

City of Merced CA

## Sun Star Building Evaluation

Prepared by  
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City of Merced CA  
**Sun Star Building Evaluation**

## INTRODUCTION

This report was commissioned by the City of Merced to evaluate the feasibility of acquiring the existing Sun Star property and facilities for conversion to a Police Station. The 5.5 acre property is located at 3033 North "G" Street, Merced. The approximately 30,260 square foot main building was built in 1972 for media offices and a newspaper printing, publishing and distribution facility. There is an original 2,800 square foot 2<sup>nd</sup> floor area/mezzanine at the northwest corner of the building. There have been numerous additions as late as 1991, some of which may not have been permitted. There are two pre-engineered metal storage buildings on the west side of the property.

The evaluation team consists of the following firms:

- WMB Architects | Stockton – Sacramento CA : Life-safety, Envelope and Accessibility
- Siegfried Engineering | Stockton CA : Civil – Site Systems
- CYS Engineering | Sacramento CA : Structural Systems
- Stanton Engineering | Sacramento CA : Mechanical and Electrical Systems
- D7 Roofing Consulting | Sacramento CA: Roofing Systems

The goal of the study is to determine what baseline improvements to the site and facility are required to change the use of the building to a Police Station complying with all current Building Codes; and to establish the range of magnitude costs associated with those identified improvements. The evaluation is structured in the following building systems:

- Site systems and Accessibility
- Code, Life Safety & Envelope Systems
- Building Accessibly
- Structural Systems
- Mechanical and Plumbing Systems
- Electrical Systems

The evaluation was based on the existing drawings of the original building from 1972; on-site investigation/observations by the architectural/engineering team; and discussions with City public works personnel. The Title Report for the property was not available for review.



## EXECUTIVE SUMMARY

This study evaluates the Merced Sun Star property and facilities for possible purchase and conversion to use as a City Police Station; and determines the baseline improvements with associated costs required to change the use of the building to comply with the California Code of Regulations Title 24.

The 5.5 acre property located at 3033 G Street Merced is two-thirds developed, and generally flat in elevation change. The existing driveway access, on-site driveway around the building, parking and service loading areas can be appropriated for police and employee vehicle use. The asphalt paving and many of the concrete curbs are deteriorating and near the end of their life cycle; however they can be serviceable for the immediate future. The site is deficient in accessible parking spaces, and paths of travel to the building and to the public way which are baseline required improvements.

There is no storm drainage system on-site or in the public way; the existing pattern of site sheet flow to the street will continue to be utilized. Utilities for the 3" domestic water service, and the 6" and 4" sewer service should be sufficient for the intended use. The existing sewer line is on the north end of the building, and thus the 6" sewer line to the west of the facility will need to be extended south and east to provide for the proposed new locker room/restroom addition. The elevation depth of the service is not known, and will need to be evaluated for adequate fall to the addition location. The existing gas service line and meter will need to be evaluated for capacity once the police program for the addition is complete.

The existing building does not have a fire suppression system. To comply with CBC Title 24 maximum allowable area requirements the installation of a fire sprinkler system is required. A new 8" fire water line must be installed along with a second fire hydrant on-site. A single 8" line should be sufficient as the line will not be servicing multiple buildings; however the Fire Marshal does have the discretion to require the line to be looped around the building and back to the City water main.

The proposed project is a change in use for the building from mixed use B/F-1/S-1 Occupancies to mixed use B/A3/S-1/(I-3) Occupancies; and a change in Seismic Risk from Category II to an Essential Services Facility Category IV. **The change in seismic risk category is the most significant driver of remediation requirements and cost impacts.** The initial analysis by Category IV standards found the existing building to be substantially deficient in the wood roof framing and diaphragms, the concrete tilt walls and foundation connections, and structure of the mezzanine/2<sup>nd</sup> floor areas. To achieve the structural remediation measures, the existing ceilings, all of the roofing, many of the walls and the exterior soffits are all required to be removed. Once removed, all that is replaced must be installed to current building code standards, including all the power, lighting and control systems, envelope insulation standards and HVAC distribution and control systems.

The existing building by CBC Title 24 classification is a construction Type III-B, non-rated assembly facility. For the police program to include holding cells, in either an I-3 Occupancy or in a limited number of detained persons B Occupancy, the building is required to be a Type III-A, 1 hour rated facility. As the building uses the fire sprinkler increase to achieve its allowable area, fire sprinklers cannot be used to substitute for the 1 hour rating. The portion of the facility that contains the holding cells will need to be upgraded to a 1 hour rating for roof, wall and primary structure assemblies.



There are a number of accessibility deficiencies in several features of the building. The restrooms will need to be partially and substantially remodeled to achieve compliance. Nine doors will need to be either removed, or the adjacent walls restructured, to achieve door clearances. Four exterior doors will need modifications to achieve exit door clearances. Accessible signage throughout the facility will need to be added or changed.

The existing raised floor area over the Mail Room does not comply with requirements for a mezzanine, and will need to be considered a second floor. There is no elevator access to the second floor to provide equal facilitation of second floor uses. The mezzanine at the Newsprint Storage room was a later addition; there are no existing drawings of the construction and access to the framing was unavailable to evaluate structural capacity. The CBC Title 24 requires all floor levels and mezzanines to be accessible in public buildings. As there is structural work required on the second floors, for purposes of this estimate we have provided for their demolition. Depending on the requirements of the final police program, the tenant improvement may evaluate the cost feasibility of installing elevator access and completing the structural upgrades.

The additions to the north and west of the facility are not compliant with current code requirements and must be removed. The existing original canopy has major structural deficiencies and, unless there is a compelling need in the final police program for the canopy, should be removed.

The existing roofing is a thin foam spray system over the existing original built-up asphalt roofing. The foam roofing is beyond its life expectancy and should be removed. Further, the extent of structural retrofit work will require the removal and replacement of all roofing. Additional tapered insulation cants should be installed at the low portions of the roof to assist in better water flow to roof drains. The plastic roof drains and overflows should be replaced with cast iron units throughout.

The 18 package HVAC mechanical units located on the roof are beyond or near their expected lifespans. Five of the units should be replaced; 13 of the units could be reused with the additional retrofit of economizers. The tenant improvement should consider replacement of all units because of the limited remaining life expectancy of the units. The existing interior ductwork is not likely to comply with current Title 24 leakage standards; however the extent of structural repairs will require all ductwork and grills to be replaced. The extent of retrofit work will require a new HVAC control system.

The electrical transformer service is adequate and can remain. The electric power, lighting and control systems will need to be replaced throughout. The complete replacement is a consequence of the extent of structural upgrades, the new Title 24 Energy Code requirements, and poor quality of the existing main power supply equipment. The existing Fire Alarm system is serviceable, and can be added to or replaced as necessary in the tenant improvement. Data/communications, video surveillance and security systems are considered for this study as part of the tenant improvements.

The two free standing metal storage buildings on the site did not have existing drawings to evaluate building system capacities. However, the buildings visually appear to be standard pre-engineered metal building structures that will be serviceable for storage purposes.

The cost estimate for remediation of the existing building to current code is \$6,750,000. See Exhibit E 1-10.



## FINDINGS AND RECOMMENDATIONS

### Site Systems

#### Site Wet Utilities

##### Domestic Water

The site is currently served by the City of Merced through a two inch (2") domestic water service. This service, shown on the attached site plan (Exhibit C-1), has a backflow prevention device adjacent to the frontage sidewalk. We did not find a second backflow device for the landscape irrigation service. This service serves the building, the irrigation system and a series of exterior perimeter hose bibs.

The site buildings do not have a fire sprinkler system. We understand the proposed use will require a fire suppression system in accordance with the current fire code. This will require both a building sprinkler system as well as an additional site fire hydrant. A new City service will be required to serve this system and tie into the City's twelve inch main line located near the center of G Street as depicted on Exhibit C-1. We recommend the new service enter the building along the south side of the building as the driveway along the north side has a variety of underground utilities that may conflict with the placement of a new water line.

##### Sanitary Sewer

Based upon original plan documents, the building's waste system is currently served by a pipeline along the north side of the building as depicted on Exhibit C-1. This line runs onto the adjacent property on the north. Based on discussions with the current occupant, they have not experienced any interruptions in service. The size of this service appears to be adequate to serve the proposed use.

##### Storm Drainage

This site does not appear to have an underground storm water collection system. Most of the storm water appears to drain easterly onto G Street through surface runoff within the driveway areas. Some of the site appears to drain to the undeveloped southwest portion of the site and to a lesser extent to the northwest driveway. Most roof drains enter underground pipes which discharge through curb face openings onto the pavement.

##### Roof Drainage

The existing roof is drained by roof drains connecting to steel pipes running down the inside of the concrete tilt walls, and exiting through the concrete walls to splash blocks at the perimeter. It was observed roof run-off contributed to ponding water, particularly on the south side landscape areas. As the building was constructed over several feet of a sand base, depositing the roof drainage at the building perimeter with its shallow foundation system could cause problems with the migration of water under the building and associated problems for the structure and floor moisture content. A walkway on the south side was observed to be raised several inches, not allowing an exit door to open. While not a code required improvement, we would recommend that the roof drain discharge be taken away from the edge of the building perimeter.



## Site Features

### Flood Zone

This site is situated in Flood Zone X, unshaded, per the FEMA Flood Insurance Rate Map (FIRM) number 06047C0428G. This zone is in an area determined to be outside the 0.2% annual chance floodplain. Therefore, based on the current FIRM, there are no flood related building restrictions on this site.

### Site Access

The site is served by three driveways, two along G Street and one at the northwest corner of the site. Upon review of record survey maps it does not appear this parcel has legal access to the northwest driveway. We recommend a Title be conducted search to determine whether any access easements have been granted by the adjoining property owner to this site. This driveway may be considered a prescriptive right; however, this determination is beyond the scope of this report and is subject to a legal review and interpretation.

The site has a five foot wide public utility easement along the north and west property lines.

### Site Accessibility

The site parking lot accessibility features do not meet the requirements of the California Building Code or the Americans with Disabilities Act (ADA). There is one accessible marked parking stall near the building entrance and one on the south side of the building. Neither stall meets current accessible standards with regards to slope, striping, signage and location. A facility of this size, with a likely parking space count of 50-100 spaces will require 3-4 accessible parking stalls, along with an accessible path of travel to the main and employee entrances. This will require significant realignment of the parking facilities, particularly in the east/front side of the building. One option may be to remove the landscaping on the south side of the main entry walk, and install new accessible spaces and a new sidewalk path of travel to the entry adjacent the building. See attached Exhibit C-1.

The site currently does not have an accessible path of travel to the public way, which is required by the CBC as part of the Exit Discharge. Alternatively, an area of safe dispersal can be provided on-site which meets the listed code criteria. There is sufficient area on the site more than 50' away from the building which could be so designated. However, as this is a public facility, with the opportunity for the public to access the site from public transportation at the public way, we would recommend installation of a new accessible compliant walkway to the public sidewalk.

### Pavement

A majority of the site outside of the buildings is covered with asphalt pavement bounded by curbs and gutters. The pavement is in in poor condition with significant "alligator" cracking throughout the site. Some isolated areas pond water due to settled or improperly graded pavement.

Though severely worn and cracked, we did not observe any large pot holes or conditions that would not make it serviceable on a temporary basis. For long term use we recommend further investigation, including pavement cores and sampling to determine whether the pavement should be entirely replaced or covered with a pavement overlay system.



To a similar extent, some of the concrete curbs along paving edges and planter islands are broken or displaced. These curbs should be replaced as part of any pavement improvement project.

### **Fencing**

The perimeter fencing on the north, south and west sides of the property are steel framed picket fences approximately seven feet tall. Overall, the fence is in relatively good structural condition. We did find several isolated areas where the fence was slightly rusted, leaning and/or had missing pickets. Overall, the fence requires some maintenance and painting to provide for an extended life.

Most of the fence had a small vertical gap along the bottom of roughly three to six inches tall.

## **Code, Life-Safety and Envelope Systems**

### **Occupancy, Allowable Area and Exiting**

The existing building is constructed of perimeter tilt concrete walls, a concrete slab on grade floor and wood frame roof structure. The building is essentially a two-part structure: a lower parapet elevation portion which houses the offices, which is a B occupancy; and a higher parapet elevation that houses what was the printing, storage and distribution operation, which is an F-1/S-1 occupancy designation. The structure of the building by CBC Table 601 is a construction Type III-B; which is non-combustible materials for exterior walls, wood roof structure with non-rated roof/ceiling and interior wall systems. By CBC Table 1604.5 the existing structural seismic risk category is a Level II. The existing facility does not have an NFPA 13 fire sprinkler and alarm system.

A police facility contains a mixed occupancy, which will include Offices-B Occupancy; A3 Assembly Occupancy and Storage S-1 Occupancy. Depending on detention requirements in the Police program, an I-3 occupancy category may also be required. From recent correspondence with the police, the extent of the detention program may be limited to two holding cells, with a capacity of 4 persons each; and a detention bench. If limited to holding less than 9 persons at one time, CBC 308.5.7 allows the restraint facilities to be classified as a B Occupancy provided the provisions of CBC 408.1.2.6 are met. A police facility is classified as an essential services facility, and thus, by CBC Table 1604.5, has a seismic risk category Level IV. The increase in risk from Level II to Level IV has significant structural consequences that are detailed in the structural discussion.

A review of the allowable area for a police facility by provisions of CBC Chapter 5, Section 508, finds that the existing building exceeds the allowable area when evaluated under either a separated or non-separated occupancy strategy, without the provision of fire sprinklers. With the installation of a fire sprinkler system, a non-separated approach provided by CBC 508.3 can be utilized, considering a most restrictive Occupancy A3 basic area of 9500 square feet, a .75 perimeter increase and provided the restraint of individuals is limited as required by CBC 308.5.7 and 408.1.2.6, and thus classified a B Occupancy.

The holding cell and restraint portion of the police facility program, both as an I-3 Occupancy under 5200 square feet or as a Temporary Holding Facility B Occupancy, requires the facility to be of a 1-hour rated Type III-A construction. As the Sun Star building is a non-rated construction Type III-B, the portion of the facility housing the holding cells and interview rooms will be required to upgrade the roof, and



structural elements to 1-hour protected construction. If the police program requires an I-3 Occupancy designation, the holding cell and interview room areas will also need to be separated from the remaining occupancies by a 2-hour fire wall.

As indicated by the recent correspondence with the police department, we will assume for cost estimate purposes that there will be a program limitation on the size of the restraint facility to comply with requirements for a B Occupancy; and the portion of the facility housing the holding cells and interview rooms will be required to upgrade the roof and structural elements to 1-hour protected construction.

Fire resistive substitution for the 1-hour rating cannot be utilized as fire sprinklers are needed to achieve allowable area for the building as provided by CBC Table 601, note 'd'. Once the final police program is established, and the actual area of each occupancy is known, it may be possible to achieve allowable area compliance with a separated I-3 Occupancy for the holding cell/interview room area utilizing fire resistive substitution, and a non-separated strategy for the balance of the facility utilizing fire sprinklers for allowable area increases. The walls between separated and non-separated occupancies would be required to comply with provisions for 2-hour fire barrier.

The existing floor level above the Mail Room does not comply with provisions to be classified as a mezzanine by CBC 505.2.3; and must be considered as a second floor level in the building. With the installation of a fire sprinkler system, there will be sufficient allowable area to absorb the 2800 square foot second floor area. Stated elsewhere in this report, there are code problems with both the accessibility to the floor level and the structure. If the 2<sup>nd</sup> floor remains for the tenant improvement, new handrails for each side of the existing exit stairs are required to be installed.

There appear to be sufficient exit doors with discharge to the exterior at the perimeter of the lower/office section of the facility between gridlines 7 and 15. There are accessibility issues with these exits, which will be discussed below. For the higher printing plant section between gridlines 1-6, the Machine, Newsprint Storage and Press rooms do not have exit doors for discharge to the exterior. Depending on the final program and designated use of these rooms, a minimum of one (1) exit door will need to be cut-into the concrete tilt walls in each room, and reinforced with a steel frame around the new opening. See Exhibit A-1. As discussed in Electrical Systems, an additional door will need to be added to the Electrical Room to meet exiting requirements.

## **Envelope**

The exterior walls of the facility are of 8" thick tilt-concrete construction. The walls appear in substantially serviceable condition without major cracking or settlement. The exterior sandblasted exposed aggregate finish could use a power wash cleaning, but is substantially in good condition. The interior side of the exterior walls from gridlines 6-15 have a flat-side 2x4 wood furring without insulation, and a gypsum board wall finish. The higher tilt concrete walls between gridlines 1-6 do not have furring nor insulation. The Title 24 energy code does not require previously conditioned spaces to upgrade their isolative capacity. However, with the extent of renovations, we would recommend that a rigid insulation board be installed at the furring of the concrete walls as part of the tenant improvement.

The upper portion of the envelope walls are a large fascia covered in COR-10 ribbed steel siding. The steel siding appears to be in serviceable condition; the north facing fascia has evidence of moss/mold and should be cleaned. The bottom of the fascia overhang is a framed soffit with a 1" stucco finish and continuous vent screed. Several areas of the stucco soffit are falling away from the framing and should



be replaced. However, with the extent of structural work at the exterior wall/roof connections, the entire soffit will need to be removed and replaced.

The wood roof framing at the higher roof between gridlines 1-6 is insulated below the ½" plywood deck sheathing with a spray-applied, 1" layer of insulation directly over the wood framing members and deck surface. The roof insulation between gridlines 6-15 is placed directly on top of the suspended ceiling system. As all of the suspended ceilings will be removed to achieve the required structural and fire system upgrades, new R-30 fiberglass batt insulation applied between roof rafters will be required. While not required by code, we recommend adding additional insulation to the higher roof structure as part of the tenant improvement.

The existing roofing is a thin foam layer with an elastomeric coat surfacing installed over a built-up roof with cap sheet surfacing. The lines in the cap sheet are visible through the foam roofing which means the foam is very thin over the majority of the roof field. There is a heavier layer of foam at the penetrations and HVAC unit curbs but the majority of the roof is protected by the coating over the original cap sheet roof. Coating average lifespan is between 5-7 years before new coating needs to be installed to maintain the waterproofing. This foam and coating appear to be beyond its' serviceable life span. With the extent of structural repairs required to the roof diaphragm, and the poor condition of the existing roofing, the roofing system will need to be replaced.

The existing roof drains are plastic, and should be replaced with a cast iron bowl type drain and overflow that can be attached to the existing plumbing with a no-hub coupler. Several of the HVAC units sit on wood curbs that can be roofed effectively, while many lower roof units sit on wood sleepers which cannot be adequately flashed without removing the units. We recommend removing the sleeper units and re-installing the units on new curbs. The braces for the mechanical screen are very difficult to seal using the existing angle braces; they would need a pitch-pan for the entire length and then would require regular maintenance to insure they are watertight. We recommend changing the attachment leg to either a square or round support that is attached directly to the deck. The existing coping is one large piece of COR-10 steel that fastens to the existing fascia panels and parapet framing. There are sections on the south-west side of the upper roof where the terminal bar flashing has pulled-away from the cap flashing exposing the sidewall roofing. A new terminal bar metal skirt will need to be installed around the perimeter under the metal cap to the inside face of the wall flashings. Since the roofing will need to be replaced as part of code required upgrades, these associated roofing system improvements will be incorporated into the cost estimate. The proposed roofing system replacement scope is identified in attached Exhibit R1 – R10.

The original canopy at the north side of the building has been framed-in with wood wall structure and plywood exterior siding. The wood exterior walls are of combustible construction, and do not comply with the Type III requirement for non-combustible exterior walls as set out in CBC 602.3. The additions may have been constructed without a building permit. The additions should be demolished and removed. In addition, the structural review recommends removal of the original canopy due to the extent of improvements required to retrofit it to current code. For purposes of this study, we will estimate for its removal. When the future program is established, and if there is a compelling program need for the canopy, an evaluation can be made between costs to retrofit the canopy or construct an independently supported structure. See Exhibit A-1.



There are several canopy additions to the west side of the building for loading/unloading activities. These additions do not appear to have been constructed with a building permit; in addition they do not comply with code requirements for exterior wall construction and should be removed.

The existing exterior Kawneer aluminum storefront door and window systems were observed to be in sound and serviceable condition. According to the existing drawings, the exterior glazing is ¼" thick, tempered where required, and with a solar gray tint.

### **Building Accessibility**

The facility is a concrete slab on grade, and with the exception of the small 2<sup>nd</sup> floor area, all on one level, and as such does not present accessible access issues between spaces. There are a number of doors that do not have the required 18" clear area to the pull side of the door. These doors will need to be evaluated with the final program to see if they can be removed, or should be retrofit for compliance. For the purposes of this estimate, we assumed all nine of the doors would be retrofit. Doors requiring retrofit are as follows:

- Storage room at gridlines 10 | E. (2)
- Finishing/darkroom doors (2)
- Office at D | 13. (1)
- Hall between gridlines 5 & 6 (2)
- Storage Room 139 (1)
- Between Plate Making and Dark Room (1)

The restrooms at the east side of the building although remodeled within the last decade have several deficiencies not compliant with current accessible standards:

1. The door to the Men's Room does not have the required 12" push side clearance for a door with both latch and closer. If installed with a latch, a push pull device can be substituted and the door will comply.
2. The Men's Room accessible toilet compartment door is out-swinging, and does not have the required 60" clearance in front of the door. One solution may be to relocate the urinals that are opposite the door into an alcove using space from the adjacent storage room.
3. The Women's Room accessible toilet compartment door is out-swinging and does not have the required 60" clearance in front of the door. One solution may be to relocate the lavatory counter and wing walls further to the north, and create the clear space for the out-swinging door.
4. The drinking fountain is a single level unit not in a required depth alcove. One solution may be to recess the wall into the storage closet to a 16" depth, and provide a new two-level compliant drinking fountain fixture.

The men's and women's restrooms at gridline 'B' between 5 and 6 are not compliant. As a new core of restrooms will be constructed as an addition with the tenant improvement, these restrooms should be remodeled to single occupancy restrooms, with new doors and entry vestibule having accessible clearances. A new accessible drinking fountain should be installed. The balance of the plumbing fixture count for employees can be provided with the addition.



The locker rooms and restrooms at gridlines B | 1 & 2 are not compliant. Depending on the needs of the final program, the restrooms/lockers should be remodeled to single occupancy compliant facilities; or removed and reused for other program uses. For purposes of this study, we assume the restrooms will be removed.

The exterior exit doors at gridlines A | 12 and G | 11 are sandwiched between concrete wing walls and do not provide the required 24" side clearance. See Exhibit P-1. The concrete wing wall structure and surround will need to be removed, with the door relocated to the exterior wall; or a new alcove built at the end of the concrete wing walls to achieve the accessible clearances. For purposes of this study and estimate, we assume the construction of a small addition at the building exterior to provide an exit door alcove with compliant clearances.

The exterior doors at A | 7 and G | 7 do not have the required 24" side clearance because of the concrete column at the door jamb which is greater than 8" in depth. The door and frame must be pulled-out to the face of the column (or replaced), and the interior gypsum wall patched and refinished. For purposes of this study and estimate, we assume the door re-used and relocated.

The raised floor area over the Mail Room does not have elevator access. The offices and restrooms at this floor level would not be compliant for equal facilitation. We recommend that the floor, if retained in the tenant improvement, be demolished of partitions and plumbing fixtures; and the use converted to storage space. The existing structural capacity of the floor framing will need to be analyzed to accommodate storage loading.

Accessible signage throughout the facility will need to be upgraded for room identification and exiting. A lump sum cost is assumed for the estimate.

The location of accessible improvements are identified on Exhibit A-1.

## Structural Systems

### **Project Scope**

The existing building is described by record documents (PDF of scanned sheets) provided by the City for reference. The record documents consist of 50 - 24" x 36" sized sheets of drawings and specifications prepared by Ohlinger-Jones Engineers of Merced and dated April 22, 1970. Some sheets are dated subsequently with revisions.

The scope of our work is not intended to be a complete or code-compliant evaluation or retrofit design of the existing facilities following Chapter 34 of the 2013 CBC. Rather, our work is intended to be a schematic review of the proposed project to identify a potential structural scope of work suitable for estimating order of magnitude construction costs (by others) so the City can decide if the project is worth continued evaluation/retrofit under a future contracted effort.

Our scope of work for this effort includes: record document review, site observation, and consideration of proposed modifications for structural issues.



## Record Document Review

The existing building is generally described as a concrete tilt-up building with wood-framed roofs and founded on shallow spread footings. Based on the date of the drawings and specification references to the 1967 UBC it is expected that the initial construction was permitted under the 1967 UBC. Buildings of this type have performed poorly in past earthquakes (Sylmar, Loma Prieta, Northridge). Subsequent to the original construction some building modifications and additions were made. No documentation for these modifications or additions was provided for review. Several freestanding structures were also observed on the site and are generally described as pre-engineered metal structures (buildings, canopies and sheds) and wood sheds. The freestanding outbuildings are not part of this review due to the lack of record documentation.

The roof of the Sun-Star building is generally low slope at two different levels. The Western half of the building roof is at an average elevation of 25' to 27' above finished floor with a parapet topping out at 30' elevation. The Eastern portion of the roof is lower with a 12' to 15' roof height above finished floor and 17' elevation at the top of parapet. The record drawings describe the structural roof surface as ½" plywood supported by 2x12 joists at 24" OC. The roof joists typically span approximately 20'-0" between Glue-Laminated Beams (GLB). The GLB's generally span North to South and are supported at the building centerline by steel posts at the low-roof and by an internal tilt-up wall at the high-roof area. At the building perimeter, the GLB's bear upon and cantilever 4'-0" beyond the perimeter concrete tilt-up walls (high-roof) and concrete columns (low-roof) to create a perimeter overhang and soffit detail that is typical at all sides of the building. At the East and West facing exterior walls the framing directions are rotated to achieve the same overhang/soffit detailing.

The concrete tilt-walls are typically 6" thick with curtains of #4 reinforcing running vertically and horizontally near the centerline of the panels. The exterior panels typically have a ¾" reveal near the roofline.

The floor slab is a concrete slab-on-grade reinforced with welded wire fabric. The thicknesses of the slab vary from 3/12" thick in the East Half of the building and areas under the mezzanine to 5 ½" thick in the high-bay areas at the West of the building. It is notable that the structural building sections describe the building pad as elevated from original natural grade by the addition of sand-fill. While the thickness of the sand fill is not clear, the footings drawn in section are shown bearing on, and fully within, the sand layer.

No soils or geohazards report were provided for review and the scope or evaluation of soil issues is beyond our scope of work.

## Site Observations

Site observations were conducted on January 21, 2015. A walk of the building and site was performed to confirm that the building was constructed in general conformance with the record documents provided and to observe the condition of structural materials. No destructive investigation or testing was performed. All observations were limited to what was visible from readily accessible areas.

Observed building modifications and additions include:

1. Enclosure of the original North exterior canopy with non-structural wall framing.
2. Addition of lean-to style additions to the Northwest corner of the building exterior.



### 3. South mezzanine.

No record documentation for the enclosure of the North canopy and the Northwest additions was provided for review. The enclosure of the North canopy framing appeared to be severely deteriorated and failing. The portions of the Northwest additions that were available for entry and observations appeared to be cobbled together from many different parts and pieces over time and did not appear to have a code compliant lateral load path.

The South Mezzanine is not shown on the structural drawings, but appears to be laid out according to Delta 3 Architectural drawings. Without structural record drawings it is not possible to evaluate the adequacy of the framing to support storage loads or for the framing to support itself under seismic conditions.

### **Proposed Modifications**

The most significant modification proposed from a structural standpoint is the change in occupancy/use and resulting change in structural Risk Category. The existing building was originally intended, and is currently used, as a newspaper office and production building. In terms of the current code the original and current occupancy/use is considered to fall in structural Risk Category II. Police stations are generally categorized as Risk Category IV. The City then proposes to elevate the Risk Category of the existing Merced Sun-Star building from its current Risk Category II to Risk Category IV.

Section 3408.4 of the 2013 California Building Code (CBC) requires that when the Risk Category of an existing building is increased, the structure shall conform to the seismic requirements for a new structure of the higher Risk Category.

When antiquated detailing prevents strict conformance with the new code, 2013 CBC Section 3408.4 allows that seismic performance can be demonstrated equivalent to that of a new structure, considering overstrength, redundancy and ductility. The standard of practice for analyzing the seismic performance of existing buildings is to follow a publication titled Seismic Evaluation and Retrofit of Existing Buildings (ASCE 41-13). Considering Section 3408.4 of the 2013 CBC, it is our opinion that the building be evaluated against the ASCE 41-13 Basic Performance Objective Equivalent to New Building Standards (BPON) to comply with the intent of CBC 2013 Section 3408.4.

**Our scope of work does not include a complete evaluation or design against ASCE 41-13 BPON, however, we have compiled a list of deficiencies that would need to be addressed (as a minimum) to help establish an order of magnitude structural scope of work for the purposes of establishing a budget estimate. Should the economic analysis justify the City's purchase and renovation of the Merced Sun-Star building as a police station, we would recommend that a full and complete evaluation be solicited to define a construction scope of work and retrofit.**

### **Existing Deficiencies**

The following deficiencies are observed; conceptual retrofit work is graphically described in Exhibits S-1 - S-3.

#### Wood Roof Framing



- **Overstressed diaphragms** – recommend a combination of reinforcing the existing diaphragm through increased nailing and connections with the addition of new interior lateral resisting elements such as braced frames to reduce the existing diaphragm spans, loads and deflections.
- **The roof framing adjacent to concrete panels does not appear strong enough to develop out-of-plane wall forces into the diaphragm.** Recommend strengthening diaphragm and connections adjacent to all concrete tilt-wall panels through the addition of sub-diaphragms.
- **Missing continuous load path (ties) between chords in the EW direction. Ties in the NS direction appear overstressed.** Recommend adding continuous cross ties to connect sub-diaphragms. This should be accomplished through the addition of new framing beams where absent for compression and through the addition of tension ties and straps to resist tension.
- **Missing Drag/Collector elements along the building perimeter, especially at the low-roof where shear walls are separated by multiple bays.** Recommend adding drag/collector elements to bring load out of diaphragm and into the existing shear walls.
- **Wood ledgers supporting roof joists at perimeter tilt-walls between Grids 6 and 7 are subject to cross-grain bending.** Recommend strengthening diaphragm and connections adjacent to all concrete tilt-wall panels through the addition of sub-diaphragms with continuous cross ties.
- **Original canopy framing at the North side of the high-bay portion of the building relies on cross-grain bending to attach it to the Tilt-wall.** Based on this deficiency in combination with deficiency 2.1 we recommend that the North canopy be demolished.
- **In-plane shear transfer from diaphragm to tilt-wall is deficient, needs blocking and improved bolt-connection to concrete.**
- **Existing 2x lumber may prevent increased nailing required to strengthen existing diaphragm.** The exact extent and magnitude of diaphragm strengthening required is beyond the scope of this evaluation. However, the limitation of existing framing to receive tight-nailing spaces should be considered. The final retrofit solution should weigh the relative cost and benefit of replacing 2x framing with 3x nailing versus reducing demands through the reduction in diaphragm spans.

#### Concrete Tilt-Walls

- **Tilt-walls are overstressed for out-of-plane loading, especially in the high-bay spans taller than 24'.** Recommend bracing the panels against out-of-plane loads mechanically near their mid-point via steel strong-backs. Options to strengthen the tilt-walls through shotcrete will add additional seismic mass to the building which is undesirable. Strengthening through the use of externally bonded FRP may be cost prohibitive.
- **Tilt-wall connections to the roof framing required for lateral support of panels are not capable of transferring required forces to diaphragm, deficient connections.** Recommend that the connections be improved through the use of bolts through the existing wall and new exterior steel channel ledger connected to lines on interior blocking at approximately 4 feet on-center at all tilt-wall panels.
- **Tilt walls are not doweled to the foundation to transfer seismic shear.** Recommend that new exterior (and interior at Grid D and Grid 6 at the High Bay) grade beams be placed with post-installed reinforcing dowels and pot installed bolts added to structurally connect the tilt-wall panels to the foundation. The grade beam should also be sized to transfer current code seismic loads to the soil.

#### North Mezzanine

- **Mezzanine floor diaphragm and framing is attached to the tilt-walls via wood ledgers that are subject to cross-grain bending on three sides.** Based on this deficiency in combination with



deficiency 2.1 we recommend that the North mezzanine be demolished. As an alternate, the mezzanine can be significantly retrofit through the use of braced frames, collectors, and chords to potentially provide a level of restraint to address deficiency 2.1 in-lieu of steel strong-backs.

- **The mezzanine is irregular due to its lack of lateral force resisting system along its South extent.** If the mezzanine is to be salvaged, recommend the addition of shear walls or braced frames and drags along grid B.4 to transfer East-West seismic shear to the foundation.

#### South Mezzanine

- **No structural documentation found for its construction. Based on detailing it is expected that the deficiencies noted in the North Mezzanine will be found in the South and require repair.** Based on this deficiency in combination with deficiency 2.1 we recommend that the South mezzanine be demolished.

During our site walk and observation which was attended by City Police staff, use of the existing high-bay spaces for evidence storage on steel shelving similar to what is seen in warehouses was mentioned. This may require additional foundations or slab replacement to support the shelving point loads and to resist seismic overturning.

## MECHANICAL SYSTEMS

### Existing HVAC Systems

#### **Description**

The existing HVAC system consists of 18 rooftop package units with gas fired heat and DX cooling. Each of the package units has a single thermostat located in the occupied space that it serves.

Approximate total cooling capacity	125 tons
Approximate total heating capacity	750 mbh

The units on the upper roof have supply and return plenums that have bottom connections and penetrate the roof within a perimeter roof curb. The roof curb has two functions, it supports the unit and it flashes the duct penetrations through the roof.

The units on the lower roof have side-discharge ductwork. These package units sit on wood sleepers. The supply and return plenums connect to the side of the units and extend horizontally above the roof before turning down and penetrating the roof. The duct penetrations require roof curbs for flashing. There are several roof mounted exhaust systems for bathroom exhaust and other general exhaust applications.

Ductwork below the ceiling is most likely a combination of rigid galvanized sheet metal and flexible aluminum ductwork. Ceiling mounted supply, return and exhaust grilles are distributed throughout the occupied spaces.

**Condition and Expectations**

The rooftop HVAC systems range in age from 1981 to 2008. These types of units will have a useful lifespan of approximately 20 years. See the attached Equipment Table Exhibits M-1 through M-3 for detailed information. Several of the units will need to be replaced immediately, and the remaining units could be expected to last 3 to 8 more years before they need to be replaced.

Rooftop package units are supposed to mix outside air (ventilation) with return air from the occupied space before cooling or heating it and supply it back to the space. Many of the units have provisions to accomplish this, but few seem to be operational and all will need to be retrofitted to meet current ventilation standards.

Some of the condensate piping on the roof has been damaged and will need to be repaired. Gas piping and condensate piping on the roof is improperly supported. This will need to be remedied when the re-roof project takes place.

The re-roof project will require that the rooftop equipment is removed from the roof and re-set after the roofing is complete. The sleeper mounted units (lower roof) will probably receive new sleepers and new rooftop ductwork. The curb mounted units (upper roof) can probably re-use the existing curbs. All of the existing roof mounted exhaust fans will be replaced.

It is unlikely that much, if any, of the existing ductwork in the ceiling space will be re-used for the tenant improvement. Once the new floor plans are determined, the probability that the existing ductwork is routed in a favorable manner is remote. It usually is more cost effective to start new with the ductwork for these types of systems.

## Existing Plumbing Systems

**Description**

The existing plumbing systems include roof drainage and restrooms.

**Condition and Expectations**

The roof and overflow drains will be replaced when the re-roof project takes place, but the rainwater piping is in good condition and can be expected to last many more years.

The restrooms will need to be revised for ADA compliance, so the fixtures will need to be replaced. New fixtures will also meet the new low-flow plumbing code requirements. Piping connections will be revised to accommodate new fixture locations. Existing water heaters are gas fired tank type and should be replaced with the new tenant improvement.



## ELECTRICAL SYSTEMS

This largely single-story building was constructed in 1971. The design and the existing electrical equipment are typical of the medium-quality specification grade construction then used in California. In the ensuing 4+ decades, some Code requirements have changed and some equipment is at end of life, either because it is worn out or because we now know that the equipment has proved to be unreliable at best and unsafe at worst. This report examines the existing electrical systems and makes specific recommendations in two jumps: The first jump is to get the basic building compliant with the current Codes that would be enforced, and the second jump takes the compliant building to a level required for an urban police station.

### Existing Electrical Systems

#### Lighting Systems

The interior lighting consists primarily of 4-lamp recessed fluorescent lay-in troffers. Most of these have been retrofitted with energy saving ballasts with two lamps, or simply turned off and left.

There are some incandescent fixtures, generally recessed downlight type. Some of these have been retrofitted with a variety of screw-in compact fluorescent lamps.

There is no building lighting control system, no daylight harvesting, no dimming, and no occupancy sensors.

The exterior lighting is quite minimal, below institutional standards, and consists of pole-mounted high intensity discharge lamps in cut-off type luminaires. Some after-market area floodlights have been added at the building perimeter. These generally perform poorly and create excessive glare.

#### Service and Distribution

The building is served underground by incoming utility primary power from North G Street. The underground feeder serves a padmounted utility transformer and power is delivered to the building at a voltage of 480Y/277 volts 3 $\Phi$ 4W.

The main switchboard is rated at 1200 amperes and uses a fusible switch as its main overcurrent protective device. Second-tier distribution devices utilize circuit breakers. The two distribution sections of the switchboard feed not only the interior transformer and high voltage (480V) panelboards, but also individual rooftop air conditioners, one outbuilding to the east, and the now-removed printing press(es). The switchboard and the building panelboards are manufactured by a now-defunct company ("Zinsco") whose overcurrent protective devices are known to be potentially dangerous. The Zinsco breakers suffered from mechanical malfunctions that affected their ability to safely interrupt a short or overload condition.

The main switchboard has no provisions for the addition of a full-system backup generator. The electrical room that houses the switchboard has but one exit, which leads directly to the exterior.

The dry transformer, panelboard, and machine feeders are copper. Although they are past the generally-accepted 20-year end-of-life or unless the feeder insulation has been damaged by unusually high temperatures, the feeders may be presumed to be adequate for the moment.

### **Telecommunications**

Underground telephone service from the street runs parallel to the incoming power but terminates at a second floor telephone board. This is the Minimum Point of Entry, or MPOE. There are no evident downstream telephone sub-terminal boards.

It's not clear that there are any telecommunications lines run between the main building and the warehouse building to the east (rear of parcel).

There is nothing of value atop the roof in terms of radio antennae.

There is no data cabling plant of value.

### **Signal Systems**

There is an elementary--but functioning--fire alarm system that may be left in place.

There is no evidence of a surveillance video system.

We observed a rudimentary access control system at the perimeter doors but not elsewhere.

Paging, voice amplification, video/television, white noise, and similar systems were not evident.

## **Basic Corrections (Bringing the Building up to "Zero")**

### **Lighting Systems**

Replace the existing lighting with LED-based lighting systems.

Remove all compact fluorescent and incandescent lighting fixtures.

Provide automatic controls as required by Title 24, including occupancy sensors, photocell control of daylight harvesting at perimeter windows and beneath skylights, and time-based sweep-off of fixtures in non 24/7 spaces.

Replace the existing exterior lighting systems with new pole-mounted LED fixtures. Remove the floodlights around the building roof. Provide photocells, motion sensors, and automatic dimming for exterior pole-mounted and ground-mounted fixtures.

### **Service and Distribution**

No change is recommended for the incoming utility power or transformation.



Replace with existing switchboard with a new switchboard of the same capacity (1200 amperes at 480Y/2177 volts 3Φ4W), with a ground-fault interrupting main circuit breaker and a 1200 amperes 3Φ 4-pole bypass isolation automatic transfer switch. We recommend that the new switchboard be designed *with* a bypass isolation automatic transfer switch in the lineup, because that eliminates a subsequent outage and it shortens the length of feeder between the generator and the switchboard.

Provide two exit paths at the electrical room. Provide exit doors with standard panic hardware.

Disconnect and remove the existing panelboards and their associated feeders. Provide new replacement panelboards and new feeders.

Re-circuit existing HVAC equipment to a new rooftop HVAC distribution panelboard. Locating the panelboard on the roof requires a rainproof rating on the panel enclosure, but it also minimizes the quantity of penetrations through the roof.

The current Title 24 standards require that office area duplex convenience outlets be switched off with the lights during periods of vacancy. However, unswitched duplex outlets are permitted as long as a switched outlet is provided adjacent to the unswitched device. We'll count all of the existing outlets as unswitched and provide new switched outlets in adjacent positions.

The current Title 24 requires disaggregation of load types so that the Owner may meter them separately if desired. This will require the addition of multiple panelboards that are designated for lighting, or for receptacles, or for HVAC, etc. The HVAC machines will be served by a new rooftop panelboard(s), so those loads will be segregated. The lighting will be run at 277 volts from a lighting panel, so the lighting also will be segregated. The new 120/208V panels will be used almost exclusively for duplex convenience outlet loads, thereby segregating those loads, too.

### **Telecommunications**

We recommend nothing for the incoming telecommunications service to the MPOE.

We recommend nothing for connectivity to the outbuilding to the east.

We recommend nothing in terms of antennae or related cabling.

We recommend removal of disused telecom cabling above the ceiling and in the existing underfloor duct systems, and we recommend that the existing underfloor duct system be swabbed, cleaned, and dried.

### **Signal Systems**

We recommend no work for the existing fire alarm system.

We recommend no work for a surveillance video system.

We recommend no work for the access control system at the perimeter doors.

We recommend no work for paging, voice amplification, video/television, white noise, or similar systems.

## Tenant Improvements for the Police Station

### Lighting Systems

We recommend no further work.

### Service and Distribution

Provide an outdoor emergency diesel-fired engine-generator power plant, size range 300-350 kW, with a sound attenuating Level 2 weatherproof enclosure and self-contained double-wall sub-base fuel tank. If possible, this item should be located on a concrete pad in a dedicated yard with a 10' tall masonry wall on four sides for sound attenuation. The generator should be located within 75' of the existing electrical room, if possible.

### Telecommunications

It's likely that additional telecom pathways to the street will be required. Therefore, provide two 4" empty conduits with pull ropes from the building to North G Street for future use. Shift this item to the initial upgrade if there is an open trench for fire service, etc.

Extend 2-4" empty conduits to the existing outbuilding at the rear of the site. As with the conduits to the street, this item should take advantage of an open trench if one occurs in Phase 1.

Provide conduits, cabling and antennas as required for radio communications.

Establish an MDF and IDF's as required and in accordance with EIA/TIA standards. Provide fiber and copper backbone cabling, and a copper horizontal cabling plant.

Provide new telecom outlets throughout, capable of supporting voice-data-video with interchangeable RJ-45, HDMI, and F-style connectors.

### Signal Systems

Provide fire alarm peripheral devices as necessary to accommodate Police-specific construction.

Provide a video surveillance system with network data recorder, POE Ethernet cabling or fiber optic cabling with low voltage power supply cabling for individual cameras, and video management software.

Provide new access control for perimeter doors, public/police demarcations, and other sensitive areas throughout the building.

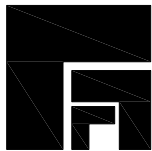
Provide a new telephone system with voicemail and a paging system to be operated from the telephone system.



## Fire Suppression System

As noted in the Code discussion, the building does not have a fire suppression system installed; and because of the change of occupancy a fire suppression system compliant with CBC Chapter 9 is required to be installed. A new 8" fire line from the water main in G Street, site hydrant, riser and alarm with a fire department connection and backflow device will be required to be installed. As recommended in the civil discussion, routing of the line should be placed on the south side of the building. A Fire Control Room will be required to be retrofit in the floor plan where the fire line enters the building. The exact location can be determined once the police program has been finalized with the tenant improvement.

This study and estimate assume a 40 square foot area to be enclosed in the plan; and a new exterior door cut-into the exterior concrete wall. See Exhibit A-1 for assumed location. The Fire Alarm and signal system devices will need to be upgraded as discussed in the Electrical Systems.



WMB  
ARCHITECTS

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2000 L Street  
Suite 125  
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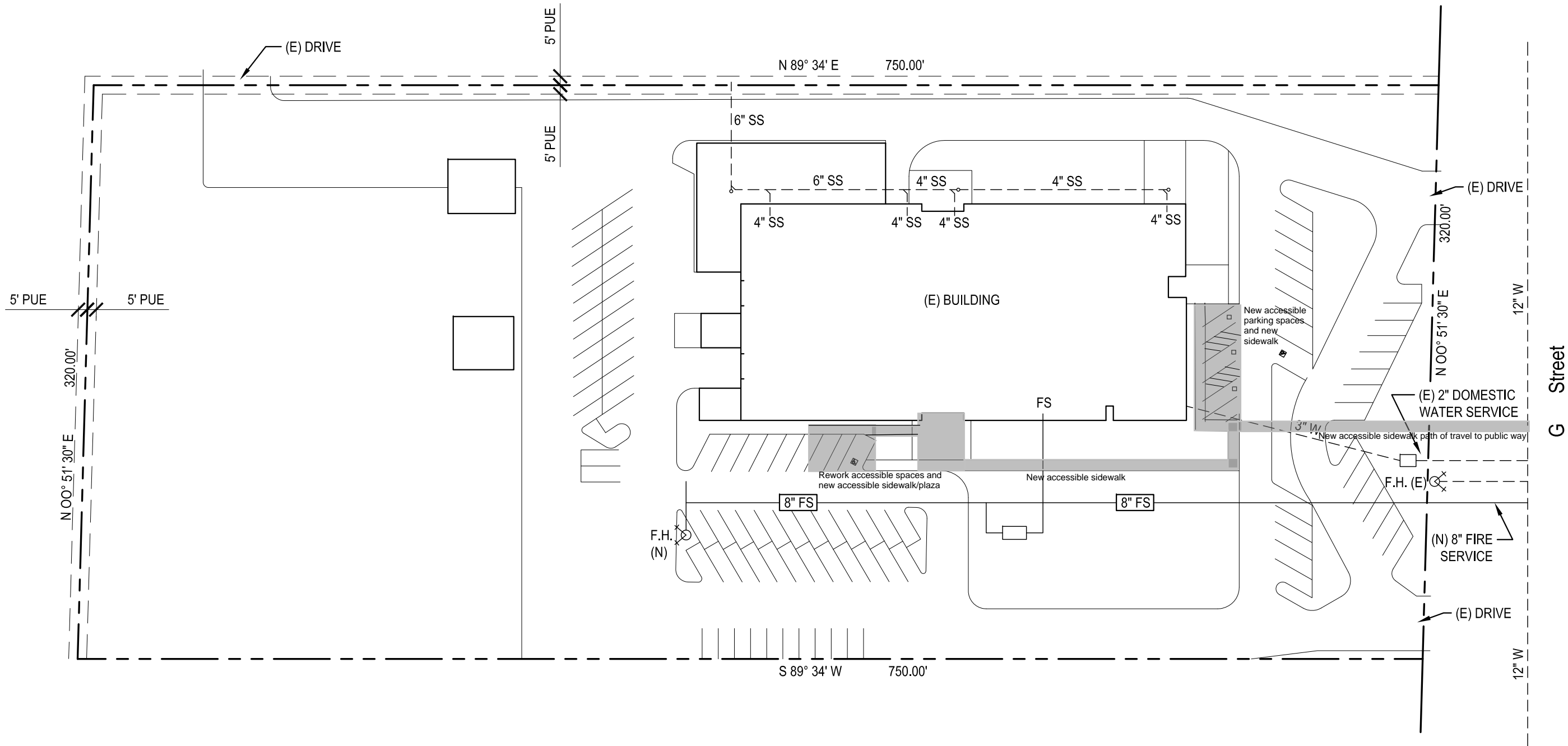
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CITY OF MERCED  
SUN STAR BUILDING  
EVALUATION  
3033 NORTH "G" STREET  
MERCED, CA 95340

02.03.16 EVALUATION

WMB PROJECT:  
15-176

Exhibit C1

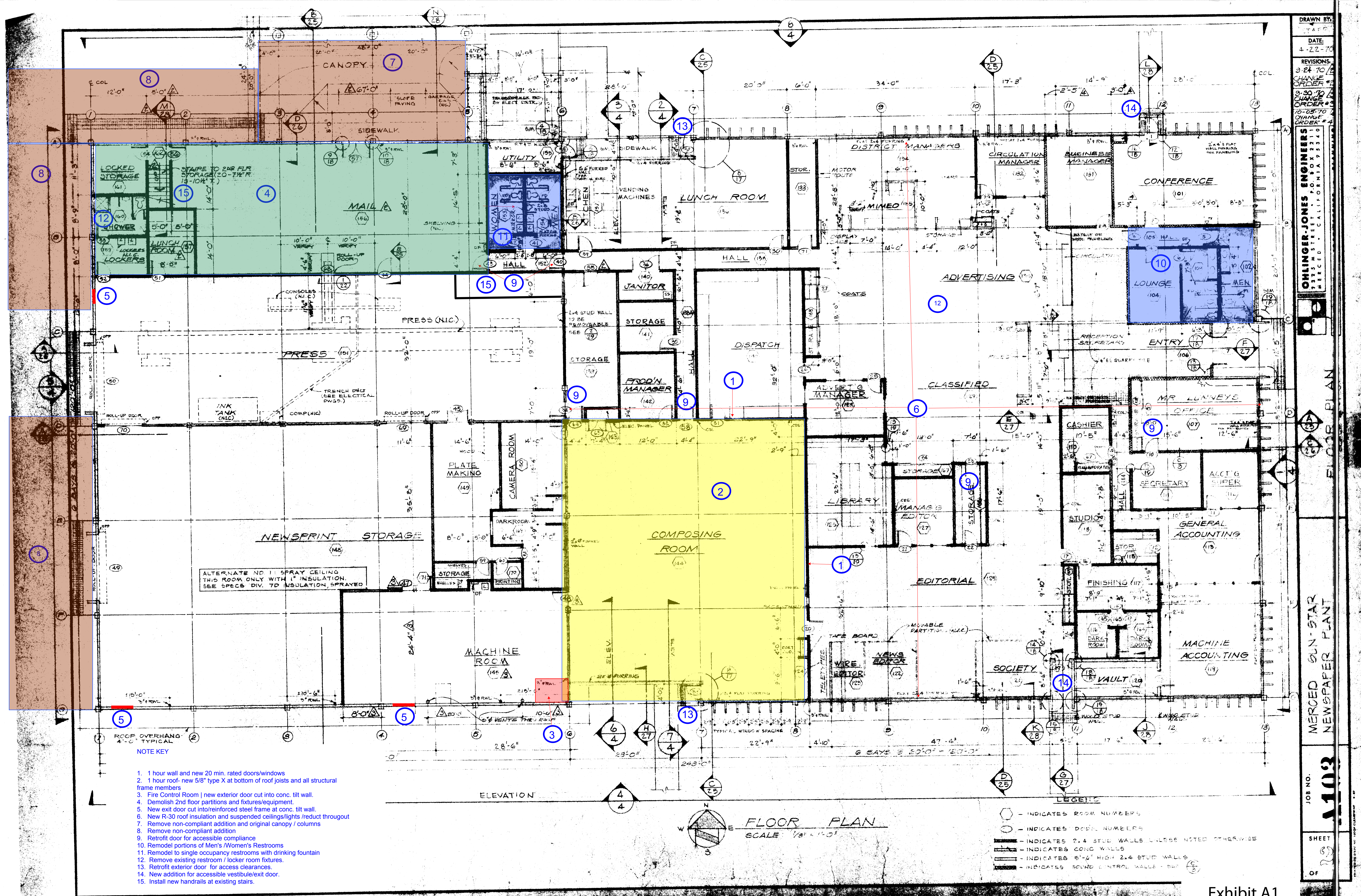


**SIEGFRIED**

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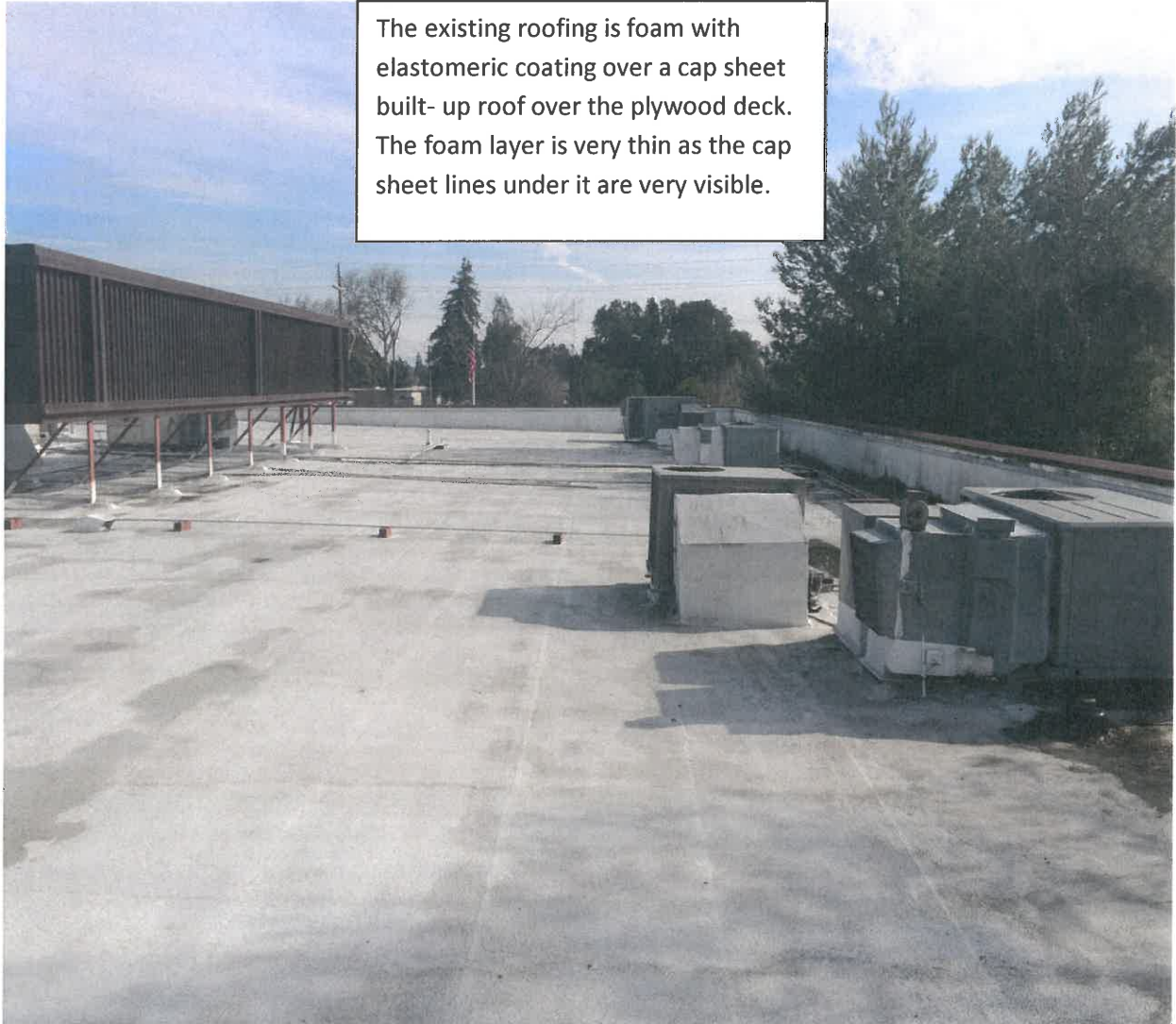
Interior doors without 18" push side clearance

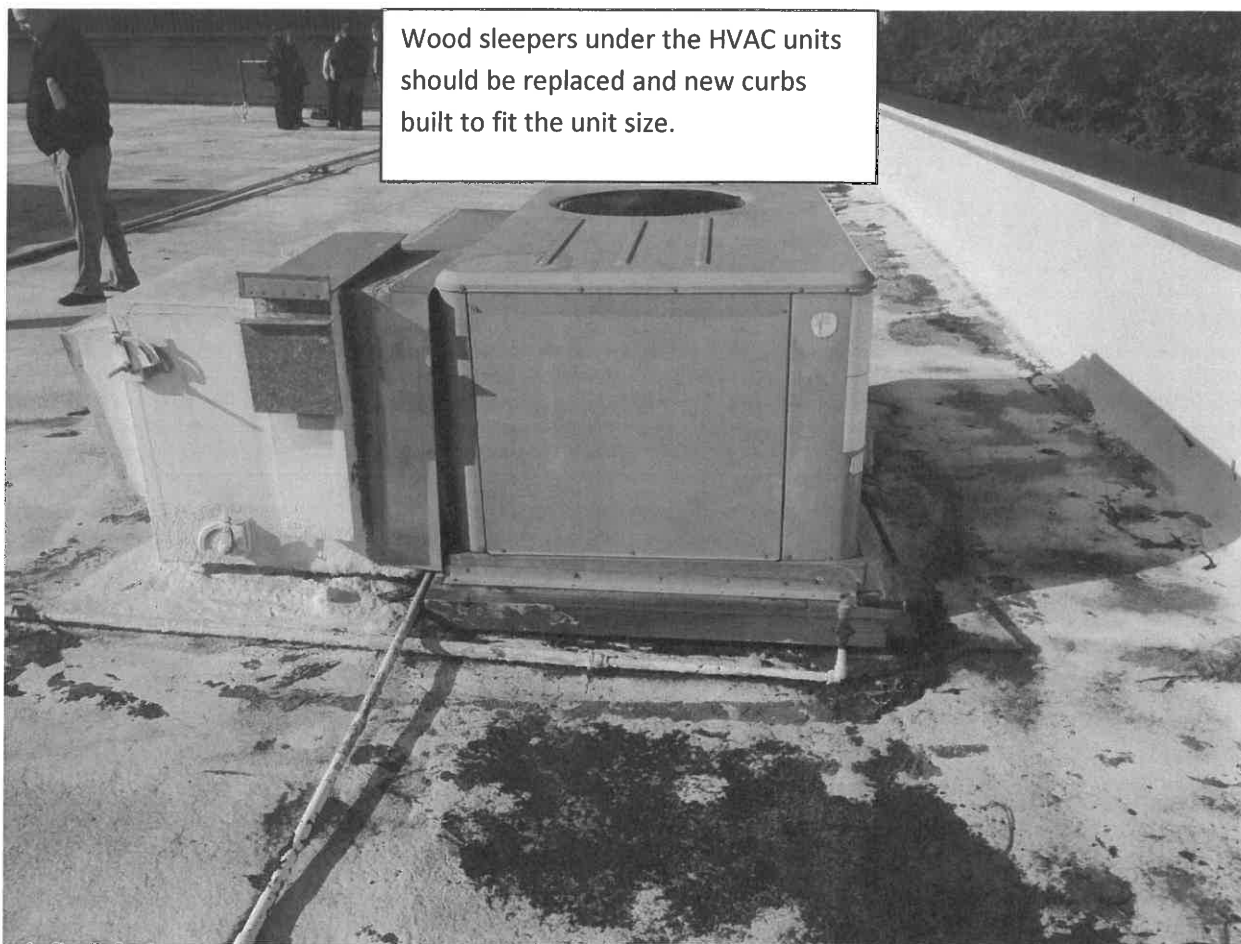


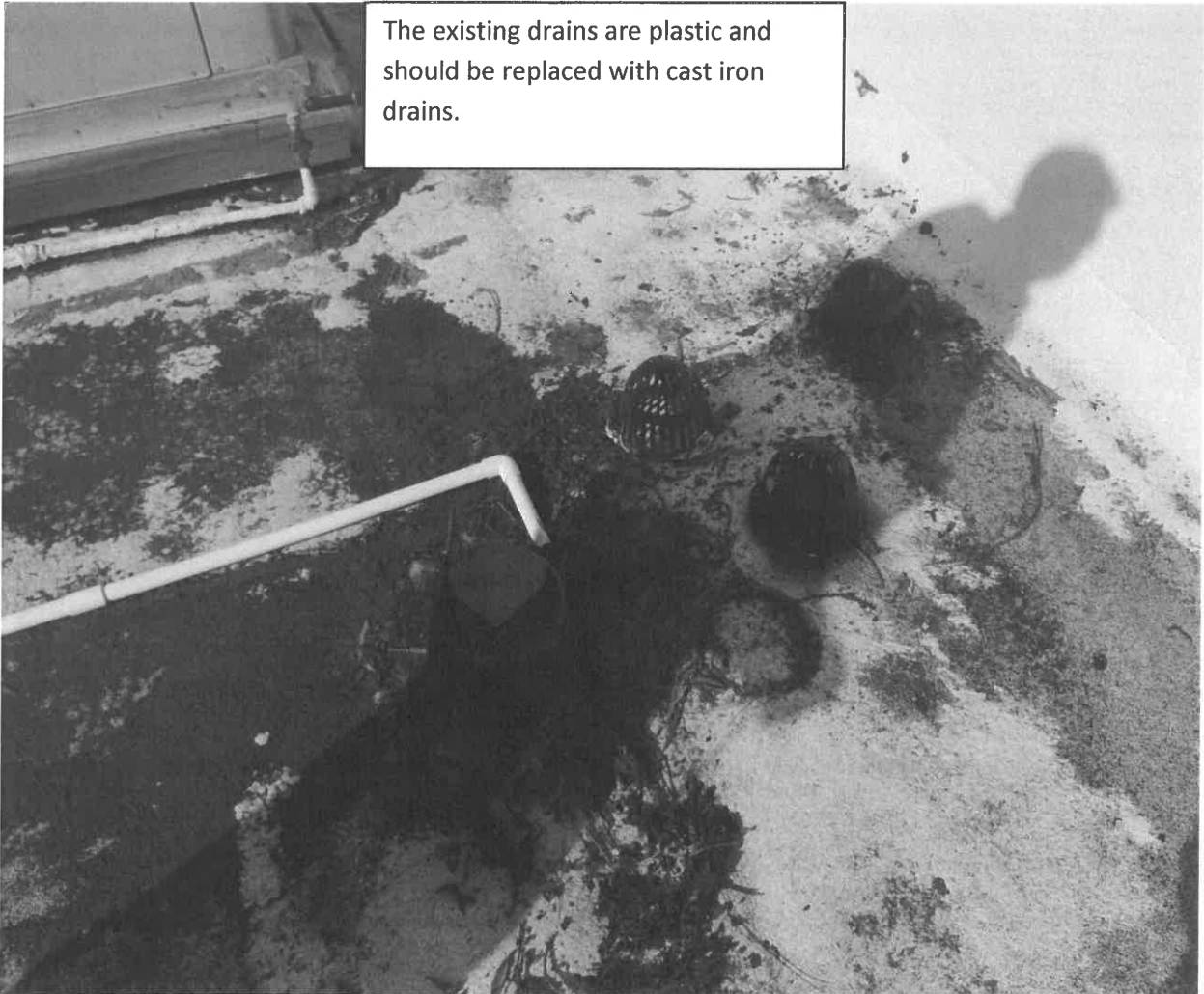
Exterior doors without 24" side clearance - concrete portico interference

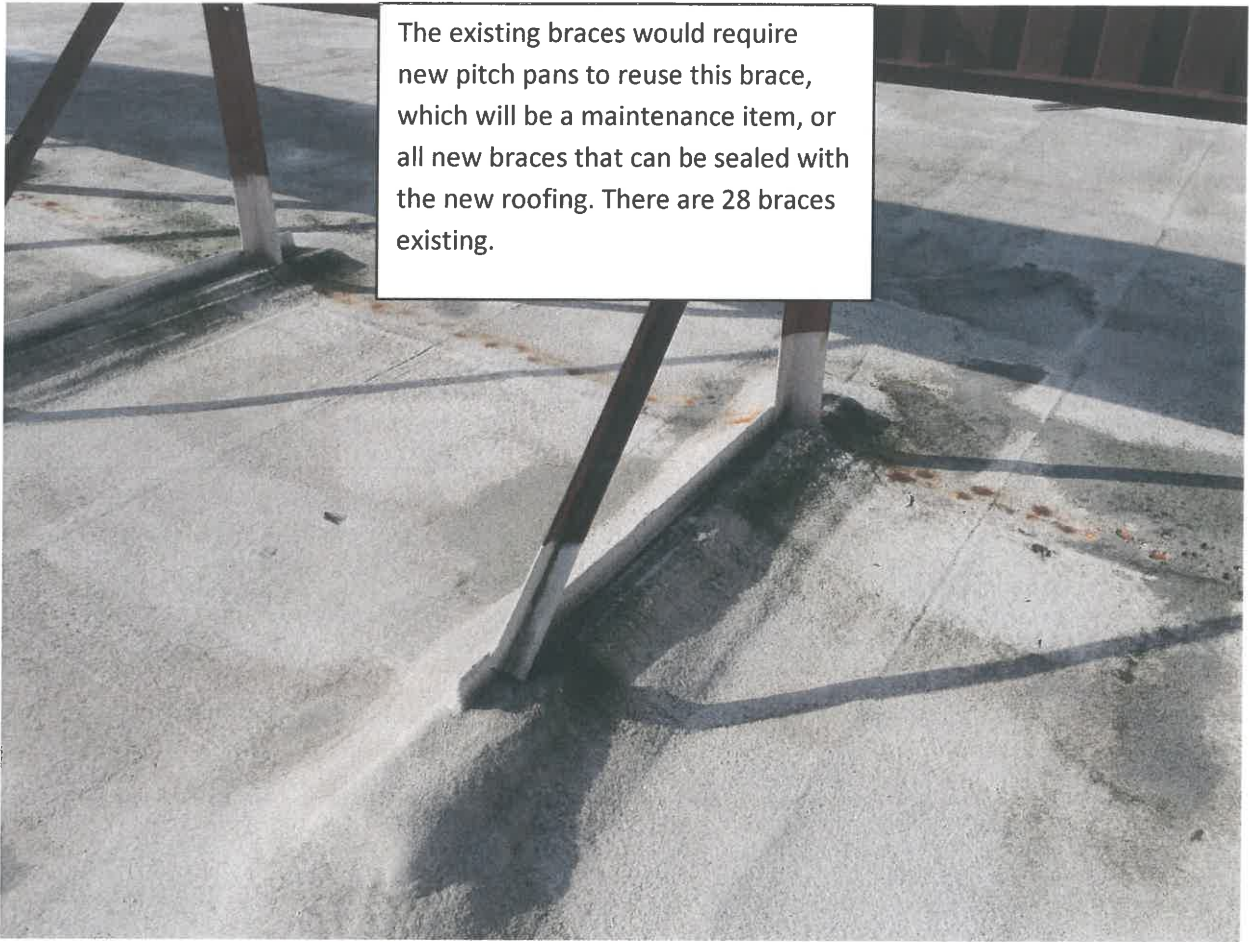


The existing roofing is foam with elastomeric coating over a cap sheet built- up roof over the plywood deck. The foam layer is very thin as the cap sheet lines under it are very visible.

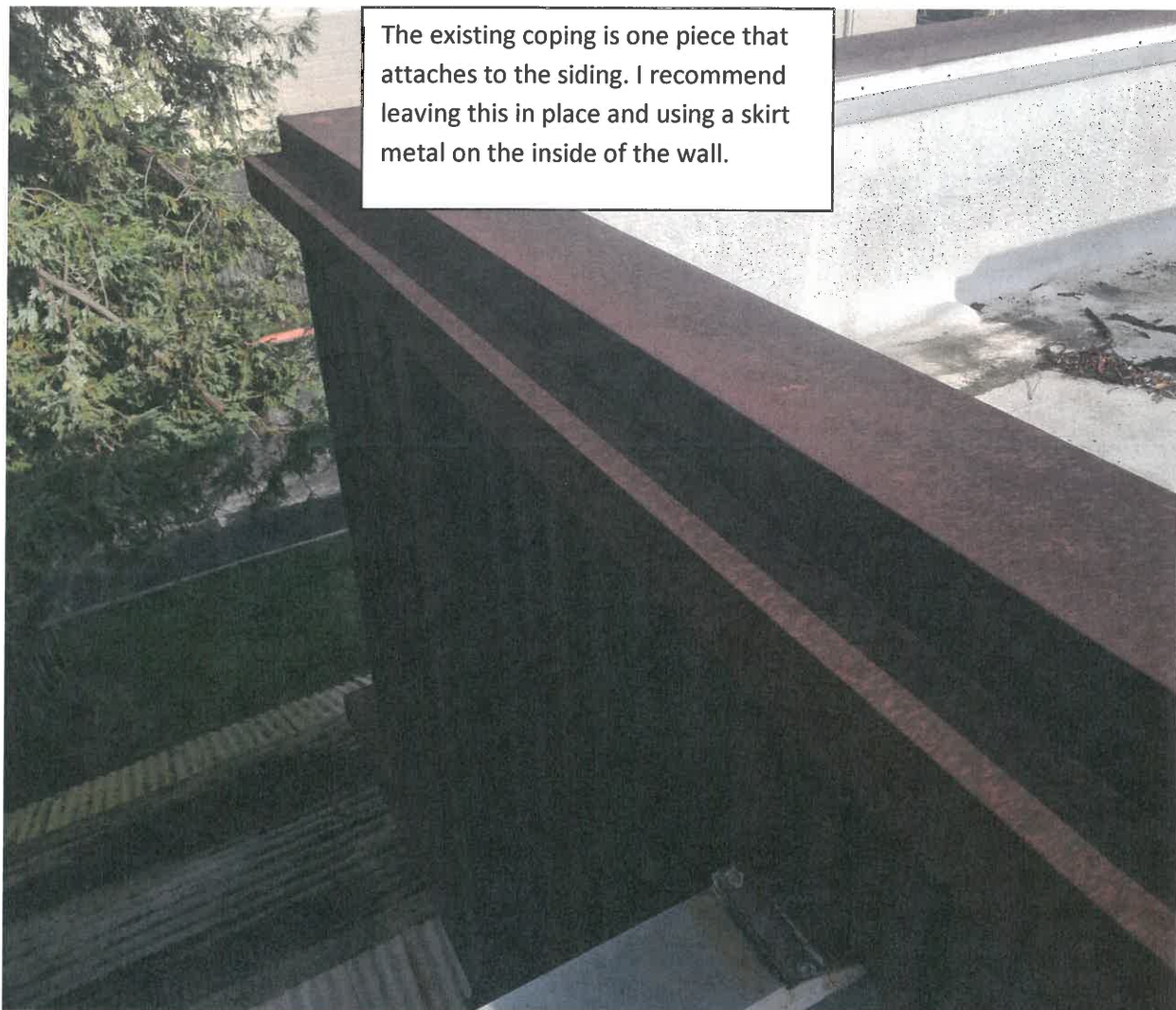




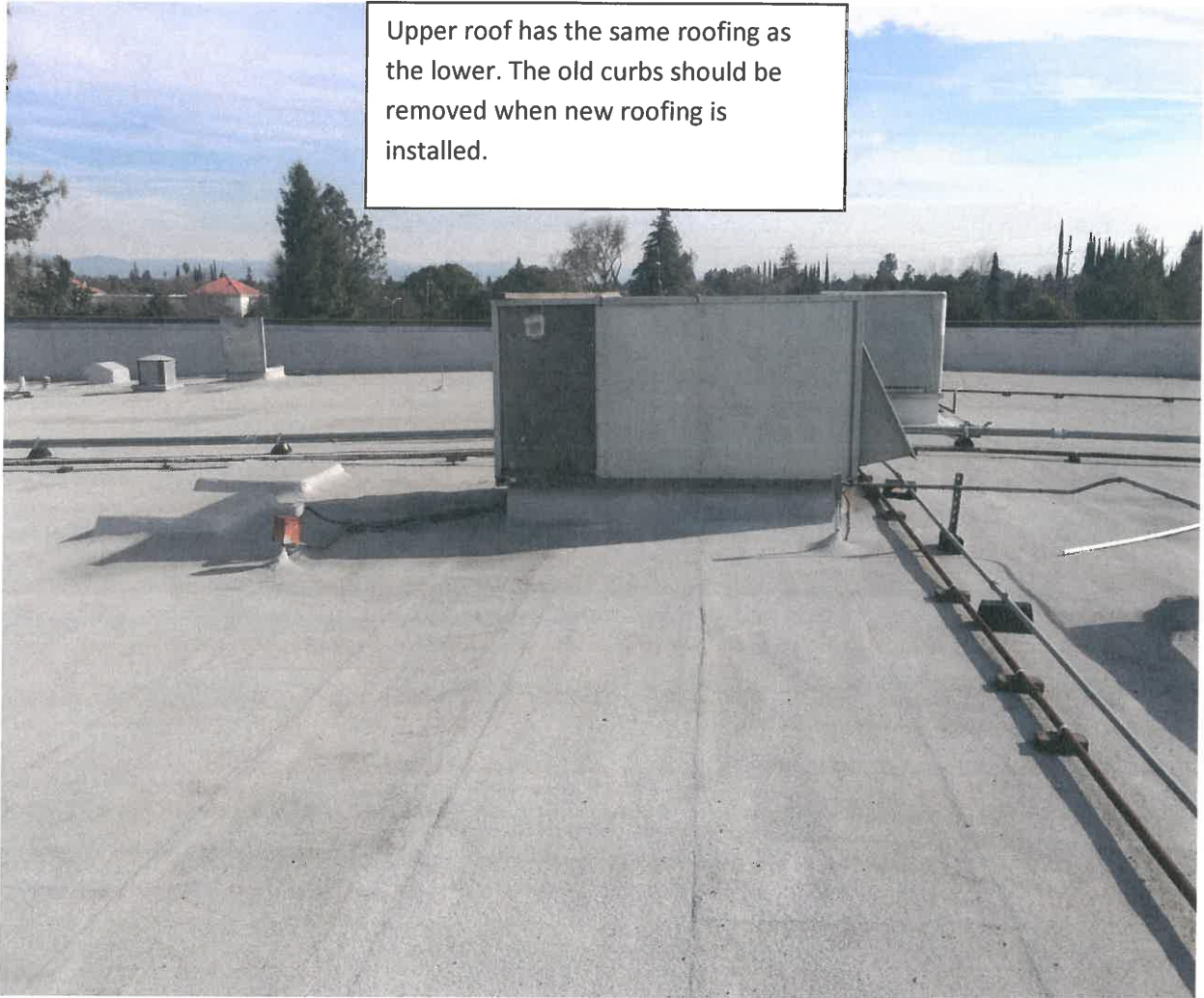








The existing coping is one piece that attaches to the siding. I recommend leaving this in place and using a skirt metal on the inside of the wall.



**D7 Roofing Services, Inc.**  
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Sacramento, CA 95816  
**Phone:** (916) 447-2175  
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February 2, 2016

Re: Merced Sun Star – Sarnafil PVC Roofing

The following will outline our recommended scope of work to best complete this project.

1. Remove the existing two roofs and legally dispose of all roofing offsite. **Does not include any asbestos material removal.**
2. Furnish and install new tapered roof insulation, at 1/4" per foot slope, between the existing drains fastened according to the manufacture's specifications.
3. Furnish and install new cast iron drains at the existing locations attached to the existing plumbing.
4. Furnish and install new 1/4" Dens deck barrier board fastened according to the manufacture's specifications for a Class "A" fire rated roof system.
5. Furnish and install Sarnafil 60mil PVC single ply membrane mechanically fastened according to the manufacture's specifications and with heat welded seams. **The PVC membrane does meet California "Cool Roof" standards.**
6. Furnish and install Sarnafil PVC membrane to the walls and fastened at the top with termination bar and caulking. Furnish and install new sheet metal skirt flashing over the termination bar and under the existing coping.
7. Furnish and install new PVC flashings as needed for a complete system warranty.
8. Furnish and install PVC walk pad at each HVAC unit and from the roof access.
9. Upon completion deliver a Manufacture's 20 year warranty.
10. This proposal includes prevailing wages.

Exhibit R7



## PRODUCT DATA SHEET

SARNAFIL® S327 ENERGYSMART  
ROOF® MEMBRANEX60 \_\_ 72 \_\_ 80 \_\_ FELTBACK

Sarnafil S327 EnergySmart Roof Membrane is a PVC thermoplastic membrane produced with an integral polyester reinforcement for high strength, guaranteed for thickness, with heat-weldable seams, and a unique lacquer coating applied to the top of the membrane to reduce dirt pick up.

## PRODUCT INFORMATION

## USES

Sarnafil S327 EnergySmart Roof Membrane is used in mechanically-attached applications with various fastening methods, over various substrates.

## AREAS OF APPLICATION

- New Roofs
- Reroofs

## FEATURES / BENEFITS

- Excellent tear strength resistance
- Factory applied lacquer coated to reduce dirt pick up
- Hot-air welded seams for long-term performance
- Proven membrane performance

## TESTS

## CODES / APPROVALS

- FM Global
- Underwriters Laboratories
- Underwriters Laboratories of Canada
- Miami-Dade County / Florida Building Code
- ENERGY STAR®
- California Title 24
- LEED / Green Globes
- NSF/ANSI 347: Platinum Certified

## PRODUCT DATA

## FORM

## COMPOSITION

High-quality, PVC membrane containing ultraviolet light stabilizers, flame retardant and polyester scrim reinforcement with a unique lacquer coating on the top surface.

## COLOR

- Top: White, Light Gray, and Tan
- Bottom: Gray



## PACKAGING

### ▪ 60 mil (1.5 mm) Membrane

10 ft x 100 ft rolls, 389 lbs per roll, 8 rolls per pallet  
5 ft x 100 ft rolls, 195 lbs per roll, 12 rolls per pallet  
10 ft x 80 ft feltback rolls, 354 lbs per roll, 9 rolls per pallet  
8 in x 100 ft rolls, 25 lbs per roll (Coverstrip)

### ▪ 72 / 80 mil (1.8 / 2.0 mm) Membrane

10 ft x 100 ft rolls, 471 / 520 lbs per roll, 4 rolls per pallet  
5 ft x 100 ft rolls, 236 / 260 lbs per roll, 9 rolls per pallet  
10 ft x 50 ft feltback rolls, 262 / 287 lbs per roll, 10 rolls per pallet  
10 ft x 80 ft feltback rolls, 419 / 459 lbs per roll, 8 rolls per pallet

## STORAGE

## STORAGE CONDITIONS

Store rolls on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.

## TECHNICAL DATA

## TYPICAL PHYSICAL PROPERTIES\*

Property	ASTM Test Method	ASTM Type III D-4434 Spec. Requirement	Typical Results		
Overall Thickness, mil	D751	45	60	72	80
Thickness Over Scrim, mil	--	16	27	35	40
Reinforcing Material	--	--	Polyester	Polyester	Polyester
Felt Weight, oz/yd <sup>2</sup> (feltback membrane only)	--	--	9	9	9
Breaking Strength, lbf/in (N)	D751	200 (890)	305 (1356)	315 (1401)	325 (1445)
Elongation at Break, % M. D. <sup>1</sup> & C.M.D. <sup>1</sup>	D751	15 & 15	28.5 & 29.5	29 & 30	29.5 & 30.5
Seam Strength, % of original <sup>2</sup>	D751	75	Pass	Pass	Pass
Retention of Properties After Heat Aging	D3045	--	--	--	--
Breaking Strength, % of original	D751	90	Pass	Pass	Pass
Elongation, % of original	D751	90	Pass	Pass	Pass
Tearing Strength, lbf (N)	D1004	45 (200)	48 (213)	48.5 (216)	49 (218)
Low Temperature Bend, -40°F (-40°C)	D2136	Pass	Pass	Pass	Pass
Accelerated Weathering Test (Fluorescent Light UV exposure), Hours	G154	5,000	10,000	10,000	10,000
Cracking (7x magnification)	--	None	None	None	None
Discoloration (by observation)	--	Negligible	Negligible	Negligible	Negligible
Crazing (7x magnification)	--	None	None	None	None
Linear Dimensional Change, %	D1204	0.5	-0.12	-0.13	-0.14
Weight Change After Immersion in Water, %	D570	± 3.0	2.0	1.8	1.8
Static Puncture Resistance	D5602	Pass	Pass	Pass	Pass
Dynamic Puncture Resistance, ft-lbf (J)	D5635	14.7 (20)	Pass	Pass	Pass
Recycled Content	9% Pre-consumer, 1% Post-consumer				

\* Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions, and curing conditions.

<sup>1</sup> M.D. = Machine Direction, C.M.D. = Cross Machine Direction

<sup>2</sup> Failure occurs through membrane rupture not seam failure.

# Exhibit R9

EnergySmart Colors	INITIAL SOLAR REFLECTANCE	3-YEAR SOLAR REFLECTANCE	INITIAL THERMAL EMITTANCE	3-YEAR THERMAL EMITTANCE	INITIAL SOLAR REFLECTANCE INDEX	3-YEAR SOLAR REFLECTANCE INDEX
EnergySmart White <sup>1</sup>	0.83	0.63	0.90	0.86	104	75
EnergySmart Tan <sup>1</sup>	0.73	0.65	0.85	0.86	89	78
EnergySmart Light Gray <sup>2</sup>	0.50	0.44	0.84	0.85	56	49

<sup>1</sup> EnergySmart White and Tan membranes meet ENERGY STAR®, LEED, Green Globes, and California's Title 24 criteria for Low and Steep Slope applications.

<sup>2</sup> EnergySmart Light Gray membranes meet ENERGY STAR®, LEED, Green Globes, and California's Title 24 criteria for Steep Slope applications.

## SYSTEM INFORMATION

### APPLICATION INSTRUCTIONS

### APPLICATION

Sarnafil S327 EnergySmart is rolled out after proper preparation of the approved substrate and fastened to the roof deck with appropriate mechanically fastened system with sarnafasteners in accordance with Sika's technical requirements. Sarnafil S327 EnergySmart seams are heat-welded together by trained operators using hot-air welding equipment. Different mechanically fastened systems require different application methods. Please consult Sika's Specifications or Applicator Handbook for detailed installation procedures.

### AVAILABILITY

From Sika Authorized Applicators when used within Sarnafil roofing systems.

### MAINTENANCE

Standard maintenance of roofs should include regular inspection of flashings, drains and termination sealants at least twice a year and after each storm.

### WARRANTY

Upon successful completion of the installed roof by the Sika Authorized Applicator, Sika Corporation will provide a warranty to the Building Owner via the Sika Authorized Applicator.

### LEGAL NOTES

All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at [usa.sarnafil.sika.com](http://usa.sarnafil.sika.com) or by calling 800-451-2504.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Product Data Sheet, product label and Safety Data Sheet which are available online at [usa.sarnafil.sika.com](http://usa.sarnafil.sika.com) or by calling Sika's Technical Service Department at 800-451-2504. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.

Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.

NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKa SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKa SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

### SIKA CORPORATION – ROOFING

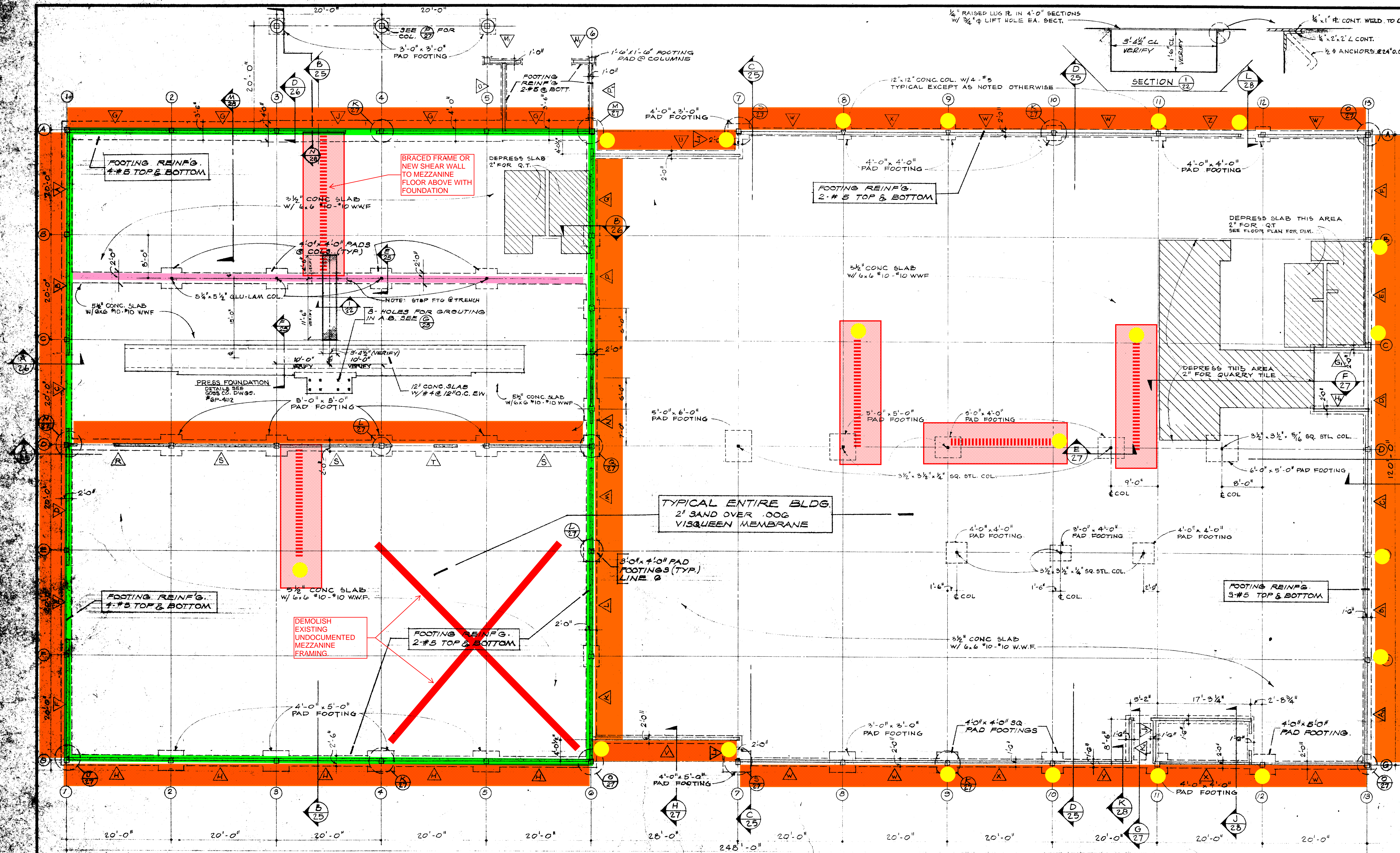
#### UNITED STATES

100 Dan Road  
Canton, MA 02021  
800-451-2504 (p)  
781-828-5365 (f)  
[usa.sarnafil.sika.com](http://usa.sarnafil.sika.com)  
[webmaster.sarnafil@us.sika.com](mailto:webmaster.sarnafil@us.sika.com)

#### SIKA CANADA INC.

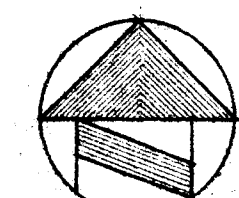
6915 Davand Drive  
Mississauga, ON L5T 1L5  
905-795-3177 (p)  
905-795-3192 (f)  
[can.sika.com](http://can.sika.com)  
[marketing.construction@ca.sika.com](mailto:marketing.construction@ca.sika.com)





NOTE:  
SEE ELECTRICAL DWG. FOR  
UNDERFLOOR DUCT LAYOUT.  
SEE 13

NOTE:  
FOOTING REINFORCING ALL PADS  
#4 @ 3' O.C. E.W. FOR PADS IN WALLS.  
THIS REINFORCING IS IN ADDITION  
TO CONT. REINFORCING.



FOUNDATION PLAN  
SCALE: 1/8" = 1'-0"

THESE SKETCHES ARE FOR ILLUSTRATIVE PURPOSES ONLY  
AND TO ASSIST WITH ESTIMATING AND ORDER-OF-MAGNITUDE  
CONSTRUCTION COSTS. THESE SKETCHES ARE NOT  
ENGINEERED DESIGNS NOR ARE THEY THE RESULT OF A  
COMPLETE, CODE COMPLIANT, BUILDING EVALUATION.

- NEW FOUNDATION @ BRACED FRAME. SEE D.
- NEW STEEL CONCENTRIC BRACED FRAME. SEE D.
- STRENGTHEN TILT-WALL PANELS WITH STEEL STRONGBACKS. SEE G & H
- NEW FOUNDATION WITH ADHESIVE DOWELS TO EXISTING  
FOUNDATION AND ADHESIVE DOWELS TO EXISTING TILT-WALL PANELS  
SEE E & F.
- SHEATH EXISTING WALL BELOW MEZZANINE
- MICRO-PILE OR HELICAL ANCHOR

EXHIBIT S-1

OHlinger-Jones Engineers  
2325 M STREET, P.O. BOX 2211  
MERCED, CALIFORNIA 95340  
ENGINEERING • ARCHITECTURE • PLANNING

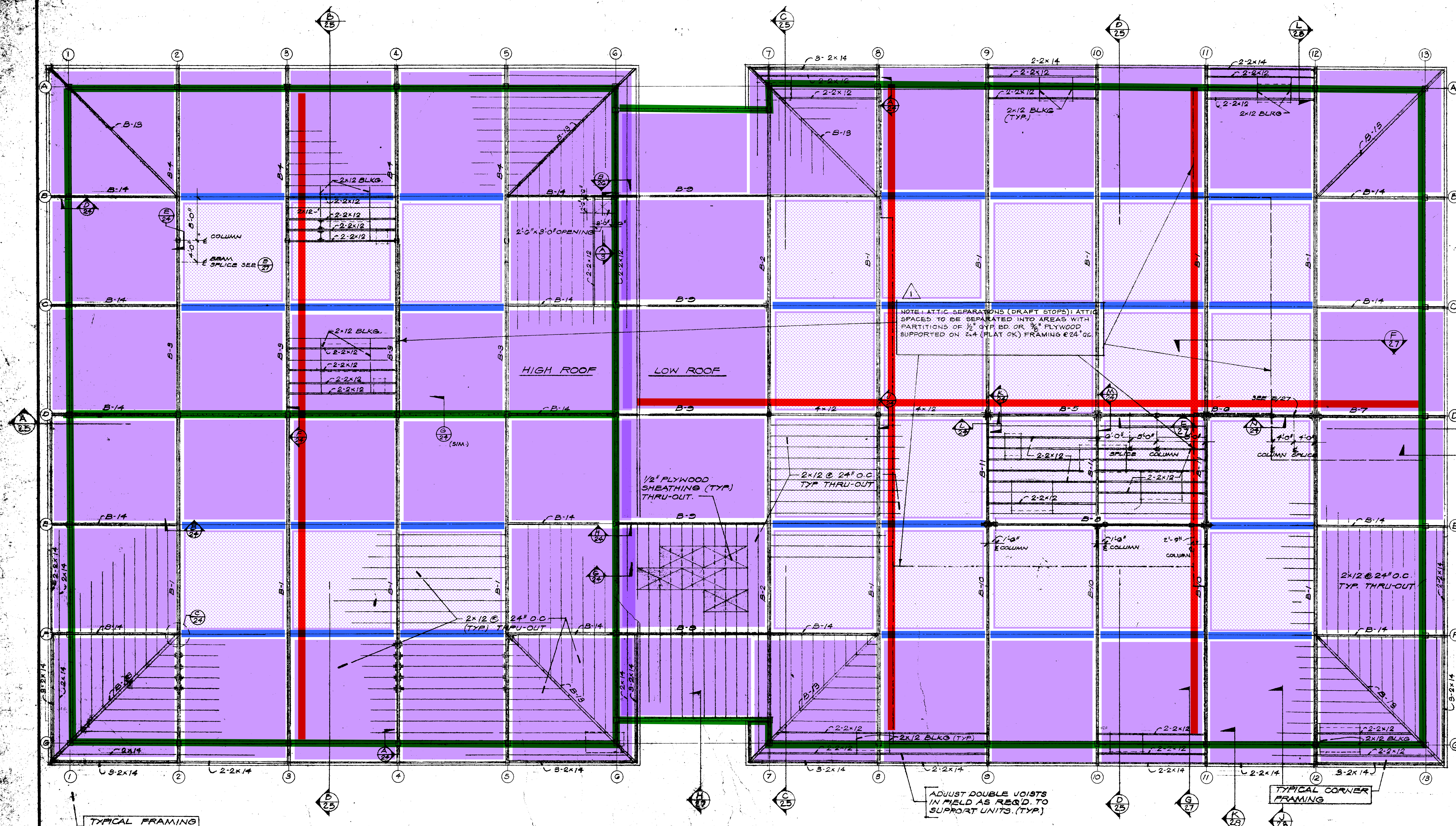
FOUNDATION PLAN

MERCED SUN-STAR  
NEWSPAPER PLANT  
NORTH G STREET, MERCED, CALIFORNIA

JOB NO.  
**A103**  
SHEET  
29  
OF  
28

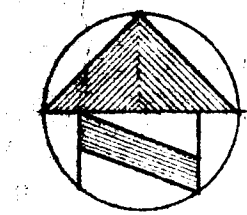
DATE:  
4-22-79  
REVISIONS:





THESE SKETCHES ARE FOR ILLUSTRATIVE PURPOSES ONLY AND TO ASSIST WITH ESTIMATING AND ORDER-OF-MAGNITUDE CONSTRUCTION COSTS. THESE SKETCHES ARE NOT ENGINEERED DESIGNS NOR ARE THEY THE RESULT OF A COMPLETE, CODE COMPLIANT, BUILDING EVALUATION.

- SUB-DIAPHRAGM CREATION SEE A.B. & C
- RE-NAIL ROOF
- C12x DRAG/CHORD CREATION & TILT-WALL PANEL TO DIAPHRAGM CONNECTION IMPROVEMENT. SEE A.B & C.
- W10x DRAG CREATION AND ATTACHMENT TO BRACED FRAME BELOW. SEE D
- 5.125x24" GLB ADDED AS COMPRESSION STRUT WITH STRAPS/TIES.



ROOF FRAMING PLAN  
SCALE: 1/8" = 1'-0"

NOTE: SEE FOUNDATION PLAN SHEET 22 FOR COLUMNS.  
**EXHIBIT S-2**  
REISSUED

**OHlinger-Jones Engineers**  
2325 M STREET, P.O. BOX 2211  
MERCED, CALIFORNIA 95340

ENGINEERING • ARCHITECTURE • PLANNING

DATE: 4-22-79

REVISION: 5-7-79

APPENDIX: A

JOB NO. **A103**

SHEET 23 OF 23

MERCED SUN-STAR  
NEWSPAPER PLANT  
NORTH 6 STREET MERCED CALIFORNIA

ROOF FRAMING PLAN



# GLU-LAM BEAM SCHEDULE

BEAM	SIZE	LENGTH*	CAMBER	CAMBER RADIUS	NOTES
B-1	7" x 93"	93'-8 1/2"	3 3/8"	1000'	2
B-2	7" x 56"	93'-11"	3 3/8"	1000'	
B-3	5 1/4" x 18"	28'-0"	1 5/8"	800'	
B-4	5 1/4" x 15"	35'-11"	1 1/4"		1
B-5	5 1/4" x 24"	26'-8"	2 1/32"	1000'	
B-6	5 1/4" x 25 1/2"	30'-0"	3 1/32"	1000'	
B-7	5 1/4" x 25 1/2"	27'-11"	-	-	
B-8	3 1/4" x 22 1/2"	41'-4"	-	-	
B-9	3 1/4" x 22 1/2"	27'-3 1/2"	3 1/32"	1200'	
B-10	5 1/4" x 25 1/2"	49'-3 1/2"	2"	1200'	
B-11	3 1/4" x 18"	19'-8"	3 1/4"	800'	
B-12	3 1/4" x 12"	48'-0"	-	-	
B-13	5 1/4" x 13 1/2"	32'-10"	-	-	
B-14	3 1/4" x 13 1/2"	23'-3 1/2"	-	-	

\*LENGTHS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR.

SPECIES: DOUGLAS FIR

GRADE: COMBINATION "A"

LAMINATIONS: 15/8" (1 1/2" O.K.)

INSPECTION: UBC 2513 c

GLUE: CASEIN W/MOLD INHIBITOR

APPEARANCE: INDUSTRIAL

PROTECTION: END SEAL

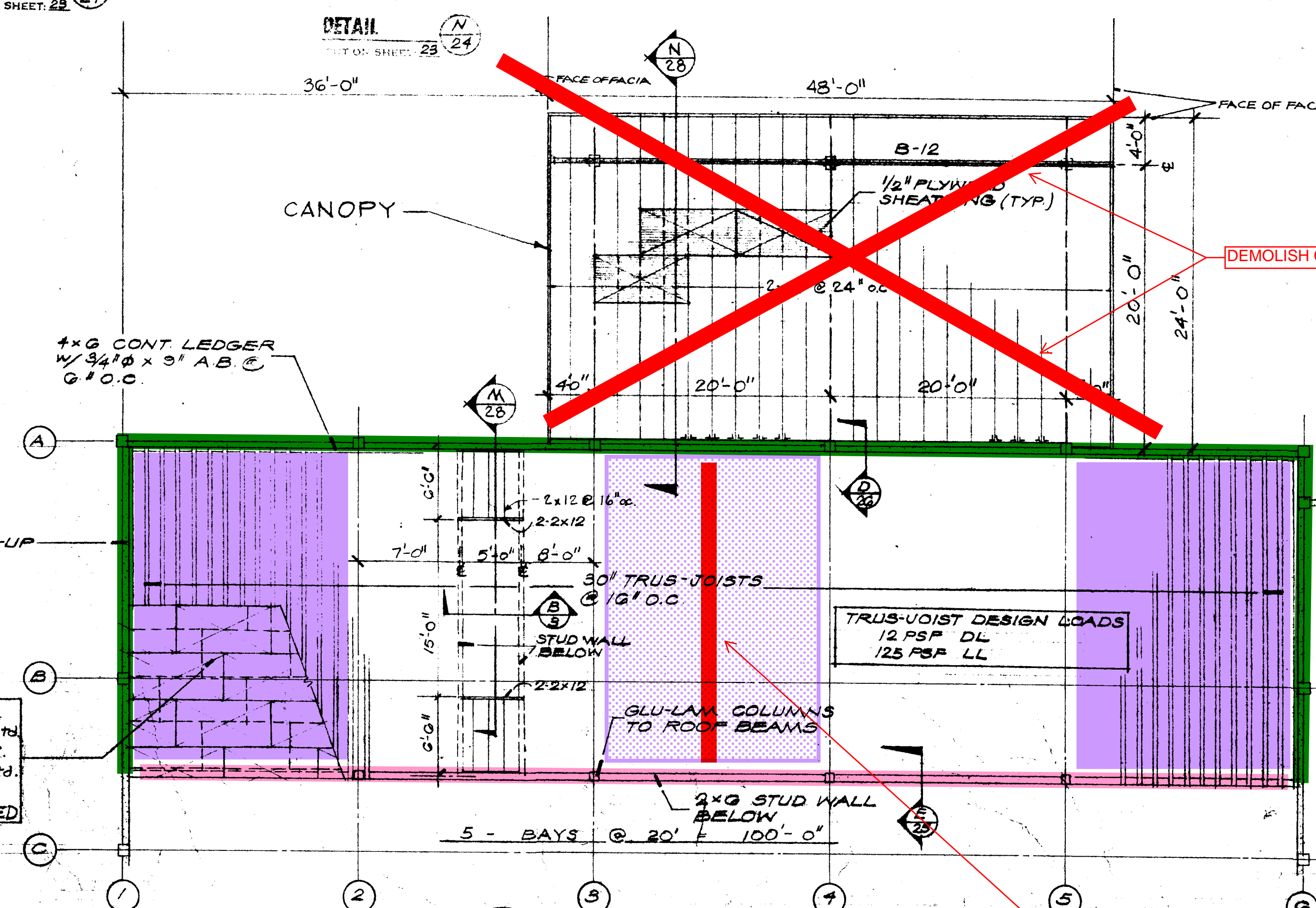
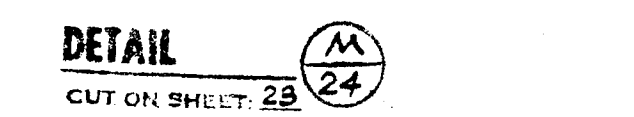
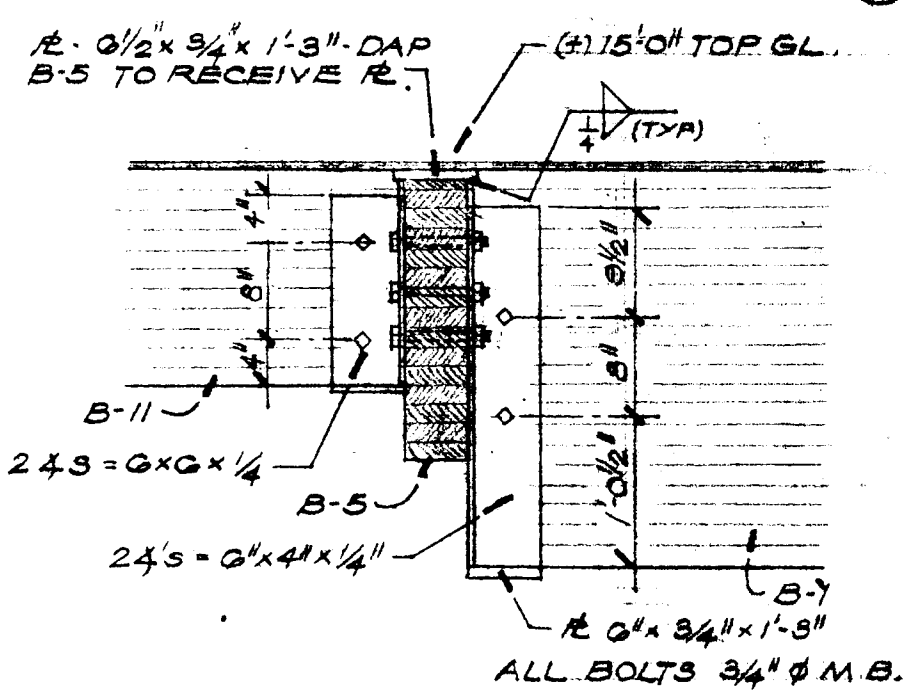
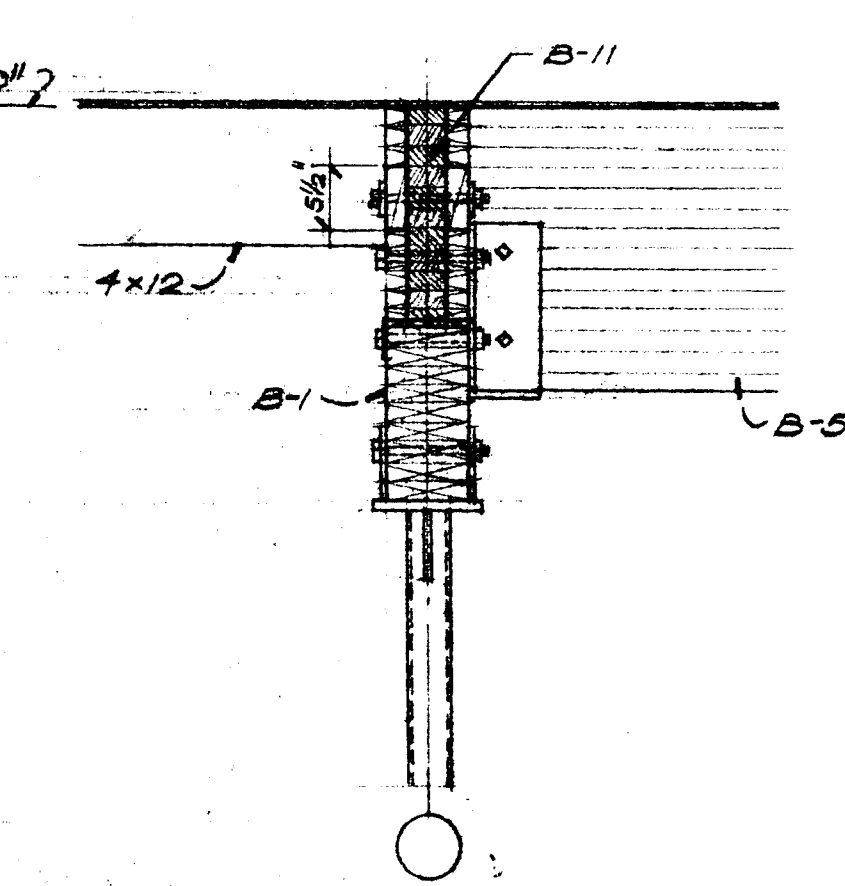
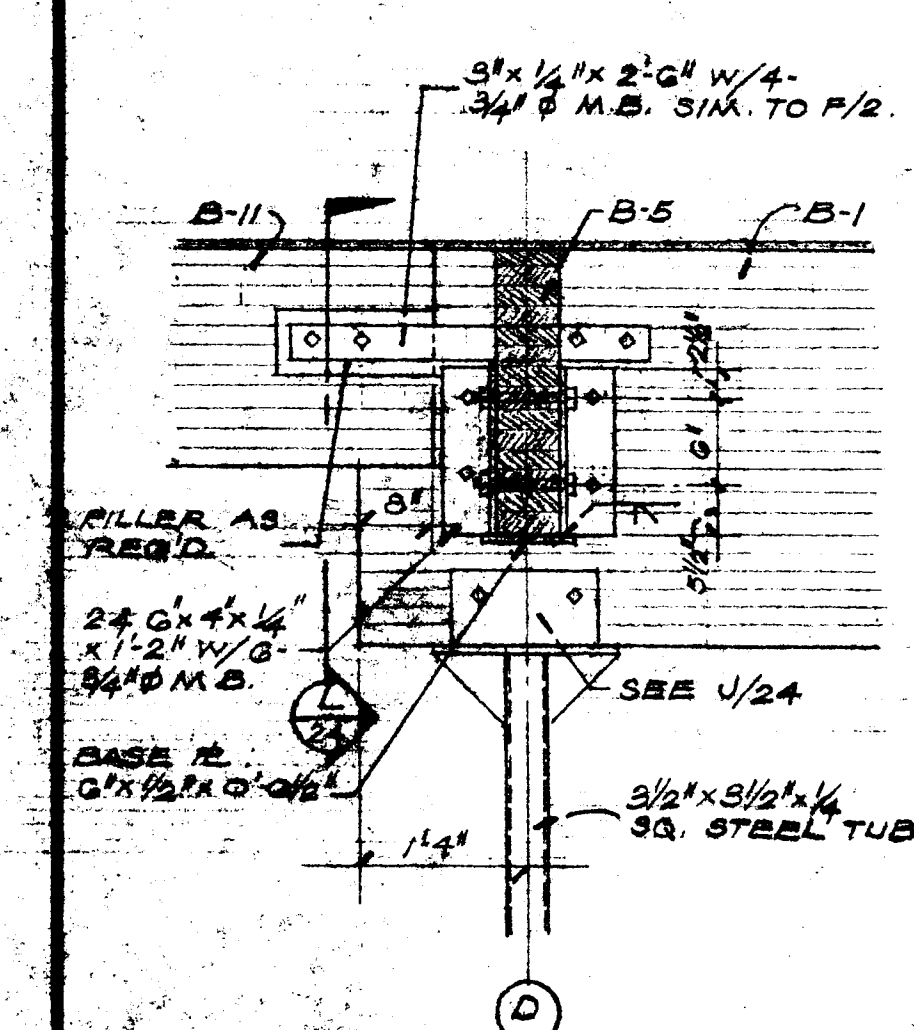
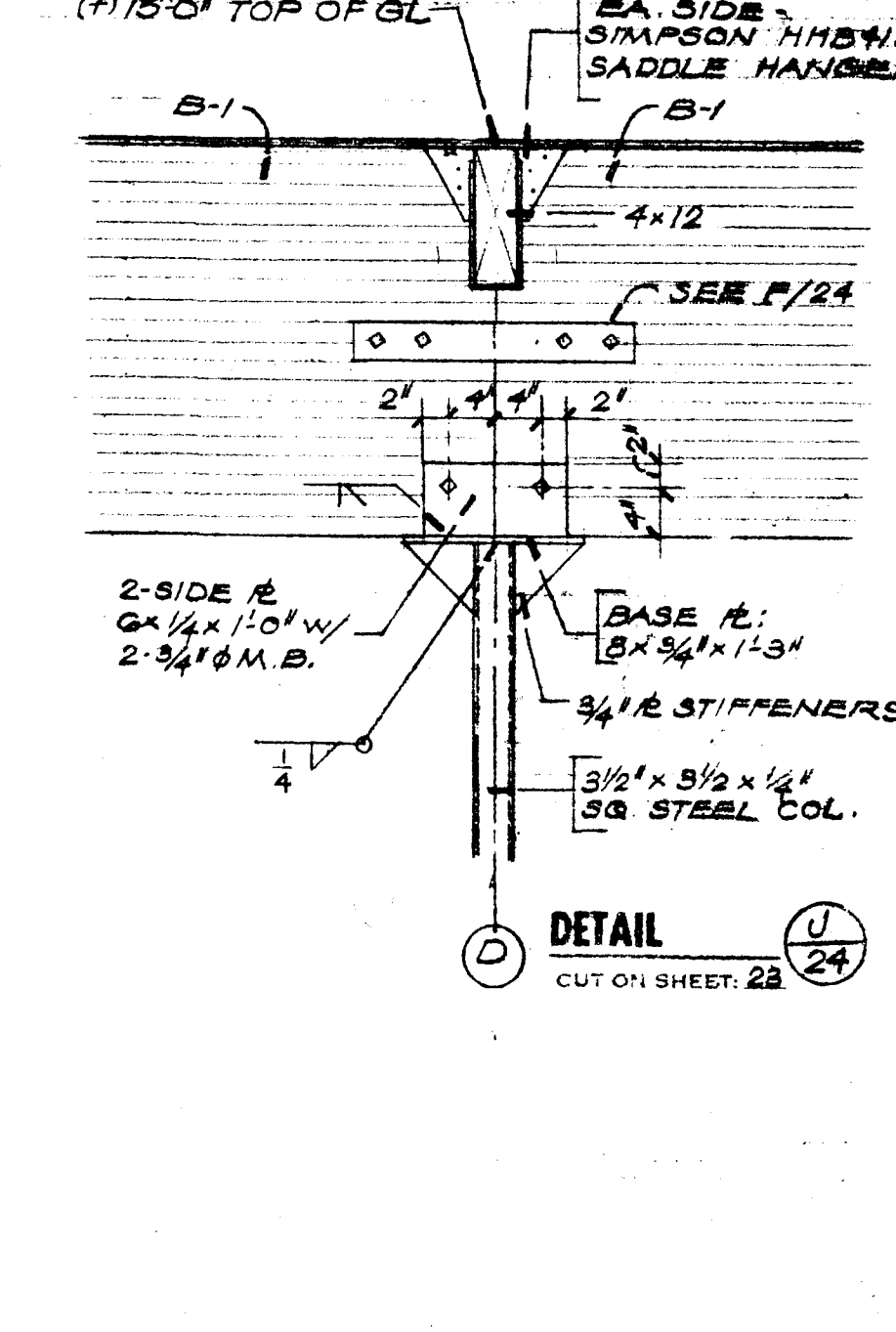
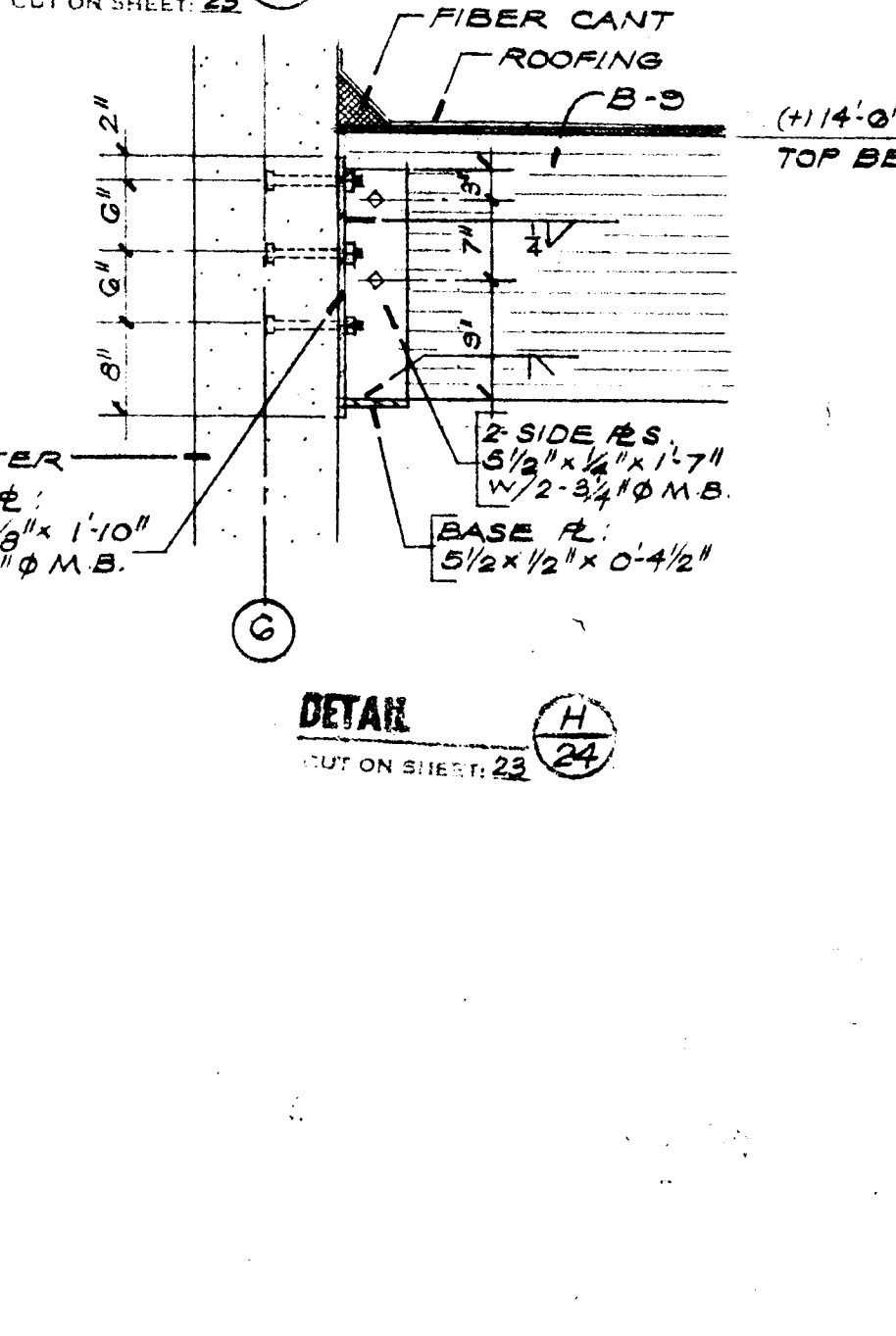
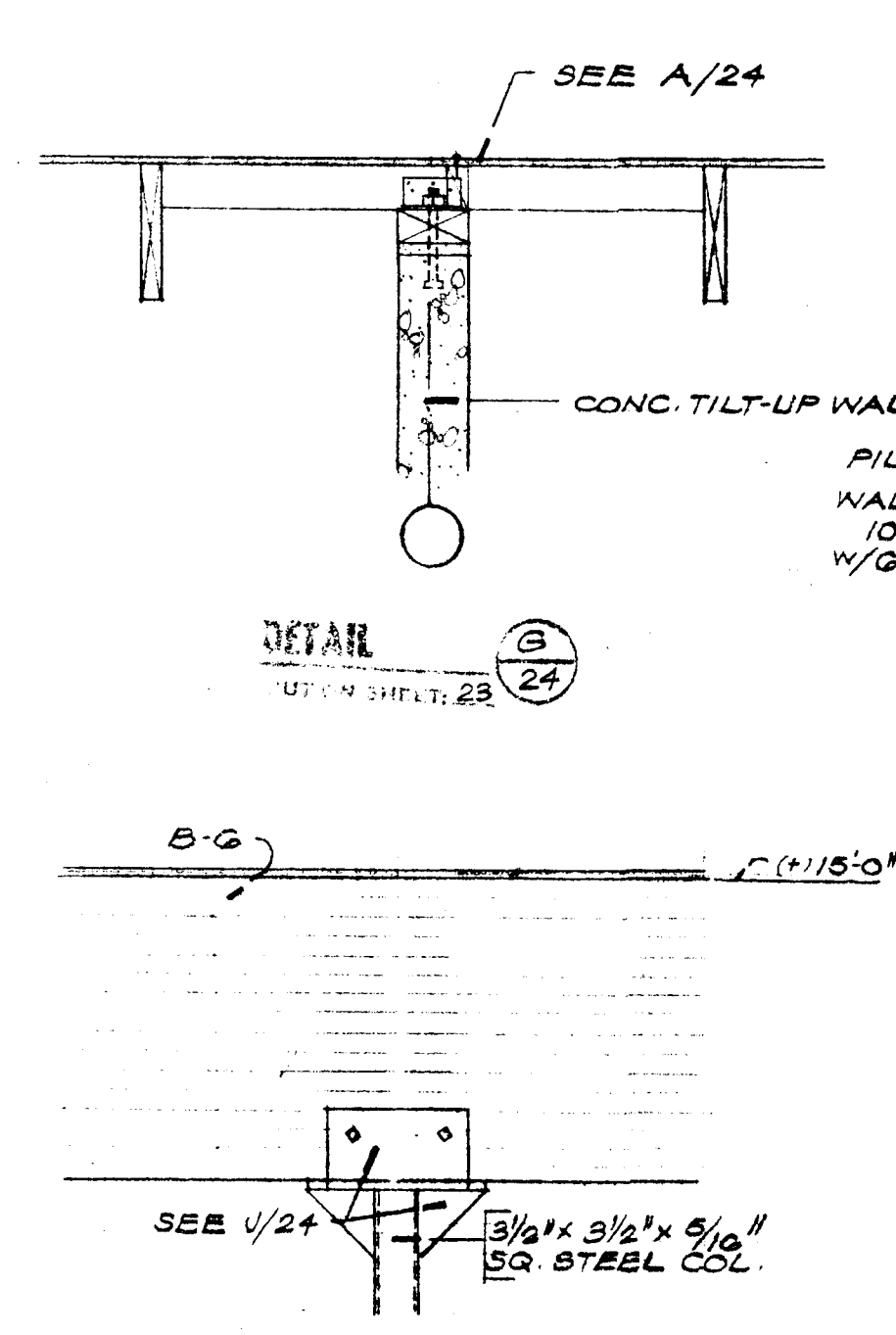
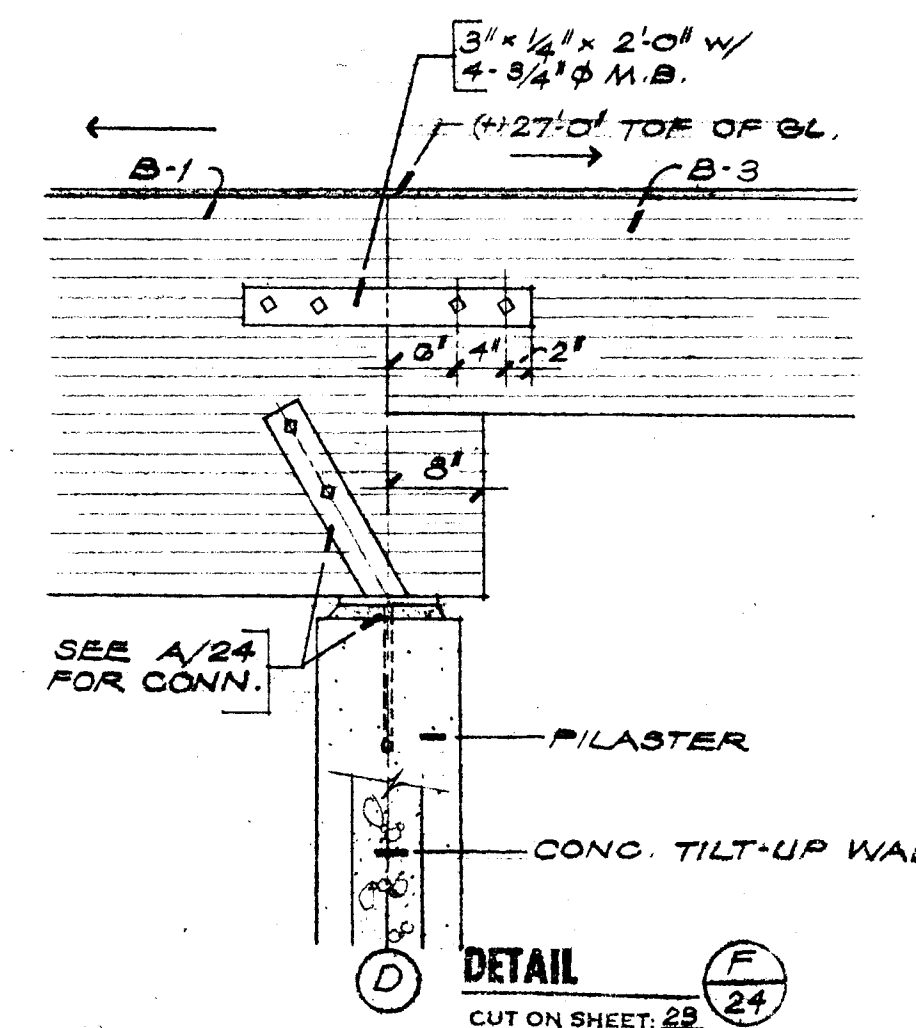
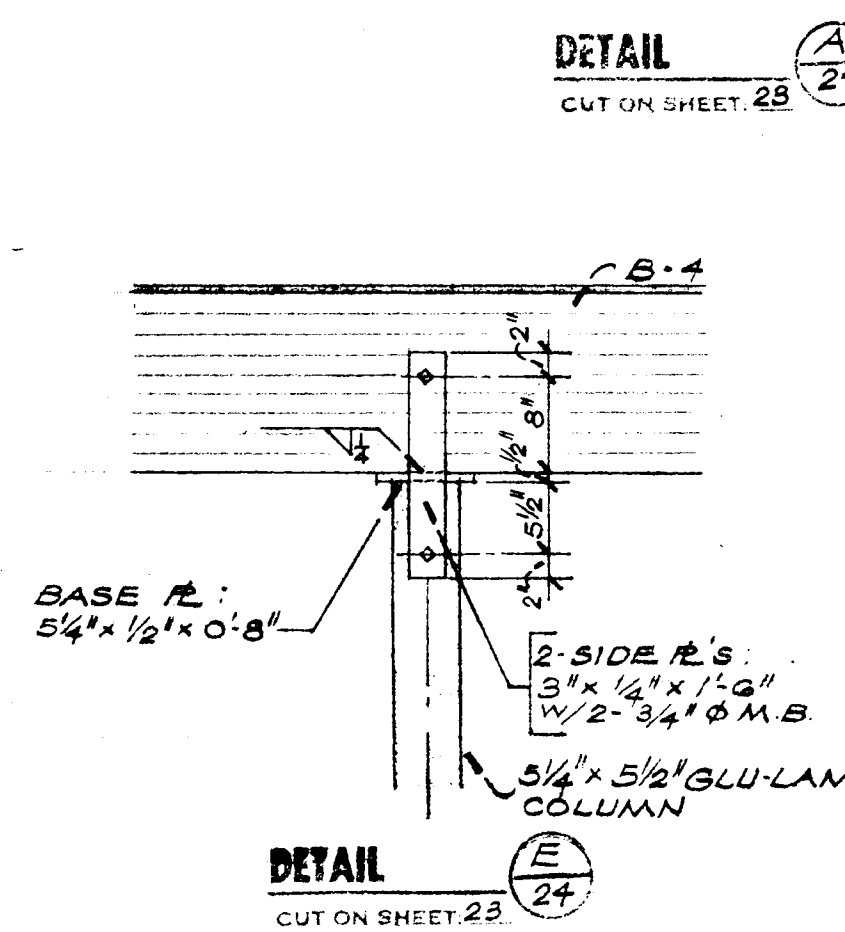
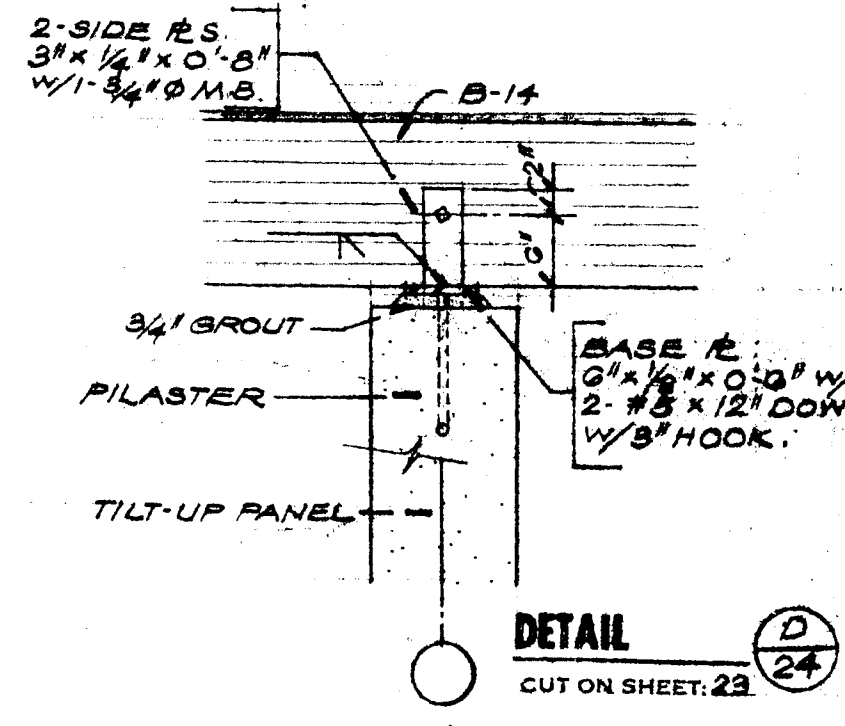
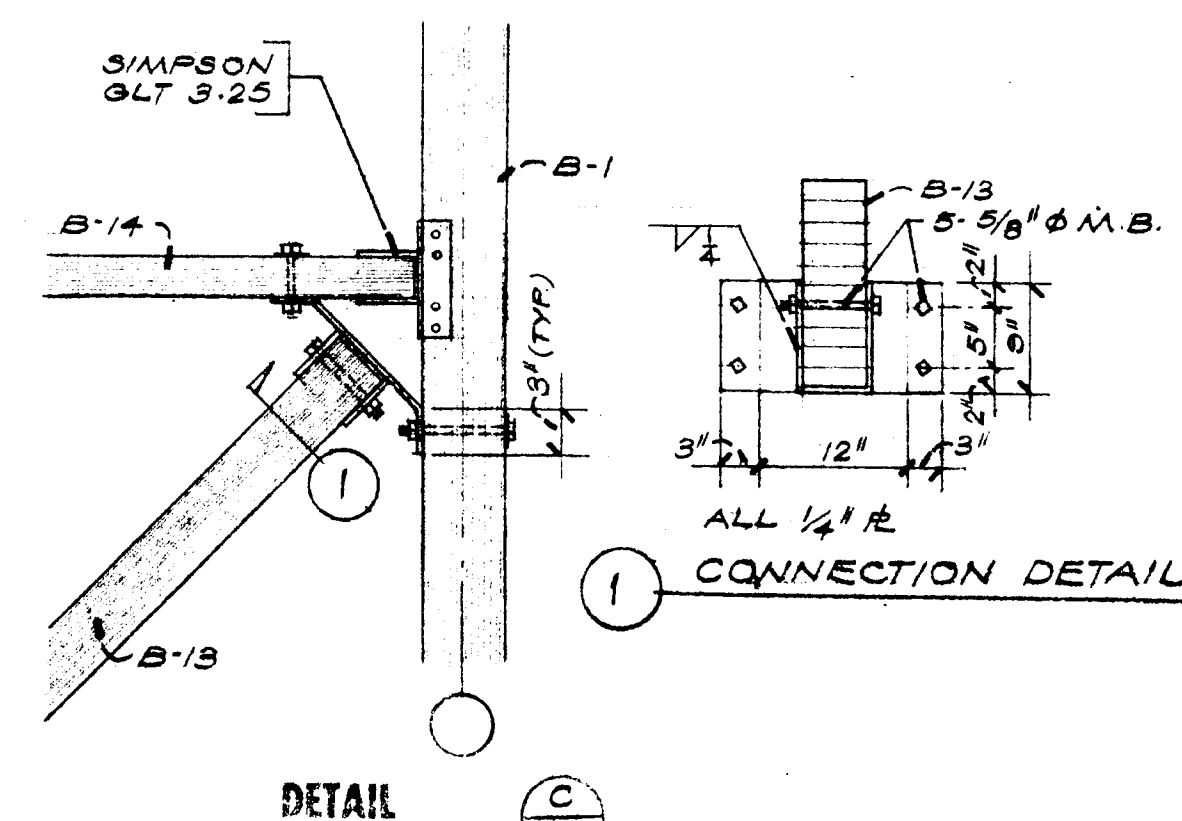
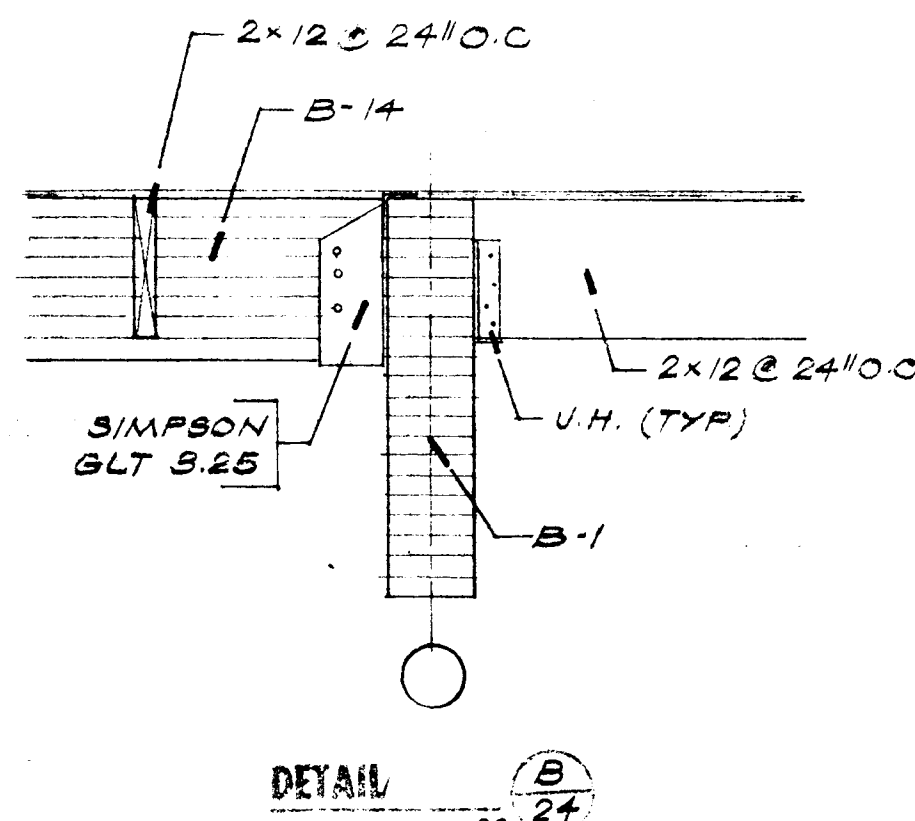
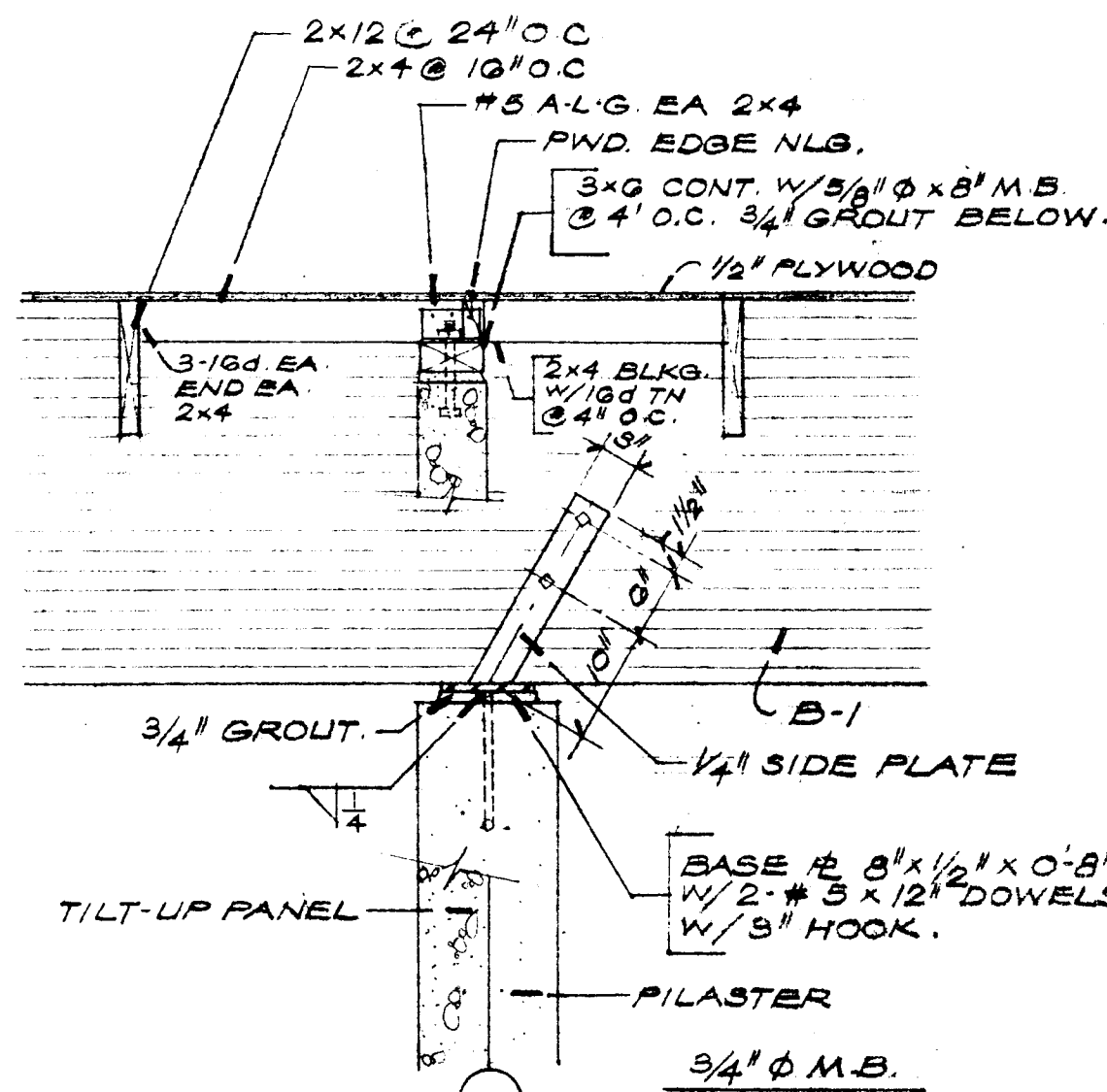
MOISTURE CONTENT: 12% AVG. W/5% MAX. VARIATION BETWEEN LAMS.

## NOTES:

1. CAMBER 1 1/4" AT 12' FROM LINE A.

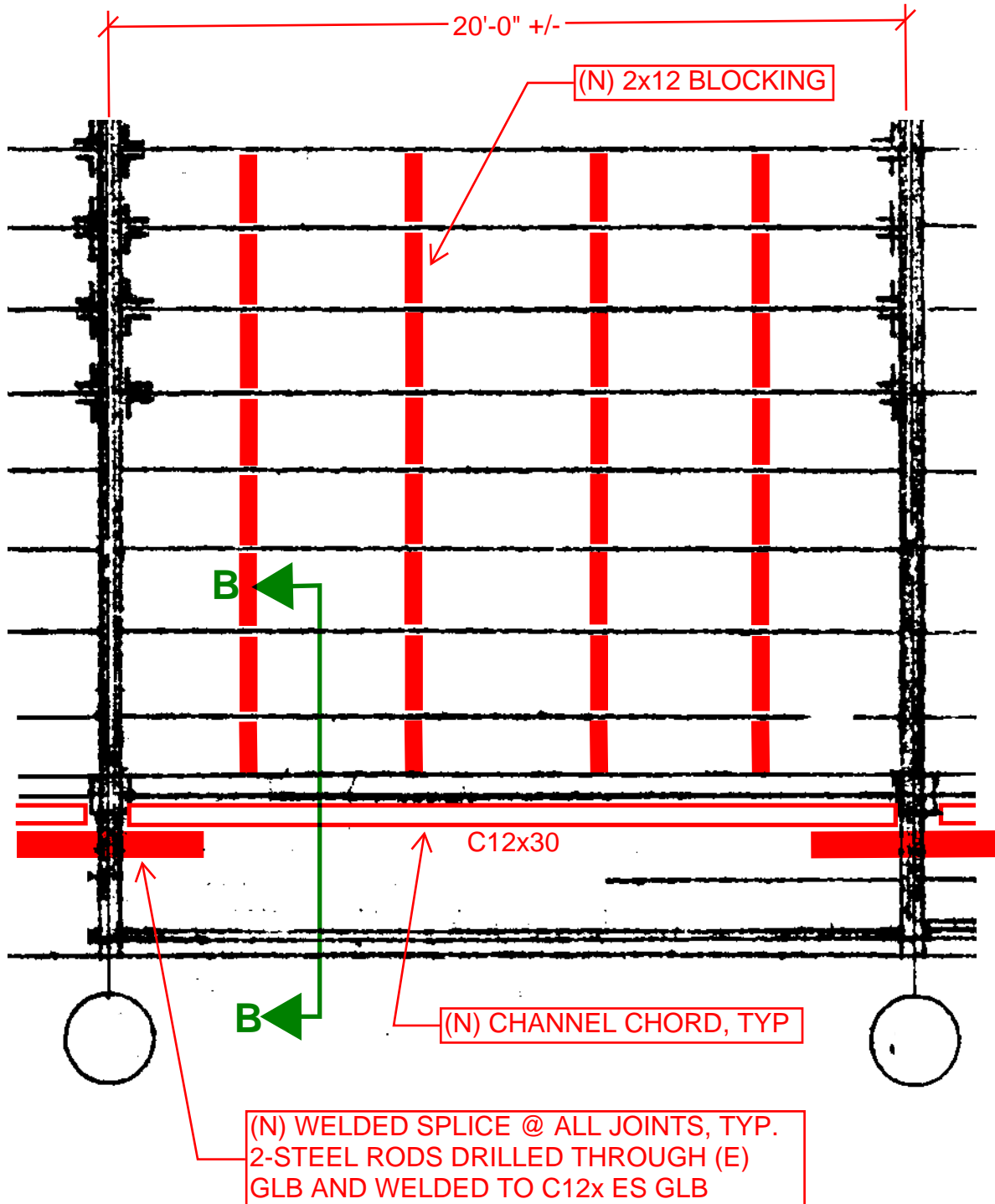
2. B-1 LENGTH IS 94'-7" AT LINES 2, 3, 4, 5 & 9

B-1 LENGTH IS 98'-11" AT LINE 8.





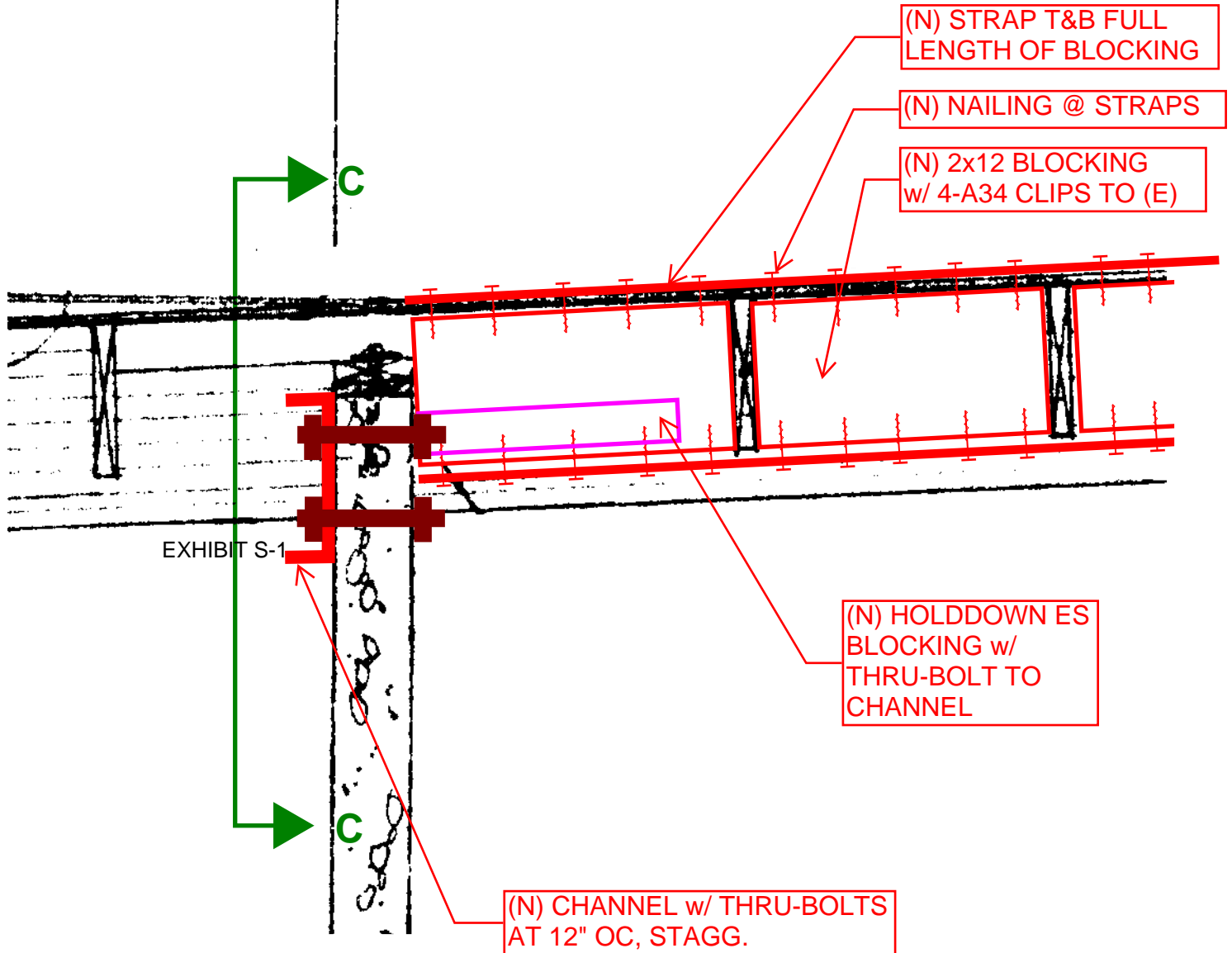
THESE SKETCHES ARE FOR ILLUSTRATIVE PURPOSES ONLY  
AND TO ASSIST WITH ESTIMATING AND ORDER-OF-MAGNITUDE  
CONSTRUCTION COSTS. THESE SKETCHES ARE NOT  
ENGINEERED DESIGNS NOR ARE THEY THE RESULT OF A  
COMPLETE, CODE COMPLIANT, BUILDING EVALUATION.



TYPICAL SUB-DIAPHRAGM BAY  
IMPROVEMENT @ TILT-WALL

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CONSTRUCTION COSTS. THESE SKETCHES ARE NOT  
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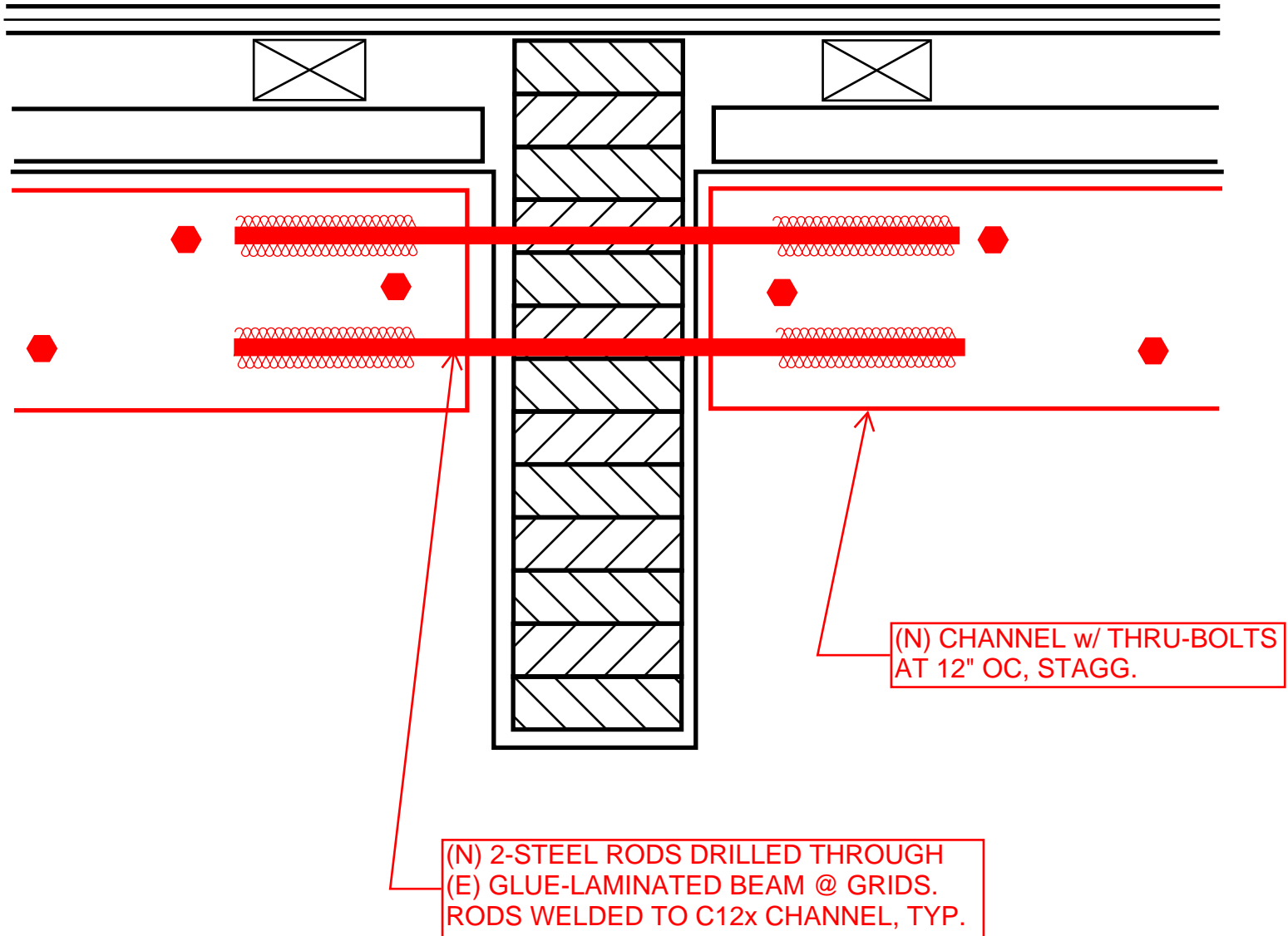
B



TYPICAL SUB-DIAPHRAGM  
IMPROVEMENT @ TILT-WALL

EXHIBIT S-5

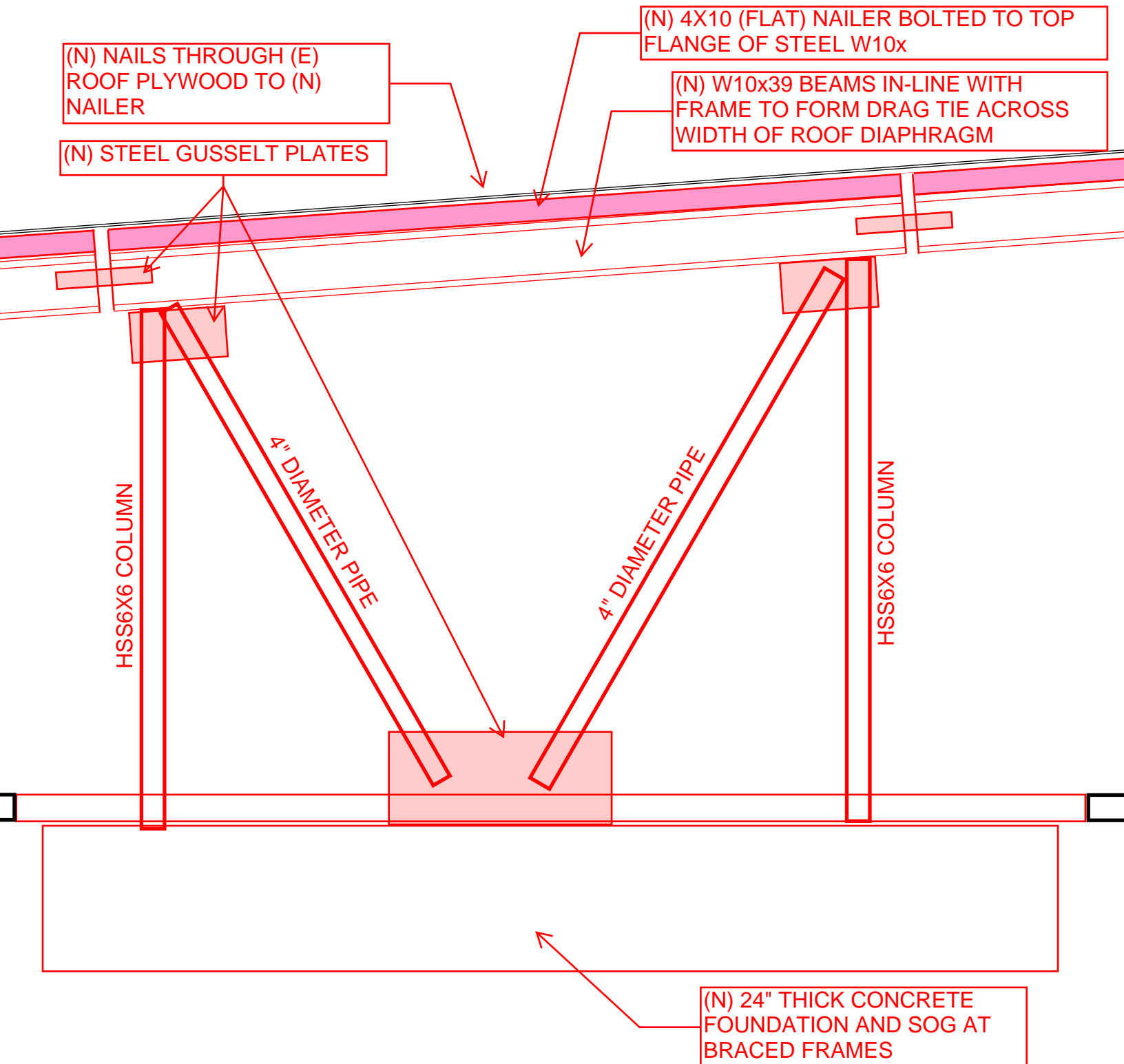
THESE SKETCHES ARE FOR ILLUSTRATIVE PURPOSES ONLY  
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## TYPICAL CONNECTION THROUGH (E) GLUE-LAMINATED BEAM



THESE SKETCHES ARE FOR ILLUSTRATIVE PURPOSES ONLY  
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CONSTRUCTION COSTS. THESE SKETCHES ARE NOT  
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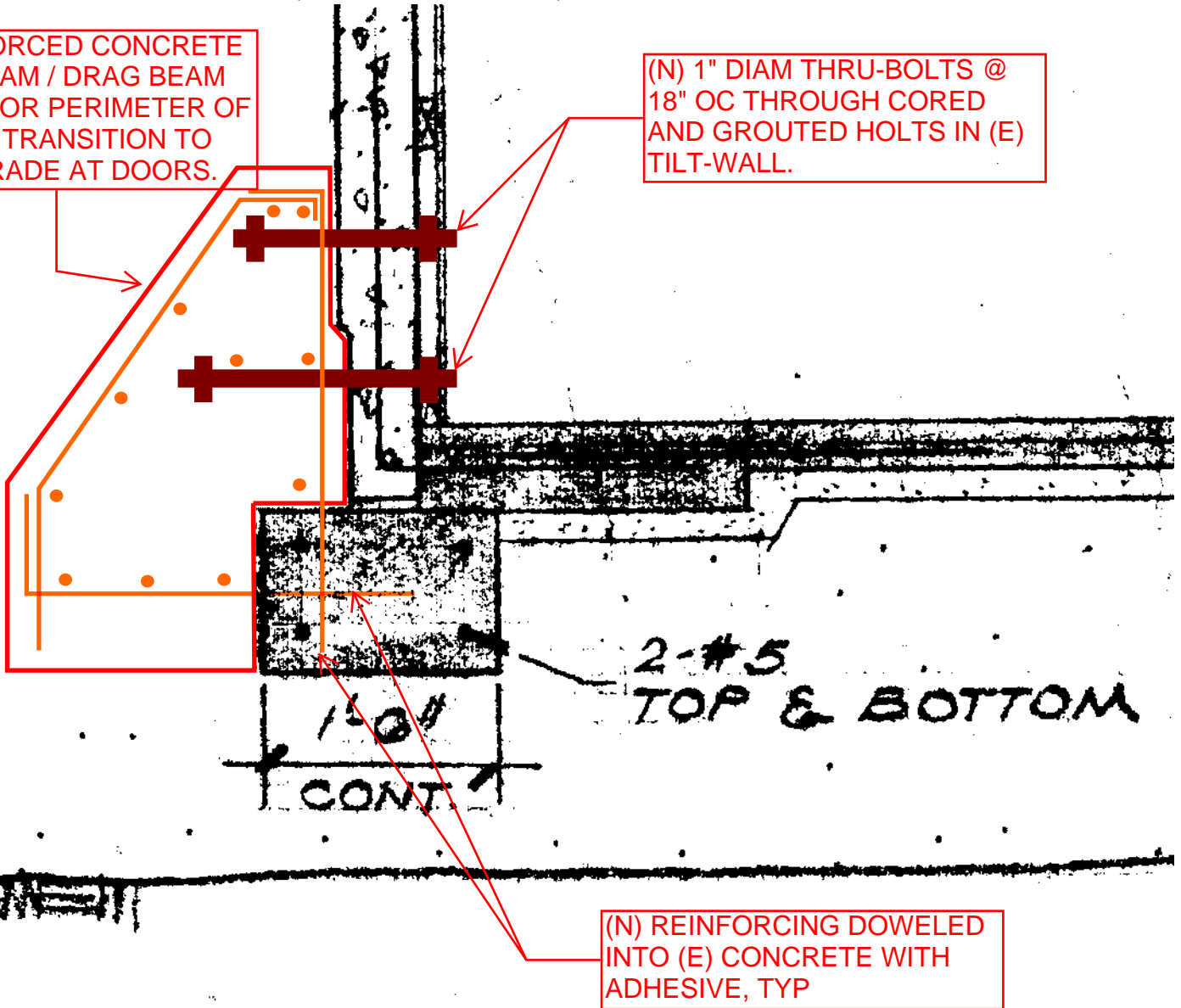
TYPICAL BRACED FRAME  
GENERIC FRAME ELEVATION

THESE SKETCHES ARE FOR ILLUSTRATIVE PURPOSES ONLY  
AND TO ASSIST WITH ESTIMATING AND ORDER-OF-MAGNITUDE  
CONSTRUCTION COSTS. THESE SKETCHES ARE NOT  
ENGINEERED DESIGNS NOR ARE THEY THE RESULT OF A  
COMPLETE, CODE COMPLIANT, BUILDING EVALUATION.



(N) REINFORCED CONCRETE  
GRADE BEAM / DRAG BEAM  
AT EXTERIOR PERIMETER OF  
BUILDING. TRANSITION TO  
BELOW GRADE AT DOORS.

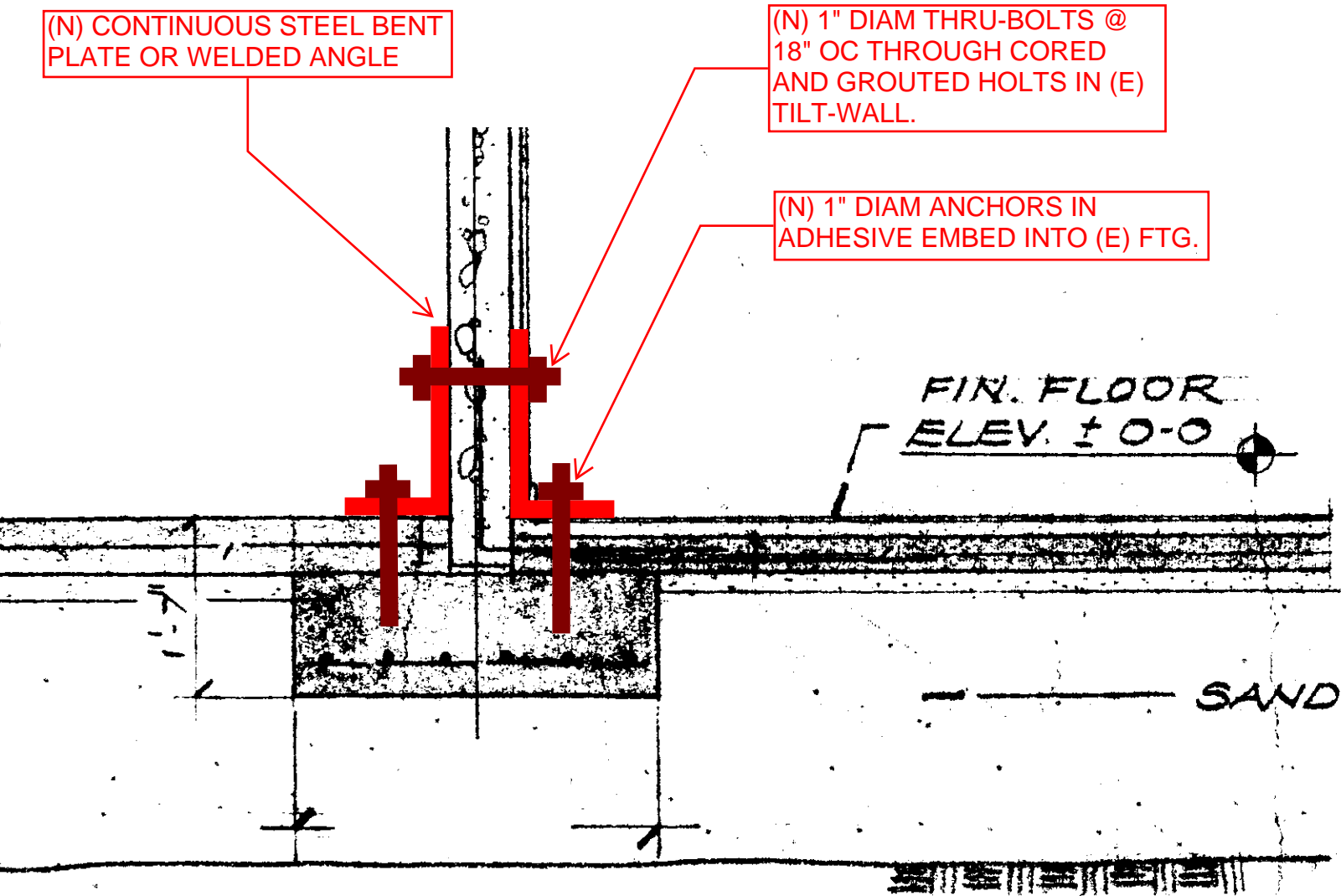
(N) 1" DIAM THRU-BOLTS @  
18" OC THROUGH CORED  
AND GROUTED HOLTS IN (E)  
TILT-WALL.



## TYPICAL LOW-BAY TILT-WALL FOUNDATION ATTACHMENT & DRAG

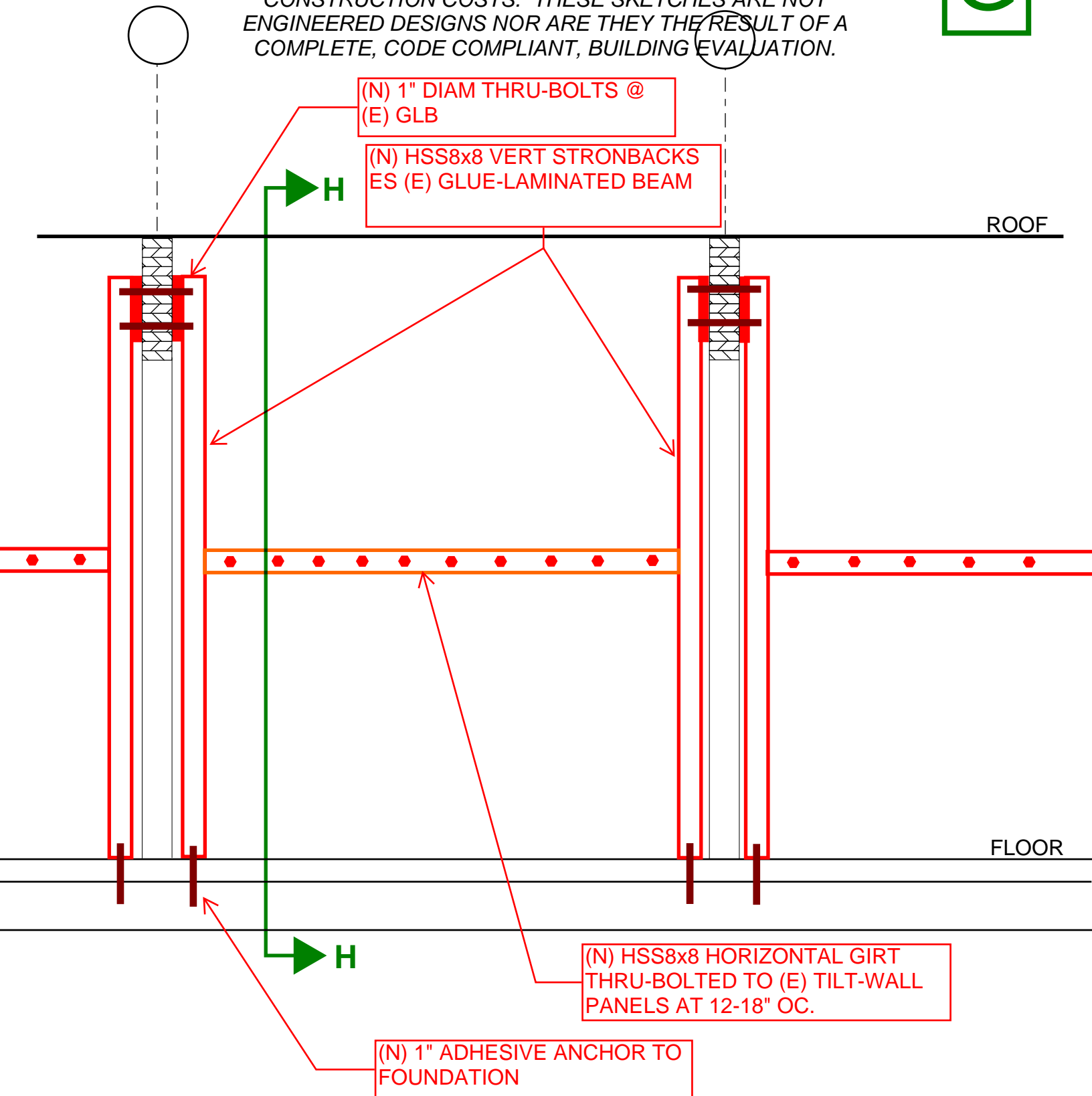
EXHIBIT S-8

THESE SKETCHES ARE FOR ILLUSTRATIVE PURPOSES ONLY  
AND TO ASSIST WITH ESTIMATING AND ORDER-OF-MAGNITUDE  
CONSTRUCTION COSTS. THESE SKETCHES ARE NOT  
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COMPLETE, CODE COMPLIANT, BUILDING EVALUATION.



TYPICAL SUB-DIAPHRAGM  
IMPROVEMENT @ TILT-WALL

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## TYPICAL HIGH-BAY TILT-WALL OUT-OF-PLANE STRENGTHENING



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AND TO ASSIST WITH ESTIMATING AND ORDER-OF-MAGNITUDE  
CONSTRUCTION COSTS. THESE SKETCHES ARE NOT  
ENGINEERED DESIGNS NOR ARE THEY THE RESULT OF A  
COMPLETE, CODE-COMPLIANT, BUILDING EVALUATION.

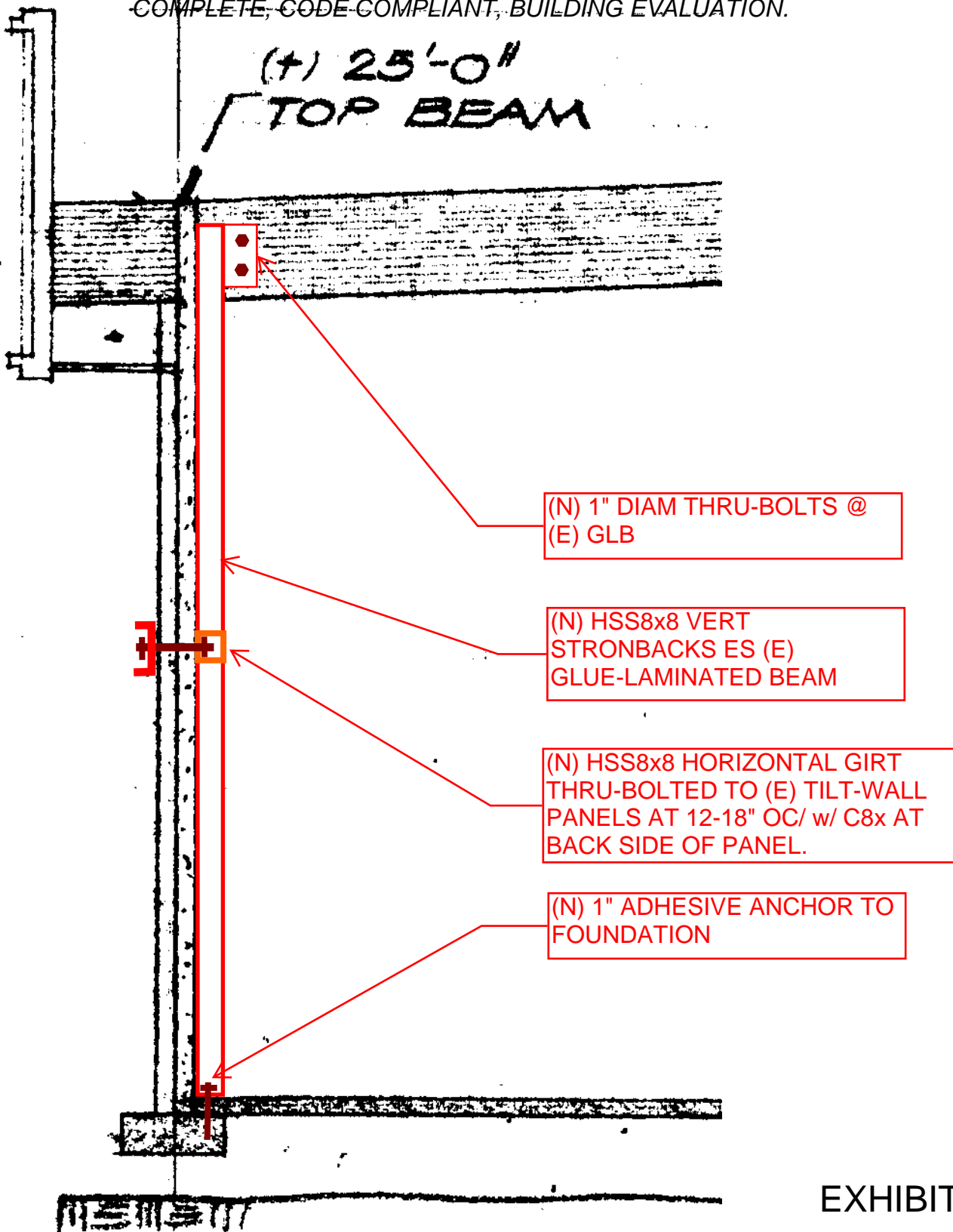


EXHIBIT S-11

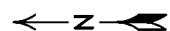
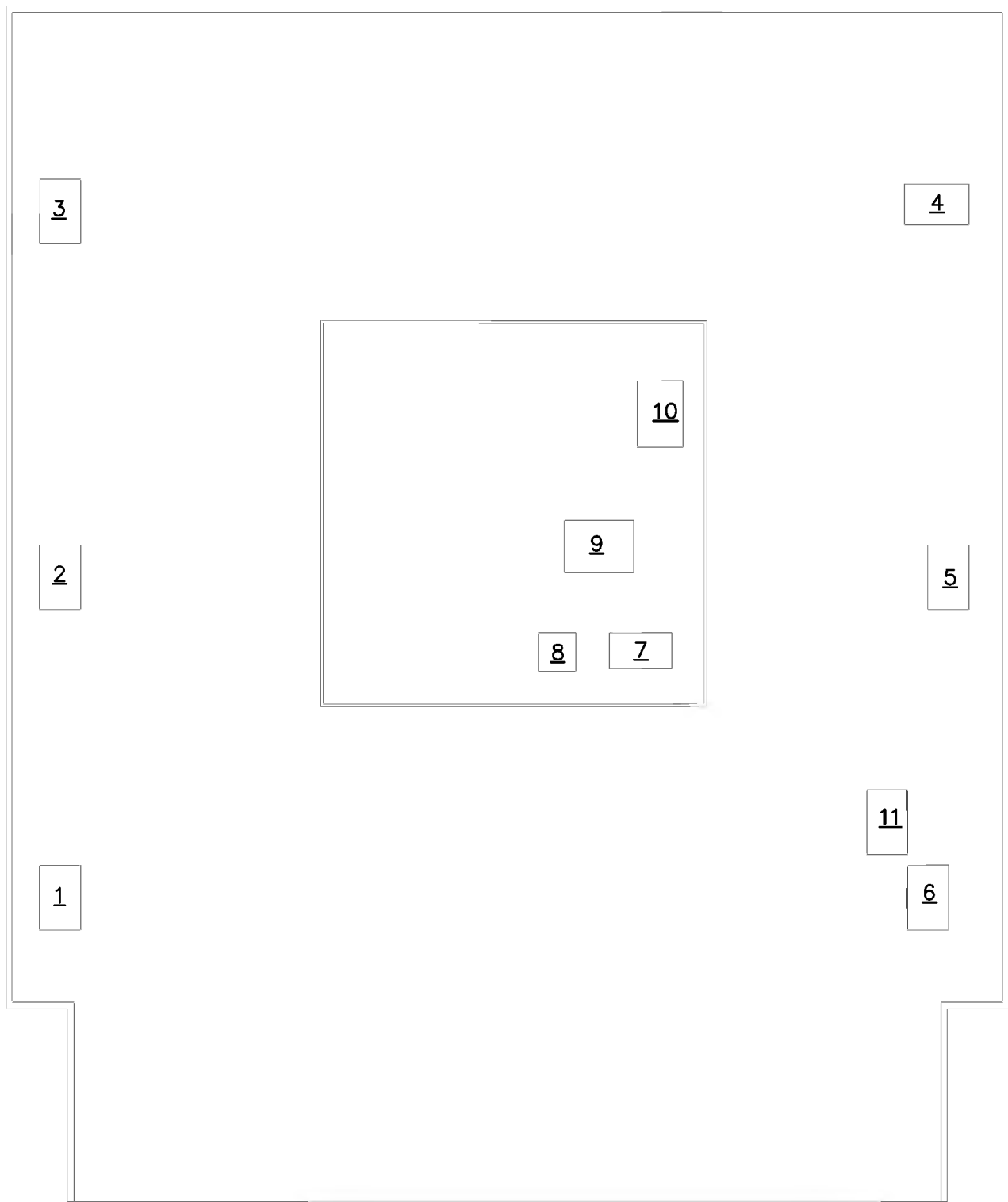
## TYPICAL HIGH-BAY TILT-WALL OUT-OF-PLANE STRENGTHENING

### Lower Roof

Equipment Tag	Brand	Model	Nominal Capacity (tons of cooling)	Year built	Duct arrangement	Ventilation	Remove unit for re-roof project	Additional Notes
1	Trane	YHC 048	4	2004	Side	Manual minimum	yes	Existing exhaust fan is within 10' of the OSA intake.
2	Trane	YHC 048	4	2004	Side	Manual minimum	yes	
3	Trane	YSC 060	5	2004	Side	Auto	yes	
4	Trane	YHC 092	7.5	2004	Side	Manual minimum	yes	Condensate drain is disconnected, existing exhaust fan is within 10" of the OSA intake.
5	Trane	YHC 048	4	2004	Side	Manual minimum	yes	
6	Trane	YSC 060	5	2004	Side	Manual minimum	yes	
7	Trane	YSC 090	7.5	2004	Side	No provisions	yes	
8	Trane	YHC 048	4	2004	Side	No provisions	yes	
9	York	D3CG150	12.5	?	Side	Manual minimum	yes	This unit will need to be replaced due to age
10	BDP	585 CE 090	7.5	1981	Side	No provisions	yes	This unit will need to be replaced due to age
11	York	D2 NP 024	2	2006	Side	No provisions	yes	

### Upper Roof

Equipment Tag	Brand	Model	Nominal Capacity (tons of cooling)	Year built	Duct arrangement	Ventilation	Remove unit for re-roof project	Additional Notes
1	Carrier	48HJD008	7.5	2008	Down	Manual minimum	yes	
2	Day & Night	?	4	?	Down	Manual minimum	yes	This unit will need to be replaced due to age
3	Trane	YHC 120	10	2005	Down	Auto	yes	
4	Trane	YCD 121	10	1997	Down	Manual minimum	yes	This unit will need to be replaced due to age
5	Trane	YSC 120	10	2004	Down	Manual minimum	yes	
6	Trane	YSC 120	10	2005	Down	Manual minimum	yes	
7	Day & Night	?	3?	?	Side	Manual minimum	yes	This unit will need to be replaced due to age



**Stanton**  
ENGINEERING 

1819 K Street, Suite 250  
Sacramento, CA 95826  
916.288.6250 OFFICE

## LOWER ROOF

SHEET REFERENCED:

REVISION NUM: N/A

**CITY OF MERCED SUN STAR EVAL.**

PROJECT 16002

# Exhibit M-2

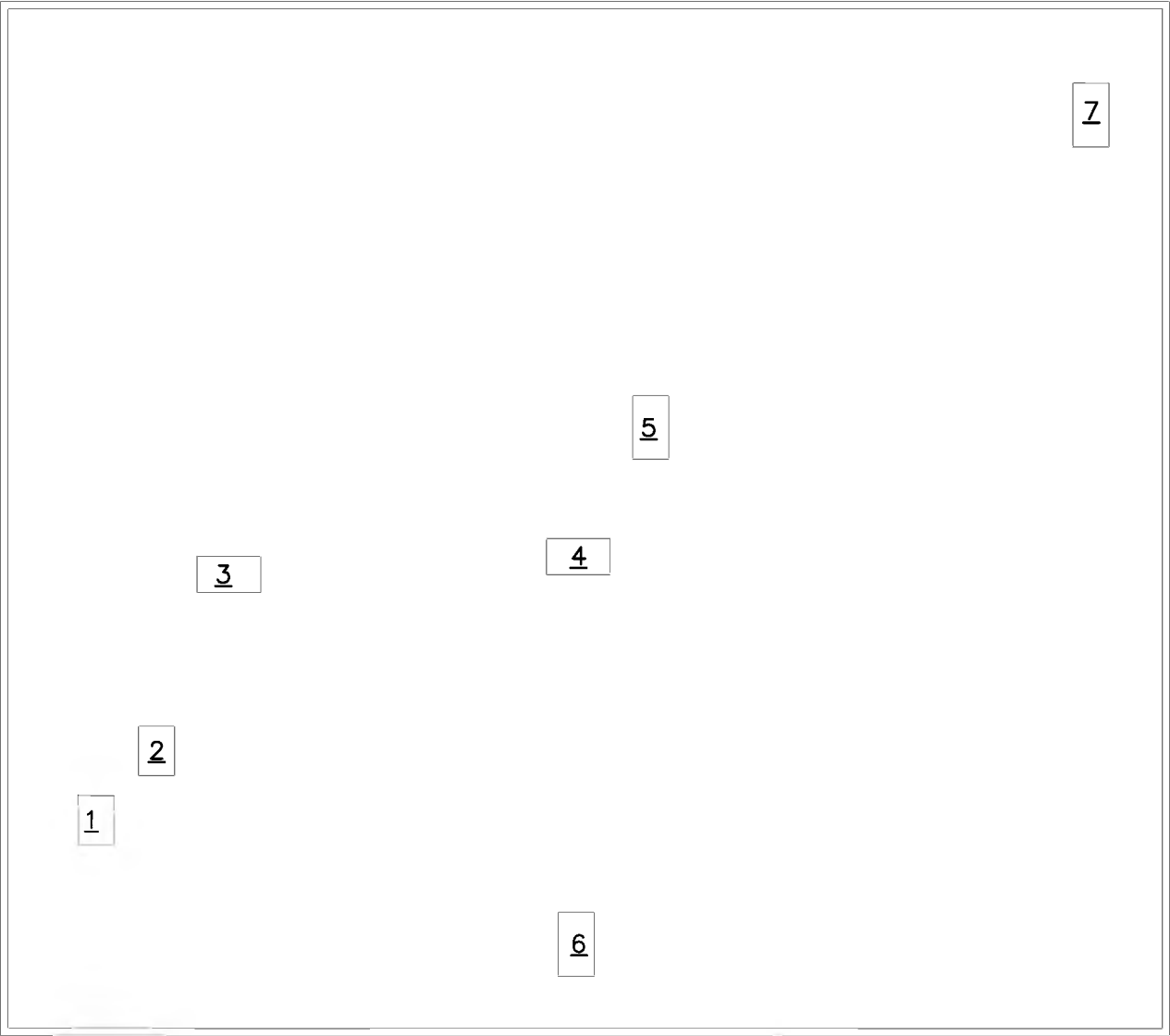
SCALE  
1"=20'

DRAWN BY  
GWS

CHECKED BY  
MS

DATE  
02/02/2016

SHEET NUMBER



**Stanton**  
ENGINEERING (M) + E

1819 K Street, Suite 250  
Sacramento, CA 95826  
916.288.6250 OFFICE

**UPPER ROOF**

SHEET REFERENCED:

REVISION NUM: N/A

**CITY OF MERCED SUN STAR EVAL.**

PROJECT 16002

**Exhibit M-3**

SCALE  
1"=20'

DRAWN BY  
GWS

CHECKED BY  
MS

DATE  
02/02/2016

SHEET NUMBER



SILVA COST CONSULTING, INC.

1521 Corporate Way, Suite 210  
Sacramento, CA 95831

P: 916.444.1130

F: 916.444.1131

---

## Sun Star Building Evaluation

Merced, CA

## Conceptual Cost Estimate

February 12, 2016

Prepared for:

**WMB Architects**

2000 L Street, Suite 125  
Sacramento, CA 95811

## ITEMS USED IN PREPARING THE ESTIMATE

---

<b>Specifications:</b>	None	
<b>Reports:</b>	See below	
<b>Civil Drawings:</b>	Conceptual civil plan, showing fire line, ADA parking stalls, and path of travel upgrades, prepared by Siegfried Engineering	2/3/2016
<b>Roofing:</b>	Roofing report outlining proposed roof improvements, prepared by D7 Roofing Services, Inc.	2/2/2016
<b>Architectural Drawings:</b>	Architectural report and floor plan showing code upgrades, prepared by WMB Architects	2/2/2016
<b>Structural Drawings:</b>	Structural drawings and report showing proposed structural improvements, prepared by CYS Engineering	2/2/2016
<b>Mechanical Drawings:</b>	Mechanical report outlining proposed mechanical improvements, prepared by Stanton Engineering	2/2/2016
<b>Plumbing Drawings:</b>	Included in mechanical report	
<b>Electrical Drawings:</b>	Electrical report outlining proposed electrical improvements, prepared by Stanton Engineering	2/4/2016

## ESTIMATE QUALIFICATIONS

---

- The project is located in Merced, CA.
- The estimate was priced using prevailing wage rates.
- We assume the project will be competitively bid with at least 4 contractors.  
If the delivery method changes, then this estimate is null and void.
- Start date of construction is assumed to be in the summer of 2017.
- Construction duration is assumed to be 8 months.
- The project will be done in one continuous phase.
- Work areas are to be un-occupied during construction.
- Work hours assumed, are 8 hours per day, 40 hours per week.
- We include a design contingency of 15%.
- The estimate is escalated 8.27%, at a rate of 5% per year, per California DGS.
- Due to the nature of construction pricing this estimate is deemed to be accurate for a period of 90 days. After 90 days, please contact us to see if the estimate needs a pricing update.
- We include general conditions at \$50,000 per month for 8 months.

## ITEMS SPECIFICALLY EXCLUDED FROM THE ESTIMATE

---

- Fees for architectural, structural, civil, mechanical, electrical, or other design fees.
- Permit fees, or inspection fees.
- Utility hook up fees.
- Premiums for overtime work.
- Hazardous materials abatement.
- Tenant Improvements.
- Domestic water, sewer, gas and electrical services to the building.
- Landscaping.
- Fencing.
- Work to the exterior envelope of the building, including windows and painting.
- Casework and finish carpentry.
- Division 11 - Equipment.
- Division 12 - Furnishings.
- Division 13 - Special Construction.
- Division 14 - Conveying.
- Telecom, , fire alarm, security, paving, voice amplification, video/television, white noise and similar systems.
- Items not specifically shown in estimate.

## PREFACE TO THE ESTIMATE

---

The estimate hereunder has been compiled from drawings and specifications (if available) believed to be an accurate portrayal of the project as drawn and indicated by the architect and/or engineers. If said drawings and specifications are incomplete, the project cost engineer has included those items as would usually appear in final drawings and specifications for a complete project in a manner ordinarily prudent under the circumstances. Specialty items unknown to the cost engineer will not normally be included unless communicated through the architect and/or engineer.

The user is cautioned that changes in the scope of the project or the drawings and specifications after the estimate has been submitted can cause cost changes and the cost engineer should be notified for appropriate addenda to be issued to the estimate.

The estimate has also been adjusted for geographical location based on local material and labor rates as well as local construction practice.

Estimates based on a competitive bid situation, involving 4 or more bidders with 4 sub bids per trade, is considered a normalized estimate. Costs may increase or decrease significantly depending on the actual number of bidders. Use the following percentages as a guide:

1 bid	+15% to +40%
2-3 bids	+5% to +15%
4-5 bids	+5% to -5%
6-7 bids	-5% to -15%
7+ bids	-15% or more



PROJECT SUMMARY				
<b>PROJECT:</b>	Sun Star Building Evaluation		<b>DATE:</b>	2/12/2016
<b>LEVEL:</b>	Conceptual		<b>ESTIMATOR:</b>	Javier Silva
<b>CLIENT:</b>	WMB Architects		<b>SCHEDULE:</b>	8 Months
<b>ITEM NO.</b>	<b>ITEM DESCRIPTION</b>	<b>AREA (SF)</b>	<b>ITEM COST</b>	<b>\$/SF</b>
1	Building Seismic and Code Upgrades	30,260	6,374,008	211
2				
3				
	<b>TOTAL CONSTRUCTION COST:</b>	<b>30,260</b>	<b>6,374,008</b>	<b>211</b>
<b>ALT. NO.</b>	<b>ALTERNATE DESCRIPTION</b>	<b>AREA (SF)</b>	<b>ALT COST</b>	<b>\$/SF</b>
1				
2				
3				
	<b>TOTAL ALTERNATES COST:</b>			

ESTIMATE SUMMARY			
<b>PROJECT:</b>	Sun Star Building Evaluation	<b>DATE:</b>	2/12/2016
<b>LEVEL:</b>	Conceptual	<b>ESTIMATOR:</b>	Javier Silva
<b>CLIENT:</b>	WMB Architects	<b>SCHEDULE:</b>	8 Months
<b>LOCATION:</b>	Building Seismic and Code Upgrades	<b>AREA (SF):</b>	30,260
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT COST</b>	<b>TOTAL AMOUNT</b>
<b>1</b>	<b>SITEWORK</b>	\$/SF: 3.91	118,366
<b>2</b>	<b>STRUCUTRAL</b>	\$/SF: 49.79	1,506,609
<b>3</b>	<b>ARCHITECTURAL</b>	\$/SF: 44.53	1,347,333
<b>4</b>	<b>FIRE PROTECTION</b>	\$/SF: 5.00	151,300
<b>5</b>	<b>MECHANICAL</b>	\$/SF: 14.28	432,013
<b>6</b>	<b>ELECTRICAL</b>	\$/SF: 25.16	761,368
	<b>SUBTOTAL</b>		<b>4,316,989</b>
	GENERAL CONDITIONS	9.3%	400,000
	BONDS & INSURANCE	2.0%	94,340
	OVERHEAD AND PROFIT	6.4%	307,925
	DESIGN CONTINGENCY	15.0%	767,888
	ESCALATION	8.3%	486,867
	<b>TOTAL CONSTRUCTION COST</b>		<b>6,374,008</b>
		<b>TOTAL \$/SF:</b>	<b>210.64</b>

EXHIBIT E7

ESTIMATE DETAIL					
<b>PROJECT:</b>	Sun Star Building Evaluation			<b>DATE:</b>	2/12/2016
<b>LEVEL:</b>	Conceptual			<b>ESTIMATOR:</b>	Javier Silva
<b>CLIENT:</b>	WMB Architects			<b>SCHEDULE:</b>	8 Months
<b>LOCATION:</b>	Building Seismic and Code Upgrades			<b>AREA (SF):</b>	30,260
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL AMOUNT
<b>1</b>	<b>SITEWORK</b>				
	8" fire line	601	lf	104.00	62,504
	Fire hydrant	1	ea	3,250.00	3,250
	BFP/PIV/FDC assembly	1	ea	10,400.00	10,400
	POC water main	1	ea	10,400.00	10,400
	POC building	1	ea	650.00	650
	Accessible parking stalls	1,767	sf	1.84	3,250
	Concrete sidewalk	2,110	sf	10.03	21,165
	Curb cuts	5	ea	1,300.00	6,500
	Diagonal striping	38	sf	6.50	247
	<b>Subtotal Sitework</b>		<b>\$/SF:</b>	<b>3.91</b>	<b>118,366</b>
<b>2</b>	<b>STRUCUTRAL</b>				
	<b>Foundation Plan</b>				
	Brace frame footing, 6' wide x 24" deep	72	cy	780.00	56,160
	Demo/patchback slab on grade for footings	810	sf	18.52	15,000
	Steel brace frames	5	ea	25,000.00	125,000
	Steel strongbacks	27	ea	8,500.00	229,500
	C8x18.75, at strong backs	9,423	lbs	3.25	30,624
	New foundations, low bay	110	cy	1,200.00	131,840
	New foundations, high bay	1,054	lf	65.00	68,510
	Sheath existing wall below mezzanine	1,485	sf	5.00	7,425
	Micro pile or helical anchor	20	ea	2,000.00	40,000
	Core drilling, bolts, connections, grout	1	ls	176,014.79	176,015
	<b>Roof Framing Plan</b>				
	Create sub-diaphragm	22,347	sf	10.56	235,984
	Re-nail roof	10,415	sf	1.30	13,540
	C12x30	33,189	lbs	3.25	107,864
	W10x39 drag	19,746	lbs	3.25	64,173
	3x12 blocking	202	lf	28.08	5,672
	4x10 flat	303	lf	31.20	9,454
	L6x4x1/4 x 18" w/(3) 5/8" bolts	51	ea	212.25	10,719
	5.125x24 GLB	561	lf	95.94	53,822
	Bolts, connections, drilling, welding	1	ls	125,306.92	125,307
	<b>Subtotal Strucutral</b>		<b>\$/SF:</b>	<b>49.79</b>	<b>1,506,609</b>
<b>3</b>	<b>ARCHITECTURAL</b>				
	<b>Demolition</b>				
	Demo canopy	1,332	sf	3.25	4,329
	Demo 2nd floor partitions and fixture/equipment	2,338	sf	6.50	15,197
	Demo non compliant additions	2,430	sf	13.00	31,590
	Demo roofing	30,260	sf	1.30	39,338
	Demo existing ceilings	30,260	sf	0.65	19,669
	<b>Restrooms</b>				
	Minor remodel of bathrooms	562	sf	100.00	56,200

EXHIBIT E8

ESTIMATE DETAIL					
<b>PROJECT:</b>	Sun Star Building Evaluation			<b>DATE:</b>	2/12/2016
<b>LEVEL:</b>	Conceptual			<b>ESTIMATOR:</b>	Javier Silva
<b>CLIENT:</b>	WMB Architects			<b>SCHEDULE:</b>	8 Months
<b>LOCATION:</b>	Building Seismic and Code Upgrades			<b>AREA (SF):</b>	30,260
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL AMOUNT
	Gut and remodel bathrooms	337	sf	350.00	117,950
	Gut/demo shower/lockers	211	sf	100.00	21,100
	<b>Interior Construction</b>				
	1 - One hour wall	2,565	sf	13.00	33,345
	1 - 20 min rated doors	7	ea	2,000.00	14,000
	2 - One hour roof, 5/8 drywall to roof structure	3,083	sf	3.25	10,020
	3 - Fire control room walls	195	sf	13.00	2,535
	3 - Fire control room flooring	41	sf	2.60	107
	3 - Fire control room ceilings	41	sf	13.00	533
	3 - Fire control room door with channel frame and demo tilt up wall	1	ea	4,200.00	4,200
	5 - New exit door, channel, demo, complete	4	ea	4,200.00	16,800
	6 - R30 roof insulation	17,648	sf	2.60	45,885
	6 - Acoustic suspended ceilings	17,648	sf	6.50	114,712
	9 - Retrofit door for accessible compliance	6	ea	650.00	3,900
	13 - Retrofit exterior door for clearances	2	ea	3,250.00	6,500
	14 - New addition for accessible vestibule/exit door	2	ea	6,500.00	13,000
	15 - New handrails at existing stairs	27	lf	260.00	7,020
	Soffit finishes replacement	2,252	sf	10.40	23,421
	<b>Roofing</b>				
	Tapered insulation, 1/4" per foot slope	15,000	sf	2.60	39,000
	Furnish cast iron drains at existing locations	12	ea	2,600.00	31,200
	1/4" dens deck barrier board	30,260	sf	5.20	157,352
	Firestone 60mil TPO single ply membrane	30,260	sf	9.75	295,035
	Firestone 60mil TPO single ply membrane, to walls with termination bar	5,036	sf	10.73	54,011
	Sheet metal skirt flashing	1,259	lf	19.50	24,551
	Walk pads allowance	1	ls	10,000.00	10,000
	Miscellaneous patching and repairing of finishes to remain	30,260	sf	4.13	125,000
	Sealants and caulking	30,260	sf	0.33	9,835
	<b>Subtotal Architectural</b>		<b>\$/SF:</b>	44.53	<b>1,347,333</b>
<b>4</b>	<b>FIRE PROTECTION</b>				
	Wet pipe fire sprinkler system	30,260	sf	5.00	151,300
	<b>Subtotal Fire Protection</b>		<b>\$/SF:</b>	5.00	<b>151,300</b>
<b>5</b>	<b>MECHANICAL</b>				
	Mechanical demolition	30,260	sf	0.50	15,130
	Replace AC-9 12.5 ton	1	ea	32,500.00	32,500
	Replace AC-10, 7.5 ton	1	ea	19,500.00	19,500
	Replace AC-2, 4 ton	1	ea	10,400.00	10,400
	Replace AC-4, 10 ton	1	ea	26,000.00	26,000
	Replace AC-7, 3 ton	1	ea	7,800.00	7,800
	Provide economizers for existing units	13	ea	800.00	10,400

ESTIMATE DETAIL					
<b>PROJECT:</b>	Sun Star Building Evaluation			<b>DATE:</b>	2/12/2016
<b>LEVEL:</b>	Conceptual			<b>ESTIMATOR:</b>	Javier Silva
<b>CLIENT:</b>	WMB Architects			<b>SCHEDULE:</b>	8 Months
<b>LOCATION:</b>	Building Seismic and Code Upgrades			<b>AREA (SF):</b>	30,260
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL AMOUNT
	Ductwork	7,565	lbs	13.00	98,345
	Supply and return grilles with flex duct	152	ea	400.00	60,800
	Testing, adjusting and balancing	30,260	sf	1.30	39,338
	Controls	30,260	sf	3.14	95,000
	Remove and replace exhaust fans, allowance	4	ea	1,950.00	7,800
	Condensate piping repairs	18	ea	500.00	9,000
	<b>Subtotal Mechanical</b>		<b>\$/SF:</b>	14.28	<b>432,013</b>
<b>6</b>	<b>ELECTRICAL</b>				
	<b>Lighting</b>				
	Demo existing lighting system, complete	30,260	sf	1.30	39,338
	LED based lighting system with automatic controls, occupancy sensors, photocell control, etc.	29,754	sf	12.50	371,925
	New LED pole mounted lights, with photocells, motion sensors and automatic dimming	10	ea	5,000.00	50,000
	<b>Service and Distribution</b>				
	Replace existing switchboard with new 1200A, 480Y/277V, 3ph, 4w	1	ea	42,900.00	42,900
	Automatic transfer switch, 1200A	1	ea	50,000.00	50,000
	Replace existing panelboards with new, allowance	10	ea	7,312.50	73,125
	Replace panel feeders with new, allowance	500	lf	97.50	48,750
	Refeed mechanical equipment as required	18	ea	3,900.00	70,200
	Minor convenience power work due to seismic retrofit	30,260	sf	0.50	15,130
	<b>Subtotal Electrical</b>		<b>\$/SF:</b>	25.16	<b>761,368</b>