





GENERAL DESIGN INFORMATION

Justification for Proposed Erosion Control Measures at 1087 Lawnes Neck Drive, Smithfield, VA

General Site Description:

The site, owned by Michael and Tonya Everett, is located at 1087 Lawnes Neck Drive in the Lawnes Point on the James (LPOJ) subdivision. The property is approximately 640 feet deep and 150 feet wide, bordering the James River on its eastern side, and is permitted for a 6,439 SF single-family residence (see approved site plan in Fig. 1). In general, the lot is a relatively flat forestland of mixed hardwoods and conifers at an elevation of approximately 30-35 feet above MSL. At the eastern end of the site, the land drops abruptly down to the James River. The existing embankment down to the river is very steep in sections with clear indications of active, detrimental erosion from wave energy along the shoreline and runoff at the upland end. In approximately the 2006-2009 timeframe, the LPOJ developer (Virginia Timberline, LLC) cleared the embankment of all indigenous vegetation and installed a riprap revetment along the shoreline. The revetment subsequently failed (likely due to poor design) with indications of scouring behind the top of the revetment, causing slumping of the overall structure towards the beach. The remnant riprap from the failed revetment is scattered along the beach. Note there are no indications that appropriate mitigation plantings were performed after the indigenous riparian vegetation buffer was cleared from the embankment by the developer. As a result, much of the embankment is now covered with "volunteer" pine saplings that have grown during the past ~ 10 years.

Ongoing Erosion Concerns:

Shoreline

The VIMS Shoreline Evolution Map shows the historical erosion rate for this area is less than 1 foot per year based on the period 1937-2009. However, Milligan et al. (2010) indicate much higher erosion rates based on data from more recent time periods (see Milligan et al.'s Table 2, segment 2 shown below). For example, during 1994-2009 the average annual erosion rate for the Lawnes Neck shoreline was 1.7 feet per year. Of particular note, the Milligan et al. (2010) study found an extreme erosion rate of 5.5 feet per year during 2007-2009. Anecdotal reports from current residents of LPOJ indicate that the erosion rate over the past 10 years is at least 2 feet per year. Located on the main stem of the James River, this site is exposed to significant wave and tidal action. The shoreline has a northerly fetch of approximately 6.5 miles, which puts it in the classification of "high-energy shorelines" (DCR, *Shoreline Management in the Chesapeake Bay*). Therefore, this shoreline is particularly susceptible to severe erosion during intense, high-energy storms such as northeasters and hurricanes, with periods of intense northeaster winds.

Channel	Station	1937	1949	1961	1973	1985	1997	2009	2011	2013	2015	2017	2019	2021	2023
1	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
3	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
4	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
5	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
7	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
8	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
9	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
10	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
11	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
12	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
14	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
15	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
16	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
17	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
18	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
19	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
20	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
21	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
22	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
23	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
24	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
25	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
26	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
27	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
28	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
29	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
30	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 2 from Milligan et al. (2010). The Lawnes Neck shoreline is located in Segment 2.

The remnant riprap from the failed revetment resides on the beach (Fig. 2). Evidence of active, detrimental erosion at the shoreline is clear. The bottom of the embankment has been undercut and eroded by continuous wave energy, resulting in a 3-4 feet drop off across the entire shoreline (see examples in Figs. 3-4). Without implementing appropriate control measures, this erosion will continue unabated and significant loss of shoreline is possible during severe storms.



Figure 2. Riprap from failed revetment on the beach.



Figure 3. Example of undercutting of shoreline bank.



Figure 4. Example of fastland erosion at base of embankment.

Top of Embankment

The high bank shoreline (upland elevation > 30 feet above MLW) at this site is characterized by a steep, eroding bluff face at the top of the embankment with large areas of bare, unstable soils. The RPA extends inland approximately 40-50 feet from the top of the bluff and is covered with scattered hardwood canopy trees. A number of the canopy trees are located very close to the edge of the bluff and their root systems have been undermined by erosion (e.g. see Fig. 6). These are at risk to collapse down the bank, exacerbating the erosion and further destabilizing the slope. The embankment itself is essentially devoid of groundcover, with the only vegetation being "volunteer" pine saplings that have grown on the bank over the past 10 years since it was cleared of its indigenous vegetation by the developer (Fig. 5). The existing vegetation is insufficient to accomplish the three functions of retarding runoff, preventing erosion and filtering non-point pollution. Runoff from the woodlands above the embankment flows unabated to the shoreline below, transporting sediment into the James River. Furthermore, if these pine saplings are allowed to mature, they will be vulnerable to blow-down during high wind events, ripping holes in the embankment and further destabilizing the slope. Construction of the house on the site above the embankment will decrease the area of permeable surfaces, potentially increasing the volume of runoff from the uplands. Unless appropriate control measures are implemented and an effective vegetative buffer installed, the top edge of the bank will continue to migrate inland with forestland destruction and sediment flow associated with runoff will continue into the river. Figures 6 show examples of the impact of the active erosion at the top of the embankment.

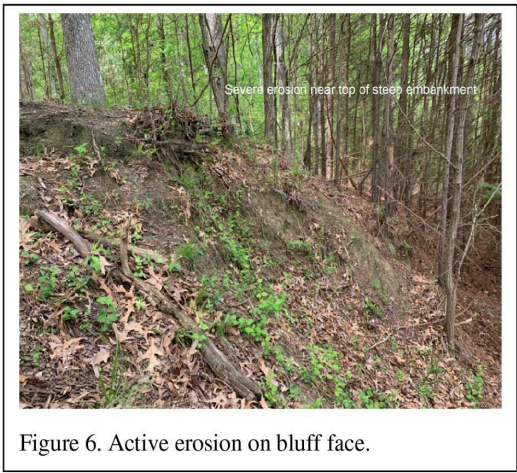


Figure 6. Active erosion on bluff face.

Proposed Erosion Control Measures:

To both protect the shoreline from erosion due to wave energy and to stabilize the bluff at the top of the embankment, we propose a comprehensive set of erosion control measures. First, the embankment will be cleared of the pine saplings and graded to a 2:1 slope. The lower portion of the graded embankment will then be hardened with a stone revetment extending to an elevation of 11 feet above MLW to protect the shoreline from wave energy associated with intense storms. The upper portion of the graded embankment will be replanted with an appropriate vegetative cover to re-establish a quality, functioning riparian buffer. Note that the RPA extends inland approximately 40-50 feet from the top of the bluff and only selected removal of trees in this portion of the RPA is planned.

The specific erosion control measures to be implemented are:

Shoreline

Install a riprap revetment on the reggraded embankment with 2:1 slope as shown in Fig. 9. The revetment will extend from near MHW to an elevation of 11 feet above MLW. This will protect the shoreline against impacts from 100-year storm intensities. The remnant riprap from the failed revetment will be left on the beach to act as an apron providing additional protection to the shoreline.

“While it may not be sensible to plant large canopy trees in the area adjacent to the structure, the Regulations require that this area be planted in vegetation other than a maintained lawn. Small trees, low-growing shrubbery, and native groundcovers are an excellent choice for planting in these sloped areas.”

and

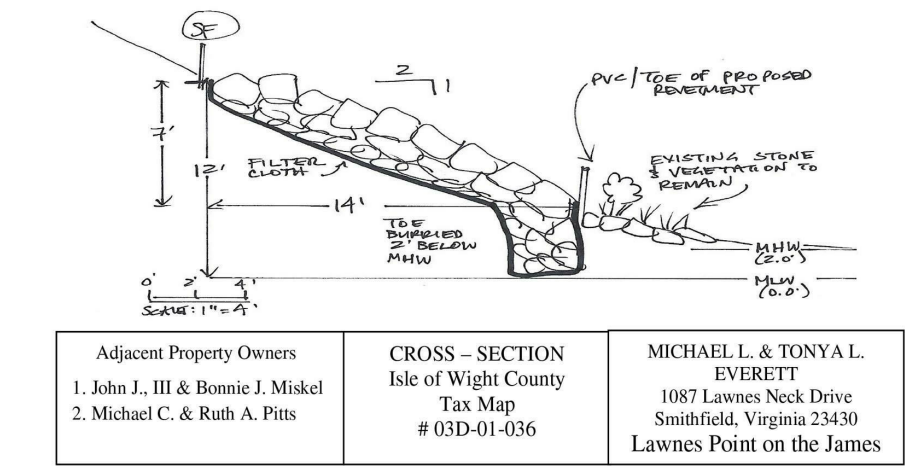


Figure 9. Proposed revetment design.

Embankment

The steep embankment will be cleared of the pine saplings and reggraded to achieve a 2:1 slope above the new revetment structure. The riparian buffer will be re-established with appropriate vegetation to protect and stabilize the embankment. A schematic of the current vegetation within the RPA is shown in Fig. 10. Note that most of the canopy trees in portions of the RPA above the top of the bluff will be left in place. Only trees with exposed root systems located near the edge of the bluff will be removed as necessary. The replanting will follow to guidelines set forth in DCR's *Riparian Buffers Modification & Mitigation Guidance Manual* (hereafter referred to simply as the *Guidance Manual*).

The following passages in the *Guidance Manual* indicate that best practice is to NOT plant canopy trees on the embankment near the revetment:

“While it may not be sensible to plant large canopy trees in the area adjacent to the structure, the Regulations require that this area be planted in vegetation other than a maintained lawn. Small trees, low-growing shrubbery, and native groundcovers are an excellent choice for planting in these sloped areas.”

and

“Planting woody vegetation on 2:1 slopes is acceptable. However, large species should be kept away from shoreline hardening and BMPs. Trees should also be kept back from shading shoreline marsh vegetation or submerged aquatic vegetation (SAV).”

Therefore, we propose to replant the disturbed area above the revetment with a combination of native grasses and shrubs as shown in the landscaping plan in Fig. 11. To minimize potential erosion of the newly graded embankment, the planting will occur immediately after the final grade is reached and mulch will be spread to protect against erosion while the new vegetation becomes established. Selected removal of canopy trees growing in the RPA above the bluff will be mitigated based on guidelines for replacement set forth in the *Guidance Manual*.

Figure 12 shows the access path to the project. A construction road to the home site will already be in place. It will be extended out to the project location with the exact path selected to minimize additional tree removal. The access path will be approximately 10-15 feet wide.

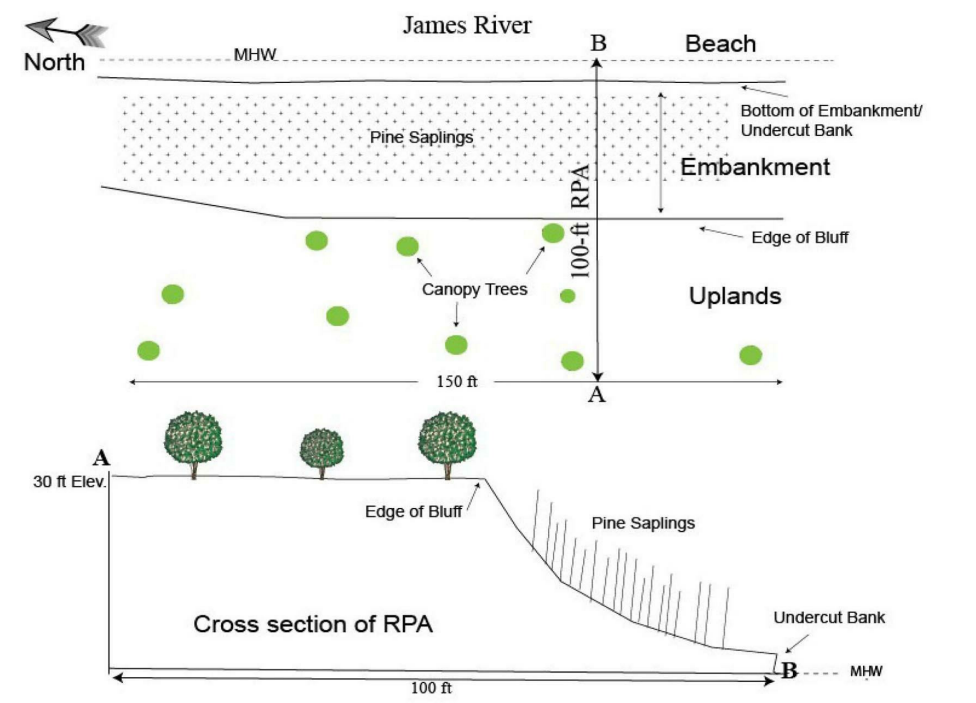


Figure 10. Schematic showing existing vegetation and terrain in RPA.

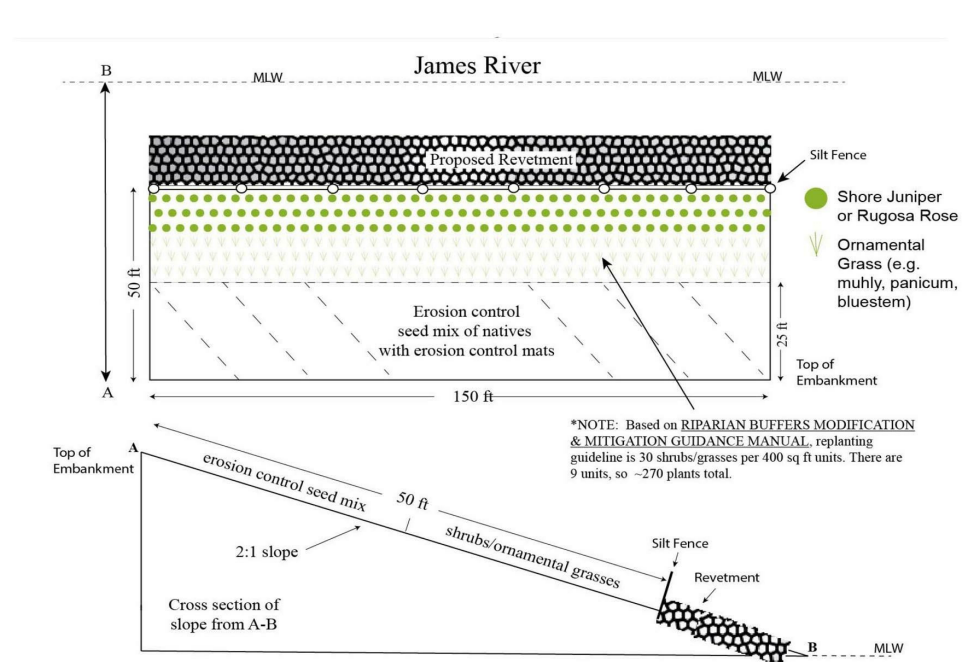


Figure 11. Proposed planting mitigation on embankment.

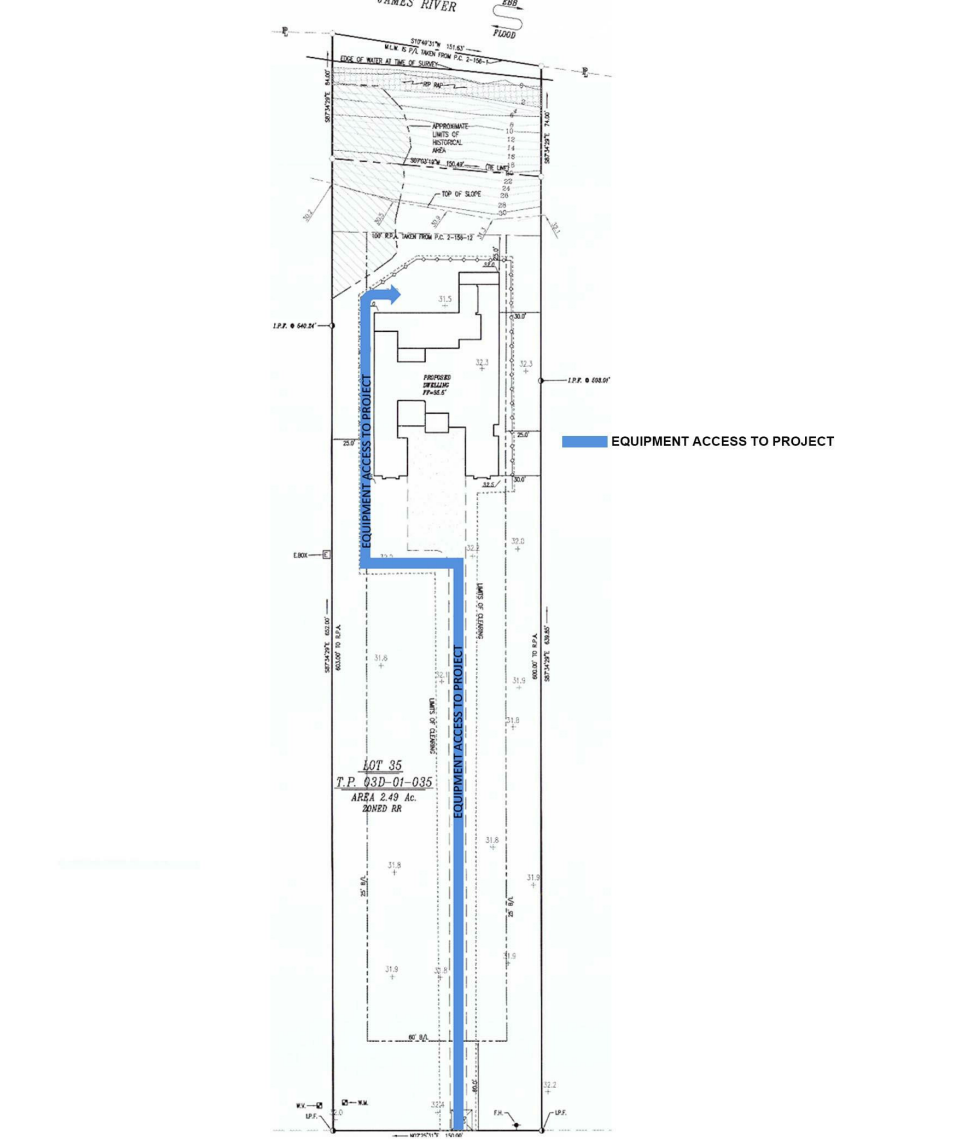


Figure 12. Equipment access path to project.

Project's consistency with the local Bay Act program based on the 8 review criteria for shore erosion control projects as listed in the Guidance Manual.

1. Are the proposed erosion control measures necessary, based on site conditions?

IOW: The Shoreline Erosion Advisory Service (SEAS) has stated that erosion is happening at a rate of less than one foot per year, based on data from the Shoreline Evolution Map produced by the Virginia Institute of Marine Science. This project needs input from a shoreline engineer or other qualified erosion control professional who can verify that this erosion control project is necessary.

Response: As discussed in detail above in **Ongoing Erosion Concerns**, active, detrimental erosion is clearly evident at both the James River shoreline and on the bluff above the failed revetment and wetlands. Based on VIMS data analyses, the average rate of shoreline erosion at this site was nearly 2 feet per year from 1994-2009 and a remarkable 5.5 feet per year during

2007-2009 (Milligan et al., 2010). Located on the main stem of the James River, this site is exposed to significant wave and tidal action. The shoreline has a northerly fetch of approximately 6.5 miles, which puts it in the classification of "high-energy shorelines" (DCR, *Shoreline Management in the Chesapeake Bay*). Therefore, this shoreline is particularly susceptible to severe erosion during intense, high-energy storms such as northeasters and hurricanes, with periods of intense northeaster winds.

The bottom of the shoreline embankment has been undercut and eroded by continuous wave energy, resulting in a 3-4 feet drop off across the entire shoreline. At the top of the embankment, there is a steep, eroding bluff face with large areas of bare, unstable soils. The embankment is essentially devoid of groundcover, with the only vegetation being "volunteer" pine saplings that have grown on the bank over the past 10 years since being cleared of its indigenous vegetation by the developer. The existing vegetation is insufficient to accomplish the three functions of retarding runoff, preventing erosion and filtering non-point pollution. To both protect the shoreline and embankment from continued erosion and establish a functional riparian buffer, the proposed erosion control measures are both necessary and reasonable.

The project has received extensive input from a number of shoreline engineers and marine scientists. Mr. Michael Vanlandingham and Mr. Aaron Wendt, both Shoreline Engineers with the Department of Conservation and Recreation (DCR) visited the site in July 2019 at the invitation of the landowner. Mr. Vanlandingham has provided ongoing guidance to the project since July 2019 and verifies that the erosion control project is necessary to prevent significant loss of shoreline and erosion of the upland bluff. Ms. Donna Milligan, Marine Scientist at VIMS, documented in her Milligan et al. (2010) report titled "Shoreline Evolution: Isle of Wight, Virginia James River and Pagan River Shorelines" that shoreline erosion rates at this site are close to 2 feet per year since 1994 and can be much larger in some years, confirming the necessity of erosion control measures.

2. Does the proposed project utilize the best available technical advice?

IOW: As stated in the *Guidance Manual*, "in order to be consistent with the Regulations, a shoreline erosion control measure must be based on the 'best available technical advice.' The applicant should seek the advice of a shoreline engineer or some other erosion control specialist such as staff from the Department of Conservation and Recreation."

Response: The IOW County's implication here is that this project has not sought nor utilized the advice of experts in shoreline management. In reality, the opposite is true. Most importantly, the project has received extensive guidance from Mr. Michael Vanlandingham, Shoreline Engineer with the DCR. Mr. Vanlandingham performed a site visit in July 2019 and has since provided ongoing guidance to the applicants on appropriate erosion control measures and their design and implementation. In fact, all the erosion control measures proposed in this application are directly based on the recommendations from Mr. Vanlandingham. We also are utilizing the "best available technical advice" as represented by the VIMS shoreline erosion rates published in Milligan et al. (2010). In addition to Mr. Vanlandingham, the applicants have received advice on best shoreline stabilization options from Ms. Rachael Peabody, Habitat Engineer at VMRC (Virginia Marine Resources Commission). Finally, our project consultant, Ms. Karla Havens, has extensive experience in the shoreline management, serving as an Environmental Engineer with the City of Norfolk for 10 years where she managed wetland, coastal primary sand dune, beaches and CBPA Programs; as well as advised the public, processed permits, conducted public hearings, workshops and public presentations.

The applicants have also consulted with numerous marine contractors (all of which visited the site), including Mr. Robert Simon (Waterfront Consulting, Inc), Mr. Kevin Pankoke (Pankoke Marine Construction), and Mr. Joe Foulis (Waterfront Construction and Design, Inc). All of these marine contractors have extensive experience in design and installation of shoreline stabilization measures in the Tidewater Virginia area. They all recommended similar measures as we propose in our application. Mr. Joe Foulis (Waterfront Consulting, Inc.) designed the proposed revetment shown in Fig. 9.

3. Has indigenous vegetation been preserved to the maximum extent practicable?

IOW: This project proposes to remove all vegetative cover from the embankment and then treat with a riprap revetment and planting. Yet SEAS is recommending that there be only selective cutting or trimming of vegetation from within 25 feet of the embankment edge. Please present a plan that incorporates this recommendation and that preserves the existing vegetative cover as much as possible.

Response: IOW's perspective on this point seems out of context. The SEAS report referred to by IOW was written by Mr. Vanlandingham shortly after his site visit in July 2019. This initial report was based on the assumption that Mr. Pitts (the applicant) only wanted to replace the failed revetment. Mr. Vanlandingham subsequently amended his report to recommend grading and replanting of the steep bank in addition to installing the riprap revetment as a more comprehensive solution that would stabilize both the shoreline and embankment. Mr. Vanlandingham has confirmed to IOW County his full support for the proposed project in conversations with Ms. Kim Hummel (IOW County Environmental Planning Office). A letter of support from Mr. Vanlandingham is available upon request.

The scope of this project is consistent with approved ongoing and past shoreline stabilization projects along the James River in IOW County. The existing vegetative cover on the embankment consists almost exclusively of pine saplings that grew on the bank after it was cleared of all indigenous vegetation about 10 years ago by the LPOJ developer. There is no groundcover on the embankment and the pine sapling stand is not an effective riparian buffer and does not stop erosion from runoff on the bluff. If these pine saplings are allowed to mature, they will be vulnerable to blow-down during high wind events, ripping holes in the embankment and further destabilizing the slope. We propose to remove these pine saplings, regrade the bank to a 2:1 slope, install the riprap revetment, and re-establish an appropriate vegetative cover above the revetment using native grasses and shrubs recommended for this riparian environment. As recommended by Mr. Vanlandingham, large canopy trees near the edge of the steep bank whose root systems have been undermined or are at risk for being undermined by erosion may also be removed. Mitigation of canopy tree removal will follow guidelines in the *Guidance Manual*.

4. Has land disturbance been minimized?

IOW: Land disturbance has been maximized with the plan to remove all vegetation from the embankment, which immediately creates an erosion problem where none has existed previously. "The intent of the Regulations is to retain a functioning vegetated buffer, preferably a naturally forested one, while allowing filtered views to the water. Providing sight lines through the buffer should be accomplished with the least amount of disturbance to the existing vegetation," as stated in Chapter 3.1 of the *Guidance Manual*. If a view of the James River is wanted, then working with staff to create a plan for limbing up or selective removal of some trees can be done to create a narrow line-of-sight view to the water, once the house has been built and the line-of-sight can be established.

Response: Based on site visits and follow-up discussions with shoreline engineers from DCR and other agencies, we conclude that there is clear evidence of active, detrimental erosion at our site. The erosion is focused in two areas: (1) shoreline and fastland erosion at the beach due to wave energy and (2) erosion of the face of the bluff above the shoreline with no functional riparian buffer. Instead of "creating an erosion problem where none has existed previously," our proposed project will mitigate the ongoing erosion problem and result in a much more stable shoreline with a functioning riparian buffer in the long term. The fundamental goal of our project is not to improve our view of the James River, it is to stabilize the shoreline and embankment to protect our investment in waterfront property and reduce the risk of further significant erosion from intense storms and sea level rise. The magnitude of the land disturbance is in scale with the erosion control measures necessary to stabilize the shoreline and embankment. It is important to note that nearly 50% of the RPA (in the uplands above the bluff) will NOT be disturbed by this project.

5. Do the proposed mitigation plantings achieve the required pollutant removal functions of the buffer?

IOW: The *Guidance Manual* is based on a 1-2-3 formula for re-forestation for every 400 square feet. That is, one canopy tree, two understory trees and three small shrubs. The proposed plan based on shore juniper and rugosa rose does not achieve re-forestation as presented by the regulations. Please present a plan based on the recommended 1-2-3 formula with as little removal of existing native vegetation as possible.

Response: Our planting mitigation plan is based on written guidance received from the IOW Environmental Planning Office that we would not be required to replant canopy trees on the reggraded embankment and instead should replant with native grasses and shrubs at a rate of 30 plants for every 400 square feet. Since only about 50% of the RPA will require replanting, these vegetative replacement rates seem appropriate and are consistent with other recently approved projects along the James River in IOW County. As discussed above in **Proposed Erosion Control Measures**, the *Guidance Manual* does NOT recommend planting canopy trees on slopes near revetment structures.

Please note that no canopy trees currently exist on the embankment. Only the pine saplings will be removed from the embankment prior to regrading. Canopy trees in the RPA on the upland side of the bluff that are at risk for falling may be removed. Their removal will be mitigated appropriately based on guidelines in the *Guidance Manual*.

6. Is the project consistent with the local comprehensive plan requirements?

IOW: The comprehensive plan supports continued implementation of the state and local Chesapeake Bay programs. Please see the comments in this listing for more details on what is required to comply with the Chesapeake Bay program.

Response: This project is fully consistent with the Isle of Wight Comprehensive Plan and in particular the "Preserve the Isle" section which addresses the preservation and enhancement of the natural resources within the County. This project follows recommendations from state agencies such as DCR for protecting shorelines from erosion and fully meets the criteria for approval of such projects as listed in the *Guidance Manual*. Although the use of riprap

revetments is not the most desirable method for defending the shoreline, it is recognized that living shorelines generally are not feasible for large, violent waterways such as the James River. In addition, the "Virginia Sea Level Rise Planning Maps" shown in the Comprehensive Plan indicate that shoreline protection is likely necessary to protect the shoreline of Lawnes Neck in the future. Therefore, we are implementing this plan now to protect our investment in riverfront property and preserve the shoreline into the future.

7. Has access to the project been provided with the minimum amount of land disturbance?

IOW: Staff cannot evaluate this as there is very little information on access to the project area.

Please provide a detailed plan showing the full route of access with minimal land disturbance.

Response: General access to the project location will be provided by a construction road that will be built to access the house building site. This construction road will ultimately become the driveway to the house, so no additional land disturbance will be required to accommodate our project. The project site is approximately 100 feet beyond the house construction site. An access path for equipment will be extended from the existing construction road out to the project site through the woodlands behind the house site. The width of the access path will be approximately 15 feet to accommodate passage of equipment and trucks. The exact path through the woodlands will be selected to avoid additional tree removal. Figure 12 shows a schematic of the location of the access route to the project.

8. Does the project comply with the local erosion and sediment control regulations?



A. ROOF - 20 PSF

B. ATTIC CEILING OVER ROOF SLOPES >3:12 - 20 P.S.F.  
ATTIC CEILING UNDER ROOF SLOPES < 3:12 - 10 P.S.F.

C. FLOOR (NON-SLEEPING ROOMS) - 40 P.S.F.

D. FLOOR (SLEEPING ROOM AND UNFINISHED ATTIC WITH STAIRS) -30 P.S.F.

E. SOIL BEARING [UNDISTURBED SOLID GROUND] - 1500 P.S.F. (ASSUMED PER TABLE R401.41. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY CAPACITY IN FIELD PRIOR TO CONSTRUCTION. NEW HOME BUILDER, LLC CANNOT BE HELD LIABLE IF CONTRACTOR DOES NOT PROVIDE CAPACITY TO NEW HOME BUILDER, LLC PRIOR TO CONSTRUCTION.

F. WIND SPEED 117 VALT 3 SEC GUST (WIND LOAD GOVERNS OVER SEISMIC U.O.N.) AS PER TABLE R301.2.1 AND FIGURE R301.2.4 ALL WINDOWS AND EXTERIOR DOORS SHALL BE DESIGNED AS PER TABLE R301.2(2) AND R301.1(3)

G. SEISMIC IS PER THE 2015 INTERNATIONAL RESIDENTIAL CODE.

H. WIND EXPOSURE CATEGORY - B

I. GROUND SNOW LOAD -10 P.S.F.

J. WEATHER AREA AS PER FIG R301.2(3) MODERATE

K. FROST DEPTH LINE - SURFACE

L. TERMITE AREA AS PER FIG 301.2(6) MODERATE TO HEAVY

M. DECAY AREA - MODERATE TO SEVERE

N. WINTER DESIGN TEMPERATURE- 22 DEGREES

O. ICE SHIELD UNDERLAYMENT REQUIRED - ROOF SLOPES AT 4 ON 12 OR LESS

1. ALL EXTERIOR WALL FOOTINGS ARE MIN 24" X 10" MIN. CONT. WITH (2) #5 REBARS CONT. AND TIES OR AS SOIL REQUIRE FOR SHRINK SWELL CONDITIONS. SEE WALL SECTION AND DETAILS FOR ADDITIONAL EXTERIOR WALL FOOTING AND FOUNDATION WALL REQ.
2. CONCRETE SLABS ARE TO BE 4" FIBER REINFORCED CONCRETE OVER 6 MIL. POLY OVER COMPACTED SOIL FILL. PROVIDE CONTROL JOINTS AS REQUIRED PROVIDE R-10 RIGID INSULATION 2'-0" DEEP AROUND PERIMETER, PROVIDE R-10 RIGID INSULATION ON VERTICAL INSIDE FACE OF C.M.U. ALONG ENTIRE PERIMETER
3. THICKENED SLAB ARE TO BE MIN. 10" DEEP AND HAVE A WIDTH AS SHOWN ON FOUNDATION PLAN. ANGLE SIDES OF THICKENED SLAB NO MORE THAN 45 DEGREES.
4. FOOTINGS FOR EXTERIOR RAISED CONCRETE SLABS ARE MIN. 8" X24" CONTINUOUS. SEE WALL SECTIONS & DETAILS FOR ADDITIONAL EXTERIOR WALL FOOTING AND FOUNDATION WALL REQUIREMENTS.
5. CONCRETE SLAB SHALL BE 3000 P.S.I. IN 28 DAYS UNLESS OTHERWISE NOTED. AND PLACED AS PER A.C.I. 318-83, ON STRUCTURAL FILL COMPACTED ON A MINIMUM DENSITY OF 95% OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY THE PROCEDURES OUTLINED IN ASTM D - 698.
6. ALL REBAR LAP SPLICE (IF REBAR SHOWN) SHALL BE FABRICATED AS PER ASTM A-615 GRAD 60.
7. CHIMNEY FOOTINGS FOR MASONRY CHIMNEYS SHALL BE 12" OR LARGER THAN FOOT PRINT X 12" THICK (MIN.)
8. WALL BACKFILLED WITH DIRT:
  - A. FOR EARTH FILL UP TO 4" MAXIMUM HEIGHT- USE 8" C.M.U. OR 8" BRICK WITH MEMBRANE OR SPRAY ON WATERPROOFING ON EXTERIOR. FOOTING MIN. SIZE OF 12" X 24" OR AS NOTED PLAN FOR SHRINK SWELL CONDITIONS. 18" X 24" MIN. 3'-0" BELOW GRADE.
  - B. FOR EARTH FILLED 4" AND HIGHER UP TO MAX OF 9' USE 12"X24" FOOTING WITH #4 @ 16" DOWELS HOOKED IN FOOTING- USE 12" C.M.U. WALL WITH #4 @ 16" VERTICAL BARS LOCATED 4" FROM BOTTOM DIRT FILL. ALL LAP SPLICES 12" AND USE C-WALL FIBER-CEMENT REINFORCING EVERY 8" IN ALL C.M.U. JOINTS. FILL ALL OPEN CELLS OF C.M.U. WITH EITHER TYPE M ORS MORTAR OR EQUAL AND ERECT ALL FRAMING BEFORE BACKFILLING FOR SHRINK SWELL CONDITIONS. 18"x24" MIN. 3'-0" BELOW GRADE.
9. ALL UTILITIES WHICH CROSS FOOTING MUST BE PAST ABOVE FOOTINGS.
10. CONCRETE MASONRY UNITS SHALL BE IN ACCORDANCE WITH ASTM C-90 MORTAR TO CONFORM TO ASTM C-270. TYPE "S" BELOW GRADE, TYPE "N" ABOVE GRADE .

1. ALL BATTEN SHALL BE SOUTHERN YELLOW PINE #2 OR SPRUCE -PINE-FIR #2 OR BETTER FRAMING UNLESS OTHERWISE NOTED. UTILITY GRADE LUMBER UNACCEPTABLE.
2. STEEL BEAMS MUST HAVE (4) 2 X 4 STUD JACKS UNDER EACH END SUPPORT UNLESS OTHERWISE NOTED.
3. MICRO-LAM BEAMS MUST HAVE (3) 2 X 4 STUD JACKS UNDER EACH END SUPPORT UNLESS OTHERWISE NOTED.
5. MASONRY UTILITY  
A. FOR SPANS UP TO 6' USE 3- 1/2" X 3- 1/2" X 1/4" STEEL ANGLES MAY BE USED FOR FIREPLACE OPENINGS AS FOLLOWS.
  1. 10' OF BRICK OR STONE MAX SPAN 36"
  2. 6' OF BRICK OR STONE MAX SPAN 48"
  3. 30" OF BRICK OR STONE MAX SPAN 72"
- B. FOR SPAN FORM 6' TO 8' USE 5" X 3 1/2" X 5/16" STEEL ANGLES.
6. ALL BRICK OVER LOWER ROOFS MUST HAVE ANGLE SECURELY SUPPORTED FROM BELOW.
7. ALL WOOD 1 JOIST AND OPEN JOIST MUST BE BRACED IN ACCORDANCE W/ MANUFACTURERS DIRECTIONS PLUS DETAILS SHOWN ON PLANS.
8. ALL RAFTER BRACES MUST HAVE (2) STUDS FORM PLATE TO FOUNDATION OR BEAM BELOW THEM AT ALL FLOORS.
9. WHERE PARTITIONS FALL BETWEEN FLOOR TRUSSES 2 X 4 LADDERS @ 16" O.C. MUST BE PLACED PERPENDICULAR TO THE TRUSSES FOR SUPPORT THE PLYWOOD DECKING.
10. ON ALL OPEN WEB FLOOR TRUSSES OVER 10' SPAN A MINIMUM SINGLE LINE OF 2 x 4'S SHALL BE NAILED TO DIAGONAL MEMBERS OR VERTICAL MEMBERS IN THE APPROXIMATE MID-SPAN AS A LOAD DISTRIBUTION MEMBER.
11. WHERE CEILING JOIST ARE PARALLEL TO EXTERIOR WALL AND RAFTERS BEAR ON STUD WALL TOP PLATES ADJACENT TO CEILING JOISTS, PROVIDE STUD JOIST AS REQUIRED TO BRACE WALL TO CEILING JOIST.
12. HEADERS ARE TO BE DESIGNED AS PER TABLE R502.5(1) OF 2015 IRC.

1. NO OBSTACLES SHALL PREVENT WATER FLOW.
2. ALL VENTILATION OPENINGS SHALL BE COVERED W/ CORROSION - RESISTANT METAL MESH W/ MESH OPENING OF 1/4".
3. ALL LUMBER SHALL BE SOUTHERN YELLOW PINE #2 OR SPRUCE- PINE #2 OR BETTER FRAMING UNLESS NOTED OTHERWISE. STUDS OR UTILITY GRADE LUMBER IS UNACCEPTABLE.
4. RAFTERS 2 X 8 @ 16" O.C. UNLESS OTHERWISE NOTED. THEY ARE CUT IN TO HIP, RIDGES, ETC. UNLESS OTHERWISE NOTED.

A. TILE, SLATE AND OTHER BEARING ROOF COVERINGS SHALL USE 2 X 10 @ 16" RAFTERS UNLESS OTHERWISE NOTED.

5. COLLAR TIES - 2X4 @ 32" AT ALL RIDGES AND AS REQUIRED BY TABLE R 602.3.1
6. (3) COLLAR TIES MIN. @ ALL RIDGES EVEN IF 2 TIES MUST BE PUT ON {1} SET OF RAFTERS.
7. ALL HIP AND RIDGES ARE TO BE SIZED SO THAT ALL RAFTERS BEAR FULLY ON THE RIDGE BOARD.
8. ALL BRACES ARE {2} 2 X 4 NAILED W/ 1 6d @ 9" O.C. VERTICALLY FROM TOP TO BOTTOM.
9. MAXIMUM SPOC OF RAFTER BRACES-RAFTERS CAN BE SPLICED OVER HOGS.  
FOR 2 X 6 HOG 6' O.C.  
FOR 2 X 8 HOG 7'-6" O.C.
10. ALL ROOF TRUSSES MUST BE BUILT IN ACCORDANCE W/ TRUSS MANUFACTURERS DIRECTIONS
11. PROVIDE HURRICANE STRAPS AT ALL ROOF RAFTERS WHERE REQUIRED BY APPLICABLE CODES.
12. ROOF SHEATHING SHALL BE MINIMUM OF 1/2" OSB SHEATHING AND SHALL CONFORM TO TABLE R 803.2.1.

1. CONTRACTOR TO NOTIFY APPLICABLE STATE UTILITY LOCATION SERVICES PRIOR TO EXCAVATION.

2. PER SECTION R312. GUARDRAILS ARE REQUIRED ON PORCHES, BALCONIES AND RAISED FLOOR SURFACES MORE THAN 30" ABOVE GRADE OR FLOOR BELOW. ALL INTERIOR AND EXTERIOR RAILED ARE TO BE MIN. 36" IN HEIGHT, BE ABLE TO WITHSTAND 200 LBS. OF FORCE AND NOT ALLOW A SPHERE GREATER THAN 3 7/8" DIA. TO PASS THROUGH. NO RAILING DESIGN W/ LADDER EFFECT IS ALLOWED. HANDRAIL GRIP SIZE AS PER SECTION R311.7.1 IN THE IRC.

3. PER SECTION R308.4 AND CPSC 16-CFR PART 1201, ALL GLAZING IN HAZARDOUS AREAS SHALL BE SAFETY. TYPED. THEREFORE, ALL SIDELITES NEAR ENTRY DOORS OR ANY WINDOWS THAT ARE IMPACTED BY DOOR SWING SHALL HAVE THEIR GLASS TEMPERED.

4. ALL DOOR, WINDOW AND SKYLIGHT AND WINDOW PRESSURE LOADS SHALL BE DETERMINED BY TABLE R301.2(2) PER SECTION R310. EGRESS WINDOWS SHALL MEET THE FOLLOWING THE REQUIREMENTS:

MIN. (1) 5.7 SQ.FT. CLEAR OPENING PER BEDROOM IS REQUIRED AT THE SECOND LEVEL AND ABOVE.

MIN. (1) 5.0 SQ.FT. CLEAR OPENING PER BEDROOM IS REQUIRED AT THE FIRST LEVEL.

6. PER SECTION R314 SMOKE DETECTORS SHALL BE INTERCONNECTED, RECEIVE PRIMARY POWER FROM THE BUILDING WIRING AND HAVE BACKUP.

7. ALL GLASS BATH TUB ENCLOSURES ARE TO BE TEMPERED.

8. ALL WINDOW AT STAIR LANDING LESS THAN 60" ABOVE THE FLOOR IS REQUIRED TO HAVE SAFETY GLAZING.

9. GARAGE TO LIVING SPACES ENTRY DOOR TO ME N.L.T. 1/ 5/8" WITH FIRE RATING OF N.L.T. 20 MIN.

10. INTERIOR GARAGE WALL & CEILING FINISH TO HAVE N.L.T. 5/8" GWB. ADJACENT OF ALL LIVING AREAS.

11. ALL BATH VENTILATION FANS MUST DISCHARGED TO OUTSIDE SPACES.

12. ALL SMOKE DETECTORS MUST BE INTERCONNECTED AS DIRECTED BY CODE.

13. ALL ELECTRICAL WORK SHALL BE ACCORDING TO THE APPLICABLE CODES.

14. PER SECTION R703.8 CORROSION RESISTIVE FLASHING SHALL BE PROVIDE AT ALL VALLEYS AND ROOF WALL INTERSECTION.

15. PER SECTION R308.4 PROVIDE SPECIALTY GLAZING REQUIRED AT "HAZARDOUS LOCATIONS"

16. ALL BATH AND SHOWER WALLS WITH SHOWERS HEADS SHALL HAVE NONABSORBENT SURFACES UP TO 6'-0". SEE AS PER SECTION R307.2

17. ALL STAIRWAYS SHALL BE ILLUMINATED AS PER SECTION R303.6 AND HAVE CONTROLS AS PER SECTION R303.6.1.

18. ENERGY EFFICIENCY CALCULATIONS SHALL BE IN ACCORDANCE WITH N1101.2.1 IF REQUIRED BY CITY OFFICIALS.

19. OUTDOOR RETURN AIR FOR FORCED AIR SYSTEMS ARE PROHIBITED FROM GARAGE.

20. ALL WALL COVERINGS SHALL BE SECURELY FASTENED IN ACCORDANCE WITH SECTION AND TABLE R703.4.

21. PROVIDE MECHANICAL VENTILATION AT TOILET ROOMS IN ACCORDANCE W/SECTION M1507.

22. ALL OUTLETS IN WET LOCATIONS SHALL BE PROVIDE AS REQUIRED PER SECTION E3801.4, E3802.6,E3802.1 AND E3802.3

23. AS PER N1101.9 A PERMANENT ENERGY CODE CERTIFICATE SHALL BE POSTED ON OR IN THE ELECTRICAL DISTRIBUTION PANEL.

24. AS PER N1102.1 PENETRATION REQUIREMENTS FOR EXTERIOR WINDOWS AND DOORS SHALL BE U 0.35 OR LOWER, ONE OPAQUE DOOR IS EXEMPT FORM THE U FACTOR PER N1102.3.4 UP TO 15 SQ. FEET OF WINDOW AREA IS ALSO EXEMPT FROM MEETING 0.35.

25. WINDOW SILL HEIGHT FOR ALL SECOND FLOOR WINDOW SHALL BE AS PER SECTION R612.2.

26. PROVIDE CARBON MONOXIDE DETECTORS PER IRC R315.1 AND R315.3

27. PROVIDE FIRE EXTINGUISHER AT KITCHEN PER R329

28. PER IRC N1102.2.3 ATTIC ACCESSES ARE TO BE INSTALLED WITH R VALUE EQUAL TO CEILING FRAMING THAT PENETRATES ALL PULL DOWN LADDERS REQUIRE AN INSULATED HATCH AND GASKET.

29. AS PER IRC R302.5.2 PROVIDE A MIN. 26 GAGE STEEL OR OTHER APPROVED MATERIALS AND NO OPENINGS TO GARAGE.

30. ALL FIREPLACES FIRE BOX OPENINGS ARE TO BE SEALED, GASKETED AND ARE TO RECEIVE COMUSTION AIR DIRECTLY FOR THE OUTSIDE.

31. ALL EXTERIOR DOORS SHALL MEET U-FACTOR PER TABLE N1101.10.3(2)

DEFAULT DOOR U-FACTORS	
DOOR TYPE	U-FACTOR
Uninsulated Metal	1.20
Insulated Metal	0.60
Wood	0.50
Insulated, nonmetal edge, max 45% glazing, any glazing double pane	0.35

# A-2

**DESIGNER'S DISCLAIMER.** We have exercised great effort and care in the creation of this house design and the completion of these construction drawings. However, the Sider Group, Inc. and the Sider Design Collection, Inc. have not been contacted by you for the purpose of obtaining a design or construction contract. We are not responsible for the use of these drawings for any purpose other than the methods for preparing used by the builder. For this reason, as well as the great variations in local building codes, the Sider Group, Inc. and The Sider Design Collection, Inc. assume no responsibility for any damages, including structural failures resulting from errors or omissions in these construction drawings. We strongly recommend that you, the homeowner, have these drawings thoroughly reviewed by a licensed architect, professional engineer, certified residential designer or general contractor licensed to practice in your area, in addition to your local building officials, prior to beginning construction.

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DRWG. NO.	6970
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DATE	DRWG. NO.
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**A**

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# ARCHITECTURAL NOTES

## General Notes:

1. Comply With All Applicable Building Codes, Ordinances And Regulations Pertaining To Construction.
2. Connect Water, Gas And Electric Lines To Existing Utilities In Accordance With All Applicable Building Codes.
3. Minimum Finished Floor Elevation Will Be At Least 6" Plus 1 Percent Above Low Point Of Lot. Minimum F.e.m.a. Flood Elevation, Or As Noted On Site.
4. All Footings To Extend Below Grade Minimum As Per All Applicable Codes At Bearing Walls. Interior Bearing Footings 6" Into Natural Grade Unless Noted Otherwise.
5. Slope Backfill 6" Of Fall Per 10' Away From Foundation Wall.
6. Seal Sill Plate & Top Plates Of All Exterior Walls, Garage Separation Walls, And All Window's & Door Jamb's W/ Caulk, Gaskets, Backer Rods, Or Equivalent.
7. Provide Weather Stripping At All Attic Accesses/ Access Panels.
8. All Particleboard, Mdf, & Plywood To Be Certified Low Formaldehyde Emission.
9. Provide Moisture Resistant Backer Board In All Wet Areas.

## Soil:

Allowable Soil Pressure - 3000 P.s.f. Minimum  
Minimum Footing Depth As Per All Applicable Building Codes

## Concrete:

1. Foundations - 3000 P.s.i. @ 28 Days, Type II Concrete, 6-bag.
2. Floor Slabs - 2500 P.s.i. @ 28 Days (4" Concrete On 6 Mil Polyethylene Vapor Barrier On Stainless Steel Terminate Deterrent Mesh On 4" Of Granulated Stone, On Terminate Treated Fill) Max. Slump = 4", Type II Concrete 6-bag.
3. Provide Construction Joints @ 400 Sq. Ft. Maximum In Slabs.
4. Walks & Drives - 2500 P.s.i. @ 28 Days, Type II Concrete, 6-bag With Air Entrainment.

## Masonry:

1. Concrete Block Units - Grade N: Fm = 1350 P.s.i..
2. Grout - 3000 P.s.i..
3. Mortar - Type S - 1800 P.s.i..
4. Provide Duro-o-wire @ 16" O.c. Vertical, 9 Gauge Steel.
5. All Cells With Re-bar To Be Grouted Solid.

## Glass:

1. All Exterior And Interior Glazing To Comply With All Applicable Building Codes.
2. Horizontal Window Mullins Between Window To Be 1-1/2" & 24" & 36" From Floor At All Windows Less Than 18" From Floor.
3. All Glass (with Least Dimension Greater Than 3") In Doors And Adjoining Windows Less Than 40" From Locking Device To Be Tempered.

## Plumbing:

1. Water Heaters To Be Electric. Sized According To Actual Needs, Or Substituted For Tankless Gas Or Electric System, Located Within 30' Of Pipe Run Of All Fixtures.
2. Water Closets - 1.2 Gal / Flush Maximum Or Lower. Use Power Assist/ Dual Flush Where Available.
3. Shower Heads - 2.5 G.p.m. Maximum W/ Aerator Or Venturi Technology
4. Sink/ Lavatory Faucets - 2.2 G.p.m. Maximum W/ Aerator.
5. Dishwasher To Have Air Gaps Installed And Be Energy Star Labeled.
6. All Water Supply Pipes Material And Installation Per All Applicable Building Codes & Nabh Green Building Guidelines.
7. All Waste And Vent Pipe Material And Installation Per All Applicable Building Codes & Nabh Green Building Guidelines.
8. Provide Location In Piping For Attachment Of A Softener System.

## Insulation:

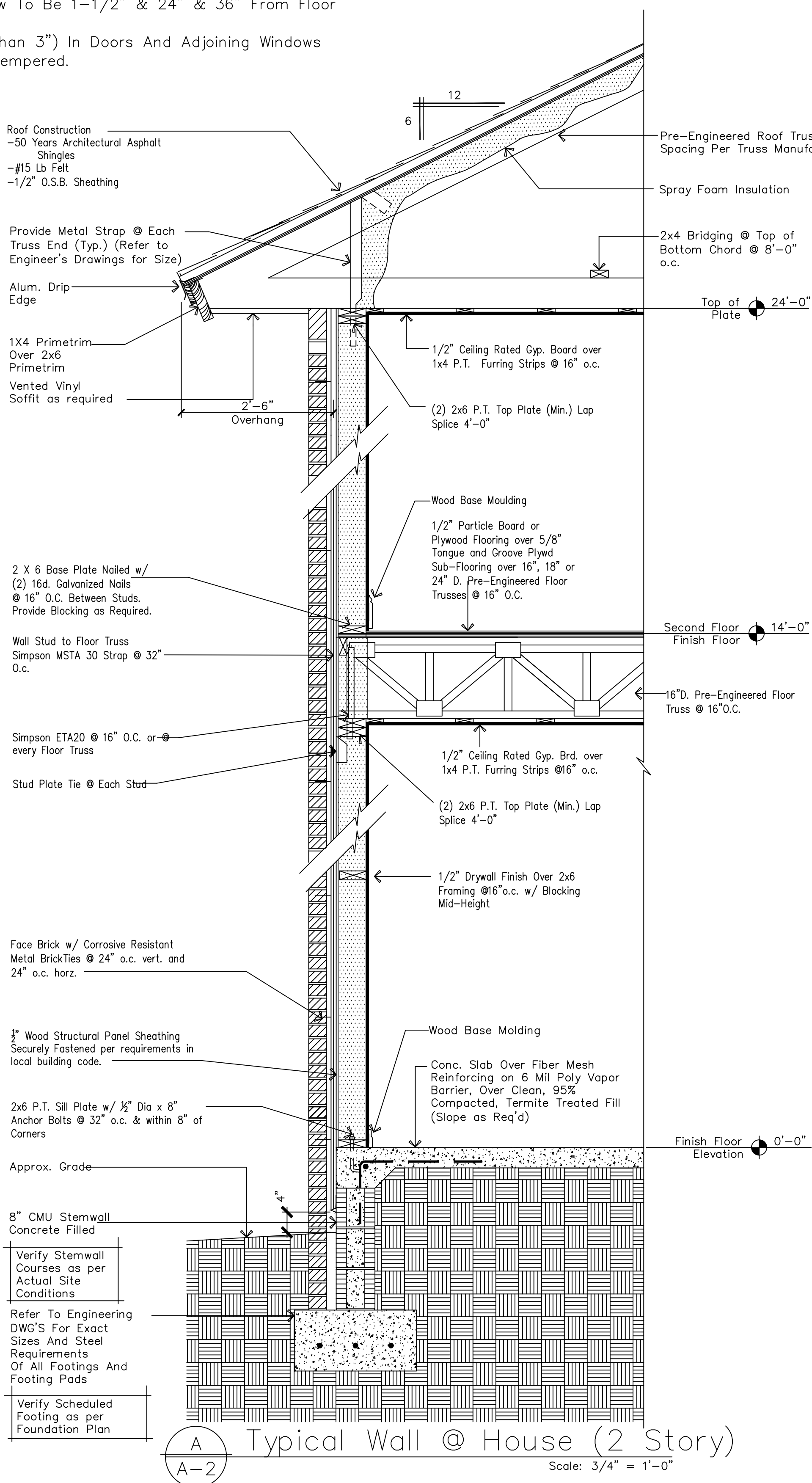
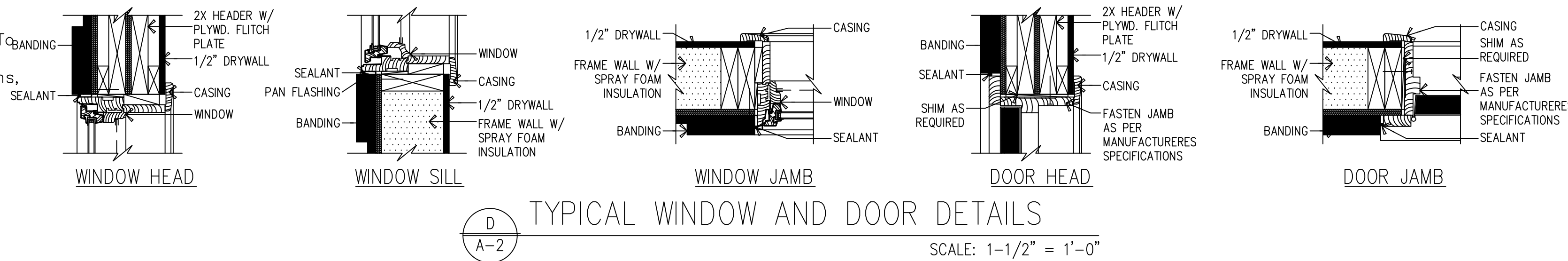
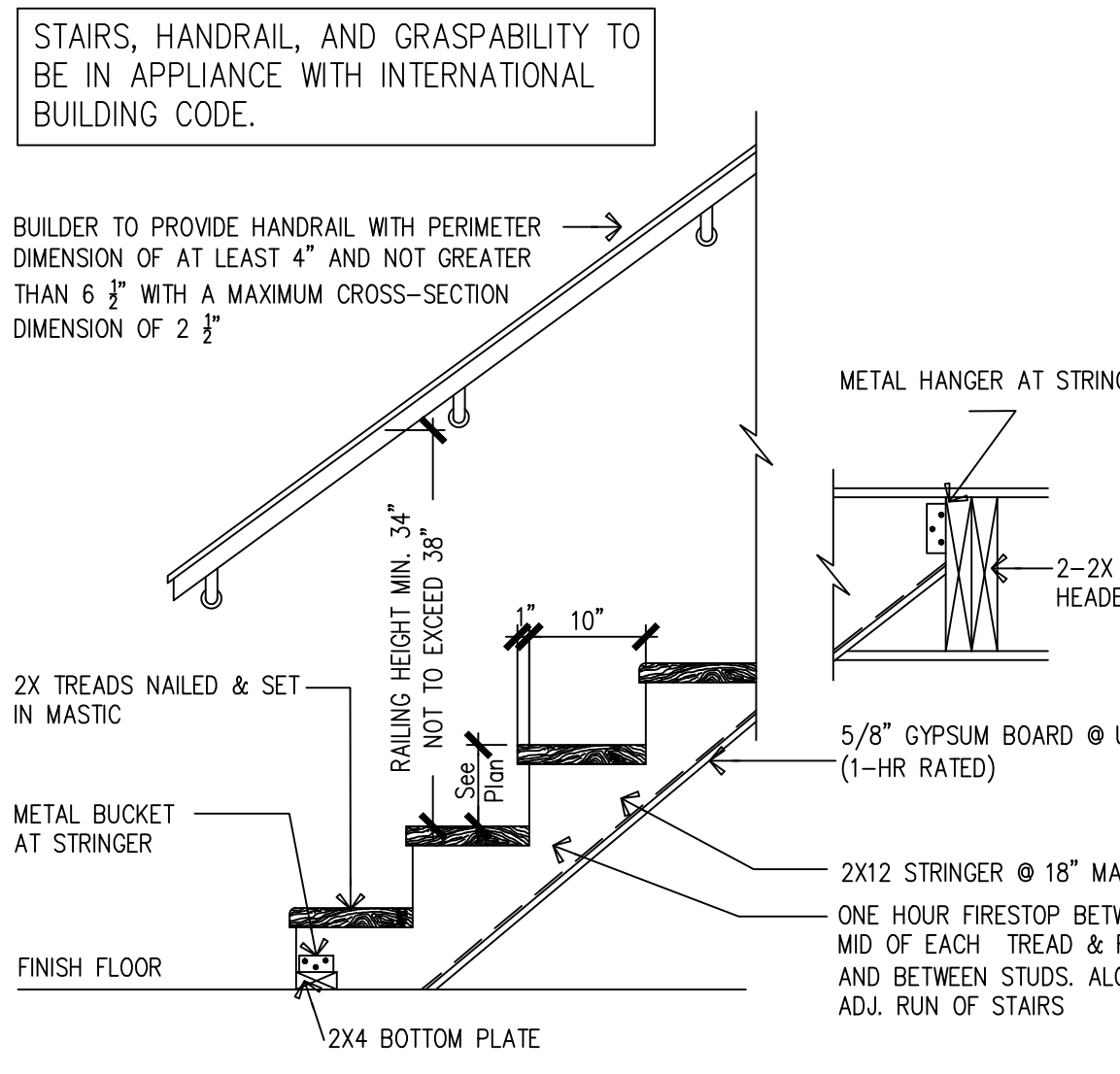
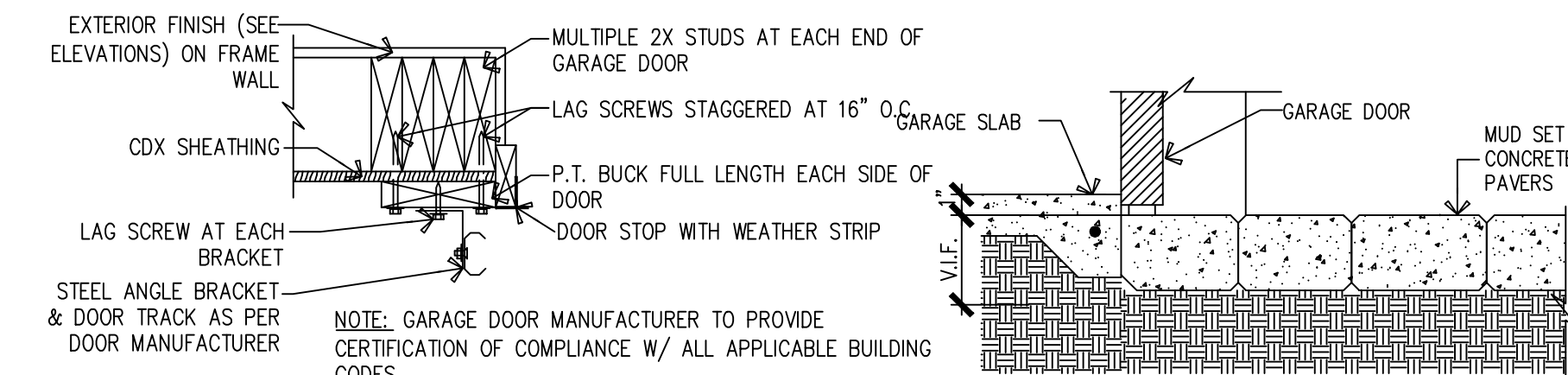
Spray Foam Insulation On Entire Building Envelope And All Electrical, Plumbing, & Hvac Penetrations. Minimum R-value As Per All Applicable Building Codes. Increased R-value Shall Be Utilized Where Available As Per Spray Foam Insulation Contractor

## Mechanical:

1. Electric Service Per All Applicable Building And Utility Codes.
2. Entire Hvac Systems To Be Within Conditioned Building Envelope, Sized Accordingly Based On Building Performance, With All Ducts, Plenums, & Equipment Sealed With UI Rated Foil Tape And Or Mastic's
3. Use Energy Star Labeled Appliances. Energy Star Ceiling Fans, & Exhaust Fans Ducted To Outside With Humidistat.
4. Use Motion Detectors On Outdoor Areas
5. Provide An Automated Mechanical Ventilation System In Garage Exhausting To Outside.
6. Install Return Ducts Or Transfer Grills In All Room Having Doors Except Baths, Kitchen, Closets, Pantries, & Utilities.
7. Use Rated Air Tight Type "ic" Housing For All Recessed Lights.

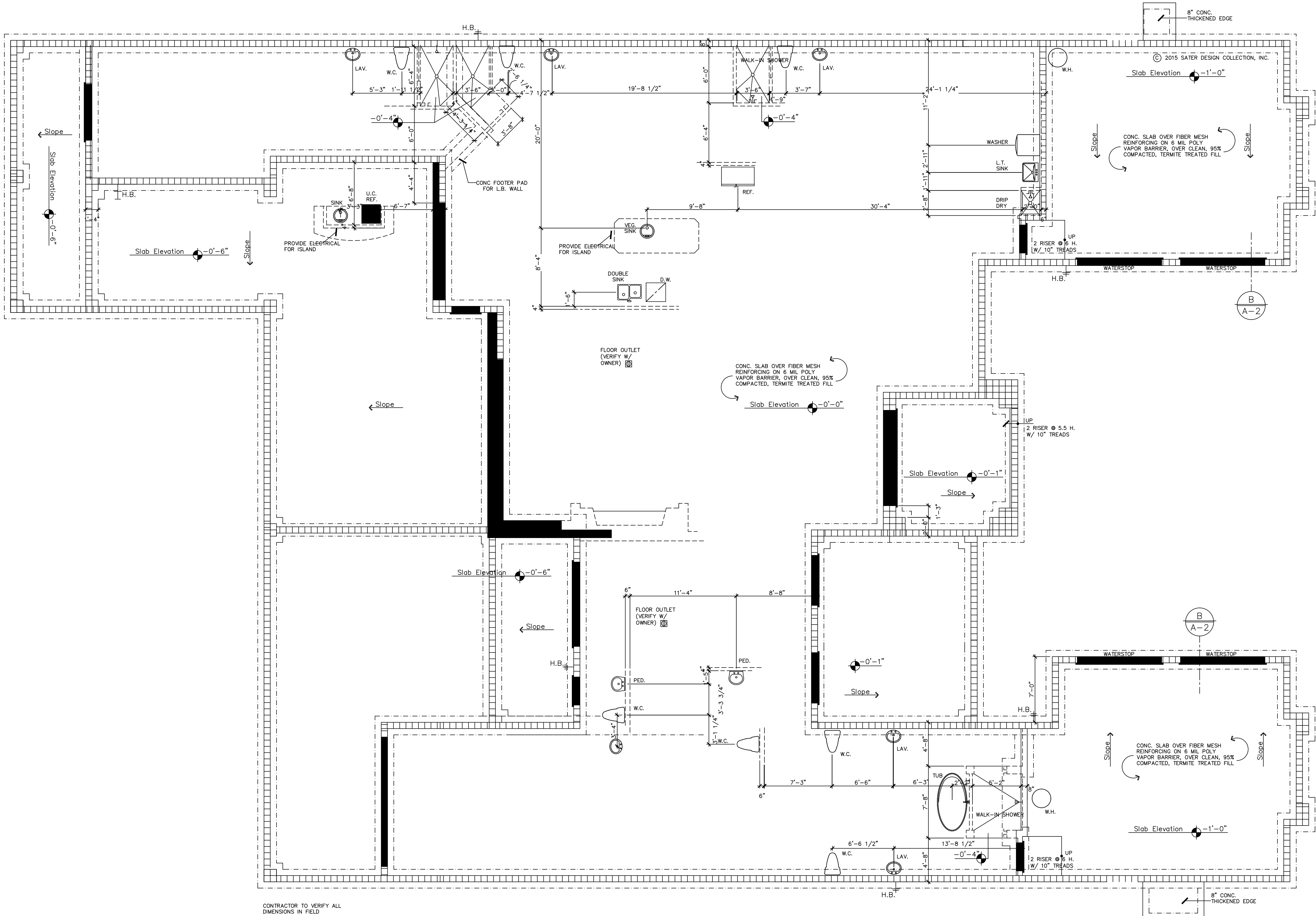
## Smoke Detector:

Per All Applicable Building Codes. See Electrical Plan For Locations.





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CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD.

## Plumbing Location Plan

FOR DESIGN PURPOSES ONLY. REFER TO ENGINEER'S DRAWINGS FOR FOOTING SIZES AND SPECS.

Scale: 3/16" = 1'-0"

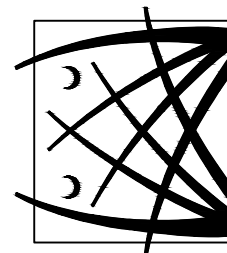
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**ABD**  
OF BUILDING DESIGN

DRWG. NO. 6970

DATE 05-13-15

DRAWN BY NF

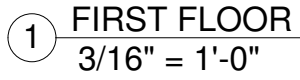
CONVERTED BY NF

CHECKED BY DFS II

REVISIONS

**A-4**





Window Schedule		
MARK	SIZE	DESCRIPTION
A	2- 29"X 71"(58"X116")	PELLA LIFESTYLE 2 WIDE CASEMENT 58" X 71", W/ FIXED SASH
C	2- 34"X 84" (68" X84")	PELLA LIFESTYLE 2- WIDE 68" X84"
D	2-25" X 47" (50" X47")	PELLA LIFESTYLE 2 WIDE 50" X 47"
E	2-29" X 65" (58"X 65")	PELLA LIFESTYLE 2 WIDE 58" X 65"
F	25" X 41"	PELLA LIFESTYLE CASEMENT
G	32" X 65"	PELLA LIFESTYLE CASEMENT
H	25" X 41"	PELLA LIFESTYLE CASEMENT
I	25" X 25"	PELLA LIFESTYLE CASEMENT
J	25" X 71" (25"X106")	PELLA LIFESTYLE 2 WIDE CASEMENT25" X 106 W/ 25" X 35" FIXED SASH
K	72" X 16"	PELLA FIXED FRAMED

TOTAL HEATED	6,556 SF
TOTAL UNHEATED	1336 SF

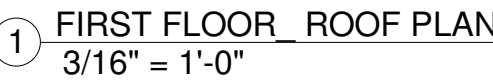
1. ALL 10'-0" WALL ARE TO HAVE PURLIN BLOCKING AS REQUIRED BY GOVERNING BUILDING CODES.
2. ALL EXTERIOR WINDOWS AND DOORS SHALL MEET MAXIMUM DESIGN PRESSURE OF +25 PSF AND -25 PSF R301.2.1
3. ALL HEADERS ARE TO BE DESIGNED AS PER TABLE R502.5.1, OF THE 2015 INTERNATIONAL RESIDENTIAL CODE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE. USCBC[2015 EDITION]
4. SET SECOND FLOOR WINDOW HEADERS AT 6'-8" A.F.F. UNLESS OTHERWISE NOTED.
5. PROVIDE DRAIN PANS AT WASHER LOCATIONS.
6. PER USCBC SECTION N1103.2.2. ALL DUCTS, AIR HANDLERS, FILTER BOXES AND BUILDING CAVITIES USED AS DUCTS, JOINTS AND SEAMS, SHALL BE SEALED PER IRC SECTION M1401.4.1. AND VERIFIED IN COMPLIANCE PER TESTING FOUND IN N1103.2.2.1 AND/OR VISUAL INSPECTIONS PER N1103.2.2.2.
7. ALL CONCENTRATED LOADS TO BEAR ON WALL DESIGNED TO CARRY LOAD THROUGH ALL LEVELS BELOW AND TERMINATE AT THE FOUNDATION DESIGNED TO CARRY THE LOAD.
8. ALL EXTERIOR WALLS TO BE 2X4 NO. 2 S.Y.P. STUD WALL @16" O.C.
9. ALL EXTERIOR WALLS TO BE 2X4 NO. 2 S.Y.P. STUD WALL @16" O.C. EXCEPT AT STAIR LOCATION WALL ARE TO BE 2X6 NO 2 S.Y.P. @ 16" O.C.
10. FIRST FLOOR CEILINGS ARE 9'-0" . ANGLED WALLS ARE 45 DEGREES U.N.O.
11. ALL DOORS INTO STORAGE AND GARAGE TO BE FIRE TREATED. SIZE INDICATED ON PLAN.
12. PROVIDE FIRE/DRAFTSTOPPING AS PER SECTION R6028 AND R502 MAXIMUM AREA OF CONCEALED SPACE SHALL BE 100 SQ. FT. PROVIDE FIRE BLOCKING IN CONCEALED SPACES O STUDS VERTICALLY AT CEILING AND FLOOR LEVELS. FIBER-CEMENT AT INTERVALS NOT EXCEEDING 10'-0" AT ALL INTERCONNECTIONS BETWEEN STAIR STRINGERS AT TOP AND BOTTOM OF RUN AT OPENINGS AROUND VENTS PIPES AND DUCTS AT CEILING AND FLOOR LEVELS.

- FIRE BLOCKING**  
PROVIDE FIRE/DRAFTSTOPPING AS PER SECTIONS R602B AND R502. MAXIMUM AREA OF CONCEALED SPACE IS 1000 SQ. FT. PROVIDE FIREBLOCKING IN CONCEALED SPACES OF STUDS VERTICALLY AT CEILING AND FLOOR LEVELS. FIBER-CEMENTY AT INTERVALS NOT EXCEEDING 10'-0" AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND FIBER-CEMENT SPACES. IN SPACES BETWEEN STAIRS STRINGERS AT TOP AND BOTTOM OF RUN AT OPENINGS AROUND VENTS, PIPES AND DUCTS AT CEILING AND FLOOR LEVELS









1. ALL RIDGE, VALLEY AND RAFTER BRACING TO BEAR ON LOAD BEARING WALLS DESIGNED TO CARRY LOAD THROUGH ALL LEVELS AND TERMINATE AT FOUNDATION DESIGNED TO CARRY LOAD
2. VENTILATION SHALL COMPLY WITH SECTION 806.1.1. ENCLOSED ATTIC AND UNFINISHED CRAWL SPACE SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS SHALL HAVE CROSS VENTILATION FOR EACH SEPARATE SPACE BY VENTILATION OPENINGS PROTECTED AGAINST THE ENTRANCE OF RAIN OR SNOW. VENTILATING OPENINGS SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE MESH 1/8" (3.2MM) MINIMUM TO 1/4" (6.4MM) MAX. OPENINGS. VERIFY ALL BEARING HEIGHTS.
3. ALL ROOF SLOPES OF 4 ON 12 OR LESS ARE REQUIRED TO HAVE ICE & WATER SHEET INSTALLED OVER ROOF RISE SURFACE.
4. ROOF FRAMING PREFAB TRUSSES AS REQUIRED INSTALL PER MANUFACTURERS INSTRUCTIONS
5. PROVIDE RIDGE VENTS AT ALL ROOF PROJECTION OR VENT TO MAIN.
6. PROVIDE WATER AND ICE SHIELD AT ALL VALLEYS.
7. PROVIDE FIRE/DRAFTSTOPPING AS PER SECTIONS R6028 AND R502 MAXIMUM AREA OF CONCEALED SPACE IS 1000 SQ. FT. PROVIDE FIREBLOCKING IN CONCEALED SPACES OF STUDS VERTICALLY AT CEILING AND FLOOR LEVELS FIBER-CEMENT AT INTERVALS NOT EXCEEDING 10'-0" AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND FIBER-CEMENT SPACES IN SPACES BETWEEN STAIRS STRINGERS AT TOP AND BOTTOM OF RUN AT OPENINGS AROUND VENTS, PIPES AND DUCTS AT CEILING AND FLOOR LEVELS.
8. FIELD VERIFY SLOTTED ARCHES, SPANS AS PER ROLL UP SHUTTERS MANUFACTURERS SPECS.
9. SEE STRUCTURAL FOR ADDITIONAL INFORMATION.

<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <h1 style="margin: 0;">A-7</h1> </div> <div style="text-align: center;"> </div> </div>	
<div style="display: flex; justify-content: space-between;"> <div> <p><b>DRWG. NO.</b></p> <p><b>DATE</b></p> <p><b>DRAWN BY</b></p> <p><b>CONVERTED BY</b></p> <p><b>CHECKED BY</b></p> <p><b>REVISIONS</b></p> </div> <div> <p>6970</p> <p>03/30/21</p> <p>NF</p> <p>NF</p> <p>DFS II</p> <p></p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div> <p><b>AMERICAN INSTITUTE</b></p> </div> <div> <p><b>OF BUILDING DESIGN</b></p> </div> </div>

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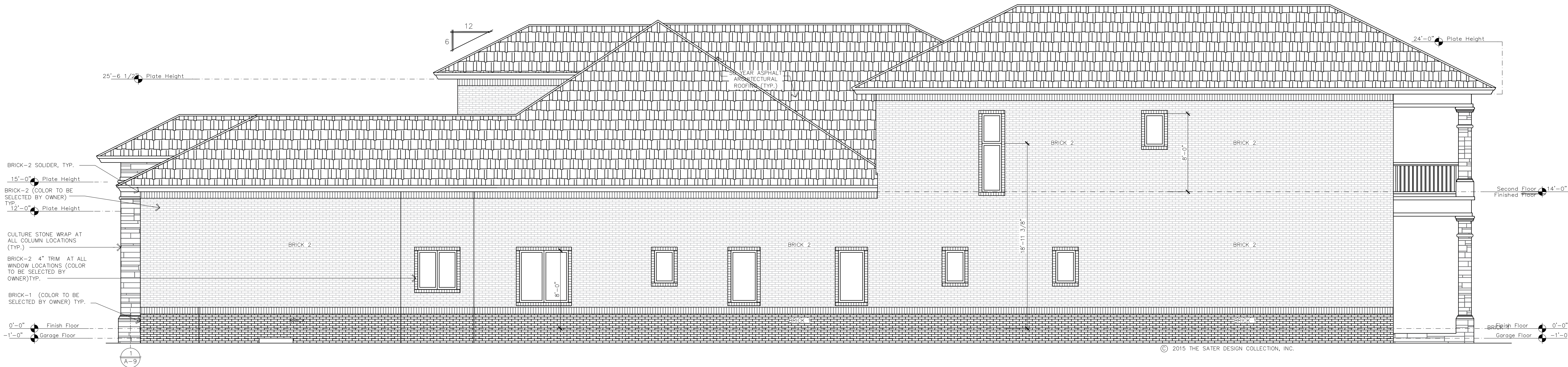
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Front Elevation

Scale: 3/16" = 1'-0"



Right Elevation

Scale: 3/16" = 1'-0"

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DRWG. NO. 6970

DATE 05-13-15

DRAWN BY NF

CONVERTED BY NF

CHECKED BY DFS II

REVISIONS

A-8

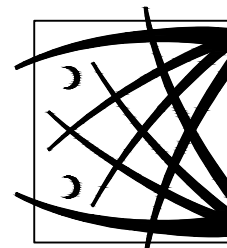
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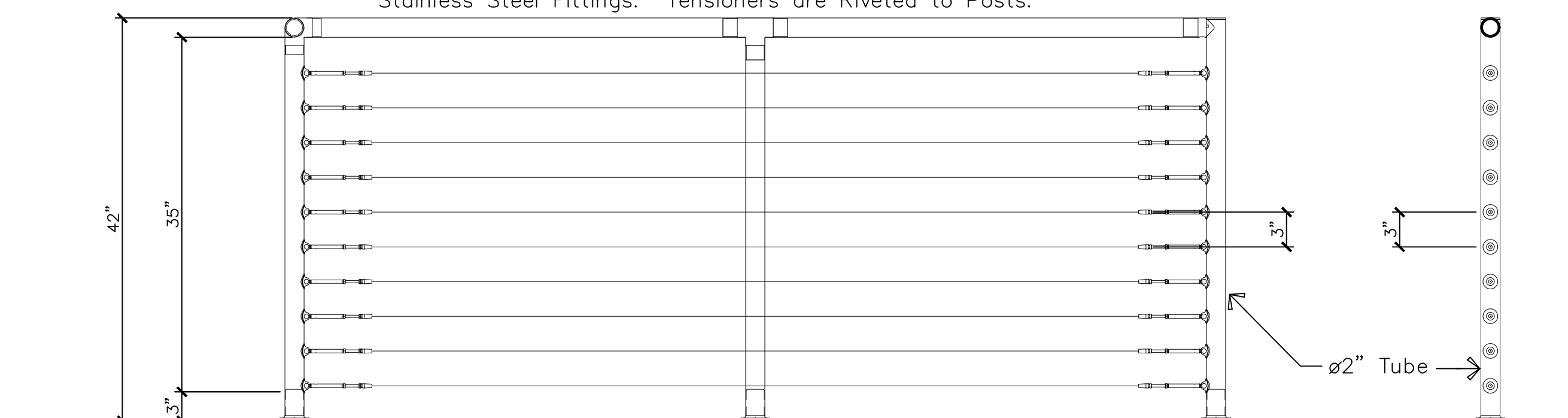
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**A-9**

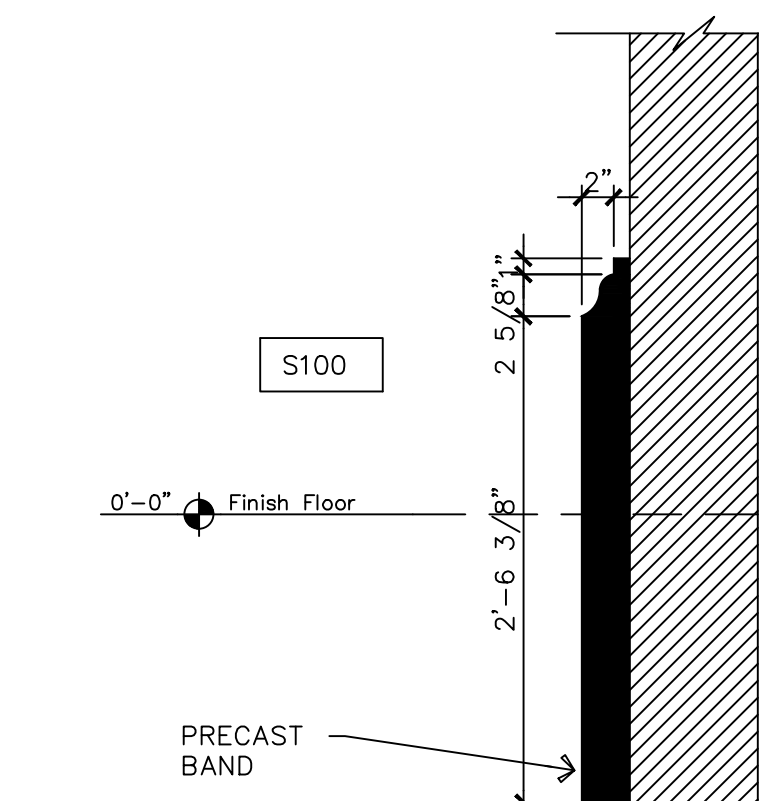
[illegible]

Scale:  $3/16" = 1'-0"$

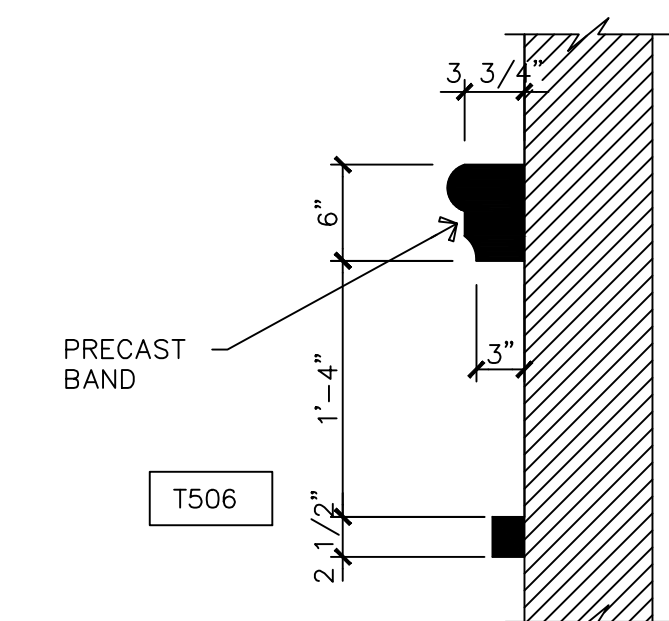
Recommended Span: 48" Between Posts.  
Wire May Pass Through Posts On Longer Spans.  
Handrail: 2" Diameter 16 Gauge 316 Grade Stainless Steel Tubing.  
Infill: RailEasy Tensioners with 1x19 316 Grade Stainless Steel Cable.  
Posts: 2" Diameter 16 Gauge 316 Grade Stainless Steel Tubing.  
Top and Bottom Rails are Secured to Posts Using 316 Grade Cast  
Stainless Steel Fittings. Tensioners are Riveted to Posts.



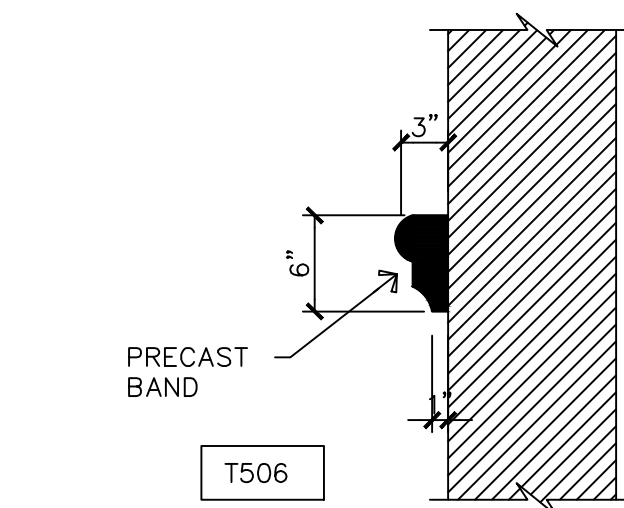
5 Railing Detail  
A-9 Scale: 1" = 1'-0"



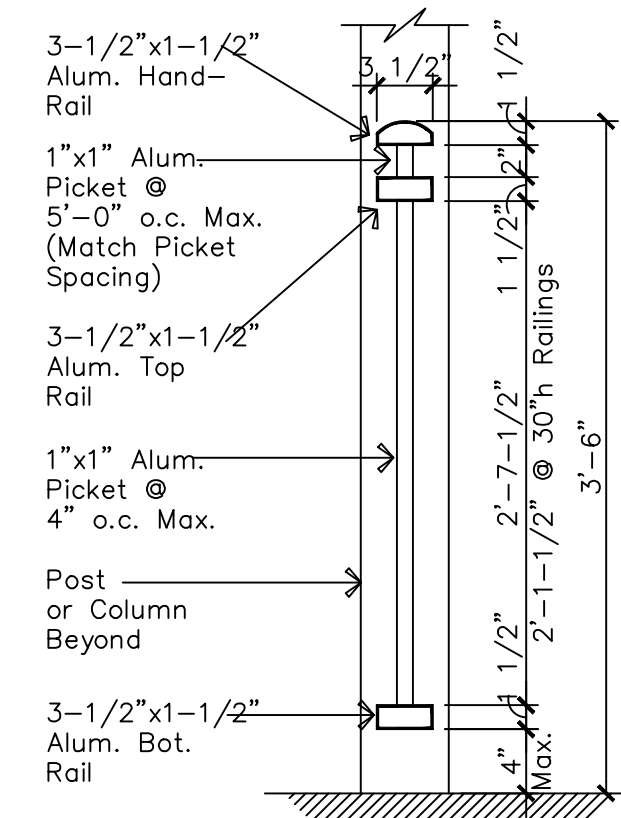
3162 Miller Park Drive North  
Garland, Texas 75042  
972-276-2000



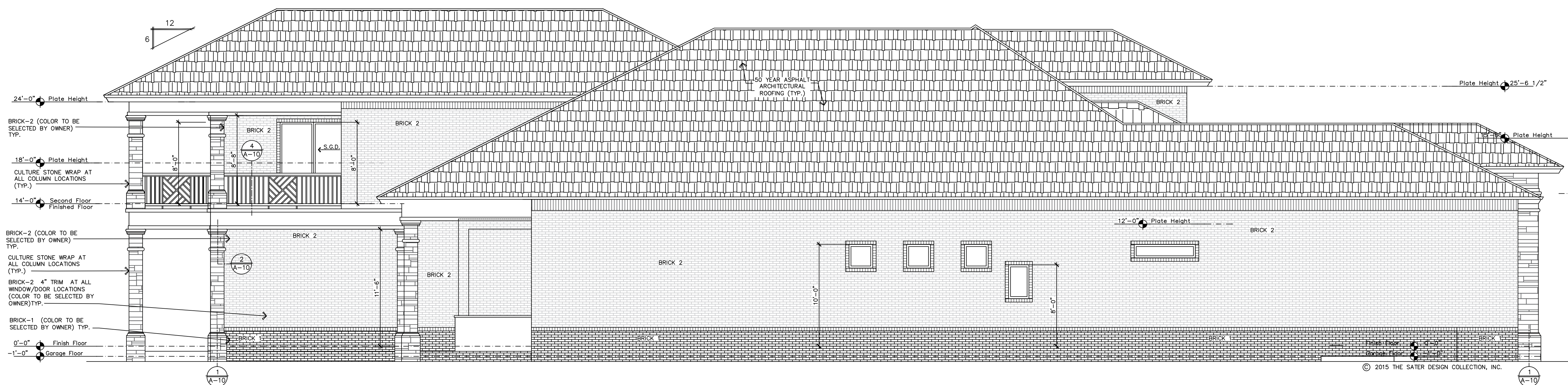
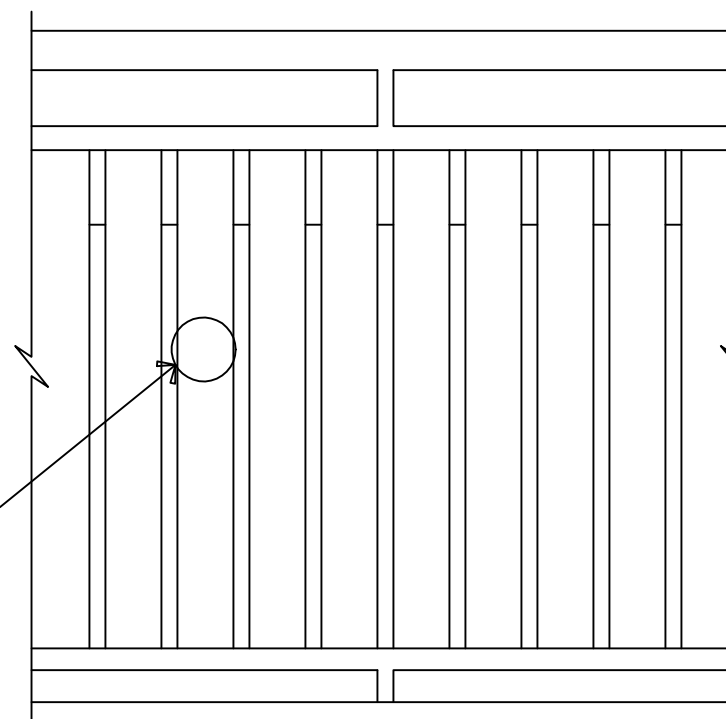
3162 Miller Park Drive North  
Garland, Texas 75042  
972-276-2000



3162 Miller Park Drive North  
Garland, Texas 75042  
972-276-2000



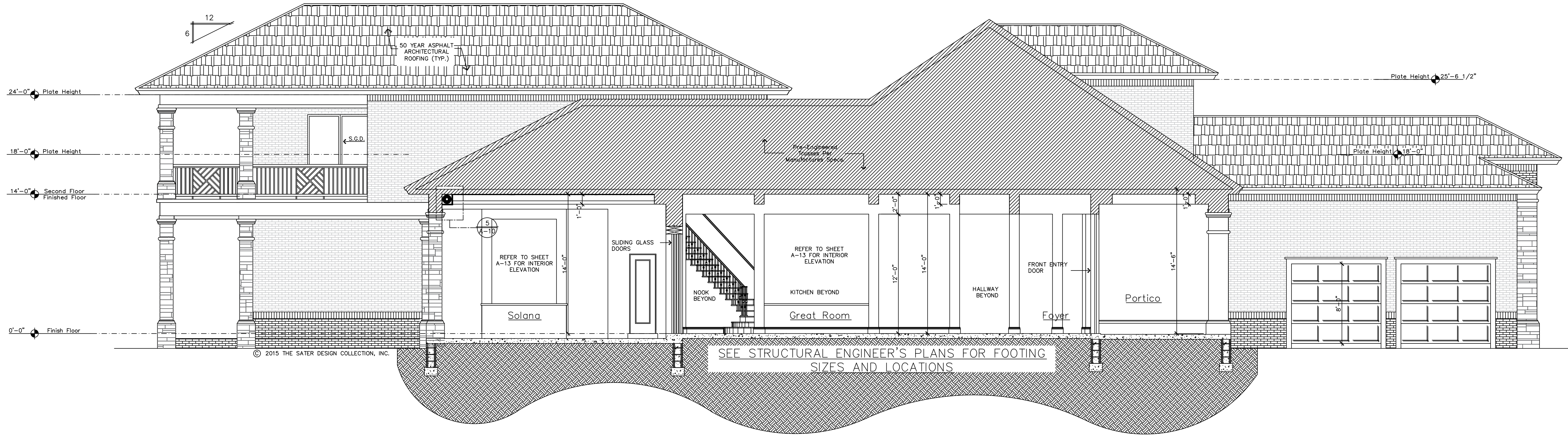
## RAILING PICKETS



Scale:  $3/16" = 1'-0"$

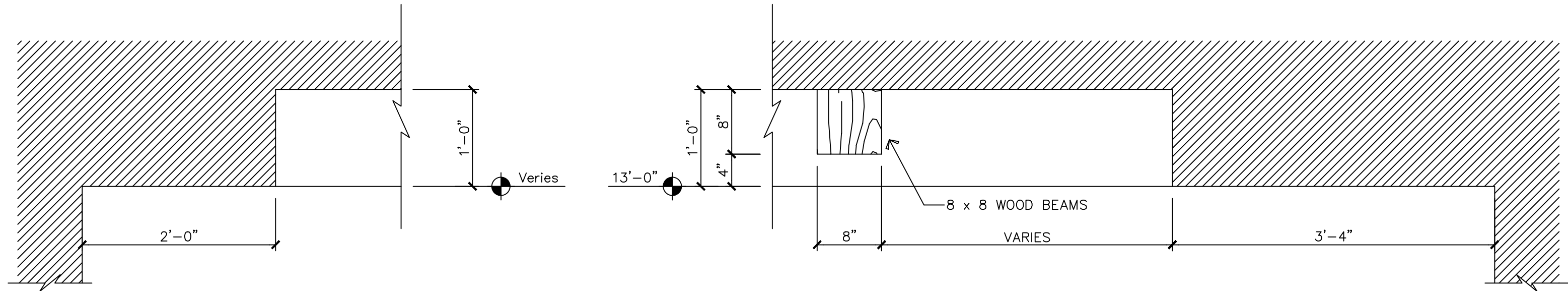


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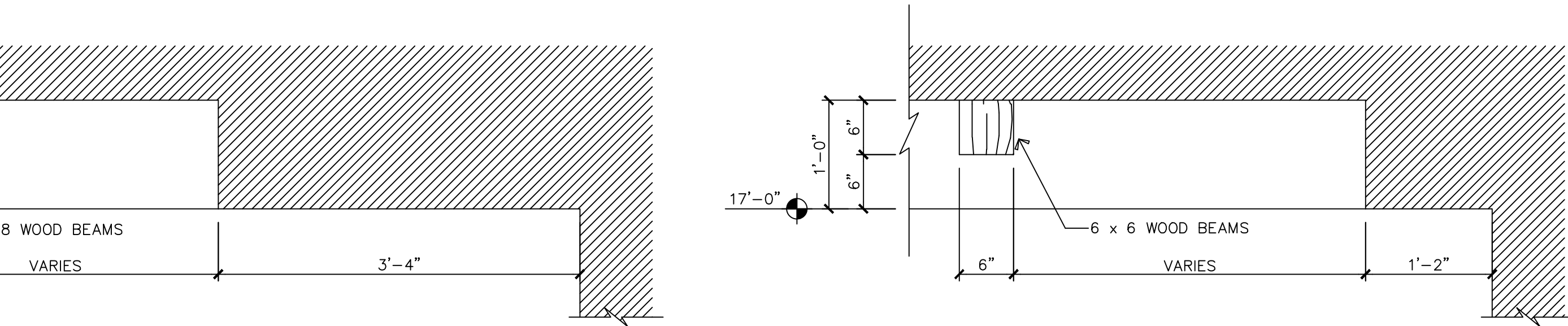
Building Section A-A

Scale: 3/16" = 1'-0"



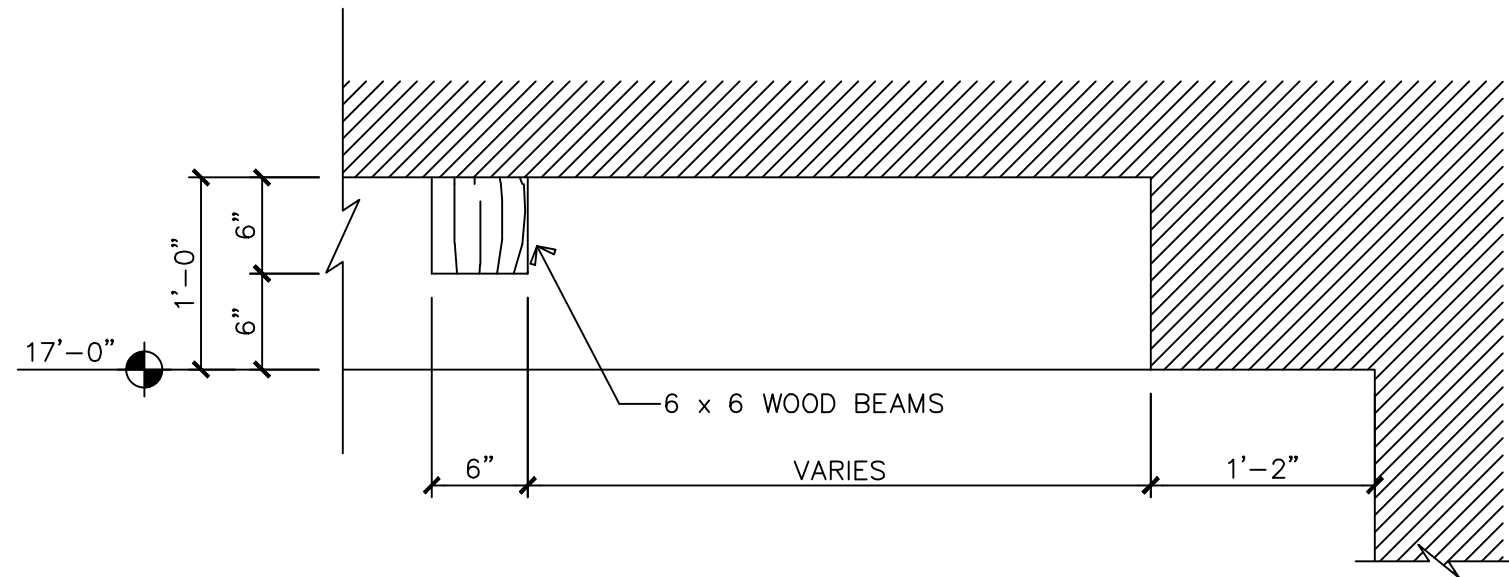
1 Ceiling Detail  
A-10

Scale: 1" = 1'-0"



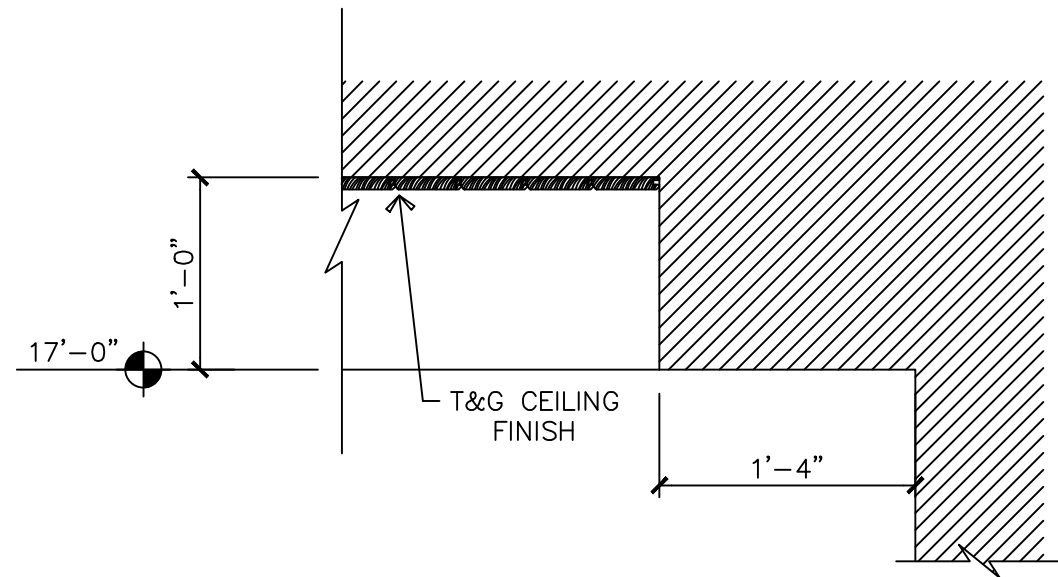
2 Ceiling Detail  
A-10

Scale: 1" = 1'-0"



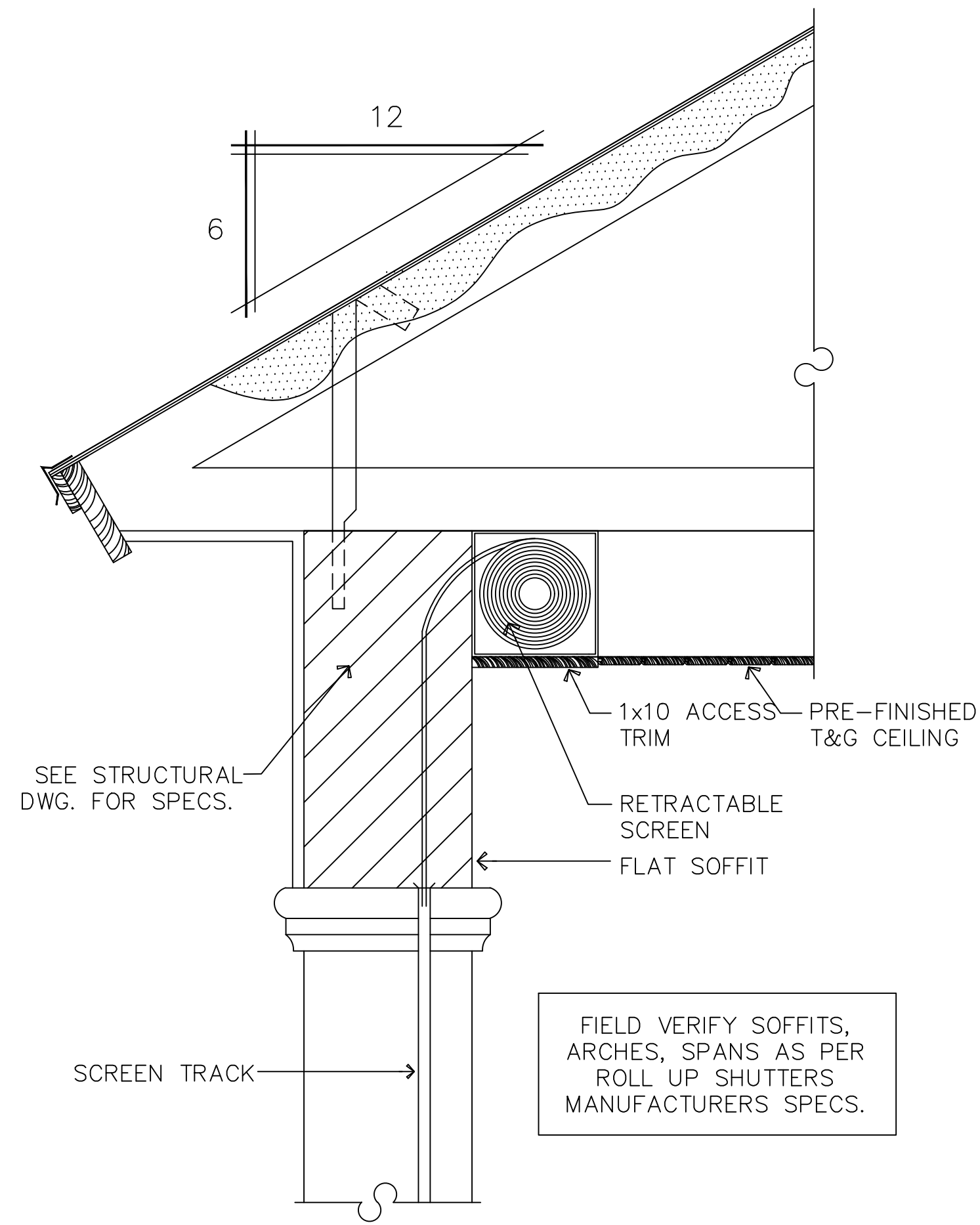
3 Ceiling Detail  
A-10

Scale: 1" = 1'-0"



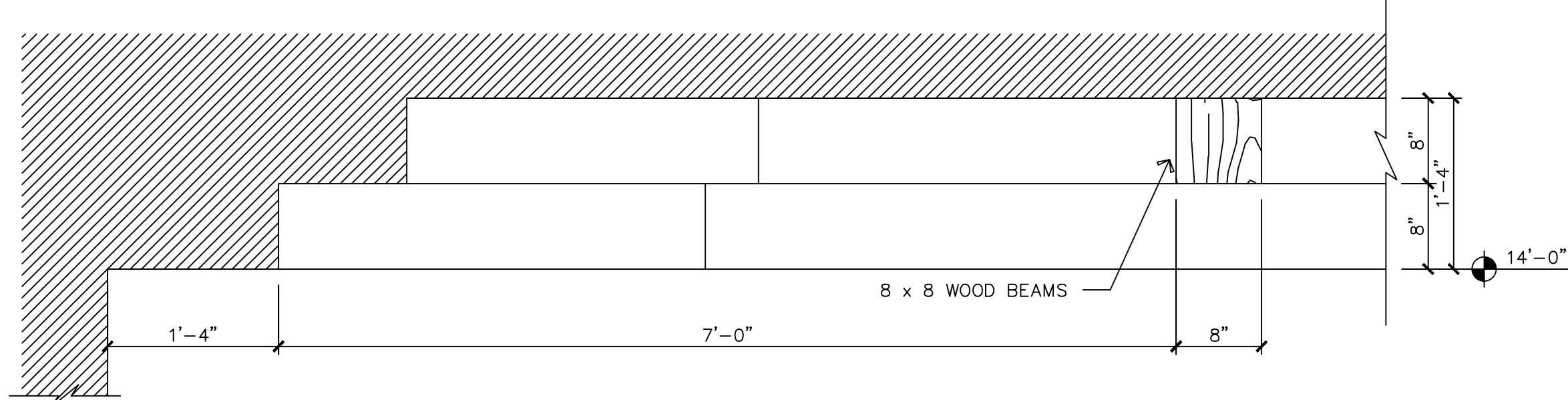
4 Ceiling Detail  
A-10

Scale: 1" = 1'-0"



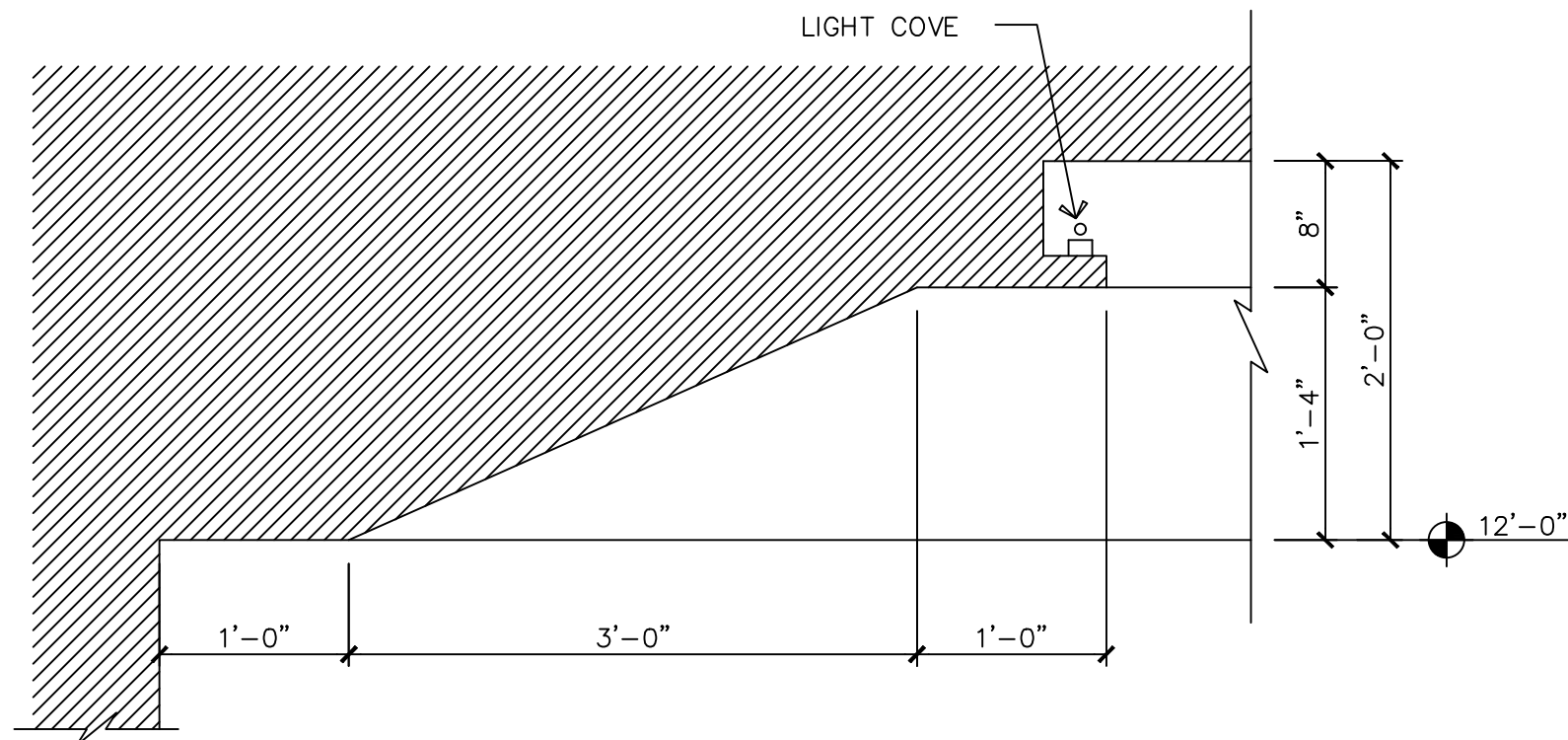
5 Screen Detail  
A-10

Scale: 1" = 1'-0"



6 Ceiling Detail  
A-10

Scale: 1" = 1'-0"



7 Ceiling Detail  
A-10

Scale: 1" = 1'-0"

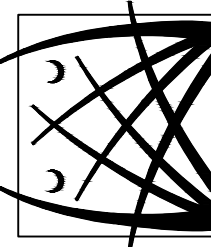
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DATE 05-13-15

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REVISIONS

A-10





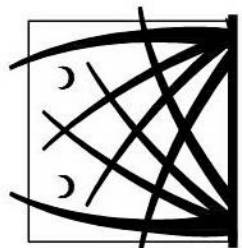
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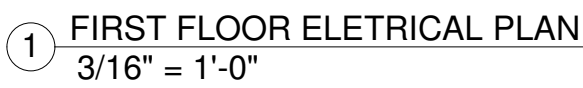
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**A-11**



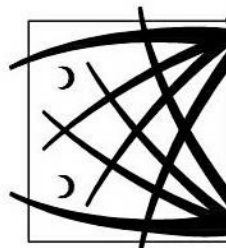


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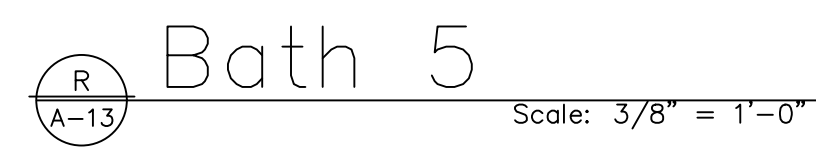
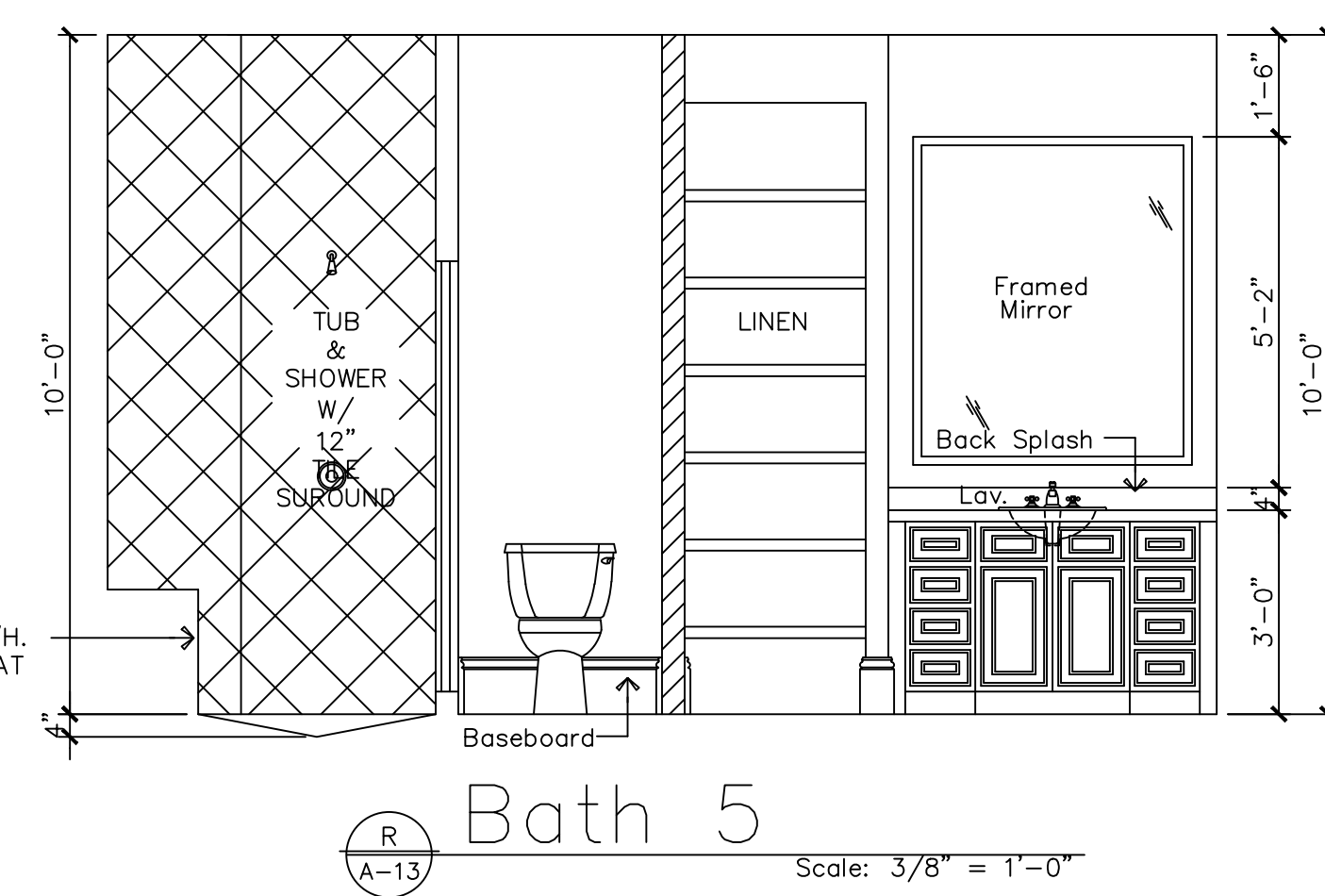
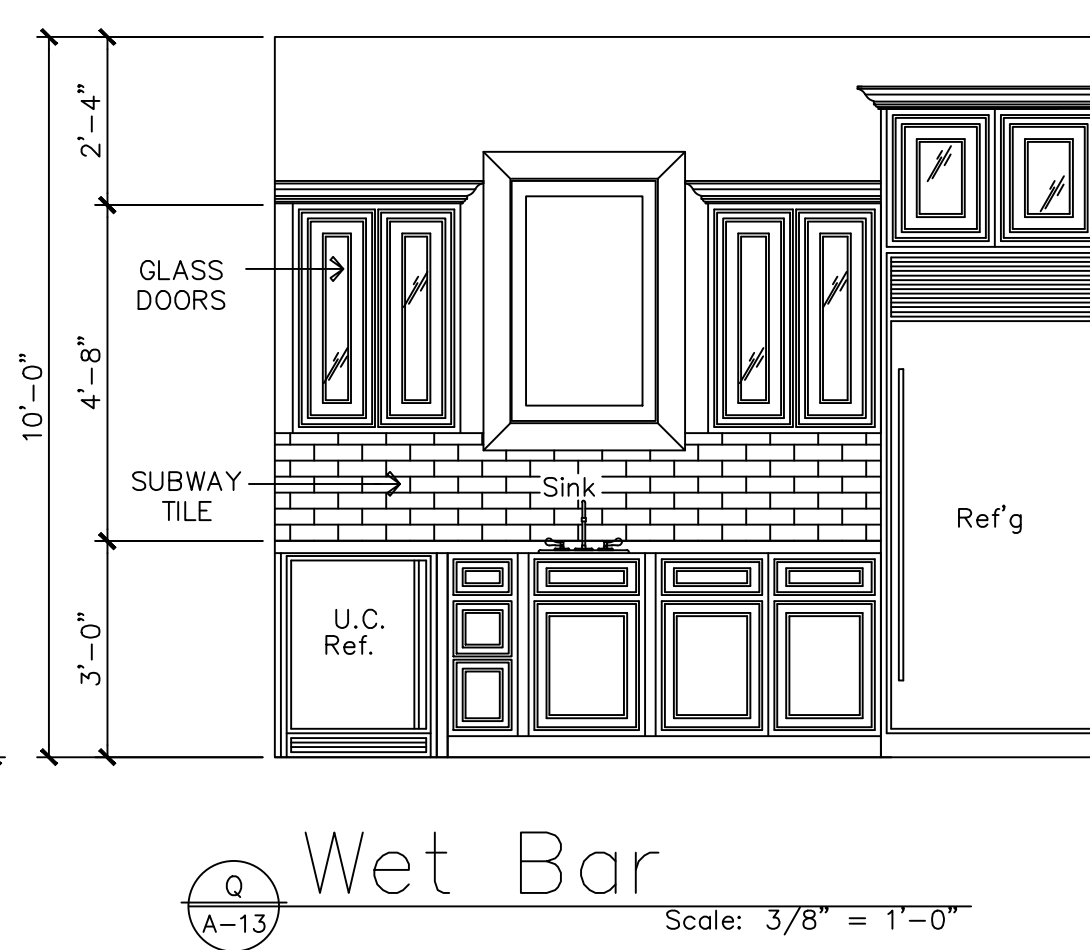
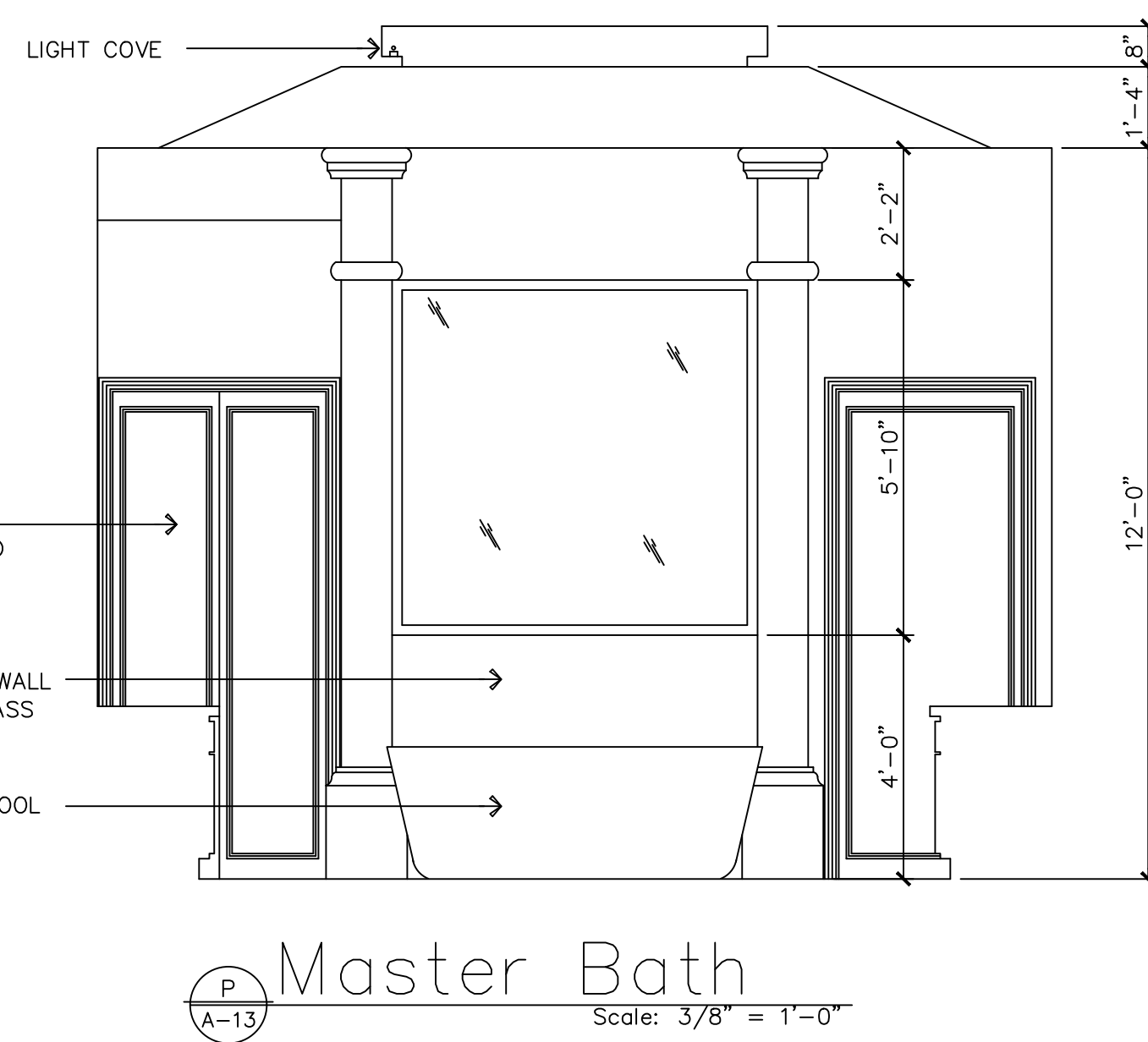
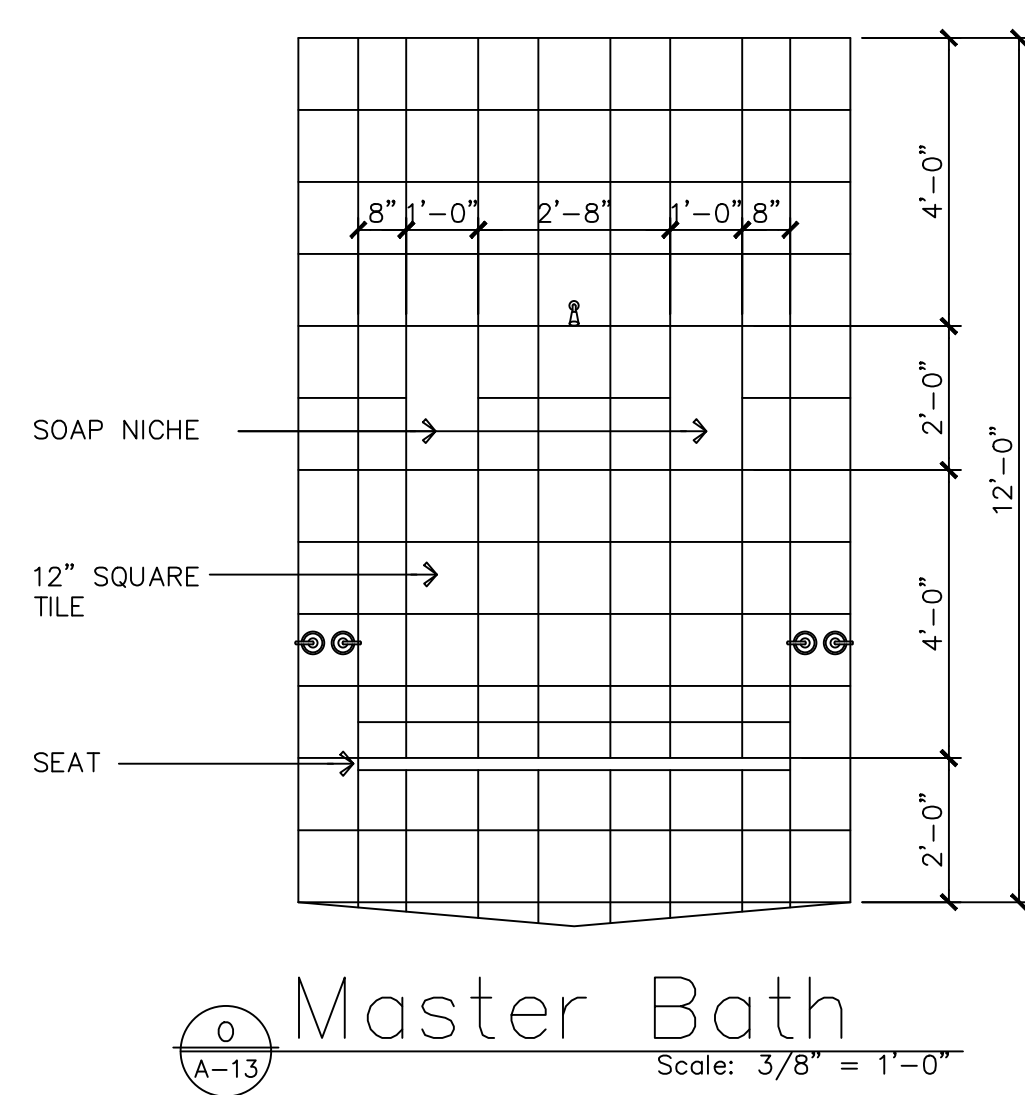
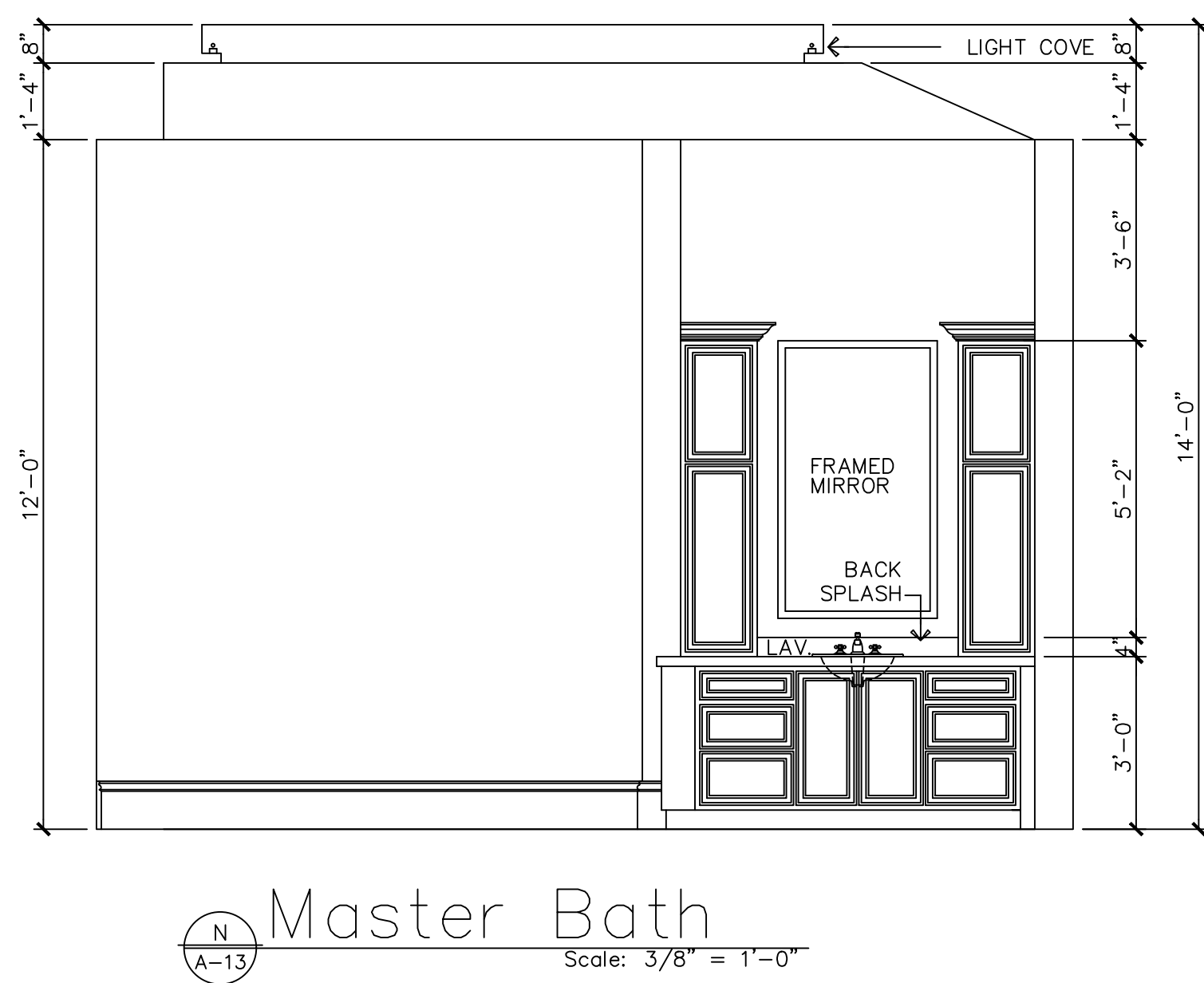
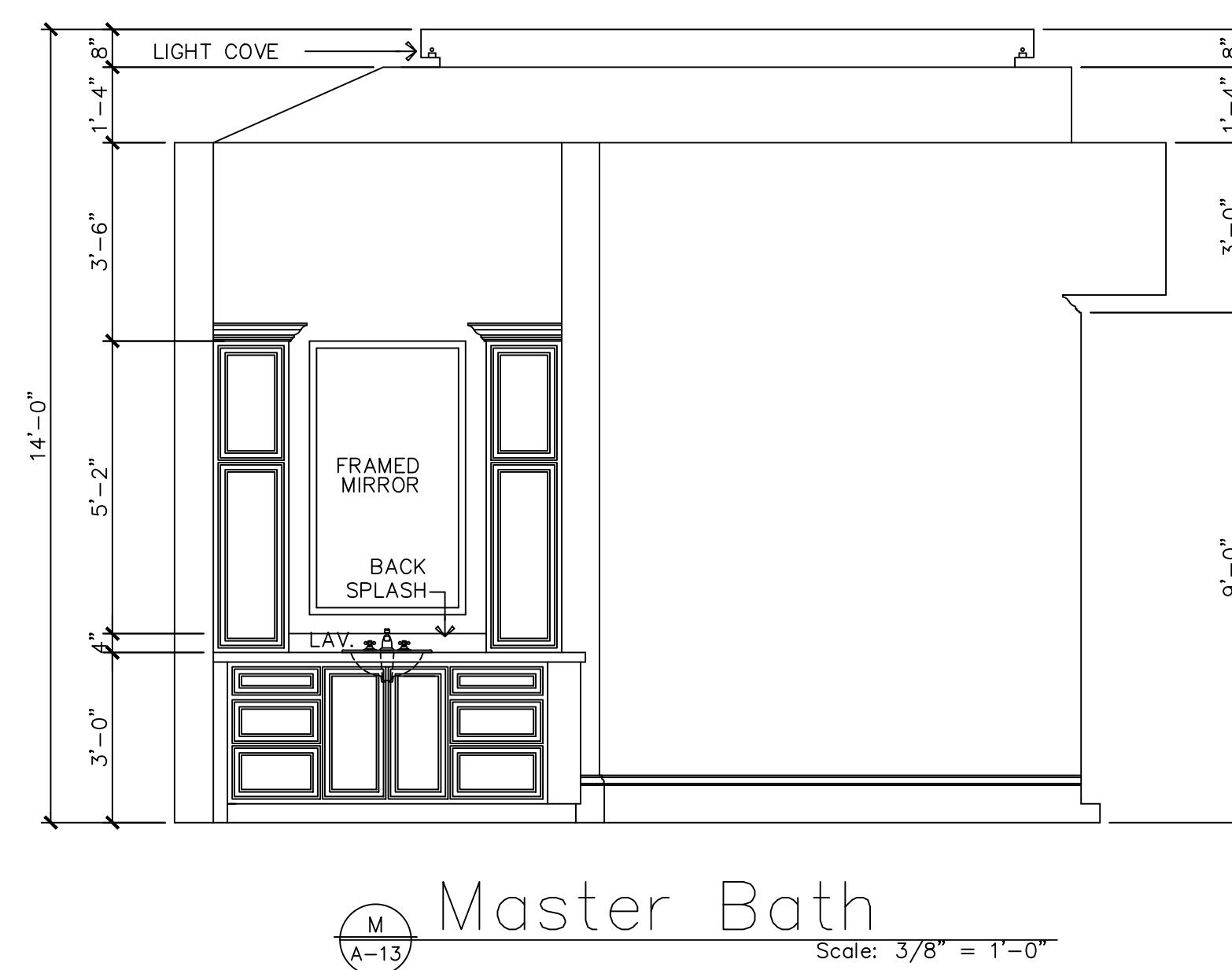
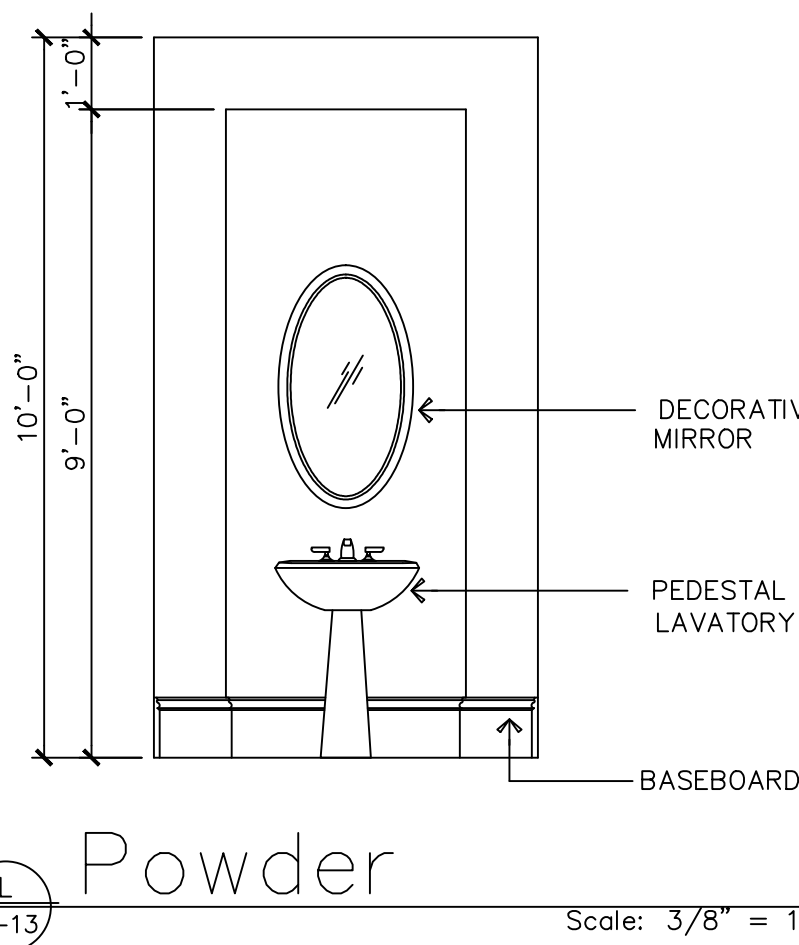
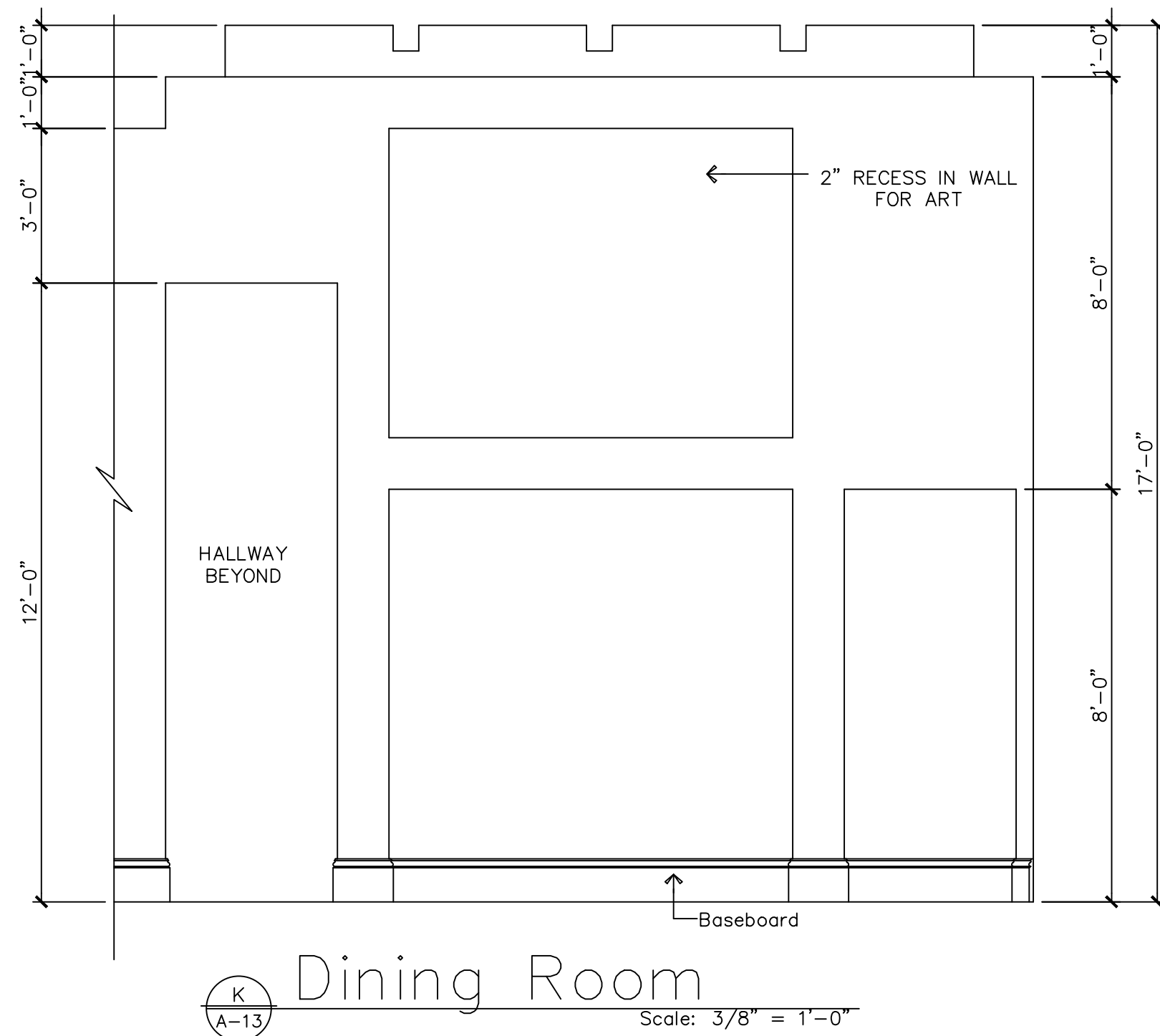
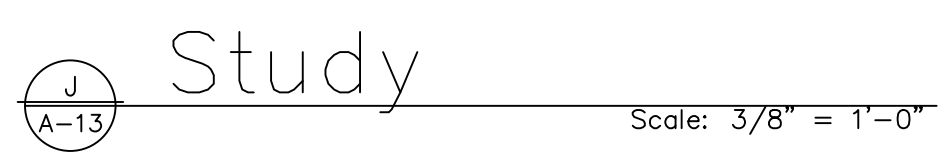
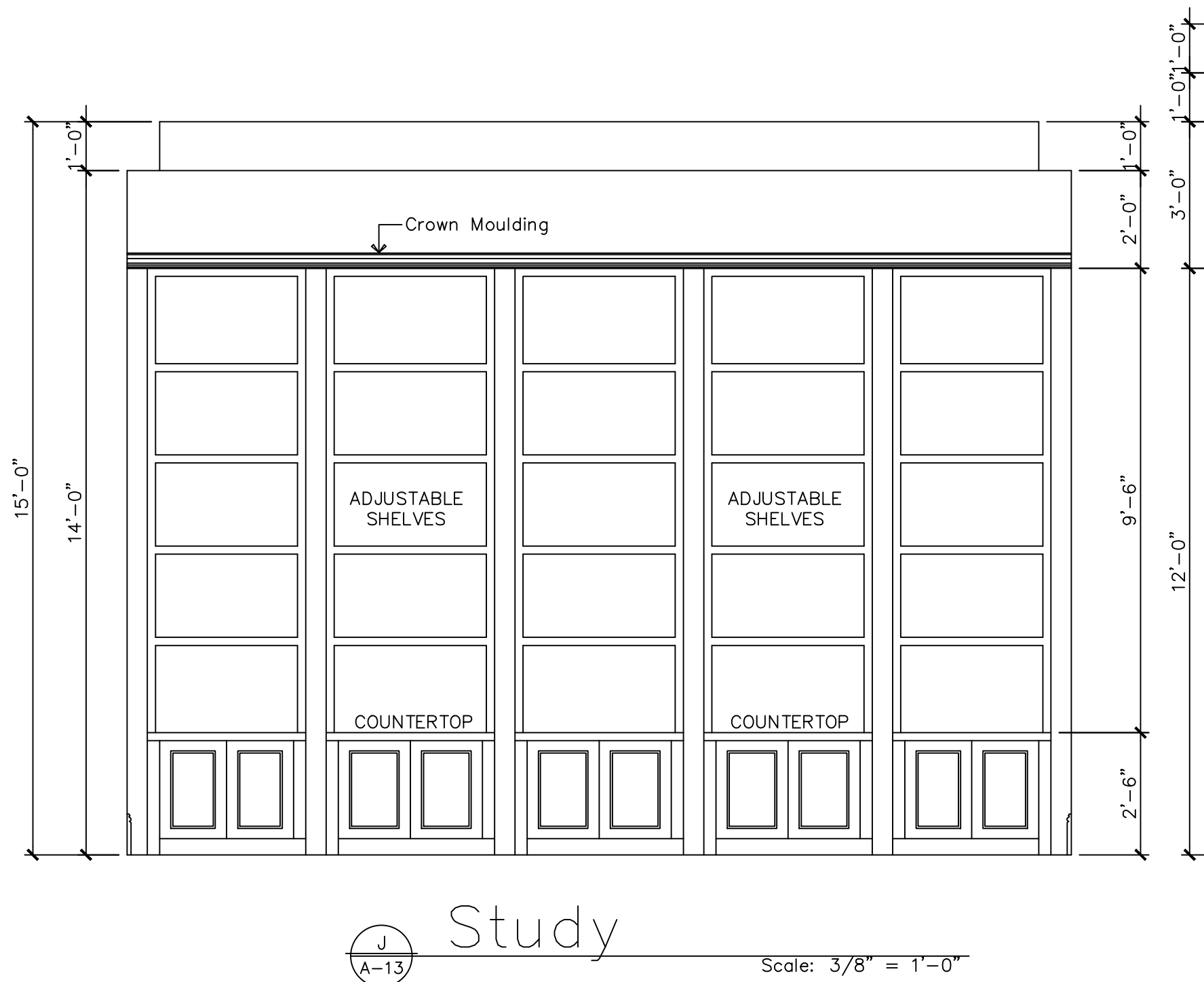
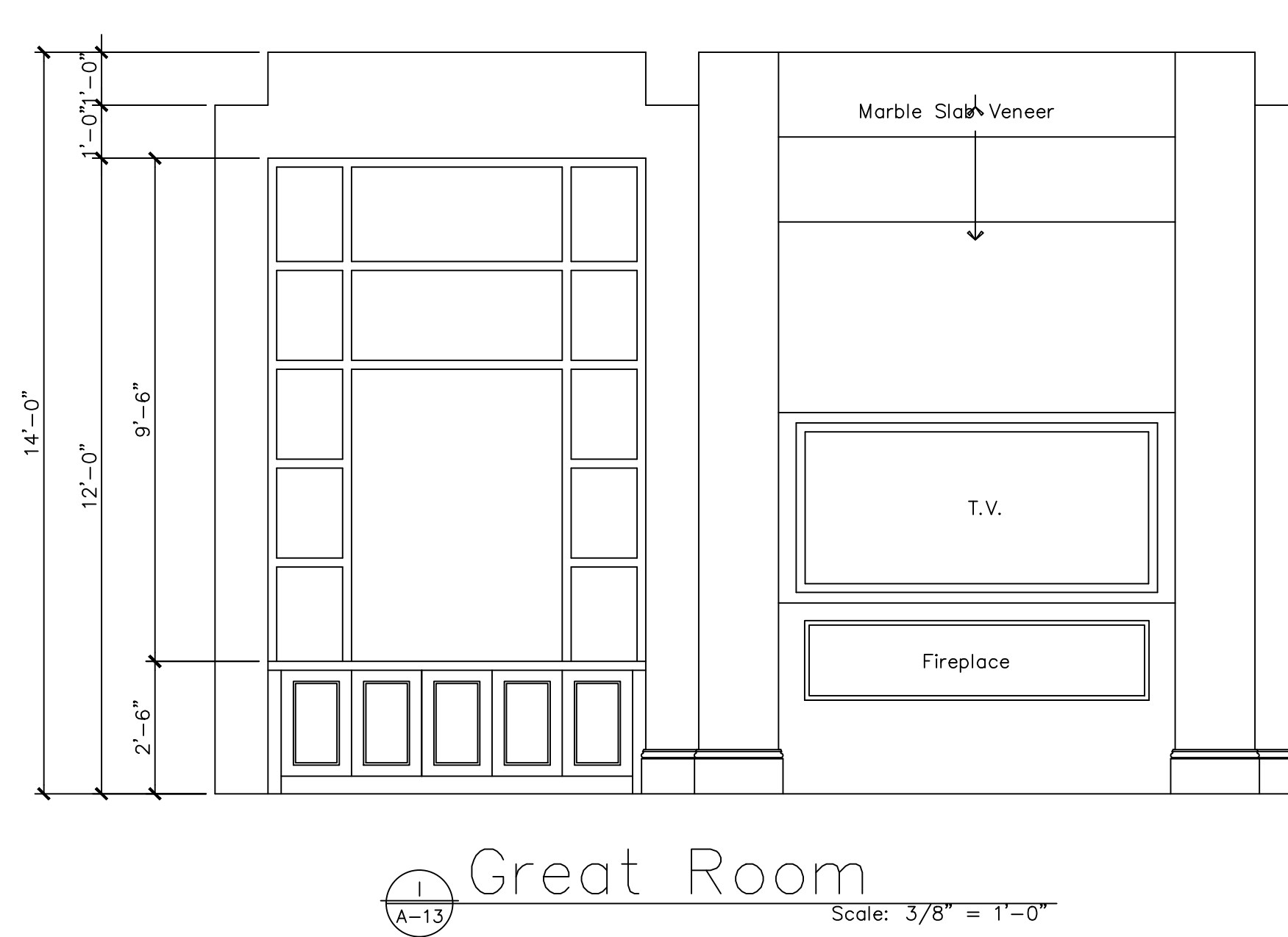
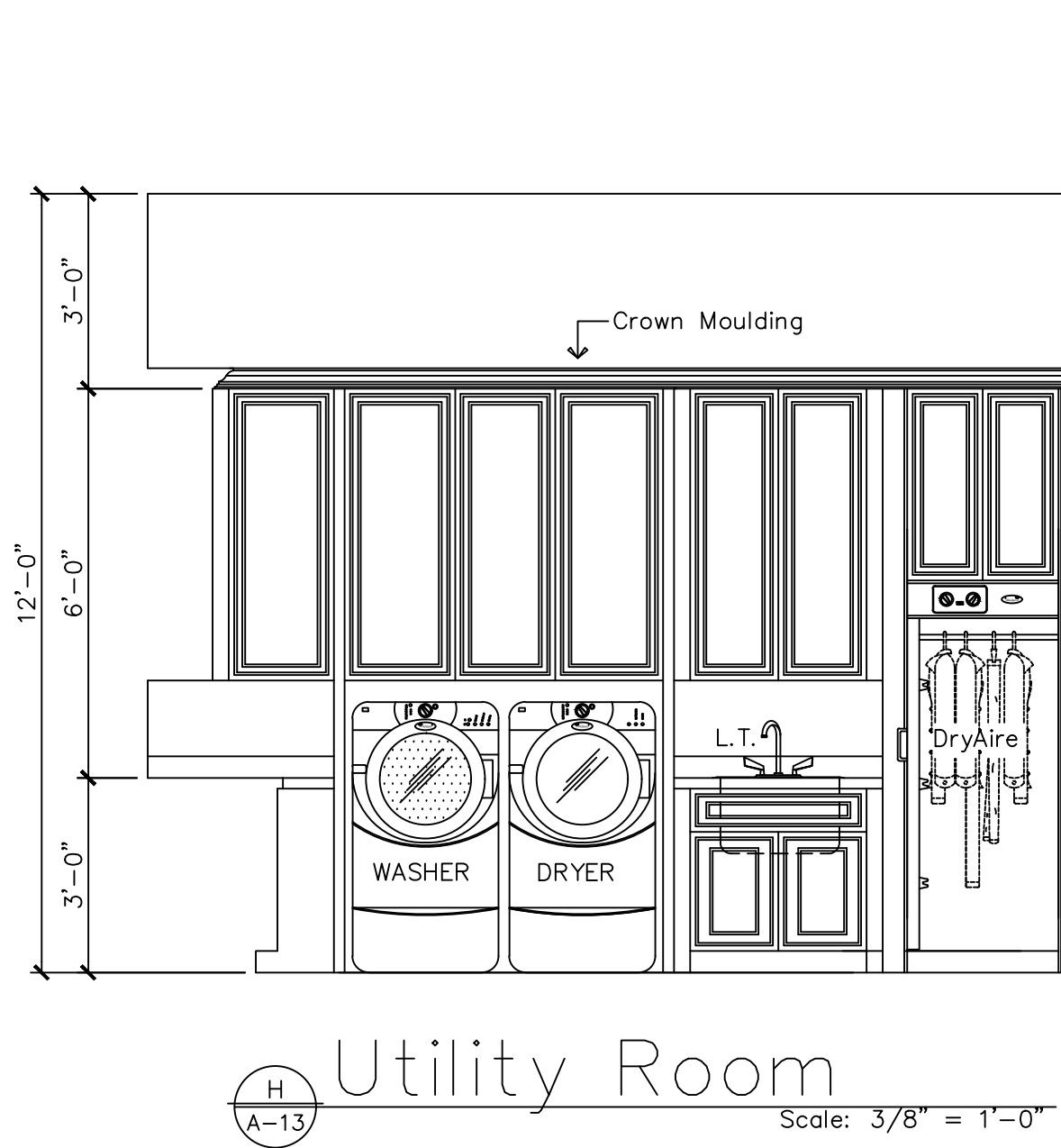
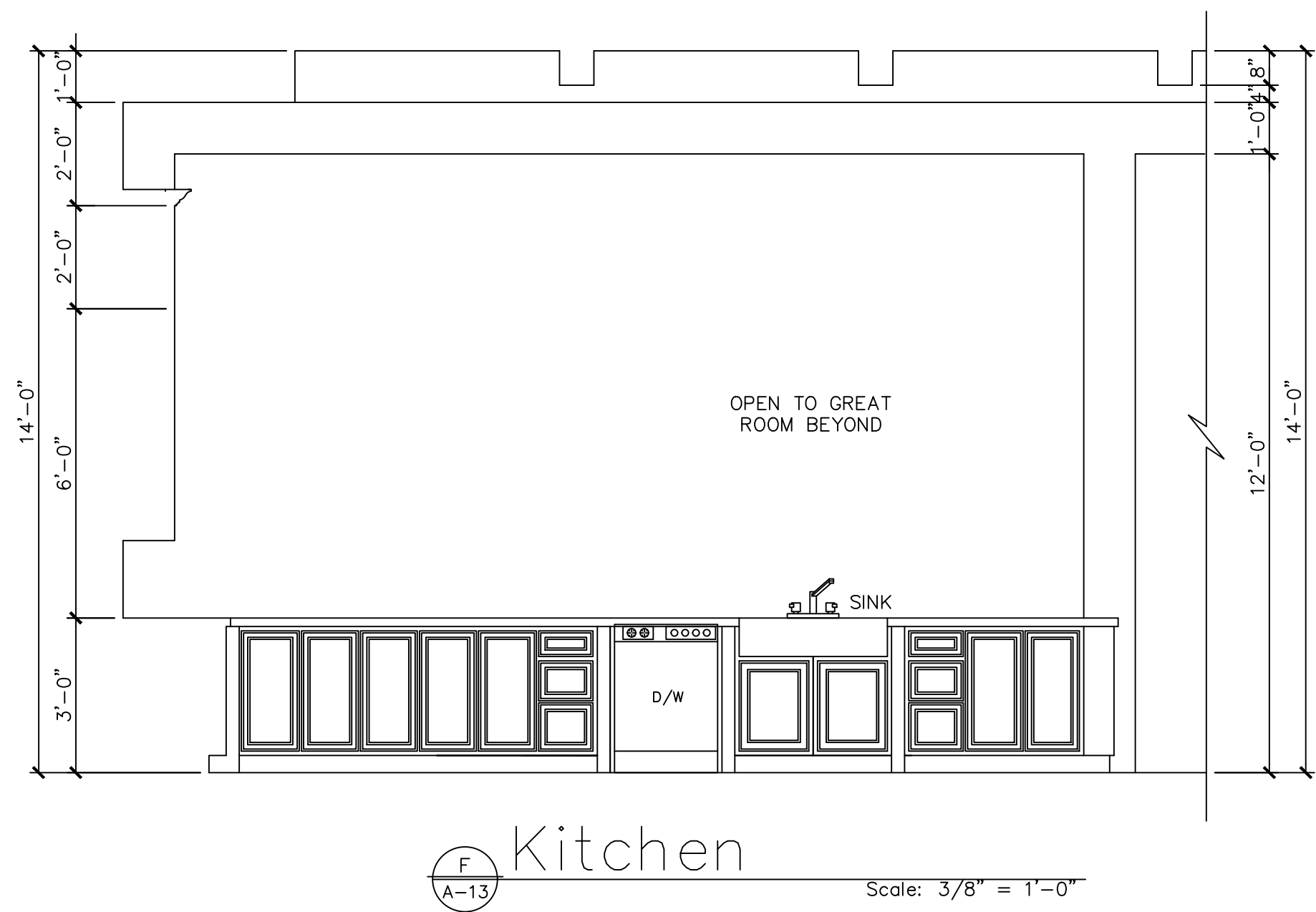
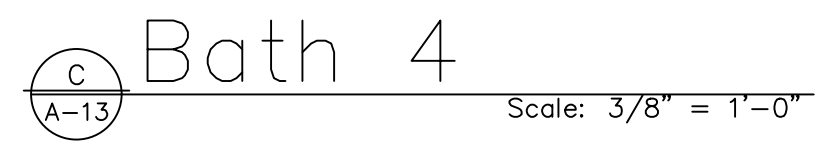
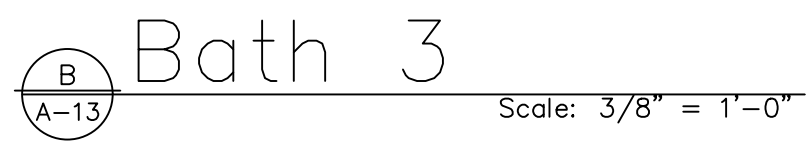
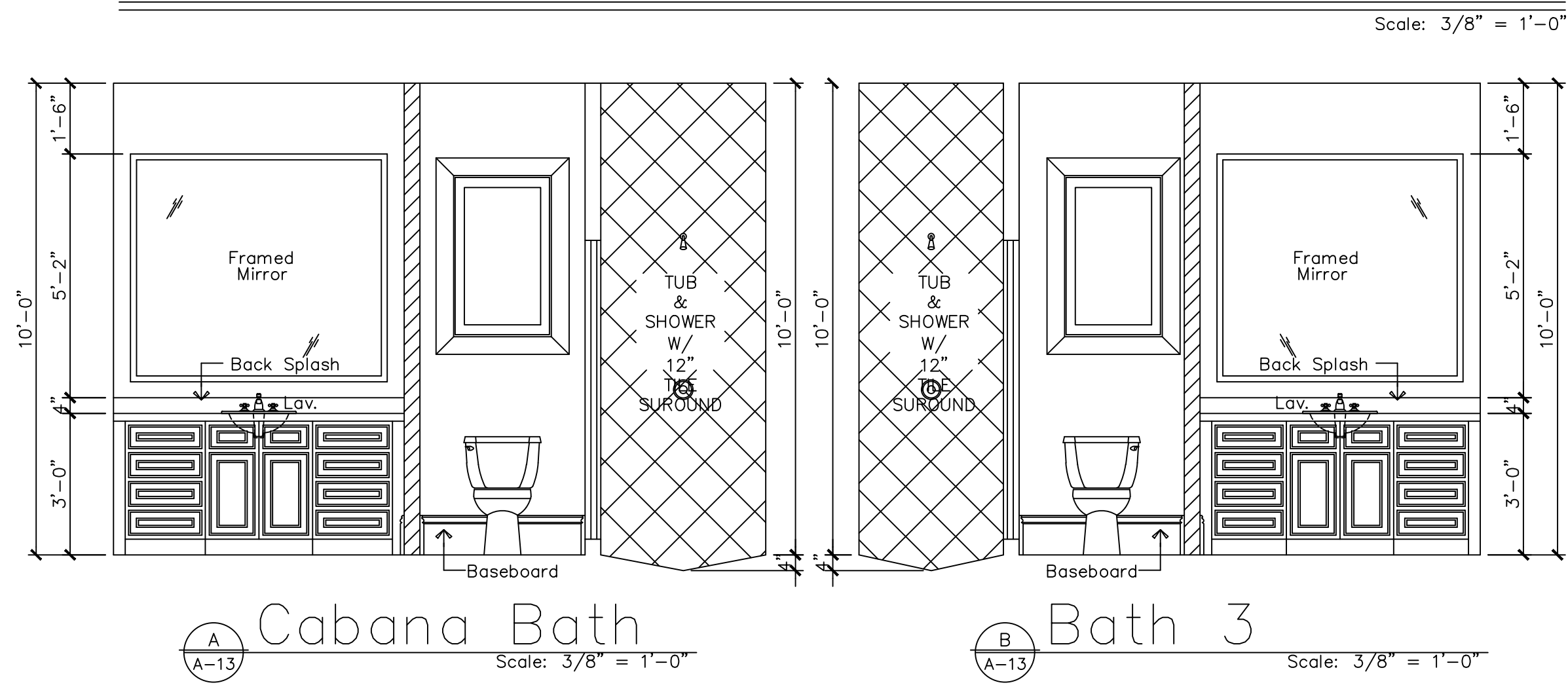
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**A-12**



## Interior Elevations



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