City of Ketchum
Planning & Building

STAFF REPORT
KETCHUM PLANNING AND ZONING COMMISSION
REGULAR MEETING OF SEPTEMBER 9, 2019

PROJECT:	Hammond House
APPLICATION TYPES:	Mountain Overlay Design Review, Variance Request, Conditional Use Permit
FILE NUMBER:	P19-021, P19-081, and P19-082
PROPERTY OWNER:	Rockwell Hammond
REPRESENTATIVE:	Neil Middleton & Lars Guy
REQUEST:	Mountain Overlay Design Review for a new 4,080 sq ft single-family residence, Conditional Use Permit for the installation of an associated avalanche attenuation device, and a Variance request for relief from required front, rear, and side yard setbacks
LOCATION:	102 Sage Road (Warm Springs Village 4th Addition: Block 3: Lot 1)
ZONING:	General Residential Low Density (GR-L) Zoning District
OVERLAY:	Mountain Overlay and Avalanche Zone
NOTICE:	A public hearing notice for the three interrelated applications associated with the Hammond House project was mailed to all property owners within 300 ft of the development site on July 24th, 2019. The public hearing notice was published in the Idaho Mountain Express on July 24th, 2019. A public hearing notice was posted on the subject property on August 6th, 2019 and was posted to the City website on August 7th, 2019. At the August 12th, 2019 meeting, the Planning & Zoning Commission moved to continue review of the application to a date certain of September 9th, 2019. *Public comment received has been included as Exhibit 5 to this Staff Report.*
REVIEWER:	Abby Rivin, Associate Planner

BACKGROUND

The Hammond House project is comprised of three interrelated development applications for the construction of a new 4,080 sq ft single-family residence located at 102 Sage Road (Warm Springs Village 4th Addition: Block 3: Lot 1). In conjunction with Mountain Overlay Design Review, the applicant has submitted a Conditional Use Permit application for the installation of an avalanche attenuation device as well as a Variance request for relief from the required front, rear, and side yard setbacks. Review of the three interrelated application was continued from the August 12th, 2019 Planning & Zoning Commission meeting.

At the August 12th, 2019 meeting, the Planning & Zoning Commission conducted a site visit and considered the Mountain Overlay Design Review submittal, Conditional Use Permit application, and Variance request as well as Staff analysis, the applicant's presentation, and public comment. The Commission unanimously moved to continue review of the three interrelated applications to a date certain of September 9th, 2019 requesting additional information and material to support the applications.

UPDATE

On September 5th, 2019, the Planning & Building Department received an updated set of plans from the applicant with associated revisions addressing feedback received from the Commission at the August 12th meeting. The applicant submitted a letter (Exhibit 2) highlighting the avalanche design approach and addressing the Commission's comments and concerns regarding the project. Revisions to the plans as described in the letter include delineating the area of proposed encroachment within the required setbacks, design enhancements to the south façade, removing the proposed patio planters at the rear elevation, and reducing the length of the proposed driveway. The updated submittal package including revised architectural drawings and renderings, civil drawings, and structural plans are attached as Exhibit 3. In addition to the revised drawings, the applicant submitted an avalanche addendum summary as well as the avalanche engineer's curriculum vitae, which has been included as Exhibit 4. Public comment received regarding the project has been included as Exhibit 5.

RECCOMENDATION

Staff recommends the Planning & Zoning Commission consider the analysis contained in the August 12th, 2019 Staff Report, the applicant submittal package and updates, the applicant's presentation, and any public comment received. Following consideration of the applicant's presentation, Staff analysis, and public comment, Staff recommends the Commission deliberate and consider the project in relation to the applicable Mountain Overlay Design Review standards (KMC §17.104.070), Design Review standards (KMC §17.96.060), Conditional Use Permit criteria (KMC §17.116.030), and Variance criteria (KMC §17.148.010). Staff recommends the Commission move to approve the Mountain Overlay Design Review application, Conditional Use Permit, and Variance request subject to the recommended conditions of approval included in Exhibits A3, A5, and A6 of the August 12th, 2019 Staff Report with the addition of the following conditions of approval to the Mountain Overlay Design Review (Exhibit 1A3) and Conditional Use Permit (Exhibit 1A5):

Mountain Overlay Design Review Recommended Condition of Approval #16:

16. Prior Building Permit issuance for the project, an independent third-party review of the avalanche evaluation, associated design loads, and structural plans shall be submitted to the Planning & Building Department for review and approval. Subject evaluation, among other items, shall assure the project (1) does not deflect the avalanche onto neighboring properties, (2) does not create hazards for occupants of the structure due to blocked egress or other design considerations (glazing, gathering areas, etc.), and (3) does not threaten to increase the danger to persons or property. Any significant modifications to the approved set of plans that result from the third-party review will be forwarded to the Planning & Zoning Commission for review and approval. Any changes that qualify as a minor modification as defined by KMC §17.08.020 may be reviewed and approved by the Administrator.

Conditional Use Permit Recommended Condition of Approval #7:

Due to the concern that many tenant, particularly those occupying a short term rental for brief period during winter months may not understand the risk of living in areas of avalanche hazard, Staff recommends adding the following condition of approval to the Conditional Use Permit.

7. For health and safety reasons, the single-family residence located at 102 Sage Road shall not be leased, rented, or sublet as a Short Term Rental.

Commission Options

The Commission may either (1) approve the applications as recommended by Staff, (2) move to continue review of the applications to a date certain requesting additional information, material, or evidence from the applicant or Staff to support the applicable evaluation standards, or (3) move to deny the applications and draft findings supporting denial.

EXHIBIT LIST

Exhibit 1: August 12th, 2019 Staff Report with Exhibits A & B

A: Staff Analysis

1. City Department Comments
2. Zoning and Dimensional Standard Analysis
3. Mountain Overlay Design Review Standards
4. Design Review Standards
5. Conditional Use Permit Criteria Analysis
6. Variance Criteria Analysis
7. Comprehensive Plan Analysis

B: Applicant Submittal Drawings, Avalanche Review, and Narratives

1. Mountain Overlay Design Review Submittal Drawings and Renderings
2. XCell Engineering Avalanche Evaluation and Plan Review Summary
3. Mountain Overlay Design Review Standards Narrative
4. Conditional Use Permit Criteria Narrative
5. Variance Criteria Narrative

Exhibit 2: Letter Dated September 4, 2019 RE: MOD, CUP, and Variance Continued Hearing

Exhibit 3: Updated Submittal (Architectural Drawings and Renderings, Civil Drawings, and Structural Plans)

Exhibit 4: Avalanche Evaluation Summary Addendum & Curriculum Vitae

Exhibit 5: Public Comment

Exhibit 1:
August 12th, 2019
Staff Report
with
Exhibits A & B

City of Ketchum
Planning & Building

STAFF REPORT
KETCHUM PLANNING AND ZONING COMMISSION
REGULAR MEETING OF AUGUST 12, 2019

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REVIEWER:	Abby Rivin, Associate Planner

BACKGROUND

The Hammond House project is comprised of three interrelated development applications for the construction of a new 4,080 sq ft single-family residence located at 102 Sage Road (Warm Springs Village 4th Addition: Block 3: Lot 1). In conjunction with Mountain Overlay Design Review, the applicant has submitted a Conditional Use Permit application for the installation of an avalanche attenuation device as well as a Variance request for relief from the required front, rear, and side yard setbacks. The Staff Report provides an overview of the project and highlights specific issues and standards for review and consideration by the Planning & Zoning Commission. Additional analysis, including City Department comments, is attached as Exhibit A. The applicant submittal package including drawings and renderings, avalanche evaluation and plan review summary, and narrative responses to criteria and standards of evaluation is included as Exhibit B.

ANALYSIS

The property is located in the General Residential Low Density (GR-L) Zoning District and also within the Mountain Overlay and Avalanche Zone. The subject property is within Warm Springs Village Subdivision 4th Addition, which was created in 1961 prior to the adoption of the City's first comprehensive zoning ordinance in 1974 (Ordinance No. 208) as well as the City's first subdivision ordinance in 1979 (Ordinance No. 316). The subject undeveloped, infill site has a total lot area of 0.16 acres. The dimensions of the subject property are noncompliant as the lot has both an area of 6,934 sq ft, which is less than the 8,000 sq ft minimum lot area required in the GR-L Zone, and a lot width of 29 ft, which is less than the 80 ft average required. The lot is also nonconforming in relation to the maximum 35% of linear footage of street frontage that may be dedicated to access off street parking as an improved access easement spans the width of the parcel. The subject property is located on the north side of Sage Road approximately 185 ft from its intersection with Warm Springs. The Ski Hut Townhomes development borders the subject property to the southeast and an existing single-family residence is sited on the adjacent lot to the northwest. The subject property is bounded at the rear by one 83.66 acre parcel in the county and zoned Rural Residential (R-10) with a permitted density of one unit per 10 acre.

The subject property has a minimum elevation of 5898' at the southeast corner and a maximum elevation of 5920' at the northwest corner for a total elevation gain of 22'. Unlike the lots further east on Sage Road with depths exceeding 1,000 ft up the hillside, the subject trapezoidal lot has a maximum depth of 112 ft at the western property line. In addition to the nonconforming lot dimensions and topographical challenges, the subject lot is also constrained by an approximately 20 ft wide cross easement (Instrument No. 363233 & 574032) providing access for the benefit of the adjacent single-family residence at 104 Sage Road and the L & A Townhomes located at 108 Sage Road.

Mountain Overlay Design Review

Pursuant to Ketchum Municipal Code (KMC) §17.104.050.A, the construction or placement of structures within the Mountain Overlay District is subject to all applicable Design Review improvements and standards (KMC §17.96.060) as well as to the Mountain Overlay Design Review requirements set forth in KMC §17.104.070. The purpose of the MO Zoning District is to encourage land uses harmonious with existing natural resources, protect natural land features and wildlife habitat, prohibit detrimental alteration and minimize impacts to the existing topography, preserve hillsides and ridges, and minimize the visual impact by siting building footprint away from higher elevations.

The eastern portion of Sage Road, where the subject property is located, has relatively shallow lot depths compared to properties further west along Sage Road. As the subject lot depth is relatively shallow compared to the existing developed lots along Sage Road, the proposed residence has less visual impact compared to the existing single-family residences and townhomes in the neighborhood. As indicated on the survey submitted with the Design Review application, the Mountain Overlay District Boundary bisects the property at the northwest corner. A comprehensive Staff Analysis of Mountain Overlay Design Review Standards as well as recommended conditions of approval are attached as Exhibit A3. The submittal drawings and renderings are included as Exhibit B1 and the applicant response to Mountain Overlay Design Review criteria is attached as Exhibit B3.

Building elevations are included on Sheet A-4.0 and A-4.1 of the applicant submittal drawings. Sheet A-5.0 depicts 3D renderings of the proposed residence. The façade design includes both vertical elements, such as the vertical seam metal garage doors, and horizontal elements such as the core-ten metal siding panels and guardrails, to provide visual interest. The combination of materials, color variation, and the vertical and horizontal finishes provide undulation and relief to the façade design. The south elevation adjacent to the east interior property line lacks fenestration and appears as monolithic, concrete mass. Staff recommends that the

applicant provide visual relief through material differentiation or incorporate more undulation at the south elevation.

Conditional Use Permit

The Sage Road neighborhood is characterized by hazards associated with red and blue avalanche zones. Building in the Avalanche Zone must meet the standards and comply with certain restrictions specified in KMC §17.92.010. New construction in the Avalanche Zone must be certified by an engineer licensed in the State of Idaho certifying that the proposed construction as designed will withstand the avalanche forces specific to the development site (KMC §17.02.010.D.3). Avalanche structures or earthwork that threaten to deflect avalanches toward the property of others or otherwise threaten to increase the danger to persons or property are prohibited (KMC §17.02.010.D.2). Avalanche attenuation and protective structures require the review and approval of a Conditional Use Permit. Conditional Use Permits for avalanche attenuation devices have been granted within the neighborhood including the adjacent L & A Townhome development (Application Number 95-011) located at 108 Sage Road. The proposed avalanche attenuation devices are structurally integrated into the design of the single-family residences. The applicant has submitted an XCell Engineering Avalanche Evaluation and Plan Review Summary that is included as Exhibit B2 to the Staff Report and the associated applicant responses to the Conditional Use Permit criteria is included as Exhibit B4. Staff analysis of the Conditional Use Permit criteria is included as Exhibit A5.

According to the XCell Engineering Avalanche Evaluation and Plan Review Summary, the flow path expected in the event of an avalanche runs from the northwest of the project site and shifts approximately 45 degrees to the east toward the property. The avalanche attenuation device is incorporated in the design of the structure and is comprised of five components. The east wall of the residence serves as the primary buffer to dissipate most of the impact force in the case of an avalanche event. The patio area at the rear elevation serves as a secondary control for snow overtopping the avalanche wall at the northeast corner of the house. Additional avalanche attenuation components include the north wall of the structure and the driveway pad along the east interior property line.

Variance

Ketchum Municipal Code specifies different standards for decks and walls in relation to required setbacks and building coverage calculations. Pursuant to KMC §17.128.020.H, decks less than 30'' in height from grade may be constructed to the property line and are not included in the calculation for building coverage (KMC §17.08.020). Decks greater than 30'' in height from grade are included in the building coverage calculation and must comply with all setbacks unless considered to be a similar architectural feature to a cornice, canopy, or chimney chase, which may encroach into a required yard setback a maximum of 3 ft (KMC §17.128.020.A). Fences, hedges, and walls may not exceed 4 ft in height when located less than 30 ft from the front lot line and may not exceed 6 ft when located more than 30 ft from the front lot line. Fences, hedges, and freestanding walls are not qualified as structures for the purposes of determining setbacks (Definition of *Structure* KMC §17.08.020). Appendages to structures, such as the attached patio and driveway pad proposed by the applicant, are considered to be part of the building for the purpose of determining setback and building coverage unless otherwise specified (Definition of *Building* KMC §17.08.020). While serving as avalanche containment and mitigation features, the patio and driveway pad are appendages of the residence and as such are subject to setback requirements.

The patio at the rear elevation, avalanche retaining walls, and driveway pad encroach into the required setbacks from the front, rear, and side property lines required in the GR-L Zone. The applicant has submitted a Variance request from the required yard setbacks in order to accommodate the required avalanche attenuation structural components. The applicant has requested the variance as the minimum relief necessary in order to accommodate the necessary avalanche attenuation and mitigation structural components due to the unique size and topography of the lot.

Ketchum Municipal Code defines a variance as:

> *A modification of the requirements of this title as to lot size, lot coverage, width, depth, front yard, side yard, rear yard, setbacks, parking space, parking areas, height of buildings, or other title provisions affecting the size or shape of a structure or the placement of the structure upon lots, or the size of lots* (KMC §17.08.020).

Per KMC §17.148.010, a variance shall not be considered a right or special privilege, but may be granted to an applicant only upon a showing of undue hardship because of unique characteristics of the site, and that the variance is not in conflict with the public interest. A variance may be granted by the Planning & Zoning Commission only if the applicant demonstrates compliance with all of the variance criteria as outlined in KMC §17.148.010. Staff analysis of the variance required is attached as Exhibit A6. The applicant analysis of the proposal in relation to the variance criteria is included as Exhibit B5.

RECCOMENDATION

Staff recommends the Planning & Zoning Commission consider the analysis contained in the Staff Report and Exhibit A, the applicant submittal package included as Exhibit B, the applicant's presentation, and any public comment received. Following consideration of the applicant's presentation, Staff analysis, and public comment, Staff recommends the Commission deliberate and consider the project in relation to the applicable Mountain Overlay Design Review standards (KMC §17.104.070), Design Review standards (KMC §17.96.060), Conditional Use Permit criteria (KMC §17.116.030), and Variance criteria (KMC §17.148.010). Staff recommends the Commission move to approve the Mountain Overlay Design Review application, Conditional Use Permit, and Variance request subject to the recommended conditions of approval included in Exhibits A3, A5, and A6.

Commission Options

The Commission may either (1) approve the applications as recommended by Staff, (2) move to continue review of the applications to a date certain requesting additional information, material, or evidence from the applicant or Staff to support the applicable evaluation standards, or (3) move to deny the applications and draft findings supporting denial.

EXHIBITS

A: Staff Analysis

1. City Department Comments
2. Zoning and Dimensional Standard Analysis
3. Mountain Overlay Design Review Standards
4. Design Review Standards
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Exhibit A:
Staff Analysis

City of Ketchum
Planning & Building

Exhibit A1
City Department Comments

PROJECT: Hammond House

APPLICATION TYPES: Mountain Overlay Design Review, Variance Request, Conditional Use Permit

FILE NUMBER: P19-021, P19-081, and P19-082

City Department Comments
Note: City Department comments are preliminary and based on the project concept as proposed with the subject Design Review application. All City Departments shall review and approve the project through the Building Permit application process. All comments pertaining to the Design Review drawings are subject to change. All right-of-way improvements shall be reviewed and approved by the City Engineer and Streets Department prior to issuance of a Building Permit for the project. All City Department requirements and associated specifications for the required improvements must be verified, reviewed, and approved prior to issuance of a Building Permit for the project.

Fire Department:

- It is the General Contractor's responsibility to understand and adhere to all Fire Protection Ordinance #1125 requirements in addition to any and all other City of Ketchum requirements in effect at the time of Building Permit issuance. Failure to comply with all local ordinances and codes may result in project work stoppage as well as criminal penalties.
- The above project shall meet all 2012 International Fire Code requirements in addition to specific City Building and Fire Ordinances.
- IF a monitored fire detection system exists or is installed, it shall meet NFPA 72 and be monitored by an approved alarm monitoring station. An approved key box shall be installed, with the appropriate keys, for emergency fire department access in a location approved by the fire department.
- Approved address numbers shall be placed in such a position to be plainly visible and legible from the road fronting the property. Numbers and letters shall be a minimum of four (4) inches tall, contrast with their background and be positioned a minimum of forty-eight (48) inches above final grade.
- Vehicle parking and material storage during construction shall not restrict or obstruct public streets or access to any building. A minimum twenty-foot travel lane for emergency vehicle access shall be maintained clear and unobstructed at all times. All required Fire Lanes, including within 15 feet of fire hydrants, shall be maintained clear and unobstructed at all times.
- An approved access roadway per 2012 International Fire Code Appendix D (www.ketchumfire.org) shall be installed prior to any combustible construction on the site. The road shall be a minimum of twenty (20) feet in width and capable of supporting an imposed load of at least 75,000 pounds. The road must be an all-weather driving surface maintained free, clear, and unobstructed at all times. Grades shall not exceed 7%. Gates, if installed, are required to be siren activated for emergency vehicle access.
- Fire extinguishers shall be installed and maintained per 2012 IFC Section 906 both during construction and upon occupancy of the building.
- Spark arresters are required on all solid fuel burning appliance chimneys to reduce potential fires from burning embers.
- Final inspections of all fire department permit required installations by the Fire Chief or an appointee are required and shall be scheduled at least 48 hours in advance. A Final Inspection Checklist can be found at

www.ketchumfire.org.

- Fire Department requirements and associated specifications for the required improvements must be verified, reviewed, and approved prior to issuance of a Building Permit for the project.

City Engineer & Streets Department:

- Pursuant to KMC §17.96.060.C.1, all storm water drainage shall be retained on site.
- All construction for the project must comply with the standards set forth in Ketchum Municipal Code, Chapter 15.06 Construction Activity Standards. The applicant shall submit a Construction Activity Plan addressing all applicable activities including excavation, material storage and deliveries, screening, and site clean-up (KMC §15.06.030) to be reviewed and approved by the Building Department prior to issuance of a Building Permit for the project. Pursuant to KMC §15.06.030.A.2, the applicant shall provide notice of the project, construction schedule, and general contractor's contact information to all neighbors with properties adjacent to the project site.
- The design shall meet all applicable sections of Chapter 12 of Ketchum Municipal Code including design criteria for private driveways (KMC §12.04.030.L).
- The public right-of-way adjacent to the subject property shall be improved to the City's right-of-way standards for local-residential street right-of-ways. Material within the first eight (8) feet from the edge of asphalt shall be (1) distinct from the driveway in order to visually appear to be available for parking, (2) pervious and permeable to enhance drainage, and (3) the surface must allow for vehicle parking and be consistent along the entire property frontage. No live plant materials or obstructions, such as boulder or berms, are permitted within the first 8 ft from the edge of asphalt.
- The applicant shall submit a Street and Alley Digging, Excavation, and Trenching ("DIG") Permit application with an associated traffic control plan for all construction work within the City right-of-way to be reviewed and approved by the Streets Department. The use of City right-of-way for construction including the closure of adjacent streets or sidewalks requires a Temporary Use of Right-of-Way Permit ("TURP").
- City Engineer & Streets Department requirements and associated specifications for the required improvements must be verified, reviewed, and approved prior to issuance of a Building Permit for the project.

Utilities:

- The applicant will be responsible for installing connections to the water and sewer system at Sage Road.
- Requirements and specifications for the water and sewer connections will be verified, reviewed, and approved by the Utilities Department prior to issuance of a Building Permit for the project.
- Pursuant to KMC §17.92.010.D, all utilities providing services to the building shall be installed underground in order to minimize possible avalanche damage to such utilities and injury to persons or property.

Building:

- The building must meet the 2012 International Building Code and Title 15 Buildings and Construction of Ketchum Municipal Code.
- Building Department requirements and associated specifications for the required improvements must be verified, reviewed, and approved prior to issuance of a Building Permit for the project.

Planning and Zoning:

Comments are denoted throughout Exhibit A.

City of Ketchum
Planning & Building

Exhibit A2
Zoning and Dimensional Standards Analysis

PROJECT: Hammond House

APPLICATION TYPES: Mountain Overlay Design Review, Variance Request, Conditional Use Permit

FILE NUMBER: P19-021, P19-081, and P19-082

Compliance with Zoning and Dimensional Standards				
Compliant			**Standards and *Staff Comments***	
Yes	**No**	**N/A**	**Ketchum Municipal Code Standard**	**City Standards and *Staff Comments***
☐	☒	☐	**17.12.040**	**Minimum Lot Area**
			Staff Comment	***Required:*** *8,000 square feet minimum* ***Existing:*** *6,934 sq ft* *Subdivided prior to the adoption of the City's first subdivision ordinance in 1979, subject Lot 1 is an existing nonconforming lot in the GR-L Zoning District.*
☒	☐	☐	**17.12.040**	***Building Coverage***
			Staff Comment	***Permitted:*** *35%* ***Proposed:*** *31% (2,121 square feet/ 6,934 sq ft lot area)*
☐	☒	☐	**17.12.040**	***Minimum Building Setbacks***
			Staff Comment	***Minimum Required Setbacks:*** *Front: 15'* *Side: > of 1' for every 3' in building height, or 5' (11'-5'' required)* *Rear: 15'* ***Proposed:*** *Front (S): The single-family residence is setback 26'-3'' from the front property line, but the retaining wall and driveway pad extend into the front setback area.'* *Side (E): 10'* *Side (W): < 1'* *Rear (N): <1'* *The patio at the rear elevation, avalanche retaining walls, and driveway pad encroach into the required setbacks from the front, rear, and side property lines required in the GR-L Zone. The applicant has submitted a Variance request from the required yard setbacks in order to accommodate the required avalanche attenuation structural components. If the Planning & Zoning Commission moves to approve the Variance request, Staff recommends adding as a condition of approval that the applicant submit a setback encroachment exhibit specifying the dimensioned encroachments into the required yards.*
☒	☐	☐	**17.12.040**	**Building Height**
			Staff Comment	***Maximum Permitted:*** *35'* ***Proposed:*** *As indicated on Sheet A-4.0, the maximum height of the single-family*

				residence including the avalanche attenuation retaining component is 34'-6''. The maximum height of the single-family residence from the top of the avalanche attenuation retaining wall is 29'-10''.
☐	☒	☐	**17.125. 030.H**	Curb Cut
			Staff Comment	***Permitted:*** *A total of 35% of the linear footage of any street frontage can be devoted to access off street parking.* **Proposed:** The existing paver driveway developed within the cross easement is separated by a curb and extends across the width of the subject property. The applicant has proposed removing the existing curb in order to accommodate driveway access to the garage. The proposed driveway will extend the width of the cross easement along Lot 1. The applicant has proposed retaining the existing nonconforming curb cut.
☒	☐	☐	**17.125.020.A.2 & 17.125.050**	Parking Spaces
			Staff Comment	*Off-street parking standards of this chapter apply to any new development and to any new established uses.* ***Required:*** *One-Family Dwelling Units in all Zoning Districts: 2 parking spaces per dwelling unit.* ***Proposed:*** *The applicant is proposing a three parking spaces within the enclosed garage.*

City of Ketchum
Planning & Building

Exhibit A3
Mountain Overlay Design Review Standards Analysis

PROJECT: Hammond House

APPLICATION TYPES: Mountain Overlay Design Review, Variance Request, Conditional Use Permit

FILE NUMBER: P19-021, P19-081, and P19-082

Mountain Overlay Design Review Standards				
EVALUATION STANDARDS: Ketchum Municipal Code § 17.107.070.A				
Compliant			**Standards and Staff Comments**	
Yes	**No**	**N/A**	**Reference**	**City Standards and *Staff Comments***
☒	☐	☐	**17.104.070.A.1**	**There is no building on ridges or knolls which would have a material visual impact on a significant skyline visible from a public vantage point entering the City or within the City. Material, as the term is used herein, shall be construed in light of the magnitude of the negative impact on the objectives of this Ordinance.**
			Staff Comments	*No ridges or knolls are present on the subject development parcel—the ridge line is located beyond the extent of the rear property line.* *The property is not located adjacent to an identified or protected view corridor. The most prominent street in the vicinity is Warm Springs Road. The existing Ski Hut Townhomes development located at 100 Sage Road and existing vegetation will sufficiently screen the residence from Warm Springs Road corridor.* *The eastern portion of Sage Road, where the subject property is located, has relatively shallow lot depths compared to properties further west along Sage Road. As the subject lot depth is relatively shallow compared to the existing developed lots along Sage Road, the proposed residence has less visual impact compared to the existing single-family residences and townhomes in the neighborhood. Existing development and vegetation provide sufficient screening.*
☒	☐	☐	**17.104.070.A.2**	**Building, excavating, filling and vegetation disturbance on hillsides which would have a material visual impact visible from a public vantage point entering the City or within the City is minimized. Material, as the term is used herein, shall be construed in light of the magnitude of the negative impact on the objectives of this Ordinance.**
			Staff Comments	*Building, excavation, filling, and vegetation disturbance will not have a material visual impact visible from a public vantage point entering into or within the City due to the siting of the building footprint at the lower elevation portion of the Sage Road hillside.*
☒	☐	☐	**17.104.070.A.3**	**Driveway standards as well as other applicable standards contained in Street Standards Chapter 12.04 are met.**

			Staff Comments	*As indicated on Sheet C-1 of the submittal, the proposed driveway will extend from the existing improved cross easement. The paver driveway will include a snowmelt system. The proposed driveway design has been reviewed by the Streets Department and Fire Code Official. The driveway grade varies from 0 to 5%, which is less than the 7% maximum permitted by the International Fire Code.* *The public right-of-way adjacent to the subject property shall be improved to the City's right-of-way standards for local-residential street right-of-ways. Material within the first eight (8) feet from the edge of asphalt shall be (1) distinct from the driveway in order to visually appear to be available for parking, (2) pervious and permeable to enhance drainage, and (3) the surface must allow for vehicle parking and be consistent along the entire property frontage. No live plant materials or obstructions, such as boulder or berms, are permitted within the first 8 ft from the edge of asphalt.* *As indicated on Sheet A-1.0 of the MO Design Review submittal drawings (Exhibit B1), a stairway and associated retaining walls encroach onto the cross easement. Per the cross easement, no owner may erect, build, locate, or maintain any improvement on the easement premises. Prior to issuance of a Building Permit for the project, the applicant shall submit written consent from the adjacent property owners and easement beneficiaries (Instrument #363233 and #574032) for all proposed encroachments within the easement area.* *See Exhibit A1 comment from the Streets and Fire departments. Fire and Streets department requirements and associated specifications for the required improvements must be verified, reviewed, and approved prior to issuance of a Building Permit for the project.*
☒	☐	☐	**17.104.070.A.4**	**All development shall have access for fire and other emergency vehicles to within one hundred fifty feet (150') of the furthest exterior wall of any building.**
			Staff Comments	*Sufficient access is provided for fire and emergency apparatus to reach within 150 ft of the furthest exterior wall of the building. The Fire Department has reviewed the proposed design and has found that all access requirements for emergency vehicles has been met. Fire Department requirements* and associated specifications for the required improvements must be verified, reviewed, and approved prior to issuance of a Building Permit for the project.
☒	☐	☐	**17.104.070.A.5**	**Significant rock outcroppings are not disturbed.**
			Staff Comments	*No significant rock outcroppings have been identified on the subject site.*
☒	☐	☐	**17.104.070.A.6**	**International Building Code (IBC) and International Fire Code (IFC) and Ketchum Fire Department requirements shall be met.**
			Staff Comments	*The project must comply with the 2012 International Building Code, the 2012 International Fire Code and Ketchum Fire Department requirements, as well as Title 15 of Ketchum Municipal Code. All IBC, IFC, Building Department, and Fire Department requirements shall be verified and met prior to issuance of a Building Permit for the project.*
☒	☐	☐	**17.104.070.A.7**	**Public water and sewer service comply with the requirements of the City.**
			Staff Comments	*As indicated on Sheet C-1 of the submittal, the applicant has proposed connecting to the municipal water and sewer systems from existing lines within*

				the Sage Road right of way. Requirements and specification for the water and sewer connections will be verified, reviewed, and approved by the Utilities Department prior to issuance of a Building Permit for the project.
☒	☐	☐	**17.104.070.A.8**	**Drainage is controlled and maintained to not adversely affect other properties.**
			Staff Comments	*The applicant has proposed a combination drywells and catch basins to control drainage on site. Pursuant to KMC §17.96.060.C.1, all storm water drainage shall be retained on site. The applicant has submitted specifications and details for the drywells and catch basins as indicated on Sheet C-2 of the Design Review submittal. All drainage plans and specifications shall be reviewed and approved by the City Engineer and Streets Department prior to issuance of a Building Permit for the project.*
☒	☐	☐	**17.104.070.A.9**	**Cuts and fills allowed for roadways shall be minimized; lengths of driveways allowed shall be minimized; all cuts and fills shall be concealed with landscaping, revegetation and/or natural stone materials.** **Revegetation on hillsides with a clear zone of thirty feet (30') around all structures is recommended. Said clear zone shall include low combustible irrigated vegetation with appropriate species, on file with the Ketchum planning department. Revegetation outside of this clear zone should be harmonious with the surrounding hillsides.**
			Staff Comments	*No new roadway is proposed with the project. Serving as an avalanche mitigation feature, the driveway pad spans the depth of the lot at the east interior property line for approximately 75 ft. The eastern portion of the property is located at the lowest elevation of the site, which minimizes the visual impact of the driveway. While the Mountain Overlay Design Review criteria include minimizing the length of driveways, the applicant's proposed location is the most appropriate site for concealing the driveway. As the driveway pad also serves as an avalanche mitigation component, Staff finds the proposed driveway access to be in the most appropriate location for the specific site. While the proposed driveway access does not significantly increase the curb cut from Sage Road, its addition in conjunction with the existing cross easement access and adjacent Ski Hut Townhomes driveway creates a significant aesthetic impact. While the siting of the driveway minimizes hillside impact, Staff recommends the applicant explore treatments to decrease its visual impact, such as vegetative screening.* *As indicated on Sheet LS-01 of the Design Review submittal, the landscape plan includes the installation of two fir and three aspen trees to serve as a landscape buffer between the proposed development and the adjacent single-family residence to the west. A variety of shrubs including clematis, hops, dogwood, viburnum, spirea, snowberry, and lilac are proposed in beds surrounding the entry porch as well as in the planter beds at the rear patio. The planter beds proposed at the rear elevation serve to soften the concrete mass of the avalanche attenuation wall. The applicant has proposed a natural grasses to revegetate the west side yard. A limited amount of lawn grass is proposed in the front yard.*
☒	☐	☐	**17.104.070. A.10**	**There are not other sites on the parcel more suitable for the proposed development in order to carry out the purposes of this Ordinance.**
			Staff	*The trapezoidal development site is characterized by both dimensional and*

			Comments	*topographical constraints. The dimensions of the subject property are noncompliant as the lot has both an area of 6,934 sq ft, which is less than the 8,000 sq ft minimum lot area required in the GR-L Zone, and lot width of 29 ft, which is less than the 80 ft average required. Unlike the lots further east on Sage Road with depths exceeding 1,000 ft up the hillside, the subject lot has a maximum depth of 112 ft at the western property line. In addition to dimensional and topographical challenges, the site is further constrained by the cross easement, which serves as driveway access to three adjacent dwelling units to the west. The proposed avalanche attenuation device at the rear of the property is approximately 18 ft in width. These factors constrain the total feasible buildable area of the lot. Staff has found that due to these constraints, the applicant has utilized the area of the property the most suitable for the development of single-family residence.*
☒	☐	☐	**17.104.070. A.11**	**Access traversing 25% or greater slopes does not have significant impact on drainage, snow and earth slide potential and erosion as it relates to the subject property and to adjacent properties.**
			Staff Comments	*The proposed driveway access does not traverse 25% or greater slopes. The applicant has chosen to site the driveway at the lowest elevation of the site, which minimizes required cuts or fills.*
☒	☐	☐	**17.104.070. A.12**	**Utilities shall be underground.**
			Staff Comments	*All on-site utilities shall be located underground. The project will connect to municipal water and sewer services in the Sage Road right of way.*
☐	☒	☐	**17.104.070. A.13**	**Limits of disturbance shall be established on the plans and protected by fencing on the site for the duration of construction.**
			Staff Comments	*The applicant has not indicated the limits of disturbance on the Design Review submittal drawings. Due to site constraints, Staff anticipates the most of the lot area will be subject to construction disturbance. As the avalanche attenuation patio is sited adjacent to the rear property line, construction disturbance may extend over the property line. The limits of disturbance must be established on the construction activity plan submitted with the Building Permit application to be reviewed and approved by the Planning & Building Department prior to issuance of a Building Permit for the project. The applicant will be required to submit written consent from adjacent property owners if construction disturbance extends over the property line.*
☒	☐	☐	**17.104.070. A.14**	**Excavations, fills and vegetation disturbance on hillsides not associated with the building construction shall be minimized.**
			Staff Comments	*Excavation, fill, and vegetation disturbances that are not associated with building construction have been minimized - all excavation, fill and vegetation disturbance is associated with construction of the building, driveway, and avalanche attenuation walls that will serve the development.*
☒	☐	☐	**17.104.070. A.15**	**Preservation of significant landmarks shall be encouraged and protected, where applicable. A significant landmark is one which gives historical and/or cultural importance to the neighborhood and/or community.**
			Staff Comments	*No significant landmarks have been identified on the subject property.*

Recommended Conditions of Approval

1. The Mountain Overlay Design Review approval is subject to Conditional Use Permit P19-081 and Variance Request P19-082. All associated conditions of approval shall apply.
2. All City Department conditions as described in Exhibit A1 shall be met. All City Departments shall verify comments, review, and approve the project through the Building Permit application process. All comments pertaining to the Mountain Overlay Design Review application are subject to change.
3. The limits of disturbance must be established on the construction activity plan submitted with the Building Permit application to be reviewed and approved by the Planning & Building Department prior to issuance of a Building Permit for the project. The applicant will be required to submit written consent from adjacent property owners if construction disturbance extends over the property line. Construction fencing at the limits of disturbance shall be installed on the site prior to any excavation or earthwork and remain in place throughout the duration of construction.
4. As indicated on Sheet A-1.0 of the MO Design Review submittal drawings (Exhibit B1), a stairway and associated retaining walls encroach onto the improved cross easement. Per the cross easement, no owner may erect, build, locate, or maintain any improvement on the easement premises. Prior to issuance of a Building Permit for the project, the applicant shall submit written consent from the adjacent property owners and easement beneficiaries (Instrument #363233 and #574032) for all proposed encroachments within the easement area.
5. As the property is located within the Avalanche Zone, the project shall comply with all applicable standards specified in Chapter 17.92 Avalanche Zone District.
6. A final drainage/grading plan for the subject property and final civil drawings for the adjacent right-of-way shall be submitted to the Planning & Building Department for review and approve by the City Engineer and Streets Department prior to issuance of a Building Permit for the project.
7. The public right-of-way adjacent to the subject property shall be improved to the City's right-of-way standards for local-residential street right-of-ways. Material within the first eight (8) feet from the edge of asphalt shall be (1) distinct from the driveway in order to visually appear to be available for parking, (2) pervious and permeable to enhance drainage, and (3) the surface must allow for vehicle parking and be consistent along the entire property frontage. No live plant materials or obstructions, such as boulder or berms, are permitted within the first 8 ft from the edge of asphalt.
8. This Design Review approval is based on the plans and information presented and approved at the meeting on the date noted herein. Building Permit plans must conform to the approved Design Review plans unless otherwise approved in writing by the Planning and Zoning Commission or Administrator. Any building or site discrepancies which do not conform to the approved plans will be subject to removal.
9. All construction for the project must comply with the standards set forth in Ketchum Municipal Code, Chapter 15.06 Construction Activity Standards.
10. All governing ordinances, requirements, and regulations of the Fire Department (2012 International Fire Code and local Fire Protection Ordinance No.1125), Building Department (2012 International Building Code, the 2012 International Residential Code, and Title 15 of Ketchum Municipal Code), Utilities Department, Street Department (Title 12 of Ketchum Municipal Code), and the City Engineer shall be met prior to issuance of Certificate of Occupancy.
11. The applicant shall submit a Street and Alley Digging, Excavation, and Trenching ("DIG") Permit application with an associated traffic control plan for any construction work within the City right-of-way to be reviewed and approved by the Streets Department. The use of City right-of-way for construction including the closure of adjacent streets or sidewalks requires a Temporary Use of Right-of-Way Permit ("TURP").
12. Design Review approval shall expire one (1) year from the date the Findings of Fact, Conclusions of Law, and Decision are adopted by the Planning & Zoning Commission, unless is an extension is requested and granted consistent with KMC §17.96.090.
13. All Design Review elements shall be completed prior to final inspection.

14. All exterior lighting shall be in compliance with Ketchum Municipal Code, Chapter 17.132, Dark Skies, and approved prior the issuance of a Certificate of Occupancy for the project.
15. In addition to the requirements set forth in this Design Review approval, this project shall comply with all applicable local, state, and federal laws.

City of Ketchum
Planning & Building

Exhibit A4
Design Review Standards Analysis

PROJECT: Hammond House

APPLICATION TYPES: Mountain Overlay Design Review, Variance Request, Conditional Use Permit

FILE NUMBER: P19-021, P19-081, and P19-082

Design Review Requirements IMPROVEMENTS AND STANDARDS: 17.96.060				
Yes	**No**	**N/A**	**City Code**	**City Standards and *Staff Comments***
☒	☐	☐	**17.96.060(A)(1) Streets**	**The applicant shall be responsible for all costs associated with providing a connection from an existing city street to their development.**
			Staff Comments	*The driveway access connects to the existing cross easement connected to Sage Road.*
☐	☐	☒	**17.96.060(A)(2) Streets**	**All street designs shall be approved by the City Engineer.**
			Staff Comments	*No changes to the lanes of travel in the street are proposed at this time. However, should improvements be deemed necessary by the Streets Department, such designs shall be approved by the City Engineer.*
☐	☐	☒	**17.96.060(B)(1)**	**All projects under 17.96.010(A) that qualify as a "Substantial Improvement" shall install sidewalks as required by the Public Works Department.**
			Staff Comments	*N/A as sidewalks are not required or existing in the subject low density residential area.*
☐	☐	☒	**17.96.060 (B)(2)c**	**Sidewalk width shall conform to the City's right-of-way standards, however the City Engineer may reduce or increase the sidewalk width and design standard requirements at their discretion.**
			Staff Comments	*N/A*
☐	☐	☒	**17.96.060 (B)(3)**	**Sidewalks may be waived if one of the following criteria is met:** **a. The project comprises an addition of less than 250 square feet of conditioned space.** **b. The City Engineer finds that sidewalks are not necessary because of existing geographic limitations, pedestrian traffic on the street does not warrant a sidewalk, or if a sidewalk would not be beneficial to the general welfare and safety of the public.**
			Staff Comments	*N/A*
☐	☐	☒	**17.96.060 (B)(4)**	**The length of sidewalk improvements constructed shall be equal to the length of the subject property line(s) adjacent to any public street or private street.**
			Staff Comments	*N/A*
☐	☐	☒	**17.96.060 (B)(5)**	**New sidewalks shall be planned to provide pedestrian connections to any existing or future sidewalks adjacent to the site. In addition, sidewalks shall be constructed to provide safe pedestrian access to and around a building.**
			Staff Comments	*N/A*
☐	☐	☒	**17.96.060 (B)(6)**	**The City may approve and accept voluntary cash contributions in-lieu of the above described improvements, which contributions must be segregated by the City and not used for any purpose other than the provision of these improvements. The contribution amount shall be one hundred ten percent (110%) of the estimated costs of concrete sidewalk and drainage improvements provided by a qualified contractor, plus associated engineering costs, as approved by the City Engineer. Any approved**

				in-lieu contribution shall be paid before the City issues a certificate of occupancy.
			Staff Comments	*N/A*
☒	☐	☐	**17.96.060(C)(1)**	**All storm water shall be retained on site.**
			Staff Comments	*All storm water shall be retained on site. As indicated on Sheet C-1 of the Design Review submittal, drainage is proposed to be maintained and controlled through a system of catch basins and drywells. The specifications for the catch basins and drywells are included on Sheet C-2.* *The final drainage plan shall be submitted with the Building Permit to be verified, reviewed, and approved by the City Engineer and the Streets Department prior to issuance of a Building Permit for the project.*
☒	☐	☐	**17.96.060(C)(2)**	**Drainage improvements constructed shall be equal to the length of the subject property lines adjacent to any public street or private street.**
			Staff Comments	*The proposed drainage improvements span the width of the subject lot. See above analysis for KMC §17.96.060(C)(1).*
☒	☐	☐	**17.96.060(C)(3)**	**The City Engineer may require additional drainage improvements as necessary, depending on the unique characteristics of a site.**
			Staff Comments	*The final drainage plan shall be submitted with the Building Permit to be verified, reviewed, and approved by the City Engineer and the Streets Department prior to issuance of a Building Permit for the project.*
☒	☐	☐	**17.96.060(C)(4)**	**Drainage facilities shall be constructed per City standards.**
			Staff Comments	*Drainage facilities shall be constructed per City standards. All drainage improvements shall be verified, reviewed, and approved by the City Engineer prior to issuance of a Building Permit for the project.*
☒	☐	☐	**17.96.060(D)(1)**	**All utilities necessary for the development shall be improved and installed at the sole expense of the applicant.**
			Staff Comments	*The applicant is aware that any service connections to utilities are the sole responsibility of the applicant.*
☒	☐	☐	**17.96.060(D)(2)**	**Utilities shall be located underground and utility, power, and communication lines within the development site shall be concealed from public view.**
			Staff Comments	*All on-site utilities shall be located underground. The project will connect to existing water and sewer lines within the Sage Road ROW and the associated existing infrastructure is underground.*
☐	☐	☒	**17.96.060(D)(3)**	**When extension of utilities is necessary all developers will be required to pay for and install two (2") inch SDR11 fiber optical conduit. The placement and construction of the fiber optical conduit shall be done in accordance with city of Ketchum standards and at the discretion of the City Engineer.**
			Staff Comments	*N/A*
☒	☐	☐	**17.96.060(E)(1)**	**The project's materials, colors and signing shall be complementary with the townscape, surrounding neighborhoods and adjoining structures.**
			Staff Comments	*As indicated on Sheet A-4.0 of the Design Review submittal, exterior materials include a core-ten metal standing seam roof, aluminum gutters and downspouts with a charcoal finish, vertical seam metal siding with a rust patina finish, core-ten metal siding panels, and concrete with a natural finish. Adjacent residential development includes similar exterior materials including wood, stucco, and stone. Staff finds that the project's proposed materials and colors complement the Sage Road neighborhood and surrounding hillside.*
☐	☐	☒	**17.96.060(E)(2)**	**Preservation of significant landmarks shall be encouraged and protected, where applicable. A significant landmark is one which gives historical and/or cultural importance to the neighborhood and/or community.**
			Staff Comments	*N/A. There are no identified landmarks on the property.*
☐	☐	☒	**17.96.060(E)(3)**	**Additions to existing buildings, built prior to 1940, shall be complementary in design and use similar material and finishes of the building being added to.**
			Staff Comments	*N/A. The subject property is currently undeveloped except for the improved cross access improvement.*

☒	☐	☐	**17.96.060(F)(1)**	**Building(s) shall provide unobstructed pedestrian access to the nearest sidewalk and the entryway shall be clearly defined.**
			Staff Comments	*N/A. No sidewalks are located on Sage Road, but the multi-use path along Warm Springs Road is adjacent to the property. The building design provides unobstructed access to Sage Road. The entry landing and stairs are proposed to include a snowmelt system.*
☒	☐	☐	**17.96.060(F)(2)**	**The building character shall be clearly defined by use of architectural features**.
			Staff Comments	*Building elevations are included on Sheet A-4.0 and A-4.1 of the submittal. Sheet A-5.0 depicts 3D renderings of the proposed residence. The façade design includes both vertical elements, such as the vertical seam metal garage doors, and horizontal elements such as the core-ten metal siding panels and guardrails, to provide visual interest. The combination of materials, color variation, and the vertical and horizontal finishes provide undulation and relief to the façade design. The south elevation adjacent to the east interior property line lacks fenestration and appears as monolithic, concrete mass. Staff recommends that the applicant provide visual relief through material differentiation or incorporate more undulation at the south elevation.*
☒	☐	☐	**17.96.060(F)(3)**	**There shall be continuity of materials, colors and signing within the project.**
			Staff Comments	*The proposed materials and color palette minimize visual impact to the hillside through the use of neutral and unreflective elements. The natural materials and colors complement the surrounding landscape.*
☒	☐	☐	**17.96.060(F)(4)**	**Accessory structures, fences, walls and landscape features within the project shall match or complement the principal building.**
			Staff Comments	*The concrete retaining walls echo the concrete components of the structure. The applicant has incorporated planter beds within the avalanche attenuation patio to soften the visual impact of the concrete mass.*
☒	☐	☐	**17.96.060(F)(5)**	**Building walls shall provide undulation/relief, thus reducing the appearance of bulk and flatness.**
			Staff Comments	*Material differentiation and fenestration provide relief to the front and rear façades. The side facades lack undulation and relief. The applicant has proposed recessed elements at the side facades in order to provide visual interest, however, the south façade in particular appears as monolithic and flat. Staff recommends the applicant incorporate more material differentiation and undulation in order to provide more relief to the side elevation façades.*
☒	☐	☐	**17.96.060(F)(6)**	**Building(s) shall orient towards their primary street frontage.**
			Staff Comments	*The building orients toward Sage Road.*
☒	☐	☐	**17.96.060(F)(7)**	**Garbage storage areas and satellite receivers shall be screened from public view and located off alleys.**
			Staff Comments	*No satellite receivers are proposed. This is a residential project that will not have an exterior commercial garbage receptacle that requires screening.*
☒	☐	☐	**17.96.060(F)(8)**	**Building design shall include weather protection which prevents water to drip or snow to slide on areas where pedestrians gather and circulate or onto adjacent properties.**
			Staff Comments	*The applicant has proposed the installation of a snow fence or clips as gutters and downspouts in order to enhance weather protection.*
☒	☐	☐	**17.96.060(G)(1)**	**Pedestrian, equestrian and bicycle access shall be located to connect with existing and anticipated easements and pathways.**
			Staff Comments	*The subject property is an infill site located within a residential neighborhood. The site is not contiguous to an existing pedestrian, equestrian, or bicycle access although there is a multi-use path adjacent to Warm Springs Road. No new pedestrian, equestrian or bicycle accesses are anticipated or proposed for the subject property,*
☐	☐	☒	**17.96.060(G)(2)**	**Awnings extending over public sidewalks shall extend five (5') feet or more across the public sidewalk but shall not extend within two (2') feet of parking or travel lanes within the right of way.**
			Staff Comments	*N/A.*
☒	☐	☐	**17.96.060(G)(3)**	**Traffic shall flow safely within the project and onto adjacent streets. Traffic includes**

				vehicle, bicycle, pedestrian and equestrian use. Consideration shall be given to adequate sight distances and proper signage.
			Staff Comments	*Sage Road is located in a low-traffic residential and traffic is anticipated to flow safely within the project and onto adjacent streets.*
☒	☐	☐	**17.96.060(G)(4)**	**Curb cuts and driveway entrances shall be no closer than twenty (20') feet to the nearest intersection of two or more streets, as measured along the property line adjacent to the right of way. Due to site conditions or current/projected traffic levels or speed, the City Engineer may increase the minimum distance requirements.**
			Staff Comments	*The driveway entrances are located over 150 ft from the nearest intersection located at Sage Road and Warm Springs.*
☒	☐	☐	**17.96.060(G)(5)**	**Unobstructed access shall be provided for emergency vehicles, snowplows, garbage trucks and similar service vehicles to all necessary locations within the proposed project.**
			Staff Comments	*Unobstructed access to the site is provided by Sage Road.*
☐	☐	☒	**17.96.060(H)(1)**	**Snow storage areas shall not be less than thirty percent (30%) of the improved parking and pedestrian circulation areas**.
			Staff Comments	*The applicant has proposed a snowmelt system in lieu of providing a snow storage area.*
☐	☐	☒	**17.96.060(H)(2)**	**Snow storage areas shall be provided on-site.**
			Staff Comments	*The applicant has proposed a snowmelt system in lieu of providing a snow storage area.*
☐	☐	☒	**17.96.060(H)(3)**	**A designated snow storage area shall not have any dimension less than five (5') feet and shall be a minimum of twenty five (25) square feet.**
			Staff Comments	*The applicant has proposed a snowmelt system in lieu of providing a snow storage area.*
☒	☐	☐	**17.96.060(H)(4)**	**In lieu of providing snow storage areas, snow melt and hauling of snow may be allowed.**
			Staff Comments	*The applicant has proposed a snow melt system for all vehicular and pedestrian circulation areas.*
☒	☐	☐	**17.96.060(I)(1)**	**Landscaping is required for all projects**.
			Staff Comments	*Landscape plans have been submitted with this proposal.*
☒	☐	☐	**17.96.060(I)(2)**	**Landscape materials and vegetation types specified shall be readily adaptable to a site's microclimate, soil conditions, orientation and aspect, and shall serve to enhance and complement the neighborhood and townscape.**
			Staff Comments	*As indicated on Sheet LS-01 of the Design Review submittal, the landscape plan includes the installation of two fir and three aspen trees to serve as a landscape buffer between the proposed development and the adjacent single-family residence to the west. A variety of shrubs including clematis, hops, dogwood, viburnum, spirea, snowberry, and lilac are proposed in beds surrounding the entry porch as well as in the planter beds at the rear patio. The planter beds proposed at the rear elevation serve to soften the concrete mass of the avalanche attenuation wall. The applicant has proposed a natural grasses to revegetate the west side yard. A limited amount of lawn grass is proposed in the front yard.*
☒	☐	☐	**17.96.060(I)(3)**	**All trees, shrubs, grasses and perennials shall be drought tolerant. Native species are recommended but not required.**
			Staff Comments	*As noted on Sheet LS-01, the applicant has indicated that the proposed landscape materials require limited irrigation.*
☒	☐	☐	**17.96.060(I)(4)**	**Landscaping shall provide a substantial buffer between land uses, including, but not limited to, structures, streets and parking lots. The development of landscaped public courtyards, including trees and shrubs where appropriate, shall be encouraged.**
			Staff Comments	*The landscaping proposed for this residential project in the Mountain Overlay is appropriate. Staff recommends enhancing the landscape screening in order to buffer the multiple driveway accesses in this corridor.*

☐	☐	☒	**17.96.060(J)(1)**	**Where sidewalks are required, pedestrian amenities shall be installed. Amenities may include, but are not limited to, benches and other seating, kiosks, bus shelters, trash receptacles, restrooms, fountains, art, etc. All public amenities shall receive approval from the Public Works Department prior to design review approval from the Commission.**
			Staff Comments	*N/A. Sidewalks are not required for the project.*

Recommended Conditions of Approval

Recommended Conditions of Approval for the Mountain Overlay Design Review application are included as Exhibit A3 to the Staff Report.

City of Ketchum
Planning & Building

Exhibit A5
Conditional Use Permit Criteria

PROJECT: Hammond House

APPLICATION TYPES: Mountain Overlay Design Review, Variance Request, Conditional Use Permit

FILE NUMBER: P19-021, P19-081, and P19-082

Conditional Use Requirements				
EVALUATION STANDARDS: 17.116.030 and § 67-6512 of Idaho Code A conditional use permit shall be granted by the commission only if the applicant demonstrates the following:				
Compliance and Analysis				
Yes	**No**	**N/A**	**City Code**	**City Standards and *Staff Comments***
☒	☐	☐	**17.116.030(A)**	**The characteristics of the conditional use will not be unreasonably incompatible with the types of uses permitted in the applicable zoning district.**
			Staff Comments	*The Sage Road neighborhood is characterized by hazards associated with red and blue avalanche zones. Conditional Use Permits for avalanche attenuation devices have been granted within the area including the adjacent A&L Townhome development (Application Number 95-011) located at 108 Sage Road. The avalanche attenuation devices are structurally integrated into the design of the single-family residences. Both single-family and multiple-family dwelling units are a permitted use in the GR-L Zoning District.*
☒	☐	☐	**17.116.030(B)**	**The conditional use will not materially endanger the health, safety and welfare of the community.**
			Staff Comments	*Consistent with KMC §17.92.010.D.2, avalanche protective, deflective, and preventative structures, which threaten to deflect avalanches toward the property of others or otherwise threaten to persons or property are prohibited. The construction of avalanche attenuation devices is permitted only as a Conditional Sue. Prior to issuance of a Building Permit for the project, the applicant shall submit a certification signed by an engineer licensed in Idaho certifying that the proposed construction as designed will withstand the associated avalanche forces and that the single-family residence is deflection neutral.*
☒	☐	☐	**17.116.030(C)**	**The conditional use is such that pedestrian and vehicular traffic associated with the use will not be hazardous or conflict with existing and anticipated traffic in the neighborhood.**
			Staff Comments	*The applicant has proposed three parking spaces within the enclosed garage and three parking spaces may also be accommodated on the driveway. The applicant has provided 6 total parking spaces, which is four more required per KMC §17.125.040. The proposed single-family residential use is not anticipated to generate a high volume of trips. As such, hazards to pedestrian and vehicular traffic will not be generated by this proposal.*
☒	☐	☐	**17.116.030(D)**	**The conditional use will be supported by adequate public facilities or services and will not adversely affect public services to the surrounding area or conditions can be established to mitigate adverse impacts.**

			Staff Comments	*The proposed single-family residence will be adequately supported by public services and facilities. See Exhibit A1 for comment from the Fire, Utilities, and Streets Department. existing Redfish building and this unit are adequately served by public facilities and services.*
☒	☐	☐	**17.116.030(E)**	**The conditional use is not in conflict with the policies of the Comprehensive Plan or the basic purposes of this section.**
			Staff Comments	*As referenced in Exhibit A7 of the Staff Report, the conditional use aligns with, rather than conflicts with, the policies of the Comprehensive Plan and the basic purposes of this section.*

Recommended Conditions of Approval

1. The Conditional Use Permit is subject to Mountain Overlay Design Review P19-021 and Variance Request P19-082. All associated conditions of approval shall apply.
2. The plans submitted for a Building Permit shall be stamped by an engineer licensed in the State of Idaho certifying that the single-family residence and associated avalanche protection devices will resist the avalanche forces associated with the site and that all proposed improvements will not deflect avalanche debris toward the property of others.
3. As the property is located within the Avalanche Zone, the project shall comply with all applicable standards specified in Chapter 17.92 Avalanche Zone District.
4. This Conditional Use Permit approval is based on the application presented at the Planning and Zoning Commission meeting of August 12th, 2019.
5. All governing ordinances, requirements, and regulations of the Fire Department (2012 International Fire Code and local Fire Protection Ordinance No.1125), Building Department (2012 International Building Code, the 2012 International Residential Code, and Title 15 of Ketchum Municipal Code), Utilities Department, Street Department (Title 12 of Ketchum Municipal Code), and the City Engineer shall be met prior to issuance of Certificate of Occupancy.
6. In addition to the requirements set forth in this Design Review approval, this project shall comply with all applicable local, state, and federal laws.

City of Ketchum
Planning & Building

Exhibit A6
Variance Criteria

PROJECT: Hammond House

APPLICATION TYPES: Mountain Overlay Design Review, Variance Request, Conditional Use Permit

FILE NUMBER: P19-021, P19-081, and P19-082

Variance Evaluation Standards Analysis

A. The strict enforcement of the provisions of this title creates an undue hardship to the property owner; however, economic feasibility shall not be considered an undue hardship.

The subject property is within Warm Springs Village Subdivision 4th Addition, which was created in 1961 prior to the adoption of the City's first comprehensive zoning ordinance in 1974 (Ordinance No. 208) as well as the City's first subdivision ordinance in 1979 (Ordinance No. 316). The subject undeveloped, infill site has a total lot area of 0.16 acres. The dimensions of the subject property are noncompliant as the lot has both an area of 6,934 sq ft, which is less than the 8,000 sq ft minimum lot area required in the GR-L Zone, and a lot width of 29 ft, which is less than the 80 ft average required. Unlike the lots further east on Sage Road with depths exceeding 1,000 ft up the hillside, the subject trapezoidal lot has a maximum depth of 112 ft at the western property line. In addition to the nonconforming lot dimensions and topographical challenges, the subject lot is also constrained by an approximately 20 ft wide cross easement (Instrument No. 363233 & 574032) providing access for the benefit of the adjacent single-family residence at 104 Sage Road and the L & A Townhomes located at 108 Sage Road.

Recommendation: This standard has been met. Staff finds that the dimensional constraints and topographical challenges create an undue hardship to the property owners.

B. The variance is necessary because of the unique size, shape, topography or location of the subject property.

The trapezoidal development site is characterized by both dimensional and topographical constraints. The dimensions of the subject property are noncompliant as the lot has both an area of 6,934 sq ft, which is less than the 8,000 sq ft minimum lot area required in the GR-L Zone, and lot width of 29 ft, which is less than the 80 ft average required. n addition to dimensional and topographical challenges, the site is further constrained by the cross easement, which serves as driveway access to three adjacent dwelling units to the west. The proposed avalanche attenuation device at the rear of the property is approximately 18 ft in width. These factors constrain the total feasible buildable area of the lot. Staff has found that due to these constraints, the applicant has utilized the area of the property the most suitable for the development of single-family residence.

Recommendation: The standard has been met. The applicant has provided sufficient support that a Variance is the minimum relief required due to the unique size, shape, and topography of the subject lot.

C. The subject property is deprived, by provision of this title, of rights and privileges enjoyed legally by other properties in the vicinity and under an identical zone.

The subject property is denied the same rights and privileges enjoyed legally by other properties in the vicinity and under the GR-L Zone as the dimensional and topographical constraints in conjunction with the associated avalanche hazards would preclude the development of a residential dwelling unit.

Recommendation: This standard has been meet.

D. The need for the variance is not the result of actions of the applicant or property owner.

The need for the variance is not the result of the actions of the applicant or property owner, but is due to the subject properties topographical challenges and dimensional constraints.

Recommendation: This standard has been met.

E. The variance does not create health and safety hazards.

The plans submitted for a Building Permit shall be stamped by an engineer licensed in the State of Idaho certifying that the single-family residence and associated avalanche protection devices will resist the avalanche forces associated with the site and that all proposed improvements will not deflect avalanche debris toward the property of others. As conditioned, the variance does not create health or safety hazards.

Recommendation: This standard has been met.

F. The variance does not relieve an applicant from any of the procedural provisions of this title.

The variance request does not relieve the applicant from any of the procedural provisions of Title 17. All standard permitting processes would apply to any further construction at the site. If a variance is granted, the project would require a Building Permit. Excepting any regulations that may be relieved through the approval of the associated variance, the Planning & Building Department would ensure that the project comply with dimensional standards of the GR-L Zoning District as part of Building Permit application review.

Recommendation: This standard has been met.

G. The variance does not relieve an applicant from any standard or provision that specifically states that no variance from such standard or provision is permitted.

Ketchum Municipal Code defines a variance as:

> *A modification of the requirements of this title as to lot size, lot coverage, width, depth, front yard, side yard, rear yard, setbacks, parking space, parking areas, height of buildings, or other title provisions affecting the size or shape of a structure or the placement of the structure upon lots, or the size of lots* (KMC §17.08.020).

The applicant's request for a variance is in accordance with the definition of variance as defined in Ketchum Municipal Code and with the procedural standards for processing variance requests as outlined in KMC §17.148.020. No request has been made from any standard that prohibits the option to request a variance.

Recommendation: This standard has been met.

H. The variance does not relieve an applicant from conditions established during prior permit review.

The variance does not relieve the applicant from conditions established during any prior permit review. As indicated on Sheet A-1.0 of the MO Design Review submittal drawings (Exhibit B1), a stairway and associated retaining walls encroach onto the improved cross easement. Per the cross easement, no owner may erect, build, locate, or maintain any improvement on the easement premises. Prior to issuance of a Building Permit for the project, the applicant shall submit written consent from the adjacent property owners and easement beneficiaries (Instrument #363233 and #574032) for all proposed encroachments within the easement area.

Recommendation: This standard has been met.

I. The variance does not allow establishment of a use that is not otherwise permitted in the zone in which the subject property is located.

One-family dwelling uses are permitted within the GR-L Zoning District (KMC §17.12.020).

Recommendation: This standard has been met.

J. The variance is the minimum necessary to grant relief to the applicant.

Due to the topographical constraints and dimensional constraints, the variance is the minimum necessary to grant relief to the applicant.

Recommendation: The standard has been met.

Recommended Conditions of Approval

1. The Variance is subject to Mountain Overlay Design Review P19-021 and Conditional Use Permit P19-081. All associated conditions of approval shall apply.
2. Per Ketchum Municipal Code §17.148.050, all variances shall be issued and construction shall commence within six (6) month from the date that such variance is granted, otherwise, the variance shall no longer be considered valid.
3. The plans submitted for a Building Permit shall be stamped by an engineer licensed in the State of Idaho certifying that the single-family residence and associated avalanche protection devices will resist the avalanche forces associated with the site and that all proposed improvements will not deflect avalanche debris toward the property of others.
4. As the property is located within the Avalanche Zone, the project shall comply with all applicable standards specified in Chapter 17.92 Avalanche Zone District.
5. This Variance approval is based on the application presented at the Planning and Zoning Commission meeting of August 12th, 2019.
6. All governing ordinances, requirements, and regulations of the Fire Department (2012 International Fire Code and local Fire Protection Ordinance No.1125), Building Department (2012 International Building Code, the 2012 International Residential Code, and Title 15 of Ketchum Municipal Code), Utilities Department, Street Department (Title 12 of Ketchum Municipal Code), and the City Engineer shall be met prior to issuance of Certificate of Occupancy.
7. In addition to the requirements set forth in this Design Review approval, this project shall comply with all applicable local, state, and federal laws.

City of Ketchum
Planning & Building

Exhibit A7
Comprehensive Plan Analysis

PROJECT: Hammond House

APPLICATION TYPES: Mountain Overlay Design Review, Variance Request, Conditional Use Permit

FILE NUMBER: P19-021, P19-081, and P19-082

SUPPORTING SECTION	SUMMARY OF COMPLIANCE WITH THE 2014 COMPREHENSIVE PLAN
Future Land Use	
Low Density Residential	**Primary Uses:** Single-family and duplex residences and accessory units. **Secondary Uses:** Supporting and complementary uses, including open space and recreation, agriculture/gardens, schools, places of worship, and other public uses. Senior housing facilities are also appropriate if compatible with the surrounding areas. The intent is for the average density of a residential area in this category is not to exceed about five units per acre. **Characteristics and Location:** New residences should be within neighborhoods that have pedestrian-oriented, connected local streets and sidewalks. New housing should also have access to parks, open space, schools, and other civic activities. Neighborhoods within this category should be accessible via local streets with access to collector streets for circulation.
Community Design and Neighborhoods	
Goal CD-2 **Protect and enhance views of the surrounding mountains and natural features.**	**Policy CD-2.2 - Mountain Overlay Zone** Continue to protect hillsides within the City and the Area of City Impact from further development. Enforce and encourage strengthening of the Mountain Overlay standards of the City and County, by using a variety of techniques; such as clustering at lower elevations, creating conservation easements, or purchasing private property on hillsides.
	Policy CD-2.4 Development Designed for Natural Feature Preservation Protect and incorporate natural features into newly developing areas. Conserve the natural patterns of streams, ridgelines, topography, riparian areas, and wildlife habitat areas.
Public Safety and Utilities	
Safety	**Avalanche Prone Areas** The history of avalanche activity in the Warm Springs canyon dates back to the 1920s. Numerous avalanches are observed on the upper and lower slopes annually. The number of observed avalanches along with the terrain, vegetation and weather of the area, is sufficient to verify frequent avalanche hazard to the canyon floor. The occurrence of avalanches on the west slope of Dollar Mountain above Trail Creek is also regularly observed. Due to the potential avalanche hazard in these areas the City established an avalanche zone overlay district where special regulations apply.

Exhibit B:

Applicant Submittal Drawings, Avalanche Review, and Narratives

Exhibit B1:

Mountain Overlay Design Review Submittal Drawings and Renderings

PERSPECTIVE - RENDERINGS

PROJECT TEAM

OWNER:	Dr. Rockwell Hammond Jr. + Jill Hammond 35611 SE David Powell Road, Fall City WA 98024 P: 206.919.8009
PROJECT:	NEW RESIDENCE 102 Sage Road KETCHUM, ID 83340
ARCHITECT:	Neil B. Middleton, AIA 45 Weston Road, Lincoln MA 01773 P: 781.259.1380 C: 617.281.6996 middleton.nb@gmail.com
ARCHITECT REPRESENTATIVE:	Lars Guy • Provisualization, Inc. 220 River Street East • PO Box 2675 Ketchum, ID 83340 C. 208.720.9684lars@provisualization.com
STRUCTURAL ENGINEER:	Markel Bateman, PE, Principal Frost Engineering 1020 Lincoln Road, Idaho Falls 83401 P: 208.227.8404 C: 208.390.4597 markell.bateman@frost-structural.com
GEOTECHNICAL ENGINEER:	Steve Butler, PE • Butler Associates, Inc. 208 Spruce Avenue North Ketchum ID 83340 P: 208.720.6432 svgeotech@gmail.com
AVALANCHE ENGINEER:	Chris Wilbur, PE, Principal Wilbur Engineering, Inc. 150 E 9th Street, #201 Durango, CO 81301 P: 970.247.1488 geowilbur@gmail.com
CIVIL ENGINEER:	Don Sewell Benchmark Associates, PA 100 Bell Drive, P.O. Box 733 Ketchum, ID 83340 P: 208.726.9512 Don@bma5b.com

SHEET SCHEDULE

ADDITIONAL INFORMATION

DRAINAGE:	GUTTERS AND DOWNSPOUTS TO DRYWELLS WILL BE PROVIDED WHERE REQUIRED.
SNOWCLIPS:	TO BE PROVIDED AT ALL OVERHANGS AT AREAS OF PEDESTRIAN CIRCULATION
LANDSCAPE PLAN:	SUBJECT PROPERTY CONTAINS MATURE LANDSCAPING. MINIMAL ADDITIONAL IS PLANNED
LIGHTING:	ANY LIGHTING WILL BE SHIELDED LED NIGHT SKY COMPLIANT FIXTURES
STREET R.O.W.:	PROJECT WILL NOT CREATE ANY NON COMPLIANCE TO CITY OF KETCHUM R.O.W. STANDARDS

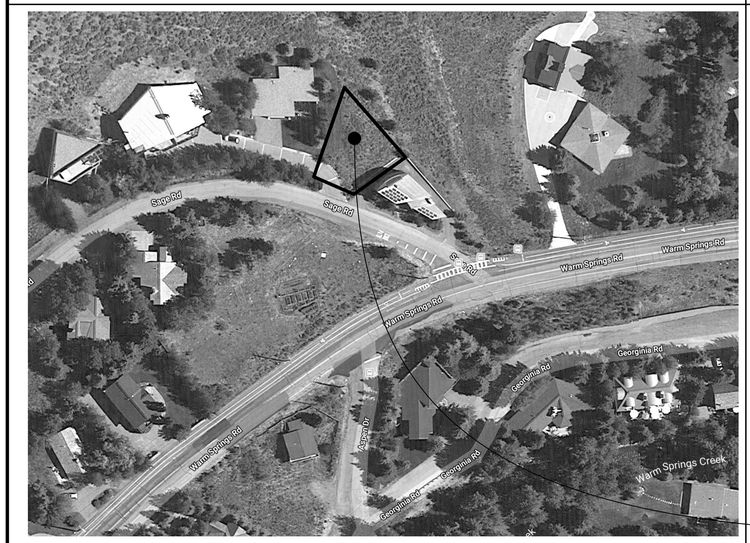
PROJECT INFORMATION

LOT:	102 Sage Road, Ketchum LOT 1, BLOCK 3, WARM SPRINGS VILLAGE SUB NO. 4	
SIZE:	6,933.6 SQ FT (.16± ACRES)	
ZONE:	GR-L	
SETBACKS:	FRONT/WEST SIDE SIDE REAR	26' 3 1/2" (@ CLOSEST CORNER) 10'-0" 10'-0" 15' 0"

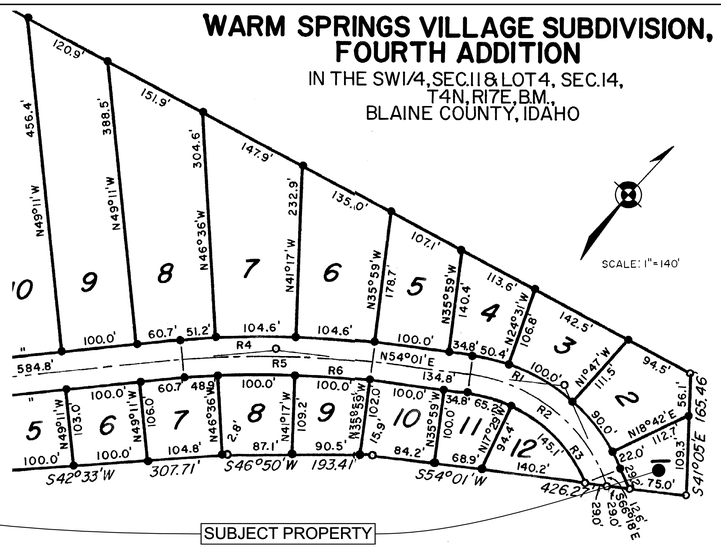
AREA ANALYSIS: (GROSS ENCLOSED SQUARE FOOTAGE)

BASEMENT/GARAGE	2,032 S.F.
1ST FLOOR	2,048 S.F.
TOTAL ENCLOSED STRUCTURE	4,080 S.F.
FOOTPRINT ON SITE	2,121 S.F.
LOT COVERAGE	30.5%
MAXIMUM BUILDING HEIGHT	29'-10" (ALLOWED) 30'-0" PER S.B.

VICINITY MAP



SUBDIVISION MAP



EXT. LIGHT FIXTURES

B-K LIGHTING, WALL MOUNTED LED DOWNLIGHT, NIGHT SKY COMPLIANT

LED PATHWAY LIGHTS AT EXTERIOR STAIRS/LANDINGS

SITE PHOTO

BUILDING CODE

ALL WORK SHALL MEET OR EXCEED THE CURRENT ADOPTED CODES:

2012 INTERNATIONAL BUILDING CODE (2012 IBC)

2012 INTERNATIONAL RESIDENTIAL CODE (2012 IRC)

2012 ENERGY CONSERVATION CODE (2012 IEC)

2012 FIRE CODE (2012 IEC)

(AS ADOPTED BY ORDINANCE NUMBER 1125, 2014)

COMPLIANCE WITH KETCHUM MUNICIPAL CODE, CHP 15.078 REQUIRED

PROVIDE REQUIRED UNDERFLOOR VENTING/RADON MITIGATION AS REQUIRED.

PROVIDE REQUIRED UNDERFLOOR VENTING MOLD MITIGATION AS REQUIRED.

PROVIDE UNDERFLOOR (CRAWL SPACE) VENTILATION OF 1 S.F. PER 150 S.F. OF FLOOR AREA

PROJECT TO MEET ADOPTED NGBS SILVER STANDARD, MINIMUM (REFER TO RATER DOCUMENTS)

PROJECT TO MEET ADOPTED R.O.W. STANDARDS (JULY 2015)

ARCHITECT

Neil B. Middleton, AIA
45 Weston Road
Lincoln MA 01773
P: 781.259.1380
C: 617.281.6996
middleton.nb@gmail.com

PROJECT NO.

CONTRACTOR

A NEW RESIDENCE FOR:

DR. ROCKWELL HAMMOND JR. & JILL HAMMOND

Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road * Ketchum, ID 83340

DRAWING:

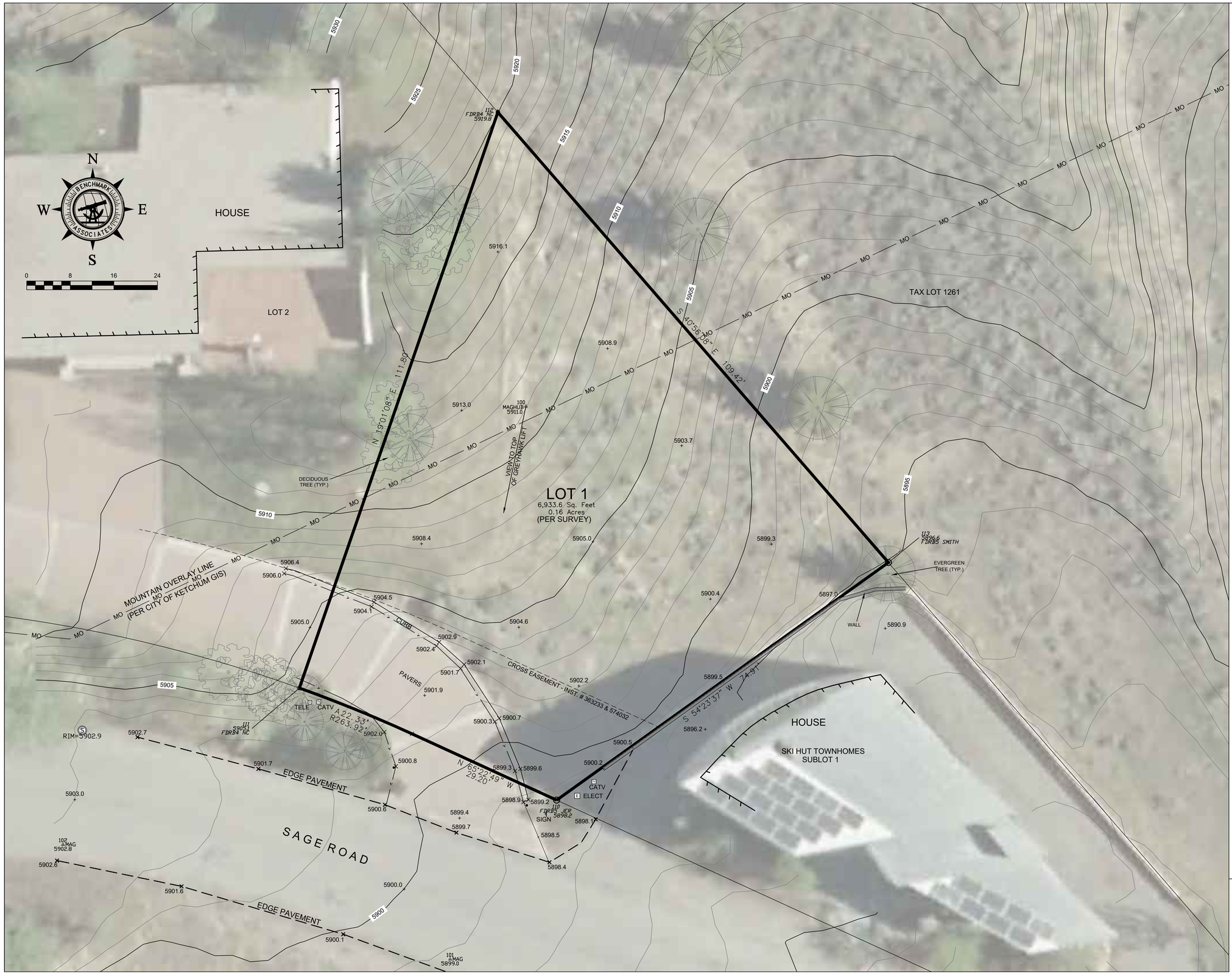
COVER SHEET

DATE

5/17/19

SHEET NUMBER

A-00



NOTES

GENERAL RESTRICTIONS & TITLE INFORMATION:

1. THE PURPOSE OF THIS MAP IS TO SHOW TOPOGRAPHICAL/SITE INFORMATION AS IT EXISTED ON THE DATE THE FIELD SURVEY WAS PERFORMED. CHANGES MAY HAVE OCCURRED TO SITE CONDITIONS SINCE SURVEY DATE.
2. THIS MAP WAS PREPARED FOR THE EXPRESS USE OF THE CLIENT AND IS NOT TRANSFERABLE TO OTHERS WITHOUT WRITTEN CONSENT
3. A TITLE POLICY HAS NOT BEEN SUBMITTED TO BENCHMARK ASSOCIATES, NOR HAS A TITLE SEARCH BEEN REQUESTED. CERTAIN INFORMATION CONTAINED WITHIN SAID POLICY MAY NOT APPEAR ON THIS MAP OR MAY AFFECT ITEMS SHOWN ON THIS MAP.
4. ELECTRONIC DATA: BENCHMARK ASSOCIATES ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE REUSE, DISTRIBUTION OR ACCURACY OF DATA CONTAINED ON ELECTRONIC COPIES OF THIS DRAWING. THE STAMPED HARD COPY OF THIS DRAWING IS THE FINAL PRODUCT.
5. THIS DRAWING IS VOID AFTER 2 YEARS AND NO FURTHER COPIES OR DIGITAL FILES WILL BE TRANSMITTED.

EASEMENTS, ENCUMBRANCES AND RESTRICTIONS:

6. BUILDING AREA: BUILDING ENVELOPE IF SHOWN, IS PER PLAT. SETBACK AND FOOTPRINT REQUIREMENTS PER CURRENT CITY/COUNTY ORDINANCES MAY VARY FROM PLAT. IT IS RECOMMENDED THAT SAID ORDINANCES BE REVIEWED PRIOR TO DESIGN.
7. GENERAL RESTRICTIONS : EXCEPT AS SPECIFICALLY STATED OR SHOWN ON THIS MAP, THIS SURVEY DOES NOT PURPORT TO REFLECT ANY OF THE FOLLOWING WHICH MAY APPLICABLE TO THE SUBJECT OF REAL ESTATE: EASEMENTS, OTHER THAN THOSE SHOWN OR LISTED HEREON, BUILDING SETBACK LINES, RESTRICTIVE COVENANTS, SUBDIVISION RESTRICTIONS, ZONING, WETLANDS OR ANY OTHER LAND-USE REGULATIONS.
8. STORM WATER PLAN: IF SOIL DISTURBANCE, CLEARING, GRADING AND/OR EXCAVATION OF ONE (1) ACRE OR MORE IS TO TAKE PLACE A FEDERAL GENERAL CONSTRUCTION PERMIT, INCLUDING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), MUST BE PREPARED AND SUBMITTED TO AND APPROVED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY PRIOR TO ANY SITE DISTURBANCE.

SURVEY AND SITE FEATURES:

9. BASIS OF BEARINGS IS IDAHO STATE PLANE COORDINATE SYSTEM, NAD83, CENTRAL ZONE AS DERIVED BY GPS OBSERVATIONS. BOUNDARY LINES AND CERTAIN EASEMENTS SHOWN HEREON ARE PER PLAT. REFER TO PLAT & CC&R'S FOR CONDITIONS AND/OR RESTRICTIONS REGARDING THIS PROPERTY. ALL DISTANCES SHOWN ARE GROUND DISTANCES IN U.S. SURVEY FEET.
10. ELEVATIONS BASED ON NAVD 88 (GEOID03) DATUM.
11. UTILITIES AND DRAIN PIPES IF SHOWN HEREON ARE PER SURFACE EVIDENCE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST. LOCATION OF UNDERGROUND UTILITIES AND SERVICES SHOULD BE CONFIRMED PRIOR TO EXCAVATION OR DESIGN.
12. BUILDING WALLS IF SHOWN HEREON ARE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
13. SPRINKLER HEADS AND IRRIGATION LINES ARE NOT SHOWN HEREON.
14. TREE LOCATIONS AND DRIP LINES IF SHOWN HEREON ARE APPROXIMATE.
15. ORTHOPHOTOGRAPHY: PHOTO RECTIFIED AT GROUND LEVEL ONLY. IMAGES OF OBJECTS ABOVE GROUND LEVEL (TREES, BUILDINGS, POWER POLES, ETC.,) MAY BE DISPLACED. DATE OF PHOTOGRAPHY: JUNE 2017.
16. CONTOUR INTERVAL: 1' - CONTOURS IN AREAS OF DENSE VEGETATION MAY DEVIATE FROM TRUE ELEVATION BY ONE HALF THE HEIGHT OF THE VEGETATION. DATE OF LIDAR FLIGHT FOR CONTOURS: 2016.
17. MAP SCALE: DUE TO ELECTRONIC MAP DELIVERY AND ALTERNATE PRINTING METHODS, PLEASE USE BAR SCALE TO DETERMINE ACTUAL PRINTED SCALE.
18. FEATURES OBSCURED BY DEBRIS, SNOW OR VEHICLES AT THE TIME OF SURVEY, DO NOT APPEAR ON THIS MAP.
19. THE ENTIRE PROPERTY LIES WITHIN A RED AVALANCHE ZONE AND THE CITY OF KETCHUM'S AVALANCHE OVERLAY. REFER TO THE CITY OF KETCHUM ORDINANCES FOR CONDITIONS/RESTRICTIONS THAT MAY APPLY.

PREPARED BY :
BENCHMARK ASSOCIATES, P.A.
P.O. BOX 733 - 100 BELL DRIVE, KETCHUM, IDAHO, 83340
PHONE (208)726-9512 FAX (208)726-9514
WEB: http://benchmark-associates.com/

PROFESSIONAL LAND SURVEYOR LICENSED 13764 4/2/18 STATE OF IDAHO LARRY JONES

SHEET NUMBER
C-01

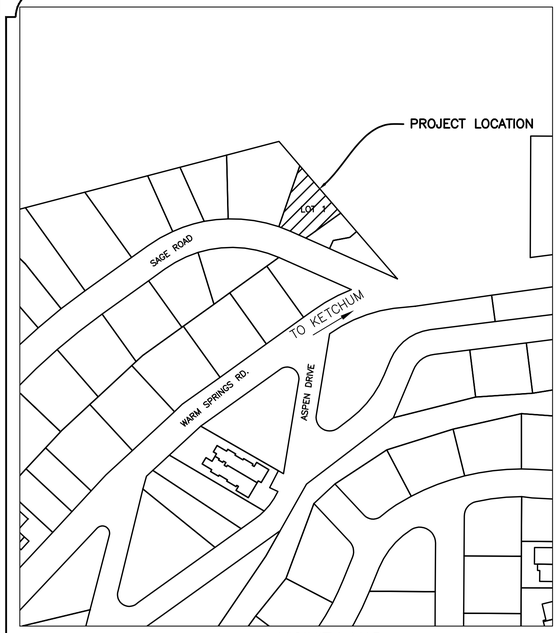
BENCHMARK ASSOCIATES

WARM SPRINGS VILLAGE 4
BLOCK 3, LOT 1

LOCATED WITHIN
SECTION 11, TOWNSHIP 4 NORTH, RANGE 18 EAST, B.M.,
CITY OF KETCHUM, BLAINE COUNTY, IDAHO

PREPARED FOR : DR. ROCKWELL HAMMOND JR.

PROJECT NO. 18031	DWG BY: DWS	CRD: 18031.CRD	18031TOPO.DWG
A TOPOGRAPHIC MAP	DATE OF SURVEY: 3/29/2018		SHEET: 1 OF 1



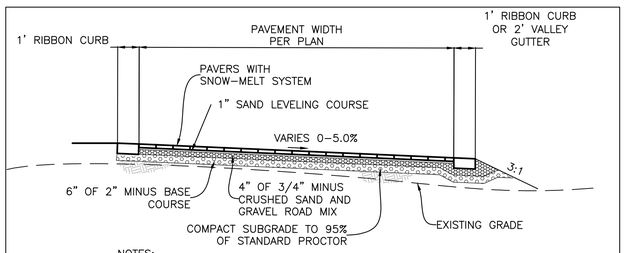
VICINITY MAP
NOT TO SCALE

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
ADJOINING PROPERTY LINE		
CENTERLINE		
ASPHALT PAVEMENT		
FENCE		
SEWER	S S	S S
SEWER MANHOLE		
WATER	W W	W
GAS	G G	G G
POWER		E E
TELEPHONE		
CABLE TV LINE	TV TV	TV TV
TELEPHONE RISER		
ELEVATION CONTOUR		
SAWCUT LINE		
FLOW LINE		
DRYWELL		
LANDSCAPE DRYWELL		
STORM DRAIN PIPE	12" SD	
CATCH BASIN		
DOWN SPOUT		DS

GENERAL NOTES

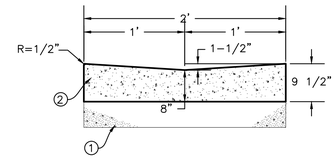
1. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION. ANY CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. CONTRACTOR SHALL NOTIFY DIGLINE (1-800-342-1585) AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL DURING THE CONSTRUCTION OF ALL ITEMS HEREON. DUST CONTROL SHALL BE CONTINUOUS DURING CONSTRUCTION, 24 HOURS PER DAY 7 DAYS PER WEEK. THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS OF THE STORM WATER POLLUTION PREVENTION PROGRAM AT ALL TIMES UNTIL PERMANENT EROSION CONTROL IS ESTABLISHED.
4. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM THE UPHILL SIDE OF HOUSE.
5. REFER TO THE PROJECT GEOTECHNICAL REPORT FOR FOUNDATION CUT-OFF TRENCH DETAIL.



NOTES:

1. COMPACT DRIVEWAY SUBGRADE AND ALL STRUCTURAL FILL MATERIAL TO AT LEAST 95% OF THE MAXIMUM DENSITY OF EACH MATERIAL ACCORDING TO STANDARD PROCTOR ASTM D-698.

1/— DRIVEWAY TYPICAL SECTION
SCALE: N.T.S.



TYPICAL SECTION

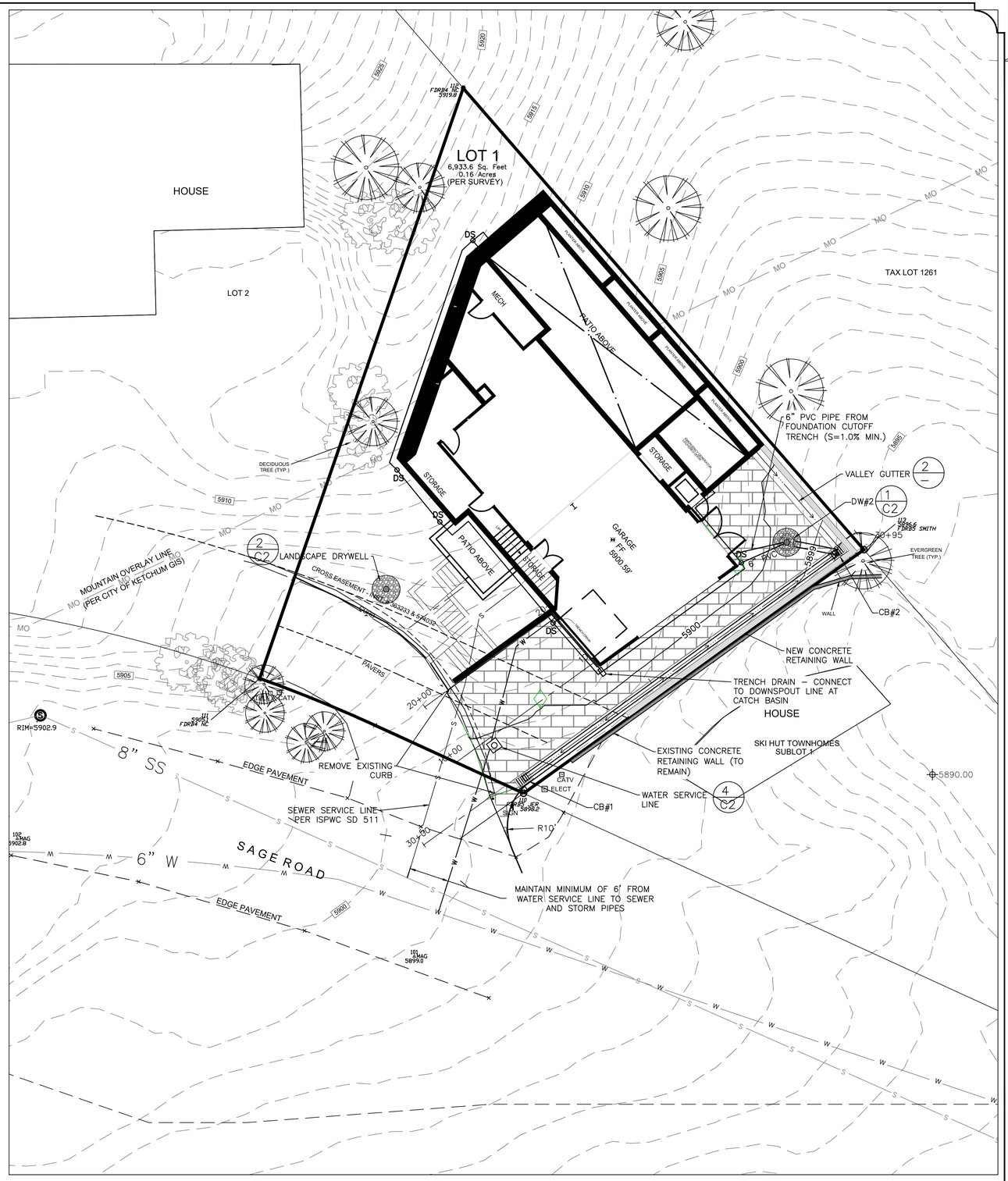
LEGEND

1. AGGREGATE BASE PER ROAD DESIGN.
2. CONCRETE
3. 1/2" EXPANSION JOINT

NOTES:

A. GRADE OF GUTTER MINIMUM 0.5%.
B. EXPANSION JOINT 1/2-INCH PREFORMED JOINT MATERIAL (AASHTO M 213.)

2/— VALLEY GUTTER DETAIL
SCALE: NONE



PLAN
SCALE IN FEET
0' 10' 20' 30'

PRELIMINARY - FOR DESIGN REVIEW

PROFESSIONAL ENGINEER
PHOEBE JOHANNESSEN
LICENSED
17661
STATE OF IDAHO
5/16/2019

REVISIONS

No.	DESCRIPTION	DATE	BY
-			

BENCHMARK ASSOCIATES

PREPARED BY:
BENCHMARK ASSOCIATES, P.A.
P.O. BOX 733 100 BELL DRIVE
KETCHUM, IDAHO 83340
(208) 726-9512
FAX 726-9514
WEB: WWW.BMA5B.COM
MAIL: WWW.BMA5B.COM

SITE PLAN

WARM SPRINGS VILLAGE 4, BL 3 LOT 1
T4N, R18E, SEC 11, B.M., CITY OF KETCHUM, IDAHO

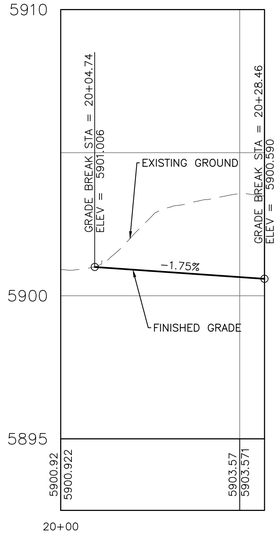
PREPARED FOR: DR. ROCKWELL HAMMOND JR.

DRAWN BY:	PLJ
DESIGNED BY:	PLJ
CHECKED BY:	SB
DATE:	05/16/19
PROJECT NO.:	19068

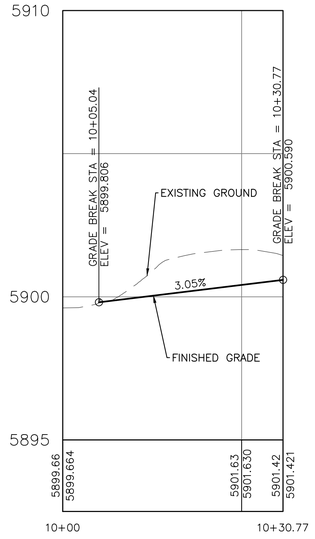
DRAWING NO.

C-1

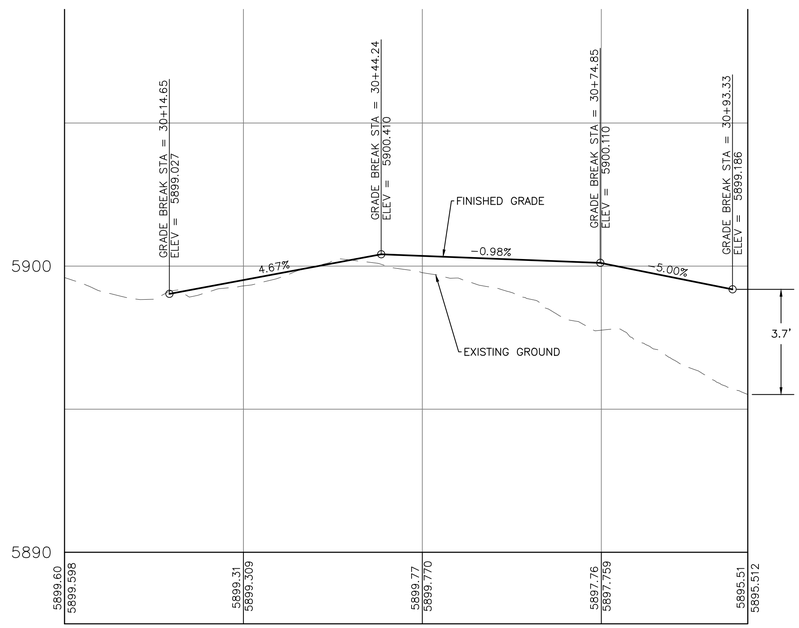
G:\BMA\W\warm springs village\4th addition\block 3\Lot 1\CIVIL - HAMMOND\19068 Civil.dwg, 5/16/2019 5:12:44 PM



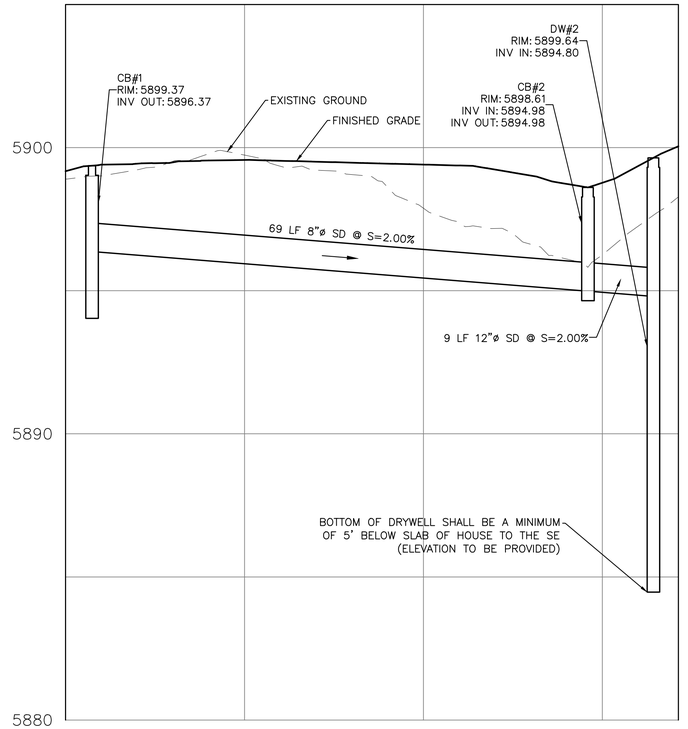
DRIVEWAY PROFILE (LEFT)
HORIZ: 1"=10'
VERT: 1"=5'

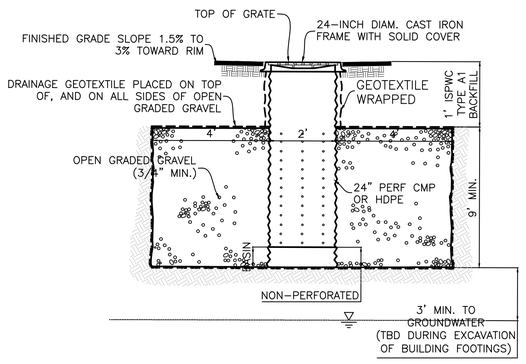


DRIVEWAY PROFILE (CENTER)
HORIZ: 1"=10'
VERT: 1"=5'



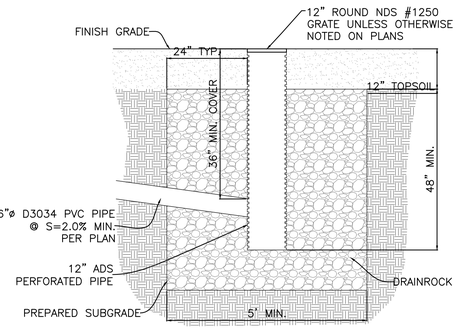
DRIVEWAY PROFILE (RIGHT)
HORIZ: 1"=10'
VERT: 1"=5'



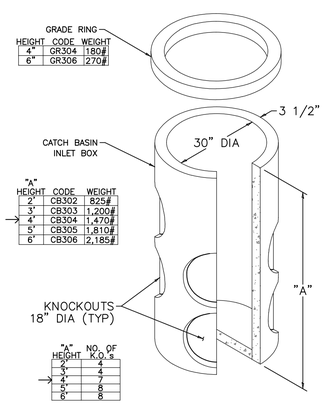


NOTES:
1. ALL PRODUCTS AS NOTED OR APPROVED SUBSTITUTION.

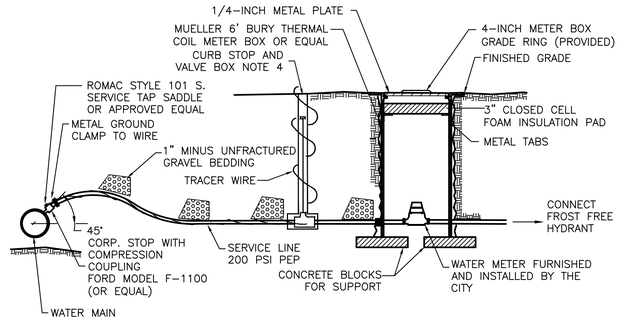
1/C1 DRYWELL DETAIL
SCALE: N.T.S.



2/C1 LANDSCAPE DRYWELL
SCALE: N.T.S.



3/C1 30-INCH CATCH BASIN DETAIL
SCALE: N.T.S.



NOTES
1. WATER SERVICE LINE SHALL HAVE A 6' MIN. BURY DEPTH
2. SERVICE LINE SHALL BE 1" DIAMETER POLYETHYLENE PIPE UNLESS OTHERWISE SPECIFIED.
3. WATER SERVICE LINES SHALL BE BEDDED WITH 1" MINUS UNFRACTURED GRAVEL. BEDDING SHALL BE INSTALLED 4" UNDER THE PIPE AND 6" OVER THE PIPE.
4. FORD MODEL B-111 RESILIENT SEAT, CURB BALL VALVE (OR EQUAL). FORD EXTENSION CURB BOX WITH ARCHED BASE, 1-INCH UPPER SECTION, AND 2 HOLE "ERIE" PATTERN LID.

4/C1 WATER SERVICE AND METER CONNECTION
SCALE: N.T.S.

PRELIMINARY - FOR DESIGN REVIEW

PROFESSIONAL ENGINEER
PHOEBE JOHANNESSEN
17661
STATE OF IDAHO
5/16/2019

REVISIONS

No.	DESCRIPTION	DATE	BY
1			

BENCHMARK ASSOCIATES
PREPARED BY:
BENCHMARK ASSOCIATES, P.A.
P.O. BOX 733 100 BELL DRIVE
KETCHUM, IDAHO 83340
(208) 726-9512
FAX 726-9514
WEB: WWW.BMA5B.COM
MAIL: WWW.BMA5B.COM

DETAILS

WARM SPRINGS VILLAGE 4, BL 3 LOT 1
T4N, R18E, SEC 11, B.M., CITY OF KETCHUM, IDAHO

PREPARED FOR: DR. ROCKWELL HAMMOND JR.

DRAWN BY: PLJ
DESIGNED BY: PLJ
CHECKED BY: SB
DATE: 05/16/19
PROJECT NO.: 19068

DRAWING NO.
C-2


S 40°56'08" E 109.42'
73'-9 3/16"
PLANTER ABOVE
AVALANCE WALL ABOVE
PAVER PATIO ABOVE
AVALANCE ATTENUATION WALL
HEATED DRIVEWAY
15'-0" SETBACK
WALL
POST ABOVE
57'-5 3/16"
13'-4"
3'-0"
10'-0" SETBACK
LOT 1
6,933.6 Sq. Feet
0.16 Acres
(PER SURVEY)
100
MAGHUB
5911.0
VIEW TO TOP OF GREYHAWK LIFT
AVALANCE WALL
PROPOSED STRUCTURE
5900.59'
HOUSE
HOUSE
S 54°23'37" W 74.91'
N 19°01'08" E 114.80'
TRENCH DRAIN
TRENCH DRAIN
CROSS EASEMENT - INST. # 363233 & 574022
26'-3 1/2" SETBACK
DECIDUOUS TREE (TYP.)
19'-1 3/16"
16'-0"
36'-0"
71'-1 3/16"
2'-8"
HEATED DRIVEWAY
CATV
ELECT
CURB
PAVERS
110
FDRB5 JER
5898.2
SIGN
N 65°22'49" W
29.20'
PRIVATE (SHARED) DRIVEWAY
SAGE ROAD
112
FDRBANC
5919.8
LOT 2
SKI HUT

ARCHITECT

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Lincoln MA 01773
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C: 617.281.6996
middleton.nb@comcast.net

PROJECT NO.

CONTRACTOR

A NEW RESIDENCE FOR:

DR. ROCKWELL HAMMOND JR. & JILL HAMMOND

Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

DRAWING:

ARCHITECTURAL SITE PLAN

DATE

5/17/19

SHEET NUMBER

A-1.0

SCALE: 1/4" = 1'-0"

EXISTING DOUGLAS FIR

EXISTING DOUGLAS FIR

5925

5920

5915

5910

5905

5900

5895

STONE/PAVER SEATING AREA

S 40°56'08" E 109.42'

(PRESERVE IF POSSIBLE) REPLACE AS NECESSARY

AVALANCHE ATTENUATION WALL

AVALANCHE ATTENUATION (BELOW) WALL +36" RAILING

AVALANCHE WALL

LIMITED IRRIGATION

HEATED DRIVEWAY DRAIN TO DRYWELL

PLANTER (TYP)

PAVER PATIO

AVALANCHE ATTENUATION (ABOVE) WALL +42" RAILING

RAISED GUARDRAIL (AS REQUIRED)

EXISTING DOUGLAS FIR (NEIGHBOR)

HOUSE

AVALANCHE WALL

EXISTING ASPEN (NEIGHBOR)

LOT 1

PROPOSED STRUCTURE

HEATED DRIVEWAY DRAIN TO DRYWELL

S 54°23'37" W 74.91'

WALL

HOUSE

PAVER ENTRY PORCH

PARKING: 3 SPOTS GARAGE 3+ SPOTS SURFACE

EXISTING RETAINING (NEIGHBOR)

LIMITED IRRIGATION

SNOWMELT STAIRS AND LANDINGS

HEATED DRIVEWAY

POSITIVE SLOPE AWAY FROM STRUCTURE

REMOVE (3) TREES (PRESERVE IF POSSIBLE)

N 19°01'08" E 111.80'

EXISTING PAVER DRIVEWAY

N 65°22'49" W 29.20'

CATV

A22.33'

R263.92'

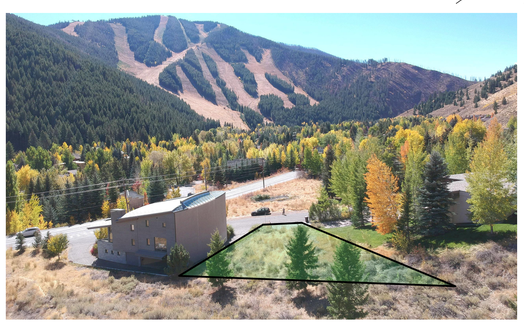
5902.0'

5899.7

SAGE ROAD

PLANT LEGEND SUBJECT TO CHANGE

SYMBOL	PLANTING	VARIETIES	SIZE
	EVERGREEN TREE	FIR	4" TRUNK SIZE
	DECIDUOUS TREE	ASPEN	4" TRUNK SIZE
	EVERGREEN TREE/SHRUB BUSHES/SHRUBS	CLEMATIS, HOPS, DOGWOOD, VIBURNUM, SPIREA, SNOWBERRY, LILAC, ETC	2"-4" TRUNK SIZE
	ORNAMENTAL GRASSES	FESCUE, GREAT BASIN WILDRYE, KARL FOERSTER, ETC.	3-5 GAL
	FLOWERS (ANNUAL/PERENNIAL)	DAYLILY, SAGE, CLEMATIS, PENSTEMON, ETC	3-5 GAL
	LANDSCAPE ROCKS	TO BLEND WITH SURROUNDING	VARIES
	NATURAL GRASSES	HYDROSEED	
	LAWN GRASS	SOD	
	PLANTER BEDS (FLOWERS, SHRUBS, VEGETABLES)	GROUND LEVEL & RAISED	



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A NEW RESIDENCE FOR:

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Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road · Ketchum, ID 83340

DRAWING:

LANDSCAPE

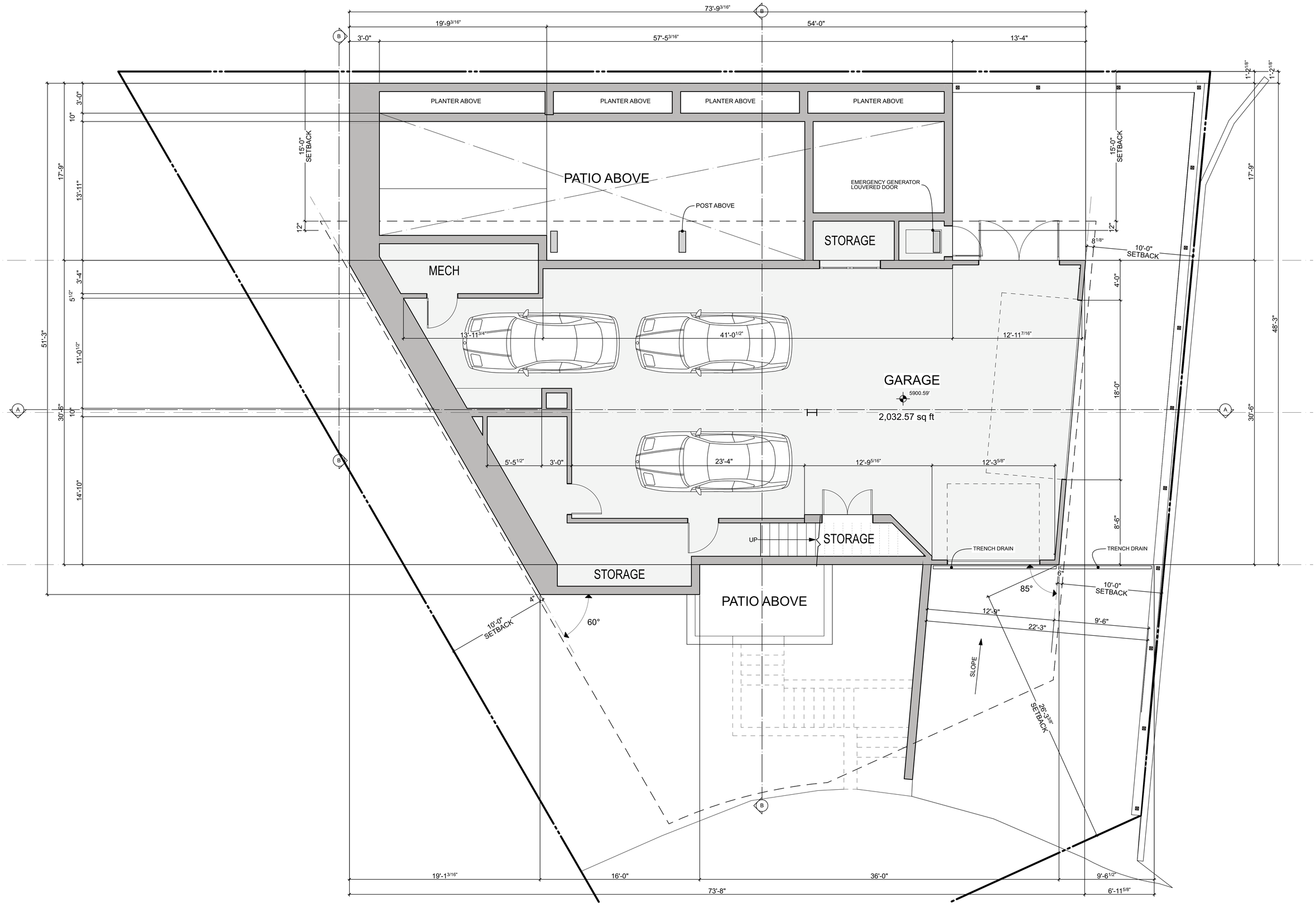
DATE

5/17/19

SHEET NUMBER

LS-01

SCALE: 1'-0" = 5'-0"



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Lot 1, Block 3, Warm Springs Village Subdivision No. 4
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DRAWING:

GARAGE LEVEL PLAN

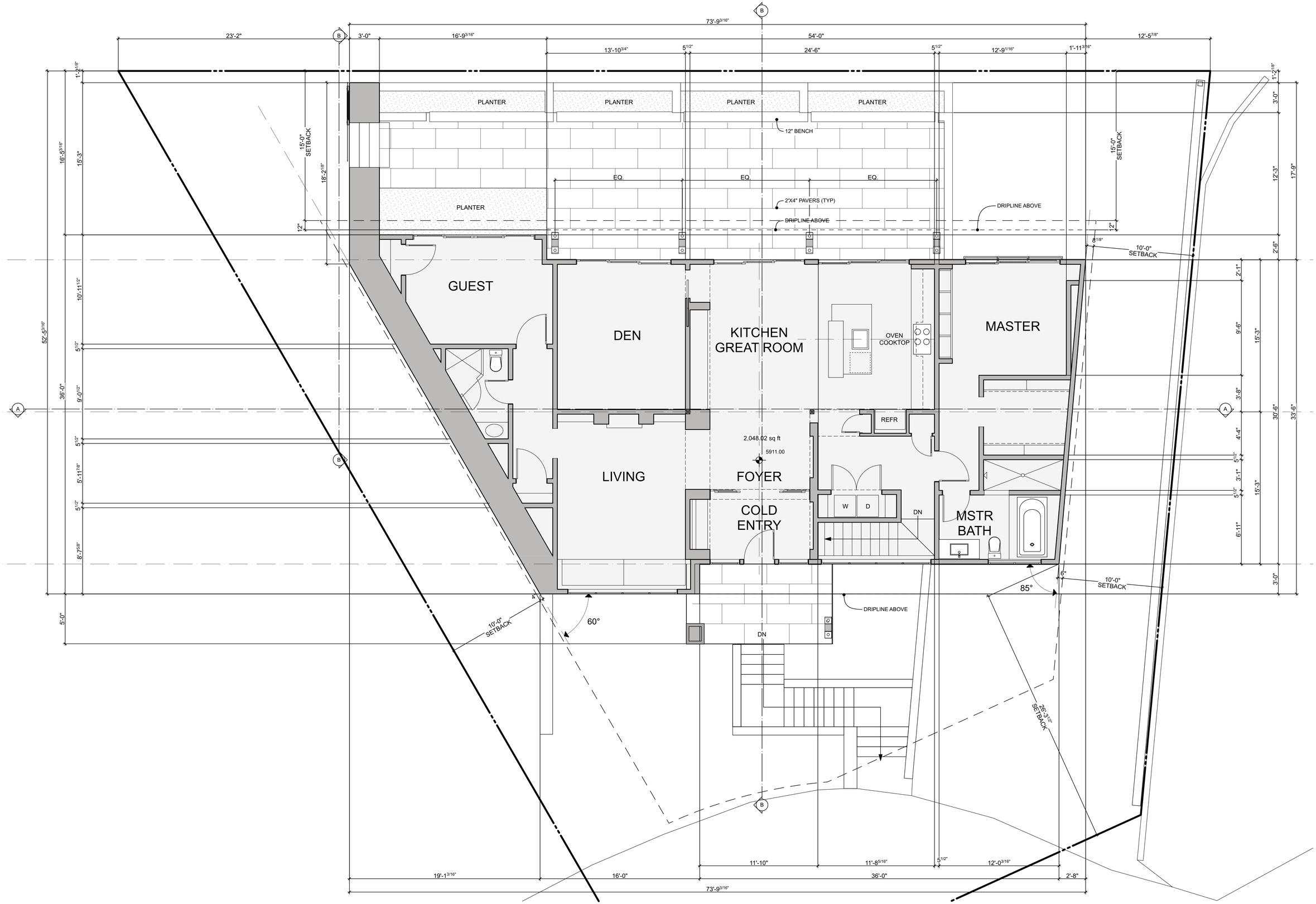
DATE

5/17/19

SHEET NUMBER

A-2.0

SCALE: 1/4" = 1'-0"



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102 Sage Road \ Ketchum, ID 83340

DRAWING:

LIVING LEVEL PLAN

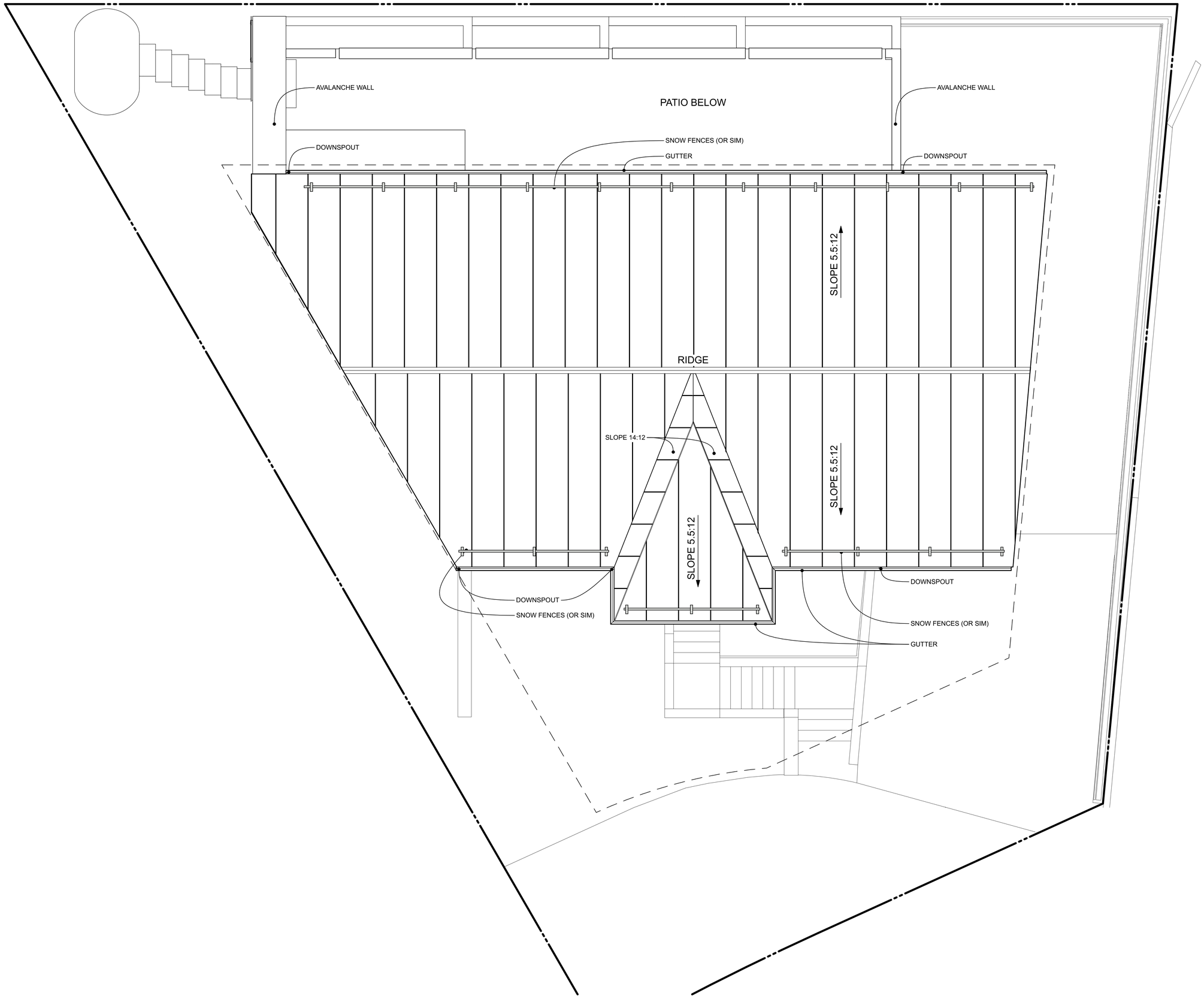
DATE

5/17/19

SHEET NUMBER

A-2.1

SCALE: 1/4" = 1'-0"



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Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road ~ Ketchum, ID 83340

DRAWING:

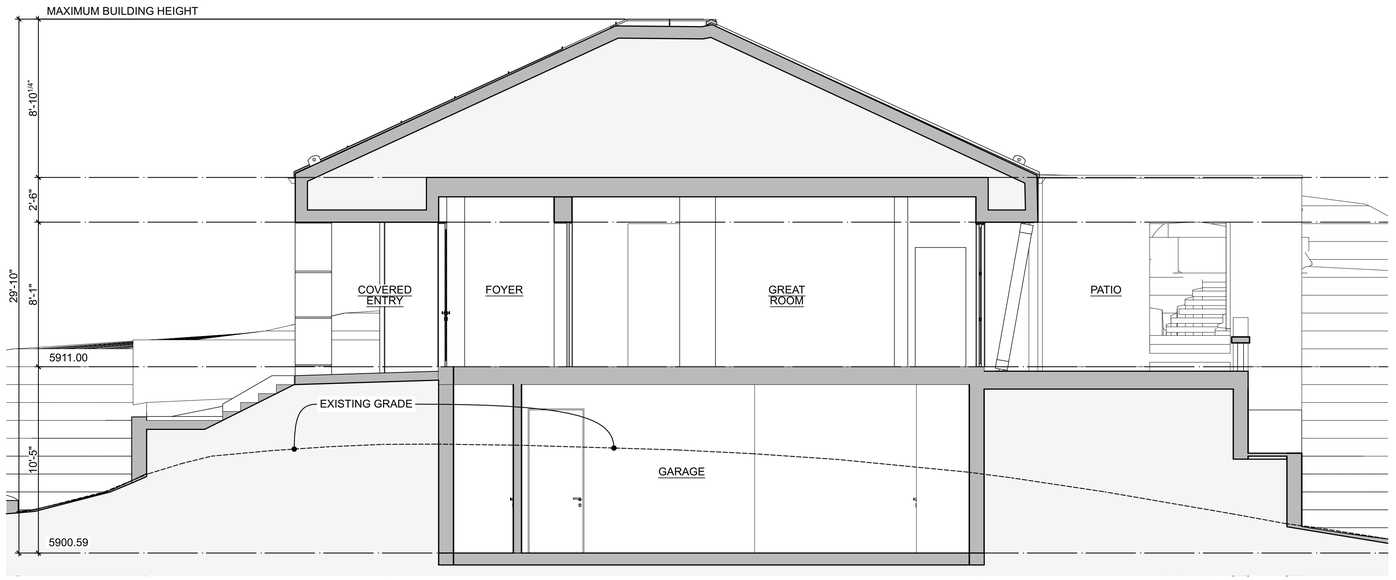
ROOF PLAN

DATE

5/17/19

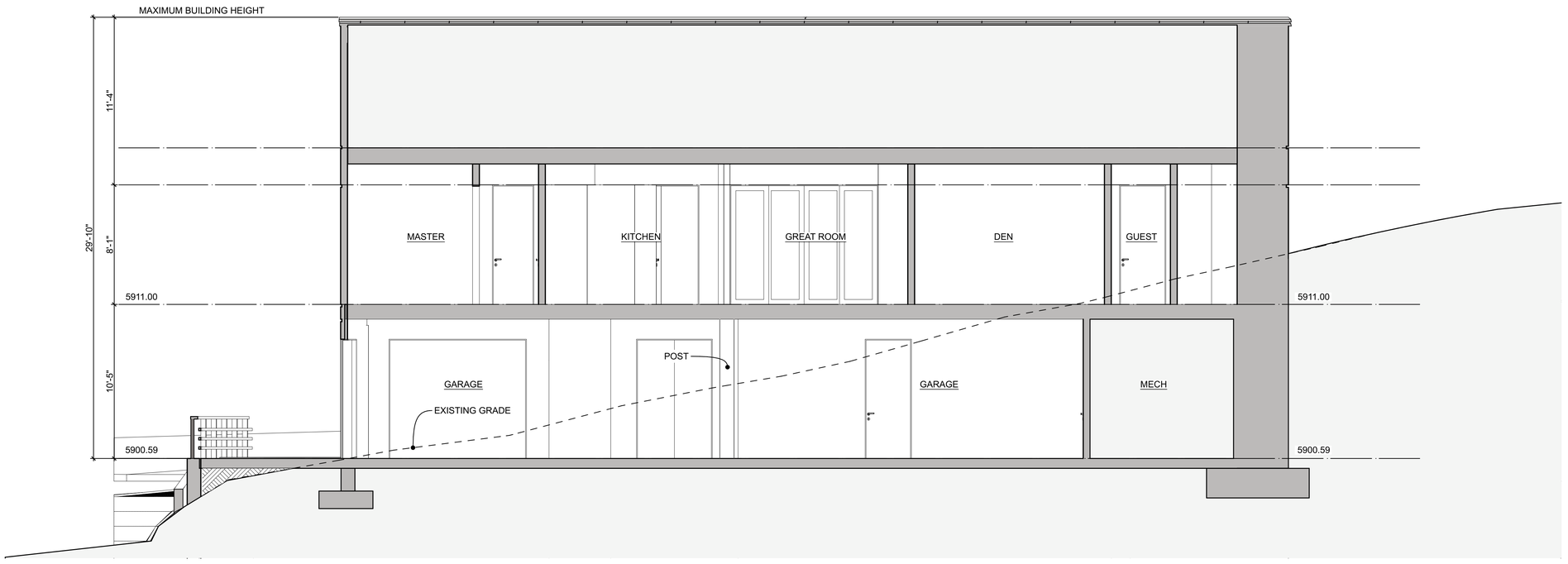
SHEET NUMBER

A-2.2



CROSS SECTION

SCALE: 1/4" = 1'-0"



SITE SECTION (NORTH-SOUTH)

SCALE: 1/4" = 1'-0"

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Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road ' Ketchum, ID 83340

DRAWING:

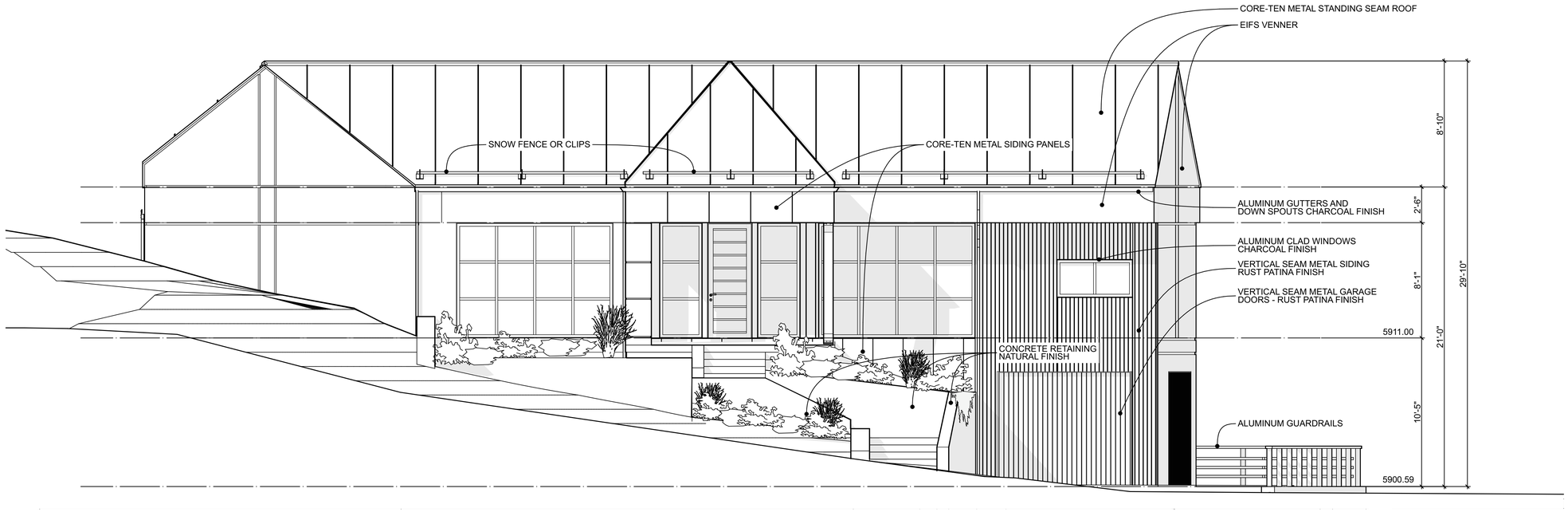
BUILDING SECTIONS

DATE

5/17/19

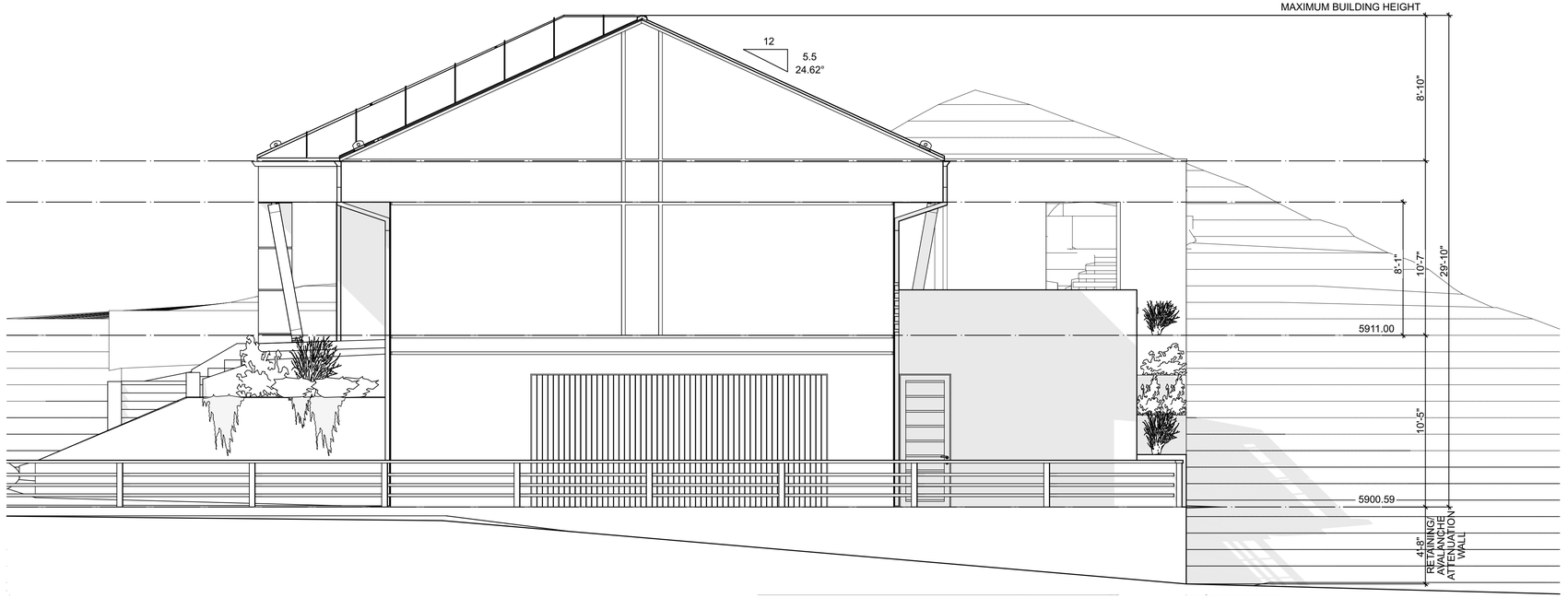
SHEET NUMBER

A-3.0



WEST ELEVATION

SCALE: 1/4" = 1'-0"



SOUTH ELEVATION

SCALE: 1/4" = 1'-0"

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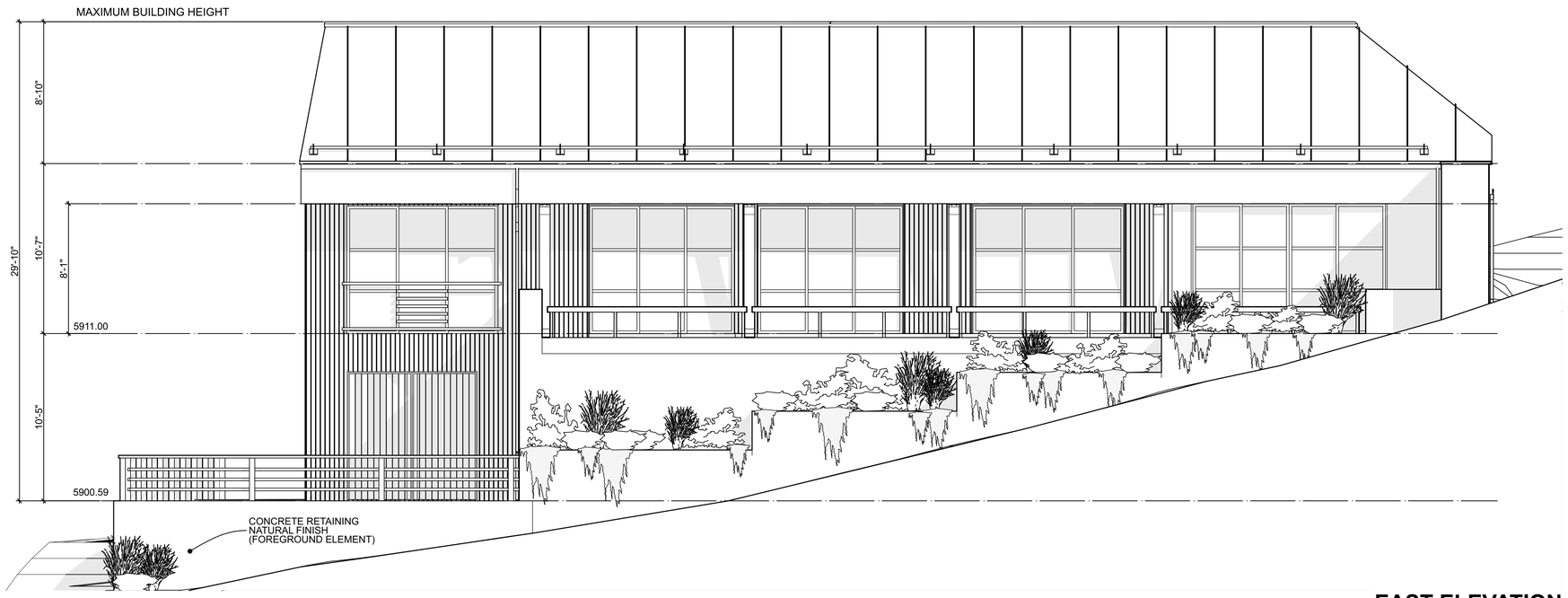
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road " Ketchum, ID 83340

DRAWING:

EXTERIOR ELEVATIONS

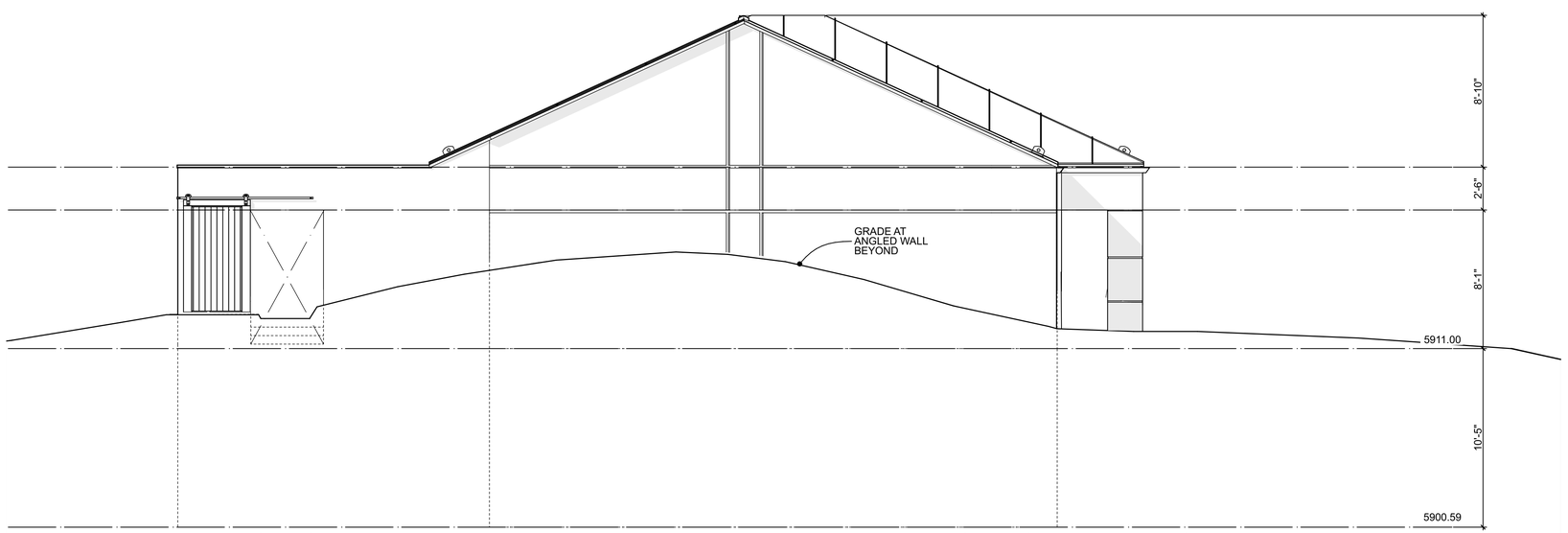
DATE
5/17/19

SHEET NUMBER
A-4.0



EAST ELEVATION

SCALE: 1/4" = 1'-0"



NORTH ELEVATION

SCALE: 1/4" = 1'-0"

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Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road " Ketchum, ID 83340

DRAWING:

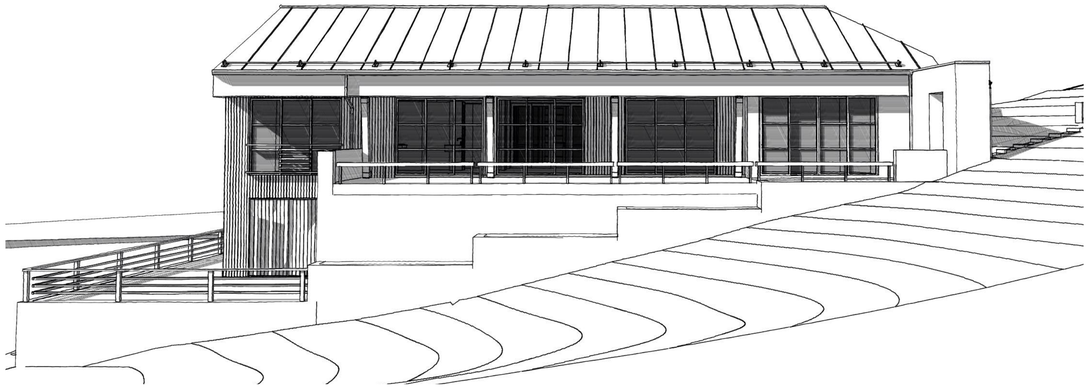
EXTERIOR ELEVATIONS

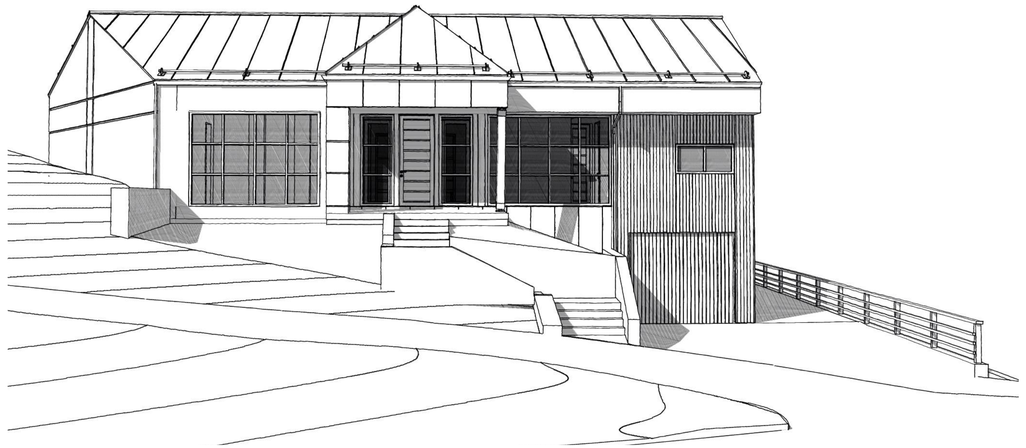
DATE

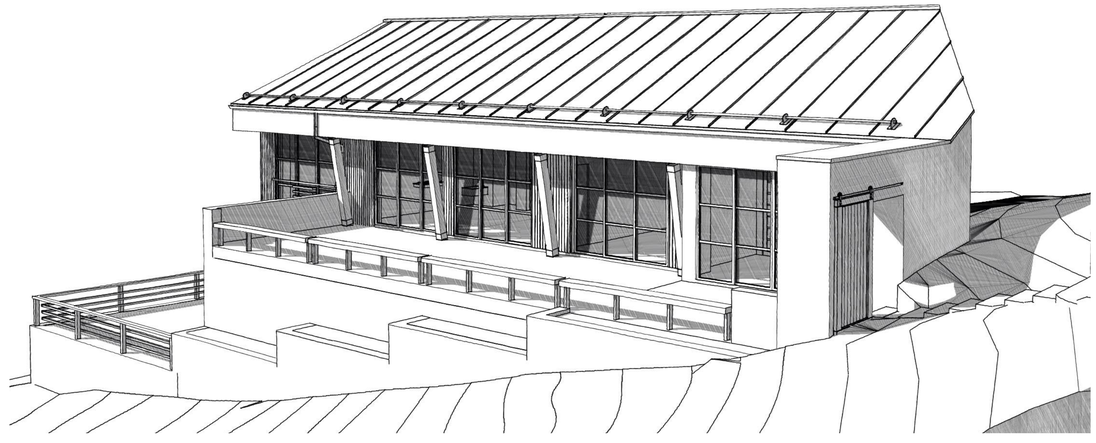
5/17/19

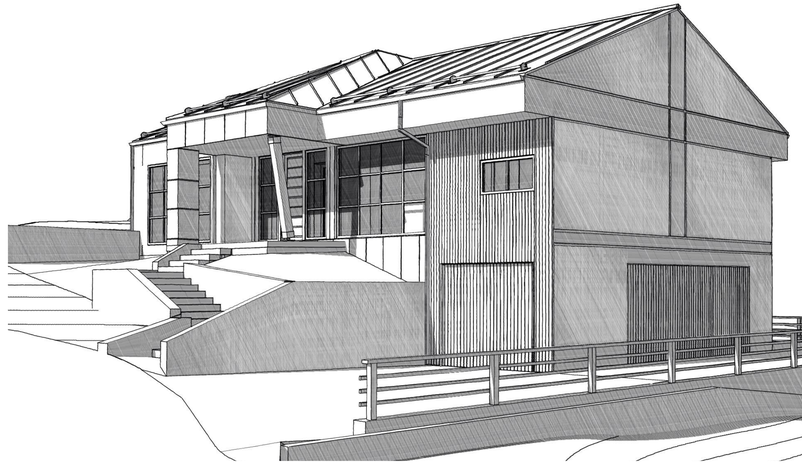
SHEET NUMBER

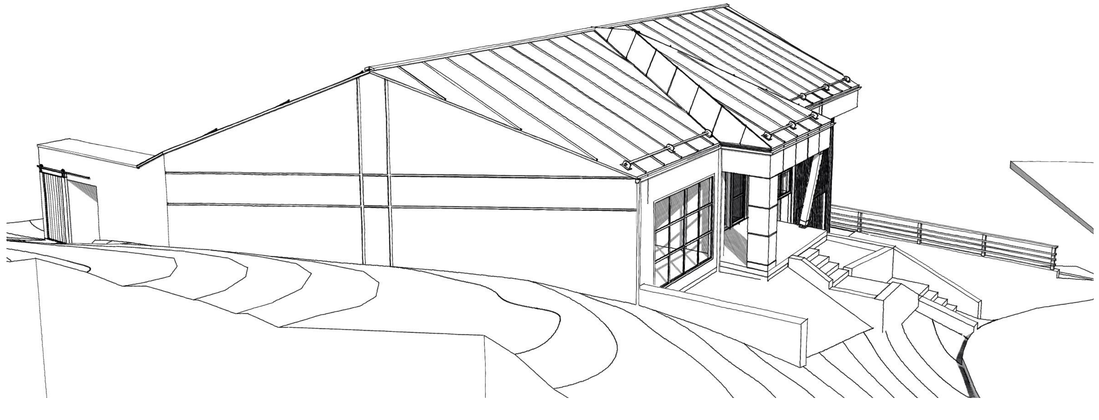
A-4.1

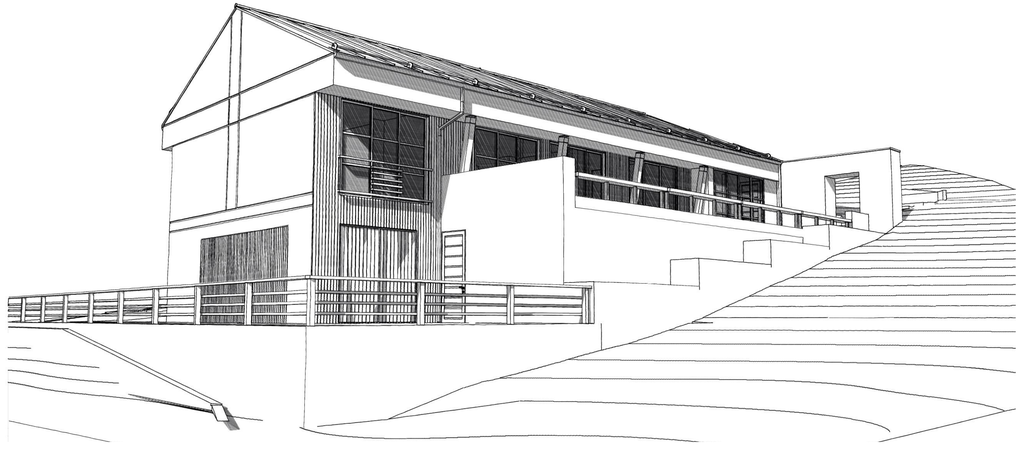












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PROJECT NO.

CONTRACTOR

A NEW RESIDENCE FOR:

DR. ROCKWELL HAMMOND JR. & JILL HAMMOND

Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road " Ketchum, ID 83340

DRAWING:

3D LAYOUT

DATE

5/17/19

SHEET NUMBER

A-5.0

Exhibit B2:

XCell Engineering Avalanche Evaluation and Plan Review Summary

XCELL ENGINEERING, LLC
260 Laurel Lane
Chubbuck, ID 83202
Phone (208) 237-5900
Fax (208) 237-5925
E-mail: xcelleng@qwestoffice.net

May 8, 2019
File: P19380

Dr. Rockwell Hammond Jr.
35611 SE David Powell Road
Fall City, WA 98204

RE: **SUMMARY**
Avalanche Evaluation
Sage Road
Ketchum, Idaho

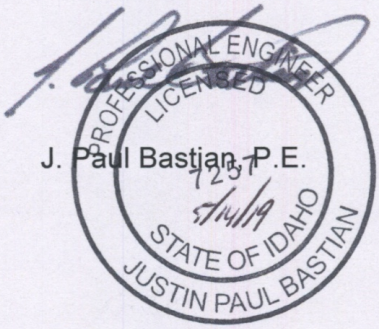
Dr. Rockwell:
At your request we have evaluated the avalanche potential of the subject lot with respect to future construction per preliminary drawings provided by Neil Middleton. It is our understanding that the planned construction will be a 1-2 story wood and concrete structure with a walk out basement on the downhill side. The site is located beneath natural topographic and slope features that will collect and direct avalanche movement of snow and debris toward your property. The upper reaches of the collection area have slopes ranging from 32 to 37 degrees and the lower portions are inclined 35 to 37 degrees. The existing slope inclination is sufficient to generate and accelerate moving snow under the right conditions. Review of the site revealed that snow avalanche has occurred on the slope in the past and therefore recurrence of the same conditions is expected in the future. Any construction on the site must take into account the anticipated impact forces of the design avalanche and the risk associated with construction in this location.

Plate 1, attached, shows the contributory area and flow path that is expected in the event of an avalanche. You will note that the direction of flow (to the northwest of your site) shifts approximately 45 degrees to the east toward your property. At this point of course change it is anticipated that a significant portion of the sliding mass will not be redirected to your property but will continue in a relatively linear direction in line with the up-gradient ravine. Deceleration of the avalanche will begin slightly above the point of course change and again at the toe of slope. The Torrecelli Theorum, which is a specialized case of the Bernoulli Equation, was used to calculate energy of a falling fluid based on gravitational acceleration, inclination of slope and length of vertical fall. This assumes steady state velocity for slope inclination uphill of your site will be achieved within 500 vertical feet of fall. This assumption is based on steady state avalanche velocity previously measured by others on similar slopes in the area. Calculations indicate that the moving mass will enter your property at a velocity of 48 feet per second or about 33 miles per hour. Direction of flow is nearly perpendicular to the leading wall of the planned construction. This will result in an impulse (or impact) force of 300 pounds per square foot at the instant contact is made. As additional snow piles up against the leading (or strong) wall of your building pressure will increase over a period of about 1-second to approximately 475 pounds per square foot. This pressure will diminish linearly with height as snow accumulates on the upper portions of the strong wall to a minimum value of 320 pounds per square foot. As lateral deposition of snow and ice increase on the strong wall, the rate at which lateral pressure on the wall increases will decrease and stabilize. This may occur while the avalanche is still in progress. After sufficient accumulation the snow and ice stopped by the strong wall will act as a buffer between your building and the moving snow, ice and debris that may continue for a significantly longer duration. The preceding

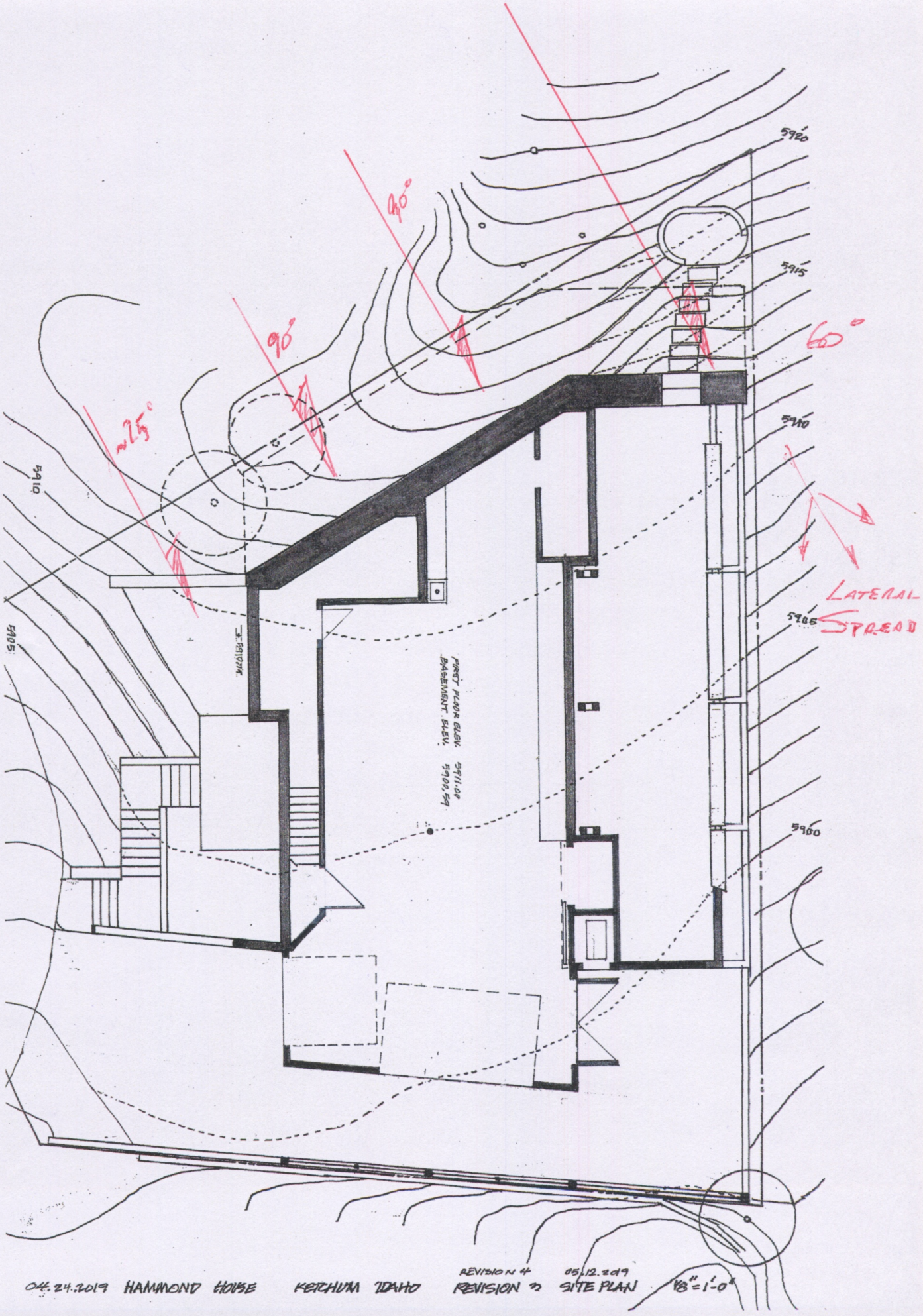
pressures assume no impact point loading. However, snow avalanche rarely occur in pristine, snow only, conditions and debris such as rocks, trees and etc. contained within the mass of moving snow and ice should be anticipated. It is also critical that the wing wall on the east end of the strong wall be a higher wall, as shown in the plans, to help control flow.

Design of the structure should take into account the probability of isolated point loads from a 20-pound object moving at a velocity of 48 feet per second on the lower third of the strong wall. This equates to an average point load impulse force of 600 pounds over a time period of 0.05 seconds in addition to the contact pressure indicated above. We anticipate depth of snow deposited on your property could be 15 to 20 feet. Roof structures are planned that may allow snow and ice to pass over your building. Leading corners of the gable end should be secured to resist damage from moving snow and ice. It will be necessary to account for the vertical weight of snow and ice that may be deposited and come to rest on the roof of your building. Therefore the roof should be designed to support 120 pounds per cubic foot and resist a lateral friction load of 24 pounds per square foot based on a friction factor of 0.2. The preceding is based on the geometry and anticipated snow depth on the slopes above your property. It should be understood that risk is inherent in plans to construct on this site and, in spite of the information gathered and analysis performed to help mitigate it, risk will remain as a part of the planned construction. If you have questions or require additional information, please call.

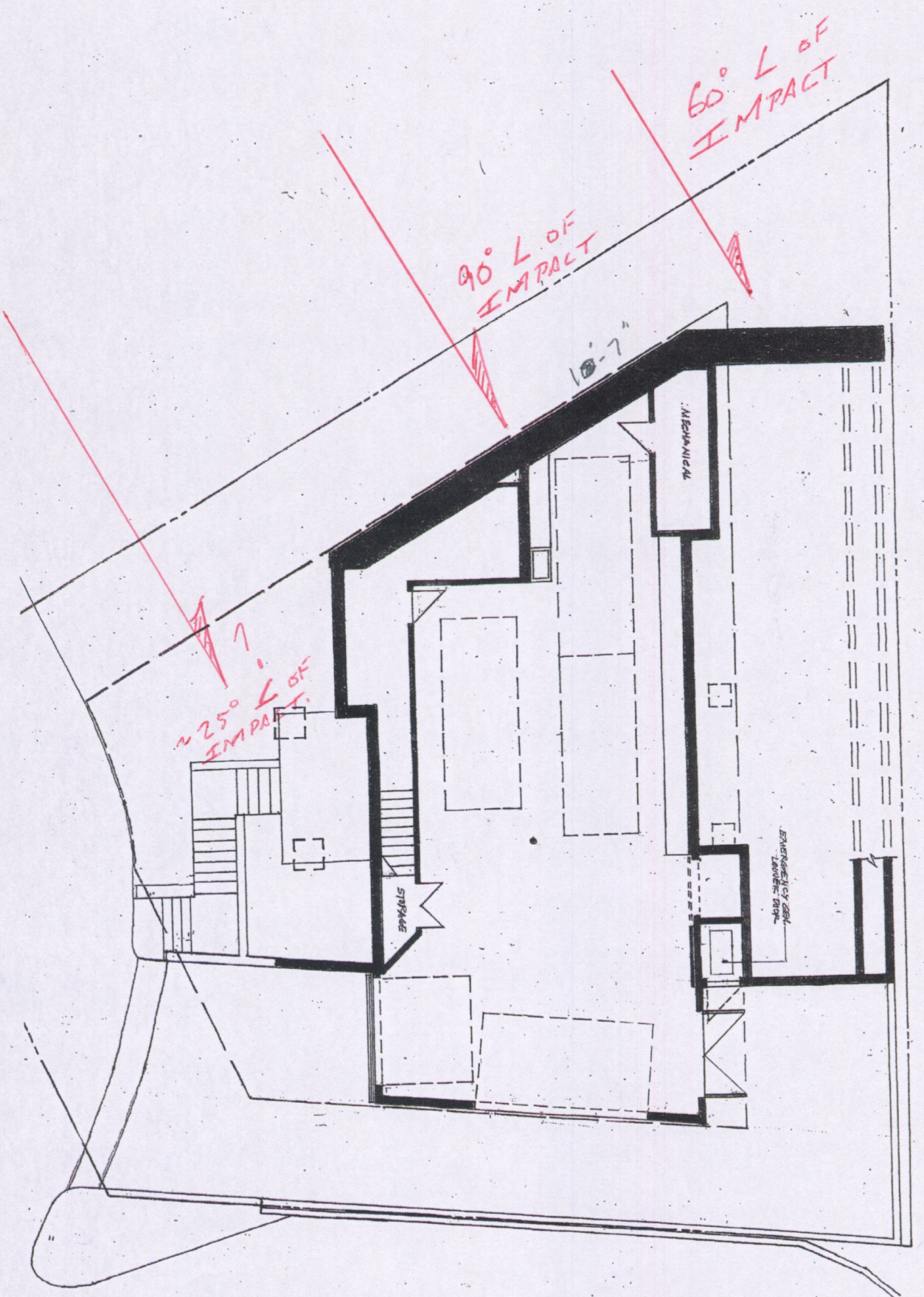
Sincerely,
Xcell Engineering, LLC



J. Paul Bastian, P.E.



04.24.2019 HAMMOND HOUSE KETCHUM IDAHO REVISION 4 05.12.2019 REVISION 3 SITE PLAN 1/8"=1'-0"



05.02.2019
04.22.2019 HAMMOND HOUSE KETCHUM IDAHO REVISION 4 REVISION 3 BASEMENT 1/8"=1'-0"

Estimation of Avalanche Flow Velocity

Using The Torricelli Theorum as a specialized case of the Bernoulli Equation

Assumptions:

1. The average slope above 22 degrees inclination may be used to determine Steady State Average Velocity
2. On slopes 28 to 34 degrees inclination steady state velocity will be reached in 500 feet of vertical fall (≈850' slope distance)
3. Deceleration begins to occur on slopes below 22 degrees inclination
4. No reduction for frictional resistance by air and ground have been considered beyond the run length

Torricelli Theorum: V=√2GnH

Velocity = Steady State velocity - amount deceleration during runout

Velocity = Square root of (2 * gravity * Sin of the slope Inclination * vertical height of drop) - Square root (2 * gravity * the Cos of the inclination of deceleration slope*Length)

$$V=(\sqrt{2}*Gn*\sin(\Phi 1)*(H)*\mu-(\sqrt{2}*Gn*\cos(\Phi 2)*(L))$$

Where:

V = Velocity
Gn = Gravitational Acceleration = 32.2ft/s^2
H = The vertical Height of Fall
Φ1 = Inclination of acceleration slope
Φ2 = Inclination of the deceleration slope
L = Length of runout

Acceleration

Vertical Fall	500
Slope Inclination	30
Gravity	32.2

Max Velocity	127	Feet Per Second
or	87	Miles Per Hour

Deceleration

Length of Run out in Feet	100
Slope Inclination in Degrees	16
Gravity ft/s^2	32.2

Deceleration Velocity	79	Feet Per Second
or	54	Miles Per Hour

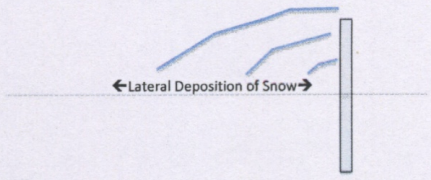
Velocity on Impact	48	Feet Per Second
or	33	Miles Per Hour

Impulse Momentum

Impulse= J =(W/g)*(Vi-Vf)

Where:

W=Weight in pcf	20
g = acceleration in feet/sec^2	32
Vi = Velocity on impact in feet/sec	48
Vf = Final Velocity = 0	0



Wall Height in Feet	8
Time to reach lateral deposition of twice wall height (sec)	1.328

Impulse in lb-Sec	Time in Seconds	Distance of impact face from Wall (ft)	Dynamic Pressure on wall (psf)	Static Pressure on Wall (psf)
30	0.1	1	300	300
15	0.2	2	75	375
10	0.3	4	33	408
8	0.4	5	19	427
6	0.5	6	12	439
5	0.6	5	8	447
4	0.7	5	6	453
4	0.8	5	5	458
4	0.9	5	5	463
4	1.0	5	4	467

Xcell Engineering, LLC
260 Laurel Lane
Chubbuck, ID 83202
Phone (208) 237-5900
Fax (208) 237-5925
E-mail: paul@xcelleng.com

June 12, 2019
P19380

Neil Middleton
45 Weston Road
Lincoln, MA 01773

RE: **Plan Review Summary**
Lot 1 Block 3 Warm Springs Village
Subdivision #4
Ketchum, Idaho

Neil:
I have recently reviewed the plans with the project structural engineer. Based on that review there is some risk of snow in the design event overtopping the avalanche wall on the northeast corner of the house and flowing into the patio area. Based on geometry of the structure, we anticipate the avalanche wall will dissipate all but a small fraction of energy associated with the design event. The patio area and planters will channel snow overtopping the avalanche wall and should provide secondary control of snow that may overtop and enter the patio area. Given this condition, there is risk of debris and snow entering the patio area during the design event. Therefore, we recommend signage be placed on the inside of the door on the northeast corner of the house indicating the risk of overtopping snow during avalanche season and associated danger of using the area when the risk of avalanche is high.

Secondary containment and mitigation features are placed to provide additional separation and energy dissipation. They include the following:

1. The North wall of the house, which slopes parallel with the property line and directs snow along the northwest property boundary so as to avoid flow onto the adjacent property.

2. The 10 foot high wall running west to east extending from the house into the rear yard setback.

3. The patio and the 42-inch wall at the end of the patio.

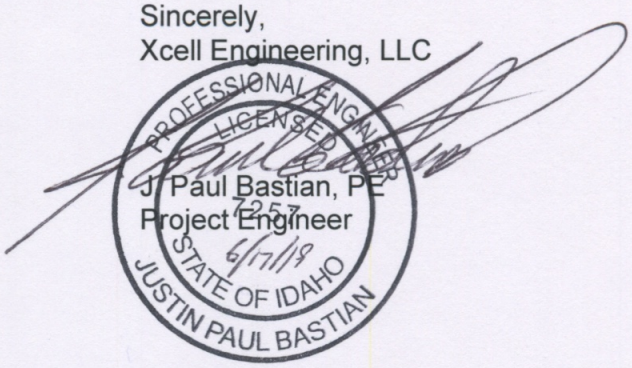
4. The stepping planters along the patio east and south wall.

5. The driveway pad and the wall along the Southern Property line.

Based on the plans and geometry of the slope, anticipated velocity and calculated impact forces the plans appear adequate given the risks associated with construction in an avalanche zone. The preceding statement may not be construed to provide warranty or guarantee against any damage or loss resulting from the design avalanche event. Since nature is inherently

unpredictable it is not possible to predict with certainty all possible conditions or factors and their potential outcome. The risk and potential outcome is assumed in its entirety by the homeowner. If you have questions or require more information, please call.

Sincerely,
Xcell Engineering, LLC



J. Paul Bastian, PE
Project Engineer

Exhibit B3:

Mountain Overlay Design Review Standards Narrative

master planning and design

May 16, 2019

Ms. Abby Rivin
Associate Planner
PO Box 2315
Town of Ketchum
480 East Avenue North
Ketchum ID 83340

Re. Mountain Overlay District Review
Hammond House, 102 Sage Road, Ketchum, Idaho

Dear Ms. Rivin:

We appreciate the Commission taking the time to review this Application submittal for the construction of a single-family home at 102 Sage Road. In our design we have sought to address the site development issues that attend this particular parcel of land, while achieving the Owner's desired program.

We have addressed, below in summary form, the Commission's Evaluation Criteria. The reports and drawings that accompany this letter represent the formal submission and are complimentary to each other.

1. There shall be no building on ridges or knolls, which would have a material visual impact on a significant skyline visible form a public vantage point entering the City or within the City. "Material", as a term is used herein, shall be construed in light of the magnitude of the negative impact on the objectives of this section.

The site is a part of the approved Warm Springs Subdivision No.4. The adjacent lots are built out with a multiple story house to the northwest and a duplex condominium to the southeast. The proposed structure is a single story home built into the sloping site with a garage below grade. This profile minimizes the project's impact on the skyline and is thought to be less impactful that its neighbors.

2. Building, excavating, filling and vegetation disturbance on hillsides, which would have a material visual impact visible from a public vantage point entering the City or within the City shall be minimized. " Material", as a term is used herein, shall be construed in light of the magnitude of the negative impact on the objectives of this section.

There is minimum disturbance to the lot outside the limits of construction. The finished grades will be similar to existing, modified only to receive the construction of the house, patio and the front entry stair. The intention is to let the natural landscape proliferate around the house with the exception of the west/entry side, where new plantings and a modest grass lawn area are planned. The planters, which step down the east elevation retaining wall, will receive a variety of plants to tie the house visually with the landscape. Natural species on the Planning Board's list are utilized in this plan. *See Landscape Plan.*

3. Driveway standards, as well as other applicable standards contained in Chapter 12.04 of this code shall be met.

It is the design intention to comply with all regulations pertaining to the construction of the driveway. The driveway, the entry landing, the entry stair and the patio will be paved with heated pavers. *See Civil Engineering Drawings and Landscape Plan.*

4. All developments shall have access for fire and other emergency vehicles to within one hundred fifty feet (150') of the furthest exterior wall of any building.

This requirement has been satisfied by the current design.

5. Significant rock outcroppings shall not be disturbed.

There are, to our knowledge as determined in our geotechnical report by Mr. Steve Butler, and by personal inspection of the site, no significant outcroppings in the area of construction or on the property. *See Geotechnical Report.*

6. International building code (IBC) and international fire code (IFC) and Ketchum fire department requirements shall be met.

The project intent is to comply with all local and State Codes having jurisdiction, as required by law. This includes the IBC and IFC.

7. Public water and sewer service shall comply with the requirements of the City.

It is the project intention to comply with the requirements of the City of Ketchum with regard to water and sewer service. Both are available at the site. *See Benchmark Civil Engineering Drawings.*

8. Drainage shall be controlled and maintained to not adversely affect other properties.

The project will comply with this requirement. We intend to execute the drainage systems and design recommended by Mr. Steve Butler in his Geotechnical Report. This reports recommendations will be integrated into the design documents developed by us and Benchmark Associates. *See Benchmark Engineering Drawings for drainage and water management.*

9. Cuts and fills allowable for roadways shall be minimized; lengths of driveways allowed shall be minimized; all cuts and fills shall be concealed with landscaping, re-vegetation and/or natural stone materials. Re-vegetation on hillsides with a clear zone of thirty feet (30') around all structures is recommended. Said clear zone shall include low combustible irrigated vegetation with appropriate species, on file with the Ketchum Planning Department.

The Civil and Engineering and the Landscape design drawings address these criteria. We believe they address the intent of this guideline.

10. Are there other sites on the parcel more suitable for the proposed development in order to carry out the purposes of this section?

There are no other sites on the parcel that are more suitable. The site is small at 6,933.6 square feet, grandfathered by the earlier accepted subdivision, allowing for no other sound option for a single story house of 2,121 square feet of coverage.

11. Access traversing twenty five percent (25%) or greater slopes, does not have significant impact on drainage snow and earth slide potential and erosion as it relates to the subject property to adjacent properties.

The north elevation wall will be structurally reinforced concrete in thickness from three to one foot to act as a buffer to stop slides. Stepping retaining walls on the East side of the house and along the driveway, parallel to the property line will act as catchment areas for any overflow from slides.

12. Utilities shall be underground.

All utilities will be underground. *See Benchmark Engineering Drawings.*

13. Limits of disturbance shall be established on the plans and protected by fencing on the site for the duration of the construction.

The illustration of these limits will most likely cover a majority of the site. They will be demarked on the construction documents submitted for Application review.

14. Excavations, fills and vegetation disturbance on hillsides not associated with the building construction shall be minimized.

To the degree achievable, given the small size of the lot, this criteria will be met.

15. Preservation of significant landmarks shall be encouraged and protected, where applicable. A significant landmark is on which gives historical and/or cultural importance to the neighborhood and/or community.

To our knowledge, there area no significant landmarks on the property.

We look forward to meeting with you and answering any questions you may have. Thank you for your consideration.

Sincerely,

Neil B. Middleton
Architect

Lars Guy
Architectural Team

Exhibit B4:

Conditional Use Permit Criteria Narrative

Conditional Use Permit

Ketchum Municipal Code, Section 17.116.030

1. The characteristics of the conditional use will not be unreasonably incompatible with the types of uses permitted in the applicable zoning district;

The surrounding houses are in the GR-L Zone and the avalanche zone that runs along Sage Road. The conditional use for avalanche attenuation devices is characteristic of all our abutters.

2. The conditional use will not materially endanger the health, safety and welfare of the community;

The proposed avalanche attenuation devices and the house itself serve to improve the health safety and welfare of those individuals using that portion of Sage Road adjacent to development. This is done by the house and attenuation devices absorbing a good deal of the avalanche flow from the large hillside above the property. The two condominiums at the corner of Sage Road will be beneficially impacted by this absorption of flow, since currently, all flow crosses the 102 Sage Road property and hits the driveway and north elevation of that structure.

3. The conditional use is such that pedestrian and vehicular traffic associated with the use will not be hazardous or conflict with existing and anticipated traffic in the neighborhood;

The house is accessed by a shared driveway off of Sage Road. This one curb cut serves three lots, ours is the first. It is anticipated that there will be no significant increase in neighborhood traffic beyond the impact of an additional single-family residence.

4. The conditional use will be supported by adequate public facilities or services and will not adversely affect public services to the surrounding area, or conditions can be established to mitigate adverse impacts; and

The property is part of the Warm Springs Subdivision No. 4. As such all lots were designed to utilize the utilities provided in the Sage Road street development. Those existing utilities are adequate to serve Lot 1. We are aware and know of no known other adverse affects to public services generated by the development of the proposed house on Lot 1.

5. The conditional use is not in conflict with the policies of the comprehensive plan or the basic purposes of the Zoning Ordinance.

The only known provisions of the proposed design that are in conflict with the Zoning Ordinance are the Construction of avalanche attenuation devices in the rear and side yard setbacks. These are necessary due to the nature of the typography and the small size of the grandfathered lot. They are the result of conscious design strategies to survive and quell the impacts of an avalanche in this avalanche zone.

Avalanche Protective, Deflective and Preventative Structures

Ketchum Municipal Code §17.92.010.D.2

1. Avalanche protective, deflective and preventative structures, devices or earthwork which threaten to deflect avalanches toward property of others or otherwise threaten to increase the danger to persons or property are prohibited. The construction of such structures, devices or earthwork shall be permitted only as a conditional use. Prior to granting of a conditional use permit, the applicant shall submit to the City plans signed by an engineer licensed in the State, certifying that the proposed construction will withstand the avalanche forces set forth in the avalanche studies on file with the City and that the proposed construction will not deflect avalanches toward the property of others. Other information and engineering

studies may be requested in consideration of an application for a conditional use permit. As a further condition of any conditional use permit, appropriate landscaping may be required where such structures, devices or earthwork alter the natural slope or beauty of the land. This shall not apply to reforestation. Alteration or removal of any existing natural barriers is prohibited.

The house and it appurtenances are designed to protect against avalanches and, to the reasonable extent possible, to quell their flow to minimize impact. These design components of the development are discussed in more detail in the following responses.

This submission includes a letter and report from both our Avalanche Engineer and a letter from our structural engineer certifying that the proposed construction will withstand the avalanche forces set forth in the avalanche studies on file with the City and that the proposed construction will not deflect avalanches toward the property of others.

2. *Avalanche Report by a Licensed Idaho Engineer*

Paul Bastian of Xcell Engineering, Chubbuck ID was retained to do an avalanche study and loading analysis on this specific house design on the property at 102 Sage Road. That study and its projected loading is used as the basis of design on this project. *See Avalanche Report by Xcell Engineering.*

3. *Avalanche Devices*

There are five specific avalanche attenuation devices built into the design:
First, the North wall of the house, which is angled parallel with the property line will resist impact flow and direct snow in the northwest property setback to avoid flow onto the abutters property.

Second, the 10 foot high wall running west to east extending from the house into the rear yard setback will resist and in many cases stop flow. In the most extreme design case, the flow can rise up to 19 feet high and will partially overflow the wall and flow onto the house roof and patio.

Third, the patio and the forty-two inch wall at the end of the patio will act as a catchment area and slow flow. In extreme cases an overflow will occur.

Fourth, the stepping planters along the patio east and south wall will trap debris and slow flow.

Fifth, the wall along the driveway's south property line will trap and eliminate most remaining flow, except in extreme cases.

These devices will attenuate an avalanche flow by slowing down the speed of flow and gathering debris at the base of the flows trapping snow.

4. Appropriate Landscaping

To blend with the natural beauty of the existing landscape an array of locally appropriate species of plantings will be introduced. In many areas away from the house on the northwest and southwest sides of the property the natural landscape will prevail. See the Landscape Plan in the accompanying documents.

Conditional Use Permit

Ketchum Municipal Code 17.116.050

The Planning and Zoning Commission may attach additional conditions to the Conditional Use Permit including, but not limited to (Ketchum Municipal Code §17.116.050):

A. Minimizing adverse impact on other development;

It is our belief that there are no adverse impacts resulting from the proposed development of 102 Sage Road. There are two developed properties on either side of 102 Sage Road, a house to the northwest and a two-unit condominium to the southeast. The property to the east is conservation land and the property to the west is a shared driveway and Sage Road.

B. Controlling the sequence and timing of development;

Assuming approvals are in hand as a result of this process and there are no appeals, construction would preferably start in the latter weeks of September, seeking enclosure of the framed house before Christmas 2019.

C. Controlling the duration of development;

It is estimated that construction will take twelve to sixteen months.

D. Assuring that development is maintained properly;

Our associated designer, Lars Guy, will monitor construction on a weekly basis.

E. Designating the exact location and nature of development;

The exact nature and location of construction are as proposed in the plans and documents composing this Application.

F. Requiring the provision for on site or off site public facilities or services;

There are no such facilities that have been discussed or mentioned; none are anticipated.

G. Requiring more restrictive standards than those generally required in an ordinance; and

None have been discussed or mentioned; none are anticipated.

H. Requiring mitigation of effects of the proposed development upon service delivery by any political subdivision, including school districts, providing services within the city.

There has been no discussion with the City to date, or mention, of any such mitigation. None is anticipated

Exhibit B5:

Variance Criteria Narrative

Variance Application
Ketchum Municipal Code (KMC) §17.148.010

The applicant, Dr. Rockwell Hammond Jr., is seeking a variance to allow the construction of a ten foot high wall, a patio, stepping planters along the patio east and south walls, a driveway and driveway retaining wall in the rear and side yard of Lot 1, Block 4 of the Warm Springs Subdivision No. 4 in Ketchum ID.

Pursuant to Ketchum Municipal Code (KMC) §17.148.010, a variance may be granted to an applicant only upon a showing of undue hardship because of the unique characteristics of the site. Variances may only be granted by the Planning & Zoning Commission if the applicant demonstrates all of the following criteria:

1. The strict enforcement of the provisions of this Code creates an undue hardship to the property owner; however, economic feasibility shall not be considered an undue hardship.
Lot 1 has nonconforming dimensions for lots located in the GR-L Zone. The dimensions of the subject property are noncompliant as lot 1 has both an area of 6,934 sq ft, which is less than the 8,000 sq ft minimum lot area required in the GR-L Zone, and a lot width of 29 ft, which is less than the 80 ft average required. The subject property is characterized by a unique size, shape, and topography.

The Owners purchased Lot 1 of the Warm Springs Subdivision No. 4 over 20 years ago, before much of the current Zoning Code and other regulations were in place. It has always been their intention to develop a retirement house on the lot, hence the current development proposal. The proposed house is not large, with the living spaces all on the first floor, anticipating future personal mobility issues. The first floor has a gross enclosed area of 2,048 square feet. It is a two bedroom, two bathroom property with a study and an open plan containing the living room, dining and kitchen area. It is a small house on a small steeply sloped lot with an atypical shape.

Once the setbacks are drawn on the site -- 10 foot side yards, 15 foot and front yards – the allowable footprint area is small and unforgiving.

The external amenities include a patio on the east side of the house, front steps and covered entryway on the west side of the house and a driveway along the south property line. In order to fit these onto the property, they and their retaining walls extend into the side and rear yard setbacks. These components, the ten foot wall on the north side of the lot, the patio, patio east and south stepped planter retaining walls and the south wall retaining the driveway along the south property line all serve double purposes. They all provide significant avalanche attenuation and enable the design. These walls all extend into the setbacks and, due to the steep property slope from north to south are higher than thirty inches.

2. The variance is necessary because of the unique size, shape, topography or location of the subject property.

There are no feasible alternative designs or building sitings for the proposed single-family residence within the required setbacks on the site. The unique shape of the trapezoidal lot, combined with the small buildable footprint area and the steep site typography do not allow for alternative configurations of the house with living space all on one floor that address the safety issues attending its location in an avalanche red zone.

3. The subject property is deprived, by provision of this Code, of rights and privileges enjoyed legally by other properties in the vicinity and under an identical zone.

There are twelve lots in the Warm Springs Subdivision No.4. Almost all of these lots have been developed. Both abutting lots have been developed. All of the subdivision lots are in the GR-L Zone. The unique size and shape of Lot 1 deprive the subject property of the rights and privileges enjoyed legally by other properties in the vicinity and under an identical zone. For theses rights and privileges to be obtained a variance is required.

4. The need for the variance is not the result of actions of the applicant or property owner.

The lot has been undeveloped and unaltered since it was purchased. The Owner/Applicant has done nothing to create the need for the variance other than support the efforts to design his house on the lot.

5. The variance does not create health and safety hazards.

To our knowledge there are no health and safety hazards the will be created by the granting of the variance.

6. The variance does not relieve an applicant from any of the procedural provisions of this Code.

The granting of the variance does not relieve the applicant/owner from any of the procedural provisions of the applicable Code.

7. The variance does not relieve an applicant from any standard or provision that specifically states that no variance from such standard or provision is permitted.

To our knowledge, the variance does not relieve the applicant from any standard or provision that specifically states that no variance from such standard or provision is permitted.

8. The variance does not relieve an applicant from conditions established during prior permit review.

To our knowledge there have been no conditions established prior to this permit review that must be adhered to.

9. The variance does not allow establishment of a use that is not otherwise permitted in the zone in which the subject property is located.

The use proposed – single-family dwelling – is fully compatible and permitted in the GR-L Zone in which the property falls.

10. The variance is the minimum necessary to grant relief to the applicant.
The variance is the minimum necessary to grant relief to the applicant for the construction of the proposed house and appurtenances on Lot 1, Block 3 of the Warm Springs Subdivision No.4.

We look forward to meeting with you and answering any questions you may have. Thank you for your consideration.

Sincerely,

Neil B. Middleton
Architect

Exhibit 2:

Letter Dated

September 4, 2019

RE: MOD, CUP, and Variance Continued Hearing

September 4, 2019

Ms. Abby Rivin
Associate Planner
PO Box 2315
Town of Ketchum
480 East Avenue North
Ketchum ID 83340

Re. MOD, CUP and Variance Continued Hearing
Hammond House, 102 Sage Road, Ketchum, Idaho

Dear Ms. Rivin:
We appreciate the Commissions keen interest and their taking the time to review this Application submittal for the construction of a single-family home at 102 Sage Road. This letter is written to address a number of concerns raised at the previous hearing by the Board members.

Intent
It is our intent to fully comply with the professional requirements for the design of this home. We have retained a team that complies with the licensing requirements of the State of Idaho and the City of Ketchum. The appropriate reports by licensed engineers, stamped letter for structural compliance and the Owner's affidavit regarding his construction on a site in an avalanche zone have all been submitted. Further documents required for compliance with a building permit will be forthcoming at the appropriate time.

Avalanche Design Approach
There are always a number of different approaches to deal with the loading and impact of an avalanche. For this site two different approaches have been discussed. First, building a wall that would resist and stop most of an avalanche and, second, building a structure, like a turtle shell, that would accept the loading and protect any inhabitants of the house. Given the projected loads and amount of snow and debris, a combination of both was designed. The north wall is designed to block a considerable amount of snow and debris and then be overtopped with the remainder. This minimizes the flow of snow to the lot to our South. As a footnote, a wall 25 feet high would be required to stop most of an avalanche. This would in our judgment be environmentally insulting. To protect windows we will have steel mesh shutters that are activated in an avalanche warning.

The following responses are made to comments and concerns addressed by Board members:

Plans

- *Plans have been "shaded" to delineate the area of the variance in the setbacks that is being requested.*

South Wall Design Enhancement

- Several things have been done to create more variety in mass and detail of the South wall. The garage wall has been recessed two feet, creating an overhang for the living room and gable end wall. In addition, a window has been added in the center of the cantilevered wall, even though all views from this window are essentially blocked by the abutters solid massive wall, light and air will be available to the house.
- A door for occupant egress has been added to the South garage door. This door swings in, allowing for egress should an avalanche's snow and debris cover the front lawn and spill into the driveway. Most studies see that much flow around the houses' southwestern corner to be a very unusual event.

Patio Planters

- The stepping patio planters have been removed. This increases the natural un-built setback and decreases the amount of construction in the rear yard setback.

Parking/Paving/ Retaining Wall Reduction

- The "staging area" for the camper has been shortened to just five feet of paving beyond the eastern side of the house. It should be noted that the Owner is not storing his camper on site. It is being stored off site. The staging area will be used for only a few days both before its use and after for logistical preparation for trips.
- The driveway width will be used for parking of guest/visitor cars. The slope and shape of the lot and the need to not block the shared driveway easement necessitate this.

South (Property Line) Retaining Wall

- The Southeastern retaining wall along the south property line is shortened and sloped down follow the grade. The adjacent grading will climb up the setback to the end of the shortened driveway paving.

North Avalanche Impact Wall

- The extension of the north avalanche wall into the rear setback has been shortened several feet.
- The sliding door in the avalanche wall has been eliminated.

Responsibility for Any Construction Impacts to Abutters

- The Owner has sent letters to the abutters expressing his intent to ameliorate and repair any damages to the abutters properties that might occur during construction.

We look forward to meeting with you and answering any additional questions you may have. Thank you for your consideration.

Sincerely,

Neil B. Middleton
Architect

Exhibit 3:

Updated Submittal (Architectural Drawings and Renderings, Civil Drawings, and Structural Plans)

PERSPECTIVE - RENDERINGS

PROJECT TEAM

OWNER:	Dr. Rockwell Hammond Jr. + Jill Hammond 35611 SE David Powell Road, Fall City WA 98024 P: 206.919.8009
PROJECT:	NEW RESIDENCE 102 Sage Road KETCHUM, ID 83340
ARCHITECT:	Neil B. Middleton, AIA 45 Weston Road, Lincoln MA 01773 P: 781.259.1380 C: 617.281.6996 middleton.nb@gmail.com
ARCHITECT REPRESENTATIVE:	Lars Guy • Provisualization, Inc. 220 River Street East • PO Box 2675 Ketchum, ID 83340 C. 208.720.9684lars@provisualization.com
STRUCTURAL ENGINEER:	Markel Bateman, PE, Principal Frost Engineering 1020 Lincoln Road, Idaho Falls 83401 P: 208.227.8404 C: 208.390.4597 markell.bateman@frost-structural.com
GEOTECHNICAL ENGINEER:	Steve Butler, PE • Butler Associates, Inc. 208 Spruce Avenue North Ketchum ID 83340 P: 208.720.6432 svgeotech@gmail.com
AVALANCHE ENGINEER:	EXCELL ENGINEERING, LLC Paul Bastian 260 Laurel Lane Chubbock, ID 83202 P: 208.237.5900 paul@excelleng.com
CIVIL ENGINEER:	Don Sewell Benchmark Associates, PA 100 Bell Drive, P.O. Box 733 Ketchum, ID 83340 P: 208.726.9512 Don@bma5b.com

SHEET SCHEDULE

ADDITIONAL INFORMATION

DRAINAGE:	GUTTERS AND DOWNSPOUTS TO DRYWELLS WILL BE PROVIDED WHERE REQUIRED.
SNOWCLIPS:	TO BE PROVIDED AT ALL OVERHANGS AT AREAS OF PEDESTRIAN CIRCULATION
LANDSCAPE PLAN:	SUBJECT PROPERTY CONTAINS MATURE LANDSCAPING. MINIMAL ADDITIONAL IS PLANNED
LIGHTING:	ANY LIGHTING WILL BE SHIELDED LED NIGHT SKY COMPLIANT FIXTURES
STREET R.O.W.:	PROJECT WILL NOT CREATE ANY NON COMPLIANCE TO CITY OF KETCHUM R.O.W. STANDARDS

PROJECT INFORMATION

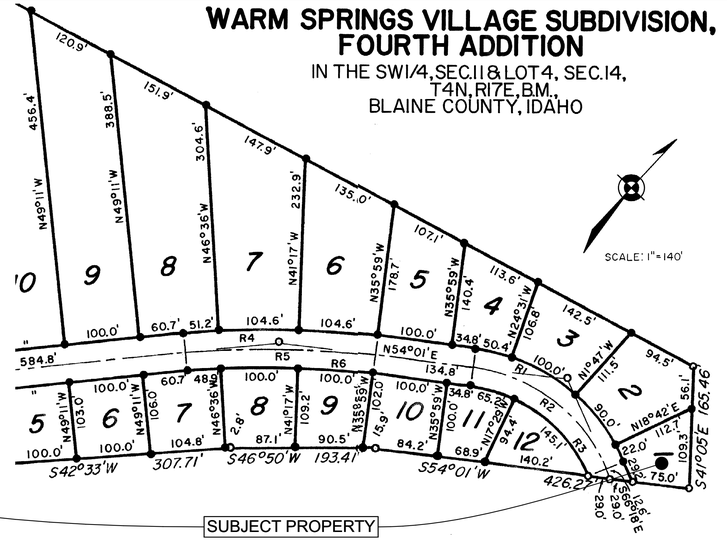
LOT:	102 Sage Road, Ketchum LOT 1, BLOCK 3, WARM SPRINGS VILLAGE SUB NO. 4
SIZE:	6,933.6 SQ FT (.16± ACRES)
ZONE:	GR-L
SETBACKS: FRONT/WEST	26' 3 1/2" (@ CLOSEST CORNER)
SIDE	10'-0"
SIDE	10'-0"
REAR	15' 0"

AREA ANALYSIS: (GROSS ENCLOSED SQUARE FOOTAGE)

BASEMENT/GARAGE	2,028 S.F.
1ST FLOOR	2,048 S.F.
TOTAL ENCLOSED STRUCTURE	4,076 S.F.
FOOTPRINT ON SITE	2,121 S.F.
LOT COVERAGE	30.5%
MAXIMUM BUILDING HEIGHT	29'-10" (ALLOWED) 30'-0" PER S.B.

VICINITY MAP

SUBDIVISION MAP



EXT. LIGHT FIXTURES

B-K LIGHTING, WALL MOUNTED LED DOWNLIGHT, NIGHT SKY COMPLIANT

LED PATHWAY LIGHTS AT EXTERIOR STAIRS/LANDINGS

SITE PHOTO

BUILDING CODE

ALL WORK SHALL MEET OR EXCEED THE CURRENT ADOPTED CODES:

2012 INTERNATIONAL BUILDING CODE (2012 IBC)

2012 INTERNATIONAL RESIDENTIAL CODE (2012 IRC)

2012 ENERGY CONSERVATION CODE (2012 IEC)

2012 FIRE CODE (2012 IEC)

(AS ADOPTED BY ORDINANCE NUMBER 1125, 2014)

COMPLIANCE WITH KETCHUM MUNICIPAL CODE, CHP 15.078 REQUIRED

PROVIDE REQUIRED UNDERFLOOR VENTING/RADON MITIGATION AS REQUIRED.

PROVIDE REQUIRED UNDERFLOOR VENTING MOLD MITIGATION AS REQUIRED.

PROVIDE UNDERFLOOR (CRAWL SPACE) VENTILATION OF 1 S.F. PER 150 S.F. OF FLOOR AREA

PROJECT TO MEET ADOPTED NGBS SILVER STANDARD, MINIMUM (REFER TO RATER DOCUMENTS)

PROJECT TO MEET ADOPTED R.O.W. STANDARDS (JULY 2015)

ARCHITECT

Neil B. Middleton, AIA
45 Weston Road
Lincoln MA 01773
P: 781.259.1380
C: 617.281.6996
middleton.nb@gmail.com

PROJECT NO.

CONTRACTOR

A NEW RESIDENCE FOR:

DR. ROCKWELL HAMMOND JR. & JILL HAMMOND

Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road * Ketchum, ID 83340

DRAWING:

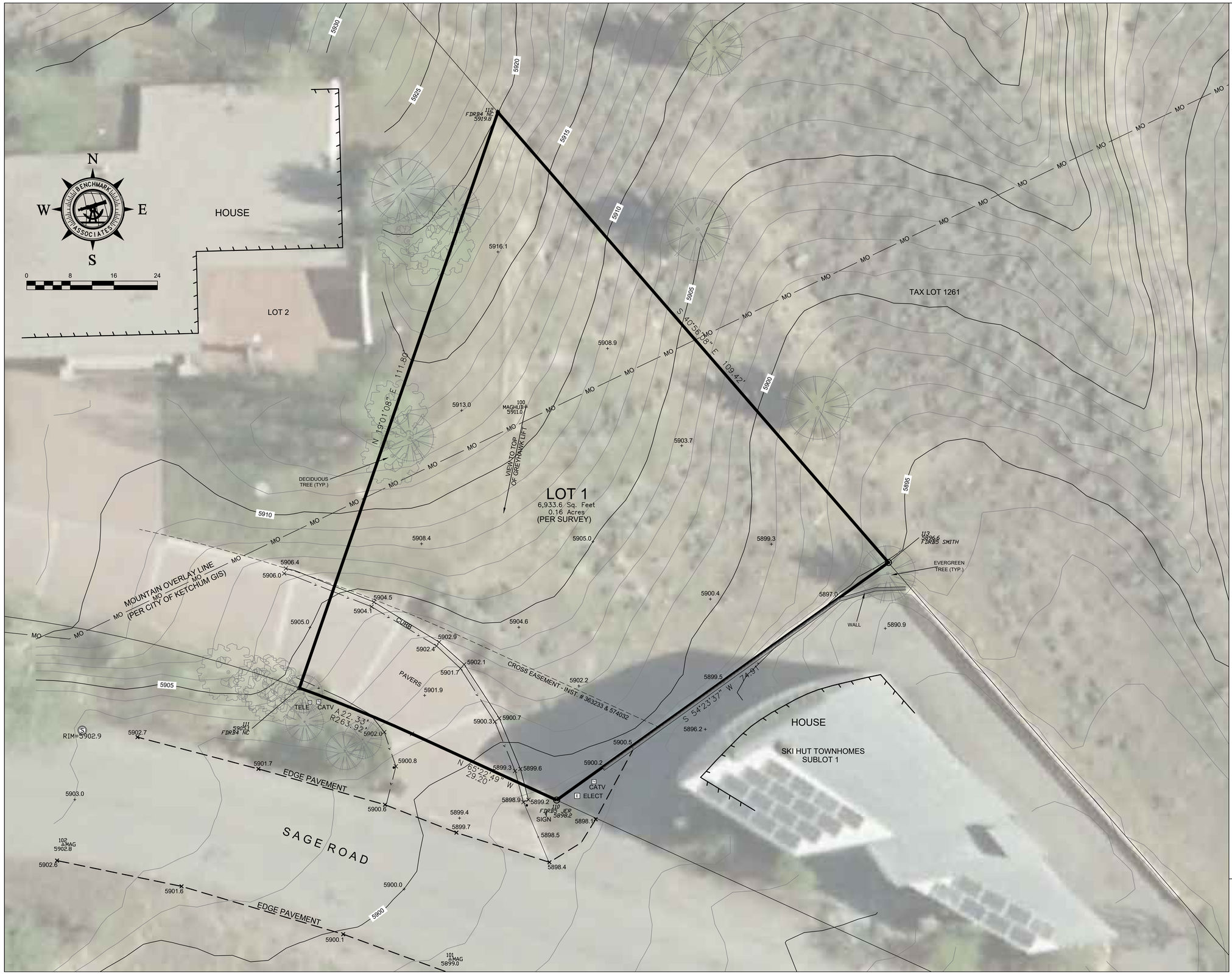
COVER SHEET

DATE

9/4/19

SHEET NUMBER

A-00



NOTES

GENERAL RESTRICTIONS & TITLE INFORMATION:

1. THE PURPOSE OF THIS MAP IS TO SHOW TOPOGRAPHICAL/SITE INFORMATION AS IT EXISTED ON THE DATE THE FIELD SURVEY WAS PERFORMED. CHANGES MAY HAVE OCCURRED TO SITE CONDITIONS SINCE SURVEY DATE.
2. THIS MAP WAS PREPARED FOR THE EXPRESS USE OF THE CLIENT AND IS NOT TRANSFERABLE TO OTHERS WITHOUT WRITTEN CONSENT
3. A TITLE POLICY HAS NOT BEEN SUBMITTED TO BENCHMARK ASSOCIATES, NOR HAS A TITLE SEARCH BEEN REQUESTED. CERTAIN INFORMATION CONTAINED WITHIN SAID POLICY MAY NOT APPEAR ON THIS MAP OR MAY AFFECT ITEMS SHOWN ON THIS MAP.
4. ELECTRONIC DATA: BENCHMARK ASSOCIATES ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE REUSE, DISTRIBUTION OR ACCURACY OF DATA CONTAINED ON ELECTRONIC COPIES OF THIS DRAWING. THE STAMPED HARD COPY OF THIS DRAWING IS THE FINAL PRODUCT.
5. THIS DRAWING IS VOID AFTER 2 YEARS AND NO FURTHER COPIES OR DIGITAL FILES WILL BE TRANSMITTED.

EASEMENTS, ENCUMBRANCES AND RESTRICTIONS:

6. BUILDING AREA: BUILDING ENVELOPE IF SHOWN, IS PER PLAT. SETBACK AND FOOTPRINT REQUIREMENTS PER CURRENT CITY/COUNTY ORDINANCES MAY VARY FROM PLAT. IT IS RECOMMENDED THAT SAID ORDINANCES BE REVIEWED PRIOR TO DESIGN.
7. GENERAL RESTRICTIONS : EXCEPT AS SPECIFICALLY STATED OR SHOWN ON THIS MAP, THIS SURVEY DOES NOT PURPORT TO REFLECT ANY OF THE FOLLOWING WHICH MAY APPLICABLE TO THE SUBJECT OF REAL ESTATE: EASEMENTS, OTHER THAN THOSE SHOWN OR LISTED HEREON, BUILDING SETBACK LINES, RESTRICTIVE COVENANTS, SUBDIVISION RESTRICTIONS, ZONING, WETLANDS OR ANY OTHER LAND-USE REGULATIONS.
8. STORM WATER PLAN: IF SOIL DISTURBANCE, CLEARING, GRADING AND/OR EXCAVATION OF ONE (1) ACRE OR MORE IS TO TAKE PLACE A FEDERAL GENERAL CONSTRUCTION PERMIT, INCLUDING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), MUST BE PREPARED AND SUBMITTED TO AND APPROVED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY PRIOR TO ANY SITE DISTURBANCE.

SURVEY AND SITE FEATURES:

9. BASIS OF BEARINGS IS IDAHO STATE PLANE COORDINATE SYSTEM, NAD83, CENTRAL ZONE AS DERIVED BY GPS OBSERVATIONS. BOUNDARY LINES AND CERTAIN EASEMENTS SHOWN HEREON ARE PER PLAT. REFER TO PLAT & CC&R'S FOR CONDITIONS AND/OR RESTRICTIONS REGARDING THIS PROPERTY. ALL DISTANCES SHOWN ARE GROUND DISTANCES IN U.S. SURVEY FEET.
10. ELEVATIONS BASED ON NAVD 88 (GEOID03) DATUM.
11. UTILITIES AND DRAIN PIPES IF SHOWN HEREON ARE PER SURFACE EVIDENCE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST. LOCATION OF UNDERGROUND UTILITIES AND SERVICES SHOULD BE CONFIRMED PRIOR TO EXCAVATION OR DESIGN.
12. BUILDING WALLS IF SHOWN HEREON ARE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
13. SPRINKLER HEADS AND IRRIGATION LINES ARE NOT SHOWN HEREON.
14. TREE LOCATIONS AND DRIP LINES IF SHOWN HEREON ARE APPROXIMATE.
15. ORTHOPHOTOGRAPHY: PHOTO RECTIFIED AT GROUND LEVEL ONLY. IMAGES OF OBJECTS ABOVE GROUND LEVEL (TREES, BUILDINGS, POWER POLES, ETC.,) MAY BE DISPLACED. DATE OF PHOTOGRAPHY: JUNE 2017.
16. CONTOUR INTERVAL: 1' - CONTOURS IN AREAS OF DENSE VEGETATION MAY DEVIATE FROM TRUE ELEVATION BY ONE HALF THE HEIGHT OF THE VEGETATION. DATE OF LIDAR FLIGHT FOR CONTOURS: 2016.
17. MAP SCALE: DUE TO ELECTRONIC MAP DELIVERY AND ALTERNATE PRINTING METHODS, PLEASE USE BAR SCALE TO DETERMINE ACTUAL PRINTED SCALE.
18. FEATURES OBSCURED BY DEBRIS, SNOW OR VEHICLES AT THE TIME OF SURVEY, DO NOT APPEAR ON THIS MAP.
19. THE ENTIRE PROPERTY LIES WITHIN A RED AVALANCHE ZONE AND THE CITY OF KETCHUM'S AVALANCHE OVERLAY. REFER TO THE CITY OF KETCHUM ORDINANCES FOR CONDITIONS/RESTRICTIONS THAT MAY APPLY.

PREPARED BY :
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P.O. BOX 733 - 100 BELL DRIVE, KETCHUM, IDAHO, 83340
PHONE (208)726-9512 FAX (208)726-9514
WEB: http://benchmark-associates.com/

PROFESSIONAL LAND SURVEYOR LICENSED 13764 4/2/18 STATE OF IDAHO LARRY JONES

SHEET NUMBER
C-01

BENCHMARK ASSOCIATES

WARM SPRINGS VILLAGE 4
BLOCK 3, LOT 1

LOCATED WITHIN
SECTION 11, TOWNSHIP 4 NORTH, RANGE 18 EAST, B.M.,
CITY OF KETCHUM, BLAINE COUNTY, IDAHO

PREPARED FOR : DR. ROCKWELL HAMMOND JR.

PROJECT NO. 18031	DWG BY: DWS	CRD: 18031.CRD	18031TOPO.DWG
A TOPOGRAPHIC MAP	DATE OF SURVEY: 3/29/2018		SHEET: 1 OF 1

PLANT LEGEND
SUBJECT TO CHANGE

SYMBOL	PLANTING	VARIETIES	SIZE
	EVERGREEN TREE	FIR	4" TRUNK SIZE
	DECIDUOUS TREE	ASPEN	4" TRUNK SIZE
	EVERGREEN TREE/SHRUB BUSHES/SHRUBS	CLEMATIS, HOPS, DOGWOOD, VIBURNUM, SPIREA, SNOWBERRY, LILAC, ETC	2"-4" TRUNK SIZE
	ORNAMENTAL GRASSES	FESCUE, GREAT BASIN WILDRYE, KARL FOERSTER, ETC.	3-5 GAL
	FLOWERS (ANNUAL/PERENNIAL)	DAYLILY, SAGE, CLEMATIS, PENSTEMON, ETC	3-5 GAL
	LANDSCAPE ROCKS	TO BLEND WITH SURROUNDING	VARIES
	NATURAL GRASSES	HYDROSEED	
	LAWN GRASS	SOD	
	PLANTER BEDS (FLOWERS, SHRUBS, VEGETABLES)	GROUND LEVEL & RAISED	

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PROJECT NO.

CONTRACTOR

A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road * Ketchum, ID 83340

DRAWING:
LANDSCAPE

DATE
9/4/19

SHEET NUMBER
LS-01

SCALE: 1'-0" = 5'-0"


S 40°56'08" E 109.42'
71'-9 1/16"
AVALANCE WALL ABOVE
PAVER PATIO ABOVE
AVALANCE ATTENUATION WALL
AVALANCE ATTENUATION WALL
15'-0" SETBACK
WALL
61'-7 3/16"
8'-1 7/8"
POST ABOVE
10'-0" SETBACK
CANTILEVERED WALL ABOVE
LOT 1
6,933.6 Sq. Feet
0.16 Acres
(PER SURVEY)
100 MAGHUB 5911.0
AVALANCE WALL
HEATED DRIVEWAY
HOUSE
HOUSE
PROPOSED STRUCTURE
VIEW TO TOP OF GREYHAWK LIFT
S 54°23'37" W 74.91'
SKI HUT
12'-6"
TRENCH DRAIN
TRENCH DRAIN
10'-0" SETBACK
26'-3 1/2" SETBACK
LOT 2
10'-0" SETBACK
N 19°01'08" E 114.80'
HANDRAIL
CROSS EASEMENT - INST. # 363233 & 574022
DECIDUOUS TREE (TYP.)
HEATED DRIVEWAY
CATV
ELECT
110 FDRB5 JER 5898.2
SIGN
CURB
PAVERS
19'-1 3/16"
16'-0"
33'-11 15/16"
69'-1 1/16"
2'-8"
N 65°22'49" W 29.20'
PRIVATE (SHARED) DRIVEWAY
SAGE ROAD

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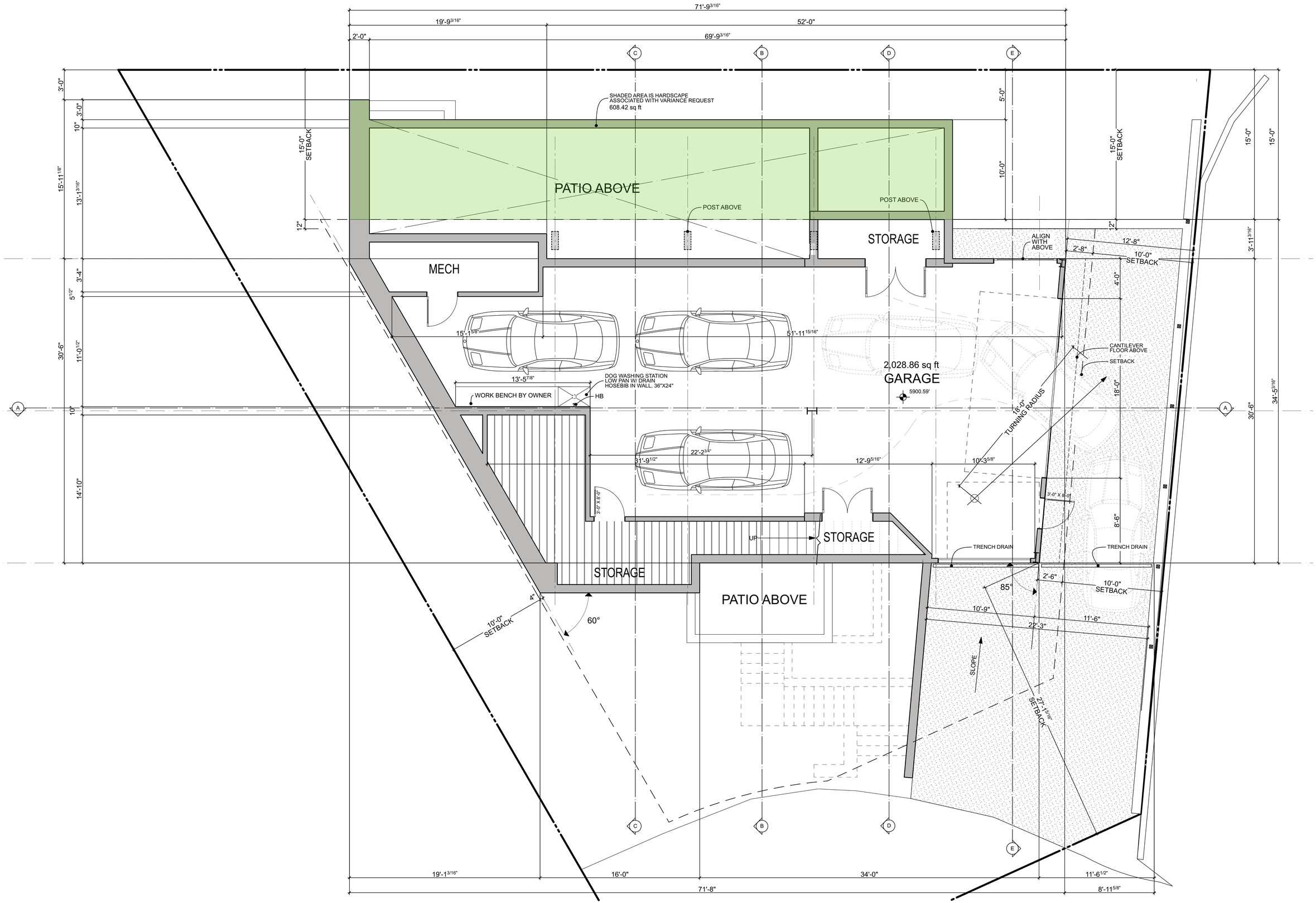
DRAWING:

ARCHITECTURAL SITE PLAN

DATE
9/4/19

SHEET NUMBER
A-1.0

SCALE: 1/4" = 1'-0"



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DRAWING:

GARAGE LEVEL PLAN

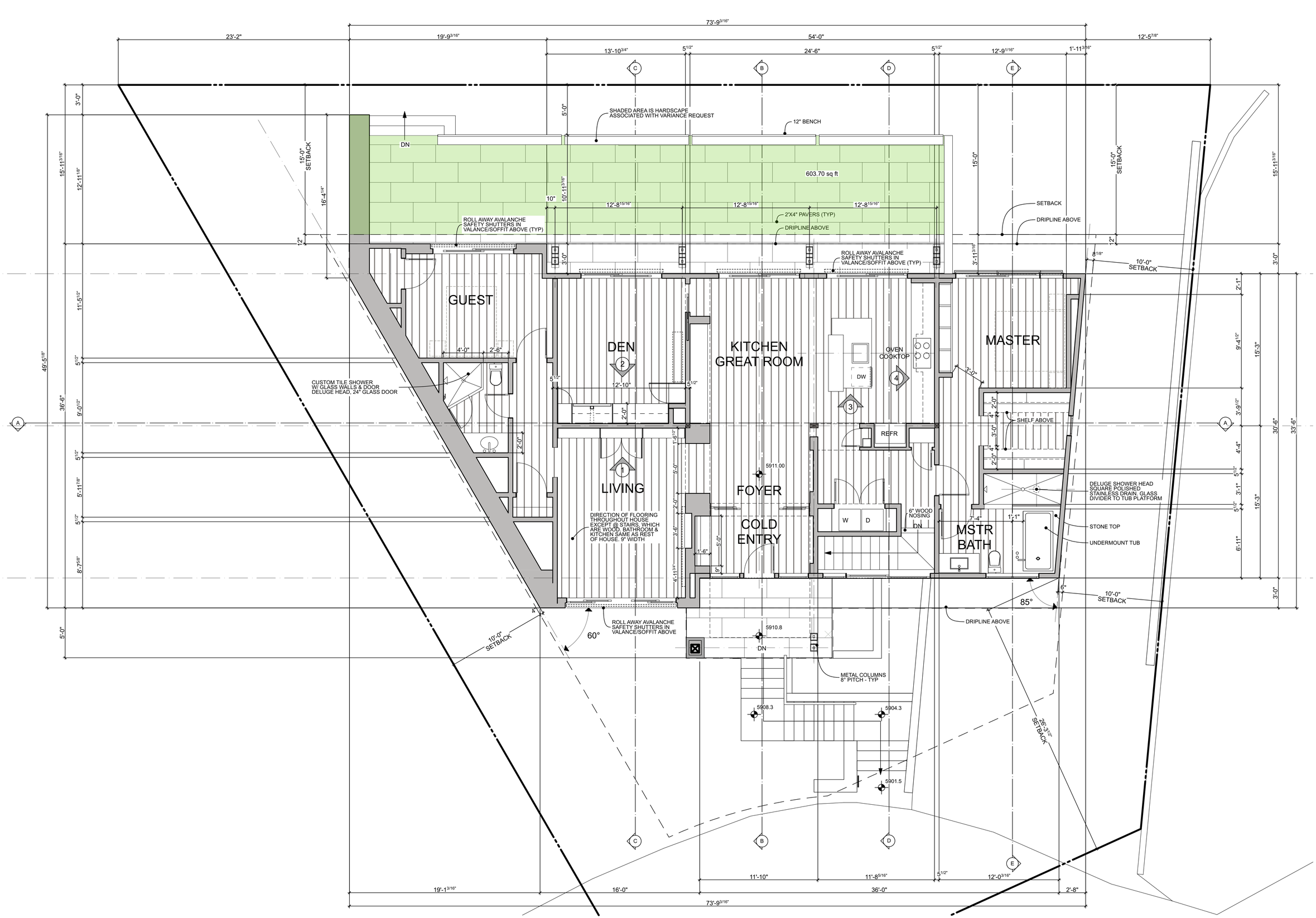
DATE

9/4/19

SHEET NUMBER

A-2.0

SCALE: 1/4" = 1'-0"



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D R A W I N G :

LIVING LEVEL PLAN

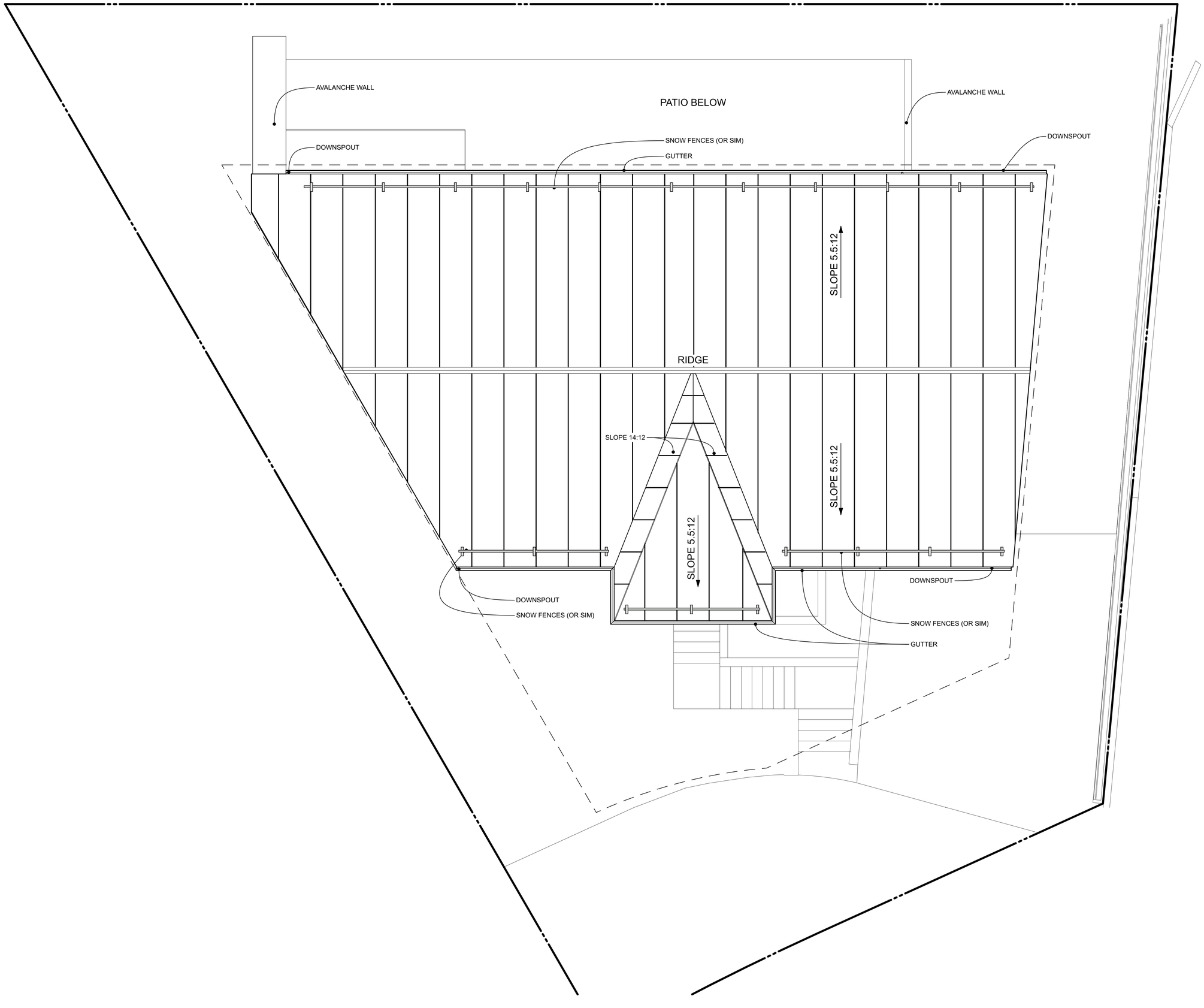
DATE

9/4/19

SHEET NUMBER

A-2.1

SCALE: 1/4" = 1'-0"



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DRAWING:

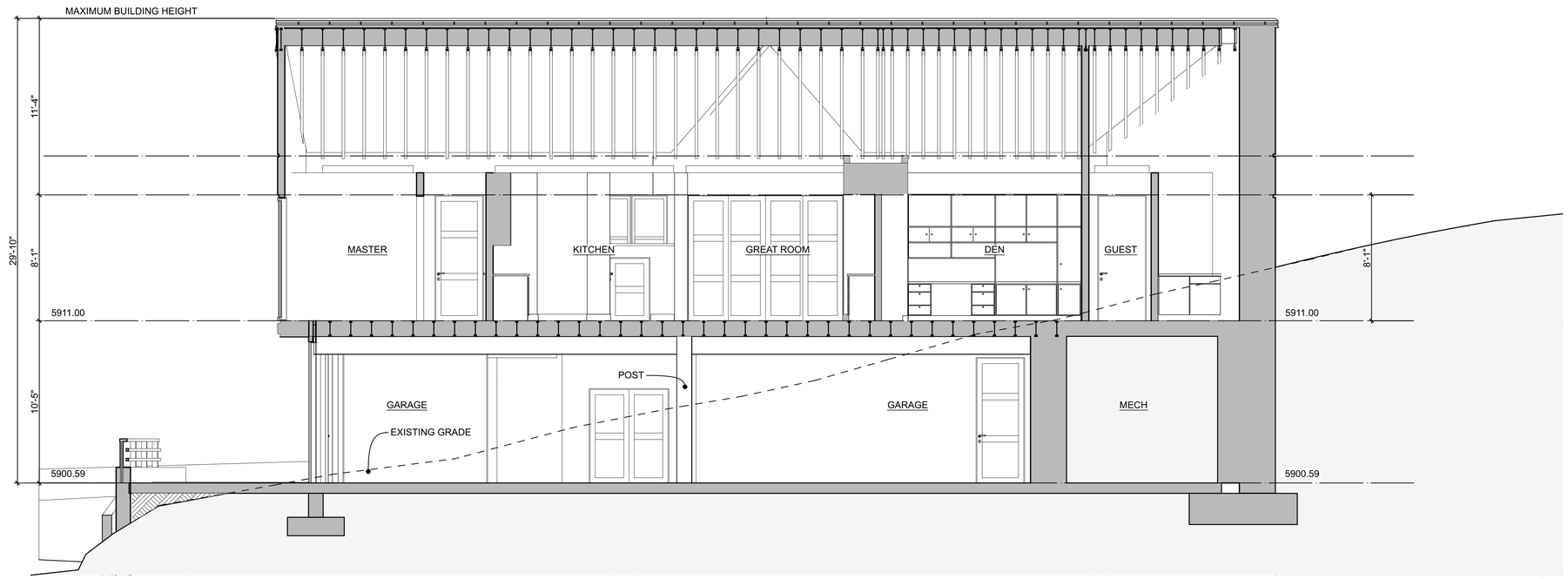
ROOF PLAN

DATE

9/4/19

SHEET NUMBER

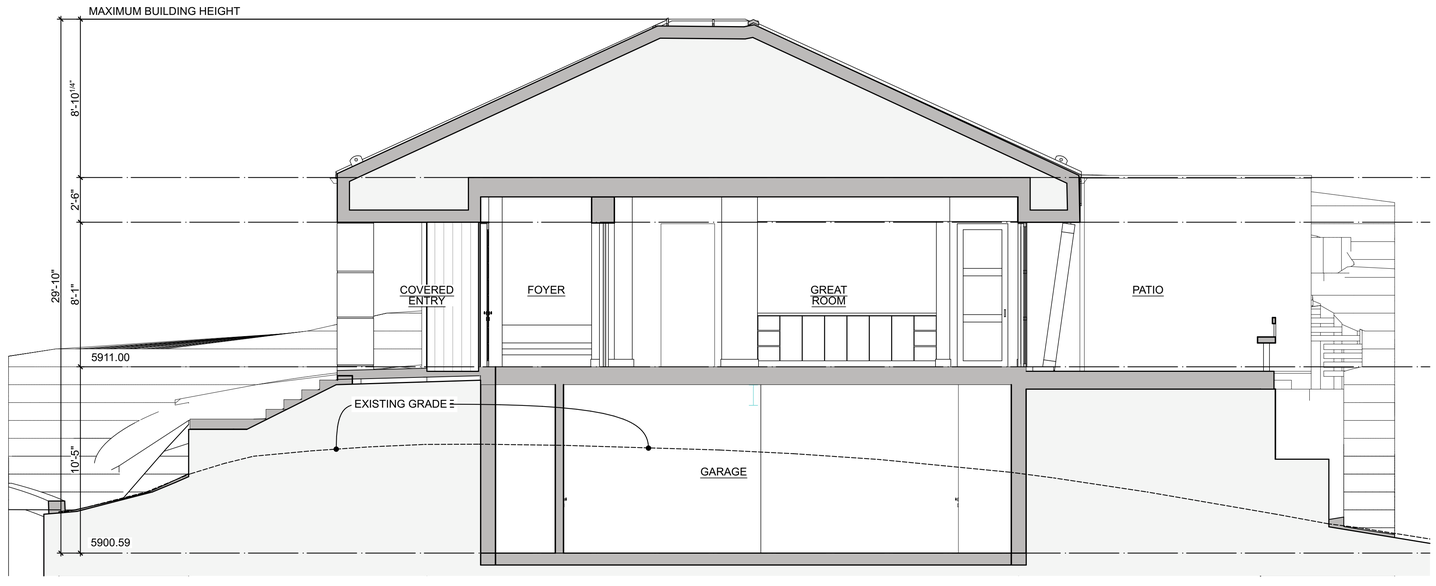
A-2.2



SITE SECTION (NORTH-SOUTH) A

SCALE: 1/4" = 1'-0"

UNDER CONSTRUCTION (W.I.P.)



CROSS SECTION B

SCALE: 1/4" = 1'-0"

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102 Sage Road ' Ketchum, ID 83340

DRAWING:

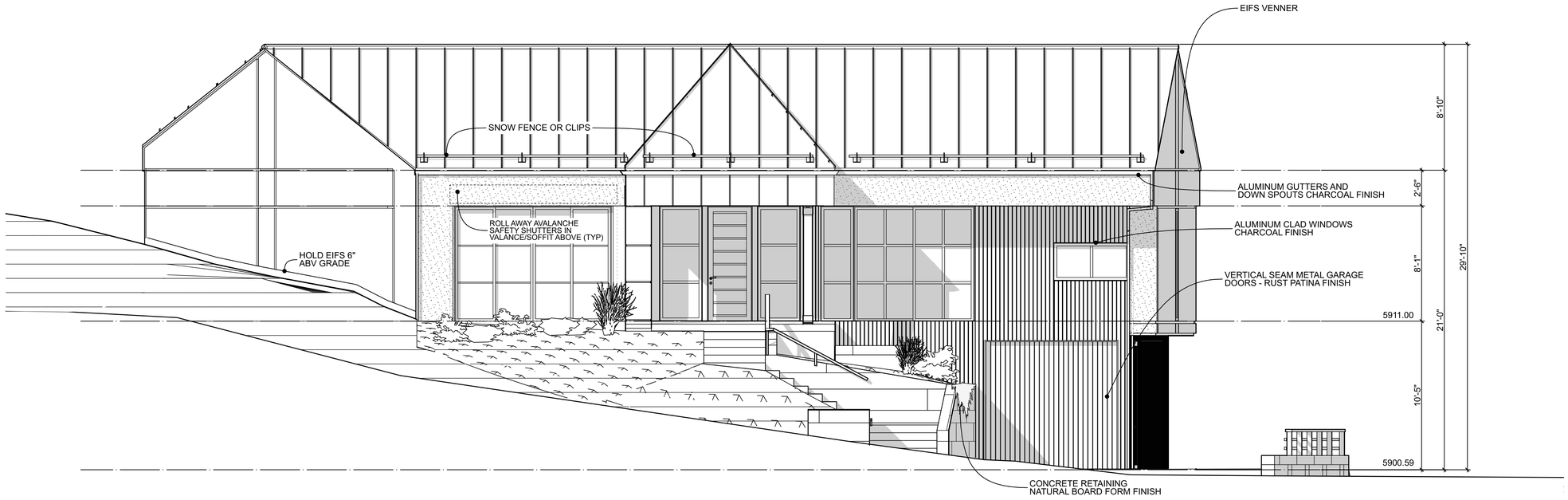
BUILDING SECTIONS

DATE

9/4/19

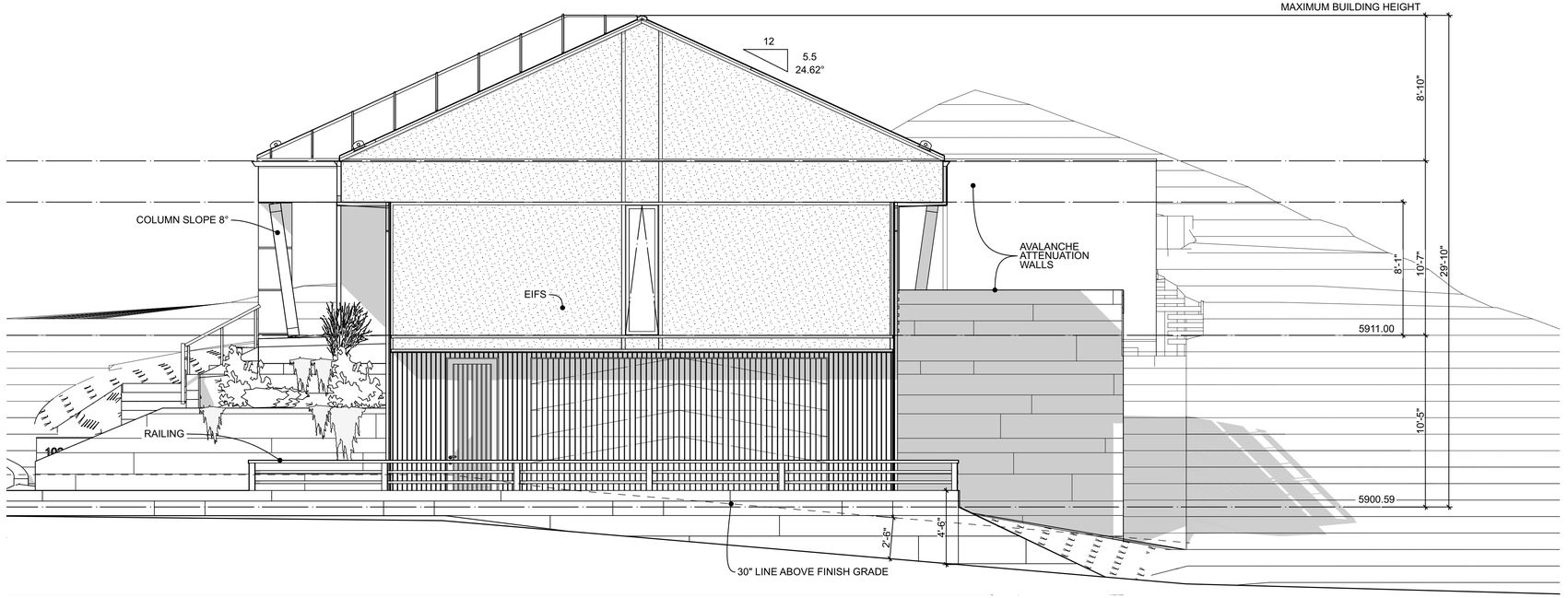
SHEET NUMBER

A-3.0



WEST ELEVATION

SCALE: 1/4" = 1'-0"



SOUTH ELEVATION

SCALE: 1/4" = 1'-0"

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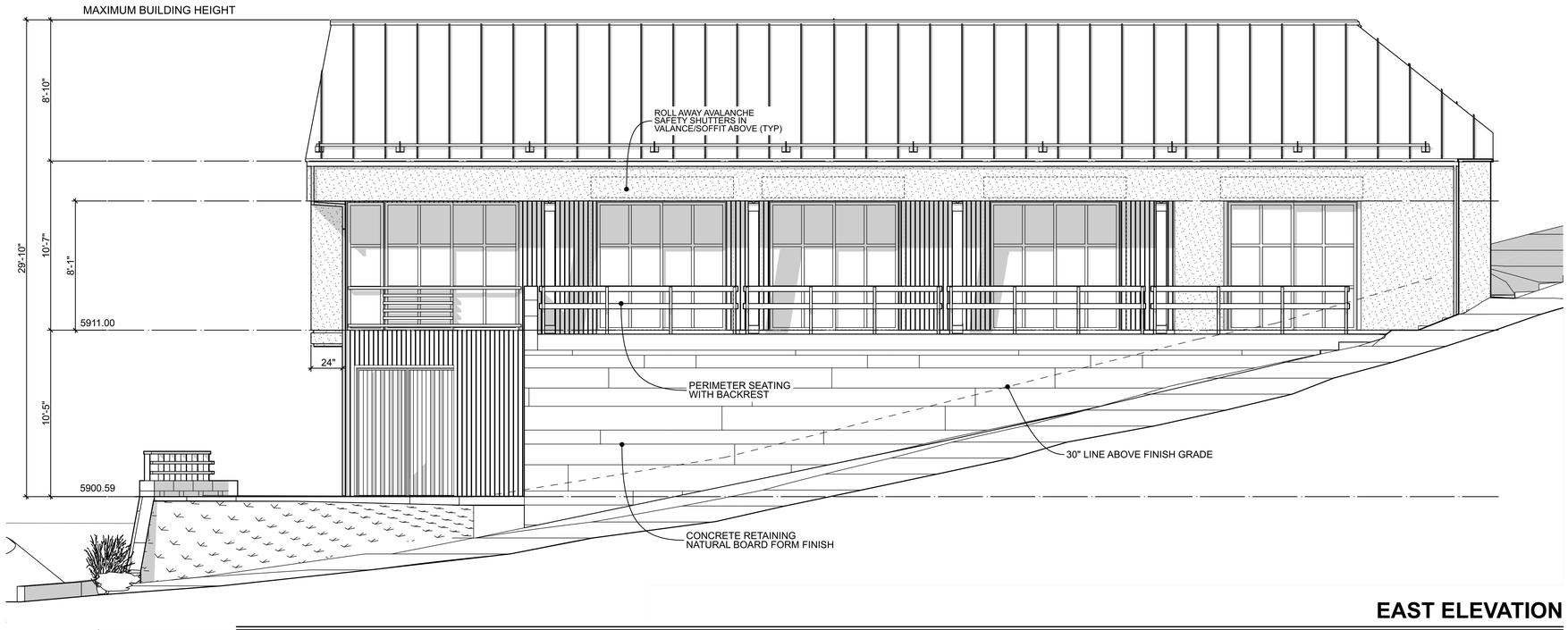
DRAWING:
EXTERIOR ELEVATIONS

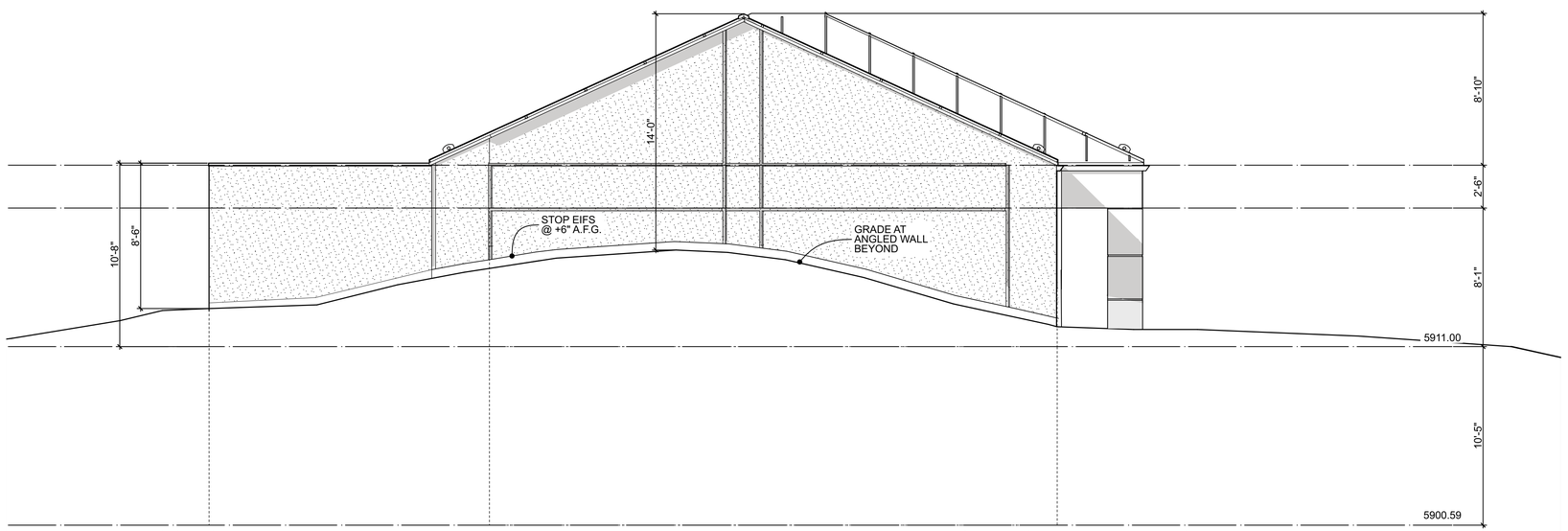
DATE
9/4/19

SHEET NUMBER
A-4.0



EAST ELEVATION

SCALE: 1/4" = 1'-0"



NORTH ELEVATION

SCALE: 1/4" = 1'-0"

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DRAWING:

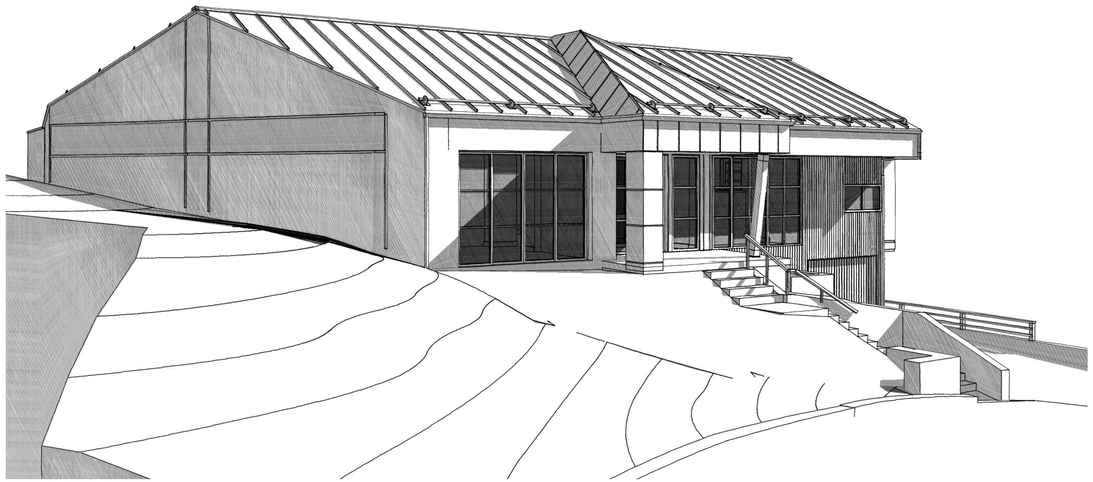
EXTERIOR ELEVATIONS

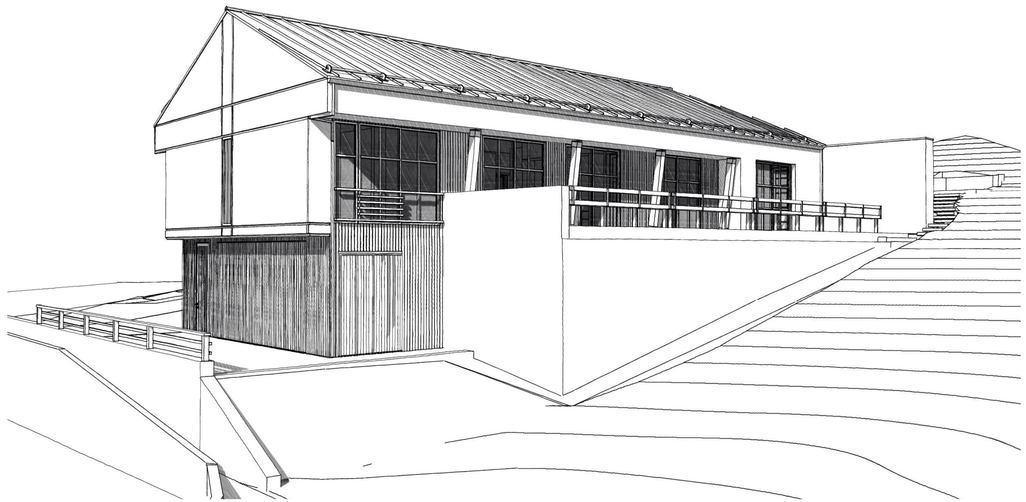
DATE

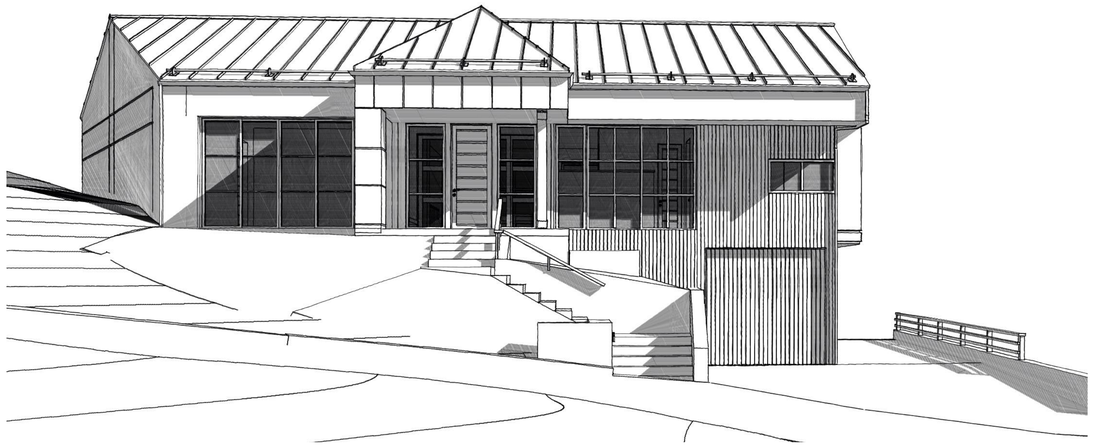
9/4/19

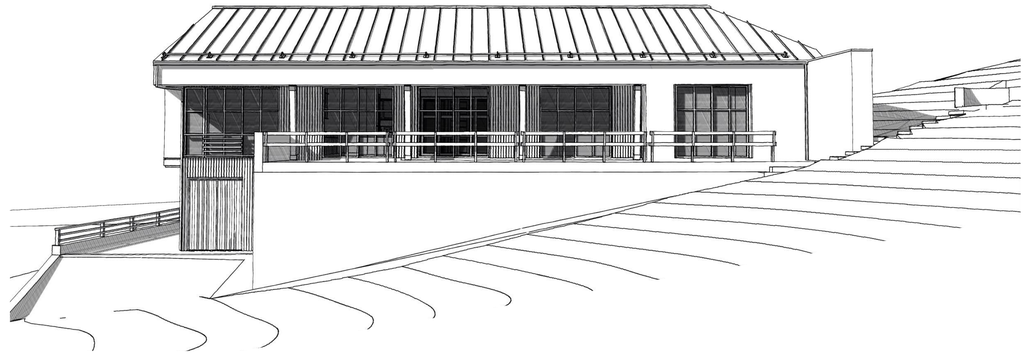
SHEET NUMBER

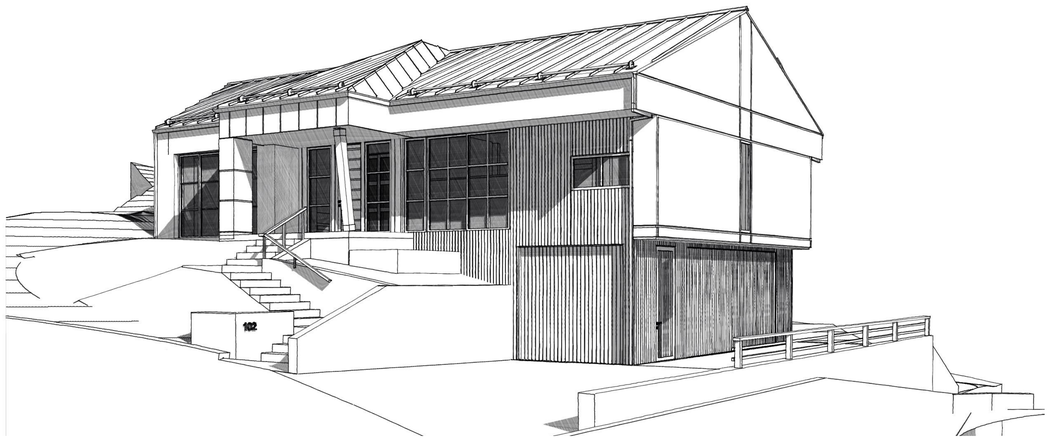
A-4.1

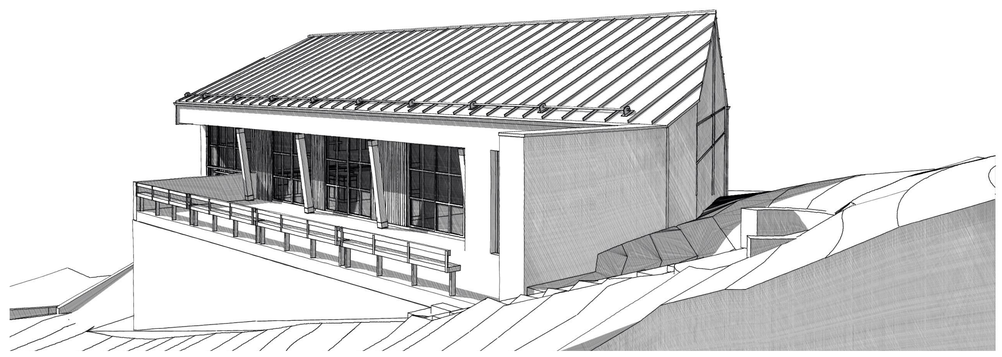












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PROJECT NO.

CONTRACTOR

A NEW RESIDENCE FOR:

DR. ROCKWELL HAMMOND JR. & JILL HAMMOND

Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road " Ketchum, ID 83340

DRAWING:

3D LAYOUT

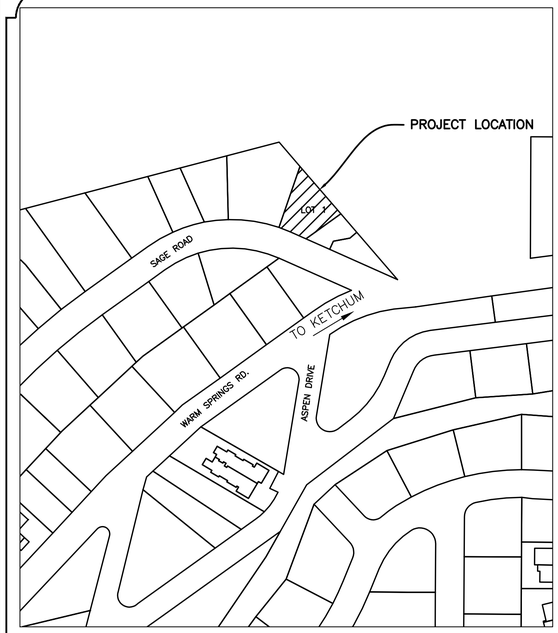
DATE

9/4/19

SHEET NUMBER

A-5.0


102



VICINITY MAP
NOT TO SCALE

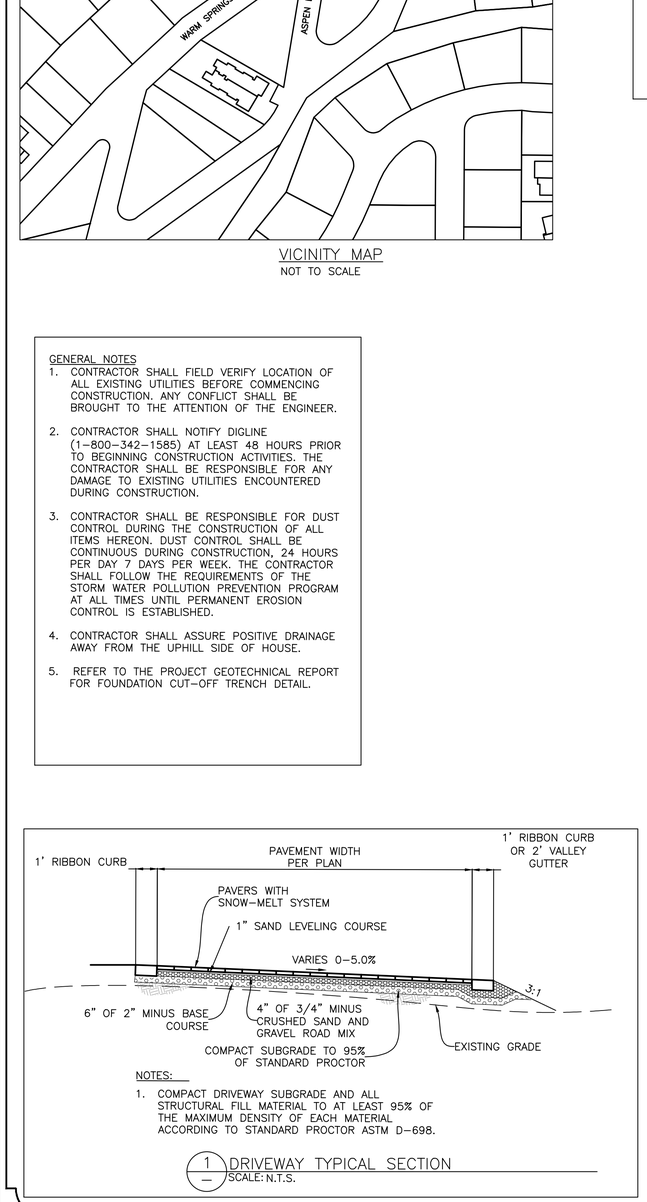
LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
ADJOINING PROPERTY LINE		
CENTERLINE		
ASPHALT PAVEMENT		
FENCE		
SEWER	S S	S S
SEWER MANHOLE		
WATER	W W	W
GAS	G G	G G
POWER		E E
TELEPHONE		
CABLE TV LINE	TV TV	TV TV
TELEPHONE RISER		
ELEVATION CONTOUR		
SAWCUT LINE		
FLOW LINE		
DRYWELL		
LANDSCAPE DRYWELL		
STORM DRAIN PIPE	12"SD	
CATCH BASIN		
DOWN SPOUT		DS

FG	FINISHED GRADE
ME	MATCH EXISTING GRADE
TW	TOP OF WALL

GENERAL NOTES

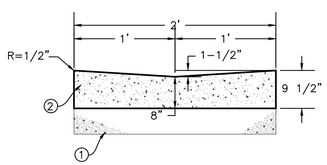
1. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION. ANY CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. CONTRACTOR SHALL NOTIFY DIGLINE (1-800-342-1585) AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL DURING THE CONSTRUCTION OF ALL ITEMS HEREON. DUST CONTROL SHALL BE CONTINUOUS DURING CONSTRUCTION, 24 HOURS PER DAY 7 DAYS PER WEEK. THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS OF THE STORM WATER POLLUTION PREVENTION PROGRAM AT ALL TIMES UNTIL PERMANENT EROSION CONTROL IS ESTABLISHED.
4. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM THE UPHILL SIDE OF HOUSE.
5. REFER TO THE PROJECT GEOTECHNICAL REPORT FOR FOUNDATION CUT-OFF TRENCH DETAIL.



NOTES:

1. COMPACT DRIVEWAY SUBGRADE AND ALL STRUCTURAL FILL MATERIAL TO AT LEAST 95% OF THE MAXIMUM DENSITY OF EACH MATERIAL ACCORDING TO STANDARD PROCTOR ASTM D-698.

1 — DRIVEWAY TYPICAL SECTION
SCALE: N.T.S.



TYPICAL SECTION

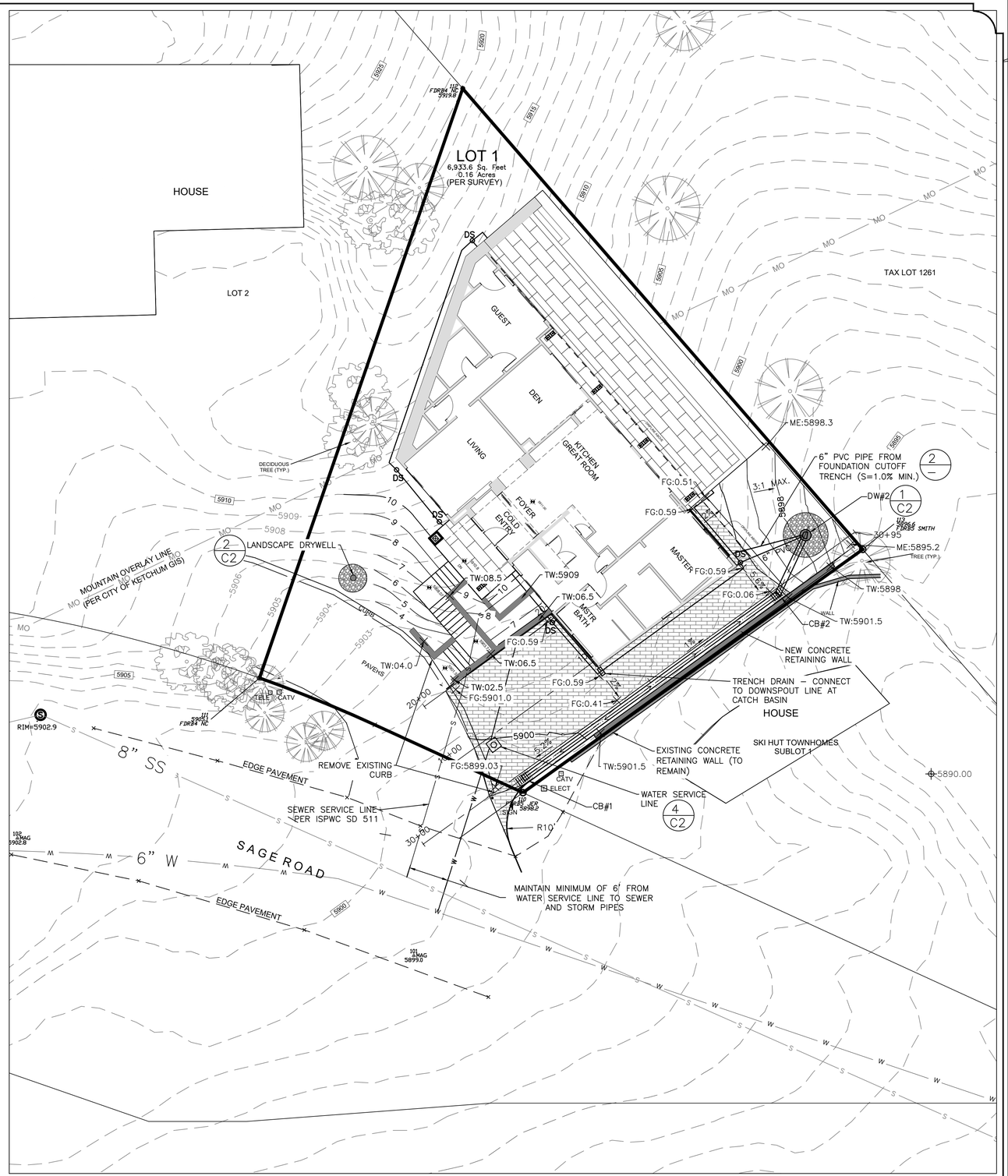
LEGEND

1. AGGREGATE BASE PER ROAD DESIGN.
2. CONCRETE
3. 1/2" EXPANSION JOINT

NOTES:

A. GRADE OF GUTTER MINIMUM 0.5%.
B. EXPANSION JOINT 1/2-INCH PREFORMED JOINT MATERIAL (AASHTO M 213.)

2 — VALLEY GUTTER DETAIL
SCALE: NONE



PLAN
SCALE IN FEET
0' 10' 20' 30'

PRELIMINARY - FOR DESIGN REVIEW

PROFESSIONAL ENGINEER
LICENSED
17661
STATE OF IDAHO
PHOEBE JOHANNESSEN
9/03/2019

No.	DESCRIPTION	DATE	BY
1			

REVISIONS

BENCHMARK ASSOCIATES

PREPARED BY:
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MAIL: WWW.BMA5B.COM

SITE PLAN

WARM SPRINGS VILLAGE 4, BL 3 LOT 1
T4N, R18E, SEC 11, B.M., CITY OF KETCHUM, IDAHO

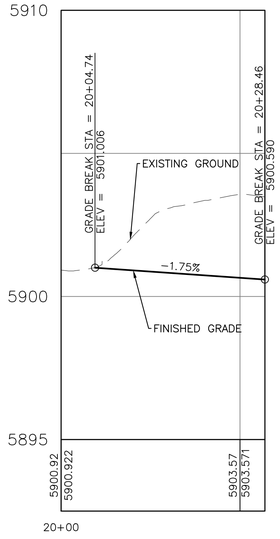
PREPARED FOR: DR. ROCKWELL HAMMOND JR.

DRAWN BY: PLJ
DESIGNED BY: PLJ
CHECKED BY: SB
DATE: 09/03/19
PROJECT NO.: 19068

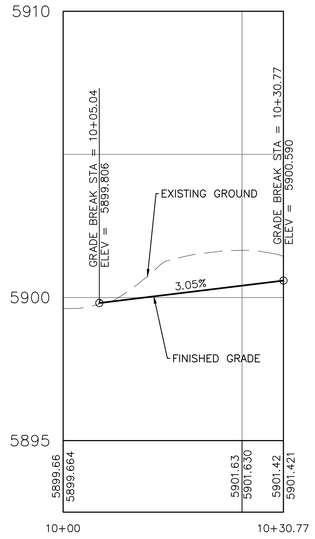
DRAWING NO.

C-1

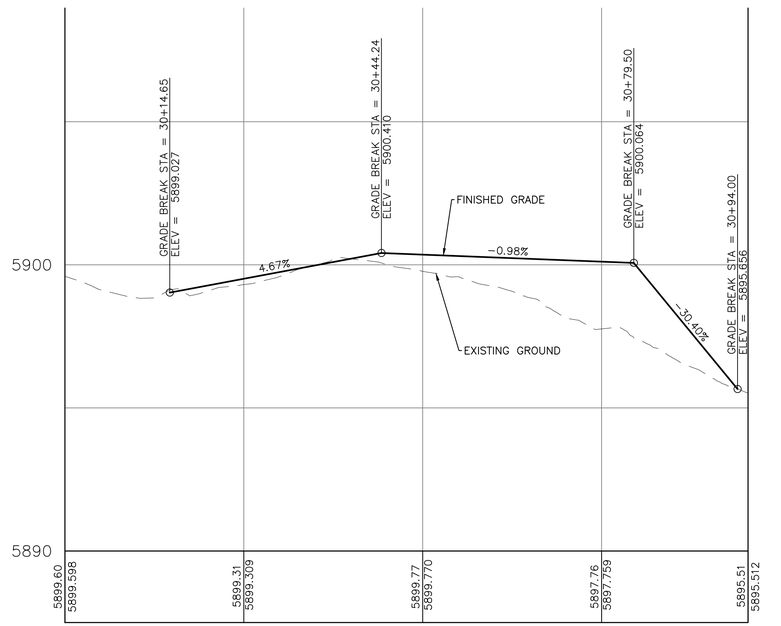
G:\BMA\P\warm springs village\4th addition\block 3\lot 1\CIVIL - HAMMOND\19068 Civil.dwg 9/3/2019 11:55:29 AM



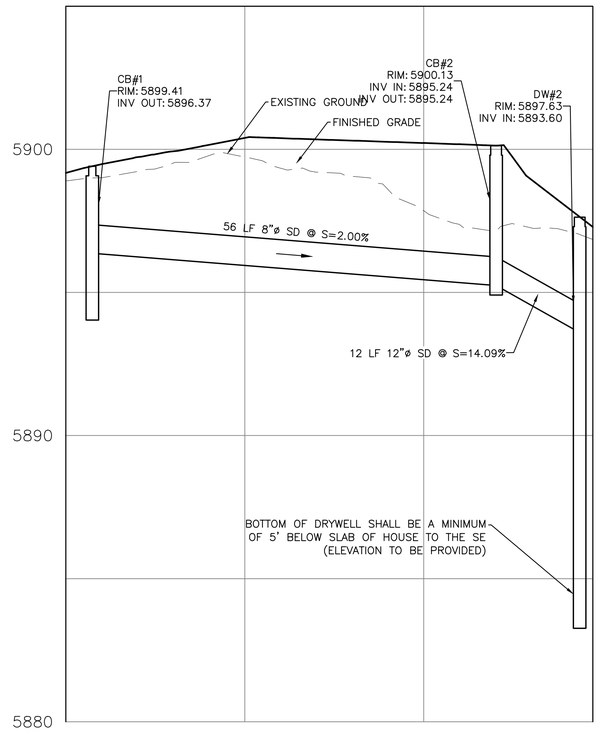
DRIVEWAY PROFILE (LEFT)
HORIZ: 1"=10'
VERT: 1"=5'

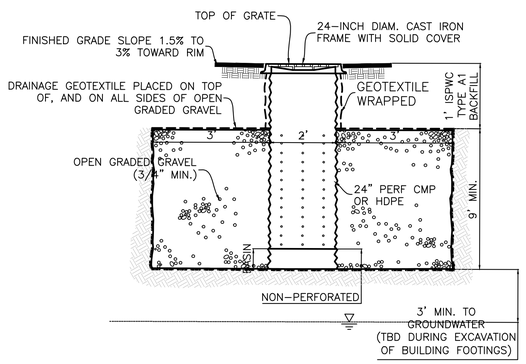


DRIVEWAY PROFILE (CENTER)
HORIZ: 1"=10'
VERT: 1"=5'



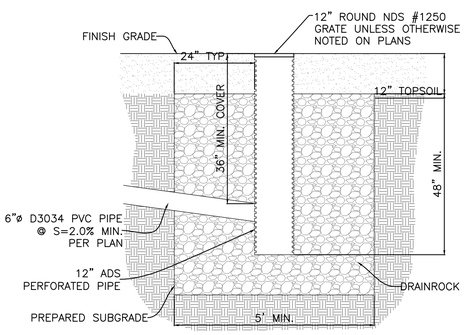
DRIVEWAY PROFILE (RIGHT)
HORIZ: 1"=10'
VERT: 1"=5'



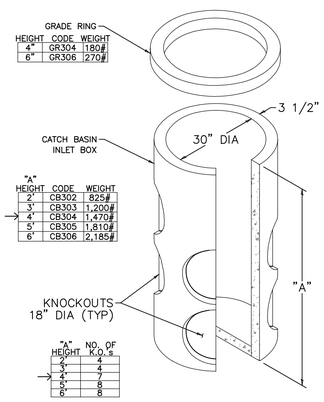


NOTES:
① ALL PRODUCTS AS NOTED OR APPROVED SUBSTITUTION.

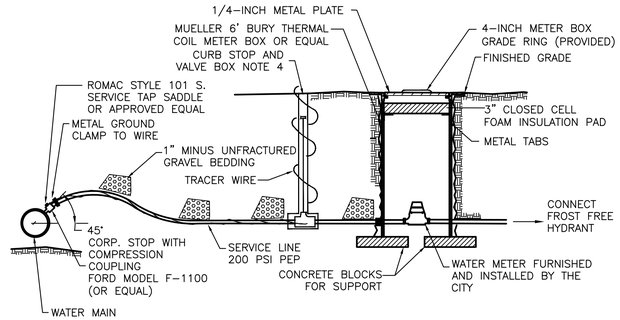
1 C1 DRYWELL DETAIL
SCALE: N.T.S.



2 C1 LANDSCAPE DRYWELL
SCALE: N.T.S.



3 C1 30-INCH CATCH BASIN DETAIL
SCALE: N.T.S.



NOTES
1. WATER SERVICE LINE SHALL HAVE A 6' MIN. BURY DEPTH
2. SERVICE LINE SHALL BE 1" DIAMETER POLYETHYLENE PIPE UNLESS OTHERWISE SPECIFIED.
3. WATER SERVICE LINES SHALL BE BEDDED WITH 1" MINUS UNFRACTURED GRAVEL. BEDDING SHALL BE INSTALLED 4" UNDER THE PIPE AND 6" OVER THE PIPE.
4. FORD MODEL B-111 RESILIENT SEAT, CURB BALL VALVE (OR EQUAL). FORD EXTENSION CURB BOX WITH ARCHED BASE, 1-INCH UPPER SECTION, AND 2 HOLE "ERIE" PATTERN LID.

4 C1 WATER SERVICE AND METER CONNECTION
SCALE: N.T.S.

PRELIMINARY – FOR DESIGN REVIEW

PROFESSIONAL ENGINEER
LICENSED
17661
STATE OF IDAHO
PHOEBE JOHANNESSEN
9/03/2019

REVISIONS

No.	DESCRIPTION	DATE	BY
1			

BENCHMARK ASSOCIATES

PREPARED BY:
BENCHMARK ASSOCIATES, P.A.
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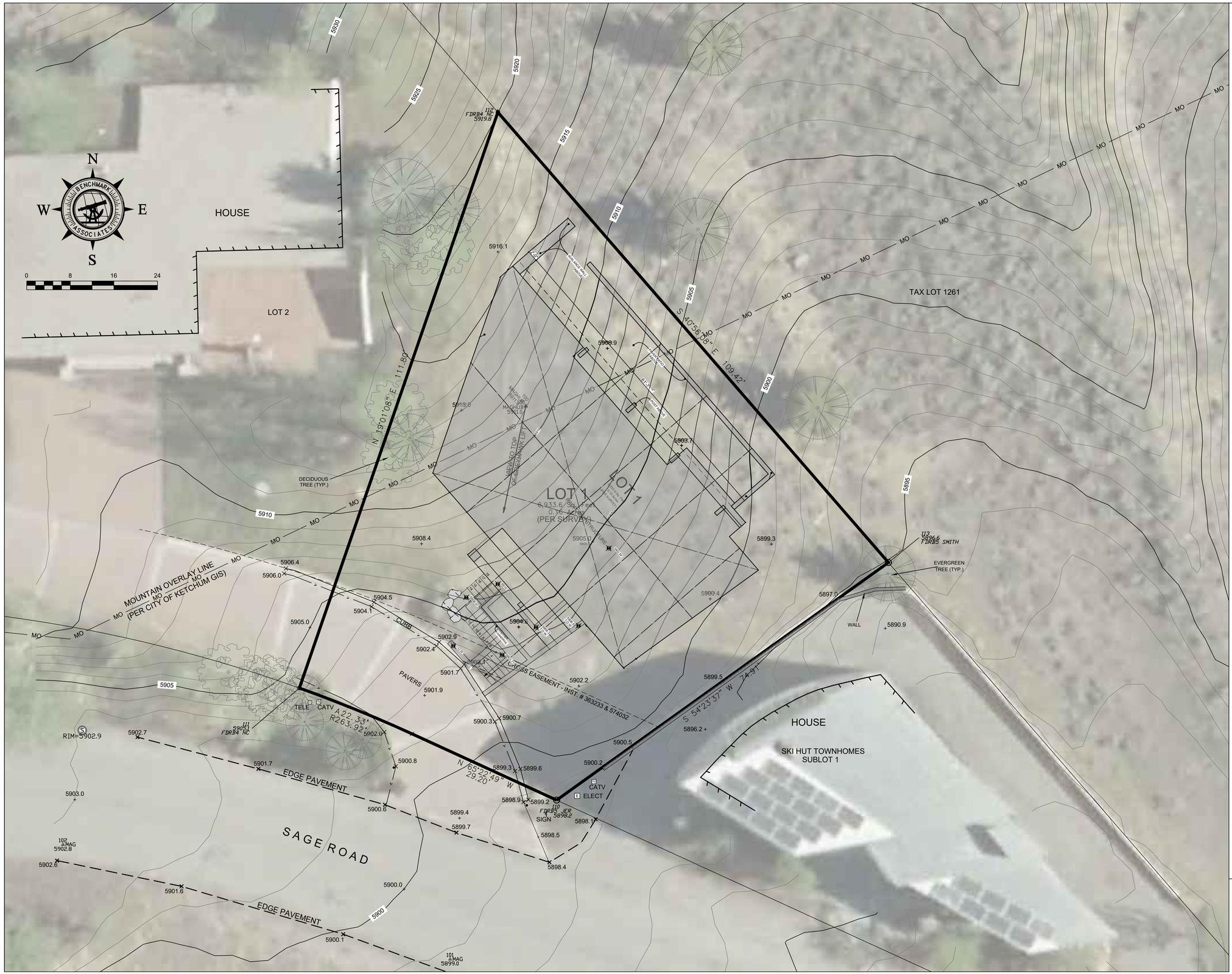
DETAILS

WARM SPRINGS VILLAGE 4, BL 3 LOT 1
T4N, R18E, SEC 11, B.M., CITY OF KETCHUM, IDAHO

PREPARED FOR: DR. ROCKWELL HAMMOND JR.

DRAWN BY: PLJ
DESIGNED BY: PLJ
CHECKED BY: SB
DATE: 09/03/19
PROJECT NO.: 19068

DRAWING NO.
C-2



NOTES

GENERAL RESTRICTIONS & TITLE INFORMATION:

1. THE PURPOSE OF THIS MAP IS TO SHOW TOPOGRAPHICAL/SITE INFORMATION AS IT EXISTED ON THE DATE THE FIELD SURVEY WAS PERFORMED. CHANGES MAY HAVE OCCURRED TO SITE CONDITIONS SINCE SURVEY DATE.
2. THIS MAP WAS PREPARED FOR THE EXPRESS USE OF THE CLIENT AND IS NOT TRANSFERABLE TO OTHERS WITHOUT WRITTEN CONSENT
3. A TITLE POLICY HAS NOT BEEN SUBMITTED TO BENCHMARK ASSOCIATES, NOR HAS A TITLE SEARCH BEEN REQUESTED. CERTAIN INFORMATION CONTAINED WITHIN SAID POLICY MAY NOT APPEAR ON THIS MAP OR MAY AFFECT ITEMS SHOWN ON THIS MAP.
4. ELECTRONIC DATA: BENCHMARK ASSOCIATES ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE REUSE, DISTRIBUTION OR ACCURACY OF DATA CONTAINED ON ELECTRONIC COPIES OF THIS DRAWING. THE STAMPED HARD COPY OF THIS DRAWING IS THE FINAL PRODUCT.
5. THIS DRAWING IS VOID AFTER 2 YEARS AND NO FURTHER COPIES OR DIGITAL FILES WILL BE TRANSMITTED.

EASEMENTS, ENCUMBRANCES AND RESTRICTIONS:

6. BUILDING AREA: BUILDING ENVELOPE IF SHOWN, IS PER PLAT. SETBACK AND FOOTPRINT REQUIREMENTS PER CURRENT CITY/COUNTY ORDINANCES MAY VARY FROM PLAT. IT IS RECOMMENDED THAT SAID ORDINANCES BE REVIEWED PRIOR TO DESIGN.
7. GENERAL RESTRICTIONS : EXCEPT AS SPECIFICALLY STATED OR SHOWN ON THIS MAP, THIS SURVEY DOES NOT PURPORT TO REFLECT ANY OF THE FOLLOWING WHICH MAY APPLICABLE TO THE SUBJECT OF REAL ESTATE: EASEMENTS, OTHER THAN THOSE SHOWN OR LISTED HEREON, BUILDING SETBACK LINES, RESTRICTIVE COVENANTS, SUBDIVISION RESTRICTIONS, ZONING, WETLANDS OR ANY OTHER LAND-USE REGULATIONS.
8. STORM WATER PLAN: IF SOIL DISTURBANCE, CLEARING, GRADING AND/OR EXCAVATION OF ONE (1) ACRE OR MORE IS TO TAKE PLACE A FEDERAL GENERAL CONSTRUCTION PERMIT, INCLUDING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), MUST BE PREPARED AND SUBMITTED TO AND APPROVED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY PRIOR TO ANY SITE DISTURBANCE.

SURVEY AND SITE FEATURES:

9. BASIS OF BEARINGS IS IDAHO STATE PLANE COORDINATE SYSTEM, NAD83, CENTRAL ZONE AS DERIVED BY GPS OBSERVATIONS. BOUNDARY LINES AND CERTAIN EASEMENTS SHOWN HEREON ARE PER PLAT. REFER TO PLAT & CC&R'S FOR CONDITIONS AND/OR RESTRICTIONS REGARDING THIS PROPERTY. ALL DISTANCES SHOWN ARE GROUND DISTANCES IN U.S. SURVEY FEET.
10. ELEVATIONS BASED ON NAVD 88 (GEOID03) DATUM.
11. UTILITIES AND DRAIN PIPES IF SHOWN HEREON ARE PER SURFACE EVIDENCE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST. LOCATION OF UNDERGROUND UTILITIES AND SERVICES SHOULD BE CONFIRMED PRIOR TO EXCAVATION OR DESIGN.
12. BUILDING WALLS IF SHOWN HEREON ARE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
13. SPRINKLER HEADS AND IRRIGATION LINES ARE NOT SHOWN HEREON.
14. TREE LOCATIONS AND DRIP LINES IF SHOWN HEREON ARE APPROXIMATE.
15. ORTHOPHOTOGRAPHY: PHOTO RECTIFIED AT GROUND LEVEL ONLY. IMAGES OF OBJECTS ABOVE GROUND LEVEL (TREES, BUILDINGS, POWER POLES, ETC.,) MAY BE DISPLACED. DATE OF PHOTOGRAPHY: JUNE 2017
16. CONTOUR INTERVAL: 1' - CONTOURS IN AREAS OF DENSE VEGETATION MAY DEVIATE FROM TRUE ELEVATION BY ONE HALF THE HEIGHT OF THE VEGETATION. DATE OF LIDAR FLIGHT FOR CONTOURS: 2016.
17. MAP SCALE: DUE TO ELECTRONIC MAP DELIVERY AND ALTERNATE PRINTING METHODS, PLEASE USE BAR SCALE TO DETERMINE ACTUAL PRINTED SCALE.
18. FEATURES OBSCURED BY DEBRIS, SNOW OR VEHICLES AT THE TIME OF SURVEY, DO NOT APPEAR ON THIS MAP.
19. THE ENTIRE PROPERTY LIES WITHIN A RED AVALANCHE ZONE AND THE CITY OF KETCHUM'S AVALANCHE OVERLAY. REFER TO THE CITY OF KETCHUM ORDINANCES FOR CONDITIONS/RESTRICTIONS THAT MAY APPLY.

PREPARED BY :

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13764
4/2/18
LARRY JONES

SHEET NUMBER

C-02

WARM SPRINGS VILLAGE 4
BLOCK 3, LOT 1

LOCATED WITHIN
SECTION 11, TOWNSHIP 4 NORTH, RANGE 18 EAST, B.M.,
CITY OF KETCHUM, BLAINE COUNTY, IDAHO

PREPARED FOR : DR. ROCKWELL HAMMOND JR.

PROJECT NO. 18031	DWG BY: DWS	CRD: 18031.CRD	18031TOPO.DWG
A TOPOGRAPHIC MAP	DATE OF SURVEY: 3/29/2018		SHEET: 1 OF 1

GENERAL STRUCTURAL NOTES

(APPLY UNLESS NOTED OTHERWISE ON PLANS/DETAILS)

GENERAL REQUIREMENTS:

1. THE STRUCTURAL SYSTEMS AND MEMBERS DEPICTED HEREIN HAVE BEEN DESIGNED PRIMARILY TO SAFEGUARD AGAINST MAJOR STRUCTURAL DAMAGE AND LOSS OF LIFE, NOT TO LIMIT DAMAGE OR MAINTAIN FUNCTION (IBC SECTION 101.3).
2. THESE DRAWINGS, AND THEIR ASSOCIATED STRUCTURAL CALCULATIONS, HAVE BEEN PERFORMED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE STRUCTURAL ENGINEER'S IN THIS OR SIMILAR LOCALITIES. THEY NECESSARILY ASSUME THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKMEN WHO HAVE A WORKING KNOWLEDGE OF THE INTERNATIONAL BUILDING CODE CONVENTIONAL FRAMING REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR FRAMING ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, IT IS UNDERSTOOD THAT THE CONTRACTOR WILL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR ALL MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED CONSTRUCTION SUCH THAT DESIGN LIVE LOAD PER SQUARE FOOT AS STATED HEREIN IS NOT EXCEEDED. OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF AN OPTION IS USED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES, AND SHALL COORDINATE ALL DETAILS.
4. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL STRUCTURAL NOTES AND SPECIFICATIONS, THE GREATER REQUIREMENTS SHALL GOVERN. TYPICAL DETAILS AND NOTES ARE NOT NECESSARILY INDICATED ON THE PLANS, BUT SHALL APPLY NONE-THE-LESS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT. DETAILS MAY SHOW ONLY ONE SIDE OF CONNECTION OR MAY OMIT INFORMATION FOR CLARITY.
5. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO START OF CONSTRUCTION. RESOLVE ANY DISCREPANCY WITH THE ARCHITECT AND STRUCTURAL ENGINEER.
6. ANY INSPECTIONS, SPECIAL (IBC CHAPTER 17) OR OTHERWISE THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR BY THESE PLANS SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY OR THE BUILDING DEPARTMENT, SITE VISITS BY THE STRUCTURAL ENGINEER DO NOT CONSTITUTE AN OFFICIAL INSPECTION, UNLESS SPECIFICALLY CONTRACTED FOR.
7. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL ITEMS IN ADDITION TO ITEMS REQUIRED BY ARCHITECTURAL SPECIFICATIONS, THE CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS PRIOR TO SUBMITTAL. ITEMS NOT IN ACCORDANCE WITH CONTRACT DRAWINGS SHALL BE FLAGGED UPON HIS REVIEW. VERIFY ALL DIMENSIONS WITH ARCHITECT. ANY CHANGES, SUBSTITUTIONS, OR DEVIATIONS FROM ORIGINAL CONTRACT DRAWINGS SHALL BE CLOUDED. ANY OF THE AFOREMENTIONED WHICH ARE NOT CLOUDED OR FLAGGED BY SUBMITTING PARTIES, SHALL NOT BE CONSIDERED APPROVED AFTER THE STRUCTURAL ENGINEER'S REVIEW, UNLESS NOTED ACCORDINGLY. ANY ENGINEERING PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW, SHALL BEAR THE SEAL OF A STRUCTURAL ENGINEER REGISTERED IN THE APPROPRIATE STATE. THE SHOP DRAWINGS DO NOT REPLACE THE ORIGINAL CONTRACT DRAWINGS. ITEMS OMITTED OR SHOWN INCORRECTLY AND ARE NOT FLAGGED BY THE STRUCTURAL ENGINEER ARE NOT TO BE CONSIDERED CHANGES TO ORIGINAL DRAWINGS. THE ADEQUACY OF ENGINEERING DESIGNS AND LAYOUT PERFORMED BY THE OTHERS RESTS WITH THE DESIGNING OR SUBMITTING AUTHORITY. REVIEWING IS INTENDED ONLY AS AN AID TO THE CONTRACTOR IN OBTAINING CORRECT SHOP DRAWINGS. RESPONSIBILITY FOR CORRECTNESS SHALL REST WITH THE CONTRACTOR. ALLOW (5) WORKING DAYS FOR THE STRUCTURAL ENGINEER'S REVIEW. ONE COPY OF EACH SUBMITTAL WILL BE RETAINED FOR THE STRUCTURAL ENGINEER'S RECORDS.

BASIS FOR DESIGN:

1. BUILDING CODE: 2015 EDITION OF THE IBC WITH CITY/COUNTY AMENDMENTS.

   RISK CATEGORY = II

2. VERTICAL LOADS:

LOCATION	LIVE / SNOW LOAD	DEAD LOAD
ROOF	25 PSF	100 PSF
2ND FLOOR (WOOD)	40 PSF	25 PSF
2ND FLOOR (CONCRETE)	40 PSF	100 PSF
BALCONY	60 PSF	20 PSF
STAIRS	100 PSF	25 PSF

3. DEFLECTION LIMITS:

ELEMENTS	LIVE LOAD	TOTAL LOAD
ROOF TRUSSES/JOISTS	L/360	L/240
FLOOR TRUSSES/JOISTS	L/720	L/240
BEAMS	L/360	L/240

4. SEISMIC DESIGN PARAMETERS:

ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE PROCEDURE
IMPORTANCE FACTOR	Ie = 1.00
SITE CLASS	D
SEISMIC DESIGN CATEGORY	D
MAPPED SPECTRAL RESPONSE ACCELERATIONS	$S_1 = 0.152$, $S_S = 0.470$
DESIGN SPECTRAL RESPONSE ACCELERATIONS	$S_{D1} = 0.222$, $S_{DS} = 0.446$
PERCENT SNOW INCLUDED WITH SEISMIC LOADS	20
VERTICAL SHEAR TRANSFER ELEMENTS:	
PLYWOOD SHEARWALL(S)	R = 6.5, $C_S = 0.069$
SPECIAL CONCRETE	R = 5.5, $C_S = 0.129$

5. WIND DESIGN PARAMETERS (STRENGTH):

ULTIMATE WIND SPEED	115 MPH (3 SECOND GUST)
WIND EXPOSURE	C
IMPORTANCE FACTOR	Iw = 1.00
INTERNAL PRESSURE COEFFICIENT	-0.18
COMPONENT AND CLADDING PRESSURE	40 PSF
NET UPLIFT ON ROOF	20 PSF

FOUNDATION NOTES:

1. FOUNDATIONS DESIGNED IN CONFORMANCE WITH RECOMMENDATIONS BY: ENGINEERING TESTING CONSULTANTS, INC. REPORT NO. 3456 DATED JANUARY 1, 2007.
2. SITE PREPARATION AND GRADING REQUIREMENTS OF THE SOIL REPORT AND ANY ADDENDUM'S SHALL BE COMPLETED PRIOR TO CONSTRUCTION OF FOUNDATIONS. ANY TESTS OR INSPECTIONS REQUIRED BY THE SOIL REPORT SHALL BE PERFORMED PRIOR TO PLACEMENT OF FOUNDATION REINFORCING STEEL OR CONCRETE. ALTERATIONS TO SITE PREPARATION OR GRADING SHALL BE REPORTED TO THE GEOTECHNICAL ENGINEER PRIOR TO FOUNDATION CONSTRUCTION.

   (USE THE NEXT 4 PARAGRAPHS IF THERE IS NO SOIL REPORT)

1. IN LIEU OF A GEOTECHNICAL REPORT: THE FOUNDATION HAS BEEN DESIGNED ACCORDING TO THE RECOMMENDATIONS OF CHAPTER 18 OF THE IBC.
2. THE SOIL DESIGN VALUES LISTED BELOW HAVE BEEN APPROVED BY THE CITY/COUNTY BUILDING DEPARTMENT, CONTINGENT THAT THE SOIL ON THE SITE PREDOMINATELY CONSISTS OF SAND AND/OR GRAVEL.

   SPECIFIC SOIL CLASSIFICATIONS SHOULD BE ONE OF THE FOLLOWING: SANDY GRAVEL OR GRAVEL(GW OR GP), SAND(SW AND SP), SILTY SAND(SM), CLAYEY SAND(SC), SILTY GRAVEL(GM), OR CLAYEY GRAVEL(GC). THESE SOIL CLASSIFICATIONS CAN BE FOUND IN TABLE 1806.2 OF CHAPTER 18 OF THE IBC.

   VERIFICATION OF SOIL CLASSIFICATION IS THE RESPONSIBILITY OF THE CONTRACTOR.

THE SOIL DESIGN VALUES FOR THE FOUNDATION ARE:

ALLOWABLE BEARING PRESSURE	1500 PSF
ALLOWABLE LATERAL BEARING PRESSURE	150 PSF/FT
ALLOWABLE LATERAL SLIDING COEFFICIENT	0.25
LATERAL BACKFILL PRESSURE (UNRESTRAINED)	30 PSF/FT
LATERAL BACKFILL PRESSURE (RESTRAINED)	50 PSF/FT

3. A ONE-THIRD INCREASE IN BEARING PRESSURES IS ALLOWED WITH SEISMIC OR WIND LOAD COMBINATIONS. LATERAL BEARING AND LATERAL SLIDING RESISTANCE MAY BE COMBINED.

FOUNDATION BEARING DEPTH
30" BELOW FINISHED GRADE

4. ALL FOUNDATIONS SHALL BEAR ON COMPACTED ENGINEERED FILL OR COMPETENT NATIVE SOIL SUBBASE COMPACTED TO 95% DRY DENSITY (STANDARD PROCTOR). GRADE IS DEFINED AS LOWEST ADJACENT GRADE WITHIN 5 FEET OF THE BUILDING FOR PERIMETER FOOTINGS. WHERE EXTERIOR PAVING OR CONCRETE IS DIRECTLY ADJACENT TO BUILDING, GRADE IS DEFINED AS TOP OF EXTERIOR PAVING AT LEAST 5 FEET FROM BUILDING. CONCRETE FOOTING EXCAVATIONS SHALL BE CLEAN AND FREE OF LOOSE DEBRIS OR UN-COMPACTED MATERIAL AT TIME OF CONCRETE PLACEMENT.
5. CONCRETE SLABS ON GRADE SHALL BE SUPPORTED ON A 4 INCH (MIN) LAYER OF FREE-DRAINING GRANULAR MAT (DRAINAGE FILL COURSE). THE MAT SHOULD CONSIST OF A WELL GRADED SAND AND GRAVEL MIXTURE WITH MAXIMUM 3/4-INCH CRUSHED AGGREGATE. THE GRANULAR MAT SHOULD BE COMPACTED TO NO LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557.
6. BACKFILL AGAINST RESTRAINED WALLS SHALL NOT BE PLACED UNTIL AFTER THE WALLS ARE SUPPORTED BY THE COMPLETION OF INTERIOR FLOOR SYSTEMS AND CONCRETE OR GROUT STRENGTH HAS REACHED THE 28 DAY STRENGTH LISTED BELOW.

REINFORCING STEEL:

1. ASTM A615 GRADE 60 (FY = 60 KSI) DEFORMED BARS FOR ALL BARS #4 AND LARGER. ASTM A615 GRADE 40 (FY = 40 KSI) DEFORMED BARS FOR ALL BARS #3 AND SMALLER. GRADE 60 DEFORMED BARS SHALL BE USED FOR CONCRETE WALLS, BEAMS, ELEVATED SLABS AND COLUMN REINFORCING.
2. WELDING OF REINFORCING BARS SHALL BE MADE ONLY TO ASTM A706 GRADE 60 BARS AND ONLY USING E90 SERIES RODS. WELDING OF REINFORCING BARS SHALL BE MADE ONLY AT LOCATIONS SHOWN ON PLANS OR DETAILS.
3. REINFORCING BAR SPACING GIVEN ARE MAXIMUM ON CENTERS. ALL BARS PER CRSI SPECIFICATIONS AND HANDBOOK. DOWEL ALL VERTICAL REINFORCING TO FOUNDATION. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE.

STEEL:

1. MATERIALS: ROLLED W SHAPES, SHALL CONFORM TO ASTM A992 (FY=50 KSI). ALL OTHER STRUCTURAL STEEL SHAPES, ROLLED SECTIONS, BARS AND PLATES SHALL CONFORM TO ASTM A36 (FY = 36 KSI). ALL PIPE STEEL SHALL BE ASTM A501 (FY = 36 KSI) OR ASTM A53, TYPE E OR S, GRADE B (FY = 35 KSI). ALL TUBULAR STEEL SHALL BE ASTM A500 (FY = 46 KSI).
2. ALL BOLTS AND STUDS SHALL BE ASTM A307, UNLESS NOTED OTHERWISE. ALL EXPANSION BOLTS TO HAVE CURRENT ICC REPORT RATING FOR MATERIAL INTO WHICH INSTALLATION TAKES PLACE. HEADED STUDS SHALL CONFORM TO ALL REQUIREMENTS OF THE LATEST EDITION OF THE "RECOMMENDED PRACTICES FOR STUD WELDING" AND THE "STRUCTURAL WELDING CODE" PUBLISHED BY AWS. ALL BOLTS, ANCHOR BOLTS, EXPANSION BOLTS, ETC. SHALL BE INSTALLED WITH STEEL WASHERS AT FACE OF WOOD OR AT SLOTTED HOLES IN STEEL SECTIONS.
3. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION.
4. WELDING SHALL BE BY WELDERS HOLDING VALID CERTIFICATES AND HAVING CURRENT EXPERIENCE IN THE TYPE OF WELD SHOWN ON THE DRAWINGS OR NOTES. ALL WELDING SHALL USE E70 SERIES LOW HYDROGEN RODS UNLESS NOTED OTHERWISE. ALL WELDING PER LATEST AMERICAN WELDING SOCIETY STANDARDS. ALL WELDS ON DRAWINGS ARE SHOWN AS SHOP WELDS. CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION. ALL FULL PENETRATION WELDS SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.
5. STEEL TO STEEL BOLTED CONNECTIONS: HIGH STRENGTH BOLTS SHALL BE ASTM A325N AND SHALL BE INSTALLED AS BEARING-TYPE CONNECTIONS WITH THREADS INCLUDED IN SHEAR PLANE (TYPE "N" CONNECTION UNLESS NOTED OTHERWISE). BOLTS MAY BE TIGHTENED USING ANY AISC APPROVED METHOD.
6. DRYPACK SHALL BE 5,000 PSI FIVE STAR NON-SHRINK GROUT OR EQUIVALENT. INSTALL DRYPACK UNDER BEARING PLATES BEFORE FRAMING MEMBER IS INSTALLED. AT COLUMNS, INSTALL DRYPACK UNDER BASE PLATES AFTER COLUMN HAS BEEN PLUMBED BUT PRIOR TO FLOOR OR ROOF INSTALLATION.

CONCRETE:

1. MINIMUM 28 DAY CONCRETE STRENGTH SHALL BE AS FOLLOWS:

USE:	CONCRETE STRENGTH:	MAX W/C RATIO	AIR ENTRAINMENT
FOOTINGS	3500 PSI	0.50	5.5% ± 1%
FOUNDATION WALLS	4500 PSI	0.45	5.5% ± 1%
INTERIOR CONCRETE SLABS ON GRADE	3500 PSI	0.45	N/A
BEAMS, COLUMNS, ELEVATED SLABS, WALLS	4500 PSI	0.45	5.5% ± 1%

CONCRETE CONT:

2. ALL NORMAL WEIGHT CONCRETE SHALL BE REGULAR WEIGHT OF 150 POUNDS PER CUBIC FOOT USING HARD-ROCK AGGREGATES. AGGREGATE USED IN CONCRETE SHALL CONFORM TO ASTM C33.
3. LAP SPLICES FOR BEAMS AND FLOOR SLABS SLABS SHALL BE ACCORDING TO CHAPTER 12 OF ACI 318 OR LAP SCHEDULE ON THESE DRAWINGS.

   STAGGER SPLICES A MINIMUM OF ONE LAP LENGTH. NO TACK WELDING OF REINFORCING BARS ALLOWED WITHOUT PRIOR REVIEW OF PROCEDURE WITH THE STRUCTURAL ENGINEER. LATEST ACI CODE AND DETAILING MANUAL APPLY. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT ALL CORNERS AND INTERSECTIONS PER TYPICAL DETAILS. VERTICAL WALL BARS SHALL BE SPLICED AT OR NEAR FLOOR LINES.
4. ALL DIMENSIONS SHOWING THE LOCATION OF REINFORCING STEEL NOT NOTED AS "CLEAR" OR "CLR" ARE TO CENTER OF STEEL. MINIMUM COVER FOR NON-PRESTRESSED CONCRETE REINFORCING SHALL BE AS FOLLOWS:

LOCATION:	MINIMUM COVER	TOLERANCE
CAST AGAINST EARTH (FOOTINGS)	3"	± $^3/_8$"
SLABS ON GRADE	1$^1/_2$"	± $^1/_4$"
EXPOSED TO EARTH OR WEATHER - #5 AND SMALLER	1$^1/_2$"	± $^3/_8$"
EXPOSED TO EARTH OR WEATHER - #6 AND LARGER	2"	± $^3/_8$"
NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND ROOF SLAB	1"	$^1/_8$"
STRUCTURAL SLABS AND WALLS	$^3/_4$"	$^1/_8$"
BEAMS AND COLUMNS (PRIMARY) REINFORCEMENT, TIES, STIRRUPS AND SPIRALS	1$^1/_2$"	$^3/_8$"

5. MAXIMUM SLUMP FOR ALL CONCRETE SHALL BE 6". PORTLAND CEMENT SHALL CONFORM TO ASTM C150. TYPE V CEMENT SHALL BE USED FOR CONCRETE IN CONTACT WITH ALKALINE SOIL, AND TYPE II ELSEWHERE.
6. NO MORE THAN 90 MINUTES SHALL ELAPSE BETWEEN CONCRETE BATCHING AND CONCRETE PLACEMENT UNLESS APPROVED BY THE TESTING AGENCY.
7. CONCRETE PLACEMENT AND QUALITY SHALL BE PER RECOMMENDATIONS IN ACI 614, ACI 301 AND ACI 318. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED, EXCEPT THAT SLABS ON GRADE NEED BE VIBRATED ONLY AROUND AND UNDER FLOOR DUCTS, ETC. CAST CLOSURE POUR, WHERE SHOWN ON PLANS AROUND COLUMNS AFTER COLUMN DEAD LOAD IS APPLIED. REMOVE ALL DEBRIS FROM FORMS BEFORE PLACING CONCRETE.

   ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCING, DOWELS, BOLTS, ANCHORS, PIPES, SLEEVES, ETC., SHALL BE SECURELY POSITIONED IN THE FORMS BEFORE PLACING THE CONCRETE.
8. ALL CONCRETE SLABS ON GRADE SHALL BE DIVIDED INTO AREAS BY CONTROL JOINTS (KEYED OR SAW CUT) SUCH THAT ONE SLAB AREA DOES NOT EXCEED A MAXIMUM LENGTH OF 24 TIMES THE SLAB THICKNESS IN BOTH DIRECTIONS (EXAMPLE: 4" SLAB = 8'-0" LENGTH). SQUARE LAYOUTS ARE PREFERRED, BUT THE SLAB GEOMETRY MAY DICTATE OTHERWISE. THE RATIO OF THE LONG TO SHORT DISTANCE SHALL NOT EXCEED 1.3. IT IS RECOMMENDED THAT SAW CUTS BE MADE WITHIN 16 HOURS OF CONCRETE BATCHING.

   KEYED CONTROL JOINTS NEED ONLY OCCUR AT EXPOSED EDGES DURING POURING, ALL OTHER JOINTS MAY BE SAW CUT.
9. HORIZONTAL PIPES AND ELECTRICAL CONDUITS SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE AND SLABS ON GRADE EXCEPT WHERE SPECIFICALLY APPROVED OR NOTED BY THE STRUCTURAL ENGINEER. PIPES AND CONDUITS SHALL NOT IMPAIR THE STRENGTH OF THE WORK.
10. FLY ASH MAY BE USED ONLY IF PERMITTED BY ARCHITECTURAL SPECIFICATIONS AND SHALL BE LIMITED TO 18 PERCENT OF CEMENTITIOUS MATERIALS AND SHALL HAVE A REPLACEMENT FACTOR OF 1.2 RELATIVE TO CEMENT REPLACED. NO FLY ASH ADDITIVES SHALL BE USED IN FLATWORK OR ARCHITECTURALLY EXPOSED CONCRETE.
11. COLD/HOT WEATHER CONCRETE CONSTRUCTION: PROTECT CONCRETE FROM DAMAGE OR REDUCED STRENGTH IN COMPLIANCE WITH ACI 305 AND 306.
12. CONCRETE MIXES SHALL BE DESIGNED BY A CERTIFIED LABORATORY AND APPROVED BY THE STRUCTURAL ENGINEER.
13. LIMIT ALKALI-SILICA REACTION (ASR) TO 0.1% EXPANSION AT 28 DAYS IN CONCRETE MIX AT ALL EXTERIOR CONCRETE AND INTERIOR CONCRETE EXPOSED TO MOISTURE.

WOOD:

1. GENERAL: DO NOT NOTCH OR DRILL JOISTS, BEAMS, OR LOAD BEARING STUDS WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER THROUGH THE ARCHITECT. DOUBLE UP JOISTS AND BLOCKING UNDER PARTITIONS. PROVIDE 2" (NOMINAL) SOLID BLOCKING AT SUPPORTS OF ALL JOISTS. UNLESS NOTED OTHERWISE ON PLANS/DETAILS PROVIDE 2x SOLID BLOCKING AT MID-HEIGHT OF BEARING STUD WALLS. ALL NAILING NOT NOTED SHALL BE ACCORDING TO IBC TABLE 2304.10.1. JOIST HANGERS AND OTHER MISC. FRAMING ANCHORS SHALL BE SIMPSON STRONG-TIE COMPANY, INC. OR OTHER MANUFACTURER WITH CURRENT ICC-ES APPROVAL.
2. SAWN LUMBER: FRAMING LUMBER SHALL COMPLY WITH THE LATEST EDITION OF THE GRADING RULES OF THE WESTERN WOOD PRODUCTS ASSOCIATION (WWPA) OR THE WEST COAST LUMBER INSPECTION BUREAU (WCLIB). ALL SAWN LUMBER SHALL BE STAMPED WITH THE GRADE MARK OF AN APPROVED LUMBER GRADING AGENCY. SAWN LUMBER SHALL HAVE THE FOLLOWING MINIMUM GRADE UNLESS NOTED OTHERWISE IN SCHEDULES:

USE:	MATERIAL:
2x4 STUDS	DOUGLAS-FIR NO. 2, MINIMUM (U.N.O.)
2x6 STUDS	DOUGLAS-FIR NO. 2, MINIMUM (U.N.O.)
JOISTS, TOP PLATES AND ALL OTHER SAWN LUMBER	DOUGLAS-FIR NO. 2, MINIMUM (U.N.O.)
BEAMS AND POSTS	DOUGLAS-FIR NO. 2, MINIMUM (U.N.O.)

3. PLYWOOD: ALL PLYWOOD SHALL BE C-D OR C-C SHEATHING CONFORMING TO STANDARD PS 1-95. LAY UP PLYWOOD WITH FACE GRAIN IN PERPENDICULAR TO SUPPORTS (ON ROOFS WHERE PLYWOOD IS LAID UP WITH FACE GRAIN PARALLEL TO SUPPORTS, USE A MINIMUM OF 5-PLY PLYWOOD, STAGGER JOINTS). ALL NAILING, COMMON NAILS. BLOCKING AT PANEL EDGES WHERE INDICATED ON PLANS. ALL PLYWOOD SHALL BE OF THE FOLLOWING NOMINAL THICKNESS, SPAN/INDEX RATING AND SHALL BE NAILED AS FOLLOWS UNLESS NOTED OTHERWISE ON THE PLANS:

LOCATION:	NOMINAL THICKNESS:	SPAN INDEX RATING:	EDGE ATTACHMENT:	FIELD ATTACHMENT:
WALL	$^7/_{16}$" OR $^1/_2$"	$^{24}/_{16}$	8d AT 6" O.C.	8d AT 12" O.C.
ROOF	$^7/_{16}$" OR $^1/_2$"	$^{24}/_{16}$	8d AT 6" O.C.	8d AT 12" O.C.
ROOF	$^{15}/_{32}$" OR $^1/_2$"	$^{32}/_{16}$	8d AT 6" O.C.	8d AT 12" O.C.
ROOF	$^{19}/_{32}$" OR $^5/_8$"	$^{40}/_{20}$	10d AT 6" O.C.	10d AT 12" O.C.
ROOF	$^{23}/_{32}$" OR $^3/_4$"	$^{48}/_{24}$	10d AT 6" O.C.	10d AT 12" O.C.
ROOF	$^7/_8$"	$^{60}/_{32}$	10d AT 6" O.C.	10d AT 12" O.C.

WOOD CONT:

LOCATION:	NOMINAL THICKNESS:	SPAN INDEX RATING:	EDGE ATTACHMENT:	FIELD ATTACHMENT:
FLOOR	$^3/_4$" T&G	$^{48}/_{24}$	10d AT 6" O.C. OR #8 SCREWS AT 6" O.C.	10d AT 6" O.C. OR #8 SCREWS AT 12" O.C.
FLOOR	$^7/_8$" T&G	$^{60}/_{32}$	10d AT 6" O.C. OR #8 SCREWS AT 6" O.C.	10d AT 6" O.C. OR #8 SCREWS AT 12" O.C.
FLOOR	1$^1/_8$" T&G	$^{60}/_{48}$	10d AT 6" O.C. OR #8 SCREWS AT 6" O.C.	10d AT 6" O.C. OR #8 SCREWS AT 12" O.C.

SCREWS AT FLOOR SHEATHING SHALL BE #8 SCREWS AND SHALL PENETRATE AT LEAST 1$^1/_2$" INTO THE SUPPORTING MEMBER. ALL FLOOR SHEATHING SHALL BE GLUED TO SUPPORTING MEMBERS WITH AN APA AFG-01 QUALIFIED GLUE.

PLYWOOD ALTERNATE: AMERICAN PLYWOOD ASSOCIATION PERFORMANCE RATED SHEATHING MAY BE USED AS AN ALTERNATE TO PLYWOOD WITH PRIOR APPROVAL OF OWNER, ARCHITECT AND ROOFER. IT MAY NOT BE USED ON ROOFS WHERE BUILT-UP ROOF SYSTEM IS TO BE GUARANTEED BY ROOFER. RATED SHEATHING SHALL COMPLY WITH CURRENT ICC-ES REPORTS AND SHALL HAVE A SPAN RATING EQUIVALENT TO OR BETTER THAN THE PLYWOOD IT REPLACES. ATTACHMENT AND THICKNESS (WITHIN $^1/_{32}$") SHALL BE THE SAME AS THE PLYWOOD IT REPLACES. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

4. NOMINAL 2x AND 3x DECKING. TONGUE AND GROOVE TYPE. MINIMUM Fb = 1,600 PSI, MINIMUM E = 1,300,000 PSI. INSTALL WITH TONGUES UP SLOPE ON PITCHED ROOFS, AND OUTWARD IN THE DIRECTION OF LAYING ON FLAT ROOFS. NAIL EACH PLANK WITH 16d TOENAIL (THRU THE TONGUE) AND 16d FACE NAIL AT EACH SUPPORT. DECK SHALL BE INSTALLED AS SIMPLE SPAN WITH ALL PLANKS BEARING ON TWO SUPPORTS. FOR REFERENCE AND/OR ADDITIONAL INFORMATION SEE AITC 117-2010.
5. GLUED-LAMINATED BEAMS (GLB): GLUED-LAMINATED BEAMS SHALL BE DOUGLAS FIR COMBINATION AT 24F-V4 AT SIMPLE SPAN BEAMS AND 24F-V8 AT MULTI-SPAN AND CANTILEVERED BEAMS WITH THE FOLLOWING MINIMUM PROPERTIES: FB = 2,400 PSI, FV = 190 PSI, FC (PERPENDICULAR) = 650 PSI, E =1,800 KSI. ALL BEAMS SHALL BE FABRICATED USING WATERPROOF GLUE. FABRICATION AND HANDLING PER LATEST AITC AND WCLA STANDARDS. BEAMS TO BEAR GRADE STAMP AND AITC STAMP AND CERTIFICATE. CAMBER AS SHOWN ON DRAWINGS. STANDARD CAMBER IS BASED ON A RADIUS OF CURVATURE OF 2000 FEET.
6. GLUED-LAMINATED COLUMNS: GLUED-LAMINATED COLUMNS SHALL BE DOUGLAS FIR COMBINATION 3 WITH THE FOLLOWING MINIMUM PROPERTIES: FBY = 2,100 PSI, FBY = 2000 PSI, FVY = 230 PSI, FVX = 265 PSI, FC (PERPENDICULAR) = 650 PSI, E =1,900 KSI. ALL COLUMNS SHALL BE FABRICATED USING WATERPROOF GLUE. FABRICATION AND HANDLING PER LATEST AITC AND WCLA STANDARDS. COLUMNS TO BEAR GRADE STAMP AND AITC STAMP AND CERTIFICATE.
7. LAMINATED VENEER LUMBER (LVL): DESIGN, FABRICATION AND ERECTION IN ACCORDANCE WITH THE LATEST ICC-ES REPORT. MINIMUM PROPERTIES FOR LVLs SHALL BE: FB = 2,600 PSI, FV = 285 PSI, E = 2,000 KSI.
8. PARALLEL STRAND LUMBER (PSL): DESIGN, FABRICATION AND ERECTION IN ACCORDANCE WITH THE LATEST ICC-ES REPORT. MINIMUM PROPERTIES FOR PSLs SHALL BE: FB = 2,900 PSI, FV = 290 PSI, E = 2,000 KSI.
9. LAMINATED STRAND LUMBER (LSL): DESIGN, FABRICATION AND ERECTION IN ACCORDANCE WITH THE LATEST ICC-ES REPORT. MINIMUM PROPERTIES FOR LSLs SHALL BE: FB = 2,325 PSI, FV = 310 PSI, E = 1,550 KSI.
10. SILL PLATES RESTING ON CONCRETE OR MASONRY SHALL BE OF TREATED FIR. SHEAR WALLS AND EXTERIOR WALL SILLS AT CONCRETE SLAB SHALL HAVE A MINIMUM OF (2) ANCHOR BOLTS PER PIECE. PROVIDE ANCHOR BOLT AT 9" MAXIMUM, 4" MINIMUM FROM THE END OF EACH PIECE AT SPLICE OR END OF WALL. MAXIMUM ANCHOR BOLT SPACING SHALL BE 72" ON CENTER UNLESS NOTED OTHERWISE ON PLANS OR DETAILS. ALL ANCHOR BOLTS (OTHER THAN BOLTS FOR HOLDOWNS) SHALL EMBED 7" INTO CONCRETE. ANCHOR BOLTS FOR HOLDOWNS SHALL NOT BE CONSIDERED AS PART OF REQUIRED ANCHOR BOLTS ON SHEAR WALLS. ALL EXTERIOR WALLS SHALL BE SECURED WITH MINIMUM ANCHOR BOLTS. INTERIOR WALLS MAY BE SECURED TO CONCRETE WITH EITHER ANCHOR BOLTS OR POWER DRIVEN SHOT PINS UNLESS NOTED OTHERWISE ON PLANS.
11. BOLTING: ALL BOLTS IN WOOD CONNECTIONS SHALL CONFORM TO ASTM A307. BOLTS SHALL BE INSTALLED IN HOLES BORED WITH A BIT $^1/_{16}$" LARGER THAN THE Ø (DIAMETER) OF THE BOLT. BOLTS AND NUTS SEATING ON WOOD SHALL HAVE CUT STEEL WASHERS UNDER HEADS AND NUTS. NICK THREADS TO PREVENT LOOSENING.
12. PREFABRICATED WOOD TRUSSES: PREFABRICATED WOOD TRUSSES SHALL BE DESIGNED TO SUPPORT SELF WEIGHT PLUS LIVE LOAD AND SUPERIMPOSED DEAD LOADS. WHERE ATTIC SPACE CAN BE USED FOR STORAGE, A 40 PSF LIVE LOAD ON THE BOTTOM CHORD SHALL BE INCLUDED IN THE ANALYSIS. BRIDGING SIZE AND SPACING BY TRUSS MANUFACTURER UNLESS NOTED OTHERWISE. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH DESIGN CALCULATIONS SEALED BY A REGISTERED ENGINEER FOR REVIEW PRIOR TO MANUFACTURE FOR BOTH ROOF AND FLOOR TRUSSES WHEN USED.

    SHOP DRAWINGS SHALL SHOW ANY SPECIAL DETAILS REQUIRED AT BEARING POINTS. ALL CONNECTORS SHALL HAVE CURRENT ICC-ES APPROVAL. ADDITIONAL TRUSSES SHALL BE SUPPLIED AS REQUIRED TO SUPPORT MECHANICAL EQUIPMENT. PER IBC SECTION 2303.4 AND TPI-1: EACH TRUSS SHALL BE LEGIBLY BRANDED, MARKED OR OTHERWISE HAVE PERMANENTLY AFFIXED THERETO THE IDENTITY OF THE COMPANY MANUFACTURING THE TRUSS, THE DESIGN LOADS, AND THE TRUSS SPACING - WITHIN TWO FEET OF THE CENTER OF THE SPAN ON THE FACE OF THE BOTTOM CHORD.

    PREFABRICATED WOOD/STEEL WEB JOIST/PURLINS (TJI/TJL SERIES OR EQUAL): DESIGN, FABRICATION AND ERECTION IN ACCORDANCE WITH THE LATEST EDITION ICC-ES REPORT. CONNECTIONS AND BEARING MATERIAL TO BE DESIGNED AND FURNISHED BY JOIST FABRICATOR. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH DESIGN CALCULATIONS SEALED BY A REGISTERED STRUCTURAL ENGINEER FOR REVIEW PRIOR TO MANUFACTURE. ADDITIONAL JOISTS SHALL BE SUPPLIED AS REQUIRED TO SUPPORT MECHANICAL EQUIPMENT.

DEFERRED SUBMITTAL ITEMS:

PREFABRICATED WOOD ROOF TRUSSES

ABBREVIATIONS

A.B.C.	AGGREGATE BASE COURSE	HORIZ	HORIZONTAL
A/C	AIR CONDITIONER	K(KIP)	1000 POUNDS
A.F.F.	ABOVE FINISHED FLOOR	L L	LIVE LOAD
ALT	ALTERNATE	LBS (#)	POUNDS
A.B.	ANCHOR BOLT	LLH	LONG LEG HORIZONTAL
@	AT (MEASUREMENT)	LLV	LONG LEG VERTICAL
BM	BEAM	MIN	MINIMUM
B.F.F	BELOW FINISHED FLOOR	MAX	MAXIMUM
B.O.B.	BOTTOM OF BEAM	MFR('S)	MANUFACTURER('S)
B.O.D.	BOTTOM OF DECK	M.C.J.	MASONRY CONTROL JOINT
B.O.F.	BOTTOM OF FOOTING	MECH	MECHANICAL
BRG	BEARING	N/A	NOT APPLICABLE
C.C.	CONCRETE COLUMN	N.T.S.	NOT TO SCALE
C.I.P.	CAST IN PLACE	O.C.	ON CENTER
C L	CENTERLINE	O.F.W.	OUTSIDE FACE OF WALL
C.L.B.	CENTERLINE OF BEAM	OPP	OPPOSITE
C.L.C.	CENTERLINE OF COLUMN	P.C.	PRECAST CONCRETE
C.L.F.	CENTERLINE OF FOOTING	PLF	POUNDS PER LINEAR FOOT
C.L.W.	CENTERLINE OF WALL	PREFAB	PREFABRICATED
CLR	CLEAR	PFT	PREFAB FLOOR TRUSSES
CONC	CONCRETE	PRT	PREFAB ROOF TRUSSES
C.C.J.	CONCRETE CONTROL JOINT	PSF	POUNDS PER SQUARE FOOT
C.S.J.	CONCRETE SAWCUT JOINT	PSI	POUNDS PER SQUARE INCH
C.M.U.	CONCRETE MASONRY UNIT	PT	PRESSURE TREATED
CONN.	CONNECTION	REINF	REINFORCING
CONT	CONTINUOUS	SLH	SHORT LEG HORIZONTAL
D L	DEAD LOAD	SLV	SHORT LEG VERTICAL
Ø OR DIA.	DIAMETER	SIM	SIMILAR
DN.	DOWN	SQ	SQUARE
DWG(S)	DRAWING(S)	STD	STANDARD
E.O.S.	EDGE OF SLAB	T L	TOTAL LOAD
EQ	EQUAL	T.O.B.	TOP OF BEAM
EQUIP	EQUIPMENT	T.O.D.	TOP OF DECK
EXP. BOLT	EXPANSION BOLT	T.O.F.	TOP OF FOOTING
EXP. JT (E.J.)	EXPANSION JOINT	T.O.L.	TOP OF LEDGER
(E)	EXISTING	T.O.M.	TOP OF MASONRY
E.W.	EACH WAY	T.O.P.	TOP OF PLATE
F.F.	FINISHED FLOOR	T.O.S.	TOP OF STEEL
F.O.M.	FACE OF MEMBER	T.O.W.	TOP OF WALL
F.O.S.	FACE OF STEEL	TYP	TYPICAL
F.O.W.	FACE OF WALL	U.N.O.	UNLESS NOTED OTHERWISE
GA	GAUGE	VERT	VERTICAL
GALV	GALVANIZED	W.W.F.	WELDED WIRE FABRIC
GSN	GENERAL STRUCTURAL NOTES	W/	WITH
GLB	GLUED-LAMINATED BEAM	W/O	WITHOUT
I.F.W.	INSIDE FACE OF WALL		

SHEET INDEX

SHEET	DESCRIPTION	DETAILS
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S1.2	TYPICAL DETAILS	T-SERIES
S1.3	TYPICAL DETAILS	T-SERIES
S1.4	TYPICAL DETAILS	T-SERIES
S2.0	FOUNDATION PLAN	---
S2.1	MAIN FLOOR FRAMING PLAN	---
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S3.0	FOUNDATION DETAILS	100 - SERIES
S4.0	FLOOR FRAMING DETAILS	200 - SERIES
S5.0	ROOF FRAMING DETAILS	300 - SERIES

REV.	DATE	BY	DESCRIPTION

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PROJECT:
A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

CLIENT: ----

STRUCTURAL ENGINEERS SEAL:
11697
06/21/2019

GENERAL STRUCTURAL NOTES
JOB NO.: IF19-019
PROJECT MANAGER: MTB
CAD OPERATOR: DML

FROST Structural Engineering
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Idaho Falls, ID 83401
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DATE: 6/12/2019
CURRENT REV.

S1.0

GENERAL STRUCTURAL NOTES

-CONTINUED - (APPLY UNLESS NOTED OTHERWISE ON PLANS/DETAILS)

POST-INSTALLED ANCHORS:

1. EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES. ALL ANCHORS ARE TO BE INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS.

ANCHORAGE TO CONCRETE:

ADHESIVE ANCHORS:

HILTI HIT-HY 200	PER ICC ESR-3187
HILTI HIT-RE 500 V3	PER ICC ESR-3814
SIMPSON AT-XP	PER IAPMO ER-263
SIMPSON SET-XP	PER ICC ESR-2508

MECHANICAL ANCHORS:

HILTI KWIK HUS	PER ICC ESR-3027
HILTI KWIK BOLT-TZ EXPANSION ANCHORS	PER ICC ESR-1917
SIMPSON TITEN HD	PER ICC ESR-2713
SIMPSON STRONG BOLT-2	PER ICC ESR-3037

REBAR DOWELING TO CONCRETE:

ADHESIVES:

HILTI HIT-HY 200	PER ICC ESR-3187
HILTI HIT-RE 500 V3	PER ICC ESR-3814
SIMPSON AT-XP	PER IAPMO ER-263
SIMPSON SET-XP	PER ICC ESR-2508

ANCHORAGE TO SOLID GROUTED MASONRY:

ADHESIVE ANCHORS:

HILTI HIT-HY 200	PER ICC ESR-3963
SIMPSON AT-XP	PER IAPMO ER-281
SIMPSON SET	PER ICC ESR-1772

MECHANICAL ANCHORS:

HILTI KWIK BOLT-3 EXPANSION ANCHORS	PER ICC ESR-1385
HILTI KWIK BOLT-TZ EXPANSION ANCHORS	PER ICC ESR-3785
SIMPSON TITEN HD	PER ICC ESR-1056
SIMPSON STRONG BOLT-2	PER IAPMO ER-240

ANCHORAGE TO HOLLOW/MULTI-WYTHE MASONRY:

ADHESIVE ANCHORS:

HILTI HIT-HY 70 MASONRY ADHESIVE ANCHORING SYSTEM	PER ICC ESR-3963
SIMPSON AT-XP	PER IAPMO ER-281
SIMPSON SET	PER ICC ESR-1772

2. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR OR IAPMO ER SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE.
3. INSTALL THE ANCHORS PER THE MANUFACTURER INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.
4. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
5. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.

SPECIAL INSPECTION ITEMS:

1. THE OWNER OR THE OWNER'S AUTHORIZED AGENT, OTHER THAN THE CONTRACTOR, SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PROVIDE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION ON THE TYPES OF WORK SPECIFIED PER IBC SECTION 1705 AND IDENTIFY THE APPROVED AGENCIES TO THE BUILDING OFFICIAL. SPECIAL INSPECTIONS ARE REQUIRED AS FOLLOWS:

VERIFICATION AND INSPECTION OF STRUCTURAL STEEL (PER AISC 360-CHAPTER N)

VERIFICATION AND INSPECTION	OBSERVE	PERFORM
1. INSPECTION TASKS PRIOR TO WELDING (TABLE N5.4-1)		
A. WELDING PROCEDURE SPECIFICATIONS (WPSS) AVAILABLE		X
B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE		X
C. MATERIAL IDENTIFICATION (TYPE/GRADE)	X	
D. WELDER IDENTIFICATIONS SYSTEM (THE FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED. (STAMPS, IF USED, SHALL BE THE LOW STRESS TYPE)	X	
E. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY), JOINT PREPARATION, DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL), CLEANLINESS (CONDITION OF STEEL SURFACES), TACKING (TACK WELD QUALITY AND LOCATION) , BACKING TYPE AND FIT (IF APPLICABLE)	X	
F. CONFIGURATION AND FINISH OF ACCESS HOLES	X	
G. FIT-UP OF FILLET WELDS, DIMENSIONS (ALIGNMENT, GAPS AT ROOT), CLEANLINESS (CONDITION OF STEEL SURFACES) TACKING (TACK WELD QUALITY AND LOCATION)	X	
H. CHECK WELDING EQUIPMENT	X	
2. INSPECTION TASKS DURING WELDING (TABLE N5.4-2)		
A. USE OF QUALIFIED WELDERS	X	
B. CONTROL AND HANDLING OF WELDING CONSUMABLES, PACKAGING, EXPOSURE CONTROL	X	
C. NO WELDING OVER CRACKED TACK WELDS	X	
D. ENVIRONMENTAL CONDITIONS, WIND SPEED WITHIN LIMITS, PRECIPITATION AND TEMPERATURE	X	
E. WPS FOLLOWED, SETTINGS ON WELDING EQUIPMENT, TRAVEL SPEED, SELECTED WELDING MATERIALS, SHIELDING GAS TYPE/FLOW RATE, PREHEAT APPLIED, INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.), PROPER POSITION (F, V, H, OH)	X	
F. WELDING TECHNIQUES, INTERPASS AND FINAL CLEANING, EACH PASS WITHIN PROFILE LIMITATIONS, EACH PASS MEETS QUALITY REQUIREMENTS	X	
3. INSPECTION TASKS AFTER WELDING (TABLE N5.4-3)		
A. WELDS CLEANED	X	
B. SIZE LENGTH AND LOCATION OF WELDS		X
C. WELDS MEAT VISUAL ACCEPTANCE CRITERIA, CRACK PROHIBITION, WELD/BASE-METAL FUSION, CRATER CROSS SECTION, WELD PROFILES, WELD SIZE, UNDERCUT, POROSITY		X
D. ARC STRIKES		X
E. K-AREA (WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN, PERFORMED IN THE K-AREA, VISUALLY INSPECT THE WEB K-AREA FOR CRACKS WITHIN 3 IN. (75 MM) OF THE WELD).		X
F. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)		X
G. REPAIR ACTIVITIES		X
H. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER		X
4. INSPECTION TASKS PRIOR TO BOLTING (TABLE N5.6-1)		
A. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS		X
B. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	X	
C. PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	X	
D. PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	X	
E. CONNECTION ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	X	
F. PRE-INSTALLED VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED		X
G. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	X	
5. INSPECTION TASKS DURING BOLTING (TABLE N5.6-2)		
A. FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	X	
B. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	X	
C. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	X	
D. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARDS THE FREE EDGES	X	
6. INSPECTION TASKS AFTER BOLTING (TABLE N5.6-3)		
A. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS		X

VERIFICATION AND INSPECTION OF STRUCTURAL STEEL (PER AISC 360-CHAPTER N) (CONT:)

7. INSPECTION OF STEEL ELEMENTS OF COMPOSITE CONSTRUCTION PRIOR TO CONCRETE PLACEMENT (TABLE N6.1)		
A. PLACEMENT AND INSTALLATION OF STEEL DECK		X
B. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS		X
C. DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS		X
8. INSPECTOR SHALL BE ON PREMISES FOR INSPECTION DURING THE PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL (SECTION N5.7)	X	

VERIFICATION AND INSPECTION OF STEEL DECK (PER SDI QA/QC)

VERIFICATION AND INSPECTION	OBSERVE	PERFORM
1. INSPECTION OR EXECUTION TASKS PRIOR TO DECK PLACEMENT (TABLE 1.1)		
A. VERIFY COMPLIANCE OF MATERIALS (DECK AND ALL DECK ACCESSORIES) WITH CONSTRUCTION DOCUMENTS, INCLUDING PROFILES, MATERIAL PROPERTIES, AND BASE METAL THICKNESS		X
B. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES		X
2. INSPECTION OR EXECUTION TASKS AFTER TO DECK PLACEMENT (TABLE 1.2)		
A. VERIFY COMPLIANCE OF DECK AND ALL DECK ACCESSORIES INSTALLATION WITH CONSTRUCTION DOCUMENTS		X
B. VERIFY DECK MATERIALS ARE REPRESENTED BY THE MILL CERTIFICATIONS THAT COMPLY WITH THE CONSTRUCTION DOCUMENTS		X
C. DOCUMENT ACCEPTANCE OR REJECTION OF INSTALLATION OF DECK AND DECK ACCESSORIES		X
3. INSPECTION OR EXECUTION TASKS PRIOR TO WELDING (TABLE 1.3)		
A. WELDING PROCEDURE SPECIFICATIONS (WPS) AVAILABLE	X	
B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	X	
C. MATERIAL IDENTIFICATION (TYPE/GRADE)	X	
D. CHECK WELDING EQUIPMENT	X	
4. INSPECTION OR EXECUTION TASKS DURING WELDING (TABLE 1.4)		
A. USE OF QUALIFIED WELDERS	X	
B. CONTROL AND HANDLING OF WELDING CONSUMABLES	X	
C. ENVIRONMENTAL CONDITIONS (WIND SPEED, MOISTURE, TEMPERATURE)	X	
D. WPS FOLLOWED	X	
5. INSPECTION OR EXECUTION TASKS AFTER WELDING (TABLE 1.5)		
A. VERIFY SIZE AND LOCATION OF WELDS, INCLUDING SUPPORT, SIDELAP, AND PERIMETER WELDS		X
B. WELDS MEET VISUAL ACCEPTANCE CRITERIA		X
C. VERIFY REPAIR ACTIVITIES		X
D. DOCUMENT ACCEPTANCE OR REJECTION OF WELDS		X
6. INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING (TABLE 1.6)		
A. MANUFACTURER INSTALLATION INSTRUCTIONS AVAILABLE FOR MECHANICAL FASTENERS	X	
B. PROPER TOOLS AVAILABLE FOR FASTENER INSTALLATION	X	
C. PROPER STORAGE FOR MECHANICAL FASTENERS	X	
7. INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING (TABLE 1.7)		
A. FASTENERS ARE POSITIONED AS REQUIRED	X	
B. FASTENERS ARE INSTALLED IN ACCORDANCE WITH, MANUFACTURER'S INSTRUCTIONS	X	
8. INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING (TABLE 1.7)		
A. CHECK SPACING, TYPE, AND INSTALLATION OF SUPPORT FASTENERS		X
B. CHECK SPACING, TYPE, AND INSTALLATION OF SIDELAP FASTENERS		X
C. CHECK SPACING, TYPE, AND INSTALLATION OF PERIMETER FASTENERS		X
D. VERIFY REPAIR ACTIVITIES		X
E. DOCUMENT ACCEPTANCE OR REJECTION OF MECHANICAL FASTENERS		X

SOILS (IBC TABLE 1705.6) (W/ GEOTECH REPORT)

VERIFICATION AND INSPECTION	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X
2. VERIFY EXCAVATIONSARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	X

SPECIAL INSPECTION FOR WIND RESISTANCE (WOOD) (SECTION 1705.11)

VERIFICATION AND INSPECTION	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. INSPECTION IS REQUIRED DURING FIELD GLUING OPERATIONS OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM	X	-
2. INSPECTION IS REQUIRED FOR NAILING, BOLTING ANCHORING AND OTHER FASTENING OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM, INCLUDING WOOD SHEARWALLS, WOOD DIAPHRAGMS, DRAG STRUTS, BRACES AND HOLD-DOWNS	-	X

EXCEPTION:

SPECIAL INSPECTIONS ARE NOT REQUIRED FOR WOOD SHEARWALLS, SHEAR PANELS AND DIAPHRAGMS, INCLUDING NAILING, BOLTING, ANCHORING AND OTHER FASTENING TO OTHER ELEMENTS OF THE MAIN WINDFORCE RESISTING SYSTEM, WHERE THE FASTENING SPACING OF THE SHEATHING IS MORE THAN 4 INCHES (102 MM) ON CENTER

2. QUALITY ASSURANCE PROGRAM:
   - A. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO BE CERTAIN IT CONFORMS WITH THE APPROVED DESIGN DRAWINGS AND SPECIFICATIONS.
   - B. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE STRUCTURAL ENGINEER OF RECORD. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF UNCORRECTED, TO THE DESIGN AUTHORITY AND THE BUILDING OFFICIAL.

REV.	DATE	BY	DESCRIPTION
1			
2			
3			
4			
5			

PROJECT: A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

CLIENT:

STRUCTURAL ENGINEERS SEAL:
06/21/2019

GENERAL STRUCTURAL NOTES

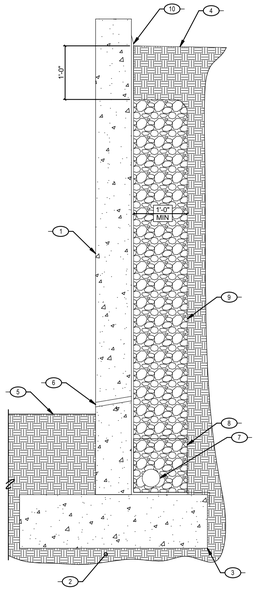
JOB NO.: IF19-019 | PROJECT MANAGER: MTB | CAD OPERATOR: DML

FROST Structural Engineering
1020 E. Lincoln Road
Idaho Falls, ID 83401
phone: 208.227.8404
fax: 208.227.8405

DATE: 6/12/2019 | CURRENT REV.:

S1.1

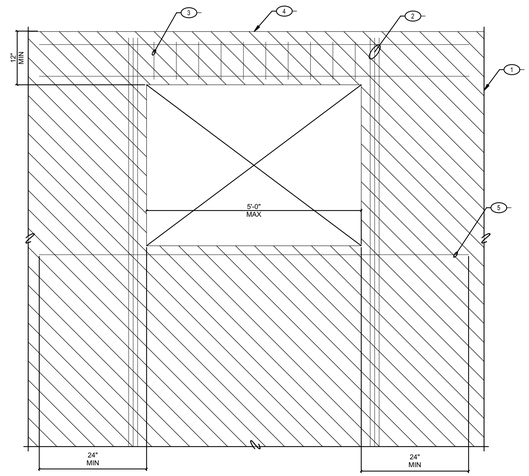
KEYNOTES:
1. CONCRETE WALL, SEE PLAN
2. COMPACTED SUB-GRADE BELOW FOOTING, SEE PLAN
3. CONCRETE FOOTING, SEE PLAN
4. FINISH GRADE, SLOPE AWAY FROM STRUCTURE
5. FINISH GRADE OR CONCRETE SLAP WHERE OCCURS
6. FOR RETAINING WALLS, WHERE DRAIN PIPE IS NOT INSTALLED PROVIDE WEEP HOLES AT 6'-0" O.C. MIN FILTER FABRIC
7. 4" MIN PERFORATED DRAIN PIPE, OUTLET TO DAYLIGHT EACH END
8. FILTER FABRIC WRAPPED AROUND MIN 12"x12" OF GRAVEL BACKFILL
9. FREE DRAINING GRAVEL BACKFILL, AGGREGATE SIZE: 2" MAX, ¼" MIN
10. FOUNDATION DAMP-PROOFING AS REQUIRED



NOTE:
A. BACKFILL REQUIREMENTS ARE A MINIMUM. SEE GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS

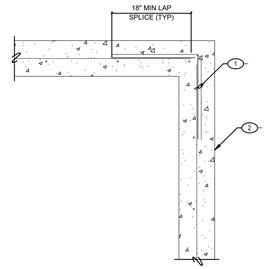
T13 TYPICAL CONCRETE RETAINING WALL OR BASEMENT BACKFILL DETAIL
TD13 NO SCALE

KEYNOTES:
1. CONCRETE WALL
2. (3) #4 OR (2) #5 FULL HEIGHT VERTICAL BARS EACH SIDE OF OPENING
3. #3 STIRRUPS AT 5" O.C.
4. CONCRETE LINTEL W/ (2) #5 BARS TOP AND BOTTOM
5. (1) #4 HORIZONTAL BELOW OPENINGS



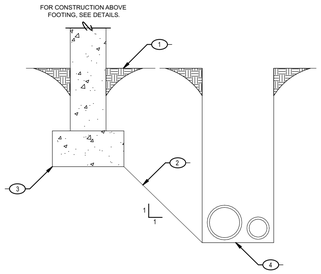
T9 ELEVATION - TYPICAL OPENING IN CONCRETE WALL
TD11 NO SCALE

KEYNOTES:
1. CORNER DOWELS TO MATCH HORIZONTAL REINFORCEMENT
2. CONCRETE WALL WITH REINFORCEMENT



T5 TYPICAL CONCRETE CORNER
TD05 NO SCALE

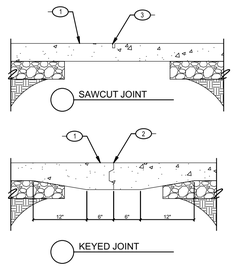
KEYNOTES:
1. FINISHED GRADE WHERE OCCURS
2. DO NOT EXCAVATE A TRENCH CLOSER THAN A 45 DEGREE ANGLE TO BELOW BOTTOM FOOTING OR FOUNDATION
3. BOTTOM OF CONCRETE FOOTING
4. BOTTOM OF TRENCH



NOTE:
A. DO NOT UNDERCUT EXISTING FOOTINGS
B. NO PIPE OR OTHER UTILITIES SHALL PASS THRU WALL FOOTINGS OR UNDER COLUMN FOOTINGS

T1 TRENCH PARALLEL TO CONTINUOUS STRAP FOOTING
TD01 NO SCALE

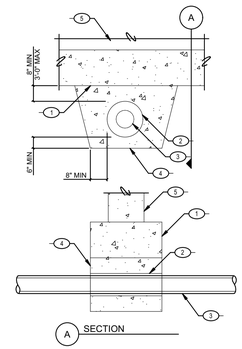
KEYNOTES:
1. CONCRETE SLAB ON GRADE
2. CONT KEYED JOINT
3. SAWCUT 1/8" WIDE x ½ SLAB THICKNESS IN DEPTH - CUT SHALL BE MADE SOON ENOUGH TO PREVENT SHRINKAGE CRACKING, BUT NOT SO SOON AS TO CAUSE SPALLING OF THE CONCRETE WHILE SAWING. WORK MUST BE COMPLETE WITHIN 16 HOURS OF CONCRETE PLACEMENT.



NOTE:
A. KEYED JOINTS NEED ONLY OCCUR AT EXPOSED EDGES DURING PLACEMENT UNLESS SPECIFICALLY NOTED ON THE PLANS.
B. "TOOL WET JOINT", "ZIP STRIP", ETC SHALL MATCH SAWCUT REQUIREMENTS

T6 CONTROL JOINTS IN CONCRETE SLAB ON GRADE
TD07 NO SCALE

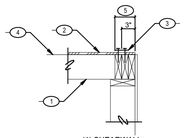
KEYNOTES:
1. CONCRETE FOOTING
2. SLEEVE - PROVIDE ½" MINIMUM CLEARANCE AROUND PIPE OR CONDUIT
3. PIPE OR CONDUIT
4. CONCRETE FILL TO BE PLACED BEFORE FOOTING IS POURED - FORM SAME AS FOOTING AND POUR FULL WIDTH OF PIPE TRENCH
5. STEM WALL



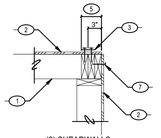
NOTE:
A. NO PIPE SHALL PASS THRU FOOTING OR UNDER COLUMN FOOTINGS. FOR TRENCHES GREATER THAN 2'-6" BELOW BOTTOM OF FOOTING, SEE PIPE PASSING BELOW WALL FOOTING DETAIL.

T2 PIPE PASSING UNDER WALL FOOTING IN SHALLOW TRENCH
TD02 NO SCALE

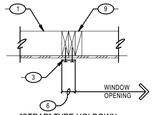
KEYNOTES:
1. WOOD STUD WALL, SEE PLAN
2. SHEARWALL SHEATHING, SEE PLAN
3. STRAP TYPE HOLDOWN
4. EDGE OF FOUNDATION
5. SHEARWALL END POST (3 STUDS)
6. SHEARWALL END POSTS (2 STUDS)
7. SHEARWALL EDGE NAILING
8. TRIMMER STUD TO SUPPORT HEADER
9. BLOCK TO SUPPORT WINDOW SILL
10. 6x6 WOOD POST
11. (25) - SIMPSON SDS 1/4"x4½" LONG WOOD SCREWS, STAGGERED
12. (25) - SIMPSON SDS 1/4"x6" LONG WOOD SCREWS, STAGGERED



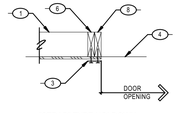
(1) SHEARWALL
(1) STRAP HOLDOWN
AT EXTERIOR CORNER



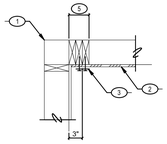
(2) SHEARWALLS
(1) STRAP HOLDOWN
AT EXTERIOR CORNER



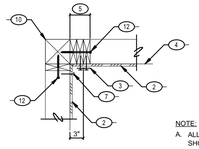
"STRAP" TYPE HOLDOWN
WINDOW JAMB



"STRAP" TYPE HOLDOWN
DOOR JAMB OR WALL END



(1) SHEARWALL
(1) STRAP HOLDOWN
AT RE-ENTRANT CORNER

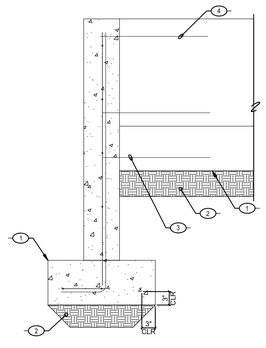


(2) SHEARWALLS
(1) STRAP HOLDOWN
AT RE-ENTRANT CORNER

NOTE:
A. ALL CONDITIONS MAY NOT BE SHOWN. FOR CONDITIONS NOT SHOWN, USE THESE DETAILS AS A GUIDE.
B. SOME LARGER HOLDOWNS REQUIRE 6x6 POSTS, SEE PLANS AND SCHEDULES.
C. WHERE MULTIPLE TRIMMER STUDS OR KING STUDS OCCUR, MAKE ADJUSTMENTS AS REQUIRED.

T14 STRAP TYPE HOLDOWNS / SHEARWALL END POSTS, PLAN VIEW - HOLDOWN LOCATIONS
TD15 NO SCALE

KEYNOTES:
1. CONCRETE FOOTING, SEE PLAN
2. COMPACTED SUB-GRADE BELOW FOOTING, SEE PLAN
3. #4 DOWEL TO MATCH FOOTING REINFORCEMENT 24" / 24"
4. #4 DOWEL TO LAP AND MATCH WALL REINFORCEMENT 24" / 24"



NOTE:
A. FOR ITEMS SHOWN BUT NOT KEYNOTED, SEE FOUNDATION DETAILS
B. WHERE NEW FOOTING TIES INTO EXISTING FOOTING, DRILL AND EPOXY 24" LONG DOWELS INTO EXISTING, PROVIDE 4" MIN EMBEDMENT

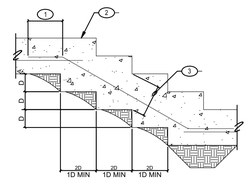
T10 CONCRETE FOOTING AT CONCRETE WALL
TD12 NO SCALE

BAR SIZE	CLASS B TENSION SPLICE LENGTHS					
	f'c = 3,000 PSI		f'c = 4,000 PSI		f'c = 5,000 PSI	
	HOIRZONTAL BARS W/ >12" OF CONC. BELOW	VERTICAL AND BOTTOM HORIZONTAL BARS	HOIRZONTAL BARS W/ >12" OF CONC. BELOW	VERTICAL AND BOTTOM HORIZONTAL BARS	HOIRZONTAL BARS W/ >12" OF CONC. BELOW	VERTICAL AND BOTTOM HORIZONTAL BARS
#3	12"	12"	12"	12"	12"	12"
#4	19"	15"	17"	13"	15"	12"
#5	29"	23"	26"	20"	23"	18"
#6	32"	25"	28"	21"	25"	19"
#7	54"	41"	47"	36"	42"	32"
#8	70"	54"	61"	47"	54"	42"
#9	89"	68"	77"	59"	69"	53"
#10	112"	87"	97"	75"	87"	67"

NOTES:
1. TOP BARS ARE ANY HORIZONTAL BARS PLACED SO THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.
2. UNLESS NOTED OTHERWISE, LAP SPLICES IN CONCRETE BEAMS, SLABS AND WALLS SHALL BE CLASS "B" TENSION LAP SPLICES.

T12 STEEL REINFORCING LAP SPLICES IN CONCRETE
TD14 NO SCALE

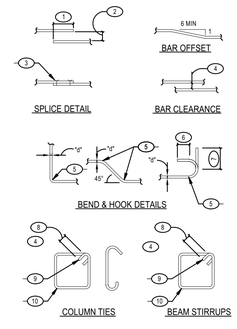
KEYNOTES:
1. MINIMUM LAP PER PLAN (24" MIN) - TYPICAL
2. TOP OF WALL FOOTING
3. REGULAR FOOTING THICKNESS AS SHOWN ON PLAN OR FOOTING SCHEDULE



NOTE:
A. D = 2'-0" MAX

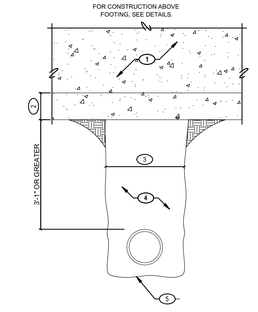
T7 TYPICAL STEP IN CONCRETE FOOTING
TD08 NO SCALE

KEYNOTES:
1. LAP - SEE G.S.N.
2. MAXIMUM 1/3 LAP BUT NOT MORE THAN 6"
3. WIRE TIES
4. 1d (1" MINIMUM)
5. RADIUS = 3d FOR BARS NOT OVER #8; 4d FOR #9, #10, AND #1 BARS; 5d FOR #14 AND #18 BARS, 5d FOR ALL GRADE 40 BARS WITH 180 DEGREE HOOK
6. 4D (4" MINIMUM)
7. 12d (90 DEGREE HOOK)
8. 6d (4" MINIMUM)
9. 135 DEGREE BEND
10. BEND AROUND 1"/8" PIN FOR #3 BARS, BEND AROUND 2" PIN FOR #4 BARS. BEND AROUND 2½" PIN FOR #5 BARS.



T8 TYPICAL REINFORCING DETAILS
TD10 NO SCALE

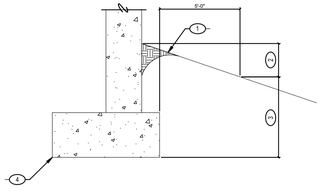
KEYNOTES:
1. STEM WALL
2. CONCRETE FOOTING
3. 1'-6" MAXIMUM - WHERE TRENCH EXCEEDS 1'-6" NOTIFY STRUCTURAL ENGINEER PRIOR TO PLACEMENT OF FOOTINGS
4. BACKFILL AND RECOMPACT TRENCH PER SOILS REPORT AND SPECIFICATIONS
5. BOTTOM OF TRENCH



NOTE:
A. DO NOT UNDERCUT EXISTING FOOTINGS
B. NO PIPES OR OTHER UTILITIES SHALL PASS THRU WALL FOOTINGS OR UNDER COLUMN FOOTINGS

T3 PIPE PASSING BELOW FOOTING IN DEEP TRENCH
TD03 NO SCALE

KEYNOTES:
1. SLOPED FINISH GRADE
2. MINIMUM FOOTING DEPTH PER G.S.N. - 12" MINIMUM
3. DEEPEN FOOTING AS REQUIRED TO ACCOUNT FOR SLOPED GRADE
4. CONCRETE FOOTING



NOTE:
A. FOR ADDITIONAL INFORMATION, SEE PLANS AND DETAILS

T4 TYPICAL DETAIL FOR FOUNDATION EMBEDMENT
TD04 NO SCALE

REV.	DATE	BY	DESCRIPTION
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PROJECT:
A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

CLIENT: ....

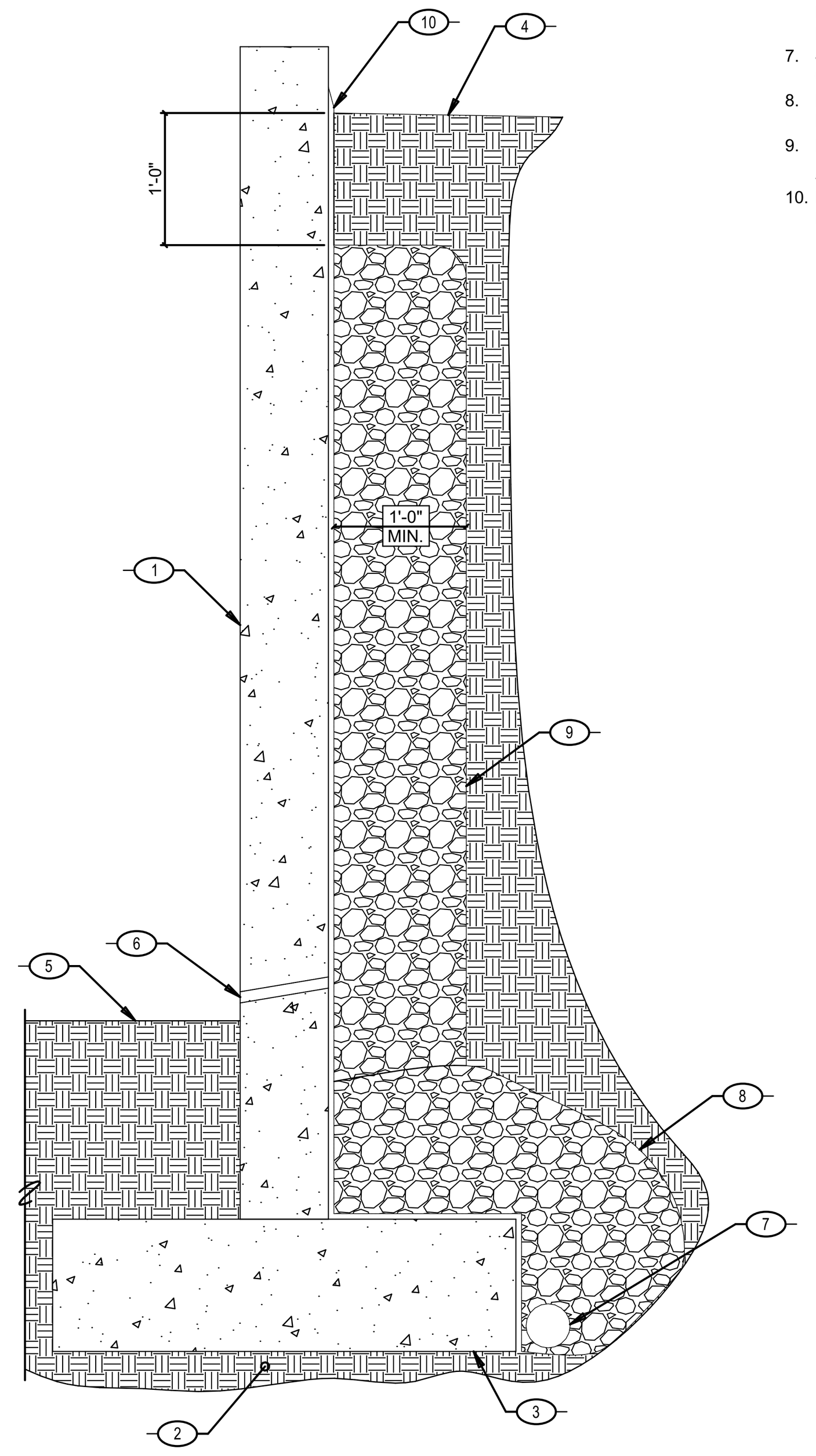
STRUCTURAL ENGINEERS SEAL:
PROFESSIONAL ENGINEER · REGISTERED · 11697 · STATE OF IDAHO · MARKELL LATHAM
06/21/2019

TYPICAL DETAILS
JOB NO.: IF18-019 | PROJECT MANAGER: MTB | CAD OPERATOR: DML

FROST Structural Engineering
1020 E. Lincoln Road
Idaho Falls, ID 83401
phone: 208.227.8404
fax: 208.227.8405

DATE: 6/7/2019 | CURRENT REV.: △

S1.1



KEYNOTES:
1. CONCRETE WALL, SEE PLAN
2. COMPACTED SUB-GRADE BELOW FOOTING, SEE PLAN
3. CONCRETE FOOTING, SEE PLAN
4. FINISH GRADE, SLOPE AWAY FROM STRUCTURE
5. FINISH GRADE OR CONCRETE SLAP WHERE OCCURS
6. FOR RETAINING WALLS, WHERE DRAIN PIPE IS NOT INSTALLED PROVIDE WEEP HOLES AT 8'-0" O.C. MIN FILTER FABRIC
7. 4" MIN PERFORATED DRAIN PIPE, OUTLET TO DAYLIGHT EACH END
8. FILTER FABRIC WRAPPED AROUND MIN 12"x12" OF GRAVEL BACKFILL
9. FREE DRAINING GRAVEL BACKFILL, AGGREGATE SIZE: 2" MAX, $^{1}/_{8}$" MIN
10. FOUNDATION DAMP-PROOFING AS REQUIRED

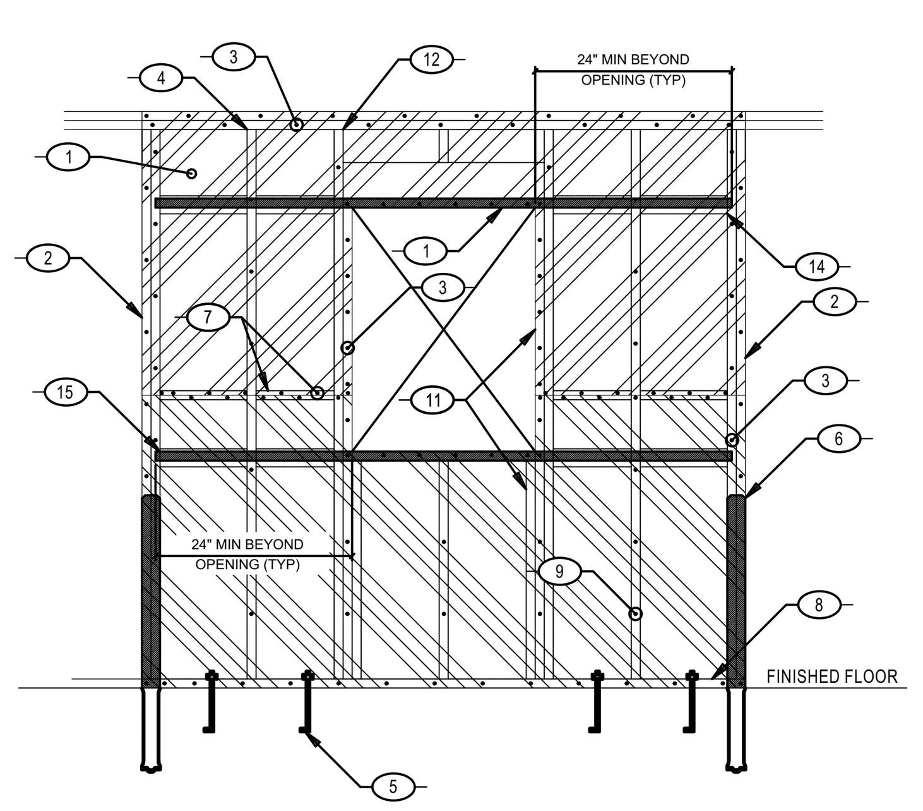
NOTE:
A. BACKFILL REQUIREMENTS ARE A MINIMUM, SEE GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS

T12 TYPICAL CONCRETE RETAINING WALL OR BASEMENT BACKFILL DETAIL
TD60 NO SCALE

BAR SIZE	CLASS B TENSION SPLICE LENGTHS					
	f'c = 3,000 PSI		f'c = 4,000 PSI		f'c = 5,000 PSI	
	HOIRZONTAL BARS W/ >12" OF CONC. BELOW	VERTICAL AND BOTTOM HORIZONTAL BARS	HOIRZONTAL BARS W/ >12" OF CONC. BELOW	VERTICAL AND BOTTOM HORIZONTAL BARS	HOIRZONTAL BARS W/ >12" OF CONC. BELOW	VERTICAL AND BOTTOM HORIZONTAL BARS
#3	12"	12"	12"	12"	12"	12"
#4	19"	15"	17"	13"	15"	12"
#5	29"	23"	26"	20"	23"	18"
#6	32"	25"	28"	21"	25"	19"
#7	54"	41"	47"	36"	42"	32"
#8	70"	54"	61"	47"	54"	42"
#9	89"	68"	77"	59"	69"	53"
#10	112"	87"	97"	75"	87"	67"

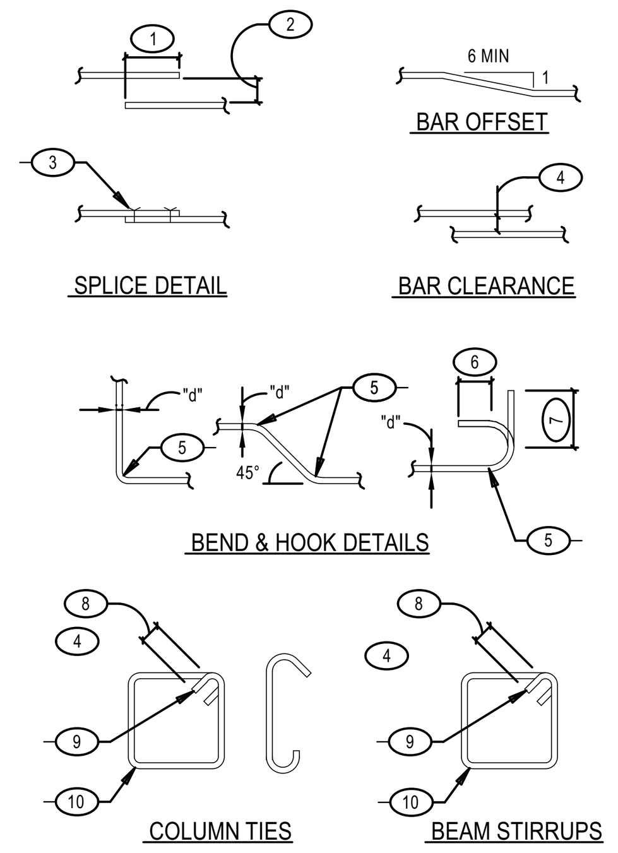
NOTES:
1. TOP BARS ARE ANY HORIZONTAL BARS PLACED SO THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.
2. UNLESS NOTED OTHERWISE, LAP SPLICES IN CONCRETE BEAMS, SLABS AND WALLS SHALL BE CLASS "B" TENSION LAP SPLICES.

T13 STEEL REINFORCING LAP SPLICES IN CONCRETE
TD14 NO SCALE



KEYNOTES:
1. SHEATHING MATERIAL
2. SHEARWALL END POST (DBL STUD AT HOLDOWN U.N.O.)
3. EDGE NAILING AT ALL SHEATHING PANEL EDGES - STAGGER NAILS AT DOUBLE STUD END POSTS
4. FULL HEIGHT WOOD STUDS
5. ANCHOR BOLTS TO FOUNDATION OR NAILS TO LOWER FRAMING PER SHEARWALL SCHEDULE
6. SIMPSON STRAP TYPE HOLDOWN, WHERE OCCURS
7. SOLID BLOCKING AND EDGE NAILING REQUIRED AT PLYWOOD SHEET EDGES
8. CONT 2x PT SOLE PLATE
9. FIELD NAILING AWAY FROM PANEL EDGES
10. WOOD HEADER
11. TRIMMER STUD UNDER HEADER AND SILL, PROVIDE ADDITIONAL TRIMMER STUDS WHERE INDICATED ON PLANS
12. FULL HEIGHT KING STUD
13. PROVIDE ADDITIONAL KING STUDS WHERE INDICATED ON PLANS
14. 2x BLOCKING FOR STRAP NAILING
15. STRAP, PER PLAN, ABOVE AND BELOW OPENING AS SHOWN

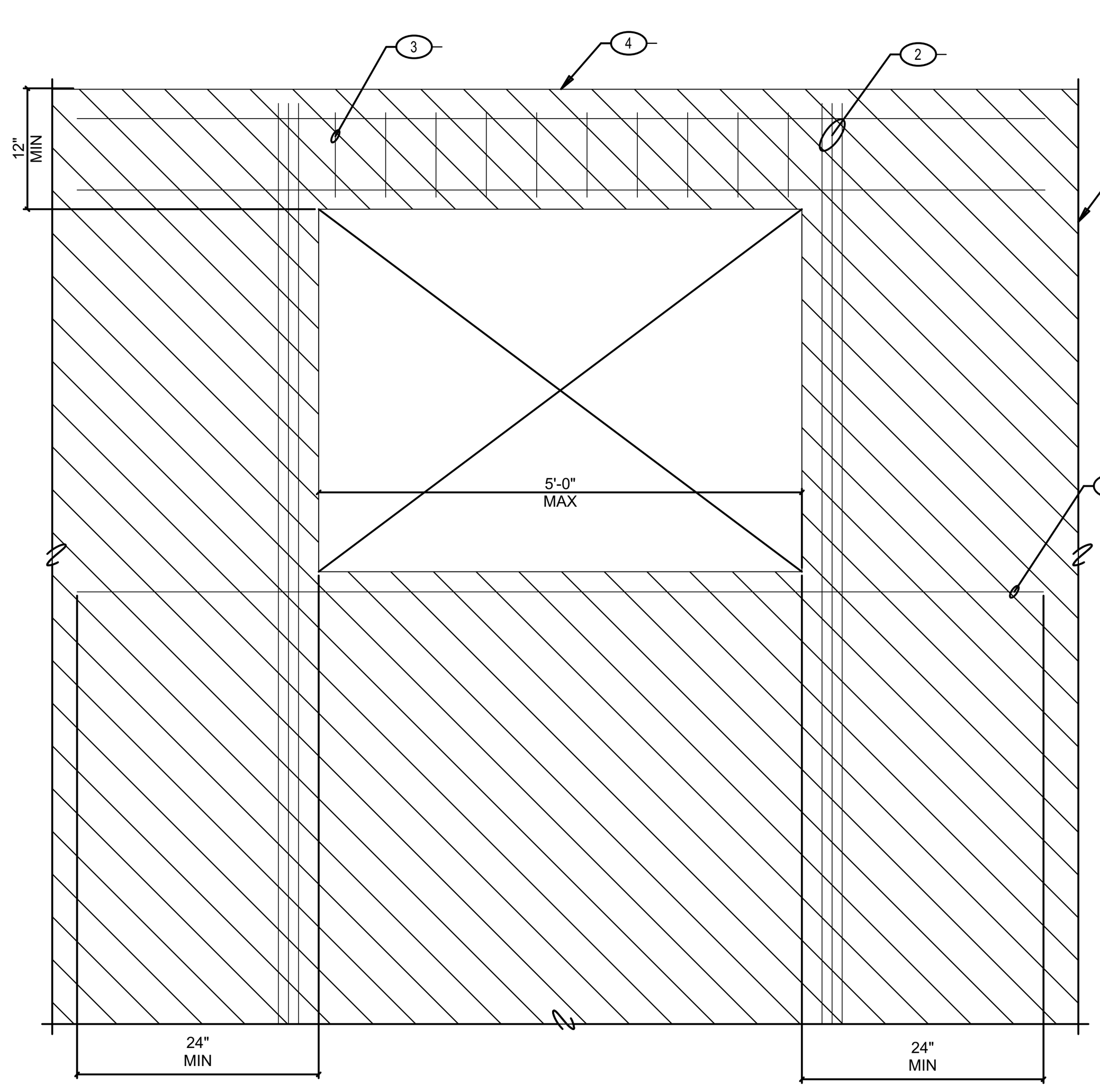
T14 STRAP AT OPENING IN SHEARWALL
TD17 NO SCALE



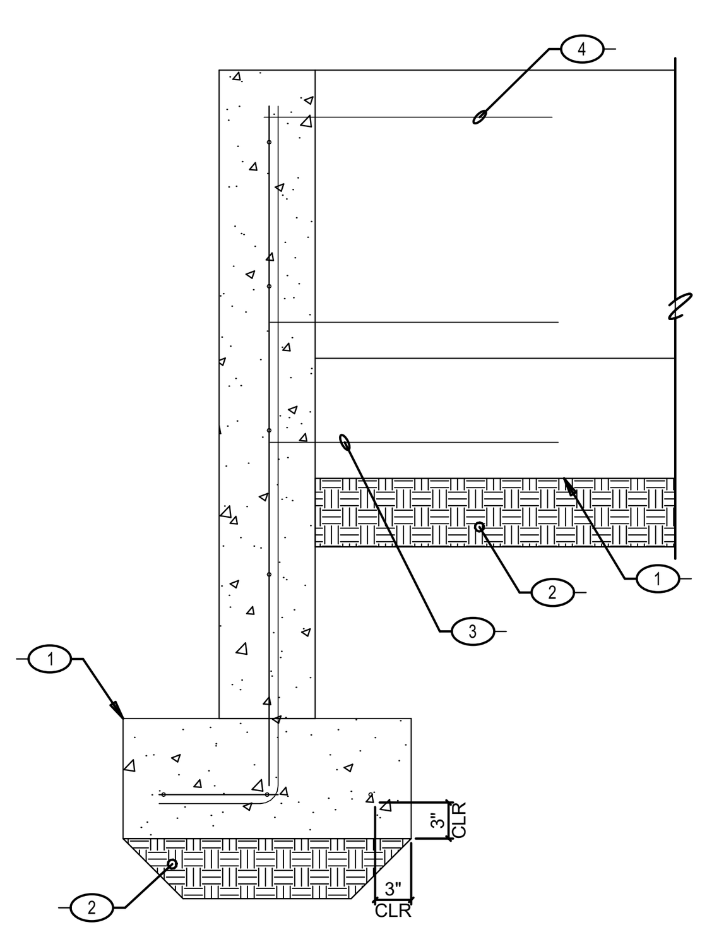
KEYNOTES:
1. LAP - SEE G.S.N.
2. MAXIMUM $^{1}/_{5}$ LAP BUT NOT MORE THAN 6"
3. WIRE TIES
4. 1d (1" MINIMUM)
5. RADIUS = 3d FOR BARS NOT OVER #8; 4d FOR #9, #10, AND #1 BARS; 5d FOR #14 AND #18 BARS, 5d FOR ALL GRADE 40 BARS WITH 180 DEGREE HOOK
6. 4D (4" MINIMUM)
7. 12d (90 DEGREE HOOK)
8. 6d (4" MINIMUM)
9. 135 DEGREE BEND
10. BEND AROUND $1^{1}/_{2}$" PIN FOR #3 BARS. BEND AROUND 2" PIN FOR #4 BARS. BEND AROUND $2^{1}/_{2}$" PIN FOR #5 BARS.

T9 TYPICAL REINFORCING DETAILS
TD10 NO SCALE

KEYNOTES:
1. CONCRETE WALL
2. (3) #4 OR (2) #5 FULL HEIGHT VERTICAL BARS EACH SIDE OF OPENING
3. #3 STIRRUPS AT 5" O.C.
4. CONCRETE LINTEL W/ (2) #5 BARS TOP AND BOTTOM
5. (1) #4 HORIZONTAL BELOW OPENINGS



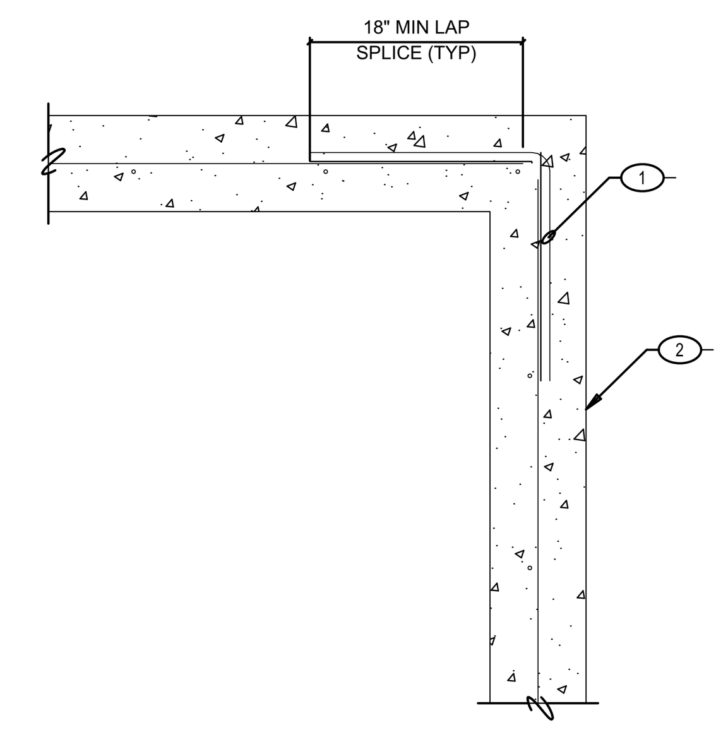
T10 ELEVATION - TYPICAL OPENING IN CONCRETE WALL
TD11 NO SCALE



KEYNOTES:
1. CONCRETE FOOTING, SEE PLAN
2. COMPACTED SUB-GRADE BELOW FOOTING, SEE PLAN
3. #4 DOWEL TO MATCH FOOTING REINFORCEMENT (24" / 24")
4. #4 DOWEL TO LAP AND MATCH WALL REINFORCEMENT (24" / 24")

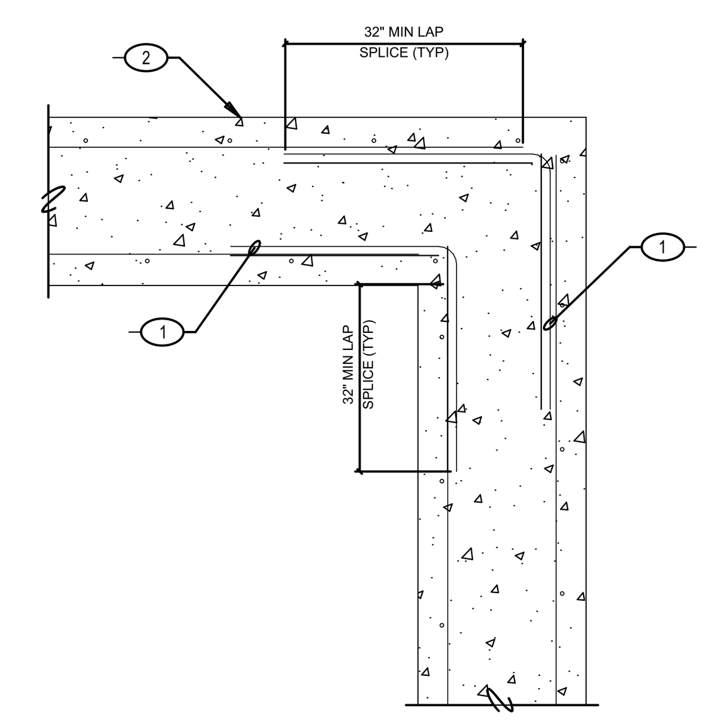
NOTE:
A. FOR ITEMS SHOWN BUT NOT KEYNOTED, SEE FOUNDATION DETAILS
B. WHERE NEW FOOTING TIES INTO EXISTING FOOTING, DRILL AND EPOXY 24" LONG DOWELS INTO EXISTING, PROVIDE 4" MIN EMBEDMENT

T11 CONCRETE FOOTING AT CONCRETE WALL
TD12 NO SCALE



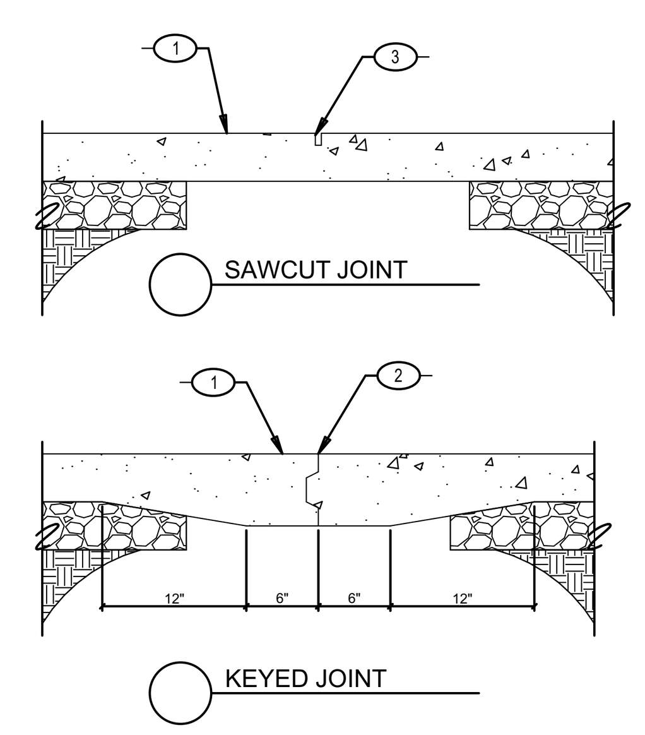
KEYNOTES:
1. CORNER DOWELS TO MATCH HORIZONTAL REINFORCEMENT
2. CONCRETE WALL WITH REINFORCEMENT

T5 TYPICAL CONCRETE CORNER
TD05 NO SCALE



KEYNOTES:
1. CORNER DOWELS TO MATCH HORIZONTAL REINFORCEMENT
2. CONCRETE WALL

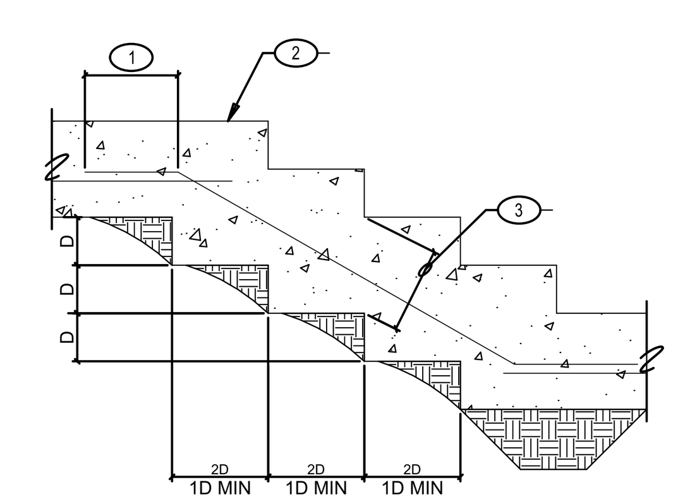
T6 TYPICAL CONCRETE CORNER
TD06 NO SCALE



KEYNOTES:
1. CONCRETE SLAB ON GRADE
2. CONT KEYED JOINT
3. SAWCUT $^{1}/_{8}$" WIDE x $^{1}/_{4}$ SLAB THICKNESS IN DEPTH - CUT SHALL BE MADE SOON ENOUGH TO PREVENT SHRINKAGE CRACKING, BUT NOT SO SOON AS TO CAUSE SPALLING OF THE CONCRETE WHILE SAWING. WORK MUST BE COMPLETE WITHIN 16 HOURS OF CONCRETE PLACEMENT.

NOTE:
A. KEYED JOINTS NEED ONLY OCCUR AT EXPOSED EDGES DURING PLACEMENT UNLESS SPECIFICALLY NOTED ON THE PLANS.
B. "TOOL WET JOINT", "ZIP STRIP", ETC SHALL MATCH SAWCUT REQUIREMENTS

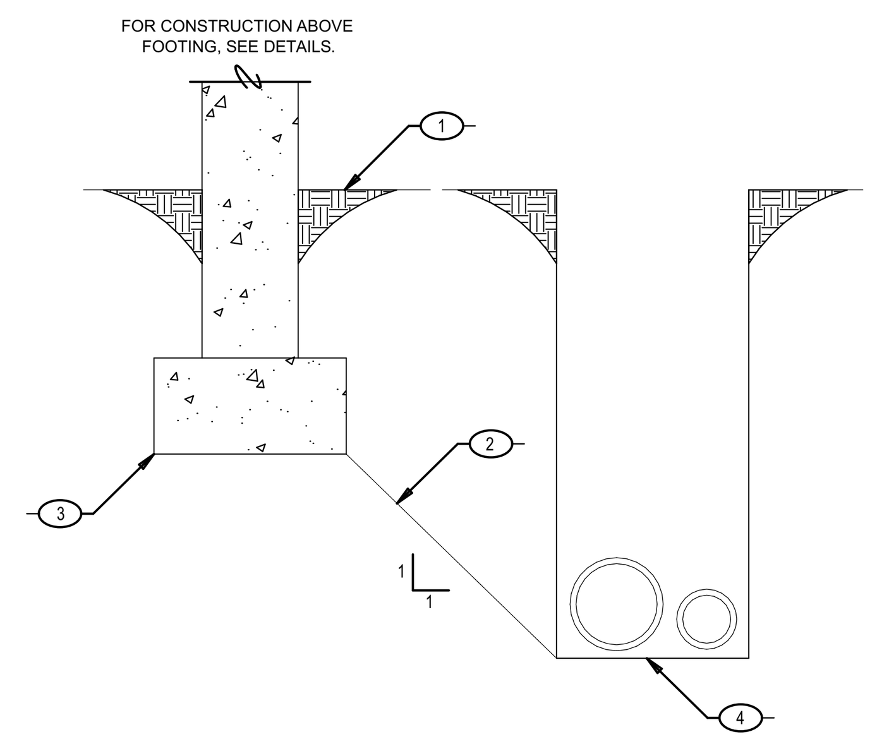
T7 CONTROL JOINTS IN CONCRETE SLAB ON GRADE
TD07 NO SCALE



KEYNOTES:
1. MINIMUM LAP PER PLAN (24" MIN) - TYPICAL
2. TOP OF WALL FOOTING
3. REGULAR FOOTING THICKNESS AS SHOWN ON PLAN OR FOOTING SCHEDULE

NOTE:
A. D = 2'-0" MAX

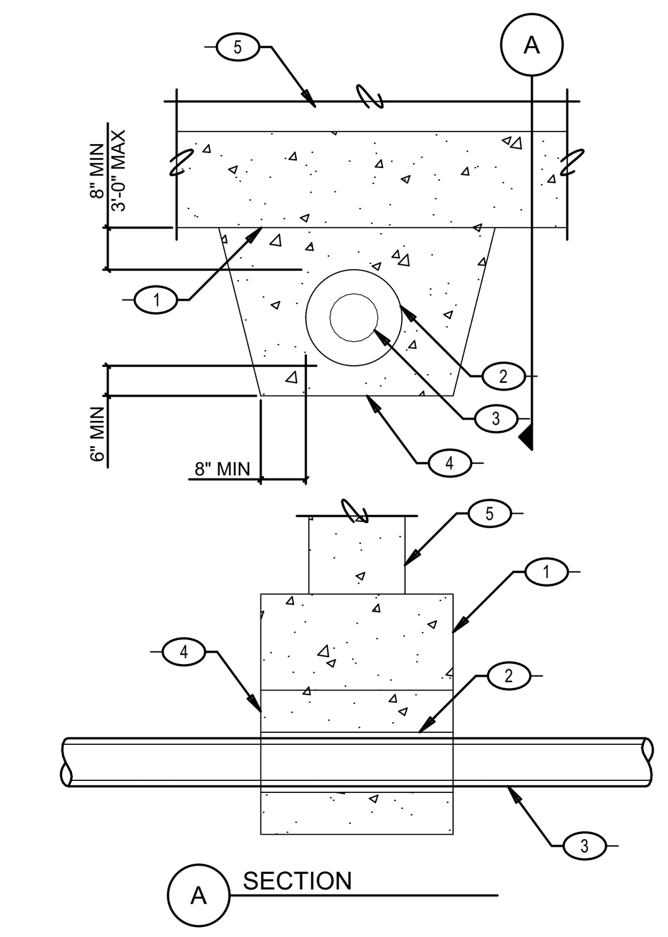
T8 TYPICAL STEP IN CONCRETE FOOTING
TD08 NO SCALE



KEYNOTES:
1. FINISHED GRADE WHERE OCCURS
2. DO NOT EXCAVATE A TRENCH CLOSER THAN A 45 DEGREE ANGLE TO BELOW BOTTOM FOOTING OR FOUNDATION
3. BOTTOM OF CONCRETE FOOTING
4. BOTTOM OF TRENCH

NOTE:
A. DO NOT UNDERCUT EXISTING FOOTINGS
B. NO PIPE OR OTHER UTILITIES SHALL PASS THRU WALL FOOTINGS OR UNDER COLUMN FOOTINGS

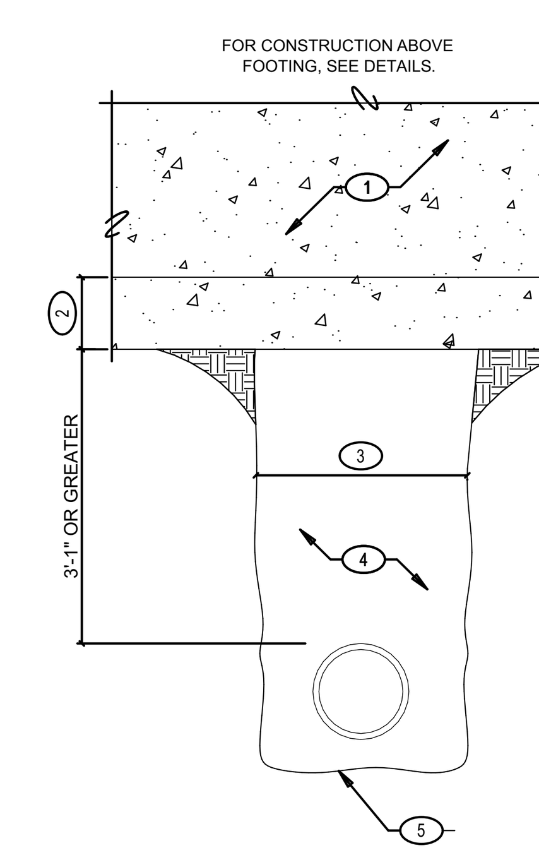
T1 TRENCH PARALLEL TO CONTINUOUS STRAP FOOTING
TD01 NO SCALE



KEYNOTES:
1. CONCRETE FOOTING
2. SLEEVE - PROVIDE $^{1}/_{2}$" MINIMUM CLEARANCE AROUND PIPE OR CONDUIT
3. PIPE OR CONDUIT
4. CONCRETE FILL TO BE PLACED BEFORE FOOTING IS POURED - FORM SAME AS FOOTING AND POUR FULL WIDTH OF PIPE TRENCH
5. STEM WALL

NOTE:
A. NO PIPE SHALL PASS THRU FOOTING OR UNDER COLUMN FOOTINGS. FOR TRENCHES GREATER THAN 3'-6" BELOW BOTTOM OF FOOTING, SEE PIPE PASSING BELOW WALL FOOTING DETAIL.

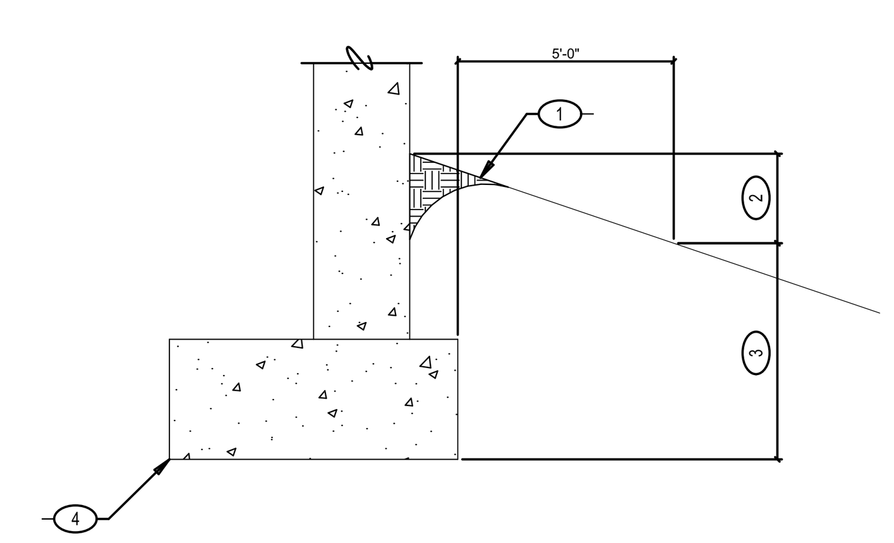
T2 PIPE PASSING UNDER WALL FOOTING IN SHALLOW TRENCH
TD02 NO SCALE



KEYNOTES:
1. STEM WALL
2. CONCRETE FOOTING
3. 1'-6" MAXIMUM - WHERE TRENCH EXCEEDS 1'-6" NOTIFY STRUCTURAL ENGINEER PRIOR TO PLACEMENT OF FOOTINGS
4. BACKFILL AND RECOMPACT TRENCH PER SOILS REPORT AND SPECIFICATIONS
5. BOTTOM OF TRENCH

NOTE:
A. DO NOT UNDERCUT EXISTING FOOTINGS
B. NO PIPES OR OTHER UTILITIES SHALL PASS THRU WALL FOOTINGS OR UNDER COLUMN FOOTINGS

T3 PIPE PASSING BELOW FOOTING IN DEEP TRENCH
TD03 NO SCALE



KEYNOTES:
1. SLOPED FINISH GRADE
2. MINIMUM FOOTING DEPTH PER G.S.N. - 12" MINIMUM
3. DEEPEN FOOTING AS REQUIRED TO ACCOUNT FOR SLOPED GRADE
4. CONCRETE FOOTING

NOTE:
A. FOR ADDITIONAL INFORMATION, SEE PLANS AND DETAILS

T4 TYPICAL DETAIL FOR FOUNDATION EMBEDMENT
TD04 NO SCALE

REV.	DATE	BY	DESCRIPTION
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△	.	.	.
1	.	.	.
2	.	.	.
3	.	.	.
4	.	.	.
5	.	.	.

PROJECT:
A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340
CLIENT: ----

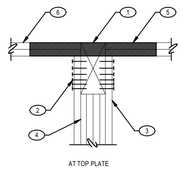
STRUCTURAL ENGINEERS SEAL:
PROFESSIONAL ENGINEER REGISTERED 11697 STATE OF IDAHO MARKELL BATEMAN
06/21/2019

TYPICAL DETAILS
JOB NO.: IF19-019 PROJECT MANAGER: MTB CAD OPERATOR: DML

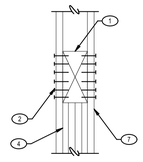
FROST Structural Engineering
1020 E. Lincoln Road
Idaho Falls, ID 83401
phone: 208.227.8404
fax: 208.227.8405

DATE: 6/12/2019 CURRENT REV. △

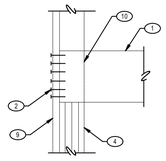
S1.2



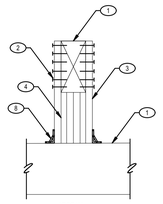
AT TOP PLATE



AT MID WALL



AT CORNER

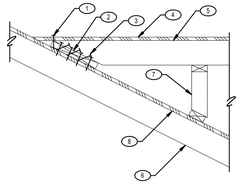


AT BEAM

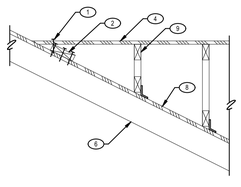
KEYNOTES:

1. WOOD BEAM
2. (2) 16d NAILS AT 6" O.C.
3. KING STUD EACH SIDE OF BEAM
4. SOLID BUILT-UP POST BELOW BEAM
5. STRAP BROKEN TOP PLATE ON SIDE OR TOP
6. CONT DBL 2x TOP PLATE W/ LAP SPLICE PER TYPICAL DETAIL
7. FULL-HEIGHT KING STUD EACH SIDE OF BEAM
8. HGA10 CLIP EACH SIDE
9. FULL-HEIGHT KING STUD, OPPOSITE SIDE OF THE BEAM
10. FULL-HEIGHT KING STUD, OPPOSITE SIDE OF THE BEAM

T24 TYPICAL BEAM POCKET
TD26 NO SCALE



OPTION 1



OPTION 2

ATTACHMENT SCHEDULE

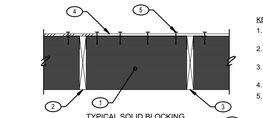
ROOF SLOPE	PLATE ATTACHMENT
< 4:12	(3) 16d NAILS
4:12 TO 7:12	(5) 16d NAILS
7:12 TO 10:12	(3)#10x3½" LONG SCREWS
10:12 TO 12:12	(4) #10x3½" LONG SCREWS

KEYNOTES:

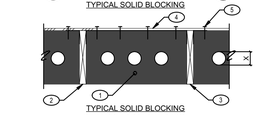
1. BOUNDARY NAILING 8d NAILS AT 4" O.C.
2. 2x6 (MIN) CONT BEARING PLATE ATTACH PER ATTACHMENT SCHEDULE
3. TOE NAIL OVER-BUILD FRAMING TO BEARING PLATE W/ (3) 16d NAILS MIN.
4. ROOF SHEATHING
5. 2x OVERBUILD FRAMING, SEE PLAN
6. TOP CHORD OF TRUSS OR ROOF FRAMING MEMBER, SEE PLAN
7. 2x STUD PONY WALL AS OCCURS ON PLAN (5'-0" O.C. MAX AND WALL SHALL BE CENTERED BETWEEN MAX SPAN)
8. ROOF SHEATHING (SHEATH LOWER ROOF PRIOR TO CONSTRUCTION OF OVER-BUILD)
9. PREFABRICATED OVERBUILD ROOF TRUSS W/ SIMPSON VTCR CLIP AT 24" O.C.

T25 TYPICAL OVER-BUILD
TD27 NO SCALE

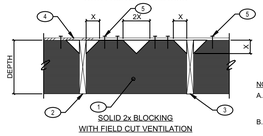
VENTILATION OPENINGS	
DEPTH	X
6"	2"
8"	2.5"
10"	3"
12"	3"



TYPICAL SOLID BLOCKING



TYPICAL SOLID BLOCKING
WITH PREFAB VENTILATION



SOLID 2x BLOCKING
WITH FIELD CUT VENTILATION

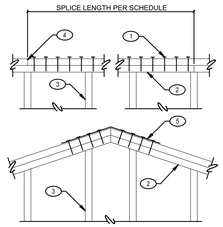
KEYNOTES:

1. SOLID BLOCKING TO BE TIGHT AGAINST PLYWOOD
2. PREFAB WOOD TRUSS OR WOOD JOIST
3. TOP OF WOOD PLATE OR BEAM AS OCCURS
4. PLYWOOD SHEATHING
5. EDGE NAILING

NOTE:

A. FOR CONSTRUCTION BELOW BLOCKING, SEE PLAN AND DETAILS. BLOCKING IS CONTINUOUS
B. INDIVIDUAL SHEAR BLOCKS MAY BE OMITTED EVERY 5TH BLOCK

T20 ELEVATION - TYPICAL SOLID 2x BLOCKING
TD22 NO SCALE



LENGTH OF WALL (BETWEEN CORNERS)	SPLICE LENGTH MINIMUM	NAILS ALONG SPLICE LENGTH
OVER 20'	6'-0"	(30) 16d
LESS THAN 20'	4'-0"	(24) 16d

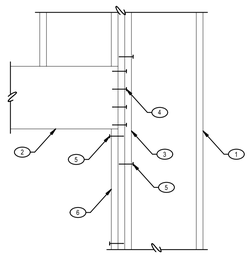
KEYNOTES:

1. NAILS BETWEEN SPLICE LOCATION PER SCHEDULE - STAGGERED
2. DBL 2x TOP PLATE
3. WOOD STUD WALL, SEE PLAN
4. SPLICE OVER STUD
5. SIMPSON ST6224 OR MSTC40 STRAP AT LOCATIONS WHERE PLATES CAN NOT BE SPLICED

NOTE:

A. DO NOT SPLICE TOP PLATES WITHIN 6'-0" OF ENDS OF PLYWOOD SHEARWALLS. THIS DETAIL REQUIRED AT ALL EXTERIOR WALLS AND OVER SHEARWALLS - NOT REQUIRED AT INTERIOR NON-SHEARWALLS.

T21 ELEVATION - TYPICAL TOP PLATE SPLICE
TD24 NO SCALE



KEYNOTES:

1. WOOD STUD WALL, SEE PLAN
2. WOOD HEADER
3. KING STUD(S) PER PLAN
4. (2) 16d NAILS AT 2" O.C.
5. 16d NAILS AT 12" O.C.
6. TRIMMER STUD(S) PER PLAN

T22 TYPICAL HEADER CONNECTION
TD25 NO SCALE

ALTERNATE FASTENER SCHEDULE	
MATERIAL: 7/16" SHEARWALL OR ROOF SHEATHING	
SPECIFIED FASTENER	ALTERNATE FASTENER
8d COMMON AT 12" O.C.	16 GA STAPLE AT 12" O.C.
	15 GA STAPLE AT 12" O.C.
	14 GA STAPLE AT 12" O.C.
	13 GA STAPLE AT 12" O.C.
8d COMMON AT 6" O.C.	16 GA STAPLE AT 4" O.C.
	15 GA STAPLE AT 5" O.C.
	14 GA STAPLE AT 6" O.C.
	13 GA STAPLE AT 6" O.C.
8d COMMON AT 4" O.C.	16 GA STAPLE AT 2.5" O.C.
	15 GA STAPLE AT 3" O.C.
	14 GA STAPLE AT 4" O.C.
	13 GA STAPLE AT 5" O.C.
8d COMMON AT 3" O.C.	15 GA STAPLE AT 2" O.C.
	14 GA STAPLE AT 3" O.C.
	13 GA STAPLE AT 4" O.C.

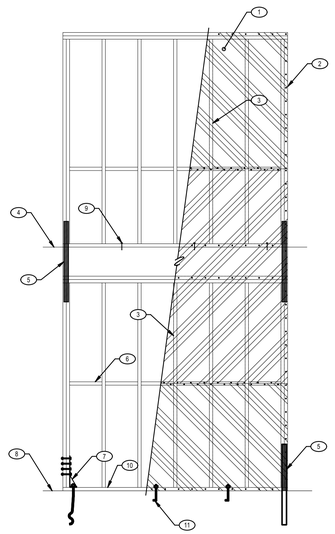
NOTES:

1. STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16" INCH OUTSIDE DIMENSION, AND INSTALLED WITH CROWN PARALLEL TO THE LONG DIMENSION OF FRAMING MEMBER.
2. FRAMING SHALL BE 3x OR WIDER WHEN NAIL SPACING IS LESS THAN 3 INCHES ON CENTER.
3. ALL STAPLES SHALL HAVE 1½" LONG LEGS MINIMUM.
4. STAPLE SIZES AND SPACING PER REPORT NO. ICC-ESR-1539.

NOTE:

A. MINIMUM STAPLING SPECIFIED HEREIN SHALL BE PROVIDED UNLESS NOTED OTHERWISE ON PLANS, DETAILS OR GENERAL STRUCTURAL NOTES

T23 ALTERNATE SHEATHING STAPLE OPTION
TD32 NO SCALE



KEYNOTES:

1. SHEATHING MATERIAL
2. DOUBLE STUDS AT EACH END OF SHEARWALL, EDGE NAIL ALONG DOUBLE STUDS
3. FULL HEIGHT WOOD STUDS
4. 2ND FLOOR LINE
5. SIMPSON STRAP TYPE HOLDOWN
6. MIDHEIGHT BLOCKING AND EDGE NAILING REQUIRED AT PLYWOOD SHEET EDGES
7. SIMPSON HD TYPE HOLDOWN
8. 1ST FLOOR LINE
9. BOTTOM PLATE ATTACHMENT
10. CONT 2x PT SOLE PLATE
11. SOLE PLATE ATTACHMENT

T17 ELEVATION - TYPICAL 2-STORY SHEARWALL
TD18 NO SCALE

SIMPLE ROOF FRAMING OR ROOF OVERBUILD FRAMING		
MAXIMUM HORIZONTAL SPAN	JOIST	RIDGE/VALLEY/HIP FRAMING
3'-6"	2x4	2x6
5'-0"	2x6	2x8
6'-6"	2x8	2x10

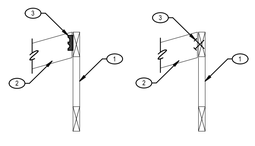
SIMPLE CEILING FRAMING	
MAXIMUM HORIZONTAL SPAN	CEILING JOIST
6'-0"	2x4
7'-0"	2x6
10'-0"	2x8

NOTE:

A. CONNECT FRAMING AT OVERBUILD AREAS PER TYPICAL DETAILS
B. FRAMING NOT BEARING ON SUPPORT SHALL BE HUNG USING SIMPSON LU, U, LUP OR LSSU TYPE HANGERS DESIGNATED FOR THE JOIST SIZE AT SPANS LESS THAN 10'-0" SIMPSON A34 OR (4)-16d NAILS MAY BE USED, AT SPANS LESS THAN 0'-6", (3)-16d NAILS MAY BE USED

T18 TYPICAL JOIST SCHEDULE FOR SIMPLE FRAMING
TD20 NO SCALE

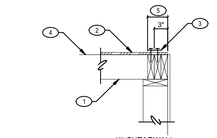
JOIST	CONNECTION
2x4	SIMPSON HANGER OR 3-16d NAILS OR SIMPSON A34
2x6	4-16d NAILS OR SIMPSON HANGER OR SIMPSON A34
2x8	SIMPSON HANGER OR SIMPSON A35 AND 2 - 16d NAILS
2x10 OR LARGER	SIMPSON HANGER



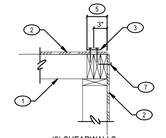
KEYNOTES:

1. PREFAB WOOD ROOF TRUSS, GIRDER TRUSS, OR HIP TRUSS
2. WOOD ROOF JOISTS OR RAFTER
3. CONNECTION WITH NAILS OR SIMPSON HANGER (SIMPSON LU, U, LUP, OR LSS) TYPE HANGER DESIGNED FOR THE JOIST SIZE. USE SKEWED MODEL AS REQUIRED

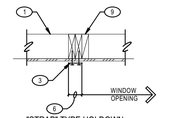
T19 TYPICAL SIMPLE FRAMING AT WOOD TRUSS
TD21 NO SCALE



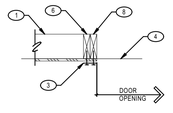
(1) SHEARWALL
(1) STRAP HOLDOWN
AT EXTERIOR CORNER



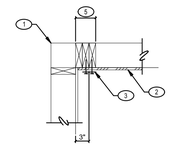
(2) SHEARWALLS
(1) STRAP HOLDOWN
AT EXTERIOR CORNER



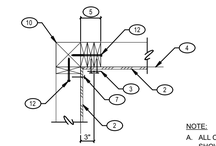
"STRAP" TYPE HOLDOWN
WINDOW JAMB



"STRAP" TYPE HOLDOWN
DOOR JAMB OR WALL END



(1) SHEARWALL
(1) STRAP HOLDOWN
AT RE-ENTRANT CORNER



(2) SHEARWALLS
(1) STRAP HOLDOWN
AT RE-ENTRANT CORNER

KEYNOTES:

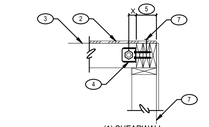
1. WOOD STUD WALL, SEE PLAN
2. SHEARWALL SHEATHING, SEE PLAN
3. STRAP TYPE HOLDOWN
4. EDGE OF FOUNDATION
5. SHEARWALL END POST (3 STUDS)
6. SHEARWALL END POSTS (2 STUDS)
7. SHEARWALL EDGE NAILING
8. TRIMMER STUD TO SUPPORT HEADER
9. BLOCK TO SUPPORT WINDOW SILL
10. 6x6 WOOD POST
11. (25) - SIMPSON SDS ¼"x4½" LONG WOOD SCREWS, STAGGERED
12. (25) - SIMPSON SDS ¼"x6" LONG WOOD SCREWS, STAGGERED

NOTE:

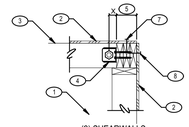
A. ALL CONDITIONS MAY NOT BE SHOWN. FOR CONDITIONS NOT SHOWN, USE THESE DETAILS AS A GUIDE.
B. SOME LARGER HOLDOWNS REQUIRE 6x6 POSTS, SEE PLANS AND SCHEDULES.
C. WHERE MULTIPLE TRIMMER STUDS OR KING STUDS OCCUR, MAKE ADJUSTMENTS AS REQUIRED.

T15 STRAP TYPE HOLDOWNS / SHEARWALL END POSTS, PLAN VIEW - HOLDOWN LOCATIONS
TD15 NO SCALE

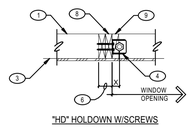
HOLDOWN	X
HDU2, HDU4, HDU5	1-5/16"
HDU8, HDU11	1-3/8"
HDU14	1-9/16"
LTT19	1-3/8"
LTT20B	1-1/2"
HTT4	1-5/16"
HTT5	
HD19	2-1/8"
HDHQ8	1-1/4"
HHDQ11 HHDQ14	1-1/2"



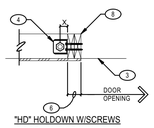
(1) SHEARWALL
(1) "HD" HOLDOWN W/SCREWS
AT EXTERIOR CORNER



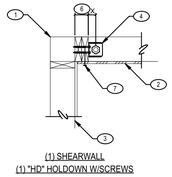
(2) SHEARWALLS
(1) "HD" HOLDOWN W/SCREWS
AT EXTERIOR CORNER



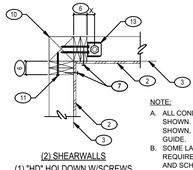
"HD" HOLDOWN W/SCREWS
WINDOW JAMB



"HD" HOLDOWN W/SCREWS
DOOR JAMB OR WALL END



(1) SHEARWALL
(1) "HD" HOLDOWN W/SCREWS
AT RE-ENTRANT CORNER



(2) SHEARWALLS
(1) "HD" HOLDOWN W/SCREWS
AT RE-ENTRANT CORNER

KEYNOTES:

1. WOOD STUD WALL, SEE PLAN
2. SHEARWALL SHEATHING, SEE PLAN
3. EDGE OF FOUNDATION
4. SIMPSON HD TYPE HOLDOWN WITH SCREWS
5. SHEARWALL END POST (3 STUDS) TYPICAL, EXCEPT AT HDU11, HDU14, HHDQ11, AND HHDQ14 WHERE 6x6 POST IS REQUIRED
6. SHEARWALL END POSTS (2 STUDS)
7. SHEARWALL EDGE NAILING
8. TRIMMER STUD TO SUPPORT HEADER
9. BLOCK TO SUPPORT WINDOW SILL
10. 6x6 WOOD POST
11. (25) - SIMPSON SDS ¼"x4½" LONG WOOD SCREWS, STAGGERED
12. (25) - SIMPSON SDS ¼"x6" LOND WOOD SCREWS, STAGGERED
13. SIMPSON HD TYPE HOLDOWN WITH 6" LONG SIMPSON SDS ¼" SCREWS

NOTE:

A. ALL CONDITIONS MAY NOT BE SHOWN. FOR CONDITIONS NOT SHOWN, USE THESE DETAILS AS A GUIDE.
B. SOME LARGER HOLDOWNS REQUIRE 6x6 POSTS, SEE PLANS AND SCHEDULES.
C. WHERE MULTIPLE TRIMMER STUDS OR KING STUDS OCCUR, MAKE ADJUSTMENTS AS REQUIRED.

T16 PLAN VIEW - HOLDOWN LOCATIONS/SHEARWALL END POSTS, "HD" TYPE HOLDOWNS USING SCREWS
TD16 NO SCALE

REV.	DATE	BY	DESCRIPTION
◀	. . .	. .	. . . . .
1	. . .	. .	. . . . .
2	. . .	. .	. . . . .
3	. . .	. .	. . . . .
4	. . .	. .	. . . . .
5	. . .	. .	. . . . .

PROJECT:
A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

CLIENT: ----

STRUCTURAL ENGINEERS SEAL:
PROFESSIONAL ENGINEER REGISTERED STATE OF IDAHO MAXWELL BATTANY 11697
06/21/2019

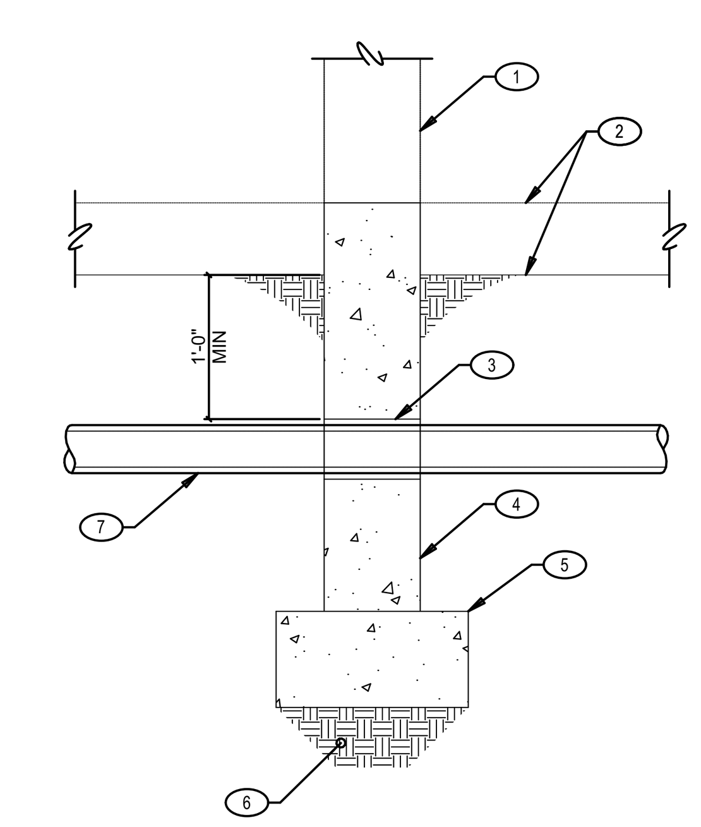
TYPICAL DETAILS

JOB NO.: IF19-019 | PROJECT MANAGER: MTB | CAD OPERATOR: DML

FROST Structural Engineering
1020 E. Lincoln Road
Idaho Falls, ID 83401
phone: 208.227.8404
fax: 208.227.8405

DATE: 6/12/2019 | CURRENT REV.: △

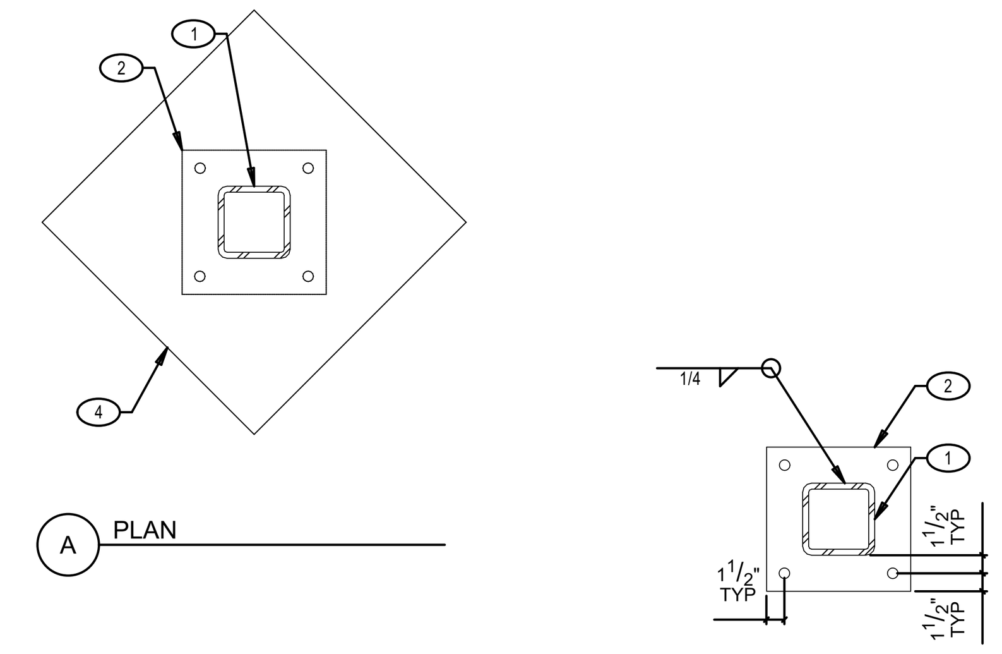
S1.3



KEYNOTES:
1. WALL AS OCCURS, SEE PLAN
2. SIDEWALK, PAVEMENT, OR FINISH GRADE PER ARCH
3. SLEEVE, 8"Ø MAX, PROVIDE $^{1}/_{2}$" MINIMUM CLEARANCE AROUND PIPE-CONDUIT
4. CONCRETE WALL, SEE PLAN
5. CONCRETE FOOTING, SEE PLAN
6. COMPACTED SUB-GRADE BELOW FOOTING, SEE PLAN
7. PIPE OR CONDUIT
8. SIDEWALK, PAVEMENT, OR FINISH GRADE PER ARCH
9. PROVIDE DRAINAGE SYSTEM BEHIND WALL, SEE TYPICAL DETAIL
10. FILTER FABRIC WRAPPED AROUND MIN 12"x12" OF GRAVEL BACKFILL

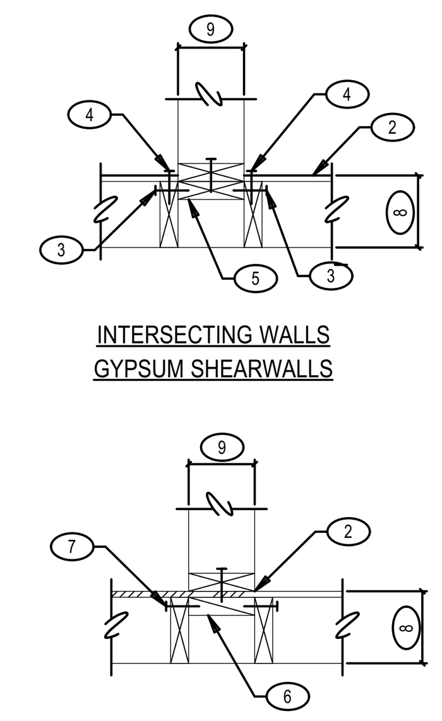
NOTE:
A. NO PIPE SHALL PASS THROUGH FOOTINGS OR UNDER COLUMN FOOTINGS. FOR ADDITIONAL INFORMATION SEE PLANS AND DETAILS
B. MULTIPLE PIPES/CONDUIT SLEEVES ALLOWED PROVIDED SLEEVES ARE SPACED W/ MINIMUM OF 2x SLEEVE DIAMETER BETWEEN SLEEVES
C. SLEEVES SHALL NOT OCCUR WITHIN 12" OF POINT LOADS OR HOLDOWN ANCHORS

T34 TYPICAL PIPE THROUGH STEM WALL
TD61 NO SCALE



A PLAN

KEYNOTES:
1. STEEL COLUMN, SEE PLAN
2. STEEL BASE PLATE W/ LEVELING NUTS, SEE COLUMN SCHEDULE
3. ±1$^{1}/_{2}$" NON-SHRINK GROUT
4. CONCRETE CLOSURE POUR. POUR AFTER DEAD LOADS ARE IN PLACE
5. CONCRETE SLAB ON GRADE, SEE PLAN
6. CONCRETE FOOTING, SEE PLAN
7. COMPACTED SUB-GRADE BELOW FOOTING, SEE PLAN

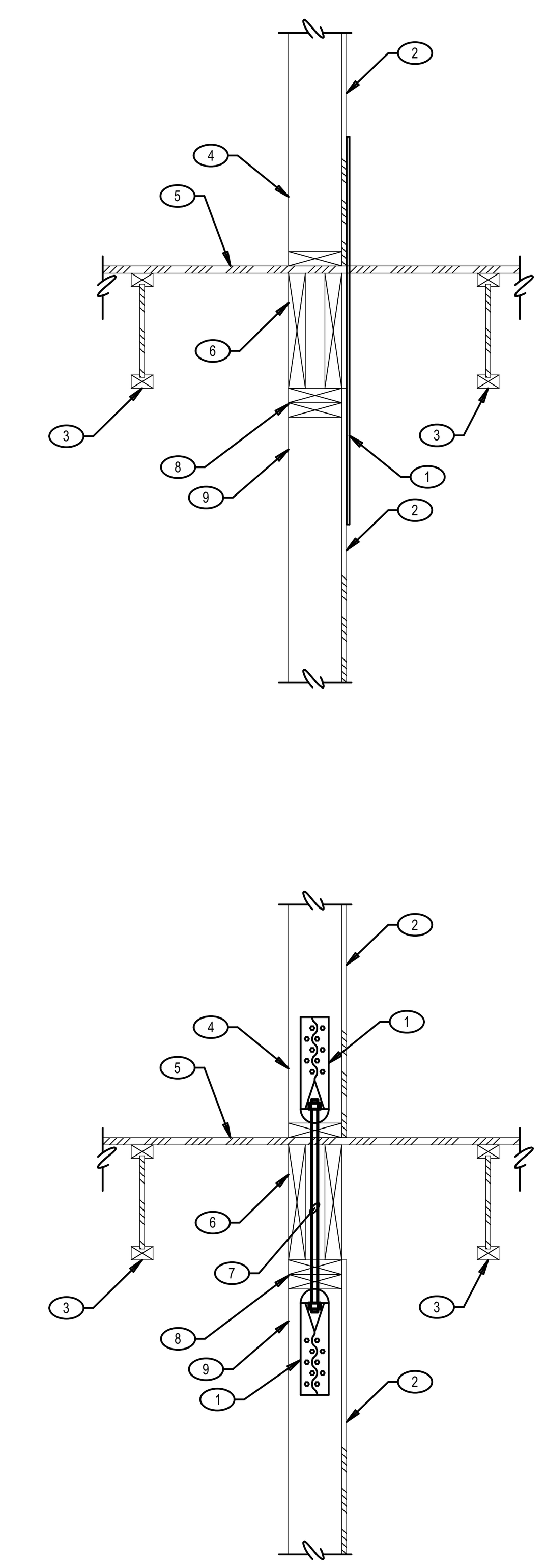


INTERSECTING WALLS
GYPSUM SHEARWALLS

INTERSECTING WALLS
PLYWOOD SHEARWALLS

KEYNOTES:
1. WOOD STUD WALL, SEE PLAN
2. PLYWOOD SHEATHING SHALL BE CONT THRU WALL INTERSECTIONS, GYPSUM SHEATHING MAY BE DISCONTINUOUS
3. 16d FACENAIL AT 16" O.C.
4. EDGE NAILING
5. FULL HEIGHT STUD
6. (3)-2x BLOCKS 18" LONG
7. (2)-16d FACENAILS EACH SIDE OF EACH BLOCK
8. PLYWOOD OR GYPSUM
9. INTERSECTING WALL

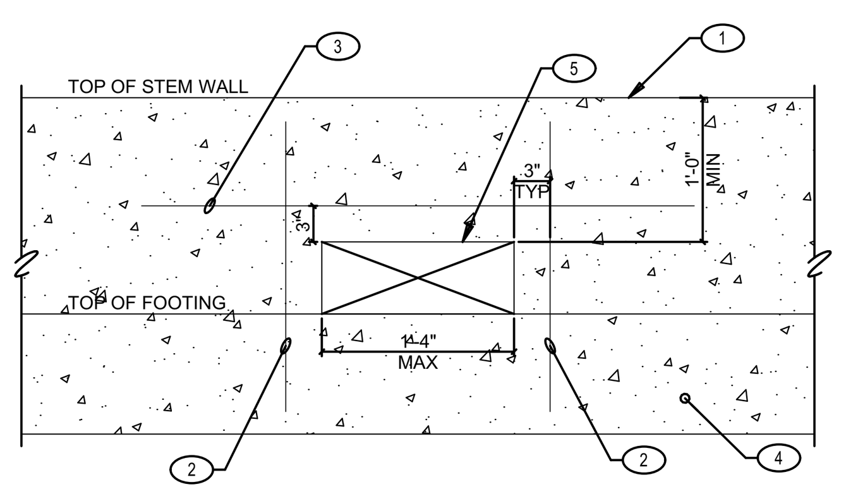
T28 PLAN VIEW - SHEARWALL INTERSECTIONS
TD33 NO SCALE



KEYNOTES:
1. HOLDOWN, SEE PLAN
2. WALL SHEATHING AS OCCURS, SEE PLAN
3. WOOD JOIST, SEE PLAN
4. WOOD POST, SEE HOLDOWN SCHEDULE
5. FLOOR SHEATHING, SEE PLAN
6. SOLID BLOCKING WITHIN JOIST BAY
7. ALL THREAD TO MATCH HOLDOWN REQUIREMENTS
8. CONT 2x DBL TOP PLATE W/ LAP SPLICE, SEE TYPICAL DETAIL
9. WOOD POST, MATCH POST ABOVE

NOTE:
A. FLOOR JOIST ORIENTATION MAY VARY

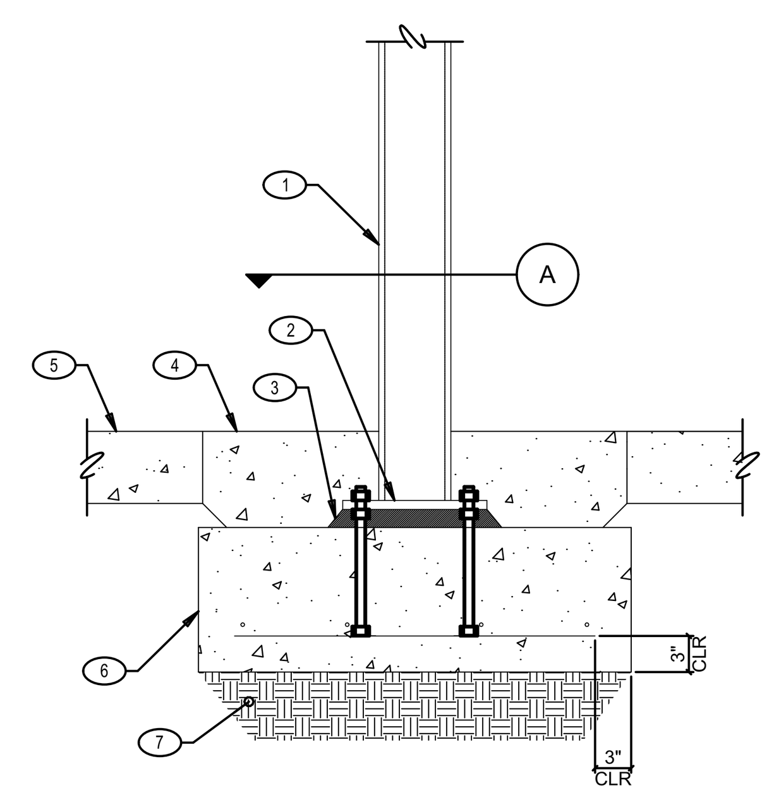
T26 STRAP AND "HD" TYPE HOLDOWNS BETWEEN FLOORS
TD29 NO SCALE



KEYNOTES:
1. STEM WALL
2. ADDITIONAL #4 VERTICAL BAR EACH SIDE OF OPENING
3. ADDITIONAL #4 BAR ABOVE BLOCKOUT
4. CONCRETE FOOTING
5. BLOCKOUT, PROVIDE $^{1}/_{2}$' MINIMUM CLEARANCE AROUND PIPES/CONDUITS

NOTE:
A. BLOCKOUTS SHALL NOT OCCUR WITHIN 12" OF POINT LOADS OR HOLDOWN ANCHORS
B. MULTIPLE BLOCKOUTS ARE PERMITTED PROVIDED BLOCKOUTS ARE A MINIMUM OF 24" APART

T35 BLOCKOUT THROUGH STEM WALL
TD63 NO SCALE

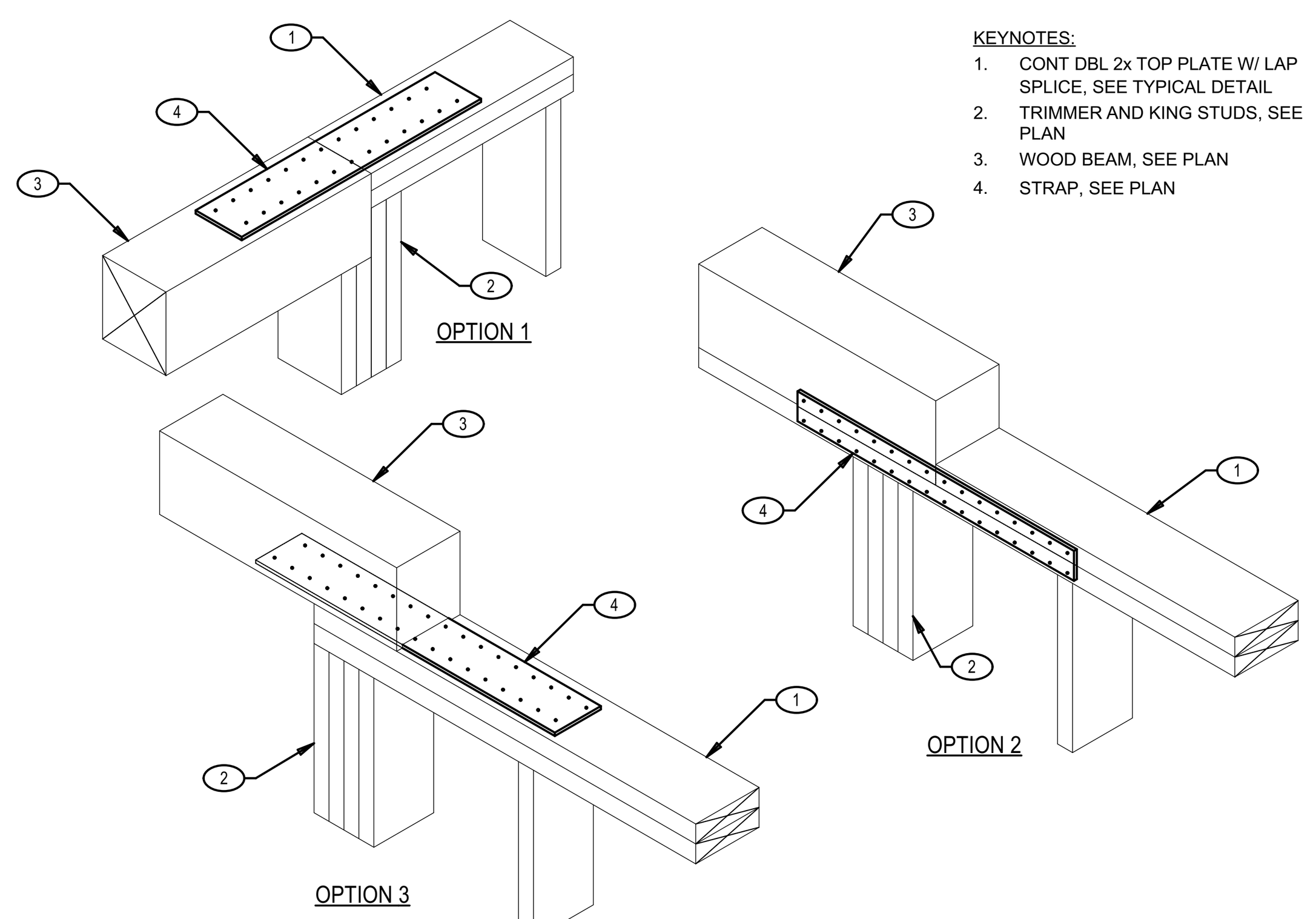


T31 TYPICAL STEEL COLUMN AT FOUNDATION
TD41 NO SCALE

CONNECTION	NAILING	TYPE
JOIST OR TRUSS BEARING ON SILL OR GIRDER	(3)-8d COMMON (2 1/2" x 0.131")	TOENAIL
	(3)-3"x 0.131" NAILS (Gun Nail)	
	(3)-3"x 14 GAUGE STAPLES	
BRIDGING TO JOIST	(2)-8d COMMON (2 1/2" x 0.131")	TOENAIL EACH END
	(2)-3"x 0.131" NAILS (Gun Nail)	
	(2)-3"x 14 GAUGE STAPLES	
SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL	16d (3 1/2"x 0.135") AT 16" O.C.	FACE NAIL
	3"x 0.131" NAILS (Gun Nail) AT 8" O.C.	
	3"x 14 GAUGE STAPLES AT 12" O.C.	
TOP PLATE TO STUD	(2)-16d COMMON (3 1/2"x 0.162")	END NAIL
	(3)-3"x 0.131" NAILS (Gun Nail)	
	(3)-3"x 14 GAUGE STAPLES	
SOLE PLATE TO STUD	(2)-16d COMMON (3 1/2"x 0.162")	END NAIL
	(3)-3"x 0.131" NAILS (Gun Nail)	
	(3)-3"x 14 GAUGE STAPLES	
DOUBLE STUDS, FACE NAIL	16d (3 1/2"x 0.135") AT 24" O.C.	FACE NAIL
	3"x 0.131" NAILS (Gun Nail) AT 8" O.C.	
	3"x 14 GAUGE STAPLES AT 8" O.C.	
DOUBLE TOP PLATES	16d (3 1/2"x 0.135") AT 16" O.C.	FACE NAIL
	3"x 0.131" NAILS (Gun Nail) AT 12" O.C.	
	3"x 14 GAUGE STAPLES AT 12" O.C.	
DOUBLE TOP PLATES - LAP SPLICE	(8)-16d COMMON (3 1/2"x 0.162")	FACE NAIL
	(12)-3"x 0.131" NAILS (Gun Nail)	
	(12)-3"x 14 GAUGE STAPLES	
BLOCKING BETWEEN JOISTS OR RAFTERS AND TOP PLATE	(3)-8d COMMON (2 1/2"x 0.131")	TOENAIL
	(3)-3"x 0.131" NAILS (Gun Nail)	
	(3)-3"x 14 GAUGE STAPLES	
	SIMPSON A35 AT EVERY OTHER BLOCK	-NA-
RIM JOIST TO TOP PLATE	8d (2 1/2"x 0.131") AT 6" O.C.	TOENAIL
	3"x 0.131" NAILS (Gun Nail) AT 6" O.C.	
	3"x 14 GAUGE STAPLES AT 6" O.C.	
	USE- SIMPSON A35 AT 48" O.C.	-NA-
TOP PLATES, LAPS AND INTERSECTIONS	(2)-16d COMMON (3 1/2"x 0.162")	FACE NAIL
	(3)-3"x 0.131" NAILS (Gun Nail)	
	(3)-3"x 14 GAUGE STAPLES	
CONTINUOUS HEADER, TWO PIECES	16d COMMON (3 1/2"x 0.162")	FACE NAIL AT 16" O.C. ALONG EDGES
CEILING JOISTS TO PLATE	(3)-8d COMMON (2 1/2"x 0.131")	TOENAIL
	(5)-3"x 0.131" NAILS (Gun Nail)	
	(5)-3"x 14 GAUGE STAPLES	
CEILING JOISTS, LAPS OVER PARTITIONS	(3)-16d COMMON (3 1/2"x 0.162)	FACE NAIL
	(4)-3"x 0.131" NAILS (Gun Nail)	
	(4)-3"x 14 GAUGE STAPLES	
CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL	(3)-16d COMMON (3 1/2"x 0.162)	FACE NAIL
	(4)-3"x 0.131" NAILS (Gun Nail)	
	(4)-3"x 14 GAUGE STAPLES	
RAFTER OR TRUSS TO PLATE	(3)-8d COMMON (2 1/2"x 0.131")	TOENAIL
	(3)-3"x 0.131" NAILS (Gun Nail)	
	(3)-3"x 14 GAUGE STAPLES	
CONTINUOUS HEADER TO STUD	(4)-8d COMMON (2 1/2" x 0.131")	TOENAIL
BUILT-UP CORNER STUDS	16d COM.(3 1/2"x 0.162") AT 24" O.C.	FACE NAIL
	3"x 0.131" NAILS (Gun Nail) AT 16" O.C.	
	3"x 14 GAUGE STAPLES AT 16" O.C.	

NOTE:
A. MINIMUM NAILING SPECIFIED HEREIN SHALL BE PROVIDED UNLESS NOTED OTHERWISE ON PLANS, DETAILS OR GENERAL STRUCTURAL NOTES
B. NAILING NOT NOTED ON THESE PLANS OR DETAILS SHALL BE PER I.B.C. TABLE 2304.10.1

T29 MINIMUM NAILING SCHEDULE - UNLESS NOTED OTHERWISE
TD34 NO SCALE

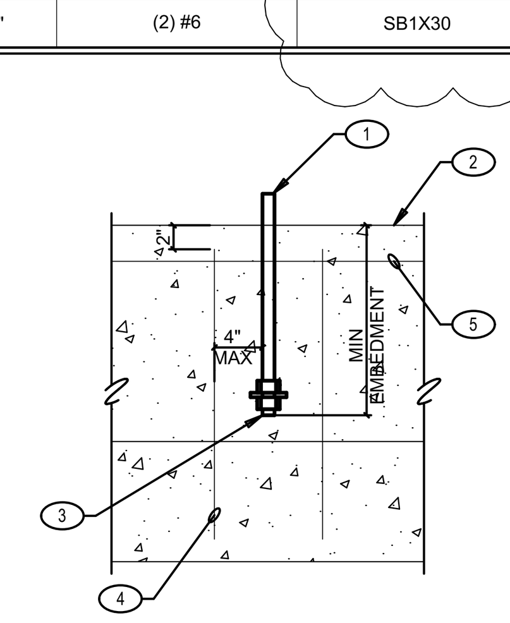


KEYNOTES:
1. CONT DBL 2x TOP PLATE W/ LAP SPLICE, SEE TYPICAL DETAIL
2. TRIMMER AND KING STUDS, SEE PLAN
3. WOOD BEAM, SEE PLAN
4. STRAP, SEE PLAN

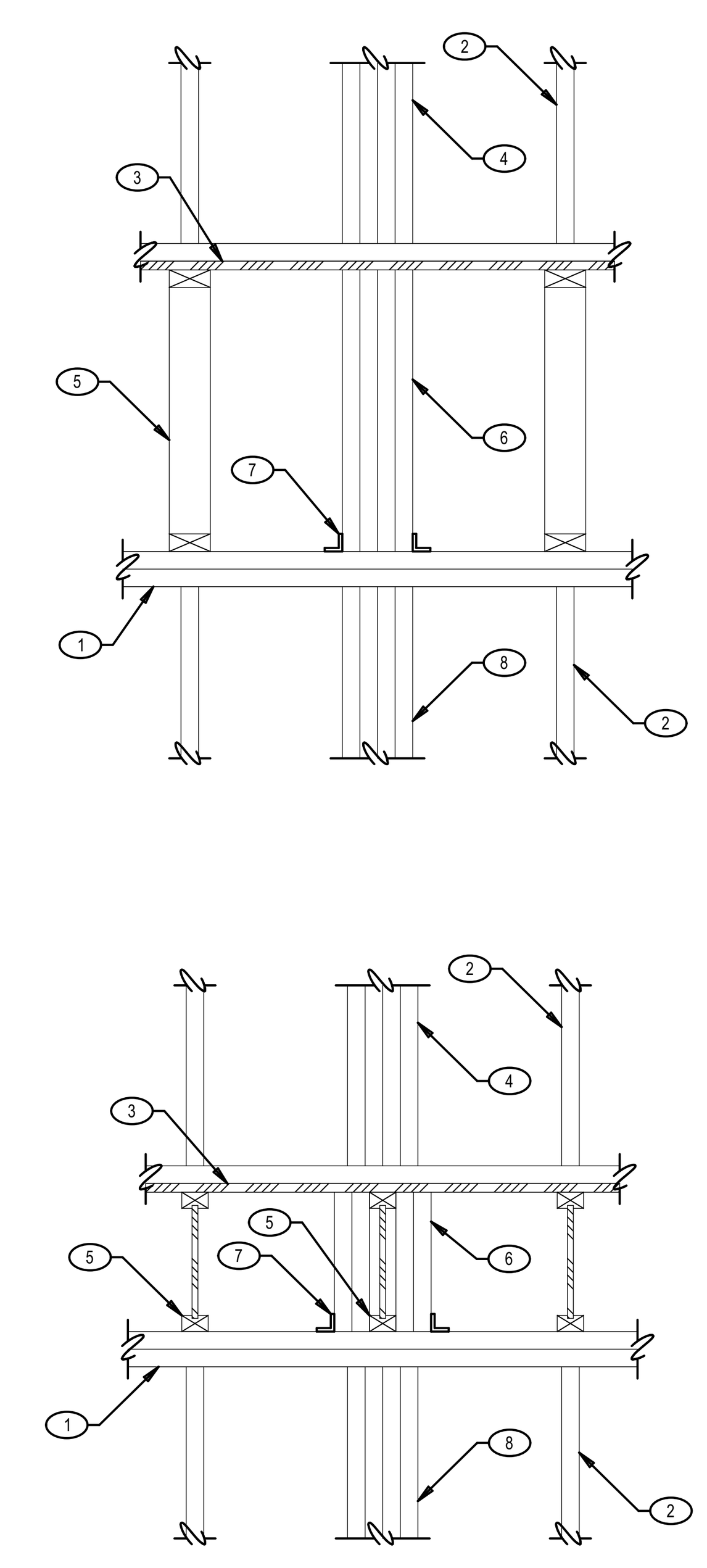
T36 TYPICAL STRAP AT WOOD BEAM
TD68 NO SCALE

ANCHOR SCHEDULE			
ALL-THREAD ANCHOR DIAMETER	MINIMUM EMBEDMENT	MINIMUM VERTICAL BARS (PROVIDE ADDITIONAL VERTICAL BARS AS REQUIRED)	ALTERNATE SIMPSON ANCHOR TYPE (INSTALL PER MANUFACTURER)
$^{1}/_{2}$"	12"	---	---
$^{5}/_{8}$"	16"	(1) #5 OR (2) #4	SB5/8X24
$^{7}/_{8}$"	18"	(2) #5	SSTB34 OR SB7/8X24
1"	20"	(2) #6	SB1X30

KEYNOTES:
1. HOLDOWN ANCHOR BOLT
2. TOP OF CONCRETE OR COLD JOINT
3. DBL NUT AND 2"Ø PLATE WASHER
4. ADDITIONAL VERTICAL BAR(S), SEE SCHEDULE
5. TOP REINFORCING BAR (#4 BAR MINIMUM) PER PLAN

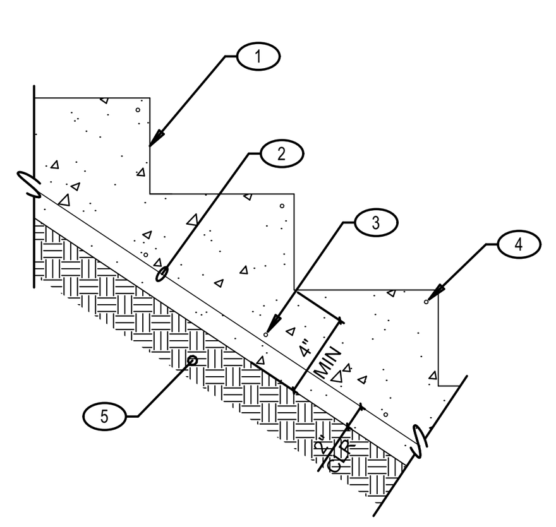


T32 TYPICAL ANCHORAGE FOR "HD" TYPE HOLDOWN
TD56 NO SCALE



KEYNOTES:
1. DBL TOP PLATE, SEE PLAN
2. WOOD STUD WALL, SEE PLAN
3. PLYWOOD SHEATHING
4. WOOD POST ABOVE
5. WOOD TRUSS OR JOIST
6. SOLID BLOCKING BETWEEN FLOORS, MATCH BEARING WITH OF POST ABOVE, MINIMUM
7. SIMPSON A35 CLIP EACH SIDE OF SOLID BLOCKING, WHERE POST ABOVE IS MORE THAN (2) STUDS, OTHERWISE ATTACH TO TOP PLATE WITH (2) 16d TOE-NAILS AT EACH BLOCK
8. WOOD POST BELOW

T27 SOLID BLOCKING BETWEEN FLOORS
TD31 NO SCALE

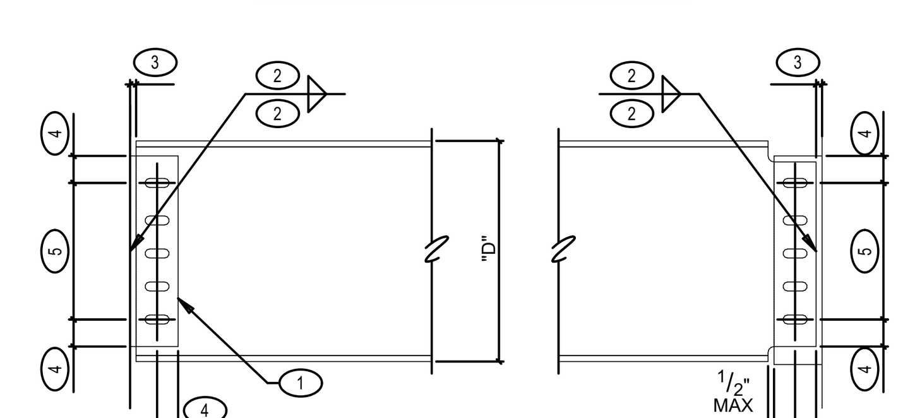


KEYNOTES:
1. CONCRETE STAIRS ON GRADE, SEE PLAN
2. #4 AT 18" O.C.
3. #4 AT 18" O.C.
4. #4 AT NOSE OF STEP
5. COMPACTED SUB-GRADE BELOW STAIRS

T33 TYPICAL CONCRETE STAIRS ON GRADE
TD58 NO SCALE

NOMINAL BEAM DEPTH "D"	NUMBER OF BOLTS IN ROW
UP TO 7"	(2) $^{3}/_{4}$"Ø
8" TO 10"	(2) $^{3}/_{4}$"Ø
12" TO 14"	(3) $^{3}/_{4}$"Ø
16"	(4) $^{3}/_{4}$"Ø
18"	(5) $^{3}/_{4}$"Ø
21"	(6) $^{3}/_{4}$"Ø
24" TO 27"	(7) $^{7}/_{8}$"Ø
30"	(8) $^{7}/_{8}$"Ø
33"	(9) $^{7}/_{8}$"Ø
36"	(10) $^{7}/_{8}$"Ø

KEYNOTES:
1. SHEAR PLATE TO EQUAL OR EXCEED BEAM WEB THICKNESS $^{3}/_{8}$" MIN OR AS SHOWN OTHERWISE
2. $^{5}/_{16}$" FOR 21" DEEP BEAMS OR LESS, $^{3}/_{8}$" FOR BEAMS 24" OR GREATER
3. $^{1}/_{2}$" CLEAR TO FACE OF SUPPORTING MEMBER (TYP)
4. AISC MIN EDGE DISTANCE
5. HORIZONTAL SHORT SLOTTED HOLES AT 3" O.C. MIN IN EITHER BEAM OR SHEAR PLATE PER AISC SPEC



NOTE:
A. TYP CONNECTION CONSISTS OF ONE SHEAR PLATE WITH $^{3}/_{4}$"Ø OR $^{7}/_{8}$"Ø A325N BOLTS, SEE SCHEDULE
B. MAINTAIN BOLT SPACING AND EDGE DISTANCES PER AISC SPEC

T30 TYPICAL SHEAR PLATE CONNECTION DETAIL
TD42 NO SCALE

REV.	DATE	BY	DESCRIPTION
▲	.	.	.
△	.	.	.
1	.	.	.
2	.	.	.
3	.	.	.
4	.	.	.
5	.	.	.

PROJECT:
A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

CLIENT: ----

STRUCTURAL ENGINEERS SEAL:
PROFESSIONAL ENGINEER REGISTERED 11697 STATE OF IDAHO MARKELL BATEMAN
06/21/2019

TYPICAL DETAILS
JOB NO.: IF19-019 | PROJECT MANAGER: MTB | CAD OPERATOR: DML

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1020 E. Lincoln Road
Idaho Falls, ID 83401
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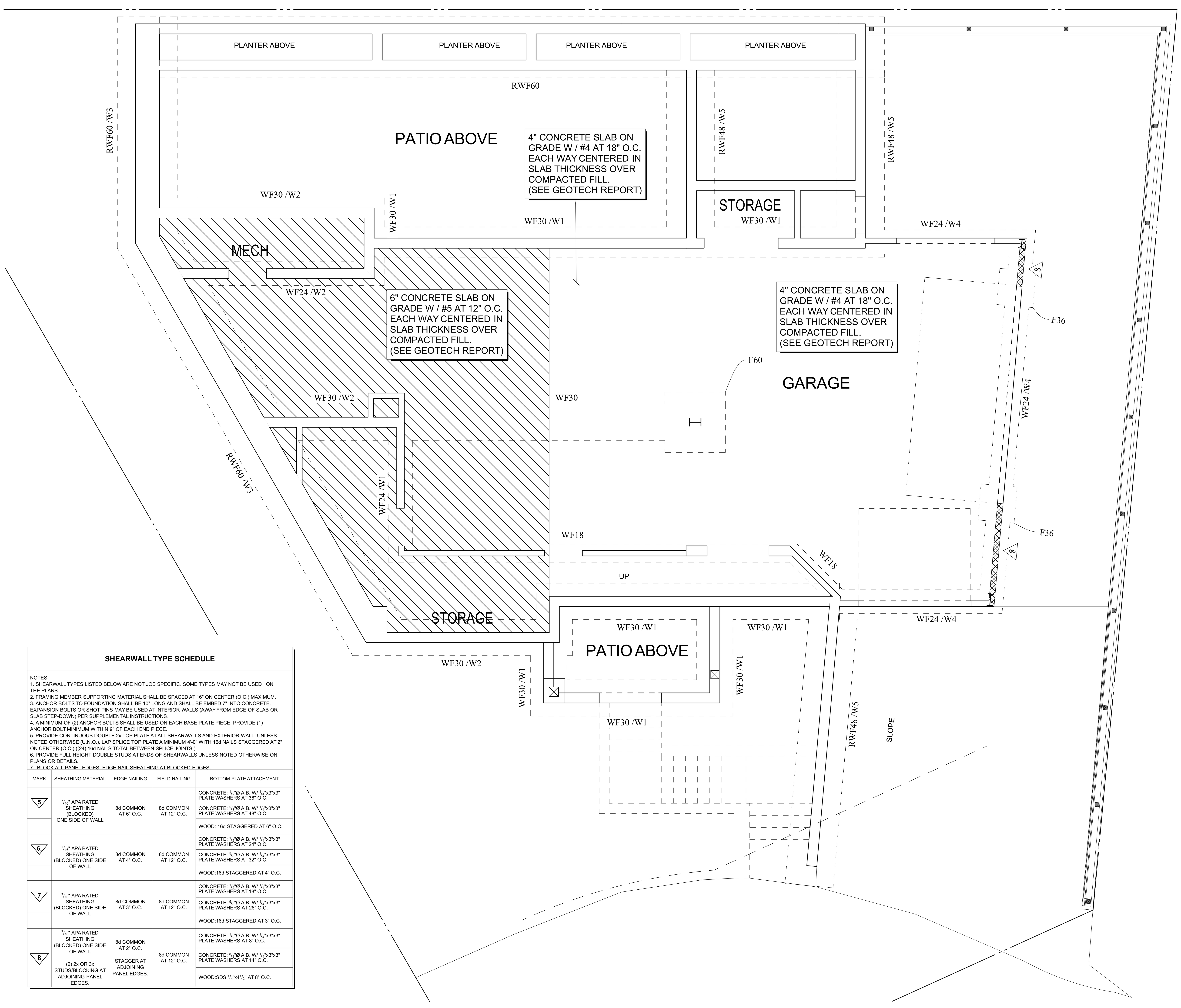
fax: 208.227.8405

DATE: 6/12/2019 CURRENT REV. △

S1.4



S2.0 **FOUNDATION**
SCALE: 1/4" = 1'-0"

SHEARWALL HOLDOWN SCHEDULE

MARK	HOLDOWN	SHEARWALL END POST UNO ON PLAN	ALTERNATE HOLDOWN
A	SIMPSON LSTHD8	(2) 2x STUDS	N/A
B	SIMPSON LSTHD8RJ	(2) 2x STUDS	N/A
C	SIMPSON STHD10	(2) 2x STUDS	N/A
D	SIMPSON STHD10RJ	(2) 2x STUDS	N/A
E	SIMPSON STHD14	(2) 2x STUDS	N/A
F	SIMPSON STHD14RJ	(2) 2x STUDS	N/A
G	SIMPSON LSTHD8	(2) 2x STUDS	N/A
H	SIMPSON HTT4	(2) 2x STUDS	N/A
K	SIMPSON HTT5	(2) 2x STUDS	N/A
L	SIMPSON HDU8	(2) 2x STUDS	N/A
M	SIMPSON HDU11	6x6 WOOD POST	N/A
N	SIMPSON MST37	(2) 2x STUDS	N/A
P	SIMPSON MST48	(2) 2x STUDS	N/A
R	SIMPSON MST60	(2) 2x STUDS	N/A
S	SIMPSON MST72	(2) 2x STUDS	N/A
T	SIMPSON MSTC40	(2) 2x STUDS	N/A
U	SIMPSON MSTC52	(2) 2x STUDS	N/A
V	SIMPSON MSTC66	(2) 2x STUDS	N/A

FOUNDATION PLAN NOTES

A. VERIFY ALL DIMENSIONS WITH ALL ARCHITECTURAL DRAWINGS.

B. ALL SCHEDULED MARK DESIGNATIONS MAY NOT NECESSARILY BE FOUND ON THIS PLAN. SCHEDULES ARE TYPICAL TO THIS PROJECT.

C. THE DEPTH OF FOOTING DIMENSION INDICATED IN THE G.S.N. IS A MINIMUM. FOUNDATION CONTRACTOR SHALL COORDINATE WITH THE SOILS REPORT AND OTHER TRADES TO INSURE THAT THESE MINIMUMS ARE SUFFICIENT FOR THE WORK. SEE TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.

D. WALLS WITH SOLID LINES DESIGNATED STRUCTURAL (BEARING) WALLS.

E. WALLS WITH DASHED LINES DESIGNATE NON-STRUCTURAL (NON-BEARING) WALLS.

F. 5, 6., 7, -AS SHOWN ON PLAN INDICATES A SHEARWALL; HATCHING IN WALL DESIGNATES SHEARWALL LENGTH.

G. A, B, - AS SHOWN ON PLAN INDICATES A SHEARWALL HOLDOWN. SEE HOLDOWN SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION.

H. W1, W2, ETC. - AS SHOWN ON PLAN INDICATES CONCRETE OR MASONRY WALLS. SEE WALL SCHEDULE FOR ADDITIONAL INFORMATION.

I. WF18, WF24, ETC. - AS SHOWN ON PLAN INDICATES A CONTINUOUS WALL FOOTING. SEE FOOTING SCHEDULE FOR ADDITIONAL INFORMATION.

J. F36, F48, ETC. - AS SHOWN ON PLAN INDICATES A CONCRETE FOOTING. SEE FOOTING SCHEDULE FOR ADDITIONAL INFORMATION.

K. RWF36, RWF42, ETC. - AS SHOWN ON PLAN INDICATES A CONTINUOUS RETAINING WALL FOOTING. SEE FOOTING SCHEDULE FOR ADDITIONAL INFORMATION.

L. P1, P2, ETC. AS SHOWN ON PLAN INDICATES A WOOD POST. SEE POST SCHEDULE FOR MORE INFORMATION.

M. SC1, SC2, ETC. - AS SHOWN ON PLAN INDICATES A STEEL COLUMN. SEE STEEL COLUMN SCHEDULE FOR ADDITIONAL INFORMATION. COLUMNS START AT THE LEVEL THEY ARE CALLED OUT ON.

N. PROVIDE CONTINUOUS BEARING FOR ALL POSTS AND BUILT-UP STUDS TO THE FOUNDATION PER TYPICAL "SOLID BLOCKING BETWEEN FLOORS" DETAIL.

O. ALL EXTERIOR WALLS SHALL BE CONSTRUCTED WITH TYPE "5" SHEARWALLS, UNO.

P. VERIFY EXACT SIZE AND LOCATION OF DEPRESSED AND/OR RAISED SLABS WITH ARCHITECTURAL DRAWINGS.

Q. FOR SIDEWALK AND LANDING LOCATIONS, SEE ARCHITECTURAL DRAWINGS.

(X) PLAN KEYNOTES

1. ----
2. ----
3. ----

SHEARWALL TYPE SCHEDULE

NOTES:
1. SHEARWALL TYPES LISTED BELOW ARE NOT JOB SPECIFIC. SOME TYPES MAY NOT BE USED ON THE PLANS.
2. FRAMING MEMBER SUPPORTING MATERIAL SHALL BE SPACED AT 16" ON CENTER (O.C.) MAXIMUM.
3. ANCHOR BOLTS TO FOUNDATION SHALL BE 10" LONG AND SHALL BE EMBED 7" INTO CONCRETE. EXPANSION BOLTS OR SHOT PINS MAY BE USED AT INTERIOR WALLS (AWAY FROM EDGE OF SLAB OR SLAB STEP-DOWN) PER SUPPLEMENTAL INSTRUCTIONS.
4. A MINIMUM OF (2) ANCHOR BOLTS SHALL BE USED ON EACH BASE PLATE PIECE. PROVIDE (1) ANCHOR BOLT MINIMUM WITHIN 9" OF EACH END PIECE.
5. PROVIDE CONTINUOUS DOUBLE 2x TOP PLATE AT ALL SHEARWALLS AND EXTERIOR WALL. UNLESS NOTED OTHERWISE (U.N.O.), LAP SPLICE TOP PLATE A MINIMUM 4'-0" WITH 16d NAILS STAGGERED AT 2" ON CENTER (O.C.) ((24) 16d NAILS TOTAL BETWEEN SPLICE JOINTS.)
6. PROVIDE FULL HEIGHT DOUBLE STUDS AT ENDS OF SHEARWALLS UNLESS NOTED OTHERWISE ON PLANS OR DETAILS.
7. BLOCK ALL PANEL EDGES. EDGE NAIL SHEATHING AT BLOCKED EDGES.

MARK	SHEATHING MATERIAL	EDGE NAILING	FIELD NAILING	BOTTOM PLATE ATTACHMENT
5	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 6" O.C.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 36" O.C.
				CONCRETE: 5/8"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 48" O.C.
				WOOD: 16d STAGGERED AT 6" O.C.
6.	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 4" O.C.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 24" O.C.
				CONCRETE: 5/8"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 32" O.C.
				WOOD:16d STAGGERED AT 4" O.C.
7	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 3" O.C.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 18" O.C.
				CONCRETE: 5/8"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 26" O.C.
				WOOD:16d STAGGERED AT 3" O.C.
8	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL (2) 2x OR 3x STUDS/BLOCKING AT ADJOINING PANEL EDGES.	8d COMMON AT 2" O.C. STAGGER AT ADJOINING PANEL EDGES.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 8" O.C.
				CONCRETE: 5/8"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 14" O.C.
				WOOD:SDS 1/4"x4 1/2" AT 8" O.C.

FOOTING SCHEDULE

NOTES:
1. FOR CONSTRUCTION ABOVE FOOTING, SEE DETAILS.
2. FOR MINIMUM CLEARANCE (CLR) OF REINFORCING, SEE GENERAL STRUCTURAL NOTES (GSN).

MARK	LENGTH	WIDTH	THICKNESS	FOOTING REINFORCING	REMARKS
F36	36"	36"	10"	(4) #4 EACH WAY BOTTOM	---
F42	42"	42"	10"	(5) #4 EACH WAY BOTTOM	---
F60	60"	60"	12"	(6) #5 EACH WAY BOTTOM	---
WF18	CONT	18"	10"	(2) #4 CONT BOTTOM	MONO POUR W/ SLAB
WF18A	CONT	18"	12"	(2) #4 CONT TOP AND BOTTOM	MONO POUR W/ SLAB
WF24	CONT	24"	10"	(2) #4 CONT BOTTOM	STRIP FOOTING
WF30	CONT	30"	10"	(3) #4 W/#4 AT 24" O.C. TRANSVERSE, TOP AND BOTTOM	STRIP FOOTING
RWF42	CONT	42"	12"	(5) #4 CONT W/ #4 AT 14" O.C. TRANSVERSE, TOP AND BOTTOM	OFFSET FOOTING 24" ON TOE SIDE PER PLAN
RWF48	CONT	48"	12"	(6) #4 CONT W/ #4 AT 16" O.C. TRANSVERSE, TOP AND BOTTOM	CENTER FOOTING ON WALL
RWF60	CONT	60"	14"	(5) #5 CONT W/ #5 AT 12" O.C. TRANSVERSE, TOP AND BOTTOM	CENTER FOOTING ON WALL

WALL (W) SCHEDULE

MARK	THICKNESS AND TYPE	VERTICAL REINFORCING	HORIZONTAL REINFORCING	REMARKS
W1	8" CONCRETE	#5 AT 12" O.C.	#4 AT 18" O.C.	---
W2	8" CONCRETE	#5 AT 8" O.C.	#4 AT 12" O.C.	---
W3	24" CONCRETE	#6 AT 12" O.C. EACH FACE	#5 AT 12" O.C. EACH FACE	---
W4	8" CONCRETE	#4 AT 18" O.C.	#4 AT 18" O.C.	---
W5	8" CONCRETE	#4 AT 18" O.C.	#4 AT 18" O.C.	SEE DETAIL FOR DOWEL SIZE AND SPACING FROM FOUNDATION

REV.	DATE	BY	DESCRIPTION
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PROJECT: A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340
CLIENT: ----

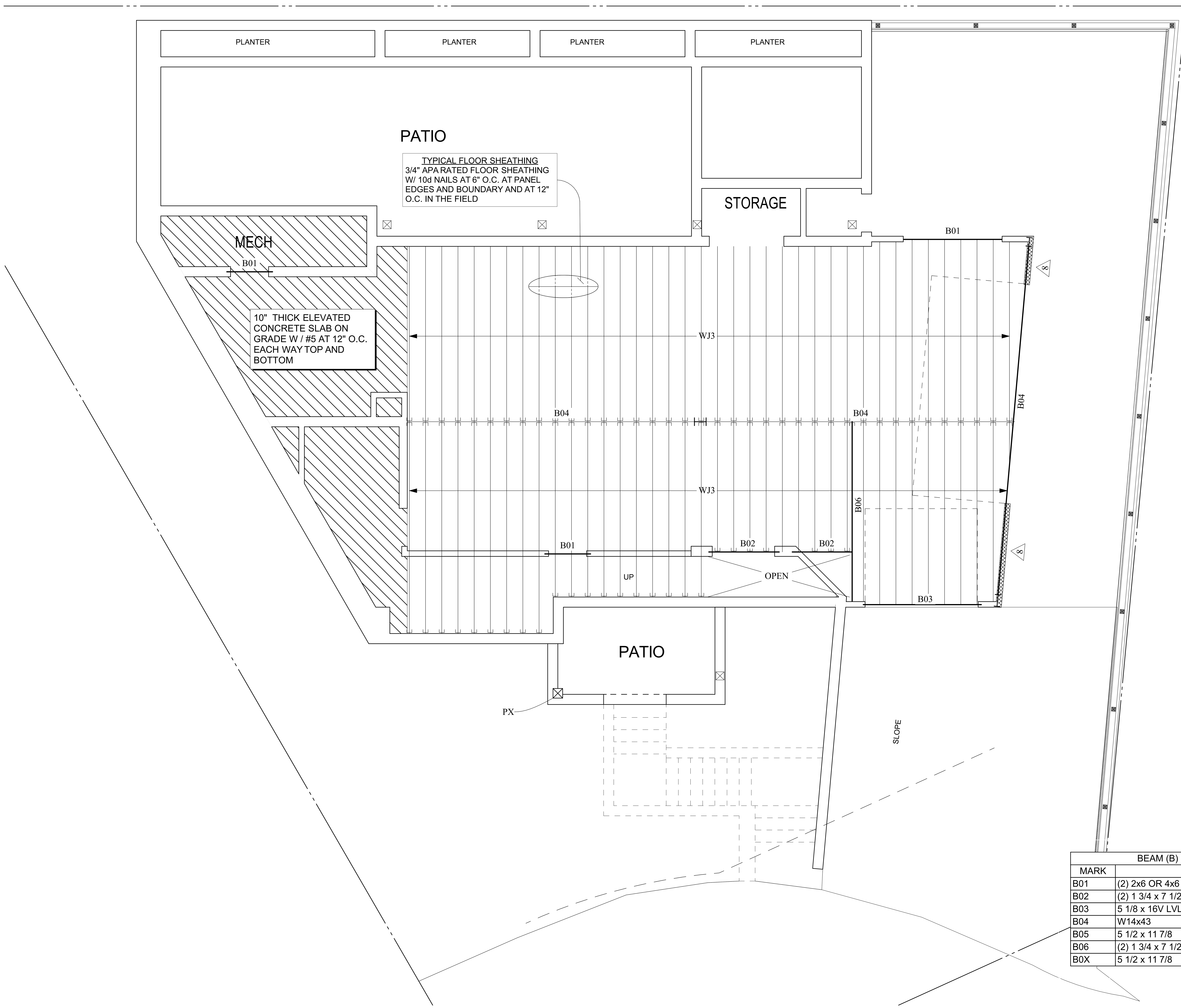
STRUCTURAL ENGINEERS SEAL:
PROFESSIONAL ENGINEER · REGISTERED · 11697 · STATE OF IDAHO · MARKELL BATEMAN
06/21/2019

FOUNDATION PLAN
JOB NO.: IF19-019 | PROJECT MANAGER: MTB | CAD OPERATOR: DML

FROST Structural Engineering
1020 E. Lincoln Road
Idaho Falls, ID 83401
phone: 208.227.8404
fax: 208.227.8405

DATE: 6/12/2019 | CURRENT REV.

S2.0



BEAM (B) SCHEDULE

MARK	SIZE
B01	(2) 2x6 OR 4x6 OR (2) 1 3/4 x 5 1/2 LVL
B02	(2) 1 3/4 x 7 1/2 LVL
B03	5 1/8 x 16V LVL
B04	W14x43
B05	5 1/2 x 11 7/8
B06	(2) 1 3/4 x 7 1/2 LVL
B0X	5 1/2 x 11 7/8

S2.1 MAIN FLOOR FRAMING PLAN
SCALE: 1/4" = 1'-0"

FLOOR FRAMING PLAN NOTES

A. VERIFY ALL DIMENSIONS WITH ALL ARCHITECTURAL DRAWINGS.

B. ALL SCHEDULED MARK DESIGNATIONS MAY NOT NECESSARILY BE FOUND ON THIS PLAN. SCHEDULES ARE TYPICAL TO THIS PROJECT.

C. IF DOUBLE TOP PLATE IS NOTCHED, STEPPED OR BROKEN, PROVIDE A SIMPSON MSTC40 STRAP AT DISCONTINUITY.

D. TYPICAL BEARING WALL FRAMING SHALL BE 2x6 STUDS AT 16" O.C. UNO.

E. PROVIDE TRIMMER STUDS (TS) AND KING STUDS (KS) AT OPENINGS AS FOLLOWS, U.N.O.: OPENINGS 6'-0" OR LESS, (1) TS & (1) KS, OPENINGS 6'-1" TO 9'-0", (1) TS & (2) KS, 9'-1" TO 12-0", (2) TS & (3) KS. FOR ATTACHMENT, SEE "TYPICAL HEADER CONNECTION" DETAIL.

F. WALLS WITH SOLID LINES DESIGNATED STRUCTURAL (BEARING) WALLS .

G. WALLS WITH DASHED LINES DESIGNATE NON-STRUCTURAL (NON-BEARING) WALLS .

H. 5, 6., 7, -AS SHOWN ON PLAN INDICATES A SHEARWALL; HATCHING IN WALL DESIGNATES SHEARWALL LENGTH.

I. A, B, - AS SHOWN ON PLAN INDICATES A SHEARWALL HOLDOWN. SEE HOLDOWN SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION .

J. B1, B2, ETC. - AS SHOWN ON PLAN INDICATES A BEAM OR HEADER. SEE BEAM SCHEDULE FOR ADDITIONAL INFORMATION .

K. WJ1, WJ2, ETC. - AS SHOWN ON PLAN INDICATES A WOOD JOIST. SEE WOOD JOIST SCHEDULE FOR ADDITIONAL INFORMATION.

L. P1, P2, ETC. AS SHOWN ON PLAN INDICATES A WOOD POST. SEE POST SCHEDULE FOR MORE INFORMATION.

M. SC1, SC2, ETC. - AS SHOWN ON PLAN INDICATES A STEEL COLUMN. SEE STEEL COLUMN SCHEDULE FOR ADDITIONAL INFORMATION. COLUMNS START AT THE LEVEL THEY ARE CALLED OUT ON .

N. W1, W2, ETC. - AS SHOWN ON PLAN INDICATES CONCRETE OR MASONRY WALLS. SEE WALL SCHEDULE FOR ADDITIONAL INFORMATION.

O. CS16, CS18, ETC. - AS SHOWN AT WALL OPENINGS, PROVIDE STRAPPING PER "TYPICAL STRAP AT OPENING" DETAIL .

P. PROVIDE CONTINUOUS BEARING FOR ALL POSTS AND BUILT-UP STUDS TO THE FOUNDATION PER TYPICAL "SOLID BLOCKING BETWEEN FLOORS" DETAIL.

Q. FOR CLARITY, DETAILS MAY SHOW ONLY ONE SIDE OF FRAMING CONDITION.

R. ALL EXTERIOR WALLS SHALL BE CONSTRUCTED WITH TYPE "5" SHEARWALLS, UNO.

(X) PLAN KEYNOTES

1. ----
2. ----
3. ----

WOOD JOIST (WJ) SCHEDULE

MARK	JOIST	FACE MOUNT HANGER	TOP FLANGE HANGER
WJ1	16" BCI 90 2.0 AT 12" O.C. (WEB STIFFENERS EACH END AT BEARING POINTS	LUS26	LB26
WJ2	16" BCI 90 2.0 AT 16" O.C.	IUS2.06/11.88	ITS2.06/11.88
WJ3	$11^7/_8$" BCI 6500 1.8 AT 16" O.C.	IUS2.37/11.88	ITS2.37/11.88

SHEARWALL TYPE SCHEDULE

NOTES:
1. SHEARWALL TYPES LISTED BELOW ARE NOT JOB SPECIFIC. SOME TYPES MAY NOT BE USED ON THE PLANS.
2. FRAMING MEMBER SUPPORTING MATERIAL SHALL BE SPACED AT 16" ON CENTER (O.C.) MAXIMUM.
3. ANCHOR BOLTS TO FOUNDATION SHALL BE 10" LONG AND SHALL BE EMBED 7" INTO CONCRETE. EXPANSION BOLTS OR SHOT PINS MAY BE USED AT INTERIOR WALLS (AWAY FROM EDGE OF SLAB OR SLAB STEP-DOWN) PER SUPPLEMENTAL INSTRUCTIONS.
4. A MINIMUM OF (2) ANCHOR BOLTS SHALL BE USED ON EACH BASE PLATE PIECE. PROVIDE (1) ANCHOR BOLT MINIMUM WITHIN 9" OF EACH END PIECE.
5. PROVIDE CONTINUOUS DOUBLE 2x TOP PLATE AT ALL SHEARWALLS AND EXTERIOR WALL. UNLESS NOTED OTHERWISE (U.N.O.), LAP SPLICE TOP PLATE A MINIMUM 4'-0" WITH 16d NAILS STAGGERED AT 2" ON CENTER (O.C.) ((24) 16d NAILS TOTAL BETWEEN SPLICE JOINTS.)
6. PROVIDE FULL HEIGHT DOUBLE STUDS AT ENDS OF SHEARWALLS UNLESS NOTED OTHERWISE ON PLANS OR DETAILS.
7. BLOCK ALL PANEL EDGES. EDGE NAIL SHEATHING AT BLOCKED EDGES.

MARK	SHEATHING MATERIAL	EDGE NAILING	FIELD NAILING	BOTTOM PLATE ATTACHMENT
5	$^7/_{16}$" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 6" O.C.	8d COMMON AT 12" O.C.	CONCRETE: $^1/_2$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 36" O.C.
				CONCRETE: $^5/_8$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 48" O.C.
				WOOD: 16d STAGGERED AT 6" O.C.
6.	$^7/_{16}$" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 4" O.C.	8d COMMON AT 12" O.C.	CONCRETE: $^1/_2$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 24" O.C.
				CONCRETE: $^5/_8$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 32" O.C.
				WOOD:16d STAGGERED AT 4" O.C.
7	$^7/_{16}$" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 3" O.C.	8d COMMON AT 12" O.C.	CONCRETE: $^1/_2$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 18" O.C.
				CONCRETE: $^5/_8$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 26" O.C.
				WOOD:16d STAGGERED AT 3" O.C.
8	$^7/_{16}$" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL (2) 2x OR 3x STUDS/BLOCKING AT ADJOINING PANEL EDGES.	8d COMMON AT 2" O.C. STAGGER AT ADJOINING PANEL EDGES.	8d COMMON AT 12" O.C.	CONCRETE: $^1/_2$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 8" O.C.
				CONCRETE: $^5/_8$"Ø A.B. W/ $^1/_4$"x3"x3" PLATE WASHERS AT 14" O.C.
				WOOD:SDS $^1/_4$"x4$^1/_2$" AT 8" O.C.

REV.	DATE	BY	DESCRIPTION
1	-	-	-
2	-	-	-
3	-	-	-
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PROJECT: A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

CLIENT: ----

STRUCTURAL ENGINEERS SEAL:
PROFESSIONAL ENGINEER REGISTERED 11697 STATE OF IDAHO MARKELL BATEMAN
06/21/2019

MAIN FLOOR FRAMING PLAN
JOB NO.: IF19-019 PROJECT MANAGER: MTB CAD OPERATOR: DML

FROST Structural Engineering
1020 E. Lincoln Road
Idaho Falls, ID 83401
phone: 208.227.8404
fax: 208.227.8405

DATE: 6/12/2019 CURRENT REV.

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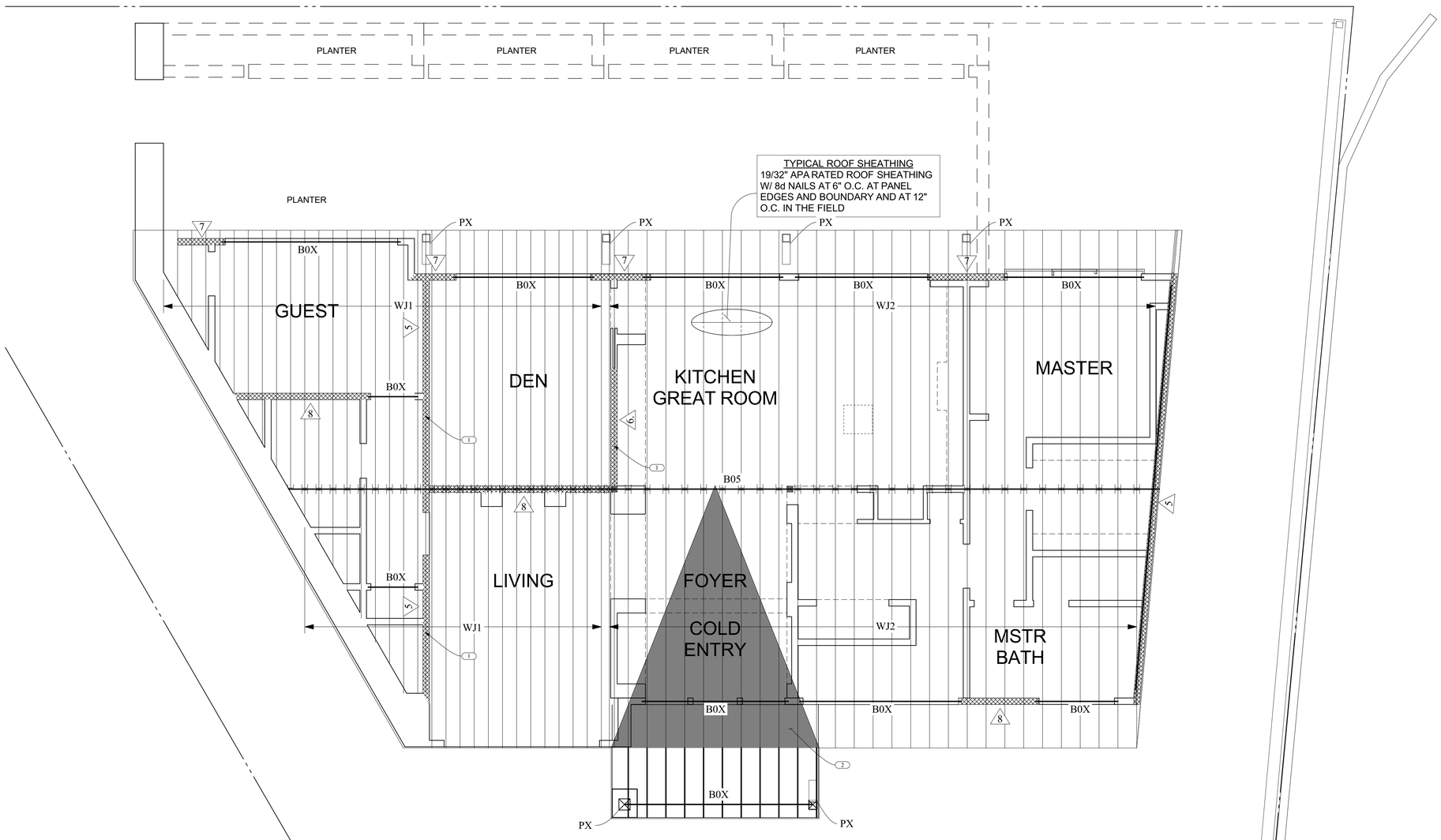

S2.2 ROOF FRAMING PLAN
SCALE: 1/4" = 1'-0"

ROOF FRAMING PLAN NOTES

A. VERIFY ALL DIMENSIONS WITH ALL ARCHITECTURAL DRAWINGS.

B. ALL SCHEDULED MARK DESIGNATIONS MAY NOT NECESSARILY BE FOUND ON THIS PLAN. SCHEDULES ARE TYPICAL TO THIS PROJECT.

C. IF DOUBLE TOP PLATE IS NOTCHED, STEPPED OR BROKEN, PROVIDE A SIMPSON MSTC40 STRAP AT DISCONTINUITY.

D. TYPICAL BEARING WALL FRAMING SHALL BE 2x6 STUDS AT 16" O.C. UNO. WHERE ROOF TRUSSES OR JOISTS SPANS EXCEED 20'-0" ALIGN ADDITIONAL STUD BELOW ROOF FRAMING MEMBER.

E. PROVIDE TRIMMER STUDS (TS) AND KING STUDS (KS) AT OPENINGS AS FOLLOWS, U.N.O.: OPENINGS 6'-0" OR LESS, (1) TS & (1) KS, OPENINGS 6'-1" TO 9'-0", (1) TS & (2) KS, 9'-1" TO 12-0", (2) TS & (3) KS. FOR ATTACHMENT, SEE "TYPICAL HEADER CONNECTION" DETAIL.

F. ▭ WALLS WITH SOLID LINES DESIGNATED STRUCTURAL (BEARING) WALLS .

G. [▭ ▭ ▭] WALLS WITH DASHED LINES DESIGNATE NON-STRUCTURAL (NON-BEARING) WALLS .

H. 1 2 3 4 5 6 7 8 -AS SHOWN ON PLAN INDICATES A SHEARWALL. HATCHING IN WALL DESIGNATES SHEARWALL LENGTH.

I. B1, B2, ETC. - AS SHOWN ON PLAN INDICATES A BEAM OR HEADER. SEE BEAM SCHEDULE FOR ADDITIONAL INFORMATION .

J. WJ1, WJ2, ETC. - AS SHOWN ON PLAN INDICATES A JOIST. SEE JOIST SCHEDULE FOR ADDITIONAL INFORMATION.

K. P1, P2, ETC. AS SHOWN ON PLAN INDICATES A WOOD POST. SEE POST SCHEDULE FOR MORE INFORMATION.

L. SC1, SC2, ETC. - AS SHOWN ON PLAN INDICATES A STEEL COLUMN. SEE STEEL COLUMN SCHEDULE FOR ADDITIONAL INFORMATION. COLUMNS START AT THE LEVEL THEY ARE CALLED OUT ON .

M. W1, W2, ETC. - AS SHOWN ON PLAN INDICATES CONCRETE OR MASONRY WALLS. SEE WALL SCHEDULE FOR ADDITIONAL INFORMATION.

N. TIE EACH ROOF JOIST AT BEARING LOCATIONS WITH (1) H2.5A CLIP, UNO.

O. PROVIDE BUILT-UP 2x POSTS BELOW EACH GIRDER TRUSS, MATCH GIRDER TRUSS WIDTH, U.N.O .

P. OVERBUILD PONY WALLS (MAX 4'-0" SPACING FOR 2x OVERBUILD FRAMING AT 16" O.C. W/ SIMPSON LUS26 HANGER) PER "TYPICAL OVERBUILD" DETAIL.

Q. CS16, CS18, ETC. - AS SHOWN AT WALL OPENINGS, PROVIDE STRAPPING PER "TYPICAL STRAP AT OPENING" DETAIL .

R. PROVIDE CONTINUOUS BEARING FOR ALL POSTS AND BUILT-UP STUDS TO THE FOUNDATION PER TYPICAL "SOLID BLOCKING BETWEEN FLOORS" DETAIL

S. FOR CLARITY, DETAILS MAY SHOW ONLY ONE SIDE OF FRAMING CONDITION.

T. ALL EXTERIOR WALLS SHALL BE CONSTRUCTED WITH TYPE "5" SHEARWALLS, UNO.

PLAN KEYNOTES

1. ALIGN ADDITIONAL JOIST W/ SHEAR WALL BELOW, SEE DETIAL FOR ATTACHMENT
2. OVERBUILD FRAMING, SEE PLAN NOTES AND TYPICAL DETAILS

WOOD JOIST (WJ) SCHEDULE

MARK	JOIST	FACE MOUNT HANGER	TOP FLANGE HANGER
WJ1	16" BCI 90 2.0 AT 12" O.C. (WEB STIFFENERS EACH END AT BEARING POINTS	LUS26	LB26
WJ2	16" BCI 90 2.0 AT 16" O.C.	IUS2.06/11.88	ITS2.06/11.88
WJ3	11 7/8" BCI 6500 1.8 AT 16" O.C.	IUS2.37/11.88	ITS2.37/11.88

SHEARWALL TYPE SCHEDULE

NOTES:
1. SHEARWALL TYPES LISTED BELOW ARE NOT JOB SPECIFIC. SOME TYPES MAY NOT BE USED ON THE PLANS.
2. FRAMING MEMBER SUPPORTING MATERIAL SHALL BE SPACED AT 16" ON CENTER (O.C.) MAXIMUM.
3. ANCHOR BOLTS TO FOUNDATION SHALL BE 10" LONG AND SHALL BE EMBED 7" INTO CONCRETE. EXPANSION BOLTS OR SHOT PINS MAY BE USED AT INTERIOR WALLS (AWAY FROM EDGE OF SLAB OR SLAB STEP-DOWN) PER SUPPLEMENTAL INSTRUCTIONS.
4. A MINIMUM OF (2) ANCHOR BOLTS SHALL BE USED ON EACH BASE PLATE PIECE. PROVIDE (1) ANCHOR BOLT MINIMUM WITHIN 9" OF EACH END PIECE.
5. PROVIDE CONTINUOUS DOUBLE 2x TOP PLATE AT ALL SHEARWALLS AND EXTERIOR WALL. UNLESS NOTED OTHERWISE (U.N.O.), LAP SPLICE TOP PLATE A MINIMUM 4'-0" WITH 16d NAILS STAGGERED AT 2" ON CENTER (O.C.) ((24) 16d NAILS TOTAL BETWEEN SPLICE JOINTS.)
6. PROVIDE FULL HEIGHT DOUBLE STUDS AT ENDS OF SHEARWALLS UNLESS NOTED OTHERWISE ON PLANS OR DETAILS.
7. BLOCK ALL PANEL EDGES. EDGE NAIL SHEATHING AT BLOCKED EDGES.

MARK	SHEATHING MATERIAL	EDGE NAILING	FIELD NAILING	BOTTOM PLATE ATTACHMENT
5	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 6" O.C.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 36" O.C. CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 48" O.C. WOOD: 16d STAGGERED AT 6" O.C.
6	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 4" O.C.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 24" O.C. CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 32" O.C. WOOD:16d STAGGERED AT 4" O.C.
7	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL	8d COMMON AT 3" O.C.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 18" O.C. CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 26" O.C. WOOD:16d STAGGERED AT 3" O.C.
8	7/16" APA RATED SHEATHING (BLOCKED) ONE SIDE OF WALL (2) 2x OR 3x STUDS/BLOCKING AT ADJOINING PANEL EDGES.	8d COMMON AT 2" O.C. STAGGER AT ADJOINING PANEL EDGES.	8d COMMON AT 12" O.C.	CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 8" O.C. CONCRETE: 1/2"Ø A.B. W/ 1/4"x3"x3" PLATE WASHERS AT 14" O.C. WOOD:SDS 1/4"x4 1/2" AT 8" O.C.

BEAM (B) SCHEDULE	
MARK	SIZE
B01	(2) 2x6 OR 4x6 OR (2) 1 3/4 x 5 1/2 LVL
B02	(2) 1 3/4 x 7 1/2 LVL
B03	5 1/8 x 16V LVL
B04	W14x43
B05	5 1/2 x 11 7/8
B06	(2) 1 3/4 x 7 1/2 LVL
B0X	5 1/2 x 11 7/8

REV.	DATE	BY	DESCRIPTION
1			
2			
3			
4			
5			

PROJECT:
A NEW RESIDENCE FOR:
DR. ROCKWELL HAMMOND JR. & JILL HAMMOND
Lot 1, Block 3, Warm Springs Village Subdivision No. 4
102 Sage Road • Ketchum, ID 83340

CLIENT: ....

STRUCTURAL ENGINEERS SEAL:
PROFESSIONAL ENGINEER — 11697 — STATE OF IDAHO — MARKELL B. FROST
06/21/2019

ROOF FRAMING PLAN
JOB NO.: IF18419 | PROJECT MANAGER: MTB | CAD OPERATOR: DML

FROST Structural Engineering
1020 E. Lincoln Road
Idaho Falls, ID 83401
phone: 208.227.8404
fax: 208.227.8405

DATE: 6/12/2019 | CURRENT REV.: 1

S2.2

Exhibit 4:

Avalanche Evaluation Summary Addendum

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Curriculum Vitae

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September 5, 2019
File: P19380

Dr. Rockwell Hammond Jr.
35611 SE David Powell Road
Fall City, WA 98204

RE: **SUMMARY Addendum**
Avalanche Evaluation
Lot 1 Sub #4
Warm Springs Village Sub

Dr. Rockwell:
This addendum supersedes and replaces all previous reports and summaries. At your request we have evaluated the avalanche potential of the subject lot with respect to future construction per preliminary drawings provided by Neil Middleton. It is our understanding that the planned construction will be a 1-2 story wood and concrete structure with a walk out basement on the downhill side. The site is located beneath natural topographic and slope features that will collect and direct avalanche movement of snow and debris toward your property. The upper reaches of the collection area have slopes ranging from 32 to 37 degrees and the lower portions are inclined 35 to 37 degrees uphill of the deceleration zone. The existing slope inclination is sufficient to generate and accelerate moving snow under the right conditions. Review of the site revealed that snow avalanche has occurred on the slope in the past and therefore recurrence of the same conditions is expected in the future. Any construction on the site must take into account the anticipated impact forces of the design avalanche.

Site Characteristics
The site is located below a significant contributory area facing southeast. At the Winter Solstice the slope above the property is subject to direct solar radiation from 8:55am to 4:22pm as shown on the attached aerial photographs. As a result of incidental radiation snow accumulation on the site is subject to more repetitive cycles of freezing and thawing. Consequently, the characteristic of the snow changes throughout the season from lighter depositional snow to a more granular mix of snow and interstitial voids. As this occurs the inherent friction angle and cohesion of the exposed surface snow increases leading to probable formation of weak and stronger layering of the snow pack. Accumulations are typically on the order of 1 to 1.5 meters.

Indications are that prevailing wind patterns may promote accumulation and removal of snow in locations within the contributory area. Due to the prevailing winds cornicing would be anticipate to a greater extent on north facing slopes as opposed to this south facing area.

Site History & Risk
Snow avalanches have occurred at the site historically and should be anticipated with all associated risks and consequences. Prior occurrence's have resulted in property damage and risks associated with construction on this site must be recognized and assumed by you and all future owners. This document shall become part of the full disclosure required upon any transfer of ownership. This document and following portions of this site summary do not undertake in any way to warrant against any and all risks associated with building in an avalanche zone. You as the

property owner and all future owners shall assume these risks in there entirety in conjunction with all associated loss, damages and etcetera. If assumption of the risk associated with building and living in an avalanche area are not acceptable to you we recommend relocating to an area with less inherent risk.

Velocity

Plate 1, attached, shows the contributory area and flow path that is expected in the event of an avalanche. You will note that the direction of flow (to the northwest of your site) shifts approximately 45 degrees to the east toward your property. At this point of course change it is anticipated that a significant portion of the sliding mass will not be redirected to your property but will continue in a relatively linear direction in line with the up-gradient ravine. Deceleration of the avalanche will begin slightly above the point of course change and again at the toe of slope. Velocity calculations wee performed using multiple methods and comparing indicated velocity.

The Torrecelli Theorum, which is a specialized case of the Bernoulli Equation and mathematical modeling using residual stress were used to calculate energy of a falling fluid based on gravitational acceleration, inclination of slope and length of vertical fall. Specifically velocity is calculated based in the following equations:

$$V=(\sqrt{2}*Gn*Sin(\Phi 1)*(H)*\mu-(\sqrt{2}*Gn*Cos(\Phi 2)*(L)) \quad \text{Torrecelli thm}$$

and

$$V_{max} = \text{Square Root of } [\eta H(1/3\ Sin\theta T-\mu f\ Cos\theta T)] \quad \text{Residual Stress}^{1}$$

Where;

θT=Slope at Track Zone
η= Eddy Viscosity
H= Slab Depth
μf= Coefficient of Sliding Friction

Both methods indicate a velocity of 33 to 35 miles per hour upon impact with your house. These velocities are corroborated by measurement of avalanche velocity under similar conditions in the area (see attached documentation). The calculation spreadsheet of impact force for both methods accompanies this summary. Variation in the contact forces is approximately 3% giving pressures of 475 to 490 psf with isolated impulse impact of an additional 600 pounds at any point(s) on the wall during peak dynamic loading.

Momentum

Dynamic pressure is force per unit area and is easily equated to momentum. Specifically momentum is defined as:

Momentum = Mass * Velocity

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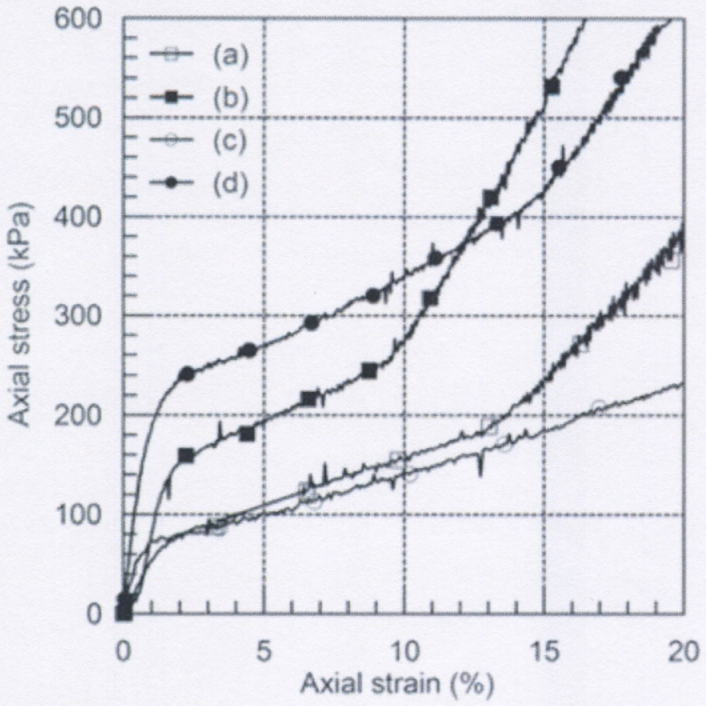
[1] IJACM June 2016, Vol 2, pp213-221 Mahmoud Zarrini[1]

[2] Influence of Snow Type and Temperature on Snow Viscosity, Delamas, UNIS, Longyearbyen, Norway

You will note that the SI Base units for momentum are kilogram meters per second (kg·m/s) and are the same units as impulse momentum. The forces are usually calculated in Newtons as the calculation is more straight forward using the SI. One newton is 0.2248 pounds.

If we assume 1 cubic meter of snow weighing 300 kg strikes an immovable object (your wall) at 15 meters per second (34 miles per hour), the resulting force is 4655 Newtons per square meter or 97 pounds per square foot as shown on the attached spreadsheet titled Velocity and Momentum.

However, there are a series of dynamics or changing variables in (1) the composition and characteristics of an avalanche and (2) the actual impact of the mass with a stationary object. First an avalanche may be characterized by three phases of development. The first stage is elastic with a little increase in axial strain and rapidly increasing axial stress. This stage is associated with lighter density and increasing velocity. The second stage is hardening and indicated by a marked reduction in the rate of axial stress increase and an inverse increase in the axial strain. The third stage is densification where density is increasing and axial stress and strain are increasing proportionately as seen in the specific example below[2]

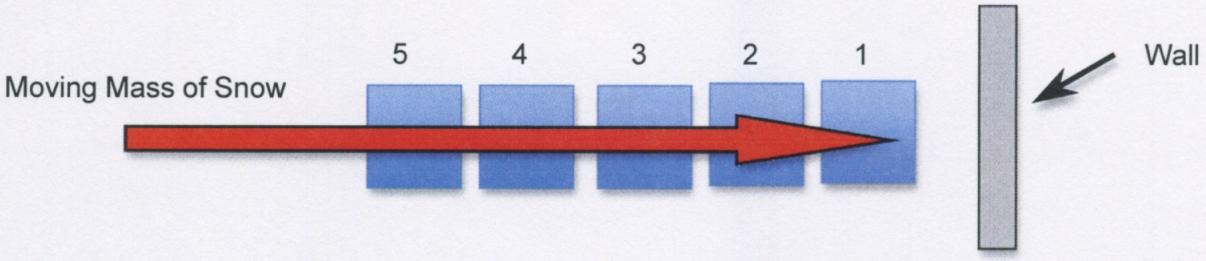


Stress Strain Relationships

The inflection points in the graph above indicate the zones in which material characteristics of the avalanche are changing as it progresses. This means a simple one size fits all equation is unacceptable for evaluating dynamic pressure throughout the relatively brief life of an avalanche. In this case, since your lot is located at the toe of the slope in the deceleration, densification zone we must take into account the changed conditions of the mass which is at this point behaving like a snow foam and due to the inherent generation of heat becoming more dense. At the point of

[2] Influence of Snow Type and Temperature on Snow Viscosity, Delamas, UNIS, Longyearbyen, Norway

impact the mass will have proportionally increasing axial stress and axial strain as a result of increasing internal friction and energy will be dissipating as a result. Further, impact with your wall will not involve only one cubic meter of snow but will involve a much longer "train" of snow following the first cubic meter as shown in the figure below:



Immediately after the first "car" strikes the wall the second is plowing into it adding its force to the wall. This continues until the inherent shear strength and cohesion of the snow (friction angle) is exceeded and the mass begins to divert around the obstruction instead of being stopped by it. At this point the momentum being transferred to the wall drops rapidly as the snow mass moves past the structure while retaining a significant portion of its initial momentum. The internal friction angle of snow varies based on density particle shape, temperature & etc. However, a conservative typical value is 40 degrees. This means that when a cone of 40° of compacted snow comes to rest against your wall the subsequent cars in the train will begin to diverge and re-rout around your house.
Due to the positioning of your house on the lot, snow will impact the main house wall at an angle of approximately 45°. That wall will be addressed in a moment. Your patio avalanche wall will be impacted at an angle of approximately 70°. For the sake of this evaluation the patio wall will be addressed as a more conservative direct 90° impact zone. Since the wall is 3.65 meters wide the snow will begin to diverge when a cone approximately 5 meters long parallel to the direction of flow builds up against the wall. This should take about 0.3 seconds. Based on the calculated velocity and the new "five-car" mass that will impact your wall the momentum applied to your wall will be about 486 pounds per square foot. The vector reduction of force by a factor of 0.94 has been neglected in this calculation. In addition no credit has been given for the fact that the wall is less than three meters tall and the cone of compacted snow required to divert snow over the wall will occur sooner and closer to the wall resulting in lower dynamic pressures than indicated above.

Powder Cloud Avalanches

Neither of these methods represent to evaluate potential for powder cloud avalanches which are capable, under very specific conditions, of developing very high velocity and associated dynamic pressures. Powder cloud avalanches will develop frontal pressures that exceed the passive soil pressure of the earth and rock slope on which the snow is moving, thus gouging out an avalanche chute by removing the soil and rock comprising the slope. Since this type of avalanche requires a specific set of conditions not typical to the area and since geologic evidence of such an occurrence does not exist at the site it is our opinion that the risk of such an occurrence is low.

Shear and Normal Forces

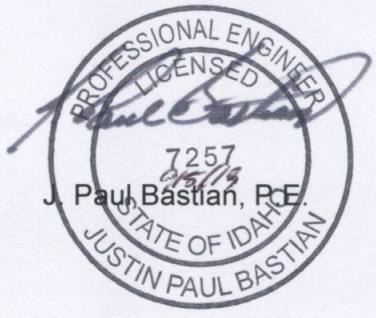
Our evaluation assumes steady state velocity for slope inclination uphill of your site will be achieved within 500 vertical feet of fall. This assumption is based on steady state avalanche velocity previously measured by others on similar slopes in the area. Calculations indicate that the moving mass will enter your property at a velocity of 48 feet per second or about 33 miles per hour. Previous avalanche movement on the site corroborates this. Direction of flow is approximately 45° to the main wall of the planned construction. This will result in an impact force of 350 pounds per

square foot. In addition shear force from the snow moving past the wall will be transmitted to the footings. Shear forces are calculated to be 0.08 times the contact pressure or approximately 32 pounds per square foot of contact.[3] Frictional shear also applies to the roof of the structure and must be considered during its design. This calculation is based on simple vectors of forces and neglects any reduction from a slow or non-moving laminar zone immediately adjacent to the wall or roof. As additional snow piles up against the wall of your building pressure will increase over a period of about 1-second to approximately 400 pounds per square foot and then stabilize. As lateral deposition of snow and ice increase on the wall the rate at which lateral pressure and shear on the wall increases will decrease and stabilize. This may occur while the avalanche is still in progress. After sufficient accumulation the snow and ice stopped by contact with the leading or adjacent wall will act as a buffer between your building and the moving snow, ice and debris that may continue for a significantly longer duration. This will allow stresses to be transferred in a significant way to the ground around your structure as opposed to the structure itself. The preceding pressures assume no impact point loading. However, snow avalanche rarely occur in pristine, snow only, conditions and debris such as rocks, trees and etc. contained within the moving mass of snow and ice should be anticipated. Design of the structure should take into account the probability of isolated point loads from a 10 kg object moving at a velocity of 15.5 meters per second. This equates to an average point load force of 600 pounds over a time period of 0.05 seconds. We anticipate depth of snow deposited on your property could be 15 to 20 feet. If roof structures are planned that will allow snow and ice to pass over your building and thereby minimize the impact forces it will be necessary to account for the vertical weight of snow and shear force of the snow and ice that may move over, be deposited and/or come to rest on the roof of your building as well as any horizontal force component resulting from a vertical change indirection as the avalanche passes over your building.

Limitations

The preceding have been evaluated and prepared to assist with planning and design of the proposed house. Xcell Engineering makes no representation to prevent damages or loss associated with building and living in or occupying in any way a structure within an avalanche zone. The property owner and all entering the premises shall assume such risk. Warning signs indicating the inherent risks are recommended. If you have any questions, please call.

Sincerely,
Xcell Engineering, LLC



J. Paul Bastian, P.E.

[3] Measurements of Friction Coefficients of Snow Blocks – Casassa, Narita, Maeno – Institiute of Low Temperature Science, Hokkaido University, Japan

NOTES

GENERAL RESTRICTIONS & TITLE INFORMATION:

1. THE PURPOSE OF THIS MAP IS TO SHOW TOPOGRAPHICAL/SITE INFORMATION AS IT EXISTED ON THE DATE THE FIELD SURVEY WAS PERFORMED. CHANGES MAY HAVE OCCURRED TO SITE CONDITIONS SINCE SURVEY DATE.
2. THIS MAP WAS PREPARED FOR THE EXPRESS USE OF THE CLIENT AND IS NOT TRANSFERABLE TO OTHERS WITHOUT WRITTEN CONSENT
3. A TITLE POLICY HAS NOT BEEN SUBMITTED TO BENCHMARK ASSOCIATES, NOR HAS A TITLE SEARCH BEEN REQUESTED. CERTAIN INFORMATION CONTAINED WITHIN SAID POLICY MAY NOT APPEAR ON THIS MAP OR MAY AFFECT ITEMS SHOWN ON THIS MAP.
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5. THIS DRAWING IS VOID AFTER 2 YEARS AND NO FURTHER COPIES OR DIGITAL FILES WILL BE TRANSMITTED.

EASEMENTS, ENCUMBRANCES AND RESTRICTIONS:

6. BUILDING AREA: BUILDING ENVELOPE IF SHOWN, IS PER PLAT. SETBACK AND FOOTPRINT REQUIREMENTS PER CURRENT CITY/COUNTY ORDINANCES MAY VARY FROM PLAT. IT IS RECOMMENDED THAT SAID ORDINANCES BE REVIEWED PRIOR TO DESIGN.
7. GENERAL RESTRICTIONS : EXCEPT AS SPECIFICALLY STATED OR SHOWN ON THIS MAP, THIS SURVEY DOES NOT PURPORT TO REFLECT ANY OF THE FOLLOWING WHICH MAY APPLICABLE TO THE SUBJECT OF REAL ESTATE: EASEMENTS, OTHER THAN THOSE SHOWN OR LISTED HEREON, BUILDING SETBACK LINES, RESTRICTIVE COVENANTS, SUBDIVISION RESTRICTIONS, ZONING, WETLANDS OR ANY OTHER LAND-USE REGULATIONS.
8. STORM WATER PLAN: IF SOIL DISTURBANCE, CLEARING, GRADING AND/OR EXCAVATION OF ONE (1) ACRE OR MORE IS TO TAKE PLACE A FEDERAL GENERAL CONSTRUCTION PERMIT, INCLUDING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), MUST BE PREPARED AND SUBMITTED TO AND APPROVED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY PRIOR TO ANY SITE DISTURBANCE.

SURVEY AND SITE FEATURES:

9. BASIS OF BEARINGS IS IDAHO STATE PLANE COORDINATE SYSTEM, NAD83, CENTRAL ZONE AS DERIVED BY GPS OBSERVATIONS. BOUNDARY LINES AND CERTAIN EASEMENTS SHOWN HEREON ARE PER PLAT. REFER TO PLAT & CC&R'S FOR CONDITIONS AND/OR RESTRICTIONS REGARDING THIS PROPERTY. ALL DISTANCES SHOWN ARE GROUND DISTANCES IN U.S. SURVEY FEET.
10. ELEVATIONS BASED ON NAVD 88 (GEOID03) DATUM.
11. UTILITIES AND DRAIN PIPES IF SHOWN HEREON ARE PER SURFACE EVIDENCE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST. LOCATION OF UNDERGROUND UTILITIES AND SERVICES SHOULD BE CONFIRMED PRIOR TO EXCAVATION OR DESIGN.
12. BUILDING WALLS IF SHOWN HEREON ARE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
13. SPRINKLER HEADS AND IRRIGATION LINES ARE NOT SHOWN HEREON.
14. TREE LOCATIONS AND DRIP LINES IF SHOWN HEREON ARE APPROXIMATE.
15. ORTHOPHOTOGRAPHY: PHOTO RECTIFIED AT GROUND LEVEL ONLY. IMAGES OF OBJECTS ABOVE GROUND LEVEL (TREES, BUILDINGS, POWER POLES, ETC.,) MAY BE DISPLACED. DATE OF PHOTOGRAPHY: JUNE 2017
16. CONTOUR INTERVAL: 1' - CONTOURS IN AREAS OF DENSE VEGETATION MAY DEVIATE FROM TRUE ELEVATION BY ONE HALF THE HEIGHT OF THE VEGETATION. DATE OF LIDAR FLIGHT FOR CONTOURS: 2016.
17. MAP SCALE: DUE TO ELECTRONIC MAP DELIVERY AND ALTERNATE PRINTING METHODS, PLEASE USE BAR SCALE TO DETERMINE ACTUAL PRINTED SCALE.
18. FEATURES OBSCURED BY DEBRIS, SNOW OR VEHICLES AT THE TIME OF SURVEY, DO NOT APPEAR ON THIS MAP.

PREPARED BY :
BENCHMARK ASSOCIATES, P.A.
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PRELIMINARY
DRAFT
WORKSHEET

WARM SPRINGS VILLAGE 4
BLOCK 3, LOT 1

LOCATED WITHIN
SECTION 11, TOWNSHIP 4 NORTH, RANGE 18 EAST, B.M.,
CITY OF KETCHUM, BLAINE COUNTY, IDAHO

PREPARED FOR : DR. ROCKWELL HAMMOND JR.

PROJECT NO. 18031	DWG BY: DWS	CRD: 18031.CRD	18031TOPO.DWG
A TOPOGRAPHIC MAP	DATE OF SURVEY: 3/29/2018		SHEET: 1 OF 1

Hammond Area

8:55am January 22

Hammond Area
4:22pm January 22

Estimation of Avalanche Flow Velocity

Using The Torricelli Theorum as a specialized case of the Bernoulli Equation

Assumptions:

1. The average slope above 22 degrees inclination may be used to determine Steady State Average Velocity
2. On slopes 28 to 34 degrees inclination steady state velocity will be reached in 500 feet of vertical fall (≈850' slope distance)
3. Deceleration begins to occur on slopes below 22 degrees inclination
4. No reduction for frictional resistance by air and ground have been considered beyond the run length

Torricelli Theorum: V=√2GnH

Velocity = Steady State velocity - amount deceleration during runout

Velocity = Square root of (2 * gravity * Sin of the slope Inclination * vertical height of drop) - Square root (2 * gravity * the Cos of the inclination of deceleration slope*Length)

$$V=(\sqrt{2}*Gn*\sin(\Phi 1)*(H)*\mu-(\sqrt{2}*Gn*\cos(\Phi 2)*(L))$$

Maximum Velocity of Avalanches in Track Zone Mathematical Model

Where:

V = Velocity
Gn = Gravitational Acceleration = 32.2ft/s^2
H = The vertical Height of Fall
Φ1 = Inclination of acceleration slope
Φ2 = Inclination of the deceleration slope
L = Length of runout

$$V_{max} = \text{Square Root of } [\eta H(1/3\ \sin\theta T-\mu f\ \cos\theta T)]$$ Ref IGACM June 2016, Vol 2 Iss 2 pp213-221

Where:
θT=Slope at Track Zone
η= Eddy Viscosity
H= Slab Depth
μf= Coefficient of Sliding Friction

Given:						Range
	θT =	37	Degrees =	0.64577182	Radians	30-45
	η =	600	m s-2			400 - 1200
	H =	3	m			1 - 2 meters
	μf=	0.1				.053-.177

Vmax=	15.5	m/s =	34.7	mph

Acceleration

Vertical Fall	500
Slope Inclination	30
Gravity	32.2

Max Ideal Velocity	127	Feet Per Second
or	87	Miles Per Hour

Deceleration

Length of Run out in Feet	100
Slope Inclination in Degrees	16
Gravity ft/s^2	32.2

Deceleration Velocity	79	Feet Per Second
or	54	Miles Per Hour

Velocity on Impact	48	Feet Per Second
or	33	Miles Per Hour

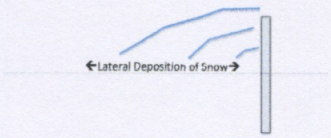
Impulse Momentum

Impulse= J =(W/g)*(Vi-Vf)

Where:

W=Weight in pcf	20
g = acceleration in feet/sec^2	32
Vi = Velocity on impact in feet/sec	48
Vf = Final Velocity = 0	0

Unit weight of pure airless Ice is 57.4#/ft3



Wall Height in Feet	15
Time to reach lateral deposition of twice wall height (sec)	2.489

Transient Loading

Impulse in lb-Sec	Time in Seconds	Distance of impact face from Wall (ft)	Dynamic Pressure on wall (psf)	Static Pressure on Wall (psf)
30	0.1	2	300	300
15	0.2	5	75	375
10	0.3	7	33	408
8	0.4	10	19	427
6	0.5	12	12	439
5	0.6	14	8	447
4	0.7	17	6	453
4	0.8	19	5	458
4	0.9	22	5	463
4	1.0	24	4	467

Velocity and Momentum

Hammond Site

Maximum Velocity of Avalanches in Track Zone

$$V_{max} = \text{Square Root of } [\eta H(1/3\ \text{Sin}\theta T - \mu f\ \text{Cos}\theta T)]$$

Ref IGACM June 2016, Vol 2 Iss 2 pp213-221

Where:
- θT=Slope at Track Zone
- η= Eddy Viscosity
- H= Slab Depth
- μf= Coefficient of Sliding Friction

Given:

θT =	37	Degrees =	0.64577182	Radians
η =	600	m s-2		
H =	3	m		
μf=	0.1			
Mass of Snow	1500	kg	(use a cubic meter)	
Vmax= 15.5	m/s =	34.7	mph	

Momentum

Momentum = Mass * Velocity

23272.9 Newtons per square meter = 5231.7 Pounds per square meter

or

486.0 Pounds per square foot

$$dV2/dx = 2g(1/3\text{Sin}\theta(x) - \mu f\ \text{Cos}\ \theta(x)) - (2g/\eta H)V2$$

Where θ = Slope at a given position x
- g = Acceleration
- μf = Constant Coeff of sliding friction
- η = Eddy Viscosity
- H = Avg Core Flow Height (usu 1-2 meters)
- V = Velocity of Snow Pack

Kiematic Viscosity = ν

$$\nu = (\mu o/\rho)e^{-\alpha T} * e^{\beta \rho}$$

Where: μo = 3.6*10^6 Nsm^-2
- α = 0.08K^-1
- β = 0.021 m^3/kg

XCELL ENGINEERING

"Building on Excellence"

CURRICULUM VITAE
General

Mr. J. Paul Bastian, PE
Paul@xcelleng.com

Current Address:
260 Laurel Lane
Chubbuck, Idaho 83202
(208) 237-5900

EDUCATION:

1983 - 1988	Brigham young University – Bachelor of Science, Civil Engineering
1993 - 1995	University of Idaho – Graduate Studies, Geotechnical Engineering
1995 to present	Continuing education 15 units per year minimum

WORK EXPERIENCE:

1986 – 1987 Engineer-in-Training and officer in The Department of The Navy-Indian Health Service. Rank: Ensign 01/2.

1988-1990 Laver Roper & Associates
Staff Engineer
- Performed geotechnical-engineering evaluations under direction of one or more licensed engineers.

1990-1996 Howard Consultants
Project Engineer
- Performed geotechnical engineering evaluations and managed the work effort of 2-3 technicians and 2-3 staff level engineers.
- Senior engineer , responsible for completion and review of work.

1996-1998 Kleinfelder, Inc.
Senior Geotechnical Engineer, Boise Office
- Directed efforts of 3-5 technicians and 2-3 project and staff level engineers.
- Responsible for completion and final review of all work performed and liability management.

1998-2005 Recovered Energy/Lewis Corporation
Vice President Engineering
- Directed the efforts of 50-75 welders and laborers and 4-8 engineers and designers.

- Responsible for design, completion of projects and management of work effort as well as shipping and commissioning on-site.
- Installed plants in Indonesia, Greece and Australia

2004-20005 Strata, Inc.
Senior Geotechnical Engineer and Partner
- Responsible for all geotechnical engineering work performed in southeast Idaho.

2006-Present Xcell Engineering, Inc.
CEO and Owner. Professional Engineer Licensed in:

1.	Wyoming	PE No. 15379
2.	Idaho	PE No. 7257
3.	Montana	PE No. 13522 49435
4.	Arizona	PE No. 65270
5.	Virginia	PE No. 57851

Sample Experience includes:

1. **Biddle Residence Avalanche Evaluation** – Determination of risk and dynamic load modeling.
2. **Lake Street Avalanche Evaluation** – Determination of risk potential dynamic loading
3. **Haily Avalanche Evaluation** – Determination of risk, velocity, run-out and placement of single family residence
4. **Highway 55 hydroelectric facility, Horseshoe Bend Idaho.** Project Engineer. Slope stability, erosion control, deep dynamic compaction, slope modification, groundwater modeling, hydrostatic fluid pressure monitoring and prediction & etc.
5. **I-15 Corridor through Salt Lake City Utah** Project preliminary design of the Interstate and superstructures through the Salt Lake area. (1997)
6. **LDS Church, New Meadows Wyoming.** Project included remediation, permanent dewatering and re-design of failing pavement in saturated subgrade conditions
7. **11th Street/ Interstate 84 overpass, Nampa** Project included Phase I through V materials reports (1993)
8. **Komotini Greece** Engineering Manager. Site plan & design for construction of formaldehyde and polyacetal plastic manufacturing plants (2003).
9. **Popka Indonesia** Engineering Manager. Design, manufacture and site installation of modular formaldehyde manufacturing plant. Built in US and shipped via heavy freight for installation in Popka (2004).
10. **Boise River Bridge, Middleton** Project included Phase I through V materials reports with dewatering, erosion control and deep foundations, Slope Stability (1994).
11. **Bear Lake Bike Path** Project included modified Phase I-III/V materials reports including construction in soft, saturated and expansive soils (2007) .
12. **Siphon Road Canal Crossings** Project included Phase I through IV materials reports, slope stability. (2003)
13. **Franklin County Inverted Siphon** Project included 3+ miles of 36" diameter water supply line through approximately 85 feet of drop and subsequent pressurized rise to within 20 feet of inlet elevation in order to deliver 30 cfs of gravity flow water. Included dewatering and permanent groundwater management, slope stability, erosion control modeling of slope materials & etc. (2010).

14. **Rexburg Temple for The Church of Jesus Christ of Latter Day Saints** Mapped and defined presence of lava tubes and basalt conditions for construction of the temple and appurtenances, dynamic loading, stability of variable materials, inverted blasting collapse & consolidation of site
15. **Farm Bureau** Provided plan to stop settlement and stabilize the four story Farm Bureau Insurance Headquarters building in Pocatello. Ground water monitoring, slope stability subsurface flow modeling, dynamic stress strain evaluation & etc. (2006)

AREAS OF EXPERTISE:

Proficient in Geotechnical Engineering including finite element analysis, **slope stability, Finite element analysis of slopes and materials thereon**, shallow and deep foundations, piles, piers, micro-piles, stone columns, compaction grouting, bearing capacity, settlement, collapsible soils, frost sensitive soil, environmental contamination including Phase 1 through 4 evaluation, remediation and final disposition, **dynamic loading of soil substrates & overburden**, **mass movement dynamics for materials on slopes**, flexible and rigid pavement design, **induced stress and fatigue analysis in non-homogenous manufactured and naturally occurring slopes and materials, retaining wall design, sheet piling systems, shoring**, **rock slope stabilization,** asbestos inspection, groundwater, subsurface flow modeling, nutrient pathogen transport, dewatering systems, canals, pipelines, **fluid mechanics**, irrigation systems, erosion control, avalanche modeling, dynamic loading & etc.

Exhibit 5:
Public Comment

From: Bruce Smith <bsmith@alpineenterprisesinc.com>
Date: Monday, August 12, 2019 at 12:02 PM
To: John Gaeddert <JGaeddert@ketchumidaho.org>
Cc: BC Wilbur <geowilbur@gmail.com>, Art Mears <artmears@hotmail.com>
Subject: FW: LBR Mapping report

Hi John,
You may want to take a look at the attachments.
My concerns are:
The Cover Sheet shows that Chris Wilbur is the avalanche consultant.
Mr. Bastian's loads appear to be much less than would be expected (and City Zoning Maps show) in Creek Slide.
His sketches show snow deflecting towards the property of others.
Portions of the house are glass that appear to take avalanche forces.
The extensions of the mitigation structures into the setbacks and the waiver requests should be a hardship, not a privilege.
I have no personal feelings towards the project itself, but I feel obligated to speak up when I see possible compromises in public health, safety and welfare.
I have lots of photos and records for this site if you want to take a look.
Feel free to contact me if I can be of further assistance.
Thanks!

Bruce Smith, PLS
Alpine Enterprises Inc.
Shipping: 660 Bell Dr., Unit 1
Mail: PO Box 2037
Ketchum, ID 83340-2037
Ofc: 208-727-1988
Cell:208-720-3042
Fax: 208-727-1987

From: Bruce Smith
To: John Gaeddert; Abby Rivin
Subject: RE: Avalanche Questions on Hammond CUP, Variance & DR 8/12/19
Date: Monday, August 12, 2019 3:05:45 PM

Maybe one of the Commissioners can ask Mr. Bastian for a resume and experience?
The code states " **or the avalanche forces set forth in a study of the property in question prepared at the owner's expense and submitted to the City by a recognized expert in the field of avalanche occurrence, force and behavior."**
I don't recognize him and Janet Kellam, Art Mears and Chris Wilbur also wonder what his experience is.
25 years ago, I had to stand in front of the Council, present my resume and experience and asked to be recognized as an expert.

Bruce Smith, PLS
Alpine Enterprises Inc.
Shipping: 660 Bell Dr., Unit 1
Mail: PO Box 2037
Ketchum, ID 83340-2037
Ofc: 208-727-1988
Cell:208-720-3042
Fax: 208-727-1987

To: Bruce Smith
Cc: Art Mears
Subject: Re: LBR Mapping report

Hi Bruce,

Thanks for the heads up. I hope that Mr. Bastion does not misrepresent my professional opinions on the Hammond site. Attached are 2 documents that show my reasons for withdrawing from this mis-guided project.
Feel free to forward both in the interest of public safety.

Thanks for your help with this and LBR.

Chris

Chris Wilbur, P.E.
Wilbur Engineering, Inc.
150 E 9th St. #201
Durango, CO 81301
(970) 247-1488
www.mearsandwilbur.com

From: Art Mears [mailto:artmears@hotmail.com]
Sent: Friday, August 09, 2019 9:39 AM
To: Bruce Smith; janetkellam@cox.net; BC Wilbur
Subject: LBR Mapping report

Hi Bruce, Janet,

Our mapping report is attached. Thanks for helping facilitate this work. I hope it does some good.

Here in Colorado we are still discovering all the very big avalanches in the March cycle. Lots to see!

Art Mears, P.E.
www.mearsandwilbur.com

--

<Neil phone log commentsR2.docx>
<2-12-19 Hammond avalanche design memo.pdf>

Neil,

In our recent phone conversation, you gave two reasons explaining why you have chosen not comply with my recommendations for residential construction in a Red/High Avalanche Hazard Zone:

1. A shed roof would count against allowable enclosed space and you are at the maximum allowed by code.
2. The area near the garage doors was designed to accommodate specific vehicles and cannot be modified, even though it will fill with avalanche debris and create a hazardous area at an egress location.

The rest of our conversation related to design modifications that you are willing to make. The intent of any comments that I made was to indicate that you were moving the right direction. However, I issued my 2/2/19 Interim Avalanche Design Report for the purpose of providing you guidance so that you could efficiently comply with my recommendations and we could reduce the number of iterations to achieve an acceptable design. I regret not explaining more forcefully that your design goals and limitations do not outweigh minimum avalanche safety criteria. Please review my Interim Design Report.

We, the design team, are obligated to meet the professional standard of care in our respective fields. The avalanche safety standard has been established by the neighboring homes described in my Interim Design Report. The current design and your proposed modifications will not meet that standard.

I recognize that time is of the essence. I issued my Interim Design Report with the intent of making the design process more efficient. This is a very challenging site and the reasons that you provided for not complying with my recommendations are not acceptable. It seems to me that the best way forward is to modify your design to allow a shed roof over the patio and to design the site grading and retaining walls to reduce the flows into the garage area.

Neil Middleton Feb 22, 2019, 11:46 AM (22 hours ago)

to me

Chris,
I appreciate your services both to assist us in creating a house that is safe fo the Owners and users and to assist us in designing to the appropriate loads.
Here is my summary of our phone conversation. These are my notes to Lars made after we got off the phone. Also, I don't know if you have read the Avalanche Ordinance in the Ketchum Code recently. There are a lot of instructions to Owners as to what their responsibilities are. We discussed a few on the phone.

"Just got off the phone with Chris, discussing his latest memorandum. Here is what we agreed to, that he thinks makes sense.

1. North Wall extension: We will raise the north wall extension (end of Patio) up the in height to just under the roof edge, approximately 2'-6". Just as an aside, I am not sure we have the top of plate set correctly on the house yet. The model seems to have the extending wall height a bit low. Once we have preliminary structural sizing we can fix this. I have the top of plate at roof at 11'-6". This raising of the freestanding wall will help lessen the impact of snow and debris on the patio, which is Chris' largest concern. If a shed roof is not constructed, I recommend a blocking wall about 25 feet tall on the avalanche side and a lower wall on the east side to prevent spreading. You are proposing a wall significantly less than the recommended height.

2. North and East Wall SV Meeting Redesign: The wrap around of the North wall with the trellis shutters we developed together in Sun Valley really has no, to very little impact so we will not be doing that. It should be removed from the drawings. The shift of the stairs that we made should remain in place.

3. Move Patio South Wall: In order to provide egress in case of a full design avalanche, we will extend the patio South and make the window in the master dressing room into a door. I will do a sketch of this in section through the patio to clarify and send it out tomorrow. I have not reviewed this proposed change. The proposed 2'-6" increased wall height will not prevent large avalanche impacts and deposition on the entire patio, blocking egress. The minimum protection heights from Figure 8 in my Interim Design Report assumed a shed roof.

4. Shutters: All of the windows shown on his exhibits # 8 + 9 that are touched by his red flow diagram indicators should have shutters on them.
I am interested to see if we could have these be electrified roll away mesh shutters that are black. They would roll away into the soffit and be activated by one switch inside the house. Reliance on structural shutters should be done with an awareness of their limitations. They require someone to decide when to open and close them. While this might seem like a simple matter, experience has shown that operational mitigation measures are less reliable than structural measures. I suggest minimizing the use of structural shutters to reduce avalanche risk. The loading would be 30 pdf with sheer loads of 15 pdf. I have not provided design loads. The loads in my interim report were feasibility level load estimates that must be revised based on final designs.

If these things plus the heating of the driveway, front steps and patio are undertaken, then Chris believes we have done what is reasonable. He also has asked me to look at some sort of non concrete extension on top of the north extended wall, raising it up a few feet. I will mess a bit on this and see if anything makes sense." I was "thinking out loud" trying to help you achieve a design that meets the intent of my recommendations. Upon reflection, the energy is too high for a steel barrier. We are back to the options described in my Interim Design Report.

The other significant safety issue relates to the area in front of the garage. Your design has the effect of directing avalanche flows into what should be the safest side of the building. Egress should be elevated, not depressed relative to adjoining terrain. In the avalanche profession, this is known as a "terrain trap" because avalanche debris piles up disproportionally deep for a give size avalanche. I strongly recommend that you revise your designs to eliminate or reduce this hazard.

Chris, if you recall something that I did not include, please let me know. We do need the design loads ASAP, as we are loosing time by the week. I have asked Lars to send you the drawings as soon as he has updated them.. He has a pile of redlines from me and is working on them.

I recognize that time is of the essence. That is why I issued my Interim Design Report. This is a very difficult site and the reasons that you provided for not complying with my recommendations are not acceptable. It seems to me that the best way forward is to modify your design to allow a shed roof over the patio and to design the site grading and retaining walls to reduce the flows into the garage area.

I am bound by Idaho statutes in my engineering practice. Here is an excerpt:

005. RESPONSIBILITY TO THE PUBLIC.

01. Primary Obligation. All Licensees and Certificate Holders shall at all times recognize their primary obligation is to protect the safety, health and welfare of the public in the performance of their professional duties. (5-8-09)

02. Standard of Care. Each Licensee and Certificate Holder shall exercise such care, skill and diligence as others in that profession ordinarily exercise under like circumstances. (3-29-10)

03. Professional Judgment. If any Licensee's or Certificate Holder's professional judgment is overruled under circumstances where the safety, health and welfare of the public are endangered, the Licensee or Certificate Holder shall inform the employer or client of the possible consequences and, where appropriate, notify the Board or such other authority of the situation.

150 East 9 St., Suite 201 • Durango CO 81301
(970) 247-1488 • chris@mearsandwilbur.com

February 12, 2019

Neil Middleton, AIA
nb middleton architecture
Lincoln, Massachusetts
Via email

RE: Interim Avalanche Design Report for Hammond Residence
Warm Springs Village 4, Block 3, Lot 1
102 Sage Road, Ketchum, Idaho

Dear Neil:

This letter presents a summary of design avalanche conditions and constraints at the Hammond site. As we have discussed, I have serious safety concerns with the current house design. This letter describes my concerns and provides recommendations for reducing avalanche risk. I will provide details of my methods and supporting data and analyses in a separate report after the safety measures outlined in this letter have been addressed.

Avalanche Zoning

The Creek Slide avalanche path shown in Figure 1 lies in the city of Ketchum "Avalanche Overlay Zone". Figure 1 also shows the site and approximate "Red" or "High" Avalanche Hazard Zone mapped in separate studies by avalanche consultant Norman A. Wilson in 1977, and avalanche control engineer Art Mears, P.E. in 1978. The Red Zone is defined by high frequency or high impact criteria. The site exceeds both criteria thresholds. We estimate avalanche frequency at the site is about triple the Red Zone criteria and the impact pressures at the site exceed the Red criteria by a factor of five. Most jurisdictions in the United States prohibit residential development in Red Zones. The city of Ketchum allows development subject to conditions, including structural designs for avalanche impact and preventing avalanche diversions that increase the hazard to off-site lands and properties. The city of Ketchum attempts to protect residents and visitors, including delivery personnel and first responders, from avalanches with warnings and road closures during periods of high avalanche danger.

Avalanche History

The 1977 Wilson report states that the Creek Slide reached Warm Springs Creek circa 1922. This very large avalanche event is assumed to be representative of a design-magnitude avalanche[1]. The Wilson report also states that the Creek Slide ran to within

[1] Design-magnitude avalanche is defined as an avalanche with an approximate annual exceedence probability of one percent (1%).

200-feet of the Warm Springs Road in December 1971, and that the east end of Sage Road was covered in both January and March 1974, and also in February 1975. The Creek slide also ran across Warm Springs Road during a storm January 9-12, 1980. In January 2008, homes were impacted along Sage Road, Huffman Drive and Hillside Drive. In January 2017, two houses were impacted on Sage Road. Huffman Drive and Sage Road were closed except to residents *after* the houses were impacted in 2017. The January 2017 sequence of events shows the difficulty of predicting the timing of natural avalanche events.

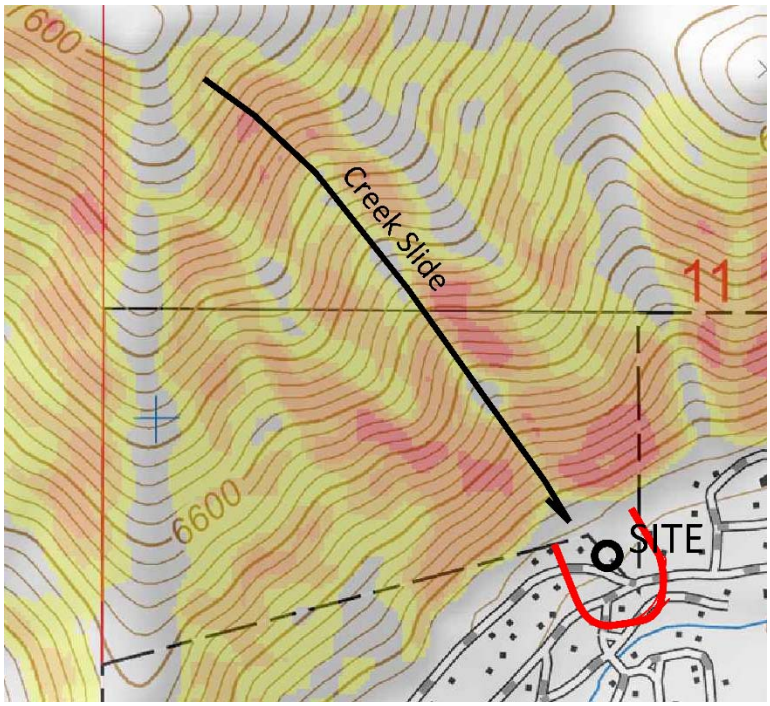


Figure 1 – Site Location and Red or High Avalanche Hazard Zone
Map source: Caltopo.com, Wilson 1977, Mears, 1978

Architectural Designs

After site selection, architectural designs provide the most efficient and effective means of reducing avalanche risk. In rural low-density settings, “splitting wedge” geometry can provide a high level of protection, while minimizing impact pressures on uphill walls and providing relatively safe areas for windows and doors on downhill walls. The urban setting of the site precludes splitting wedge designs because deflected flows would cause adverse off-site impacts to neighboring sites, including public streets. In order to prevent adverse off-site impacts, avalanche designs at this site must either:

a) Allow flow over the structure without lateral deflection (Shed Roof), or
b) Block the avalanche flow with a wall perpendicular to the flow (Blocking Wall).

Shed Roofs

Figure 2 shows an example of a shed roof design at 104 Sage Road. The house has a low-pitch roof that allows avalanched to pass over the roof without significant lateral flow deflections. Some energy will be dissipated at the structure, reducing runout distance and thereby reducing hazard to off-site down-gradient properties. Launched air-borne flows can increase the avalanche hazard immediately down-gradient. The January 2017 avalanche impacted this house and caused tree damage above and below the house. This type of design does not protect people or vehicles in the driveway or front yard. Dynamic impact loads on the roof are relatively small, but static loads from avalanche deposits can be large.

Figure 2 – Shed Roof Design at 104 Sage Road

Blocking Walls

Figure 3 shows the duplex structure with a blocking wall design at 100 Sage Road. This structure has a gently curved uphill wall designed to block flow and resist avalanche impact. The impact angle on this wall is such that the initial high-speed avalanche front will be blocked and significant energy will be dissipated. Due to the speed and direction of the avalanche, impact pressures and forces on blocking walls are large and extend about 25 feet up the wall. After initial impact, a wedge-shaped avalanche deposit will form uphill of the structure and the “tail” of the avalanche (flows that occur about 5 to 20 seconds after initial impact) will flow around this wedge and the sides of the structure at reduced speeds. Due to significant energy loss, the net effect of the blocking wall is to reduce the hazard for down-gradient sites, including Warm Spring Road. However, blocking walls alter deposition patterns reducing runout distance and increasing lateral spreading. The effect is deeper deposits on the sides of the structure and immediately down-gradient. These deep deposits can cause dynamic and static loads that must be addressed on-site and off-site.

Figure 3 – Blocking Wall Design at 100 Sage Road
(Note that doors are reinforced, windows are small, recessed, or 10-ft. above grade.)

Hammond Design

The current design for the uphill side of the planned Hammond residence is shown in Figure 4. It is primarily a blocking wall design, but the roof and east side patio will be overtopped and avalanche debris will fill the patio area and act on the east walls. Due to the frequency of avalanches at the site, the patio design must be modified to protect the outdoor living space and the east wall. This can be accomplished with either a shed roof, or by extending the blocking wall and modifying the east side openings.

Figure 5 shows the garage area, which will accumulate significant deposits of avalanche debris. Persons in this area will not be protected during the design avalanche. Also, avalanche debris will block egress in this area.

The main entry on the west side will be exposed to avalanche flows and deposition. These deposits present a significant risk to persons outside of the house and may block egress from the doors and windows. Windows and doors on the west side will be subject to pressures well beyond the capacity of conventional doors and windows.

Figures 6 and 7 illustrate two conceptual design options (shed roof and blocking wall) for protecting the patio area. Figures 8 and 9 show minimum heights above existing grade that require avalanche protection for all openings including windows and doors.

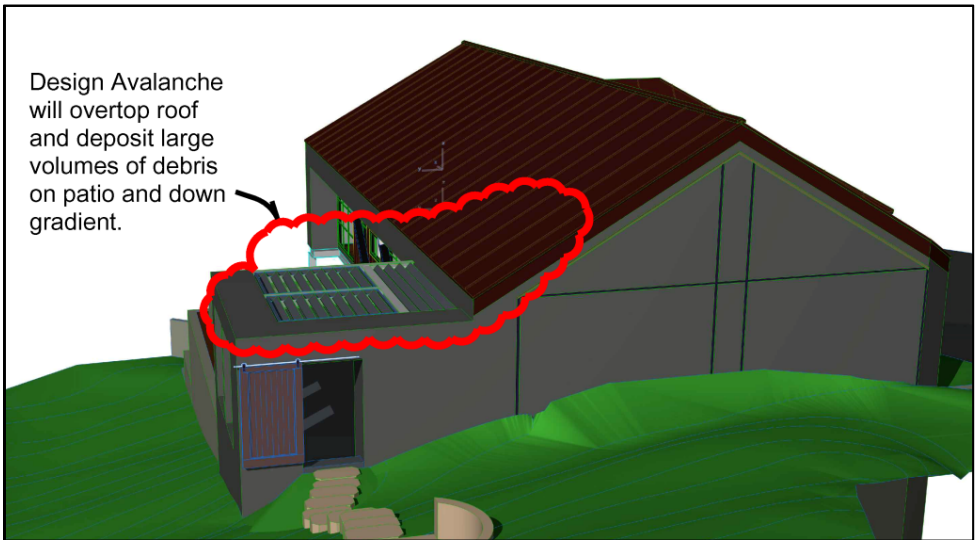


Figure 4 – North Wall

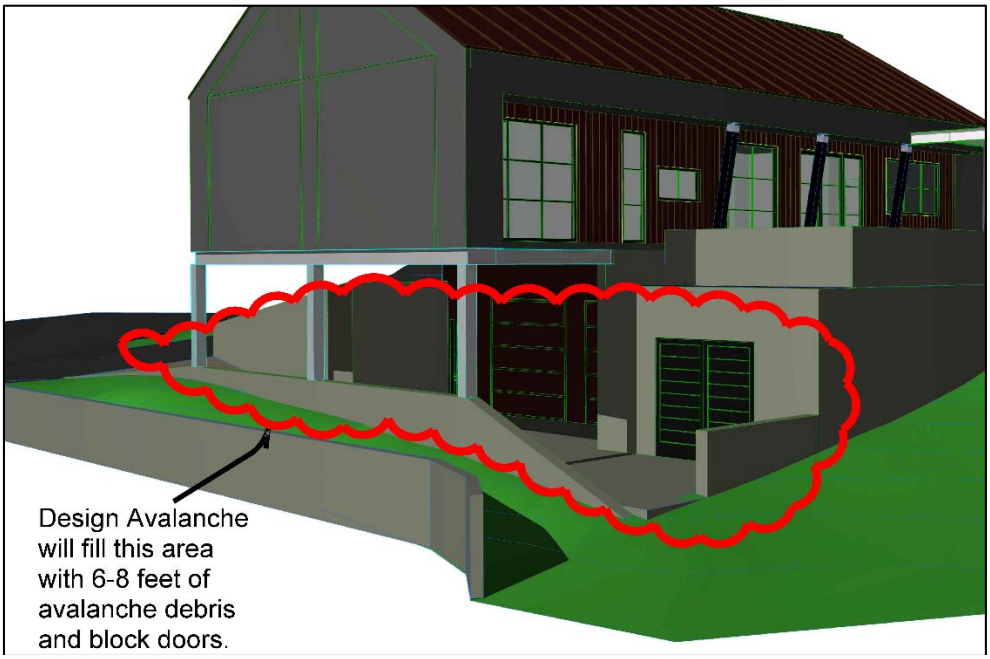
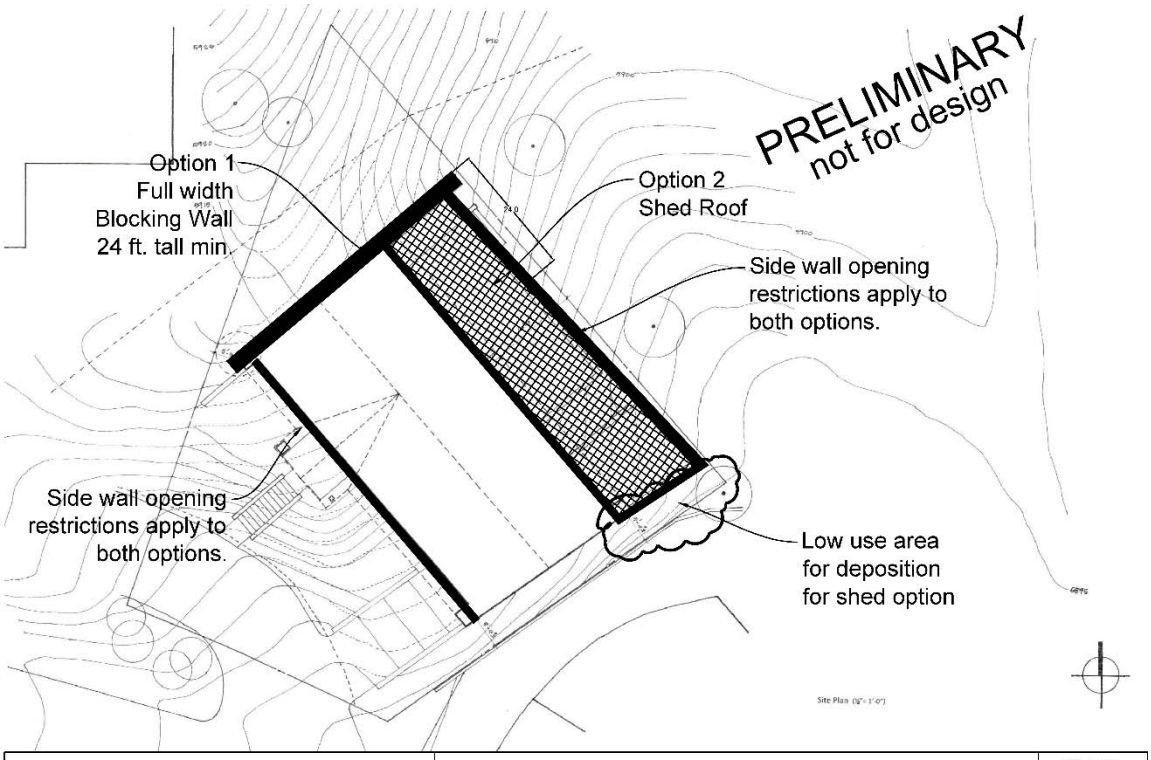
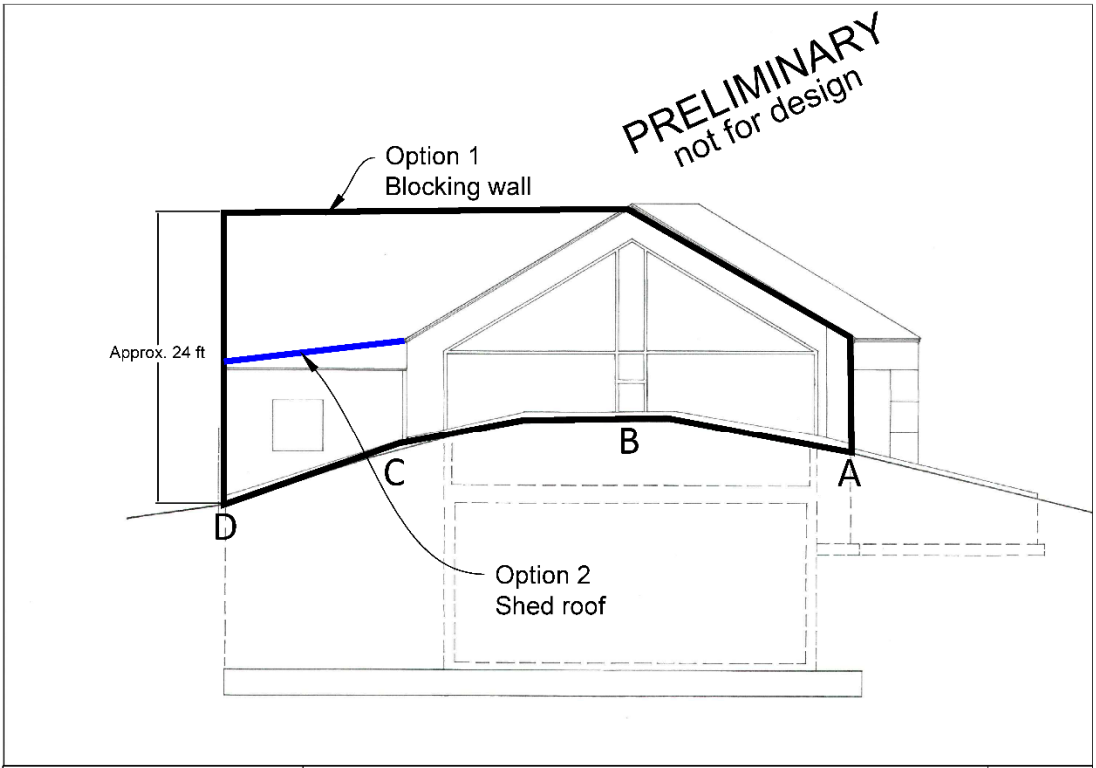


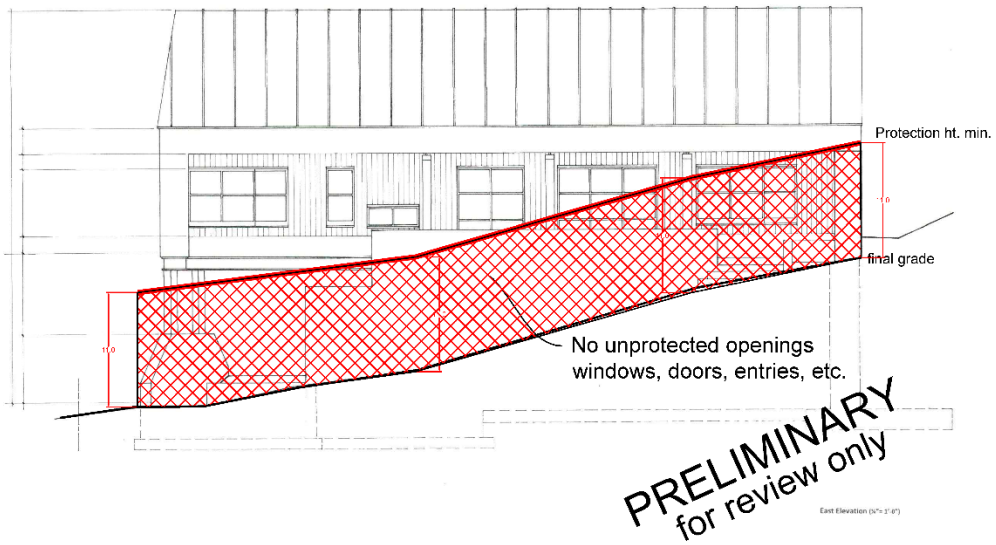
Figure 5 – Garage Area



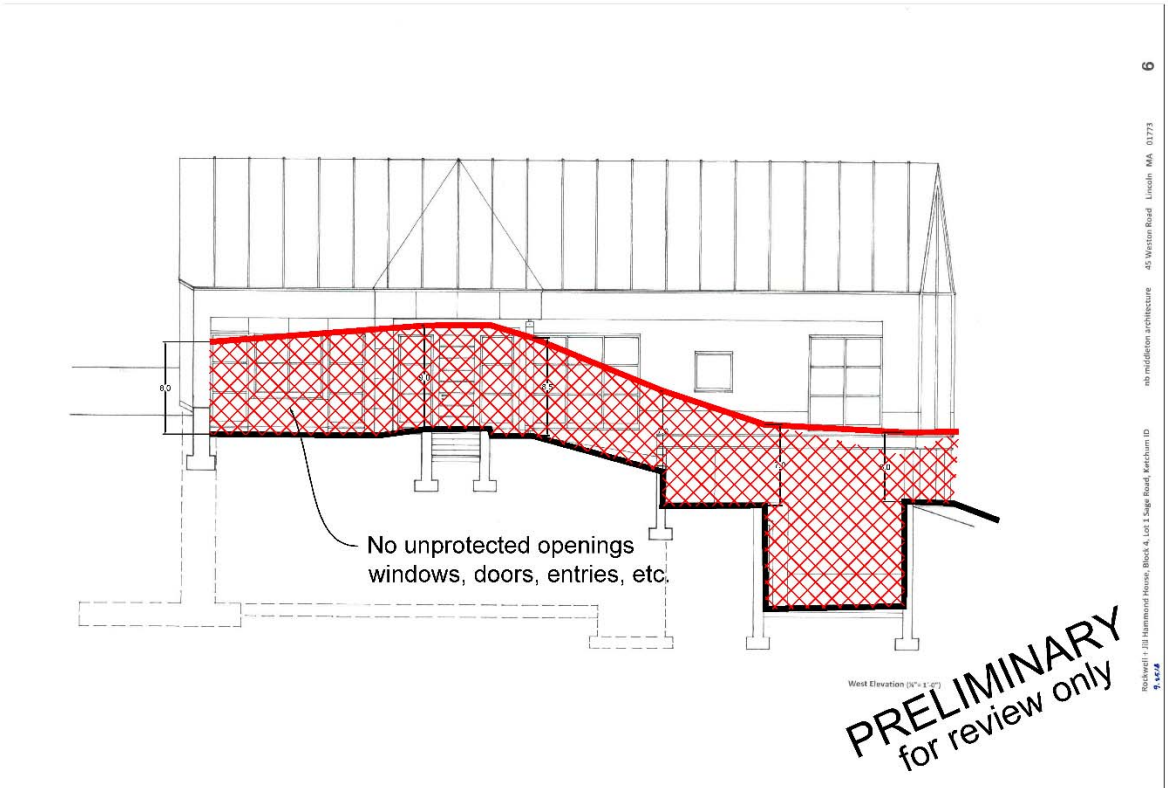
Wilbur Engineering, Inc. February 12, 2019	Shed & Blocking Wall Options Hammond Residence 102 Sage Road, Ketchum, Idaho	Figure 6



Wilbur Engineering, Inc. February 12, 2019	North Wall Options 1 & 2 Hammond Residence 102 Sage Road, Ketchum, Idaho	Figure 7



Wilbur Engineering, Inc. February 12, 2019	East Protection Height Hammond Residence 102 Sage Road, Ketchum, Idaho	Figure 8



Wilbur Engineering, Inc. February 12, 2019	West Wall Protection Height Hammond Residence 102 Sage Road, Ketchum, Idaho	Figure 9

Avalanche Design Recommendations

The following measures are widely recognized for reducing avalanche risk to residential buildings. Due to the very high avalanche exposure at this site, we recommend applying all practical measures to reduce avalanche exposure and risk.

1. Avoid doors on walls exposed to avalanches. If necessary, design doors for impact loading and provide egress on protected down-gradient walls.
2. Minimize glazing on walls exposed to avalanches. Small and strong windows are recommended on walls exposed to avalanches. Shutters can also be used to protect occupants and reduce avalanche damage.
3. Eliminate or minimize eaves, balconies, railings, columns, chimneys and other protrusions exposed to avalanches.
4. Design walls exposed to avalanches with smooth surfaces to reduce shear loads.
5. Outdoor living spaces, especially spaces that can be occupied in the winter, such as hot tubs, should be placed in protected areas.
6. It is prudent for anyone living in avalanche terrain to attend a Level 1 Avalanche Class taught by a qualified instructor.
7. Residents should also be familiar with the local avalanche warning and advisory system. Residents should be trained and equipped for self rescue.
8. All utilities in avalanche zones should be buried. Gas lines, utility meters, overhead electric lines and fire hydrants within avalanche zones should be protected to prevent damage.

As a professional engineer, it is my duty to advise you and recommend all practical measures to reduce the risk to health and safety. Please review this letter and let me know if you have any questions or would like to discuss options. I appreciate the opportunity to work with you on this interesting and challenging project.

Sincerely,
Wilbur Engineering, Inc.

Chris Wilbur, P.E. (CO, UT, WA, AK, NM)*

*Applied for Idaho Professional Engineer license 2/6/19

Copy: Rockwell Hammond Jr., owner
Markell Bateman, structural engineer

From: Architecture, J. A., Inc. Architecture, J. A., Inc. <Dan@architectureja.com>
Sent: Monday, August 12, 2019 1:40 PM
To: Participate <participate@ketchumidaho.org>
Subject: Planning Commission hearing for property at 102 Sage Road

Re: Planning Commission Hearing, 102 Sage Road

Dear Maureen and Planning Commissioners,

I am the owner of the Ski Hut Townhomes located at 100 Sage road, immediately adjacent to 102 Sage Road on the south side. We built the structure roughly 10 years ago.

I think the proposed home to be built at 102 Sage Road is nicely designed and of an appropriate aesthetic for the neighborhood, however I do have a few concerns that I would appreciate you considering.

1. Setbacks:
   I don't know how often variances are awarded for setbacks due to lot configuration, but when we built our house, on a smaller and more challenging lot, we did respect all city setbacks. In the case of 102 Sage Road, I can't accept the argument that the setbacks have to be compromised in order to have effective avalanche attenuation. The staff report mentions 11'-6" as the required side yard setback, due to building height. When you look at the south elevation that abuts our property, you find the tallest building elevation sitting on a level podium that itself rises to almost 5' above grade. I don't believe that the proximity of the two buildings to each other along with the combined elements of height, are appropriate for neighbors or the neighborhood. I therefore would oppose the relaxation of the setback on the south side of 102 Sage Road.

2. Landscape screening:
   A driveway extension wraps the south end of the house which eliminate the opportunity for landscape screening between the two structures. For the most part, even with the density found on Sage Road, there is landscape screening between buildings. The applicant has provided for screening between the proposed structure and the house to the west. I would encourage you to require some screening between our house and this proposal that continues what we have provided at the corners of our property.

Thank you for considering my thoughts,

Dan Johnston, A.I.A., N.C.A.R.B.
Architecture, J. A., Inc.
2296 Las Tunas Road
Santa Barbara, CA 93103
dan@architectureja.com
858.922.0288

ARCHITECTURE, J. A.

September 4, 2019

John Gaeddert, Planning Director
Abby Riven, Planning Assistant
City of Ketchum

Dear John and Abby,

I built and own the duplex town homes at 100 Sage Road. Upon receiving the notice of development for the property at 102 Sage Road, and obviously having an interest in what is built there, due to the proximity of the two lots, I have reviewed the information made available on the City's web site.

As an architect, I do promote property rights and support an owner's desire to develop their property as they choose. However, in the case of 102 Sage road I do have a number of concerns.

I feel the house is too big for the lot. I suppose it meets FAR limitations, but while the applicants are asking for a variance to reduce setbacks on two sides, I believe this supports my concern of the size of the house. As far as I know, other property owners along Sage road have respected setbacks, including my development at 100 Sage, where I ended up with about 1,200 SF of buildable area after setbacks were applied.

The proposal at 102 Sage boasts landscape screening on the northwest side of the property where it abuts a neighboring home, but nothing between 102 and my property. Instead, 102 proposes a concrete driveway extension around the end of the house that creates a very stark condition. Constraints on my lot led to using the setbacks for driveway routing. The geometry of the building however left the corners of the property that abuts 102 undeveloped, I added trees and landscaping in those areas as best I could. I would expect similar consideration be offered by the owner of 102, and a landscape screen as a condition of approval by the City.

I am concerned with how the proposed house at 102 Sage Road is addressing avalanches and the resulting affect my property. My house was designed to withstand an avalanche, with a force of 2,500 lbs/square foot, flowing down the mountainside. It was also designed to minimize disturbance of the flow beyond the house onto other property. It was not designed for impact of another house being swept off its site by an avalanche, or to accept avalanche forces at an abnormally high elevation as a result of the redirection of flow over the roof of an adjoining house. To be clear, any condition created that would result in something other than standard avalanche forces to impacting my house, could jeopardize the integrity of the house. After reviewing the project information that the city has posted for review of 102 Sage Road, it appears that avalanche issues are not properly addressed, and I am quite concerned
about potential effects of an avalanche on my property and would expect the City of Ketchum to fully review models of various scenarios at 102 Sage Road.

Thank you for your consideration and the enforcement of City rules that address design within avalanche zones.

Sincerely,

Daniel Johnston, A.I.A.

2296 LAS TUNAS ROAD SANTA BARBARA CA 93103 PHONE 858.922.0288 dan@architectureja.com