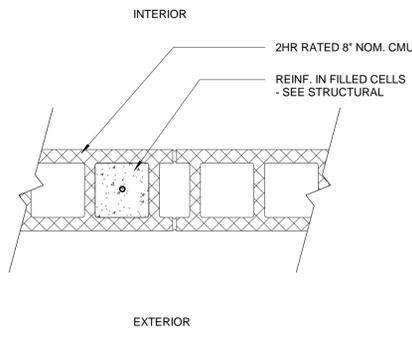


1. Roofing System\* — Any UL Class A, B or C Roofing System (TGfU) or Prepared Roof Covering (TFWZ) acceptable for use over nom 15/32 in. thick wood structural panels, min. grade "C-D" or "Sheathing". Nom 15/32 in. thick wood structural panels secured to trusses with No. 6d ringed shank nails. Nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Construction adhesive is optional and may be used with either nails or staples.

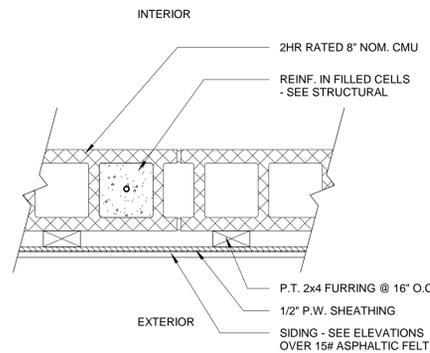
2. Trusses — Pitch or Parallel chord trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Truss members secured together min. 0.0356 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approximately 7/8 in. centers with four rows of teeth per inch of plate width. Minimum parallel chord truss depth shall be 18 in. Where the truss intersects with the interior face of the exterior walls, the min truss depth shall be 3 in. and a min. average depth of 18 in.. Where the truss intersects with the interior face of the exterior walls, batts and blankets shall be firmly packed against the intersection of the bottom chords and the plywood sheathing. Min roof slope of 3/12 unless American Gypsum boards are used, in which case there is no minimum slope.

3. Gypsum Board\* — Three layers of 5/8 in. thick by 4 ft wide gypsum board. Top layer boards installed with the long dimension perpendicular to trusses with end joints located under bottom of trusses. End joints in adjacent rows shall be staggered on adjacent trusses. Top layer boards secured to bottom chord of trusses with 1-5/8 in. long Type S bugle head screws, spaced max 8 in. OC. Screws located 1-1/2 to 2 in., and 3/4 in. from side and end joints, respectively. Bottom two layers of gypsum board installed perpendicular to furring channels with end joints centered on the furring channels. Middle layer boards secured to each furring channel with 1 or 1-1/4 in. long Type S-12 bugle head steel screws spaced max 8 in. OC. Screws located 1-1/2 to 2 in. and 5/8 to 3/4 in. from side and end joints, respectively. Face layer boards secured to each furring channel through the middle layer with 1-5/8 or 1-7/8 in. long Type S-12 bugle head steel screws, spaced a max of 8 in. OC. Screws located 1-1/2 to 2 in. and 5/8 to 3/4 in. from side and end joints, respectively. End joints and side joints of the face layer boards shall be staggered a min of 16 in. from the joints in the middle layer. If end joints of the face layer boards are not centered on the furring channels, the end of boards at the end joint shall be attached to the middle layer boards with 1-1/2 in. long Type G steel screws spaced 8 in. OC and located 1-1/2 in. from the end joint. All screws shall be driven no further than flush with the face of the boards in order not to damage the core of the boards.

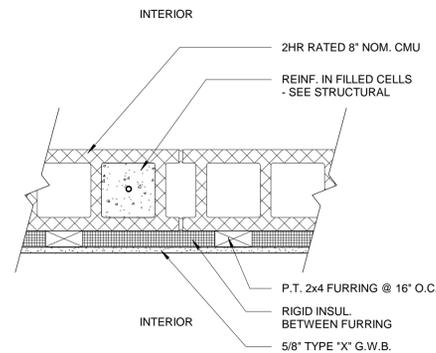
AMERICAN GYPSUM CO — Type AG-C



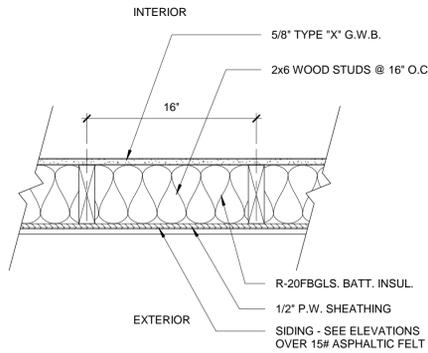
**WALL TYPE "WA"**  
2HR REF UL U906



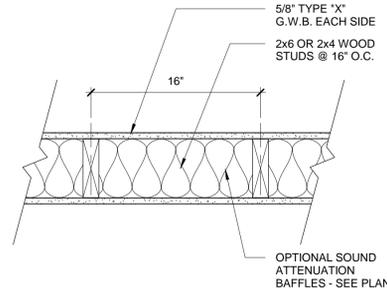
**WALL TYPE "WA2"**  
2HR REF UL U906



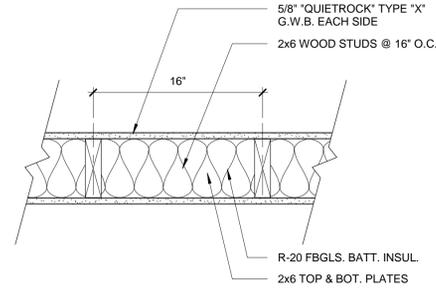
**WALL TYPE "WA3"**  
2HR REF UL U906



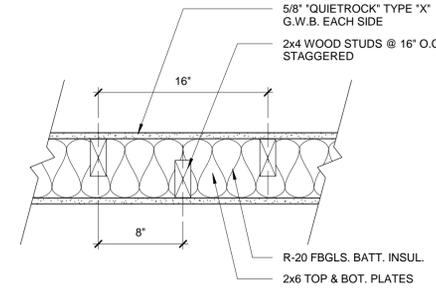
**WALL TYPE "WB"**  
1HR REF. NCBC 721.1 - 16-1.3



**WALL TYPE "WC"**  
1HR REF. NCBC 721.1 - 15-1.1

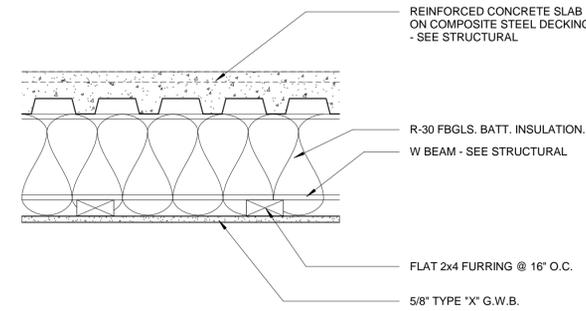


**WALL TYPE "WD"**  
1HR REF. NCBC 721.1 - 15-1.1

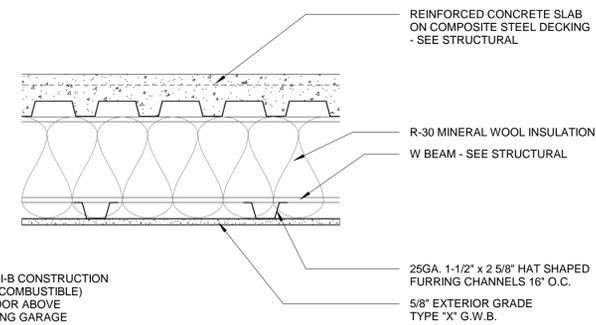


**WALL TYPE "WD2"**  
1HR REF UL U340

① Wall Types  
1 1/2" = 1'-0"

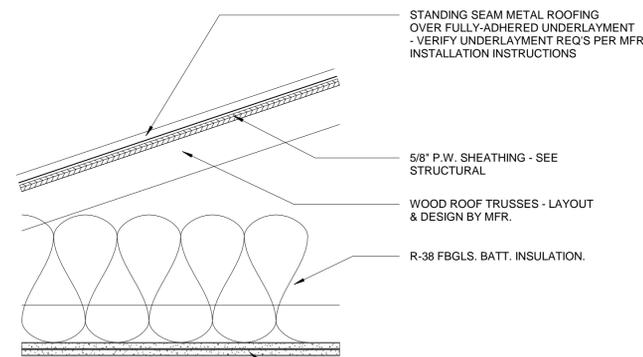


**FLOOR TYPE "FA2"**  
1HR REF UL D798



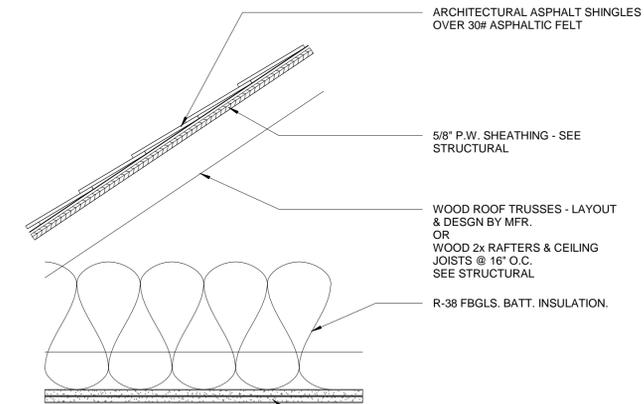
**FLOOR TYPE "FA1"**  
1HR REF UL D798

② Floor Ceiling Types  
1 1/2" = 1'-0"



**ROOF TYPE "RA"**  
1HR REF UL D798

③ Roof Ceiling Types  
1 1/2" = 1'-0"



**ROOF TYPE "RB"**  
1HR REF UL D798

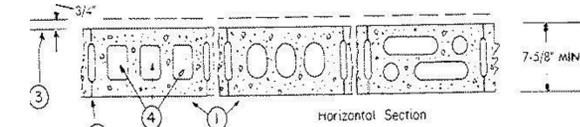
Design No. U905

June 6, 2022

Bearing Wall Rating — 2 HR.  
Nonbearing Wall Rating — 2 HR.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



- Concrete Blocks\* — Various designs. Classification D-2 (2 hr).  
See Concrete Blocks category for list of eligible manufacturers.
  - Mortar — Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.
  - Portland Cement Stucco or Gypsum Plaster — Add 1/2 hr to classification if used. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max. Classification of 1-1/2 hr. Attached to concrete blocks (Item 1).
  - Loose Masonry Fill — If all core spaces are filled with loose dry expanded slag, expanded clay or shale (Rotary Kin Process), water repellent vermiculite masonry fill insulation, or silicone treated perlite loose fill insulation add 2 hr to classification.
  - Foamed Plastic\* — (Optional-Not Shown) — 1-1/2 in. thick max. 4 ft wide sheathing attached to concrete blocks (Item 1).
  - ATLAS ROOFING CORP — "EnergyShield Pro Wall Insulation", "EnergyShield Pro 2 Wall Insulation", "EnergyShield CGF Pro and EnergyShield Ply Pro
  - DUPONT DE NEMOURS, INC. — Types Thermo Sheathing, Thermo Light Duty Insulation, Thermo Heavy Duty Insulation, Thermo Metal Building Board, Thermo White Finish Insulation, Thermo X ARMOR G Exterior Insulation, Thermo X ARMOR G Exterior Insulation, Thermo IH Insulation, Thermo Plus Liner Panel, Thermo Heavy Duty Plus (HDP), TUFF-R™ ci Insulation, Thermo Butler Stywall Insulation Board and Thermo Morton Heavy Duty Insulation Board
  - FIRESTONE BUILDING PRODUCTS CO L L C — "Enverge™ CI Foil Exterior Wall Insulation" and "Enverge™ CI Glass Exterior Wall Insulation"
  - HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — Types "Xci-Class A", "Xci Foil (Class A)", "Xci 286"
  - RMAX, A BUSINESS UNIT OF SIKA CORPORATION — Types "TSX-8500", "ECOMAXGI FR", "TSX-8510", "ECOMAX xi FR White", "ECOMAXci", "ECOMAXci FR Air Barrier", "Thermasheath-XP", "Thermasheath", "Durasheath", "Thermasheath-3", "Durasheath-3".
  - JOHNS MANVILLE — Type "AP Foil-Faced Foam Sheathing"
  - 5A. Building Units\* — As an alternate to Items 5, min. 1-in thick polyisocyanurate composite foamed plastic insulation boards, nom. 48 by 48 or 96 in.
  - HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — "Xci NB", "Xci Ply"
  - RMAX, A BUSINESS UNIT OF SIKA CORPORATION — "Thermasheath-Si", "ECOBASEci", "ThermaBase-Ci", "ECOMAXGI FR Ply", "ECOMAXci Ply".
- \*Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.  
Last Updated on 2022-06-06

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Wall, Floor, & Roof  
Types**  
Date: **December 23, 2022**  
Scale: **As indicated**

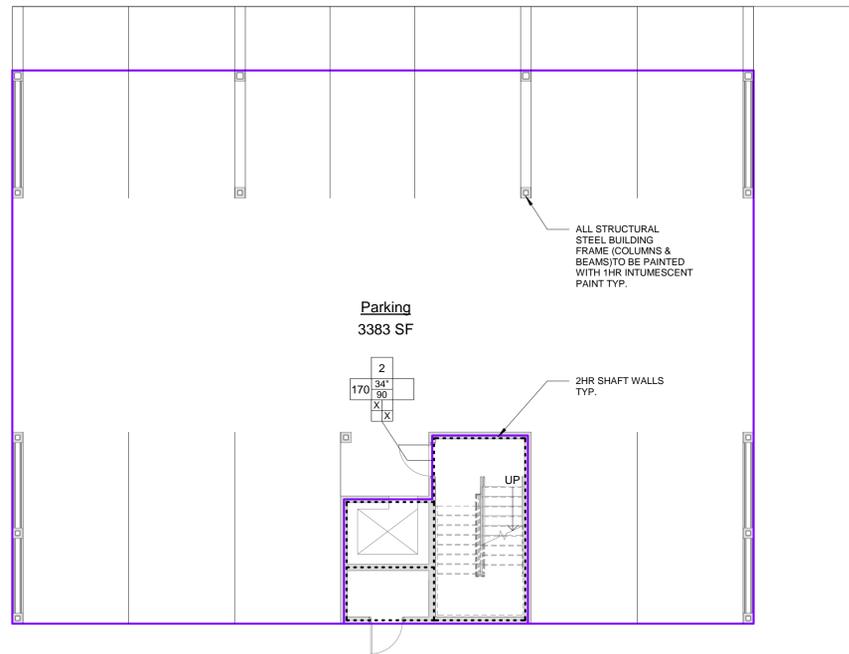
The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.



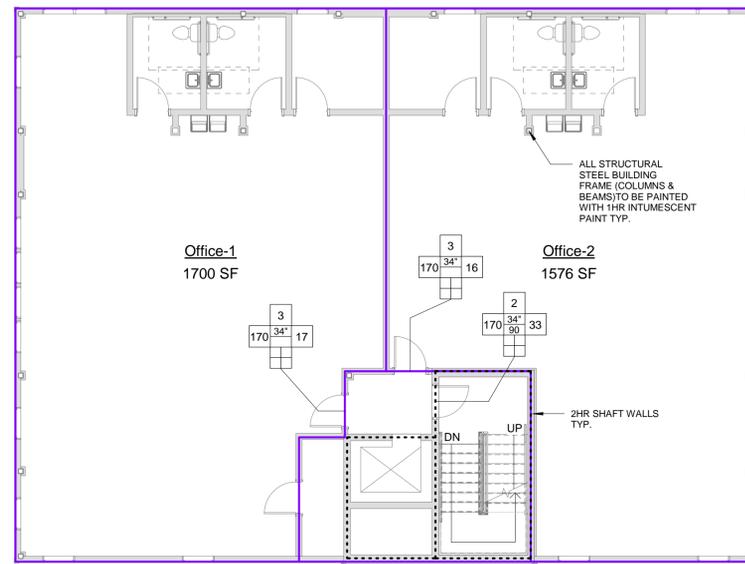
Revisions:

No.	Description	Date

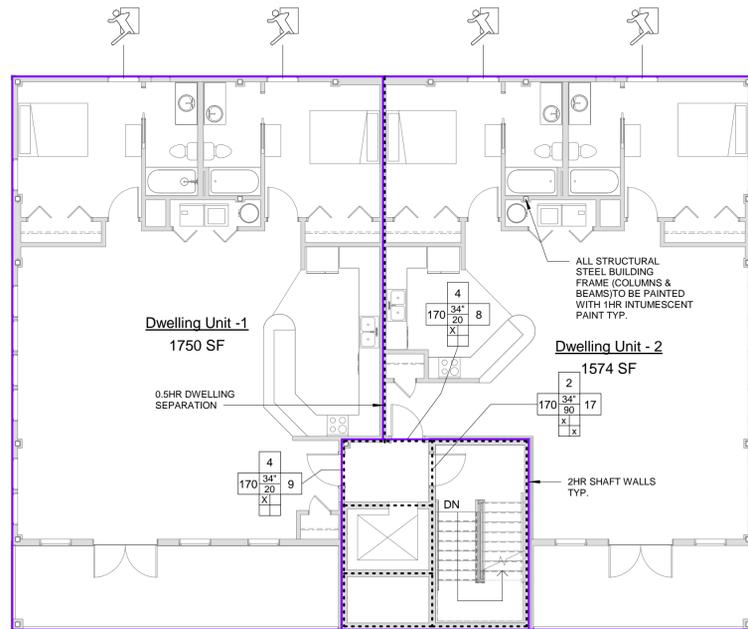
Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A004**



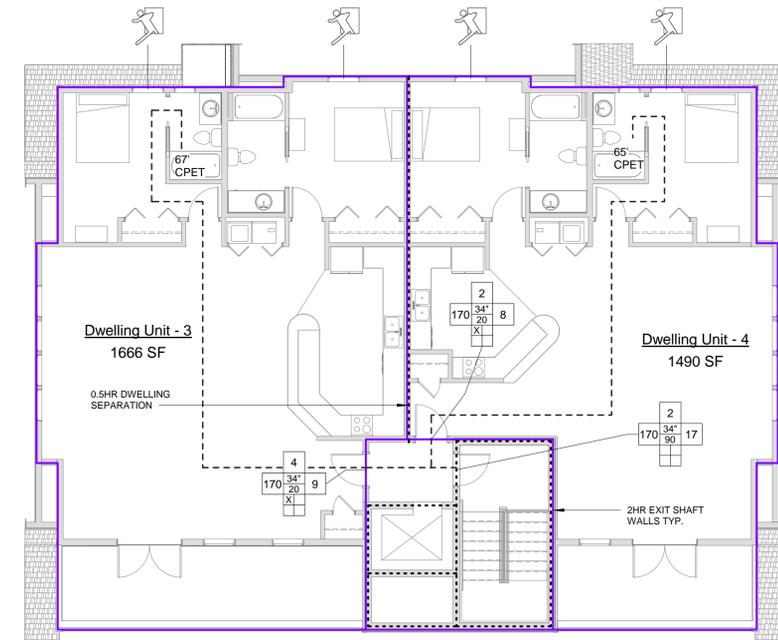
1 (1) Ground Floor  
1/8" = 1'-0"



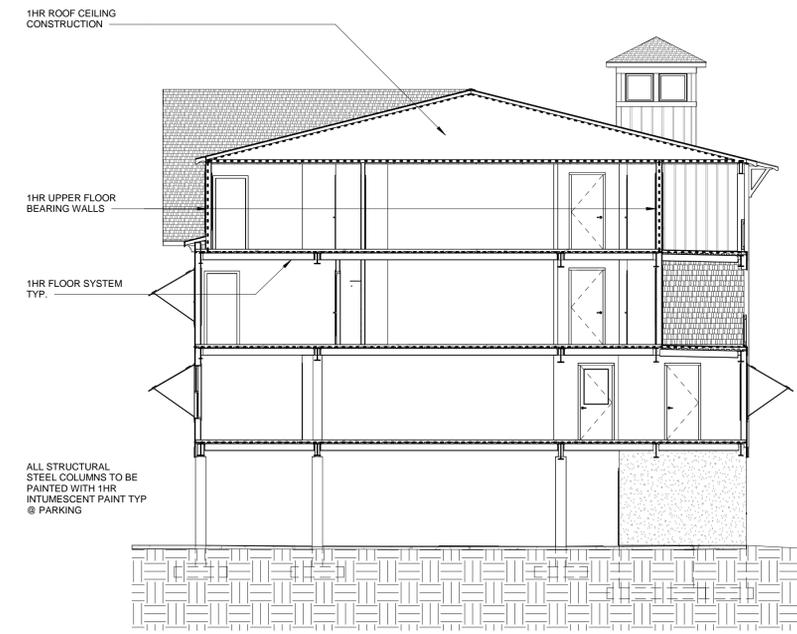
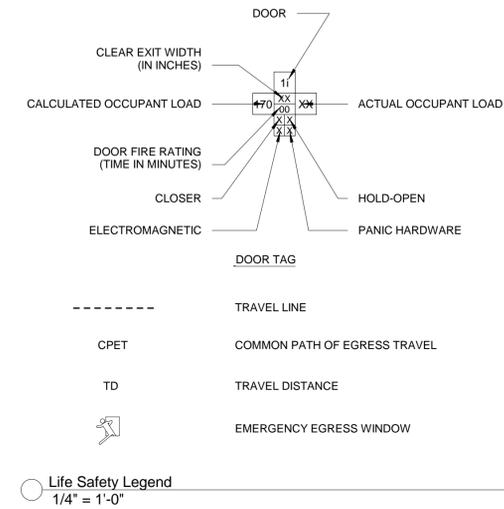
2 (2) Second Floor  
1/8" = 1'-0"



3 (3) Third Floor  
1/8" = 1'-0"



4 (4) Fourth Floor  
1/8" = 1'-0"



5 Life Safety Section  
1/8" = 1'-0"

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Life Safety Plans**  
Date: **December 23, 2022**  
Scale: **As indicated**

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Occupant Schedule					
Name	Area	Occupancy	Occupancy S.F. Type	Area Per Occupant	Occupants
Parking	3383 SF	Parking Garages	Gross	200 SF	17
Office-1	1700 SF	Business Areas	Gross	100 SF	17
Office-2	1576 SF	Business Areas	Gross	100 SF	16
Dwelling Unit - 1	1750 SF	Residential	Gross	200 SF	9
Dwelling Unit - 2	1574 SF	Residential	Gross	200 SF	8
Dwelling Unit - 3	1666 SF	Residential	Gross	200 SF	9
Dwelling Unit - 4	1490 SF	Residential	Gross	200 SF	8
					84



Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A005**

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Ground Floor Plan**  
Date: **December 23, 2022**  
Scale: **As indicated**

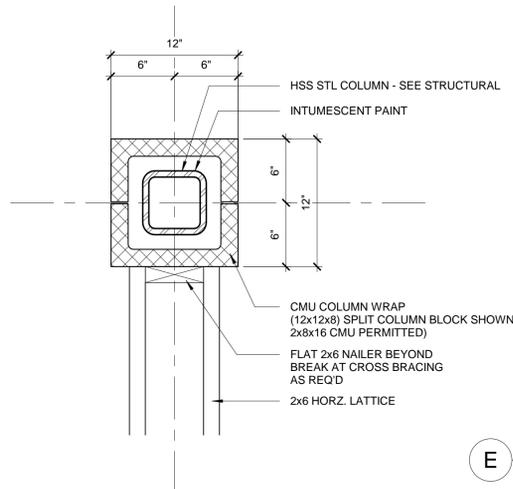
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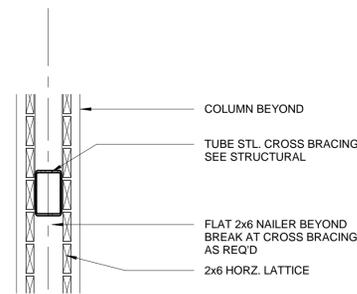
Revisions:

No.	Description	Date

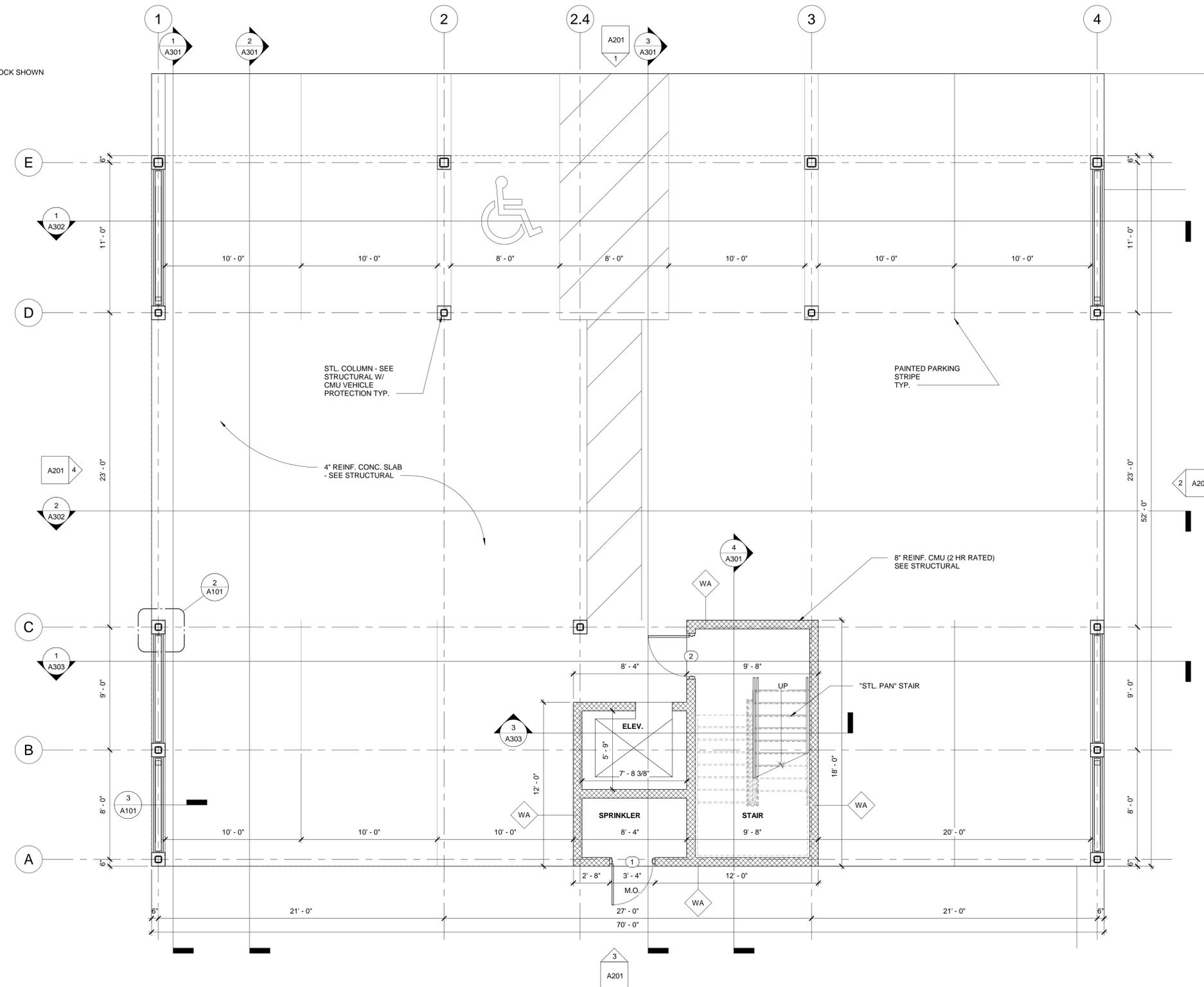
Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A101**



2 Typical Column Wrap  
1 1/2" = 1'-0"



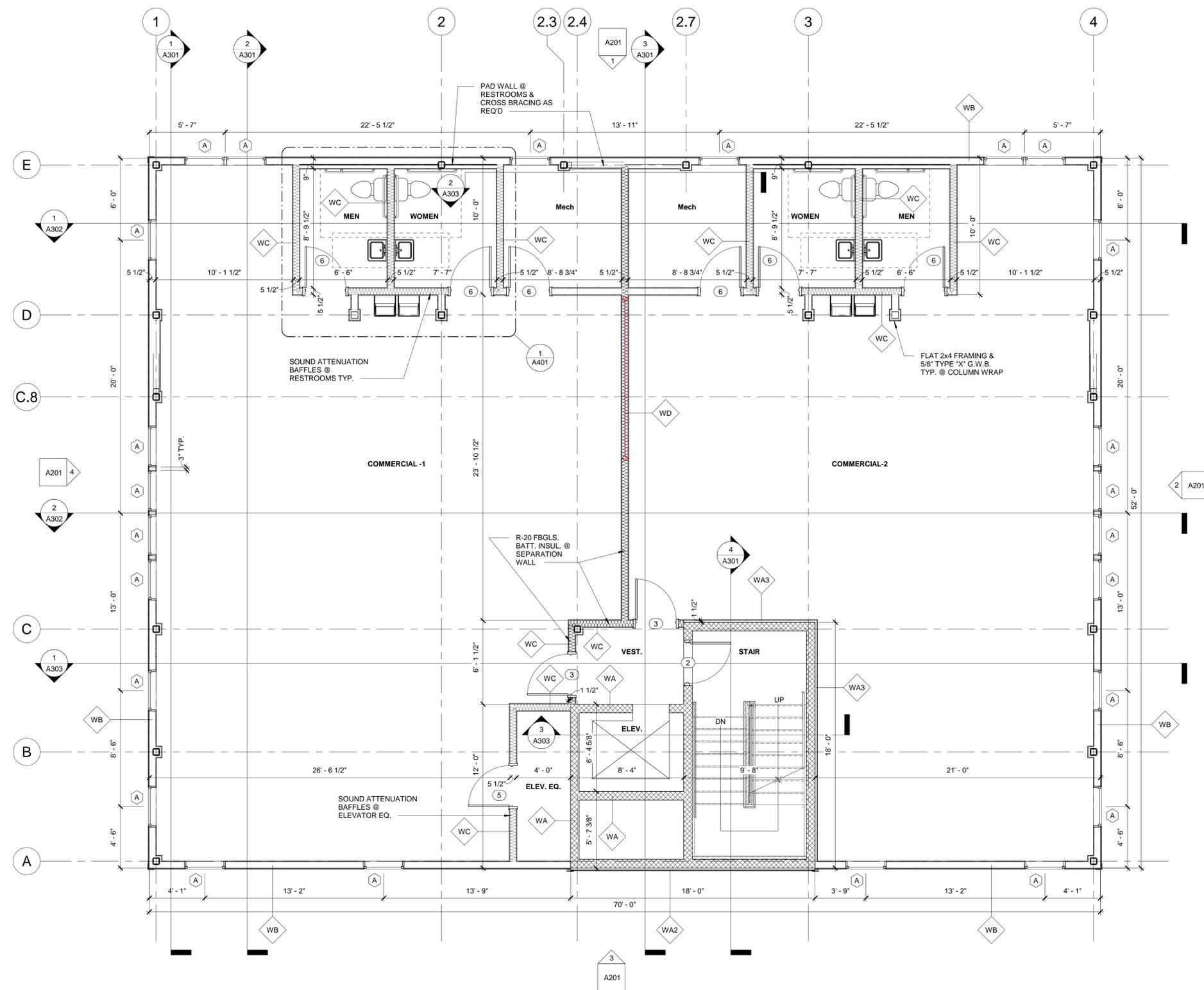
3 Lattice Detail  
3/4" = 1'-0"



1 First Floor Plan  
1/4" = 1'-0"

Door Schedule										
Type	Door Style	Door				Frame		Comments		
		Width	Height	Door Material	Finish	Fire Rating	Material		Finish	
1	Single	3'-0"	7'-0"	STL.	PNTD	90	HM	PNTD		
2	Single	3'-0"	7'-0"	STL.	PNTD	90	HM	PNTD		
3	Single	3'-0"	7'-0"	WOOD	PNTD		HM	PNTD		
4	Single	3'-0"	7'-0"	WOOD	PNTD		HM	PNTD		
5	Single	3'-0"	7'-0"	STL.	PNTD		HM	PNTD		
6	Single	3'-0"	7'-0"	WOOD	PNTD		HM	PNTD		
7	Single	2'-10"	6'-8"	WOOD	PNTD		WOOD	PNTD		
8	Single	2'-0"	6'-8"	WOOD	PNTD		WOOD	PNTD		
9	Pocket	2'-10"	6'-8"	WOOD	PNTD		WOOD	PNTD		
10	Bi-Fold	6'-0"	6'-8"	WOOD	PNTD		WOOD	PNTD		
11	Bi-Fold	5'-0"	6'-8"	WOOD	PNTD		WOOD	PNTD		
12	Frenchwood	6'-0"	6'-8"	WOOD	PNTD		WOOD	PNTD		

Window Schedule										
Type Mark	Model	Type	Manufacturer	R.O.		Thermal Resistance (R)	Heat Transfer Coefficient (U)	Solar Heat Gain Coefficient	Visual Light Transmittance	Comments
				Width	Height					
A	Double Hung	36" x 60"	TBD	3'-1"	5'-1"	2.8571 (h-ft <sup>2</sup> -F)/BTU	0.3500 BTU/(h-ft <sup>2</sup> -F)	0.26	0.42	
B	Double Hung	24" x 36"	TBD	2'-1"	3'-1"	2.8571 (h-ft <sup>2</sup> -F)/BTU	0.3500 BTU/(h-ft <sup>2</sup> -F)	0.26	0.42	
C	Fixed	32" x 32"	TBD	2'-8"	2'-8"	2.8571 (h-ft <sup>2</sup> -F)/BTU	0.3500 BTU/(h-ft <sup>2</sup> -F)	0.26	0.42	



1 Second Floor Plan  
1/4" = 1'-0"

Project: **BK Associates Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy Nags Head, NC 27959**  
Title: **Second Floor Plan**  
Date: **December 23, 2022**  
Scale: **1/4" = 1'-0"**

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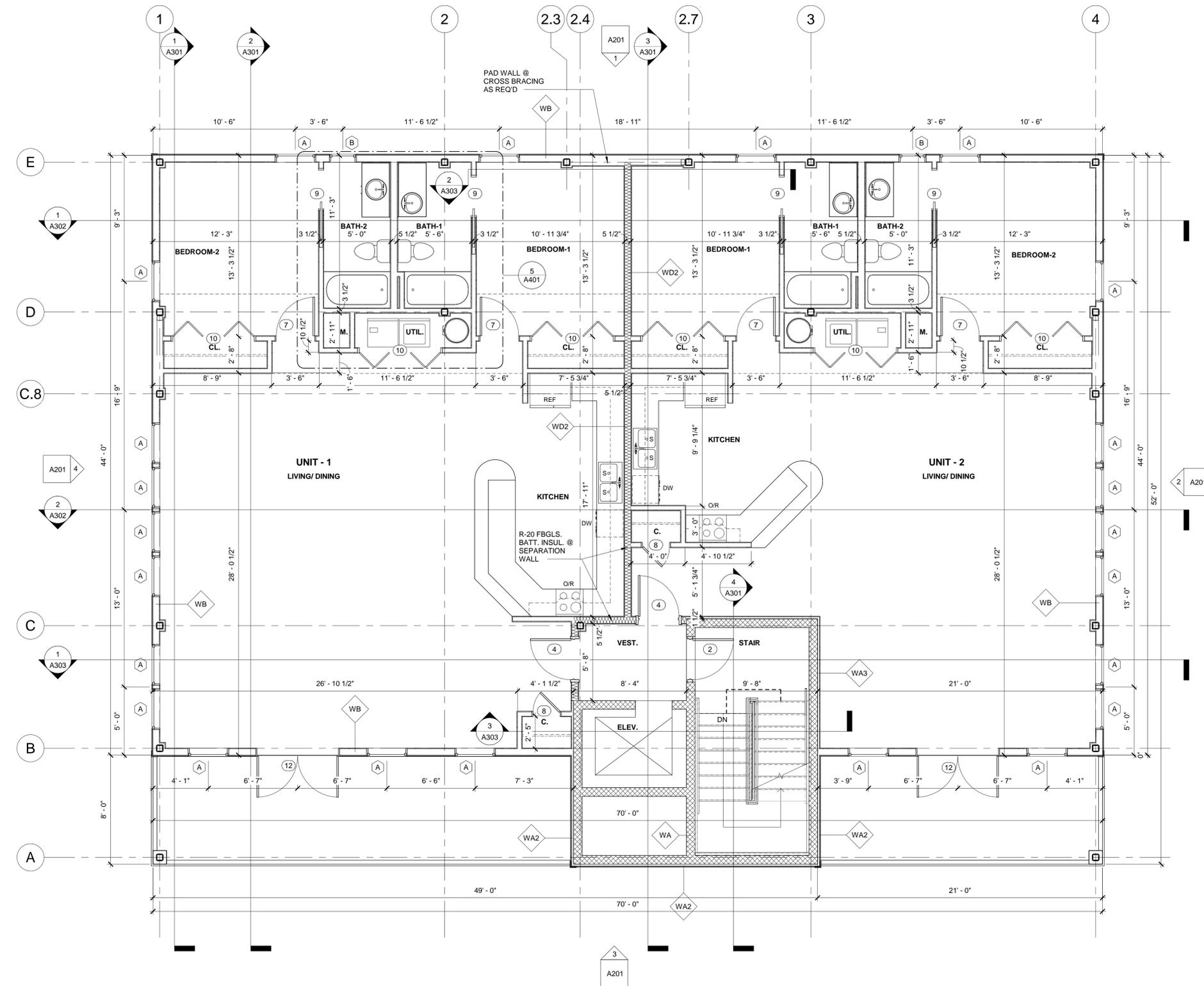


Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File:

**A102**



Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Third Floor Plan**  
Date: **December 23, 2022**  
Scale: **1/4" = 1'-0"**

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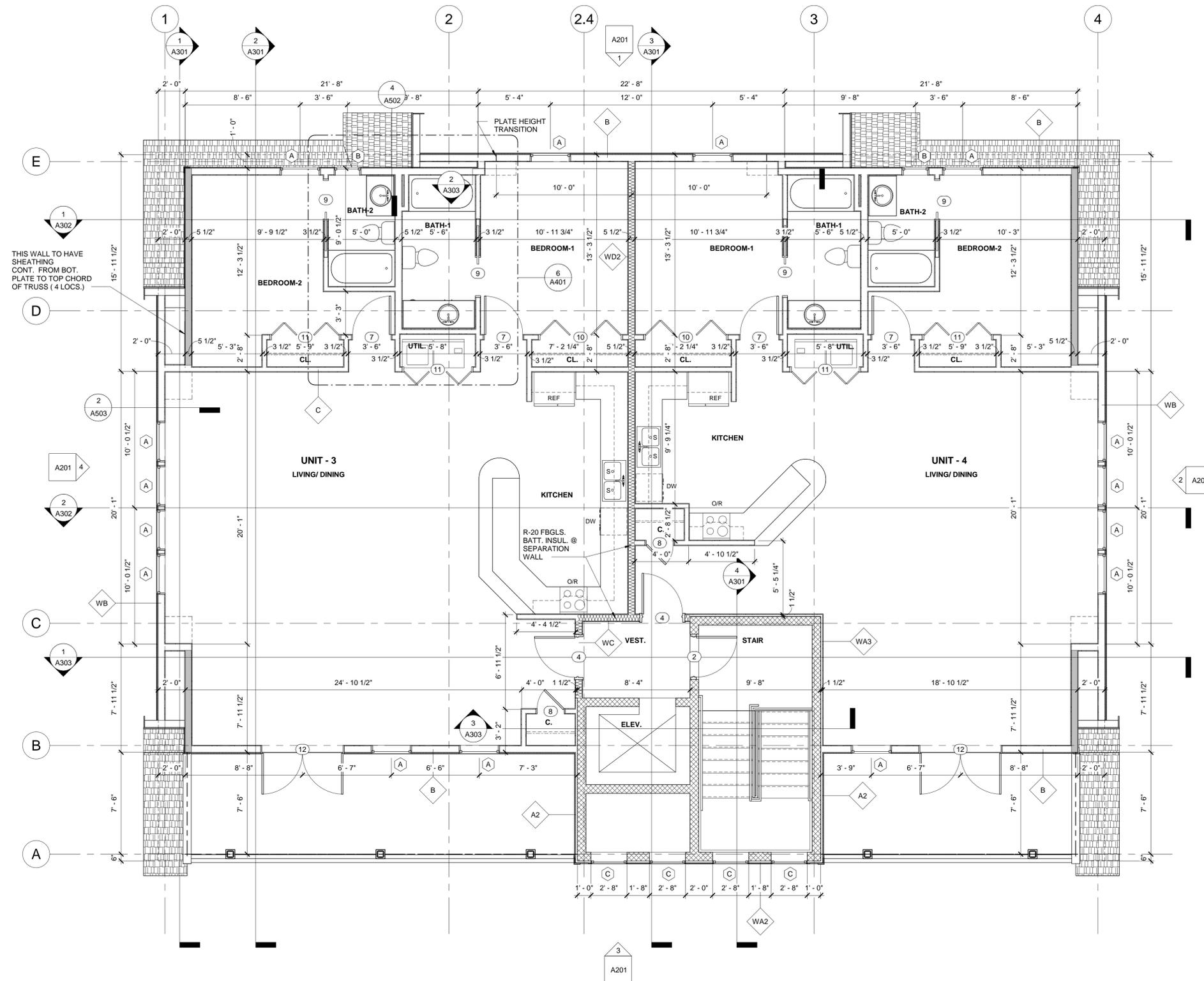


Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A103**

1 Third Floor Plan  
1/4" = 1'-0"



(4) Fourth Floor  
1/4" = 1'-0"

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Fourth Floor Plan**  
Date: **December 23, 2022**  
Scale: **1/4" = 1'-0"**

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Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A104**

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Tower & Roof Plans**  
Date: **December 23, 2022**  
Scale: **1/4" = 1'-0"**

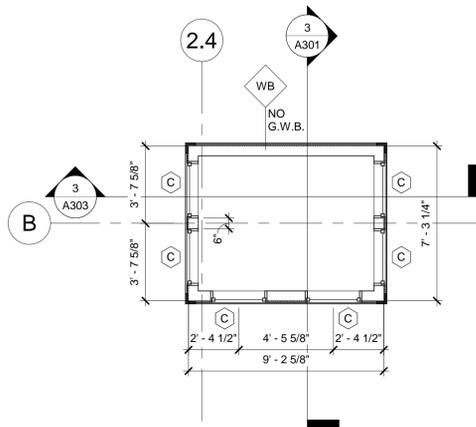
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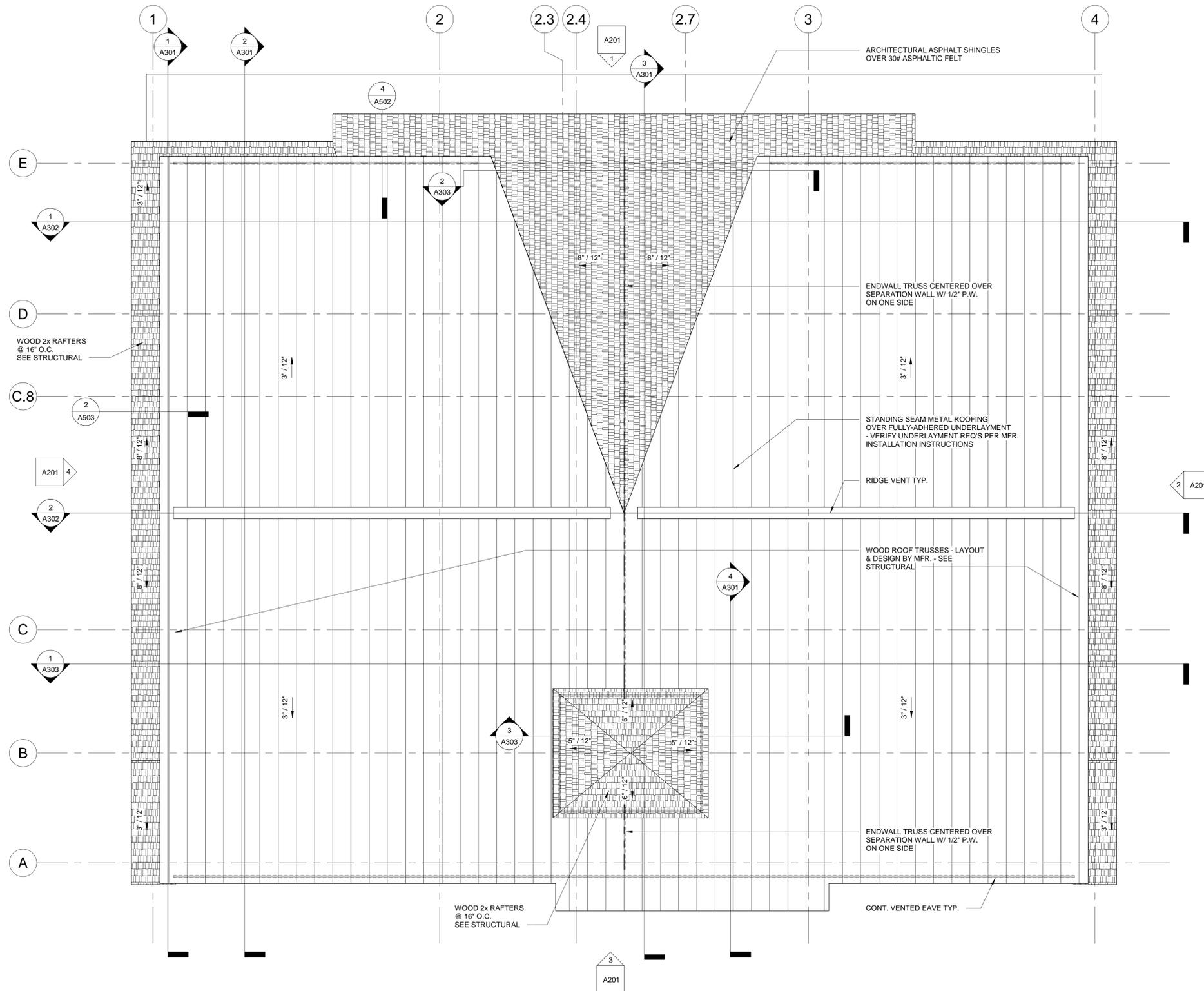
Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A105**



1 (5) Tower Plan  
1/4" = 1'-0"



2 Roof Plan  
1/4" = 1'-0"

**ROOF VENTING CALCS.**

**ZONE A**

3640 SF ROOF AREA  
@ 1/300 = **1,748 SQ. IN. VENTING REQUIRED**  
**2,380 SQ. IN. VENTING PROVIDED**  
EAVE  
(874 SQ. IN. REQ'D (50%))  
10 SQ. IN. PER LINEAR FOOT  
x 110 LINEAR FT. OF EAVE  
**1,100 SQ. IN. PROVIDED**  
UPPER THIRD OF ROOF (RIDGE)  
(874 SQ. IN. REQ'D (50%))  
20 SQ. IN. PER LINEAR FOOT  
x 64 VENTS  
**1,280 SQ. IN. PROVIDED**

**ZONE B (TOWER ROOF)**

67 SF ROOF AREA  
@ 1/150 = **32 SQ. IN. VENTING REQUIRED**  
**380 SQ. IN. VENTING PROVIDED**  
EAVE  
(874 SQ. IN. REQ'D (50%))  
10 SQ. IN. PER LINEAR FOOT  
x 38 LINEAR FT. OF EAVE

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Elevations**  
Date: **December 23, 2022**  
Scale: **3/16" = 1'-0"**

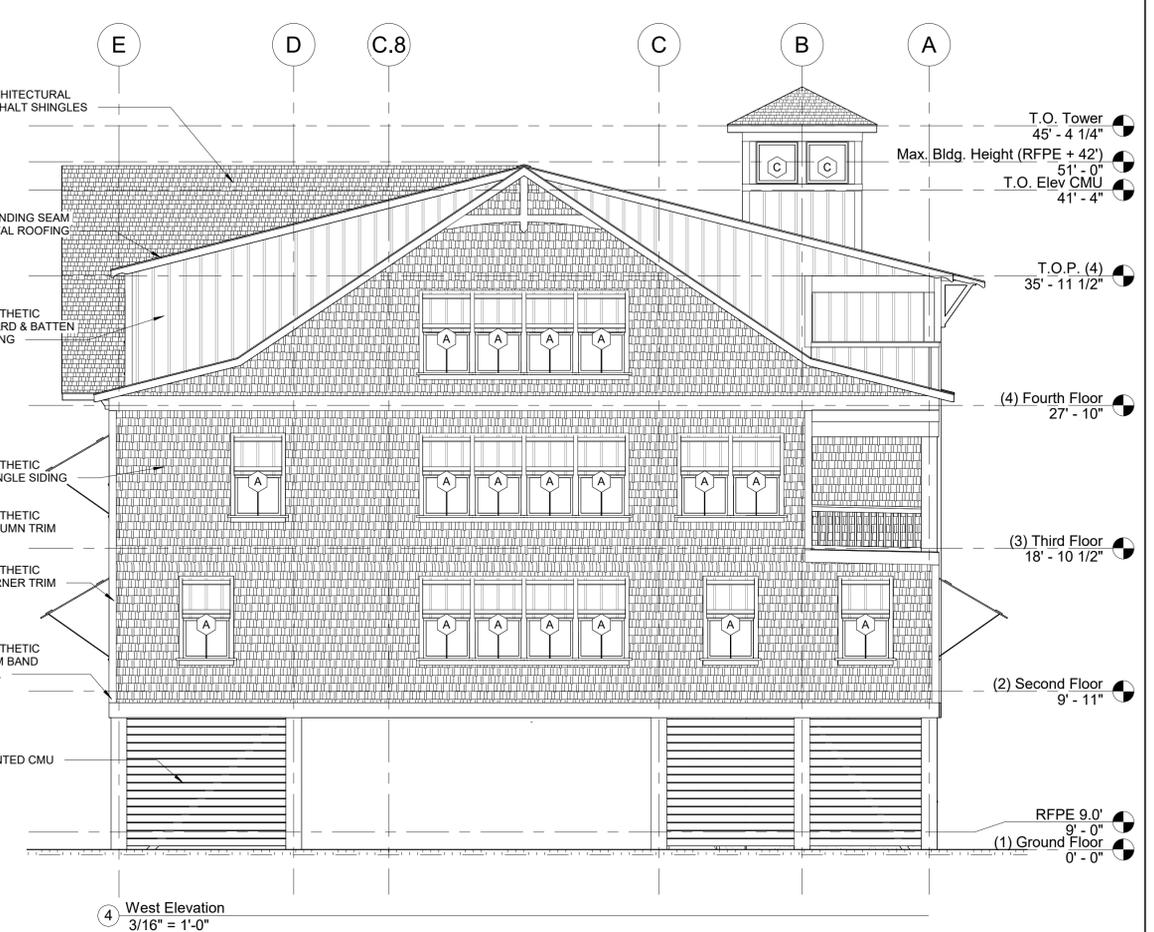
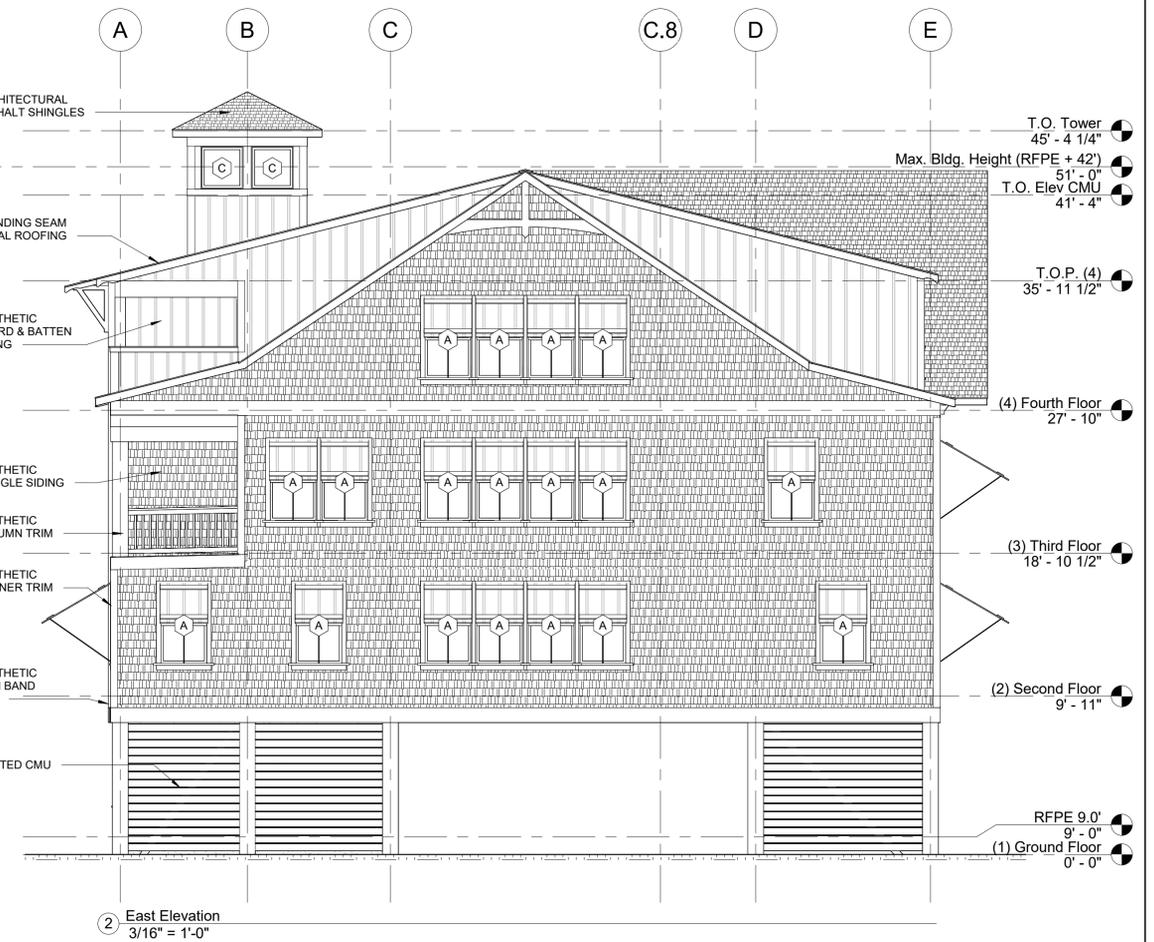
The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.

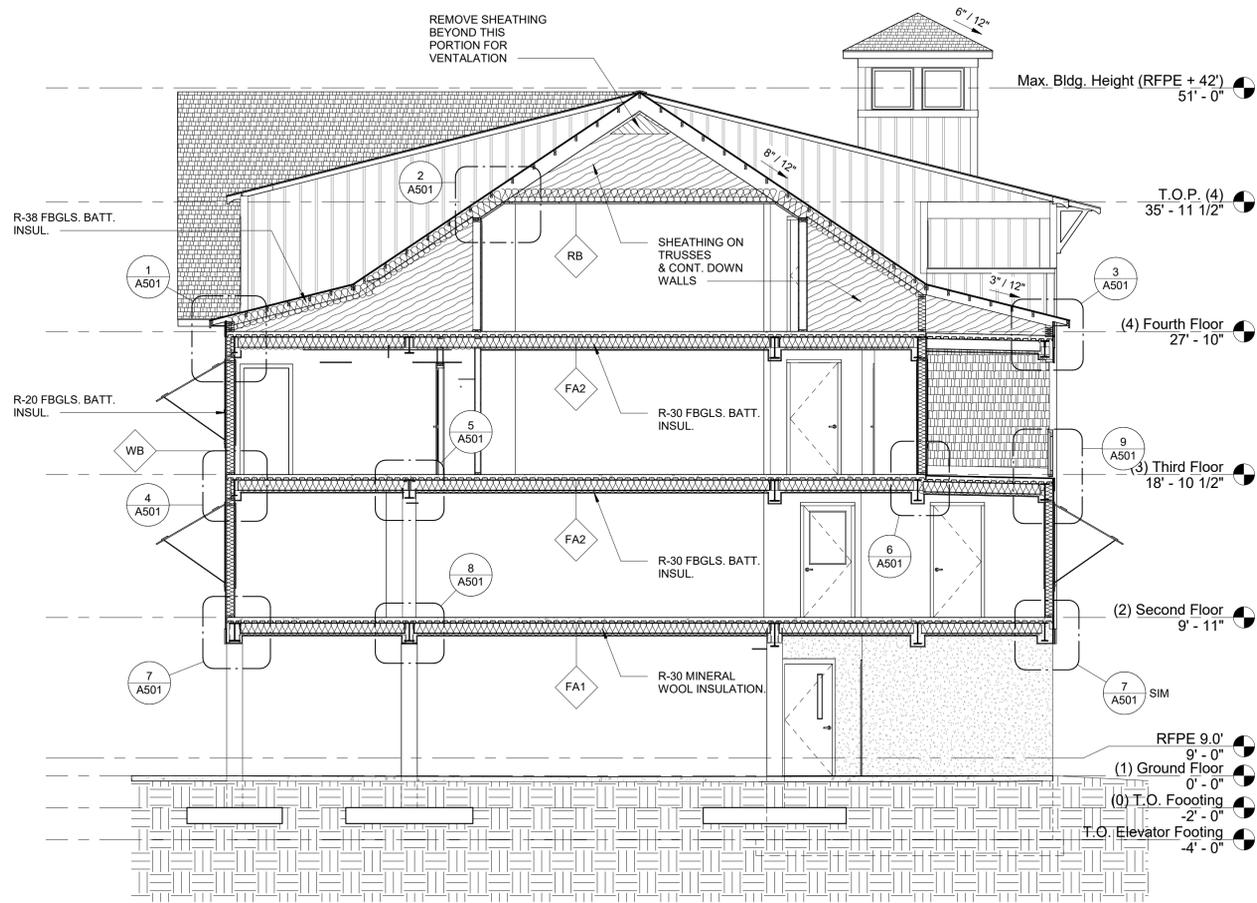


Revisions:

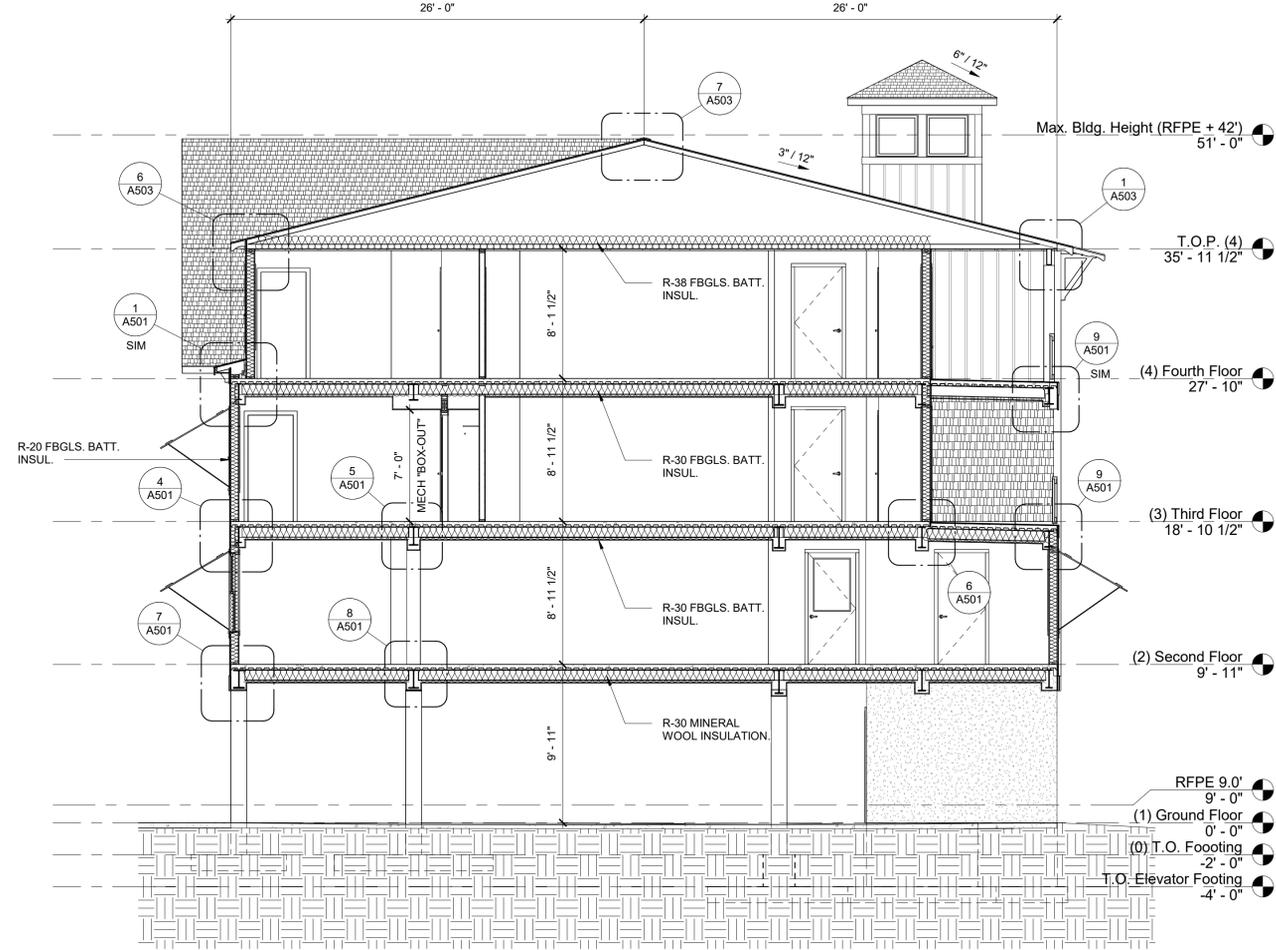
No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
CAD File: **A201**

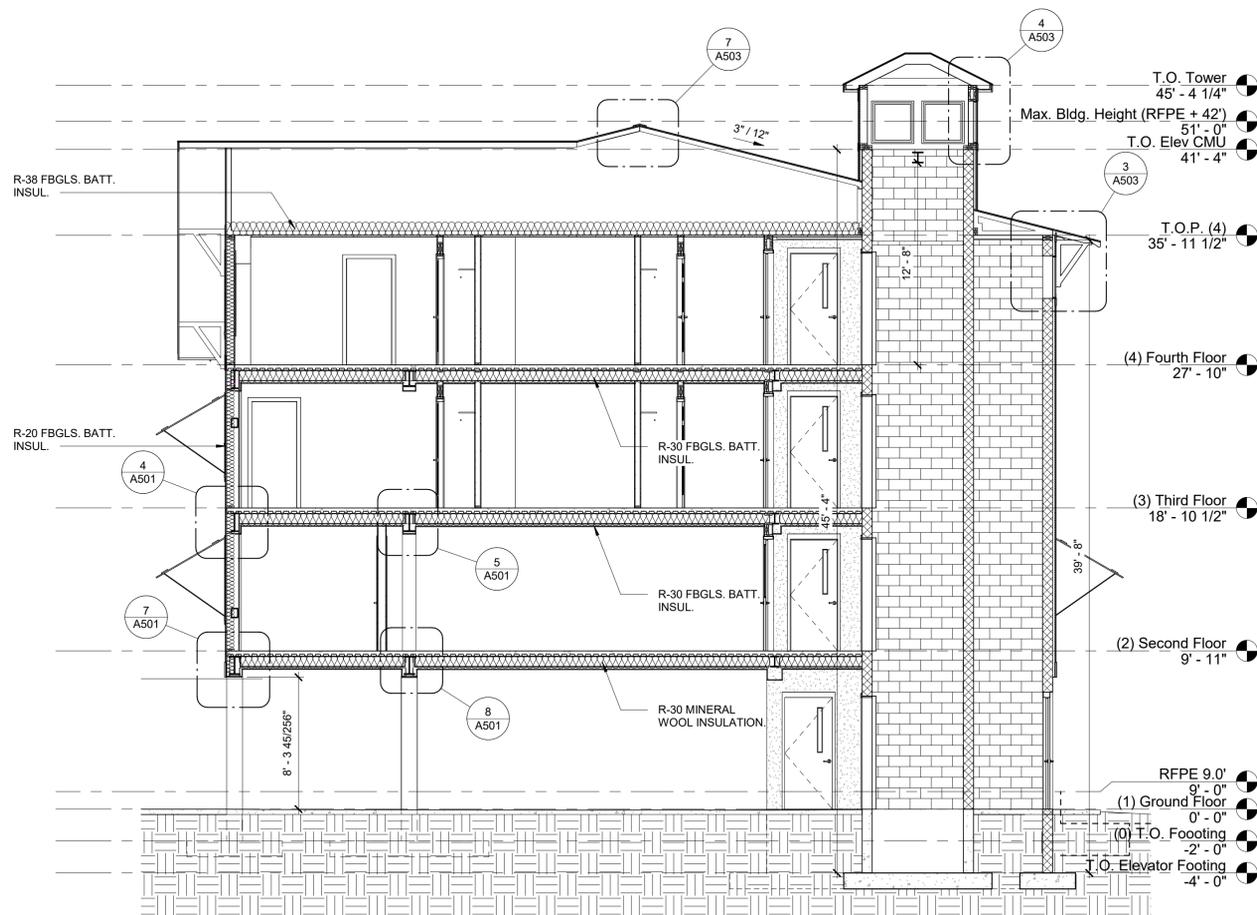




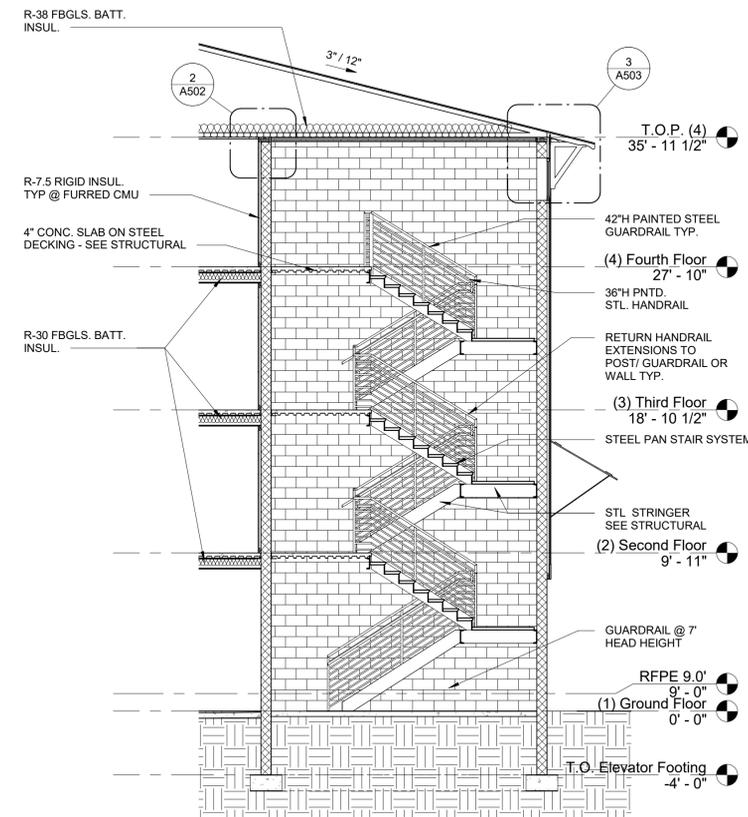
1 Building Section @ End  
3/16" = 1'-0"



2 Typical Building Section  
3/16" = 1'-0"



3 Building Section @ Elevator  
3/16" = 1'-0"



4 Section @ Stair  
3/16" = 1'-0"

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Building Sections**  
Date: **December 23, 2022**  
Scale: **3/16" = 1'-0"**

The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.

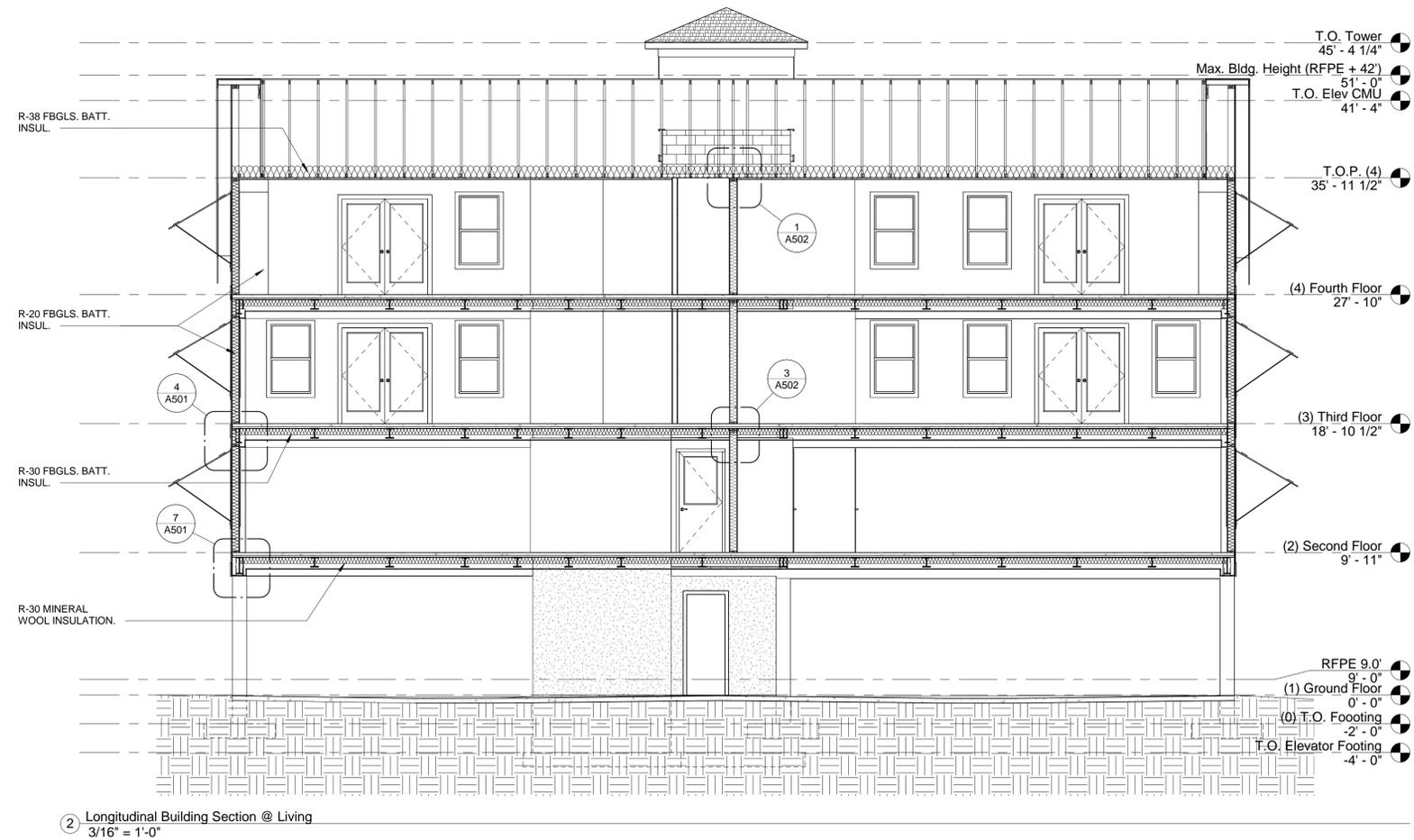
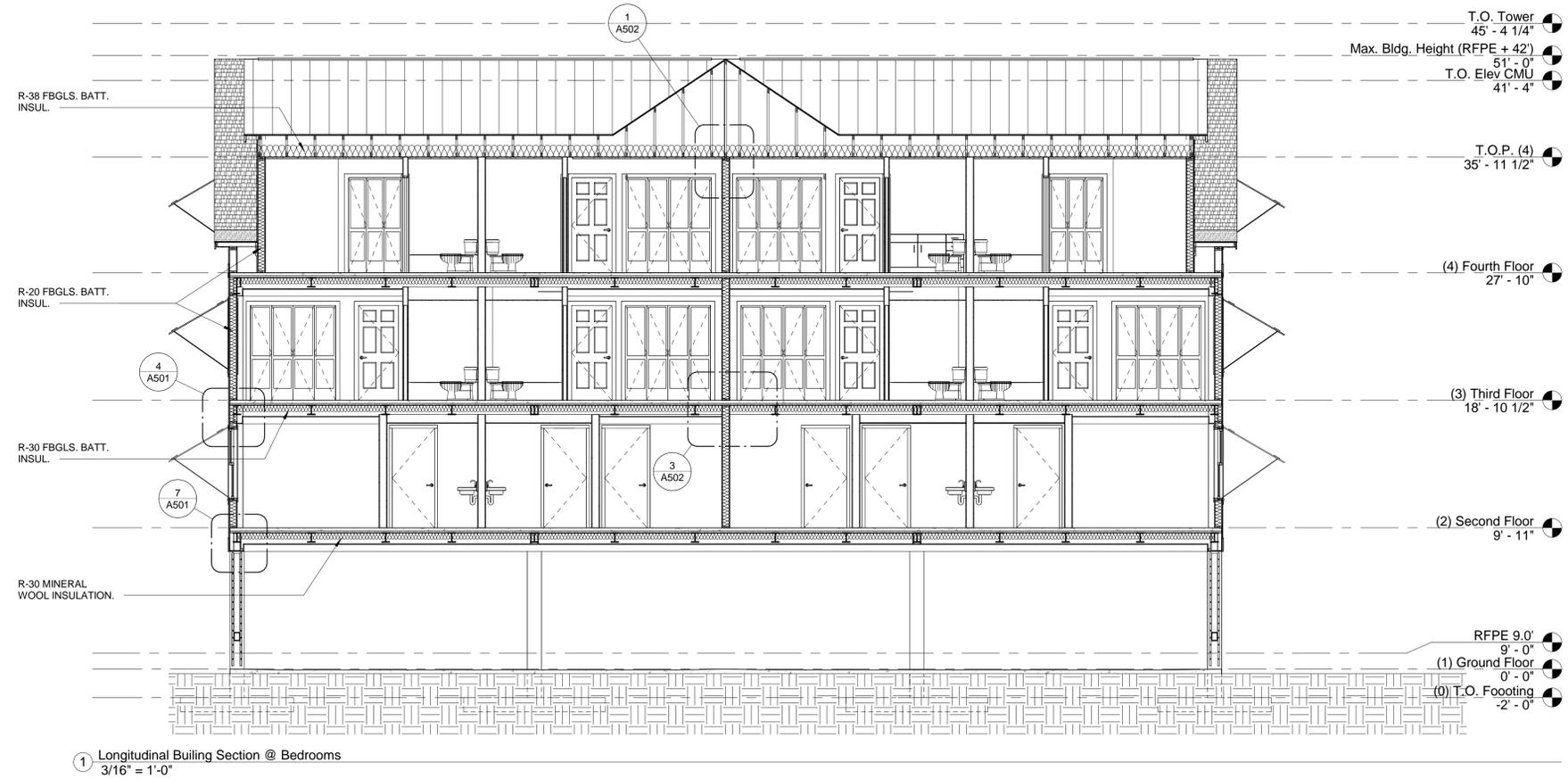


Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File:

**A301**



Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Building Sections**  
Date: **December 23, 2022**  
Scale: **3/16" = 1'-0"**

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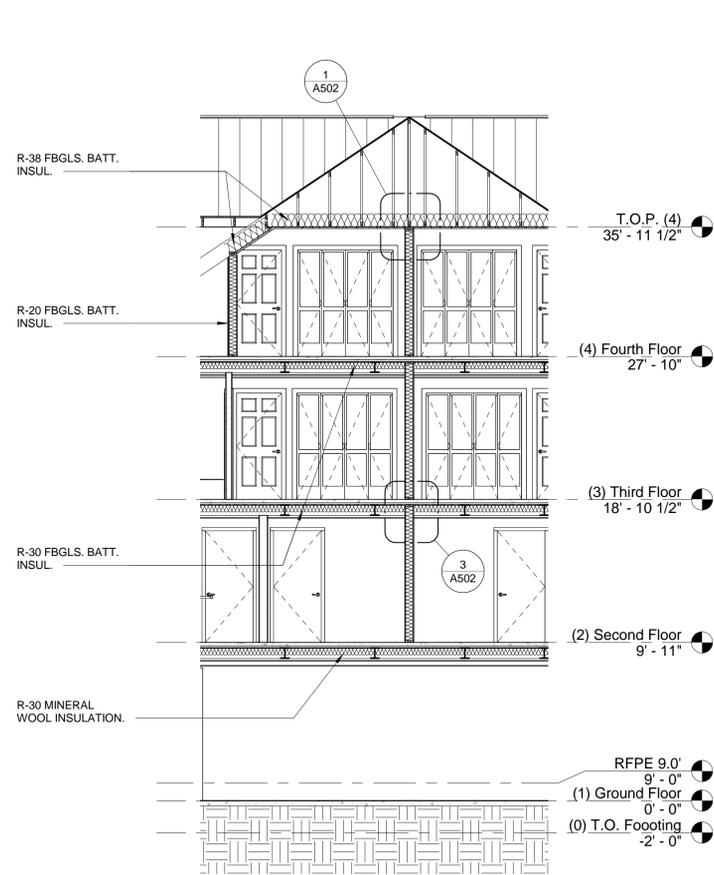
Revisions:

No.	Description	Date

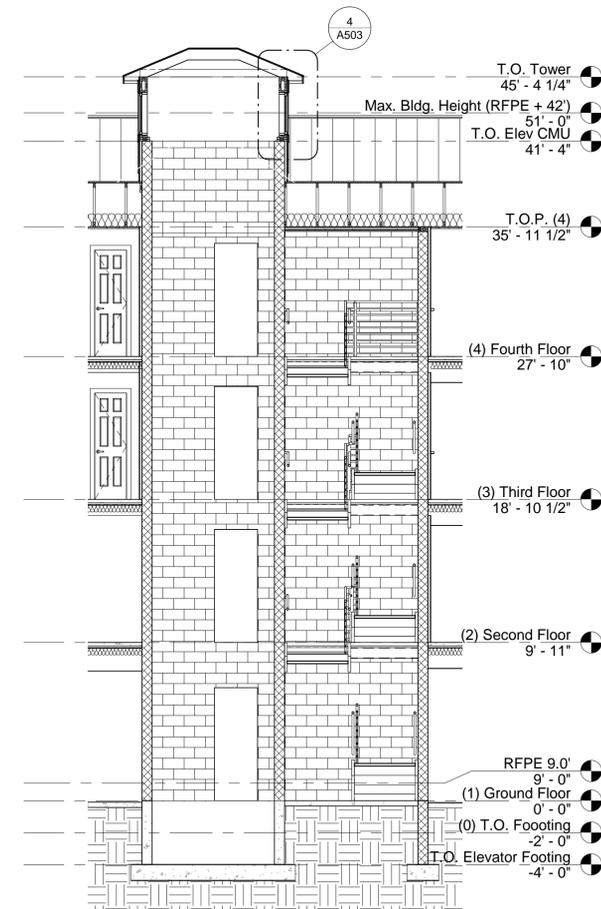
Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A302**



① Longitudinal Building Section @ Stair  
3/16" = 1'-0"



② Section @ Gable  
3/16" = 1'-0"



③ Section @ Elevator Tower  
3/16" = 1'-0"

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Building Sections**  
Date: **December 23, 2022**  
Scale: **3/16" = 1'-0"**

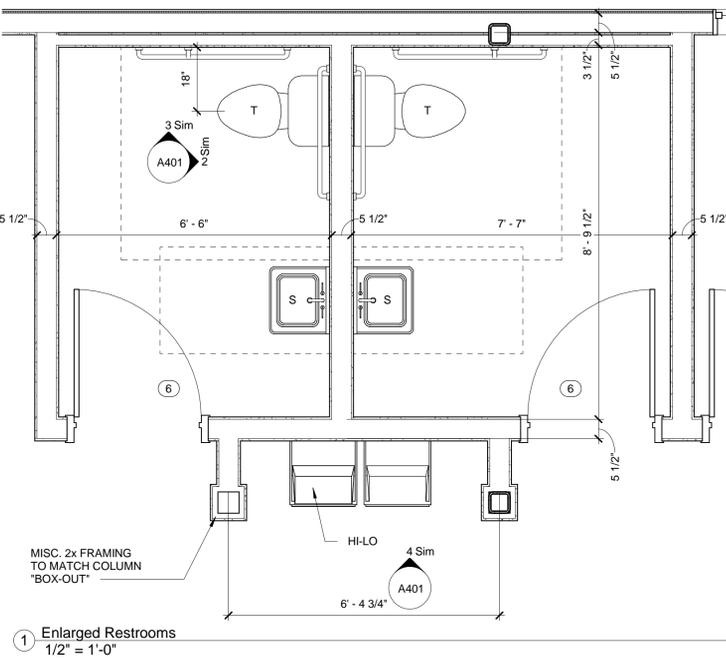
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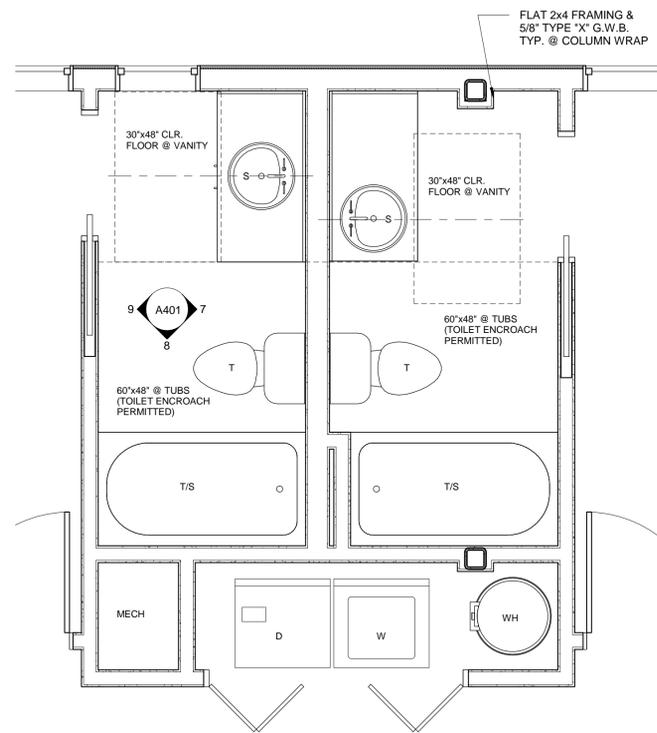
Revisions:

No.	Description	Date

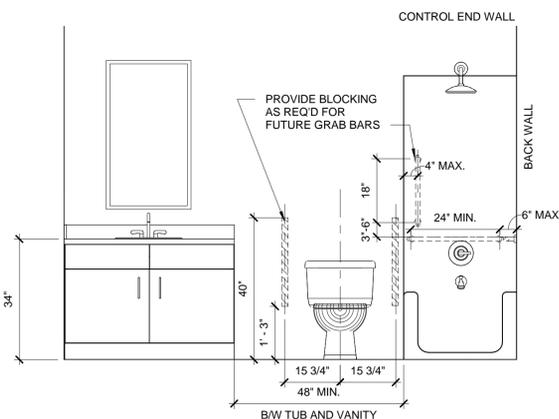
Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A303**



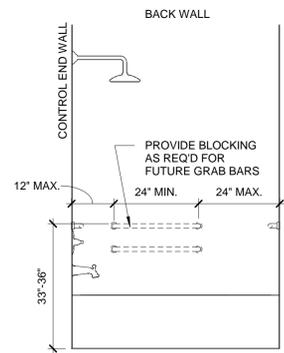
1 Enlarged Restrooms  
1/2" = 1'-0"



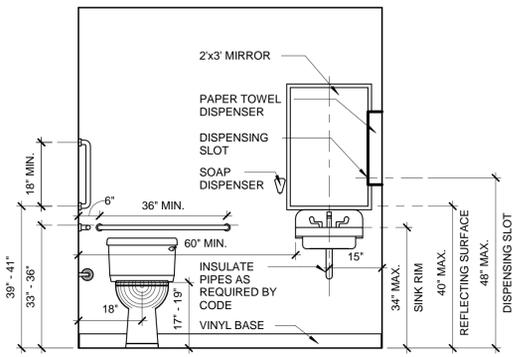
5 Enlarged Bathroom - Unit 1 (Type "B", Option "B") (Unit 2 Opp Hand)  
1/2" = 1'-0"



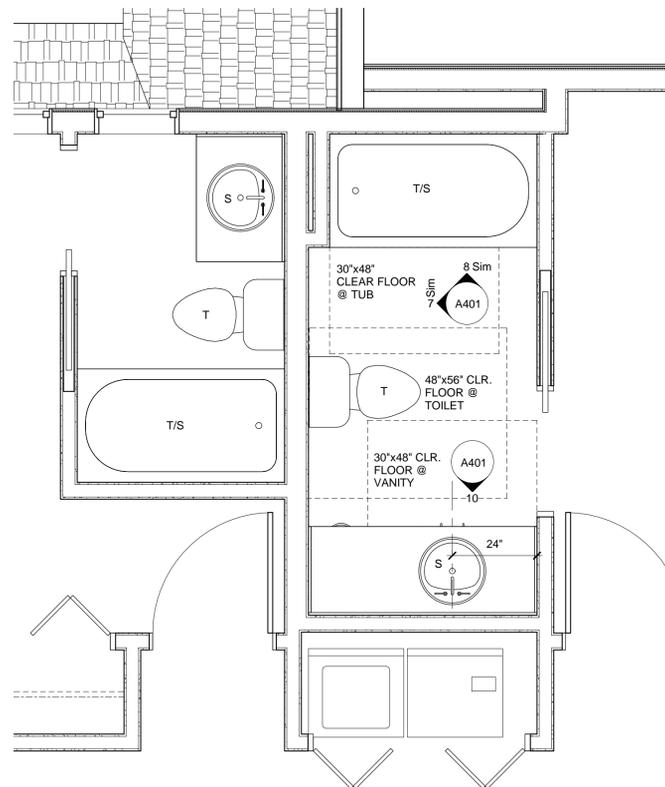
7 Bathroom Elevation - Fixture Wall (Option "A")  
1/2" = 1'-0"



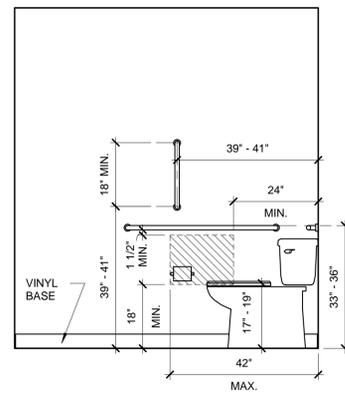
8 Bathroom Elevation - Tub Back Wall  
1/2" = 1'-0"



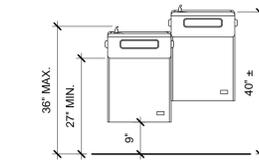
2 Toilet Elevation - LH Front  
1/2" = 1'-0"



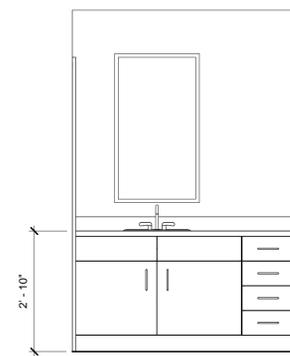
6 Enlarged Bathroom - Unit 3 (Type "B", Option "A")  
1/2" = 1'-0"



3 Toilet Elevation - LH Side  
1/2" = 1'-0"



4 Water Cooler  
1/2" = 1'-0"



10 Bathroom Elevation - Toilet Option "B"  
1/2" = 1'-0"

NOTES:

- ALL RESIDENTIAL UNITS MUST BE TYPE "B" ACCESSIBLE UNITS.
- IN TYPE "B" ACCESSIBLE UNITS EITHER ALL BATHROOMS MUST MEET OPTION "A" OR (ONE) BATHROOM WITHIN THE UNIT MUST MEET OPTION "B"
- RESIDENTIAL UNITS 1 & 2 BATHROOMS MEET THE OPTION "A" REQUIREMENT
- RESIDENTIAL UNITS 3 & 4 BATHROOMS MEET THE OPTION "B" REQUIREMENT.

Project: **BK Associates  
Mixed Use Building**

Project No: **21068**

Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**

Title: **Interior Elevations**

Date: **December 23, 2022**

Scale: **1/2" = 1'-0"**

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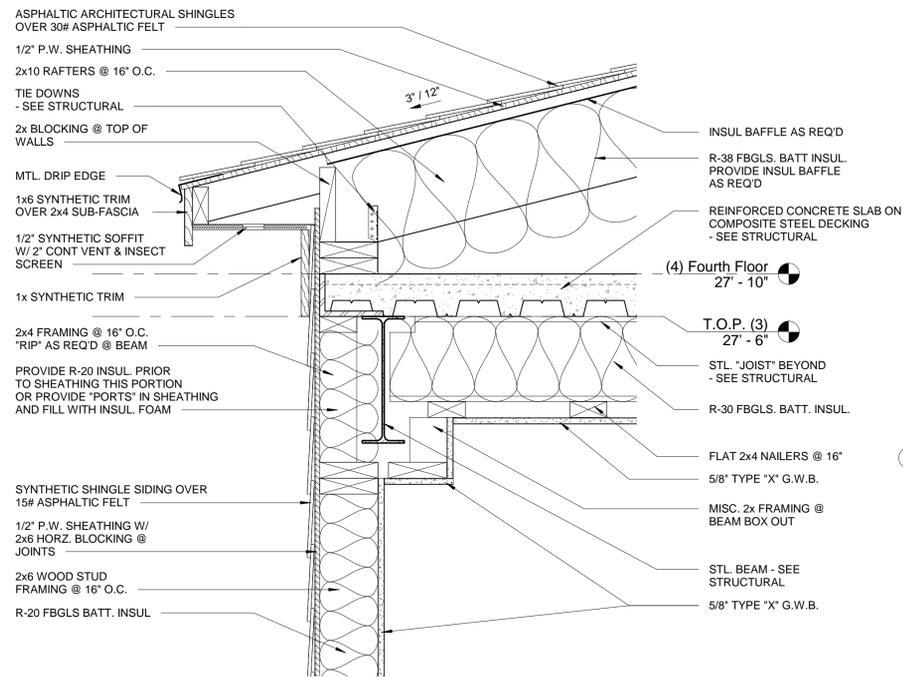


Revisions:

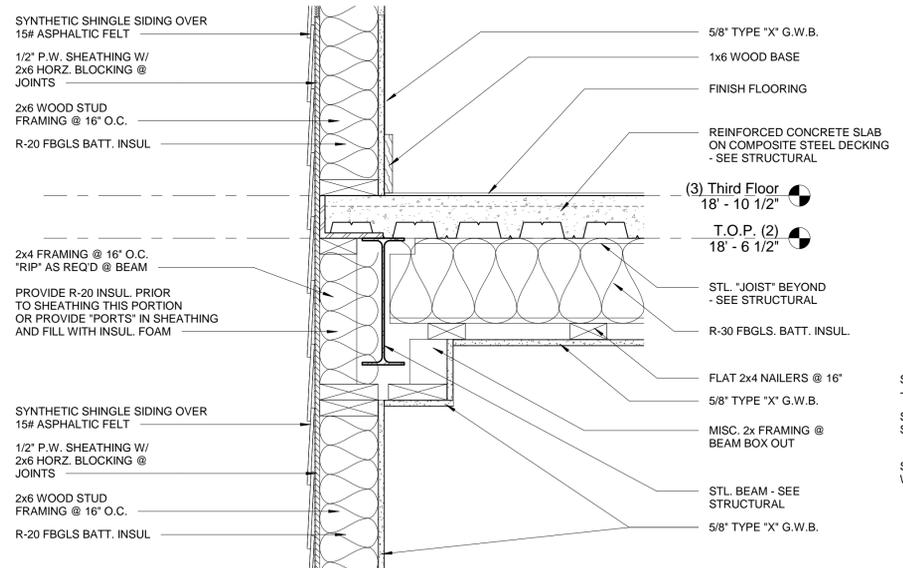
No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File:

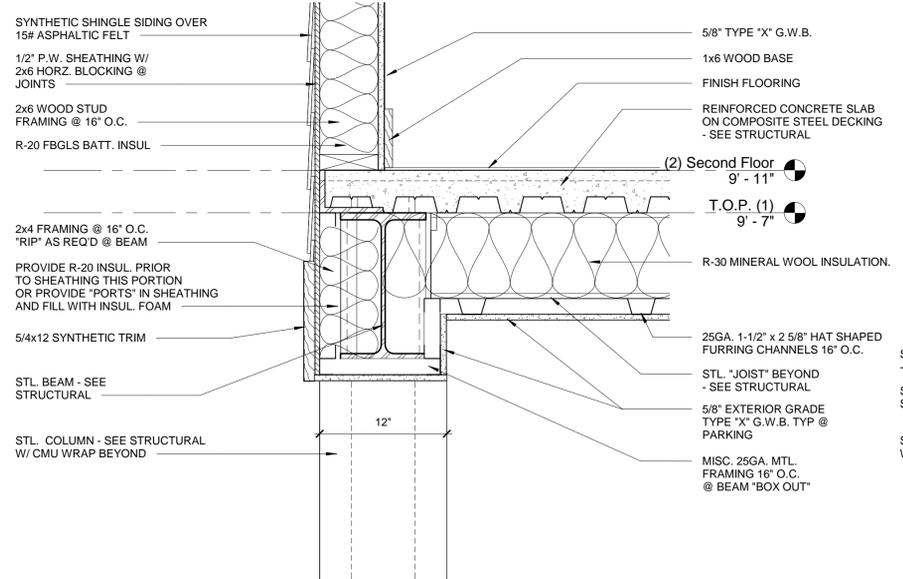
A401



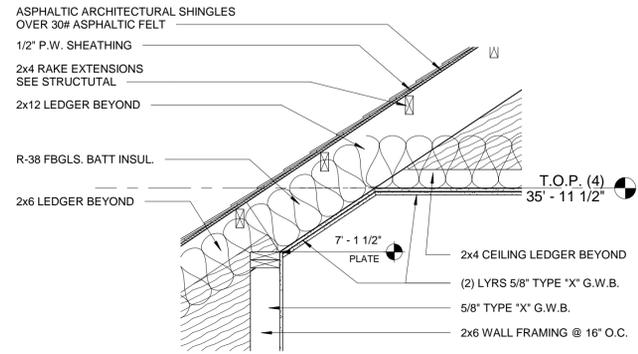
1 Detail @ Low Eave  
1 1/2" = 1'-0"



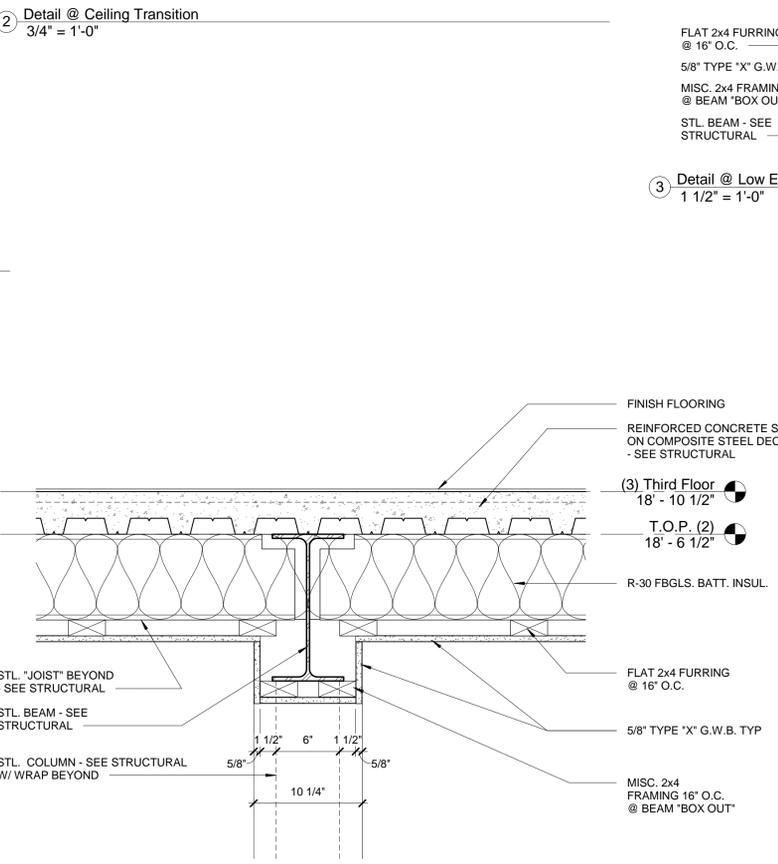
4 Detail @ Exterior Wall / Floor Beam  
1 1/2" = 1'-0"



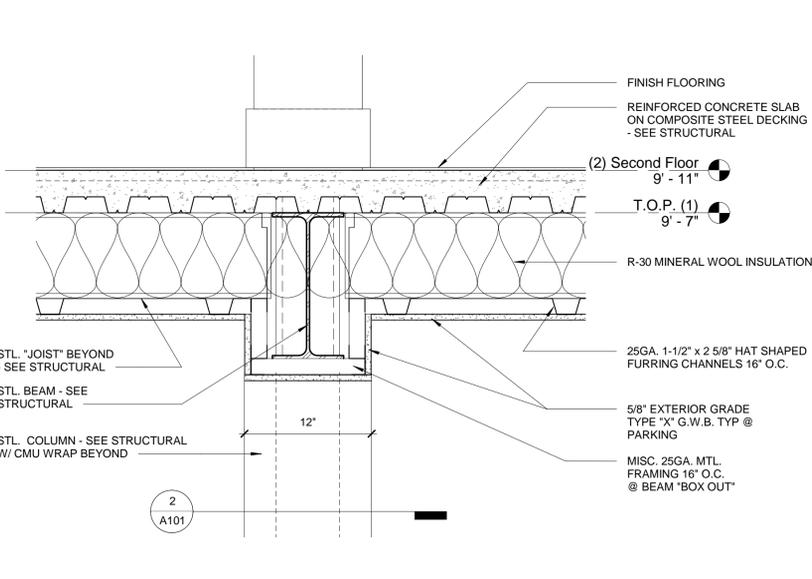
7 Detail @ Exterior Wall / Lower Floor Beam  
1 1/2" = 1'-0"



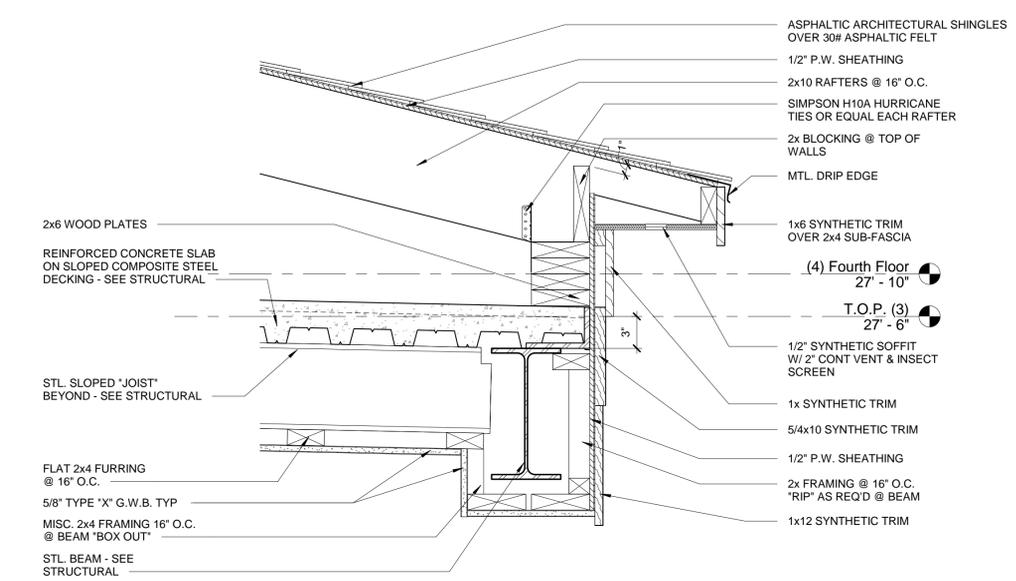
2 Detail @ Ceiling Transition  
3/4" = 1'-0"



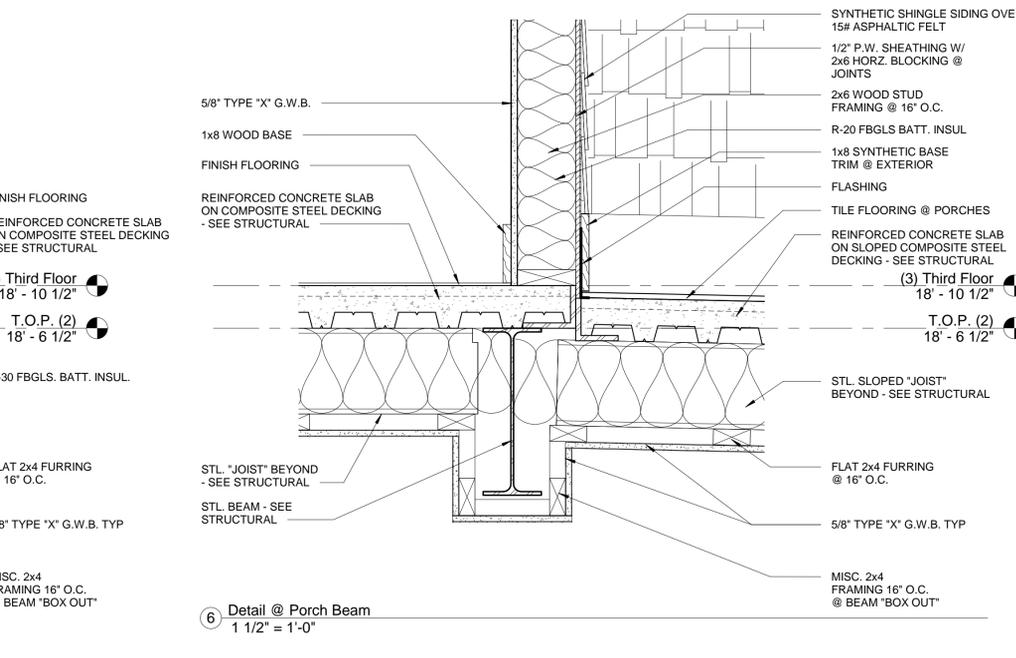
5 Beam Detail @ Interior  
1 1/2" = 1'-0"



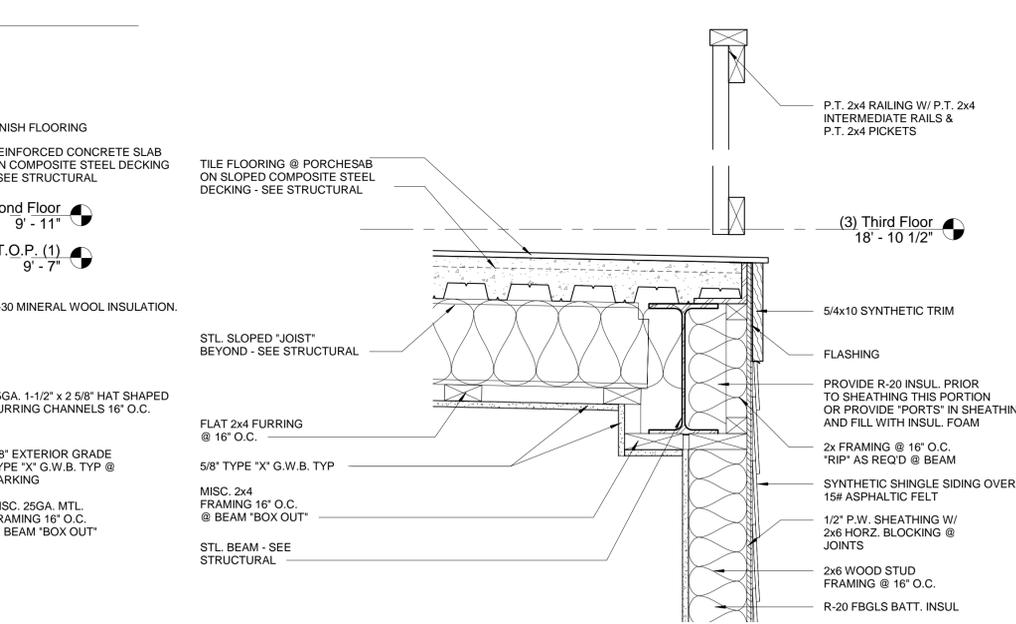
8 Beam Detail @ Parking  
1 1/2" = 1'-0"



3 Detail @ Low Eave Adjacent Porch  
1 1/2" = 1'-0"



6 Detail @ Porch Beam  
1 1/2" = 1'-0"



9 Detail @ Porch Floor  
1 1/2" = 1'-0"

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Details**  
Date: **December 23, 2022**  
Scale: **As indicated**

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Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File: **A501**

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Details**  
Date: **December 23, 2022**  
Scale: **As indicated**

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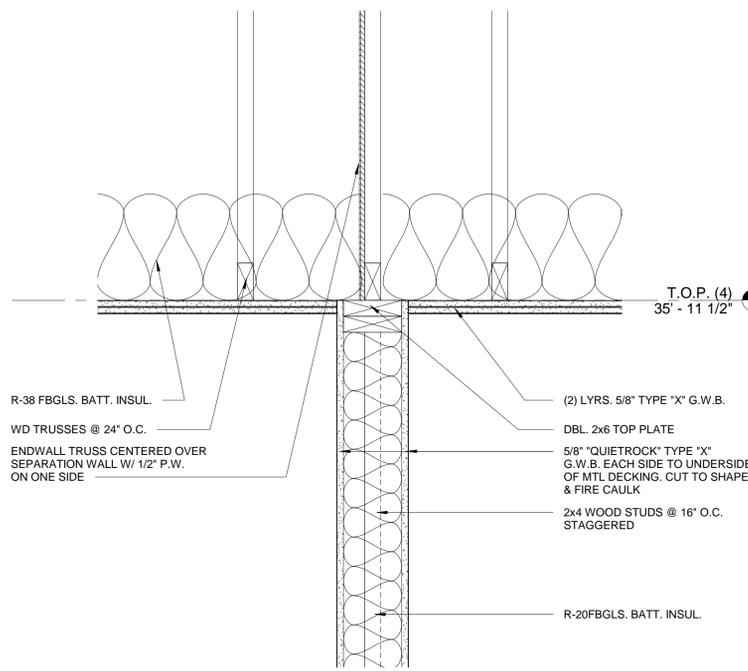


Revisions:

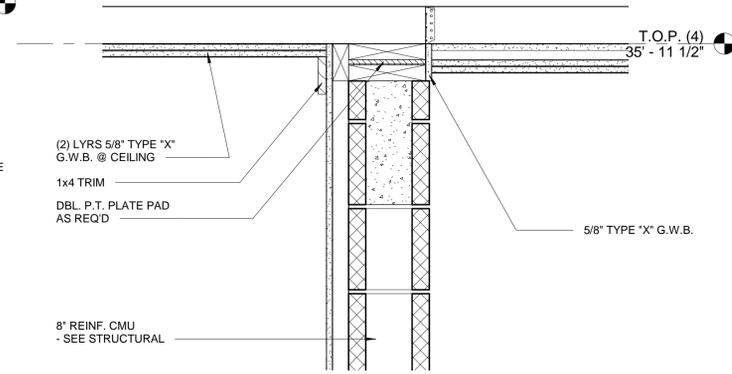
No.	Description	Date

Designed: Designer  
Drawn: Author  
Reviewed: Checker  
Cad File:

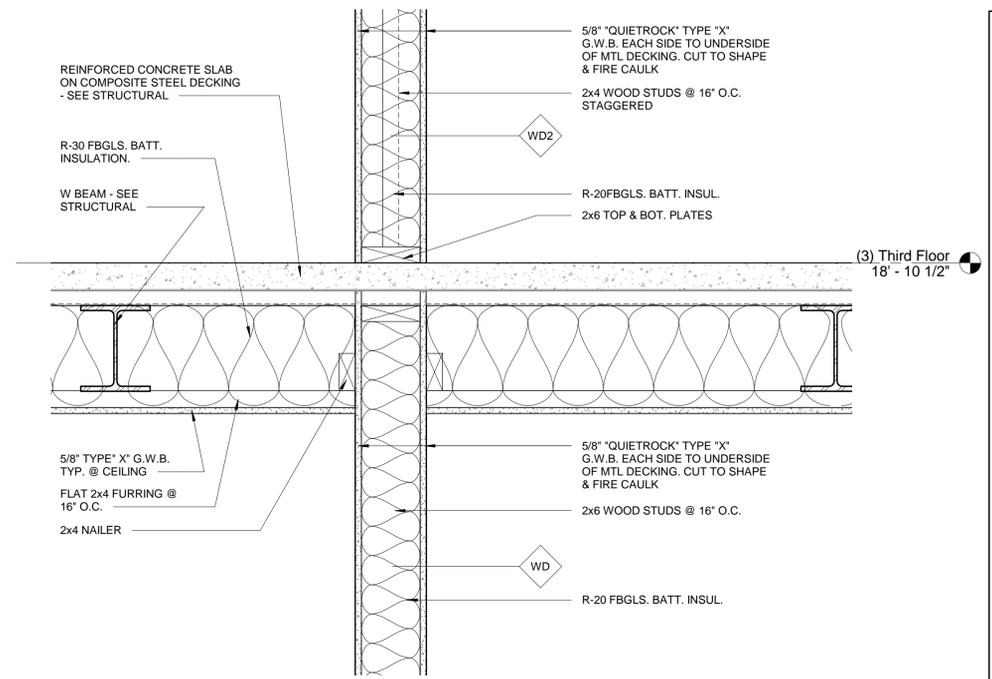
**A502**



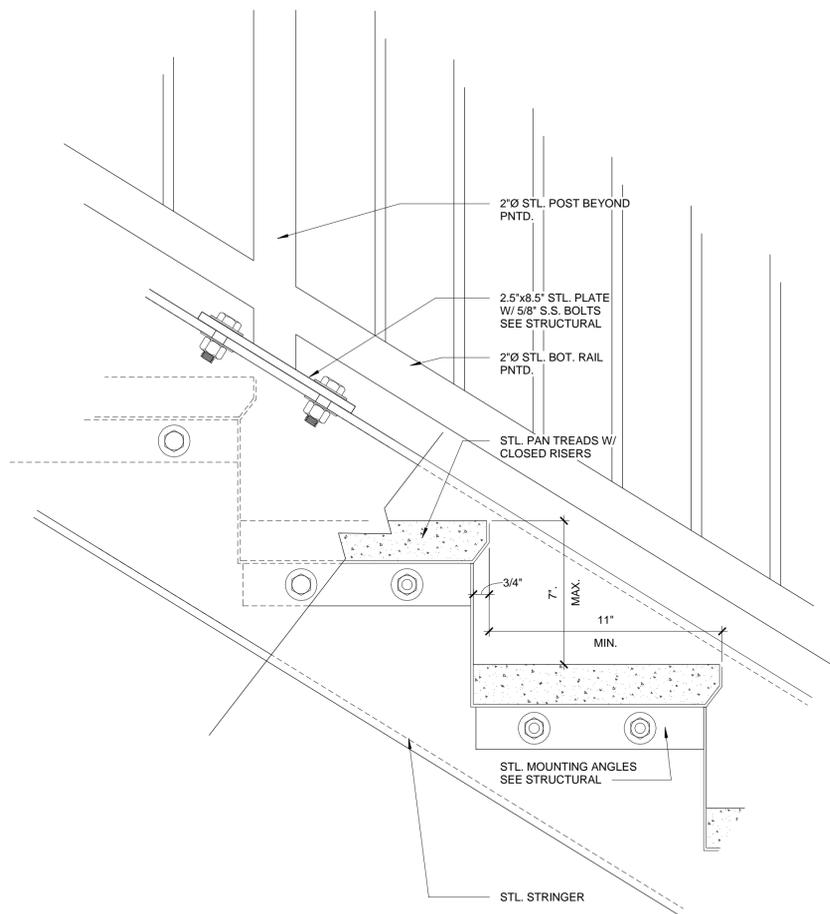
1 Detail @ Separation Wall @ Roof  
1 1/2" = 1'-0"



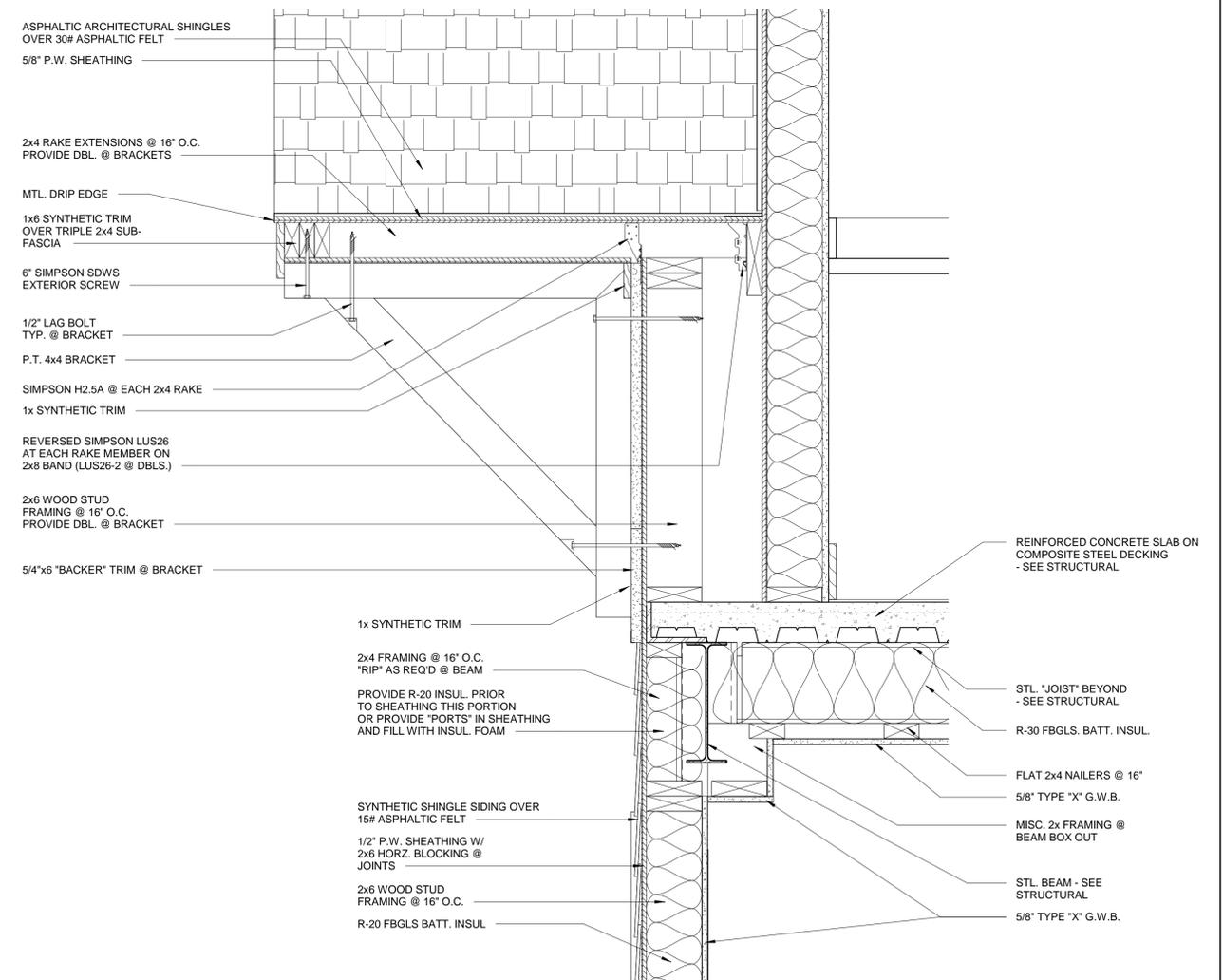
2 Detail @ Truss Bearing  
1 1/2" = 1'-0"



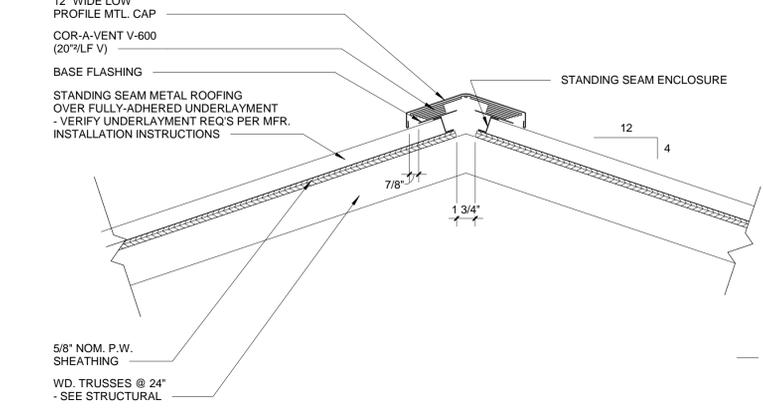
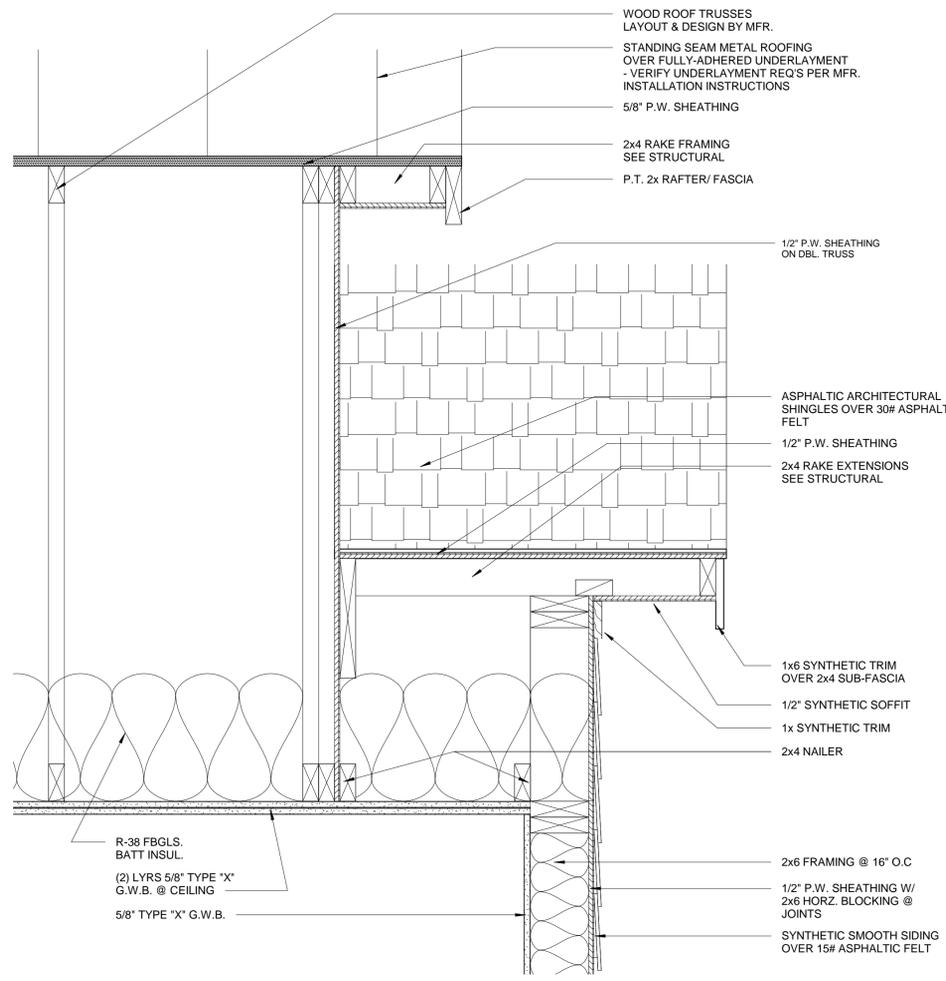
3 Detail @ Separation Wall  
1 1/2" = 1'-0"



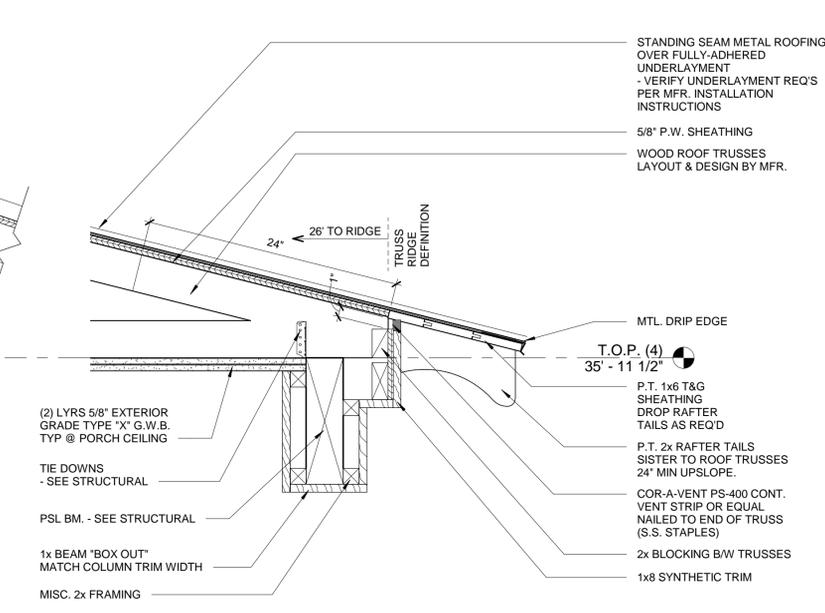
5 Stair Detail  
3" = 1'-0"



4 Bracket Detail @ Overhang  
1 1/2" = 1'-0"

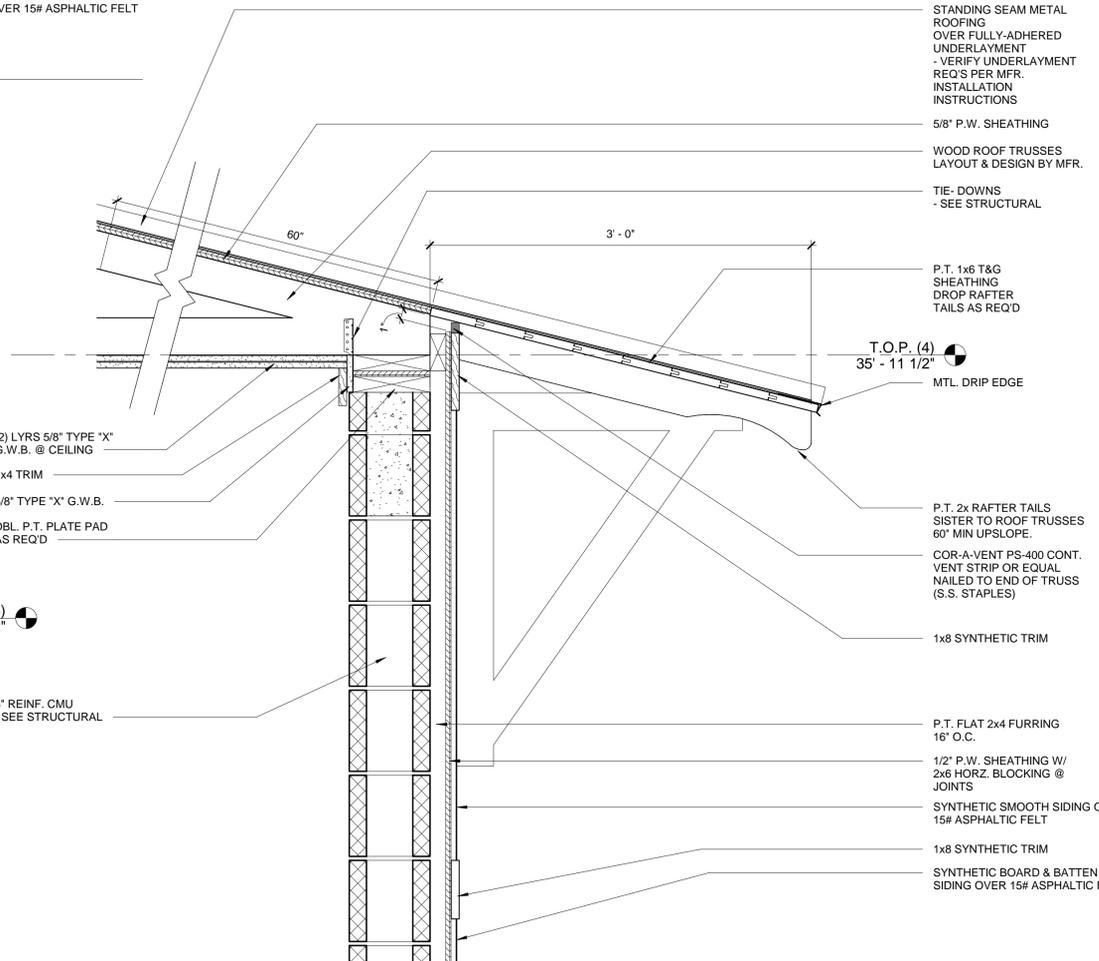


7 Ridge Detail -- Standing 4-12  
1 1/2" = 1'-0"

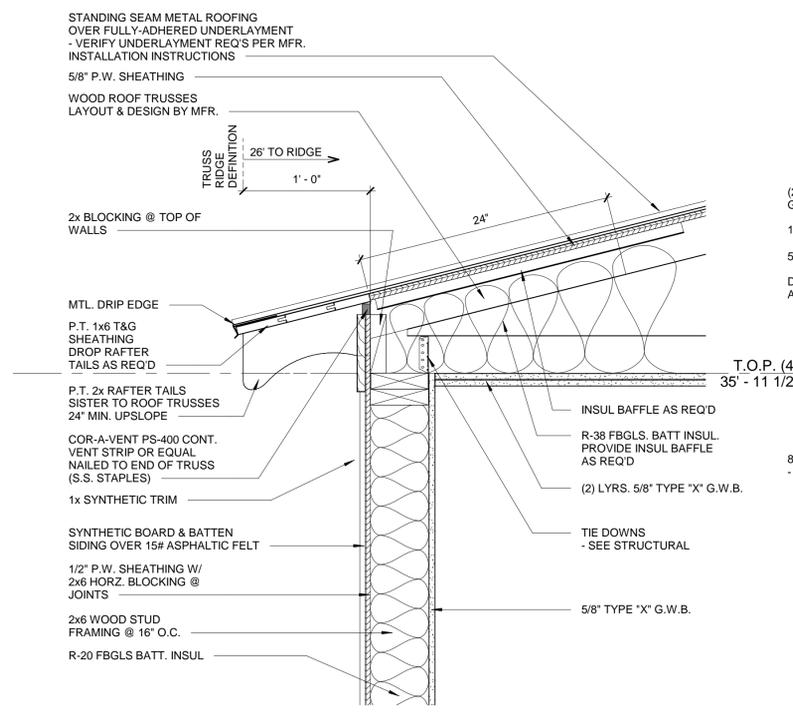


1 Detail @ Porch Eave  
1 1/2" = 1'-0"

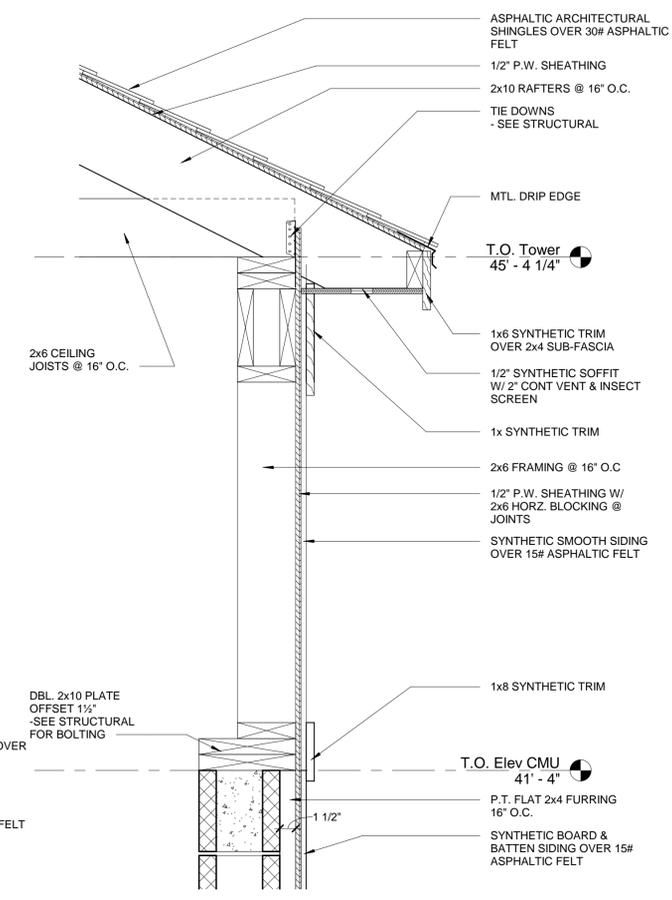
2 Rake Detail  
1 1/2" = 1'-0"



3 Detail @ Shaft Eave  
1 1/2" = 1'-0"



6 Eave Detail  
1 1/2" = 1'-0"



4 Detail @ Tower Eave  
1 1/2" = 1'-0"

Project: **BK Associates Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy Nags Head, NC 27959**  
Title: **Details**  
Date: **December 23, 2022**  
Scale: **1 1/2" = 1'-0"**

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Revisions:

No.	Description	Date

Designed: BBC  
Drawn: JPB  
Reviewed: BBC  
Cad File:  
**A503**

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Foundation Plan**  
Date: **December 23, 2022**

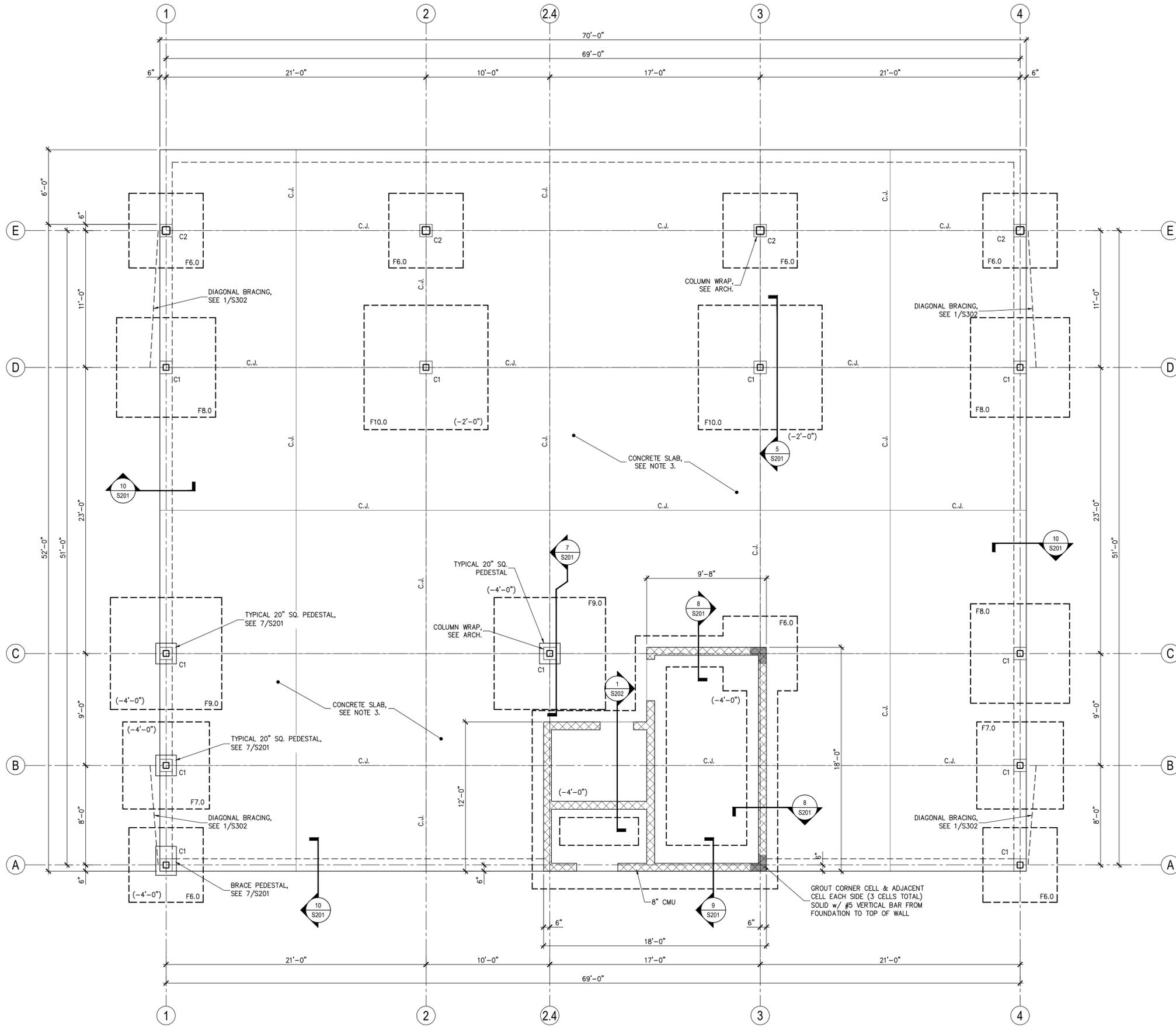
The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.



Revisions:

No.	Description	Date

Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cad File: **S101**



**FOUNDATION PLAN LEGEND**

F4.0	DENOTES COLUMN CONCRETE SPREAD FOOTING WITH FOOTING MARK - SEE FOOTING SCHEDULE ON THIS SHEET FOR SIZE AND REINFORCING
C3	DENOTES STEEL COLUMN WITH COLUMN MARK AND ISOLATION JOINT - SEE COLUMN SCHEDULE ON THIS SHEET FOR COLUMN SIZE, BASE PLATE SIZE AND QUANTITY, AND SIZE OF ANCHOR BOLTS. SEE DETAIL 5/S201 AND 6/S201 FOR ADDITIONAL INFORMATION
C.J.	DENOTES SLAB ON GRADE CONSTRUCTION OR SAWCUT CONTROL JOINT - SEE DETAILS 2/S201 AND 3/S201 FOR ADDITIONAL INFORMATION
(-1'-4")	DENOTES TOP OF FOOTING ELEVATION
E.O.S.	EDGE OF SLAB
U.O.N.	DENOTES 'UNLESS OTHERWISE NOTED'

- FOUNDATION PLAN NOTES:**
- SEE SHEET S401 FOR DESIGN CRITERIA, GENERAL STRUCTURAL NOTES & SCHEDULES.
  - TOP OF SLAB REFERENCE ELEVATION = 0'-0" UNLESS OTHERWISE NOTED. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR ACTUAL SITE ELEVATIONS.
  - CONCRETE FLOOR SLAB IS 4" THICK WITH 6 x 6 - W 2.1 x W 2.1 WELDED WIRE FABRIC. PROVIDE 6 MIL VAPOR BARRIER AND 4" COMPACTED GRANULAR BASE UNDER SLAB.
  - ALL EXTERIOR WALL FOOTINGS SHALL BE 2'-6" WIDE UNLESS OTHERWISE NOTED ON THE PLAN. SEE -/S201. THE TOP OF ALL CMU WALL FOOTINGS SHALL BE AT ELEVATION -4'-0" UNLESS OTHERWISE NOTED ON THE PLAN.
  - THE TOP OF ALL EXTERIOR COLUMN SPREAD FOOTINGS SHALL BE AT ELEVATION -2'-0" UNLESS OTHERWISE NOTED ON THE PLAN. THE TOP OF ALL INTERIOR COLUMN SPREAD FOOTINGS SHALL BE AT ELEVATION -2'-0" UNLESS OTHERWISE NOTED ON THE PLAN.
  - SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR MASONRY OPENINGS NOT SHOWN.
  - VERIFY TOP OF FOOTING ELEV. WITH EXISTING SITE CONDITIONS. TOP OF FOOTING SHALL BE 2'-0" MINIMUM BELOW GRADE.
  - VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
  - SEE ARCH DWGS FOR ADDITIONAL DIMENSIONS, WALL OPENINGS, AND SIDEWALKS/OUTSIDE CURBS.
  - EXTERIOR COLUMN CONCRETE ENCASUREMENT SIZE SHOWN ON 5&7/S201 SHALL BE VERIFIED WITH ARCHITECT.
  - VERIFY LOCATION OF EXTERIOR SLAB CONTROL JOINTS WITH ARCHITECT.

**FOUNDATION PLAN**  
1/4" = 1'-0"







Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Roof Framing Plan**  
Date: **December 23, 2022**

The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.



Revisions:

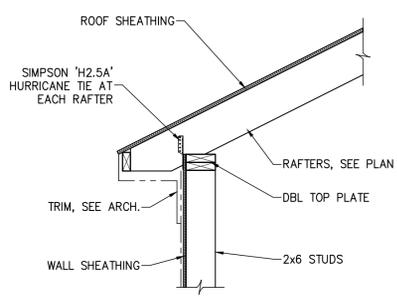
No.	Description	Date

Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cad File:

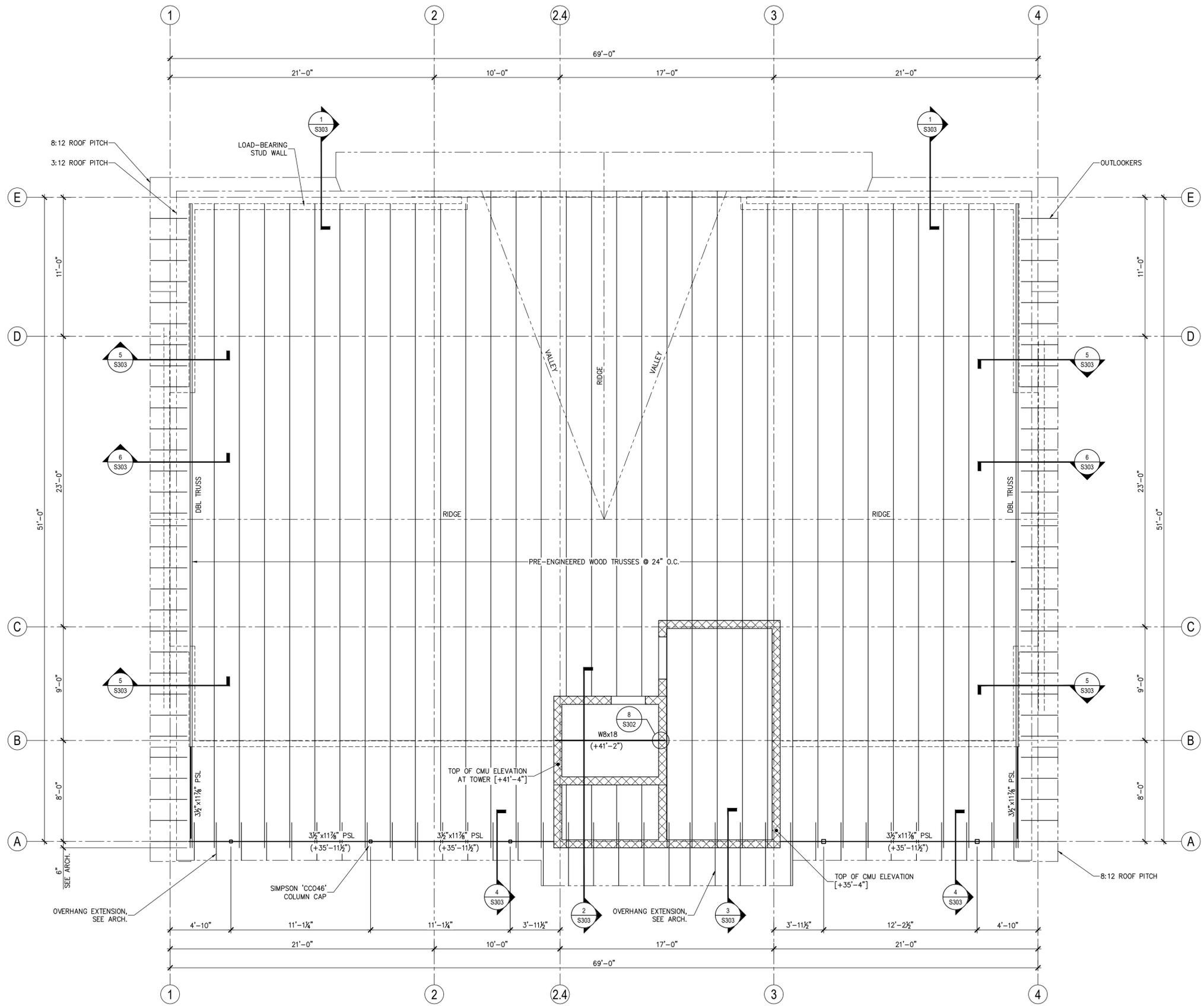
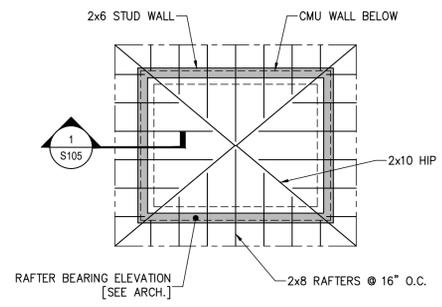
**S105**

**ROOF FRAMING PLAN NOTES:**

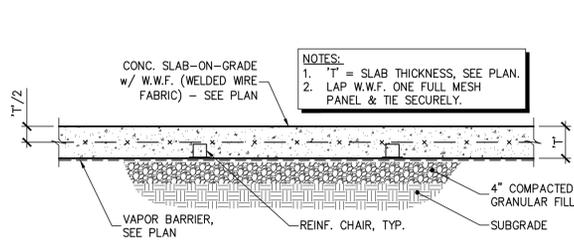
- SEE SHEET S401 FOR DESIGN CRITERIA, GENERAL STRUCTURAL NOTES AND SCHEDULES.
- VERIFY/COORDINATE RAFTER BEARING ELEVATIONS WITH ARCHITECTURAL DRAWINGS.
- TOP OF STEEL ELEVATIONS ARE REFERENCED FROM FINISHED FLOOR REFERENCE ELEVATION 0'-0". SEE ARCHITECTURAL DRAWINGS FOR ACTUAL FINISHED FLOOR ELEVATION.



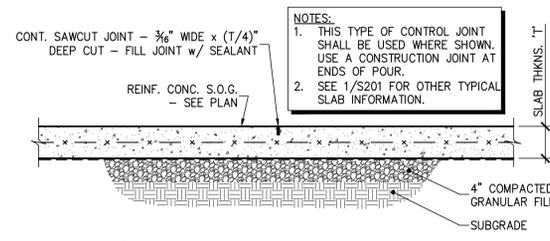
**1**  
FRAMING AT TOWER  
S105 / 3/4" = 1'-0"



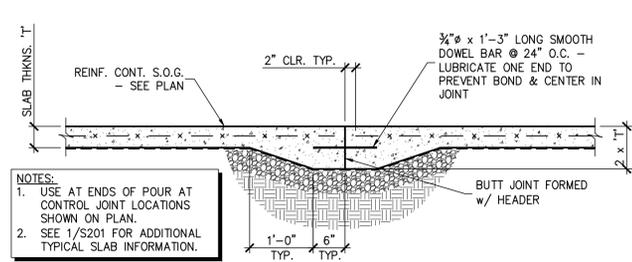
**ROOF FRAMING PLAN**  
1/4" = 1'-0"



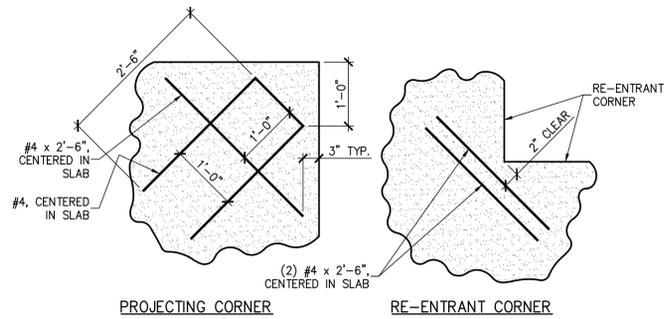
**1 SECTION - TYP. SLAB ON GRADE**  
S201 3/4" = 1'-0"



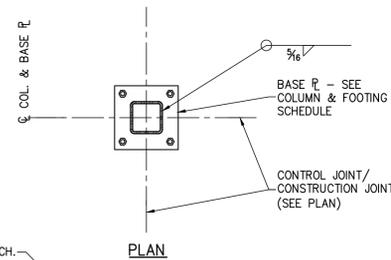
**2 SECTION - TYP. CONTROL JOINT**  
S201 3/4" = 1'-0"



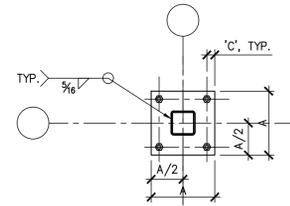
**3 SECTION - TYP. CONSTRUCTION JOINT**  
S201 3/4" = 1'-0"



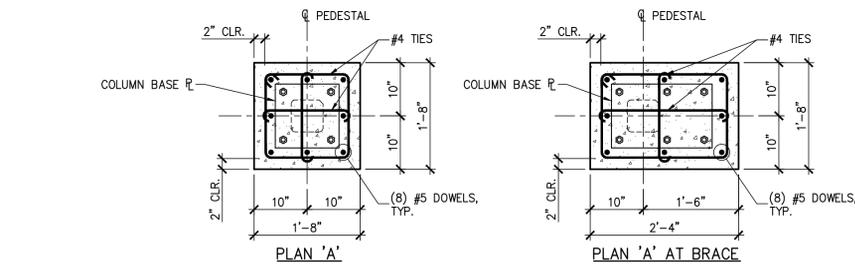
**4 DETAIL - TYP. REINF. @ SLAB CORNERS**  
S201 3/4" = 1'-0"



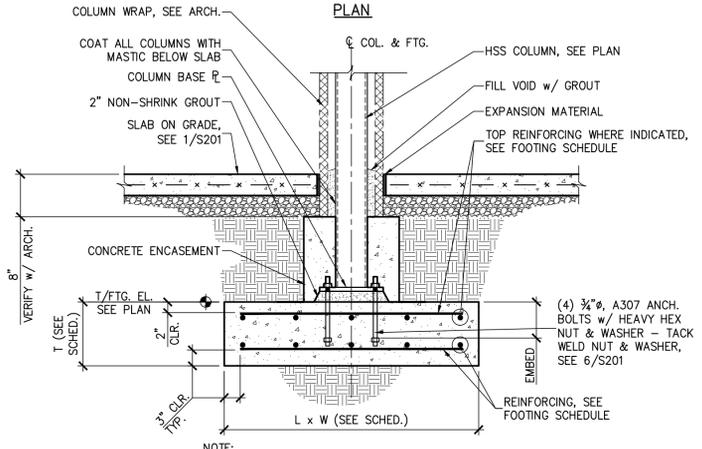
**5 SECTION - TYP. HSS COL. FTG.**  
S201 3/4" = 1'-0"



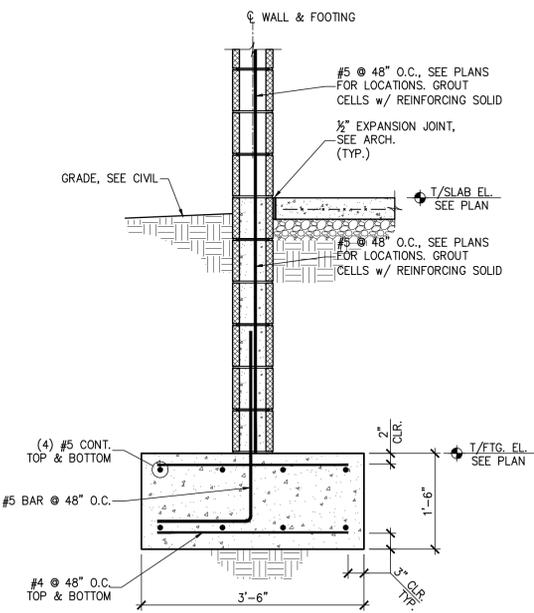
**6 TYPICAL ANCHOR BOLT DETAIL**  
S201 3/4" = 1'-0"



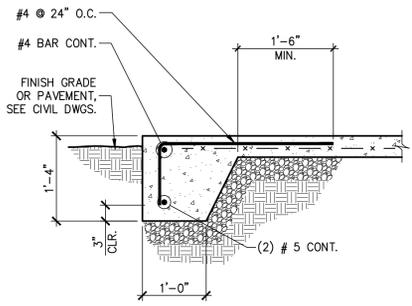
**7 COLUMN PEDESTAL DETAIL**  
S201 3/4" = 1'-0"



**8 EXTERIOR CMU WALL FOOTING**  
S201 3/4" = 1'-0"



**9 EXTERIOR CMU SHEAR WALL FOOTING**  
S201 3/4" = 1'-0"



**10 TURN DOWN SLAB EDGE**  
S201 3/4" = 1'-0"

BOLT DIA.	DISTANCE 'C'
3/4" AND BELOW	1 1/2"
1"	1 3/4"

BOLT DIA. 'D'	EMBEDMENT 'E'	REMARKS
3/4"	0'-9"	-
1"	1'-0"	-

MARK	COL. SIZE	BASE PLATE SIZE	ANCH. BOLT DIA.	REMARKS
C1	HSS 6 x 6 x 3/8	3/4" x 12" x 1'-0"	3/4"	4 BOLTS
C2	HSS 8 x 8 x 3/8	3/4" x 14" x 1'-2"	3/4"	4 BOLTS

MARK	FTG. SIZE	REINFORCEMENT	REMARKS
-	-	-	-
F6.0	6'-0" x 6'-0" x 1'-0"	7 - #6 EACH WAY, BOT.	-
F7.0	7'-0" x 7'-0" x 2'-0"	8 - #5 EACH WAY, TOP 8 - #6 EACH WAY, BOT.	-
F8.0	8'-0" x 8'-0" x 2'-0"	9 - #5 EACH WAY, TOP 9 - #6 EACH WAY, BOT.	-
F9.0	9'-0" x 9'-0" x 2'-0"	10 - #5 EACH WAY, TOP 10 - #6 EACH WAY, BOT.	-
F10.0	10'-0" x 10'-0" x 2'-0"	11 - #5 EACH WAY, TOP 11 - #6 EACH WAY, BOT.	-
-	-	-	-

Project: **BK Associates**  
**Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy**  
**Nags Head, NC 27959**  
Title: **Foundation Details**  
Date: **December 23, 2022**

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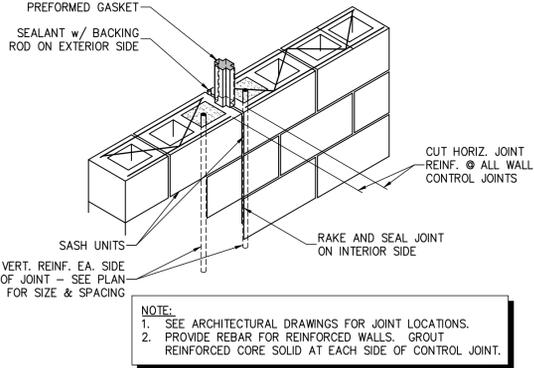


Revisions:

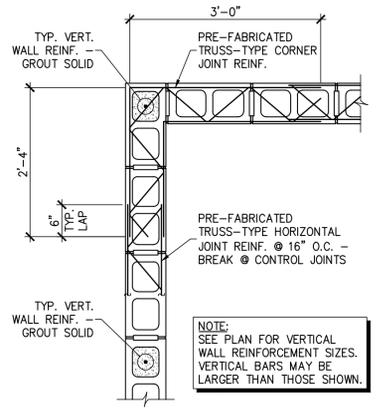
No.	Description	Date

Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cal File:

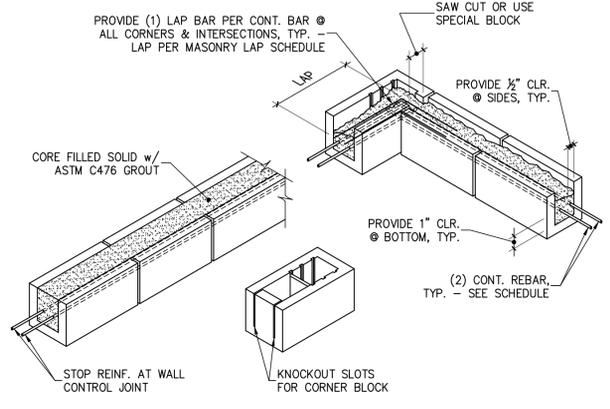
**S201**



**6 SECTION - TYP. CMU WALL CONTROL JOINT**  
S202 N.T.S.



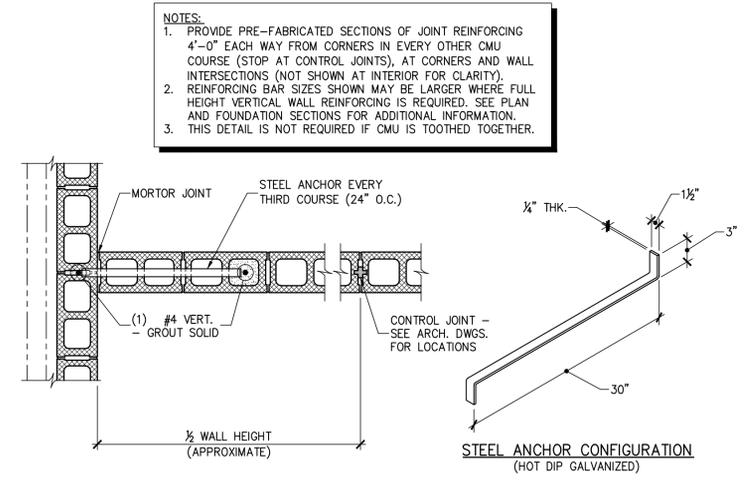
**7 PLAN DETAIL - TYP. CMU CORNER REINF.**  
S202 3/4" = 1'-0"



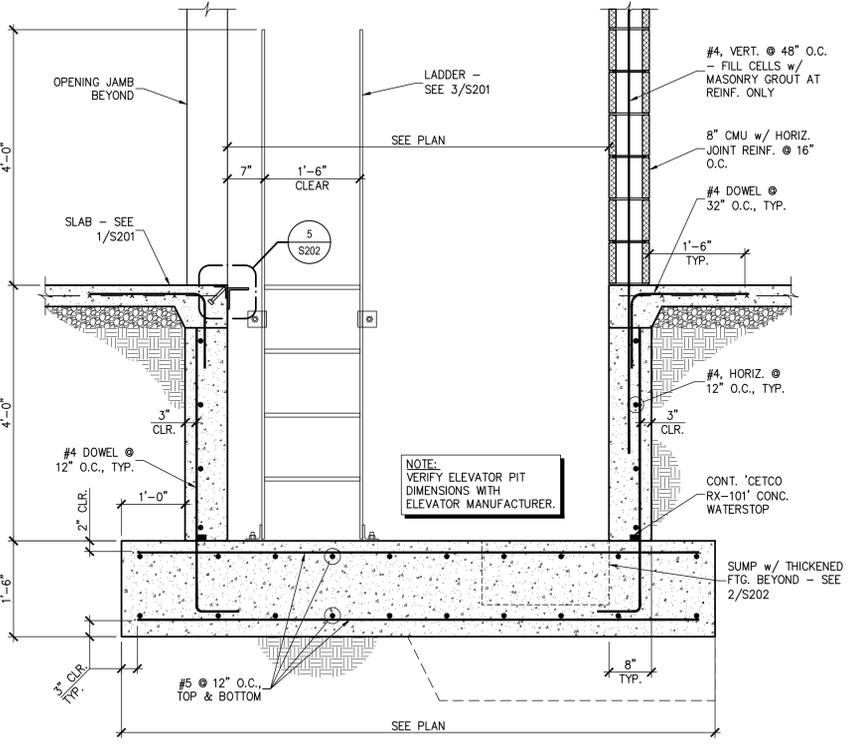
CMU THK.	REINF.	REMARKS
8"	(2) #5	-
12"	(2) #5	-
-	-	-

NOTES:  
1. MATCH THICKNESS OF CORNER LAP BARS AND CONTINUOUS BARS.  
2. SEE MASONRY LAP SCHEDULE FOR LAP REQUIREMENTS AT CORNERS AND INTERSECTIONS.

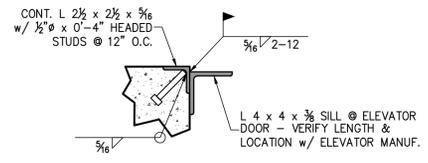
**8 DETAIL - TYP. BOND BEAM**  
S202 N.T.S.



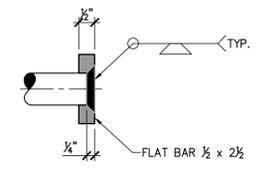
**9 PLAN DETAIL - TYPICAL INTERIOR CMU WALL REINFORCING**  
S202 3/4" = 1'-0"



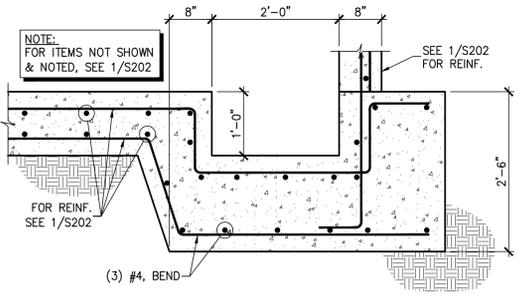
**1 SECTION - ELEVATOR PIT**  
S202 3/4" = 1'-0"



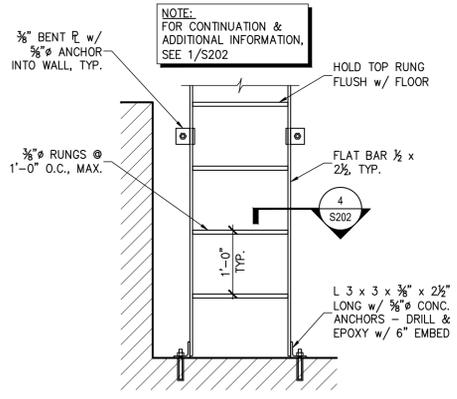
**5 OPENING EDGE DETAIL**  
S202 1 1/2" = 1'-0"



**4 RUNG ATTACHMENT DETAIL**  
S202 N.T.S.



**2 SECTION - ELEVATOR SUMP PIT**  
S202 3/4" = 1'-0"



**3 LADDER ELEVATION**  
S202 3/4" = 1'-0"

Project: **BK Associates Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy Nags Head, NC 27959**  
Title: **Foundation Details**  
Date: **December 23, 2022**

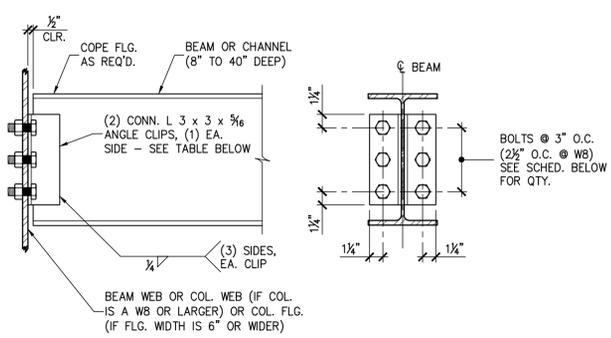
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Revisions:

No.	Description	Date

Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cad File: **S202**

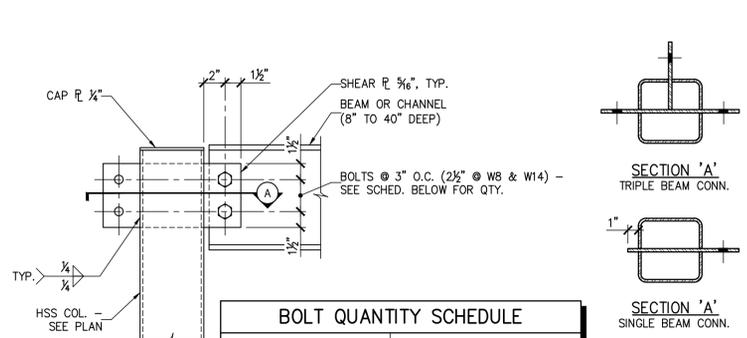


- NOTES:  
1. ALL BOLTS ARE 3/4" Ø, A325 BOLTS IN 1 3/16" Ø HOLES.  
2. USE 3/8" CLIP ANGLES WHERE INDICATED ON FRAMING PLAN(S).

BEAM DEPTH NOMINAL	No. OF BOLTS EACH SIDE	FRAMING ANGLE LENGTH 'L'
8"	2	5"
10"	2	5 1/2"
12"	3	8 1/2"
14"	3	8 1/2"
16"	4	11 1/2"
18"	4	11 1/2"
21"	5	14 1/2"
24"	6	17 1/2"

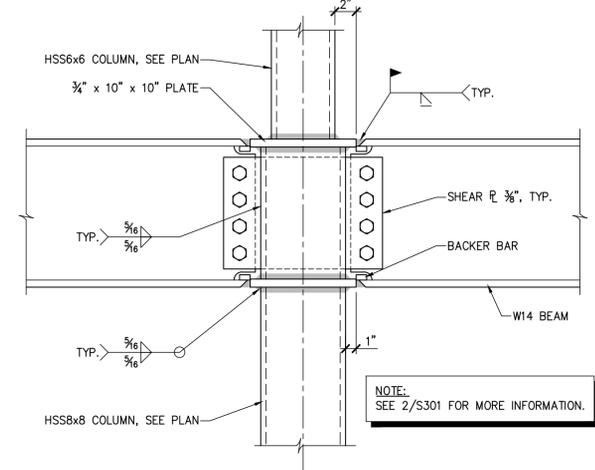
\* BOLT ROWS ARE SPACED 3" O.C. UNLESS NOTED OTHERWISE.

**1** DETAIL - TYP. FRAMED BEAM CONN.  
S301 N.T.S.



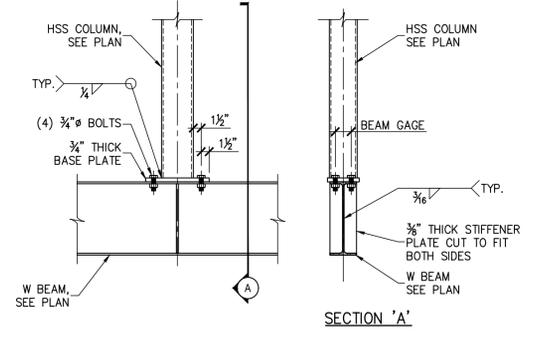
SUPPORTED BEAM	QTY. 3/4" Ø A325N BOLTS
W8 & W10	2
W12	3
W14 & W16	4
W18	5
W21	6
W24	7
W27	8
W30	9
W33	10
W36	11
W40	12

**2** DETAIL - TYP. WF FLR. BEAM TO HSS COL. SHEAR TAB CONNECTION (SLOTTED INTO COL.)  
S301 N.T.S.

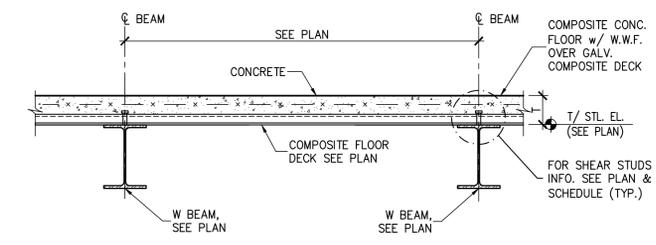


SUPPORTED BEAM	QTY. 3/4" Ø A325N BOLTS
W14	4

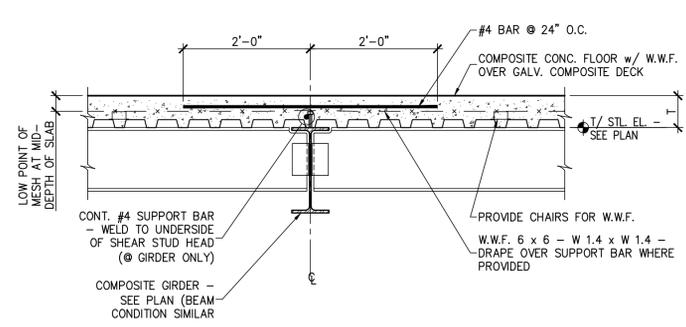
**3** TYPICAL MOMENT CONNECTION  
S301 N.T.S.



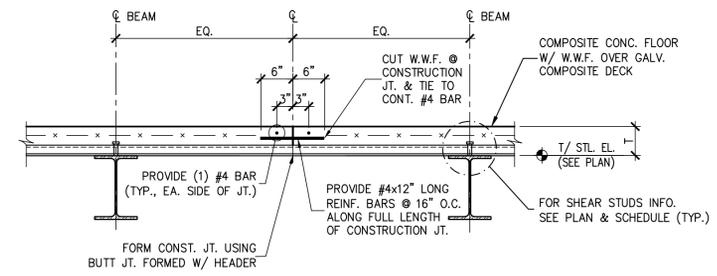
**4** TYP. COLUMN OVER BEAM CONNECTION  
S301 3/4" = 1'-0"



**5** SECTION - COMPOSITE FLOOR SLAB (TYP.)  
S301 3/4" = 1'-0"

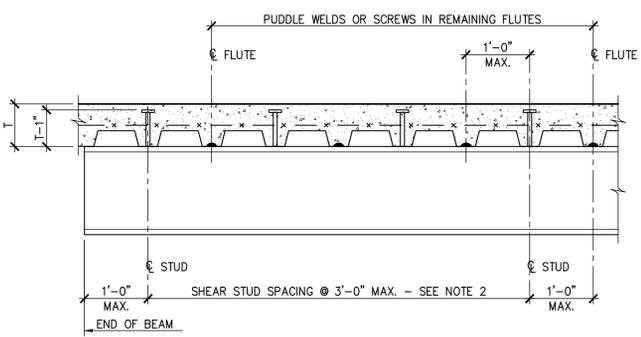


**6** SECTION - LONGITUDINAL COMPOSITE FLOOR CONSTRUCTION  
S301 3/4" = 1'-0"



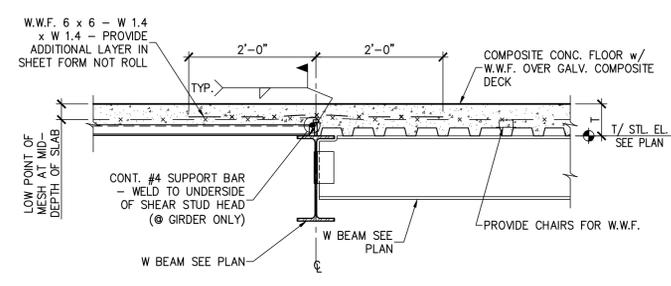
- NOTES:  
1. USE AT ENDS OF CONCRETE PLACEMENT IF REQUIRED.  
2. CONFIRM LOCATION OF CONSTRUCTION JT. W/ STRUCT. ENGR. PRIOR TO CONC. PLACEMENT.

**7** SECTION - COMPOSITE FLOOR SLAB CONSTRUCTION JOINT (TYP.)  
S301 3/4" = 1'-0"

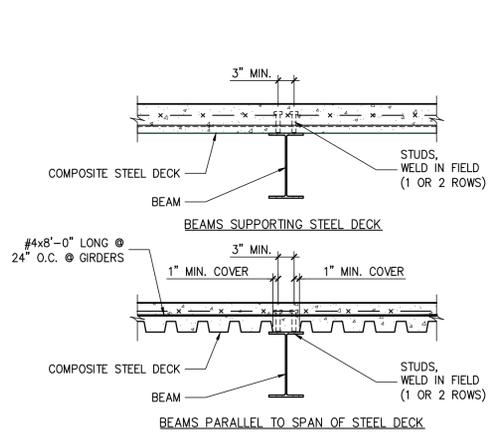


- NOTES:  
1. FOR SHEAR STUD PLACEMENT INFORMATION SEE 'GENERAL STRUCTURAL NOTES', SECTION 8 ON S4.1.  
2. 3/4" Ø SHEAR STUDS ARE TYPICAL. 'N', SHOWN ON FRAMING PLAN, DENOTES TOTAL NUMBER OF SHEAR STUDS. PLACE ONE HALF THE NUMBER OF STUDS ON EACH SIDE OF THE BEAM CENTERLINE UNLESS OTHERWISE NOTED. MAXIMUM SHEAR STUD SPACING IS 3'-0".  
3. SEE DETAIL 10/S301 IF DOUBLE LINE OF STUDS ARE REQUIRED.

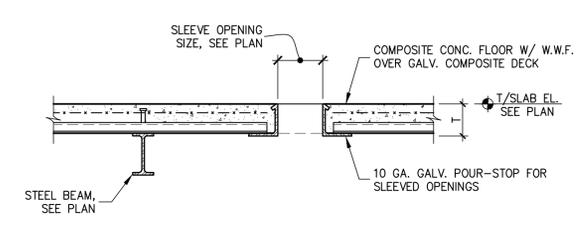
**8** SECTION - TYP. COMPOSITE METAL DECK & SHEAR STUD ATTACHMENT  
S301 N.T.S.



**9** SECTION @ DECK DIRECTION CHANGE  
S301 3/4" = 1'-0" (IF NEEDED)



**10** TYP. DOUBLE LINE STUD SPACING  
S301 N.T.S.



1. USE THIS DETAIL FOR ALL ROUND OPENING, FOR OTHER OPENINGS SEE DETAIL 13/S301.  
2. G.C. COORD. SIZE, LOCATION, & QTY. OF SLEEVED OPENINGS. SEE ALSO MECH., ELEC., & PLUMB. DWGS.  
3. G.C. TO NOTIFY STRUC. ENGR. OF ALL OPENINGS NOT INDICATED ON PLANS PRIOR TO CONC. PLACEMENT.  
4. OPENINGS MAY BE CORE-DRILLED AT CONTRACTOR'S OPTION.

**11** SLEEVE OPENING IN COMPOSITE FLOOR (TYP.)  
S301 3/4" = 1'-0"

Project: **BK Associates Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy Nags Head, NC 27959**  
Title: **Framing Details**  
Date: **December 23, 2022**

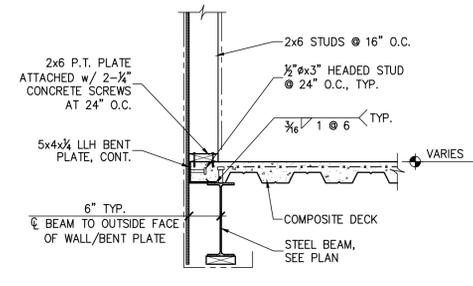
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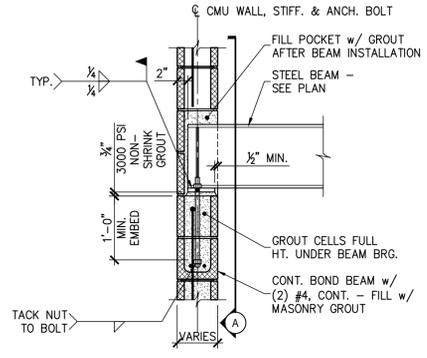
Revisions:

No.	Description	Date

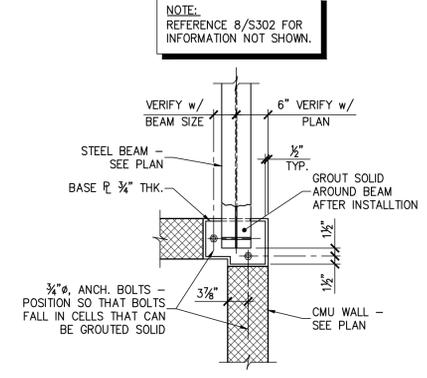
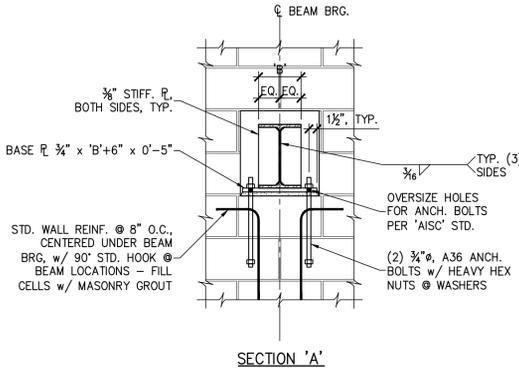
Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cad File:  
**S301**



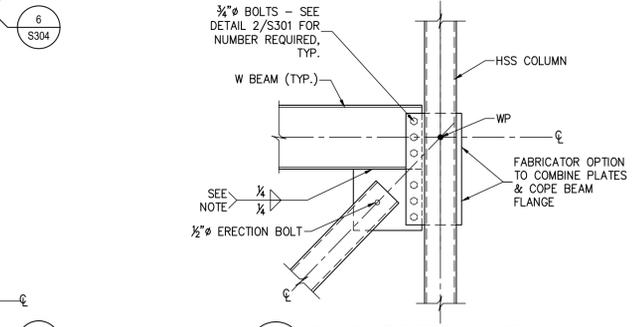
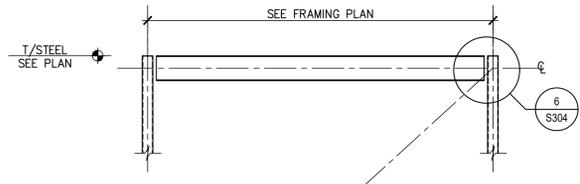
**7 COMPOSITE DECK SUPPORT**  
S302 3/4" = 1'-0"



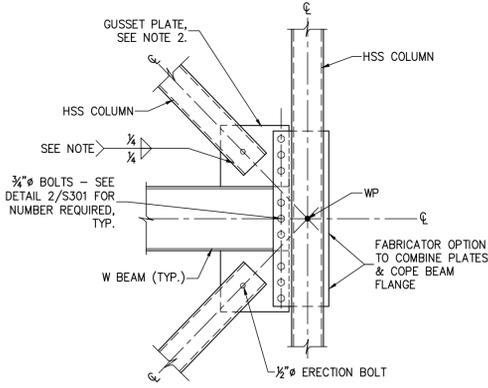
**8 SECTION - TYP. STEEL BEAM BRG. ON CMU**  
S302 3/4" = 1'-0"



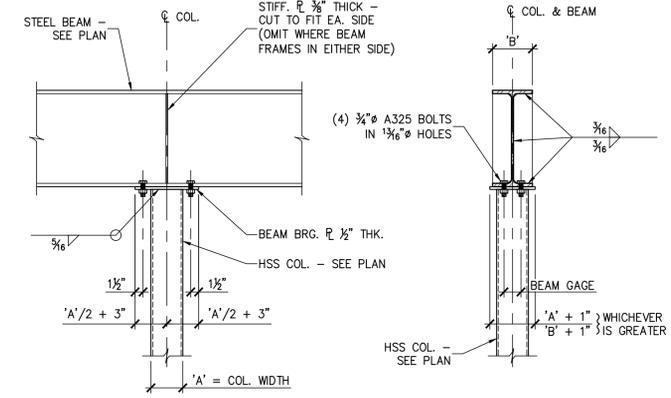
**9 PLAN DETAIL - STEEL BEAM BRG. ON CMU CORNER**  
S302 3/4" = 1'-0"



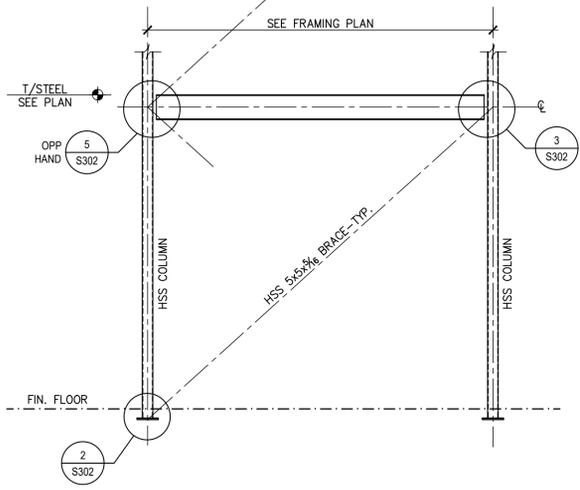
**3 BRACING DETAIL AT BEAM**  
S302 3/4" = 1'-0"



**5 BRACING DETAIL AT BEAM**  
S302 3/4" = 1'-0"

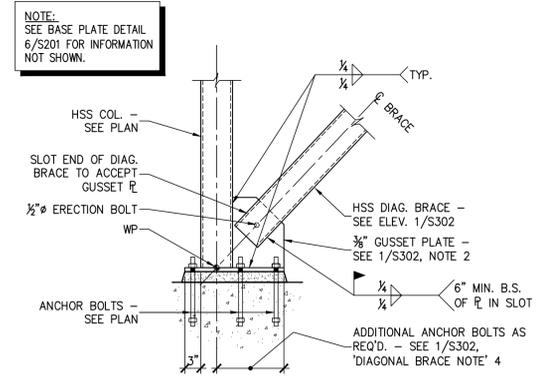


**10 DETAIL - TYP. WF BEAM OVER HSS COL. CONN.**  
S302 3/4" = 1'-0"

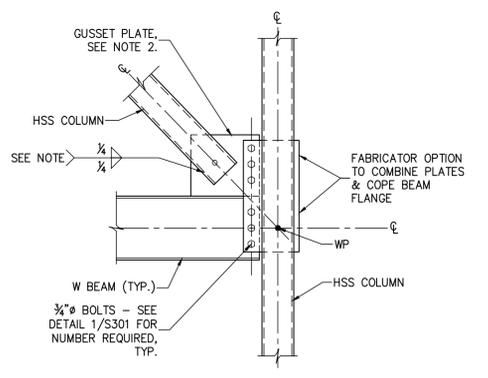


**1 VERTICAL "DIAGONAL" BRACING ELEVATION**  
S302 1/4" = 1'-0"

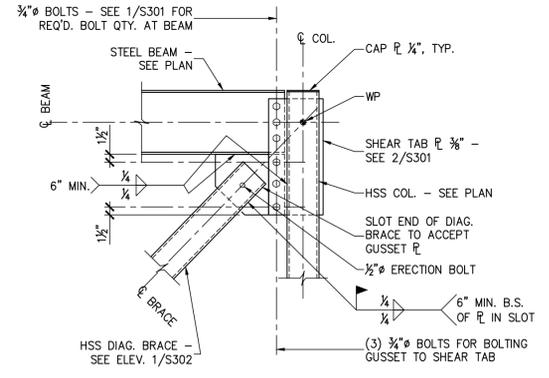
**DIAGONAL BRACE NOTES:**  
1. ALL BOLTS ARE 3/4" A325N, UNLESS OTHERWISE NOTED.  
2. SIZE AND CONFIGURATION OF GUSSET PLATES WILL VARY DEPENDING UPON ANGLES OF BRACING MEMBERS.  
3. ADJUST BASE PLATE LENGTH WHERE REQUIRED TO PROVIDE WELD LENGTH FOR GUSSET PLATE CONNECTION.  
4. PROVIDE (2) ADDITIONAL ANCHOR BOLTS IF BASE PLATE LENGTH EXTENDS 5" PAST ADJACENT BOLTS.



**2 BRACING DETAIL AT BASE**  
S302 3/4" = 1'-0"



**4 BRACING DETAIL AT BEAM**  
S302 3/4" = 1'-0"



**6 BRACING DETAIL AT COL./BEAM**  
S3.4 3/4" = 1'-0"

Project: **BK Associates Mixed Use Building**  
Project No: **21068**  
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Title: **Framing Details**  
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Revisions:

No.	Description	Date

Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cad File:  
**S302**

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Framing Details**  
Date: **December 23, 2022**

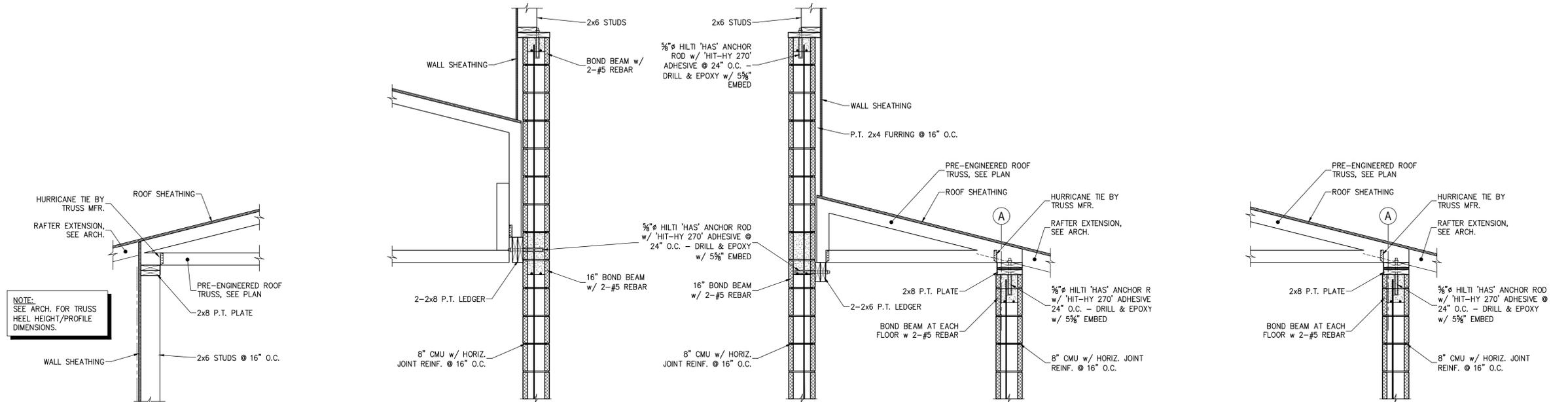
The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.



Revisions:

No.	Description	Date

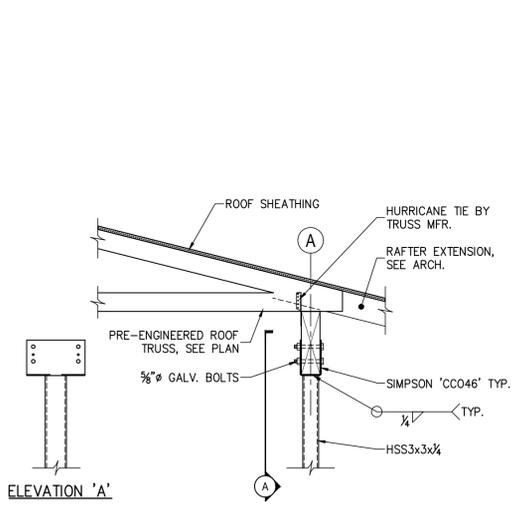
Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cadd File:  
**S303**



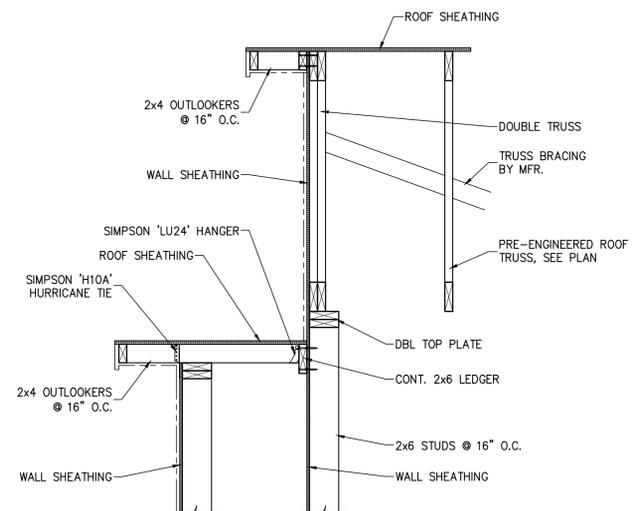
**1 TRUSS BEARING DETAIL**  
S303 3/4" = 1'-0"

**2 FRAMING AT CMU**  
S303 3/4" = 1'-0"

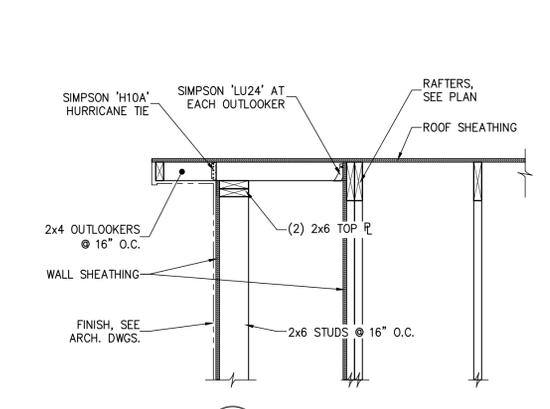
**3 FRAMING AT CMU**  
S303 3/4" = 1'-0"



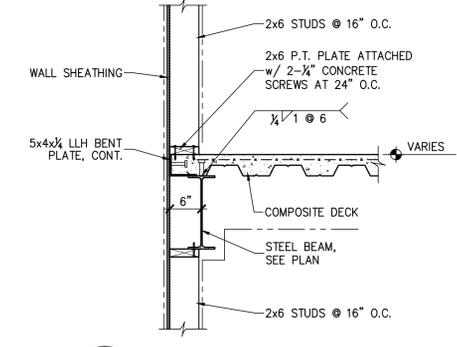
**4 ROOF TRUSS BEARING AT PORCH**  
S303 3/4" = 1'-0"



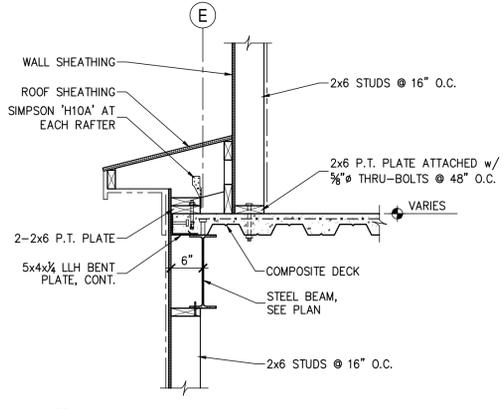
**5 ROOF FRAMING DETAIL**  
S303 3/4" = 1'-0"



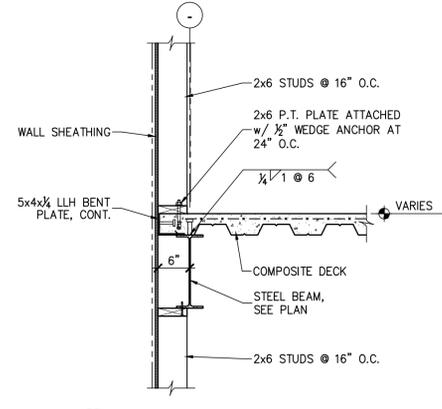
**6 ROOF FRAMING DETAIL**  
S303 3/4" = 1'-0"



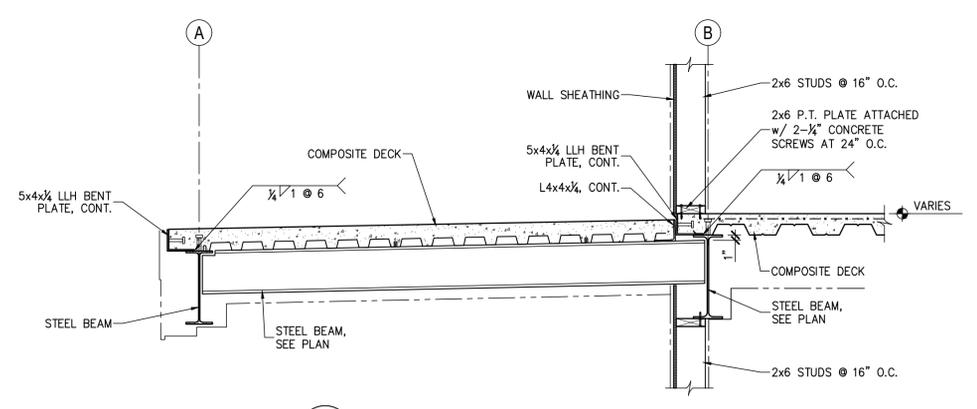
**7 COMPOSITE DECK SUPPORT**  
S303 3/4" = 1'-0"



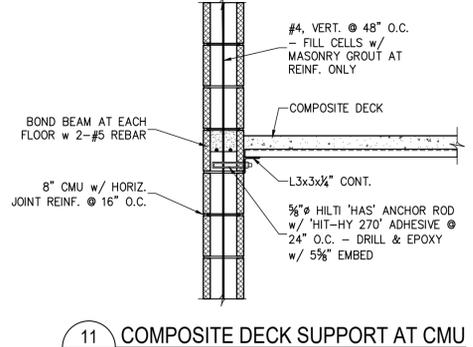
**8 COMPOSITE DECK SUPPORT AT 4TH FLOOR**  
S302 3/4" = 1'-0"



**9 COMPOSITE DECK SUPPORT**  
S302 3/4" = 1'-0"



**10 COMPOSITE DECK AT PORCH**  
S303 3/4" = 1'-0"



**11 COMPOSITE DECK SUPPORT AT CMU**  
S303 3/4" = 1'-0"

**GENERAL STRUCTURAL NOTES:**

**1. GENERAL NOTES**

- 1.1. METHODS, PROCEDURES AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
- 1.2. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SLEEVES, CURBS, INSERTS OR OPENINGS NOT HEREIN INDICATED.
- 1.3. COORDINATE THESE DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DRAWINGS.
- 1.4. VERIFY ALL FLOOR AND ROOF OPENING SIZES AND LOCATIONS, EQUIPMENT PAD SIZES AND LOCATIONS, ANCHOR BOLT LAYOUTS, ETC., WITH EQUIPMENT SELECTED.
- 1.5. VERIFY BUILDING LOCATION AND ORIENTATION WITH OWNER AND LOT SETBACK REQUIREMENTS BEFORE ANY CONSTRUCTION IS STARTED ON THE PROJECT.
- 1.6. CONTRACTOR SHALL VERIFY ALL EXISTING CONSTRUCTION DIMENSIONS WHICH IMPACT NEW CONSTRUCTION PRIOR TO FABRICATING ANY REBAR, STEEL, TRUSSES, ETCETERA.
- 1.7. DO NOT CUT, NOTCH, OR OTHERWISE MODIFY ANY STRUCTURAL MEMBERS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS WITHOUT APPROVAL OF THE ENGINEER OF RECORD.
- 1.8. CUTTING OF STEEL MEMBERS AND INSTALLATION OF HOLES IN STEEL MEMBERS SHALL BE DONE BY CUTTING OR DRILLING. DO NOT USE TORCHES FOR CUTTING UNLESS APPROVED BY THE ENGINEER OF RECORD.
- 1.9. CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF ALL SHORING REQUIRED TO SUPPORT NEW AND EXISTING STRUCTURAL ELEMENTS.

**2. FOUNDATION**

- 2.1. ALL FOOTINGS SHALL BE ON UNDISTURBED SOIL OR 98% COMPACTED FILL PER ASTM D698.
- 2.2. NO FOOTINGS OR SLABS SHALL BE POURED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST, ICE OR LOOSE MATERIAL.
- 2.3. EXCAVATIONS FOR FOOTINGS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 6 MIL. POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HRS OF THE EXCAVATION OF THE FOOTING.
- 2.4. ADVERSE FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION SUCH AS SOFT SOILS, ORGANIC MATTER, ETC., SHALL BE REPORTED TO THE ENGINEER BEFORE FURTHER CONSTRUCTION IS ATTEMPTED.
- 2.5. IF UNDERMINING OF FOOTINGS OCCURS, FILL VOIDS WITH LEAN CONCRETE MIX. DO NOT ATTEMPT TO REPLACE AND RECOMPACT SOIL.

**3. REINFORCED CONCRETE MASONRY**

- 3.1. LOAD-BEARING MASONRY PIERS OR WALLS, FOUNDATION WALLS, AND ANY OTHER MASONRY SO DESIGNATED ON THE DRAWINGS, ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- 3.2. COMPRESSIVE STRENGTH OF MASONRY UNITS:  
SOLID CLAY UNITS \_\_\_\_\_ 8250 PSI  
CONCRETE UNITS \_\_\_\_\_ 1900 PSI ON NET AREA  
MINIMUM NET AREA COMPRESSIVE STRENGTH OF CONCRETE MASONRY (Fm) IS 1,900 PSI.
- 3.3. MORTAR SHALL BE TYPE 'S' ASTM C270.
- 3.4. GROUT FOR REINFORCED MASONRY SHALL BE FINE GROUT ASTM C476. MINIMUM 28 DAY COMPRESSIVE STRENGTH SHALL BE 3000 PSI. MAXIMUM HEIGHT TO WHICH MASONRY SHALL BE LAID BEFORE FILLING IS 6'-0". PROVIDE CLEANOUT OPENINGS AT THE BOTTOM OF EACH GROUT LIFT. CLEANOUT OPENINGS SHALL BE PROVIDED AT EACH CELL TO BE FILLED WITH GROUT.
- 3.5. REINFORCING GRADE AND DETAILS FOR MASONRY, SHALL BE AS THAT FOR CONCRETE. TIE IN REBAR IN POSITION, AND PLACE CONCRETE AROUND REINFORCING DURING CONSTRUCTION OF MASONRY. DO NOT PUSH REINFORCING DOWN INTO PREVIOUSLY PLACED GROUT FILL. SET BOLTS SIMILARLY. TIE WYTHES WITH HORIZONTAL REINFORCING AS SPECIFIED.
- 3.6. ALL CELLS BELOW GRADE SHALL BE FULLY GROUTED WITH MASONRY GROUT.
- 3.7. PROVIDE HORIZONTAL JOINT REINFORCING @ 16" O.C. UNLESS OTHERWISE NOTED.
- 3.8. PLACE ALL VERTICAL REINFORCING BARS IN CENTERS OF BLOCK CELLS UNLESS OTHERWISE NOTED.
- 3.9. FILL ALL CELLS, AT VERTICAL REINFORCING, FULL HEIGHT WITH MASONRY GROUT.
- 3.10. CONTRACTOR SHALL COORDINATE LOCATION OF ALL OPENINGS IN MASONRY. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SIZE AND LOCATION OF OPENINGS.
- 3.11. ALL MASONRY WORK PERFORMED, SHALL BE IN ACCORDANCE WITH ACI/ASCE 530. MASONRY CONSTRUCTION AND MATERIALS USED, SHALL CONFORM TO ALL REQUIREMENTS OF THESE CONTRACT DOCUMENTS.
- 3.12. UNLESS OTHERWISE SHOWN, MASONRY WALLS SHALL HAVE VERTICAL CONTROL JOINTS AT A MAXIMUM SPACING OF 40'-0" ON CENTER FOR BRICK AND OF 25'-0" FOR CMU. THE JOINT SHALL BE FORMED USING PVC MATERIAL CONFORMING TO ASTM D2287, TYPE PVC 654-4. COORDINATE LOCATION OF JOINTS WITH THE ARCHITECTURAL ELEVATIONS.
- 3.13. PLACE A CONTINUOUS HORIZONTAL CMU BOND BEAM AT EACH FLOOR, AND AT THE TOP OF THE WALL, AND AT INTERMEDIATE LOCATIONS AS REQUIRED TO PROVIDE A MAXIMUM VERTICAL SPACING OF 12'-0", UNLESS OTHERWISE NOTED ON THE PLAN.

**4. CONCRETE**

- 4.1. ALL PLACED CONCRETE, SHALL HAVE NORMAL WEIGHT COARSE AGGREGATES, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) AT 28 DAYS AS SHOWN ON THE CONCRETE MATERIALS SCHEDULE.
- 4.2. GROUT FOR BASE PLATES SHALL BE NON-METALLIC, NON-SHRINKABLE GROUT, AND SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH, AT 28 DAYS, OF 5000 PSI.
- 4.3. NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
- 4.4. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 3/4" x 45 DEGREE CHAMFER, UNLESS OTHERWISE NOTED.
- 4.5. HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCING SHALL BE CONTINUOUS, AND SHALL HAVE 90 DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED, WITH A CLASS B TENSION SPLICE, AT CORNERS AND INTERSECTIONS. TOP BAR CRITERIA SHALL APPLY IF 12" OR MORE OF FRESH CONCRETE IS PLACED BELOW BAR.
- 4.6. SEE ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING / DAMPROOFING DETAILS.
- 4.7. ALL DOWELS SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- 4.8. SEE ARCHITECTURAL DRAWINGS FOR TYPE AND LOCATION OF FLOOR FINISHES.
- 4.9. SEE MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DRAWINGS FOR ADDITIONAL WALL / SLAB OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
- 4.10. ALL REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60.
- 4.11. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
- 4.12. DETAIL AND FABRICATE REINFORCING STEEL IN ACCORDANCE WITH THE ACI DETAILING MANUAL.
- 4.13. IN-PLACE REINFORCING STEEL, SHALL BE REVIEWED BY THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
- 4.14. AT CORNERS AND INTERSECTIONS, PROVIDE BARS OF THE SAME NUMBER AND SIZE AS THE LONGITUDINAL BARS IN THE FOOTING.
- 4.15. CONCRETE MATERIALS SHALL BE AS FOLLOWS:  
USE TYPE I/II PORTLAND CEMENT CONFORMING TO ASTM C150  
AGGREGATE SHALL CONFORM TO ASTM C33 (FINE AND COURSE AGGREGATES)  
AIR ENTRAINING ADMIXTURE SHALL CONFORM TO ASTM C260  
PLASTICIZER CAN BE USED TO IMPROVE WORKABILITY IF REQUIRED
- 4.16. CONCRETE MIX DESIGN:  
MAXIMUM WATER/CEMENT RATIO - 0.50 FOR SLAB, 0.55 FOR FOOTINGS AND OTHER CONCRETE UNLESS OTHERWISE NOTED.  
SLUMP: 4 INCHES TO 6 INCHES (WITHOUT PLASTICIZER)  
AIR ENTRAINMENT: 4% TO 6% (EXTERIOR CONCRETE)
- 4.17. CONCRETE SLAB SHALL BE CURED USING A WATER-BASED CURING COMPOUND. CURING COMPOUND SHALL BE APPLIED TO ALL HORIZONTAL SURFACES. ONCE THE SURFACE WATER DISSIPATES AND THE SURFACE IS NOT MARRIED BY WALKING, APPLY PER MANUFACTURER'S SPECIFICATIONS.
- 4.18. CONDUCT SLUMP, AIR, AND STRENGTH TESTS OF CONCRETE IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:
- 4.19. SECURE SAMPLES IN ACCORDANCE WITH "METHOD OF SAMPLING FRESH CONCRETE" (ASTM C 172). MOLD AND CURE FIVE SPECIMENS FROM EACH SAMPLE IN ACCORDANCE WITH " METHOD OF MAKING AND CURING CONCRETE COMPRESSION AND FLEXURE SPECIMENS IN THE FIELD" (ASTM C 31). FIVE SPECIMENS COMPRISE ONE TEST. TEST TWO SPECIMENS AT 7 DAYS (ASTM C 39). TEST TWO SPECIMENS AT 28 DAYS IN ACCORDANCE WITH "METHOD OF TEST FOR COMPRESSIVE STRENGTH OF MOLDED CONCRETE CYLINDERS" (ASTM C 39). TEST EVALUATION SHALL BE CONDUCTED IN ACCORDANCE WITH PROVISIONS OF ACI 318-05. KEEP ONE SPECIMEN IN RESERVE.
- 4.20. MAKE ONE STRENGTH TEST FOR EACH 100 CUBIC YARDS OR FRACTION THEREOF FOR EACH MIX DESIGN OF CONCRETE PLACED IN ONE DAY, EXCEPT THAT IN NO CASE SHALL A GIVEN MIX DESIGN BE REPRESENTED BY LESS THAN THREE TESTS.

**5. STRUCTURAL STEEL**

- 5.1. DETAILING OF STRUCTURAL STEEL CONNECTIONS, MUST BE CONSISTENT WITH RECOGNIZED, PUBLISHED METHODS, SUCH AS THE "AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION", "DETAILING FOR STEEL CONSTRUCTION", OR "VOLUME II CONNECTIONS MANUAL OF STEEL CONSTRUCTION".
- 5.2. MEMBERS AND CONNECTIONS NOT FULLY DEVELOPED ON THE CONTRACT DRAWINGS, AND CONNECTIONS FOR ANY PORTION OF THE STRUCTURE NOT SHOWN ON THE CONTRACT DRAWINGS, SHALL BE DESIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, AND DETAILED ON THE SHOP DRAWINGS.
- 5.3. ALTERNATIVE CONNECTION DETAILS, MAY BE SUBMITTED ON SHOP DRAWINGS BY THE CONTRACTOR, ONLY IF ACCOMPANIED BY COMPLETE STRUCTURAL CALCULATIONS, PREPARED AND SEALED BY AN ENGINEER, LICENSED IN THE PROJECT'S JURISDICTION. FAILURE TO SUBMIT SUCH CALCULATIONS FOR REVIEW, CONCURRENT WITH SHOP DRAWING ERECTION PLANS AND DETAILS, WILL BE CAUSE FOR REJECTION OF THAT SUBMITTAL.
- 5.4. CALCULATIONS FOR DETAILS, MUST SHOW A RATIONAL ANALYSIS OF A COMPLETE LOAD PATH, INCLUDING LOCAL EFFECTS ON WEBS, FLANGES ETC., OF THE CONNECTED MEMBERS AND THE DEVICES (PLATES, SEATS, BRACKETS, BOLTS, WEBS, ETC.) AFFECTING ALL CONNECTING MEMBERS.
- 5.5. STRUCTURAL STEEL DETAILING, FABRICATION AND ERECTION, SHALL CONFORM TO THE "AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" (MARCH 9, 2005), AND THE "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (MARCH 18, 2005).

- 5.6. WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE, AWS D1.1. ELECTRODES FOR SHOP AND FIELD WELDS, SHALL BE CLASS E70XX. ALL WELDING SHALL BE DONE BY QUALIFIED, CERTIFIED WELDERS, PER THE ABOVE STANDARD.
- 5.7. SHOP AND FIELD TESTING OF WELDS AND BOLTS, SHALL BE PERFORMED AS OUTLINED IN THE SPECIFICATIONS.
- 5.8. ALL FILLET WELDS SHALL BE A MINIMUM OF 3/8 INCH, UNLESS OTHERWISE NOTED.
- 5.9. THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS, FOR THE WORK OF OTHER TRADES, WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.
- 5.10. ALL STRUCTURAL STEEL SHAPES USED, SHALL BE IN ACCORDANCE WITH ASTM A992 SPECIFICATIONS (Fy = 50 KSI). ALL STRUCTURAL TUBING USED, SHALL BE IN ACCORDANCE WITH ASTM A500, GRADE B (Fy = 46 KSI). ALL PIPE USED, SHALL BE IN ACCORDANCE WITH ASTM A53 (Fy = 35 KSI). ALL MISCELLANEOUS STEEL USED, SHALL BE IN ACCORDANCE WITH ASTM A36 (Fy = 36 KSI).
- 5.11. ALL FIELD BOLTED CONNECTIONS, SHALL BE BEARING TYPE CONNECTIONS (THREADS INCLUDED IN THE SHEAR PLANE), WITH 3/4" DIAMETER, ASTM A325 HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED ON THE DRAWING. ALL BOLTS SHALL BE TIGHTENED TO A "SNUG-TIGHT" CONDITION, UNLESS OTHERWISE NOTED.
- 5.12. FOR ALL FLOOR AND ROOF OPENINGS, THE CONTRACTOR SHALL VERIFY OPENING LOCATIONS WITH EQUIPMENT SELECTED, AND MAKE ANY NECESSARY MODIFICATIONS AT NO ADDITIONAL COST. IT IS THE RESPONSIBILITY OF FABRICATOR, TO RECEIVE ALL NECESSARY INFORMATION, PRIOR TO FABRICATION OF ANY STEEL.
- 5.13. ALL STRUCTURAL STEEL WHICH IS TO BE SPRAYED WITH FIREPROOFING SHALL NOT BE PRIMED OR PAINTED. STEEL WHICH IS NOT SPRAYED WITH FIREPROOFING SHALL BE PRIMED AND PAINTED. DO NOT PAINT SURFACES TO BE EMBEDDED IN CONCRETE.
- 5.14. BEAM END CONNECTIONS, SHALL BE DESIGNED FOR A MINIMUM GRAVITY LOAD OF 50% U.D.L., PER THE "AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION", UNLESS OTHERWISE INDICATED.
- 5.15. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY GUYING AND BRACING REQUIRED, TO ERECT AND HOLD THE STRUCTURE IN PROPER ALIGNMENT, UNTIL ALL PERMANENT BRACING, ROOF & WALL SHEATHING, OR METAL ROOF DECK ARE IN PLACE, TO RESIST LATERAL MOVEMENT OF THE FRAME.

**6. COMPOSITE METAL FLOOR DECK**

- 6.1. STEEL FLOOR DECK SHALL BE 1/2", 20 GAGE, GALVANIZED, COMPOSITE FLOOR DECK AS PER STEEL DECK INSTITUTE (SDI) SPECIFICATIONS, VULCRAFT TYPE 1.5V, OR EQUIVALENT.
- 6.2. FLOOR DECK SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:  
MOMENT OF INERTIA, I 0.182 IN<sup>4</sup>/FT. WIDTH  
SECTION MODULUS (TOP OF DECK), S<sub>x</sub> 0.226 IN<sup>3</sup>/FT. WIDTH  
SECTION MODULUS (BOT. OF DECK), S<sub>y</sub> 0.218 IN<sup>3</sup>/FT. WIDTH  
IN ADDITION TO MEETING THE MINIMUM REQUIREMENTS ABOVE, THE DECK MANUFACTURER SHALL DESIGN THE FLOOR DECK FOR THE LOADS SHOWN IN THE STRUCTURAL DESIGN CRITERIA. DECK SHALL BE DESIGNED TO SUPPORT ALL CONSTRUCTION LOADS ALONE UNSHORED, AND ALL INDICATED DEAD AND LIVE LOADS IN A COMPOSITE CONDITION.
- 6.3. AS A MINIMUM, FLOOR DECK SHALL BE ATTACHED AS DESCRIBED BELOW. WHERE SHEETS BEAR ON SUPPORTS, THEY SHALL BE WELDED WITH 3/8" DIAMETER PUDDLE WELDS IN THE BOTTOM OF THE FLUTES WITHOUT SHEAR STUDS (12" O.C., MAXIMUM). SIDE LAPS SHALL BE FASTENED AS RECOMMENDED BY THE MANUFACTURER SUFFICIENT TO PREVENT DIFFERENTIAL DEFLECTION OF THE DECK UNITS.

**7. SHEAR STUDS**

- 7.1. SHEAR STUDS SHALL BE 3/4" DIA. x 3" LONG.
- 7.2. SHEAR STUDS SHALL BE PLACED WITH A UNIFORM SPACING ALONG THE BEAM. SEE FRAMING PLANS FOR STUD QUANTITIES PER BEAM. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THE STUD CONNECTOR QUANTITIES AND PLACEMENT PER BEAM.
- 7.3. IF SHEAR STUDS CANNOT BE PLACED WITH A UNIFORM SPACING ALONG THE BEAM, THE GREATEST NUMBER SHOULD OCCUR AT THE ENDS.
- 7.4. IF NUMBER OF SHEAR STUDS IS LESS THAN NUMBER OF COMPOSITE METAL DECKING RIBS, START AT BEAM ENDS AND PLACE A SINGLE STUD IN EVERY OTHER DECK FLUTE, WORKING TOWARD THE CENTER OF THE BEAM. IF STUDS REMAIN, FILL EMPTY RIBS, AGAIN STARTING AT BEAM ENDS. ADDITIONAL SHEAR STUDS OR "PUDDLE WELDS" MUST BE USED FOR REMAINING EMPTY FLUTES. SEE DETAIL 8/S301 FOR STUD LAYOUT.
- 7.5. IF NUMBER OF SHEAR STUDS IS MORE THAN NUMBER OF DECK RIBS, PLACE DOUBLE OR TRIPLE ROW OF STUDS AS NEEDED STARTING FROM BEAM ENDS AND WORKING TOWARD THE CENTER OF THE BEAM. A MINIMUM OF ONE STUD SHALL BE PLACED IN EVERY FLUTE.
- 7.6. FOR FLOOR BEAMS WITH NO SHEAR STUD QUANTITIES GIVEN, PROVIDE 1 STUD PER FLUTE, OR 12" O.C. MINIMUM SPACING.
- 7.7. SHEAR STUDS SHALL COMPLY WITH AMERICAN WELDING SOCIETY (AWS D1-90).

**8. NON-COMPOSITE METAL FLOOR DECK**

- 8.1. STEEL FLOOR DECK SHALL BE 1.0C24, 24 GAGE, GALVANIZED, NON-COMPOSITE FORM DECK AS PER STEEL DECK INSTITUTE (SDI) SPECIFICATIONS.
- 8.2. FLOOR DECK SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:  
MOMENT OF INERTIA, I 0.057 IN<sup>4</sup>/FT. WIDTH  
SECTION MODULUS (TOP OF DECK), S<sub>x</sub> 0.103 IN<sup>3</sup>/FT. WIDTH  
SECTION MODULUS (BOT. OF DECK), S<sub>y</sub> 0.103 IN<sup>3</sup>/FT. WIDTH  
IN ADDITION TO MEETING THE MINIMUM REQUIREMENTS ABOVE, THE DECK MANUFACTURER SHALL DESIGN THE FLOOR DECK FOR THE LOADS SHOWN IN THE STRUCTURAL DESIGN CRITERIA. DECK SHALL BE DESIGNED TO SUPPORT ALL CONSTRUCTION LOADS ALONE, UNSHORED, AND ALL INDICATED DEAD AND LIVE LOADS.
- 8.3. AS A MINIMUM, FLOOR DECK SHALL BE ATTACHED AS FOLLOWS:  
• SHEETS BEARING ON SUPPORTS, SHALL BE WELDED WITH 3/8" DIAMETER PUDDLE WELDS IN THE BOTTOM OF THE FLUTES WITHOUT SHEAR STUDS (12" O.C., MAX.)  
• SIDE LAPS SHALL BE FASTENED AS RECOMMENDED BY THE MANUFACTURER, SUFFICIENT TO PREVENT DIFFERENTIAL DEFLECTION OF THE DECK UNITS.

**9. WOOD FRAMING**

- 9.1. ALL STRUCTURAL WOOD MEMBERS SHALL BE No. 2 SOUTHERN YELLOW PINE, 19% MAXIMUM MOISTURE CONTENT, UNLESS OTHERWISE NOTED. INTERIOR NON BEARING PARTITIONS MAY BE No. 2 SPRUCE (SPF).
- 9.2. ALL WOOD FRAMING, DIRECTLY EXPOSED TO WEATHER, OR IN DIRECT CONTACT WITH MASONRY, SOIL OR CONCRETE, SHALL BE PRESSURE TREATED, UNLESS OTHERWISE NOTED.
- 9.3. ALL LVLs, DIRECTLY EXPOSED TO WEATHER, OR IN DIRECT CONTACT WITH MASONRY, SOIL OR CONCRETE, SHALL BE EXTERIOR GRADE, UNLESS NOTED OTHERWISE.
- 9.4. ALL METAL CONNECTORS SHALL BE HOT DIP GALVANIZED. INSTALL ALL CONNECTORS PER THE MANUFACTURER'S RECOMMENDATIONS. METAL CONNECTOR DESIGNATIONS INDICATED ON PLANS, ARE FOR "SIMPSON STRONG-TIE" ANCHORS. ANCHORS FROM OTHER MANUFACTURERS MAY BE USED, PROVIDED THEY HAVE EQUIVALENT STRENGTH.
- 9.5. ALL NAILED CONNECTIONS SHALL BE IN ACCORDANCE WITH NORTH CAROLINA STATE BUILDING CODE TABLE 2304.9.1. - FASTENING SCHEDULE, UNLESS OTHERWISE NOTED.
- 9.6. FRAMING CONNECTIONS THAT ARE BOLTED OR SREWED, SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL DESIGN SPECIFICATION FOR WOOD.
- 9.7. PROVIDE STUDS AND HEADERS AT ALL EXTERIOR WALLS AND INTERIOR BEARING WALLS AS FOLLOWS, UNLESS OTHERWISE NOTED:  
OPENING WIDTH STUDS HEADER  
0'-0" TO 6'-0" 2 KING STUDS, 1 JACK STUD (2) 2 x 10 @ 2 x 4 WALL  
6'-1" TO 8'-0" 2 KING STUDS, 2 JACK STUDS (2) 2 x 10 @ 2 x 4 WALL  
8'-1" TO 12'-0" 3 KING STUDS, 2 JACK STUDS (3) 2 x 10 @ 2 x 4 WALL  
(2) 2 x 12 @ 2 x 4 WALL

**10. WOOD DECKING/SHEATHING**

- 10.1. WALL SHEATHING SHALL BE 1/2" PLYWOOD OR ORIENTED STRAND BOARD (OSB), UNLESS OTHERWISE NOTED. ATTACH WALL SHEATHING TO FRAMING WITH 10d NAILS @ 4" O.C. AT PANEL EDGES AND 12" O.C. AT INTERIOR MEMBERS. PROVIDE SOLID BLOCKING AT PANEL EDGES (48" O.C.).
- 10.2. ROOF SHEATHING SHALL BE 1/2" PLYWOOD OR ORIENTED STRAND BOARD (OSB), UNLESS OTHERWISE NOTED. ATTACH ROOF SHEATHING TO FRAMING WITH 8d NAILS @ 4" O.C. AT PANEL EDGES AND 12" O.C. AT INTERIOR MEMBERS.
- 10.3. SUB-FLOOR SHALL CONSIST OF 3/4" PLYWOOD UNLESS OTHERWISE NOTED. FASTEN WITH 8d NAILS AT 6" O.C. AT PANEL EDGES, AND AT 12" O.C. AT INTERIOR SUPPORTS.

**11. PRE-ENGINEERED WOOD TRUSSES**

- 11.1. PRE-ENGINEERED TRUSSES SHALL BE DESIGNED, FABRICATED AND ERECTED, IN ACCORDANCE WITH TRUSS PLATE INSTITUTE (T.P.I.) SPECIFICATIONS.
- 11.2. PRE-ENGINEERED TRUSS MANUFACTURER SHALL DESIGN ALL TEMPORARY AND PERMANENT TRUSS BRACING, AND CLEARLY INDICATE ALL BRACING SIZES AND LOCATIONS ON THE SHOP DRAWINGS.
- 11.3. TRUSS HANGERS: AT EACH TRUSS END THAT DOES NOT HAVE A STANDARD BEARING CONNECTION, PROVIDE AN ENGINEERED CONNECTION THAT IS CAPABLE OF SUPPORTING THE REQUIRED REACTION.
- 11.4. COORDINATE TRUSS PROFILES AND OVERHANG DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
- 11.5. HURRICANE ANCHORS SHALL BE SPECIFIED BY THE TRUSS MANUFACTURER UNLESS OTHERWISE NOTED. ENGINEER OF RECORD CAN SPECIFY ANCHORS IF LOADING INFORMATION IS PROVIDED BY TRUSS MANUFACTURER. ALL TRUSS TO TRUSS CONNECTORS SHALL BE SPECIFIED BY TRUSS MANUFACTURER. THE CONTRACTOR SHALL SUBMIT TRUSS SHOP AND LAYOUT DRAWINGS FOR APPROVAL, PRIOR TO THE FABRICATION OF THE TRUSSES. ALL TRUSS DRAWINGS SHALL BE SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER.
- 11.7. ALL PRE-ENGINEERED WOOD TRUSSES SHALL BE DESIGNED TO SUPPORT THE DEAD AND LIVE LOADS INDICATED AS FOLLOWS:  
UNIFORM LOADS: ROOF TRUSSES FLOOR TRUSSES  
TOP CHORD LIVE LOAD 20 PSF 40 PSF  
TOP CHORD DEAD LOAD 10 PSF 10 PSF  
BOTTOM CHORD DEAD LOAD 10 PSF 10 PSF

**STRUCTURAL DESIGN CRITERIA:**

**1. DESIGN LOADS:**

- 1.1.

ROOF DEAD LOAD	MAX	MIN (FOR UPLIFT)
ROOFING & INSULATION	4 PSF	2 PSF
SHEATHING	3 PSF	2 PSF
ROOF FRAMING	4 PSF	3 PSF
PIPING, DUCT, ETC.	4 PSF	0 PSF
	15 PSF	7 PSF
- 1.2. LIVE LOADS  
ROOF LIVE LOAD - ALL AREAS GREATER OF 20 PSF MINIMUM OR SNOW LOAD  
1ST FLOOR LIVE LOAD \_\_\_\_\_ 100 PSF  
2ND FLOOR LIVE LOAD \_\_\_\_\_ 40 PSF  
3RD FLOOR LIVE LOAD \_\_\_\_\_ 40 PSF
- 1.3. SNOW LOAD  
GROUND SNOW LOAD = 10 PSF (DARE COUNTY)  
SNOW LOAD IMPORTANCE FACTOR: I = 1.0  
SNOW EXPOSURE FACTOR = 1.0  
SNOW THERMAL FACTOR = 1.0  
ROOF SNOW LOAD = 7 PSF  
BASIC DESIGN ROOF SNOW LOAD = 7.0 PSF
- 1.4. WIND LOAD  
BASIC WIND SPEED: Vult = 140 MPH (DARE COUNTY)  
RISK CATEGORY: I X II III IV  
WIND EXPOSURE CATEGORY: "C" (ASCE 7-10)  
WIND BASE SHEAR (FOR WFRFS): Vx = 77K Vy = 112K  
INTERNAL PRESSURE COEFFICIENT: ±0.55
- 1.5. SEISMIC LOADS (N.C. STATE BLDG. CODE):  
SEISMIC IMPORTANCE FACTOR: I = 1.0  
RISK CATEGORY: I X II III IV  
COMPLIANCE WITH SECTION 1616.4 ONLY? YES X NO  
SEISMIC DESIGN CATEGORY: A X B C D  
MAPPED SPECTRAL RESPONSE ACCELERATION: Ss 7.6 % g S1 4.4 % g  
SPECTRAL RESPONSE COEFFICIENTS: Sps 8.1 % S1 7.00 %  
SEISMIC RESPONSE COEFFICIENT: Cs 0.0270  
RESPONSE MODIFICATION FACTOR, R 3.0 (STEEL FRAMING - NO SPECIAL DETAILING)  
SITE CLASSIFICATION: A B C X D E F

**2. FOUNDATION DESIGN CRITERIA:**

- 2.1. MINIMUM FOOTING BEARING DEPTH BELOW GRADE IS 12 INCHES.
- 2.2. FOUNDATION DESIGN IS BASED ON A PRESUMPTIVE SOIL BEARING CAPACITY OF 1,500 PSF.
- 2.3. CONTRACTOR SHALL FIELD VERIFY THE SOIL BEARING CAPACITY PRIOR TO START OF CONSTRUCTION.

**cahoon+kasten**  
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**RPA ENGINEERING, P.A.**  
Structural Engineering Solutions  
Engineering License Certificate No. C-2734  
102 Regency Blvd. Phone : 252-321-6027  
Suite A1 Fax : 252-355-2179  
Greenville, NC 27834  
RPA Project No.: 2022351

Project: **BK Associates  
Mixed Use Building**  
Project No: **21068**  
Location: **4413 S Croatan Hwy  
Nags Head, NC 27959**  
Title: **Structural Notes**  
Date: **December 23, 2022**

The designer shall not be responsible for any error, omission, defect or deficiency in the contract documents ("error") prepared by the designer or its consultants which in any way impacts the schedule of the project, results in a lack of coordination among the contract documents, delays the completion of the project or which in any other way causes any damage or loss to the owner, contractor, subcontractors, or other entity involved in the project, unless: (i) designer is promptly notified of such error, in any event within 14 days of the date such error was discovered or could reasonably have been discovered; and (ii) designer is given opportunity at the time of discovery to address such error, and, if appropriate, take such steps as are necessary to correct and resolve it. Failure to comply with the provisions of this paragraph shall constitute a waiver of any claim for damages, or a right to offset against designer by owner, contractor or others and shall in no event cause or allow a reduction in the fees otherwise due designer for services provided on the project.



Revisions:

No.	Description	Date

Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cad File:  
**S401**

CONCRETE MATERIALS SCHEDULE		
LOCATION	MINIMUM COMPRESSIVE STRENGTH (AT 28 DAYS)	REMARKS
FOUNDATIONS	3000 PSI	-
ELEVATED FLOOR SLABS	4000 PSI	LIGHTWEIGHT CONCRETE
FLOOR SLAB, WALLS, EQUIPMENT PADS	4000 PSI	-
CONCRETE FOR MASONRY CORES, BOND BEAMS	3000 PSI	ASTM C476 GROUT

EXPOSED CONCRETE FINISH SCHEDULE		
AREA	FINISH	COMMENTS
BASEMENT WALLS	SMOOTH FORM	SEE NOTE 1
ALL EXTERIOR WALLS, CURBS, UNLESS OTHERWISE NOTED	SMOOTH FORM	SEE NOTE 1
EXTERIOR CONCRETE PAVEMENT, SIDEWALKS	COARSE BROOM	SEE NOTE 1
SLAB ON GRADE	TROWEL	SEE NOTE 1
EXT. EQUIP. PADS	COARSE BROOM	SEE NOTE 1
EXTERIOR STAIRS	COARSE BROOM	SEE NOTE 1
-	-	-

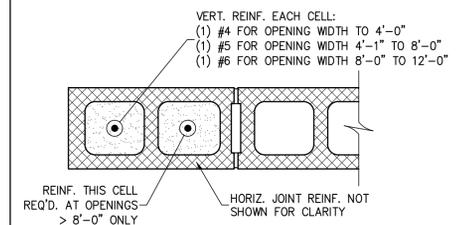
CONCRETE REBAR SPLICE SCHEDULE			
BAR SIZE	LAP LENGTH (in.)		
	f'c = 3000 psi	f'c = 4000 psi	f'c = 5000 psi
#4	22	19	17
#5	28	24	21
#6	32	29	26
#7	48	42	37
#8	55	48	43
#9	62	54	48
#10	68	60	53
#11	76	66	59

MASONRY REBAR LAP SPLICE SCHEDULE	
BAR SIZE	BASIC LAP SPLICE (Ld) FOR CMU REINFORCING
#3	1'-6"
#4	2'-0"
#5	2'-6"
#6	3'-0"
#7	3'-6"
#8	4'-0"
#9	4'-6"

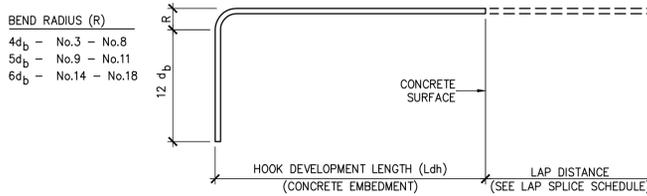
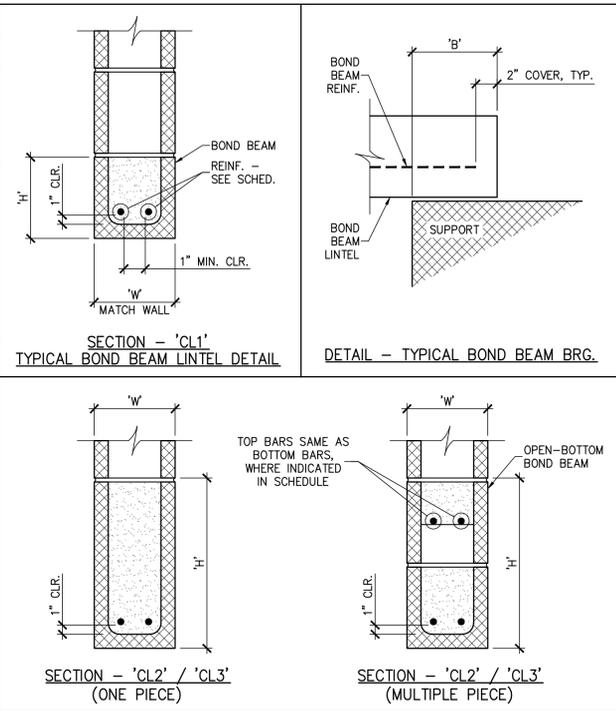
- NOTES:
- CONCRETE IS NORMAL WEIGHT CONCRETE. IF LIGHTWEIGHT CONCRETE IS USED, MULTIPLY LENGTHS IN TABLE BY 1.3.
  - BAR YIELD STRENGTH (fy) IS 60 KSI.
  - BAR SPACING AND COVER REQUIREMENTS OF ACI SECTION 25.4.2.2 ARE ASSUMED TO BE MET. IF NOT, MULTIPLY LENGTHS IN TABLE BY 1.5.
  - REDUCTION OF EXCESS REINFORCEMENT NOT TAKEN.
  - IF MORE THAN 12" OF FRESH CONCRETE IS CAST IN MEMBER BELOW HORIZONTAL SPLICE, MULTIPLY LENGTHS IN TABLE BY 1.3.

CONCRETE MASONRY LINTEL SCHEDULE					
LINTEL MARK	WIDTH 'W'	HEIGHT 'H'	BRG. 'B'	REINFORCING	REMARKS
CL1	WALL	8"	8"	(2) #5	SEE NOTE 1
CL2	WALL	16"	8" (U.O.N.)	(2) #5	SEE NOTE 1
CL3	WALL	24"	16"	(2) #5	SEE NOTE 1
-	-	-	-	-	-

- MASONRY LINTEL SCHEDULE NOTES:
- PROVIDE REINFORCING BOND BEAM LINTELS FOR ALL CONCRETE MASONRY OPENINGS ACCORDING TO SPAN SCHEDULE BELOW, UNLESS OTHERWISE NOTED.
    - 0'-0" < CLR. OP'NG. ≤ 4'-0" CL1
    - 4'-0" < CLR. OP'NG. ≤ 6'-0" CL1
    - 6'-0" < CLR. OP'NG. ≤ 8'-0" CL2
    - 8'-0" < CLR. OP'NG. ≤ 10'-0" CL2 w/ 16" BRG. EA. END
    - 10'-0" < CLR. OP'NG. ≤ 12'-0" CL3
  - PROVIDE 'CL1' LINTEL BELOW ALL WALL OPENINGS UNLESS OTHERWISE NOTED (WINDOW SILLS, ETC.)



- TYPICAL JAMB @ EXTERIOR CMU DETAIL NOTES:
- OPENING WIDTH SHALL NOT EXCEED 12'-0" FOR THIS TYPE OF JAMB, UNLESS OTHERWISE NOTED.
  - THIS TYPE OF JAMB APPLIES WHERE ALL CMU LINTELS ARE USED, UNLESS OTHERWISE NOTED.



STANDARD HOOKS IN TENSION (PER ACI 318-02)			
BAR SIZE	HOOK DEVELOPMENT LENGTH Ldh (INCHES)		
	f'c 3000 psi	f'c 4000 psi	f'c 5000 psi
#3	9	7	7
#4	11	10	9
#5	14	12	11
#6	17	15	13
#7	19	17	15
#8	22	19	17
#9	25	22	19
#10	28	24	22
#11	31	26	24

- NOTES:
- CONCRETE IS NORMAL WEIGHT CONCRETE. IF LIGHTWEIGHT CONCRETE IS USED, MULTIPLY LENGTHS IN TABLE BY 1.3.
  - BAR YIELD STRENGTH (fy) IS 60 KSI.
  - SIDE COVER REQUIREMENTS OF ACI SECTION 25.4.3.2 ARE ASSUMED TO NOT BE MET.
  - TIE OR STIRRUP REQUIREMENTS OF ACI SECTION 25.4.3.2 ARE ASSUMED TO NOT BE MET.
  - REDUCTION OF EXCESS REINFORCEMENT IS NOT TAKEN.
  - HOOK DEVELOPMENT LENGTH IS VALID FOR 180° HOOKS ALSO.
- db = BAR DIAMETER

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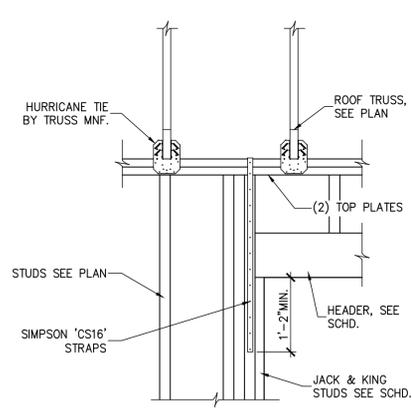
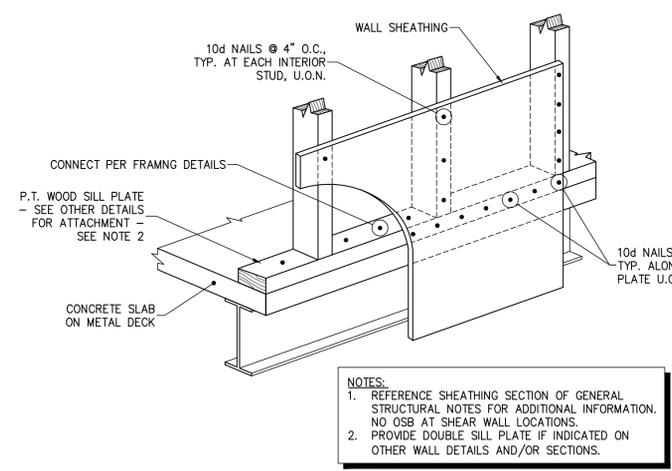


Revisions:		
No.	Description	Date

Designed: **MSR**  
Drawn: **MKE**  
Reviewed: **MSR**  
Cad File:

**S402**

1 SHEARWALL DETAIL  
S402 / 3/4" = 1'-0"



2 DETAIL AT WINDOW HEADER  
S402 / 3/4" = 1'-0"