



CITY OF WEST LAKE HILLS, TEXAS
NOTICE OF BOARD OF ADJUSTMENT (BOA) REGULAR MEETING
Wednesday, May 8, 2024 at 7:00 PM

Notice is hereby given that the Board of Adjustment (BOA) of the City of West Lake Hills, Texas, will hold a Regular Meeting on the 8th day of May 2024 at 7:00 p.m., in the Council Chamber, Municipal Building, 911 Westlake Drive, West Lake Hills, Texas, at which time the following items will be discussed, to-wit:

REMOTE ACCESS - Join Zoom Meeting at <https://us02web.zoom.us/j/3499549035>
Or via telephone: Dial (346) 248-7799
Meeting ID: 349 954 9035

If you wish to speak during the meeting or provide written comments, please email your name, phone number, comments, and the item number you wish to speak on to citysec@westlakehills.gov by 1:00 P.M. on May 8, 2024.

1. Call to Order
2. Citizen Communications The Board welcomes public comments at this point on any issue. If the issue is listed on the agenda, the speaker may choose to comment during the Public Comment period or when the specific agenda item is taken up by the Board later in the meeting. The Board cannot respond to or discuss matters not listed on the agenda. The Board may provide factual information, refer the item to a staff member, or request the item be added to a future meeting agenda. Speakers shall limit their comments to five (5) minutes each.
3. Consent Agenda All Consent Agenda items listed are considered to be routine by the Board and will be enacted by one (1) motion. No separate discussion or action on any of the items is necessary unless requested by a Board Member.
 - a. Approval of the April 10, 2024 Regular Meeting Minutes.
4. Ordinance 3638 Bee Cave Road - Discuss and consider action to approve Ordinance 157-2024-B for a Special Use Permit request to allow the sale of beer and wine beverages in a restaurant for on-premise and off-premise consumption on a property Zoned B-2 Business 2 District (West Lake Hills Code, Section 38.04.031). Applicant: Austin's Pizza Westlake.

- a. Public Hearing - All persons wishing to speak for or against shall be heard.
5. Land Use 803 Rock Creek Drive - Discuss and consider action on a variance to allow grading in the setback greater than 18 inches (Section 22.03.170 of the West Lake Hills Code). Applicant: Eric Krause, Property Owner.
6. Land Use 1511 Wildcat Hollow - Discuss and consider action on the proposed variances:
 - a. Increase impervious cover to 30% where 25% is the maximum (Section 22.03.281(b) of the West Lake Hills Code).
 - b. Allow for 30 feet encroachment of the building and grading into a 50-foot front setback (Section 22.03.281(b) of the West Lake Hills Code).

Applicant: Matt Sener, Michael Hsu Office of Architecture.

7. Administration 402 Camp Craft Road - Discuss and consider action on an appeal of the permit expiration determination by the Building Official/City Inspector per Section 22.03.512, Appeals from denial of permits from city inspector.
8. Adjournment

Approved by: Linda Anthony, Chair

Certificate

I certify that the above Notice of the May 8, 2024 Board of Adjustment Regular Meeting was posted on the bulletin board at the Municipal Building, 911 Westlake Drive, West Lake Hills, Texas on Friday, May 3, 2024 by 5:00 pm. and will remain posted continuously until said meeting is convened.

Signed by: Terry Blanchard, City Secretary

The City of West Lake Hills is committed to compliance with the Americans with Disabilities Act. Reasonable accommodation and equal access to communications will be provided upon request.

All items on the agenda are for discussion and/or action. City Council reserves the right to adjourn into executive session at any time during the course of this meeting to discuss any of the matters listed above, as authorized by Texas Government Code Sections 551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices), and 551.086 (Economic Development).

CITY OF WEST LAKE HILLS, TEXAS
MINUTES OF A BOARD OF ADJUSTMENT (BOA) REGULAR MEETING
Wednesday, April 10, 2024 at 7:00 PM

1. Call to Order

With a quorum present, Chair Anthony called the meeting to order at 7:02 p.m.

BOARD MEMBERS PRESENT:

Chair Linda Anthony
Gordon Bowman
Jim O'Connor
Brian Plunkett
Beth South
Darin Walker

CITY STAFF PRESENT:

Director of BDS Jennifer Bills
City Secretary Terry Blanchard
Chief of Police Scott Gerdes
City Attorney Josh Brockman-Weber

Chair Anthony suspended the BOA meeting at 7:03 p.m.

Chair Anthony reconvened the BOA meeting at 7:04 p.m.

2. Citizen Communications The Board welcomes public comments at this point on any issue. If the issue is listed on the agenda, the speaker may choose to comment during the Public Comment period or when the specific agenda item is taken up by the Board later in the meeting. The Board cannot respond to or discuss matters not listed on the agenda. The Board may provide factual information, refer the item to a staff member, or request the item be added to a future meeting agenda. Speakers shall limit their comments to five (5) minutes each.

Chair Anthony opened the meeting for public comments. Hearing none, the public comment section was closed.

3. Consent Agenda All Consent Agenda items listed are considered to be routine by the Board and will be enacted by one (1) motion. No separate discussion or action on any of the items is necessary unless requested by a Board Member.

- a. Approval of the March 13, 2024 Regular Meeting Minutes.

MOTION: Upon a motion made by Board Member Walker and a second by Board Member South, the Board voted six (6) for and none (0) opposed to approve the Consent Agenda as presented. Motion carried.

4. Land Use **702 Loma Linda** - Discuss and consider action on a variance to exceed the 30-foot building height maximum by 3 feet, 2 inches for a balcony roof (Section 22.03.279 of the West Lake Hills Code). Applicant: Jenna Montoya.

Director Bills gave a brief summary. The following individuals spoke regarding the variance request:

- Jenna Montoya (property owner) - Neighbors have no objections to the request.
- Brian McLaury (Cornerstone Architects) - Distributed updated exhibit showing the correct grade calculations. The request is for a 1'4" height variance.
- James Vaughan - Asked about the percentage of impervious coverage. He considers the excessive slope and safety issues to be a hardship. He encouraged the Council to be kind and compassionate when considering these types of issues.

MOTION: Upon a motion made by Board Member Walker and a second by Board Member O'Connor, the Board voted five (5) for and one (1) opposed to approve the height variance request due to safety issues and excessive slope. Board Member Plunkett voted in opposition. Motion carried.

5. Land Use 902 Redbud Trail - Discuss and consider action on a variance to allow grading in the setback greater than 18 inches (Section 22.03.170 of the West Lake Hills Code). Applicant: Samy Aboel-Nil, Property Owner.

Director Bills gave a brief summary.

MOTION: Upon a motion made by Board Member Walker and a second by Board Member O'Connor, the Board voted six (6) for and none (0) opposed to approve the variance as requested. Motion carried.

6. Land Use 311 Westhaven Drive - Discuss and consider action on a variance for an encroachment of 5 feet into the 20-foot side setback for an addition to an existing non-conforming single-family house (Sections 22.03.275 and 22.03.281 of the West Lake Hills Code). Applicant: Elizabeth Salaiz, Elizabeth Salaiz Architect, Inc.

Director Bills gave a brief summary.

Jon and Katie Hibler (property owners) stated that they did not want to disturb the trees on their lot. The design they chose would allow them to reconfigure the home to meet the needs of their growing family.

MOTION: Upon a motion made by Board Member Walker and a second by Board Member Plunkett, the Board voted six (6) for and none (0) opposed to approve the variance as requested. Motion carried.

7. Land Use 613 Rock Park - Discuss and consider action on two variances:
 - a. Allow one primary residential unit with an attached dwelling unit - More than 2 dwelling units per acre (Section 38.03.034 of the West Lake Hills Code).
 - b. Schedule of Regulations - Establishing Setbacks for R-3 Transitional smaller than 0.5 acres (Section 22.03.281 of the West Lake Hills Code).

Applicant: Alfredo Terrones, MMR Y, LLC.

Director Bills gave a brief summary. The property was annexed in 2011 with a Development Agreement that allowed for the maximization of density, given that the impervious cover of 50% is not exceeded.

Alfredo Terrones (architect) stated that the septic limits the space available on the lot. He clarified that the second unit would be connected to the main house by a hallway.

MOTION: Upon a motion made by Board Member Bowman and a second by Board Member Plunkett, the Board voted six (6) for and none (0) opposed to approve the variance as requested. Motion carried.

8. Adjournment

MOTION: Upon a motion made by Board Member Walker and a second by Board Member South, the Board voted six (6) for and none (0) opposed to adjourn the meeting at 7:45 p.m. Motion carried.

Respectfully submitted,

LINDA ANTHONY, CHAIR

ATTEST:

Terry Blanchard, TRMC
City Secretary

These minutes were approved on May 8, 2024.



City of West Lake Hills Board of Adjustments

AGENDA REPORT

Meeting Date:	May 8, 2024	Item Number:	4
Department:	Building and Development Services		
Prepared By:	Jennifer C. Bills	Cost / Budget:	None
Exhibits:	See Attached	Source of Funds:	N/A

Subject

3638 Bee Cave Rd Suite 104 – Discuss and consider action to approve Ordinance 157-2024-B for a Special Use Permit request to allow the sale of beer and wine beverages in a restaurant for on-premise and off-premise consumption on a property Zoned B-2 Business 2 District (West Lake Hills Code, Section 38.04.031).

Applicant: AP ATX Restaurant Holding, LLC, (Austin's Pizza Westlake)

Recommendation

Staff recommend approval of the special use permit.

Discussion

Property Information, Zoning & Site Characteristics:

Business Owner: Eddy Patterson, Austin's Pizza

Legal Description: Lot 1 Resubdivision of lot 19, Las Brisas Subdivision, and Block A, Westwood Section 1

Lot Size: 3.169 acres

Zoning: B-2 – Business 2

Hours of Operation: 10:00 am – 9:00 pm Monday through Sunday

The properties surrounding the subject property are zoned B-2 Business 2, O-Office, and R-1 One Family.

Background & Analysis:

The business owners are requesting a Special Use Permit to sell alcoholic beverages as a supplementary use to the primary use as a restaurant. The restaurant previously had a SUP that expired in 2023 and has changed ownership, necessitating a new SUP.

SUP Criteria & Analysis:

(1) *The restaurant where the alcoholic beverage is proposed to be sold shall not be located within 300 feet of a church or school as measured by state law;*

The location complies with TABC requirements regarding distance to churches and schools.

(2) *The restaurant where the alcoholic beverage is proposed to be sold shall not be located on property, two or more sides of which abut property in a residential zoning district;*

Refer to the zoning map included at the end of this report. There are three properties zoned R-1 – One-Family Residential abutting 3638 Bee Cave Rd on the north property line (one side).

(3) *The gross receipts derived from the sale of alcoholic beverages shall not exceed the gross receipts derived from the sale of food;*

The primary business of this restaurant is the sale of food.

(4) *The permit shall be reviewed annually by the city administrator and, if reissued, reissued at the end of the calendar year; and*

City staff will review annually and keep track of when the SUP needs to be reissued.

(5) *Additional fees are to be collected after three years' operation in accordance with the alcoholic beverage commission permit rules.*

City staff will review and ensure all applicable fees are collected in accordance with TABC rules.

Outdoor Lighting

No outdoor lighting is being considered with this SUP.

Compliance with Code of Ordinances

The property and future construction will have to comply with all applicable City codes.

Subdivision

There is no change to the subdivision proposed with this application.

Comprehensive Planning Analysis

The existing and future land use is in conformance with the City of West Lake Hills Master Plan.

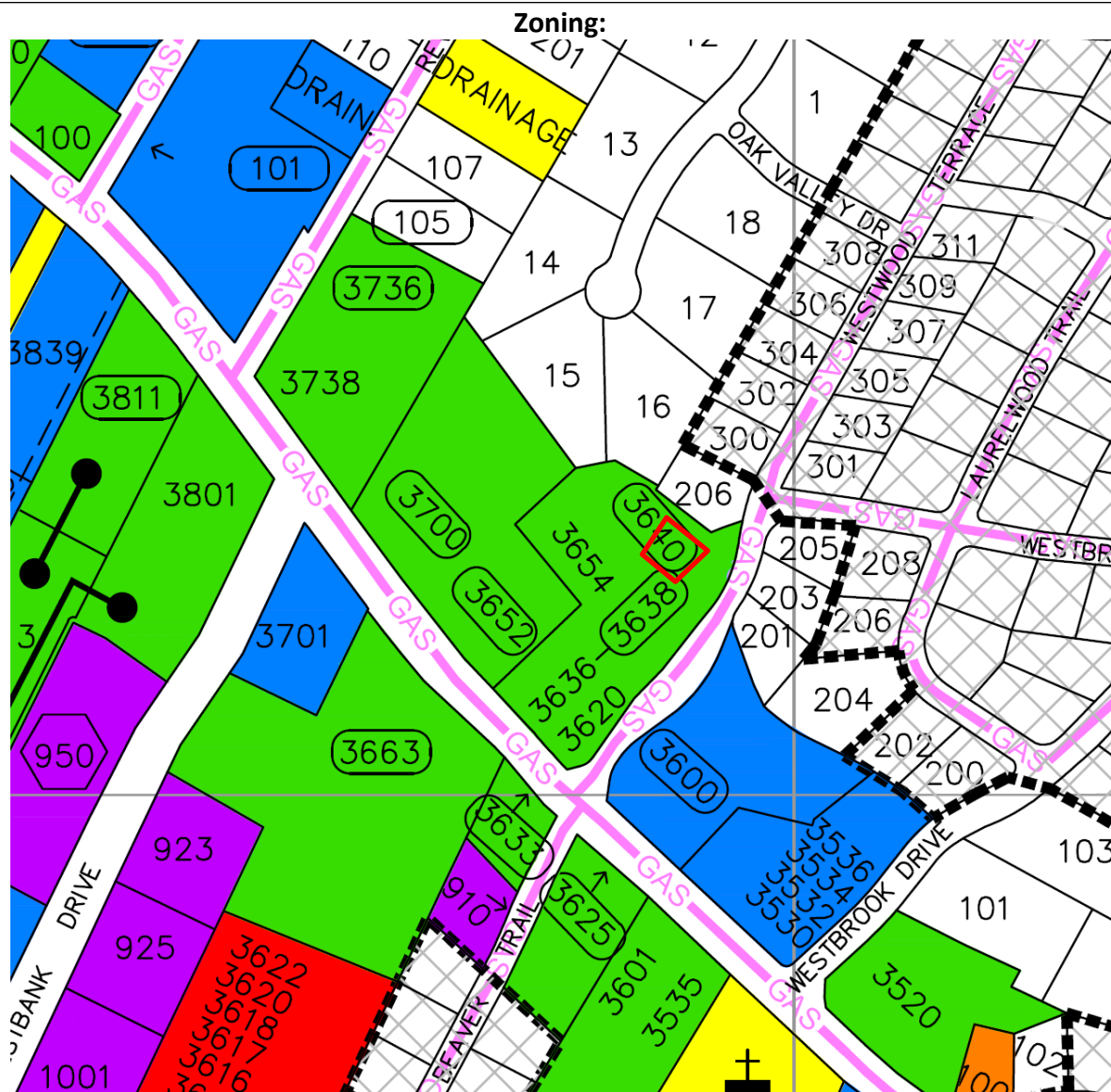
Links to Relevant Code:

[Section 38.03.037\(c\) Special uses \(in B-2 Business 2\)](#)

[Section 38.04.033: General criteria applicable to all special uses.](#)

[Section 38.04.034\(e\) Criteria applicable to Alcoholic beverages sold in a restaurant for on- or off-premises consumption.](#)

[Section 38.04.035: General conditions for all special uses.](#)



Aerial:





SPECIAL USE PERMIT 157-2024-B

A PERMIT SETTING FORTH THE CONDITIONS UNDER WHICH BEER AND WINE BEVERAGES MAY BE SOLD FOR ON- AND OFF-PREMISE CONSUMPTION, AND AUTHORIZING THE CITY ADMINISTRATOR TO NOTE THE CHANGE ON THE OFFICIAL ZONING MAP OF THE CITY.

WHEREAS, AP ATX Restaurant Holding, LLC, has requested a Special Use Permit (SUP) for the sale of on-premises consumption of beer and wine at Austin's Pizza located at 3638 Bee Cave Road, Suite 104, West Lake Hills, Texas, the herein described parcel of land; and

WHEREAS, the notice as required by Section 38.03.037, of the West Lake Hills Code has been given to adjacent property owners; and

WHEREAS, Public Hearings have been held by the Board of Adjustment (BOA) as required by law; and

WHEREAS, any and all protests submitted against the proposed SUP have been considered by BOA; and

WHEREAS, BOA find that the application for Special Use Permit meets the requirements of Section 38.04.033 and 38.04.034 of the West Lake Hills Code; and

WHEREAS, beer and wine will be sold and consumed on the premises, and the premises will be used as a restaurant; and

WHEREAS, the public interest dictates that special conditions be set forth regulating the sale of beer and wine beverages under the Special Use Permit provisions of the West Lake Hills Code; and

WHEREAS, the applicant has agreed to the special conditions regulating the sale of beer and wine contained herein; and

WHEREAS, BOA at its Public Hearing on the Special Use Permit on the herein described parcel is not contrary to the public interest;

NOW, THEREFORE, BE IT ORDAINED BY BOARD OF ADJUSTMENTS OF THE CITY OF WEST LAKE HILLS, TEXAS:

Article 1. The legal description of said parcel of land is as follows:

Lot 1, Las Brisas re-subdivision of Lot 19 and Block A Westwood Section 1

Article 2. The permit is granted under the following terms and conditions:

1. Beer and wine may be sold on- or off-premises under the following conditions:
 - (a) The restaurant where the alcoholic beverage is proposed to be sold shall not be located within 300 feet of a church or school as measured by state law.
 - (b) The restaurant where the alcoholic beverage is proposed to be sold shall not be located on property, two or more sides of which abut property in a residential zoning district.
 - (c) The gross receipts derived from the sale of alcoholic beverages shall not exceed the gross receipts derived from the sale of food.

- (d) The permit shall be reviewed annually by the city administrator and, if reissued, reissued at the end of the calendar year.
 - (e) Additional fees are to be collected after three years' operation in accordance with the alcoholic beverage commission permit rules.
 - (f) Special offers to the public promoting the sale of alcoholic beverages commonly known as "happy hour" shall be conducted only at times when the permittee offers full food service and only during the period of time from 4:00 p.m. through 7:00 p.m. during the days of Monday through Friday inclusive except as indicated in this subsection. The permittee may select a period of time not to exceed three hours per each day to conduct a happy hour promotion for the days of Saturday and Sunday. The permittee shall give written notification to the city administrator of the hour selected for such a happy hour and any changes thereto. The permittee shall give a 72-hour notice to the city administrator of changes to any happy hour designation.
 - (g) Live entertainment utilizing electronically amplified musical instruments or an associated sound system shall not be permitted. Live entertainment is permitted as follows:
 - 1. The group of performers is limited to not more than four persons;
 - 2. The entertainment must be located within the confines of the restaurant interior;
 - 3. The sound is not to be heard outside the restaurant premises; and
 - 4. All performances must end at 10:30 p.m. daily.
2. Applicant must comply with all applicable federal, state and local statutes, rules, regulations and ordinances.

Article 3. This Special Use Permit is not transferable to another person/business or another parcel of land.

Article 4. The Board of Adjustment after notice and public hearing, may revoke this Special Use Permit for one or more of the following reasons:

- 1. A violation of any of the representations, plans, terms, general, or special conditions and limitations applicable to this Special Use Permit.
- 2. A violation of any laws, ordinances or regulations.
- 3. A change in the nature of the use of Austin's Pizza.
- 4. Operation or maintenance of the Special Use Permit in a manner that is detrimental to the public health or safety, or so as to constitute a nuisance.

Article 5. If this Special Use Permit is discontinued for more than sixty (60) consecutive days, it shall be deemed abandoned.

Article 6. The duration of this Special Use Permit shall be for two (2) years from the effective date hereon.

Article 7. This Special Use Permit may be renewed for two (2) year periods at the discretion of the City Administrator provided no written complaints have been received during the use period. When complaints have been registered, the applicant will obtain renewal approval from the Board of Adjustment.

Article 8. The supporting correspondence and documents and marked as Exhibit "A" attached hereto are incorporated herein by reference for all pertinent purposes.

Article 9. The City Administrator is hereby authorized and shall promptly note the change on the Official Zoning Map of the City of West Lake Hills, Texas. The zoning map shall indicate that there is a Special Use Permit for the premises.

Article 10. This Special Use Permit shall become effective on the 8th day of May, 2024.

PASSED AND APPROVED this 8th day of May, 2024.

Linda Anthony, BOA CHAIR

ATTEST:

Terry Blanchard, City Secretary

I/We acknowledge receipt of this SUP and agree to abide by its terms and conditions.

Applicant's Signature

City of West Lake Hills, Texas
Zoning & Planning Commission
911 Westlake Dr,
West Lake Hills, TX 78746

[DATE]

Re: Special Use Permit Request to Allow Beer and Wine (On and Off-Premise) Sales at Austin's Pizza at 3638, Ste. 104, Bee Caves Road.

Dear Sir/Madam:

I represent AP ATX Restaurant Holdings LLC ('Applicant') as its representative, and the property owner, Johnson Four Corners Lts. (landlord), in their application for a special use permit ("SUP") from the City of West Lake Hills to allow for the sale of beer and wine (for both on-and-off-premise consumption) at the business known as Austin's Pizza located at **3625 Bee Caves Rd., Ste. 104, West Lake Hills, Texas 78746**. This letter accompanies the application which is attached hereto and describes the nature of the special use requested.

INTRODUCTION

AP ATX Restaurant Holdings LLC has taken over this restaurant location since **July (September?)** 2023. Previously, the prior operators were permitted by the Texas Alcoholic Beverage Commission ("TABC") to sell beer and wine for on-and-off-premise consumption at this location, and this location was and received a SUP from the City to do the same. The prior TABC permit was allowed to expire on its own terms last year, and no alcoholic beverage are currently being sold at the location. Since SUPs are not transferable per City Code and the former TABC permit has expired, both a new SUP from the city and a new TABC permit from the state are necessary.

In applying for this SUP for retail beer and wine for on-and-off-premise consumption sales, the applicants are seeking to add an additional beverage product to the current variety it already offers to its customers at this location.

The Applicants will extend great care will to ensure the proper and lawful sale of beer and wine should the SUP be granted. The applicant has already shown itself to be in compliance with municipal, county, and state laws regarding licensing, permitting, and the continued operation of its businesses in each location and community it occupies. With the granting of a SUP by the City of West Lake Hills for this location, the Applicants are committed to upholding its high standards and maintaining compliance with all applicable provisions of the Texas Alcoholic Beverage Code and the ordinances of the City.

JUSTIFICATION FOR THE REQUESTED SUP

It is the opinion of the Applicants that an additional seller of wine and beer for on-and-off-premise consumption in its geographic area will have no adverse effect on this area, will not create a safety hazard, nuisance, congestion, parking problems, or disturb the peace and quiet of the neighborhood. The location previously sold beer and wine and thus no adverse effect should be felt by the community.

Furthermore, in the immediate vicinity are the following TABC permits:

1. Blue Dahlia Bistro selling beer and wine for on-premise consumption located at 3663 Bee Cave Road, Ste. 4A;
2. Chipotle selling full liquor for on-premise consumption located at 3300 Bee Cave Road, Ste. 670;
3. Marye's Gourmet Pizza selling beer and wine for on-premise consumption located at 3663 Bee Cave Road, Suite 4G
4. Twin Liquors selling full liquor for off-premise consumption at 3652 Bee Cave Road;

Furthermore, this does not include the Walgreens, Starbucks, or Randall's locations that are within 1/2 mile of this location.

An existing business where beer and wine sales have previously been made at a location containing a number of retail alcohol sellers in the area will have little to no impact on the community and would be clearly compatible with the surrounding area.

The introduction of beer and wine sales for on and off-premise consumption will not change the actual use of the premises. The location will still be a restaurant that has primarily food sales. Alcohol sales will not substantially increase traffic congestion or create overcrowding in the establishment or in the immediately surrounding area. Austin's Pizza designs its stores to be consumer friendly. Customers would still be able to pick out their food and non-alcoholic beverages, whether this includes wine and beer or not, pay for this merchandise, and exit the store.

Furthermore, as mentioned above, there are several establishments that sell alcohol within the immediate vicinity. Thus, a consumer wishing to purchase beer or wine may pick any of these establishments to purchase their product. As a result, a substantial increase in traffic congestion or the overcrowding of the establishment or immediately surrounding area is not likely to occur.

The Applicants are committed to providing for the safety and well-being of its customers. It is believed that the likelihood of incidents involving drunkenness, disorderly conduct and raucous behavior will likely be non-existent. Furthermore, the Applicant is experienced in providing appropriate control over its establishment for the benefit of all its customers. The location will likewise continue to run a safe, sanitary, and welcoming business for the citizens of West Lake Hills if the requested SUP is awarded. The Store will not produce excessive noise, dirt, litter and odors in the establishment and in the surrounding area.

In fact, the re-introduction of beer and wine sales for on-and-off-premise consumption should not be expected to change much of anything in relation to how the store currently operates. Furthermore, this location has ample parking space. As such, no disturbances to surrounding property owners or the

community at large should occur and compliance with all applicable city ordinances and state laws will be followed. No safety hazard or nuisance will be created should the Applicants receive this requested SUP.

* * *

Based upon the foregoing, on behalf of the Applicants, I respectfully request that this special use permit application be approved forthwith.

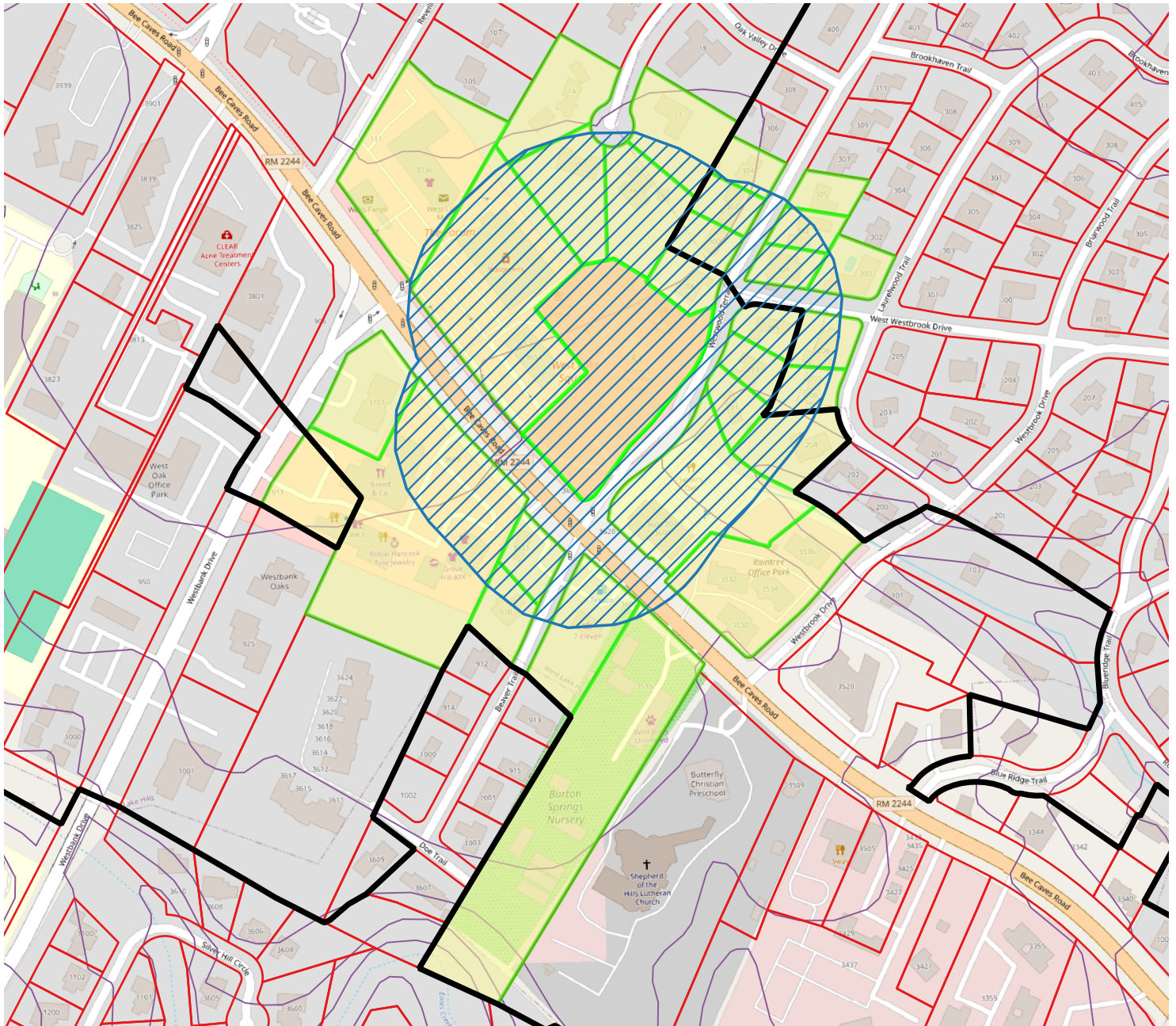
Should you have any questions or require further information or explanation regarding anything found herein, please do not hesitate to contact me at (512) 549-8903 or via email.

Respectfully submitted,

Dewey Brackin

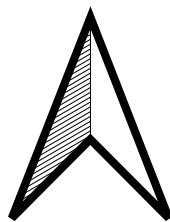
Notification Area

Austin's Pizza On-premises Alcoholic Beverage Special Use Permit



Legend

-  West Lake Hills City Limits
-  Subject Property
-  Notified Properties
-  Notification Area
-  Parcels



From: [ca](#)
To: [Planner](#)
Subject: Beer and Wine Sales at Austin's Pizza
Date: Tuesday, April 30, 2024 9:59:32 AM

City Staff,

I received a Notice to Neighbors of Special Use Permit Application.

I am in favor of granting Austin's Pizza the Special Use Permit for beer and wine sales at Austin's Pizza.

Charlie Avant
302 Laurelwood Trail
Austin, TX 78746



City of West Lake Hills Board of Adjustment

AGENDA REPORT

Meeting Date:	May 8, 2024	Item Number:	5
Department:	Building & Development Services		
Prepared By:	Jennifer C. Bills	Cost / Budget:	None
Exhibits:	See Attached	Source of Funds:	N/A

Subject

803 Rock Creek Dr.: Discuss and consider action on a variance to allow grading in the setback greater than 18 inches (Section 22.03.170 of the West Lake Hills Code).

Applicant: Eric Krause, Property Owner

Recommendation

Staff recommend approval of the variance request. The erosion presents a hardship to the property owner that they are trying to resolve with a series of low-profile walls. The grading over 18 inches is limited to a small area of the yard with less than a 12-inch variance (2.5 foot tall wall).

This item was considered at the April 17, 2024, regular ZAPCO meeting and was recommended for approval by a vote of 5-0 (Attachment 7).

Discussion

Property Information, Zoning & Site Characteristics:

Owner: Eric & Ashley Krause

Legal Description: Liveoak Terrace, Block D, Lot 2 Partial Replat

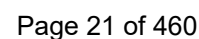
Lot Size: 0.4693

Zoning: R-1 One Family

The properties surrounding the subject property are zoned R-1 One Family Residential.

Background & Analysis:

The applicant is requesting a variance for grading over 18 inches in the setback for retaining walls (Attachment 1). The applicant states that the existing slope is causing erosion in the rear setback as the property slopes down to the property line. They would like to install a series of retaining walls to the sides and rear of the property to reduce the erosion and make planting areas within the yard. In the southeast corner, some of the walls would exceed 18 inches. The tallest wall will be 2 feet 1.5 inches, which would be a variance of 7.32 inches (Attachment 2). With the grading the owner is planning to install additional vegetation to also slow the erosion of the site (Attachment 3). The city engineer has reviewed the plans and recommends approval of the variance (Attachment 4).



Given the slope of the property, there is no practical way to add retention on the property without variance from the natural grade greater than 18 inches. Without it, the erosion and disruption/disturbance of neighbors with inevitably continue and natural terrain and flora on property will continue to be devastated.

2. *There will not be unreasonable disruption of the natural terrain or unreasonable destruction of existing flora.*

The existing flora is being destroyed due to the extreme erosion resulting from the substantial sloping on the property. More than ten trees lost in the last two years. I am planting over 42 new city-approved trees in an attempt to reclaim the drainage retention but it will all be ineffective and undermined without some retention walls allowing for mitigation of erosion.

3. *There is no reasonable alternative to the requisite variance that will alleviate the difficulty or hardship complained of.*

I have replanted grass, new bushes, and trees two separate times after taking ownership of the property in 2017 and due to the unique topography, slope, and tree canopy, all those efforts were entirely unsuccessful on the slope. Trees, grass, rocks, and soil washed away quickly without retention walls multiple times due to sloping.

4. *The variance will not be greater than the minimum required to alleviate the difficulty or hardship complained of.*

Only four new walls are being constructed in order to maximize retention and minimize erosion across half an acre. Existing walls that were previously degraded have been restored in order to minimize the necessity of new retention walls.

5. *The variance does not violate the intent of the Zoning Ordinance or goals of the Comprehensive Plan.*

I believe the goal of the city's plan is to retain and bolster the natural plant life/flora as much as possible while allowing for reasonable development. The amount of flora loss resulting from erosion on this uniquely situated property has devastated that natural life. Moreover, I believe the city's plan also encourages minimizing the disturbance of neighboring properties from natural rain events and erosion as much as possible. Both of the preceding issues are directly addressed and improved as a result of this variance request.

6. *The variance will not adversely affect neighboring properties or interfere with the enjoyment of these properties by their owners.*

As stated above, the retention walls will greatly improve neighboring properties and owners' enjoyment of said properties by eliminating the significant erosion from my highly sloped property that has occurred for years. After having discussed the plans with my neighbors, they have expressed gratitude and appreciation for the efforts to bring the drainage and erosion frustrations to an end.

Outdoor Lighting

Outdoor lighting is not proposed with this variance request. Any outdoor lighting will need to comply with the City's Code.

Compliance with Adopted International Building Code

The property and future construction will have to comply with all applicable City codes.

Subdivision

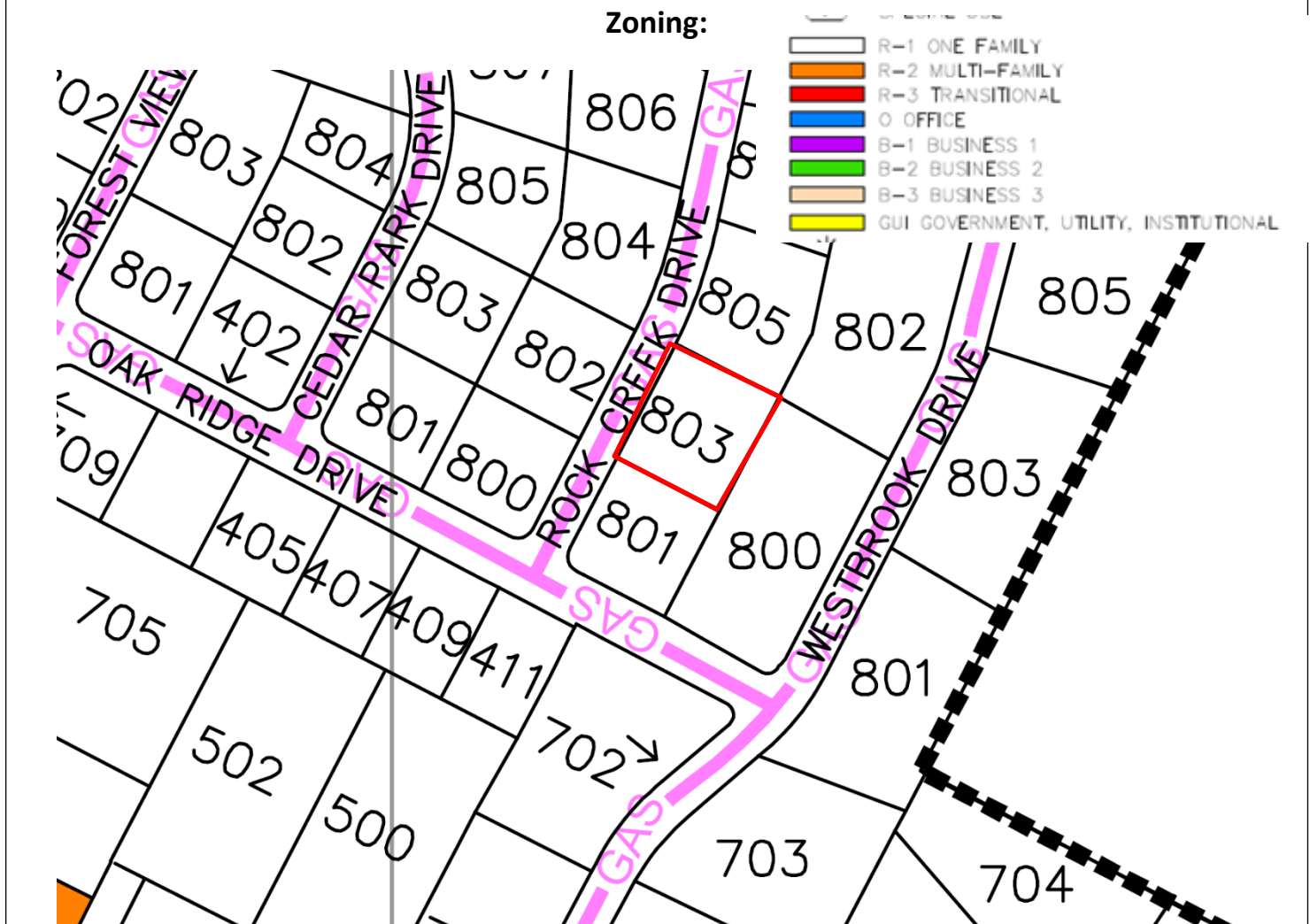
There is no change to the subdivision proposed with this application.

Comprehensive Planning Analysis

The existing and future land use is in conformance with the City of West Lake Hills Master Plan.

Links to Relevant Code:

- [Section 22.03.275 Building setback distances](#)
- [Section 22.03.281 Schedule of Regulations](#)
- [Section 22.03.170 Site disturbance \(excavation, grading or filling\)](#)
- [Section 38.05.031 Variances](#)
- [Section 22.03.514 Criteria and process required for granting a variance](#)



Aerial:



March 4, 2024

Mr. Robert Meisel
Chair of Zoning and Planning Commission
City of West Lake Hills
911 Westlake Drive
West Lake Hills, Texas 78746
512-327-3628

*Re: Project Title: 803 Rock Creek Landscaping; Project Number 2023-11711
Variance Request Letter*

Dear Mr. Meisel:

This letter is intended to provide a request for the variance I am seeking on my property at 803 Rock Creek Drive in the City of West Lake Hills. I have filed an application for a permit in order to perform landscaping projects on my property and in the review process, it was determined that to proceed with the plan as designed would require a variance.¹ My family has resided at 803 Rock Creek Dr. since 2017 and over that time period, we have made numerous investments and efforts to maintain the natural flora and the significant number of trees that exist on the property including replanting of natural grass and foliage multiple times, the installation of gravel retention efforts, and restoration of eroded retention mechanisms. Unfortunately, these efforts have largely failed and due to the extreme slope on the property (approximately 15% across the property from front to back)², that has led to significant and consistent erosion over the years. Numerous efforts to plant grass and other rooted ground cover in order to encourage drainage and mitigate erosion have been comprehensively unsuccessful due to a combination of aforementioned topography slope, as well as sun canopy created by the voluminous number of mature trees on the property.

Without some surface stabilizer, the last few years have demonstrated that the soil and rock will materially erode and destabilize the environment for the trees and other flora, as well as the improvements on the lot. The significant slope on the property creates a particular challenge for the growth of grass and underbrush. As a result, numerous trees have been lost on the property over the last few years in connection with erosion and extreme climate challenges (e.g., extreme summer heat and extreme ice events).

As a result, I have hired landscape architects and engineers to evaluate the property who have recommended the need for added retention walls that are necessarily going to have to exist in the new setback distances in addition to the restoration of existing retaining walls on the

¹ The project is exclusively limited to landscaping efforts. It does not include any work to buildings or improvements.

² The property is 137 feet deep and has an elevation change of just over 35 feet from the front to back. Mathematically, this results in a slope of approximately 15%.

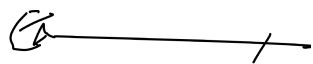
property. Because of the substantial slope of 15%, adding retention walls will necessarily require the excavation and fill on either side of the wall will be slightly more than the 18 inches provided for in 22.03.170(f) of the city ordinance code. As a result, I am seeking a variance to the application of that particular code in order to construct the retention walls and significantly improve the conditions on the property for the benefit of the natural flora. I believe that a failure to approve the variance allowing will result in long-term exacerbation of the erosion and destruction of the natural environment that has struggled to be maintained despite the extreme measures we have taken to ensure its viability over the last seven years. Numerous trees have been unearthed and lost as a result of the erosion and the primary goal of this project is to control drainage and erosion on the unique property with extreme sloping topography.

The existing walls have been repaired as they were no longer functional in any erosion control and drainage retention and so they have been restored and reinforced in order to enhance drainage on the property and to mitigate drainage and runoff to neighboring properties that has been experienced for years. As part of this project, I have also planted forty-two (42) new trees including 12 Monterrey Oaks, 14 Yaupons, 7 Texas Redbud, 5 Texas Mountain Laurel, and 4 Sabal Palm trees in order to further encourage rooting and better drainage on the property in order to mitigate runoff and erosion that disturbs neighboring properties. There are twelve (12) mature Texas Live Oak trees and two very large Elm trees on the property today that I am seeking to save by mitigating the erosion. Three years ago, there were five additional oak trees that have since been lost due to the property erosion and this variance is needed to try and stop the losses and encourage healthy growth.

I am proposing two new steel walls clearly in the setbacks of the property and a single new stone wall within the rear and side setbacks that will significantly enhance the drainage on the property and mitigate the rushing erosion from my property on my neighbors' respective properties. I am confident the variance will be vehemently supported by all neighbors as they have each expressed great appreciation for the significant improvements to the drainage and erosion runoff problems that have faced our contiguous properties for years since adding the first phase of these changes outside the setbacks.

Thank you very much for your consideration and if there are any questions related to anything in this letter, please do not hesitate to contact me.

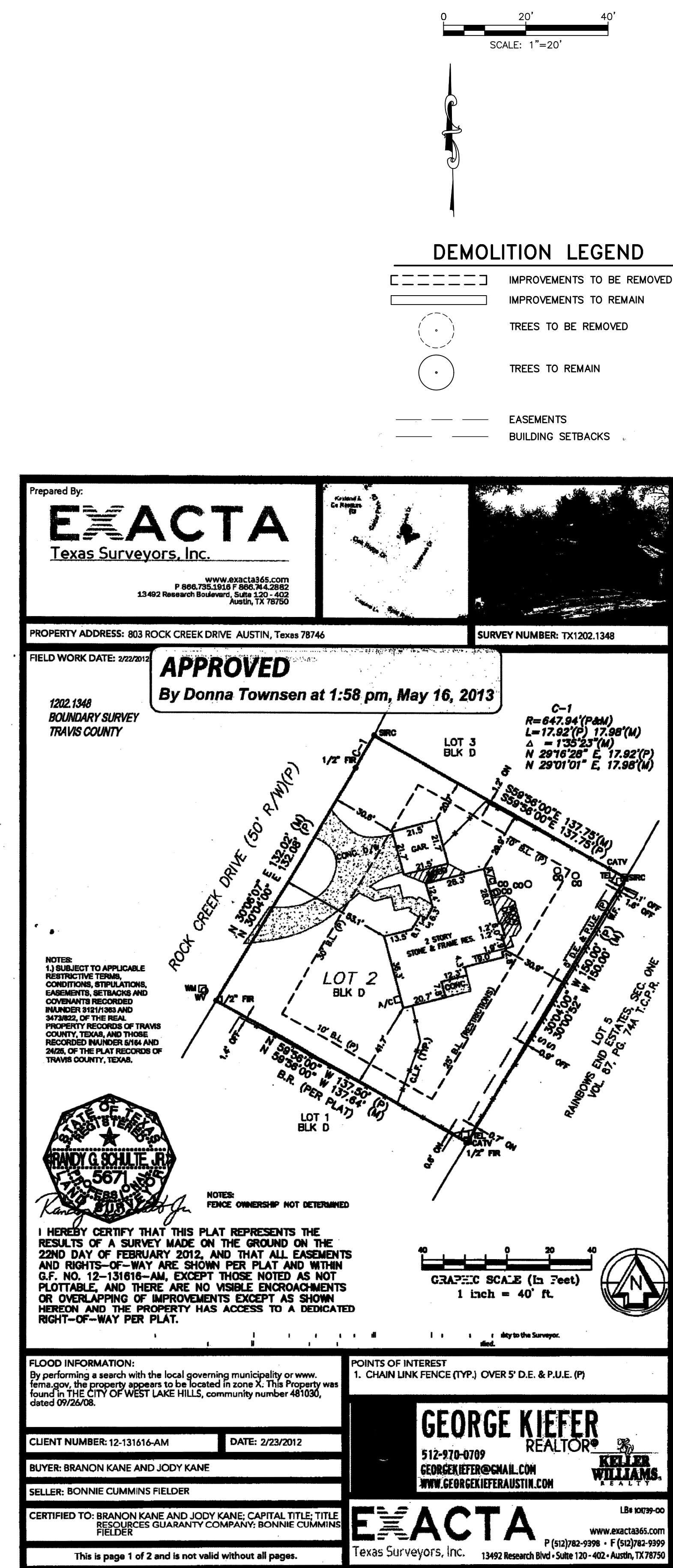
Cordially,



Eric Krause
803 Rock Creek Drive
West Lake Hills, Texas 78746



EXISTING CONDITIONS & DEMOLITION PLAN

[illegible]

RANGER ENGINEERING, PLLC
CIVIL ENGINEERING
TYPE REG. NO. F-22406
5524 BEE CAVES ROAD, STE J-3
AUSTIN, TEXAS 78746
PHONE: (512) 785-8446
email: marco@sectexas.com

803 Rock Creek Drive

West Lake Hills, Texas 78746

EXISTING CONDITIONS SURVEY

PROJECT: _____

DATE: DECEMBER 11, 2023

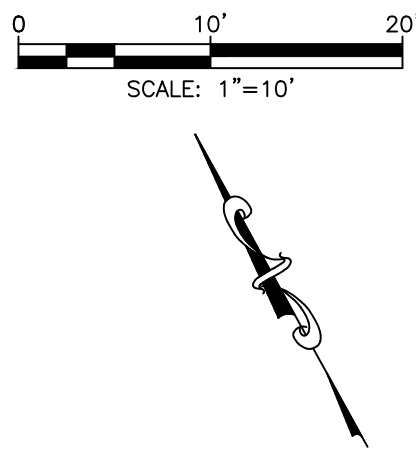
DRAWN BY: _____ MEC

CHECKED BY: _____ MEC

SHEET NO. _____

03

PERMIT NO. 2023-_____

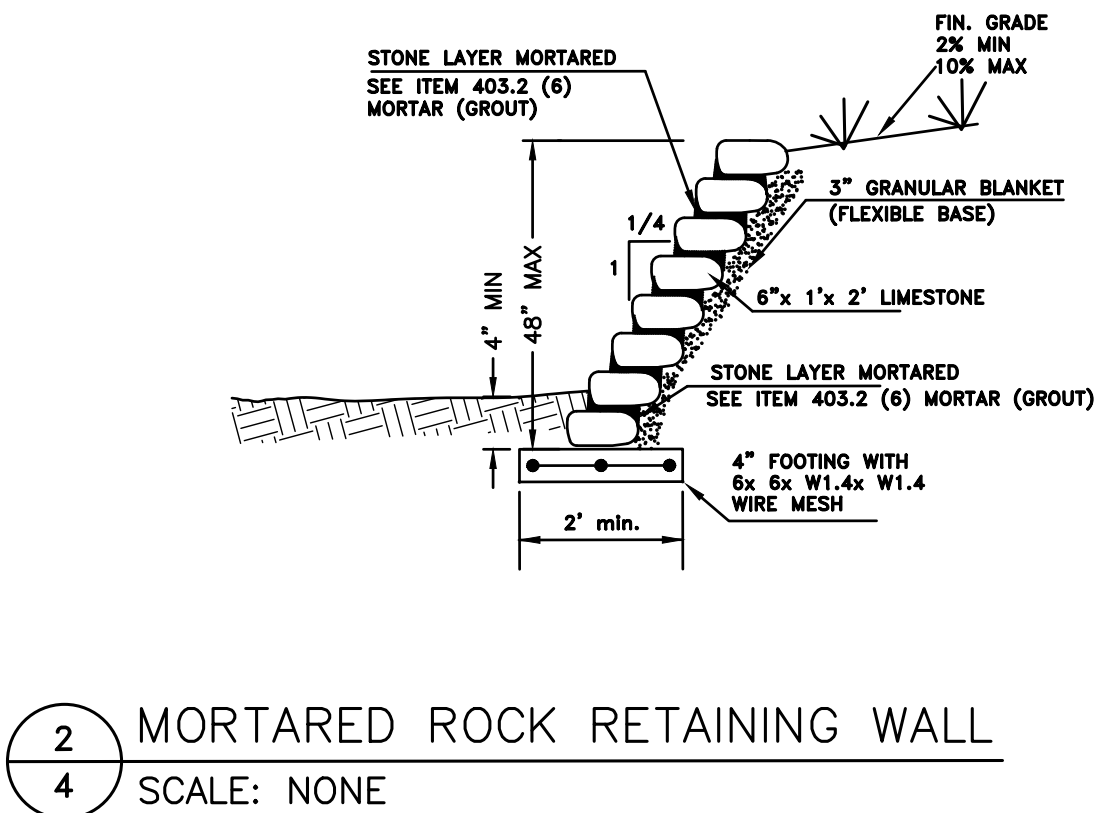
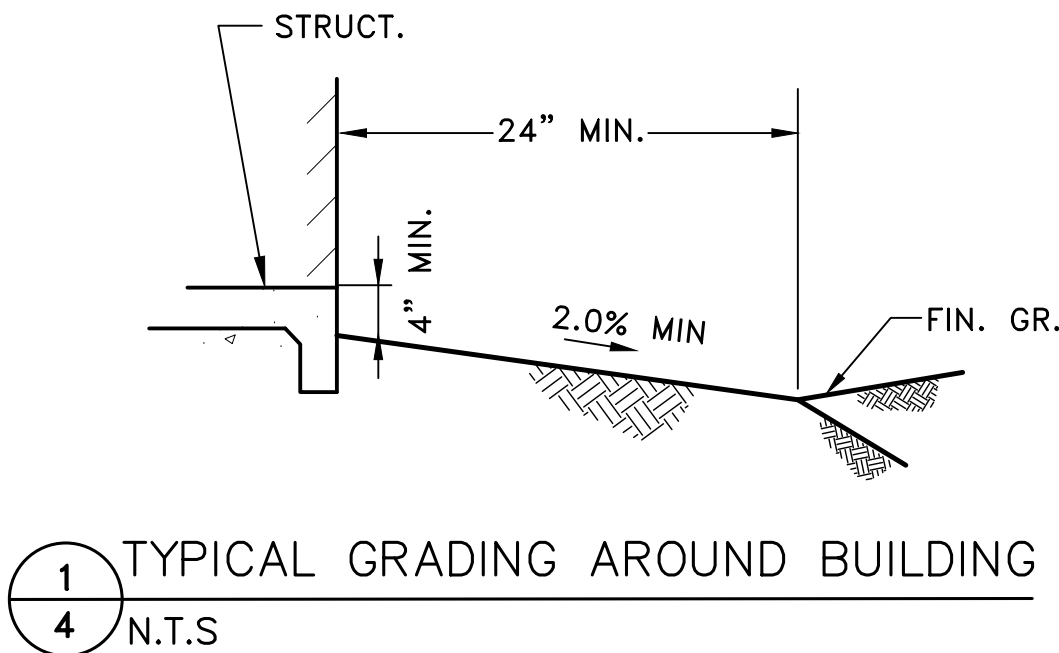


LEGEND	
	PROPOSED RETAINING WALL
	PROPOSED FLATWORK (MISC)
	EASEMENTS
	BUILDING SETBACKS
	EXISTING CONTOUR
	700 PROPOSED CONTOUR
TC 7XX.XX	TOP OF CURB
TP 7XX.XX	TOP OF PAVEMENT
TS 7XX.XX	TOP OF SIDEWALK
FG 7XX.XX	FINISHED GRADE
TW 7XX.XX	TOP OF WALL
FL 7XX.XX	FLOW LINE
TB 7XX.XX	TOP OF BERM
NG 7XX.XX	NATURAL OR EXISTING GRADE

- NOTES:
- PROJECT IS A TYPE I DEVELOPMENT UNDER WEST LAKE HILLS DEVELOPMENT ORDINANCE.
 - WE CERTIFY THAT ALL EASEMENTS ARE SHOWN ON THIS PLAN.
 - NO CONCENTRATED STORMWATER FLOWS WILL LEAVE THIS LOT ONTO ADJACENT PROPERTIES, UNLESS THEY DISCHARGE DIRECTLY INTO AN APPROVED CHANNEL THAT IS WITHIN A PUBLIC R.O.W. OR DRAINAGE EASEMENT.
 - NO FENCES OR STRUCTURES ARE ALLOWED ACROSS ANY DRAINAGE EASEMENT.
 - THE DRAINAGE DESIGNER IS RESPONSIBLE FOR THE ADEQUACY OF THESE PLANS. IN ACCEPTING THESE PLANS, THE CITY OF WEST LAKE HILLS AND ALL REVIEWERS RELY UPON THE ADEQUACY OF THE DESIGN BY THE DRAINAGE DESIGNER.
 - PER TPDES GENERAL PERMIT NO. 150000, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS.
 - THE OWNER OF THE PROPERTY IS RESPONSIBLE FOR CLEANING AND REMOVING ALL SEDIMENT THAT IS WASHED FROM THE SITE IN DEDICATED STREETS, ALLEYS, WATERWAYS, OR OTHER PROPERTIES.
 - STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME PER THE WEST LAKE HILLS DRAINAGE AND EROSION CONTROL DESIGN MANUAL, SEC. 7.1(L).
 - NO PORTION OF THIS TRACT IS WITHIN THE BOUNDARIES OF THE 100 YEAR FLOODPLAIN OF A WATERWAY THAT IS WITHIN THE LIMITS OF STUDY OF THE FEDERAL FLOOD INSURANCE ADMINISTRATION FIRM MAP # 484530445K, DATED JANUARY 22, 2020 FOR TRAVIS COUNTY, TEXAS.
 - THIS SITE IS FULLY LOCATED WITHIN THE EDWARD'S AQUIFER RECHARGE ZONE.

- DRAINAGE NOTES
- NO NEW IMPERVIOUS COVER IS PROPOSED AS PART OF THESE IMPROVEMENTS.
 - NO INCREASE IN RUN-OFF WILL RESULT FROM THE PROPOSED IMPROVEMENTS.
 - THE IMPROVEMENTS WERE DESIGNED TO AVOID CREATING ANY CONCENTRATED DISCHARGE IMPACTING ANY ADJACENT PROPERTIES.

- GRADING NOTES
- PROTECT EXISTING UTILITY LINES IN SERVICE FROM DAMAGE DURING CONSTRUCTION OPERATION.
 - CONTRACTOR SHALL COMPLY WITH OSHA TRENCH SAFETY REQUIREMENTS.
 - ALL EARTHWORK, TRENCHING, BACKFILLING, RESTORATION OR OTHER RELATED WORK WITHIN A PUBLIC EASEMENT OR R.O.W. SHALL BE IN STRICT COMPLIANCE WITH THE GOVERNING AUTHORITY STANDARD DETAILS, SPECIFICATIONS, AND REQUIREMENTS.
 - CONTRACTOR SHALL VERIFY EXISTING SITE GRADES AND CONDITIONS IN CONJUNCTION WITH GRADING AND DRAINAGE WORK PRIOR TO BEGINNING OF WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCY AND WAIT FOR FURTHER INSTRUCTIONS.
 - EXISTING TOPOGRAPHY AND BOUNDARY SURVEY AS FURNISHED BY THE OWNER.
 - GRADES SHALL VARY UNIFORMLY BETWEEN ELEVATIONS SHOWN.
 - NEW GRADES IN OPEN AREA INDICATE FINISHED GRADES. CONTRACTOR TO ALLOW FOR MINIMUM 4" THICK TOP SOIL.
 - NEW GRADES IN PAVED AREA INDICATE TOP OF PAVEMENT ELEVATION. CONTRACTOR TO ALLOW FOR THE DEPTH OF PAVING MATERIALS. REFER TO PAVEMENT SECTION DETAILS FOR THICKNESS. SEE SHEET # 08.
 - MAXIMUM SLOPE IS 3:1 (3' HORIZONTAL TO 1' VERTICAL) UNLESS OTHERWISE INDICATED.
 - AT INTERSECTION OF NEW AND EXISTING VEHICULAR OR PEDESTRIAN PAVEMENT (ASPHALT OR CONCRETE) SAW CUT EXISTING PAVEMENT TO PROVIDE CLEAN AND SOLID JOINT. IN ALL CASES MATCH TOP OF NEW AND EXISTING PAVEMENT ELEVATIONS.
 - FOR ADDITIONAL INFORMATION OF THE SITE EXISTING GRADES, REFER TO THE SITE TOPOGRAPHY AND BOUNDARY SURVEY DRAWING # 03.
 - TOP OF NEW PAVEMENT ELEVATION IS 6" BELOW TOP OF CURB ELEVATION UNLESS OTHERWISE INDICATED.
 - ALL PROPOSED SIDEWALKS SHALL COMPLY WITH HANDICAPPED ACCESSIBLE ROUTE REQUIREMENTS [TAS 4.3.7]. SLOPES ON ACCESSIBLE ROUTES MAY NOT EXCEED 1:20 (5.0%) AND A CROSS SLOPE OF 1:50 (2.0%) UNLESS OTHERWISE DESIGNATED AS AN ACCESSIBLE RAMP. ACCESSIBLE RAMPS MAY NOT EXCEED A SLOPE OF 1:12.
 - CONTRACTOR SHALL PROVIDE BARRICADES, FLAGMAN, FLASHING WARNING LIGHTS AND ANY SAFETY MEASURES, ETC., DEEMED NECESSARY TO PROTECT PUBLIC AND ON-SITE WORKERS UNTIL COMPLETION OF THIS WORK.



REV. NO.	REVISION DESCRIPTION	APPROVED BY:	DATE



RANGER ENGINEERING, PLLC
CIVIL ENGINEERING
TYPE REG. NO. F-22406
5524 BEE CAVES ROAD, STE J-3
AUSTIN, TEXAS 78746
PHONE: (512) 785-8446
email: marcoe@rangereng.com

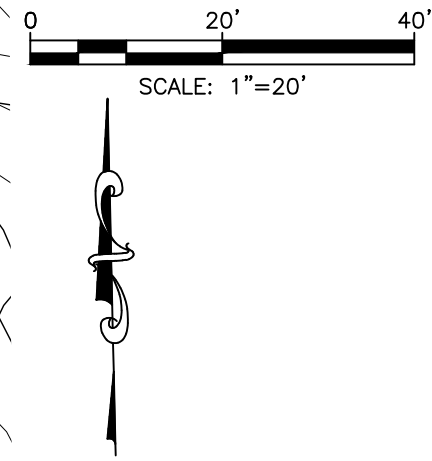
803 Rock Creek Drive

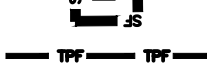
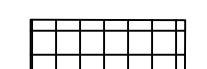
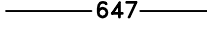
West Lake Hills, Texas 78746

GRADING & STORMWATER CONVEYANCE PLAN

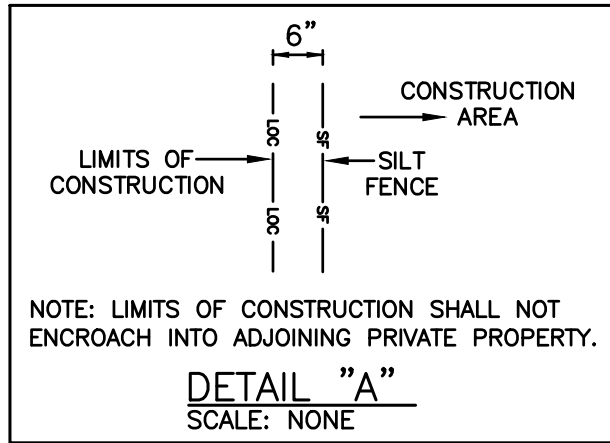
PROJECT:	
DATE: DECEMBER 11, 2023	
DRAWN BY:	MEC
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SHEET NO.	

PERMIT NO. 2023-



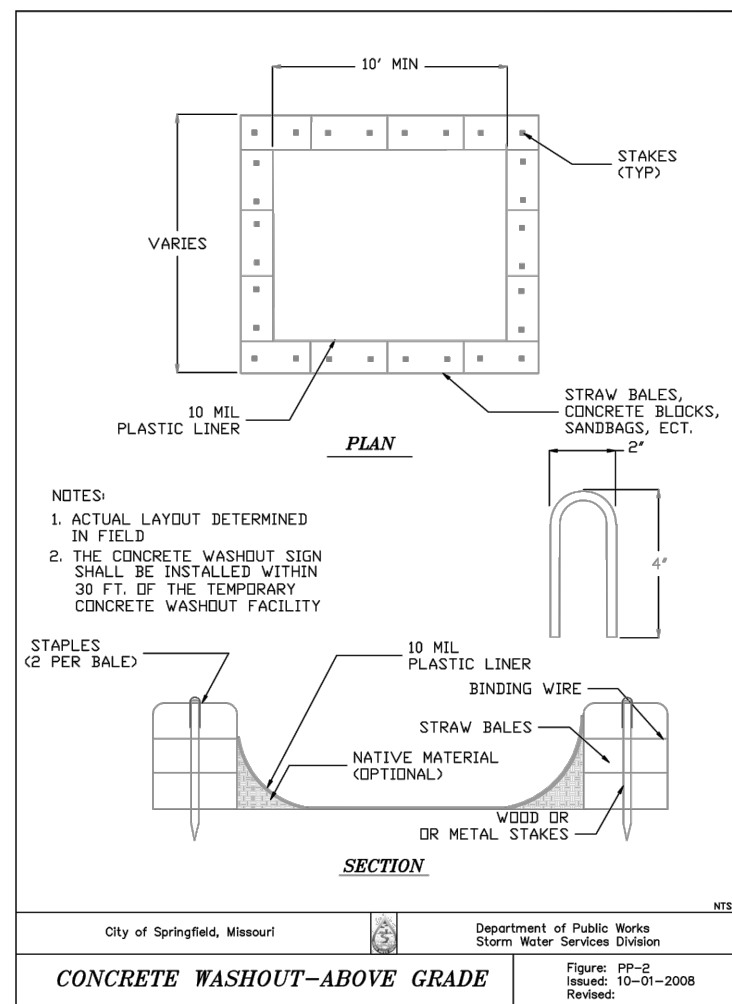
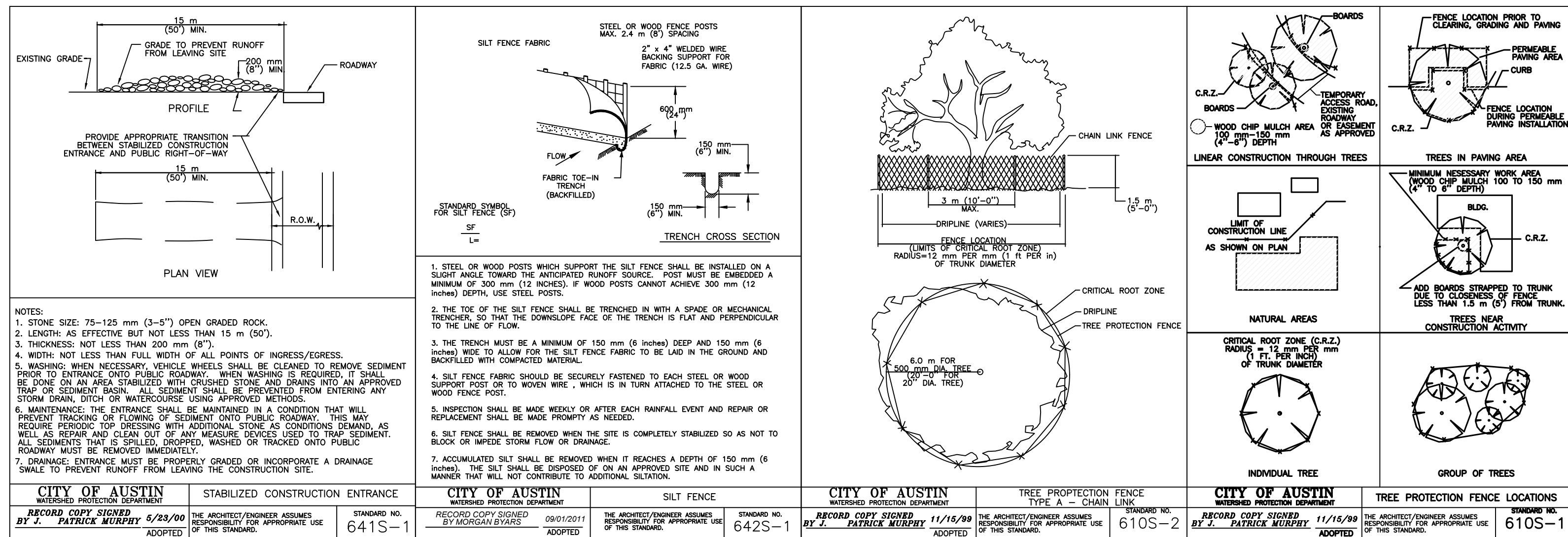
	LIMITS OF CONSTRUCTION (L.O.C.)
	SILT FENCE
	SILT FENCE AT L.O.C. (SEE DETAIL "A")
	TRIANGULAR FILTER DIKE
	MULCH SOCK
	AREA INLET PROTECTION
	TREE PROTECTION FENCE
	ROCK BERM
	STABILIZED CONSTRUCTION ENTRANCE
	CONSTRUCTION STAGING SITE
	TEMP. SPOILS AREA
	CONCRETE WASHOUT AREA
	TREE TO REMAIN (W/ 1/2 CR2)
	TREE CANOPY
	TREE TO BE REMOVED
	EXISTING CONTOUR
	PROPOSED CONTOUR

REFERENCE SHEET 3 FOR TREE LIST



RANGER ENGINEERING, PLLC
CIVIL ENGINEERING
TBPE REG. NO. F-22406
5524 BEE CAVES ROAD, STE J-3
AUSTIN, TEXAS 78746
PHONE: (512) 795-8446
email: marcelo@sectexas.com

803 Rock Creek Drive
West Lake Hills, Texas 78741
EROSION/SEDIMENTATION CONTROL PLAN

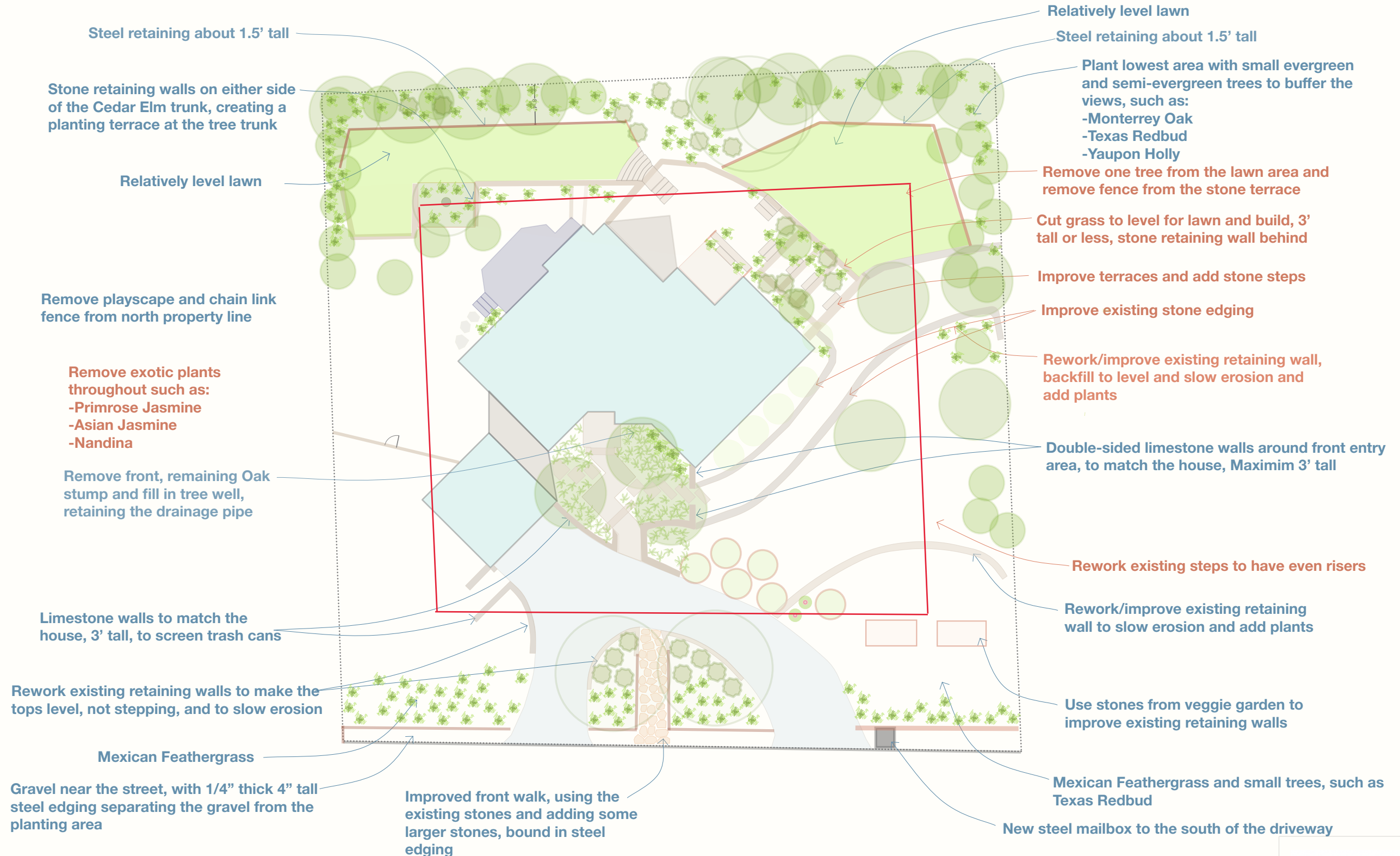


PERMANENT STABILIZATION NOTES:

1. All areas of native vegetation beyond the limit of construction are to be left undisturbed.
2. All improvements shall be made in accordance with the released site plan. Any additional improvements will require site plan amendment and approval of TNR.
3. Permanent erosion control: All disturbed areas shall be restored to the original or better condition. A minimum of 4 inches of topsoil shall be placed on all areas to receive grass planting (all areas except building and parking). The contractor shall hydromulch or sod all exposed cuts and fills upon completion of construction, except for areas that are more than 100 square feet. Erosion control shall be applied at the specified rate over areas disturbed by construction as follows: from September 15 to March 1, seeding shall be at a rate of 100 pounds per 1,000 square feet of unhulled bermuda grass and 3 pounds per 1,000 square feet of winter ryegrass with a purity of 95% with 90% germination. From March 1 to September 14, seeding shall be with hulled bermuda grass (Cyrenen dactyloides) and 3 pounds per 1,000 square feet of winter ryegrass with a purity of 95% with 85% germination. Fertilizer shall be an analysis of 16-20-0 or 16-8-8 and shall be applied at a rate of 400 pounds per acre. The planted area shall be irrigated or watered in in a minimum of 1 inch of water spaced at 10 day intervals during the first two months of a rate sufficient to thoroughly soak the soil to a depth of 6 inches. Rainfall occurrences or 1/2 inch or greater shall postpone the watering schedule 10 days. Mutch type to be hay or straw applied at a rate of 4,000 pounds per acre. Restoration shall be acceptable when the grass has grown at least 1 inch high with 85% coverage and the topsoil is exposed.
4. Initiate permanent stabilization immediately once work has ceased and final grading complete.
5. All 3:1 slopes or steeper require soil retention blanket (SRB).
6. All disturbed/areas shall be required to meet the TNR 100% stabilization before the Notice of Termination (NOT) for this project shall not be submitted.

THE CITY OF WEST LAKE HILLS ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD OR MODIFY EROSION/SEDIMENT CONTROLS ON SITE THROUGHOUT THE DURATION OF THE PROJECT.

PERMIT NO. 2023-



Krause Landscape Concept



Setbacks



Re: 803 ROCK CREEK VARIANCE REQUEST

On behalf of the City of West Lake Hills, Walter P Moore has reviewed the variance requests for the property located at 803 Rock Creek. This review was performed in the context of the City of West Lake Hills Code of Ordinances which states that no variance shall be granted unless it meets the following criteria:

1. The strict or literal enforcement of the terms of the code, because of special conditions, will result in unnecessary hardship to the applicant.
2. There will not be unreasonable disruption of the natural terrain or unreasonable destruction of existing flora.
3. There is no reasonable alternative to the requisite variance that will alleviate the difficulty or hardship.
4. The variance will not be greater than the minimum required to alleviate the difficulty or hardship.

The following requests were made:

1. Allow 12-16 inches greater than the 18 inch deviation from the natural grade for four new retaining walls within the rear and side setbacks.

The hardships mentioned are as follows:

1. Site topography and erosion.

After reviewing the provided documents and the city code, the engineering team on behalf of the City of West Lake Hills recommends that the variance be approved.

March 25, 2024

City of West Lake Hills Planning and Development 911 Westlake Drive
West Lake Hills, TX 78746

To Whom It May Concern,

We are writing to express our support for our neighbors, Eric and Ashley Krause, and their request for a variance from city code regarding limitations on excavation and fill-in setbacks at their residence on 803 Rock Creek. As the residents of 800 Westbrook Drive (which is directly adjacent to the rear and of the area at issue), we believe the work on the Krause's backyard will have a positive impact on erosion issues we have experienced from their property. (Our lot is a bit lower than theirs, and debris and water have washed into our back driveway from their yard in the past.)

Since the completion of their project, there has been a reduction in erosion and water accumulation on to our property during heavy rains. The retaining walls seem to have stabilized the terrain, preventing soil displacement.

In addition to the Krause's specific needs for a variance, we urge you to consider the broader implications of their project on us as their neighbors and approve their request.

Sincerely,

Two handwritten signatures in blue ink. The first signature is a cursive 'Allison' and the second is a cursive 'Gregg'.

Allison and Gregg Knaupe
800 Westbrook Drive

March 22, 2024

City of West Lake Hills
Planning and Development
911 Westlake Drive
West Lake Hills, TX 78746

Council Members,

We are writing to formally extend our emphatic support for our neighbors, the Krauses, and their recent request for a variance from city code concerning limitations on setback excavation and fill greater than 18 inches. We reside at 805 Rock Creek which is directly adjacent to the Krauses, and we are directly impacted by any changes made on their property. That said, we have observed from next door the helpful impact of the new retaining walls in the setbacks, both on the Krauses' property as well as our property.

Before the installation of these retaining walls, erosion from the Krauses' property was a constant concern, causing soil displacement and water accumulation onto our property due to the significant slope on which the property sits. There was a constant threat of potential damage to surrounding properties. However, since the completion of this project, the reduction in erosion has been remarkable, significantly improving the stability and aesthetics of our street and wider block.

The erection of these retaining walls was not just a surface-level enhancement initiated by the Krauses; rather, we view it as an essential step to combat the substantial erosion challenges stemming from the Krauses' property onto ours, persisting for several years. The Krauses' land features steep grading, exacerbating erosion issues that were a continuous worry before the walls were erected. This erosion not only threatened soil integrity and potential structural damage on our property but also resulted in the depletion of significant vegetation on both the Krauses' and our own land.

Since the completion of the project, we have seen a significant decrease in erosion and water pooling on our property. The retaining walls have played a crucial role in stabilizing the terrain, preventing soil displacement and safeguarding the integrity of both our properties and the vegetation they support. The nature of the erosion from the Krauses' property presents a genuine need to address a pressing issue affecting multiple properties in our neighborhood. Granting this variance would not just ensure a stable and safe environment but also benefit our native plants and wildlife.

In light of the positive impact that these retaining walls have had on our property as well as others, I respectfully recommend you consider supporting the Krauses' request for a variance. Your decision in this matter will undoubtedly contribute to the continued improvement of our neighborhood.

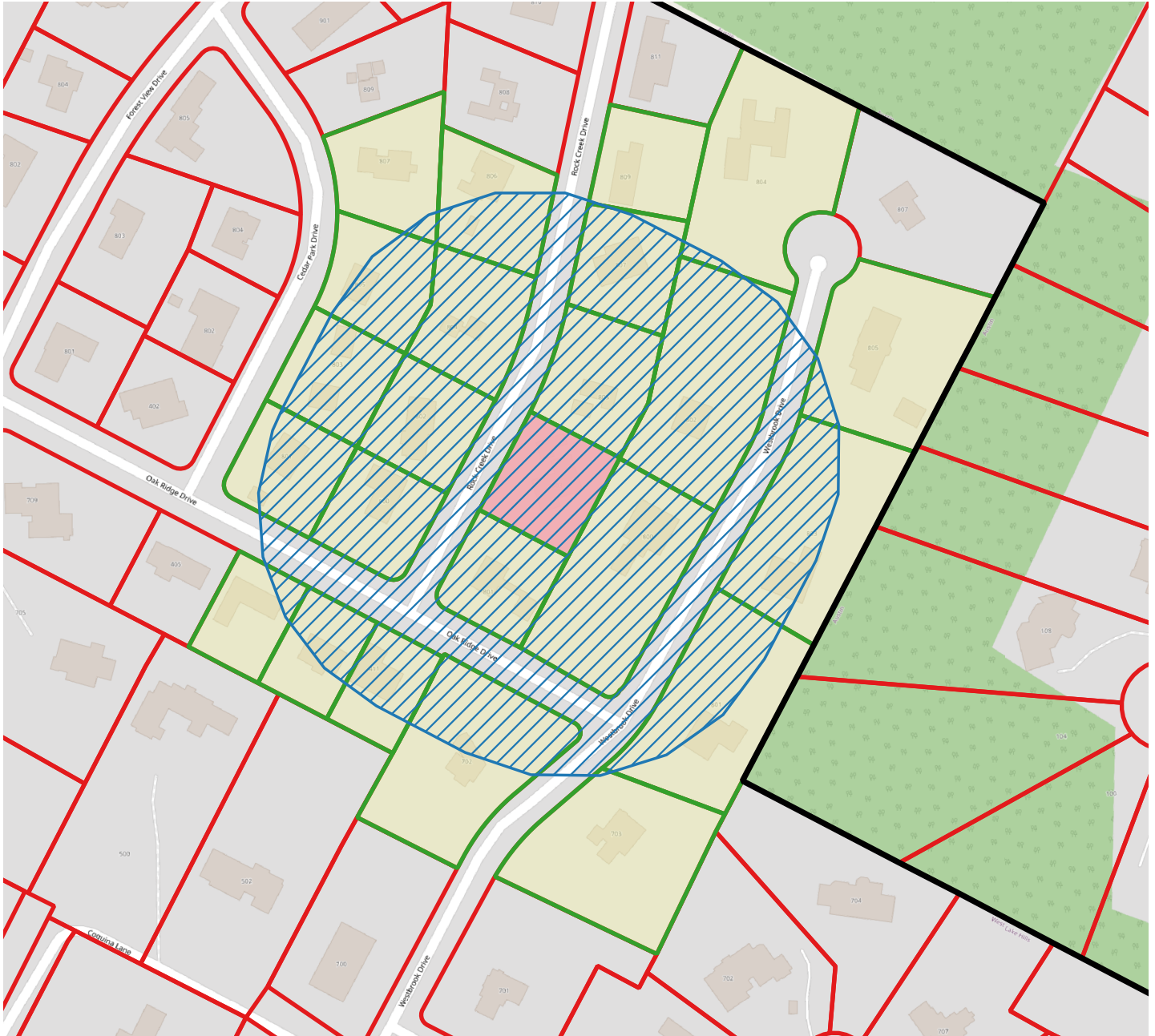
Regards,



Stuart and Kelly Sampley

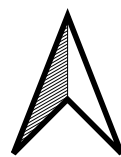
Notification Area

803 Rock Creek Variance



Legend

- Notification Area
- Subject Parcel
- Notified Parcels
- Parcels
- West Lake Hills City Limits



0 100 200 300 400 ft

A scale bar with markings at 0, 100, 200, 300, and 400 feet.

City of West Lake Hills

EXERPT OF ZONING & PLANNING COMMISSION (ZAPCO)

REGULAR MEETING

Wednesday, April 17, 2024 at 6:30 PM

Agenda Item 4: 803 Rock Creek Drive Variance

4. Public Hearing: 803 Rock Creek Dr: Discuss and make a recommendation on a variance to allow grading in the setback greater than 18 inches (Section 22.03.170 of the West Lake Hills Code).

Applicant: Eric Krause, Property Owner

- a. Staff Report:** Director Bills delivered a briefing on property's unique geographical characteristics and the request to erect retaining walls slightly higher than the 18" maximum allowed by code within the setbacks.

b. Public Comments:

- Eric Krause: Applicant
 - Mr Krause delivered a presentation on the history of his property's drainage issues and his attempts to limit erosion on his property and discharge for the neighbors, including pictures and video of existing conditions and detention/revegetation plans to stabilize slope and limit erosion.

c. Discussion:

- Commissioners appreciate quality of applicant presentation
- Commissioner Maccini appreciates the variety of vegetation included in the plans

d. Action:

- Commissioner Maccini moves that the variance be forwarded to Council with a recommendation of **approval**.
 - Commissioner Bartoletti Seconds
 - Motion **carries** unanimously (5-0)

Recommendation will be forwarded to the Board of Adjustment for final consideration on May 8, 2024.



City of West Lake Hills
Board of Adjustment

AGENDA REPORT

Meeting Date:	May 8, 2024	Item Number:	6
	Building & Development		
Department:	Services		
Prepared By:	Jennifer C. Bills	Cost / Budget:	None
Exhibits:	See Attached	Source of Funds:	N/A

Subject

1511 Wildcat Hollow: Discuss and make recommendation on the proposed variances:

1. Increase impervious cover to 30% where 25% is the maximum (Section 22.03.281 (b) of the West Lake Hills Code)
2. Allow for 30 feet encroachment of the building and grading into a 50-foot front setback (22.03.281 (b) of the West Lake Hills Code).

Applicant: Matt Sener, Michael Hsu Office of Architecture

Recommendation

Staff recommends approval of the variance request with conditions based on the analysis in the staff report.
Condition – the building and driveway be allowed to encroach up to 30 feet into the front setback but not as depicted in the site plan (encroachment limit is parallel to the front property line). The side setback will remain at 25 feet.

This item was considered at the April 17, 2024 regular ZAPCO meeting and recommended approval with conditions recommended by staff by a vote of 5-0 (Attachment 7).

Discussion

Property Information, Zoning & Site Characteristics:

Owner: Wild Cat Hollow Family Trust

Legal Description: Lot 3 Amended Plat Lots 4 & 5 WILDCAT NO 1 & Lots 3&4 Resub of Lot 3 Block 3 of the Shelton Subdivision

Lot Size: 0.7180 acres

Zoning: R-1 One Family

The properties surrounding the subject property are zoned R-1, One Family Residential.

Background & Analysis:

The applicant is proposing to demolish and replace the existing house, garage, and pool on the existing lot (Attachment 1). The existing 3,675 square foot house was built in 1964. The existing lot is 0.718 acres in size and is an irregular shape (Attachment 3).

The applicant is requesting three variances to rebuild on the lot (Attachment 2).

1. Removal of one 17.7-inch cedar (action City Council).

The applicant is attempting to use the existing footprint as much as possible for the new house. With the new house, the applicant is also trying to eliminate an extremely steep driveway and utilize the area of the existing driveway. With this layout, the location of the garage conflicts with a 17.7-inch cedar tree. The applicant is working around a 19.6-inch live oak that will be between the house and the garage.

Staff recommends approval. There are a number of trees both over 10 inches and 14 inches in size that the applicant is preserving. Given the number of trees and grade, they appear to have made the best attempt to minimize the disruption to the trees.

2. Increase in impervious cover from 25% to 30% (action BOA).

The impervious cover of the existing structure and other improvements is 30%. The applicant is requesting to remain at 30%. The applicant is proposing to capture the 2,847-sf roof area in a rainwater harvesting system to decrease site runoff and improve water quality.

The site currently has two driveways off Wild Cat Hollow. They are proposing to remove the shorter driveway, as it is very steep and does not meet the Code requirements for slope. By using the existing driveway, which has a more gradual slope, it will take up more of the impervious cover on the site.

Staff recommends approval, given the factors above.

3. Allow for 30 feet of encroachment of the building and grading into the 50-foot front setback (action BOA).

The applicant has provided exhibits showing the existing slopes on the property. The Drainage and Erosion Control Manual has limits on the amount of cut and fill that is allowed on certain slopes. The property slopes more severely towards the rear of the property so the applicant is requesting an encroachment of up to 30 feet to utilize the flattest part of the property where the existing house and driveway are currently.

Staff recommends approval with the condition that the encroachment area be limited to 30 feet into the front setback. The site plan included in the application shows a variable setback that curves into the side setback. The limit for the encroachment should be a line that parallels the front property line until it meets the side setbacks.

The city engineering team has reviewed the application materials and concurs with these recommendations (Attachment 5).

Public Comment:

At the time of this report, no comments in support or objection to the project have been received.

Variance Criteria Review:

When applying for a variance, the applicant has provided the following evidence:

1. The strict or literal enforcement of the terms of this chapter, because of special conditions, will result in unnecessary hardship to the applicant.

1. Total site area is less than 1 acre (0.717acres)

2. Overall lot depth is less than 150ft (145ft)

3. Intent to demolish the existing 1964 home, carport and pool deck triggers current COWLH Zoning Ordinance setbacks and initiates a new 50ft front setback line.
4. New COWLH 50ft front setback line results in loss of buildable site area of 27% > 25% maximum.
5. The new COWLH 50ft front setback line produces unreasonable encroachment upon new buildable area by 30ft at its greatest point, accounting for 50% of the overall buildable dimension of 60ft.
6. 69% of the existing lot slope is between 25% to above 35% limiting the area of construction according to the Drainage and Erosion Control Manual

It is our understanding that if the existing 1964 home is demolished, the property must be brought into compliance with the current City of West Lake Hills Zoning Ordinances. This includes the update of all setbacks and following the Drainage and Erosion Control Manual to determine cut and fill maximums.

2. *There will not be unreasonable disruption of the natural terrain or unreasonable destruction of existing flora.*

The proposed new home follows the existing home (to be demolished) footprint to a great extent, limiting the cut and fill required to construct the new home design.

We have located the detached garage in such a spot on the site which reduces the amount of cut to safely construct a driveway down hill to the entrance of garage door. Our site plan indicates reusing about half of the existing driveway and promotes drainage by using gravel landscape paths.

The driveway turnaround space is cantilevered on a steel and concrete bridge only coming into contact with the existing grade at two points where concrete piers brace the bridge. This allows water to naturally flow under the bridge without disrupting the natural terrain.

While we are proposing a handful of trees to be removed, we plan to mitigate, and hire an arborist to evaluate the conditions of multiple trees on site. Many appear to be visually unhealthy and are leaning in a dangerous manner.

3. *There is no reasonable alternative to the requisite variance that will alleviate the difficulty or hardship complained of.*

We have attempted to locate the detached garage further down the hill, but it would disturb more existing terrain for the actual footprint of the garage, and increase impervious cover because of a longer driveway. The garage is pinched between the side yard setback, a PUE easement, and various tree CRZ's. If the detached garage is moved further up the hill, an extremely unreasonable drop in grade from the garage to the main living level would result in many steps in grade and/or steps to the home, both of which would disrupt the natural terrain.

4. The variance will not be greater than the minimum required to alleviate the difficulty or hardship complained of.

During our two pre-application meetings with Director Bills, we demonstrated extensive site research and design alternatives which would result in greater cut/fill, impervious cover, and even steeper grade changes. The design which we are proposing alters the front yard setback, yes, but namely to properly grade a safe driveway for our clients. The total conditioned space within the new proposed setback is only 2.7% of the total lot area and our proposed impervious cover is less than the current existing conditions of 30%.

5. The variance does not violate the intent of the Zoning Ordinance or goals of the Comprehensive Plan.

Our client's desire for a new home stems from their love of nature and early schematic plans integrate the home into the landscape by setting the home into the hillside, produced the demolition of the existing home.

Project goals for the new home are minimal disturbance of the surrounding context, reduce the overall visibility from the street, lush vegetation, and abundant daylighting. By setting the new home into the hillside, the main living spaces are nearly completely hidden from the street, allowing for a lush front yard landscape.

We also have allotted a roof area over 2,800sf of potential rainwater harvesting to reduce site runoff.

6. The variance will not adversely affect neighboring properties or interfere with the enjoyment of these properties by their owners.

As mentioned above, by setting the new home into the hillside, the main living spaces are nearly completely hidden from the street, allowing for a lush front yard landscape and views to the valley beyond. Our intention is for the new home to be quiet and almost unnoticeable, except for the front door and small main bedroom.

Outdoor Lighting

Outdoor lighting is not proposed with this variance request. Any outdoor lighting will need to comply with the City's Code.

Compliance with Adopted International Building Code

The property and future construction will have to comply with all applicable City codes.

Subdivision

There is no change to the subdivision proposed with this application.

Comprehensive Planning Analysis

The existing and future land use is in conformance with the City of West Lake Hills Master Plan.

Links to Relevant Code:

[Section 22.03.034 Tree and Vegetation Removal and Replacement](#)

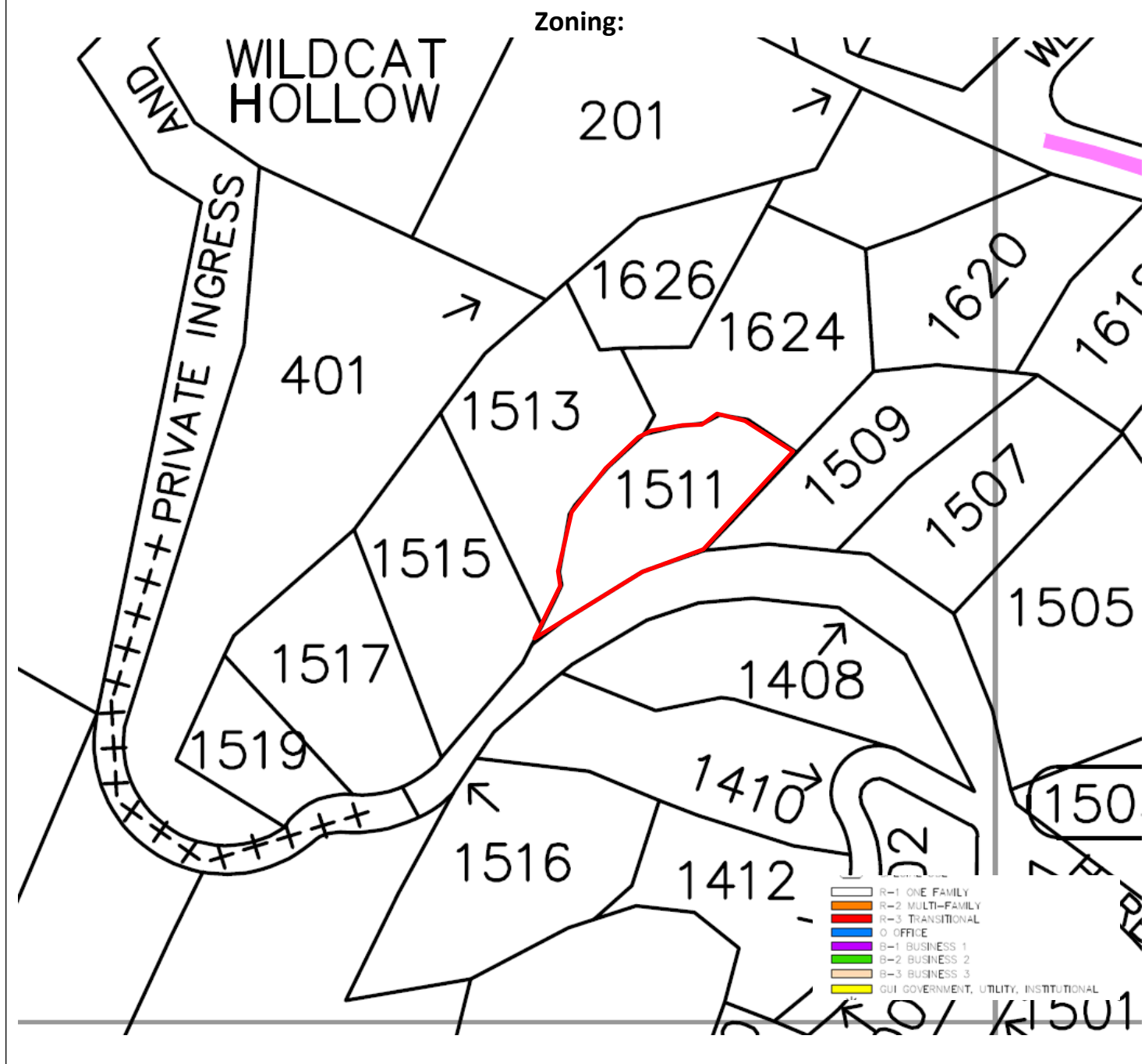
[Section 22.03.170 Site Disturbance \(Excavation, grading or filling\)](#)

[Section 22.03.249 Driveway Parking and Loading Setbacks](#)

Drainage and Erosion Control Manual

Section 38.05.031 Variances

Section 22.03.514 Criteria and process required for granting variance



Aerial:



March 4, 2024

Jennifer C. Bills, AICP, LEED AP
City of West Lake Hills
Director of Building and Development Services
911 Westlake Drive
West Lake Hills, TX 78746

Re: 1511 Wild Cat Hollow Variance Request

Director Bills,

On behalf of our client, it is our pleasure to submit a package for variance requests of the property located at 1511 Wild Cat Hollow.

Michael Hsu Office of Architecture has conducted two (2) pre-planning meetings with Director Bills and her team, to ensure our clients' vision of their future home is in alignment with the values and the spirit of the City of West Lake Hills Zoning Ordinances. During these two (2) pre-planning meetings, we determined the existing site conditions are rather difficult and thus would require three (3) variance requests:

1. Front yard setback adjustment due to encroachment and existing site slope limiting location of proposed new detached garage (proposed setback line varies, see site plan)
2. Impervious cover increase to match existing conditions of 30%, due to existing site slope and location of proposed detached garage with corresponding driveway.
3. Tree removal variance to accommodate proposed home and detached garage (see site plan and tree table for number, size, and species)

The current property holds a single-family residence with detached carport, concrete pool deck, and landscape retaining walls. The original home was built circa 1964, prior to the City of West Lake Hills Zoning Ordinances, and property line setbacks were evidentially not included at the time of construction. A survey conducted in 1993 documented the existing home which indicated front and side yard setbacks following the footprint of the existing home.

Our clients are relocating back to Austin after a decade with their three (3) children. This wonderful and caring family of five are looking forward to returning to West Lake Hills to be closer to family. Their desire for a new home stems from their love of nature and early schematic plans integrate the home into the landscape. Project goals for the home are minimal disturbance of the surrounding context, reduce the overall visibility from the street, lush vegetation, and abundant daylighting.

A feasibility and site study conducted by Michael Hsu Office of Architecture has determined there are six (6) undue hardships which inhibit our client from constructing their new home. Further documentation of such undue hardships is included in the attached drawing set named "Variance Request- 1511 Wild Cat Hollow" and "Appendix A." Such undue hardships indicated within the City of West Lake Hills Zoning Ordinances are as follows:

1. Total site area is less than 1 acre (0.717acres)
2. Overall lot depth is less than 150ft (145ft)
3. Intent to demolish the existing 1964 home, carport and pool deck triggers current COWLH Zoning Ordinance setbacks and initiates a new 50ft front setback line.
4. New COWLH 50ft front setback line results in loss of buildable site area of 27% > 25% maximum.
5. The new COWLH 50ft front setback line produces unreasonable encroachment upon new buildable area by 30ft at its greatest point, accounting for 50% of the overall buildable dimension of 60ft.
6. 69% of the existing lot slope is between 25% to above 35% limiting the area of construction according to the Drainage and Erosion Control Manual

It is our understanding that if the existing 1964 home is demolished, the property must be brought into compliance with the current City of West Lake Hills Zoning Ordinances. This includes the update of all setbacks and following the Drainage and Erosion Control Manual to determine cut and fill maximums.

The new proposed setback line follows the footprint of the existing home and adds only 2.7% of the total lot area of conditioned space, outside of the City of West Lake Hills 50ft front setback line. The remaining impervious cover includes a driveway to the garage, gravel guest parking and landscape paths to the front door.

We also understand an arborist must review any existing trees which are to be affected, and mitigation shall be required based on the City of West Lake Hills Zoning Ordinances prior to building permit submittal.

It is also our understanding a drainage plan will be required upon applying for a building permit, and we plan to engage a Civil Engineer in the near future. Currently we have allotted 2,847sf of roof area for potential rainwater harvesting to decrease site runoff.

As described, this project is in the preliminary stages of design, and we are applying for three (3) variances in order to fully comply with the City of West Lake Hills Zoning Ordinances prior to any further project development.

Thank you for the opportunity to review said variance requests and please do not hesitate to reach out if there are any further questions.



Matt Sener, Associate

Michael Hsu
Office Of Architecture

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Consultant

Variance Request

1511 Wild Cat Hollow
Austin, Texas
78746

Abbreviations			Symbol Legend		Project Data		Project Description	
A.C.T. Acoustical Ceiling Tile Adj. Adjacent / Adjustable A.F.F. Above Finished Floor Allow. Allowance Alt. Alternate Alum. Aluminum Anod. Anodized A.O.R. Area Of Refuge Approx. Approximate Arch. Architect/ Architectural Bd. Board Bldg. Building Blkg. Blocking B.O. Bottom Of Btm. Bottom Btw. Between C.F.M.F. Cold-Formed Metal Framing C.G. Corner Guard C.I.P. Cast-In-Place C.J. Control Joint C.L. Centerline Clg. Ceiling Clo. Closet Clr. Clear / Clearance Conc. Concrete Cont. Continuous Corr. Corridor Cpt. Carpet C.R. Card Reader Demo. Demolish D.F. Drinking Fountain Dia. Diameter Dim. Dimension Disp. Dispenser / Disposer Dn. Down D.S. Downspout Dtl. Detail Dw. Dishwasher (E) Existing Ea. Each E.J. Expansion Joint Elev. Elevator Encl. Enclose / Enclosure Eq. Equal Equip. Equipment Exist. Existing Ext. Exterior C.O. Cleanout F.D. Floor Drain F.E. Fire Extinguisher F.E.C. Fire Extinguisher Cabinet Fin. Finish / Finished F.O. Face Of F.R.P. Fiberglass Reinforced Plastic F.R.T. Fire Retardant Treated F.S. Floor Sink F.W.P. Fabric Wrapped Panels Ga. Gauge Galv. Galvanized G.F.I. Ground Fault Interrupter Gyp.Bd. Gypsum Board H.B. Hose Bibb H.C. Hollow Core Hdw. Hardware H.M. Hollow Metal Horiz. Horizontal Ht. Height Jt. Joint Lt. Light L.V.T. Luxury Vinyl Tile M.C.M. Metal Composite Material M.D.F. Main Distribution Frame Mezz. Mezzanine Mfr. Manufacture(R) Min. Minimum Mir. Mirror M.R.T. Moisture Resistant Treated Mtd. Mounted Mtl. Metal Mw. Microwave N.I.C. Not In Contract N.T.S. Not To Scale N.I.S. Not In Scope O.C. On Center O.H. Opposite Hand Opg. Opening Opp. Opposite O.S.B. Oriented Strand Board P.B. Particle Board Perf. Perforate(D) P.L. Property Line P.Lam. Plastic Laminate Plm. Plastic Laminate Plywd. Plywood Pnl. Panel Pnt. Paint(Ed) Polyiso. Polyisocyanurate R.C.P. Reflected Ceiling Plan R.D. Roof Drain Ref. Reference Req. Required R.O. Rough Opening S.C. Solid Core Sched. Schedule(D) Sim. Similar Spec. Specification(S) S.Stl. Stainless Steel S.T.C. Sound Transmission Class Std. Standard Stl. Steel Stor. Storage Struc. Structure/ Structural Susp. Suspended Sym. Symmetrical T.B.D. To Be Determined T&G Tongue And Groove Thk. Thick(Ness) T.O. Top Of Trans. Transparent Typ. Typical U.N.O. Unless Noted Otherwise Var. Varies V.I.F. Verily In Field W/ With Wd. Wood Wdw. Window W/O Without			Window Tag Keynote Door Tag Partition Tag Level Spot Material Tag North / True North Align Elements Room Tag Building Elevation Detail Callout Building Section Interior Elevation Detail Section Enlarged Elevation		Site Data Address: <input> Zoning: <input> Floodplain: <input> Building Use and Areas Area of Work: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx Applicable Codes 20XX International Building Code* 20XX International Energy Conservation Code* 20XX International Residential Code* 20XX International Fire Code* 20XX International Plumbing Code* 20XX International Mechanical Code* 20XX National Electrical Code* *And all applicable City of XXXXXXXXX Amendments	
Vicinity Map			Key Plan		Project Team			
					Architect Michael Hsu Office of Architecture 826 Houston St Suite 100 Austin, TX 78756 www.hsuoffice.com 512.706.4303 Contact: Jay Colombo & Matt Sener Email: colombo@hsuoffice.com sener@hsuoffice.com Owner Firm Name Address 1 Address 2 url phone Contact: Email: Structural Firm Name Address 1 Address 2 url phone Contact: Email: MEP Engineer Firm Name Address 1 Address 2 url phone Contact: Email: Civil Firm Name Address 1 Address 2 url phone Contact: Email: Landscape Firm Name Address 1 Address 2 url phone Contact: Email:			

Project Title

1511 Wild Cat Hollow

1511 Wild Cat Hollow
Austin, Texas
78746

△ Date Issue/ Revision

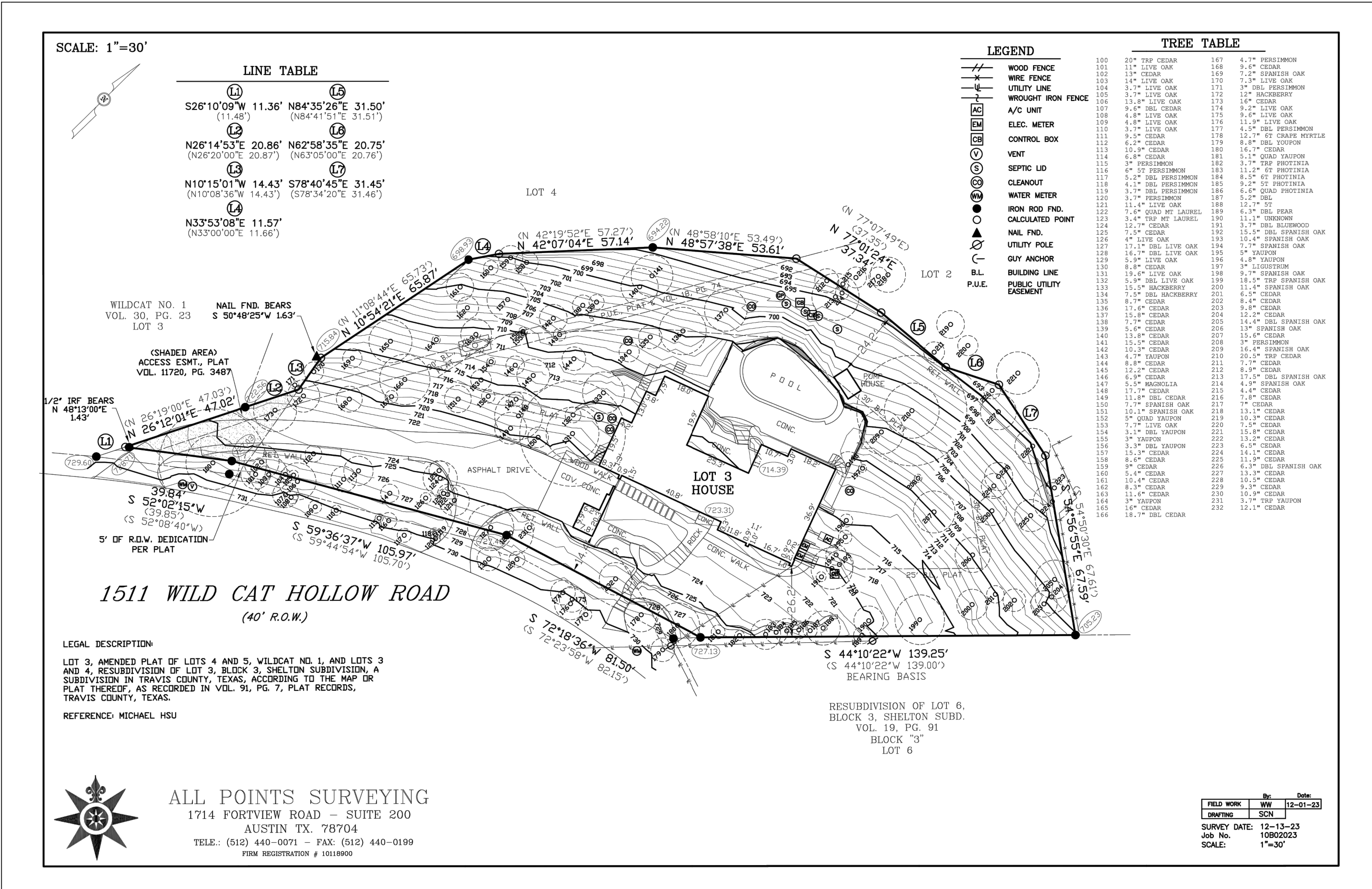
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Cover Sheet/ General
Information

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2023 Survey
Scale: See Graphic Scale



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Austin, Texas
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Date Issue/ Revision

Drawing Title

Existing Survey

Sheet

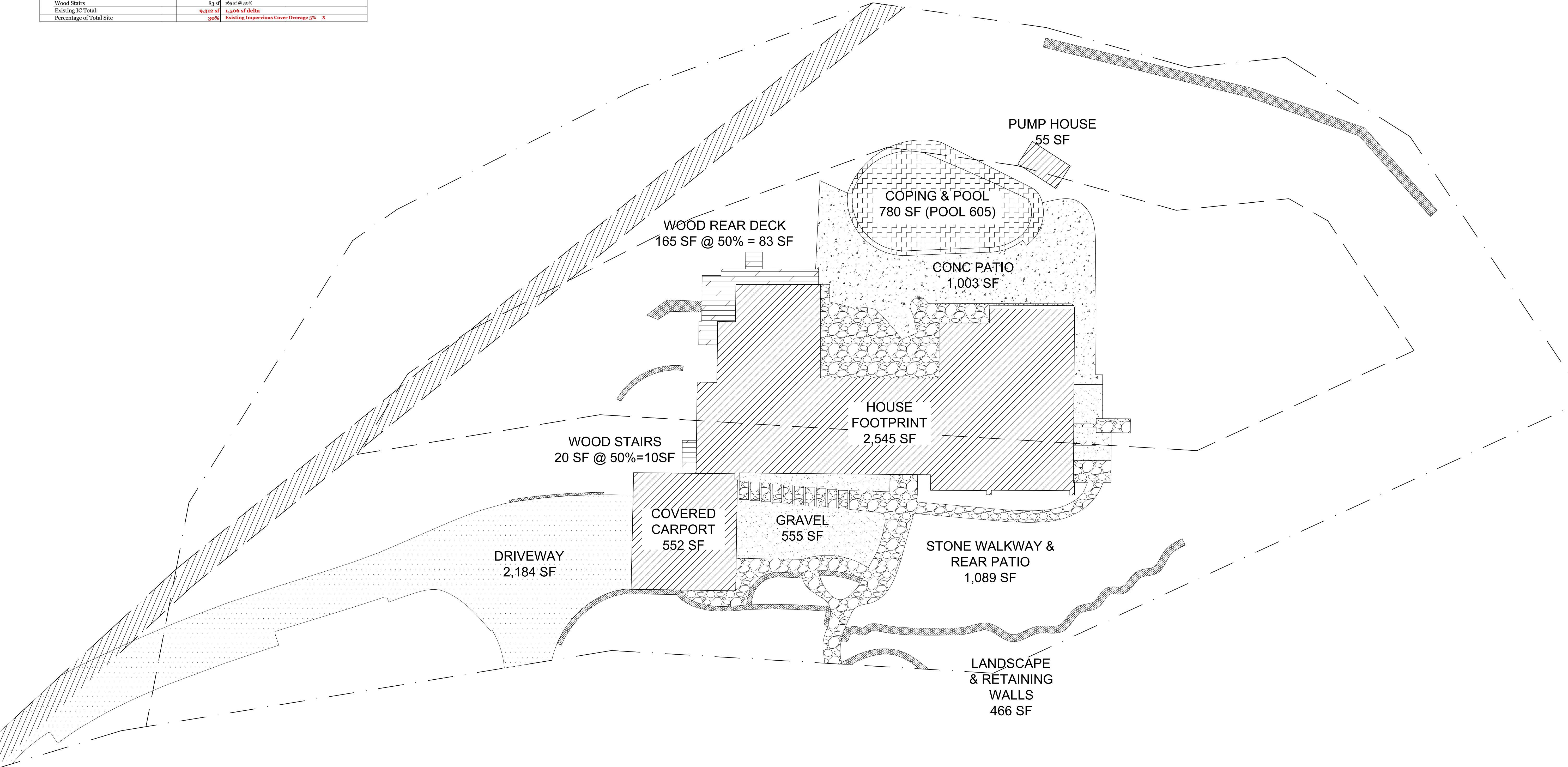
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1993 Survey
Scale: See Graphic Scale

1511 Wildcat Hollow- Site Area Study			3/4/2024
Existing Site Area			
Lot 3 ⁽¹⁾	31,223 sf		0.717 Acres
Allowable Building Area	30% Lot Area	9,367 sf Allowable	
Existing Lot Depth ⁽²⁾	145 ft		COWLH minimum is 150ft
Existing Building Area	11,645 sf		Front setback does not conform to current COWLH setbacks
Conforming Building Area ⁽³⁾	9,293 sf		New COWLH setback conforming Buildable Area
Loss of Lot Area	2,323 sf		
Loss of Buildable Area Due to Easements	191 sf		
Total Loss of Lot Area ⁽⁴⁾	2,514 sf	27% >25% Loss of Lot Area Hardship	
Existing Setbacks			
Setbacks			
Front ⁽⁵⁾	50 ft		If demo existing home, current COWLH setbacks would apply
Side	25 ft		
Rear	30 ft		
Existing Impervious Cover	25% Lot Area	7,806 sf Allowable	
Home Footprint	2,545 sf		
Carport	552 sf		
Pump House	55 sf		
Driveway	2,184 sf		
Concrete Patio	1,003 sf		
Stone Walkways & Patio	1,089 sf		
Stone Landscape & Retaining Walls	466 sf		
Gravel	555 sf		*Counts in COWLH
Pool & Coping	780 sf		*Counts in COWLH
Wood Stairs	83 sf		165 sf @ 50%
Existing IC Total:	9,312 sf	1,506 sf delta	
Percentage of Total Site	30%	Existing Impervious Cover Coverage 5% X	

Undue Hardship Items		
1. Lot Area Under 1 acre	0.717 Acres	COWHL Zoning Ordinance 22.03.281
2. Min Lot Depth	150 ft	COWHL Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)
3. Full Demo of Existing Home		COWHL Zoning Ordinance 22.03.273, 2023 survey
4. Loss of Site Area of at least 25%	27%	COWHL Zoning Ordinance 38.02.007(b.2)
5. Unreasonable Enchrachment	30 ft	COWHL Zoning Ordinance 38.02.007(b.4)
6. Buildable Area Slope	See Diagrams	COWLH Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits



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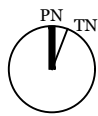
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Drawing Title

Existing
Impervious Cover

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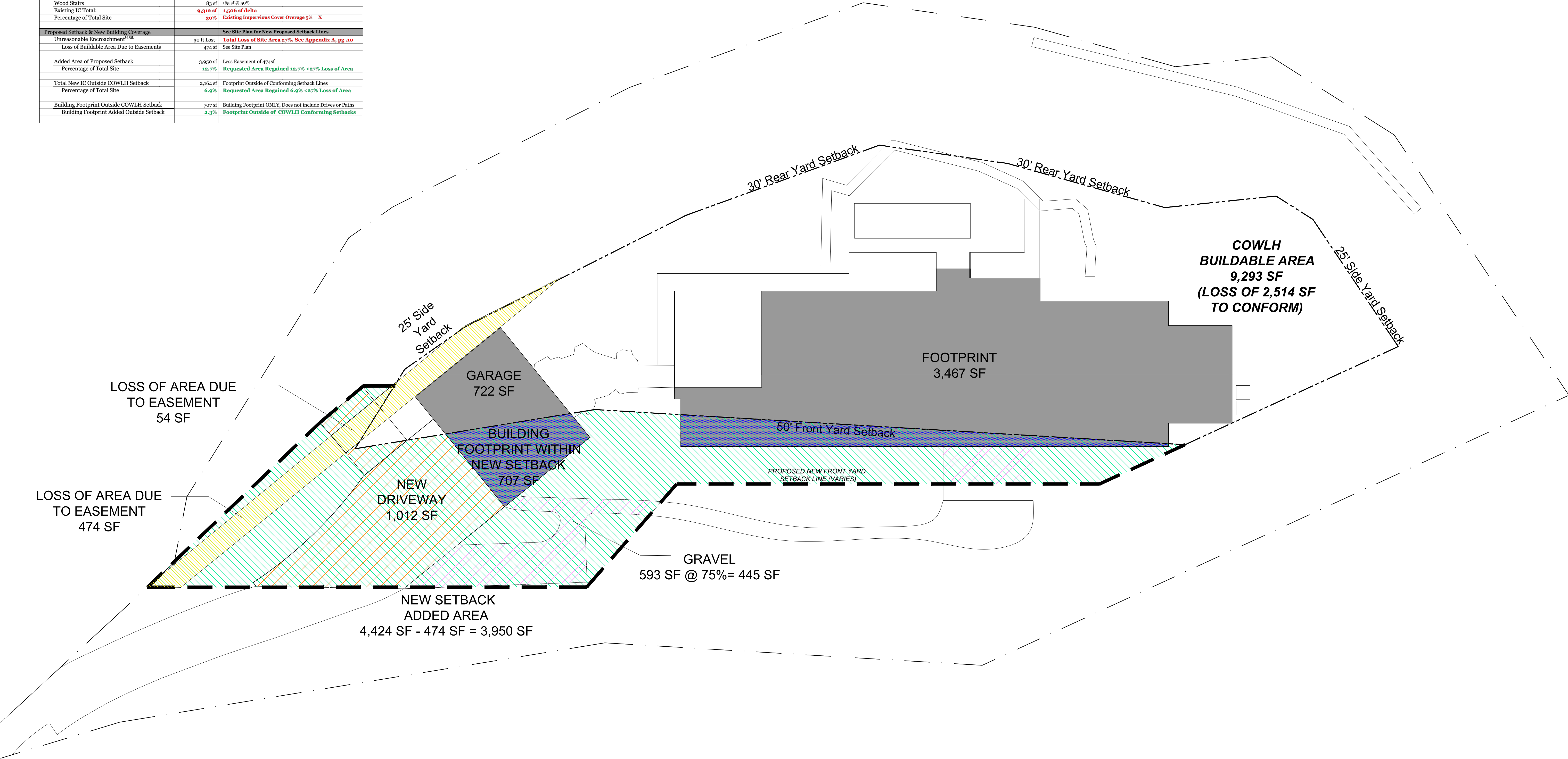


1 Existing Impervious Cover
Scale: 3/32" = 1'-0"

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1511 Wildcat Hollow- Site Area Study			3/4/2024
Existing Site Area			Remarks
Lot 3 ⁽¹⁾	31,223 sf	0.717 Acres	
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Existing Building Area	11,645 sf	Front setback does not conform to current COWLH setbacks	
Conforming Building Area ⁽³⁾	9,293 sf	New COWLH setback conforming Buildable Area	
Loss of Lot Area	2,323 sf		
Loss of Buildable Area Due to Easements	191 sf		
Total Loss of Lot Area ⁽⁴⁾	2,514 sf	27% >25% Loss of Lot Area Hardship	
Existing Setbacks			
Setbacks			
Front ⁽⁵⁾	50 ft	If demo existing home, current COWLH setbacks would apply	
Side	25 ft		
Rear	30 ft		
Existing Impervious Cover	25% Lot Area	7,806 sf Allowable	
Home Footprint	2,545 sf		
Carport	552 sf		
Pump House	55 sf		
Driveway	2,184 sf		
Concrete Patio	1,003 sf		
Stone Walkways & Patio	1,089 sf		
Stone Landscape & Retaining Walls	466 sf		
Gravel	555 sf	*Counts in COWLH	
Pool & Coping	780 sf	*Counts in COWLH	
Wood Stairs	83 sf	165 sf @ 50%	
Existing IC Total:	9,312 sf	1,506 sf delta	
Percentage of Total Site	30%	Existing Impervious Cover Overage 5% X	
Proposed Setback & New Building Coverage		See Site Plan for New Proposed Setback Lines	
Unreasonable Encroachment ⁽⁴⁾⁽⁵⁾	30 ft Lost	Total Loss of Site Area 27%. See Appendix A, pg. 10	
Loss of Buildable Area Due to Easements	474 sf	See Site Plan	
Added Area of Proposed Setback	3,950 sf	Less Easement of 474sf	
Percentage of Total Site	12.7%	Requested Area Regained 12.7% <27% Loss of Area	
Total New IC Outside COWLH Setback	2,164 sf	Footprint Outside of Conforming Setback Lines	
Percentage of Total Site	6.9%	Requested Area Regained 6.9% <27% Loss of Area	
Building Footprint Outside COWLH Setback	707 sf	Building Footprint ONLY, Does not include Drives or Paths	
Building Footprint Added Outside Setback	2.3%	Footprint Outside of COWLH Conforming Setbacks	

Undue Hardship Items		
1. Lot Area Under 1 acre	0.717 Acres	COWLH Zoning Ordinance 22.03.281
2. Min Lot Depth	150 ft	COWLH Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)
3. Full Demo of Existing Home		COWLH Zoning Ordinance 22.03.272, 2023 survey
4. Loss of Site Area of at least 25%	27%	COWLH Zoning Ordinance 38.02.007(b.2)
5. Unreasonable Encroachment	30 ft	COWLH Zoning Ordinance 38.02.007(b.4)
6. Buildable Area Slope	See Diagrams	COWLH Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion



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Drawing Title

Proposed
Setback

Sheet

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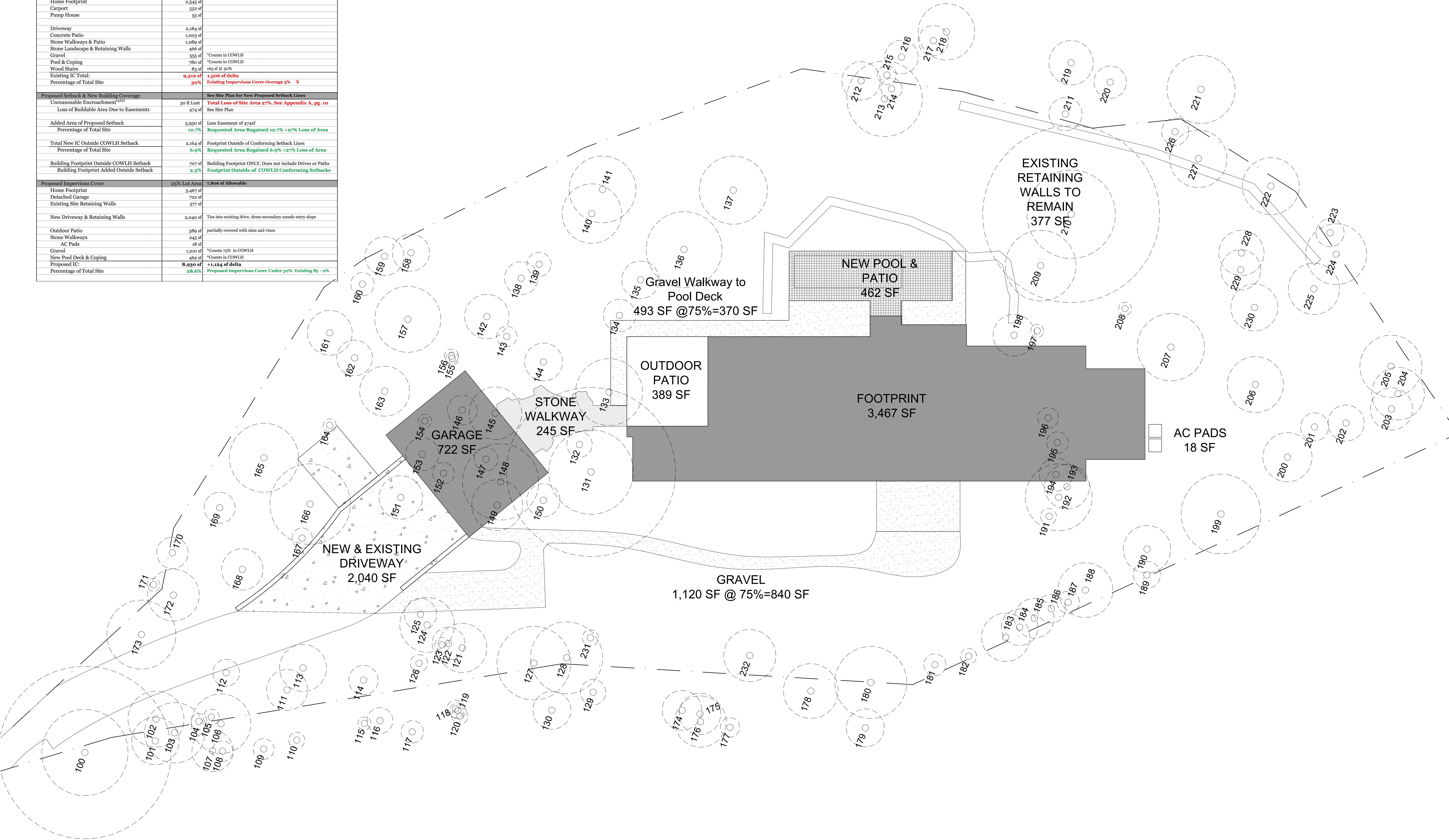
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1 Proposed Site Plan
Scale: 3/32" = 1'-0"

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Setbacks			
Front ⁽⁵⁾	50 ft	If demo existing home, current COWLH setbacks would apply	
Side	25 ft		
Rear	30 ft		
Existing Impervious Cover	25% Lot Area	7,806 sf of Allowable	
Home Footprint	2,545 sf		
Carport	552 sf		
Pump House	55 sf		
Driveway	2,184 sf		
Concrete Patio	1,003 sf		
Stone Walkways & Patio	1,089 sf		
Stone Landscape & Retaining Walls	466 sf		
Gravel	555 sf	*Counts in COWLH	
Pool & Coping	780 sf	*Counts in COWLH	
Wood Stairs	83 sf	165 sf @ 50%	
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Percentage of Total Site	30%	Existing Impervious Cover Overage 5% X	
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Building Footprint Added Outside Setback	2.3%	Footprint Outside of COWLH Conforming Setbacks	
Proposed Impervious Cover	25% Lot Area	7,806 sf of Allowable	
Home Footprint	3,467 sf		
Detached Garage	722 sf		
Existing Site Retaining Walls	377 sf		
New Driveway & Retaining Walls	2,040 sf	Ties into existing drive, demo secondary unsafe entry slope	
Outdoor Patio	389 sf	partially covered with slats and vines	
Stone Walkways	245 sf		
AC Pads	18 sf		
Gravel	1,210 sf	*Counts 75% in COWLH	
New Pool Deck & Coping	462 sf	*Counts in COWLH	
Proposed IC:	8,930 sf	+1,124 sf delta	
Percentage of Total Site	26.6%	Proposed Impervious Cover Under 30% Existing By -2%	

Undue Hardship Items		
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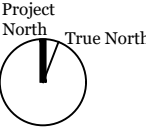
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Proposed
Impervious Cover

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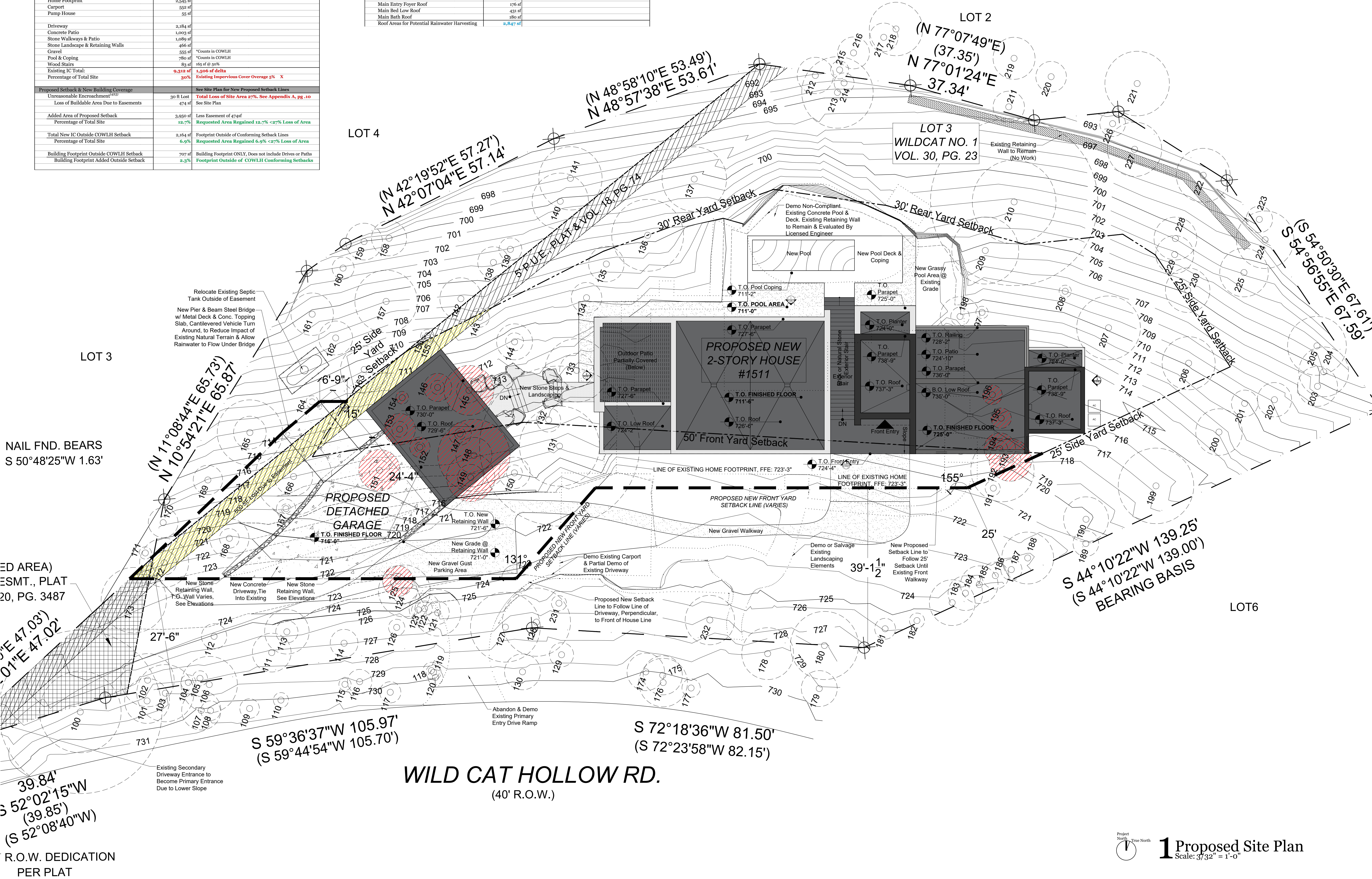


1 Proposed Site Plan
Scale: 3/32" = 1'-0"

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Percentage of Total Site	6.9%	Requested Area Regained 6.9% <27% Loss of Area	
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Building Footprint Added Outside Setback	2.3%	Footprint Outside of COWHL Conforming Setbacks	

Proposed Impervious Cover	25% Lot Area	7,806 sf Allowable
Home Footprint	3,467 sf	
Detached Garage	722 sf	
Existing Site Retaining Walls	377 sf	
New Driveway & Retaining Walls	2,040 sf	Ties into existing drive, demo secondary unsafe entry slope
Outdoor Patio	389 sf	partially covered with slats and vines
Stone Walkways	245 sf	
AC Pads	18 sf	
Gravel	1,210 sf	*Counts 75% in COWHL
New Pool Deck & Coping	462 sf	*Counts in COWHL
Proposed IC:	8,930 sf	+1,124 sf delta
Percentage of Total Site	28.6%	Proposed Impervious Cover Under 30% Existing By -2%
Potential Rainwater Harvesting		
Garage Roof	617 sf	
Living Room & Mud Room Roof	1,318 sf	
Planters	125 sf	
Main Entry Foyer Roof	176 sf	
Main Bed Low Roof	431 sf	
Main Bath Roof	180 sf	
Roof Areas for Potential Rainwater Harvesting	2,847 sf	

Undue Hardship Items		
1. Lot Area Under 1 acre	0.717 Acres	COWHL Zoning Ordinance 22.03.01b
2. Min Lot Depth	150 ft	COWHL Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)
3. Full Demo of Existing Home		COWHL Zoning Ordinance 22.03.273, 2023 survey
4. Loss of Site Area of at least 25%	27%	COWHL Zoning Ordinance 38.02.007(b.2)
5. Unreasonable Encroachment	30 ft	COWHL Zoning Ordinance 38.02.007(b.4)
6. Buildable Area Slope	See Diagrams	COWHL Zoning Ordinance 38.02.207(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits



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Project Title

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Drawing Title

Proposed
Site Plan

Sheet

A.001.3

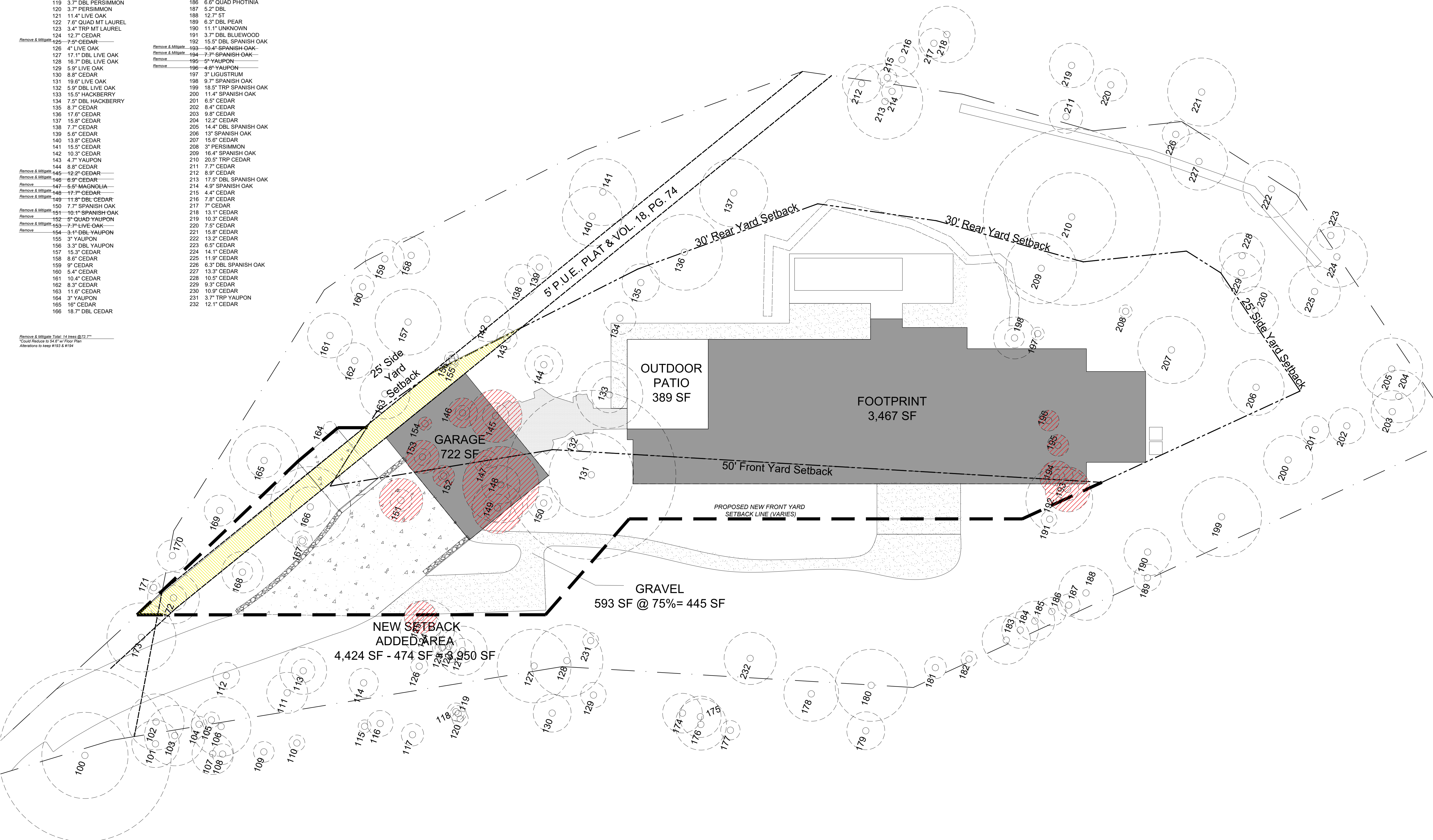
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Project North True North



1 Proposed Site Plan
Scale: 3/32" = 1'-0"

Remove & Mitigate Total: 14 trees @72.7**
 *Could Reduce to 54.6 w/ Floor Plan
 Alterations to keep #193 & #194



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Drawing Title

Proposed Tree Impacts

Sheet

A.001.4

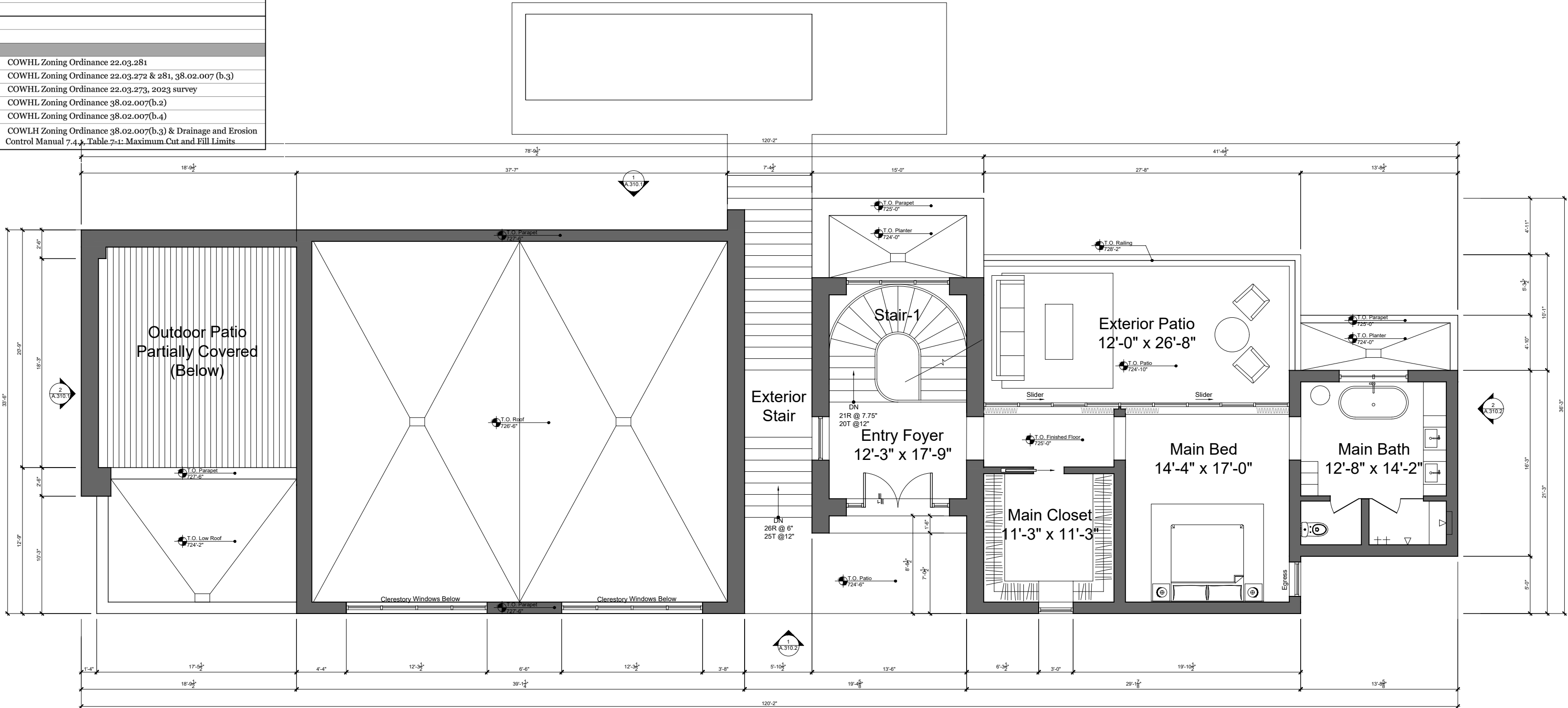
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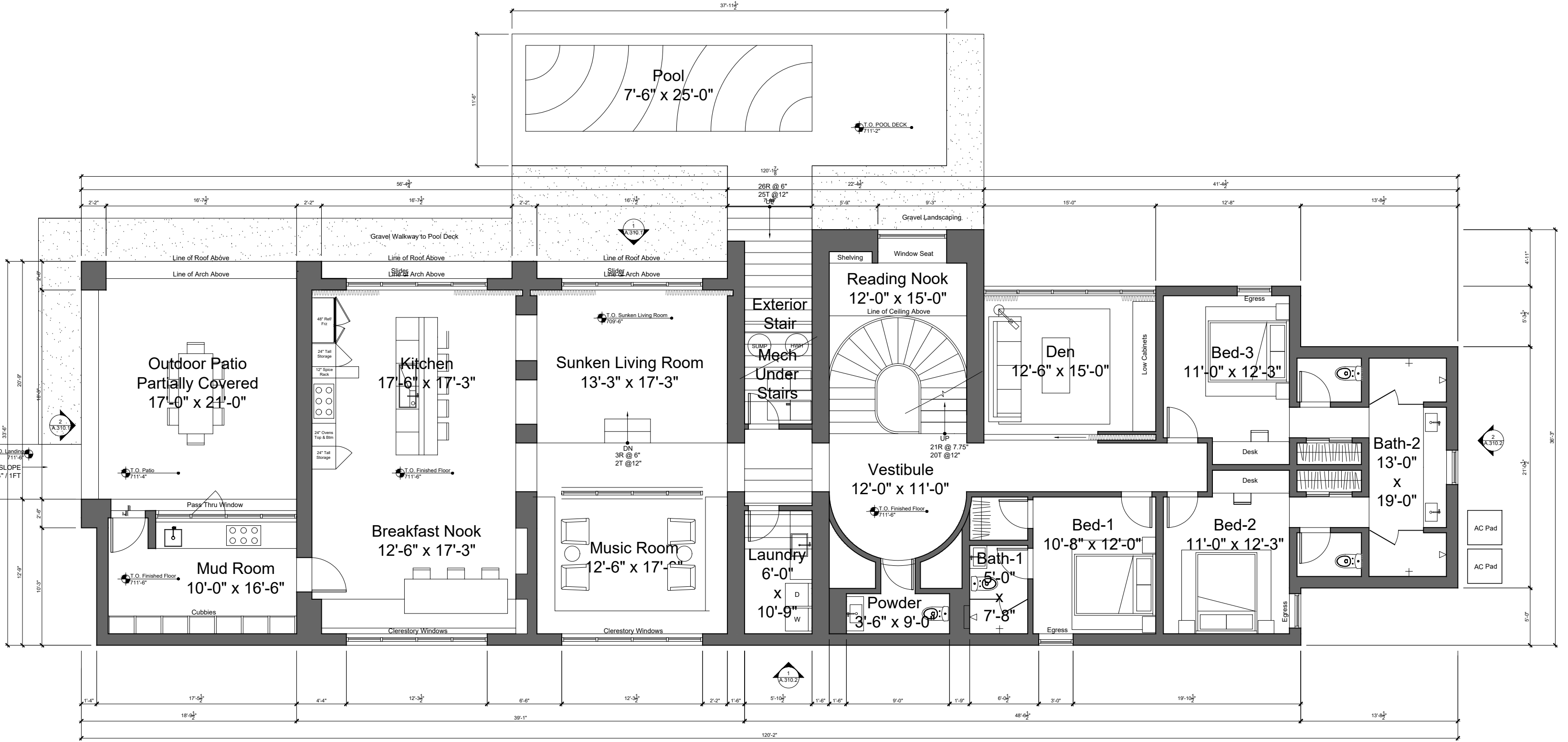
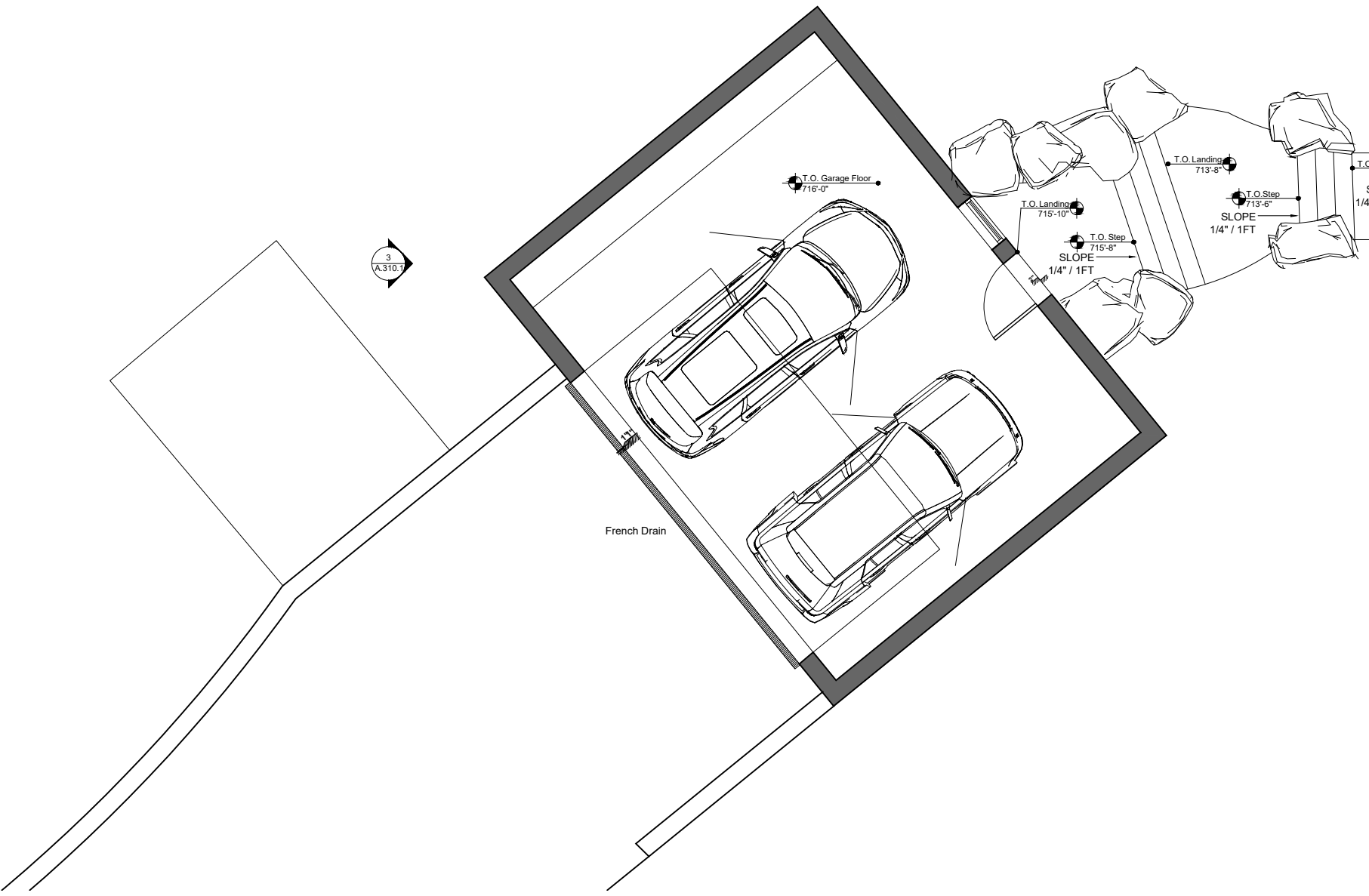
1 Proposed Site Plan

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Loss of Lot Area	2,923 sf		
Loss of Buildable Area Due to Easements	191 sf		
Total Loss of Lot Area ⁽⁴⁾	2,514 sf	27% >25% Loss of Lot Area Hardship	
Existing Setbacks			
Setbacks			
Front ⁽⁵⁾	50 ft	If demo existing home, current COWLH setbacks would apply	
Side	25 ft		
Rear	30 ft		
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Home Footprint	2,545 sf		
Carport	552 sf		
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Driveway	2,184 sf		
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Stone Walkways & Patio	1,089 sf		
Stone Landscape & Retaining Walls	466 sf		
Gravel	555 sf	*Counts in COWLH	
Pool & Coping	780 sf	*Counts in COWLH	
Wood Stairs	83 sf	165 sf @ 50%	
Existing IC Total:	9,312 sf	1,506 sf delta	
Percentage of Total Site	30%	Existing Impervious Cover Overage 5% X	
Proposed Setback & New Building Coverage		See Site Plan for New Proposed Setback Lines	
Unreasonable Encroachment ⁽⁴⁾⁽⁵⁾	30 ft Lost	Total Loss of Site Area 27%. See Appendix A, pg. 10	
Loss of Buildable Area Due to Easements	474 sf	See Site Plan	
Added Area of Proposed Setback	3,950 sf	Less Easement of 474sf	
Percentage of Total Site	12.7%	Requested Area Regained 12.7% <27% Loss of Area	
Total New IC Outside COWLH Setback	2,164 sf	Footprint Outside of Conforming Setback Lines	
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6. Buildable Area Slope	See Diagrams	COWLH Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4, Table 2-1: Maximum Cut and Fill Limits



2 Upper Level Floor Plan
Scale: 1/8" = 1'-0"



1 Lower Level Floor Plan
Scale: 1/8" = 1'-0"



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Floor Plans

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6. Buildable Area Slope	See Diagrams	COWLH Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits



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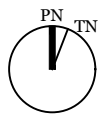
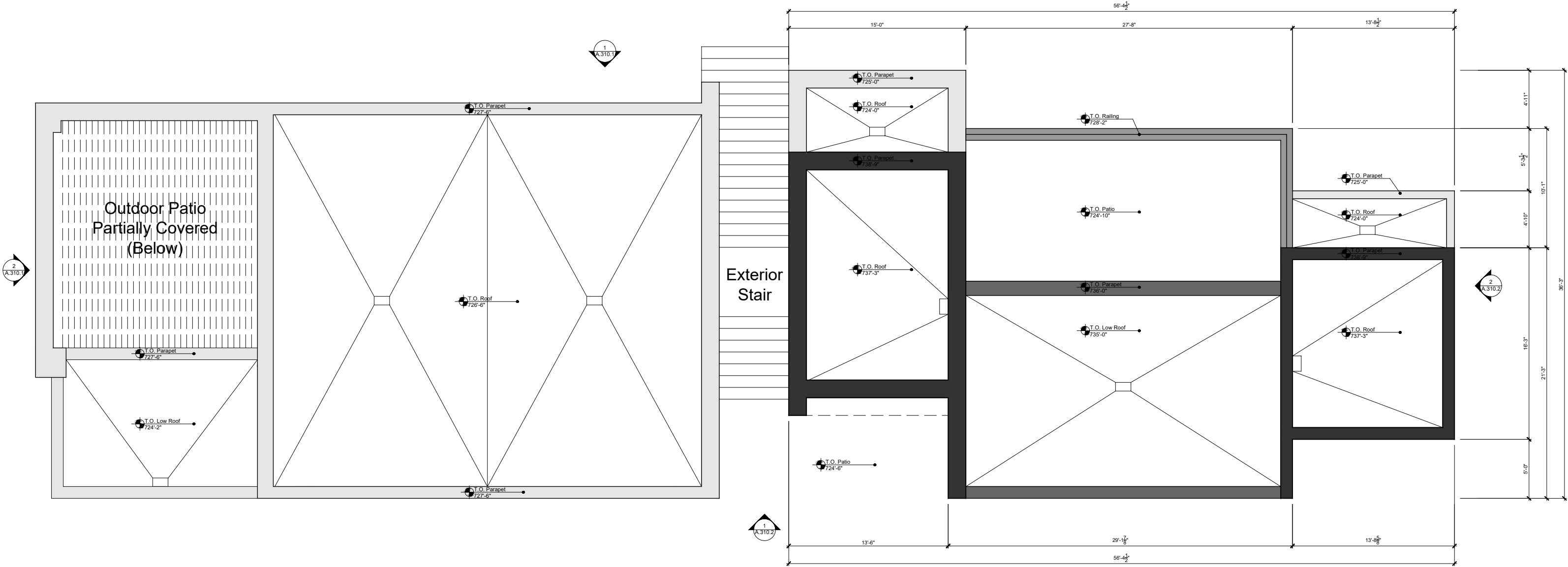
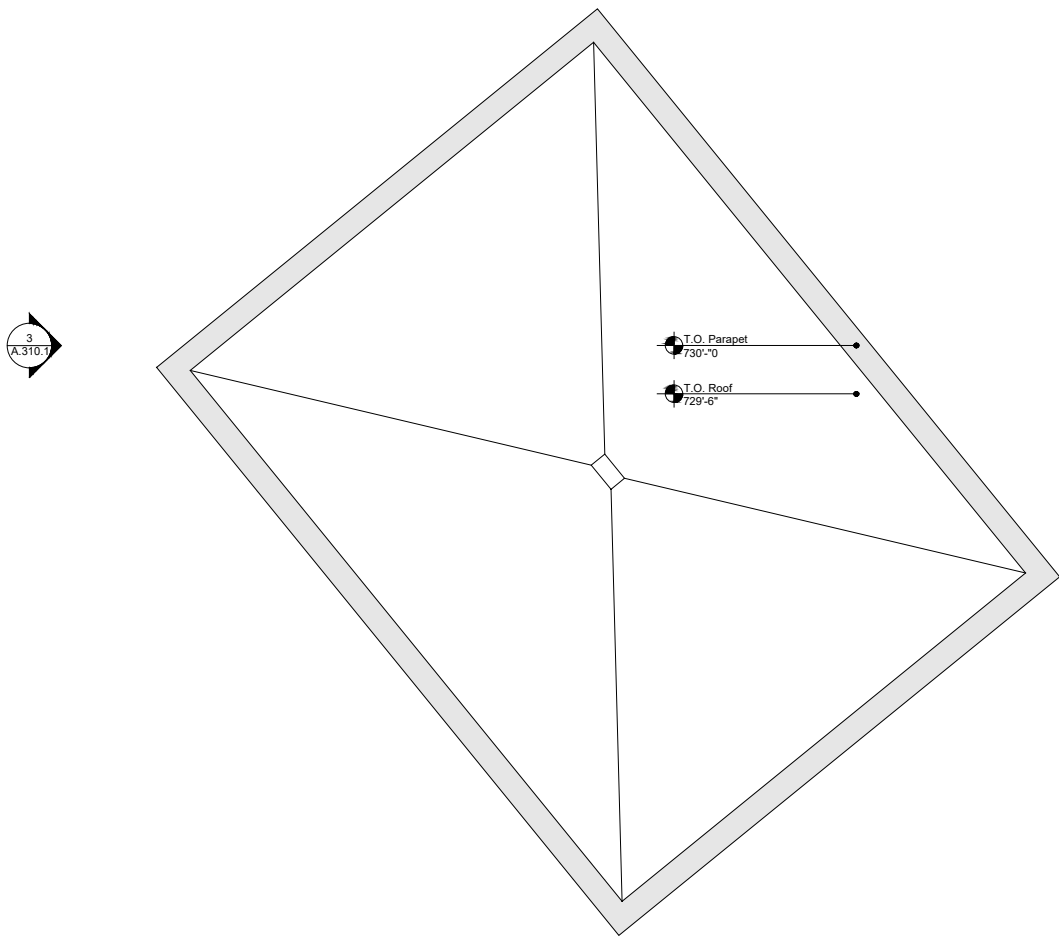
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Roof Plan

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1 Roof Plan
Scale: 1/8" = 1'-0"



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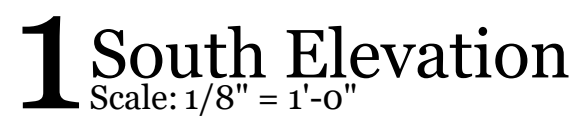
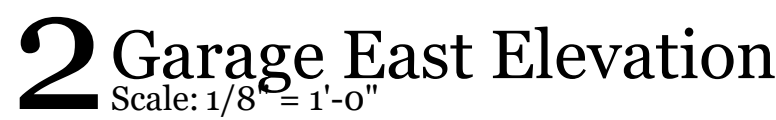
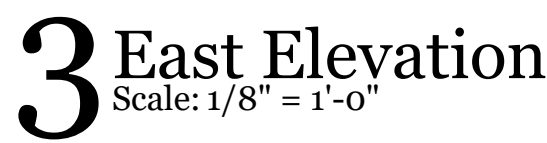
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Exterior Elevations

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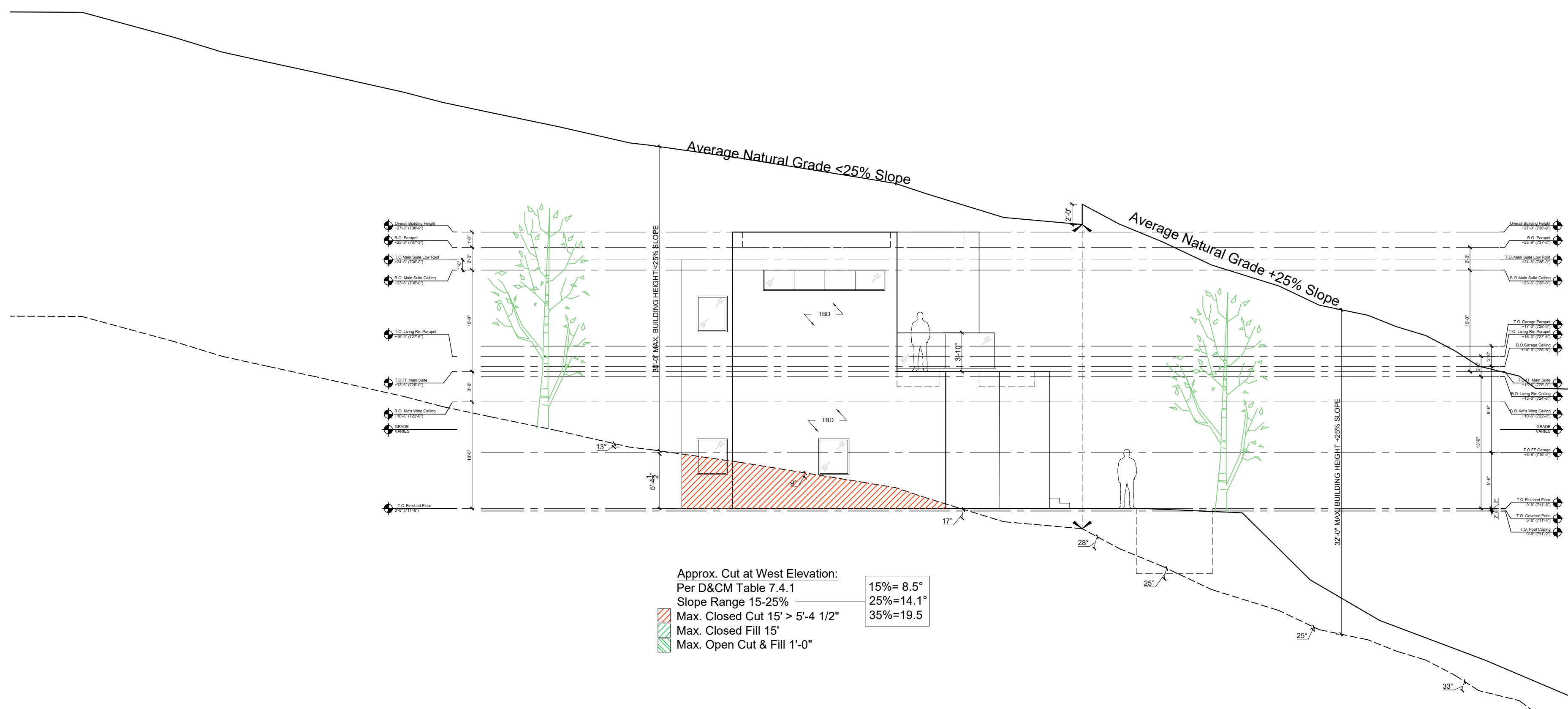
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Exterior Elevations

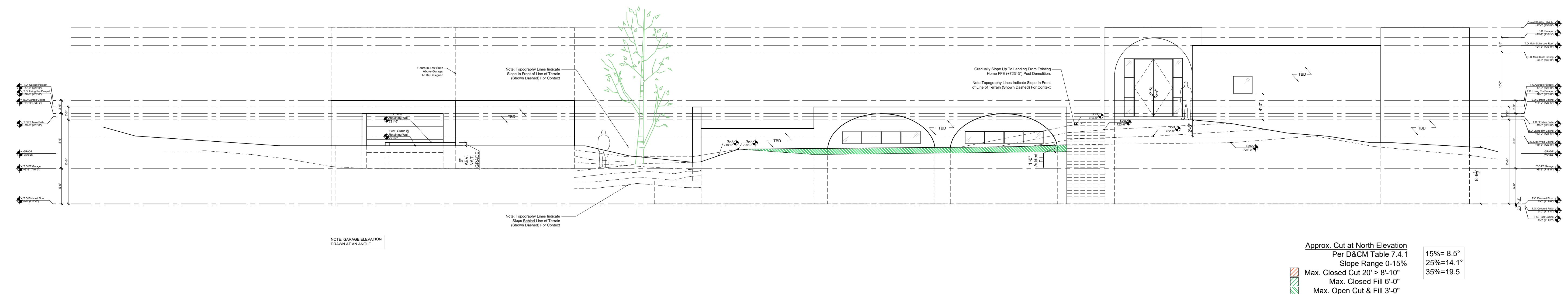
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2 West Elevation

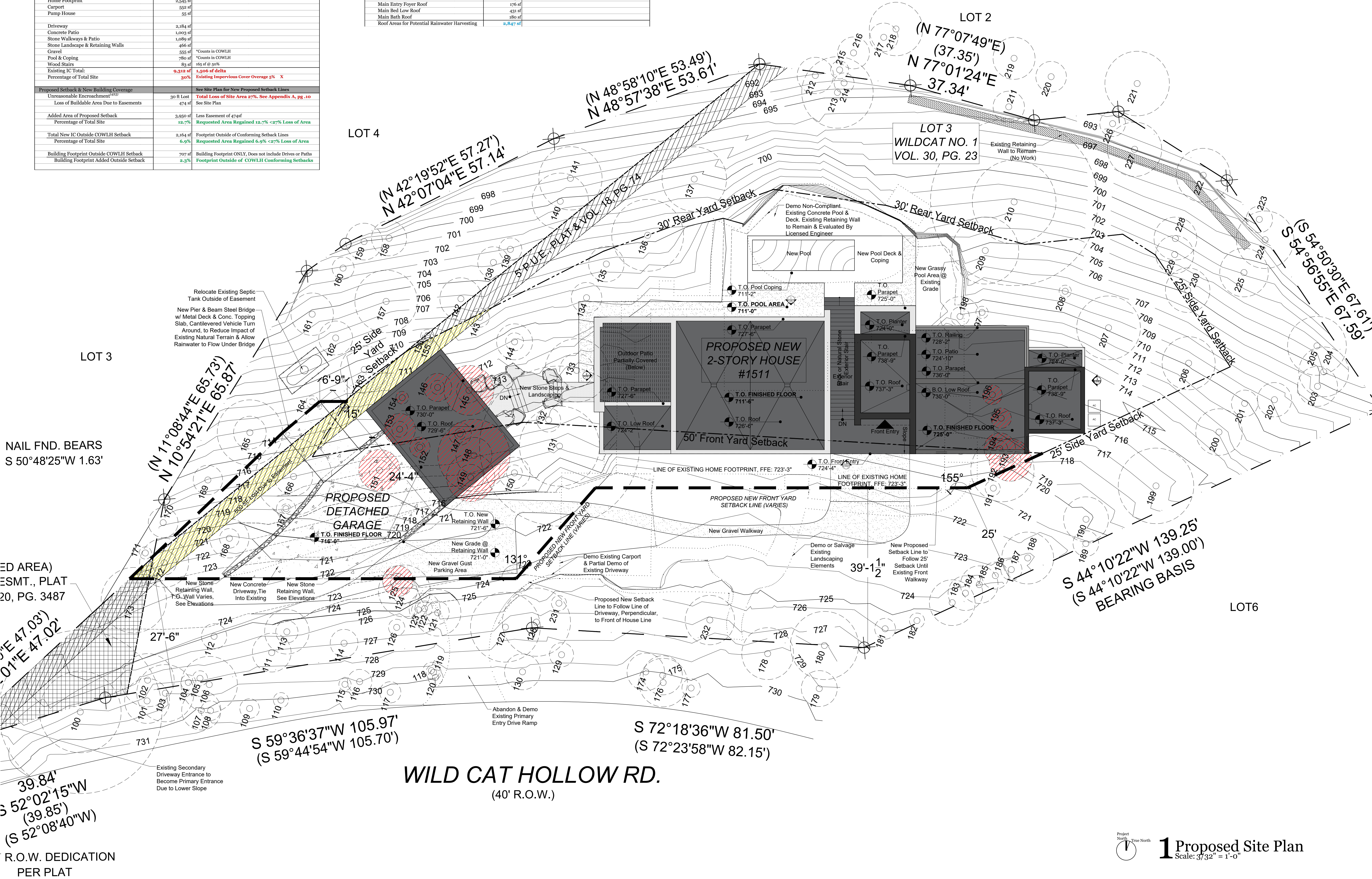


1 North Elevation

1511 Wildcat Hollow- Site Area Study			3/4/2024
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Allowable Building Area	30% Lot Area	9,367 sf Allowable	
Existing Lot Depth ⁽²⁾	145 ft	COWLH minimum is 150ft	
Existing Building Area	11,645 sf	Front setback does not conform to current COWLH setbacks	
Conforming Building Area ⁽³⁾	9,293 sf	New COWLH setback conforming Buildable Area	
Loss of Lot Area	2,323 sf		
Loss of Buildable Area Due to Easements	191 sf		
Total Loss of Lot Area ⁽⁴⁾	2,514 sf	27% >25% Loss of Lot Area Hardship	
Existing Setbacks			
Setbacks			
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Date Issue/ Revision

Drawing Title

Proposed
Site Plan

Sheet

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Project
North True North



1 Proposed Site Plan
Scale: 3/32" = 1'-0"



1511 WILDCAT HOLLOW
VARIANCE REQUEST- APPENDIX A

04 March 2024

Michael Hsu
Office Of Architecture





Existing Site



Existing Conditions



Existing Conditions



Site Context



Home Across the Street Appears Extremely Tall with Large Grade Cuts & Retainage

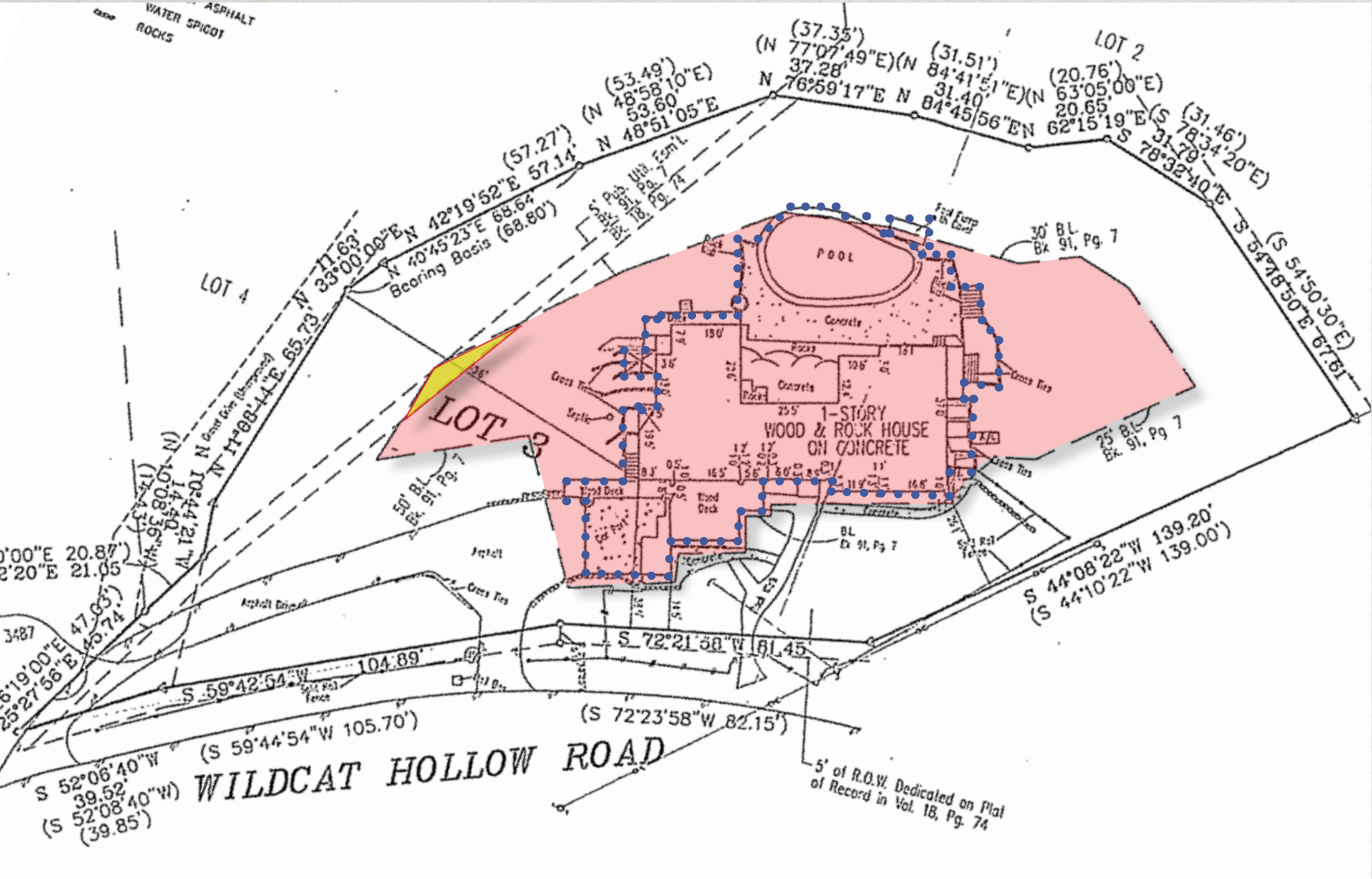
Project Inspiration Images



Project Inspiration Images



Existing Site- 1993 Survey

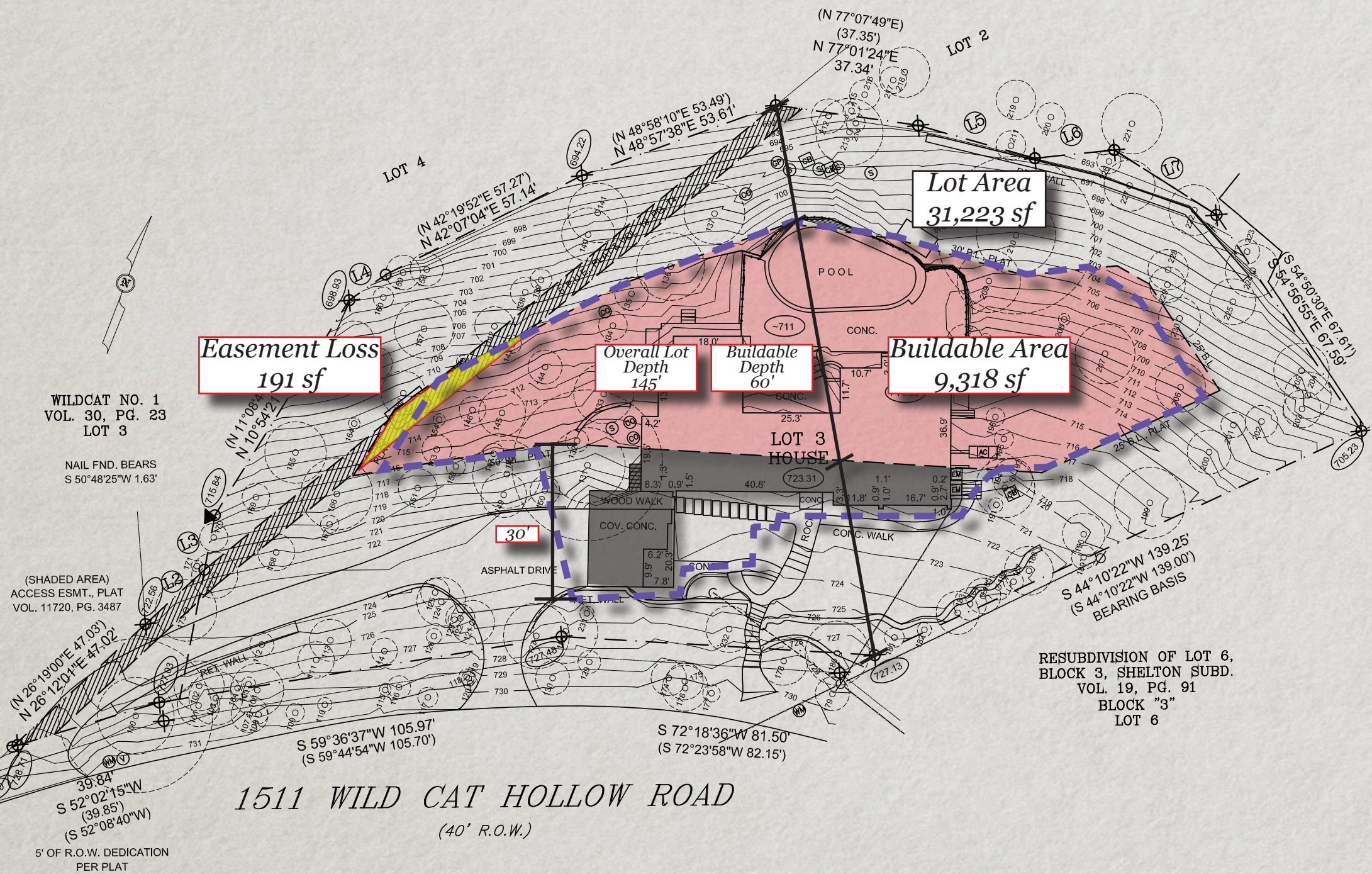


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Existing Building Area	11,645 sf	Front setback does not conform to current COWLH setbacks	

- Existing Lot 0.7 acre < COWLH min 1 acre
- Existing Buildable Area 11,645 sf
- Lot depth 145ft < COWLH min 150ft
- Intent to demolish existing home, patio & carport triggers current COWLH Zoning setbacks

Undue Hardship Items		
1. Lot Area Under 1 acre	0.717 Acres	COWHL Zoning Ordinance 22.03.281
2. Min Lot Depth	150 ft	COWHL Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)

Existing Site- 2023 Topography, Tree and Lot Survey

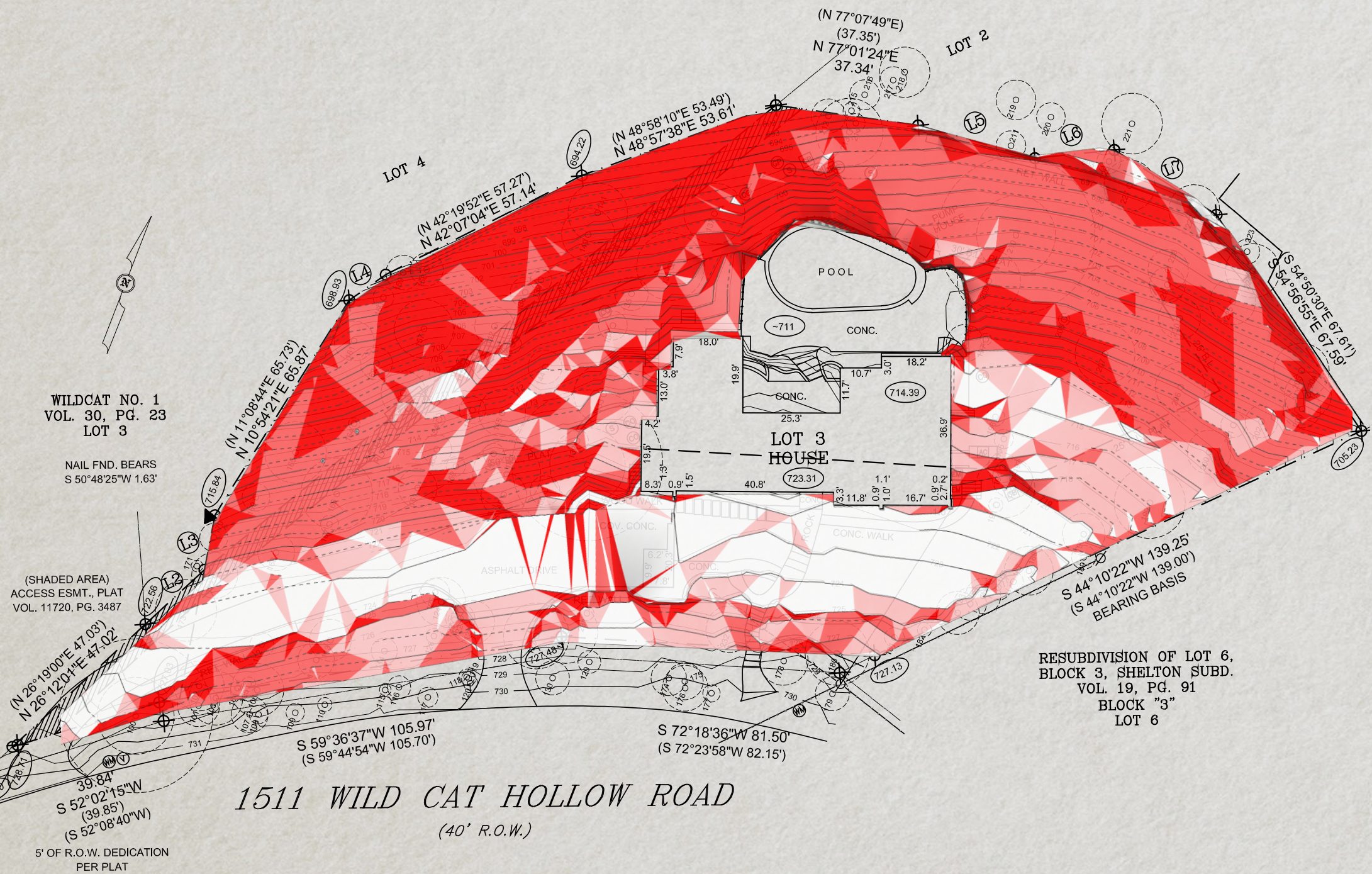


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Existing Setbacks			
Setbacks			
Front ⁽³⁾	50 ft	If demo existing home, current COWLH setbacks would apply	
Side	25 ft		
Rear	30 ft		

- 2023 survey indicates current COWLH setbacks
- Resulting in 27% loss of Buildable Area (2,521 sf) > COWLH min 25%, including loss due to Easement (191 sf)
- Unreasonable encroachment from 1993 front setback of 30ft

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Site Slope



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Existing Setbacks			
Setbacks			
Front ⁽³⁾	50 ft	If demo existing home, current COWLH setbacks would apply	
Side	25 ft		
Rear	30 ft		

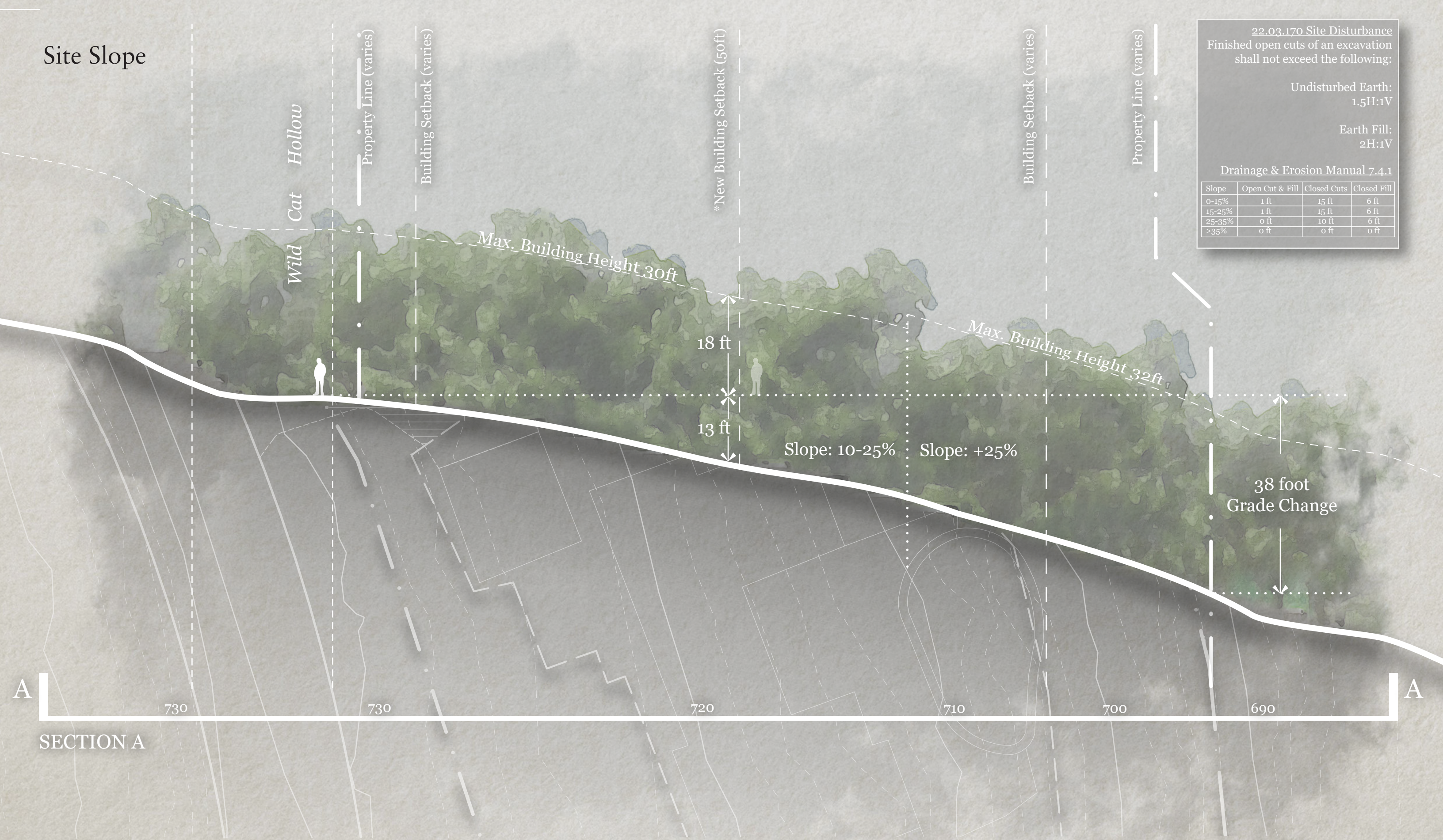
- +35% Slope 12,678 sf (40% of lot)
- 25-35% Slope 9,109 sf (29% of lot)
- 15-25% Slope 4,384 sf (14% of lot)
- 0-15% Slope 5,561 sf (17% of lot)
- House & Pool Deck 4,532 sf

Table 7-1: Maximum Cut and Fill Limits

Slope	Open Cuts and Fills	Closed Cuts	Closed Fill
0 - 15%	3 feet	20 feet	6 feet
15 - 25%	1 foot	15 feet	6 feet
25% - 35%	0 feet	10 feet	6 feet
> 35%	0 feet	0 feet	0 feet

Undue Hardship Items		
1. Lot Area Under 1 acre	0.717 Acres	COWHL Zoning Ordinance 22.03.281
2. Min Lot Depth	150 ft	COWHL Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)
3. Full Demo of Existing Home		COWHL Zoning Ordinance 22.03.273, 2023 survey
4. Loss of Site Area of at least 25%	27%	COWHL Zoning Ordinance 38.02.007(b.2)
5. Unreasonable Encroachment	30 ft	COWHL Zoning Ordinance 38.02.007(b.4)
6. Buildable Area Slope	See Diagrams	COWLH Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits

Site Slope



22.03.170 Site Disturbance
Finished open cuts of an excavation shall not exceed the following:

Undisturbed Earth:
1.5H:1V

Earth Fill:
2H:1V

Drainage & Erosion Manual 7.4.1

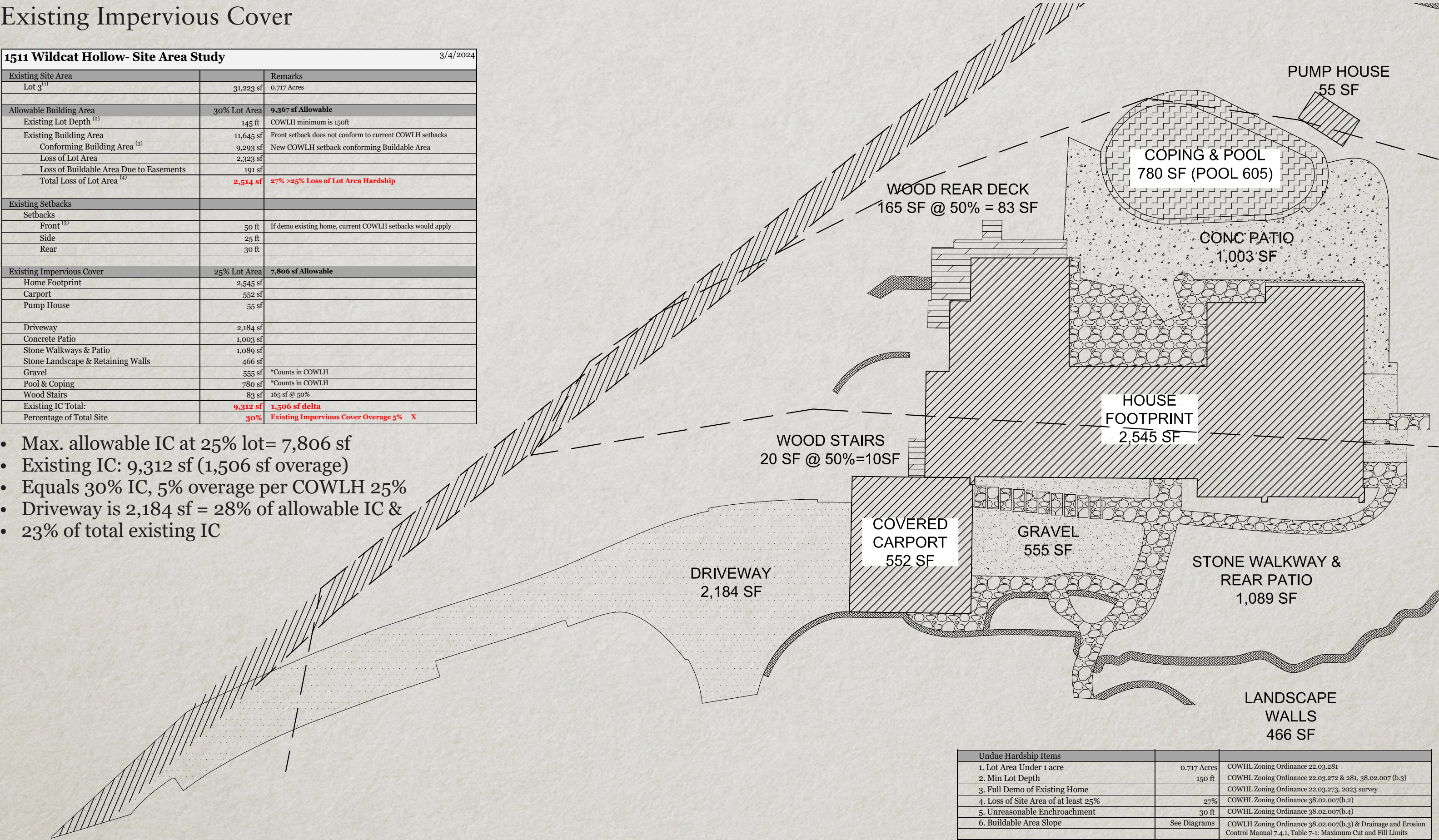
Slope	Open Cut & Fill	Closed Cuts	Closed Fill
0-15%	1 ft	15 ft	6 ft
15-25%	1 ft	15 ft	6 ft
25-35%	0 ft	10 ft	6 ft
>35%	0 ft	0 ft	0 ft

Existing Impervious Cover

1511 Wildcat Hollow- Site Area Study			3/4/2024
Existing Site Area		Remarks	
Lot 3 ⁽¹⁾	31,223 sf	0.717 Acres	
Allowable Building Area	30% Lot Area	9,367 sf Allowable	
Existing Lot Depth ⁽²⁾	145 ft	COWLH minimum is 150ft	
Existing Building Area	11,645 sf	Front setback does not conform to current COWLH setbacks	
Conforming Building Area ⁽³⁾	9,293 sf	New COWLH setback conforming Buildable Area	
Loss of Lot Area	2,323 sf		
Loss of Buildable Area Due to Easements	191 sf		
Total Loss of Lot Area ⁽⁴⁾	2,514 sf	27% >25% Loss of Lot Area Hardship	
Existing Setbacks			
Setbacks			
Front ⁽³⁾	50 ft	If demo existing home, current COWLH setbacks would apply	
Side	25 ft		
Rear	30 ft		
Existing Impervious Cover	25% Lot Area	7,806 sf Allowable	
Home Footprint	2,545 sf		
Carport	552 sf		
Pump House	55 sf		
Driveway	2,184 sf		
Concrete Patio	1,003 sf		
Stone Walkways & Patio	1,089 sf		
Stone Landscape & Retaining Walls	466 sf		
Gravel	555 sf	*Counts in COWLH	
Pool & Coping	780 sf	*Counts in COWLH	
Wood Stairs	83 sf	165 sf @ 50%	
Existing IC Total:	9,312 sf	1,506 sf delta	
Percentage of Total Site	30%	Existing Impervious Cover Overage 5% X	

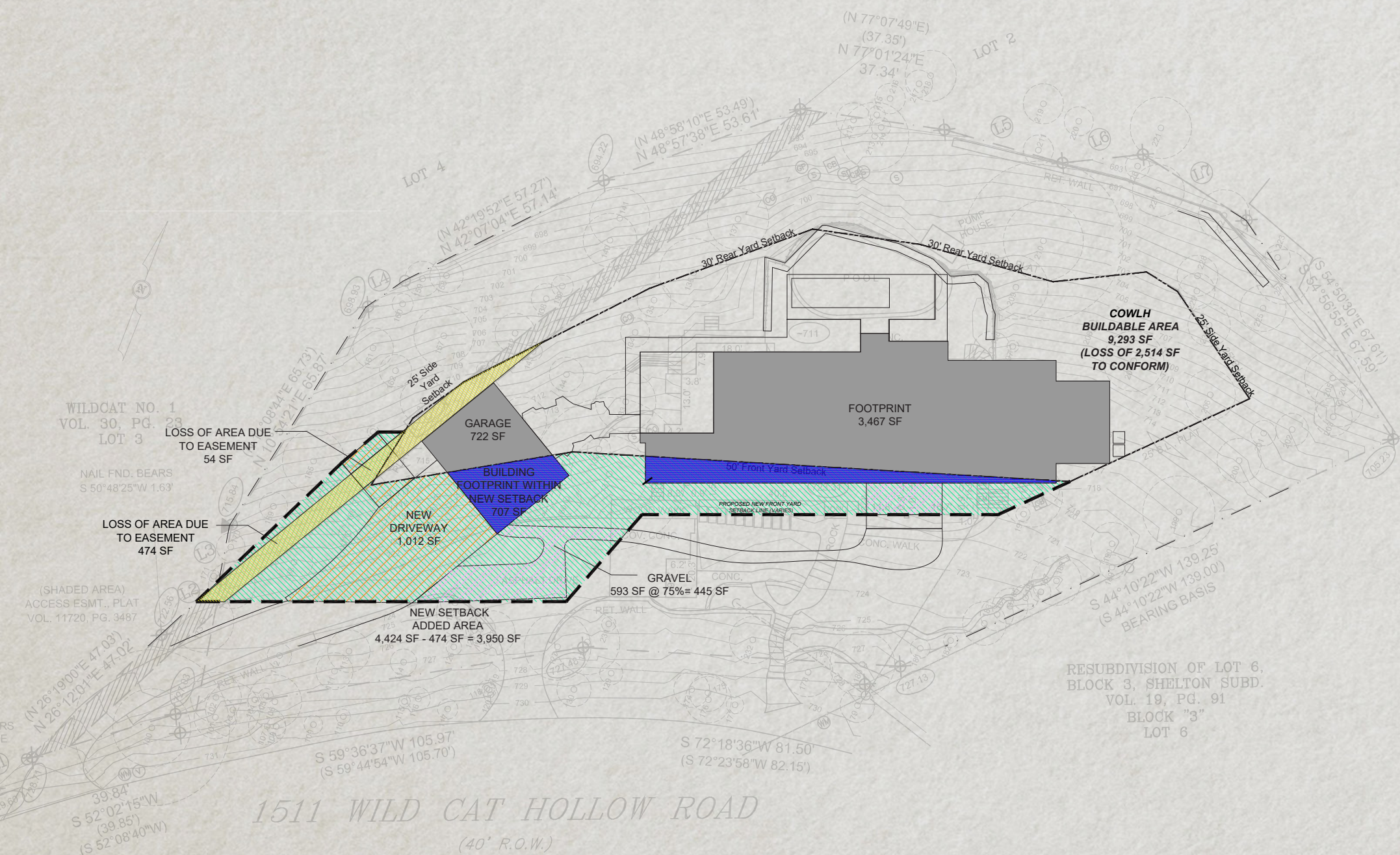
- Max. allowable IC at 25% lot= 7,806 sf
- Existing IC: 9,312 sf (1,506 sf overage)
- Equals 30% IC, 5% overage per COWLH 25%
- Driveway is 2,184 sf = 28% of allowable IC &
- 23% of total existing IC

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Office Of Architecture



Undue Hardship Items		
1. Lot Area Under 1 acre	0.717 Acres	COWHL Zoning Ordinance 22.03.281
2. Min Lot Depth	150 ft	COWHL Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)
3. Full Demo of Existing Home		COWHL Zoning Ordinance 22.03.273, 2023 survey
4. Loss of Site Area of at least 25%	27%	COWHL Zoning Ordinance 38.02.007(b.2)
5. Unreasonable Enchroachment	30 ft	COWHL Zoning Ordinance 38.02.007(b.4)
6. Buildable Area Slope	See Diagrams	COWHL Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits

Proposed New Front Setback



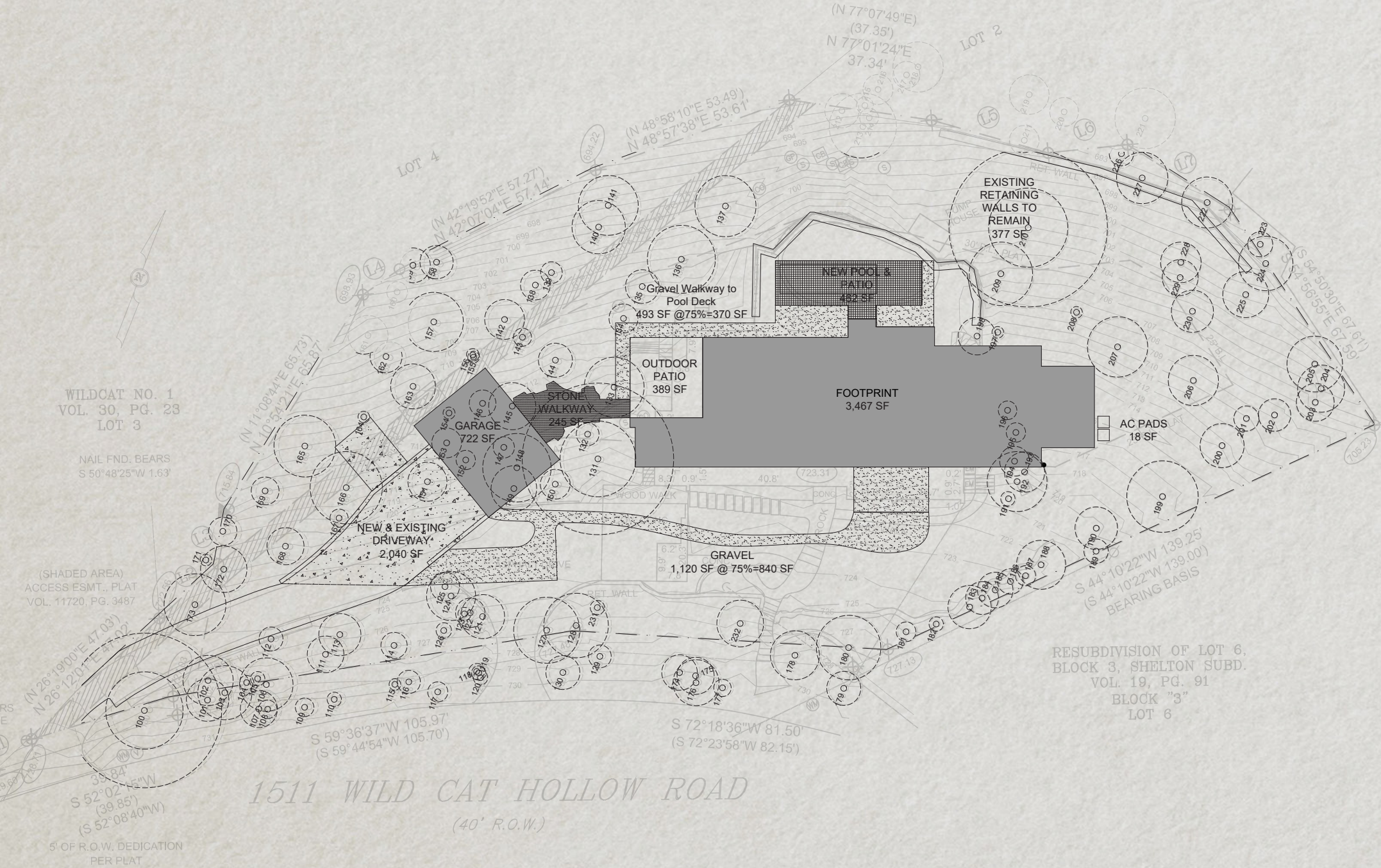
- MHOA proposes striking new front setback to align with geometry of former home's footprint (underlay)
- Garage would violate existing front setback line due to slope, easement, side yard setback lines and existing trees.
- Total IC within proposed setback line is only 6.9% of total site area, and only 2.3% of the total site area is actual conditioned space
- The Garage poses a conundrum regarding it's location given the same factors mentioned above

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Office Of Architecture

1511 Wildcat Hollow- Site Area Study			3/4/2024
Existing Site Area		Remarks	
Lot 3 ⁽¹⁾	31,223 sf	0.717 Acres	
Allowable Building Area	30% Lot Area	9,367 sf Allowable	
Existing Lot Depth ⁽²⁾	145 ft	COWLH minimum is 150ft	
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Loss of Lot Area	2,323 sf		
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Existing Setbacks			
Setbacks			
Front ⁽³⁾	50 ft	If demo existing home, current COWLH setbacks would apply	
Side	25 ft		
Rear	30 ft		
Existing Impervious Cover	25% Lot Area	7,806 sf Allowable	
Home Footprint	2,545 sf		
Carport	552 sf		
Pump House	55 sf		
Driveway	2,184 sf		
Concrete Patio	1,003 sf		
Stone Walkways & Patio	1,089 sf		
Stone Landscape & Retaining Walls	466 sf		
Gravel	555 sf	*Counts in COWLH	
Pool & Coping	780 sf	*Counts in COWLH	
Wood Stairs	83 sf	165 sf @ 50%	
Existing IC Total:	9,312 sf	1,506 sf delta	
Percentage of Total Site	30%	Existing Impervious Cover Overage 5% X	
Proposed Setback & New Building Coverage		See Site Plan for New Proposed Setback Lines	
Unreasonable Encroachment ⁽⁴⁾⁽⁵⁾	30 ft Lost	Total Loss of Site Area 27%. See Appendix A, pg .10	
Loss of Buildable Area Due to Easements	474 sf	See Site Plan	
Added Area of Proposed Setback	3,950 sf	Less Easement of 474sf	
Percentage of Total Site	12.7%	Requested Area Regained 12.7% <27% Loss of Area	
Total New IC Outside COWLH Setback	2,164 sf	Footprint Outside of Conforming Setback Lines	
Percentage of Total Site	6.9%	Requested Area Regained 6.9% <27% Loss of Area	
Building Footprint Outside COWLH Setback	707 sf	Building Footprint ONLY, Does not include Drives or Paths	
Building Footprint Added Outside Setback	2.3%	Footprint Outside of COWLH Conforming Setbacks	

Undue Hardship Items		
1. Lot Area Under 1 acre	0.717 Acres	COWHL Zoning Ordinance 22.03.281
2. Min Lot Depth	150 ft	COWHL Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)
3. Full Demo of Existing Home		COWHL Zoning Ordinance 22.03.273, 2023 survey
4. Loss of Site Area of at least 25%	27%	COWHL Zoning Ordinance 38.02.007(b.2)
5. Unreasonable Encroachment	30 ft	COWHL Zoning Ordinance 38.02.007(b.4)
6. Buildable Area Slope	See Diagrams	COWHL Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits

Proposed Impervious Cover

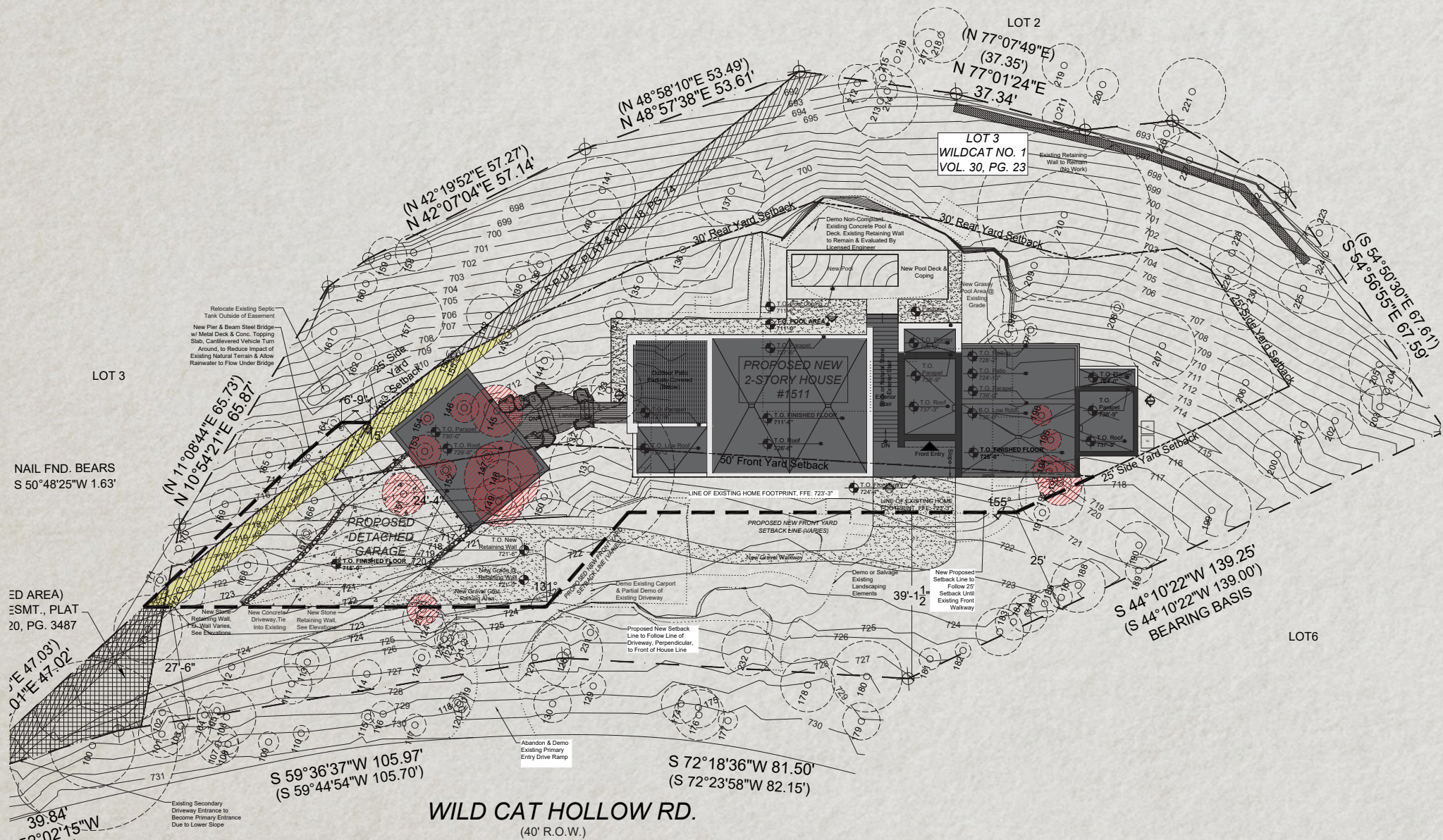


- Max. allowable IC at 25% lot= 7,806 sf
- Existing IC prior to demo= 30% of lot area
- Proposed IC: 8,930 sf=28.6% <30%
- Maintains cut or fill requirements per Erosion Control Manual

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1511 Wildcat Hollow- Site Area Study			3/4/2024
Existing Site Area		Remarks	
Lot 3 ⁽¹⁾	31,223 sf	0.717 Acres	
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Setbacks			
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Gravel	555 sf	*Counts in COWLH	
Pool & Coping	780 sf	*Counts in COWLH	
Wood Stairs	83 sf	165 sf @ 50%	
Existing IC Total:	9,312 sf	1,506 sf delta	
Percentage of Total Site	30%	Existing Impervious Cover Coverage 5% X	
Proposed Setback & New Building Coverage		See Site Plan for New Proposed Setback Lines	
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Building Footprint Outside COWLH Setback	707 sf	Building Footprint ONLY, Does not include Drives or Paths	
Building Footprint Added Outside Setback	2.3%	Footprint Outside of COWLH Conforming Setbacks	
Proposed Impervious Cover	25% Lot Area	7,806 sf Allowable	
Home Footprint	3,467 sf		
Detached Garage	722 sf		
Existing Site Retaining Walls	377 sf		
New Driveway & Retaining Walls	2,040 sf	Ties into existing drive, demo secondary unsafe entry slope	
Outdoor Patio	389 sf	partially covered with slats and vines	
Stone Walkways	245 sf		
AC Pads	18 sf		
Gravel	1,210 sf	*Counts 75% in COWLH	
New Pool Deck & Coping	462 sf	*Counts in COWLH	
Proposed IC:	8,930 sf	+1,124 sf delta	
Percentage of Total Site	28.6%	Proposed Impervious Cover Under 30% Existing By ~2%	
Potential Rainwater Harvesting			
Garage Roof	617 sf		
Living Room & Mud Room Roof	1,318 sf		
Planters	125 sf		
Main Entry Foyer Roof	176 sf		
Main Bed Low Roof	431 sf		
Main Bath Roof	180 sf		
Roof Areas for Potential Rainwater Harvesting	2,847 sf		
Undue Hardship Items			
1. Lot Area Under 1 acre	0.717 Acres	COWHL Zoning Ordinance 22.03.281	
2. Min Lot Depth	150 ft	COWHL Zoning Ordinance 22.03.272 & 281, 38.02.007 (b.3)	
3. Full Demo of Existing Home		COWHL Zoning Ordinance 22.03.273, 2023 survey	
4. Loss of Site Area of at least 25%	27%	COWHL Zoning Ordinance 38.02.007(b.2)	
5. Unreasonable Enchroachment	30 ft	COWHL Zoning Ordinance 38.02.007(b.4)	
6. Buildable Area Slope	See Diagrams	COWHL Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits	

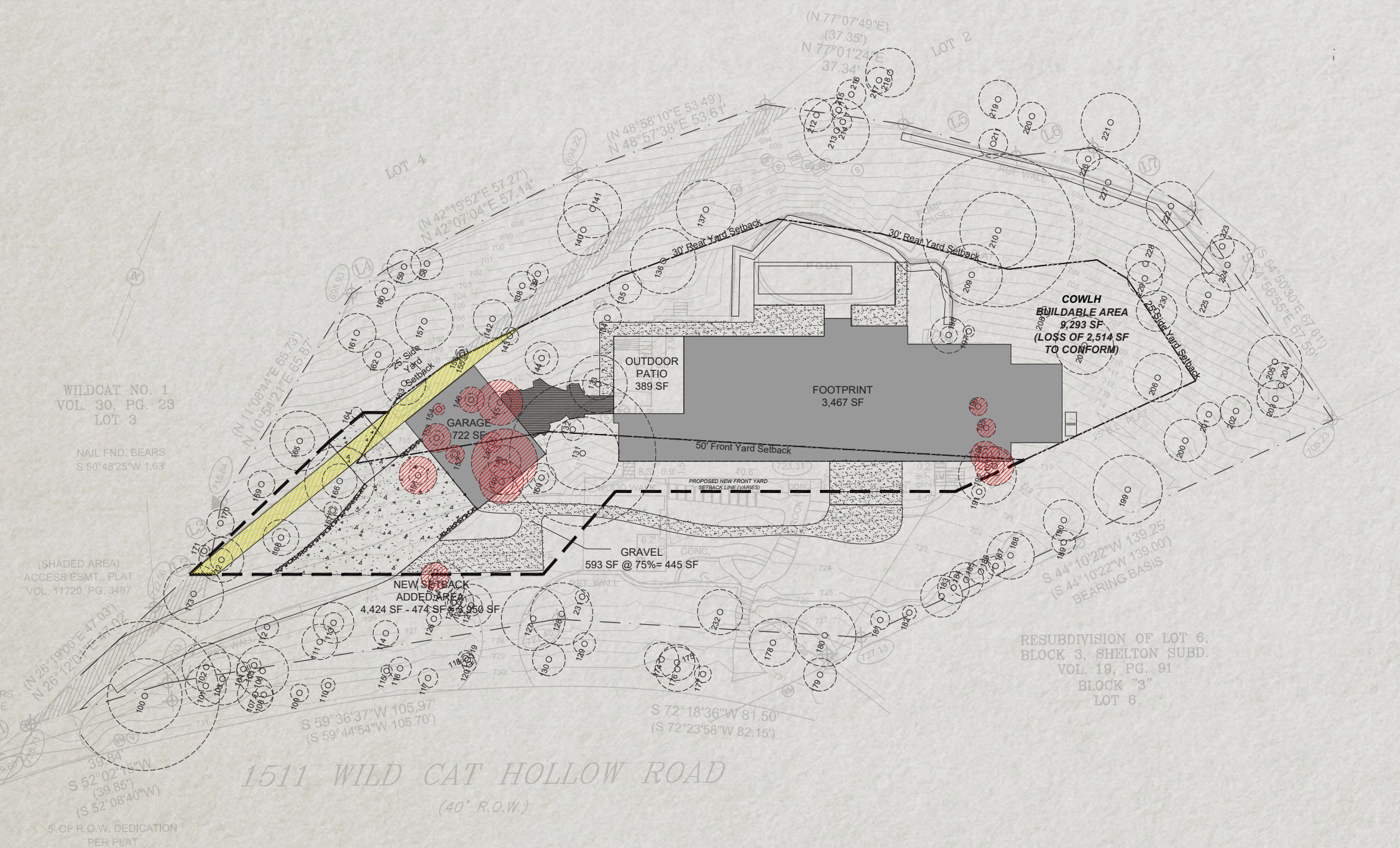
Proposed Site Plan



Michael Hsu
Office Of Architecture

1511 Wildcat Hollow- Site Area Study			3/4/2024
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6. Buildable Area Slope	See Diagrams	COWLH Zoning Ordinance 38.02.007(b.3) & Drainage and Erosion Control Manual 7.4.1, Table 7-1: Maximum Cut and Fill Limits	

Tree Impacts



TREE TABLE:			
100	20" TRP CEDAR	167	4.7" PERSIMMON
101	11" LIVE OAK	168	9.6" CEDAR
102	13" CEDAR	169	7.2" SPANISH OAK
103	14" LIVE OAK	170	7.3" LIVE OAK
104	3.7" LIVE OAK	171	3" DBL PERSIMMON
105	3.7" LIVE OAK	172	12" HACKBERRY
106	13.8" LIVE OAK	173	16" CEDAR
107	9.6" DBL CEDAR	174	9.2" LIVE OAK
108	4.8" LIVE OAK	175	9.6" LIVE OAK
109	4.8" LIVE OAK	176	11.9" LIVE OAK
110	3.7" LIVE OAK	177	4.5" DBL PERSIMMON
111	9.5" CEDAR	178	12.7" 6T CRAPE MYRTLE
112	6.2" CEDAR	179	8.8" DBL YAUAPON
113	10.9" CEDAR	180	16.7" CEDAR
114	6.8" CEDAR	181	5.1" QUAD YAUAPON
115	3" PERSIMMON	182	3.7" TRP PHOTINIA
116	6" 5T PERSIMMON	183	11.2" 6T PHOTINIA
117	5.2" DBL PERSIMMON	184	8.5" 6T PHOTINIA
118	4.1" DBL PERSIMMON	185	9.2" 5T PHOTINIA
119	3.7" DBL PERSIMMON	186	6.6" QUAD PHOTINIA
120	3.7" PERSIMMON	187	5.2" DBL
121	11.4" LIVE OAK	188	12.7" 5T
122	7.6" QUAD MT LAUREL	189	6.3" DBL PEAR
123	3.4" TRP MT LAUREL	190	11.1" UNKNOWN
124	12.7" CEDAR	191	3.7" DBL BLUEWOOD
Remove & Mitigate	125 7.5" CEDAR	192	15.5" DBL SPANISH OAK
126	4" LIVE OAK	193	10.4" SPANISH OAK
127	17.1" DBL LIVE OAK	Remove & Mitigate	194 7.7" SPANISH OAK
128	16.7" DBL LIVE OAK	Remove	195 5" YAUAPON
129	5.9" LIVE OAK	Remove	196 4.8" YAUAPON
130	8.8" CEDAR	197	3" LIGUSTRUM
131	19.6" LIVE OAK	198	9.7" SPANISH OAK
132	5.9" DBL LIVE OAK	199	18.5" TRP SPANISH OAK
133	15.5" HACKBERRY	200	11.4" SPANISH OAK
134	7.5" DBL HACKBERRY	201	6.5" CEDAR
135	8.7" CEDAR	202	8.4" CEDAR
136	17.6" CEDAR	203	9.8" CEDAR
137	15.8" CEDAR	204	12.2" CEDAR
138	7.7" CEDAR	205	14.4" DBL SPANISH OAK
139	5.6" CEDAR	206	13" SPANISH OAK
140	13.8" CEDAR	207	15.6" CEDAR
141	15.5" CEDAR	208	3" PERSIMMON
142	10.3" CEDAR	209	16.4" SPANISH OAK
143	4.7" YAUAPON	210	20.5" TRP CEDAR
144	8.8" CEDAR	211	7.7" CEDAR
Remove & Mitigate	145 12.2" CEDAR	212	8.9" CEDAR
Remove & Mitigate	146 6.9" CEDAR	213	17.5" DBL SPANISH OAK
Remove	147 5.5" MAGNOLIA	214	4.9" SPANISH OAK
Remove & Mitigate	148 17.7" CEDAR	215	4.4" CEDAR
Remove & Mitigate	149 11.8" DBL CEDAR	216	7.8" CEDAR
150	7.7" SPANISH OAK	217	7" CEDAR
Remove & Mitigate	151 10.1" SPANISH OAK	218	13.1" CEDAR
Remove	152 5" QUAD YAUAPON	219	10.3" CEDAR
Remove & Mitigate	153 7.7" LIVE OAK	220	7.5" CEDAR
Remove	154 3.1" DBL YAUAPON	221	15.8" CEDAR
155	3" YAUAPON	222	13.2" CEDAR
156	3.3" DBL YAUAPON	223	6.5" CEDAR
157	15.3" CEDAR	224	14.1" CEDAR
158	8.6" CEDAR	225	11.9" CEDAR
159	9" CEDAR	226	6.3" DBL SPANISH OAK
160	5.4" CEDAR	227	13.3" CEDAR
161	10.4" CEDAR	228	10.5" CEDAR
162	8.3" CEDAR	229	9.3" CEDAR
163	11.6" CEDAR	230	10.9" CEDAR
164	3" YAUAPON	231	3.7" TRP YAUAPON
165	16" CEDAR	232	12.1" CEDAR
166	18.7" DBL CEDAR		

Remove & Mitigate Total: 14 trees @72.7"
*Could Reduce to 54.6" w/ Floor Plan
Alterations to keep #193 & #194

Tree Impacts



Summary

- Intent to demolish existing home, patio & carport, triggers current COWLH Zoning setbacks
- Existing site is either non-confirming and/or possesses six hardship instances per current COWLH Zoning Ordinances
 1. Site is less than COWLH minimum 1 acre
 2. Lot depth is under 150ft COWLH minimum
 3. Demo of existing home initiates 50ft front setback line
 4. New 50ft front setback line results in loss of buildable site area of 27%
 5. New setback line produces unreasonable encroachment upon buildable area by 30ft at greatest point
 6. 69% of the existing lot slope is 25%-35%+
- Existing impervious cover is 30% of lot area, 5% over COWLH maximum of 25%
- MHOA proposing new home FFE at 711'-6" to comply with 6ft cut maximum per Erosion Control Manual
- Proposed home impervious coverage is less than existing home of 30%
- MHOA proposing alternate front setback line to mimic the geometry of the current existing home, to be demolished
 - Detached garage addresses cut/fill requirements, while maintaining adequate driveway slope and minimizing impact of larger surrounding trees
 - However some smaller trees will be impacted regardless of detached garage and driveway location
 - Numerous trees appear to be unhealthy and will require an arborist review prior to permit submission
 - MHOA understands a Drainage Plan and rainwater harvesting will be required for permit, and will engage a Civil Engineer after submission of this varaince request

RE: VARIANCE REQUESTS OF 1511 WILDCAT HOLLOW

On behalf of the City of West Lake Hills, Walter P Moore has reviewed the variance requests for the property located at 1511 Wildcat Hollow. This review was performed in the context of the City of West Lake Hills Code of Ordinances which states that no variance shall be granted unless it meets the following criteria:

1. The strict or literal enforcement of the terms of the code, because of special conditions, will result in unnecessary hardship to the applicant.
2. There will not be unreasonable disruption of the natural terrain or unreasonable destruction of existing flora.
3. There is no reasonable alternative to the requisite variance that will alleviate the difficulty or hardship.
4. The variance will not be greater than the minimum required to alleviate the difficulty or hardship.

The following requests were made:

1. Front yard setback adjustments due to encroachment and existing site slope limiting location of proposed new detached garage (see site plan).
2. Impervious cover increase to match existing condition of 30%, due to existing site slope and location of proposed detached garage with corresponding driveway.
3. Tree removal variance to accommodate proposed home and detached garage.

The hardships mentioned are as follows:

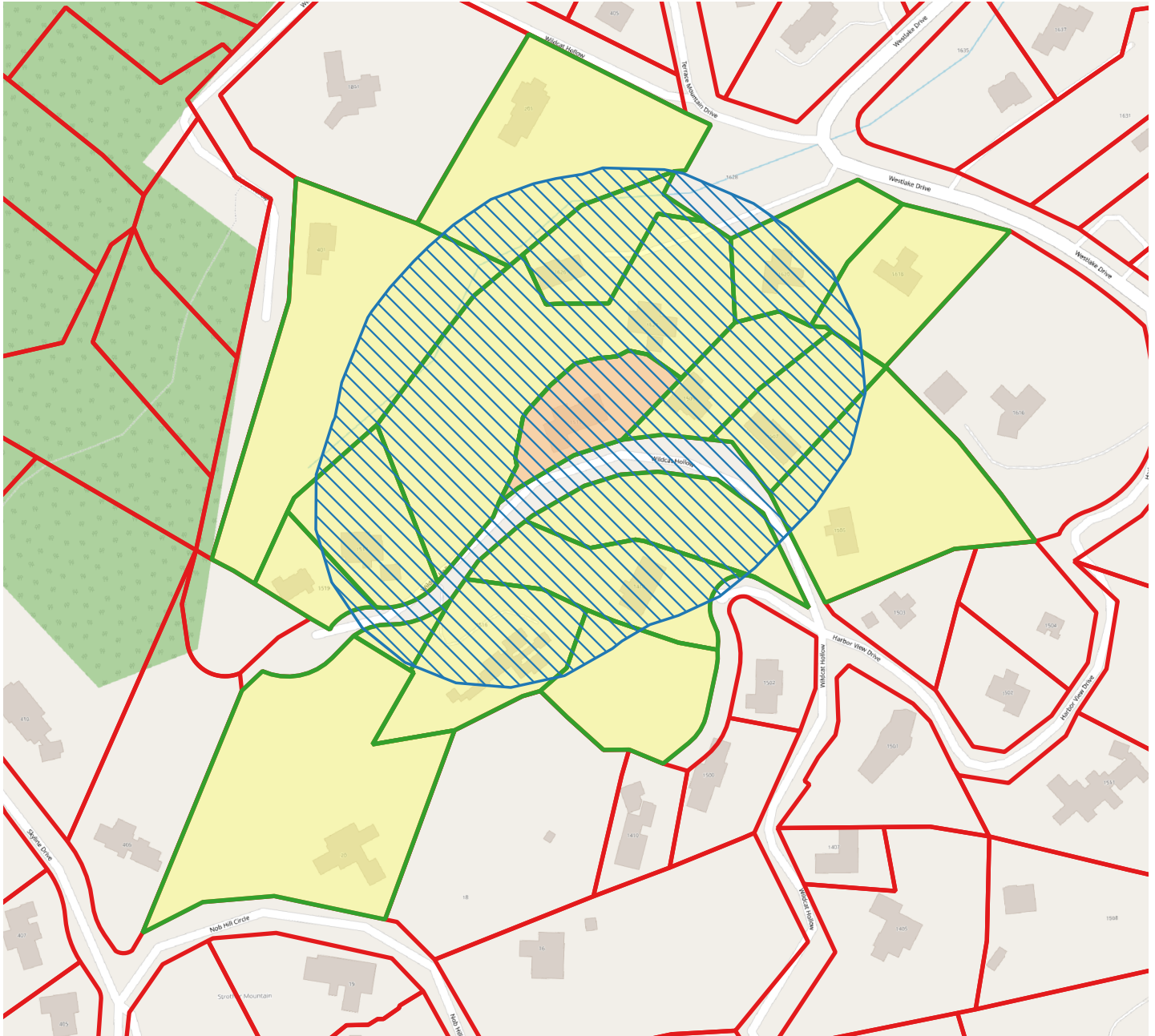
1. Total site area is less than 1 acre.
 - a. **This is accurate, the minimum lot size for R-1 zoning is 1 acre per the City of West Lake Hills Code of Ordinances.**
2. Overall lot depth is less than 150ft.
 - a. **Section 22.03.281.b shows a minimum lot depth of 150 ft for the City of West Lake Hills for lots zoned R-1. This is not a special condition.**
3. Intent to demolish the existing 1964 home triggers current zoning ordinances which initiates new setback lines.
 - a. **This is not a special condition; this is City Code.**
4. The current 50-foot front setback line results in a loss of buildable site area of 27%.
 - a. **Sections 33.03.281.b displays a minimum front setback of 50 feet for sites which are larger than 0.5 acres. This is typical in the City of West Lake Hills and not a special condition.**
5. 69% of the existing lot slope is between 25% to above 35% limiting the area of construction according to the DECDM.
 - a. **Rules and regulations of the City of West Lake Hills outlines that at least 50% of the area of all lots must be situated on land having a natural slope of less than 30% for residential lots per Section 36.01.009. It is unclear whether or not this site meets those criteria or if there is undue hardship. In addition, the DECDM Table 7-1 allows closed cuts up to 10 feet and closed fill up to 6 feet on areas where the natural slope is from 35%-25%. No grading is allowed on areas where the natural slope is over 35%.**

Due to the reasons listed above, we, on behalf of the City of West Lake Hills recommend the following:

1. Front yard setback adjustments due to encroachment and existing site slope limiting location of proposed new detached garage (see site plan).
 - a. **The proposed setback reaches the property line at one point, for no apparent reason. We recommend denying the proposed setback shown on the Site Plan. However, due to the unique shape of the property, we recommend approving a smaller front setback, such as 30', which is typical in the City of West Lake Hills for small lots (<0.5 acres).**
2. Impervious cover increase to match existing condition of 30%, due to existing site slope and location of proposed detached garage with corresponding driveway.
 - a. **It is unclear how existing site slope necessitates an increase in impervious cover. However, as long as all 10% of the proposed 30% impervious cover is treated per TCEQ, and no additional runoff is generated on-site, we recommend this variance for approval.**
3. Tree removal variance to accommodate proposed home and detached garage.
 - a. **We recommend approval of the removal of tree 148 assuming it will be mitigated properly and that tree 131 will not be removed. The applicant is performing due diligence to ensure that the natural flora is protected.**

Notification Area

1511 Wildcat Hollow Variances



Legend

-  Subject Property
-  Notification Area
-  Notified Parcels
-  Parcels
-  West Lake Hills City Limits



0 100 200 300 400 500 ft



City of West Lake Hills

EXERPT OF ZONING & PLANNING COMMISSION (ZAPCO)

REGULAR MEETING

Wednesday, April 17, 2024 at 6:30 PM

Agenda Item 5: 1511 Wildcat Hollow Variances

5. **Public Hearing 1511 Wildcat Hollow:** Discuss and make recommendation on the proposed variances:
- a. The removal of one tree (17.7 Cedar) with trunk diameter of 14 inches or greater (Section 22.03.304 of the West Lake Hills Code)
 - b. Increase impervious cover to 30% where 25% is the maximum (Section 22.03.281(b) of the West Lake Hills Code)
 - c. Allow for 30 feet encroachment of the building and grading into a 50-foot front setback (22.03.281 (b) of the West Lake Hills Code)

Applicant: Matt Sener, Michael Hsu Office of Architecture

- a. **Staff Report:** Director Bills delivers briefing on site including existing and proposed conditions.
- b. **Public Comment:**
 - i. Matt Sener: Applicant
 - a) Delivered presentation demonstrating extreme slope on large portion of property except within setback, where existing non-conforming house exists.
 - ii. Renee Womack- Neighbor
 - a) Asks how project can extend into the setbacks without building closer to property lines within the setback.
 - Director Bills explains that existing home was already in the setback prior to current rules and applicant is requesting to keep existing non-compliant setback distance, but not to further encroach.
- c. **Discussion:**
 - i. Commissioner Webber appreciates plan, profile, and preservation of existing view.
- d. **Action:** Commissioner Webber moves that the variance be forwarded to Council with a recommendation with a recommendation of **approval** with staff conditions.
 - i. Commissioner Bartoletti Seconds
 - ii. Motion Carries Unanimously (5-0)

Recommendation will be forwarded to the Board of Adjustment on May 8th, 2024



City of West Lake Hills Board of Adjustments

AGENDA REPORT

Meeting Date:	May 8, 2024	Item Number:	7
Department:	Building and Development Services		
Prepared By:	Jennifer C. Bills	Cost / Budget:	None
Exhibits:	See Attached	Source of Funds:	N/A

Subject

Address – Discuss and consider action on an appeal of the permit expiration determination by the Building Official/City Inspector per Section 22.03.512, Appeals from denial of permits from city inspector.

Applicants: Ryan Pitylak

Recommendation

Staff recommend that the Board of Adjustment uphold the Building Official's determination.

Discussion

Property Information, Zoning & Site Characteristics:

Owner: Ryan and Kimberly Pitylak

Legal Description: Lot 2 of the Resubdivision of Oak Hollow Confirming Plat

Lot Size: 2.65 acres

Zoning: R-1 One Family

The site is surrounded GUI - Government, Utility, and Institutional, O – Office, R-1 – One Family and ETJ – Extraterritorial Jurisdiction (Travis County).

Background & Analysis:

The property owners are requesting to appeal the determination of the Building Official that several demolition and building permits for the property at 402 Camp Craft are expired.

Per Section 22.03.575, a demolition permit expires if work has not commenced within 10 days and 60 days from the date of issuance if no progress has been made.

Per Section 22.03.137, a building permit (including OSSF) expires within 60 days of the permit issuance if work has not commenced or after 12 months of inactivity once the project is started.

The applicant has received multiple approvals and permits over the last 4 years.

- October 21, 2020 – Variances Approved by City Council
 - Background - <https://westlakehillstx.portal.civicclerk.com/event/13/files/agenda/193>
 - Expires a year after approval if no action is taken.
 - **Expired with the permits.**
- October 27, 2021 – #2021-1003 Variances approved by City Council and BOA
 - Background <https://westlakehillstx.portal.civicclerk.com/event/140/files/agenda/502>
 - Expires a year after approval if no action is taken.
 - **Expired with the permits.**
- May 18, 2023 – #2021-10218 Demolition Permit Issued
 - Trees were removed, the demolition of one outbuilding is partially complete (slab hasn't been removed per plan), but demolition of the main house and other outbuilding is incomplete. No inspections were completed of partial demolition. Surety Bond for demolition expired April 5th, 2024.
 - **Expired after 60 days of no activity.**
- May 18, 2023 – 2021-10216 Outbuilding Remodel Issued (4,400 sf building)
 - Proposed demolition of existing slab. No work or inspections performed.
 - **Expired due to work not starting with 60 days.**
- May 18, 2023 – 2021-10217 Outbuilding Remodel (617 sf building)
 - Minimal demolition work performed. No work or inspections performed.
 - Remodel plans indicate it will be a guest quarters, but no Special Use Permit is on file for the use.
 - **Expired due to work not starting with 60 days.**
- March 17, 2023 – 2021-10157 House Remodel and addition Issued
 - Roof removed under demo permit, no remodel work or inspections performed.
 - **Expired due to work not starting with 60 days.**
- March 17, 2023 – OSSF (Septic) Permit Issued
 - No work or inspections performed.
 - **Expired due to work not starting with 60 days.**

Due to the lack of inspections, delays in construction, and failure to start on the remodel permits, the building official determined the permits to be expired.

The Board of Adjustment shall have the power hear and decide an appeal where it is alleged that there is an error in any order, requirements, decision, or determination made by an administrative official in the enforcement of chapters 22, 32, 36, and 38 of the Code.

Attachments:

- Attachment 1 - Appeal Letter from Applicant
- Attachment 2 - Expiration Notice from Building Official
- Attachment 3 - Approved Remodel/Addition Plans (2021-10216, 10217, 10157)
- Attachment 4 - Approved OSSF Plans (2022-10549)

Outdoor Lighting

Any outdoor lighting will comply with the City's Code.

Compliance with Adopted International Building Code

The property and future construction will have to comply with all applicable City codes.

Subdivision

No changes are proposed to the subdivision.

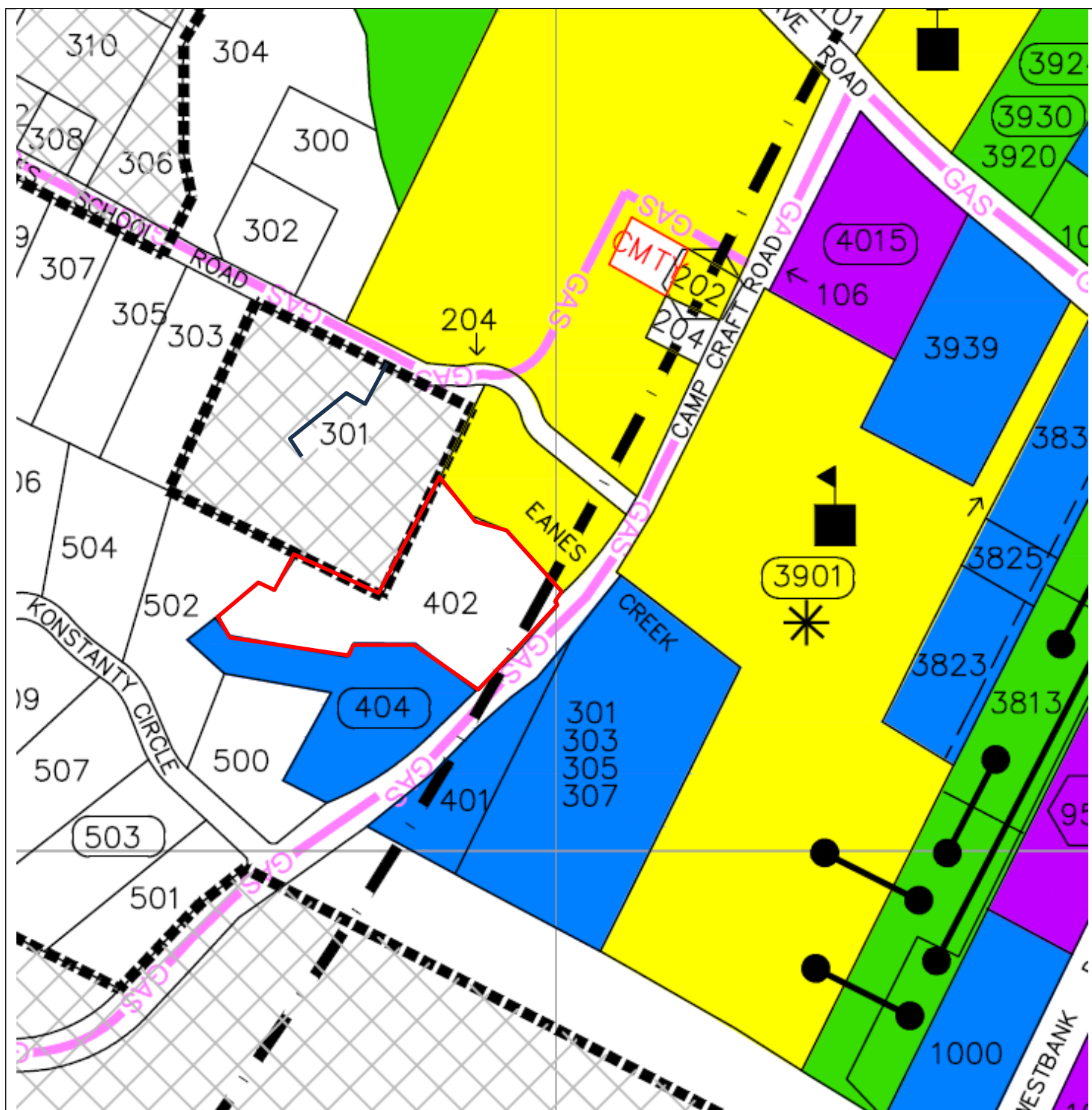
Comprehensive Planning Analysis

The existing and future land use is in conformance with the City of West Lake Hills Master Plan.

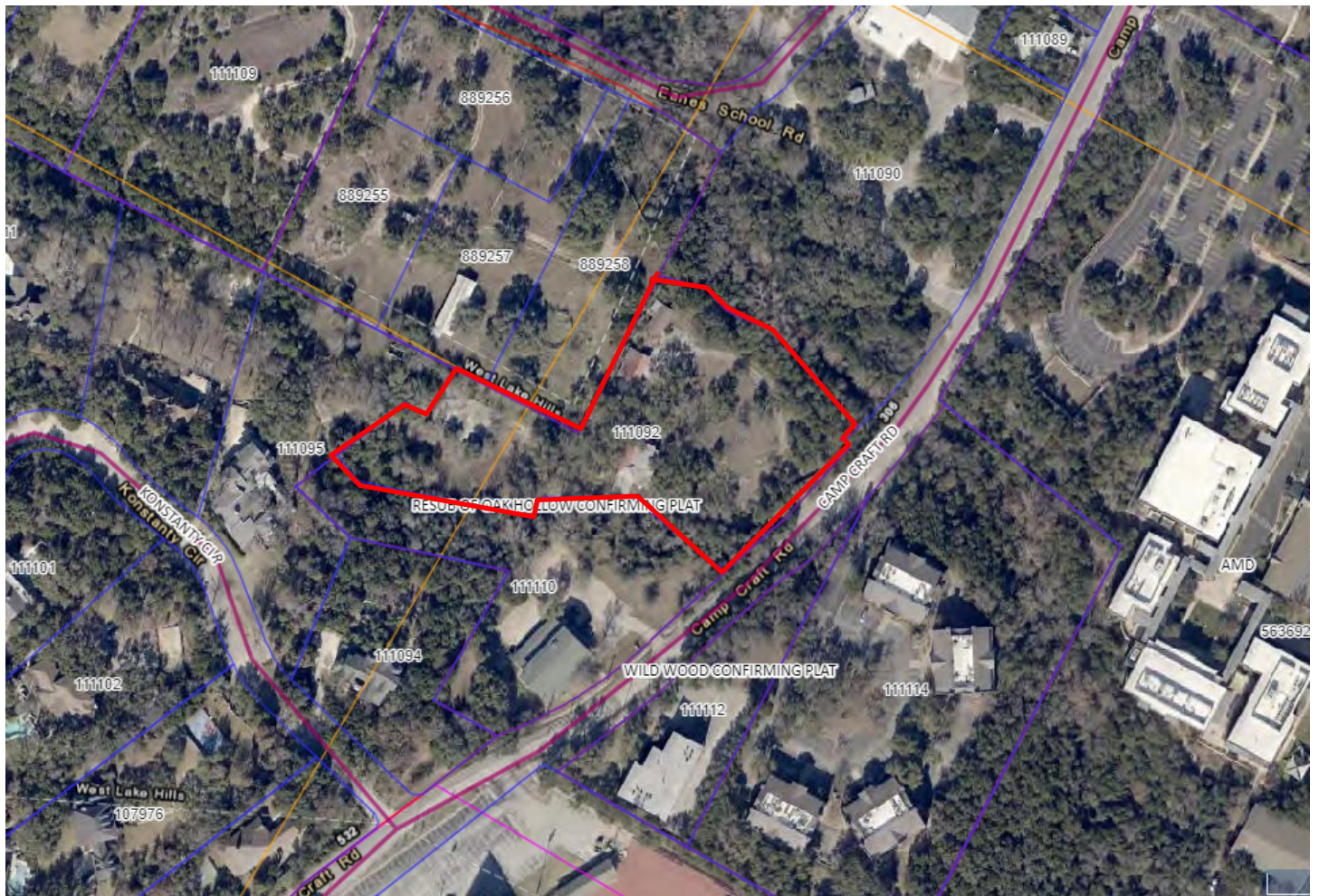
Links to Relevant Code:

- [Section 22.03.512: Appeal from denial of permits from city inspector.](#)
- [Section 38.02.006: Appeals to the board of adjustment.](#)
- [Section 38.02.008: Procedure for appeals to the board.](#)
- [Section 22.03.137: Expiration.](#)
- [Section 22.03.575: Transferability; commencement of work; continuation of work; duration of permit; extension.](#)

Zoning:



Aerial:



Ryan and Kim Pitylak
402 Camp Craft Rd
West Lake Hills, TX 78746

April 22, 2024

Jennifer Bills
Director of Building & Development
City of West Lake Hills
911 Westlake Dr
West Lake Hills, TX 78746

Dear Jennifer Bills,

I'm writing to appeal the expiration determination by the Building Official for all permits and variances relative to the property known as 402 Camp Craft Rd. At the end of this letter, I have included a list of issued permits, approved variances, and a schedule of completed work prior to pausing site construction in August of 2023.

I requested the pause without considering the best way to extend the life of the permits. We are ready to begin work and are committed to bringing this unique property, formally Camp Craft, back to a condition that honors its history. The approved plans and variances are products of significant time and effort by both the city of West Lake Hills and property owners. We humbly request the opportunity to see this project through as originally intended in order to create our home.

We are happy to provide any additional information you and the West Lake Hills City Council would like and appreciate this opportunity to request an appeal relative the expired permits and variances for 402 Camp Craft Rd and return the permits and variances to an active status in order for work on the project to be completed.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Kim Pitylak", with a long horizontal line extending to the right.

Ryan Pitylak and Kim Pitylak

Approved Variances for 402 Camp Craft Rd:

- Allow an existing structure to remain in the setback. (Main Residence)
- Allow for an existing secondary structure to remain in the setback. (Art House)
- Allow for an existing structure to remain in the setback and allow for improvements to be made in the setback. (Workshop) *Please note this variance is no longer needed for the project as the alterations to the sport court/workshop are no longer a part of the scope of work.*
- Allow for an existing driveway to remain in the setback.
- Allow for the removal of a 27" Crepe Myrtle.
- Allow for the removal of a 15" Oak.
- Allow for the removal of a 17" Hackberry.
- Allow for the removal of a 14.5" Hackberry.

Issued permits for 402 Camp Craft Rd:

2021-10157 Issued 3/17/2023 for Remodel/addition to existing single-family residence.

2021-10216 Issued 4/5/202 for Remodel to existing 4,400 square foot outbuilding. 3
Please note this permit is no longer needed for the project as the alterations to the sport court/workshop are no longer a part of the proposed scope of work.

2021-10218 Issued 5/18/2023 for Demolition of three (3) exterior outbuildings, existing driveway (up to transition point) and partial demolition of existing 2-story home. One outbuilding not planned for demolition.

2021-10217 Issued 5/18/2023 for Remodel of existing 617 square foot outbidding.

Final permits issued in the later part of May. Construction began in early July.

Construction Notes for 402 Camp Craft Rd:

March 1, 2023: T-pole approved for energizing. Permit 2023-022081 EP Finaled.

March 7, 2023: Site Meeting with City of Westlake engineering to discuss road raising

March 21, 2023: Temp electric meter installed by AE.

July 11, 2023: Pre-construction meeting with Alex Sanchez, City of Westlake.
Meeting Notes:

- Post Job box and Permit @ street
- 7 am to 6pm Monday - Saturday working hours; No holidays
- Give 1 weeks notice for early work start
- Trim bushes back
- Tree protection; 2x4 and fencing
- ATS handles all inspections
- For tree trimming contact city and have mitigation for c.o.
- Survey after demo is complete

July 19, 2023: Start of Demolition

- Demo continued through end of July
- Roof framing dismantled.
- Accessory building removed.
- Site cleared
- Silt fence installed

July 28, 2023: Pre-construction meeting with Dondi Atwell, ATS

Meeting Notes:

- Will need weather-proofing inspection during rough-in
- Tree protection: 2x4 armoring and CRZ fencing

August 1, 2023: Pause on construction for personal reasons.

September 8, 2023: Famed wood structure to support stone gables. Please see photos included with this letter showing supported walls of the main structure, roof removed, and water intrusion that can be corrected as soon as permits are active.

September 15, 2023: Rental fence removed.

September 25, 2023: Durational construction fence installed.

April 18, 2024: Construction fence removed per order of West Lake Hills due to permit expiration.









Status Request for Project #2021-10217, #2021-10218, and #2021-10157 for 402 Camp Craft Rd

8 messages

CleanTag Permits <cleantagpermits@gmail.com>

Mon, May 15, 2023 at 11:28 AM

To: jbill@westlakehills.gov

Cc: Mark pzsec <pzsec@westlakehills.gov>, a.strehler@westlakehills.gov

Hello Jennifer,

I've sent messages through the My Gov portal but haven't heard back. On 5/3 my message was sent back to me as a "reply" from West Lake Hills.

Can you help?

I'm looking for an update for:

Projects #2021-10217, #2021-10218, and #2021-10157 for 402 Camp Craft Rd. West Lake Hills TX 78746

Four (4) applications were submitted as a part of this package. We were informed they would all be reviewed and approved together. Two (2) of the four (4) permits were approved on 4/5/2023, however only one (1) building permit was created for project #2021-10216.

Can you please send a copy of the approved building permit for #2021-10157, and provide an update on the review and release date for #2021-10217, #2021-10218 at your earliest convenience.

Thanks,
Linda

Linda Sullivan
Carter York

CleanTag Permits
4804 Menchaca Rd. Unit B
Austin, TX 78745
512-826-4209
cleantagpermits.com

Allison Strehler <astrehler@westlakehills.gov>

Mon, May 15, 2023 at 2:54 PM

To: "cleantagpermits@gmail.com" <cleantagpermits@gmail.com>

Cc: "Mark Littrell (PZSec)" <pzsec@westlakehills.gov>, Jennifer Bills <jbill@westlakehills.gov>

Hello Linda,

I apologize for the delays. I emailed a copy of the building permit for 2021-10157. Please let me know if you don't receive it.

For the demolition permit (2021-10218), can you please upload or email me the \$50,000 surety bond and proof of liability insurance? Once I receive this information, I can issue the permit.

Remodeling permit for outbuilding (2021-10217) - Can you please email or upload the trade contractor information and the proof of liability insurance?

Thank you,

Allison Strehler
Interim Development Coordinator
City of West Lake Hills
(512) 327-3628
[Quoted text hidden]

CleanTag Permits <cleantagpermits@gmail.com>

Mon, May 15, 2023 at 3:01 PM

To: Allison Strehler <astrehler@westlakehills.gov>

Cc: "Mark Littrell (PZSec)" <pzsec@westlakehills.gov>, Jennifer Bills <jbills@westlakehills.gov>

Thanks Allison,

I received the Building Permit for the main residence remodel.

The items requested are attached.

-Linda

Linda Sullivan
Carter York

CleanTag Permits
4804 Menchaca Rd. Unit B
Austin, TX 78745
512-826-4209
cleantagpermits.com

[Quoted text hidden]

5 attachments

 **Rauser Construction- Certificate of Insurance.pdf**
48K

 **Bond Certificate.pdf**
2341K

 **L - Berts license and tdlr.pdf**
297K

 **L - Plumbing license 2022.pdf**
165K

 **L - Eric Rauser.pdf**
135K

Allison Strehler <astrehler@westlakehills.gov>

Tue, May 16, 2023 at 9:05 AM

To: CleanTag Permits <cleantagpermits@gmail.com>

Cc: "Mark Littrell (PZSec)" <pzsec@westlakehills.gov>, Jennifer Bills <jbills@westlakehills.gov>

Hello Linda,

After looking at all of the attachments, everything except the surety bond is expired. I need current licenses and insurance docs please.

Thank you,

Allison Strehler
Interim Development Coordinator
City of West Lake Hills

(512) 327-3628

From: CleanTag Permits <cleantagpermits@gmail.com>
Sent: Monday, May 15, 2023 3:01 PM
To: Allison Strehler <astrehler@westlakehills.gov>
Cc: Mark Littrell (PZSec) <pzsec@westlakehills.gov>; Jennifer Bills <jbills@westlakehills.gov>
Subject: Re: Status Request for Project #2021-10217, #2021-10218, and #2021-10157 for [402 Camp Craft Rd](#)

[Quoted text hidden]

Allison Strehler <astrehler@westlakehills.gov> Thu, May 18, 2023 at 2:16 PM
To: CleanTag Permits <cleantagpermits@gmail.com>
Cc: "Mark Littrell (PZSec)" <pzsec@westlakehills.gov>, Jennifer Bills <jbills@westlakehills.gov>

Linda,

Good news, I was able to use TDLR and verify the plumbers license is still valid. I'm issuing the demolition permit now.

Thank you,

Allison Strehler
Interim Development Coordinator
City of West Lake Hills
(512) 327-3628

From: Allison Strehler <astrehler@westlakehills.gov>
Sent: Tuesday, May 16, 2023 9:05 AM
To: CleanTag Permits <cleantagpermits@gmail.com>

[Quoted text hidden]

[Quoted text hidden]

CleanTag Permits <cleantagpermits@gmail.com> Thu, May 18, 2023 at 3:35 PM
To: Allison Strehler <astrehler@westlakehills.gov>
Cc: "Mark Littrell (PZSec)" <pzsec@westlakehills.gov>, Jennifer Bills <jbills@westlakehills.gov>

That's great news!

Thanks so much for your extra effort. I really appreciate it.

Kind regards,
Linda

Linda Sullivan
Carter York

CleanTag Permits
4804 Menchaca Rd. Unit B
Austin, TX 78745
512-826-4209
cleantagpermits.com

[Quoted text hidden]

Allison Strehler <astrehler@westlakehills.gov> Thu, May 18, 2023 at 3:41 PM
To: CleanTag Permits <cleantagpermits@gmail.com>

Cc: "Mark Littrell (PZSec)" <pzsec@westlakehills.gov>

Linda,

I just issued the renovation permit on the outbuilding as well.

Thank you,

Allison Strehler
Interim Development Coordinator
City of West Lake Hills
(512) 327-3628

From: CleanTag Permits <cleantagpermits@gmail.com>

Sent: Thursday, May 18, 2023 3:35 PM

[Quoted text hidden]

[Quoted text hidden]

CleanTag Permits <cleantagpermits@gmail.com>
To: Allison Strehler <astrehler@westlakehills.gov>
Cc: "Mark Littrell (PZSec)" <pzsec@westlakehills.gov>

Thu, May 18, 2023 at 4:07 PM

Fantastic news!

The property owners will be very pleased.

Kind regards,
Linda

Linda Sullivan
Carter York

CleanTag Permits
4804 Menchaca Rd. Unit B
Austin, TX 78745
512-826-4209
cleantagpermits.com

[Quoted text hidden]

From: [Jordan Word](#)
To: [Jennifer Bills](#)
Subject: FW: Expired Permits - 402 Camp Craft Rd. (#2021-10218 Demo; #2021-10157 SFR Remodel/Addition; #2021-10216 Outbuilding Remodel/Addition; #2021-10217 Outbuilding Remodel/Addition; #2022-10549 OSSF)
Date: Friday, May 3, 2024 2:54:14 PM
Attachments: [image001.png](#)

Thank you,

Jordan Word

Building Official/City Inspector
City of West Lake Hills, TX
Direct – (512) 610-6827
Office – (512) 327-3628 (ext. 827)



From: Jordan Word <jword@westlakehills.gov>
Sent: Wednesday, April 10, 2024 7:50 AM
To: Ryan Pitylak <ryan@ryanpitylak.com>
Cc: cleantagpermits@gmail.com; eric@rauserconstruction.com; Jennifer Bills <jbills@westlakehills.gov>; Joel Sherrouse <jsherrouse@westlakehills.gov>; Alex Sanchez <asanchez@westlakehills.gov>
Subject: RE: Expired Permits - 402 Camp Craft Rd. (#2021-10218 Demo; #2021-10157 SFR Remodel/Addition; #2021-10216 Outbuilding Remodel/Addition; #2021-10217 Outbuilding Remodel/Addition; #2022-10549 OSSF)

Good morning Ryan,

We have spoken internally about your request to extend the permits and have concluded that we are unable to do so, per city ordinance. But you do have the ability to appeal the expiration of permits to the City Council for consideration, see process below.

“If you would like to appeal the expiration determination by the Building Official/City Inspector, you may submit an appeal with any supporting documentation to the Director of Building &

Development, Jennifer Bills, that will be taken to the City Council for consideration (Section [22.03.512](#) Appeal from denial of permits from city inspector). Once the appeal request is received, we notify you of the meeting date and will send written notice of the appeal to all property owners within 200 feet of the subject property.”

Please understand that your permits are currently expired, meaning no work can commence during this time. A new permit application and full plan review can be submitted to obtain new permits and any applicable variances for the proposed work OR;

If you choose to go the route of an Appeal to Council the following steps need to be taken as soon as possible so your case can be presented as the next available council meeting (which requires a 30-days notification period), please provide the following:

1. A **signed formal request for reconsideration**. This is for the building permits and any applicable variances. (you may use what you have already sent if you would like).
2. Submit any and **all-relevant documentation** you would like to present, detailing your case for reconsideration.
3. Once received we will reach out with the 30-day notification timeline and next available council meeting. This is a public meeting you will be able to attend if you so choose.

Feel free to follow-up with any questions you may have.

Thank you,

Jordan Word

Building Official/City Inspector

City of West Lake Hills, TX

Direct – (512) 610-6827

Office – (512) 327-3628 (ext. 827)



From: Ryan Pitylak <ryan@ryanpitylak.com>

Sent: Friday, April 5, 2024 2:37 PM

To: Jordan Word <jword@westlakehills.gov>

Cc: cleantagpermits@gmail.com; eric@rauserconstruction.com; Jennifer Bills <jbills@westlakehills.gov>; Joel Sherrouse <jsherrouse@westlakehills.gov>; Alex Sanchez <asanchez@westlakehills.gov>

Subject: Re: Expired Permits - 402 Camp Craft Rd. (#2021-10218 Demo; #2021-10157 SFR Remodel/Addition; #2021-10216 Outbuilding Remodel/Addition; #2021-10217 Outbuilding Remodel/Addition; #2022-10549 OSSF)

Jordan

Thank you for the email and for talking with me yesterday.

I lost my job in July of last year and subsequently put the project on hold while I regrouped and got my finances in order. As you can imagine, the job loss was traumatizing for our family, but I am happy to report that I've found a new job and have also done some things in my personal financial life to free up the funds to complete the project regardless of employment. We were actually in the process of restarting the process last week.

I'm sorry for not fully acknowledging the requirements for the permits. I called someone when they were initially granted and I learned that construction needed to start within 60 days but I didn't realize the additional requirements around demolition completion timeline, construction build start timeline, etc. We've kept the surety bond active because we always intended to restart the project.

As you recommended, I would like to know if your Director and the City Planner would be around some time next week to sit down to discuss my options. I would really like to extend the building permits that are associated with the remodel of the two existing structures. We had planned to restart that project this month. We are not planning to build the workshop on the back of the property and we can continue to let that permit stay expired.

Again I'm really sorry that I've screwed this up. I'm coming to you, hat in hand, asking to see if you'd be willing to extend those expired permits. Otherwise we'll have to go through the permitting process all over again, seeking a variance for that small building remodel, which also seems like a lot of additional, duplicative work for the city. You have my commitment that we will restart the project immediately and get things moving

on time.

Let me know about the ability to have a sit down, hopefully next week.

Thanks,
Ryan

On Thu, Apr 04, 2024 at 12:33 PM, Jordan Word <jword@westlakehills.gov> wrote:

Good afternoon,

I am reaching out in reference to the subject property and associated permits above.

All permits listed above have exceeded the required commencement and/or completion deadlines required by our city codes as well as International Residential Code (<https://ecode360.com/40398658>; [IRC 105.5 Expiration](#)). At this time, the permits have now been expired and will require new permit applications and full plan review to obtain new permits before any work is to begin. Furthermore, the construction fence, erosion controls and any additional construction material are to be removed from the site within 15-days of this notice (April 19th; <https://ecode360.com/40399483>) to avoid an official Notice of Violation.

Feel free to follow up with any questions or concerns you may have.

Thank you,

Jordan Word

Building Official/City Inspector

City of West Lake Hills, TX

Direct – (512) 610-6827

Office – (512) 327-3628 (ext. 827)



GENERAL

1. Dimensions refer to rough surfaces. The contractor must verify all dimensions and elevations prior to start of construction. The engineer shall be notified of any discrepancies or inconsistencies.
2. All drawings are considered part of the contract documents. The contractor shall be responsible for review and coordination of all drawings and specifications prior to start of construction. Any discrepancies that occur shall be brought to the attention of the engineer prior to the start of construction so that clarifications can be issued. Any work in conflict with contract documents or any code requirements shall be corrected by the contractor at his own expense and at no expense to the owner or structural engineer.
3. All work shall conform to the minimum standards of the building code as well as any other regulating authority over any portion of the work including those additional codes and standards listed in the structural notes and specifications.
4. The engineer shall not control and shall not be responsible for construction means, methods, techniques, sequences, or procedures; for safety precautions and programs in connection with the work, for the acts or omissions of the contractor, subcontractor, or for any persons performing the work, or for the failure of any of them to carry out the work in accordance with the contract documents.
5. Site observations by field representatives of the engineer are solely for the purpose of determining if the work of the contractor is proceeding in accordance with the structural contract drawings. This limited site observation should not be constructed as exhaustive or continuous to check the quality of the work, but rather an effort to guard the owner against defects or deficiencies in the work of the contractor.
6. All structures require periodic maintenance to extend life span and to insure structural integrity from exposure to the environment. A planned program of maintenance shall be established by the building owner. This program shall include items such as painting of structural steel, protective coating for concrete, sealants, caulked joists, expansion joints, control joists, spalls and cracks in concrete.
7. Refer to Architectural, Mechanical, Electrical and Plumbing drawings for additional information not shown in the structural drawings. Notify engineer of any discrepancies.
8. Contractor shall coordinate the requirements for building equipment supported on or from the structure. Submittals identify all equipment supported on or from the structure. Submittals identify all equipment including size, dimensions, clearances, accessibility, weights and reactions. Any deviations from specified equipment shall be noted on the submittals.
9. Shop drawings shall be prepared for all structural items and submitted for review by the Engineer. Contract Drawings shall not be reproduced and used as shop drawings. All items deviating from the Contract Drawings or from previously submitted shop drawings shall be noted.
10. The details designated as "Typical Details" apply generally to the Drawings in all areas where conditions are similar to those described in the details.
11. The design and provision of all temporary supports required for the execution of the contract such as guys, braces, shores, reshores, falsework, supports and anchors are not included in these drawings and shall be the responsibility of the Contractor. Temporary supports shall not result in the overstress or damage to the structure.

REQUIRED OBSERVATIONS BY ENGINEER OF RECORD

The structural engineer of record, or his designate, shall provide structural observation of the structural system for general conformance to the approved plans and specifications at significant construction stages:

1. PREPOUR OF FOUNDATION
2. STRUCTURAL STEEL FRAMING
3. WOOD FRAMING, PRIOR TO BUILDING WRAP

The structural observation is an integral component of the oversight of the construction of the project. If the observations are not performed due to negligence of the owner or contractor, or the contractor does not address the issues raised by the engineer of record at the structural observation, the engineer of record is released of any claims regarding the structural design.

BEYOND SCOPE OF STRUCTURAL ENGINEER

1. The following items are beyond the scope of the structural engineer and are therefore the responsibility of others. The client is responsible for arranging for the design of these systems. Any mention of these items on these drawings is for information purposes only and does not relieve the client of these responsibilities:
 - A. Drainage systems including surface drainage, any area inlets, grate drains, french drains, and subgrade drain pipes
 - B. Waterproofing systems including vapor barriers, roofing, flashing, waterproofing, and drip edges
 - C. Ventilation of crawlspace and attic
 - D. Glazing design and attachment
 - E. Finishes of architecturally exposed concrete

CODES

All work shall be performed in accordance with applicable sections of the 2015 edition of the International Residential Code (IRC 2015) , all local amendments, and all referenced codes, specifications, and standards listed below.

1. Structural Concrete: Building Code Requirements for Reinforced Concrete; American Concrete Institute. (ACI 318-11)
2. Structural Steel: Specification for Structural Steel Buildings, as published in the Manual of Steel Construction 14th Edition; American Institute of Steel Construction. (ANSI/AISC 360-10)
3. Wood Framing: National Design Specification For Wood Construction with 2012 Supplement; American Forest and Paper Association. (ANSI/AF&PA NDS-2012)
4. Structural Plywood: Panel Design Specification; American Plywood Association. (APA Form D510C)
5. Brick and Concrete Masonry: Building Code Requirements for Masonry Structures; Masonry Standards Joint Committee. (ACI 530-11/ASCE 5-11/TMS 402-11)

LOADS

- | | | |
|------|--|---------|
| 1. | Live Loads - Single Family Residential | |
| 1.1. | Typical, u.n.o | 40psf |
| 1.2. | Sleeping Areas | 30 psf |
| 1.3. | Attic Space | 10 psf |
| 1.4. | Balconies | 60 psf |
| 1.5. | Stairs | 100 psf |
| 1.6. | Awnings or Canopies | 10 psf |
| 2. | Wind Load | |
| 2.1. | Basic Wind Speed (3-sec. gust) | 115 mph |
| 2.2. | Wind Exposure | B |
| 2.3. | Internal Pressure Coefficient | ±0.18 |
| 3. | Dead Loads | |
| 3.1. | Roofing (TPO) | 8 psf |
| 3.2. | Roofing (Metal) | 10 psf |
| 3.3. | Wood Soffit | 10 psf |
| 3.4. | Brick Veneer | 50 psf |
| 3.5. | Floor Dead (HARDWOOD) | 25 psf |
| 4. | Snow Loads | |
| 4.1. | Ground Snow Load | 5 psf |
| 4.2. | Snow Importance Factor | 1.0 |

BUILDING PAD

3. Prior to excavating for building pads or placing any fill soils, all organic materials, existing pavements, and otherwise unsuitable materials shall be removed from planned building areas to a depth of 6" below grade. Site stripping shall include the limits of any proposed building and abutting sidewalks or flatwork, plus a horizontal distance of 3 feet beyond.
4. Concrete slab to be built over 6" of compacted select fill.
5. Bottom of exterior grade beams shall be founded 30" INTO GRADE, or "6" INTO UNDERLYING LIMESTONE unless noted otherwise.
6. Bottom of grade beams shall have a slope less than or equal to 1 in 10. Under no circumstances shall concrete beams be placed on sloping grad greater than 1 in 10. Bottom of grade beams shall be free of loose deleterious fill material including topsoil, loose rocks, crushed rock, base material, water, or moist soil.
7. Place imported select fill in approximately 8-inch loose lifts, watered as required and compacted to 95 percent of maximum dry density (as defined in ASTM D 698) at a moisture content within -3 to +3 percent of optimum moisture content. Compacted thickness of each lift should not exceed 6 inches.
8. Grade adjustments within the building limits shall be accomplished with select fill soils meeting TxDOT standard specifications Item 247, Type A, Grade 4 (Crushed Limestone Base Material). All structural fill shall be placed on prepared surfaces in lifts not to exceed eight inches loose measure with compacted thickness not to exceed six inches. The fill shall be compacted to at least 95 percent of the ASTM 698 maximum dry density at a moisture content ranging between -2 and +3 percent of optimum moisture content.
9. Structural Fill shall be hard durable particles of gravel or crushed stone, with no organic material
10. Where not covered by concrete flatwork or pavements, provide 2-foot thick clay caps at overbuild areas along the perimeters of slabs-on-grade over building pads, to protect from moisture intrusion. Caps shall slope away from buildings.
11. Provide a 10 mil vapor barrier placed according to manufacturer's recommendations between the bottom of slab and the top of the select fill. Moisture barrier shall not be draped continuous across the bottom of grade beams.

CAST IN PLACE CONCRETE

1. Cast in place concrete shall meet the following requirements:

Class	28 Day	Type	Aggregate		
	Strength		Size	Slump	Use
A	3000psi	C33	1"	3"-5"	All

3. Provide 3 percent plus or minus 1 1/2 percent of entrained air in concrete permanently exposed to the weather.
4. Contractor shall develop and submit a hot weather concreting plan for approval. Follow ACI 305 recommendations in developing hot weather concreting plan.
5. Proper consolidation must be achieved through externally vibrating the forms, vibrating the wet concrete or by other appropriate means.
6. Comply with the provisions of the following latest codes, specifications and standards, except as otherwise shown or specified:
 - a. ACI 301 "specifications for structural concrete for buildings".
 - b. ACI 311 "recommended practice for concrete inspection".
 - c. ACI 318 "building code requirements for reinforced concrete".
 - d. ACI 347 "recommended practice for concrete formwork".
 - e. ACI 304 "recommended practice for measuring, mixing, transporting and placing concrete".
 - f. Concrete reinforcing steel institute, "manual of standard practice".
7. Embedded conduits, pipes, and sleeves shall meet the requirements of ACI 318-02, Section 6.3, including the following:
 - a. Conduits and pipes embedded within a slab, wall, or beam (other than those passing through) shall not be larger in outside dimension than 1/3 the overall thickness of the slab, wall or beam in which they are embedded.
 - b. Conduits, pipes and sleeves shall not be spaced closer than three diameters on center.
8. Concrete pours shall not exceed 8000 square feet or 100 linear feet on each side without prior approval by the Architect for each pour or noted on plan.
- 9.10. Submittal: Submit proposed mix designs in accordance with ACI 301, chapter 10.3.9. Each proposed mix design shall be accompanied by a record of past performance based on at least 30 consecutive strength tests, or by three laboratory trial mixtures with confirmation tests.
- 9.11. Contractor shall coordinate all exposed concrete with architectural finish and specifications. Contractor shall submit concrete curing procedure for all architecturally exposed concrete.
- 9.12. The contractor is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances and finishes. Correct deficient concrete as directed by the architect.

CONCRETE REINFORCING

3. Reinforcing steel shall be deformed new billet steel bars in accordance with ASTM A615 Grade 60.
4. Detailing of reinforcing steel shall conform to the American Concrete Institute Detailing Manual.
5. All hooks and bends in reinforcing bars shall conform to ACI detailing standards unless shown otherwise.
6. Provide reinforcing bars in accordance with the bar bending diagram if bar types are specified. In unscheduled beams, slabs, columns and walls detail reinforcing as follows:
 - a. Lap top reinforcing bars at mid span.
 - b. Lap bottom reinforcing bars at the supports.
 - c. Lap vertical bars in columns and walls only at floor lines, unless noted otherwise.
 - d. Refer to lap splice schedule for splice length requirement.
 - e. Reinforcement labeled as continuous shall be lap spliced 38 bar diameters as a minimum, unless otherwise noted.
 - f. Provide standard hooks in top bars at cantilever and discontinuous ends of beams, walls and slabs.
 - g. Provide corner bars for all horizontal bars at the inside and outside faces of intersecting beams or walls. Corner bars are not required if top, bottom, or horizontal bars are hooked.
7. Welding of reinforcing steel will not be permitted.
8. Heat shall not be used in the fabrication or installation of reinforcement.
9. Reinforcing steel clear cover shall be as follows:
 - a. Grade beams -
1 1/2" top, 3" bottom,
2" side (formed), 3" side
(placed against earth)
 - b. Slabs above grade -
1"
10. Submit: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Details and Detailing of Concrete Reinforcement". Do not reproduce the Contract Drawings for use as shop drawings.

WOOD FRAMING

3. All sawn lumber and pre-manufactured wood products shall be identified by the grade mark or a certificate of inspection issued by the certifying agency.
4. Unless otherwise noted, all structural framing lumber shall be clearly marked No. 2 grade Southern Yellow Pine (SYP), except that non-loadbearing interior walls may be stud grade SYP, Douglas Fir-Larch (Doug Fir), or Spruce-Pine-Fir (SPF).
5. All wood stud walls shall be full light without intermediate plate line.
6. Exterior, load-bearing wood stud walls shall be 2x6 studs at 16 inches on center.
7. Finger Jointed Studs are acceptable at interior, non-load bearing stud walls only.
8. All load bearing walls greater than 10'-0" in height shall have solid 2x blocking at 4'-0" o.c. maximum vertically. End nail with 2-16d nails or side toe nail with 2-16d nails.
9. Provide double studs at all wall corners and on each side of all openings, unless noted or detailed otherwise.
10. Place a single plate at the bottom and a double plate at the top of all stud walls. Exterior sill plates shall be bolted to the foundation with 1/2" anchor bolts with a minimum embedment of 8" spaced at 4'-0" on center. Provide a minimum of two bolts per plate segment. Sill plates in contact with concrete or masonry shall be pressure treated with a preservative.
11. Where shown, wood connectors shall be Simpson Strong-tie as specified in the latest catalog. Connectors by other manufacturers may be substituted provided such connectors have the current ICC approval for equal or greater load capacities and is submitted for approval by the Engineer of Record. Connectors shall be installed per the manufacturer's directions.
 - a. Where connectors are used in exposed or exterior applications, and when connectors are in contact with preservative treated (PT) lumber, connectors are to be hot dipped galvanized (HDG), mechanically galvanized (ASTM B695, Class 40 or greater) stainless steel, or zinc galvanizing equal or greater to ZMAX Simpson finish.
12. Fasteners shall conform to IRC 602 "Fastener Schedule" unless otherwise noted. Nail according to IRC. Nails shall be common. Alternate nails may be used upon review and approval by structural engineer of record. Staples for the nailing or rated sheathing is subject to review and approval by the structural engineer of record.
13. Moisture content of all sawn lumber shall have a maximum of 19%, with the exception of pressure treated wood sill plates. Moisture content can be lower than 19%. Refer to architect's drawings and project specifications and with cladding installer for maximum recommended moisture content.
14. Preservative Treated (PT) wood materials are to be used per IRC. "Decay and Termite Protection" shall conform to the appropriate standards of the American Wood Preservers Association (AWPA) for sawn lumber. Fasteners, anchors, and connectors touching treated wood shall be either stainless steel or hot-dipped galvanized.
15. Refer to the architectural drawings for additional wood framing members. Provide additional wood framing members shown on the architectural drawings even though they may not be shown on the structural drawings.

WOOD STRUCTURAL PANEL SHEATHING

1. Floor sheathing: 1 1/8" APA-rated, tongue and groove plywood Sturd-I-Floor sheathing with an Exposure 1 rating. Floor sheathing shall be glued to the wood support members with a wet use adhesive, in addition to being nailed to the supports per wood framing typical details. Stagger joints in sheathing.
2. Roof sheathing: 5/8" APA-rated sheathing with an exposure 1 rating. Panels shall be continuous over two or more spans with the long dimension oriented perpendicular to the framing members. Nail with 8d common nails at 6" on center at supported edges and 12" on center at intermediate supports. Stagger joints in sheathing.
3. Wall sheathing: All exterior wall framing shall be braced by 4'-0" wide x 1/2" thick panels of APA rated sheathing with an exposure 1 rating extending from the top plate to the sill plate. Where wall is taller than 8'-0", provide multiple panels as required to extend from sill plate to top plate. Provide 2x blocking as required to support all panel edges. Nail with 10d common nails at 6" on center at supported edges and 12" on center at intermediate supports. REFER TO WALL BRACING PLAN FOR ADDITIONAL INFORMATION

COMPOSITE WOOD MEMBERS

1. Engineered lumber shall have the following minimum design properties:

	Fb (psi)	Fv (psi)	E (psi)
Microllam (LVL)	2600	285	2,000,000
SYN GlueLam (24F-1.8)	2400	200	1,800,000
Parallam (PSL)	2900	290	2,000,000

2. Do not notch joists or beams. Drill holes through webs of engineered wood members for mechanical, electrical or plumbing services in accordance with the recommendations of the engineered wood product manufacturer.
3. Multiple wood beams up to three members thick shall be nailed together with three rows of 16d nails at 12" on center. Four or more multiple wood beams and any multiple wood beams utilizing beams thicker than 1 3/4" shall be bolted together with 1/2" diameter bolts top and bottom at supports and ends of the beam, then at 24" on center, staggered top and bottom for the full length of the beam.
4. Where multiples of two 1 3/4" Microllam LVL beams are noted on the drawings, contractor may provide single 3 1/2" beams in lieu of double 1 3/4" beams.

CONCRETE FOOTINGS

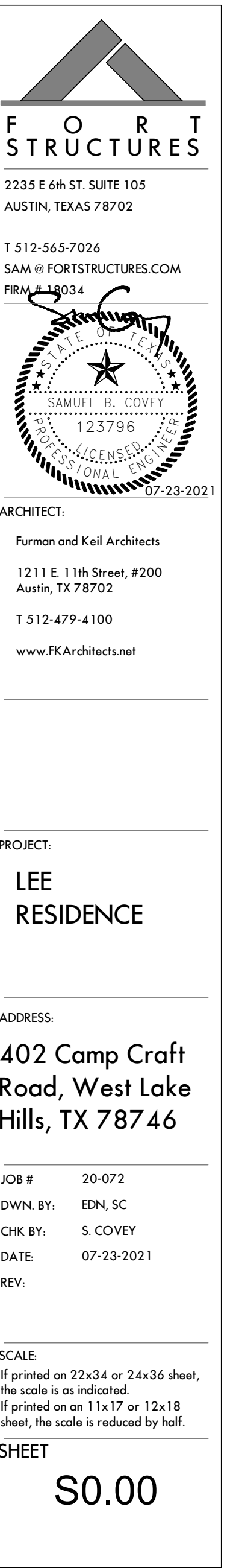
1. Concrete footing design is based on an allowable net bearing capacity of 1500 psf in accordance with the IRC.
2. Bearing stratum shown on the footing details is 6" minimum embedment into underlying limestone.
3. Footings not specifically located on the plan shall be located on centerline of pilaster or column above. Where no pilaster or column occurs, locate on centerline of wall or beam.
4. Elevation of top of footings, unless noted otherwise on drawings, is at the bottom of the deepest intersecting beam or wall supported by the footing.
5. Footing excavations shall be to neat lines and shall be free of loose or wet materials.
6. Concrete should be placed within 2 weeks of the completion of footing excavations and the moisture barrier should be installed before any notable rainfall event. If the bearing soils are softened by surface water intrusion or disturbance, the softened soils must be removed from the foundation excavation bottom prior to concrete placement. Exposure to the environment may weaken the soils at the grade beam bearing level if the foundation excavations remain open for an extended duration.
7. See plans and schedules for footing sizes, reinforcing and depths.
8. All footings shall be inspected by a representative of Fort Structures in order to ensure that the proposed bearing material has been reached in accordance with the plans and that the footing has been constructed to specified size, with detailed reinforcing, and to specified tolerances.

EXISTING CONDITIONS

1. Existing conditions of the existing structure are unknown, and the contractor is advised to verify all the existing structure including, but not limited to size and location of all existing foundation and framing elements and verify all dimensions. Notify engineer of any discrepancies or substandard construction. Contractor to repair and/or replace any damaged or substandard construction.
2. In as much as the remodeling and/or rehabilitation of an existing structures requires that certain assumptions be made by the Engineer regarding existing conditions, and because some of these assumptions may not be verifiable without the Client's expending substantial sums of money or destroying otherwise adequate or serviceable portions of the structure, the Client has agree to bear all costs, losses, and expenses, including the costs of Engineer's Additional Services, arising from the discovery of concealed or unknown conditions in the existing structure and foundation.
3. Engineer did not design nor construct the existing structure, foundation and framing, and therefore does not guarantee or warranty the existing construction and/or design. The existing structure should have no issue carrying the remodeled structure if the original structure is performing in accordance with the original design of the engineer of record. Future performance of the existing structure is expected to be similar to its current performance. Owner agrees to indemnify and hold harmless the Engineer from and against all actions, suits, liabilities, losses, costs, damages, settlements, judgments, and claims of every type arising out of the existing structural performance.



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PREFABRICATED METAL PLATE CONNECTED WOOD TRUSSES

- Trusses shall be designed by the Contractor in accordance with the Truss Plate Institute "Design Standard for Metal Plate Connected Wood Truss Construction" (ANSI/TPI 1-95) and shall conform to IBC Section 2303.4.
- Submittals: Submit product data and proof of ICBO approval for framing members and fasteners that have been designed by others. Submit calculations prepared by an engineer licensed in the state of Texas for all members and connections designed by others along with their respective shop drawings. All necessary bridging, blocking, and blocking panels and web stiffeners shall be detailed and furnished by the supplier. Temporary and permanent bridging shall be installed in conformance to the manufacturer's installation requirements.
 - Metal plate connected roof truss shop drawings shall provide detailed description of shapes, bearing points, hips, and valleys as shown in the drawings. Provide special trusses such as jack-trusses, girder trusses and step down trusses to match drawings. Provide all truss connection details and required connection materials. Provide all truss reactions on shop drawings.
 - Metal plate connected floor truss shop drawings shall provide detailed description of shapes, bearing points, and step downs. Provide all truss connection details and required connection materials. Provide all truss reactions on shop drawings.
- Truss members shall be clamped in a mechanical or hydraulic jig with sufficient pressure to bring members into reasonable contact at all joints during application of connector plates.
- Provide adequate erection bracing in accordance with Truss Plate Institute publication HIB-91.
- Truss Manufacturer shall provide permanent bracing as required by the design of the trusses. Erection bracing may remain in place as permanent bracing where it does not interfere with the architectural finishes.
- All timber truss members shall be Southern Yellow Pine with a maximum moisture content of 19%. Chord members shall be No. 2 or better and web members shall be No. 3 or better.
- Connection plates shall be manufactured by a WTCA member plate manufacturer. Plates shall be 20 gauge minimum, ASTM A446 grade A steel, with a G60 galvanized coating.
- Trusses shall be designed in accordance with the following requirements:
 - Top chords shall be designed to resist the local bending induced by the floor or roof uniform load on the top chord.
 - Limit live load deflection of floor trusses to L/480. Total load deflections shall be limited to L/360
 - Truss members and connections shall be proportioned with a maximum allowable stress increase for duration of load as follows:
 - Roof Loads 25 percent
 - Trusses shall be designed for the superimposed dead and live loads as noted in the Structural Notes and as indicated on the drawings. Dead loads shall not be less than the following:

Floor - Top Chord	20 psf
Floor - Bot. Chord	5 psf
Roof - Top. Chord	10 psf
Roof - Bot. Chord	5 psf
- Connect roof trusses to bearing wall or beam support at each end with a type H2.5 framing anchor as manufactured by the Simpson Company or approved equal.

MASONRY VENEER

- Maximum wall height: Install over backing of wood wall and limited in height to a maximum of 30 feet above foundation (38 feet permitted at the top of gable ends).
- Masonry on Wood: Where indicated on plans, masonry weighing less than 40 psf may be supported on wood framing (deflection limit L/600). Install a movement joint between the veneer supported by wood and the veneer supported by the foundation.
- Anchorage: Anchor to wood wall framing with corrosion resistant 22 gauge X 7/8" corrugated sheet metal ties spaced a maximum of 24" horizontally and 19.5" vertically.
- Lintels over Openings: Support Masonry on loose lintels per code supported on masonry to foundation at each end.
- Isolation Joints: Install vertical isolation/expansion joints at approximately 25 feet on center.

STRUCTURAL STEEL

- All structural steel rolled shapes shall conform to ASTM A992 and shall have fy = 50 ksi (yield stress, min). Rect. HSS shapes shall conform to ASTM A500 GR. B. fy = 46 ksi. Channels, bars, and plates shall conform to ASTM A36 or ASTM A572 with fy = 36 ksi, minimum. Rods and pipes shall conform to ASTM A36 with fy = 36 ksi, minimum.
- All bolts for structural steel shall conform to ASTM A325. Bolts in moment connections and bracing shall be "slip critical" bolts. All others may be bearing bolts and installed per AISC "snug" tight criteria. High-strength bolts in moment connections shall be "snug" tightened before welding, and final tightened after welding.
- All anchor bolts shall conform to paragraph 1.3 of ASTM A307.
- electrodes for all field and shop welding shall conform to ASTM A233, E70xx, except use E60xx to weld steel deck. All welding shall conform to the standards of the American Welding Society. Filler metal fy = 60 ksi minimum. Provide back-up plates for all single bevel groove welds. All groove or butt welds shall be full-penetration welds.
- All structural steel details and connections shall conform to the standards of the AISC unless detailed otherwise.

STRUCTURAL STEEL CONNECTIONS

- Welding shall conform to ANSI/AWS D1.1, latest edition.
- Bolts conform to ASTM A325. Bolts shall be designed using values for bearing type bolts with thread allowed in the shear plane.
- For connections not specifically addressed by these notes or the Drawings, provide fillet welds at all contact surfaces sufficient to develop the tensile strength of the smaller member at the joint.
- Moment connections indicated on Drawings as "MC" shall be welded to develop the full capacity of the member on both sides of supporting member..
- Fillet welds with no size specified shall be 3/16", or minimum size required by AISC, whichever is larger.

POST-INSTALLED ANCHORAGE (INTO EXISTING MASONRY)

- Adhesive anchors shall only be used where specified on the drawings. The Contractor shall obtain approval from the engineer of record prior to using the anchors for missing or misplaced cast-in-place anchors.
- Unless otherwise noted, size and depth of the adhesive anchors specified in the drawings are based on HAS rods and the following epoxy:

EXISTING MASONRY EPOXY = Hilti HIT-HY 270 (with stl mesh sleeve)

- Substitution of expansion anchor products with similar capacities shall be submitted to the engineer of record for approval.
- Adhesive anchors of the size and embedment shown on the Drawings shall be installed in accordance with the Contract Documents, the manufacturer's recommendations, and the manufacturer's current ICBO report for the anchor. If conflicts exist between these referenced documents, the most stringent requirements shall govern.
- The Contractor shall locate all existing reinforcing steel and other embedded items contained in the concrete using non-destructive methods and shall position anchor locations to avoid conflicts with existing embedded items. Anchor locations can be adjusted by a maximum of 1 inch from detailed locations to avoid conflicts, unless noted otherwise.
- Based on field verified locations of reinforcing steel and embedded items, the Contractor shall create templates for each anchor group. Submit template dimensions for review prior to fabrication of connection plates.
- Holes for anchors shall be drilled in a continuous operation using the bit type and size recommended by the anchor manufacturer. Holes shall be drilled perpendicular to the concrete surface and shall not be enlarged or redirected at any point along its length. All debris shall be blown out of the holes with compressed air after drilling.
- All abandoned holes shall be filled with non-shrink grout.
- Holes in connection plates shall be no more than 1/16" larger than the anchor diameter. If larger holes are required for erection purposes, Contractor shall provide 1/4" x 3" x 3" plate washers sufficiently welded to the connection plate to transfer the specified load.
- Installation of adhesive anchors shall be continuously inspected by the testing agency to ensure that holes are of specified size, and that bolts are properly installed.

PERMIT DOCUMENTS

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07-23-2021

ARCHITECT:

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PROJECT:

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RESIDENCE

ADDRESS:

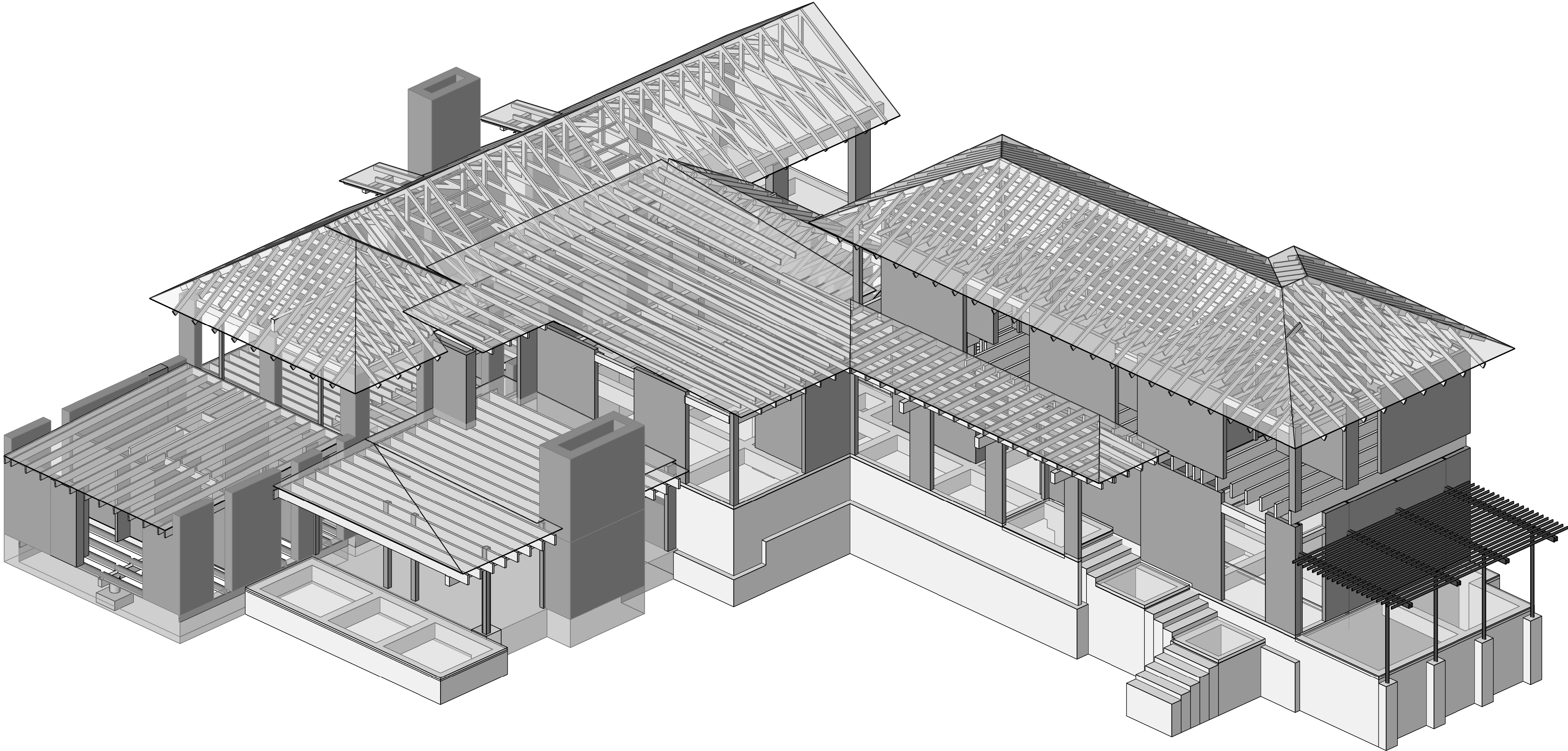
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Road, West Lake
Hills, TX 78746

JOB # 20-072
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CHK BY: S. COVEY
DATE: 07-23-2021
REV:

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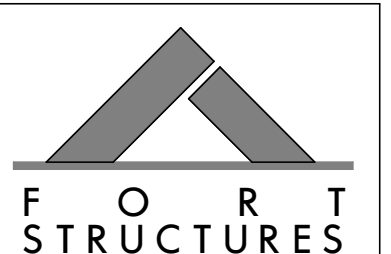
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01 3D VIEW-A
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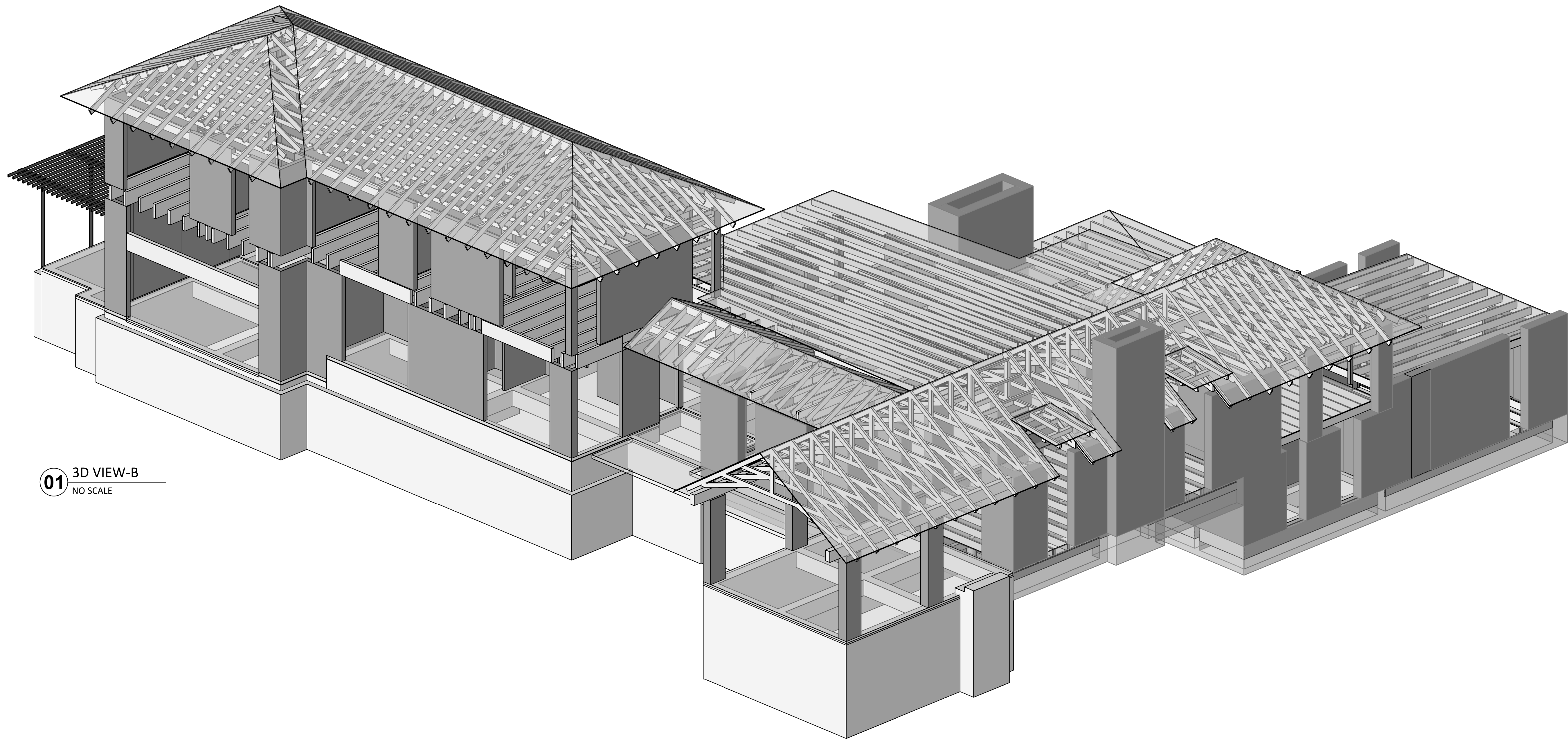
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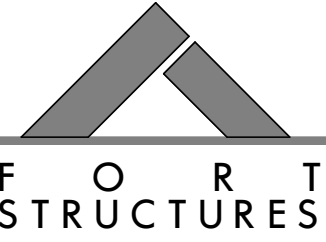
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01 3D VIEW-B
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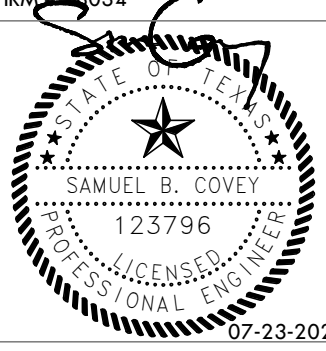
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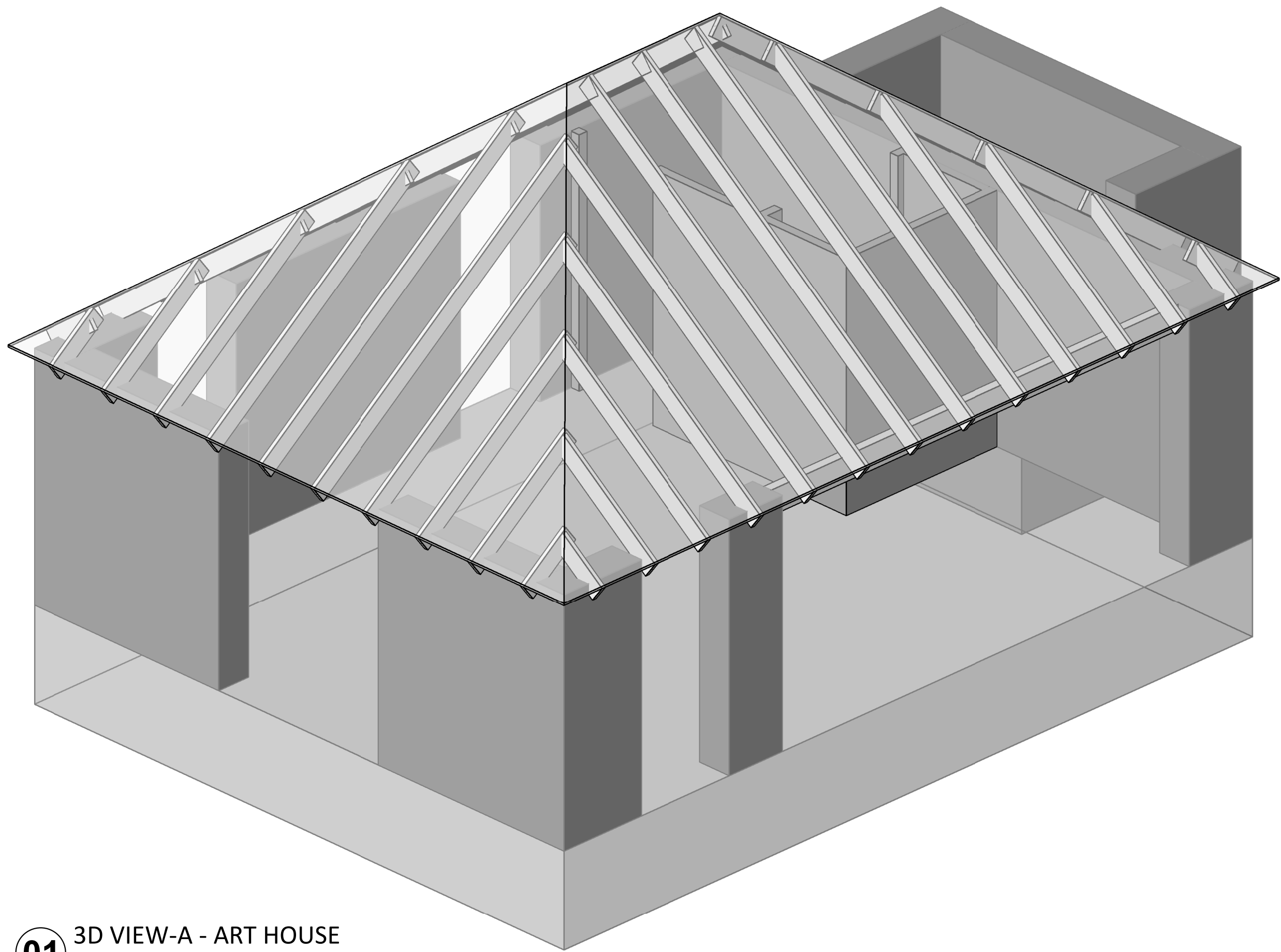
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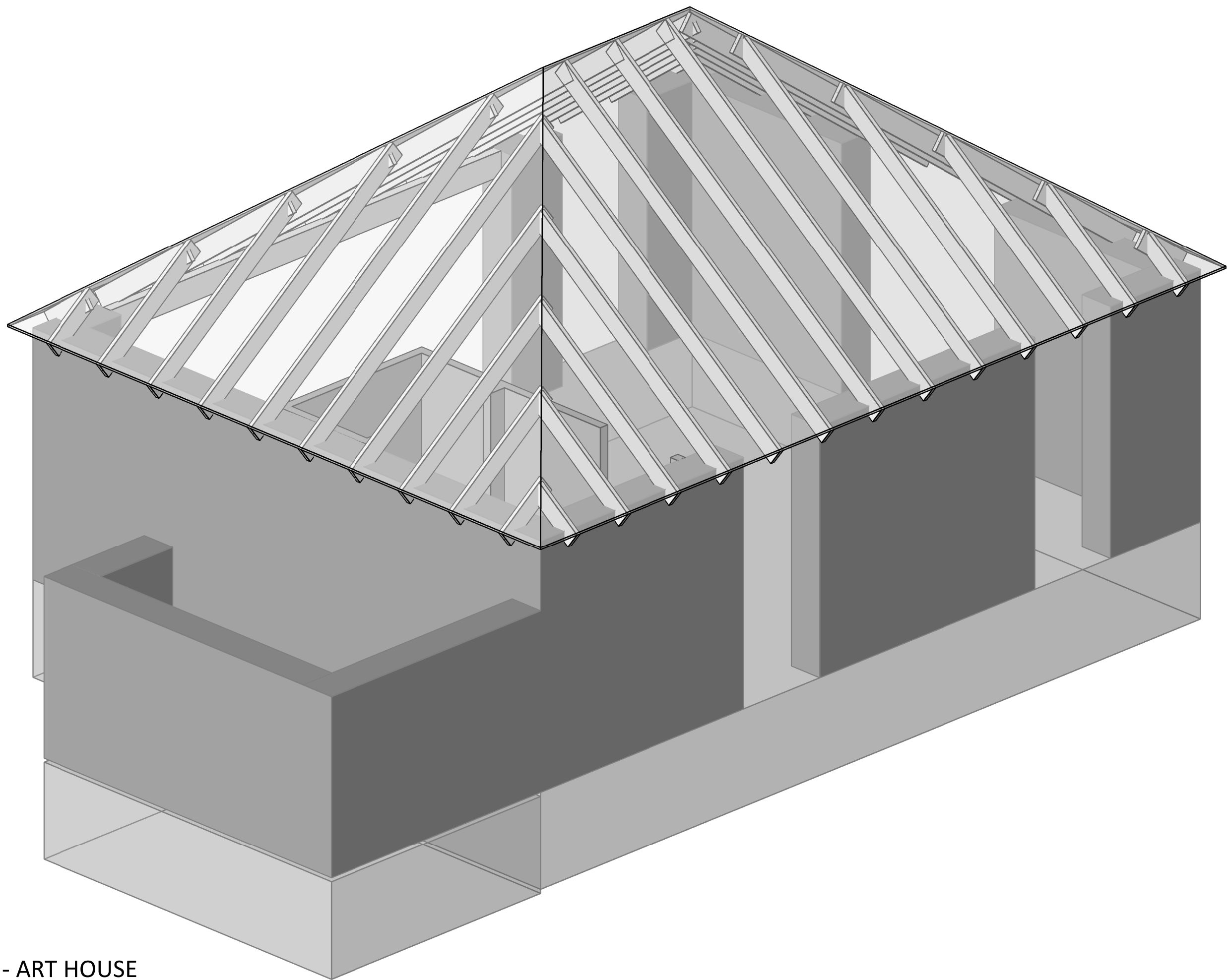
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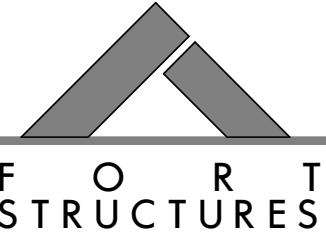
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SCALE:



02 3D VIEW-B - ART HOUSE
SCALE:

PERMIT DOCUMENTS

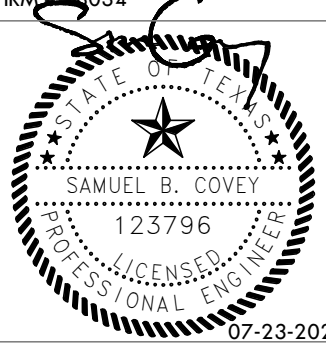
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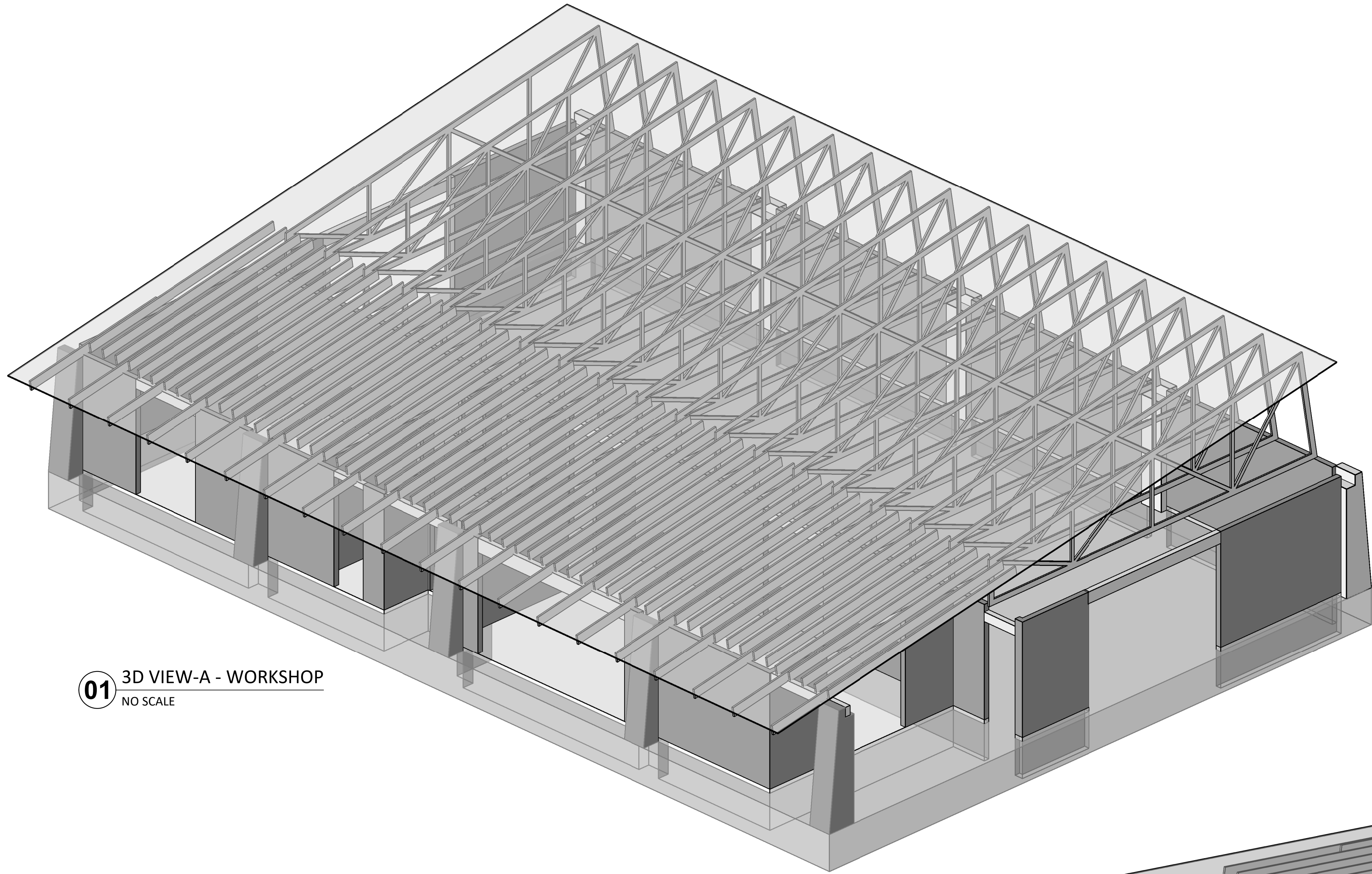
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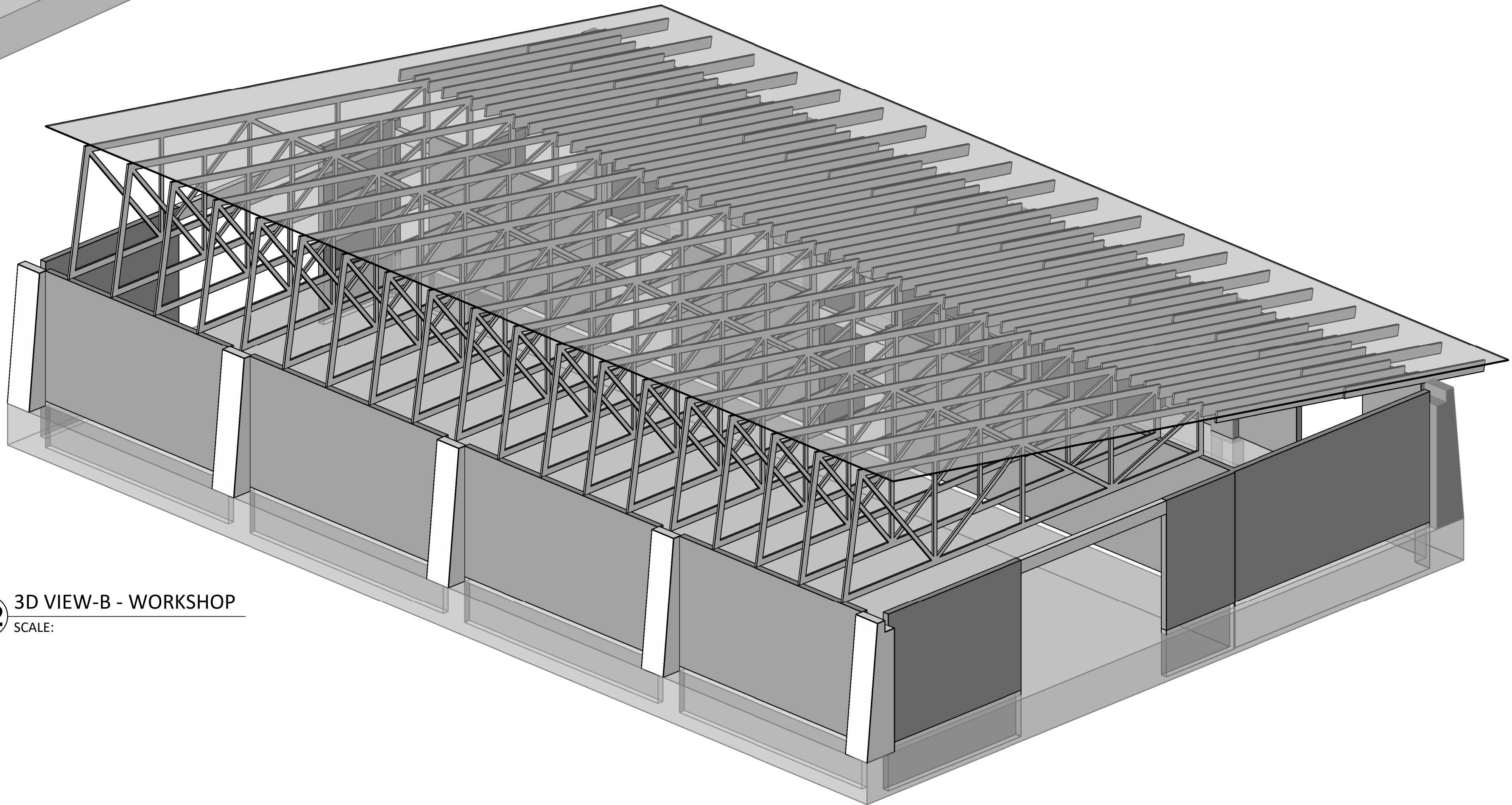
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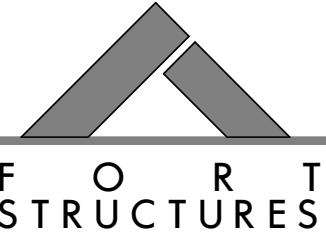
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NO SCALE



02 3D VIEW-B - WORKSHOP
SCALE:

PERMIT DOCUMENTS

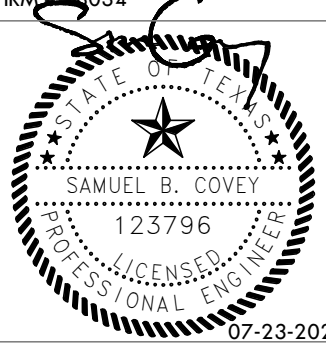
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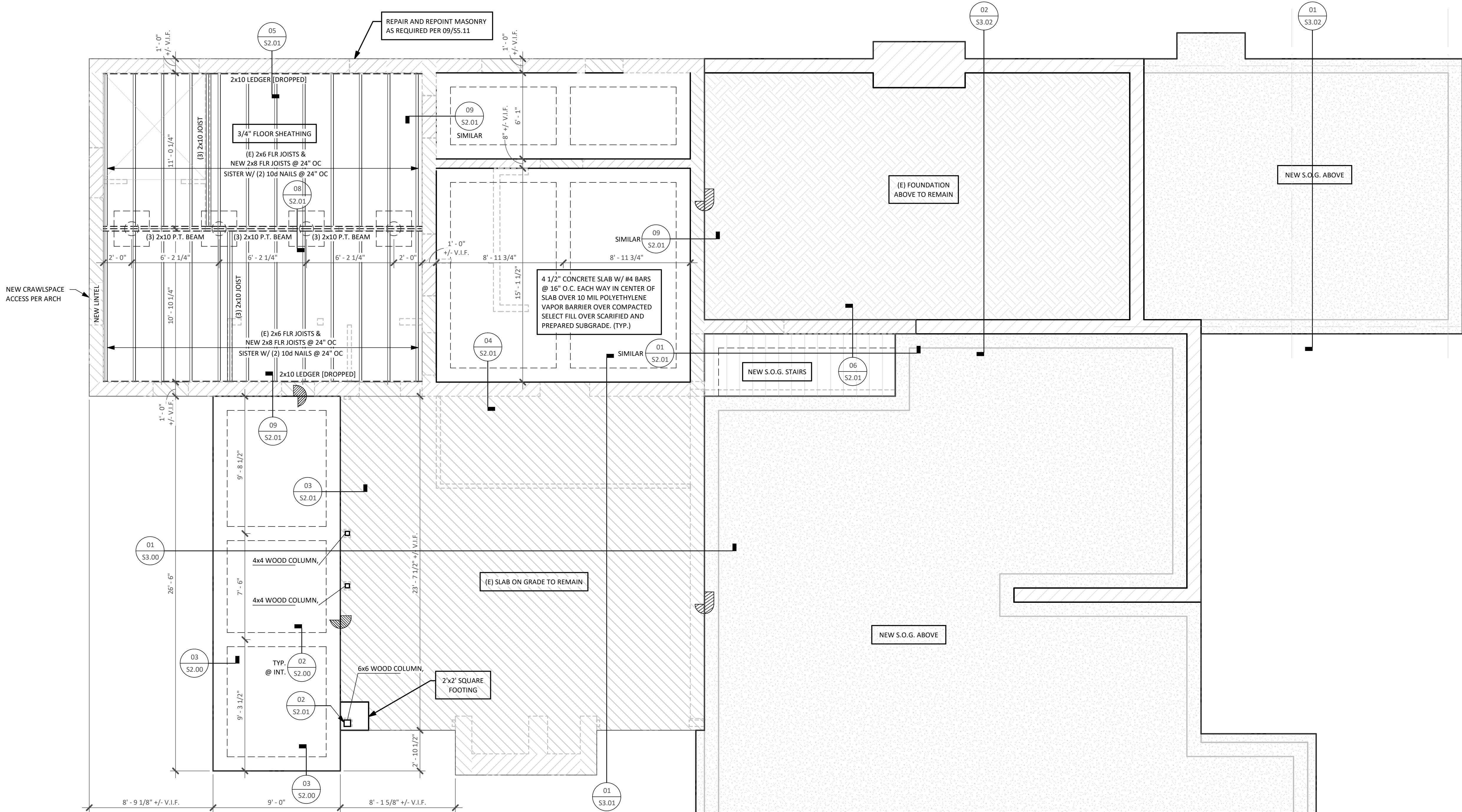
PROJECT:
**LEE
RESIDENCE**

ADDRESS:
**402 Camp Craft
Road, West Lake
Hills, TX 78746**

JOB #	20-072
DWN. BY:	EDN, SC
CHK BY:	S. COVEY
DATE:	07-23-2021
REV:	

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FOUNDATION PLAN NOTES:

- FOR T.O.S.C. ELEVATIONS, REFER TO ARCHITECTURAL DRAWINGS. ELEVATIONS NOTED ON PLAN ARE FOR REFERENCE ONLY. REFER TO AND VERIFY ALL DIMENSIONS AND ELEVATIONS W/ ARCHITECTURAL DRAWINGS.
- REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF WALLS, ROUGH OPENINGS, FLOOR RECESSES, DROPS AND SLOPES NOT DIMENSIONED ON PLAN.
- REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATIONS AND DIMENSIONS OF PENETRATIONS NOT SHOWN OR DIMENSIONED ON PLAN.
- REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION ABOUT CAST-IN ANCHOR PLATES.
- REFER TO TYPICAL CONCRETE DETAILS S2.10 AND S2.11 FOR ADDITIONAL INFORMATION.
- STEEL COLUMNS ARE NOTED ON PLAN AS FOLLOWS:

STEEL COLUMN SIZE
BP- BASEPLATE CALLOUT

EXISTING NOTES:

- FIELD VERIFY ALL DIMENSIONS
- FIELD VERIFY EXISTING CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES
- VERIFY SIZE AND DIRECTION OF FRAMING BEFORE STARTING CONSTRUCTION
- SHORE ALL EXISTING CONSTRUCTION DOWN TO THE FOUNDATION DURING DEMOLITION
- REPLACE ANY DAMAGE OR ROTTED WOOD
- REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION

NOTES:

FORT Structures did not design the existing foundation, and therefore does not guarantee or warranty the existing foundation construction and design. The existing foundation should have no issue carrying the remodeled structure if the original structure is performing in accordance with the original design of the engineer of record. Future performance of the foundation is expected to be similar to its current performance. There is potential for differential movement between new and existing construction.

01 LEVEL-0 FOUNDATION PLAN

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

PERMIT DOCUMENTS

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123796
PROFESSIONAL ENGINEER
07-23-2021

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S1.10

BRACED WALL NOTES

CODE:

International Residential Code 2015 Edition

BWL

Braced Wall Line

EX-LMS

Existing limestone masonry wall

CS-WSP

Continuously Sheathed - Wood Structural Panel

Solid sheath entire building and walls noted on plan with 7/16" to 1/2" wood paneling and fasten with 8d common nails at 6" on center at supported edges and 12" on center at the intermediate supports. Horizontal block all wood panels.

CS-PF

Continuously Sheathed - Portal Frame

REF DETAIL 5/54.11 AND IRC 602.10.6.2

LIB

Let In Bracing - Diagonal Strap, Refer 3/54.11
1x4 diagonal wood bracing continuous from top plate to bottom plate or approved metal straps (1 1/4" x 18 ga) at 45 to 60 degree angles for 16" stud spacing. Nail strap to each stud with (2)-8d nails. Install straps as per manufacturer's requirements. Braced walls must have 1/2" gypsum wall board installed on side of wall opposite the bracing material.

HD #

Hold Down callout - REF. SCHEDULE

REFER TO PAGE S4.11 FOR ADDITIONAL INFORMATION

SHEAR WALL LEGEND:

HD-1

12'-0"

MIN. SHEAR WALL LENGTH

HOLD-DOWN

SHEAR WALL MARK, REF. SCHEDULE

HOLD-DOWN MARK, SEE LIST

SHEARWALL SCHEDULE

MARK	SHEATHING	1	EDGE NAILING (PEN)	2	STILL PLATE NAILING (2 ROWS)	3	ANCHOR BOLTS W/ WASHERS	4
CS-WSP (TYP. @ EXTERIOR)	15/32" APA RATED CDX		8d @ 6" O.C.		16d @ 6" O.C.		1/2" DIA. x8" @ 48" O.C.	
A	15/32" APA RATED CDX		8d @ 6" O.C.		16d @ 6" O.C.		1/2" DIA. x8" @ 48" O.C.	
B	15/32" APA RATED CDX		8d @ 4" O.C.		16d @ 6" O.C.		1/2" DIA. x8" @ 36" O.C.	

NOTES

1. PRIOR TO CONSTRUCTION OF SHEARWALLS, REVIEW LATEST DIMENSIONED ARCHITECTURAL DRAWINGS AND NOTIFY STRUCTURAL ENGINEER OF ANY LOCATIONS WHERE MINIMUM SHEARWALL LENGTHS ARE NOT MET. MINIMUM LENGTHS BASED ON OUT TO OUT FACE OF TIEDOWN POSTS.

2. FIELD NAILING TO BE 8d @ 12" O.C. @ SHEARWALL PLYWOOD PANELS, TYP.

3. SEE PLANS FOR SHEARWALL TIE DOWNS, SIZES AND LOCATIONS.

4. PLACE SHEATHING ON SIDE OF WALL WHERE SHEARWALL SYMBOL OCCURS.

5. HORIZONTAL PLYWOOD SPLICES TO OCCUR AT RIBBON BAND. WHERE WALL HEIGHT DICTATES HORIZONTAL SPLICE AT WALL, PROVIDE 2x BLOCKING. DO NOT SPLICE AT DOUBLE 2x TOP PLATE.

6. USE 2x STUDS, DOUBLE TOP PLATE AND SINGLE SILL PLATE, U.N.O.

7. SHEATHING THICKNESS IS NOMINAL, ACTUAL THICKNESS EQUIVALENTS ARE: 1/2"= 15/32", 5/8" = 19/32", 3/4"= 23/32"

8. INSTALL (2)-2x STUDS OR 3x STUD AT EDGE OF PLYWOOD PANELS WHERE EDGE NAILING IS LESS THAN 6" O.C.

SHEARWALL SCHEDULE					
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	HOLDDOWN ANCHOR BOLT	END POST	CAPACITY	DETAIL
HD-1	SIMPSON HDU-5	5/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(2) 2x6	5645#	1/S1.06
HD-2	SIMPSON HDU-8	7/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(3) 2x6	7870#	1/S1.06
HD-3	SIMPSON HDU-11	1" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(4) 2x6	9335#	1/S1.06
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	DESCRIPTION	END POST	CAPACITY	DETAIL
HD-4	SIMPSON LSTA36	18 Ga. x1 1/4" x36" STRAP, FASTEN W/ (24) 10d SINKER NAILS	(2) 2x6	1640#	6/S1.06
HD-5	SIMPSON MSTC52	16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(2) 2x6	4745#	6/S1.06
HD-6	(2) SIMPSON MSTC52	(2) 16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(4) 2x6	9490#	6/S1.06
HD-7	SIMPSON MSTC48B3	14 Ga. x3" x45" STRAP W/ 3" SEAT WRAPPED UNDER BEAM, FASTEN W/ (38) 10d SINKER NAILS	(2) 2x6	3975#	7/S1.06
SCHEDULE HOLDDOWNS ARE PRE-DEFLECTED STEEL HOLDDOWN ANCHORS BY "SIMPSON STRONG-TIE." INSTALL ACCORDING TO MANUFACTURER'S RECOMENDATIONS					

01

LEVEL-0 WINDBRACING PLAN

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

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DWN. BY:

EDN, SC

CHK BY:

S. COVEY

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SHEET

S1.10W

Page 106 of 460

PLAN LEGEND:

(E) MASONRY WALL, VERIFY IN FIELD. HEADERS AT NEW OPENINGS PER 10/S4.00

STRUCTURAL LOAD BEARING AND/OR SHEAR WALL 2X6 @16" O.C. WOOD WALL BELOW UNLESS OTHERWISE NOTED

INDICATES STRUCTURAL NON-LOAD BEARING WALL BELOW, TYP 2x4 OR 2x6 @ 16" O.C.

HEADER IN WALL; SEE S5.10 FOR KING STUDS AND JACK STUDS IN LOAD BEARING WALLS

ELEMENT SIZE. FIRST NUMBER INDICATES THICKNESS, SECOND INDICATES WIDTH.

NUMBER OF ELEMENTS; THUS 2-28 INDICATES (2) 2X8 MEMBERS

PRE-ENGINEERED FLOOR TRUSSES

FLOOR JOISTS, REF. PLAN FOR SIZE

RAFTERS, REF. PLAN

WOOD BEAM, REF. PLAN FOR SIZE

DROP IN FRAMING

NOTE:

1. REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION NOT SHOWN
2. REFER TO WOOD TYPICAL DETAILS ON S4.10 & S4.11
3. REFER TO STEEL TYPICAL DETAILS ON S5.10, & S5.11

FOUNDATION PLAN NOTES:

1. FOR T.O.S.C. ELEVATIONS, REFER TO ARCHITECTURAL DRAWINGS. ELEVATIONS NOTED ON PLAN ARE FOR REFERENCE ONLY. REFER TO AND VERIFY ALL DIMENSIONS AND ELEVATIONS W/ ARCHITECTURAL DRAWINGS.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF WALLS, ROUGH OPENINGS, FLOOR RECESSES, DROPS AND SLOPES NOT DIMENSIONED ON PLAN.
3. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATIONS AND DIMENSIONS OF PENETRATIONS NOT SHOWN OR DIMENSIONED ON PLAN.
4. REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION ABOUT CAST-IN ANCHOR PLATES.
5. REFER TO TYPICAL CONCRETE DETAILS S2.10 AND S2.11 FOR ADDITIONAL INFORMATION.
6. STEEL COLUMNS ARE NOTED ON PLAN AS FOLLOWS:

STEEL COLUMN SIZE
BP: BASEPLATE CALLOUT

EXISTING NOTES:

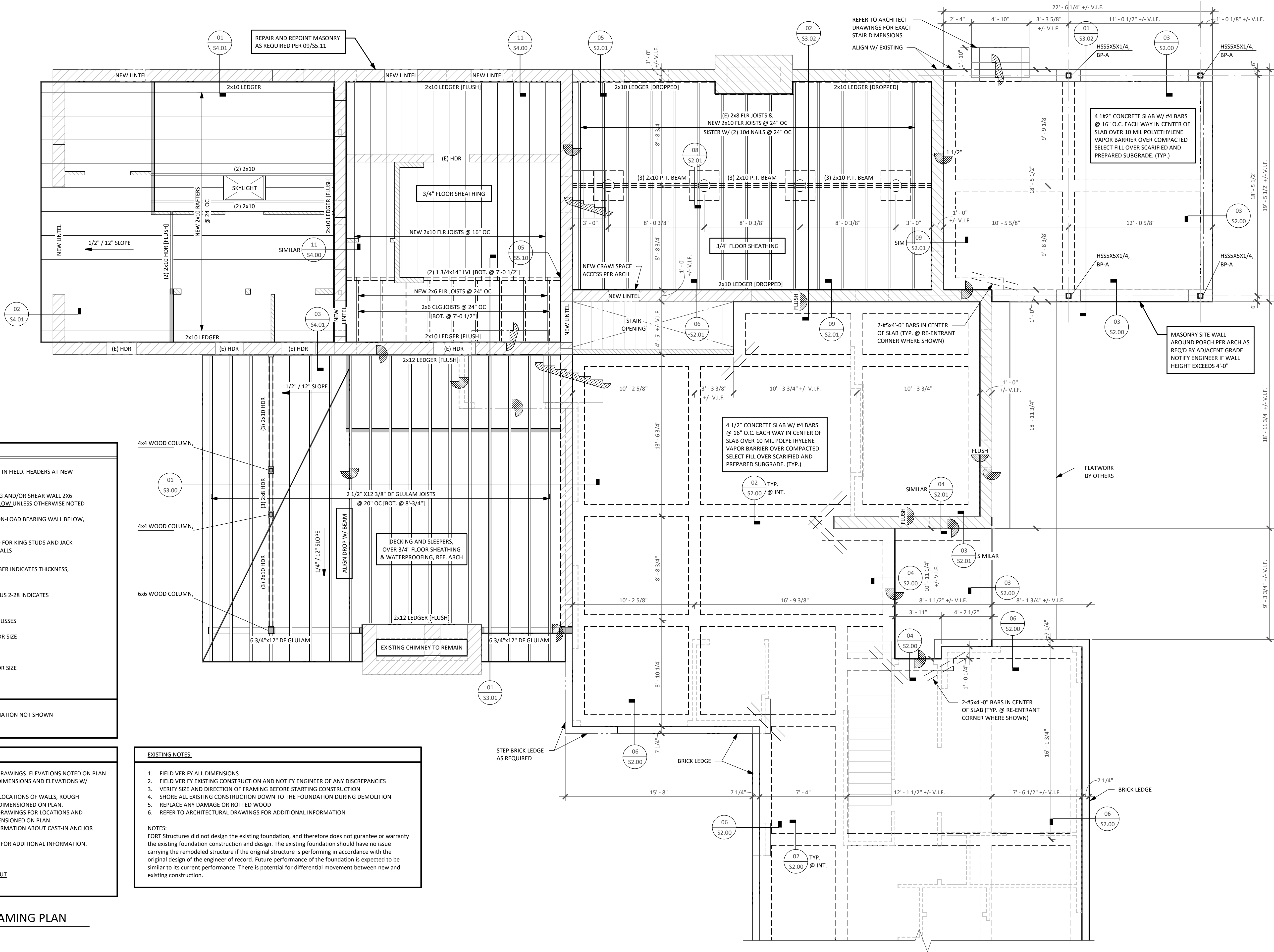
1. FIELD VERIFY ALL DIMENSIONS
2. FIELD VERIFY EXISTING CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES
3. VERIFY SIZE AND DIRECTION OF FRAMING BEFORE STARTING CONSTRUCTION
4. SHORE ALL EXISTING CONSTRUCTION DOWN TO THE FOUNDATION DURING DEMOLITION
5. REPLACE ANY DAMAGE OR ROTTED WOOD
6. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION

NOTES:

FORT Structures did not design the existing foundation, and therefore does not guarantee or warranty the existing foundation construction and design. The existing foundation should have no issue carrying the remodeled structure if the original structure is performing in accordance with the original design of the engineer of record. Future performance of the foundation is expected to be similar to its current performance. There is potential for differential movement between new and existing construction.

01 LEVEL-1 FOUNDATION/FRAMING PLAN

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



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PROJECT:

**LEE
RESIDENCE**

ADDRESS:

**402 Camp Craft
Road, West Lake
Hills, TX 78746**

JOB # 20-072
DWN. BY: EDN, SC
CHK BY: S. COVEY
DATE: 07-23-2021
REV:

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NORTH**

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SAMUEL B. COVEY

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07-23-2021

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www.FKArchitects.net

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Hills, TX 78746

JOB #

20-072

DWN. BY:

EDN, SC

CHK BY:

S. COVEY

DATE:

07-23-2021

REV:

SCALE:

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SHEET

S1.11
SOUTH

PLAN LEGEND:

(E) MASONRY WALL, VERIFY IN FIELD. HEADERS AT NEW OPENINGS PER 10/S4.00

STRUCTURAL LOAD BEARING AND/OR SHEAR WALL 2X6 @16" O.C. WOOD WALL BELOW UNLESS OTHERWISE NOTED

INDICATES STRUCTURAL NON-LOAD BEARING WALL BELOW, TYP 2x4 OR 2x6 @ 16" O.C.

HEADER IN WALL; SEE S5.10 FOR KING STUDS AND JACK STUDS IN LOAD BEARING WALLS

ELEMENT SIZE. FIRST NUMBER INDICATES THICKNESS, SECOND INDICATES WIDTH.

NUMBER OF ELEMENTS; THUS 2-28 INDICATES (2) 2X8 MEMBERS

PRE-ENGINEERED FLOOR TRUSSES

FLOOR JOISTS, REF. PLAN FOR SIZE

RAFTERS, REF. PLAN

WOOD BEAM, REF. PLAN FOR SIZE

DROP IN FRAMING

NOTE:

1. REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION NOT SHOWN

2. REFER TO WOOD TYPICAL DETAILS ON S4.10 & S4.11

3. REFER TO STEEL TYPICAL DETAILS ON S5.10, & S5.11

FOUNDATION PLAN NOTES:

1. FOR T.O.S.C. ELEVATIONS, REFER TO ARCHITECTURAL DRAWINGS. ELEVATIONS NOTED ON PLAN ARE FOR REFERENCE ONLY. REFER TO AND VERIFY ALL DIMENSIONS AND ELEVATIONS W/ ARCHITECTURAL DRAWINGS.

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3. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATIONS AND DIMENSIONS OF PENETRATIONS NOT SHOWN OR DIMENSIONED ON PLAN.

4. REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION ABOUT CAST-IN ANCHOR PLATES.

5. REFER TO TYPICAL CONCRETE DETAILS S2.10 AND S2.11 FOR ADDITIONAL INFORMATION.

6. STEEL COLUMNS ARE NOTED ON PLAN AS FOLLOWS:

STEEL COLUMN SIZE
BP- BASEPLATE CALLOUT

01 LEVEL-1 FOUNDATION/FRAMING PLAN

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

Page 108 of 460

BRACED WALL NOTES

CODE:

International Residential Code 2015 Edition

BWL

Braced Wall Line

EX-LMS

Existing limestone masonry wall

CS-WSP

Continuously Sheathed - Wood Structural Panel

CS-PF

Continuously Sheathed - Portal Frame

REF DETAIL 5/54.11 AND IRC 602.10.6.2

LIB

Let In Bracing - Diagonal Strap, Refer 3/54.11
1x4 diagonal wood bracing continuous from top plate to bottom plate or approved metal straps (1 1/4" x 18 ga) at 45 to 60 degree angles for 16" stud spacing. Nail strap to each stud with (2)-8d nails. Install straps as per manufacturer's requirements. Braced walls must have 1/2" gypsum wall board installed on side of wall opposite the bracing material.

HD-#

Hold Down callout - REF. SCHEDULE

REFER TO PAGE S4.11 FOR ADDITIONAL INFORMATION

SHEAR WALL LEGEND:

HD-1

12'-0"

MIN. SHEAR WALL LENGTH

HOLD-DOWN

SHEAR WALL MARK, REF. SCHEDULE

HOLD-DOWN MARK, SEE LIST

SHEARWALL SCHEDULE

MARK	SHEATHING	1	EDGE NAILING (PEN)	2	STILL PLATE NAILING (2 ROWS)	3	ANCHOR BOLTS W/ WASHERS	4
CS-WSP (TYP. @ EXTERIOR)	15/32" APA RATED CDX		8d @ 6" O.C.		16d @ 6" O.C.		1/2" DIA. x8" @ 48" O.C.	
A	15/32" APA RATED CDX		8d @ 6" O.C.		16d @ 6" O.C.		1/2" DIA. x8" @ 48" O.C.	
B	15/32" APA RATED CDX		8d @ 4" O.C.		16d @ 6" O.C.		1/2" DIA. x8" @ 36" O.C.	

NOTES

1. PRIOR TO CONSTRUCTION OF SHEARWALLS, REVIEW LATEST DIMENSIONED ARCHITECTURAL DRAWINGS AND NOTIFY STRUCTURAL ENGINEER OF ANY LOCATIONS WHERE MINIMUM SHEARWALL LENGTHS ARE NOT MET. MINIMUM LENGTHS BASED ON OUT TO OUT FACE OF TIEDOWN POSTS.

2. FIELD NAILING TO BE 8d @ 12" O.C. @ SHEARWALL PLYWOOD PANELS, TYP.

3. SEE PLANS FOR SHEARWALL TIE DOWNS, SIZES AND LOCATIONS.

4. PLACE SHEATHING ON SIDE OF WALL WHERE SHEARWALL SYMBOL OCCURS.

5. HORIZONTAL PLYWOOD SPLICES TO OCCUR AT RIBBON BANDING. WHERE WALL HEIGHT DICTATES HORIZONTAL SPLICE AT WALL, PROVIDE 2x BLOCKING. DO NOT SPLICE AT DOUBLE 2x TOP PLATE.

6. USE 2x STUDS, DOUBLE TOP PLATE AND SINGLE SILL PLATE, U.N.O.

7. SHEATHING THICKNESS IS NOMINAL, ACTUAL THICKNESS EQUIVALENTS ARE: 1/2"= 15/32", 5/8" = 19/32", 3/4"= 23/32"

8. INSTALL (2)-2x STUDS OR 3x STUD AT EDGE OF PLYWOOD PANELS WHERE EDGE NAILING IS LESS THAN 6" O.C.

SHEARWALL SCHEDULE					
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	HOLDDOWN ANCHOR BOLT	END POST	CAPACITY	DETAIL
HD-1	SIMPSON HDU-5	5/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(2) 2x6	5645#	1/S1.06
HD-2	SIMPSON HDU-8	7/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(3) 2x6	7870#	1/S1.06
HD-3	SIMPSON HDU-11	1" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(4) 2x6	9335#	1/S1.06
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	DESCRIPTION	END POST	CAPACITY	DETAIL
HD-4	SIMPSON LSTA36	18 Ga. x1 1/4" x36" STRAP, FASTEN W/ (24) 10d SINKER NAILS	(2) 2x6	1640#	6/S1.06
HD-5	SIMPSON MSTC52	16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(2) 2x6	4745#	6/S1.06
HD-6	(2) SIMPSON MSTC52	(2) 16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(4) 2x6	9490#	6/S1.06
HD-7	SIMPSON MSTC48B3	14 Ga. x3" x45" STRAP W/ 3" SEAT WRAPPED UNDER BEAM, FASTEN W/ (38) 10d SINKER NAILS	(2) 2x6	3975#	7/S1.06
SCHEDULE HOLDDOWNS ARE PRE-DEFLECTED STEEL HOLDDOWN ANCHORS BY "SIMPSON STRONG-TIE." INSTALL ACCORDING TO MANUFACTURER'S RECOMENDATIONS					

01

LEVEL-1 WINDBRACING PLAN

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

F O R T

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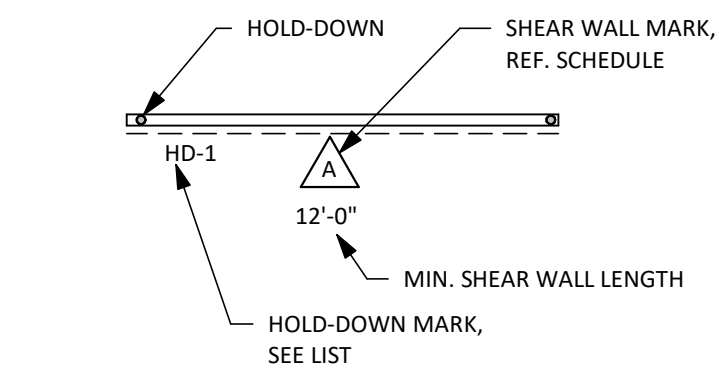
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SHEET

S1.11W
NORTH

Page 109 of 460

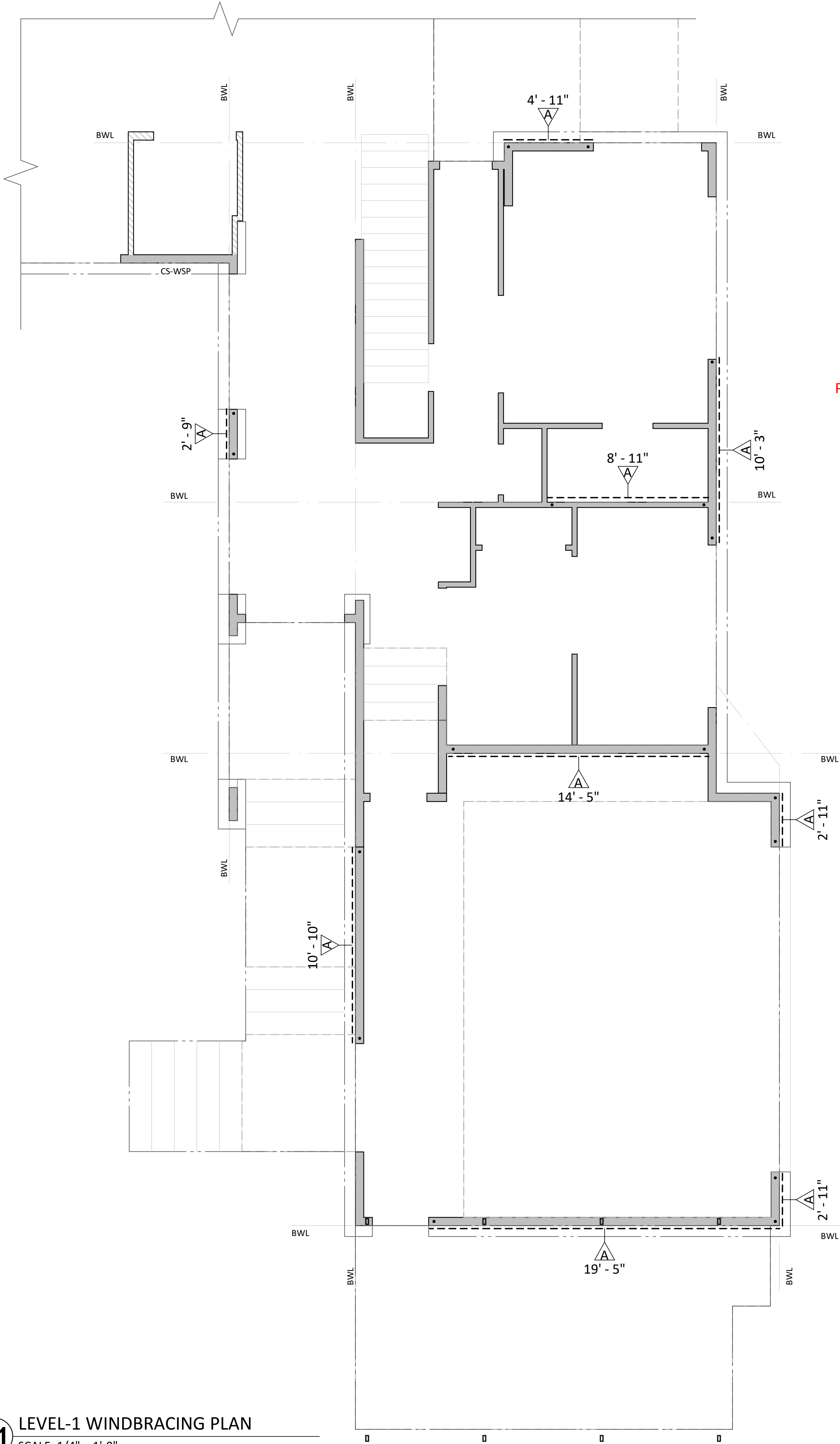
BRACED WALL NOTES	
CODE:	International Residential Code 2015 Edition
BWL	Braced Wall Line
EX-LMS	Existing limestone masonry wall
CS-WSP	Continuously Sheathed - Wood Structural Panel
CS-PF	Continuously Sheathed - Portal Frame
LIB	Let In Bracing - Diagonal Strap, Refer 3/54.11
HD-#	Hold Down callout - REF. SCHEDULE
REFER TO PAGE S4.11 FOR ADDITIONAL INFORMATION	
SHEAR WALL LEGEND:	
	

SHEARWALL SCHEDULE				
MARK	SHEATHING ①	EDGE NAILING (PEN) ②	STILL PLATE NAILING (2 ROWS) ③	ANCHOR BOLTS W/ WASHERS ④
CS-WSP (TYP. @ EXTERIOR)	15/32" APA RATED CDX	8d @ 6" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 48" O.C.
A	15/32" APA RATED CDX	8d @ 6" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 48" O.C.
B	15/32" APA RATED CDX	8d @ 4" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 36" O.C.

- NOTES
- PRIOR TO CONSTRUCTION OF SHEARWALLS, REVIEW LATEST DIMENSIONED ARCHITECTURAL DRAWINGS AND NOTIFY STRUCTURAL ENGINEER OF ANY LOCATIONS WHERE MINIMUM SHEARWALL LENGTHS ARE NOT MET. MINIMUM LENGTHS BASED ON OUT TO OUT FACE OF TIEDOWN POSTS.
 - FIELD NAILING TO BE 8d @ 12" O.C. @ SHEARWALL PLYWOOD PANELS, TYP.
 - SEE PLANS FOR SHEARWALL TIE DOWNS, SIZES AND LOCATIONS.
 - PLACE SHEATHING ON SIDE OF WALL WHERE SHEARWALL SYMBOL OCCURS.
 - HORIZONTAL PLYWOOD SPLICES TO OCCUR AT RIBBON BAND. WHERE WALL HEIGHT DICTATES HORIZONTAL SPLICE AT WALL, PROVIDE 2x BLOCKING. DO NOT SPLICE AT DOUBLE 2x TOP PLATE.
 - USE 2x STUDS, DOUBLE TOP PLATE AND SINGLE SILL PLATE, U.N.O.
 - SHEATHING THICKNESS IS NOMINAL, ACTUAL THICKNESS EQUIVALENTS ARE: 1/2" = 15/32", 5/8" = 19/32", 3/4" = 23/32"
 - INSTALL (2)-2x STUDS OR 3x STUD AT EDGE OF PLYWOOD PANELS WHERE EDGE NAILING IS LESS THAN 6" O.C.

SHEARWALL SCHEDULE					
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	HOLDDOWN ANCHOR BOLT	END POST	CAPACITY	DETAIL
HD-1	SIMPSON HDU-5	5/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(2) 2x6	5645#	1/S1.06
HD-2	SIMPSON HDU-8	7/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(3) 2x6	7870#	1/S1.06
HD-3	SIMPSON HDU-11	1" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(4) 2x6	9335#	1/S1.06
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	DESCRIPTION	END POST	CAPACITY	DETAIL
HD-4	SIMPSON LSTA36	18 Ga. x1 1/4" x36" STRAP, FASTEN W/ (24) 10d SINKER NAILS	(2) 2x6	1640#	6/S1.06
HD-5	SIMPSON MSTC52	16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(2) 2x6	4745#	6/S1.06
HD-6	(2) SIMPSON MSTC52	(2) 16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(4) 2x6	9490#	6/S1.06
HD-7	SIMPSON MSTC48B3	14 Ga. x3" x45" STRAP W/ 3" SEAT WRAPPED UNDER BEAM, FASTEN W/ (38) 10d SINKER NAILS	(2) 2x6	3975#	7/S1.06
SCHEDULE HOLDDOWNS ARE PRE-DEFLECTED STEEL HOLDDOWN ANCHORS BY "SIMPSON STRONG-TIE." INSTALL ACCORDING TO MANUFACTURER'S RECOMENDATIONS					

01 LEVEL-1 WINDBRACING PLAN
SCALE: 1/4" = 1'-0"



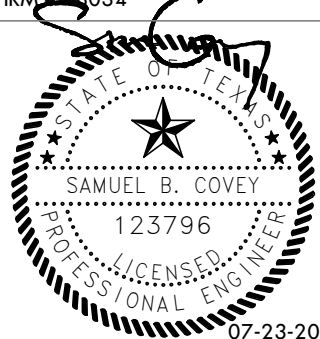
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PROJECT:
**LEE
RESIDENCE**

ADDRESS:
**402 Camp Craft
Road, West Lake
Hills, TX 78746**

JOB # 20-072
DWN. BY: EDN, SC
CHK BY: S. COVEY
DATE: 07-23-2021
REV:

SCALE:
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SHEET
**S1.11W
SOUTH**

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01 LEVEL-2 FRAMING PLAN
SCALE: 1/4" = 1'-0"

PLAN LEGEND:

(E) MASONRY WALL, VERIFY IN FIELD. HEADERS AT NEW OPENINGS PER 10/54.00

STRUCTURAL LOAD BEARING AND/OR SHEAR WALL 2X6 @16" O.C. WOOD WALL BELOW, UNLESS OTHERWISE NOTED

INDICATES STRUCTURAL NON-LOAD BEARING WALL BELOW, TYP 2x4 OR 2x6 @ 16" O.C.

HEADER IN WALL; SEE S5.10 FOR KING STUDS AND JACK STUDS IN LOAD BEARING WALLS

ELEMENT SIZE. FIRST NUMBER INDICATES THICKNESS, SECOND INDICATES WIDTH.

NUMBER OF ELEMENTS; THUS 2-28 INDICATES (2) 2X8 MEMBERS

PRE-ENGINEERED FLOOR TRUSSES

FLOOR JOISTS, REF. PLAN FOR SIZE

RAFTERS, REF. PLAN

WOOD BEAM, REF. PLAN FOR SIZE

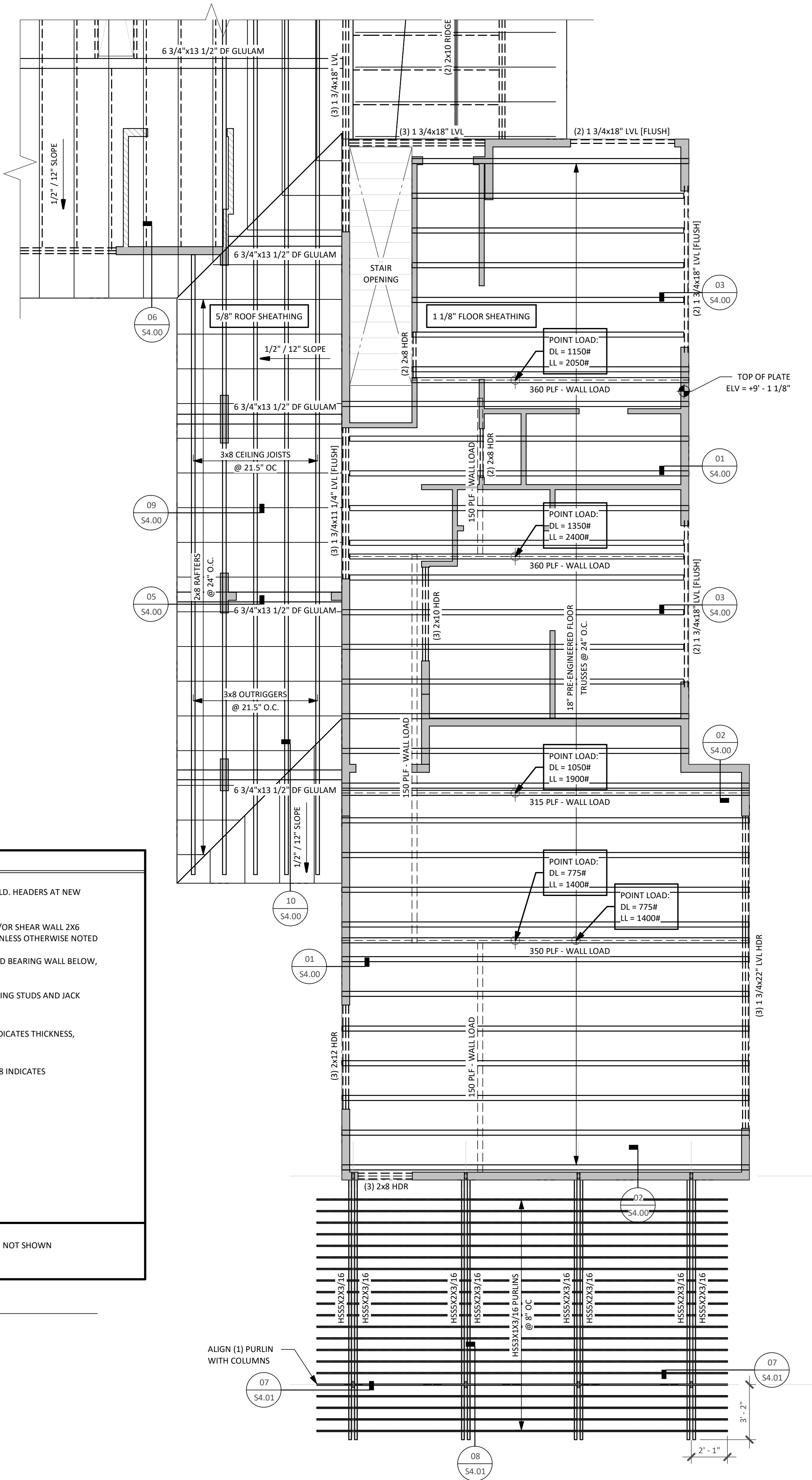
DROP IN FRAMING

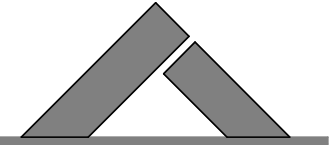
NOTE:

1. REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION NOT SHOWN

2. REFER TO WOOD TYPICAL DETAILS ON S4.10 & S4.11

3. REFER TO STEEL TYPICAL DETAILS ON S5.10, & S5.11

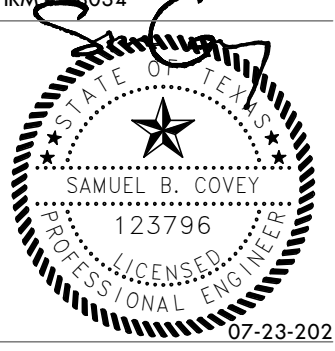




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DWN. BY: EDN, SC

CHK BY: S. COVEY

DATE: 07-23-2021

REV:

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SOUTH**

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BRACED WALL NOTES	
CODE:	International Residential Code 2015 Edition
BWL	Braced Wall Line
EX-LMS	Existing limestone masonry wall
CS-WSP	Continuously Sheathed - Wood Structural Panel
	Solid sheath entire building and walls noted on plan with 7/16" to 1/2" wood paneling and fasten with <u>8d common nails at 6" on center</u> at supported edges and 12" on center at the intermediate supports. Horizontal block all wood panels.
CS-PF	Continuously Sheathed - Portal Frame
REF DETAIL 5/54.11 AND IRC 602.10.6.2	
LIB	Let In Bracing - Diagonal Strap, Refer 3/54.11 1x4 diagonal wood bracing continuous from top plate to bottom plate or approved metal straps (1 1/4" x 18 ga) at 45 to 60 degree angles for 16" stud spacing. Nail strap to each stud with (2)-8d nails. Install straps as per manufacturer's requirements. Braced walls must have 1/2" gypsum wall board installed on side of wall opposite the bracing material.
HD-#	Hold Down callout - REF. SCHEDULE
REFER TO PAGE S4.11 FOR ADDITIONAL INFORMATION	
SHEAR WALL LEGEND:	

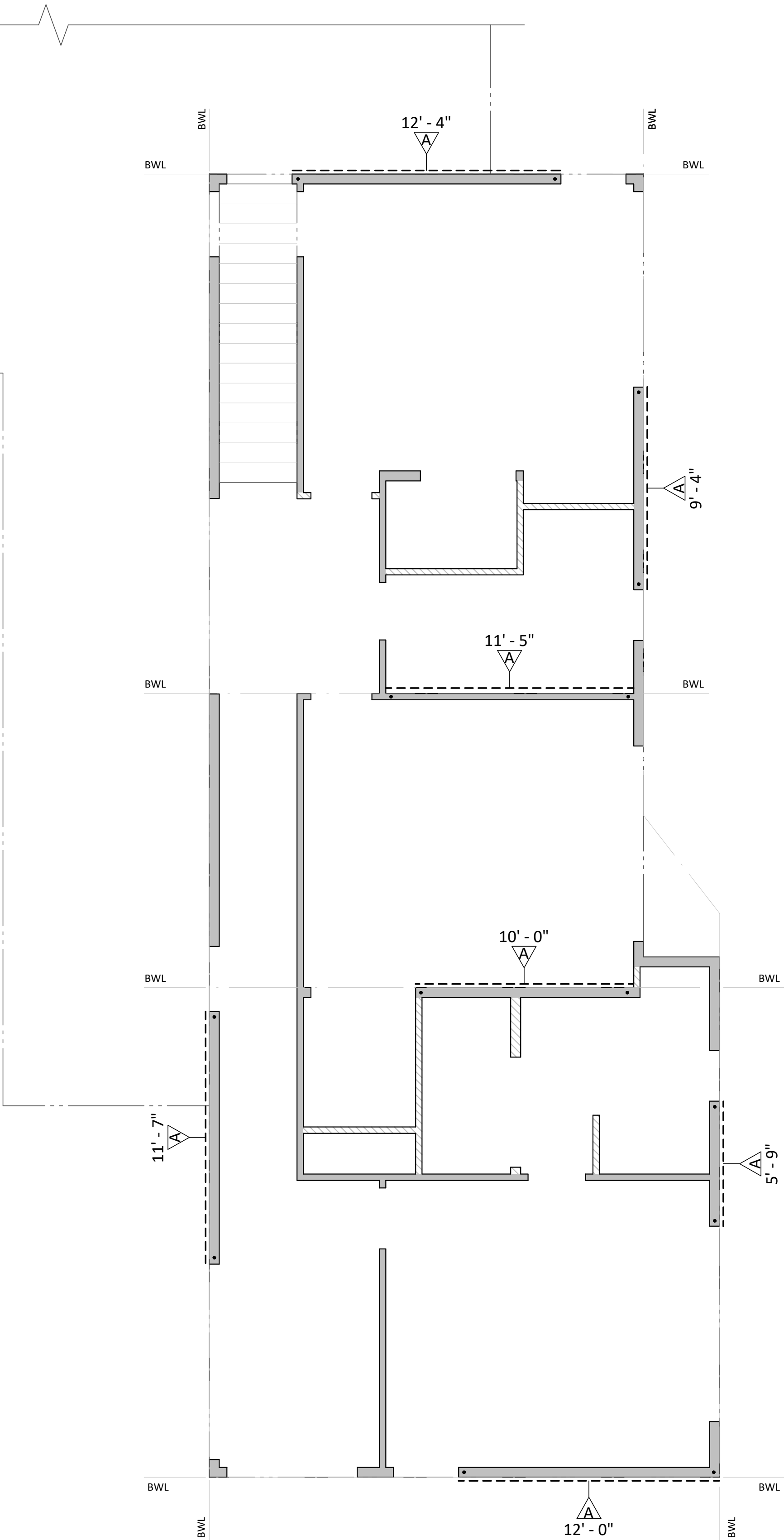
SHEARWALL SCHEDULE				
MARK	SHEATHING ①	EDGE NAILING (PEN) ②	STILL PLATE NAILING (2 ROWS) ③	ANCHOR BOLTS W/ WASHERS ④
CS-WSP (TYP. @ EXTERIOR)	15/32" APA RATED CDX	8d @ 6" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 48" O.C.
A	15/32" APA RATED CDX	8d @ 6" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 48" O.C.
B	15/32" APA RATED CDX	8d @ 4" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 36" O.C.

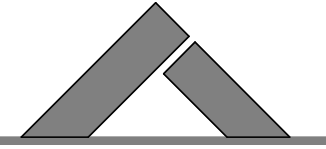
NOTES	
1. PRIOR TO CONSTRUCTION OF SHEARWALLS, REVIEW LATEST DIMENSIONED ARCHITECTURAL DRAWINGS AND NOTIFY STRUCTURAL ENGINEER OF ANY LOCATIONS WHERE MINIMUM SHEARWALL LENGTHS ARE NOT MET. MINIMUM LENGTHS BASED ON OUT TO OUT FACE OF TIEDOWN POSTS.	
2. FIELD NAILING TO BE 8d @ 12" O.C. @ SHEARWALL PLYWOOD PANELS, TYP.	
3. SEE PLANS FOR SHEARWALL TIE DOWNS, SIZES AND LOCATIONS.	
4. PLACE SHEATHING ON SIDE OF WALL WHERE SHEARWALL SYMBOL OCCURS.	
5. HORIZONTAL PLYWOOD SPLICES TO OCCUR AT RIBBON BAND. WHERE WALL HEIGHT DICTATES HORIZONTAL SPLICE AT WALL, PROVIDE 2x BLOCKING. DO NOT SPLICE AT DOUBLE 2x TOP PLATE.	
6. USE 2x STUDS, DOUBLE TOP PLATE AND SINGLE SILL PLATE, U.N.O.	
7. SHEATHING THICKNESS IS NOMINAL, ACTUAL THICKNESS EQUIVALENTS ARE: 1/2"= 15/32", 5/8" = 19/32", 3/4"= 23/32"	
8. INSTALL (2)-2x STUDS OR 3x STUD AT EDGE OF PLYWOOD PANELS WHERE EDGE NAILING IS LESS THAN 6" O.C.	

SHEARWALL SCHEDULE					
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	HOLDDOWN ANCHOR BOLT	END POST	CAPACITY	DETAIL
HD-1	SIMPSON HDU-5	5/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(2) 2x6	5645#	1/S1.06
HD-2	SIMPSON HDU-8	7/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(3) 2x6	7870#	1/S1.06
HD-3	SIMPSON HDU-11	1" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(4) 2x6	9335#	1/S1.06
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	DESCRIPTION	END POST	CAPACITY	DETAIL
HD-4	SIMPSON LSTA36	18 Ga. x1 1/4" x36" STRAP, FASTEN W/ (24) 10d SINKER NAILS	(2) 2x6	1640#	6/S1.06
HD-5	SIMPSON MSTC52	16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(2) 2x6	4745#	6/S1.06
HD-6	(2) SIMPSON MSTC52	(2) 16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(4) 2x6	9490#	6/S1.06
HD-7	SIMPSON MSTC48B3	14 Ga. x3" x45" STRAP W/ 3" SEAT WRAPPED UNDER BEAM, FASTEN W/ (38) 10d SINKER NAILS	(2) 2x6	3975#	7/S1.06
SCHEDULE HOLDDOWNS ARE PRE-DEFLECTED STEEL HOLDDOWN ANCHORS BY "SIMPSON STRONG-TIE." INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS					

01 LEVEL-2 WINDBRACING PLAN

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

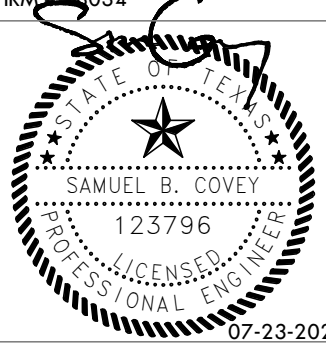




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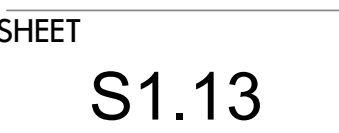
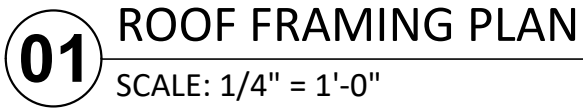
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DWN. BY: EDN, SC
CHK BY: S. COVEY
DATE: 07-23-2021
REV:

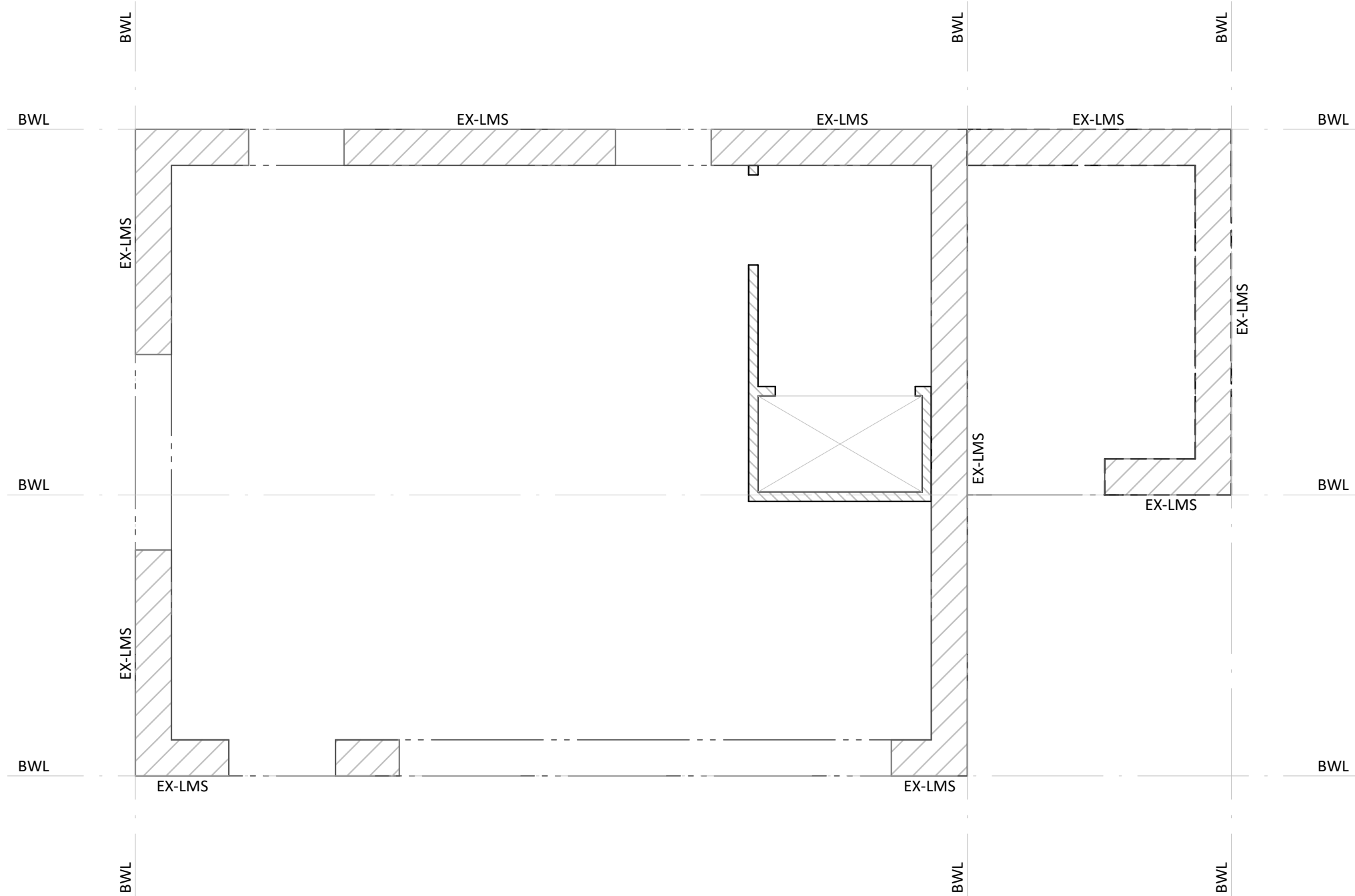
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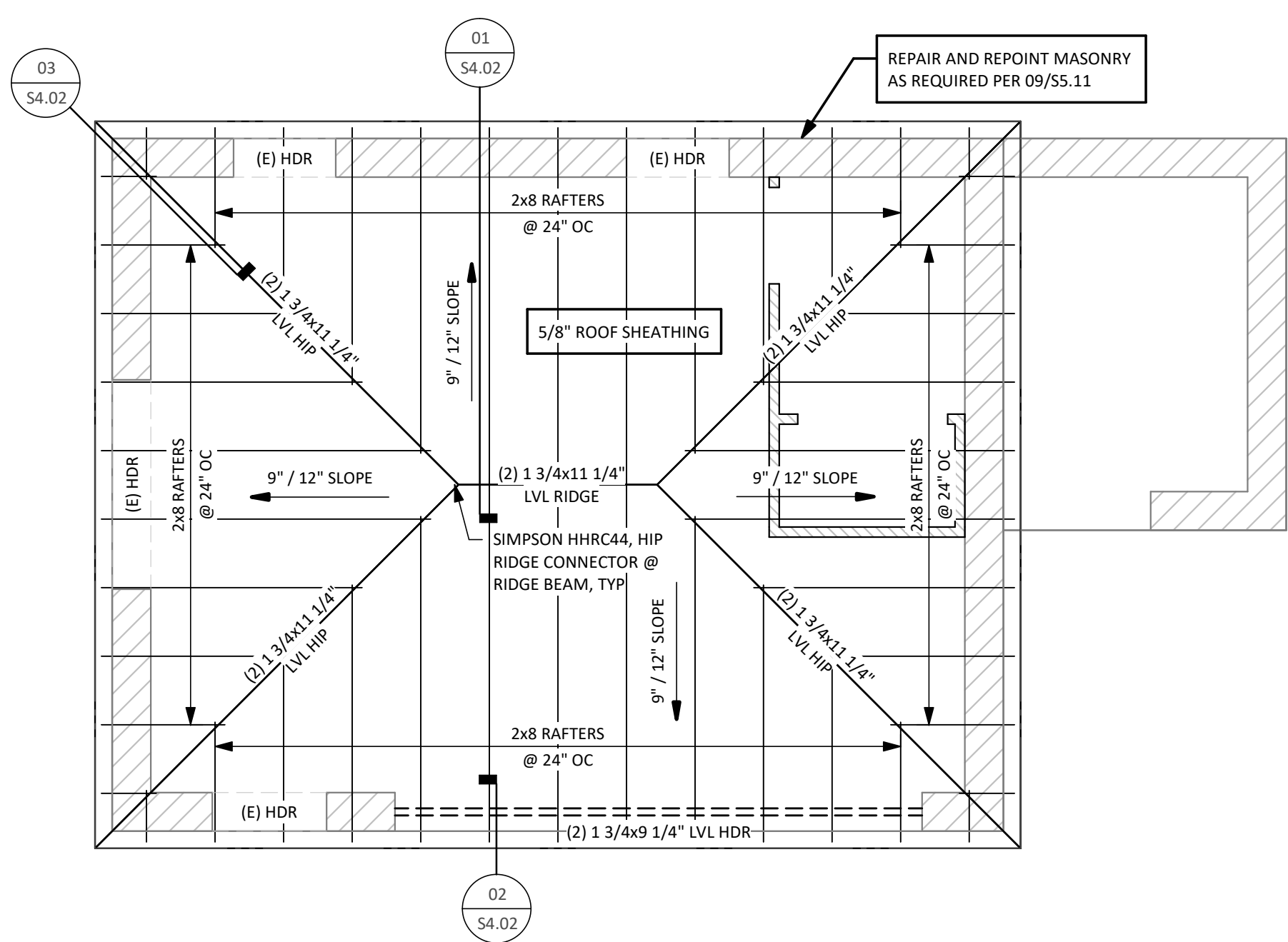
S1.12W

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03 ART HOUSE WINDBRACING PLAN
SCALE: 1/4" = 1'-0"



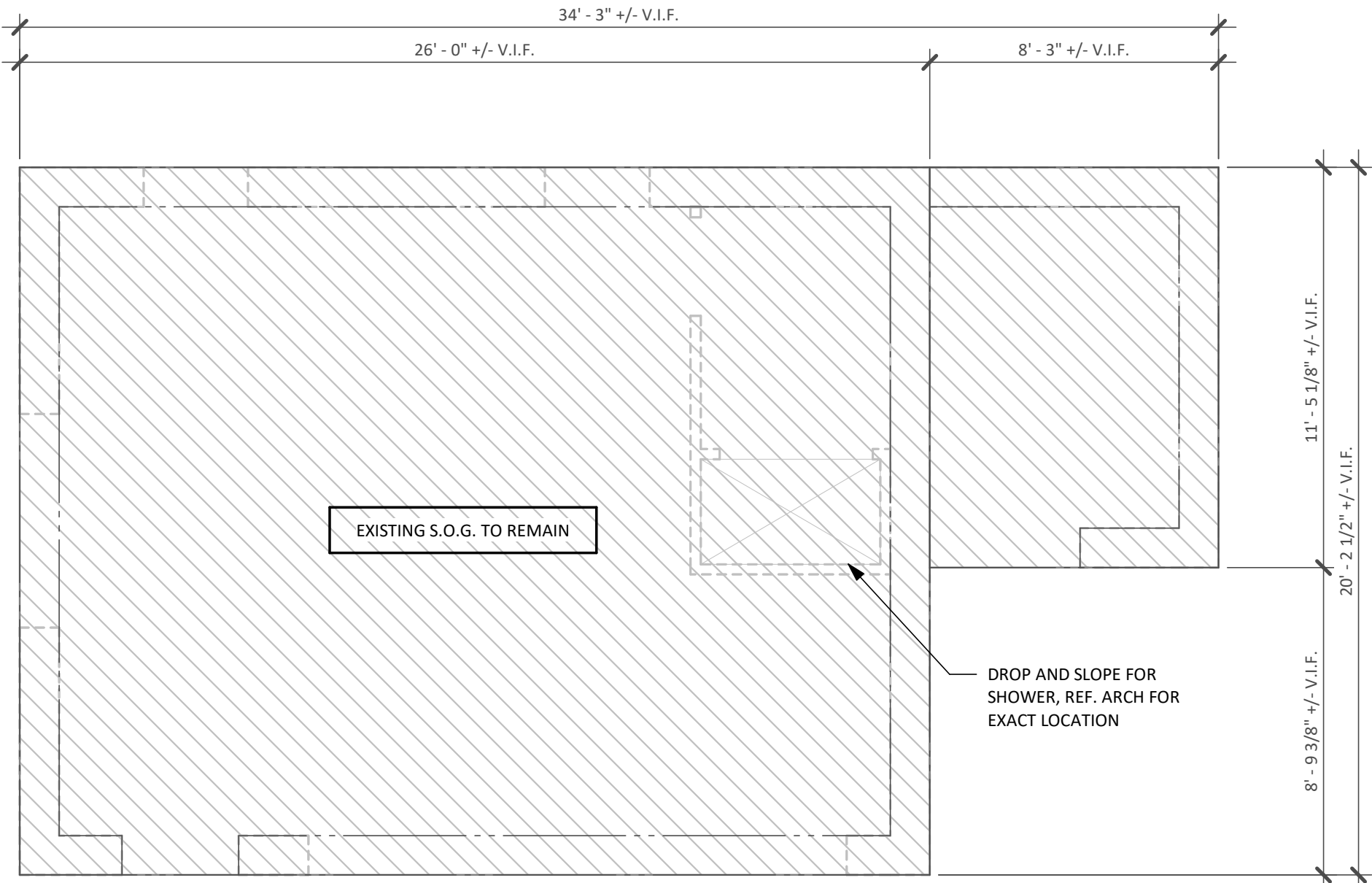
02 ART HOUSE FRAMING PLAN
SCALE: 1/4" = 1'-0"

BRACED WALL NOTES	
CODE:	International Residential Code 2015 Edition
BWL	Braced Wall Line
EX-LMS	Existing limestone masonry wall

FOUNDATION PLAN NOTES:	
1.	FOR T.O.S.C. ELEVATIONS, REFER TO ARCHITECTURAL DRAWINGS. ELEVATIONS NOTED ON PLAN ARE FOR REFERENCE ONLY. REFER TO AND VERIFY ALL DIMENSIONS AND ELEVATIONS W/ ARCHITECTURAL DRAWINGS.
2.	REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF WALLS, ROUGH OPENINGS, FLOOR RECESSES, DROPS AND SLOPES NOT DIMENSIONED ON PLAN.
3.	REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATIONS AND DIMENSIONS OF PENETRATIONS NOT SHOWN OR DIMENSIONED ON PLAN.
4.	REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION ABOUT CAST-IN ANCHOR PLATES.
5.	REFER TO TYPICAL CONCRETE DETAILS S2.10 AND S2.11 FOR ADDITIONAL INFORMATION.
6.	STEEL COLUMNS ARE NOTED ON PLAN AS FOLLOWS:
	STEEL COLUMN SIZE BP- BASEPLATE CALLOUT

EXISTING NOTES:	
1.	FIELD VERIFY ALL DIMENSIONS
2.	FIELD VERIFY EXISTING CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES
3.	VERIFY SIZE AND DIRECTION OF FRAMING BEFORE STARTING CONSTRUCTION
4.	SHORE ALL EXISTING CONSTRUCTION DOWN TO THE FOUNDATION DURING DEMOLITION
5.	REPLACE ANY DAMAGE OR ROTTED WOOD
6.	REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION
NOTES: FORT Structures did not design the existing foundation, and therefore does not guarantee or warranty the existing foundation construction and design. The existing foundation should have no issue carrying the remodeled structure if the original structure is performing in accordance with the original design of the engineer of record. Future performance of the foundation is expected to be similar to its current performance. There is potential for differential movement between new and existing construction.	

PLAN LEGEND:	
	(E) MASONRY WALL, VERIFY IN FIELD. HEADERS AT NEW OPENINGS PER 10/S4.00
	STRUCTURAL LOAD BEARING AND/OR SHEAR WALL 2X6 @16" O.C. WOOD WALL <u>BELOW</u> UNLESS OTHERWISE NOTED
	INDICATES STRUCTURAL NON-LOAD BEARING WALL BELOW, TYP 2x4 OR 2x6 @ 16" O.C.
	HEADER IN WALL; SEE S5.10 FOR KING STUDS AND JACK STUDS IN LOAD BEARING WALLS
	ELEMENT SIZE. FIRST NUMBER INDICATES THICKNESS, SECOND INDICATES WIDTH.
	NUMBER OF ELEMENTS; THUS 2-28 INDICATES (2) 2X8 MEMBERS
	PRE-ENGINEERED FLOOR TRUSSES
	FLOOR JOISTS, REF. PLAN FOR SIZE
	RAFTERS, REF. PLAN
	WOOD BEAM, REF. PLAN FOR SIZE
	DROP IN FRAMING
NOTE: 1. REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION NOT SHOWN 2. REFER TO WOOD TYPICAL DETAILS ON S4.10 & S4.11 3. REFER TO STEEL TYPICAL DETAILS ON S5.10, & S5.11	



01 ART HOUSE FOUNDATION PLAN
SCALE: 1/4" = 1'-0"

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www.FKArchitects.net

PROJECT:
LEE RESIDENCE

ADDRESS:
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JOB # 20-072
DWN. BY: EDN, SC
CHK. BY: S. COVEY
DATE: 07-23-2021
REV:

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01 WORKSHOP FOUNDATION PLAN

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

EXISTING NOTES:

1. FIELD VERIFY ALL DIMENSIONS
2. FIELD VERIFY EXISTING CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES
3. VERIFY SIZE AND DIRECTION OF FRAMING BEFORE STARTING CONSTRUCTION
4. SHORE ALL EXISTING CONSTRUCTION DOWN TO THE FOUNDATION DURING DEMOLITION
5. REPLACE ANY DAMAGE OR ROTTED WOOD
6. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION

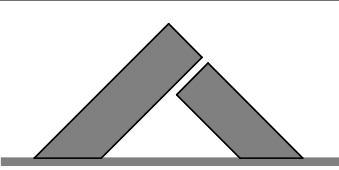
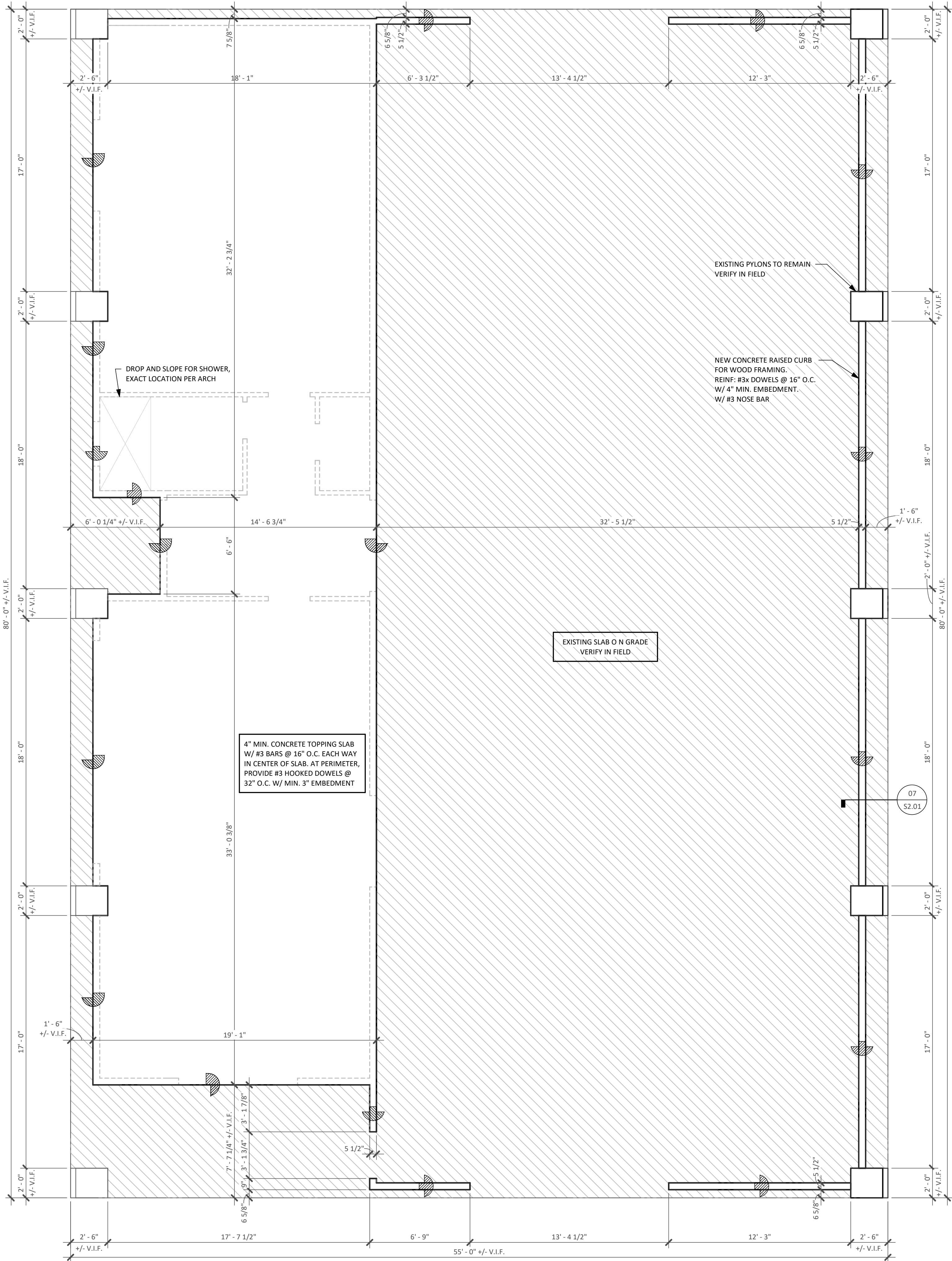
NOTES:

FORT Structures did not design the existing foundation, and therefore does not gurantee or warranty the existing foundation construction and design. The existing foundation should have no issue carrying the remodeled structure if the original structure is performing in accordance with the original design of the engineer of record. Future performance of the foundation is expected to be similar to its current performance. There is potential for differential movement between new and existing construction.

FOUNDATION PLAN NOTES:

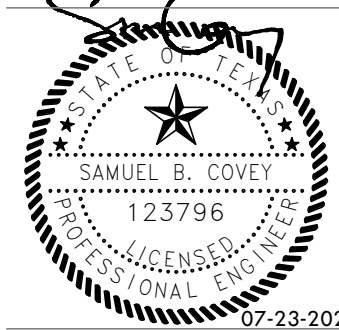
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2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF WALLS, ROUGH OPENINGS, FLOOR RECESSES, DROPS AND SLOPES NOT DIMENSIONED ON PLAN.
3. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATIONS AND DIMENSIONS OF PENETRATIONS NOT SHOWN OR DIMENSIONED ON PLAN.
4. REFER TO WALL BRACING PLANS FOR ADDITIONAL INFORMATION ABOUT CAST-IN ANCHOR PLATES.
5. REFER TO TYPICAL CONCRETE DETAILS S2.10 AND S2.11 FOR ADDITIONAL INFORMATION.
6. STEEL COLUMNS ARE NOTED ON PLAN AS FOLLOWS:

STEEL COLUMN SIZE
BP- BASEPLATE CALLOUT



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BRACED WALL NOTES

CODE:

International Residential Code 2015 Edition

BWL

Braced Wall Line

EX-LMS

Existing limestone masonry wall

CS-WSP

Continuously Sheathed - Wood Structural Panel

Solid sheath entire building and walls noted on plan with 7/16" to 1/2" wood paneling and fasten with 8d common nails at 6" on center at supported edges and 12" on center at the intermediate supports. Horizontal block all wood panels.

CS-PF

Continuously Sheathed - Portal Frame

REF DETAIL 5/54.11 AND IRC 602.10.6.2

LIB

Let In Bracing - Diagonal Strap, Refer 3/54.11
1x4 diagonal wood bracing continuous from top plate to bottom plate or approved metal straps (1 1/4" x 18 ga) at 45 to 60 degree angles for 16" stud spacing. Nail strap to each stud with (2)-8d nails. Install straps as per manufacturer's requirements. Braced walls must have 1/2" gypsum wall board installed on side of wall opposite the bracing material.

HD-#

Hold Down callout - REF. SCHEDULE

REFER TO PAGE S4.11 FOR ADDITIONAL INFORMATION

SHEAR WALL LEGEND:

HOLD-DOWN

HD-1

MIN. SHEAR WALL LENGTH

12'-0"

SHEAR WALL MARK, REF. SCHEDULE

HOLD-DOWN MARK, SEE LIST

SHEARWALL SCHEDULE

MARK	SHEATHING	EDGE NAILING (PEN)	STILL PLATE NAILING (2 ROWS)	ANCHOR BOLTS W/ WASHERS
CS-WSP (TYP. @ EXTERIOR)	15/32" APA RATED CDX	8d @ 6" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 48" O.C.
A	15/32" APA RATED CDX	8d @ 6" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 48" O.C.
B	15/32" APA RATED CDX	8d @ 4" O.C.	16d @ 6" O.C.	1/2" DIA. x8" @ 36" O.C.

NOTES

1. PRIOR TO CONSTRUCTION OF SHEARWALLS, REVIEW LATEST DIMENSIONED ARCHITECTURAL DRAWINGS AND NOTIFY STRUCTURAL ENGINEER OF ANY LOCATIONS WHERE MINIMUM SHEARWALL LENGTHS ARE NOT MET. MINIMUM LENGTHS BASED ON OUT TO OUT FACE OF TIEDOWN POSTS.

2. FIELD NAILING TO BE 8d @ 12" O.C. @ SHEARWALL PLYWOOD PANELS, TYP.

3. SEE PLANS FOR SHEARWALL TIE DOWNS, SIZES AND LOCATIONS.

4. PLACE SHEATHING ON SIDE OF WALL WHERE SHEARWALL SYMBOL OCCURS.

5. HORIZONTAL PLYWOOD SPLICES TO OCCUR AT RIBBON BAND. WHERE WALL HEIGHT DICTATES HORIZONTAL SPLICE AT WALL, PROVIDE 2x BLOCKING. DO NOT SPLICE AT DOUBLE 2x TOP PLATE.

6. USE 2x STUDS, DOUBLE TOP PLATE AND SINGLE SILL PLATE, U.N.O.

7. SHEATHING THICKNESS IS NOMINAL, ACTUAL THICKNESS EQUIVALENTS ARE: 1/2"= 15/32", 5/8" = 19/32", 3/4"= 23/32"

8. INSTALL (2)-2x STUDS OR 3x STUD AT EDGE OF PLYWOOD PANELS WHERE EDGE NAILING IS LESS THAN 6" O.C.

SHEARWALL SCHEDULE					
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	HOLDDOWN ANCHOR BOLT	END POST	CAPACITY	DETAIL
HD-1	SIMPSON HDU-5	5/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(2) 2x6	5645#	1/S1.06
HD-2	SIMPSON HDU-8	7/8" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(3) 2x6	7870#	1/S1.06
HD-3	SIMPSON HDU-11	1" DIA. F1553 GR. 35 ANCHOR BOLTS W/ 12" EMBEDMENT	(4) 2x6	9335#	1/S1.06
FRAMING TO CONCRETE					
MARK	HOLDDOWN TYPE	DESCRIPTION	END POST	CAPACITY	DETAIL
HD-4	SIMPSON LSTA36	18 Ga. x1 1/4" x36" STRAP, FASTEN W/ (24) 10d SINKER NAILS	(2) 2x6	1640#	6/S1.06
HD-5	SIMPSON MSTC52	16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(2) 2x6	4745#	6/S1.06
HD-6	(2) SIMPSON MSTC52	(2) 16 Ga. x3" x52 1/4" STRAP, FASTEN W/ (62) 16d SINKER NAILS	(4) 2x6	9490#	6/S1.06
HD-7	SIMPSON MSTC48B3	14 Ga. x3" x45" STRAP W/ 3" SEAT WRAPPED UNDER BEAM, FASTEN W/ (38) 10d SINKER NAILS	(2) 2x6	3975#	7/S1.06
SCHEDULE HOLDDOWNS ARE PRE-DEFLECTED STEEL HOLDDOWN ANCHORS BY "SIMPSON STRONG-TIE." INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS					

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01 WORKSHOP WINDBRACING PLAN
SCALE: 1/4" = 1'-0"

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RESIDENCE

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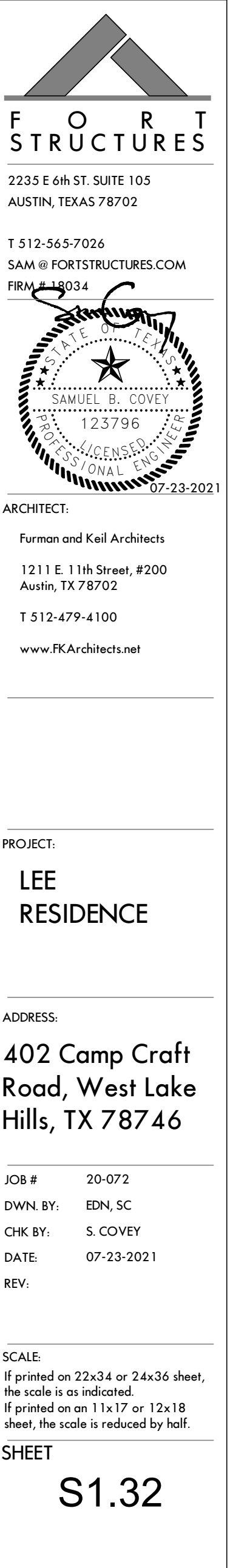
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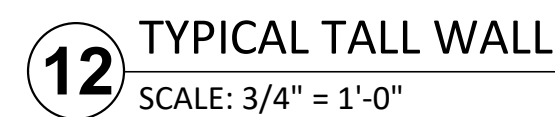
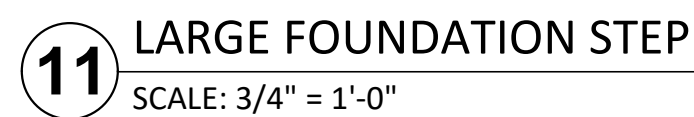
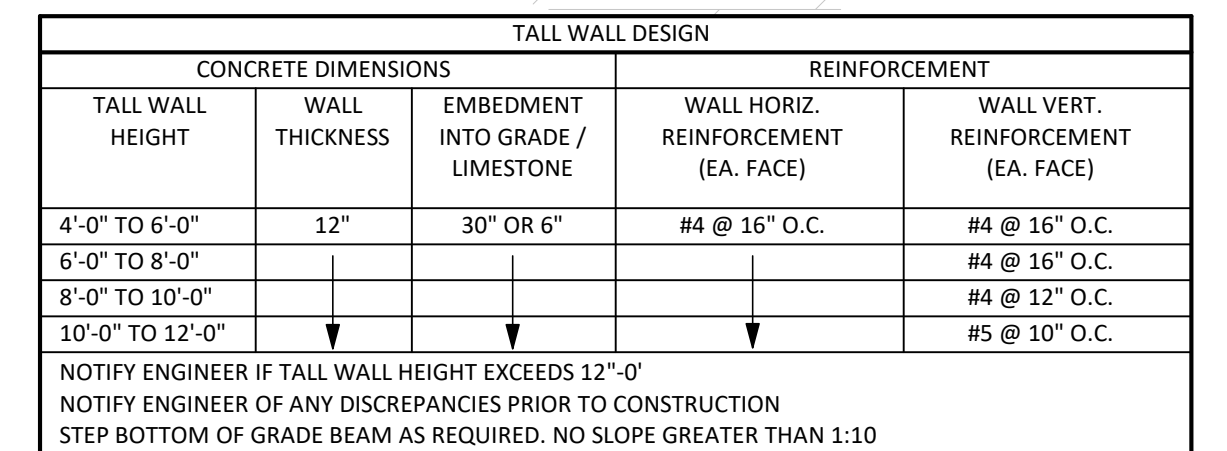
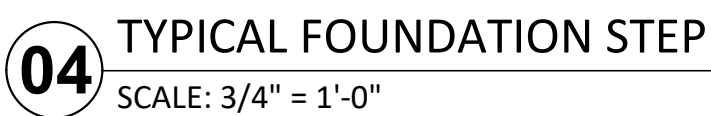
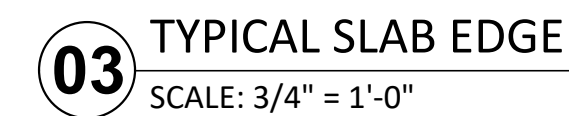
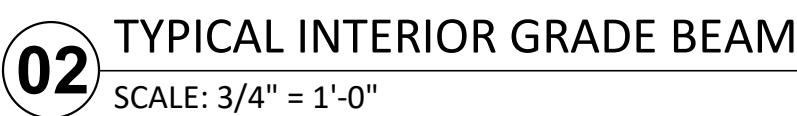
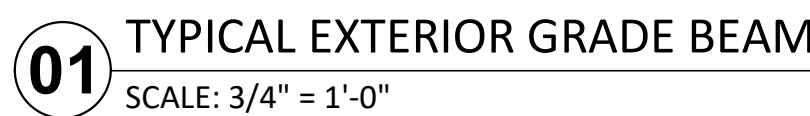
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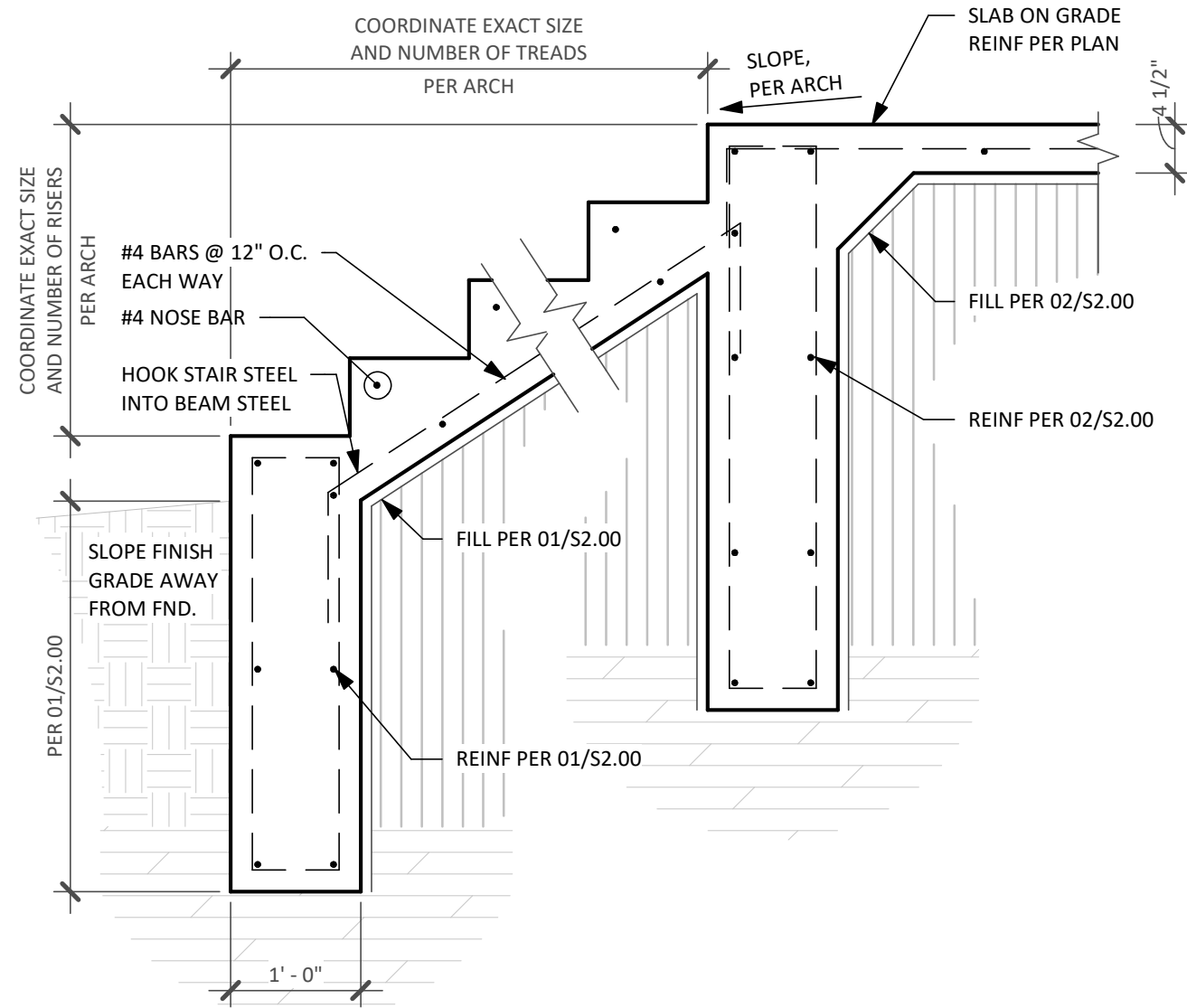
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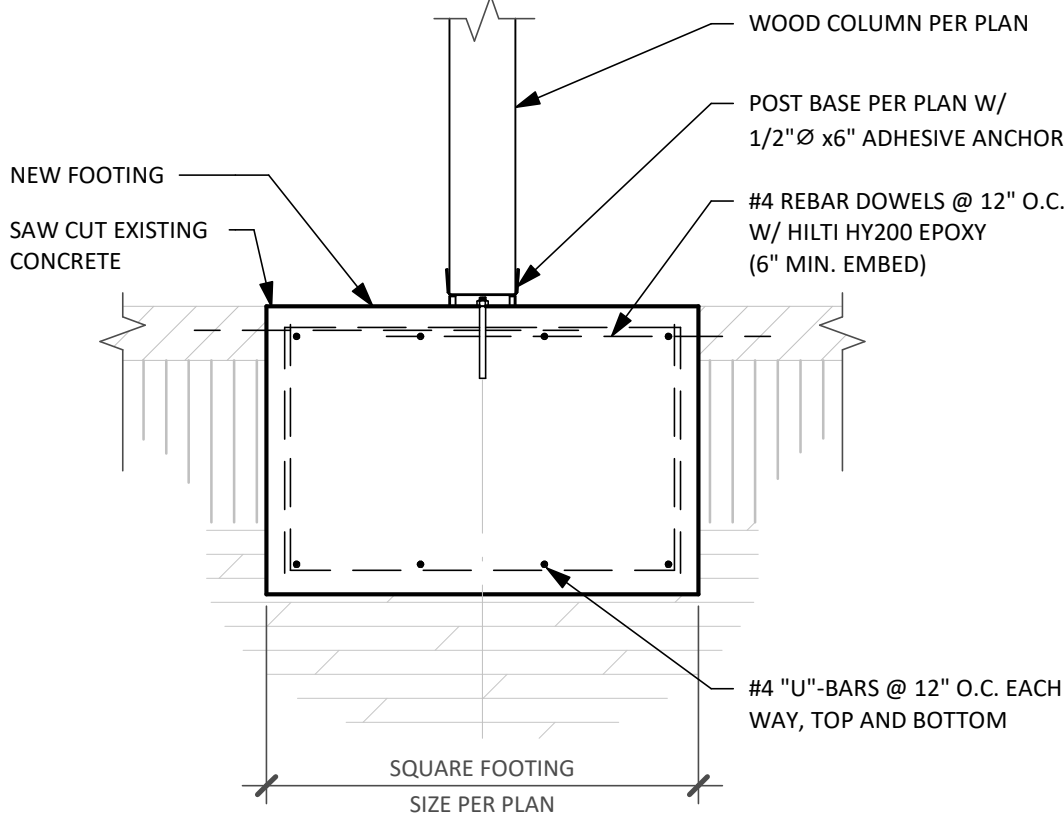
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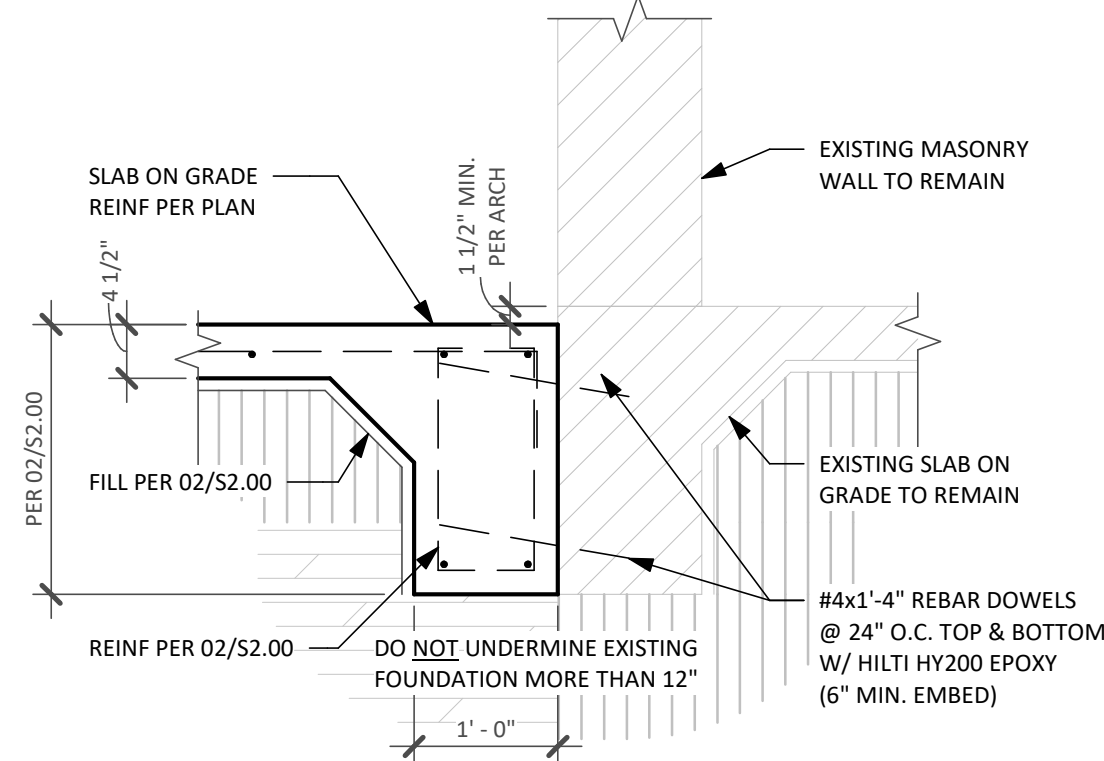




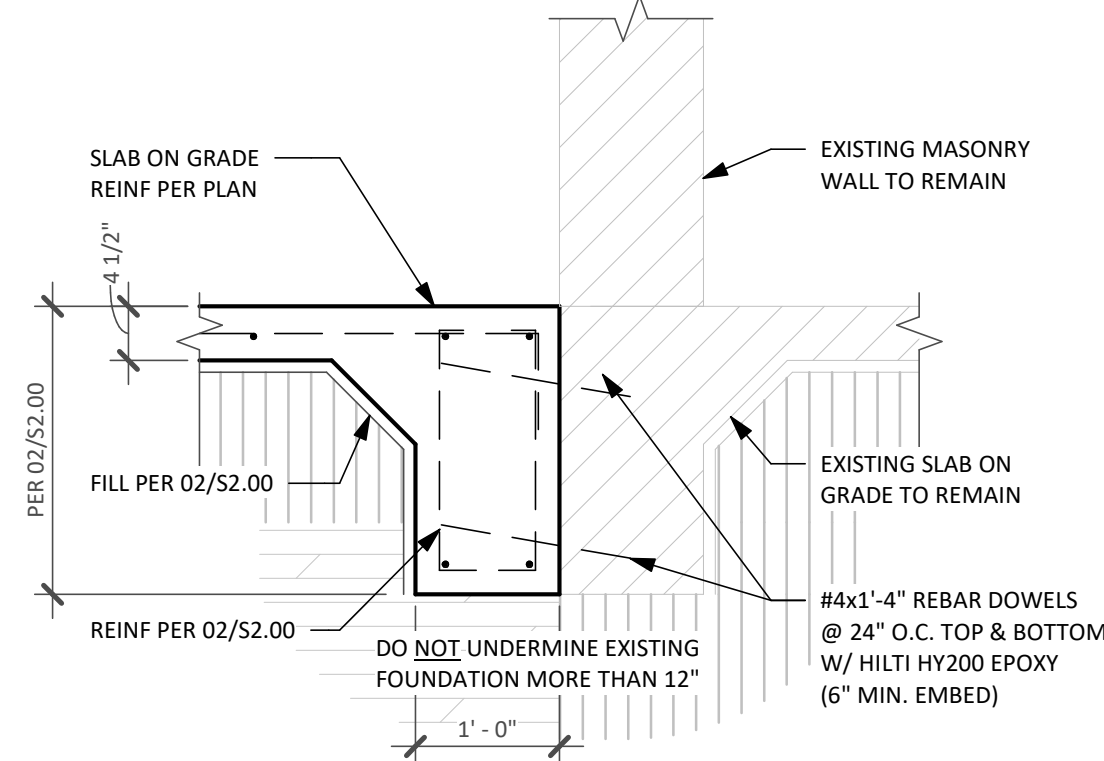
01 TYPICAL CONCRETE STEPS
SCALE: 3/4" = 1'-0"



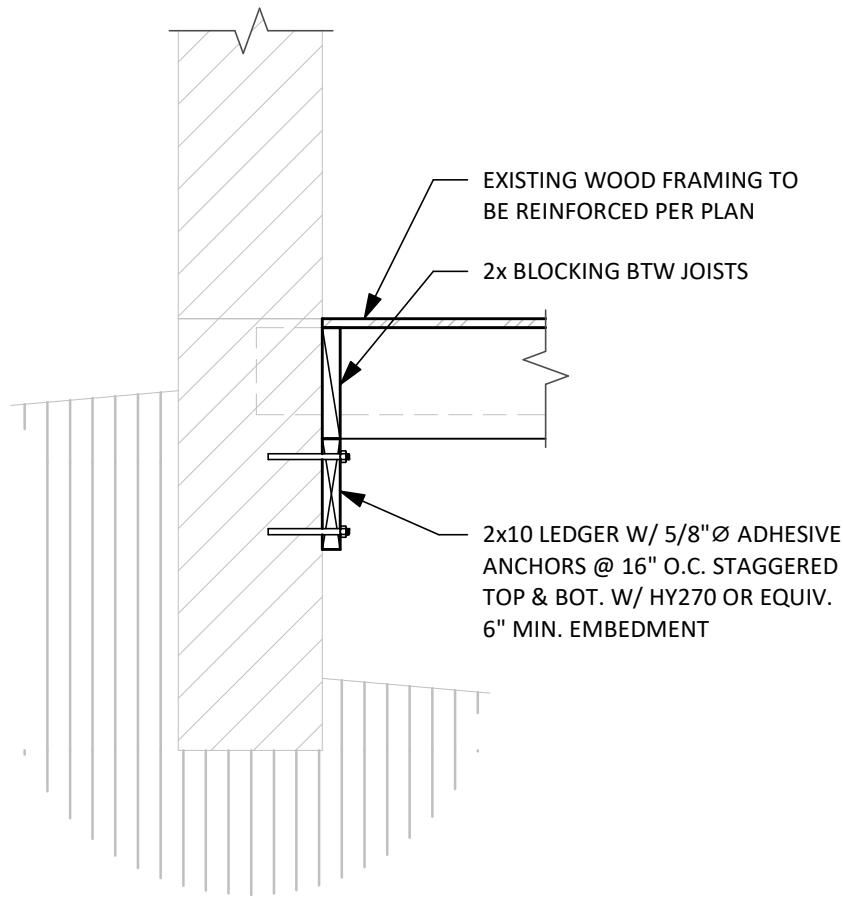
02 FND DETAIL - NEW FOOTING AT EXISTING SLAB
SCALE: 3/4" = 1'-0"



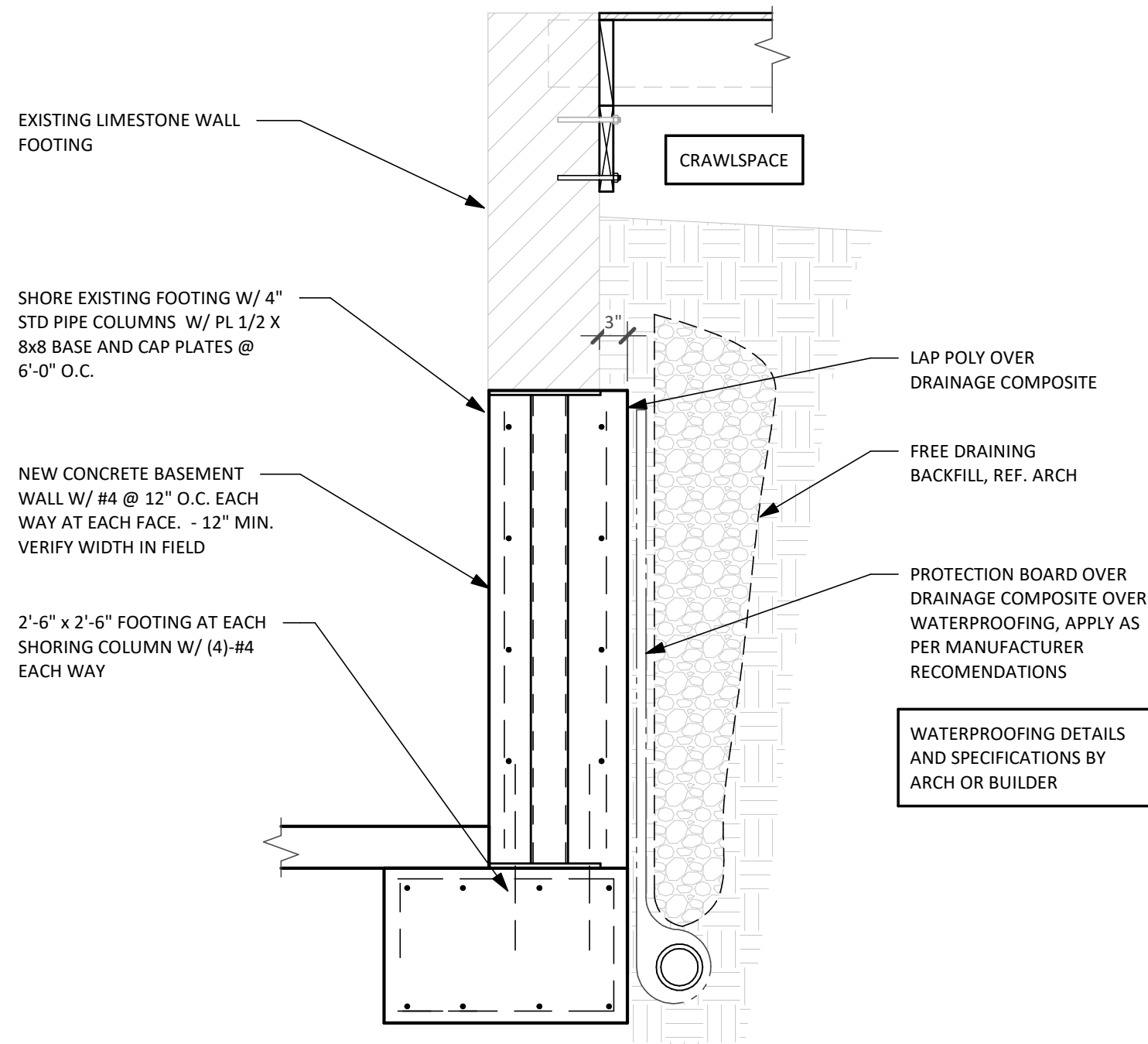
03 NEW SLAB ON GRADE DROPPED FROM EXISTING
SCALE: 3/4" = 1'-0"



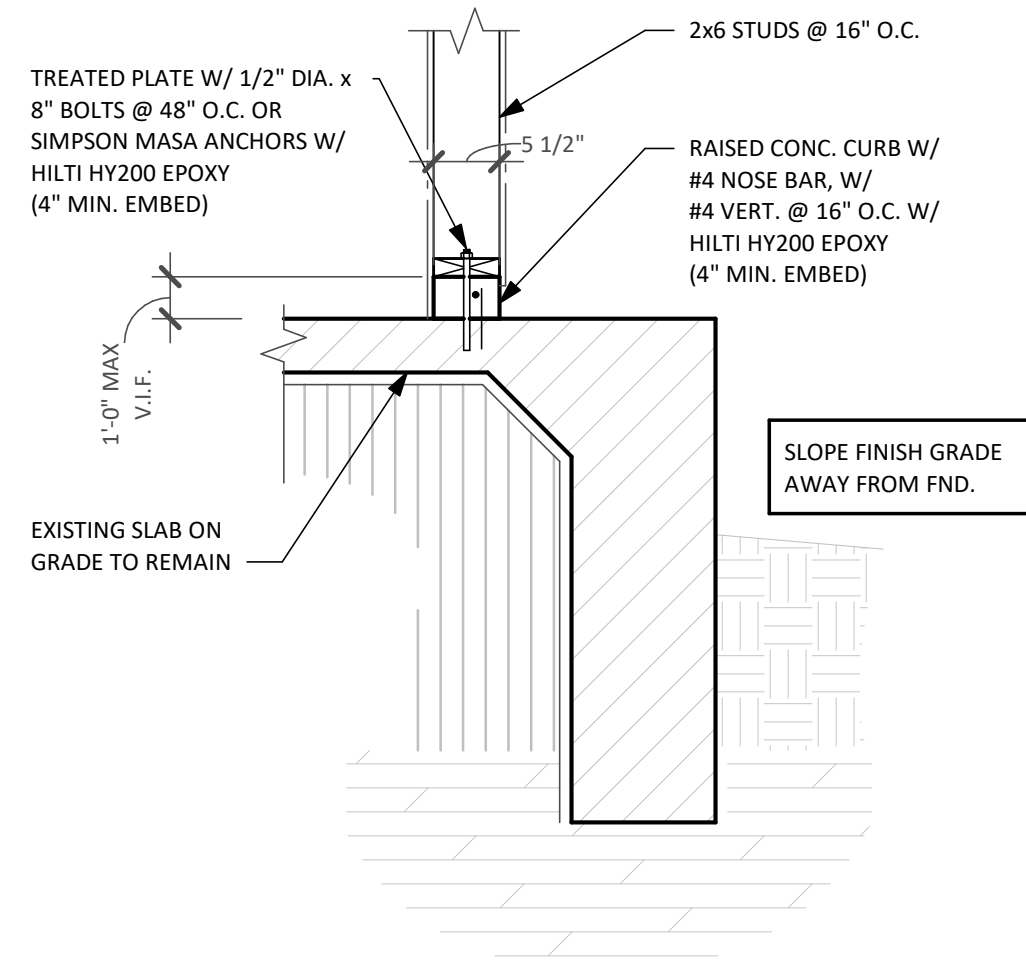
04 NEW SLAB ON GRADE FLUSH W/ EXISTING
SCALE: 3/4" = 1'-0"



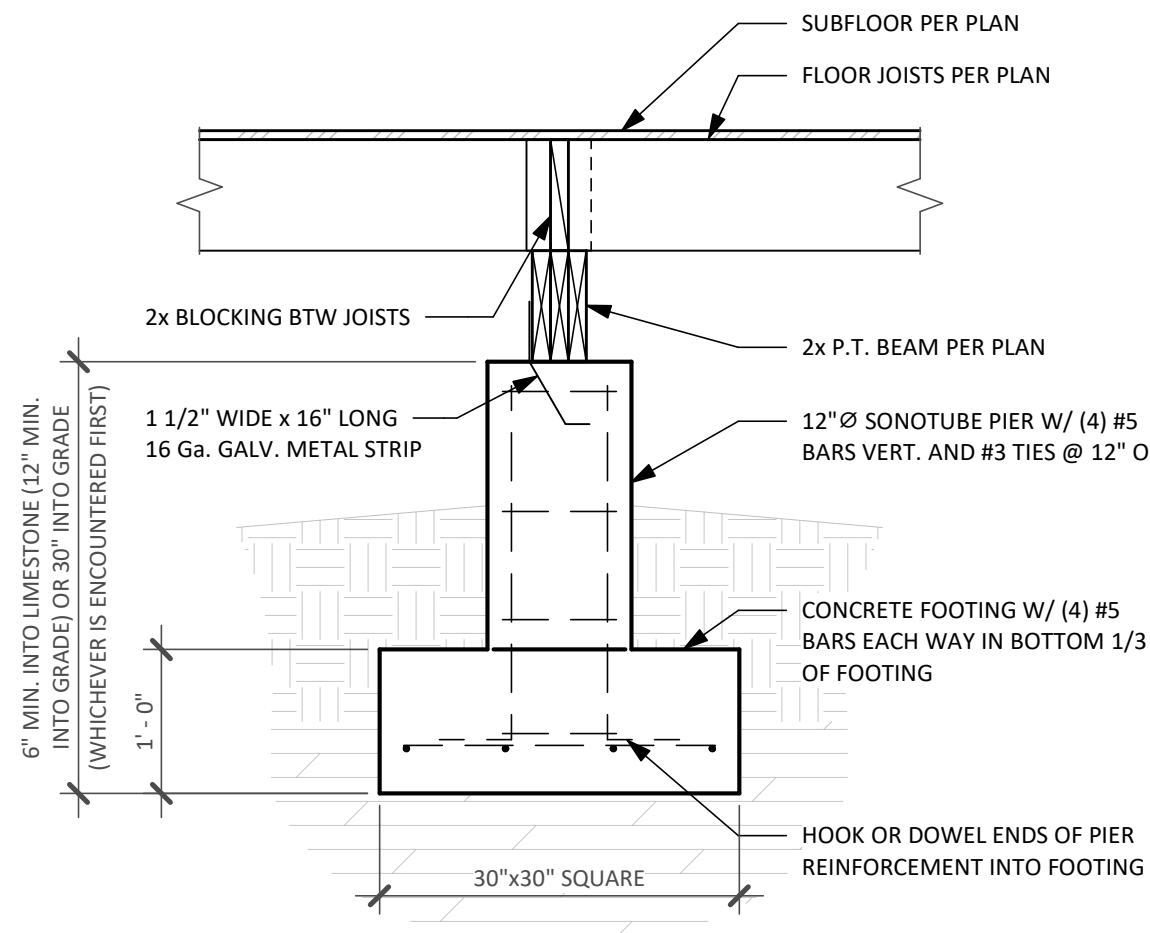
05 NEW SISTERED JOISTS & DROPPED LEDGER
SCALE: 3/4" = 1'-0"



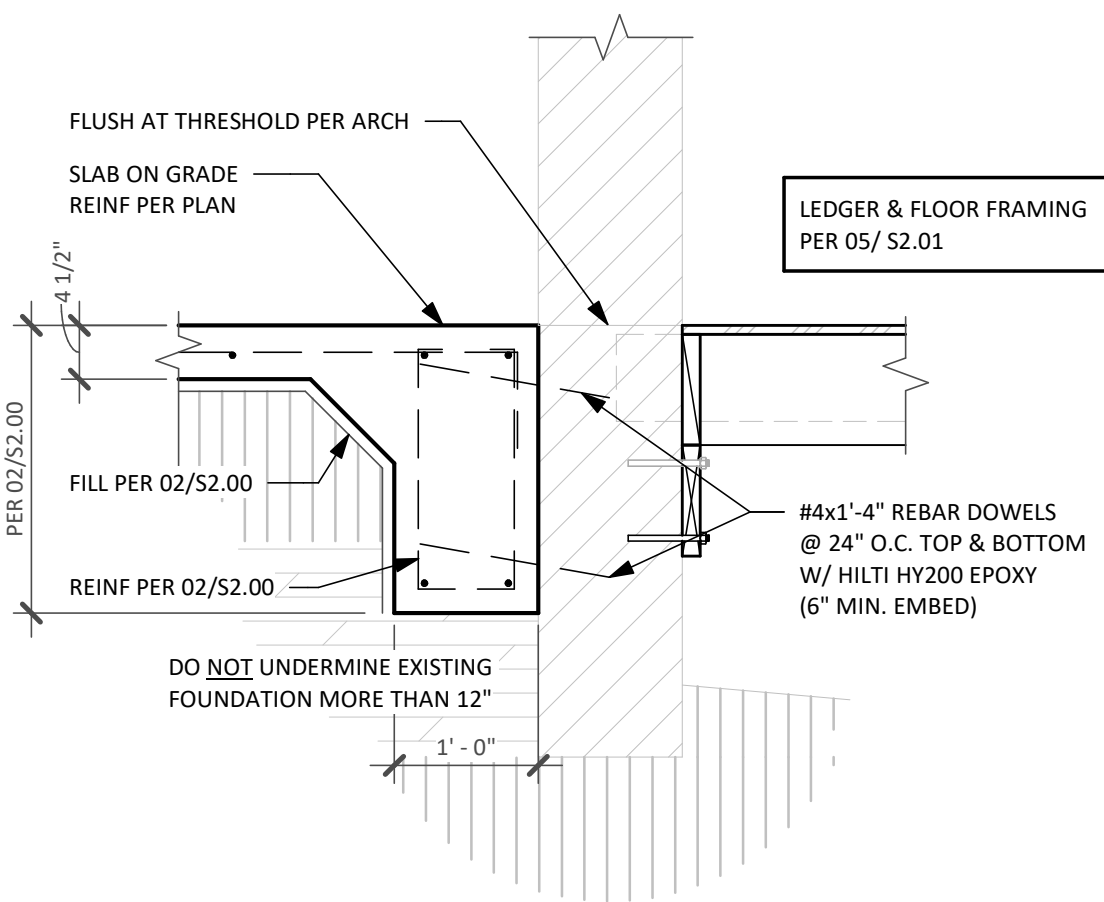
06 BASEMENT WALL AT STAIR
SCALE: 3/4" = 1'-0"



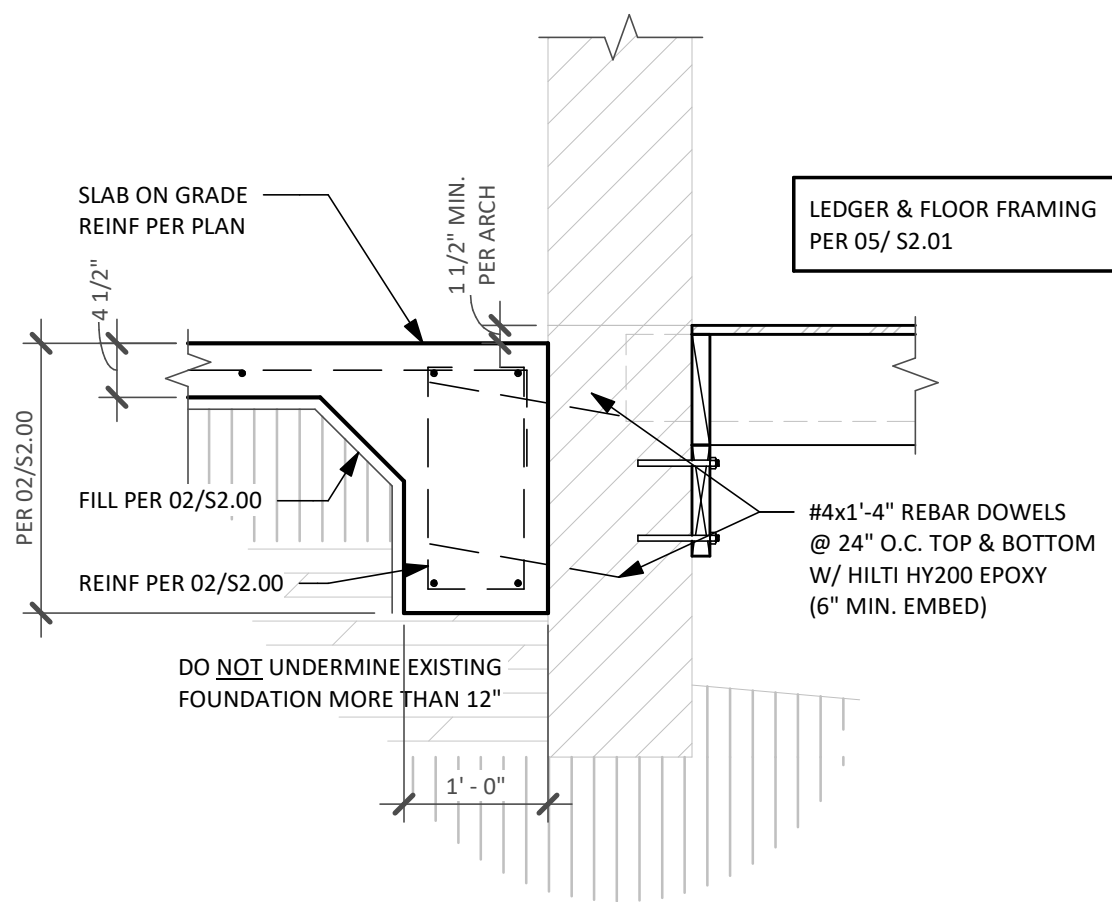
07 RAISED CONCRETE CURB ON EXISTING SLAB
SCALE: 3/4" = 1'-0"



08 TYPICAL INTERIOR PIER
SCALE: 3/4" = 1'-0"



09 NEW SLAB ON GRADE, FLUSH W/ EXISTING
SCALE: 3/4" = 1'-0"

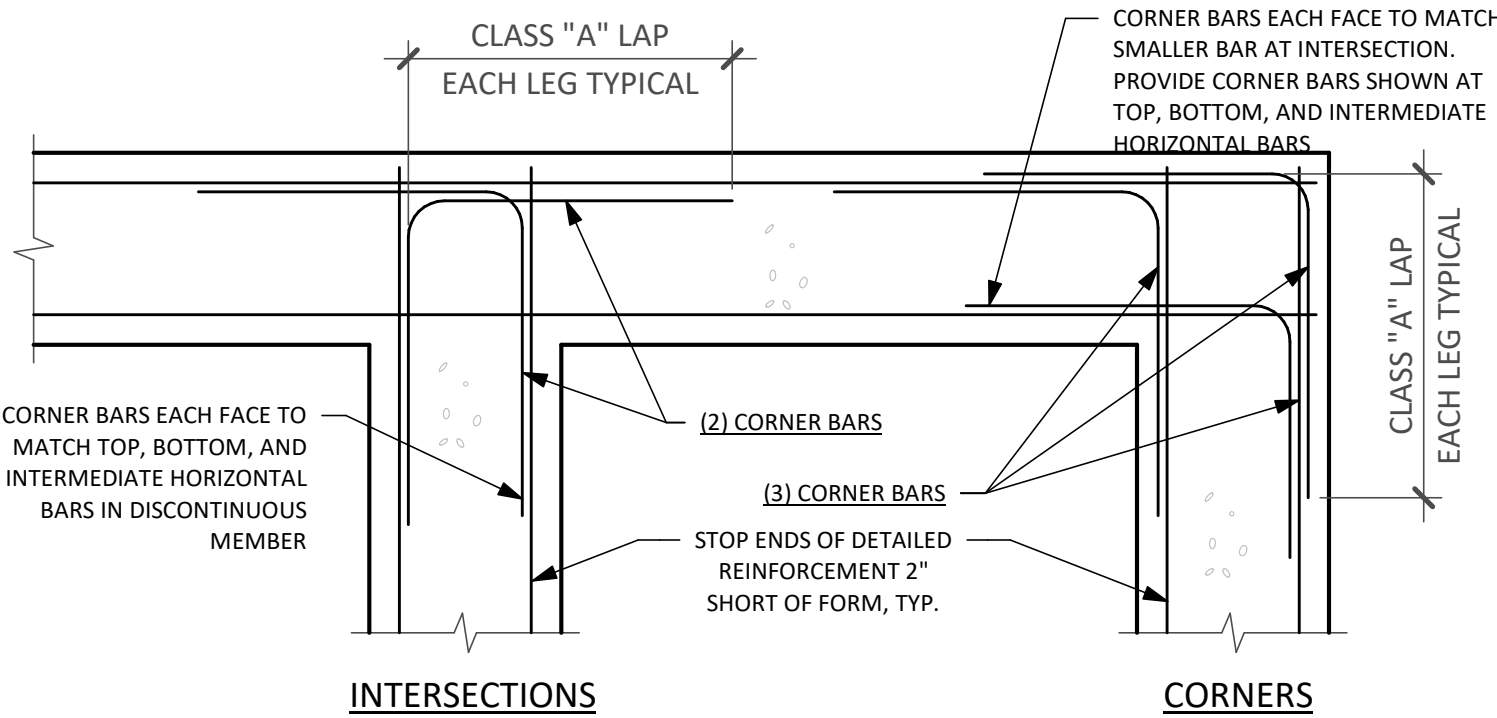
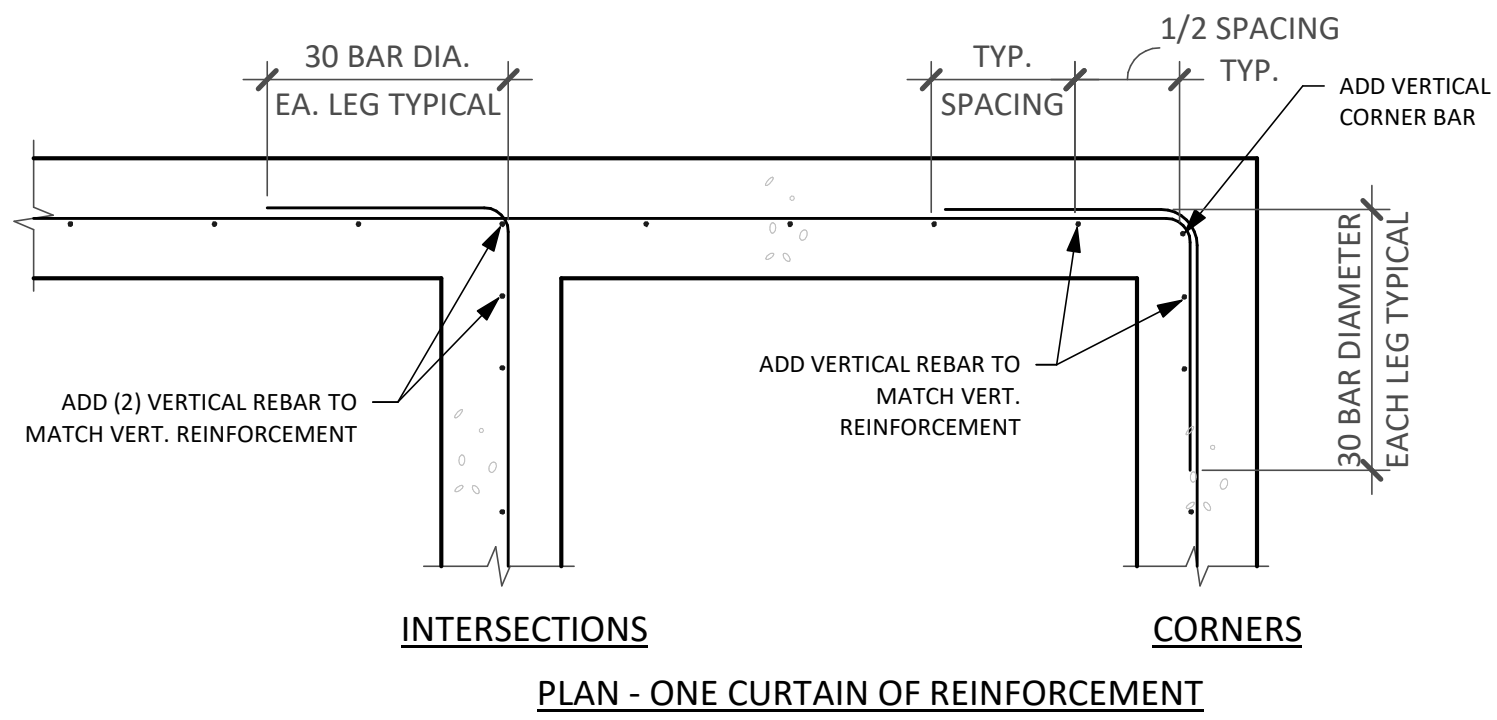


10 NEW SLAB ON GRADE, DROPPED FROM EXISTING
SCALE: 3/4" = 1'-0"

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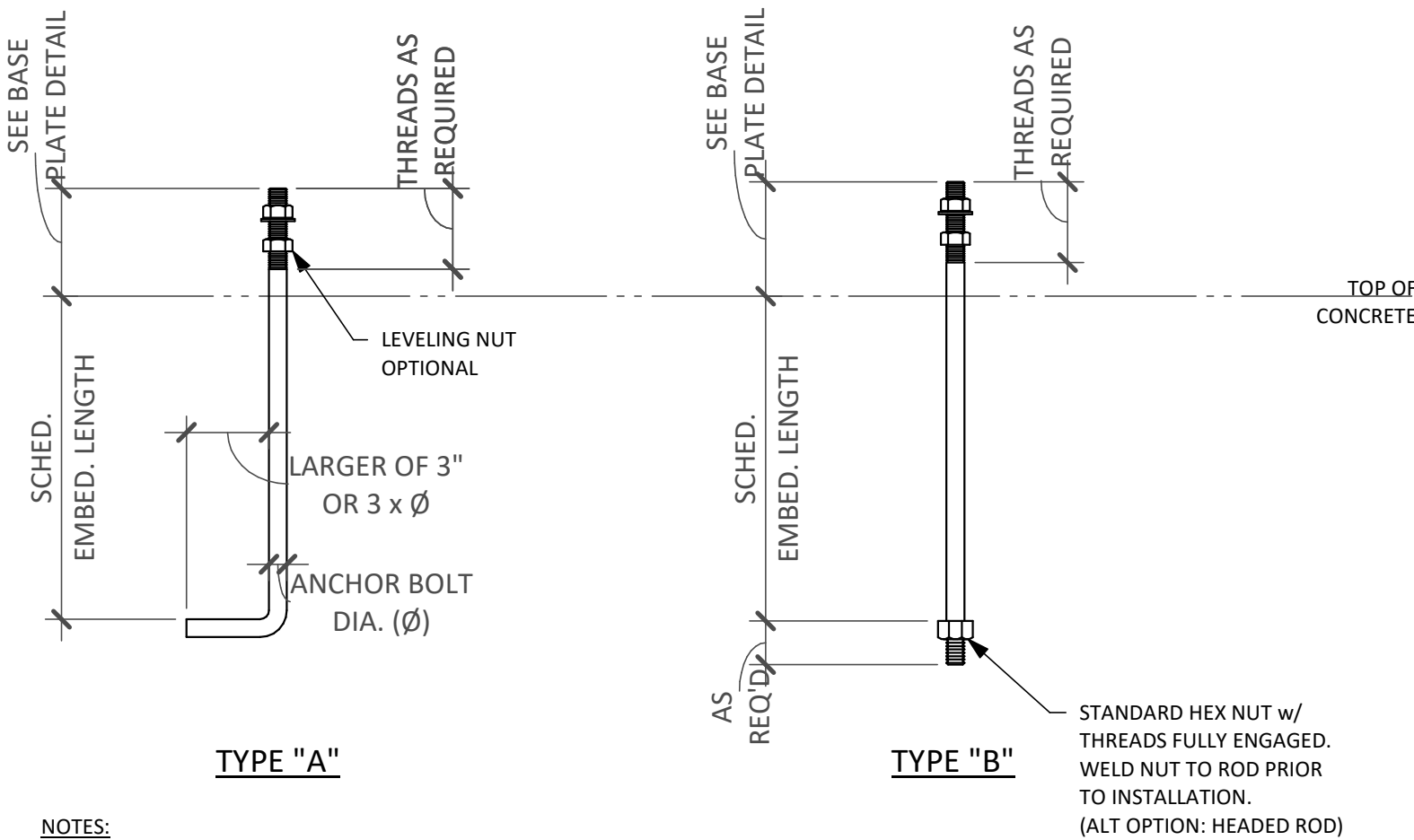
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- NOTES:
- WHERE 90 DEGREE HOOKS ARE SCHEDULED OR DETAILED FOR BARS, CORNER BARS MAY BE OMITTED FOR THAT LAYER.
 - MATCH SIZE, LOCATION AND NUMBER OF HORIZONTAL BEAM AND WALL BARS, EXCEPT THAT WHERE THERE ARE MORE THAN 2 TOP OR BOTTOM BARS, ONLY THE INSIDE AND OUTSIDE BARS MUST BE MATCHED.

01 TYPICAL DETAIL WALL OR GRADE BEAM REINFORCING

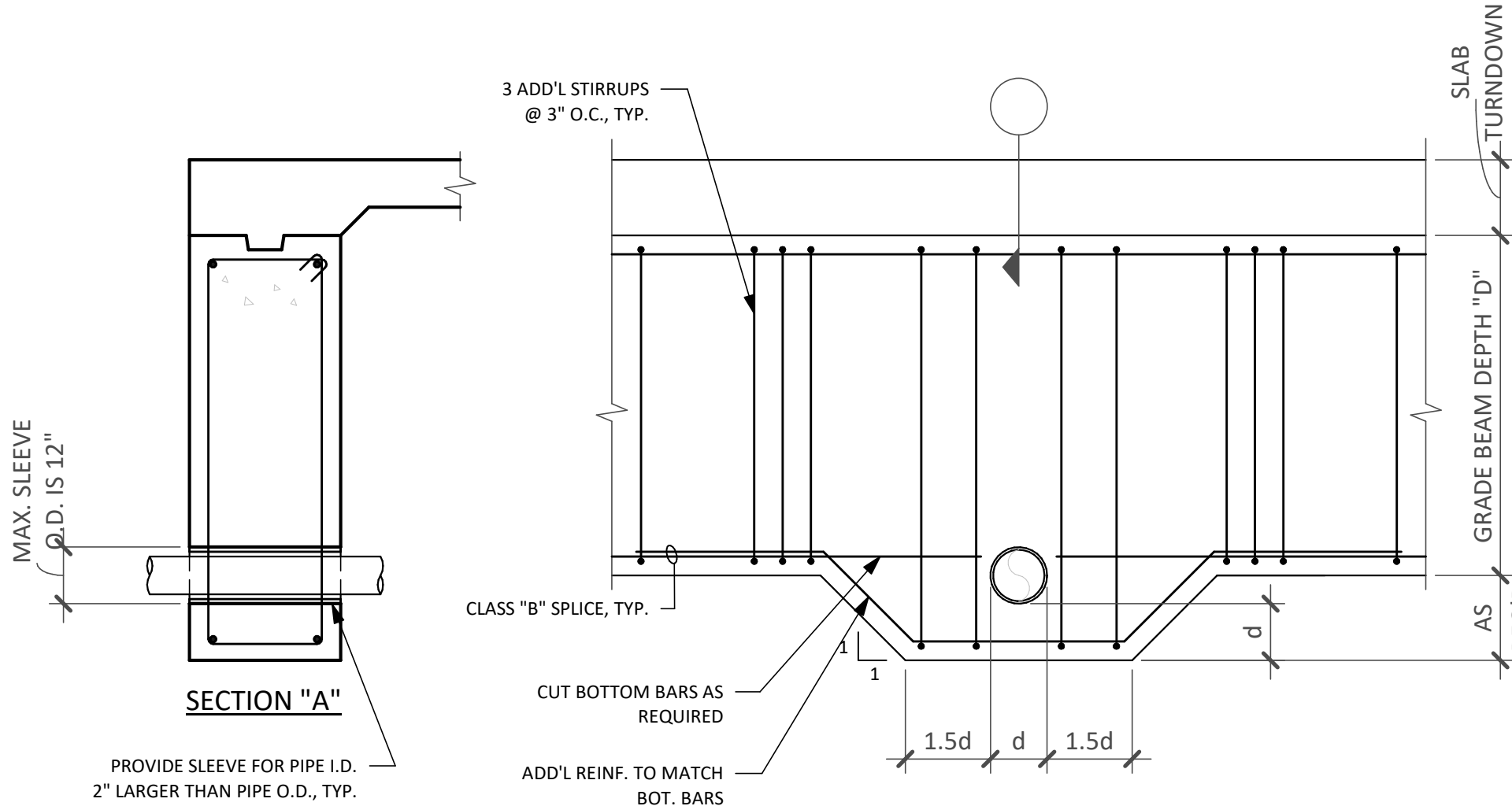
SCALE: 3/4" = 1'-0"



- NOTES:
- USE TYPE "A" ROD, TYPICAL, UNLESS NOTED OTHERWISE.
 - USE TYPE "B" ROD AT ALL WINDBRACE LOCATIONS.

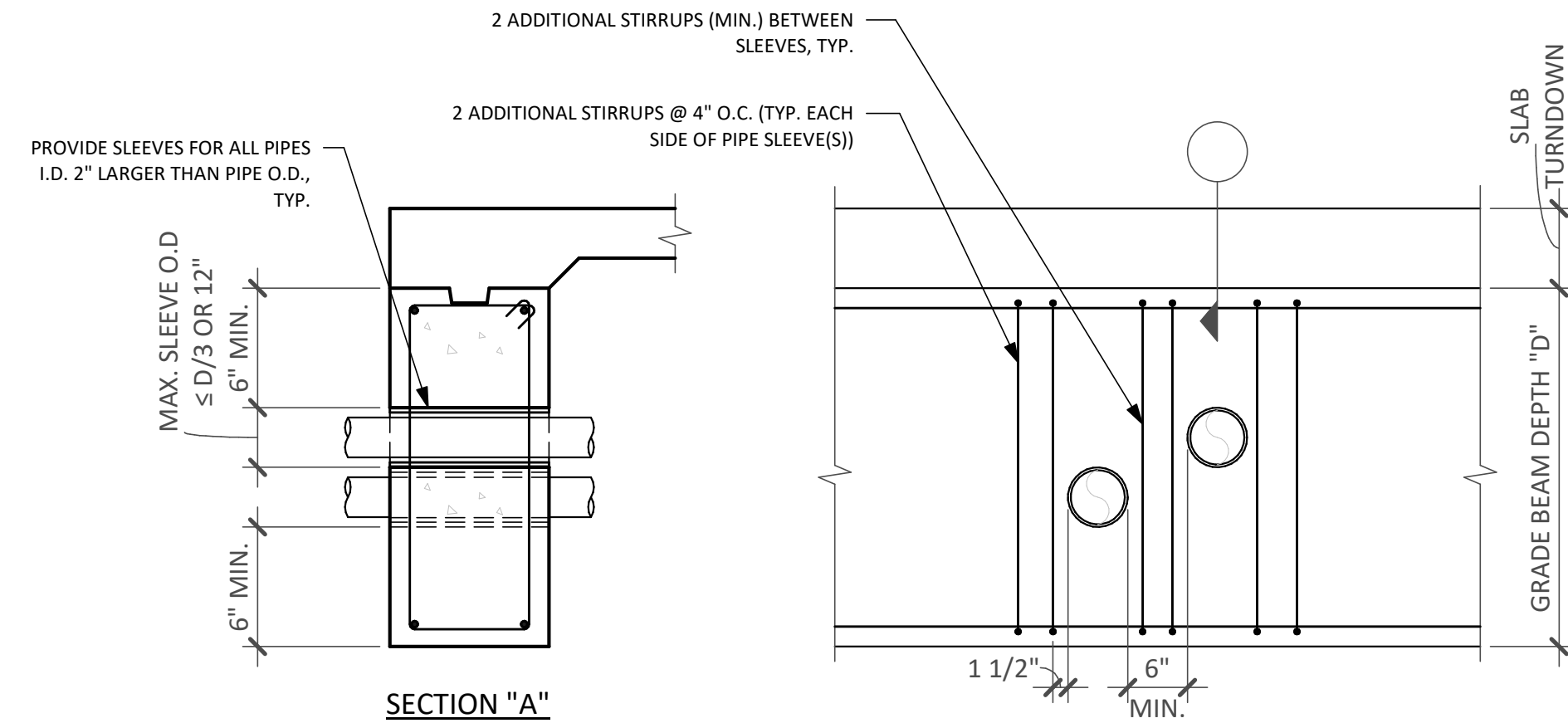
04 TYPICAL DETAIL ANCHOR ROD

SCALE: 1" = 1'-0"



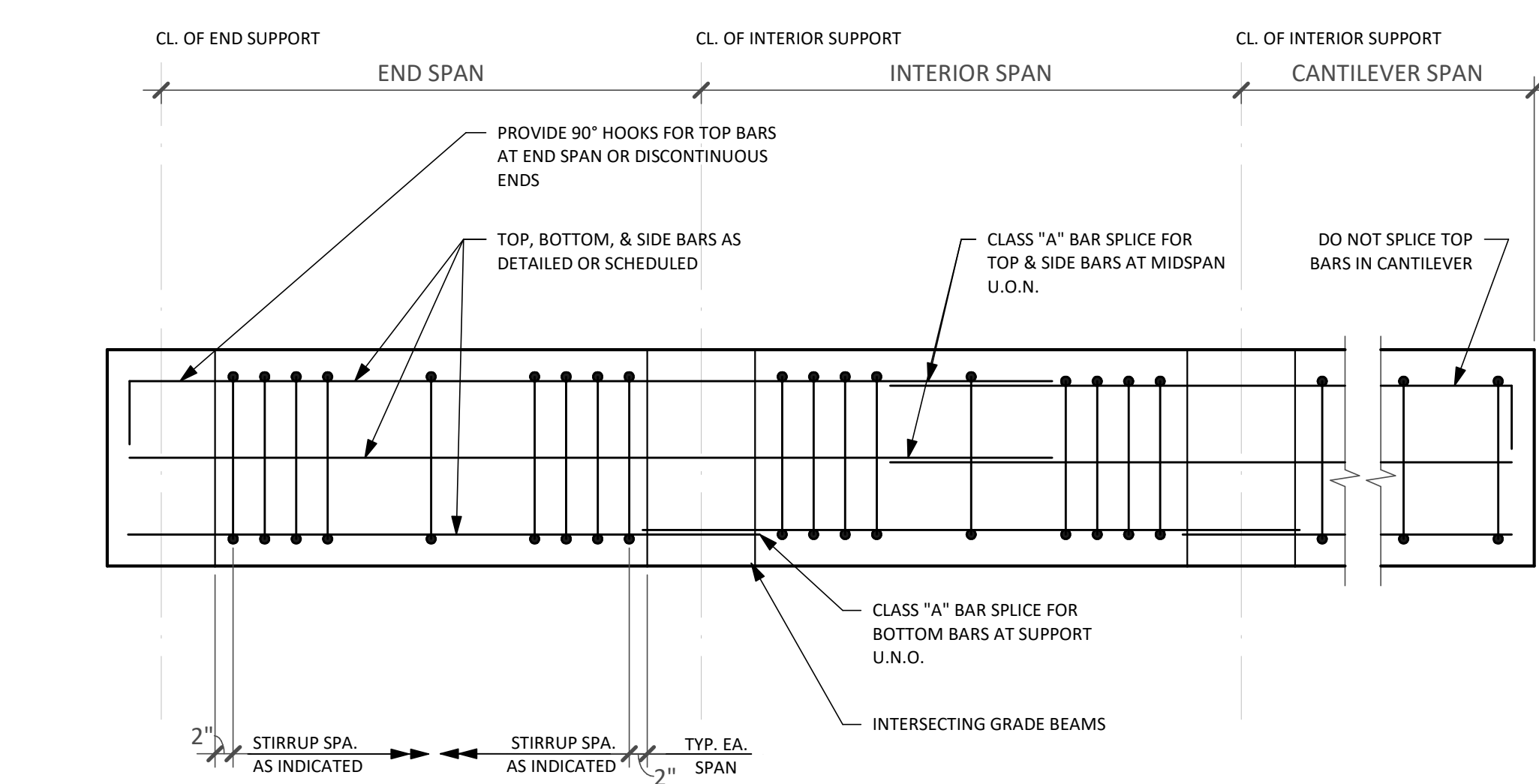
02 TYPICAL DETAIL HORIZONTAL PENETRATIONS THROUGH BOTTOM OF GRADE BEAM

SCALE: 3/4" = 1'-0"



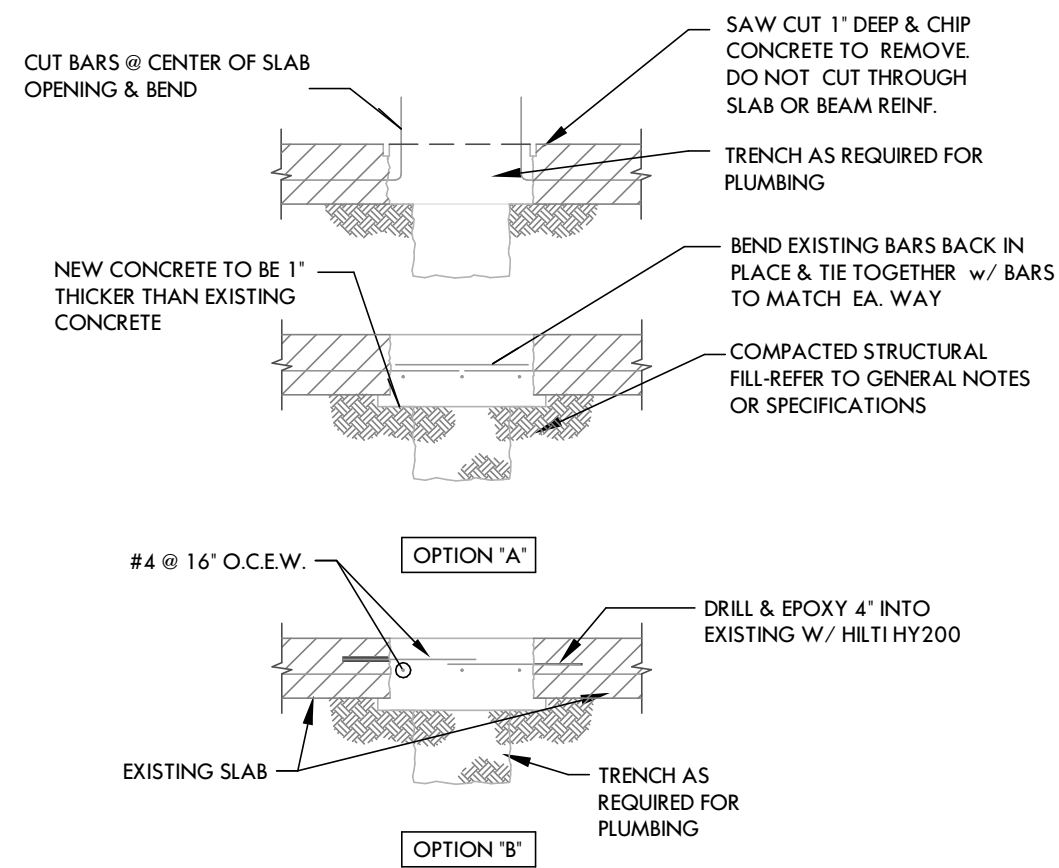
05 TYPICAL DETAIL HORIZONTAL PIPE PENETRATIONS THROUGH GRADE BEAM

SCALE: 3/4" = 1'-0"



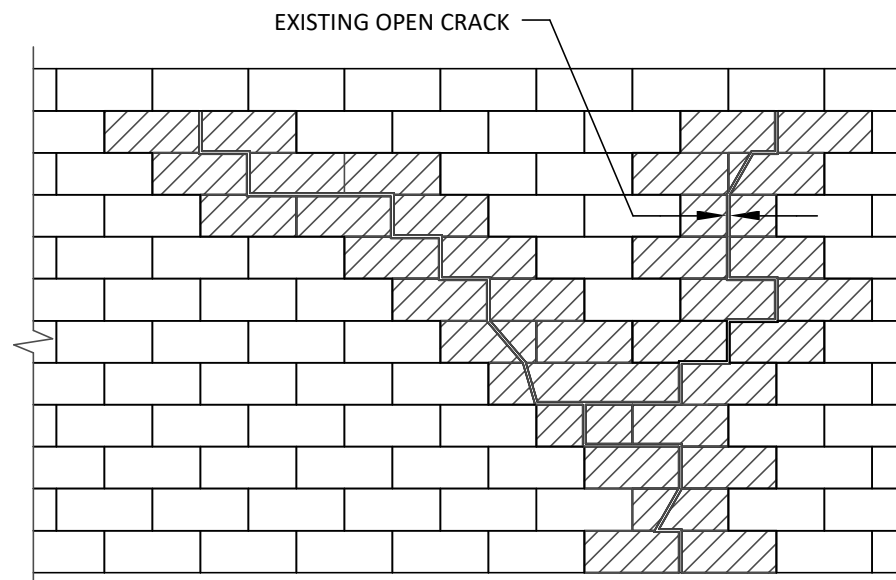
03 TYPICAL DETAIL GRADE BEAM REINFORCING

SCALE: 3/4" = 1'-0"



06 TYPICAL DETAIL SLAB REPAIR AT PLUMBING TRENCH

SCALE: 3/4" = 1'-0"



- NOTES:
- DENOTES BRICK TO BE REPLACED WHERE CRACK IS THRU WALL. REPLACE ALL WYTHES OF BRICK ON EACH SIDE OF CRACK TO NEXT MORTAR JOINT. REPLACE EXISTING HEADERS WITH NEW HEADERS. REPLACE LOOSE AND CRACKED BRICKS. WHERE CRACK IS ONLY IN OUTER WYTHE. REPLACE ONLY OUTER WYTHE.
 - WHERE CRACK IS OPEN AND 1/4" OR LESS AND IS PRESENT ONLY IN THE OUTER WYTHE AND ONLY IN JOINTS. RAKE AND REPOINT JOINTS ONLY.
 - MORTAR TO BE CEMENT-LIME TYPE "N". MORTAR TO CONFORM TO ASTM C270 BY PROPORTION.
 - REPLACE ALL LOOSE AND CRACKED BRICKS WITH NEW BRICKS AND MORTAR.

07 TYPICAL DETAIL CRACK REPAIR IN MASONRY

SCALE: 3/4" = 1'-0"

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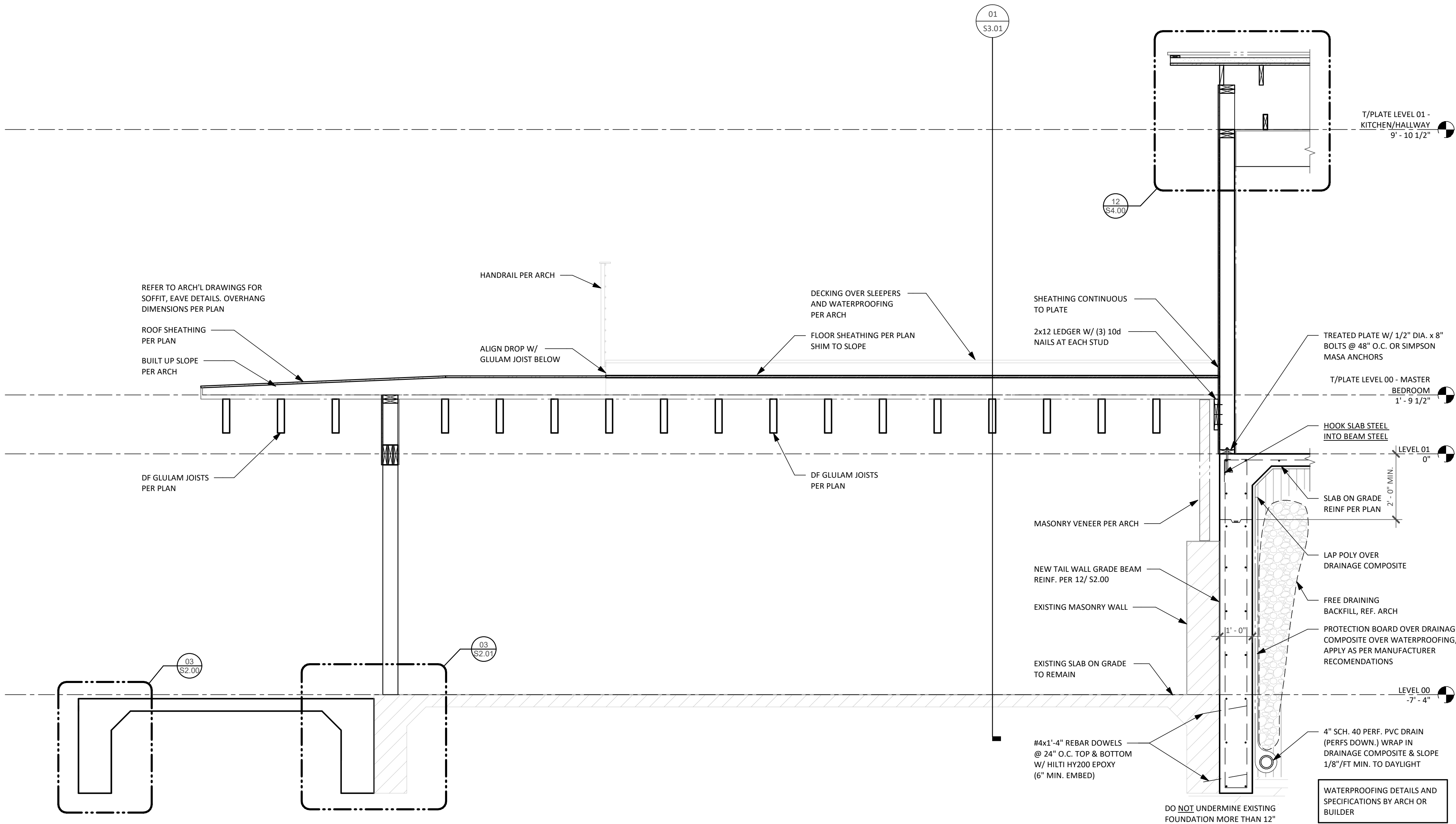
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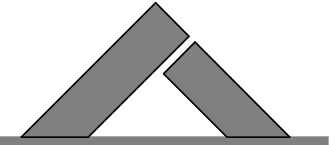
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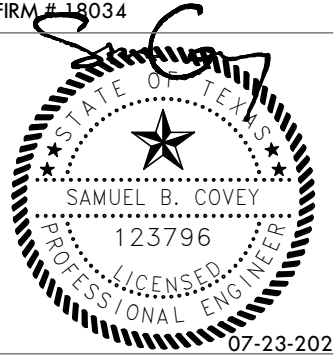


01 MASTER BEDROOM - EAST/WEST
SCALE: 1/2" = 1'-0"



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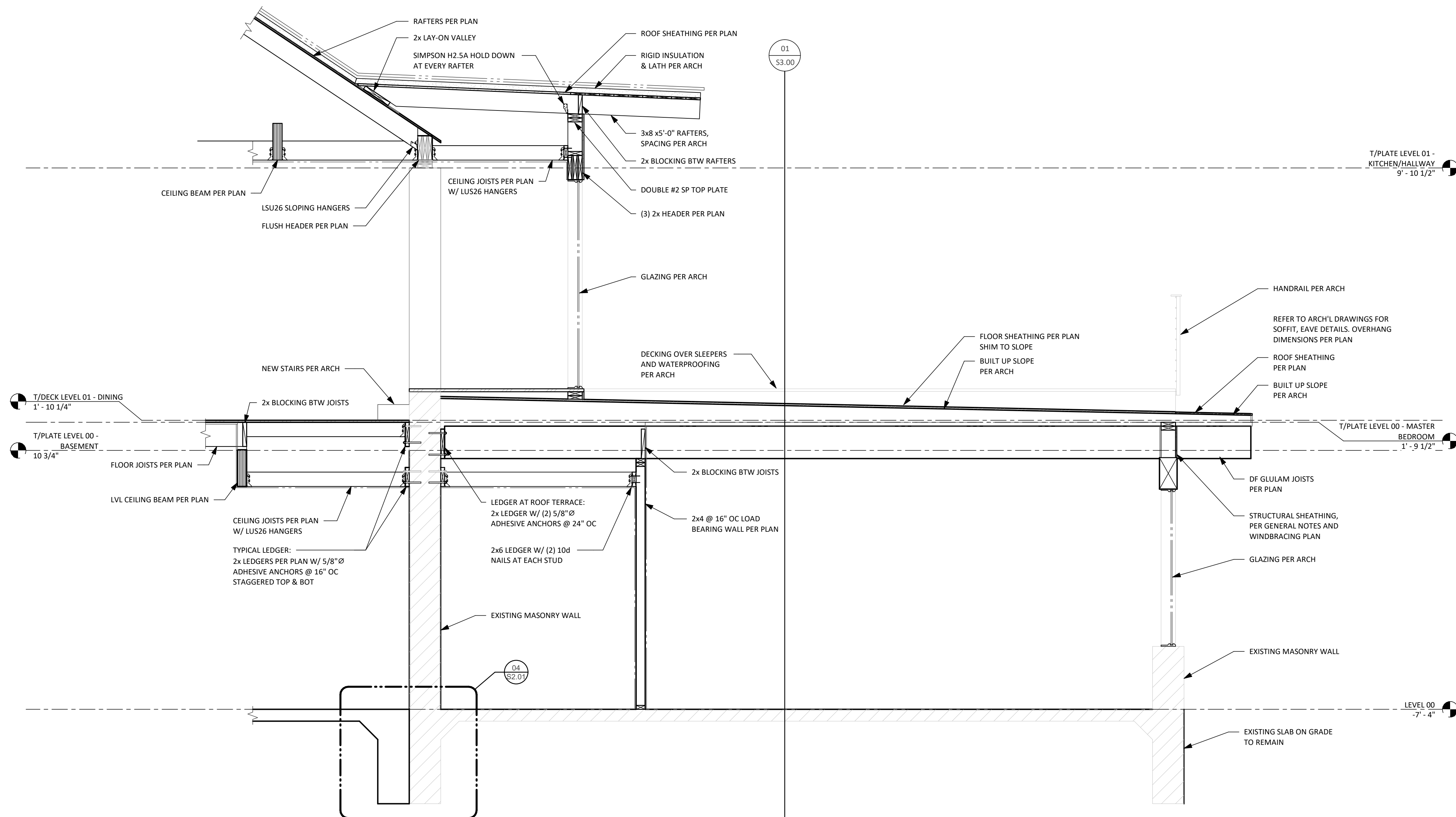
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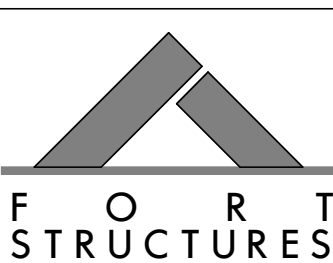
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01 MASTER BEDROOM - NORTH/SOUTH
SCALE: 1/2" = 1'-0"

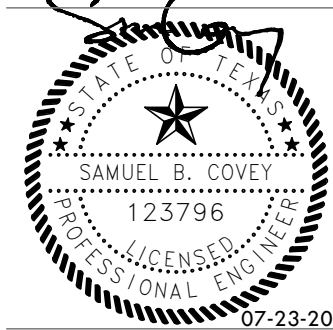
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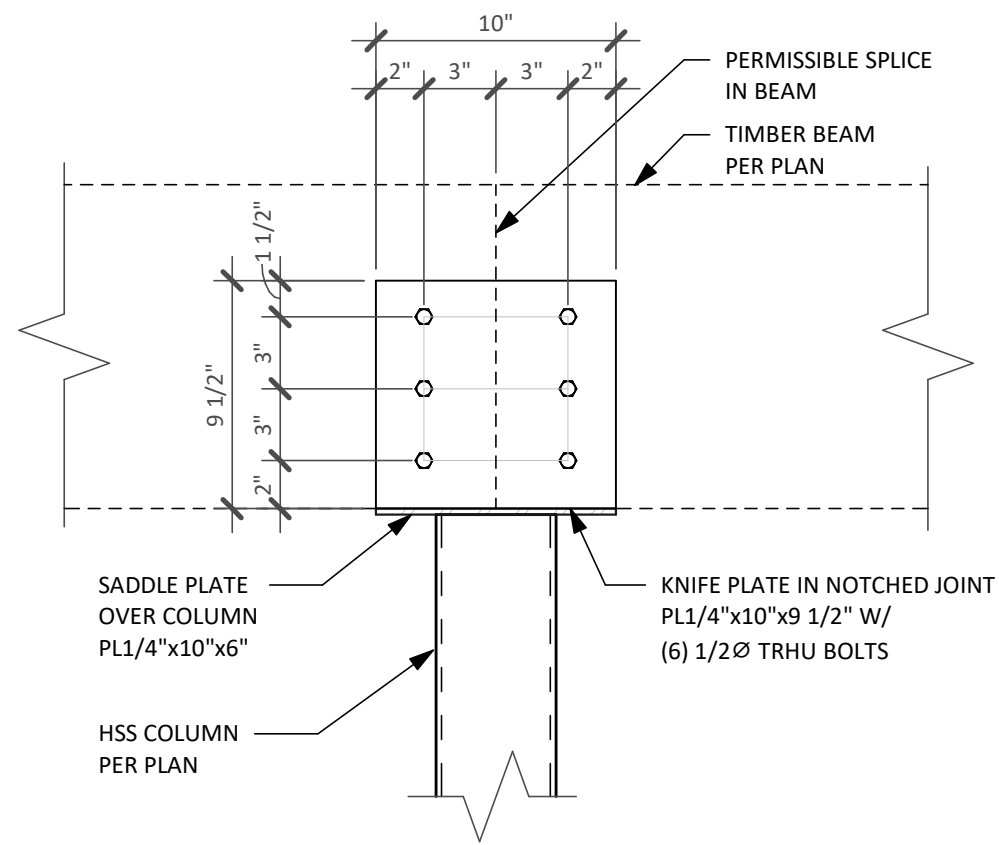
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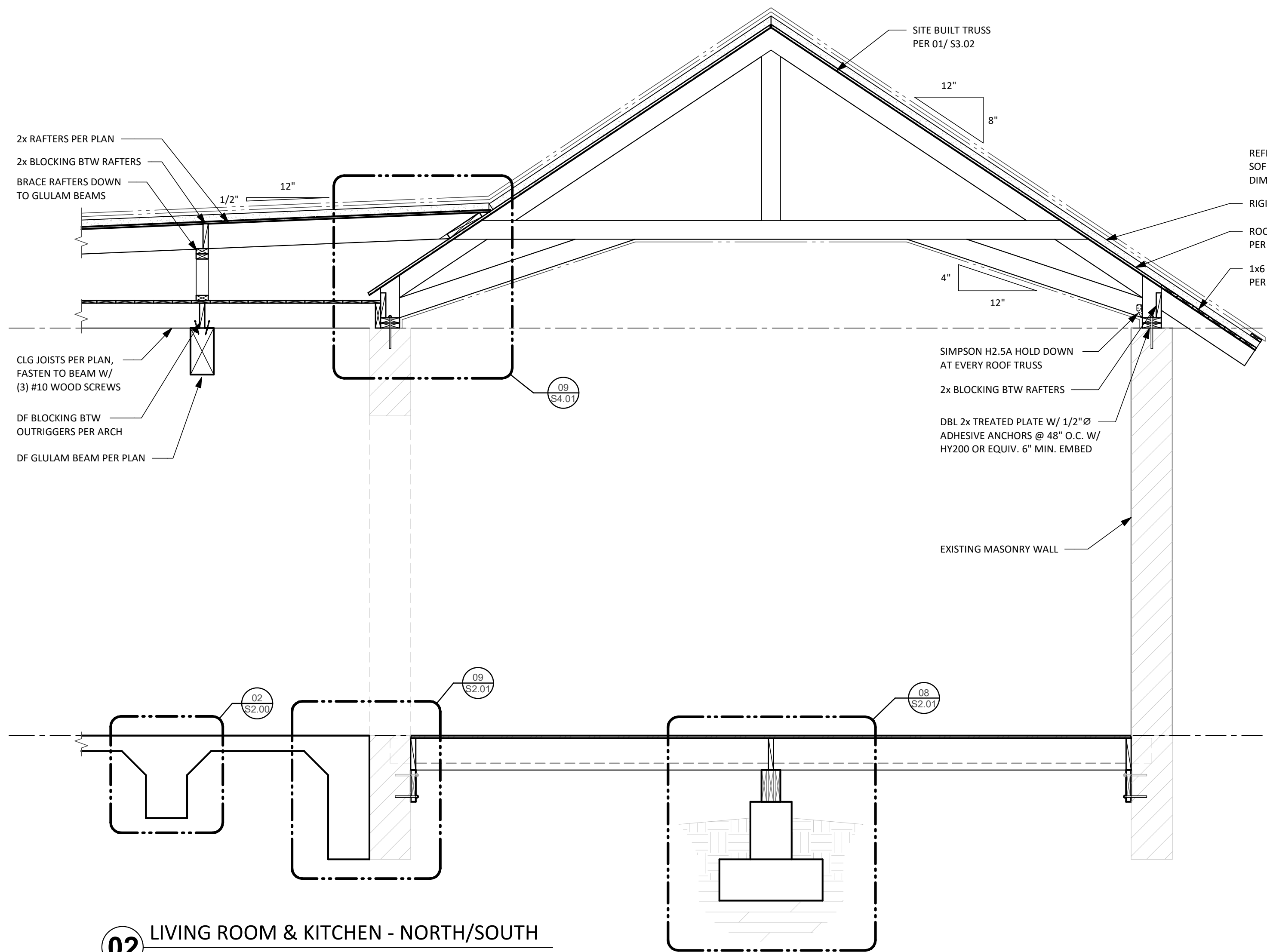
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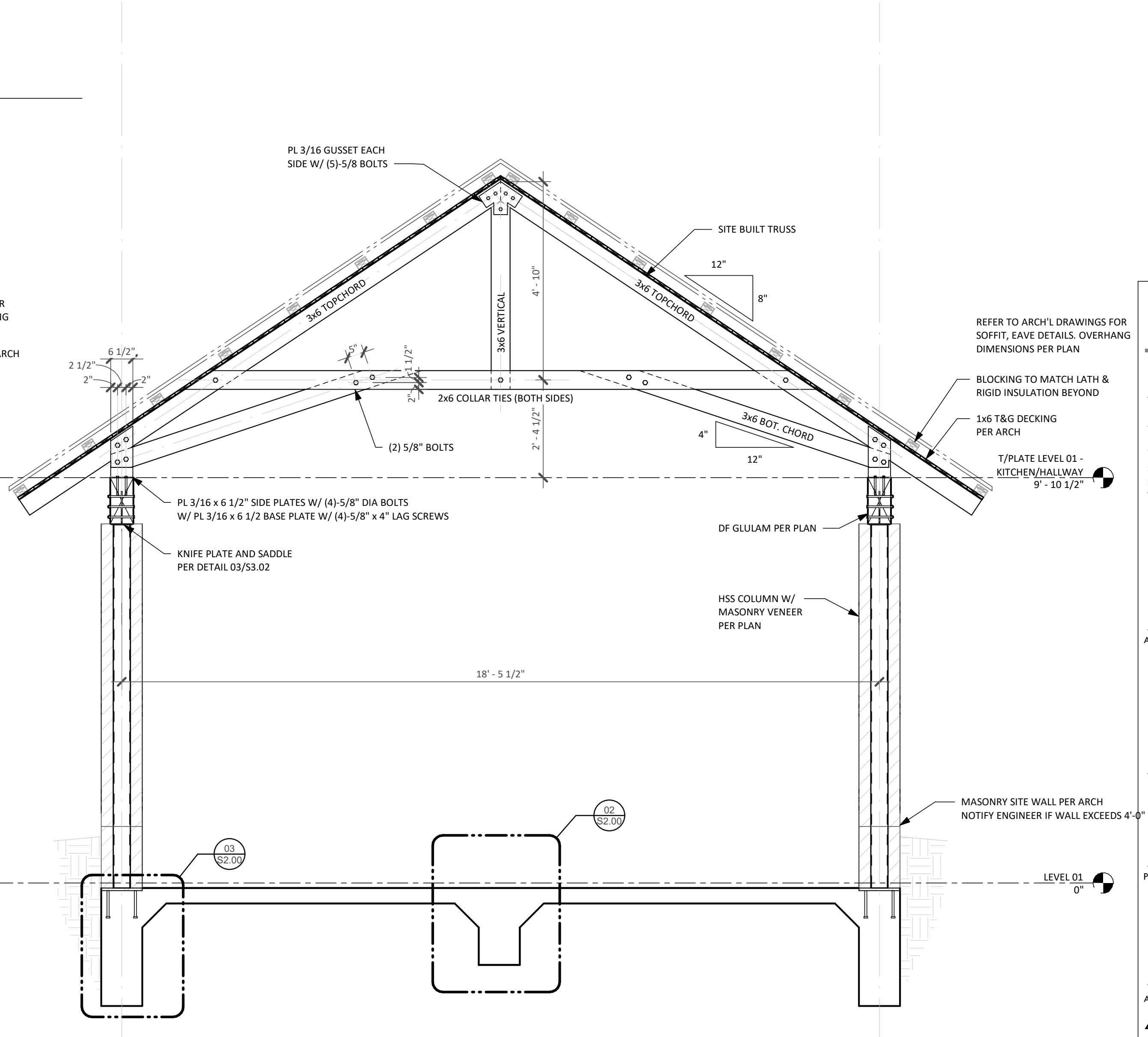
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03 KNIFE PLATE & SADDLE
SCALE: 1 1/2" = 1'-0"



02 LIVING ROOM & KITCHEN - NORTH/SOUTH
SCALE: 1/2" = 1'-0"



01 LIVING PORCH - NORTH/SOUTH
SCALE: 1/2" = 1'-0"

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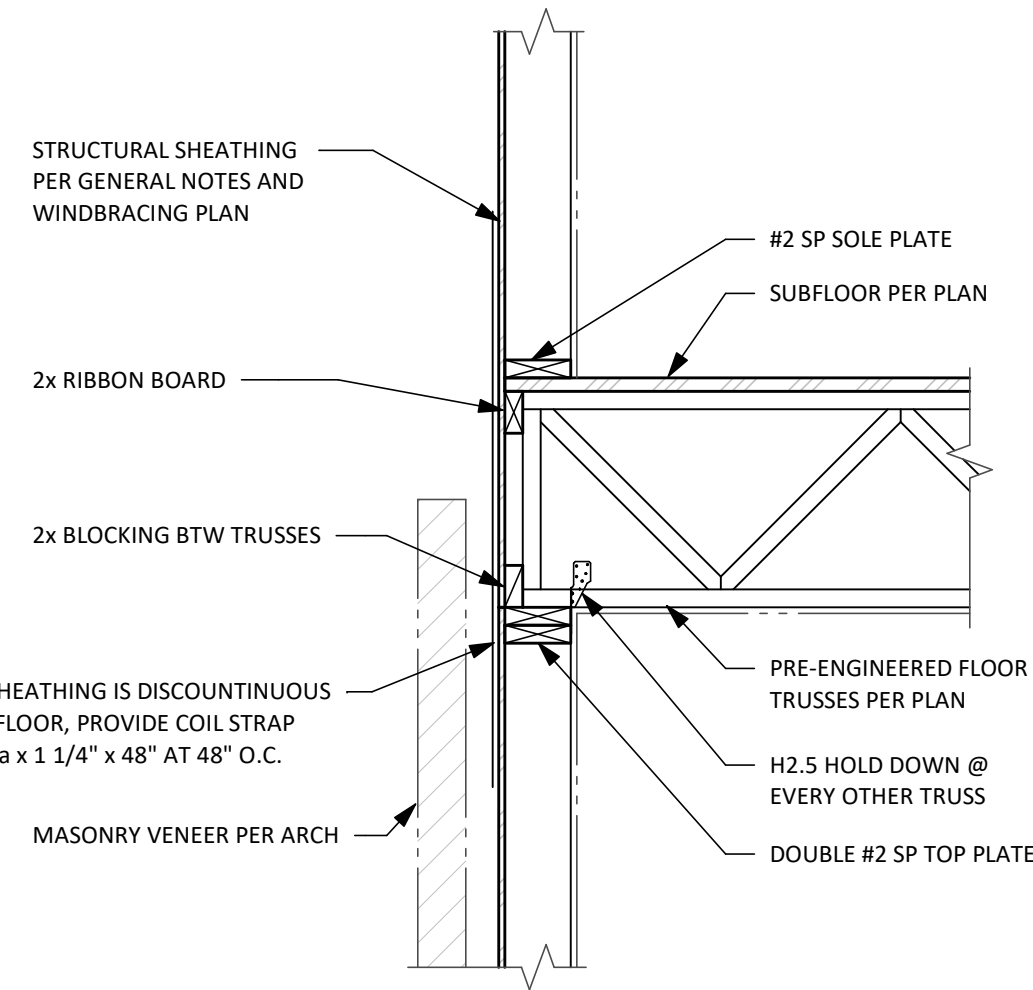
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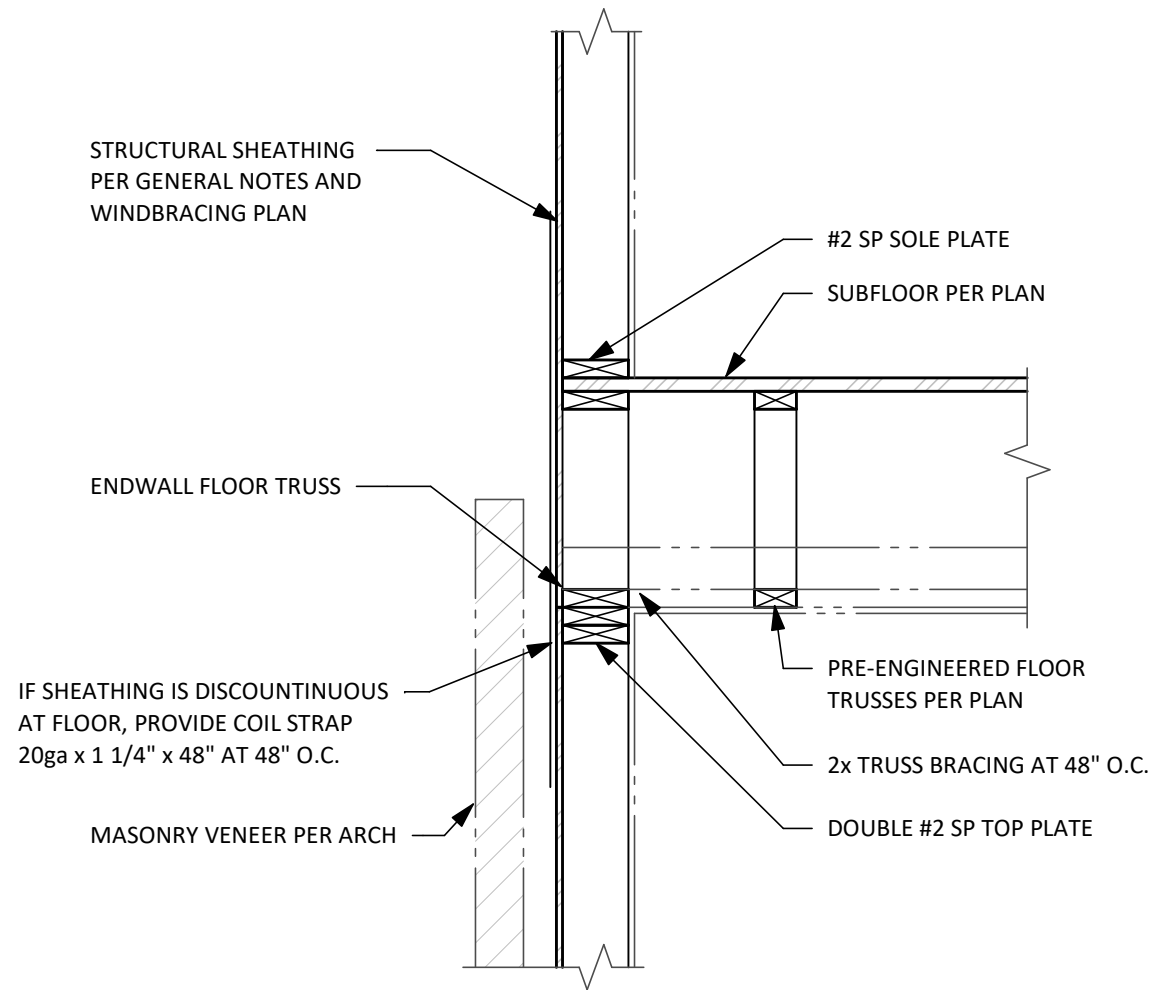
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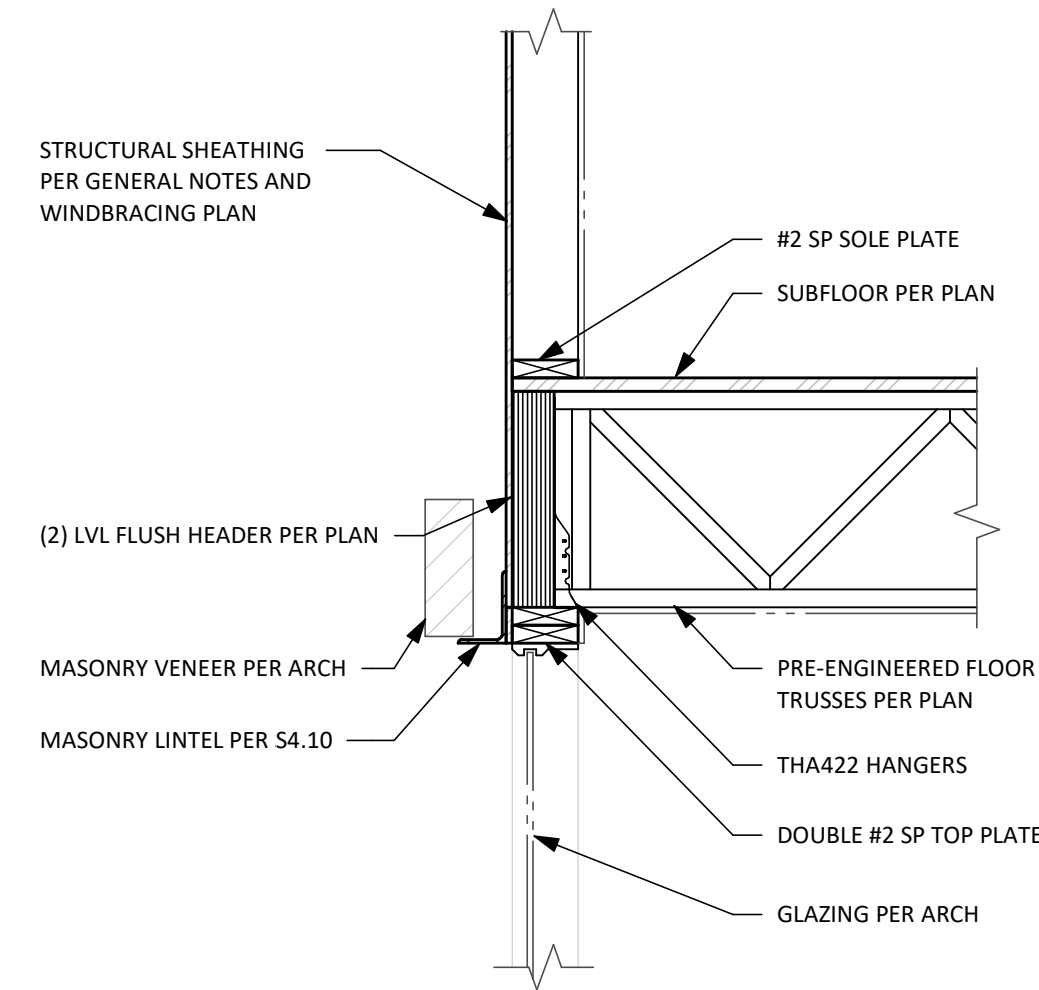
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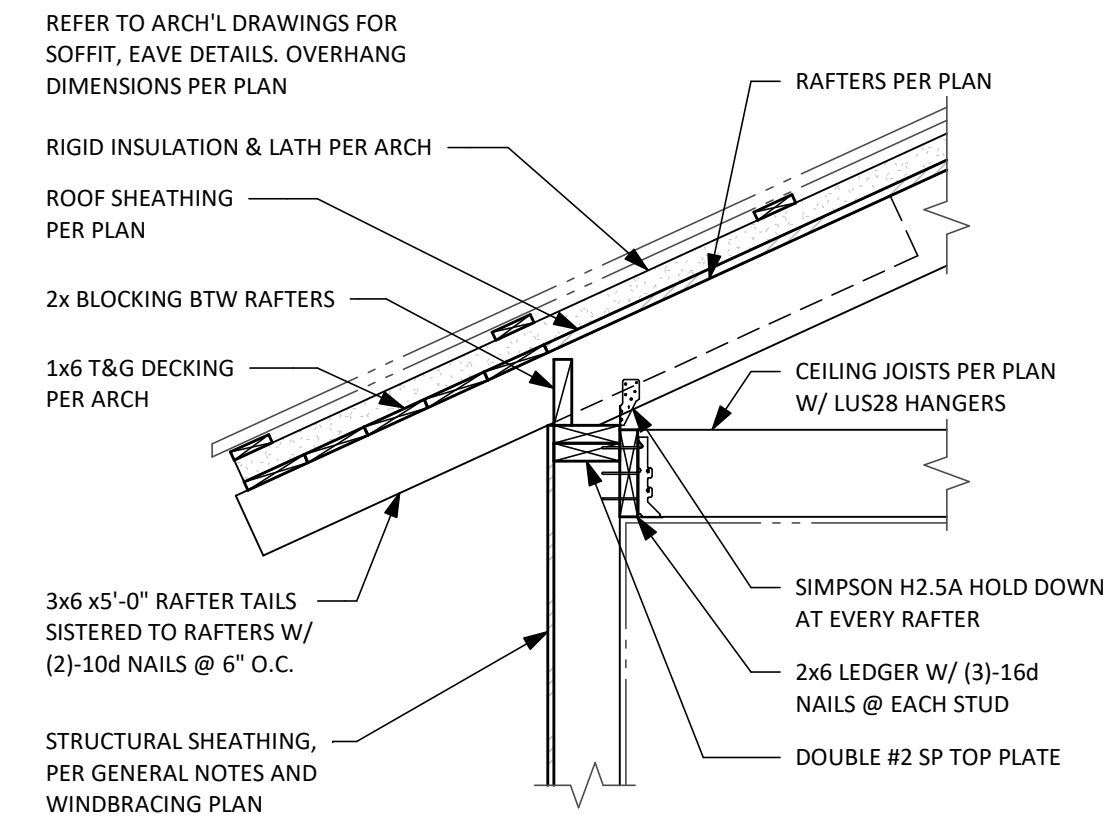
01 FLOOR TRUSS PERPENDICULAR TO EXT WALL
SCALE: 3/4" = 1'-0"



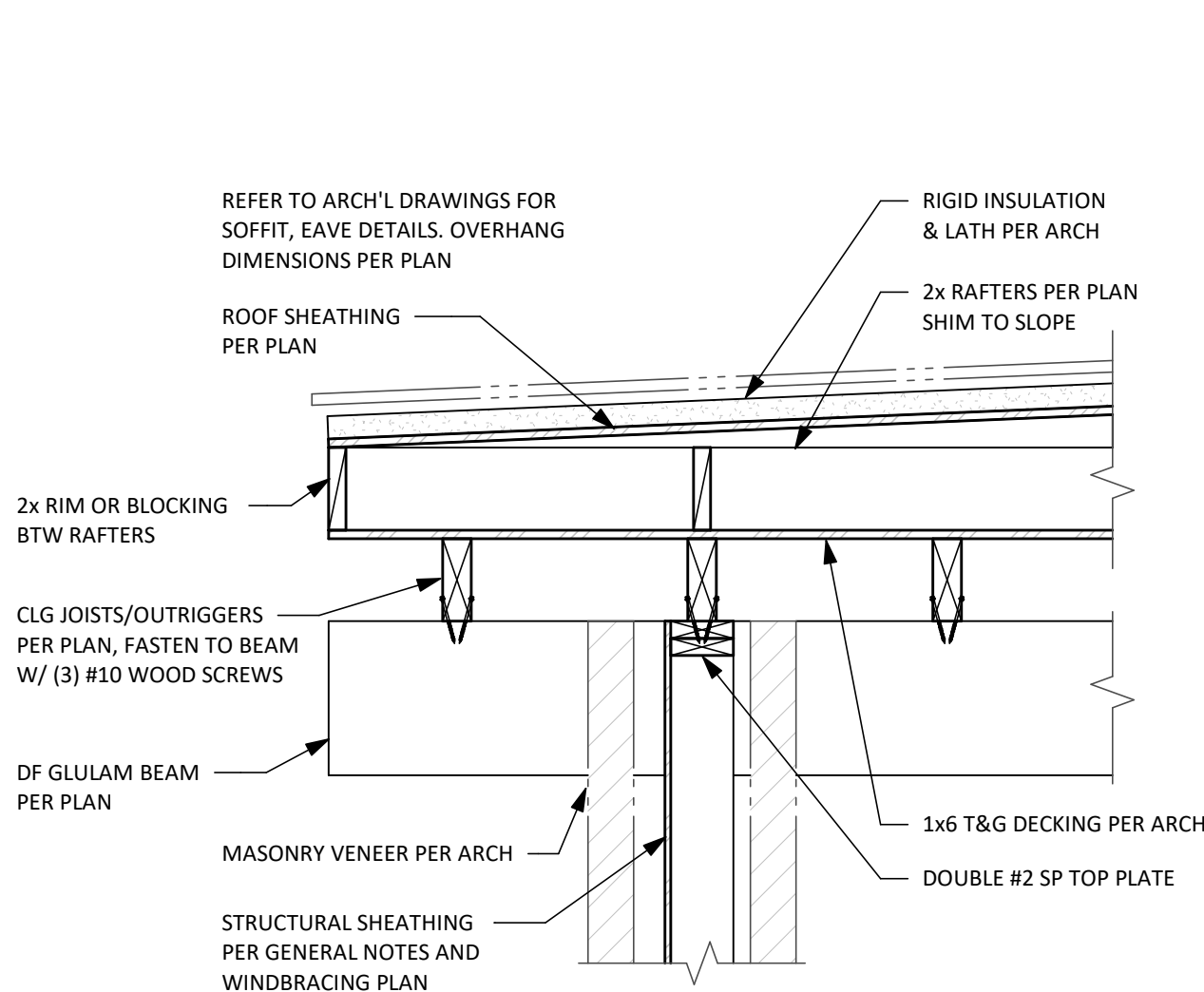
02 FLOOR TRUSS PARALLEL TO EXT WALL
SCALE: 3/4" = 1'-0"



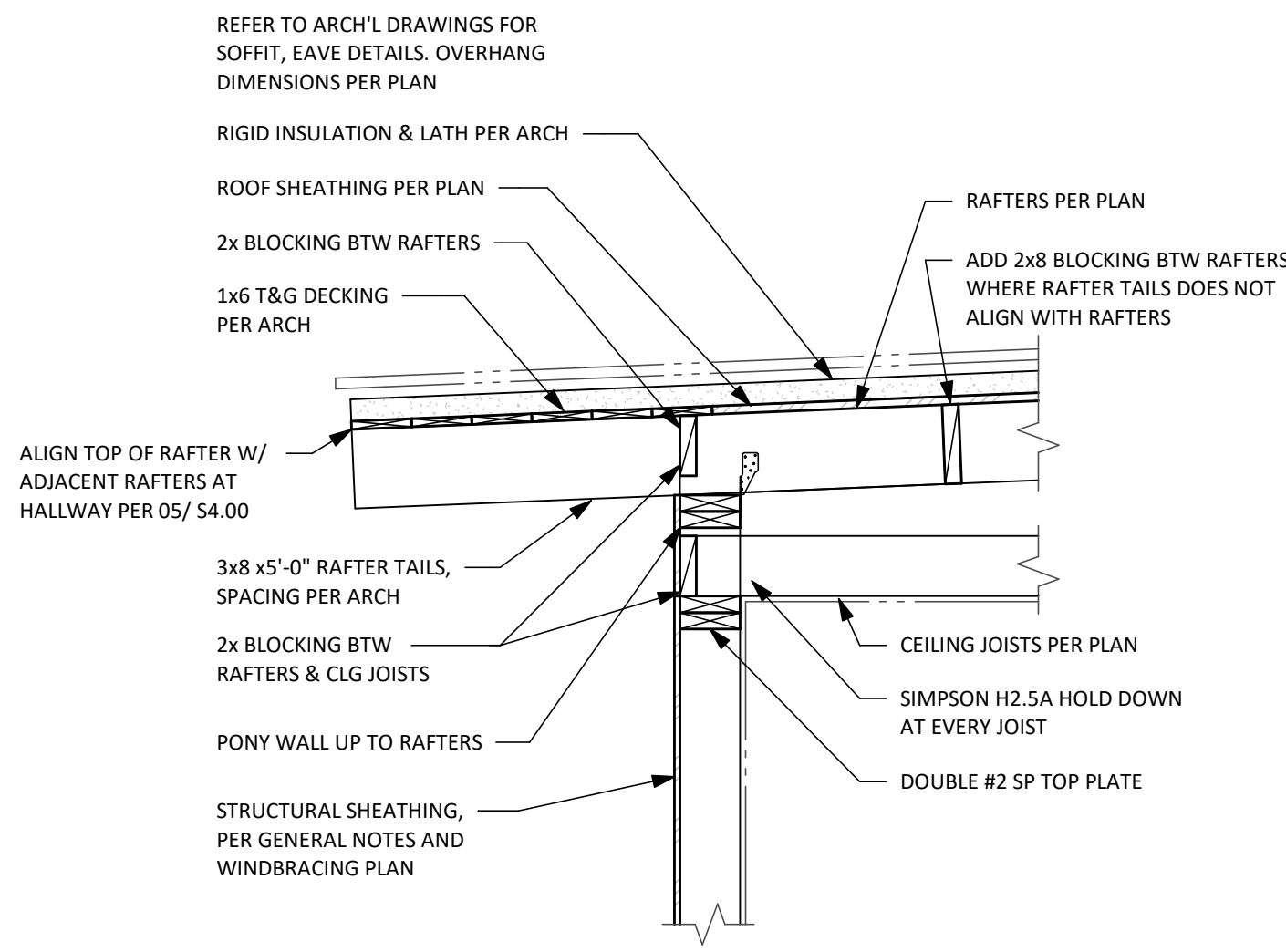
03 FLOOR TRUSS W/ FLUSH HEADER
SCALE: 3/4" = 1'-0"



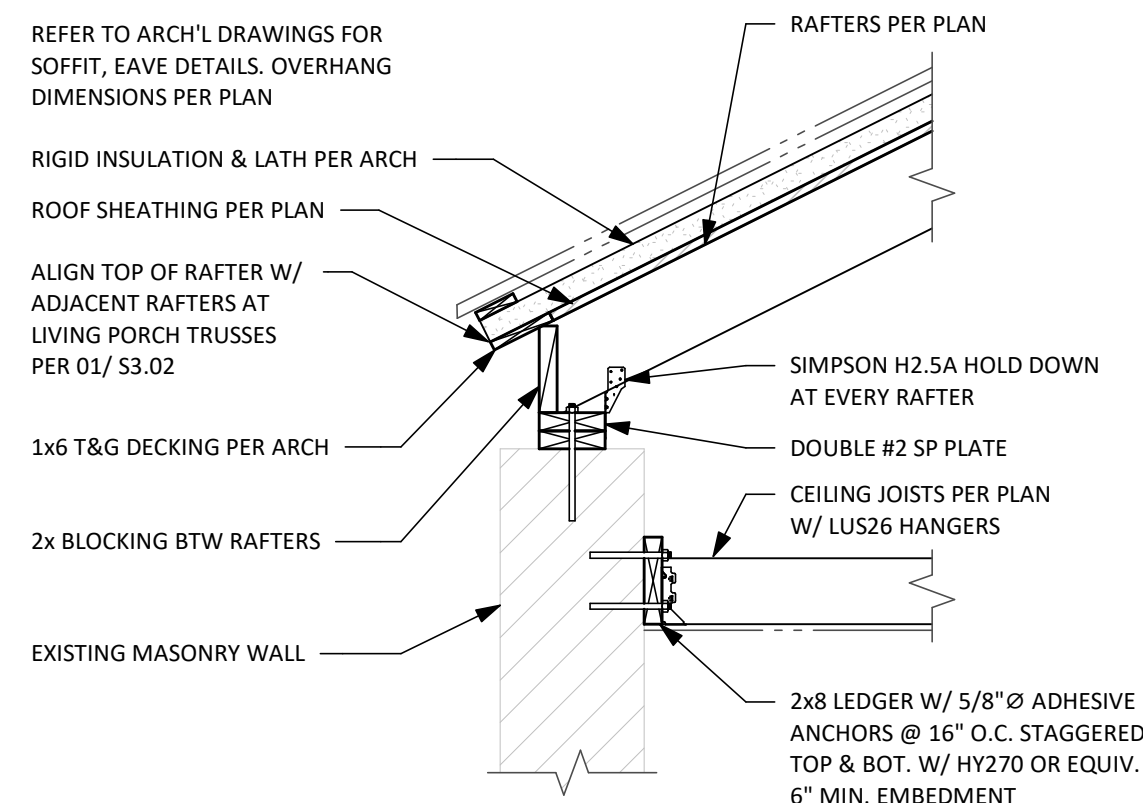
04 RAFTER FRAMING W/ DROPPED CEILING
SCALE: 3/4" = 1'-0"



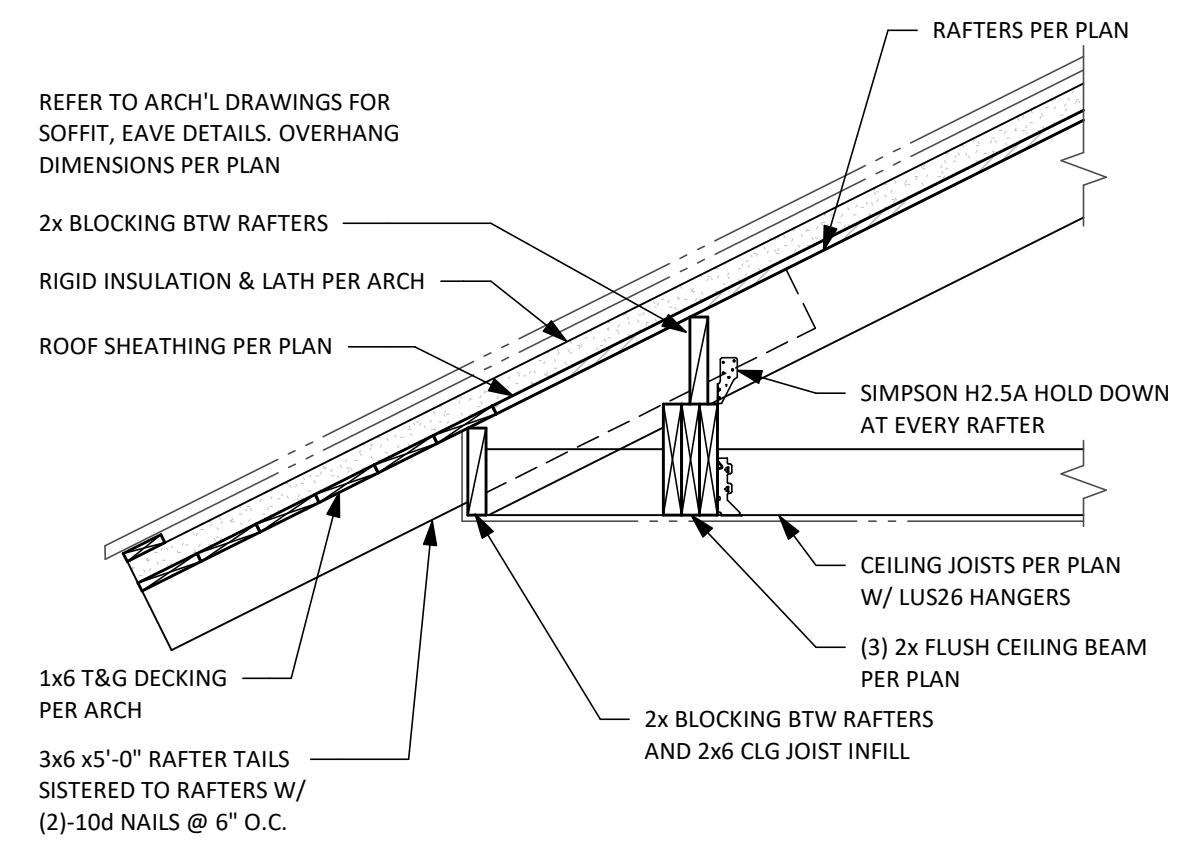
05 ROOF FRAMING AT HALLWAY WALL
SCALE: 3/4" = 1'-0"



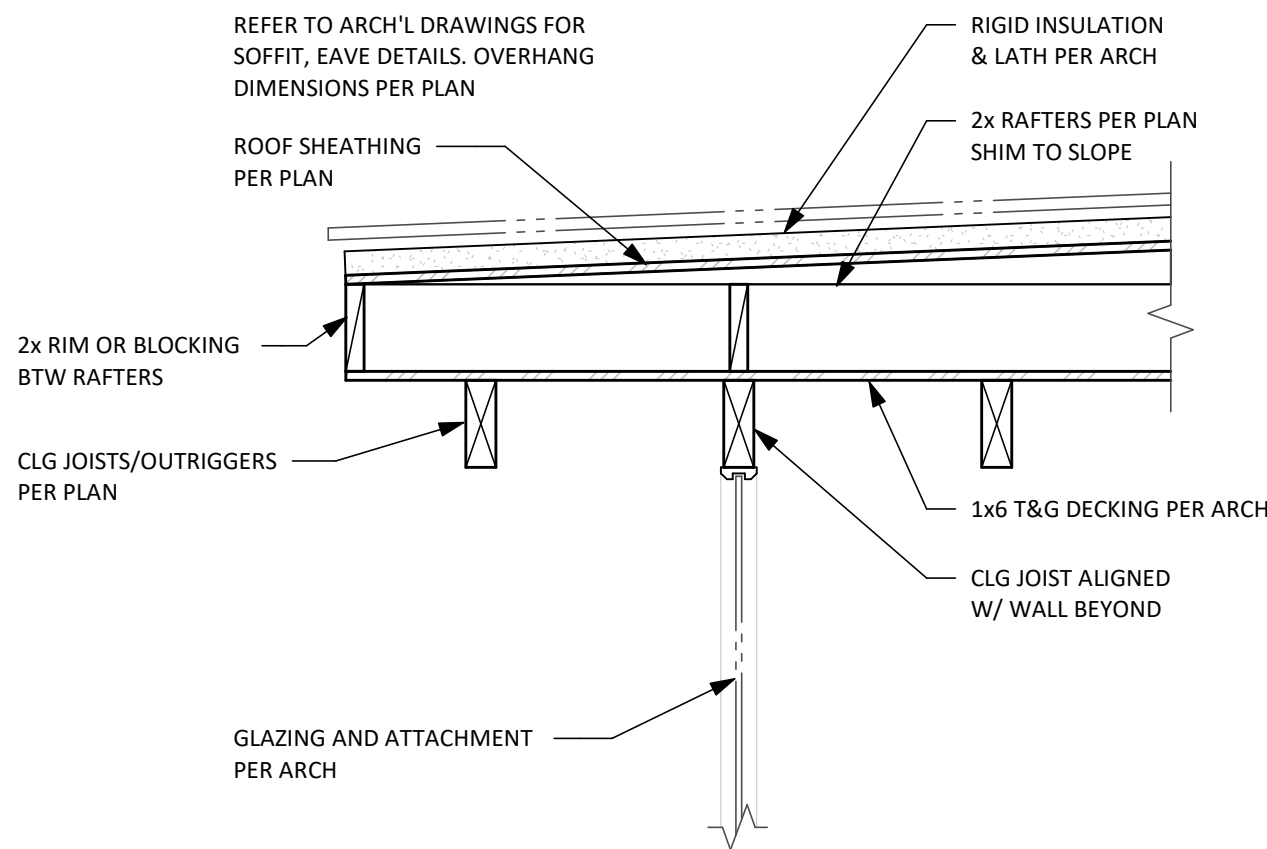
06 ROOF FRAMING AT KITCHEN
SCALE: 3/4" = 1'-0"



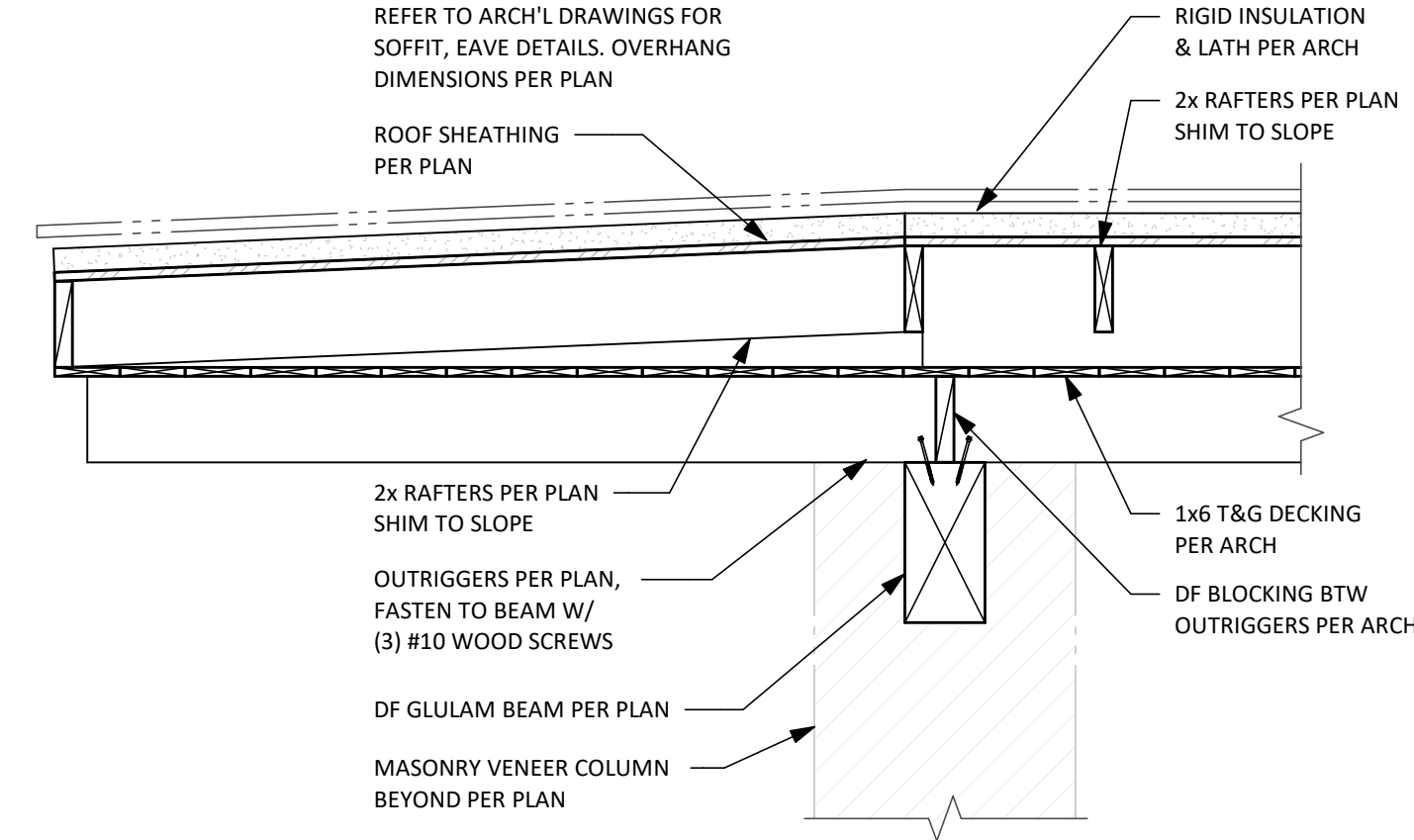
07 ROOF FRAMING AT MEDIA ROOM
SCALE: 3/4" = 1'-0"



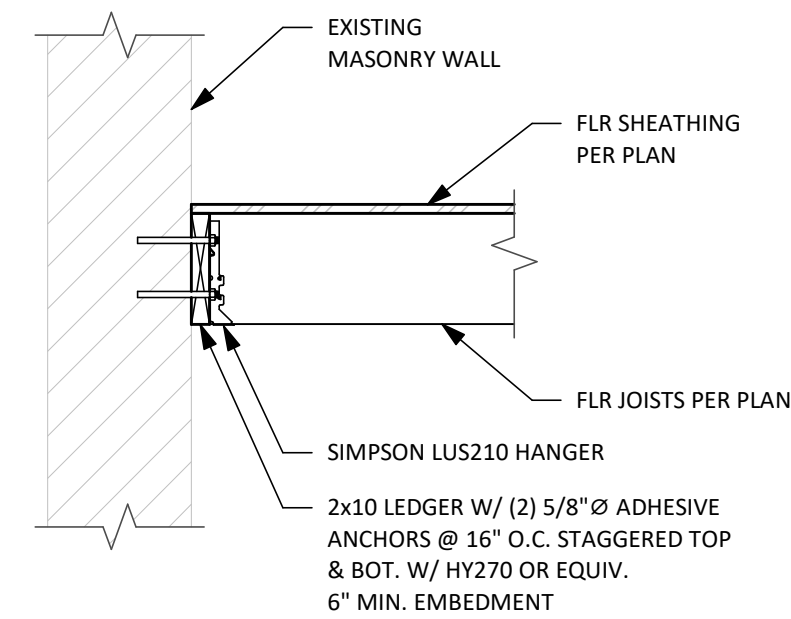
08 ROOF FRAMING AT SIDE ENTRY PORCH
SCALE: 3/4" = 1'-0"



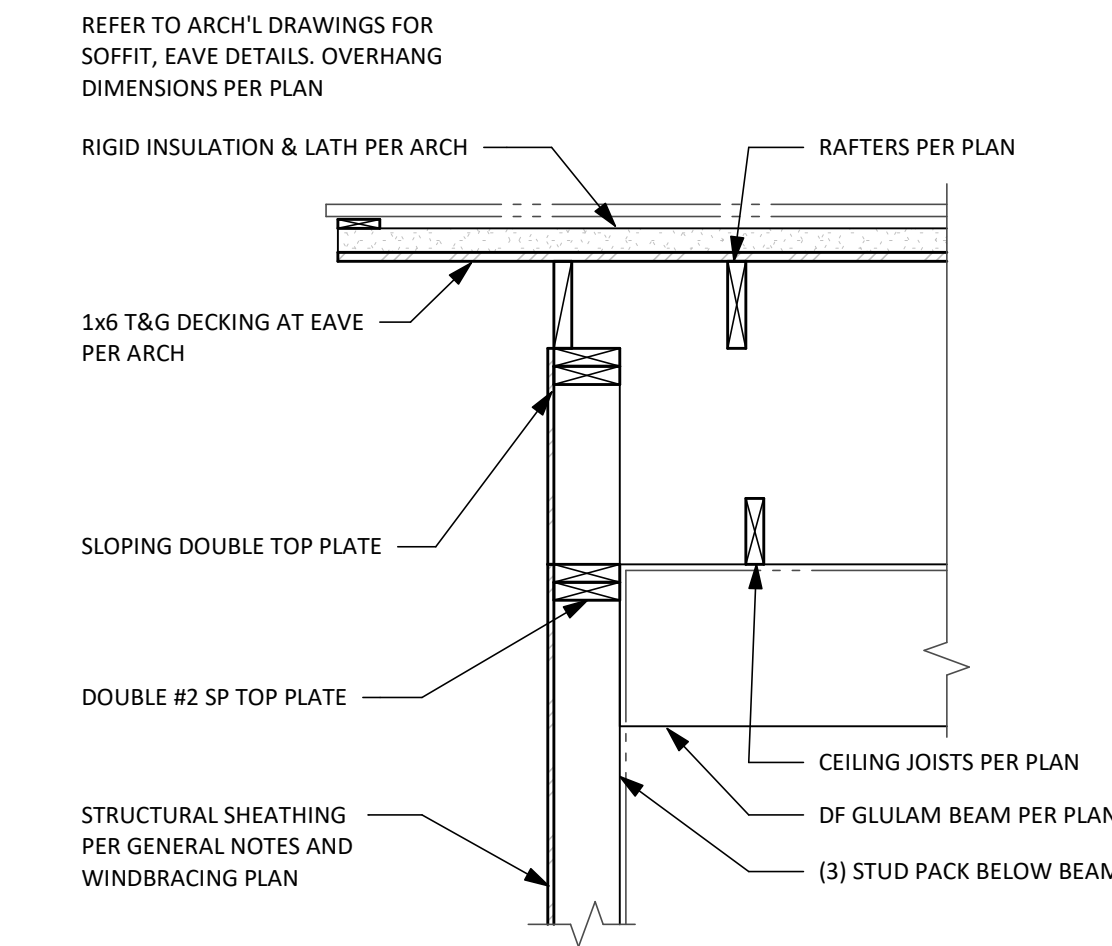
09 ROOF FRAMING AT HALLWAY WINDOW
SCALE: 3/4" = 1'-0"



10 ROOF FRAMING AT HALLWAY
SCALE: 3/4" = 1'-0"



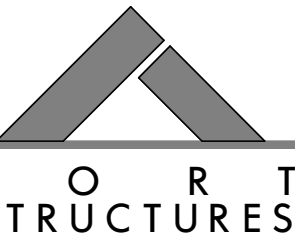
11 TYPICAL DETAIL
FLOOR JOIST & LEDGER AT (E) MASONRY
SCALE: 3/4" = 1'-0"



12 ROOF FRAMING AT KITCHEN
SCALE: 3/4" = 1'-0"

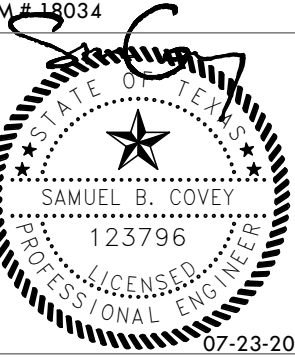
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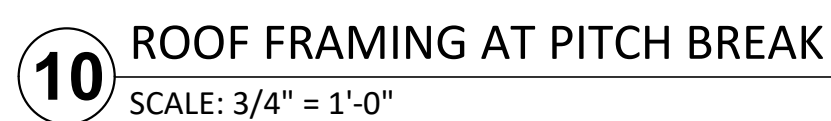
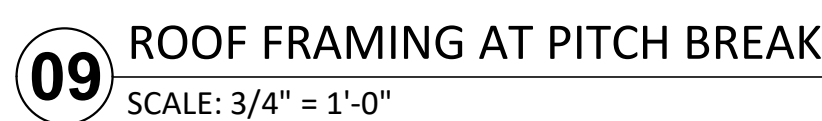
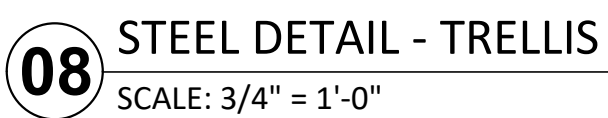
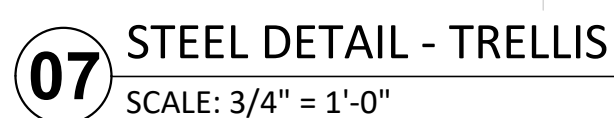
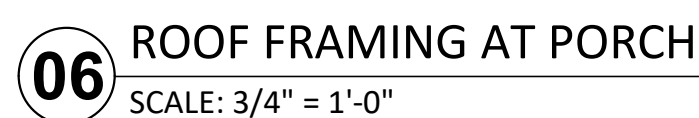
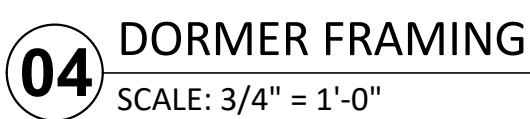
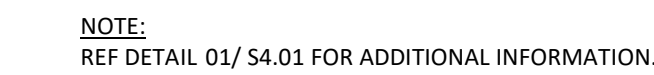
PROJECT:
**LEE
RESIDENCE**

ADDRESS:
**402 Camp Craft
Road, West Lake
Hills, TX 78746**

JOB # 20-072
DWN. BY: EDN, SC
CHK. BY: S. COVEY
DATE: 07-23-2021
REV:

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S4.00



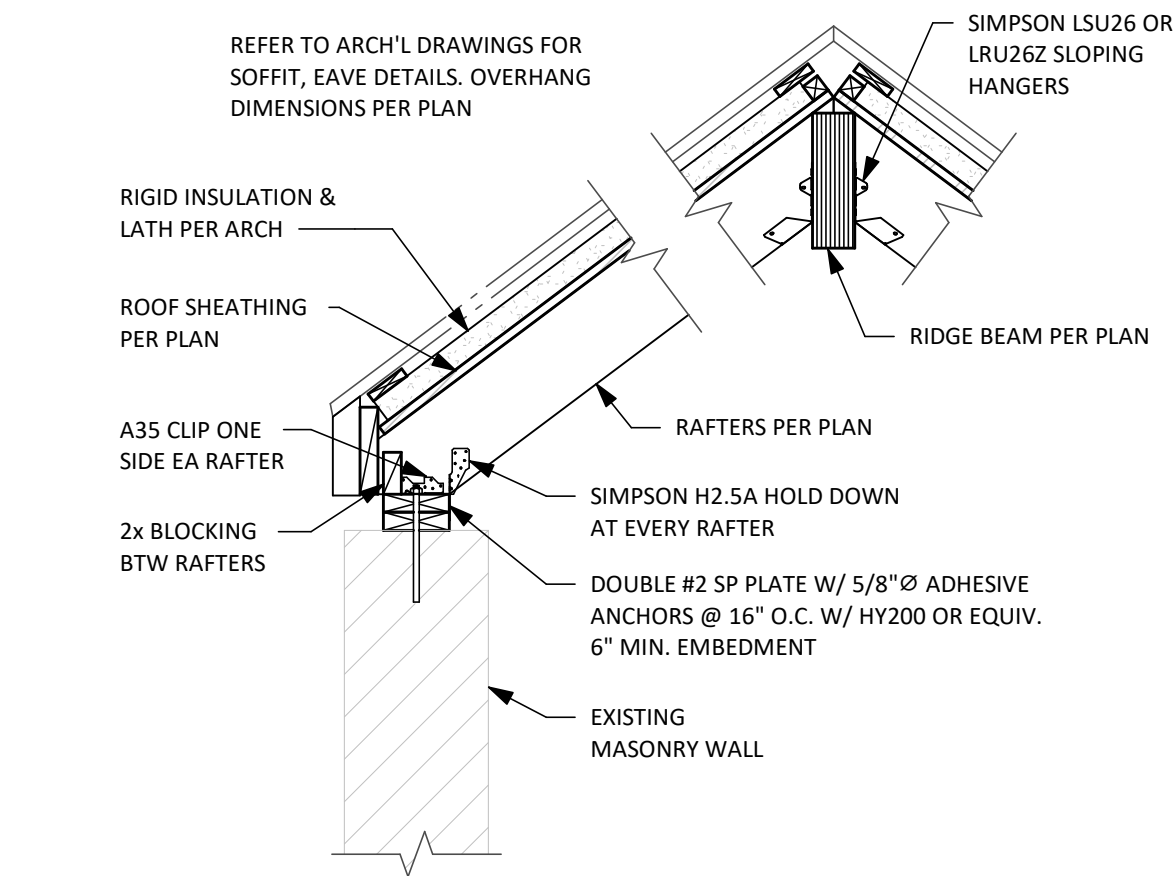
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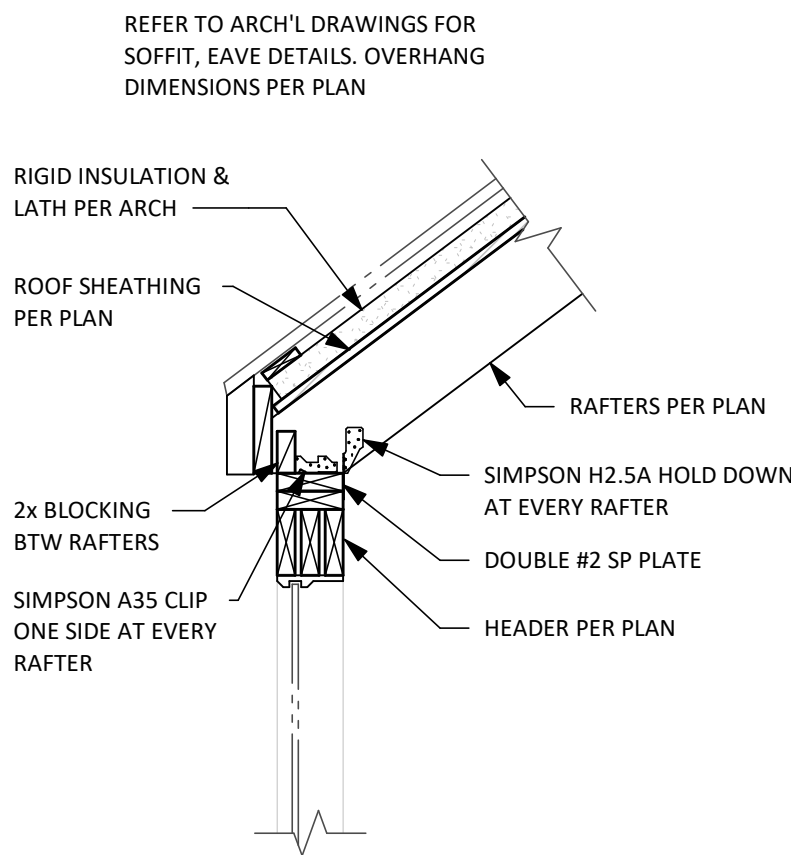
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REV:

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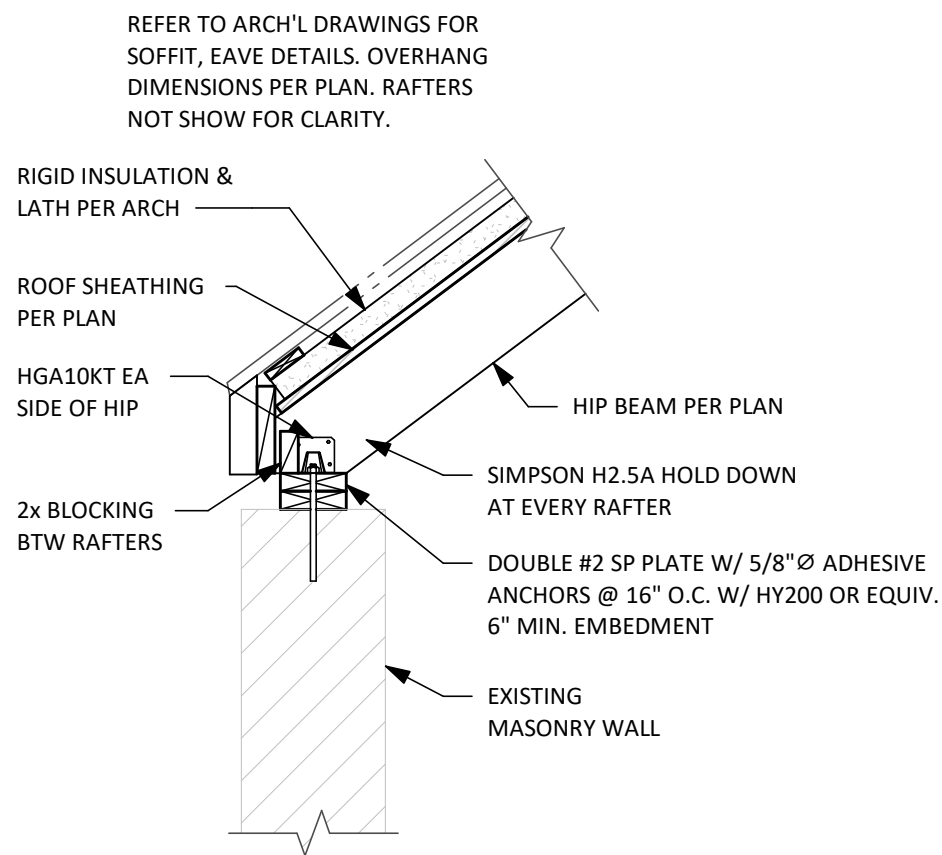
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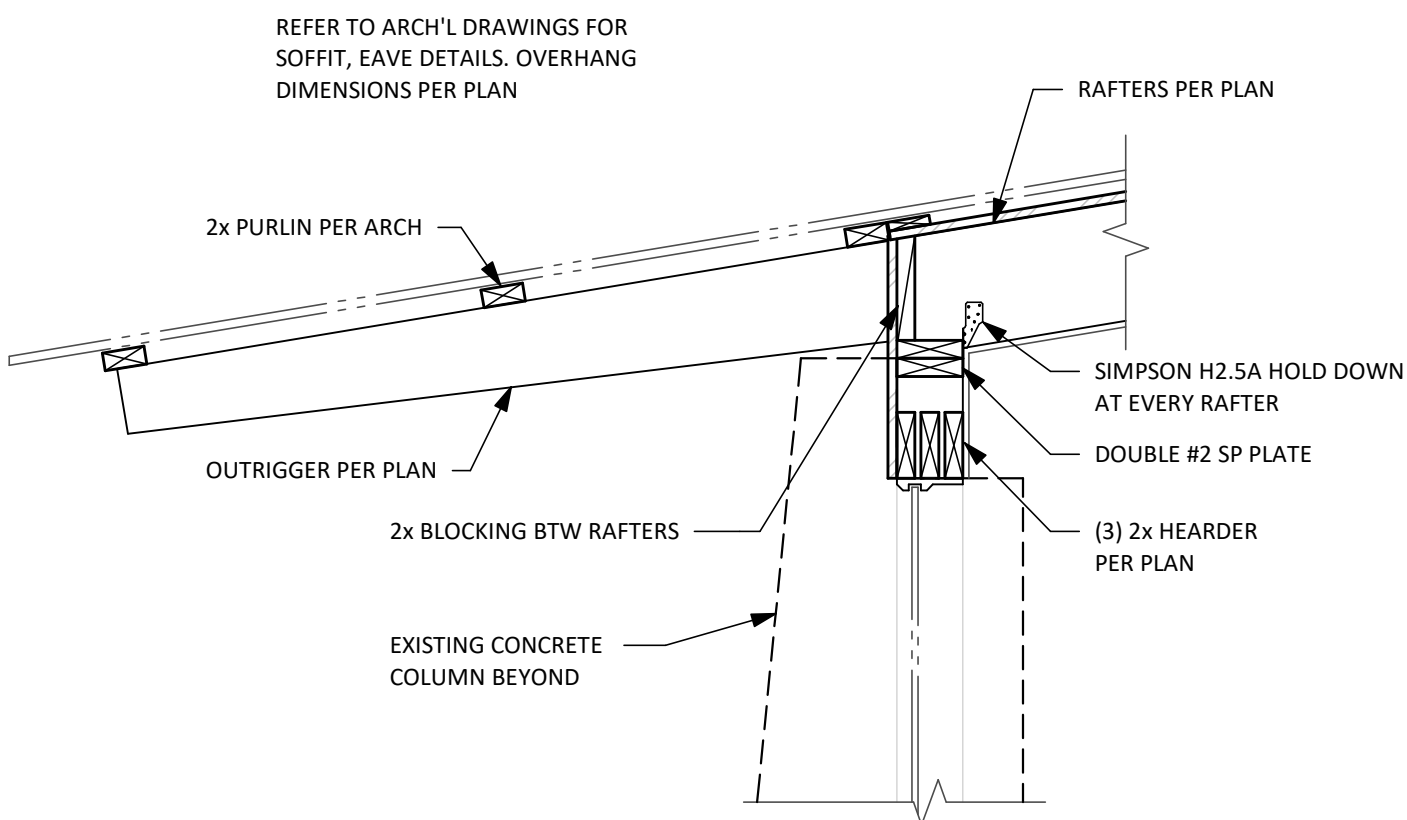
01 RAFTER TO EXISTING MASONRY WALL
SCALE: 3/4" = 1'-0"



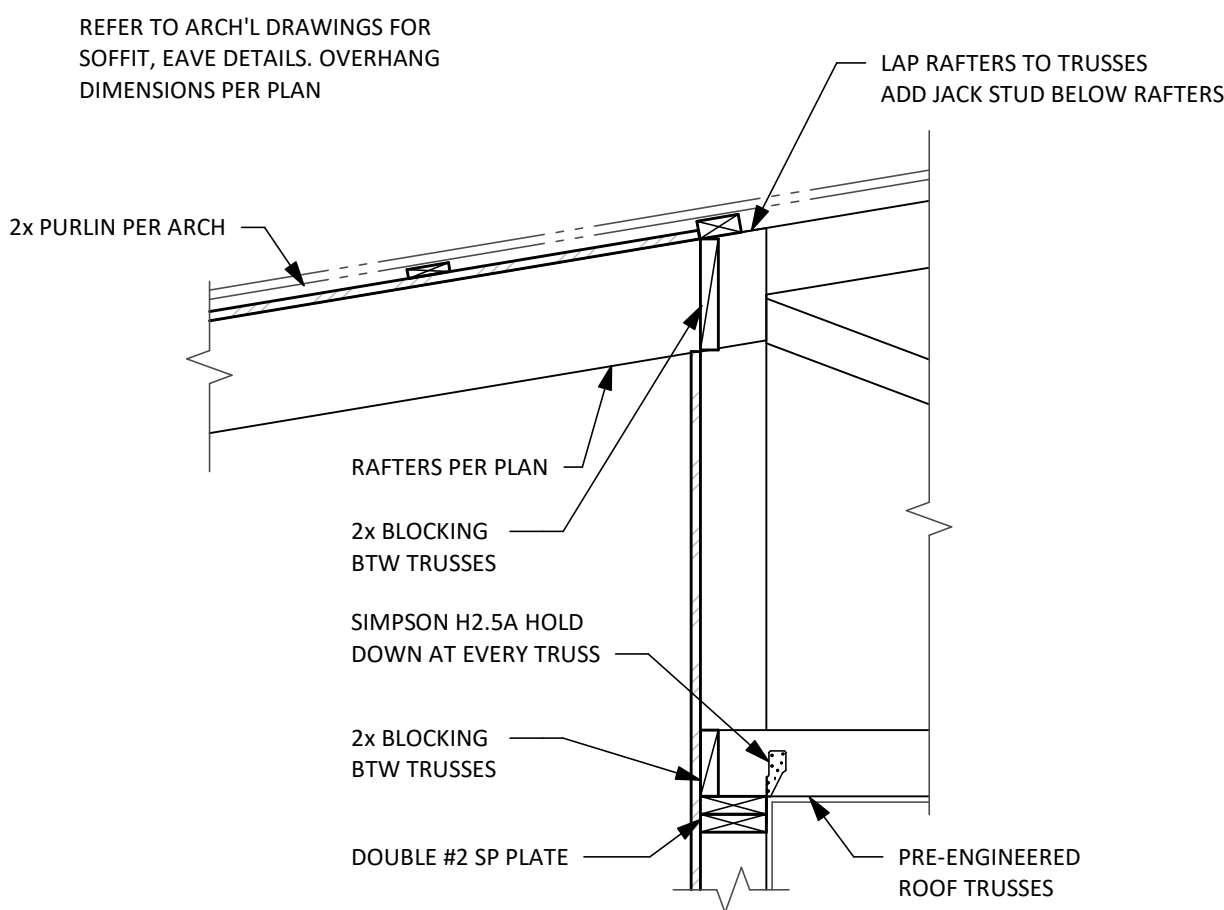
02 ROOF FRAMING AT ART HOUSE
SCALE: 3/4" = 1'-0"



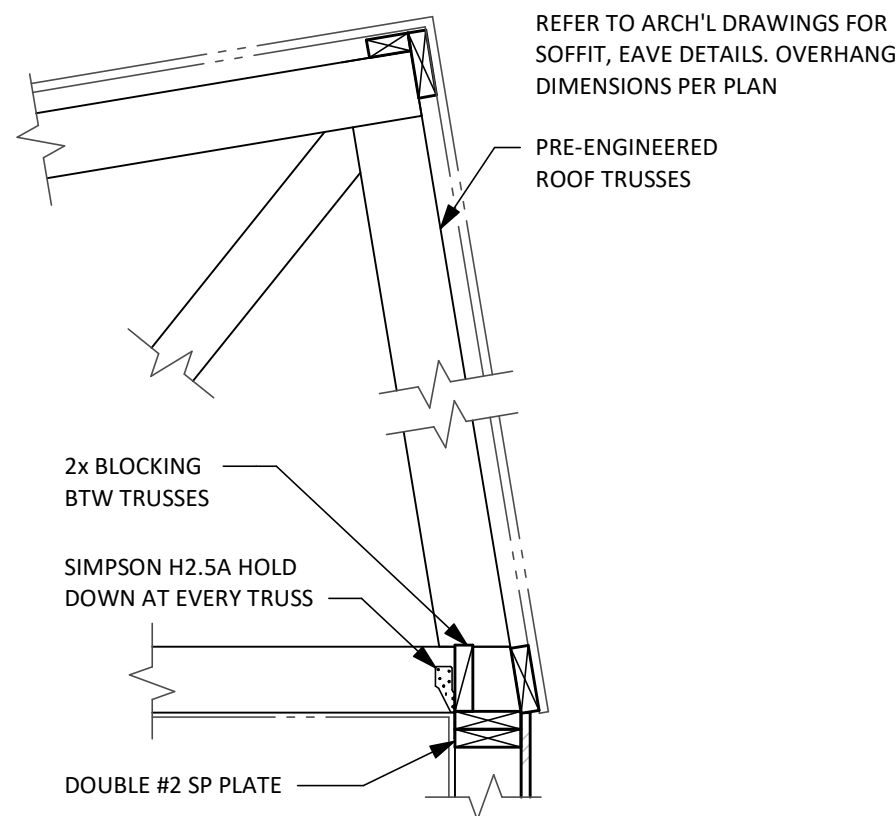
03 HIP BEAM TO EXISTING MASONRY WALL
SCALE: 3/4" = 1'-0"



04 ROOF FRAMING AT WORKSHOP
SCALE: 3/4" = 1'-0"

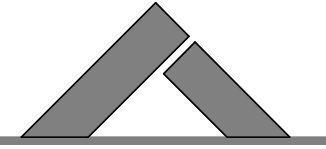


05 ROOF FRAMING AT WORKSHOP
SCALE: 3/4" = 1'-0"



06 ROOF FRAMING AT WORKSHOP
SCALE: 3/4" = 1'-0"

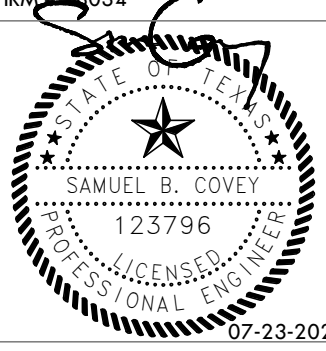
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PROJECT:
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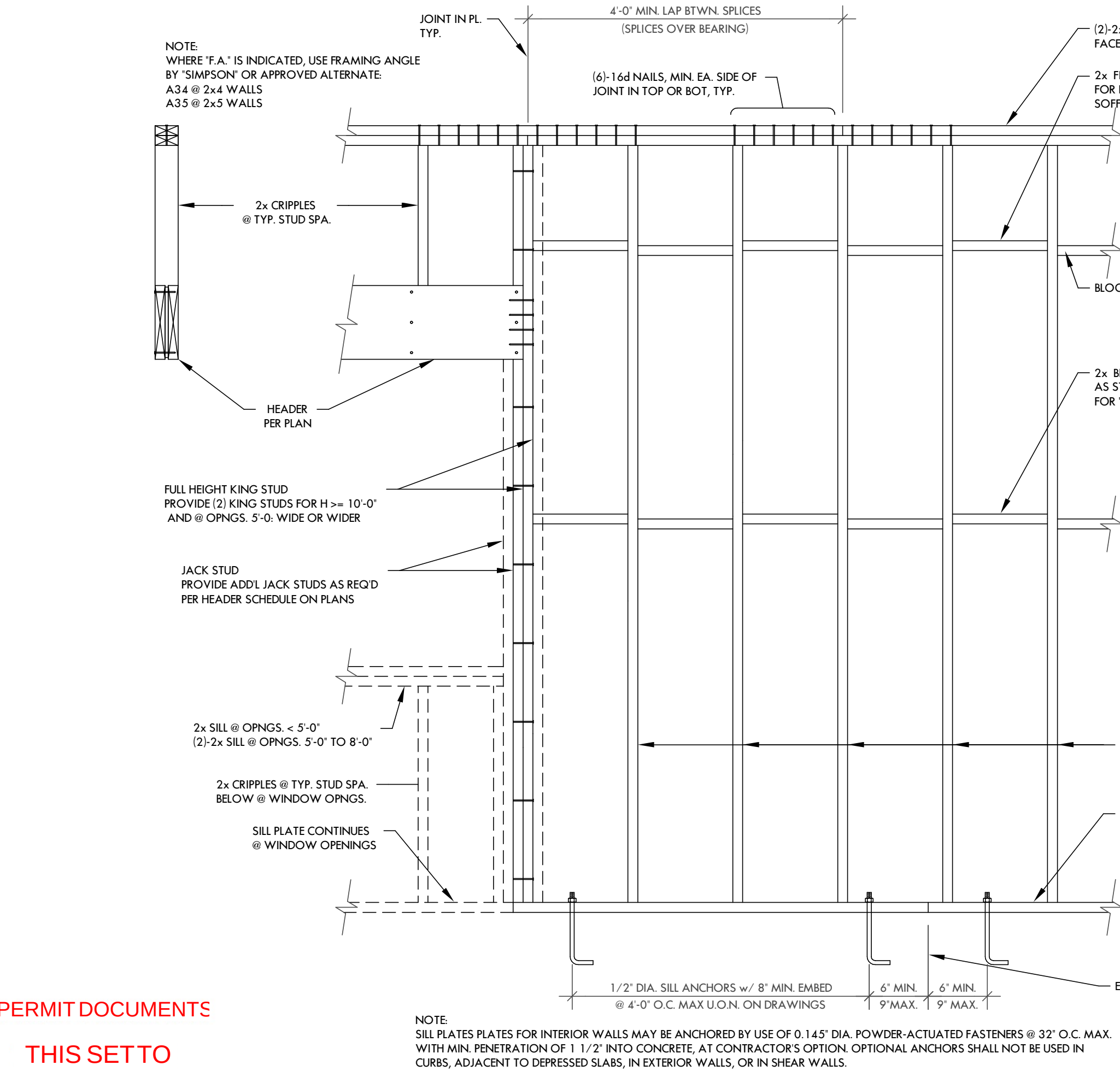
ADDRESS:
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DATE:	07-23-2021
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S4.02

FASTENER SCHEDULE FOR STRUCTURAL MEMBERS			
ROOF			
ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING OF FASTENERS
1	Blocking between joists or rafters to top plate, toe nail	3-8d (2-1/2" x 0.113")	—
2	Ceiling joists to plate, toe nail	3-8d (2-1/2" x 0.113")	—
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	—
4	Collar tie to rafter, face nail or 11/4" x 20 gage ridge strap	3-10d (3" x 0.128")	—
5	Rafter or roof truss to plate, toe nail	3-16d box nails (3 1/2" x 0.135") or 3-10d common nails (3" x 0.148")	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss
6	Roof rafters to ridge, valley or hip rafters: toe nail face nail	4-16d (3 1/2" X 0.135") 3-16d (3 1/2" X 0.135")	—
WALL			
7	Built-up studs-face nail	10d (3" x 0.128")	24" o.c.
8	Abutting studs at intersecting wall corners, face nail	16d (3 1/2" x 0.135")	12" o.c.
9	Built-up header, two pieces with 1/2" spacer	16d (3 1/2" x 0.135")	16" o.c. along each edge
10	Continued header, two pieces	16d (3 1/2" x 0.135")	16" o.c. along each edge
11	Continuous header to stud, toe nail	4-8d (2 1/2" x 0.113")	—
12	Double studs, face nail	10d (3" x 0.128")	24" o.c.
13	Double top plates, face nail	16d (3" x 0.128")	16" o.c.
14	Double top plates, minimum 24-inch offset of end joints, face nail in lapped area	8-16d (31/2" x 0.135")	—
15	Sole plate to joist or blocking, face nail	16d (3 1/2" X 0.135")	16" o.c.
16	Sole plate to joist or blocking at braced wall panels	3-16d (3 1/2" x 0.135")	16" o.c.
17	Stud to sole plate, toe nail	3-8d (2 1/2" x 0.113") or 2-16d (3 1/2" x 0.135")	—
18	Top or sole plate to stud, end nail	2-16d (3 1/2" x 0.135")	2-16d (31/2" x 0.135")
19	Top plates, laps at corners and intersections, face nail	2-10d (3" x 0.128")	—
20	1" brace to each stud and plate, face nail	2-8d (2 1/2" x 0.113") 2 staples 1 3/4"	—
21	1" x 6" sheathing to each bearing, face nail	2-8d (2 1/2" x .113") 2 staples 1 3/4"	—
22	1" x 8" sheathing to each bearing, face nail	2-8d (2 1/2" x .113") 3 staples 1 3/4"	—
23	Wider than 1" x 8" sheathing to each bearing, face nail	3-8d (21/2" x 0.113") 4 staples 1 3/4"	—
FLOOR			
24	Joist to sill or girder, toe nail	3-8d (2 1/2" x 0.113")	—
25	Rim joist to top plate, toe nail (roof applications also)	8d (2 1/2" x 0.113")	6" o.c.
26	Rim joist or blocking to sill plate, toe nail	8d (2 1/2" x 0.113")	6" o.c.
27	1" x 6" subfloor or less to each joist, face nail	2-8d (2 1/2" x 0.113") 2 staples 1 3/4"	—
28	2" subfloor to joist or girder, blind and face nail	2-16d (3 1/2" x 0.135")	—
29	2" planks (plank & beam - floor & roof)	2-16d (3 1/2" x 0.135")	at each bearing
30	Built-up girders and beams, 2-inch lumber layers	10d (3" x 0.128")	Nail each layer as follows: 32" o.c. at top and bottom and staggered. Two nails at ends and at each splice.
31	Ledger strip supporting joists or rafters	3-16d (3 1/2" x 0.135")	At each joist or rafter



PERMIT DOCUMENTS

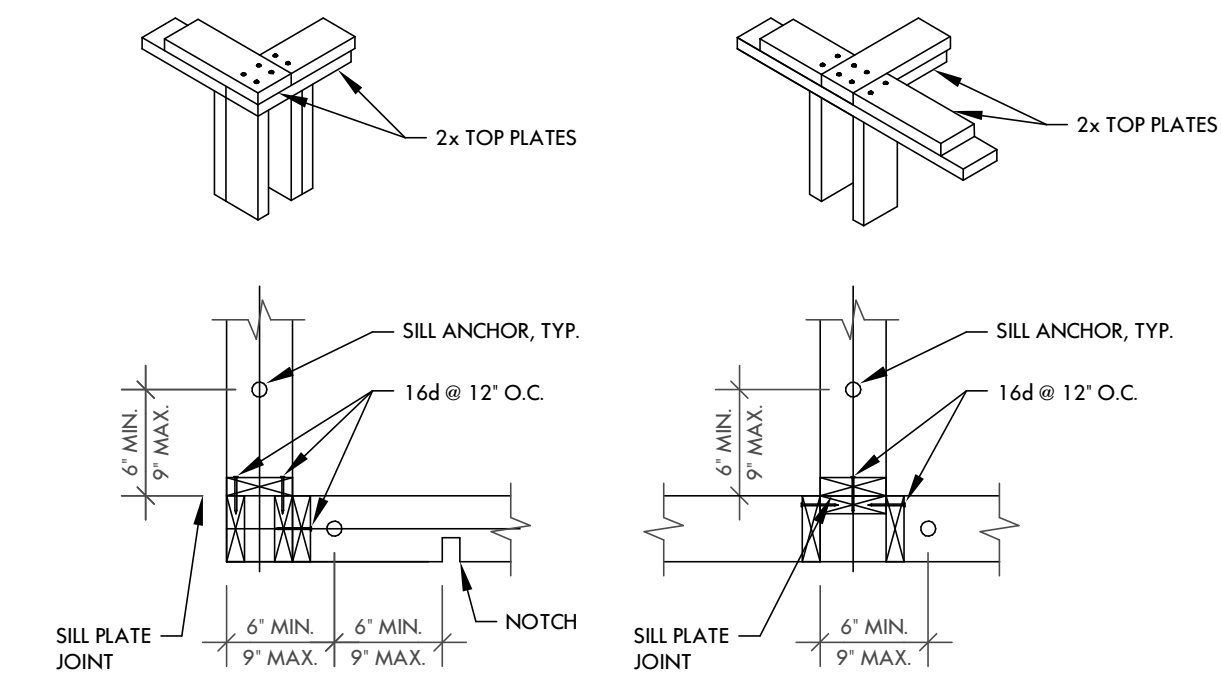
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TYPICAL WALL FRAMING DETAIL
NO SCALE

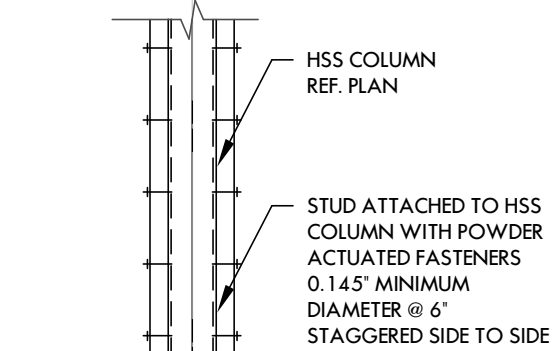
LUMBER HANGER SCHEDULE			
MEMBER SIZE	FACE MOUNT HANGER	MEMBER SIZE	FACE MOUNT HANGER
(1)- 2x8	LUS 28	(1)- 1 3/4"x11 1/4" LVL	LUS 210
(2)- 2x8	LUS 28-2	(2)- 1 3/4"x11 1/4" LVL	HU 412
(3)- 2x8	LUS 28-3	(3)- 1 3/4"x11 1/4" LVL	HU 612
(1)- 2x10	LUS 210	(2)- 1 3/4"x14" LVL	HGUS 4110
(2)- 2x10	LUS 210-2	(3)- 1 3/4"x14" LVL	HHUS 5.5/10
(3)- 2x10	HU 210-3	(2)- 1 3/4"x16" LVL	HGUS 412
(1)- 2x12	LUS 212	(3)- 1 3/4"x16" LVL	HHUS 5.5/10
(2)- 2x12	HUS 212-2	(2)- 1 3/4"x18" LVL	HGUS 412
(3)- 2x12	HU 212-3	(3)- 1 3/4"x18" LVL	HGUS 5.5/14

- NOTE:
- HANGERS LISTED ABOVE ARE MANUFACTURED BY SIMPSON STRONG-TIE.
 - INSTALL HANGERS ACCORDING TO MANUFACTURER'S GUIDELINES.
 - USE HANGERS IN SCHEDULE ABOVE UNLESS OTHERWISE NOTED ON PLANS OR DETAILS.

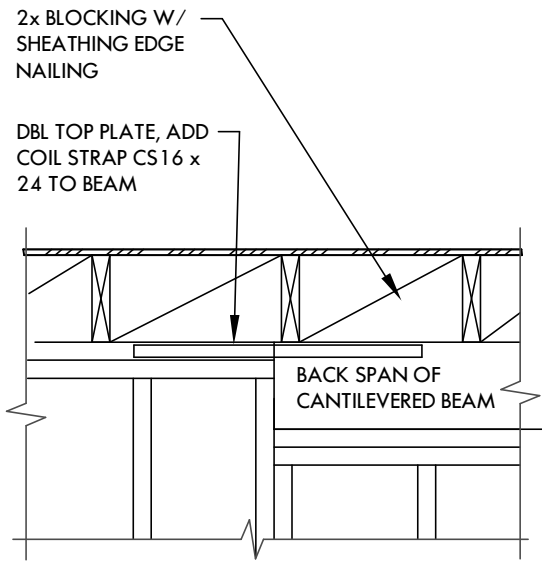
HANGER SCHEDULE FOR
WOOD STRUCTURAL MEMBERS
NO SCALE



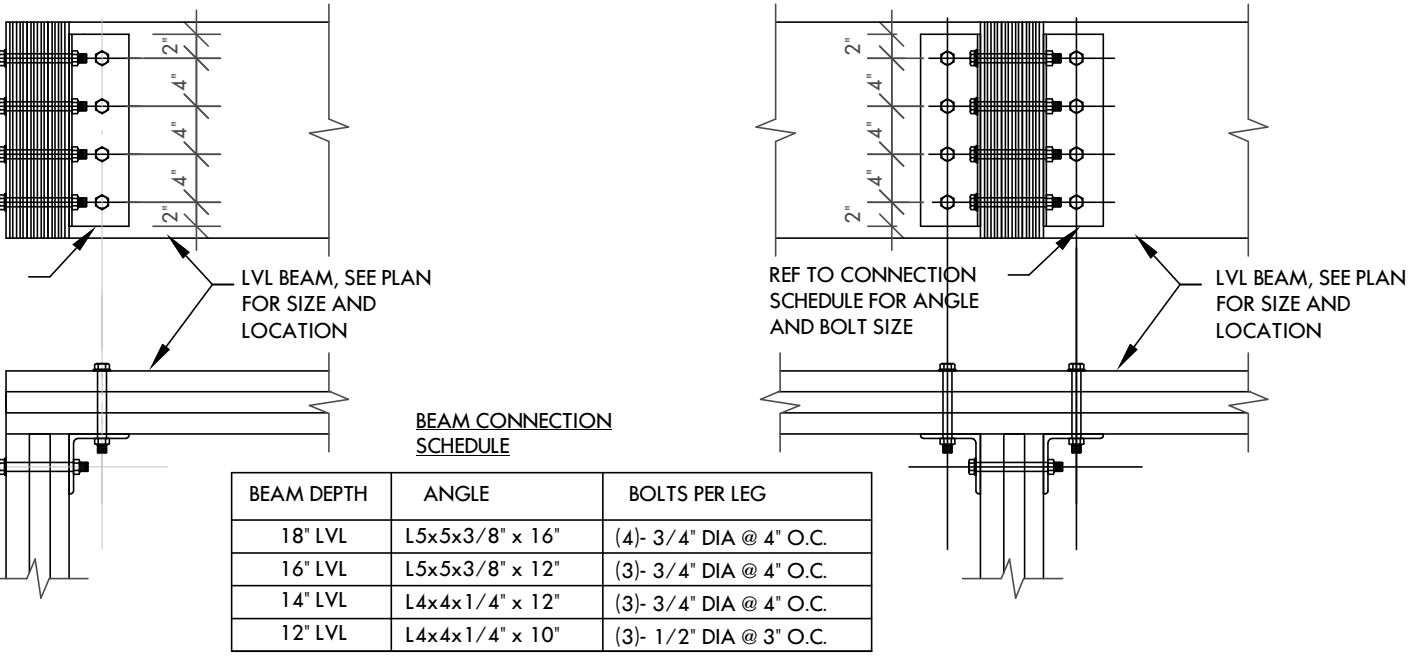
TYPICAL DETAIL
CORNERS AND
INTERSECTIONS @ 2x6 WOOD
STUD WALLS



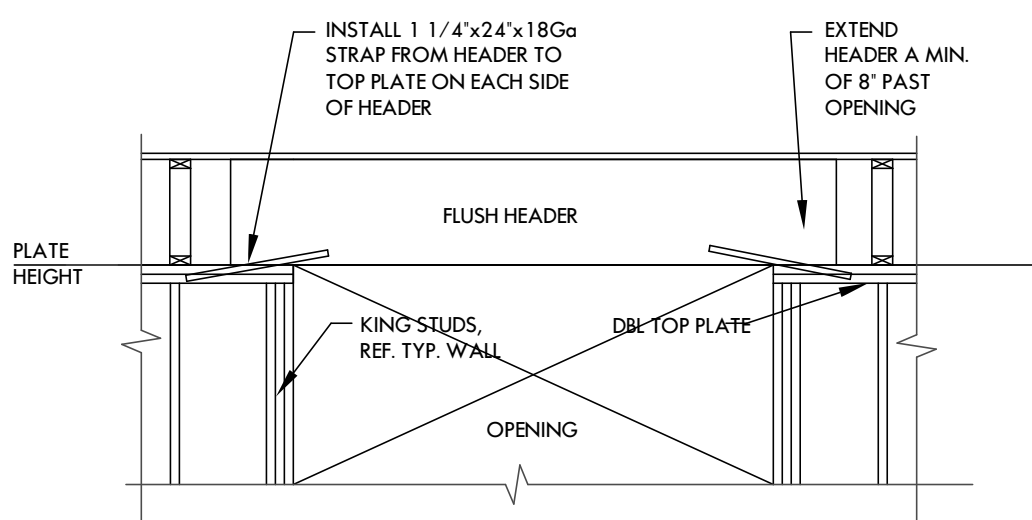
TYPICAL DETAIL
STUD ATTACHMENT TO STEEL COLUMN
SCALE: 3/4" = 1'-0"



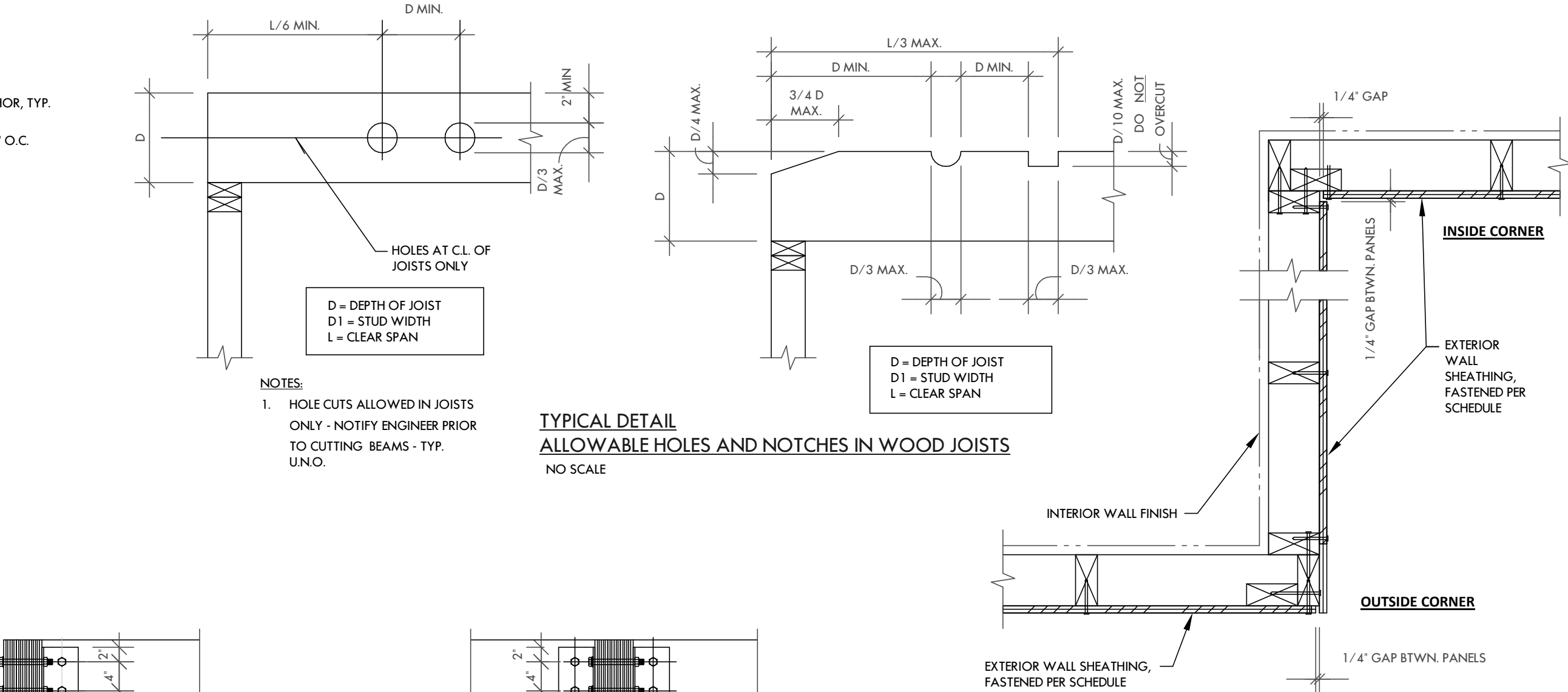
FRAMING DETAIL AT CANTILEVER BACK SPAN
SCALE: 3/4" = 1'-0"



TYP. WOOD DETAIL
BEAM TO BEAM CONNECTION
NOT TO SCALE

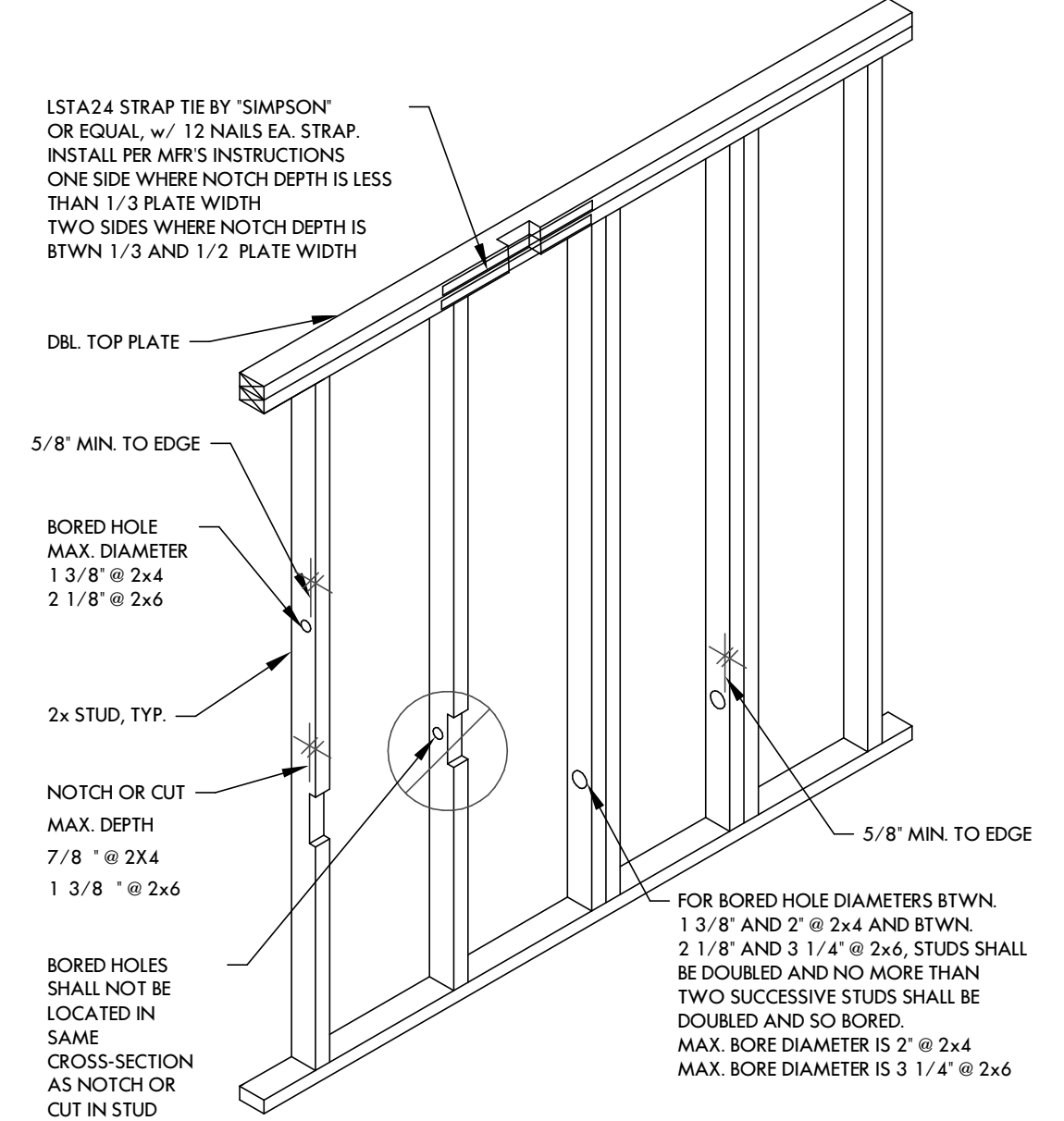


FLUSH HEADER DETAIL
SCALE: 3/4" = 1'-0"



TYPICAL DETAIL
ALLOWABLE HOLES AND NOTCHES IN WOOD JOISTS
NO SCALE

TYPICAL DETAIL
EXTERIOR SHEATHING @ WOOD STUD WALL CORNERS
NO SCALE



TYPICAL DETAIL
NOTCH, CUT, AND BORE LIMITATIONS
FOR WOOD STUDS IN BEARING WALLS
NO SCALE

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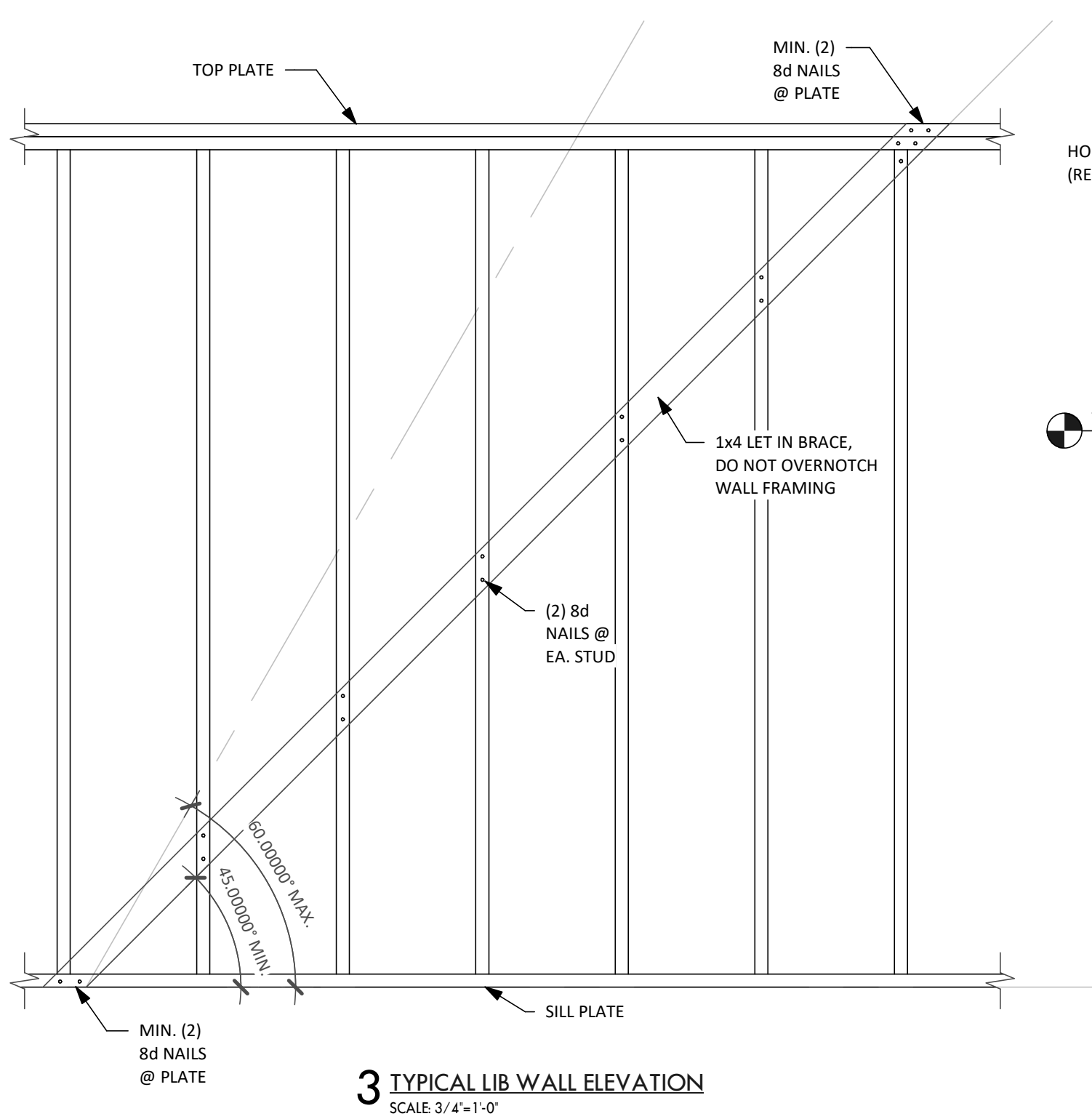
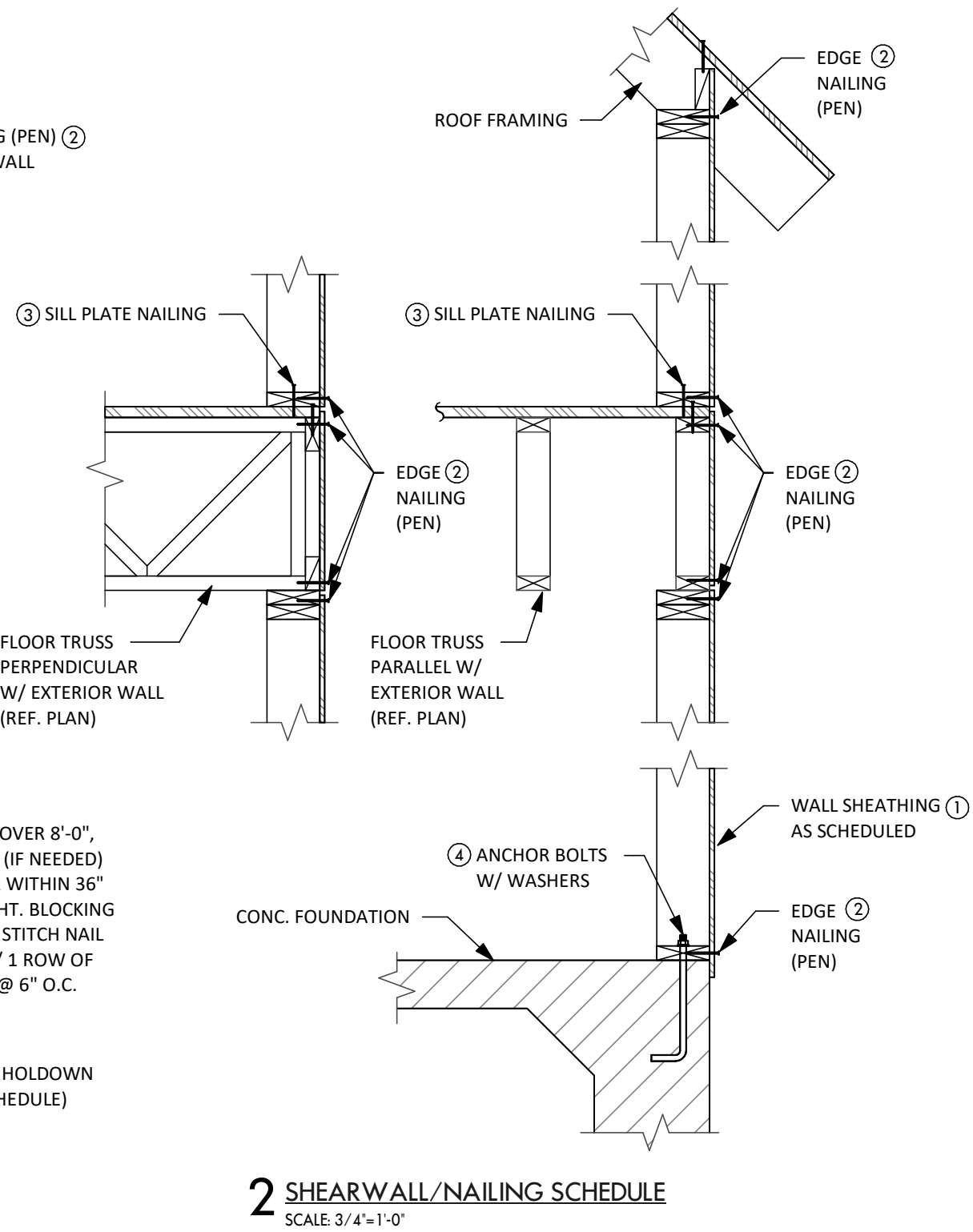
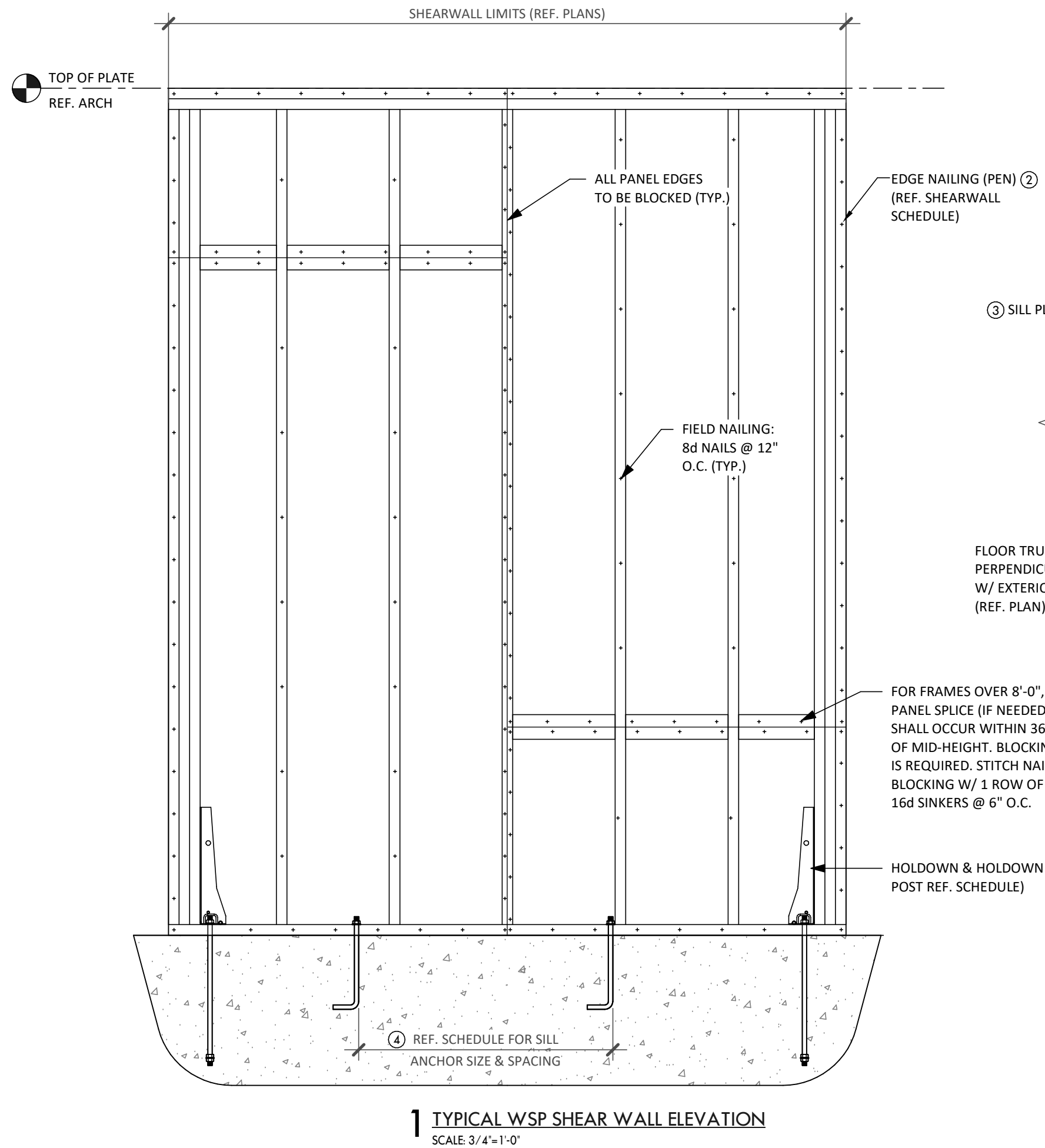
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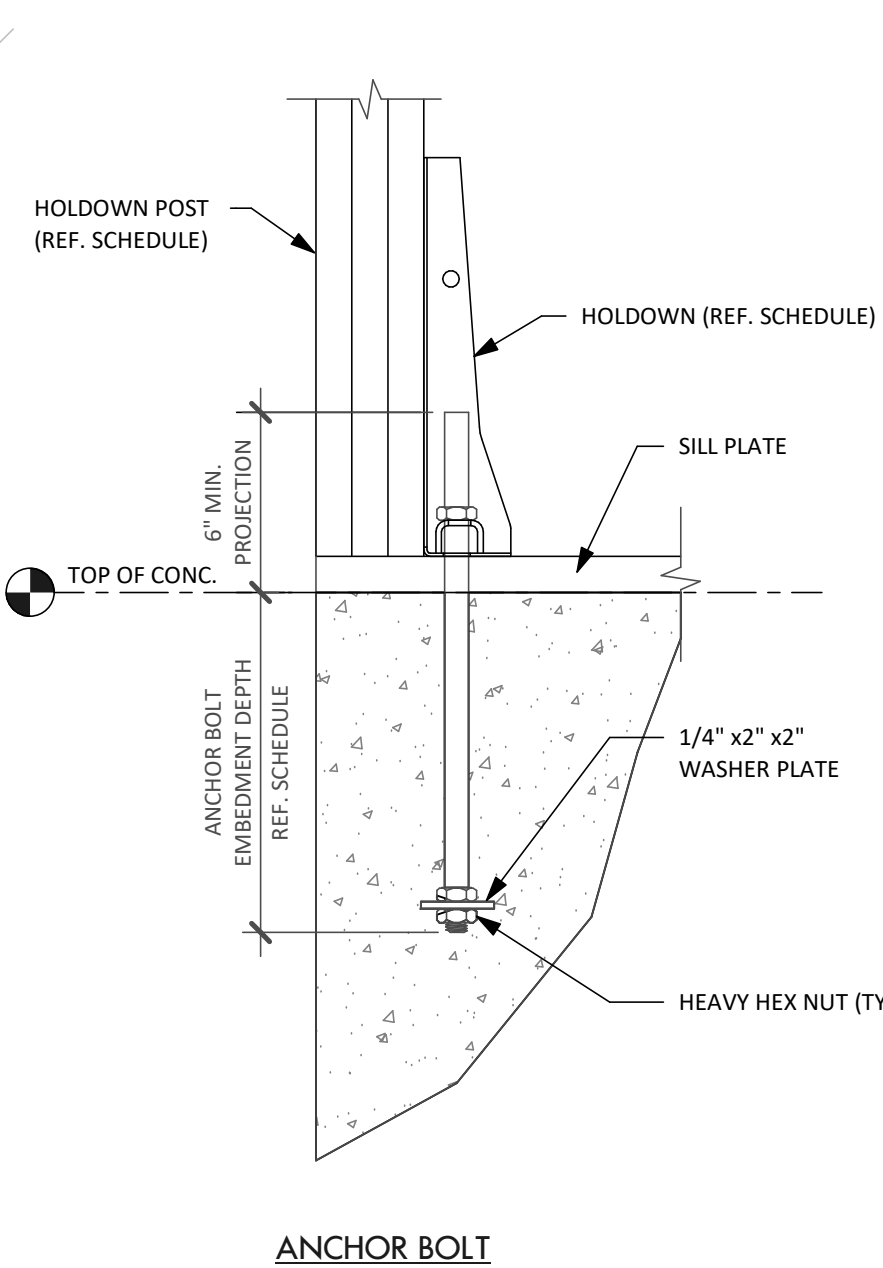
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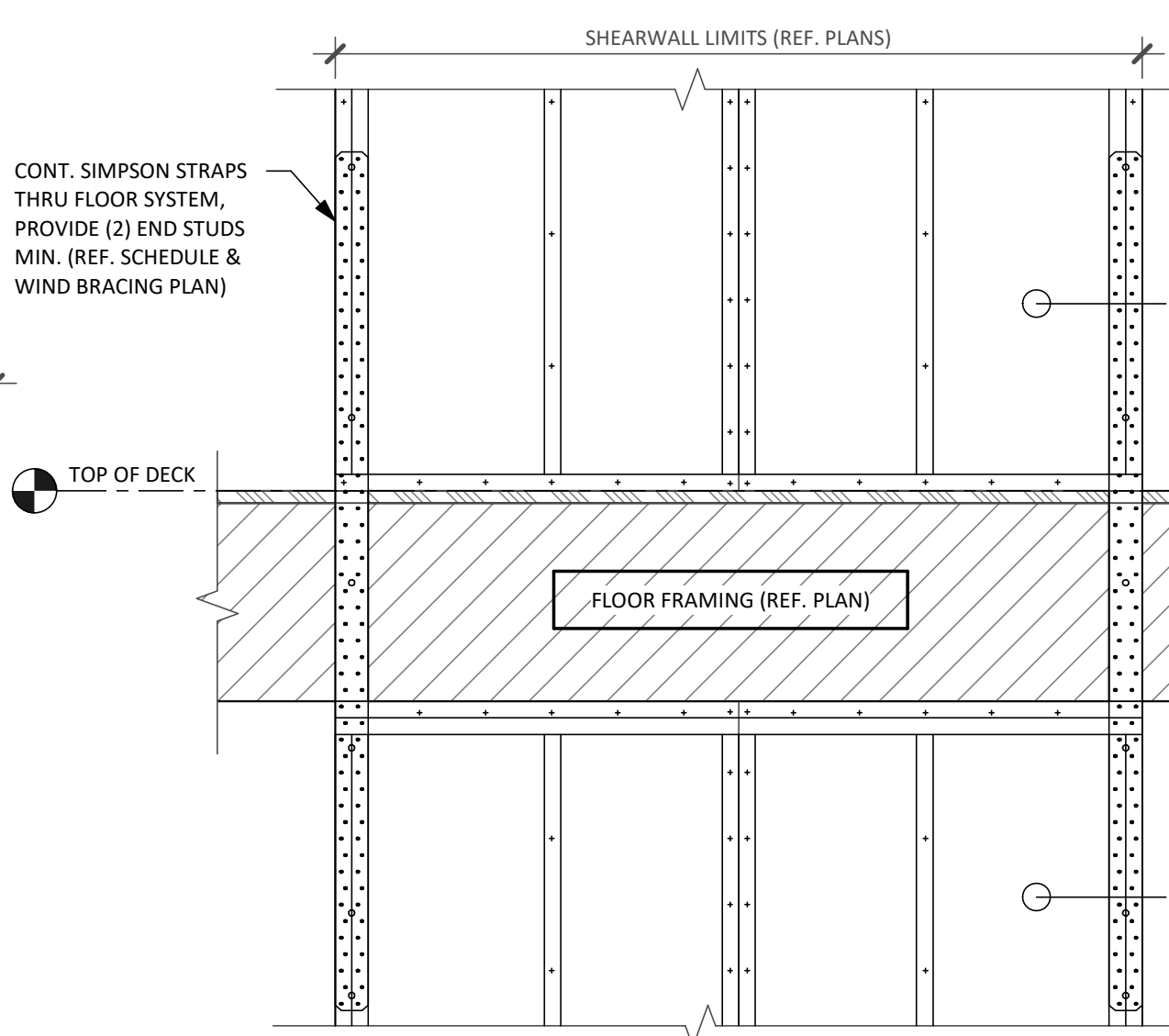
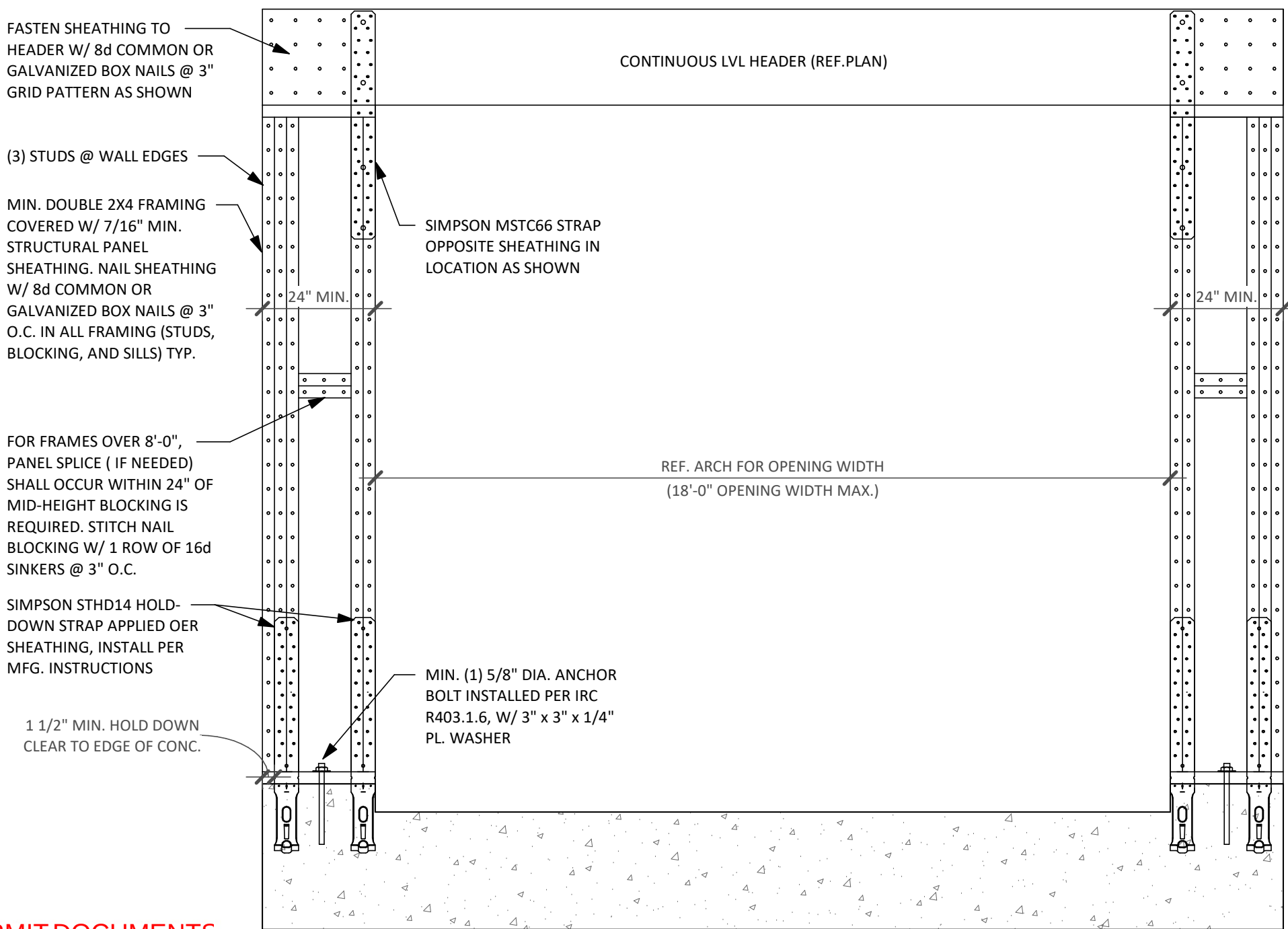
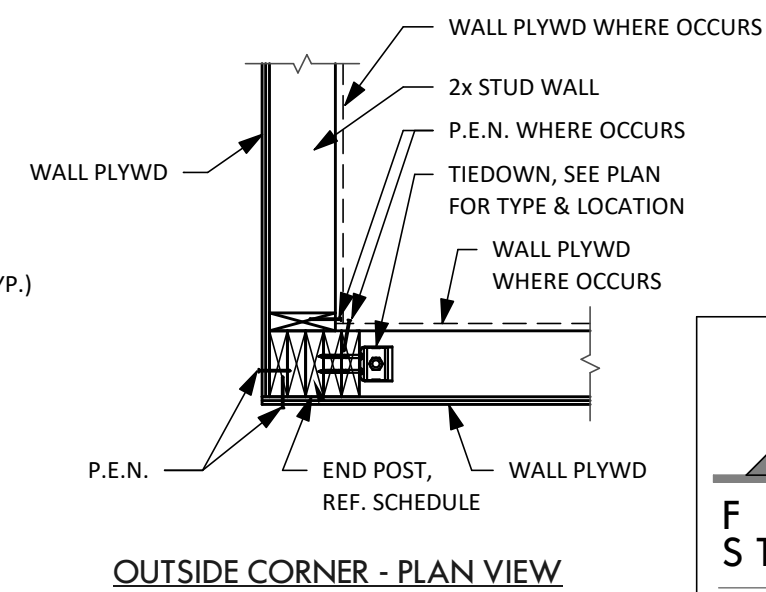
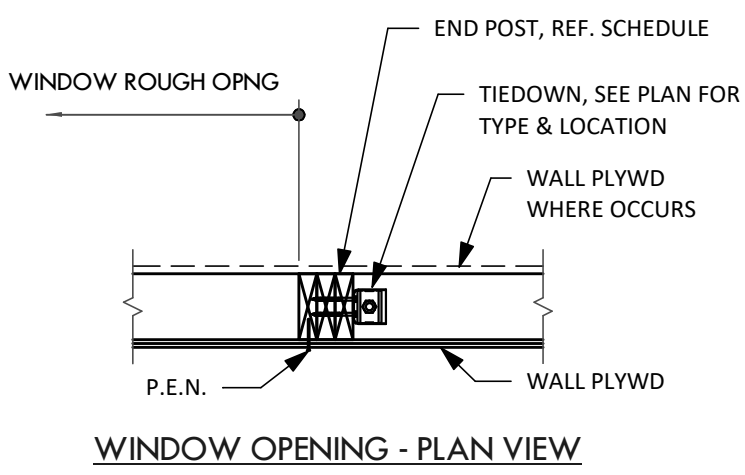
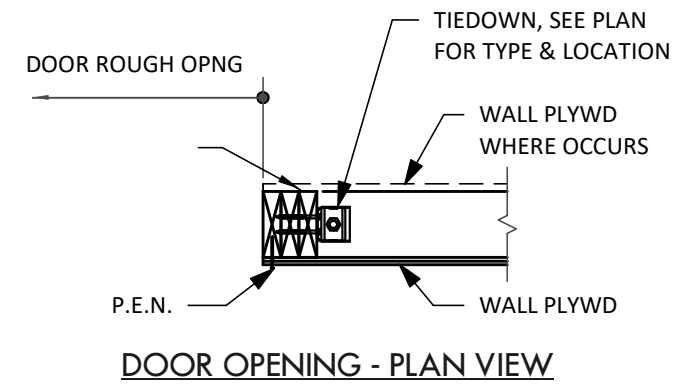
SHEET
S4.10



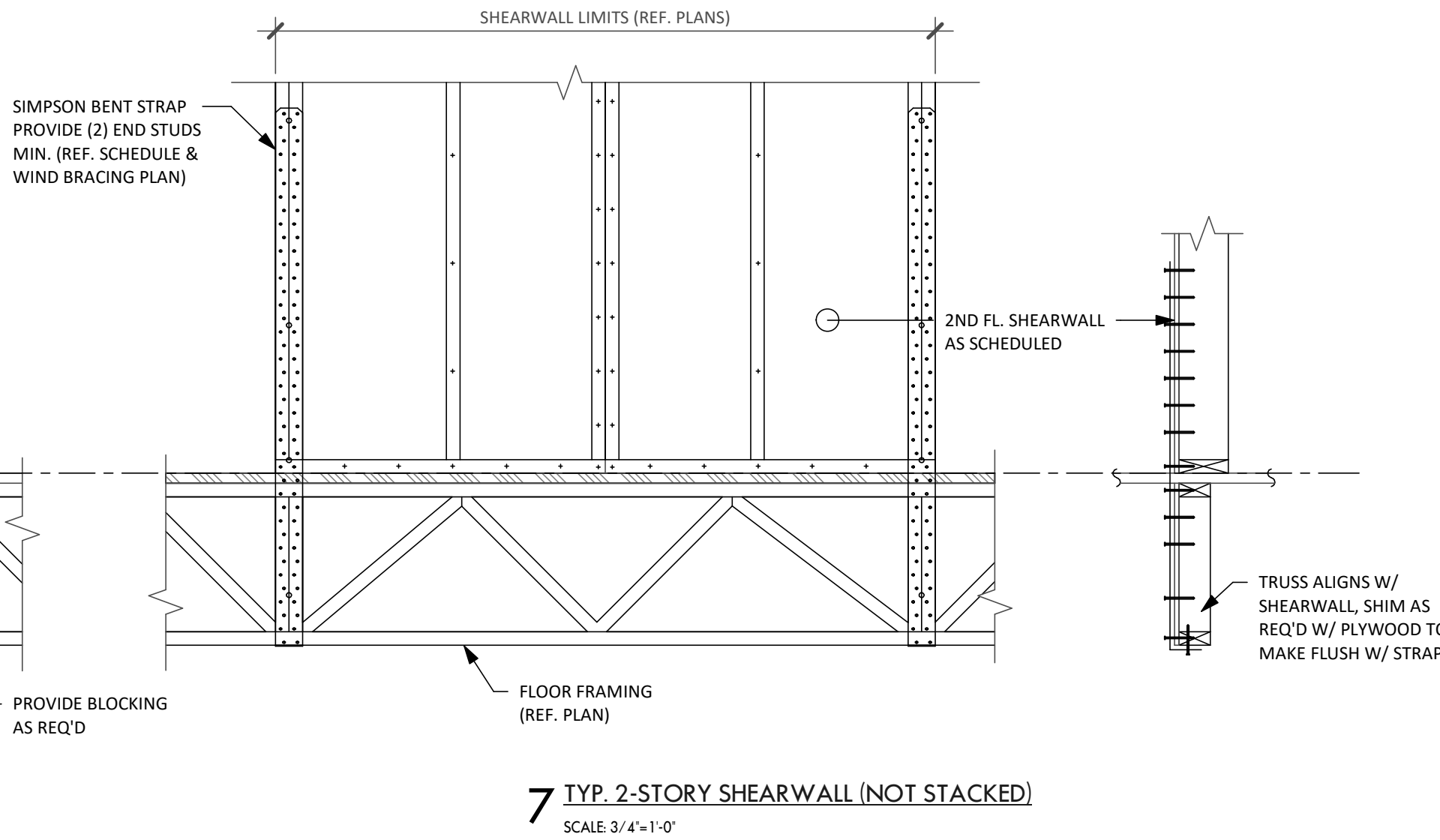
- LET-IN BRACE NOTES:
1. LET-IN BRACING MAY BE PLACED AT ANY ANGLE BETWEEN 45° AND 60°
 2. LET-IN BRACING MUST BE CONTINUOUS FROM BOTTOM TO TOP PLATE
 3. 1x4 LET-IN OR SIMPSON CS18 METAL STRAPS MAY BE USED INTERCHANGEABLY FOR WALL HEIGHTS UP TO 10' W/ STUDS SPACED @ 16" O.C.
 4. BRACING MAY BE INSTALLED ON OPPOSITE WALL FACE FROM THAT SHOWN ON PLAN FOR EASE OF INSTALLATION



4 TYPICAL ANCHOR BOLT INSTALLATION
SCALE 3/4"=1'-0"



- CONDITION A:
TRUSS PARALLEL TO SHEARWALL
- CONDITION B:
TRUSS PERPENDICULAR TO SHEARWALL



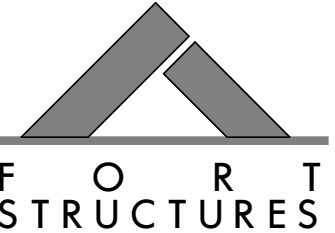
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5 TYPICAL CS-PF WALL ELEVATION
SCALE 3/4"=1'-0"

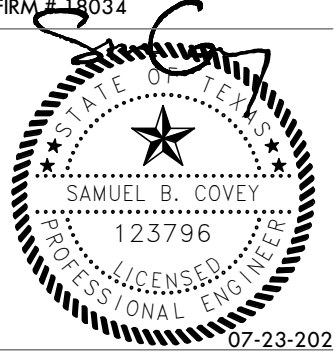
6 TYP. 2-STORY SHEARWALL (STACKED)
SCALE 3/4"=1'-0"

7 TYP. 2-STORY SHEARWALL (NOT STACKED)
SCALE 3/4"=1'-0"



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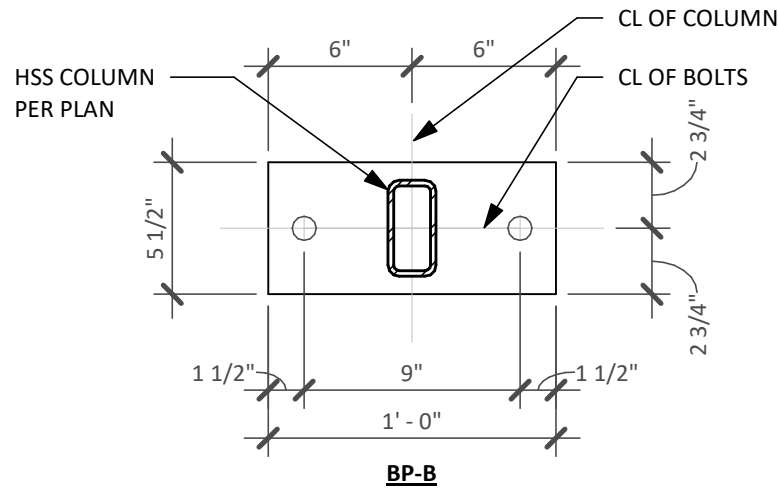
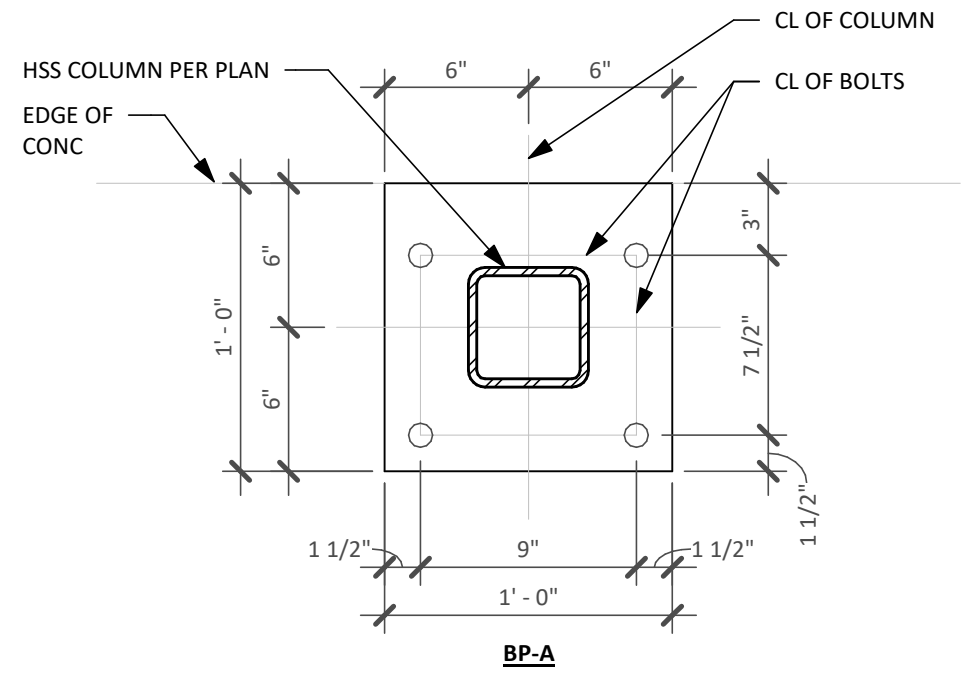
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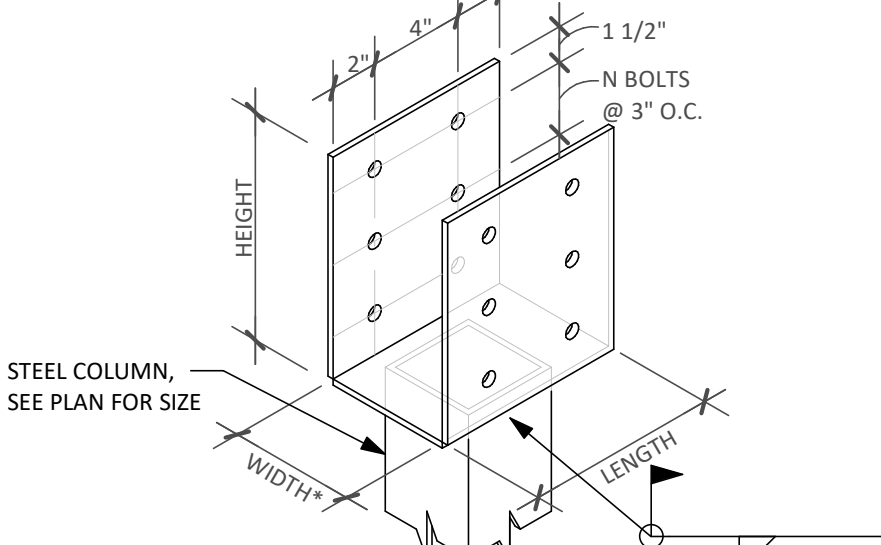
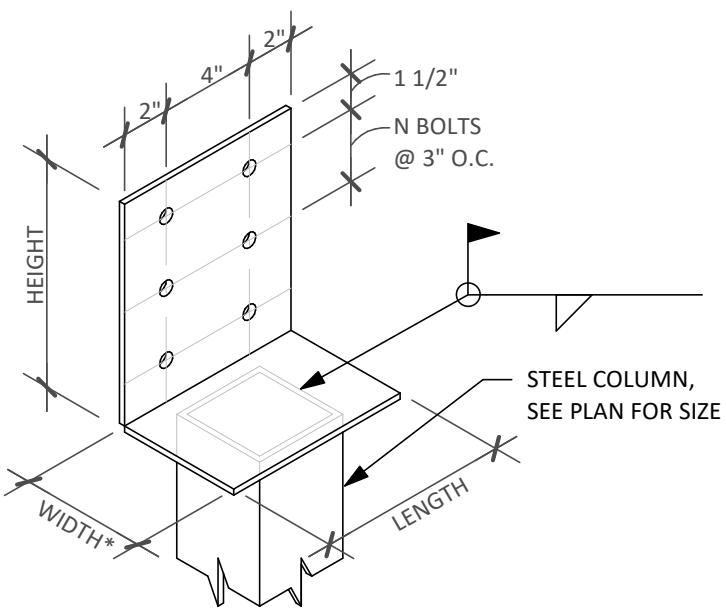
SHEET
S4.11



BASEPLATE SCHEDULE		
MARK	BASEPLATE THICKNESS	ANCHOR BOLTS
BP-A	3/4"	(4) - 3/4" x 8" HEADED STUDS
BP-B	3/4"	(2) - 3/4" x 8" HEADED STUDS

01 STEEL EMBED PLATES

SCALE: 3/4" = 1'-0"



BEAM SIZE	SADDLE DIMENSIONS			BOLT SPECS.
	HEIGHT	WIDTH*	LENGTH	
(2) 2x6	4"	3"	8"	(2) 5/8" DIA. THRU BOLTS
(3) 2x6	4"	4 1/2"	8"	(2) 5/8" DIA. THRU BOLTS
(2) 2x8 TO (2) 2x12	6 1/2"	3"	3"	(4) 5/8" DIA. THRU BOLTS
(3) 2x8 TO (3) 2x12	6 1/2"	4 1/2"	3"	(4) 5/8" DIA. THRU BOLTS
(2) 5 1/2" LVL	4"	3 1/2"	4"	(2) 5/8" DIA. THRU BOLTS
(3) 5 1/2" LVL	4"	5 1/4"	4"	(2) 5/8" DIA. THRU BOLTS
(2) 7 1/4" LVL TO (2) 12" LVL	6 1/2"	3 1/2"	3 1/2"	(4) 5/8" DIA. THRU BOLTS
(3) 7 1/4" LVL TO (3) 12" LVL	6 1/2"	5 1/4"	3 1/2"	(4) 5/8" DIA. THRU BOLTS
(2) 14" LVL TO (2) 18" LVL	9 1/2"	3 1/2"	3 1/2"	(6) 5/8" DIA. THRU BOLTS
(3) 14" LVL TO (3) 18" LVL	9 1/2"	5 1/4"	3 1/2"	(6) 5/8" DIA. THRU BOLTS
(2) 20" LVL TO (2) 24" LVL	12 1/2"	3 1/2"	3 1/2"	(8) 5/8" DIA. THRU BOLTS
(3) 20" LVL TO (3) 24" LVL	12 1/2"	5 1/4"	3 1/2"	(8) 5/8" DIA. THRU BOLTS

WIDTH*, INSIDE FACE TO INSIDE FACE OF PLATE
SADDLE SHALL BE 1/4" THICK PLATE UNLESS NOTED OTHERWISE

A OPEN SADDLE OVER COLUMN

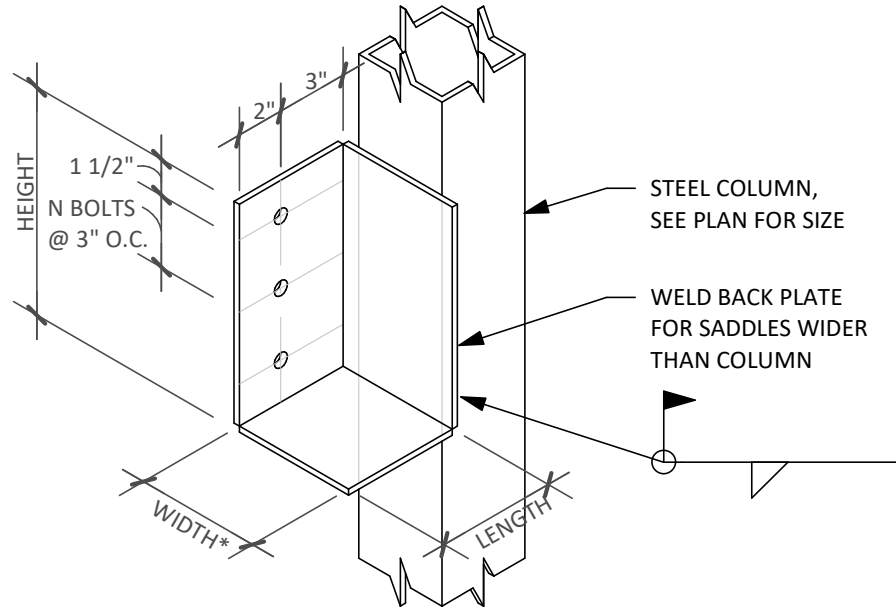
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BEAM SIZE	SADDLE DIMENSIONS			BOLT SPECS.
	HEIGHT	WIDTH*	LENGTH	
(2) 2x6	4"	3"	8"	(2) 5/8" DIA. THRU BOLTS
(3) 2x6	4"	4 1/2"	8"	(2) 5/8" DIA. THRU BOLTS
(2) 2x8 TO (2) 2x12	6 1/2"	3"	3"	(4) 5/8" DIA. THRU BOLTS
(3) 2x8 TO (3) 2x12	6 1/2"	4 1/2"	3"	(4) 5/8" DIA. THRU BOLTS
(2) 5 1/2" LVL	4"	3 1/2"	4"	(2) 5/8" DIA. THRU BOLTS
(3) 5 1/2" LVL	4"	5 1/4"	4"	(2) 5/8" DIA. THRU BOLTS
(2) 7 1/4" LVL TO (2) 12" LVL	6 1/2"	3 1/2"	3 1/2"	(4) 5/8" DIA. THRU BOLTS
(3) 7 1/4" LVL TO (3) 12" LVL	6 1/2"	5 1/4"	3 1/2"	(4) 5/8" DIA. THRU BOLTS
(2) 14" LVL TO (2) 18" LVL	9 1/2"	3 1/2"	3 1/2"	(6) 5/8" DIA. THRU BOLTS
(3) 14" LVL TO (3) 18" LVL	9 1/2"	5 1/4"	3 1/2"	(6) 5/8" DIA. THRU BOLTS
(2) 20" LVL TO (2) 24" LVL	12 1/2"	3 1/2"	3 1/2"	(8) 5/8" DIA. THRU BOLTS
(3) 20" LVL TO (3) 24" LVL	12 1/2"	5 1/4"	3 1/2"	(8) 5/8" DIA. THRU BOLTS

WIDTH*, INSIDE FACE TO INSIDE FACE OF PLATE
SADDLE SHALL BE 1/4" THICK PLATE UNLESS NOTED OTHERWISE

B CLOSED SADDLE OVER COLUMN

SCALE: N/A

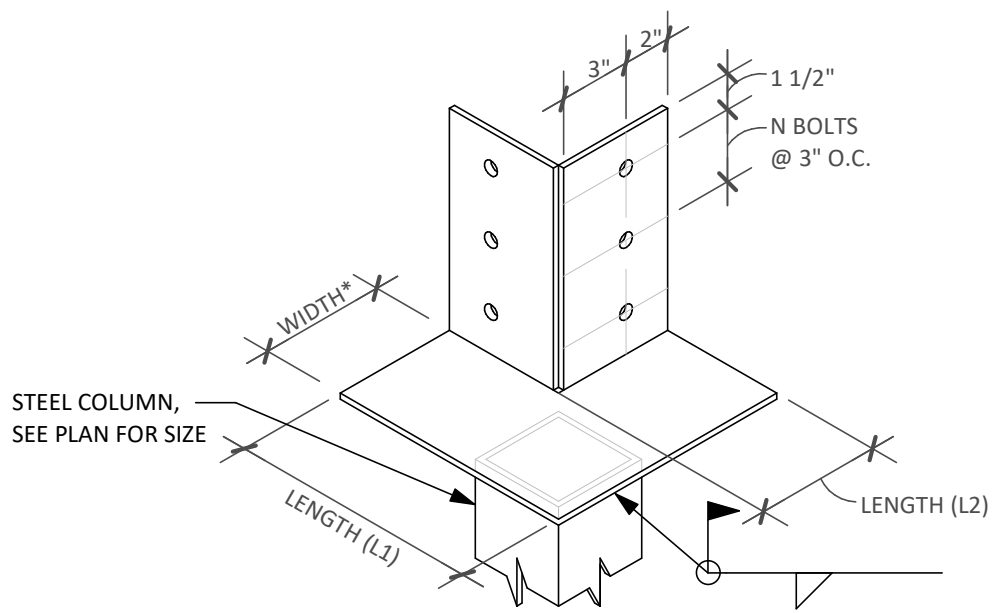


BEAM SIZE	SADDLE DIMENSIONS			BOLT SPECS.
	HEIGHT	WIDTH*	LENGTH	
(2) 2x6	4"	3"	5"	(1) 5/8" DIA. THRU BOLT
(3) 2x6	4"	4 1/2"	5"	(1) 5/8" DIA. THRU BOLT
(2) 2x8 TO (2) 2x12	6 1/2"	3"	3"	(2) 5/8" DIA. THRU BOLTS
(3) 2x8 TO (3) 2x12	6 1/2"	4 1/2"	3"	(2) 5/8" DIA. THRU BOLTS
(2) 5 1/2" LVL	4"	3 1/2"	4"	(1) 5/8" DIA. THRU BOLT
(3) 5 1/2" LVL	4"	5 1/4"	4"	(1) 5/8" DIA. THRU BOLT
(2) 7 1/4" LVL TO (2) 12" LVL	6 1/2"	3 1/2"	3 1/2"	(2) 5/8" DIA. THRU BOLTS
(3) 7 1/4" LVL TO (3) 12" LVL	6 1/2"	5 1/4"	3 1/2"	(2) 5/8" DIA. THRU BOLTS
(2) 14" LVL TO (2) 18" LVL	9 1/2"	3 1/2"	3 1/2"	(3) 5/8" DIA. THRU BOLTS
(3) 14" LVL TO (3) 18" LVL	9 1/2"	5 1/4"	3 1/2"	(3) 5/8" DIA. THRU BOLTS
(2) 20" LVL TO (2) 24" LVL	12 1/2"	3 1/2"	3 1/2"	(4) 5/8" DIA. THRU BOLTS
(3) 20" LVL TO (3) 24" LVL	12 1/2"	5 1/4"	3 1/2"	(4) 5/8" DIA. THRU BOLTS

WIDTH*, INSIDE FACE TO INSIDE FACE OF PLATE
SADDLE SHALL BE 1/4" THICK PLATE UNLESS NOTED OTHERWISE

C OPEN SADDLE AT CONTINUOUS COLUMN

SCALE: N/A

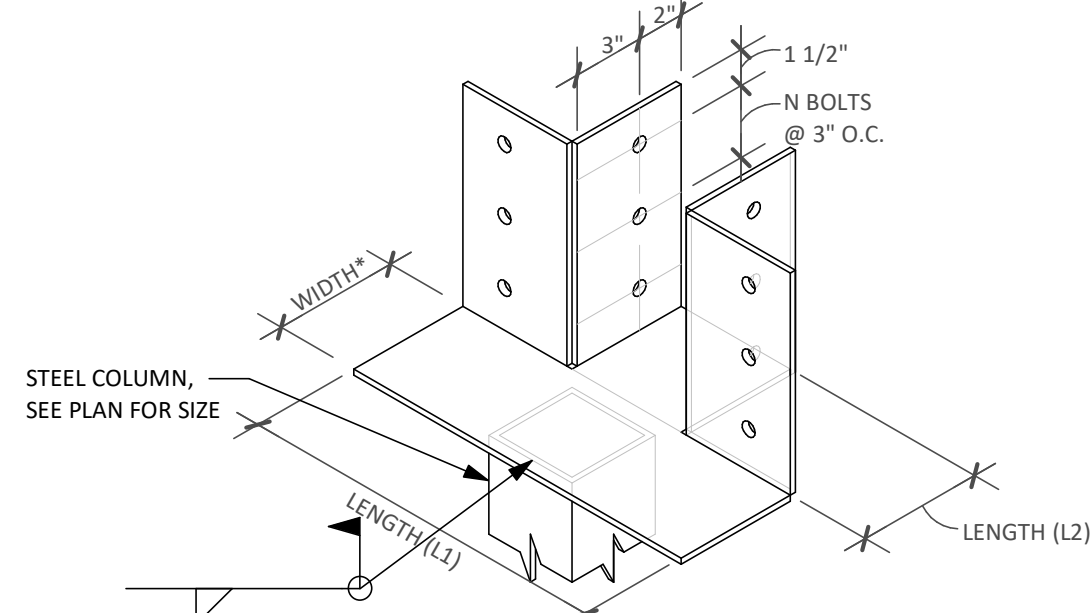


BEAM SIZE	SADDLE DIMENSIONS				BOLT SPECS.
	HEIGHT	WIDTH*	L1	L2	
(2) 2x6	4"	3"	8 1/4"	5 1/4"	(2) 5/8" DIA. THRU BOLTS
(3) 2x6	4"	4 1/2"	9 3/4"	5 1/4"	(2) 5/8" DIA. THRU BOLTS
(2) 2x8 TO (2) 2x12	6 1/2"	3"	8 1/4"	5 1/4"	(4) 5/8" DIA. THRU BOLTS
(3) 2x8 TO (3) 2x12	6 1/2"	4 1/2"	9 3/4"	5 1/4"	(4) 5/8" DIA. THRU BOLTS
(2) 5 1/2" LVL	4"	3 1/2"	8 3/4"	5 1/4"	(2) 5/8" DIA. THRU BOLTS
(3) 5 1/2" LVL	4"	5 1/4"	10 1/2"	5 1/4"	(2) 5/8" DIA. THRU BOLTS
(2) 7 1/4" LVL TO (2) 12" LVL	6 1/2"	3 1/2"	8 3/4"	5 1/4"	(4) 5/8" DIA. THRU BOLTS
(3) 7 1/4" LVL TO (3) 12" LVL	6 1/2"	5 1/4"	10 1/2"	5 1/4"	(4) 5/8" DIA. THRU BOLTS
(2) 14" LVL TO (2) 18" LVL	9 1/2"	3 1/2"	8 3/4"	5 1/4"	(6) 5/8" DIA. THRU BOLTS
(3) 14" LVL TO (3) 18" LVL	9 1/2"	5 1/4"	10 1/2"	5 1/4"	(6) 5/8" DIA. THRU BOLTS
(2) 20" LVL TO (2) 24" LVL	12 1/2"	3 1/2"	8 3/4"	5 1/4"	(8) 5/8" DIA. THRU BOLTS
(3) 20" LVL TO (3) 24" LVL	12 1/2"	5 1/4"	10 1/2"	5 1/4"	(8) 5/8" DIA. THRU BOLTS

WIDTH*, INSIDE FACE TO INSIDE FACE OF PLATE
SADDLE SHALL BE 1/4" THICK PLATE UNLESS NOTED OTHERWISE

D OPEN CORNER SADDLE OVER COLUMN

SCALE: N/A



BEAM SIZE	SADDLE DIMENSIONS				BOLT SPECS.
	HEIGHT	WIDTH*	L1	L2	
(2) 2x6	4"	3"	13 1/2"	5 1/4"	(3) 5/8" DIA. THRU BOLTS
(3) 2x6	4"	4 1/2"	15"	5 1/4"	(3) 5/8" DIA. THRU BOLTS
(2) 2x8 TO (2) 2x12	6 1/2"	3"	13 1/2"	5 1/4"	(6) 5/8" DIA. THRU BOLTS
(3) 2x8 TO (3) 2x12	6 1/2"	4 1/2"	15"	5 1/4"	(6) 5/8" DIA. THRU BOLTS
(2) 5 1/2" LVL	4"	3 1/2"	14"	5 1/4"	(3) 5/8" DIA. THRU BOLTS
(3) 5 1/2" LVL	4"	5 1/4"	15 3/4"	5 1/4"	(3) 5/8" DIA. THRU BOLTS
(2) 7 1/4" LVL TO (2) 12" LVL	6 1/2"	3 1/2"	14"	5 1/4"	(6) 5/8" DIA. THRU BOLTS
(3) 7 1/4" LVL TO (3) 12" LVL	6 1/2"	5 1/4"	15 3/4"	5 1/4"	(6) 5/8" DIA. THRU BOLTS
(2) 14" LVL TO (2) 18" LVL	9 1/2"	3 1/2"	14"	5 1/4"	(9) 5/8" DIA. THRU BOLTS
(3) 14" LVL TO (3) 18" LVL	9 1/2"	5 1/4"	15 3/4"	5 1/4"	(9) 5/8" DIA. THRU BOLTS
(2) 20" LVL TO (2) 24" LVL	12 1/2"	3 1/2"	14"	5 1/4"	(12) 5/8" DIA. THRU BOLTS
(3) 20" LVL TO (3) 24" LVL	12 1/2"	5 1/4"	15 3/4"	5 1/4"	(12) 5/8" DIA. THRU BOLTS

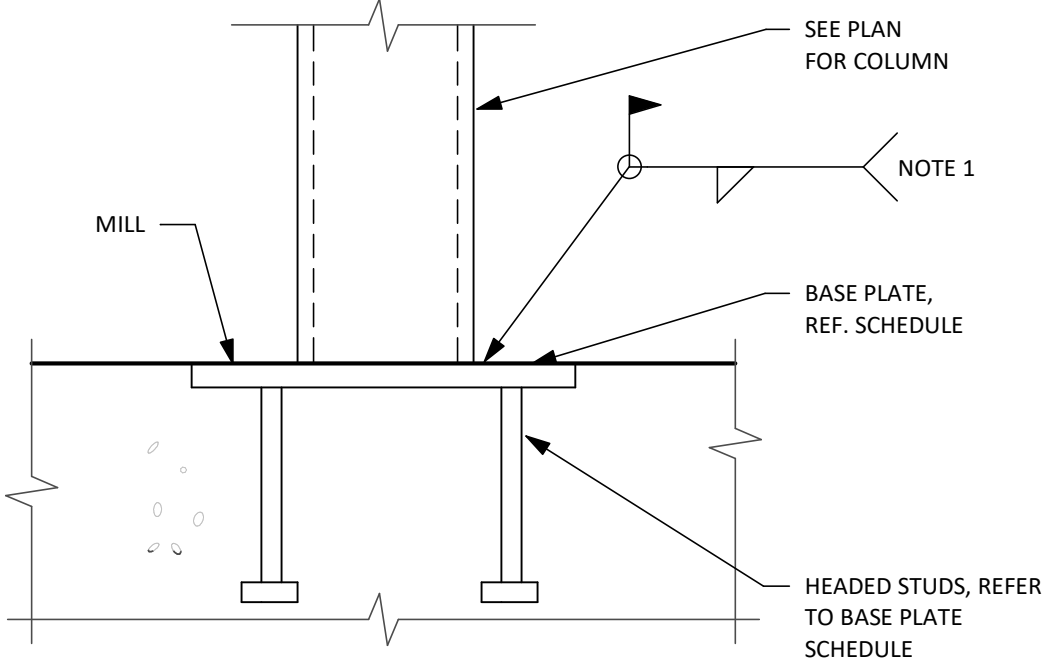
WIDTH*, INSIDE FACE TO INSIDE FACE OF PLATE
SADDLE SHALL BE 1/4" THICK PLATE UNLESS NOTED OTHERWISE

E OPEN "I" INTERSECTION SADDLE OVER COLUMN

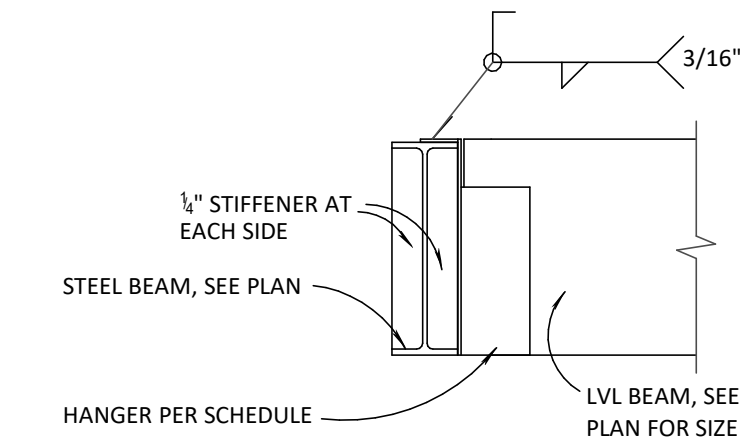
SCALE: N/A

02 TYPICAL DETAIL - STEEL PLATE SADDLES

SCALE: 3/4" = 1'-0"



- NOTES:
- WELD TO BE MINIMUM SIZE REQUIRED BY A.I.S.C. FOR THICKNESS OF BASE PLATE USED.
 - SEE DETAIL SCHEDULE FOR BASE PLATE DIMENSIONS.
 - EMBEDMENT PLATE TO BE INSTALLED LEVEL AND FULLY EMBEDDED INTO CONCRETE.



LVL TO STEEL CONNECTION SCHEDULE	
BEAM DEPTH	SIMPSON HANGER
(4) 18" LVL	HGLTV418-2
(3) 18" LVL	HGLTV5.518
(2) 18" LVL	GLTV3.518
(3) 16" LVL	GLTV5.516
(2) 16" LVL	GLTV3.516
(3) 14" LVL	GLTV5.514
(2) 14" LVL	HW1414
(3) 12" LVL	GLTV5.512
(2) 12" LVL	HW1412

NOTE: INSTALL ACCORDING TO MANUFACTURER SPECIFICATIONS. SUBSTITUTION MUST MEET EQUIVALENT LOADING, AND CONFIRMED WITH ENGINEER

03 TYPICAL DETAIL - COL. EMBED PLATE

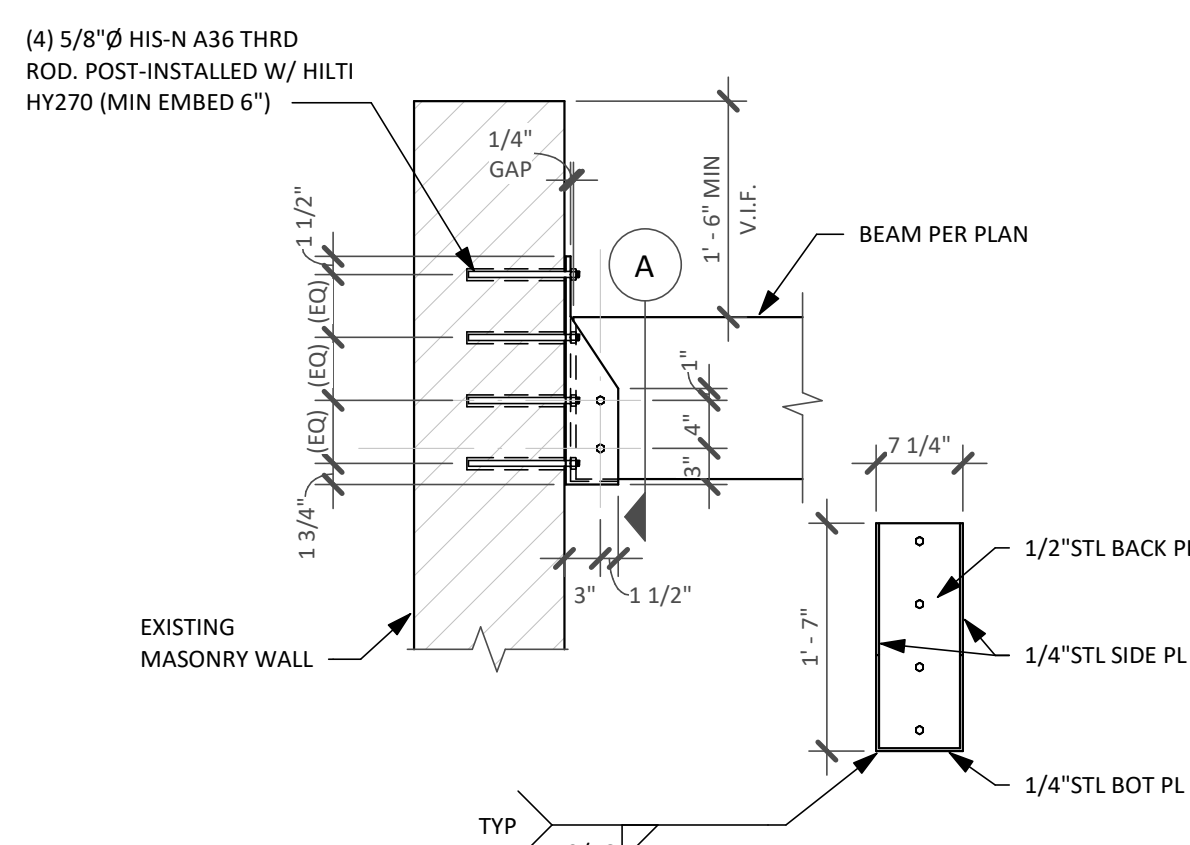
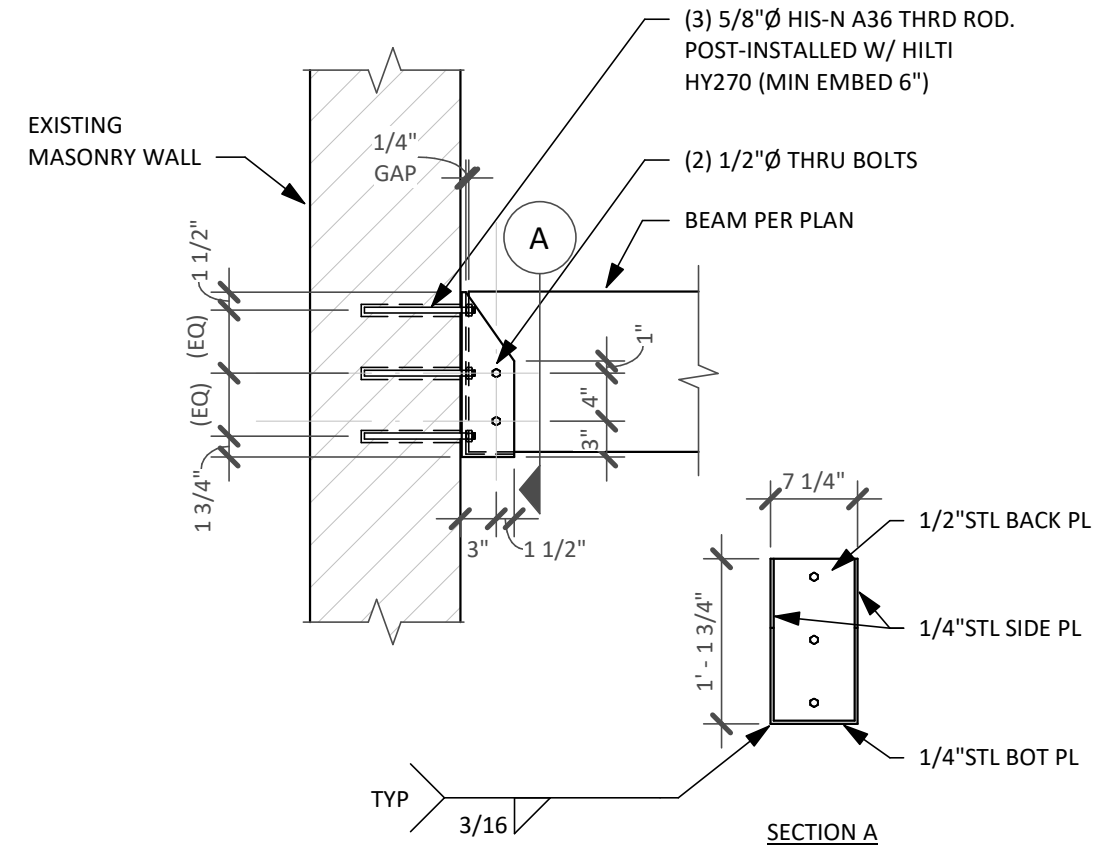
SCALE: 1" = 1'-0"

04 TYPICAL DETAIL - BEAM HANGER ON STEEL BEAM

SCALE: 3/4" = 1'-0"

05 BEAM HANGER ON STONE WALL AT PORCH

SCALE: 3/4" = 1'-0"



06 BEAM HANGER ON STONE WALL AT KITCHEN

SCALE: 3/4" = 1'-0"

PERMIT DOCUMENTS

THIS SET TO
REMAIN
ON-SITE



T 512-565-7026
SAM @ FORTSTRUCTURES.COM
FIRM # 18034



ARCHITECT:

Furman and Keil Architects

1211 E. 11th Street, #200

Austin, TX 78702

T 512-479-4100

www.FKArchitects.net

PROJECT:

LEE
RESIDENCE

ADDRESS:

402 Camp Craft
Road, West Lake
Hills, TX 78746

JOB #

20-072

DWN. BY:

EDN, SC

CHK BY:

S. COVEY

DATE:

07-23-2021

REV:

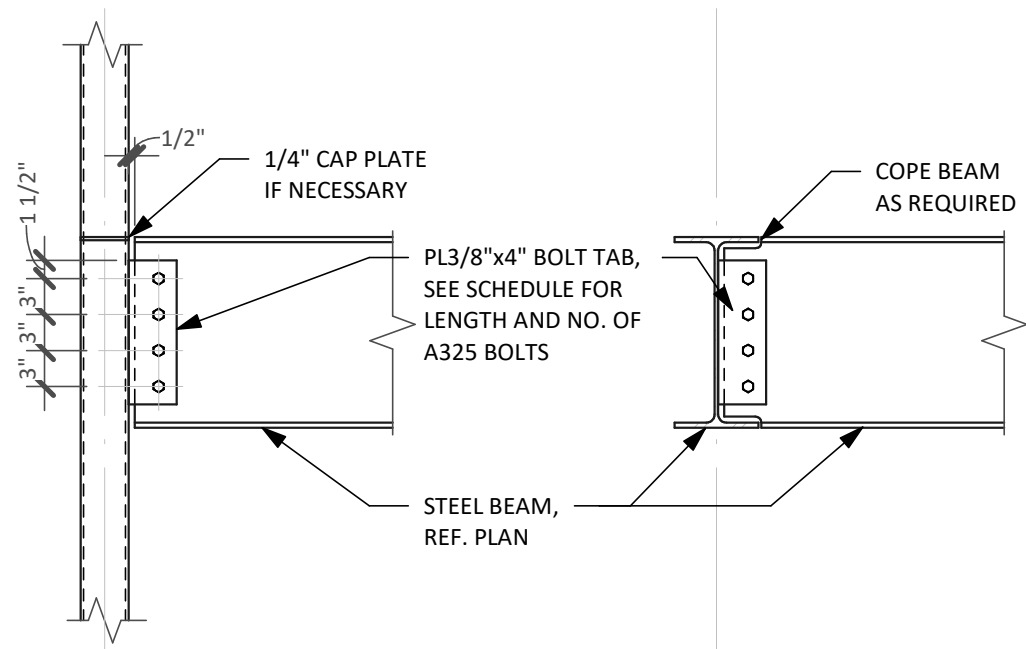
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the scale is as indicated.
If printed on an 11x17 or 12x18
sheet, the scale is reduced by half.

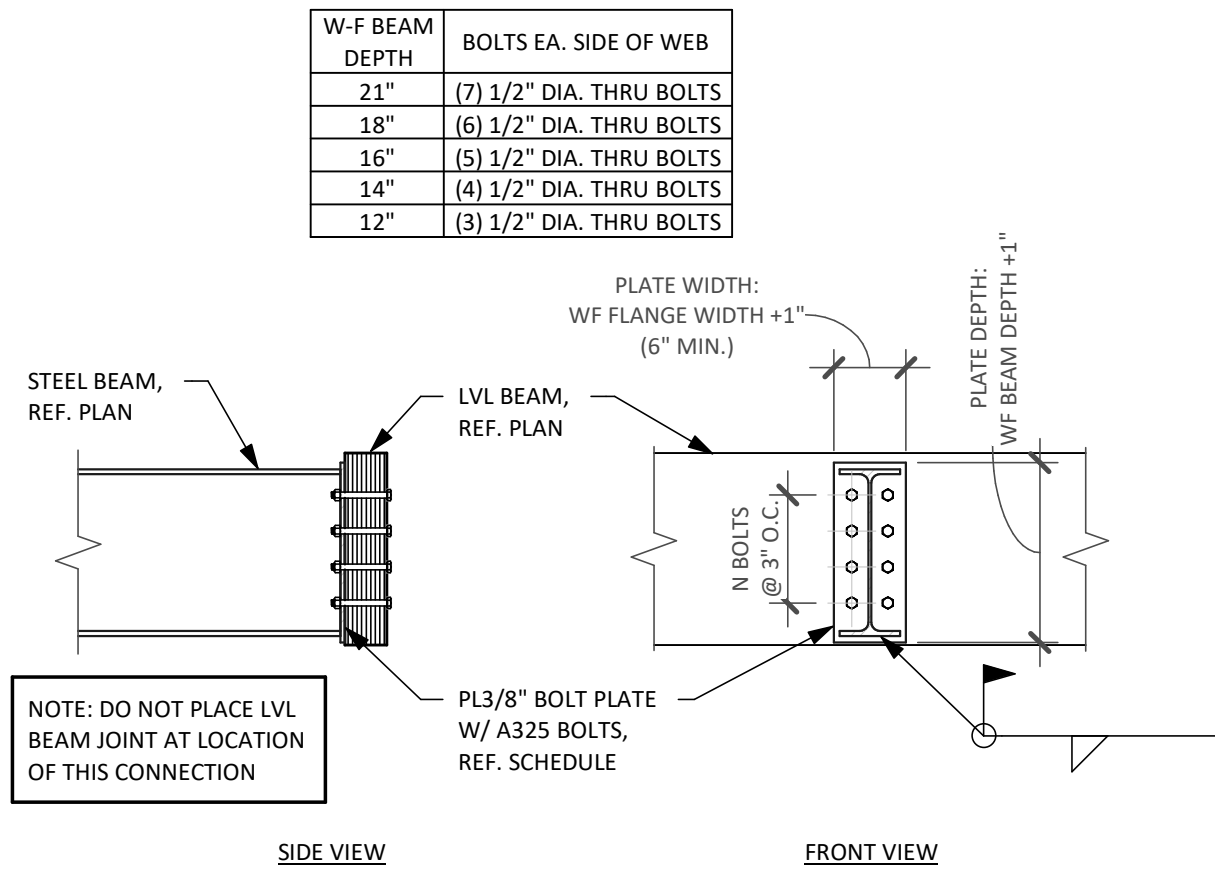
SHEET

S5.10

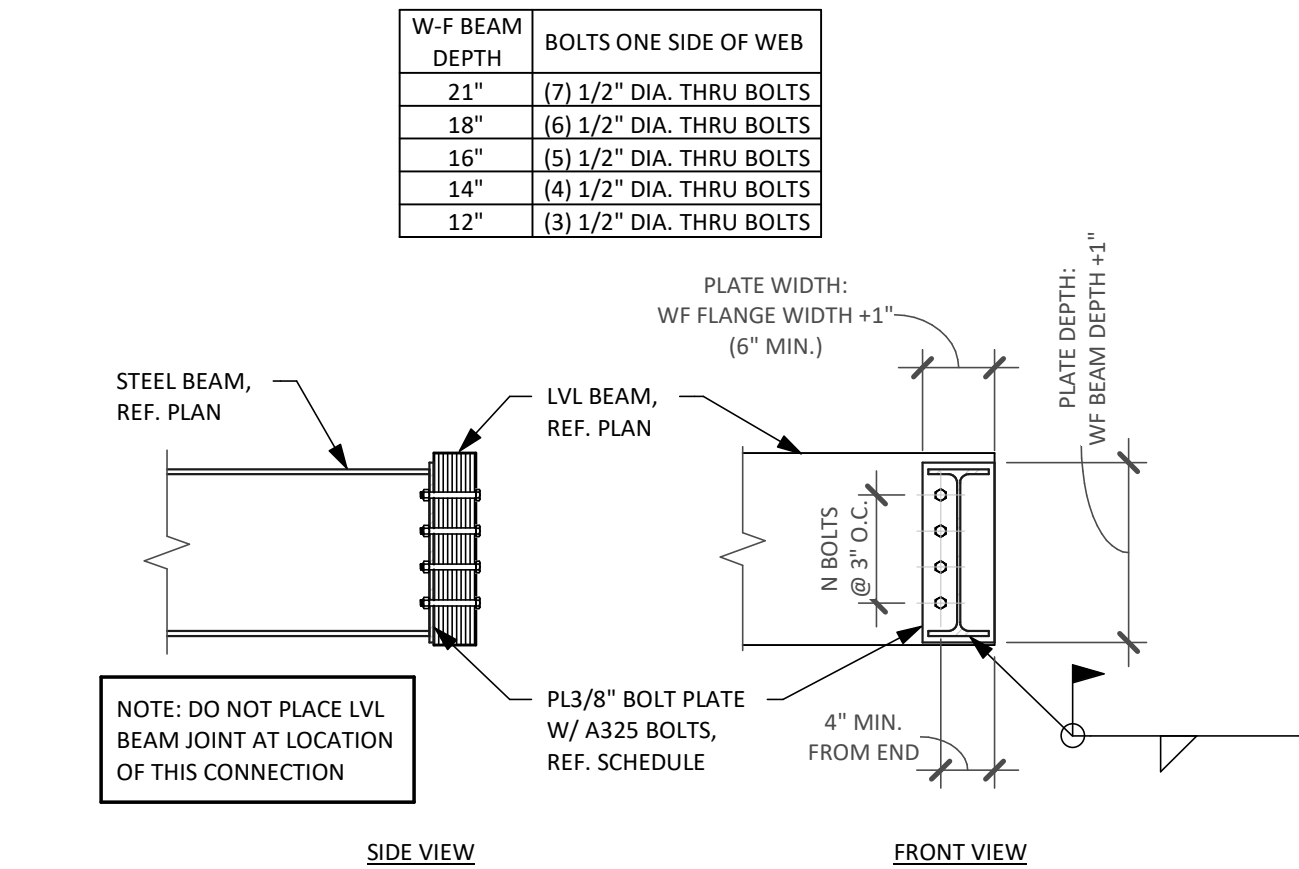
BEAM SIZE	NO. OF ROWS OF BOLTS	BOLT DIAMETER	TAB THICKNESS	TAB LENGTH	WELD SIZE BOTH SIDES	MAX BEAM REACTION (KIPS)
W8	2	3/4"	3/8"	6"	1/4"	12
W10	2			6"		16
W12	3			9"		24
W14	3			9"		30
W16	4			12"		40
W18	5			15"		50
W21	6			18"		
W24	7			21"		



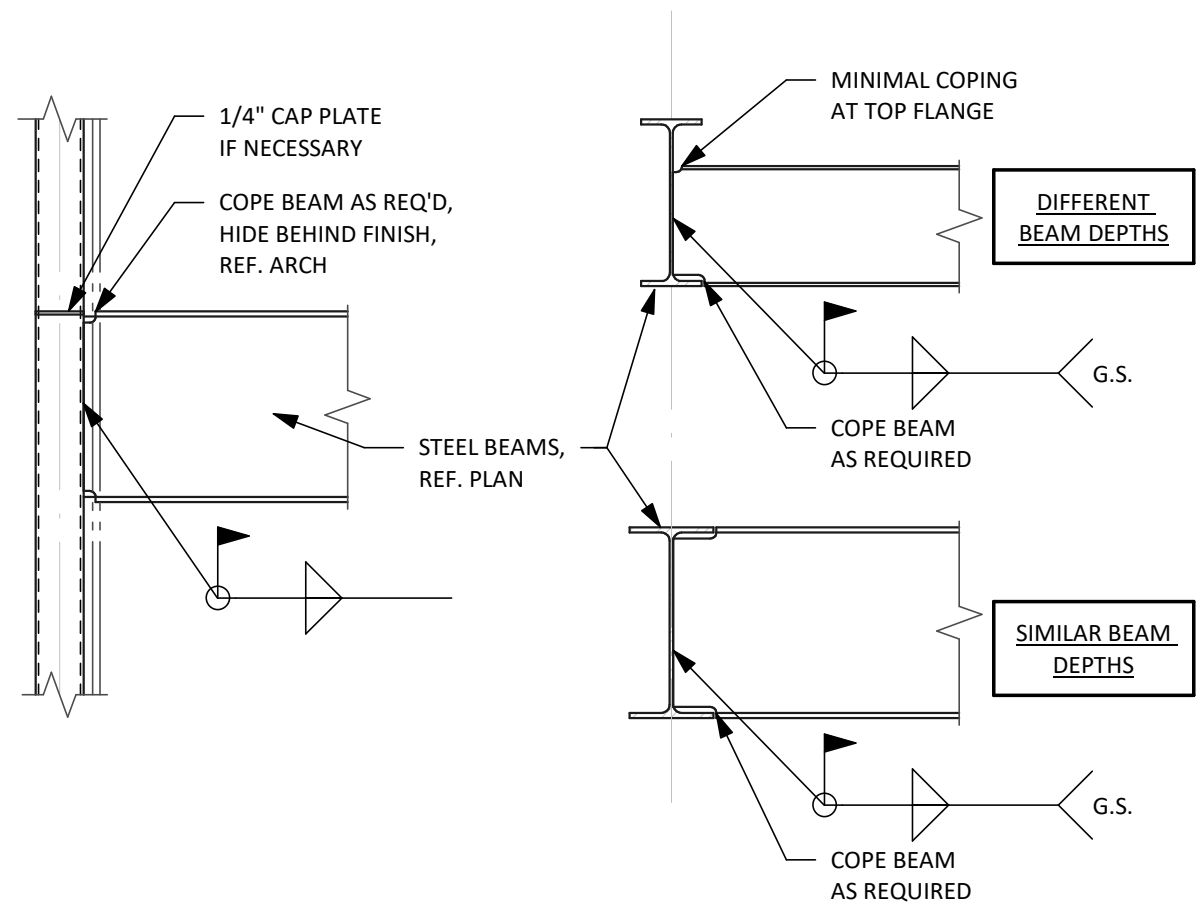
01 STL DETAIL - SIMPLE SHEAR CONX.
SCALE: 3/4" = 1'-0"



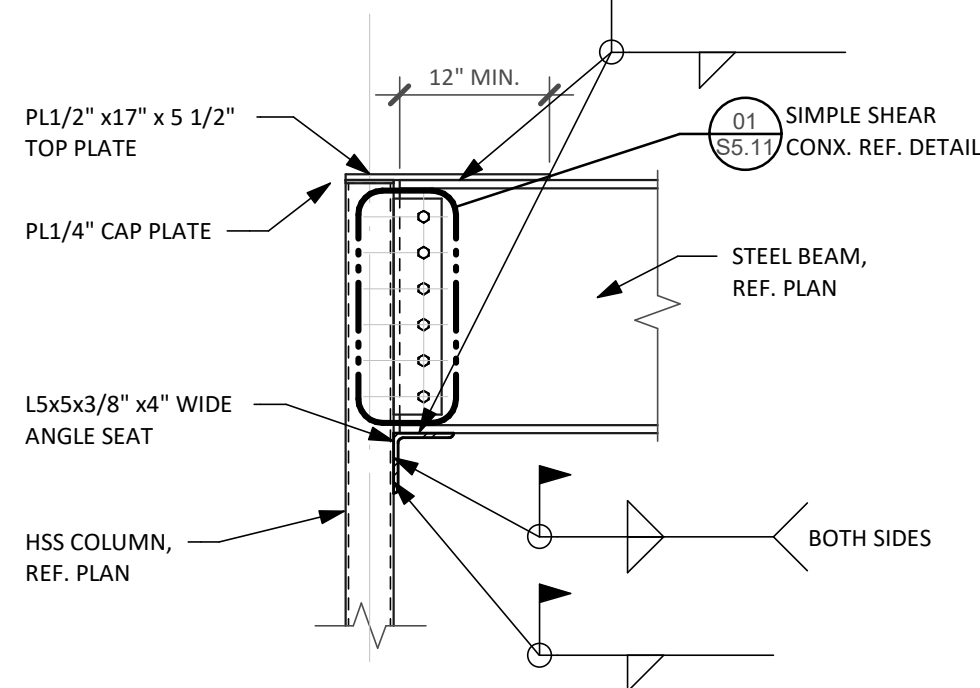
02 STL DETAIL - WF BEAM TO LVL BEAM CONX.
SCALE: 3/4" = 1'-0"



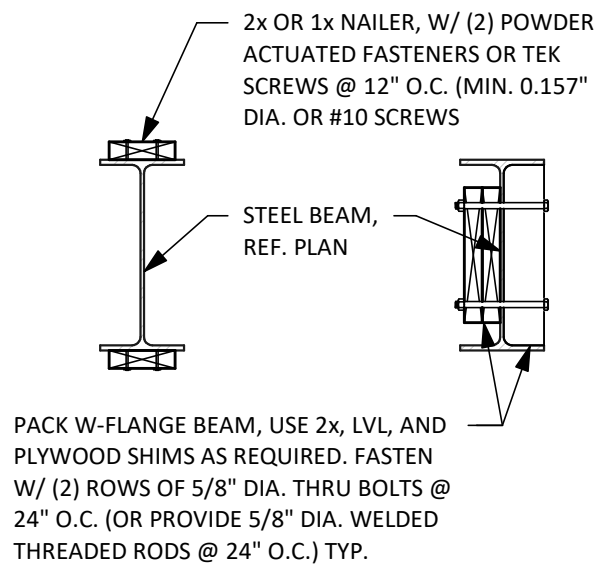
03 STL DETAIL - WF BEAM TO LVL BEAM CONX. AT CORNER
SCALE: 3/4" = 1'-0"



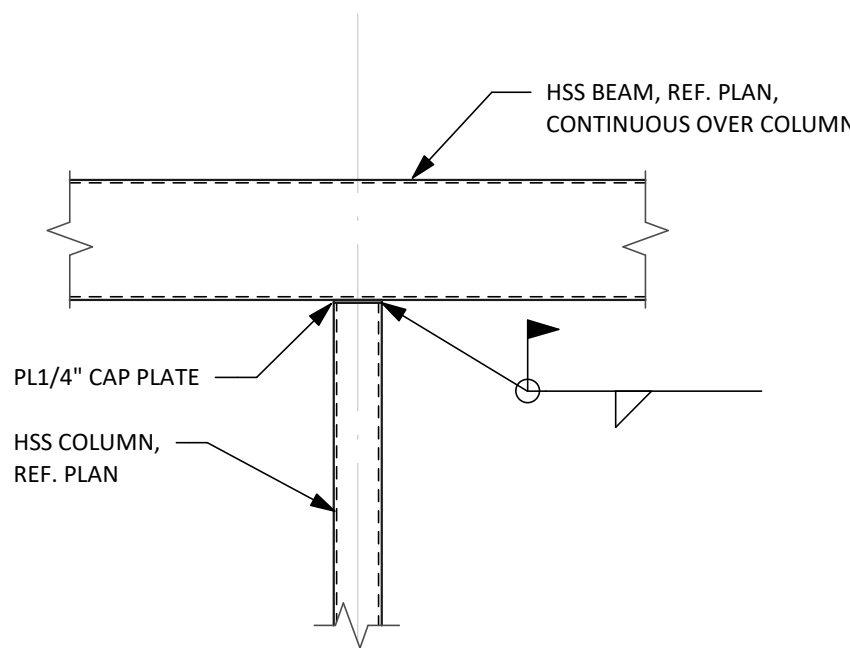
04 STL DETAIL - EXPOSED SHEAR CONX.
SCALE: 3/4" = 1'-0"



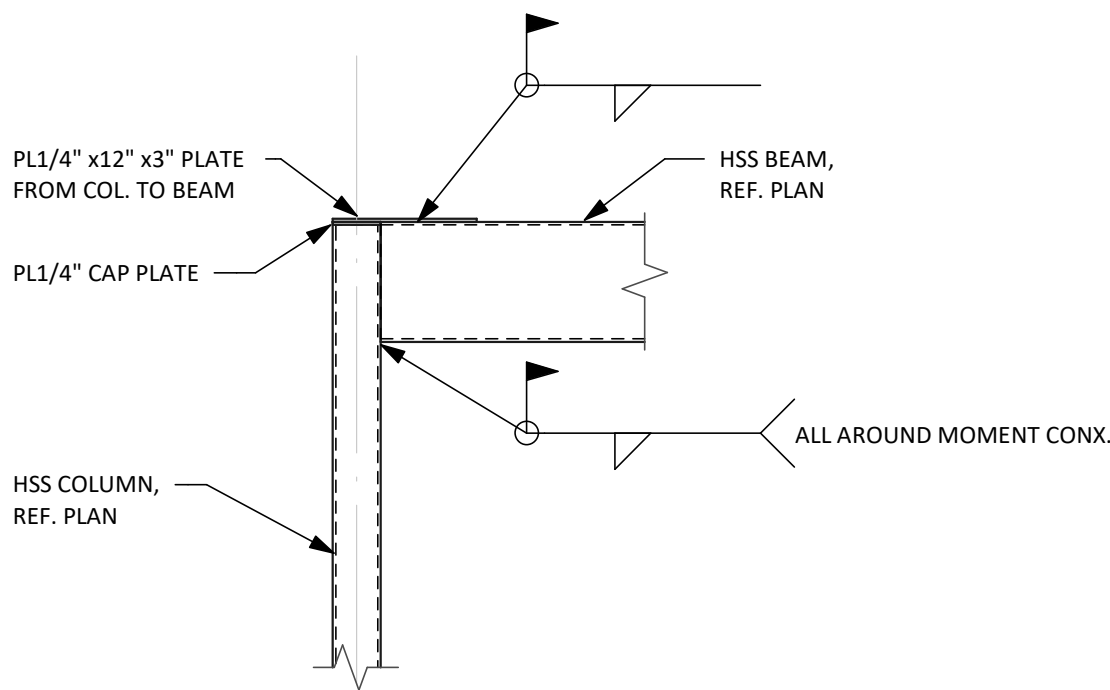
05 STL DETAIL - MOMENT CONX. WF BEAM TO COLUMN
SCALE: 3/4" = 1'-0"



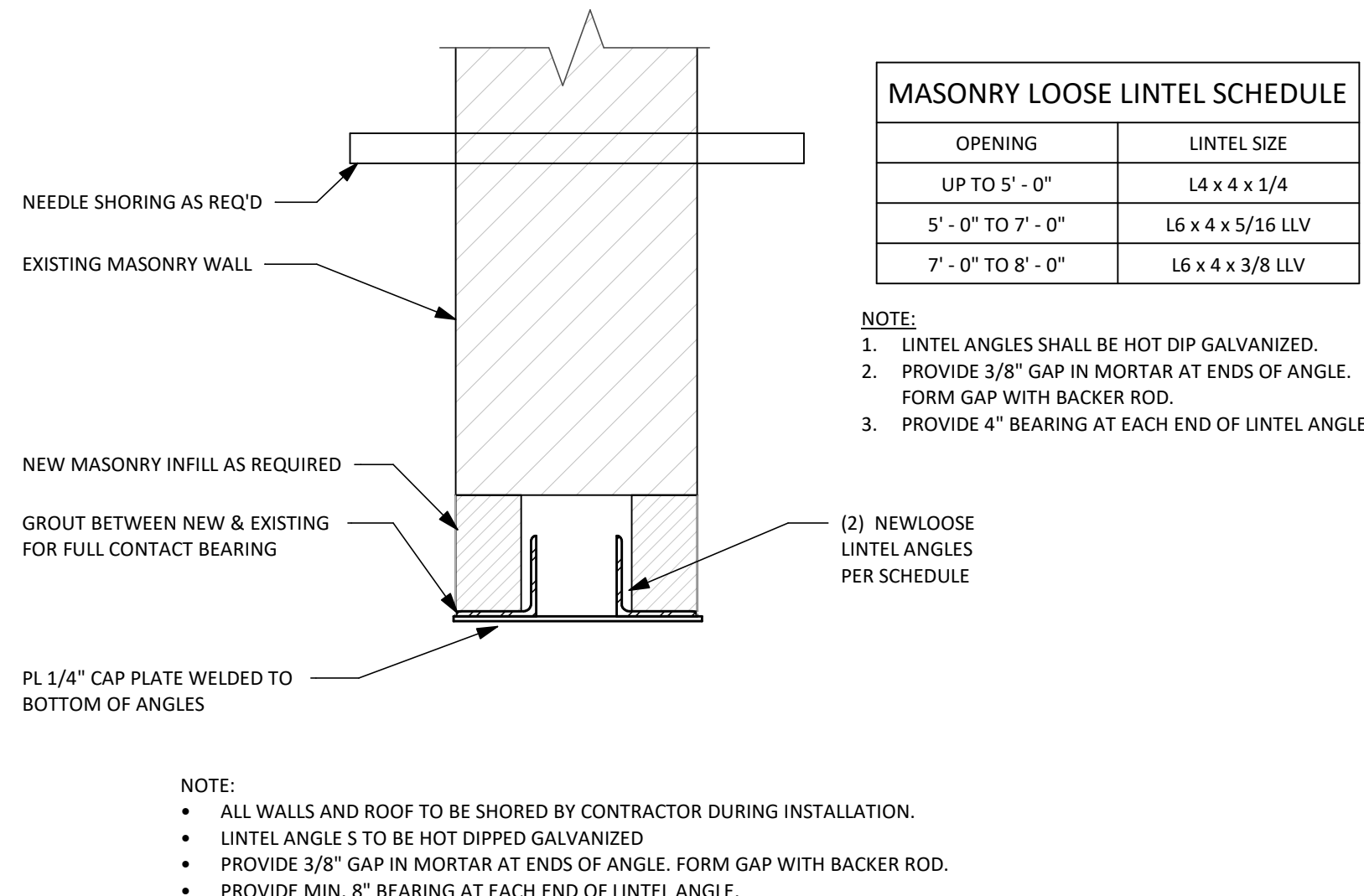
06 STL DETAIL - WF BEAM NAILER & WEB PACKING
SCALE: 3/4" = 1'-0"



07 STL DETAIL - HSS BEAM OVER COLUMN
SCALE: 3/4" = 1'-0"



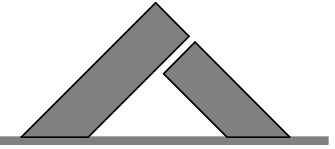
08 STL DETAIL - MOMENT CONX. HSS BEAM TO COLUMN
SCALE: 3/4" = 1'-0"



09 MASONRY LOOSE LINTEL
SCALE: 1 1/2" = 1'-0"

PERMIT DOCUMENTS

THIS SET TO
REMAIN
ON-SITE

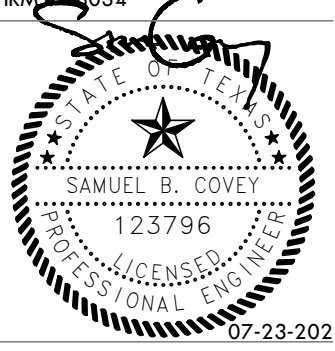


F O R T

STRUCTURES

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SAM@FORTSTRUCTURES.COM
FIRM # 18034



SAMUEL B. COVEY

123796

PROFESSIONAL ENGINEER

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CHK. BY:

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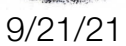
SHEET

S5.11

Page 132 of 460



402 Camp Craft Road
West Lake Hills, Texas 78746



	date	description
--	------	-------------

9/21/21

A1.1



main house

A1.1	cover sheet
A1.2	site plan existing
A1.3	site plan proposed
A1.4	demo plan
A1.5	overall floor plan
A1.6	lower level / second level floor plan
A1.7	level 1 floor plan
A1.8	level 1 floor plan
A1.9	window elevations
A1.10	door schedule / elev.
A2.1	elevations
A2.2	elevations
A3.1	sections
A3.2	sections
A3.3	sections
A3.4	sections
ME.1	mechanical / electrical
ME.2	mechanical / electrical
ME.3	mechanical / electrical (t)
B1.1	plans
B2.1	elevations / sections
C1.1	floor plan
C1.2	RCP / ME
C2.1	elevations
C2.2	elevations
C3.1	sections
S0.00	general notes
S0.01	general notes
S0.02	3D view
S0.03	3D view
S0.04	3D view
S0.05	3D view
S1.10	lower level foundation plan
S1.10W	lower level wind bracing plan
S1.11 N...	level 1 foundation/framing plan
S1.11 S...	level 1 foundation/framing plan
S1.11W ...	level 1 wind bracing plan
S1.11W ...	level 1 wind bracing plan
S1.12 N...	level 2 framing plan
S1.12 S...	level 2 framing plan
S1.12W	level 2 wind bracing plan
S1.13	roof framing plan
S1.21	art house
S1.31	workshop foundation plan
S1.31W	workshop wind bracing plan
S1.32	workshop roof framing plan
S2.00	details
S2.01	details
S2.10	details
S2.11	details
S3.00	sections
S3.01	sections
S3.02	sections
S4.00	framing details
S4.01	framing details
S4.02	framing details
S4.10	framing details
S4.11	framing details
S5.10	steel details
S5.11	steel details

- 1) main house setback encroachment
- 2) detached structure in setback
- 3) driveway encroachment
- 4) sport court remodel
- 5) removal of tree #75 and tree #94

This project is a remodel of an existing 2 story residence with a significant new addition, remodel of an outbuilding, and new construction of a workshop on an existing slab.

LOT 2 RESUB OF OAK HOLLOW CONFIRMING PLAT

ZONING:

GEOGRAPHIC

115,140 square feet

Robert & Tanja Lee
402 Camp Craft Road
West Lake Hills, TX 78093

Rauser Construction
5904 Grover Avenue
Austin, TX 78757
512-481-2444

Fort Structures
2235 East 6th Street.

11

lot size	115,140 sq ft
max allowed impervious cover (25%)	28,785 sq ft

main house	4,895 sq ft
driveway	4,456 sq ft
existing driveway to workshop	5,738 sq ft
AC pads and other concrete flatwork	1,326 sq ft
art house	617 sq ft
workshop	4,400 sq ft
other (retaining walls, outbuilding)	1,149 sq ft
total impervious cover:	22,581 sq ft
% of lot size:	21%

lower level conditioned	1634 sq ft
main level conditioned	3044 sq ft
second level conditioned	1284 sq ft

conditioned	5,962 sq ft
garage	594 sq ft
terraces	414 sq ft
porches and overhangs	909 sq ft

ART HOUSE:
conditioned 527 sq ft

unconditioned	2,898 sq ft
---------------	-------------

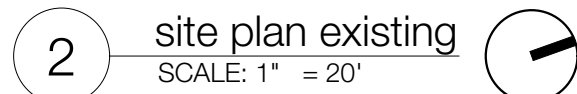
SKYLIGHT SCHEDULE

ID	LOCATION	FRAME WIDTH	FRAME HEIGHT	NOTES
SL01	master closet	25 1/2"	37 1/2"	velux 2234
SL02	kitchen	37 1/2"	49 1/2"	velux 3446

These plans have been reviewed by ATS Engineers, Inspectors and Surveyors for code compliance and adopted jurisdictional ordinances. This stamp of review in no way alleviates the responsibility of the owner or contractor to comply with all codes, ordinances, State and Federal laws. Copy of plans bearing this stamp shall be available on the jobsite at all times.

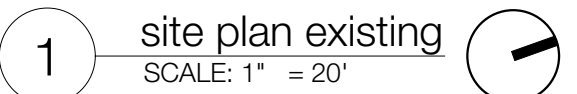
THIS SETTO
REMAIN
ON-SITE

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 = tree to be removed

note
Trees to be removed are shown on **A1.5 site plan existing** with the tree number bolded and underlined, and with tree trunk shaded.



1211 E. 11th Street, #200
Austin, Texas 78702
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402 Camp Craft Road
West Lake Hills, Texas 78746



9/21/21

revisions	
date	description
1	--/--/----
2	--/--/----
3	--/--/----
4	--/--/----
5	--/--/----
6	--/--/----

permit set

9/21/21

site plan existing

A1.2

These plans have been reviewed by ATS Engineers, Inspectors and Surveyors for code compliance and adopt jurisdictional ordinances. This stamp of review in no way alleviates the responsibility of the owner or contractor to comply with all codes, ordinances, State and Federal laws. Copy of plans bearing this stamp shall be available on the job site at all times.

matchline

see 1/A1.6

TREE LIST		variance approved for tree 84	
	MS = 100% DISCREPANCY	MS = 100% DISCREPANCY	
1	8* E	88	113% OK
2	8* E	88	113% OK
3	8* E	88	114% OK
4	8* E	88	114% OK
5	8* E	88	114% OK
6	8* E	88	114% OK
7	8* E	88	114% OK
8	8* E	88	114% OK
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 = tree to be removed

note
Trees to be removed are shown on **A1.5** **site plan existing** with the tree number **bolded and underlined**, and with tree trunk shaded.

see
C series
sheets

site plan proposed
SCALE: 1" = 20'

see 2/A1.6
● — — — —
matchline

**see
B series
sheets**

see
A series
sheets

NOTE:

hardscape - see landscape architect's drawings for materials, details, and configurations of hardscape elements (planters, walkways, etc.).

pool - drawing for reference only; pool and pool deck not in the contract

planters - see landscape architect's drawings; provide irrigation for all planters.

site - see survey for additional site information.

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revisions

	date	description
1	--/--/----	
2	--/--/----	
3	--/--/----	
4	--/--/----	
5	--/--/----	
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permit set

9/21/21

site plan proposed

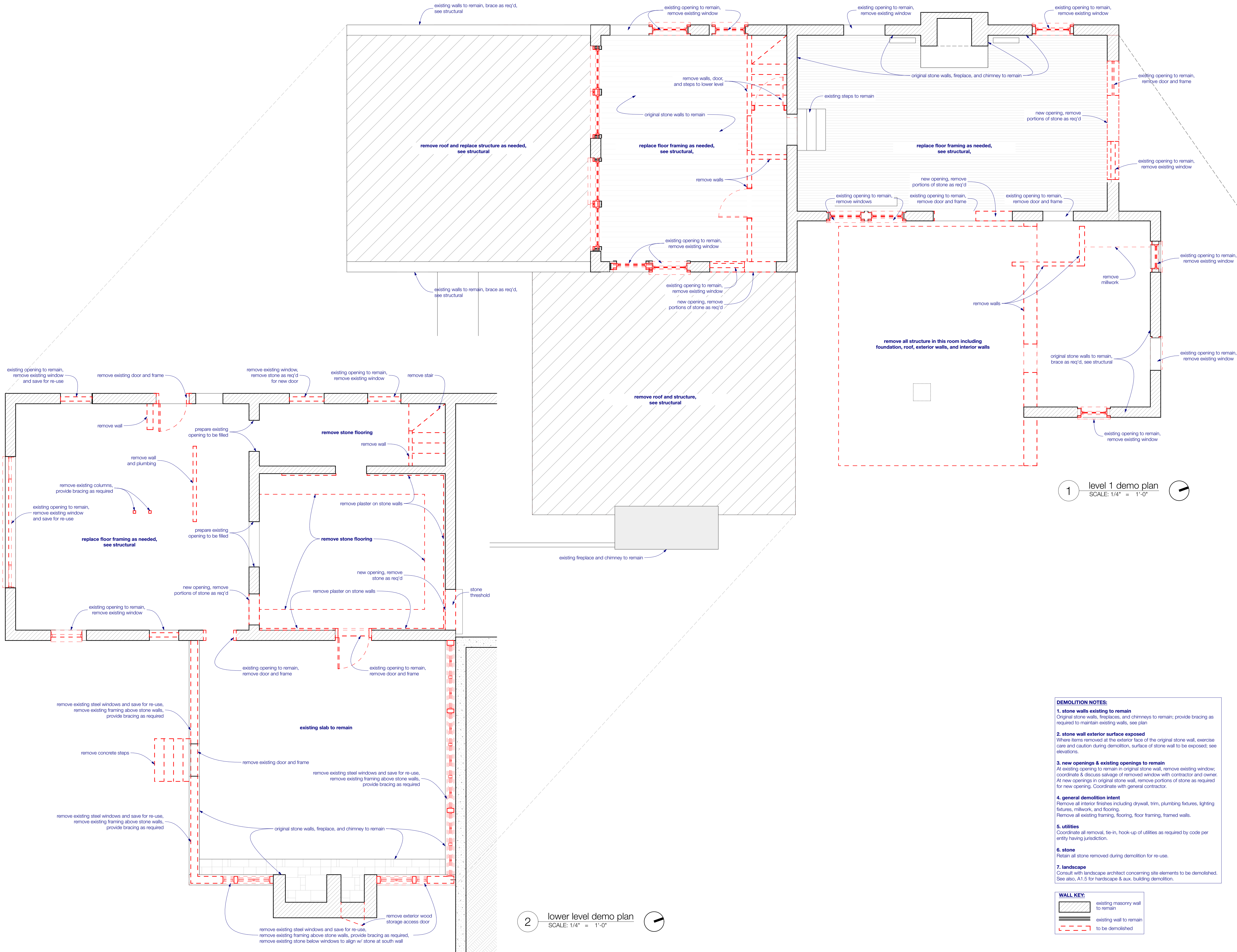
A1.3

PERMIT DOCUMENTS

This stamp has been reviewed by ATIS Engineers, Inc. and Surveyors for code compliance in the jurisdiction of the State of Texas. This stamp is not a seal and does not constitute a professional seal. It is not to be used as a seal of approval or as a seal of approval for any project. Copy of plan bearing this stamp shall be available on the project at all times.

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revisions

date	description
1	10/1/21
2	10/1/21
3	10/1/21
4	10/1/21
5	10/1/21
6	10/1/21

permit set

9/21/21

demo plan

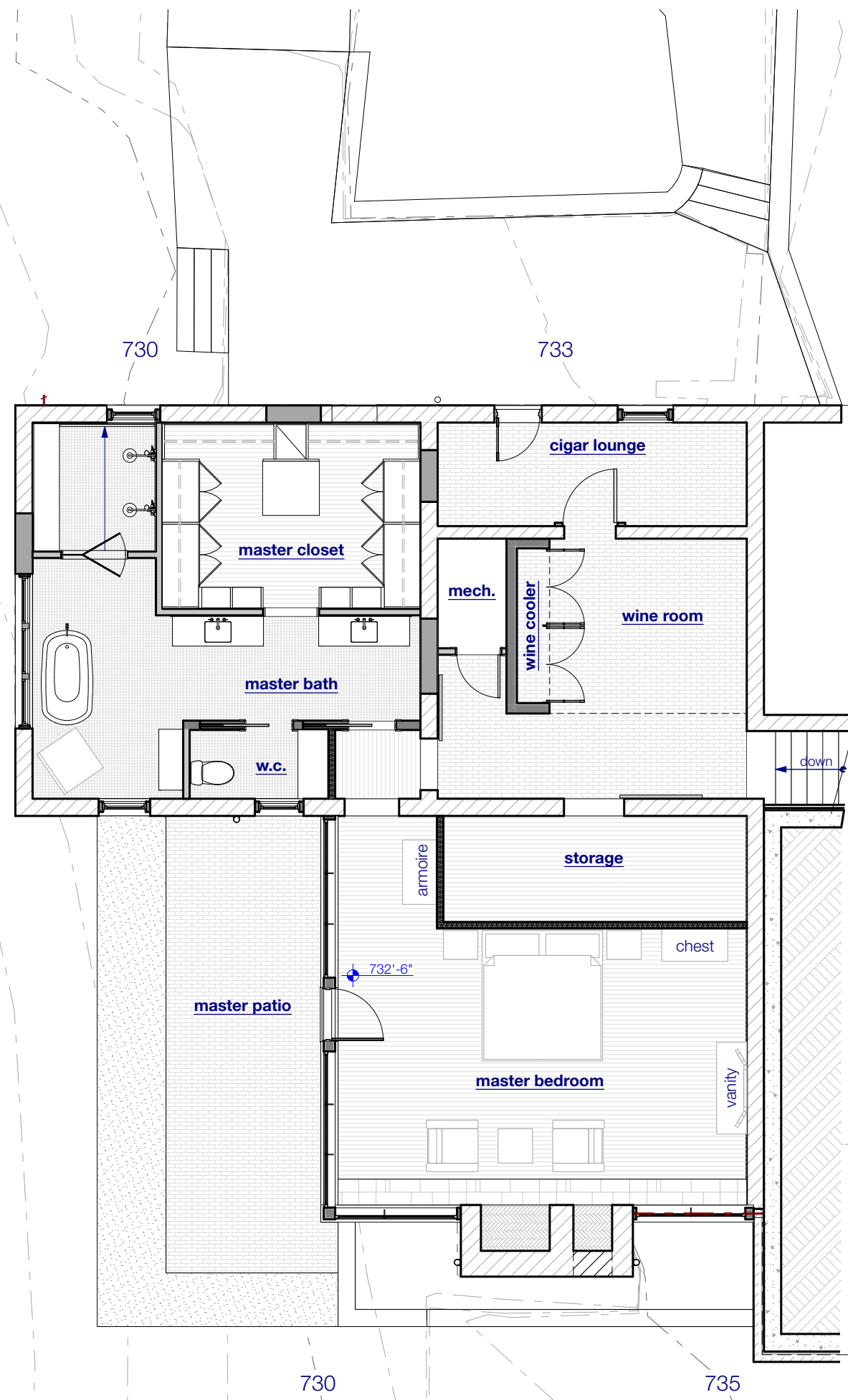
A1.4

PERMIT DOCUMENTS

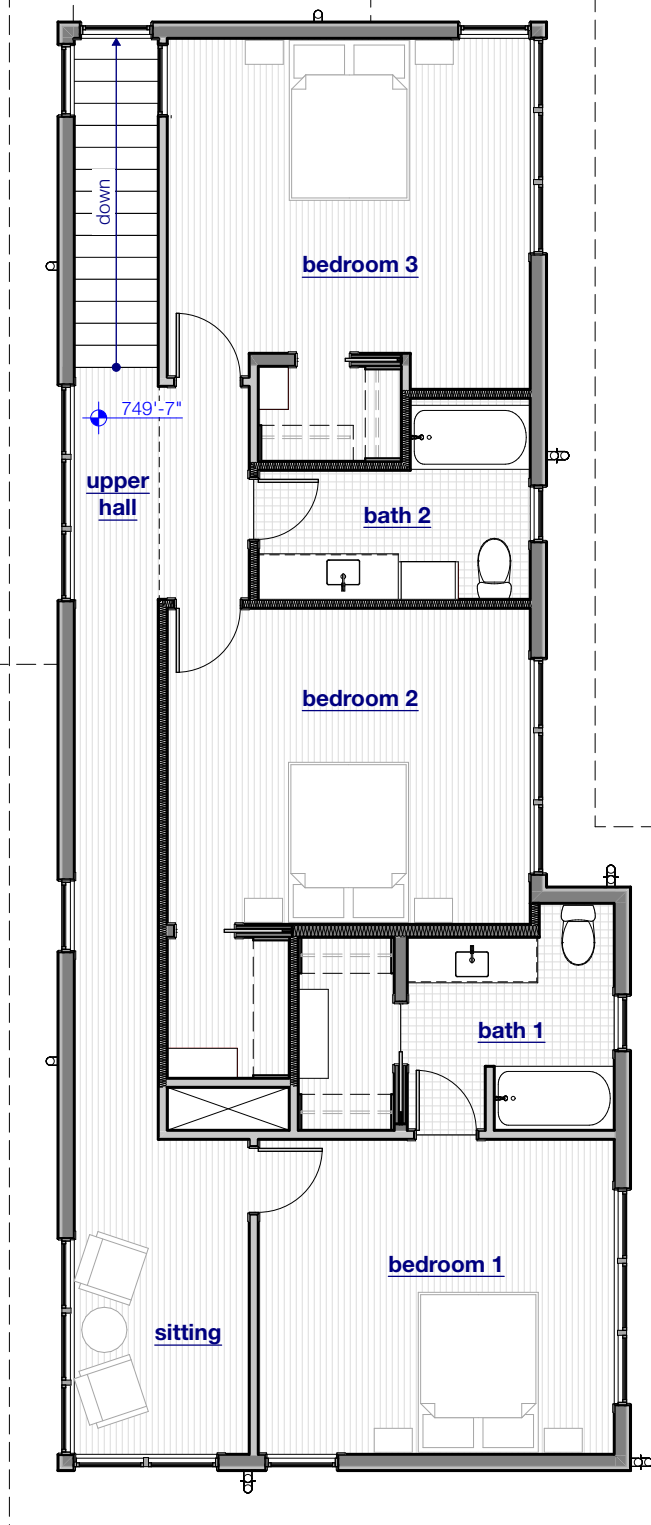
This plan has been reviewed by ATC Engineers, Inc. for compliance with the Texas Building Code. The stamp is not a seal of approval and does not constitute a warranty. The owner is responsible for obtaining all necessary permits and for ensuring that the construction complies with all applicable codes and regulations. The architect is not responsible for the construction or the performance of the building.

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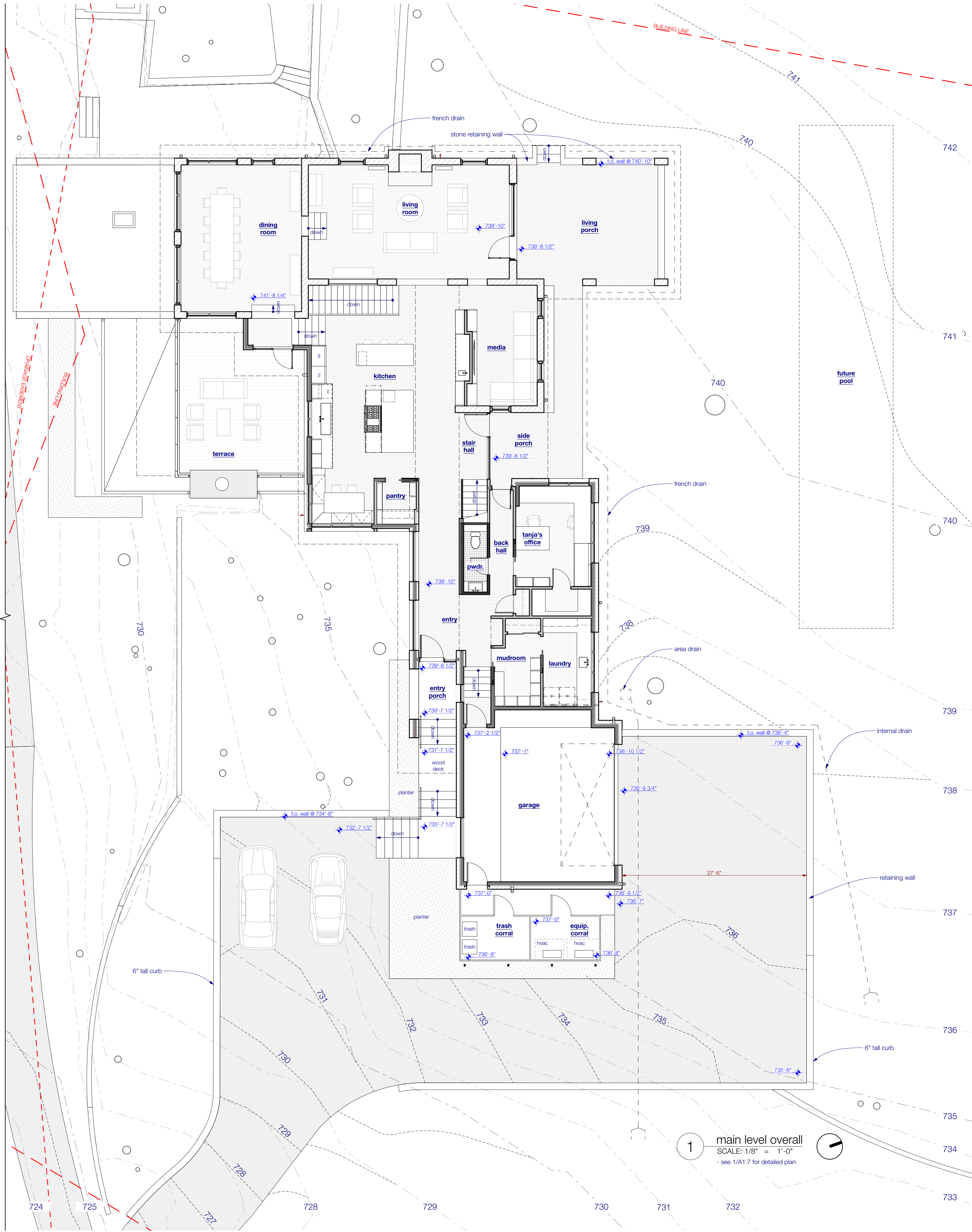
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REMAIN
ON-SITE



3 lower level overall
SCALE: 1/8" = 1'-0"
- see 1/A1.6 for detailed plan



2 second level overall
SCALE: 1/8" = 1'-0"
- see 2/A1.6 for detailed plan



1 main level overall
SCALE: 1/8" = 1'-0"
- see 1/A1.7 for detailed plan

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revisions	
date	description
1	
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permit set
9/21/21
overall floor plan
A1.5

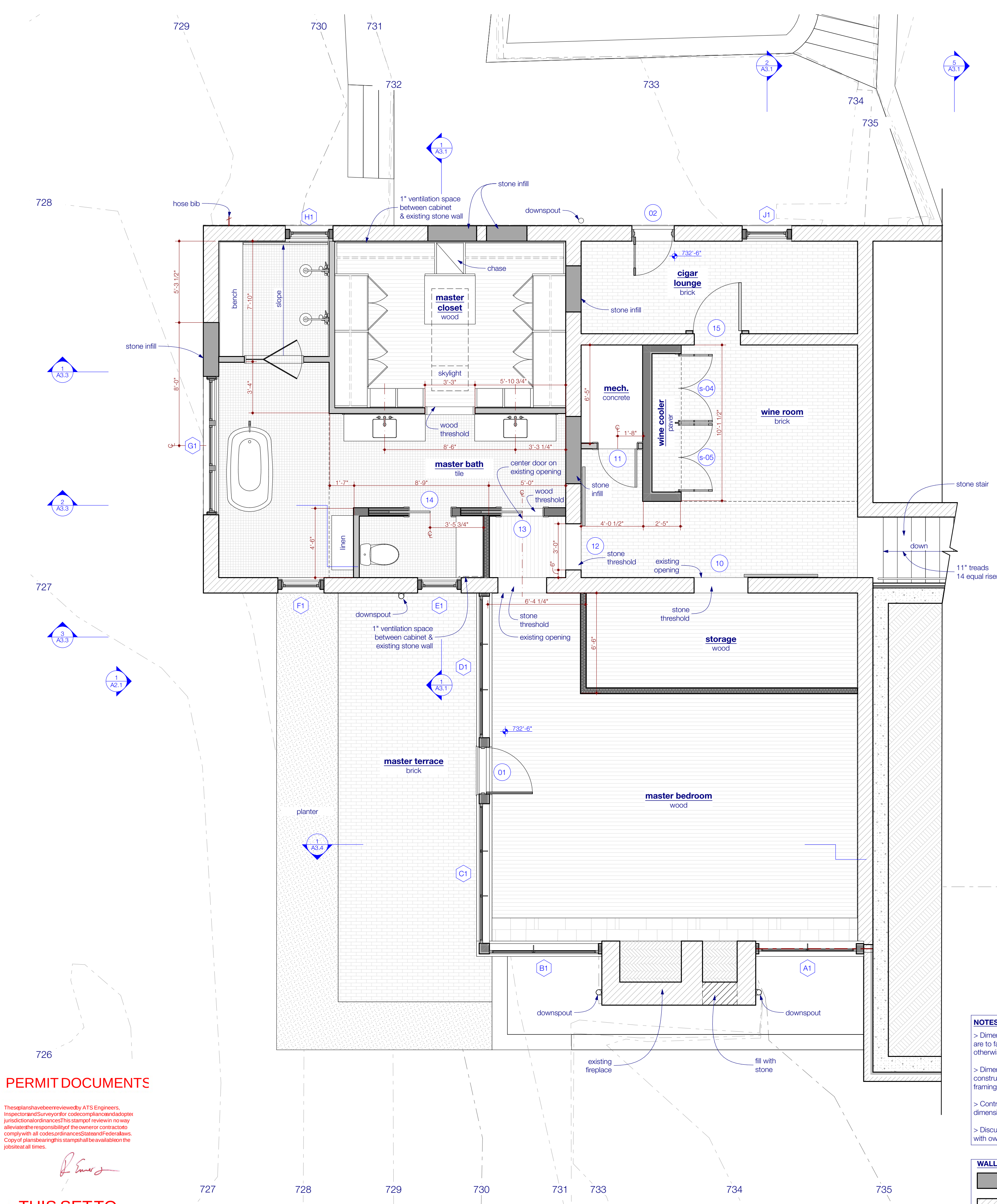
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date	description
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2	
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permit set
9/21/21
overall floor plan
A1.5



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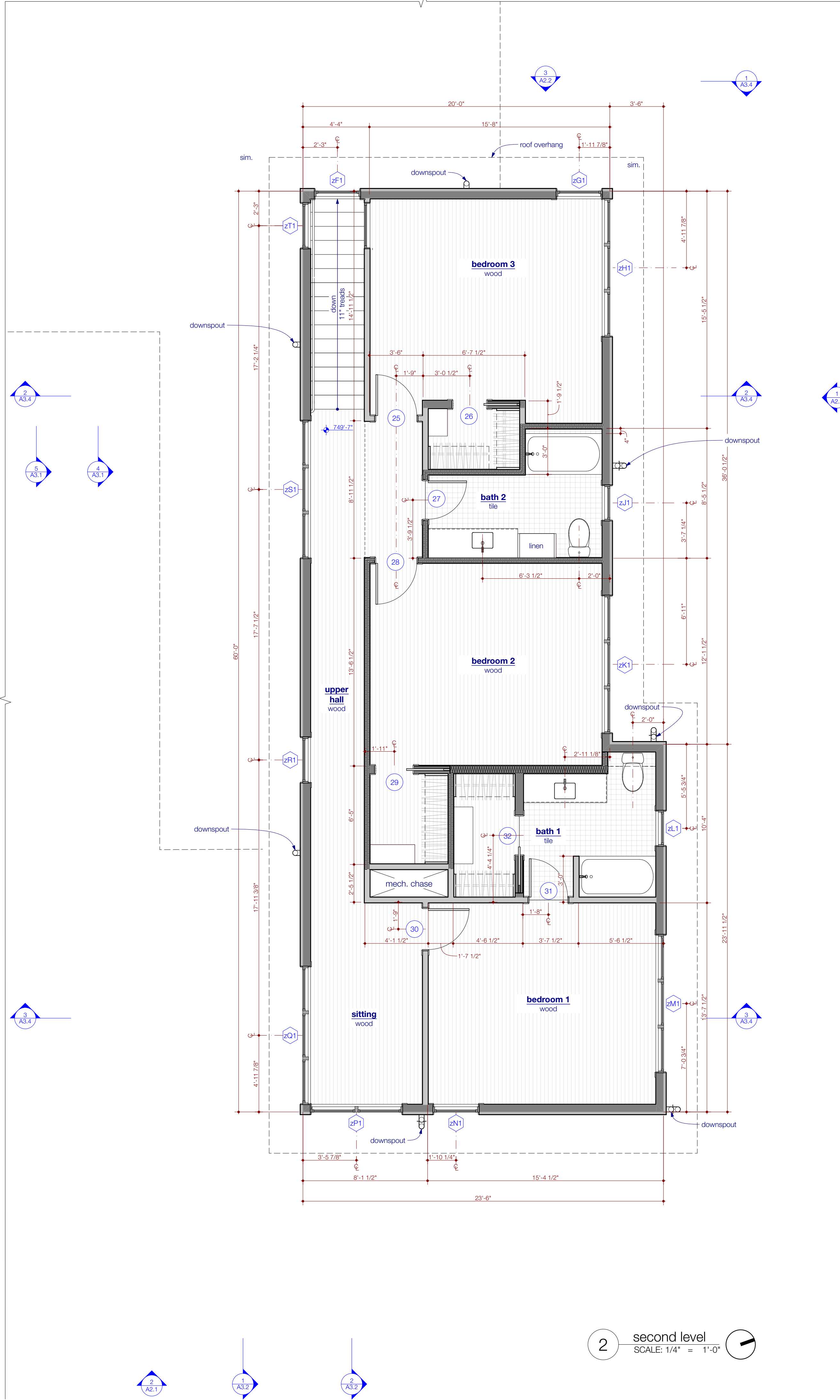
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THIS SET TO
REMAIN
ON-SITE

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

- NOTES:**
- > Dimensions to existing masonry walls are to face of finish unless noted otherwise.
 - > Dimensions to new and existing construction are to outside face of framing unless noted otherwise.
 - > Contractor to verify all existing dimensions in field.
 - > Discuss desired hose bib locations with owner.

- WALL KEY:**
- masonry infill wall
 - existing masonry wall
 - existing wall
 - brick / stone
 - new 2x6 framed wall
 - new 2x4 framed wall
 - sound attenuation

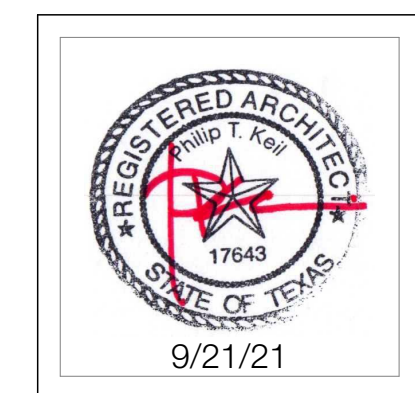


2 second level
SCALE: 1/4" = 1'-0"

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revisions	
date	description
1	9/21/21
2	9/21/21
3	9/21/21
4	9/21/21
5	9/21/21
6	9/21/21

permit set

9/21/21

lower level / second
level floor plan

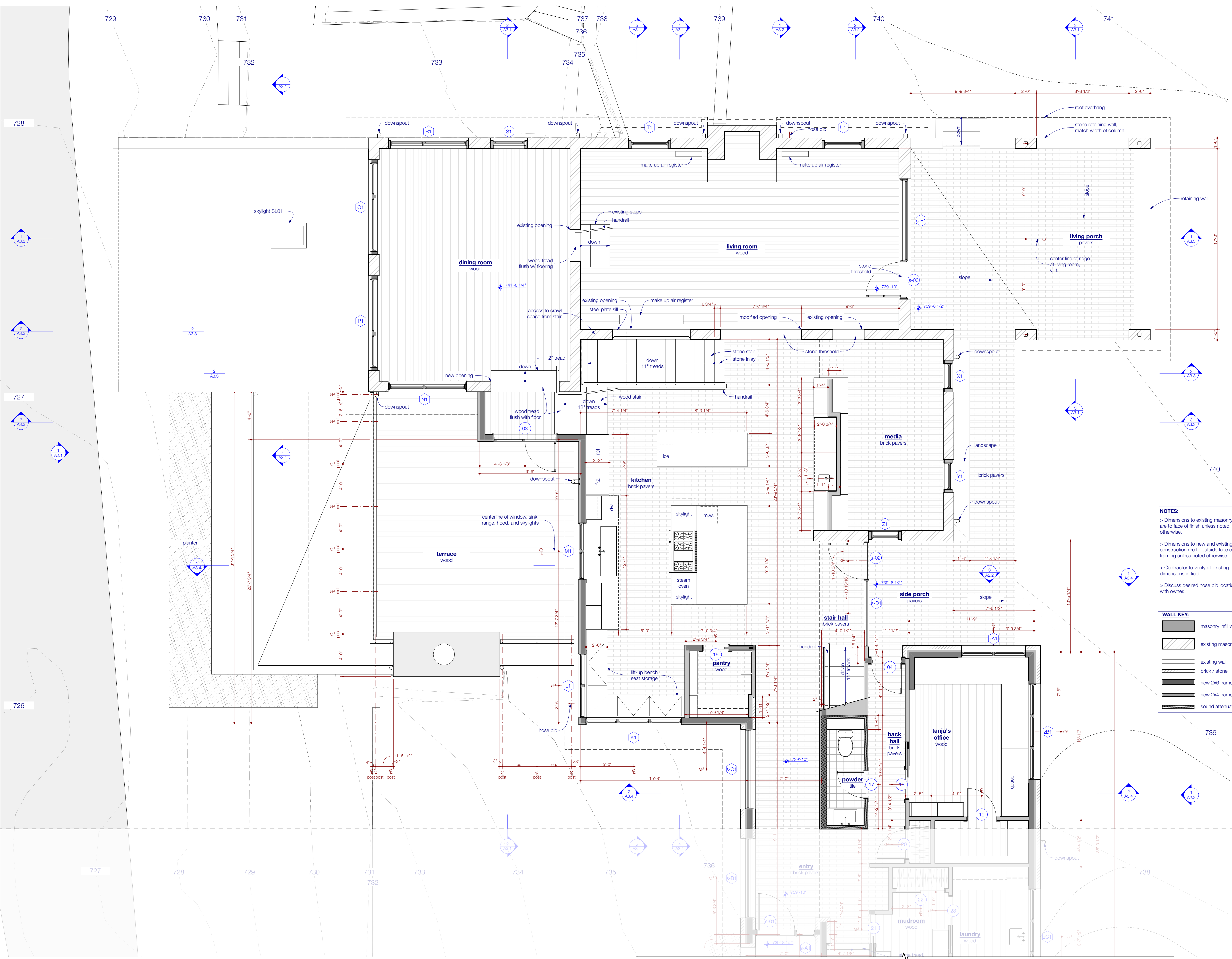
A1.6

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see A1.13
matchline



NOTES:
> Dimensions to existing masonry walls are to face of finish unless noted otherwise.
> Dimensions to new and existing construction are to outside face of framing unless noted otherwise.
> Contractor to verify all existing dimensions in field.
> Discuss desired hose bib locations with owner.

WALL KEY:
masonry infill wall
existing masonry wall
existing wall
brick / stone
new 2x6 framed wall
new 2x4 framed wall
sound attenuation

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

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revisions	
date	description
1	--/--/----
2	--/--/----
3	--/--/----
4	--/--/----
5	--/--/----
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permit set

9/21/21

level 1 floor plan

A1.7

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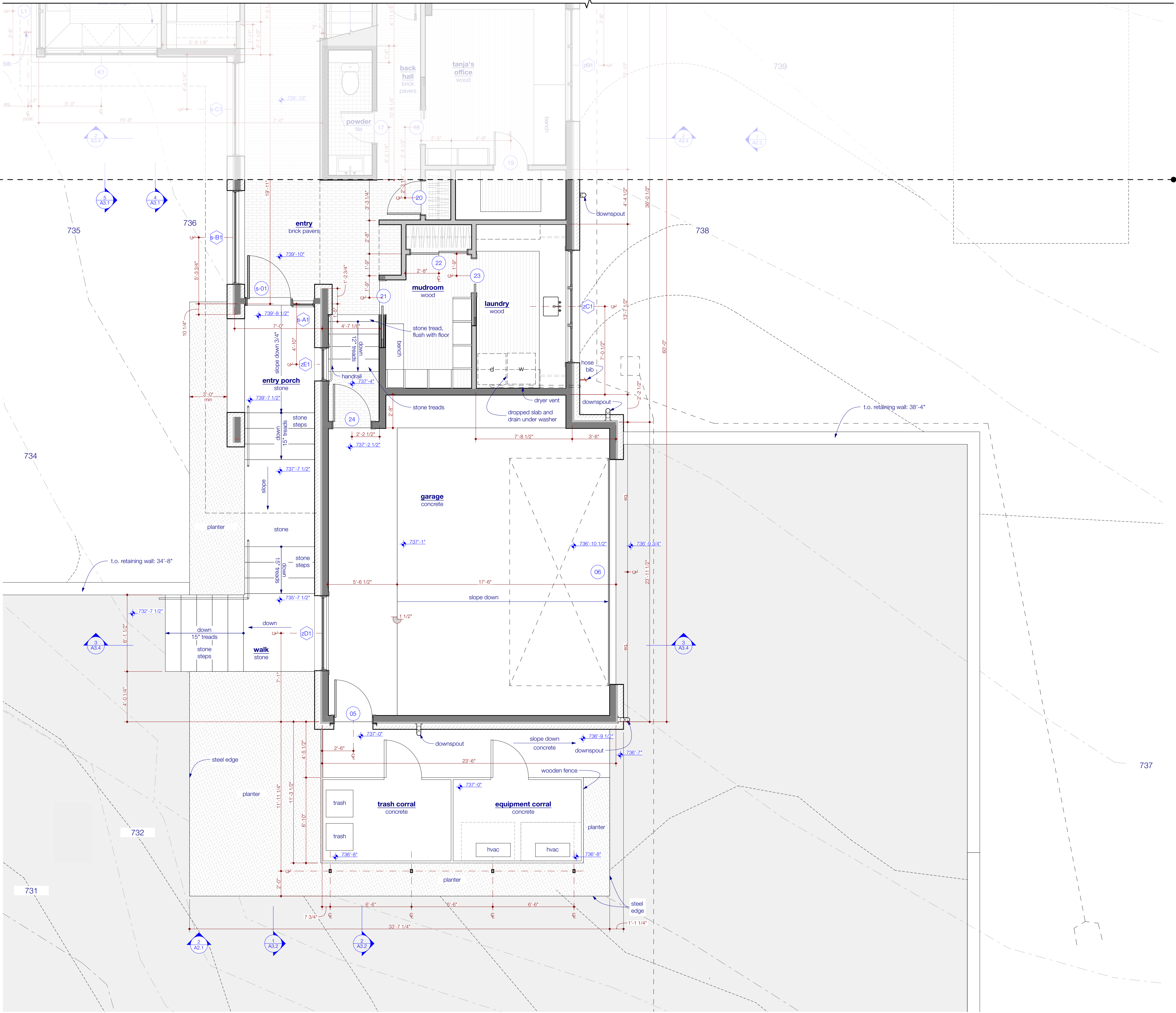
[Signature]

THIS SET TO
REMAIN
ON-SITE

see A1.12
matchline

NOTES:
> Dimensions to existing masonry walls are to face of finish unless noted otherwise.
> Dimensions to new and existing construction are to outside face of framing unless noted otherwise.
> Contractor to verify all existing dimensions in field.
> Discuss desired hose bib locations with owner.

WALL KEY:
masonry infill wall
existing masonry wall
existing wall
brick / stone
new 2x6 framed wall
new 2x4 framed wall
sound attenuation



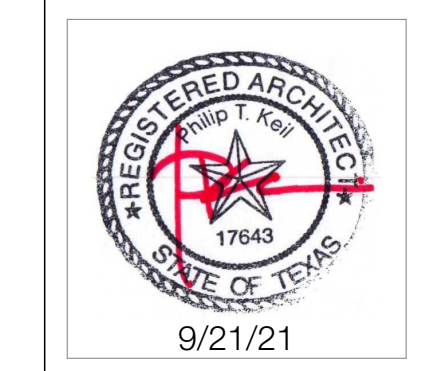
1 main level
SCALE: 1/4" = 1'-0"

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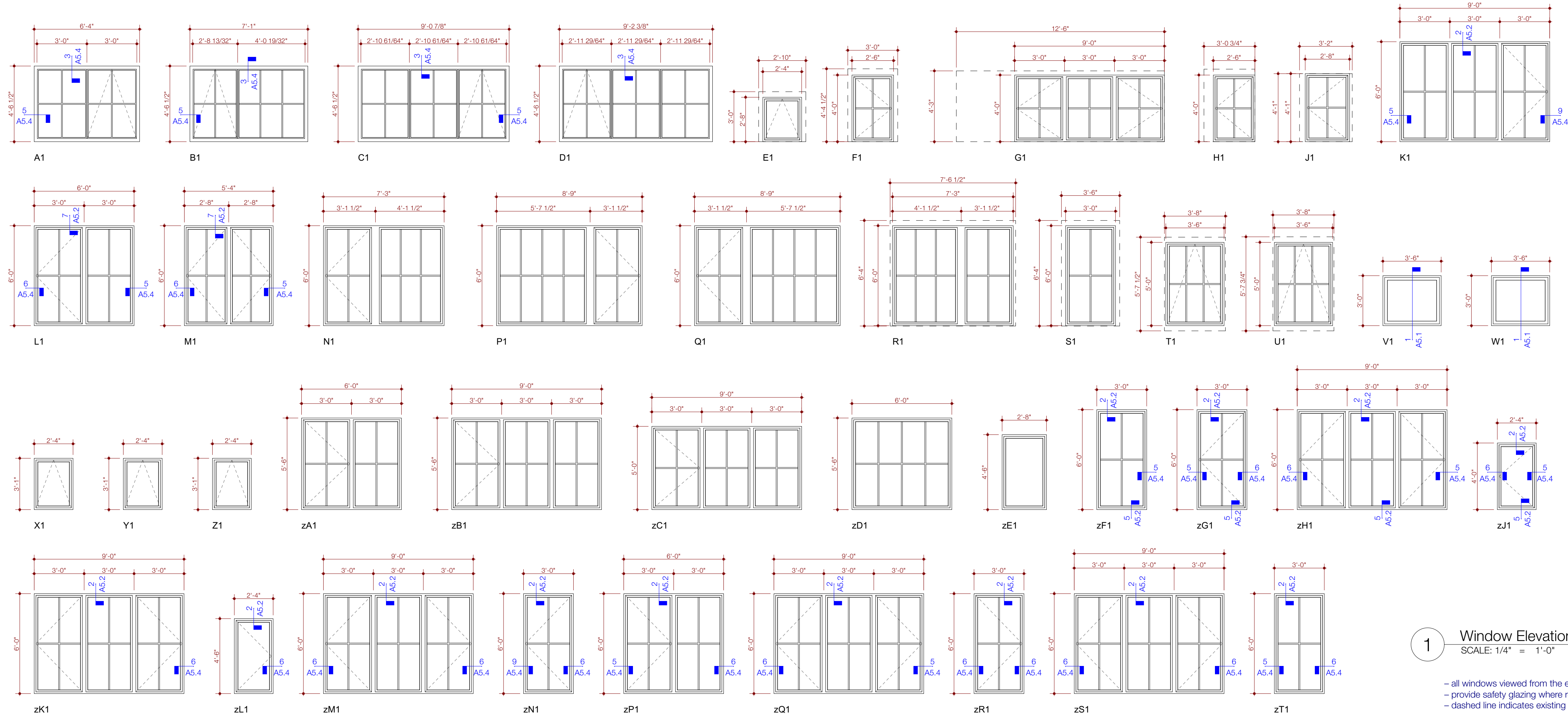
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date	description
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2	11/11/21
3	11/11/21
4	11/11/21
5	11/11/21
6	11/11/21

permit set

9/21/21

level 1 floor plan

A1.8



WINDOW SCHEDULE		— dimensions are of frame size				
key	location	type	width	height	head height	notes
A1	master bedroom	clad combo	6'-4"	4'-6 1/2"	6'-10 3/4"	
B1	master bedroom	clad combo	7'-1"	4'-6 1/2"	6'-10 3/4"	
C1	master bedroom	clad combo	9'-0 7/8"	4'-6 1/2"	6'-10 3/4"	
D1	master bedroom	clad combo	9'-2 3/8"	4'-6 1/2"	6'-10 3/4"	
E1	master bath w.c.	clad awning	2'-4"	3'-0"	6'-6"	
F1	master bath	clad casement	2'-6"	4'-0"	5'-11"	
G1	master bath	clad combo	8'-8"	4'-0"	5'-8 3/4"	4" mull caps
H1	master bath shower	clad casement	2'-6 5/8"	4'-0"	5'-9 3/4"	
J1	living room	clad awning	2'-8"	3'-0"	6'-2"	
K1	kitchen	clad combo	9'-0"	6'-0"	9'-1"	
L1	kitchen	clad combo	6'-0"	6'-0"	9'-1"	
M1	kitchen	clad casement	5'-4"	6'-0"	9'-1"	
N1	dining room	clad combo	7'-2"	6'-0"	9'-8"	2" mull cap
P1	dining room	clad combo	8'-4"	6'-0"	9'-8"	4" mull cap
Q1	dining room	clad combo	8'-4"	6'-0"	9'-8"	4" mull cap
R1	dining room	clad fixed	7'-2"	6'-0"	9'-8"	2" mull cap
S1	dining room	clad fixed	3'-0"	6'-0"	9'-8"	
T1	living room	clad awning	3'-6"	5'-0"	7'-3 3/4"	
U1	living room	clad awning	3'-6"	5'-0"	7'-3 3/4"	
V1	living room dormer	clad fixed	3'-6"	3'-0"	13'-1 1/2"	
W1	living room dormer	clad fixed	3'-6"	3'-0"	13'-1 1/2"	
X1			2'-4"	3'-0"	7'-3 3/4"	
Y1			2'-6"	4'-6"	7'-1 1/2"	
Z1			2'-6"	4'-6"	6'-9 9/32"	
zA1	tanja's office	clad combo	6'-0"	5'-6"	8'-7 1/4"	
zB1	tanja's office	clad combo	9'-0"	5'-6"	8'-7 1/4"	
zC1	laundry	clad combo	9'-0"	5'-0"	8'-7 1/4"	
zD1	garage	clad fixed	6'-0"	5'-6"	8'-0 7/8"	
zE1	entry porch	clad fixed	2'-8"	4'-6"	8'-0 7/8"	

SECOND LEVEL						
zF1	bedroom hallway	clad fixed	3'-0"	6'-0"	8'-1"	
zG1	bedroom 3	clad casement	3'-0"	6'-0"	8'-1"	
zH1	bedroom 3	clad combo	9'-0"	6'-0"	8'-1"	
zJ1	bath 2	clad casement	2'-4"	4'-0"	8'-1"	
zK1	bedroom 2	clad combo	9'-0"	6'-0"	8'-1"	
zL1	bath 1	clad casement	2'-4"	4'-6"	8'-1"	
zM1	bedroom 1	clad combo	9'-0"	6'-0"	8'-1"	
zN1	bedroom 1	clad casement	3'-0"	6'-0"	8'-1"	
zP1	bedroom hallway	clad combo	6'-0"	6'-0"	8'-1"	
zQ1	bedroom hallway	clad combo	9'-0"	6'-0"	8'-1"	
zR1	bedroom hallway	clad casement	3'-0"	6'-0"	8'-1"	
zS1	bedroom hallway	clad combo	9'-0"	6'-0"	8'-1"	
zT1	bedroom hallway	clad fixed	3'-0"	6'-0"	8'-1"	

- 2 window schedule
- see 1/A1.9 for elevations & details
 - head heights of windows at main level are from finished floor at entry
 - head heights of windows on lower level and second level are from adjacent finished floor
 - provide safety glazing as required by code
 - provide egress as required by code

STEEL WINDOW SCHEDULE		— dimensions are of frame size				
key	location	type	width	height	head height	notes
s-A1	entry door	fixed	1'-9 3/4"	8'-8 1/2"	8'-8"	
s-B1	entry hall	fixed	7'-6"	9'-10 1/2"	9'-10 1/2"	
s-C1	entry hall	fixed	7'-6"	9'-10 1/2"	9'-10 1/2"	
s-D1	kitchen hall	fixed	6'-3 7/8"	8'-4 7/8"	8'-4 7/8"	
s-E1	living room	fixed	7'-7 3/4"	9'-0"	8'-11 1/4"	

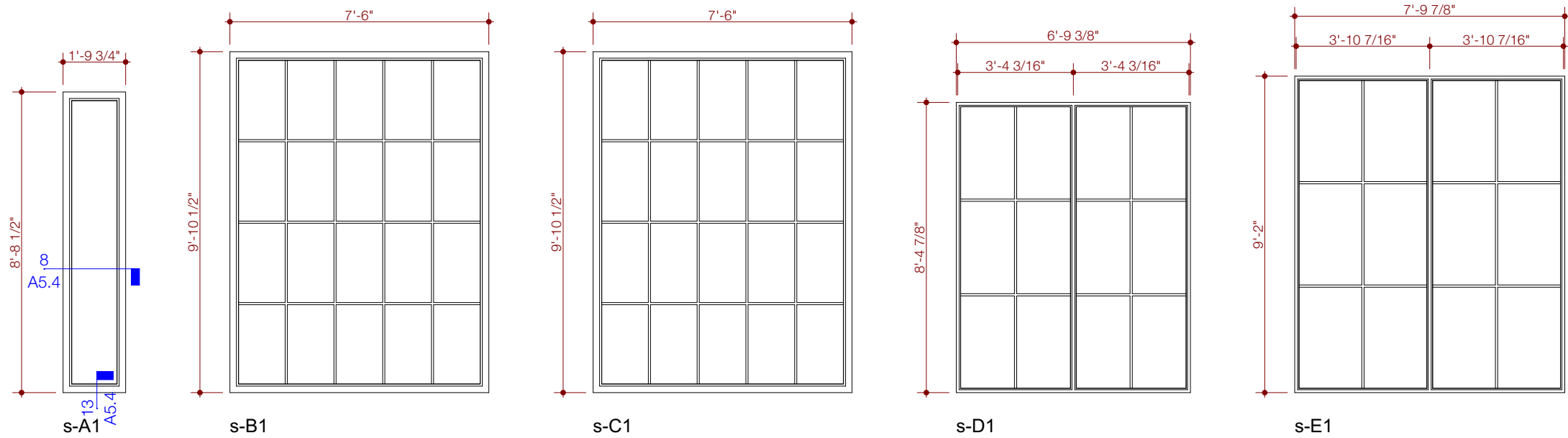
- 4 steel window schedule
- see 3/A1.9 for elevations & details
 - head heights are from main level finished floor at entry
 - provide safety glazing as required by code

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EXTERIOR DOOR SCHEDULE – clad doors to be Windsor Pinnacle Clad Series, Clad Patio French Doors U.N.O. – dimensions are of the unit size						
key	location	width	height	type	lock set	notes
01	master bedroom	3'-1 1/2"	6'-9 1/2"	custom wood w/ glass	entrance w/ deadbolt	
02	bar	2'-9"	7'-1 1/2"	custom wood w/ glass	entrance w/ deadbolt	
03	terrace	6'-0 1/16"	6'-9 7/8"	entrance w/ deadbolt	double door, one fixed panel	
04	powder hallway	2'-11"	8'-4 7/8"	custom wood w/ glass	entrance w/ deadbolt	
05	garage	3'-1 1/2"	8'-0 3/4"	solid core, flush slab	entrance w/ deadbolt	
06	garage	18'-0"	8'-0"	garage door		

1 exterior door schedule

- see 4/A1.16 for door elevations & details
- provide safety glazing as required by code

WEATHERSHIELD DOOR SCHEDULE – Weathershield doors to be Contemporary Slim-line, u.n.o. – dimensions are of the unit size; verify in field						
key	location	width	height	type	lock set	notes
s-01	entry	3'-8"	8'-7 51/64"	steel frame with custom wood entry swing door	entrance w/ deadbolt	adjacent to window s-B2
s-02	kitchen hall	3'-5 3/4"	8'-4 7/8"	steel swing door	entrance w/ deadbolt	adjacent to window s-F1
s-03	living room	3'-6"	9'-0"	steel swing door	entrance w/ deadbolt	adjacent to window s-F1
s-04	wine room	4'-6"	7'-0 1/2"	steel swing door	passage	
s-05	wine room	4'-6"	7'-0 1/2"	steel swing door	passage	

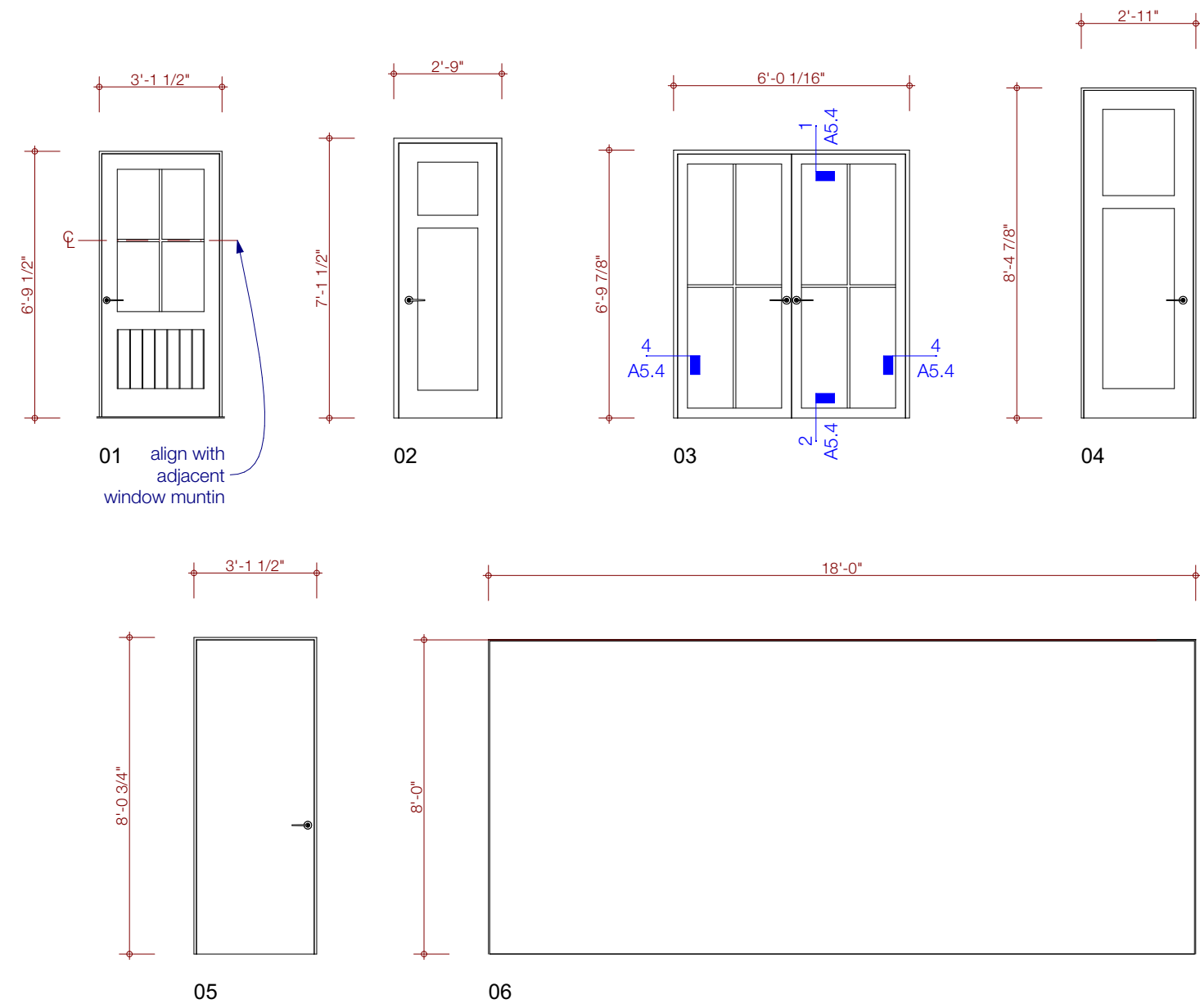
2 steel door schedule

- see 5/A1.16 for door elevations & details
- provide safety glazing as required by code

	INTERIOR DOOR SCHEDULE – dimensions are of leaf size					
LOWER LEVEL	key	location	leaf dimensions	type	lock set	notes
	10	lower level storage	verify in field	custom barn door	passage	
	11	lower level mechanical	2'-6"x6'-8"	solid core, 3 panel	passage	
	12	master bedroom	verify in field	custom barn door	privacy	
	13	master bathroom	2'-8"x6'-8"	solid core, 3 panel; pocket	privacy	
MAIN LEVEL	14	master bathroom w.c.	2'-8"x6'-8"	solid core, 3 panel; pocket	privacy	
	15	cigar lounge	verify in field	custom door	passage	see detail x/A4.x
	16	pantry	2'-4"x8'-0"	solid core, 3 panel; pocket	passage	
	17	powder	2'-6"x7'-0 3/8"	solid core, 3 panel	privacy	
	18	tanja's office	2'-8"x8'-0"	solid core, 3 panel; pocket	privacy	
SECOND LEVEL	19	tanja's office closet	2'-8"x8'-0"	solid core, 3 panel; pocket	passage	
	20	entry closet	2'-8"x8'-0"	solid core, 3 panel; pocket	passage	
	21	mudroom	2'-8"x8'-0 3/8"	solid core, 3 panel; pocket	passage	
	22	mudroom closet	4'-5 3/4"x8'-0 1/8"	solid core, 3 panel; slider	privacy	
	23	laundry	2'-8"x8'-0"	solid core, 3 panel; pocket	passage	
	24	garage	3'-0"x8'-0"	solid core, flush slab	entrance w/ deadbolt	
	25	bedroom 3	2'-8"x8'-0"	solid core, 3 panel	privacy	
	26	bedroom 3 closet	2'-2"x8'-0"	solid core, 3 panel; pocket	passage	
	27	bath 2	2'-6"x8'-0"	solid core, 3 panel	privacy	
	28	bedroom 2	2'-8"x8'-0"	solid core, 3 panel	privacy	
	29	bedroom 2 closet	2'-5"x8'-0"	solid core, 3 panel; pocket	passage	
	30	bedroom 1	2'-8"x8'-0"	solid core, 3 panel	privacy	
	31	bath 1	2'-6"x8'-0"	solid core, 3 panel	privacy	
	32	bath 1 closet	2'-6"x8'-0"	solid core, 3 panel; pocket	passage	

3 interior door schedule

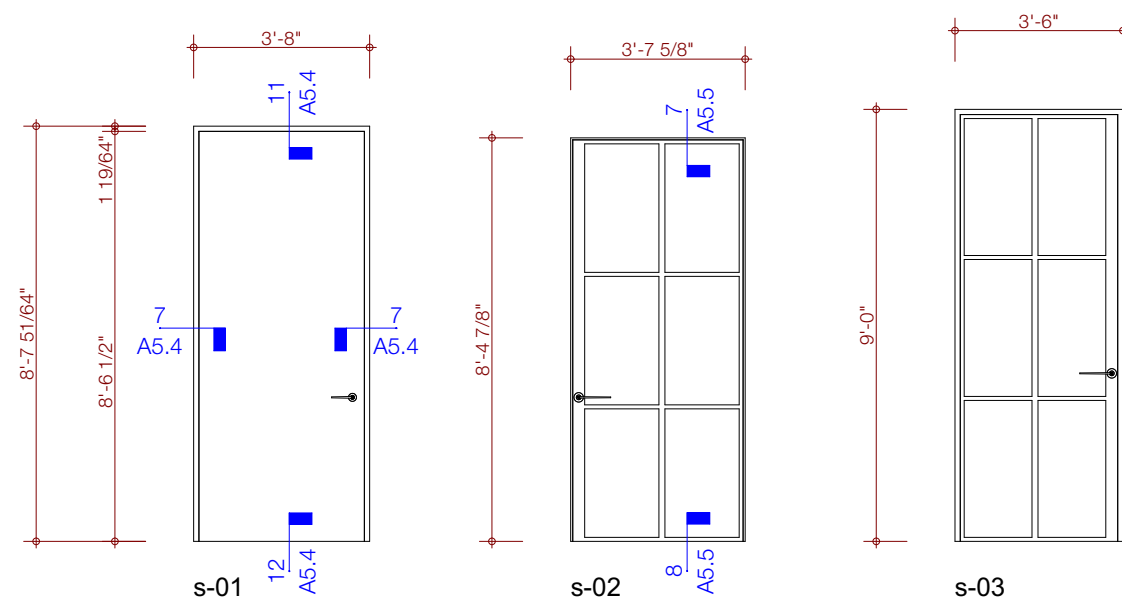
- see 4/A1.10 for door elevations & details
- provide safety glazing as required by code



4 exterior door elevations

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

- all doors viewed from the exterior
- provide safety glazing where required by code



5 weathershield door elevations

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

- all doors viewed from the exterior
- provide safety glazing where required by code

PERMIT DOCUMENTS

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Signature of ATS Engineers, Inc.

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Lee Residence

402 Camp Craft Road
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9/21/21

revisions	
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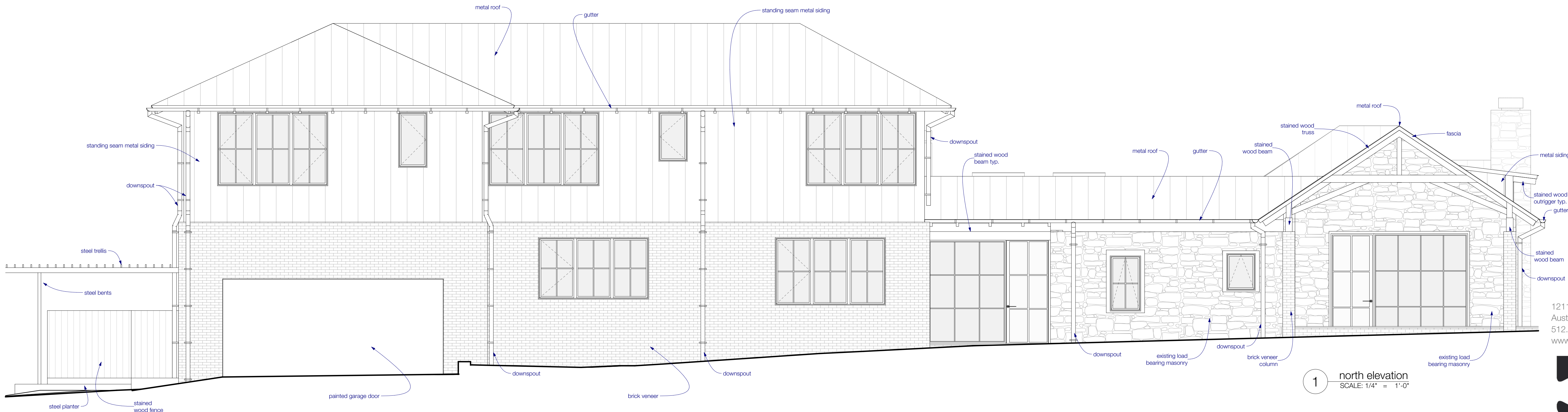
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door schedule / elev.

A1.10

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West Lake Hills, Texas 78746

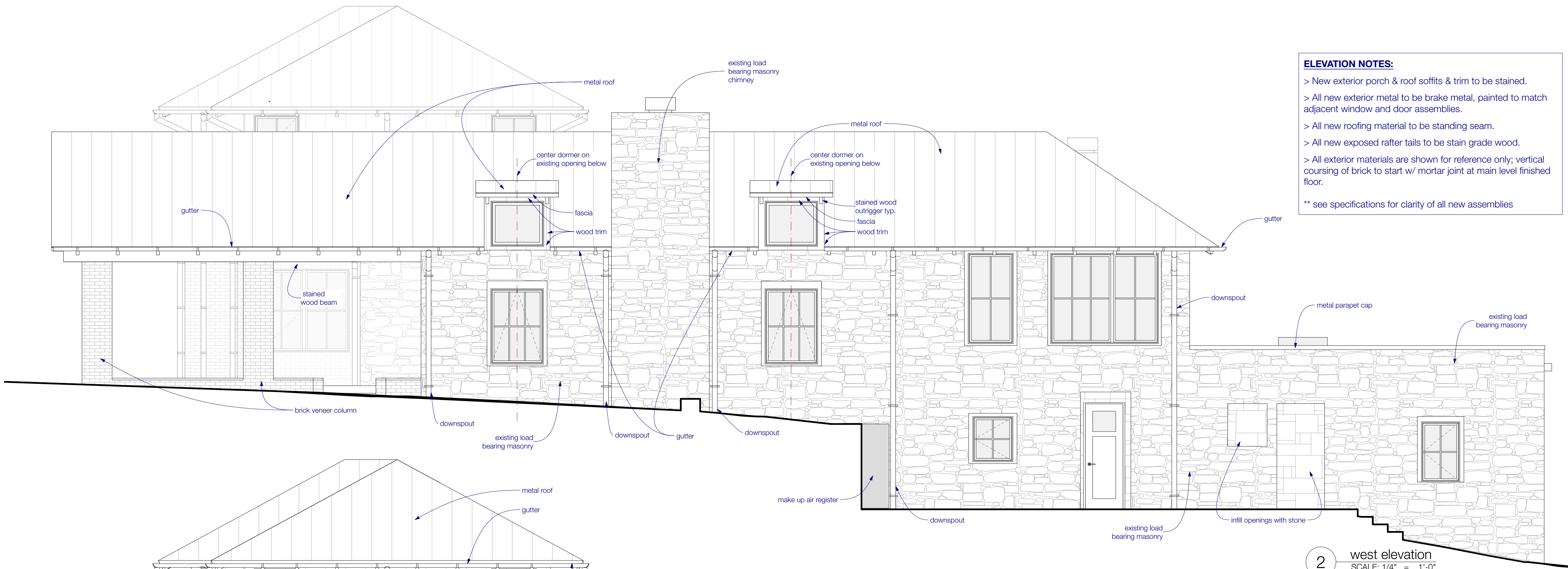


1 north elevation
SCALE: 1/4" = 1'-0"

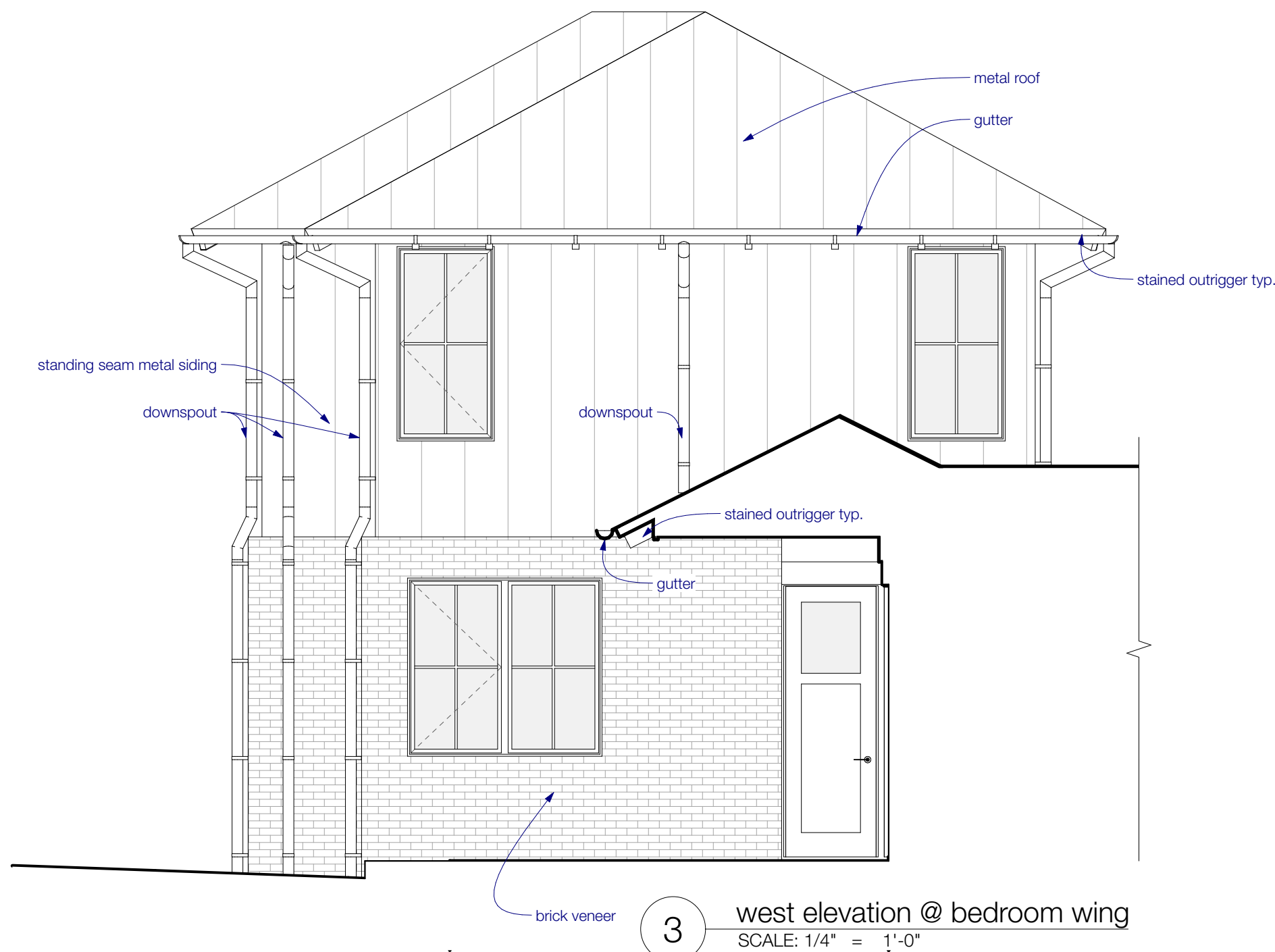
ELEVATION NOTES:

- > New exterior porch & roof soffits & trim to be stained.
- > All new exterior metal to be brake metal, painted to match adjacent window and door assemblies.
- > All new roofing material to be standing seam.
- > All new exposed rafter tails to be stain grade wood.
- > All exterior materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor.

** see specifications for clarity of all new assemblies



2 west elevation
SCALE: 1/4" = 1'-0"



3 west elevation @ bedroom wing
SCALE: 1/4" = 1'-0"

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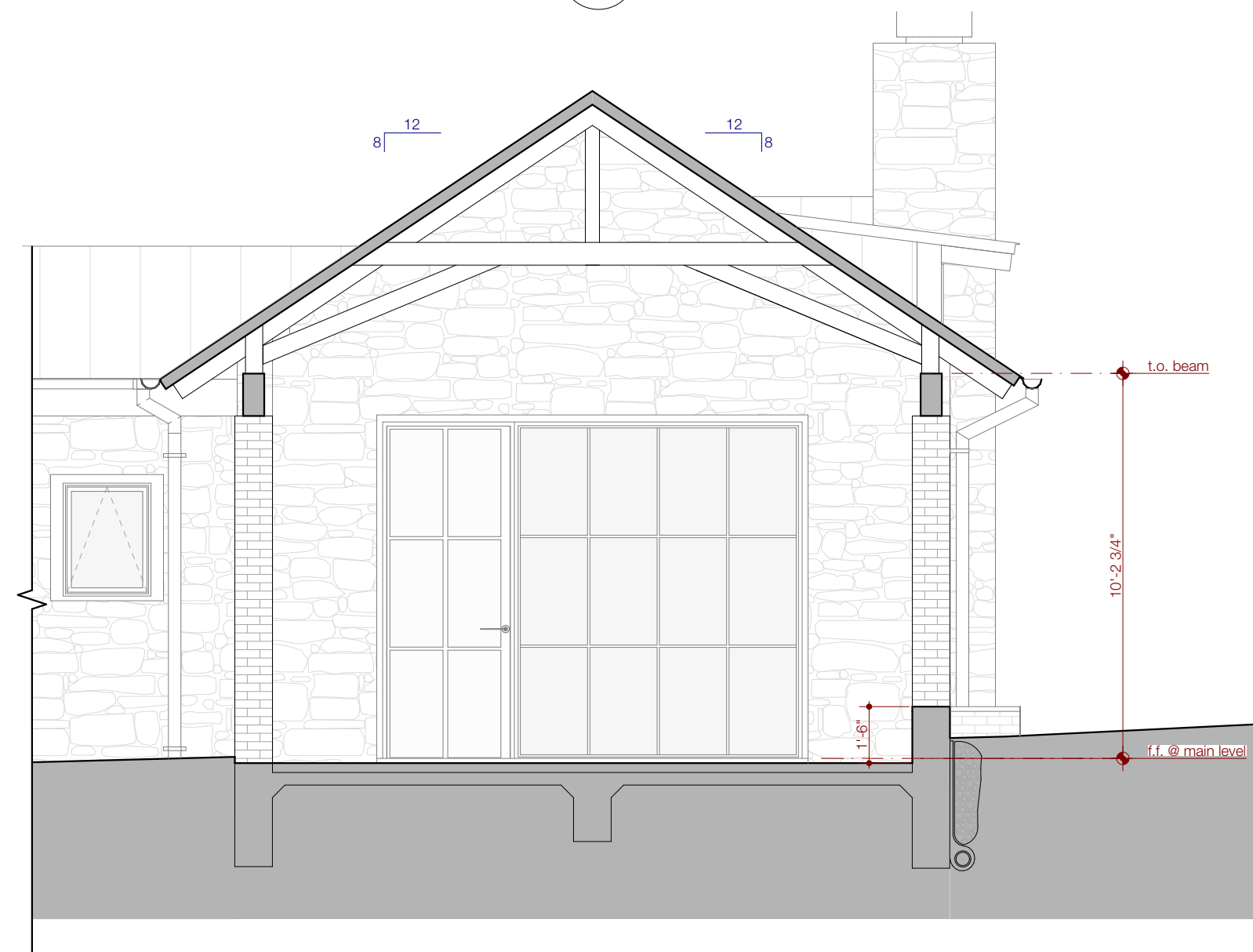
9/21/21

elevations

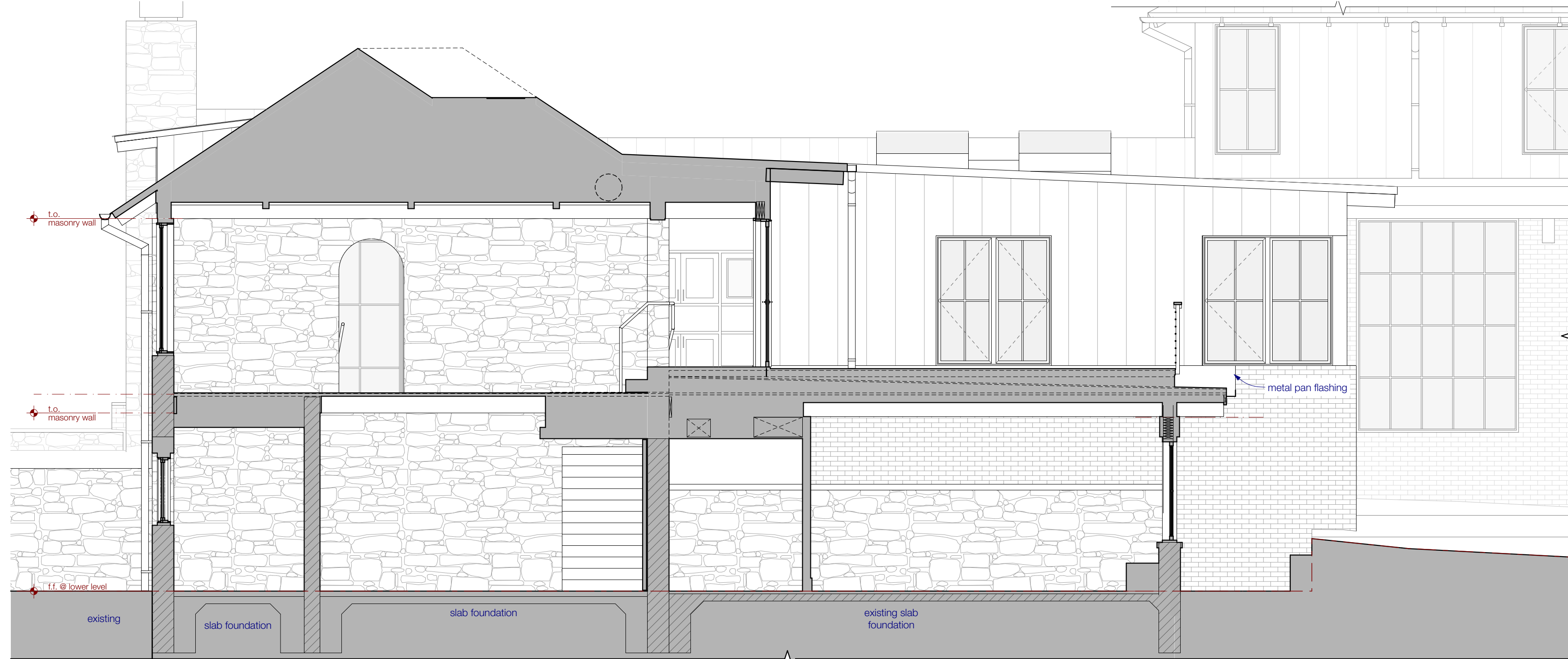
A2.2



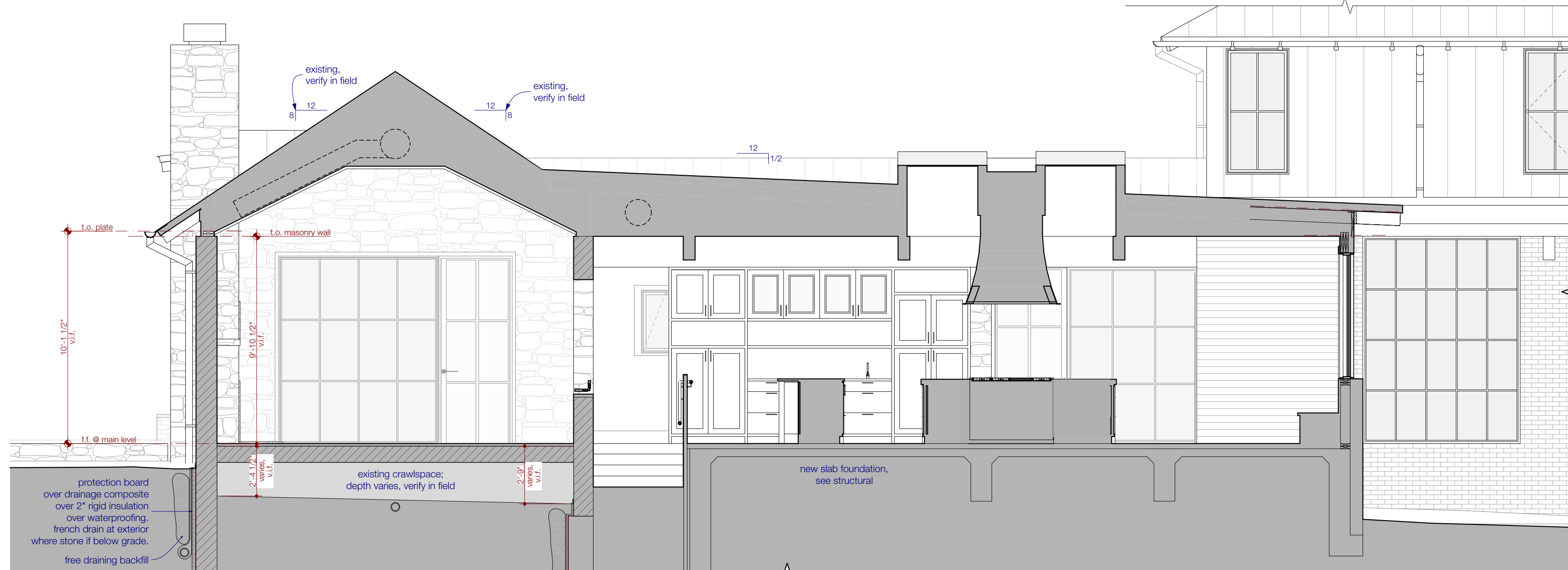
1 section @ master bath and closet
SCALE: 1/4" = 1'-0"



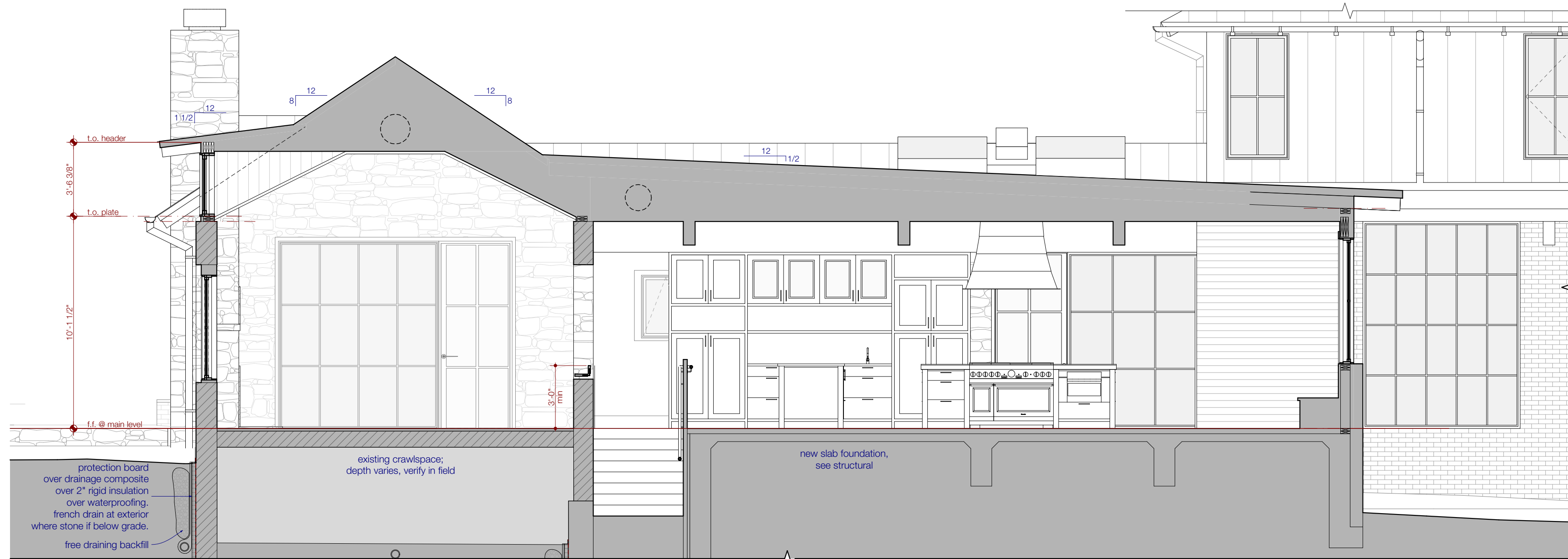
3 section @ living porch
SCALE: 1/4" = 1'-0"



2 section @ master bedroom / dining
SCALE: 1/4" = 1'-0"



4 section @ living / kitchen skylight
SCALE: 1/4" = 1'-0"



5 section @ living dormer / kitchen
SCALE: 1/4" = 1'-0"

PERMIT DOCUMENTS

This plan has been reviewed by AT'S Engineers, Inspectors and Surveyors for code compliance and adopted jurisdictional ordinances. This stamp of review in no way alleviates the responsibility of the owner, contractor, or architect to comply with all codes, ordinances, standards, and federal laws. Copy of plan bearing this stamp shall be available on the jobsite at all times.

[Signature]

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SECTION NOTES:

- > all new gutters & downspouts
- > all new guardrails & handrails
- > all roofing to be replaced
- > existing framing & structure are shown for reference only; contractor to verify final location of existing structure & coordinate w/ architect upon any interference w/ new assemblies
- > all materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor

KEY:

 existing structure

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1	10/1/21
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3	10/1/21
4	10/1/21
5	10/1/21
6	10/1/21

permit set

9/21/21

sections

A3.1

PERMIT DOCUMENTS

This set of plans has been reviewed by ATS Engineers, Inc. for compliance with the Texas State Building Code. The undersigned hereby certifies that the plans comply with all applicable codes and regulations. Copy of plan bearing this stamp shall be available on the project at all times.

[Signature]

THIS SET TO
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ON-SITE

SECTION NOTES:

- > all new gutters & downspouts
- > all new guardrails & handrails
- > all roofing to be replaced
- > existing framing & structure are shown for reference only; contractor to verify final location of existing structure & coordinate w/ architect upon any interference w/ new assemblies
- > all materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor
- ** see specifications for clarity of all new assemblies

KEY:

 existing structure



1 section @ living / entry hall
SCALE: 1/4" = 1'-0"

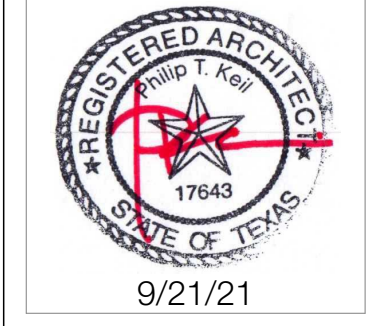


2 section @ living / media / stair
SCALE: 1/4" = 1'-0"

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9/21/21

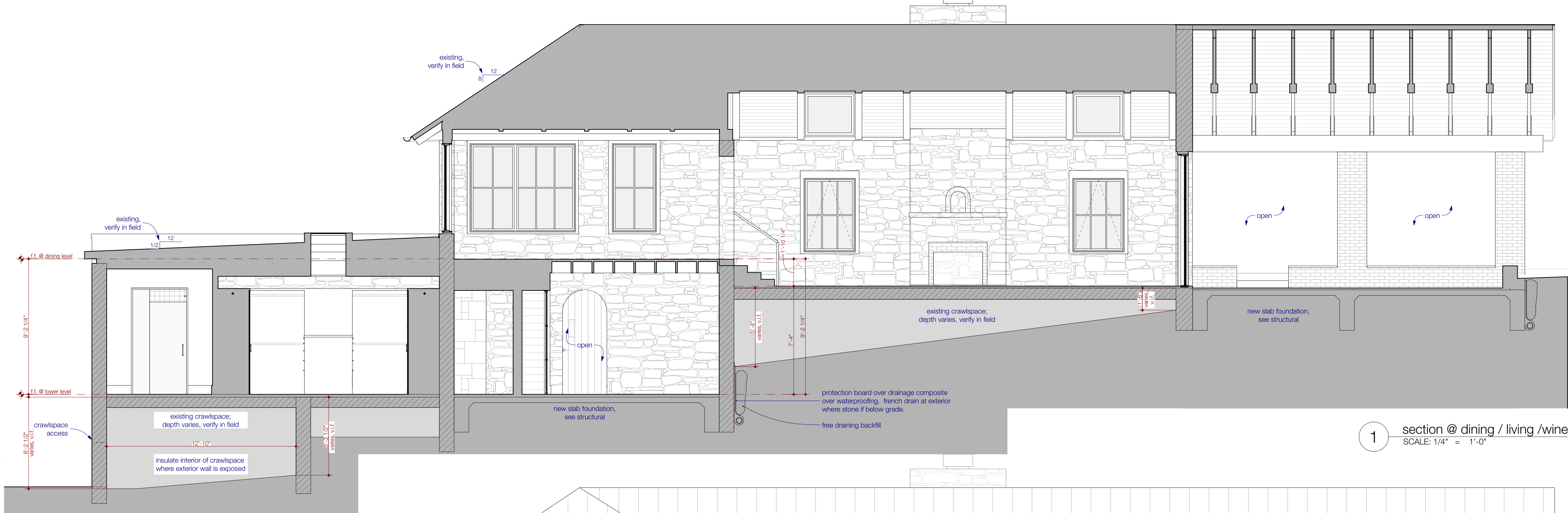
sections

A3.2

PERMIT DOCUMENTS

This plan has been reviewed by ATS Engineers, Inc. and is subject to the code compliance and design jurisdiction of the local authority. The engineer does not assume any liability for the design or construction of the project. The engineer's responsibility is limited to the design and construction of the project. The engineer's design is based on the information provided by the owner and the contractor. The engineer's design is based on the information provided by the owner and the contractor. The engineer's design is based on the information provided by the owner and the contractor.

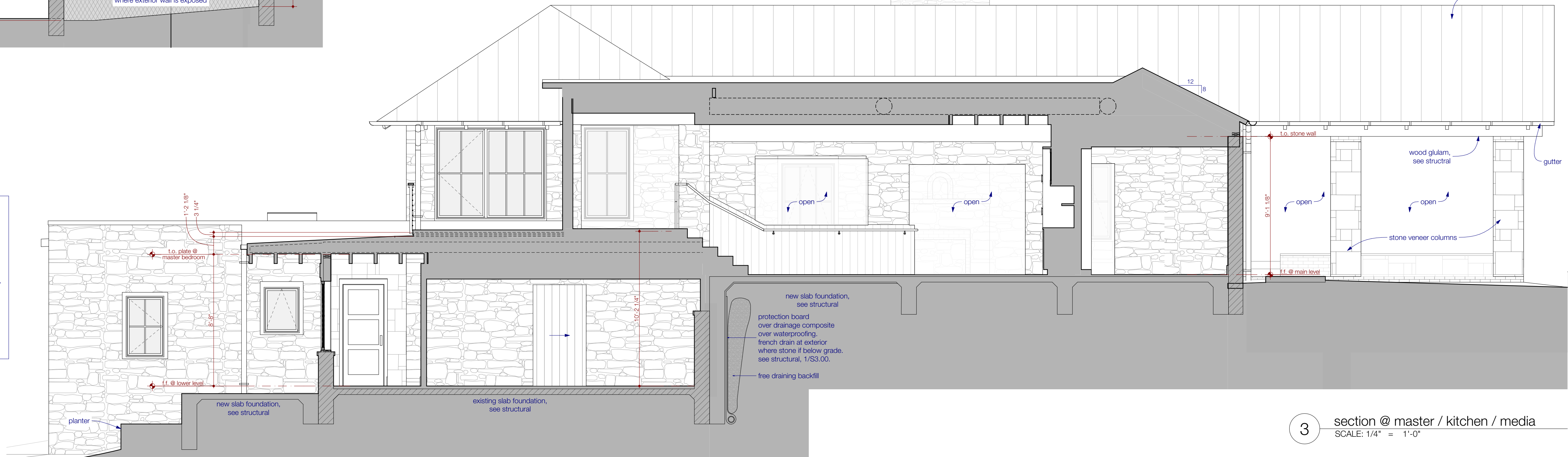
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1 section @ dining / living / wine
SCALE: 1/4" = 1'-0"



2 section @ dining / stair / master bathroom
SCALE: 1/4" = 1'-0"

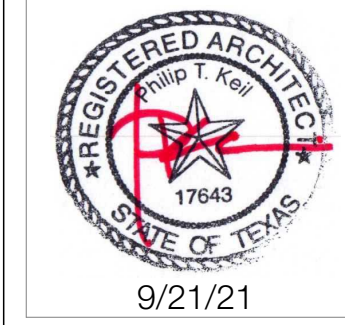


3 section @ master / kitchen / media
SCALE: 1/4" = 1'-0"

SECTION NOTES:

- > all new gutters & downspouts
- > all new guardrails & handrails
- > all roofing to be replaced
- > existing framing & structure are shown for reference only; contractor to verify final location of existing structure & coordinate w/ architect upon any interference w/ new assemblies
- > all materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor
- ** see specifications for clarity of all new assemblies

KEY:
existing structure



revisions	
date	description
1	11/11/21
2	11/11/21
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sections

A3.3



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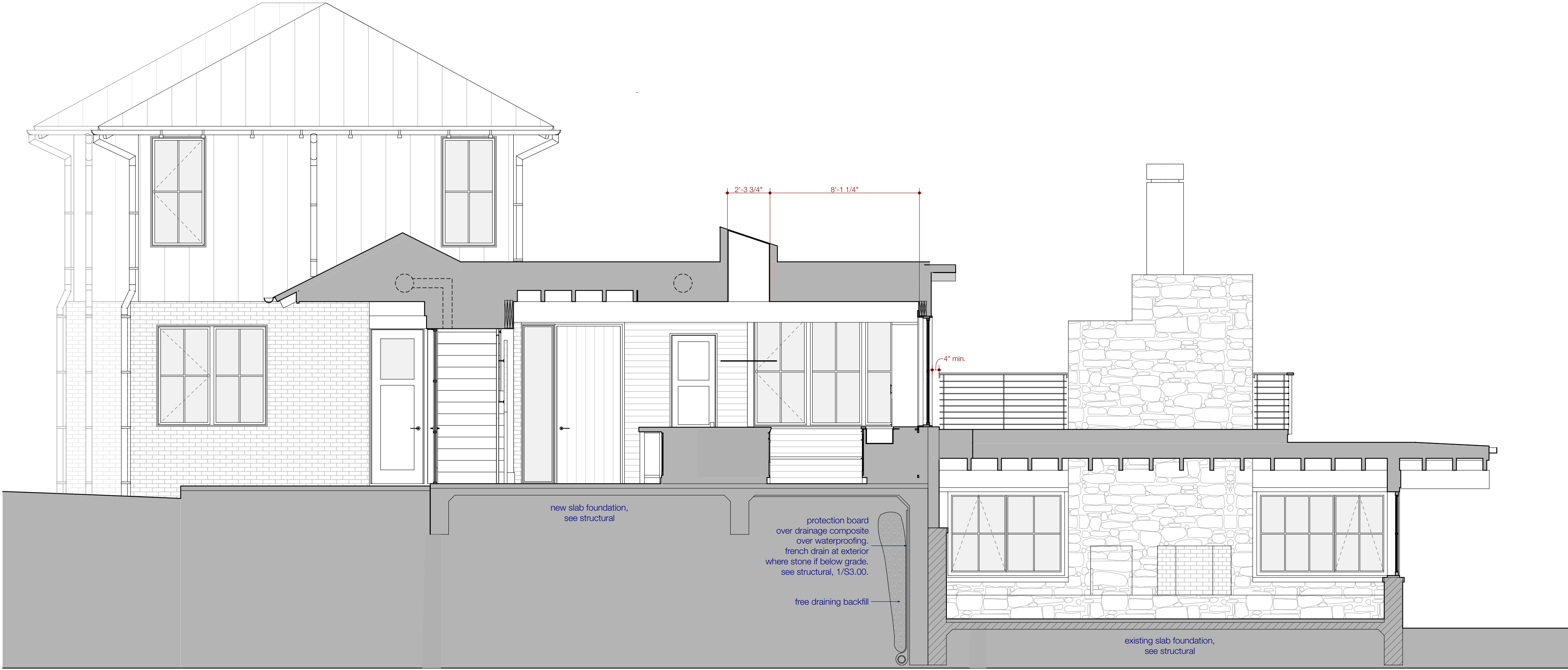
PERMIT SET

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This plan has been reviewed by ATS Engineers, Inc. and is subject to the code compliance and inspection jurisdiction of the local authority having jurisdiction. This stamp review is not a warranty of the accuracy of the information provided. The user of this plan is responsible for obtaining all necessary permits and for compliance with all applicable codes and regulations. Copy of plans bearing this stamp shall be available on the project at all times.

[Signature]

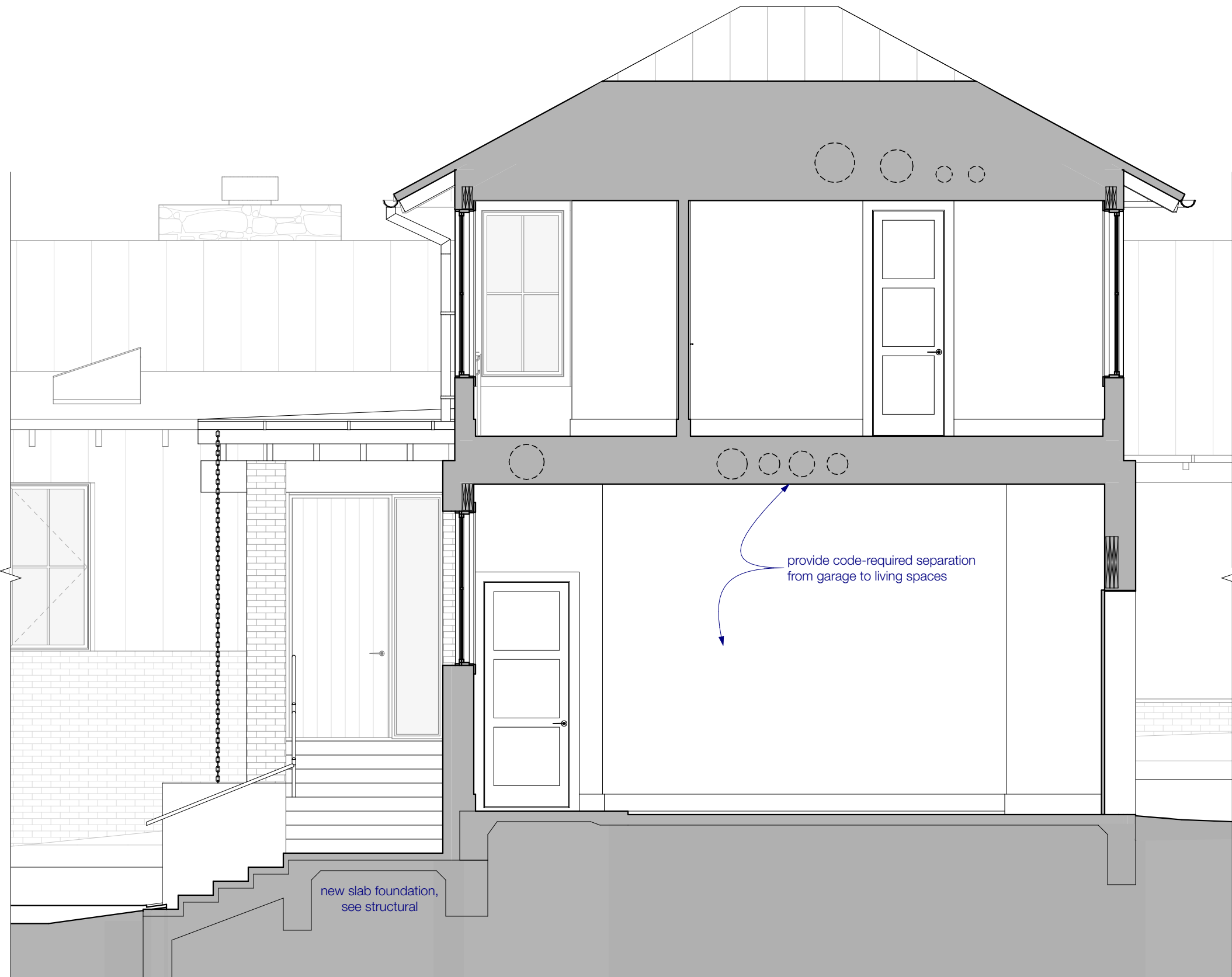
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1 section @ kitchen / stair / porch
SCALE: 1/4" = 1'-0"



2 section @ entry hallway / bedroom wing
SCALE: 1/4" = 1'-0"



3 section @ garage / bedroom wing
SCALE: 1/4" = 1'-0"

SECTION NOTES:

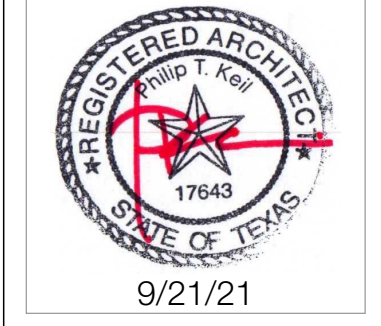
- > all new gutters & downspouts
- > all new guardrails & handrails
- > all roofing to be replaced
- > existing framing & structure are shown for reference only; contractor to verify final location of existing structure & coordinate w/ architect upon any interference w/ new assemblies
- > all materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor
- ** see specifications for clarity of all new assemblies

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sections

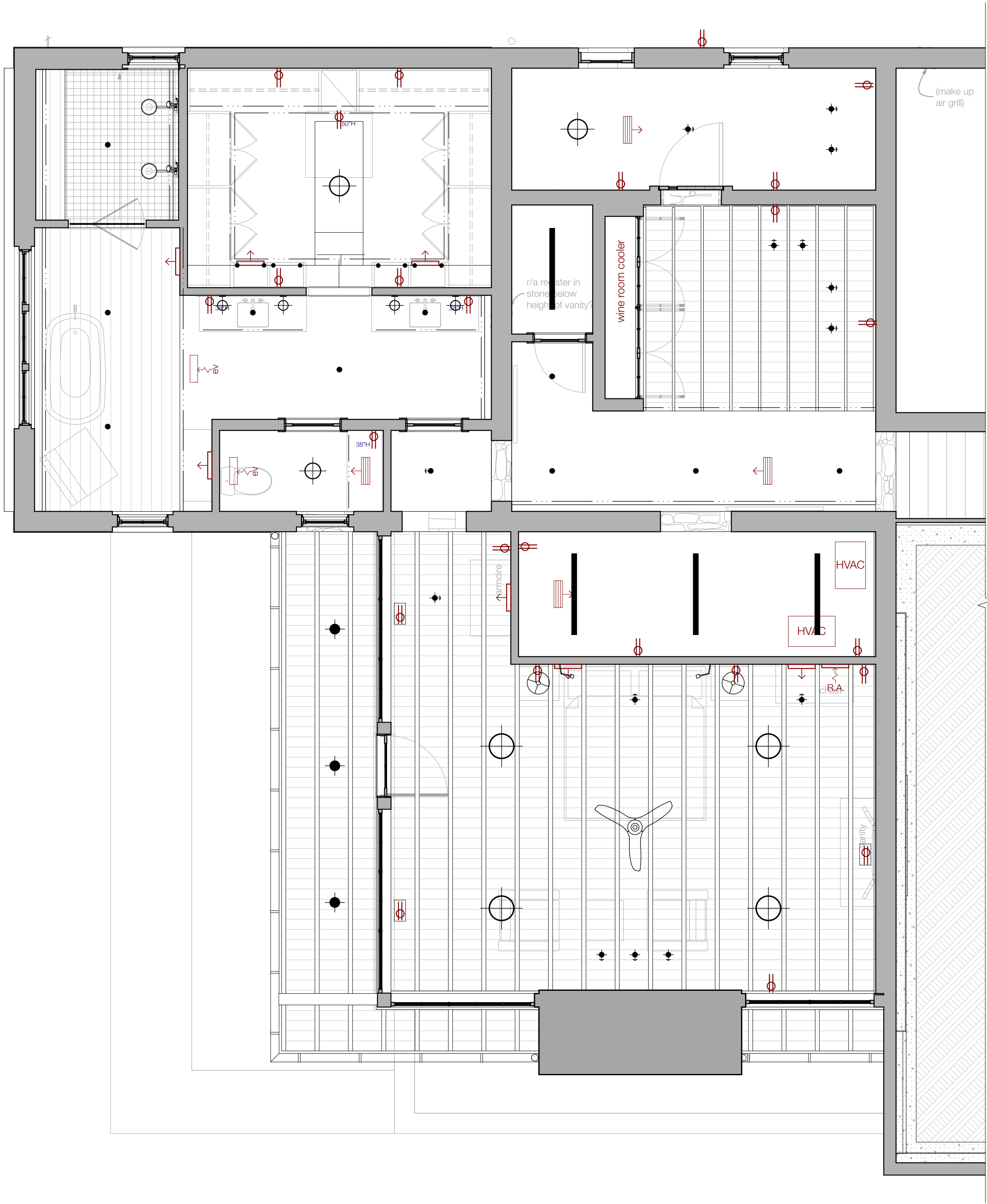
A3.4

PERMIT DOCUMENTS

These plans have been reviewed by AT'S Engineers, Inc. for code compliance and adopted jurisdictional ordinance. This stamp of review is not a guarantee of the accuracy of the information provided. The user assumes all responsibility for the accuracy of the information provided. Copy of plans bearing this stamp shall be available for review at all times.

[Signature]

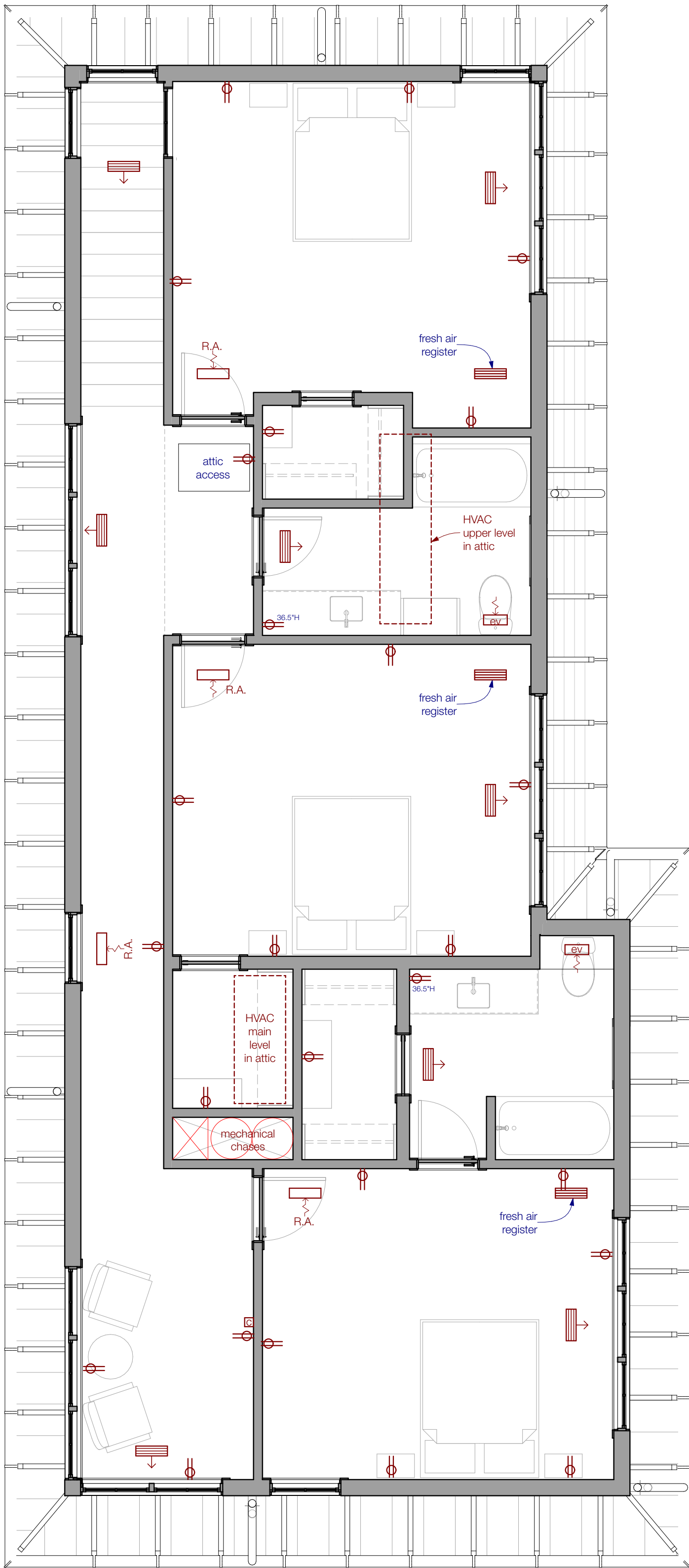
THIS SET TO
REMAIN
ON-SITE



- NOTE:**
1. Lighting Equipment Schedule and Fixture Cut Sheets to be provided by lighting designer. Consult with owner and Interior Designer for decorative fixture selections.
 2. See landscape drawings for additional outdoor lighting.
 3. Heights of electrical devices are shown from finish floor to center of electrical device. Duplex outlets shown with height followed by "H" shall be mounted in a horizontal orientation.
 4. Heights of electrical devices at level 1 shall conform to city of Austin visibility ordinance. Mount duplex outlets as low as ordinance will allow.
 5. Mount duplex outlets at level 2, horizontally, 8" above finish floor to centerline of box.
 6. Mount light switches at 39.5", unless noted otherwise.
 7. Provide power and gas as needed for all appliances.

electrical legend	
	switch
	dimmer switch
	3 way switch
	duplex outlet
	cable
	monopoint fixture
	wall mounted fixture
	surface mounted fixture
	recessed fixture
	step light
	strip light
	ceiling fan
	supply register (directional)
	supply register
	supply register: m - moudin, l - linear, c - curved, f - floor
	wall register
	exhaust vent
	return air register
	R.A.
	surface mounted fixture
	pendant
	adjustable recessed fixture
	thermostat
	keypad
	Radio RA2 circuit

1 lower level ME
SCALE: 1/4" = 1'-0"

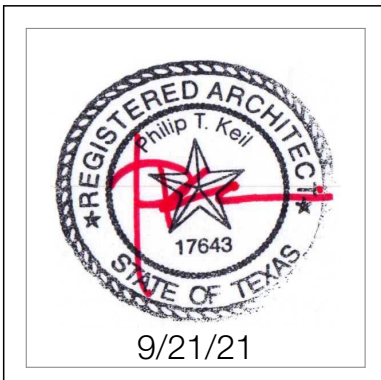


2 level 2 ME
SCALE: 1/4" = 1'-0"

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6	9/21/21

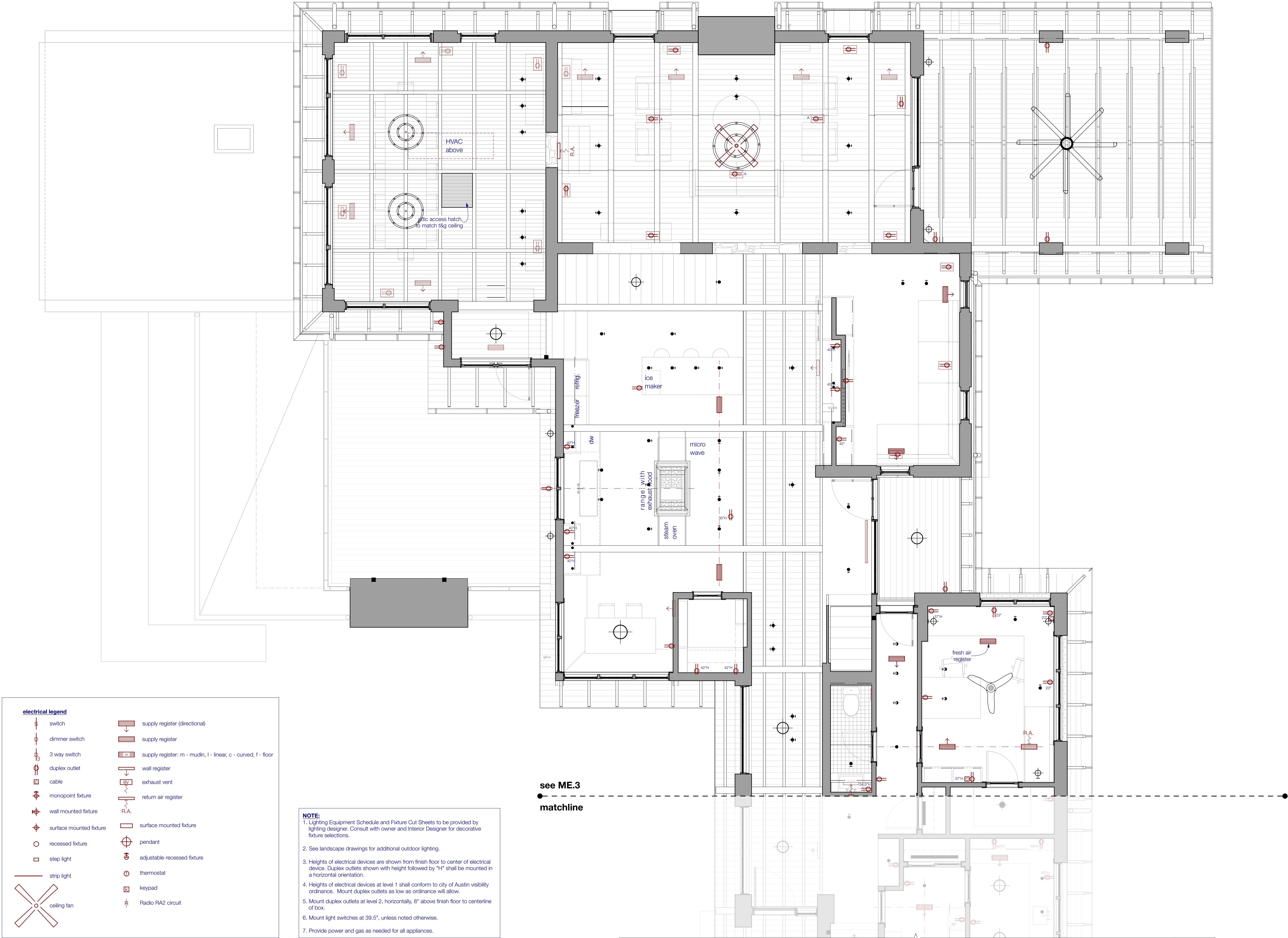
permit set	
9/21/21	mechanical / electrical
ME.1	

PERMIT DOCUMENTS

These plans have been reviewed by ATS Engineers, Inc. as the Engineer of Record for the project. The Engineer's review is limited to the electrical code requirements and does not constitute a review of the project for compliance with all applicable codes, ordinances, state and federal laws. Copy of plans bearing this stamp shall be available on the project at all times.

[Signature]

THIS SET TO
REMAIN
ON-SITE



electrical legend

- | | |
|-------------------------|---|
| switch | supply register (directional) |
| dimmer switch | supply register |
| 3 way switch | supply register: m - mudin, l - linear, c - curved, f - floor |
| duplex outlet | wall register |
| cable | exhaust vent |
| monopoint fixture | return air register |
| wall mounted fixture | R.A. |
| surface mounted fixture | surface mounted fixture |
| recessed fixture | pendant |
| step light | adjustable recessed fixture |
| strip light | thermostat |
| ceiling fan | keypad |
| | Radio RA2 circuit |

NOTE:

1. Lighting Equipment Schedule and Fixture Cut Sheets to be provided by lighting designer. Consult with owner and Interior Designer for decorative fixture selections.
2. See landscape drawings for additional outdoor lighting.
3. Heights of electrical devices are shown from finish floor to center of electrical device. Duplex outlets shown with height followed by "H" shall be mounted in a horizontal orientation.
4. Heights of electrical devices at level 1 shall conform to city of Austin visibility ordinance. Mount duplex outlets as low as ordinance will allow.
5. Mount duplex outlets at level 2, horizontally, 6" above finish floor to centerline of box.
6. Mount light switches at 39.5", unless noted otherwise.
7. Provide power and gas as needed for all appliances.

see ME.3

matchline

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

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permit set

9/21/21

mechanical / electrical

ME.2

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[Signature]

THIS SET TO
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electrical legend	
	switch
	dimmer switch
	3 way switch
	duplex outlet
	cable
	monopoint fixture
	wall mounted fixture
	surface mounted fixture
	recessed fixture
	step light
	strip light
	ceiling fan
	supply register (directional)
	supply register
	supply register: m - mudin, l - linear, c - curved, f - floor
	wall register
	exhaust vent
	return air register
	R.A.
	surface mounted fixture
	pendant
	adjustable recessed fixture
	thermostat
	keypad
	Radio RA2 circuit

NOTE:
1. Lighting Equipment Schedule and Fixture Cut Sheets to be provided by lighting designer. Consult with owner and Interior Designer for decorative fixture selections.
2. See landscape drawings for additional outdoor lighting.
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4. Heights of electrical devices at level 1 shall conform to city of Austin visibility ordinance. Mount duplex outlets as low as ordinance will allow.
5. Mount duplex outlets at level 2, horizontally, 6" above finish floor to centerline of box.
6. Mount light switches at 39.5", unless noted otherwise.
7. Provide power and gas as needed for all appliances.

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



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mechanical / electrical
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ME.3



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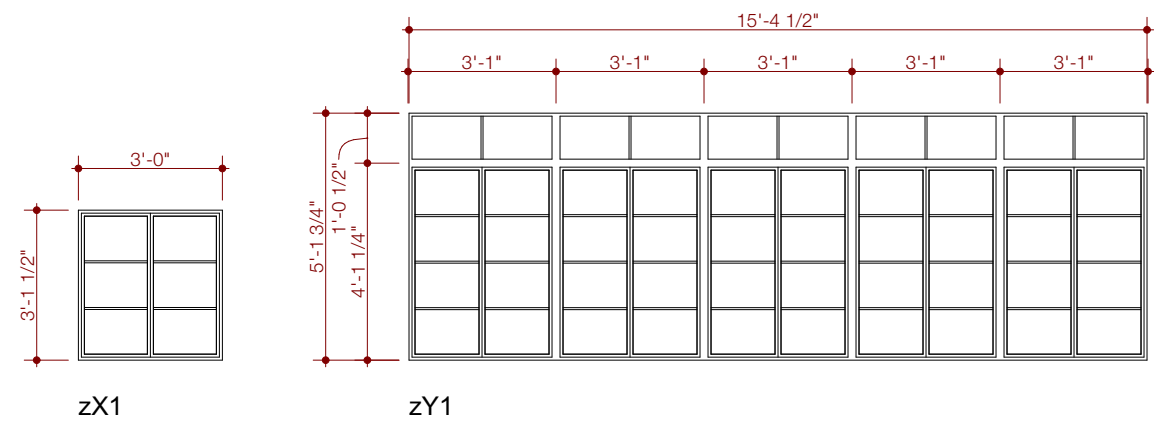
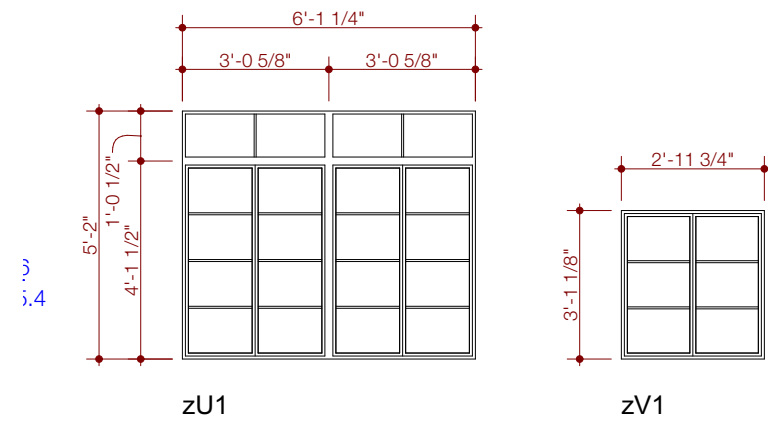
PERMIT SET

PERMIT DOCUMENTS

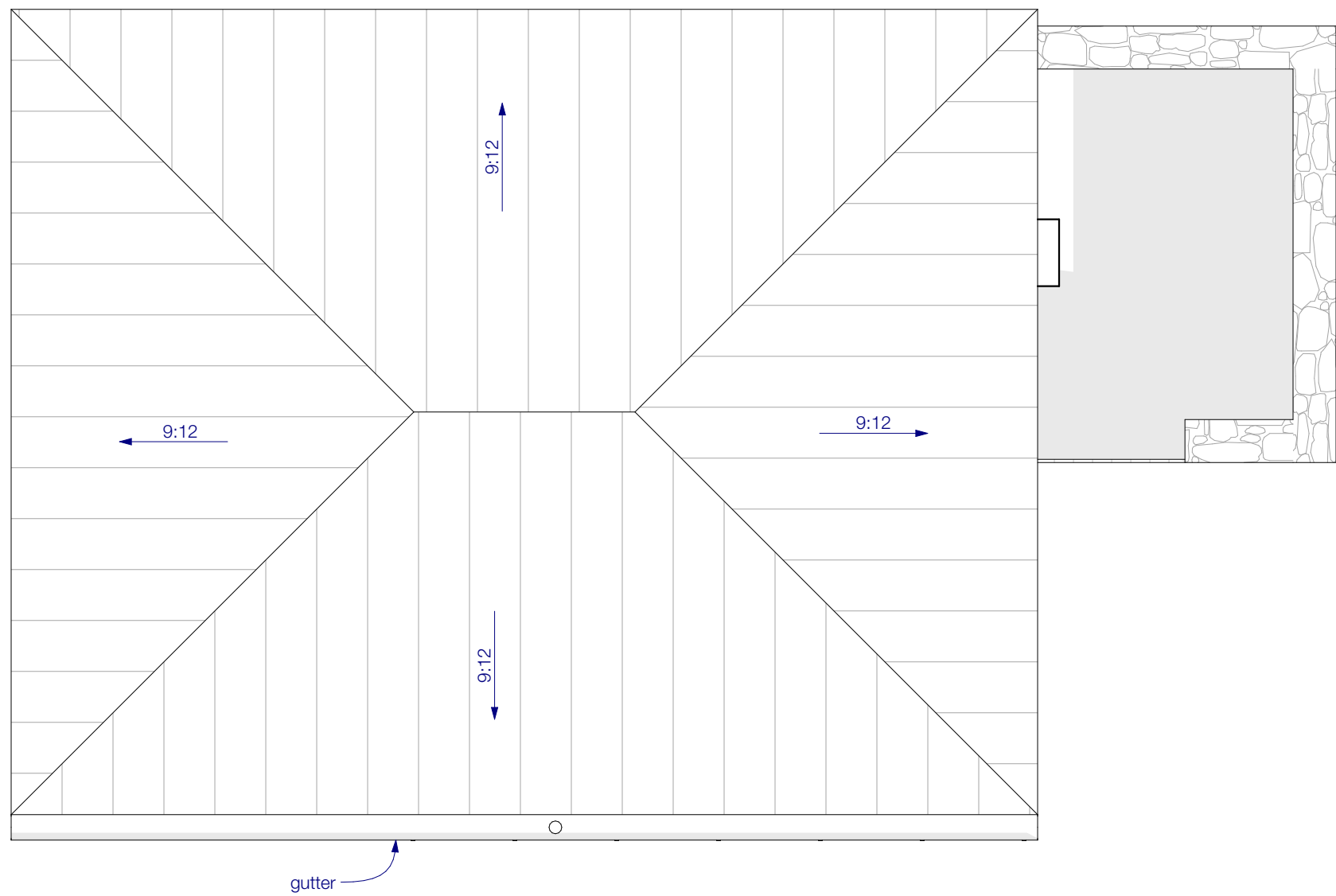
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[Signature]

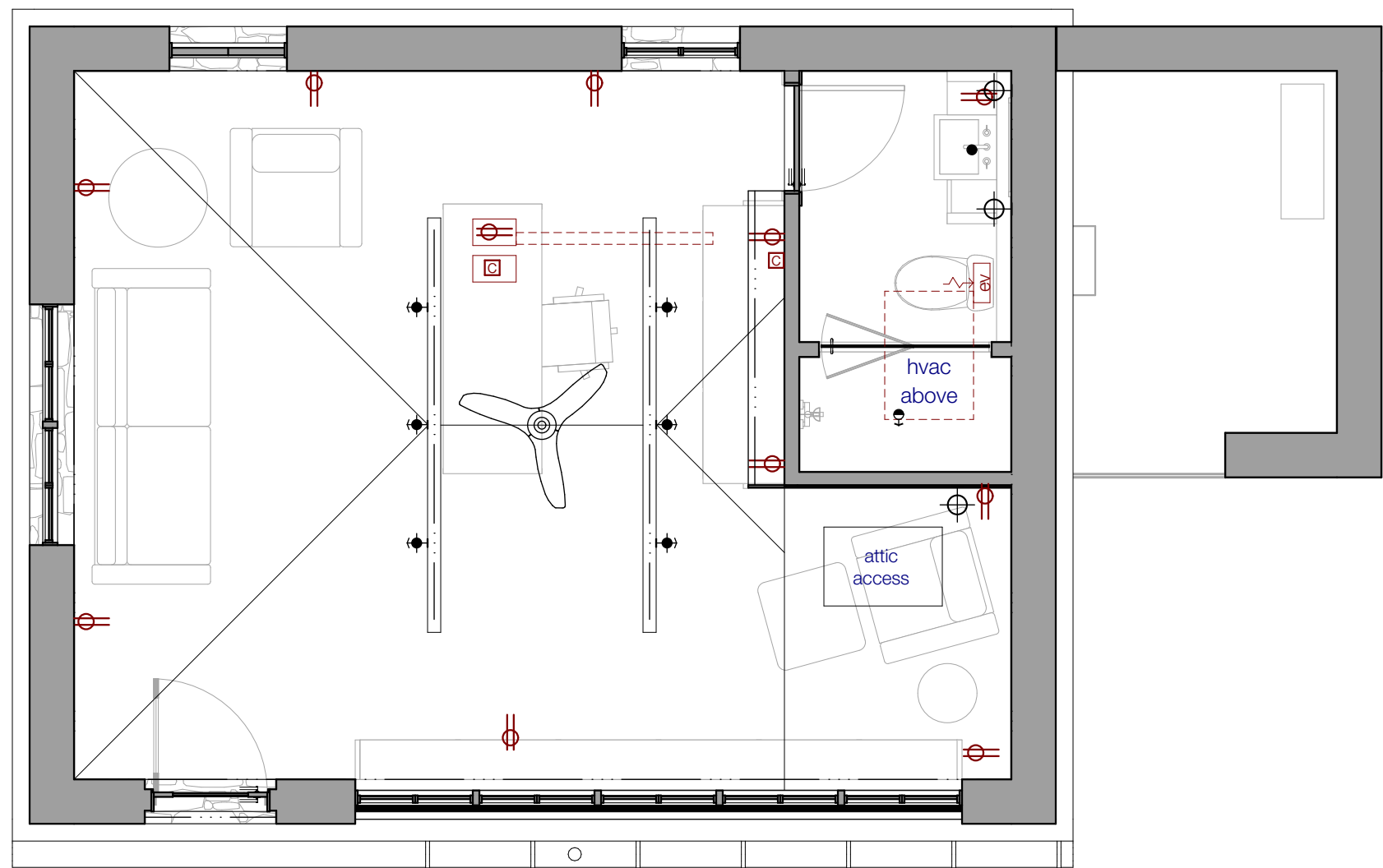
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1 Window Elevations
SCALE: 1/4" = 1'-0"



5 art house roof plan
SCALE: 1/4" = 1'-0"



7 art house ME
SCALE: 1/4" = 1'-0"

EXTERIOR DOOR SCHEDULE - verify all sizes with existing masonry openings						
key	location	width	height	type	lock set	notes
61	workshop garage	3'-1 3/4"	8'-1 1/4"		entrance w/ deadbolt	

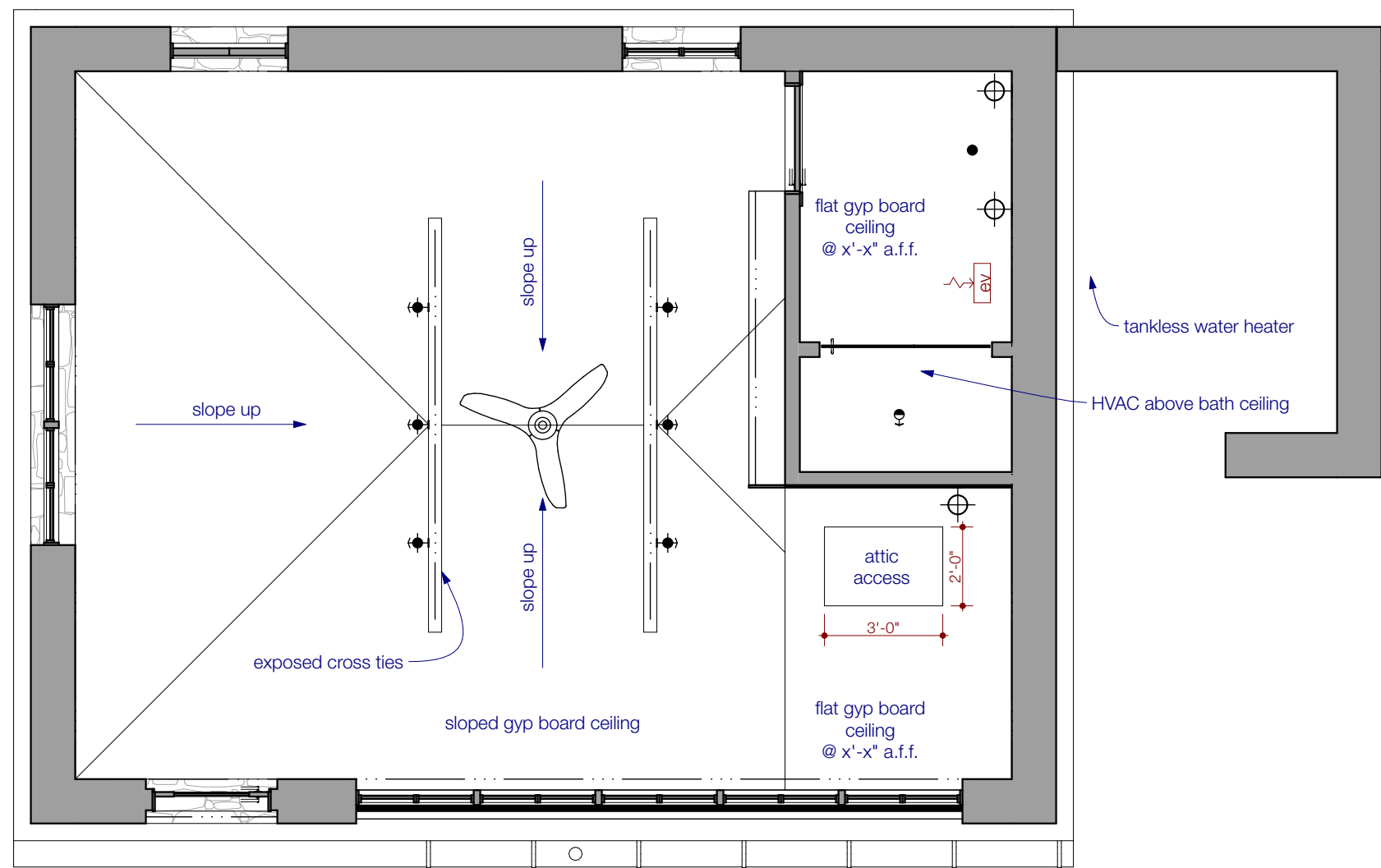
2 exterior door schedule
SCALE: 1" = 1'-0"

INTERIOR DOOR SCHEDULE					
key	location	leaf dimensions	type	lock set	notes
31	bath 1	2'-6"x8'-0"	solid core, 3 panel	privacy	

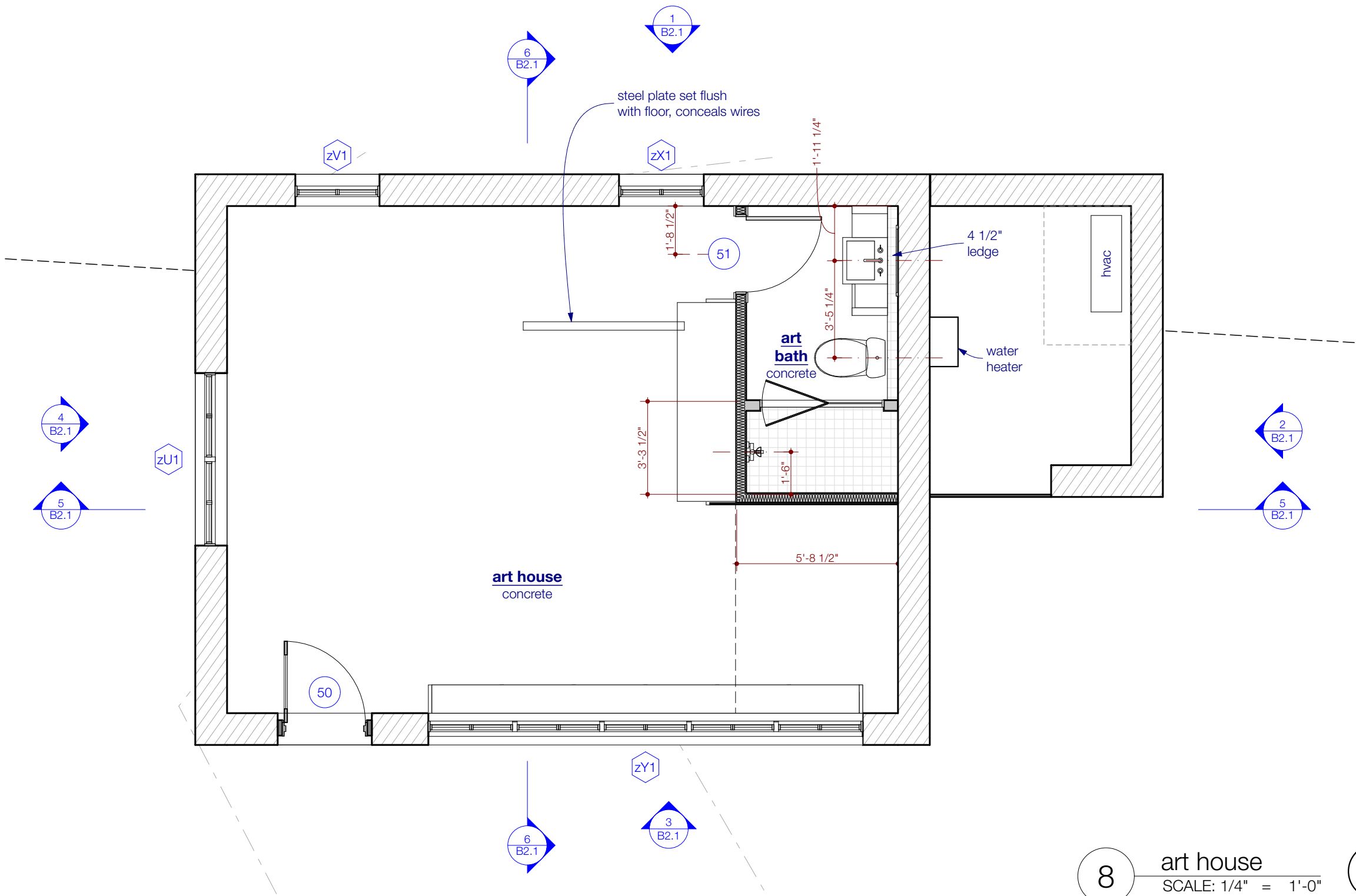
3 interior door schedule
SCALE: 1" = 1'-0"

WINDOW SCHEDULE - verify all sizes with existing masonry openings						
key	location	type	width	height	head height	notes
zU1	art house	clad casement	6'-1 1/4"	5'-2"	6'-0"	
zV1	art house	clad casement	2'-11 3/4"	3'-1 1/8"	5'-5 1/8"	
zX1	art house	clad casement	3'-0"	3'-1 1/2"	5'-2 1/2"	
zY1	art house		15'-4 1/2"	5'-1 3/4"	5'-1 3/4"	

4 window schedule
SCALE: 1" = 1'-0"



6 art house RCP
SCALE: 1/4" = 1'-0"



8 art house
SCALE: 1/4" = 1'-0"

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Lee Art House
402 Camp Craft Road
West Lake Hills, Texas 78746



revisions	
date	description
1	11/1/2020
2	11/1/2020
3	11/1/2020
4	11/1/2020
5	11/1/2020
6	11/1/2020

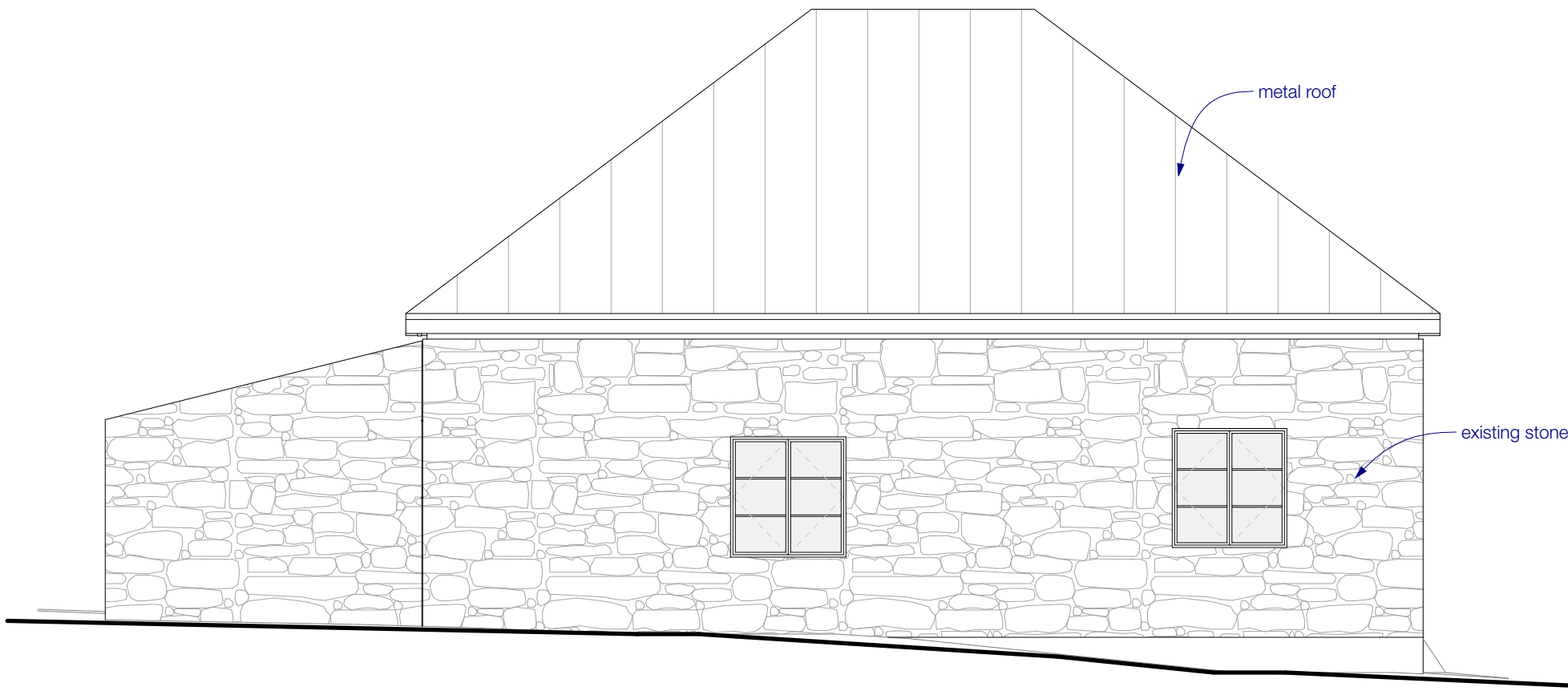
permit set	
9/21/21	plans
B1.1	

PERMIT DOCUMENTS

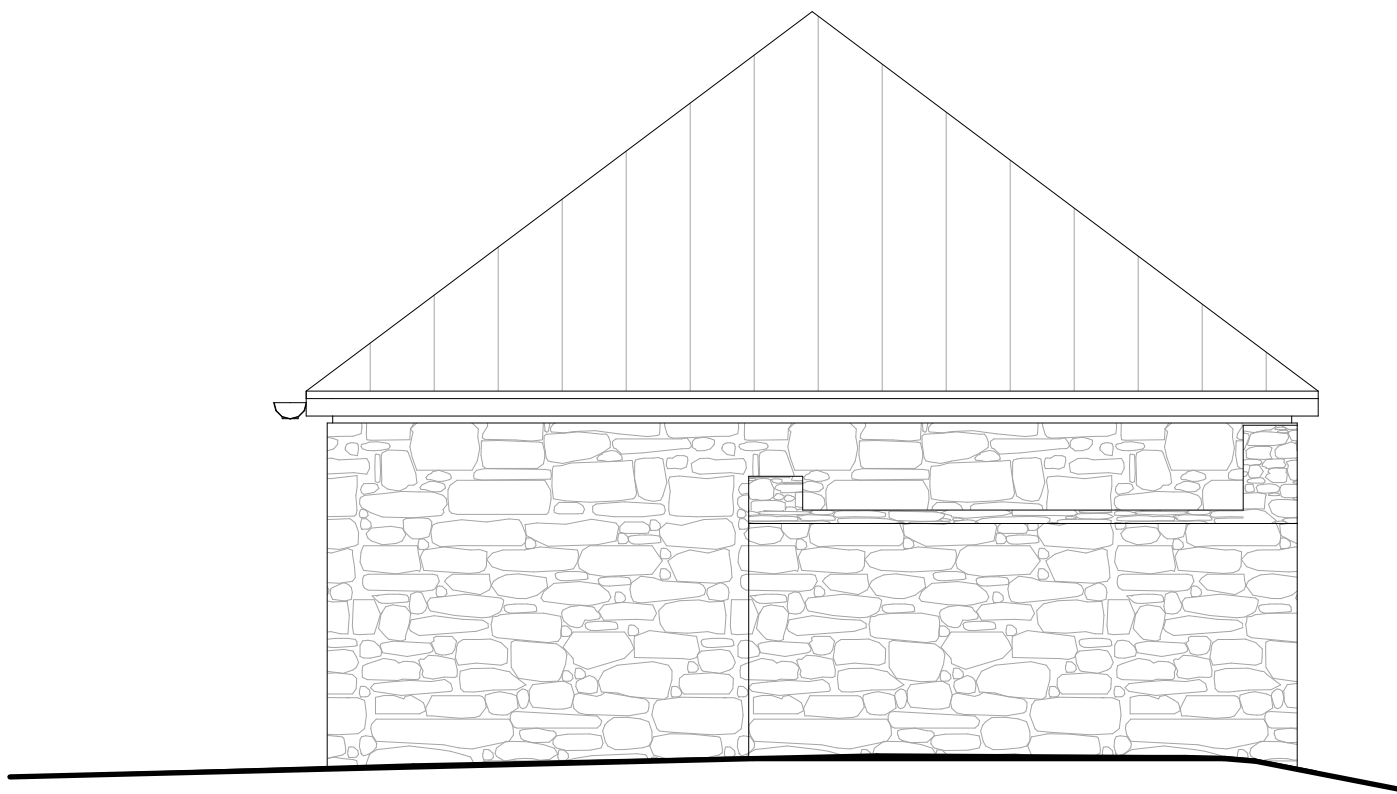
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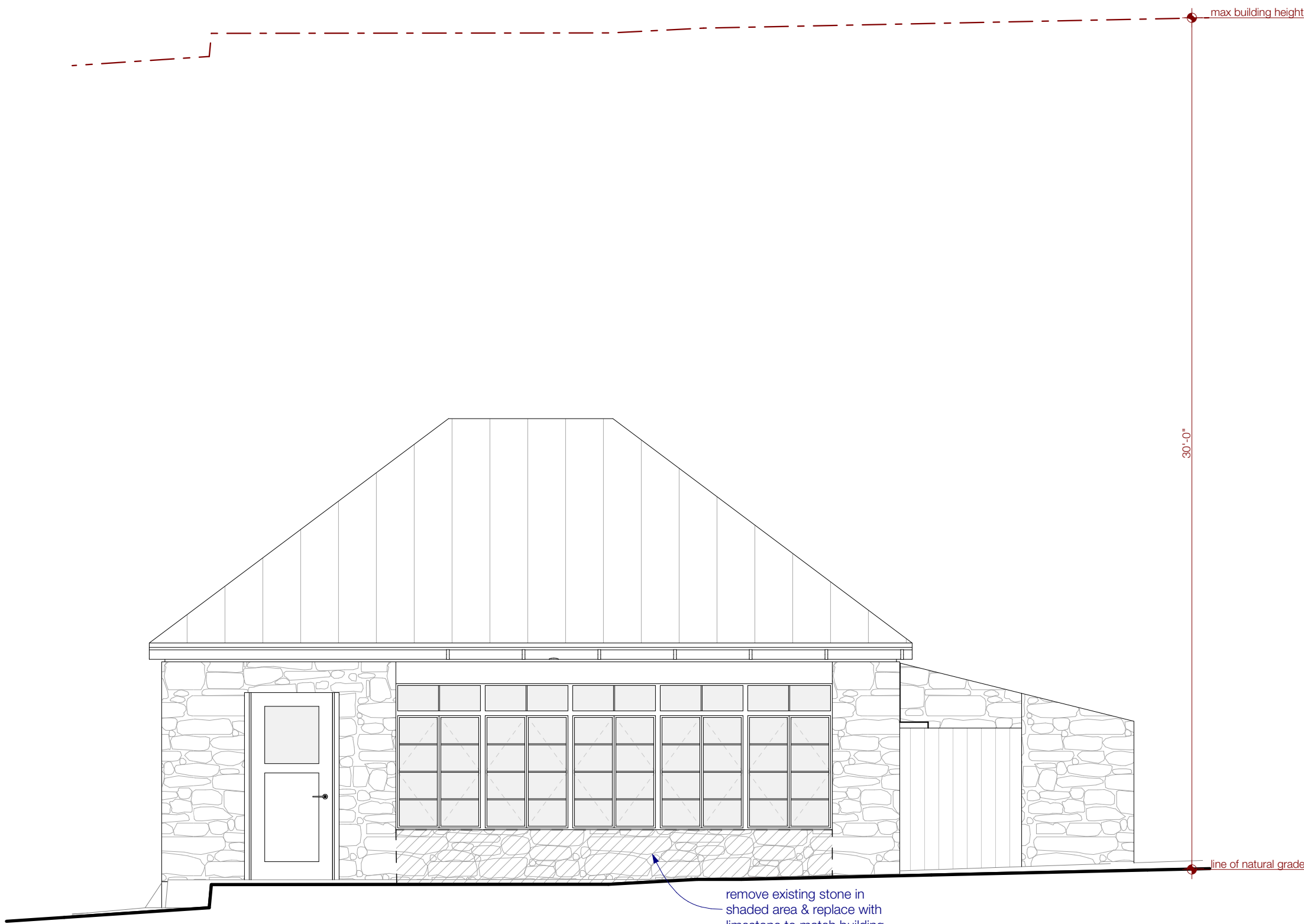
THIS SET TO
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ON-SITE



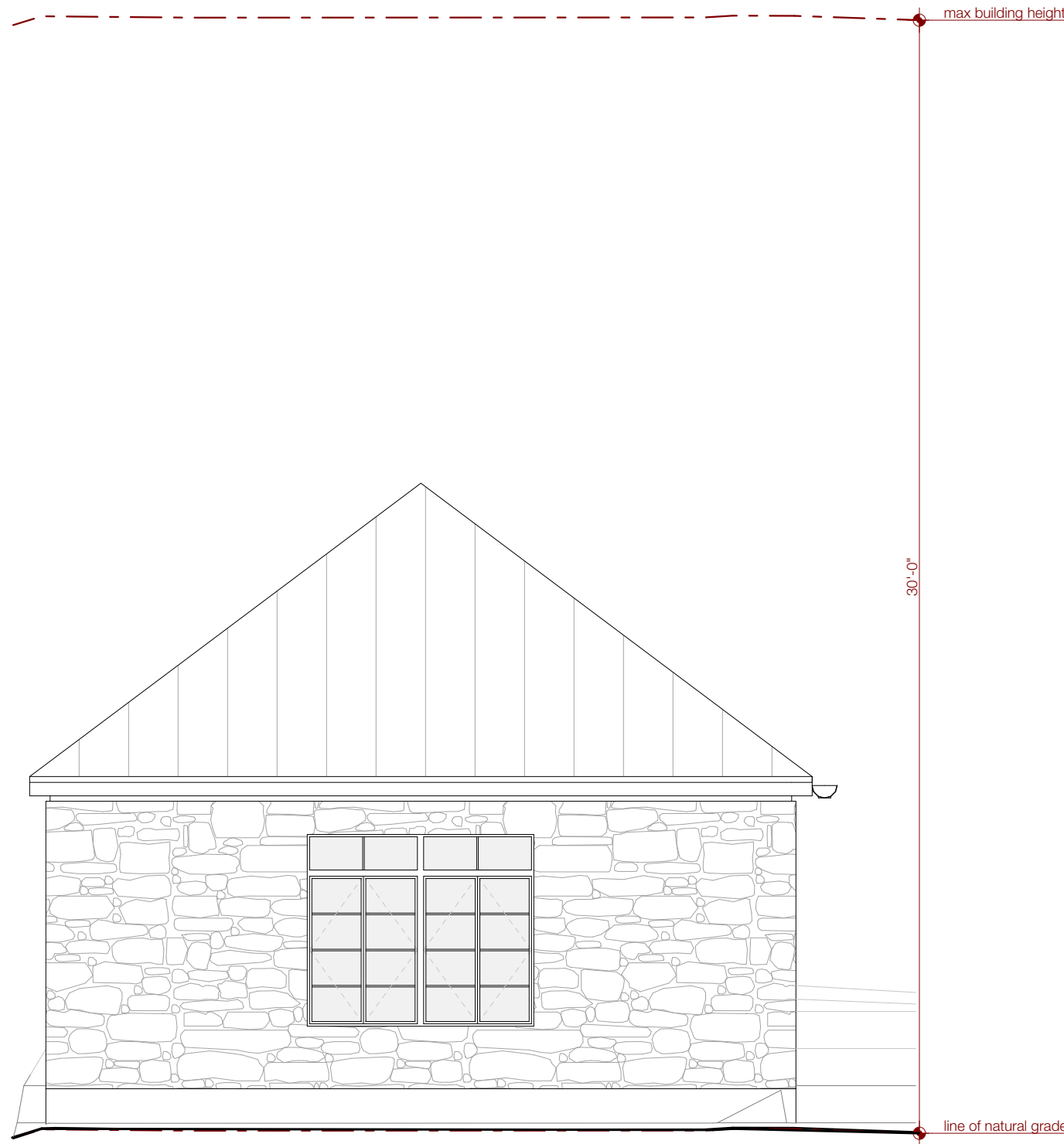
1 art house west
SCALE: 1/4" = 1'-0"



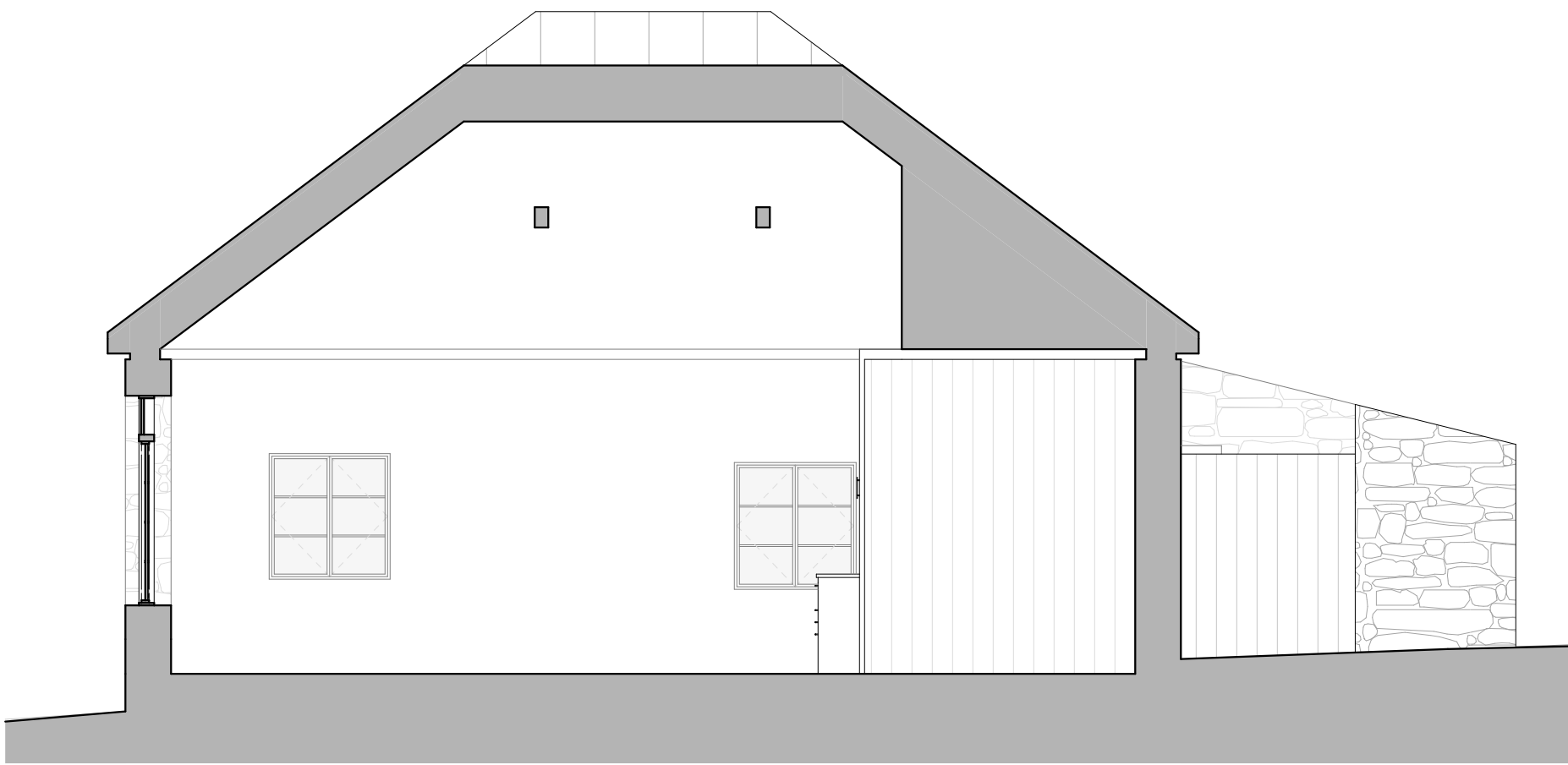
2 art house north
SCALE: 1/4" = 1'-0"



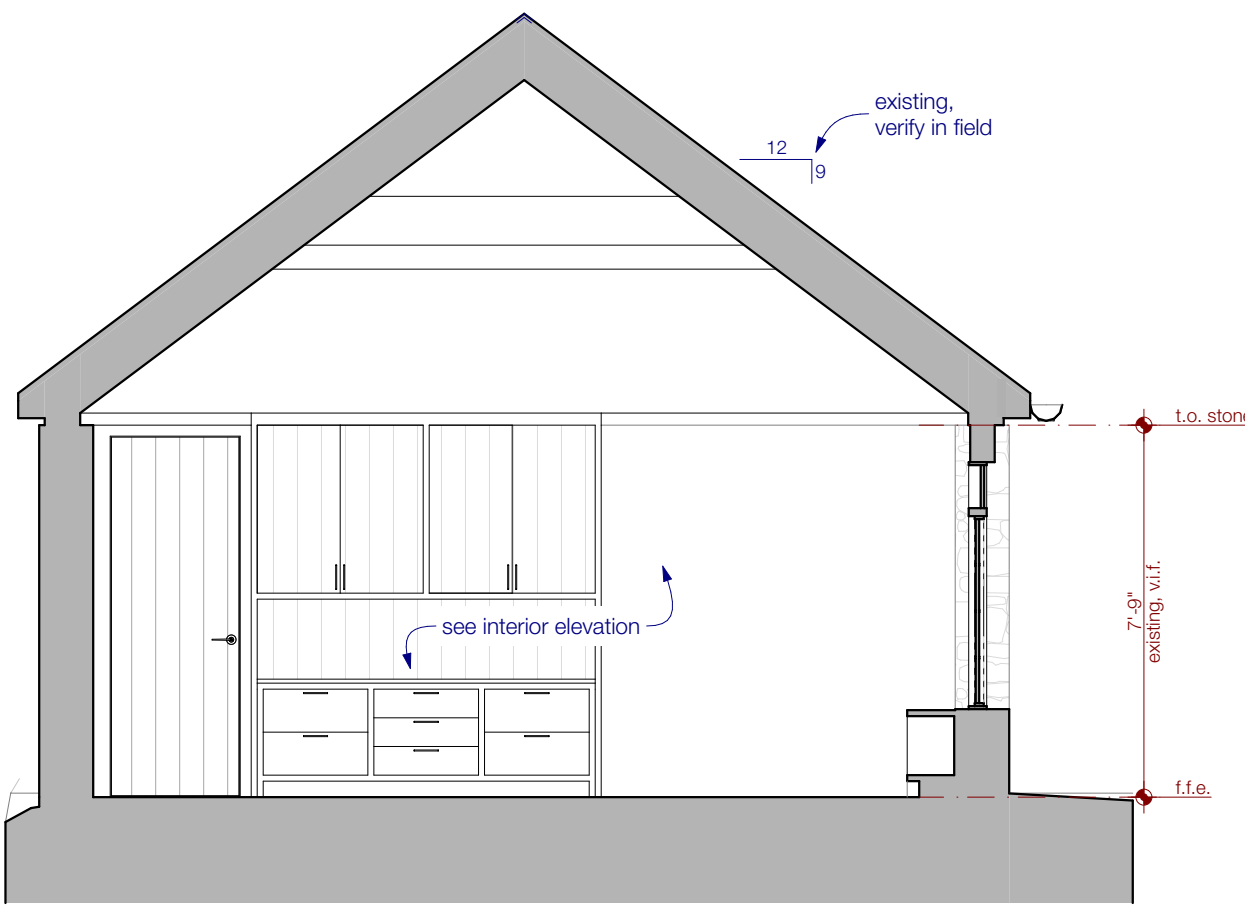
3 art house east
SCALE: 1/4" = 1'-0"



4 art house south
SCALE: 1/4" = 1'-0"



5 section @ art house
SCALE: 1/4" = 1'-0"



6 section @ art house
SCALE: 1/4" = 1'-0"

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revisions	
date	description
1	...
2	...
3	...
4	...
5	...
6	...

permit set

9/21/21

elevations / sections

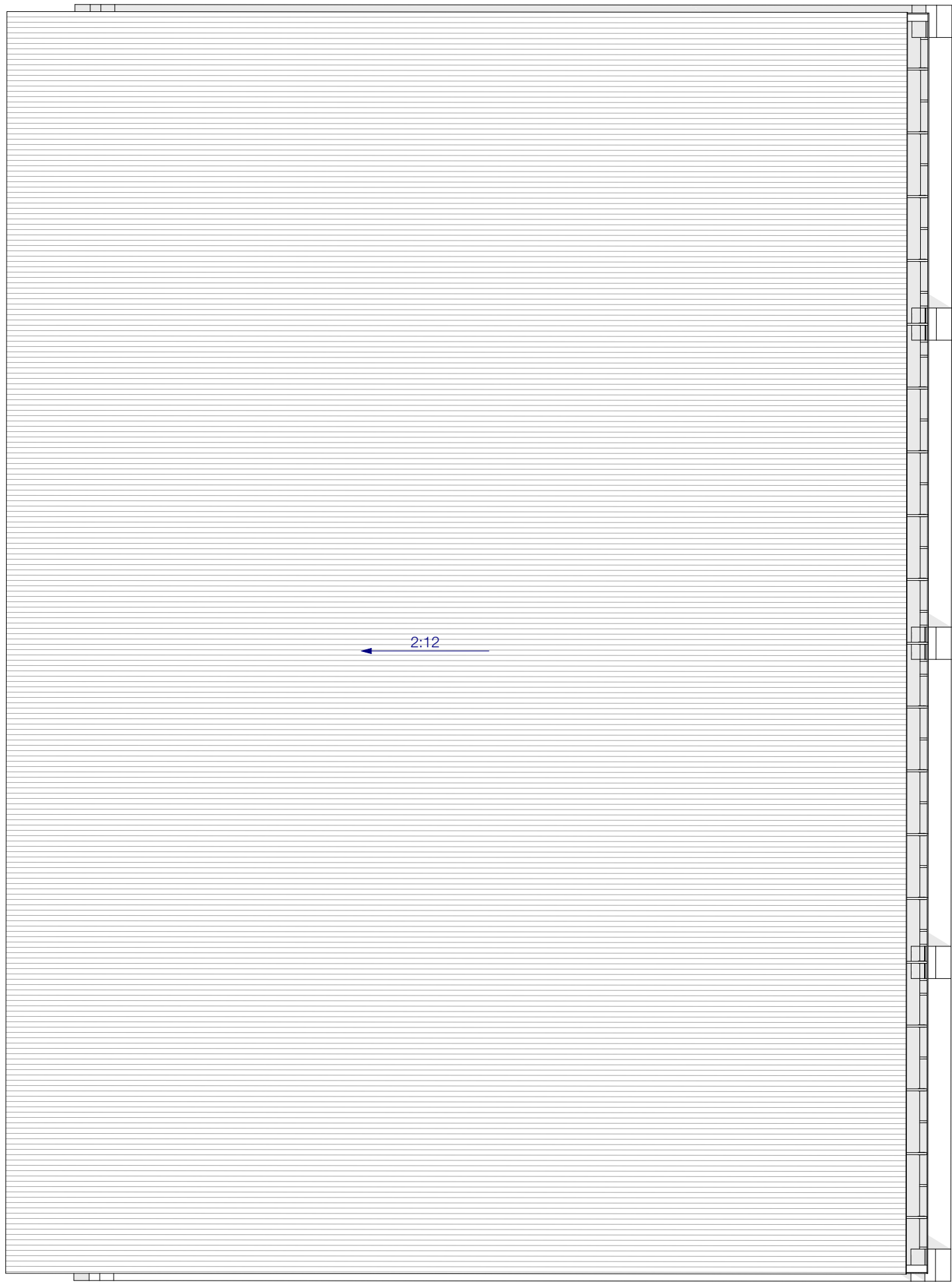
B2.1

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2 workshop roof plan
SCALE: 1/8" = 1'-0"

INTERIOR DOOR SCHEDULE

key	location	leaf dimensions	type	lock set	notes
32	bath 1 closet	2'-6" x 8'-0"	solid core, 3 panel; pocket	passage	
51	art house bath	2'-8" x 7'-5 5/8"	solid core, slab	privacy	finish t.b.d.
70	workshop	2'-8" x 8'-0"	solid core, slab	passage	
71	bathroom	2'-4" x 8'-0"	solid core, slab	privacy	

3 interior door schedule
SCALE: 1" = 1'-0"

EXTERIOR DOOR SCHEDULE — dimensions are of the unit size

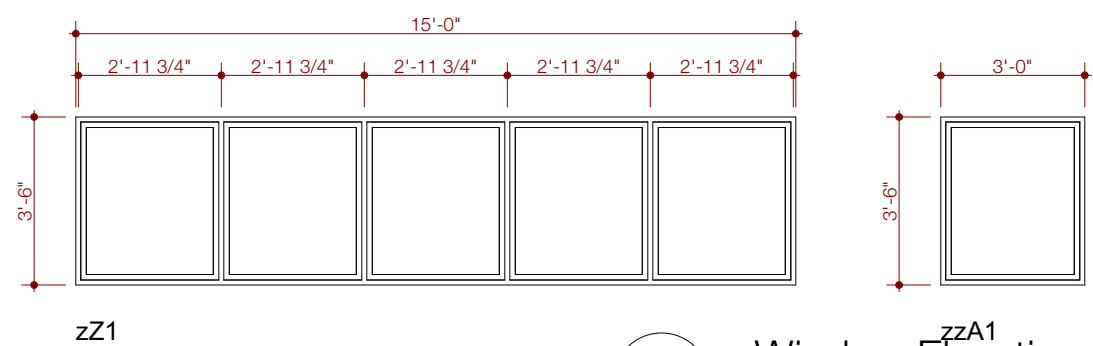
key	location	width	height	type	lock set	notes
62	workshop	8'-0"	8'-4 25/32"	rolling door		
63	workshop vestibule	3'-1 3/4"	8'-1 1/4"	frame with single lite	entrance w/ deadbolt	
64	gameroom	8'-1 3/4"	8'-1 1/4"	frame with * * * *	entrance w/ deadbolt	(2) 3'-0" leaves
65	workshop garage	13'-4 1/2"	8'-8 1/32"	barn door		
66	workshop vestibule	6'-1 3/4"	8'-1 1/4"	solid core slab	entrance w/ deadbolt	
67	workshop	6'-1 3/4"	8'-1 1/4"	solid core slab	entrance w/ deadbolt	
68	workshop garage	13'-4 1/2"	8'-8 1/32"	rolling door		

4 exterior door schedule
SCALE: 1" = 1'-0"

WINDOW SCHEDULE

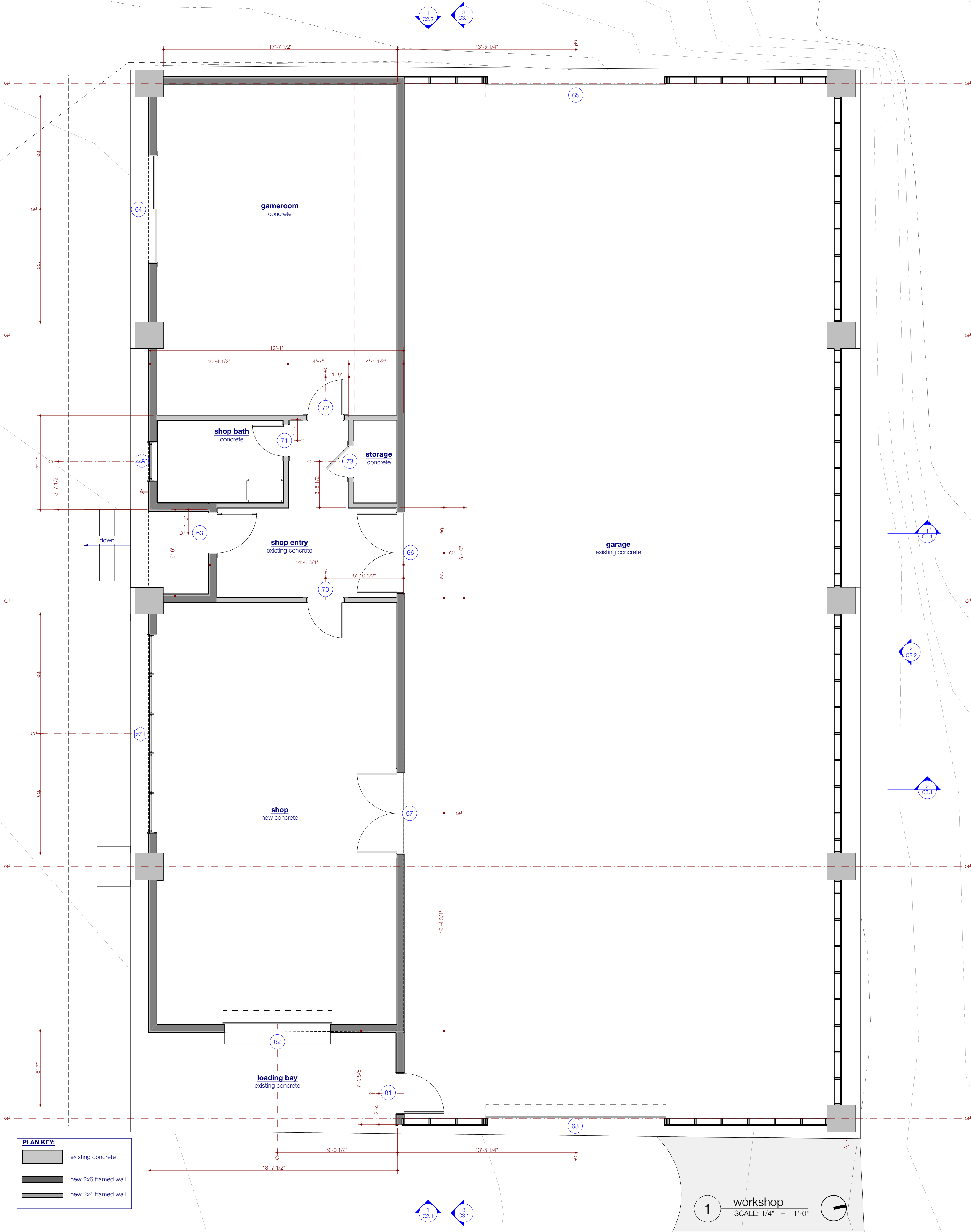
key	location	type	width	height	head height	notes
zz1	workshop	aluminum fixed	15'-0"	3'-6"	8'-9 1/2"	
zzA1	workshop bath	aluminum fixed	3'-0"	3'-6"	8'-9 1/2"	

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



6 Window Elevations
SCALE: 1/4" = 1'-0"

PLAN KEY:
existing concrete
new 2x6 framed wall
new 2x4 framed wall



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Lee Workshop

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revisions

date	description
1	10/1/21
2	10/1/21
3	10/1/21
4	10/1/21
5	10/1/21
6	10/1/21

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floor plan

C1.1

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1 workshop RCP/ME
SCALE: 1/4" = 1'-0"

1

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Lee Workshop
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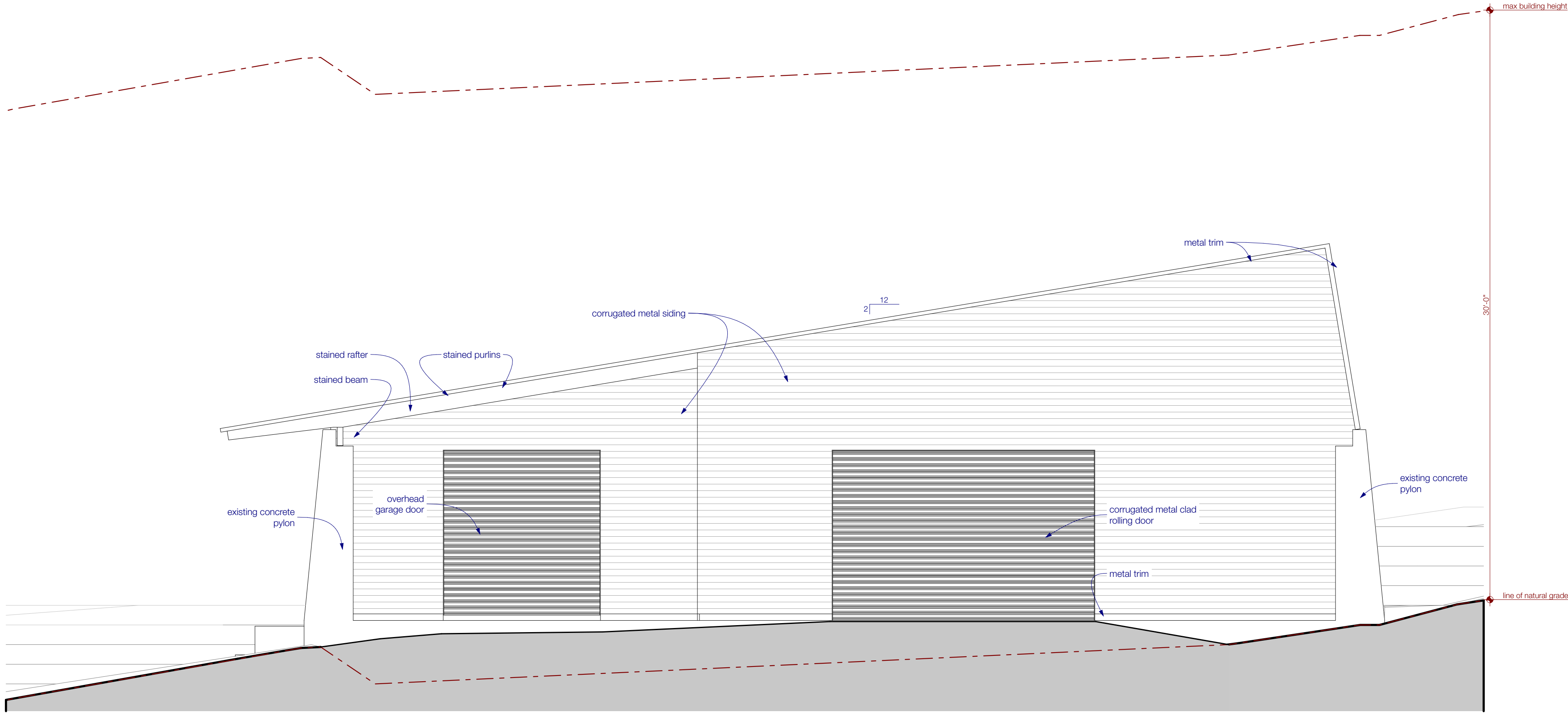
PERMIT SET

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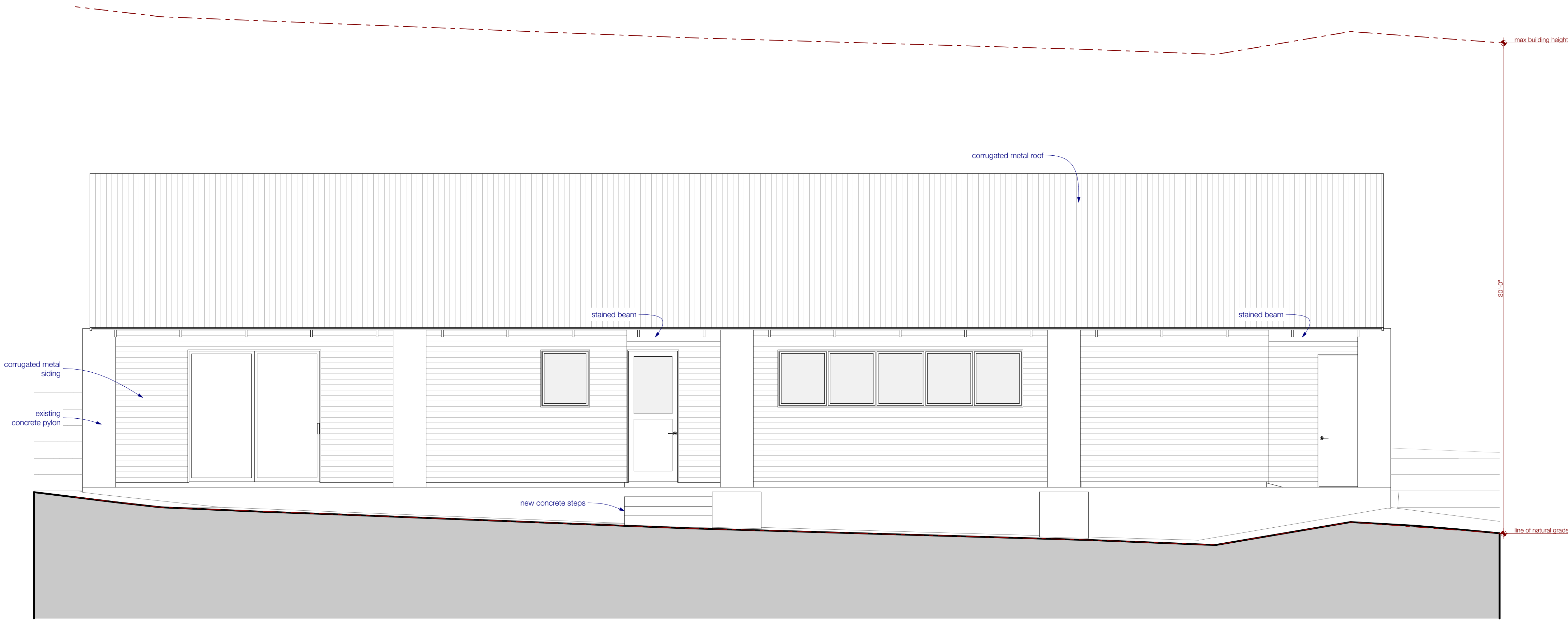
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1 workshop east elevation
SCALE: 1/4" = 1'-0"



2 workshop south elevation
SCALE: 1/4" = 1'-0"

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Lee Workshop

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revisions

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2	10/1/21
3	10/1/21
4	10/1/21
5	10/1/21
6	10/1/21

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9/21/21

elevations

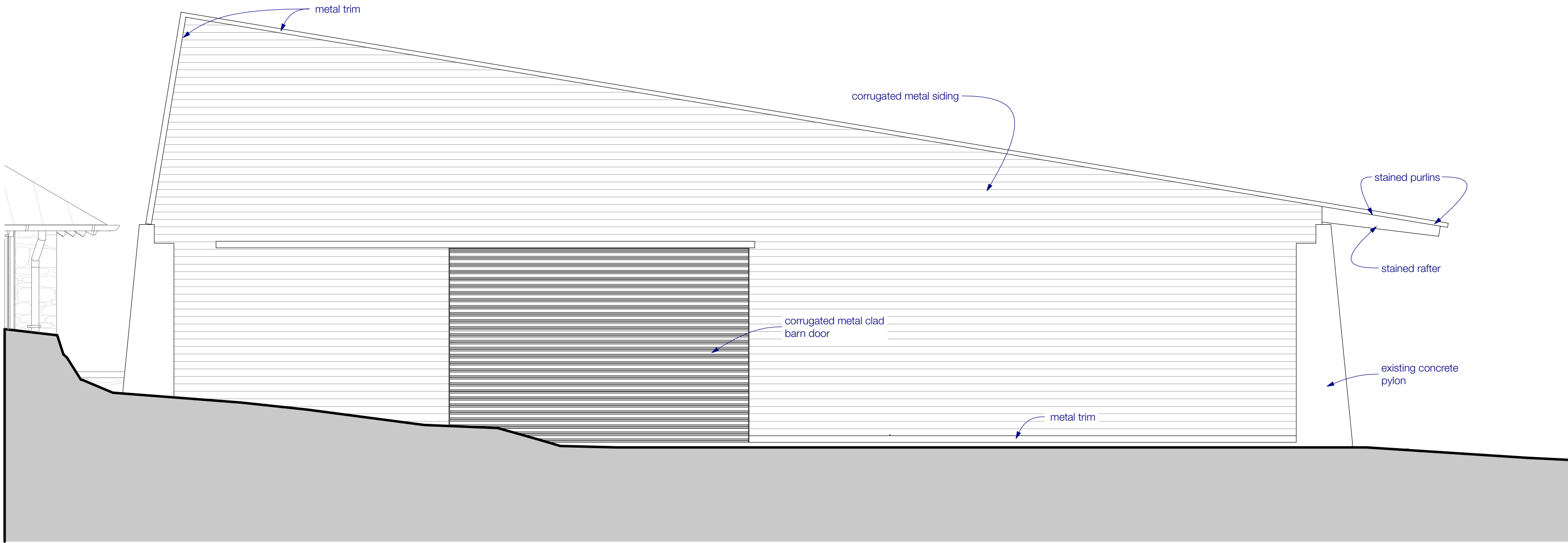
C2.1

PERMIT DOCUMENTS

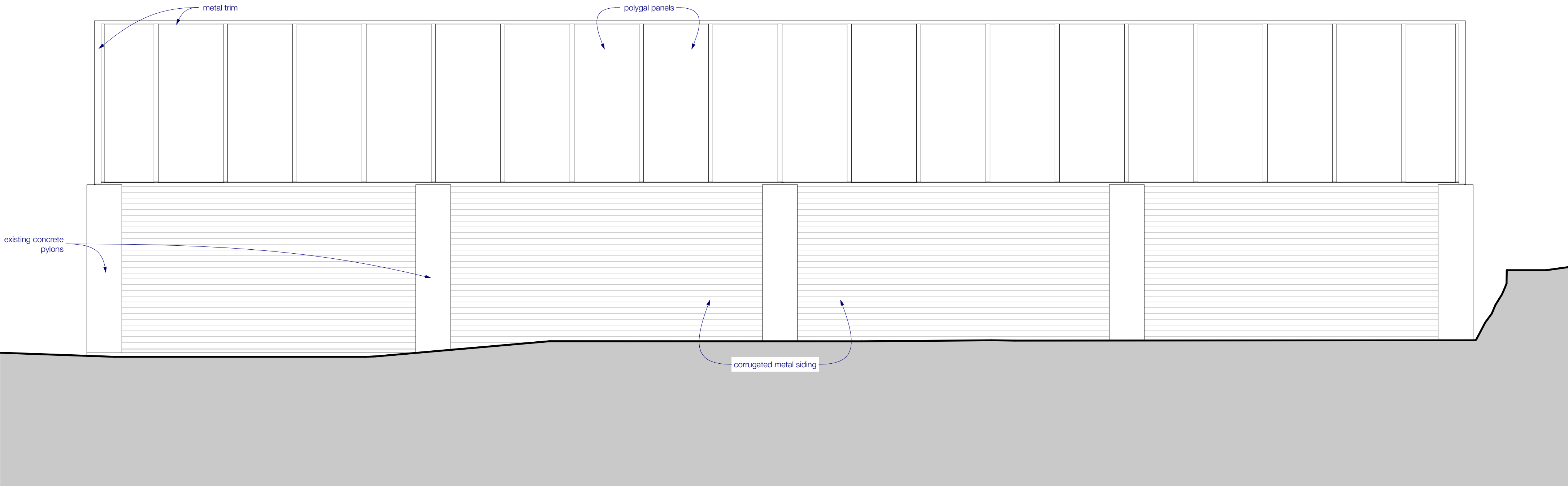
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1 workshop west elevation
SCALE: 1/4" = 1'-0"



2 workshop north elevation
SCALE: 1/4" = 1'-0"

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revisions	
date	description
1	---/---/---
2	---/---/---
3	---/---/---
4	---/---/---
5	---/---/---
6	---/---/---

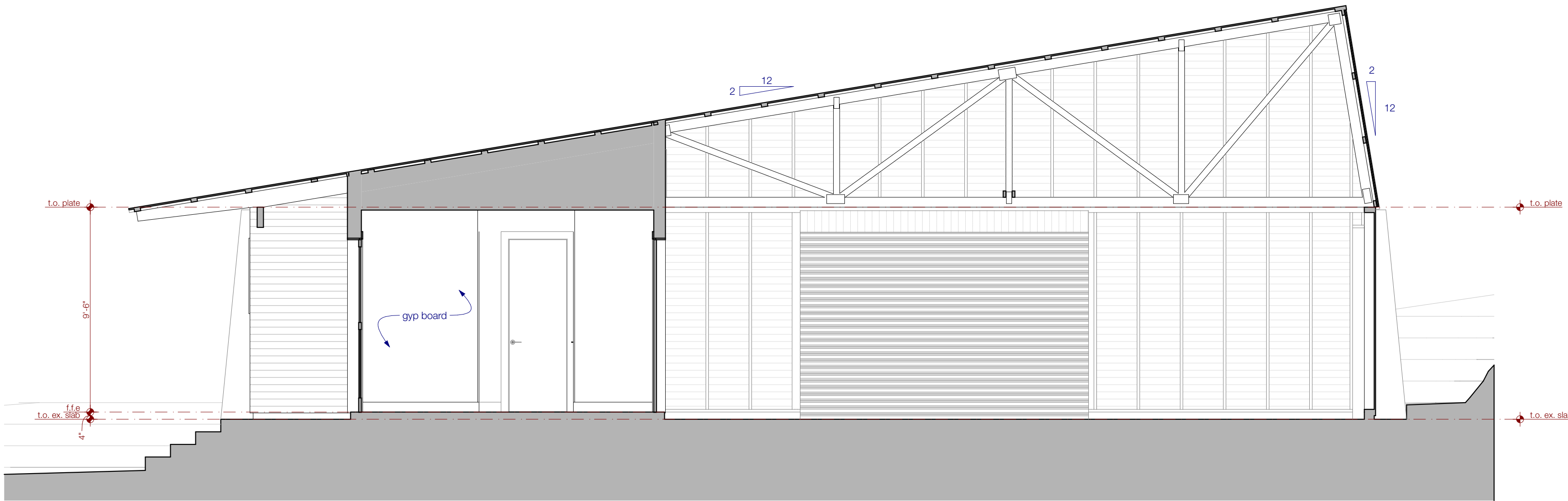
permit set
9/21/21
elevations
C2.2

PERMIT DOCUMENTS

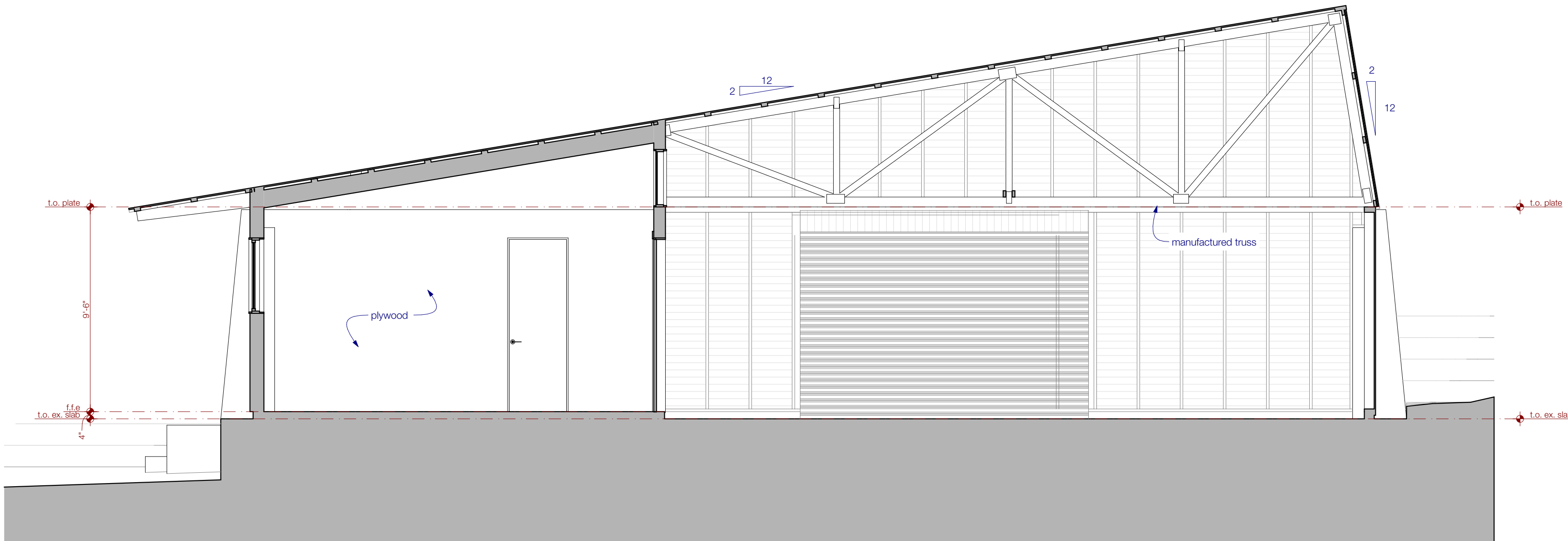
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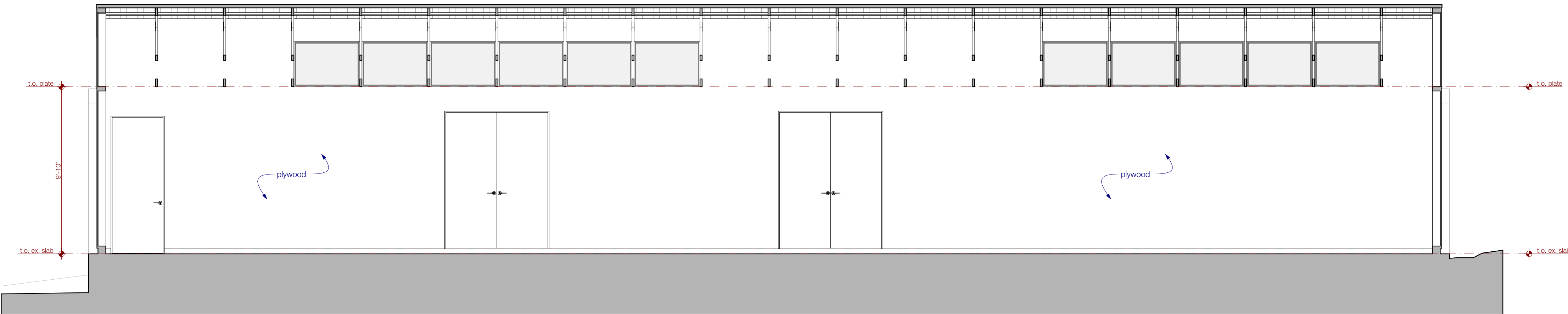
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REMAIN
ON-SITE



1 section @ workshop entry / garage
SCALE: 1/4" = 1'-0"



2 section @ workshop shop / garage
SCALE: 1/4" = 1'-0"



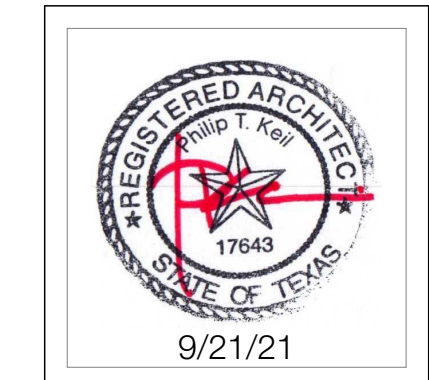
3 section @ workshop garage
SCALE: 1/4" = 1'-0"

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date	description
1	11/11/21
2	11/11/21
3	11/11/21
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5	11/11/21
6	11/11/21

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9/21/21

sections

C3.1

402 Camp Craft Rd. - Lee Residence
HVAC Load Calculations

for

Furman + Keil Architects
1211 E. 11th St., #200

Prepared By:

Hap Pfeil
Positive Energy
1114 South 1st Street
Austin, TX 78704
512-462-1000
Thursday, July 15, 2021

Rhvac is an ACCA approved Manual J, D and S computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.



Project Report

General Project Information

Project Title: 402 Camp Craft Rd. - Lee Residence
 Designed By: Hap Pfeil
 Project Date: 05/26/2021
 Project Comment:
 Client Name: Furman + Keil Architects
 Client Address: 1211 E. 11th St., #200
 Client Comment: It is the responsibility of the client and/or the installing contractor to ensure inputs align with as-built, observed conditions on site prior to installing equipment. Please review with specific attention to designer comments, building envelope materials, dimensions & specifications.
 Company Name: Positive Energy
 Company Representative: Hap Pfeil
 Company Address: 1114 South 1st Street
 Company City: Austin, TX 78704
 Company Phone: 512-462-1000
 Company Fax: 512-326-1359
 Company E-Mail Address: info@positiveEnergy.pro
 Company Website: www.positiveEnergy.pro
 Company Comment: Regulated by the Texas Department of Licensing and Regulation, PO Box 12157, Austin, TX 78711 1-800-803-9202, 512-463-6599, www.license.state.tx.us License# TACLA49421E

Design Data

Reference City: Austin AP, Texas
 Building Orientation: Front door faces East
 Daily Temperature Range: Medium
 Latitude: 30 Degrees
 Elevation: 597 ft.
 Altitude Factor: 0.979

	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	n/a	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21

Check Figures

Total Building Supply CFM:	6,117	CFM Per Square ft.:	1.038
Square ft. of Room Area:	5,892	Square ft. Per Ton:	579
Volume (ft³):	53,901		

Building Loads

Total Heating Required Including Ventilation Air:	138,088 Btuh	138.088 MBH
Total Sensible Gain:	119,205 Btuh	98 %
Total Latent Gain:	2,913 Btuh	2 %
Total Cooling Required Including Ventilation Air:	122,118 Btuh	10.18 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.
 Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.
 All computed results are estimates as building use and weather may vary.
 Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



Miscellaneous Report

System 1 L0 Master BR Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45
System 2 L0 Bar Hall Storage Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45
System 3 L0 Master Bath & Closet Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45
System 4 L1 Living Dining Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45
System 5 L1 Kitchen & Media Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45
System 6 L1 Office & Laundry Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45
System 7 L2 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45
System 9 L0 Wine Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45

Duct Sizing Inputs

	Main Trunk	Runouts
Calculate:	Yes	Yes
Use Schedule:	Yes	Yes
Roughness Factor:	0.00300	0.01000
Pressure Drop:	0.1000 in.wg./100 ft.	0.1000 in.wg./100 ft.
Minimum Velocity:	650 ft./min	450 ft./min
Maximum Velocity:	900 ft./min	750 ft./min
Minimum Height:	0 in.	0 in.
Maximum Height:	0 in.	0 in.

Outside Air Data

	Winter	Summer
Infiltration Specified:	0.236 AC/hr 212 CFM	0.140 AC/hr 126 CFM
Infiltration Actual:	0.109 AC/hr	0.001 AC/hr
Above Grade Volume:	X 53,901 Cu.ft. 5,884 Cu.ft./hr X 0.0167	X 53,901 Cu.ft. 29 Cu.ft./hr X 0.0167
Total Building Infiltration:	98 CFM	0 CFM
Total Building Ventilation:	222 CFM	222 CFM

---System 1---

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)



Miscellaneous Report (cont'd)

Outside Air Data

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.237 AC/hr (19 CFM)

Summer Infiltration Specified: 0.141 AC/hr (11 CFM)

Blower Door Data:

Wind Shielding Class: 3 - More Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3

---System 2---

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.201 AC/hr (3 CFM)

Summer Infiltration Specified: 0.126 AC/hr (2 CFM)

Blower Door Data:

Wind Shielding Class: 4 - Substantial Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3

---System 3---

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.237 AC/hr (17 CFM)

Summer Infiltration Specified: 0.141 AC/hr (10 CFM)

Blower Door Data:

Wind Shielding Class: 3 - More Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3

---System 4---

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.237 AC/hr (44 CFM)

Summer Infiltration Specified: 0.141 AC/hr (26 CFM)

Blower Door Data:

Wind Shielding Class: 3 - More Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3

---System 5---



Miscellaneous Report (cont'd)

Outside Air Data

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.237 AC/hr (55 CFM)

Summer Infiltration Specified: 0.141 AC/hr (33 CFM)

Blower Door Data:

Wind Shielding Class: 3 - More Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3

---System 6---

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.237 AC/hr (30 CFM)

Summer Infiltration Specified: 0.141 AC/hr (18 CFM)

Blower Door Data:

Wind Shielding Class: 3 - More Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3

---System 7---

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.237 AC/hr (44 CFM)

Summer Infiltration Specified: 0.141 AC/hr (26 CFM)

Blower Door Data:

Wind Shielding Class: 3 - More Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3

---System 9---

Infiltration & Ventilation Sensible Gain Multiplier: 27.13 = (1.10 X 0.979 X 25.20 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 14.28 = (0.68 X 0.979 X 21.45 Grains Difference)

Infiltration & Ventilation Sensible Loss Multiplier: 46.61 = (1.10 X 0.979 X 43.30 Winter Temp. Difference)

Winter Infiltration Specified: 0.269 AC/hr (1 CFM)

Summer Infiltration Specified: 0.154 AC/hr (0 CFM)

Blower Door Data:

Wind Shielding Class: 2 - Few Obstructions

Building Stories: 1

Multi/Single Option: Single-Point

Assumed n: 0.65

Pressure Diff.: 50

Test Flow: 2,695

Test AC/hr (Selected): 3



Load Preview Report

Scope	Net Ton	ft. ² /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Sys Htg CFM	Sys Clg CFM	Sys Act CFM
Building	10.18	579	5,892	119,205	2,913	122,118	138,088	6,043	6,117	6,117
System 1 L0 Master BR	0.98	562	550	11,148	583	11,731	13,514	735	735	735
Ventilation				347	457	804	597			
Misc. Return				0	-274	-274				
Zone 1			550	10,801	400	11,201	12,917	735	735	735
1-L0 Master BR			550	10,801	400	11,201	12,917	735	735	735
System 2 L0 Bar Hall Storage	0.36	1,350	485	4,222	86	4,309	8,518	448	448	448
Ventilation				163	214	377	280			
Misc. Return				0	-128	-128				
Zone 1			485	4,060	0	4,060	8,238	448	448	448
2-L0 Bar Hall			230	233	0	233	2,172	118	26	26
3-L0 Storage North			117	3,495	0	3,495	5,135	279	386	386
5-L0 Mech Room			28	28	0	28	0	0	3	3
6-L0 Storage South			110	303	0	303	931	51	33	33
System 3 L0 Master Bath & Closet	0.87	553	483	10,353	130	10,483	18,454	735	735	735
Ventilation				152	200	352	261			
Misc. Return				0	-120	-120				
Zone 1			483	10,201	50	10,251	18,193	735	735	735
7-L0 Master Bath			286	6,908	50	6,958	11,283	456	498	498
8-L0 WC			34	1,112	0	1,112	2,522	102	80	80
9-L0 Master Closet			163	2,182	0	2,182	4,388	177	157	157
System 4 L1 Living Dining	2.95	378	1,115	35,234	188	35,422	34,633	1,400	1,400	1,400
Ventilation				358	471	829	615			
Misc. Return				0	-283	-283				
Zone 1			1,115	34,876	0	34,876	34,018	1,400	1,400	1,400
10-L1 Dining Room			460	15,865	0	15,865	12,343	508	637	637
11-L1 Terrace Landing			48	2,847	0	2,847	1,355	56	114	114
12-L1 Living Room			607	16,164	0	16,164	20,320	836	649	649
System 5 L1 Kitchen & Media	2.55	516	1,317	30,018	628	30,646	35,967	1,400	1,400	1,400
Ventilation				434	571	1,005	746			
Misc. Return				0	-343	-343				
Zone 1			1,317	29,584	400	29,984	35,221	1,400	1,400	1,400
13-L1 Media Room			208	4,347	0	4,347	9,055	360	206	206
14-L1 Kitchen			949	16,060	400	16,460	13,845	550	760	760
15-L1 Entry Hall			160	9,177	0	9,177	12,321	490	434	434
System 6 L1 Office & Laundry	0.67	1,038	694	7,811	210	8,020	10,444	448	448	448
Ventilation				228	300	528	392			
Misc. Return				0	-180	-180				
Zone 1			694	7,583	90	7,673	10,052	448	448	448
16-L1 Powder			41	38	30	68	0	0	2	2
17-L1 Office Hall			193	1,172	0	1,172	1,892	84	69	69
18-L1 Mud Room			94	169	0	169	568	25	10	10
19-L1 Laundry			117	1,738	60	1,798	2,941	131	103	103
20-L1 Office			249	4,465	0	4,465	4,651	207	264	264
System 7 L2	1.66	744	1,232	18,779	1,082	19,861	16,487	875	875	875
Ventilation				727	957	1,684	1,249			
Misc. Return				0	-575	-575				



Load Preview Report (cont'd)

Scope	Net Ton	ft ² /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Sys Htg CFM	Sys Clg CFM	Sys Act CFM
Zone 1			1,232	18,052	700	18,752	15,238	875	875	875
21-L2 Hall			237	4,114	0	4,114	3,747	215	199	199
22-L2 Kids Nook			114	3,797	0	3,797	2,804	161	184	184
23-L2 BR1			198	3,435	200	3,635	2,871	165	166	166
24-L2 Bath 1			93	697	50	747	839	48	34	34
25-L2 BR1 Closet			33	109	0	109	126	7	5	5
26-L2 BR2			205	2,123	200	2,323	1,812	104	103	103
27-L2 BR2 Closet			32	106	0	106	120	7	5	5
28-L2 Bath 2			88	467	50	517	477	27	23	23
29-L2 BR3			208	3,161	200	3,361	2,412	139	153	153
30-L2 BR3 Closet			24	42	0	42	30	2	2	2
System 9 L0 Wine	0.14	125	17	1,639	7	1,646	72	2	76	76
Zone 1			17	1,639	7	1,646	72	2	76	76
4-L0 Wine Room			17	1,639	7	1,646	72	2	76	76



Duct Size Preview

Room or Duct Name	Source	Minimum Velocity	Maximum Velocity	Rough Factor	Design L/100	SP Loss	Duct Velocity	Duct Length	Htg Flow	Clg Flow	Act. Flow	Duct Size	Reg Size
System 1													
Supply Runouts													
Zone 1													
1-L0 Master BR	Built-In	450	750	0.01	0.1		534.8		735	735	735	7--6	
Other Ducts in System 1													
Supply Main Trunk	Built-In	650	900	0.003	0.1		756		735	735	735	10x14	
System 2													
Supply Runouts													
Zone 1													
2-L0 Bar Hall	Built-In	450	750	0.01	0.1		294.9		118	26	26	1--4	
3-L0 Storage North	Built-In	450	750	0.01	0.1		491.1		279	386	386	4--6	
5-L0 Mech Room	Built-In	450	750	0.01	0.1		35.6		0	3	3	1--4	
6-L0 Storage South	Built-In	450	750	0.01	0.1		383.4		51	33	33	1--4	
Other Ducts in System 2													
Supply Main Trunk	Built-In	650	900	0.003	0.1		672		448	448	448	8x12	
System 3													
Supply Runouts													
Zone 1													
7-L0 Master Bath	Built-In	450	750	0.01	0.1		507		456	498	498	5--6	
8-L0 WC	Built-In	450	750	0.01	0.1		407.9		102	80	80	1--6	
9-L0 Master Closet	Built-In	450	750	0.01	0.1		400.3		177	157	157	2--6	
Other Ducts in System 3													
Supply Main Trunk	Built-In	650	900	0.003	0.1		756		735	735	735	10x14	
System 4													
Supply Runouts													
Zone 1													
10-L1 Dining Room	Built-In	450	750	0.01	0.1		540.6		508	637	637	6--6	
11-L1 Terrace Landing	Built-In	450	750	0.01	0.1		654.9		56	114	114	2--4	
12-L1 Living Room	Built-In	450	750	0.01	0.1		550.8		836	649	649	6--6	
Other Ducts in System 4													
Supply Main Trunk	Built-In	650	900	0.003	0.1		884.2		1,400	1,400	1,400	12x19	
System 5													
Supply Runouts													
Zone 1													
13-L1 Media Room	Built-In	450	750	0.01	0.1		523.9		360	206	206	2--6	
14-L1 Kitchen	Built-In	450	750	0.01	0.1		552.9		550	760	760	7--6	
15-L1 Entry Hall	Built-In	450	750	0.01	0.1		553		490	434	434	4--6	
Other Ducts in System 5													
Supply Main Trunk	Built-In	650	900	0.003	0.1		884.2		1,400	1,400	1,400	12x19	
System 6													
Supply Runouts													
Zone 1													
16-L1 Powder	Built-In	450	750	0.01	0.1		25.8		0	2	2	1--4	
17-L1 Office Hall	Built-In	450	750	0.01	0.1		352.8		84	69	69	1--6	
18-L1 Mud Room	Built-In	450	750	0.01	0.1		114.7		25	10	10	1--4	
19-L1 Laundry	Built-In	450	750	0.01	0.1		522.9		131	103	103	1--6	
20-L1 Office	Built-In	450	750	0.01	0.1		447.9		207	264	264	3--6	
Other Ducts in System 6													
Supply Main Trunk	Built-In	650	900	0.003	0.1		672		448	448	448	8x12	
System 7													
Supply Runouts													
Zone 1													
21-L2 Hall	Built-In	450	750	0.01	0.1		507.8		215	199	199	2--6	
22-L2 Kids Nook	Built-In	450	750	0.01	0.1		468.7		161	184	184	2--6	

**Duct Size Preview (cont'd)**

Room or Duct Name	Source	Minimum Velocity	Maximum Velocity	Rough. Factor	Design L/100	SP Loss	Duct Velocity	Duct Length	Htg Flow	Clg Flow	Act. Flow	Duct Size	Reg Size
23-L2 BR1	Built-In	450	750	0.01	0.1		423.9		165	166	166	2-6	
24-L2 Bath 1	Built-In	450	750	0.01	0.1		387.1		48	34	34	1-4	
25-L2 BR1 Closet	Built-In	450	750	0.01	0.1		60.7		7	5	5	1-4	
26-L2 BR2	Built-In	450	750	0.01	0.1		524.1		104	103	103	1-6	
27-L2 BR2 Closet	Built-In	450	750	0.01	0.1		59		7	5	5	1-4	
28-L2 Bath 2	Built-In	450	750	0.01	0.1		259.4		27	23	23	1-4	
29-L2 BR3	Built-In	450	750	0.01	0.1		390.2		139	153	153	2-6	
30-L2 BR3 Closet	Built-In	450	750	0.01	0.1		23.6		2	2	2	1-4	
Other Ducts in System 7													
Supply Main Trunk	Built-In	650	900	0.003	0.1		787.5		875	875	875	10x16	
System 9													
Supply Runouts													
Zone 1													
4-L0 Wine Room	Built-In	450	750	0.01	0.1		387.7		2	76	76	1-6	
Other Ducts in System 9													
Supply Main Trunk	Built-In	650	900	0.003	0.1		685.2		2	76	76	4x4	

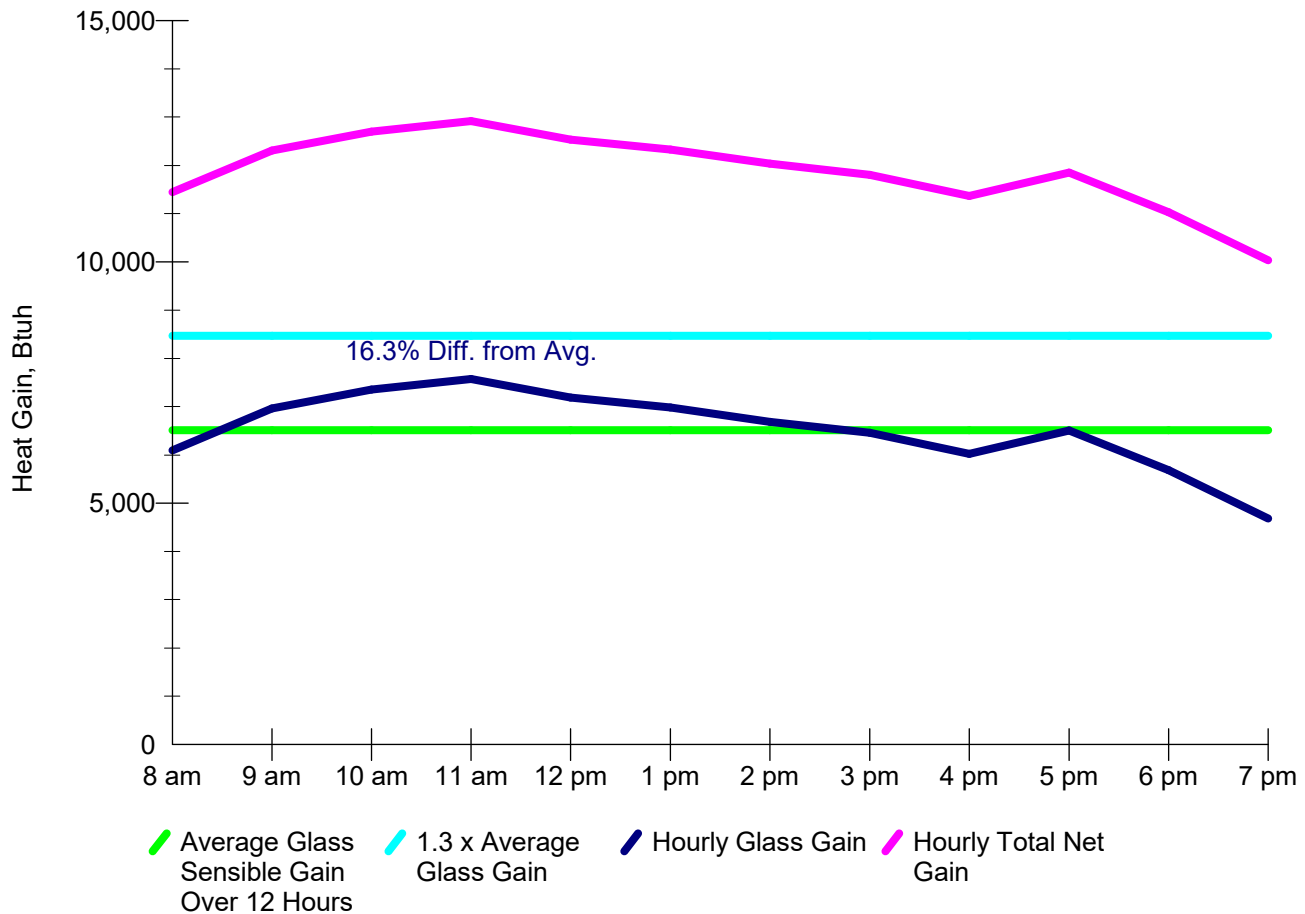
Summary

System 1	
Heating Flow:	735
Cooling Flow:	735
System 2	
Heating Flow:	448
Cooling Flow:	448
System 3	
Heating Flow:	735
Cooling Flow:	735
System 4	
Heating Flow:	1400
Cooling Flow:	1400
System 5	
Heating Flow:	1400
Cooling Flow:	1400
System 6	
Heating Flow:	448
Cooling Flow:	448
System 7	
Heating Flow:	875
Cooling Flow:	875
System 9	
Heating Flow:	2
Cooling Flow:	76



System 1 - L0 Master BR - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 16.3%.

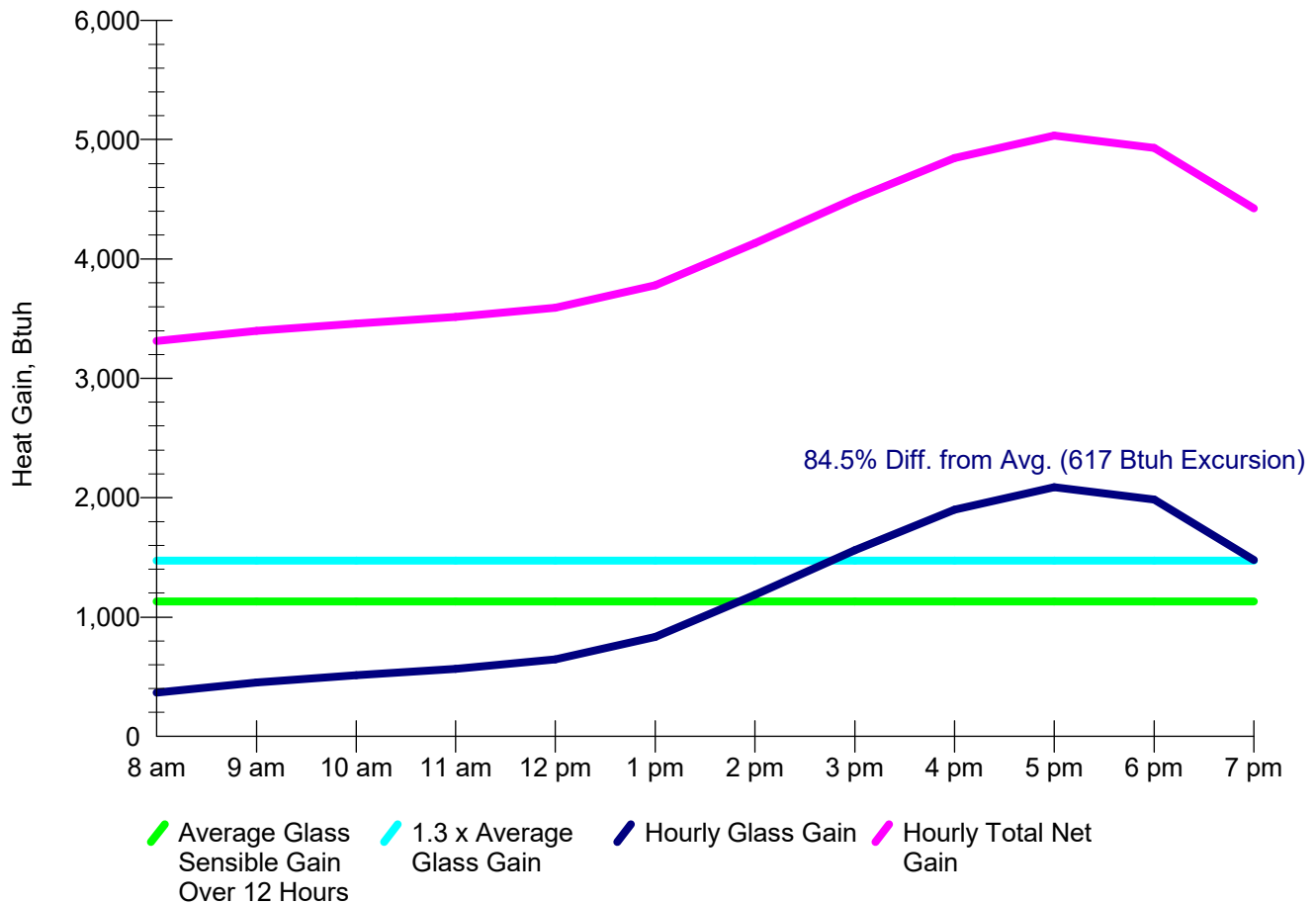
AED Excursion (amount by which peak exceeds 1.3 x average): 0 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 2 - L0 Bar Hall Storage - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM DOES NOT HAVE ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 84.5%.

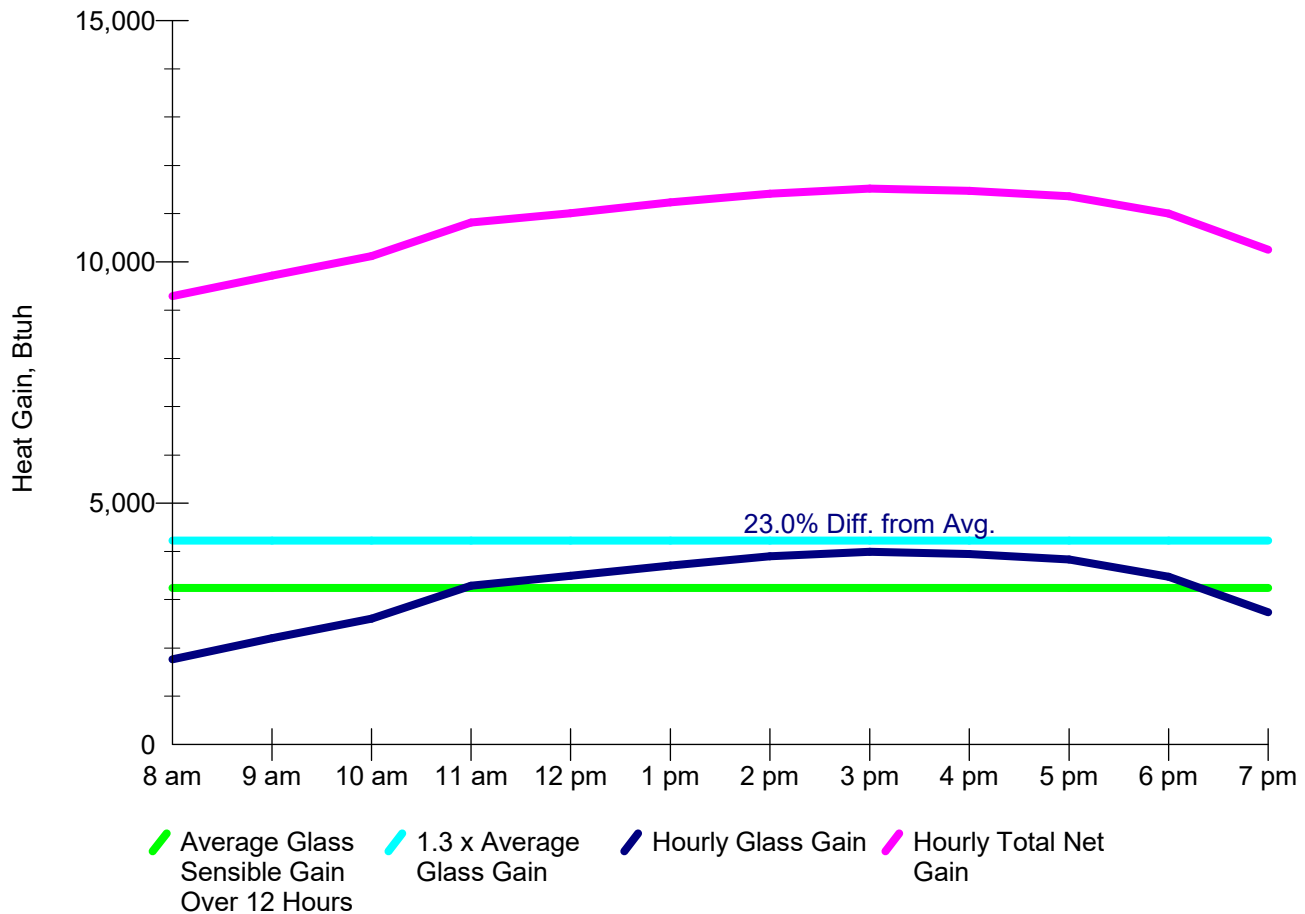
AED Excursion (amount by which peak exceeds 1.3 x average): 617 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 3 - L0 Master Bath & Closet - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 23.0%.

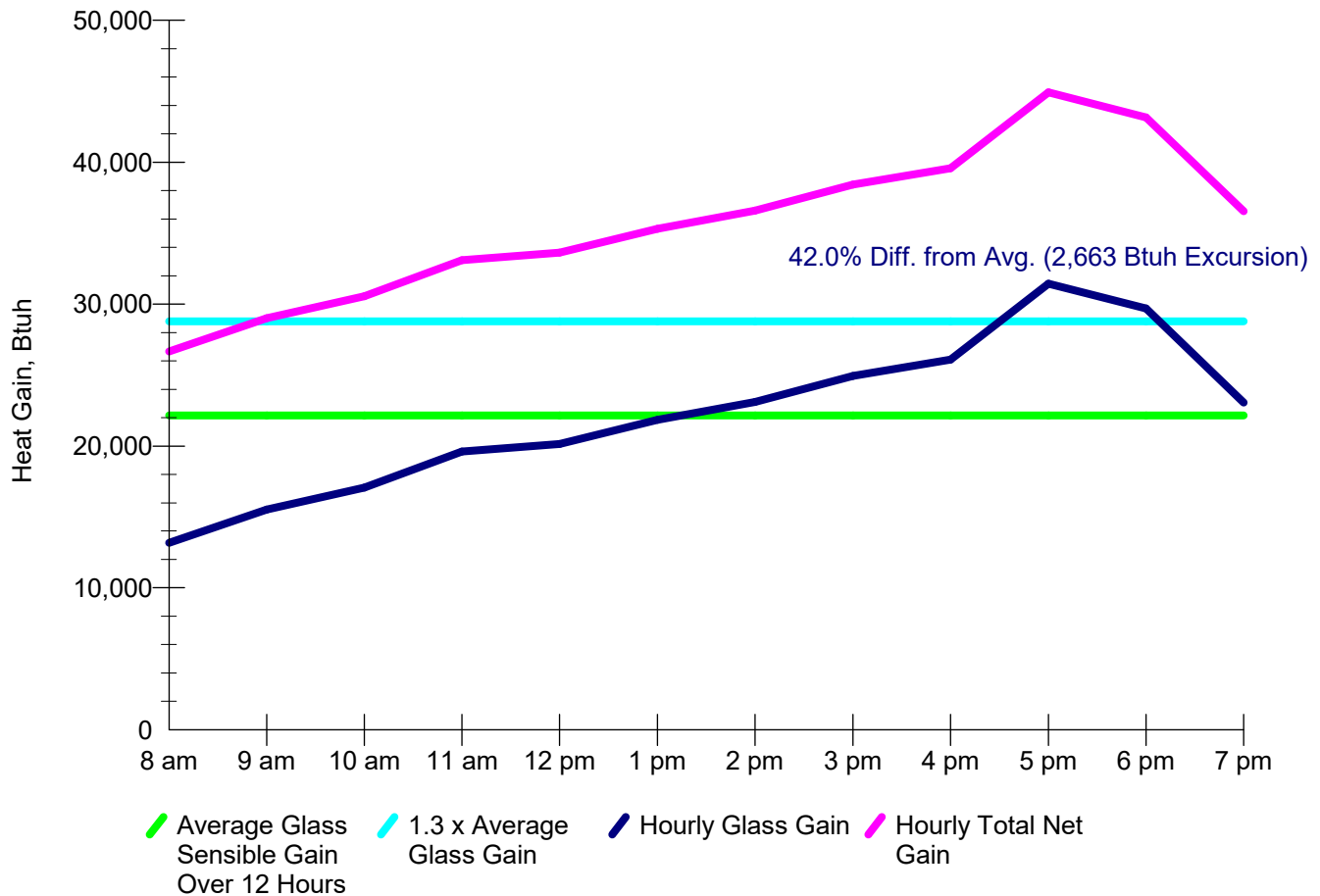
AED Excursion (amount by which peak exceeds 1.3 x average): 0 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 4 - L1 Living Dining - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM DOES NOT HAVE ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 42.0%.

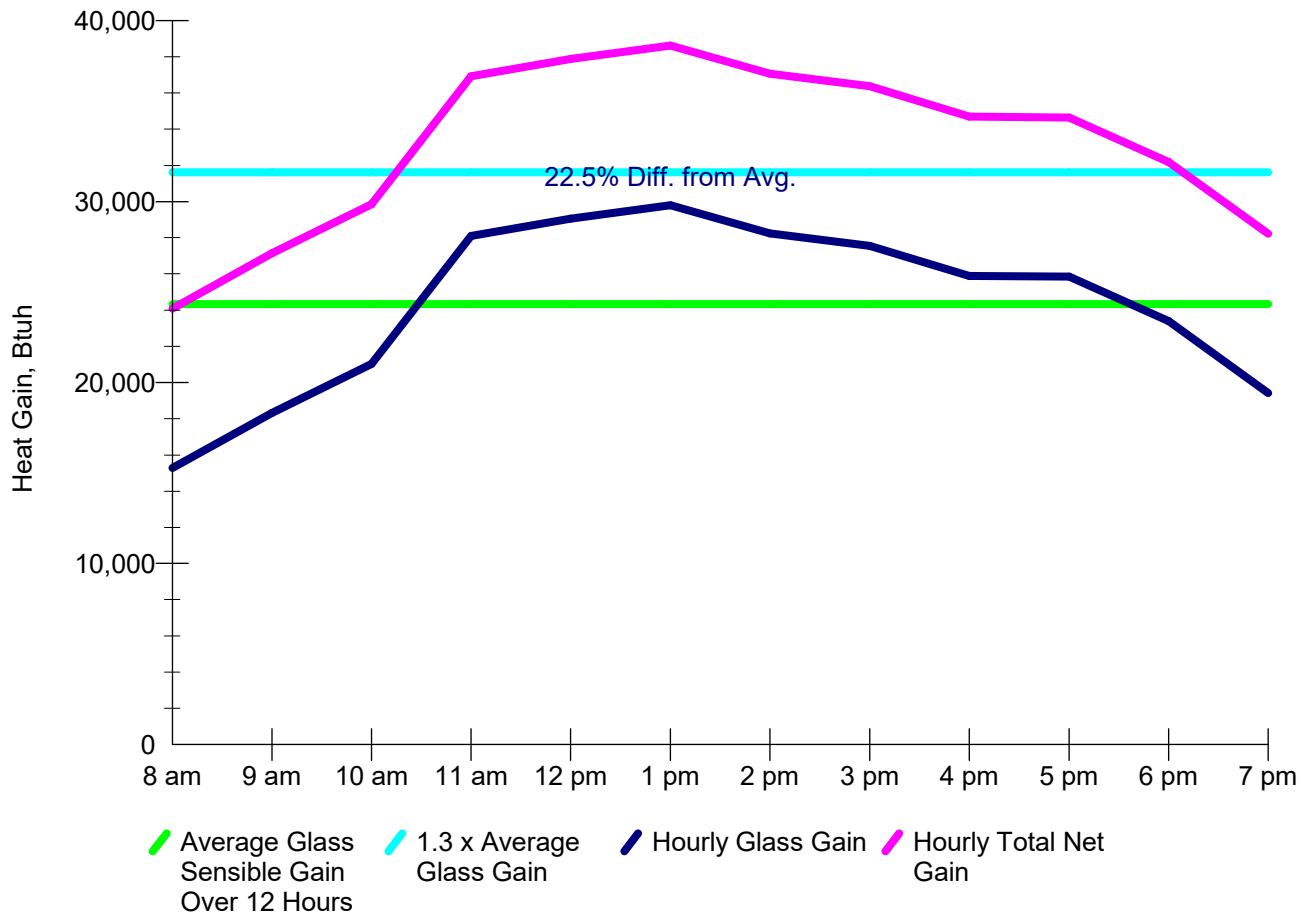
AED Excursion (amount by which peak exceeds 1.3 x average): 2,663 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 5 - L1 Kitchen & Media - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 22.5%.

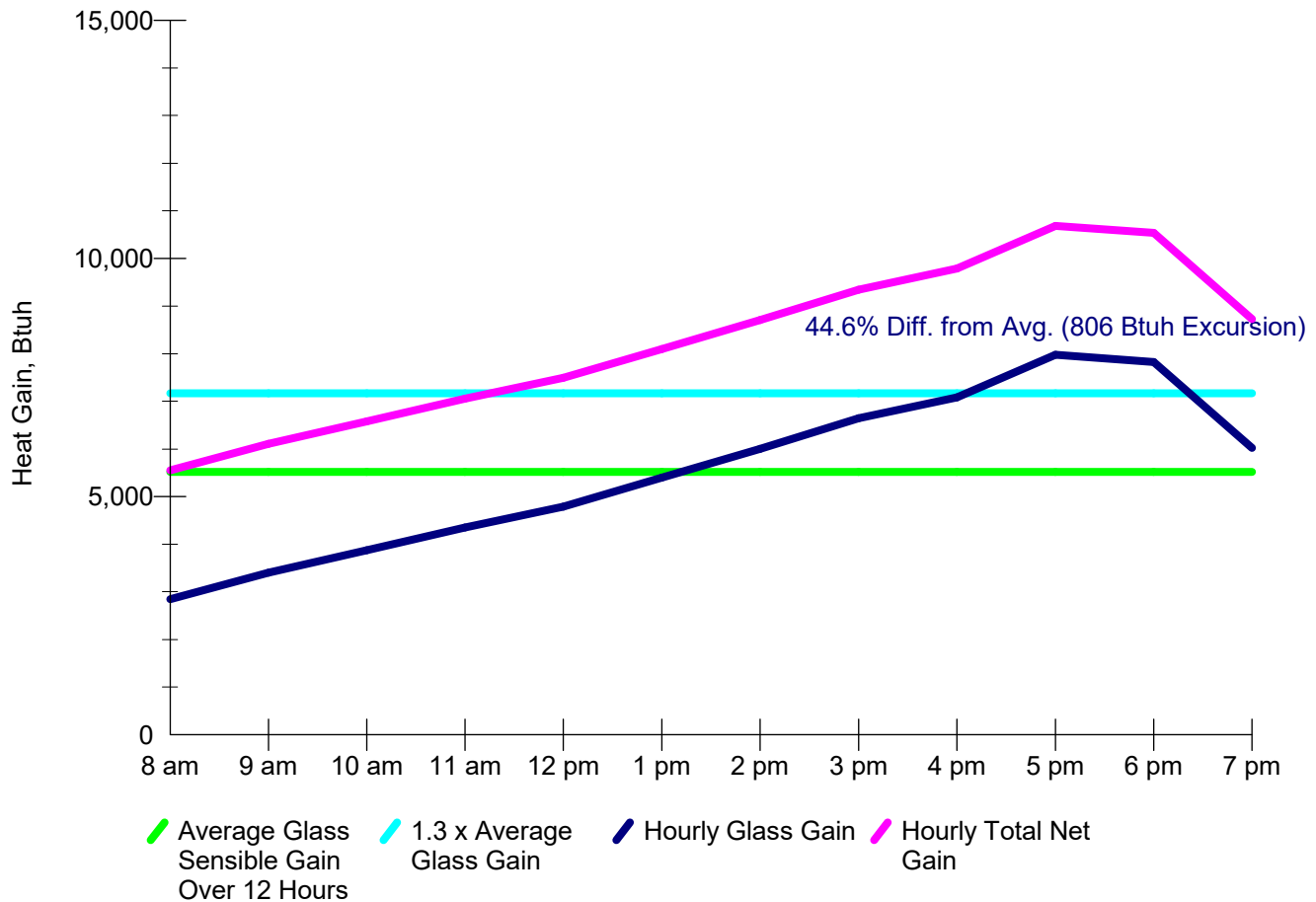
AED Excursion (amount by which peak exceeds 1.3 x average): 0 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 6 - L1 Office & Laundry - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM DOES NOT HAVE ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 44.6%.

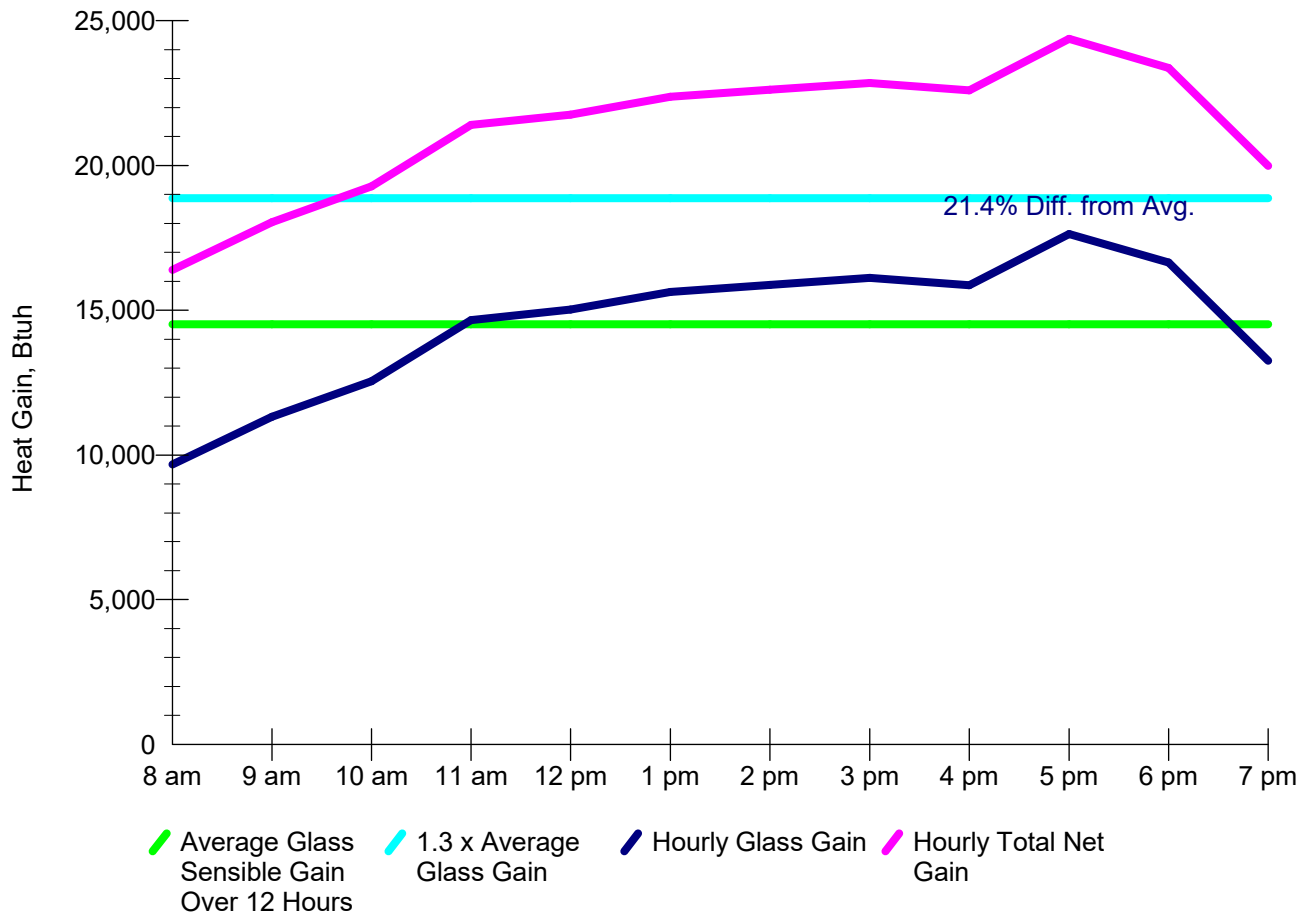
AED Excursion (amount by which peak exceeds 1.3 x average): 806 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 7 - L2 - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 21.4%.

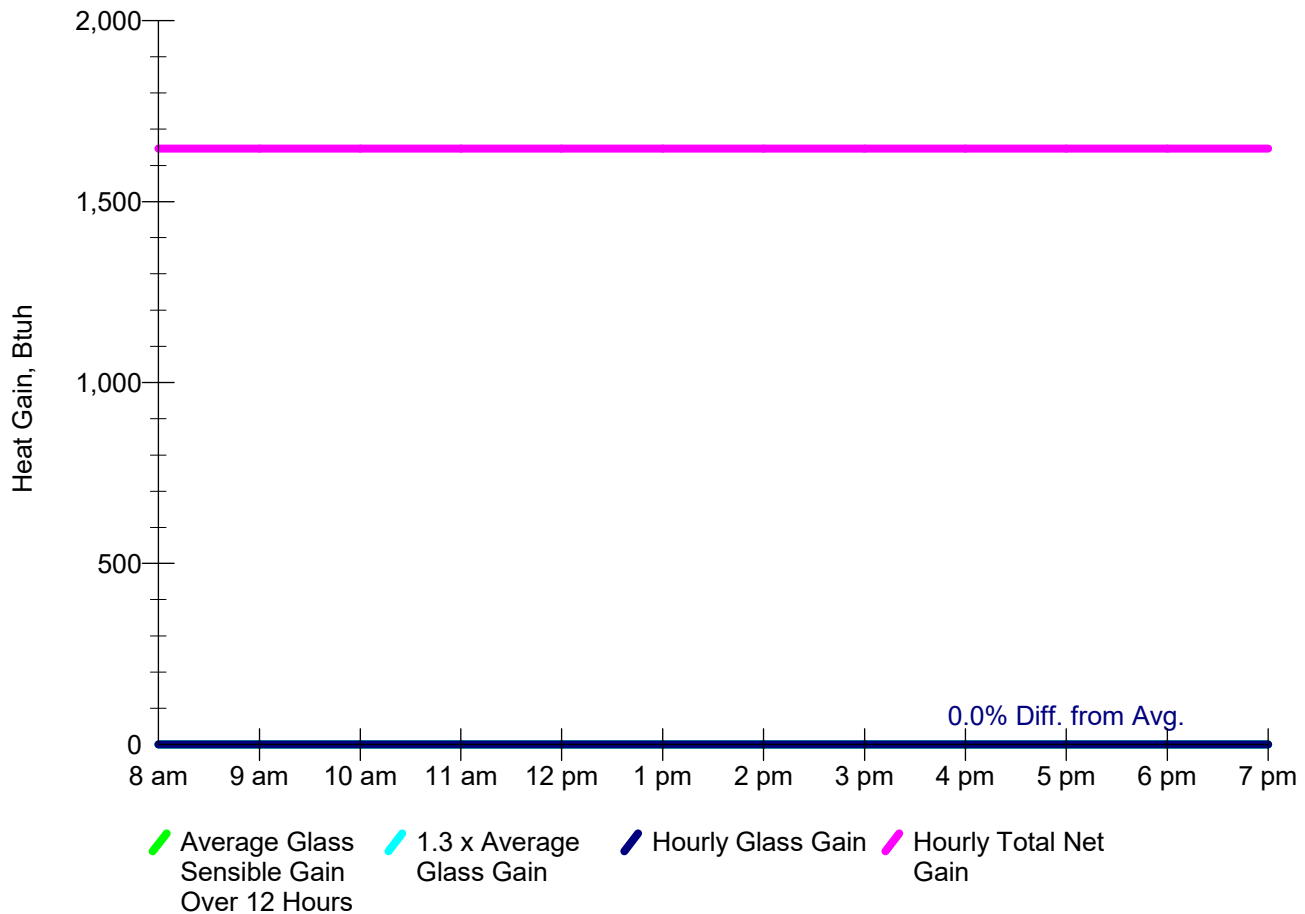
AED Excursion (amount by which peak exceeds 1.3 x average): 0 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 9 - L0 Wine - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

System is on NE, SE, SW, NW rosette.

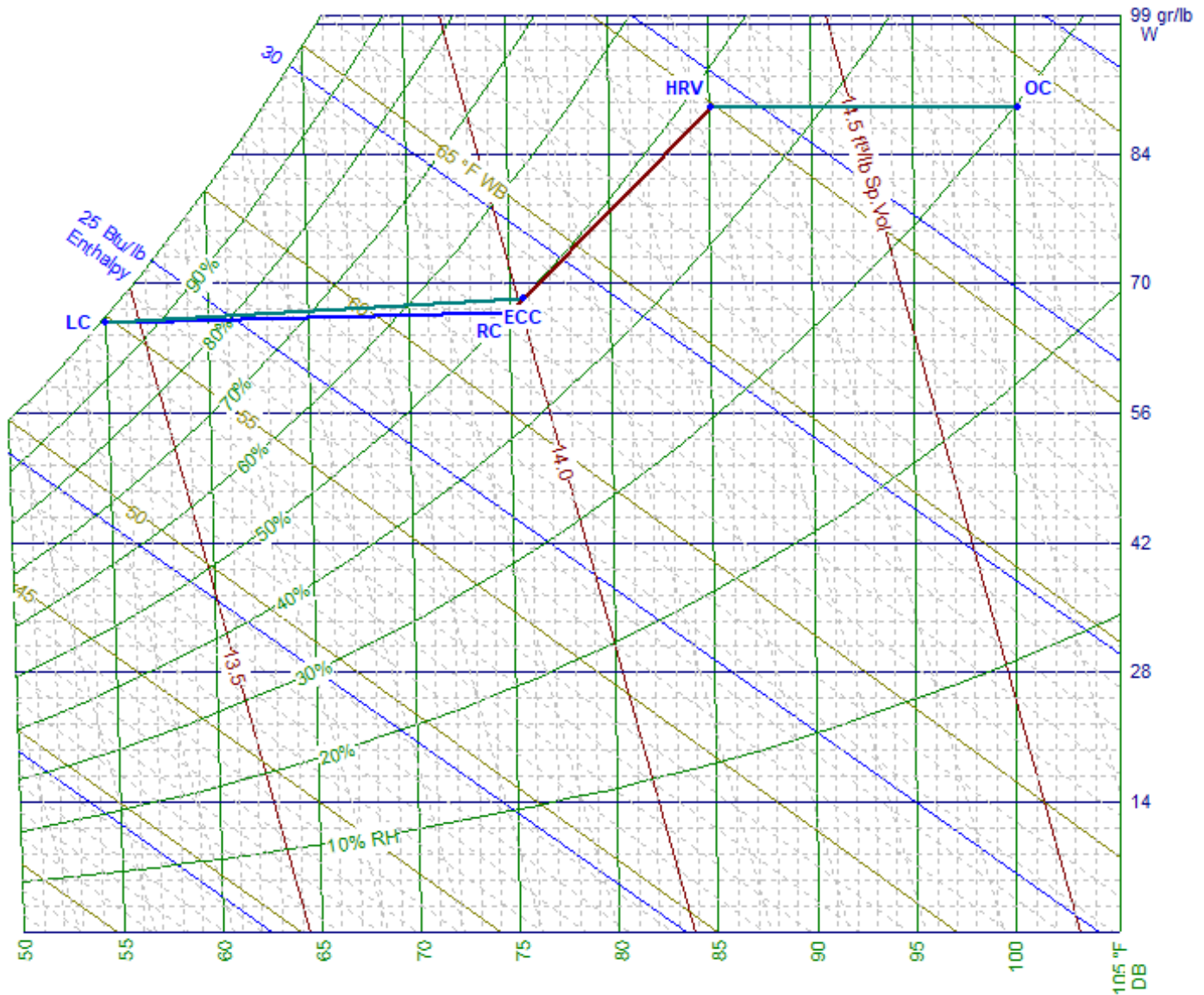
Peak load exceeds 12-hour average load by 0.0%.

AED Excursion (amount by which peak exceeds 1.3 x average): 0 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.

System 1 - L0 Master BR - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	75	62.4	OC	Outdoor Condition	100.2	74.1
LC	Leaving Coil Condition	55	54.8	ECC	Entering Coil Condition	75.7	62.9
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	75.7	62.9
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	85.1	69.9				



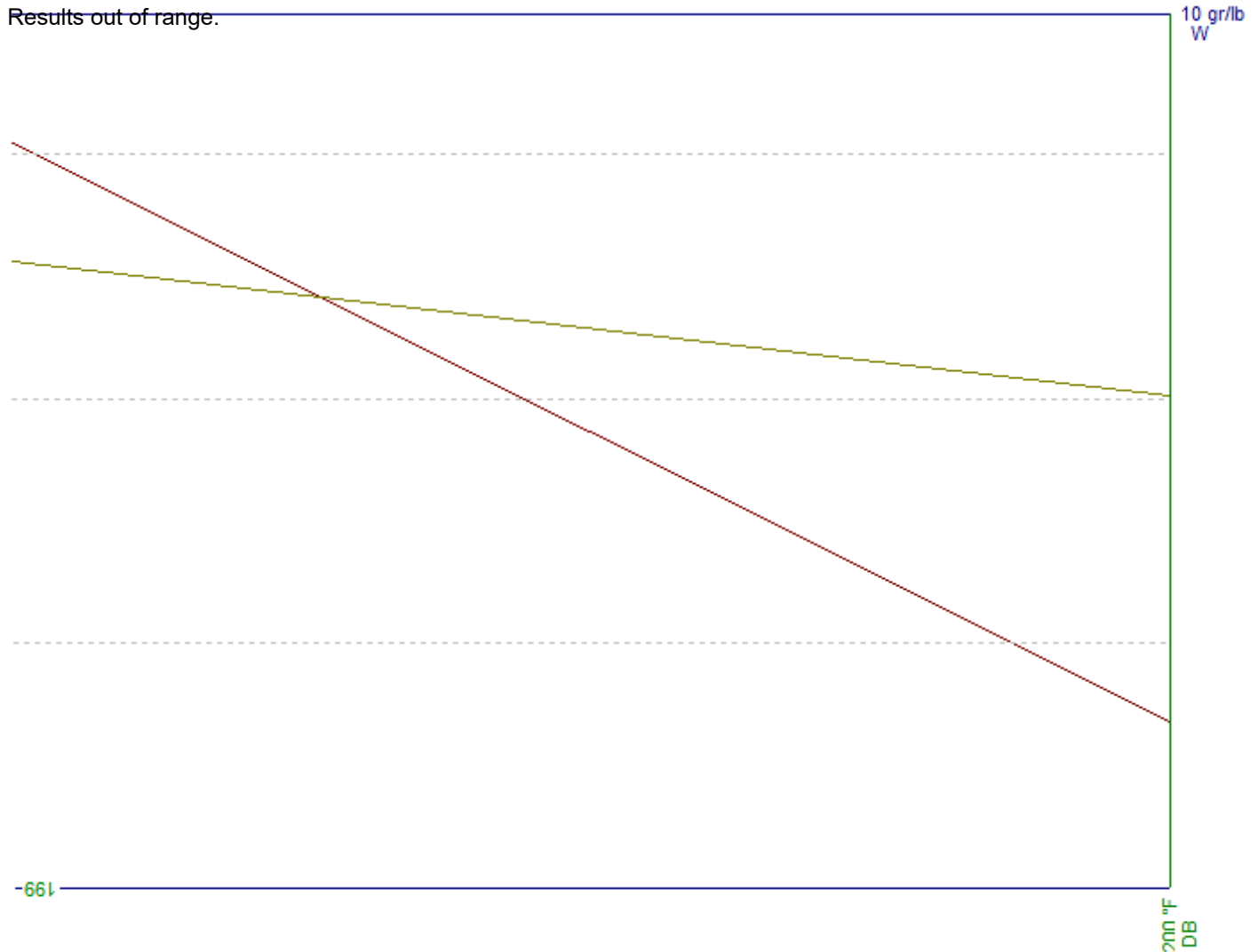


System 2 - L0 Bar Hall Storage - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	n/a	n/a	OC	Outdoor Condition	n/a	n/a
LC	Leaving Coil Condition	n/a	n/a	ECC	Entering Coil Condition	n/a	n/a
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	n/a	n/a
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	n/a	n/a				

One or more points or processes failed to be added to the chart:
 Zone process could not be added.

Results out of range.



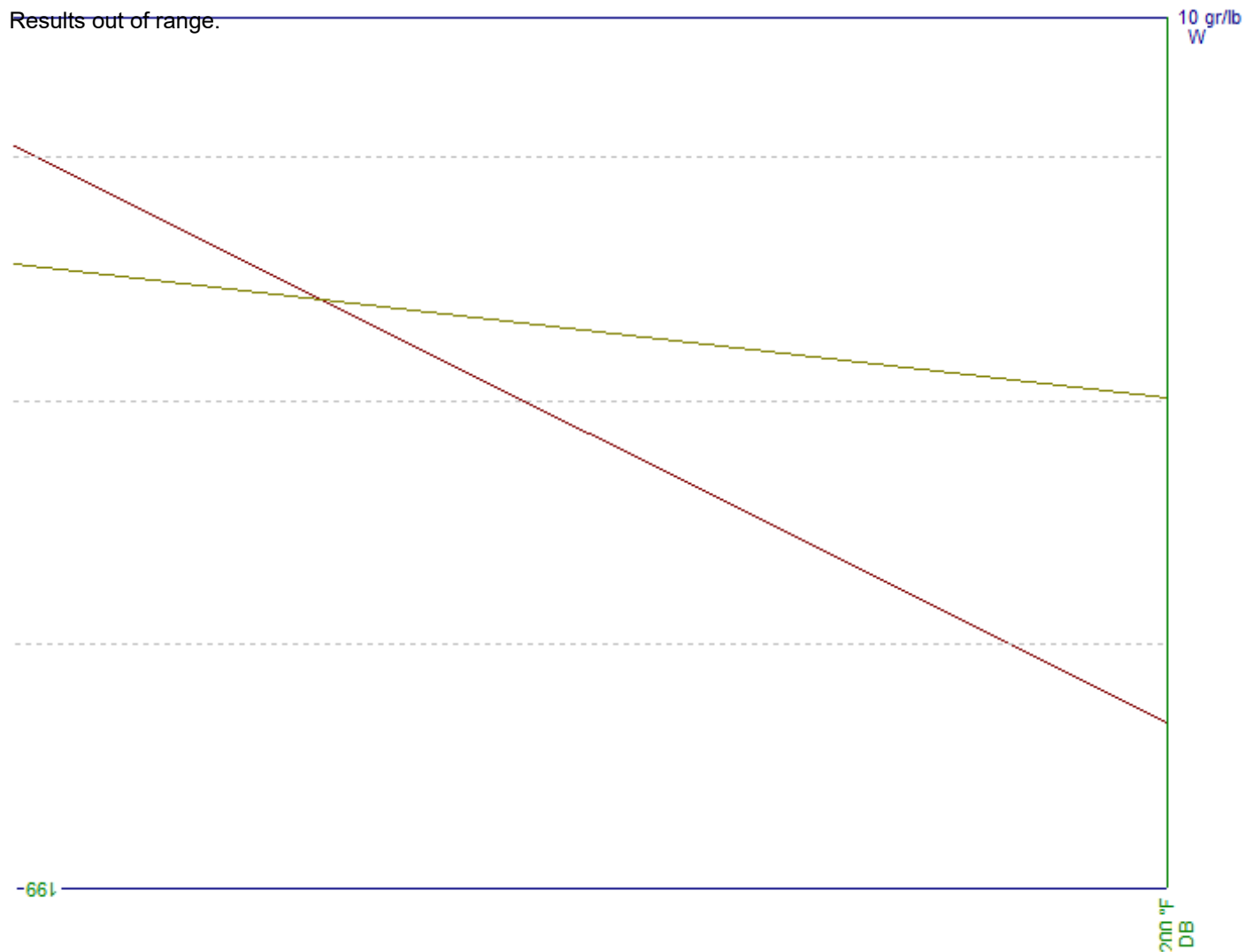


System 3 - L0 Master Bath & Closet - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	n/a	n/a	OC	Outdoor Condition	n/a	n/a
LC	Leaving Coil Condition	n/a	n/a	ECC	Entering Coil Condition	n/a	n/a
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	n/a	n/a
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	n/a	n/a				

One or more points or processes failed to be added to the chart:
Zone process could not be added.

Results out of range.



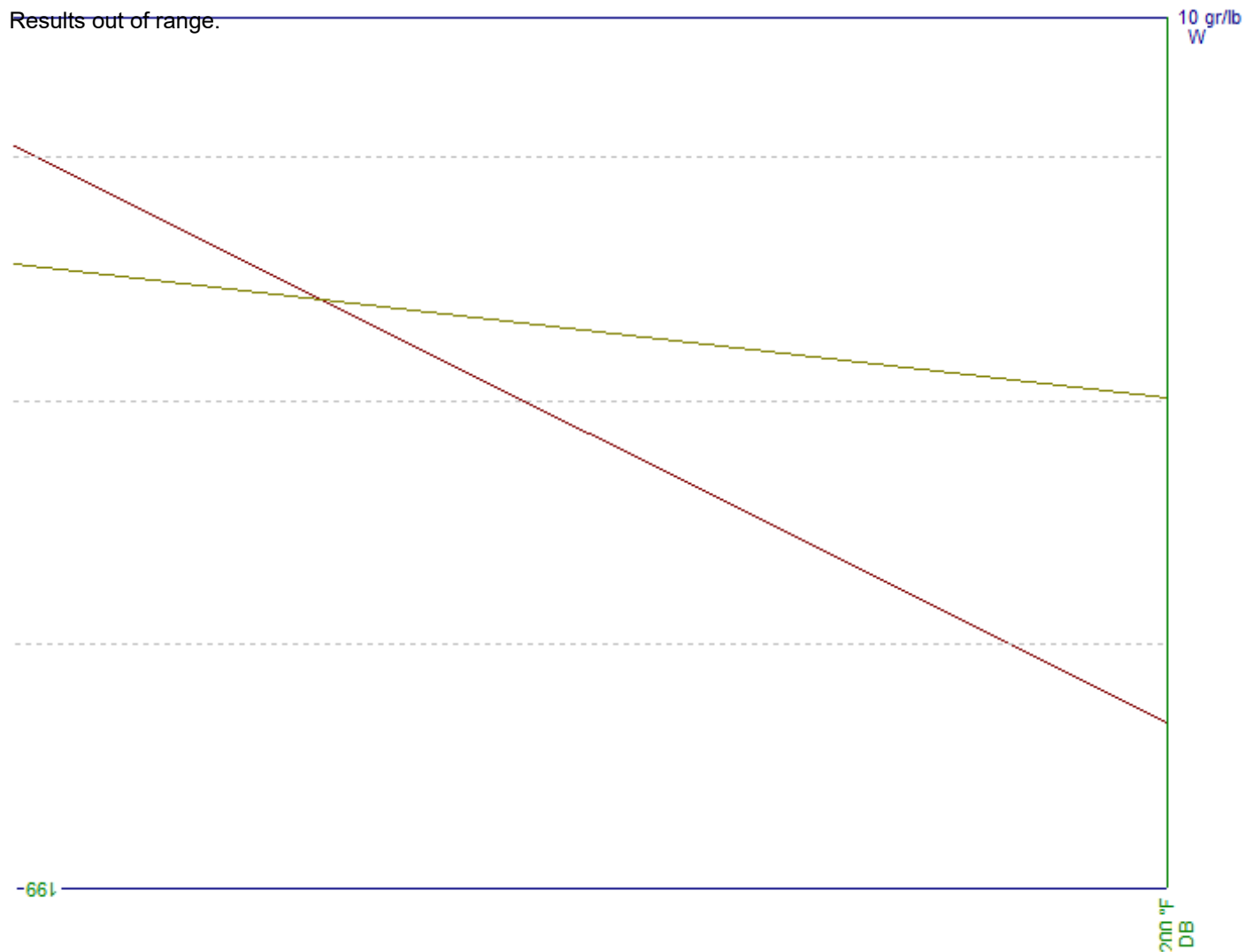


System 4 - L1 Living Dining - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	n/a	n/a	OC	Outdoor Condition	n/a	n/a
LC	Leaving Coil Condition	n/a	n/a	ECC	Entering Coil Condition	n/a	n/a
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	n/a	n/a
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	n/a	n/a				

One or more points or processes failed to be added to the chart:
Zone process could not be added.

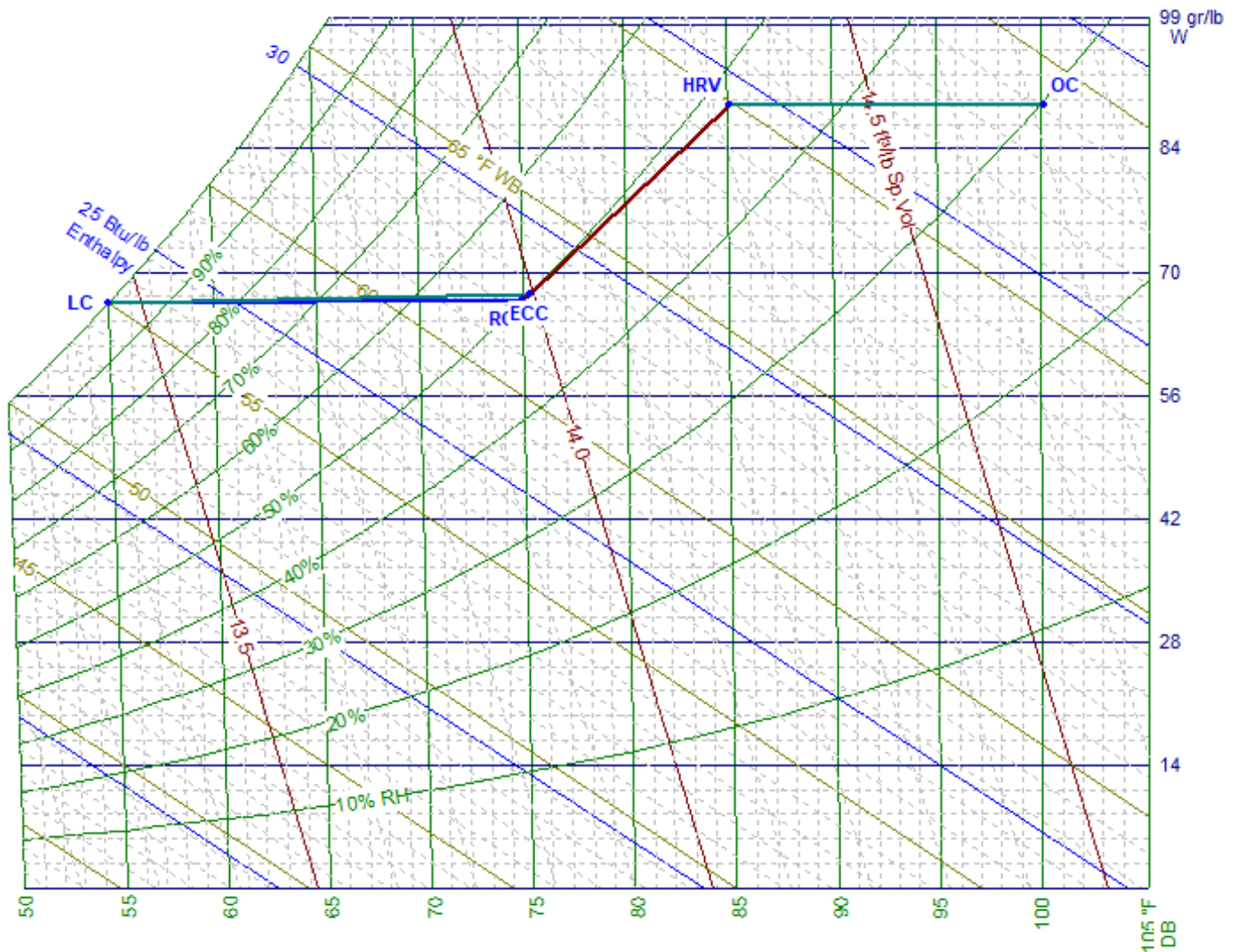
Results out of range.





System 5 - L1 Kitchen & Media - Psychrometric Chart

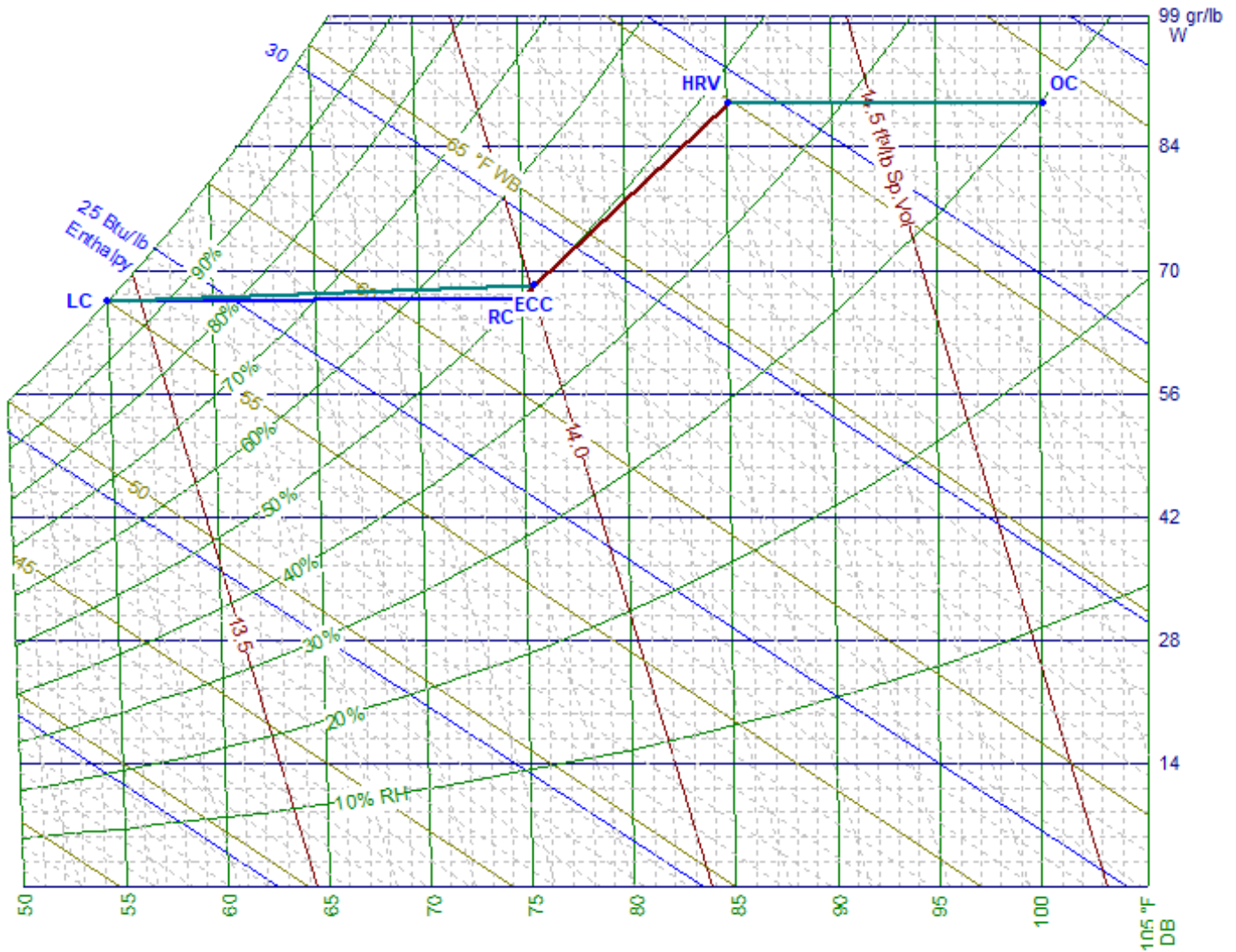
Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	75	62.4	OC	Outdoor Condition	100.2	74.1
LC	Leaving Coil Condition	55	55	ECC	Entering Coil Condition	75.3	62.7
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	75.3	62.7
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	85.1	69.9				





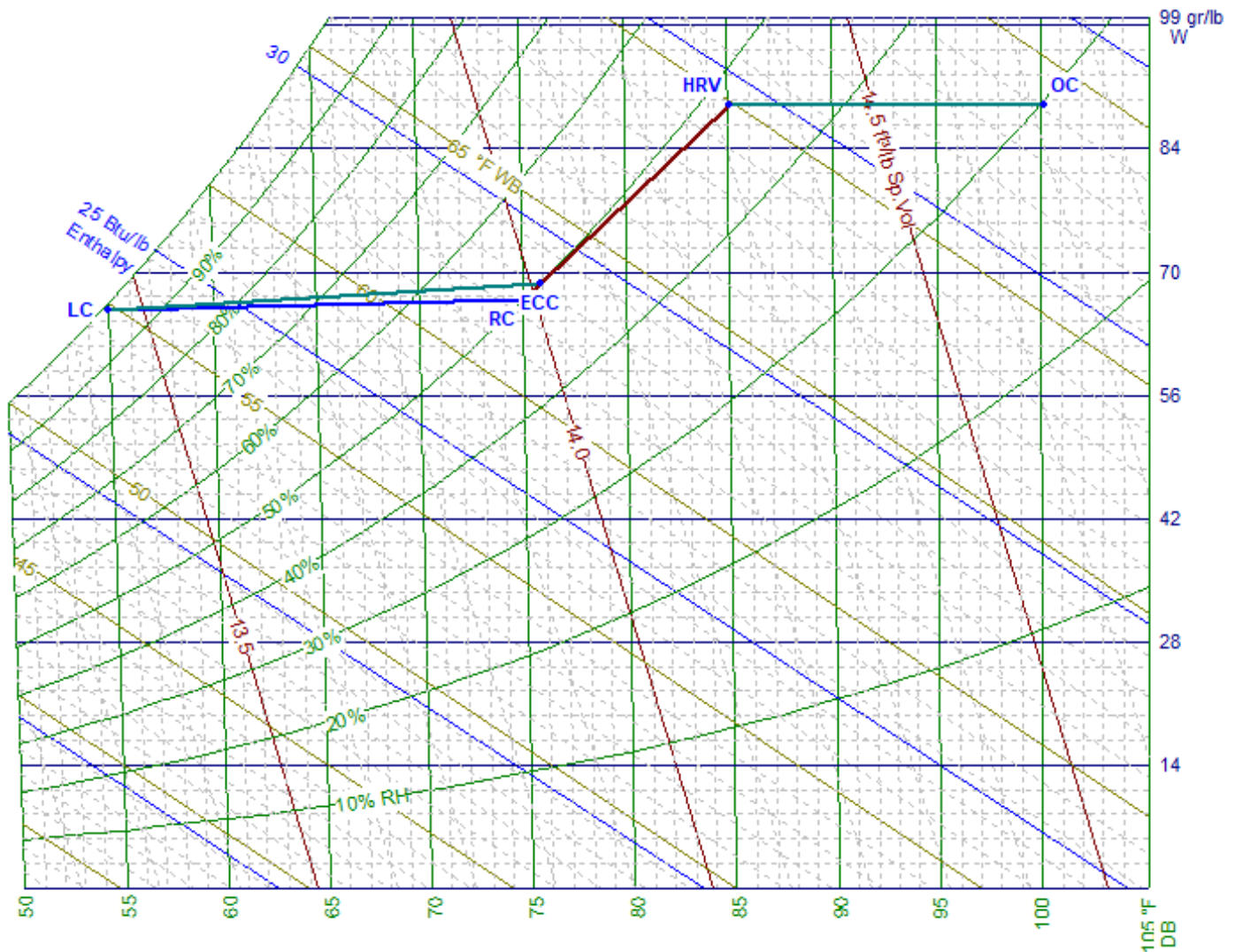
System 6 - L1 Office & Laundry - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	75	62.4	OC	Outdoor Condition	100.2	74.1
LC	Leaving Coil Condition	55	55	ECC	Entering Coil Condition	75.6	62.9
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	75.6	62.9
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	85.1	69.9				



System 7 - L2 - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	75	62.4	OC	Outdoor Condition	100.2	74.1
LC	Leaving Coil Condition	55	54.8	ECC	Entering Coil Condition	75.8	63.1
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	75.8	63.1
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	85.1	69.9				



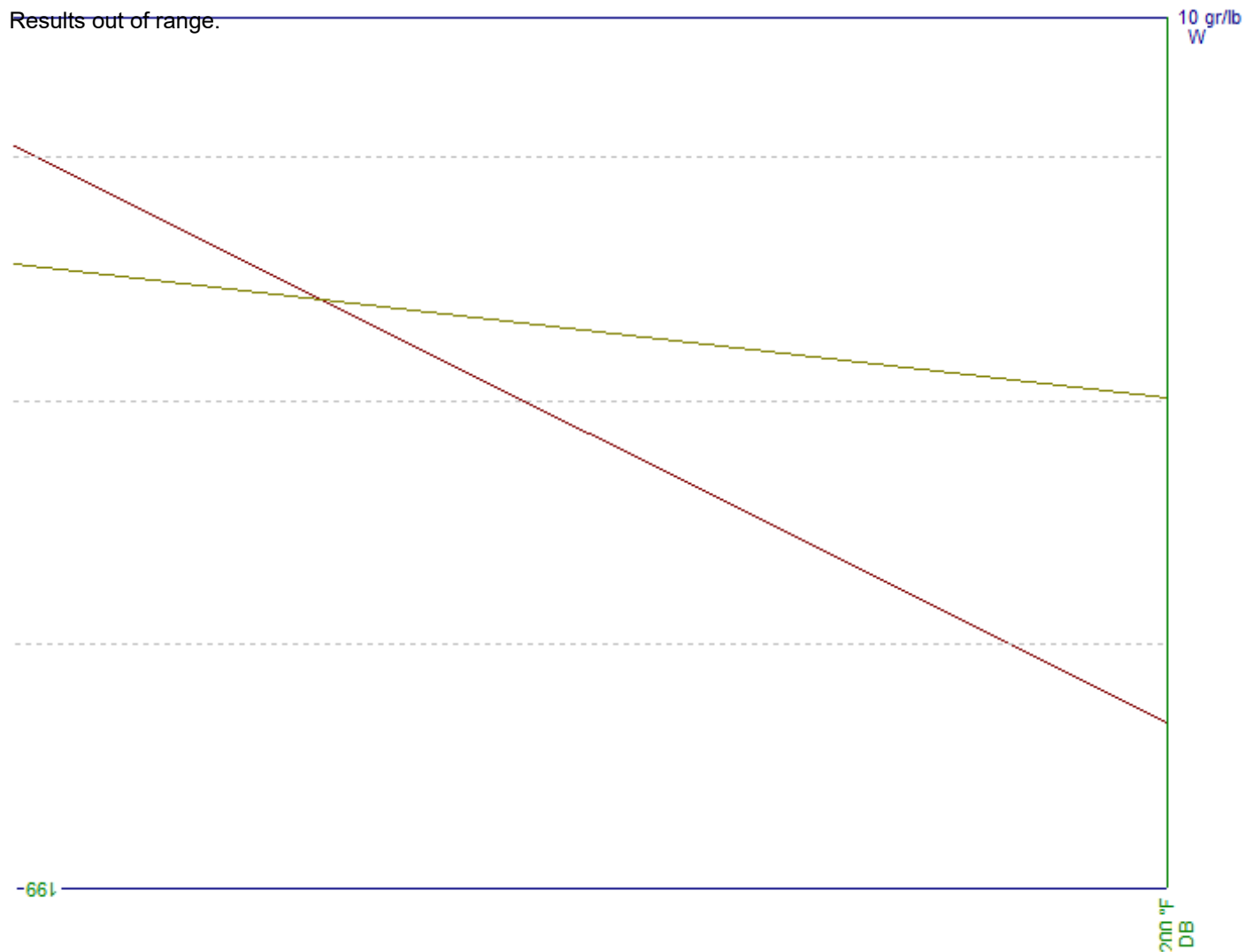


System 9 - L0 Wine - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	n/a	n/a	OC	Outdoor Condition	n/a	n/a
LC	Leaving Coil Condition	n/a	n/a	ECC	Entering Coil Condition	n/a	n/a
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	n/a	n/a
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	n/a	n/a				

One or more points or processes failed to be added to the chart:
Zone process could not be added.

Results out of range.





Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	1319.8	31,436	0	52,569	52,569
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	372.5	20,484	0	17,727	17,727
8E20-law: Glazing-Skylight, Flat double pane low-e (e = 0.20), large curb, aluminum clad wood sash, wood curb, no insulation, plywood shaft, no insulation, horizontal, U-value 0.83, SHGC 0.61	16.4	589	0	2,645	2,645
11D: Door-Wood - Solid Core, U-value 0.39	35.7	603	0	504	504
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft^3	1847.2	41,594	0	19,978	19,978
ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52					
15B0-0-10: Wall-Basement, , no insulation or framing, no interior finish, 10' floor depth, U-value 0.102, above grade U-value 0.488	344.3	1,611	0	62	62
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	2147.4	4,465	0	2,227	2,227
12F-6sw: Part-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	331.6	268	0	358	358
12A-0sm: Part-Frame, no insulation in stud cavity, no board insulation, siding finish, metal studs, U-value 0.55	99.4	0	0	1,366	1,366
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	5057	6,351	0	4,722	4,722
16BR-21: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Unvented Attic with Radiant Barrier, Any Roofing Material, Any Roof Color, R-21 insulation, U-value 0.044	17.1	33	0	45	45
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	361	18,446	0	0	0
20P1-11op-t: Floor-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	652	2,146	0	1,001	1,001
20P1-11op-t: Partition Floor (STD=20.2, WTD=33.3)-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	533.6	1,351	0	819	819
20P1-23op-t: Partition Floor (STD=25, WTD=0)-Over open crawl space or garage, Passive, spray foam insulation, R-23 open cell 1/2 lb. spray foam insulation, 6 inches in 2 x 10 joist cavity, tile covering, U-value 0.044	17.1	0	0	19	19
Subtotals for structure:		129,377	0	104,042	104,042
People:	5		1,000	1,150	2,150
Equipment:			640	2,495	3,135
Lighting:	1469			5,009	5,009



Total Building Summary Loads (cont'd)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 98, Summer CFM: 0		4,572	7	13	20
Ventilation: Winter CFM: 222, Summer CFM: 222		4,139	3,169	2,409	5,578
Return Misc. Gain:		0	-1,903	0	-1,903
AED Excursion:		0	0	4,087	4,087
Total Building Load Totals:		138,088	2,913	119,205	122,118

Check Figures

Total Building Supply CFM:	6,117	CFM Per Square ft.:	1.038
Square ft. of Room Area:	5,892	Square ft. Per Ton:	579
Volume (ft³):	53,901		

Building Loads

Total Heating Required Including Ventilation Air:	138,088	Btuh	138.088	MBH
Total Sensible Gain:	119,205	Btuh	98	%
Total Latent Gain:	2,913	Btuh	2	%
Total Cooling Required Including Ventilation Air:	122,118	Btuh	10.18	Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

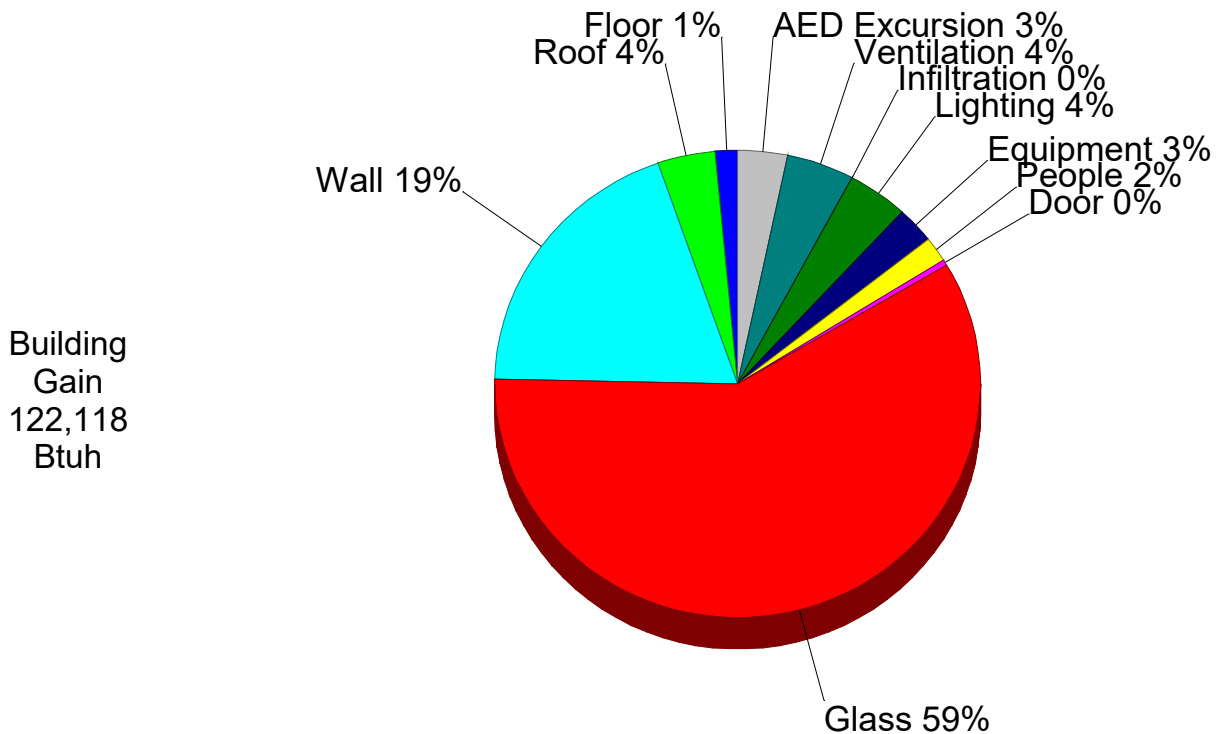
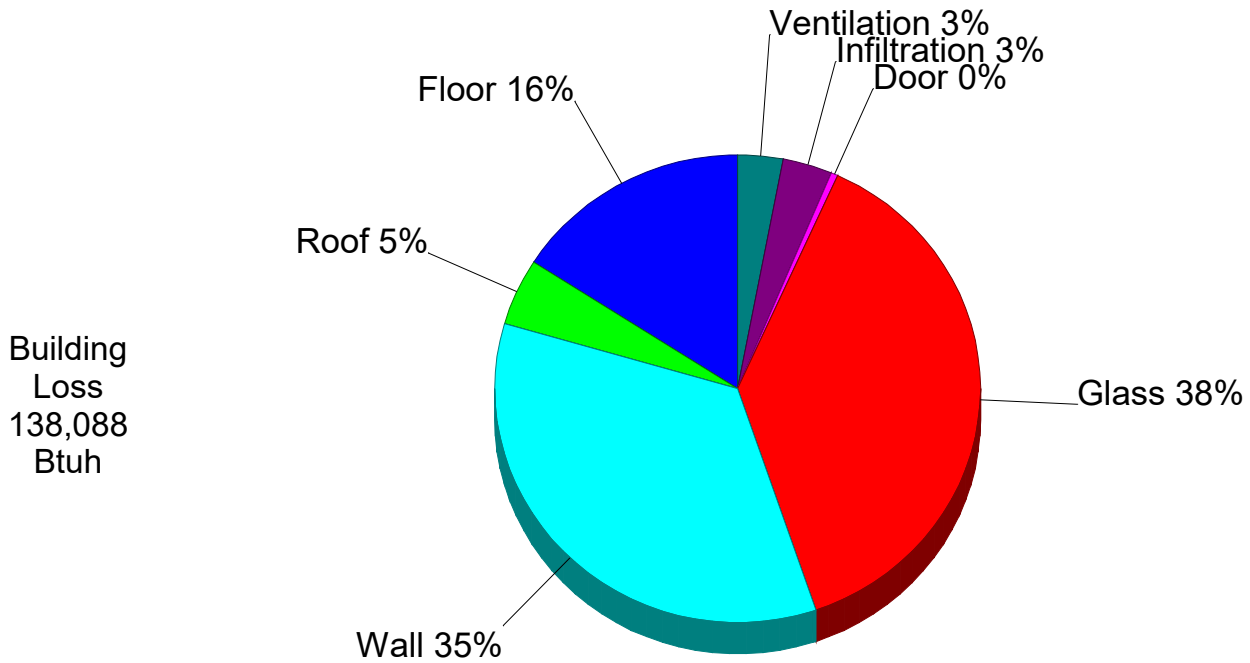
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



Building Pie Chart





System 1 L0 Master BR Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	153.5	3,656	0	6,387	6,387
11D: Door-Wood - Solid Core, U-value 0.39	10	169	0	141	141
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft^3	261.9	5,898	0	2,833	2,833
ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52					
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	549.5	690	0	513	513
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	49	2,504	0	0	0
Subtotals for structure:		12,917	0	9,874	9,874
People:	2		400	460	860
Equipment:			0	0	0
Lighting:	137			467	467
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
Ventilation: Winter CFM: 32, Summer CFM: 32		597	457	347	804
Return Misc. Gain:		0	-274	0	-274
System 1 L0 Master BR Load Totals:		13,514	583	11,148	11,731

Check Figures

Supply CFM:	735	CFM Per Square ft.:	1.338
Square ft. of Room Area:	550	Square ft. Per Ton:	562
Volume (ft³):	4,781		

System Loads

Total Heating Required Including Ventilation Air:	13,514 Btuh	13.514 MBH
Total Sensible Gain:	11,148 Btuh	95 %
Total Latent Gain:	583 Btuh	5 %
Total Cooling Required Including Ventilation Air:	11,731 Btuh	0.98 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 2 L0 Bar Hall Storage Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	20.2	480	0	1,362	1,362
11D: Door-Wood - Solid Core, U-value 0.39	11	186	0	155	155
15B0-0-10: Wall-Basement, , no insulation or framing, no interior finish, 10' floor depth, U-value 0.102, above grade U-value 0.488	344.3	1,611	0	62	62
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft ³ ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	124.7	2,807	0	1,348	1,348
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	110.3	139	0	103	103
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	59	3,015	0	0	0
Subtotals for structure:		8,238	0	3,030	3,030
People:	0		0	0	0
Equipment:			0	0	0
Lighting:	121			413	413
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
Ventilation: Winter CFM: 15, Summer CFM: 15		280	214	163	377
Return Misc. Gain:		0	-128	0	-128
AED Excursion:		0	0	617	617
System 2 L0 Bar Hall Storage Load Totals:		8,518	86	4,222	4,309

Check Figures

Supply CFM:	448	CFM Per Square ft.:	0.924
Square ft. of Room Area:	485	Square ft. Per Ton:	1,350
Volume (ft ³):	992		

System Loads

Total Heating Required Including Ventilation Air:	8,518 Btuh	8.518 MBH
Total Sensible Gain:	4,222 Btuh	98 %
Total Latent Gain:	86 Btuh	2 %
Total Cooling Required Including Ventilation Air:	4,309 Btuh	0.36 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 3 L0 Master Bath & Closet Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	68	1,620	0	2,965	2,965
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft^3 ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	538.5	12,125	0	5,824	5,824
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	483.3	607	0	451	451
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	66	3,373	0	0	0
Subtotals for structure:		17,725	0	9,240	9,240
People:	0		0	0	0
Equipment:			50	545	595
Lighting:	122			416	416
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 10, Summer CFM: 0		468	0	0	0
Ventilation: Winter CFM: 14, Summer CFM: 14		261	200	152	352
Return Misc. Gain:		0	-120	0	-120
System 3 L0 Master Bath & Closet Load Totals:		18,454	130	10,353	10,483

Check Figures

Supply CFM:	735	CFM Per Square ft.:	1.521
Square ft. of Room Area:	483	Square ft. Per Ton:	553
Volume (ft³):	4,366		

System Loads

Total Heating Required Including Ventilation Air:	18,454 Btuh	18.454 MBH
Total Sensible Gain:	10,353 Btuh	99 %
Total Latent Gain:	130 Btuh	1 %
Total Cooling Required Including Ventilation Air:	10,483 Btuh	0.87 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 4 L1 Living Dining Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	364.4	8,681	0	17,185	17,185
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	100	5,497	0	4,757	4,757
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft^3	647	14,568	0	6,998	6,998
ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52					
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	95.1	198	0	98	98
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	1382	1,735	0	1,291	1,291
20P1-11op-t: Floor-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	607	1,998	0	932	932
Subtotals for structure:		32,677	0	31,261	31,261
People:	0		0	0	0
Equipment:			0	0	0
Lighting:	279			951	951
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 29, Summer CFM: 0		1,341	0	0	0
Ventilation: Winter CFM: 33, Summer CFM: 33		615	471	358	829
Return Misc. Gain:		0	-283	0	-283
AED Excursion:		0	0	2,663	2,663
System 4 L1 Living Dining Load Totals:		34,633	188	35,234	35,422

Check Figures

Supply CFM:	1,400	CFM Per Square ft.:	1.256
Square ft. of Room Area:	1,115	Square ft. Per Ton:	378
Volume (ft³):	11,092		

System Loads

Total Heating Required Including Ventilation Air:	34,633 Btuh	34.633 MBH
Total Sensible Gain:	35,234 Btuh	99 %
Total Latent Gain:	188 Btuh	1 %
Total Cooling Required Including Ventilation Air:	35,422 Btuh	2.95 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 5 L1 Kitchen & Media Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	143.9	3,428	0	6,223	6,223
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	272.5	14,987	0	12,970	12,970
8E20-law: Glazing-Skylight, Flat double pane low-e (e = 0.20), large curb, aluminum clad wood sash, wood curb, no insulation, plywood shaft, no insulation, horizontal, U-value 0.83, SHGC 0.61	16.4	589	0	2,645	2,645
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft ³ ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	275.1	6,196	0	2,975	2,975
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	463.7	964	0	481	481
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	1300.2	1,633	0	1,215	1,215
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	111	5,671	0	0	0
Subtotals for structure:		33,468	0	26,509	26,509
People:	0		0	0	0
Equipment:			400	1,950	2,350
Lighting:	330			1,125	1,125
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 38, Summer CFM: 0		1,753	0	0	0
Ventilation: Winter CFM: 40, Summer CFM: 40		746	571	434	1,005
Return Misc. Gain:		0	-343	0	-343
System 5 L1 Kitchen & Media Load Totals:		35,967	628	30,018	30,646

Check Figures

Supply CFM:	1,400	CFM Per Square ft.:	1.063
Square ft. of Room Area:	1,317	Square ft. Per Ton:	516
Volume (ft ³):	13,908		

System Loads

Total Heating Required Including Ventilation Air:	35,967 Btuh	35.967 MBH
Total Sensible Gain:	30,018 Btuh	98 %
Total Latent Gain:	628 Btuh	2 %
Total Cooling Required Including Ventilation Air:	30,646 Btuh	2.55 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.
All computed results are estimates as building use and weather may vary.
Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 6 L1 Office & Laundry Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	154	3,667	0	5,314	5,314
11D: Door-Wood - Solid Core, U-value 0.39	14.7	248	0	208	208
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	488	1,015	0	506	506
12F-6sw: Part-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	167.4	268	0	162	162
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	76	3,883	0	0	0
Subtotals for structure:		9,081	0	6,190	6,190
People:	0		0	0	0
Equipment:			90	0	90
Lighting:	172			587	587
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 21, Summer CFM: 0		971	0	0	0
Ventilation: Winter CFM: 21, Summer CFM: 21		392	300	228	528
Return Misc. Gain:		0	-180	0	-180
AED Excursion:		0	0	806	806
System 6 L1 Office & Laundry Load Totals:		10,444	210	7,811	8,020

Check Figures

Supply CFM:	448	CFM Per Square ft.:	0.646
Square ft. of Room Area:	694	Square ft. Per Ton:	1,038
Volume (ft ³):	7,492		

System Loads

Total Heating Required Including Ventilation Air:	10,444 Btuh	10.444 MBH
Total Sensible Gain:	7,811 Btuh	97 %
Total Latent Gain:	210 Btuh	3 %
Total Cooling Required Including Ventilation Air:	8,020 Btuh	0.67 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 7 L2 Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	415.8	9,904	0	13,133	13,133
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	1100.7	2,288	0	1,142	1,142
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	1231.7	1,547	0	1,149	1,149
20P1-11op-t: Floor-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	45	148	0	69	69
20P1-11op-t: Partition Floor (STD=20.2, WTD=33.3)-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	533.6	1,351	0	819	819
Subtotals for structure:		15,238	0	16,312	16,312
People:	3		600	690	1,290
Equipment:			100	0	100
Lighting:	308			1,050	1,050
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
Ventilation: Winter CFM: 67, Summer CFM: 67		1,249	957	727	1,684
Return Misc. Gain:		0	-575	0	-575
System 7 L2 Load Totals:		16,487	1,082	18,779	19,861

Check Figures

Supply CFM:	875	CFM Per Square ft.:	0.710
Square ft. of Room Area:	1,232	Square ft. Per Ton:	744
Volume (ft³):	11,085		

System Loads

Total Heating Required Including Ventilation Air:	16,487 Btuh	16.487 MBH
Total Sensible Gain:	18,779 Btuh	95 %
Total Latent Gain:	1,082 Btuh	5 %
Total Cooling Required Including Ventilation Air:	19,861 Btuh	1.66 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 9 L0 Wine Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
12F-6sw: Part-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	164.2	0	0	196	196
12A-0sm: Part-Frame, no insulation in stud cavity, no board insulation, siding finish, metal studs, U-value 0.55	99.4	0	0	1,366	1,366
16BR-21: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Unvented Attic with Radiant Barrier, Any Roofing Material, Any Roof Color, R-21 insulation, U-value 0.044	17.1	33	0	45	45
20P1-23op-t: Partition Floor (STD=25, WTD=0)-Over open crawl space or garage, Passive, spray foam insulation, R-23 open cell 1/2 lb. spray foam insulation, 6 inches in 2 x 10 joist cavity, tile covering, U-value 0.044	17.1	0	0	19	19
Subtotals for structure:		33	0	1,626	1,626
People:	0		0	0	0
Equipment:			0	0	0
Lighting:	0			0	0
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 1, Summer CFM: 0		39	7	13	20
Ventilation: Winter CFM: 0, Summer CFM: 0		0	0	0	0
System 9 L0 Wine Load Totals:		72	7	1,639	1,646

Check Figures

Supply CFM:	76	CFM Per Square ft.:	4.452
Square ft. of Room Area:	17	Square ft. Per Ton:	125
Volume (ft³):	185		

System Loads

Total Heating Required Including Ventilation Air:	72 Btuh	0.072 MBH
Total Sensible Gain:	1,639 Btuh	100 %
Total Latent Gain:	7 Btuh	0 %
Total Cooling Required Including Ventilation Air:	1,646 Btuh	0.14 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

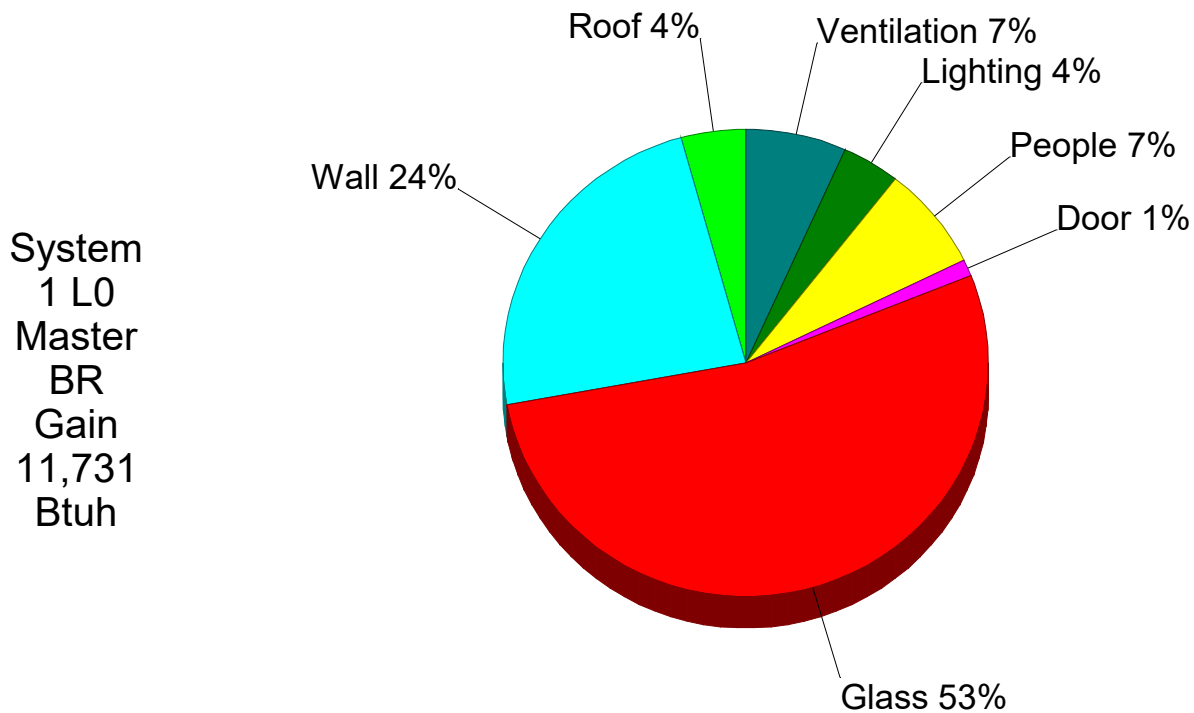
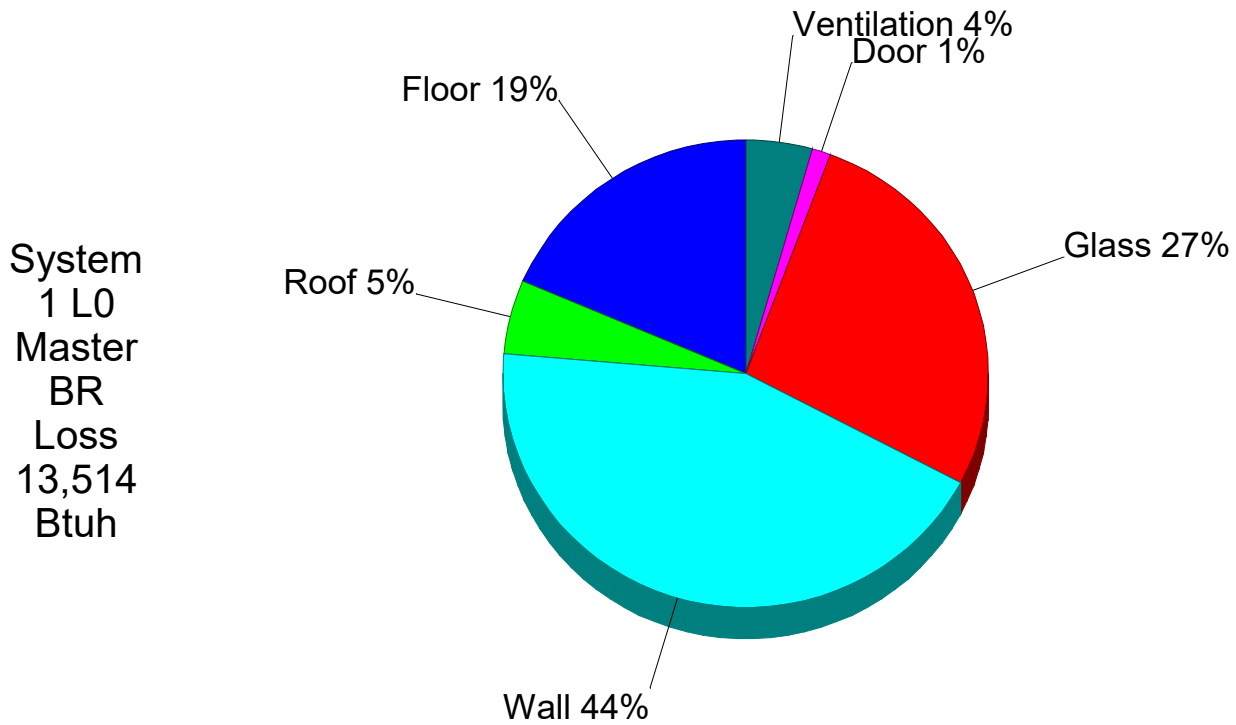
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



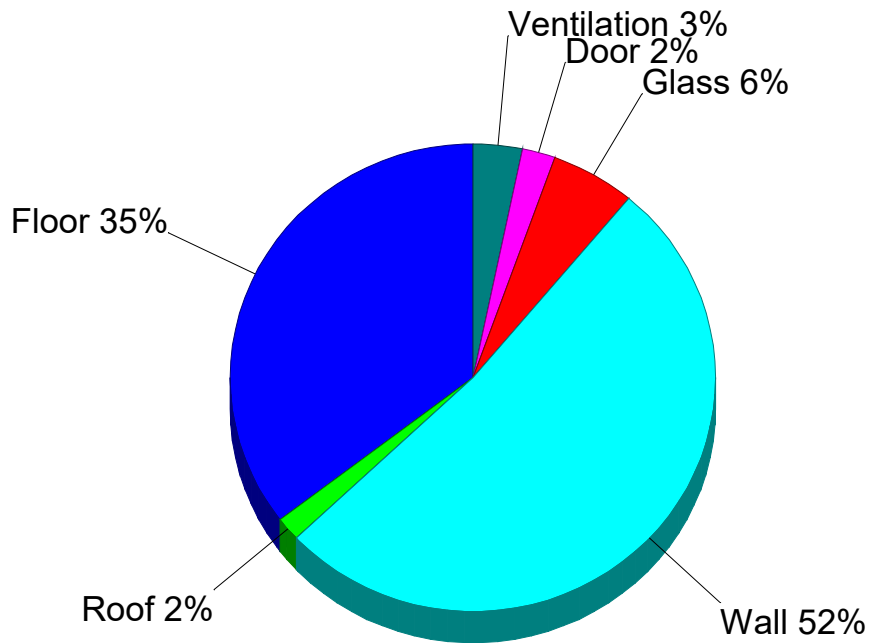
System 1 L0 Master BR Pie Chart



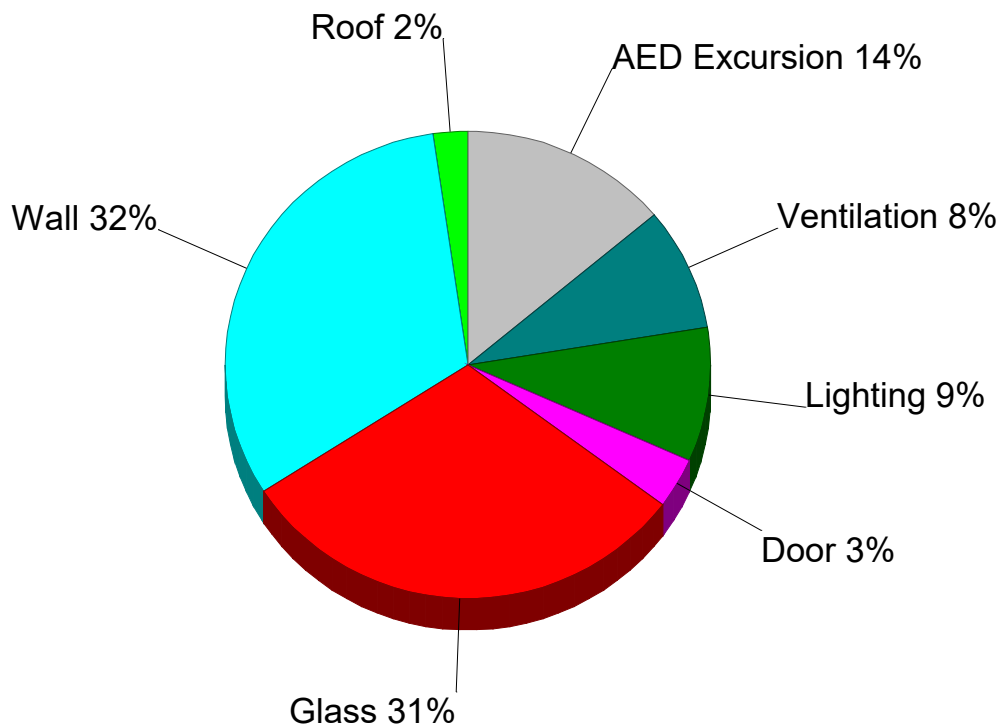


System 2 L0 Bar Hall Storage Pie Chart

System
2 L0 Bar
Hall
Storage
Loss
8,518
Btuh



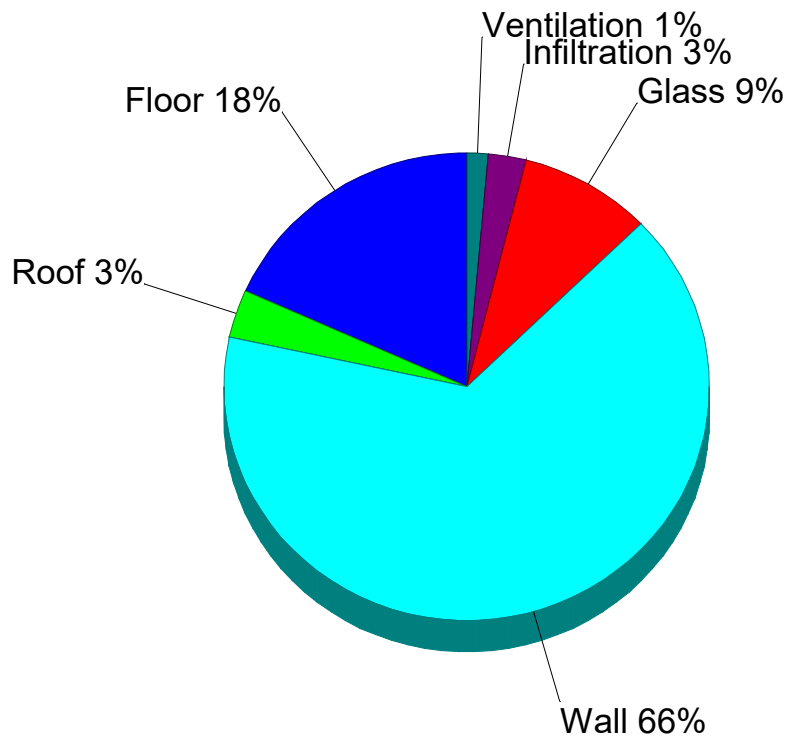
System
2 L0 Bar
Hall
Storage
Gain
4,309
Btuh



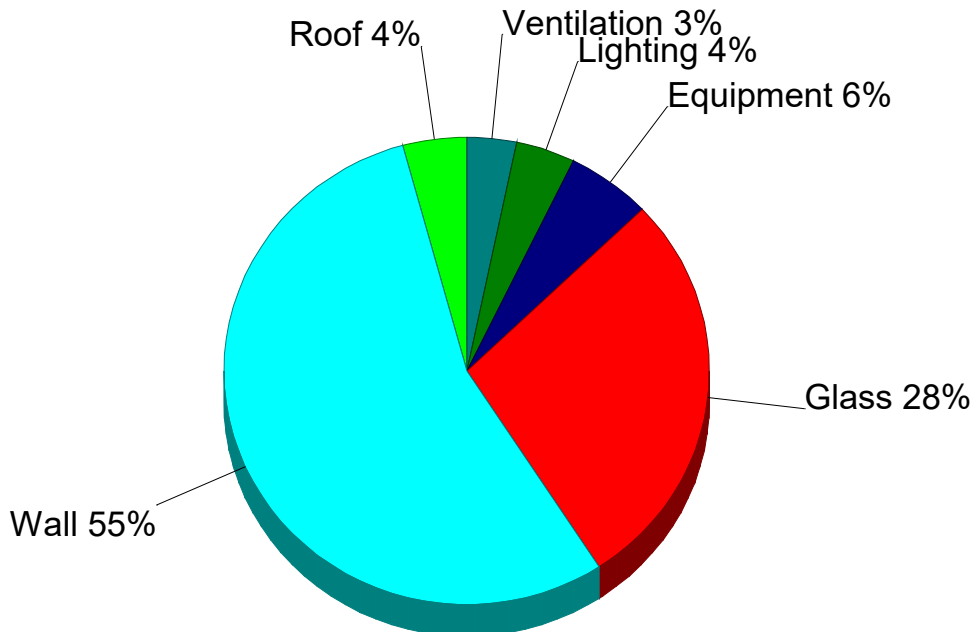


System 3 L0 Master Bath & Closet Pie Chart

System
3 L0
Master
Bath &
Closet
Loss
18,454
Btuh

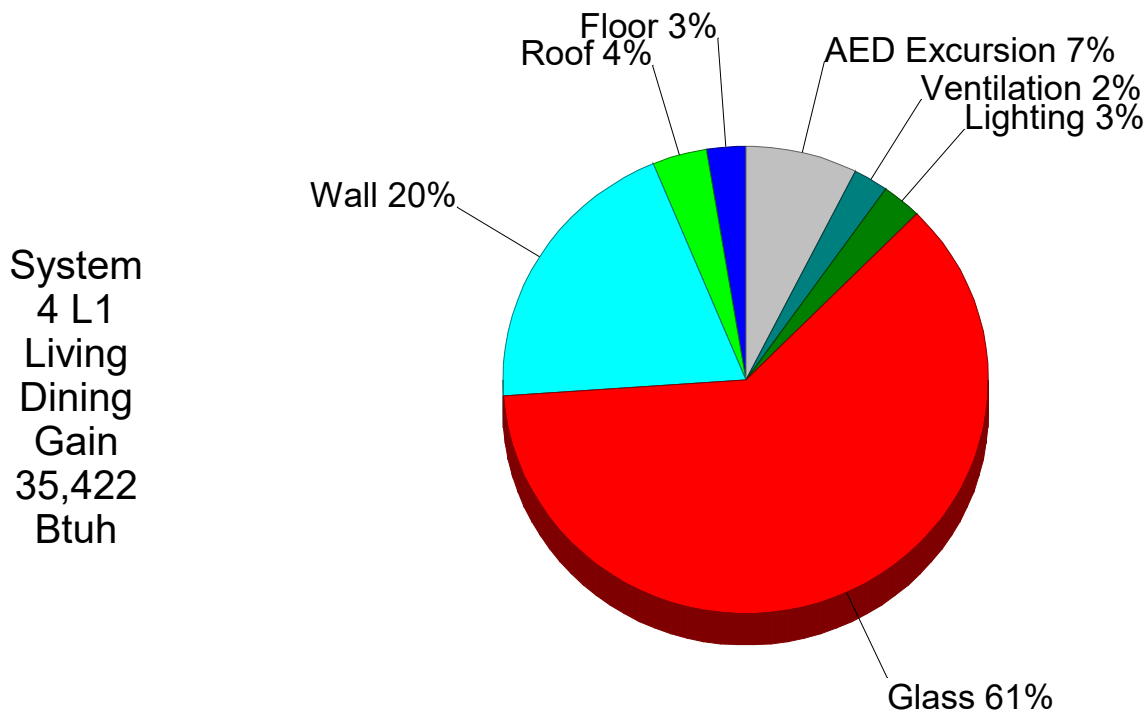
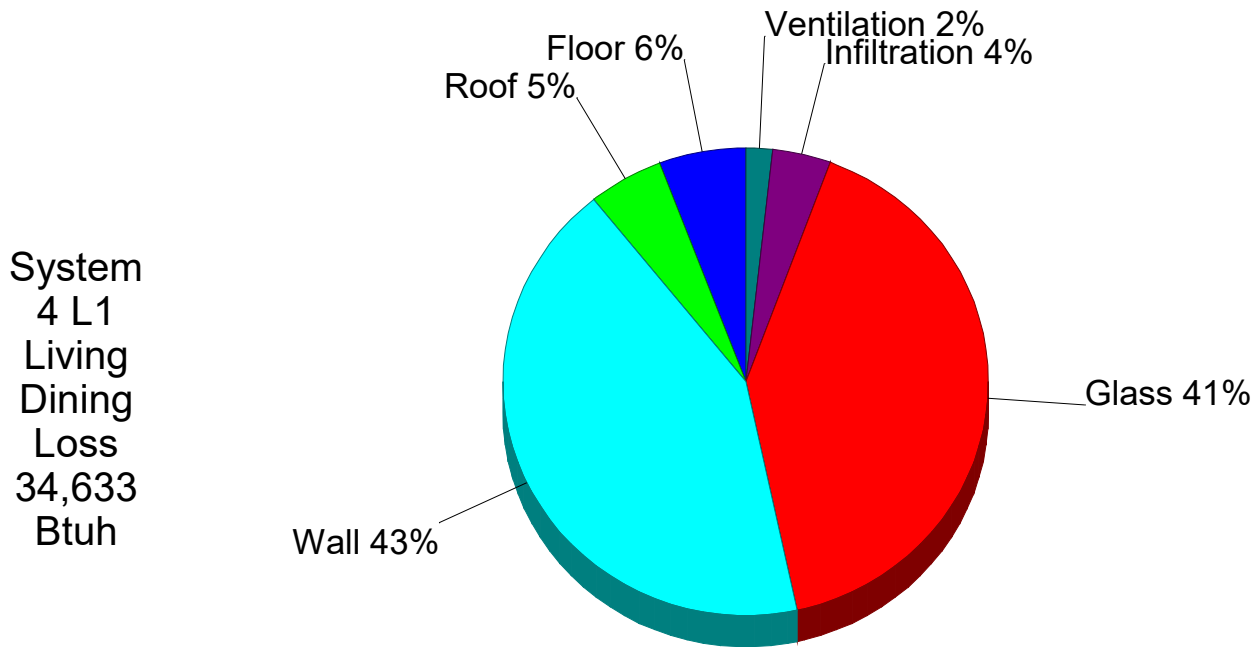


System
3 L0
Master
Bath &
Closet
Gain
10,483
Btuh





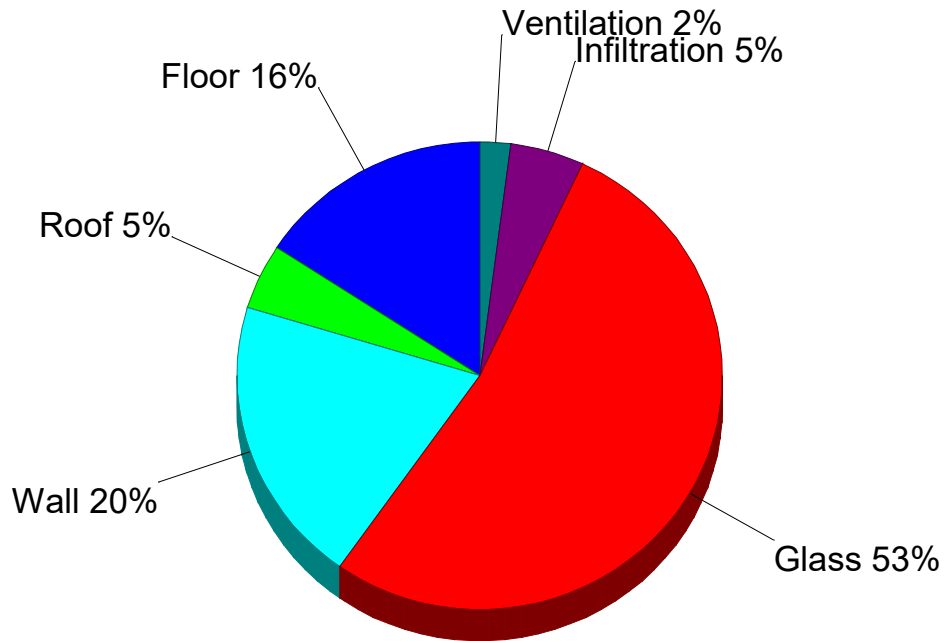
System 4 L1 Living Dining Pie Chart



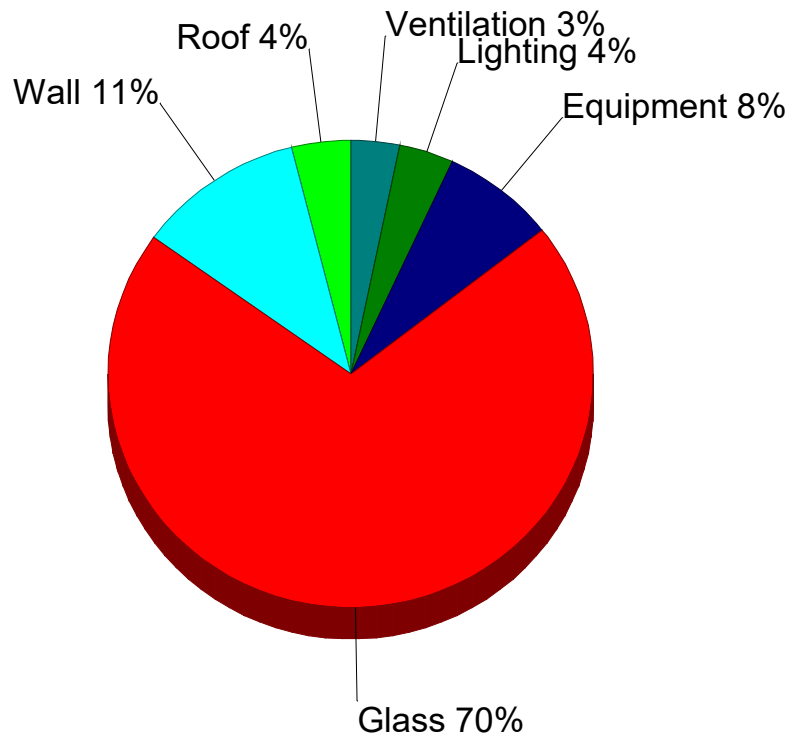


System 5 L1 Kitchen & Media Pie Chart

System
5 L1
Kitchen
&
Media
Loss
35,967
Btuh



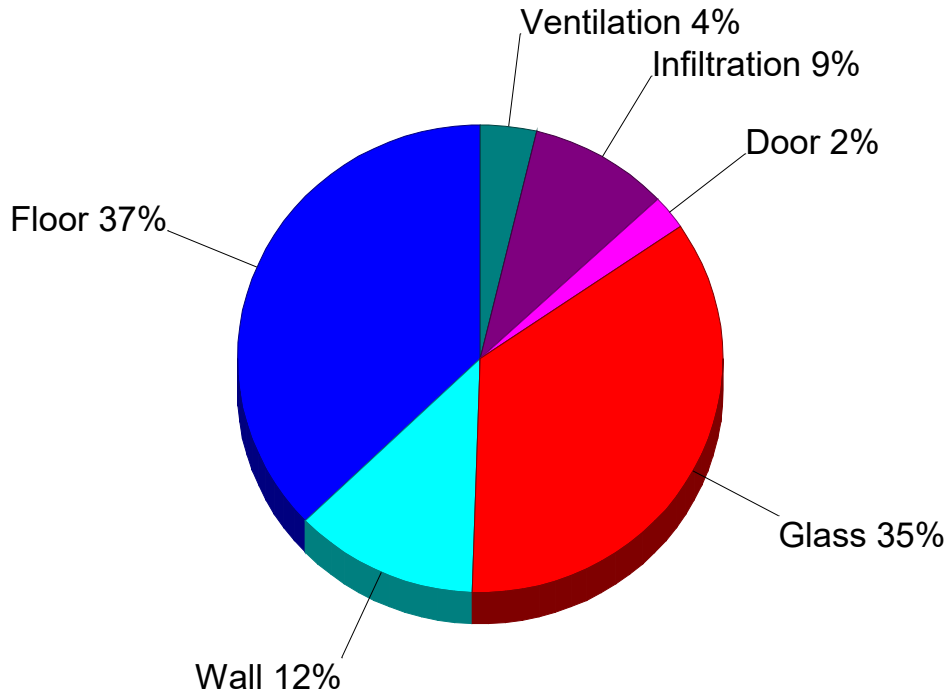
System
5 L1
Kitchen
&
Media
Gain
30,646
Btuh



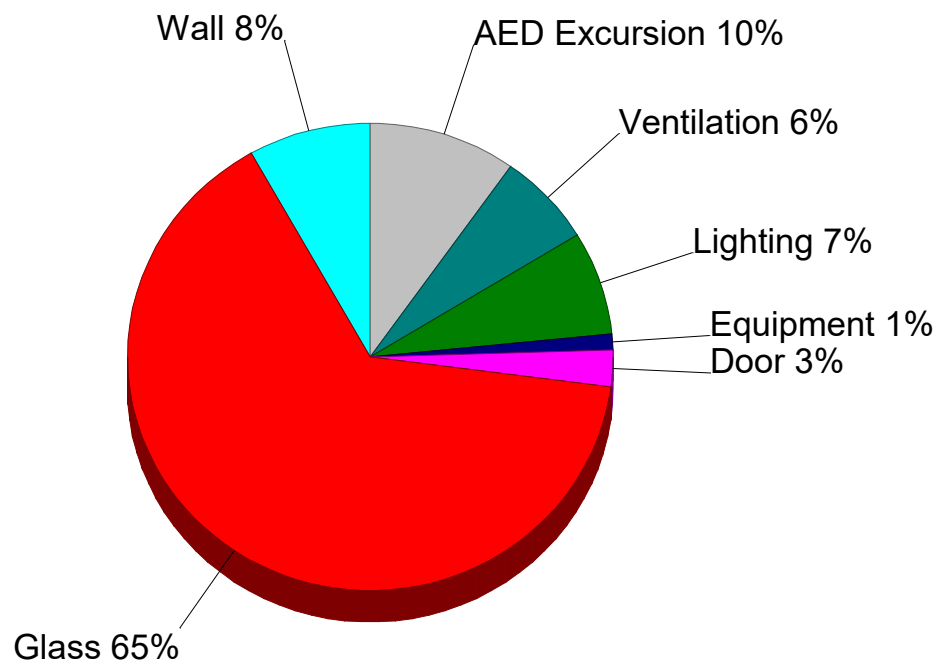


System 6 L1 Office & Laundry Pie Chart

System
6 L1
Office &
Laundry
Loss
10,444
Btuh



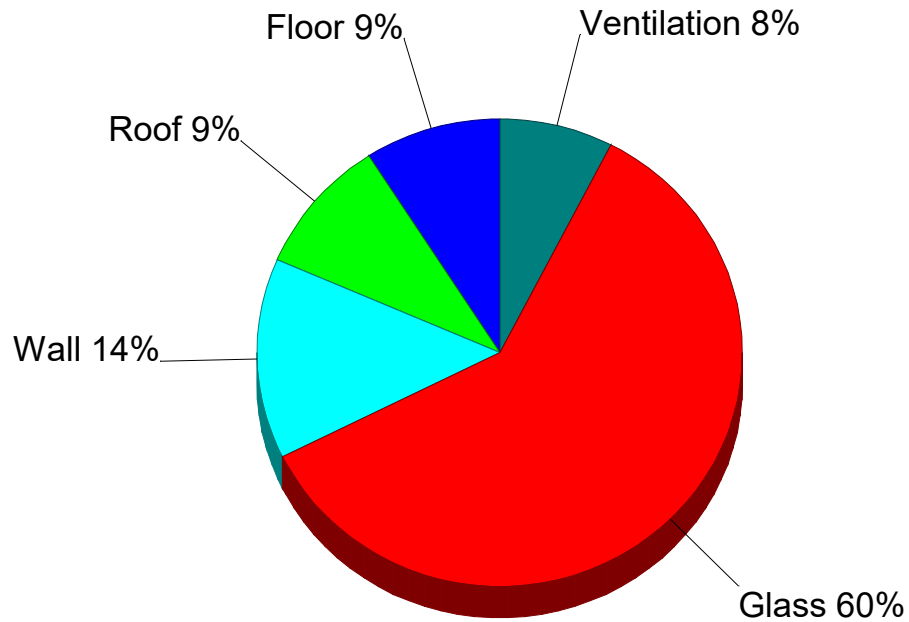
System
6 L1
Office &
Laundry
Gain
8,020
Btuh



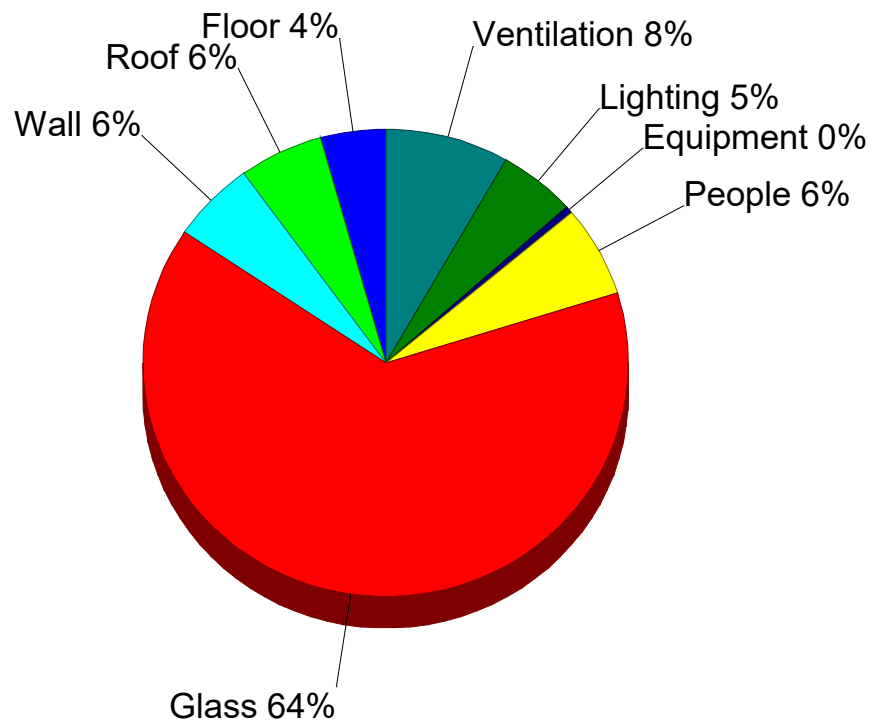


System 7 L2 Pie Chart

System
7 L2
Loss
16,487
Btuh



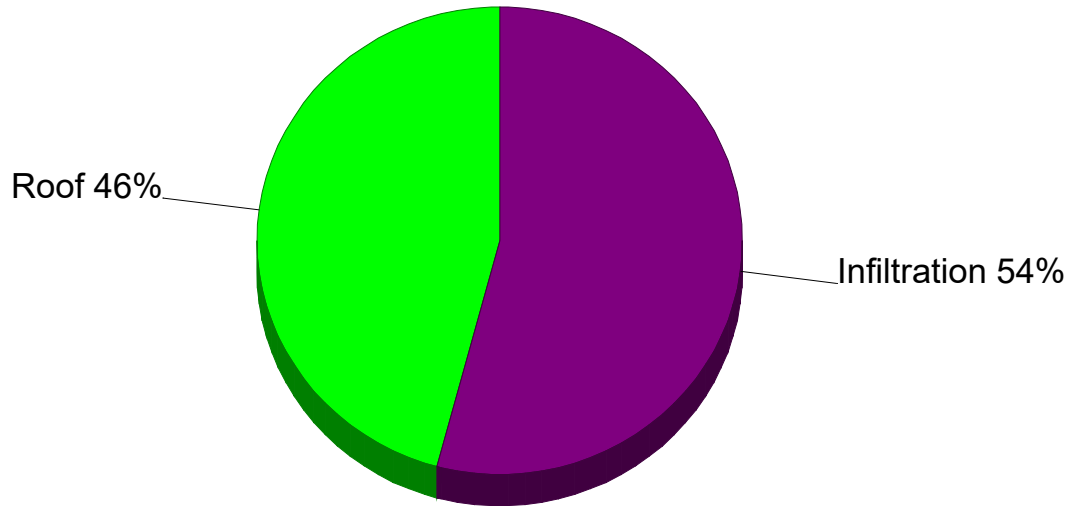
System
7 L2
Gain
19,861
Btuh



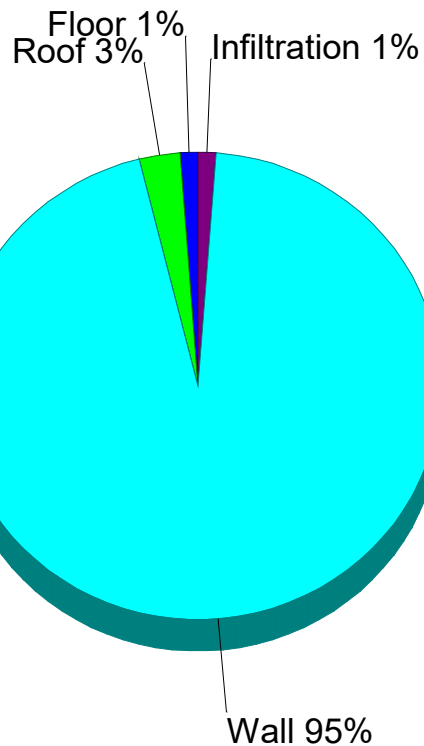


System 9 L0 Wine Pie Chart

System
9 L0
Wine
Loss
72
Btuh



System
9 L0
Wine
Gain
1,646
Btuh





Manual S Performance Data - System 1 - L0 Master BR

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	11,148
Outdoor Wet Bulb:	74.1	Latent Gain:	583
Indoor Dry Bulb:	75	Total Gain:	11,731
Indoor RH:	50	Load SHR:	0.95
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	13,514
Indoor Dry Bulb:	70	Entering Dry Bulb:	69.2
Indoor RH:	30	Supply Airflow:	735

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0	11,148	0%
Latent Capacity:	0	583	0%
Total Capacity:	0	11,731	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0	13,514	0%



Manual S Performance Data - System 2 - L0 Bar Hall Storage

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	4.222
Outdoor Wet Bulb:	74.1	Latent Gain:	0.086
Indoor Dry Bulb:	75	Total Gain:	4.309
Indoor RH:	50	Load SHR:	0.98
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	8.518
Indoor Dry Bulb:	70	Entering Dry Bulb:	69.4
Indoor RH:	30	Supply Airflow:	448

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	4.222	0%
Latent Capacity:	0.000	0.086	0%
Total Capacity:	0.000	4.309	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	8.518	0%



Manual S Performance Data - System 3 - L0 Master Bath & Closet

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	10.353
Outdoor Wet Bulb:	74.1	Latent Gain:	0.130
Indoor Dry Bulb:	75	Total Gain:	10.483
Indoor RH:	50	Load SHR:	0.99
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	18.454
Indoor Dry Bulb:	70	Entering Dry Bulb:	69.7
Indoor RH:	30	Supply Airflow:	735

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	10.353	0%
Latent Capacity:	0.000	0.130	0%
Total Capacity:	0.000	10.483	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	18.454	0%



Manual S Performance Data - System 4 - L1 Living Dining

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	35.234
Outdoor Wet Bulb:	74.1	Latent Gain:	0.188
Indoor Dry Bulb:	75	Total Gain:	35.422
Indoor RH:	50	Load SHR:	0.99
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	34.633
Indoor Dry Bulb:	70	Entering Dry Bulb:	69.6
Indoor RH:	30	Supply Airflow:	1,400

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	35.234	0%
Latent Capacity:	0.000	0.188	0%
Total Capacity:	0.000	35.422	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	34.633	0%



Manual S Performance Data - System 5 - L1 Kitchen & Media

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	30.018
Outdoor Wet Bulb:	74.1	Latent Gain:	0.628
Indoor Dry Bulb:	75	Total Gain:	30.646
Indoor RH:	50	Load SHR:	0.98
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	35.967
Indoor Dry Bulb:	70	Entering Dry Bulb:	69.5
Indoor RH:	30	Supply Airflow:	1,400

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	30.018	0%
Latent Capacity:	0.000	0.628	0%
Total Capacity:	0.000	30.646	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	35.967	0%



Manual S Performance Data - System 6 - L1 Office & Laundry

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	7.811
Outdoor Wet Bulb:	74.1	Latent Gain:	0.210
Indoor Dry Bulb:	75	Total Gain:	8.020
Indoor RH:	50	Load SHR:	0.97
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	10.444
Indoor Dry Bulb:	70	Entering Dry Bulb:	69.2
Indoor RH:	30	Supply Airflow:	448

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	7.811	0%
Latent Capacity:	0.000	0.210	0%
Total Capacity:	0.000	8.020	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	10.444	0%



Manual S Performance Data - System 7 - L2

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	18.779
Outdoor Wet Bulb:	74.1	Latent Gain:	1.082
Indoor Dry Bulb:	75	Total Gain:	19.861
Indoor RH:	50	Load SHR:	0.95
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	16.487
Indoor Dry Bulb:	70	Entering Dry Bulb:	68.7
Indoor RH:	30	Supply Airflow:	875

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	18.779	0%
Latent Capacity:	0.000	1.082	0%
Total Capacity:	0.000	19.861	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	16.487	0%

**Manual S Performance Data - System 8 - L1 Art House****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%



Manual S Performance Data - System 9 - L0 Wine

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	1.639
Outdoor Wet Bulb:	74.1	Latent Gain:	0.007
Indoor Dry Bulb:	75	Total Gain:	1.646
Indoor RH:	50	Load SHR:	1.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	0.072
Indoor Dry Bulb:	70	Entering Dry Bulb:	70.0
Indoor RH:	30	Supply Airflow:	2

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	1.639	0%
Latent Capacity:	0.000	0.007	0%
Total Capacity:	0.000	1.646	0%

Heating:

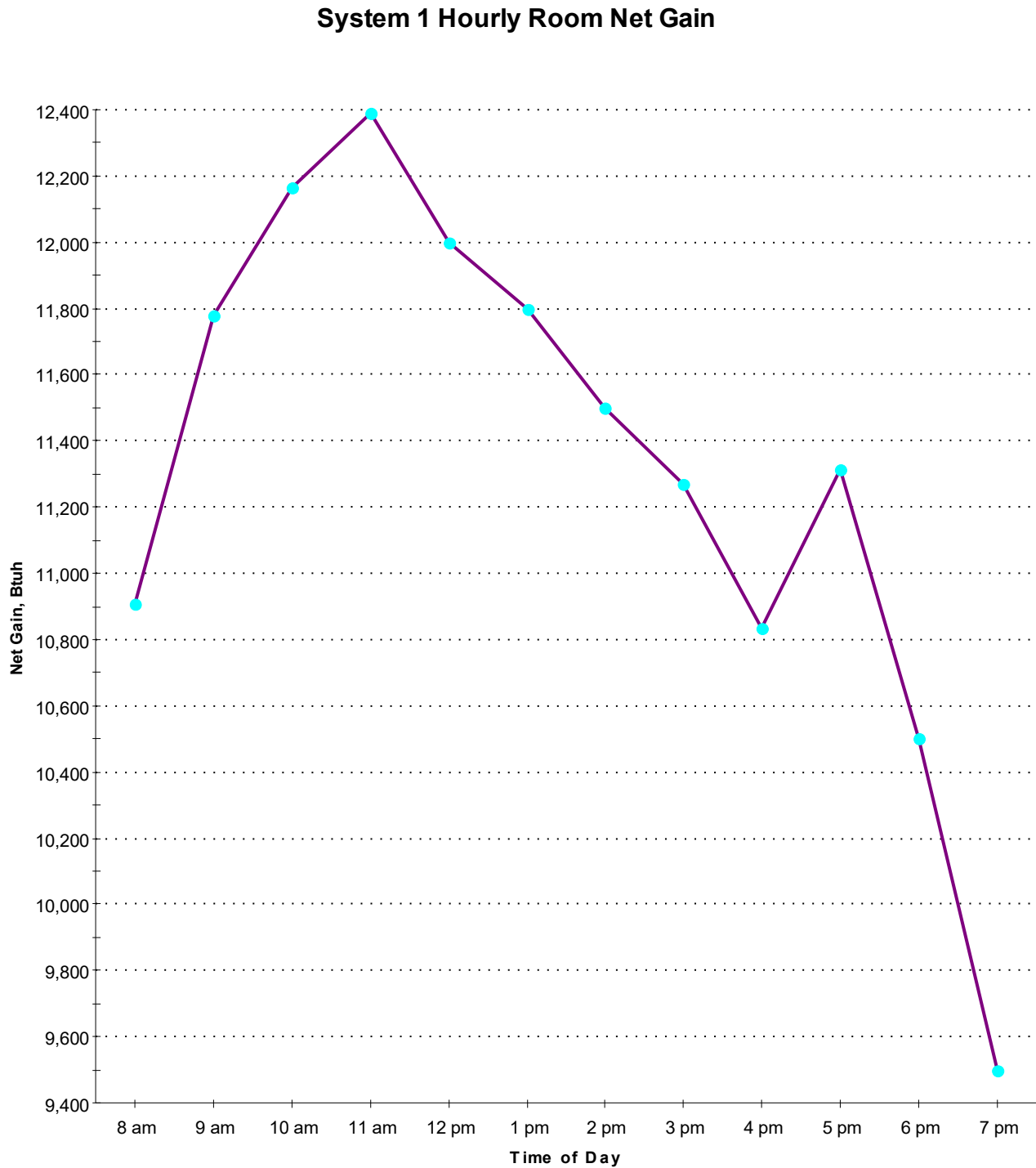
Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	0.072	0%



System 1 - Hourly Room Net Gain



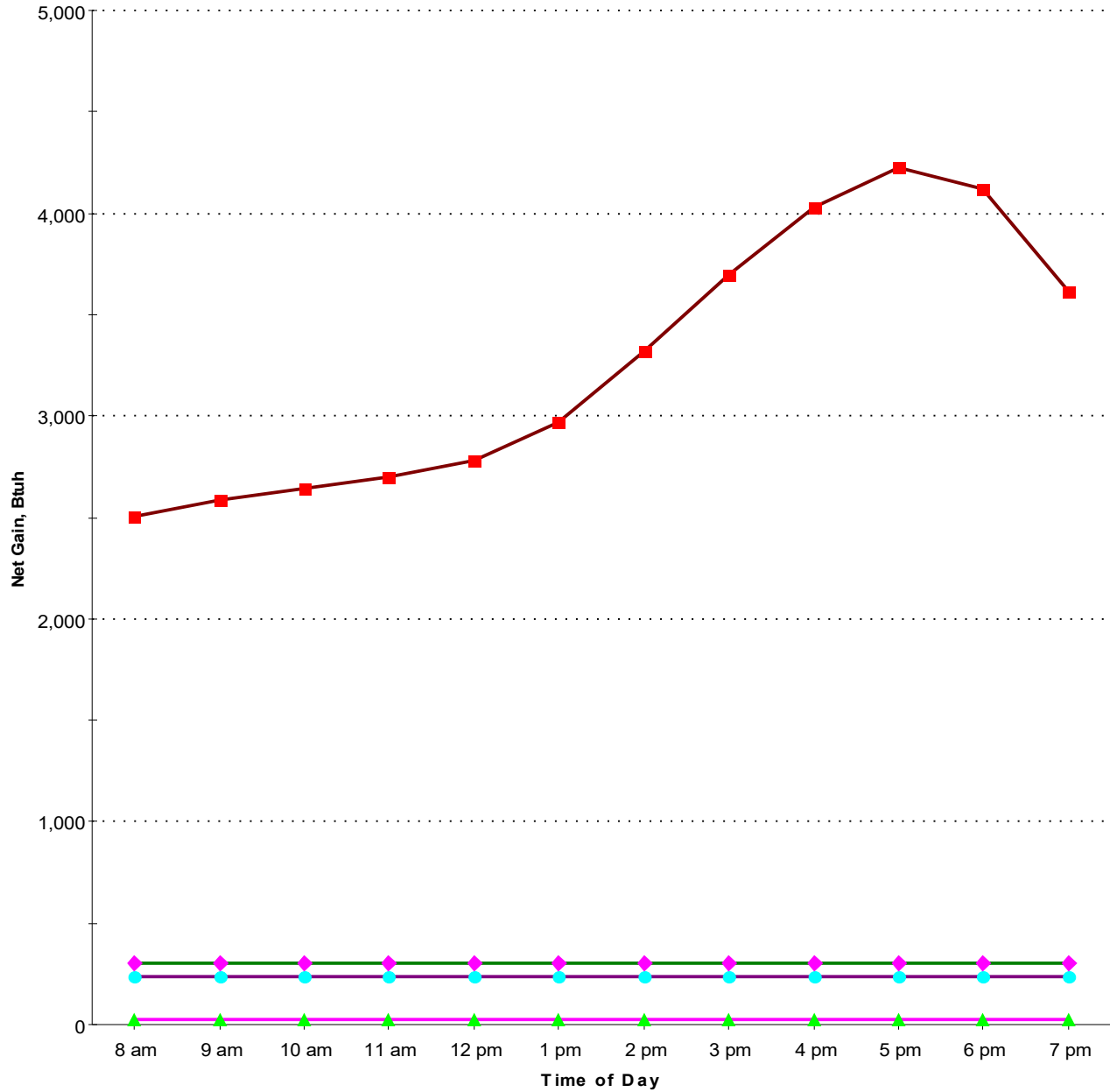
—●— L0 Master BR (57%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 2 - Hourly Room Net Gain

System 2 Hourly Room Net Gain



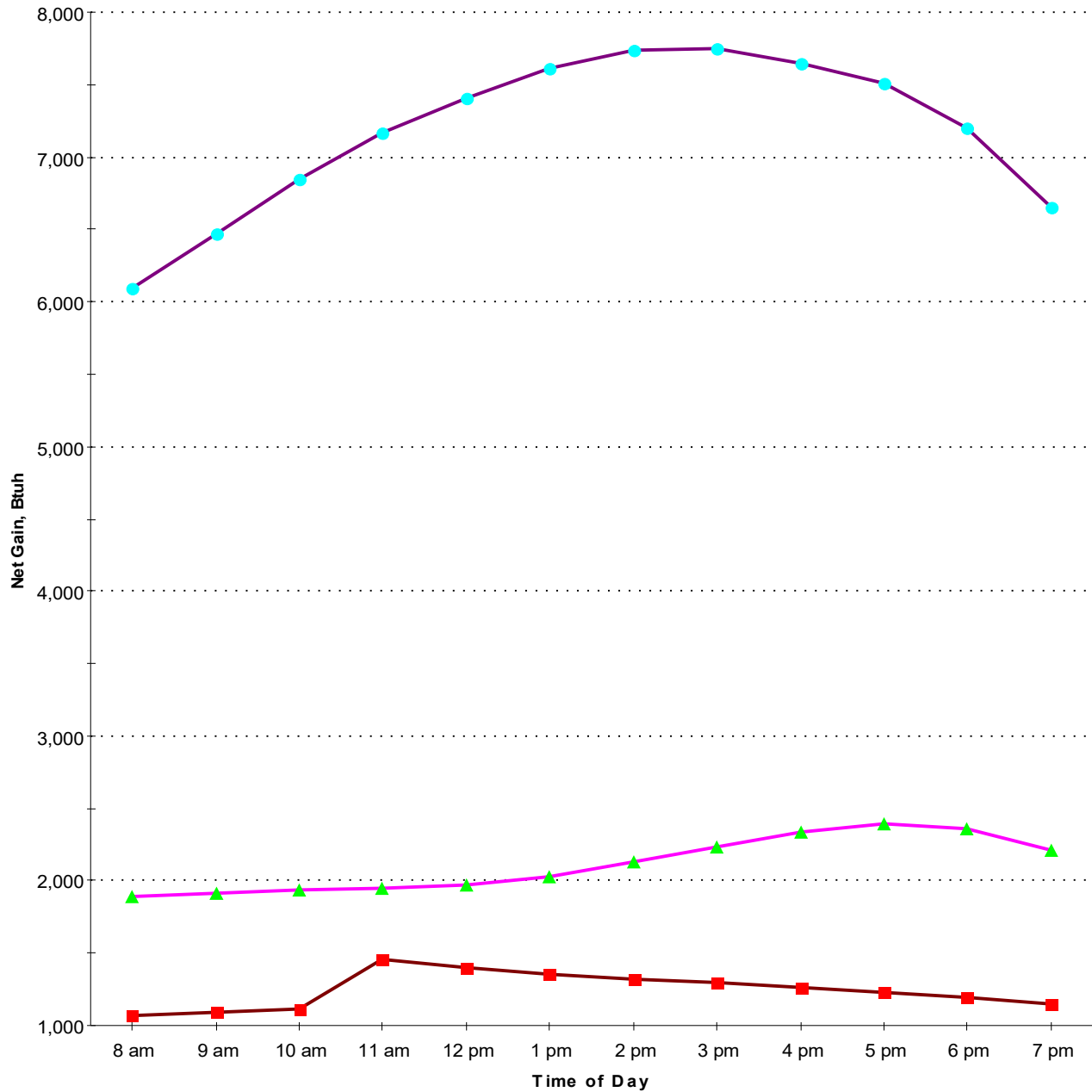
- L0 Bar Hall (0%)
- L0 Storage North (39%)
- ▲— L0 Mech Room (0%)
- ◆— L0 Storage South (0%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 3 - Hourly Room Net Gain

System 3 Hourly Room Net Gain



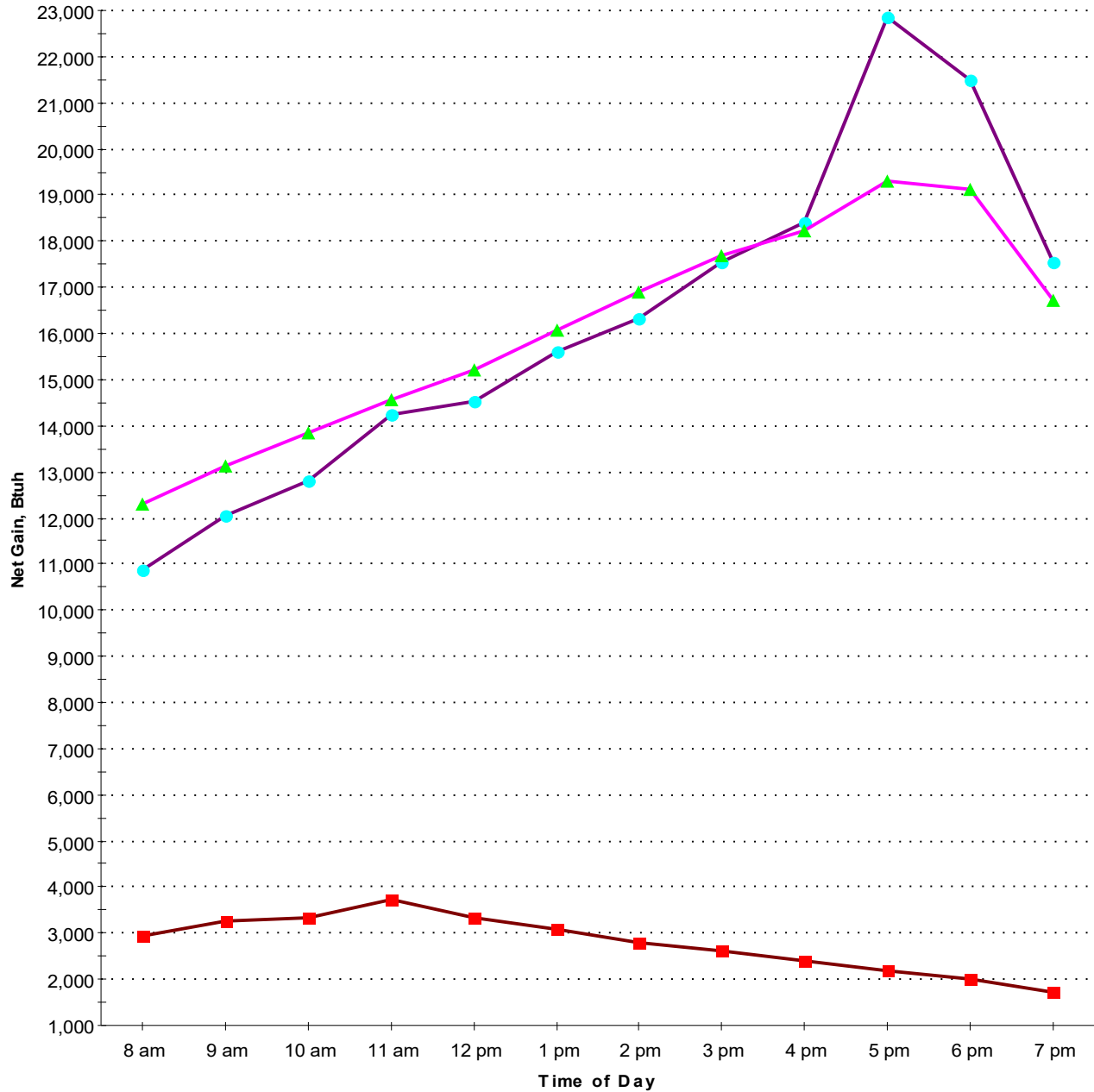
- L0 Master Bath (35%)
- L0 WC (14%)
- ▲ L0 Master Closet (18%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 4 - Hourly Room Net Gain

System 4 Hourly Room Net Gain



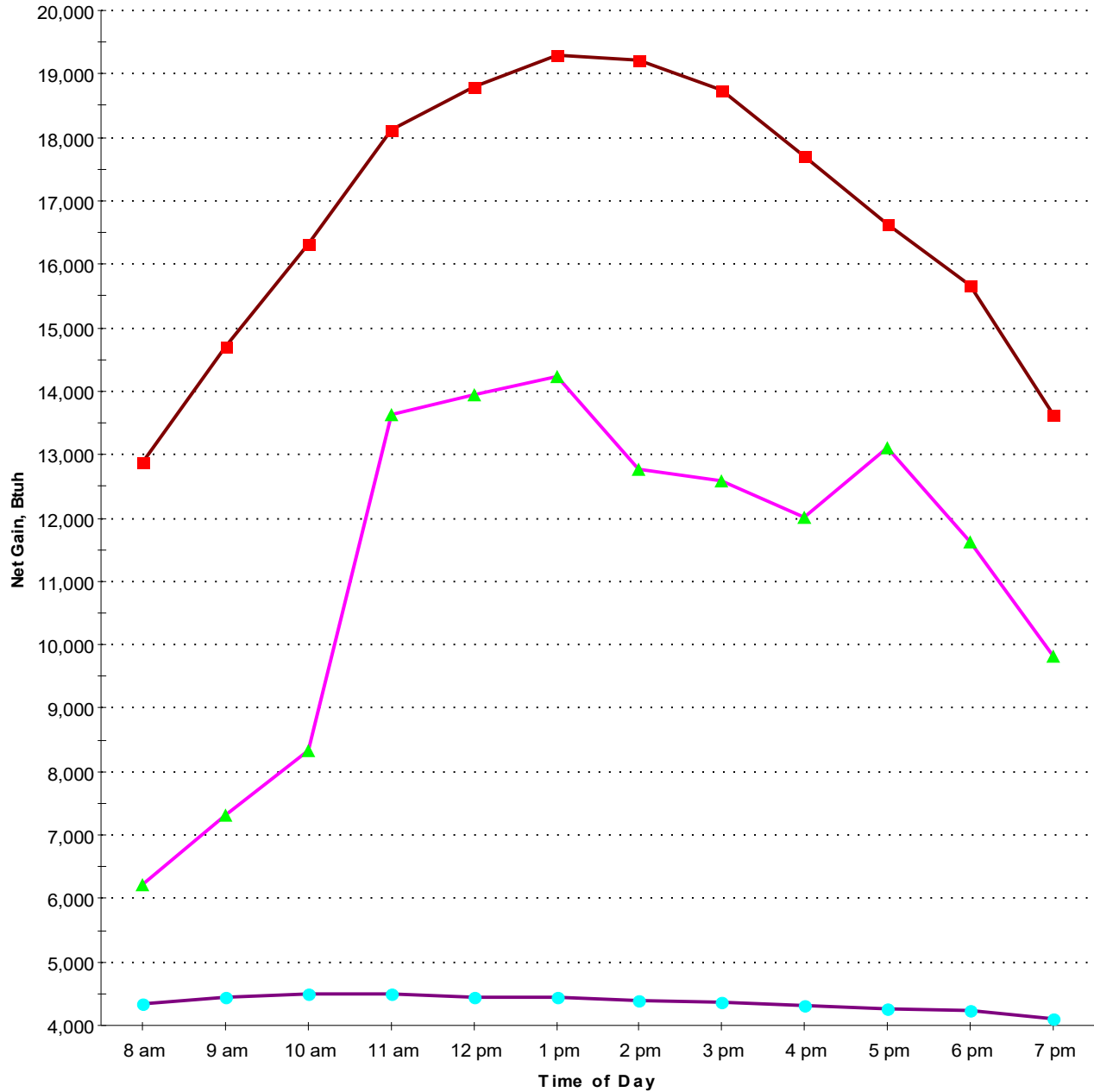
- L1 Dining Room (72%)
- L1 Terrace Landing (86%)
- ▲— L1 Living Room (50%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 5 - Hourly Room Net Gain

System 5 Hourly Room Net Gain



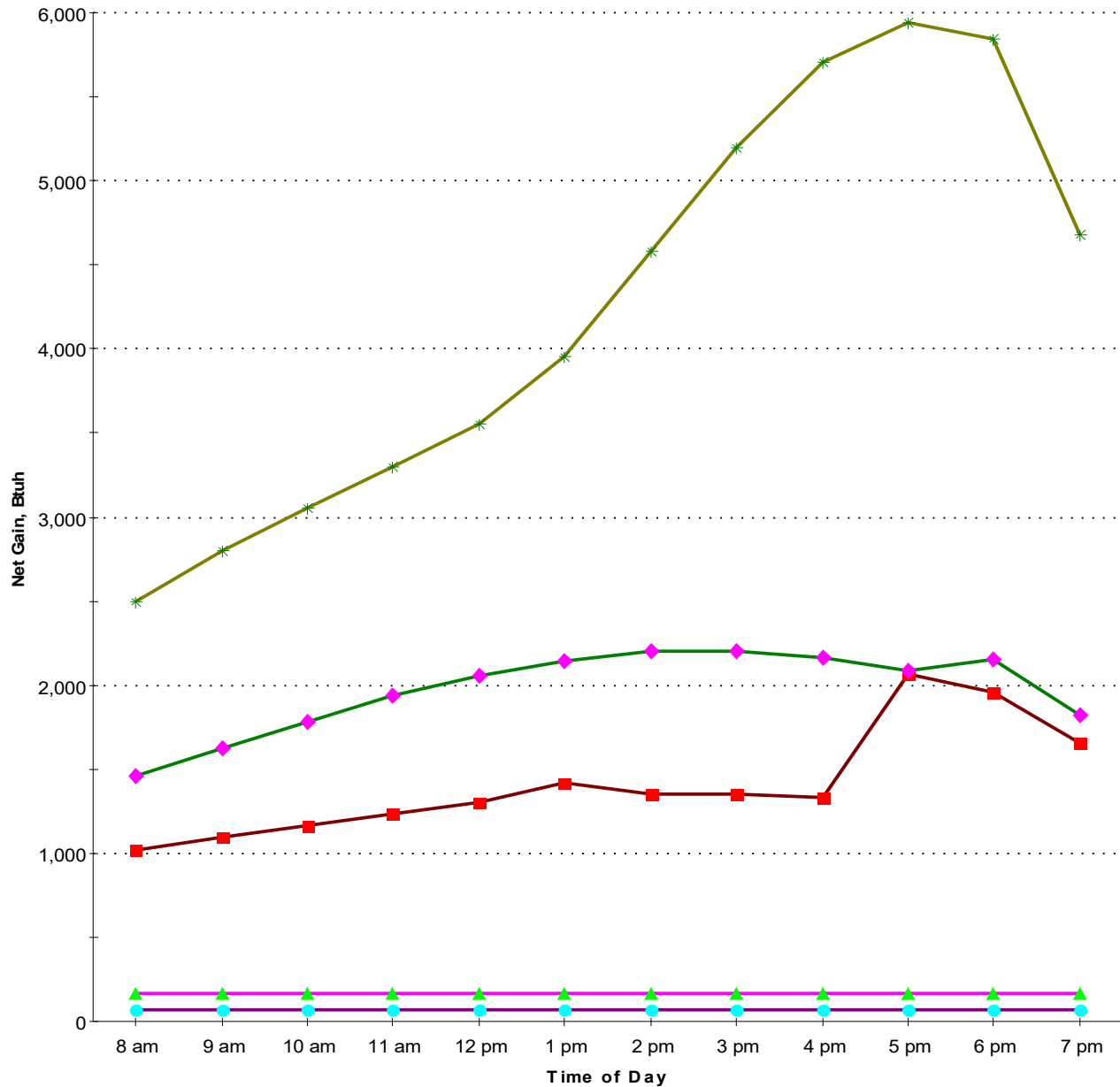
- L1 Media Room (20%)
- L1 Kitchen (74%)
- ▲— L1 Entry Hall (96%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 6 - Hourly Room Net Gain

System 6 Hourly Room Net Gain



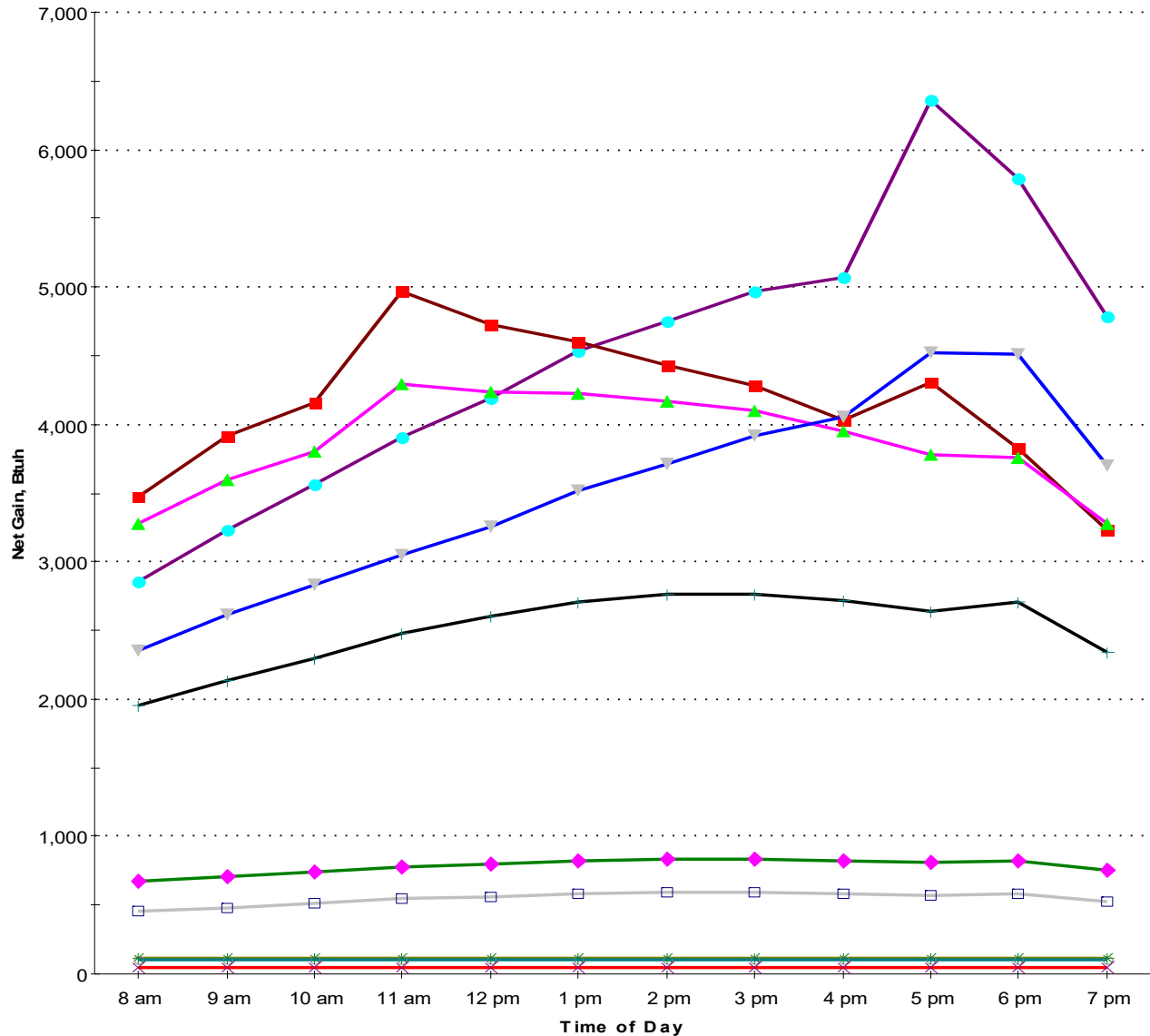
- L1 Powder (0%)
- L1 Office Hall (48%)
- ▲ L1 Mud Room (0%)
- ◆ L1 Laundry (70%)
- * L1 Office (78%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 7 - Hourly Room Net Gain

System 7 Hourly Room Net Gain

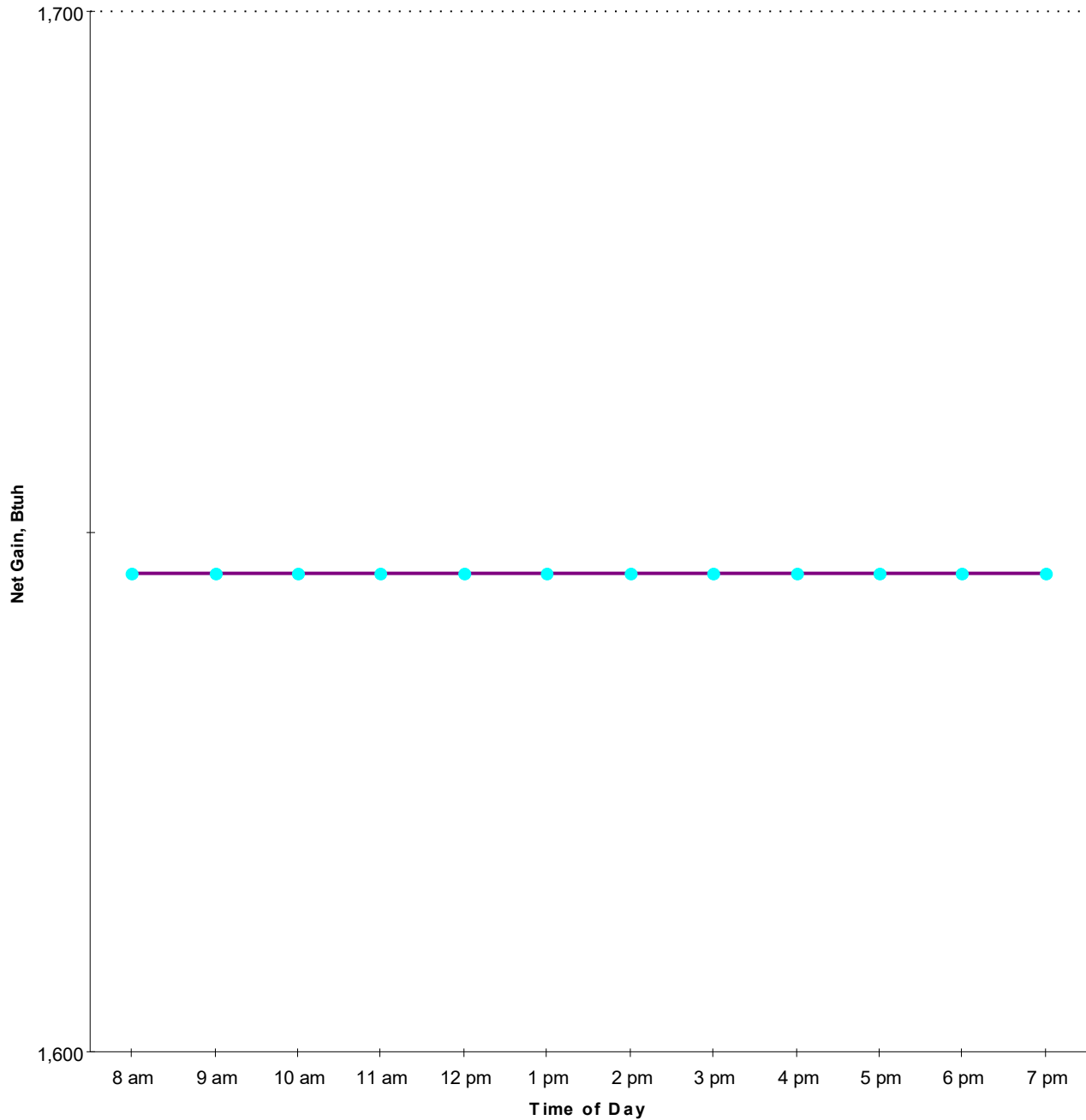


Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 9 - Hourly Room Net Gain

System 9 Hourly Room Net Gain



—●— L0 Wine Room (0%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 1, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	153.5	3,656	0	6,387	6,387
11D: Door-Wood - Solid Core, U-value 0.39	10	169	0	141	141
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft^3 ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	261.9	5,898	0	2,833	2,833
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	549.5	690	0	513	513
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	49	2,504	0	0	0
Subtotals for structure:		12,917	0	9,874	9,874
People:	2		400	460	860
Equipment:			0	0	0
Lighting:	137			467	467
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
System 1, Zone 1 Load Totals:		12,917	400	10,801	11,201

Check Figures

Supply CFM:	735	CFM Per Square ft.:	1.338
Square ft. of Room Area:	550	Square ft. Per Ton:	589
Volume (ft³):	4,781		

Zone Loads

Total Heating Required:	12,917 Btuh	12.917 MBH
Total Sensible Gain:	10,801 Btuh	96 %
Total Latent Gain:	400 Btuh	4 %
Total Cooling Required:	11,201 Btuh	0.93 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 2, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	20.2	480	0	1,362	1,362
11D: Door-Wood - Solid Core, U-value 0.39	11	186	0	155	155
15B0-0-10: Wall-Basement, , no insulation or framing, no interior finish, 10' floor depth, U-value 0.102, above grade U-value 0.488	344.3	1,611	0	62	62
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft ³ ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	124.7	2,807	0	1,348	1,348
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	110.3	139	0	103	103
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	59	3,015	0	0	0
Subtotals for structure:		8,238	0	3,030	3,030
People:	0		0	0	0
Equipment:			0	0	0
Lighting:	121			413	413
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
System 2, Zone 1 Load Totals:		8,238	0	4,060	4,060

Check Figures

Supply CFM:	448	CFM Per Square ft.:	0.924
Square ft. of Room Area:	485	Square ft. Per Ton:	1,432
Volume (ft ³):	992		

Zone Loads

Total Heating Required:	8,238 Btuh	8.238 MBH
Total Sensible Gain:	4,060 Btuh	100 %
Total Latent Gain:	0 Btuh	0 %
Total Cooling Required:	4,060 Btuh	0.34 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 3, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	68	1,620	0	2,965	2,965
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft^3 ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	538.5	12,125	0	5,824	5,824
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	483.3	607	0	451	451
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	66	3,373	0	0	0
Subtotals for structure:		17,725	0	9,240	9,240
People:	0		0	0	0
Equipment:			50	545	595
Lighting:	122			416	416
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 10, Summer CFM: 0		468	0	0	0
System 3, Zone 1 Load Totals:		18,193	50	10,201	10,251

Check Figures

Supply CFM:	735	CFM Per Square ft.:	1.521
Square ft. of Room Area:	483	Square ft. Per Ton:	566
Volume (ft³):	4,366		

Zone Loads

Total Heating Required:	18,193 Btuh	18.193 MBH
Total Sensible Gain:	10,201 Btuh	100 %
Total Latent Gain:	50 Btuh	0 %
Total Cooling Required:	10,251 Btuh	0.85 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 4, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	364.4	8,681	0	17,185	17,185
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	100	5,497	0	4,757	4,757
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft ³ ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	647	14,568	0	6,998	6,998
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	95.1	198	0	98	98
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	1382	1,735	0	1,291	1,291
20P1-11op-t: Floor-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	607	1,998	0	932	932
Subtotals for structure:		32,677	0	31,261	31,261
People:	0		0	0	0
Equipment:			0	0	0
Lighting:	279			951	951
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 29, Summer CFM: 0		1,341	0	0	0
System 4, Zone 1 Load Totals:		34,018	0	34,876	34,876

Check Figures

Supply CFM:	1,400	CFM Per Square ft.:	1.256
Square ft. of Room Area:	1,115	Square ft. Per Ton:	384
Volume (ft ³):	11,092		

Zone Loads

Total Heating Required:	34,018 Btuh	34.018 MBH
Total Sensible Gain:	34,876 Btuh	100 %
Total Latent Gain:	0 Btuh	0 %
Total Cooling Required:	34,876 Btuh	2.91 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 5, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	143.9	3,428	0	6,223	6,223
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	272.5	14,987	0	12,970	12,970
8E20-law: Glazing-Skylight, Flat double pane low-e (e = 0.20), large curb, aluminum clad wood sash, wood curb, no insulation, plywood shaft, no insulation, horizontal, U-value 0.83, SHGC 0.61	16.4	589	0	2,645	2,645
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft ³ ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52	275.1	6,196	0	2,975	2,975
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	463.7	964	0	481	481
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	1300.2	1,633	0	1,215	1,215
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	111	5,671	0	0	0
Subtotals for structure:		33,468	0	26,509	26,509
People:	0		0	0	0
Equipment:			400	1,950	2,350
Lighting:	330			1,125	1,125
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 38, Summer CFM: 0		1,753	0	0	0
System 5, Zone 1 Load Totals:		35,221	400	29,584	29,984

Check Figures

Supply CFM:	1,400	CFM Per Square ft.:	1.063
Square ft. of Room Area:	1,317	Square ft. Per Ton:	527
Volume (ft ³):	13,908		

Zone Loads

Total Heating Required:	35,221 Btuh	35.221 MBH
Total Sensible Gain:	29,584 Btuh	99 %
Total Latent Gain:	400 Btuh	1 %
Total Cooling Required:	29,984 Btuh	2.50 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 6, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	154	3,667	0	5,314	5,314
11D: Door-Wood - Solid Core, U-value 0.39	14.7	248	0	208	208
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	488	1,015	0	506	506
12F-6sw: Part-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	167.4	268	0	162	162
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	76	3,883	0	0	0
Subtotals for structure:		9,081	0	6,190	6,190
People:	0		0	0	0
Equipment:			90	0	90
Lighting:	172			587	587
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 21, Summer CFM: 0		971	0	0	0
System 6, Zone 1 Load Totals:		10,052	90	7,583	7,673

Check Figures

Supply CFM:	448	CFM Per Square ft.:	0.646
Square ft. of Room Area:	694	Square ft. Per Ton:	1,085
Volume (ft³):	7,492		

Zone Loads

Total Heating Required:	10,052 Btuh	10.052 MBH
Total Sensible Gain:	7,583 Btuh	99 %
Total Latent Gain:	90 Btuh	1 %
Total Cooling Required:	7,673 Btuh	0.64 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 7, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	415.8	9,904	0	13,133	13,133
12F-6sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	1100.7	2,288	0	1,142	1,142
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	1231.7	1,547	0	1,149	1,149
20P1-11op-t: Floor-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	45	148	0	69	69
20P1-11op-t: Partition Floor (STD=20.2, WTD=33.3)-Over open crawl space or garage, Passive, spray foam insulation, R-11 open cell 1/2 lb. spray foam insulation, 3 inches in 2 x 10 joist cavity, tile covering, U-value 0.076	533.6	1,351	0	819	819
Subtotals for structure:		15,238	0	16,312	16,312
People:	3		600	690	1,290
Equipment:			100	0	100
Lighting:	308			1,050	1,050
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
System 7, Zone 1 Load Totals:		15,238	700	18,052	18,752

Check Figures

Supply CFM:	875	CFM Per Square ft.:	0.710
Square ft. of Room Area:	1,232	Square ft. Per Ton:	788
Volume (ft³):	11,085		

Zone Loads

Total Heating Required:	15,238 Btuh	15.238 MBH
Total Sensible Gain:	18,052 Btuh	96 %
Total Latent Gain:	700 Btuh	4 %
Total Cooling Required:	18,752 Btuh	1.56 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 9, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
12F-6sw: Part-Frame, R-21 insulation in 2 x 6 stud cavity, R-6 board insulation, siding finish, wood studs, U-value 0.048	164.2	0	0	196	196
12A-0sm: Part-Frame, no insulation in stud cavity, no board insulation, siding finish, metal studs, U-value 0.55	99.4	0	0	1,366	1,366
16BR-21: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Unvented Attic with Radiant Barrier, Any Roofing Material, Any Roof Color, R-21 insulation, U-value 0.044	17.1	33	0	45	45
20P1-23op-t: Partition Floor (STD=25, WTD=0)-Over open crawl space or garage, Passive, spray foam insulation, R-23 open cell 1/2 lb. spray foam insulation, 6 inches in 2 x 10 joist cavity, tile covering, U-value 0.044	17.1	0	0	19	19
Subtotals for structure:		33	0	1,626	1,626
People:	0		0	0	0
Equipment:			0	0	0
Lighting:	0			0	0
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 1, Summer CFM: 0		39	7	13	20
System 9, Zone 1 Load Totals:		72	7	1,639	1,646

Check Figures

Supply CFM:	76	CFM Per Square ft.:	4.452
Square ft. of Room Area:	17	Square ft. Per Ton:	125
Volume (ft³):	185		

Zone Loads

Total Heating Required:	72 Btuh	0.072 MBH
Total Sensible Gain:	1,639 Btuh	100 %
Total Latent Gain:	7 Btuh	0 %
Total Cooling Required:	1,646 Btuh	0.14 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

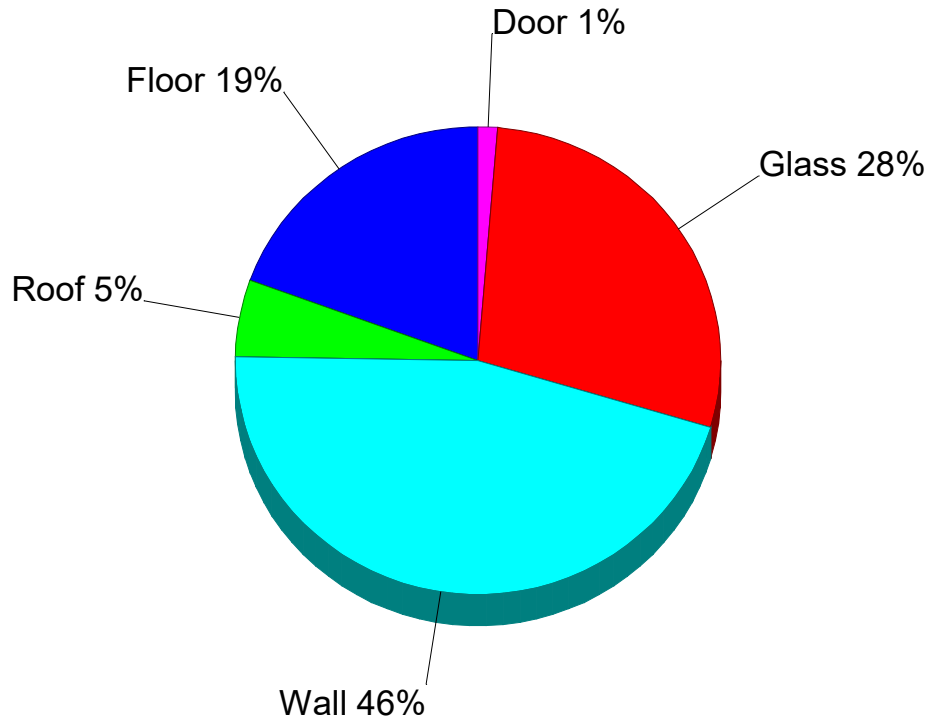
All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

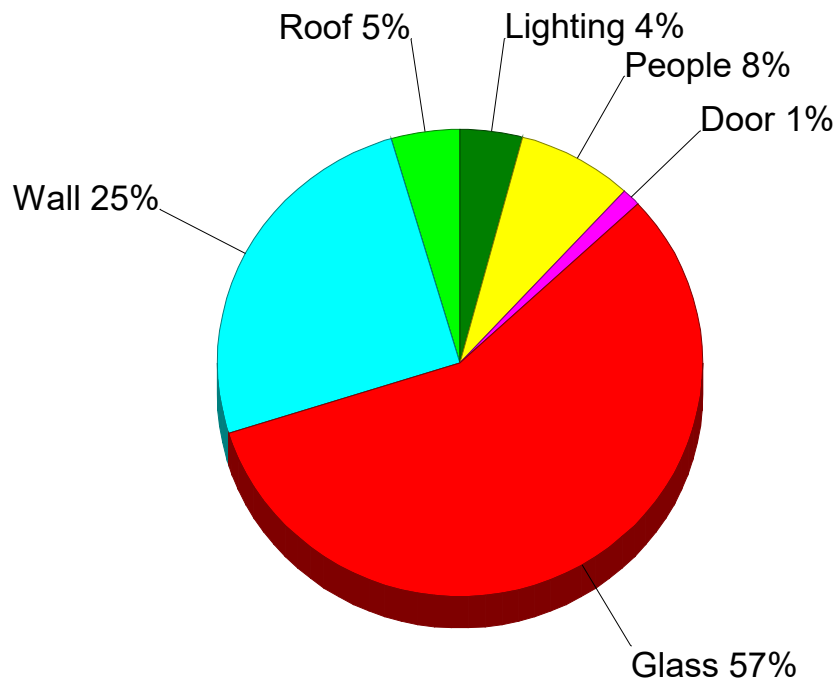


System 1, Zone 1 Pie Chart

System
1, Zone
1
Loss
12,917
Btuh



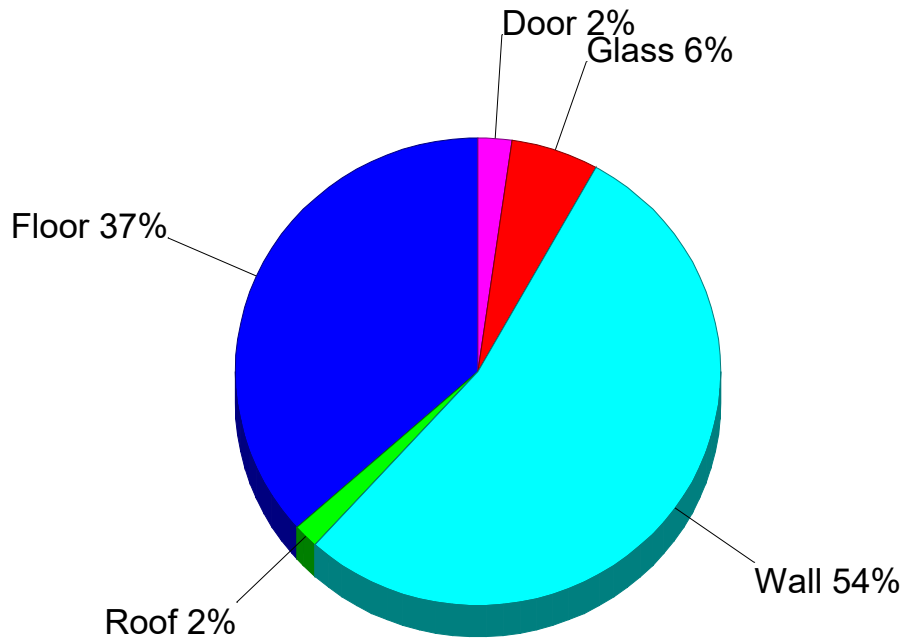
System
1, Zone
1
Gain
11,201
Btuh



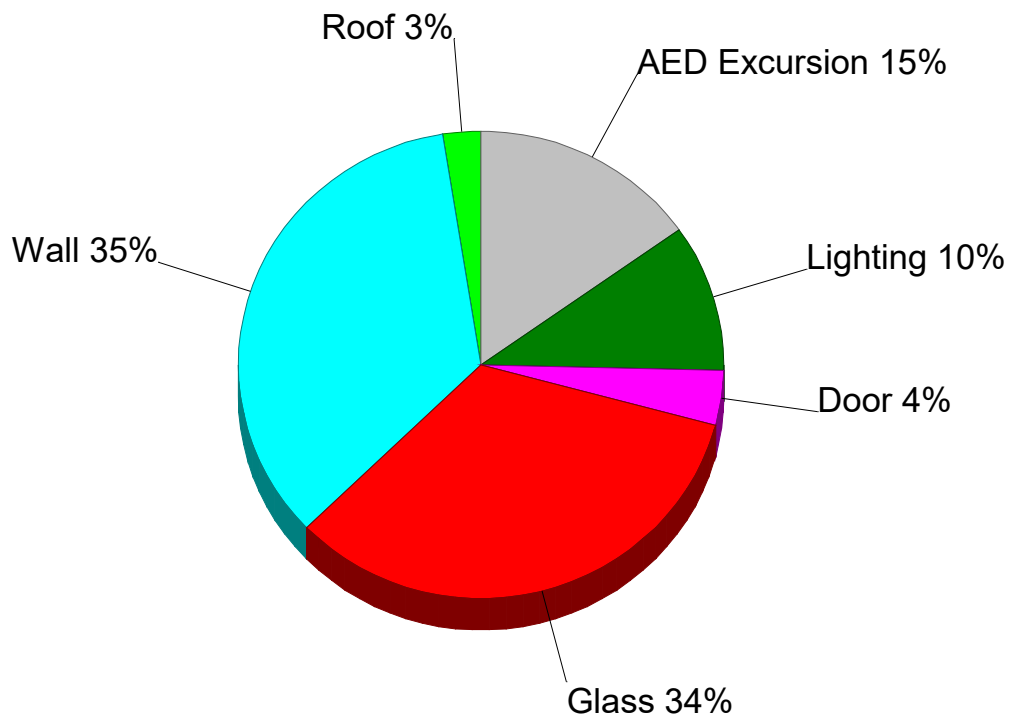


System 2, Zone 1 Pie Chart

System
2, Zone
1
Loss
8,238
Btuh

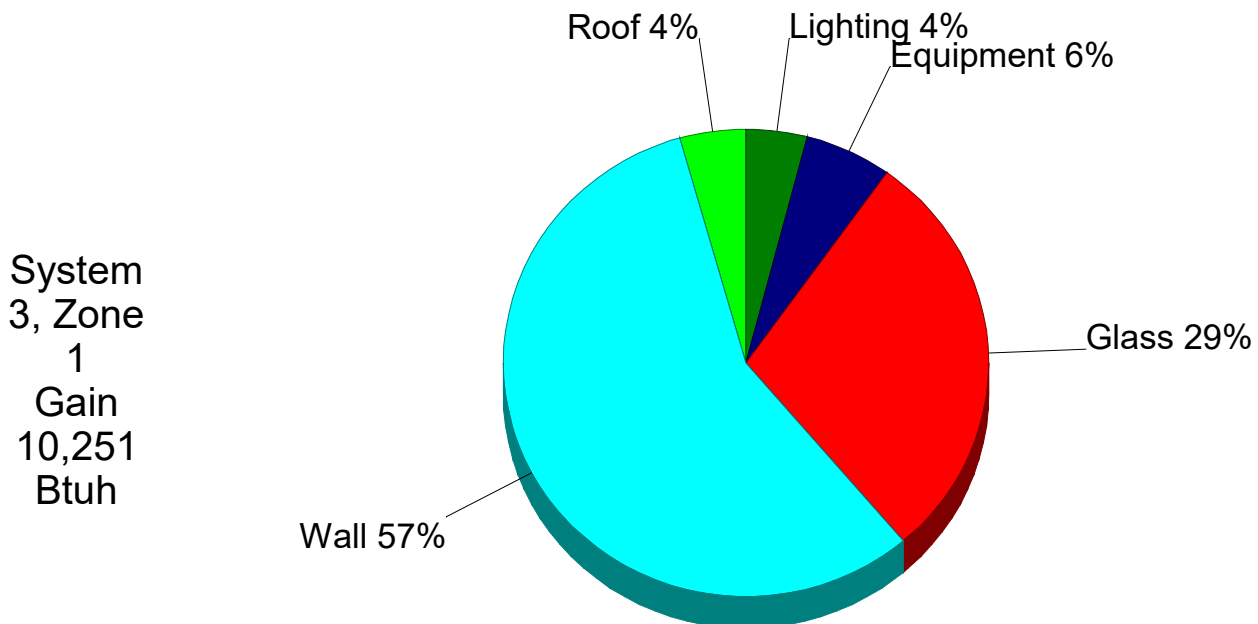
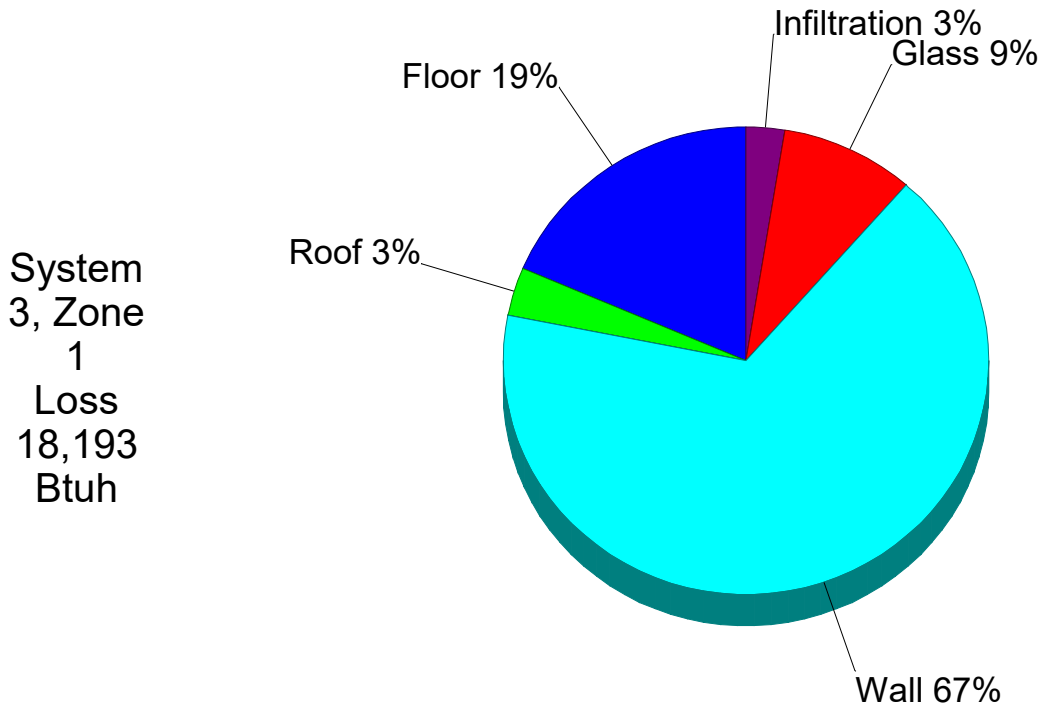


System
2, Zone
1
Gain
4,060
Btuh





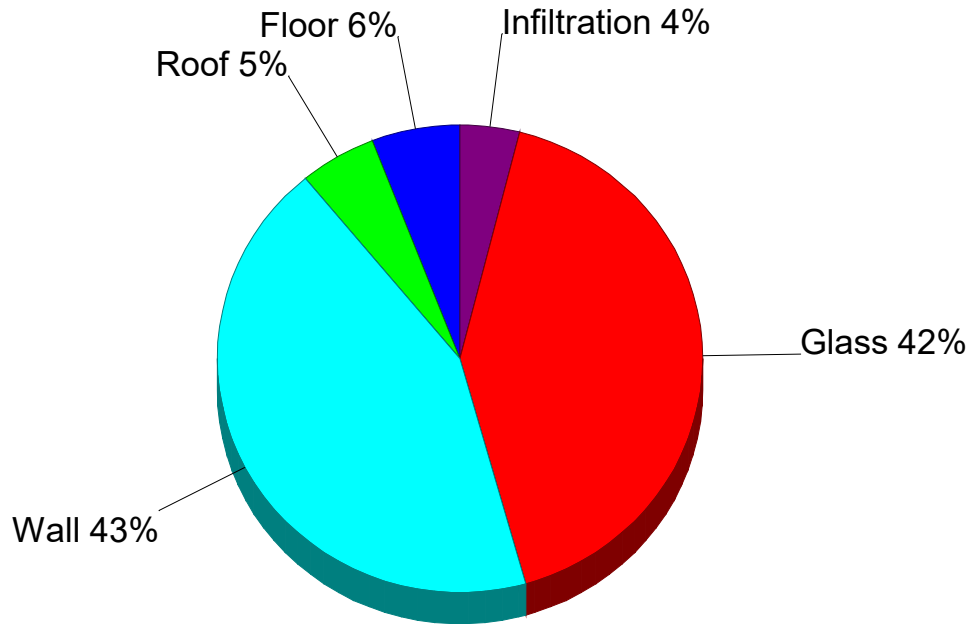
System 3, Zone 1 Pie Chart



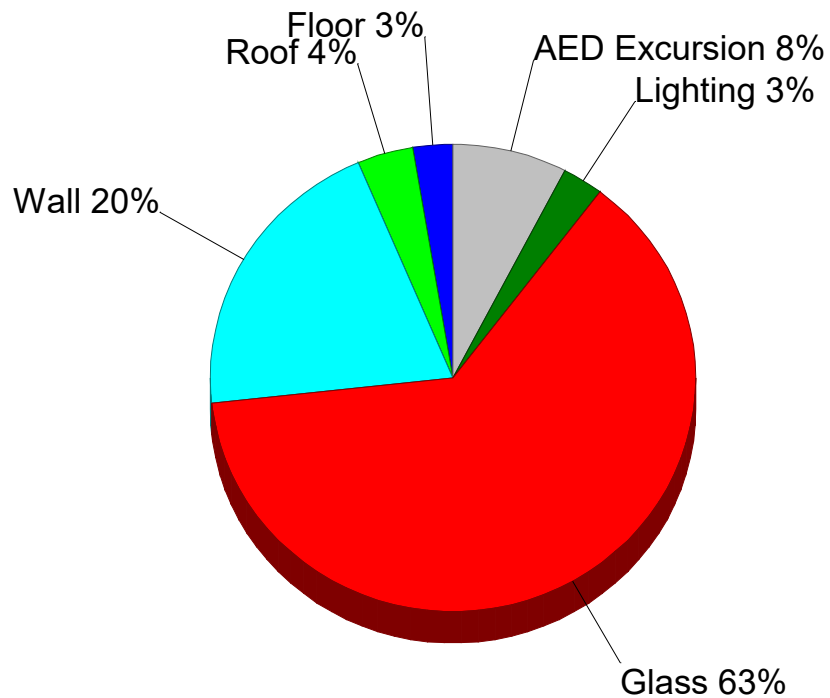


System 4, Zone 1 Pie Chart

System
4, Zone
1
Loss
34,018
Btuh

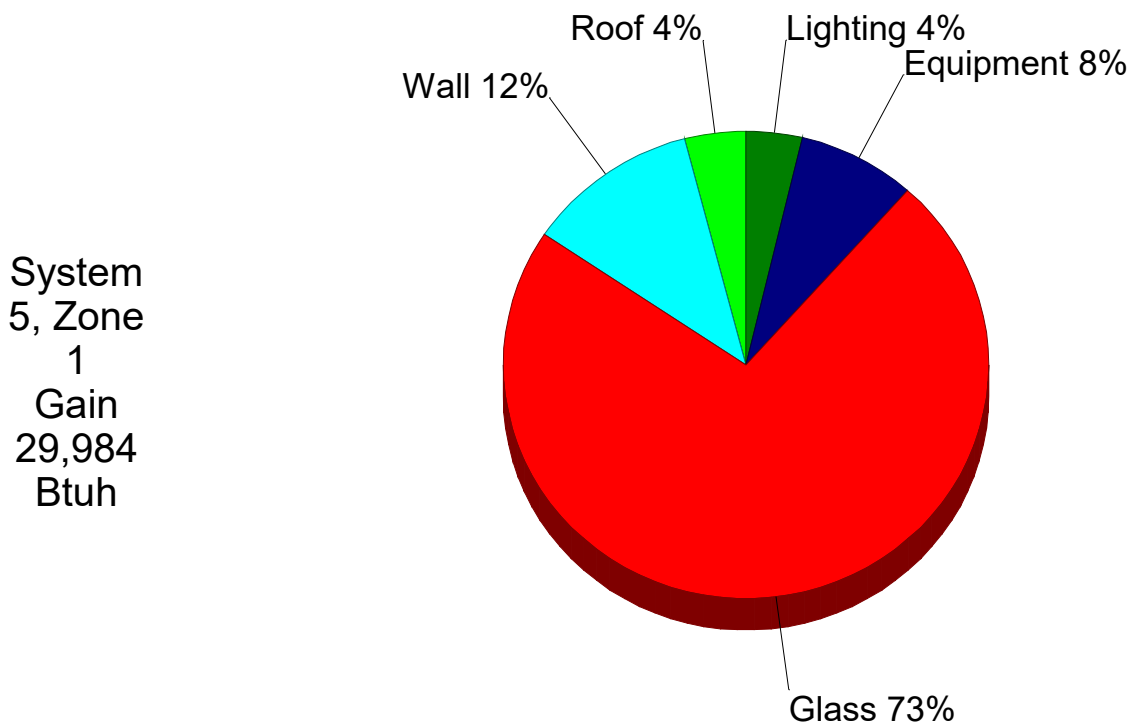
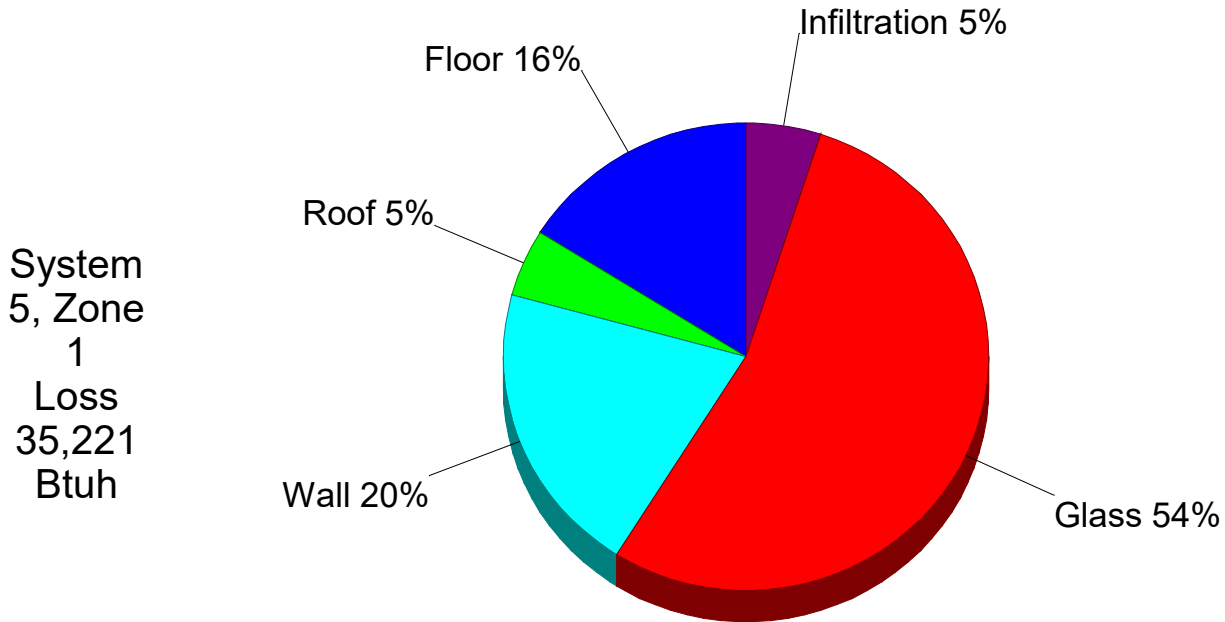


System
4, Zone
1
Gain
34,876
Btuh





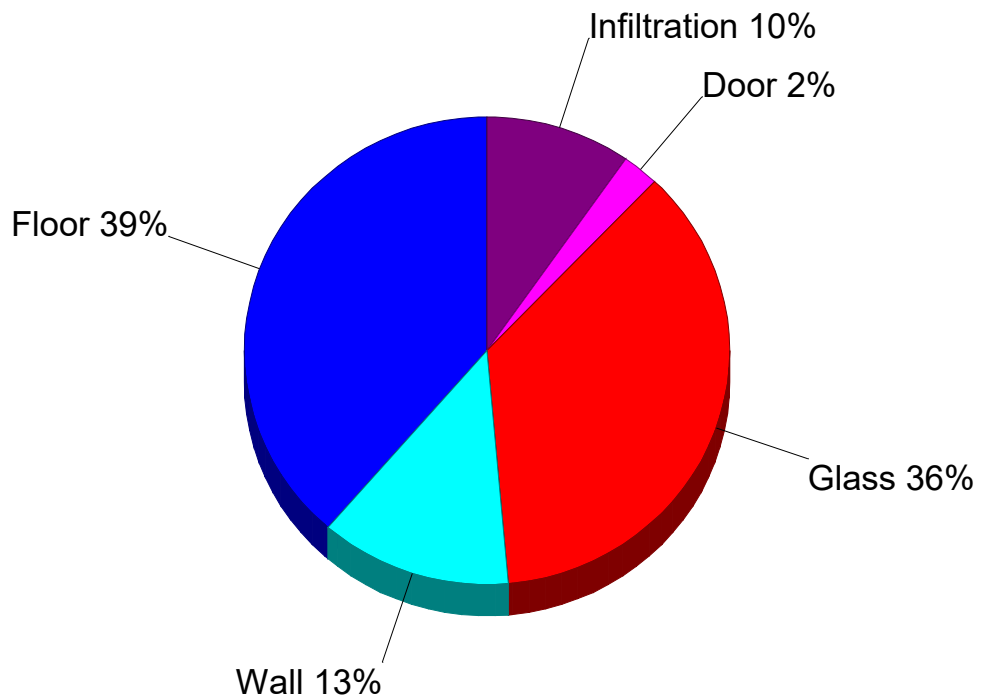
System 5, Zone 1 Pie Chart



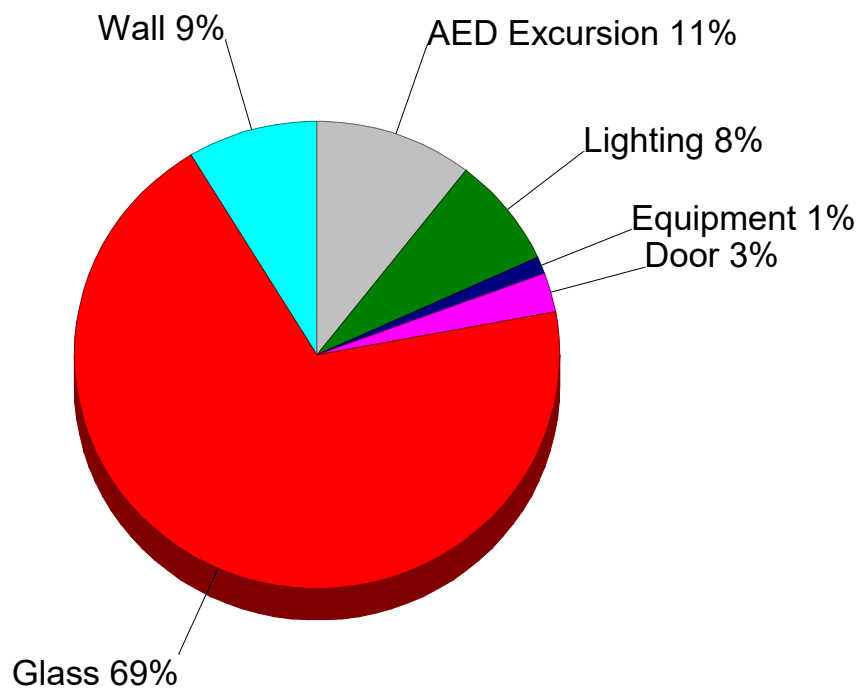


System 6, Zone 1 Pie Chart

System
6, Zone
1
Loss
10,052
Btuh



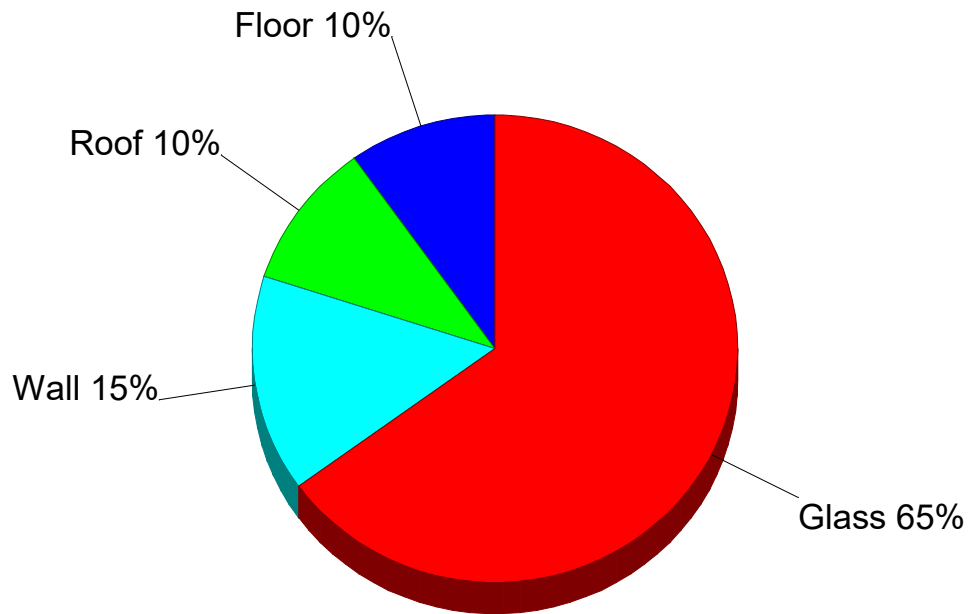
System
6, Zone
1
Gain
7,673
Btuh



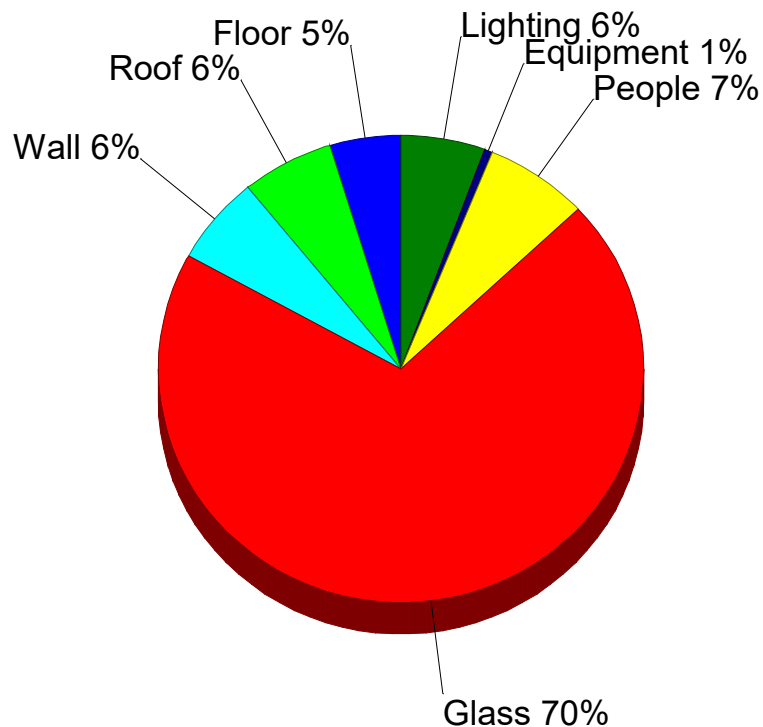


System 7, Zone 1 Pie Chart

System
7, Zone
1
Loss
15,238
Btuh



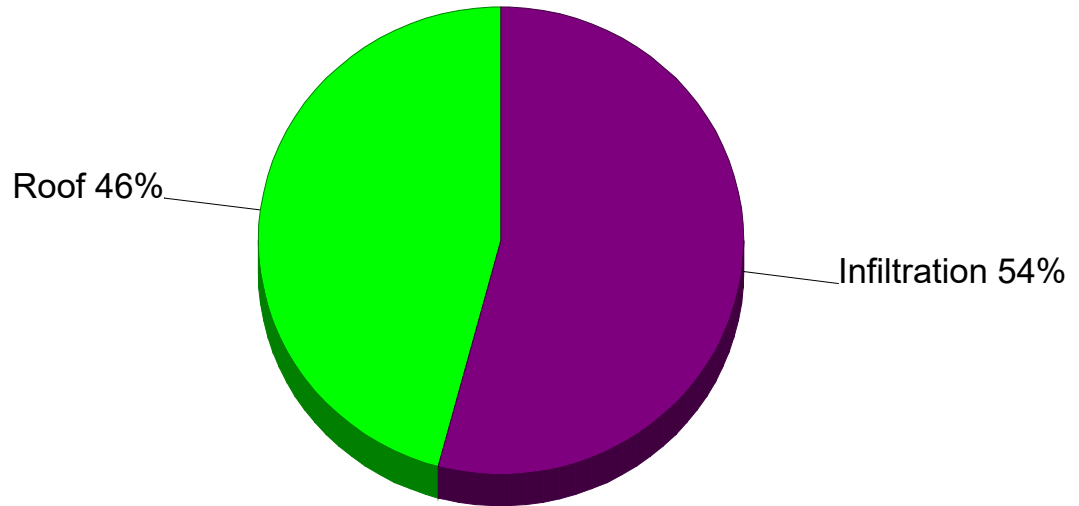
System
7, Zone
1
Gain
18,752
Btuh



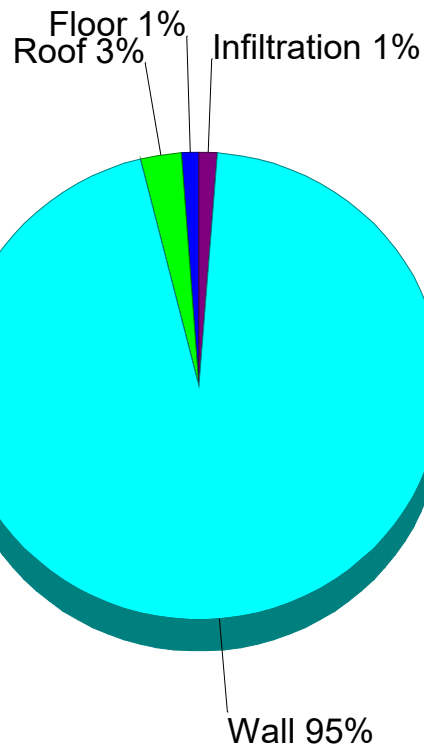


System 9, Zone 1 Pie Chart

System
9, Zone
1
Loss
72
Btuh



System
9, Zone
1
Gain
1,646
Btuh



**Detailed Room Loads - Room 1 - L0 Master BR (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	1
Room Width:	n/a	Zone Number:	1
Area:	549.5 sq.ft.	Supply Air:	735 CFM
Ceiling Height:	8.7 ft.	Supply Air Changes:	9.2 AC/hr
Volume:	4,781 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	7	Actual Winter Vent.:	32 CFM
Runout Air:	105 CFM	Percent of Supply.:	4 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	32 CFM
Runout Air Velocity:	535 ft./min.	Percent of Supply:	4 %
Runout Air Velocity:	535 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.179 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Wall-Masonry - 12" uninsu 25.2 X 8.7	158.9	0.520	22.5	3,578	10.8	0	1,719
S -Wall-Masonry - 12" uninsu 23.7 X 8.7	103	0.520	22.5	2,320	10.8	0	1,114
S -Door-11D 1 X 10	10	0.390	16.9	169	14.1	0	141
E -Gls-2A-a-o shgc-0.56 2%S	28.5	0.550	23.8	678	66.5	0	1,894
E -Gls-2A-a-o shgc-0.56 2%S	31.9	0.550	23.8	759	66.5	0	2,118
S -Gls-2A-a-o shgc-0.56 100%S	40.9	0.550	23.8	973	25.5	0	1,042
S -Gls-2A-a-o shgc-0.56 100%S	41.3	0.550	23.8	983	25.5	0	1,052
S -Gls-2A-a-o shgc-0.56 100%S	11	0.550	23.8	263	25.5	0	281
UP-Roof-18A-38 549.5 X 1	549.5	0.029	1.3	690	0.9	0	513
Floor-22A-pm 49 ft..Per.	49	1.180	51.1	2,504	0.0	0	0
Subtotals for Structure:				12,917		0	9,874
Infil.: Win.: 0.0, Sum.: 0.0	425		0.000	0	0.000	0	0
People: 200 lat/per, 230 sen/per:	2					400	460
Lighting:	137						467
Room Totals:				12,917		400	10,801



Detailed Room Loads - Room 2 - L0 Bar Hall (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	2
Room Width:	n/a	Zone Number:	1
Area:	229.5 sq.ft.	Supply Air:	26 CFM
Ceiling Height:	8.2 ft.	Supply Air Changes:	0.8 AC/hr
Volume:	1,882 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	4 CFM
Runout Air:	26 CFM	Percent of Supply.:	15 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	1 CFM
Runout Air Velocity:	295 ft./min.	Percent of Supply:	3 %
Runout Air Velocity:	295 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.098 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-15B0-0-10 24.7 X 8.2	202.5	0.102	4.4	895	0.0	0	0
- Abv. grade U-value 0.488							
Floor-22A-pm 25 ft..Per.	25	1.180	51.1	1,277	0.0	0	0
Subtotals for Structure:				2,172		0	0
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
AED Excursion:							35
Lighting:	58						198
Room Totals:				2,172		0	233



Detailed Room Loads - Room 3 - L0 Storage North (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	2
Room Width:	n/a	Zone Number:	1
Area:	116.9 sq.ft.	Supply Air:	386 CFM
Ceiling Height:	8.2 ft.	Supply Air Changes:	24.1 AC/hr
Volume:	959 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	4	Actual Winter Vent.:	9 CFM
Runout Air:	96 CFM	Percent of Supply.:	2 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	13 CFM
Runout Air Velocity:	491 ft./min.	Percent of Supply:	3 %
Runout Air Velocity:	491 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.152 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-15B0-0-10 7.8 X 8.2 - Abv. grade U-value 0.488	64	0.102	4.4	282	0.0	0	0
W -Wall-Masonry - 12" uninsu 19 X 8.2	124.7	0.520	22.5	2,807	10.8	0	1,348
W -Door-11D 1 X 11	11	0.390	16.9	186	14.1	0	155
W -Gls-2A-a-o shgc-0.56 0%S	12.2	0.550	23.8	289	67.6	0	821
W -Gls-2A-a-o shgc-0.56 0%S	8	0.550	23.8	191	67.6	0	541
Floor-22A-pm 27 ft..Per.	27	1.180	51.1	1,380	0.0	0	0
Subtotals for Structure:				5,135		0	2,865
Infil.: Win.: 0.0, Sum.: 0.0	156		0.000	0	0.000	0	0
AED Excursion:							531
Lighting:	29						99
Room Totals:				5,135		0	3,495



Detailed Room Loads - Room 5 - L0 Mech Room (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	2
Room Width:	n/a	Zone Number:	1
Area:	27.9 sq.ft.	Supply Air:	3 CFM
Ceiling Height:	8.2 ft.	Supply Air Changes:	0.8 AC/hr
Volume:	229 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	0 CFM
Runout Air:	3 CFM	Percent of Supply.:	0 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	36 ft./min.	Percent of Supply:	3 %
Runout Air Velocity:	36 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.002 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
Subtotals for Structure:				0		0	0
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
AED Excursion:							4
Lighting:	7						24
Room Totals:				0		0	28



Detailed Room Loads - Room 6 - L0 Storage South (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	2
Room Width:	n/a	Zone Number:	1
Area:	110.3 sq.ft.	Supply Air:	33 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	1.7 AC/hr
Volume:	1,191 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	2 CFM
Runout Air:	33 CFM	Percent of Supply.:	5 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	1 CFM
Runout Air Velocity:	383 ft./min.	Percent of Supply:	3 %
Runout Air Velocity:	383 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.164 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-15B0-0-10 7.2 X 10.8 - Abv. grade U-value 0.488	77.8	0.102	5.6	434	0.8	0	62
UP-Roof-18A-38 110.3 X 1	110.3	0.029	1.3	139	0.9	0	103
Floor-22A-pm 7 ft..Per.	7	1.180	51.1	358	0.0	0	0
Subtotals for Structure:				931		0	165
Infil.: Win.: 0.0, Sum.: 0.0	5		0.000	0	0.000	0	0
AED Excursion:							46
Lighting:	27						92
Room Totals:				931		0	303



Detailed Room Loads - Room 7 - L0 Master Bath (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	3
Room Width:	n/a	Zone Number:	1
Area:	286.0 sq.ft.	Supply Air:	498 CFM
Ceiling Height:	8.9 ft.	Supply Air Changes:	11.7 AC/hr
Volume:	2,545 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	5	Actual Winter Vent.:	9 CFM
Runout Air:	100 CFM	Percent of Supply.:	2 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	9 CFM
Runout Air Velocity:	507 ft./min.	Percent of Supply:	2 %
Runout Air Velocity:	507 ft./min.	Actual Winter Infil.:	6 CFM
Actual Loss:	0.161 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-Masonry - 12" uninsu 8.3 X 8.9	63.9	0.520	22.5	1,438	10.8	0	691
S -Wall-Masonry - 12" uninsu 23.9 X 8.9	176.7	0.520	22.5	3,979	10.8	0	1,911
E -Wall-Masonry - 12" uninsu 9.8 X 8.9	77.2	0.520	22.5	1,739	10.8	0	835
W -Gls-2A-a-o shgc-0.56 0%S	10	0.550	23.8	238	67.6	0	676
E -Gls-2A-a-o shgc-0.56 0%S	10	0.550	23.8	238	67.6	0	676
S -Gls-2A-a-o shgc-0.56 0%S	36	0.550	23.8	857	29.5	0	1,061
UP-Roof-18A-38 286 X 1	286	0.029	1.3	359	0.9	0	267
Floor-22A-pm 42 ft..Per.	42	1.180	51.1	2,146	0.0	0	0
Subtotals for Structure:				10,994		0	6,117
Infil.: Win.: 6.2, Sum.: 0.0	374		0.773	289	0.000	0	0
Equipment:						50	545
Lighting:	72						246
Room Totals:				11,283		50	6,908

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Full Bath	0	500	100	10	0	50
Dehumidifier on cooling peak	2179	0	100	25	545	0
Total					545	50



Detailed Room Loads - Room 8 - L0 WC (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	3
Room Width:	n/a	Zone Number:	1
Area:	34.2 sq.ft.	Supply Air:	80 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	13.0 AC/hr
Volume:	369 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	2 CFM
Runout Air:	80 CFM	Percent of Supply.:	2 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	2 CFM
Runout Air Velocity:	408 ft./min.	Percent of Supply:	2 %
Runout Air Velocity:	408 ft./min.	Actual Winter Infil.:	1 CFM
Actual Loss:	0.105 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Wall-Masonry - 12" uninsu 8.2 X 10.8	82.4	0.520	22.5	1,854	10.8	0	891
E -Gls-2A-a-o shgc-0.56 100%S	6.2	0.550	23.8	148	25.5	0	158
UP-Roof-18A-38 34.2 X 1	34.2	0.029	1.3	43	0.9	0	32
Floor-22A-pm 8 ft..Per.	8	1.180	51.1	409	0.0	0	0
Subtotals for Structure:				2,454		0	1,081
Infil.: Win.: 1.5, Sum.: 0.0	89		0.768	68	0.000	0	0
Lighting:	9						31
Room Totals:				2,522		0	1,112

**Detailed Room Loads - Room 9 - L0 Master Closet (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	3
Room Width:	n/a	Zone Number:	1
Area:	163.1 sq.ft.	Supply Air:	157 CFM
Ceiling Height:	8.9 ft.	Supply Air Changes:	6.5 AC/hr
Volume:	1,452 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	3 CFM
Runout Air:	79 CFM	Percent of Supply.:	2 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	3 CFM
Runout Air Velocity:	400 ft./min.	Percent of Supply:	2 %
Runout Air Velocity:	400 ft./min.	Actual Winter Infil.:	2 CFM
Actual Loss:	0.101 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-Masonry - 12" uninsu 16.2 X 8.9	138.4	0.520	22.5	3,115	10.8	0	1,496
W -Gls-2A-a-o shgc-0.56 0%S	5.8	0.550	23.8	139	67.6	0	394
UP-Roof-18A-38 163.1 X 1	163.1	0.029	1.3	205	0.9	0	152
Floor-22A-pm 16 ft..Per.	16	1.180	51.1	818	0.0	0	0
Subtotals for Structure:				4,277		0	2,042
Infil.: Win.: 2.4, Sum.: 0.0	144		0.770	111	0.000	0	0
Lighting:	41						140
Room Totals:				4,388		0	2,182



Detailed Room Loads - Room 10 - L1 Dining Room (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	4
Room Width:	n/a	Zone Number:	1
Area:	460.0 sq.ft.	Supply Air:	637 CFM
Ceiling Height:	8.9 ft.	Supply Air Changes:	9.3 AC/hr
Volume:	4,094 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	6	Actual Winter Vent.:	12 CFM
Runout Air:	106 CFM	Percent of Supply.:	2 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	15 CFM
Runout Air Velocity:	541 ft./min.	Percent of Supply:	2 %
Runout Air Velocity:	541 ft./min.	Actual Winter Infil.:	11 CFM
Actual Loss:	0.183 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-Masonry - 12" uninsu 19.4 X 8.9	49.7	0.520	22.5	1,118	10.8	0	537
S -Wall-Masonry - 12" uninsu 23.9 X 8.9	110.7	0.520	22.5	2,493	10.8	0	1,197
E -Wall-Masonry - 12" uninsu 10.3 X 8.9	49.1	0.520	22.5	1,105	10.8	0	531
E -Gls-2A-a-o shgc-0.56 33%S	42.6	0.550	23.8	1,015	53.5	0	2,279
S -Gls-2A-a-o shgc-0.56 100%S (2)	102	0.550	23.8	2,430	25.5	0	2,600
W -Gls-2A-a-o shgc-0.56 33%S (2)	87	0.550	23.8	2,072	53.5	0	4,654
W -Gls-2A-a-o shgc-0.56 33%S (2)	36	0.550	23.8	858	53.5	0	1,926
UP-Roof-18A-38 575 X 1	575	0.029	1.3	722	0.9	0	537
Subtotals for Structure:				11,813		0	14,261
Infil.: Win.: 11.4, Sum.: 0.0	477		1.111	530	0.000	0	0
AED Excursion:							1,212
Lighting:	115						392
Room Totals:				12,343		0	15,865

**Detailed Room Loads - Room 11 - L1 Terrace Landing (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	4
Room Width:	n/a	Zone Number:	1
Area:	48.0 sq.ft.	Supply Air:	114 CFM
Ceiling Height:	9.2 ft.	Supply Air Changes:	15.5 AC/hr
Volume:	442 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	1 CFM
Runout Air:	57 CFM	Percent of Supply.:	1 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	3 CFM
Runout Air Velocity:	655 ft./min.	Percent of Supply:	2 %
Runout Air Velocity:	655 ft./min.	Actual Winter Infil.:	3 CFM
Actual Loss:	0.472 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-6sw 4.7 X 9.2	43.2	0.048	2.1	90	1.0	0	45
E -Wall-12F-6sw 9.2 X 9.2	43.8	0.048	2.1	91	1.0	0	45
E -Gls-2A-a-o shgc-0.56 17%S	40.8	0.550	23.8	972	60.1	0	2,454
UP-Roof-18A-38 48 X 1	48	0.029	1.3	60	0.9	0	45
Subtotals for Structure:				1,213		0	2,589
Infil.: Win.: 3.0, Sum.: 0.0	128		1.110	142	0.000	0	0
AED Excursion:							217
Lighting:	12						41
Room Totals:				1,355		0	2,847



Detailed Room Loads - Room 12 - L1 Living Room (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	4
Room Width:	n/a	Zone Number:	1
Area:	607.0 sq.ft.	Supply Air:	649 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	5.9 AC/hr
Volume:	6,556 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	6	Actual Winter Vent.:	20 CFM
Runout Air:	108 CFM	Percent of Supply.:	3 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	15 CFM
Runout Air Velocity:	551 ft./min.	Percent of Supply:	2 %
Runout Air Velocity:	551 ft./min.	Actual Winter Infil.:	14 CFM
Actual Loss:	0.190 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-Masonry - 12" uninsu 31.6 X 10.8	306.3	0.520	22.5	6,896	10.8	0	3,313
N -Wall-Masonry - 12" uninsu 18.5 X 12.5	131.3	0.520	22.5	2,956	10.8	0	1,420
W -Wall-12F-6sw 8.8 X 3.3	8	0.048	2.1	17	1.0	0	8
W -Gls-2A-a-o shgc-0.56 0%S (2)	35	0.550	23.8	834	67.6	0	2,366
W -Gls-2A-a-o shgc-0.56 58%S (2)	21	0.550	23.8	500	43.1	0	906
N -Gls-1A-cm-o shgc-0.75 100%S	100	1.270	55.0	5,497	47.6	0	4,757
UP-Roof-18A-38 759 X 1	759	0.029	1.3	953	0.9	0	709
Floor-20P1-11op 1 X 607	607	0.076	3.3	1,998	1.5	0	932
Subtotals for Structure:				19,651		0	14,411
Infil.: Win.: 14.3, Sum.: 0.0	602		1.112	669	0.000	0	0
AED Excursion:							1,234
Lighting:	152						518
Room Totals:				20,320		0	16,164

**Detailed Room Loads - Room 13 - L1 Media Room (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	5
Room Width:	n/a	Zone Number:	1
Area:	207.5 sq.ft.	Supply Air:	206 CFM
Ceiling Height:	9.3 ft.	Supply Air Changes:	6.4 AC/hr
Volume:	1,930 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	10 CFM
Runout Air:	103 CFM	Percent of Supply.:	5 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	6 CFM
Runout Air Velocity:	524 ft./min.	Percent of Supply:	3 %
Runout Air Velocity:	524 ft./min.	Actual Winter Infil.:	10 CFM
Actual Loss:	0.172 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Masonry - 12" uninsu 19.9 X 9.3	170.7	0.520	22.5	3,844	10.8	0	1,846
W -Wall-Masonry - 12" uninsu 4 X 9.3	37.2	0.520	22.5	838	10.8	0	402
E -Wall-Masonry - 12" uninsu 8 X 9.3	67.2	0.520	22.5	1,514	10.8	0	727
N -Gls-2A-a-o shgc-0.56 100%S (2)	14.4	0.550	23.8	342	25.5	0	366
E -Gls-2A-a-o shgc-0.56 0%S	7.2	0.550	23.8	171	67.6	0	485
UP-Roof-18A-38 207.5 X 1	207.5	0.029	1.3	261	0.9	0	194
Floor-22A-pm 32 ft..Per.	32	1.180	51.1	1,635	0.0	0	0
Subtotals for Structure:				8,605		0	4,020
Infil.: Win.: 9.7, Sum.: 0.0	297		1.517	450	0.000	0	0
Equipment:						0	150
Lighting:	52						177
Room Totals:				9,055		0	4,347

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Electronics	600	0	25	100	150	0
Total					150	0

**Detailed Room Loads - Room 14 - L1 Kitchen (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	5
Room Width:	n/a	Zone Number:	1
Area:	948.8 sq.ft.	Supply Air:	760 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	4.4 AC/hr
Volume:	10,247 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	7	Actual Winter Vent.:	16 CFM
Runout Air:	109 CFM	Percent of Supply.:	2 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	22 CFM
Runout Air Velocity:	553 ft./min.	Percent of Supply:	3 %
Runout Air Velocity:	553 ft./min.	Actual Winter Infil.:	19 CFM
Actual Loss:	0.192 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-6sw 27.1 X 10.8	224.3	0.048	2.1	466	1.0	0	233
E -Wall-12F-6sw 15.7 X 10.8	115.6	0.048	2.1	240	1.0	0	120
N -Wall-12F-6sw 10.4 X 10.8	24.4	0.048	2.1	51	1.0	0	25
E -Gls-2A-a-o shgc-0.56 12%S	54	0.550	23.8	1,286	62.1	0	3,356
S -Gls-2A-a-o shgc-0.56 0%S	36	0.550	23.8	857	29.5	0	1,061
S -Gls-2A-a-o shgc-0.56 0%S	32.4	0.550	23.8	772	29.5	0	955
N -Gls-1A-cm-o shgc-0.75 100%S	87.9	1.270	55.0	4,833	47.6	0	4,182
UP-Sky-8E20-law shgc-0.61	16.4	0.830	35.9	589	161.3	0	2,645
UP-Roof-18A-38 948.8 X 1	932.4	0.029	1.3	1,171	0.9	0	871
Floor-22A-pm 53 ft..Per.	53	1.180	51.1	2,708	0.0	0	0
Subtotals for Structure:				12,973		0	13,448
Infil.: Win.: 18.7, Sum.: 0.0	575		1.518	872	0.000	0	0
Equipment:						400	1,800
Lighting:	238						812
Room Totals:				13,845		400	16,060

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Kitchen	1800	400	100	100	1800	400
Total					1800	400

**Detailed Room Loads - Room 15 - L1 Entry Hall (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	5
Room Width:	n/a	Zone Number:	1
Area:	160.3 sq.ft.	Supply Air:	434 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	15.1 AC/hr
Volume:	1,731 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	4	Actual Winter Vent.:	14 CFM
Runout Air:	109 CFM	Percent of Supply.:	3 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	12 CFM
Runout Air Velocity:	553 ft./min.	Percent of Supply:	3 %
Runout Air Velocity:	553 ft./min.	Actual Winter Infil.:	9 CFM
Actual Loss:	0.192 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-6sw 19.3 X 10.8	71.9	0.048	2.1	150	1.0	0	75
E -Wall-12F-6sw 7 X 10.8	27.4	0.048	2.1	57	1.0	0	28
E -Gls-1A-cm-o shgc-0.75 100%S	48.2	1.270	55.0	2,648	47.6	0	2,292
S -Gls-1A-cm-o shgc-0.75 100%S (2)	136.5	1.270	55.0	7,506	47.6	0	6,496
UP-Roof-18A-38 160.3 X 1	160.3	0.029	1.3	201	0.9	0	150
Floor-22A-pm 26 ft..Per.	26	1.180	51.1	1,328	0.0	0	0
Subtotals for Structure:				11,890		0	9,041
Infil.: Win.: 9.2, Sum.: 0.0	284		1.517	431	0.000	0	0
Lighting:	40						136
Room Totals:				12,321		0	9,177

**Detailed Room Loads - Room 16 - L1 Powder (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	6
Room Width:	n/a	Zone Number:	1
Area:	40.8 sq.ft.	Supply Air:	2 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	0.3 AC/hr
Volume:	441 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	0 CFM
Runout Air:	2 CFM	Percent of Supply.:	0 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	26 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	26 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.001 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
Subtotals for Structure:				0		0	0
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
AED Excursion:							4
Equipment:						30	0
Lighting:	10						34
Room Totals:				0		30	38

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Powder	0	300	100	10	0	30
Total					0	30

**Detailed Room Loads - Room 17 - L1 Office Hall (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	6
Room Width:	n/a	Zone Number:	1
Area:	193.0 sq.ft.	Supply Air:	69 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	2.0 AC/hr
Volume:	2,084 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	4 CFM
Runout Air:	69 CFM	Percent of Supply.:	6 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	3 CFM
Runout Air Velocity:	353 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	353 ft./min.	Actual Winter Infil.:	4 CFM
Actual Loss:	0.079 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-12F-6sw 3.7 X 10.8	15.3	0.048	2.1	32	1.0	0	16
S -Wall-12F-6sw 10 X 10.8	96	0.048	2.1	200	1.0	0	100
W -Door-11D 1 X 14.7	14.7	0.390	16.9	248	14.1	0	208
S -Gls-2A-a-o shgc-0.56 100%S	12	0.550	23.8	285	25.5	0	305
W -Gls-2A-a-o shgc-0.56 100%S	10	0.550	23.8	238	25.5	0	255
Floor-22A-pm 14 ft..Per.	14	1.180	51.1	715	0.0	0	0
Subtotals for Structure:				1,718		0	884
Infil.: Win.: 3.7, Sum.: 0.0	148		1.176	174	0.000	0	0
AED Excursion:							125
Lighting:	48						164
Room Totals:				1,892		0	1,172



Detailed Room Loads - Room 18 - L1 Mud Room (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	6
Room Width:	n/a	Zone Number:	1
Area:	94.0 sq.ft.	Supply Air:	10 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	0.6 AC/hr
Volume:	1,015 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	1 CFM
Runout Air:	10 CFM	Percent of Supply.:	12 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	115 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	115 ft./min.	Actual Winter Infil.:	2 CFM
Actual Loss:	0.016 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Part-20.2°/33.3°-12F-6sw 7 X 10.8	75.6	0.048	1.6	121	1.0	0	73
Floor-22A-pm 7 ft..Per.	7	1.180	51.1	358	0.0	0	0
Subtotals for Structure:				479		0	73
Infil.: Win.: 1.9, Sum.: 0.0	76		1.177	89	0.000	0	0
AED Excursion:							18
Lighting:	23						78
Room Totals:				568		0	169

**Detailed Room Loads - Room 19 - L1 Laundry (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	6
Room Width:	n/a	Zone Number:	1
Area:	117.0 sq.ft.	Supply Air:	103 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	4.9 AC/hr
Volume:	1,264 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	6 CFM
Runout Air:	103 CFM	Percent of Supply.:	6 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	5 CFM
Runout Air Velocity:	523 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	523 ft./min.	Actual Winter Infil.:	6 CFM
Actual Loss:	0.172 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-6sw 13.8 X 10.8	99.5	0.048	2.1	207	1.0	0	103
N -Part-20.2°/33.3°-12F-6sw 8.5 X 10.8	91.8	0.048	1.6	147	1.0	0	89
N -Gls-2A-a-o shgc-0.56 100%S	49.5	0.550	23.8	1,179	25.5	0	1,262
Floor-22A-pm 22 ft..Per.	22	1.180	51.1	1,124	0.0	0	0
Subtotals for Structure:				2,657		0	1,454
Infil.: Win.: 6.1, Sum.: 0.0	241		1.179	284	0.000	0	0
AED Excursion:							185
Equipment:						60	0
Lighting:	29						99
Room Totals:				2,941		60	1,738

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Utility/Laundry	0	600	100	10	0	60
Total					0	60

**Detailed Room Loads - Room 20 - L1 Office (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	6
Room Width:	n/a	Zone Number:	1
Area:	248.9 sq.ft.	Supply Air:	264 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	5.9 AC/hr
Volume:	2,688 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	3	Actual Winter Vent.:	10 CFM
Runout Air:	88 CFM	Percent of Supply.:	4 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	12 CFM
Runout Air Velocity:	448 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	448 ft./min.	Actual Winter Infil.:	9 CFM
Actual Loss:	0.126 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-12F-6sw 12.6 X 10.8	103.1	0.048	2.1	214	1.0	0	107
N -Wall-12F-6sw 16.3 X 10.8	126.5	0.048	2.1	263	1.0	0	131
N -Wall-12F-6sw 4.4 X 10.8	47.5	0.048	2.1	99	1.0	0	49
W -Gls-2A-a-o shgc-0.56 0%S	33	0.550	23.8	786	67.6	0	2,230
N -Gls-2A-a-o shgc-0.56 100%S	49.5	0.550	23.8	1,179	25.5	0	1,262
Floor-22A-pm 33 ft..Per.	33	1.180	51.1	1,686	0.0	0	0
Subtotals for Structure:				4,227		0	3,779
Infil.: Win.: 9.1, Sum.: 0.0	360		1.179	424	0.000	0	0
AED Excursion:							475
Lighting:	62						211
Room Totals:				4,651		0	4,465



Detailed Room Loads - Room 21 - L2 Hall (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	237.0 sq.ft.	Supply Air:	199 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	5.6 AC/hr
Volume:	2,133 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	16 CFM
Runout Air:	100 CFM	Percent of Supply.:	8 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	15 CFM
Runout Air Velocity:	508 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	508 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.162 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-6sw 46.4 X 9	327.6	0.048	2.1	681	1.0	0	340
W -Wall-12F-6sw 4.5 X 9	22.5	0.048	2.1	47	1.0	0	23
W -Gls-2A-a-o shgc-0.56 33%S	18	0.550	23.8	429	53.6	0	965
S -Gls-2A-a-o shgc-0.56 100%S (2)	36	0.550	23.8	858	25.5	0	918
S -Gls-2A-a-o shgc-0.56 100%S	54	0.550	23.8	1,286	25.5	0	1,377
UP-Roof-18A-38 237 X 1	237	0.029	1.3	298	0.9	0	221
Floor-20P1-11op 1 X 45	45	0.076	3.3	148	1.5	0	69
Subtotals for Structure:				3,747		0	3,913
Infil.: Win.: 0.0, Sum.: 0.0	458		0.000	0	0.000	0	0
Lighting:	59						201
Room Totals:				3,747		0	4,114

**Detailed Room Loads - Room 22 - L2 Kids Nook (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	114.0 sq.ft.	Supply Air:	184 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	10.8 AC/hr
Volume:	1,026 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	12 CFM
Runout Air:	92 CFM	Percent of Supply.:	7 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	14 CFM
Runout Air Velocity:	469 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	469 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.138 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-6sw 14 X 9	72	0.048	2.1	150	1.0	0	75
E -Wall-12F-6sw 8.2 X 9	37.8	0.048	2.1	79	1.0	0	39
S -Gls-2A-a-o shgc-0.56 100%S	54	0.550	23.8	1,286	25.5	0	1,377
E -Gls-2A-a-o shgc-0.56 33%S	36	0.550	23.8	857	53.6	0	1,930
UP-Roof-18A-38 114 X 1	114	0.029	1.3	143	0.9	0	106
Floor-Part-20P1-11op 1 X 114	114	0.076	2.5	289	1.5	0	175
Subtotals for Structure:				2,804		0	3,702
Infil.: Win.: 0.0, Sum.: 0.0	200		0.000	0	0.000	0	0
Lighting:	28						95
Room Totals:				2,804		0	3,797

**Detailed Room Loads - Room 23 - L2 BR1 (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	198.0 sq.ft.	Supply Air:	166 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	5.6 AC/hr
Volume:	1,782 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	13 CFM
Runout Air:	83 CFM	Percent of Supply.:	8 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	13 CFM
Runout Air Velocity:	424 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	424 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.113 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Wall-12F-6sw 15.7 X 9	123.3	0.048	2.1	256	1.0	0	128
N -Wall-12F-6sw 14 X 9	72	0.048	2.1	150	1.0	0	75
E -Gls-2A-a-o shgc-0.56 33%S	18	0.550	23.8	429	53.6	0	965
N -Gls-2A-a-o shgc-0.56 100%S	54	0.550	23.8	1,286	25.5	0	1,377
UP-Roof-18A-38 198 X 1	198	0.029	1.3	249	0.9	0	185
Floor-Part-20P1-11op 1 X 198	198	0.076	2.5	501	1.5	0	304
Subtotals for Structure:				2,871		0	3,034
Infil.: Win.: 0.0, Sum.: 0.0	267		0.000	0	0.000	0	0
People: 200 lat/per, 230 sen/per:	1					200	230
Lighting:	50						171
Room Totals:				2,871		200	3,435

**Detailed Room Loads - Room 24 - L2 Bath 1 (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	93.1 sq.ft.	Supply Air:	34 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	2.4 AC/hr
Volume:	838 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	4 CFM
Runout Air:	34 CFM	Percent of Supply.:	11 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	3 CFM
Runout Air Velocity:	387 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	387 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.167 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-6sw 10.3 X 9	82.2	0.048	2.1	171	1.0	0	85
W -Wall-12F-6sw 3.5 X 9	31.5	0.048	2.1	65	1.0	0	33
N -Gls-2A-a-o shgc-0.56 100%S	10.5	0.550	23.8	250	25.5	0	267
UP-Roof-18A-38 93.1 X 1	93.1	0.029	1.3	117	0.9	0	87
Floor-Part-20P1-11op 1 X 93.1	93.1	0.076	2.5	236	1.5	0	143
Subtotals for Structure:				839		0	615
Infil.: Win.: 0.0, Sum.: 0.0	124		0.000	0	0.000	0	0
Equipment:						50	0
Lighting:	24						82
Room Totals:				839		50	697

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Full Bath	0	500	100	10	0	50
Total					0	50

**Detailed Room Loads - Room 25 - L2 BR1 Closet (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	33.2 sq.ft.	Supply Air:	5 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	1.1 AC/hr
Volume:	299 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	1 CFM
Runout Air:	5 CFM	Percent of Supply.:	10 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	61 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	61 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.005 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
UP-Roof-18A-38 33.2 X 1	33.2	0.029	1.3	42	0.9	0	31
Floor-Part-20P1-11op 1 X 33.2	33.2	0.076	2.5	84	1.5	0	51
Subtotals for Structure:				126		0	82
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
Lighting:	8						27
Room Totals:				126		0	109

**Detailed Room Loads - Room 26 - L2 BR2 (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	204.9 sq.ft.	Supply Air:	103 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	3.3 AC/hr
Volume:	1,844 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	8 CFM
Runout Air:	103 CFM	Percent of Supply.:	8 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	8 CFM
Runout Air Velocity:	524 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	524 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.172 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-6sw 11.8 X 9	52.2	0.048	2.1	108	1.0	0	54
N -Gls-2A-a-o shgc-0.56 100%S	54	0.550	23.8	1,286	25.5	0	1,377
UP-Roof-18A-38 204.9 X 1	204.9	0.029	1.3	257	0.9	0	191
Floor-Part-20P1-11op 1 X 63.5	63.5	0.076	2.5	161	1.5	0	97
Subtotals for Structure:				1,812		0	1,719
Infil.: Win.: 0.0, Sum.: 0.0	106		0.000	0	0.000	0	0
People: 200 lat/per, 230 sen/per:	1					200	230
Lighting:	51						174
Room Totals:				1,812		200	2,123



Detailed Room Loads - Room 27 - L2 BR2 Closet (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	31.8 sq.ft.	Supply Air:	5 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	1.1 AC/hr
Volume:	286 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	1 CFM
Runout Air:	5 CFM	Percent of Supply.:	10 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	59 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	59 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.005 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
UP-Roof-18A-38 31.8 X 1	31.8	0.029	1.3	40	0.9	0	30
Floor-Part-20P1-11op 1 X 31.8	31.8	0.076	2.5	80	1.5	0	49
Subtotals for Structure:				120		0	79
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
Lighting:	8						27
Room Totals:				120		0	106

**Detailed Room Loads - Room 28 - L2 Bath 2 (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	87.9 sq.ft.	Supply Air:	23 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	1.7 AC/hr
Volume:	792 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	2 CFM
Runout Air:	23 CFM	Percent of Supply.:	9 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	2 CFM
Runout Air Velocity:	259 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	259 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.076 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-6sw 8.8 X 9	69.9	0.048	2.1	145	1.0	0	72
N -Gls-2A-a-o shgc-0.56 100%S	9.3	0.550	23.8	222	25.5	0	238
UP-Roof-18A-38 87.9 X 1	87.9	0.029	1.3	110	0.9	0	82
Subtotals for Structure:				477		0	392
Infil.: Win.: 0.0, Sum.: 0.0	79		0.000	0	0.000	0	0
Equipment:						50	0
Lighting:	22						75
Room Totals:				477		50	467

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Full Bath	0	500	100	10	0	50
Total					0	50

**Detailed Room Loads - Room 29 - L2 BR3 (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	208.1 sq.ft.	Supply Air:	153 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	4.9 AC/hr
Volume:	1,873 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	11 CFM
Runout Air:	77 CFM	Percent of Supply.:	7 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	12 CFM
Runout Air Velocity:	390 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	390 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.096 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-6sw 15.5 X 9	85.5	0.048	2.1	178	1.0	0	89
W -Wall-12F-6sw 15.8 X 9	124.2	0.048	2.1	258	1.0	0	129
W -Gls-2A-a-o shgc-0.56 33%S	18	0.550	23.8	429	53.6	0	965
N -Gls-2A-a-o shgc-0.56 100%S	54	0.550	23.8	1,286	25.5	0	1,377
UP-Roof-18A-38 208.1 X 1	208.1	0.029	1.3	261	0.9	0	194
Subtotals for Structure:				2,412		0	2,754
Infil.: Win.: 0.0, Sum.: 0.0	282		0.000	0	0.000	0	0
People: 200 lat/per, 230 sen/per:	1					200	230
Lighting:	52						177
Room Totals:				2,412		200	3,161



Detailed Room Loads - Room 30 - L2 BR3 Closet (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	7
Room Width:	n/a	Zone Number:	1
Area:	23.7 sq.ft.	Supply Air:	2 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	0.6 AC/hr
Volume:	213 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	0 CFM
Runout Air:	2 CFM	Percent of Supply.:	6 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	24 ft./min.	Percent of Supply:	8 %
Runout Air Velocity:	24 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.001 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
UP-Roof-18A-38 23.7 X 1	23.7	0.029	1.3	30	0.9	0	22
Subtotals for Structure:				30		0	22
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
Lighting:	6						20
Room Totals:				30		0	42

**Detailed Room Loads - Room 4 - L0 Wine Room (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	9
Room Width:	n/a	Zone Number:	1
Area:	17.1 sq.ft.	Supply Air:	76 CFM
Ceiling Height:	10.8 ft.	Supply Air Changes:	24.7 AC/hr
Volume:	185 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	0 CFM
Runout Air:	76 CFM	Percent of Supply.:	0 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	388 ft./min.	Percent of Supply:	0 %
Runout Air Velocity:	388 ft./min.	Actual Winter Infil.:	1 CFM
Actual Loss:	0.095 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Part-25°/0°-12F-6sw 10.2 X 10.8	110.2	0.048	0.0	0	1.2	0	132
N -Part-25°/0°-12F-6sw 2.5 X 10.8	27	0.048	0.0	0	1.2	0	32
N -Part-25°/0°-12F-6sw 2.5 X 10.8	27	0.048	0.0	0	1.2	0	32
N -Part-25°/0°-12A-0sm 9.2 X 10.8	99.4	0.550	0.0	0	13.8	0	1,366
UP-Ceil-16BR-21 17.1 X 1	17.1	0.044	1.9	33	2.6	0	45
Floor-Part-20P1-23op 1 X 17.1	17.1	0.044	0.0	0	1.1	0	19
Subtotals for Structure:				33		0	1,626
Infil.: Win.: 0.8, Sum.: 0.5	264		0.148	39	0.049	7	13
Room Totals:				72		7	1,639



System 1 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
1	L0 Master BR	550	12,917	300	7-6	535	10,801	400	502	735
	Ventilation		597				347	457		
	Misc Return Gain						0	-274		
	System 1 total	550	13,514	300			11,148	583	502	735

System 1 Main Trunk Size: 10x14 in.
 Velocity: 756 ft./min
 Loss per 100 ft.: 0.103 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.98	95% / 5%	11,148	583	11,731

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 2 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
2	L0 Bar Hall	230	2,172	50	1-4	295	233	0	11	26
3	L0 Storage North	117	5,135	119	4-6	491	3,495	0	162	386
5	L0 Mech Room	28	0	0	1-4	36	28	0	1	3
6	L0 Storage South	110	931	22	1-4	383	303	0	14	33
Ventilation			280				163	214		
Misc Return Gain									0	-128
System 2 total		485	8,518	191			4,222	86	189	448

System 2 Main Trunk Size: 8x12 in.
 Velocity: 672 ft./min
 Loss per 100 ft.: 0.106 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.36	98% / 2%	4,222	86	4,309

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 3 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
7	L0 Master Bath	286	11,283	262	5-6	507	6,908	50	321	498
8	L0 WC	34	2,522	59	1-6	408	1,112	0	52	80
9	L0 Master Closet	163	4,388	102	2-6	400	2,182	0	101	157
	Ventilation		261				152	200		
	Misc Return Gain						0	-120		
System 3 total		483	18,454	423			10,353	130	474	735

System 3 Main Trunk Size: 10x14 in.
Velocity: 756 ft./min
Loss per 100 ft.: 0.103 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.87	99% / 1%	10,353	130	10,483

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 4 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
10	L1 Dining Room	460	12,343	287	6-6	541	15,865	0	737	637
11	L1 Terrace Landing	48	1,355	31	2-4	655	2,847	0	132	114
12	L1 Living Room	607	20,320	472	6-6	551	16,164	0	751	649
	Ventilation		615				358	471		
	Misc Return Gain						0	-283		
System 4 total		1,115	34,633	790			35,234	188	1,620	1,400

System 4 Main Trunk Size: 12x19 in.
Velocity: 884 ft./min
Loss per 100 ft.: 0.104 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	2.95	99% / 1%	35,234	188	35,422

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 5 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
13	L1 Media Room	208	9,055	210	2-6	524	4,347	0	202	206
14	L1 Kitchen	949	13,845	322	7-6	553	16,060	400	746	760
15	L1 Entry Hall	160	12,321	286	4-6	553	9,177	0	426	434
	Ventilation		746				434	571		
	Misc Return Gain						0	-343		
System 5 total		1,317	35,967	818			30,018	628	1,374	1,400

System 5 Main Trunk Size: 12x19 in.
 Velocity: 884 ft./min
 Loss per 100 ft.: 0.104 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	2.55	98% / 2%	30,018	628	30,646

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 6 Room Load Summary

	Room	Area	Htg	Min	Run	Run	Clg	Clg	Min	Act
	No	Name	SF	Sens	Htg	Duct	Sens	Lat	Clg	Sys
			Btuh	CFM	Size	Vel	Btuh	Btuh	CFM	CFM
---Zone 1---										
16	L1 Powder	41	0	0	1-4	26	38	30	2	2
17	L1 Office Hall	193	1,892	44	1-6	353	1,172	0	54	69
18	L1 Mud Room	94	568	13	1-4	115	169	0	8	10
19	L1 Laundry	117	2,941	68	1-6	523	1,738	60	81	103
20	L1 Office	249	4,651	108	3-6	448	4,465	0	207	264
Ventilation			392				228	300		
Misc Return Gain							0	-180		
System 6 total		694	10,444	233			7,811	210	352	448

System 6 Main Trunk Size: 8x12 in.
 Velocity: 672 ft./min
 Loss per 100 ft.: 0.106 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.67	97% / 3%	7,811	210	8,020

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 7 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
21	L2 Hall	237	3,747	87	2-6	508	4,114	0	191	199
22	L2 Kids Nook	114	2,804	65	2-6	469	3,797	0	176	184
23	L2 BR1	198	2,871	67	2-6	424	3,435	200	160	166
24	L2 Bath 1	93	839	19	1-4	387	697	50	32	34
25	L2 BR1 Closet	33	126	3	1-4	61	109	0	5	5
26	L2 BR2	205	1,812	42	1-6	524	2,123	200	99	103
27	L2 BR2 Closet	32	120	3	1-4	59	106	0	5	5
28	L2 Bath 2	88	477	11	1-4	259	467	50	22	23
29	L2 BR3	208	2,412	56	2-6	390	3,161	200	147	153
30	L2 BR3 Closet	24	30	1	1-4	24	42	0	2	2
Ventilation			1,249				727	957		
Misc Return Gain							0	-575		
System 7 total		1,232	16,487	354			18,779	1,082	838	875

System 7 Main Trunk Size: 10x16 in.
Velocity: 788 ft./min
Loss per 100 ft.: 0.104 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	1.66	95% / 5%	18,779	1,082	19,861

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 9 Room Load Summary

Room No Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---									
4 L0 Wine Room	17	72	2	1-6	388	1,639	7	76	76
System 9 total	17	72	2			1,639	7	76	76

System 9 Main Trunk Size: 4x4 in.
 Velocity: 685 ft./min
 Loss per 100 ft.: 0.346 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.14	100% / 0%	1,639	7	1,646

Equipment Data

	<u>Heating System</u>	<u>Cooling System</u>
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 1
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 13514 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 11148 Btu/h
Latent heat gain 583 Btu/h
Total heat gain 11731 Btu/h

Building Construction Information

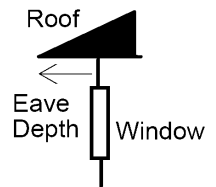
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 550 Sq Ft
Number of occupants 2

Windows

Eave overhang depth 4.2 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 735 CFM
Cooling CFM 735 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow 735 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

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² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.
Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 2
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 8518 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 4222 Btu/h
Latent heat gain 86 Btu/h
Total heat gain 4309 Btu/h

Building Construction Information

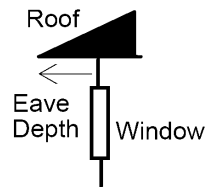
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 485 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 448 CFM
Cooling CFM 448 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow 448 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 3
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 18454 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 10353 Btu/h
Latent heat gain 130 Btu/h
Total heat gain 10483 Btu/h

Building Construction Information

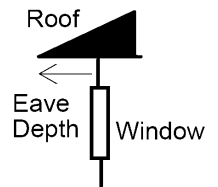
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 483 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 15 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 735 CFM
Cooling CFM 735 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow 735 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

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Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 4
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 34633 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 35234 Btu/h
Latent heat gain 188 Btu/h
Total heat gain 35422 Btu/h

Building Construction Information

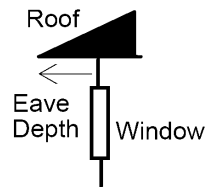
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 1115 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 5.9 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 1400 CFM
Cooling CFM 1400 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow 1400 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 5
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 35967 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 30018 Btu/h
Latent heat gain 628 Btu/h
Total heat gain 30646 Btu/h

Building Construction Information

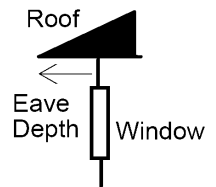
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 1317 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 7.4 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 1400 CFM
Cooling CFM 1400 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow 1400 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 6
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 10444 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 7811 Btu/h
Latent heat gain 210 Btu/h
Total heat gain 8020 Btu/h

Building Construction Information

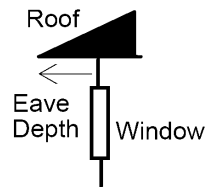
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 694 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 14.6 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 448 CFM
Cooling CFM 448 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow 448 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 7
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 16487 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 18779 Btu/h
Latent heat gain 1082 Btu/h
Total heat gain 19861 Btu/h

Building Construction Information

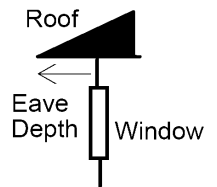
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 1232 Sq Ft
Number of occupants 3

Windows

Eave overhang depth 2.4 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 875 CFM
Cooling CFM 875 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow 875 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 8
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

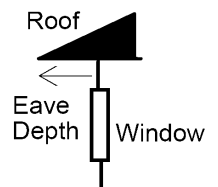
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 9
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature _____ 27 °F
Indoor temperature _____ 70 °F
Total heat loss _____ 72 Btu/h

Summer Design Conditions

Outdoor temperature _____ 100 °F
Indoor temperature _____ 75 °F
Grains difference _____ 21 Δ Gr @ 50 % Rh
Sensible heat gain _____ 1639 Btu/h
Latent heat gain _____ 7 Btu/h
Total heat gain _____ 1646 Btu/h

Building Construction Information

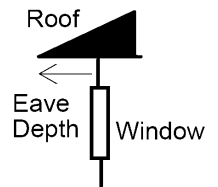
Building

Orientation (Front door faces) _____ East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms _____ 0
Conditioned floor area _____ 17 Sq Ft
Number of occupants _____ 0

Windows

Eave overhang depth _____ 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights _____ 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type _____ Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type _____ Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ 76 CFM
Cooling CFM _____ 76 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP $\times$ 100) $\div$ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 1
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 13514 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 11148 Btu/h
Latent heat gain 583 Btu/h
Total heat gain 11731 Btu/h

Building Construction Information

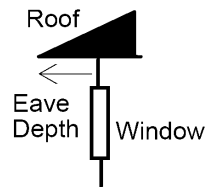
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 550 Sq Ft
Number of occupants 2

Windows

Eave overhang depth 4.2 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 735 CFM
Cooling CFM 735 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow 735 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 2
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 8518 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 4222 Btu/h
Latent heat gain 86 Btu/h
Total heat gain 4309 Btu/h

Building Construction Information

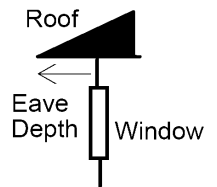
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 485 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 448 CFM
Cooling CFM 448 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow 448 CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 3
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 18454 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 10353 Btu/h
Latent heat gain 130 Btu/h
Total heat gain 10483 Btu/h

Building Construction Information

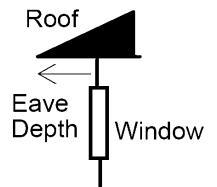
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 483 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 15 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 735 CFM
Cooling CFM 735 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow 735 CFM
Longest supply duct: _____ Ft
External Static Pressure (ESP) _____ IWC
Longest return duct: _____ Ft
Component Pressure Losses (CPL) _____ IWC
Total Effective Length (TEL) _____ Ft
Available Static Pressure (ASP) _____ IWC
Friction Rate: _____ IWC
ASP = ESP - CPL
Friction Rate = (ASP × 100) ÷ TEL

Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

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Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 4
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 34633 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 35234 Btu/h
Latent heat gain 188 Btu/h
Total heat gain 35422 Btu/h

Building Construction Information

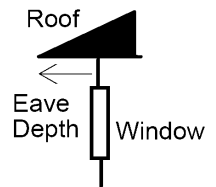
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 1115 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 5.9 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 1400 CFM
Cooling CFM 1400 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow 1400 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

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Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 5
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 35967 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 30018 Btu/h
Latent heat gain 628 Btu/h
Total heat gain 30646 Btu/h

Building Construction Information

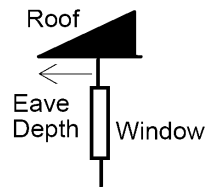
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 1317 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 7.4 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 1400 CFM
Cooling CFM 1400 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow 1400 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 6
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 10444 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 7811 Btu/h
Latent heat gain 210 Btu/h
Total heat gain 8020 Btu/h

Building Construction Information

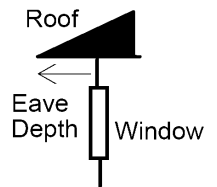
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 694 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 14.6 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 448 CFM
Cooling CFM 448 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow 448 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

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Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 7
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 16487 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 18779 Btu/h
Latent heat gain 1082 Btu/h
Total heat gain 19861 Btu/h

Building Construction Information

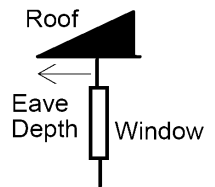
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 1232 Sq Ft
Number of occupants 3

Windows

Eave overhang depth 2.4 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 875 CFM
Cooling CFM 875 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow 875 CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL
Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = (ASP × 100) ÷ TEL
Duct Materials Used (circle)
Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 8
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

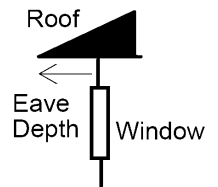
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft
Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 9
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature _____ 27 °F
Indoor temperature _____ 70 °F
Total heat loss _____ 72 Btu/h

Summer Design Conditions

Outdoor temperature _____ 100 °F
Indoor temperature _____ 75 °F
Grains difference _____ 21 Δ Gr @ 50 % Rh
Sensible heat gain _____ 1639 Btu/h
Latent heat gain _____ 7 Btu/h
Total heat gain _____ 1646 Btu/h

Building Construction Information

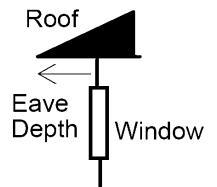
Building

Orientation (Front door faces) _____ East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms _____ 0
Conditioned floor area _____ 17 Sq Ft
Number of occupants _____ 0

Windows

Eave overhang depth _____ 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights _____ 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type _____ Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type _____ Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ 76 CFM
Cooling CFM _____ 76 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
ASP = ESP - CPL Friction Rate = (ASP $\times$ 100) $\div$ TEL Lined sheet metal, Other (specify)

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.
Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

402 Camp Craft Rd. - Lee Residence
HVAC Load Calculations

for

Furman + Keil Architects
1211 E. 11th St., #200

Prepared By:

Hap Pfeil
Positive Energy
1114 South 1st Street
Austin, TX 78704
512-462-1000
Thursday, July 15, 2021

Rhvac is an ACCA approved Manual J, D and S computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.



Project Report

General Project Information

Project Title: 402 Camp Craft Rd. - Lee Residence
 Designed By: Hap Pfeil
 Project Date: 05/26/2021
 Project Comment:
 Client Name: Furman + Keil Architects
 Client Address: 1211 E. 11th St., #200
 Client Comment: It is the responsibility of the client and/or the installing contractor to ensure inputs align with as-built, observed conditions on site prior to installing equipment. Please review with specific attention to designer comments, building envelope materials, dimensions & specifications.
 Company Name: Positive Energy
 Company Representative: Hap Pfeil
 Company Address: 1114 South 1st Street
 Company City: Austin, TX 78704
 Company Phone: 512-462-1000
 Company Fax: 512-326-1359
 Company E-Mail Address: info@positiveEnergy.pro
 Company Website: www.positiveEnergy.pro
 Company Comment: Regulated by the Texas Department of Licensing and Regulation, PO Box 12157, Austin, TX 78711 1-800-803-9202, 512-463-6599, www.license.state.tx.us License# TACLA49421E

Design Data

Reference City: Austin AP, Texas
 Building Orientation: Front door faces East
 Daily Temperature Range: Medium
 Latitude: 30 Degrees
 Elevation: 597 ft.
 Altitude Factor: 0.979

	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	n/a		0	
Summer:	100.2	74.1	30%	0%	0	0

Check Figures

Total Building Supply CFM:	962	CFM Per Square ft.:	1.828
Square ft. of Room Area:	527	Square ft. Per Ton:	300
Volume (ft³):	5,792		

Building Loads

Total Heating Required Including Ventilation Air:	26,865 Btuh	26.865 MBH
Total Sensible Gain:	20,938 Btuh	99 %
Total Latent Gain:	144 Btuh	1 %
Total Cooling Required Including Ventilation Air:	21,082 Btuh	1.76 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.
 Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.
 All computed results are estimates as building use and weather may vary.
 Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



Miscellaneous Report

System 8 L1 Art House Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	26.7	23.3	63%	n/a	70	n/a
Summer:	100.2	74.1	30%	50%	75	21.45

Duct Sizing Inputs

	Main Trunk	Runouts
Calculate:	Yes	Yes
Use Schedule:	Yes	Yes
Roughness Factor:	0.00300	0.01000
Pressure Drop:	0.1000 in.wg./100 ft.	0.1000 in.wg./100 ft.
Minimum Velocity:	650 ft./min	450 ft./min
Maximum Velocity:	900 ft./min	750 ft./min
Minimum Height:	0 in.	0 in.
Maximum Height:	0 in.	0 in.

Outside Air Data

	Winter	Summer
Infiltration Specified:	0.237 AC/hr 23 CFM	0.141 AC/hr 14 CFM
Infiltration Actual:	0.115 AC/hr	0.000 AC/hr
Above Grade Volume:	X 5.792 Cu.ft. 665 Cu.ft./hr	X 5.792 Cu.ft. 0 Cu.ft./hr
	X 0.0167	X 0.0167
Total Building Infiltration:	11 CFM	0 CFM
Total Building Ventilation:	20 CFM	20 CFM

---System 8---

Infiltration & Ventilation Sensible Gain Multiplier:	27.13	= (1.10 X 0.979 X 25.20 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	14.28	= (0.68 X 0.979 X 21.45 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	46.61	= (1.10 X 0.979 X 43.30 Winter Temp. Difference)
Winter Infiltration Specified:	0.237 AC/hr (23 CFM)	
Summer Infiltration Specified:	0.141 AC/hr (14 CFM)	

Blower Door Data:

Wind Shielding Class:	3 - More Obstructions
Building Stories:	1
Multi/Single Option:	Single-Point
Assumed n:	0.65
Pressure Diff.:	50
Test Flow:	290
Test AC/hr (Selected):	3



Load Preview Report

Scope	Net Ton	ft ² /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Sys Htg CFM	Sys Clg CFM	Sys Act CFM
Building	1.76	300	527	20,938	144	21,082	26,865	615	962	962
System 8 L1 Art House	1.76	300	527	20,938	144	21,082	26,865	615	962	962
Ventilation				217	286	503	373			
Misc. Return				0	-172	-172				
Zone 1			527	20,721	30	20,751	26,492	615	962	962
1-Art House			527	20,721	30	20,751	26,492	615	962	962



Duct Size Preview

Room or Duct Name	Source	Minimum Velocity	Maximum Velocity	Rough. Factor	Design L/100	SP Loss	Duct Velocity	Duct Length	Htg Flow	Clg Flow	Act Flow	Duct Size	Reg Size
System 8													
Supply Runouts													
Zone 1													
1-Art House	Built-In	450	750	0.01	0.1		544.6		615	962	962	9-6	
Other Ducts in System 8													
Supply Main Trunk	Built-In	650	900	0.003	0.1		825		615	962	962	12x14	

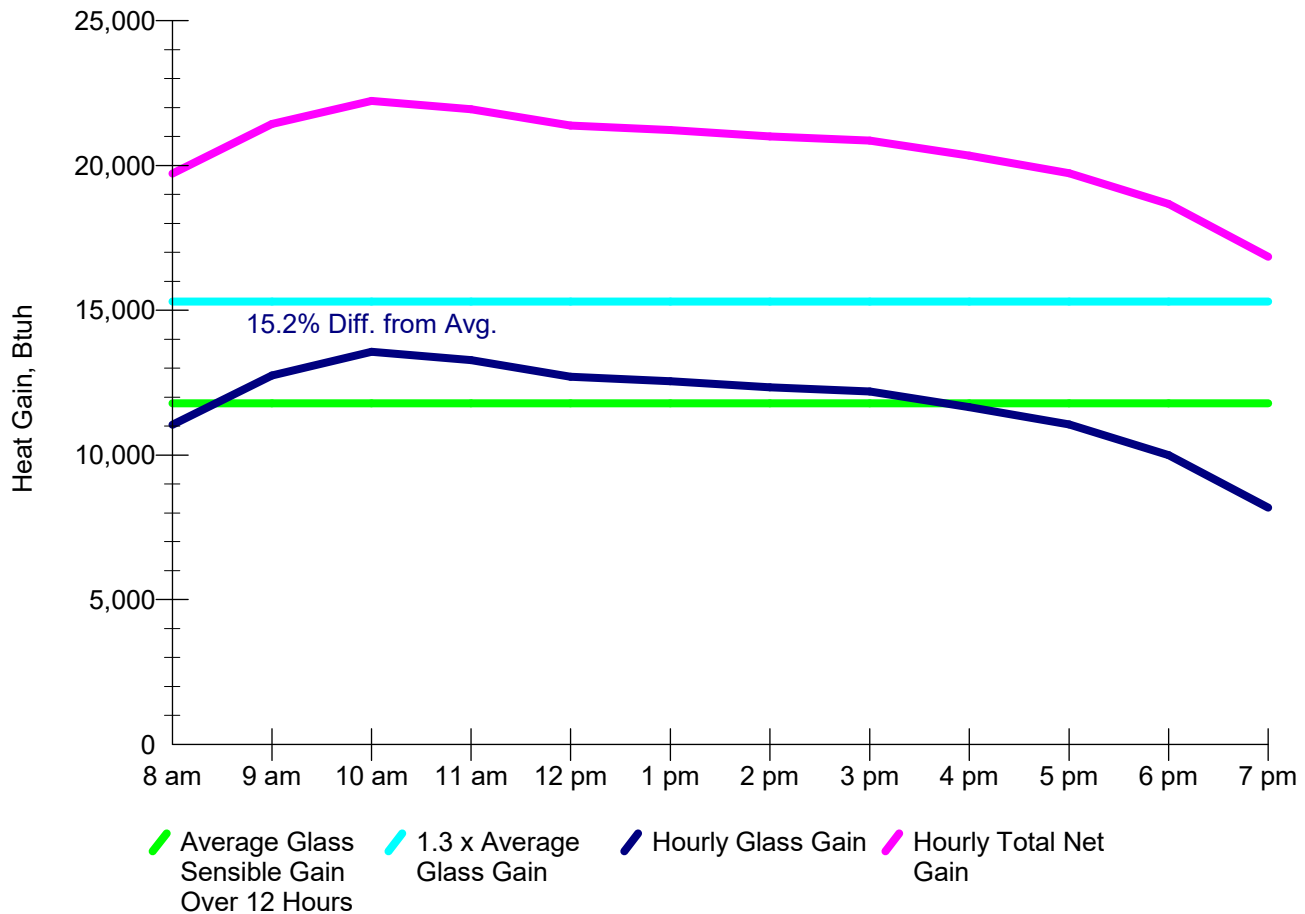
Summary

System 8	
Heating Flow:	615
Cooling Flow:	962



System 8 - L1 Art House - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 15.2%.

AED Excursion (amount by which peak exceeds 1.3 x average): 0 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.

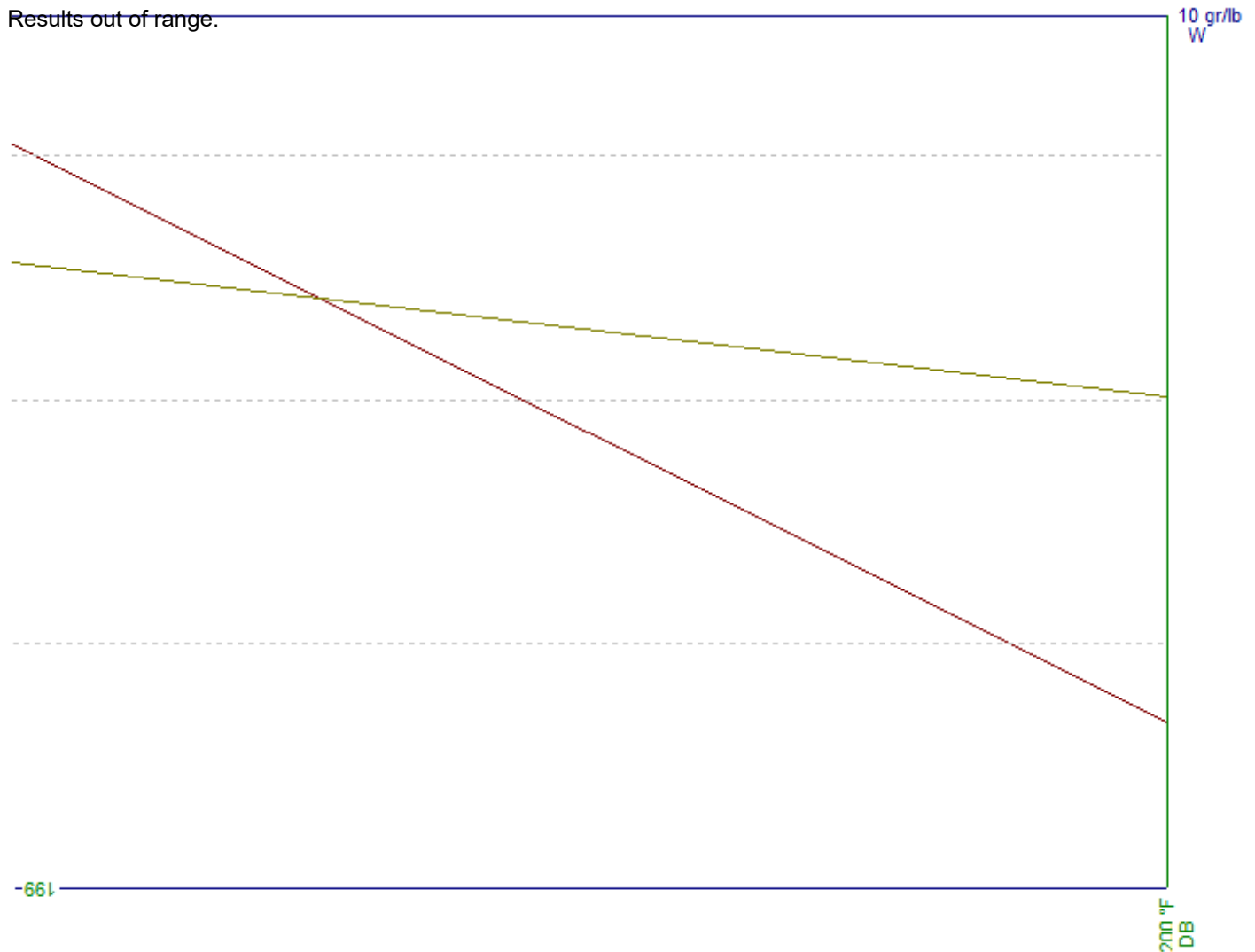


System 8 - L1 Art House - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	n/a	n/a	OC	Outdoor Condition	n/a	n/a
LC	Leaving Coil Condition	n/a	n/a	ECC	Entering Coil Condition	n/a	n/a
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	n/a	n/a
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	n/a	n/a				

One or more points or processes failed to be added to the chart:
Zone process could not be added.

Results out of range.





Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	128.7	7,078	0	11,736	11,736
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	10	238	0	676	676
11D: Door-Wood - Solid Core, U-value 0.39	10	169	0	141	141
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft ³	573.6	12,913	0	6,204	6,204
ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52					
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	658	826	0	614	614
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	93	4,752	0	0	0
Subtotals for structure:		25,976	0	19,371	19,371
People:	0		0	0	0
Equipment:			30	900	930
Lighting:	132			450	450
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 11, Summer CFM: 0		516	0	0	0
Ventilation: Winter CFM: 20, Summer CFM: 20		373	286	217	503
Return Misc. Gain:		0	-172	0	-172
Total Building Load Totals:		26,865	144	20,938	21,082

Check Figures

Total Building Supply CFM:	962	CFM Per Square ft.:	1.828
Square ft. of Room Area:	527	Square ft. Per Ton:	300
Volume (ft ³):	5,792		

Building Loads

Total Heating Required Including Ventilation Air:	26,865 Btuh	26.865 MBH
Total Sensible Gain:	20,938 Btuh	99 %
Total Latent Gain:	144 Btuh	1 %
Total Cooling Required Including Ventilation Air:	21,082 Btuh	1.76 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

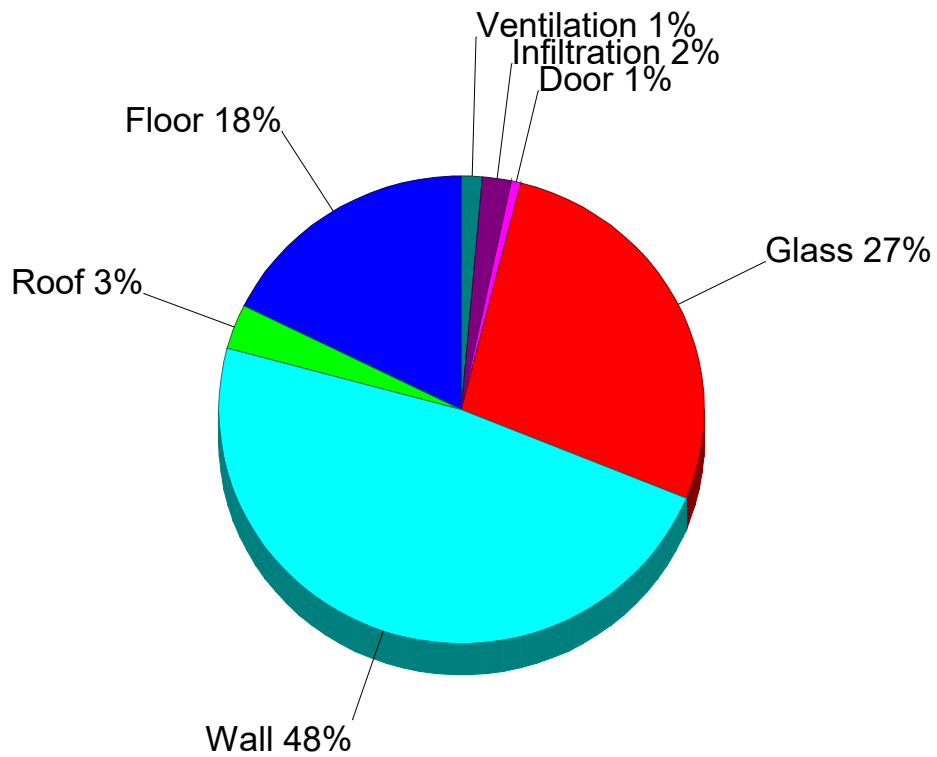
All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

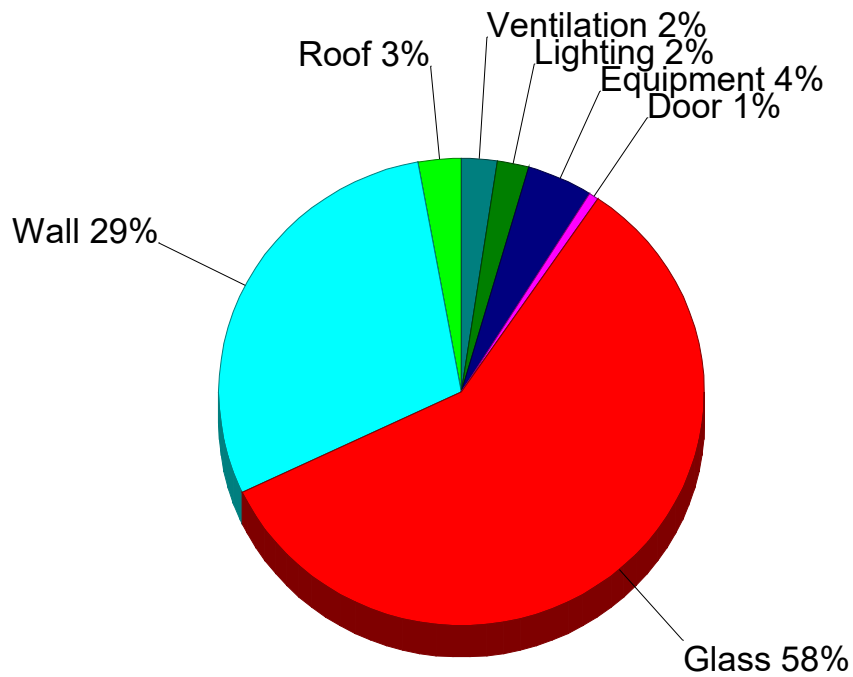


Building Pie Chart

Building
Loss
26,865
Btuh



Building
Gain
21,082
Btuh





System 8 L1 Art House Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	128.7	7,078	0	11,736	11,736
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	10	238	0	676	676
11D: Door-Wood - Solid Core, U-value 0.39	10	169	0	141	141
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft^3	573.6	12,913	0	6,204	6,204
ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52					
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	658	826	0	614	614
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	93	4,752	0	0	0
Subtotals for structure:		25,976	0	19,371	19,371
People:	0		0	0	0
Equipment:			30	900	930
Lighting:	132			450	450
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 11, Summer CFM: 0		516	0	0	0
Ventilation: Winter CFM: 20, Summer CFM: 20		373	286	217	503
Return Misc. Gain:		0	-172	0	-172
System 8 L1 Art House Load Totals:		26,865	144	20,938	21,082

Check Figures

Supply CFM:	962	CFM Per Square ft.:	1.828
Square ft. of Room Area:	527	Square ft. Per Ton:	300
Volume (ft³):	5,792		

System Loads

Total Heating Required Including Ventilation Air:	26,865 Btuh	26.865 MBH
Total Sensible Gain:	20,938 Btuh	99 %
Total Latent Gain:	144 Btuh	1 %
Total Cooling Required Including Ventilation Air:	21,082 Btuh	1.76 Tons (Based On Sensible + Latent)

Notes

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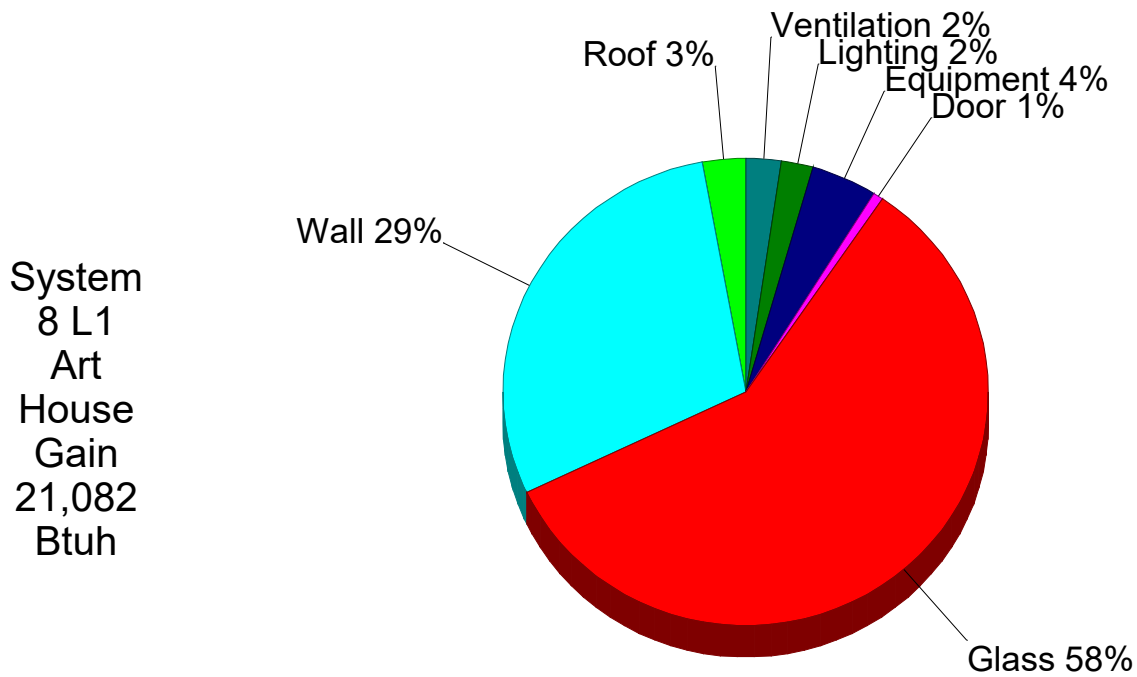
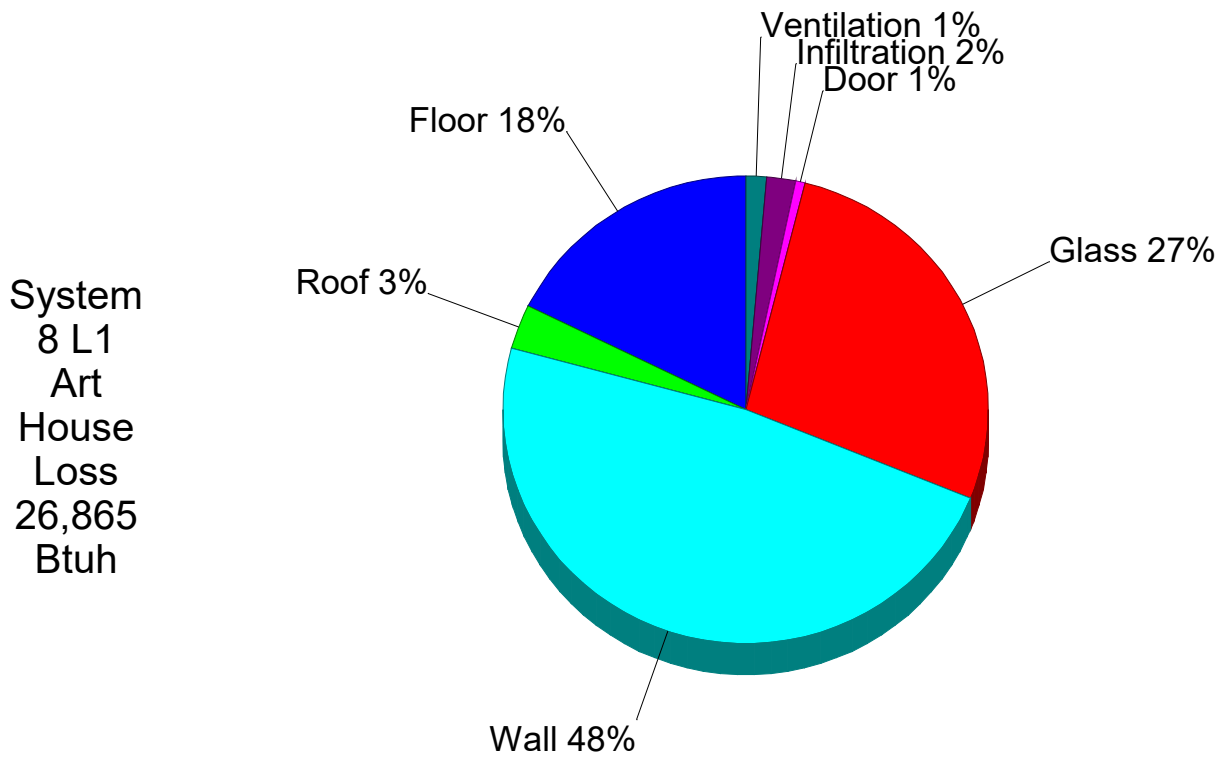
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



System 8 L1 Art House Pie Chart



**Manual S Performance Data - System 1 - L0 Master BR****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0
Outdoor Wet Bulb:	74.1	Latent Gain:	0
Indoor Dry Bulb:	75	Total Gain:	0
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0	0	0%
Latent Capacity:	0	0	0%
Total Capacity:	0	0	0%

**Manual S Performance Data - System 2 - L0 Bar Hall Storage****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%

**Manual S Performance Data - System 3 - L0 Master Bath & Closet****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%

**Manual S Performance Data - System 4 - L1 Living Dining****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%

**Manual S Performance Data - System 5 - L1 Kitchen & Media****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%

**Manual S Performance Data - System 6 - L1 Office & Laundry****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%

**Manual S Performance Data - System 7 - L2****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%



Manual S Performance Data - System 8 - L1 Art House

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	0	Sensible Gain:	20.938
Outdoor Wet Bulb:	74.1	Latent Gain:	0.144
Indoor Dry Bulb:	75	Total Gain:	21.082
Indoor RH:	50	Load SHR:	0.99
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Heating:

Outdoor Dry Bulb:	26.7	Sensible Loss:	26.865
Indoor Dry Bulb:	70	Entering Dry Bulb:	69.4
Indoor RH:	30	Supply Airflow:	615

Equipment Performance Data at System Design Conditions

Cooling:

Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	20.938	0%
Latent Capacity:	0.000	0.144	0%
Total Capacity:	0.000	21.082	0%

Heating:

Model Type: Air Source Heat Pump, Model: , Manufacturer:

Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	0.000	26.865	0%

**Manual S Performance Data - System 9 - L0 Wine****Loads and Design Conditions**

Outdoor Dry Bulb:	0	Sensible Gain:	0.000
Outdoor Wet Bulb:	74.1	Latent Gain:	0.000
Indoor Dry Bulb:	75	Total Gain:	0.000
Indoor RH:	50	Load SHR:	0.00
Supply Airflow:	0	Entering Dry Bulb:	0
		Entering Wet Bulb:	0

Equipment Performance Data at System Design Conditions

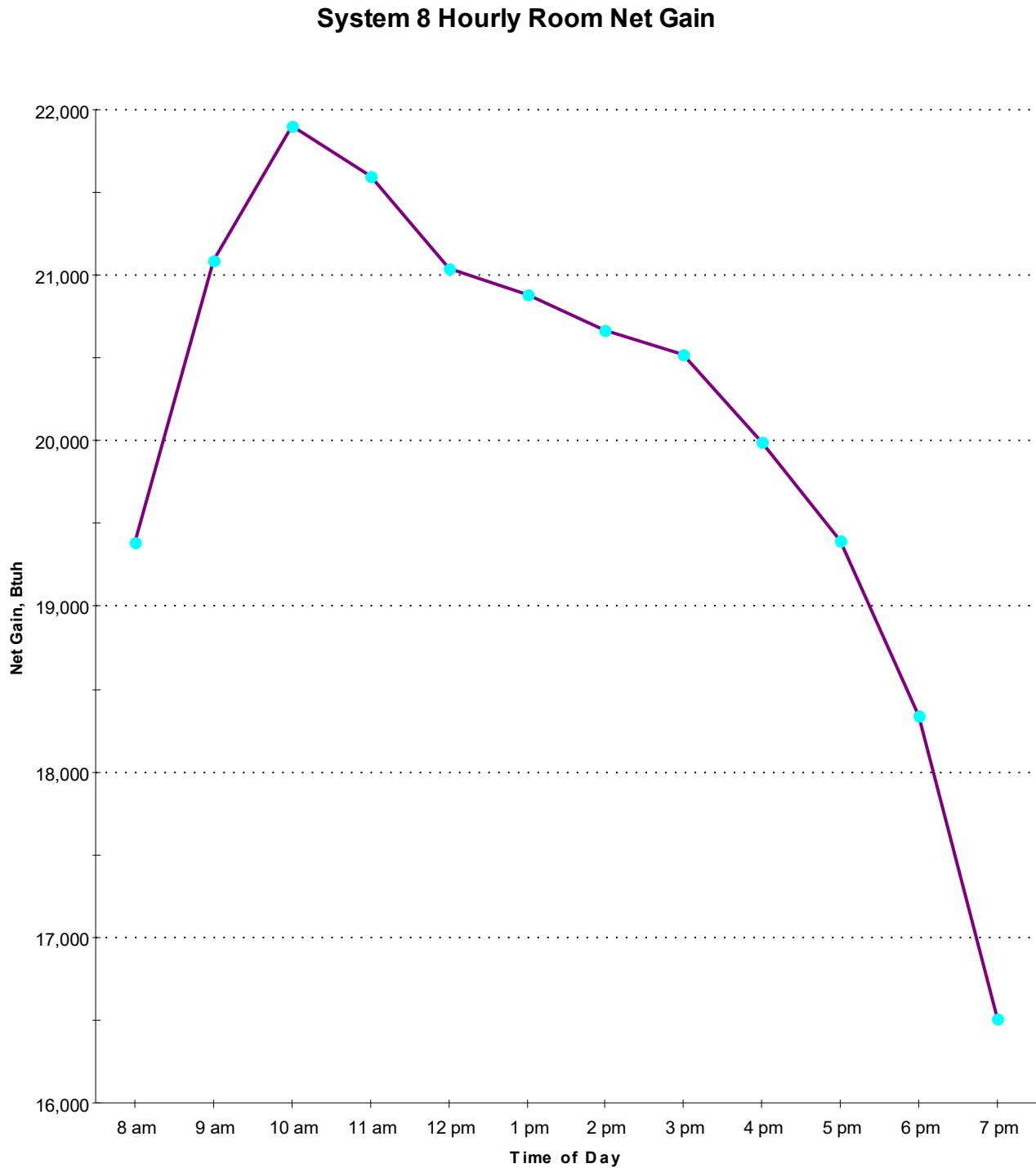
Model Type: Standard Air Conditioner,
Manufacturer:

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	0.000	0.000	0%
Latent Capacity:	0.000	0.000	0%
Total Capacity:	0.000	0.000	0%



System 8 - Hourly Room Net Gain



—●— Art House (60%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.



System 8, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
1A-cm-o: Glazing-Single pane, operable window, clear, metal frame no break, U-value 1.27, SHGC 0.75	128.7	7,078	0	11,736	11,736
2A-a-o: Glazing-Double pane low-e (e = 0.60), operable window, wood with metal clad frame, U-value 0.55, SHGC 0.56	10	238	0	676	676
11D: Door-Wood - Solid Core, U-value 0.39	10	169	0	141	141
Masonry - 12" uninsu: Wall-Block, Custom, 12" HW concrete block wall, solid grouted. 135 lb/ft ³	573.6	12,913	0	6,204	6,204
ASHRAE 90.1-2013 Table A3.1-3, U-value 0.52					
18A-38: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Dark or Bold-Color Asphalt Shingle, Dark Metal, Dark Membrane, Dark Tar and Gravel, R-38 blanket or loose fill, U-value 0.029	658	826	0	614	614
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	93	4,752	0	0	0
Subtotals for structure:		25,976	0	19,371	19,371
People:	0		0	0	0
Equipment:			30	900	930
Lighting:	132			450	450
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 11, Summer CFM: 0		516	0	0	0
System 8, Zone 1 Load Totals:		26,492	30	20,721	20,751

Check Figures

Supply CFM:	962	CFM Per Square ft.:	1.828
Square ft. of Room Area:	527	Square ft. Per Ton:	304
Volume (ft ³):	5,792		

Zone Loads

Total Heating Required:	26,492 Btuh	26.492 MBH
Total Sensible Gain:	20,721 Btuh	100 %
Total Latent Gain:	30 Btuh	0 %
Total Cooling Required:	20,751 Btuh	1.73 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

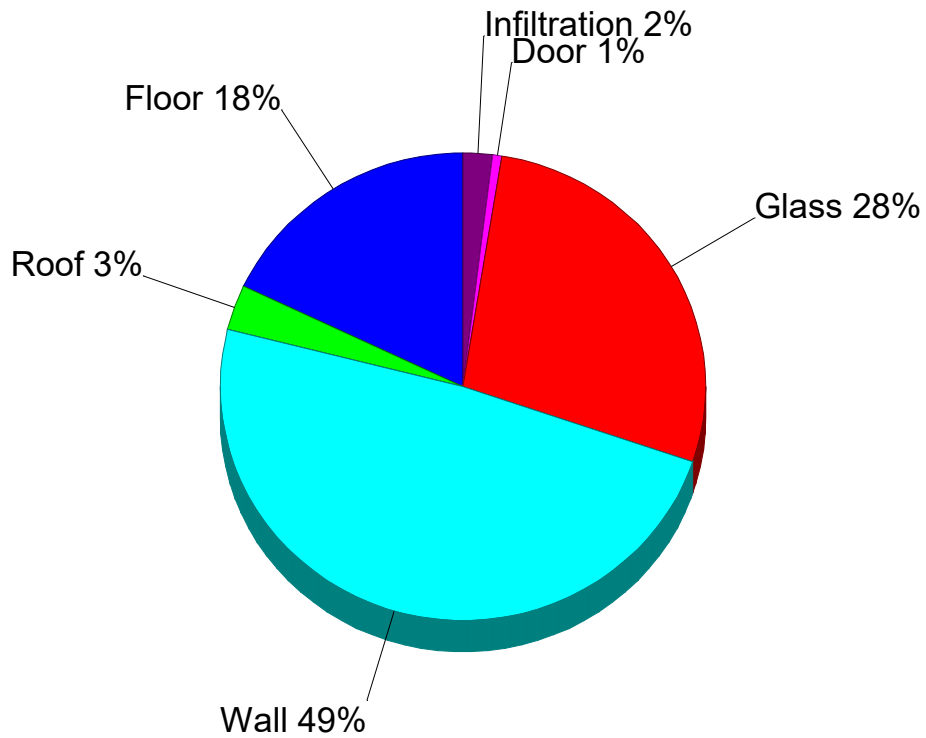
All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

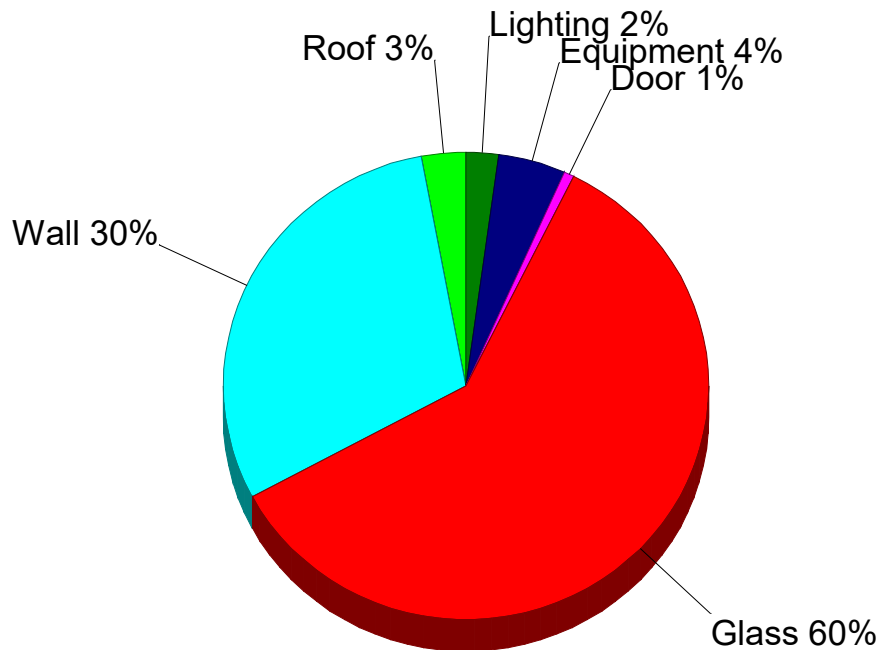


System 8, Zone 1 Pie Chart

System
8, Zone
1
Loss
26,492
Btuh



System
8, Zone
1
Gain
20,751
Btuh



**Detailed Room Loads - Room 1 - Art House (Average Load Procedure)****General**

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	n/a	System Number:	8
Room Width:	n/a	Zone Number:	1
Area:	526.5 sq.ft.	Supply Air:	962 CFM
Ceiling Height:	11.0 ft.	Supply Air Changes:	10.0 AC/hr
Volume:	5,792 cu.ft.	Req. Vent. Clg:	0 CFM
Number of Registers:	9	Actual Winter Vent.:	20 CFM
Runout Air:	107 CFM	Percent of Supply.:	2 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	20 CFM
Runout Air Velocity:	545 ft./min.	Percent of Supply:	2 %
Runout Air Velocity:	545 ft./min.	Actual Winter Infil.:	11 CFM
Actual Loss:	0.186 in.wg./100 ft.	Actual Summer Infil.:	0 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Masonry - 12" uninsu 20.3 X 7.8	158.3	0.520	22.5	3,565	10.8	0	1,713
S -Wall-Masonry - 12" uninsu 20.3 X 7.8	126.1	0.520	22.5	2,839	10.8	0	1,364
W -Wall-Masonry - 12" uninsu 26 X 7.8	184.2	0.520	22.5	4,147	10.8	0	1,992
E -Wall-Masonry - 12" uninsu 26 X 7.8	104.9	0.520	22.5	2,362	10.8	0	1,135
E -Door-11D 1 X 10	10	0.390	16.9	169	14.1	0	141
E -Gls-1A-cm-o shgc-0.75 0%S	77.9	1.270	55.0	4,283	104.0	0	8,096
W -Gls-1A-cm-o shgc-0.75 0%S (2)	18.6	1.270	55.0	1,022	104.0	0	1,934
S -Gls-1A-cm-o shgc-0.75 0%S	32.2	1.270	55.0	1,773	52.9	0	1,706
E -Gls-2A-a-o shgc-0.56 0%S	10	0.550	23.8	238	67.6	0	676
UP-Roof-18A-38 658 X 1	658	0.029	1.3	826	0.9	0	614
Floor-22A-pm 93 ft..Per.	93	1.180	51.1	4,752	0.0	0	0
Subtotals for Structure:				25,976		0	19,371
Infil.: Win.: 11.1, Sum.: 0.0	722		0.714	516	0.000	0	0
Equipment:						30	900
Lighting:	132						450
Room Totals:				26,492		30	20,721

Equipment Cooling Loads

Item Name	Cont. Output Sens. Btuh	Cont. Output Lat. Btuh	Avg. In-Use Output	Pct Used /Hour	Sens. Load Btuh	Lat. Load Btuh
PE Office Load	900	0	100	100	900	0
PE Powder	0	300	100	10	0	30
Total					900	30



System 8 Room Load Summary

Room No Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---									
1 Art House	527	26,492	615	9-6	545	20,721	30	962	962
Ventilation		373				217	286		
Misc Return Gain						0	-172		
System 8 total	527	26,865	615			20,938	144	962	962

System 8 Main Trunk Size: 12x14 in.
 Velocity: 825 ft./min
 Loss per 100 ft.: 0.107 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	1.76	99% / 1%	20,938	144	21,082

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Standard Air Conditioner
Model:		
Indoor Model:		
Brand:		
Efficiency:		0 SEER
Sound:	0	0
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 1
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

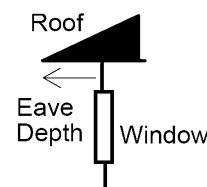
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL Lined sheet metal, Other (specify)

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

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Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 2
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

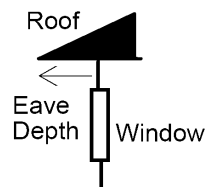
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 3
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

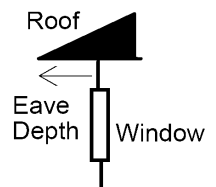
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 4
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

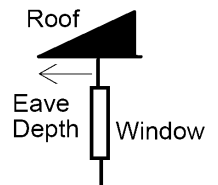
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

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Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 5
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

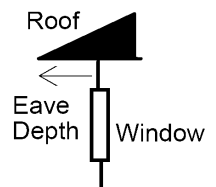
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

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Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 6
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

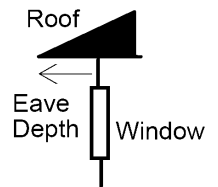
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 7
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

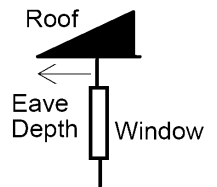
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 8
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 26865 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 20938 Btu/h
Latent heat gain 144 Btu/h
Total heat gain 21082 Btu/h

Building Construction Information

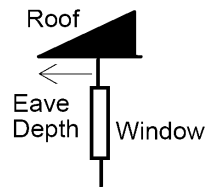
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 526 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 962 CFM
Cooling CFM 962 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 9
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

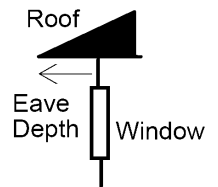
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

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Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 1
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

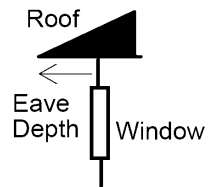
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 2
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

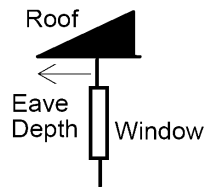
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 3
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

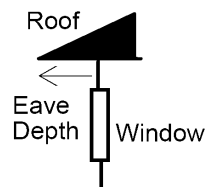
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

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Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 4
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

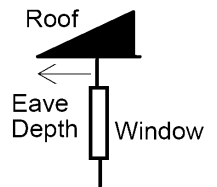
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

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Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 5
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

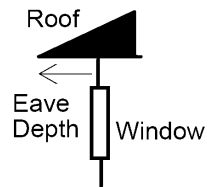
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 6
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

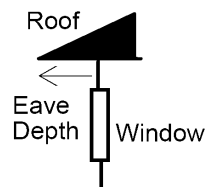
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 7
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

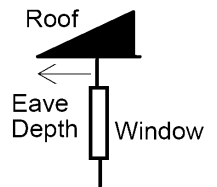
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 8
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature 70 °F
Total heat loss 26865 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 20938 Btu/h
Latent heat gain 144 Btu/h
Total heat gain 21082 Btu/h

Building Construction Information

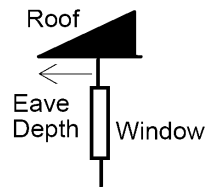
Building

Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 526 Sq Ft
Number of occupants 0

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM 962 CFM
Cooling CFM 962 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL Lined sheet metal, Other (specify)

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

¹ The AHJ shall have the discretion to accept Required Attachments printed from approved ACCA software vendors, see list on page 2 of instructions.
² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.
Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____ Sys. 9
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):
or MJ1AE Form² (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution system sketch:

ATTACHED

Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒
Yes ☐ No ☒

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 27 °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

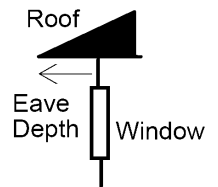
Orientation (Front door faces) East
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 1
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth 0 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 1



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Heat pump
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM Longest supply duct: _____ Ft Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC Longest return duct: _____ Ft Trunk Duct: Duct board, Flex, Sheet metal,
Component Pressure Losses (CPL) _____ IWC Total Effective Length (TEL) _____ Ft Lined sheet metal, Other (specify)
Available Static Pressure (ASP) _____ IWC Friction Rate: _____ IWC Branch Duct: Duct board, Flex, Sheet metal,
Lined sheet metal, Other (specify)
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

¹ The AHJ shall have the discretion to accept Required Attachments printed from approved ACCA software vendors, see list on page 2 of instructions.
² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.
Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

Project Information

For: Air Rite by Design
402 Camp Craft Rd. (Workshop), West Lake Hills, TX 78746

Notes: The report we provide is only as good as the information we receive.
Please review all load calculations and reports you receive from us for accuracy.
It is ultimately the HVAC contractor who is responsible for the equipment they install.
Texas Department of Licensing and Regulation Number TACLA57315E

Design Information

Weather: Austin-Bergstrom Intl, TX, US

Winter Design Conditions

Outside db	30 °F
Inside db	72 °F
Design TD	42 °F

Summer Design Conditions

Outside db	100 °F
Inside db	72 °F
Design TD	28 °F
Daily range	M
Relative humidity	50 %
Moisture difference	28 gr/lb

Heating Summary

Structure	17594 Btuh
Ducts	1867 Btuh
Central vent (28 cfm)	1282 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	20744 Btuh

Sensible Cooling Equipment Load Sizing

Structure	13083 Btuh
Ducts	1192 Btuh
Central vent (28 cfm)	861 Btuh
Outside air	
Blower	0 Btuh
Use manufacturer's data	y
Rate/swing multiplier	1.00
Equipment sensible load	15136 Btuh

Infiltration

Method	Simplified
Construction quality	Semi-tight
Fireplaces	0

Latent Cooling Equipment Load Sizing

Structure	660 Btuh
Ducts	323 Btuh
Central vent (28 cfm)	528 Btuh
Outside air	
Equipment latent load	1511 Btuh

	Heating	Cooling
Area (ft²)	1325	1325
Volume (ft³)	13245	13245
Air changes/hour	0.31	0.16
Equiv. AVF (cfm)	68	35

Equipment Total Load (Sen+Lat)	16648 Btuh
Req. total capacity at 0.80 SHR	1.6 ton

Heating Equipment Summary

Make	Mitsubishi Electric
Trade	Mitsubishi Electric
Model	SUZ-KA24NA2
AHRI ref	202392024
Efficiency	10.4 HSPF
Heating input	
Heating output	25000 Btuh @ 47°F
Temperature rise	31 °F
Actual air flow	735 cfm
Air flow factor	0.038 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	
Capacity balance point = 28 °F	
Backup: Mitsubishi Electric AFUE 100	
Input = 8 kW, Output = 27296 Btuh, 100 AFUE	

Cooling Equipment Summary

Make	Mitsubishi Electric
Trade	Mitsubishi Electric
Cond	SUZ-KA24NA2
Coil	SVZ-KP24NA
AHRI ref	202392024
Efficiency	12.5 EER, 18 SEER
Sensible cooling	16800 Btuh
Latent cooling	7200 Btuh
Total cooling	24000 Btuh
Actual air flow	662 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.60 in H2O
Load sensible heat ratio	0.91

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

Load Short Form Workshop Fresh Air HVAC Sizing

Job: 402 Camp Craft Rd. (Work...
Date: Sep 08, 2021
By: Coby Sackett

Austin, TX Phone: (512) 814-7638 Email: Info@HVAC-Sizing.com Web: www.HVAC-Sizing.com License: TACLA57315E

Project Information

For: Air Rite by Design
402 Camp Craft Rd. (Workshop), West Lake Hills, TX 78746

Design Information

	Htg	Clg	Infiltration	
Outside db (°F)	30	100	Method	Simplified
Inside db (°F)	72	72	Construction quality	Semi-tight
Design TD (°F)	42	28	Fireplaces	0
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	16	28		

HEATING EQUIPMENT

Make Mitsubishi Electric
Trade Mitsubishi Electric
Model SUZ-KA24NA2
AHRI ref 202392024
Efficiency 10.4 HSPF
Heating input
Heating output 25000 Btuh @ 47°F
Temperature rise 31 °F
Actual air flow 735 cfm
Air flow factor 0.038 cfm/Btuh
Static pressure 0.60 in H2O
Space thermostat
Capacity balance point = 28 °F

Backup: Mitsubishi Electric AFUE 100
Input = 8 kW, Output = 27296 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Mitsubishi Electric
Trade Mitsubishi Electric
Cond SUZ-KA24NA2
Coil SVZ-KP24NA
AHRI ref 202392024
Efficiency 12.5 EER, 18 SEER
Sensible cooling 16800 Btuh
Latent cooling 7200 Btuh
Total cooling 24000 Btuh
Actual air flow 662 cfm
Air flow factor 0.046 cfm/Btuh
Static pressure 0.60 in H2O
Load sensible heat ratio 0.91

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Shop	622	9899	7214	374	335
Entry	126	1403	1273	53	59
Stor	27	0	0	0	0
Bath	69	1518	821	57	38
Game	480	6641	4967	251	230
Workshop	1325	19462	14275	735	662
Other equip loads		1282	861		
Equip. @ 1.00 RSM			15136		
Latent cooling			1511		
TOTALS	1325	20744	16648	735	662

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

Project Information

For: Air Rite by Design
402 Camp Craft Rd. (Workshop), West Lake Hills, TX 78746

Design Conditions

Location:

Austin-Bergstrom Intl, TX, US
Elevation: 480 ft
Latitude: 30°N

Outdoor:

Dry bulb (°F)
Daily range (°F)
Wet bulb (°F)
Wind speed (mph)

Heating

30
-
-
15.0

Cooling

100
23 (M)
74
7.5

Indoor:

Indoor temperature (°F)
Design TD (°F)
Relative humidity (%)
Moisture difference (gr/lb)

Heating

72
42
30
15.8

Cooling

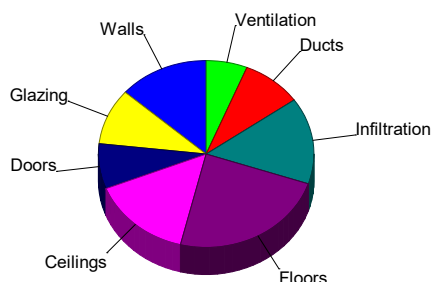
72
28
50
28.0

Infiltration:

Method	Simplified
Construction quality	Semi-tight
Fireplaces	0

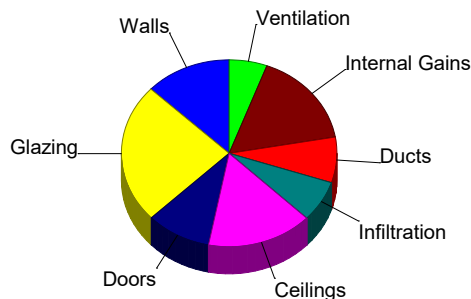
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.9	2802	13.5
Glazing	14.7	2018	9.7
Doors	25.2	1613	7.8
Ceilings	2.4	3143	15.1
Floors	3.7	4912	23.7
Infiltration	2.6	3107	15.0
Ducts		1867	9.0
Piping		0	0
Humidification		0	0
Ventilation		1282	6.2
Adjustments		0	
Total		20744	100.0



Cooling

Component	Btuh/ft ²	Btuh	% of load
Walls	2.0	1958	12.9
Glazing	26.7	3665	24.2
Doors	23.1	1476	9.8
Ceilings	1.8	2407	15.9
Floors	0	0	0
Infiltration	0.9	1077	7.1
Ducts		1192	7.9
Ventilation		861	5.7
Internal gains		2500	16.5
Blower		0	0
Adjustments		0	
Total		15136	100.0



Latent Cooling Load = 1511 Btuh
Overall U-value = 0.212 Btuh/ft²·°F

Data entries checked.

Project Information

For: Air Rite by Design
402 Camp Craft Rd. (Workshop), West Lake Hills, TX 78746

Design Conditions

Location:		Indoor:		Heating	Cooling
Austin-Bergstrom Intl, TX, US		Indoor temperature (°F)		72	72
Elevation:	480 ft	Design TD (°F)		42	28
Latitude:	30°N	Relative humidity (%)		30	50
		Moisture difference (gr/lb)		15.8	28.0
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	30	100	Method		
Daily range (°F)	-	23 (M)	Construction quality		
Wet bulb (°F)	-	74	Fireplaces		
Wind speed (mph)	15.0	7.5	Simplified Semi-tight 0		

Construction descriptions

Construction descriptions	Or	Area ft²	U-value Btu/h/ft²·°F	Insul R ft²·°F/Btu/h	Htg HTM Btu/h/ft²	Loss Btu/h	Clg HTM Btu/h/ft²	Gain Btu/h
Walls Frm wall, mtl ext, 1/2" wood shth, r-19 cav ins, 1/2" gypsum board int fnsh, 2"x6" wood frm, 24" o.c. stud	se	171	0.068	19.0	2.86	488	2.00	341
	sw	575	0.068	19.0	2.86	1643	2.00	1148
	nw	235	0.068	19.0	2.86	671	2.00	469
	all	981	0.068	19.0	2.86	2802	2.00	1958

Partitions

(none)

Windows

2 glazing, clr low-e outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk: 2 glazing, clr low-e outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.25); 6 ft overhang (3.5 ft window ht, 2 ft sep.); 8.75 ft head ht	sw	11	0.350	0	14.7	154	15.1	158
2 glazing, clr low-e outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk: 2 glazing, clr low-e outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.25); 6 ft overhang (8.1 ft window ht, 2 ft sep.); 8.1 ft head ht	sw	53	0.350	0	14.7	772	15.1	791
	all	63	0.350	0	14.7	926	15.1	949
	sw	49	0.350	0	14.7	724	10.9	537
2 glazing, clr low-e outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk: 2 glazing, clr low-e outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.25); 10 ft overhang (8.1 ft window ht, 2 ft sep.); 8.1 ft head ht	sw	25	0.350	0	14.7	367	15.1	376

Doors

11J0: Door, ovhd mtl type	se	64	0.600	6.3	25.2	1613	23.1	1476
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Ceilings

Attic ceiling, mtl roof mat, r-22 roof ins, 5/8" gypsum board int fnsh		1325	0.408	22.0	2.37	3143	1.82	2407
--	--	------	-------	------	------	------	------	------

Floors

22A-tp: Bg floor, light dry soil, on grade depth		118	0.989	0	41.5	4912	0	0
--	--	-----	-------	---	------	------	---	---

Project Information

For: Air Rite by Design
 402 Camp Craft Rd. (Workshop), West Lake Hills, TX 78746

Cooling Equipment

Design Conditions

Outdoor design DB:	100°F	Sensible gain:	15136	Btuh	Entering coil DB:	73.4°F
Outdoor design WB:	74.1°F	Latent gain:	1511	Btuh	Entering coil WB:	60.8°F
Indoor design DB:	72.0°F	Total gain:	16648	Btuh		
Indoor RH:	50%	Estimated airflow:	662	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Mitsubishi Electric	Model:	SUZ-KA24NA2+SVZ-KP24NA	
Actual airflow:	662	cfm		
Sensible capacity:	16800	Btuh	111% of load	
Latent capacity:	7200	Btuh	476% of load	
Total capacity:	24000	Btuh	144% of load	SHR: 70%

Heating Equipment

Design Conditions

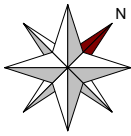
Outdoor design DB:	30.0°F	Heat loss:	20744	Btuh	Entering coil DB:	70.2°F
Indoor design DB:	72.0°F					

Manufacturer's Performance Data at Actual Design Conditions

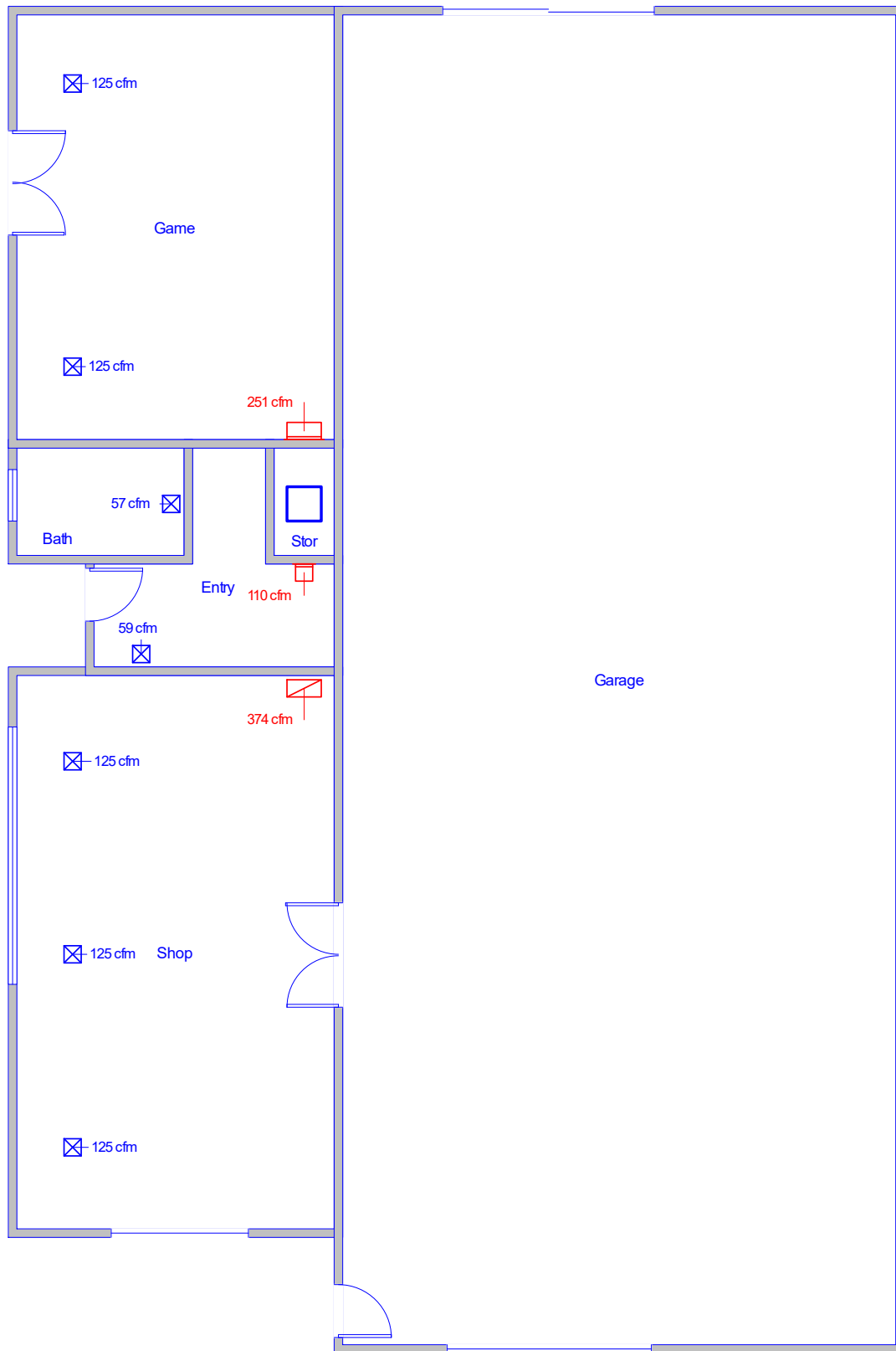
Equipment type:	Split ASHP			
Manufacturer:	Mitsubishi Electric	Model:	SUZ-KA24NA2+SVZ-KP24NA	
Actual airflow:	735	cfm		
Output capacity:	25000	Btuh	121% of load	Capacity balance: 28 °F
Supplemental heat required:	0	Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip			
Manufacturer:	Mitsubishi Electric	Model:	AFUE 100	
Actual airflow:	735	cfm		
Output capacity:	8.0	kW	132% of load	Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.



Level 1



Job #: 402 Camp Craft Rd. (Workshop)
Performed by Coby Sackett for:

Air Rite by Design
402 Camp Craft Rd. (Workshop)
West Lake Hills, TX 78746

Fresh Air HVAC Sizing

Austin, TX
Phone: (512) 814-7638
www.HVAC-Sizing.com Info@HVAC-Sizing.com

Scale: 1 : 112

Page 1
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Generated by REScheck-Web Software

Compliance Certificate

Project Lee - Camp Craft Main House

Energy Code: **2015 IECC**
Location: **West Lake Hills, Texas**
Construction Type: **Single-family**
Project Type: **Addition**
Orientation: **Bldg. faces 90 deg. from North**
Climate Zone: **2 (1688 HDD)**
Permit Date:
Permit Number:

Construction Site:

Owner/Agent:

Designer/Contractor:

Compliance: Passes using UA trade-off

Compliance: **10.4% Better Than Code** Maximum UA: **1177** Your UA: **1055** Maximum SHGC: **0.25** Your SHGC: **0.23**

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Prop. U-Factor	Req. U-Factor	Prop. UA	Req. UA
Ceiling: Flat Ceiling or Scissor Truss	3,745	30.0	12.4	0.025	0.030	93	111
Skylight master closet: Metal Frame w/ Thermal Break SHGC: 0.24	7			0.520	0.650	4	5
Skylight kitchen 1: Metal Frame w/ Thermal Break SHGC: 0.24	13			0.520	0.650	7	8
Skylight kitchen 2: Metal Frame w/ Thermal Break SHGC: 0.24	13			0.520	0.650	7	8
Ceiling 1: Cathedral Ceiling	962	30.0	12.4	0.024	0.030	23	29
framed south: Wood Frame, 16" o.c. Orientation: Left side	1,046	23.0	9.3	0.035	0.084	13	32
master patio: Glass Door (over 50% glazing) SHGC: 0.15 Orientation: Left side	21			0.270	0.400	6	8
windsor windows: Metal Frame w/ Thermal Break SHGC: 0.25 Orientation: Left side	492			0.350	0.400	172	197
weathershield windows: Metal Frame w/ Thermal Break SHGC: 0.20 Orientation: Left side	150			0.280	0.400	42	60
framed east: Wood Frame, 16" o.c. Orientation: Front	315	23.0	9.3	0.035	0.084	2	6
front door: Solid Door (under 50% glazing) Orientation: Front	32			1.250	0.400	40	13

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Prop. U-Factor	Req. U-Factor	Prop. UA	Req. UA
terrace door: Glass Door (over 50% glazing) SHGC: 0.15 Orientation: Front	40			0.270	0.400	11	16
windsor windows: Metal Frame w/ Thermal Break SHGC: 0.25 Orientation: Front	176			0.350	0.400	62	70
framed north: Wood Frame, 16" o.c. Orientation: Right side	624	23.0	9.3	0.035	0.084	13	31
side entry door: Glass Door (over 50% glazing) SHGC: 0.15 Orientation: Right side	30			0.270	0.400	8	12
weathershield windows: Metal Frame w/ Thermal Break SHGC: 0.20 Orientation: Right side	52			0.280	0.400	15	21
windsor windows: Metal Frame w/ Thermal Break SHGC: 0.25 Orientation: Right side	168			0.350	0.400	59	67
framed west: Wood Frame, 16" o.c. Orientation: Back	225	23.0	9.3	0.035	0.084	5	11
powder hall door: Solid Door (under 50% glazing) Orientation: Back	27			1.250	0.400	34	11
windsor windows: Metal Frame w/ Thermal Break SHGC: 0.25 Orientation: Back	69			0.350	0.400	24	28
floor over garage: All-Wood Joist/Truss	560	30.0	0.0	0.033	0.064	18	36
slab lower level: Slab-On-Grade (Unheated) Insulation depth: 0.0'	146		1.2	1.042	1.042	152	152
slab main level: Slab-On-Grade (Unheated) Insulation depth: 0.0'	235		1.2	1.042	1.042	245	245

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2015 IECC requirements in REScheck Version : REScheck-Web and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Name - Title

Signature

Date



Inspection Checklist

Energy Code: 2015 IECC

Requirements: 100.0% were addressed directly in the REScheck software

Text in the "Comments/Assumptions" column is provided by the user in the REScheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Pre-Inspection/Plan Review	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
103.1, 103.2 [PR1] ¹ 	Construction drawings and documentation demonstrate energy code compliance for the building envelope. Thermal envelope represented on construction documents.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
103.1, 103.2, 403.7 [PR3] ¹ 	Construction drawings and documentation demonstrate energy code compliance for lighting and mechanical systems. Systems serving multiple dwelling units must demonstrate compliance with the IECC Commercial Provisions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
302.1, 403.7 [PR2] ² 	Heating and cooling equipment is sized per ACCA Manual S based on loads calculated per ACCA Manual J or other methods approved by the code official.	Heating: Btu/hr____ Cooling: Btu/hr____	Heating: Btu/hr____ Cooling: Btu/hr____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.2 [FO1] ¹ 	Slab edge insulation R-value.	R-____ ☐ Unheated ☐ Heated	R-____ ☐ Unheated ☐ Heated	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
402.1.2 [FO3] ¹ 	Slab edge insulation depth/length.	____ ft	____ ft	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.2.1 [FO11] ² 	A protective covering is installed to protect exposed exterior insulation and extends a minimum of 6 in. below grade.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.9 [FO12] ² 	Snow- and ice-melting system controls installed.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
---	----------------------	---	------------------------	---	---------------------

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.3.4 [FR1] ¹ 	Door U-factor.	U-____	U-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
402.1.1, 402.3.1, 402.3.3, 402.5 [FR2] ¹ 	Glazing U-factor (area-weighted average).	U-____	U-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
402.1.1, 402.3.2, 402.3.3, 402.5 [FR3] ¹ 	Glazing SHGC value (area-weighted average).	SHGC:____	SHGC:____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.3 [FR4] ¹ 	U-factors of fenestration products are determined in accordance with the NFRC test procedure or taken from the default table.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.1.1, 402.3.3, 402.3.6, 402.5 [FR5] ¹ 	Skylight U-factor.	U-____	U-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
402.1.1, 402.3.3, 402.3.6, 402.5 [FR6] ¹ 	Skylight SHGC value.	SHGC:____	SHGC:____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.3 [FR7] ¹ 	SHGC values are determined in accordance with the NFRC test procedure or taken from the default table.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.1.1 [FR23] ¹ 	Air barrier and thermal barrier installed per manufacturer's instructions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.3 [FR20] ¹ 	Fenestration that is not site built is listed and labeled as meeting AAMA /WDMA/CSA 101/I.S.2/A440 or has infiltration rates per NFRC 400 that do not exceed code limits.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.5 [FR16] ²	IC-rated recessed lighting fixtures sealed at housing/interior finish and labeled to indicate ≤2.0 cfm leakage at 75 Pa.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.3.1 [FR12] ¹ 	Supply and return ducts in attics insulated ≥ R-8 where duct is ≥ 3 inches in diameter and ≥ R-6 where < 3 inches. Supply and return ducts in other portions of the building insulated ≥ R-6 for diameter ≥ 3 inches and R-4.2 for < 3 inches in diameter.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Ducts located completely inside the building envelope.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
403.3.5 [FR15] ³ 	Building cavities are not used as ducts or plenums.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.4 [FR17] ² 	HVAC piping conveying fluids above 105 °F or chilled fluids below 55 °F are insulated to ≥R-3.	R-_____	R-_____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.4.1 [FR24] ¹ 	Protection of insulation on HVAC piping.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.5.3 [FR18] ² 	Hot water pipes are insulated to ≥R-3.	R-_____	R-_____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.6 [FR19] ²	Automatic or gravity dampers are installed on all outdoor air intakes and exhausts.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
303.1 [IN13] ² 	All installed insulation is labeled or the installed R-values provided.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.1.1, 402.2.6 [IN1] ¹ 	Floor insulation R-value.	R-_____ ☐ Wood ☐ Steel	R-_____ ☐ Wood ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.2, 402.2.7 [IN2] ¹ 	Floor insulation installed per manufacturer's instructions and in substantial contact with the underside of the subfloor, or floor framing cavity insulation is in contact with the top side of sheathing, or continuous insulation is installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.1.1, 402.2.5, 402.2.6 [IN3] ¹ 	Wall insulation R-value. If this is a mass wall with at least ½ of the wall insulation on the wall exterior, the exterior insulation requirement applies (FR10).	R-_____ ☐ Wood ☐ Mass ☐ Steel	R-_____ ☐ Wood ☐ Mass ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.2 [IN4] ¹	Wall insulation is installed per manufacturer's instructions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.2.1, 402.2.2, 402.2.6 [FI1] ¹	Ceiling insulation R-value.	R-____ ☐ Wood ☐ Steel	R-____ ☐ Wood ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.1.1, 303.2 [FI2] ¹	Ceiling insulation installed per manufacturer's instructions. Blown insulation marked every 300 ft ² .			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.2.3 [FI22] ²	Vented attics with air permeable insulation include baffle adjacent to soffit and eave vents that extends over insulation.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
402.2.4 [FI3] ¹	Attic access hatch and door insulation ≥ R-value of the adjacent assembly.	R-____	R-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.1.2 [FI17] ¹	Blower door test @ 50 Pa. ≤ 5 ach in Climate Zones 1-2, and ≤ 3 ach in Climate Zones 3-8.	ACH 50 = ____	ACH 50 = ____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.2 [FI8] ²	Wood-burning fireplaces have tight fitting flue dampers and outdoor air for combustion.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.3.4 [FI4] ¹	Duct tightness test result of ≤ 4 cfm/100 ft ² across the system or ≤ 3 cfm/100 ft ² without air handler @ 25 Pa. For rough-in tests, verification may need to occur during Framing Inspection.	____ cfm/100 ft ²	____ cfm/100 ft ²	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: All ducts and air handlers are located within conditioned space.
403.3.3 [FI27] ¹	Ducts are pressure tested to determine air leakage with either: Rough-in test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the system including the manufacturer's air handler enclosure if installed at time of test. Postconstruction test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the entire system including the manufacturer's air handler enclosure.	____ cfm/100 ft ²	____ cfm/100 ft ²	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: All ducts and air handlers are located within conditioned space.
403.3.2.1 [FI24] ¹	Air handler leakage designated by manufacturer at ≤ 2% of design air flow.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.1.1 [FI9] ²	Programmable thermostats installed for control of primary heating and cooling systems and initially set by manufacturer to code specifications.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.1.2 [FI10] ²	Heat pump thermostat installed on heat pumps.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
403.5.1 [FI11] ²	Circulating service hot water systems have automatic or accessible manual controls.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.6.1 [FI25] ²	All mechanical ventilation system fans not part of tested and listed HVAC equipment meet efficacy and air flow limits.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.2 [FI26] ²	Hot water boilers supplying heat through one- or two-pipe heating systems have outdoor setback control to lower boiler water temperature based on outdoor temperature.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.1.1 [FI28] ²	Heated water circulation systems have a circulation pump. The system return pipe is a dedicated return pipe or a cold water supply pipe. Gravity and thermos-syphon circulation systems are not present. Controls for circulating hot water system pumps start the pump with signal for hot water demand within the occupancy. Controls automatically turn off the pump when water is in circulation loop is at set-point temperature and no demand for hot water exists.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.1.2 [FI29] ²	Electric heat trace systems comply with IEEE 515.1 or UL 515. Controls automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.2 [FI30] ²	Water distribution systems that have recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe have a demand recirculation water system. Pumps have controls that manage operation of the pump and limit the temperature of the water entering the cold water piping to 104°F.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.4 [FI31] ²	Drain water heat recovery units tested in accordance with CSA B55.1. Potable water-side pressure loss of drain water heat recovery units < 3 psi for individual units connected to one or two showers. Potable water-side pressure loss of drain water heat recovery units < 2 psi for individual units connected to three or more showers.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
404.1 [FI6] ¹	75% of lamps in permanent fixtures or 75% of permanent fixtures have high efficacy lamps. Does not apply to low-voltage lighting.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

1 High Impact (Tier 1)
2 Medium Impact (Tier 2)
3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
404.1.1 [FI23] ³ 	Fuel gas lighting systems have no continuous pilot light.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
401.3 [FI7] ²	Compliance certificate posted.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
303.3 [FI18] ³	Manufacturer manuals for mechanical and water heating systems have been provided.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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2015 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
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Above-Grade Wall	32.30
Below-Grade Wall	0.00
Floor	30.00
Ceiling / Roof	42.40
Ductwork (unconditioned spaces):	_____

Glass & Door Rating	U-Factor	SHGC
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Window	0.35	0.25
Door	0.27	0.15
Skylight	0.52	0.24

Heating & Cooling Equipment	Efficiency
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Heating System: _____	_____
Cooling System: _____	_____
Water Heater: _____	_____

Name: _____ Date: _____

Comments



Generated by REScheck-Web Software

Compliance Certificate

Project Lee - Camp Craft Art House

Energy Code: **2015 IECC**
Location: **West Lake Hills, Texas**
Construction Type: **Single-family**
Project Type: **Alteration**
Orientation: **Bldg. faces 90 deg. from North**
Climate Zone: **2 (1688 HDD)**
Permit Date:
Permit Number:

Construction Site: Owner/Agent: Designer/Contractor:

Compliance: Passes using prescriptive requirements for alteration projects

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Prop. U-Factor	Req. U-Factor	Prop. UA	Req. UA
Ceiling: Cathedral Ceiling	566	30.0	12.4	0.024	0.030	14	17

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2015 IECC requirements in REScheck Version : REScheck-Web and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Name - Title

Signature

Date



Inspection Checklist

Energy Code: 2015 IECC

Requirements: 97.0% were addressed directly in the REScheck software

Text in the "Comments/Assumptions" column is provided by the user in the REScheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Pre-Inspection/Plan Review	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
103.1, 103.2 [PR1] ¹ 	Construction drawings and documentation demonstrate energy code compliance for the building envelope. Thermal envelope represented on construction documents.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
103.1, 103.2, 403.7 [PR3] ¹ 	Construction drawings and documentation demonstrate energy code compliance for lighting and mechanical systems. Systems serving multiple dwelling units must demonstrate compliance with the IECC Commercial Provisions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
302.1, 403.7 [PR2] ² 	Heating and cooling equipment is sized per ACCA Manual S based on loads calculated per ACCA Manual J or other methods approved by the code official.	Heating: Btu/hr____ Cooling: Btu/hr____	Heating: Btu/hr____ Cooling: Btu/hr____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Foundation Inspection	Complies?	Comments/Assumptions
303.2.1 [FO11] ² 	A protective covering is installed to protect exposed exterior insulation and extends a minimum of 6 in. below grade.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.9 [FO12] ² 	Snow- and ice-melting system controls installed.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

Additional Comments/Assumptions:

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.4.1.1 [FR23] ¹ 	Air barrier and thermal barrier installed per manufacturer's instructions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.3 [FR20] ¹ 	Fenestration that is not site built is listed and labeled as meeting AAMA /WDMA/CSA 101/I.S.2/A440 or has infiltration rates per NFRC 400 that do not exceed code limits.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.5 [FR16] ²	IC-rated recessed lighting fixtures sealed at housing/interior finish and labeled to indicate ≤2.0 cfm leakage at 75 Pa.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.3.1 [FR12] ¹ 	Supply and return ducts in attics insulated ≥ R-8 where duct is ≥ 3 inches in diameter and ≥ R-6 where < 3 inches. Supply and return ducts in other portions of the building insulated ≥ R-6 for diameter ≥ 3 inches and R-4.2 for < 3 inches in diameter.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Ducts located completely inside the building envelope.
403.3.5 [FR15] ³ 	Building cavities are not used as ducts or plenums.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.4 [FR17] ² 	HVAC piping conveying fluids above 105 °F or chilled fluids below 55 °F are insulated to ≥ R-3.	R-_____	R-_____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.4.1 [FR24] ¹ 	Protection of insulation on HVAC piping.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.5.3 [FR18] ² 	Hot water pipes are insulated to ≥ R-3.	R-_____	R-_____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.6 [FR19] ²	Automatic or gravity dampers are installed on all outdoor air intakes and exhausts.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Insulation Inspection	Complies?	Comments/Assumptions
303.1 [IN13] ² 	All installed insulation is labeled or the installed R-values provided.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.2.1, 402.2.2, 402.2.6 [FI1] ¹	Ceiling insulation R-value.	R-____ ☐ Wood ☐ Steel	R-____ ☐ Wood ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.1.1, 303.2 [FI2] ¹	Ceiling insulation installed per manufacturer's instructions. Blown insulation marked every 300 ft ² .			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.2.3 [FI22] ²	Vented attics with air permeable insulation include baffle adjacent to soffit and eave vents that extends over insulation.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
402.2.4 [FI3] ¹	Attic access hatch and door insulation ≥ R-value of the adjacent assembly.	R-____	R-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.1.2 [FI17] ¹	Blower door test @ 50 Pa. ≤ 5 ach in Climate Zones 1-2, and ≤ 3 ach in Climate Zones 3-8.	ACH 50 = ____	ACH 50 = ____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.3.4 [FI4] ¹	Duct tightness test result of ≤ 4 cfm/100 ft ² across the system or ≤ 3 cfm/100 ft ² without air handler @ 25 Pa. For rough-in tests, verification may need to occur during Framing Inspection.	____ cfm/100 ft ²	____ cfm/100 ft ²	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: All ducts and air handlers are located within conditioned space.
403.3.3 [FI27] ¹	Ducts are pressure tested to determine air leakage with either: Rough-in test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the system including the manufacturer's air handler enclosure if installed at time of test. Postconstruction test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the entire system including the manufacturer's air handler enclosure.	____ cfm/100 ft ²	____ cfm/100 ft ²	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: All ducts and air handlers are located within conditioned space.
403.3.2.1 [FI24] ¹	Air handler leakage designated by manufacturer at ≤ 2% of design air flow.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.1.1 [FI9] ²	Programmable thermostats installed for control of primary heating and cooling systems and initially set by manufacturer to code specifications.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.1.2 [FI10] ²	Heat pump thermostat installed on heat pumps.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.5.1 [FI11] ²	Circulating service hot water systems have automatic or accessible manual controls.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
403.6.1 [FI25] ²	All mechanical ventilation system fans not part of tested and listed HVAC equipment meet efficacy and air flow limits.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.2 [FI26] ²	Hot water boilers supplying heat through one- or two-pipe heating systems have outdoor setback control to lower boiler water temperature based on outdoor temperature.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.1.1 [FI28] ²	Heated water circulation systems have a circulation pump. The system return pipe is a dedicated return pipe or a cold water supply pipe. Gravity and thermosyphon circulation systems are not present. Controls for circulating hot water system pumps start the pump with signal for hot water demand within the occupancy. Controls automatically turn off the pump when water is in circulation loop is at set-point temperature and no demand for hot water exists.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.1.2 [FI29] ²	Electric heat trace systems comply with IEEE 515.1 or UL 515. Controls automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.2 [FI30] ²	Water distribution systems that have recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe have a demand recirculation water system. Pumps have controls that manage operation of the pump and limit the temperature of the water entering the cold water piping to 104°F.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.4 [FI31] ²	Drain water heat recovery units tested in accordance with CSA B55.1. Potable water-side pressure loss of drain water heat recovery units < 3 psi for individual units connected to one or two showers. Potable water-side pressure loss of drain water heat recovery units < 2 psi for individual units connected to three or more showers.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
404.1 [FI6] ¹	75% of lamps in permanent fixtures or 75% of permanent fixtures have high efficacy lamps. Does not apply to low-voltage lighting.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
404.1.1 [FI23] ³ 	Fuel gas lighting systems have no continuous pilot light.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
401.3 [FI7] ²	Compliance certificate posted.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
303.3 [FI18] ³	Manufacturer manuals for mechanical and water heating systems have been provided.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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2015 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
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Above-Grade Wall	0.00
Below-Grade Wall	0.00
Floor	0.00
Ceiling / Roof	42.40
Ductwork (unconditioned spaces):	_____

Glass & Door Rating	U-Factor	SHGC
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Window

Door

Heating & Cooling Equipment	Efficiency
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Heating System: _____

Cooling System: _____

Water Heater: _____

Name: _____ Date: _____

Comments



Generated by REScheck-Web Software

Compliance Certificate

Project Lee - Camp Craft Workshop

Energy Code: **2015 IECC**
Location: **West Lake Hills, Texas**
Construction Type: **Single-family**
Project Type: **New Construction**
Orientation: **Bldg. faces 90 deg. from North**
Conditioned Floor Area: **1,351 ft2**
Glazing Area: **16%**
Climate Zone: **2 (1688 HDD)**
Permit Date:
Permit Number:

Construction Site:

Owner/Agent:

Designer/Contractor:

Compliance: Passes using UA trade-off

Compliance: **15.8% Better Than Code** Maximum UA: **475** Your UA: **400** Maximum SHGC: **0.25** Your SHGC: **0.21**

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Prop. U-Factor	Req. U-Factor	Prop. UA	Req. UA
ceiling: Cathedral Ceiling	1,245	30.0	0.0	0.034	0.030	42	37
east: Wood Frame, 16" o.c. Orientation: Front	127	23.0	0.0	0.055	0.084	3	5
roll up door: Solid Door (under 50% glazing) Orientation: Front	67			0.125	0.400	8	27
south: Wood Frame, 16" o.c. Orientation: Left side	485	23.0	0.0	0.055	0.084	18	28
metal door: Solid Door (under 50% glazing) Orientation: Left side	26			0.100	0.400	3	10
metal craft door: Glass Door (over 50% glazing) SHGC: 0.25 Orientation: Left side	66			0.300	0.400	20	26
ram windows: Metal Frame SHGC: 0.20 Orientation: Left side	63			0.400	0.400	25	25
north: Wood Frame, 16" o.c. Orientation: Right side	660	23.0	0.0	0.055	0.084	27	42
Door: Solid Door (under 50% glazing) Orientation: Right side	50			0.100	0.400	5	20
high windows: Metal Frame SHGC: 0.20 Orientation: Right side	115			0.400	0.400	46	46
west: Wood Frame, 16" o.c. Orientation: Back	228	23.0	0.0	0.055	0.084	13	19

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Prop. U-Factor	Req. U-Factor	Prop. UA	Req. UA
Floor: Slab-On-Grade (Unheated) Insulation depth: 0.0'	182		1.2	1.042	1.042	190	190

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2015 IECC requirements in REScheck Version : REScheck-Web and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Name - Title

Signature

Date



Inspection Checklist

Energy Code: 2015 IECC

Requirements: 94.0% were addressed directly in the REScheck software

Text in the "Comments/Assumptions" column is provided by the user in the REScheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Pre-Inspection/Plan Review	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
103.1, 103.2 [PR1] ¹ 	Construction drawings and documentation demonstrate energy code compliance for the building envelope. Thermal envelope represented on construction documents.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
103.1, 103.2, 403.7 [PR3] ¹ 	Construction drawings and documentation demonstrate energy code compliance for lighting and mechanical systems. Systems serving multiple dwelling units must demonstrate compliance with the IECC Commercial Provisions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
302.1, 403.7 [PR2] ² 	Heating and cooling equipment is sized per ACCA Manual S based on loads calculated per ACCA Manual J or other methods approved by the code official.	Heating: Btu/hr____ Cooling: Btu/hr____	Heating: Btu/hr____ Cooling: Btu/hr____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.2 [FO1] ¹ 	Slab edge insulation R-value.	R-____ ☐ Unheated ☐ Heated	R-____ ☐ Unheated ☐ Heated	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	<i>See the Envelope Assemblies table for values.</i>
402.1.2 [FO3] ¹ 	Slab edge insulation depth/length.	____ ft	____ ft	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	<i>See the Envelope Assemblies table for values.</i>
303.2.1 [FO11] ² 	A protective covering is installed to protect exposed exterior insulation and extends a minimum of 6 in. below grade.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.9 [FO12] ² 	Snow- and ice-melting system controls installed.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.3.4 [FR1] ¹ 	Door U-factor.	U-____	U-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
402.1.1, 402.3.1, 402.3.3, 402.5 [FR2] ¹ 	Glazing U-factor (area-weighted average).	U-____	U-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
402.1.1, 402.3.2, 402.3.3, 402.5 [FR3] ¹ 	Glazing SHGC value (area-weighted average).	SHGC:____	SHGC:____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.3 [FR4] ¹ 	U-factors of fenestration products are determined in accordance with the NFRC test procedure or taken from the default table.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.1.1 [FR23] ¹ 	Air barrier and thermal barrier installed per manufacturer's instructions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.3 [FR20] ¹ 	Fenestration that is not site built is listed and labeled as meeting AAMA /WDMA/CSA 101/I.S.2/A440 or has infiltration rates per NFRC 400 that do not exceed code limits.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.4.5 [FR16] ²	IC-rated recessed lighting fixtures sealed at housing/interior finish and labeled to indicate ≤2.0 cfm leakage at 75 Pa.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.3.1 [FR12] ¹ 	Supply and return ducts in attics insulated ≥ R-8 where duct is ≥ 3 inches in diameter and ≥ R-6 where < 3 inches. Supply and return ducts in other portions of the building insulated ≥ R-6 for diameter ≥ 3 inches and R-4.2 for < 3 inches in diameter.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Ducts located completely inside the building envelope.
403.3.5 [FR15] ³ 	Building cavities are not used as ducts or plenums.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.4 [FR17] ² 	HVAC piping conveying fluids above 105 °F or chilled fluids below 55 °F are insulated to ≥R-3.	R-____	R-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.4.1 [FR24] ¹ 	Protection of insulation on HVAC piping.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
403.5.3 [FR18] ² 	Hot water pipes are insulated to $\geq R-3$.	R- _____	R- _____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.6 [FR19] ²	Automatic or gravity dampers are installed on all outdoor air intakes and exhausts.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
303.1 [IN13] ² 	All installed insulation is labeled or the installed R-values provided.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.1.1, 402.2.5, 402.2.6 [IN3] ¹ 	Wall insulation R-value. If this is a mass wall with at least ½ of the wall insulation on the wall exterior, the exterior insulation requirement applies (FR10).	R-_____ ☐ Wood ☐ Mass ☐ Steel	R-_____ ☐ Wood ☐ Mass ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.2 [IN4] ¹	Wall insulation is installed per manufacturer's instructions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.2.1, 402.2.2, 402.2.6 [FI1] ¹	Ceiling insulation R-value.	R-____ ☐ Wood ☐ Steel	R-____ ☐ Wood ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.1.1, 303.2 [FI2] ¹	Ceiling insulation installed per manufacturer's instructions. Blown insulation marked every 300 ft ² .			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.2.3 [FI22] ²	Vented attics with air permeable insulation include baffle adjacent to soffit and eave vents that extends over insulation.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
402.2.4 [FI3] ¹	Attic access hatch and door insulation ≥ R-value of the adjacent assembly.	R-____	R-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
402.4.1.2 [FI17] ¹	Blower door test @ 50 Pa. ≤ 5 ach in Climate Zones 1-2, and ≤ 3 ach in Climate Zones 3-8.	ACH 50 = ____	ACH 50 = ____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.3.4 [FI4] ¹	Duct tightness test result of ≤ 4 cfm/100 ft ² across the system or ≤ 3 cfm/100 ft ² without air handler @ 25 Pa. For rough-in tests, verification may need to occur during Framing Inspection.	____ cfm/100 ft ²	____ cfm/100 ft ²	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.3.3 [FI27] ¹	Ducts are pressure tested to determine air leakage with either: Rough-in test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the system including the manufacturer's air handler enclosure if installed at time of test. Postconstruction test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the entire system including the manufacturer's air handler enclosure.	____ cfm/100 ft ²	____ cfm/100 ft ²	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.3.2.1 [FI24] ¹	Air handler leakage designated by manufacturer at ≤ 2% of design air flow.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.1.1 [FI9] ²	Programmable thermostats installed for control of primary heating and cooling systems and initially set by manufacturer to code specifications.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.1.2 [FI10] ²	Heat pump thermostat installed on heat pumps.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
403.5.1 [FI11] ²	Circulating service hot water systems have automatic or accessible manual controls.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
403.6.1 [FI25] ²	All mechanical ventilation system fans not part of tested and listed HVAC equipment meet efficacy and air flow limits.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.2 [FI26] ²	Hot water boilers supplying heat through one- or two-pipe heating systems have outdoor setback control to lower boiler water temperature based on outdoor temperature.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.1.1 [FI28] ²	Heated water circulation systems have a circulation pump. The system return pipe is a dedicated return pipe or a cold water supply pipe. Gravity and thermos-syphon circulation systems are not present. Controls for circulating hot water system pumps start the pump with signal for hot water demand within the occupancy. Controls automatically turn off the pump when water is in circulation loop is at set-point temperature and no demand for hot water exists.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.1.2 [FI29] ²	Electric heat trace systems comply with IEEE 515.1 or UL 515. Controls automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.2 [FI30] ²	Water distribution systems that have recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe have a demand recirculation water system. Pumps have controls that manage operation of the pump and limit the temperature of the water entering the cold water piping to 104°F.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
403.5.4 [FI31] ²	Drain water heat recovery units tested in accordance with CSA B55.1. Potable water-side pressure loss of drain water heat recovery units < 3 psi for individual units connected to one or two showers. Potable water-side pressure loss of drain water heat recovery units < 2 psi for individual units connected to three or more showers.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.
404.1 [FI6] ¹	75% of lamps in permanent fixtures or 75% of permanent fixtures have high efficacy lamps. Does not apply to low-voltage lighting.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
404.1.1 [FI23] ³ 	Fuel gas lighting systems have no continuous pilot light.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement is not applicable.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
401.3 [FI7] ²	Compliance certificate posted.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
303.3 [FI18] ³	Manufacturer manuals for mechanical and water heating systems have been provided.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:



2015 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
-------------------	---------

Above-Grade Wall	23.00
Below-Grade Wall	0.00
Floor	1.20
Ceiling / Roof	30.00
Ductwork (unconditioned spaces):	_____

Glass & Door Rating	U-Factor	SHGC
---------------------	----------	------

Window	0.40	0.20
Door	0.12	0.25

Heating & Cooling Equipment	Efficiency
-----------------------------	------------

Heating System: _____	_____
Cooling System: _____	_____
Water Heater: _____	_____

Name: _____ Date: _____

Comments

SUBMITTAL CHECKLIST FOR ON-SITE SEWAGE FACILITIES

Please provide the information listed below (references to applicable sections of the City of West Lake Hills Code of Ordinances and the Texas Administrative Code are provided in parentheses). Using this checklist and having a complete package will ensure that the review process runs smoothly. Only complete submissions will be reviewed. **Please complete this checklist and turn it in with your application package.**

Owner's Name: ROBERT & TANJA LEE

Phone: (512) 807-0123 Cell Phone (312) 479-5026

Email robert.lee@windmuehlelands.com

Property Address: 402 CAMP CRAFT RD AUSTIN, TX 78746

Designer's Name: WUKASCH DESIGNS

Phone: (512) 756-2028 Cell Phone (512) 756-2028

Email septicwater@gmail.com

Builder's Name: RAUSER CONSTRUCTION

Phone: (512) 481-8444 Cell Phone (512) 751-5580

Email eric@rauserconstruction.com

X 1. A complete application for an On-Site Sewage Facility Construction Permit signed by the property owner and the initial application fee. (30 TAC §285.3(b) (1) (A, D))

X 2. A legal description of the property in the form of a property survey or subdivision plat showing all easements and setbacks associated with the property. (30 TAC §285.5)

X 3. A certified ground survey with one-foot interval contours shall be required for the disposal field areas for all systems regardless of slope conditions. The survey shall be sealed and certified by a state registered public surveyor. (Chapter 18, Sec. 18.03.067 (3) iii c 3).

X 4. If a Maintenance Contract is required under Ch. 285, a copy of the executed "Affidavit to the Public" after it has been filed with the county. (30 TAC §285.3(b) (3))

NA 5. If system components are to be on separate lots, a copy of the executed "Affidavit to the Public" after it has been filed with the county. (30 TAC §285.4(b) (2) (D))

X 6. Two complete sets of plans for the OSSF system. If the system is professionally designed then each set should bear an original seal and signature by the designer. (30 TAC §285.5(a))

X 7. Site evaluation report for the property on the TCEQ form. (30 TAC §285.3(b) (1) (C))

X 9. If the site lies within a floodplain, a FEMA floodplain map must be provided with the submittal that clearly indicates the portion of the site that lies within the 100-year floodplain. The 100-year flood

boundaries shall be clearly indicated on the site drawing §285.5 (a) The drawings shall also indicate if the 100-year floodplain does not exist within the tract. 30 TAC §285.30(b)(3)(B)) and 30 TAC §285.31(c) (2))

NA10. A formal written request for any variances being requested, with a separate justification for each. (30 TAC §285.3(b) (2))

X 11. Clearly indicate setback features and distances on the plans. (30 TAC §285.30(b) (4))

X 12. Please indicate whether the system is in the Edwards Aquifer recharge zone. (30 TAC §285.40)

X 13. Clearly indicate the location of all water wells within 150' of the proposed disposal area or within 50' of any other system component. (30 TAC §285.30(b) (4))

X 14. A statement from the designer that no part of the system is within 10' of a potable water line. Please indicate the location of any potable water lines on the plans. (30 TAC §285.31(d))

X 15. A site plan scaled to 1"=10', 20' or 30' showing the system layout with 2 ft. contours for the areas extending 25' upslope to 75' down slope of the disposal area, with 1ft. contours throughout the extent of the disposal area. (To ensure compliance with 30 TAC §285.31(c) (1))

X 16. Cross-sectional diagrams of the treatment units and all disposal areas. (To ensure compliance with 30 TAC §285.32 and 30 TAC §285.33). All treatment units require risers to grade, an outlet filter and a reserve tank capacity of one day flow above the alarm on level.

X 17. Sizing calculations for the treatment units and all disposal areas. Pressure reducing emitters are to wet not more than four square feet of absorptive area per emitter and overlapping areas shall be counted once within one foot of the pressure reducing emitter. (To ensure compliance with 30 TAC §285.32 and 30 TAC §285.33).

X 18. The plan must clearly indicate that the proposed facility will meet the minimum requirements of the applicable rules, regulations, construction standards, and Department policies. (30 TAC §285.3(a) (1)) In addition, please clearly mark the street address at the site in a manner visible from the road, along with the location of the profile holes, tank area, and disposal area corners. Before a permit can be issued, the City of West Lake Hills will conduct a field review. If the site is inaccessible because of locked gates, fences, or thick brush, the review will be delayed and re-inspection fees may be required. (To ensure compliance with 30 TAC §285.30)

X 19. The City of West Lake Hills requires all OSSF designs to include an engineered silt fence signed and sealed by a Professional Engineer. West Lake Hills Municipal Code 14-142 (c)(8), Reference Sec. 86-129 (b).

Note: This list represents the minimum information required to begin the review process. During the review, other information may be required.

City of West Lake Hills
OSSF Inspection
911 Westlake Drive
West Lake Hills, Texas 78746
(512) 327-3628 fax: (512) 372-1863

**City of West Lake Hills
Private On-Site Sewage Facility
Application**

CITY USE ONLY:

TWSO No: _____
Date: _____
Amount Paid: _____
Approved By: _____

Application for On-Site Sewage Facility Construction Permit
Please fill in all spaces provided

Site Address: 402 CAMP CRAFT RD Zip: 78746

Legal Description: Lot: LOT 2 RESUB OF OAK HOLLOW CONFIRMING PLAT
Block: _____ Subdivision: _____

Sec #: _____ or _____ Acres of the _____

Survey #: _____ Tax Parcel #: 111092

Type of Disposal System: _____

☐ Engineered Residential Permit (\$410)* ☐ Engineered Commercial Permit (\$510)*

☐ Engineered Plans Resubmission (\$150) ☐ Modification or Repair (\$160)

☐ Renewal of Expired Permit (\$150)
Residential (\$200) Commercial

☐ Includes \$10 State Surcharge* ☐ Each Variance (\$250) ☐ Re-inspection (\$100)

Property Owner: ROBERT & TANJA LEE

Mailing Address: 402 CAMP CRAFT RD AUSTIN, TX 78746

Email: robert.lee@windmuehleffunds.com

Phone: (512) 807-0123 Cell Phone: (312) 479-5026

Contractor/Builder Name: RAUSER CONSTRUCTION

Email: eric@rauserconstruction.com

Phone: (512) 481-8444 Cell Phone: (512) 751-5580

OSSF Engineer/Designer Name: WUKASCH DESIGNS

Email: septicwater@gmail.com

Phone: (512) 756-2028 Cell Phone: (512) 756-2028

Revised March 2012

Installer: 3T Septic Services

Installer No: _____ Email: _____

Phone: (512) 645-8052 Cell Phone: (903) 440-6633

Source of Water: ☐ Private Well ☐ Cistern ☐ Lake Water ☒ Public Water Supply - Name: _____

Type of Development:

☒ Single Family Residential Living Area Size: 5962 sf sq. ft. Bedrooms: 4

☐ Non-Residential (or multi-family residential) Type use: _____

Size of Building: _____ sq. ft. No. of Employees: _____

Days Occupied per Week: _____ No. of Customers: _____

Estimated Daily Water Use 540 g.p.d. Is water used in a manufacturing process? _____

Distance to Closest Organized Sewer Line: ☐ Less than 500 feet (actual measurement _____ ft.) ☐ Greater than 500 feet

I CERTIFY THAT THE ABOVE STATEMENTS ARE TRUE AND CORRECT.
AUTHORIZATION IS HEREBY GIVEN TO THE CITY OF WEST LAKE HILLS TO ENTER
THE ABOVE DESCRIBED PRIVATE PROPERTY FOR THE PURPOSE OF LOT
EVALUATIONS AND INSPECTIONS OF PRIVATE SEWAGE FACILITIES.

Signature of Owner [Signature] Date: 11-10-21

AN APPLICATION CHECK LIST MUST BE SUBMITTED WITH THIS APPLICATION.

**AFFIDAVIT TO THE PUBLIC**

**STATE OF TEXAS §
THE COUNTY OF TRAVIS §**

CERTIFICATION OF ON-SITE SEWAGE FACILITIES (OSSFs) REQUIRING MAINTENANCE

According to Texas Commission on Environmental Quality Rules for On-Site Sewage Facilities (OSSFs), this document is filed in the Deed Records of Travis County, Texas.

I

The Texas Health and Safety Code, Chapter 366 authorizes the Texas Commission on Environmental Quality (commission) to regulate on-site sewage facilities (OSSFs). Additionally, the Texas Water Code (TWC), §5.012 and §5.013, gives the commission primary responsibility for implementing the laws of the State of Texas relating to water and adopting rules necessary to carry out its powers and duties under the TWC.

The commission, under the authority of the TWC and the Texas Health and Safety Code, requires owners to provide notice to the public that certain types of OSSFs are located on specific pieces of property. To achieve this notice, the commission requires a recorded affidavit.

Additionally, the owner must provide proof of the recording to the OSSF permitting authority. This recorded affidavit is not a representation or warranty by the commission of the suitability of this OSSF, nor does it constitute any guarantee by the commission that the appropriate OSSF was installed.

II

An OSSF requiring a maintenance contract, according to 30 Texas Administrative Code §285.91(12) will be installed on the property described as:

Street Address:

402 CAMP CRAFT RD

Legal Description:

LOT 2 RESUB OF OAK HOLLOW CONFIRMING PLAT

The property is owned by [Owner(s)'s Printed Full Name(s)]:

ROBERT & TANJA LEE

This OSSF must be covered by a continuous maintenance policy for the first two years. All maintenance on the property must be performed by an approved maintenance company, and a signed maintenance contract must be submitted to the City of West Lake Hills within 30 days after the property has transferred.

Upon sale or transfer of the above-described property, the license for the OSSF shall be transferred to the buyer or new owner.

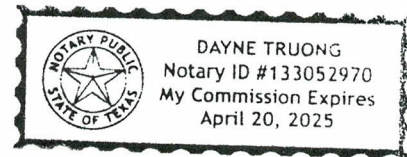
WITNESS BY HAND(S) ON THIS 10 DAY OF
November, 2021.

Robert C. Lee, III 11-10-21
[Owner(s)'s Signature(s)]

SWORN TO AND SUBSCRIBED BEFORE ME ON THIS _____ DAY OF
_____, 2011.

Dayne Truong
Notary Public, State of Texas
Notary's Printed Name

My Commission Expires: April 20, 2025



RETURN TO:
WUKASCH DESIGNS
P.O. BOX 401
BURNET, TX 78611
512.756.2028



2021264517

FILED AND RECORDED
OFFICIAL PUBLIC RECORDS

Dana DeBeauvoir
Dana DeBeauvoir, County Clerk
Travis County, Texas

Dec 02, 2021 12:03 PM
Fee: \$30.00 ANDERSOND

Jesse IPSTALL
Suzanne W. Design

Texas Septic Services
 Charlie Threet
 9802 Talleyran Drive
 Austin, TX 78750
 (512) 247-1406
texassepticsservices@yahoo.com

Job 1456
 City of Westlake

AGREEMENT

- I. General: This work for hire Agreement (hereinafter referred to as "Agreement") is entered into by and between Clients' Robert Lee (hereinafter referred to as "Client") residing or doing business at 402 Camp Craft Rd., West Lake Hills, TX 78746 and Texas Septic Services, Inc. (hereinafter referred to as "Contractor"), located at 9802 Talleyran Dr., Austin, TX 78750; (512) 247-1406. By this agreement, Contractor agrees to render services, as described herein, and Client agrees to fulfill his/her/their responsibilities under this agreement as described herein.
- II. Effective Dates: This Agreement commences on _____ and runs for 2 year(s). If this is an initial agreement, Contractor relies on Client to notify Contractor of the date of first use. Contractor must receive such notification within two business days of the date of the systems first use. If no notification is given to the Contractor within 90 days after the equipment is installed, Contractor will assume Commencement of the agreement being the day the equipment was installed.
- III. Renewal Terms: This Agreement shall automatically renew for an additional 2 year(s) on the same terms as this Agreement unless either party gives written notice of the termination of if Client fails to submit payment for such renewal. Contractor must receive both written notices and renewal payment no later than 30 days prior to the end of the term. The terminating party must give notice in writing to the equipment manufacturer and the local regulatory agency. Failure to submit renewal payment in a timely manner will have the same effect as a written termination.
- IV. Services by Contractor: Contractor will provide the following services (hereinafter referred to as the "Services")
1. In compliance with Agency City of Westlake and Manufacturer Aerobic requirements, inspect and perform routine upkeep on all parts within the On-site Sewage Facility (hereinafter referred to as "OSSF") 3 times annually if monitoring is required, Contractor will provide electronic monitoring to the OSSF as part of this agreement. If the OSSF is equipped with an UV disinfecting unit, Contractor is responsible for maintenance of said unit.
 2. Report to the appropriate regulatory authority and to the Client as required by both the State's on-site-rules and the local Agency's rules, if more stringent. All findings must be reported to the local Agency within 14 days.
 3. Replace, or repair, if the Contractor has in possession the supplies needed at the time of the site visit any component of the OSSF found to be in need of such replacement or repair, during Contractor's routine visits. Unless otherwise covered by warranty, when the service cost is greater than \$100.00 or if Contractor does not have the supplies needed at the time of the site visit, Contractor will notify Client of the Service needed. Client must notify Contractor of Client's arrangement(s) to affect repairs within 48 hours from the date the Client was notified, or Contractor will affect repairs and bill Client as required by State and local Agency rules.
 4. Visit site in response to Client's request(s) for unscheduled service(s) within two business days from the date of Contractor's receipt of Client's request. Unless otherwise covered by warranty, such as unscheduled responses will be billed to Client.
 5. Attempt to provide notification of arrival to site to the homeowner or to site personnel. Written notification of the visit will be left at the Home or with site personnel upon completion of inspection, as well as forwarded to Agency within 14 days.
- V. Site Location: The Services are to be performed at the property located at 402 Camp Craft Rd., West Lake Hills, TX 78746. V.B. Charlie Threet is certified by Manufacturer listed above IV-1 to provide maintenance.
- VI. Payments: The fee for this agreement, \$500.00 only covers the Services Described herein. This fee does not cover equipment of labor for non-warranty repairs or for charges for unscheduled Client requested trips to the Client's site. Payments for such additional services are due when service is provided or rendered. Payment not received within 10 days from the due date will be subject to a \$20.00 late penalty and/or 1.5% carrying charge whichever is greater, in addition to reasonable attorney's fees and all costs of collection incurred by Contractor in collection of any unpaid debt(s).

Printed Name: Robert Lee

Signature: Robert Lee

Date: 11/23/2021

Client Phone Numbers: (512) 807-0123

Email: Robert.lee@windmueblefunds.com

Contractor Texas Septic Services Signature: _____

License Number: MP0001076

Date: 11-18-21

VII. Client's Responsibilities: The Client is responsible for each and all of the following:

1. Maintain chlorinator and provide proper chlorine supply, if OSSF is supplied with one.
2. Provide all necessary yard or lawn maintenance and removal of all obstacles, including dogs and other animals, as needed to allow the OSSF to function properly and to allow Contractor safe and easy access to all parts of the OSSF.
3. Maintain a current license to operate, and abide by the conditions and limitations of that license all requirements for an on-site sewage facility (OSSF) from State and local regulatory agency as well as manufacturer's recommendations.
4. Immediately notify Contractor and Agency of any and all alarms or problems with, including failure of the OSSF
5. Provide the Contractor with water usage records, upon request, for evaluation by the Contractor of the OSSF performance
6. Allow for samples as both the inlet and outlet to the OSSF to be obtained by the Contractor for the purpose of evaluating the OSSF performance. If these samples are sent to a lab for testing, the Client will directly pay the lab for the cost of testing plus pay the Contractor for all man-hours expended in providing this additional service. The rate for this additional service \$75.00 per hour measured from office to OSSF site, OSSF site to lab, and lab to office, otherwise known as portal to portal
7. Do not allow the backwash from water treatment, or water conditioning equipment to enter the OSSF.
8. Provide for pumping of tanks, when and as suggested by Contractor, at Client's own expense.
9. Maintain site drainage to prevent adverse effects on OSSF.
10. Promptly and fully pay Contractor's bill fees of invoices as described herein.

VIII. Access by Contractor: Contractor is hereby granted an easement to the OSSF for the purposes of performing services. Contractor's personnel may enter the property at reasonable times without prior notice for the performing the above described services or repairs. Contractor will require access to the OSSF electrical and physical components, including tanks, by means of man ways or risers for the purpose of elevation required by manufacturer, and/or rules. If such man ways or risers are not in place, excavation together with other labor and materials will be required and will be billed to Client as an additional service at the rate of \$75.00 per hour, plus materials billed at list price. Excavated soil is to be replaced as best as reasonably possible.

IX. Application or Transfer of Payment: The fees for this agreement may transfer to the subsequent owner(s), however this agreement will not transfer. Client will advise subsequent owner(s) of the requirement that they sign a replacement agreement authorizing Contractor to perform the above-described Services and accepting Client's responsibilities. This replacement Agreement must be signed and received in Contractor's offices within 10 days of transfer of ownership. Contractor will apply all charges for repairs or services not paid within 10 days of invoicing. The consumption of the payment in this manner may lead to termination of the agreement by the Contractor.

X. Termination of Agreement: This Agreement may be terminated by Client or Contractor with 30 days written notice in any event, including substantial failure to perform in accordance with its terms, by the other party without fault of the Terminating Party. If this Agreement is so terminated, Contractor shall be paid at the rate of \$75.00 per hour for any work performed, but not yet paid. Also, the party terminating will notify, in writing the equipment manufacturer and the regulatory agency of the termination.

XI. Limit of Liability: In no event shall the Contractor be liable for indirect, consequential, incidental or punitive damages, whether in contractor or any other theory, in no event shall the Contractor's liability for direct damages exceed the fee for the services described in this Agreement.

XII. Severability: If any provisions of this Agreement shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be held valid and enforceable. If a court finds that any provision of this Agreement is invalid or unenforceable, but that by limiting such provision it would become invalid and enforceable, then such provision as this will be deemed to be written, construed, and enforced as so limited.

XIII. Performance of Agreement: Commencement of and performance by Contractor under this Agreement is contingent on the following conditions:

(a) If this is an initial contract

1. Contractor receiving a fully executed original of this agreement and all the required documentation
2. Contractor providing the equipment for this project
3. Contractor receiving payment in full for the equipment and fee as described in Section IV

(b) If this is not an initial contract:

1. Contractor receiving a fully executed original copy of this Agreement and all required documentation
2. Contractor receiving payment in full for the fee as described in Section VI

If the above conditions are not met, then Contractor is not obligated to perform any portion of this agreement

XIV. Entire Agreement: This agreement contains the entire agreement of the parties and there are not other promises or conditions in any other agreement, oral or written.

Property Search > 111092 LEE ROBERT CHARLES & TANJA for Tax Year: 2021
Year 2021

Property

Account

Property ID:	111092	Legal Description:	LOT 2 RESUB OF OAK HOLLOW CONFIRMING PLAT
Geographic ID:	0111190406	Zoning:	
Type:	Real	Agent Code:	1533669
Property Use Code:			
Property Use Description:			

Protest

Protest Status:
Informal Date:
Formal Date:

Location

Address:	402 CAMP CRAFT RD AUSTIN, TX 78746	Map ID:	011027
Neighborhood:	M5600		
Neighborhood CD:	M5600		

Owner

Name:	LEE ROBERT CHARLES & TANJA	Owner ID:	1841149
Mailing Address:	250 CREEKSIDE DR BUDA, TX 78610-3338	% Ownership:	100.0000000000%
		Exemptions:	

Values

(+) Improvement Homesite Value:	+	\$747,500	
(+) Improvement Non-Homesite Value:	+	\$0	
(+) Land Homesite Value:	+	\$1,152,000	
(+) Land Non-Homesite Value:	+	\$0	Ag / Timber Use Value
(+) Agricultural Market Valuation:	+	\$0	\$0
(+) Timber Market Valuation:	+	\$0	\$0

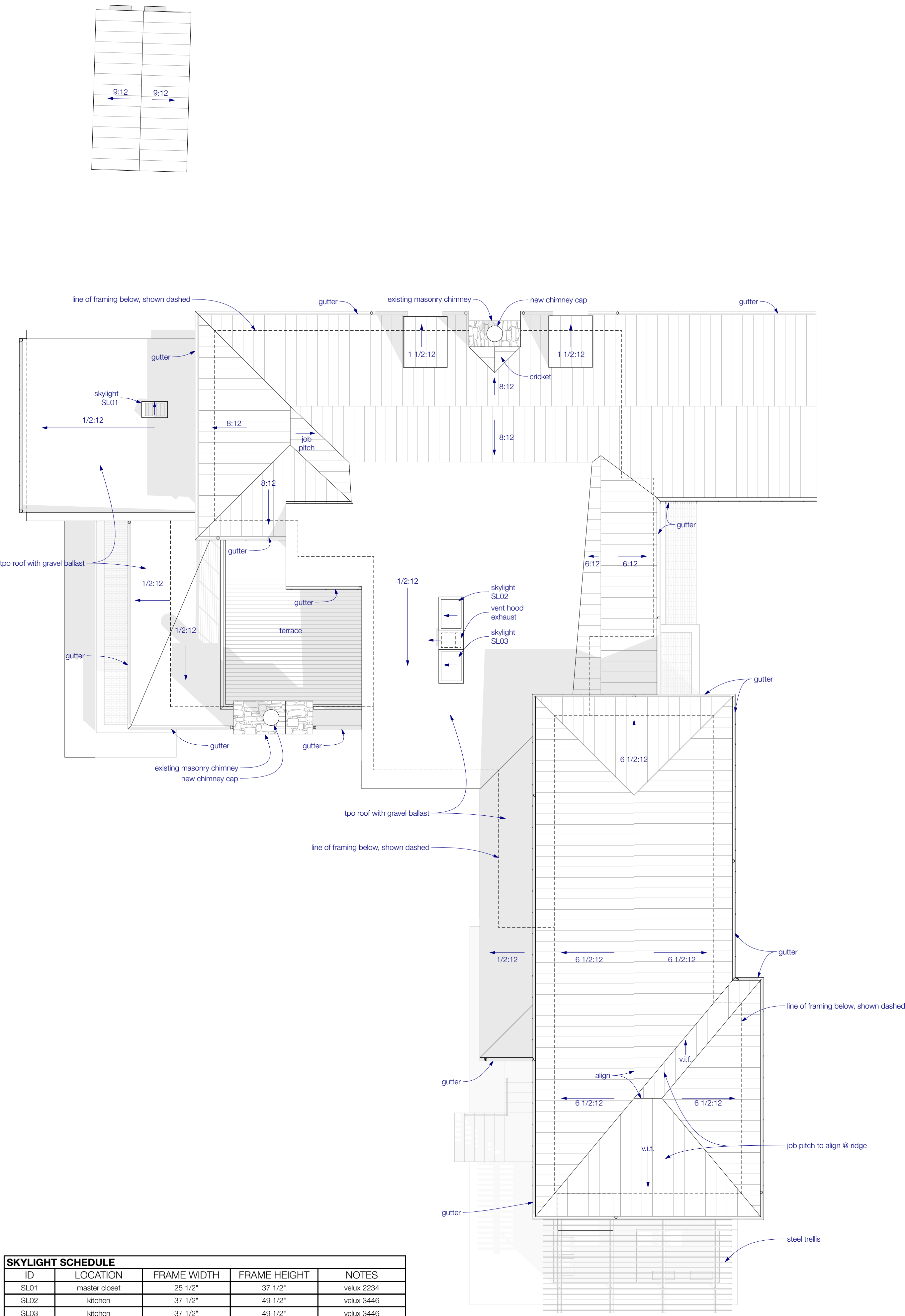
(=) Market Value:	=	\$1,899,500	
(-) Ag or Timber Use Value Reduction:	-	\$0	

(=) Appraised Value:	=	\$1,899,500	
(-) HS Cap:	-	\$0	

(=) Assessed Value:	=	\$1,899,500	

Taxing Jurisdiction

Owner: LEE ROBERT CHARLES & TANJA
% Ownership: 100.0000000000%



SITE INFORMATION:	
lot size	115,140 sq ft
max allowed impervious cover (25%)	28,785 sq ft
IMPERVIOUS COVER:	
main house	4,895 sq ft
driveway	4,456 sq ft
existing driveway to workshop	5,738 sq ft
AC pads and other concrete flatwork	1,326 sq ft
art house	617 sq ft
workshop	4,400 sq ft
other (retaining walls, outbuilding)	1,149 sq ft
total impervious cover:	22,581 sq ft
% of lot size:	21%

AREA CALCULATIONS:	
lower level conditioned	1634 sq ft
main level conditioned	3044 sq ft
second level conditioned	1284 sq ft
total conditioned:	5,962 sq ft
conditioned	5,962 sq ft
garage	594 sq ft
terraces	414 sq ft
porches and overhangs	909 sq ft
total under roof:	7,879 sq ft

ART HOUSE:	
conditioned	527 sq ft

WORKSHOP:	
conditioned	1,333 sq ft
unconditioned	2,898 sq ft

- CITY OF WEST LAKE HILLS
APPROVED VARIANCES:**
- 1) main house setback encroachment
 - 2) detached structure in setback
 - 3) driveway encroachment
 - 4) sport court remodel
 - 5) removal of tree #75 and tree #94
 - 6) removal of tree #167 and tree #169

GENERAL SCOPE OF WORK

This project is a remodel of an existing 2 story residence with a significant new addition, remodel of an outbuilding, and new construction of a workshop on an existing slab.

LEGAL DESCRIPTION:
LOT 2 RESUB OF OAK HOLLOW CONFIRMING PLAT

JURISDICTION:
City of West Lake Hills

ZONING:
R-1

PROPERTY ID:
111092

GEOGRAPHIC ID:
011100405

LOT SIZE:
115,140 square feet

OWNER
Robert & Tanja Lee
402 Camp Craft Road
West Lake Hills, TX 78746

BUILDER
Rausser Construction
5904 Grover Avenue
Austin, TX 78757
512.481.8444

STRUCTURAL ENGINEER
Fort Structures
2235 East 6th Street, #105
Austin, TX 78702
512.817.9264

DRAWING LIST

main house	G1.1	cover sheet
	G1.2	specifications
	G1.3	specifications
	G1.4	specifications
	G1.5	site plan demo/existing
	G1.6	site plan proposed
	G1.7	demo plan
	G1.8	existing openings in stone walls
	G1.9	existing openings in stone walls
	A1.1	overall floor plan
	A1.2	lower level / level 2 floor plan
	A1.3	level 1 floor plan
	A1.4	level 1 floor plan
	A1.5	window elevations
	A1.6	door schedule / elev.
	A1.7	lower level / level 2 RCP
	A1.8	level 1 RCP
	A1.9	level 1 RCP
	A2.1	elevations
	A2.2	elevations
	A3.1	sections
	A3.2	sections
	A3.3	sections
	A3.4	sections
	A4.1	interior elevations
	A4.2	interior elevations
	A4.3	interior elevations
	A4.4	interior elevations
	A4.5	interior elevations
	A5.1	details
	A5.2	details
	A5.3	details
	A5.4	details
	A5.5	details
	A5.6	details
	A6.1	lower level slab drop plan
	A6.2	level 1 slab drop plan
	A6.3	level 1 slab drop plan
	ME.1	mechanical / electrical
	ME.2	mechanical / electrical
	ME.3	mechanical / electrical
art house	B1.1	plans
	B2.1	elevations / sections
	B4.1	interior elevations
	B5.1	details
workshop	C1.1	floor plan
	C1.2	RCP / ME
	C2.1	elevations
	C2.2	elevations
	C3.1	sections
	C4.1	details
	C4.2	details
	C5.1	interior elevations
structural	S0.00	general notes
	S0.01	general notes
	S0.02	3D view
	S0.03	3D view
	S0.04	3D view
	S0.05	3D view
	S1.10	lower level foundation plan
	S1.10W	lower level wind bracing plan
	S1.11 N...	level 1 foundation/framing plan
	S1.11 S...	level 1 foundation/framing plan
	S1.11W ...	level 1 wind bracing plan
	S1.11W ...	level 1 wind bracing plan
	S1.12 N...	level 2 framing plan
	S1.12 S...	level 2 framing plan
	S1.12W	level 2 wind bracing plan
	S1.13	roof framing plan
	S1.21	art house
	S1.31	workshop foundation plan
	S1.31W	workshop wind bracing plan
	S1.32	workshop roof framing plan
	S2.00	details
	S2.01	details
	S2.10	details
	S2.11	details
	S3.00	sections
	S3.01	sections
	S3.02	sections
	S4.00	framing details
	S4.01	framing details
	S4.02	framing details
	S4.10	framing details
	S4.11	framing details
	S5.10	steel details
	S5.11	steel details
lighting	LC1.11	art house / lower level ltg control plan
	LC1.12	level 1 ltg control plan
	LC1.13	level 1 ltg control plan
	LD1.11	art house / lower level lighting plan
	LD1.12	level 1 lighting plan
	LD1.13	level 1 lighting plan
	LD1.14	level 2 lighting plan
mechanical	M000	general notes & legends
	M001	calculations & equipment schedules
	M100	zoning plan / site plan
	M200	mechanical floor plan - lower level
	M201	mechanical floor plan - level 1
	M202	mechanical floor plan - level 1
	M203	mechanical floor plan - level 2
	M300	section & 3D Views
	M301	sections & 3D views
	M400	VRF diagrams
	M500	details & clearances
	M600	controls & writing

1211 E. 11th Street, #200
Austin, Texas 78702
512.479.4100
www.FKArchitects.net



Lee Residence

402 Camp Craft Road
West Lake Hills, Texas 78746



revisions

date	description
1	
2	
3	
4	
5	
6	

100% CD

3/8/22

cover sheet

G1.1

SPECIFICATIONS

table of contents:

1. General Conditions
2. Site Work
3. Concrete
4. Masonry
5. Metals
- 6A. Rough Carpentry
- 6B. Exposed Carpentry and Trim Work
7. Thermal and Moisture Protection
8. Doors and Windows
9. Finishes
11. Equipment
- 15A. Plumbing
- 15B. Heating, Ventilation and Cooling
16. Electrical

1. General and Special Conditions

1.1 General Conditions

Document A105 of the American Institute of Architects, "Standard Form of Agreement between Owner and Contractor for Residential or Small Commercial Project" (2017 edition), is part of this Contract and applies to all Contractors and Sub-Contractors.

1.2 Codes:

All work shall comply with current versions of the International Residential Code, International Energy Conservation Code, and other applicable Codes, Amendments, Ordinances, Rules, Regulations, and Laws of Building Officials or Authorities having jurisdiction. All Work necessary to comply with such requirements shall be provided by Contractor.

Discrepancies between Codes, standard practices and information with Construction Drawings shall be brought to the attention of the Architect prior to construction.

1.3 Warranty:

The Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents.

1.4 Inter-Relation of Documents:

The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing construction activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report to the Architect any errors, inconsistencies or omissions discovered. Report discrepancies to the architect, as they are discovered before proceeding.

1.5 Permits and Fees:

Contractor shall provide building permit and pay all applicable fees, and provide permits required for each trade. Contractor shall coordinate all Inspections required by local authorities having jurisdiction over the property.

1.6 Insurance:

Contractor shall furnish to Owner certificates of insurance as required by the conditions of the Contract, in a form acceptable to the Owner for Comprehensive General Liability, Employer's Liability, and Builder's Risk.

1.7 Construction Waste:

Waste products from demolition of existing house and from construction of new residence are to be separated on-site and reused, recycled or salvaged as the first alternative, before sending to a landfill.

1.8 Record Set of Drawings:

A record set of Contract Documents (Drawings and Specifications) and subsequent Drawings/Clarifications/Changes (SK's) shall be kept on the jobsite with all changes or notes recorded thereon.

1.9 Temporary Facilities:

Contractor shall provide and maintain the following (as necessary):

- job port-a-can
- power and electricity
- lighting
- water
- heating and cooling
- fencing, site security, and other barriers to ensure a safe and secure site

1.10 Photographic Documentation:

Contractor shall photograph extensively and/or video record open walls and ceilings showing locations of all electrical, plumbing and mechanical runs before applying insulation and gypsum board or other finish products to walls. Contractor shall provide a copy of the photos and/or video recording to Owner at end of the job.

1.11 Information package:

Contractor shall furnish to Owner, at move-in, a binder or digital file of information containing all warranties, instructions, paint and stain colors used on the project, special operating instructions and a list of sub-contractors that participated in the Work.

1.12 Submittals:

Contractor shall furnish architect with the following submittals for review during the construction process. This list is in addition to material samples or mock-ups requested by architect or owner:

- Window and door orders
 - including shop drawings of any custom windows and doors
 - including details through joints, heads, sills, sticking, stop profiles, muntin bars, etc.
- Shop drawings of any custom steel fabrications (structural and non-structural)
- Shop drawings of trusses
- Shop drawings of cabinets
- Special equipment submittals
- Plumbing fixture submittal
- Light fixture submittal
- Appliance submittal
- Wine cooler
- Shop drawings of sprinkler layout for fire suppression system

The Contractor shall promptly review, approve in writing and submit to the Architect: Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents. Architect will only review submittals that have been reviewed first by the General Contractor.

Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The Architect shall review these submittals for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor.

1.13 Existing dimensions:

All dimensions on architectural drawings are based on assumptions of existing dimensions. Existing building may not be square or consistent as assumed, therefore it is imperative for contractor to check entire strings of dimensions and report any discrepancies with existing conditions to Architect before framing new walls or pouring new foundations.

1.14 Protection of Existing Building:

Contractor shall protect parts of the existing house that will remain in new design.

1.15 Protection of Persons and Property:

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury or loss to employees on the Work, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

1.16 Protection of installed work:

Protect installed work from damage by construction operations.

1.17 Cutting & Patching:

Whenever possible, execute the work by methods that avoid cutting or patching. Perform whatever cutting and patching is necessary to:

1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-conforming work.

Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces. Restore work with new products in accordance with requirements of Contract Documents. At building envelope, fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with appropriate fire codes, to full thickness of the penetrated element.

Patching:

1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

1.18 Sustainable Construction:

> Only low- or no-VOC paints, coatings, sealants, and adhesives shall be used on the project
> Contractor shall not use any sheet goods or insulation that contain urea formaldehyde

Whenever possible:

- > Contractor shall use products that have been harvested, manufactured or recovered locally.
- > Contractor shall attempt to use products with high recycled contents.
- > Lumber, trim, doors, casework, etc. shall be certified as being harvested from sustainably managed forests.

1.19 Soils Report: For subsurface investigation report and foundation recommendations, refer to report prepared by Capital Geotechnical Services, dated November 4, 2020, File No. 20-0112.

1.20 3rd Party Inspections: Contractor shall arrange for 3rd party inspections, including

1.21 Progress cleaning

Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space. Broom and vacuum clean interior areas prior to start of finishing of surfaces and continue cleaning to eliminate dust. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

1.22 Final cleaning

Execute final cleaning prior to Substantial Completion. Use cleaning materials that are nonhazardous. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

Replace HVAC filters of operating equipment with new filters after final cleaning. Clean debris from roofs, gutters, downspouts, and drainage systems. Clean site; sweep paved areas, rake clean landscaped surfaces. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site.

1.23 Closeout procedure

Make submittals that are required by governing or other authorities, and close out all open permits. Coordinate final inspections needed to obtain Certificate of Occupancy. Provide copies of Certificate of Occupancy to Architect and Owner.

Notify Architect when work is considered ready for Substantial Completion, Contract Documents have been reviewed, work has been inspected by authorities having jurisdiction over project, and work is complete in accordance with Contract Documents and ready for Architect's review. Complete items of work determined by Architect's final inspection.

Contractor shall provide Owner with an organized binder of all product warranties, operating instructions and photo documentation (see section 1.10). The contractor shall also give the Owner a tutorial on the care, maintenance and operation of the project and its components and systems.

1.24 Maintenance and Warranty

Contractor shall warrant all work for not less than one year from the date of Substantial Completion or the length of the specified warranty, whichever is longer. Contractor shall provide service and maintenance of components installed under this contract for the maintenance.

2. Site Work

2.0 General:

General Contractor shall review building layout on site with Architect prior to construction.

2.1 Protection:

Protect trees greater than 14" diameter and within 25' distance of construction activity with orange plastic fencing at the drip line and lumber on all sides of tree, and a 6" mulch bed over tree roots. Do not place fill or construction debris in half critical root zone of trees. Contractor is responsible for orchestrating staging areas for materials to minimize impact to the site. Contractor shall ensure no degradation of site occurs due to carelessness with trash, building materials, and unnecessary foot and vehicular traffic in areas not crucial to the work.

2.2 Grading:

Grade all areas indicated & adjacent transition areas with uniform levels or slopes between finish elevations. Shape and compact as required. Slope grade away from building for at least 5 feet @ a minimum grade of 5% at all sides. Fill all planting beds with min. 6" soil containing 25% compost, minimum 2" organic mulch. Coordinate with landscape architect. Final grading and drainage plans designed by others. Coordinate with landscape architect or civil engineer.

2.3 Sewer system:

General contractor to remove unused septic tanks. Provide septic system for entire project. General Contractor shall determine that proper slopes are available for adequate gravity flow from all house plumbing systems to new septic system. If adequate slopes are not available, contractor shall install a grinder pump to provide the flow needed.

2.4 Drainage:

See architectural drawings for locations of gutters and downspouts. Collect water from downspouts in subsurface drainage system and daylight away from building. Do not use the same piping for downspouts for other French drains.

2.4.1 Trench Drain: See architectural plans for specific locations adjacent to buildings.

2.4.2 Foundation Waterproofing/French Drains:

Provide French drains as shown in drawings. Discharge to daylight in locations shown. See architectural drawings for locations.

2.4.3 Area Drains:

Provide area drains as shown on site plan, discharge to daylight in locations shown. Coordinate with Landscape Architect

2.5 Pool and Spa: N.A.

2.7 Driveway:

Main Driveway to house shall be concrete. See site plan. Reuse existing concrete apron at street if possible. Review expansion joint layout with Architect prior to construction. Provide appropriate compacted base material, slope, and drainage in accordance with industry standards and as needed to prevent standing surface water and accommodate passenger vehicle traffic.

Existing asphalt branch driveway to Shop shall remain where possible. Provide new transition from new Main Driveway to existing asphalt driveway. Repair any potholes or faults in the existing asphalt.

2.8 Retaining Walls:

See drawings for location. For walls greater than 4' in height, provide structural engineering design compliant with local jurisdictional regulations. Discuss surface finish, cladding or texture options with Architect prior to forming.

2.9 Fence and Gate: N.A.

2.10 Water Well: N.A.

2.11 Propane Gas Tank:

See site plan for location of existing propane tank. (see also Plumbing division 15A of this specification) Discuss possibility of reusing existing propane tank, or connecting with natural gas supply at street.

3. Concrete

3.1 Compliance:

Refer to structural drawings, details and notes for specific execution, performance requirements, standards, and code compliance requirements.

3.2 Coordination:

Contractor shall provide that all sleeves, piping and conduits required for drainage, downspouts, plumbing systems, irrigation, electrical, data, A/V & security, floor plugs, steplights, HVAC systems, vents, etc. described in plans or specifications are accommodated in concrete work.

3.3 Masonry Lugs:

All masonry lugs shall extend to finish grade, unless noted otherwise.

3.4 Inspection:

Contractor shall notify architect and structural engineer 5 days prior to pouring concrete to arrange a site visit. Steel reinforcing placement, formwork, and weld plates shall be inspected by the structural engineer prior to pouring concrete.

3.5 Concrete Finish Floor:

Concrete finish floor at shop; provide smooth steel-troweled finish to structural slab. Discuss options and price for acid washing as needed for slip resistance, and options for sealing concrete.

Place concrete as flat and level as possible using highway screeds, laser screeds, vibrating screeds etc. Finish concrete after bleed water evaporates. Finish concrete to a smooth, flat, level, consistent steel troweled finish. Edges, around plumbing, stairs and risers must be finished by hand. Check for floor flatness and floor levelness specs.

Protection: The contractor shall be responsible for protecting slab during construction and alerting subcontractors of potential damage to surface. Protect finished floors after seal manufacturers recommended cure time using EZ cover by McTech Group or similar.

For finish floor at exterior patios and walkways flatwork: provide light broom finish to structural slab or flatwork.

Existing concrete floor at Art House: TBD, discuss finish with architect and owner.

3.6 Concrete Sills:

Site finish to match existing at master bedroom windows.

3.7 Termite Protection:

Provide metal termite shield system (Termi-Mesh or similar) mechanical termite control system or sand barrier (sand shall be 16 grit; diameter of 0.06 to 0.1 inches). Provide metal or plastic separation barrier between all exterior wood to concrete connections. (See also framing division 6.A.3 Borate treatment).

3.8 Concrete Retaining Walls:

See Site Work division 2 of this specification. Discuss surface finish and texture options with Architect prior to forming.

3.9 Driveways:

See Site Work division 2 of this specification

3.10 Truck Wash-out:

Recycle concrete residue when possible and treat wash-out water from truck after pour.

4. Masonry

4.1 General Requirements:

All masonry materials used for interior and exterior finish shall be reviewed and approved by Owner and Architect prior to construction.

4.2 Stucco: N.A.

4.3 Brick Veneer at Building:

Brick selection TBD, discuss with architect and owner. Discuss options for color, pattern, mortar, etc. with Owner and Architect. Contractor shall provide sample walls of min. 4' x 4' on site for Owner and Architect's selection process. See elevations, sections, plans and details for notes and layout of brick coursing.

4.4 Weep Holes:

Weep holes in accordance with code and ASTM requirements. Weep holes shall be located above masonry lugs and at lintels above windows and doors. MortarNet or equal cavity netting to be used behind all weep holes. Fill cavity with mortar below weep holes at grade to direct water to weep holes.

4.5 Stone Thresholds, Hearth extensions, and Steps:

Buff Lueders Limestone, see drawings. Clean, acid wash and seal stone with a non-yellowing sealer. Provide sample of grouted and sealed stone flooring for approval. Sample shall represent range of color one would expect to find in a delivery of selected stone. Assume that any grout between stones is properly released and cleaned from face of stone. Exposed edges shall be 2 ¼" tall, unless noted otherwise on drawings.

4.5 Stone Pavers:

Buff Lueders Limestone pavers with 2 ¼" exposed edges at steps.

4.7 Existing Load Bearing Stone:

Point up any holes or cracks in existing stone walls. Seal all existing load bearing walls inside and out.

4.8 Sealer at Cut Stone: Seal with non-yellowing, exterior grade, Miracle 511 Porous Plus Sealer or Aqua Mix Sealer's Choice Gold. Provide sample on several stones representing range of stone colors for Owner and Architect's review.

4.9 Masonry Anchors:

Provide standard code-approved corrugated metal anchors for attachment to wood framing. All anchors shall be hot-dip galvanized corrosion resistant metal meeting or exceeding current ASTM standards.

4.10 Interior Plaster:

See division 9, Finishes

4.11 Existing Masonry Fireplace:

Contractor shall evaluate functionality of existing fireboxes and make recommendation to assure that fireplaces draw adequately. If proper code compliant dampers do not exist, contractor shall retrofit fireboxes with operable dampers.

Living Room: wood burning fireplace

Primary Bedroom: provide new gas fireplace insert, see Equipment division 11 of this specification

4.12 Flashing:

Provide appropriate flashing at lintels, heads, and sills of openings in new masonry exterior veneers; at all locations shown on the drawings; and at any other locations as required to complete the integrity of waterproofed or damp-proofed surfaces.

4.13 Stone Countertops:

See Division 9.

5. Metals

5.1 Structural Steel:

Reference structural drawings and notes for specific execution, required observations by engineer, performance requirements, standards, and code compliance.

5.2 Steel Constructions:

Shall be in accordance with Drawings. Contractor to provide engineering as needed for guardrails, stairs, and assemblies not addressed in structural engineering documents. For exposed or visible steel: Grind smooth all joints.

For exterior assemblies, prime and paint at shop with 1 coat rust-inhibitive primer and 2 coats color. Touch up in field.

For interior assemblies, including exposed lintels, railings, and trim: prep surfaces to remove rust and mill markings; discuss finish options to achieve "raw steel" appearance with Architect and Interior Designer: wax, Penetrol or similar coating.

Discuss using Black Magic or other blackening agent to provide a more uniform appearance of areas receiving tooling or grinding. Provide shop drawings of all steel assemblies for Architects' review. Provide samples of finishes for discussion and approval.

5.3 Flashing and Gutters:

See Division 7.

5.4 Handrails & Guardrails:

Interior handrails shall be steel, with steel offsets. Exterior handrails and guard rails shall be painted steel assembly. See drawings. Contractor shall provide shop drawings to architect prior to construction. See 5.2 Steel Constructions.

5.5 Metal Siding:

See Division 7.17 Metal Siding.

6A. Rough Carpentry

6A.1 General Notes:

See structural notes for specific execution, required observations by engineer, performance requirements, standards, and code compliance.

Stud framing at all *exterior* walls shall be 2x6 unless noted otherwise. See drawings.

Stud framing at all *interior* walls shall be 2x4 unless noted otherwise, or thickened to accommodate pocket doors, plumbing, structure, etc. Some interior walls may be continuations of exterior 2x6 walls. See drawings.

Required adjustments of the framing to allow proper layout shall be reviewed with Architect prior to construction. Coordinate framing layout with lighting and HVAC location requirements.

Truss: Coordinate truss layout with lighting and HVAC location requirements. Review truss layout and shop drawings of prefabricated trusses with Architect prior to ordering and/or setting trusses. Required adjustments of the framing to allow proper layout shall be reviewed prior to construction.

All door and window headers on exterior walls shall be sized for specific loads and framed to allow for 1" rigid insulation where applicable.

6A.2 Treated Lumber:

Comply with guidelines of American Wood Protection Association Standard U1 Use Category System. All lumber in contact with ground, masonry, concrete or subject to weather shall be treated lumber. Any structural lumber exposed to weather, ground or standing water, or within 18" of grade in crawlspace of house shall be ACO-treated lumber. Use approved fasteners as recommended by manufacturer. Sill plates within the weatherproofed building envelope to be borate-treated. Provide foam or rubberized flashing membrane sill gasket at exterior walls. Unexposed framing for sleepers & structure at deck shall be treated lumber.

6A.3 Wood Treatment: Provide borate treatment, Bora-Care or equal, to wood framing before insulating and closing walls to prevent mold and insect infestation. Discuss options with Owner and Architect.

6A.4 Roof Decking: See structural drawings. See division 6B for exposed decking.

6A.5 Blocking: Block vertically at all closet locations for closet rods. Provide blocking for cabinets, handrails, closet rods, and bathroom fixtures and accessories. Provide blocking for grab bar in all shower and tub locations. Grab bar blocking shall be 2x6 or larger and the centerline shall be 34" above and parallel to the interior floor level. Provide fire-stop blocking as required by Code.

6A.6 Floor Framing: All new subfloor decking over framing and at wood stair shall be 1 1/8" Huber AdvanTech plywood or equivalent. Install in accordance with manufacturer's recommendations with AdvanTech subfloor adhesive.

6A.7 Stair Framing: Tread run is measured horizontally from nosing to nosing. Provide 1 1/8" Huber AdvanTech subfloor at treads and risers over 2x stair stringers.

6A.8 Mold and Mildew:

Only wood that is free of mold and mildew is acceptable.

6A.9 Protection:

Wood stored onsite shall be protected from moisture damage by elevating it off the ground and covering it with a tarp during precipitation.

6A.10 Drying:

Wood that becomes wet must be quickly dried by cross-stacking to promote aeration. It shall have less than a 16 percent moisture content, as tested by a moisture meter, and must be free of all sign of mold to be acceptable.

6A.11 Wood Adhesives:

Use solvent-free, formaldehyde-free adhesives.

6A.12 Special procedures for interior garage walls:

Follow current code procedures for airtight gypsum board installation between garage and living spaces of home. Install weather-stripped, fire-rated door between garage and home. Thoroughly seal the door sill with one of the approved sealants. Seal all electrical penetrations between garage and home with aluminum tape.

6B. Exposed Carpentry and Trim Work

6B.1 General Notes:

All exposed exterior materials shall be free of checks, splits, mill marks or other visible defects. Hard tight knots only (unless specified as clear). All exposed lumber shall be S4S unless noted otherwise. All exposed sides shall be sanded. Back-seal all exterior trim and soffits before installation. All framing materials to be formaldehyde-free.

Whenever an inch symbol (") follows a trim or lumber dimension, an actual dimension is denoted (i.e. 1"x 4" is full 1" and full 4"). Whenever a dimension appears without the inch symbol, a nominal dimension is denoted (i.e. 1x4 is 3/4" x 3 1/2").

6B.2 Exposed Exterior Framing and Carpentry (rafter tails, decking):

All exposed framing shall be square-edged, free of heart center (FOHC) and free of wane (FOW), except for reclaimed material. Use appropriate fasteners for treated lumber. See section 6C for exposed interior wood specifications.

- | | |
|-------------------------------|--|
| • stained eave, t&g decking: | Douglas Fir, #1 & better "premium exposed" |
| • stained trim: | Douglas Fir, #1 & better "premium exposed" |
| • painted trim | Douglas Fir, appearance grade |
| • exposed beams: | Douglas Fir, FOHC, appearance grade |
| • exposed decking at terrace: | see division 7.9 Roofing for deck system |
| • gluelams or paralams: | architectural stain grade |

6C. Interior Millwork and Trim

6C.1 General Notes:

All interior trim and cabinetry material shall be

Painted cabinets: A-grade birch veneer plywood with taped edges and solid birch face frames.
Stained cabinets: species, TBD. Bid as plain-sawn walnut.

6C.3 Hardware:
Operating hardware to be J. Blum, Hafele, Louis & Co., or equal as approved by Architect.
Door hardware: Cabinet doors hung from fully concealed European style, self-closing, soft-closing, adjustable hinges.
Drawer hardware: Provide full-extension, self-closing bottom-mounted drawer glides. Oversized drawers shall have heavy-duty hardware.
Cabinet Door and Drawer Pulls: allow \$20.00 per pull.

6C.4 Interior Trim:
See drawings and details for painted vs. stained trim and for specific sizes and profiles. All trim shall have biscuit splines at intersections as necessary. Provide mockups of typical trim as drawn for architects' and owners' review.

- Painted trim material: clear poplar
- Stained trim material: Douglas Fir, #1 & better "premium exposed"
- typical window and door trim: see drawings for size & shape
- typical baseboard: see drawings for size & shape

6C.5 Wood Floor:
Consult with Architect for exact flooring specification concerning wood selection, screening, staining, etc. Provide samples of wood species and finishes to Architect and Owner for approval prior to construction. Bid as engineered, site-finished white oak flooring, 4mm min wear layer, sanded and sealed. Provide allowance of 15.00/sf. Installed.

6C.6 Wood Steps:
Match species and finish of wood floor. Provide solid laminated risers and treads.

6C.7 Stained Interior Wood Siding and Ceilings:

- 1x6, t&g, Primeline clear douglas fir. Provide 1/8" gap appearance between boards.

6C.8 Interior Painted Wood Ceilings:

- 1x6 t&g clear Poplar, square edge.

6C.10 Interior Painted Wood Siding:
1x6 T&G Poplar, with 1/8" square edge gap. Provide layout with storyboard and order with tongue configuration to allow full boards from floor to bottom of window.

7. Thermal and Moisture Protection

7.1 General Note:
Contractor to provide and install all flashing, sealants, and installations necessary to ensure a weather-tight, air-sealed building envelope. Coordinate products to ensure compatibility.

7.2 Foundation Vapor Barrier:
Refer to structural drawings.

7.3 Rough Opening Protection:
Provide rubberized self-adhesive or equivalent peel & stick water protection continuous lengths around all window openings. Place in accordance with window manufacturer's recommendation.

7.4 Exterior Wall Sheathing:
Sheath all exterior stud walls with 1/2" CDX plywood. Refer to structural drawings for performance requirements.

7.5 Exterior Wall Drainage Plane:
Install Poly Wall Alumna Flash Plus, 40 mil, peel 'n' stick house wrap. Install house wrap per instructions/recommendations, continuously over sheathing plywood sheathing.

At below grade stone walls enclosing conditioned space, install MasterSeal HLM 5000 (or similar as approved by Architect) liquid cold-applied elastomeric waterproofing membrane system as drainage plane. See details for closure at top of waterproofing layer.

In crawlspace: at exterior stone walls and floor, install MasterSeal HLM 5000 (or similar as approved by Architect) liquid cold-applied elastomeric waterproofing membrane system as drainage plane.

7.6 Thermal Insulation:
All insulation shall be free of CFC, HCFC, VOC and formaldehyde. All door and window headers in exterior walls shall be insulated with 1" rigid insulation, where applicable. All insulation to have flame spread ratings to meet current code.

Roof Insulation shall meet or exceed current applicable codes. Install all roof insulation at plane of roof making sure that all HVAC equipment and ducts are within conditioned space. Attic spaces are sealed, not ventilated.

Insulation between structure:
Exterior Wall Insulation: 5 1/2" mineral wool batt in wall cavity

Continuous insulation:
At walls: Rigid 1 1/2" mineral wool insulation, outside of structure and drainage plane
At roofs: Rigid 2" mineral wool continuous rigid insulation, above structural decking and membrane
Wine room ceiling, floor and framed walls: continuous rigid insulation, R-21
At crawlspace: Rigid 1 1/2" mineral wool insulation, at exterior stone walls

7.7 Sound Attenuation:
Wall sound attenuation: Provide R-11, sound attenuating batt insulation or blown-in fiberglass cavity fill on any interior walls noted in drawings, at all walls surrounding bathrooms, and at any other plumbing walls.

Floor/Ceiling Sound Attenuation above Tanja's office and laundry:
Install 7/8" tall metal hat channels below trusses with 1/2" sound board before installing finish material.
Additionally, provide R-11, sound attenuating batt insulation between trusses above this room.

7.8 Air Sealing:
Provide low-pressure polyurethane foam sealant between window and door frames and rough openings, at intersections between wall framing, floors and ceilings, and at other locations to provide an air-sealed building envelope.

7.9 Roofing

Metal Roof:

a. Main and Art House
Standing seam: 24-gauge standing seam Kynar finished painted metal roof. Seams shall be 1 1/4" inches tall. Panels and seams shall be roll-formed in continuous lengths.
All gutters, downspouts and roof flashings shall match the color of the metal siding, see drawings and notes.

b. Workshop
Provide 24-gauge C-panel 7/8" corrugated bonderized metal panel (paint grip.) Provide roof panels in continuous vertical runs. All gutters, downspouts and roof flashings to match finish, see drawings and notes.

TPO Roofing:
Ballasted thermoplastic membrane roofing by Firestone Building Products Co., Carlisle Syntec, Inc. or equal. Install per manufacturer's instructions. Gravel ballast size shall be between 3/4" - 1 1/2".

Roofing and deck system @ dining deck above master bedroom:
TPO roofing, install in accordance with manufacturer's recommendations. Provide protective scrim sheet before applying any ballast over TPO.

Adjustable Pedestal Deck System: Manufactured by Tile Tech Paver Systems. Provide protection matt between TPO roofing and bottom of pedestal. Provide Tile Tech Paver Ipe Wood Tile, coordinated with the installation of the pedestals. Discuss final dimension of Ipe Wood Tiles with Architect and Owner. Bid as 2" X 6". See plan for configuration.

7.10 Roofing Underlayment at metal roofs:
Roof deck must be solid sheathed and cleaned of all objects which could puncture underlayment. Entire roof deck shall be covered with a minimum of one layer of 30 pound felt roofing underlayment laid and lapped horizontally starting at eaves. All roofs flatter than 2:12 shall be covered with GRACE WIP HT300 high-temperature rated peel & stick ice and water shield roofing underlayment, or similar as approved by Architect. Follow manufacturer's recommendations for water tight installation. Lap underlayment a minimum of 12" over hips and ridges from both sides. Apply 36" wide strip centered over ridge. Extend 6" up abutting vertical surfaces. Install all roofing in accordance with manufacturer's recommendations. Cover with specified roof. Ensure compatibility of water proofing products.

7.11 Skylights:
At Kitchen: Velux, FCM fixed curb-mounted insulated skylights, 3046. Glazing: Insulated Sun2, frosted.
At Master Closet: Velux FCM curb-mounted insulated skylight, 2234. Glazing: Insulated Sun2, frosted.

Install per manufacturer's instructions.

7.12 Flashing/Sheet Metal:
All sheet metal to be as indicated on drawings and shall conform to Code and standard industry (SMACNA) practice. All roof flashings shall match roof and have hemmed closed ends. Provide through wall flashing based as needed to complete a water tight assembly. Provide hemmed, closed-end window head flashings at all windows exposed to weather. Provide copper steel pans at all exterior doors and sidelights, and at windows that engage the floor. Notify Architect of any possibility of galvanic reactions of dissimilar metals.

7.13 Roof Penetrations:
Run all vents through roof and terminate with a rain proof cap. Gang vents as possible to minimize penetrations. Avoid penetrations at roof planes that are visible from the pool.

7.14 Gutters, Rain Chains and Downspouts:
Gutters to match metal siding color and finish
Box Gutters: 5" box gutters. See Detailed drawings of box gutters.
Round Gutters: 6" half-round gutters with modified, adjustable #10 combination bracket.
See drawings for locations

See roof plan for location of all gutters. Provide 4" round downspouts, and. Run downspouts in long vertical runs and provide standoff brackets as required to minimize angles and jogs. See exterior elevations and building sections for more detailed location of downspouts. See site plan for information about directing water from roof.
See Detailed drawings of box gutters.

7.15 Caulk:
Henkel Consumer Adhesives: H2U Acrylic Urethane Sealant (or equivalent). Match sealant with appropriate application, install in accordance with manufacturers recommendations.

7.16 Garage/Living Space Separation:
Follow current code procedures for airtight gypsum board installation between garage and home. Install finish surface over one layer of 1/2" Zip Wall taped per manufacturer's instructions. Install weather-stripped door between garage and home. Thoroughly seal the door sill with one of the approved sealants. Seal all electrical penetrations between garage and home with aluminum tape.

7.17 Metal Siding:

a. Main House
Provide 24-gauge standing seam roll-formed Kynar finished metal for vertical cladding. Seams shall be 1" tall. Take precautions by providing separation of different metals to avoid galvanic action. Refer to drawings for attachment and spacing and alignment of seams.

b. Workshop
Provide 24-gauge C-panel 7/8" corrugated bonderized metal panel (paint grip) for horizontal metal cladding. Take precautions by providing separation of different metals to avoid galvanic action.

7.18 Special Construction at Existing Load Bearing Stone Walls:
Provide a one-component, moisture-curing bitumen-modified elastomeric waterproofing membrane below grade past depth of French drains and exterior of stone walls. Accompany membrane with drainage matt.
Provide one layer of 1 1/2" Polyiso insulation board over membrane drainage matt. Install perforated drain below floor level and back fill with gravel. See detail.

7.19 Polygal @ Workshop:
Polycarbonate multi-wall sheets with Mega-lock glazing system. Panels to be 16mm Titan Sky multiwall polycarbonate. Color to be determined.

8. Doors and Windows

8.1 General Notes - Doors:
All door patterns as in accordance with schedule and drawings. See floor plans for door hinging. Use tempered or safety glass and egress hardware in locations required by Codes. All doors shall meet or exceed the Design Pressure ratings established by the IPC for the location, orientation and conditions of the specific installations called out in the construction documents. All doors that serve as part of a pool enclosure are to have listed and labeled water entrance alarms in accordance with applicable codes.

8.2 Exterior Doors

a. Aluminum Clad Exterior Doors:
Windsor "Pinnacle" series aluminum clad patio, or French-type. Doors to be simulated divided light. See door schedule for exceptions.

- Cladding color: Red River Rouge
- Interior finish: see door schedule
- Glazing: Insulated Southern Low-E glass to comply with current codes.
- Hardware: to be determined by design team, Multi-point lock system
- Spacer color: bronze
- Sash Profile: square edge
- Grille Pattern: equal lite typical, see elevations for each door
- Grille Profile: 5/8" flat "contemporary" divided lite

b. Aluminum Clad Exterior Doors:
Weather Shield Contemporary Collection:

- Cladding color: Brick Red
- Interior finish: see door schedule
- Glazing: Insulated Southern Low-E glass to comply with current codes.
- Hardware: to be determined by design team, Multi-point lock system
- Spacer color: bronze
- Sash Profile: square edge
- Grille Pattern: equal lite typical, see elevations for each door
- Grille Profile: 5/8" flat "contemporary" divided lite

c. Specialty Doors:
See schedule and door elevations for exterior doors 01, 02, 04, s-01. Cladding, glazing, hardware and finish to be determined by design team.

e. Metal Exterior Door @ Main House snd Workshop:
Flush panel hollow metal door. Color and hardware to be determined by design team.

d. Aluminum Slider @ Workshop:
Metal-craft:

- Cladding color: to be determined by design team
- Glazing: Insulated Southern Low-E glass to comply with current codes.
- Hardware: to be determined by design team
- Finish: to be determined by design team

f. Specialty Door @ Workshop:
See schedule and door elevations for exterior door 63. Cladding, glazing, hardware and finish to be determined by design team.

Note: Contractor to provide all hinges, latches, thresholds, door bumpers, and weather-stripping as necessary as part of base contract price. All exterior doors shall be keyed alike where possible. All hardware selections to be approved by Architect and Owner prior to purchase.

8.3 Interior Doors: See drawings and schedules for locations and quantities:

Shaker style doors: 1 3/8", 3-panel, frame and flat panel doors, square-edged sticking. Simpson, Supador, TruStile or equal as approved by Architect, painted. See door schedule for exceptions.

Slab doors: 1 3/8", flush slab solid core doors. Simpson, Supador, TruStile or equal as approved by Architect, painted. See door schedule for exceptions.

Special note concerning pocket doors next to swing doors. Install pocket doors in such a way that the head trims of pocket doors aligns with the head trim of typical interior swing doors. Trim bottom of pocket door if necessary to achieve alignment.

Hardware: TBD by design team, square butt hinges
Contractor to provide all hinges, latches, thresholds, and door bumpers as necessary as part of base contract price.

8.4 Shower Door: Frameless glass swinging door, verify glass selection with Owner and Architect before order.

5. Overhead Garage Doors:

Main house: Insulated smooth flat-panel overhead door w/motorized opener. Clad with vertical t&g (stained douglas fir or mahogany) wood.

Workshop @ garage: Galvanized roll-up overhead door. Verify finish is allowable with jurisdictional authority.

Workshop @ shop (conditioned): Insulated galvanized roll-up overhead door. Verify finish is allowable with jurisdictional authority.

8.6 General Notes - Windows: Use tempered or safety glass and egress hardware in locations required by Code. See window schedule and window types at drawings. See building elevations for window configuration and hinging. Contractor to verify that size and installed height of windows in bedrooms meets code egress requirements. All windows supplied shall meet or exceed the Design Pressure ratings established by the International Residential Code for the location, orientation and conditions of the specific installations called out in the construction documents. All ground floor windows with sills 48" or less that serve as part of the pool enclosure are to have listed and labeled water entrance alarms in accordance with applicable codes.

8.7 Aluminum Clad Wood Windows:
Windsor Pinnacle aluminum-clad wood windows in accordance with schedule and drawings. Provide screens at operable windows.

- Cladding color: Red River Rouge
- Interior Finish: see window schedule
- Glazing: Insulated Southern Low-E glass to comply with current codes.
- Hardware: to be determined by design team
- Spacer color: bronze
- Sash Profile: square edge
- Grille Pattern: 4 equal lite typical, unless drawn otherwise; see elevations for each window
- Grille Profile: 5/8" tall putty with inner bar

8.7b Aluminum Clad Exterior Windows:
Weather Shield Contemporary Collection:

- Cladding color: Brick Red
- Interior finish: see window schedule
- Glazing: Insulated Southern Low-E glass to comply with current codes.
- Hardware: to be determined by design team, Multi-point lock system
- Spacer color: bronze
- Sash Profile: square edge
- Grille Pattern: equal lite typical, see elevations for each door
- Grille Profile: 5/8" flat "contemporary" divided lite

8.7c Vinyl Window at Master Bath Shower:
Windsor Next Dimension Vinyl window in accordance with schedules and drawings.

- Color: Red River Rouge
- Glazing: Insulated Southern Low-E glass, meets or exceeds current codes

8.7d Aluminum Windows at Workshop:
RAM Aluminum windows in accordance with schedules and drawings.

- Color: to be determined by design team
- Glazing: Insulated Southern Low-E glass, meets or exceeds current codes
- Hardware: to be determined by design team
- Finish: to be determined by design team

8.9 Skylights: see Division 7.

9. Finishes

9.1 Lath & plaster (stucco): Add skim coat to existing walls with plaster and at stem wall of stair to lower level.

Interior Skim-Coat Plaster: Touch up existing interior plaster walls.

9.2 Gypsum Wall Board (gyp board):
Interior gyp board, 1/2" at walls and 5/8" at ceilings, unless otherwise noted. Tapered edge type with correct Underwriters Laboratory label design number. Water resistant board at all wet location walls, DensArmor Plus or equivalent. Cementitious backer board at floor tile locations over wood subfloor, HardieBacker or equivalent. Gyp board shall be screw fastened in accordance with local Code and manufacturer's suggested installation practices. Provide smooth, sanded, flat finish. The only texture will be the nap of the painter's roller. Square corners.

9.3 General Notes - Tile:
Install in accordance with manufacturer's specs and T.C.A. Handbook requirements. Provide trim tile, cove and bullnose as required. Line up all joints unless noted otherwise. Clean tile face to remove all grout & bedding. Protect all work upon completion. Thin set wall tile as noted on drawings, Laticrete or equivalent mortar as appropriate for tile type, installation location, and substrate type. Mud set all shower floor tile and as noted in the drawings. Provide waterproofing membrane in wet locations, Laticrete "Hydro-ban" or equivalent. Laticrete "Permacolor" or similar cementitious grout. Provide color-matched, location-appropriate caulk as needed. Contractor to ensure compatibility and appropriateness of tile installation products. Review tile layout with interior designer and Architect after tile selection is made and prior to performing the work.

9.4 Tile Allowances:
Allow \$22.50/s.f. material only.

9.5 Plastic Laminate Counters: N.A.

9.6 Slab Countertops:
See drawings for locations and thickness (3cm typical). Pencil edge. Square corners. Review joints in countertops with Architect prior to cutting stone.
Allow \$115.00/s.f., final selection TBD.

9.7 Stainless Steel Countertops: N.A.

9.12 Painting:
All colors to be selected by Architect or Owner. Samples to be provided by Contractor upon request by Architect. Contract base price shall include 3 color for millwork, doors, and cabinets, 2 colors for walls and ceilings. All painted surfaces shall receive one coat primer and two color coats unless noted otherwise. Temperature shall be above 50 degrees and wood shall have moisture content below 20% before painting. All interior paints are Low-VOC or Zero-VOC. VOC content not to exceed 100 grams per liter. Paints and stains shall be free of urea-formaldehyde. Paint to be Sherwin Williams, Benjamin Moore, or equal.

Painting Contractor to protect adjacent work and clean and remove all debris and provide Owner with clearly labeled excess quantities of each paint used at end of job. Contractor is responsible for field priming at various stages and shall coordinate with paint Sub-Contractors as required. Roll all gyp. board walls. The only texture will be the nap of the painter's roller.

Interior Caulking: Scribe all cabinets and baseboards to walls to avoid the use of caulk. Before applying any interior caulk, contractor shall provide sample of caulk to review with architect.

9.13 Staining:
All stain colors to be selected by design team. Exterior stain shall be Benjamin Moore Arborcoat, Lifetime Valhalla or equal. Design team to provide sample/selection of intended stain colors; contractor shall coordinate with painter to provide samples to match and refine intended color and finish on the same wood or veneer that will be used for the project for siding, decking, cabinets, and other stained assemblies.

11. Equipment

11.1 General Notes:
All equipment to be provided and installed by contractor unless noted otherwise. Contractor to verify all dimensions and utility requirements prior to installation of equipment or other affected work.

11.2 Appliance List:
This list is for reference only. Consult Owner for complete list prior to purchase.

Kitchen:

- (1) 30" freezer
- (1) 36" refrigerator
- (1) Dishwasher
- (1) 48" range
- (1) vent hood insert
- (1) 30" Steam Oven
- (1) 24" Microwave Drawer
- (1) 15" ice maker

(2) Disposals (one at main sink, the other at coffee bar)

Utility Room:

- (1) Washers (install Owner's existing appliance)
- (1) Dryers (install Owner's existing appliance)

11.4 Bath Accessories:
Provided and installed by Contractor. Allow \$265.00 per bath. Final selection TBD.

11.5 Photovoltaic System:
House to be prewired for photovoltaic panels.

11.6 Drop Stair:
Contractor to verify sizes and specs for clearance allowances, configuration and ceiling heights
Rainbow Attic Stair, Star 22x36

11.7 Central Vacuum: N.A.

11.8 Water Softener:
See division 15A Plumbing

11.9 Water Heaters:
See division 15A Plumbing

11.10 Natural Gas Powered Generator:
Discuss alternatives with Owner for size and power.

11.11 Pool Equipment: N.A.

11.12 Prefabricated Fireplaces:
TBD, discuss options with architect and owner.

15A. Plumbing

15A.1 General:
Include all required accessories including shut-offs and clean outs. Provide components that prevent back siphoning or cross connections. Provide components which insure steady stream of water at the temperature selected. See note at Division 7.11 regarding roof penetration locations.

15A.2 Piping:
All new PEX water supply lines. Insulate all drain line traps and hot & cold water pipes in under floor areas or areas subject to freeze with polyethylene or fiberglass self-sealing pipe insulation, in accordance with code. Provide circulation loop for all fixtures on hot water.

Use cast iron drain risers and lines where appropriate for sound dampening of plumbing system. Discuss with Architect and Owner any sound attenuation details available for the plumbing installation.

15A.4 Hose Bibs:
See drawings for locations. Freeze-proof wherever possible.

15A.5 Water Softener: N.A.

15A.6 Water Heaters:
Provide the following tankless gas water heaters at these locations. Plumber to verify size and flow requirements with demand of selected plumbing fixtures. Unit to have a minimum of 0.90 efficiency. Provide Navien NPE-A series or equivalent on a recirculating loop.

- Main house: serves kitchen, powder bath, laundry and coffee bar, located in attic above bedroom 3.
- Bedroom wing 2nd level: serves bath 1 and 2, located in attic above bedroom 3.
- Lower level: serves primary bathroom, located in crawlspace below primary bathroom.
- Robert's office: serves office bath, exterior-mounted on north wall of office in stone jacket.
- Shop: serves bath, locate high up in closet across from bath.

15A.8 Gas Connections:
Provide gas hookups to all gas appliances shown in drawings or listed in specifications. Coordinate with contractor for lists of appliances run from gas.

15A.9 Flood Sensors:
Discuss costs and benefits of providing water flooding sensors at plumbing fixtures and water appliances. Discuss options and locations with Owner.

15A.10 Fire Suppression System: N.A.

15A.11 Plumbing Fixture Schedule:
For reference only, Consult Owner for complete list before purchasing.

Coffee Bar:

- (1) sink
- (1) faucet

Kitchen:

- (1) sinks
- (1) faucets (1 or 2)

Powder room:

- (1) lavatory
- (1) faucet
- (1) toilet

Laundry:

- (1) sink
- (1) faucet

Primary Bath:

- (2) lavatories
- (2) faucets
- (1) toilet
- (2) shower sets
- (1) tub
- (1) tub filler

Bath 1:

- (1) faucet
- (1) lavatory
- (1) toilet
- (1) tub (slide in)
- (1) shower set w/ tub filler

Bath 2:

- (1) faucet
- (1) lavatory
- (1) toilet
- (1) tub (slide in)
- (1) shower set w/ tub filler

Shop Bath:

- (1) faucet
- (1) lavatory
- (1) toilet
- (1) shower set

Discuss options for future sink at shop with architect and owner.

15A.12 Washer/Dryer outlet box:
Provide washing machine water supply & dryer vent outlet boxes recessed in frame wall at each washer/dryer location shown in plans.

15B. Heating, Ventilation and Air Conditioning

Reference MEP drawings from Positive Energy and notes for specific execution, performance requirements, standards, and code compliance.

15B.1 Mechanical/Electrical General Provisions:
See Mechanical Engineers Drawings. Report any discrepancies to architect between these specifications and the Mechanical Engineer's specifications before proceeding with purchase and installation of products or systems.

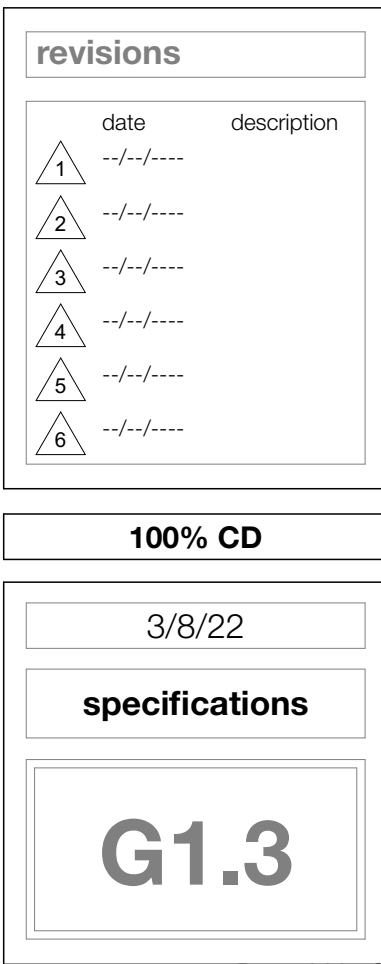
Coordinate mechanical and electrical divisions with other trades affecting or affected by same. Examine each section of the specification for requirements which affect the work of other sections and coordinate scheduling to insure steady progress of all work under the contract. See Mechanical Electrical drawings. HVAC subcontractor shall meet with Architect and

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Contractor on site to discuss location of chase locations and return air registers based on existing conditions.

15B.2 Installation Requirements:
Contractor shall review architect's register layout and make suggestions as required for adequate heating and cooling of all habitable spaces. Submit Manual J calculations, duct layout, sizing, & register locations to contractor and architect for approval prior to construction. Coordinate ductwork with other trades. Provide condensate drain for mechanical systems at locations to be approved by Architect. During construction, the ends and openings of any partially installed ductwork or open vents shall be sealed to avoid the introduction of dust and debris from construction. Ductwork must be professionally cleaned prior to occupancy, using true HEPA filtration vacuums. No chemicals shall be used during the cleaning.

15B.3 Performance Requirements / Guarantee:
System shall be designed, balanced, and installed to provide for distribution to all habitable spaces and to maintain 75-degree F temperature in all conditioned spaces with 102-degree F exterior temperature and 75-degree F temperature in all conditioned spaces with 25-degree F exterior temperature. Fabricate and install in accordance with current ASHRAE guide, Local Codes, SMACNA and NFPA requirements.

15B.4 Testing & Adjusting:
Air flow and/or water flows (where applicable) balanced by anemometer or velometer & by temperature for optimum conditions.

Direct Duct Pressure Test:
Refer to MEP drawings.

Blower Door Test:
Refer to MEP drawings.

System Air Flow Test:
Refer to MEP drawings.

Gas Appliance Safety Back-Draft Test:
If gas is present within the envelope of the house, it must pass a Gas Appliance Safety Back-Draft Test.

15B.5 HVAC filtering:
Provide Aprilaire "Space-Gard" or equal, HEPA-type filters at each unit. Contractor to size unit as appropriate for air flow requirements.

15B.6 HVAC Controls:
Thermostats to be programmable type, discuss locations with architect.

15B.7 Air Registers:
Provide commercial-grade aluminum registers: Price, Titus or equal as approved by Architect. See ME drawings for designations of linear bar grills, curved-blade registers, floor registers, flanged or mud-in registers, etc. Bar grills at sidewall registers and curved blades at ceilings. Provide one way registers whenever possible. Proportions of grills preferred to be long & narrow rather than square. Where supply and return grills are aligned in the same room, match sizes. Registers shall center on lighting and other centerlines shown on RCP. Paint all ceiling and wall registers to match surrounding surface, color to be selected by Architect.

15B.8 Equipment Bases:
Contractor to provide min. 4" thick concrete pad or cast in place concrete under condensing units as necessary for horizontal stability and landscape installation, or as specified by MEP engineer. See site plan for approximate locations.

15B.9 HVAC Piping:
As recommended by manufacturer. Insulate all refrigerant piping in walls to prevent sound transmission & condensation.

15B.11 Condensation Drain:
Provide 2" deep galvanized pan with adequate condensation drain and overflow protection float switch.

15B.12 Exhaust Fans:
Bathroom exhaust fans installed with timer or a humidistat, or as specified by MEP engineer.

15B.13 Below-floor radiant heater:
See plans for general location of radiant floor heating pads. Install in accordance with manufacturer's recommendations.

15B.14 Dryer Vent:
Dryer vents and other mechanical vents on exterior of building to be Seiho model SFZ or SFCZ as needed.

15B.15 Down draft exhaust: N.A.

5B.15 Vent hood exhaust: 1200 CFM roof-mounted remote ventilator, or as specified by MEP engineer. Provide make-up air as required for air pressure balancing of HVAC systems. Verify with Owner's selection and report any discrepancies. Vent hood insert unit shall be selected by Owner. Provide decorative steel shroud suspended from ceiling around insert. See mechanical and architectural drawings.

16. Electrical

16.1 General:
Size of service required shall be calculated by contractor in accordance with current Codes. Coordinate electrical divisions with other trades affecting or affected by same. Examine each division of the spec for requirements which affect the work of other divisions and coordinate scheduling to insure steady progress of all work under the contract. Provide electrical hookups to all equipment shown on drawings or listed in specifications. Ground to water pipe. Provide lighting and power required by code in attic and at all mechanical locations. See ME plans and RCP for light fixture placement and notes as well as control systems for lighting and other switched devices.

Conduit (where applicable): required at all service motor feeders & panelboard feeders and all wiring buried in earth or concrete or in damp locations. If plastic conduit is used provide appropriate ground wire.

Individual circuits: Air conditioning, pumps and heaters, registers and all other motor controls on separate circuits from lighting. Check with owner and alarm installer for any special circuits needed.

16.2 Electrical Outlets:
Shown at lavatory counters, sink counters or any other wet location shall be GFCI (Ground fault circuit interrupter) type outlet and circuit. Exterior outlets shall be GFCI and shall be mounted in weatherproof cover if exposed to weather. Bedroom outlets shall be AFCI (arc fault circuit interrupter).

16.3 Electrical Equipment:
Panels and other equipment to be Square D, General Electric, or I.T.E. Provide "solar ready" electrical panels for future PV installation. Coordinate installation with other equipment, including generator. See specification section 11, equipment.

16.4 Switches / Outlets:
See Lighting Drawings, series LD. Color shall be determined by Architect and Owner. All switches and outlets shall be standard faceplates.

16.5 Wiring:
All wiring shall be copper.

16.6 Final Locations:
Drawings attempt to locate fixtures, outlets and switches as accurately as possible at drawing phase. Contractor shall arrange pre-electrical meeting to review these attempts and adjust accordingly. Architect reserves the right to make any reasonable location changes.

16.8 Speakers, Network, Security, Misc. Low-voltage, Cable, etc.:
Provide Electrical Non-Metallic (ENT) threaded tubing, see ME plan for locations.

Design of low-voltage devices and services such as speakers, network, phone, security, etc. is not in Architects scope. Low-voltage consultant to provide shop drawings to coordinate location of devices with other systems in the project (light fixtures, switches and outlets, HVAC registers, etc.)

16.9 Smoke Alarm and Carbon Monoxide Detector:
Hardwire in accordance with applicable Code. Discuss with Architect on site location of all units as required by Code. See ME plans.

16.10 Landscape Lighting:
Provide circuits for landscape lighting. See Lighting Drawings, series LD. Coordinate with Landscape Designer.

16.11 Pool Lighting and Controls:
N.A.

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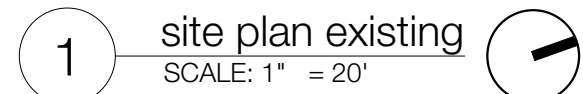
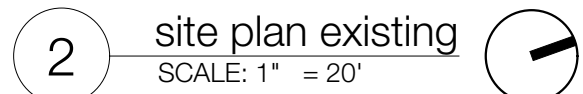
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specifications	
G1.4	

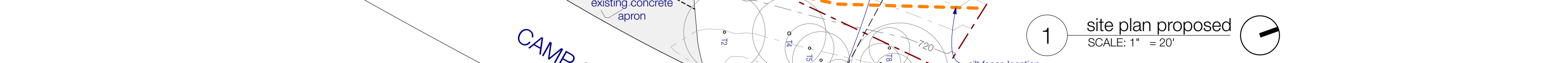
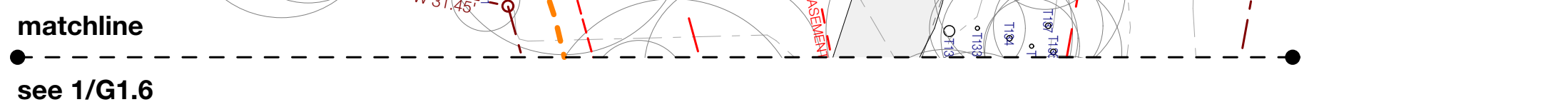
 = tree to be removed

note
Trees to be removed are shown on **G1.5**
site plan existing with the tree number
bolded and underlined, and with tree trunk
shaded.



 = tree to be removed

note
Trees to be removed are shown on **G1.5**
site plan existing with the tree number
bolded and underlined, and with tree trunk
shaded.



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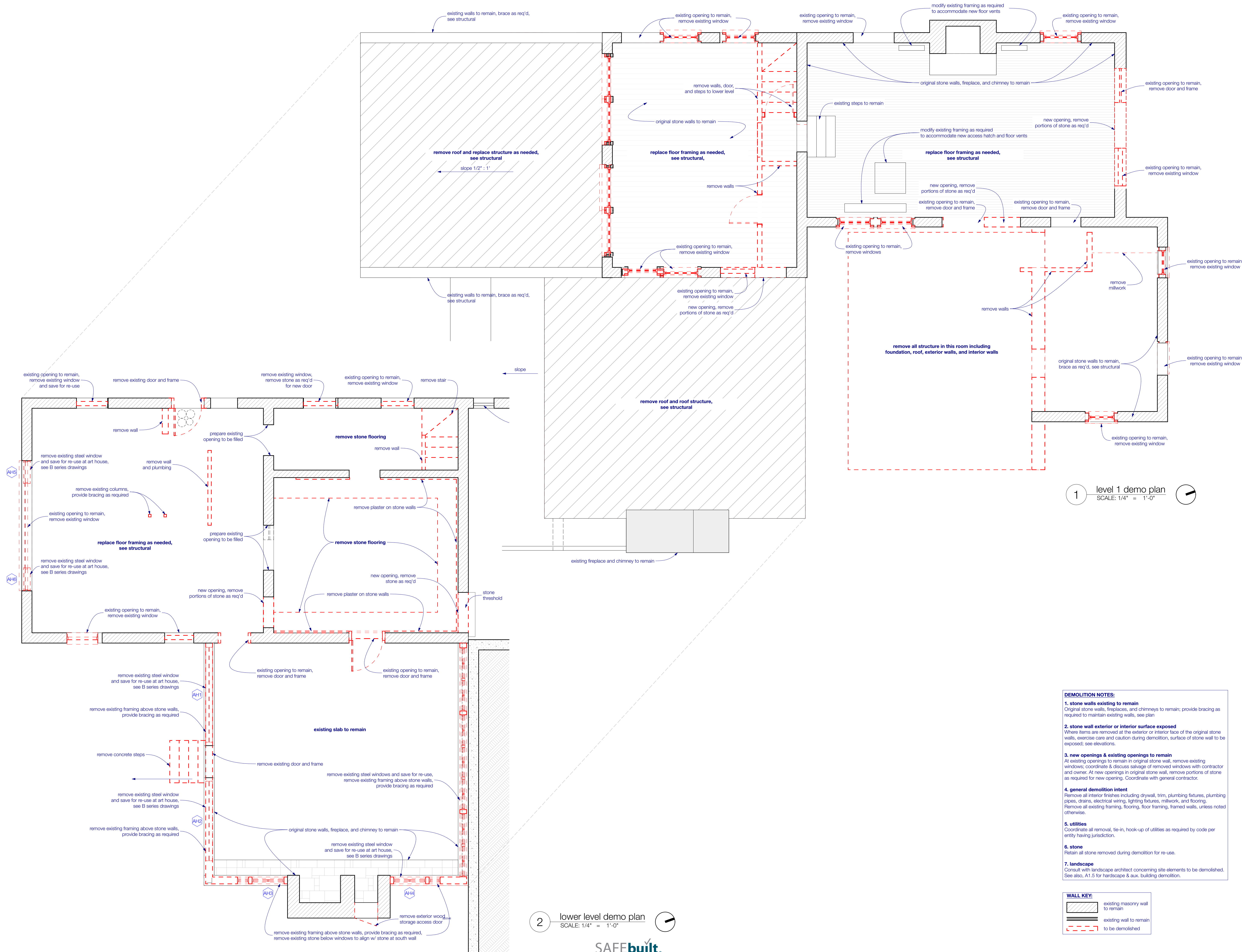
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site plan proposed

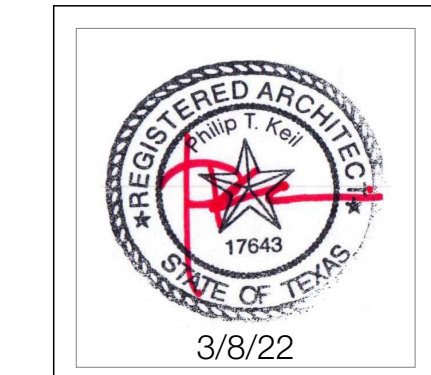
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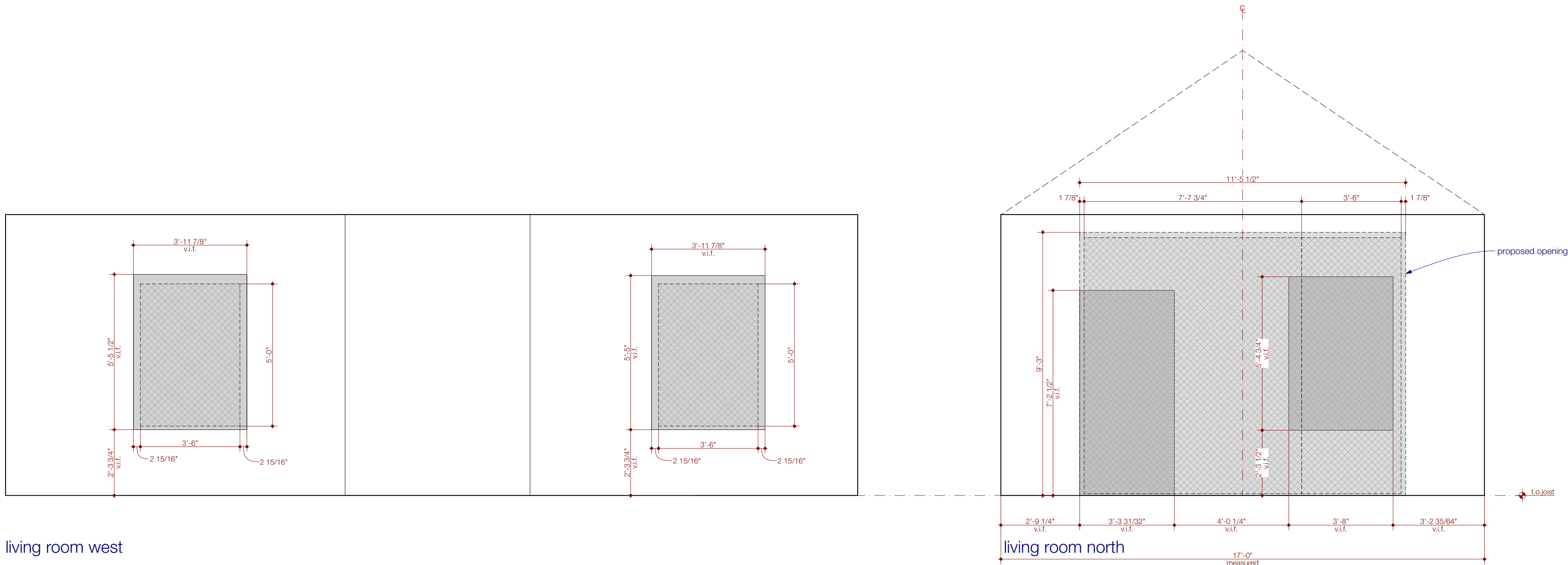
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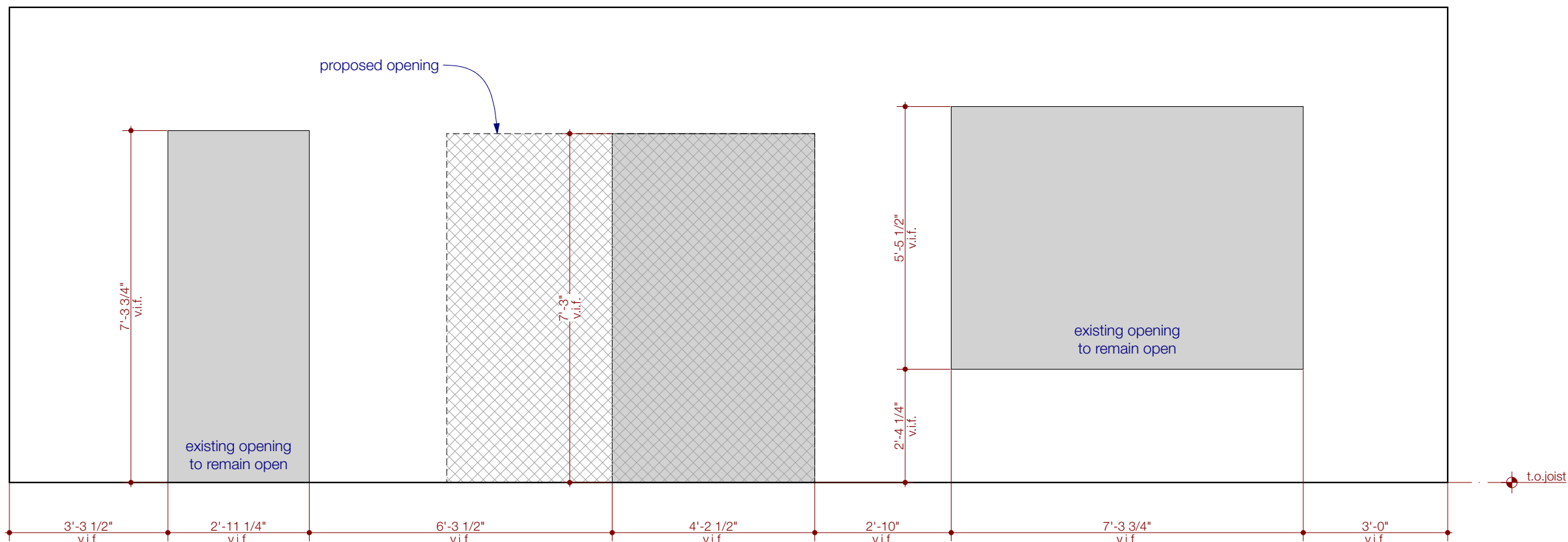
demo plan

G1.7

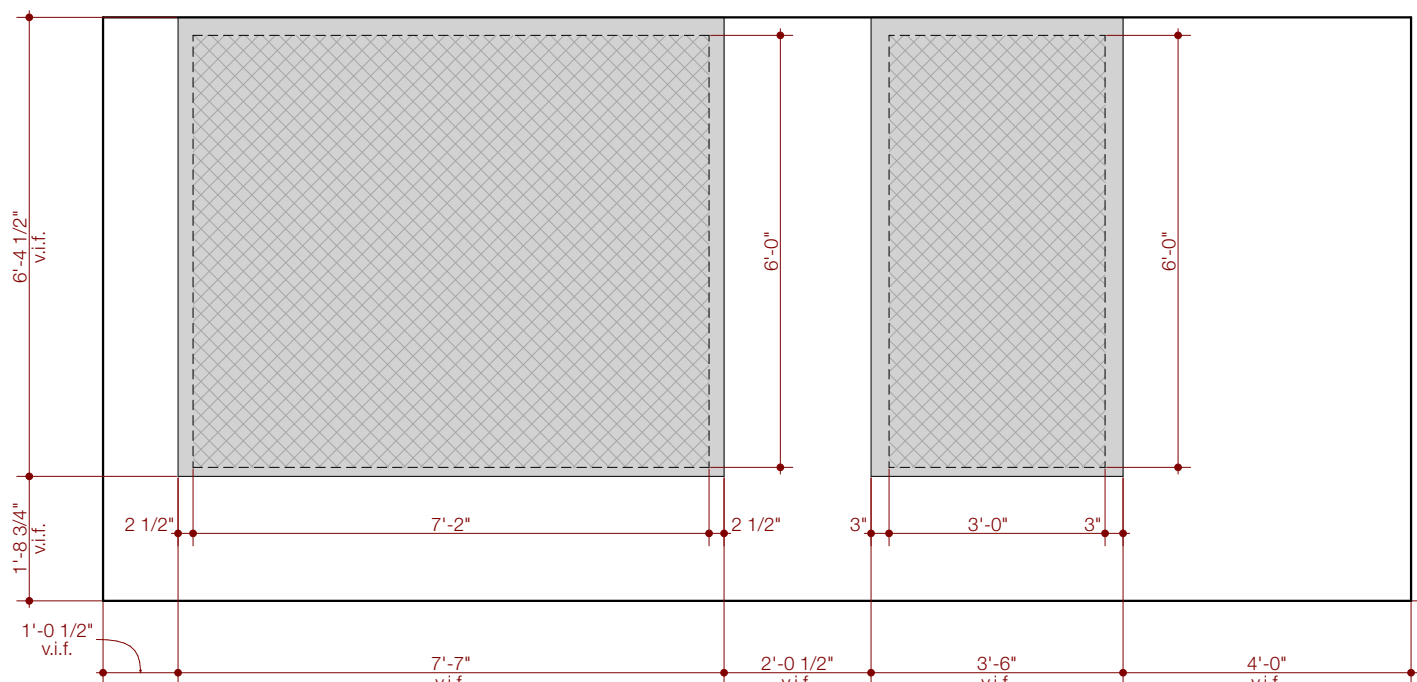


living room west

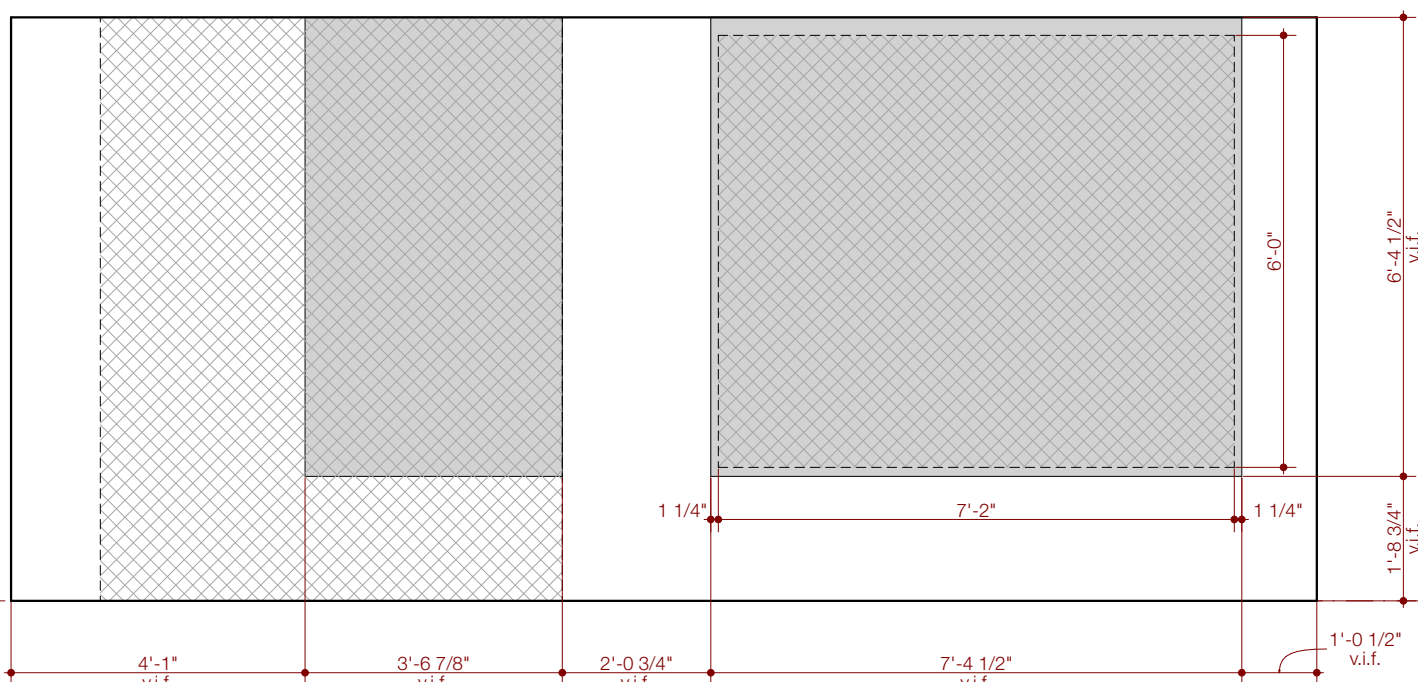
living room north



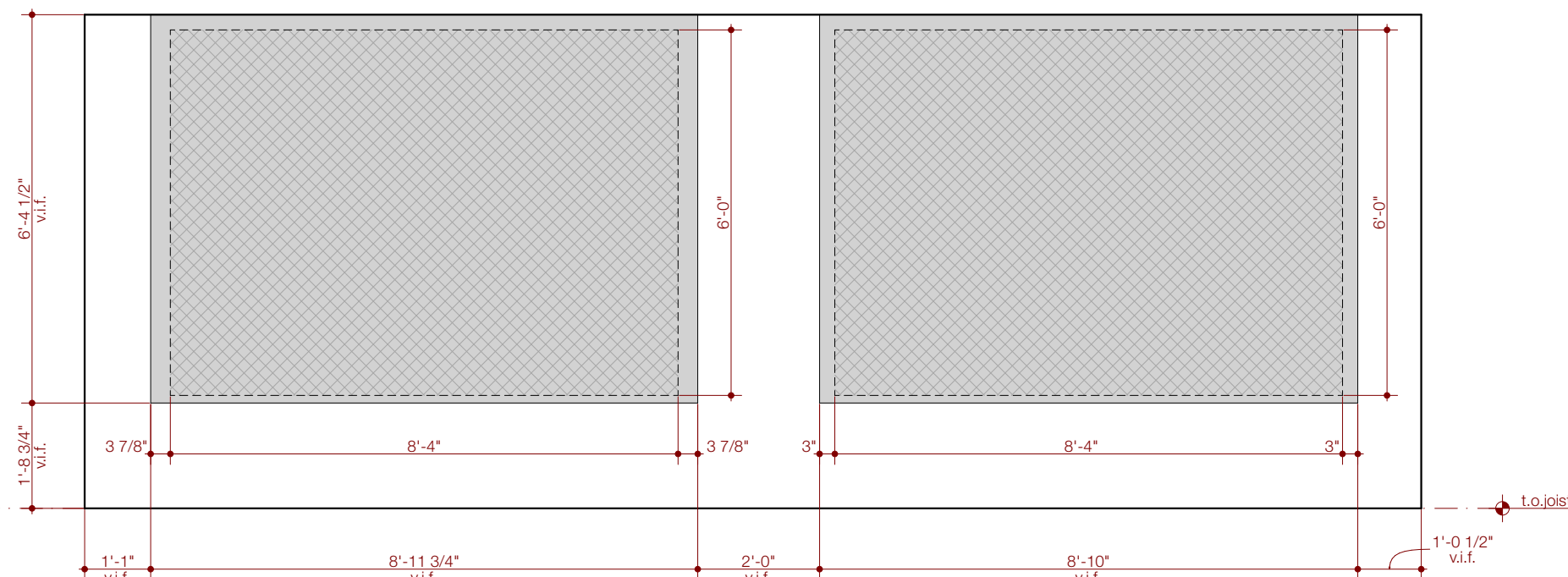
living room east



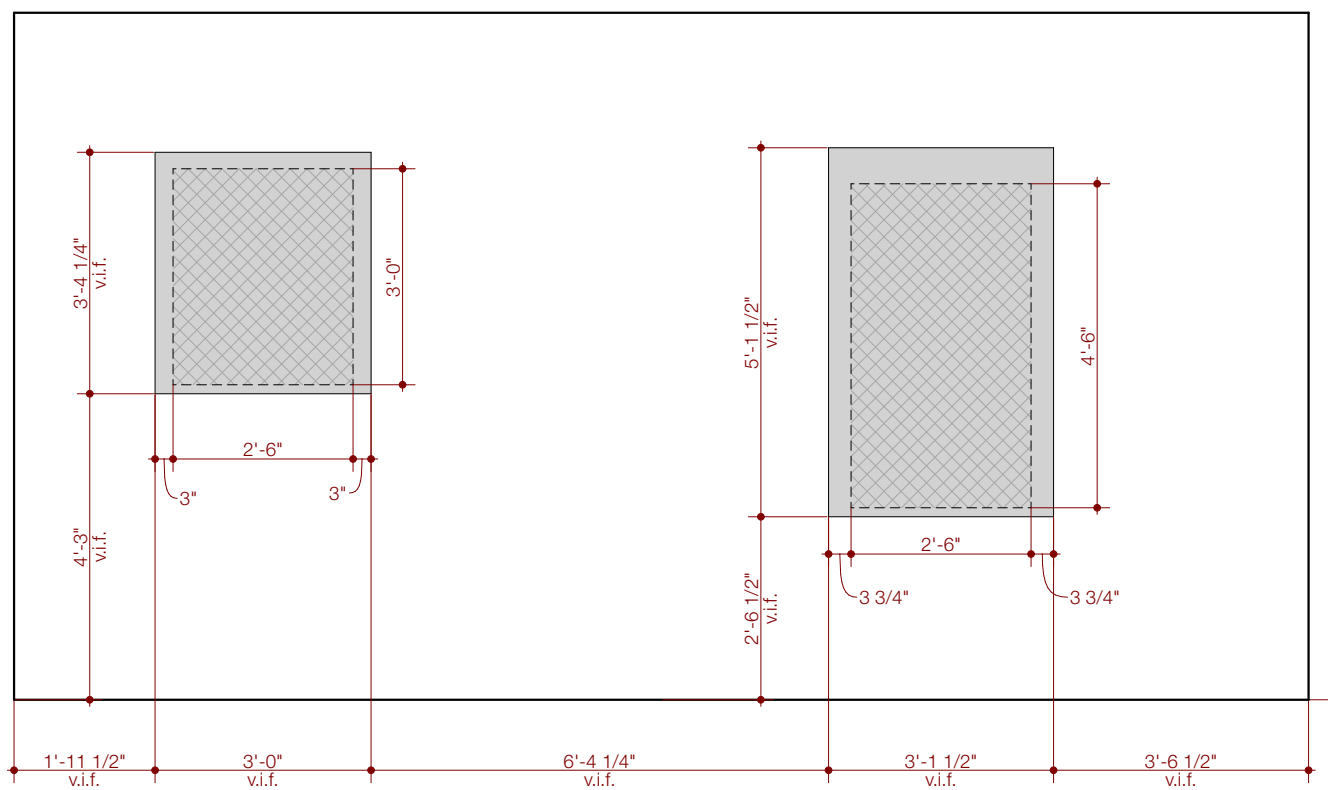
dining room west



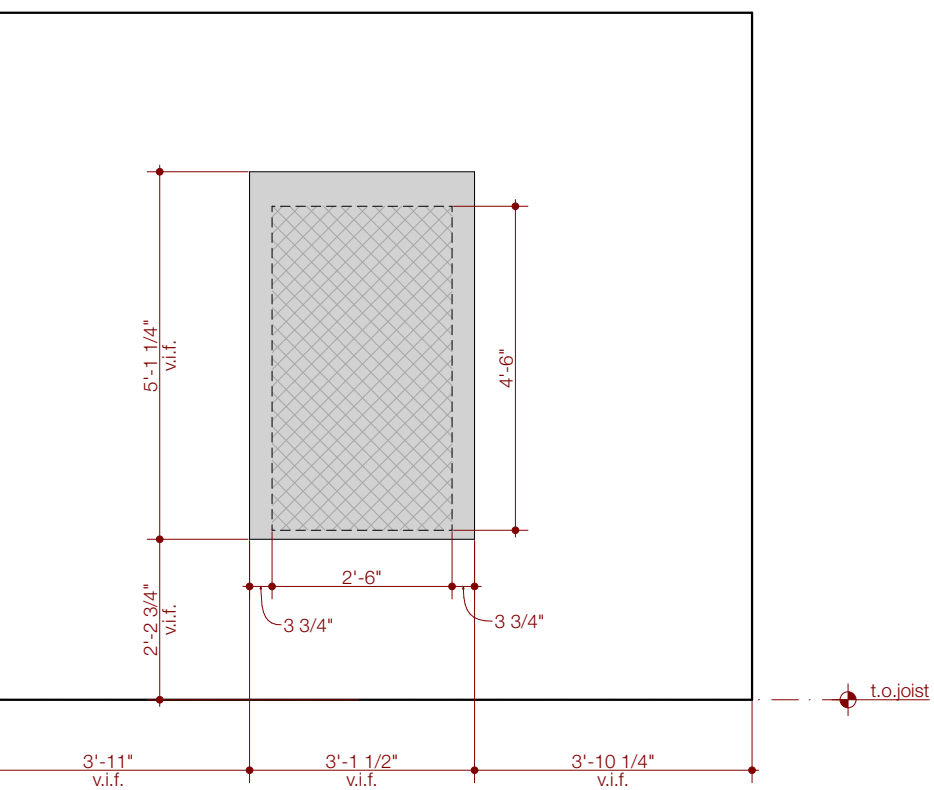
dining room east



dining room south



media room north



media room east

1 existing openings at stone walls
SCALE: 3/8" = 1'-0"

NOTES:
> Sill heights measured from t.o. joist unless noted otherwise.
> v.l.f. = verify in field
> After demo, review all existing stone sill, head, and jamb conditions. Discuss casing options with architect and owner.

- existing openings
- proposed openings
- frame size of new door/window in existing opening

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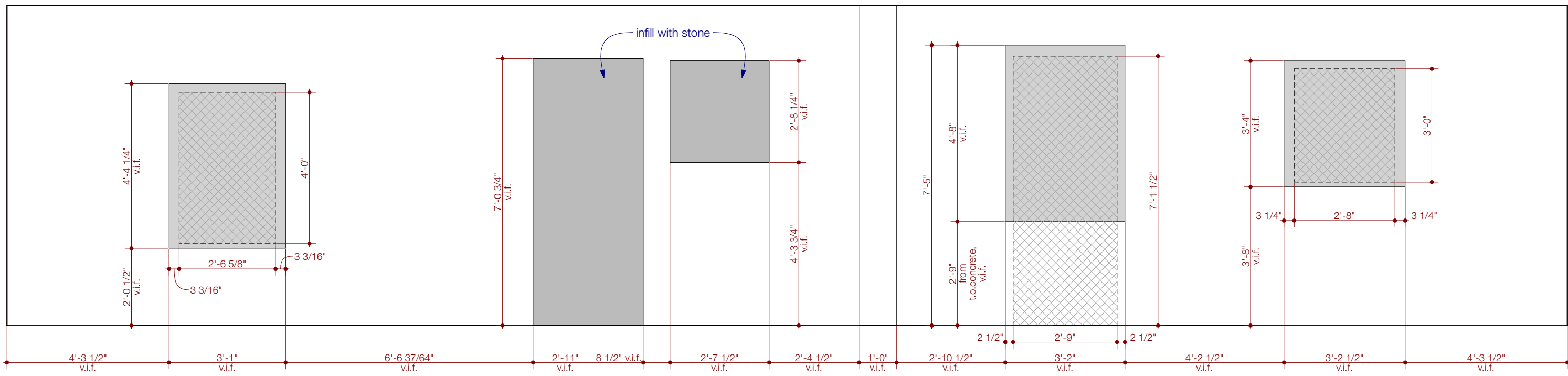
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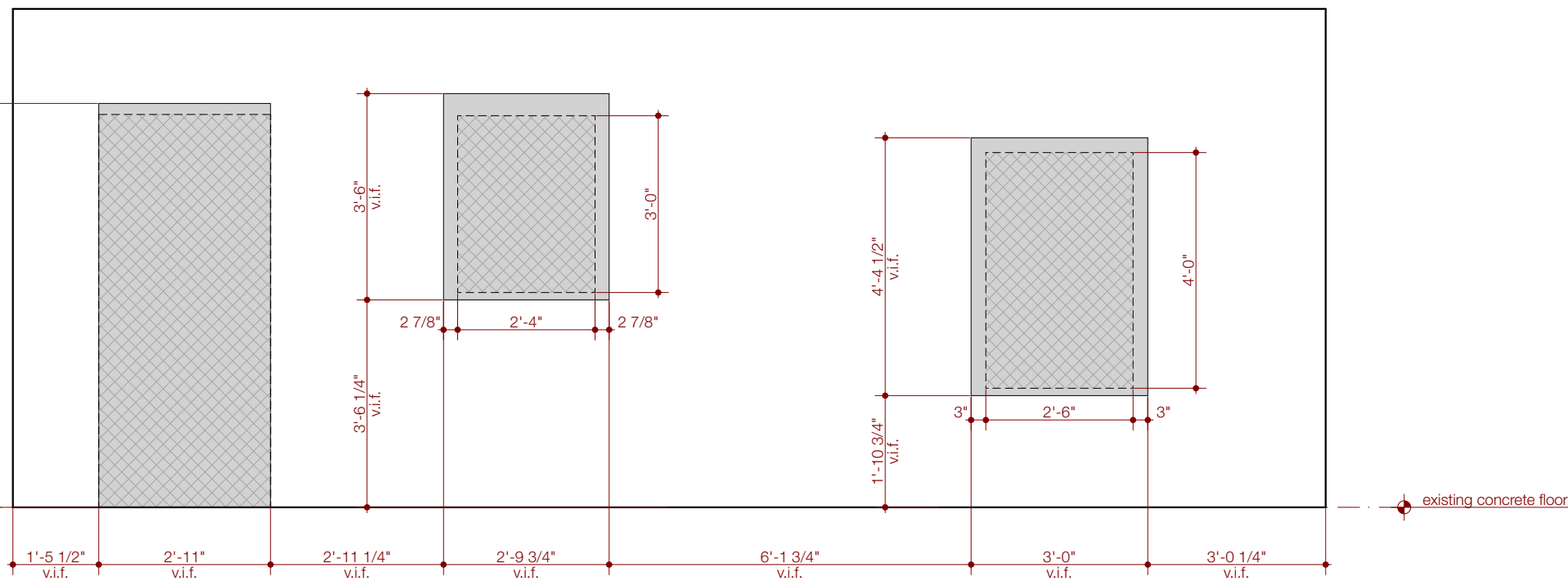
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existing openings in
stone walls

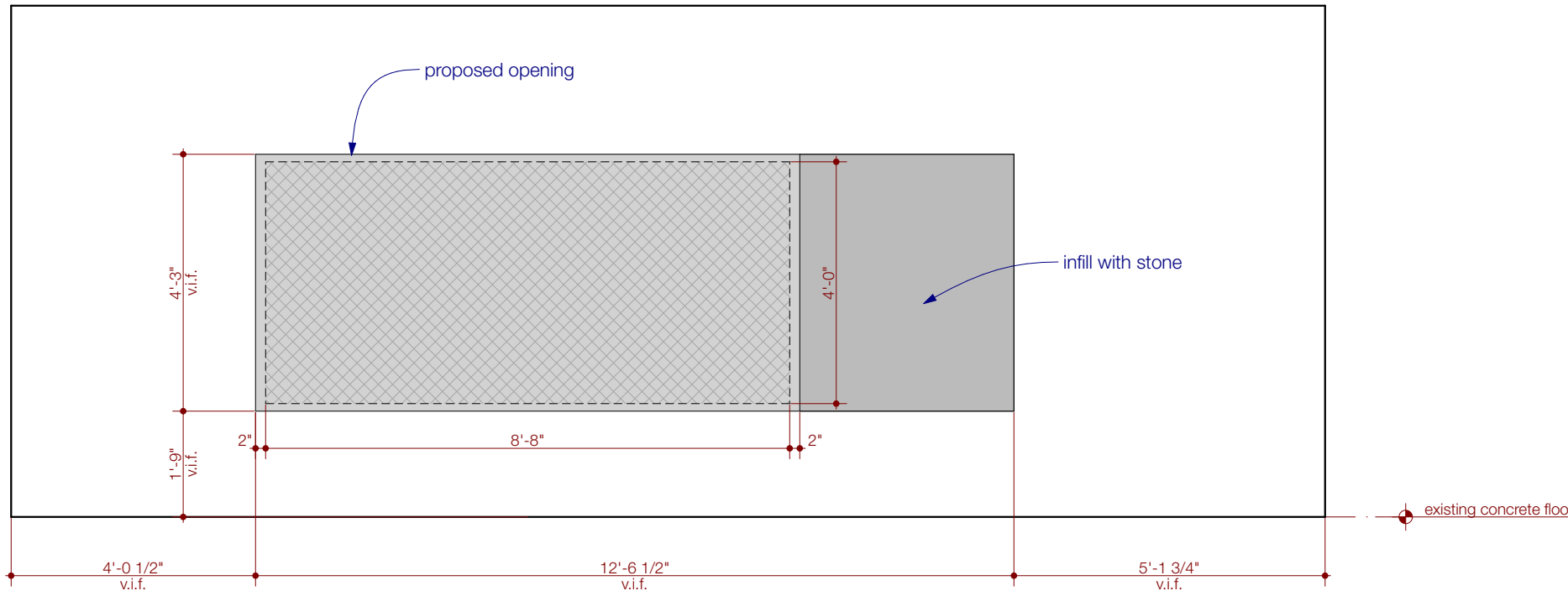
G1.8



lower level west



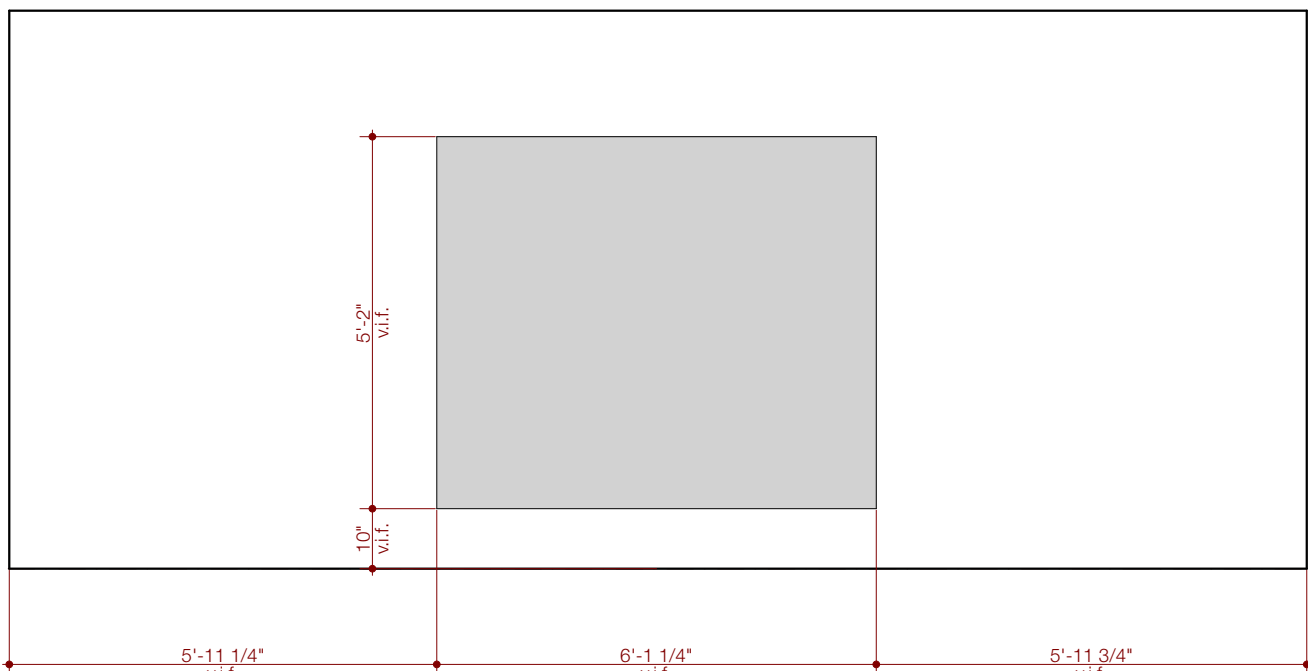
master bath east



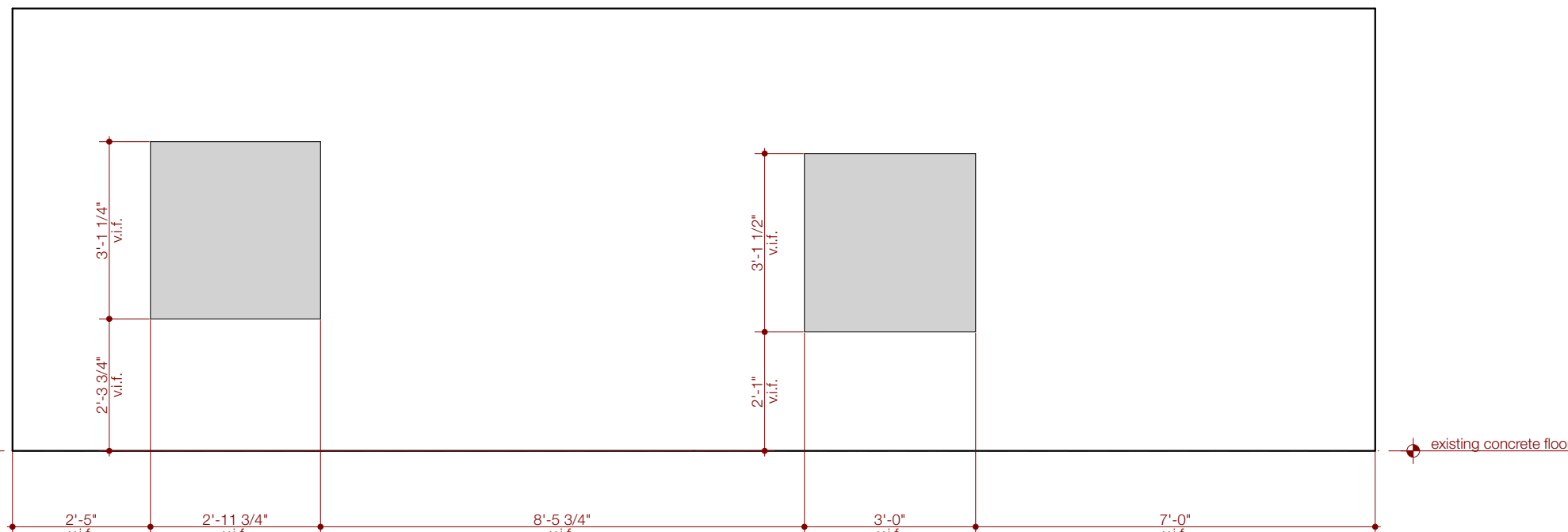
master bath south



art house east



art house south



art house west

ART HOUSE NOTE:
> See plans, elevations, and window schedule on B series sheets for proposed re-used window configuration. Discuss options with Architect and Owner.

1 existing openings at stone walls
SCALE: 3/8" = 1'-0"

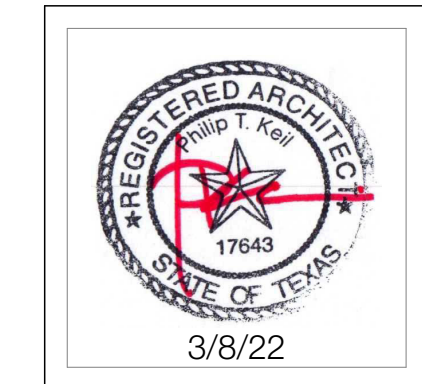
NOTES:
> Sill heights measured from t.o. joist unless noted otherwise.
> v.l.f. = verify in field
> After demo, review all existing stone sill, head, and jamb conditions. Discuss casing options with architect and owner.

- existing openings
- proposed openings
- frame size of new door/window in existing opening

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existing openings in stone walls
G1.9

PLANS MUST BE ON SITE
FOR ALL INSPECTIONS

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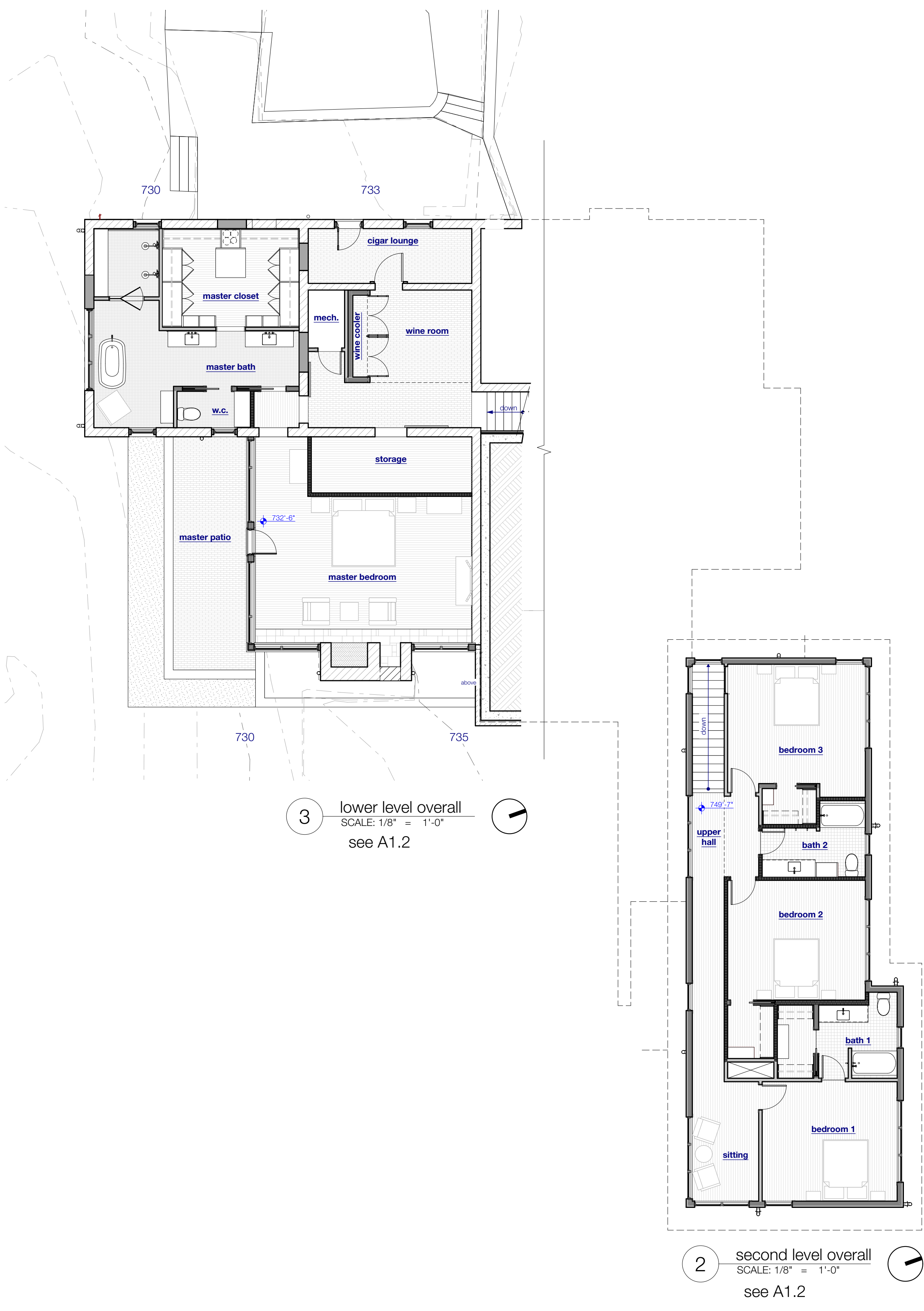
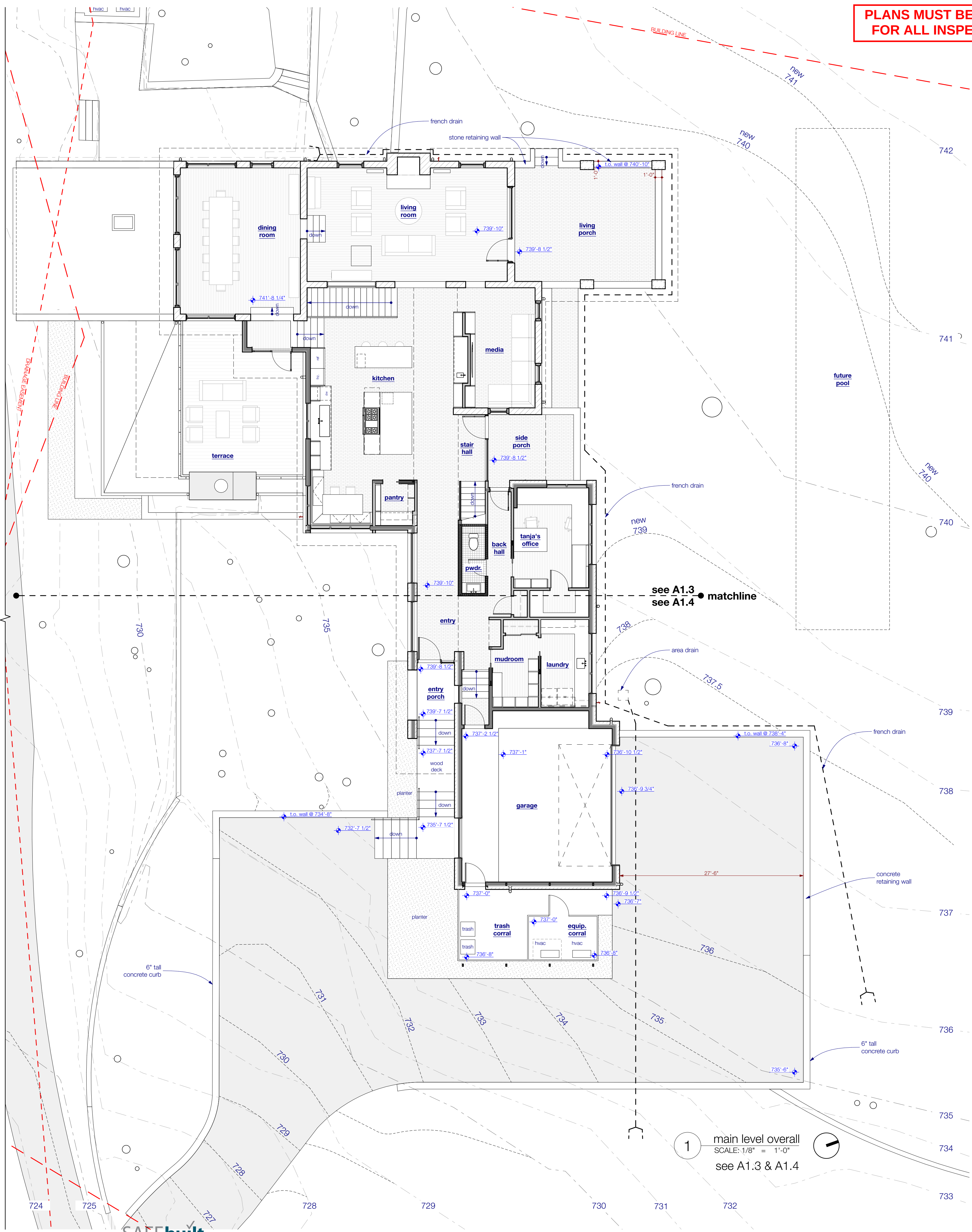
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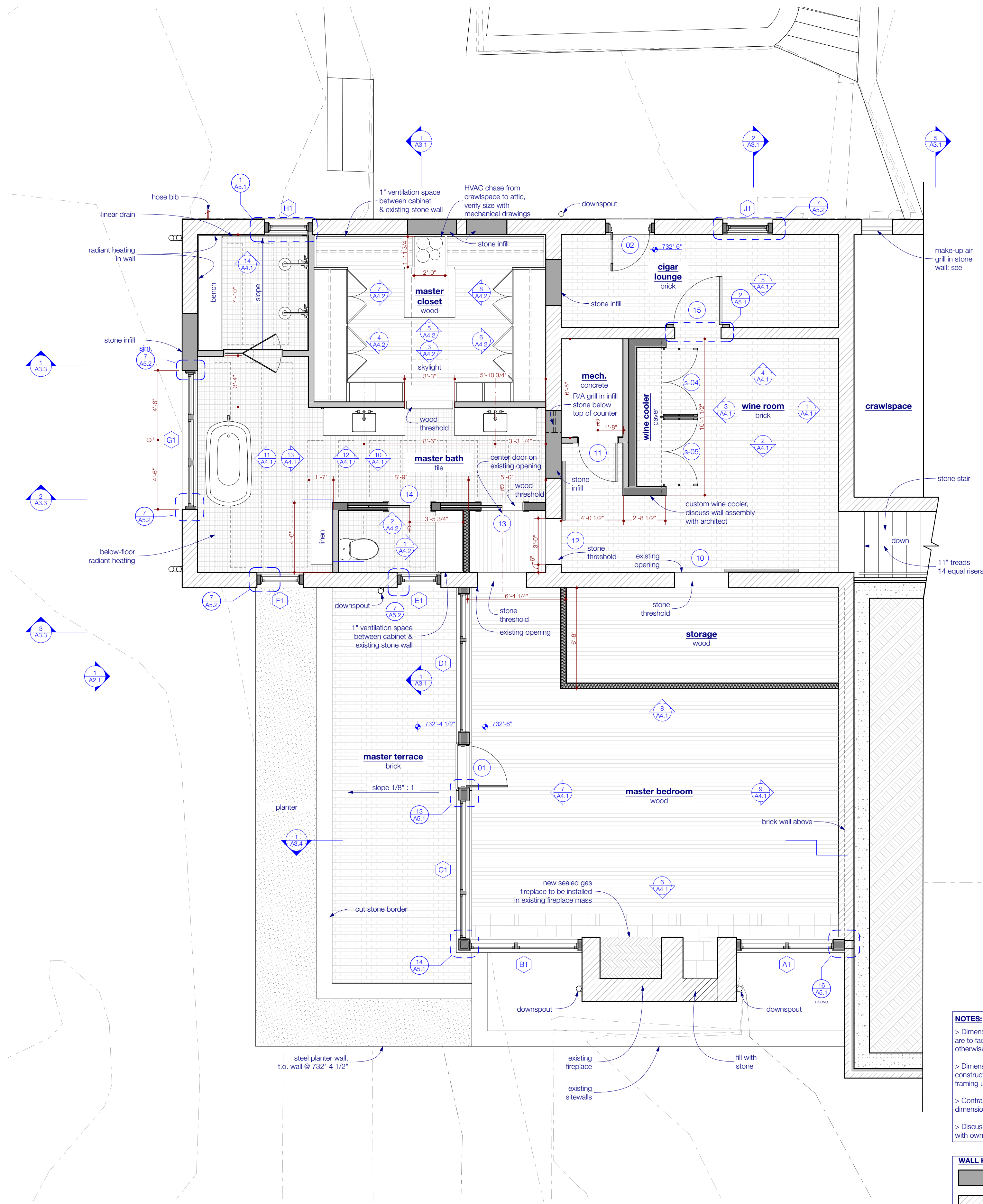
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overall floor plan

A1.1

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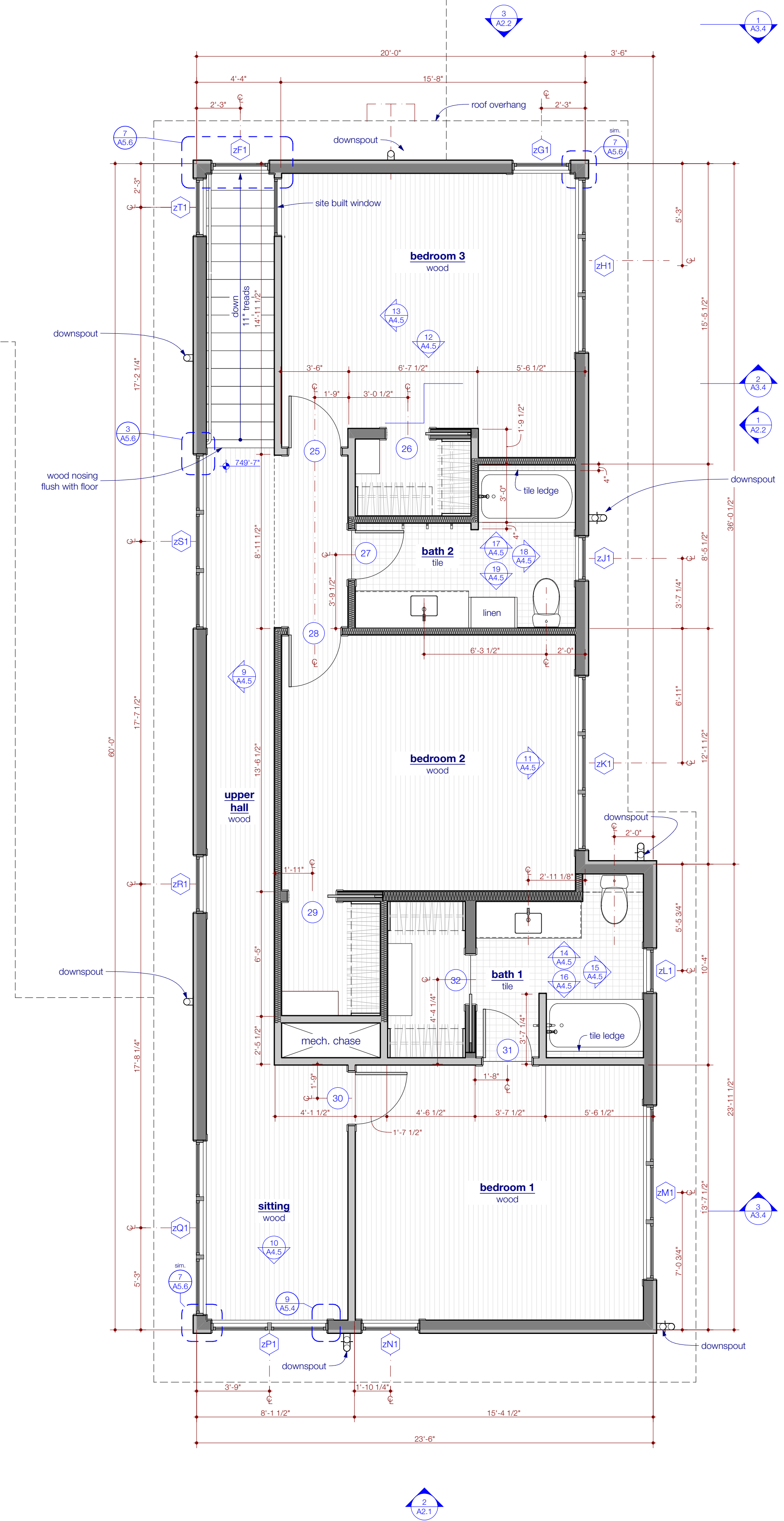


NOTES:

- > Dimensions to existing masonry walls are to face of finish unless noted otherwise.
- > Dimensions to new and existing frame construction are to outside face of framing unless noted otherwise.
- > Contractor to verify all existing dimensions in field.
- > Discuss desired hose bib locations with owner.

WALL KEY:	
	masonry infill wall
	existing masonry wall
	existing wall
	brick / stone
	new 2x6 framed wall
	new 2x4 framed wall
	sound attenuation

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



2 level 2
SCALE: 1/4" = 1'-0"

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3	3/8/22
4	3/8/22
5	3/8/22
6	3/8/22

100% CD

3/8/22

lower level / level 2
floor plan

A1.2

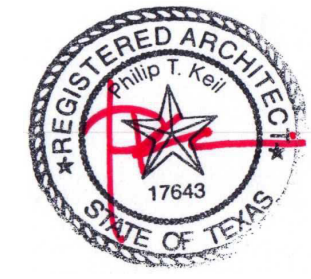
see A1.4
matchline

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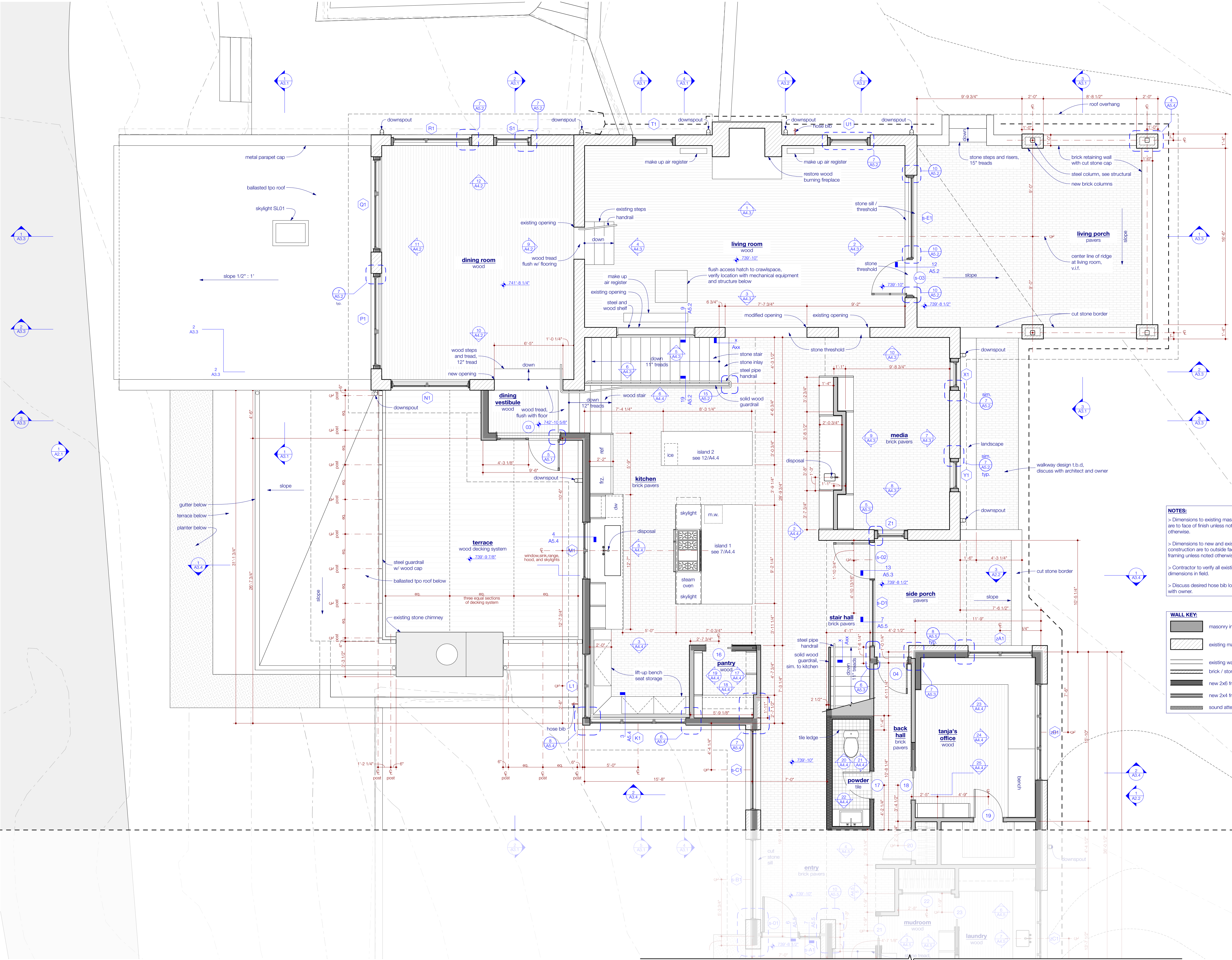
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level 1 floor plan

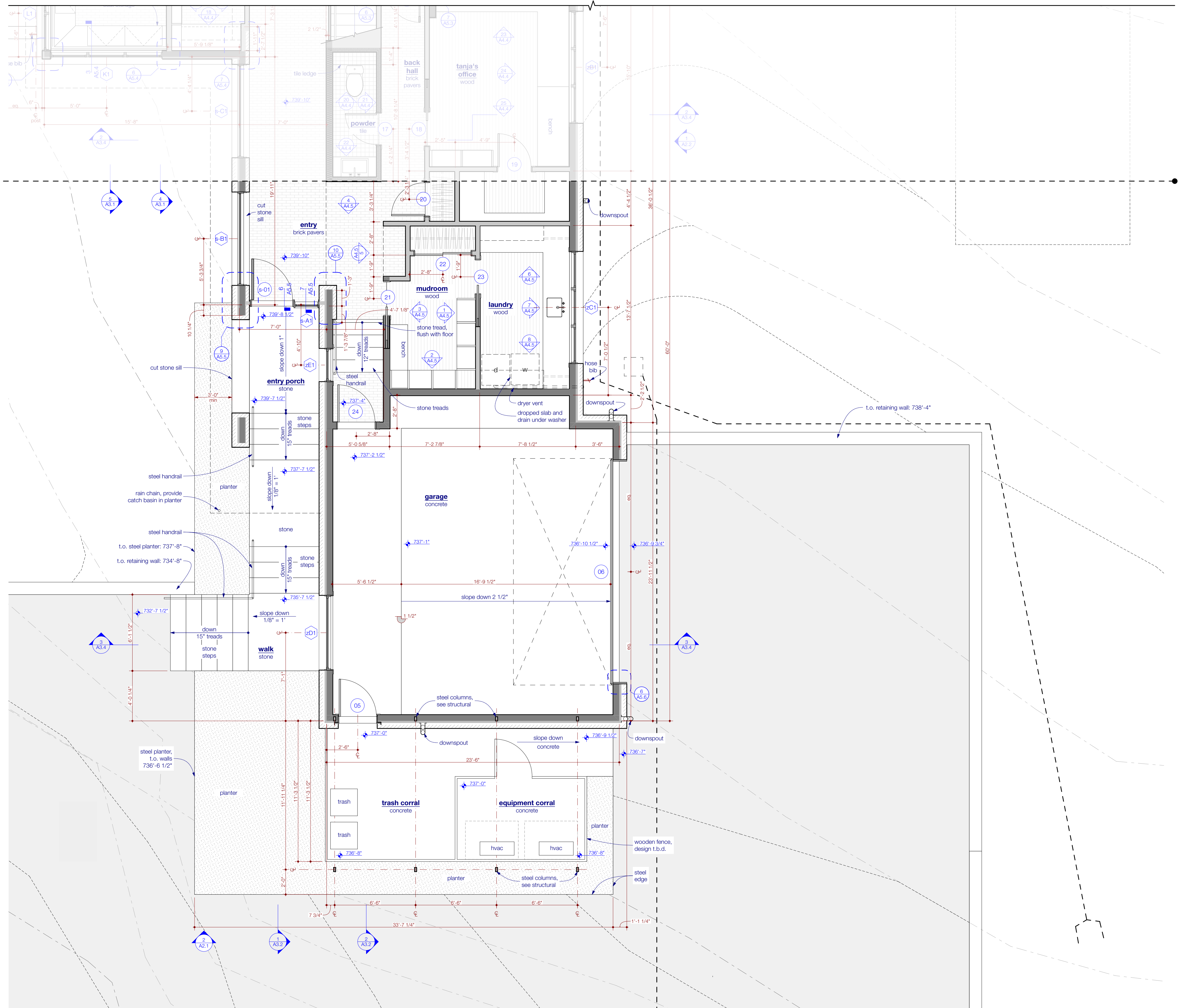
A1.3

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

matchline



NOTES:

- > Dimensions to existing masonry walls are to face of finish unless noted otherwise.
- > Dimensions to new and existing frame construction are to outside face of framing unless noted otherwise.
- > Contractor to verify all existing dimensions in field.
- > Discuss desired hose bib locations with owner.

WALL KEY:	
	masonry infill wall
	existing masonry wall
	existing wall
	brick / stone
	new 2x6 framed wall
	new 2x4 framed wall
	sound attenuation



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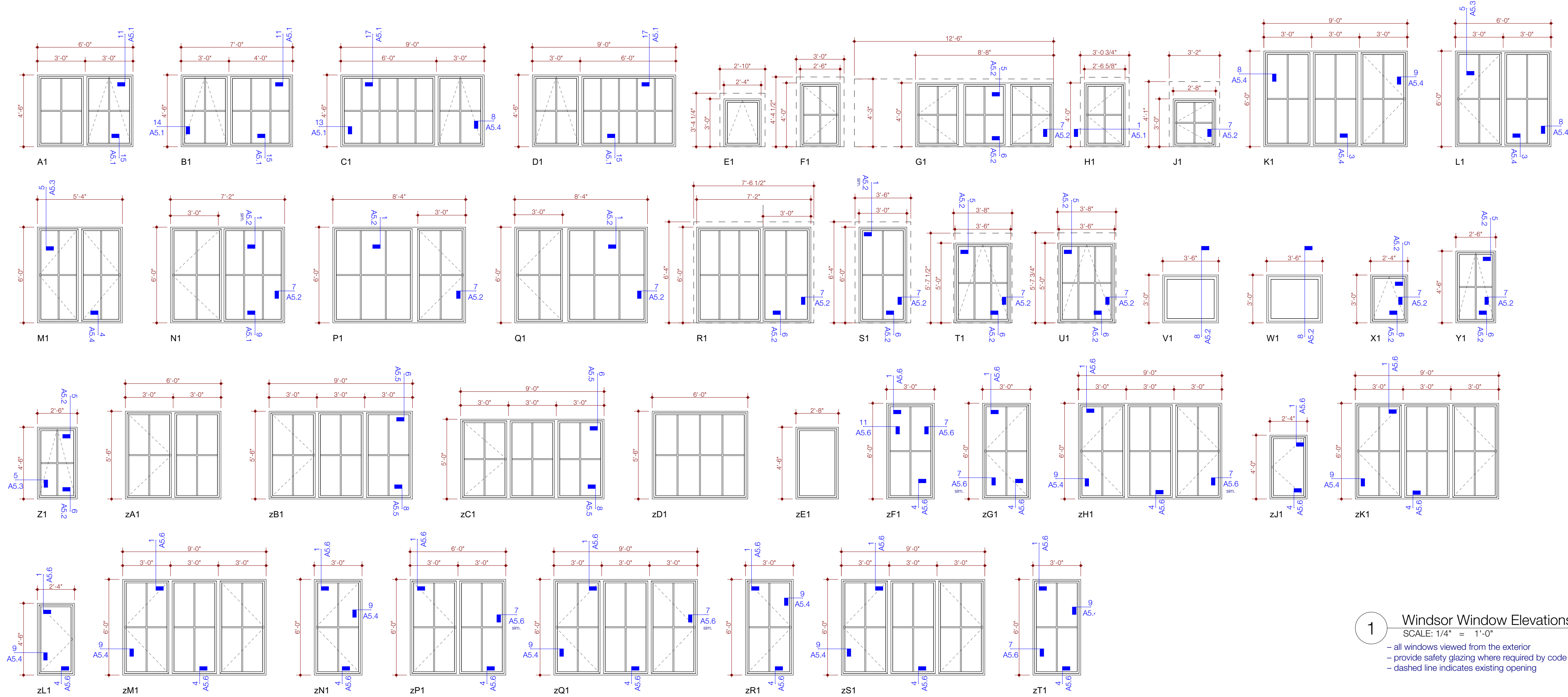
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level 1 floor plan

A1.4

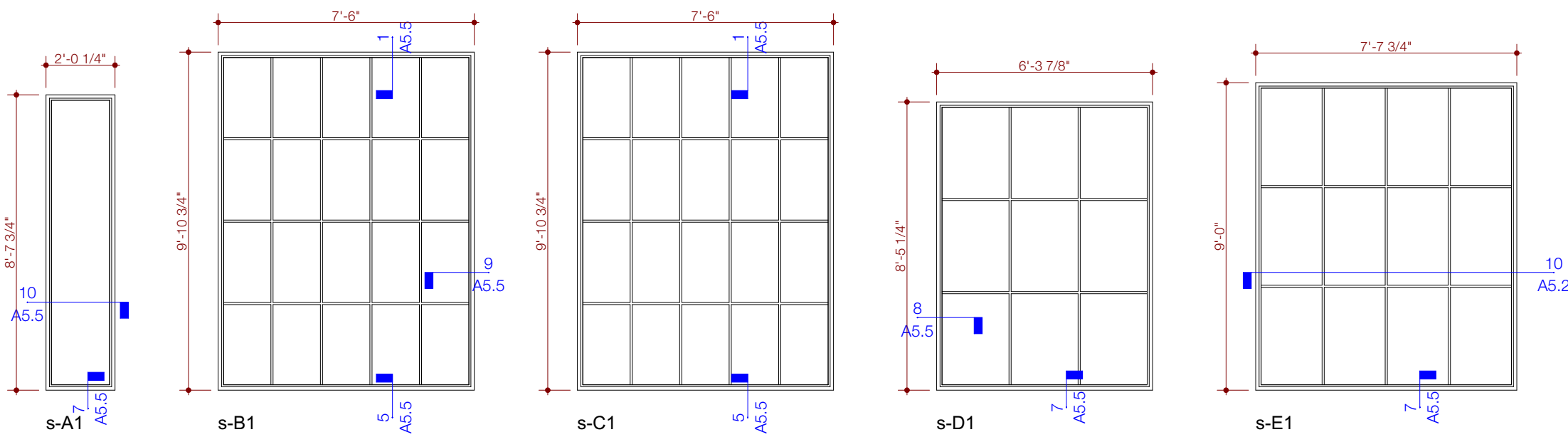


1 Windsor Window Elevations
SCALE: 1/4" = 1'-0"
- all windows viewed from the exterior
- provide safety glazing where required by code
- dashed line indicates existing opening

WINDSOR WINDOW SCHEDULE – dimensions are of frame size; verify in field								
	key	location	type	width	height	head height	finish	notes
LOWER LEVEL	A1	master bedroom	clad combo	6'-0"	4'-6"	6'-10 3/4"	stained	
	B1	master bedroom	clad combo	7'-0"	4'-6"	6'-10 3/4"	stained	
	C1	master bedroom	clad combo	9'-0"	4'-6"	6'-10 3/4"	stained	
	D1	master bedroom	clad combo	9'-0"	4'-6"	6'-10 3/4"	stained	
	E1	master bath w.c.	clad awning	2'-4"	3'-0"	6'-6"	stained	
	F1	master bath	clad casement	2'-6"	4'-0"	5'-11"	stained	
	G1	master bath	clad combo	8'-8"	4'-0"	5'-8 3/4"	stained	4" mull caps
	H1	master bath shower	clad casement	2'-6 5/8"	4'-0"	5'-11 1/4"	stained	Windsor Next Dimension vinyl window
	J1	cigar lounge	clad awning	2'-8"	3'-0"	6'-9 1/2"	stained	
	K1	kitchen	clad combo	9'-0"	6'-0"	9'-1"	stained	
	L1	kitchen	clad combo	6'-0"	6'-0"	9'-1"	stained	
MAIN LEVEL	M1	kitchen	clad casement	5'-4"	6'-0"	9'-1"	stained	
	N1	dining room	clad combo	7'-2"	6'-0"	9'-8"	stained	2" mull cap
	P1	dining room	clad combo	8'-4"	6'-0"	9'-8"	stained	4" mull cap
	Q1	dining room	clad combo	8'-4"	6'-0"	9'-8"	stained	4" mull cap
	R1	dining room	clad fixed	7'-2"	6'-0"	9'-8"	stained	2" mull cap
	S1	dining room	clad fixed	3'-0"	6'-0"	9'-8"	stained	
	T1	living room	clad awning	3'-6"	5'-0"	7'-3 3/4"	stained	
	U1	living room	clad awning	3'-6"	5'-0"	7'-3 3/4"	stained	
	V1	living room dormer	clad fixed	3'-6"	3'-0"	13'-1 1/2"	stained	
	W1	living room dormer	clad fixed	3'-6"	3'-0"	13'-1 1/2"	stained	
	X1	media room	clad awning	2'-4"	3'-0"	7'-3 3/4"	stained	
	Y1	media room	clad awning	2'-6"	4'-6"	7'-2"	stained	
	Z1	media room	clad awning	2'-6"	4'-6"	6'-10 1/4"	stained	
	zA1	tanja's office	clad combo	6'-0"	5'-6"	8'-7 1/4"	stained	
	zB1	tanja's office	clad combo	9'-0"	5'-6"	8'-7 1/4"	stained	
	zC1	laundry	clad combo	9'-0"	5'-0"	8'-7 1/4"	stained	
	zD1	garage	clad fixed	6'-0"	5'-6"	7'-11 1/4"	stained	
	zE1	entry porch	clad fixed	2'-8"	4'-6"	7'-11 1/4"	stained	

SECOND LEVEL	zF1	bedroom hallway	clad fixed	3'-0"	6'-0"	8'-1"	stained	
	zG1	bedroom 3	clad casement	3'-0"	6'-0"	8'-1"	stained	
	zH1	bedroom 3	clad combo	9'-0"	6'-0"	8'-1"	stained	
	zJ1	bath 2	clad casement	2'-4"	4'-0"	8'-1"	stained	
	zK1	bedroom 2	clad combo	9'-0"	6'-0"	8'-1"	stained	
	zL1	bath 1	clad casement	2'-4"	4'-6"	8'-1"	stained	
	zM1	bedroom 1	clad combo	9'-0"	6'-0"	8'-1"	stained	
	zN1	bedroom 1	clad casement	3'-0"	6'-0"	8'-1"	stained	
	zP1	bedroom hallway	clad combo	6'-0"	6'-0"	8'-1"	stained	
	zO1	bedroom hallway	clad combo	9'-0"	6'-0"	8'-1"	stained	
	zR1	bedroom hallway	clad casement	3'-0"	6'-0"	8'-1"	stained	
	zS1	bedroom hallway	clad combo	9'-0"	6'-0"	8'-1"	stained	
	zT1	bedroom hallway	clad fixed	3'-0"	6'-0"	8'-1"	stained	

2 Windsor Window Schedule
- see 1/A1.5 for elevations & details
- head heights of windows at main level are from finished floor at entry
- head heights of windows on lower level and second level are from adjacent finished floor
- provide safety glazing as required by code
- provide egress as required by code



3 Weather Shield Window Elevations
SCALE: 1/4" = 1'-0"
- all windows viewed from the exterior
- provide safety glazing where required by code

WEATHER SHIELD WINDOW SCHEDULE – dimensions are of frame size; verify in field							
key	location	type	width	height	head height	finish	notes
s-A1	entry door	fixed	2'-0 1/4"	8'-7 3/4"	8'-7"	stained	mulled to door S-01
s-B1	entry hall	fixed	7'-6"	9'-10 3/4"	9'-10"	stained	
s-C1	entry hall	fixed	7'-6"	9'-10 3/4"	9'-10"	stained	
s-D1	kitchen hall	fixed	6'-3 7/8"	8'-5 1/4"	8'-4 1/2"	stained	mulled to door S-02
s-E1	living room	fixed	7'-7 3/4"	9'-0"	8'-11 1/4"	stained	mulled to door S-03

4 Weather Shield Window Schedule
- see 3/A1.5 for elevations & details
- head heights are from main level finished floor at entry
- provide safety glazing as required by code

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revisions	
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1	10/1/22
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4	10/1/22
5	10/1/22
6	10/1/22

100% CD

3/8/22

window elevations

A1.5

EXTERIOR DOOR SCHEDULE – dimensions are of the unit size; verify in field						
	key	location	width	height	type	lock set
LOWER LEVEL	01	master bedroom	2'-9 1/2"	6'-10 3/4"	custom wood w/ glass	entrance w/ deadbolt
	02	cigar lounge	2'-9"	7'-1 1/2"	custom wood w/ glass	entrance w/ deadbolt
MAIN LEVEL	03	terrace	6'-0 1/16"	6'-10 3/8"	Windsor Pinnacle Clad Patio French Door	entrance w/ deadbolt
	04	powder hallway	2'-11"	8'-2 1/8"	custom wood w/ glass	entrance w/ deadbolt
	05	garage	3'-1 1/2"	8'-0 3/4"	solid core, flush slab	entrance w/ deadbolt
	06	garage	18'-0"	8'-0"	garage door	
					high lift garage door tracks	

1 exterior door schedule

- see 5/A1.6 for door elevations & details
- provide safety glazing as required by code

WEATHERSHIELD DOOR SCHEDULE – Weathershield doors to be Contemporary Slim-line, u.n.o. – dimensions are of the unit size; verify in field						
	key	location	width	height	type	lock set
	s-01	entry	3'-6"	8'-7 3/4"	frame with custom wood door leaf	entrance w/ deadbolt
	s-02	kitchen hall	3'-5 3/4"	8'-5 1/4"	swing door	entrance w/ deadbolt
	s-03	living room	3'-6"	9'-0"	swing door	entrance w/ deadbolt
					adjacent to window s-E1	

2 weathershield door schedule

- see 6/A1.6 for door elevations & details
- provide safety glazing as required by code

CUSTOM STEEL DOOR SCHEDULE – dimensions are of the unit size; verify in field						
	key	location	width	height	type	lock set
	s-04	wine room	4'-6"	7'-0 1/2"	steel swing door	passage
	s-05	wine room	4'-6"	7'-0 1/2"	steel swing door	passage
					provide weatherstrip and double-glazed glass similar to exterior door	

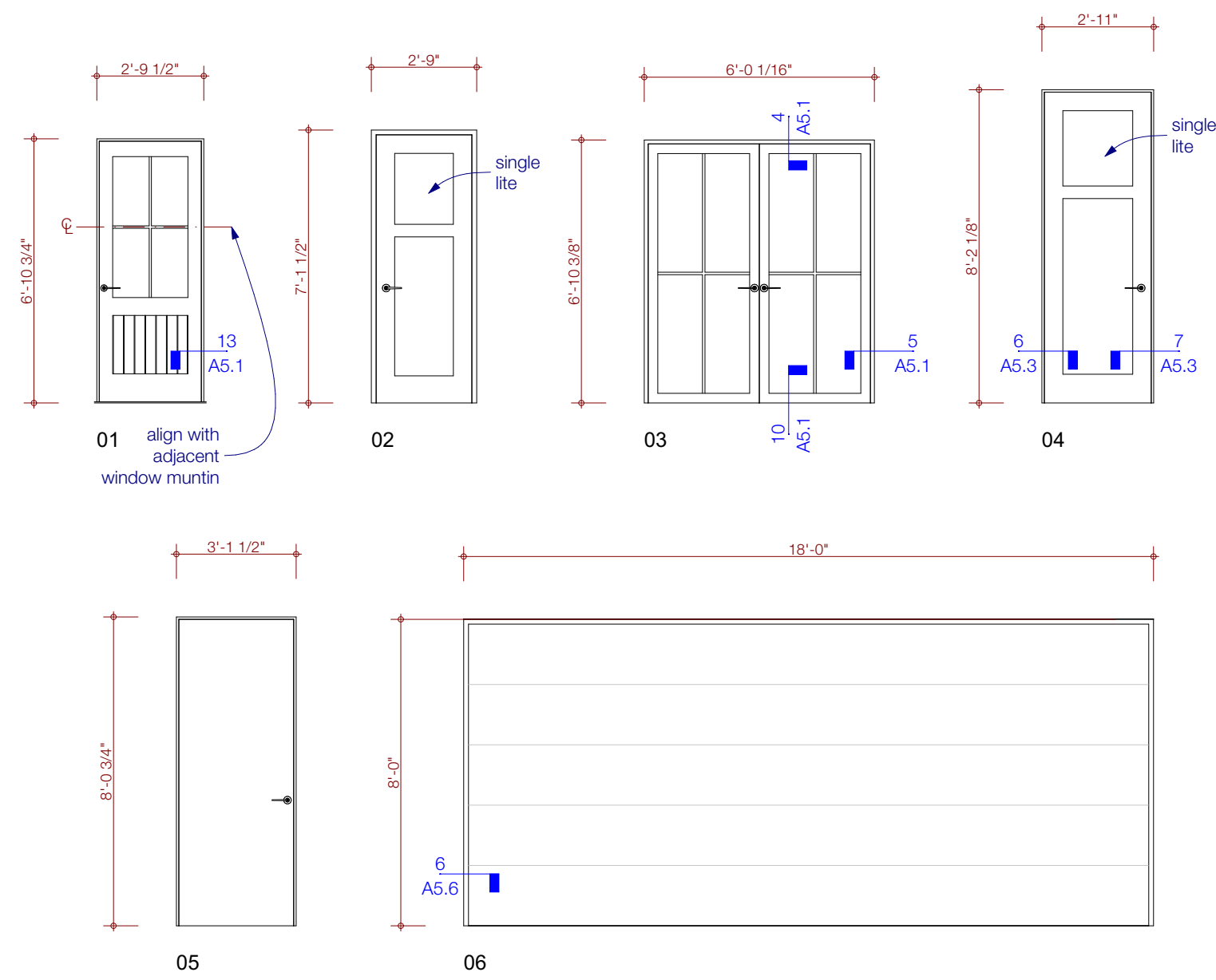
3 custom steel door schedule

- see 7/A1.6 for door elevations & details
- provide safety glazing as required by code

INTERIOR DOOR SCHEDULE – dimensions are of leaf size					
	key	location	leaf dimensions	type	lock set
LOWER LEVEL	10	lower level storage	verify in field	custom barn door	passage
	11	lower level mechanical	2'-6"x6'-8"	solid core, 3 panel	passage
	12	master bedroom	verify in field	custom barn door	privacy
	13	master bathroom	2'-8"x6'-8"	solid core, 3 panel; pocket	privacy
MAIN LEVEL	14	master bathroom w.c.	2'-8"x6'-8"	solid core, 3 panel; pocket	privacy
	15	cigar lounge	verify in field	custom door	passage
	16	pantry	2'-4"x8'-0"	solid core, 3 panel; pocket	passage
	17	powder	2'-6"x7'-0"	solid core, 3 panel	privacy
	18	tanja's office	2'-8"x8'-0"	solid core, 3 panel; pocket	privacy
	19	tanja's office closet	2'-8"x8'-0"	solid core, 3 panel; pocket	passage
	20	entry closet	2'-8"x8'-0"	solid core, 3 panel; pocket	passage
	21	mudroom	2'-8"x8'-0"	solid core, 3 panel; pocket	passage
	22	mudroom closet	4'-5 3/4"x8'-0"	solid core, 3 panel; slider	passage
	23	laundry	2'-8"x8'-0"	solid core, 3 panel; pocket	passage
	24	garage	3'-0"x8'-0"	solid core, flush slab	entrance w/ deadbolt
					weatherstrip - consider as exterior door; use low profile threshold
SECOND LEVEL	25	bedroom 3	2'-8"x8'-0"	solid core, 3 panel	privacy
	26	bedroom 3 closet	2'-2"x8'-0"	solid core, 3 panel; pocket	passage
	27	bath 2	2'-6"x8'-0"	solid core, 3 panel	privacy
	28	bedroom 2	2'-8"x8'-0"	solid core, 3 panel	privacy
	29	bedroom 2 closet	2'-5"x8'-0"	solid core, 3 panel; pocket	passage
	30	bedroom 1	2'-8"x8'-0"	solid core, 3 panel	privacy
	31	bath 1	2'-6"x8'-0"	solid core, 3 panel	privacy
	32	bath 1 closet	2'-6"x8'-0"	solid core, 3 panel; pocket	passage

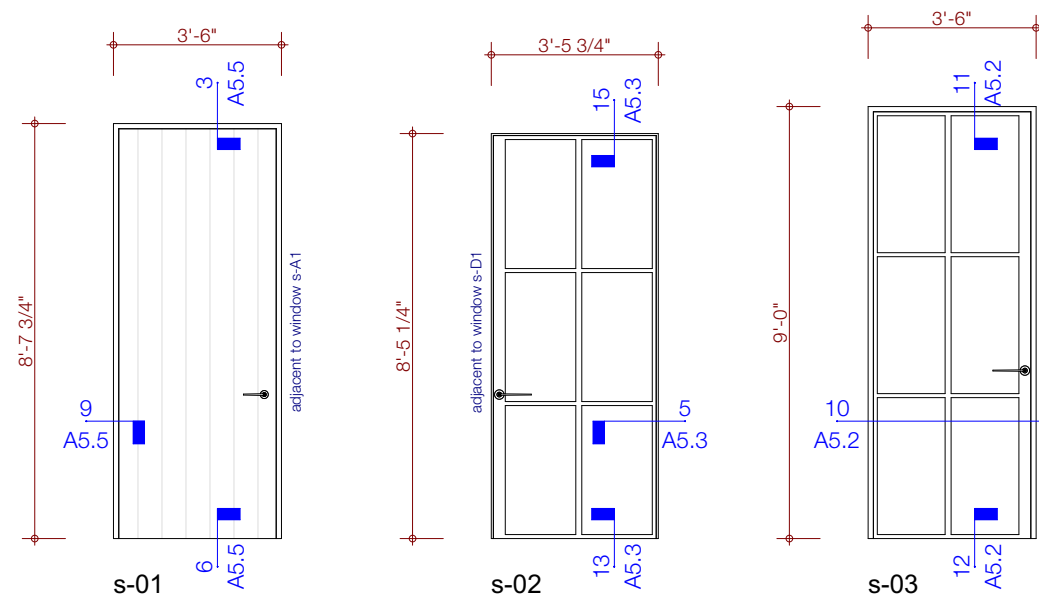
4 interior door schedule

- provide safety glazing as required by code



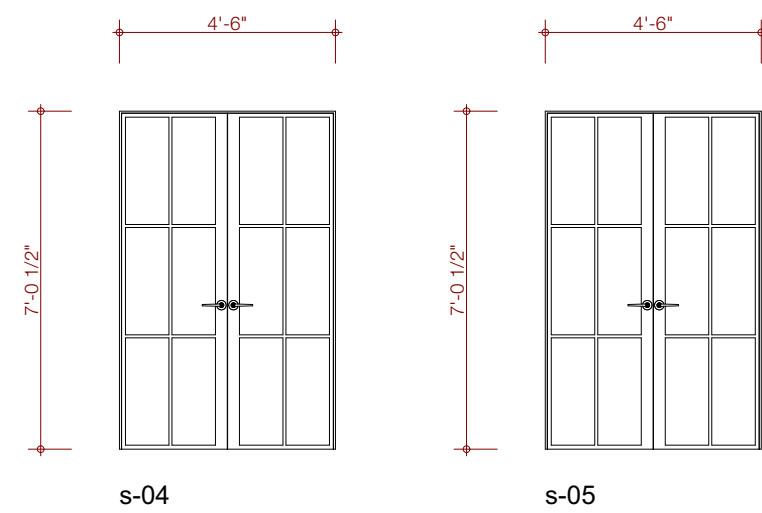
5 exterior door elevations

- SCALE: 1/4" = 1'-0"
- all doors viewed from the exterior
 - provide safety glazing where required by code



6 weathershield door elevations

- SCALE: 1/4" = 1'-0"
- all doors viewed from the exterior
 - provide safety glazing where required by code



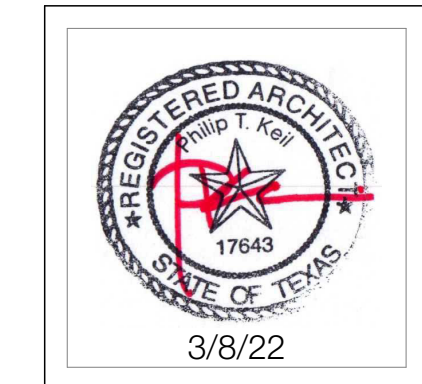
7 custom steel door elevations

- SCALE: 1/4" = 1'-0"
- all doors viewed from the exterior
 - provide safety glazing where required by code

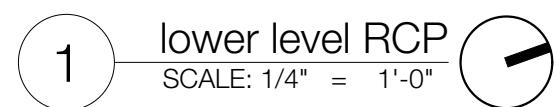
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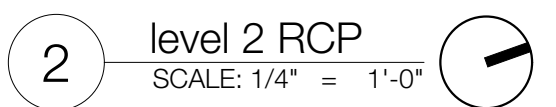
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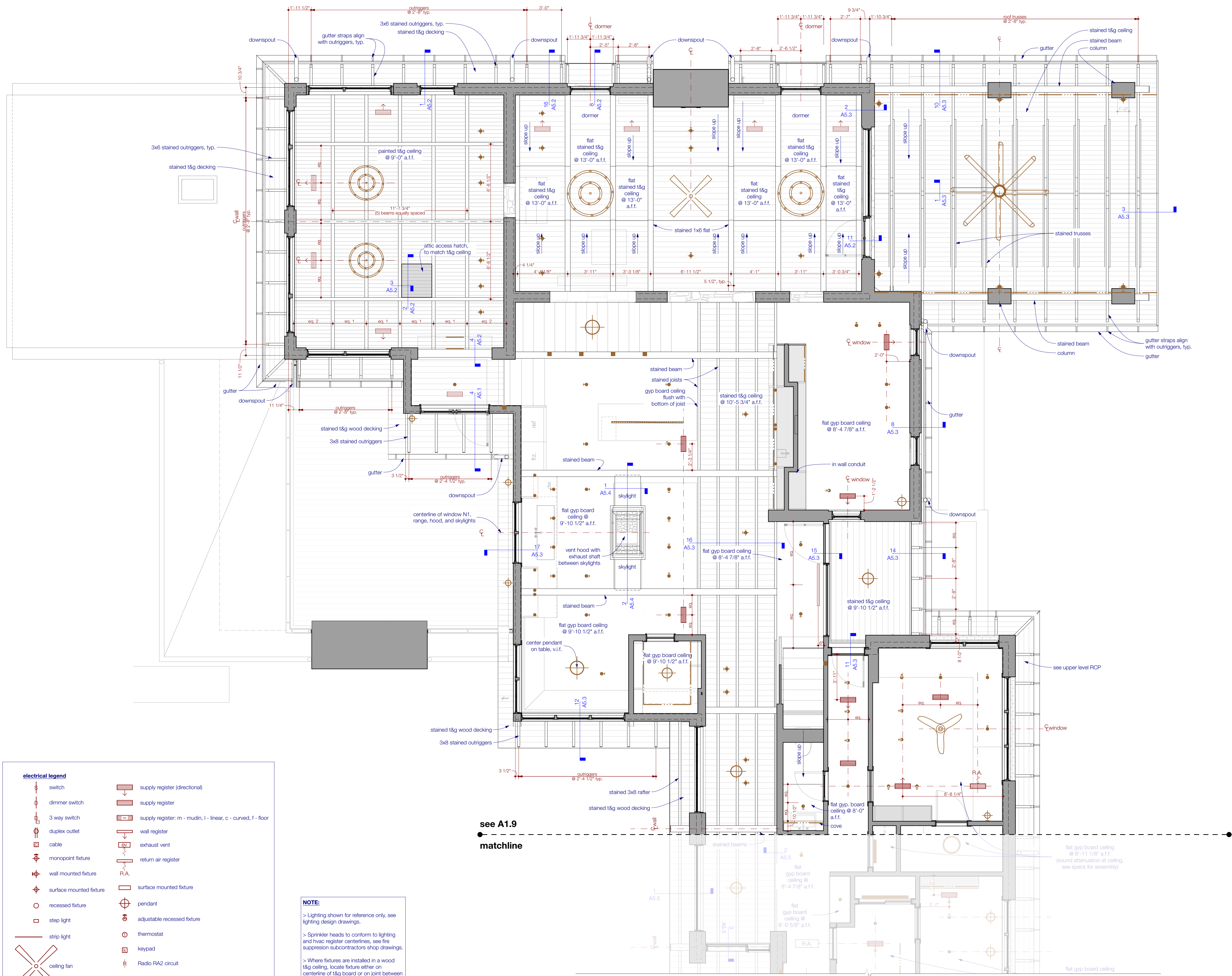
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3/8/22	
door schedule / elev.	
A1.6	



SAFEbuilt
Reviewed for Compliance by: CarlPartin
Date: 03/14/2023



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electrical legend

	switch		supply register (directional)
	dimmer switch		supply register
	3 way switch		supply register: m - mudin, l - linear, c - curved, f - floor
	duplex outlet		wall register
	cable		exhaust vent
	monopoint fixture		return air register
	wall mounted fixture		R.A.
	surface mounted fixture		surface mounted fixture
	recessed fixture		pendant
	step light		adjustable recessed fixture
	strip light		thermostat
	ceiling fan		keypad
			Radio RA2 circuit

NOTE:

> Lighting shown for reference only, see lighting design drawings.

> Sprinkler heads to conform to lighting and hvac register centerlines, see fire suppression subcontractors shop drawings.

> Where fixtures are installed in a wood t&g ceiling, locate fixture either on centerline of t&g board or on joint between boards. Verify in field board and fixture layout with architect.

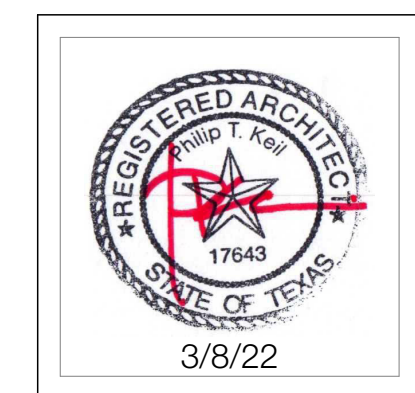
see A1.9
matchline

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

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revisions	
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1	11-11-22
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5	11-11-22
6	11-11-22

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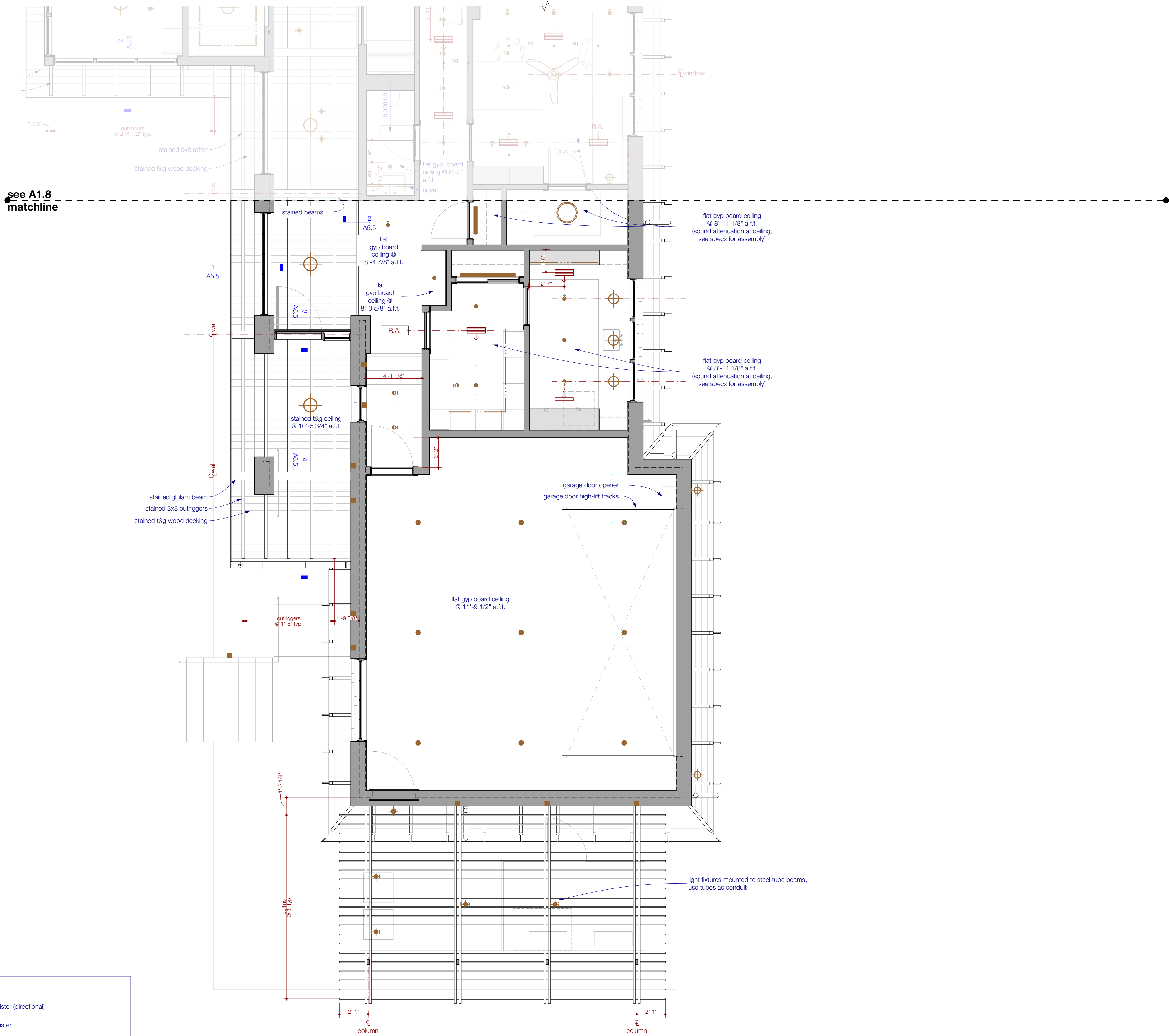
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level 1 RCP

A1.8

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electrical legend	
	switch
	dimmer switch
	3 way switch
	duplex outlet
	cable
	monopoint fixture
	wall mounted fixture
	surface mounted fixture
	recessed fixture
	step light
	strip light
	ceiling fan
	supply register (directional)
	supply register
	supply register: m - mudin, l - linear, c - curved, f - floor
	wall register
	exhaust vent
	return air register
	R.A.
	surface mounted fixture
	pendant
	adjustable recessed fixture
	thermostat
	keypad
	Radio RA2 circuit

NOTE:

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

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revisions	
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6	3/8/22

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level 1 RCP

A1.9



** see specifications for clarity of all new assemblies



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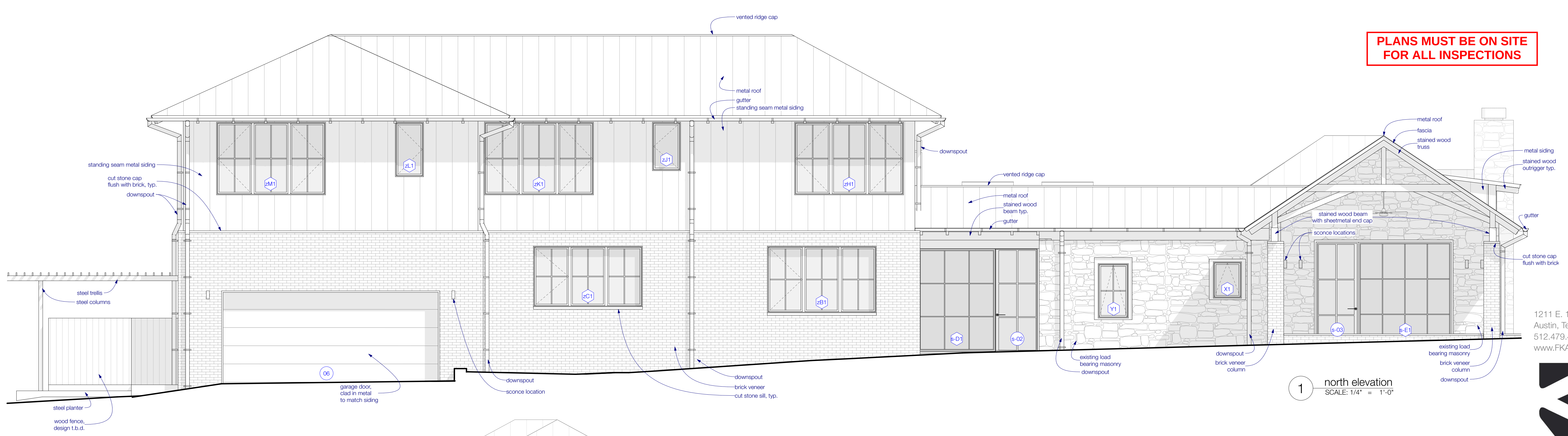


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elevations

A2.1

**PLANS MUST BE ON SITE
FOR ALL INSPECTIONS**



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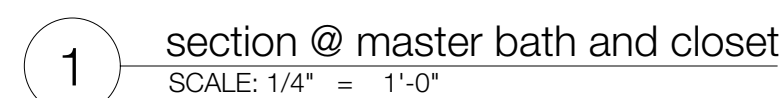
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3/8/22

elevations

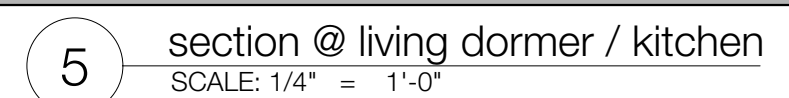
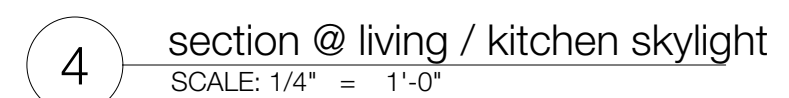
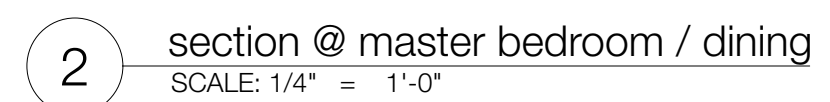
A2.2

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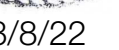
KEY:

 existing structure



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A3.1

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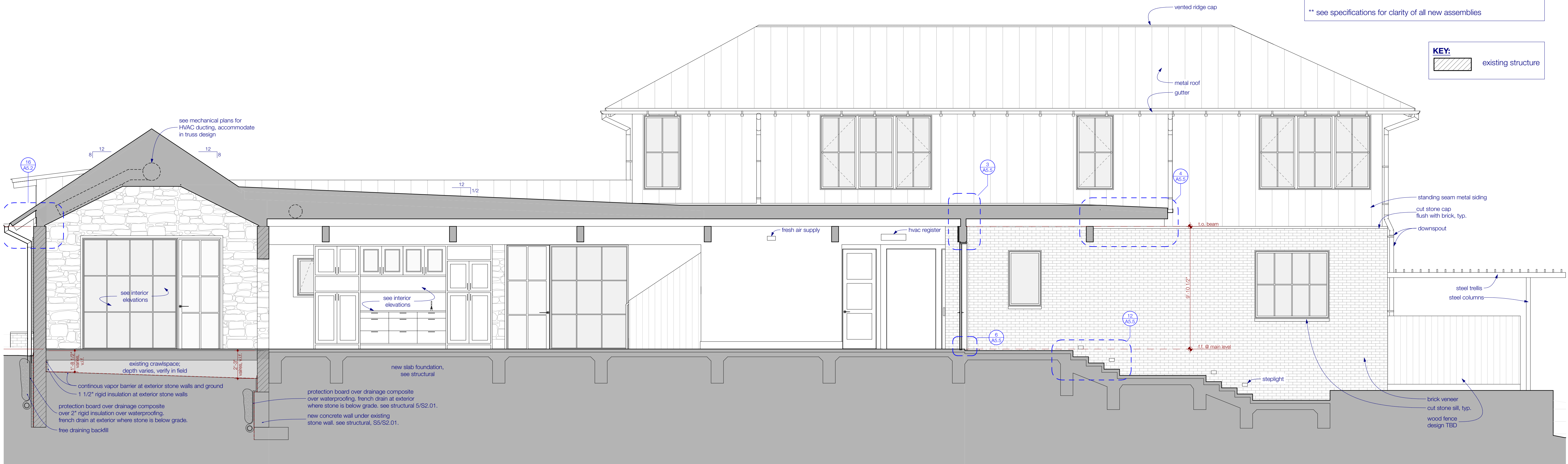
SECTION NOTES:

- > all new gutters & downspouts
- > all new guardrails & handrails
- > all roofing to be replaced
- > existing framing & structure are shown for reference only; contractor to verify final location of existing structure & coordinate w/ architect upon any interference w/ new assemblies
- > all materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor
- > all drainage notes are for reference only, final design by others

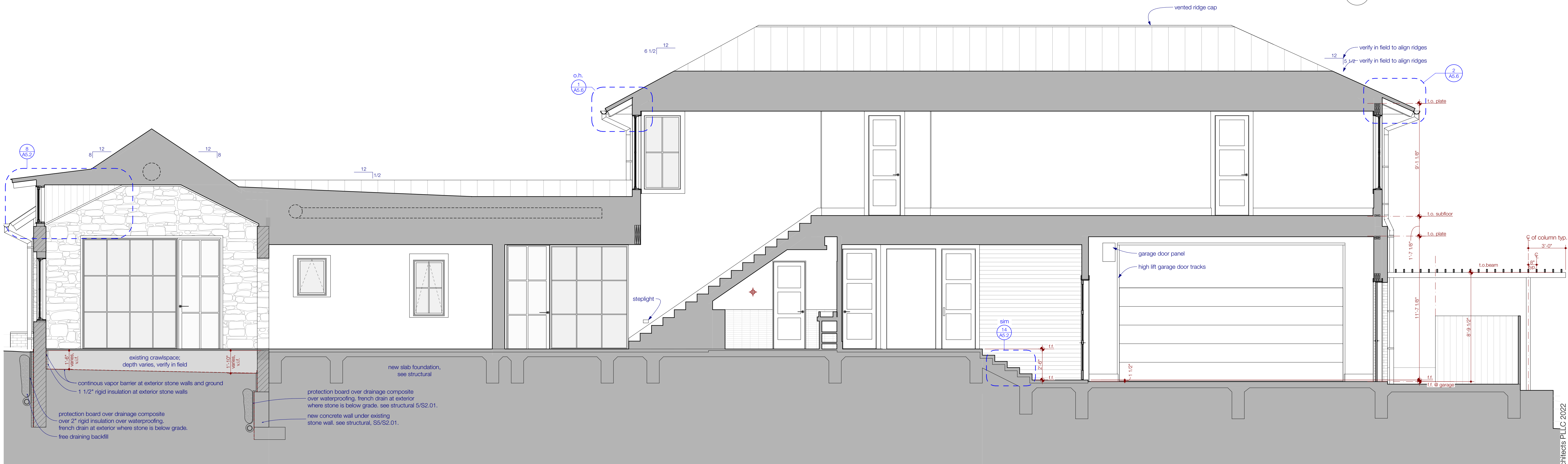
** see specifications for clarity of all new assemblies

KEY:

existing structure



1 section @ living / entry hall
SCALE: 1/4" = 1'-0"

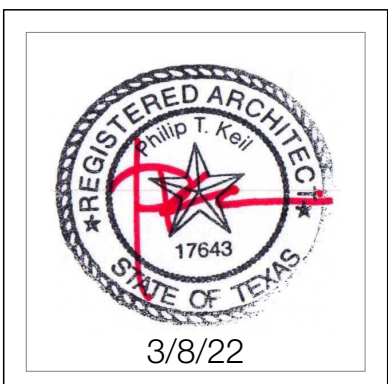


2 section @ living / media / stair
SCALE: 1/4" = 1'-0"

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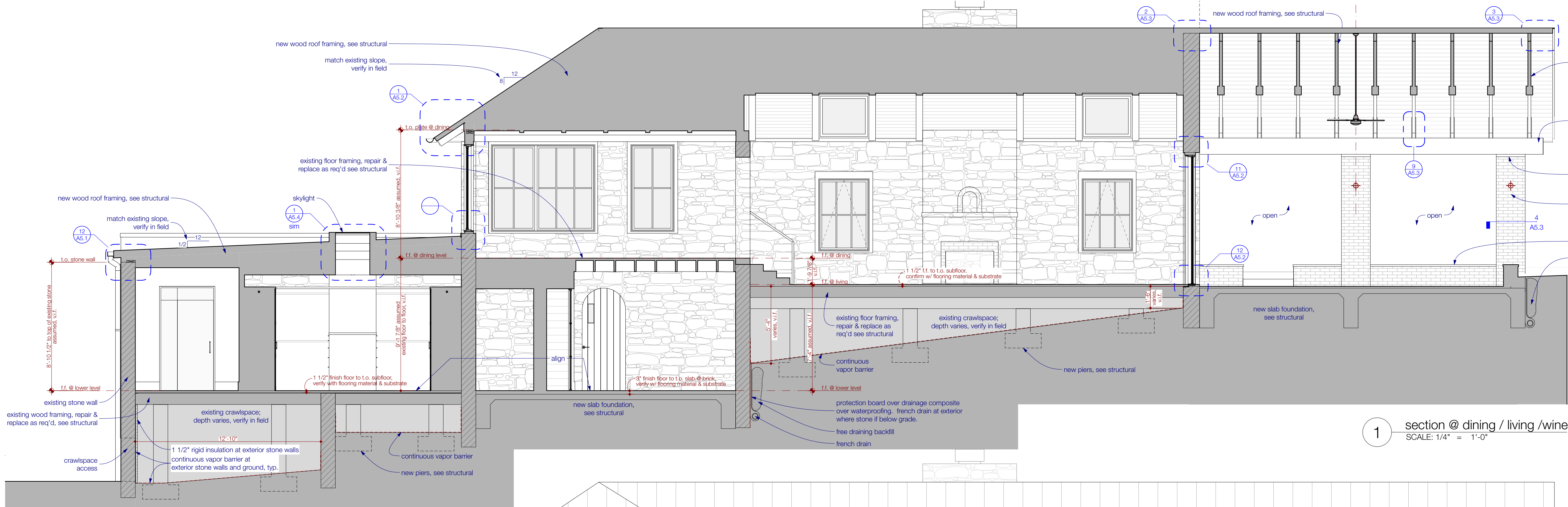
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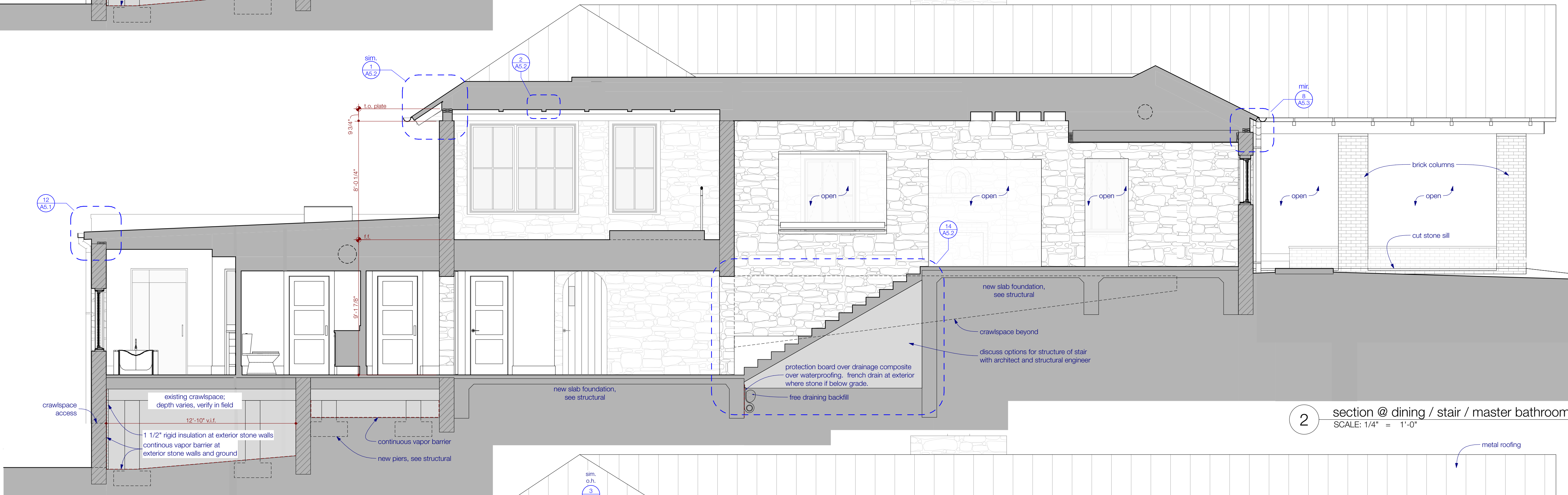
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sections

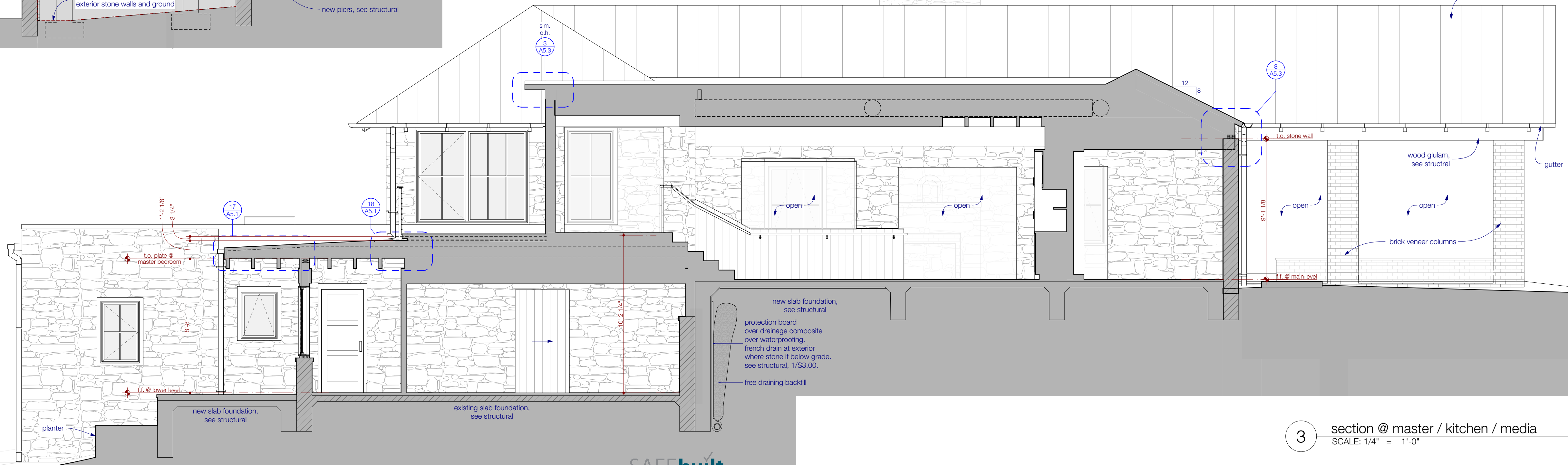
A3.2



1 section @ dining / living / wine
SCALE: 1/4" = 1'-0"



2 section @ dining / stair / master bathroom
SCALE: 1/4" = 1'-0"



3 section @ master / kitchen / media
SCALE: 1/4" = 1'-0"

SECTION NOTES:

- > all new gutters & downspouts
- > all new guardrails & handrails
- > all roofing to be replaced
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- > all materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor
- > all drainage notes are for reference only, final design by others

** see specifications for clarity of all new assemblies

KEY:

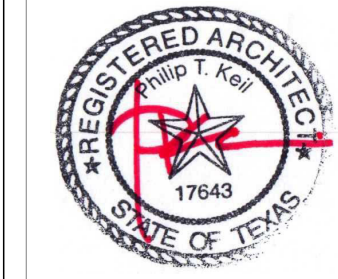
existing structure

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revisions

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1	1/1/22
2	1/1/22
3	1/1/22
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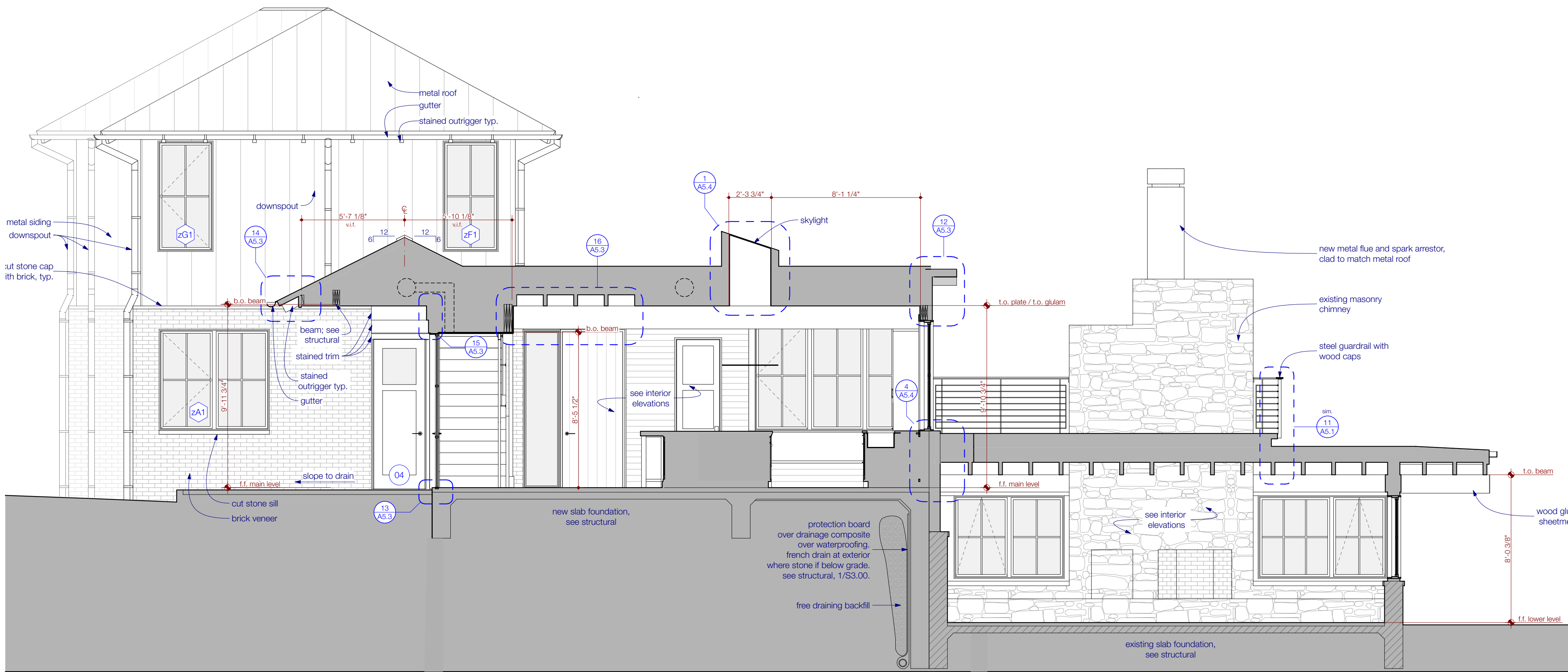
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sections

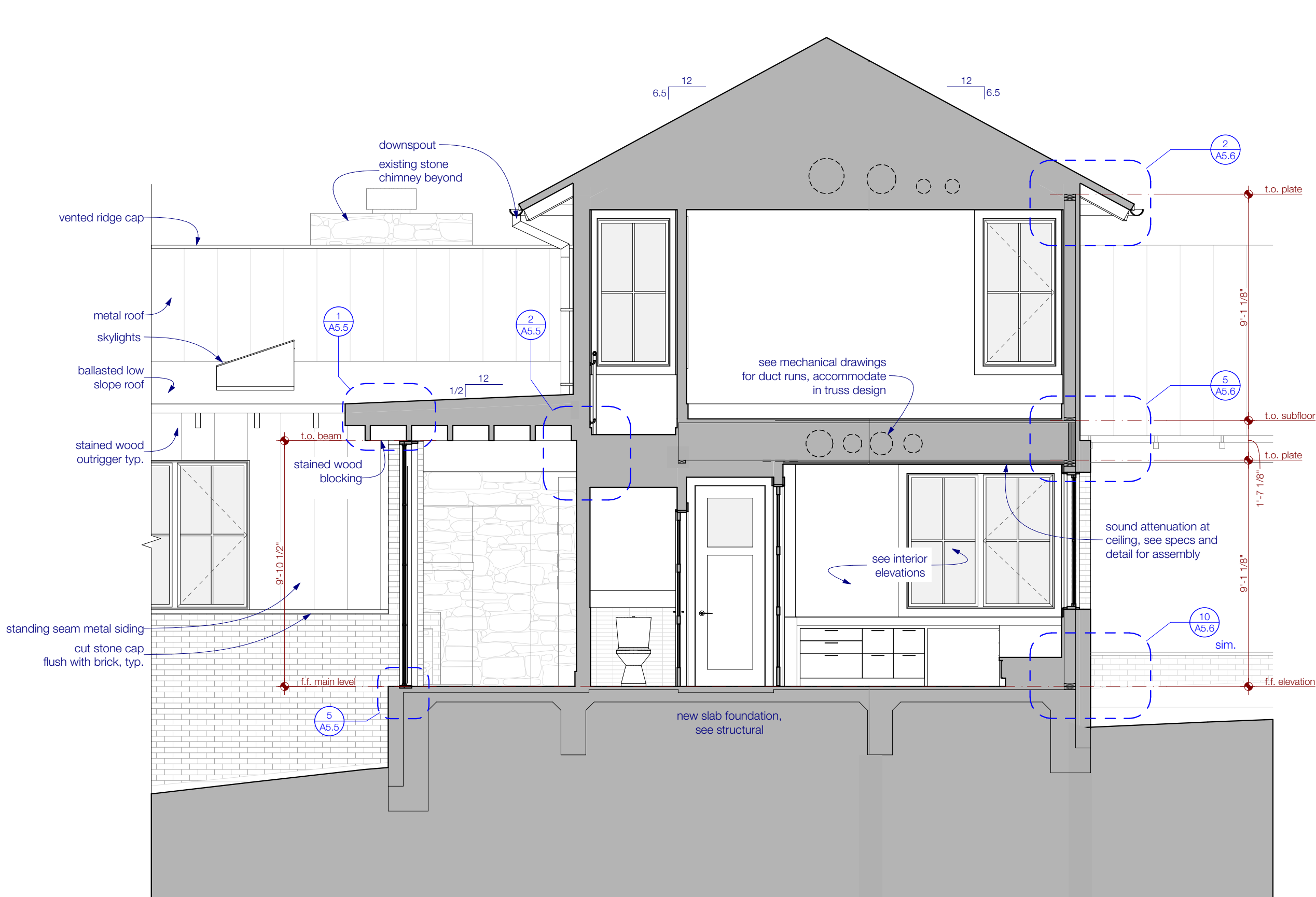
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SECTION NOTES:

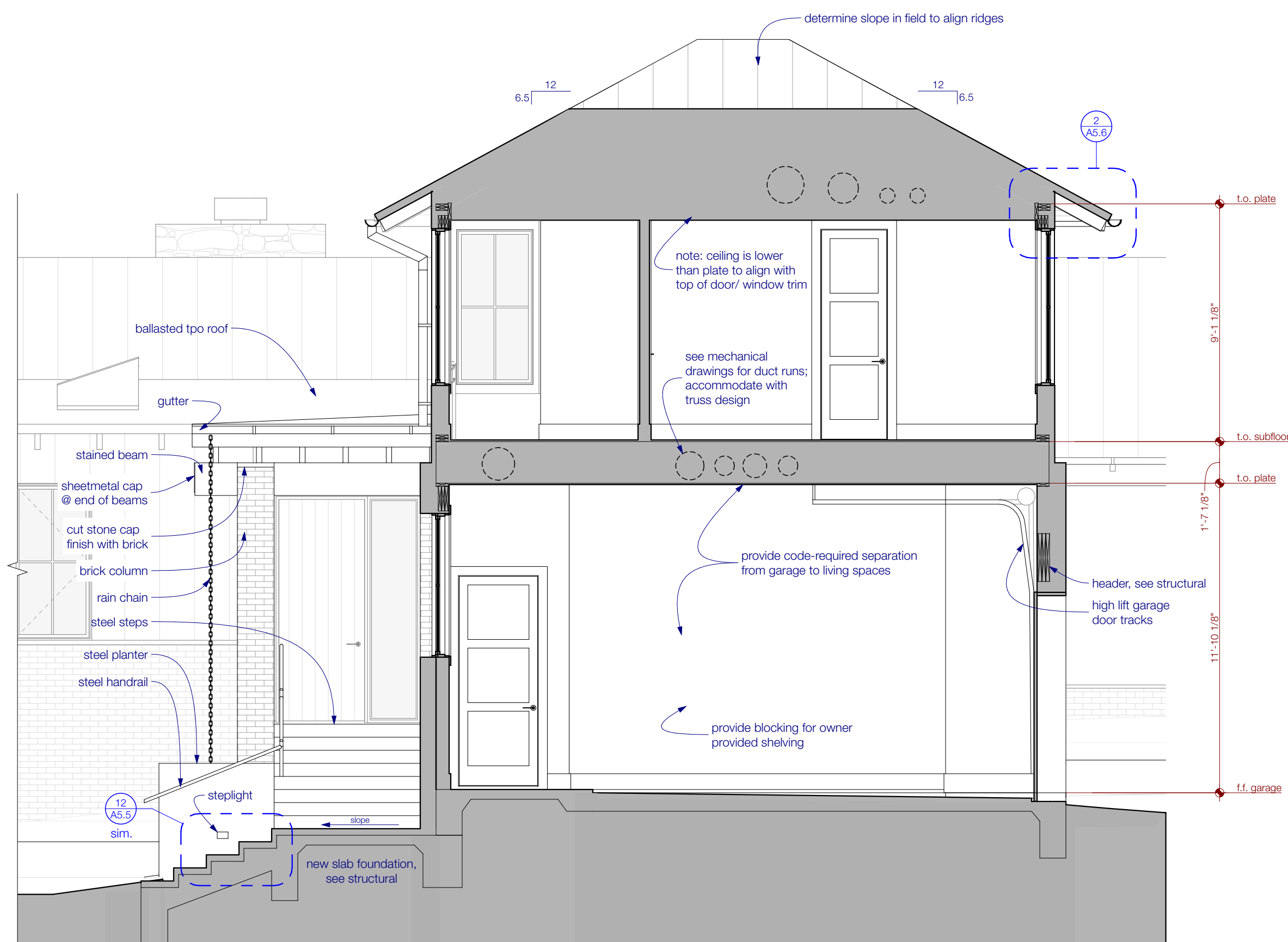
- > all new gutters & downspouts
- > all new guardrails & handrails
- > all roofing to be replaced
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- > all materials are shown for reference only; vertical coursing of brick to start w/ mortar joint at main level finished floor
- > all drainage notes are for reference only, final design by others
- ** see specifications for clarity of all new assemblies



1 section @ kitchen / stair / porch
SCALE: 1/4" = 1'-0"



2 section @ entry hallway / bedroom wing
SCALE: 1/4" = 1'-0"



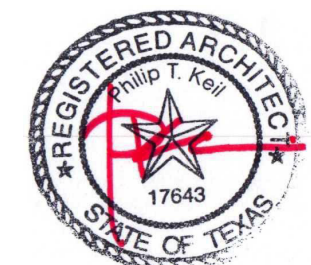
3 section @ garage / bedroom wing
SCALE: 1/4" = 1'-0"

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3/8/22

sections

A3.4



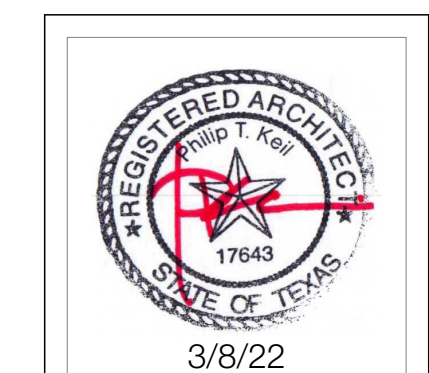
INTERIOR ELEVATION NOTES:

- > All interior walls are painted gyp board, u.n.o.
- > All base boards, window trim, door trim, & ceiling moulding to be painted, u.n.o.
- > See typ. details for trim profiles.
- > All solid surface countertops are 3cm with 3/4" overhangs, typ.
- > Material patterns are not representative of final sizes or configurations – they are shown for reference only; contractor to discuss w/ architect & interior designer the final "start" and "stop" points of the different materials.

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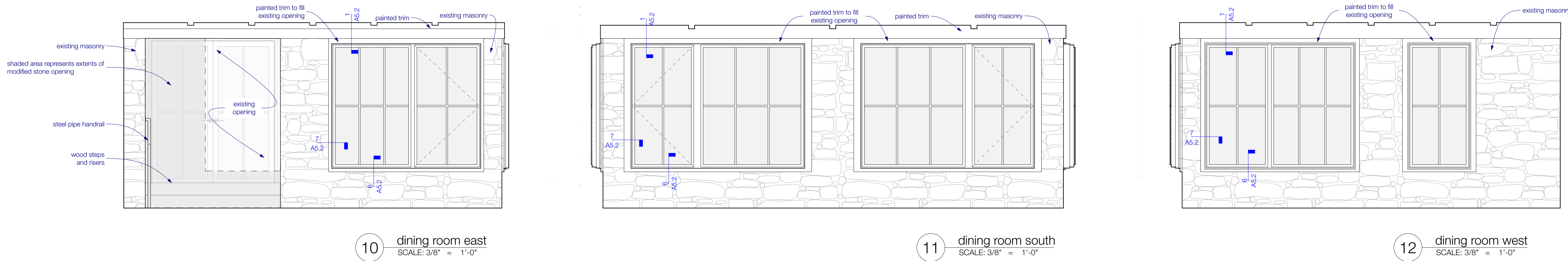
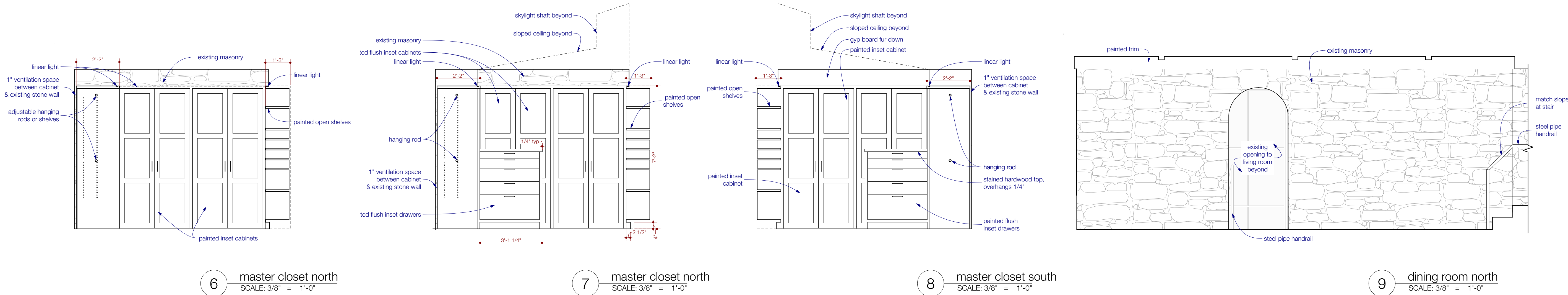
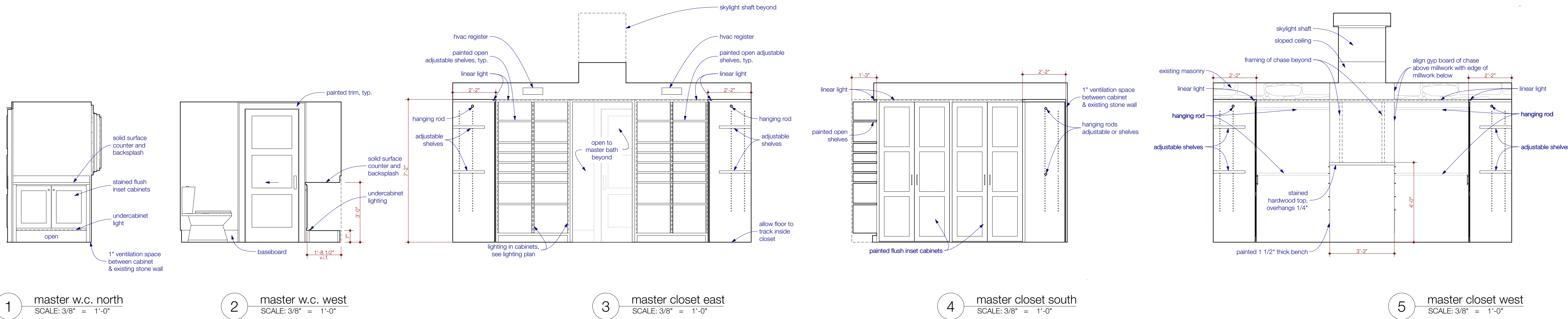
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interior elevations

A4.1



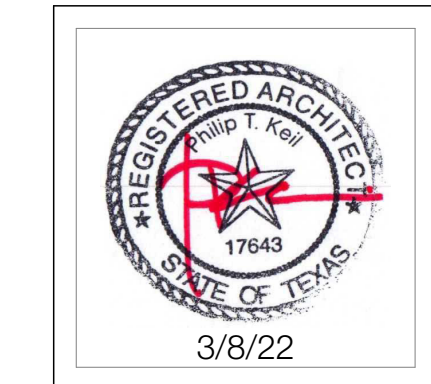
INTERIOR ELEVATION NOTES:

- > All interior walls are painted gyp board, u.n.o.
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- > See typ. details for trim profiles.
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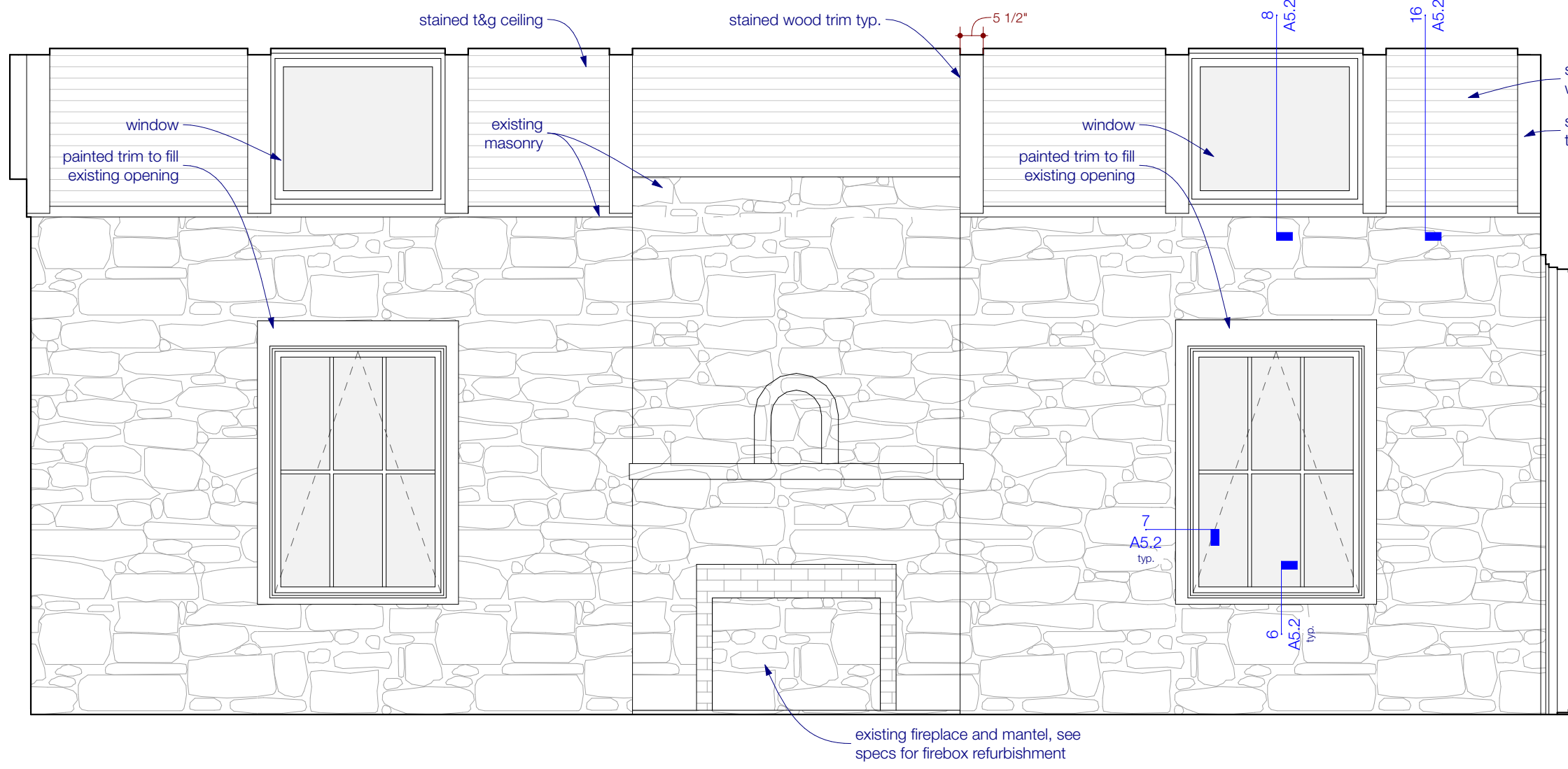


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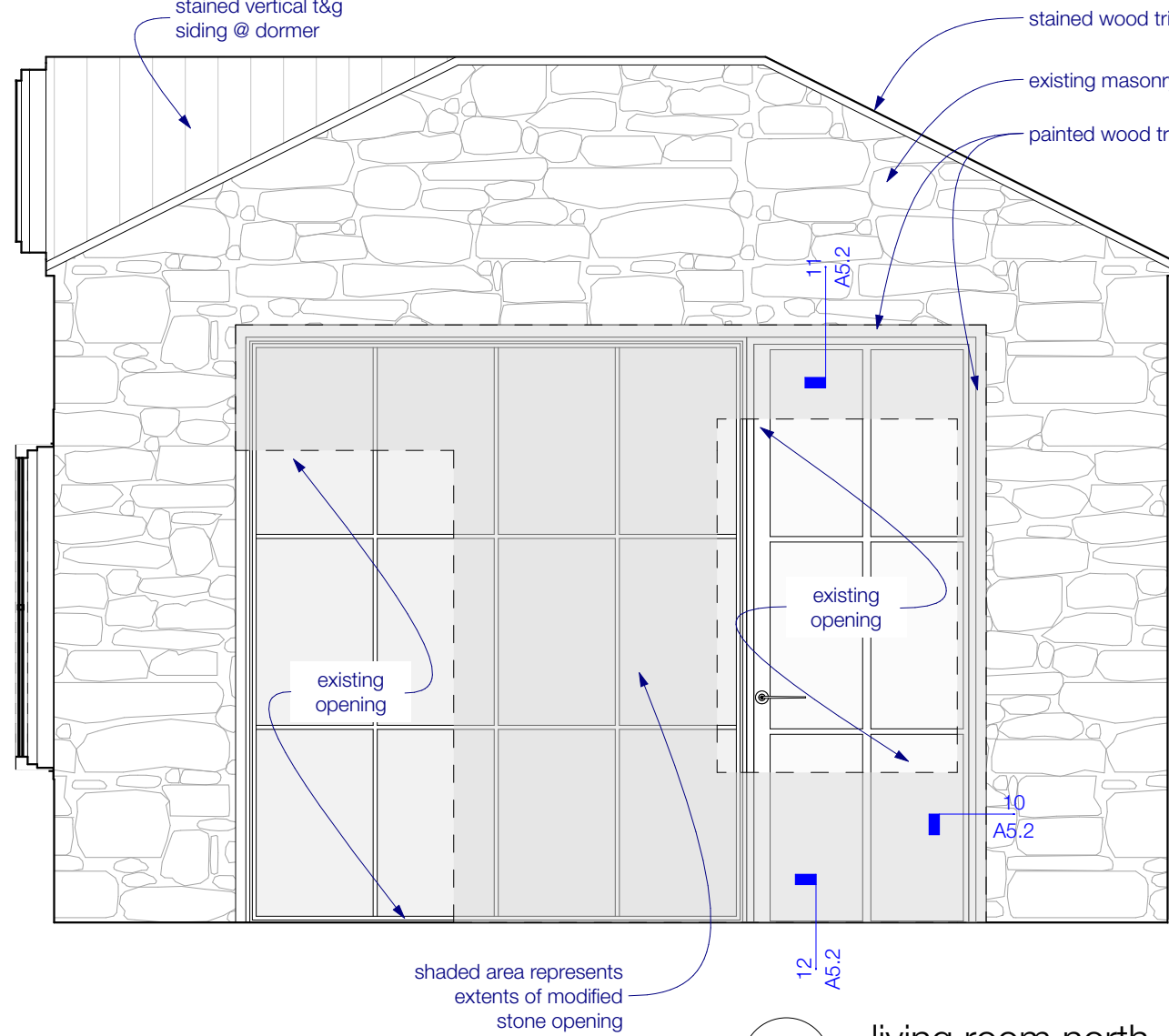


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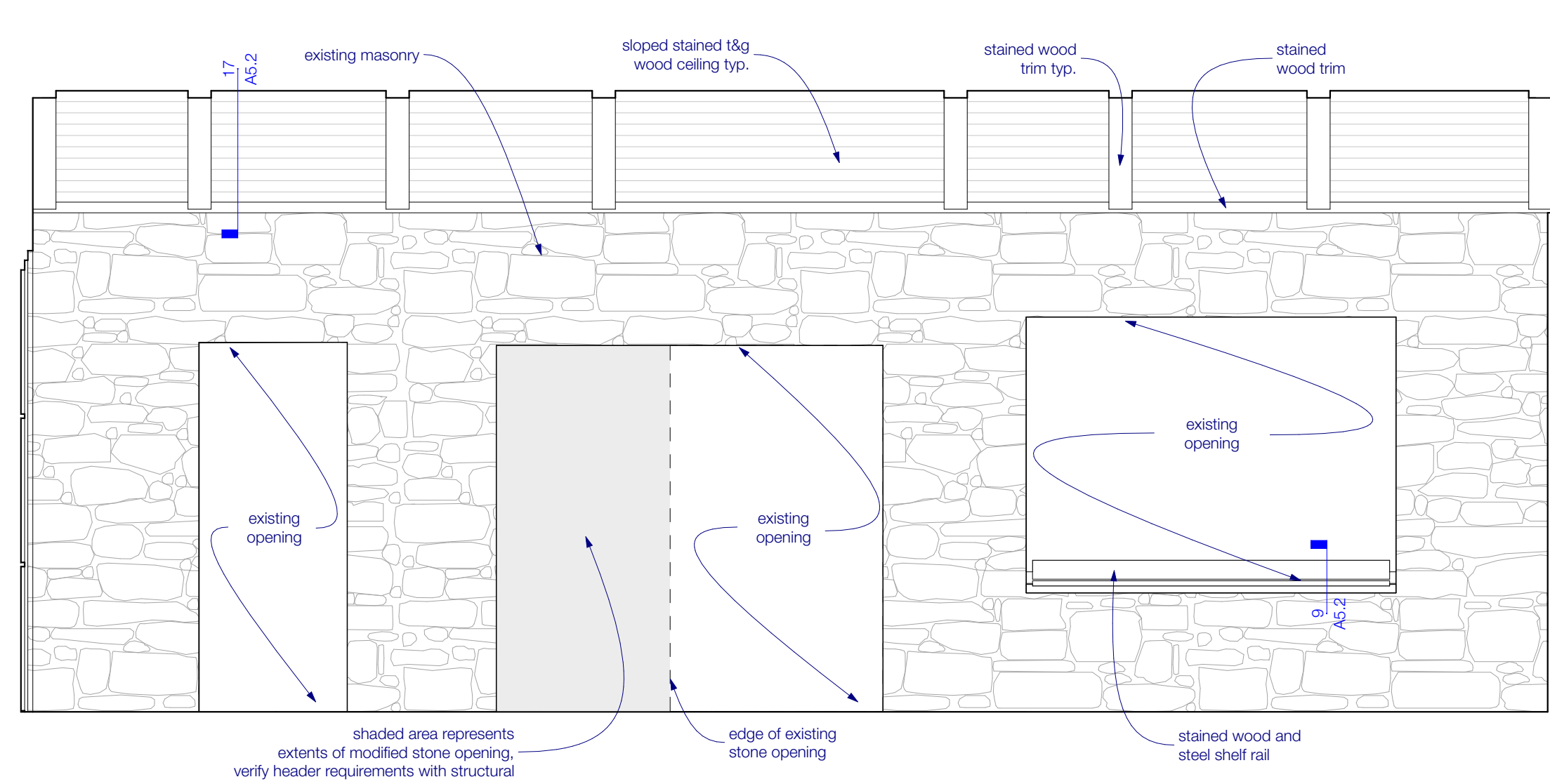
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3/8/22
interior elevations
A4.2



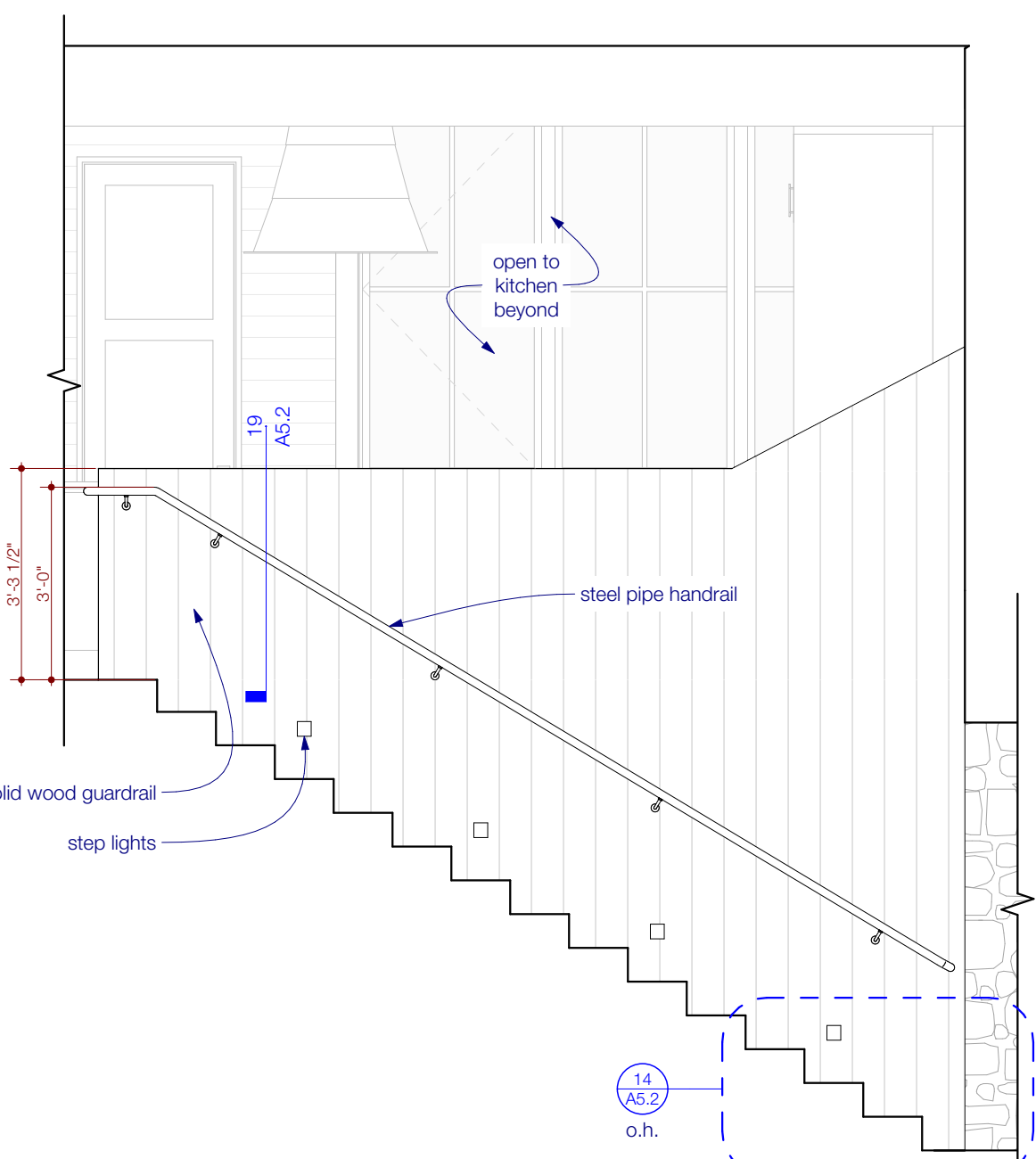
1 living room west
SCALE: 3/8" = 1'-0"



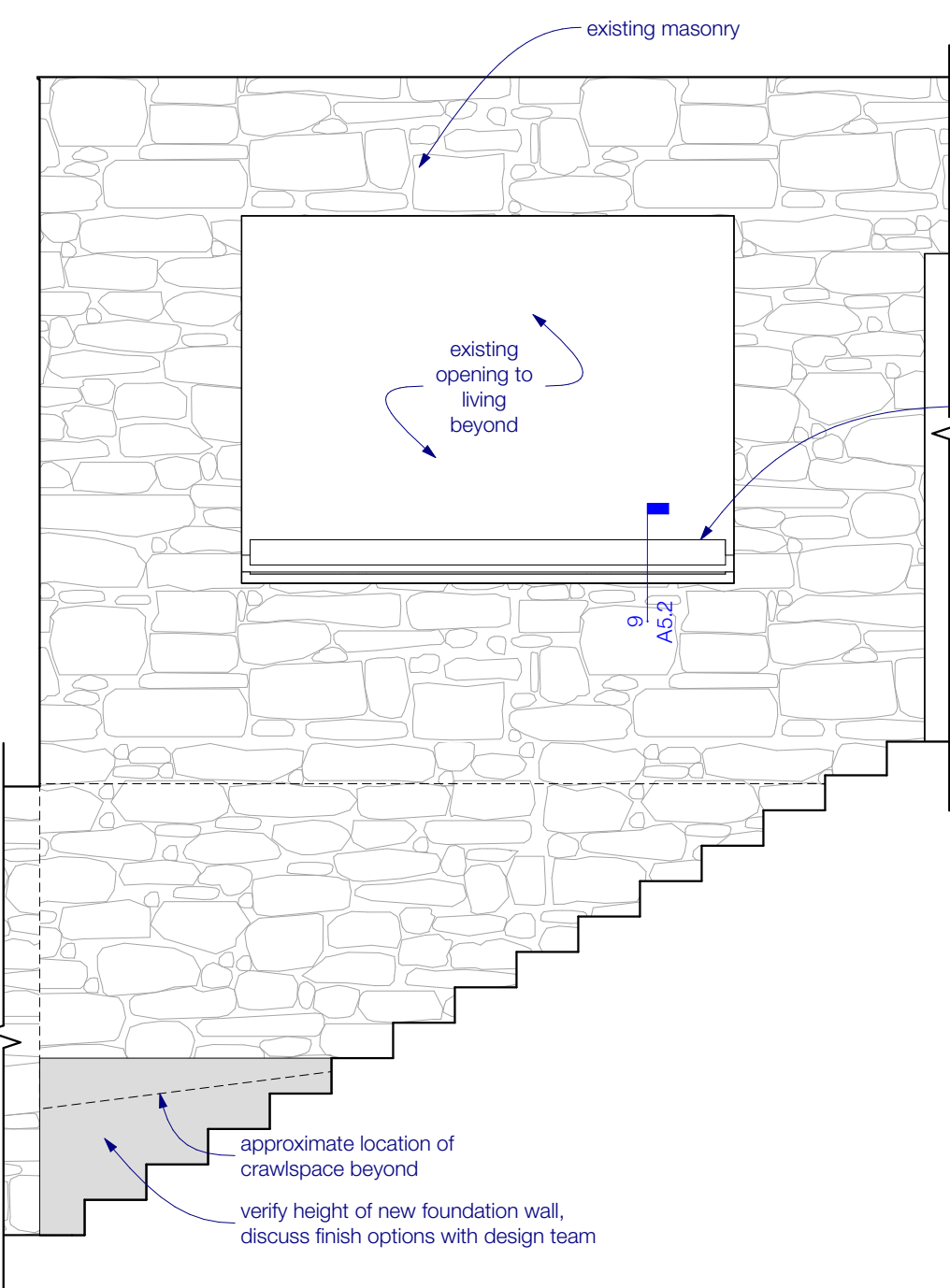
2 living room north
SCALE: 3/8" = 1'-0"



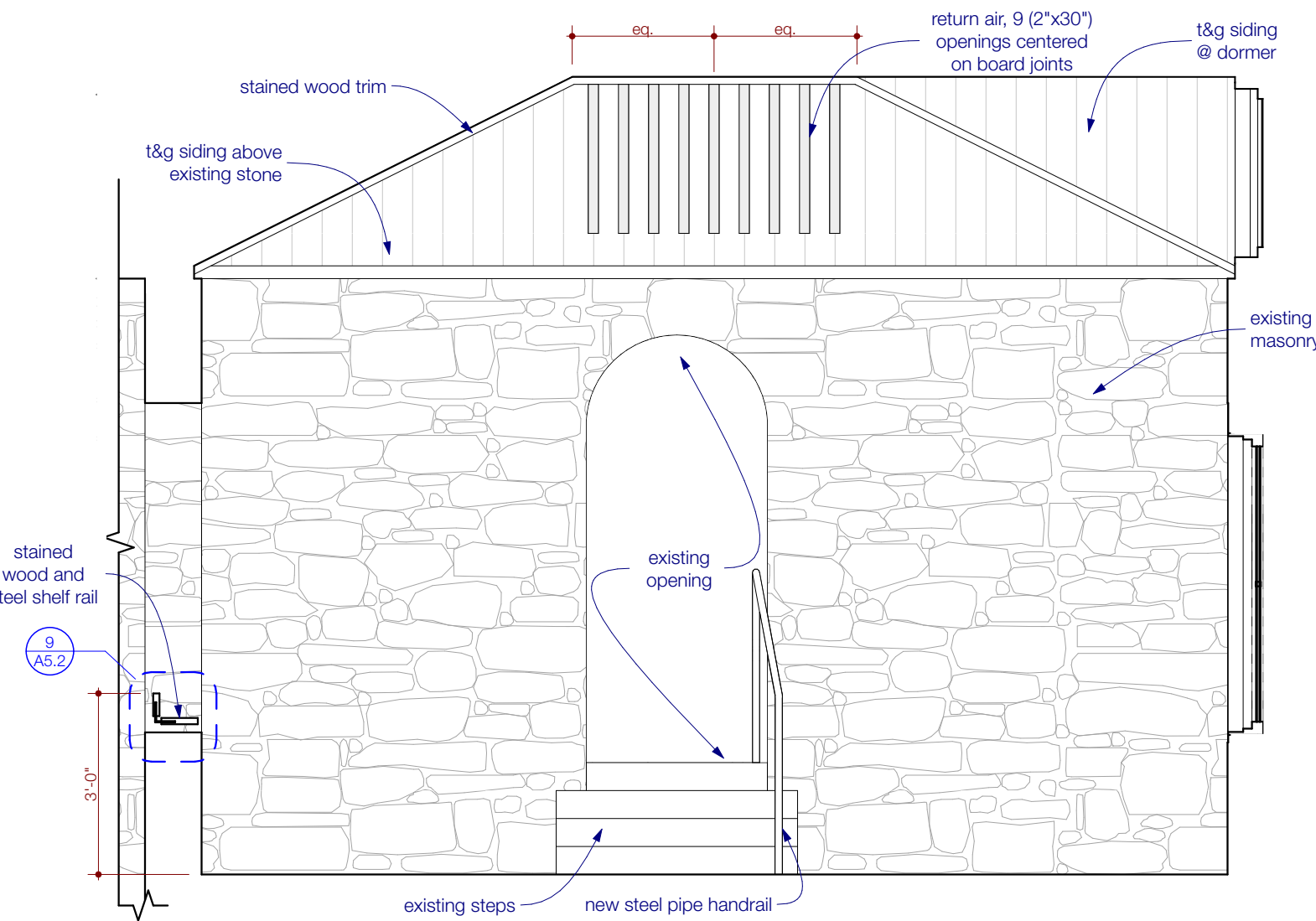
3 living room east
SCALE: 3/8" = 1'-0"



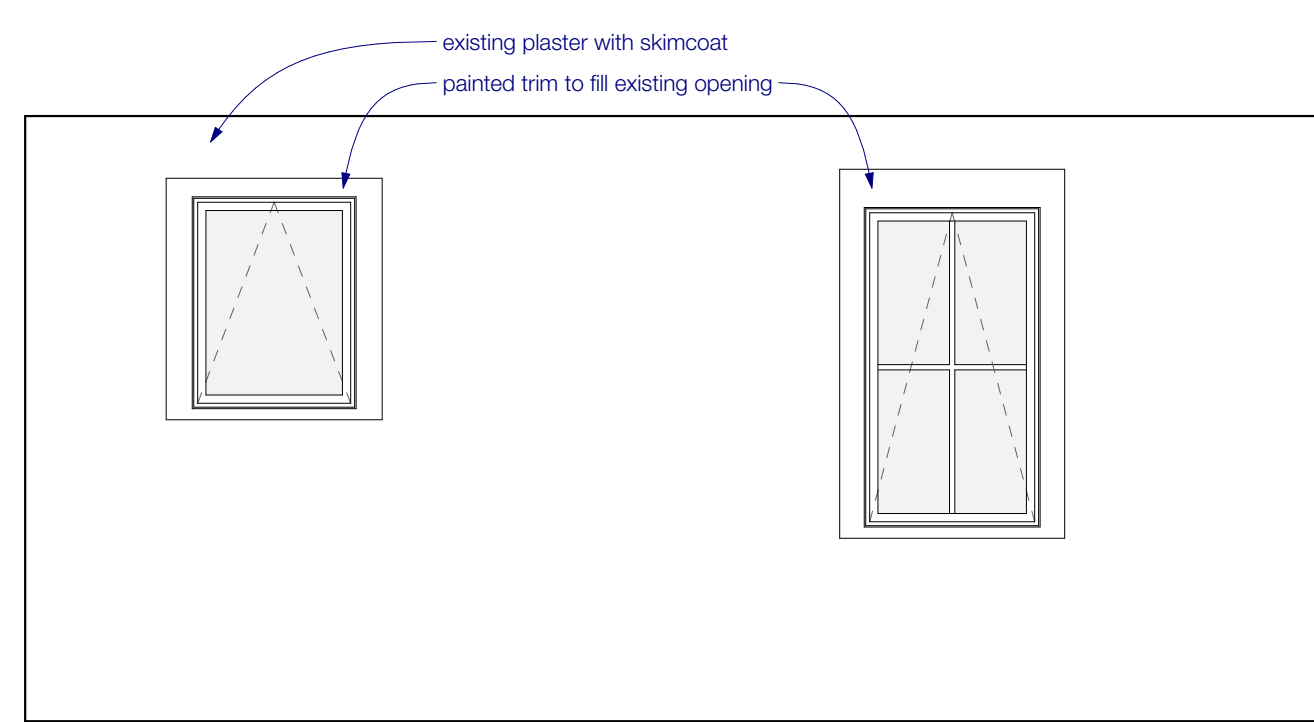
6 kitchen stair
SCALE: 3/8" = 1'-0"



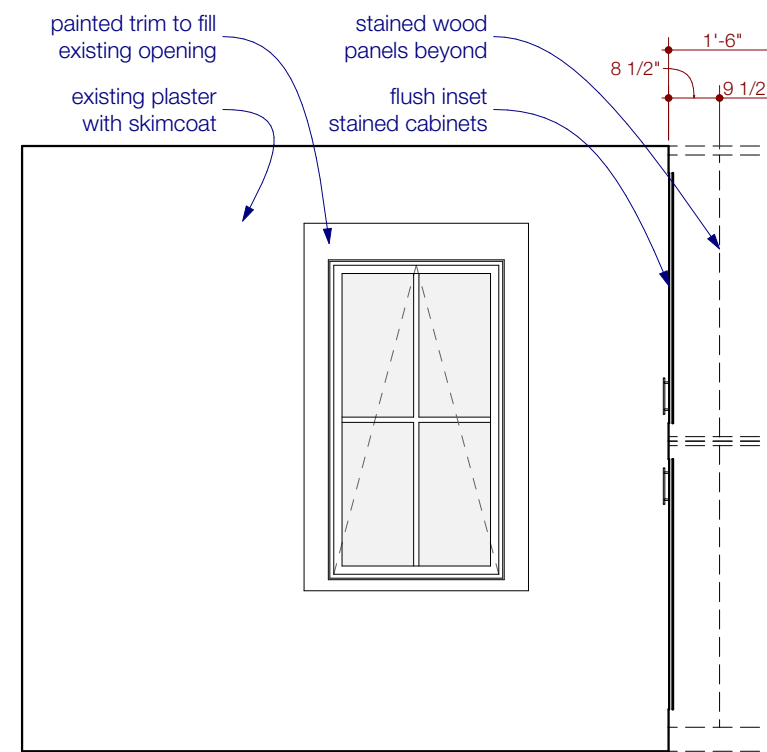
5 kitchen stair
SCALE: 3/8" = 1'-0"



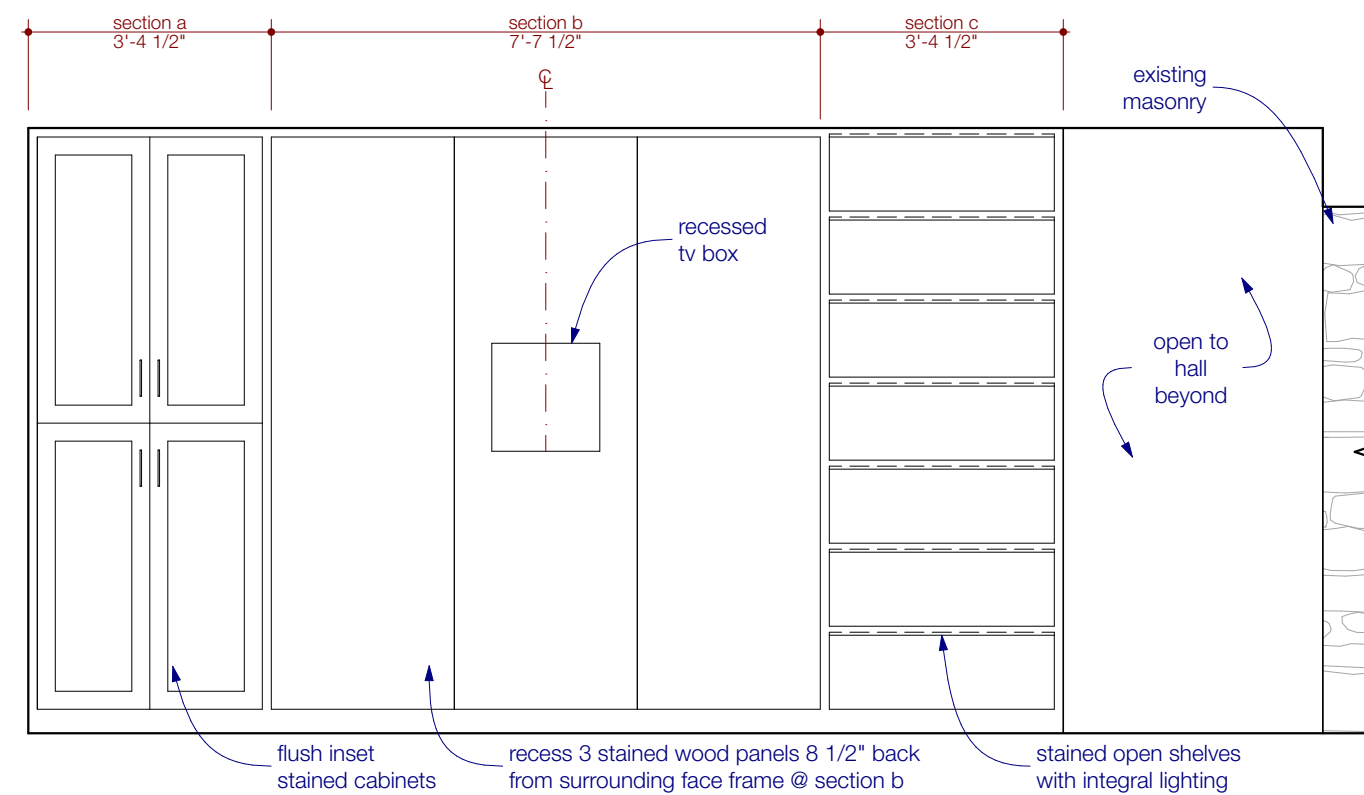
4 living room south
SCALE: 3/8" = 1'-0"



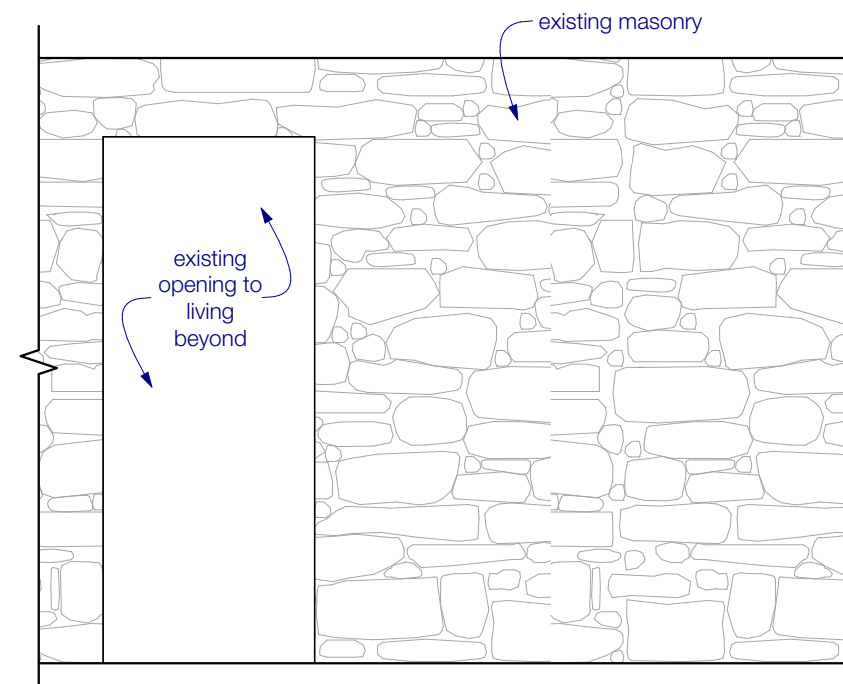
7 media north
SCALE: 3/8" = 1'-0"



8 media east
SCALE: 3/8" = 1'-0"



9 media south
SCALE: 3/8" = 1'-0"



10 media west
SCALE: 3/8" = 1'-0"

INTERIOR ELEVATION NOTES:

- > All interior walls are painted gyp board, u.n.o.
- > All base boards, window trim, door trim, & ceiling moulding to be painted, u.n.o.
- > See typ. details for trim profiles.
- > All solid surface countertops are 3cm with 3/4" overhangs, typ.
- > Material patterns are not representative of final sizes or configurations – they are shown for reference only; contractor to discuss w/ architect & interior designer the final "start" and "stop" points of the different materials.

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3/8/22

revisions

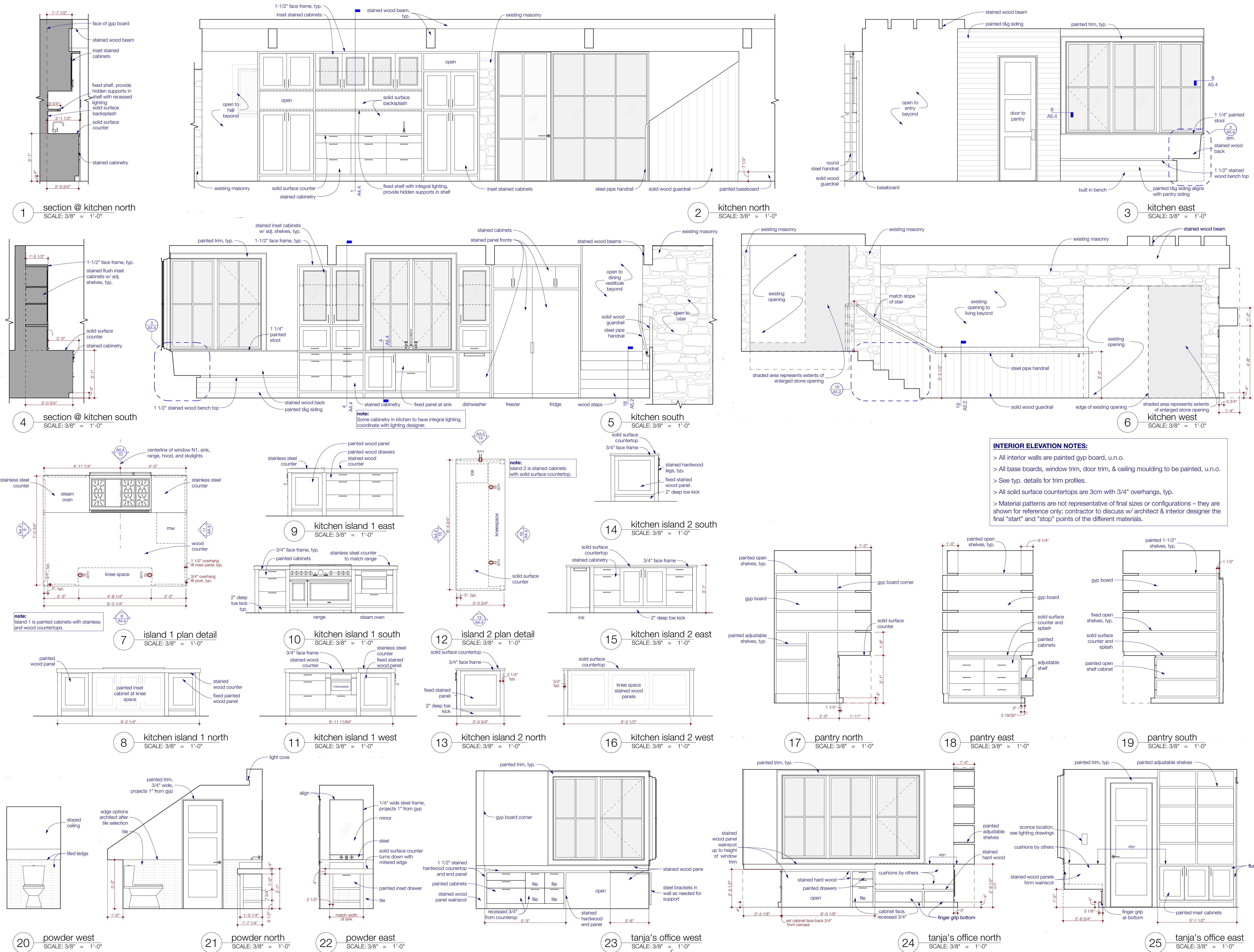
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6	1/1/22

100% CD

3/8/22

interior elevations

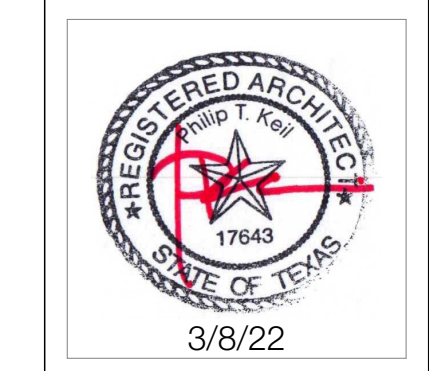
A4.3



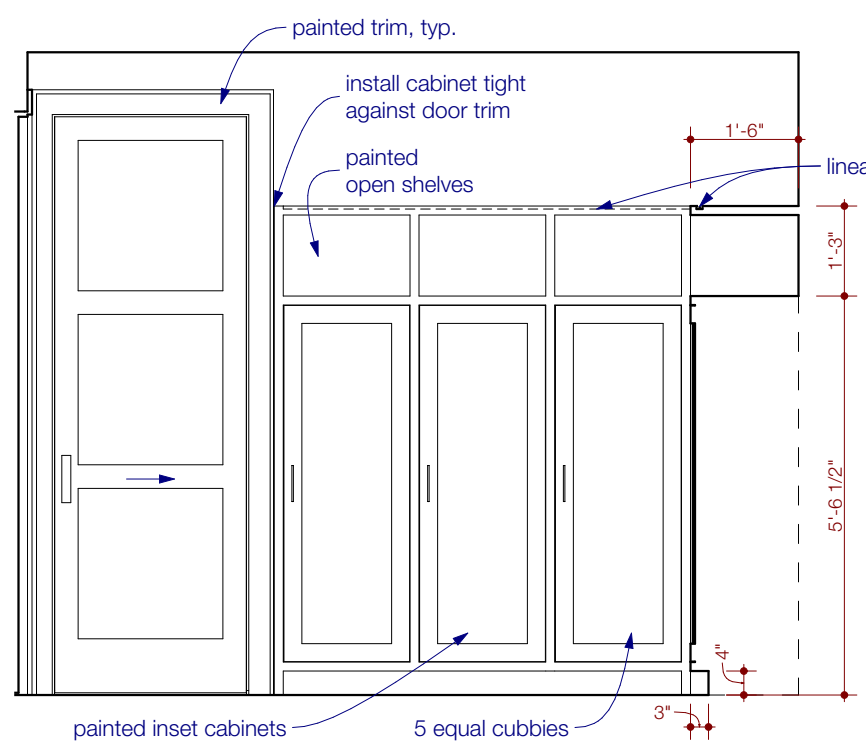
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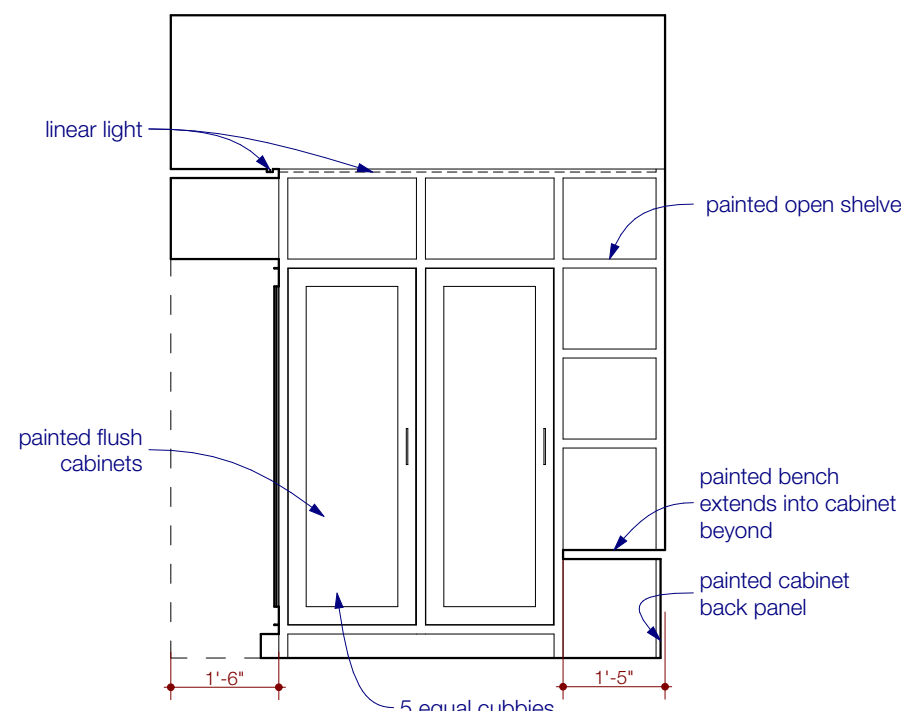
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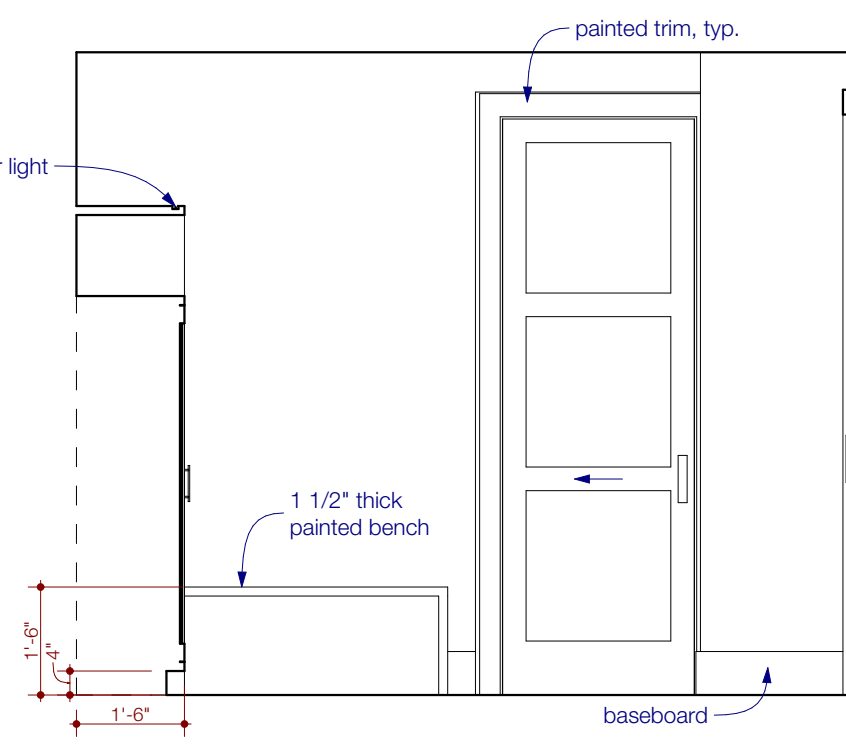
revisions	
date	description
1	100% CD
2	3/8/22
3	interior elevations
4	A4.4



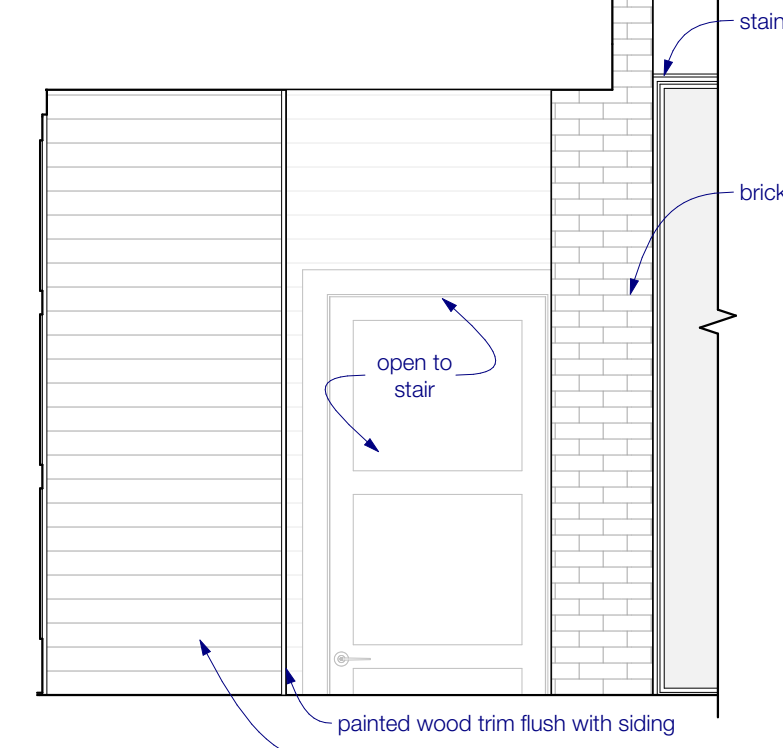
1 mudroom north
SCALE: 3/8" = 1'-0"



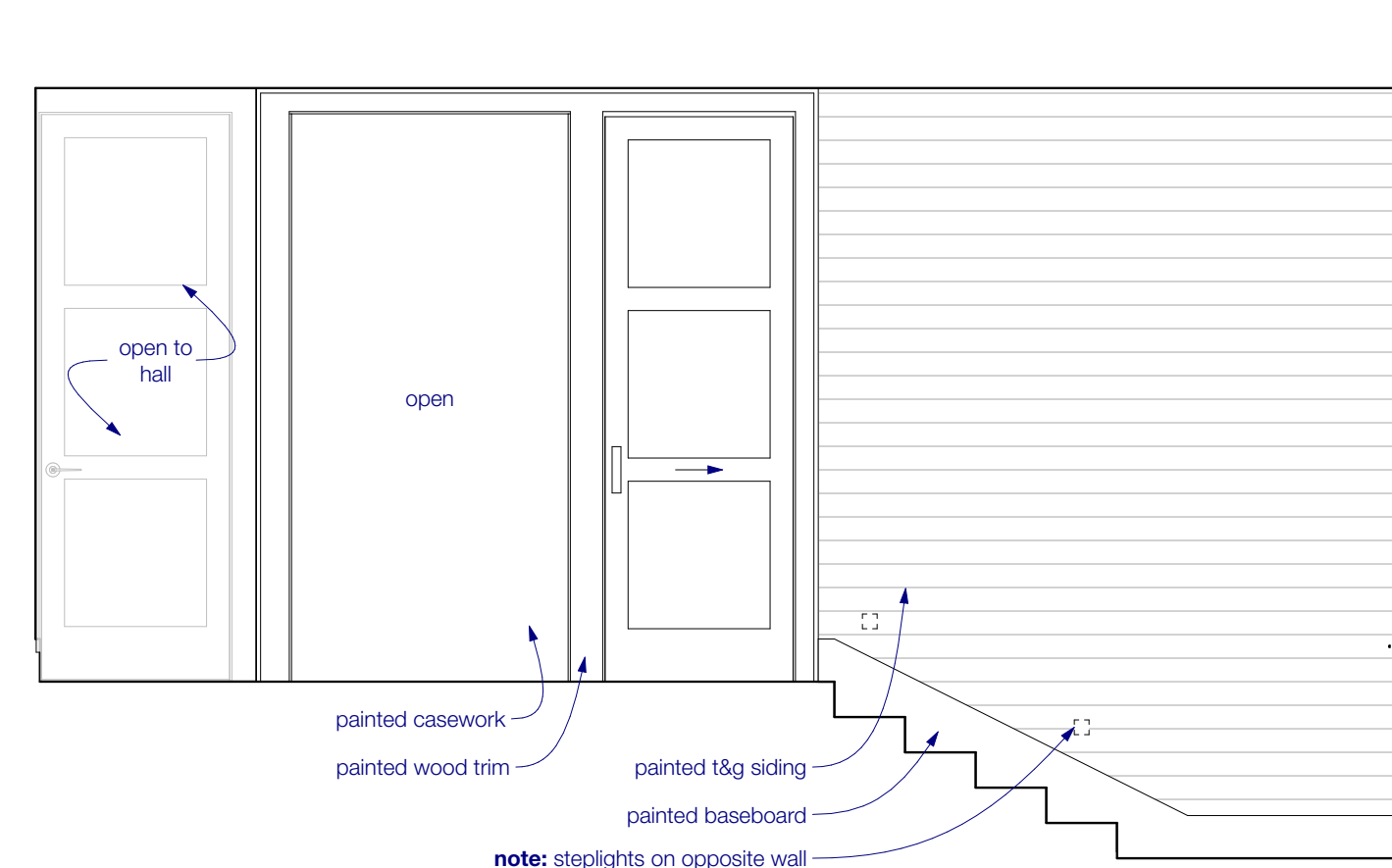
2 mudroom east
SCALE: 3/8" = 1'-0"



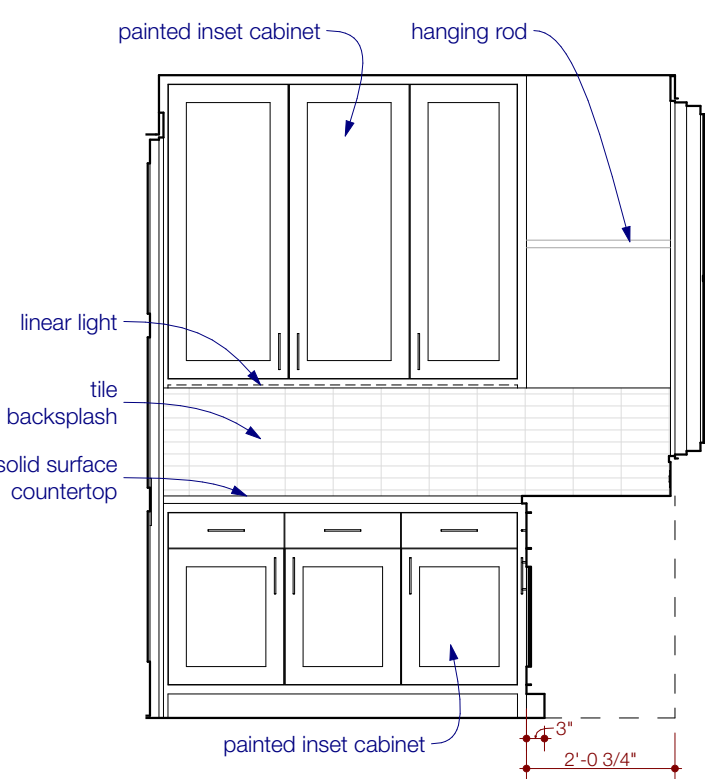
3 mudroom south
SCALE: 3/8" = 1'-0"



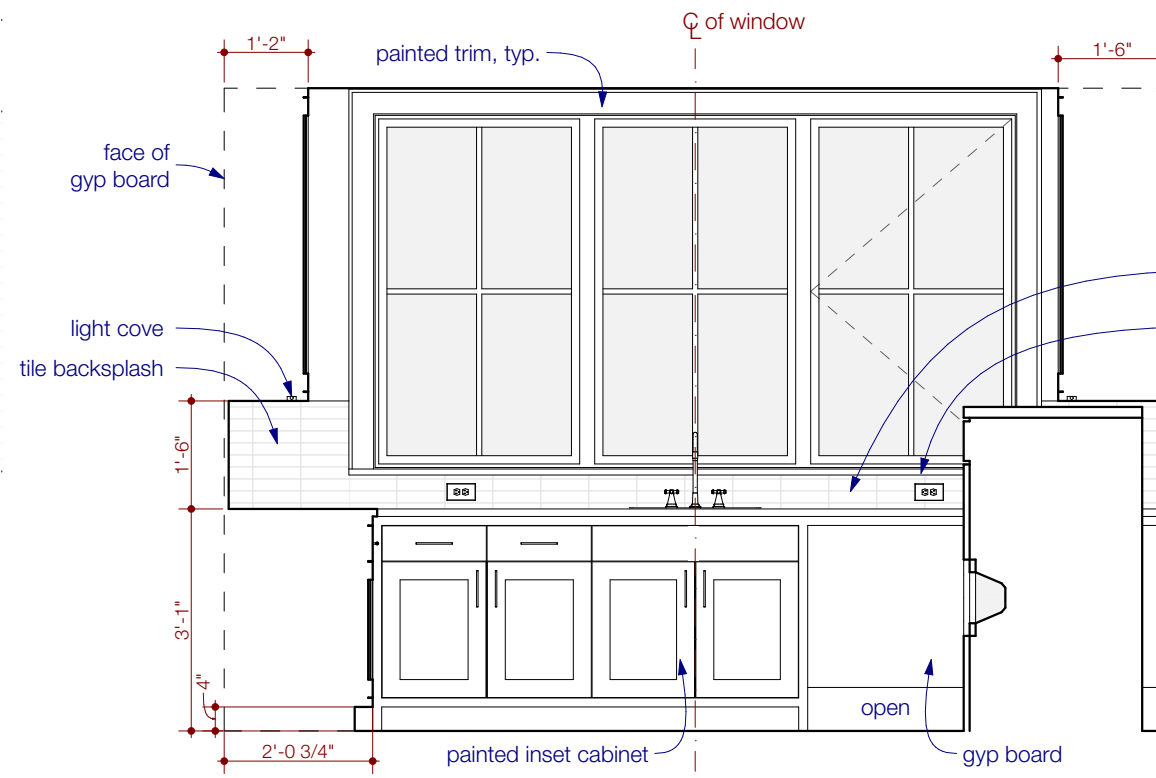
4 entry hall east
SCALE: 3/8" = 1'-0"



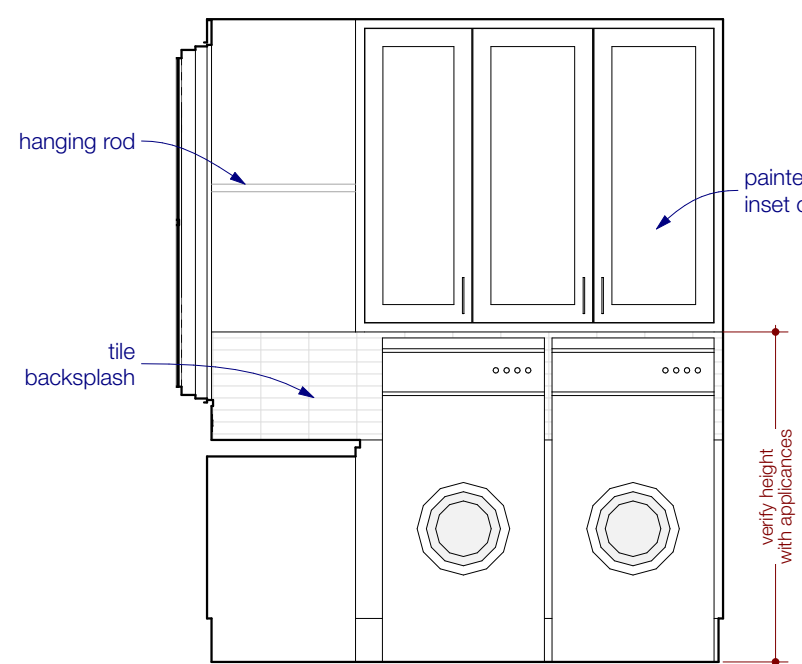
5 entry hall north
SCALE: 3/8" = 1'-0"



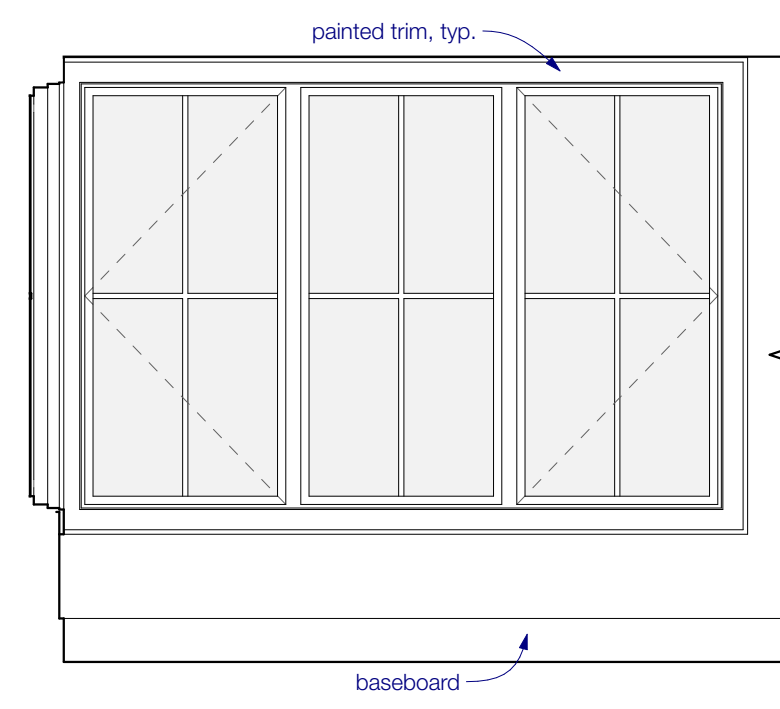
6 laundry west
SCALE: 3/8" = 1'-0"



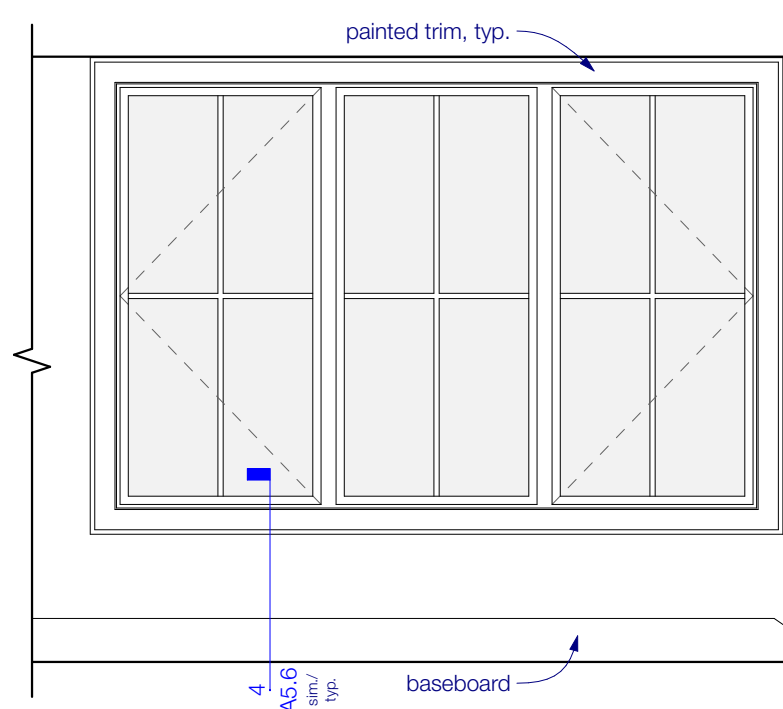
7 laundry north
SCALE: 3/8" = 1'-0"



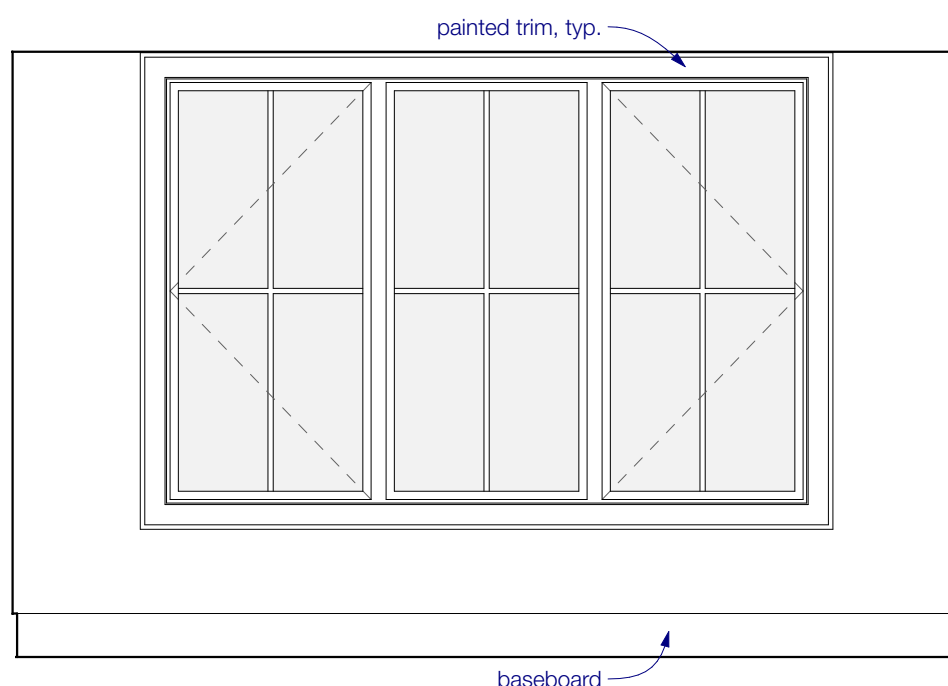
8 laundry east
SCALE: 3/8" = 1'-0"



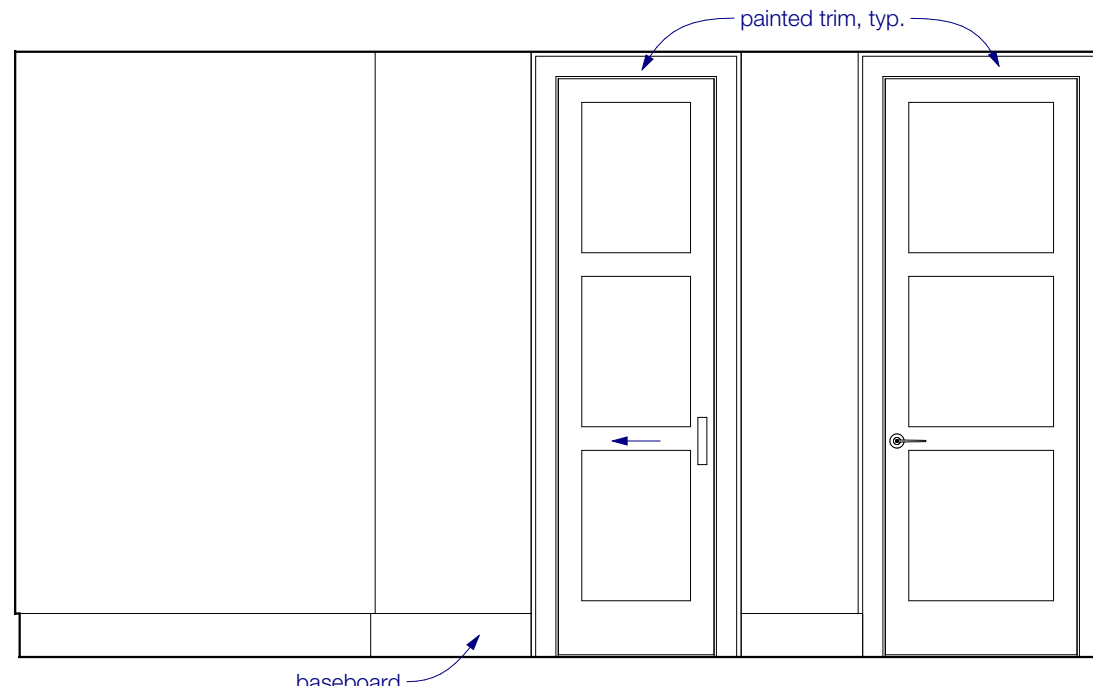
9 sitting south
SCALE: 3/8" = 1'-0"



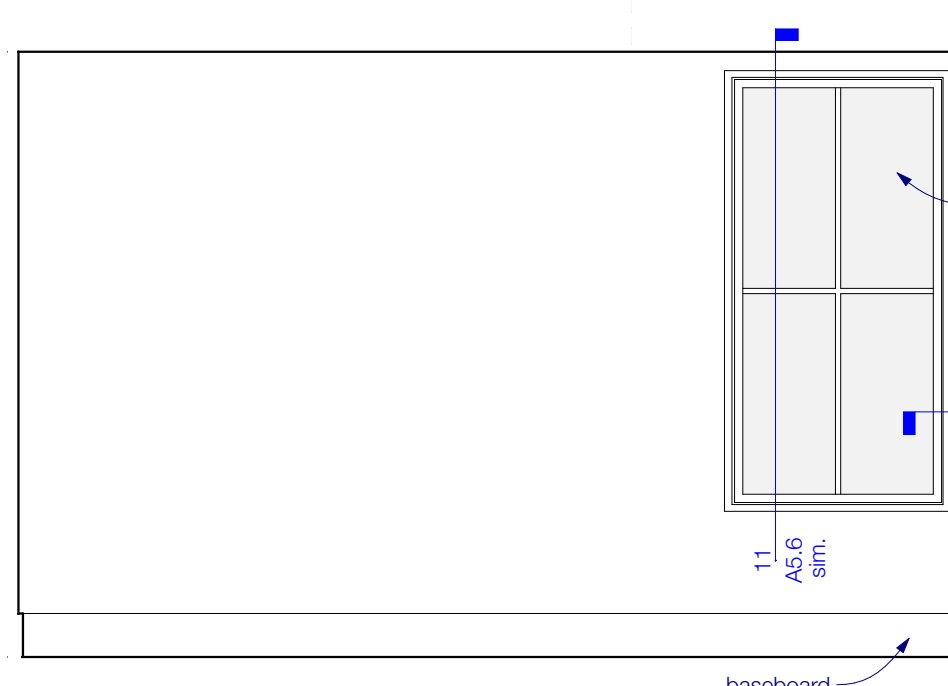
10 sitting east
SCALE: 3/8" = 1'-0"



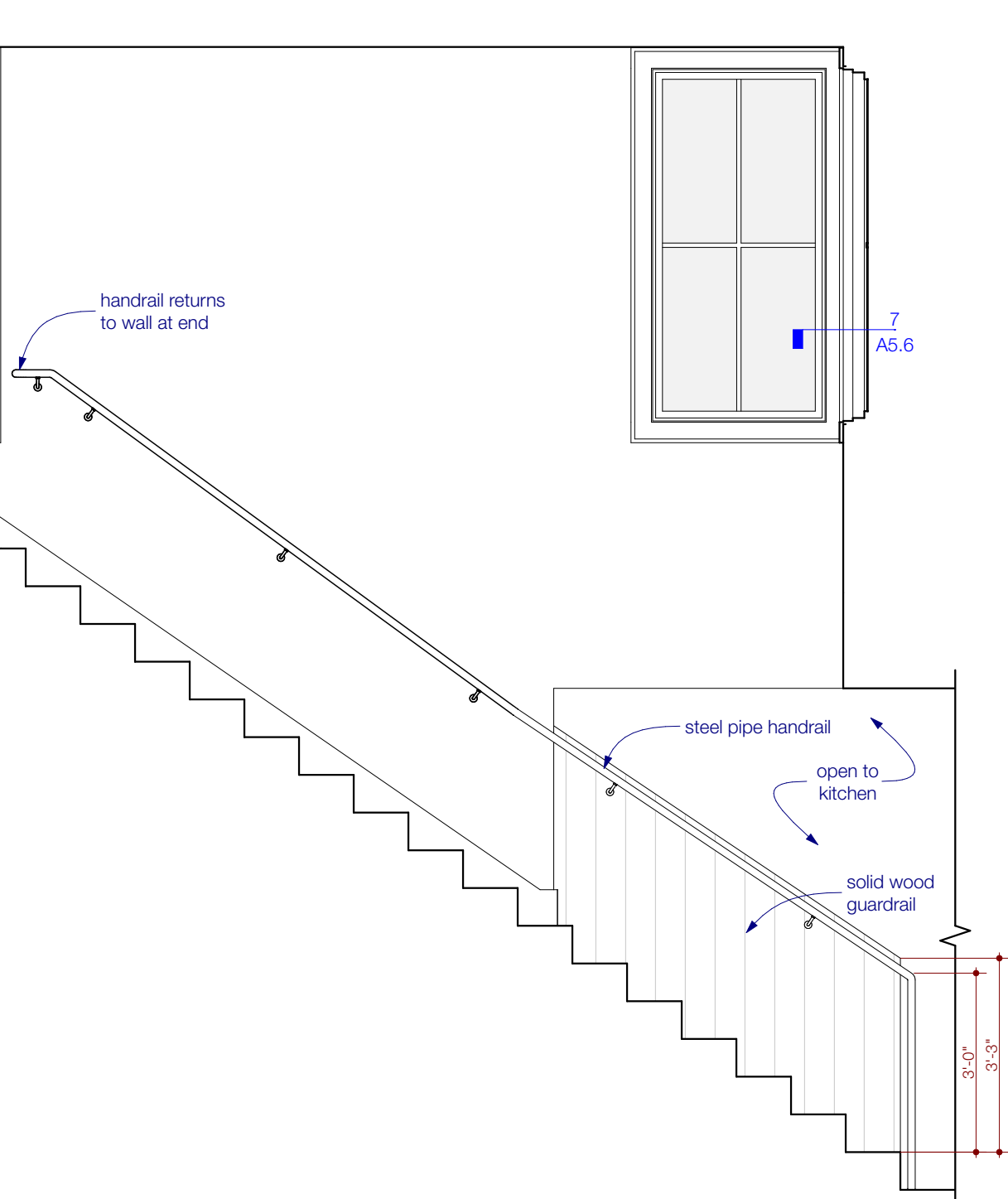
11 bedroom 2 north
SCALE: 3/8" = 1'-0"



12 bedroom 3 east
SCALE: 3/8" = 1'-0"



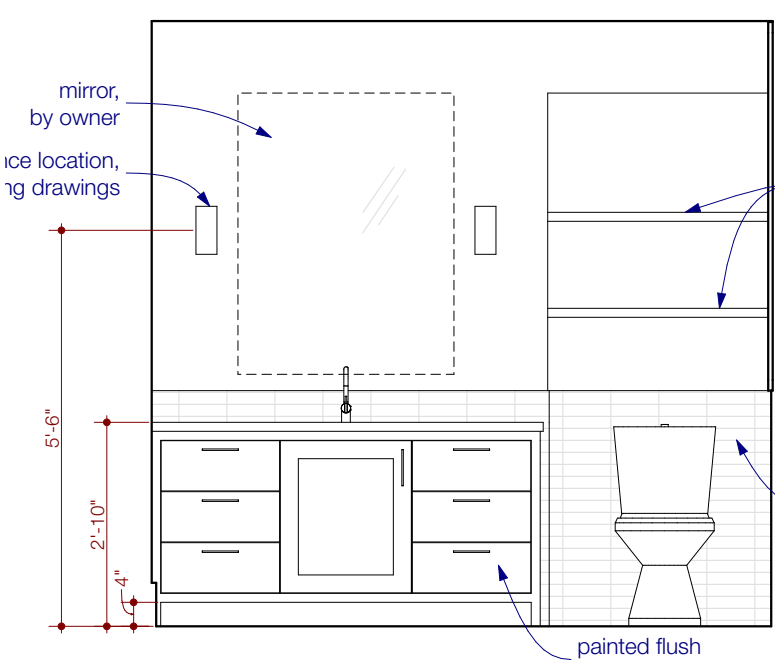
13 bedroom 3 south
SCALE: 3/8" = 1'-0"



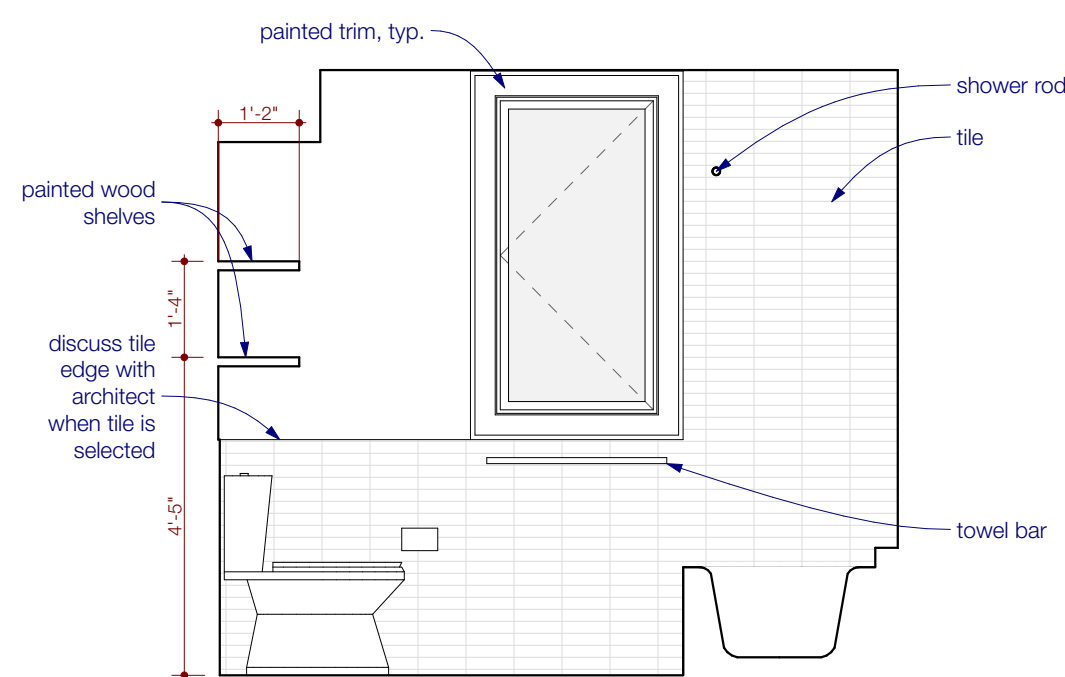
9 stair/upper hall south
SCALE: 3/8" = 1'-0"

INTERIOR ELEVATION NOTES:

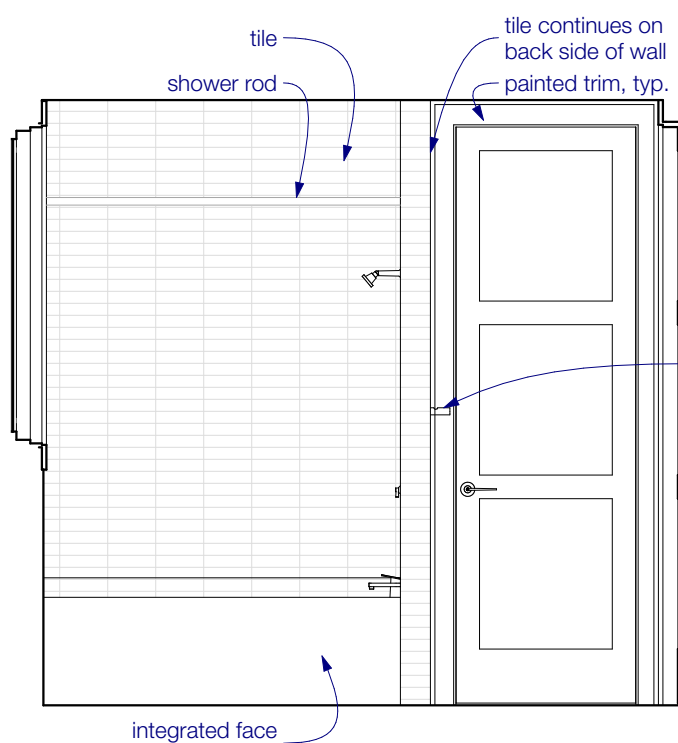
- > All interior walls are painted gyp board, u.n.o.
- > All base boards, window trim, door trim, & ceiling molding to be painted, u.n.o.
- > See typ. details for trim profiles.
- > All solid surface countertops are 3cm with 3/4" overhangs, typ.
- > Material patterns are not representative of final sizes or configurations – they are shown for reference only; contractor to discuss w/ architect & interior designer the final "start" and "stop" points of the different materials.



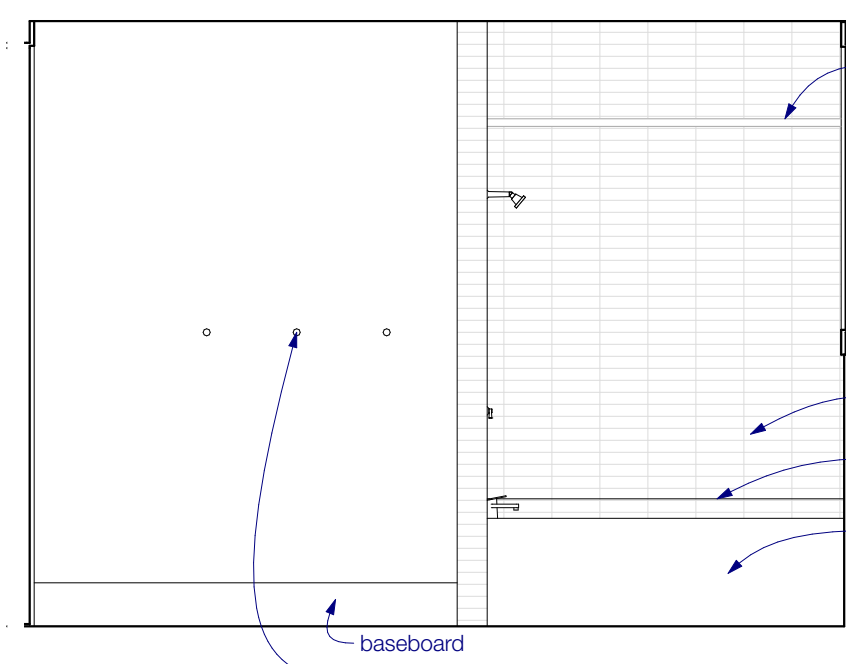
14 bath 1 west
SCALE: 3/8" = 1'-0"



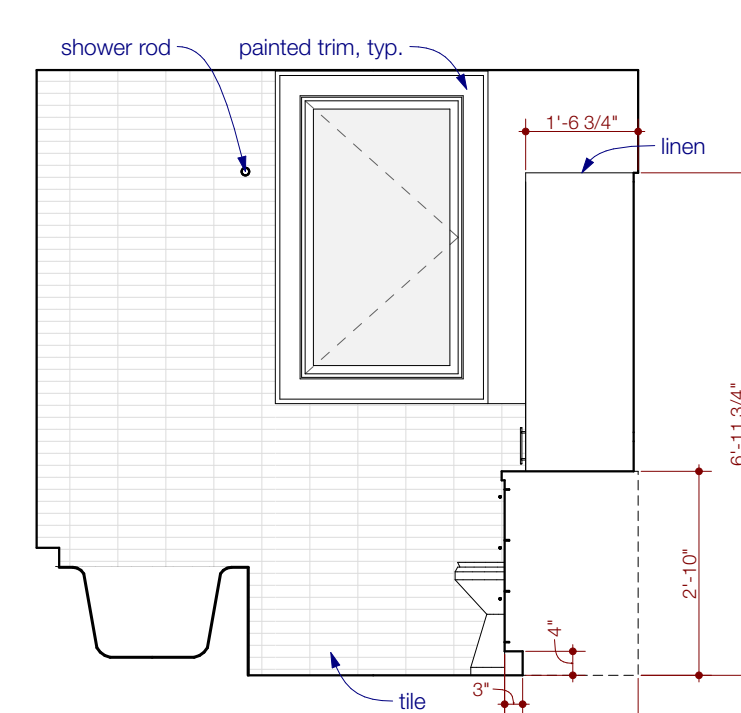
15 bath 1 north
SCALE: 3/8" = 1'-0"



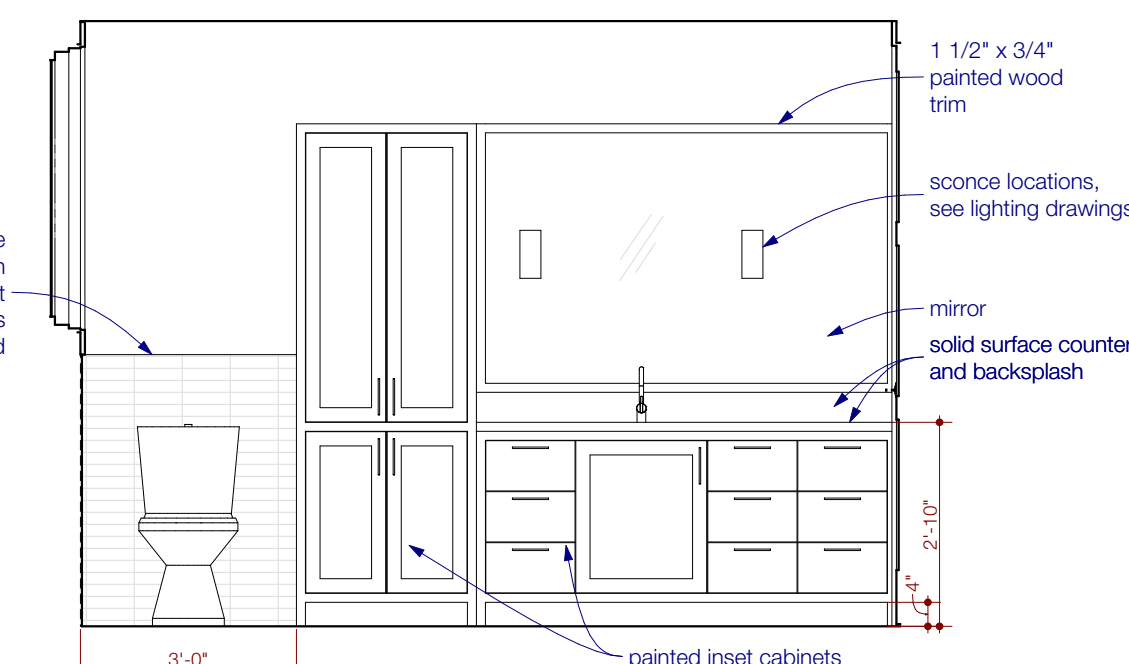
16 bath 1 east
SCALE: 3/8" = 1'-0"



17 bath 2 west
SCALE: 3/8" = 1'-0"



18 bath 2 north
SCALE: 3/8" = 1'-0"

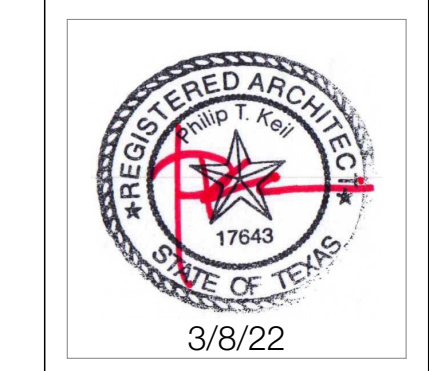


19 bath 2 east
SCALE: 3/8" = 1'-0"

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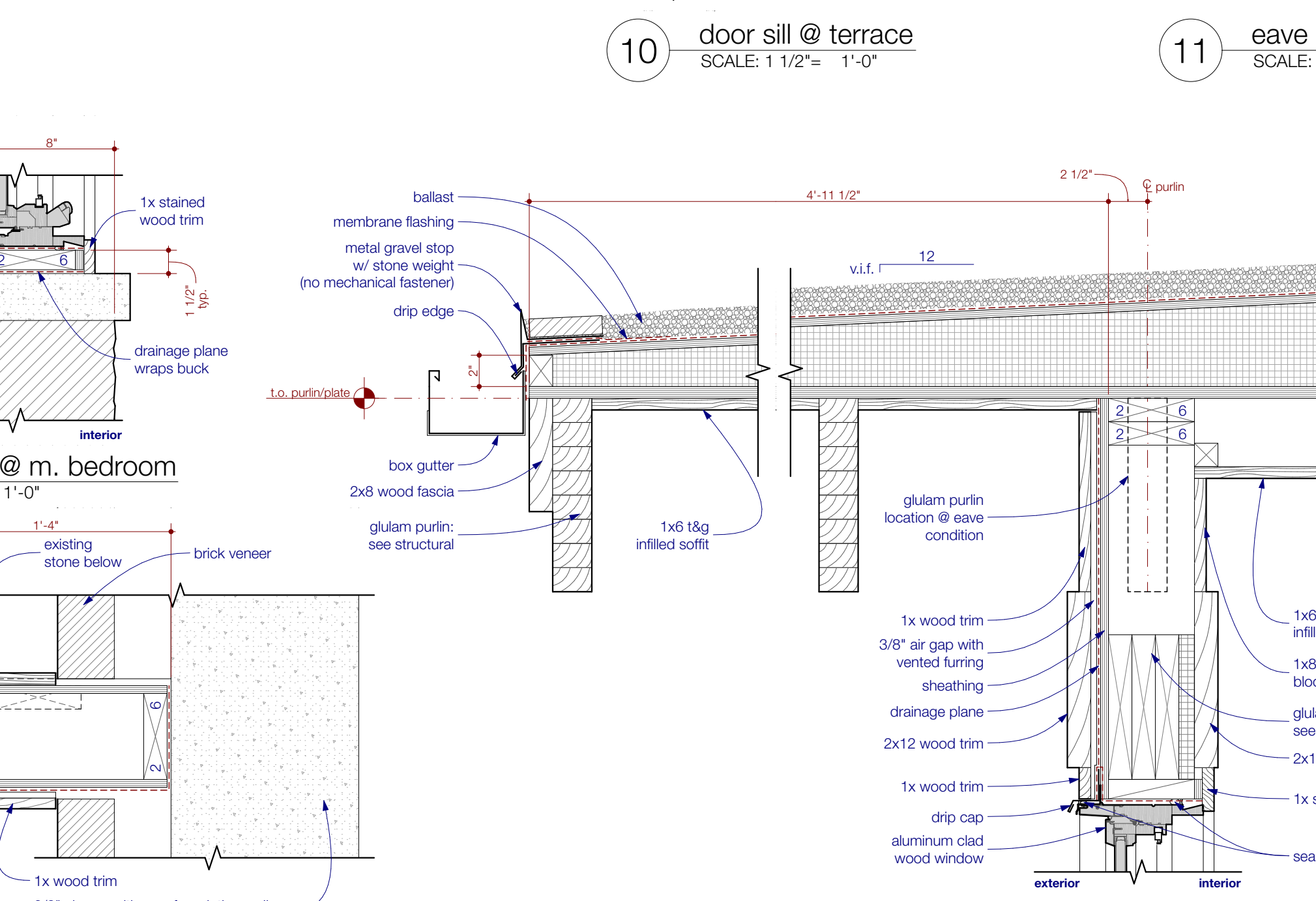
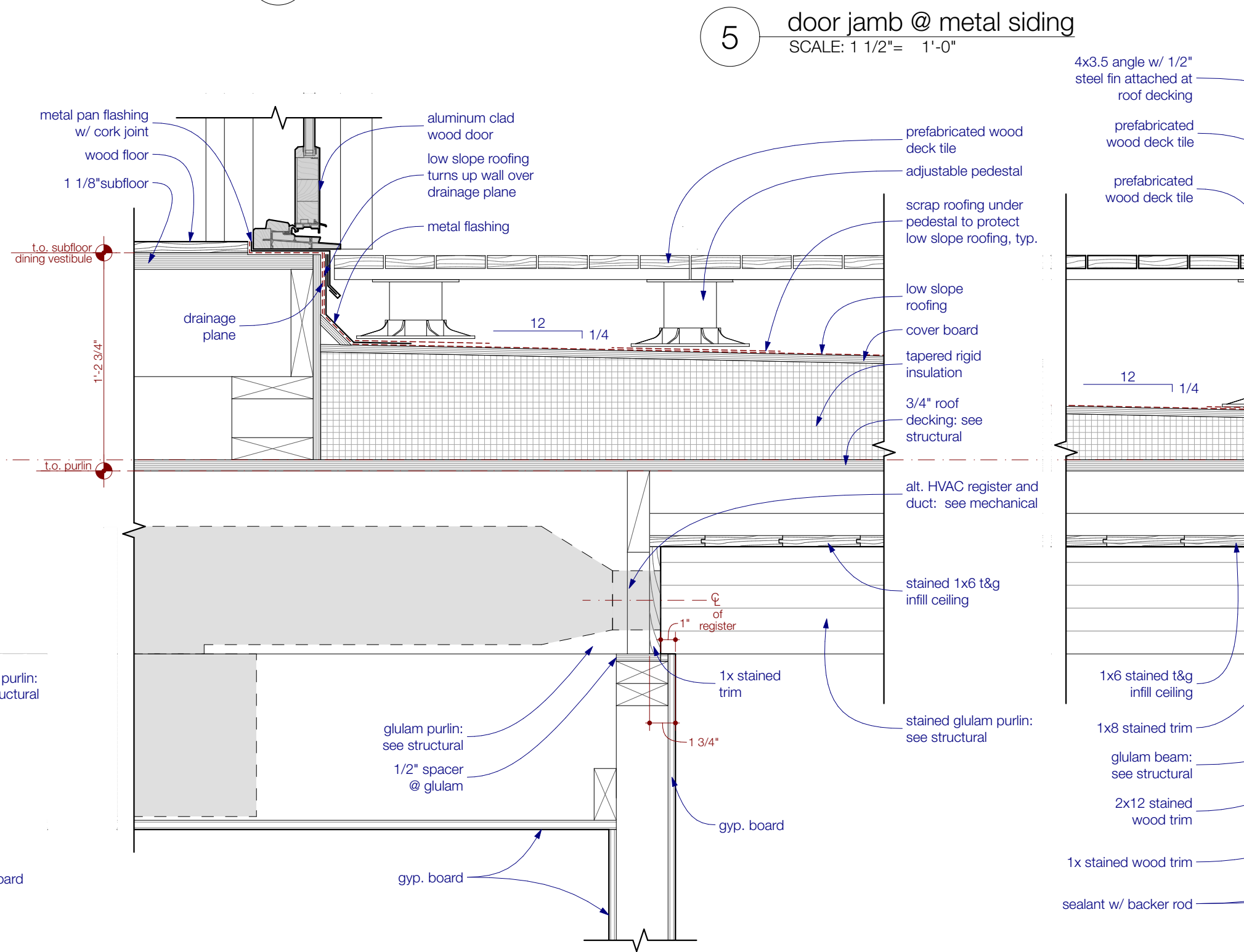
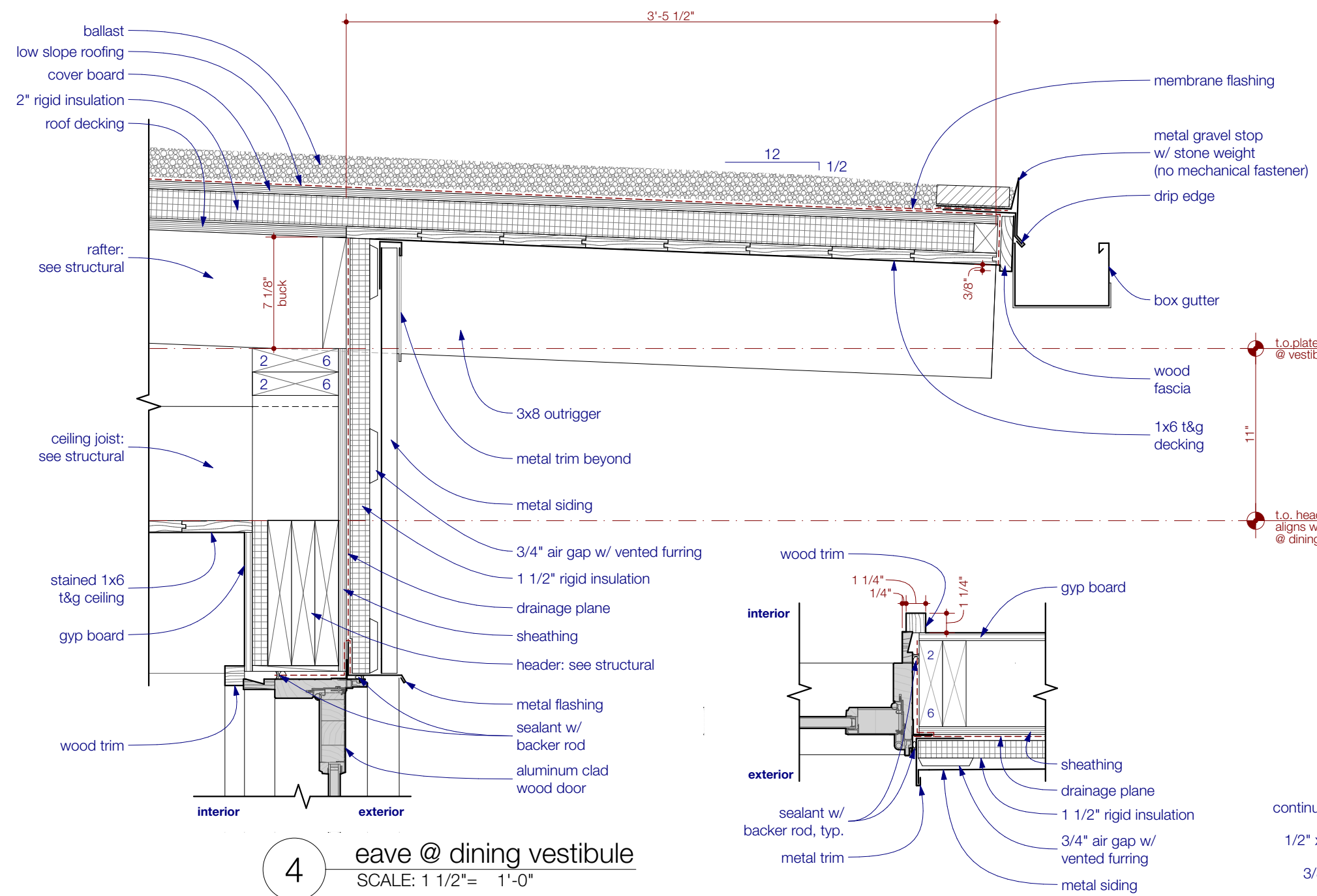
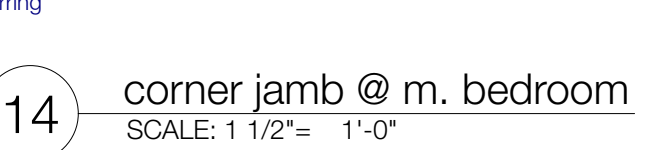
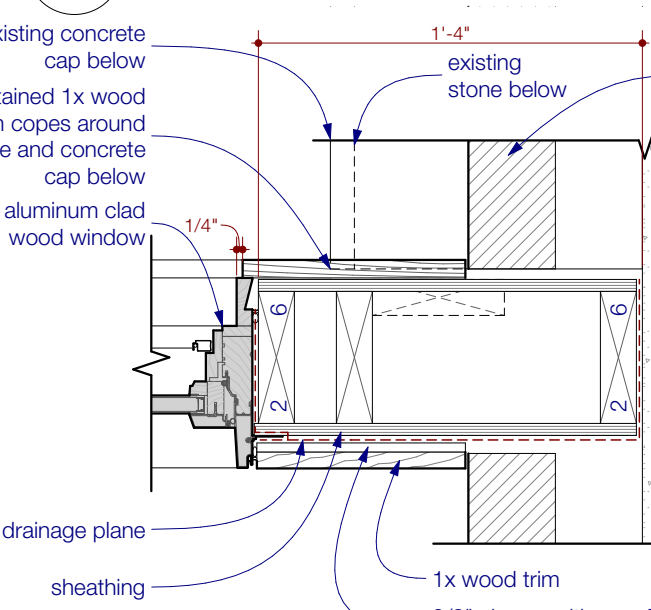
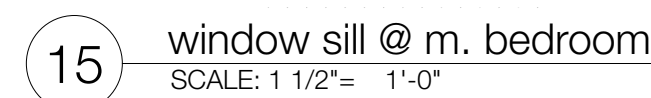
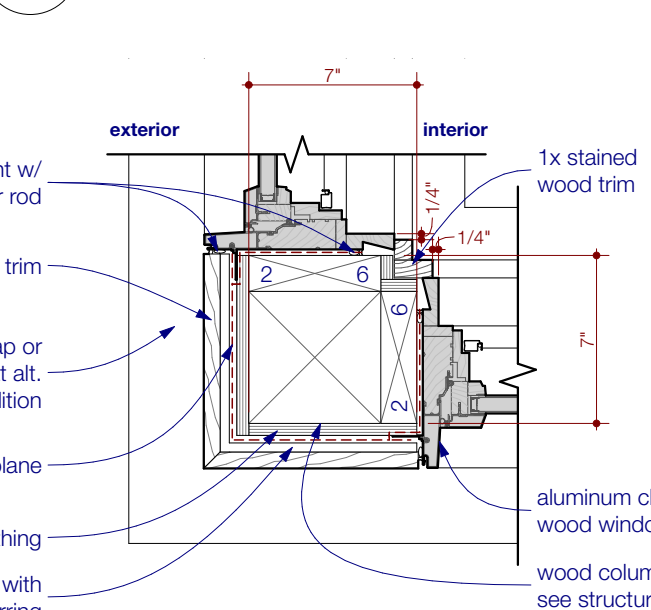
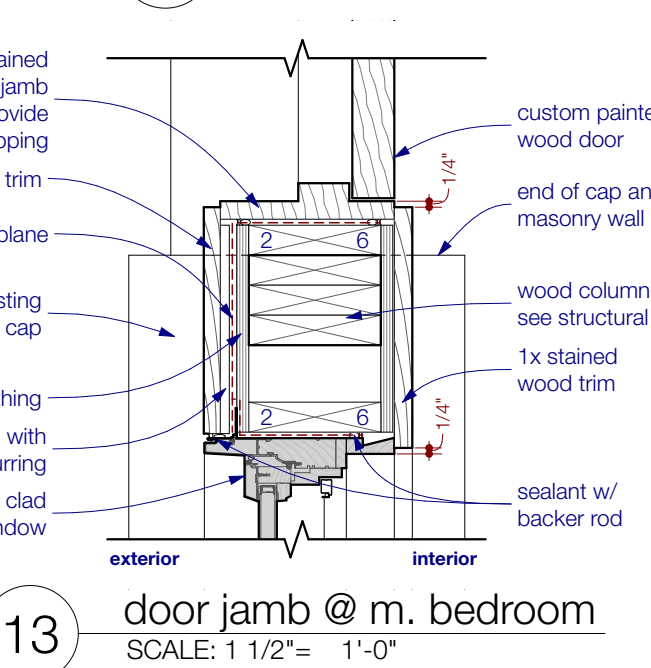
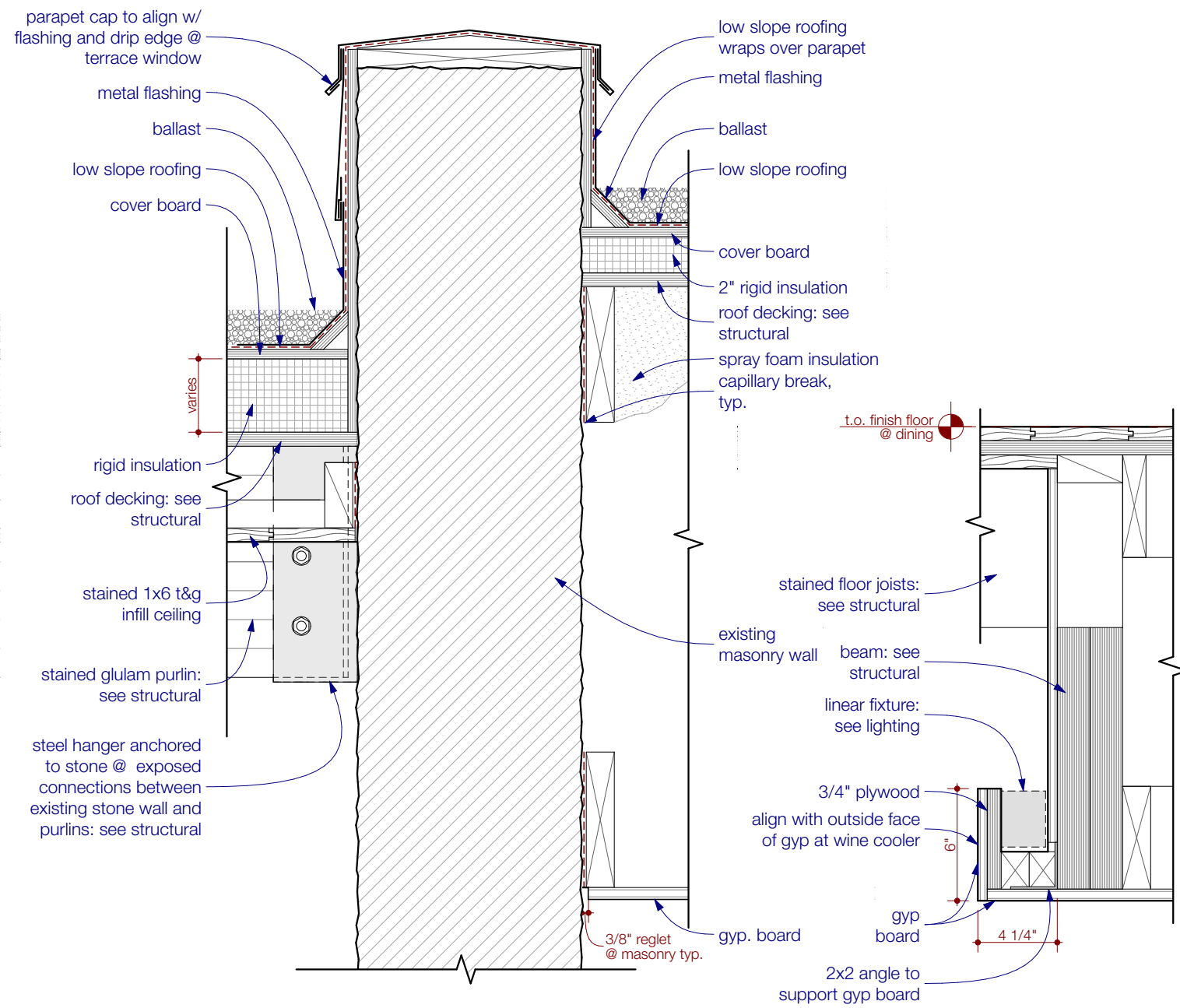
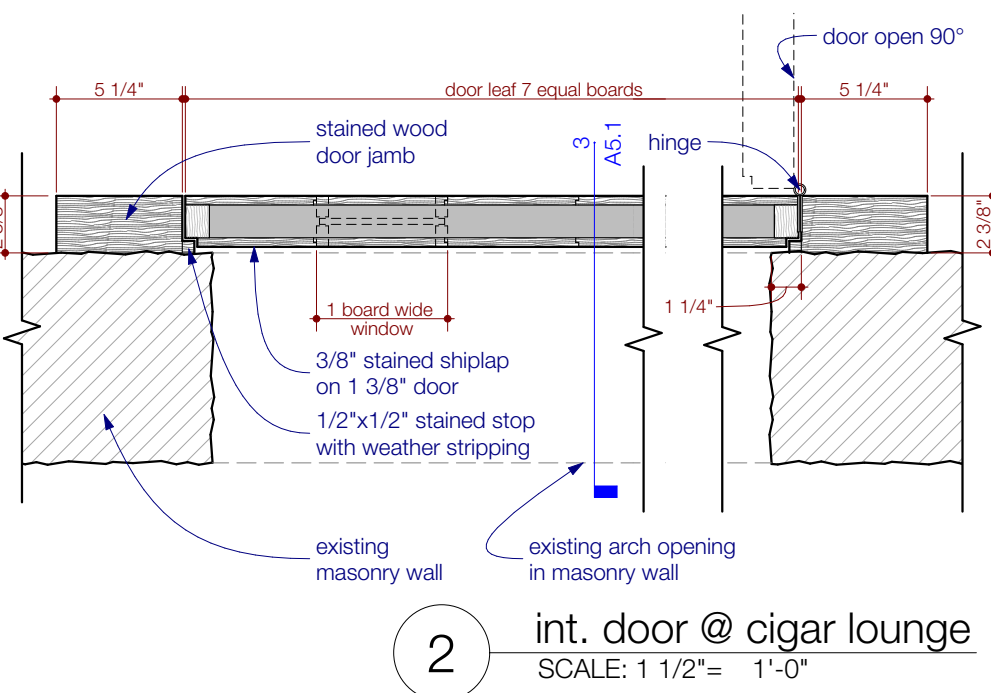
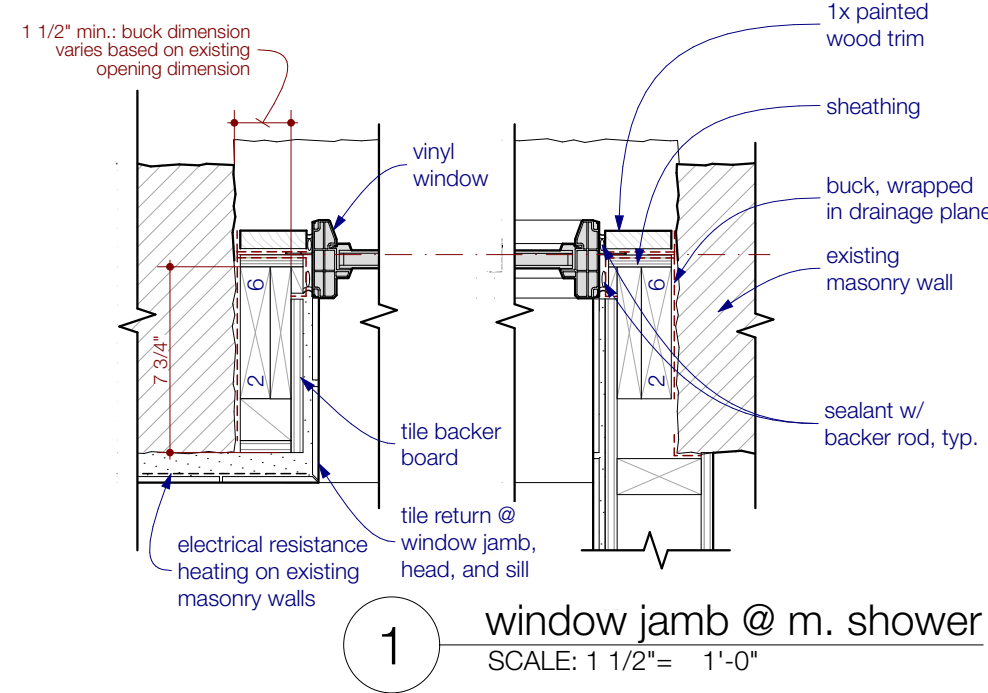
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revisions	
date	description
1	discuss tile edge with architect when tile is selected
2	discuss tile edge with architect when tile is selected
3	discuss tile edge with architect when tile is selected
4	discuss tile edge with architect when tile is selected
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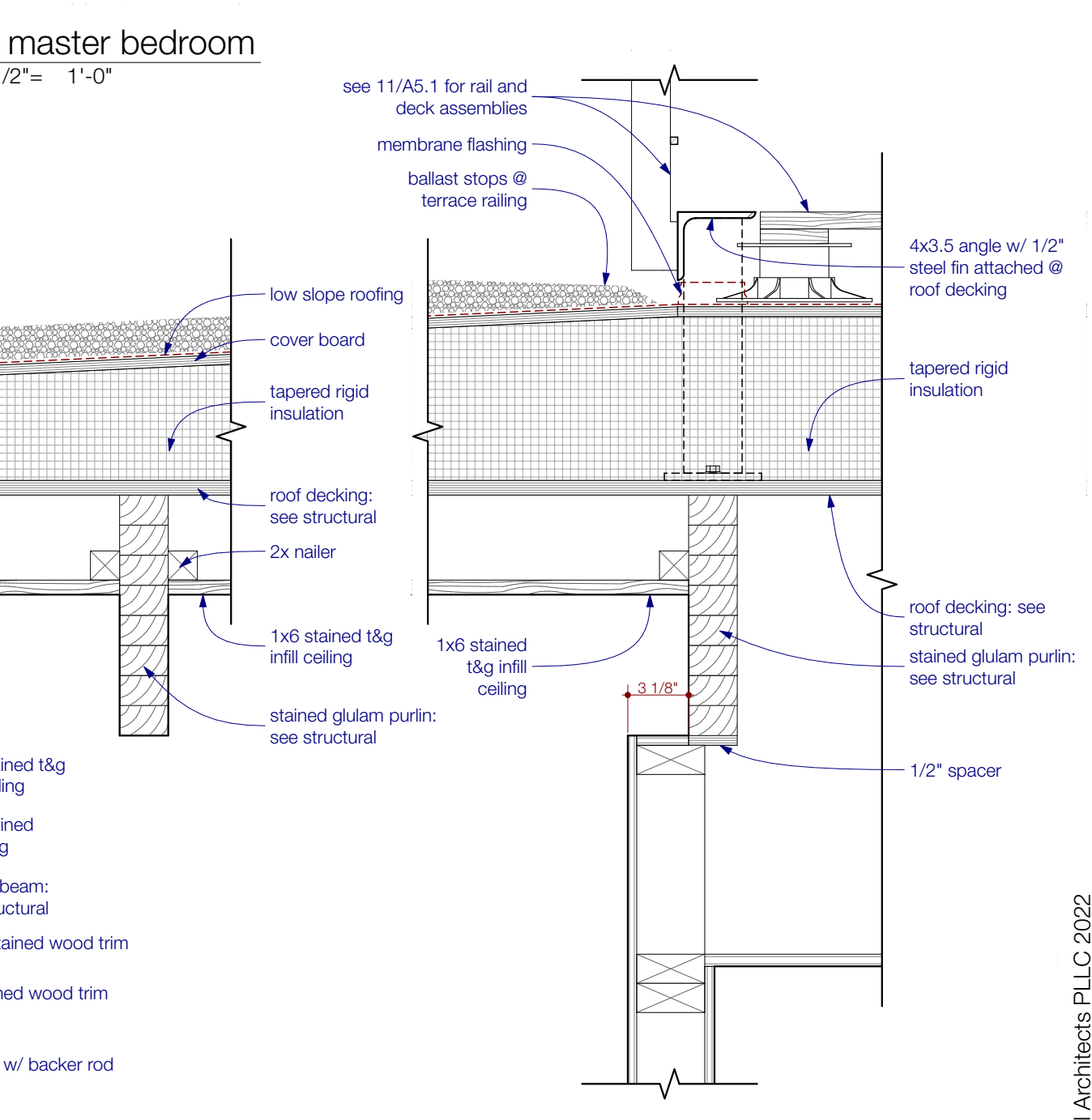
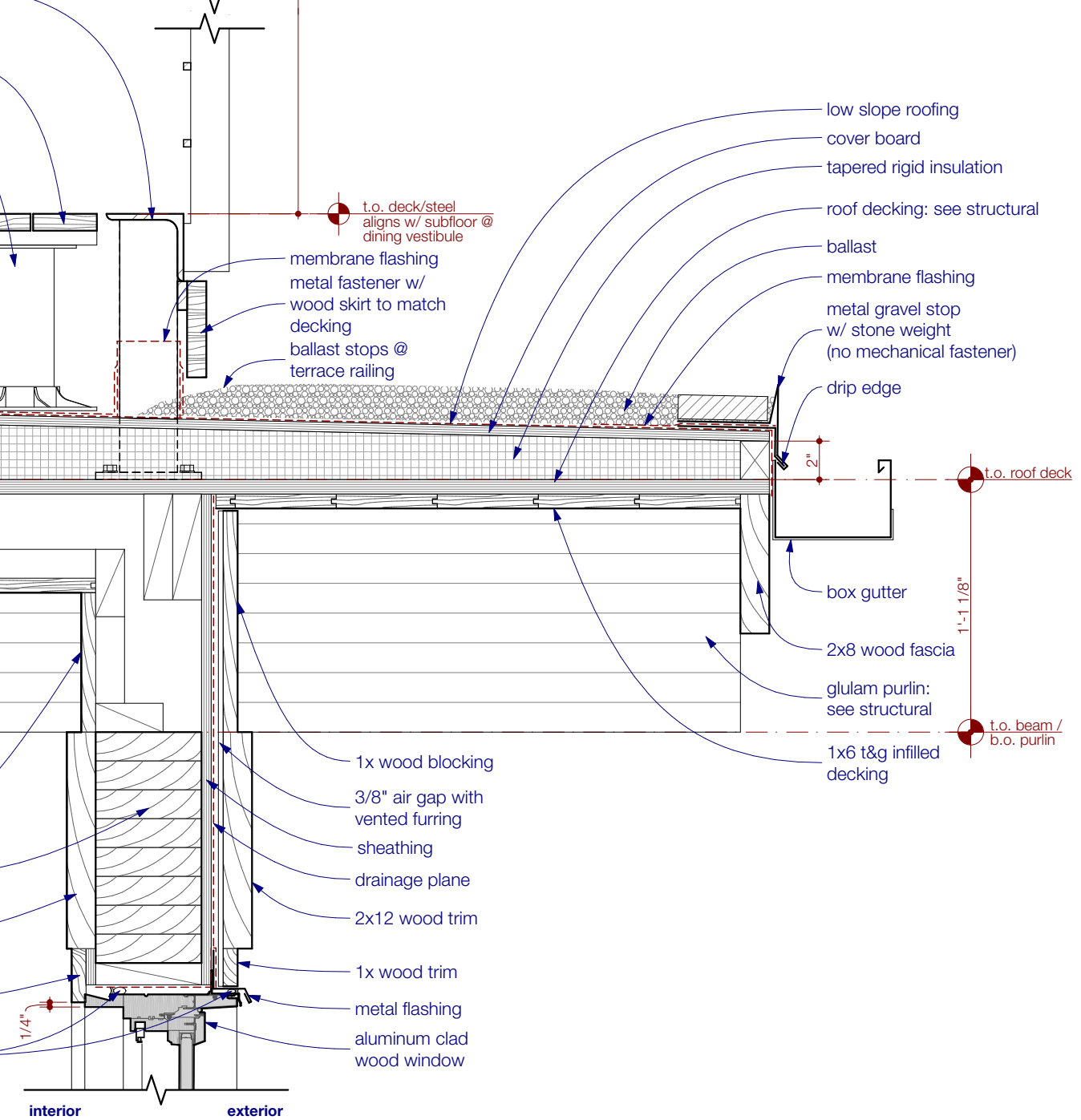
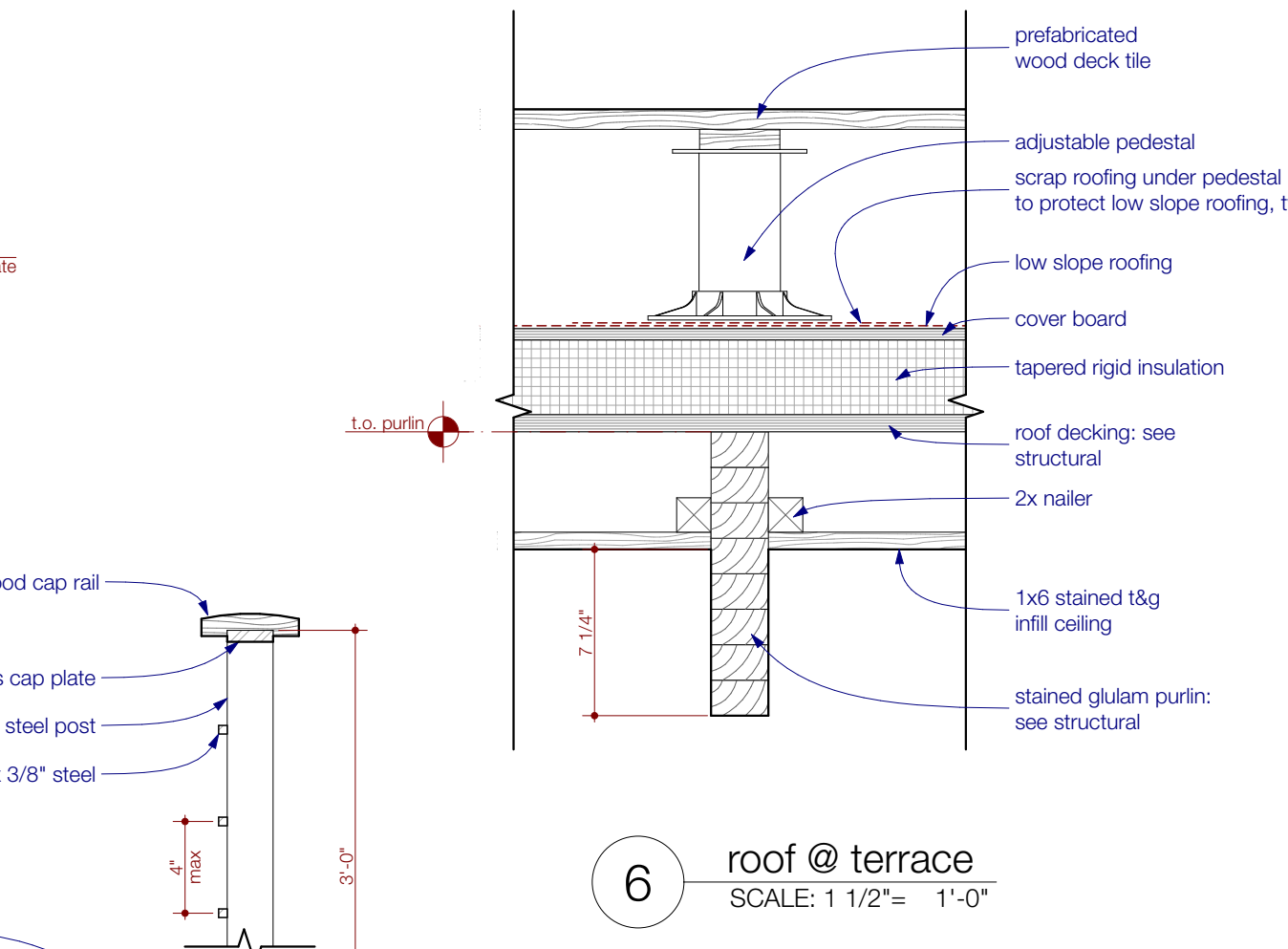
100% CD
3/8/22
interior elevations
A4.5

PLANS MUST BE ON SITE
FOR ALL INSPECTIONS



DETAIL NOTES:

- > all interior wood trim, siding, beams, etc. are to be painted, u.n.o.
- > all exterior wood trim is to be stained, u.n.o.
- > all exterior beams, joists, outriggers, decking, and blocking are to be stained, u.n.o.
- > all metal trims and flashings associated with roof are to match the roof color
- > all metal trims and flashings associated with siding are to match the siding color
- > all gutters, downspouts and associated brackets and standoffs are to match the metal wall color
- > wall, ceiling, and floor insulation have been omitted from details for purposes of clarity



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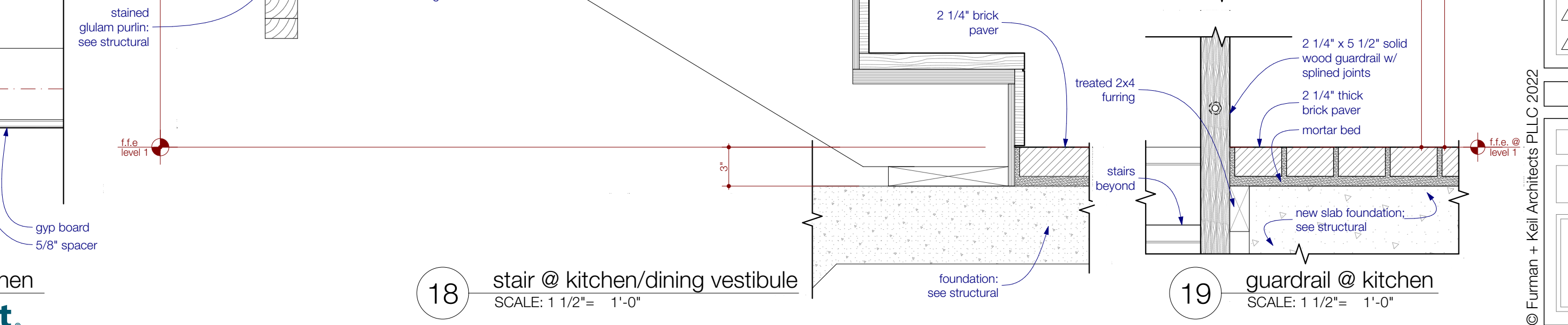
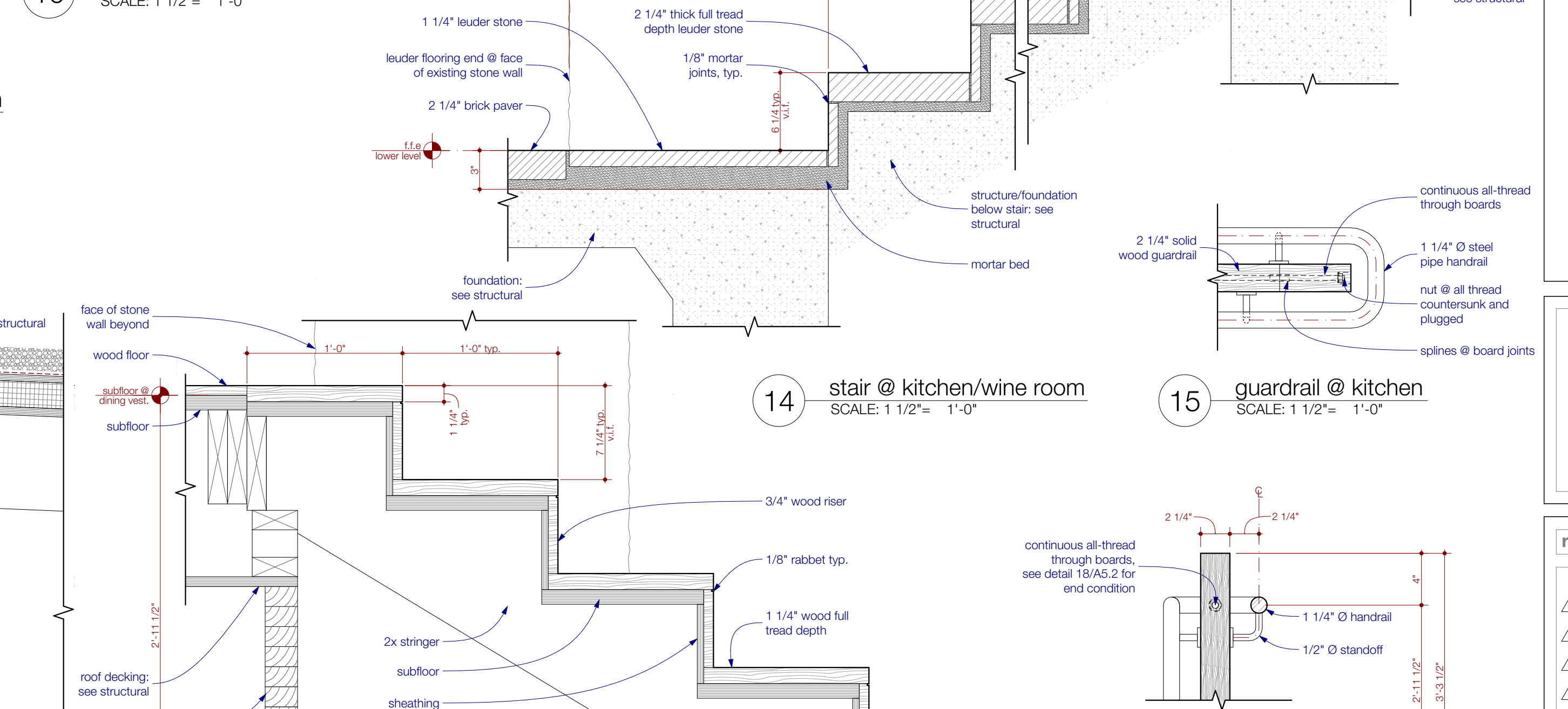
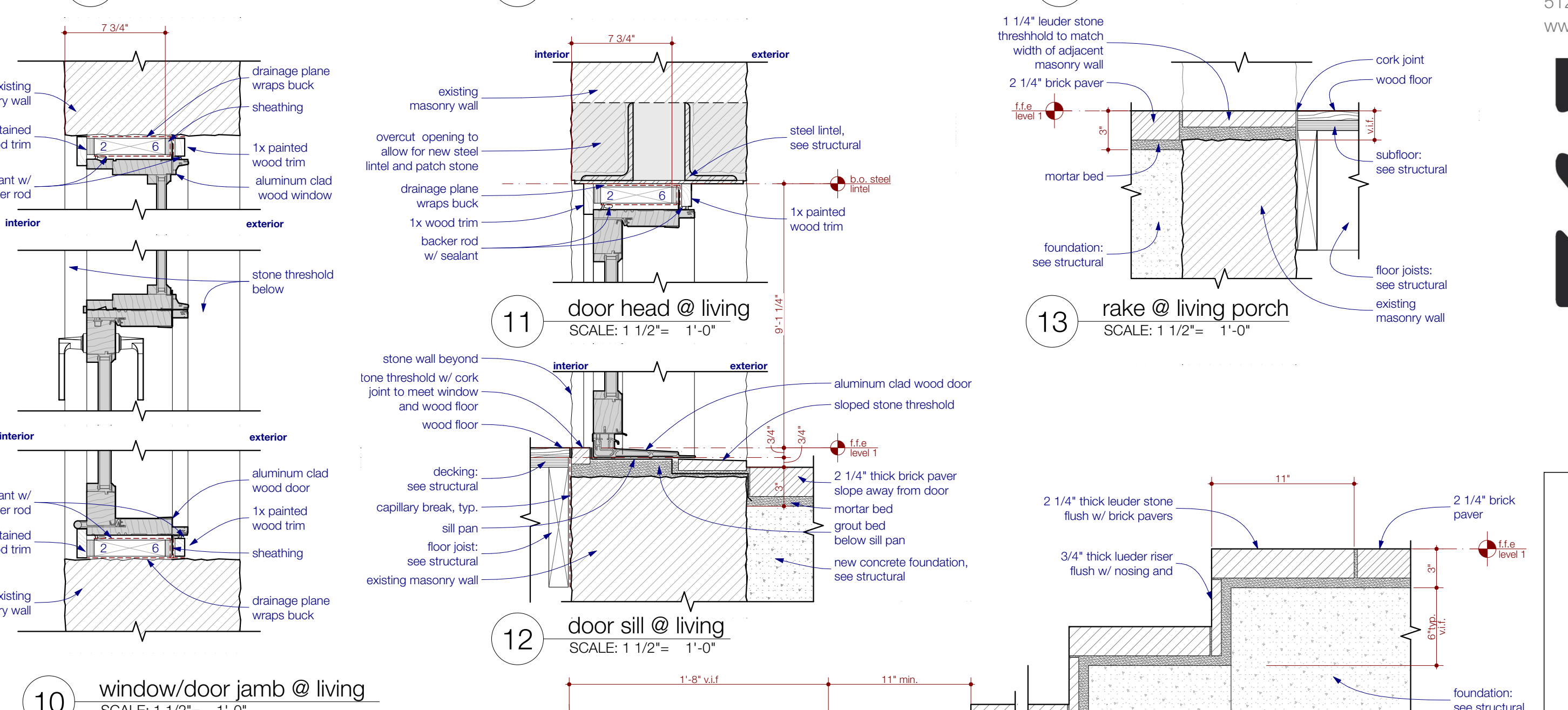
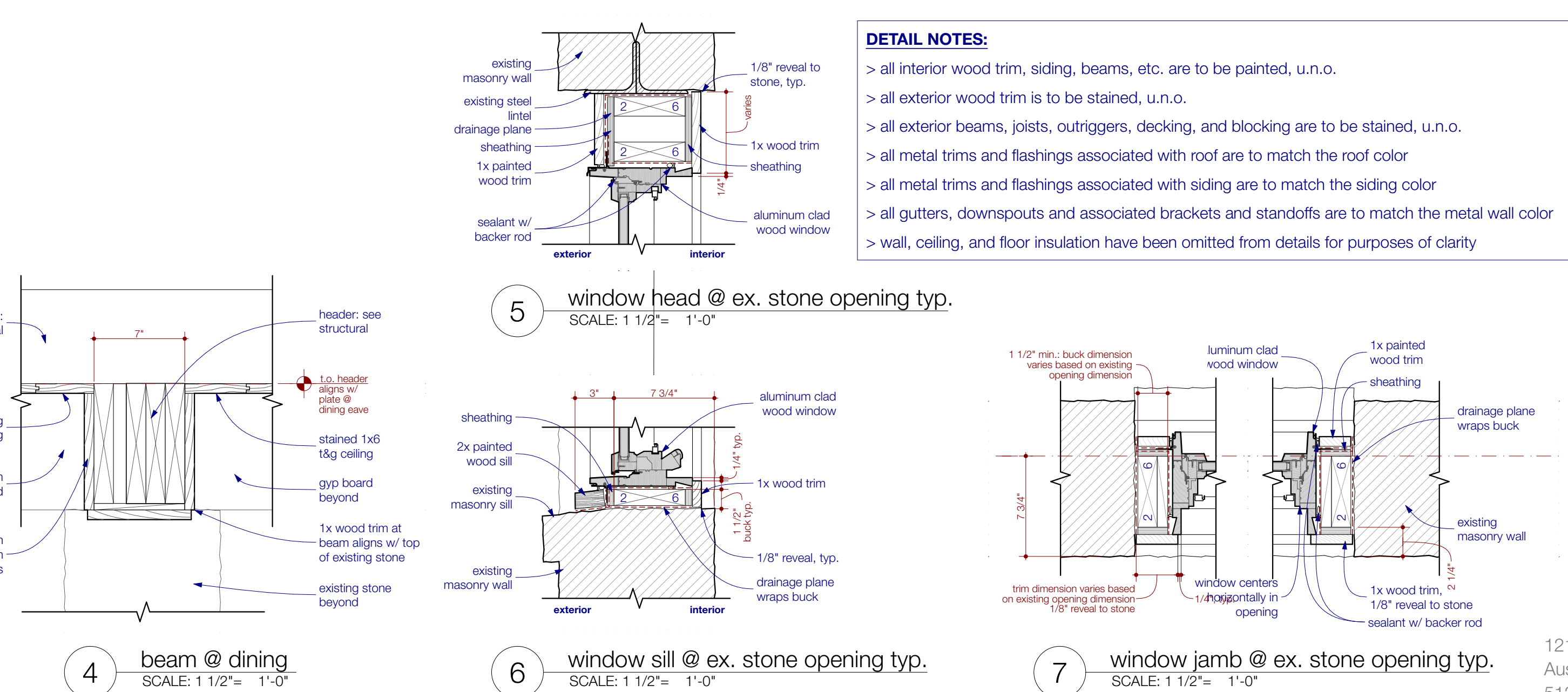
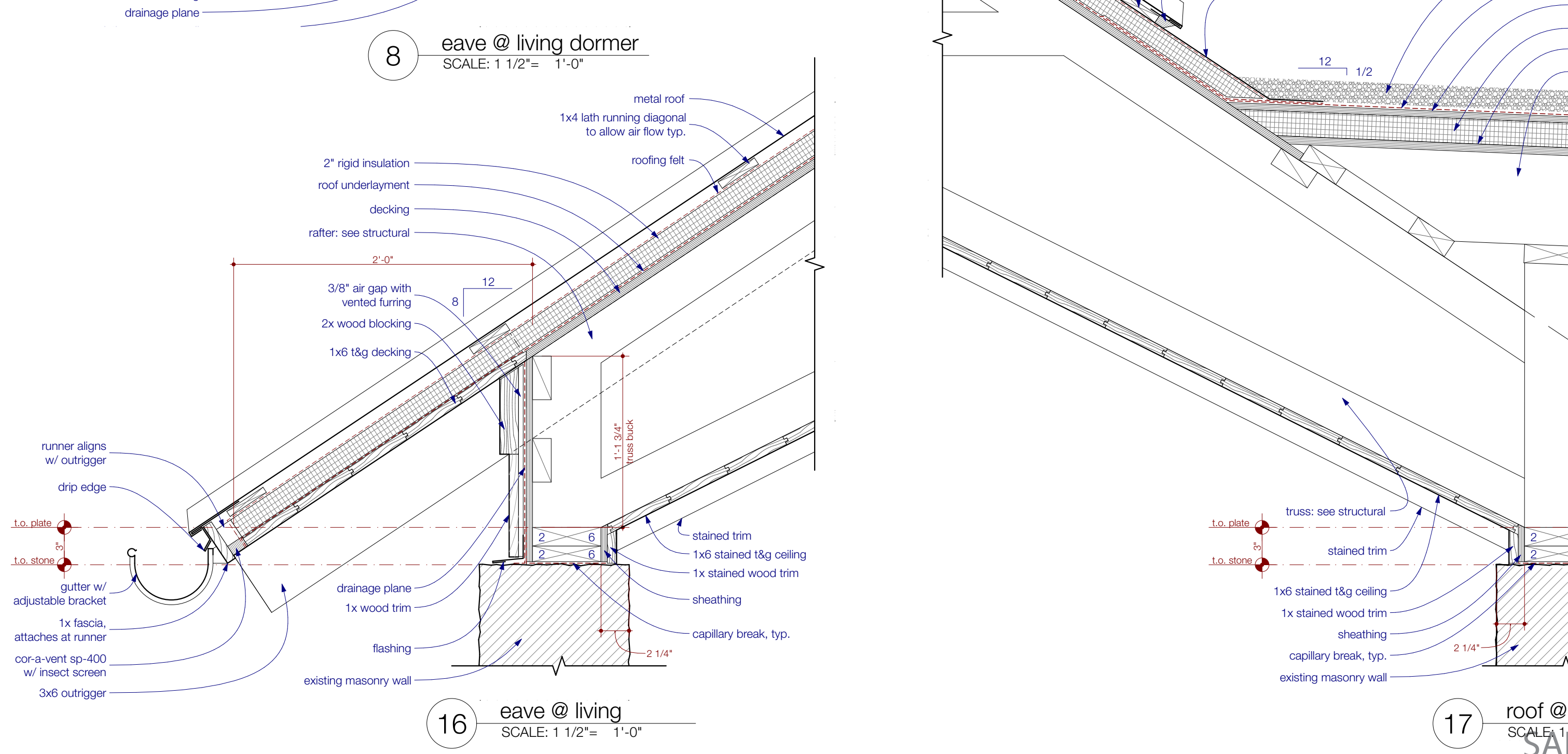
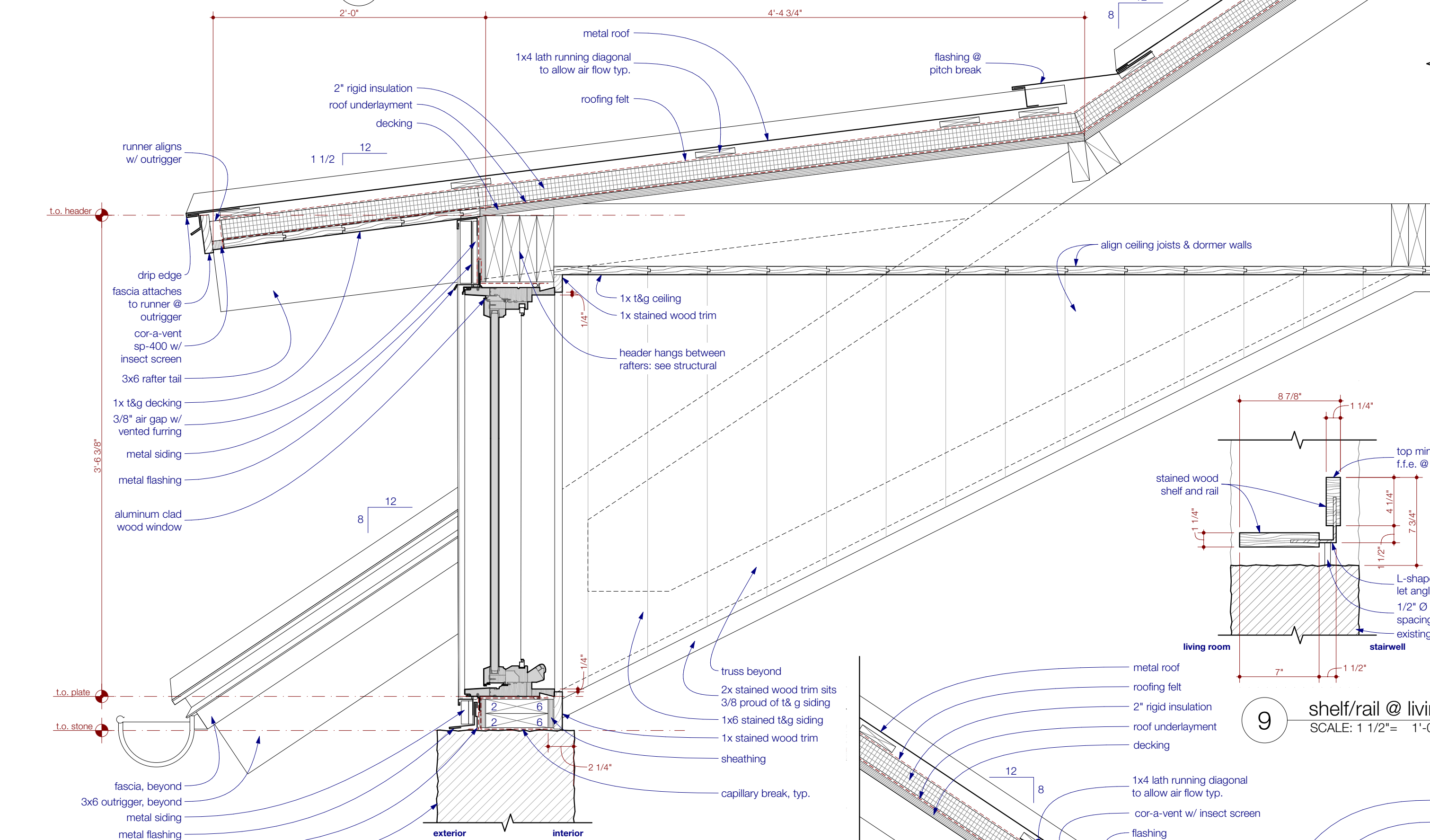
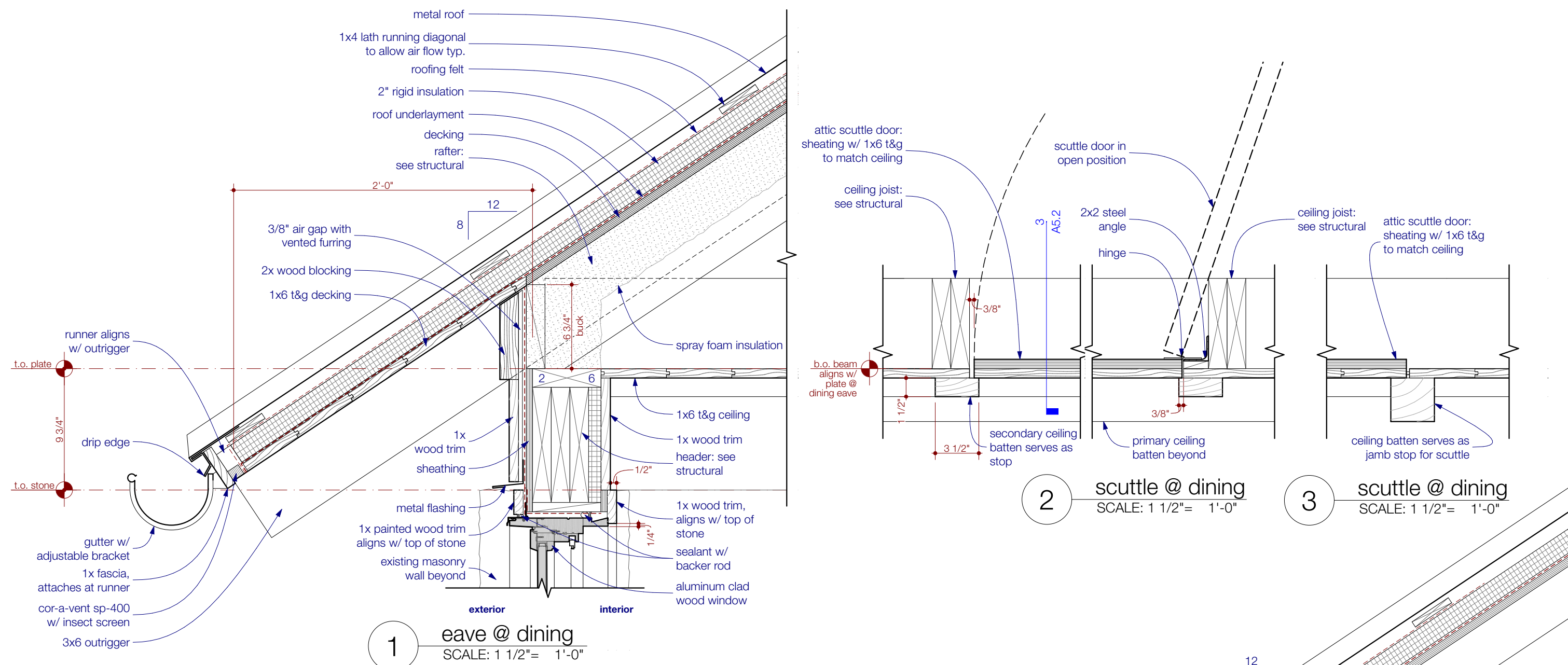
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6	11/11/22

100% CD

3/8/22

details

A5.1



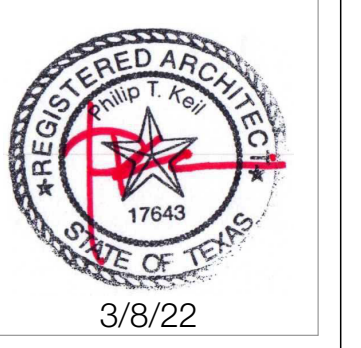
DETAIL NOTES:

- > all interior wood trim, siding, beams, etc. are to be painted, u.n.o.
- > all exterior wood trim is to be stained, u.n.o.
- > all exterior beams, joists, outriggers, decking, and blocking are to be stained, u.n.o.
- > all metal trims and flashings associated with roof are to match the roof color
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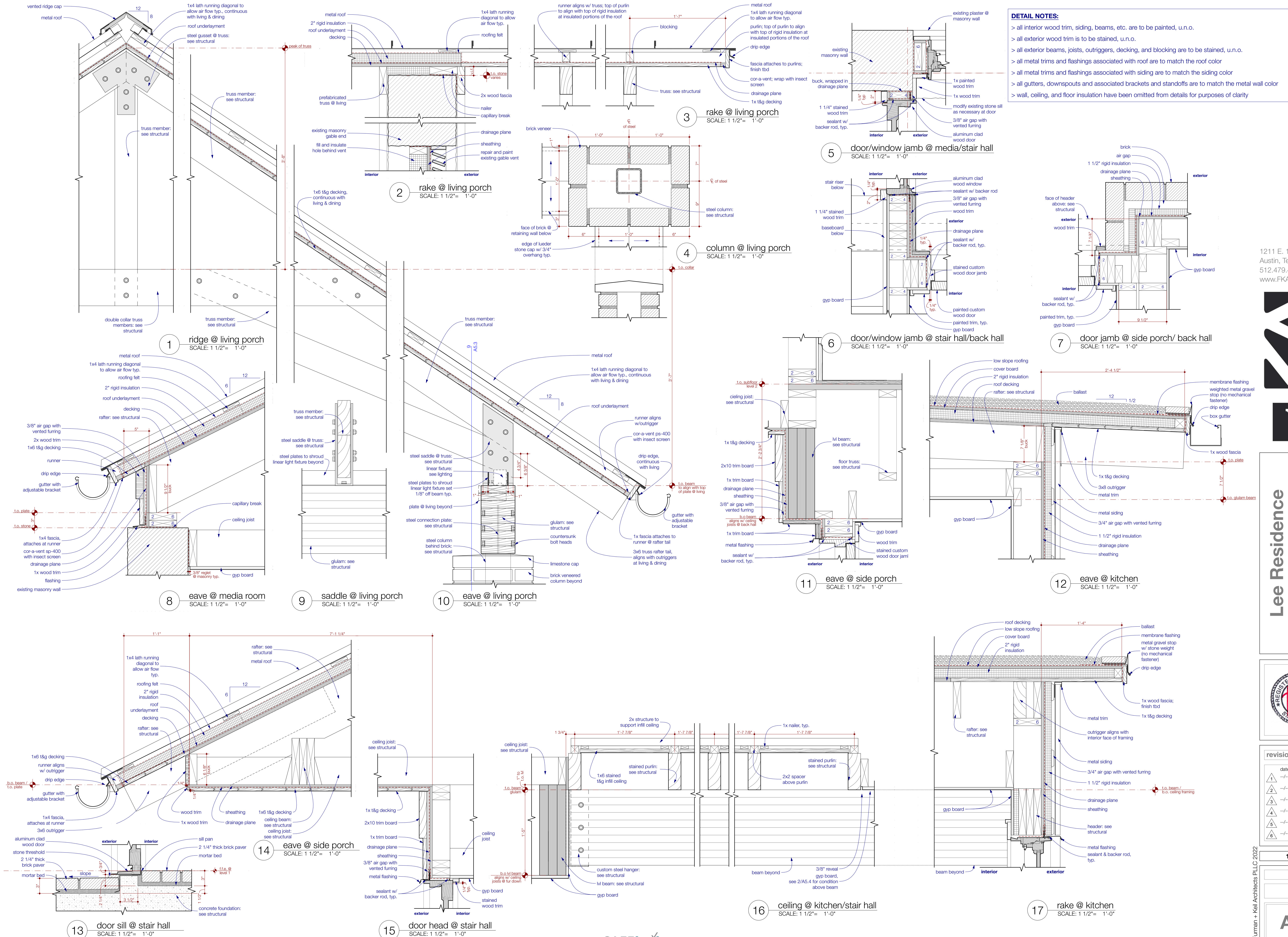


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revisions	
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5	10/1/22
6	10/1/22

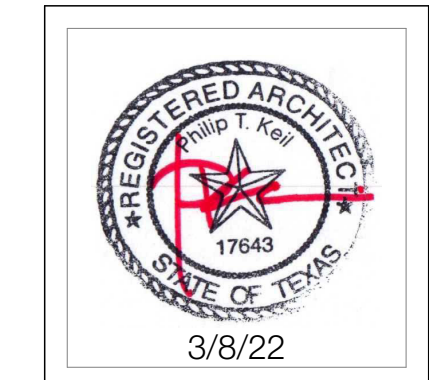
100% CD
3/8/22
details
A5.2



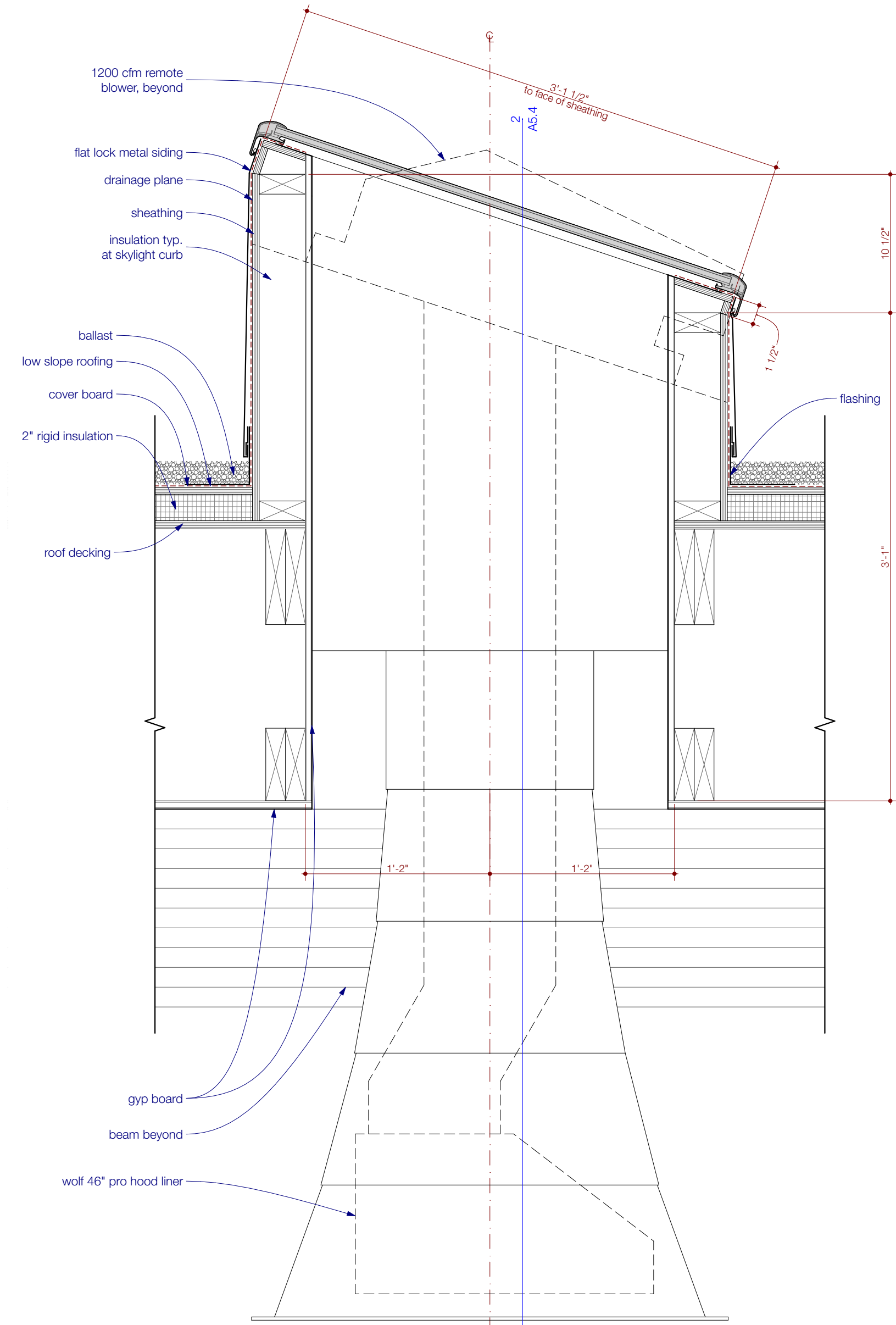
1211 E. 11th Street, #200
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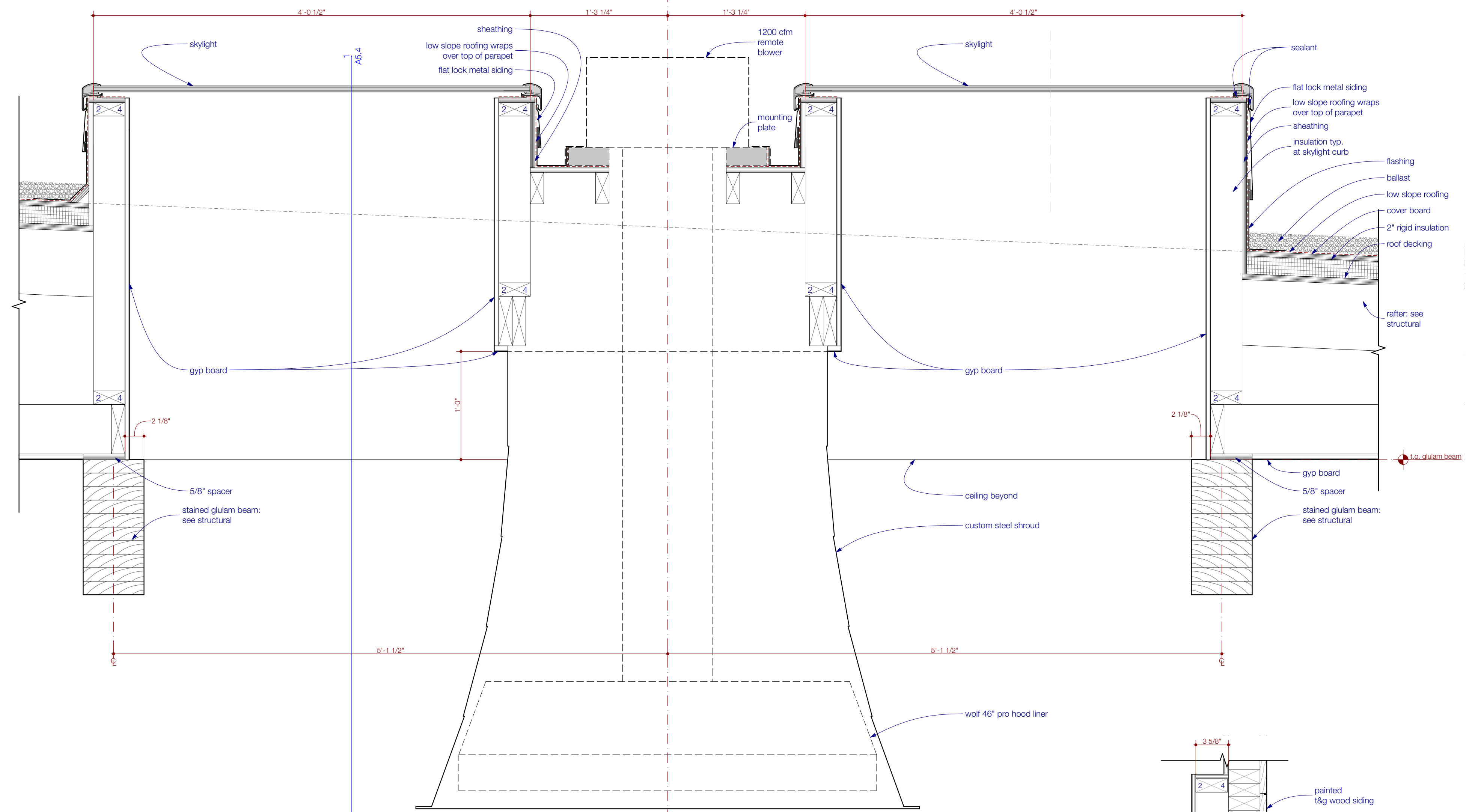
Lee Residence
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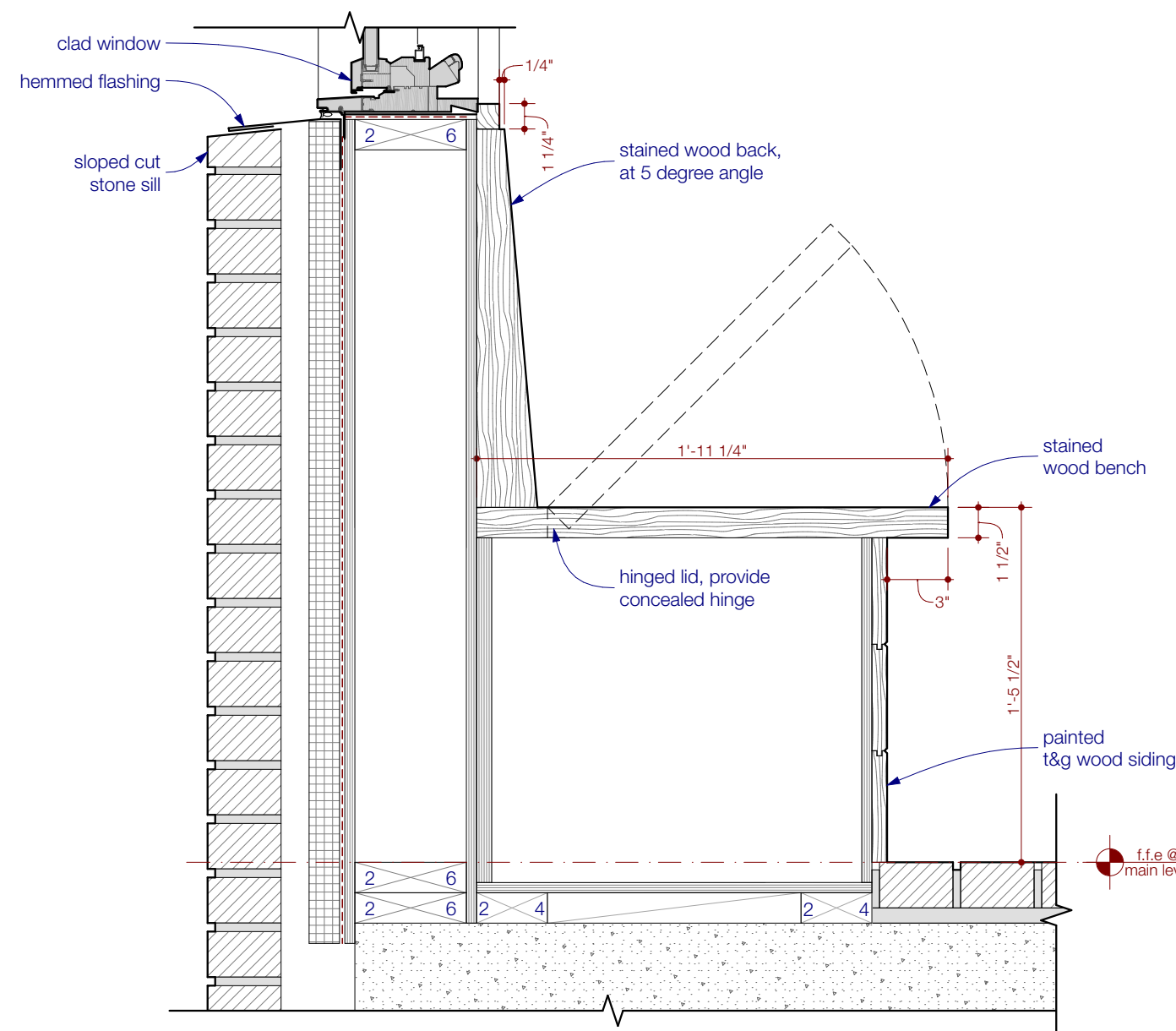
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100% CD	
3/8/22	
details	
A5.3	



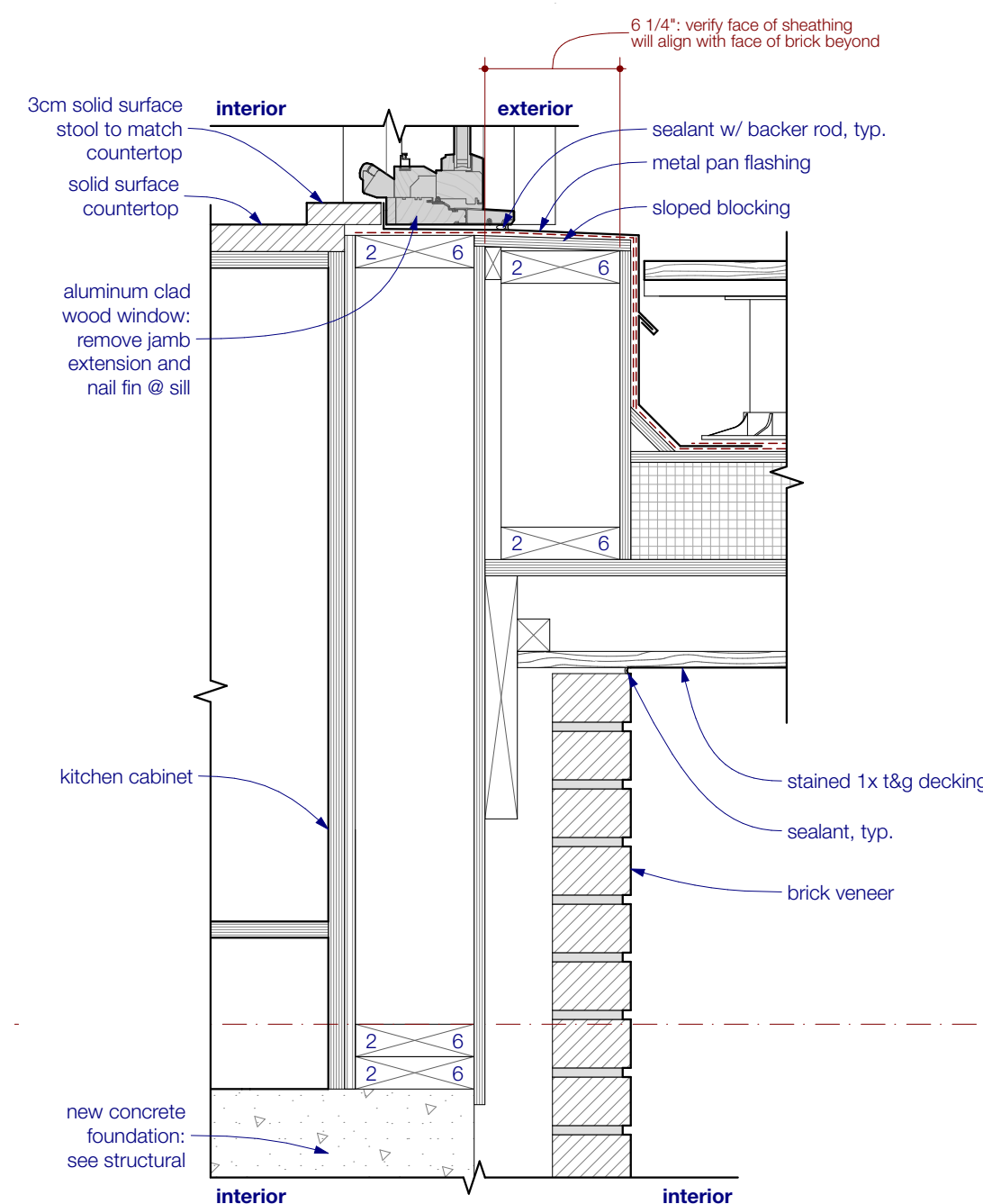
1 skylight/vent hood @ kitchen
SCALE: 1 1/2" = 1'-0"



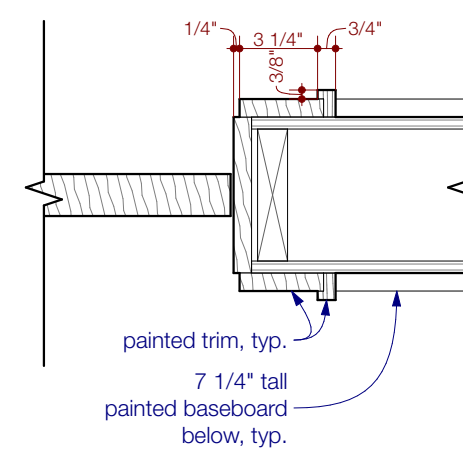
2 skylight/vent hood @ kitchen
SCALE: 1 1/2" = 1'-0"



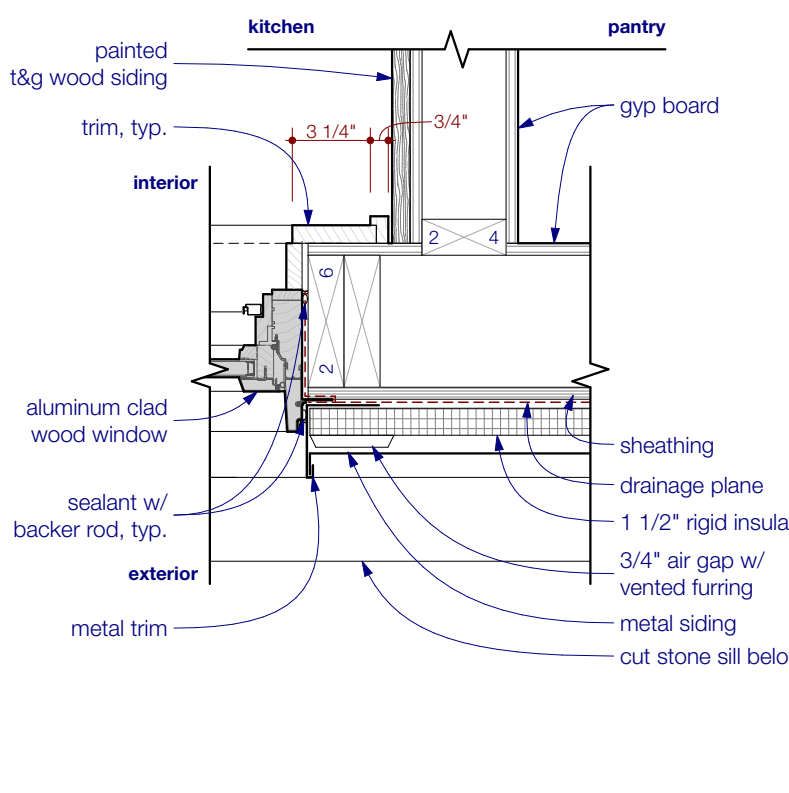
3 bench/storage @ kitchen banquette
SCALE: 1 1/2" = 1'-0"



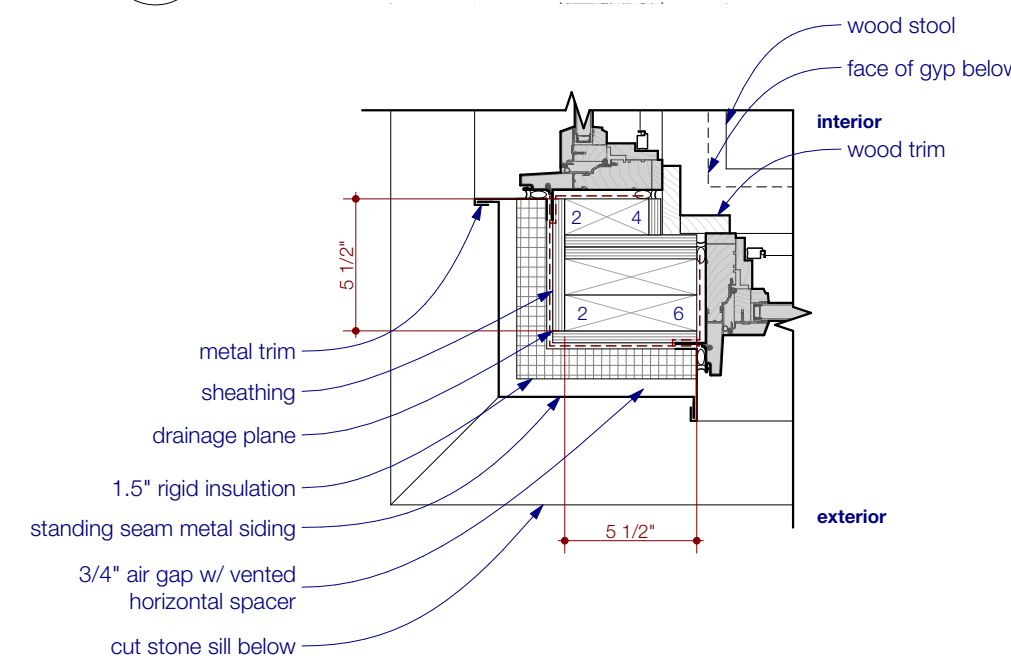
4 window sill @ kitchen/terrace
SCALE: 1 1/2" = 1'-0"



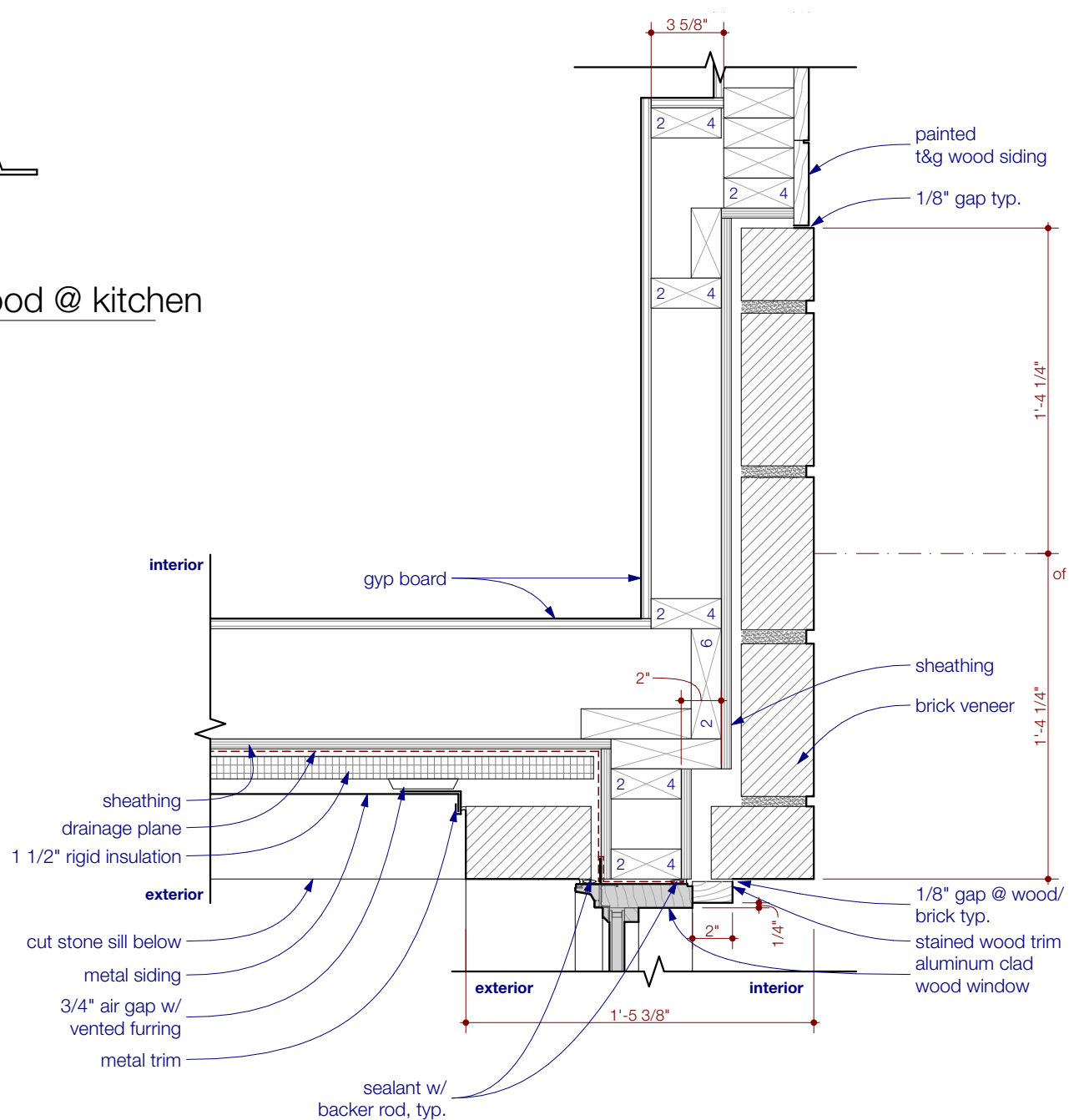
5 jamb: interior door @ gyp board, typ.
SCALE: 1 1/2" = 1'-0"



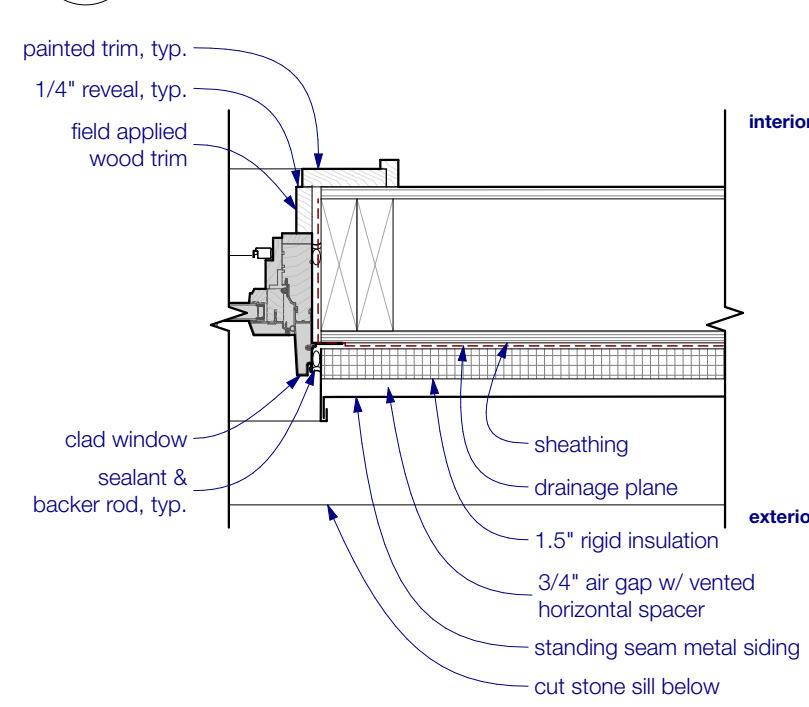
6 window jamb @ kitchen banquette
SCALE: 1 1/2" = 1'-0"



8 corner jamb: typ. window @ metal siding
SCALE: 1 1/2" = 1'-0"



7 window jamb @ entry hall
SCALE: 1 1/2" = 1'-0"



9 jamb: typ. window @ metal siding
SCALE: 1 1/2" = 1'-0"

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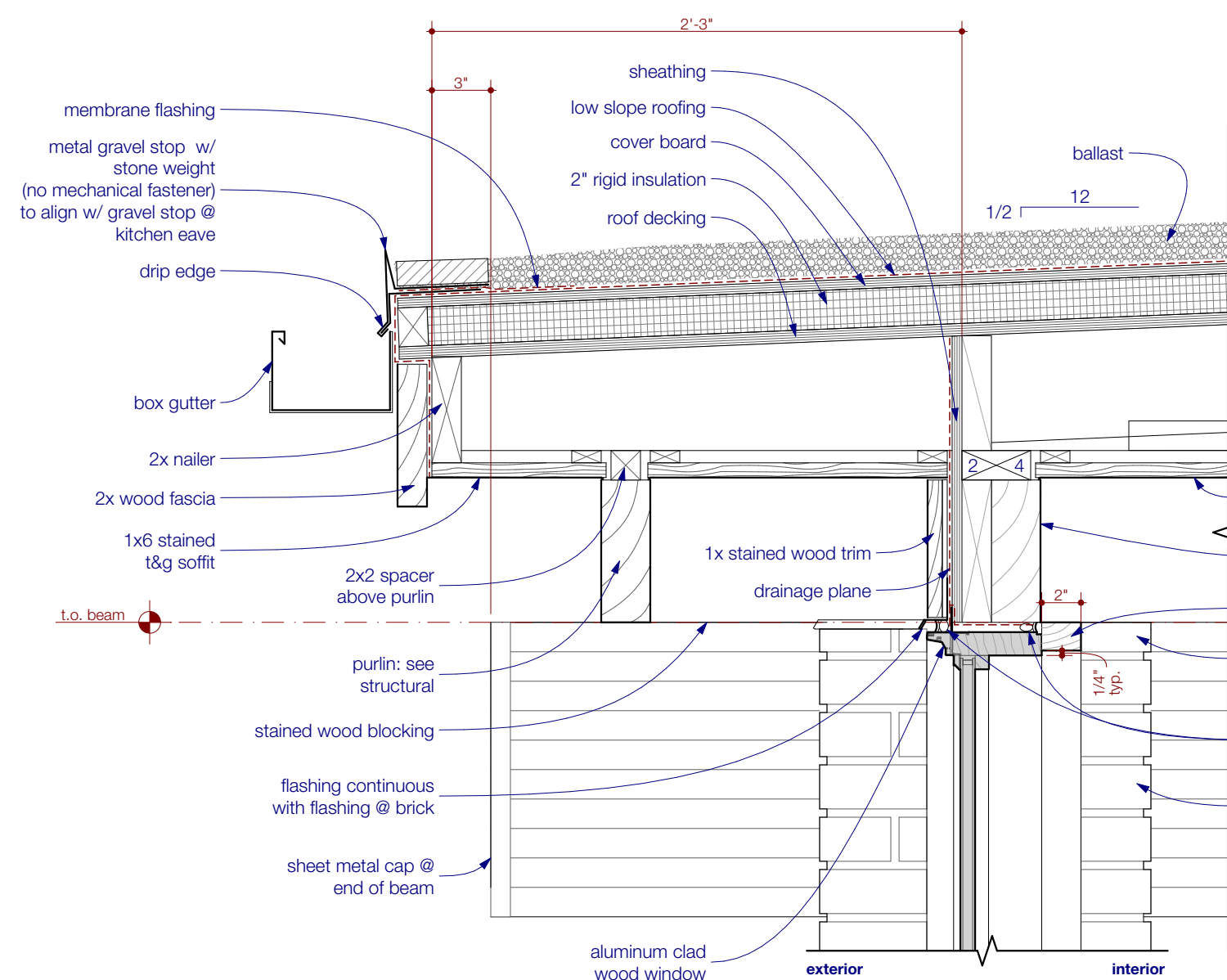
date	description
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3	11/1/22
4	11/1/22
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6	11/1/22

100% CD

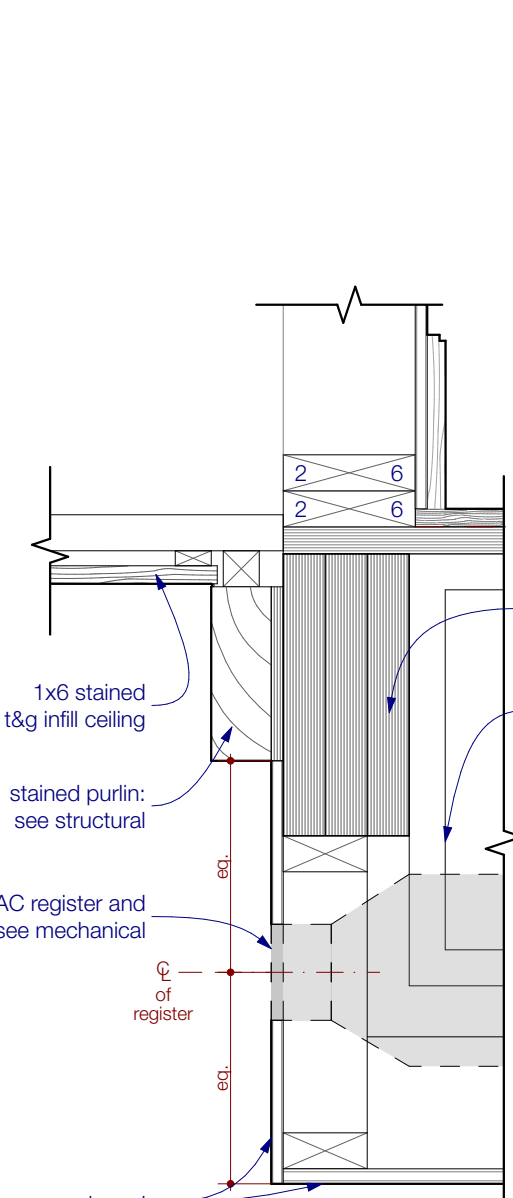
3/8/22

details

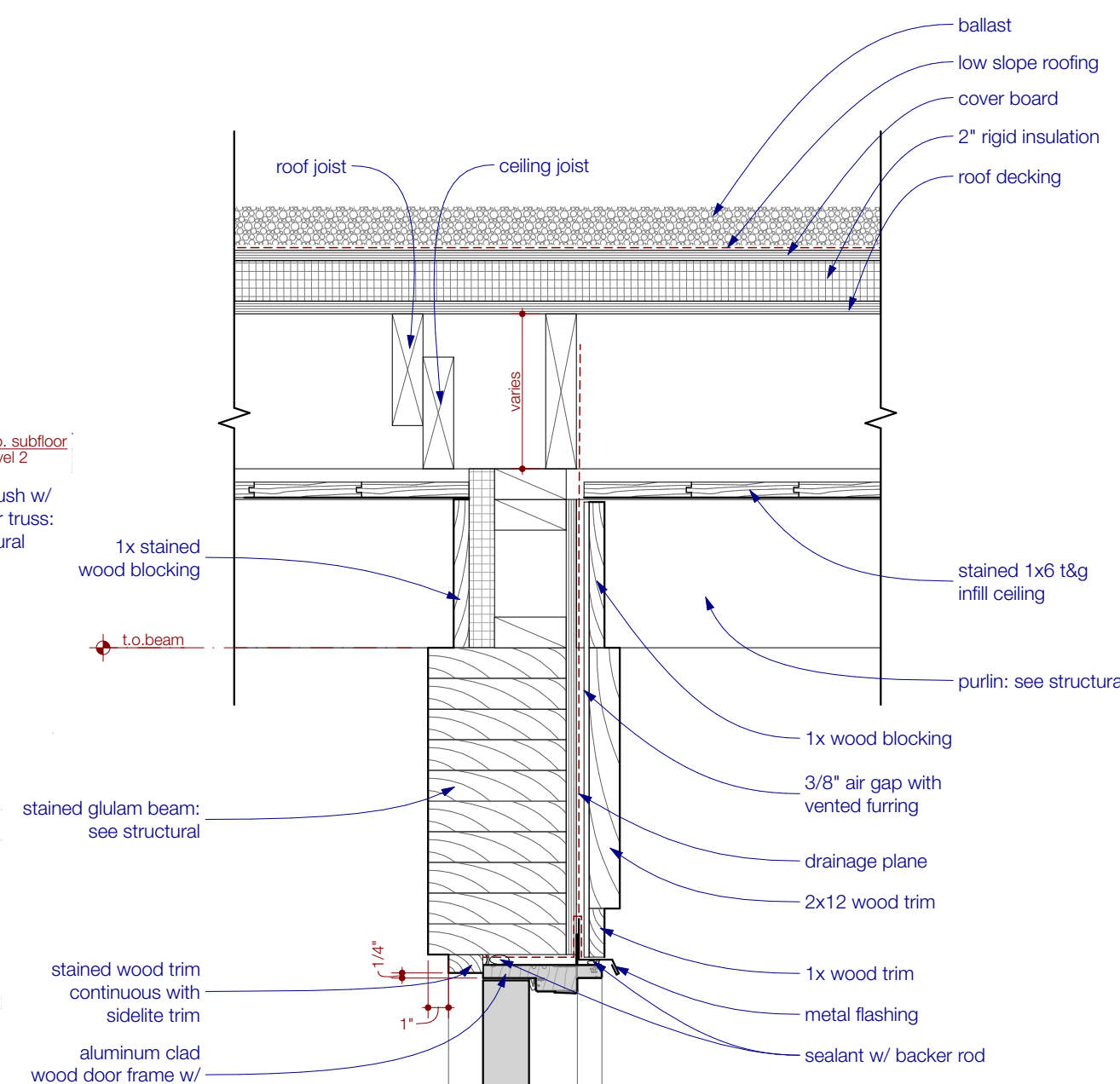
A5.4



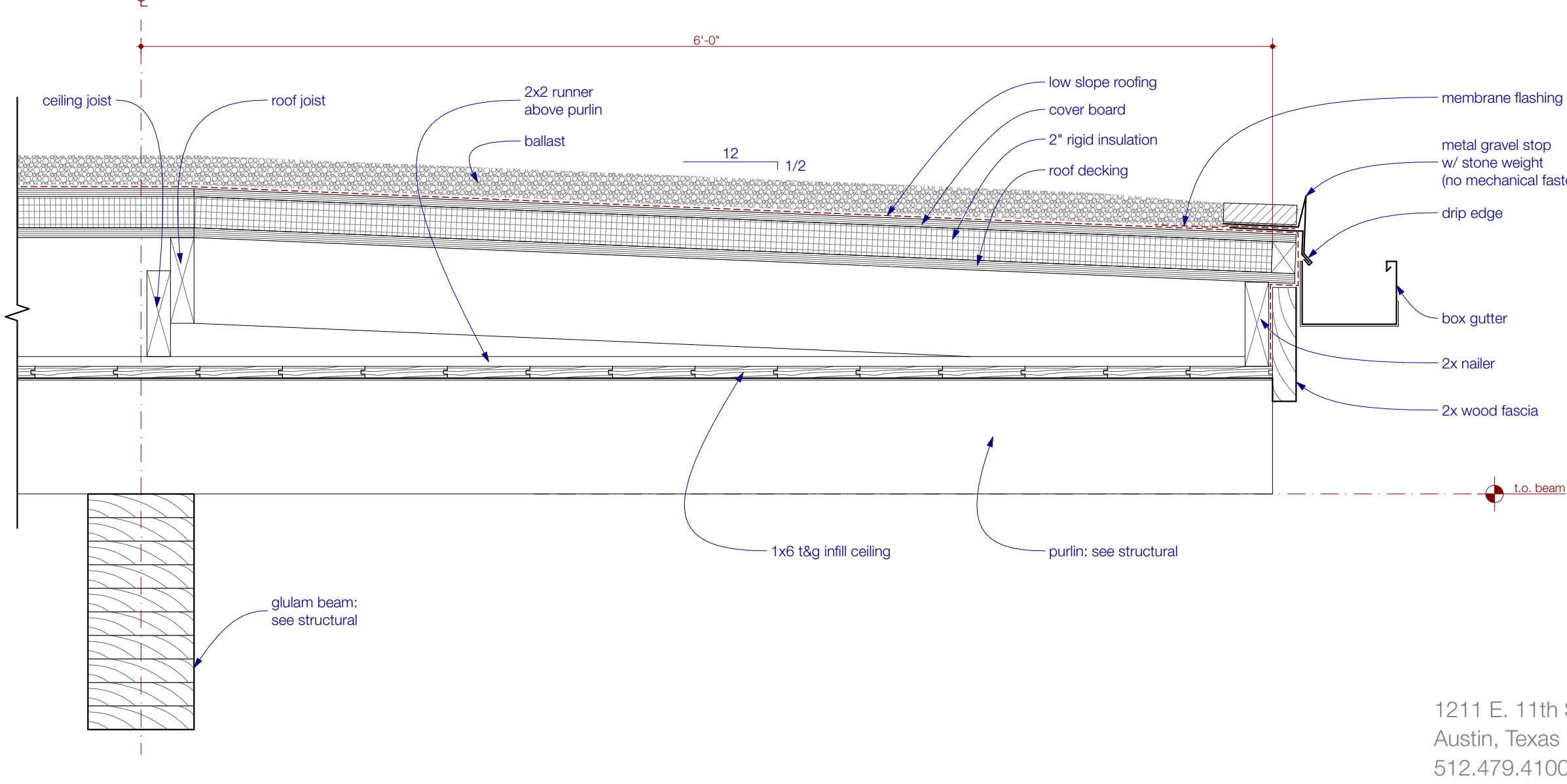
1 eave @ entry
SCALE: 1 1/2" = 1'-0"



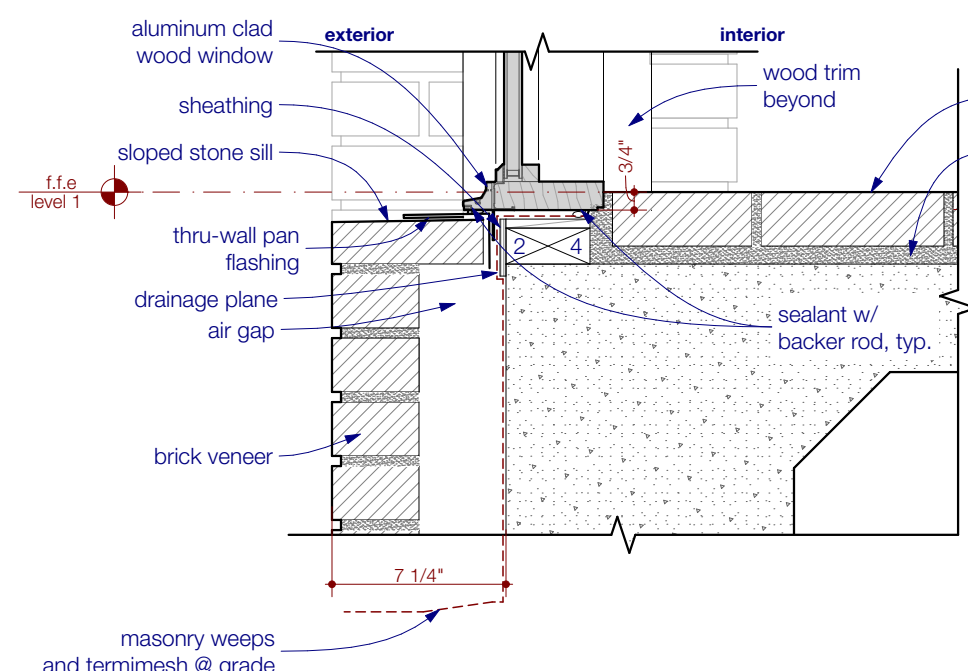
2 furr-down @ entry
SCALE: 1 1/2" = 1'-0"



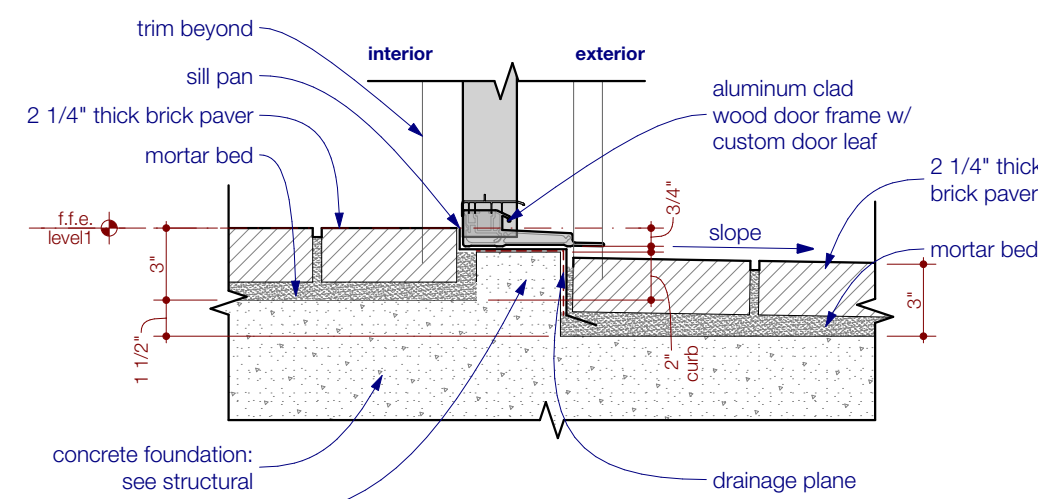
3 head: weathershield inswing door @ entry
SCALE: 1 1/2" = 1'-0"



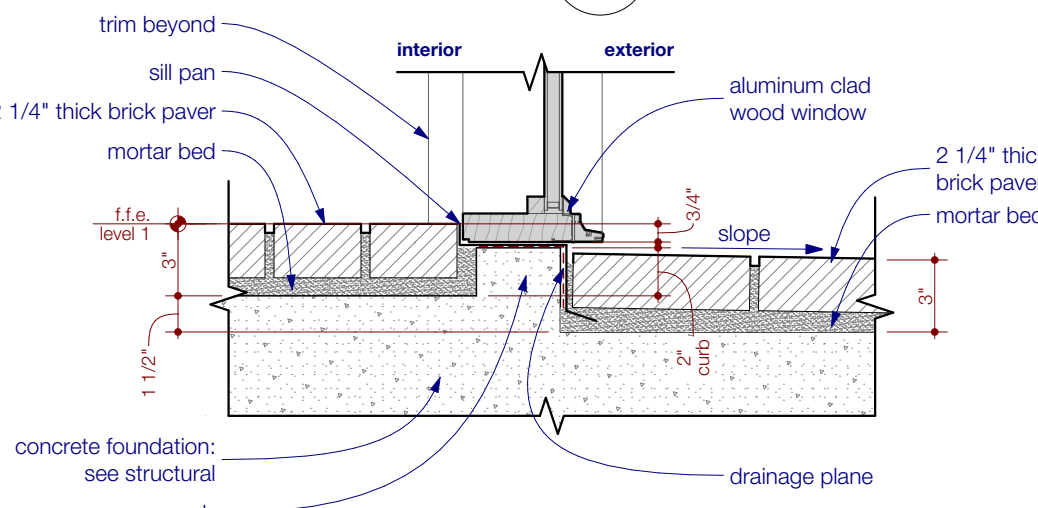
4 eave @ entry porch
SCALE: 1 1/2" = 1'-0"



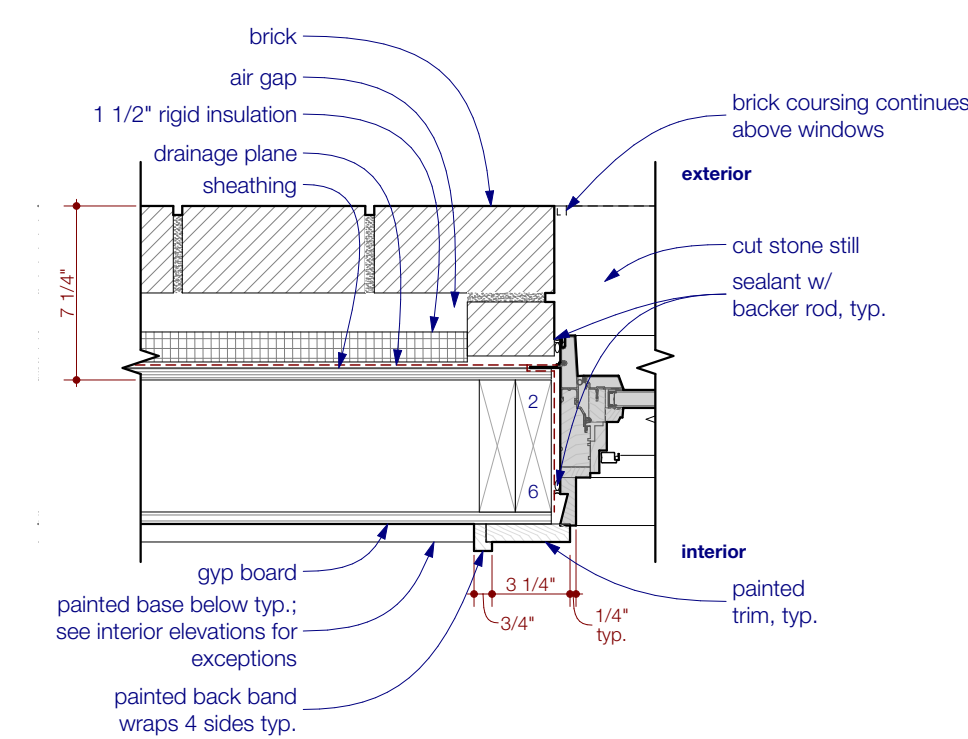
5 sill: weathershield window @ entry
SCALE: 1 1/2" = 1'-0"



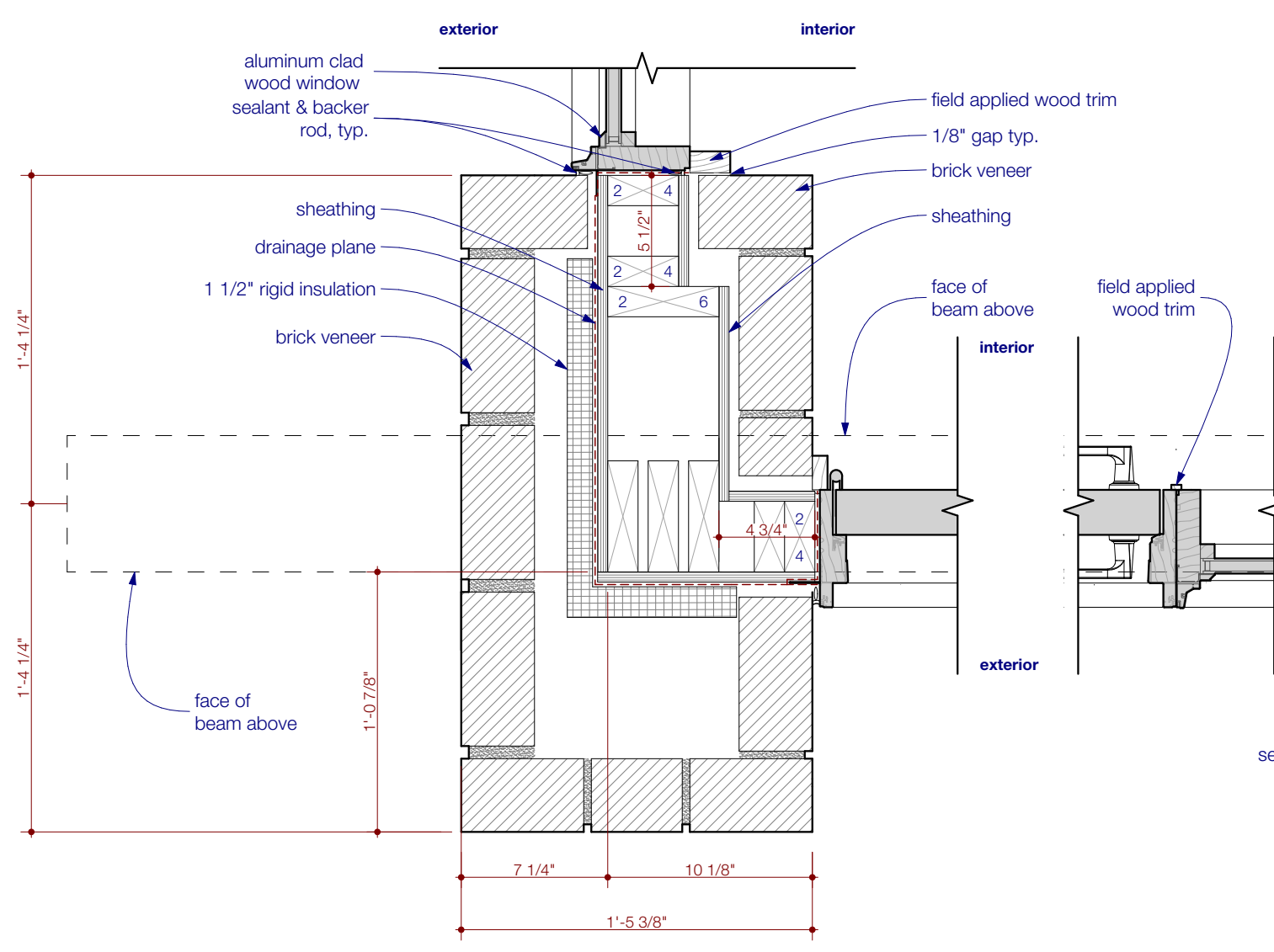
6 (typ.) sill: weathershield inswing door
SCALE: 1 1/2" = 1'-0"



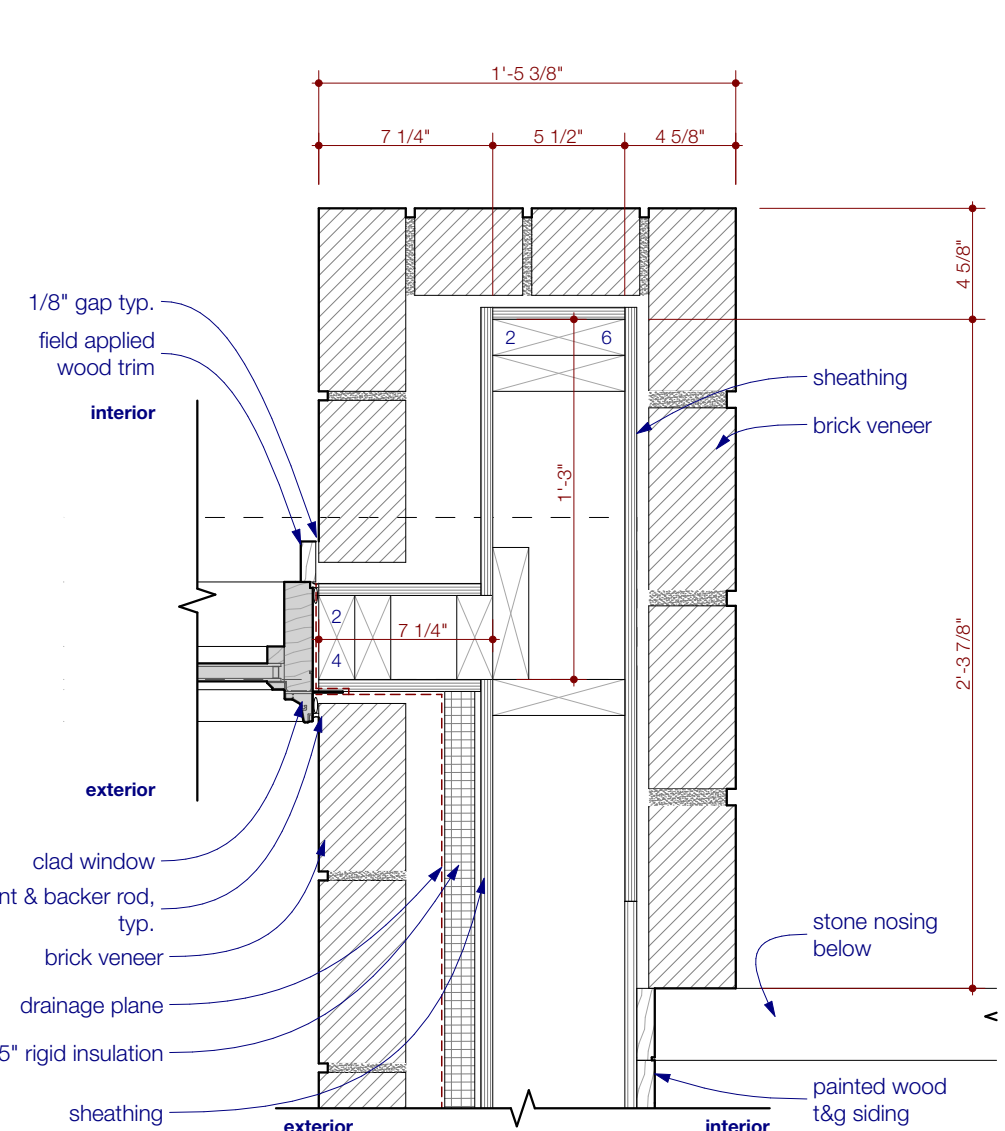
7 (typ.) sill: weathershield window @ main level
SCALE: 1 1/2" = 1'-0"



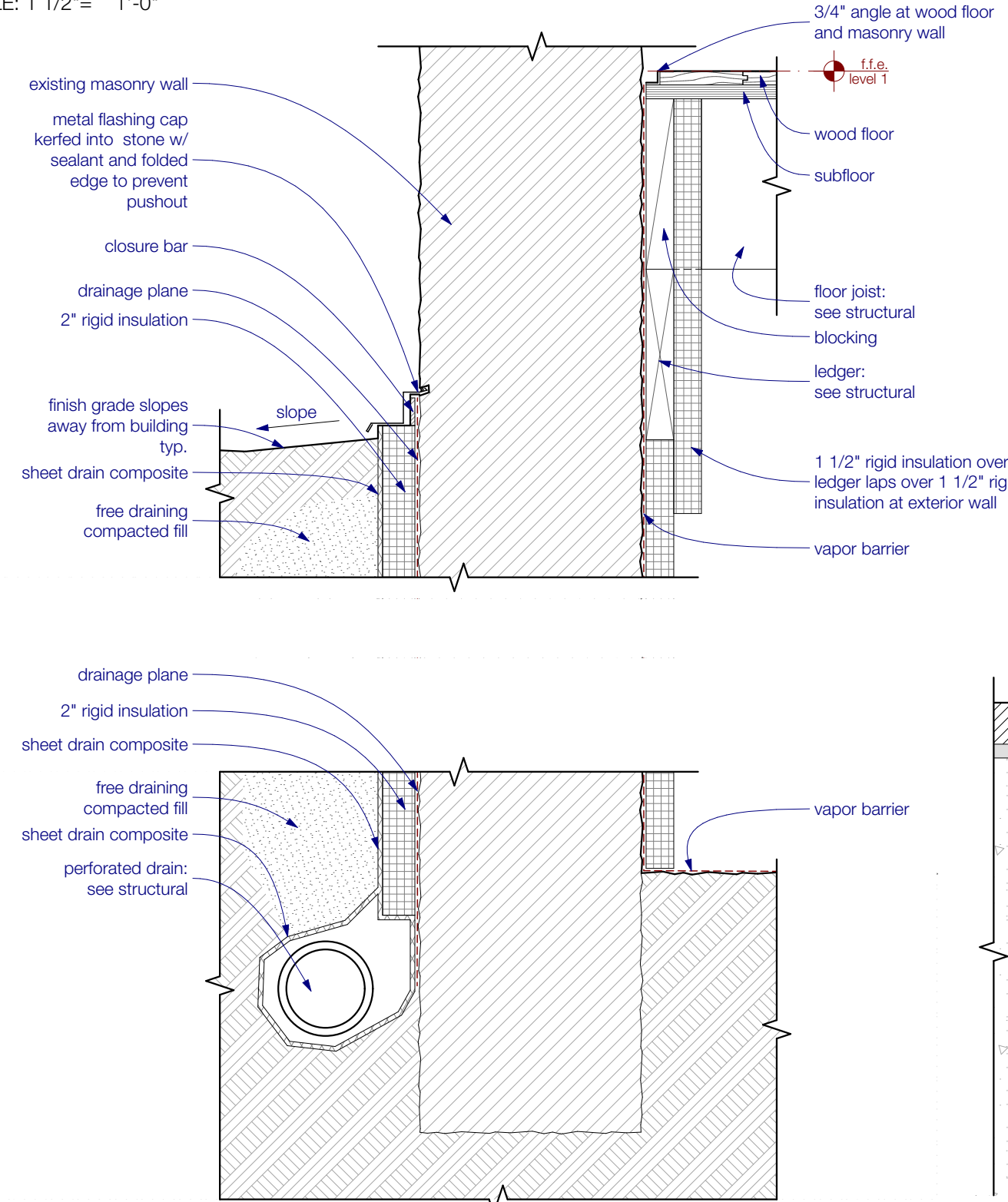
8 window jamb @ brick typ.
SCALE: 1 1/2" = 1'-0"



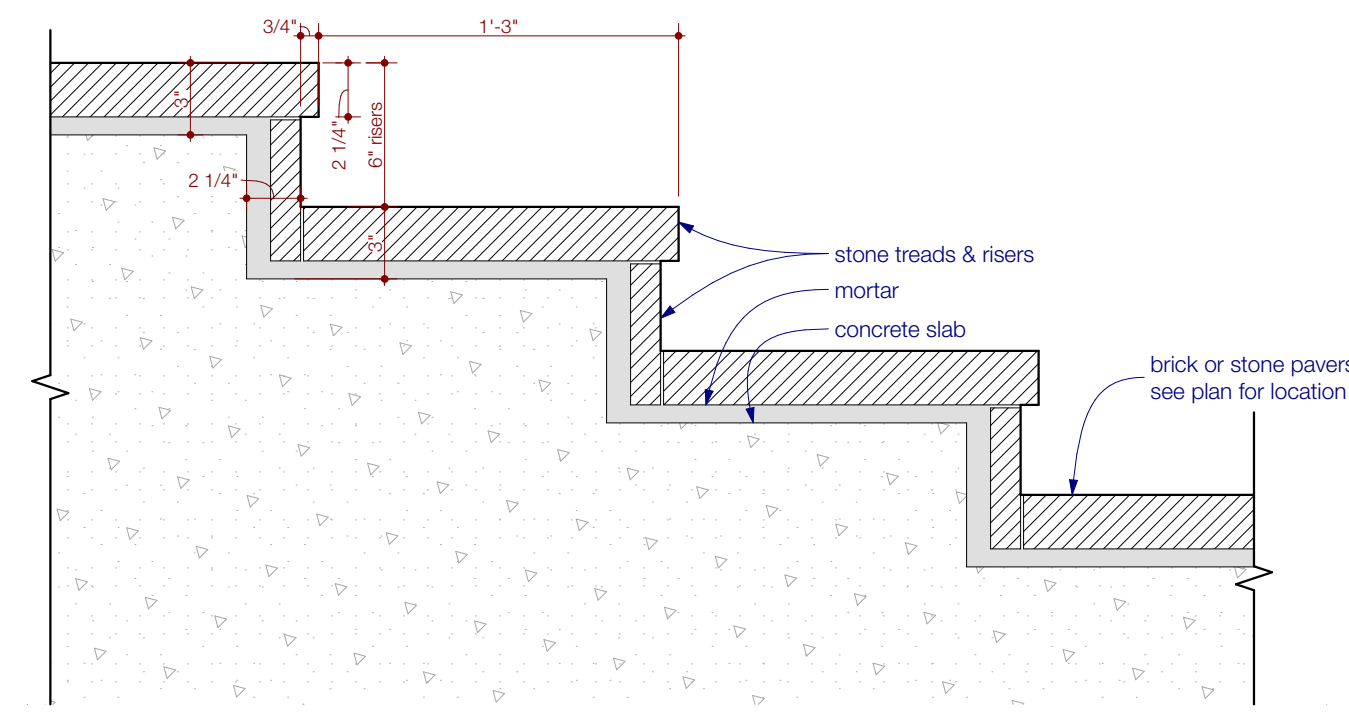
9 corner jamb: weather shield window & entry door
SCALE: 1 1/2" = 1'-0"



10 corner jamb: weather shield window @ entry
SCALE: 1 1/2" = 1'-0"



11 section @ living west wall
SCALE: 1 1/2" = 1'-0"

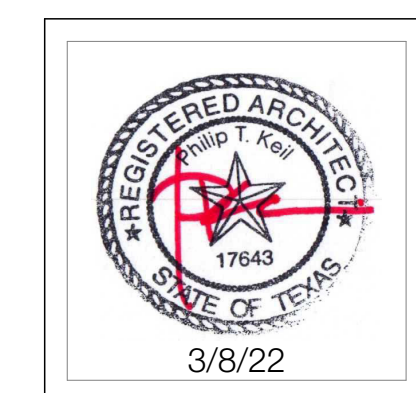


12 section @ entry porch steps
SCALE: 1 1/2" = 1'-0"

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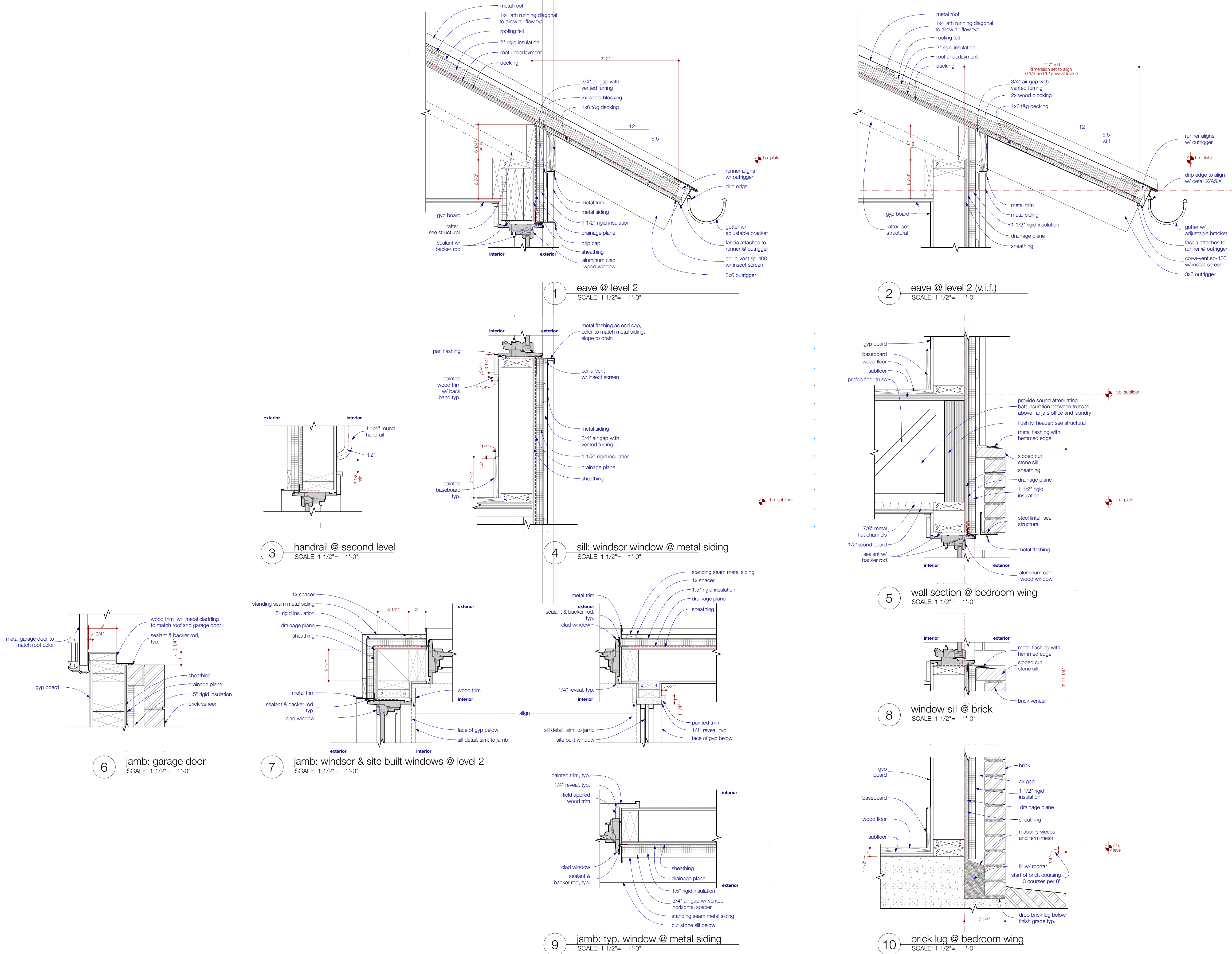
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2	3/8/22	Final Design
3	3/8/22	Final Design
4	3/8/22	Final Design
5	3/8/22	Final Design
6	3/8/22	Final Design

100% CD

3/8/22

details

A5.5



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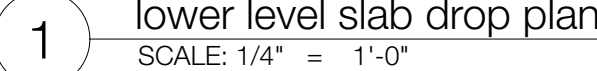
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date	description
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100% CD

3/8/22

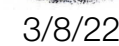
details

A5.6



FURMAN + KEIL ARCHITECTS

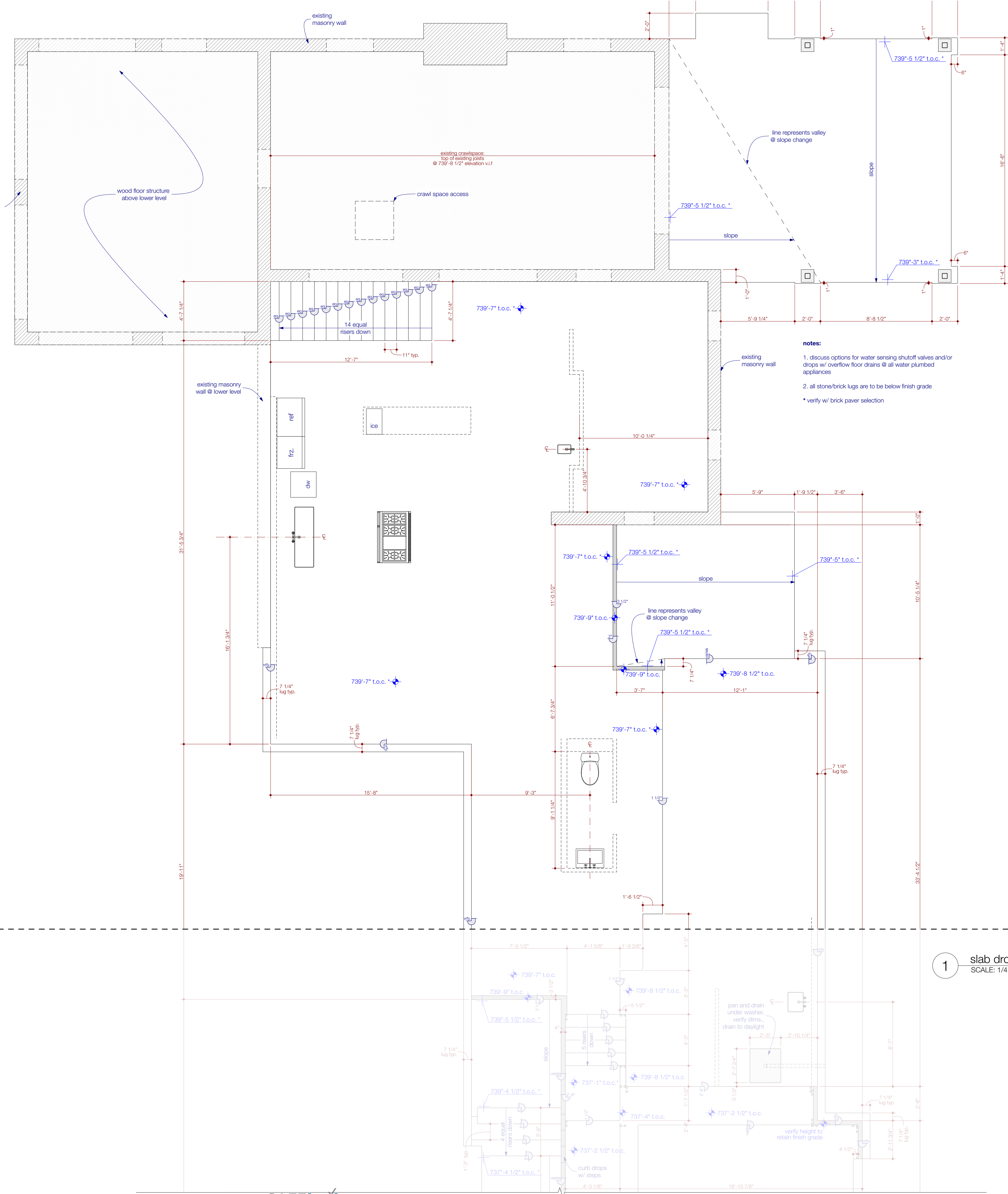
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100% CD

lower level slab drop
plan

A6.1



see A6.2
matchline

revisions	
date	description
1	---/---/---
2	---/---/---
3	---/---/---
4	---/---/---
5	---/---/---
6	---/---/---

100% CD

3/8/22

level 1 slab drop plan

A6.2

see A6.2
● — — — — —
matchline

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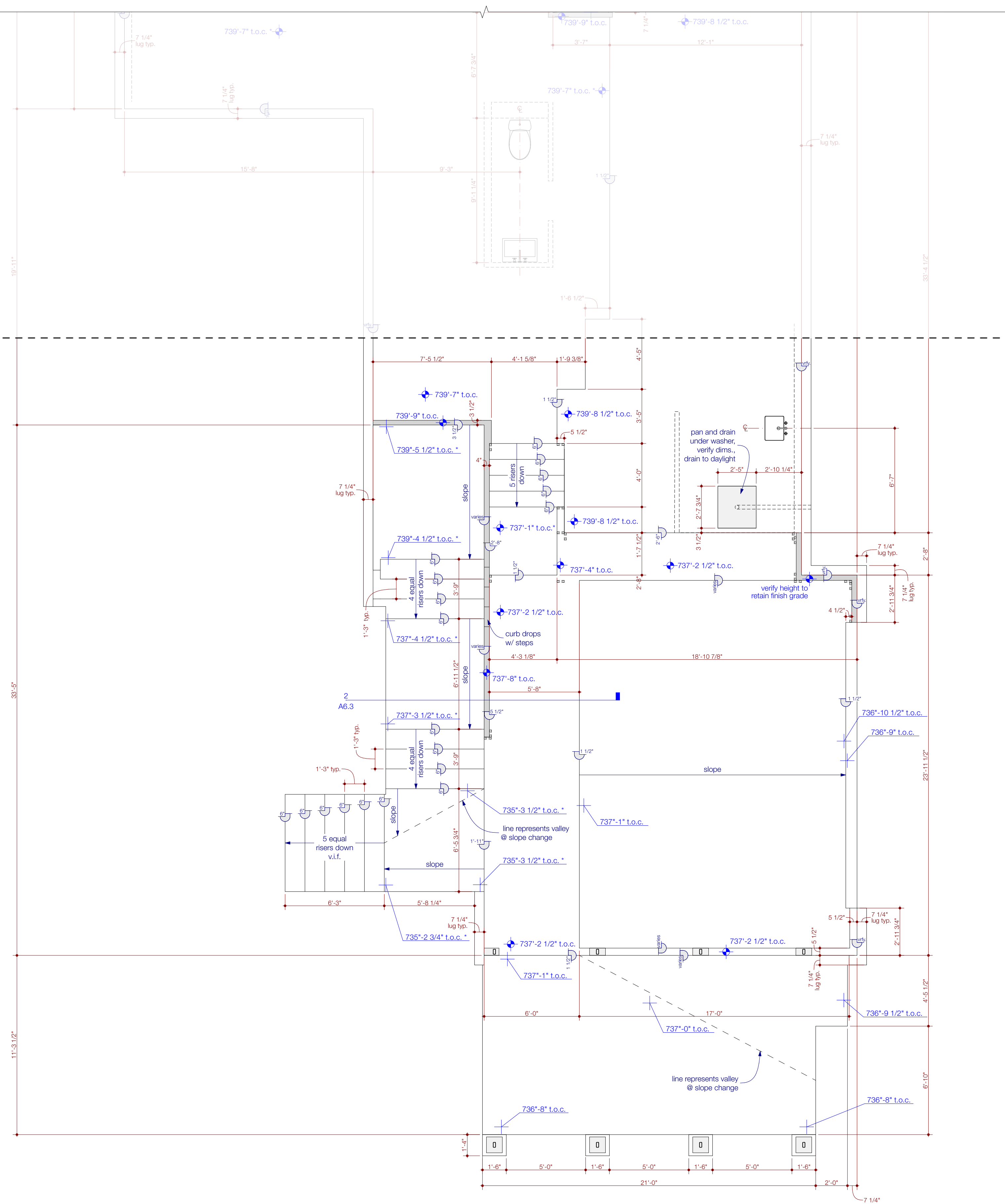
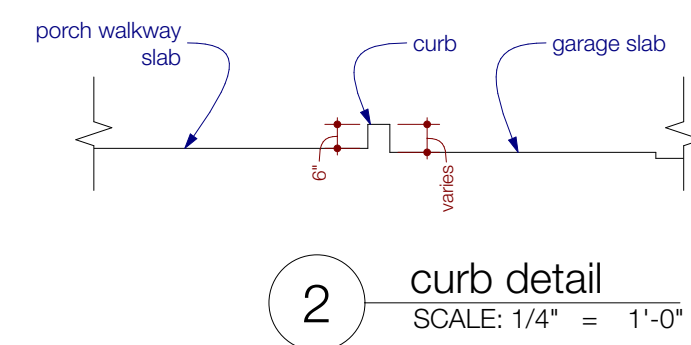
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date	description
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6	--/------

100% CD

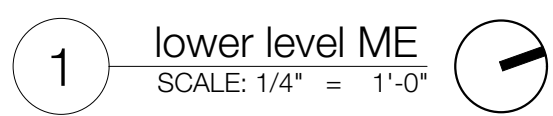
3/8/22

level 1 slab drop plan

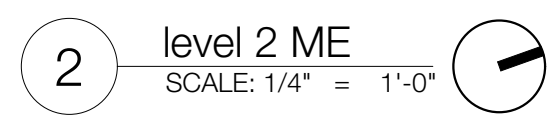
A6.3



1 slab drop plan
SCALE: 1/4" = 1'-0"

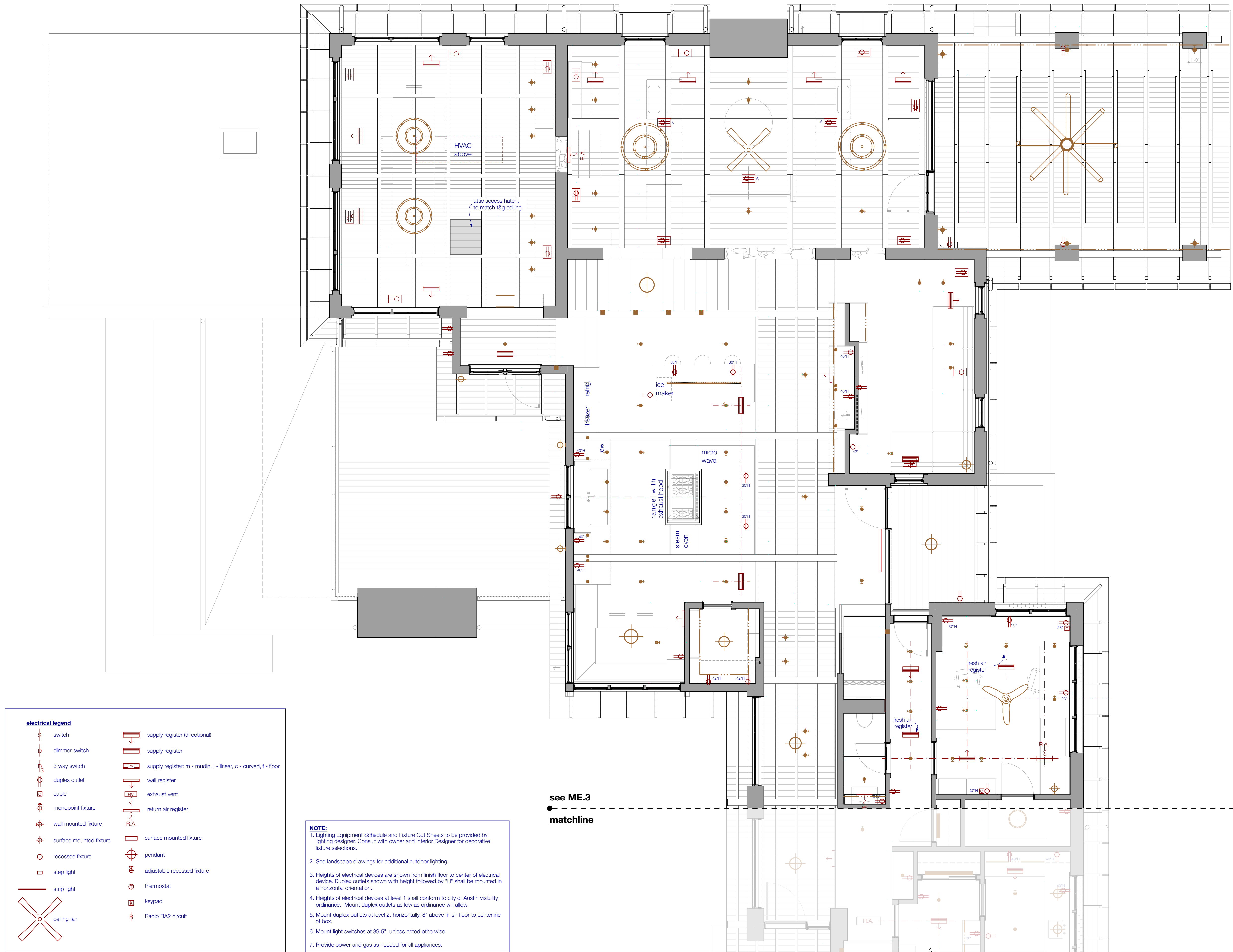


	switch		supply register (directional)
	dimmer switch		supply register
	3 way switch		supply register: m - mudin, l - linear, c - curved, f - floor
	duplex outlet		wall register
	cable		exhaust vent
	monopoint fixture		return air register
	wall mounted fixture		
	surface mounted fixture		surface mounted fixture
	recessed fixture		pendant
	step light		adjustable recessed fixture
	strip light		thermostat
	ceiling fan		keypad
			Radio RA2 circuit



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PLANS MUST BE ON SITE
FOR ALL INSPECTIONS



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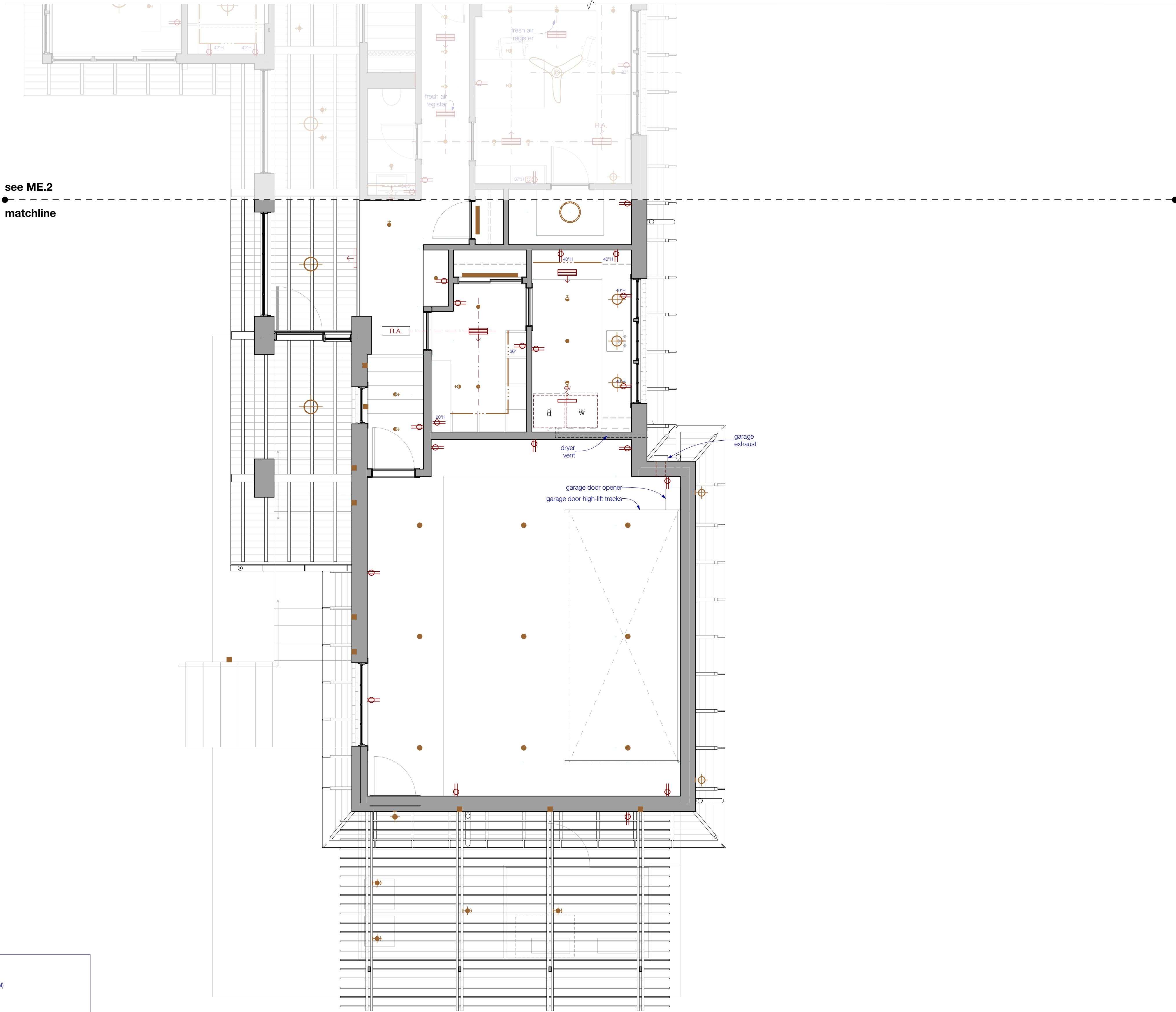
revisions	
date	description
1	...
2	...
3	...
4	...
5	...
6	...

100% CD

3/8/22

mechanical / electrical

ME.2



electrical legend	
	switch
	dimmer switch
	3 way switch
	duplex outlet
	cable
	monopoint fixture
	wall mounted fixture
	surface mounted fixture
	recessed fixture
	step light
	strip light
	ceiling fan
	supply register (directional)
	supply register
	supply register: m - mudin, l - linear, c - curved, f - floor
	wall register
	exhaust vent
	return air register
	R.A.
	surface mounted fixture
	pendant
	adjustable recessed fixture
	thermostat
	keypad
	Radio RA2 circuit

NOTE:

1. Lighting Equipment Schedule and Fixture Cut Sheets to be provided by lighting designer. Consult with owner and Interior Designer for decorative fixture selections.
2. See landscape drawings for additional outdoor lighting.
3. Heights of electrical devices are shown from finish floor to center of electrical device. Duplex outlets shown with height followed by "H" shall be mounted in a horizontal orientation.
4. Heights of electrical devices at level 1 shall conform to city of Austin visibility ordinance. Mount duplex outlets as low as ordinance will allow.
5. Mount duplex outlets at level 2, horizontally, 8" above finish floor to centerline of box.
6. Mount light switches at 39.5", unless noted otherwise.
7. Provide power and gas as needed for all appliances.

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

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revisions	
date	description
1	...
2	...
3	...
4	...
5	...
6	...

100% CD

3/8/22

mechanical / electrical

ME.3

GENERAL NOTES:

> "B" sheets describe the Art House, part of a larger development on this property. See sheets A.1-A1.9 for cover sheet, site plan, specifications, and existing openings in stone walls.

> Lighting shown for coordination and location only, see lighting plans.

> Mechanical shown for coordination and location only, see mechanical plans.

> Interior demo has been completed. Demo roof framing and existing metal roof.

EXTERIOR DOOR SCHEDULE

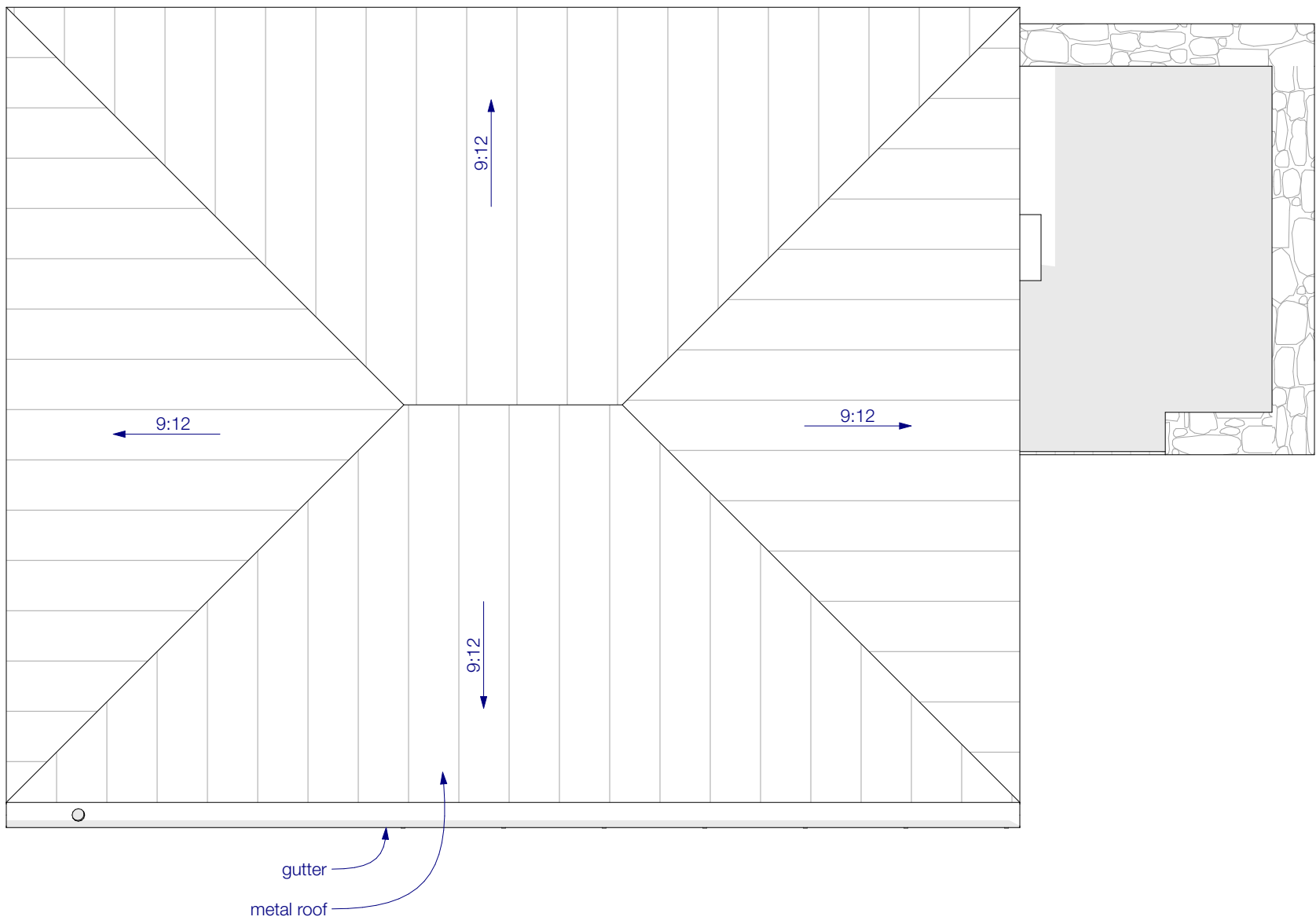
key	location	width	height	type	lock set	notes
50	art house	3'-0"	6'-8 3/4"	custom	entrance w/ deadbolt, keypad	

3 exterior door schedule
SCALE: 1" = 1'-0"

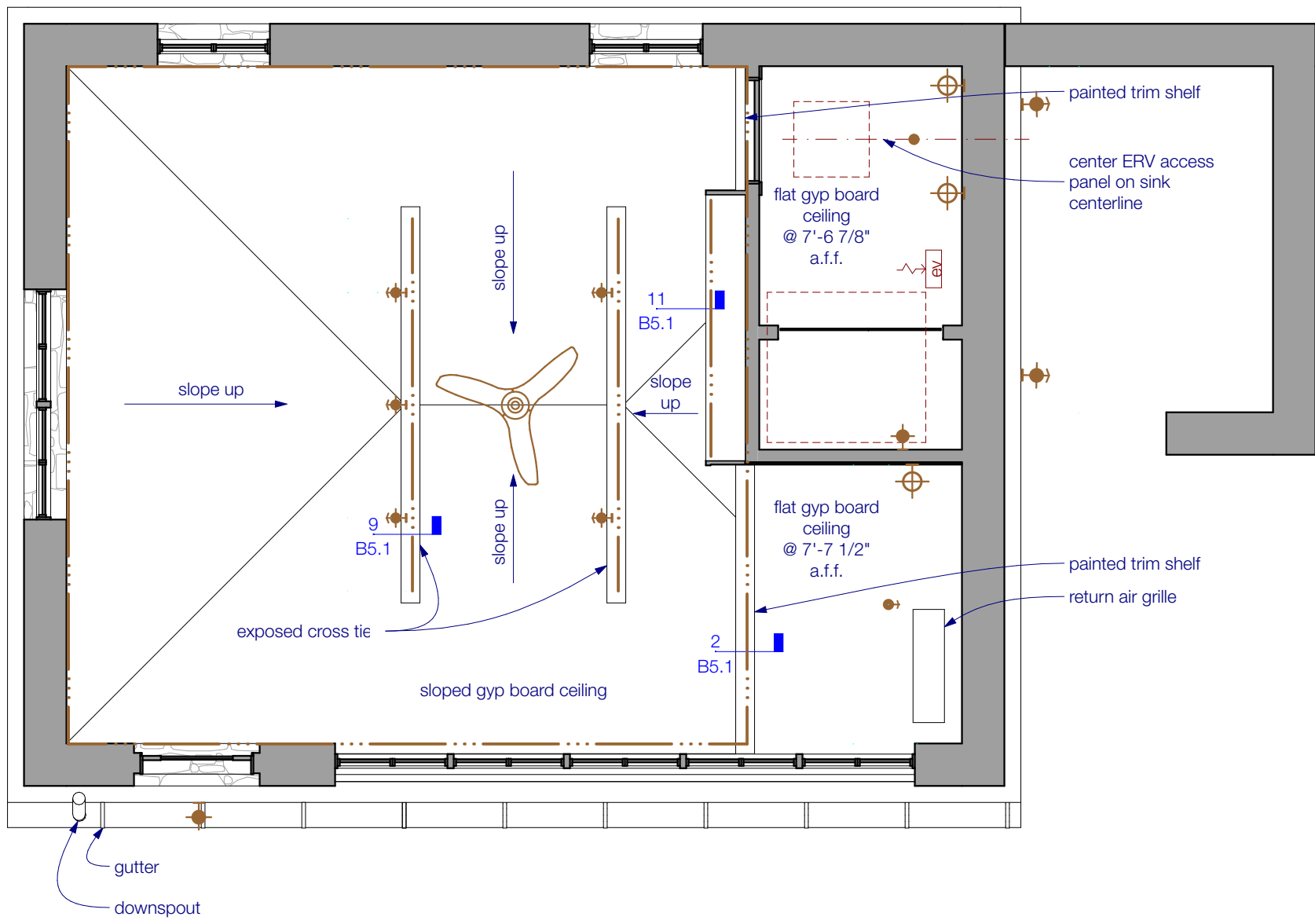
INTERIOR DOOR SCHEDULE

key	location	leaf dimensions	type	lock set	notes
51	art house bath	2'-8"x7'-5 5/8"	solid core, slab	privacy	finish t.b.d.

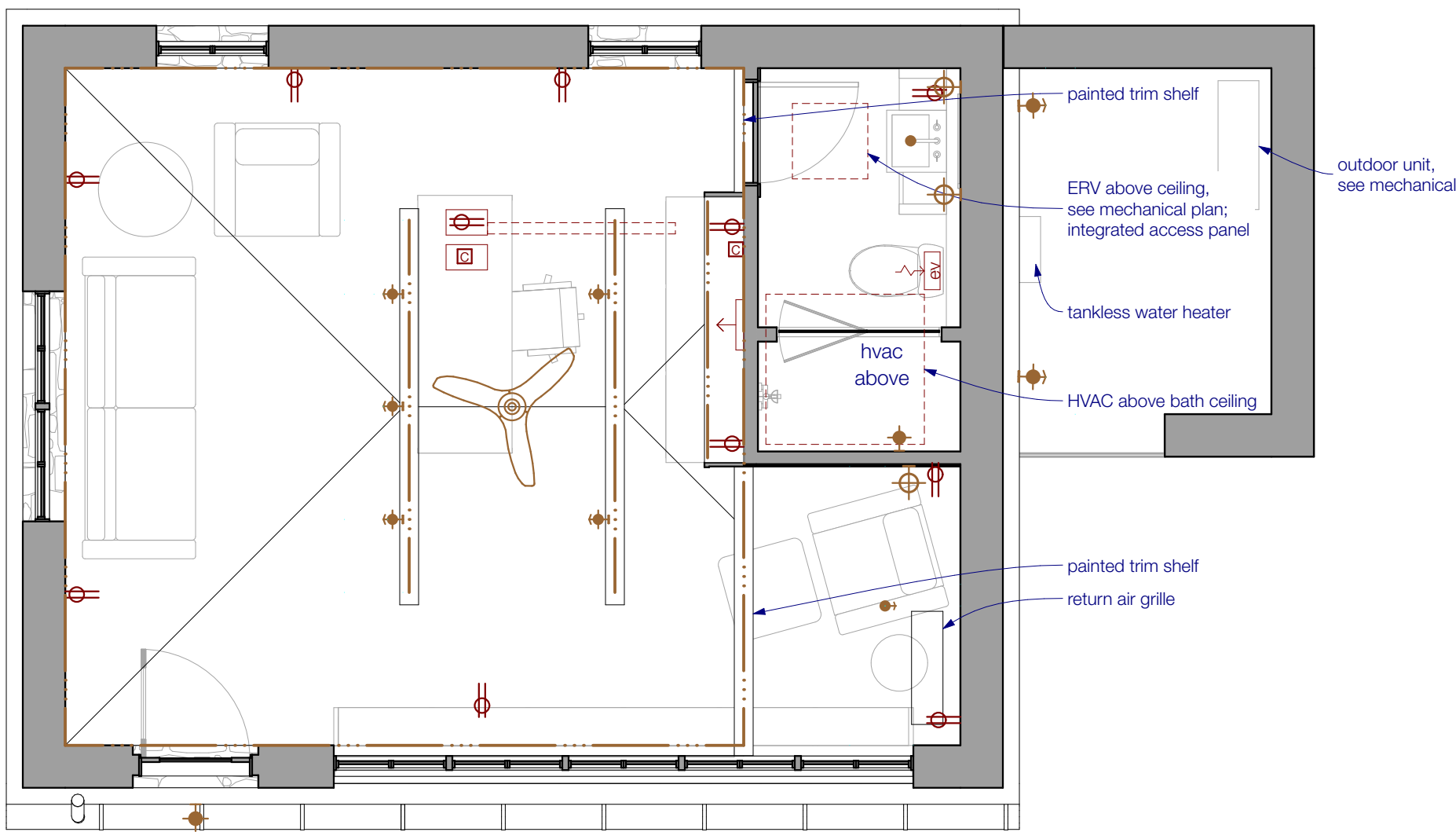
4 interior door schedule
SCALE: 1" = 1'-0"



5 art house roof plan
SCALE: 1/4" = 1'-0"

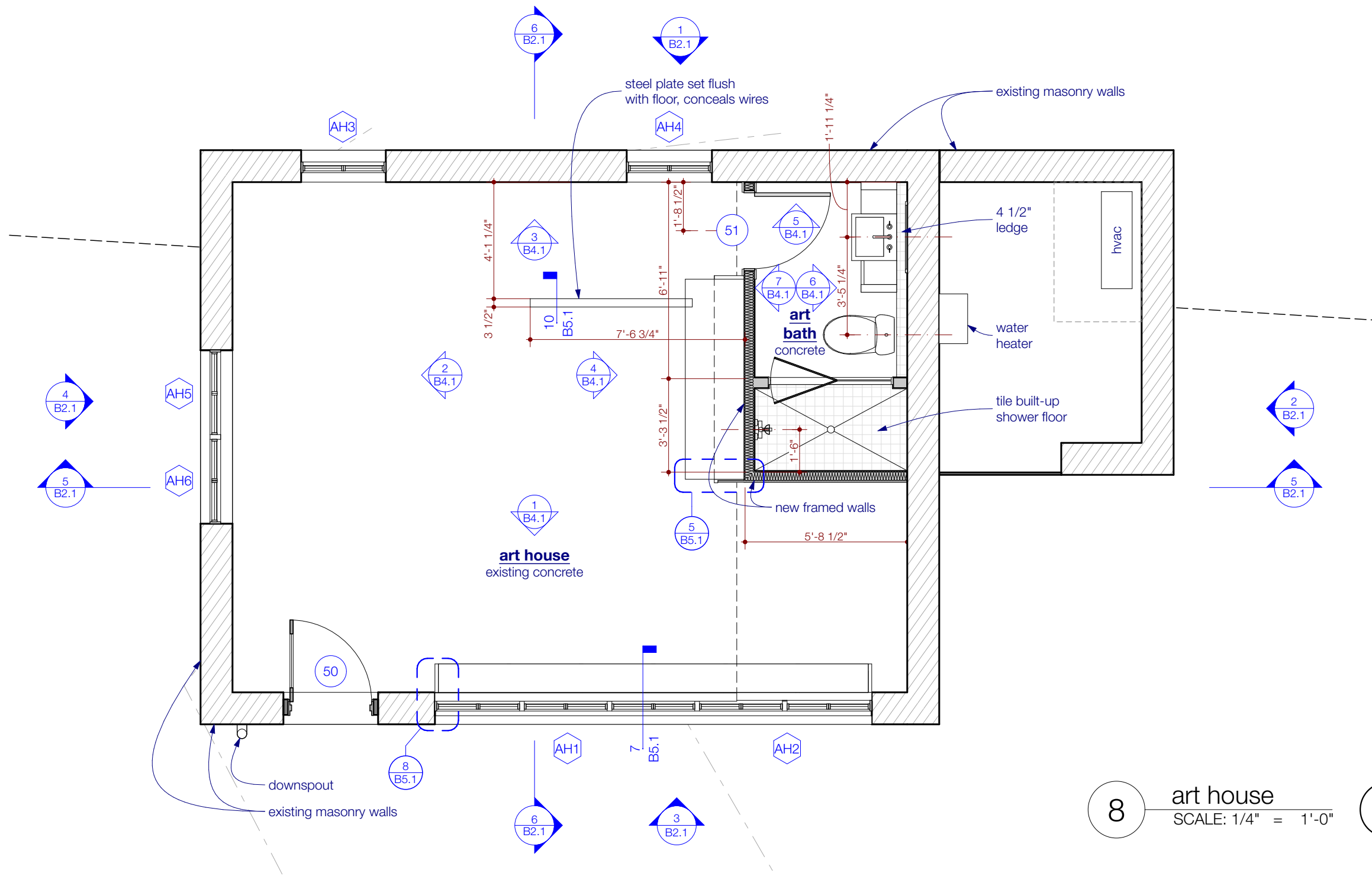


6 art house RCP
SCALE: 1/4" = 1'-0"



7 art house ME
SCALE: 1/4" = 1'-0"

- see lighting plan for lights and switches



8 art house
SCALE: 1/4" = 1'-0"

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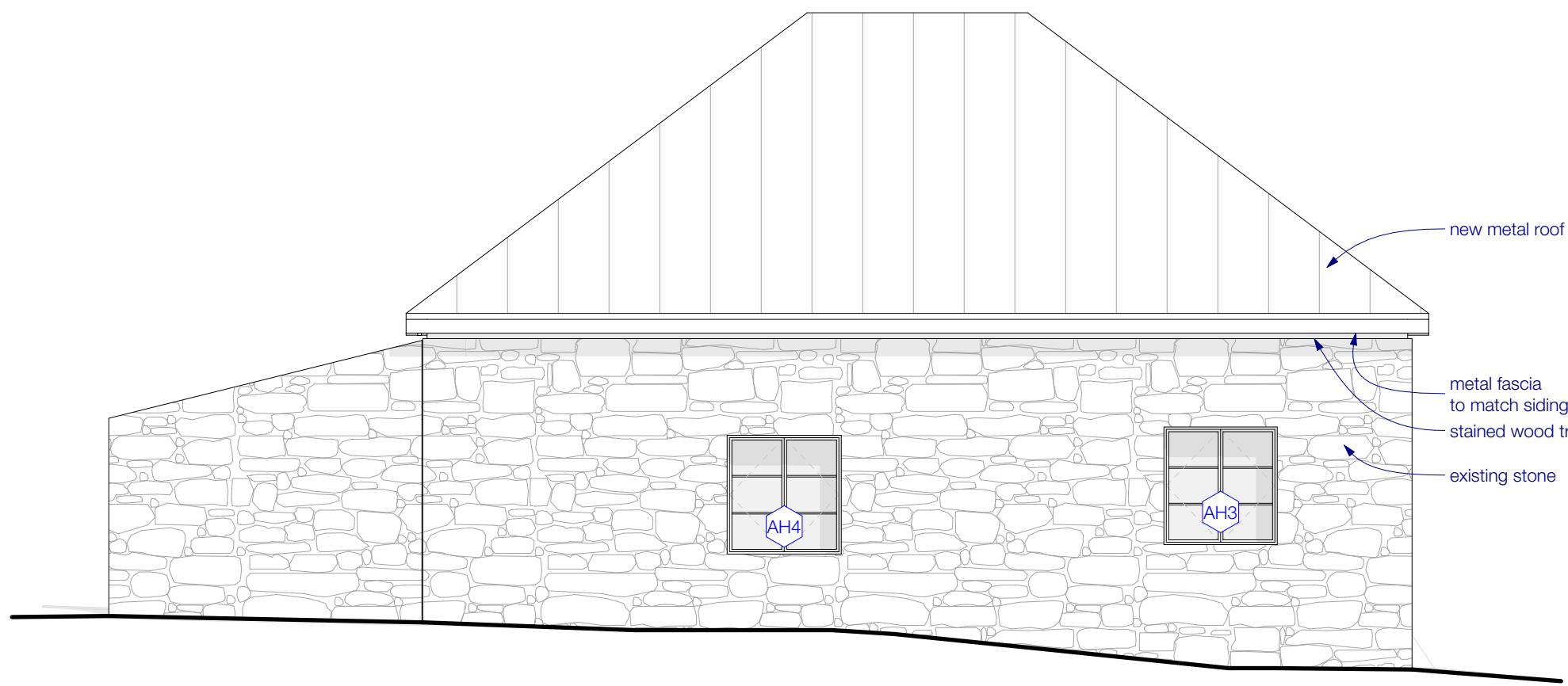
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3	--/------
4	--/------
5	--/------
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100% CD

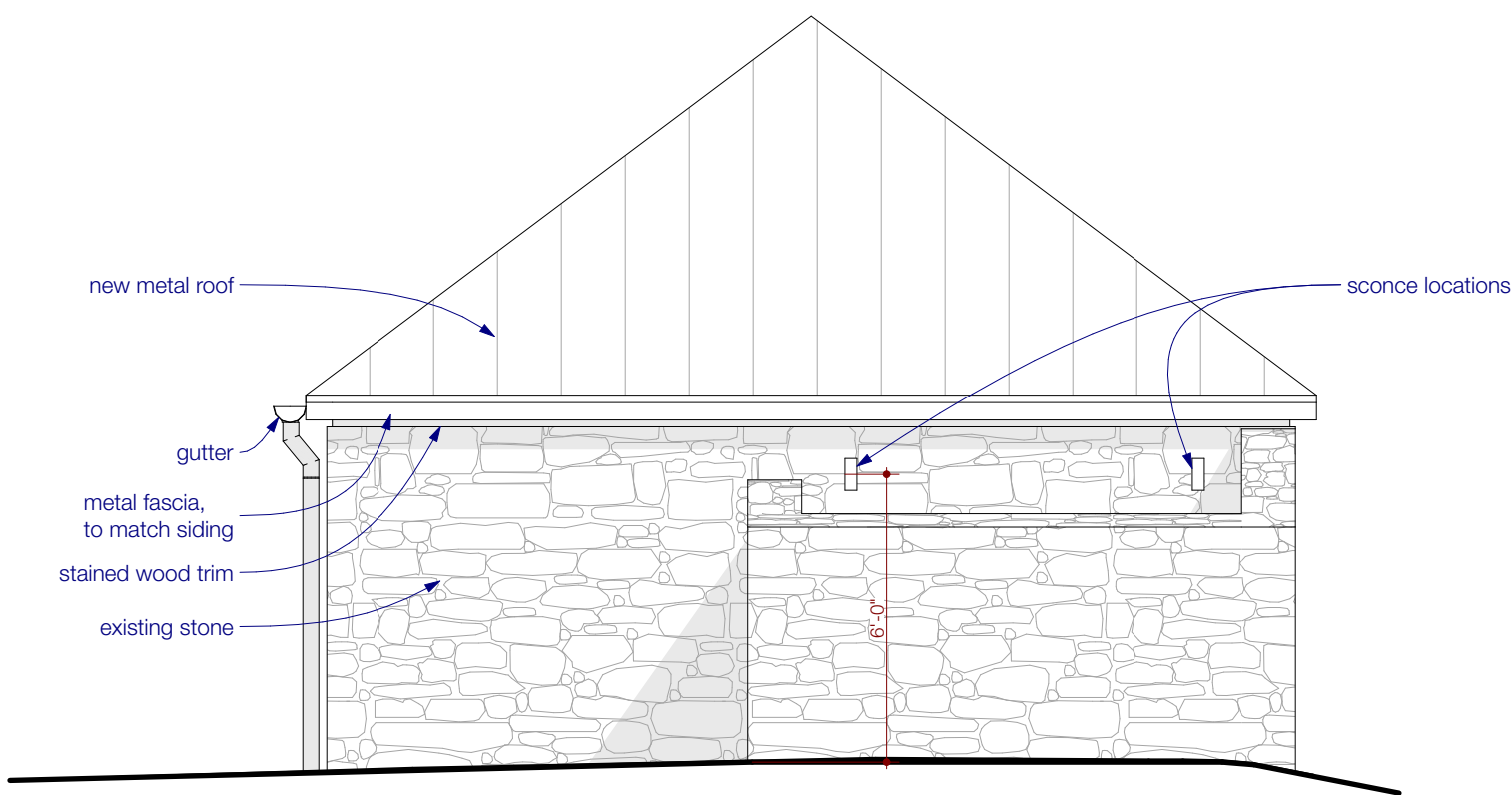
3/8/22

plans

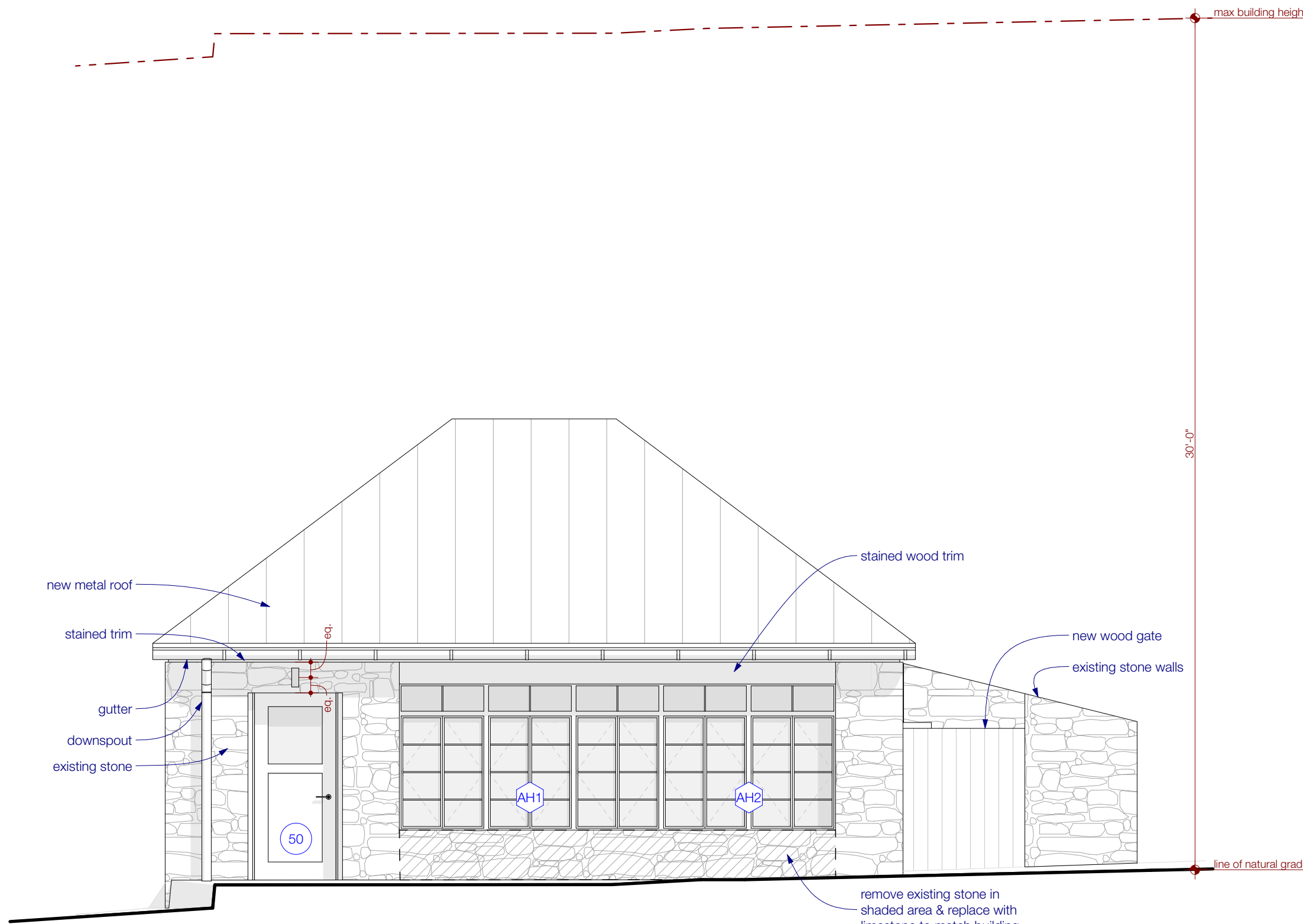
B1.1



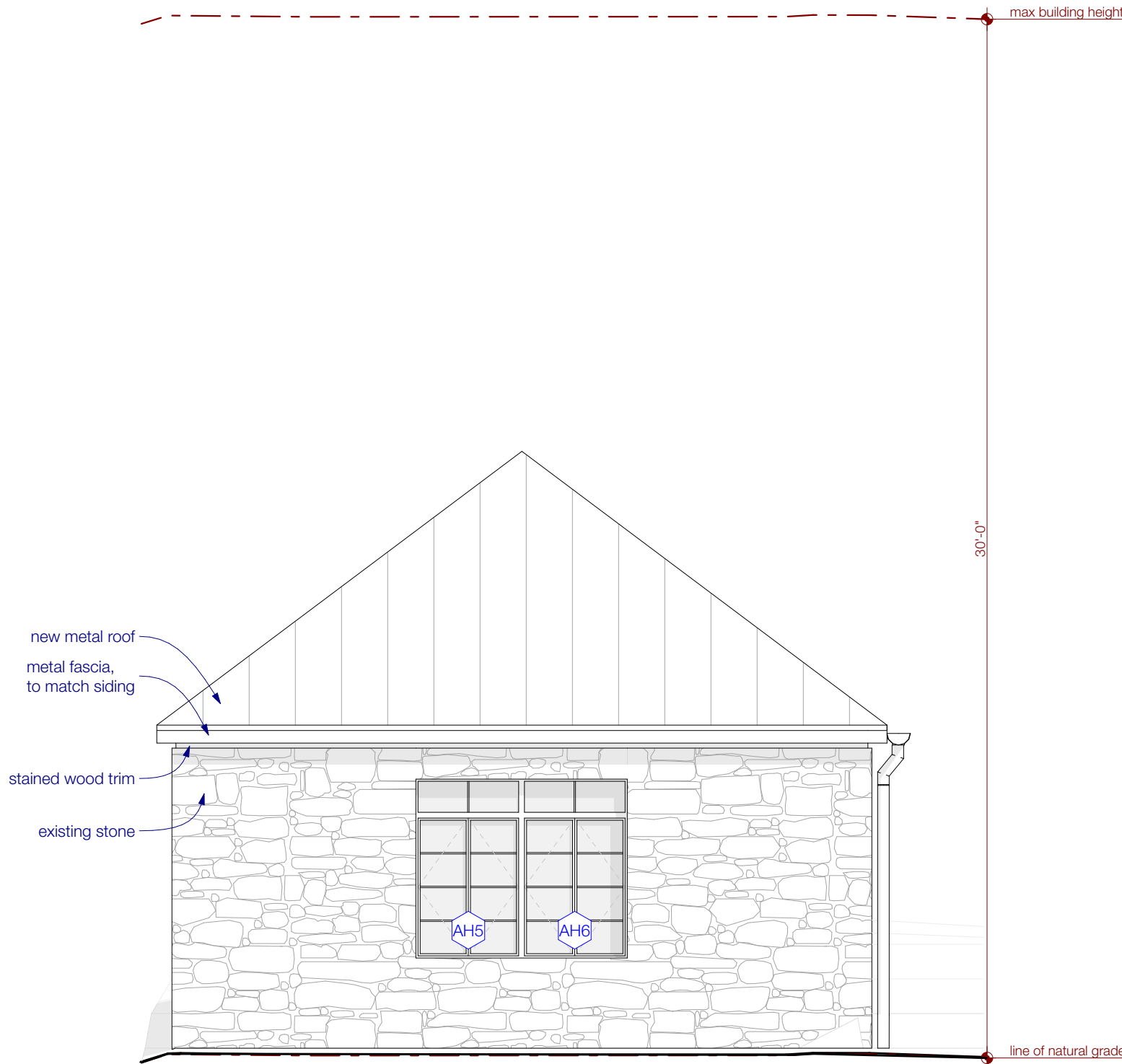
1 art house west
SCALE: 1/4" = 1'-0"



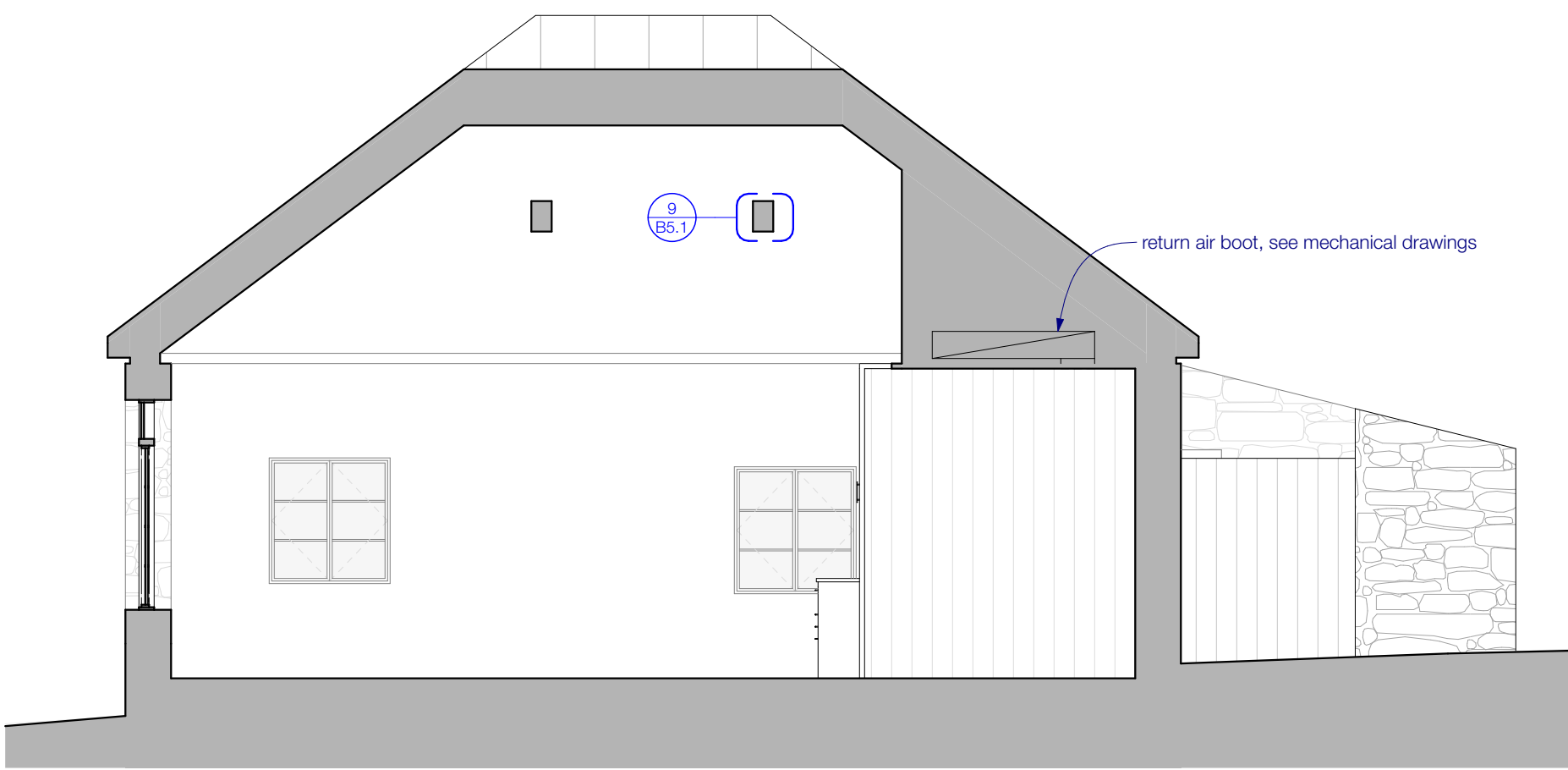
2 art house north
SCALE: 1/4" = 1'-0"



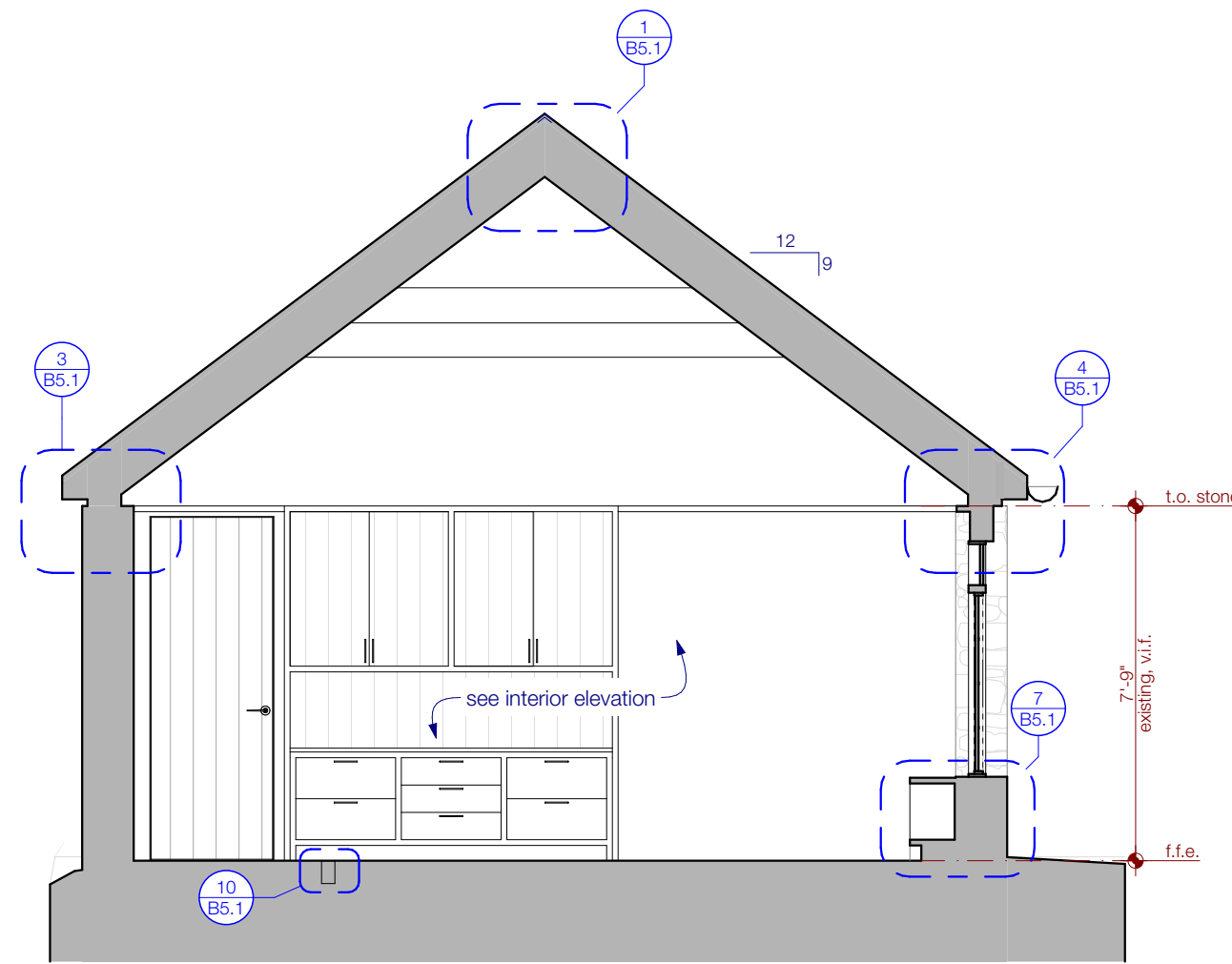
3 art house east
SCALE: 1/4" = 1'-0"



4 art house south
SCALE: 1/4" = 1'-0"



5 section @ art house
SCALE: 1/4" = 1'-0"



6 section @ art house
SCALE: 1/4" = 1'-0"

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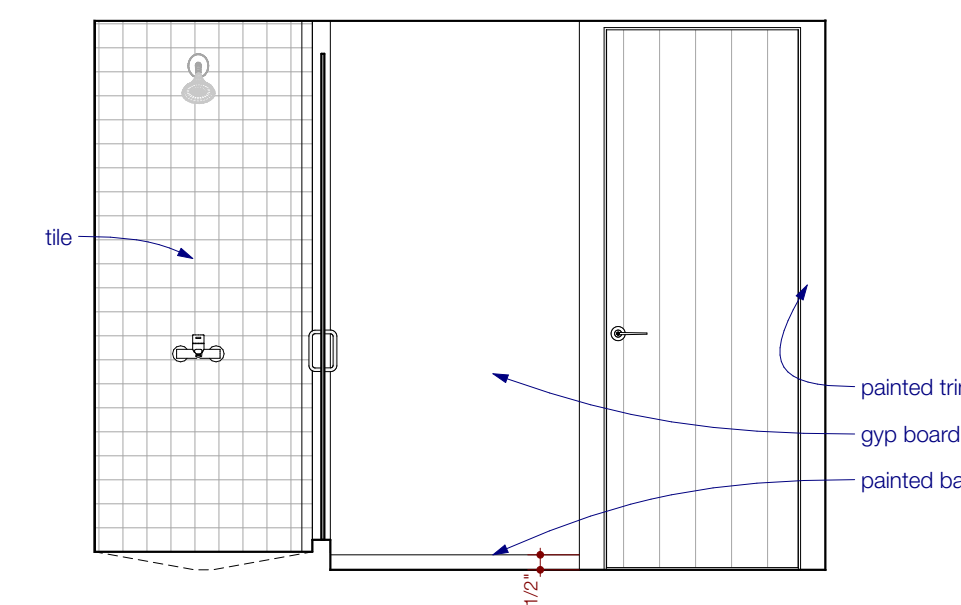
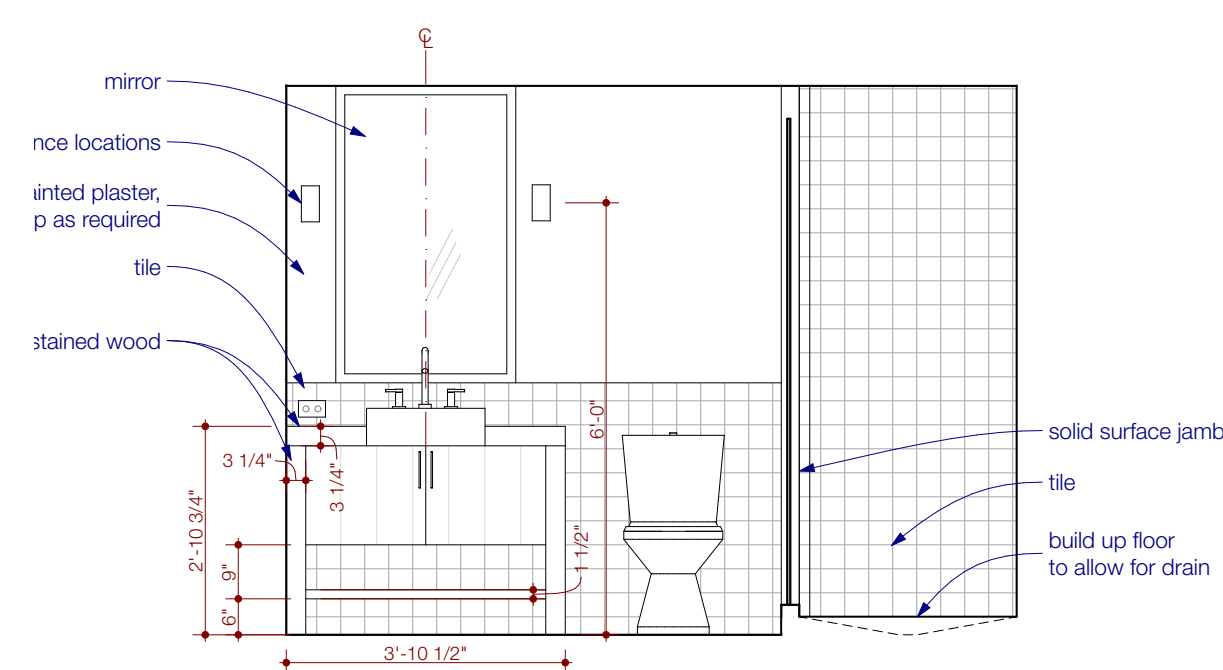
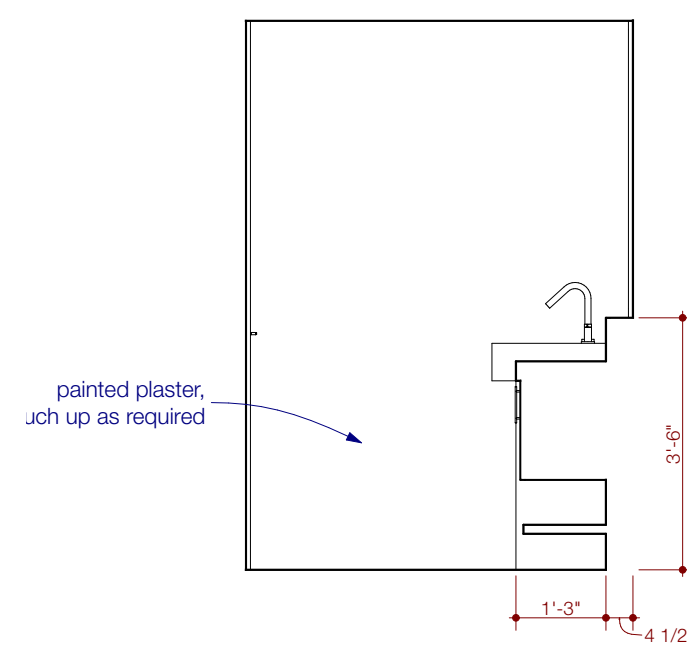
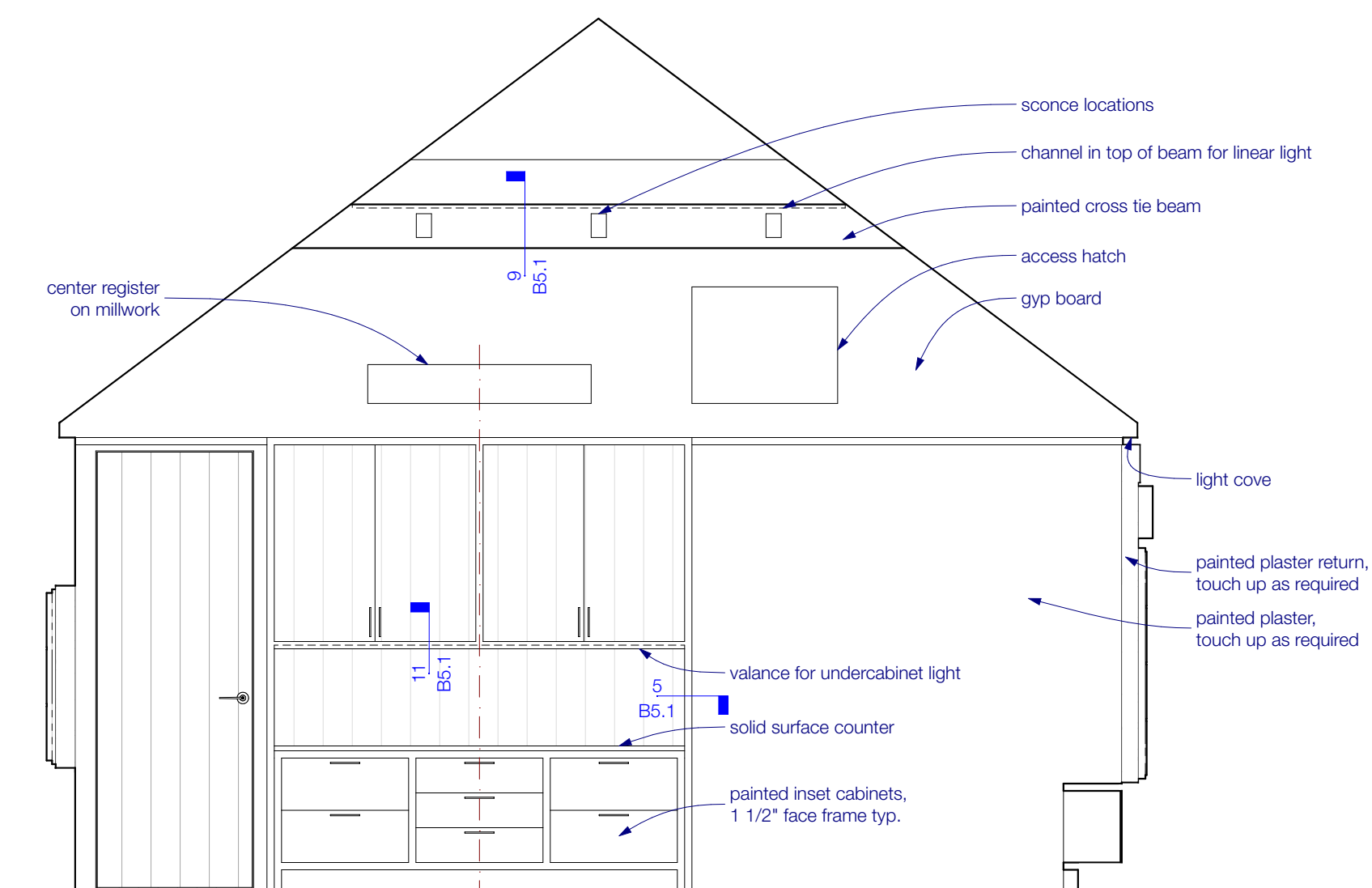
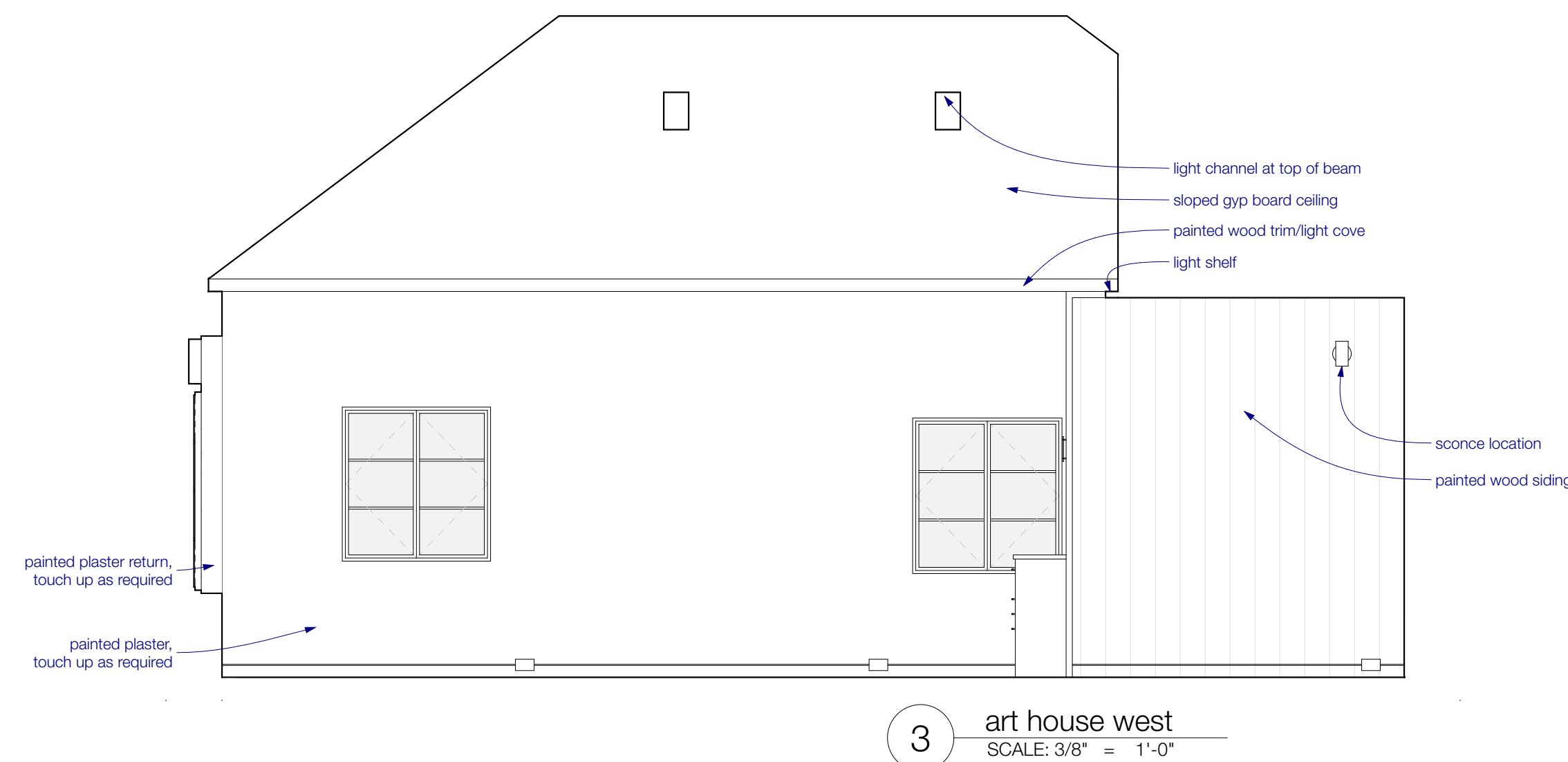
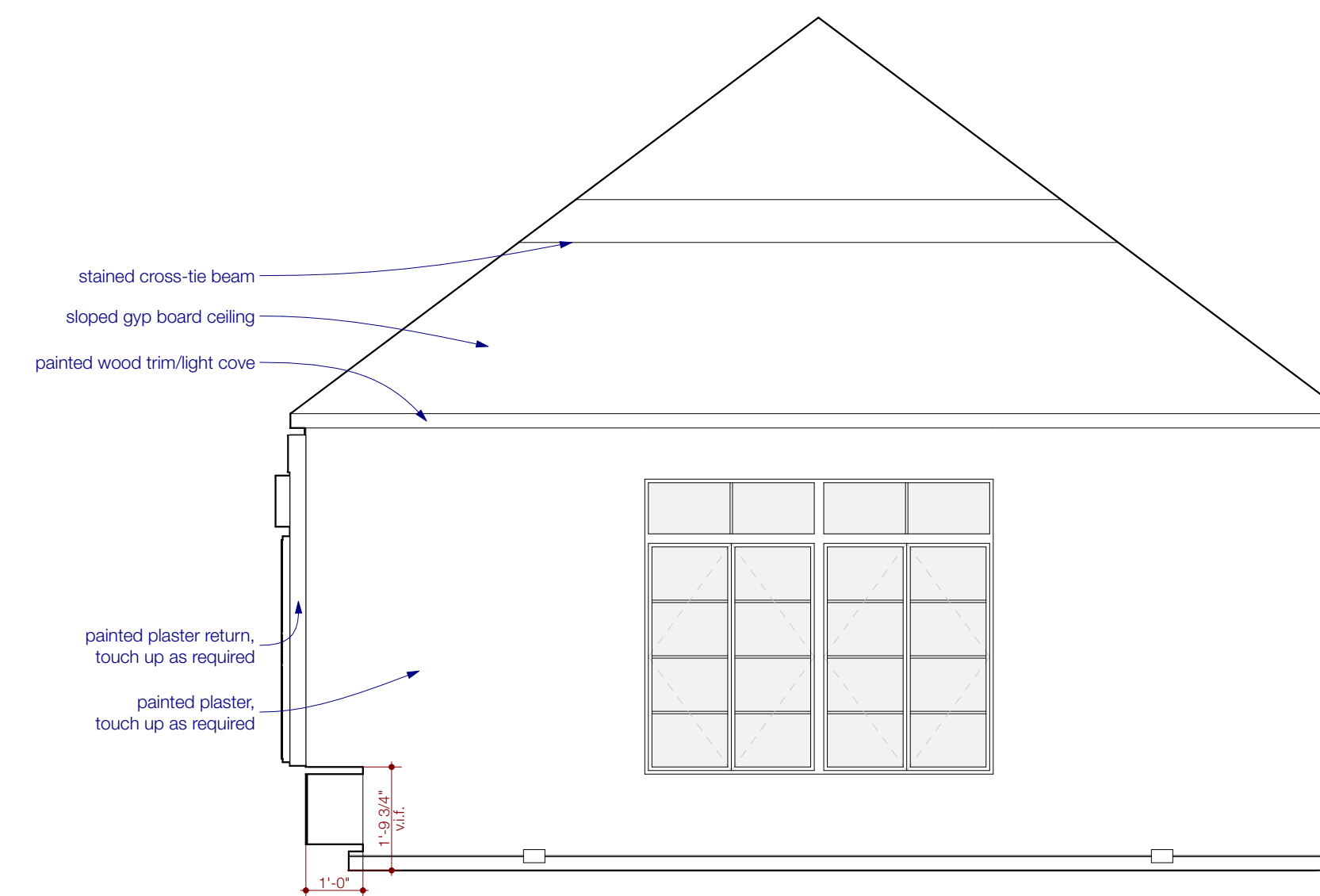
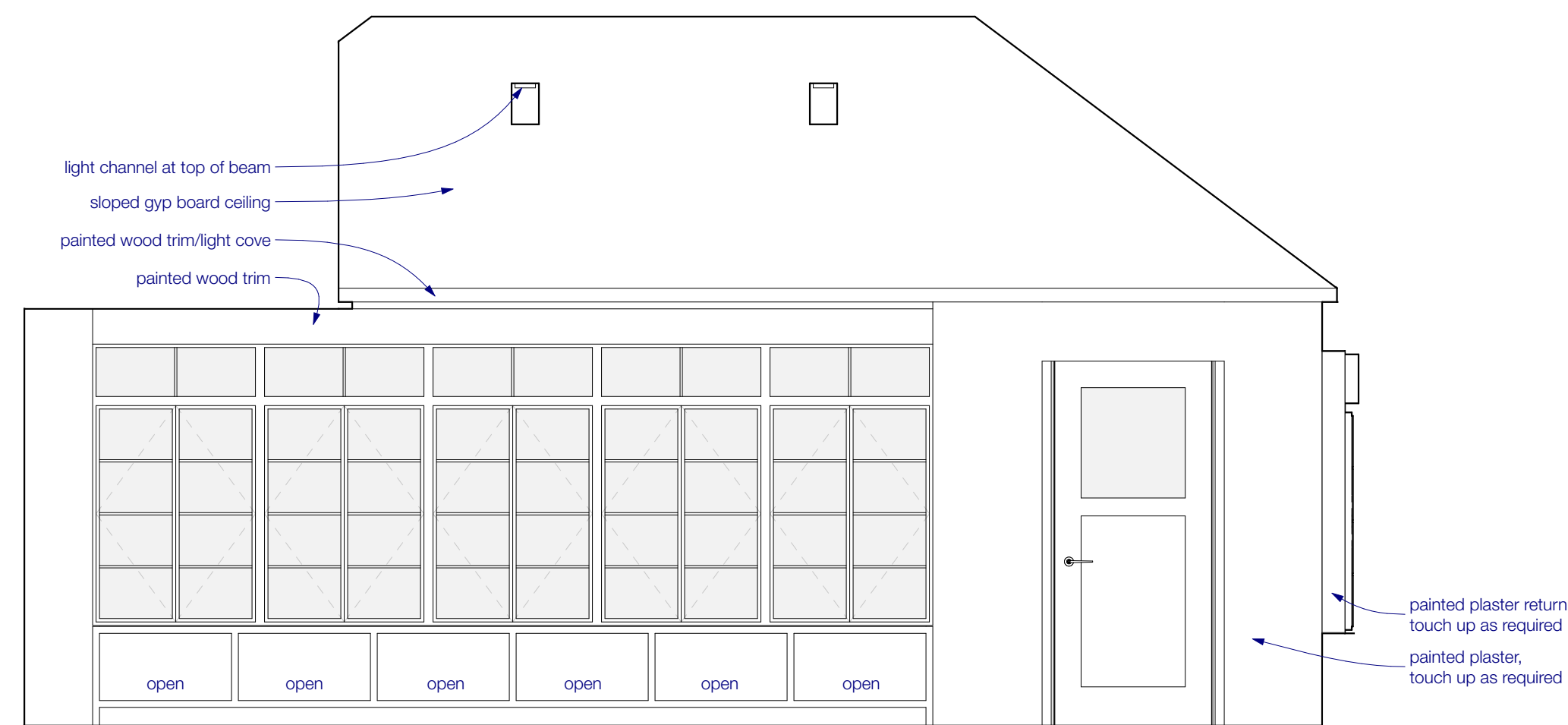
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3	11/1/2021
4	11/1/2021
5	11/1/2021
6	11/1/2021

100% CD

3/8/22

elevations / sections

B2.1



INTERIOR ELEVATION NOTES:

- > All interior walls are painted gyp board, u.n.o.
- > All base boards, window trim, door trim, & ceiling moulding to be painted, u.n.o.
- > See typ. details for trim profiles.
- > All solid surface countertops are 3cm with 3/4" overhangs, typ.
- > Material patterns are not representative of final sizes or configurations – they are shown for reference only; contractor to discuss w/ architect & interior designer the final "start" and "stop" points of the different materials.

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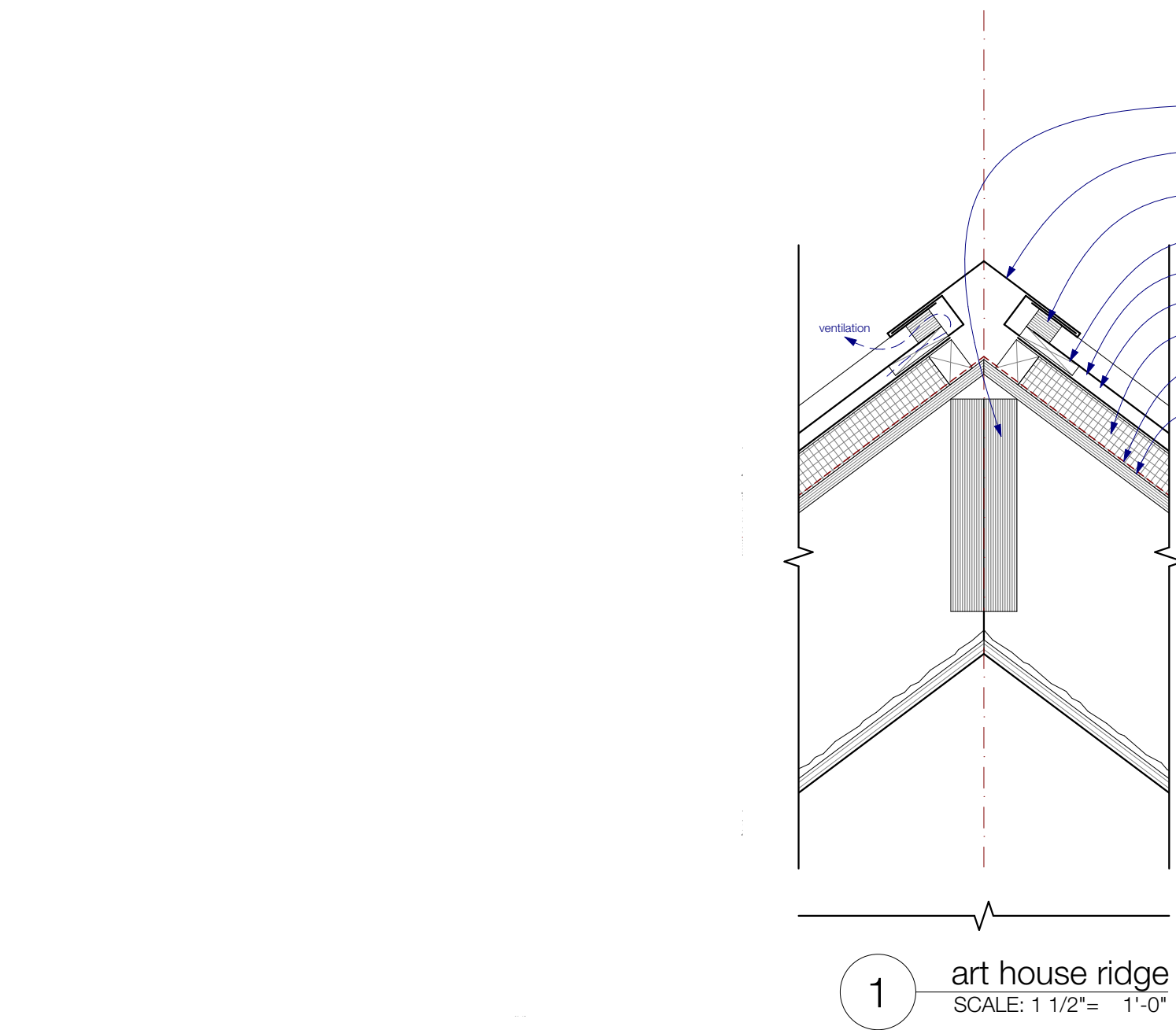


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5	--/--/----
6	--/--/----

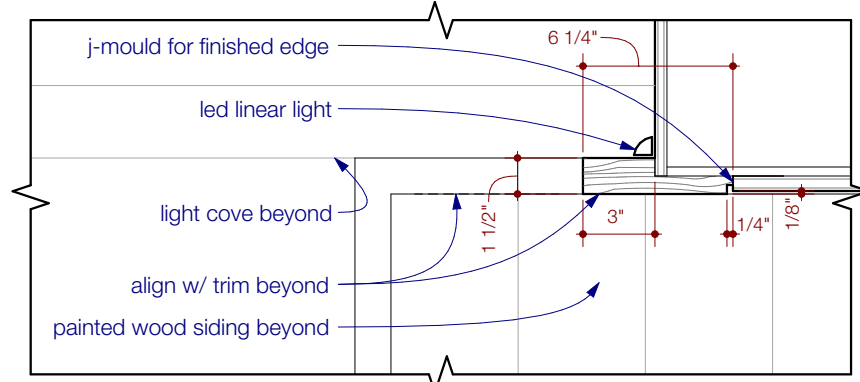
3/8/22

interior elevations

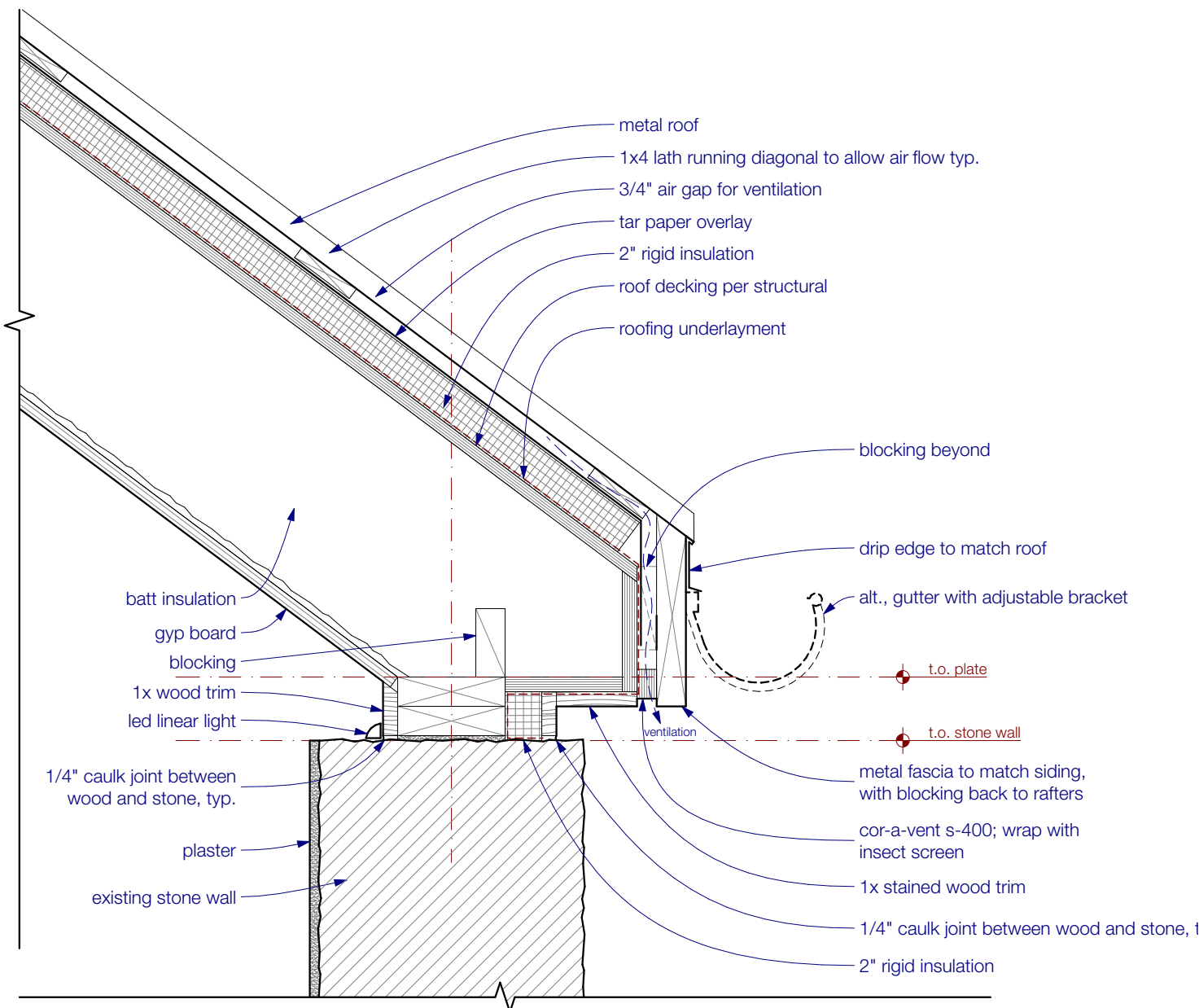
B4.1



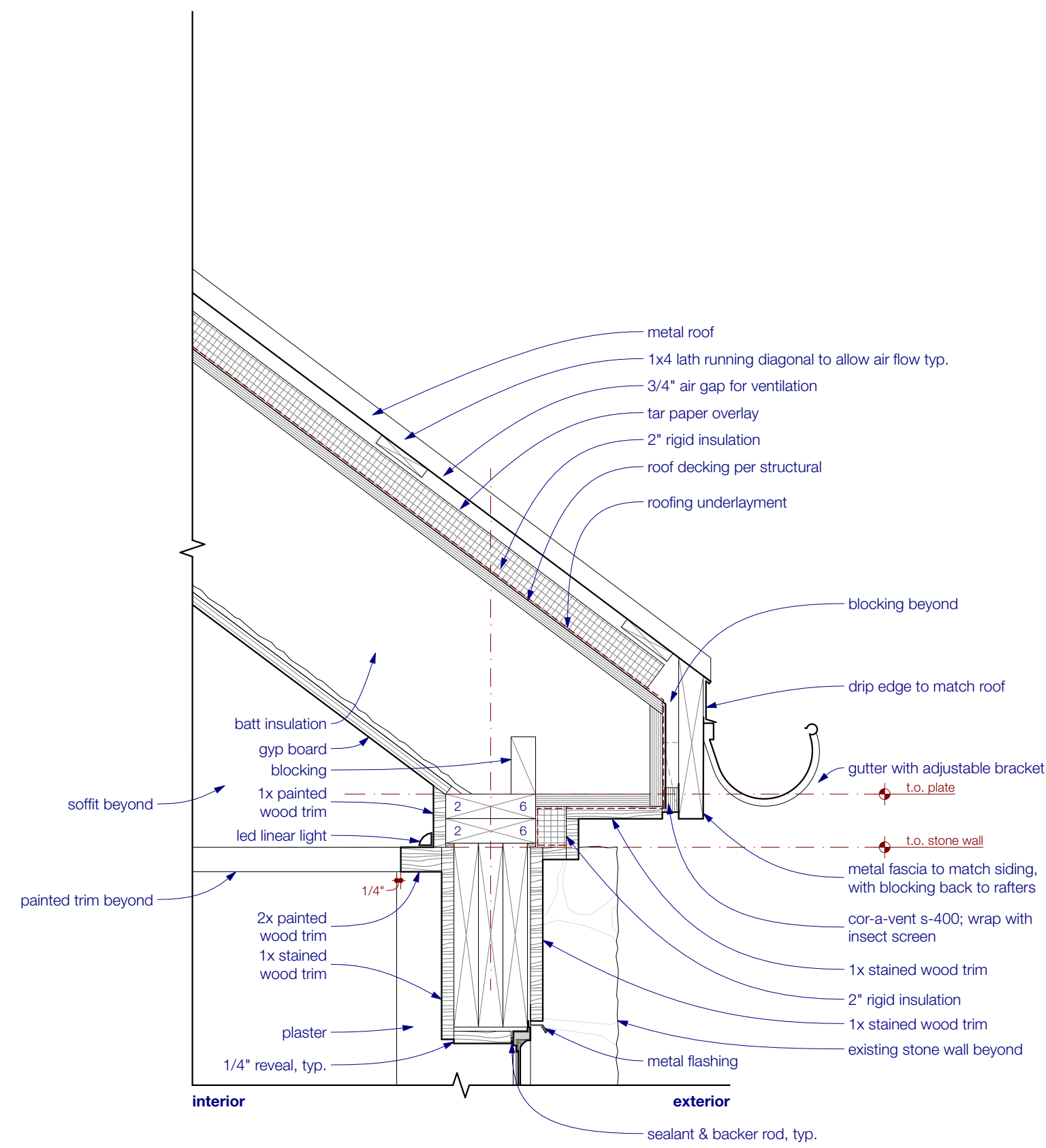
1 art house ridge
SCALE: 1 1/2"= 1'-0"



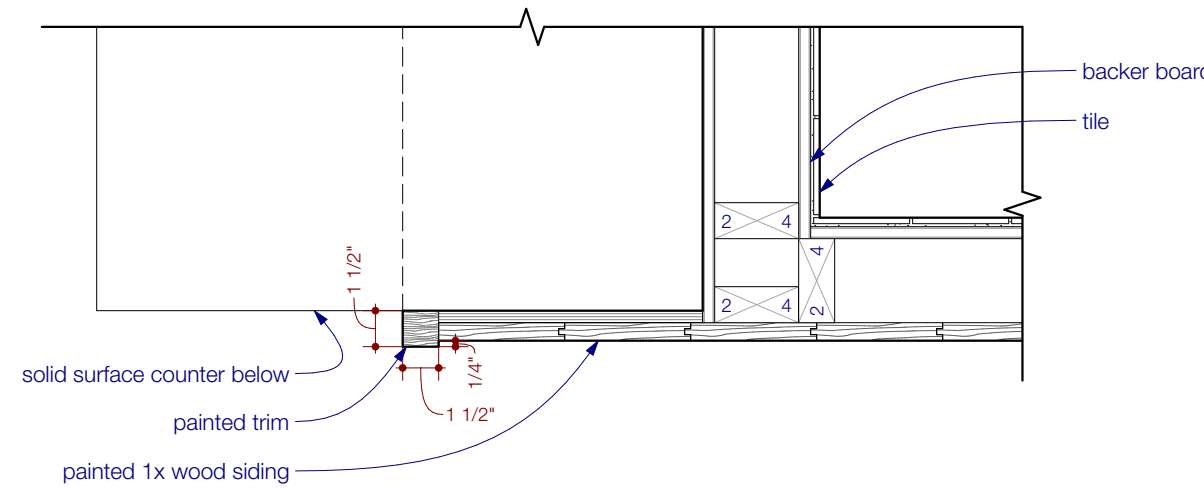
2 trim shelf @ ceiling
SCALE: 1 1/2"= 1'-0"



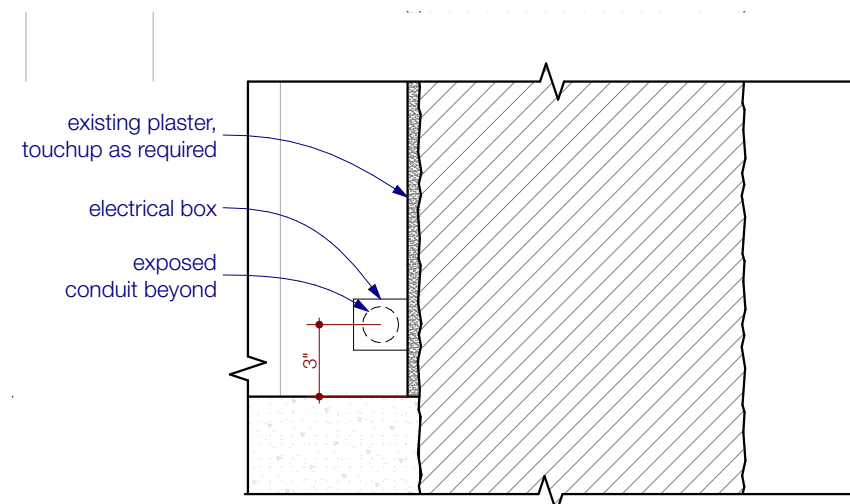
3 art house top plate
SCALE: 1 1/2"= 1'-0"



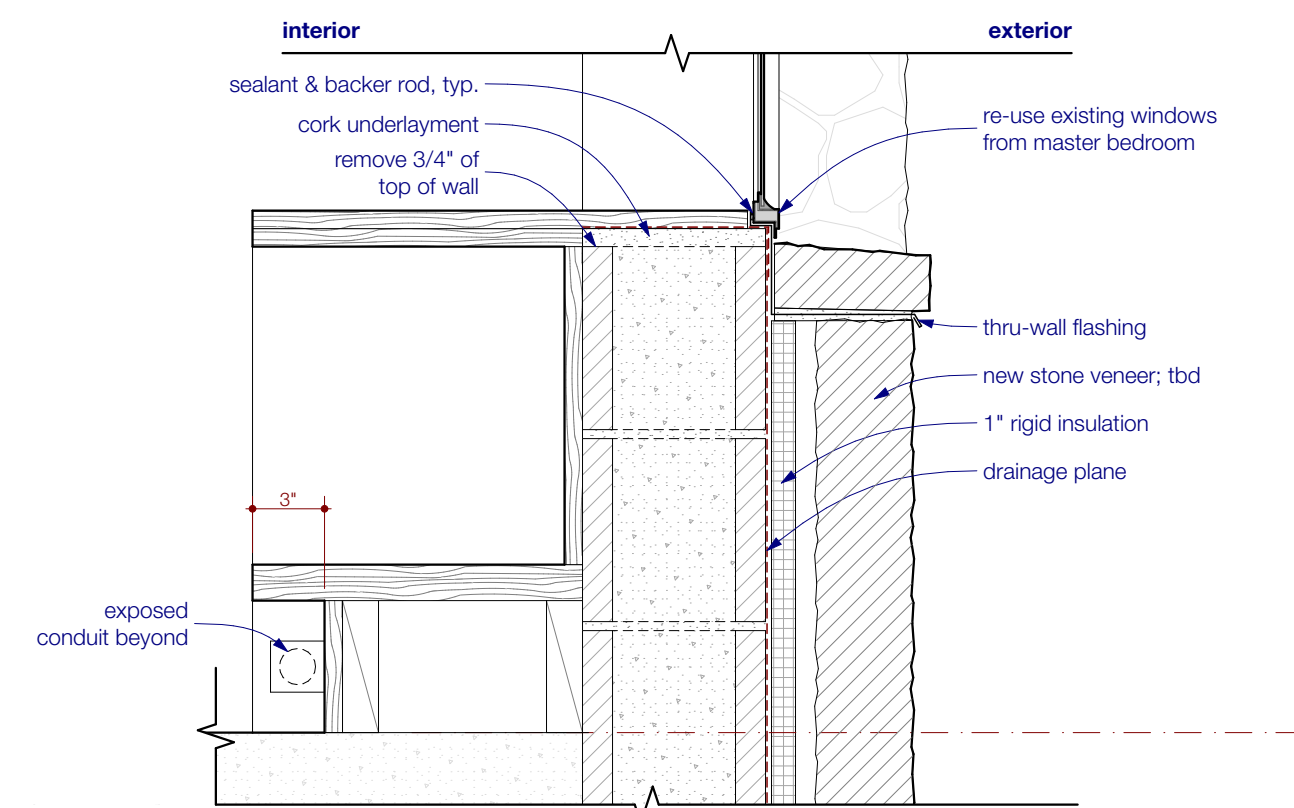
4 art house header (jamb similar)
SCALE: 1 1/2"= 1'-0"



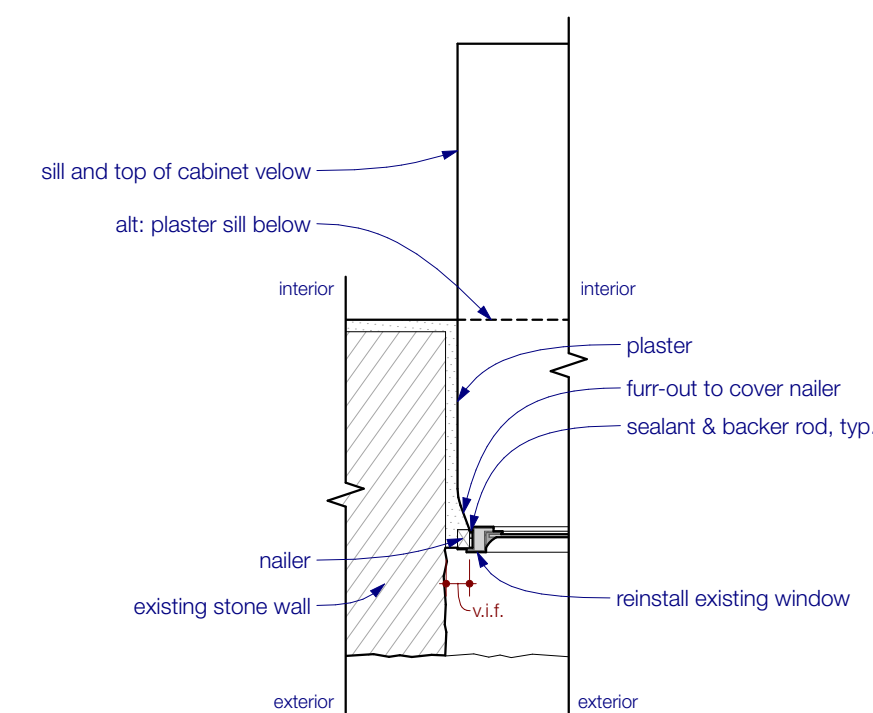
5 plan detail: wood siding @ wall
SCALE: 1 1/2"= 1'-0"



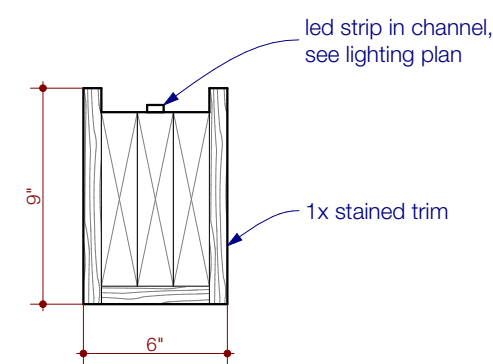
6 base detail, typ.
SCALE: 1 1/2"= 1'-0"



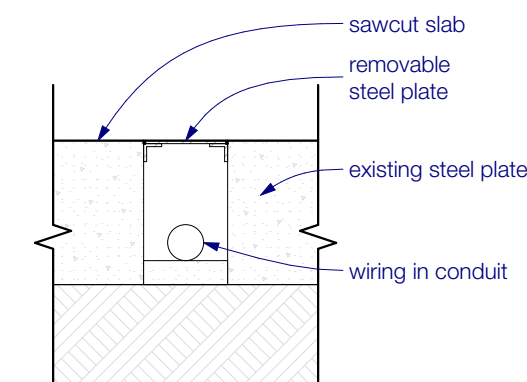
7 art house window bookshelf
SCALE: 1 1/2"= 1'-0"



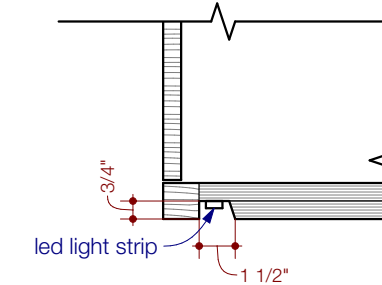
8 jamb: typical
SCALE: 1 1/2"= 1'-0"



9 lighting detail @ cross-tie beam
SCALE: 1 1/2"= 1'-0"



10 electrical trench detail
SCALE: 1 1/2"= 1'-0"



11 undercabinet light detail
SCALE: 1 1/2"= 1'-0"

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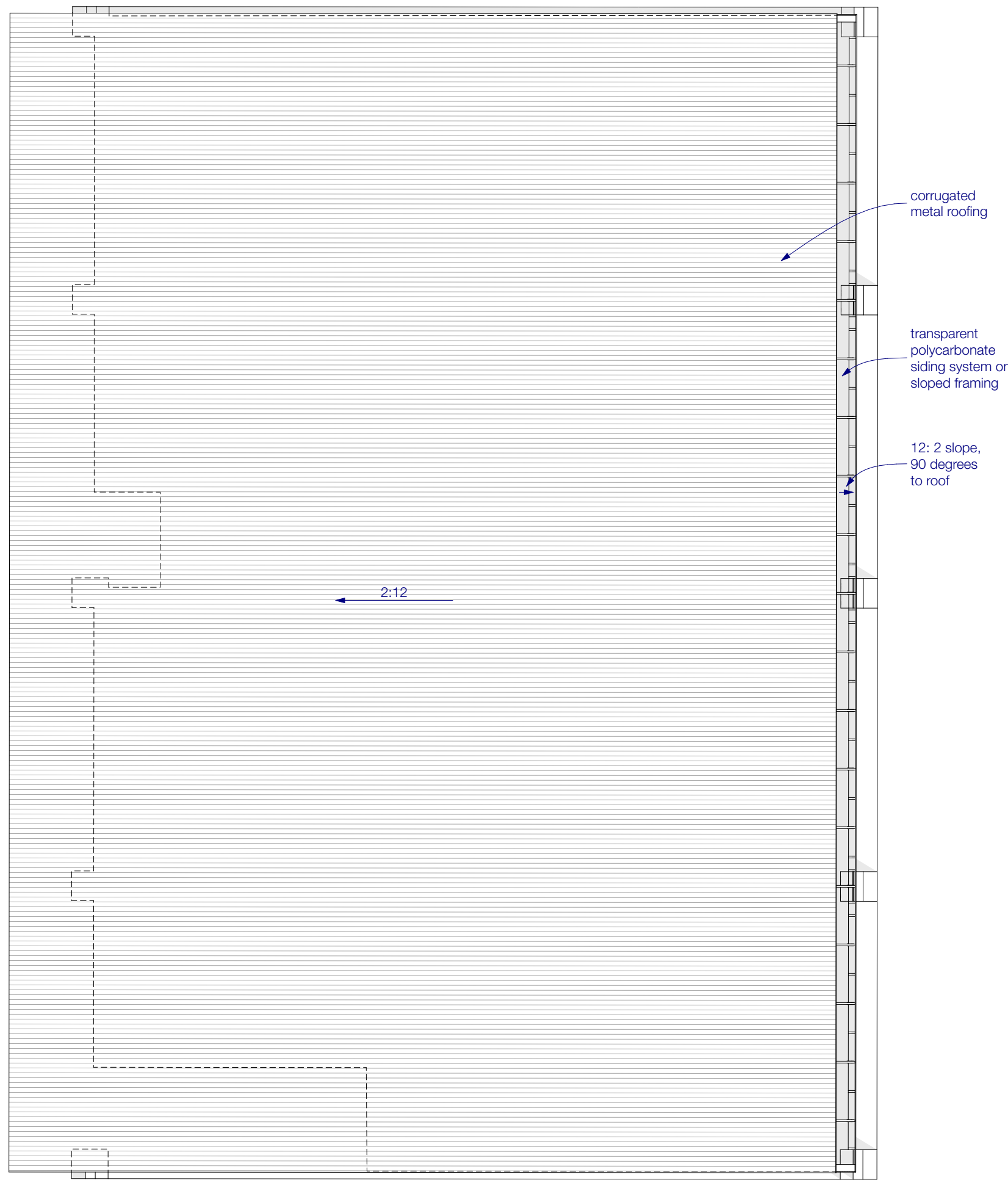


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revisions	
date	description
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3	---/---/---
4	---/---/---
5	---/---/---
6	---/---/---

100% CD
3/8/22
details
B5.1



2 workshop roof plan
SCALE: 1/8" = 1'-0"

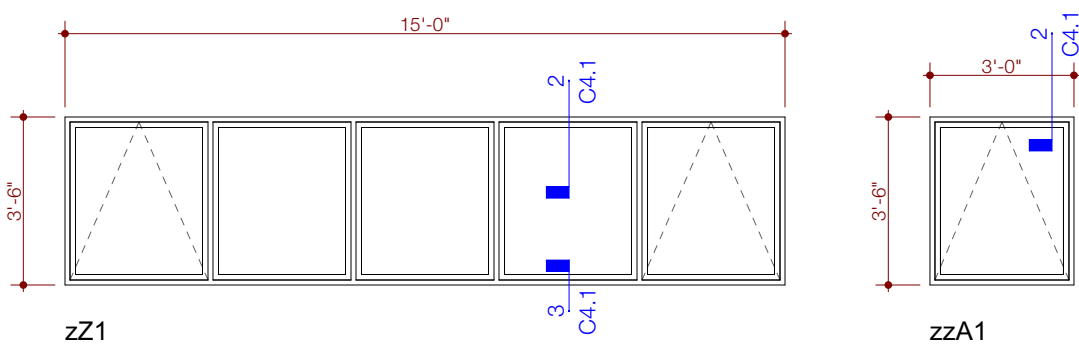
INTERIOR DOOR SCHEDULE – dimensions are of the leaf size					
key	location	leaf dimensions	type	lock set	notes
70	workshop	2'-8"x8'-0"	solid core, slab	passage	
71	bathroom	2'-4"x8'-0"	solid core, slab	privacy	
72	gameroom	2'-8"x8'-0"	solid core, slab	passage	
73	storage	2'-4"x8'-0"	solid core, slab	passage	

3 interior door schedule
– provide safety glazing as required by code

EXTERIOR DOOR SCHEDULE						
~ dimensions are of the unit size, verify in field						
key	location	width	height	type	lock set	notes
61	workshop garage	3'-1 3/4"	8'-1 1/4"		entrance w/ deadbolt	
62	workshop	8'-0"	8'-4 3/4"	roll-up overhead door		
63	shop entry	3'-1 3/4"	8'-1 1/4"	single lite over panel	entrance w/ deadbolt	see elevation 2/C2.1
64	gameroom	8'-1 3/4"	8'-1 1/4"	frame with single lite	entrance w/ deadbolt	(2) 3'-0" leaves
65	workshop garage	13'-4 1/2"	8'-8"	roll-up overhead door		
66	workshop vestibule	6'-1 3/4"	8'-1 1/4"	solid core slab	entrance w/ deadbolt	
67	workshop	6'-1 3/4"	8'-1 1/4"	solid core slab	entrance w/ deadbolt	
68	workshop garage	13'-4 1/2"	8'-8"	roll-up overhead door		

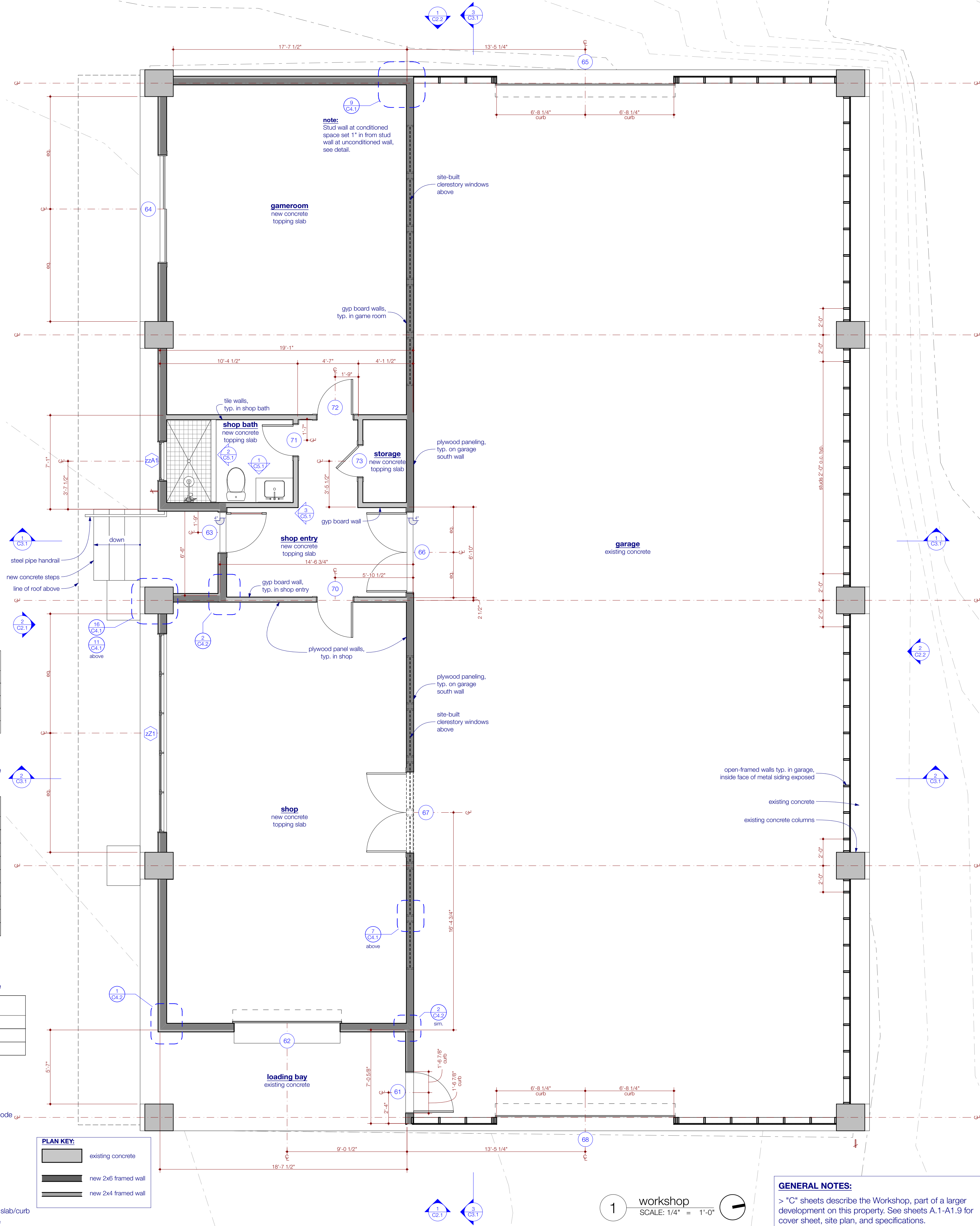
4 exterior door schedule
– provide safety glazing as required by code

WINDOW SCHEDULE – all windows RAM Aluminum Windows, u.n.o. – dimensions are of the frame size						
key	location	type	width	height	head height	notes
zz1	workshop	aluminum combo	15'-0"	3'-6"	8'-0 3/4"	
zzA1	workshop bath	aluminum awning	3'-0"	3'-6"	8'-0 3/4"	



5 window schedule
– see 6/C1.1 for elevations & details
– all windows viewed from the exterior
– provide safety glazing where required by code

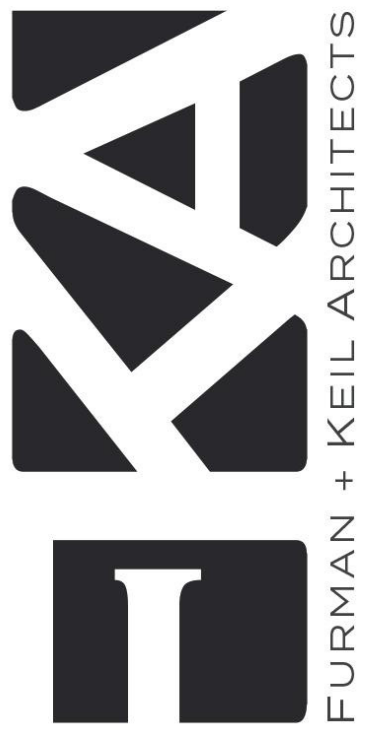
6 Window Elevations
SCALE: 1/4" = 1'-0"
– head heights are from top of new topping slab/curb
– provide safety glazing as required by code



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

GENERAL NOTES:
> "C" sheets describe the Workshop, part of a larger development on this property. See sheets A.1-A1.9 for cover sheet, site plan, and specifications.

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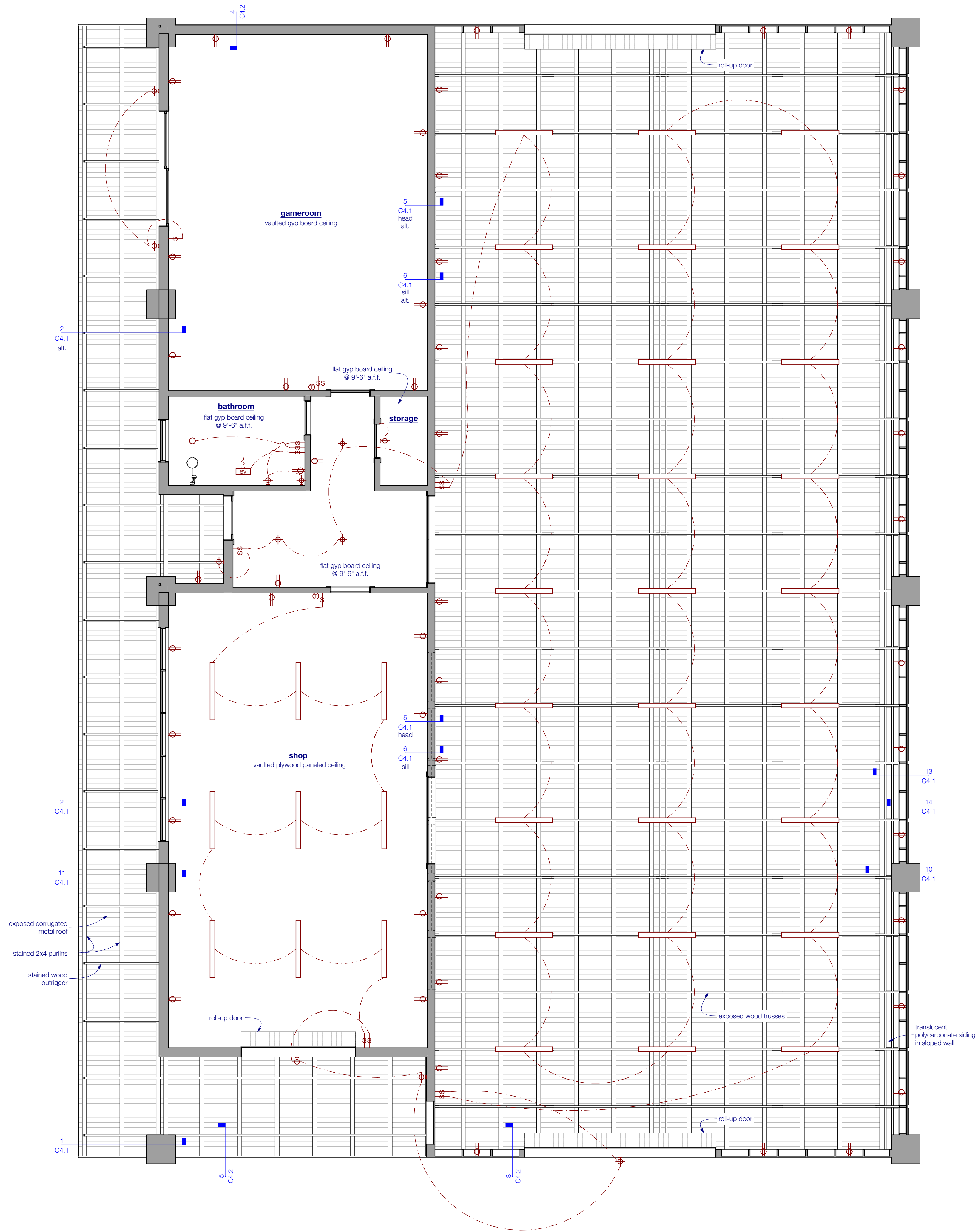
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3/8/22

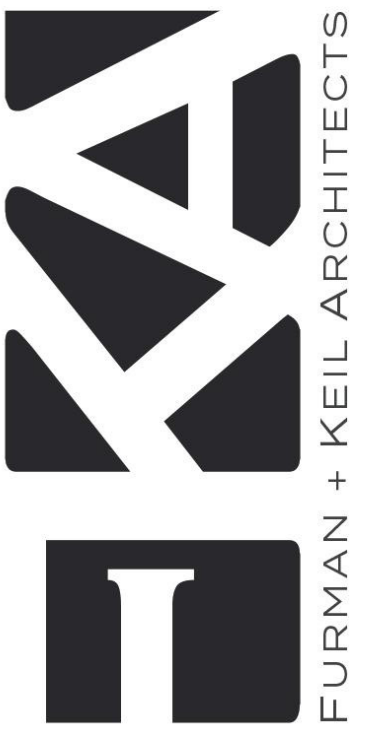
floor plan

C1.1



1 workshop RCP / ME
SCALE: 1/4" = 1'-0"

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Lee Workshop

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revisions

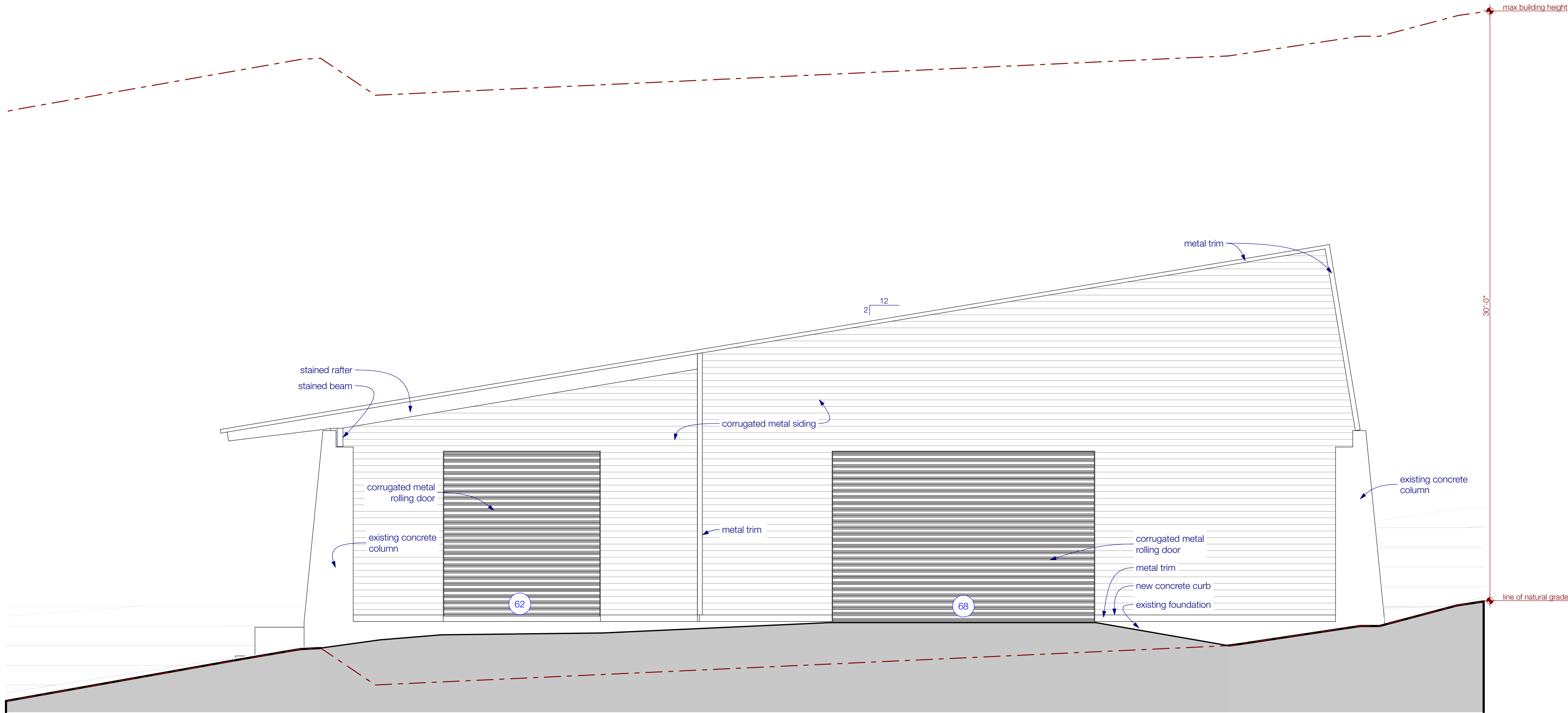
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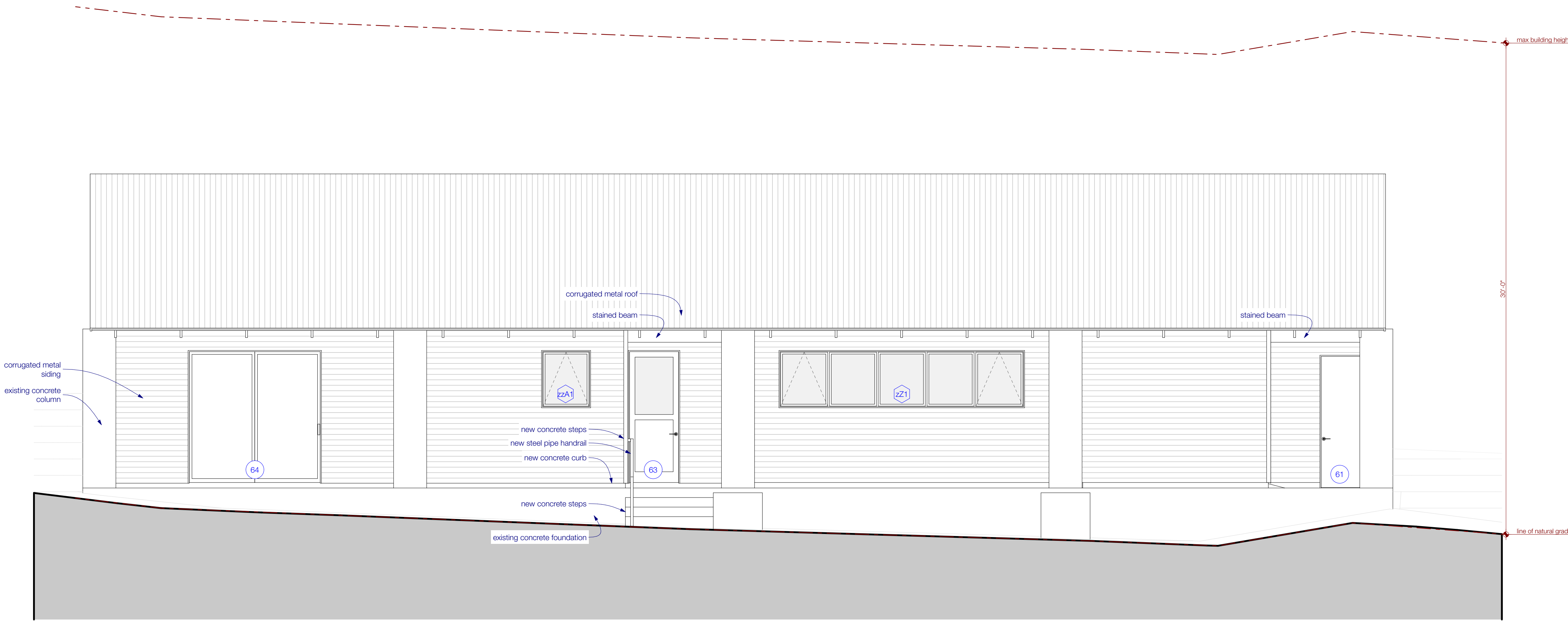
3/8/22

RCP / ME

C1.2



1 workshop east elevation
SCALE: 1/4" = 1'-0"



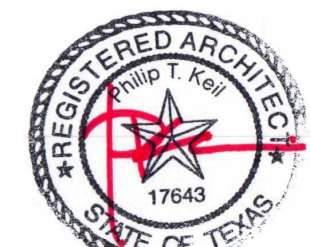
2 workshop south elevation
SCALE: 1/4" = 1'-0"

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Lee Workshop

402 Camp Craft Road
West Lake Hills, Texas 78746



3/8/22

revisions

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2	11/11/21
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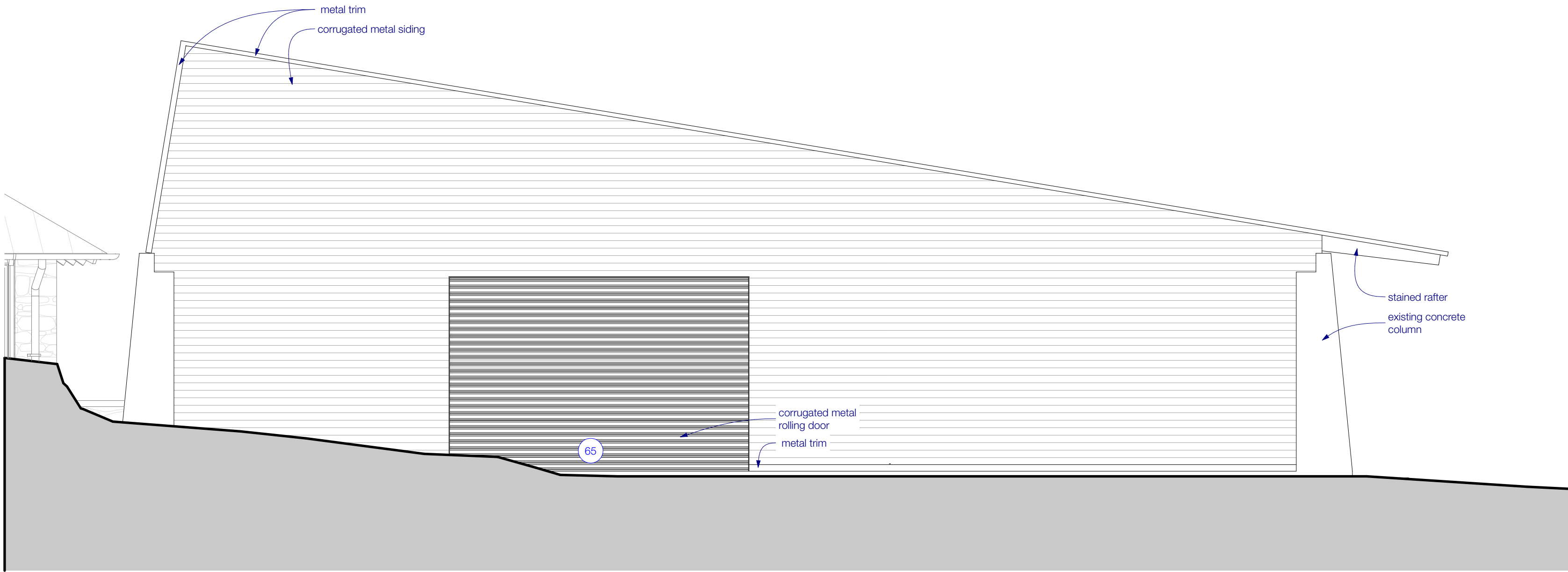
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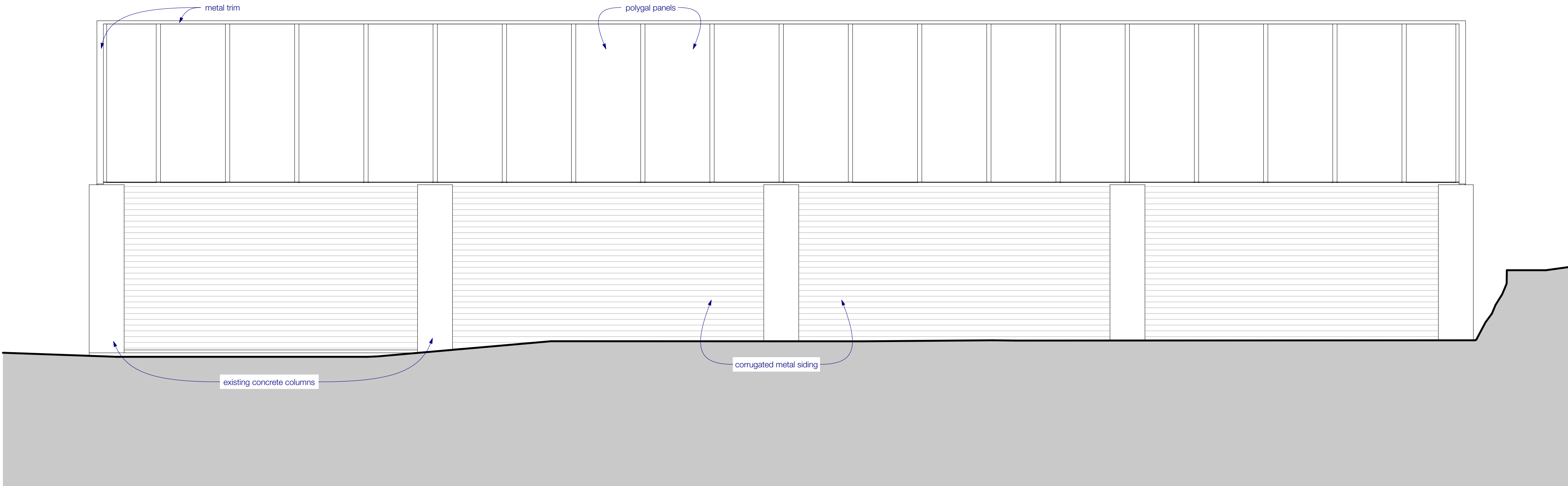
elevations

C2.1

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1 workshop west elevation
SCALE: 1/4" = 1'-0"



2 workshop north elevation
SCALE: 1/4" = 1'-0"

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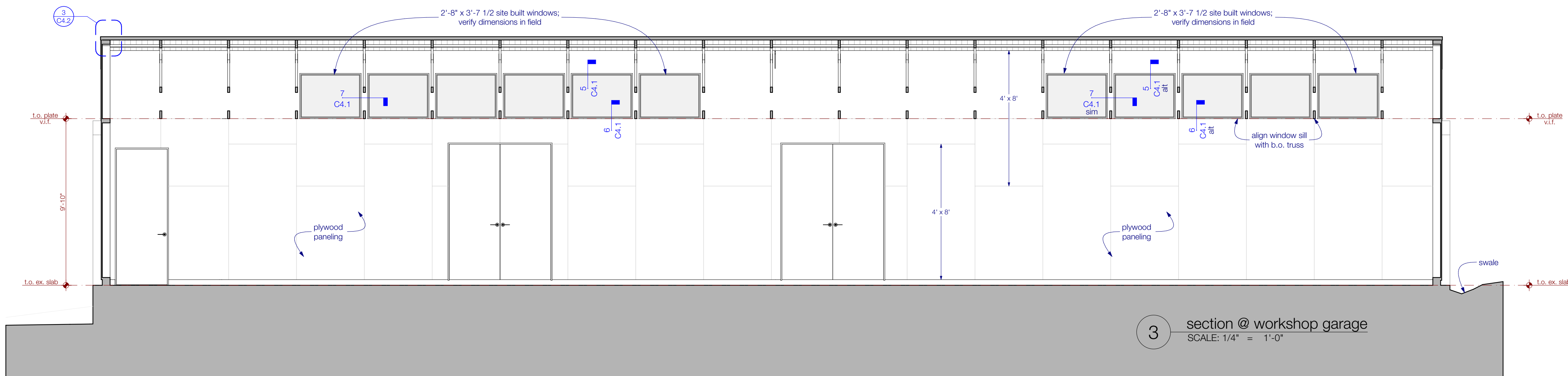
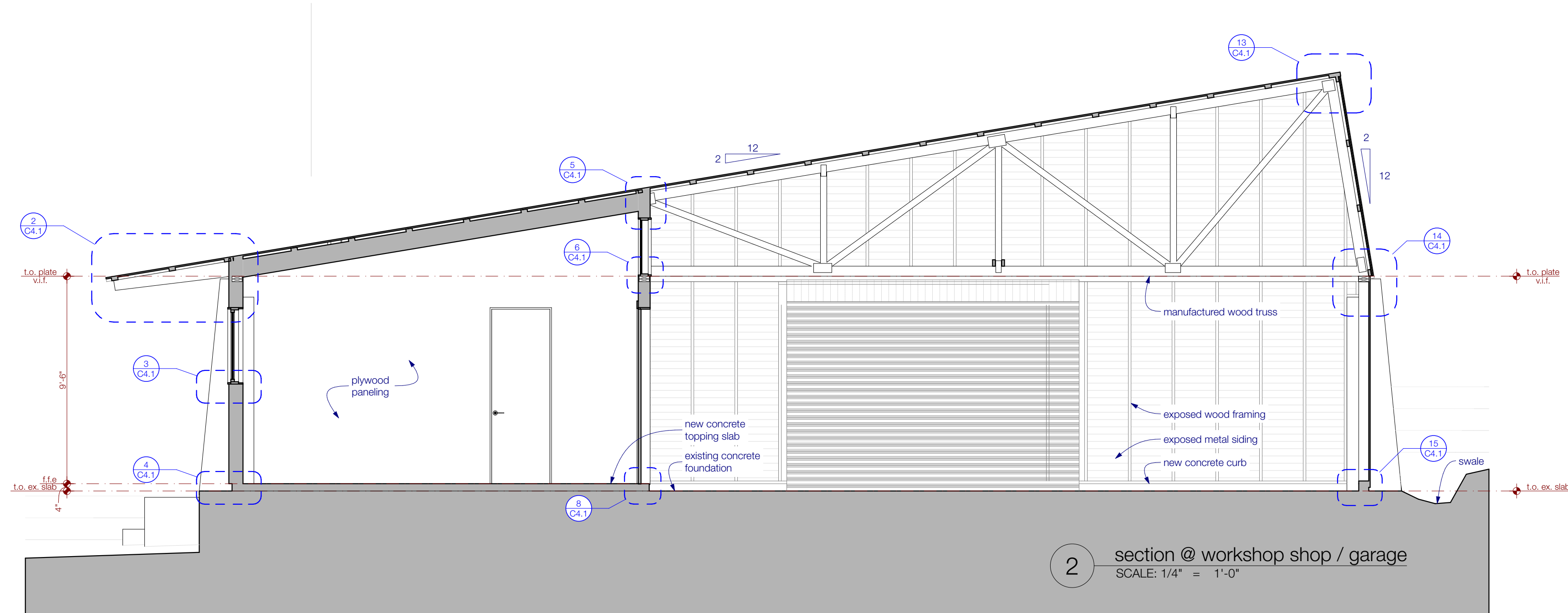
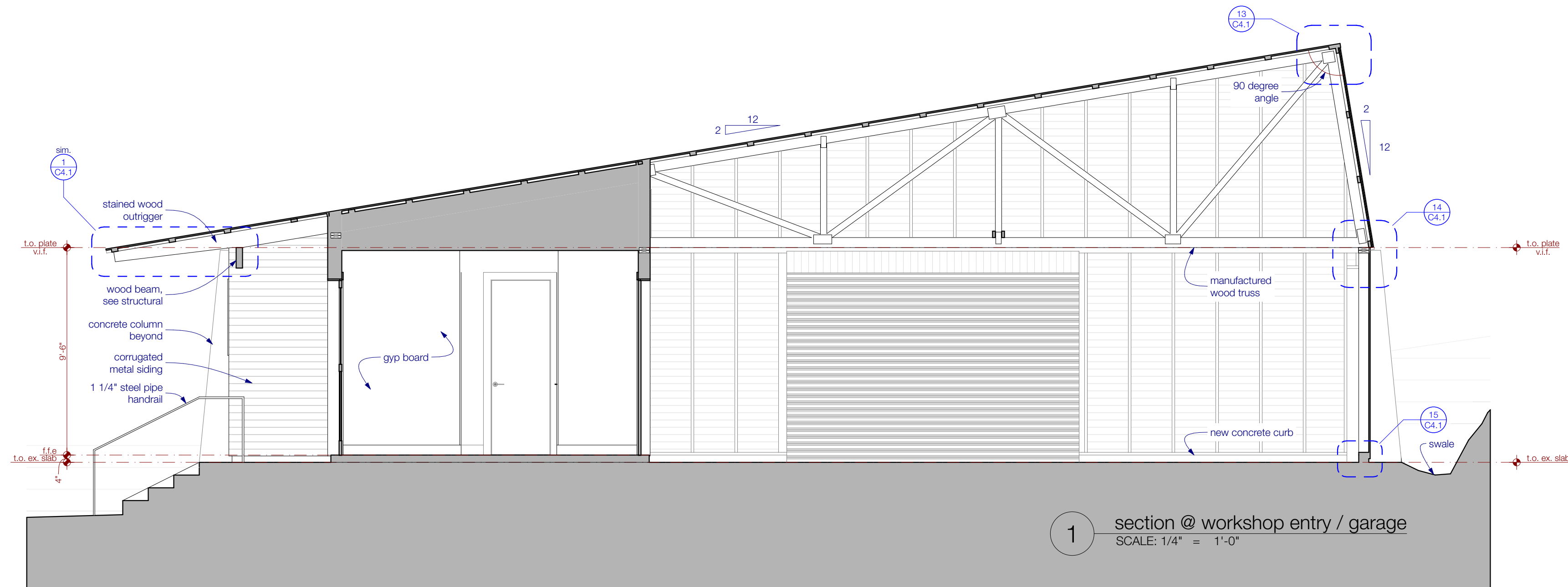


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elevations
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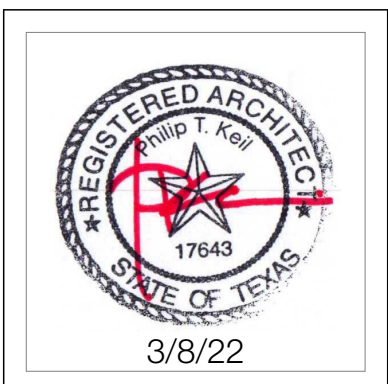
PLANS MUST BE ON SITE
FOR ALL INSPECTIONS



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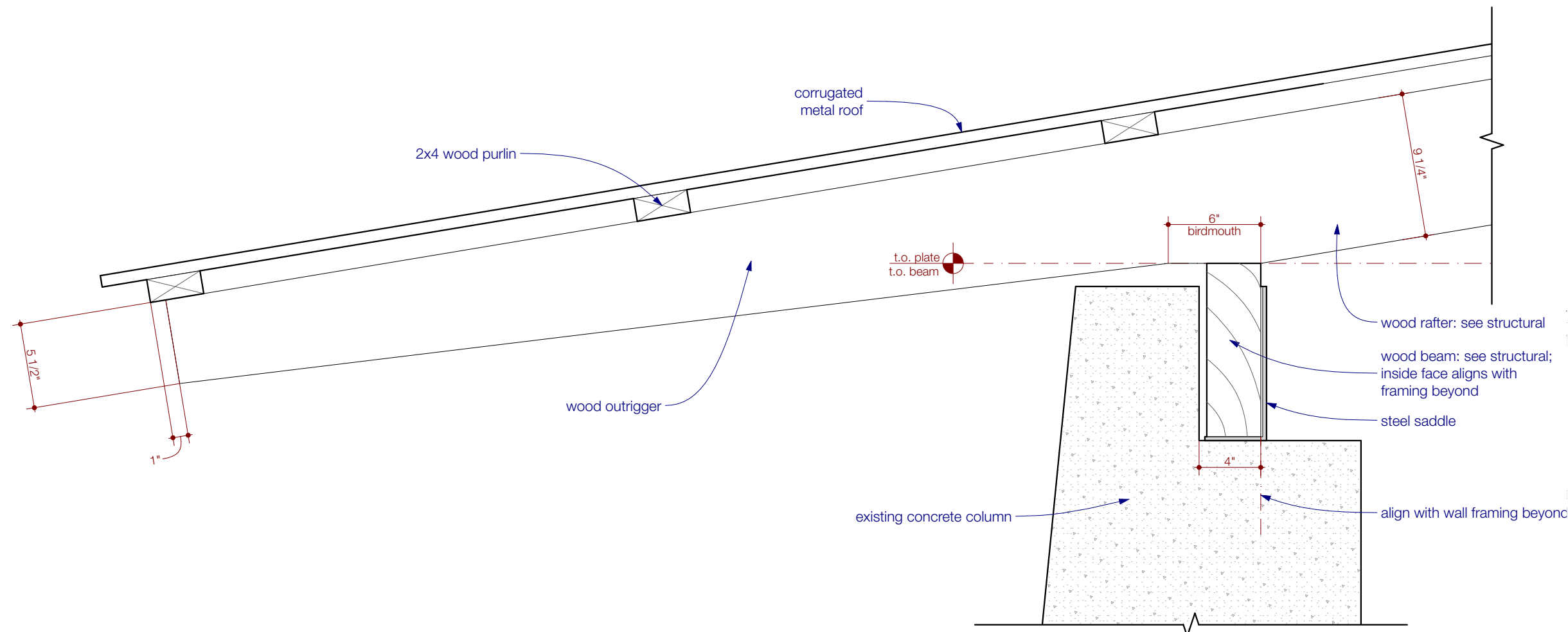


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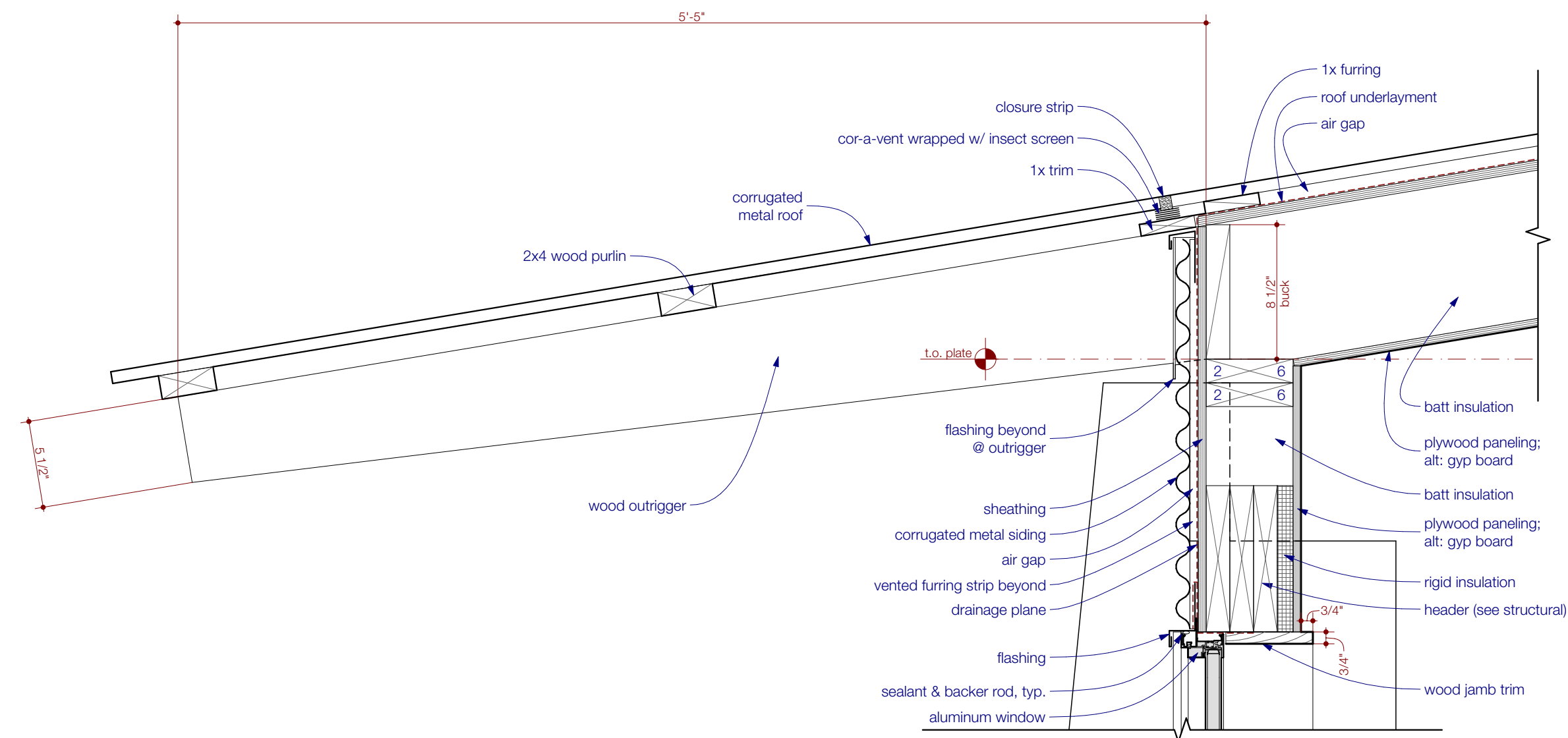


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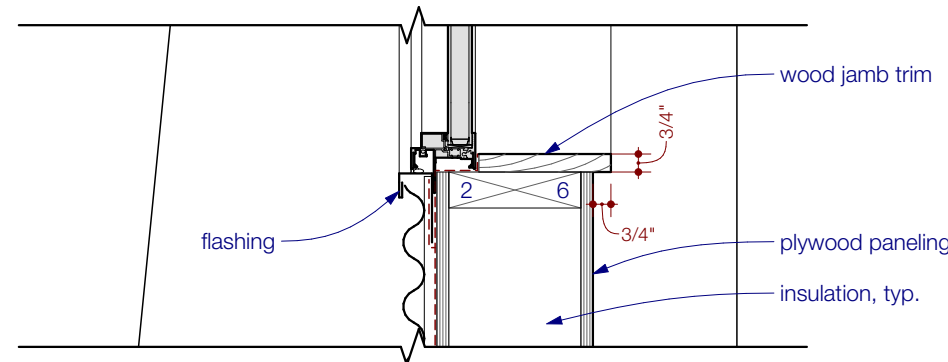
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sections
C3.1



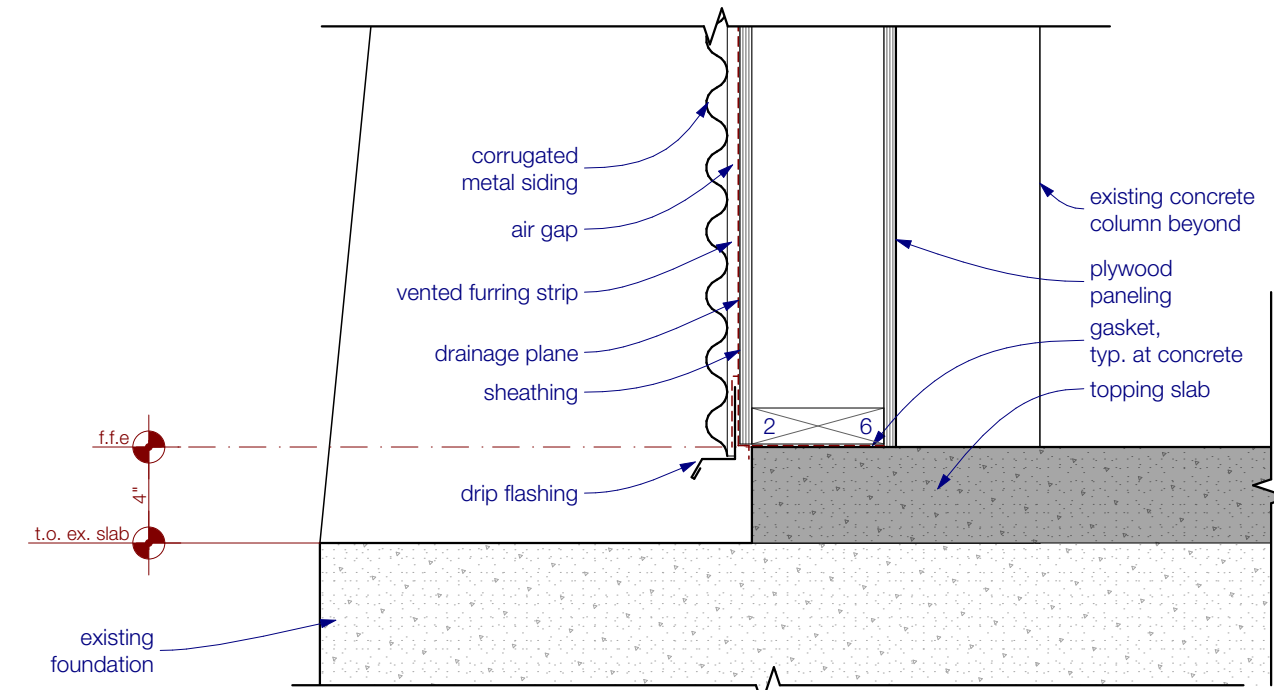
1 eave @ workshop exterior concrete column
SCALE: 1 1/2" = 1'-0"



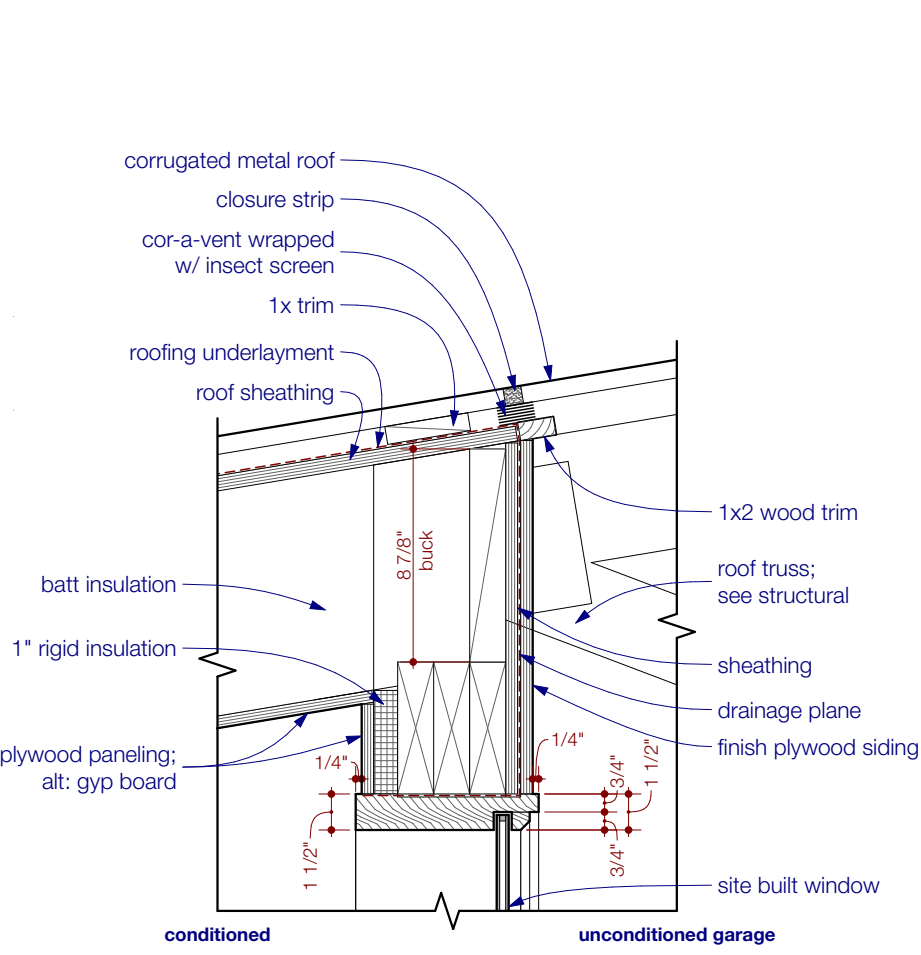
2 eave/head @ workshop
SCALE: 1 1/2" = 1'-0"



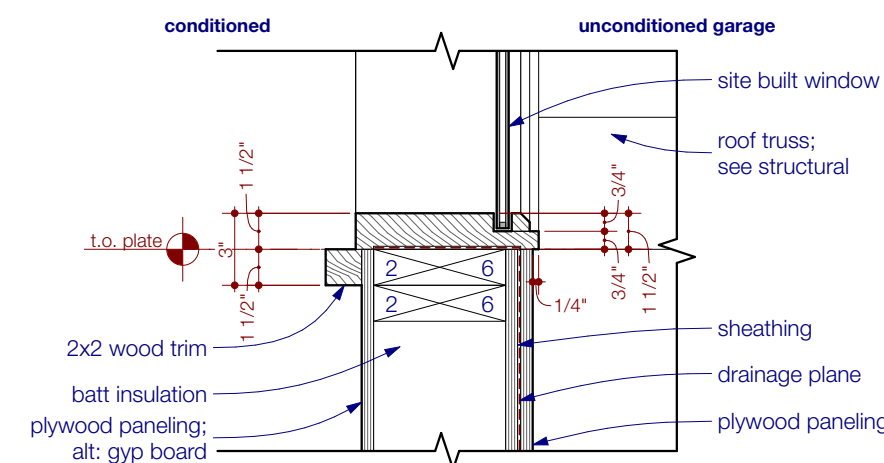
3 sill @ workshop
SCALE: 1 1/2" = 1'-0"



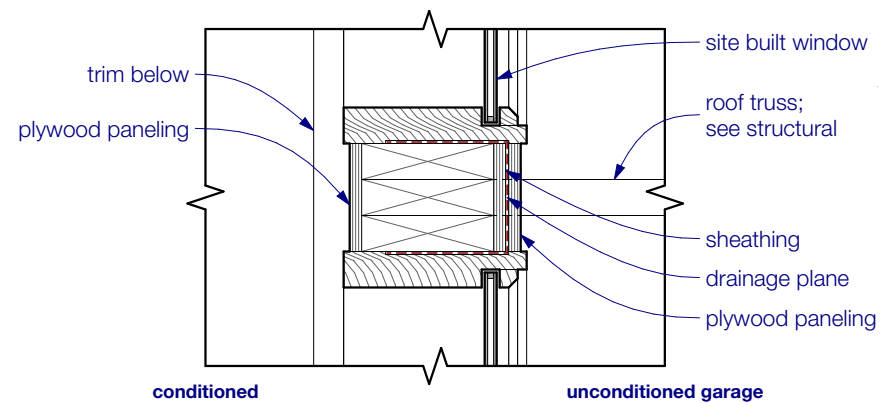
4 sole plate @ workshop
SCALE: 1 1/2" = 1'-0"



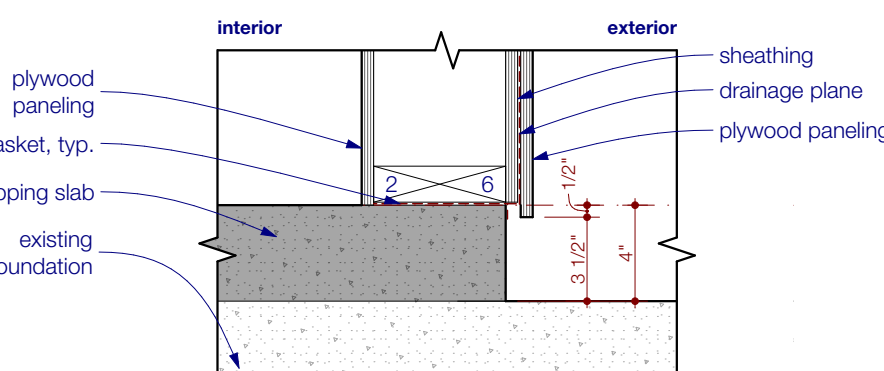
5 head @ workshop/garage window
SCALE: 1 1/2" = 1'-0"



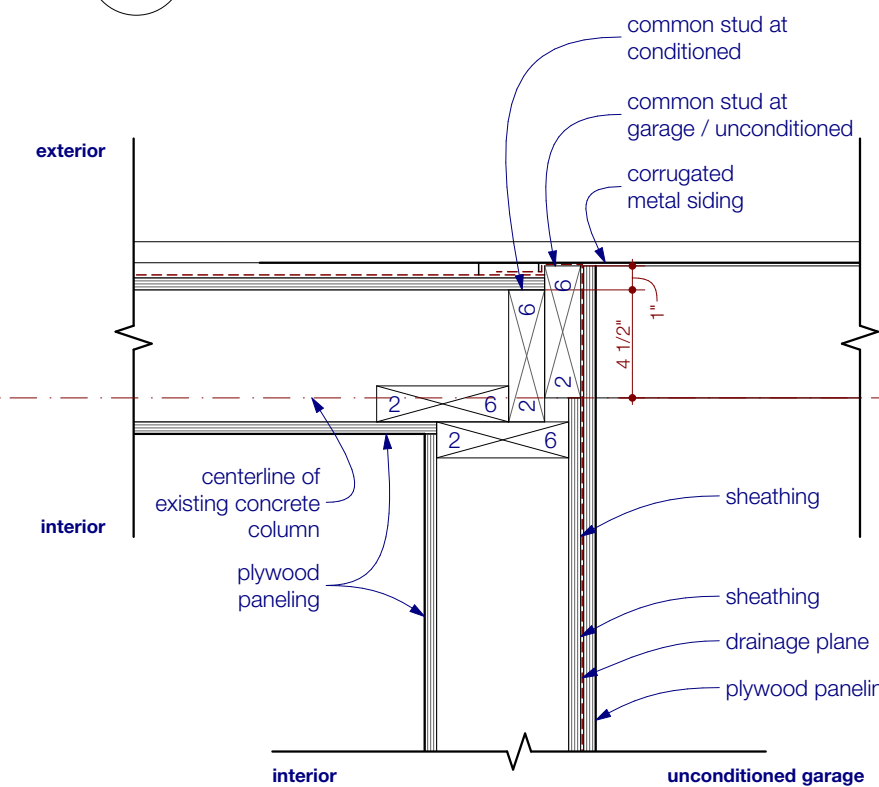
6 sill @ workshop/garage window
SCALE: 1 1/2" = 1'-0"



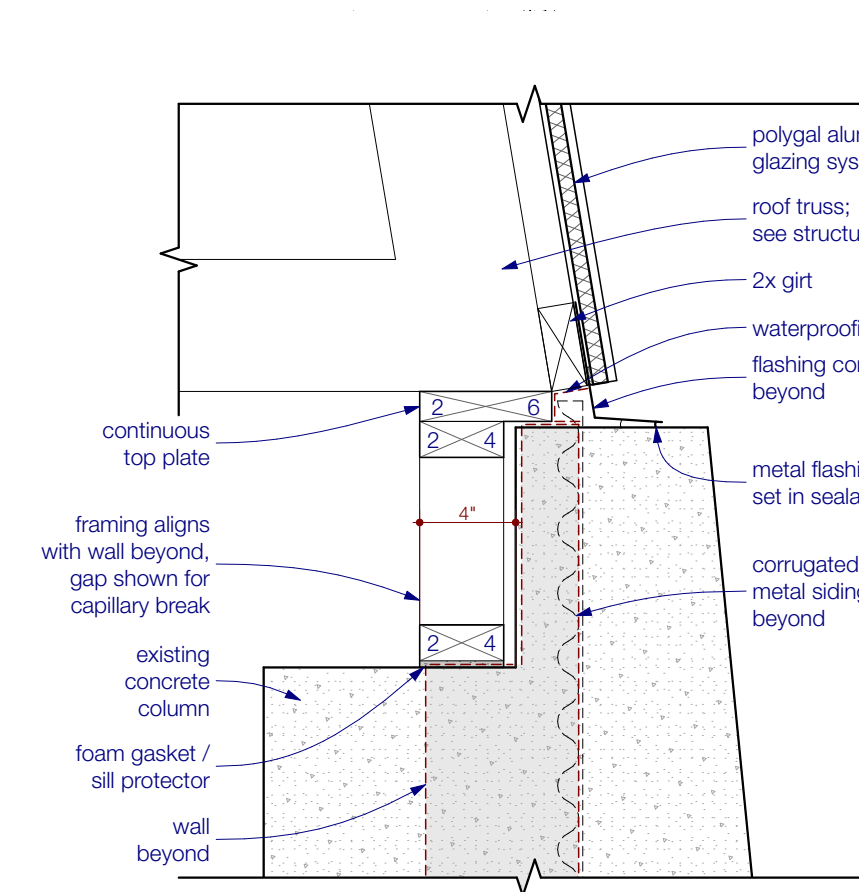
7 jamb @ workshop/garage window
SCALE: 1 1/2" = 1'-0"



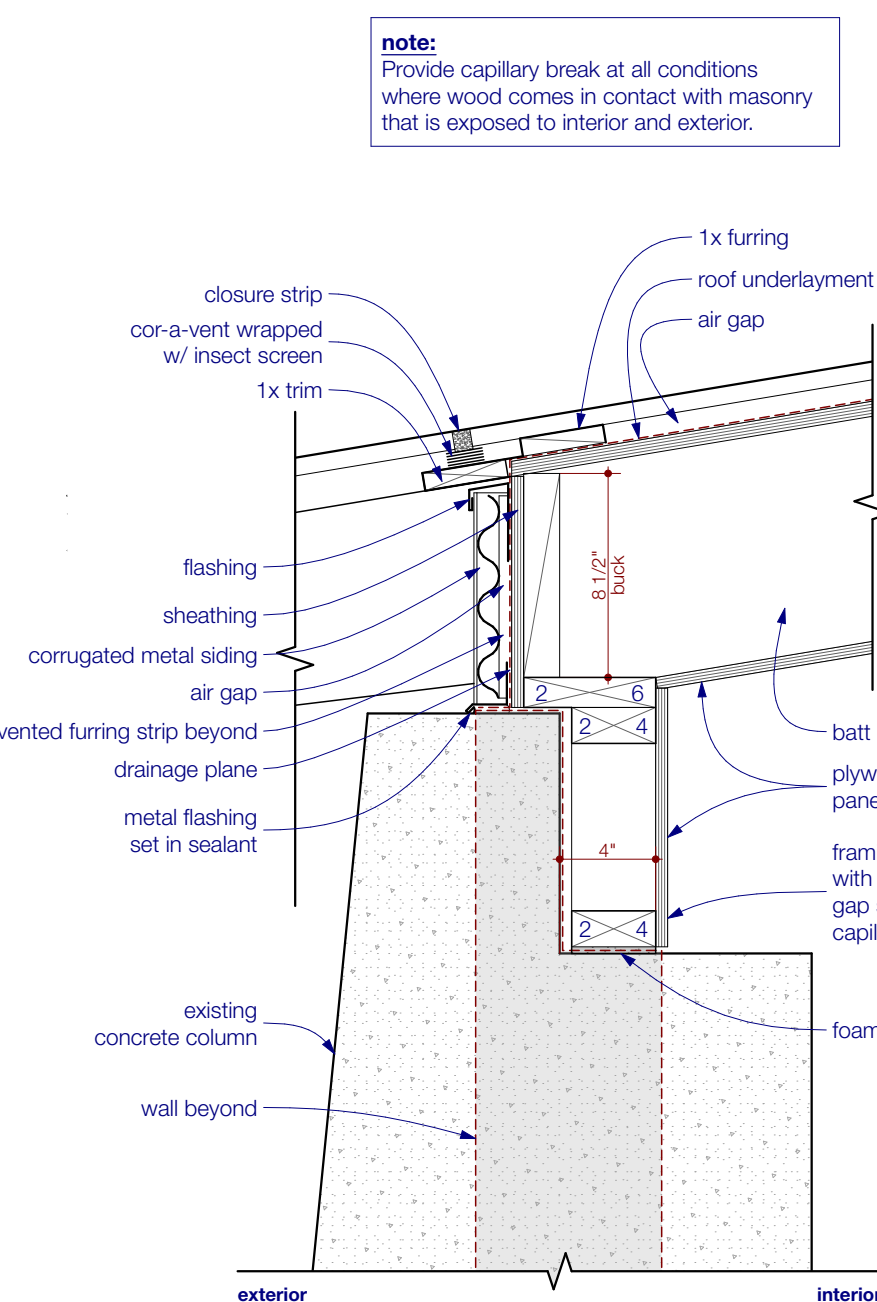
8 wall section @ workshop/garage
SCALE: 1 1/2" = 1'-0"



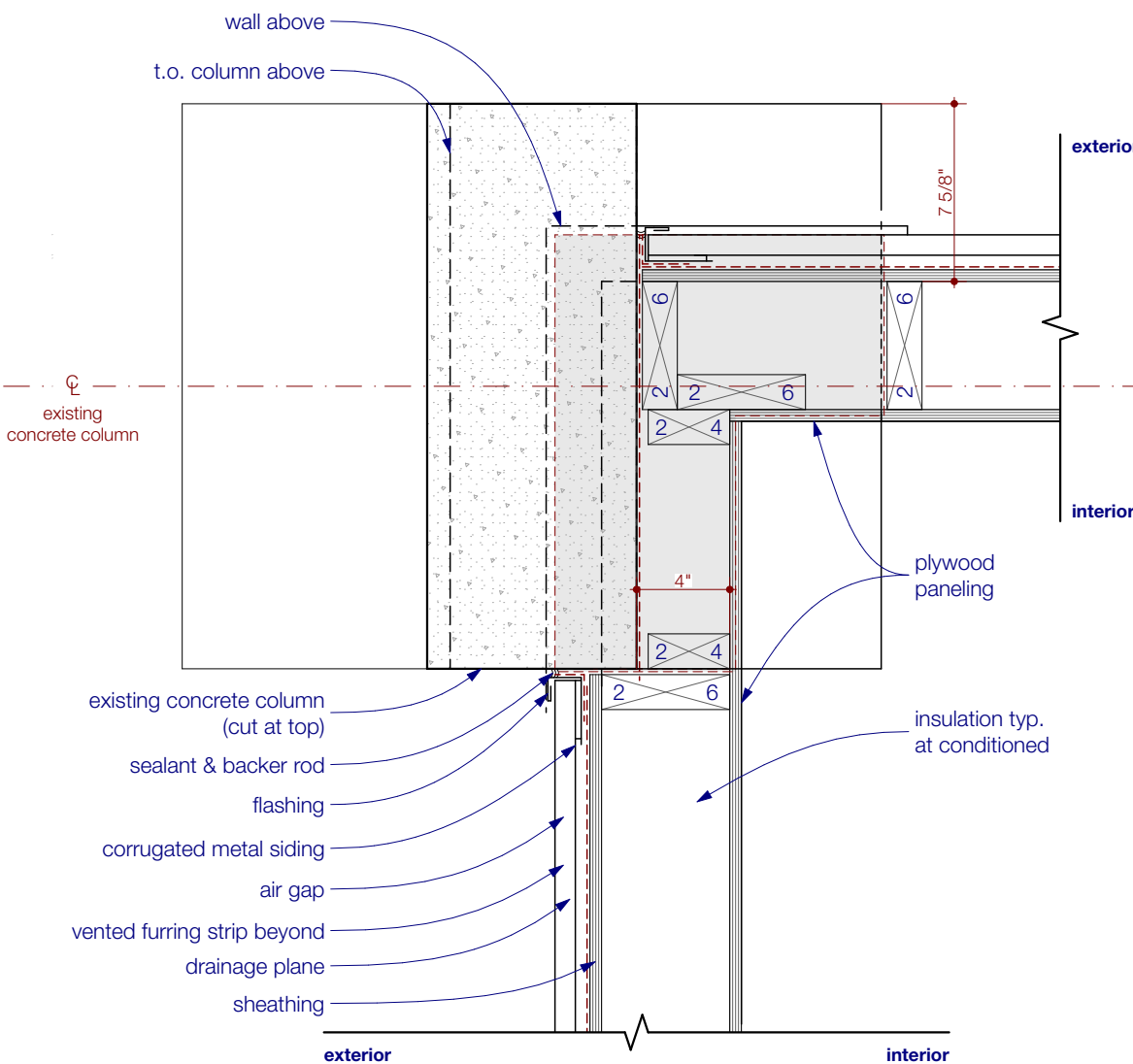
9 detail @ workshop/garage
SCALE: 1 1/2" = 1'-0"



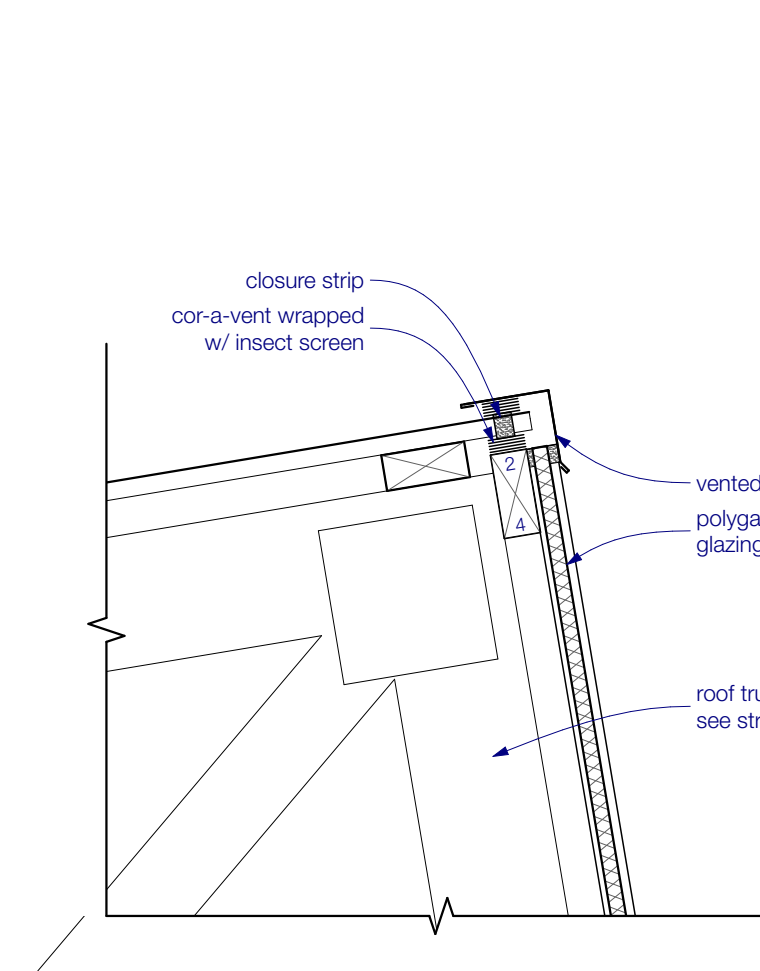
10 head @ workshop/courtyard
SCALE: 1 1/2" = 1'-0"



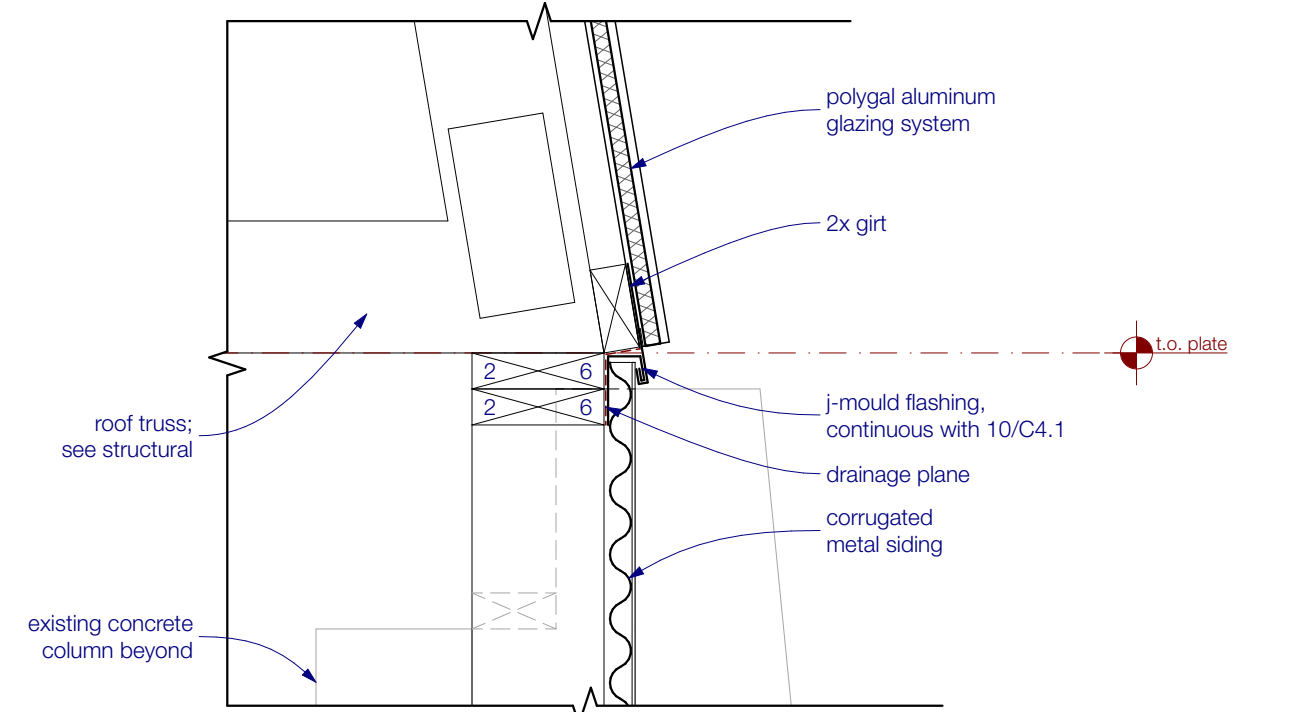
11 head @ workshop / garage
SCALE: 1 1/2" = 1'-0"



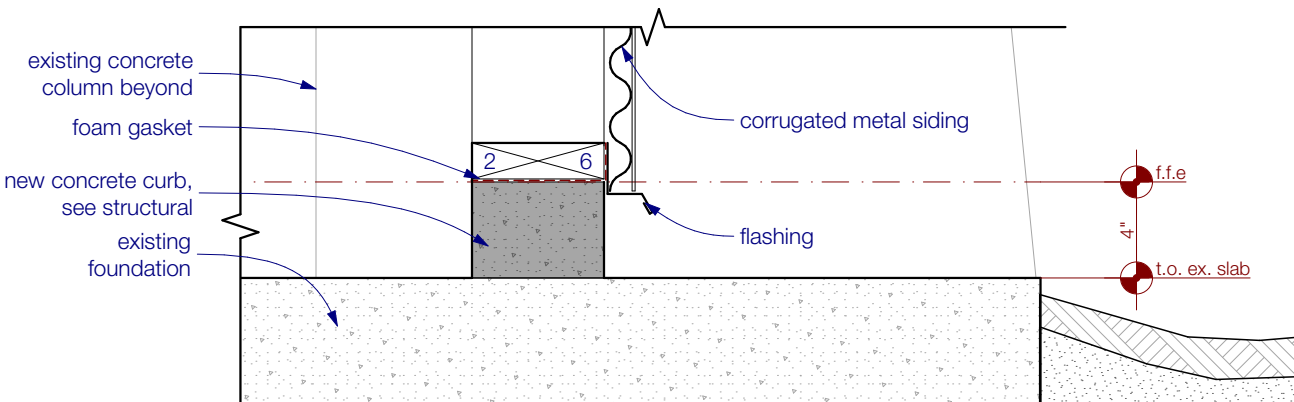
12 corner @ top of workshop column
SCALE: 1 1/2" = 1'-0"



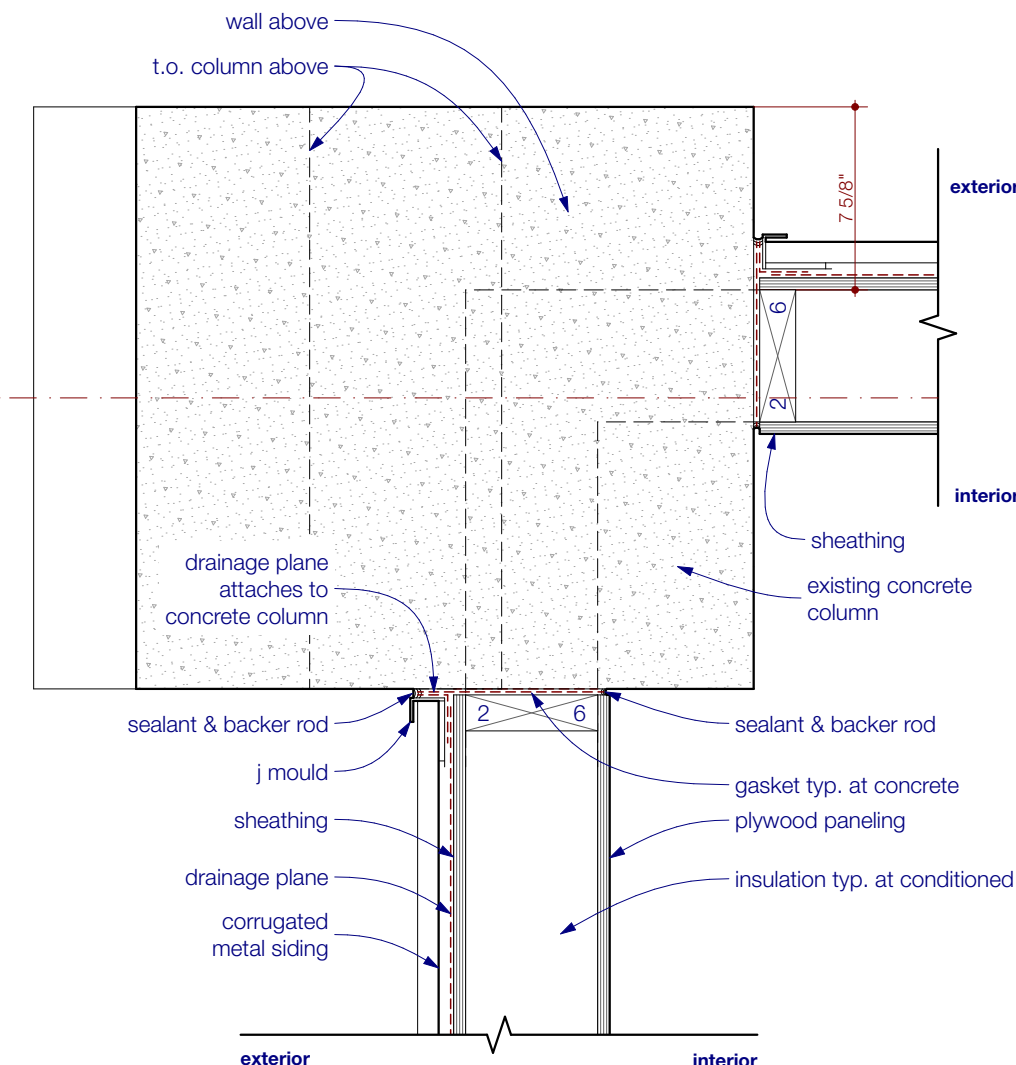
13 rake: polygal @ workshop garage
SCALE: 1 1/2" = 1'-0"



14 head @ workshop garage
SCALE: 1 1/2" = 1'-0"



15 curb @ workshop garage
SCALE: 1 1/2" = 1'-0"



16 detail @ workshop column
SCALE: 1 1/2" = 1'-0"

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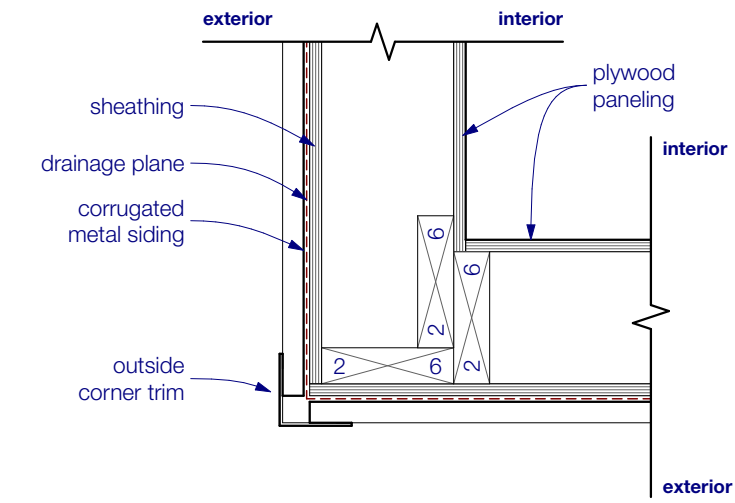


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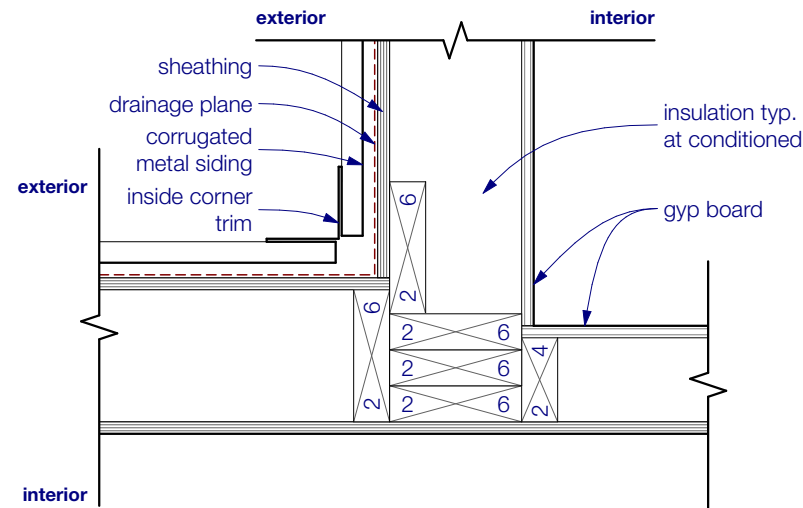


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6	3/8/22	Final

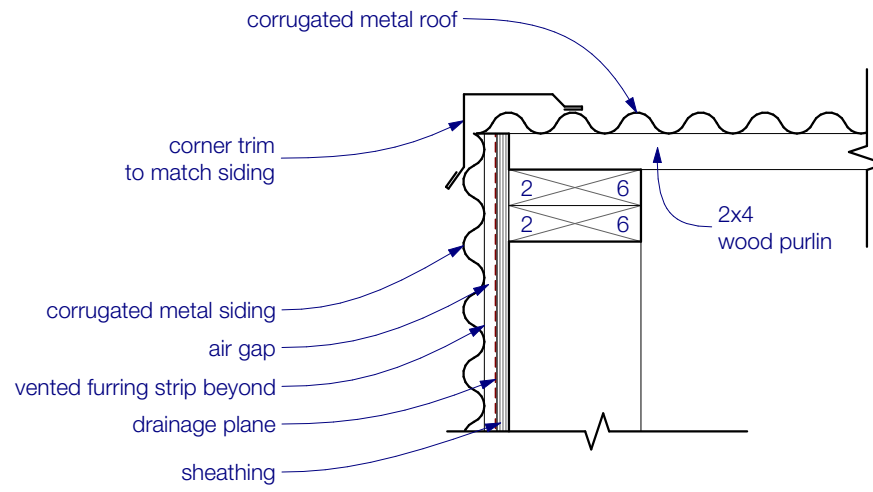
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details
C4.1



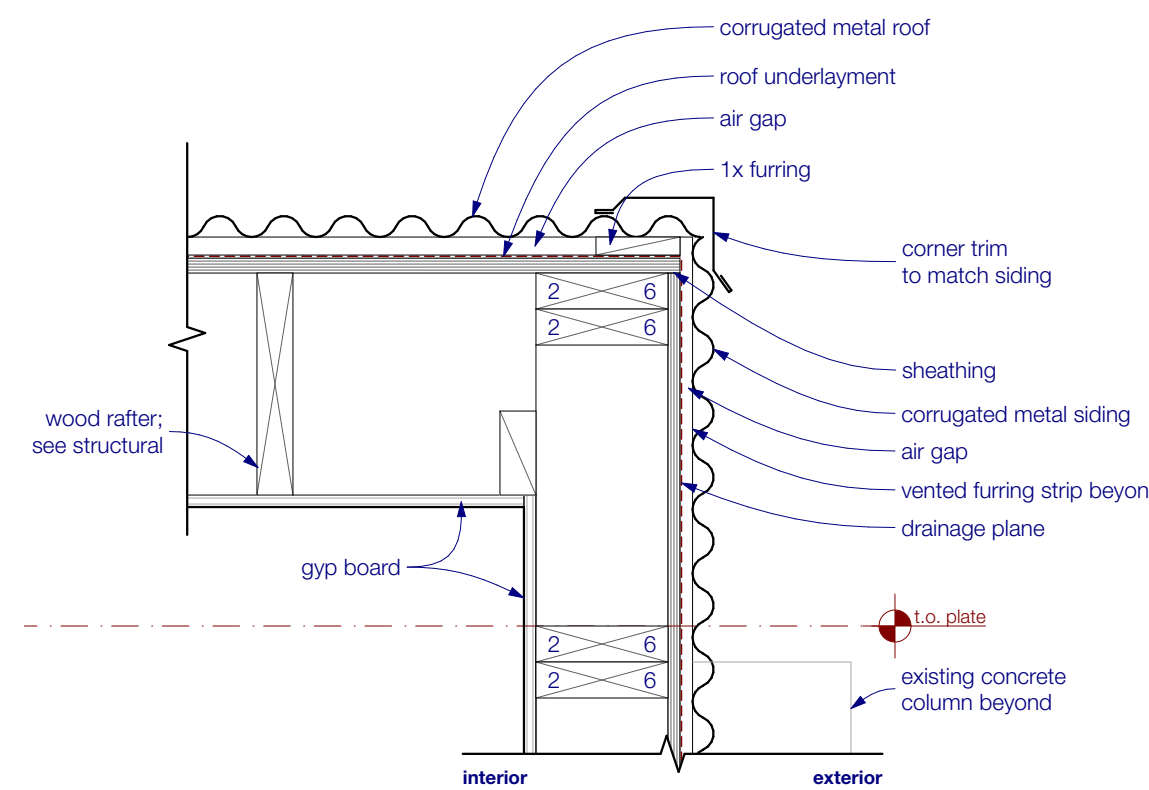
1 outside corner trim @ workshop
SCALE: 1 1/2"= 1'-0"



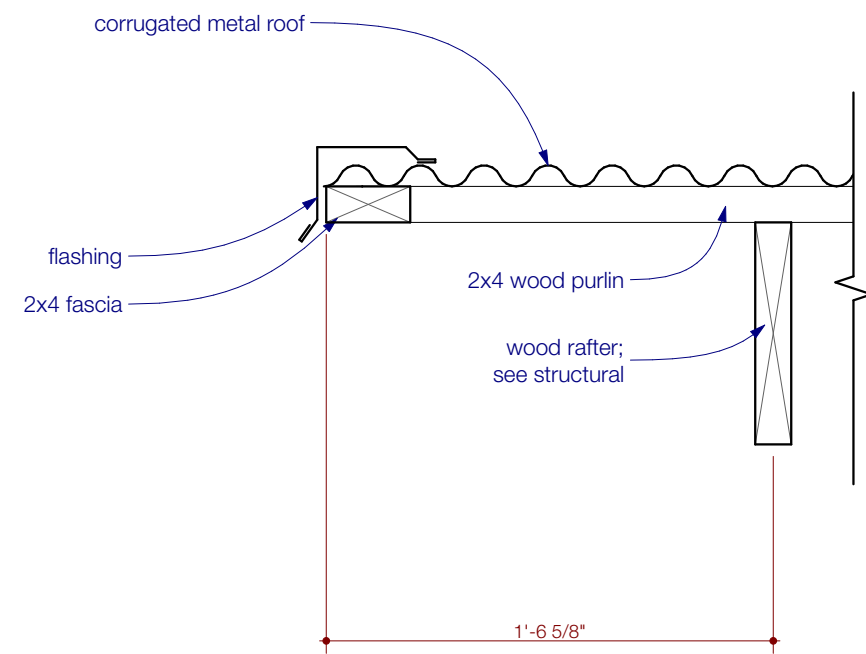
2 inside corner trim @ workshop
SCALE: 1 1/2"= 1'-0"



3 (typ.) rake: uninsulated @ workshop garage
SCALE: 1 1/2"= 1'-0"

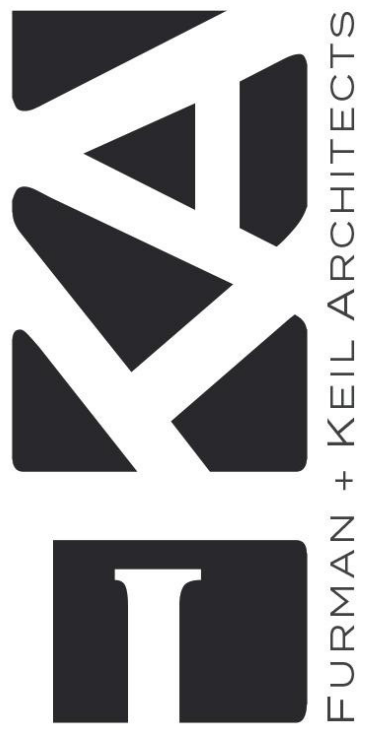


4 (typ.) rake: insulated @ workshop garage
SCALE: 1 1/2"= 1'-0"



5 (typ.) rake: @ workshop exposed rafters
SCALE: 1 1/2"= 1'-0"

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revisions

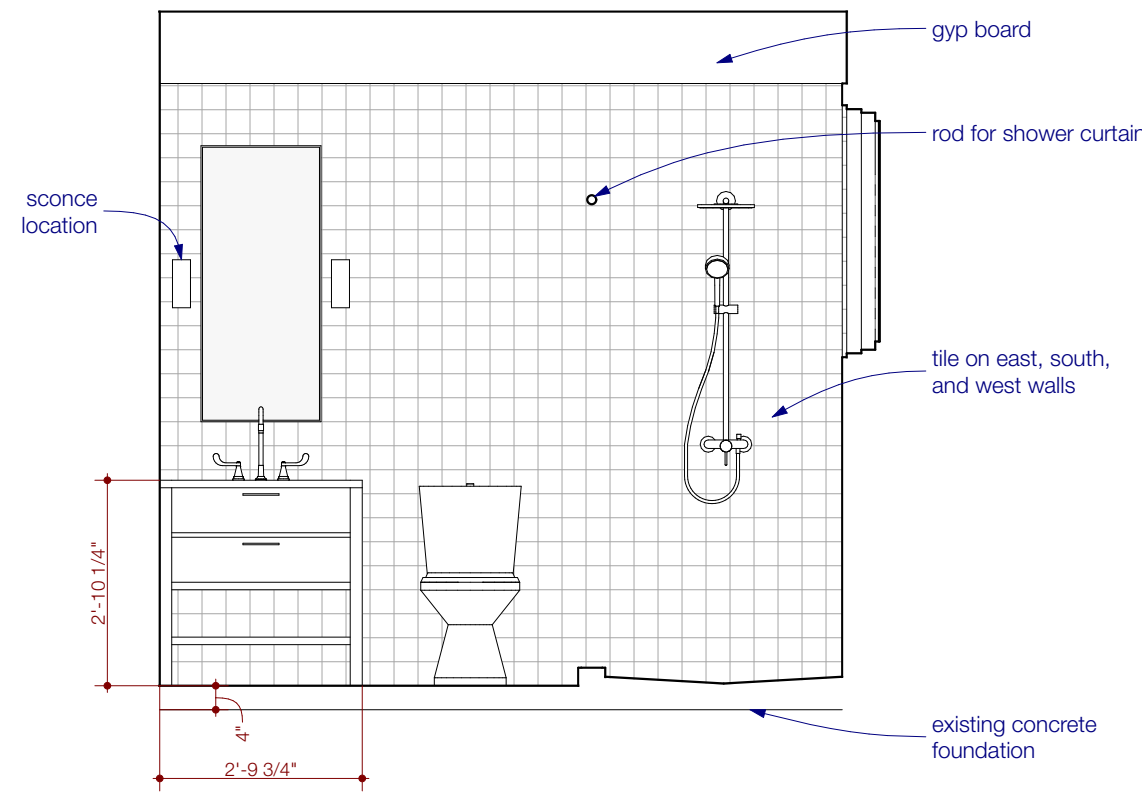
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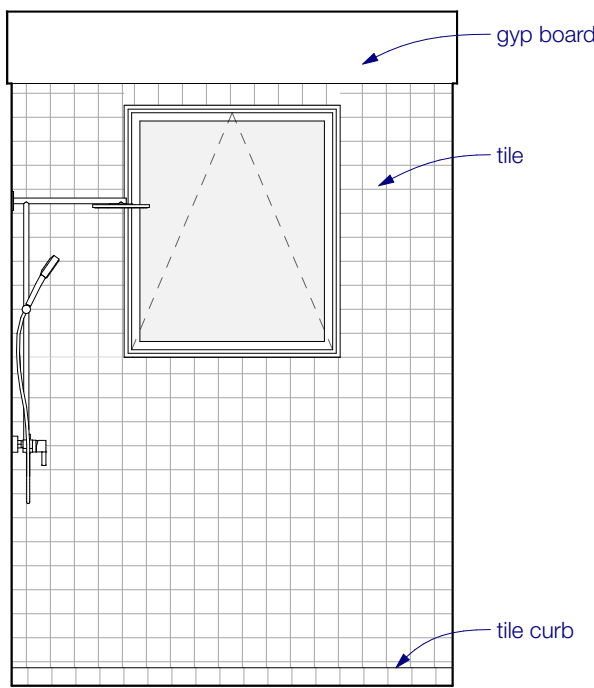
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details

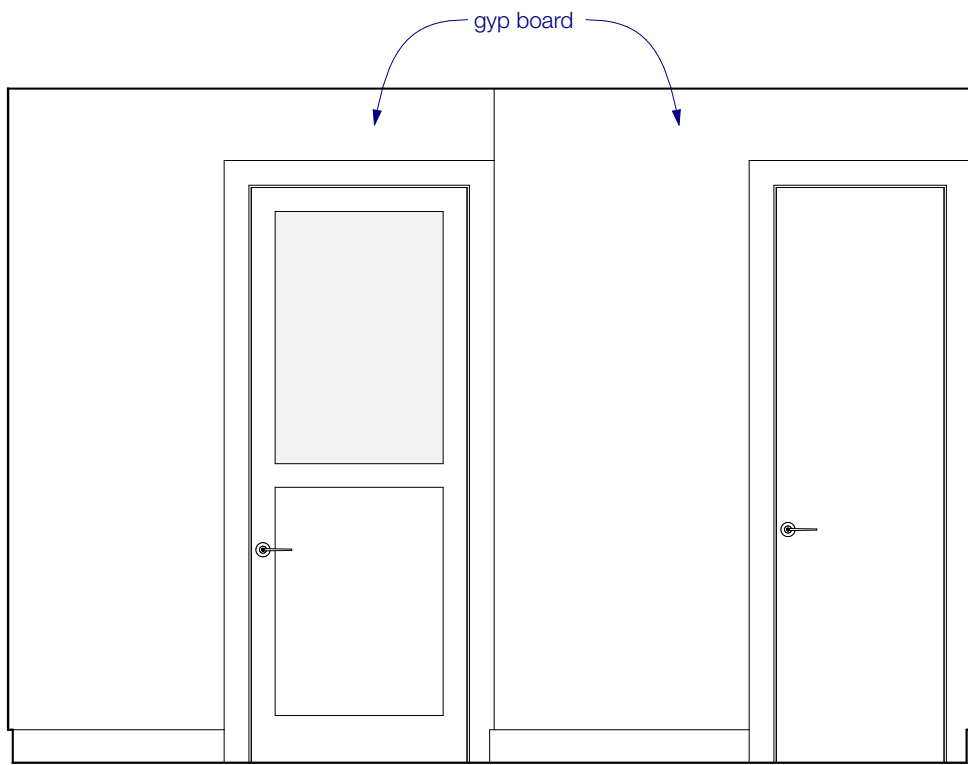
C4.2



1 shop bath east
SCALE: 3/8" = 1'-0"



2 shop bath south
SCALE: 3/8" = 1'-0"



3 shop entry
SCALE: 3/8" = 1'-0"

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100% CD

3/8/22

interior elevations

C5.1



WUKASCH DESIGNS

SUZANNE WUKASCH, PROFESSIONAL SANITARIAN

ON-SITE SEWAGE FACILITY DESIGNS

PO BOX 401 | BURNET, TX 78611 | 512.756.2028 | septicwater@gmail.com

May 19, 2022

City of West Lake Hills
911 Westlake Drive
West Lake Hills, TX 78746

RE: Private On-site Sewage Facility for: Lot 2, Resub of Oak Hollow Confirming Plat, 402 Camp Craft Road,
Austin, TX 78746, Lee Residence #2021-10157 (Main house)

Dear Reviewer:

Enclosed are the plans, specifications and calculations for the above referenced private on-site sewer facility.

The facility is designed for a five (5) bedroom, single-family residence with a square footage of 7822. According to the Construction Standards for On-site Sewage Facilities adopted by the Texas Commission on Environmental Quality on December 29, 2016, the estimated figure for wastewater design flow with installed low water use fixtures in gallons per day will be 540 gpd.

We have designed a subsurface drip irrigation system to serve this house. The system consists of:

- one, 750 gallon, 2/c, pre-cast concrete septic tank (located at main residence)
- one, .4 hp Liberty LE 41 submersible sewage pump, 115 volt with alarm and level controls
- one, 750 gallon, 2/c, pre-cast concrete septic tank (located at the workshop)
- two, PolyLok PL-68 effluent filters (one per each 750 gallon septic tank)
- one, .4 hp Liberty LE 41 submersible sewage pump, 115 volt with alarm and level controls
- one, 1000 gallon, single compartment, pre-cast concrete trash tank
- one, AquaAire, AA1000, 1000 gpd aerobic treatment unit (including the aerobic unit, aerator mechanism, electronic controls in a weather-proof box)
- one, 1500 gallon, single compartment, pre-cast concrete pump tank
- one, ½ h.p. Sta-rite 20 DOM 05121+1 submersible pump
- one, spinfilter, Agricultural Products, Inc. 4E-1" or equivalent [80 psi @ 28 gpm]
- one, Netafim® 50 psi pressure regulator (or approved equivalent)
- one, Hydrotek® 6402 alternating valve
- one, ETI model 217 control panel (no telemetry required)
- one, Crouzet 1/16 DIN Solid-State Repeat-Cycle Timer
- one, subsurface drip irrigation drain field with an absorption area of 5400 square feet

If you should have any questions, please let me know. Thank you for your consideration.

Sincerely,

Suzanne Wukasch, RS

Suzanne Wukasch, R.S. #2724



SEPTIC SYSTEM DESIGN DATA

Required Absorption Area = $540 \div .1 (R_a) = 5400 \text{ s.f. (2700 l.f.)}$ will be installed.

The installer is to use Netfim® Bioline, pressure compensating drip lines. The equivalent lateral drip line for this system will be a minimum 2700 linear feet (l.f.) divided into two separate zones of approximately 1350 linear feet per zone. All lines will maintain a 2' separation from one another. Individual runs must not exceed a continuous run of greater than 320 linear feet of drip line.

Per zone, there will be a total of 675 emitters. Each emitter generates .60 gph x 675 emitters or 405 gph or 6.75 gpm. Additionally, there will be five (5) connections for flushing at 1.6 gpm per connection. This adds an additional 8 gpm for a total of 14.75 gpm.

Supply line and manifold, return manifold and flush lines

The installer is to use 1" Schedule 40 PVC to the supply manifolds. A check valve is required after the pump. An anti-siphon hole is required in the pump tank to prevent back siphoning when the pump turns off. The same type and size pipe is to be used for the return manifold and flush line. The flush line will terminate at the pump tank. There will be one ball valve to assist with the back flush mechanism.

HEAD LOSS INFORMATION

Friction Loss:

Supply line length (@ 14.75 gpm): 70 ft. of 1" Schedule 40 PVC = $70/100 \times 11.90 = 8.33$ feet

Return Line Length (@ 8 gpm): 45 ft. of 1" Schedule 40 PVC = $45/100 \times 3.7 = 1.67$ feet

Elevation head: 8 feet

Pressure = 57.5 feet (25 psi)

Spin filter = 12 feet

Hydrotek® 6402 alternating valve = 5.75 feet (2.5 psi)

Miscellaneous losses = 5 feet

Total Head Loss = $8.33 + 1.67 + 8 + 57.5 + 12 + 5.75 + 5 = 98.25$ feet

A ½ h.p. Sta-rite 20 DOM 05121+1 submersible pump capable of pumping ~ 15 gallons per minute at 98 feet of head is required.

A Netfim® pressure regulator (or approved equivalent) is required to set pressure at 50 psi. A field pressure of no less than 25 psi is required.

Spin Filter

An Agricultural Products, Inc. spinfilter model # 4EH-1BN-150 will be installed between the pump and the drip field to screen any debris. The filter flush valve and the field flushing valve shall remain slightly open at all times to allow for a continuous flush. At least twice a year, the valves need to be opened fully for a complete system flush. Installation must comply with all instructions provided by the manufacturer. The spin filter and the return flush line from the field must return to the pump tank.

One Hydrotek® 6402 alternating valve is required.

Vacuum breakers

Model 65 ARIBI (or equivalent) vacuum breakers should be located at the highest point on the supply and return line. They should be located in an irrigation or valve box, lined with a pea gravel bed of at least 6 inches.

Check valves

A check valve is required on the supply line (inside or just outside of the pump tank) and at each zone's return manifold.

Loops and Flex Connects

Loops may be used in any circumstance where greater than a 45-degree turn must be made. Flex connects can be used between the Netfim® tubing and the manifold to allow for shrink and swell and the movement and settling of the soils.

Dripper Field Preparation, Layout and Landscaping

Scarification is required prior to the installation of the drip tubing. Using the teeth of a backhoe, disrupt the existing soil to a sufficient depth that it resembles a tilled garden. If necessary, prepare the site for the proposed irrigation fields by removing large rocks, debris and any other trees and shrubs impeding proper installation. All care should be taken by the installer to save native trees and vegetation.

PLEASE NOTE: The decision for the removal of any trees for this installation is the responsibility made solely between the owner and the contractor.

After scarification, prior to installing the loam pad, the native material must be mixed to a depth of 2-3 inches with suitable Class IB or Class II soil to provide a suitable interface for downward migration of effluent. A minimum 12 inch Class IB or Class II loam pad will be constructed above the native/Class IB or Class II fill blend prior to installing the drip lines. The drip lines shall be laid without kinks and without any rocks or debris in direct contact with the drip lines. The installer is to maintain a minimum separation of 12" of suitable soil to solid or fractured rock and 12" to groundwater. Install the dripper lines with the appropriate spacing along the 1" Schedule 40 PVC supply lines using ½" flex tubing, the lock-slip PVC adapters and dripper lines. The vacuum breakers shall be placed in the highest point of the supply and return flush lines. Install the vacuum breakers with a gravel bed beneath it and at least a six (6) inch valve cover box for easy access to the vacuum breaker. All imported fill and backfill material should be Class IB or II, loamy sand or sandy loam. The fill must not be hauled or worked when wet. Once the lines are installed, uniformly and lightly compact the loamy sand/sandy loam cover over all pertinent components to a minimum depth of 8-10 inches. Dome or "crown" the backfill for positive drainage. Hydro-mulching or seeding must be applied immediately for vegetation. The intent is to apply vegetative cover capable of holding the applied soils in place and to provide effective transpiration to aid in the functioning of the dripper fields. It is recommended that the entire disposal area be covered with Curlex® or E-Mat® (erosion/sediment control material) to hold the disturbed soils in place until vegetation is sufficiently established over the disposal area. Do not use clay backed sod for re-vegetating the disposal area.

A storm water diversion berm is recommended. All means necessary (i.e. retaining walls, berms, etc.) to divert sheet flow from above onto disposal area is imperative! The disposal area as well as the general area around the disposal area is to be graded to provide positive flow around disposal area. Gutters are strongly recommended for this site.

TANK DATA

Lift Station Data at Main Residence

A 750 gallon, dual compartment lift station will serve as the septic tank (1st compartment) and the effluent pumping unit (2nd compartment) for a master bedroom. We estimate 60 gallons per day from this bathroom.

Specifications for location of pump activation and alarm floats are outlined in tank detail drawing. A check valve is required in the pump supply line in or just outside of the pump chamber. An antisiphon hole is also required in the supply line inside the pump tank. The pump and alarm must be on separate electrical circuits. Electrical service must be hardwired inside the tank with plug fixtures outside. All wiring must be in rigid conduit. The alarm light must be installed where it is visible to the property owner. Both a visual and an audible alarm are required.

Dosing Rate = ~ 20 gpm

Total head - For a 200 foot supply line with a 2 inch diameter PVC pipe

- 1) Friction head = $(200/100) \times .74 = 1.48 \times 1.2$ (fitting loss) = 1.78 ft.
- 2) Elevation head = 5 feet

$$\text{Total Dynamic Head} = 1.78 + 5 = 6.78 \text{ feet}$$

Minimum Dosing Volume –

$$\begin{aligned} V \text{ dose} &= V \text{ supply} + 5 (V \text{ laterals}) \\ \text{Supply line} &= 200 \text{ feet of 2 inch pipe} \\ V \text{ supply} &= (200/100) \times 16.2 \\ &= 32.40 \text{ gal.} \end{aligned}$$

$$\begin{aligned} \text{Dosing Depth} &= (\text{gallons per dose/chamber volume}) \times \text{liquid depth (inches)} \\ &= (32.40/350) \times 36" \text{ (9.72 gallons per inch)} = 3.33 \text{ inches} \\ &= 4 \text{ inches (actual dose = 38.88 gallons)} \end{aligned}$$

Reserve capacity = $36" - 29" = 7" \times 9.72 \text{ g/inch}$ (350 gal. chamber/36" liquid depth) = 68.04 gallons; > one-day reserve above the alarm 'on' (= 60 gallons)

This system will require a Liberty model LE-41, .4 h.p. effluent pump capable of pumping 20 gallons per minute against 7 feet of head. A PolyLok PL-68 effluent filter is required on the outlet 'T' going into the 2nd compartment.

Lift Station Data at Workshop

A 750 gallon, dual compartment lift station will serve as the septic tank (1st compartment) and the effluent pumping unit (2nd compartment) for a workshop. We estimate 60 gallons per day from this bathroom.

Specifications for location of pump activation and alarm floats are outlined in tank detail drawing. A check valve is required in the pump supply line in or just outside of the pump chamber. An antisiphon hole is also required in the supply line inside the pump tank. The pump and alarm must be on separate electrical circuits. Electrical service must be hardwired inside the tank with plug fixtures outside. All wiring must be in rigid conduit. The alarm light must be installed where it is visible to the property owner. Both a visual and an audible alarm are required.

Dosing Rate = ~ 20 gpm

Total head - For a 188 foot supply line with a 2 inch diameter PVC pipe

- 1) Friction head = $(188/100) \times .74 = 1.39 \times 1.2$ (fitting loss) = 1.67 ft.
- 2) Elevation head = 5 feet

$$\text{Total Dynamic Head} = 1.67 + 5 = 6.67 \text{ feet}$$

Minimum Dosing Volume –

$$\begin{aligned} V \text{ dose} &= V \text{ supply} + 5 (V \text{ laterals}) \\ \text{Supply line} &= 188 \text{ feet of 2 inch pipe} \\ V \text{ supply} &= (188/100) \times 16.2 \\ &= 30.46 \text{ gal.} \end{aligned}$$

$$\begin{aligned} \text{Dosing Depth} &= (\text{gallons per dose/chamber volume}) \times \text{liquid depth (inches)} \\ &= (30.46/350) \times 36" \text{ (9.72 gallons per inch)} = 3.13 \text{ inches} \\ &= 4 \text{ inches (actual dose} = 38.88 \text{ gallons)} \end{aligned}$$

Reserve capacity = $36" - 29" = 7" \times 9.72 \text{ g/inch}$ (350 gal. chamber/36" liquid depth) = 68.04 gallons; > one-day reserve above the alarm 'on' (= 60 gallons)

This system will require a Liberty model LE-41, .4 h.p. effluent pump capable of pumping 20 gallons per minute against 7 feet of head. A PolyLok PL-68 effluent filter is required on the outlet 'T' going into the 2nd compartment.

A 1000 gallon, single compartment trash tank is proposed. Tanks are to be installed with a minimum separation of five feet from structure foundations, surface improvements, swimming pools and property lines. A minimum one foot separation from all easements is required. The aerobic treatment unit must be level to a tolerance of +/- 1", water tight and set on a level sand pad of a minimum of four inches. Clean sand or sandy loam must be used for backfilling. A clean-out shall be installed between all foundations and septic tank(s) or every 100'.

Aerobic Unit

An AquaAire AA1000, 1000 gallon per day aerobic treatment unit will be used for this site. All state specified and manufacturer's installation procedures will be followed. All installation procedures will comply with instructions provided by the manufacturer.

Pump Tank Data

A pre-cast concrete, 1500 gallon pump tank will be used for transfer of treated effluent to the drip field. The tank is sized to provide a minimum of one-day reserve above the alarm 'on' (540 gallons). A sampling port in the form of an unthreaded hose bib is required in the effluent pump line. The sampling port will be used to facilitate testing of effluent for quality control. This system requires timed dosing. Dosing will be a minimum of eight (8) times per day at 67.50 gallons per dose ($67.50 \div 6.75 \text{ gpm} = \sim 10$ minutes dosing duration). Specifications for location of pump activation and alarm floats are outlined in tank detail drawing.

All components with the exception of risers, chlorinators, cleanouts, sprinklers and inspection ports shall be completely buried without adding fill. Non buried components (i.e. alarms, junction boxes and compressors) shall be elevated above the 100 year flood elevation.

All existing tanks and pump tanks shall have the wastewater removed by a waste transporter, holding a current registration with the executive director. Additionally, the tanks shall be filled to ground level with fill material (less than three inches in diameter) which is free of organic and construction debris. Disposal area is to be abandoned in place. Statement also included in design narrative. A trip ticket for proof of proper wastewater disposal shall be provided to the City of Westlake Hills records for the property.

Timer and Alarm System

An audio/visual high water alarm (red light) will be installed on this system. The alarm/light will be installed in a highly visible location as near the pump tank as possible.

All existing tanks and pump tanks shall have the wastewater removed by a waste transporter, holding a current registration with the executive director. Additionally, the tanks shall be filled to ground level with fill material (less than three inches in diameter) which is free of organic and construction debris. Disposal area is to be abandoned in place.

The homeowner must be aware that the installation of a new OSSF may create changes in drainage patterns across the site. It is the responsibility of the homeowner to make whatever modifications necessary, to ensure continued positive drainage across all OSSF components (particularly runoff 'channels' that may be created in the disposal area) as well as making adjustments to any previous drainage patterns that may have been altered as the result of the installation of the OSSF. Such modifications may include berms, drainage swales, traffic barriers and gutters around the house.

This system and its layout have been designed based on the "Minimum Construction Standards for On-Site Sewage Facilities" as revised December 29, 2016 by Texas Commission for Environmental Quality ("TCEQ") and as amended by the City of Westlake Hills. These procedures are approved by TCEQ & by the City of Westlake Hills and indicate only that a system can be installed here, which meets the estimated flow rates established by the State of Texas. The proper performance of this system cannot be guaranteed even though all provisions of the Standards have been met. Owner is ultimately responsible for the system upkeep (retaining maintenance, reporting problems, monitoring flow, etc.). While the designer has made diligent effort to preserve vegetation and the landscape, the designer is not responsible for any losses (trees, landscaping, etc.) due to installation, operation, and/or system failure.

PLANS MUST BE ON SITE FOR ALL INSPECTIONS

MAINTENANCE GUIDE

Lot 2, Resub of Oak Hollow Confirming Plat,
402 Camp Craft Road,
Austin, TX 78746,
Lee Residence

DRIP IRRIGATION-TYPE SEPTIC SYSTEM

The system serving this residence is commonly known as a drip irrigation type system. The following information is provided so that the owner or maintenance personnel can operate and maintain the system properly. Failure to do so may result in its malfunction or overflow. Use this manual along with a copy of the design plans that have been provided to you to operate and maintain this system successfully. The licensing authority for this system is the City of Westlake Hills. Your system is made up of the following basic components:

- one, 750 gallon, 2/c, pre-cast concrete septic tank (located at main residence)
- one, .4 hp Liberty LE 41 submersible sewage pump, 115 volt with alarm and level controls
- one, 750 gallon, 2/c, pre-cast concrete septic tank (located at the workshop)
- two, PolyLok PL-68 effluent filters (one per each 750 gallon septic tank)
- one, .4 hp Liberty LE 41 submersible sewage pump, 115 volt with alarm and level controls
- one, 1000 gallon, single compartment, pre-cast concrete trash tank
- one, AquaAire, AA1000, 1000 gpd aerobic treatment unit (including the aerobic unit, aerator mechanism, electronic controls in a weather-proof box)
- one, 1500 gallon, single compartment, pre-cast concrete pump tank
- one, ½ h.p. Sta-rite 20 DOM 05121+1 submersible pump
- one, spinfilter, Agricultural Products, Inc. 4E-1" or equivalent [80 psi @ 28 gpm]
- one, Netafim® 50 psi pressure regulator (or approved equivalent)
- one, Hydrotek® 6402 alternating valve
- one, ETI model 217 control panel (no telemetry required)
- one, Crouzet 1/16 DIN Solid-State Repeat-Cycle Timer
- one, subsurface drip irrigation drain field with an absorption area of 5400 square feet

Maintenance and Operation

1. Water conservation is very important in protecting your septic system from failure. Low flush toilets (1.6 gallons/flush or less) and water restricting shower heads and faucets are required for this system. Repair or replace leaking fixtures.
2. Avoid using a garbage grinder as this tends to increase the amount of fats, grease, and floating scum in the tanks and can clog lines.
3. Septic tanks require periodic pumping. It is recommended that the tanks be pumped every year by a licensed pumping service. If an alarm condition exists, avoid further use of system until the pumping chamber is pumped and the maintenance provider/licensed installer can make the necessary repairs.
4. This system is designed to treat and dispose of domestic wastewater only. The property owner should not dispose of any products in the treatment system which could disrupt the treatment and/or disposal process. Those items include but are not limited to commercial enzymes, yeast, water softener back flush, etc.
5. Vegetation on the drain fields is a necessity. Hydromulch must be applied immediately to the disturbed, imported soils upon system completion to minimize erosion. Groundcover on this system must be maintained because it provides for the requisite plant transpiration. It also helps to hold the original and imported soils in place. If vegetation dies, then it should be replaced as quickly as possible so that the

disposal fields can continue to function properly. If settling of the sandy loam covering material occurs resulting in "ponding" or channeling of surface water into the system, then it should be quickly replaced with a good quality sandy loam that shall be lightly but thoroughly compacted and revegetated. Changes in drainage or lack of established and/or maintained vegetation often results in furrows in the drain fields. The fields must be protected by any berms, swales and retaining walls originally designed for this system. Changes in the final landscaping must take into account the protection of the disposal fields and septic tanks. Clay backed sod is not recommended for this type drain field. No structures, sidewalks, patios, decks or other structures shall be built over the disposal fields. No traffic should ever be allowed over any of the septic system components.

6. Surface water must be kept from infiltrating the treatment tanks. If they are down a hill, surface water must be directed away from the tanks with the use of berms or tank lid risers. Surface water should not stand over tank areas. Infiltration of surface water can cause tanks to fill up resulting in continuous pumping to the drain field possibly flooding the drain field. This additional work can also cause premature failure of the pump. Gutters may be required to divert water off of the disposal area.

7. Frequent flushing under full system pressure is critical for the correct operation and longevity of the system. Dripper lines may develop a biomat in the emitters, which can cause clogging. Frequent flushing dislodges biomat and reduces debris in the lines and emitters. Dripper lines and filters should be cleaned routinely. If the lines get sluggish or if filters clog frequently, a larger filter or automatic backwashing may be required. Monitor the pressure in the driplines. Check that the pressure regulator valve is correctly set. If you have a flow meter installed, check flow rates. Consult your maintenance provider before attempting any adjustment or maintenance to your system.

Routine and periodic inspections of the system are a requirement and will be provided by your installer or a maintenance provider for two years. After the two year maintenance agreement has ended, it is the responsibility of the homeowner to contract with a maintenance provider to continue the scheduled maintenance of this system.

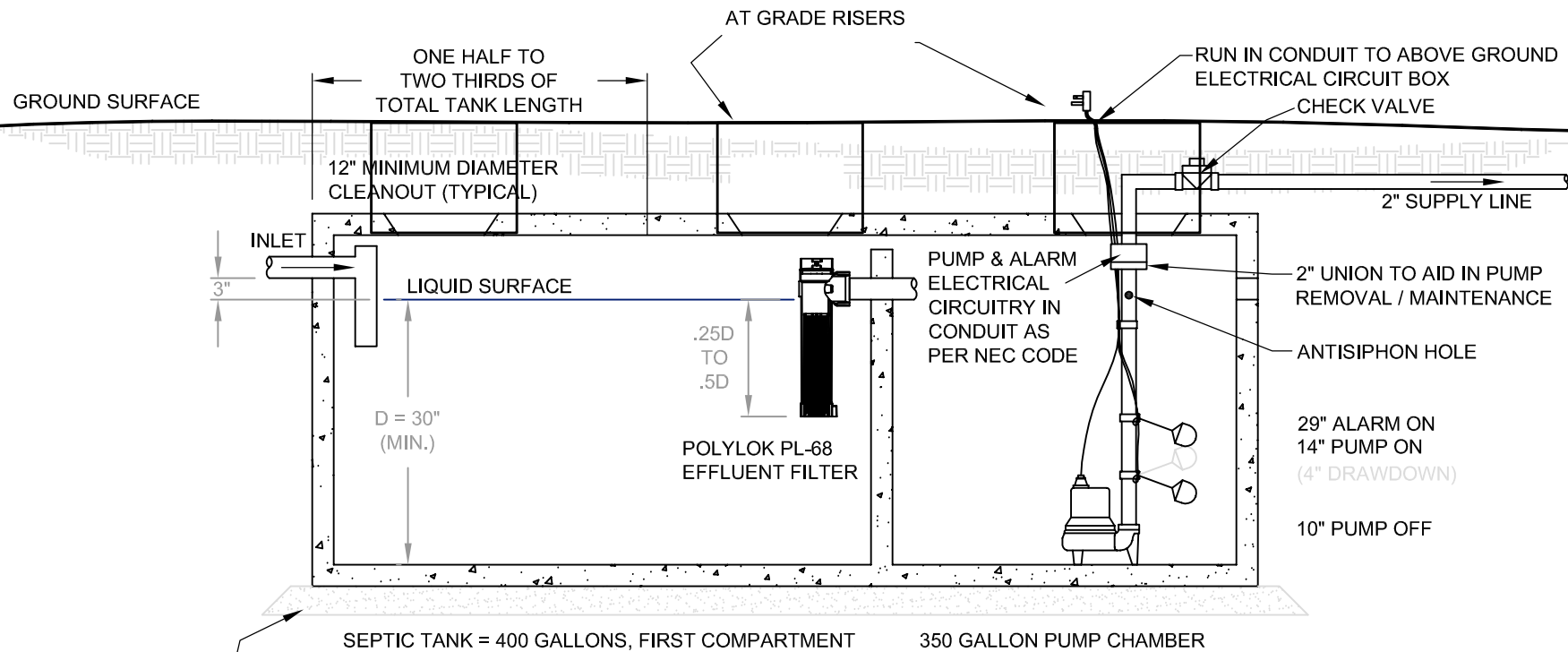
CONSTRUCTION NOTES

1. Construction materials, specifications and all construction methods shall conform to the requirements set forth in the Construction Standards for On-site Sewage Facilities, Texas Commission on Environmental Quality, December 29, 2016 and by the City of Westlake Hills.
2. The installer must be licensed by the State of Texas and have the regulatory authority to inspect the system at the required construction intervals. The designer is also to be notified of the scheduled inspections. A minimum of 48 hours' notice of a scheduled inspection or as-built drawing is required.
3. A vacuum breaker valve should be provided at the highest point of the supply manifold and return line in each zone.
4. At all times avoid getting debris into the system. Flush main lines, test for leaks and leave them full of water. Larger diameter pipes left full of air in a trench that has not been compacted may "float".
5. Low-flow fixtures should be installed in faucets and shower heads. The use of 1.6 or less gallons/flush toilets are required.
6. All potable water supply lines (including irrigation/sprinkler systems) must maintain a minimum of 10 feet from any septic system components.
7. Vegetation must be immediately established on the drain field. Proper care (regular mowing, watering and fertilization) of the vegetation is a necessity for effective evapotranspiration.
8. The septic pump and alarm must be on separate electrical circuits. Electrical service must be hardwired inside the tank with the control panel outside. The alarm light must be installed where it is visible and within easy hearing range of the property owner. All electrical installation must comply with local code.
9. Tanks buried more than 12" must have a riser installed by the septic installer.
10. Tanks under driveways must have traffic bearing lids. All PVC supply lines beneath paved surfaces, used as traffic-bearing areas, must be sleeved in the next greater size of PVC.
11. All septic tank and pump tank inlets/outlets must be thoroughly sealed with waterproof sealant.
12. A cleanout is required within 3 feet of the foundation stub-out, anywhere the sewer pipe (house to septic tank) has a 45-degree bend and /or every 50 feet.
13. Effective September 1, 2012, applicable to all pretreatment tanks, proprietary treatment units, non-standard treatment units, pump tanks, holding tanks and septic tanks:
 - Risers must be installed to the ground surface over all inlet and outlet ports unless the tank is a septic tank and buried less than 12" deep. A secondary plug, cap or restraint system shall be provided below the riser cap to prevent tank entry if the cap is unknowingly damaged or removed.
 - The rules remain unchanged for septic tanks buried less than 12".
 - Risers must be permanently fastened to the tank lid.
 - Risers must be fitted with removable watertight caps that are secured by a padlock or a cover that can be removed with tools or a cover having a minimum weight of 65 pounds set into a recess of the tank lid.
 - Risers and caps exposed to sunlight must have ultraviolet protection.
 - Risers must be able to withstand pressures exerted by surrounding soil.
 - Installation of a riser shall be performed by a licensed installer.

- Any person who accesses secured lids or covers shall secure the lid when access is complete.
- Inspection reports sent to authorized agents, regional offices and homeowners must document that the access was secured after activities were completed or that the OSSF system owner refused to pay for repairs that were needed to secure the cleanout ports.

TANK DETAIL

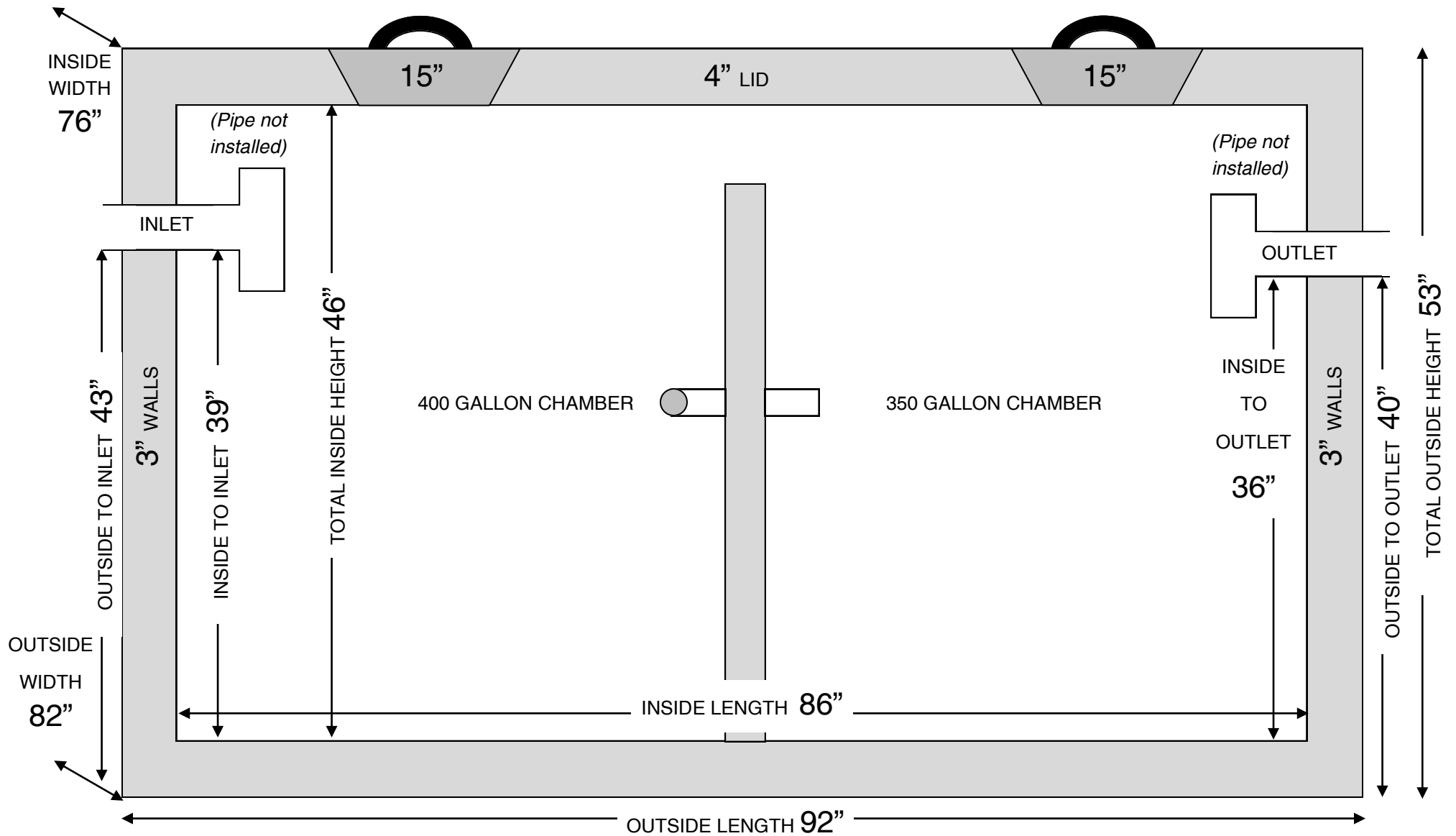
DUAL COMPARTMENT TANK
TOTAL 400 GALLON FIRST COMPARTMENT
+ 350 GALLON PUMP COMPARTMENT
(SCALE: 1/2" = 1')



FOUR INCHES MINIMUM CUSHION OF EITHER SAND, SANDY LOAM, CLAY LOAM, OR PEA GRAVEL, FREE OF ROCK LARGER THAN PEA GRAVEL; BACKFILL CUSHION IS REQUIRED ON BOTTOM AND AROUND THE PERIMETER OF THE TREATMENT TANKS

THERE SHOULD BE ADEQUATE EFFLUENT REMAINING AT THE BOTTOM OF THE TANK TO KEEP PUMPING UNIT SUFFICIENTLY SUBMERGED WHEN PUMPING HAS CEASED

9.72 GALLONS PER INCH
4 INCH DRAWDOWN (DOSE) = 4 X 9.72 = 38.88 GALLONS
36 INCHES - 29 INCHES (ALARM 'ON') = 7 INCHES RESERVE
7" X 9.72 = 68.04 GALLONS ABOVE ALARM 'ON'
> ONE-DAY RESERVE (60 GALLONS) ABOVE ALARM 'ON'



BUCHANAN SEPTIC TANKS, INC.

P.O. Box 297 | 15648 Hwy. 29
BUCHANAN DAM, TX 78609

P: (512) 793-3100 | F: (512) 793-4047

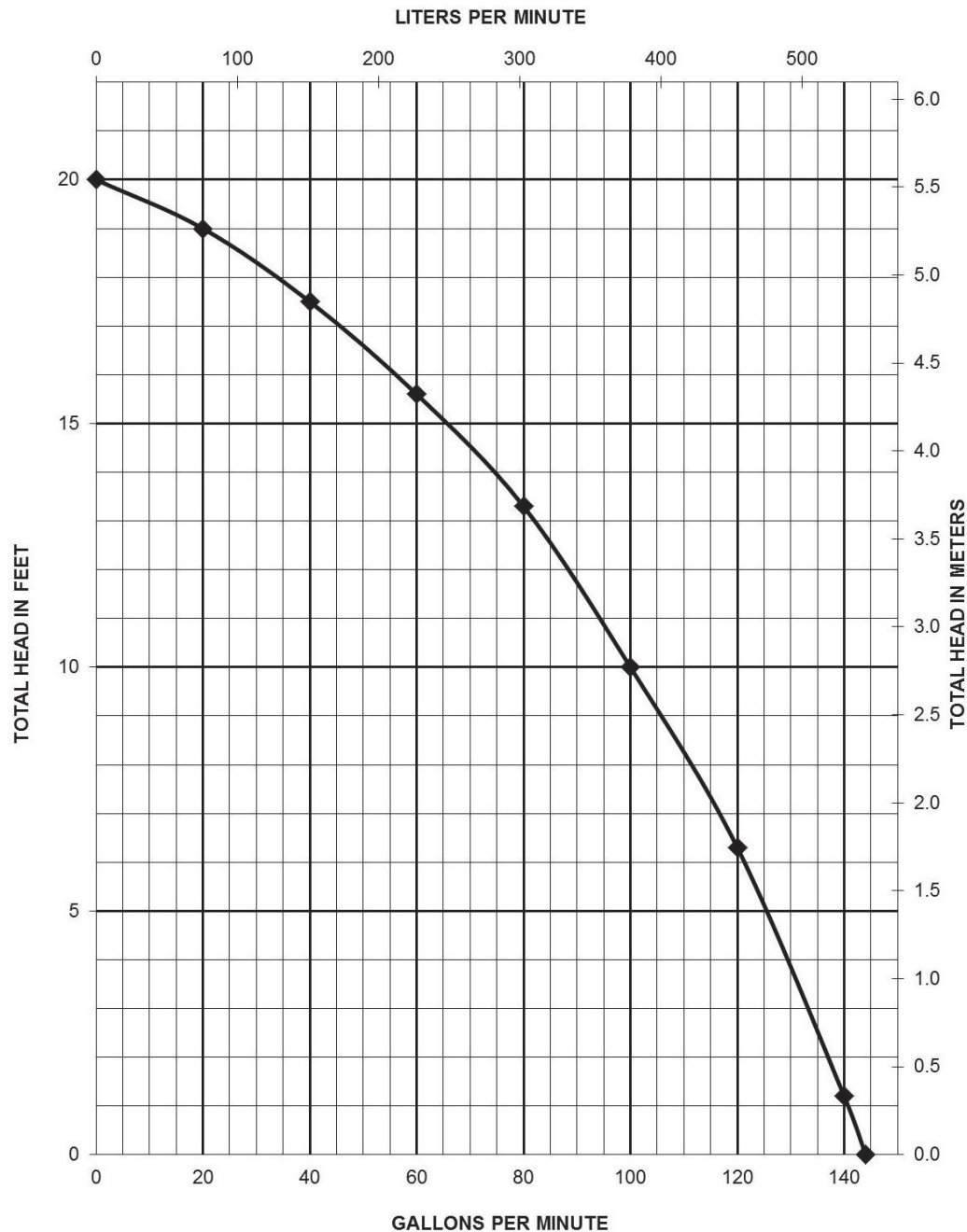
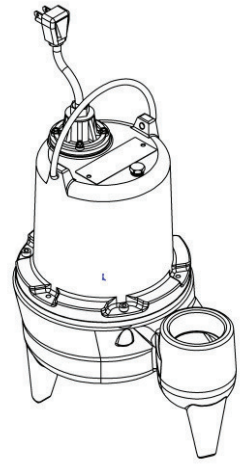
750 GALLON TWO COMPARTMENT LONG OVAL SEPTIC TANK



Pump Specifications

LE40 Series

4/10 HP Submersible Sewage Pump



PL-68 Filter and Tee

PL-68 is much more than just an effluent filter. The housing can also be used as an inlet baffle (tee) or an outlet baffle. The housing is designed to accept Polylok's snap in gas deflector to deflect gas bubbles away from the tee and to keep the solids in the tank.

Features:

- Offers 68 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Accepts 3/4" PVC handle.
- Locks in any 360° position when used with PL-68 Tee.
- PL-68 Housing can be used as an inlet or outlet tee.
- Gasket prevents bypass.

PL-68 Installation:

Ideal for residential waste flows up to 800 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-68 filter into tee.
5. Replace and secure the septic tank cover.

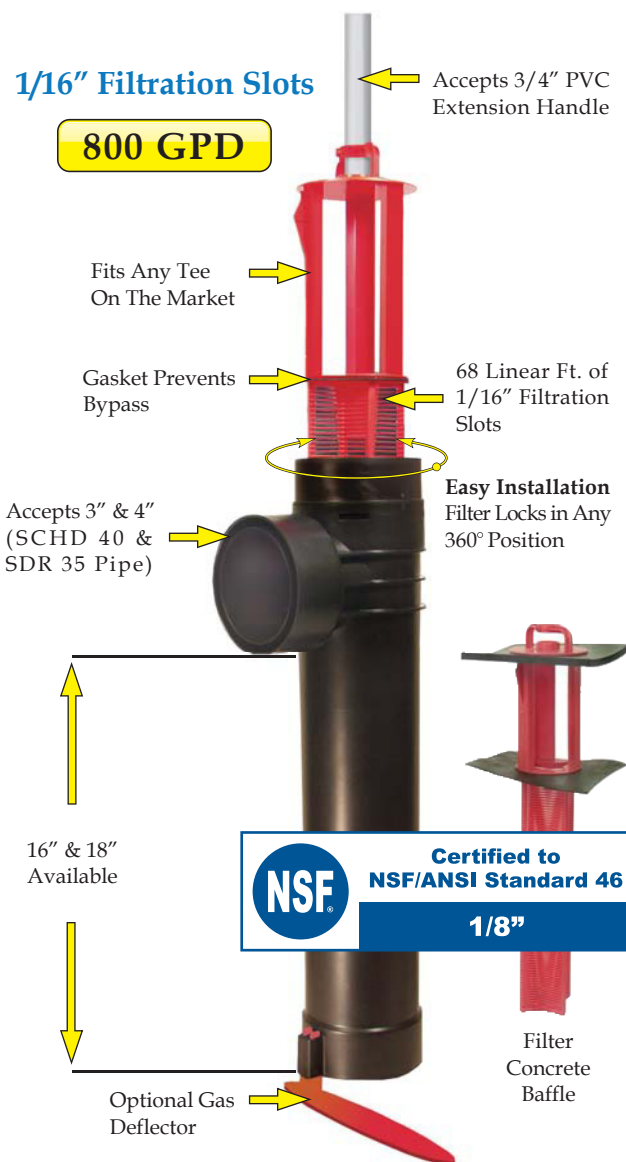
PL-68 Maintenance:

The PL-68 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-68 out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.

Related Products:

PL-68 Filter Concrete Baffle
Extend & Lok™



Extend & Lok™
Easily installs
into existing tanks.



Spacer Bushing
4" SCHD 40
to SDR 35

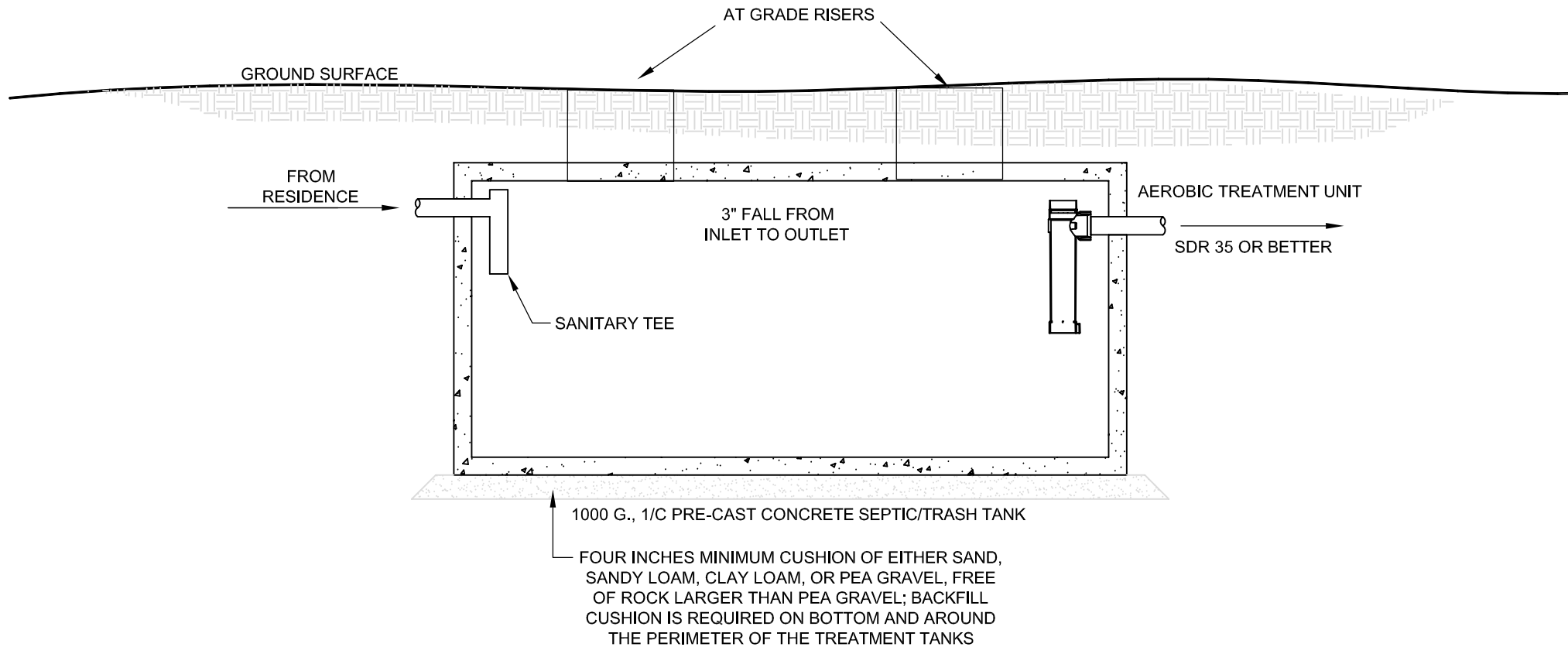


Spacer Bushing
4" SCHD 40
to 110mm Pipe



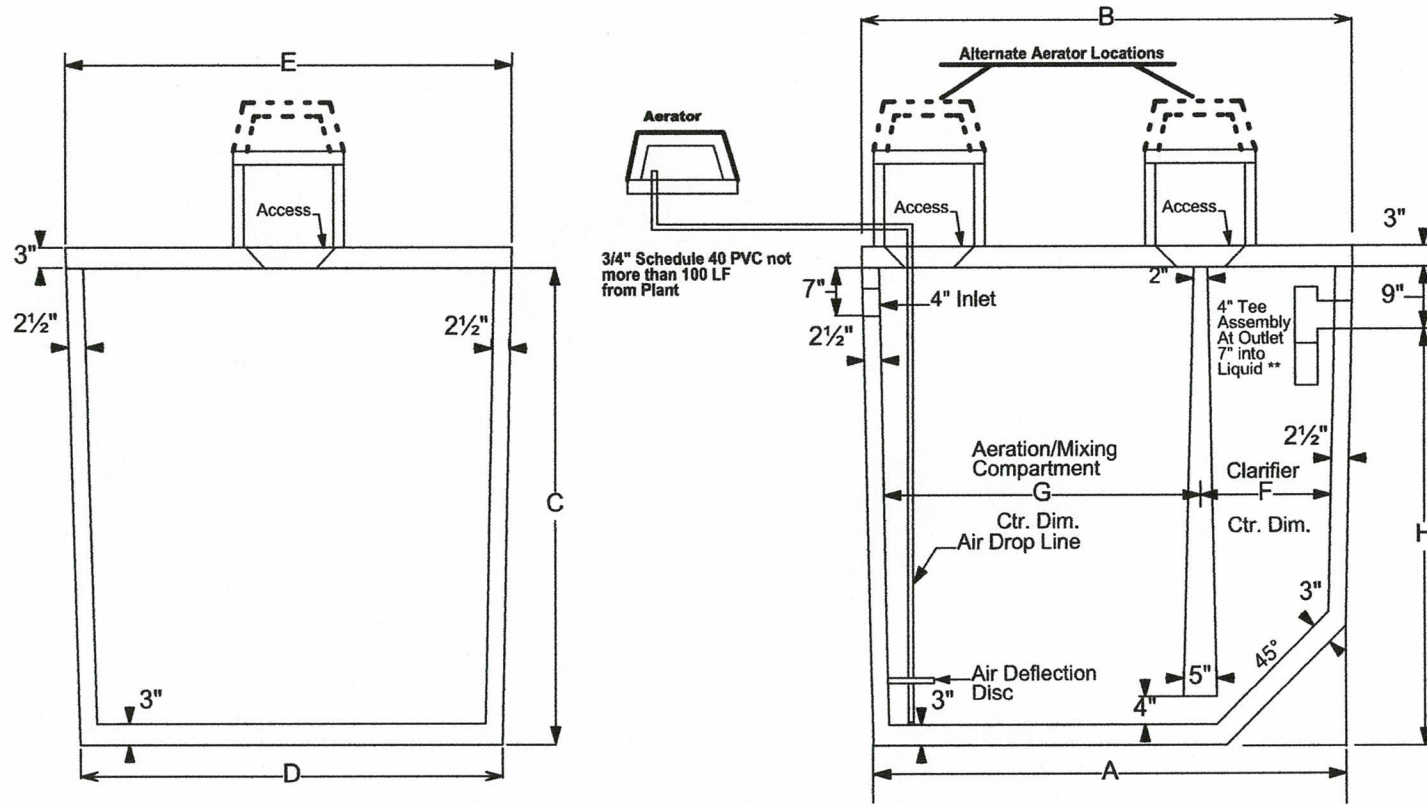
2" Extender

TANK DETAIL
1000 GALLON, SINGLE COMPARTMENT
SEPTIC/TRASH TANK
(SCALE: 1/2" = 1')



AquaAire Sewage Treatment System

Models AA500,600,750, 800,1000, 1200, 1500 In One Piece Tank with Lid



**Extend 10" into liquid depth on AA1500

800 GPD W/1096 PUMP TANK

LENGTH = 161"

WIDTH = 76"

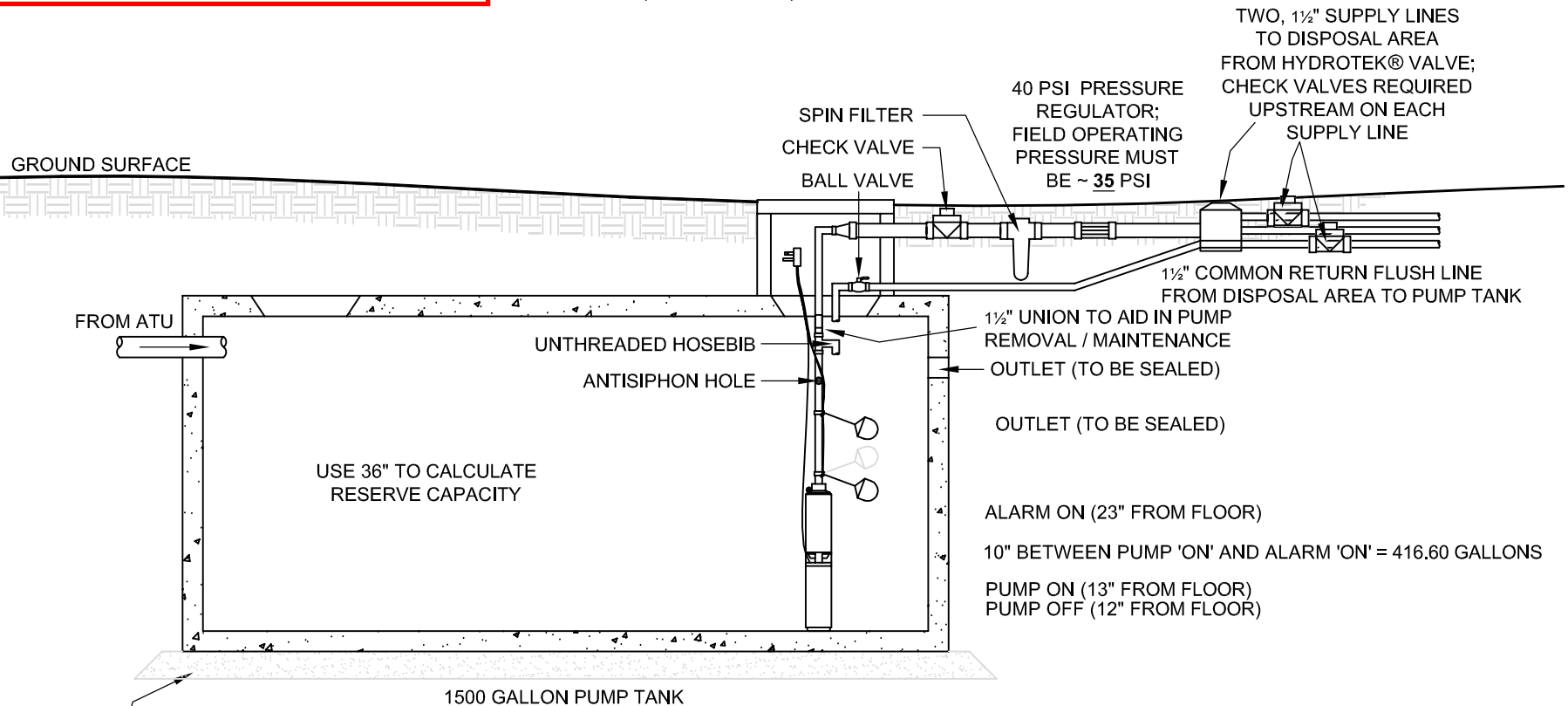
HEIGHT = 72"

Schedule

Designation	Trtmt Capacity	BOD Loading	Total Volume	Aeration Volume	Clarifier Volume	A	B	C	D	E	F	G	H
AA500	500GPD	1.25	748	560	188	68	71	64	60	63	18%	45%	55
AA600	600GPD	1.50	857	642	215	77½	80½	64	60	63	21%	52%	55
AA750	750GPD	1.85	1076	801	275	95½	98½	64	60	63	29%	64%	55
AA1000	1000GPD	2.50	1420	1063	357	111	114	64	71	74	35%	71%	55
AA1500	1500GPD	3.75	2216	1699	517	131	134	74	71	74	37%	89%	65
AA800	800GPD	2.0	1155	858	297	111	114	64	71	74	35%	71%	55
AA1200	1200GPD	3.0	1751	1300	451	131	134	74	71	74	37%	89%	65

**PLANS MUST BE ON SITE
FOR ALL INSPECTIONS**

TANK DETAIL
1500 GALLON PUMP TANK
CROSS SECTION FOR DRIP IRRIGATION DISPOSAL
(SCALE: 1/2" = 1')

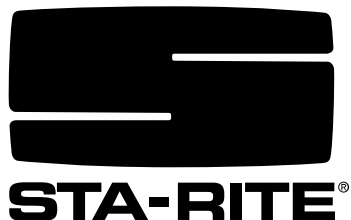


FOUR INCHES MINIMUM CUSHION OF EITHER SAND, SANDY LOAM, CLAY LOAM, OR PEA GRAVEL, FREE OF ROCK LARGER THAN PEA GRAVEL; BACKFILL CUSHION IS REQUIRED ON BOTTOM AND AROUND THE PERIMETER OF THE TREATMENT TANKS

RESERVE CAPACITY:
1500 GALLON PUMP TANK
36 INCH TANK DEPTH = 41.66 GALLONS/INCH
13" (416.60 GALLONS) BETWEEN PUMP ON AND ALARM ON
 $36 - 23 = 13 \times 41.66 = 541.58$ GALLONS RESERVE ABOVE ALARM "ON"
(> ONE-DAY RESERVE = 540 GALLONS)

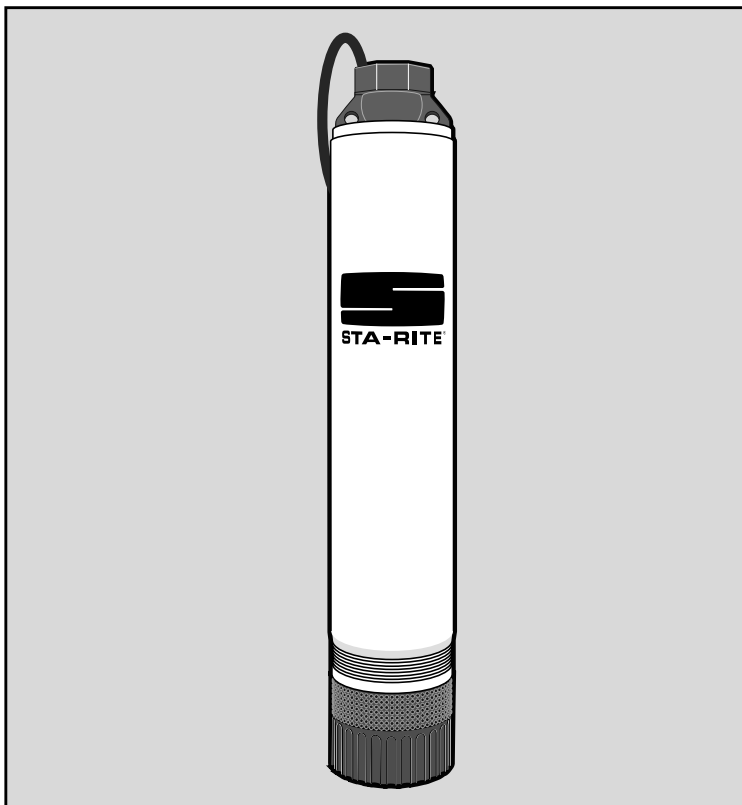
INSTALLER

TIMER TO BE INSTALLED AS SPECIFIED BY MANUFACTURER
SET TIMER TO DOSE:
67.50 GALLONS, 8 TIMES PER DAY;
 $67.50 \text{ GALLONS} / 6.75 \text{ GALLONS/MINUTE} = \sim 10$ MINUTES DURATION
170 MINUTES (2.833 HOURS 'REST' BETWEEN DOSES)



293 Wright Street, Delavan, WI 53115

OWNER'S MANUAL
S.T.E.P. Plus D Series
Submersible Pump



**Models: 10DOM0512I, 10DOM0522I,
20DOM0512I, 20DOM0522I, 20DOM0522I+I,
20DOM0512I+I, 30DOM0512I, 30DOM0522I**

Installation/Operation/Parts

For further operating, installation, or maintenance assistance:

Call 1-262-728-5551

During system operation, pump must be submerged at all times. Pipe joint compound can cause cracking in plastics. Use only teflon tape when sealing joints in plastic pipe or connecting pipe to thermoplastic pumps.

Warranty is void in the following conditions:

- Water is highly corrosive.
- If entrained gas or air present in water being pumped reduce the flow and cause cavitation (which can damage the pump).
- Pump has been operated with discharge valve closed (severe internal damage will result).

ELECTRICAL

Wiring/Grounding

⚠ WARNING Hazardous voltage. Can shock, burn, or cause death. Permanently ground pump, motor and control box before connecting power supply to motor.

Ground pump and motor in accordance with all codes and ordinances that apply. All wiring must meet National Electrical Code and Canadian Electrical Code (whichever applies). Use copper ground wire at least as large as wires carrying current to pump.

Pump is supplied with copper ground wire. Use only copper wire for connections to pump.

Permanently ground pump before connecting power cable to power supply. Connect ground wire to approved ground first, then connect to equipment being installed.

Do not ground to a gas supply line.

Float switches or any other approved motor control must match motor input in full load amperes.

For more information, contact your local code officials.

Installation Wiring Instructions

Pump has two power supply wires (Red/Black) and one ground wire (Green).

Fasten power supply wire leads securely to control panel; leave 4-5" of slack in leads at this point. Securely fasten leads to plastic pipe within 6" of the pump discharge section.

NOTICE: To avoid dropping pump or damaging wires or splices, **NEVER** allow pump wires to support weight of pump.

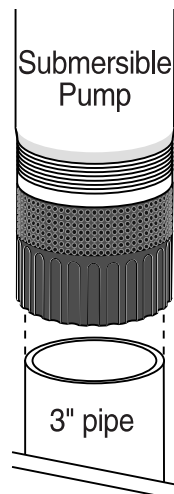


Figure 1: Insert a 3" PVC pipe in the bottom of the motor to raise the pump in the tank.

PUMP INSTALLATION

⚠ WARNING Risk of electrical shock. Do not remove or alter cord. Do not connect conduit to pump.

1. Only qualified personnel should install the pump and associated control equipment.
2. Vent sewage tank according to local code.
3. Do not install pump in any location classified as hazardous by National Electrical Code, ANSI/NFPA 70-1984.
4. These pumps are intended for permanent connection only. Provide strain relief at control panel for power supply cord connection to box. All control components must be UL listed and suitable for end use application.
5. Do not pump flammable liquids, strong caustics, or strong acids with this pump.
6. To prevent dropping pump, lower it by the drop pipe, not by the cables. The electrical cables will not hold the pump weight.
7. Discharge outlet is 1-1/4" NPT threaded.

NOTICE: If installing external check valve, hold discharge with pipe wrench to prevent loosening discharge in shell.

8. If pump is to be operated with an open discharge, a discharge valve *must be installed*. Before startup, open this valve about 1/3 open. Start pump. *Slowly* open valve until the desired flow rate is reached. Final setting must be within pump's recommended operating range.

OPERATION

1. The pump must be submerged at all times during normal operation. **Do not run pump dry.**
2. Make sure that the float switches are set so that the pump stops before the pump runs dry or breaks suction. If necessary, adjust float switches to achieve this.
3. The motor bearings are lubricated internally. No maintenance is required or possible on the pump.

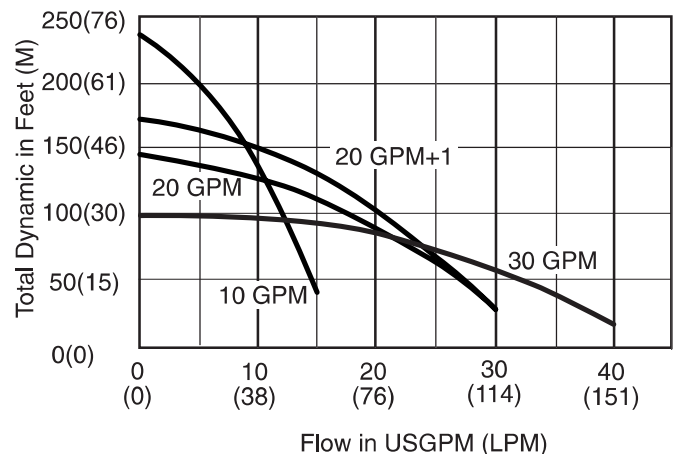


Figure 2: Performance in Feet of Head at Gallons per Minute (M@LPM).

MODEL 217

Aerobic system control panel for systems requiring timed dosing of effluent at repeated intervals ranging from a few seconds to several hours (Repeat Cycle Timer). Includes power circuit for compressor, audible and visual High Water/Low Air Pressure alarms.

Power Specifications:

- Input power:** 120 VAC, 60 Hz, 1 Phase, 20 Amps
Pump: 120 VAC, 20 Amp C/B, 1 Hp max.
Compressor: 120 VAC, 10 Amp C/B, 1/2 Hp max.
Alarm: 120 VAC, 10 Amp C/B, Alarm/Control power.

Control Features:

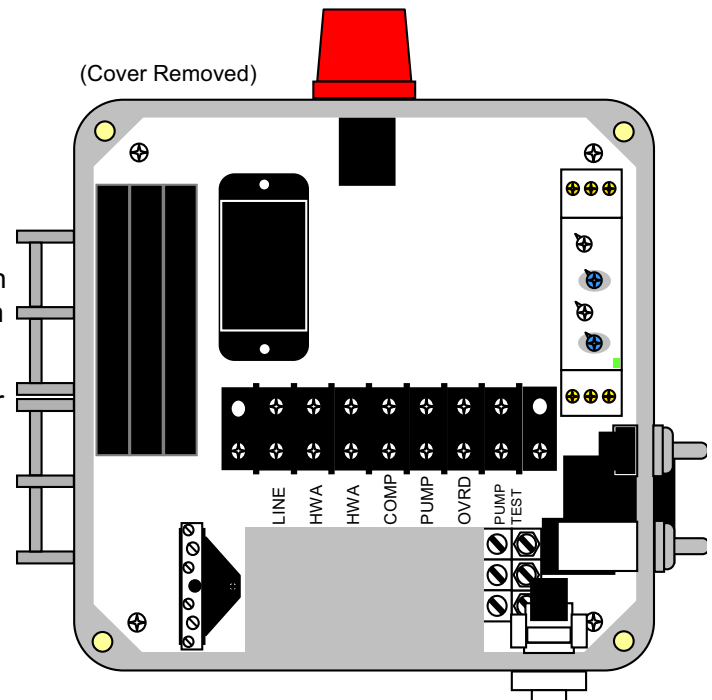
Timer Control: Pump on and off times are individually settable with values ranging from 0.1 second to 100 hours. Override feature turns pump on immediately if water exceeds normal levels (during surges or extended power outages). Includes Pump Test switch to verify operation of the effluent pump.

Individual circuit breakers provide short circuit protection and disconnect feature for compressor, pump and alarm circuits.

Alarm: Visual and audible (90 dB) alarm for High Water and Low Air Pressure faults. Includes Mute/Test switch to verify operation of the alarm circuits and to silence the audible alarm until fault is cleared.

Enclosure: 8"X8"X4" poly enclosure rated NEMA 4X (waterproof)

Certifications: NSF/ANSI Standard 40 approved
UL Listed (UL508A) Control Panel
for USA/Canada



Model 217

System Component Requirements:

- High Water Alarm float – Rated 120VAC, 1 Amp min.
Override float – Rated 120VAC, 20 Amps (1 Hp) min.
Pump float – Rated 120VAC, 20 Amps (1 Hp) min.
Pump – 120VAC, 1 Hp Max, UL approved with internal thermal protection.
Compressor – 120VAC, 1/2 Hp Max, UL approved.



CONTROL PANELS AND ALARMS

A Division of ETI

2247 Hwy 151 North,
Downsville, LA 71234

800-277-8179

email: aquasafe@bayou.com

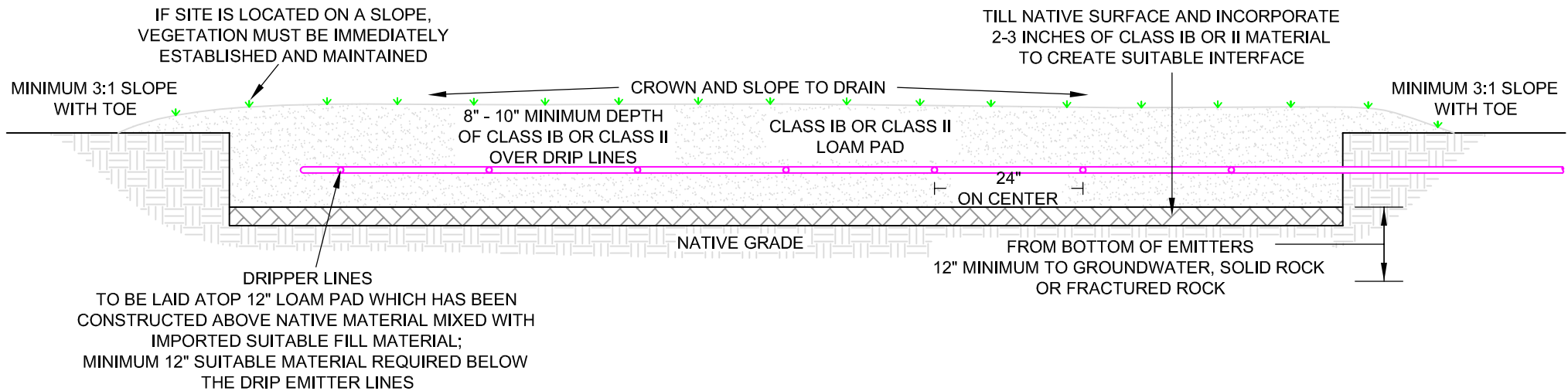
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DRIP IRRIGATION DISPOSAL FIELD IN IMPORTED FILL

TYPICAL CROSS SECTION

(SCALE: 1/2" = 1')

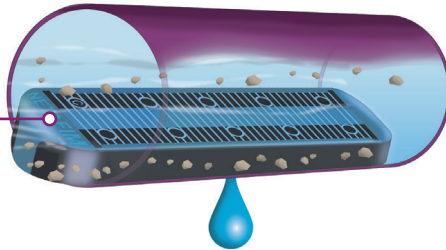


BIOLINE® DRIPPERLINE

THE WORLD'S MOST ADVANCED CONTINUOUS
SELF-CLEANING, PRESSURE COMPENSATING
DRIPPERLINE SPECIFICALLY DESIGNED FOR WASTEWATER

CROSS SECTION OF BIOLINE DRIPPERLINE

Bioline dripper inlets
are positioned in the
center of flow where
water is the cleanest



PRODUCT ADVANTAGES

- Pressure compensation - all drippers deliver equal flow, even on sloped or rolling terrain.
- Unique flow path - Turbonet technology provides more control of water and a high resistance to clogging.
- Continuous self-flushing dripper design - flushes debris, as it is detected - throughout operation, not just at the beginning or end of a cycle. Ensures uninterrupted dripper operation.
- Single hole dripper outlet from tubing:
 - Better protection against root intrusion
 - Allows the dripperline to be used in subsurface applications without need for chemical protection
- Drippers capture water flow from the center of the tubing - ensures that only the cleanest flow enters the dripper.
- Built-in physical root barrier - drippers are protected from root intrusion without the need for chemical protection. Water exits dripper in one location while exiting the tubing in another.
- Three dripper flow rates - provides the broadest range of flow rates available. Allows the designer to match the dripperline to any soil or slope condition.
- Bioline tubing is completely wrapped in purple - easily identifying it for non-potable use, regardless of how the tubing is installed.
- Anti-bacterial-impregnated drippers - prevents buildup of microbial slime.
- Can be used subsurface - Bioline can be installed on-surface, under cover or subsurface.
- No special storage requirements - does not degrade if stored outdoors.
- Techfilter compatible - an optional level of protection, provides a limited lifetime warranty against root intrusion.

APPLICATIONS

- Typically installed following a treatment process
- Can be used with domestic septic tank effluent with proper design, filtration and operation
- Reuse applications including municipally treated effluent designated for irrigation and other disinfected and non-disinfected water sources.

SPECIFICATIONS

- Dripper flow rates: 0.4, 0.6 or 0.9 GPH
- Dripper spacings: 12", 18" or 24" dripper spacings and blank tubing
- Pressure compensation range: 7 to 70 psi (stainless steel clamps recommended above 50 psi)
- Maximum recommended system pressure: 50 psi
- Tubing diameter: 0.66" OD, 0.57" ID
- Tubing color: Purple color indicates non-potable
- Coil lengths: 500' or 1,000' (Blank tubing in 250')
- Recommended filtration: 120 mesh
- Bending radius: 7"
- UV resistant
- Tubing material: Linear low-density polyethylene

Additional spacing and pipe sizes available by special order. Please contact Netafim USA Customer Service for details.

BIOLINE DRIPPERLINE

MAXIMUM LENGTH OF A SINGLE LATERAL WITH 3.0 fps FLUSH VELOCITY

ADDITIONAL FLOW OF 2.3 GPM REQUIRED PER LATERAL TO ACHIEVE 3 fps

DRIPPER SPACING		12"			18"			24"		
DRIPPER FLOW RATE (GPH)		0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH
INLET PRESSURE	15	102	94	84	136	127	113	161	151	137
	25	151	136	118	203	184	161	245	223	197
	35	193	171	146	260	232	200	315	283	245
	40	211	186	158	286	254	218	347	311	267
	45	228	200	169	310	274	233	377	335	287
Flow per 100' (GPM / GPH)		0.67/40	1.02/61	1.53/92	0.44/26.67	0.68/41	1.02/61	0.34/20	0.51/31	0.77/46

Lateral lengths are based on flows allowing for a 3 fps flushing/scouring velocity

MAXIMUM LENGTH OF A SINGLE LATERAL WITH 2.5 fps FLUSH VELOCITY

ADDITIONAL FLOW OF 2.0 GPM REQUIRED PER LATERAL TO ACHIEVE 2.5 fps

DRIPPER SPACING		12"			18"			24"		
DRIPPER FLOW RATE (GPH)		0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH
INLET PRESSURE	15	128	115	100	172	155	136	205	187	165
	25	183	161	137	248	220	188	301	268	231
	35	228	198	166	310	272	229	379	333	283
	40	248	214	178	338	295	247	413	362	305
	45	266	229	190	364	316	263	447	389	327
Flow per 100' (GPM / GPH)		0.67/40	1.02/61	1.53/92	0.44/26.67	0.68/41	1.02/61	0.34/20	0.51/31	0.77/46

Lateral lengths are based on flows allowing for a 2.5 fps flushing/scouring velocity

MAXIMUM LENGTH OF A SINGLE LATERAL WITH 2.0 fps FLUSH VELOCITY

ADDITIONAL FLOW OF 1.6 GPM REQUIRED PER LATERAL TO ACHIEVE 2.0 fps

DRIPPER SPACING		12"			18"			24"		
DRIPPER FLOW RATE (GPH)		0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH
INLET PRESSURE	15	161	141	119	217	191	164	263	233	201
	25	221	190	157	302	261	218	369	321	270
	35	269	229	187	370	316	260	455	391	324
	40	290	246	200	399	340	278	493	421	347
	45	310	261	212	427	362	296	527	449	369
Flow per 100' (GPM / GPH)		0.67/40	1.02/61	1.53/92	0.44/26.67	0.68/41	1.02/61	0.34/20	0.51/31	0.77/46

Lateral lengths are based on flows allowing for a 2 fps flushing/scouring velocity

MAXIMUM LENGTH OF A SINGLE LATERAL WITH 1.5 fps FLUSH VELOCITY

ADDITIONAL FLOW OF 1.2 GPM REQUIRED PER LATERAL TO ACHIEVE 1.5 fps

DRIPPER SPACING		12"			18"			24"		
DRIPPER FLOW RATE (GPH)		0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH
INLET PRESSURE	15	201	171	140	275	235	194	337	289	241
	25	266	222	179	366	308	251	453	383	313
	35	316	262	210	437	365	295	543	455	369
	40	337	280	223	469	391	313	583	487	393
	45	358	296	235	497	413	331	619	517	415
Flow per 100' (GPM / GPH)		0.67/40	1.02/61	1.53/92	0.44/26.67	0.68/41	1.02/61	0.34/20	0.51/31	0.77/46

Lateral lengths are based on flows allowing for a 1.5 fps flushing/scouring velocity

MAXIMUM LENGTH OF A SINGLE LATERAL WITH 1.0 fps FLUSH VELOCITY

ADDITIONAL FLOW OF 0.8 GPM REQUIRED PER LATERAL TO ACHIEVE 1.0 fps

DRIPPER SPACING		12"			18"			24"		
DRIPPER FLOW RATE (GPH)		0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH
INLET PRESSURE	15	248	205	163	344	285	228	427	355	285
	25	315	258	203	440	361	286	549	453	359
	35	367	299	234	513	419	331	643	527	417
	40	389	316	248	545	445	350	683	559	441
	45	409	332	260	574	468	367	721	589	463
Flow per 100' (GPM / GPH)		0.67/40	1.02/61	1.53/92	0.44/26.67	0.68/41	1.02/61	0.34/20	0.51/31	0.77/46

Lateral lengths are based on flows allowing for a 1 fps flushing/scouring velocity

MAXIMUM LENGTH OF A SINGLE LATERAL WITH 0.5 fps FLUSH VELOCITY

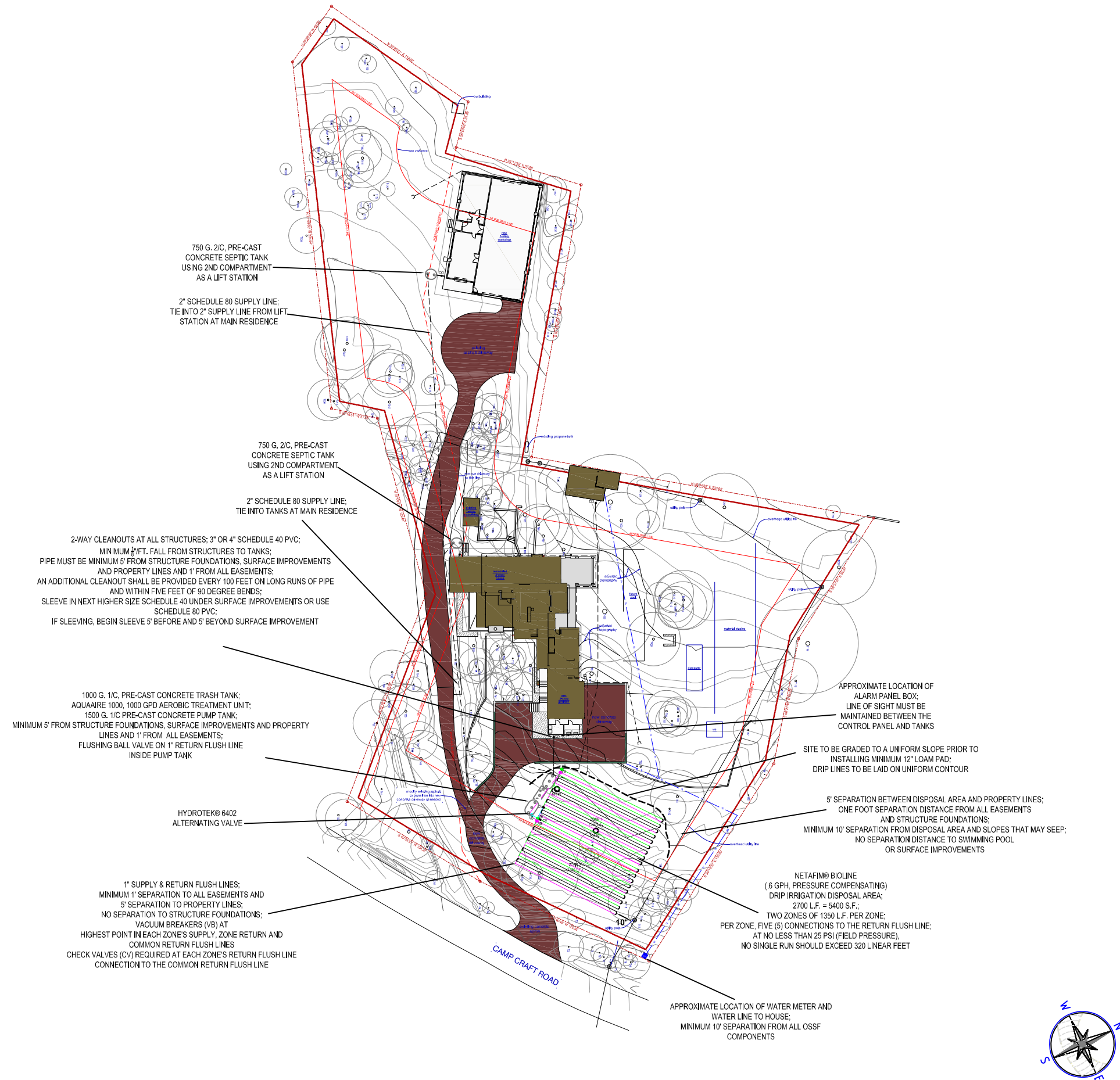
ADDITIONAL FLOW OF 0.4 GPM REQUIRED PER LATERAL TO ACHIEVE 0.5 fps

DRIPPER SPACING		12"			18"			24"		
DRIPPER FLOW RATE (GPH)		0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH	0.4 GPH	0.6 GPH	0.9 GPH
INLET PRESSURE	15	301	242	188	422	341	265	531	429	335
	25	369	296	228	520	418	323	655	527	409
	35	421	337	260	595	476	368	749	603	467
	40	443	354	273	626	501	387	790	635	491
	45	464	371	285	656	524	404	829	665	513
Flow per 100' (GPM / GPH)		0.67/40	1.02/61	1.53/92	0.44/26.67	0.68/41	1.02/61	0.34/20	0.51/31	0.77/46

Lateral lengths are based on flows allowing for a 0.5 fps flushing/scouring velocity

Netafim recommends flushing velocities capable of breaking free any accumulated bioslimes and debris in the piping network.

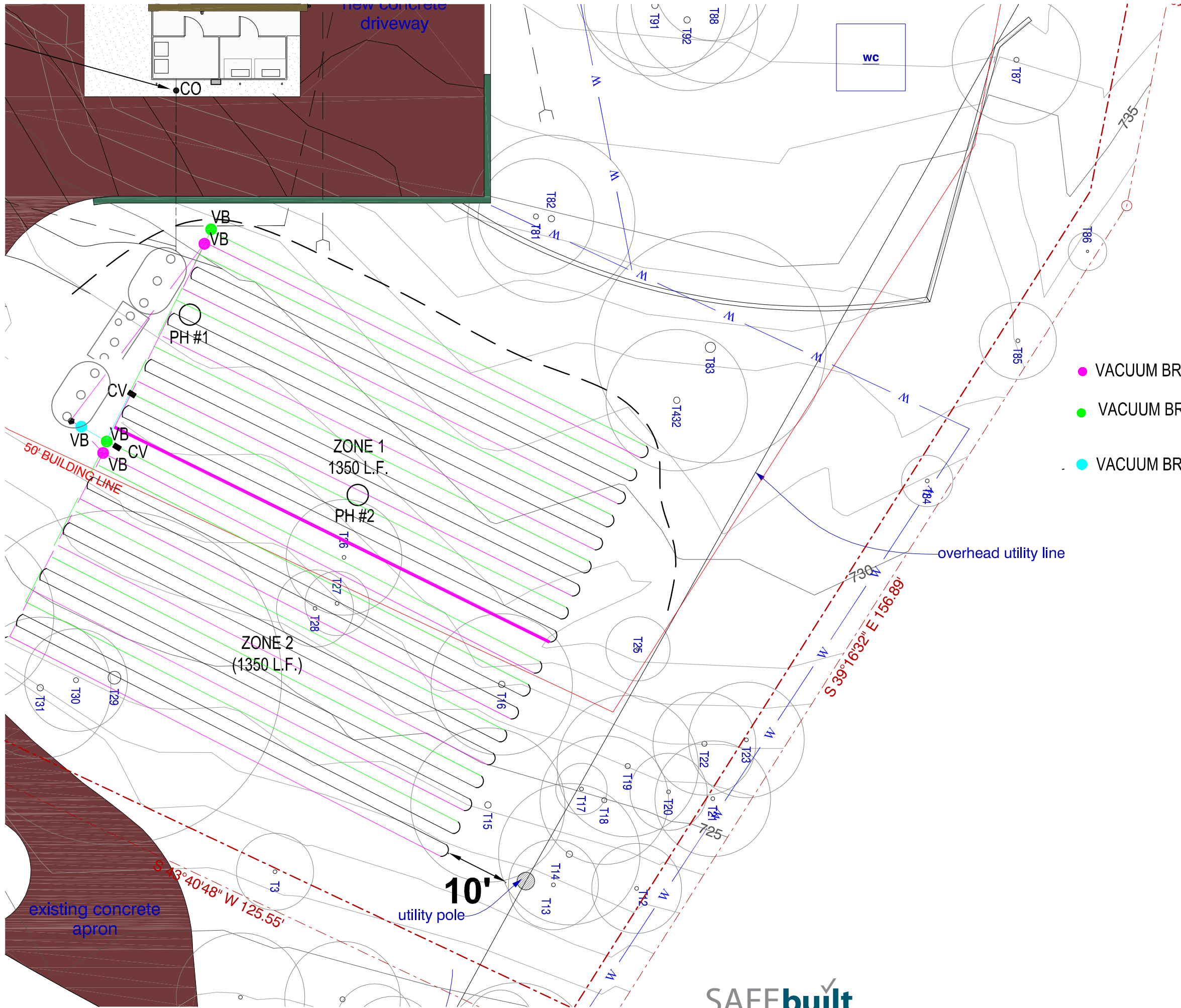
- Notes:
1. Refer to local regulations for information on flushing velocities that may be written into codes.
 2. Netafim does not endorse a specific flushing velocity.
 3. Flushing velocities should be determined based on regulations, quality of effluent, and type of flushing control.
 4. Using a flushing velocity less than 1 fps does not provide turbulent flow as defined by Reynolds Number.
 5. Higher flushing velocities provide more aggressive flushing.



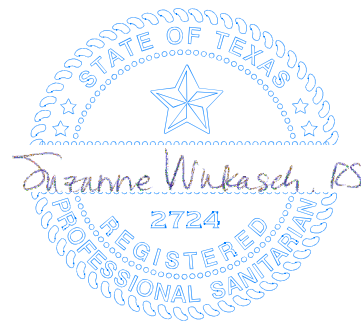
SITE PLAN

SCALE: 1" = 75'

LOT 2, RESUB OF OAK HOLLOW
CONFIRMING PLAT
LEE RESIDENCE
402 CAMP CRAFT ROAD
MAY 17, 2022
PREPARED BY:
SUZANNE WUKASCH, R.S.

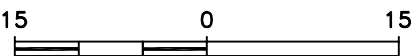


- VACUUM BREAKER - SUPPLY
- VACUUM BREAKER - RETURN
- VACUUM BREAKER - COMMON
- CHECK VALVE
- SUPPLY LINES
- ZONE RETURN FLUSH LINES
- COMMON RETURN FLUSH LINE



DETAIL SITE PLAN

SCALE: 1" = 15'



LOT 2, RESUB OF OAK HOLLOW
LEE RESIDENCE
402 CAMP CRAFT ROAD
MAY 17, 2022
PREPARED BY:
SUZANNE WUKASCH, R.S.

DATE: _____
Applicant Information:
Name: _____
Address: _____
City: _____ State: _____
Zip Code: _____ Phone: _____ Fax: _____

OSSF NUMBER: _____
Site Evaluator Information:
Name: _____
Address: _____
City: _____ State: _____
Zip Code: _____ Phone: _____ Fax: _____

Property Location:
Lot: _____ Block: _____ Subdivision: _____
County: _____ Unincorporated Area? **Y N**
City: _____ Zip Code: _____
Additional Information: _____

Installer Information:
Name: _____
Address: _____
City: _____ State: _____
Zip Code: _____ Phone: _____ Fax: _____

Schematic of Lot or Tract

Show:
Compass North, adjacent streets, property lines, property dimensions, location of buildings, easements, swimming pools, water lines, and other structures where known.
Location of existing or proposed water wells within 150 feet of property.
Indicate slope or provide contour lines from the structure to the farthest location of the proposed soil absorption or irrigation area.
Location of soil borings or dug pits (show location with respect to a known reference point).
Location of natural, constructed, or proposed drainage ways, (streams, ponds, lakes, rivers, high tide of salt water bodies) water impoundment areas, cut or fill bank, sharp slopes and breaks.

Lot size (acres): _____

SITE DRAWING

Scale: 1 inch = 50 feet



Show
Compass
North

Based on this site evaluation, the following systems may be utilized:

- | | | |
|---------------------------------------|--|---|
| ☐ CONVENTIONAL | ☐ LEACHING CHAMBER | ☐ SURFACE IRRIGATION |
| ☐ DRIP | ☐ LPD | ☐ OTHER |
| ☐ ET | ☐ MOUND | |
| ☐ GRAVELESS | ☐ SOIL SUBSTITUTION | |

Features of Site Area

Presence of 100 year flood zone	Yes _____	No _____
Presence of upper water shed	Yes _____	No _____
Presence of adjacent ponds, streams, water impoundments	Yes _____	No _____
Existing or proposed water well in nearby area	Yes _____	No _____
Organized sewage service available to lot or tract	Yes _____	No _____
EARZ features within 150' of OSSF	Yes _____	No _____
Evidence of groundwater	Yes _____	No _____

Site Evaluator:

Name: _____

Signature: SUZANNE WUKASCH

License No.: _____

OSSF SOIL EVALUATION

PLANS MUST BE ON SITE
FOR ALL INSPECTIONS

Date Performed: _____

Property Location: _____

Proposed Excavation Depth: _____

Name of Site Evaluator: _____

License Number: _____

Requirements:

At least two soil excavations must be performed on the site, at opposite ends of the proposed disposal area. Locations of soil borings or dug pits must be shown on the site drawing.

For subsurface disposal, soil evaluations must be performed to a depth of at least two feet below the proposed excavation depth. For surface disposal, the surface horizon must be evaluated.

Describe each soil horizon and identify any restrictive features on the form. Indicate depths where features appear.

Soil Boring Number: _____

Depth (Inches)	Textural Class	Structure (If applicable)	Drainage (Mottles/Water Table)	Restrictive Horizon	Observations
0"					
12"					
24"					
36"					
48"					
60"					

Soil Boring Number: _____

Depth (Inches)	Textural Class	Structure (If applicable)	Drainage (Mottles/Water Table)	Restrictive Horizon	Observations
0"					
12"					
24"					
36"					
48"					
60"					

I certify that the findings of this report are based on my field observations and are accurate to the best of my ability.

Site Evaluator:

Name: _____

Signature: SUZANNE WUKASCH

License No.: _____