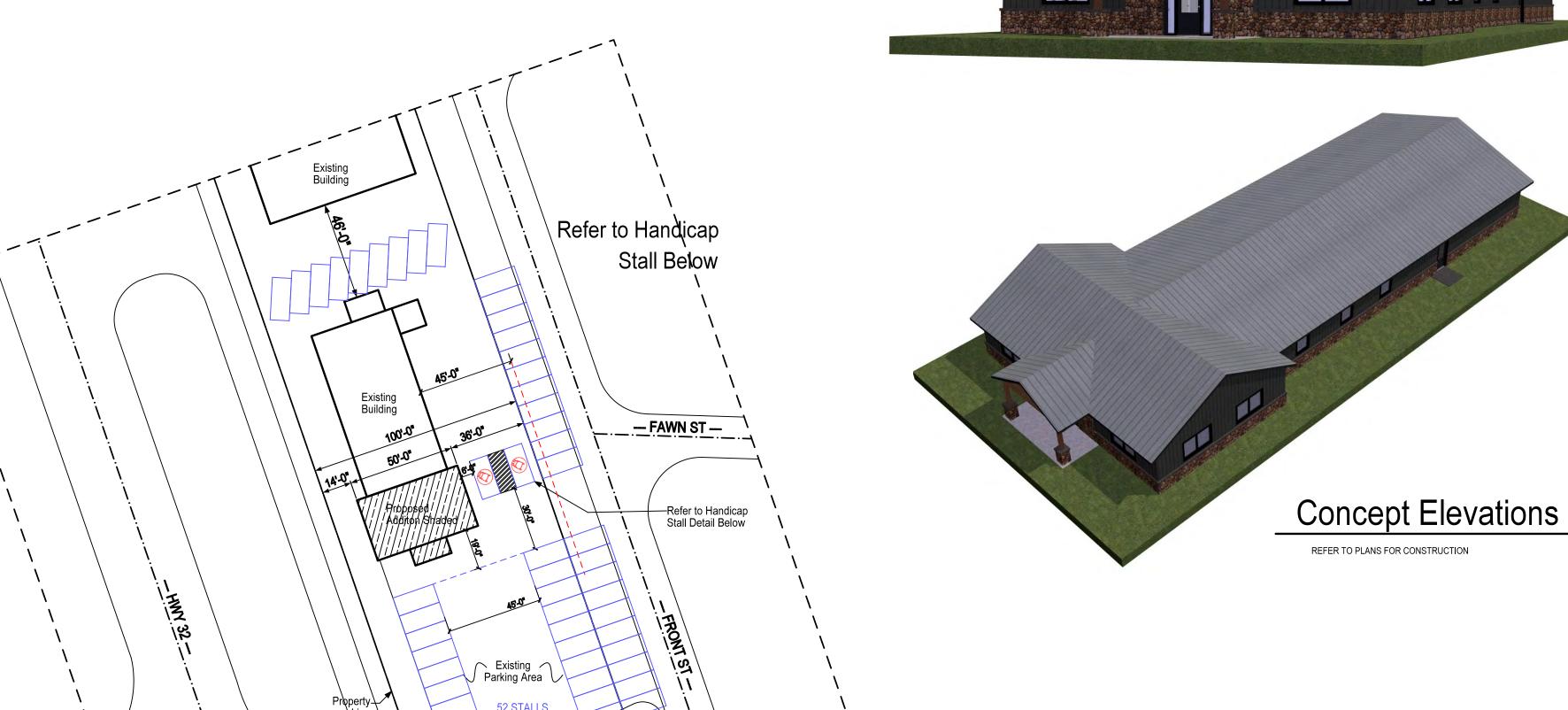
Addition

Townsend Town Hall

Townsend, WI

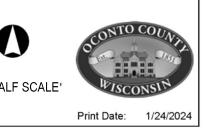


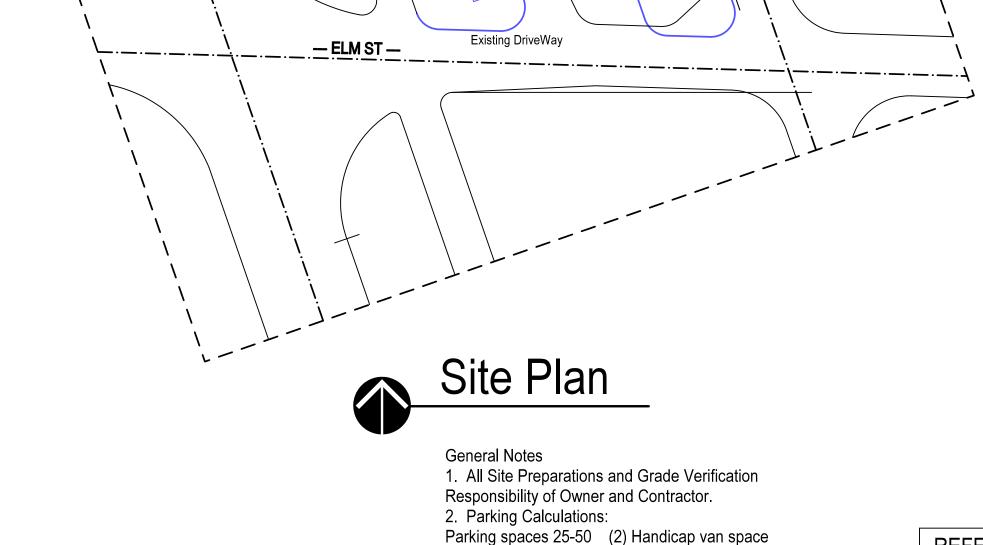


Oconto County GIS TextBox1

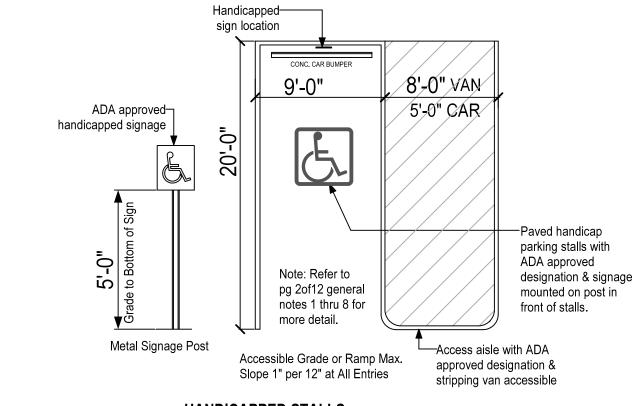
Oconto County Land Information Systems makes every effort to produce the most current and accurate information possible. No warranties, expressed or implied, are provided for the data provided, its use, or its interpretation. Oconto County does not guarantee the accuracy of the material contained herein and is not responsible for any misuse or misrepresentation of this information or its derivatives. Oconto County parcel maps are for tax and real property listing purposes only and do NOT represent a survey. The tax parcel maps are compiled from official records, including survey plats and deeds, but only contain the information required for Oconto County business. You should always use the original recorded documents for legal or survey







PRELIMINARY PLANS



HANDICAPPED STALLS

e-mail: kenschwebke@yahoo.com w10258bean@frontier.com GENERAL CONTRACTOR STRUCTURAL ENGINEER: Vilas Engineering LLC Kevin Muich, P.E. (WI, MD, CA) 1112 Vilas Ave., Madison, WI 53715 kevin@vilasengineering.com vilasengineering.com PROJECT DATA PROJECT LOCATION **BUILDING CODE:** 2015 IBC BUILDING ADDRESS: Townsend, WI 54175 CONSTRUCTION TYPE: USE AND CLASSIFICATION: ACCESSORY USE(S): MUNICIPALITY: **Town of Townsend** SEPARATED/NON-SEPARATED: Non Seperation COUNTY: ALLOWABLE BLDG HEIGHT **PROPERTY** ZONING: ALLOWABLE STORIES ALLOWABLE BLDG AREA: 6,000 sq ft CONDITIONAL USE MUNICIPALITY CERTIFIED TO TOTAL BUILDING AREA: 5,000 sq ft INSPECTION TOTAL BUILDING VOLUME: EXIT ACCESS TRAVEL DISTANCE: FIRE SUPPRESSION: SPRINKLER TYPE: PLUMBING FIXTURES PLUMBING CALC. REQUIRED PROVIDED A-3 Total Occupancy 194

Lavs 1 per 200

Water Closets

Male 1 per 125

Drinking Fountains 1 per 500

Female 1 per 65 Female 2 Lavs are required

ARCHITECT/ENGINEER

ARCHITECTURAL:

Antigo, WI 54409

715-489-3721

BC Architectural LLC.

W7121 Red River Road

GENERAL NOTES

URINAL

LAVATORY

BATH TUB / SHOWER

DRINKING FOUNTAIN

SERVICE SINK

1. Plans prepared by owners requested specifications.

OWNER INFORMATION

TOWN OF (Town Hall) TOWNSEND

PO Box 227

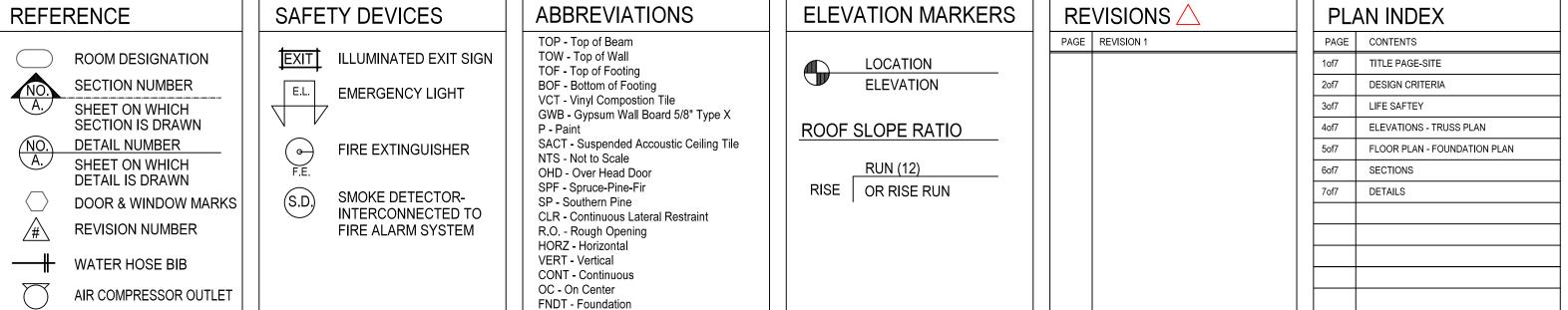
Townsend, WI 54175

Ken Schwebki 920-470-8229

- 2. It is the contractor and owners responsibility to maintain all applicable Codes.
- 3. Contractor to verify all window and door rough opening sizes with supplier. 4. Contractor to verify all existing conditions and dimensions on job site prior to construction. Any
- discrepancies shall be brought to the designer's attention immediately.
- 5. Contractor is responsible for coordinating plans and existing conditions prior to starting construction. 6. IBC 906.3.1/IBC 906.2 - Provide fire extinguishers per IFC 906. Fire extinguishers shall be selected installed and maintained in accordance with IFC 906 and NFPA 10
- 7. All Site Preparations and Grade Verification Responsibility of Owner and Contractor.
- 8. Furnishings by Owner
- Refer to ICC/ANSI Section 900 Built In Furnishing And Equipment for more detail.
- 9. Emergency Lighting Locations by Electrician.
- 10. IBC 1008.1.9.1 Hardware. Door handles, pulls, latches, locks, and other operating devices on doors required to be accessible by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to
- IBC 1008.1.9.5 Unlatching. The unlatching of any door or leaf shall not require more than one operation.

ACKNOWLEDGEMENTS

IBC 1010.1.10/SPS 362.1010(3) - Doors serving an occupant load of 50 or more in a Group A occupancy shall not be provided with a latch or lock unless it is panic hardware or fire exit hardware. Provide electrical rooms rated with 1,200 amperes or more and over 6 ft wide that contain overcurrent devices, switching devices or control devices with exit access doors shall also be addressed with door swing action in the direction of egress travel. Additionally, an electrical room that contains equipment rated 800 amperes or more and contains overcurrent devices, switching devices, or control devices, and contains a personnel door intended for entrance to and egress from the working space less than 25 from the nearest edge of the work space, shall be provided panic hardware with the door swing action in the direction of egress travel.



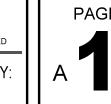


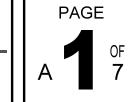


TOWNSEND TOWN HALL

3/1/2024 UNLESS NOTE PROJECT# DRAWN BY

850-0-ILLUS





Engineering Disclaimer: The structural analysis, design, and detailing in this document is based on the stated assumptions which includes the Design Criteria based on building code loads. Uses that impose loads in excess of those assumed are outside the scope of this document; therefore, the Client is responsible for contacting Vilas Engineering LLC immediately if any stated assumptions are incorrect. This report only applies to the stated Scope of Work, all other work is considered outside the scope of this document. This work is intended solely for the Client(s) named and for the Project(s) named. Any use which a third party makes of the work, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Client shall indemnify and defend Vilas Engineering LLC against any claims, liabilities, damages, expenses, fees (including reasonable attorney's fees), incurred by Vilas Engineering LLC arising from or in connection with the misuse of the report. No warranty, expressed or implied, is provided that the final construction is in accordance with this document. This document shall be

The Structural Engineer's Role During Construction:

1. Vilas Engineering LLC (a.k.a. Engineer) shall not have control, nor charge of,

- and shall not be responsible for: 1. Construction means, methods, techniques, sequences, or procedures.
- 1.2. All temporary or intermediate states of the structure. 3. Any safety precautions and programs in connection with the work 1.4. For the acts or omission of the Client, Contractor, Subcontracto or any other persons performing any work or for the failure of any of them to carr

deemed out of date upon notice by Vilas Engineering LLC to Client and in any event no later than 2 years after Issue Date.

- out the work in accordance with these contract documents . Pertaining to periodic site observation by Vilas Engineering LLC 2.1. Periodic visits are solely for the purpose of becoming generally familiar with the progress and quality of the work completed and determining, in general, if the work
- bserved is being performed in a manner indicating that the work, when fully completed, will be in accordance with these contract documents. 2.2. These limited site observations should not be construed to as exhaustive or continuous to check the quality or quantity of the work, but rather periodic in an

effort to guard the project against defects or deficiencies in the work taking place 2.3. These visits do not constitute periodic or continuous inspections or observations observations as required by the Building Code.

Design Criteria Building Length (Parallel to Ridge), L: 100 Building Width (Perpendicular to Ridge), 5: 58 ft Roof Slope: 4 /12 Mean Roof Height, h: 30 ft Building Risk Category: 2

Building Exposure Category: Wind Speed (Vult): 115 mph Wind Speed (Vasd): 90 mph Directionality Factor, Kd: .85 Topographic Factor, Kzt: 1 Enclosure Classification: Partially Enclosed

Wisconsin Commercial Code Ameridments: Yes

Building Code: 2015 IBC

Roof Type: Gable C&C Strength (Ultimate) Loads Zone 1 - Roof Field: -3 / 24 psf Zone 2 - Roof Edge: -49 / 24 psf Zone 3 - Roof Corner -72 / 24 psf Zone 4 - Wall Field: 42 / 39 psf Zone 5 - Wall Corner: -45 / 39 psf

Snow Loads Ground Snow Load, Pa: 60 psf Roof Exposure: Partially Exposed Thermal Factof, Ct: 1.1 Roof Surface Unobstructed Slippery Surface Flat Roof Snow Load: 46 psf Sloped Roof Snow Load: 40 psf

Truss - TC Dead: 10 psf Truss - BC Dead: 10 psf Walls: 0 psf Roof Live Load: 20 psf Jn**/**hhabitable Attic: 20 psf

Delegated Structural Design Manufactured Roof Trusses

ressumed Allowable Soil Bearing Pressure: 1500 psf

	•				
	Tab	le 1 - Minimur	n Reference Design Valu	ıes (psi)	
	N	/laterial	LVL LP 2900F _{\Sb} -2.0E	SPF Spruce-Pine-Fir No. 1/No. 2	
ry	-	Joist/Beam	2,900	875	
	F∖sb	Plank	2,900	875	
		F\St	1,800	450	
ork	F\Sv	Joist/Beam	285	135	
	F\Sv	Plank	140	135	
		F _{\Sc}	3,200	1,150	
	F	Joist/Beam	750	425	
<i>.</i>	\Sc_perp	Plank	550	425	

E	2,000,000		1,400,000						
Table 2 - Steel Member Fabrication Standards									
Member	Standard		n. Yield ngth (ksi)	Min. Ultimate Strength (ksi					
W Shapes	ASTM A992		50	65					
HP Shapes	ASTM A572 - Gr. 50	50		65					
M, S, C, MC, L Shapes Plates & Bars	ASTM A36	36		58					
Rectangular HSS	ASTM A500 - Gr. B		46	58					
Round HSS	ASTM A500 - Gr. B		42	58					
Pipe	ASTM A53 - Gr. B		35	60					
Bolts	ASTM A325			105					
Nuts	ASTM A563			_					
Washers	ASTM F436			_					
Threaded Rod	A36		58						
Anchor Bolts	ASTM F1554 - Gr. 36		36	58					

Table 3 - Required Special Inspections

Trade	Туре	Special Inspection
	Location and size of reinforcement, connectors, and embeds	Periodic
	Anchors Cast in Concrete	Periodic
Concrete	Post installed anchors in hardened concrete	Periodic
	Concrete strength, slump, air content tests, and concrete temperature	Continuous
	Post installed anchors in hardened concrete, in continuous tension	Continuous
	Verify materials below shallow foundations are adequate to achieve the design bearing capacity	Periodic
ľ	Classification and testing of compacted fill materials	Periodic
Soils	Proper materials, densities, and lift thickness during placement and compaction of fill	Continuous
	Prior to placement of fill, inspect subgrade to verify site has been properly prepared	Periodic
	Nailing, bolting anchoring, and other fastening of elements	Periodic
Wood	Shear Walls and wood diaphragms, drag struts, braces, and hold-downs	Periodic
	Shear Walls with fastener spacing less than 4" o.c.	Periodic
	Verification of f\sm	Periodic
	Proportions of site-prepared motar	Periodic
CMU	Construction of Joints	Periodic
	Location and size of reinforcement, connectors, and embeds	Periodic
	Grout space	Periodic
Steel	Bolting, anchoring, and other fastening.	Periodic
Steel	Welding	Continuous

Verifying soil conditions at the project site. Obtaining all permits and inspections required by the local building department.

- Adhering to all building codes. All environmental detailing such as water management details. Examples, window flashing, air sealing, water resistive barriers, air barriers, mold & rodent remediation. etc.
- 5.1. The design depicted in these plans is for the final structure only. Client is responsible for means and methods of construction which includes the temporary condition of all structural
- 5.2. When backfilling foundation walls the floor system shall be installed, fastened, and sheathed to provide bracing to the foundation wall. 5.3. When backfilling stem walls, soil shall be placed and compacted in alternating equal height lifts to minimize lateral forces on the wall.
- 6. All safety precautions required by State and Federal law during construction 6.1. Client shall fully and properly implement the engineering controls, work practices, and respiratory protection against toxic and hazardous substances, including respirable crystalline silica according to Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1153.

All materials shall be in accordance with the Wisconsin Commercial Building & Uniform Dwelling Code.

- Contractor shall verify and coordinate all dimensions and elevations prior to construction. Examples, architectural layouts, finish thickness, structural hardware, etc. Contractor shall coordinate these plans and construction with other trades. Examples, truss design drawings, shop drawings, mechanical, HVAC, electrical, etc.
- All hardware shall be installed per the manufacturer's installation instructions. Where only hardware capacity is specified the selected hardware shall be submitted to Vilas Engineering LLC for confirmation that it meets the design assumptions. All hardware
- submitted shall be supported by a Code Evaluation Report. This allows the Client the ability to shop for hardware which might be difficult and costly to attain. Details shall be considered typical and be utilized where similar conditions exist. Where additional information is needed for clarification of a detail, or where it applies, a request shall be
- submitted to Vilas Engineering LLC. Work shall stop until clarification is provided. 6.1. When these details and code requirements conflict the more restrictive of the two shall be followed.
- Where loads, loading, and required capacities are specified they shall be considered Allowable Stress Design (ASD). Where Load and Resistance Factor Design (LRFD) is required, the specified loads & capacities shall be multiplied by 1.6.
- Where details are not provided and clarification is needed contact Vilas Engineering LLC for updated details. All framing, concrete, steel, etc. shall be installed/constructed plumb or level.
- 2. All inspections required by the applicable Building Codes and these plans shall be provided by an independent inspection agency or the building department. 1. Notes on specific plans and details as shown on the drawings shall take precedence over general structural notes and typical details.
- Written approval of Vilas Engineering LLC is required prior to structural alterations or modifications of work affecting structural members. Refer to architectural plans for fire rating requirements.
- 4. Centerline of framing elements coincide with column centerlines and framing members shall be equally spaced, unless otherwise noted. 15. If any errors or omissions appear in these drawings, specifications, or other documents, the contractor shall notify the Architect and Vilas Engineering LLC in writing prior to proceeding
- 16. No provisions have been made for future expansions
- 7. No provisions have been made for future anticipated uses 18. Powder Actuated Fasteners (PAF) shall be Hilti X-U 47 (0.157"x1-7/8"). Refer to Hilti's installation instructions for conditions of use.
- Possible Changes in Quantity of Work:
- 1. Bidder understands that the quantities specified herein are approximate and that actual quantities in the field may increase or decrease from the quantities shown here. Bidder hereby agrees to perform all quantities of work as either increased or decreased, as required by Vilas Engineering LLC in accordance with the provisions of the contract documents

1. All structures require periodic maintenance to extend the life-span and to ensure structural integrity from exposure to the environment. A planned program of maintenance shall be established and executed by the Building Owner. This program shall include items such as but not limited to painting of structural steel, protective coating for concrete, replacement of

failed sealants, caulked joints, expansion joints, control joints, repair of spalls and cracks in concrete, and pressure washing of structural elements exposed to a salt environment or other harsh chemicals. Responsibility of the Contractor for Construction Loads:

The contractor shall not overload the structure during construction. The Contractor is responsible for checking the adequacy of the structure to support any applied construction loads, including those due to construction vehicles, equipment, material handling, storage, shoring, re-shoring, or any other construction activity. The Contractor shall submit calculations signed and sealed by a Professional Engineer licensed in the State of Wisconsin verifying the adequacy of the structure for any proposed construction loads that are in excess of 20 psf. Vilas Engineering LLC is not responsible to design or check the structure for loads applied to the structure for construction activity.

1. The design contained in these sheets is based on an assumed structure and load path of the existing structure obtained via a visual inspection of the existing structure prior to construction and demolition commencing. Finishes obscured the exact nature of the structure, load path, and materials.

- 1.1. These assumptions are shown throughout the plans and shall be verified as construction progresses to construction 1.1.1. After demolition has revealed the structure to an adequate degree contact Vilas Engineering LLC to schedule a site visit to verify assumptions as needed.
- 1.2. Where the assumptions are incorrect contact Vilas Engineering LLC to verify and/or update the design, if needed, prior to construction but after the demolition has revealed the exact structure, load path, and materials of the existing structure
- 2. Contractor shall verify all dimensions and conditions of the existing building at the job site and report any discrepancies, from assumed conditions shown on the drawings, to Vilas Engineering LLC prior to fabrication and erection of any members. Existing dimensions shown on the drawings are for general reference only and should not be used for final construction,
- detailing, shop drawing preparation, etc. Existing construction shown on the drawings was obtained from limited site observation. The Contractor is responsible for being knowledgeable of information presented and shall field verify all pertinent information.
- Contractor shall perform a survey to locate all existing utilities prior to the start of construction and take care to protect utilities to remain in service as required by the Owner. Existing civil, MEP, Fire Protection, and emergency protection systems servicing any areas outside the work area shall be maintained in operable condition throughout the duration, and after, construction as required by the Owner, Building Code, or local laws. Contractor shall make all necessary temporary connections to maintain existing utilities in service during the work. Temporary, localized, interruptions of these systems shall be coordinated with the Owner.

Handrails, Guards, and Grab Bars:

- 1. All handrail and guardrail systems shall be designed to resist a single concentrated load of 200 lb applied in any direction at any point on the handrail or top rail. This load shall be ransferred through the supports to the structure to produce the maximum load effect on the element being considered.
- 2. All handrail and guardrail systems shall be designed to resist a load of 50 lb/ft applied in any direction along the handrail or top rail. This load need not be assumed to act concurrently with the 200 lb concentrated load.
- Intermediate rails and panel fillers (ex. baluster) shall be designed to withstand a horizontally applied normal load of 50 lb on an area not to exceed 12 in. by 12 in. including openings and space between rails and located so as to produce the maximum load effects. Reactions due to this loading are not required to be superimposed with the loads specified in either preceding
- 4. Grab bar systems shall be designed to resist a single concentrated load of 250 lb applied in any direction at any point on the grab bar to produce the maximum load effect.

- Architect and contractor shall detail and construct building finishes to accommodate an expected building shrinkage of approximately 3/8" per floor of wood construction. All lumber shall be properly identified with a grade mark of a lumber inspection agency complying with Doc PS20 "American Softwood Lumber Standard."
- Proper care shall be taken to protect lumber from the elements at all stages of transport, storage, and construction. Lumber shall not rest in standing water Wood framing, sheathing, etc. joints shall be staggered. Roof and floor sheathing shall have panel edge clips when sheathing does not have tongue and grooves.
- Provide squash blocking in the floor/roof/wall system under posts/columns of equal or greater area as that of the column above to ensure load transfer of the concentrated load to the supporting structural member below
- Column sizes specified are minimum. Contractor may install larger sections if required to fully support members. As a minimum, all connections shall conform to the IBC Table 2304.10.1. Drawing details shall govern where they require more or increased size, length, or type of fasteners.
- All door and window headers shall be (2) 2x12 members unless noted otherwise
- All exterior walls shall be sheathed in min. ¼₆" Wood Structural Panel (WSP) sheathing with an Exposure 1 rating and Sheathing grade
 All walls shall have (2) Top Plates & (1) Bottom Plate, min. All roof and wall sheathing shall be attached with 8d ring shank nails, 6" o.c.
- 3. All roof, wall, and floor sheathing panels shall be installed in widths 24" or greater. Full 4'x8' panels, min., shall be installed whenever the geometry provides 14. Posts composed of (2) to (4) studs/plies shall be fastened together with nails/screws, of sufficient length to penetrate (2) plies with a minimum 0.120 Ø. Each ply shall be attached to the group with the following. All fasteners shall be staggered to avoid splitting, including within a ply and between adjacent ply fasteners. 4.1. For 2x4 plies (2) screw @ 6" o.o
- 14.2. For 2x6 plies (3) screws @ 6" o. 14.3. For 2x8 plies (4) screws @ 6" o.c Posts composed of (5) or more studs/plies shall be fastened together with screws, of sufficient length to penetrate all plies. Where the following qty. of screws shall be used: 15.1. For 2x4 plies (1) screw @ 6" o.c.
- 15.2. For 2x6 plies (2) screws @ 6" o.c 15.3. For 2x8 plies (3) screws @ 6" o.c.
- 16. Lumber shall meet the following requirements 16.1. Solid sawn lumber shall be minimum SPF No. 1/No. 2 grade material, unless noted otherwise.
- 16.2. LVLs shall be minimum 2900F_b-2.0E LP (Louisiana Pacific) LVL. 16.3. Lumber shall have the minimum design properties found in Table 1. Better material is permitted to be substituted provided it meets or exceeds these values. 17. Where floor joists run parallel to, and provide support for, walls, bathtubs, laundry machines, etc. additional joists shall be installed such that a minimum of (1) extra joist is providing
- additional support Blocking/bridging shall be installed between floor joists to ensure adequate load sharing between joists.
- 9. Where screws are substituting nails screws shall be standard wood screws manufactured in accordance with ANSI B18.6.1. 0. Multi-ply headers and beams shall be stitched together with structural screws as follows 3" o.c. vertically and 6" o.c. horizontally, min
- Pertaining to Structural Screws (SS): 21.1. Shall be used to stitch (5) or more 2x and (2) or more LVL plies together.
- 21.1.1. Structural Screws are permitted to fasten less than (5) 2x plies together. 21.2. Screws shall penetrate all plies completely when used to stitch plies of posts or beams together. 21.3. When attaching a side member to a main member the screw shall fully penetrate the side member and penetrate at least 2" into the main member.
- 21.4. The following structural screws are permitted to be used interchangeably:
- 21 4 1 2 Timberl OK 21.4.1.3. HeadLOK
- 21.4.1.4. LedgerLOK 21.4.2 Simpsor 21.4.2.1. SDS Heavy-Duty Connector Screw
- 21.4.2.2. SDW Truss-Ply and EWP-Ply Screws 21.4.2.3. SDWH Timber-Hex Screw Pertaining to bolts:
- 22.1. Thru bolts shall be machine bolts and have a minimum bending yield strength of 36 ksi.
- 22.3. Standard washers shall be installed on both the head and nut side against all materials, including wood, steel, and concrete. 22.4. Threaded rod, with nuts and washers on both ends, are permitted to replace bolts where obtaining the required length of bolt is impractical
- 2.5. Nuts shall be tightened enough such that all plies are in contact with each other, but not so tight as to crush the wood member
- 23.1 For solid sawn lumber joists, shall be the same size and grade as the floor joists they support 3.2. For I-Joists, shall be 1-1/8" thick, Grade B2 or better in accordance with APA PRR 410. Rim boards shall be the same depth as the I-Joists. 24. Follow I-Joist manufacturer's installation instructions for:
- 24.1 All installation conditions not noted here 24.2. All cutting, notching, and drilling.
- All web stiffening for connection attachment. 24.4. All web stiffening at bearing locations, where noted as required here. 25. All hardware shall be installed in accordance with the manufacturer's installation instructions. Fasteners specified by the hardware manufacturer shall be used. All factory created nail
- 26. Pertaining to Subfloors: 26.1. All floor systems shall be sheathed with 23/32"APA Rated 24 oc Exposure 1 T&G, min.
- 26.2. Panels shall be installed longwise across more than (2) members. 26.3. Shall be attached to joists with construction adhesive & screws or ring shank nails 6" o.c.
- Construction adhesive shall:
- 27.1. Meet ASTM D3498 specifications. 27.2. Be installed in accordance with the manufacturer's instructions. Special attention should be paid to lumber moisture content, temperature/humidity during installation, and cure time. 28. All weather protection including roofing materials, house wrap, cladding, windows, doors, brick veneer, etc. shall be installed, attached, and flashed in accordance with the manufacturer's
- installation instructions and details as well as all architectural detailing. 29. Where nails are specified screws of equal, or greater, diameter are permitted to be substituted.
- Wood in contact with masonry shall be preservative treated to prevent rot and decay. Pertaining to preservative treated lumber: 1.1. Lumber designated as pressure treated, preservative treated, or treated shall be preservative treated to protect against moisture, decay, rot, and insects.
- 31.2. Preservative treated lumber shall be selected for use in accordance with AWPA U1. 31.3. Preservative treated lumber shall be treated and labeled in accordance with AWPA U1
- 31.4. Fasteners, hangers, and other hardware used in preservative treated lumber shall be hot-dipped zinc-coated galvanized steel, stainless steel, or be certified for such use by the 32. Lumber shall be at a moisture content of 19% or less before being covered with insulation, interior wall finish, floor covering, or other materials enclosing the members.
- 33. Sheathing shall conform to the requirements for their type in DOC PS1, DOC PS2, or ANSI/APA PRP 210. Wood structural panels shall be designed and fabricated in accordance with 34. Structural composite lumber, including LVL, shall have structural capacities established and monitored in accordance with ASTM D5456 35. Lumber shall not be fire-treated unless specifically noted herein or approved by Vilas Engineering LLC. Fire treatments have reduce the strength of the lumber and therefore need to be
- 36. Cutting and notching: 36.1. LVL members are not permitted to be cut, notched, or drilled without prior approval from Vilas Engineering LLC.
- 6.1.1. Pre-drilling for fasteners specified herein is permitted. 36.2. Solid sawn floor joists and rafters are permitted to drilled with a round hole 36.2.1. The diameter of such hole shall be 1/8 the member depth or less
- 36.2.2. No part of the hole shall not be located within 2" of the member edge.
- 1. The Client is responsible for Obtaining a Geotechnical investigation and report which outlines the allowable soil bearing capacity. The report shall be signed and sealed by a Geotechnical Engineer licensed in
- Verifying the soil properties at the project location
- Compliance of soil compaction and measures taken to achieve assumed allowable bearing pressures. The IBC minimum allowable soil bearing capacity has been assumed in the design. No provisions have been made for expansive soils. Soils, native and fill, under slab on grade which experiences vehicular traffic shall be compacted to a 200 pci subgrade modulus
- All soil activities, including fill and compaction, shall be in accordance with the Geotechnical report and field verified by a qualified Geotechnical Engineer prior to the placement of slabs, 4. All topsoil, debris, silts, and organic material shall be stripped and removed from the limits of excavations and existing subgrade shall be compacted in accordance with the Geotechnical
- 5. Unsatisfactory soils located below slabs, footings, and foundations shall be removed and replaced as outlined in the Geotechnical Repor Foundation Notes: Anchor bolt nuts shall be tightened enough such that all plates are in contact with the foundation, but not so tight as to crush the plates.
- Anchor bolts shall be set to ensure that after nut is snug tightened a diameter's length of tread remains over the nut. Protect in-place foundations and slabs on grade from frost penetration until project is complete.

4. Refer to architectural, plumbing, electrical, HVAC, etc. drawings for specific utility locations and elevations

- Steel shall have the minimum design values in Table 2.
- All details, connections, fabrication, and erection of structural steel shall conform with applicable version of AISC (American Institute of Steel Construction), Specification for Structural Steel Buildings Splices shall be allowed only at locations specifically indicated on the structural drawings, unless approved otherwise by Vilas Engineering LLC
- Standard holes shall be used. Oversized or slotted holes shall not be used for any connections unless specifically indicated on the drawings or approved by Vilas Engineering LLC. Prevent any accumulation of water in steel members during erection. Cuts, holes, coping, etc. required shall be shown on the shop drawings and made in the shop. Cuts or torching of holes in structural steel members in the field is not permitted
- Contractor shall provide any necessary temporary bracing or guys wire to provide lateral support of the building until permanent frames are completed Welds shall be performed by a welder certified in accordance with the Wisconsin Commercial Building code for the welds being performed. All welds shall be performed in accordance with AWS D1.1. Structural Welding Code - Steel. Welding shall be performed with E70XX electrodes unless otherwise noted.
- Concrete Masonry Unit (CMU): All CMU blocks shall conform to ASTM C90, Normal Weight.
- Mortar shall have the following strengths (ASTM C270): Type M 2,500 psi
- Type S 1,800 psf
- The design compressive strength of masonry ${
 m f}$ m based on compressive strength of masonry units and mortar shall be 1,500 psi. Construction shall be in accordance with the applicable version of ACI 530, Building Code Requirements for Masonry Structures.
- Construction shall adhere to Level B Quality Assurance program in accordance with ACI 530. Verify f'_m using the unit strength method.
- Provide min. (1) #5 vertical bar at all wall corners, ends of walls, and each side of control joints. All reinforced cells shall be grouted with pea gravel concrete having a min. compressive strength of 3,000 psi Horizontal reinforcing and bond beam reinforcing at corners shall be lapped a min. of (48) bar diameters or 24", whichever is less.
- Cleanouts shall be provided in the bottom course of masonry for each grout pour, when the pour height exceeds 5'. 0. Face shells and web forming cells shall be full-bedded in the starting course on foundations. 1. Provide horizontal joint reinforcement at 16" o.c. vertically (8" o.c. in parapet walls), unless otherwise noted.
- Horizontal joint reinforcing shall be terminated at control joints. Bond beam reinforcing shall be continuous through the control joint.
- 3. Refer to architectural drawings for control joint spacing, coursing, and mortar joint detailing. 14. Solid or solid grouted CMU shall be provided in courses immediately above and below any changes in wythe thickness.

- Shall have a minimum 28 day compressive strength of 3.500 psi. Reinforcing steel shall comply with ASTM A615 - Grade 60 and have a minimum yield strength of 60 ksi.
- Contraction joints shall be installed such that slab panels have a length to width ratio of 1.5 to 1. L and T shaped panels shall be avoided. The maximum distance between joints shall be 36 times the slab thickness. Saw cut joints shall be placed within 24 hours of placemen
- Longitudinal reinforcing bars shall be continuous. Lap splicing is permitted provided the specified "Lap Splice Lengths" are utilized. Corner bars of equal size as that of continuous reinforcement shall be installed at all corners. Leg lengths shall be at least the lengths specified in the "Lap Splice Length" specifications. Construction shall be in accordance with the applicable version of ACI 318: 3.1. All rebar arrangements, bends, hooks, ties, etc. shall be in accordance with ACI 318.
- Rebar embedded into concrete is permitted to be field bent (1) time. Re-bending of rebar is not permitted. Cast in place anchors are critical and not substitutable with post installed options. Max aggregate size of 0.75" is assumed throughout these plans. To use concrete with larger aggregates contact Vilas Engineering LLC prior to construction.
- 10. If the moving 24 hour average temperature within 3 days of placing concrete is expected to drop below 40°F, ACI 306R Guide to Cold Weather Concreting requirements shall be followed 11. If ambient air or concrete temperature exceeds 90°F, rebar temperature exceeds 120°F, or wind velocity, humidity, etc. accelerate moisture loss or increased rate of hydration, ACI 305R Guide to Hot Weather Concreting requirements shall followed.
- Rebar shall be held in place by wire ties or placed on plastic chairs prior to concrete placement to ensure rebar is located properly. Rebar shall be held in place adequately to ensure movement doesn't occur due to excessive forces of flowing concrete or personnel. Rebar splices of adjacent bars shall be staggered such that splices are 4' apart, min. Provide (2) #5 bars around all openings. Provide (2) #5 x 60" long rebar centered at all opening corners rotated 45° to be installed diagonally.
- Welded wire reinforcing shall be installed in flat sheets only and lapped 6" min. Welding of rebar is prohibited
- . Sleeves, conduits, and pipes through slabs and walls shall be placed at (3) diameters on center, or 4" min. 18. Aluminum conduit, piping, or inserts shall not be cast in concrete.

- 19. Construction/pour joints shall have existing concrete surfaces cleaned of dirt and grease.
- Where rebar is detailed as crossing a construction joint the existing concrete surface shall be further cleaned to remove lattice to ensure shear friction is achieved.
 Finish and cover concrete slabs with film forming curing compound, vapor retarder, sprinkler-ed curing blankets, or flooding/ponding to ensure proper curing of concrete. 22. The concrete proportions shall be developed using the same type and brand of cement, the same type and brand of pozzolan, the same type and gradation of aggregates, and the same
- type and brand of admixture that will be used in the manufacture of precast concrete units for the project. . Accelerators containing calcium chloride shall not be used in precast concrete containing reinforcing steel or other embedded metal items. 24. Water shall not be added to concrete mixes on site for workability.
- 25.1. Concrete that will be exposed to freezing and thawing shall contain entrained air and shall have water-cement ratios of 0.45 or less. 25.2. Concrete which will not be exposed to freezing, but which is required to be watertight, shall have a water-cement ratio of 25.2.1. 0.48 or less if the concrete is exposed to fresh water
- 25.2.2. 0.45 or less if exposed to brackish water or sea water. 25.3. For corrosion protection, reinforced concrete exposed to deicer salts, brackish water or seawater shall have a water-cement ratio of 0.40 or less. 26. Air Content: The air content of concrete that will be exposed to freezing conditions shall be within the limits given below (percent). Aggregate Size Severe Exposure Moderate Exposure
- 6.0 9.0 4.5 - 7.5 4.5 - 7.5 3.5 - 6.5 4.5 - 7.5 3.0 - 6.0
- 4.5 7.0 3.0 - 6.0 27. For specified compressive strengths greater then 5000 psi, air content may be reduced 1%

compressed air, shop vacuums, wrenches, etc.

tested in tension by an independent testing laboratory.

- Concrete Adhesive (Epoxied) Anchors 1.1. The adhesive anchor system used for post-installed anchorage to concrete shall conform to the requirements of the most recently published ACI 355.4, Acceptance Criteria for Qualification of Post-Installed Adhesive Anchors in Concrete and Commentary. The anchor system shall be one of the following:
- 1.1.2. An approved equal meeting ACI 355.4 and the minimum bond stress values below. 1.1.3. Bulk-mixed adhesives are not permitted. 1.2. The adhesive anchors selected above, shall be supplied as an entire system. The system shall include, but is not limited to, the new adhesive cartridge, a clean mixing nozzle, extension tube, a dispensing gun, and all manufacturer recommended supplies for properly cleaning the drilled hole.

 1.3. Anchorage design is in accordance with ACI 318. For adhesive anchors, the following minimum values for bond stress were assumed for the design using the above adhesive
- anchor assemblies 1.3.1. Cracked concrete bond stress: T_{k,cr} = 800 psi (For 1" Threaded Rod)
 Uncracked concrete bond stress: T_{k,uncr} = 1,655 psi (For 1" Threaded Rod)
 1.4. All-threaded rod (eyebolts, threaded studs, internal threaded parts) to be used in adhesive anchor assemblies shall conform to ASTM A36, A193 (Grade B7), A307, B348 or F1554.
- Stainless steel anchor rods shall be AISI Type 304 or Type 316.) Threads shall be UNC coarse threads, unless noted otherwise. Compatible nuts and washers shall be furnished with the all-thread rod and considered part of the assembly 1.5. Nuts, washers, and other hardware used with an all-threaded bar adhesive anchor system shall have a material or an alloy designation that matches the all-thread material/alloy (for example, ANSI Type 304 or 316 for stainless). Galvanized assemblies shall be hot-dip galvanized in accordance with ASTM A153 Class C. Electroplate galvanizing is not acceptable. Dissimilar metal assemblies shall be separated by nylon, EPDM, or other approved non-metallic washers. 1.6. Reinforcing bars to be used in adhesive anchors assemblies shall conform to ASTM A615, A706, or A995
- General Installation Guidelines Concrete shall have a minimum compressive strength (f'c) of 2,500 psi (17.2 MPa) at the time of adhesive anchor installation. The specified 28 day strength of the concrete might be higher, see Concrete specifications for final expected strength
- 2.2. Concrete at time of adhesive anchor installation shall have a minimum age of 21 days. 2.3. Concrete temperature at the time of adhesive anchor installation shall me the Epoxy Manufacturer Specifications. 2.4. Embedment depth and anchor projection (stick-out) from the concrete surface is shown on the drawing or detail for the particular anchor or group of anchors being installed. Absent any information, the minimum embedment depth shall be 10 times the diameter of the anchor.
- 2.5. Adhesives shall be stored and installed at the service temperature ranges recommended by the manufacturer Installation Techniques 3.1. Adhesive anchors shall be installed by qualified personnel trained to install adhesive anchors in accordance with the these Specifications and drawings. Post-installed adhesive anchors shall be installed in accordance with the Manufacturer's Printed Installation Instructions (MPII).
- 3.2. Installation of adhesive anchors horizontally or upwardly inclined to support sustained tension loads shall be performed by personnel certified by the ACI/CRSI Adhesive Anchor Installer Certification program. 3.3. The installer's qualifications shall be submitted and approved by Vilas Engineering LLC prior to installation. 3.4. The Contractor shall provide all equipment required to install the adhesive anchor including, but not limited to, drills, setting tools, clean-out brushes, blow out bulbs, oil-free
- 3.5. Anchors shall be installed in holes drilled with a rotary impact hammer drill or rock drill. Anchor holes shall be thoroughly cleaned prior to adhesive injection, as required by the MPII. 3.6.1. At a minimum, this typically consists of cleaning with oil-free and moisture-free compressed air, using a nozzle extended to the bottom of the hole; supplemented with a brush or other tool cleaning to remove all concrete dust and loose material; and followed by a second compressed air cleaning. This is commonly known as
- Blow-Brush-Blow or BBB. Manufacturers MPII takes precedence over this section. 3.7. Drilled and cleaned anchor holes shall be protected from contamination until the adhesive is installed. 3.8. A drilled anchor hole shall be re-cleaned assuming the hole was just drilled, if in the opinion of the Engineer, Inspector, or Owner's Representative that the hole has become
- contaminated after initial cleaning. 3.9. Unless otherwise indicated on the MPII, adhesive shall be dispensed through a tube or cartridge extension, beginning at the maximum depth of the hole and withdrawn as adhesive is injected, followed by insertion and rotating the anchor to the specified depth. Where necessary, spaces around anchors at the surface shall be sealed at horizontal to vertically
- overhead locations to prevent loss of the adhesive during curing. 3.10. Anchors to be installed in the adhesive shall be clean, oil-free, and free of loose rust, paint, or other coatings. 3.11. Installed adhesive anchors shall be securely fixed in-place to prevent displacement while the adhesive cures. Unless shown otherwise on the drawings, anchors shall be installed perpendicular to the concrete surface. Anchors displaced before full adhesive cure shall be considered damaged and replaced at the Contractor's expens 12. Reinforcing bars or all-threaded bars shall not be bent after being adhesively embedded in hardened, sound concrete
- Field Quality Control 4.1. Adhesive anchors installed in horizontal or up-wardly inclined orientations to resist sustained tension loads shall be continuously inspected during installation by an inspecto specially approved for that purpose by the building official. 4.2. Adhesive anchors shall be proof tested as required in the Specifications and Construction Drawings. 5 percent of each type and size of an adhesive anchor assembly shall be proof
- 4.2.1. Tension testing shall be performed in accordance with ASTM E488. 4.2.2. The independent testing laboratory shall submit an anchorage testing plan to the licensed design professional to ensure the testing requirements are fulfilled. 4.3. The adhesive anchors shall be tension proof loaded to 650 lbf. Proof loading shall be performed after a minimum curing period specified by the manufacturer 4.4. Anchors shall have no visible indications of displacement or damage during or after proof load application. Concrete cracking in the vicinity of the anchor after loading shall be
- 4.5. If more than 10 percent of the tested adhesive anchors fail to achieve the specified proof load within the limits defined on these Drawings, 100 percent of the anchors of the same diameter and type as the failed anchor shall be proof tested, unless otherwise directed by Vilas Engineering LLC.
- 1. The Contractor Shall prepare a detailed list and schedule of all submittal items to be sent to Vilas Engineering LLC prior to the start of construction. This list shall be updated, revised, and kept current as the job progresses. The submittal list shall be organized as shown below: 1.1. Product Technical Data
- 1.2. Certificates, Reports, and Other Literature 1.3. Shop Drawings 1.4 Design Calculations Submittals to be provided to Vilas Engineering LLC
- 2.1. Product Submittals 2.1.1. See Design Criteria for list of Product Submittals required. 2.2. The following items are considered deferred submittals by Vilas Engineering LLC (registered design professional in responsible charge):
- 2.2.1. See Design Criteria for List of Deferred Submittals required Submittal Requirements 3.1. Deferred Submittals shall:

the tracks shall be butted tight together and fastened to structure on both sides of the joint.

- 3.1.1. Have shop drawings and delegated design submittals, including calculations, signed and sealed by a Professional Engineer licensed in the project state .1.2. Be submitted to Vilas Engineering LLC with the delegated engineer's stamp affixed 3.2. Must be reviewed and electronically stamped by the Contractor prior to submittal. 3.2.1. The Contractor shall review and stamp all submittals prior to submitting to the Architect.
- 3.2.2. Items not in conformance with the contract documents shall be noted upon Contractor's review. 3.3. Any changes, substitutions, or deviations from the contract documents shall be clouded by the manufacturer, fabricator, and/or Contractor. Any of these items that are not clouded, or noted by the submitting parties, shall not be considered approved after Vilas Engineering LLC review, unless noted accordingly. 3.4 Be provided in PDF format 3.5. Submittals do not replace the contract documents. Items omitted or shown incorrectly that are not flagged by Vilas Engineering LLC shall not be considered changes to the contract
- documents. It is the Contractors responsibility to ensure that items are constructed in accordance with the Contract Documents. Submittal review shall not relieve the Contractor of the responsibility of furnishing and installing all materials, regardless of whether submittals have been reviewed and approved. The adequacy of engineering designs and layouts performed by delegated designers and others rests solely with the designing or submitting authori Submittal review is intended only as an aid to the contractor in obtaining correct submittals. Responsibility for the correctness shall rest solely with the contractor
- 6.1. The use of electronic files or reproductions of these contract documents by any Contractor, Subcontractor, Erector, Fabricator, or Material Supplier in lieu of preparation of shop drawings signifies their acceptance of all information shown heron as correct, and obligates themselves to any job expense, real or implied, arising due to any errors that may occur Cold Formed Steel Framing:
- All stud and joist members 16 gauge and heavier shall be formed from steel corresponding to a type listed in the A.I.S.I Specification for the Design of Cold-Formed Steel Structural Members, with a minimum yield strength of 50 ksi. All 18 gauge and lighter members, and all track, bridging, and accessory items shall be formed from steel meeting the criteria as listed above, with a minimum yield strength of 33 ksi, unless specifically noted otherwise. Structural properties and capacities of steel framing components shall be in accordance with the A.I.S.I. Cold-Formed Design Specification.
- All framing products shall be formed from steel possessing a zinc coating corresponding to the minimum requirements of ASTM A525. Structural properties used in these plans are those published by the SFIA (Steel Framing Industry Association) 6. All framing components shall be cut squarely for attachment to perpendicular members or as required for an angular fit against abutting members. Members shall be held positively in place until properly fastened.
- Temporary Bracing shall be provided and remain in place until work is completely stabilized. All field cutting of studs must be done by sawing or shearing. Torch cutting of cold-formed members is not permitted When required for bridging purposes, framing fabricator is to ensure punch-out alignment when assembling framing and field cutting studs to length. Refer to typical connection details. Splices in studs, joists, or other load carrying members are not permitted unless prior engineering review and specific details for any such splice(s) are prov 11. Where splicing of wall track is necessary between stud spacings, a piece of stud shall be placed in the adjoining track sections and fastened to the track flanges at both sides of the wall or
- 12. Pertaining to welding, if required: 12.1. All welded connections are to be performed in accordance with the latest version of AWS D1.3 Specifications for Welding Sheet Steel in Structures. Consult AWS D19.0 Welding Zinc Coated Steel and ANSI standard Z49.1 for information regarding safe welding procedures. All welds are to be touched-up with a rust inhibitive galvanizing paint. 12.2. Suggested weld metal and process for shop welding are: 60 ksi weld metal strength (minimum) - MIG 12.3. Suggested methods for field welding: 1/8" (unless noted otherwise) E60XX (minimum) electrode - SMAW; or "gasless" MIG

13. Unless noted otherwise, refer to literature published by Hilti Fasteners for Anchor Bolts and Powder Driven Fastener information. Use 1 1/4 inch minimum embedment for each Powder

ven Fastener unless noted otherwise 14. Refer to ITW Buildex, Inc. technical information for TEKS screw data. Alternate manufacturer's fasteners of comparable specifications and load capacities are acceptable. 14.1. Screws shall be long enough such that they penetrate the backside of the attaching members by a minimum of (3) threads.

12.4. Minimum weld throat thickness (t) must match or exceed the base steel thickness of the thinnest connected part unless noted otherwise.

- Frost Protected Shallow Footings (FPSF) 1. Rigid foam under the column footings is permitted to be omitted provided permanent and legible notices shall be posted near the thermostats of all building heating appliances that 1.1. This structure is designed using a frost-protected-shallow foundation. 1.2. A minimum monthly average temperature of 50 degrees Fahrenheit must be maintained to avoid frost damage to the foundation.
- Truss Manufacturer may not deviate from the framing plans unless prior approval from Vilas Engineering LLC has been given. It is the Truss Manufacturer's responsibility to seek such approval prior to manufacturing and installation of framing members russ Manufacturer is responsible for all truss-to-truss connection
- All trusses shall be modeled with reactions of pin on one end and roller on the other such that a horizontal thrust is not imposed on the building. 3.1. Horizontal deflection of the roller end shall be limited to 3/4". Where floor trusses are not identical within a floor system webs shall be coordinated to create utility corridors through the floor system All trusses shall be designed to bear on an Spruce-Pine-Fir (SPF) Top plate with an reference Compression Perpendicular (bearing strength) of 425 psi. Where the Truss Manufacturer specifies a girder/common truss with a number of plies exceeding that assumed in these plans specified hardware (e.g. hangers) need to be adjusted to accommodate, contact Vilas Engineering LLC for alterations.

Trusses shall be installed and braced in accordance with Building Component Safety Information (BCSI) Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal

- Plate Connected Wood Trusses. Deflection Limits 7.1.1. Live Load 7.1.2. Total Load L/360 7.2.1. Live Load L/360
- 7.2.2. Total Load See Truss Schedules for loads. Floor trusses shall vertical webs at 10' o.c. max., along the length of the truss to accommodate strong backs. Strong backs shall consist of 2x6, on edge, attached to these vertical webs

- Special inspections shall be performed in accordance with IBC Chapter 17.
 - Special inspections shall specifically include those in Table 3. Prior to Construction:
 - Special Inspectors shall be selected 3.2. Written documentation of the Special Inspector's Qualifications shall be provided to Vilas Engineering LLC. 3.2.1. The Special Inspector shall be objective, competent, and independent from the Contractor responsible for the work being inspected.
- Contractor shall provide access to the Special Inspector as needed to perform their duties. Special Inspector shall keep records of special inspections and tests. Reports of inspections and tests shall be submitted to Vilas Engineering LLC. Discrepancies found during inspections shall be brought to the immediate attention of the Contractor for correction. These discrepancies shall be re-inspected to ensure compliance.
- Work that is not brought into compliance with the Contract Documents shall be brought to the attention of the Building Official and Vilas Engineering LLC prior to the completion of that 7. A final report documenting inspections, tests, along with discrepancies and corrections shall all be noted in the report. This report shall be submitted to Vilas Engineering LLC.
- Steel Deck Specification: 1. Steel floor shall consist of:
- 1.5" deep x 6" Form (Inverted) Deck (Wide Flange Down) 1.2. G-90 galvanized
- 1.3. Non-composite steel deck Design thickness 0.0295 in. (22 gage)
- 1.6. 4" thick 3,500 psi, normal-weight concrete topping over top flange (total thickness = 5.5") reinforced with #4 @ 12" o.c. at center of 4" slab
- Deck shall be attached to supporting framing using #12 screws in a 36/6 pattern (equivalent powder actuated fasteners are permitted) at every support. Sheet steel for deck shall conform to AISI S100, Section A3.

7.3.1. Aggregate Size Severe Exposure

6.0 - 9.0

13.2. Welding shall be performed in accordance with AWS D1.1 when necessary

17.1. Recommendations for hot weather concreting are given in ACI 305 R.

with steam under pressure in an autoclave.

if repairs are feasible and, if so, to establish the repair procedure.

or that damage will not result, impairing the performance of the product.

22 Repair

2.1. ASTM A653/A653M for galvanized deck. Galvanizing finish shall conform to the requirements of the applicable steels in AISI S100, Section A3. 2.3. Zinc-aluminum finishes shall not be used.

industry design standards and Design Criteria stated here have been met

- A shop coat of primer paint on the underside (non-concrete side) shall be applied to the steel sheet. Admixtures containing chloride salts or other substances that are corrosive or otherwise deleterious to the steel deck and embedded items shall not be permitted The minimum uncoated steel thickness as delivered to the job site shall not, at any location, be less than 95% of the design thickness, however lesser thicknesses shall be permitted at
- bends, such as corners, due to cold forming effects. Panel cover width shall be at least than 3/8"
- All materials and designs shall be in accordance with the latest adoption of the Steel Joist Institute Standard Specifications. Steel joists specified here are estimates based on load tables provided by the Steel Joist Institute. The Joist Manufacturer shall design the joists in accordance with the Standard
- Specifications for the loads specified herein.
- 2.1 See Sheet S0.3 for additional loads Bridging locations and members shall be specified and supplied by the Joist Manufacturer
- Precast Concrete Submittals
- 1.1.2. Installation and construction information shall be included on shop drawings. Details of steel reinforcement size and placement as well as supporting design calculations, if appropriate, shall be included. 1.1.3 Drawings shall indicate assumptions used in the design of units 1.1.4. The precast concrete shall be produced in accordance with the approved drawings.

1.1.1. The drawings for precast concrete shall be shop drawings furnished by the precast concrete producer for approval. These drawings shall demonstrate that the applicable

- 2.1. The precast concrete producer shall supply cut sheets showing conformance to project drawings and requirements and to applicable industry design standards listed in this 2.2. For anchors, lifting inserts, and other devices, the precast concrete producer shall provide product data sheets and proper installation instructions. The Precast concrete dimensions
- and safe working load shall be clearly indicated. 2.3. For items including, but not limited to sealants, gaskets, pipe entry connectors, steps, racks and other items installed before or after delivery, the precast concrete producer shall include proper installation instructions and relevant product data Design Data 3.1. The precast concrete producer shall supply precast concrete design calculations and concrete mix design proportions and appropriate mix design test data. Structural design
- calculations shall be signed by a Professional Engineer licensed in the project State. 4.1. Design precast concrete to withstand indicated Design Criteria conditions in accordance with applicable industry design standards (ACI 318, ACI 350, ASTM, ACPA Design Manual, PCI MNL-120, and AASHTO).

4.2. Design must also consider stresses induced during handling, shipping and installation in order to avoid product cracking or other handling damage. Design loads for precast

- concrete units shall be indicated on the shop drawing Joints and Sealants 5.1. Joints and sealants between adjacent units shall be of the type and configuration indicated on shop drawings meeting specified design and performance requirements. 6. Concrete Mix Design 6.1. Selection of proportions for concrete shall be based on the methodology presented in ACI 211.1 for normal weight concrete. ACI 211.2 for lightweight concrete, and ACI 211.3 for
- no-slump concrete. The concrete proportions shall be developed using the same type and brand of cement, the same type and brand of pozzolan, the same type and gradation of aggregates, and the same type and brand of admixture that will be used in the manufacture of precast concrete units for the project. Accelerators containing calcium chloride shall not be used in precast concrete containing reinforcing steel or other embedded metal items. 6.2. The precast concrete producer shall submit a mix design for each strength and type of concrete that will be used. Submitted mix designs shall include the quantity, type, brand, and
- 6.3. The use of self-consolidating concrete is permitted provided that mix design proportions and constituents meet the requirements of this specification 7. Durability and performance requirements Concrete Compressive Strength: Precast concrete units shall have a minimum 28-day compressive strength (fc) of 5,000 psi. 7.2. Water-Cement Ratio:

Moderate Exposure

4.5 - 7.5

7.3.2. For specified compressive strengths greater then 5000 psi, air content may be reduced 1%

7.2.1. Concrete that will be exposed to freezing and thawing shall contain entrained air and shall have water-cement ratios of 0.45 or less. 7.2.2. Concrete which will not be exposed to freezing, but which is required to be watertight, shall have a water-cement ratio of 7.2.2.1. 0.48 or less if the concrete is exposed to fresh water 7 2 2 2 0 45 or less if exposed to brackish water or sea water 7.2.3. For corrosion protection, reinforced concrete exposed to deicer salts, brackish water or seawater shall have a water-cement ratio of 0.40 or less. 7.3. Air Content: The air content of concrete that will be exposed to freezing conditions shall be within the limits given below (percent).

applicable data sheets for all mix design constituents as well as documentation indicating conformance with applicable reference specification

- 5.5 8.5 4.0 - 7.0 45-75 35-65 4.5 - 7.5 3.0 - 6.0
- 8. Quality Assurance 8.1. Precast concrete producer shall demonstrate adherence to the standards set forth in the NPCA Quality Control Manual for Precast Concrete Plants. 8.2. Submit quality control procedures established in accordance with NPCA Quality Control Manual for Precast Concrete Plants or verification of current NPCA Plant Certification. 9.1. The general contractor shall be responsible for providing adequate access to the site to facilitate hauling, storage, and proper handling of the precast concrete units.
- 9.2.1. Precast concrete units shall be lifted by suitable lifting devices at points provided by the precast concrete producer. 9.2.2. Precast concrete units shall be installed in accordance with applicable industry standards. The precast concrete producer shall provide installation instructions upon request 9.2.3. Field modifications to precast concrete is not permitted without prior authorization from the precast manufacturer.
- 9.3. Where watertightness is a necessary performance characteristic of the precast concrete's end use, watertight joints, pipe-entry connectors, and inserts should be used to ensure the integrity of the entire system. Testing shall be performed by Vacuum or Hydrostatic testing in accordance with the applicable standards. 10. Manufacture shall conform to the NPCA Quality Control Manual for Precast Concrete Plants.
- 11.1. Forms for manufacturing precast concrete units shall be of the type and design consistent with industry standards and practices. They should be capable of consistently providing uniform products and dimensions. Forms shall be constructed so that the forces and vibrations to which the forms will be subjected cause no damage to the precast concrete. 11.2. Forms shall be cleaned of concrete build-up after each use.
- 11.3. Form release agents shall be applied according to the manufacturer's recommendations and shall not be allowed to build up on the form casting surfaces 12.1. Applicable ASTM International and/or ACI 318 standards for placement and splicing shall apply. 12.2. Cages of reinforcement shall be fabricated either by tying the bars, wires or welded wire reinforcement into rigid assemblies or by welding, where permissible, in accordance with
- 12.3. Reinforcing shall be positioned as specified by the design and so that the concrete cover conforms to requirements 12.4. The tolerance on concrete cover shall be 1/3 of that specified but not more than 1/2 in. Concrete cover shall not be less than 1/2. 12.5. Positive means shall be taken to assure that the reinforcement does not move significantly during the casting operations. Embedded Items 13.1 Embedded items shall be positioned at locations specified in the design documents
- 13.3. Inserts, plates, weldments, lifting devices and other items to be embedded in precast concrete units shall be held rigidly in place so that they do not move significantly during casting operations. 14. Concrete mixing operations shall produce batch-to-batch uniformity of strength, consistency, and appearance. 15. Concrete Placing
- 15.1. Conventional concrete shall be deposited into forms as near to its final location as practical. Self-consolidating concrete shall be placed in a manner in which it flows and consolidates without segregation or air entrapment. The free fall of the concrete shall be kept to a minimum. Concrete shall be consolidated in such a manner that segregation of the concrete is minimized and honeycombed areas are kept to a minimum. Consolidation efforts are often not required when using self-consolidating concrete. Vibrators used to consolidate concrete shall have frequencies and amplitudes sufficient to produce well-consolidated concrete. Cold Weather Concreting
- 16.1. Recommendations for cold weather concreting are given in detail ACI 306 R. 16.2. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. All concrete materials and all reinforcement, forms, fillers, and ground with which concrete is to come in contact shall be free from frost. Frozen materials or materials containing ice shall not be used. In cold weather the temperature of concrete at the time of placing shall not be below 45° F. Concrete that freezes before its compressive strength reaches 500 psi shall be discarded.
- 17.2. During hot weather, proper attention shall be given to constituents, production methods, handling, placing, protection, and curing to prevent excessive concrete temperatures or water evaporation that could impair required strength or serviceability of the member or structure. The temperature of concrete at the time of placing shall not exceed 90° F. 18.1. Commence curing operations immediately following the initial set of the concrete and completion of surface finishing.

 18.2. Due to the immediacy of form removal, dry-cast products have a tendency to undergo undesirable accelerated drying. Consequently, early curing periods are most critical to ensure
- protection from extreme temperatures and dryness. Dry-cast products must be protected from drafts and wind to prevent plastic shrinkage cracking Curing by Moisture Retention 19.1. Moisture shall be prevented from evaporating from exposed surfaces until adequate strength for stripping the precast concrete unit from the forms is reached by one of the following 19.1.1. Cover with polyethylene sheets a minimum of 6 mils thick (ASTM C 171) 19.1.2. Cover with burlap or other absorptive material and keep continually moist
- 19.1.3. Use of a membrane-curing compound applied at a rate not to exceed 200 sq. per gallon, or per manufacturers' recommendations (ASTM C 309) 19.1.4. Surfaces that will be exposed to weather during service shall be cured as above a minimum of 14 days. Forms shall be considered effective in preventing evaporation from the contact surfaces. If air temperature is below 50°F the curing period shall be extended. 20. Curing with Heat and Moisture Concrete shall not be subjected to steam or hot air until after the concrete has attained its initial set.
- Surface Finish 21.1. Unformed surfaces of wet-cast precast concrete products shall be finished as specified. If no finishing procedure is specified, such surfaces shall be finished using a strike-off to level the concrete with the top of the form. 21.2. Major imperfections, excessive honeycombing, or other major defects shall not be permitted 21.3. Troweled, broom or other finishes shall be according to the requirements of project documents and performed per industry standards.

20.2. Steam, if used, shall be applied within a suitable enclosure, which permits free circulation of the steam in accordance with ACI 517.2R. If hot air is used for curing, precautions shall

be taken to prevent moisture loss from the concrete. The temperature of the concrete shall not be permitted to exceed 150° F. These requirements do not apply to products cured

21.4. Precast concrete producers shall submit sample finishes for approval when required by the project documents. The sample finishes shall be approved prior to the start of production.

22.1. Repairing Minor Defects: Defects that will not impair the functional use or expected life of a precast concrete unit may be repaired by any method that does not impair the product

23. Precast concrete units shall not be shipped until they are at least 7 days old, unless it can be shown that the concrete strength has reached at least 75% of the specified 28-day strength,

22.2. Repairing Honeycombed Areas: When honeycombed areas are to be repaired, all loose material shall be removed and the areas cut back into essentially horizontal or vertical planes to a depth at which coarse aggregate particles break under chipping rather than being dislodged. Proprietary repair materials shall be used in accordance with the manufacturer's instructions. If a proprietary repair material is not used, the area shall be saturated with water. Immediately prior to repair, the area should be damp, but free of excess water. A cement-sand grout or an approved bonding agent shall be applied to the chipped surfaces, followed immediately by consolidating an appropriate repair material into 22.3. Repairing Major Defects: Defects in precast concrete products which impair the functional use or the expected life of products shall be evaluated by qualified personnel to determine



with (4) 16d nails. Strong backs perform the task of bridging (load sharing) between adjacent trusses.



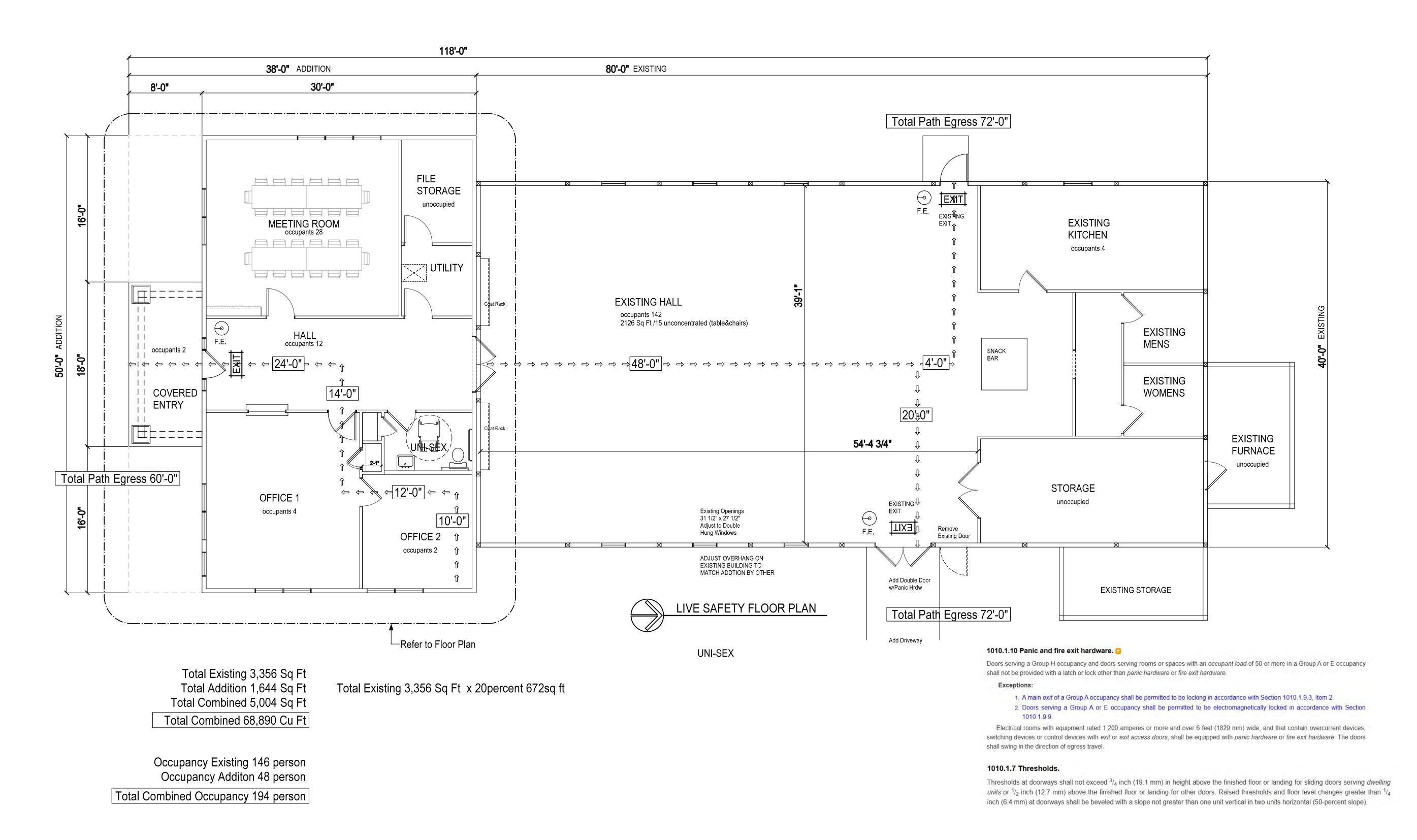
TOWNSEND TOWN HALL

3/1/2024 PROJECT #: 850-0-ILLUS

3/16" = 1'-0" UNLESS NOTED DRAWN B'

1010.1.2.1 Direction of swing.

Pivot or side-hinged swinging doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy.







TOWNSEND TOWN HALL

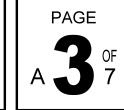
DATE: SO 3/16"

PROJECT #: DRA

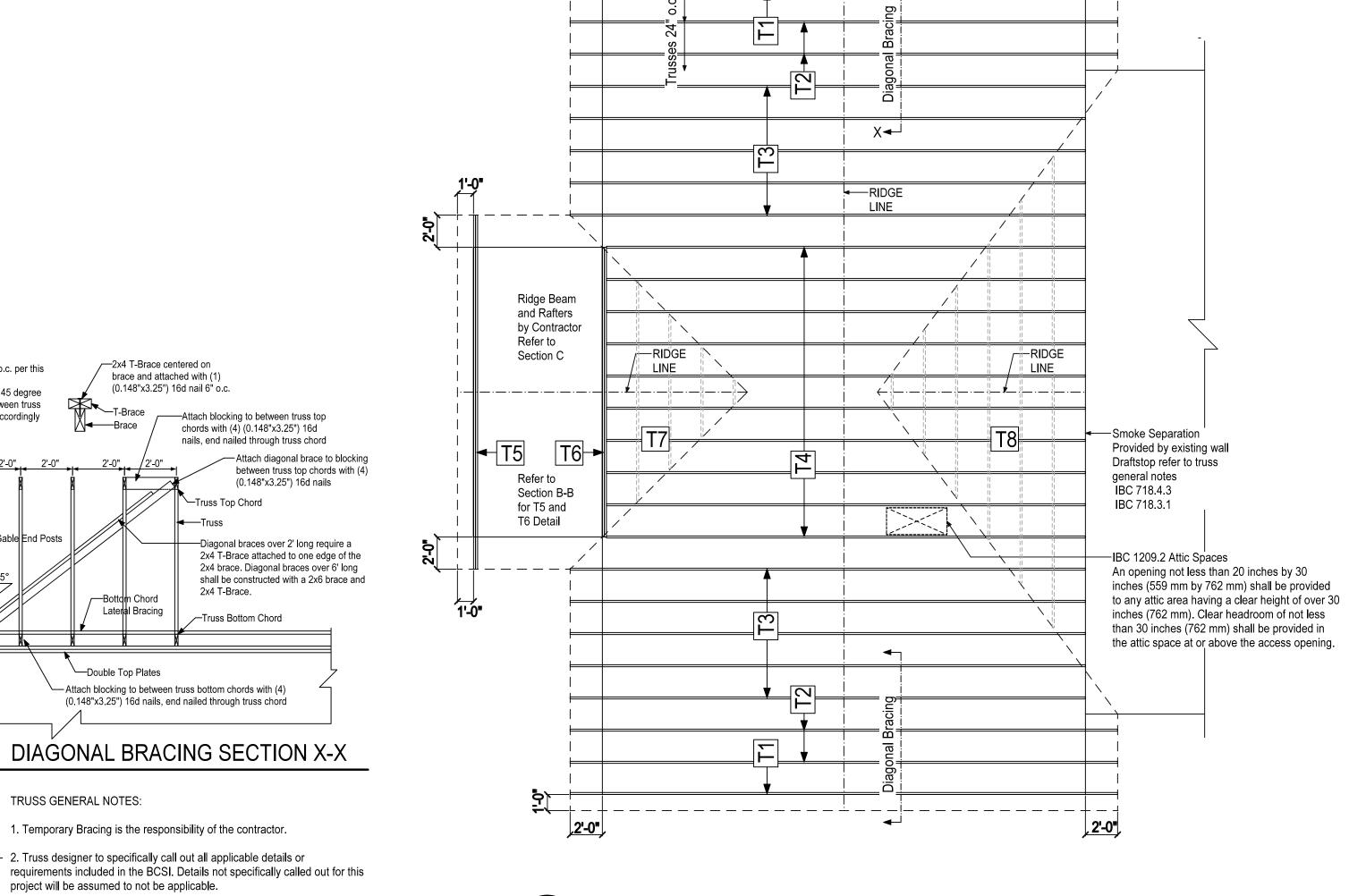
850-0-ILLUS

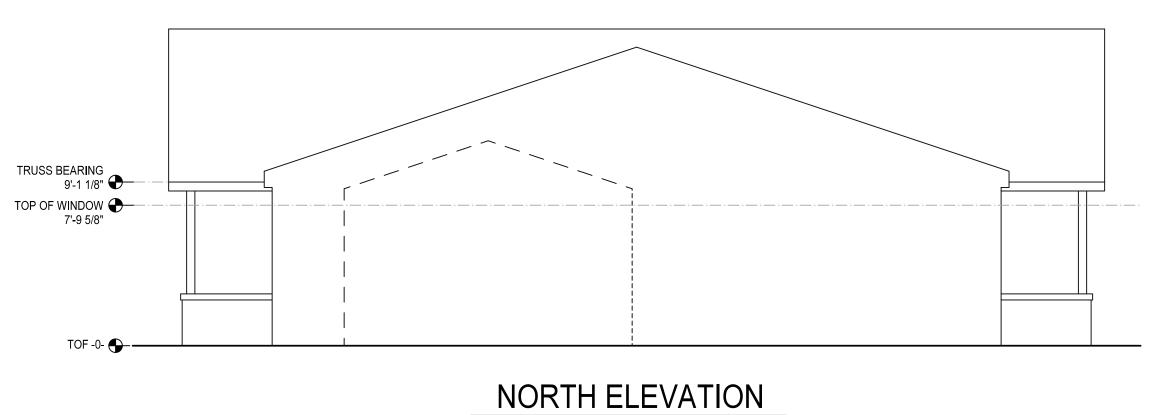
SCALE: 3/16" = 1'-0" UNLESS NOTED

DRAWN BY:











__2x4 T-Brace centered on

ر—Bottdin Chord

TRUSS GENERAL NOTES:

square feet.

Lateral Bracing

Attach blocking to between truss bottom chords with (4) (0.148"x3.25") 16d nails, end nailed through truss chord

1. Temporary Bracing is the responsibility of the contractor.

—— 2. Truss designer to specifically call out all applicable details or

3. Top Chord Bracing. Lateral Restraint provided by Sheathing.

4. Bottom Chord: Lateral Restraint, provided by drywall finish.

IBC 718.4.3 - Draftstopping shall be installed in attics and concealed

roof spaces, such that any horizontal area does not exceed 3,000

IBC 718.3.1 Draftstopping materials shall be not less than 1/2"

gypsum board, 3/8" wood structural panel, 3/8" particleboard, 1"

or glass fiber, or other approved materials adequately supported.

nominal lumber, cement fiberboard, batts or blankets of mineral wool

project will be assumed to not be applicable.

The integrity of draftstops shall be maintained.

brace and attached with (1) (0.148"x3.25") 16d nail 6" o.c.

—Attach blocking to between truss top

nails, end nailed through truss chord

chords with (4) (0.148"x3.25") 16d

-Truss Top Chord

2x4 T-Brace.

Truss Bottom Chord

1) Install Diagonal Bracing 4' o.c. per this

2) Install diagonal braces at a 45 degree angle as shown. Blocking between truss top chords shall be installed accordingly

Gable End Truss—— Gable End Posts

Stud Wall—

Attention

Truss

Designer

to accommodate this.

Attach diagonal brace to blocking—

between truss bottom chords

with (4) (0.148"x3.25") 16d nails.

- T2: COMMON TRUSS
- T3: COMMON TRUSS
- T4: COMMON TRUSS
- T5: GABLE END GIRDER T6: GABLE END GIRDER
- T7: VALLEY SET
- T8: VALLEY SET







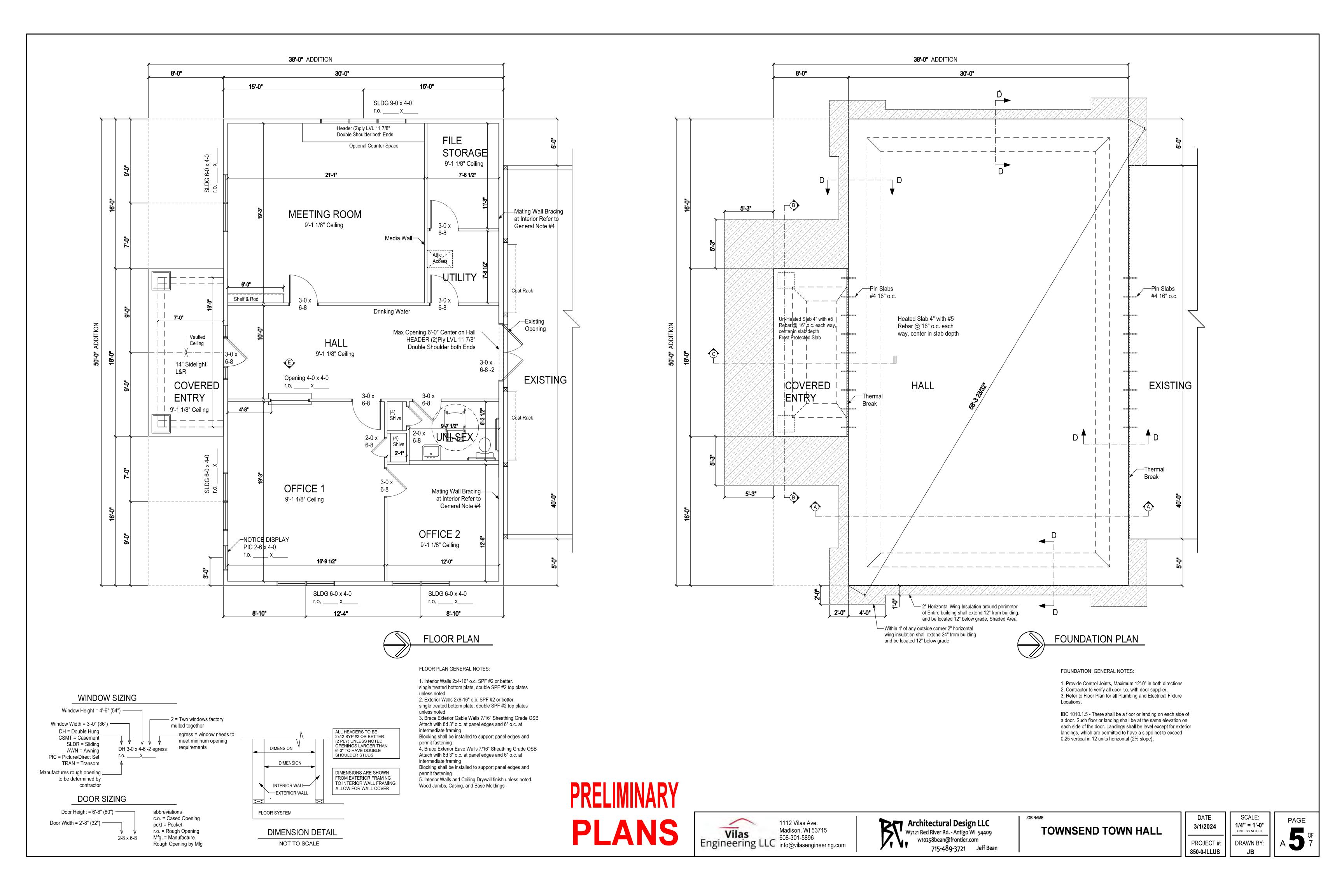
TOWNSEND TOWN HALL

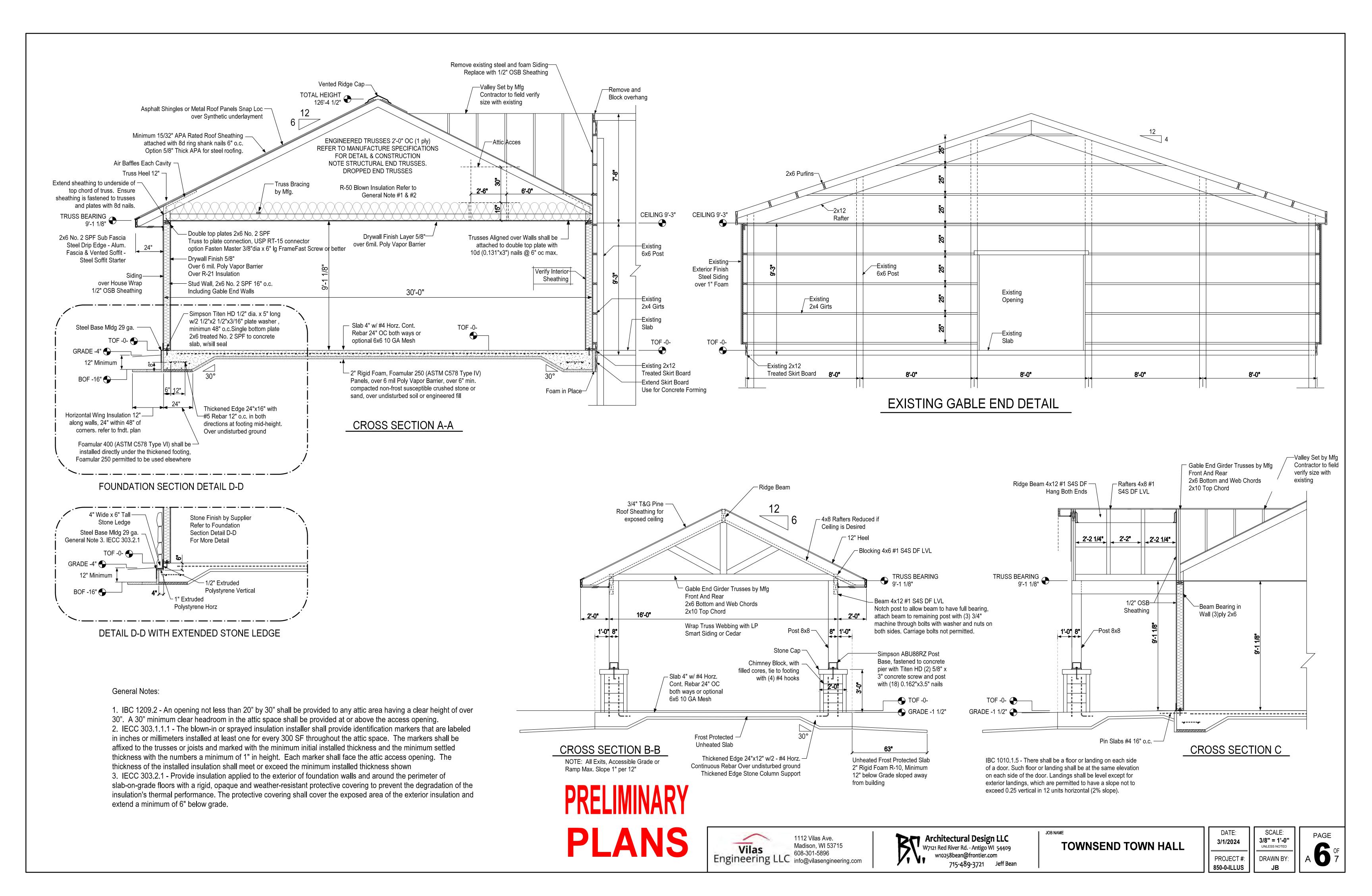
3/1/2024 PROJECT#

850-0-ILLUS

SCALE: 3/16" = 1'-0" UNLESS NOTED DRAWN BY:







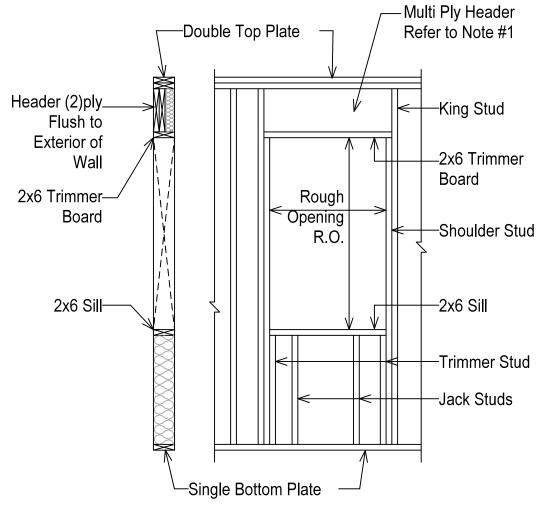
MINIMUM FASTENER SCHEDULE TABLE

Other interior and exterior panel products and finishes installed per manufacturer requirements. For engineered connectors, use manufacturer's specified fasteners.

Description of Building Materials/Connection	Number and Type of Fastener ¹²³		
Floor Framing			
Joist to joist, face nailed over support	3-8d		
Joist to sill or girder, toe nail	3-8d		
Band or rim joist to joist, end nail	3-16d		
Band or rim joist to sill or top plate	2-16d at 16" o.c.		
Bridging to joist, toe nail each end	2-8d		
Built-up girder and beams, top loaded	10d at 32" o.c. at top and bottom and staggered and two at ends and at each splice		
Built-up girder and beams, side-loaded	16d at 16" o.c. at top and bottom and staggered and two at ends and at each splice		
Ledger strip to beam, face nail	3-16d each joist		
Joist on ledger to beam, toe nail	3-8d		
Wall Framing	27.27.28.29		
Sole plate to joist or blocking, face nail	2-16d at 16" o.c.		
Top or sole plate to stud, end nail	2-16d		
Stud to sole plate, toe nail	3-8d or 2-16d		
Doubled studs, face nail	10d at 24" o.c.		
Doubled top plates, face nail	10d at 24" o.c.		
Doubled top plates, minimum 24-inch offset of end joints, face nail in lapped area	8–16d		
Top plates, laps and intersections, face nail	2-10d		
Continuous header, two pieces	16d at 16" o.c. along each edge		
Continuous header to stud, toe nail	4-8d		
1" corner brace to each stud and plate, face nail	$2-8d$ or 2 staples, $1\frac{3}{4}$ "		
Built-up corner studs	10d at 24" o.c.		
Description of Building Materials/Connection	Number and Type of Fastener 123		
Roof/Ceiling Framing			
Ceiling joists to plate, toe nail	3-8d		
Ceiling joist, laps over partitions, face nail	3–10d		
Ceiling joist to parallel rafters, face nail	3-16d		
Rafter to plate, toe nail (maximum 6 rafter span, engineered connector for longer)	2-16d		
Roof rafters to ridge, valley or hip rafters, toe nail	4-16d		
Roof rafters to ridge, valley or hip rafters, face nail	3-16d		
Collar ties to rafters, face nail	3-8d		
Boards and planks			
1" x 6" subfloor or less to each joist, face nail	$2-8d$ or 2 staples, $1\frac{3}{4}$ "		
Wider than 1" x 6" subfloor toe to each joist, face nail	$3-8d$ or 4 staples $1\frac{3}{4}$ "		
2" subfloor to joist or girder, blind and face nail	2-16d		
1" x 6" roof or wall sheathing to each bearing, face nail	$2-8d$ or 2 staples, $1\frac{3}{4}$ "		
1" x 8" roof or wall sheathing to each bearing, face nail	$2-8d$ or 3 staples, $1\frac{3}{4}$ "		
Wider than 1" x 8" roof sheathing to each bearing, face nail	$3-8d$ or 4 staples, $1\frac{3}{4}$ "		
2"planks	2-16d at each bearing		

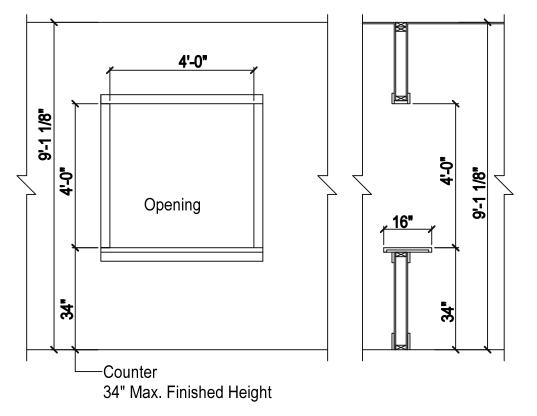
-0.0-0.04		
Pane	l She	athin

		Spacing of Fastener			
Material	Fastener	Edges	Intermediate Supports		
Engineered wood panel for subfloor and roof sheathing and wall corner					
wind bracing to framing			2002		
$^{5}/_{16}''$ to $^{1}/_{2}''$	6d common or deformed nail or staple, 1½"	6"	12" 4		
⁵ / ₈ " to ³ / ₄ "	8d smooth or common, 6d deformed nail, or staple, 14 ga. $1^{3}/_{4}''$	6"	12" 4		
⁷ / ₈ " to 1"	8d common or deformed nail	6"	12"		
$1^{1}/_{8}''$ to $1\frac{1}{4}''$	10d smooth or common, or 8d deformed nail	6"	12"		
Combination subfloor/ underlay- ment to framing					
3/4" or less	6d deformed or 8d smooth or common nail	6"	12"		
⁷ / ₈ " to 1"	8d smooth, common or deformed nail	6"	12"		
$1^{1}/_{8}''$ to $1^{1}/_{4}''$	10d smooth or common or 8d deformed nail	6"	12"		
Wood panel siding to framing					
½" or less	6d corrosion-resistant siding and casing nails	6"	12"		
5/8"	8d corrosion-resistant siding and casing nails	6"	12"		
½" structural cellulosic fiberboard sheathing	1½" galvanized roofing nail; 8d common nail; staple 16 ga., 1½" long	3"	6"		
²⁵ / ₃₂ " structural cellulosic fiberboard sheathing	1¾" galvanized roofing nail; 8d common nail; staple 16 ga., 1¾" long	3"	6"		
½" gypsum sheathing ⁵	1½" galvanized roofing nail; 6d common nail; staple galvanized 1½" long; 1¼" screws, Type W or S	4"	8"		
⁵ / ₈ " gypsum sheathing ⁵	13/4" galvanized roofing nail; 8d common nail; staple galvanized 15/8" long; 15/8" screws, Type W or	7"	7"		



TYPICAL HEADER DETAIL

1. Headers consisting of multiple plies shall be stitched together with 3" nails, spaced 2" o.c. vertically & 12" o.c. horizontally, unless otherwise noted elsewhere.



ELEVATION E

					F	ner Schedule ³		DF/SP Allowable Loads (Lbs.) ¹					S-P-F Allowable Loads (Lbs.) ¹						
				Tr	russ/Rafter		Plate		Stud			Lat	eral				Lat	eral	
	MiTek Stock No.	Ref. No.	Steel Gauge	Qty		Qty		Qty	Туре	Uplift 160%	F1 160%	F2 160%	F3 160%	F4 160%	Uplift 160%	F1 160%	F2 160%	F3 160%	F4 160%
	RT3A	НЗ	18	4	8d x 1-1/2	4	8d			350	190	65	130	90	310	155	65	130	90
				4	8d x 1-1/2	4	8d x 1-1/2			345	190	65	130	90	305	155	65	130	90
	RT4		18	4	8d x 1-1/2	4	8d			305	205	140	230	230	270	165	140	190	160
	RT5		18	4	8d x 1-1/2	4	8d			380	160	80	280	180	335	160	80	225	180
	RT6	HS24	18	8	8d x 1-1/2	6	8d			605	835	800			535	670	575		
	RT7		18	5	8d x 1-1/2	5	8d			540	270	120	185	140	475	260	120	185	140
	"",			5	8d x 1-1/2	5	8d x 1-1/2			515	210	120	100	140	455	200	120	100	140
	RT7A	H2.5A	18	5	8d x 1-1/2	5	8d			580	285	190	135	120	510	230	190	110	120
				5	8d x 1-1/2	5	8d x 1-1/2			630									
	RT7AT	H2.5T	18	5	8d x 1-1/2	5	8d x 1-1/2			480	250	150	240	165	425	200	145	240	165
	RT8A	Н8	18	5	10d x 1-1/2	5	10d x 1-1/2			750	265	100	225	150	660	265	100	225	150
	RT10	H2A	18	6	8d x 1-1/2	8	8d	6	8d	540	270	120	185	140	475	260	120	185	140
	MITO	IIZA	10	6	8d x 1-1/2	6	8d x 1-1/2	6	8d x 1-1/2	515	270	120	185	140	460	270	120	185	140
$\sqrt{}$	RT15	H1	18	5	8d x 1-1/2	5	8d			500	490	220	415		440	395	220	415	
7 /	KIIO	пі	10	5	8d x 1-1/2	5	8d x 1-1/2			580	490	220	415		440	395	220	415	
'	RT16A	H10A,	18	9	10d x 1-1/2	8	10d			1025	805	490	455		900	660	345	455	
	KIIDA	H14	18	9	8d x 1-1/2	8	8d x 1-1/2			935	805	490	455		820	660	345	455	
	RT16AR	H10AR	18	9	10d x 1-1/2	8	10d			1025	805	490	455		900	660	345	455	
	RT16-2	H10A-2	18	8	8d	8	8d			1060	780	410	405		935	625	330	320	
	HHCP2	HCP2	18	10	10d x 1-1/2	10	10d x 1-1/2			680	405				595	355			
	HHCP4-TZ	HCP4Z	16	8	10d	8	10d			1015	380				885	330			
	110500	000	40			11	8d	6	8d	515	470	430			445	405	370		
	HC520	GBC	18			11	8d x 1-1/2	6	8d x 1-1/2	515	470	430			445	405	370		
	HCPRS		18	6	8d	5	8d			490	525	345	570		315	350	275	385	
	2			8	8d	8	8d			980	745	120			825	625	100		
	LFTA6 ²	H6	16	8	8d x 1-1/2	8	8d x 1-1/2			980	745	120			825	625	100		
	RT20	H7	16	9	10d x 1-1/2	4	10d	9	10d x 1-1/2	1115					980				
				3	10d x 1-1/2	3	10d x 1-1/2			465					390				
	TSP	TSP	16	9	10d x 1-1/2	6	10d x 1-1/2			830	365	190	210	235	700	305	160	175	200
				_	10d x 1-1/2	6	10d			870	365	190	210	235	730	305	160	175	200

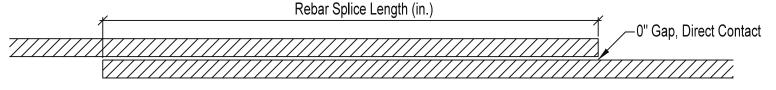
1) Allowable loads have been increased 60% for wind or seismic loads; no further increase shall be permitted. 2) LFTA6: To achieve F1 lateral loads, three nails must be installed on each side on the strap located closest to the bend line. Lateral F1 and F2 load directions do not apply to roof truss-to-top plate installations.

3) 8d common nails may be substituted for 8d x 1-1/2 nails, and 10d common nails may be substituted for 10d x 1-1/2 nails. 4) Stainless steel ring shank nails must be used with stainless steel connectors to achieve tabulated allowable loads.

5) Non-identical hurricane ties are not to be combined to resist the uplift force or lateral loads at a single connection location.

6) NAILS: 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long, 8d nails are 0.131" dia. x 2-1/2" long, 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.

REBAR LAP SPLICE LENGTH (IN.)											
SPECIFIED CONCRETE STRENGTH (PSI)		BAR SIZE (NUMBER)									
	3	4	5	6	7	8	9				
2500	23	31	39	47	68	78	88				
3000	21	28	36	43	62	71	80				
3500	20	26	33	40	58	66	74				
4000	18	25	31	37	54	62	69				



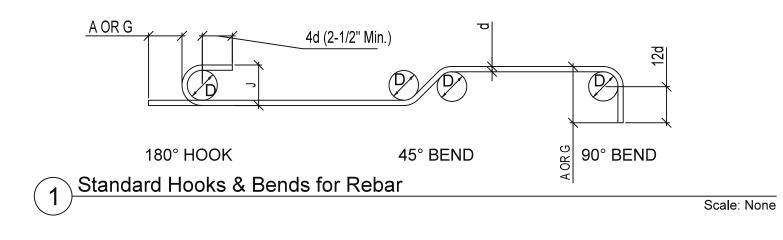
Continuous Rebar Lap Splice Lengths

Scale: None

RT15 - TOP VIEW

RT15 - FRONT VIEW RT15 - SIDE VIEW

r	`	18	0°	90°
L	J	A OR G	J	A OR (
2 1/4"		5"	3"	6"
3"		6"	4"	8"
3 3/4"	64	7"	5"	10"
4 1/2"	ou	8"	6"	12"
5 1/4"		10"	7"	14"
6"		11"	8"	6"
9 1/2"	8d	15"	11 3/4"	16"
	2 1/4" 3" 3 3/4" 4 1/2" 5 1/4"	3" 3 3/4" 4 1/2" 5 1/4" 6"	D A OR G 2 1/4" 3" 5" 6" 7" 4 1/2" 5 1/4" 10" 6" 11"	A OR G J 2 1/4" 3" 6" 4 1/2" 5" 8" 6" 10" 7" 11" 8"





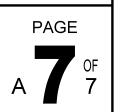




JOB NAME **TOWNSEND TOWN HALL**

DATE:
3/1/2024
PROJECT #:
850-0-ILLUS

DRAWN BY



All nails are smooth-common, box or deformed shank except where otherwise stated.

Nail is a general description and may be T-head, modified round head or round head.

Staples are 16-gauge wire, unless otherwise noted, and have a minimum ⁷/₁₆" o.d. crown width.

Staples shall be spaced at not more than 10" o.c. at intermediate supports for floors.