



Proudly Serving Rural Routt County \* City of Steamboat Springs \* Town of Hayden \* Town of Oak Creek \* Town of Yampa \* Routt County School

**Date: 01/13/2021**

Address: 25545 COUNTY ROAD 56, STEAMBOAT	Property Use: AGRES
Owner: KURTZ, PETER L. MARY B. (JT)	LotArea: 464.81
Parcel ID: 924181001	Year Built: 0
Zoning: AF	Book Page:



**Building**

**TB-20-1244**

To: Peter Kurtz

**Design information:**

Occupancy Classification: R3, U

Character and Use: One-Family Residence w/ attached Garage

Number of Stories: 1

Type of Construction: Type V-B

Occupant Load: <10

**RCRBD Record Set  
T.A.**

**01/13/2021**

**✓Items noted below do not require a response or comment back during the Plan Review in order for us to approve this permit. The Items below are required and will be checked by field inspectors. Please take time to review these items in advance of starting any work to ensure your project is ready for inspection.**

1. Separate Electrical Plumbing Permits must be applied for and obtained prior to any work being done within these trades. Note Electrical and Plumbing trades are protected by the State, Licensed Contractors must apply and perform this work on all Commercial Properties, and additionally their employees working on these projects must be registered or licensed with the State of Colorado and work directly under Licensed Individual managing the project.
  - On Residential Properties owners are allowed to apply for the permit and perform their own Electrical and Plumbing work if this is their primary residence and they sign and complete our Home Owner Agreement form.
2. Separate Mechanical Permits must be applied for and obtained prior to any work being done within this trade. Mechanical Contractors must be registered and approved by the Routt County Regional Building Department.

**Routt County Regional Building Department**

136 Sixth Street, PO Box 773840 Steamboat Springs, CO 80477 PH: 970-870-5566 Fax 970-870-5489

3. Deferred Submittal Required: Heat Load Calculations and heating information for the new construction must be submitted prior to Electrical, Plumbing, and Mechanical Permits being issued.
4. Deferred Submittal Required: Stamped Truss Drawings to be provided for review and approval by RCRBD prior to trusses being set and inspections being done.
5. Deferred Submittal: Applicant must provide additional information on how the Crawl Space area will meet Section R408 of the IRC. Please resubmit information on how you intend to meet this section.
6. Deferred Submittal: Applicant to provide information on how Whole House Ventilation requirements will be met in accordance with IEEC R403.6 and 403.6.1 and IRC M1507.3.
7. The Routt County Building Department has developed the Residential Private Garage Floor Drain Policy. This Policy outlines the regulations per Jurisdiction on private residential garage floor drains throughout Routt County, ask Routt County personnel for policy.
8. Anchored masonry veneer installed over a backing of wood or cold-formed steel shall meet the requirements of Section R703.8.
9. R308 Glazing. Except as indicated in Section R308.1.1, each pane of glazing installed in hazardous locations as defined in Section R308.4 shall be provided with a manufacturer's or installer's label, designating the type and thickness of glass and the safety glazing standard with which it complies, which is visible in the final installation. The label shall be acid etched, sandblasted, ceramic-fired, embossed mark, or shall be of a type which once applied cannot be removed without being destroyed. Exceptions: Tempered spandrel glass may be identified by the manufacturer with a removable paper label.
10. Fenestration U-factors less than or equal to 0.32 will be required. This will apply for all glazing in windows and doors. The builder shall leave the National Fenestration Rating Council (NFRC) labels on all windows and doors with glazing at time of rough inspections so inspectors can verify the glazing requirements.
11. Bath Exhaust ducts if ran in unconditioned space must be done in insulated duct.
12. R321.1 Premises identification. Approved numbers or addresses shall be provided for all new buildings in such a position as to be plainly visible and legible from the street or road fronting the property.
13. While there are exceptions, floor assemblies that are not required elsewhere in this code to be fire-resistance rated, shall be provided with a 1/2-inch (12.7 mm) gypsum wallboard membrane, 5/8-inch (16 mm) wood structural panel membrane, or equivalent on the underside of the floor framing member. Penetrations or openings for ducts, vents, electrical outlets, lighting, devices, luminaires, wires, speakers, drainage, piping and similar openings or penetrations shall be permitted as per R302.13 Fire protection of floors.
14. SECTION R314 SMOKE ALARMS
  - R314.1 General. Smoke alarms shall comply with NFPA 72 and Section R314.
  - R314.1.1 Listings. Smoke alarms shall be listed in accordance with UL 217. Combination smoke and carbon monoxide alarms shall be listed in accordance with UL 217 and UL 2034.
  - R314.2 Where required. Smoke alarms shall be provided in accordance with this section.
  - R314.2.1 New construction. Smoke alarms shall be provided in dwelling units.
  - R314.3 Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. on each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
4. Smoke alarms shall be installed not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by Section R314.3.

## SECTION R315

### CARBON MONOXIDE ALARMS

R315.1 General. Carbon monoxide alarms shall comply with Section R315.

R315.1.1 Listings. Carbon monoxide alarms shall be listed in accordance with UL 2034. Combination carbon monoxide and smoke alarms shall be listed in accordance with UL 2034 and UL 217.

R315.2 Where required. Carbon monoxide alarms shall be provided in accordance with Sections R315.2.1 and R315.2.2.

R315.2.1 New construction. For new construction, carbon monoxide alarms shall be provided in dwelling units where either or both of the following conditions exist.

1. The dwelling unit contains a fuel-fired appliance.
2. The dwelling unit has an attached garage with an opening that communicates with the dwelling unit.

R315.3 Location. Carbon monoxide alarms in dwelling units shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom.

R315.4 Combination alarms. Combination carbon monoxide and smoke alarms shall be permitted to be used in lieu of carbon monoxide alarms.

R315.5 Power source. Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection.

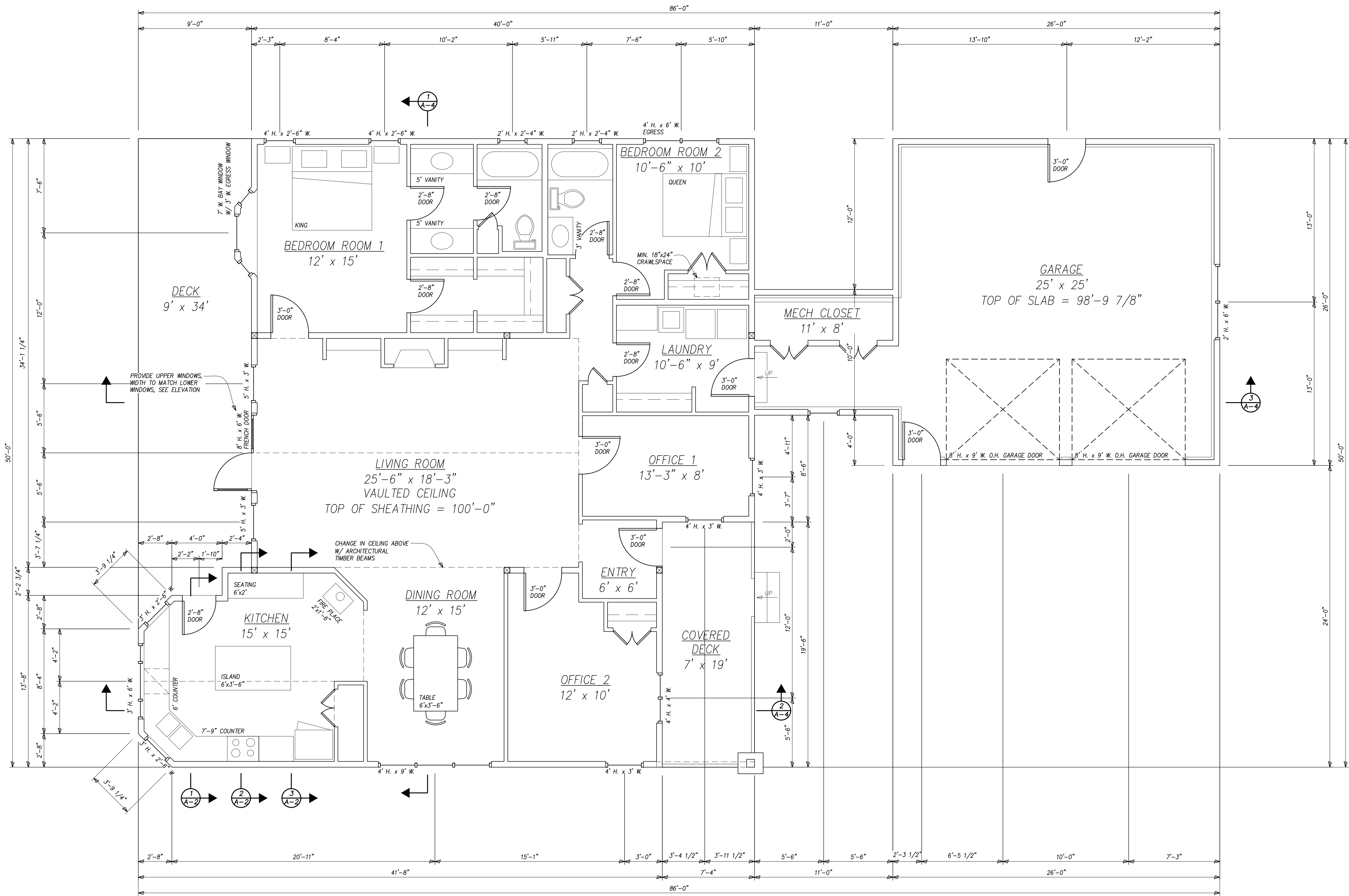
Exceptions:

1. Carbon monoxide alarms shall be permitted to be battery operated where installed in buildings without commercial power.
2. Carbon monoxide alarms installed in accordance with Section R315.2.2 shall be permitted to be battery powered.

Reviewed by: Ted Allen Date: January 13, 2021







**FLOOR PLAN**  
Scale : 1/4" = 1'-0"

NORTH

GARAGE SLAB ELEVATION = 98'-9 7/8"

MAIN FLOOR TOP OF SHEATHING ELEVATION = 100'-0"

TYPICAL EXTERIOR WALL TO BE 2x6.

TYPICAL INTERIOR WALL TO BE 2x4, EXCEPT AT INTERIOR BEARING WALL AND PLUMBING WALLS

**BUILDING SIZE**

HOUSE: 1,978 sf

COVERED DECK: 144 sf

UNCOVERED DECK: 322 sf

GARAGE: 786 sf

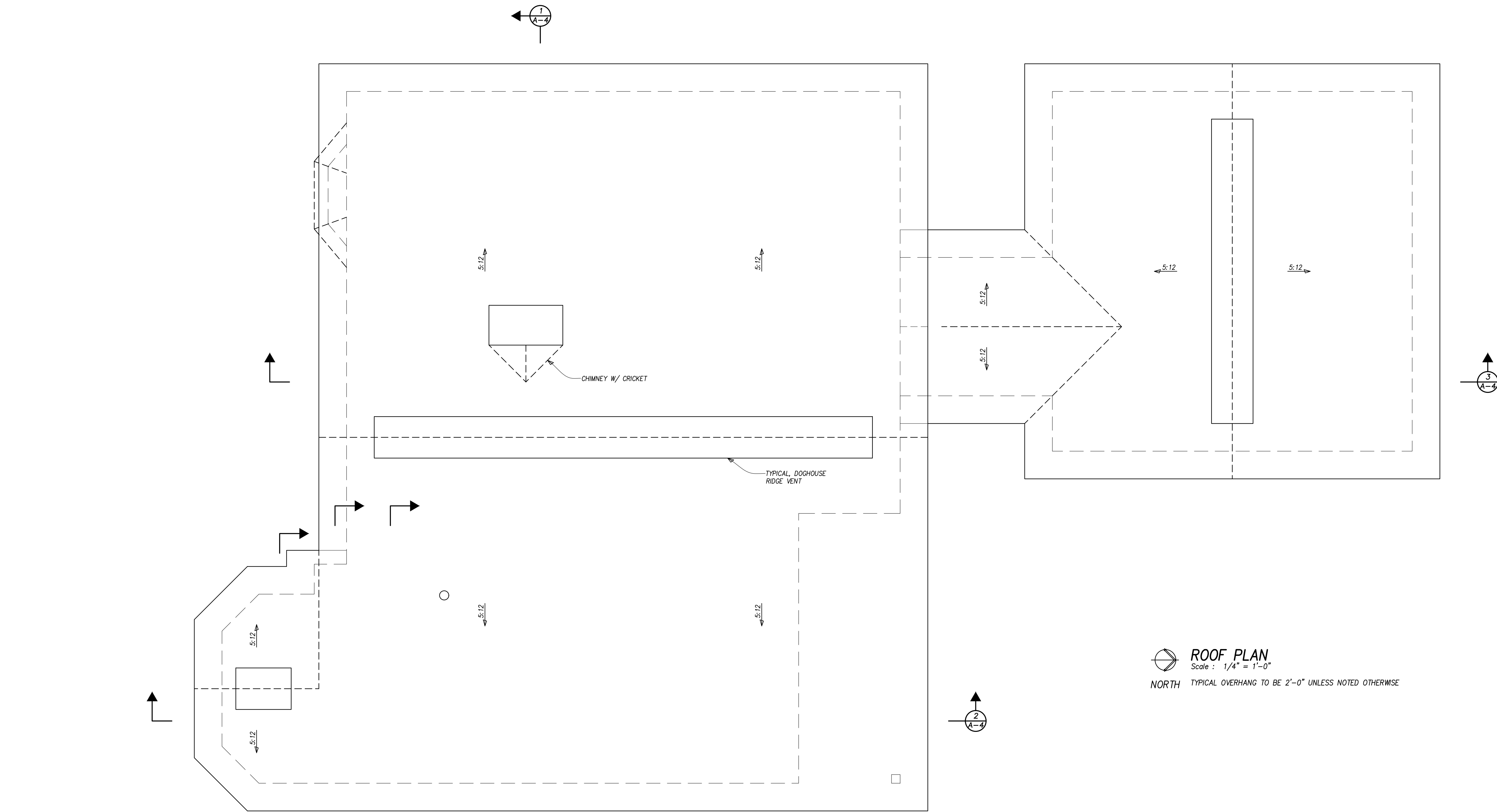
RECORDS

Record Set

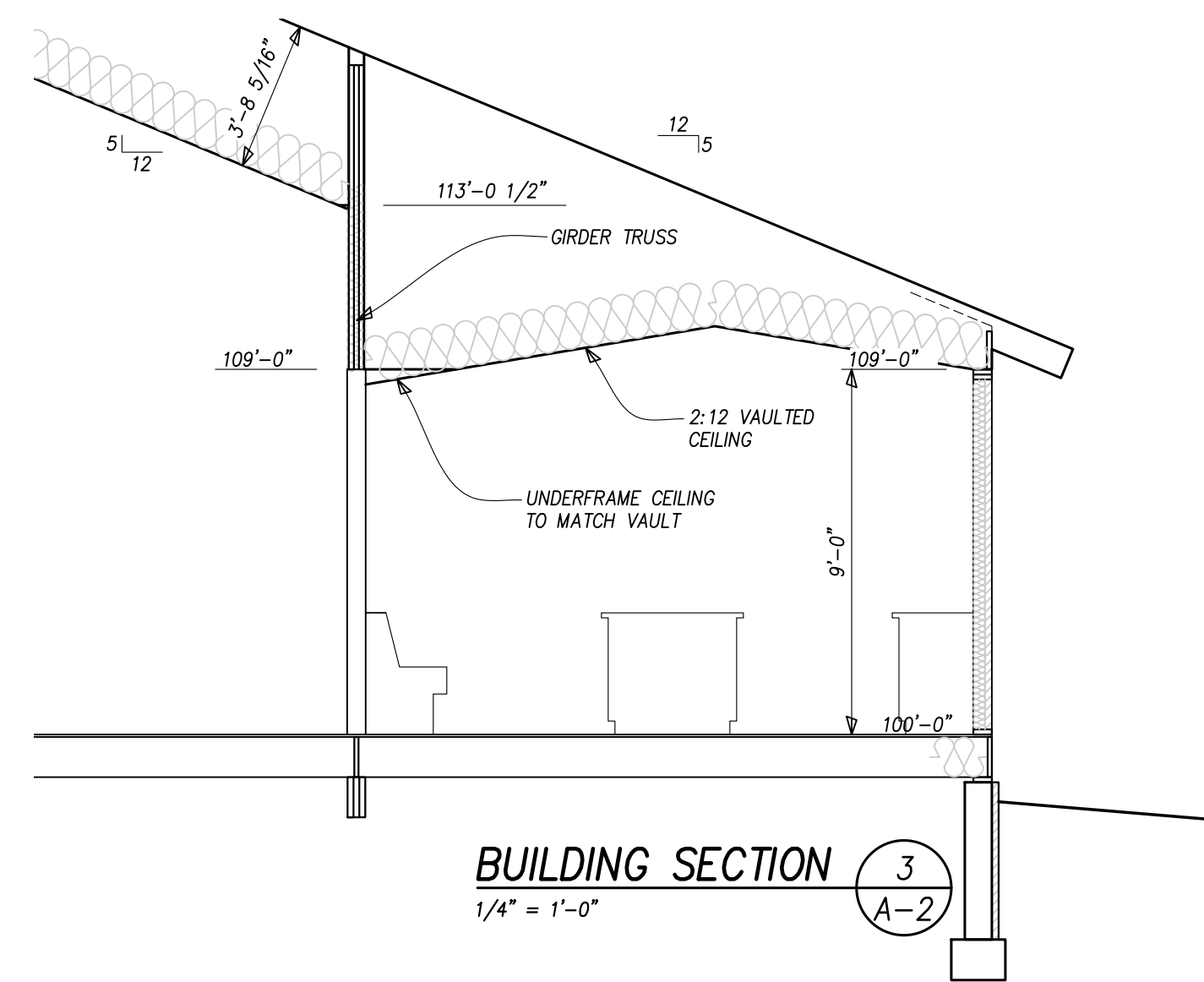
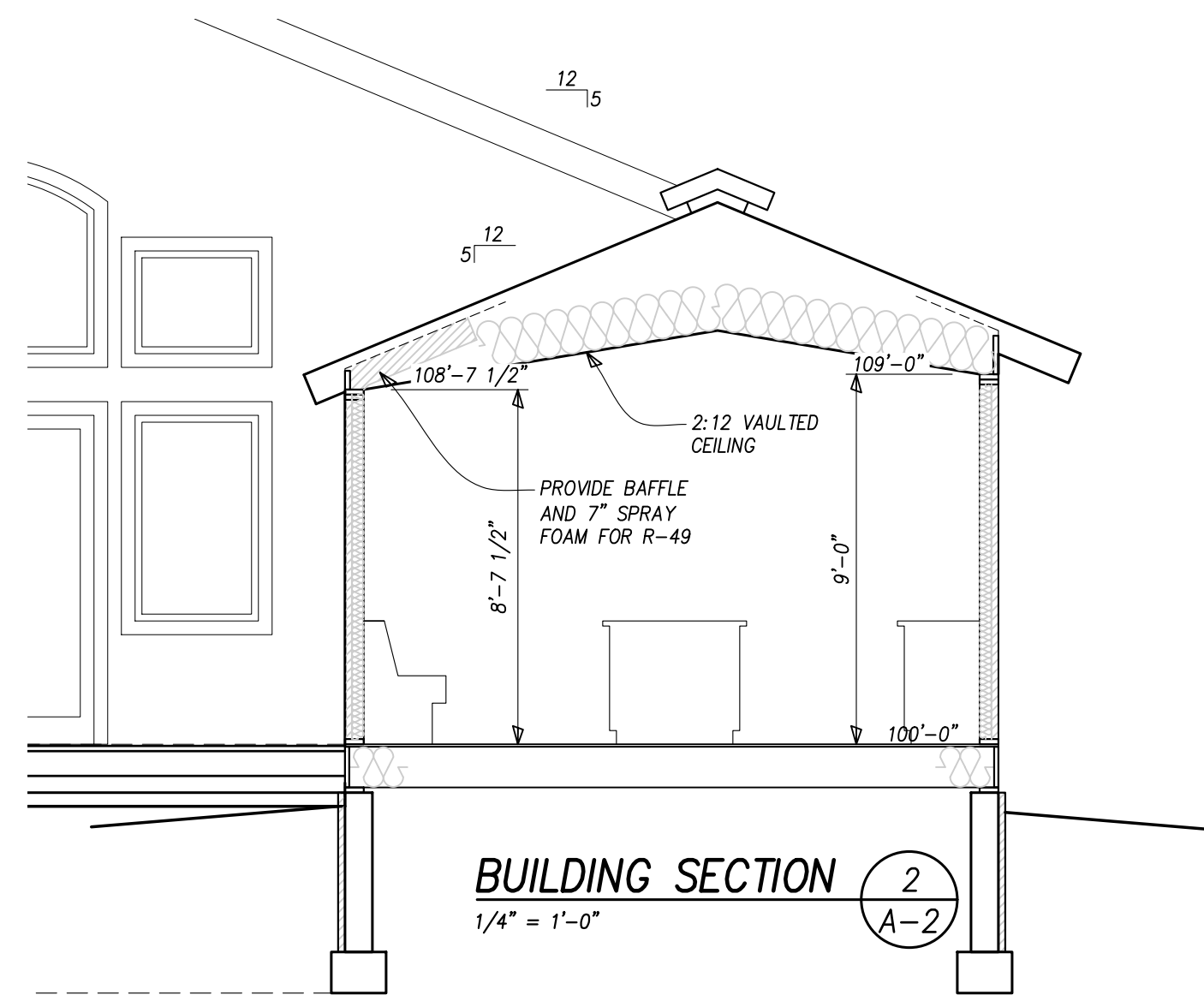
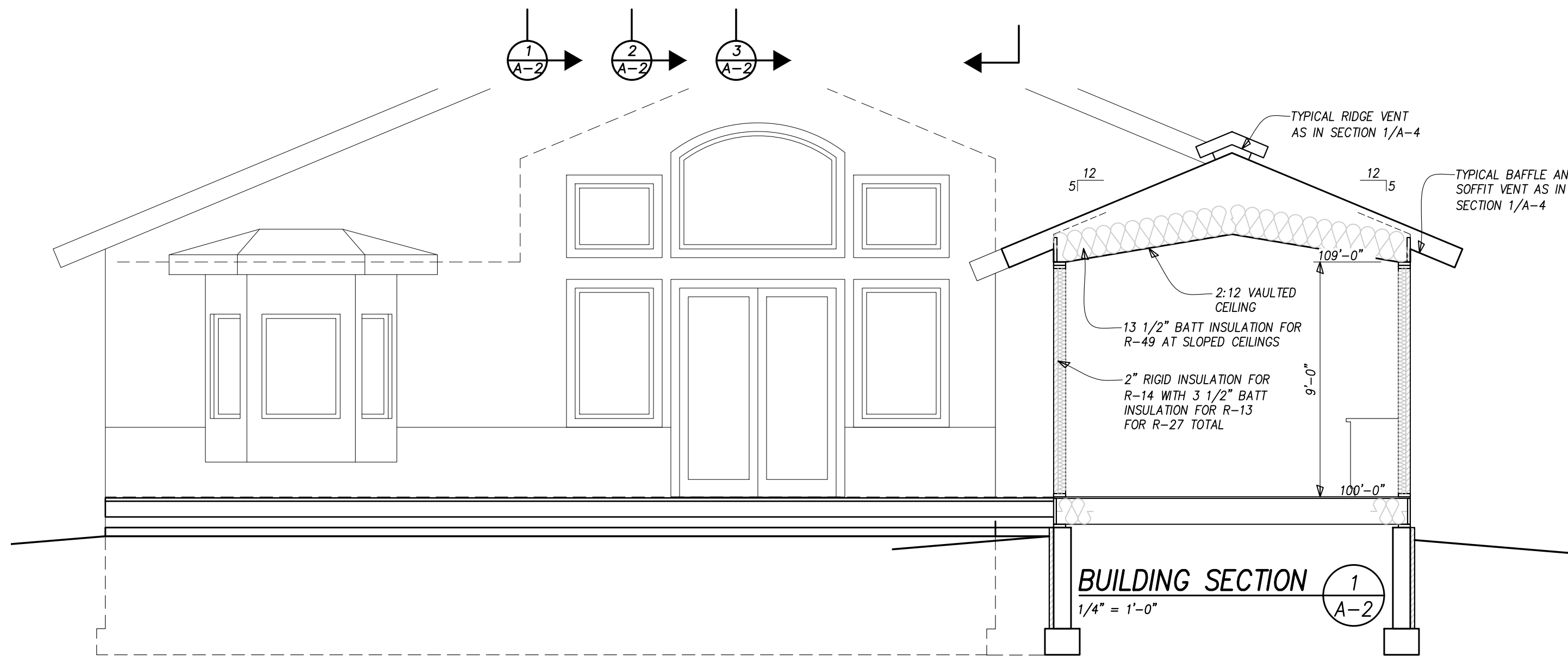
T.A.

01/13/2021

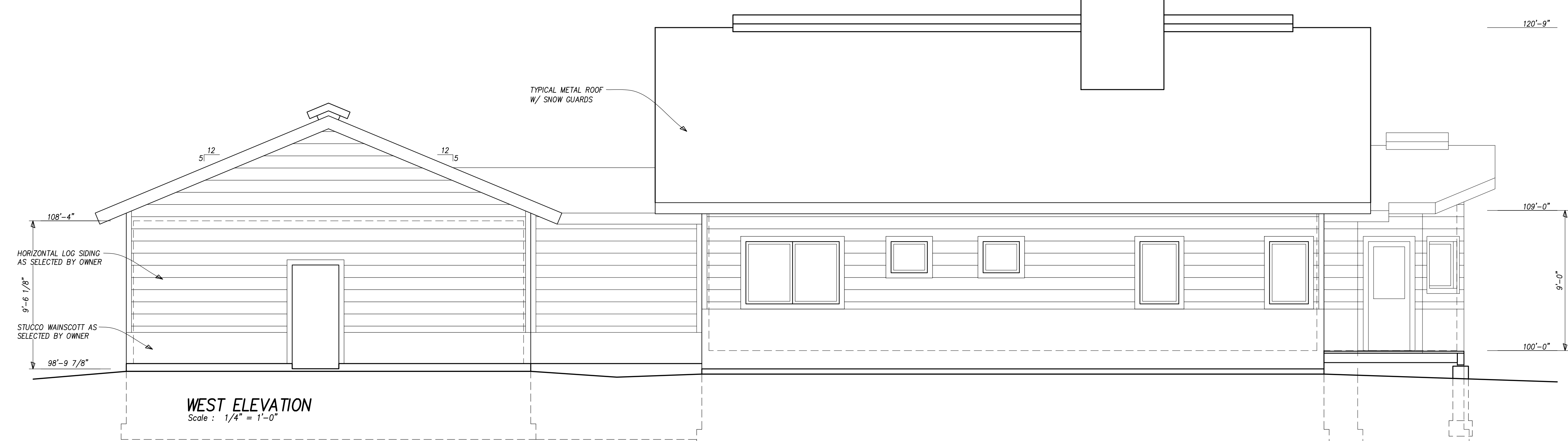
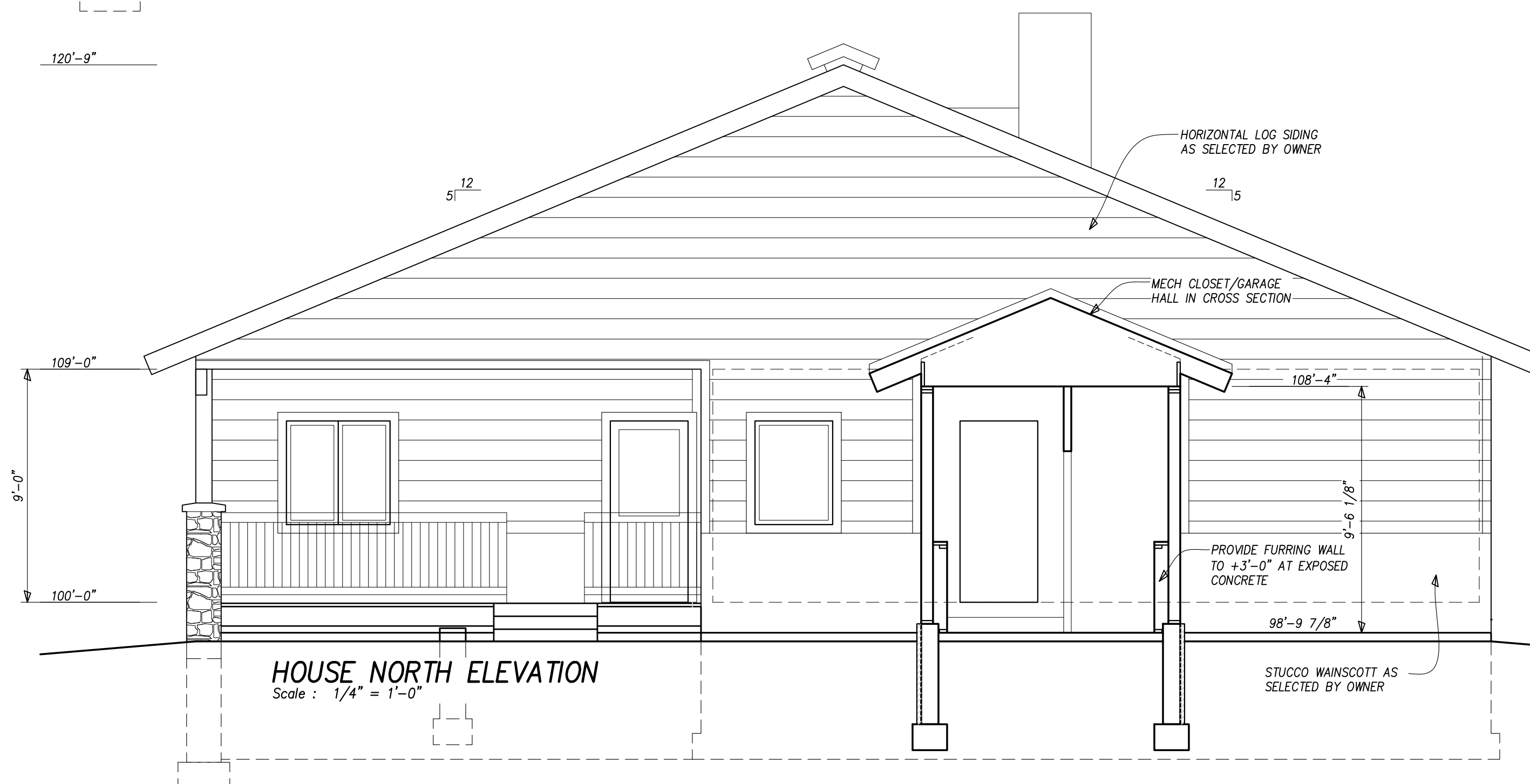
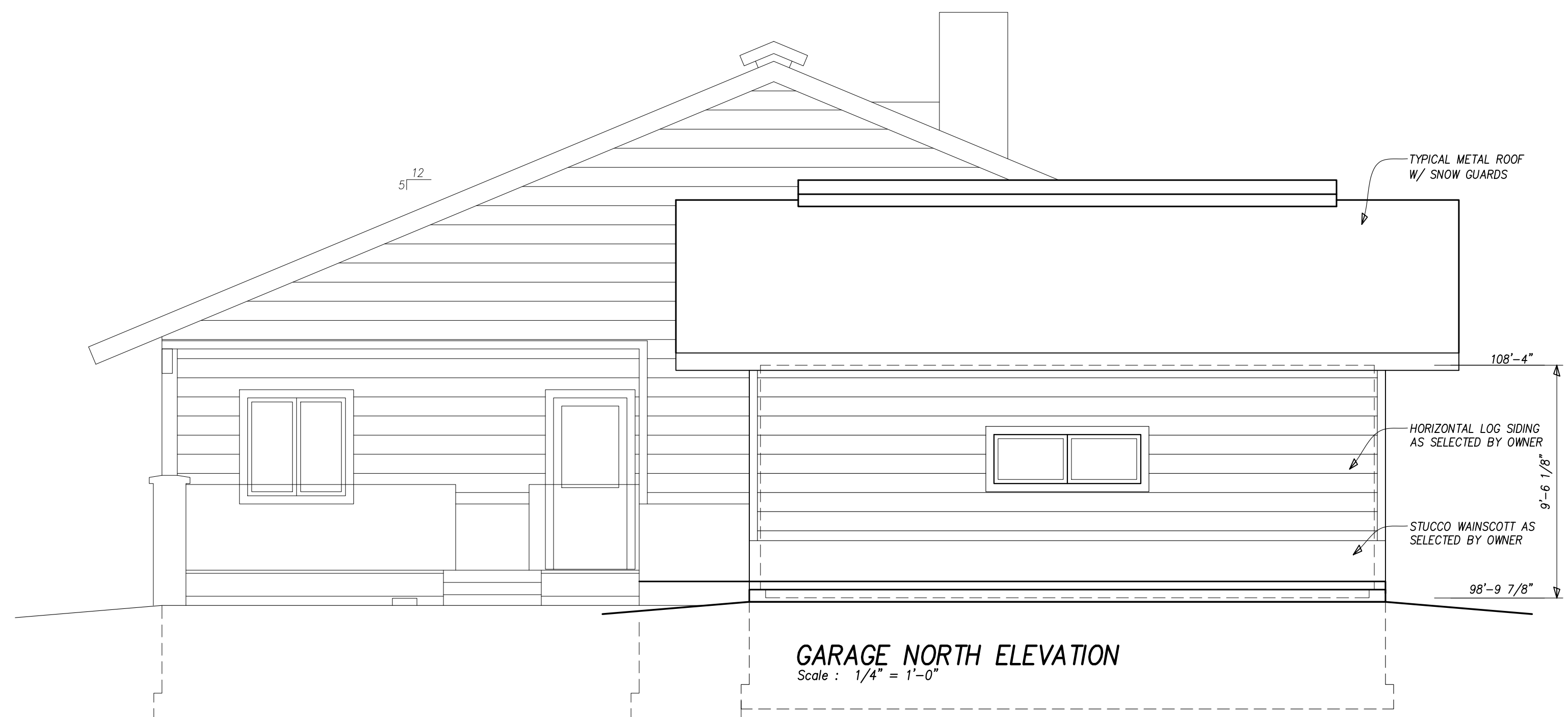
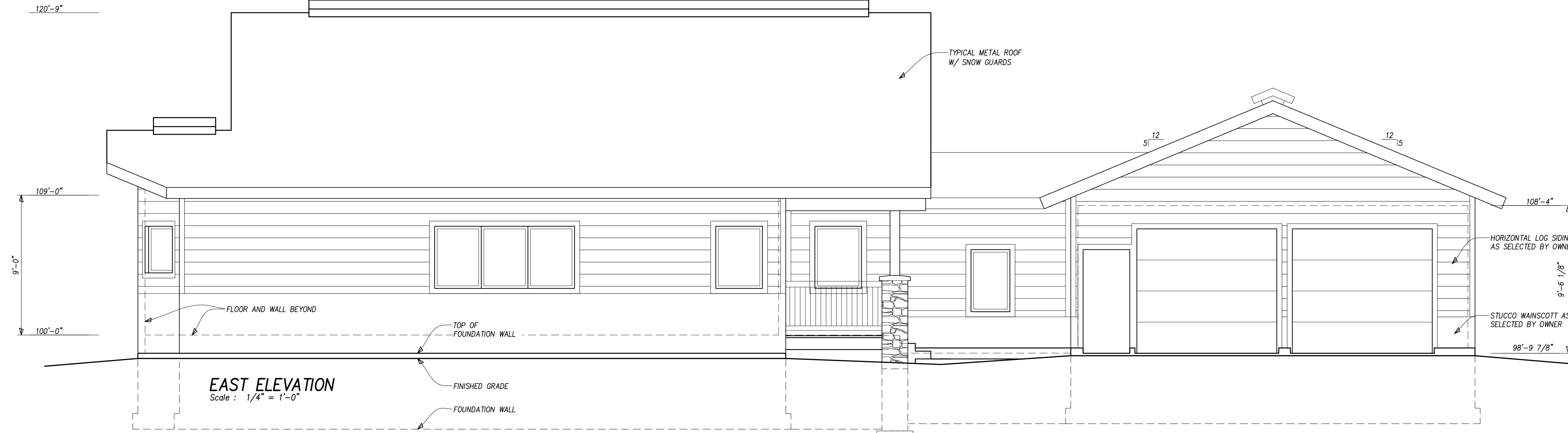




ROOF PLAN  
Scale : 1/4" = 1'-0"  
NORTH TYPICAL OVERHANG TO BE 2'-0" UNLESS NOTED OTHERWISE



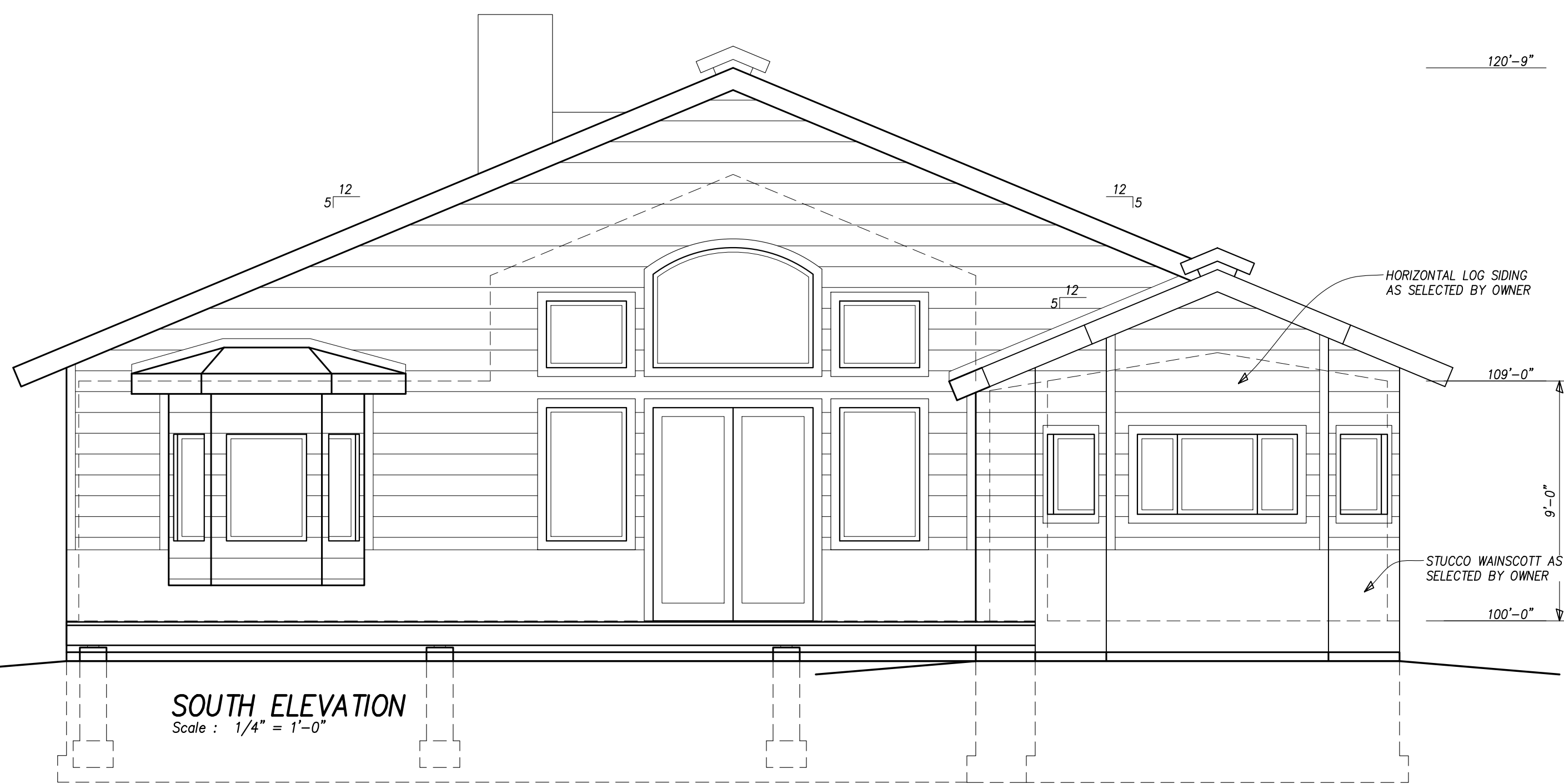
RCRD Record Set  
T.A.  
01/13/2021



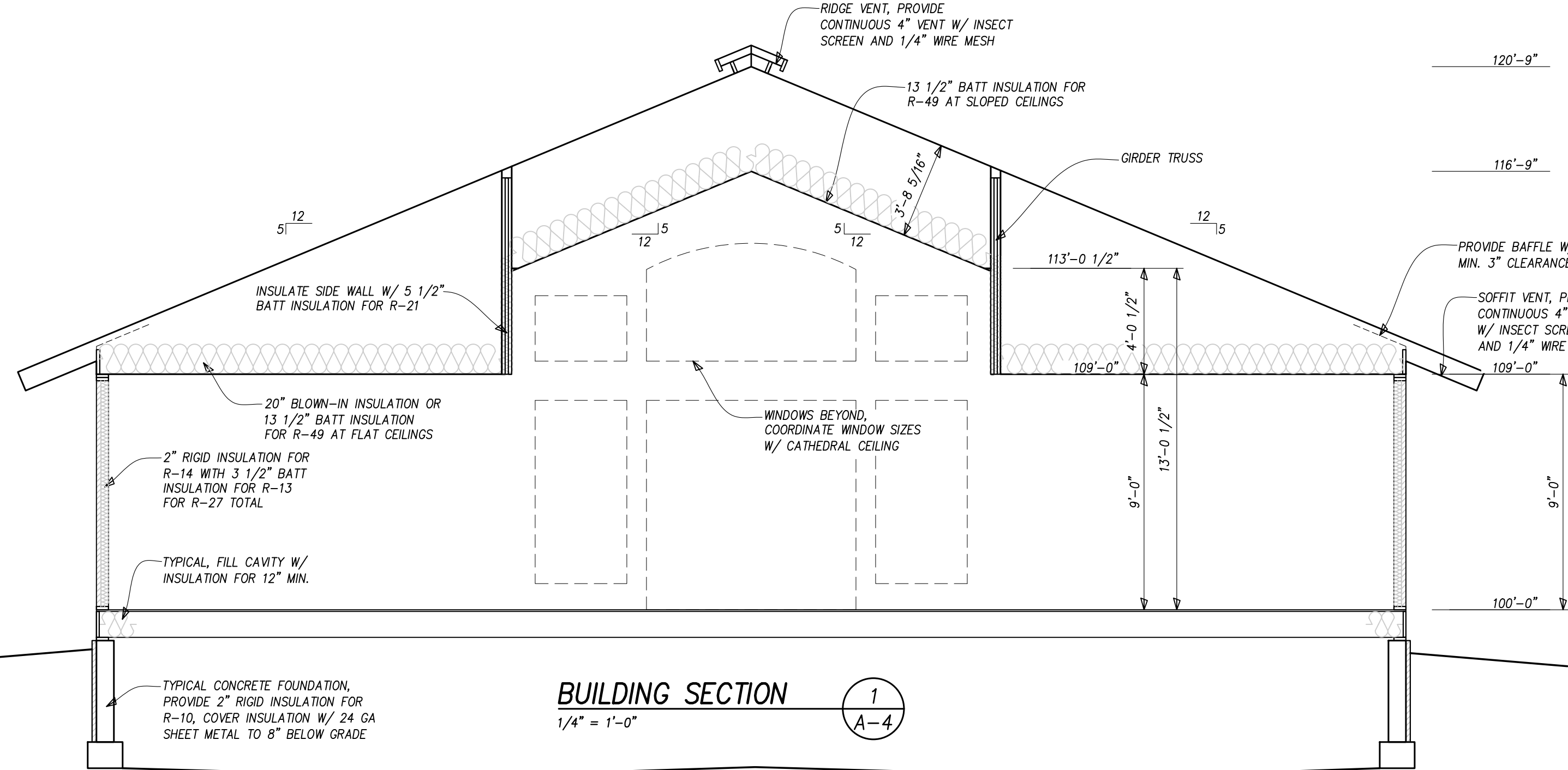
RCRD Record Set  
T.A.  
01/13/2021

DATE	REVISIONS
12/16/20	
PROJECT	#20-095
DRAWN	CAS
CHECKED	BFS
FILE	Kurtz_House_20095.dwg
SCALE	1/4" = 1'-0"

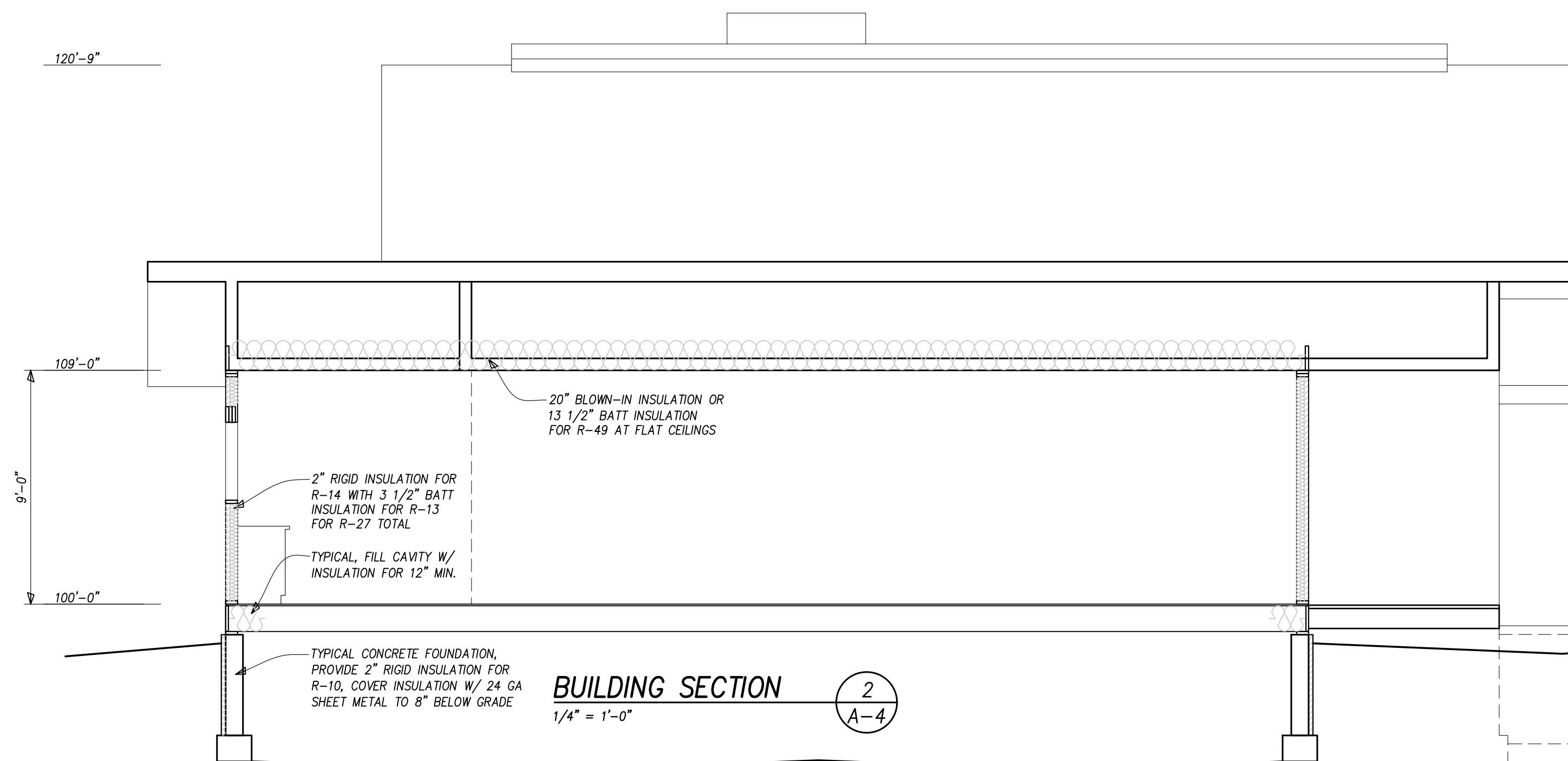
**MARY AND PETER KURTZ**  
ELEVATIONS  
RANCH HOME  
25545 COUNTY ROAD 56  
STEAMBOAT SPRINGS, COLORADO 80487



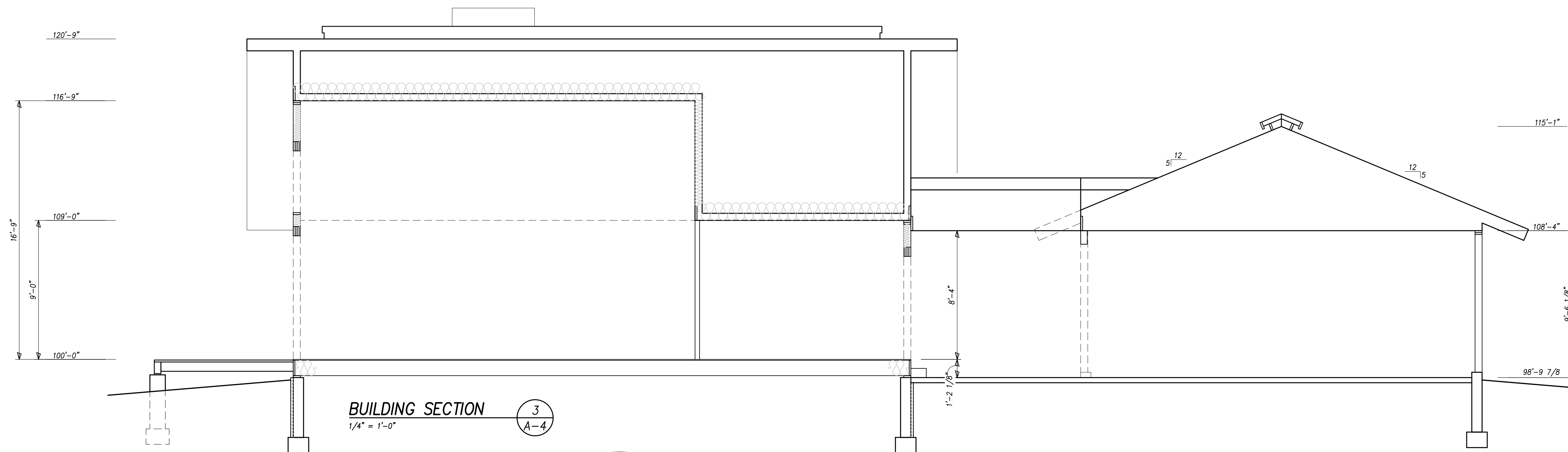
**SOUTH ELEVATION**  
Scale : 1/4" = 1'-0"



**BUILDING SECTION 1**  
1/4" = 1'-0"



**BUILDING SECTION 2**  
1/4" = 1'-0"

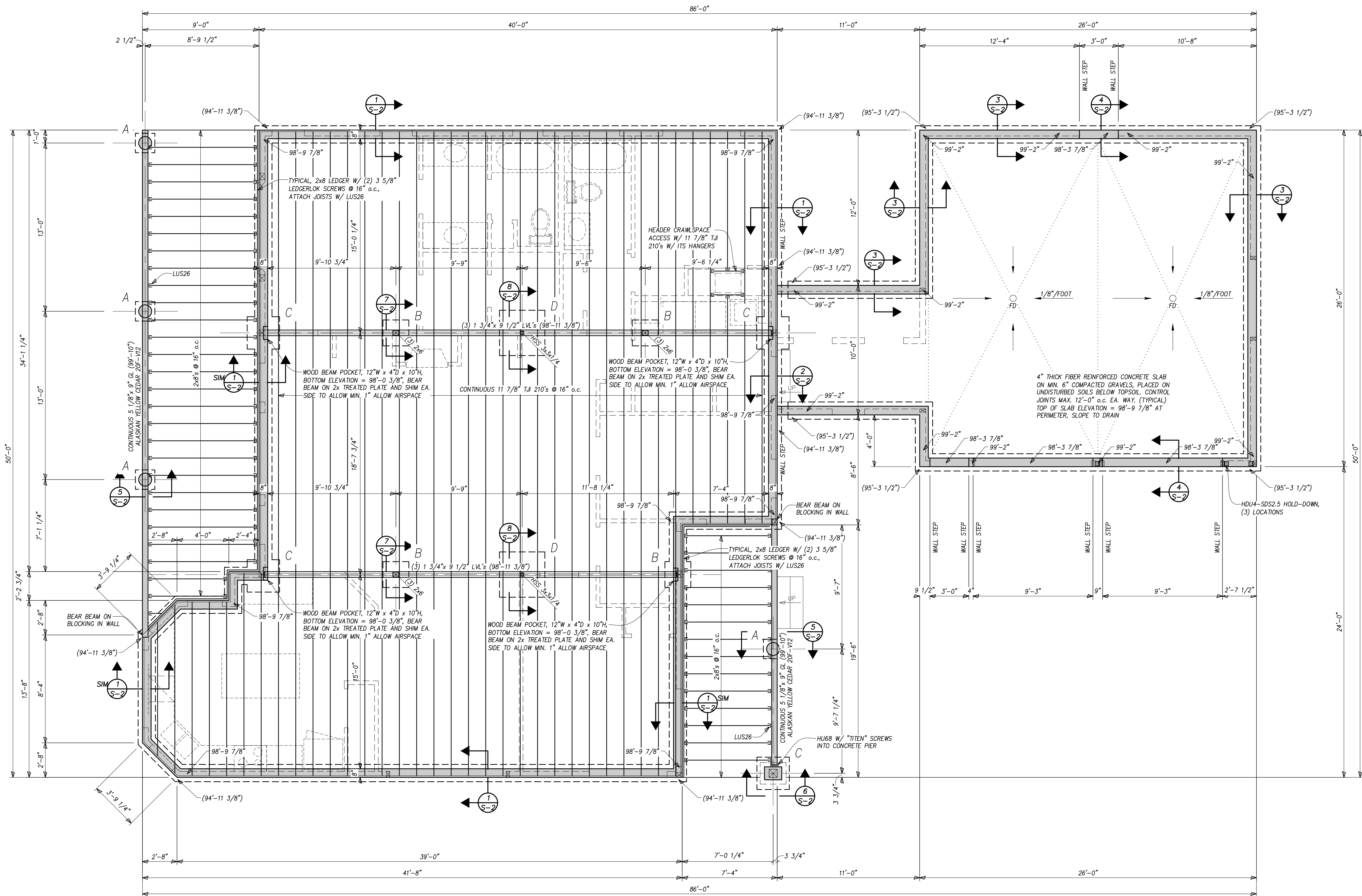


**BUILDING SECTION 3**  
1/4" = 1'-0"

RCRD Record Set  
T.A.  
01/13/2021

DATE	12/16/20
PROJECT	#20-095
DRAWN	CAS
CHECKED	BFS
FILE	Kurtz_House_20095.dwg
SCALE	1/4" = 1'-0"





**FOUNDATION AND MAIN FLOOR FRAMING PLAN**  
Scale : 1/4" = 1'-0"  
NORTH  
ELEVATION TOP OF CONCRETE WALL SHALL BE INDICATED THUS ELEV. →  
ELEVATION TOP OF CONCRETE FOOTING SHALL BE INDICATED THUS (ELEV.) →  
TYPICAL AT FLOOR, 3/4" APA RATED, EXPOSURE 1, SHEATHING  
TOP OF SHEATHING ELEVATION SHALL BE 100'-0" UNLESS NOTED OTHERWISE  
INDICATES SIZE OF COLUMN BELOW BEAM AT INDICATED LOCATION

SPREAD FOOTING SCHEDULE		
TYPE	SIZE	REINFORCING
A	1'-6" x 1'-6" x 1'-0"	(2) #5'S EA. WAY, BOTTOM
B	2'-0" x 2'-0" x 1'-0"	(3) #5'S EA. WAY, BOTTOM
C	2'-6" x 2'-6" x 1'-0"	(4) #5'S EA. WAY, BOTTOM
D	3'-6" x 3'-6" x 1'-0"	(5) #5'S EA. WAY, BOTTOM

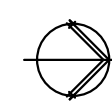
RECORD Set  
T.A.  
01/13/2021











Scale :  $1/4" = 1'-0"$

TYPICAL AT ROOF, 5/8" APA RATED, EXPOSURE 1, SHEATHING  
TYPICAL SUB-FASCIA THIS PLAN, IS TO BE 2x10

FRAME EXTERIOR WALLS ARE TO BE 2x6 @ 16" o.c. W/ 7/16" APA  
RATED SHEATHING UNLESS NOTED OTHERWISE

TYPICAL HEADER THIS PLAN, (3) 2x10's W/ (1) 2x6 TRIMMER AND (1) 2x6 KING STUD EACH END UNLESS NOTED OTHERWISE

TOP OF PLATE ELEVATION ON FRAME BEARING WALL SHALL BE INDICATED BY XX'-XX"

(XX'-XX'') INDICATES ELEVATION TOP OF STEEL OR TIMBER BEAM

INDICATES SIZE OF COLUMN BELOW BEAM AT INDICATED LOCATION



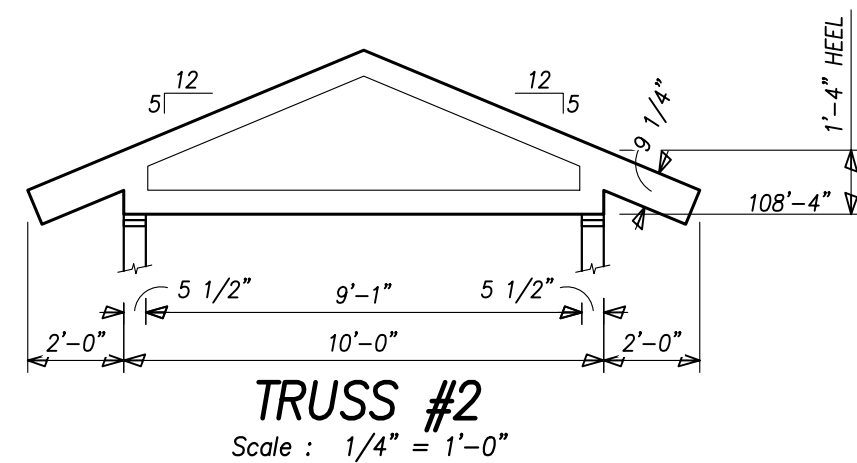
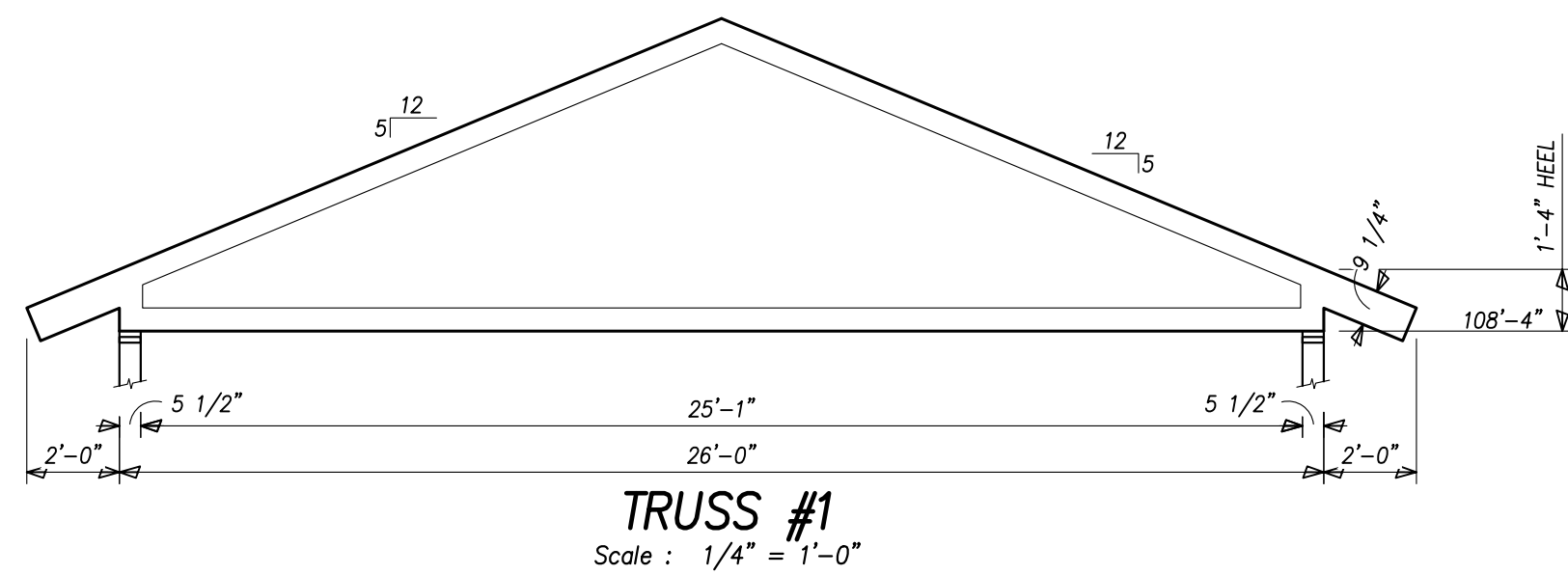
Scale :  $1/4" = 1'-0"$


$$1/2'' = 1' - 0$$

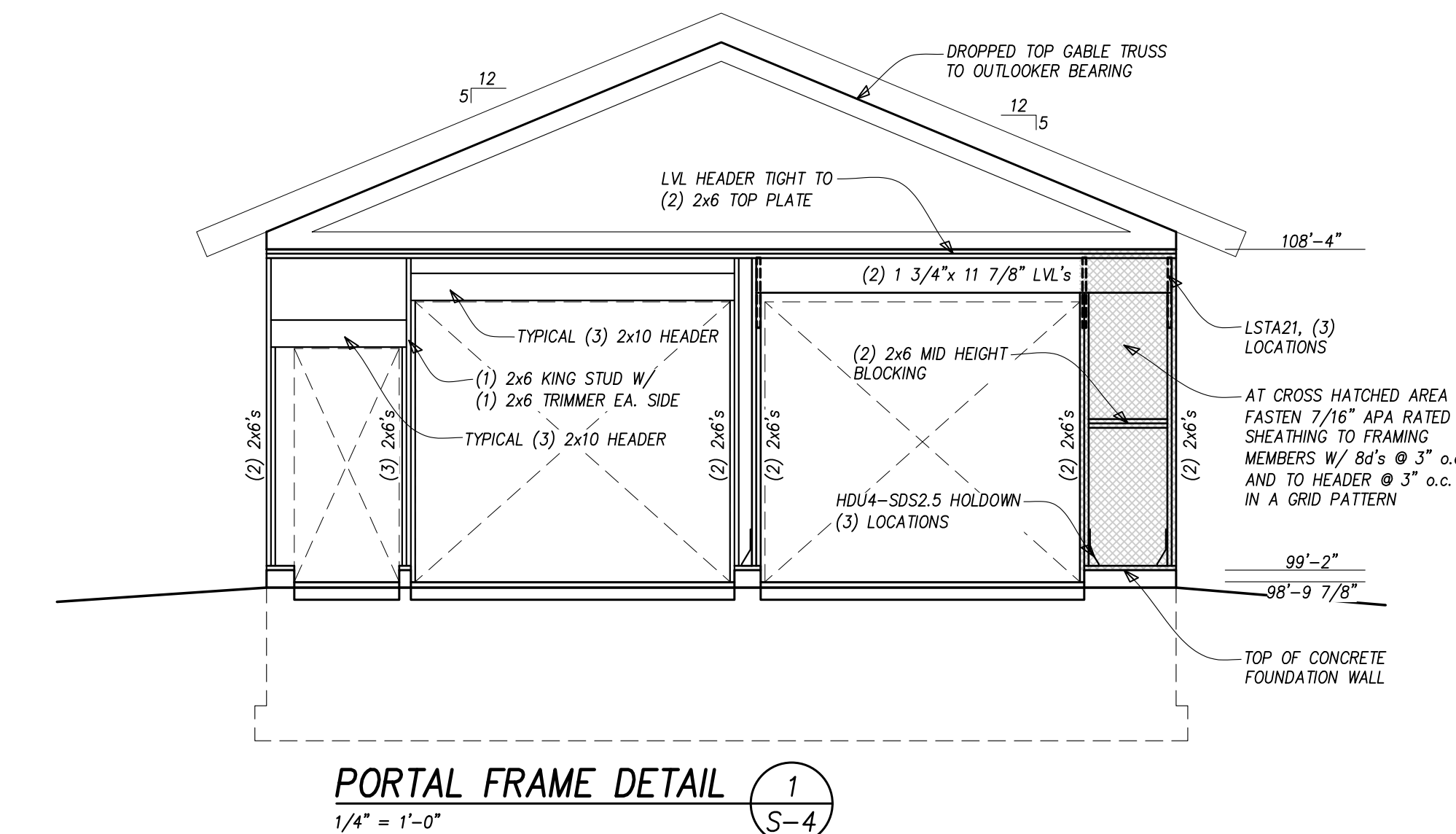
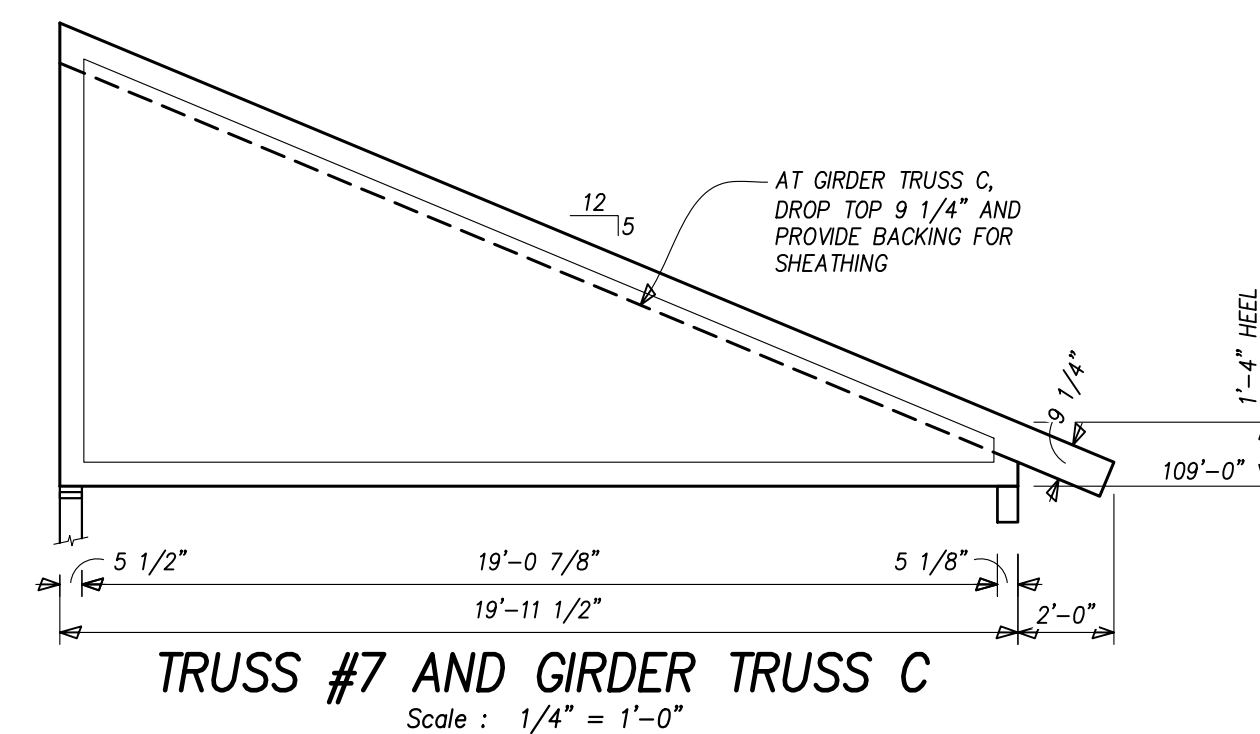
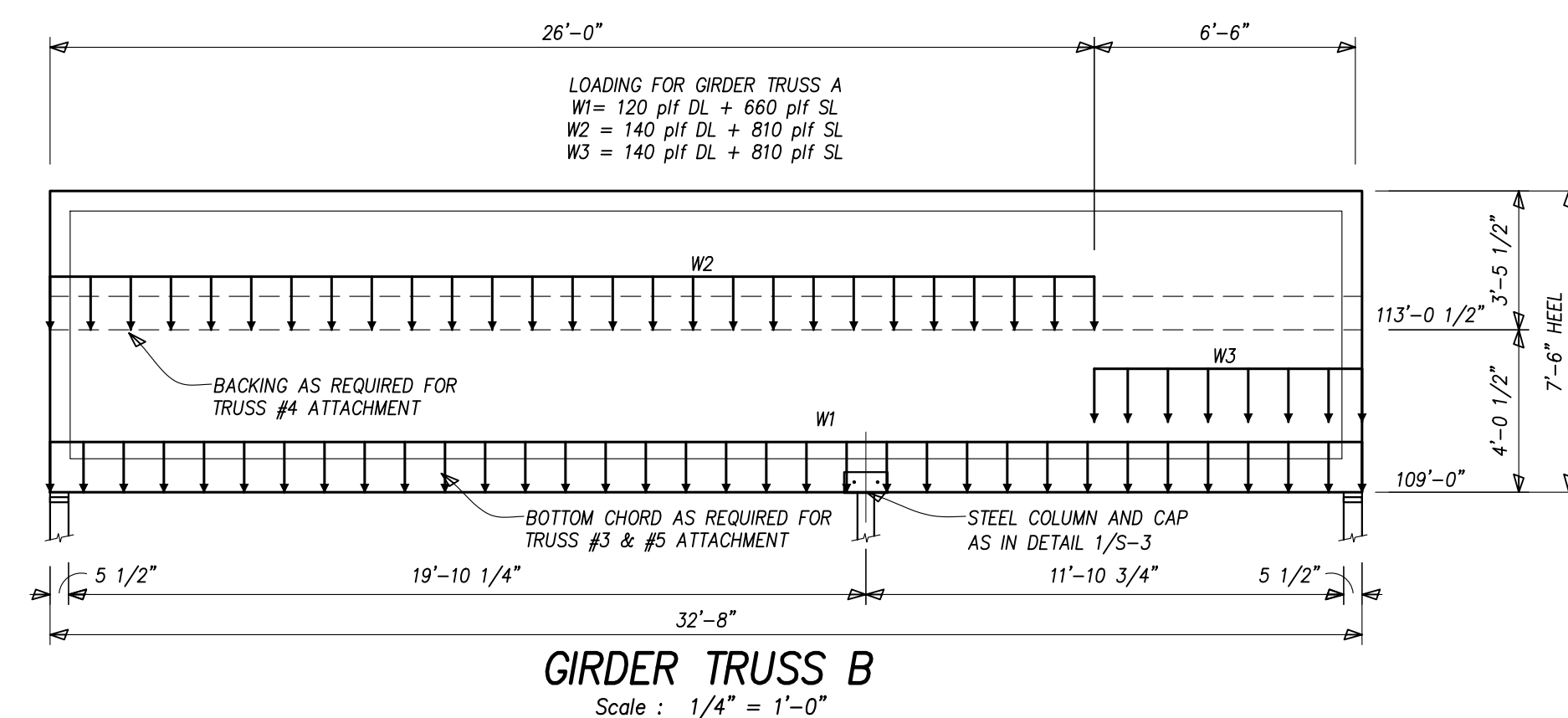
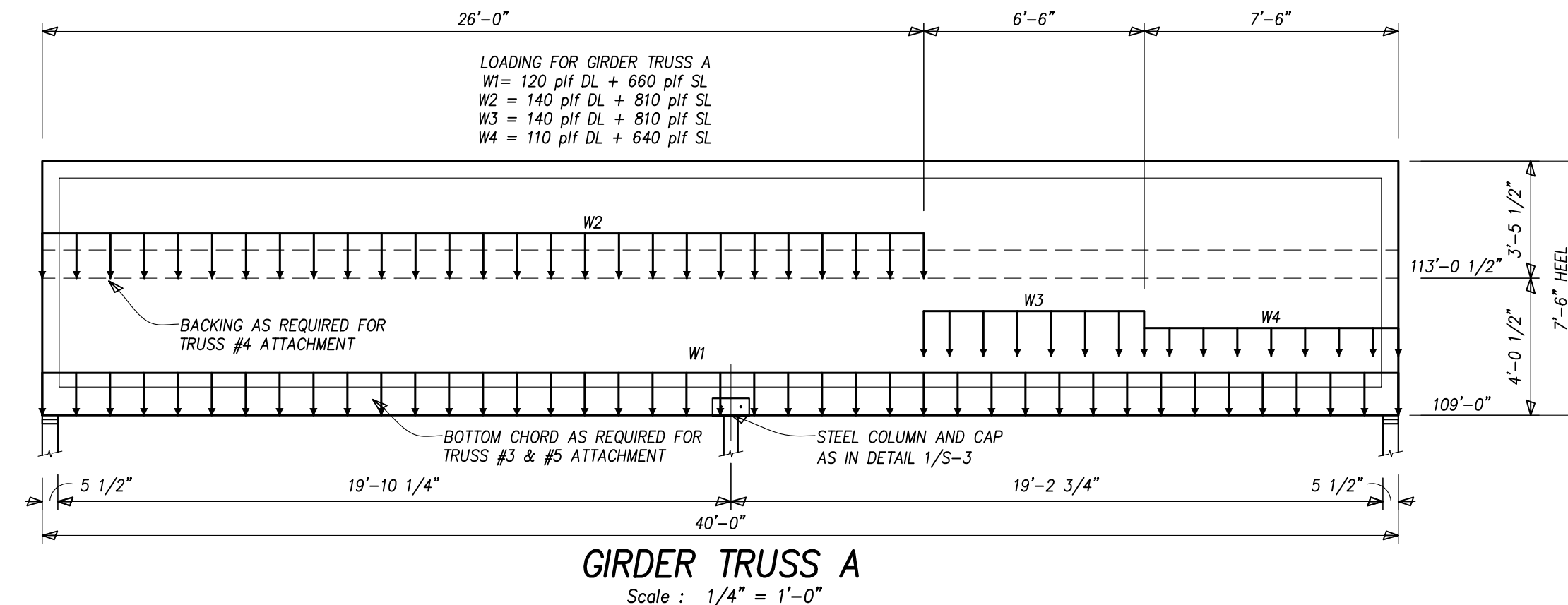
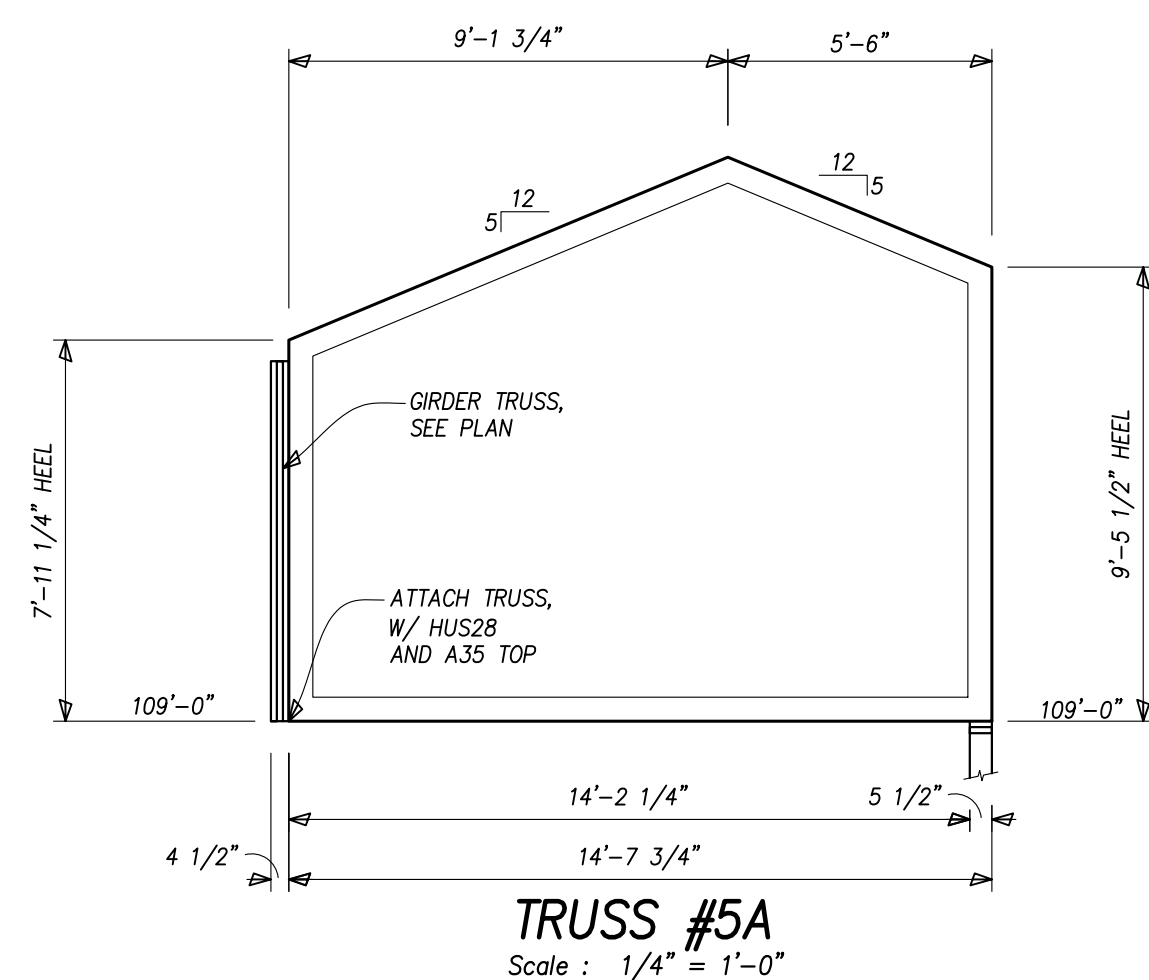
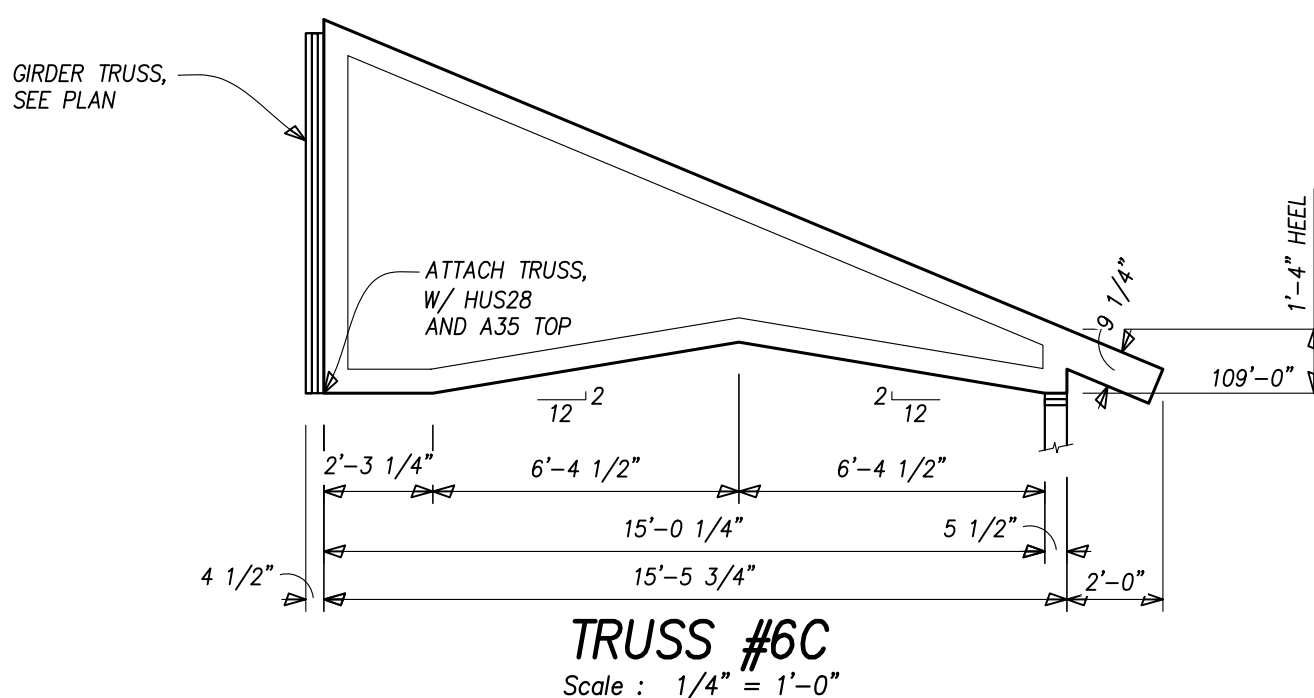
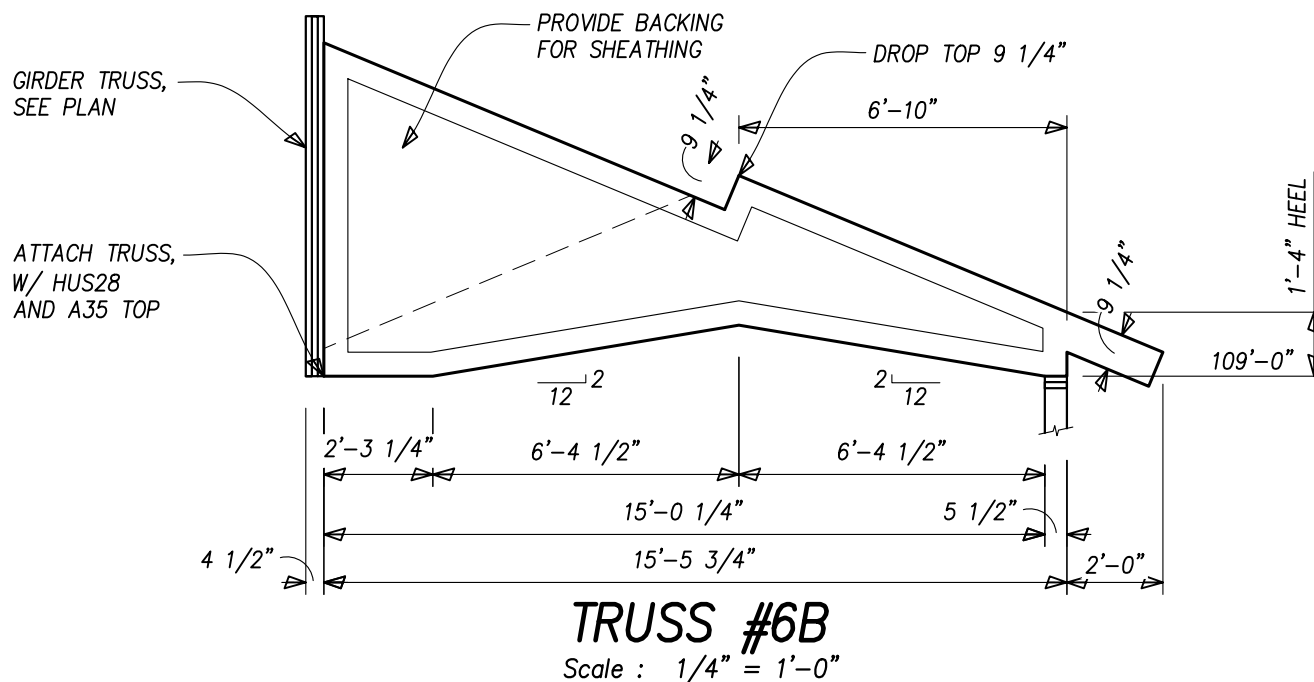
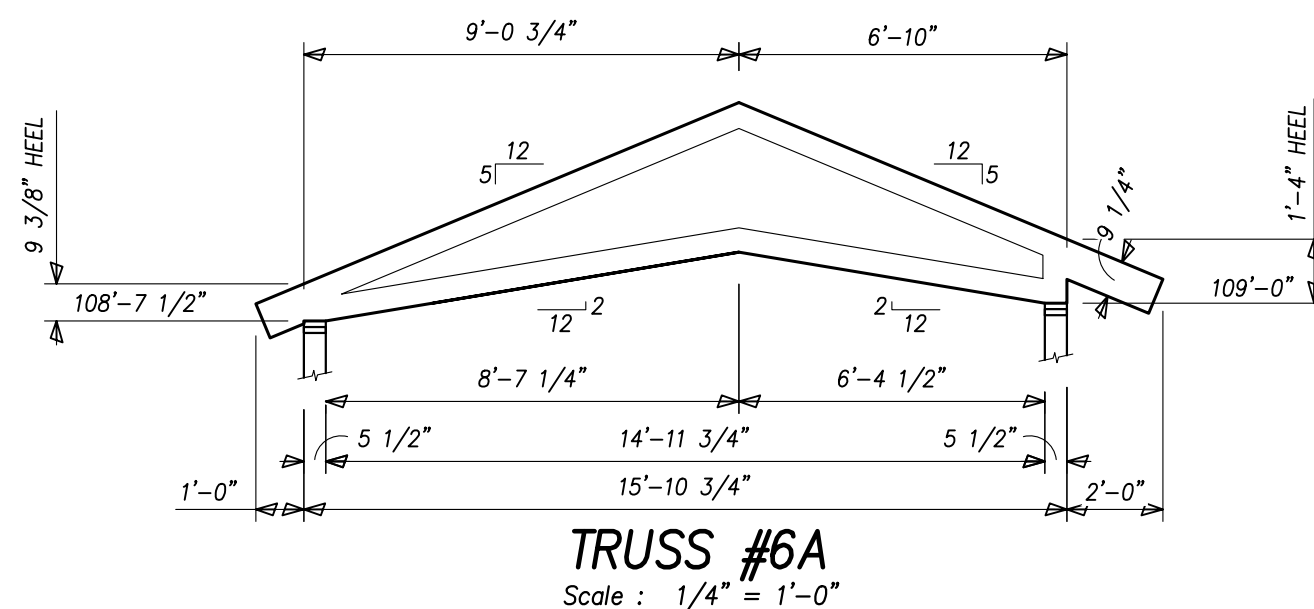
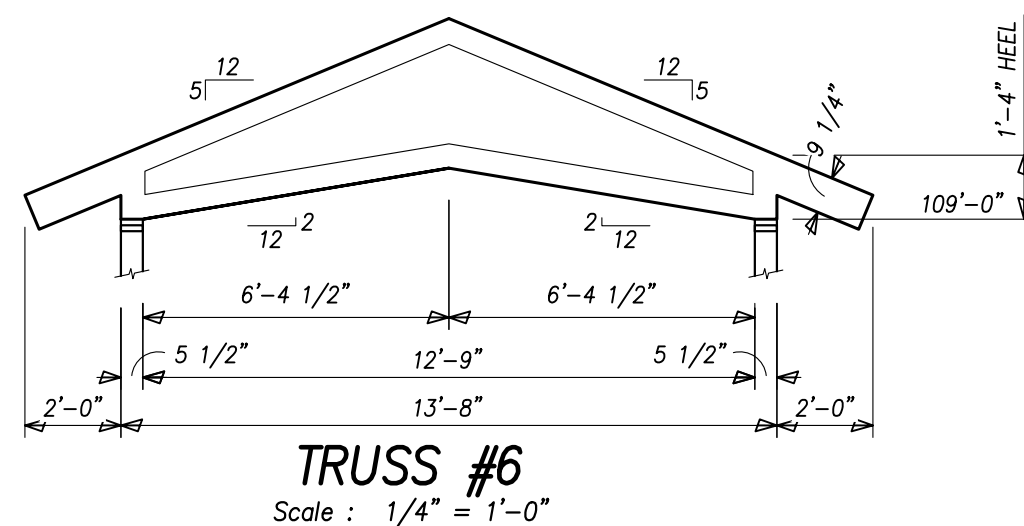
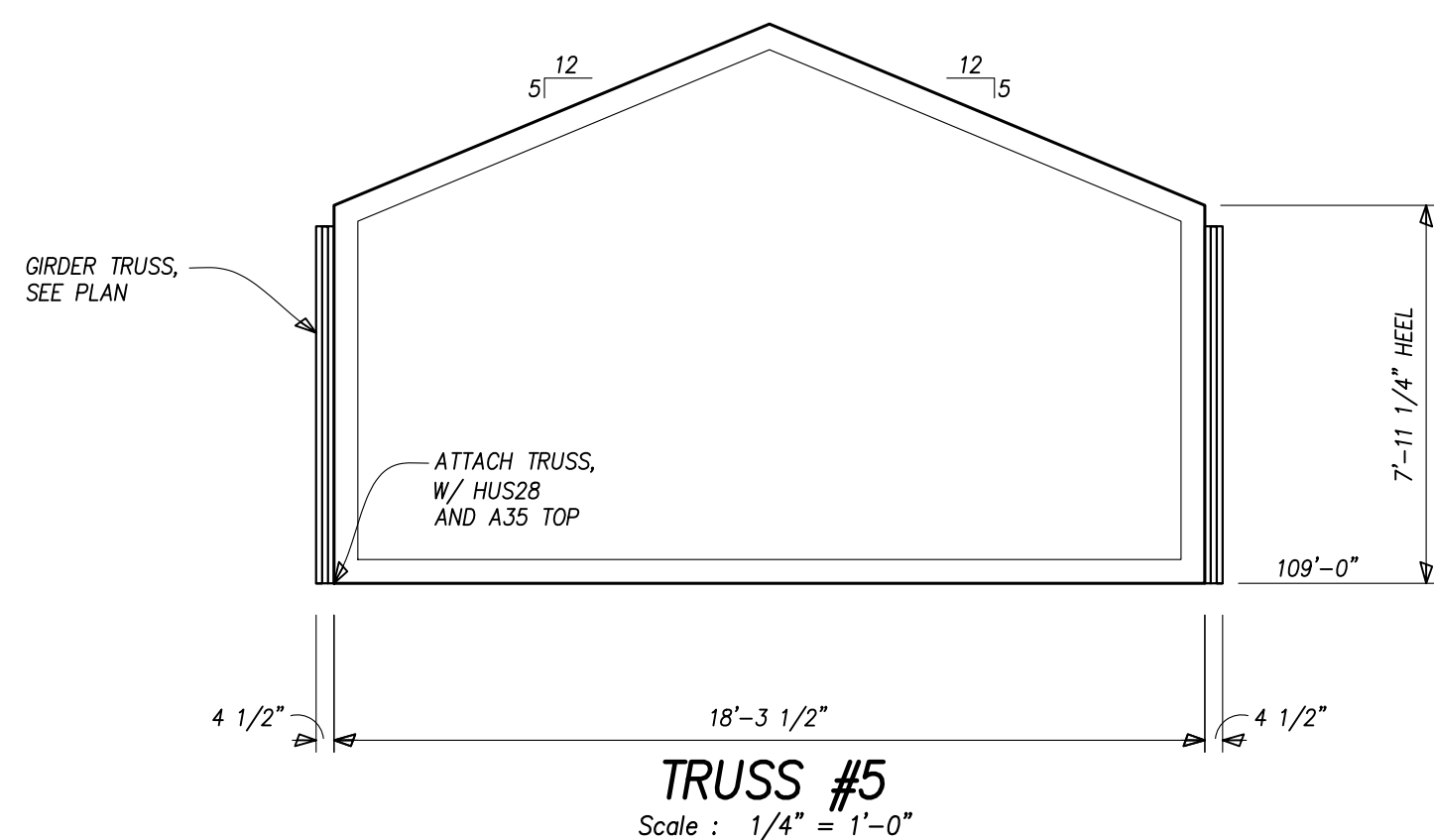
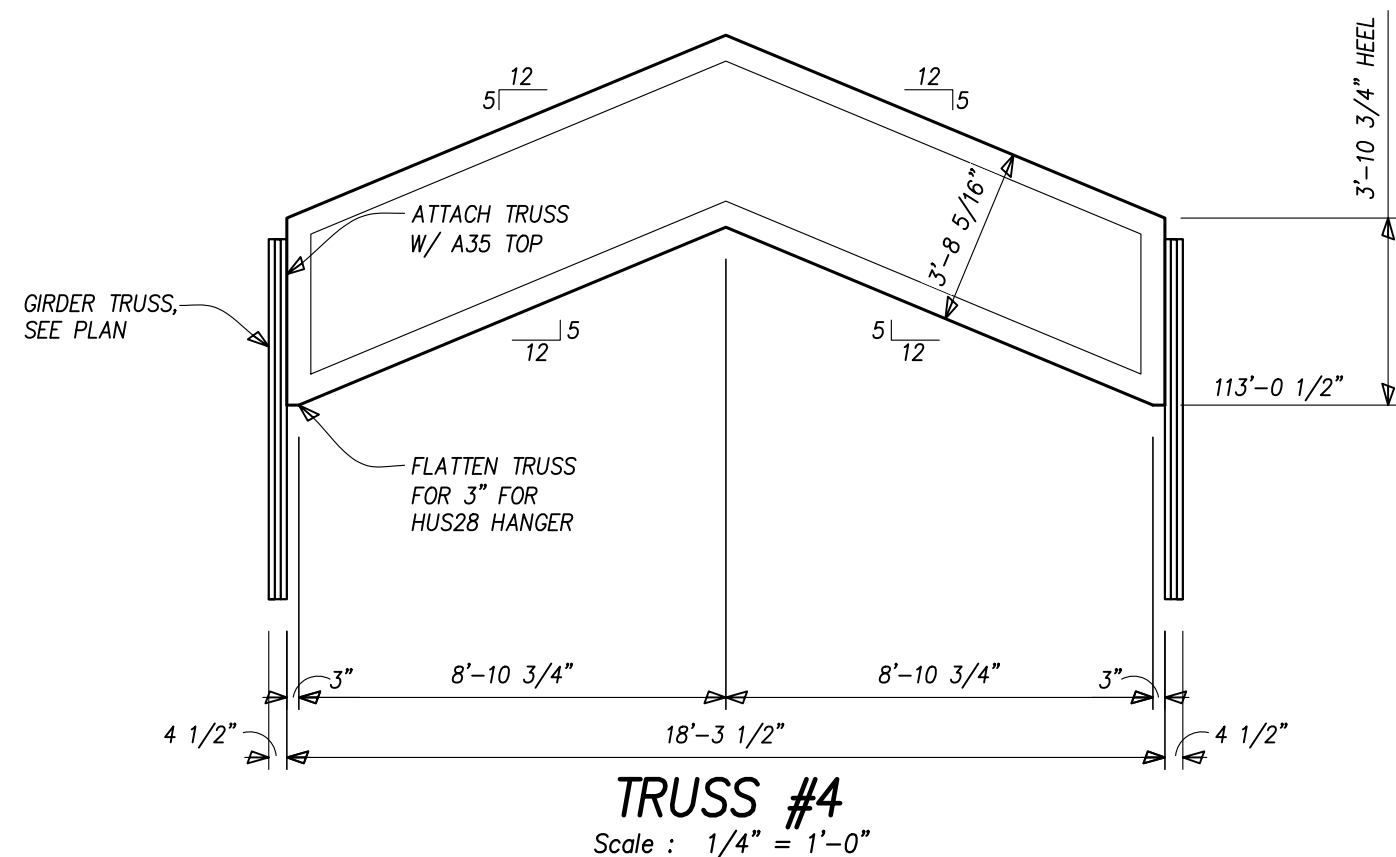
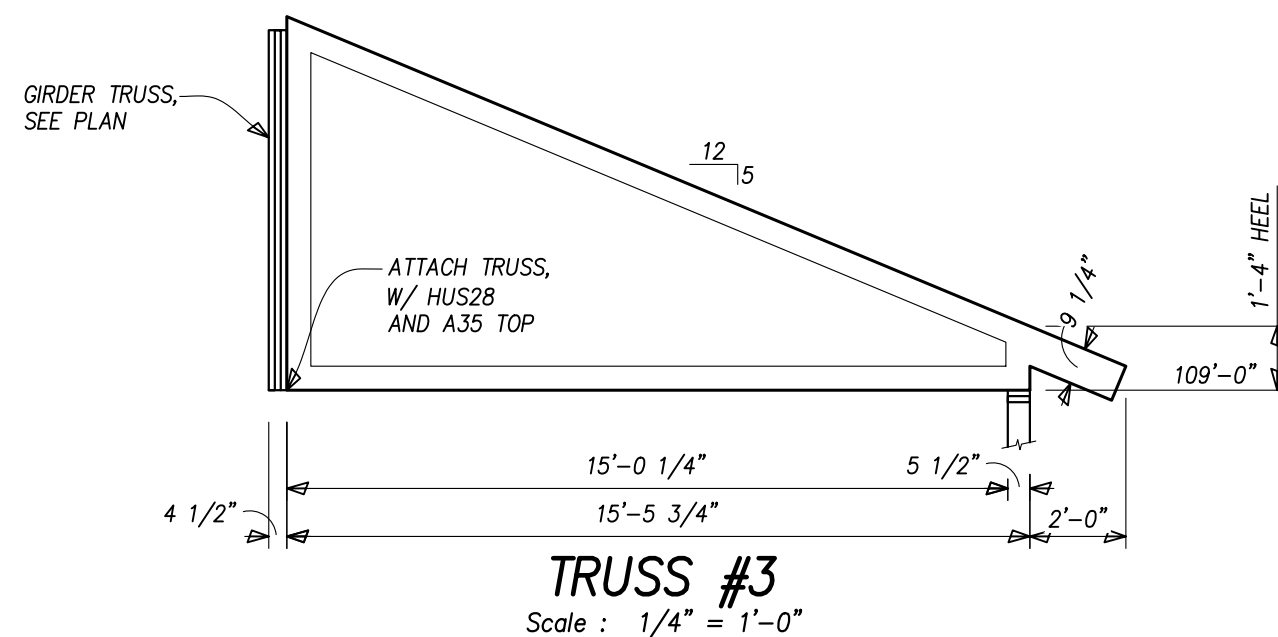
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(S-3)





**NOTE:**  
1. TYPICAL PROVIDE 2x STUD WITHIN 4" OF TRUSS BEARING  
2. PROVIDE HURRICANE TIE OR STRONG-DRIVE SOWC TRUSS SCREW AT EACH TRUSS BEARING  
3. AT SCISSORS TRUSS PROVIDE TC TRUSS CONNECTOR ONE END  
4. CHECK REQUIRED BEARING FOR TRUSS AND COORDINATE ANY REQUIRED BEARING ENHANCEMENT W/ ENGINEER



RECORD Set  
T.A.  
01/13/2021



December 30, 2020

Pete Kurtz  
25545 County Road 56  
Steamboat Springs, Colorado 80487

Re: Geotechnical Subsurface Exploration  
Proposed Kurtz Residence  
25545 County Road 56  
Routt County, Colorado  
Western Slope Geotech Project No. 20-1093

**RCRBD Record Set  
T.A.**

**01/13/2021**

Dear Pete,

Western Slope Geotech, Inc. (WSG) has completed the geotechnical subsurface exploration you requested for your proposed residence to be constructed at the Kurtz Ranch property located at 25545 County Road 56, Routt County, Colorado. The results of our subsurface exploration, laboratory testing and pertinent geotechnical engineering recommendations are included with this report.

#### **PURPOSE AND SCOPE OF WORK**

The purpose of this exploration and associated reporting is to provide geotechnical design and construction recommendations for the proposed residential structure and other associated site improvements. In addition, a site and soil evaluation was conducted for the purposes of site characterization for a potential On-site Wastewater Treatment System (OWTS). WSG's scope of work included field exploration, laboratory testing and the preparation of this report summarizing the data obtained and outlining our recommendations for foundation design and construction and support of floor slabs and exterior flatwork. The conclusions and recommendations outlined in this report are based on the results of field exploration, laboratory testing and WSG's experience with subsurface conditions and similar construction in this area. The results of the OWTS site and soil evaluation and design will be provided in a separate report.

#### **PROPOSED CONSTRUCTION**

Based on client supplied information, WSG understands proposed construction will generally consist of a single-story wood framed structure with no basement and with an

attached garage. WSG understands the main residence main floor system would be a structural floor over a crawl space and the garage would be a slab-on-grade floor system. Both floor systems will be constructed slightly above the existing ground surface.

Site grading to develop finished grades around the structure could include minor unretained fills on the order of 1 to 2 feet in height. A site plan showing the approximate proposed building site and other existing site features is presented on Figure 1.

Foundation loads are expected to be relatively light, with continuous wall loads less than 3 kips per lineal foot and individual column loads less than 50 kips. If the assumed construction and loading conditions vary substantially from those assumed, WSG should be contacted to reevaluate the recommendations in this report.

### **SITE DESCRIPTION**

The Kurtz Ranch property generally consists of approximately 465 acres of mostly undeveloped, rural, agricultural land located west of the Elk River in Routt County, Colorado. The proposed building site was located within the ranch headquarters near several existing residences situated along the west side of the Elk River and generally in the southeast portion of the property.

The proposed building was located in a vacant, apparently undisturbed area just west of an existing cabin. The site appeared to be vegetated with grasses and weeds. Cottonwood trees and deciduous brush vegetated an apparent overflow channel west of the proposed building site. The Elk River was located several hundred feet east of the building site.

Building site topography appeared fairly consistent sloped gently down to the south on the order of 2 to 3 percent. Based on site observations, it appeared that a maximum elevation difference of approximately 1 to 2 feet existed across the proposed building site.

### **FIELD EXPLORATION AND SUBSURFACE CONDITIONS**

WSG's field exploration program consisted of the excavation and observation of two (2) exploratory test pits at the proposed residence building site and two (2) exploratory profile pits in the vicinity of a potential OWTS Soil Treatment Area (STA). The test and profile pits were advanced to obtain information about the subsurface profile, groundwater conditions and obtain material samples for laboratory testing. Approximate test and profile pit locations are shown on Figure 1.



The subsurface conditions encountered in the test pits were fairly consistent and generally consisted of a thin layer of topsoil and organics overlying natural gravel to the maximum depth explored, 5½ feet below existing ground surface. Graphic logs of the exploratory test and profile pits and associated legend and notes are shown on Figure 2.

A layer of topsoil and organics were encountered at the ground surface in both test pits and profile pit 2 and varied from approximately 6 to 24 inches in thickness.

Natural gravel was encountered at the ground surface or beneath the topsoil in all test and profile pits. The gravel was sandy, clean, non-plastic, medium dense, fine to coarse grained with cobbles and boulders, dry to moist and brown. Samples of the gravel classified as GW soils in accordance with the Unified Soil Classification System (USCS). Laboratory test results are summarized on Table 1.

Groundwater seepage was not observed in the test pits at the time of excavation. However, visual indications (soil staining) of a seasonal high groundwater condition were observed at a depth of approximately 3 to 3½ feet below existing site grades in the test and profile pits.

Groundwater levels will vary seasonally and over time based on water levels in the Elk River, weather conditions, site development, irrigation practices and other hydrologic conditions. Perched and/or trapped groundwater conditions may also be encountered at times throughout the year. Perched water is commonly encountered in soils overlying less permeable soil layers and/or bedrock.

## **ANALYSIS AND RECOMMENDATIONS**

### **General**

Based on WSG's understanding regarding proposed construction and subsurface conditions encountered in the test pits, we anticipate that natural gravel will be encountered at likely foundation grades and will provide suitable bearing for proposed foundations. Groundwater was not encountered in the test pits during this exploration. However, observations of soil staining in the test and profile pits indicate seasonal high groundwater levels could approach anticipated foundation elevations. Minor subexcavation and structural backfill of foundation and slab areas may be required to produce stable surfaces suitable for concrete placement. Dewatering of excavations may also be required if

foundation construction is conducted during high water level (runoff) periods of the Elk River.

### **Foundations**

Based on our understanding of proposed construction, the subsurface conditions encountered during the field exploration, and WSG's experience, we recommend the proposed residence be supported by continuous spread footing and isolated pad foundations bearing on natural, undisturbed sandy gravel and/or structural fill.

It is WSG's opinion that total and differential foundation movements should be within limits indicated below provided the design, construction and maintenance recommendations contained herein are observed.

1. WSG recommends foundation footings be placed on undisturbed natural gravel or structural fill placed over natural gravel and designed using a maximum net allowable soil bearing pressure of 2,500 psf.
2. If groundwater is encountered at or near proposed footing grade, WSG recommends over-excavation of footing areas and placement of 6 to 12 inches of structural washed or screened rock fill. WSG recommends 1½-inch screened rock be placed and compacted in 6 to 12-inch loose lifts and uniformly compacted to at least 80% of the maximum relative density (ASTM D4253/4254). The rock fill will assist with drainage and dewatering the excavation, and will stabilize the base of excavations during construction, reducing disturbance of bearing materials and foundation settlement.
3. All foundation areas should be compacted with a mechanical compactor prior to forming for footings.
4. Footings exposed to freezing or frost conditions should be designed with adequate soil cover to prevent freezing. A cover depth of 48 inches is recognized by the local building authority as the minimum value for frost protection.
5. WSG recommends continuous footings have a minimum width of 12 inches and isolated pad foundations have a minimum width of 24 inches in order to facilitate construction and reduce the potential for development of eccentrically loaded conditions.

6. Foundation walls and grade beams should be designed to span an unsupported distance of 10 feet or the distance between pads.
7. Foundation resistance to lateral loads can be developed by passive pressure against footings and walls and sliding resistance between footings and floor slabs and the underlying soils. WSG recommends passive pressures be computed using an equivalent fluid pressure value of 250 pcf and friction resistance be calculated using a coefficient of friction of 0.30 times structural dead loads. The recommended passive equivalent fluid pressure value and coefficient of friction do not include a factor of safety.
8. Groundwater levels at the site are expected to be highly influenced by water levels in the Elk River. Effective dewatering of excavations may not be feasible during high water levels; therefore, foundation excavation is not recommended during periods of high runoff.
9. WSG should be retained to observe foundation excavations to verify the subsurface conditions are consistent with those assumed.

WSG estimates settlement of footing foundations designed and constructed as outlined above and resulting from the assumed structural loads would be on the order of 1 inch or less. Differential settlement could approach the amount of total settlement estimated above.

### **Garage Floor Slabs**

WSG assumes slab-on-grade construction would be preferred for the attached garage. Based on the results of the subsurface exploration and laboratory testing, WSG believes slab-on-grade construction can be used for the garage, provided the design and construction precautions outlined below are observed.

1. Topsoil and organic materials should be removed from beneath all proposed slab areas. Underslab subgrade (natural soils or fill) areas should be graded to drain to the building perimeter to prevent the accumulation of water.
2. Cobbles and boulders greater than 6-inches in diameter should be removed within 6 inches of slab grade to reduce the potential for point-loading of the slab, which could lead to distress and cracking.



3. Underslab fill materials should consist of either approved Low Volume Change (LVC) soils or imported nonexpansive materials and compacted to at least 95% of the maximum standard Proctor density within 2% of optimum moisture content (ASTM D698). The on-site gravel should be suitable for use beneath floor slabs but may require moisture conditioning and screening of larger cobble and boulders prior to use.
4. Floor slabs should be underlain by a minimum 6-inch layer of free draining gravel. The gravel layer will help provide uniform support and aid in underslab drainage.
5. Floor slabs should be constructed with control joints located a maximum of 12 feet on center to control natural, unavoidable cracking associated with concrete shrinkage that commonly occurs during curing. Control joint locations should be carefully selected to intersect slab intrusions and other locations where shrinkage cracking is common.

#### **Perimeter and Interior Drainage Systems**

WSG typically recommends a perimeter drainage system be installed at the building perimeter to enhance site drainage and help reduce the potential for water infiltration beneath footings and into underslab areas. Due to relatively flat/gently sloping site topography and underlying gravel soils, WSG believes a perimeter drainage system would not significantly improve drainage conditions around the building site. Due to anticipated seasonal high groundwater conditions at the site, WSG recommends an interior drainage system be placed within proposed crawl space areas to assist in dewatering during high runoff periods.

If a perimeter drainage system is considered, WSG recommends the following recommendations be considered. A perimeter drainage system should generally consist of a 4-inch perforated PVC drainpipe covered by a minimum of twelve (12) inches of free-draining gravel and covered with filter fabric (Mirafi 140N or equivalent) to prevent intrusion of fines. The high point of the drainpipe should be placed at approximate footing grade or slightly below crawl space grade around the exterior of the perimeter foundation walls, constructed with a minimum 1% slope and discharge to a daylighted outfall. Multiple daylightings are recommended for larger, more complex structures. Minimum burial depths of 24 inches are acceptable for at-grade floor slab areas. An interior drainage

system would generally consist of both 4-inch perforated and solid PVC collection and transmission pipes placed at footing grade and on approximate 10-foot centers. Transmission piping would direct collected water to a sump and pump system for discharge to the building exterior. WSG can provide underdrain and perimeter drainage system design and details upon request and after building plans are available.

### **Lateral Earth Pressures and Foundation Backfill**

Lateral Earth Pressures: Foundations should be designed to resist lateral pressures associated with foundation backfill materials and existing site soils. Materials affecting lateral pressures are located within the area extending from the base of the foundation wall upward at an approximate 1(H) to 1(V) angle. Recommended lateral earth pressure design values to be used in foundation wall design are provided in Table A shown below. All values presented assume drained conditions (no hydrostatic loads) and sufficient wall rotation is achieved for activation of active earth pressure conditions.

**Table A**

<b>Design Pressure Condition</b>	<b>Equivalent Fluid Pressure (pcf)</b>
Active	40
At-Rest	50
Passive	250

Variables that affect active lateral earth pressures include but are not limited to the classification and swell potential of the backfill soils, backfill compaction and geometry, wetting of the backfill soils, surcharge loads and point loads developed in the backfill materials. The recommended equivalent fluid pressure values do not include a factor of safety or an allowance for hydrostatic loading. Use of expansive soil backfill, excessive compaction of the wall backfill, or surcharge loads placed adjacent to the foundation walls can add to the lateral earth pressures causing the equivalent fluid pressure values used in design to be exceeded.

Foundation Backfill: Backfill placed adjacent to below-grade walls should consist of LVC potential and relatively impervious soils free from organic matter, debris and other

objectionable materials. The natural site gravel should be suitable for reuse as foundation backfill but will likely require moisture conditioning prior to placement and compaction. Cobbles and boulders greater than 3 inches in any dimension should be removed from proposed foundation wall backfill in order to reduce the potential for damage to waterproofing and development of point loads on walls. WSG recommends foundation backfill soils be uniformly placed in maximum 9-inch loose lifts, moisture conditioned to within  $\pm 2\%$  of optimum moisture content and compacted to at least 95% of the maximum standard Proctor dry density (ASTM D698).

Foundation wall backfill operations should be conducted only after proper bracing and support is provided. Structural engineer approval is recommended. Excessive lateral stresses resulting in distress and damage to foundation walls can occur when a lack of bracing is in place or heavy mechanical compaction equipment is used. WSG recommends compaction of unbalanced foundation wall backfill soils be completed using light mechanical or hand compaction equipment.

### **Exterior Flatwork**

Exterior flatwork can be supported on natural on-site materials (exclusive of topsoil/vegetation and rock larger than 6-inches in diameter). Imported granular fill materials could also be used to support flatwork and should uniformly placed and compacted in 9-inch loose lifts to at least 95% of the maximum standard Proctor density within 2% of optimum moisture content (ASTM D698). All materials should be approved by WSG prior to use.

Subgrade soils expected to receive flatwork concrete should be evaluated closely immediately prior to concrete placement. If areas of disturbed, wet and softened, or dry subgrade soils are encountered at that time, reworking of those materials or removal/replacement procedures may be required. Cobbles and boulders larger than 6-inches in diameter are not recommended within 6-inches of slab elevation to minimize the potential for point loading.

### **Drainage**

Positive surface drainage is imperative for satisfactory long-term performance of the proposed residence foundations and associated site improvements. WSG recommends

positive drainage be developed away from the building structure during construction and maintained throughout the life of the site improvements. Twelve (12) inches of fall in the first 10 feet away from the building is recommended. Flatter slopes could be considered in hardscape areas. In the event that some settlement of the backfill soils occurs adjacent to the residence, the original grade and associated positive drainage outlined above should be immediately restored.

Care should be taken in the planning of landscaping to avoid features which could result in the fluctuation of the moisture content of the foundation bearing and/or flatwork subgrade soils. We recommend watering systems be placed a minimum of 5 feet away from the perimeter of the structure and be designed to discharge away from all site improvements. Gutter systems should be considered to help reduce the potential for water ponding adjacent to the residence, with the gutter downspouts, roof drains or scuppers extended to discharge a minimum of 5 feet away from structural, flatwork and pavement elements. Water which is allowed to pond adjacent to the site improvements can result in unsatisfactory performance of those improvements over time.

### **SITE GRADING**

Based on site topography, WSG assumes unretained fills of on the order of 1 to 2 feet in height are likely to be constructed for general site development. Based on our understanding of proposed construction, WSG recommends the following:

1. Unretained cuts and fills should be constructed to a 2(H) to 1(V) or flatter slope configuration. Flatter slopes are often desirable to help facilitate revegetation efforts.
2. Fills materials supporting driveways, exterior slabs or other settlement-sensitive landscaping features should consist of either the on-site sandy gravel materials (6-inch minus) or approved imported materials. All fills should be uniformly placed and compacted in 9-inch loose lifts to at least 95% of the maximum standard Proctor density within 2% of optimum moisture content (ASTM D698).
3. Proper drainage should be provided and maintained around all cuts, fills, buildings, and driveway surfaces. Special attention should be given to channeling or routing drainage around and away from site fills and retaining structures. Excessive or



uncontrolled surface and subsurface drainage could lead to erosion and poor site fill performance and/or slope failure.

4. All disturbed areas should be protected from erosion by revegetation or other appropriate methods. Areas of concentrated drainage should be protected by use of rip rap or other appropriate methods.
5. Construction safety is the sole responsibility of the contractor. The contractor is responsible for determining the appropriate OSHA slope criteria for the soils conditions encountered and implementing it during construction. The contractor shall be responsible for all means, methods, techniques, sequencing, and operations during construction. All excavation activities should meet minimum OSHA, state or local trenching and excavation safety standards.

### **GENERAL COMMENTS**

This report was prepared based upon the data obtained from the completed site exploration, engineering analysis and WSG's experience with similar construction in this area. The subsurface conditions assumed for this exploration provide an indication of subsurface conditions at the proposed building site only. Variations in subsurface conditions can occur in relatively short distances away. This report does not reflect any variations which may occur across the site or away from the excavation. If variations in the subsurface conditions anticipated become evident, the geotechnical engineer should be notified immediately so that further evaluation can be completed and when warranted, alternative recommendations provided.

The scope of services for this project does not include either specifically or by implication any biological or environmental assessment of the site or identification or prevention of pollutants or hazardous materials or conditions. Other studies should be completed if concerns over the potential of such contamination or pollution exist.

WSG should be retained to observe foundation excavations and confirm the recommendations in this report and to review the plans and specifications so that comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. WSG should also be

retained to provide testing and observation services during construction to help evaluate compliance with project plans and specifications.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with the generally accepted standard of care for the profession. No warranties express or implied, are made. The conclusions and recommendations contained in this report should not be considered valid in the event that any changes in the nature, design or location of the project as outlined in this report are planned, unless those changes are reviewed, and the conclusions of this report modified and verified in writing by the geotechnical engineer.

WSG appreciates the opportunity to be of service to you on this project. If you have any questions concerning the enclosed information or if we can be of further service to you in any way, please do not hesitate to contact us.

Very Truly Yours,  
**Western Slope Geotech, Inc.**



Harold Schlicht, P.E.  
Principal Engineer

Cc: Jack White

**RCRBD Record Set  
T.A.**

**01/13/2021**



No Scale



## SITE PLAN/LOCATION OF TEST PITS

Project Name: Proposed Kurtz Residence

Location: 25545 County Road 56, Routt County, CO



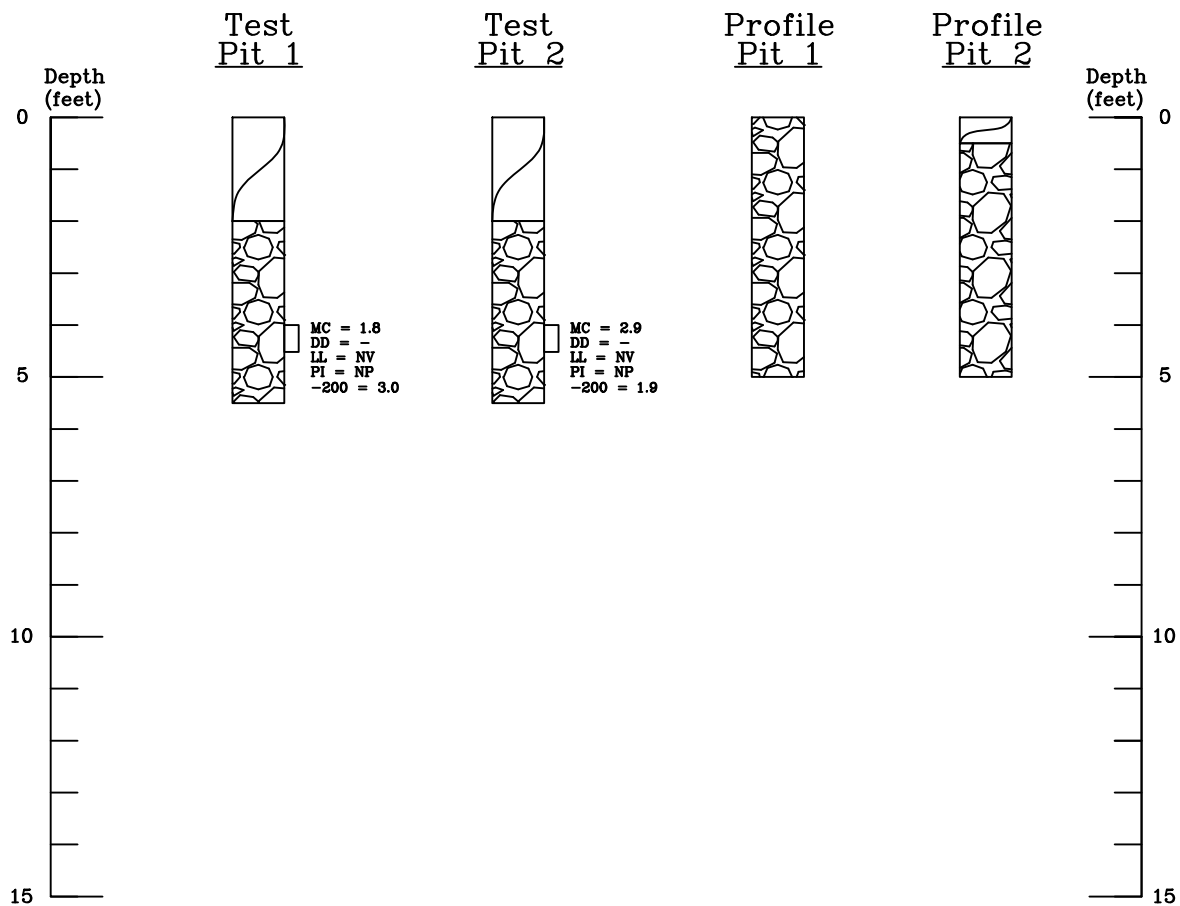
STEAMBOAT SPRINGS,  
COLORADO

Project No.: 20-1093

Date: 12/28/20

Drawn/Checked: HS

Figure No.: 1



### Legend:



TOPSOIL/ORGANICS.



GRAVEL: Sandy, clean, non-plastic, medium dense, fine to coarse grained with cobbles and boulders, dry to moist and brown.



Small disturbed bag sample.

MC = Natural Moisture Content (%)  
DD = Natural Dry Density (pcf)  
LL = Liquid Limit  
PI = Plasticity Index  
-200 = Percent Passing No. 200 Sieve  
Swell = Percent Swell Under 500 or 1,000 psf surcharge

### Notes:

- 1) Test pits were excavated on 12/10/20 with a Cat EL 200B trackhoe.
- 2) Locations of test pits were determined by pacing from existing and proposed features as described by the client.
- 3) Test pit elevations were not determined and logs are drawn to the depths explored.
- 4) Lines between materials types are approximate and transitions may be gradual.
- 5) Groundwater measurements were made at the time of excavation and levels may vary.

## LOGS, LEGEND & NOTES

Project Name: Proposed Kurtz Residence

Location: 25545 County Road 56, Routt County, CO



Project No.: 20-1093

Date: 12/28/20

STEAMBOAT SPRINGS  
COLORADO

Drawn/Checked: HS/HS

Figure No. 2





Table 1  
Summary of Laboratory Test Results

Project No.: 20-1093

[illegible]