Washington State School Seismic Safety Assessments Project

SEISMIC UPGRADES CONCEPT DESIGN REPORT

Coupeville High School – Gym

Coupeville School District

June 2019

PREPARED FOR

PREPARED BY

DYKEMAN rolludaarchitects architecture planning interiordesign PD PRODIMS BergerABAM DCI ENGINEERS wrk engineers STRUCTURAL & EARTHQUAKE ENGINEERING ReidMiddleton

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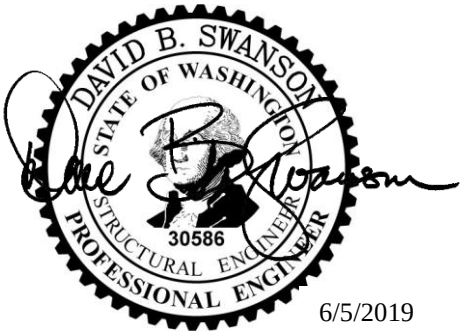

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ReidMiddleton
728 134th Street SW, Suite 200
Everett, WA 98204
425-741-3800
File No. 262018.063
www.reidmiddleton.com

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EXECUTIVE SUMMARY

This report documents the findings of a preliminary seismic evaluation of the Coupeville High School Gymnasium building in Coupeville, Washington. Coupeville High School supports more than 300 students in grades 9 through 12. The one-story facility contains two gymnasiums, locker rooms, equipment and weight rooms, and support facilities. The main gym was constructed in 1981 and renovated in 2006. An auxiliary gym was also constructed in 2006 as an addition to the north side of the main gym.

The auxiliary gym contains cement masonry unit (CMU), brick, and steel stud walls, while the main gym is primarily CMU construction. This reinforced masonry building stands 30 feet tall, with open-web steel joists and metal decking along the gym roofs. Steel wide-flange columns line the perimeter of the original gym building to help out-of-plane force resistance with the tall, heavy CMU walls. There is no seismic joint between the main gym and the auxiliary gym.

The foundation system for the building is composed of shallow continuous wall footings under the interior and exterior CMU walls, with shallow spread footings below interior and exterior steel columns.

Reid Middleton performed a Tier 1 screening in accordance with the ASCE 41-17 standard *Seismic Evaluation and Retrofit of Existing Buildings*. The evaluation included field observations and review of record drawings to verify the existing construction.

The seismic evaluation indicated that the building is in good condition with some structural and nonstructural deficiencies. The tall CMU shear walls may be overstressed in a seismic event. Other potential structural deficiencies include connections and anchorage of the roof system to the shear walls. Nonstructural deficiencies may include inadequate bracing or support of fire suppression piping, ceiling systems, brick and masonry veneer systems, and anchorage of contents such as shelving and file cabinets.

Conceptual seismic upgrade recommendations for structural and nonstructural systems are provided to improve the performance of the building to meet the designated performance criteria of ASCE 41-17. Sketches for the concept-level seismic upgrades are provided in Appendix B. Recommendations for nonstructural upgrades are identified in the report, with additional information in Appendix F.

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Acronyms

ADA	Americans with Disabilities Act
ASCE	American Society of Civil Engineers
BPOE	Basic Performance Objective for Existing Buildings
BSE	Basic Safety Earthquake
BU	Built-Up
CMU	Concrete Masonry Unit
CP	Collapse Prevention
DNR	Department of Natural Resources
DCR	Demand-to-Capacity Ratio
EERI	Earthquake Engineering Research Institute
EPAT	EERI Earthquake Performance Assessment Tool
FEMA	Federal Emergency Management Agency
IBC	International Building Code
ICOS	Information and Condition of Schools
IEBC	International Existing Building Code
IO	Immediate Occupancy
LS	Life Safety
MCE	Maximum Considered Earthquake
MEP	Mechanical/Electrical/Plumbing
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
OSPI	Office of the Superintendent of Public Instruction
PBEE	Performance-Based Earthquake Engineering
PR	Position Retention
ROM	Rough Order-of-Magnitude
SSSSC	School Seismic Safety Steering Committee
UBC	Uniform Building Code
USGS	United States Geological Survey
WF	Wide Flange
WGS	Washington Geological Survey

Reference List

Codes and References

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ASCE 7-10, 2010, *Minimum Design Loads for Buildings and Other Structures*, prepared by the Structural Engineering Institute of the American Society of Civil Engineers, Reston, Virginia.

ASCE 31-03, 2003, *Seismic Evaluation of Existing Buildings*, prepared by the Structural Engineering Institute of the American Society of Civil Engineers, Reston, Virginia.

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ASCE 41-13, 2014, *Seismic Evaluation and Retrofit of Existing Buildings*, prepared by the Structural Engineering Institute of the American Society of Civil Engineers, Reston, Virginia.

ASCE 41-17, 2018, *Seismic Evaluation and Retrofit of Existing Buildings*, prepared by the Structural Engineering Institute of the American Society of Civil Engineers, Reston, Virginia.

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FEMA E-74, *Reducing the Risks of Nonstructural Earthquake Damage.* Prepared by https://www.fema.gov/fema-e-74-reducing-risks-nonstructural-earthquake-damage

FEMA Earthquake School Hazard Hunt Game and Poster. Prepared by https://www.fema.gov/media-library/assets/documents/90409

Promoting Seismic Safety: Guidance for Advocates. Prepared by https://www.fema.gov/media-library/assets/documents/3229

Drawings

Coupeville High School Phase III, *Coupeville School District #204,* Coupeville, Washington.

Coupeville High School Phase II, *Coupeville School District #204,* Coupeville, Washington.

Renovation at Coupeville Elementary School, *Coupeville School District,* Coupeville, Washington. *Rolluda Architects.*

New Middle School & High School Remodeling, *Coupeville School District No. 204,* Coupeville, WA. *Cummins Associates Architects,* Exterior Perspective.

Coupeville School District MPR Addition & Renovation, *Coupeville School District 204,* Coupeville, WA. *Rolluda Architects.*

1.0 Introduction

1.1 Background

The Washington Geological Survey (WGS), a division of the Department of Natural Resources (DNR), is conducting a seismic assessment of 222 school buildings and 5 fire stations across Washington State to better understand the current level of seismic risk of Washington State's public-school buildings. The two main components of this project are: (1) geologic site characterization, and (2) the seismic assessment of buildings. As a part of the seismic assessments, Tier 1 screening of structural systems and nonstructural assessments were performed in accordance with the American Society of Civil Engineers' (ASCE) Standard 41-17 *Seismic Evaluation and Retrofit of Existing Buildings*. Concept-level seismic upgrades were developed to address the identified deficiencies of a select number of school buildings to evaluate seismic upgrade strategies, feasibilities, and implementation costs.

Fifteen school buildings were selected in consultation with WGS and the School Seismic Safety Steering Committee (SSSSC) to receive concept-level seismic upgrade designs utilizing the ASCE 41 Tier 1 evaluation results. This report documents the concept-level seismic upgrade design for one of those school buildings. The concept-level seismic upgrades will include structural and nonstructural seismic upgrade recommendations, with concept-level sketches and rough order-of-magnitude (ROM) construction costs determined for each building. The fifteen school buildings were selected from the list of schools with the intent of representing a variety of regions, building uses, construction eras, and construction materials.

The overall goal of the project is to provide a better understanding of the current seismic risk of our state's K-12 school buildings and what needs to be done to improve the buildings in accordance with ASCE 41 to meet seismic performance objectives.

The seismic evaluation consists of a Tier 1 screening for the structural systems performed in accordance with ASCE 41-17.

1.2 Scope of Services

The project is being performed in several distinct and overlapping phases of work. The scope of this report is as listed in the following sections.

1.2.1 Information Review

1. Project Research: Reid Middleton and their project team researched available school building records, such as relevant site data and record drawings, in advance of the field investigations. This research included searching school building records and contacting the districts and/or the Office of Superintendent of Public Instruction (OSPI) to obtain building plans, seismic reports, condition reports, property records, or related construction information useful for the project.

2. Site Geologic Data: Site geological data provided by the WGS, including site shear wave velocities, was utilized to determine the project Site Class in accordance with ASCE 41, which is included in the Tier 1 checklists and concept-level seismic upgrades design work.

1.2.2 Field Investigations

1. Field Investigations: Each of the identified buildings was visited to observe the building's age, condition, configuration, and structural systems for the purposes of the ASCE 41 Tier 1 seismic evaluations. This task included confirmation of general information in building records or layout drawings and visual observation of the structural condition of the facilities. Engineer field reports, notes, photographs, and videos of the facilities were prepared and utilized to record and document information gathered in the field investigation work.

2. Limitations Due to Access and Worker Safety: Field observations at each site were typically performed by an individual engineer. Observation efforts were limited to areas and building elements that were readily observable and safely accessible. Observations requiring access to confined spaces, potential hazardous material exposure, access by unsecured ladder, work around energized equipment or mechanical hazards, access to areas requiring Occupational Safety and Health Administration (OSHA) fall-protection, steep or unstable slopes, deteriorated structural assemblies, or other conditions deemed potentially unsafe by the engineer were not performed. Removal of finishes (e.g., gypsum board, lathe and plaster, brick veneer, roofing materials) for access to concealed conditions or to expose elements that could not otherwise be visually observed and assessed was not performed. Material testing or sampling was not performed. The ASCE checklist items that were not documented due to access limitations are noted.

1.2.3 Seismic Evaluations

1. Preliminary Seismic Evaluations: Preliminary seismic assessments of the structural and nonstructural systems of the school buildings were performed in accordance with ASCE 41-17 Tier 1 Evaluation Procedures.

2. Concept-Level Designs: Further seismic evaluation work was performed to provide concept-level seismic retrofits and/or upgrade designs for the selected school buildings based on the results of the Tier 1 seismic evaluations. The concept-level seismic upgrades design work included narrative descriptions of proposed seismic retrofits and/or upgrade schemes and concept sketches depicting the extent and type of recommended structural upgrades.

3. Cost Estimating: Through the concept-level seismic upgrades design process, ProDims provided opinions of probable construction costs for the concept-level seismic upgrade designs for the selected school buildings. These concept-level seismic upgrade designs and the associated opinions of probable construction costs are intended to be

representative samples that can be extrapolated to estimate the overall capital needs of seismically upgrading Washington State schools.

1.2.4 Reporting and Documentation

1. Project Reports: A preliminary seismic evaluation report on the overall Tier 1 seismic assessment of the schools will be provided to DNR/WGS and OSPI. The Tier 1 seismic evaluation of each building was documented by a standard report format that provides a summary of the structural systems of the building, Tier 1 checklist, building sketches/plans (if available), and site photographs. The reports will summarize the seismic evaluation, with concept-level seismic upgrade sketches and opinions of probable construction costs for seismic upgrades for each school building.

2. Building Photography: Photos and videos were taken of each building during on-site walkthroughs to document the existing building configurations, conditions, and structural systems.

3. Record Drawings: Record drawings and other information that was collected during the evaluation process are available for DNR/WGS, OSPI, and the school districts.

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2.0 Seismic Evaluation Procedures and Criteria

2.1 ASCE 41 Seismic Evaluation and Retrofit Overview

The current standard for seismic evaluation and retrofit (upgrades) of existing buildings is ASCE 41-17. ASCE 41 provides screening and evaluation procedures used to identify potential seismic deficiencies that may require further investigation or hazard mitigation. It presents a three-tiered review process, implemented by first following a series of predefined checklists and "quick check" structural calculations. Each successive tier is designed to perform an increasingly refined evaluation procedure for seismic deficiencies identified in previous tiers in the process. The flow chart in Figure 2.1 illustrates the evaluation process.

TIER 1 – Screening Phase
- Checklists of evaluation statements to quickly identify potential deficiencies
- Requires field investigation and/or review of record drawings
- Analysis limited to "Quick Checks" of global elements
- May proceed to Tier 2, Tier 3, or rehabilitation design if deficiencies are identified

TIER 2 – Evaluation Phase
- "Full Building" or "Deficiency Only" evaluation
- Address all Tier 1 seismic deficiencies
- Analysis more refined than Tier 1, but limited to simplified linear procedures
- Identify buildings not requiring rehabilitation

TIER 3 – Detailed Evaluation Phase
- Component-based evaluation of entire building using reduced ASCE 41 forces
- Advanced analytical procedures available if Tier 1 and/or Tier 2 evaluations are judged to be overly conservative
- Complex analysis procedures may result in construction savings equal to many times their cost

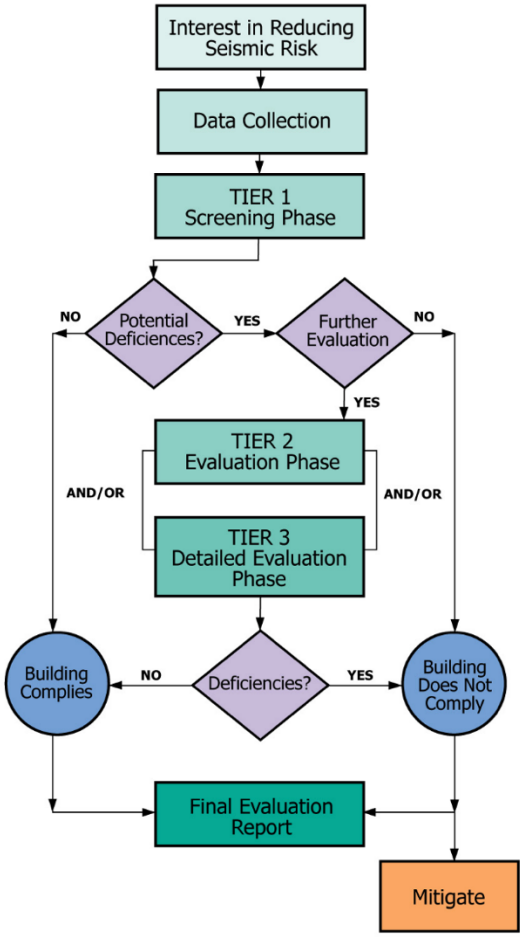

Figure 2-1. Flow Chart and Description of ASCE 41 Seismic Evaluation Procedure.

The Tier 1 checklists in ASCE 41 are specific to each common building type and contain seismic evaluation statements based on observed structural damage in past earthquakes. These checklists screen for potential seismic deficiencies by examining the lateral-force-resisting systems and details of construction that have historically caused poor seismic performance in similar buildings. Tier 1 screenings include basic "Quick Check" analyses for primary components of the lateral system: in this building's case, the building shear walls. Tier 1 screenings also include

prescriptive checks for proper seismic detailing of connections, diaphragm spans and continuity, and overall system configuration.

Tier 2 evaluations then follow with more-detailed structural and seismic calculations and assessments to either confirm the potential deficiencies identified in the Tier 1 review or demonstrate their adequacy. A Tier 3 evaluation involves an even more detailed analysis and advanced structural and seismic computations to review each structural component's seismic demand and capacity. A Tier 3 evaluation is similar in scope and complexity to the types of analyses often required to design a new building in accordance with the International Building Code (IBC), with a comprehensive analysis aimed at evaluating each component's seismic performance. Generally, Tier 3 evaluations are not practical for typical and regular-type buildings due to the rigorous and complicated calculations and procedures. As indicated in the Scope of Services, this evaluation included a Tier 1 screening of the structural systems.

2.2 Seismic Evaluation and Retrofit Criteria

Performance-Based Earthquake Engineering (PBEE) can be defined as the engineering of a structure to resist different levels of earthquake demand in order to meet the needs and performance objectives of building owners and other stakeholders. ASCE 41 employs a PBEE design methodology that allows building owners, design professionals, and the local building code authorities to establish seismic hazard levels and performance goals for individual buildings.

2.2.1 Coupeville High School Seismicity

Seismic hazards for the United States have been quantified by the United States Geological Survey (USGS). The information has been used to create seismic hazard maps, which are currently used in building codes to determine the design-level earthquake magnitudes for building design.

The Level of Seismicity is categorized as Very Low, Low, Moderate, or High based on the probabilistic ground accelerations. Ground accelerations and mass generate inertial (seismic) forces within a building (Force = mass x acceleration). Ground acceleration therefore is the parameter that classifies the level of seismicity. From geographic region to region, as the ground accelerations increase, so does the level of seismicity (from low to high). Where this building is located, the design short-period spectral acceleration, S_{DS}, is 0.944 g, and the design 1-second period spectral acceleration, S_{D1} is 0.552 g. Based on ASCE 41 Table 2-4, the Level of Seismicity for this building is classified as **High.**

The ASCE 41 Basic Performance Objective for Existing Buildings (BPOE) makes use of the Basic Safety Earthquake – 1E (BSE-1E) seismic hazard level and the Basic Safety Earthquake – 2E (BSE-2E). The BSE-1E earthquake is defined by ASCE 41 as the probabilistic ground motion with a 20 percent probability of exceedance in 50 years, or otherwise characterized as a ground motion acceleration with a probabilistic 225-year return period. The BSE-2E earthquake is defined by ASCE 41 as the probabilistic ground motion with a 5 percent probability of exceedance in 50 years, or otherwise characterized as a ground motion acceleration with a

probabilistic 975-year return period. The BSE-2N seismic hazard level is the Maximum Considered Earthquake (MCE) ground motion used in current codes for the design of new buildings and is also used in ASCE 41 to classify the Level of Seismicity for a building. The BSE-2N has a statistical ground motion acceleration with 2 percent probability of exceedance in 50 years, or otherwise characterized as a ground motion acceleration with a probabilistic 2,475-year return period.

Table 2.2.1-1 provides the spectral accelerations for the 225-year, 975-year, and 2,475-year return interval events specific to Coupeville High School that are considered in this study.

Table 2.2.1-1. Spectral Acceleration Parameters (Not Site-Modified).

BSE-1E 20%/50 (225-year) Event		BSE-1N 2/3 of 2,475-year Event		BSE-2E 5%/50 (975-year) Event		BSE-2N 2%/50 (2,475-year) Event	
0.2 Seconds	0.463 g	0.2 Seconds	0.944 g	0.2 Seconds	0.984 g	0.2 Seconds	1.416 g
1.0 Seconds	0.173 g	1.0 Seconds	0.368 g	1.0 Seconds	0.391 g	1.0 Seconds	0.552 g

2.2.2 Coupeville High School Structural Performance Objective

The school building is an Educational Group E occupancy (Risk Category III) structure and has not been identified as a critical structure requiring immediate use following an earthquake. However, Risk Category III buildings are structures that represent a substantial hazard to human life in the event of failure. According to ASCE 41, the BPOE for Risk Category III structures is the Damage Control structural performance level at the BSE-1E seismic hazard level and the Limited Safety structural performance level at the BSE-2E seismic hazard level. The ASCE 41 Tier 1 evaluations were conducted in accordance with ASCE 41 requirements and ASCE 41 seismic performance levels. Concept-level upgrades were developed for the **Life Safety** structural performance level at the **BSE-1N** seismic hazard level in accordance with DNR direction, the project scope of work, and the project legislative language.

At the Life-Safety performance level, the building may sustain damage while still protecting occupants from life-threatening injuries and allowing occupants to exit the building. Structural and nonstructural components may be extensively damaged, but some margin against the onset of partial or total collapse remains. Injuries to occupants or persons in the immediate vicinity may occur during an earthquake; however, the overall risk of life-threatening injury as a result of structural damage is anticipated to be low. Repairs may be required before reoccupying the building, and, in some cases, repairs may be economically unfeasible.

Knowledge Factor

A knowledge factor, *k*, is an ASCE 41 prescribed factor that is used to account for uncertainty in the as-built data considering the selected Performance Objective and data collection processes (availability of existing drawings, visual observation, and level of materials testing). In-situ testing of building materials and removal of architectural finishes are outside of the scope of this study. Material properties and existing construction information were assumed since existing

structural drawings were not available. If the concept design is developed further, additional materials tests and site investigations will be required to substantiate assumptions about the existing framing systems.

ASCE 41 Classified Building Type

Use of ASCE 41 for seismic evaluations requires buildings to be classified from a group of common building types historically defined in previous seismic evaluation standards (ATC-14, FEMA 310, and ASCE 31-03). The school is classified in ASCE 41 Table 3-1 as a Reinforced Masonry Wall Building with Flexible Diaphragms, **RM1**.

2.3 Report Limitations

The professional services described in this report were performed based on available record drawing information and limited visual observation of the structure. No other warranty is made as to the professional advice included in this report. This report provides an overview of the seismic evaluation results and does not address programming and planning issues. This report has been prepared for the exclusive use of DNR/WGS and is not intended for use by other parties, as it may not contain sufficient information for purposes of other parties or their uses.

3.0 Building Description & Seismic Evaluation Findings

3.1 Building Overview

3.1.1 Building Description

Original Year Built: 1981
Building Code: Unknown

Architectural Modernization Year: 2006

Number of Stories: 1
Floor Area: 10,000 SF

FEMA Building Type: RM1
ASCE 41 Level of Seismicity: High
Site Class: D

The one-story building contains two gymnasiums, locker rooms, equipment and weight rooms, and support facilities. The main gym was constructed in 1981 and renovated in 2006. An auxiliary gym was also constructed in 2006 as an addition to the north side of the main gym.

The auxiliary gym contains concrete masonry unit (CMU), brick, and steel stud walls, while the main gym is primarily CMU construction. This reinforced masonry building stands 30 feet tall, with open-web steel joists and metal decking along the gym roofs. Steel wide-flange columns line the perimeter of the original gym building to help out-of-plane force resistance with the tall, heavy CMU walls. There is no seismic joint between the main gym and the auxiliary gym.

The foundation system for the building is composed of shallow continuous wall footings under the interior and exterior CMU walls, with shallow spread footings below interior and exterior steel columns.

3.1.2 Building Use

The Gymnasium building is used for athletic events at Coupeville High School and Coupeville Middle School.

3.1.3 Structural System

Table 3.1.3-1. Structural System Descriptions.

Structural System	Description
Structural Roof	The primary roof system consists of open-web steel joists at 8 feet on center with a metal roof. The lobby and corridor running between the main and auxiliary gyms consists of glulam purlins at 8 feet on center with tongue and groove wood decking.
Structural Floor(s)	The floor consists of a 4-inch-thick concrete slab on grade.
Foundations	Foundations consist of shallow cast-in-place reinforced concrete continuous wall footings and individual spread footings at columns.
Gravity System	The building consists primarily of steel joists and metal decking supported by CMU bearing walls and footings.
Lateral System	The lateral-force-resisting system consists of a flexible roof diaphragm that distributes lateral loads to CMU shear walls.

3.1.4 Structural System Visual Condition

Table 3.1.4-1. Structural System Condition Descriptions.

Structural System	Description
Structural Roof	The roof appears to be in good condition, with no visible signs of corrosion, damage, or deterioration.
Structural Floor(s)	The floor appears to be in good condition, with no visible signs of corrosion, damage, or deterioration.
Foundations	Foundations are not observable, but no visible indications of damage or distress were found.
Gravity System	The condition of the gravity system appears functional and intact.
Lateral System	The condition of the lateral system appears to be functional and intact. It should be noted that several CMU walls in the gym are tall and slender.

3.2 Seismic Evaluation Findings

3.2.1 Structural Seismic Deficiencies

The structural seismic deficiencies identified during the Tier 1 evaluation are summarized below. Commentary for each deficiency is provided based on this evaluation.

Table 3.2.1-1. Identified Structural Seismic Deficiencies Based on Tier 1 Checklists.

Deficiency	Description
Reinforcing Steel	Existing drawings for the auxiliary gym indicate that both the vertical and horizontal reinforcing steel in the CMU walls are spaced at 48 inches on center.

3.2.2 Structural Checklist Items Marked as "U"nknown

Where building structural component seismic adequacy was unknown due to lack of available information or limited observation, the structural checklist items were marked as "unknown". These items require further investigation if definitive determination of compliance or noncompliance is desired. The unknown structural checklist items identified during the Tier 1 evaluation are summarized below. Commentary for each unknown item is provided based on the evaluation.

Table 3.2.2-1. Identified Structural Checklist Items Marked as Unknown.

Deficiency	Description
Liquefaction	Coupeville High School resides between two water fronts, which greatly increases the chance for liquefaction. The liquefaction potential of site soils is unknown at this time given available information. Very low liquefaction potential is identified per ICOS based on state geologic mapping. Requires further investigation by a licensed geotechnical engineer to determine liquefaction potential.
Slope Failure	Requires further investigation by a licensed geotechnical engineer to determine susceptibility to slope failure.
Surface Fault Rupture	Requires further investigation by a licensed geotechnical engineer to determine whether site is near locations of expected surface fault ruptures.
Ties Between Foundation Elements	Original structural drawings are not available. Further investigation should be performed. Additional foundation ties may be appropriate to mitigate seismic risk.
Wall Anchorage	Details unavailable on limited structural drawings. Only renovated drawings provided for existing gym building. Further investigation should be performed. Additional diaphragm shear wall anchoring may be appropriate to mitigate seismic risk.
Wood Ledgers	Unable to determine if ledgers produce cross-grain bending without being able to see the ledger connection during site visit. Further

Table 3.2.2-1. Identified Structural Checklist Items Marked as Unknown.

Deficiency	Description
	investigation should be performed. Additional blocking and strapping may be appropriate to mitigate seismic risk.
Cross Ties	Per detail 10/S5.01, chord detail unclear. Further investigation could be given for connection of joist truss to diaphragm chord. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
Stiffness of Wall Anchors	At the main gym, anchors connecting wood structural elements to the masonry walls were not visible, and it could not be determined if anchors were installed taut and stiff enough to limit relative movement between the walls and the diaphragm.

3.2.3 Nonstructural Seismic Deficiencies

The nonstructural seismic deficiencies identified during the Tier 1 evaluation are summarized below. Commentary for each deficiency is provided based on this evaluation. Some nonstructural deficiencies may be able to be mitigated by school district staff. Other nonstructural components that require substantial mitigation may be more appropriately included in a long-term mitigation strategy. Some typical conceptual details for the seismic upgrade of nonstructural components can be found in the FEMA E-74 Excerpts appendix.

Table 3.2.3-1. Identified Nonstructural Seismic Deficiencies based on Tier 1 Checklists.

Deficiency	Description
CF-2 Tall Narrow Contents	Shelving unit does not appear to be anchored to the wall.

3.2.4 Nonstructural Checklist Items Marked as "U"nknown

Where building nonstructural component seismic adequacy was unknown due to lack of available information or limited observation, the nonstructural checklist items were marked as "unknown". These items require further investigation if definitive determination of compliance or noncompliance is desired. The unknown nonstructural checklist items identified during the Tier 1 evaluation are summarized below. Commentary for each unknown item is provided based on the evaluation.

Some nonstructural deficiencies may be able to be mitigated by school district staff. Other nonstructural components that require substantial mitigation may be more appropriately included in a long-term mitigation strategy. Some typical conceptual details for the seismic upgrade of nonstructural components can be found in the FEMA E-74 Excerpts appendix.

Table 3.2.4-1. Identified Nonstructural Checklist Items Marked as Unknown.

Deficiency	Description
LSS-1 Fire Suppression Piping	At both main and auxiliary gym, compliance with NFPA-13 unknown. Drawings indicate fire suppression compliance with NFPA-10.
LSS-2 Flexible Couplings	At both main and auxiliary gym, compliance with NFPA-13 unknown. Drawings indicate fire suppression compliance with NFPA-10.
LSS-3 Emergency Power	Emergency power equipment does not appear to be anchored or braced.
LSS- 5 Sprinkler Ceiling Clearance	At both main and auxiliary gym, compliance with NFPA-13 unknown. Drawings indicate fire suppression compliance with NFPA-10.
HM-4 Shutoff Valve	It is unknown if the structure contains natural gas or other hazardous materials. Further investigation of mechanical piping should be performed. Providing shutoff valves may be appropriate to mitigate seismic risk.
P-3 Drift	It is unknown if there are cementitious partitions in the building, but it is unlikely. Further investigation should be performed. Detailing to allow cementitious partitions to drift an adequate amount during a seismic event may be appropriate to mitigate seismic risk.
C-2 Suspended Gypsum Board	No ceiling access to determine quantity of attachments. Available drawings do show the suspension of the gypsum wall board (GWB).
CG-8 Overhead Glazing	Glazing information is unknown. Based on the age of the building, it is unlikely that the glazing on the windows are laminated or detailed to remain in the frame. Many individual panes are likely to be below this threshold. Further investigation should be completed. Replacing applicable glazing planes may be appropriate to mitigate seismic risk.
M-1 Ties	Details depicting masonry veneer ties are not shown on architectural or structural drawings. Information may be available in project specifications.
M-2 Shelf Angles	It is unknown how the masonry veneer is connected to the building. Further investigation should be completed. Adding connections for the veneer may be appropriate to mitigate seismic risk.
M-3 Weakened Planes	Details depicting masonry veneer anchors at weakened planes are not shown on architectural or structural drawings. Information may be available in project specifications.
M-5 Stud Tracks	Details for masonry veneer anchorage to steel stud backup are not visible and not shown on architectural or structural drawings.
M-6 Anchorage	Details for masonry veneer anchorage to masonry backup are not visible and not shown on architectural or structural drawings.

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4.0 Conclusion and Recommendations

4.1 Seismic-Structural Upgrade Recommendations

Concept-level seismic upgrade recommendations to improve the lateral-force-resisting system were developed. The sketches in Appendix B depict the concept-level structural upgrade recommendations outlined in this section. The following concept recommendations are intended to address the structural deficiencies noted in Table 3.2.1-1. This concept-level seismic upgrade design represents just one of several alternative seismic upgrade design solutions and is based on preliminary seismic evaluation and analysis results. Final analysis and design for seismic upgrades must include a more detailed seismic evaluation of the building in its present or future configuration. Proposed seismic upgrades include the following.

4.1.1 New Transverse Concrete Shear Walls

Cast-in-place concrete or shotcrete shear walls are recommended in the transverse (east-west) direction at the main gym. The proposed walls are recommended full height from the foundation to the roof level, with sufficient strength and stiffness to resist seismic loads in the plane of the wall. These walls are approximately 30 feet in height.

4.1.2 Foundation Systems

At the supplemental cast-in-place or shotcrete shear walls, a new continuous shallow wall footing is required to support the vertical and lateral load-carrying capacity of the walls. New foundations shall be anchored to the existing wall footing.

4.2 Nonstructural Upgrade Recommendations

Tables 3.2.3.1 and 3.2.4.1 identify potential nonstructural deficiencies that do not meet the performance objective selected for Coupeville High School. It is recommended that these deficiencies be addressed to provide nonstructural performance consistent with the performance of the upgraded structural lateral-force-resisting system. As-built information for the existing nonstructural systems, such as fire sprinklers, mechanical ductworks, and piping, are not available for review. Only limited visual observation of the systems was performed during field investigation due to limited access or visibility to observe existing conditions. The conceptual mitigation strategies provided in this study are preliminary only. The final analysis and design for seismic rehabilitation should include a detailed field investigation.

4.2.1 Life Safety Systems

Life safety systems are responsible for protecting and evacuating occupants of a building during emergencies or disasters. These systems include, but are not limited to, fire suppression piping, emergency lighting, and stair and smoke ducts. Proper bracing, coupling, and clearances of fire suppression piping not only increase reliability of performance but also help minimize the damage to pipes and sprinkler heads. Based on the age of the building, it is likely that the

sprinkler systems in the building do not meet the requirements of current NFPA 13 for seismic bracing and flexible coupling.

The recommended seismic mitigation for the life safety systems are:

- Provide bracing and flexible couplings of fire suppression risers, feed mains, cross-mains, and branch lines in accordance with NFPA 13.
- Provide 1-inch sprinkler head clearance holes in ceiling finishes.
- Provide seismic bracing or anchor the emergency power system to the structure.

4.2.2 Hazardous Materials

The extent of hazardous material contents in the building is unknown. The following recommendation should be implemented to prevent the release of hazardous materials:

- Hazardous material ductwork and piping, including natural gas piping, should have flexible couplings.

4.2.3 Architectural Considerations

This section addresses existing construction that, while not posing specific hazards during a seismic event, would be affected by the seismic improvements proposed.

For any remodel project of an existing building, the International Existing Building Code (IEBC) would be applicable. The intent of the IEBC is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety, and welfare insofar as they are affected by the work being done. Elements of the exterior building envelope being affected by the seismic work would also be required to be brought up to the current Washington State Energy Code per Chapter 5, where applicable.

Given that the Gym building has been constructed to more recent codes, proposed upgrades are minimal. Proposed concrete shear wall and foundations could be constructed on the exterior of the building, thus limiting the amount of architectural modifications required. The proposed improvements to this building are such that the work can be mostly accomplished from the exterior of the building.

Seismic bracing of overhead equipment, such as light fixtures and sprinkler pipes, could be accessed directly without much demolition and reconstruction of existing architectural elements.

It should also be noted that as a part of any upgrade to existing buildings, the IEBC will require that any altered primary function spaces (classrooms, gyms, entrances, offices) and routes to these spaces, be made accessible to the current accessibility standards of the Americans with Disabilities Act (ADA), unless technically infeasible. This would include, but is not limited to: accessible restrooms, paths of travel, entrances and exits, parking, signage, and fire alarm systems. Under no circumstances should the facility be made less accessible. The IEBC does,

however, have exceptions for areas that do not contain a primary function (storage room, utility rooms) and states that costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of Primary Function. As with any major renovation and modernization, an ADA study would be recommended to determine the extent to which an existing facility needs to be improved to be in compliance with the ADA.

Ceiling

The suspended ceilings in the building appear to consist of gypsum board and acoustical ceiling tiles supported by steel channel systems. The recommended seismic mitigation for the architectural systems are:

- Provide ceiling attachments that resist seismic forces to suspended gypsum board ceilings for every 12 square feet of area. Suspended gypsum board ceilings have suffered significant damage in past earthquakes, causing a falling hazard to the occupants during an earthquake.
- Provide independent support of integrated suspended acoustic tile ceilings with a minimum of two wires diagonally at opposite corners of each fixture for the light fixtures that weigh more per square foot than the suspended ceiling they penetrate. Fluorescent light fixtures are often supported by the suspended ceiling system, causing the light fixtures to become overhead falling hazards during an earthquake. Therefore, light fixtures within the integrated suspended ceilings are required to be independently supported to the structure above with a minimum of two wires at opposite corners.

Exterior Shear Walls and Foundation

Exterior work only. Excavation for the footing modifications can be done without disturbing any of the existing floor slab. New exterior wall finishes could be applied to the concrete shear wall. This could be in the form of a PC plaster finish or brick veneer. Exit doors and frames at the proposed shear walls will need to be relocated to the new exterior face in order to allow the doors to open completely. Interior finishes will need to be returned to the new door frame locations.

Contents and Furnishings

The building contains various freestanding tall and narrow furniture, such as shelving and storage units, away from any backing walls. This furniture is highly susceptible to toppling if not anchored properly and can become a life safety hazard or adversely affect post-earthquake operations. The recommended seismic mitigation for tall and narrow furniture is:

- Anchor storage cabinets or shelving units that are more than 6 feet high and have a height-to-depth or height-to-width ratio greater than 3-to-1 to the structure or to each other to prevent toppling during an earthquake.
- Provide bracing or restraint for equipment, stored items, or other contents weighing more than 20 pounds and with a center of mass that is more than 4 feet above the adjacent floor level.

4.3 Opinion of Conceptual Construction Costs

A preliminary opinion of probable construction costs to perform the concept-level seismic upgrade recommendations provided in this report is included in Appendix C. The input for these preliminary probable costs are the Tier 1 checklists and the preliminary concept-level seismic upgrades design recommendations and sketches. These preliminary concept-level design sketches depict a design concept that could be implemented to improve the seismic safety of the building structure. It is important to note that this preliminary seismic upgrades design concept is based on the results of the Tier 1 seismic screening checklists and engineering design judgement and has not been substantiated by detailed structural analyses and calculations. Consequently, the costs presented in this concept-level design report are very preliminary in nature and are only intended to be utilized in their aggregate form with the entire statewide school seismic safety assessments study.

For this preliminary opinion of probable construction costs, an estimate of the current year (2019) construction costs of the probable scope of work was developed. These costs were developed based on the Tier 1 checklist, concept-level seismic upgrade design sketches, and project narratives. Then a -20 percent (low) to +50 percent (high) range variance was used to develop the construction cost estimate range for the concept-level scope of work. The -20 percent to +50 percent range variance guidance is from Table 1 of the AACE International Recommended Practice 56R-08, *Cost Estimate Classification System for Class 5 Estimates*. The variable cost range of a Class 5 estimate is due to the limited design completeness and is defined as 0 percent to 2 percent Project Definition Deliverables.

The estimated structural and nonstructural construction cost to mitigate the deficiencies identified in the Tier 1 checklists of the Coupeville High School Gymnasium ranges between approximately $216,000 and $404,000 (-20 percent/+50 percent). The estimated construction cost to seismically upgrade this building is approximately $269,000. On a per-square-foot basis, the seismic upgrade construction cost is estimated to be approximately $27 per square foot in 2019 dollars, with a variance range between $22 per square foot and $41 per square foot.

This preliminary opinion of construction cost includes labor, materials, equipment, and general contractor general conditions (mobilization), overhead, and profit. This is based on a public sector design-bid-build project delivery method. Project delivery methods such as negotiated, State of Washington GC/CM, and design-build are not the basis of the construction costs. Owner's project costs not included in the construction cost estimate are building permits, design fees, change order contingencies, escalation at a recommended 4.1 percent* per year to the midpoint of construction (currently unknown), materials testing/inspection, project planning and design schedule delay contingencies, and owner's overall project contingency. Additional owner's project costs would likely include owner's general overhead costs, including project management, financing/bond costs, administration/contract/accounting costs, review of plans, value engineering studies, equipment, fixtures, furnishings and technology, and relocation of the school staff and students during construction. These additional costs are not included in this preliminary concept-level design construction cost estimate.

Costs of all types excluded from the construction costs are site work, construction of replacement facilities, and mitigation of seismic risks for existing facilities and building code changes that occur over time after this report. Future planning budgets should not be set on the basis of the preliminary construction costs estimate based on the concept-level design ideas presented in this report. For budget planning purposes, it is highly recommended that a seismic upgrade budget be determined after the owner defines the scope of work and obtains the services of an A/E design team to study the proposed seismic mitigation strategies and to refine the concept-level seismic upgrades design approach contained in this report.

*-4.1%/year escalation rate for planning purposes should be compounded annually to the midpoint of construction and is sourced from *Engineering News Record (ENR),* November, 2017, the most recent rate representative of the escalation of construction costs throughout the state of Washington.

Table 4.3.1. Seismic Upgrades Opinion of Probable Construction Costs.

Building	FEMA Bldg Type	ASCE 41 Level of Seismicity / Site Class	Structural Performance Objective	Bldg Gross Area	Estimated Seismic Upgrade Cost Range $/SF (Total)	Estimated Seismic Upgrade Cost/SF (Total)
Coupeville High School Gym	RM1	High / D	**Structural**			
			Life Safety	10,000 SF	$21 ($213K) - $40 ($399K)	$27 ($266K)
			Nonstructural			
			Life Safety	10,000 SF	$0.28 ($3K) - $0.52 ($5K)	$0.35 ($4K)
			Total			
				10,000 SF	$22 ($216K) - $41 ($404K)	$27 ($269K)

·W: Wood-Framed; URM: Unreinforced Masonry; RM: Reinforced Masonry; C: Reinforced Concrete; PC: Precast concrete; S: Steel-framed

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Appendix A: Field Investigation Report and Tier 1 Checklists

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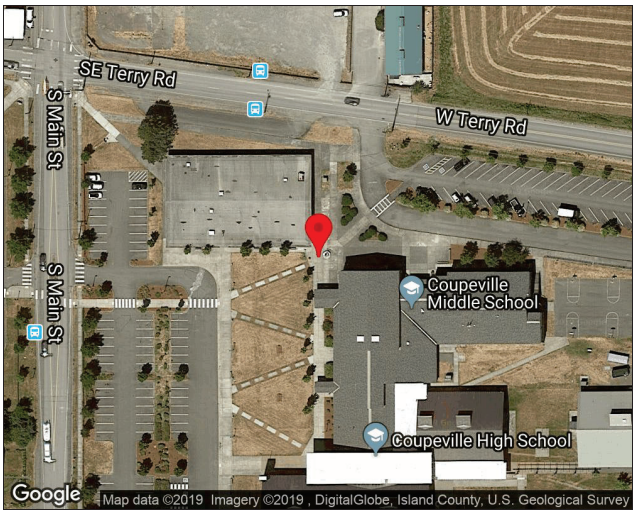
1. Coupeville, Coupeville High School, Gymnasium

1.1 Building Description

Building Name:	Gymnasium
Facility Name:	Coupeville High School
District Name:	Coupeville
ICOS Latitude:	48.207
ICOS Longitude:	-122.685
ICOS County/District ID:	15204
ICOS Building ID:	11786
ASCE 41 Bldg Type:	RM1
Enrollment:	321
Gross Sq. Ft. :	10,000
Year Built:	1981
Number of Stories:	1
$S_{XS\ BSE\text{-}2E}$:	1.089
$S_{X1\ BSE\text{-}2E}$:	0.633
ASCE 41 Level of Seismicity:	High
Site Class:	D
V_{S30}(m/s):	279
Liquefaction Potential:	very low
Tsunami Risk:	Very Low
Structural Drawings Available:	Yes
Evaluating Firm:	Reid Middleton, Inc.



The building contains two gyms where one was built in 1981 and the second gym came as an addition in 2006. Only drawings for the new gym and small architectural retrofits of the old gym are provided. The new gym contains CMU, brick, and steel stud walls while the existing gym is mostly CMU construction. This reinforced masonry building stands 30 feet tall with metal joists and metal decking along the gym roofs. Steel W8 columns line the perimeter of the existing building to help out-of-plane force resistance with the tall, heavy CMU walls. The auxiliary gym portion of the building acts as an addition to the original building rather than placing a seismic joint between the two. This may cause more load to the existing building than originally anticipated.

1.1.1 Building Use

The gym building is used for athletic events with its two gyms, one of which is newer addition. The building contains two sets of locker rooms, two sets of weight rooms and a couple office rooms.

1.1.2 Structural System

Table 1.1-1. Structural System Description of Coupeville High School

Structural System	Description
Structural Roof	Steel joists at 8' on center with metal decking roof. The corridor running between the new and old gyms and lobby as well as the old contains glulam purlins at 8' on center with T&G decking.
Structural Floor(s)	4" concrete slab on grade with 6x6 - W2.9xW2.9 WWF.
Foundations	Foundations are reinforced concrete spread footings.
Gravity System	The building contains metal joists & metal decking on top of W8/HSS columns and both 6" & 8" CMU bearing walls.
Lateral System	The building contains 6 and 8" CMU shear walls with columns to help support the heavy brick and CMU out-of-plane resistance.

1.1.3 Structural System Visual Condition

Table 1.1-2. Structural System Condition Description of Coupeville High School

Structural System	Description
Structural Roof	No visible signs of corrosion, damage or deterioration.
Structural Floor(s)	No visible signs of corrosion, damage or deterioration.
Foundations	No visible signs of corrosion, damage or deterioration.
Gravity System	No visible signs of corrosion, damage or deterioration.
Lateral System	No visible signs of corrosion, damage or deterioration.

1.2 Seismic Evaluation Findings

1.2.1 Structural Seismic Deficiencies

The structural seismic deficiencies identified during the Tier 1 evaluation are summarized below. Commentary for each deficiency is also provided based on this evaluation.

Table 1-3. Identified Structural Seismic Deficiencies for Coupeville Coupeville High School Gymnasium

Deficiency	Description
Reinforcing Steel	Per CMU reinforcing steel schedule 2/S4.01, all reinforcment spacing is 48\ o.c. Further investigation should be performed. Lateral system strengthening or additional shear walls may be appropriate to mitigate seismic risk.

1.2.2 Structural Checklist Items Marked as 'U'nknown

Where building structural component seismic adequacy was unknown due to lack of available information or limited observation, the structural checklist items were marked as “unknown”. These items require further investigation if definitive determination of compliance or noncompliance is desired. The unknown structural checklist items identified during the Tier 1 evaluation are summarized below. Commentary for each unknown item is also provided based on the evaluation.

Table 1-4. Identified Structural Checklist Items Marked as Unknown for Coupeville Coupeville High School Gymnasium

Unknown Item	Description
Liquefaction	Coupeville High School resides between two water fronts which greatly increases the chance for liquefaction. The liquefaction potential of site soils is unknown at this time given available information. \very low\ liquefaction potential is identified per ICOS based on state geologic mapping. Requires further investigation by a licensed geotechnical engineer to determine liquefaction potential.
Slope Failure	Requires further investigation by a licensed geotechnical engineer to determine susceptibility to slope failure.
Surface Fault Rupture	Requires further investigation by a licensed geotechnical engineer to determine whether site is near locations of expected surface fault ruptures.
Ties Between Foundation Elements	Original structural drawings are not available. Further investigation should be performed. Additional foundation ties may be appropriate to mitigate seismic risk.
Wall Anchorage	Details unavailable on limited structural drawings. Only renovated drawings provided for existing gym building. Further investigation should be performed. Additional diaphragm shear wall anchoring may be appropriate to mitigate seismic risk.
Wood Ledgers	Unable to determine if ledgers produce cross - grain bending without being able to see the ledger connection during site visit. Further investigation should be performed. Additional blocking and strapping may be appropriate to mitigate seismic risk.
Cross Ties	Per detail 10/S5.01, chord detail unclear. Further investigation could be given for connection of joist truss to diaphragm chord. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
Stiffness of Wall Anchors	Unable to determine stiffness of wall anchors to account for 1/8 inch displacement. Further investigation should be performed. Additional anchoring may be appropriate to mitigate seismic risk.

1.3.1 Nonstructural Seismic Deficiencies

The nonstructural seismic deficiencies identified during the Tier 1 evaluation are summarized below. Commentary for each deficiency is also provided based on this evaluation. Some nonstructural deficiencies may be able to be mitigated by school district staff. Other nonstructural components that require more substantial mitigation may be more appropriately included in a long-term mitigation strategy. Some typical conceptual details for the seismic upgrade of nonstructural components can be found in the FEMA E-74 Excerpts appendix.

Table 1-5. Identified Nonstructural Seismic Deficiencies for Coupeville Coupeville High School Gymnasium

Deficiency	Description
CF-2 Tall Narrow Contents. HR-not required; LS-H; PR-MH.	There was a cleaning shelving unit that did not appear to be anchored to the wall. Brace tops of shelves taller than 6 feet to nearest backing wall or provide overturning base restraint.

1.3.2 Nonstructural Checklist Items Marked as 'U'nknown

Where building nonstructural component seismic adequacy was unknown due to lack of available information or limited observation, the nonstructural checklist items were marked as “unknown”. These items require further investigation if definitive determination of compliance or noncompliance is desired. The unknown nonstructural checklist items identified during the Tier 1 evaluation are summarized below. Commentary for each unknown item is also provided based on the evaluation.

Some nonstructural deficiencies may be able to be mitigated by school district staff. Other nonstructural components that require more substantial mitigation may be more appropriately included in a long-term mitigation strategy. Some typical conceptual details for the seismic upgrade of nonstructural components can be found in the FEMA E-74 Excerpts appendix.

Table 1-6. Identified Nonstructural Checklist Items Marked as Unknown for Coupeville Coupeville High School Gymnasium

Unknown Item	Description
LSS-1 Fire Suppression Piping. HR-not required; LS-LMH; PR-LMH.	According to general notes A0.00, fire suppression compliant with NFPA-10. Further investigation may be appropriate to mitigate seismic risk.
LSS-2 Flexible Couplings. HR-not required; LS-LMH; PR-LMH.	According to general notes A0.00, fire suppression compliant with NFPA-10. Further investigation may be appropriate to mitigate seismic risk.
LSS-3 Emergency Power. HR-not required; LS-LMH; PR-LMH.	At least one piece of equipment did not appear to be anchored or braced, but could be braced from backside of unit. Evaluation of emergency power equipment may be appropriate to mitigate seismic risk.
LSS-5 Sprinkler Ceiling Clearance. HR-not required; LS-MH; PR-MH.	According to general notes A0.00, fire suppression compliant with NFPA-10. Evaluation of penetrations may be appropriate to mitigate seismic risk.
HM-4 Shutoff Valves. HR-MH; LS-MH; PR-MH.	It is unknown if the structure contains natural gas or other hazardous materials. Further investigation of mechanical piping should be performed. Providing shutoff valves may be appropriate to mitigate seismic risk.
P-3 Drift. HR-not required; LS-MH; PR-MH.	It is unknown if there are cementitious partitions in the building. However, it is unlikely. Further investigation should be performed. Detailing to allow cementitious partitions to drift an adequate amount during a seismic event may be appropriate to mitigate seismic risk.
C-2 Suspended Gypsum Board. HR-not required; LS-MH; PR-LMH.	No ceiling access to determine area of attachments. However, sheet A3.11 detail 2 shows the suspension of the GWB. Further investigation should be performed. Bracing for ceilings may be appropriate to mitigate seismic risk.
CG-8 Overhead Glazing. HR-not required; LS-MH; PR-MH.	Glazing information is unknown. Based on the age of the building, it is unlikely that the glazing on the windows are laminated or detailed to remain in the frame. Many individual panes are likely to be below this threshold. Further investigation should be completed. Replacing applicable glazing planes may be appropriate to mitigate seismic risk.
M-1 Ties. HR-not required; LS-LMH; PR-LMH.	It is unknown how the masonry veneer is connected to the building. Further investigation should be completed. Adding connections for the veneer may be appropriate to mitigate seismic risk.
M-2 Shelf Angles. HR-not required; LS-LMH; PR-LMH.	It is unknown how the masonry veneer is connected to the building. Further investigation should be completed. Adding connections for the veneer may be appropriate to mitigate seismic risk.
M-3 Weakened Planes. HR-not required; LS-LMH; PR-LMH.	Unable to find details on masonry veneer on structural/architectural plans. Further investigation should be completed. Adding connections for the veneer may be appropriate to mitigate seismic risk.
M-5 Stud Tracks. HR-not required; LS-MH; PR-MH.	Unable to find spacing details on masonry veneer anchoring to steel stud backup.
M-6 Anchorage. HR-not required; LS-MH; PR-MH.	Unable to find spacing details on masonry veneer anchoring to masonry backup.

Photos:

Figure 1-1. Exterior view of auxiliary gym

Figure 1-2. Auxiliary and existing gym

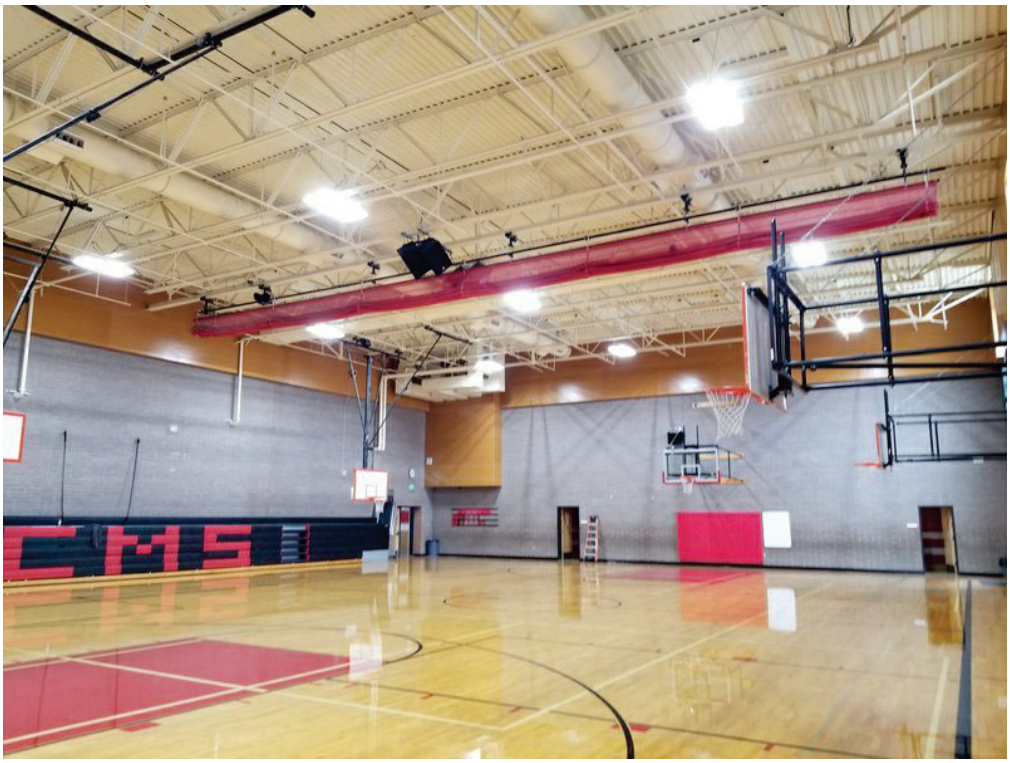


Figure 1-3. Existing gym

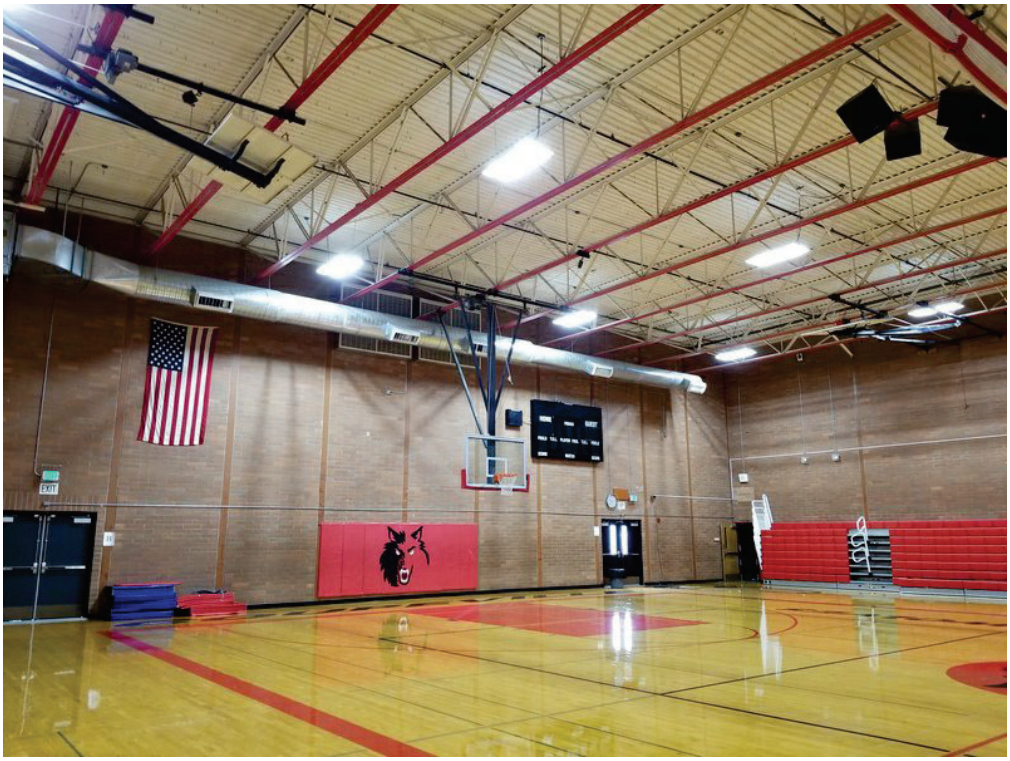


Figure 1-4. Auxiliary gym

Figure 1-5. Braced mechanical system

Figure 1-6. Braced mechanical system

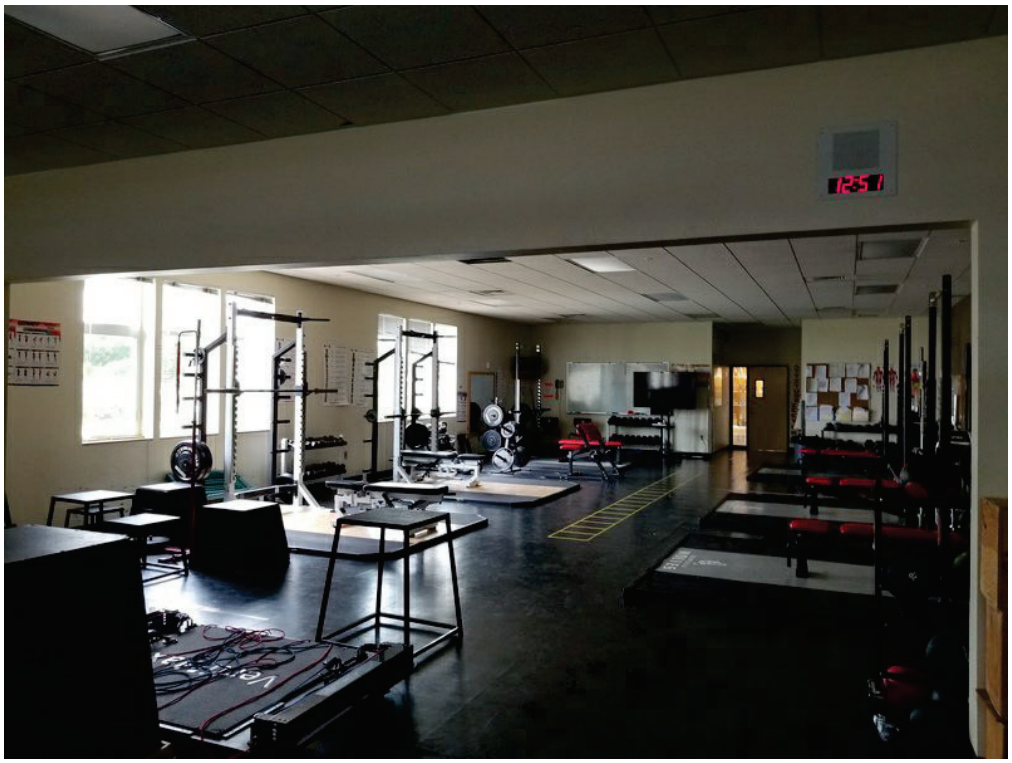


Figure 1-7. Weight room

Coupeville, Coupeville High School, Gymnasium

17-2 Collapse Prevention Basic Configuration Checklist

Building record drawings have been reviewed, when available, and a non-destructive field investigation has been performed for the subject building. Each of the required checklist items are marked Compliant (C), Noncompliant (NC), Not Applicable (N/A), or Unknown (U). Items marked Compliant indicate conditions that satisfy the performance objective, whereas items marked Noncompliant or Unknown indicate conditions that do not. Certain statements might not apply to the building being evaluated.

Low Seismicity

Building System - General

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Load Path	The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation. (Tier 2: Sec. 5.4.1.1; Commentary: Sec. A.2.1.10)	X				The gravity force tops at the metal deck and open web steel joists through HSS columns and CMU shear and bearing walls. The force then transfers down to the concrete slab on grade and then to the reinforced concrete footings. Connections in details provide plates, angles, and dowels to columns and CMU walls with anchor bolts and welds.
Adjacent Buildings	The clear distance between the building being evaluated and any adjacent building is greater than 0.25% of the height of the shorter building in low seismicity, 0.5% in moderate seismicity, and 1.5% in high seismicity. (Tier 2: Sec. 5.4.1.2; Commentary: Sec. A.2.1.2)	X				It does not appear that there are any immediately adjacent structures.
Mezzanines	Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure. (Tier 2: Sec. 5.4.1.3; Commentary: Sec. A.2.1.3)			X		There are no interior mezzanines in this building.

Building System - Building Configuration

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Weak Story	The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above. (Tier 2: Sec. 5.4.2.1; Commentary: Sec. A.2.2.2)			X		This building is a one story building and is not applicable to this section.

Soft Story	The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above. (Tier 2: Sec. 5.4.2.2; Commentary: Sec. A.2.2.3)			X		This building does not contain a soft story.
Vertical Irregularities	All vertical elements in the seismic-force-resisting system are continuous to the foundation. (Tier 2: Sec. 5.4.2.3; Commentary: Sec. A.2.2.4)	X				Vertical elements appear to be continuous to the foundation.
Geometry	There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 5.4.2.4; Commentary: Sec. A.2.2.5)	X				There does not appear to be any changes to the horizontal dimension of the seismic force-resisting system.
Mass	There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 5.4.2.5; Commentary: Sec. A.2.2.6)			X		This building does not contain a soft story.
Torsion	The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension. (Tier 2: Sec. 5.4.2.6; Commentary: Sec. A.2.2.7)	X				There does not appear to be a torsional irregularity.

Moderate Seismicity **(Complete the Following Items in Addition to the Items for Low Seismicity)**

Geologic Site Hazards

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Liquefaction	Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance do not exist in the foundation soils at depths within 50 ft (15.2 m) under the building. (Tier 2: Sec. 5.4.3.1; Commentary: Sec. A.6.1.1)				X	Coupeville High School resides between two water fronts which greatly increases the chance for liquefaction. The liquefaction potential of site soils is unknown at this time given available information. Very low liquefaction potential is identified per ICOS based on state geologic mapping. Requires further investigation by a licensed geotechnical engineer to determine liquefaction potential.

Slope Failure	The building site is located away from potential earthquake-induced slope failures or rockfalls so that it is unaffected by such failures or is capable of accommodating any predicted movements without failure. (Tier 2: Sec. 5.4.3.1; Commentary: Sec. A.6.1.2)				X	Requires further investigation by a licensed geotechnical engineer to determine susceptibility to slope failure.
Surface Fault Rupture	Surface fault rupture and surface displacement at the building site are not anticipated. (Tier 2: Sec. 5.4.3.1; Commentary: Sec. A.6.1.3)				X	Requires further investigation by a licensed geotechnical engineer to determine whether site is near locations of expected surface fault ruptures.

High Seismicity **(Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)**

Foundation Configuration

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Overturning	The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than 0.6Sa. (Tier 2: Sec. 5.4.3.3; Commentary: Sec. A.6.2.1)	X				5.155 > .396
Ties Between Foundation Elements	The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C. (Tier 2: Sec. 5.4.3.4; Commentary: Sec. A.6.2.2)				X	Original structural drawings are not available. Further investigation should be performed. Additional foundation ties may be appropriate to mitigate seismic risk.

17-34 Collapse Prevention Structural Checklist for Building Types RM1 and RM2

Building record drawings have been reviewed, when available, and a non-destructive field investigation has been performed for the subject building. Each of the required checklist items are marked Compliant (C), Noncompliant (NC), Not Applicable (N/A), or Unknown (U). Items marked Compliant indicate conditions that satisfy the performance objective, whereas items marked Noncompliant or Unknown indicate conditions that do not. Certain statements might not apply to the building being evaluated.

Low and Moderate Seismicity

Seismic-Force-Resisting System

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Redundancy	The number of lines of shear walls in each principal direction is greater than or equal to 2. (Tier 2: Sec. 5.5.1.1; Commentary: Sec. A.3.2.1.1)	X				
Shear Stress Check	The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than 70 lb/in.2 (0.48 MPa). (Tier 2: Sec. 5.5.3.1.1; Commentary: Sec. A.3.2.4.1)	X				Per Quick Check Procedure using Seismic Design Aid Spreadsheet
Reinforcing Steel	The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls is greater than 0.002 of the wall with the minimum of 0.0007 in either of the two directions; the spacing of reinforcing steel is less than 48 in. (1220 mm), and all vertical bars extend to the top of the walls. (Tier 2: Sec. 5.5.3.1.3; Commentary: Sec. A.3.2.4.2)		X			Per CMU reinforcing steel schedule 2/S4.01, all reinforcment spacing is 48 inches o.c. Further investigation should be performed. Lateral system strengthening or additional shear walls may be appropriate to mitigate seismic risk.

Stiff Diaphragms

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Topping Slab	Precast concrete diaphragm elements are interconnected by a continuous reinforced concrete topping slab. (Tier 2: Sec. 5.6.4; Commentary: Sec. A.4.5.1)			X		No precast concrete diaphragms present in building.

Connections

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT

Wall Anchorage	Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have strength to resist the connection force calculated in the Quick Check procedure of Section 4.4.3.7. (Tier 2: Sec. 5.7.1.1; Commentary: Sec. A.5.1.1)				X	Details unavailable on limited structural drawings. Only renovated drawings provided for existing gym building. Further investigation should be performed. Additional diaphragm shear wall anchoring may be appropriate to mitigate seismic risk.
Wood Ledgers	The connection between the wall panels and the diaphragm does not induce cross-grain bending or tension in the wood ledgers. (Tier 2: Sec. 5.7.1.3; Commentary: Sec. A.5.1.2)				X	Unable to determine if ledgers produce cross - grain bending without being able to see the ledger connection during site visit. Further investigation should be performed. Additional blocking and strapping may be appropriate to mitigate seismic risk.
Transfer to Shear Walls	Diaphragms are connected for transfer of seismic forces to the shear walls. (Tier 2: Sec. 5.7.2; Commentary: Sec. A.5.2.1)	X				Per detail 10/S5.01. Metal deck welded to angle and channel which is anchored to CMU wall
Topping Slab to Walls or Frames	Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements are doweled for transfer of forces into the shear wall or frame elements. (Tier 2: Sec. 5.7.2; Commentary: Sec. A.5.2.)			X		No precast concrete diaphragm present in building.
Foundation Dowels	Wall reinforcement is doweled into the foundation. (Tier 2: Sec. 5.7.3.4; Commentary: Sec. A.5.3.5)	X				
Girder-Column Connection	There is a positive connection using plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 5.7.4.1; Commentary: Sec. A.5.4.1)	X				

High Seismicity **(Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)**

Stiff Diaphragms

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Openings at Shear Walls	Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length. (Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.4)	X				
Openings at Exterior Masonry Shear Walls	Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long. (Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.6)	X				

Flexible Diaphragms

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Cross Ties	There are continuous cross ties between diaphragm chords. (Tier 2: Sec. 5.6.1.2; Commentary: Sec. A.4.1.2)				X	Per detail 10/S5.01, chord detail unclear. Further investigation could be given for connection of joist truss to diaphragm chord. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
Openings at Shear Walls	Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length. (Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.4)			X		No diaphragm opening immediately adjacent to shear walls.
Openings at Exterior Masonry Shear Walls	Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long. (Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.6)	X				Per 6/S5.01, 6 ft. 0 in. max opening
Straight Sheathing	All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered. (Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.1)			X		
Spans	All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing. (Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.2)			X		Diaphragm is metal decking
Diagonally Sheathed and Unblocked Diaphragms	All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and aspect ratios less than or equal to 4 to-1. (Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.3)			X		There are no unblocked diaphragms in this building.
Other Diaphragms	Diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Tier 2: Sec. 5.6.5; Commentary: Sec. A.4.7.1)	X				

Connections

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
Stiffness of Wall Anchors	Anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 in. (3 mm) before engagement of the anchors. (Tier 2: Sec. 5.7.1.2; Commentary: Sec. A.5.1.4)				X	Unable to determine stiffness of wall anchors to account for 1/8 inch displacement. Further investigation should be performed. Additional anchoring may be appropriate to mitigate seismic risk.

Coupeville, Coupeville High School, Gymnasium

17-38 Nonstructural Checklist

Notes:
C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.
Performance Level: HR = Hazards Reduced, LS = Life Safety, and PR = Position Retention.
Level of Seismicity: L = Low, M = Moderate, and H = High

Life Safety Systems

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
LSS-1 Fire Suppression Piping. HR-not required; LS-LMH; PR-LMH.	Fire suppression piping is anchored and braced in accordance with NFPA-13. (Tier 2: Sec. 13.7.4; Commentary: Sec. A.7.13.1)				X	According to general notes A0.00, fire suppression compliant with NFPA-10. Further investigation may be appropriate to mitigate seismic risk.
LSS-2 Flexible Couplings. HR-not required; LS-LMH; PR-LMH.	Fire suppression piping has flexible couplings in accordance with NFPA-13. (Tier 2: Sec. 13.7.4; Commentary: Sec. A.7.13.2)				X	According to general notes A0.00, fire suppression compliant with NFPA-10. Further investigation may be appropriate to mitigate seismic risk.
LSS-3 Emergency Power. HR-not required; LS-LMH; PR-LMH.	Equipment used to power or control Life Safety systems is anchored or braced. (Tier 2: Sec. 13.7.7; Commentary: Sec. A.7.12.1)				X	At least one piece of equipment did not appear to be anchored or braced, but could be braced from backside of unit. Evaluation of emergency power equipment may be appropriate to mitigate seismic risk.
LSS-4 Stair and Smoke Ducts. HR-not required; LS-LMH; PR-LMH.	Stair pressurization and smoke control ducts are braced and have flexible connections at seismic joints. (Tier 2: Sec. 13.7.6; Commentary: Sec. A.7.14.1)			X		Building is a one-story structure.
LSS-5 Sprinkler Ceiling Clearance. HR-not required; LS-MH; PR-MH.	Penetrations through panelized ceilings for fire suppression devices provide clearances in accordance with NFPA-13. (Tier 2: Sec. 13.7.4; Commentary: Sec. A.7.13.3)				X	According to general notes A0.00, fire suppression compliant with NFPA-10. Evaluation of penetrations may be appropriate to mitigate seismic risk.
LSS-6 Emergency Lighting. HR-not required; LS-not required; PR-LMH	Emergency and egress lighting equipment is anchored or braced. (Tier 2: Sec. 13.7.9; Commentary: Sec. A.7.3.1)			X		Not required for life safety performance level.

Hazardous Materials

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
HM-1 Hazardous Material Equipment. HR-LMH; LS-LMH; PR-LMH.	Equipment mounted on vibration isolators and containing hazardous material is equipped with restraints or snubbers. (Tier 2: Sec. 13.7.1; Commentary: Sec. A.7.12.2)			X		There does not appear to be any equipment mounted on vibration isolators.
HM-2 Hazardous Material Storage. HR-LMH; LS-LMH; PR-LMH.	Breakable containers that hold hazardous material, including gas cylinders, are restrained by latched doors, shelf lips, wires, or other methods. (Tier 2: Sec. 13.8.3; Commentary: Sec. A.7.15.1)			X		No hazardous material storage observed.
HM-3 Hazardous Material Distribution. HR-MH; LS-MH; PR-MH.	Piping or ductwork conveying hazardous materials is braced or otherwise protected from damage that would allow hazardous material release. (Tier 2: Sec. 13.7.3, 13.7.5; Commentary: Sec. A.7.13.4)			X		No hazardous material conveyance observed.
HM-4 Shutoff Valves. HR-MH; LS-MH; PR-MH.	Piping containing hazardous material, including natural gas, has shutoff valves or other devices to limit spills or leaks. (Tier 2: Sec. 13.7.3, 13.7.5; Commentary: Sec. A.7.13.3)				X	It is unknown if the structure contains natural gas or other hazardous materials. Further investigation of mechanical piping should be performed. Providing shutoff valves may be appropriate to mitigate seismic risk.
HM-5 Flexible Couplings. HR-LMH; LS-LMH; PR-LMH.	Hazardous material ductwork and piping, including natural gas piping, have flexible couplings. (Tier 2: Sec. 13.7.3, 13.7.5; Commentary: Sec. A.7.15.4)			X		No hazardous material conveyance observed.
HM-6 Piping or Ducts Crossing Seismic Joints. HR-MH; LS-MH; PR-MH.	Piping or ductwork carrying hazardous material that either crosses seismic joints or isolation planes or is connected to independent structures has couplings or other details to accommodate the relative seismic displacements. (Tier 2: Sec. 13.7.3, 13.7.5, 13.7.6; Commentary: Sec. A.7.13.6)			X		No hazardous material conveyance observed.

Partitions

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
P-1 Unreinforced Masonry. HR-LMH; LS-LMH; PR-LMH.	Unreinforced masonry or hollow-clay tile partitions are braced at a spacing of at most 10 ft (3.0 m) in Low or Moderate Seismicity, or at most 6 ft (1.8 m) in High Seismicity. (Tier 2: Sec. 13.6.2; Commentary: Sec. A.7.1.1)			X		No unreinforced masonry or hollow-clay tile partitions.
P-2 Heavy Partitions Supported by Ceilings. HR-LMH; LS-LMH; PR-LMH.	The tops of masonry or hollow-clay tile partitions are not laterally supported by an integrated ceiling system. (Tier 2: Sec. 13.6.2; Commentary: Sec. A.7.2.1)	X				Does not appear that partitions are braced into integrated ceiling system.

P-3 Drift. HR-not required; LS-MH; PR-MH.	Rigid cementitious partitions are detailed to accommodate the following drift ratios: in steel moment frame, concrete moment frame, and wood frame buildings, 0.02; in other buildings, 0.005. (Tier 2: Sec. 13.6.2; Commentary: Sec. A.7.1.2)				X	It is unknown if there are cementitious partitions in the building. However, it is unlikely. Further investigation should be performed. Detailing to allow cementitious partitions to drift an adequate amount during a seismic event may be appropriate to mitigate seismic risk.
P-4 Light Partitions Supported by Ceilings. HR-not required; LS-not required; PR-MH.	The tops of gypsum board partitions are not laterally supported by an integrated ceiling system. (Tier 2: Sec. 13.6.2; Commentary: Sec. A.7.2.1)			X		Not required for life safety performance level.
P-5 Structural Separations. HR-not required; LS-not required; PR-MH.	Partitions that cross structural separations have seismic or control joints. (Tier 2: Sec. 13.6.2; Commentary: Sec. A.7.1.3)			X		Not required for life safety performance level.
P-6 Tops. HR-not required; LS-not required; PR-MH.	The tops of ceiling-high framed or panelized partitions have lateral bracing to the structure at a spacing equal to or less than 6 ft (1.8 m). (Tier 2: Sec. 13.6.2; Commentary: Sec. A.7.1.4)			X		Not required for life safety performance level.

Ceilings

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
C-1 Suspended Lath and Plaster. HR-H; LS-MH; PR-LMH.	Suspended lath and plaster ceilings have attachments that resist seismic forces for every 12 ft2 (1.1 m2) of area. (Tier 2: Sec. 13.6.4; Commentary: Sec. A.7.2.3)			X		Building ceiling consists of suspended GWB and ACT
C-2 Suspended Gypsum Board. HR-not required; LS-MH; PR-LMH.	Suspended gypsum board ceilings have attachments that resist seismic forces for every 12 ft2 (1.1 m2) of area. (Tier 2: Sec. 13.6.4; Commentary: Sec. A.7.2.3)				X	No ceiling access to determine area of attachments. However, sheet A3.11 detail 2 shows the suspension of the GWB. Further investigation should be performed. Bracing for ceilings may be appropriate to mitigate seismic risk.

C-3 Integrated Ceilings. HR-not required; LS-not required; PR-MH.	Integrated suspended ceilings with continuous areas greater than 144 ft2 (13.4 m2) and ceilings of smaller areas that are not surrounded by restraining partitions are laterally restrained at a spacing no greater than 12 ft (3.6 m) with members attached to the structure above. Each restraint location has a minimum of four diagonal wires and compression struts, or diagonal members capable of resisting compression. (Tier 2: Sec. 13.6.4; Commentary: Sec. A.7.2.2)			X		Not required for life safety performance level.
C-4 Edge Clearance. HR-not required; LS-not required; PR-MH.	The free edges of integrated suspended ceilings with continuous areas greater than 144 ft2 (13.4 m2) have clearances from the enclosing wall or partition of at least the following: in Moderate Seismicity, 1/2 in. (13 mm); in High Seismicity, 3/4 in. (19 mm). (Tier 2: Sec. 13.6.4; Commentary: Sec. A.7.2.4)			X		Not required for life safety performance level.
C-5 Continuity Across Structure Joints. HR-not required; LS-not required; PR-MH.	The ceiling system does not cross any seismic joint and is not attached to multiple independent structures. (Tier 2: Sec. 13.6.4; Commentary: Sec. A.7.2.5)			X		Not required for life safety performance level.
C-6 Edge Support. HR-not required; LS-not required; PR-H.	The free edges of integrated suspended ceilings with continuous areas greater than 144 ft2 (13.4 m2) are supported by closure angles or channels not less than 2 in. (51 mm) wide. (Tier 2: Sec. 13.6.4 ; Commentary: Sec. A.7.2.6)			X		Not required for life safety performance level.
C-7 Seismic Joints. HR-not required; LS-not required; PR-H.	Acoustical tile or lay-in panel ceilings have seismic separation joints such that each continuous portion of the ceiling is no more than 2,500 ft2 (232.3 m2) and has a ratio of long-to-short dimension no more than 4-to-1. (Tier 2: Sec. 13.6.4; Commentary: Sec. A.7.2.7)			X		Not required for life safety performance level.

Light Fixtures

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
LF-1 Independent Support. HR-not required; LS-MH; PR-MH.	Light fixtures that weigh more per square foot than the ceiling they penetrate are supported independent of the grid ceiling suspension system by a minimum of two wires at diagonally opposite corners of each fixture. (Tier 2: Sec. 13.6.4, 13.7.9; Commentary: Sec. A.7.3.2)	X				It appears that the light fixtures are independently suspended from the ceiling.

LF-2 Pendant Supports. HR-not required; LS-not required; PR-H.	Light fixtures on pendant supports are attached at a spacing equal to or less than 6 ft. Unbraced suspended fixtures are free to allow a 360-degree range of motion at an angle not less than 45 degrees from horizontal without contacting adjacent components. Alternatively, if rigidly supported and/or braced, they are free to move with the structure to which they are attached without damaging adjoining components. Additionally, the connection to the structure is capable of accommodating the movement without failure. (Tier 2: Sec. 13.7.9; Commentary: Sec. A.7.3.3)			X		Not required for life safety performance level.
LF-3 Lens Covers. HR-not required; LS-not required; PR-H.	Lens covers on light fixtures are attached with safety devices. (Tier 2: Sec. 13.7.9; Commentary: Sec. A.7.3.4)			X		Not required for life safety performance level.

Cladding and Glazing

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
CG-1 Cladding Anchors. HR-MH; LS-MH; PR-MH.	Cladding components weighing more than 10 lb/ft2 (0.48 kN/m2) are mechanically anchored to the structure at a spacing equal to or less than the following: for Life Safety in Moderate Seismicity, 6 ft (1.8 m); for Life Safety in High Seismicity and for Position Retention in any seismicity, 4 ft (1.2 m) (Tier 2: Sec. 13.6.1; Commentary: Sec. A.7.4.1)			X		The building does not appear to have any cladding components.
CG-2 Cladding Isolation. HR-not required; LS-MH; PR-MH.	For steel or concrete moment-frame buildings, panel connections are detailed to accommodate a story drift ratio by the use of rods attached to framing with oversize holes or slotted holes of at least the following: for Life Safety in Moderate Seismicity, 0.01; for Life Safety in High Seismicity and for Position Retention in any seismicity, 0.02, and the rods have a length-to-diameter ratio of 4.0 or less. (Tier 2: Sec. 13.6.1; Commentary: Sec. A.7.4.3)			X		The building does not appear to have any cladding components.
CG-3 Multi-Story Panels. HR-MH; LS-MH; PR-MH.	For multi-story panels attached at more than one floor level, panel connections are detailed to accommodate a story drift ratio by the use of rods attached to framing with oversize holes or slotted holes of at least the following: for Life Safety in Moderate Seismicity, 0.01; for Life Safety in High Seismicity and for Position Retention in any seismicity, 0.02, and the rods have a length-to-diameter ratio of 4.0 or less. (Tier 2: Sec. 13.6.1; Commentary: Sec. A.7.4.4)			X		The building does not appear to have any cladding components.

CG-4 Threaded Rods. HR-not required; LS-MH; PR-MH.	Threaded rods for panel connections detailed to accommodate drift by bending of the rod have a length-to-diameter ratio greater than 0.06 times the story height in inches for Life Safety in Moderate Seismicity and 0.12 times the story height in inches for Life Safety in High Seismicity and Position Retention in any seismicity. (Tier 2: Sec. 13.6.1; Commentary: Sec. A.7.4.9)			X		The building does not appear to have any cladding components.
CG-5 Panel Connections. HR-MH; LS-MH; PR-MH.	Cladding panels are anchored out of plane with a minimum number of connections for each wall panel, as follows: for Life Safety in Moderate Seismicity, 2 connections; for Life Safety in High Seismicity and for Position Retention in any seismicity, 4 connections. (Tier 2: Sec. 13.6.1.4; Commentary: Sec. A.7.4.5)			X		The building does not appear to have any cladding components.
CG-6 Bearing Connections. HR-MH; LS-MH; PR-MH.	Where bearing connections are used, there is a minimum of two bearing connections for each cladding panel. (Tier 2: Sec. 13.6.1.4; Commentary: Sec. A.7.4.6)			X		The building does not appear to have any cladding components.
CG-7 Inserts. HR-MH; LS-MH; PR-MH.	Where concrete cladding components use inserts, the inserts have positive anchorage or are anchored to reinforcing steel. (Tier 2: Sec. 13.6.1.4; Commentary: Sec. A.7.4.7)			X		The building does not appear to have any cladding components.
CG-8 Overhead Glazing. HR-not required; LS-MH; PR-MH.	Glazing panes of any size in curtain walls and individual interior or exterior panes more than 16 ft2 (1.5 m2) in area are laminated annealed or laminated heat-strengthened glass and are detailed to remain in the frame when cracked. (Tier 2: Sec. 13.6.1.5; Commentary: Sec. A.7.4.8)				X	Glazing information is unknown. Based on the age of the building, it is unlikely that the glazing on the windows are laminated or detailed to remain in the frame. Many individual panes are likely to be below this threshold. Further investigation should be completed. Replacing applicable glazing planes may be appropriate to mitigate seismic risk.

Masonry Veneer

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
M-1 Ties. HR-not required; LS-LMH; PR-LMH.	Masonry veneer is connected to the backup with corrosion-resistant ties. There is a minimum of one tie for every 2-2/3 ft2 (0.25 m2), and the ties have spacing no greater than the following: for Life Safety in Low or Moderate Seismicity, 36 in. (914 mm); for Life Safety in High Seismicity and for Position Retention in any seismicity, 24 in. (610 mm). (Tier 2: Sec. 13.6.1.2; Commentary: Sec. A.7.5.1)				X	It is unknown how the masonry veneer is connected to the building. Further investigation should be completed. Adding connections for the veneer may be appropriate to mitigate seismic risk.
M-2 Shelf Angles. HR-not required; LS-LMH; PR-LMH.	Masonry veneer is supported by shelf angles or other elements at each floor above the ground floor. (Tier 2: Sec. 13.6.1.2; Commentary: Sec. A.7.5.2)				X	It is unknown how the masonry veneer is connected to the building. Further investigation should be completed. Adding connections for the veneer may be appropriate to mitigate seismic risk.
M-3 Weakened Planes. HR-not required; LS-LMH; PR-LMH.	Masonry veneer is anchored to the backup adjacent to weakened planes, such as at the locations of flashing. (Tier 2: Sec. 13.6.1.2; Commentary: Sec. A.7.5.3)				X	Unable to find details on masonry veneer on structural/architectural plans. Further investigation should be completed. Adding connections for the veneer may be appropriate to mitigate seismic risk.
M-4 Unreinforced Masonry Backup. HR-LMH; LS-LMH; PR-LMH.	There is no unreinforced masonry backup. (Tier 2: Sec. 13.6.1.1, 13.6.1.2; Commentary: Sec. A.7.7.2)	X				There does not appear to be any unreinforced masonry backup.
M-5 Stud Tracks. HR-not required; LS-MH; PR-MH.	For veneer with coldformed steel stud backup, stud tracks are fastened to the structure at a spacing equal to or less than 24 in. (610 mm) on center. (Tier 2: Sec. 13.6.1.1, 13.6.1.2; Commentary: Sec. A.7.6.)				X	Unable to find spacing details on masonry veneer anchoring to steel stud backup.
M-6 Anchorage. HR-not required; LS-MH; PR-MH.	For veneer with concrete block or masonry backup, the backup is positively anchored to the structure at a horizontal spacing equal to or less than 4 ft along the floors and roof. (Tier 2: Sec. 13.6.1.1, 13.6.1.2; Commentary: Sec. A.7.7.1)				X	Unable to find spacing details on masonry veneer anchoring to masonry backup.
M-7 Weep Holes. HR-not required; LS-not required; PR-MH.	In veneer anchored to stud walls, the veneer has functioning weep holes and base flashing. (Tier 2: Sec. 13.6.1.2; Commentary: Sec. A.7.5.6)			X		Not required for life safety performance level.
M-8 Openings. HR-not required; LS-not required; PR-MH.	For veneer with cold-formed-steel stud backup, steel studs frame window and door openings. (Tier 2: Sec. 13.6.1.1, 13.6.1.2; Commentary: Sec. A.7.6.2)			X		Not required for life safety performance level.

Parapets, Cornices, Ornamentation, and Appendages

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
PCOA-1 URM Parapets or Cornices. HR-LMH; LS-LMH; PR-LMH.	Laterally unsupported unreinforced masonry parapets or cornices have height-tothickness ratios no greater than the following: for Life Safety in Low or Moderate Seismicity, 2.5; for Life Safety in High Seismicity and for Position Retention in any seismicity, 1.5. (Tier 2: Sec. 13.6.5; Commentary: Sec. A.7.8.1)			X		The building does not have unreinforced masonry parapets or cornices.
PCOA-2 Canopies. HR-not required; LS-LMH; PR-LMH.	Canopies at building exits are anchored to the structure at a spacing no greater than the following: for Life Safety in Low or Moderate Seismicity, 10 ft (3.0 m); for Life Safety in High Seismicity and for Position Retention in any seismicity, 6 ft (1.8 m). (Tier 2: Sec. 13.6.6; Commentary: Sec. A.7.8.2)			X		Canopies appear to be extensions of the roof diaphragm.
PCOA-3 Concrete Parapets. HR-H; LS-MH; PR-LMH.	Concrete parapets with height-to-thickness ratios greater than 2.5 have vertical reinforcement. (Tier 2: Sec. 13.6.5; Commentary: Sec. A.7.8.3)			X		The building does not have concrete parapets.
PCOA-4 Appendages. HR-MH; LS-MH; PR-LMH.	Cornices, parapets, signs, and other ornamentation or appendages that extend above the highest point of anchorage to the structure or cantilever from components are reinforced and anchored to the structural system at a spacing equal to or less than 6 ft (1.8 m). This evaluation statement item does not apply to parapets or cornices covered by other evaluation statements. (Tier 2: Sec. 13.6.6; Commentary: Sec. A.7.8.4)			X		There does not appear to be any applicable appendages.

Masonry Chimneys

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
MC-1 URM Chimneys. HR-LMH; LS-LMH; PR-LMH.	Unreinforced masonry chimneys extend above the roof surface no more than the following: for Life Safety in Low or Moderate Seismicity, 3 times the least dimension of the chimney; for Life Safety in High Seismicity and for Position Retention in any seismicity, 2 times the least dimension of the chimney. (Tier 2: Sec. 13.6.7; Commentary: Sec. A.7.9.1)			X		No masonry chimney present in building.
MC-2 Anchorage. HR-LMH; LS-LMH; PR-LMH.	Masonry chimneys are anchored at each floor level, at the topmost ceiling level, and at the roof. (Tier 2: Sec. 13.6.7; Commentary: Sec. A.7.9.2)			X		No masonry chimney present in building.

Stairs

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
S-1 Stair Enclosures. HR-not required; LS-LMH; PR-LMH.	Hollow-clay tile or unreinforced masonry walls around stair enclosures are restrained out of plane and have height-to-thickness ratios not greater than the following: for Life Safety in Low or Moderate Seismicity, 15-to-1; for Life Safety in High Seismicity and for Position Retention in any seismicity, 12-to-1. (Tier 2: Sec. 13.6.2, 13.6.8; Commentary: Sec. A.7.10.1)			X		No stairs present in building.
S-2 Stair Details. HR-not required; LS-LMH; PR-LMH.	The connection between the stairs and the structure does not rely on post-installed anchors in concrete or masonry, and the stair details are capable of accommodating the drift calculated using the Quick Check procedure of Section 4.4.3.1 for moment-frame structures or 0.5 in. for all other structures without including any lateral stiffness contribution from the stairs. (Tier 2: Sec. 13.6.8; Commentary: Sec. A.7.10.2)			X		No stairs present in building.

Contents and Furnishings

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
CF-1 Industrial Storage Racks. HR-LMH; LS-MH; PR-MH.	Industrial storage racks or pallet racks more than 12 ft high meet the requirements of ANSI/RMI MH 16.1 as modified by ASCE 7, Chapter 15. (Tier 2: Sec. 13.8.1; Commentary: Sec. A.7.11.1)			X		No industrial storage racks observed.
CF-2 Tall Narrow Contents. HR-not required; LS-H; PR-MH.	Contents more than 6 ft (1.8 m) high with a height-to-depth or height-to-width ratio greater than 3-to-1 are anchored to the structure or to each other. (Tier 2: Sec. 13.8.2; Commentary: Sec. A.7.11.2)		X			There was a cleaning shelving unit that did not appear to be anchored to the wall. Brace tops of shelves taller than 6 feet to nearest backing wall or provide overturning base restraint.
CF-3 Fall-Prone Contents. HR-not required; LS-H; PR-H.	Equipment, stored items, or other contents weighing more than 20 lb (9.1 kg) whose center of mass is more than 4 ft (1.2 m) above the adjacent floor level are braced or otherwise restrained. (Tier 2: Sec. 13.8.2; Commentary: Sec. A.7.11.3)	X				There did not appear to be any items that were noncompliant.
CF-4 Access Floors. HR-not required; LS-not required; PR-MH.	Access floors more than 9 in. (229 mm) high are braced. (Tier 2: Sec. 13.6.10; Commentary: Sec. A.7.11.4)			X		Not required for life safety performance level.

CF-5 Equipment on Access Floors. HR-not required; LS-not required; PR-MH.	Equipment and other contents supported by access floor systems are anchored or braced to the structure independent of the access floor. (Tier 2: Sec. 13.7.7 13.6.10; Commentary: Sec. A.7.11.5)			X		Not required for life safety performance level.
CF-6 Suspended Contents. HR-not required; LS-not required; PR-H.	Items suspended without lateral bracing are free to swing from or move with the structure from which they are suspended without damaging themselves or adjoining components. (Tier 2: Sec. 13.8.2; Commentary: Sec. A.7.11.6)			X		Not required for life safety performance level.

Mechanical and Electrical Equipment

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
ME-1 Fall-Prone Equipment. HR-not required; LS-H; PR-H.	Equipment weighing more than 20 lb (9.1 kg) whose center of mass is more than 4 ft (1.2 m) above the adjacent floor level, and which is not in-line equipment, is braced. (Tier 2: Sec. 13.7.1 13.7.7; Commentary: Sec. A.7.12.4)			X		Did not appear that there was any applicable equipment.
ME-2 In-Line Equipment. HR-not required; LS-H; PR-H.	Equipment installed in line with a duct or piping system, with an operating weight more than 75 lb (34.0 kg), is supported and laterally braced independent of the duct or piping system. (Tier 2: Sec. 13.7.1; Commentary: Sec. A.7.12.5)			X		Did not appear that there was any applicable equipment.
ME-3 Tall Narrow Equipment. HR-not required; LS-H; PR-MH.	Equipment more than 6 ft (1.8 m) high with a height-to-depth or height-to-width ratio greater than 3-to-1 is anchored to the floor slab or adjacent structural walls. (Tier 2: Sec. 13.7.1 13.7.7; Commentary: Sec. A.7.12.6)			X		Did not appear that there was any applicable equipment.
ME-4 Mechanical Doors. HR-not required; LS-not required; PR-MH.	Mechanically operated doors are detailed to operate at a story drift ratio of 0.01. (Tier 2: Sec. 13.6.9; Commentary: Sec. A.7.12.7)			X		Not required for life safety performance level.
ME-5 Suspended Equipment. HR-not required; LS-not required; PR-H.	Equipment suspended without lateral bracing is free to swing from or move with the structure from which it is suspended without damaging itself or adjoining components. (Tier 2: Sec. 13.7.1, 13.7.7; Commentary: Sec. A.7.12.8)			X		Not required for life safety performance level.
ME-6 Vibration Isolators. HR-not required; LS-not required; PR-H.	Equipment mounted on vibration isolators is equipped with horizontal restraints or snubbers and with vertical restraints to resist overturning. (Tier 2: Sec. 13.7.1; Commentary: Sec. A.7.12.9)			X		Not required for life safety performance level.
ME-7 Heavy Equipment. HR-not required; LS-not required; PR-H.	Floor supported or platform-supported equipment weighing more than 400 lb (181.4 kg) is anchored to the structure. (Tier 2: Sec. 13.7.1, 13.7.7; Commentary: Sec. A.7.12.10)			X		Not required for life safety performance level.
ME-8 Electrical Equipment. HR-not required; LS-not required; PR-H.	Electrical equipment is laterally braced to the structure. (Tier 2: Sec. 13.7.7; Commentary: Sec. A.7.12.11)			X		Not required for life safety performance level.

ME-9 Conduit Couplings. HR-not required; LS-not required; PR-H.	Conduit greater than 2.5 in. (64 mm) trade size that is attached to panels, cabinets, or other equipment and is subject to relative seismic displacement has flexible couplings or connections. (Tier 2: Sec. 13.7.8; Commentary: Sec. A.7.12.12)			X		Not required for life safety performance level.

Piping

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
PP-1 Flexible Couplings. HR-not required; LS-not required; PR-H.	Fluid and gas piping has flexible couplings. (Tier 2: Sec. 13.7.3, 13.7.5; Commentary: Sec. A.7.13.2)			X		Not required for life safety performance level.
PP-2 Fluid and Gas Piping. HR-not required; LS-not required; PR-H.	Fluid and gas piping is anchored and braced to the structure to limit spills or leaks. (Tier 2: Sec. 13.7.3, 13.7.5; Commentary: Sec. A.7.13.4)			X		Not required for life safety performance level.
PP-3 C-Clamps. HR-not required; LS-not required; PR-H.	One-sided C-clamps that support piping larger than 2.5 in. (64 mm) in diameter are restrained. (Tier 2: Sec. 13.7.3, 13.7.5; Commentary: Sec. A.7.13.5)			X		Not required for life safety performance level.
PP-4 Piping Crossing Seismic Joints. HR-not required; LS-not required; PR-H.	Piping that crosses seismic joints or isolation planes or is connected to independent structures has couplings or other details to accommodate the relative seismic displacements. (Tier 2: Sec. 13.7.3, 13.7.5; Commentary: Sec. A.7.13.6)			X		Not required for life safety performance level.

Ducts

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
D-1 Duct Bracing. HR-not required; LS-not required; PR-H.	Rectangular ductwork larger than 6 ft2 (0.56 m2) in cross-sectional area and round ducts larger than 28 in. (711 mm) in diameter are braced. The maximum spacing of transverse bracing does not exceed 30 ft (9.2 m). The maximum spacing of longitudinal bracing does not exceed 60 ft (18.3 m). (Tier 2: Sec. 13.7.6; Commentary: Sec. A.7.14.2)			X		Not required for life safety performance level.
D-2 Duct Support. HR-not required; LS-not required; PR-H.	Ducts are not supported by piping or electrical conduit. (Tier 2: Sec. 13.7.6; Commentary: Sec. A.7.14.3)			X		Not required for life safety performance level.
D-3 Ducts Crossing Seismic Joints. HR-not required; LS-not required; PR-H.	Ducts that cross seismic joints or isolation planes or are connected to independent structures have couplings or other details to accommodate the relative seismic displacements. (Tier 2: Sec. 13.7.6; Commentary: Sec. A.7.14.4)			X		Not required for life safety performance level.

Elevators

EVALUATION ITEM	EVALUATION STATEMENT	C	NC	N/A	U	COMMENT
EL-1 Retainer Guards. HR-not required; LS-H; PR-H.	Sheaves and drums have cable retainer guards. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.1)			X		Building is one story and likely does not have an elevator.

EL-2 Retainer Plate. HR-not required; LS-H; PR-H.	A retainer plate is present at the top and bottom of both car and counterweight. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.2)			X		Building is one story and likely does not have an elevator.
EL-3 Elevator Equipment. HR-not required; LS-not required; PR-H.	Equipment, piping, and other components that are part of the elevator system are anchored. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.3)			X		Not required for life safety performance level.
EL-4 Seismic Switch. HR-not required; LS-not required; PR-H.	Elevators capable of operating at speeds of 150 ft/min or faster are equipped with seismic switches that meet the requirements of ASME A17.1 or have trigger levels set to 20% of the acceleration of gravity at the base of the structure and 50% of the acceleration of gravity in other locations. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.4)			X		Not required for life safety performance level.
EL-5 Shaft Walls. HR-not required; LS-not required; PR-H.	Elevator shaft walls are anchored and reinforced to prevent toppling into the shaft during strong shaking. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.5)			X		Not required for life safety performance level.
EL-6 Counterweight Rails. HR-not required; LS-not required; PR-H.	All counterweight rails and divider beams are sized in accordance with ASME A17.1. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.6)			X		Not required for life safety performance level.
EL-7 Brackets. HR-not required; LS-not required; PR-H.	The brackets that tie the car rails and the counterweight rail to the structure are sized in accordance with ASME A17.1. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.7)			X		Not required for life safety performance level.
EL-8 Spreader Bracket. HR-not required; LS-not required; PR-H.	Spreader brackets are not used to resist seismic forces. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.8)			X		Not required for life safety performance level.
EL-9 Go-Slow Elevators. HR-not required; LS-not required; PR-H.	The building has a go-slow elevator system. (Tier 2: Sec. 13.7.11; Commentary: Sec. A.7.16.9)			X		Not required for life safety performance level.

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Appendix B: Concept-Level Seismic Upgrade Figures

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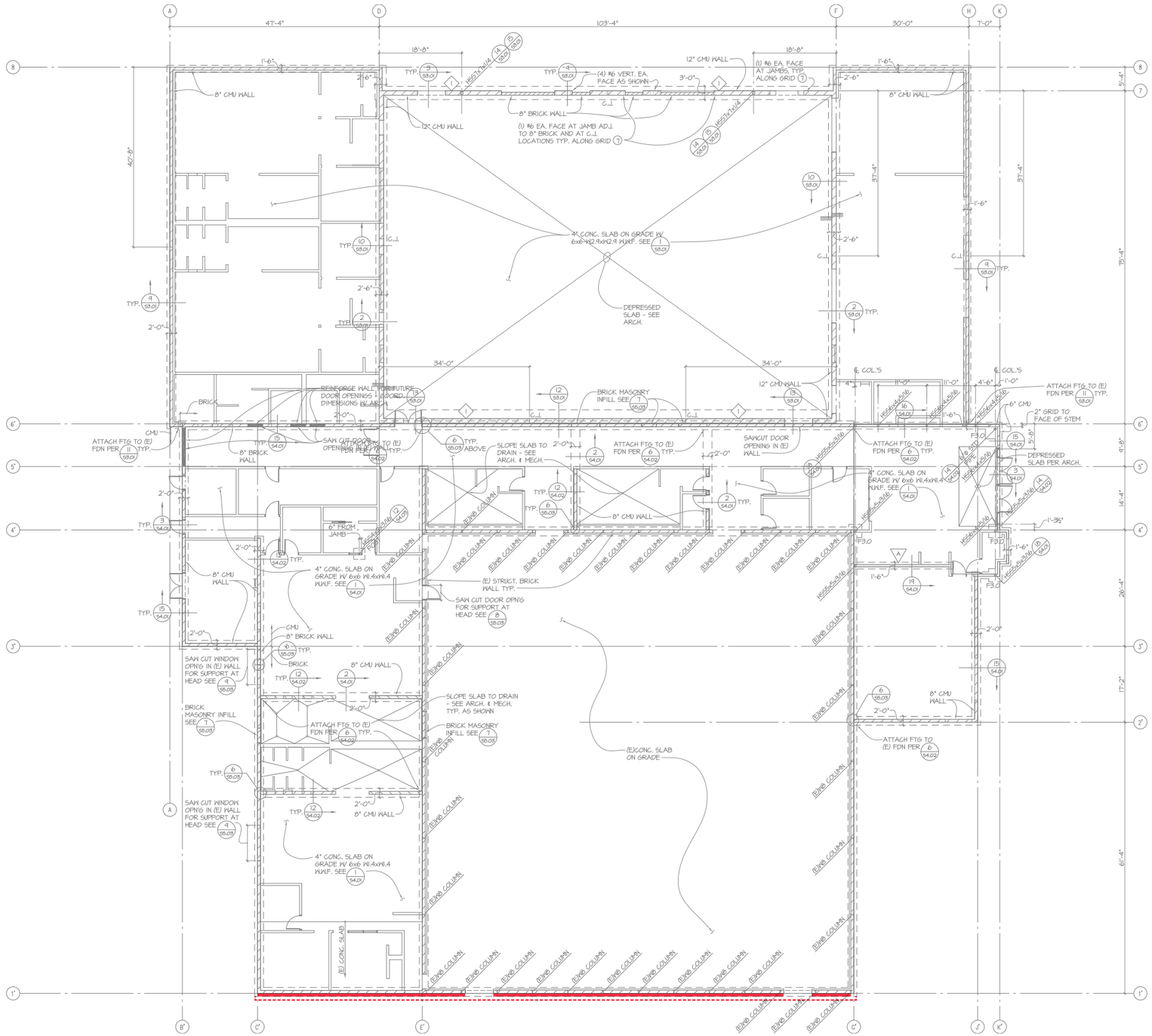

ReidMiddleton

Coupeville High School Seismic Upgrades – Gym Building

Washington State School Seismic Safety Assessments Project – Coupeville District – June 2019

Figure 1 - First Floor Plan

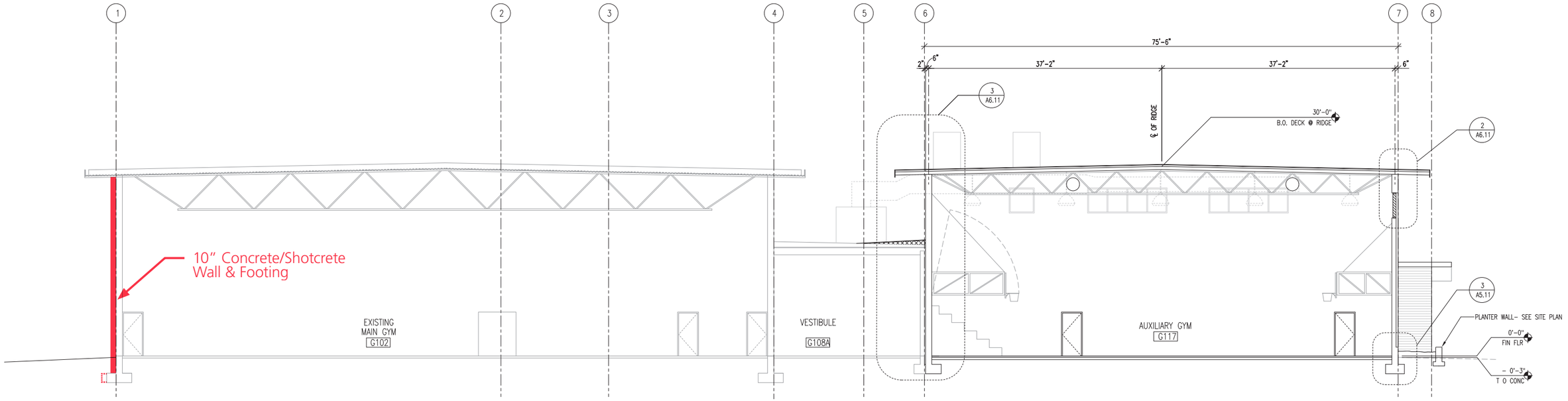

Figure 2 - Typical Longitudinal Section

Appendix C: Opinion of Probable Construction Costs

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520 Kirkland Way, Suite 301
Kirkland, WA 98033
tel: (425) 828-0500
fax: (425) 828-0700
www.prodims.com

Name:	**Wa State School Seismic Safety Assessment**
Second Name:	**Coupeville HS Gym**
Location:	**State of Washington**
Design Phase:	**ROM Cost Estimates**
Date of Estimate:	**April 27, 2019**
Date of Revision:	
Month of Cost Basis:	**1Q, 2019**

Coupeville HS Gym

Master Estimate Summary

Project Name		Total Estimated Construction Cost
Coupeville HS Gym	**Structural Costs**	**$265,945**
Coupeville HS Gym	**Non-Structural Costs**	**$3,472**
TOTAL ESTIMATED CONSTRUCTION COST		**$269,416**

Estimate Assumptions:

The ROM Construction Cost estimates are based on the Concept Design Report for the Project.
Construction Escalation is not included. Costs are current as of month of Cost Basis noted Above

Estimate Qualifications:

The ROM estimates are not be relied on solely for proforma development and financial decisions.
Further design work is required to determine construction budgets.
All Buildings Estimated to the 5' foot line for Utilities, All Sitework is estimated to go with any combination of the buildings and alternatives.
The ROM estimates do not include any Hazardous Material Abatement/Disposal.
For Construction Cost Markups they are additive, not cumulative. Percentages are added to the previous subtotal rather than the direct cost subtotal.
Owner Soft Costs are not included in the estimates. Soft costs can include design fees, sales tax, permits, owner's contingency and FF+E.
Estimated labor is based on an 8 hour per day shift 5 days a week. Accelerated schedule work of overtime has not been included.
Estimated labor is based on working on unoccupied facility without phased construction.
Estimate is based on a competitive public bid with at least 3 bona fide submitted and unrescinded general contractor bids.
Estimate is based on a competitive public bid with a minimum 6 week bidding schedule and no significant addendums within 2 weeks of bid opening.
State of Washington General Contractor/ Construction Manager (GC/CM) contracts typically raises construction costs. It is Not Included in this estimate.
Estimated construction cost is for the entire project. This estimate is not intended to be used for other projects.
Please consult the cost estimator for any modifications to this estimate. Unilaterally adding and deleting markups, scope of work, schedule, specifications, plans and bid forms could incorrectly restate the project construction cost.
Construction reserve contingency for change orders is not included in the estimate.
Sole source supply of materials and/ or installers typically results in a 40% to 100% premium on costs over open specifications.

520 Kirkland Way, Suite 301
Kirkland, WA 98033
Phone: 425-828-0500 Fax: 425-828-0700
www.prodims.com

Structural Costs

Coupeville HS Gym

Name: Wa State School Seismic Safety Assessment
Second Name: Coupeville HS Gym
Location: Coupeville, WA
Design Phase: ROM Cost Estimates
Date of Estimate: April 27, 2019
Date of Revision:
Month of Cost Basis: 4Q, 2018, 1Q, 2019

Areas	sqft
Building Area	10,000
Total Areas	10,000

Construction Cost Estimate

Subtotal Direct Cost From the Estimate Detail Below $ 203,011

	Percentage of Previous Subtotal	Amount	Running Subtotal
Scope Contingency	10.0%	$ 20,301	$ 223,312
General Conditions	10.0%	$ 20,301	$ 243,613
Home Office Overhead	5.0%	$ 10,151	$ 253,764
Profit	6.0%	$ 12,181	$ 265,945
Escalation Not Included-Costs in 1Q, 2019 Dollars	0.0%	$ -	$ 265,945
Washington State Sales Tax	0.0%	$ -	$ 265,945

Total Markups Applied to the Direct Cost 31.00%
Markups are multiplied from each subtotal- They are not multiplied from the direct cost

		$/sqft
TOTAL ESTIMATED CONSTRUCTION COST-->	**$ 265,945**	**$ 26.59**
-20% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE -->	**$ 212,756**	**$ 21.28**
+50% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE -->	**$ 398,917**	**$ 39.89**

Please see the Master Summary for Assumptions and Qualifications for ROM Cost Estimates

Direct Cost of Construction

WBS	Description	Quantity	U of M	Labor	Labor Total	Material	Material Total	Equipment	Equipment Total	Total $/U of M	Direct Cost
1 - Seismic Retrofit											
Foundations											
	New Footing Extension System for Shotcrete Walls - Excavation, Backfill, Formwork, Concrete, Reinforcing and detailing.	30.0	cuyd	$ 464.00	$ 13,920.00	$ 261.00	$ 7,830.00	$ 43.50	$ 1,305.00	$ 768.50	$ 23,055.00
Substructure											
	Remove and Reinstall Pavement System for Fotting Installation	540	sqft	$ 6.60	$ 3,564.00	$ 5.40	$ 2,916.00	$ 0.72	$ 388.80	$ 12.72	$ 6,868.80
Superstructure											
Roof Systems											
	Shotcrete Wall Systems - Shotcrete, Formwork, Reinforcing, Screeding at Perimeter of Building	100.5	cuyd	$ 666.40	$ 66,973.20	$ 313.60	$ 31,516.80	$ 58.80	$ 5,909.40	$ 1,038.80	$ 104,399.40
Exterior Closure											
Exterior Wall System											
	Exterior Wall Finish System Over Shotcrete Wall and Detailing of Door Jambs/Heads - Allowance	4,050	sqft	$ 8.80	$ 35,640.00	$ 7.20	$ 29,160.00	$ 0.96	$ 3,888.00	$ 16.96	$ 68,688.00
Subtotal of the Direct Cost of Construction				**Coupeville HS Gym**							**$ 203,011**

PRODIMS
PROJECT MANAGEMENT SERVICES

520 Kirkland Way, Suite 301
Kirkland, WA 98033
Phone: 425-828-0500 Fax: 425-828-0700
www.prodims.com

Non-Structural Costs

Name: **Wa State School Seismic Safety Assessment**
Second Name: **Coupeville HS Gym**
Location: **Coupeville, WA**
Design Phase: **ROM Cost Estimates**
Date of Estimate: **April 27, 2019**
Date of Revision:
Month of Cost Basis: **4Q, 2018, 1Q, 2019**

Areas	sqft
Building Area	10,000
Total Areas	**10,000**

Coupeville HS Gym

Construction Cost Estimate

Subtotal Direct Cost From the Estimate Detail Below $ 2,650

	Percentage of Previous Subtotal	Amount	Running Subtotal
Scope Contingency	10.0%	$ 265	$ 2,915
General Conditions	10.0%	$ 265	$ 3,180
Home Office Overhead	5.0%	$ 133	$ 3,313
Profit	6.0%	$ 159	$ 3,472
Escalation Not Included-Costs in 1Q, 2019 Dollars	0.0%	$ -	$ 3,472
Washington State Sales Tax	0.0%	$ -	$ 3,472

Total Markups Applied to the Direct Cost 31.00%
Markups are multiplied from each subtotal- They are not multiplied from the direct cost

		$/sqft
TOTAL ESTIMATED CONSTRUCTION COST	**$ 3,472**	**$ 0.35**
-20% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE	**$ 2,777**	**$ 0.28**
+50% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE	**$ 5,207**	**$ 0.52**

Please see the Master Summary for Assumptions and Qualifications for ROM Cost Estimates

Direct Cost of Construction

WBS	Description	Quantity	U of M	Labor	Labor Total	Material	Material Total	Equipment	Equipment Total	Total $/U of M	Direct Cost
	2- Non- Structural Demo/Restoration*										
	Interiors and M/E/P/FP systems										
	Interior Wall/Door/Casework/Specialties Systems										
	Electrical Systems on Bldg Exterior - Lighting Relocation	1	set	$ 1,375.00	$ 1,375.00	$ 1,125.00	$ 1,125.00	$ 150.00	$ 150.00	$ 2,650.00	$ 2,650.00
	*Allows 30 percent of existing nonstructural systems M/E/P/FP require upgrades/replacement.										
	Subtotal of the Direct Cost of Construction			**Coupeville HS Gym**							**$ 2,650**

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Appendix D: Earthquake Performance Assessment Tool (EPAT) Worksheet

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Washington Schools Earthquake Performance Assessment Tool (EPAT)
MAIN PAGE

Full District Name	Coupeville		
Point of Contact	Jaime Easton		
Telephone	360-678-2404		
E-Mail	jeaston@coupeville.k12.wa.us		
File Name	Coupeville, Coupeville High School, Gymnasium EPAT	**File Date:**	7/5/2018

District	Coupeville
Facility Name	Coupeville High School
Building Part Name	Gymnasium

Earthquake Ground Motion (% g)		**Earthquake Hazards**	
20% in 50 year PGA	26.7%	**Site Class**	D
10% in 50 year PGA	34.8%	**Ground Shaking Hazard**	High
2% in 50 year PGA	58.9%	**Liquefaction Potential**	Very Low
Percentile S_s *Among all WA Campuses*	90%	**Combined Earthquake Hazard Level**	High

Total Building Part Area (Square Feet)	**Building Evaluated By**	**Input Data by Person(s)**
10,000	DNR, Reid Middleton	Tim Green, Reid Middleton

The Earthquake Ground Motion and Earthquake Hazard Hazards data shown above are primarily for use and interpretation by engineers.

Refer to the EPAT User Guide for technical explanations of the Earthquake Ground Motion and the Earthquake Hazards information.

Washington Schools Earthquake Performance Assessment Tool (EPAT)
BUILDING DATA PAGE

Facility Name	Coupeville High School
Building Name	Gymnasium
Building Use	Sport

Data Entry Item	User Entered Values	Default Values	Used for BCA
Seismic Data			
Decimal Latitude	48.206599	48.206599	48.206599
Decimal Longitude	-122.68603	-122.68603	-122.68603
Site Class (Soil/Rock Type)	D	D	D
Liquefaction Potential	Very Low	Very Low	Very Low
Geographic Region for Seismic Zones	Puget Sound	Puget Sound	Puget Sound
Building Structural Data			
HAZUS Building Type***	RM1	Reinforced Masonry Bearing Walls w/ Wood or Metal Diaphragms	RM1
Number of Stories (Excluding Basement)***	1		1
Year Built***	1981		1981
Code for Building Design (if known)	UBC	**Use the Drop-Down menus to Select Data Entries for the Bright Green Shaded data cells.**	UBC
Design Code Year (if known)	1976-1985		1976-1985
Severe Vertical Irregularity***	No		No
Moderate Vertical Irregularity***	Yes		Yes
Plan (Horizontal) Irregularity***	No		No

*** **Mandatory Data Entry**

Washington Schools Earthquake Performance Assessment Tool (EPAT)
RESULTS SUMMARY

District Name	Coupeville	**Existing Building Life Safety Risk & Priority for Retrofit or Replacement**
School Name	Coupeville High School	
Building Name	Gymnasium	Moderate

Building Data

HAZUS Building Type	RM1	Reinforced Masonry Bearing Walls w/ Wood or Metal Diaphragms
Year Built	1981	These parameters determine the capacity of the existing building to withstand earthquake forces.
Building Design Code	1976-1985 UBC	
Existing Building Code Level	Moderate	
Geographic Area	Puget Sound	
Severe Vertical Irregularity	No	Buildings with irregularities have greater earthquake damage than otherwise similar buildings that are regular.
Moderate Vertical Irregularity	Yes	
Plan Irregularity	No	

Seismic Data

Earthquake Ground Shaking Hazard Level	High	Frequency and severity of earthquakes at this site
Percentile S_s Among WA K-12 Campuses	90%	Earthquake ground shaking hazard is higher than 90% of WA campuses.
Site Class (Soil or Rock Type)	D	Stiff Soil
Liquefaction Potential	Very Low	Liquefaction increases the risk of major damage to a building
Combined Earthquake Hazard Level	High	Earthquake ground shaking and liquefaction potential

Severe Earthquake Event (Design Basis Earthquake Ground Motion)[1]

Building State	Building Damage Estimate[2]	Probability Building is not Repairable[3]	Life Safety[4] Risk Level	Most Likely Post-Earthquake Tagging[5]
Existing Building	44%	40%	Moderate	Red
Life Safety Retrofit Building	20%	12%	Low	Green/Yellow
Current Code Building	16%	8.4%	Very Low	Green/Yellow

1. 2/3rds of the 2% in 50 year ground motion
2. Percentage of building replacement value.
3. Probability building is in the Extensive or Complete damage states. For existing buildings, the probability that the building is not economically repairable may be higher: some buildings in the Moderate Damage state are also likely to be demolished.
4. Based on probability of Complete Damage State.
5. Most likely post-earthquake damage state per ATC-20.

Source for the Data Entered into the Tool

Building Evaluated By:	DNR, Reid Middleton
Person(s) Who Entered Data in EPAT:	Tim Green, Reid Middleton
User Overrides of Default Parameters:	Building Design Code Year, Latitude, Longitude, Site Class, Liquefaction, Geographic Region

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Appendix E: Coupeville High School Record Drawings

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GENERAL NOTES

THESE GENERAL NOTES ARE TO BE USED AS A SUPPLEMENT TO THE SPECIFICATIONS. ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THE SPECIFICATIONS, THESE GENERAL NOTES AND THE SITE CONDITIONS SHALL BE REPORTED TO THE ARCHITECT, WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK. THE GENERAL CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION. THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE REQUIRED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOB SITE SAFETY; ERECTION MEANS, METHODS, AND SEQUENCES; TEMPORARY SHORING, FORMWORK, AND BRACING; USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES. PROVIDE ADEQUATE RESISTANCE TO LOADS ON THE STRUCTURES DURING CONSTRUCTION PER SEI/ASCE STANDARD NO. 37-02 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION."

CONSTRUCTION OBSERVATION BY THE STRUCTURAL ENGINEER IS FOR GENERAL CONFORMANCE WITH DESIGN ASPECTS ONLY AND IS NOT INTENDED IN ANY WAY TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

STANDARDS

ALL METHODS, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2003 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED AND ADOPTED BY THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION.

CONTRACT DRAWINGS / DIMENSIONS

ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. CONSULTANT DRAWINGS BY OTHER DISCIPLINES ARE SUPPLEMENTARY TO ARCHITECTURAL DRAWINGS. REPORT DIMENSIONAL OMISSIONS OR DISCREPANCIES BETWEEN ARCHITECTURAL DRAWINGS AND STRUCTURAL, MECHANICAL, ELECTRICAL OR CIVIL DRAWINGS TO ARCHITECT PRIOR TO PROCEEDING WITH WORK.

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS. PRIMARY STRUCTURAL ELEMENTS ARE DIMENSIONED ON STRUCTURAL PLANS AND DETAILS AND OVERALL LAYOUT OF STRUCTURAL PORTION OF WORK. SOME SECONDARY ELEMENTS ARE NOT DIMENSIONED SUCH AS, WALL CONFIGURATIONS, INCLUDING EXACT DOOR AND WINDOW LOCATIONS, ALCOVES, SLAB SLOPES AND DEPRESSIONS, CURBS, ETC. VERTICAL DIMENSIONAL CONTROL IS DEFINED BY ARCHITECTURAL WALL SECTIONS AND BUILDING SECTIONS. STRUCTURAL DETAILS SHOW DIMENSIONAL RELATIONSHIPS TO CONTROL DIMENSIONS DEFINED BY ARCHITECTURAL DRAWINGS. DETAILING AND SHOP DRAWING PRODUCTION FOR STRUCTURAL ELEMENTS WILL REQUIRE DIMENSIONAL INFORMATION CONTAINED IN **BOTH** ARCHITECTURAL AND STRUCTURAL DRAWINGS.

DESIGN CRITERIA

VERTICAL LOADS

AREA	DESIGN DEAD LOAD	LIVE LOAD (2)	PARTITION LOAD	CONCENTRATED LOADS
CAT WALK ROOF	25 PSF	25 PSF 25 PSF (1)	+EQUIPMENT	300#
CLASSROOM MECH. ROOM	70 PSF	40 PSF 40 PSF	20 PSF +EQUIPMENT	1,000#
CORRIDORS (ABOVE 1ST FLR)	70 PSF	80 PSF		2,000#

(1) DRIFT LOAD PER ASCE 7-02, SECTION 7.7.
(2) LIVE LOADS EXCEPT SNOW LOADS ARE REDUCED PER IBC SECTION 1607.9.

LATERAL FORCES

LATERAL FORCES ARE TRANSMITTED BY DIAPHRAGM ACTION OF ROOF AND FLOORS TO SHEAR WALLS AND BRACED FRAMES. LOADS ARE THEN TRANSFERRED TO FOUNDATION BY SHEAR WALL ACTION WHERE ULTIMATE DISPLACEMENT IS RESISTED BY PASSIVE PRESSURE OF EARTH AND/OR SLIDING FRICTION. OVERTURNING IS RESISTED BY DEAD LOAD OF THE STRUCTURE.

WIND:

THE BUILDING MEETS THE CRITERIA TO USE THE "METHOD 1 - SIMPLIFIED PROCEDURE" PER ASCE 7-02.

- EXPOSURE CATEGORY = B
- BASIC WIND SPEED, V_{3S} = 85 MPH
- WIND IMPORTANCE FACTOR, I_W = 1.0
- BUILDING CATEGORY PER TABLE 1604.5 = II
- INTERNAL PRESSURE COEFFICIENT (ENCLOSED) = ± 0.18
- COMPONENTS AND CLADDING LOADS

ROOF SURFACES [1]

EFFECTIVE WIND AREA	POSITIVE PRESSURES (PSF)			NEGATIVE PRESSURES (PSF)		
	ZONE [2]					
	1	2	3	1	2	3
10 SF	10.0	10.0	10.0	-13.7	-23.8	-53.2
20 SF	10.0	10.0	10.0	-13.3	-21.9	-32.9
50 SF	10.0	10.0	10.0	-12.8	-19.4	-29.9
100 SF	10.0	10.0	10.0	-12.4	-17.5	-27.6

WALL SURFACES AND ROOF OVERHANGS [1]

EFFECTIVE WIND AREA	POSITIVE PRESSURE (PSF)		NEGATIVE PRESSURE (PSF)		ROOF OVERHANGS (PSF)	
	ZONE [2]					
	4	5	4	5	4	5
10 SF	15.0	15.0	-16.2	-20.0	-27.9	-46.9
20 SF	14.3	14.3	-15.5	-18.6	-27.9	-42.2
50 SF	13.3	13.3	-14.6	-16.9	-27.9	-36.2
100 SF	12.8	12.8	-14.0	-15.5	-27.9	-31.7
500 SF	11.2	11.2	-12.4	-12.4	-	-

1. NET WIND PRESSURES AT ROOF SURFACES = VALUE FROM TABLE ABOVE -2/3 DEAD LOAD.
2. ZONES ARE AS DEFINED BY FIGURE 1609.6.2.2 IN THE 2003 IBC.

SEISMIC: $V = C_s W$

WHERE

$$C_s = \frac{S_{DS}}{\left(\frac{R}{I_e}\right)}; \text{ WITH}$$

$$C_s \text{ MINIMUM} = 0.044\, S_{DS}\, I_e$$

&

$$C_s \text{ MAXIMUM} = \frac{S_{D1}}{\left(\frac{R}{I_e}\right)T}$$

SEISMIC IMPORTANCE FACTOR, I_e = 1.25
SEISMIC USE GROUP PER TABLE 1604.5 FOOTNOTE A = II
SPECTRAL RESPONSE ACCELERATIONS S_S = 1.315 S_1 = 0.489
SITE CLASS PER GEOTECHNICAL REPORT = "C"
SPECTRAL RESPONSE COEFFICIENTS S_{DS} = 0.877 & S_{D1} = 0.427
SEISMIC DESIGN CATEGORY = D
W = DEAD LOAD OF BUILDING
ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE ANALYSIS
RESPONSE MODIFICATION FACTOR PER TABLE 1617.6.2 R = 6.0 (MAIN BUILDING), 5.0 (GYM)
C_s = 0.183 (MAIN BUILDING), 0.220 (GYM)

PIPES, DUCTS AND MECHANICAL EQUIPMENT SUPPORTED OR BRACED FROM STRUCTURE: CONFORM TO SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC. PUBLICATION "SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS". SPRINKLER LINE ATTACHMENTS SHALL CONFORM TO NFPA PAMPHLET 13.

FOUNDATION DESIGN CRITERIA ("GEOTECHNICAL INVESTIGATION -NEW COUPEVILLE HIGH SCHOOL" BY MATERIALS TESTING & CONSULTING, INC. MARCH, 2005)

SOIL BEARING PRESSURE: 2500 PSF*

ACTIVE PRESSURE - RESTRAINED: 50 PCF (ASSUMED)
ACTIVE PRESSURE - UNRESTRAINED: 40 PCF (ASSUMED)
PASSIVE RESISTANCE: 300 PCF
COEFFICIENT OF FRICTION: .35
*1/3 INCREASE ALLOWED FOR SEISMIC OR WIND LOADING

ALL FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED EARTH OR "STRUCTURAL BACKFILL". NATIVE EARTH BEARING SHALL BE SURFACE COMPACTED. AREAS OVER-EXCAVATED SHALL BE BACKFILLED WITH LEAN CONCRETE (F'c=2000 PSI) OR "STRUCTURAL BACKFILL". AREAS DESIGNATED "STRUCTURAL BACKFILL" SHALL BE FILLED WITH APPROVED WELL-GRADED BANKRUN MATERIAL. MAXIMUM SIZE OF ROCK 4". FROZEN SOIL, ORGANIC MATERIAL AND DELETERIOUS MATTER NOT ALLOWED. COMPACT TO AT LEAST 95% OF ITS MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557. CONTRACTOR SHALL EXERCISE EXTREME CARE DURING EXCAVATION TO AVOID DAMAGE TO BURIED LINES, TANKS, AND OTHER CONCEALED ITEMS. UPON DISCOVERY, DO NOT PROCEED WITH WORK UNTIL RECEIVING WRITTEN INSTRUCTIONS FROM ARCHITECT. A COMPETENT REPRESENTATIVE OF THE OWNER SHALL INSPECT ALL FOOTING EXCAVATIONS FOR SUITABILITY OF BEARING SURFACES PRIOR TO PLACEMENT OF REINFORCING STEEL. PROVIDE DRAINAGE AND DEWATERING AROUND ALL WORK TO AVOID WATER-SOFTENED FOOTINGS. PILE SHALL CONFORM TO THE REQUIREMENTS OF IBC SECTIONS 1808 & 1810.

FREE DRAINING BACKFILL MATERIAL FOR RETAINING & BASEMENT WALLS

A CLEAN, FREE DRAINING, WELL GRADED GRANULAR MATERIAL CONFORMING TO ASTM D2487 GW OR SW WHOSE MAXIMUM PARTICLE SIZE DOES NOT EXCEED 3/4" AND WHOSE FINES CONTENT (MATERIAL PASSING THE NO. 200 SIEVE) DOES NOT EXCEED 5%,

$$\text{WITH A MAXIMUM DUST RATIO} = \frac{\text{\% PASSING U.S. NO. 200 SIEVE}}{\text{\% PASSING U.S. NO. 40 SIEVE}} = 2/3 \text{ MAX.}$$

CONCRETE

CAST-IN-PLACE CONCRETE

CODES, SPECIFICATIONS, AND STANDARDS; CONCRETE WORK SHALL CONFORM TO THE FOLLOWING CODES, SPECIFICATIONS, AND STANDARDS, AND THE STANDARDS AND SPECIFICATIONS THEY REFERENCE. THE CONTRACTOR SHALL OBTAIN AND HAVE READILY AVAILABLE ON SITE THE LATEST VERSION OF THE "ACI MANUAL OF CONCRETE PRACTICE":

ACI:
1. ACI-116 'CEMENT AND CONCRETE TERMINOLOGY'.
2. ACI-301 'STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE'.
3. ACI-302 'GUIDE TO CONCRETE FLOOR AND SLAB CONSTRUCTION'.
4. ACI-304 'GUIDE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE'.
5. ACI-305 'HOT WEATHER CONCRETING'.
6. ACI-306 'COLD WEATHER CONCRETING'.
7. ACI-308 'STANDARD SPECIFICATION FOR CURING CONCRETE'.
8. ACI-309 'STANDARD PRACTICE FOR CONSOLIDATION OF CONCRETE'.
9. ACI-311 'GUIDE FOR CONCRETE INSPECTION'.
10. ACI-315 'DETAILS AND DETAILING OF CONCRETE REINFORCEMENT'.
11. ACI-318 'BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE'.
12. ACI-506 'GUIDE FOR SHOTCRETING'.
13. ACI-117 'STANDARD SPECIFICATIONS FOR TOLERANCES'
14. ACI-347 'GUIDE TO FORMWORK OF CONCRETE'

ASTM:
1. ASTM C33 'STANDARD SPECIFICATION FOR CONCRETE AGGREGATES'.
2. ASTM C94 'STANDARD SPECIFICATION FOR READY-MIX CONCRETE'.
3. ASTM C150 'STANDARD SPECIFICATION FOR PORTLAND CEMENT'.
4. ASTM C260 'STANDARD SPECIFICATION FOR AIR-ENTRAINED ADMIXTURES FOR CONCRETE'.
5. ASTM C309 'STANDARD SPECIFICATION FOR LIQUID MEMBRANE-FORMING COMPOUNDS FOR CURING CONCRETE'.
6. ASTM C494 'STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE'.
7. ASTM C595 'STANDARD SPECIFICATION FOR BLENDED HYDRAULIC CEMENTS'.
8. ASTM C618 'STANDARD SPECIFICATION FOR ... FLY-ASH...', MAXIMUM LOSS ON IGNITION SHALL BE 1.0%.
9. ASTM C1017 'STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR USE IN PRODUCING FLOWING CONCRETE'.
10. ASTM C-1116 'SYNTHETIC FIBER REINFORCED CONCRETE AND SHOTCRETE'.
11. ASTM C-1218 'STANDARD TEST METHOD FOR WATER-SOLUBLE CHLORIDE IN MORTAR AND CONCRETE'.

MIX DESIGNS: THE CONTRACTOR SHALL DESIGN CONCRETE MIXES THAT, MEET OR EXCEED THE REQUIREMENTS OF THE CONCRETE MIX TABLE. THE MIX DESIGNS SHALL FACILITATE ANTICIPATED PLACEMENT METHODS, WEATHER, REBAR CONGESTION, ARCHITECTURAL FINISHES, CONSTRUCTION SEQUENCING, STRUCTURAL DETAILS, AND ALL OTHER FACTORS REQUIRED TO PROVIDE A STRUCTURALLY SOUND, AESTHETICALLY ACCEPTABLE FINISHED PRODUCT. WATER REDUCING ADMIXTURES WILL LIKELY BE REQUIRED TO MEET THESE REQUIREMENTS. CONCRETE MIX DESIGNS SHALL CLEARLY INDICATE THE TARGET SLUMP. SLUMP TOLERANCE SHALL BE ± 1-1/2 INCHES.

AGGREGATE: COARSE AND FINE AGGREGATE SHALL CONFORM TO ASTM C-33

CEMENT: CEMENT SHALL CONFORM TO ASTM-150, TYPE II PORTLAND CEMENT, UNLESS NOTED OTHERWISE.

ALTERNATE MIX DESIGNS: VARIATIONS TO THE MIX DESIGN PROPORTIONS MAY BE ACCEPTED IF SUBSTANTIATED IN ACCORDANCE WITH ACI-318, CHAPTER 5. PROVIDE SUBMITTALS A MINIMUM OF TWO WEEKS PRIOR TO BID FOR DETERMINATION OF ACCEPTABILITY.

ADMIXTURES: ADMIXTURES SHALL BE BY MASTER BUILDERS, W.R. GRACE, OR PRE-APPROVED EQUAL. ALL MANUFACTURERS RECOMMENDATIONS SHALL BE FOLLOWED.

WATER: SHALL BE CLEAN AND POTABLE.

MAXIMUM CHLORIDE CONTENT: THE MAXIMUM WATER SOLUBLE CHLORIDE CONTENT SHALL NOT EXCEED 0.15% BY WEIGHT OF CEMENTITIOUS MATERIAL UNLESS NOTED OTHERWISE.

CONCRETE EXPOSED TO WEATHER: PROVIDE 5.0% TOTAL AIR CONTENT FOR ALL CONCRETE EXPOSED TO WEATHER. TOTAL AIR CONTENT IS THE SUM OF ENTRAINED AIR PROVIDED BY ADMIXTURES AND NATURALLY OCCURRING ENTRAPPED AIR. AIR CONTENT SHALL BE TESTED PRIOR TO BEING PLACED IN THE PUMP HOPPER OR BUCKET; IT IS NOT REQUIRED TO BE TESTED AT THE DISCHARGE END OF THE PUMP HOSE. THE TOLERANCE ON ENTRAPPED AIR SHALL BE +2.0% AND -1.5% WITH THE AVERAGE OF ALL TESTS NOT LESS THAN THE SPECIFIED AMOUNT.

ITEM	DESIGN f'c (PSI)	MAX. W/C RATIO	MIN. (2) FLYASH (PCY)	MAX. AGGREGATE SIZE (IN)	NOTES	MIN. CEMENTITOUS (1) MATERIAL (SACKS/YARD)
SLAB ON GRADE	4000 @ 28 DAYS	0.45	100	3/4		5-1/2
FOUNDATIONS	3000 @ 28 DAYS	0.50	--	3/4		5
BASEMENT, RETAINING, AND STEM WALLS	4000 @ 28 DAYS	0.45	100	3/4		5-1/2
SLAB ON METAL DECK	4000 @ 28 DAYS	0.45	--	3/4		5-1/2
COLUMNS AND SHEAR WALLS U.N.O.	4000 @ 28 DAYS	0.50	--	3/8		5-1/2
ALL OTHER CONCRETE	4000 @ 28 DAYS	0.50	--	3/4		5-1/2

CONCRETE MIX NOTES:

1. TOTAL CEMENTITOUS MATERIAL IS THE SUM OF ALL CEMENT PLUS FLYASH.

2. AT THE CONTRACTORS OPTION FLYASH MAY BE SUBSTITUTED FOR CEMENT BUT SHALL NOT EXCEED 25% BY WEIGHT OF TOTAL CEMENTITIOUS MATERIAL.

CONCRETE PLACEMENT

PLACE CONCRETE FOLLOWING ALL APPLICABLE ACI RECOMMENDATIONS. CONCRETE SHALL BE PROPERLY CONSOLIDATED PER ACI 309 USING INTERIOR MECHANICAL VIBRATORS, DO NOT OVER-VIBRATE. CONCRETE SHALL BE POURED MONOLITHICALLY BETWEEN CONSTRUCTION OR EXPANSION JOINTS. IF CONCRETE IS PLACED BY THE PUMP METHOD, HORSES SHALL BE PROVIDED TO SUPPORT THE HOSE, **THE HOSE SHALL NOT BE ALLOWED TO RIDE ON THE REINFORCING.** WEATHER FORECASTS SHALL BE MONITORED AND ACI RECOMMENDATIONS FOR HOT AND COLD WEATHER CONCRETING SHALL BE FOLLOWED AS REQUIRED. CONCRETE SHALL NOT FREE FALL MORE THAN 5 FEET DURING PLACEMENT WITHOUT WRITTEN APPROVAL OF STRUCTURAL ENGINEER.

FORMWORK STRIPPING

COLUMNS & WALLS - COLUMNS AND WALLS NOT SUPPORTING FRAMING WEIGHT MAY BE STRIPPED AS SOON AS FORMS CAN BE REMOVED WITHOUT DAMAGING THE CONCRETE AND THE CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 500 PSI.

COLD WEATHER PLACEMENT

1. COLD WEATHER IS DEFINED BY ACI 306 AS "A PERIOD WHEN FOR MORE THAN 3 SUCCESSIVE DAYS THE MEAN DAILY TEMPERATURE DROPS BELOW 40° F."
2. NO CONCRETE SHALL BE PLACED ON FROZEN OR PARTIALLY FROZEN GROUND. THAWING THE GROUND WITH HEATERS IS PERMISSIBLE.
3. CONCRETE MIX TEMPERATURES SHALL BE AS SHOWN BELOW. HEATING OF WATER AND/OR AGGREGATES MAY BE REQUIRED TO ATTAIN THESE TEMPERATURES.
4. THE CONCRETE MAY REQUIRE PROTECTION FOR 4-7 DAYS AFTER POURING. IF TEMPERATURES REMAIN BELOW FREEZING, INSULATING BLANKET COVERAGE IS REQUIRED. IF TEMPERATURES ARE SLIGHTLY BELOW FREEZING (30° F MIN.) AT NIGHT AND ABOVE FREEZING DURING THE DAY, KRAFT PAPER WITH COMPLETE COVERAGE MAY BE USED IN LIEU OF INSULATED BLANKETS.
5. NO ADDITIVES CONTAINING CHLORIDES SHALL BE USED. USE "POZZUTEC 20+" BY MASTER BUILDERS OR "POLARSET" BY W.R. GRACE OR PRE-APPROVED EQUAL.

CONDITION OF PLACEMENT AND CURING		WALLS & SLABS	FOOTINGS
MIN. TEMP. FRESH CONCRETE AS MIXED FOR WEATHER INDICATED, DEGREES F.	ABOVE 30° F. 0 TO 30° F. BELOW 0° F.	60 65 70	55 60 65
MIN. TEMP. FRESH CONCRETE AS PLACED AND MAINTAINED, DEGREES F.		55	50
MAX. ALLOWABLE GRADUAL DROP IN TEMP. THROUGHOUT FIRST 24 HOURS AFTER END OF PROTECTION, DEGREES F.		50	40

HOT OR WINDY WEATHER PLACEMENT

HOT WEATHER IS DEFINED BY ACI 305 AS "ANY COMBINATION OF HIGH AIR TEMPERATURE, LOW RELATIVE HUMIDITY, AND WIND VELOCITY, TENDING TO IMPAIR THE QUALITY OF FRESH HARDENED CONCRETE." ACI 305 FIGURE 2.1.5 SHALL BE USED BY THE CONTRACTOR TO ESTIMATE THE RATE OF EVAPORATION. WHEN THE ESTIMATED RATE OF EVAPORATION IS GREATER THAN 0.2 PSF/HOUR THE PLACEMENT SHALL BE CONSIDERED A HOT WEATHER PLACEMENT. PRECAUTIONS AGAINST PLASTIC SHRINKAGE CRACKING ARE NECESSARY. PRECAUTIONS TAKEN BY THE CONTRACTOR VARY DEPENDING UPON THE FACTORS ASSOCIATED WITH WATER EVAPORATION AND INCLUDE BUT ARE NOT LIMITED TO:

1. LIMITING CONCRETE TEMPERATURE TO 100°F AT TIME OF PLACEMENT.
2. APPLICATION OF AN EVAPORATION RETARDER.
3. USE OF FOG SPRAY.
4. REDUCTION OF POUR SIZE.
5. PLACING CONCRETE AT NIGHT.

CONTROL AND CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL MEET THE REQUIREMENTS OF ACI 301 SECTIONS 2.2.2.5 AND 5.3.2.6. SPECIAL BONDING METHODS PER SECTION 5.3.2.6 SHALL BE SATISFIED BY ITEM 6 BELOW UNLESS OTHERWISE DETAILED ON THE STRUCTURAL DRAWINGS. WHERE CONSTRUCTION JOINTS ARE NOT SHOWN ON PLAN OR ADDITIONAL CONSTRUCTION JOINTS ARE REQUIRED SUBMIT PROPOSED JOINTING FOR STRUCTURAL ENGINEERS APPROVAL. PROVIDE CONSTRUCTION JOINTS AS INDICATED BELOW UNLESS NOTED OTHERWISE ON THE PLANS:

1. SLABS ON GRADE: PROVIDE CONSTRUCTION AND/OR CONTROL JOINTS AT 16 FEET O.C. MAXIMUM FOR UNEXPOSED SLABS ON GRADE AND 12 FEET O.C. FOR EXPOSED SLABS ON GRADE.

2. WALLS AND COLUMNS: COORDINATE CONSTRUCTION JOINTS WITH ARCHITECTURAL REVEALS.

3. BONDING AGENT: WHERE BONDING AGENT IS SPECIFICALLY CALLED OUT ON THE STRUCTURAL DRAWINGS USE "WELD CRETE" BY LARSON PRODUCTS CORPORATION OR PRE-APPROVED EQUAL. FOLLOW ALL MANUFACTURERS RECOMMENDATIONS.

4. ATTACHMENT OF NEW CONCRETE TO EXISTING: WHERE SHOWN, ROUGHEN CONCRETE TO A MINIMUM AMPLITUDE OF 1/4" USING IMPACT HAMMER. REMOVE ALL LOOSE OR DAMAGED CONCRETE, THOROUGHLY FLUSH ALL SURFACES WITH POTABLE WATER, AIR BLAST WITH OIL FREE COMPRESSED AIR TO REMOVE ALL WATER.

EMBEDDED ITEMS

EMBEDDED CONDUIT IS NOT PERMITTED IN SLAB EXCEPT WHERE SPECIFICALLY SHOWN. WHERE ALLOWED IT SHALL BE PLACED AND REINFORCED PER THE TYPICAL CONCRETE DETAILS. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE. ALL EMBED PLATES SHALL BE SECURELY FASTENED IN PLACE. ALL EMBEDDED STEEL ITEMS EXPOSED TO EARTH OR WEATHER SHALL BE HOT-DIP GALVANIZED UNLESS NOTED OTHERWISE.

CONCRETE CURING AND SEALING

CURING PROCEDURES SHALL BE AS REQUIRED IN THE SPECIFICATIONS.

GROUT

NON-SHRINK GROUT: MASTER BUILDERS "MASTERFLOW 555" OR PRE-APPROVED EQUAL. GROUT SHALL CONFORM TO CRD-C621 AND ASTM C1107 GRADE B WHEN TESTED AT A FLUID CONSISTENCY PER CRD- C611-85 FOR 30 MINUTES. GROUT MAY BE PLACED FROM A 25 SECOND FLOW TO A STIFF PACKING CONSISTENCY. FILL OR PACK ENTIRE SPACE UNDER PLATES OR SHAPES. NO GROUTING SHALL BE DONE BELOW 40° F. PREPARE THE EXISTING CONCRETE SURFACES TO PREVENT PREMATURE LOSE OF WATER FROM THE GROUT THAT WOULD AFFECT PROPER CURING.

EPOXY GROUT: MASTER BUILDERS "PASTE LPL", OR HILTI "HY-150", OR SIMPSON "S.E.T.", OR COVERT OPERATIONS "CIA-GEL 7000", OR PRE-APPROVED EQUAL. TWO PART LOW SAG EPOXY. GROUT MAY CONTAIN QUARTZ SAND AGGREGATE AS PROPORTIONED BY THE MANUFACTURER. USE EQUIPMENT WHICH WILL ACCURATELY MIX AND DISPENSE THE COMPONENTS. HOLE SHALL BE DRY AND CLEANED WITH WIRE BRUSH AND PRESSURIZED AIR JUST PRIOR TO INSTALLING GROUT. THE REBAR OR ROD SHALL BE CLEAN AND INSTALLED SLOWLY, AND SHALL BE ROTATED AS IT IS PUSHED INTO THE HOLE. COLD WEATHER GROUTING SHALL BE DONE WITH PROPER GROUT FORMULA. FIRST STAGES OF THE GROUTING OPERATION SHALL BE INSPECTED BY AN AGENT AS RECOMMENDED BY THE OWNER.

REINFORCING STEEL

REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60 (GRADE A706 FOR WELDED BARS UNLESS OTHERWISE NOTED, GRADE 40 FOR BEND OUT BARS). DETAIL, FABRICATE AND PLACE PER ACI 315 AND ACI 318. HORIZONTAL BEAM BARS, VERTICAL COLUMN BARS AND VERTICAL SHEAR WALL BARS SHALL MEET THE REQUIREMENTS OF ACI SECTION 21.2.5. REINFORCEMENT SHALL COMPLY WITH ASTM A706 FOR LOW ALLOY STEEL. BILLET STEEL A615 GRADE 60 REINFORCEMENT MAY BE USED IF THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED STRENGTH BY MORE THAN 18,000 PSI AND THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRESS TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.

WELDED WIRE FABRIC REINFORCEMENT. SHALL CONFORM TO ASTM A-82 AND A-185. LAP ONE FULL MESH ON SIDES AND ENDS.

REINFORCING SPLICE AND DEVELOPMENT LENGTH SCHEDULE

BAR SIZE	MINIMUM LAP SPLICE LENGTHS ("Ls")		MINIMUM DEVELOPMENT LENGTHS ("Ld")		MINIMUM EMBEDMENT LENGTH FOR STANDARD END HOOKS ("Ldh")
	TOP BARS(1)	OTHER BARS	TOP BARS(1)	OTHER BARS	
#3	2'-0"	1'-6"	1'-6"	1'-3"	0'-7"
#4	2'-8"	2'-0"	2'-0"	1'-7"	0'-9"
#5	3'-4"	2-7"	2-7"	2-0"	1'-0"
#6	4'-0"	3'-1"	3'-1"	2'-4"	1'-2"
#7	5'-10"	4'-6"	4'-6"	3'-6"	1'-5"
#8	6'-8"	5'-2"	5'-2"	3'-11"	1'-7"
#9	7'-6"	5'-10"	5'-10"	4'-6"	1'-9"
#10	8'-6"	6'-6"	6'-6"	5'-0"	2'-0"
#11	9'-5"	7'-3"	7'-3"	5'-7"	2'-3"
#14	MECHANICAL SPLICE REQUIRED		8'-8"	6'-8"	2'-8"
#18	MECHANICAL SPLICE REQUIRED		11'-7"	8'-11"	3'-7"

SPLICE TABLE NOTES:

1. "TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12" DEPTH OF CONCRETE CAST BELOW THEM.

REINFORCING STEEL COVER

PROVIDE CONCRETE COVER OVER REINFORCEMENT AS FOLLOWS, UNLESS NOTED OTHERWISE.

CONCRETE CAST AGAINST EARTH ------------ 3"
EXPOSED TO WEATHER OR EARTH ------------ 2"
TIES ON BEAMS AND COLUMNS ------------- 1-1/2"
WALLS AND SLABS NOT EXPOSED TO WEATHER---- 3/4"

MASONRY

MASONRY ASSEMBLIES: SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE REQUIREMENTS OF CHAPTER 21 OF THE IBC, AND SHALL BE TESTED PER SECTION 2105.2 OF THE IBC FOR COMPLIANCE WITH f'm. MINIMUM SPECIFIED COMPRESSIVE STRENGTH, f'm, SHALL BE 1500 PSI FOR CONCRETE MASONRY ASSEMBLIES AND 2700 PSI FOR HOLLOW CLAY MASONRY ASSEMBLIES.

HOLLOW CONCRETE MASONRY UNITS (CMU): SHALL CONFORM TO ASTM C90. MINIMUM FACE SHELL THICKNESS AS DEFINED BY ASTM C90, SECTION 5.3.1. PROVIDE GRADE N, MEDIUM WEIGHT BLOCK WITH MINIMUM SPECIFIED COMPRESSIVE STRENGTH AS NOTED ABOVE. CMU CONSTRUCTION SHALL BE SOLID GROUTED UNLESS NOTED OTHERWISE.

HOLLOW CLAY MASONRY UNITS: SHALL CONFORM TO ASTM C652. BRICK SHALL BE SOLID SHELL HOLLOW BRICK UNITS. MINIMUM FACE SHELL AND WEB THICKNESSES AS DEFINED BY TABLE 1 OF ASTM C652. PROVIDE GRADE SW, TYPE HBS, CLASS H60V BRICK WITH MINIMUM SPECIFIED COMPRESSIVE STRENGTH AS NOTED ABOVE. HOLLOW BRICK CONSTRUCTION SHALL BE SOLID GROUTED UNLESS NOTED OTHERWISE.

MASONRY VENEER: SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 14 OF THE IBC, AND THE PROJECT SPECIFICATIONS.

MORTAR: SHALL BE TYPE S PER IBC. CONFORM TO ASTM C270. MINIMUM COMPRESSIVE STRENGTH = 1800 PSI.

GROUT: GROUT FOR POURING SHALL BE A FLUID CONSISTENCY. CONFORM TO ASTM C476 AND ACI 530.1. f'g=2500 PSI MINIMUM AT 28 DAYS.

GROUT SHALL BE CONSOLIDATED BY MECHANICAL VIBRATION DURING PLACING BEFORE LOSS OF PLASTICITY IN A MANNER TO FILL THE GROUT SPACE. GROUT POURS GREATER THAN 12 INCHES SHALL BE RECONSOLIDATED BY MECHANICAL VIBRATION 15 TO 20 MINUTES AFTER PLACEMENT TO MINIMIZE VOIDS DUE TO WATER LOSS. GROUT POURS 12 INCHES OR LESS IN HEIGHT SHALL BE MECHANICALLY VIBRATED, OR PUDDLED. COVER AND KEEP DRY ALL MASONRY WORK DURING CONSTRUCTION AND PREVENT MOISTURE ABSORPTION INTO MASONRY UNTIL THE ROOFING IS COMPLETE.

mcg-ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

GENERAL NOTES

revision_

issued_
PERMIT 26 MAY 06

drawn_
RSC

checked_
BAM

sheet_
S0.01

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ORIGINAL SHEET IS 30" x 42".

REQUIREMENTS FOR ALL-WEATHER MASONRY CONSTRUCTION:

COLD WEATHER CONSTRUCTION: WHEN AMBIENT TEMPERATURE IS BELOW 40° F, IMPLEMENT COLD WEATHER PROCEDURES

PREPARATION	CONSTRUCTION	PROTECTION
COMPLY WITH THE FOLLOWING REQUIREMENTS PRIOR TO CONDUCTING MASONRY WORK: A. DO NOT LAY MASONRY UNITS HAVING EITHER A TEMPERATURE BELOW 20°F OR CONTAINING FROZEN MOISTURE, VISIBLE ICE, OR SNOW ON THEIR SURFACE. B. REMOVE VISIBLE ICE AND SNOW FROM THE TOP SURFACE OF EXISTING FOUNDATIONS AND MASONRY TO RECEIVE NEW CONSTRUCTION. HEAT THESE SURFACES ABOVE FREEZING, USING METHODS THAT DO NOT RESULT IN DAMAGE.	THESE REQUIREMENTS APPLY TO WORK IN PROGRESS AND ARE BASED ON AMBIENT TEMPERATURE. DO NOT HEAT WATER OR AGGREGATES USED IN MORTAR OR GROUT ABOVE 140° F (60° C). COMPLY WITH THE FOLLOWING REQUIREMENTS DURING THE FOLLOWING AMBIENT CONDITIONS: A. 40° F TO 32° F : (4.4° TO 3.2° C) HEAT SAND OR MIXING WATER TO PRODUCE MORTAR TEMPERATURE BETWEEN 40°F AND 120°F AT THE TIME OF MIXING. GROUT DOES NOT REQUIRE HEATED MATERIALS, UNLESS THE TEMPERATURE OF THE MATERIALS IS LESS THAT 32° F B. 32° F TO 25° F : (0° TO -3.9° C) HEAT SAND AND MIXING WATER TO PRODUCE MORTAR TEMPERATURE BETWEEN 40° F AND 120° F AT THE TIME OF MIXING. MAINTAIN MORTAR TEMPERATURE ABOVE FREEZING UNTIL USED IN MASONRY. HEAT GROUT AGGREGATES AND MIXING WATER TO PRODUCE GROUT TEMPERATURES BETWEEN 70° F AND 120° F AT THE TIME OF MIXING. MAINTAIN GROUT TEMPERATURE ABOVE 70° F AT THE TIME OF GROUT PLACEMENT. C. 25° F TO 20° F: (-3.9° TO -6.7° C) COMPLY WITH REQUIREMENTS ABOVE AND THE FOLLOWING: HEAT MASONRY SURFACES UNDER CONSTRUCTION TO 40° F (4.4° C) AND USE WIND BREAKS OR ENCLOSURES WHEN THE WIND VELOCITY EXCEEDS 15 MPH (24 KM/H). HEAT MASONRY TO A MINIMUM OF 40° F (4.4° C) PRIOR TO GROUTING. D. 20° F AND BELOW : (-6.7° C) COMPLY WITH REQUIREMENTS ABOVE AND THE FOLLOWING: PROVIDE AN ENCLOSURE AND AUXILIARY HEAT TO MAINTAIN AIR TEMPERATURE ABOVE 32° F (0° C) WITHIN THE ENCLOSURE.	THESE REQUIREMENTS APPLY AFTER MASONRY IS PLACED AND ARE BASED ON ANTICIPATED MINIMUM DAILY TEMPERATURE FOR GROUTED MASONRY AND ANTICIPATED MEAN DAILY TEMPERATURE FOR UNGROUTED MASONRY. PROTECT COMPLETED MASONRY IN THE FOLLOWING MANNER: A. MAINTAIN THE TEMPERATURE OF GLASS UNIT MASONRY ABOVE 40° F (4.4° C) FOR THE FIRST 48 HR AFTER CONSTRUCTION. B. 40° F TO 25° F : (4.4° C TO -3.9° C) PROTECT NEWLY CONSTRUCTED MASONRY BY COVERING WITH A WEATHER-RESISTIVE INSULATING MEMBRANE FOR 24 HR AFTER BEING COMPLETED. C. 25° F TO 20° F : (-3.9° C TO-6.7° C) COVER NEWLY CONSTRUCTED MASONRY COMPLETELY WITH WEATHER-RESISTIVE INSULATING BLANKETS, OR EQUAL PROTECTION, FOR 24 HR AFTER COMPLETION OF WORK. EXTEND TIME PERIOD TO 48 HR FOR GROUTED MASONRY, UNLESS THE ONLY CEMENT IN THE GROUT IS TYPE III PORTLAND CEMENT. D. 20° F AND BELOW : (-6.7° C) MAINTAIN NEWLY CONSTRUCTED MASONRY TEMPERATURE ABOVE 32° F (0° C) FOR AT LEAST 24 HR AFTER BEING COMPLETED BY USING HEATED ENCLOSURES, ELECTRIC HEATING BLANKETS, INFRARED LAMPS, OR OTHER ACCEPTABLE METHODS. EXTEND TIME PERIOD TO 48 HR FOR GROUTED MASONRY, UNLESS THE ONLY CEMENT IN THE GROUT IS TYPE III PORTLAND CEMENT.

HOT WEATHER CONSTRUCTION: IMPLEMENT APPROVED HOT WEATHER PROCEDURES AND COMPLY WITH THE FOLLOWING PROVISIONS

PREPARATION	CONSTRUCTION	PROTECTION
PRIOR TO CONDUCTING MASONRY WORK: A. WHEN THE AMBIENT AIR TEMPERATURE EXCEEDS 100° F (37.8°C), OR EXCEEDS 90° F (32.2° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR): 1. MAINTAIN SAND PILES IN A DAMP, LOOSE CONDITION. 2. PROVIDE NECESSARY CONDITIONS AND EQUIPMENT TO PRODUCE MORTAR HAVING A TEMPERATURE BELOW 120° F (48.9° C). B. WHEN THE AMBIENT TEMPERATURE EXCEEDS 115° F (46.1° C), OR EXCEEDS 105°F (40.6° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR), IMPLEMENT THE REQUIREMENTS ABOVE AND SHADE MATERIALS AND MIXING EQUIPMENT FROM DIRECT SUNLIGHT.	WHILE MASONRY WORK IS IN PROGRESS: A. WHEN THE AMBIENT AIR TEMPERATURE EXCEEDS 100° F (37.8°C), OR EXCEEDS 90° F (32.2° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR): 1. MAINTAIN TEMPERATURE OF MORTAR AND GROUT BELOW 120° F (48.9° C). 2. FLUSH MIXER, MORTAR TRANSPORT CONTAINER, AND MORTAR BOARDS WITH COOL WATER BEFORE THEY COME INTO CONTACT WITH MORTAR INGREDIENTS OR MORTAR. 3. MAINTAIN MORTAR CONSISTENCY BY RETEMPERING WITH COOL WATER. 4. USE MORTAR WITHIN 2 HR OF INITIAL MIXING. B. WHEN THE AMBIENT TEMPERATURE EXCEEDS 115° F (46.1° C), OR EXCEEDS 105° F (40.6° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR), IMPLEMENT THE REQUIREMENTS ABOVE AND USE COOL MIXING WATER FOR MORTAR AND GROUT. ICE IS PERMITTED IN THE MIXING WATER PRIOR TO USE. DO NOT PERMIT ICE IN THE MIXING WATER WHEN ADDED TO THE OTHER MORTAR OR GROUT MATERIALS.	WHEN THE MEAN DAILY TEMPERATURE EXCEEDS 100° F (37.8° C) OR EXCEEDS 90° F (32.2° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR), FOG SPRAY ALL NEWLY CONSTRUCTED MASONRY UNTIL DAMP, AT LEAST THREE TIMES A DAY UNTIL THE MASONRY IS THREE DAYS OLD

METAL REINFORCEMENT (MASONRY): REINFORCING SHALL CONFORM TO ASTM A-615, GRADE 60 (GRADE A706 FOR WELDED BARS UNLESS OTHERWISE NOTED). DETAIL, FABRICATE AND PLACE PER ACI 315 AND ACI 318. SPLICES SHALL BE AS NOTED BELOW.

MINIMUM LAP SPLICE LENGTHS "L_d" FOR TYPICAL CONDITIONS (1)					
BAR SIZE	CORNER BARS	FOUNDATION DOWELS	VERTICAL WALL REINFORCING	HORIZONTAL WALL REINFORCING	LONG. LINTEL REINFORCING
#3	18"	18"	18"	18"	18"
#4	24"	24"	33"	24"	33"
#5	30"	30"	48"	30"	48"
#6	36"	36"	– (2)	– (2)	– (2)
#7	42"	42"	– (2)	– (2)	– (2)
#8	48"	48"	– (2)	– (2)	– (2)

(1) FOR SPECIAL SPLICE CONDITIONS, REFER TO STRUCTURAL DRAWINGS FOR LAP LENGTH REQUIREMENTS.
(2) MECHANICAL COUPLERS ARE REQUIRED

VERTICAL BAR POSITIONERS: VERTICAL REINFORCING SHALL BE SECURED AGAINST DISPLACEMENT PRIOR TO GROUTING BY "D/A 811" VERTICAL BAR POSITIONERS FOR SINGLY REINFORCED CELLS AND "D/A 816" VERTICAL BAR POSITIONERS FOR DOUBLY REINFORCED CELLS BY DUR-O-WALL INC. OR PRE-APPROVED EQUAL.

ANCHORED VENEER (MASONRY AND STONE UNITS): ALL VENEER ANCHORAGE ATTACHMENTS SHALL CONFORM TO IBC SECTION 1405.5 FOR SEISMIC DESIGN CATEGORY D.

ANCHOR TIES AND JOINT REINFORCEMENT SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153, CLASS B-2 AND SHALL BE MANUFACTURED BY DUR-O-WALL, INC. OR PRE-APPROVED EQUAL. ANCHOR TIES SHALL BE SPACED 16"O.C. EACH WAY MAXIMUM, AND SHALL HAVE A LIP OR HOOK ON THE EXTENDED LEG THAT WILL ENGAGE OR ENCLOSE A HORIZONTAL JOINT REINFORCEMENT WIRE OF NO. 9 GAUGE OR EQUIVALENT. THE JOINT REINFORCEMENT SHALL BE CONTINUOUS WITH BUTT SPLICES BETWEEN TIES PERMITTED.

ANCHORAGE OF VENEER TO BACKING SHALL BE AS FOLLOWS:

BACKING	VENEER TIE	ATTACHMENT TO BACKING
WOOD STUDS	STANDARD DUR-O-WALL DA213S	(2) 1-1/2" LONG COPOLYMER COATED DA808 SCREWS
METAL STUDS	STANDARD DUR-O-WALL DA213S	(2) 1-1/2" LONG COPOLYMER COATED DA807 SCREWS (MIN. 1/2" PENETRATION PAST THE FACE OF METAL STUD)
MASONRY	DUR-O-WALL DA3600S SEISMIC LADUR-EYE OR DA3700S SEISMIC DUR-O-EYE	EMBED SEISMIC DUR-O-EYE OR LADUR EYE IN MASONRY. LAP SIDE RODS 6 IN.
CONCRETE	STANDARD DUR-O-WALL DA5213S	(1) 1/4" DIAMETER EXPANSION ANCHOR WITH MINIMUM EMBEDMENT OF 2 IN.
EXISTING MASONRY	STANDARD DUR-O-WALL DA5213S	(1) 1/4" DIAMETER EXPANSION ANCHOR WITH MINIMUM EMBEDMENT OF 2 IN.
STRUCTURAL STEEL	STANDARD DUR-O-WALL DA700	STANDARD DUR-O-WALL DA709 WELDED TO STEEL SUPPORT.

STRUCTURAL STEEL

DETAILING, FABRICATION AND ERECTION

ALL WORKMANSHIP SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION, THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN, JUNE 1, 1989 INCLUDING SUPPLEMENT NO. 1, DECEMBER 17, 2001 AND THE AISC CODE OF STANDARD PRACTICE, MARCH 2000.

STEEL MEMBERS ARE EQUALLY SPACED BETWEEN DIMENSION POINTS UNLESS NOTED OTHERWISE.

ALL FABRICATION SHALL BE PERFORMED BY A FABRICATOR CERTIFIED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AISC, OR SHALL BE QUALIFIED AS OUTLINED IN THE SPECIFICATIONS BASED UPON PREVIOUS PROJECT EXPIERENCE. CERTIFICATION/QUALIFICATION SHALL BE IN PLACE AT THE TIME OF BID AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. 2

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES, AND OTHER AIDES, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, WELD EXTENSION TABS, COPES, SURFACE ROUGHNESS VALUES AND TAPERS OF UNEQUAL PARTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH ALL CURRENT OSHA REQUIREMENTS.

HOLES, COPES OR OTHER CUTS OR MODIFICATIONS OF THE STRUCTURAL STEEL MEMBERS SHALL NOT BE MADE IN THE FIELD WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER.

MATERIAL PROPERTIES

WIDE FLANGE SECTIONS: ASTM A992 (Fy = 50 KSI)

OTHER SHAPES AND PLATES: ASTM A36 (Fy = 36 KSI)

STRUCTURAL STEEL PIPES: ASTM A53, GRADE B, TYPE E OR S (Fy =35 KSI).

STEEL STRUCTURAL TUBING: ASTM A500, GRADE B, (Fy =46 KSI).

MACHINE BOLTS (M.B.): ASTM A307, GRADE A

HIGH-STRENGTH BOLTS: A325-ASTM F1852, A490-ASTM A490

ANCHOR BOLTS (A.B.): ASTM F1554, GRADE 36, CLASS 2A

WIDE FLANGE STRUCTURAL MEMBERS WHICH ARE ASTM A6 GROUP 3 SHAPES WITH FLANGE THICKNESS 1-1/2" THICK AND THICKER, AND ALL ASTM A6 GROUP 4 AND 5 SHAPES AND PLATE THAT IS 1-1/2" THICK OR THICKER SHALL HAVE A CHARPY V-NOTCH (CVN) TOUGHNESS OF 20 FT-LBS @ 70 DEG F.

WELDING

STRUCTURAL STEEL: WELD IN ACCORDANCE WITH "STRUCTURAL WELDING CODE" AWS D-1.1.

REINFORCING STEEL: WELD IN ACCORDANCE WITH "REINFORCING STEEL WELDING CODE" AWS D-1.4. WELD ONLY WITH SPECIFIC APPROVAL OF THE STRUCTURAL ENGINEER. IN NO CASE SHALL A WELD BE MADE WITHIN 6 BAR DIAMETERS OF A "COLD BEND".

CERTIFICATION: ALL WELDING SHALL BE PERFORMED BY WABO/AWS CERTIFIED WELDERS. WELDERS SHALL BE PREQUALIFIED FOR EACH POSITION AND WELD TYPE WHICH THE WELDER WILL BE PERFORMING.

WELD TABS (ALSO KNOWN AS WELD "EXTENSION" TABS OR "RUN OFF" TABS) SHALL BE USED. AFTER THE WELD HAS BEEN COMPLETED THE WELD TABS SHALL BE REMOVED AND THE WELD END GROUND TO A SMOOTH CONTOUR. WELD "DAMS" OR "END DAMS" SHALL NOT BE USED.

THE PROCESS CONSUMABLES FOR ALL WELD FILLER METAL INCLUDING TACK WELDS, ROOT PASS AND SUBSEQUENT PASSES DEPOSITED IN A JOINT SHALL BE COMPATIBLE.

ALL WELD FILLER METAL AND WELD PROCESS SHALL PROVIDE THE TENSILE STRENGTH CHARPY V-NOTCH RATINGS AS FOLLOWS:

GRAVITY FRAME

WELD TYPE	FILLER METAL TENSILE STRENGTH	CHARPY V-NOTCH (CVN) RATING
FILLET	70 KSI	-----
PARTIAL PENETRATION	70 KSI	-----
COMPLETE PENETRATION	70 KSI	20 FT-LBS @ -20 DEG F

LATERAL FRAME

WELD TYPE	FILLER METAL TENSILE STRENGTH	CHARPY V-NOTCH (CVN) RATING
FILLET	70 KSI	20 FT-LBS @ -20 DEG F
PARTIAL PENETRATION	70 KSI	20 FT-LBS @ -20 DEG F
COMPLETE PENETRATION	70 KSI	20 FT-LBS @ -20 DEG F AND 40 FT-LBS @ 70 DEG F

WELDED CONNECTIONS INSPECTION:

1. ALL WELDING SHALL BE CHECKED BY VISUAL MEANS AND BY OTHER METHODS DEEMED NECESSARY BY THE WELDING INSPECTOR.
2. ALL FULL PENETRATION WELDS TO MEMBERS WHICH FORM A PORTION OF THE STRUCTURAL MOMENT FRAME SHALL BE CHECKED 100 PERCENT BY ULTRASONIC TESTING.
3. THE CONTRACTOR SHALL SUBMIT A WRITTEN WELDING PROCEDURE SPECIFICATION FOR SHOP AND FIELD WELDING OF ALL FRAME CONNECTIONS FOR APPROVAL TO THE STRUCTURAL ENGINEER OF RECORD PRIOR TO FABRICATION.

THE STANDARDS OF ACCEPTANCE FOR WELDS TESTED BY ULTRASONIC METHODS SHALL CONFORM TO AWS D1.1.

ALL WELDS FOUND TO BE DEFECTIVE SHALL BE REPAIRED AND REINSPECTED BY THE SAME METHODS ORIGINALLY USED, AND THIS REPAIR AND REINSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.

GENERAL REQUIREMENTS

HIGH-STRENGTH BOLTS: ALL A325 HIGH-STRENGTH BOLTS (HSB) SHALL BE ASTM F1852, UNLESS OTHERWISE DESIGNATED AS A490. ALL HSB DESIGNATED AS A490 SHALL BE ASTM A490 TENSION CONTROL BOLT/NUT/WASHER ASSEMBLIES WITH (1) ASTM F436 ROUND WASHER AND (1) ASTM A563, GRADE DH NUT. ALL HSB SHALL BE BY "LEJEUNE BOLT COMPANY" OR PRE-APPROVED EQUAL AND SHALL BE INSTALLED PER SECTION 8.2 OF THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", JUNE 2000 BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC SPECIFICATION). ALL BOLT HOLES SHALL BE STANDARD ROUND HOLES UNLESS NOTED OTHERWISE. THE FAYING SURFACES OF ALL PLIES WITHIN THE GRIP OF SLIP-CRITICAL BOLTS (A325SC OR A490SC) SHALL MEET THE REQUIREMENTS FOR A CLASS A SURFACE PER SECTION 3.2 OF THE RCSC SPECIFICATION.

BOLTED CONNECTIONS INSPECTION: CONNECTIONS MADE WITH BEARING TYPE BOLTS SHALL BE INSPECTED PER SECTION 9.1 AND CONNECTIONS MADE WITH SLIP-CRITICAL TYPE BOLTS (A325SC OR A490SC) SHALL BE INSPECTED PER SECTION 9.3 OF RCSC SPECIFICATION.

EPOXY GROUTED ANCHORS: "ALL-THREAD" - ASTM A36 (FY = 36 KSI)

EPOXY GROUT: MASTER BUILDERS "PASTE LPL", OR HILTI "HY-150", OR SIMPSON "S.E.T.", OR COVERT OPERATIONS "CIA-GEL 7000", OR PRE-APPROVED EQUAL. TWO PART LOW SAG EPOXY. GROUT MAY CONTAIN QUARTZ SAND AGGREGATE AS PROPORTIONED BY THE MANUFACTURER. USE EQUIPMENT WHICH WILL ACCURATELY MIX AND DISPENSE THE COMPONENTS. HOLE SHALL BE DRY AND CLEANED WITH WIRE BRUSH AND PRESSURIZED AIR JUST PRIOR TO INSTALLING GROUT. THE REBAR OR ROD SHALL BE CLEAN AND INSTALLED SLOWLY, AND SHALL BE ROTATED AS IT IS PUSHED INTO THE HOLE. COLD WEATHER GROUTING SHALL BE DONE WITH PROPER GROUT FORMULA. FIRST STAGES OF THE GROUTING OPERATION SHALL BE INSPECTED BY AN AGENT AS RECOMMENDED BY THE OWNER.

EXPANSION ANCHORS: "KWIKBOLT II" BY HILTI, INC., OR "POWER-BOLT" BY POWERS/RAWL FASTENING, INC., OR PRE-APPROVED EQUAL. EMBED BOLT INTO CONCRETE OR MASONRY 8 BOLT DIAMETERS MINIMUM, UNLESS NOTED OTHERWISE. INSTALL ANCHOR PER MANUFACTURER'S PUBLISHED RECOMMENDATIONS.

POWDER ACTUATED FASTENERS: SHALL BE MANUFACTURED BY HILTI, INC OR PRE-APPROVED EQUAL. INSTALL PER MANUFACTURERS PUBLISHED INSTALLATION INSTRUCTIONS. SEE PLANS AND DETAILS FOR SPECIFIC CALLOUTS.

HEADED STUDS: SHALL BE "S3L SHEAR CONNECTORS" AS MANUFACTURED BY NELSON STUD WELDING, INC. OR PRE-APPROVED EQUAL AND SHALL CONFORM TO AWS D1.1. ALL HEADED STUDS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS USING A NELSON WELD GUN, UNLESS NOTED OTHERWISE ON DETAILS. ALL WELDS SHALL BE MADE AND INSPECTED IN ACCORDANCE WITH AWS D1.1.

FINISH: STRUCTURAL STEEL SHALL BE UNPAINTED, UNLESS NOTED OTHERWISE, AND SHALL BE CLEAN OF LOOSE RUST, LOOSE MILL SCALE, OIL, GREASE AND OTHER FOREIGN SUBSTANCES AND SHALL MEET THE REQUIREMENTS OF SSPC-SP1. WHERE STRUCTURAL STEEL IS NOTED TO BE PAINTED, ALL AREAS COMPROMISING THE FAYING SURFACES OF BOLTED CONNECTIONS MADE WITH SLIP-CRITICAL TYPE BOLTS (A325SC OR A490SC) SHALL COMPLY WITH THE REQUIREMENTS OF THE RCSC SPECIFICATION. WHERE STRUCTURAL STEEL IS NOTED TO BE GALVANIZED, IT SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123, A384, AND A385. ALL SURFACES WITHIN TWO INCHES OF ANY FIELD WELD LOCATION SHALL BE FREE OF MATERIALS THAT WOULD PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES. FIELD TOUCH-UP OF PRIMED, PAINTED, AND GALVANIZED SURFACES SHALL BE PERFORMED TO REPAIR COATING ABRASIONS, AS WELL AS TO PROTECT ALL AREAS AT CONNECTIONS.

METAL JOISTS: SHALL BE MANUFACTURED BY CANAM STEEL CORPORATION, VULCRAFT A DIVISION OF NUCOR CORPORATION OR PRE-APPROVED EQUAL, AND SHALL CONFORM TO THE STEEL JOIST INSTITUTE (SJI) AND AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) STANDARDS AND SHALL BE DESIGNED TO CARRY THE LOADS LISTED IN THE DESIGN CRITERION AND THOSE INDICATED ON THE FRAMING PLANS. JOIST MANUFACTURER SHALL VERIFY AND INCLUDE FIRE RATING STRESS REDUCTIONS AND SIZE LIMITATIONS IN ORDER TO CONFORM TO THE ASSEMBLY REQUIREMENTS AS SHOWN ON THE ARCHITECTURAL DRAWINGS. THE MATERIAL STRESS INCREASE (1.33) SHALL NOT BE ALLOWED FOR THE DESIGN OF THE JOISTS UNLESS THE ALTERNATE LOAD COMBINATIONS PER IBC SECTION 1605.3.2 ARE USED. PROVIDE BRACING TO RESIST WIND UPLIFT PRESSURES AS DEFINED IN THE DESIGN CRITERIA OF THESE GENERAL NOTES. FOR OTHER SPECIAL REQUIREMENTS, SEE STRUCTURAL DRAWINGS. JOISTS SHALL BE DESIGNED AND DETAILED TO MEET ALL CURRENT OSHA STANDARDS. THE GENERAL CONTRACTOR SHALL COORDINATE ALL OSHA REQUIREMENTS BETWEEN THE STEEL DETAILER AND JOIST MANUFACTURER. SEE ADDITIONAL INFORMATION IN THE STRUCTURAL STEEL "DETAILING, FABRICATION, AND ERECTION" SECTION.

THE ENGINEER OF RECORD FOR THE METAL JOIST DESIGN SHALL HAVE A MINIMUM OF (5) YEARS EXPERIENCE IN THE DESIGN OF METAL JOISTS OF SIMILAR SIZE PROJECTS AND BE LICENSED AS A PROFESSIONAL ENGINEER IN THE STATE OF WASHINGTON. THE ENGINEER OF RECORD FOR THE JOIST DESIGN SHALL SUBMIT A STAMPED LETTER OF COMPLIANCE INDICATING YEARS OF EXPERIENCE. THE LETTER SHALL ALSO STATE THAT THEY HAVE REVIEWED THE JOIST PLACEMENT DRAWINGS AND BILLS OF MATERIAL FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, ALONG WITH VERIFICATION THAT THE JOISTS CONFORM TO THE DESIGN CRITERIA AND ADDITIONAL LOADING REQUIREMENTS LISTED IN THE CONTRACT DOCUMENTS (INCLUDING BUT NOT LIMITED TO SNOW DRIFT, WIND UPLIFT, JOIST AXIAL LOADS AND MECHANICAL UNIT LOADING).

COMPOSITE FLOOR DECK: SHALL CONTAIN THE MINIMUM PROPERTIES SHOWN ON THE STRUCTURAL DRAWINGS AND SHALL BE "FORMLOCK" AS MANUFACTURED BY VERCO MANUFACTURING CO., "W COMPOSITE" AS MANUFACTURED BY ASC STEEL DECK, "EPICORE" AS MANUFACTURED BY EPIC METALS, OR PRE-APPROVED EQUAL. THE FLOOR UNITS SHALL BE FORMED FROM STEEL SHEETS CONFORMING TO ASTM A-653, AND GALVANIZED PER ASTM A-924. DECK SHALL BE PROVIDED WITH VENT TABS. SUBMIT SHOP DRAWINGS SHOWING LAYOUT AND FASTENING PATTERN. ALL ACCESSORIES INCLUDING EDGE FORMS, CLOSURE, ETC. SHALL BE PROVIDED TO COMPLETE THE INSTALLATION OF THE COMPOSITE FLOOR.

PREFABRICATED METAL STAIR: SHALL BE DESIGNED PER AISC AND IBC REQUIREMENTS. STRINGERS AND LANDINGS SHALL BE DESIGNED FOR A MINIMUM OF 100 PSF LIVE LOAD. INDIVIDUAL TREADS SHALL BE DESIGNED FOR 300 POUND CONCENTRATED LOAD. THE STAIR DESIGN CALCULATIONS AND SHOP DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER SHOWING THE COMPLETE ASSEMBLY AND ATTACHMENTS TO THE SURROUNDING STRUCTURE. THE ATTACHMENTS SHALL BE DETAILED SUCH THAT NO TORQUE IS APPLIED TO THE SURROUNDING STRUCTURAL MEMBERS. THE CALCULATIONS AND SHOP DRAWINGS SHALL BEAR THE SEAL AND SIGNATURE OF A REGISTERED STRUCTURAL ENGINEER LICENSED IN THE STATE OF WASHINGTON.

COLD-FORMED STEEL FRAMING CONSTRUCTION: THE DESIGN, INSTALLATION AND CONSTRUCTION OF COLD-FORMED CARBON OR LOW-ALLOY STEEL, STRUCTURAL AND NONSTRUCTURAL STEEL FRAMING, SHALL BE IN ACCORDANCE WITH THE STANDARD FOR COLD-FORMED STEEL FRAMING, GENERAL PROVISIONS, AMERICAN IRON AND STEEL INSTITUTE (AISI-GENERAL) AND AISI-NASPEC.

ALL 54 MIL AND HEAVIER GALVANIZED MEMBERS SHALL BE FORMED FROM STEEL THAT MEETS THE REQUIREMENTS OF ASTM A-653, QUALITY SQ, GRADE 50, CLASS 1, FY=50 KSI. ALL 43 MIL AND LIGHTER GALVANIZED MEMBERS SHALL BE FORMED FROM STEEL THAT MEETS THE REQUIREMENTS OF ASTM A-653, QUALITY SQ, GRADE 33, FY=33 KSI. BRIDGING PER MANUFACTURER'S REQUIREMENTS AND AS SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE IN PLACE PRIOR TO PLACING OF ANY CONSTRUCTION LOADS. ALL RUNS SHALL BE RIGIDLY ANCHORED TO END WALLS.

EXTERIOR WALL AND BEARING WALL COLD-FORMED STEEL FRAMING: COLD-FORMED STEEL FRAMING MEMBERS SHALL MEET THE TYPE, SIZE AND THICKNESS AS INDICATED ON THE STRUCTURAL PLANS AND SPECIFICATIONS, AND SHALL BE MANUFACTURED BY A MEMBER OF THE STEEL STUD MANUFACTURER'S ASSOCIATION (SSMA), OR PRE-APPROVED EQUAL, IN ACCORDANCE WITH SSMA ICC ER-4943P.

INTERIOR NON-BEARING WALL COLD-FORMED STEEL FRAMING: COLD-FORMED STEEL FRAMING MEMBERS SHALL MEET THE TYPE, SIZE AND THICKNESS AS INDICATED ON THE STRUCTURAL PLANS AND SPECIFICATIONS, AND SHALL BE MANUFACTURED BY A MEMBER OF THE STEEL STUD MANUFACTURER'S ASSOCIATION (SSMA), OR PRE-APPROVED EQUAL, IN ACCORDANCE WITH SSMA ICC ER-4943P.

SLIP CONNECTIONS: THE STEEL NETWORK "VERTICLIP" OR PRE-APPROVED EQUAL.

AT THE CONTRACTOR'S OPTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, DETAILING, FABRICATION AND ERECTION OF THE INTERIOR PARTITION AND NON-BEARING COLD-FORMED STEEL FRAMING AND THE CONNECTION TO THE COLD-FORMED STEEL FRAMING TO THE STRUCTURE. THE DESIGN AND DETAILING OF THE COLD-FORMED STEEL FRAMING. AND CONNECTION TO THE STRUCTURE SHALL BE PREPARED UNDER THE DIRECTION OF, AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF WASHINGTON AND SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO CONSTRUCTION.

CARPENTRY

NAILS: CONNECTION DESIGNS ARE BASED ON "COMMON WIRE" NAILS WITH THE FOLLOWING PROPERTIES:

PENNYWEIGHT	DIAMETER (INCHES)	LENGTH (INCHES)
8d 10d 16d 20d	0.131 0.148 0.162 0.192	2-1/2 3 3-1/2 4

FOR DIAPHRAGM OR SHEAR WALL NAILING THE FOLLOWING FASTENER TYPES MAY BE USED AT EQUIVALENT SPACING TO THAT SPECIFIED ON PLANS

FASTENER TYPE	DIAMETER (INCHES)	LENGTH (INCHES)	EQUIVALENT SPACING		
8d COMMON WIRE	0.131	2-1/2"	6"	4"	3"
8d "DIPPED GALV. BOX" 8d "SHINY BOX" 12 GA. STAPLES 14 GA. STAPLES 15 GA STAPLES	0.131 0.113 0.1055 0.080 0.072	2-1/2" 2-1/2" 1-7/8"* 1-1/2"* 1-1/2"*	6" 4-1/2" 6" 6" 5"	4" 3" 5-1/2" 4" 3"	3" 2-1/2" 4" 3" 2-1/2"
10d COMMON WIRE	0.148	3	6"	4"	3"
10d "HOT DIPPED GALV. BOX" 10d "SHINY BOX"	0.148 0.128	3 3	6" 4-1/2"	4" 3"	3" 2-1/4"

*BASED ON 1/2" PLYWOOD OR OSB

WOOD SHEATHING (STRUCTURAL): **SHEATHING ON ROOF SURFACES SHALL BE PLYWOOD ONLY.** SHEATHING ON FLOOR AND WALLS SHALL BE PLYWOOD OR ORIENTED STRAND BOARD (OSB). PLYWOOD SHEATHING SHALL BE 5-PLY MINIMUM WHERE INDICATED AS 3/4" OR THICKER. WOOD SHEATHING SHALL BE "STRUCTURAL I" CONFORMING TO PS1-95 AND/OR PS2-92. ALL PANELS SHALL BEAR THE STAMP OF AN APPROVED GRADING AGENCY. SPAN RATING SHALL BE PROVIDED AS FOLLOWS: ROOF FRAMING AT 32"O.C. (48/24); ROOF FRAMING AT 24"O.C. (32/16); WALLS (32/16); FLOORS (20"O.C.) ALL WOOD SHEATHED WALLS SHALL BE BLOCKED AT ALL PANEL EDGES UNLESS OTHERWISE NOTED.

FRAMING LUMBER:
STANDARDS: EACH PIECE SHALL BEAR THE GRADE TRADEMARK OF THE WEST COAST LUMBER INSPECTION BUREAU (WCLIB), WESTERN WOOD PRODUCTS ASSOCIATION (WWPA), OR OTHER AGENCY ACCREDITED BY THE AMERICAN LUMBER STANDARD COMMITTEE (ALSC) TO GRADE UNDER ALSC CERTIFIED GRADING RULES.

SPECIES AND GRADE (BASE DESIGN VALUE)
1. 6x BEAMS AND HEADERS: "DOUG FIR-LARCH" NO. 1 (Fb=1350 PSI, Fv=170 PSI)
2. 2x TO 4x JOISTS, PURLINS AND HEADERS: "DOUG FIR-LARCH" NO. 2 (Fb=900 PSI, Fv=180 PSI) OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fv=150 PSI)
3. 6x POSTS AND COLUMNS: "DOUG FIR-LARCH" NO. 1 (Fc=1000 PSI)
4. EXTERIOR STUDS, INTERIOR BEARING WALLS AND 4x COLUMNS: "DOUG FIR-LARCH" NO. 2 (Fb= 900 PSI, Fc=1350 PSI) OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fc=1350 PSI)
5. INTERIOR NON-BEARING STUD WALLS: "DOUG FIR-LARCH" NO. 2 (Fb=900 PSI, Fc=1350 PSI) OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fc=1350 PSI)
6. 2x & 3x T&G DECKING: "DOUG FIR-LARCH" COMMERCIAL (Fb=1650 PSI, E=1700 KSI)
7. THE MINIMUM GRADE OF ALL OTHER STRUCTURAL FRAMING: "DOUG FIR-LARCH" NO. 2 (Fb= 900 PSI, Fc=1350 PSI), OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fc=1350 PSI).
8. UTILITY & STANDARD GRADES NOT PERMITTED.

LSL FRAMING LUMBER (MANUFACTURED): SHALL BE MANUFACTURED BY TRUS JOIST CORPORATION, OR PRE-APPROVED EQUAL IN ACCORDANCE WITH APPROVED SHOP AND INSTALLATION DRAWINGS. 2

mcg-ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

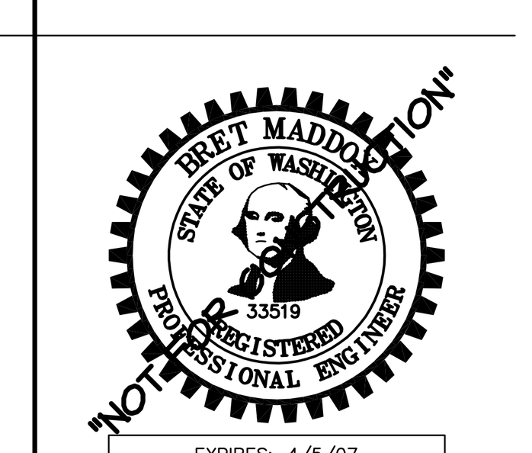
structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS



EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

GENERAL NOTES

revision_

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RSC

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ORIGINAL SHEET IS 30" x 42".

PRESERVATIVE TREATED WOOD REQUIREMENTS:
TREATMENTS OTHER THAN THOSE LISTED BELOW ARE NOT PERMITTED.

EXPOSURE		APPLICATION	SPECIFIED MATERIAL	PRESERVATIVE TREATMENT (1)	CONNECTORS & FASTENERS (2)(3)
DRY		FOUNDATION SILL PLATES, TOP PLATES & LEDGERS ON CONCRETE OR MASONRY WALLS (4)	2x, 4x, 6x, OR GLU-LAM (FIR)	CCA, SBX	GALV (G60)
				ACQ, CBA, CA	GALV (G185)
		FRAMING, DECKING, POSTS & LEDGERS	2x, & 4x (FIR)	CCA	GALV (G90)
				ACQ, CBA, CA	GALV (G185)
			2x, & 4x (CEDAR)	NONE	GALV (G90)
WET		BEAMS & COLUMNS	6x OR GLU-LAM (FIR)	CCA	GALV (G90)
				ACQ, CBA, CA	GALV (G185)
			6x OR GLU-LAM (CEDAR)	NONE	GALV (G90)

1. CCA: CHROMATED COPPER ARSENATE
   SBX: DOT SODIUM BORATE
   ACQ: ALKALINE COPPER QUAT
   CBA & CA: COPPER AZOLE

2. CONNECTORS: JOIST HANGERS, STRAPS, FRAMING CONNECTORS, COLUMN CAPS AND BASES, ETC. FASTENERS: MACHINE BOLTS, ANCHOR BOLTS AND LAG SCREWS WITH ASSOCIATED PLATE WASHERS AND NUTS. NAILS, SPIKES, WOOD SCREWS, ETC.

3. G60, G90 & G185 PER ASTM A653
   BATCH/POST HOT-DIP GALVANIZED PER ASTM A123 FOR CONNECTORS AND ASTM A153 FOR FASTENERS
   MECHANICALLY GALVANIZED FASTENERS PER ASTM B695, CLASS 55 OR GREATER.

4. AT CONTRACTORS OPTION, LEDGERS AND TOP PLATES A MINIMUM OF 8 FEET ABOVE GRADE ON CONCRETE OR MASONRY WALLS MAY BE UN-TREATED IF COMPLETELY SEPARATED FROM THE WALL BY A SELF ADHERING ICE & WATER SHIELD BARRIER (40 MIL MINIMUM).

GENERAL REQUIREMENTS: PROVIDE MINIMUM NAILING PER 2003 IBC TABLE 2304.9.1 OR MORE, AS OTHERWISE SHOWN. STAGGER ALL NAILING TO PREVENT SPLITTING OF WOOD MEMBERS. PRESSURE-TREAT ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY WITH THE EXCEPTION OF INTERIOR CONCRETE TOPPINGS ON WOOD FLOOR SYSTEMS. HOLES AND CUTS IN 3x OR 4x PLATES SHOULD BE TREATED WITH A 20% SOLUTION OF COPPER NAPHTHENATE. BOLT HOLES IN WOOD MEMBERS SHALL BE A MINIMUM OF 1/32" TO A MAXIMUM OF 1/16" LARGER THAN THE BOLT DIAMETER. PROVIDE CUT WASHERS WHERE BOLT HEADS, NUTS AND LAG SCREW HEADS BEAR ON WOOD. PROVIDE A MINIMUM 3"x3"x1/4" PLATE WASHER ON ALL ANCHOR BOLTS WHICH CONNECT MUD SILLS TO FOUNDATION. DO NOT NOTCH OR DRILL STRUCTURAL MEMBERS, EXCEPT AS ALLOWED BY IBC SECTIONS 2308.9.10, 2308.9.11, AND 2308.10.4.2 OR AS RESTRICTED BY PLANS OR DETAILS, OR AS APPROVED PRIOR TO INSTALLATION. REFER TO PRESERVATIVE TREATED WOOD REQUIREMENTS IN THESE GENERAL NOTES FOR GALVANIZING REQUIREMENTS FOR CONNECTORS AND FASTENERS.

FRAMING CONNECTORS: SHALL HAVE ICC APPROVAL AND BE MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, SAN LEANDRO, CA., OR PRE-APPROVED EQUAL. PROVIDE MAXIMUM SIZE AND QUANTITY OF NAILS OR BOLTS PER MANUFACTURER, EXCEPT AS NOTED OTHERWISE. PROVIDE LEAD HOLES AS REQUIRED TO PREVENT SPLITTING OF WOOD MEMBERS. REFER TO PRESERVATIVE TREATED WOOD REQUIREMENTS IN THESE GENERAL NOTES FOR GALVANIZING REQUIREMENTS FOR CONNECTORS AND FASTENERS.

LAG SCREWS: SHALL BE OF A DIAMETER INDICATED ON DRAWINGS WITH A MINIMUM OF 8x DIA. EMBEDMENT IN SUPPORTING MEMBER UNLESS NOTED OTHERWISE. CLEARANCE HOLE FOR THE SHANK SHALL BE THE SAME DIAMETER AS THE SHANK AND THE SAME DEPTH OF PENETRATION AS THE UNTHREADED PORTION OF THE SHANK. THE LEAD HOLE FOR THE THREADED PORTION SHALL HAVE A DIAMETER EQUAL TO 60 TO 75 PERCENT OF THE SHANK DIAMETER AND A LENGTH EQUAL TO AT LEAST THE LENGTH OF THE THREADED PORTION. THE THREADED PORTION OF THE SCREW SHALL BE INSERTED IN ITS LEAD HOLE BY TURNING WITH A WRENCH, NOT BY DRIVING WITH A HAMMER. SOAP OR OTHER LUBRICANT SHALL BE USED ON THE SCREWS OR IN THE LEAD HOLE TO FACILITATE INSERTION AND PREVENT DAMAGE TO THE SCREW. REFER TO PRESERVATIVE TREATED WOOD REQUIREMENTS IN THESE GENERAL NOTES FOR GALVANIZING REQUIREMENTS FOR CONNECTORS AND FASTENERS.

PRE-APPROVED SUBSTITUTIONS

SUBSTITUTIONS MAY BE ALLOWED ONLY IF THEY MEET THE REQUIREMENTS OF THESE GENERAL NOTES AND THE SPECIFICATIONS, AND IF COMPLETE WRITTEN ENGINEERING DATA FOR EACH CONDITION REQUIRED FOR THIS PROJECT IS PROVIDED TO THE STRUCTURAL ENGINEER TWO WEEKS PRIOR TO BID DATE AND APPROVED IN WRITTEN ADDENDA BY THE ARCHITECT. DATA IS TO INDICATE CODE BASIS BY YEAR, AUTHORITY FOR STRESSES AND STRESS INCREASES, IF ANY, AND AMOUNT OF EXPECTED DEFLECTION FOR FLEXURAL MEMBERS UNDER (1) TOTAL LOAD AND (2) LIVE LOAD ONLY. ALL INCREASED COSTS IN MECHANICAL, SPRINKLER, ELECTRICAL OR GENERAL INSTALLATION AND ANY ARCHITECTURAL OR STRUCTURAL REDESIGN RESULTING FROM SUBSTITUTION SHALL BE BORNE BY THE GENERAL CONTRACTOR.

PRE-ENGINEERED METAL BUILDING

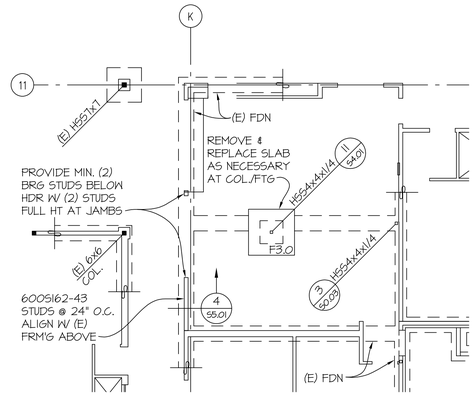
THE FOUNDATION DESIGN HAS BEEN BASED ON PRELIMINARY LOAD REACTIONS FROM THE BUILDING COLUMNS. THE FOUNDATION REQUIRES FURTHER COORDINATION AFTER BIDDING ONCE THE MANUFACTURE'S SUBMITTAL IS REVIEWED. COLUMN LOAD SUMMARIES SHALL BE PROVIDED, WHICH COMPILES LOAD COMBINATIONS. THE FOUNDATION SHOULD NOT BE INSTALLED PRIOR TO OUR REVIEW. BUILDING COLUMNS SHALL NOT RELY ON BASE FIXITY WITH THE FOUNDATIONS. REFER TO THE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

SHOP DRAWINGS

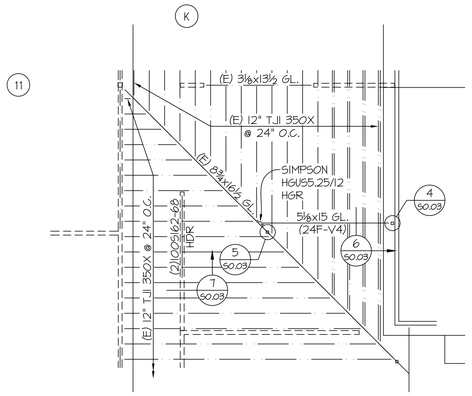
THE FOLLOWING SHOP DRAWINGS/SUBMITTALS SHALL BE PROVIDED FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION OR DELIVERY.

		STRUCTURAL ENGR.	BLDG. DEPT.
1.	CONCRETE MIX DESIGNS	X	X
2.	REINFORCING STEEL SHOP DRAWINGS	X	
3.	STRUCTURAL STEEL	X	X
4.	METAL JOISTS	X	X
5.	METAL DECK	X	X
6.	LIGHT-GAUGE METAL FRAMING	X	X
7.	PREFABRICATED METAL STAIRS	X	X
8.	MISCELLANEOUS STEEL	X	X
9.	GLU-LAMINATED MEMBERS	X	X
10.	WOOD OPEN WEB TRUSSES AND I-JOISTS	X	X
11.	CONDUIT EMBEDDED IN CONCRETE	X	X

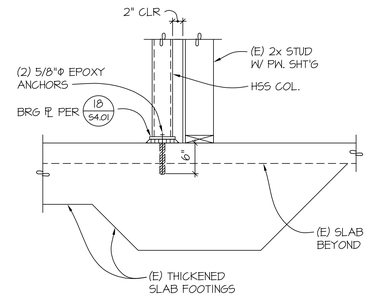
SPECIAL INSPECTION: SPECIAL INSPECTION SHALL BE PROVIDED BY AN INDEPENDENT TESTING LABORATORY PER THE REQUIREMENTS OF IBC CHAPTER 17 AND THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION AND THE CONTRACT DOCUMENTS. THE SPECIAL INSPECTOR SHALL SUBMIT INSPECTION REPORTS AND A FINAL SIGNED REPORT TO THE BUILDING OFFICIAL FOR THE ITEMS LISTED IN THE QUALITY ASSURANCE/SPECIAL INSPECTION SECTION:



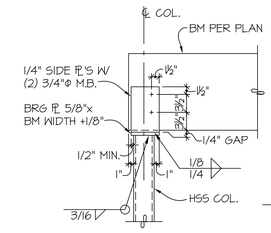
EXISTING MIDDLE SCHOOL
PARTIAL FOUNDATION PLAN
1/8"=1'-0" — 1 / S0.03



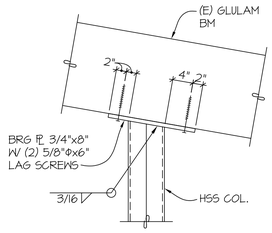
EXISTING MIDDLE SCHOOL
PARTIAL ROOF FRAMING PLAN
1/8"=1'-0" — 2 / S0.03



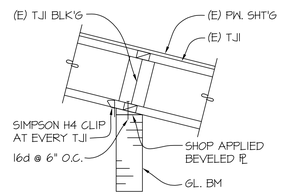
SECTION
NO SCALE — 3 / S0.03



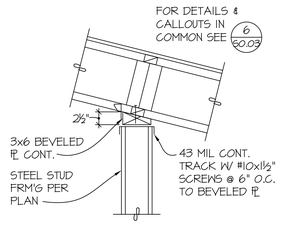
TYPICAL SINGLE BEAM TO COLUMN CONNECTION
SECTION
NO SCALE — 4 / S0.03



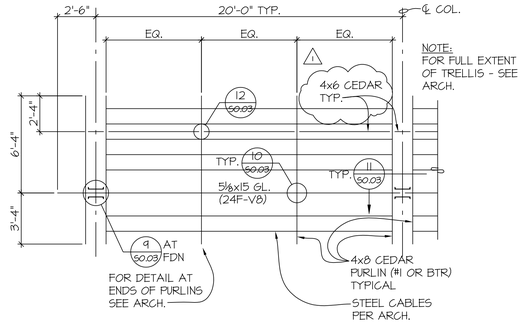
SECTION
NO SCALE — 5 / S0.03



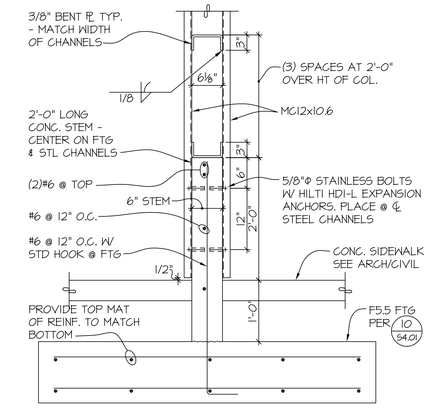
SECTION
NO SCALE — 6 / S0.03



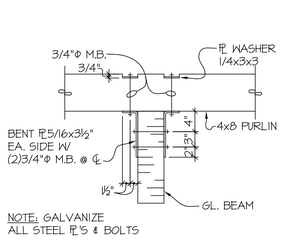
SECTION
NO SCALE — 7 / S0.03



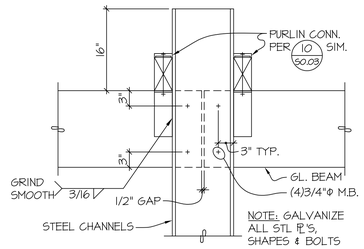
TRELLIS FRAMING PLAN
NO SCALE — 8 / S0.03



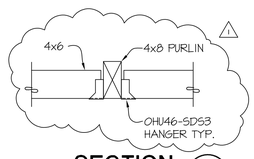
TYPICAL FOOTING AT TRELLIS
SECTION
NO SCALE — 9 / S0.03



NOTE: GALVANIZE ALL STEEL PL'S & BOLTS
SECTION
NO SCALE — 10 / S0.03



SECTION
NO SCALE — 11 / S0.03



SECTION
NO SCALE — 12 / S0.03

architect_
McGRANAHAN ARCHITECTS
civil engineer_
HARMSEN AND ASSOCIATES INC.
landscape design_
BERGER PARTNERSHIP
structural engineer_
PCS STRUCTURAL SOLUTIONS
mechanical engineer_
BCE ENGINEERS
electrical engineer_
BCE ENGINEERS
food service_
CHANDLER/WILSON DESIGN
acoustical design-
SSA ACOUSTICS

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION" — BRENT MADISON HARMSEN — STATE OF WASHINGTON — 22 — 10178 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II
client_
COUPEVILLE SCHOOL DISTRICT #204
location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

GENERAL NOTES/ EXISTING MIDDLE SCHOOL FOUNDATION & FRAMING PLANS

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QUALITY ASSURANCE/SPECIAL INSPECTION:

QUALITY ASSURANCE PLAN: QUALITY ASSURANCE SHALL BE PROVIDED PER THE REQUIREMENTS OF IBC SECTION 1705.2 AND AS NOTED HEREIN.

STRUCTURAL SYSTEM	VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	COMMENTS	REFERENCES
SOILS	PRIOR TO PLACEMENT OF PREPARED FILL, THE SPECIAL INSPECTOR SHALL DETERMINE THAT THE SITE HAS BEEN PREPARED IN ACCORDANCE WITH THE APPROVED SOILS REPORT.		X	SOIL SPECIAL INSPECTION IS NOT REQUIRED WHERE FILL PLACEMENT IS LESS THAN 12 IN.	IBC 1704.7
	DURING FILL PLACEMENT AND COMPACTION OF FILL MATERIAL	X			
	EVALUATION OF IN-PLACE DENSITY OF COMPACTED FILL		X		
	PILING, DRILLING PIERS & CAISSONS	X			IBC 1704.8
STEEL CONSTRUCTION	MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS		X		AISC ASD, SECTION A3.4 AISC LRFD SECTION A3.3
	HIGH-STRENGTH BOLTING-SLIP-CRITICAL CONNECTIONS	X			AISC LRFD SECTION M2.5 IBC 1704.3.3
	STRUCTURAL STEEL WELDING 1. COMPLETE AND PARTIAL PENETRATION WELDS 2. MULTI-PASS FILLET WELDS 3. SINGLE-PASS FILLET WELDS >5/16" 4. SINGLE-PASS FILLET WELDS <5/16" 5. FLOOR AND ROOF METAL DECKING 6. FIELD-INSTALLED WELDED STUDS 7. WELDING OF STAIRS AND RAILING SYSTEMS	 X X X 	 X X X X	SPECIAL INSPECTIONS IN THIS SECTION ARE WAIVED WHERE FABRICATION IS PERFORMED ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED IN ACCORDANCE WITH IBC SECTION 1704.2	AWS D1.1 IBC 1704.3.1 AWS D1.3
	REINFORCING STEEL WELDING 1. VERIFICATION OF WELDABILITY 2. SHEAR REINFORCEMENT 3. OTHER REINFORCEMENT 4. REINFORCEMENT IN MOMENT FRAMES, SHEAR WALL BOUNDARY ELEMENTS	 X X	 X X 		AWS D1.4 ACI 318: 3.5.2 IBC 1903.5.2
	MATERIAL VERIFICATION OF STRUCTURAL STEEL 1. IDENTIFICATION MARKINGS CONFORM TO ASTM STANDARDS LISTED IN GENERAL NOTES 2. MANUFACTURER'S CERTIFIED MILL TEST REPORTS		 X X	MANUFACTURER TO PROVIDE CERTIFIED MILL TEST REPORTS	IBC 1708.4 ASTM A6 OR A568
	MATERIAL VERIFICATION OF WELD FILLER MATERIALS. 1. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATIONS LISTED IN GENERAL NOTES 2. MANUFACTURE'S CERTIFICATE OF COMPLIANCE		 X X	MANUFACTURER TO PROVIDE CERTIFICATE OF COMPLIANCE	AISC, ASD, SECTION A3.6 AISC LRFD, SECTION A3.5
	INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS		X		IBC 1704.3.2
CONCRETE	REINFORCING STEEL AND PLACEMENT		X	SPECIAL INSPECTIONS NOT REQUIRED FOR THE FOLLOWING CONDITIONS: NON-STRUCTURAL SLAB ON GRADE CONCRETE FOUNDATION WALLS ISOLATED SPREAD FOOTINGS FOR BUILDINGS THREE-STORIES AND LESS CONTINUOUS FOOTINGS SUPPORTING WALLS OF THREE-STORIES AND LESS WHERE WALLS ARE LIGHT-FRAME CONSTRUCTION AND F'C=2500 PSI	ACI 318: 3-5,7.1-7.7 IBC 1903.5, 1907.1, 1907.7, 1914.4
	BOLTS TO BE INSTALLED IN CONCRETE-PRIOR TO AND DURING PLACEMENT OF CONCRETE	X			IBC 1912.5
	VERIFY USE OF REQUIRED DESIGN MIX		X		ACI 318, CH4,5.2-5.4 IBC 1904,1905.2-1905.4 1914.2, 1914.3
	SAMPLING OF FRESH CONCRETE, SLUMP TEST, AIR CONTENT, TEMPERATURE OF CONCRETE AT TIME OF MAKING SPECIMENS	X			ASTM C172, C31 ACI 318: 5.6, 5.8 IBC 1905.6, 1914.10
	CONCRETE PLACEMENT FOR PROPER APPLICATION	X			ACI 318: 5.9, 5.10 IBC 1905.9, 1905.10 1914.6, 1914.7, 1914.8
	INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X		ACI 318: 5.11-5.13 IBC 1905.11, 1905.13 1914.9
	MATERIAL VERIFICATION OF REINFORCEMENT STEEL			MANUFACTURER SHALL PROVIDE MILL TEST REPORTS	IBC 1708.3
	ANCHORS TO BE INSTALLED IN HARDENED CONCRETE	X			IBC 1912.5
MASONRY	AT BEGINNING OF CONSTRUCTION THE FOLLOWING SHALL BE VERIFIED: 1. PROPORTIONS OF SITE-PREPARED MORTAR. 2. CONSTRUCTION OF MORTAR JOINTS 3. LOCATION OF REINFORCEMENT AND CONNECTORS		 X X X		ACI 530.1 ARTS 2.6A, 3.3B, 3A
	INSPECTION PROGRAM SHALL VERIFY THE FOLLOWING: 1. SIZE AND LOCATION OF STRUCTURAL ELEMENTS 2. TYPE, SIZE AND LOCATION OF ANCHORS IN MASONRY 3. SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT 4. WELDING OF REINFORCING BARS 5. PROTECTION OF MASONRY DURING COLD WEATHER OR HOT WEATHER	 X 	 X X X X		IBC SEC. 2108.9.2.11 ITEM 2, SEC. 2104.3, SEC. 2104.4 ACI 530 ACI 530.1 ARTS 3.3G, 2.4, 3.4, 1.8
	PRIOR TO GROUTING THE FOLLOWING SHALL BE VERIFIED: 1. GROUT SPACE IS CLEAN 2. PLACEMENT OF REINFORCEMENT AND CONNECTORS 3. PROPORTIONS OF SITE-PREPARED GROUT 4. CONSTRUCTION OF MORTAR JOINTS		 X X X X		ACI 530, SEC. 1.12 ACI 530.1 ARTS 3.2D, 3.4, 2.6B, 3.3B
	GROUT PLACEMENT	X			ACI 530.1, ART 3.5
	PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS	X			ACI 530.1, ART 1.4
	COMPLIANCE WITH INSPECTION PROVISIONS OF CONSTRUCTION DOCUMENTS		X		ACI 530.1, ART 1.5
WOOD FRAMING	SHEAR WALL NAILING/SCREWING		X		IBC 1707.3
	PLYWOOD ROOF DIAPHRAGM NAILING		X		IBC 1707.3
	NAILING, BOLTING, AND ANCHORAGE OF COMPONENTS THAT ARE PART OF DRAG STRUTS, BRACES AND HOLD-DOWNS THAT ARE PART OF THE SEISMIC RESISTING SYSTEM		X		IBC 1707.3
COLD-FORMED STEEL FRAMING	SCREW ATTACHMENT, BOLTING, ANCHORING AND FASTENING OF DRAG STRUTS, BRACES AND HOLD-DOWNS THAT ARE PART OF SEISMIC RESISTING SYSTEM		X		IBC 1707.4
SUSPENDED CEILINGS	ANCHORAGE AND SEISMIC BRACING		X		IBC 1621, 1705.1 ASCE 9.6.2.6

TESTING AND SPECIAL INSPECTION REPORTS SHALL BE PREPARED FOR EACH INSPECTION ITEM ON A DAILY BASIS WHENEVER WORK IS PERFORMED ON THAT ITEM. REPORTS SHALL BE DISTRIBUTED TO OWNER, CONTRACTOR, BUILDING OFFICIAL, ARCHITECT AND STRUCTURAL ENGINEER.

STRUCTURAL OBSERVATIONS SHALL BE PERFORMED BY THE STRUCTURAL ENGINEER OF RECORD OR DESIGNATED REPRESENTATIVE IN ACCORDANCE WITH IBC 1709. STRUCTURAL OBSERVATION SHALL BE PERFORMED AS FOLLOWS:

- PERIODIC VISUAL OBSERVATION OF STRUCTURAL SYSTEMS FOR GENERAL CONFORMANCE TO CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES.
- REVIEW OF TESTING AND INSPECTION REPORTS.
- REPORTS SHALL BE PREPARED FOR EACH SITE VISIT AND SHALL BE DISTRIBUTED TO ARCHITECT.

GENERAL CONTRACTOR SHALL SUBMIT A WRITTEN CONTRACTOR'S STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL INCLUDE THE FOLLOWING:

- ACKNOWLEDGMENT OF AWARENESS OF REQUIREMENTS OF QUALITY ASSURANCE PLAN.
- ACKNOWLEDGMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.
- PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION AND THE METHOD AND FREQUENCY OF REPORTING AND DISTRIBUTION.
- IDENTIFICATION OF PERSONS EXERCISING SUCH CONTROL AND THEIR POSITIONS IN THE ORGANIZATION.

ABBREVIATION LIST

ADD'L	ADDITIONAL	HORIZ.	HORIZONTAL
A.B.	ANCHOR BOLT	HSS	HOLLOW STRUCTURAL SECTION
A.F.F.	ABOVE FINISH FLOOR	INT.	INTERIOR
ALT.	ALTERNATE	JT	JOINT
ARCH.	ARCHITECTURAL	JST	JOIST
@	AT	L	ANGLE
BM	BEAM	LGR	LEDGER
BRG	BEARING	L.L.	LIVE LOAD
BTWN	BETWEEN	LOC.	LOCATION
BLK'G	BLOCKING	LSL	TIMBERSTRAND
BOT.	BOTTOM	LVL	MICROLAM
B.O.F.	BOTTOM OF FOOTING	MAX.	MAXIMUM
BLD'G	BUILDING	M.B.	MACHINE BOLT
B.U.	BUILT UP	MFR	MANUFACTURER
(C=)	CAMBER	MECH.	MECHANICAL
C.I.P.	CAST IN PLACE	MEZZ.	MEZZANINE
C.J.	CONTROL/CONSTRUCTION JOINT	MIN.	MINIMUM
C.P.	COMPLETE PENETRATION	MISC.	MISCELLANEOUS
℄	CENTERLINE	NOM.	NOMINAL
CLR	CLEAR	N.S.	NEAR SIDE
COL.	COLUMN	NTS	NOT TO SCALE
CONC.	CONCRETE	O.C.	ON CENTER
CONFIG.	CONFIGURATION	OPN'G	OPENING
CMU	CONCRETE MASONRY UNIT	OPP.	OPPOSITE
CONN.	CONNECTION	OSB	ORIENTED STRAND BOARD
CONST.	CONSTRUCTION	PL	PLATE
CONT.	CONTINUOUS	PAF	POWDER ACTUATED FASTENER
CONTR.	CONTRACTOR	PERP.	PERPENDICULAR
COORD.	COORDINATE	P.L.F.	POUNDS PER LINEAL FOOT
CTR'D	CENTERED	P.P.	PARTIAL PENETRATION
CU.	CUBIC	P.S.F.	POUNDS PER SQUARE FOOT
D.L.	DEAD LOAD	PSL	PARALLAM
DIA. OR Φ	DIAMETER	PW.	PLYWOOD
DO	DITTO	REINF.	REINFORCING
DBL.	DOUBLE	REQ'D	REQUIRED
D.F.	DOUGLAS FIR	R.O.	ROUGH OPENING
DWG	DRAWING	SHT'G	SHEATHING
DWL	DOWEL	SHT	SHEET
EA.	EACH	SIM.	SIMILAR
EL.	ELEVATION	S.O.G.	SLAB ON GRADE
ENGR.	ENGINEER	SQ.	SQUARE
EQ.	EQUAL	STD	STANDARD
EXIST. OR (E)	EXISTING	STL	STEEL
EXT.	EXTERIOR	STIFF.	STIFFENER
EXP.	EXPANSION	STRUCT.	STRUCTURAL
FTG	FOOTING	T&G	TONGUE AND GROOVE
FDN	FOUNDATION	T.O.F.	TOP OF FOOTING
FLG	FLANGE	T.O.S.	TOP OF STEEL
FLR	FLOOR	TRT'D	TREATED
F.S.	FAR SIDE	TYP.	TYPICAL
FRM'G	FRAMING	U.N.O.	UNLESS NOTED OTHERWISE
GALV.	GALVANIZED	U.T.	ULTRASONIC TESTED
GA.	GAGE	VERT.	VERTICAL
GL.	GLULAM	W.P.	WORK POINT
GR.	GRADE	WT	WEIGHT
GWB	GYPSUM WALL BOARD	W.W.F.	WELDED WIRE FABRIC
HGR	HANGER	W/	WITH
HDR	HEADER	YD	YARD
HT	HEIGHT		

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

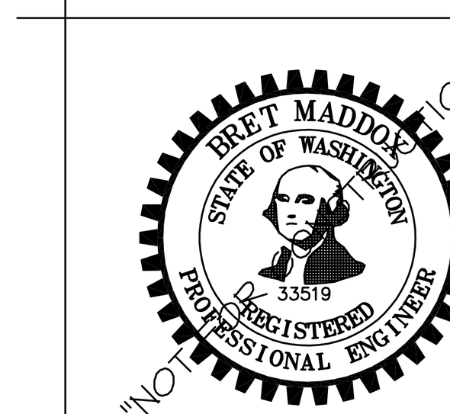
structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS



EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

GENERAL NOTES

revision_

issued_
PERMIT 26 MAY 06

drawn_
RSC

checked_
BAM

sheet_
S0.04

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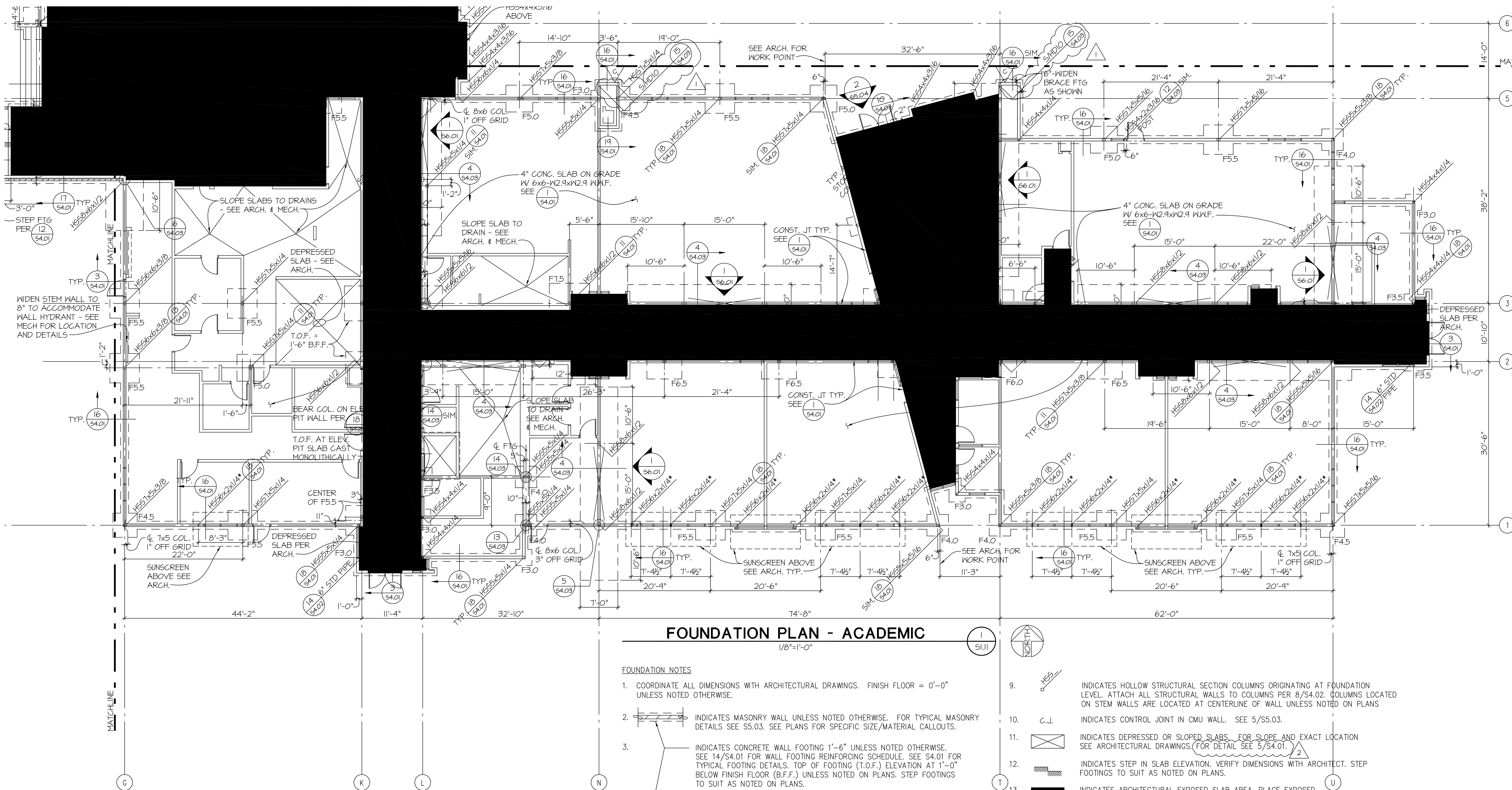
ORIGINAL SHEET IS 30" x 42".

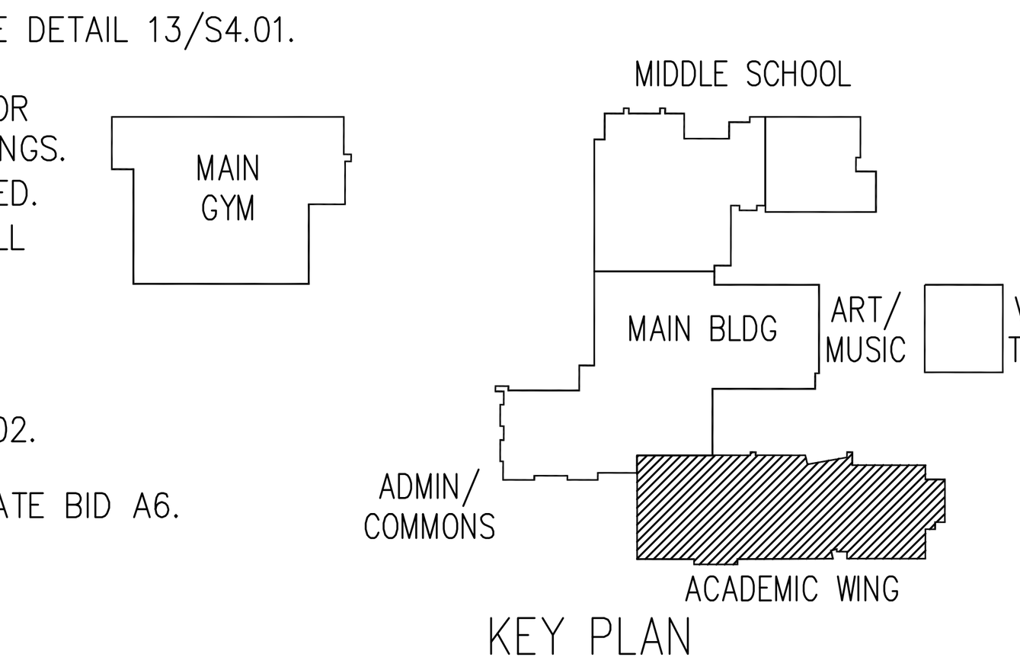


FOUNDATION PLAN - ACADEMIC

1/8"=1'-0" (1 / S1.11)

FOUNDATION NOTES

1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. FINISH FLOOR = 0'-0" UNLESS NOTED OTHERWISE.
2. INDICATES MASONRY WALL UNLESS NOTED OTHERWISE. FOR TYPICAL MASONRY DETAILS SEE S5.03. SEE PLANS FOR SPECIFIC SIZE/MATERIAL CALLOUTS.
3. INDICATES CONCRETE WALL FOOTING 1'-6" UNLESS NOTED OTHERWISE. SEE 14/S4.01 FOR WALL FOOTING REINFORCING SCHEDULE. SEE S4.01 FOR TYPICAL FOOTING DETAILS. TOP OF FOOTING (T.O.F.) ELEVATION AT 1'-0" BELOW FINISH FLOOR (B.F.F.) UNLESS NOTED ON PLANS. STEP FOOTINGS TO SUIT AS NOTED ON PLANS.
4. INDICATES STRUCTURAL WALL WITH COLD-FORMED STEEL FRAMING. 600S162-43 @ 16" O.C. UNLESS NOTED OTHERWISE. FOR TYPICAL METAL STUD WALL FRAMING SEE 1/S5.01. PROVIDE 1/2" WOOD SHEATHING AT ALL EXTERIOR WALLS WITH #10x1" SELF-TAPPING PAN HEAD SCREWS (0.292"ø HEAD MIN.). SPACE @ 6" O.C. AT ALL PANEL EDGES AND @ 12" O.C. AT INTERMEDIATE FRAMING.
5. INDICATES MASONRY VENEER. FOR ATTACHMENT OF VENEER TO BACKING SEE GENERAL NOTES. FOR VENEER LINTEL ANGLES AT OPENINGS SEE 10/S5.03.
6. INDICATES STRUCTURAL WALL WITH COLD-FORMED STEEL FRAMING. 600S162-43 @ 16" O.C. UNLESS NOTED OTHERWISE. FOR TYPICAL METAL STUD WALL FRAMING SEE 1/S5.01. PROVIDE 1/2" WOOD SHEATHING AT ALL EXTERIOR WALLS WITH #10x1" SELF-TAPPING PAN HEAD SCREWS (0.292"ø HEAD MIN.). SPACE @ 6" O.C. AT ALL PANEL EDGES AND @ 12" O.C. AT INTERMEDIATE FRAMING.
   FOUNDATION WHERE NOTED ON PLAN. SEE NOTE 3 ABOVE.
7. "F_" INDICATES CONCRETE SPREAD FOOTING. SEE 10/S4.01 FOR SCHEDULE. T.O.F. ELEVATION AT 1'-0" B.F.F. UNLESS NOTES ON PLANS.
8. INDICATES SPECIAL STRUCTURAL WALL WITH 1/2" WOOD SHEATHING. FOR DETAILS SEE 7/S4.02.
9. HSS_ INDICATES HOLLOW STRUCTURAL SECTION COLUMNS ORIGINATING AT FOUNDATION LEVEL. ATTACH ALL STRUCTURAL WALLS TO COLUMNS PER 8/S4.02. COLUMNS LOCATED ON STEM WALLS ARE LOCATED AT CENTERLINE OF WALL UNLESS NOTED ON PLANS
10. C.J. INDICATES CONTROL JOINT IN CMU WALL. SEE 5/S5.03.
11. INDICATES DEPRESSED OR SLOPED SLABS. FOR SLOPE AND EXACT LOCATION SEE ARCHITECTURAL DRAWINGS. FOR DETAIL SEE 5/S4.01. (2)
12. INDICATES STEP IN SLAB ELEVATION. VERIFY DIMENSIONS WITH ARCHITECT. STEP FOOTINGS TO SUIT AS NOTED ON PLANS.
13. INDICATES ARCHITECTURAL EXPOSED SLAB AREA. PLACE EXPOSED SLABS AFTER INSTALLATION OF ADJACENT STEEL COLUMNS RESTING ON SPREAD FOOTINGS. NO SLAB BLOCKOUTS FOR COLUMNS PERMITTED IN THIS AREA. SEE ARCHITECT FOR CONTROL AND EXPANSION JOINT JOINT LOCATIONS. FOR ADDITIONAL EXPOSED SLAB AREAS SEE ARCHITECT.
14. FOR TYPICAL CONCRETE SLAB-ON-GRADE DETAILS SEE SHEET S4.01. FOR CONTROL JOINT LOCATIONS AT EXPOSED SLAB AREAS SEE ARCH.
15. FOR TYPICAL CONCRETE STAIR-ON-GRADE, SEE 8/S4.01.
16. FOR TYPICAL PLACEMENT OF STEM WALL REINFORCEMENT, STEPS IN FOOTING, AND FOUNDATION CONSTRUCTION JOINTS SEE SEE SHEET S4.01.
17. FOR TYPICAL EXCAVATION LIMITATIONS IN THE PROXIMITY OF FOUNDATIONS, SEE DETAIL 13/S4.01.
18. INTERIOR NON-BEARING WALL W/ COLD-FORMED STEEL FRAMING NOT SHOWN OR SHOWN SCREENED. FOR WALL TYPE AND LOCATION SEE ARCHITECTURAL DRAWINGS. FOR BRACING AT TOP OF WALL SEE 2/S5.02, 3/S5.02 OR 4/S5.02 AS REQUIRED. FOR METAL STUD SIZE SEE SCHEDULE 2/S5.01. FOR TYPICAL METAL STUD WALL FRAMING SEE 1/S5.01.
19. FOR TYPICAL METAL STUD BRIDGING DETAIL SEE 5/S5.01.
20. FOR TYPICAL METAL STUD CEILING FRAMING SCHEDULE AND DETAIL SEE 5/S5.02.
21. * INDICATES STEEL COLUMN TO BE DELETED AS PART OF ALTERNATE BID A6.



KEY PLAN

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ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

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BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
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acoustical design-
SSA ACOUSTICS

BRET MADDOX, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 33519, EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

FOUNDATION PLAN - ACADEMIC

revision_

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PERMIT 26 MAY 06

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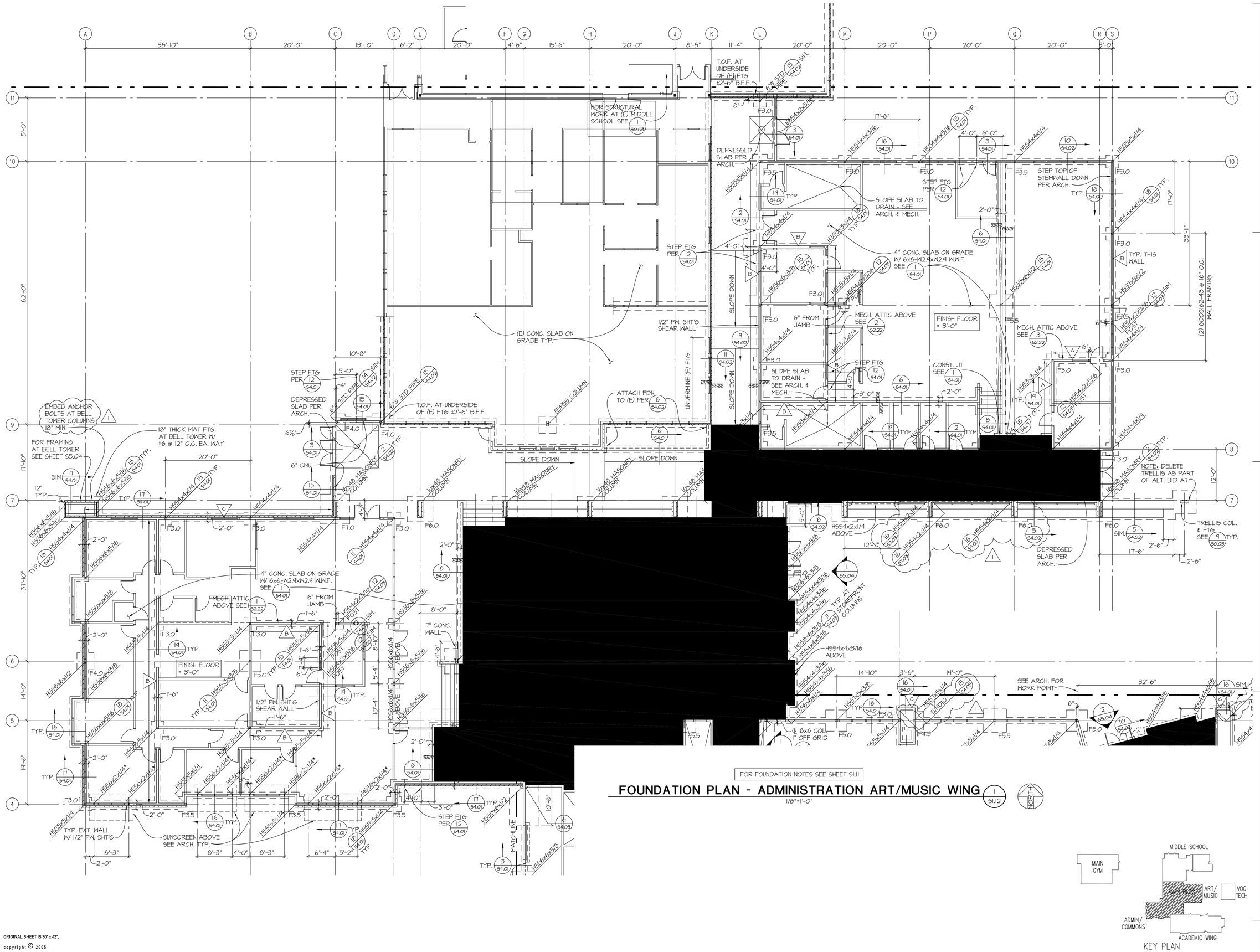
checked_

sheet_
S1.11



mcGRANAHAN ARCHITECTS

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

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electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NOTHING FOLLOWS" BRENT MADISON STATE OF WASHINGTON 12015 REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

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COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

FOUNDATION PLAN - ADMINISTRATION ART/MUSIC WING

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S1.12

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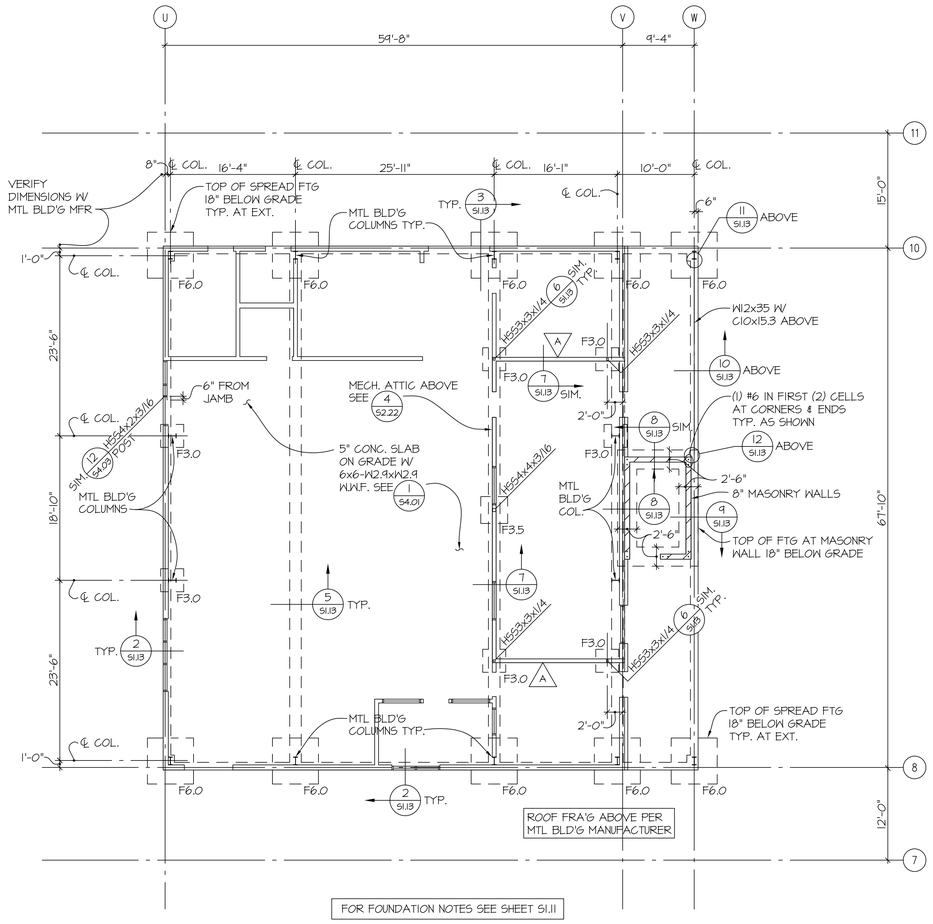
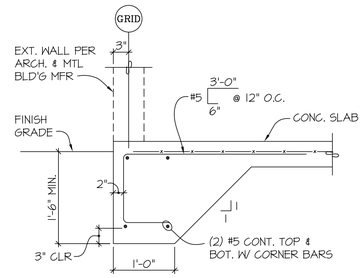


FOUNDATION PLAN - VOCATIONAL BUILDING

1 / S1.13

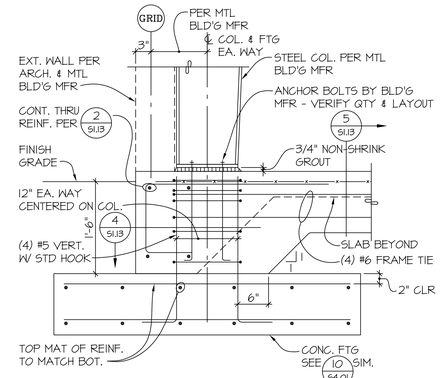
1/8"=1'-0"



SECTION

NO SCALE

2 / S1.13



SECTION

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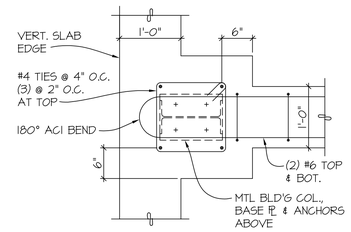
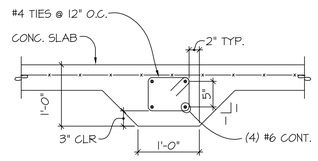
3 / S1.13



PLAN DETAIL

NO SCALE

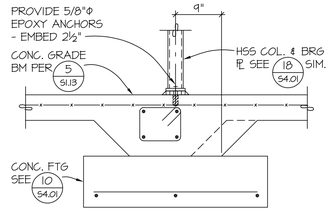
4 / S1.13



SECTION

1"=1'-0"

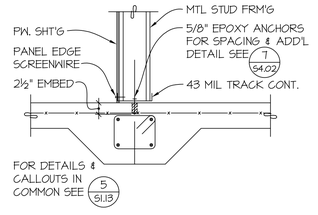
5 / S1.13



SECTION

NO SCALE

6 / S1.13



SECTION

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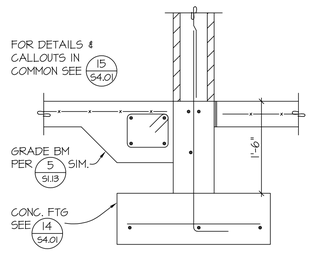
7 / S1.13



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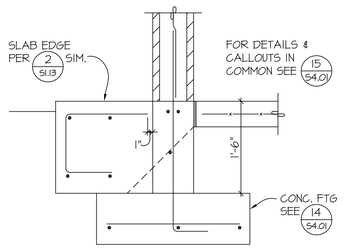
8 / S1.13



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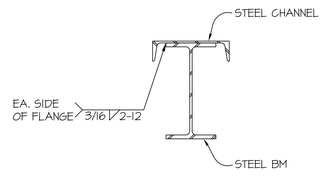
9 / S1.13



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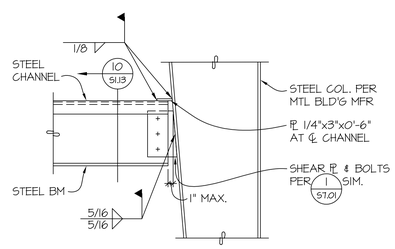
10 / S1.13



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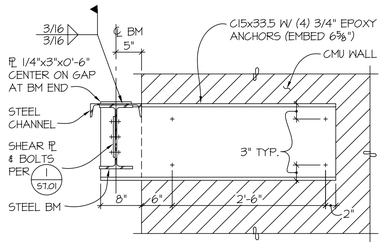
11 / S1.13



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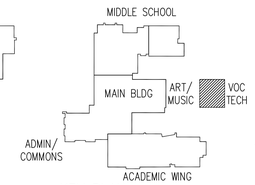
12 / S1.13



KEY PLAN

mcG+ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NOT FOR CONSTRUCTION"
BRENT MADISON HARRIS
STATE OF WASHINGTON
12 - 10175
REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

FOUNDATION PLAN - VOCATIONAL BUILDING

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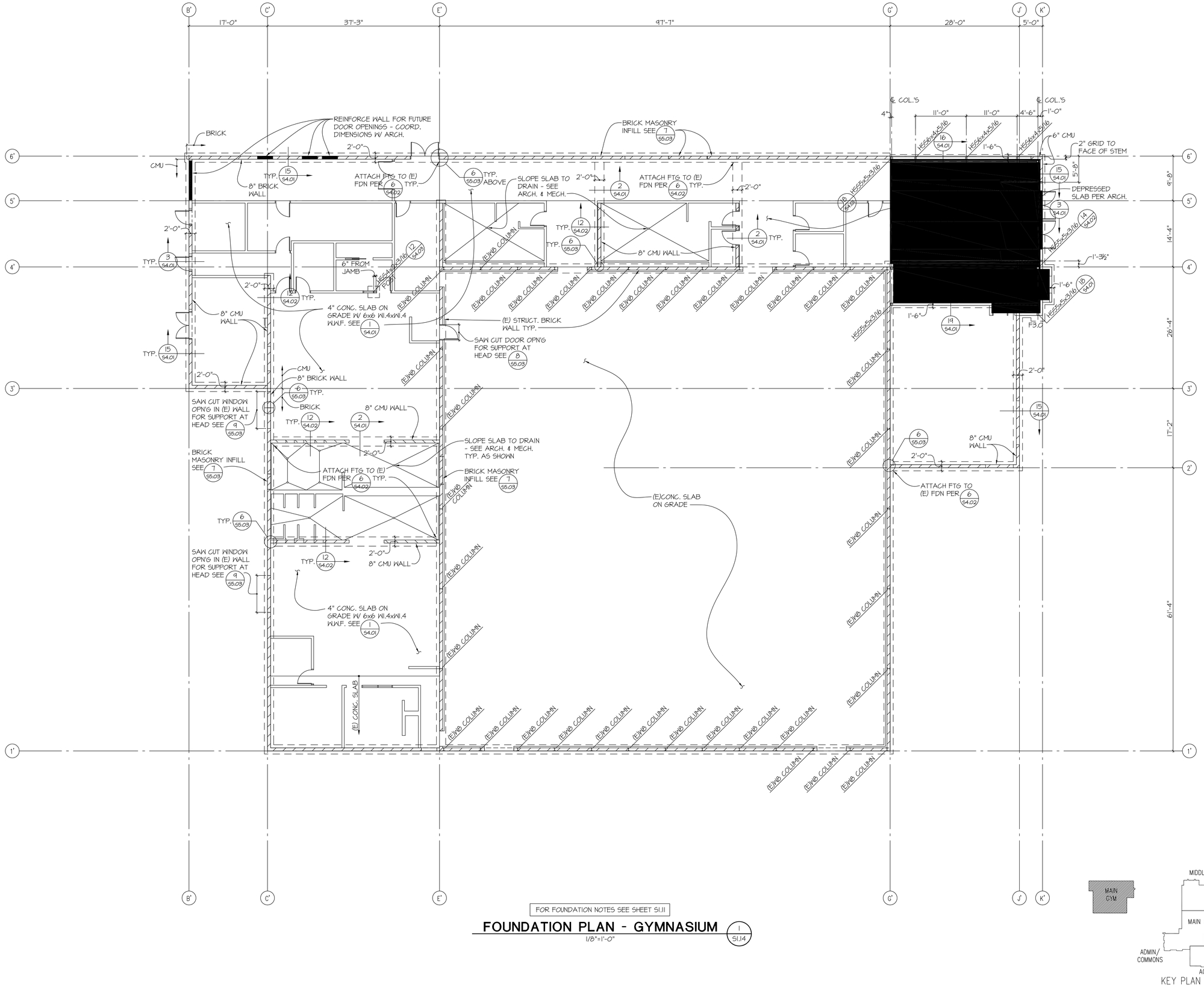
S1.13



FOR FOUNDATION NOTES SEE SHEET S1.11

FOUNDATION PLAN - GYMNASIUM

1/8"=1'-0" — 1/S1.14

KEY PLAN

mcG+ARC

architect_
McGRANAHAN ARCHITECTS

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acoustical design-
SSA ACOUSTICS

"NOT APPROVED FOR CONSTRUCTION"
BRIAN MADISON
STATE OF WASHINGTON
21615
REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

project_
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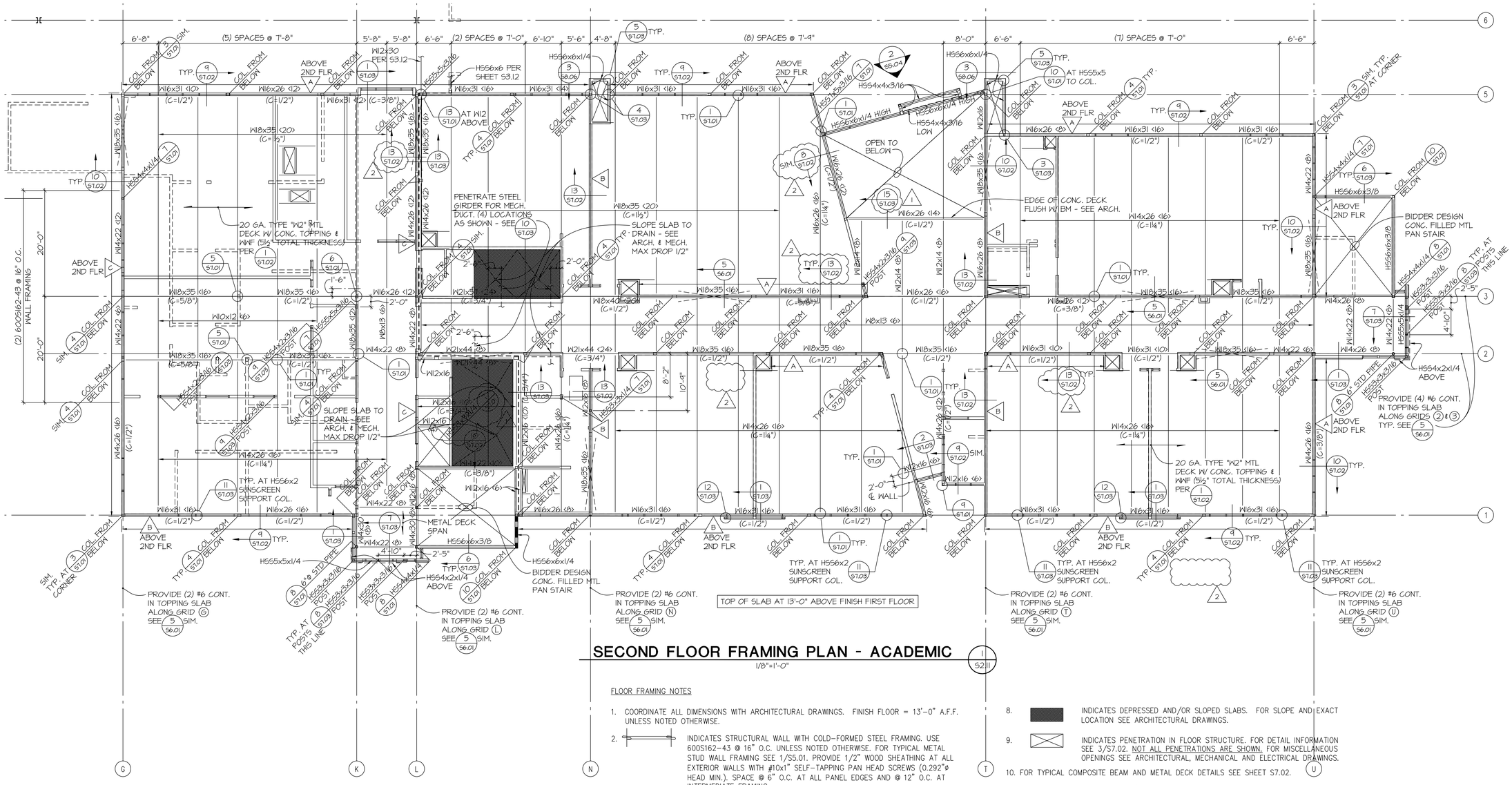
S1.14



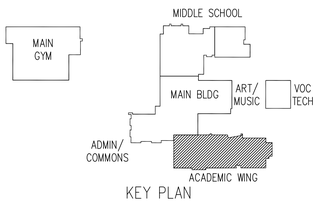
SECOND FLOOR FRAMING PLAN - ACADEMIC

1/8"=1'-0"

S2.11

FLOOR FRAMING NOTES

1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. FINISH FLOOR = 13'-0" A.F.F. UNLESS NOTED OTHERWISE.
2. INDICATES STRUCTURAL WALL WITH COLD-FORMED STEEL FRAMING. USE 600S162-43 @ 16" O.C. UNLESS NOTED OTHERWISE. FOR TYPICAL METAL STUD WALL FRAMING SEE 1/S5.01. PROVIDE 1/2" WOOD SHEATHING AT ALL EXTERIOR WALLS WITH #10x1" SELF-TAPPING PAN HEAD SCREWS (0.292"ø HEAD MIN.). SPACE @ 6" O.C. AT ALL PANEL EDGES AND @ 12" O.C. AT INTERMEDIATE FRAMING.
3. < > INDICATES NUMBER OF COMPOSITE STUDS PER BEAM. FOR STUD LAYOUT SEE 2/S7.02.
4. HSS INDICATES HOLLOW STRUCTURAL SECTION COLUMN ORIGINATING AT FLOOR LEVEL.
5. INDICATES SPECIAL STRUCTURAL WALL WITH 1/2" WOOD SHEATHING. FOR DETAILS SEE 7/S4.02.
6. "(C=_)" INDICATES STEEL BEAM CAMBER. CAMBER = 0" IF NOT INDICATED.
7. INDICATES DIRECTION OF SPAN.
8. INDICATES DEPRESSED AND/OR SLOPED SLABS. FOR SLOPE AND EXACT LOCATION SEE ARCHITECTURAL DRAWINGS.
9. INDICATES PENETRATION IN FLOOR STRUCTURE. FOR DETAIL INFORMATION SEE 3/S7.02. NOT ALL PENETRATIONS ARE SHOWN. FOR MISCELLANEOUS OPENINGS SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.
10. FOR TYPICAL COMPOSITE BEAM AND METAL DECK DETAILS SEE SHEET S7.02.
11. INTERIOR NON-BEARING WALL W/ COLD-FORMED STEEL FRAMING NOT SHOWN OR SHOWN SCREENED. FOR WALL TYPE AND LOCATION SEE ARCHITECTURAL DRAWINGS. FOR BRACING AT TOP OF WALL SEE 2/S5.02, 3/S5.02 OR 4/S5.02 AS REQUIRED. FOR METAL STUD SIZE SEE SCHEDULE 2/S5.01. FOR TYPICAL METAL STUD WALL FRAMING SEE 1/S5.01.
12. FOR TYPICAL METAL STUD BRIDGING DETAIL SEE 5/S5.01.
13. FOR TYPICAL METAL STUD CEILING FRAMING SCHEDULE AND DETAIL SEE 3/S5.02.



KEY PLAN

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mcG+ARC

architect_
McGRANAHAN ARCHITECTS
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food service_
CHANDLER|WILSON DESIGN
acoustical design-
SSA ACOUSTICS

"NOT VALID UNLESS SIGNED BY A REGISTERED PROFESSIONAL ENGINEER" BRENT MADDOX STATE OF WASHINGTON 22015 REGISTERED PROFESSIONAL ENGINEER EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II
client_
COUPEVILLE SCHOOL DISTRICT #204
location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

SECOND FLOOR FRAMING PLAN - ACADEMIC

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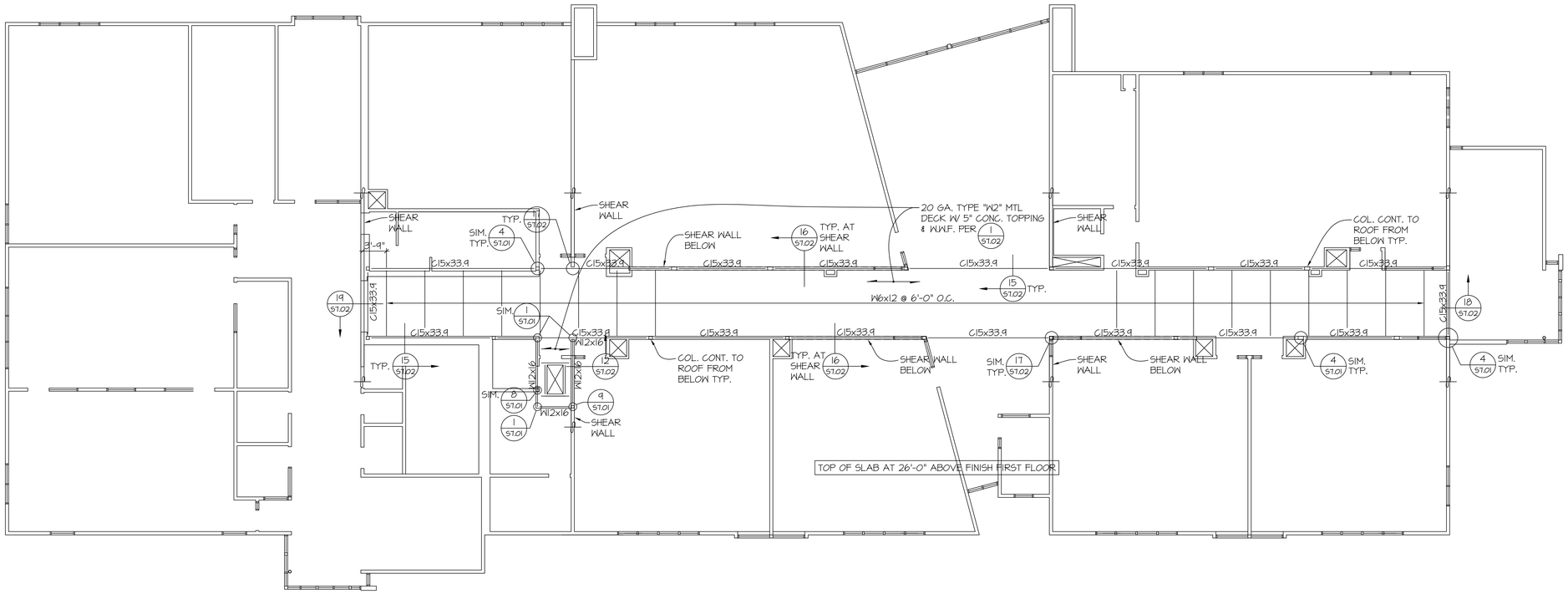
checked_
sheet_
S2.11

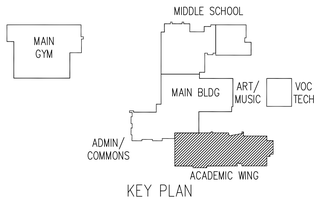


FOR FLOOR FRAMING NOTES SEE SHEET S2.11

MECHANICAL ATTIC FRAMING PLAN - ACADEMIC

1/8"=1'-0"

1 / S2.21



KEY PLAN

mcgranahan architects

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NOT VALID UNLESS SIGNED AND SEALED" BRENT MADISON LOW STATE OF WASHINGTON 22015 REGISTERED PROFESSIONAL ENGINEER

EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL
PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

MECHANICAL ATTIC FRAMING PLAN - ACADEMIC

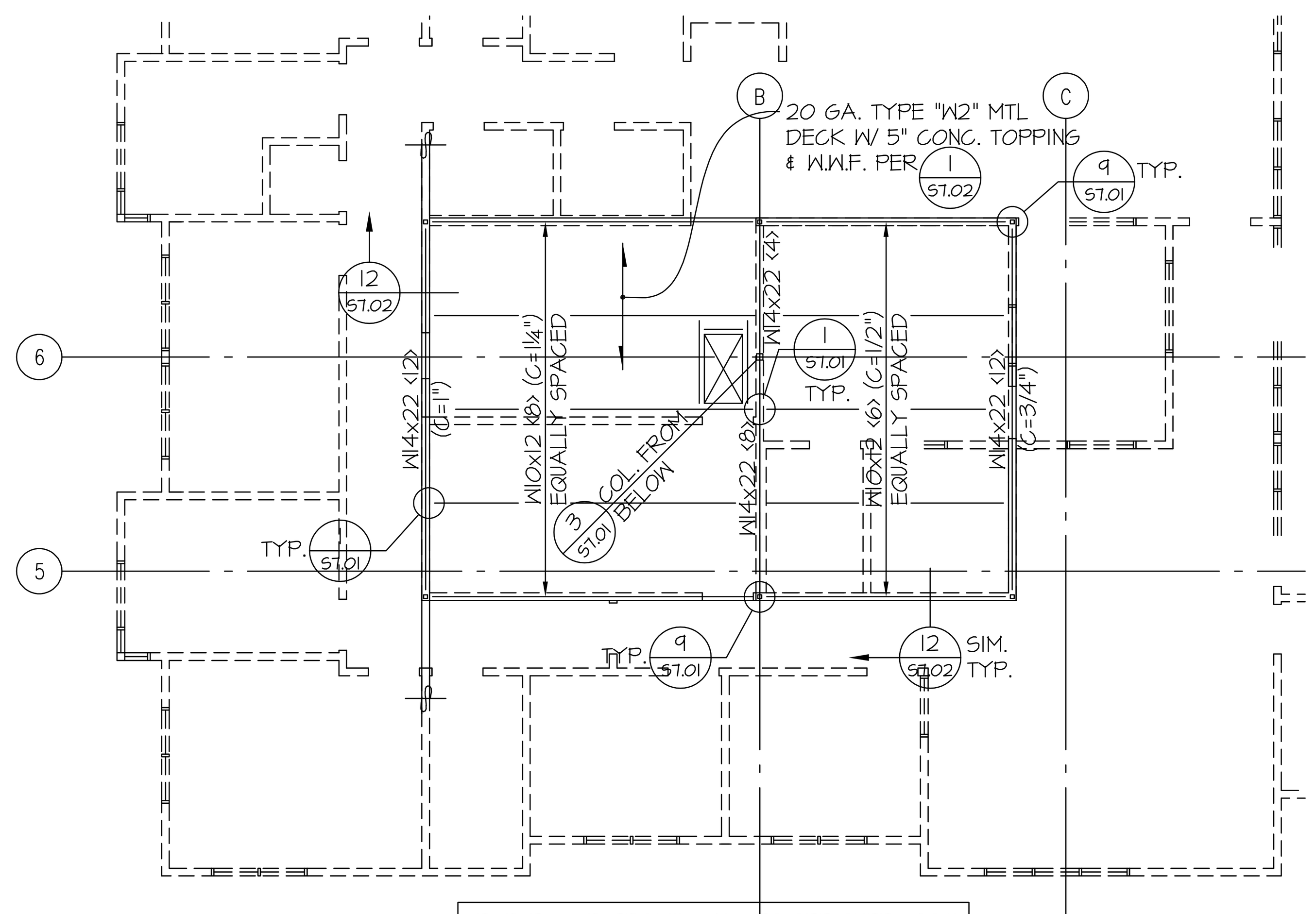
revision_

issued_
PERMIT 26 MAY 06

drawn_

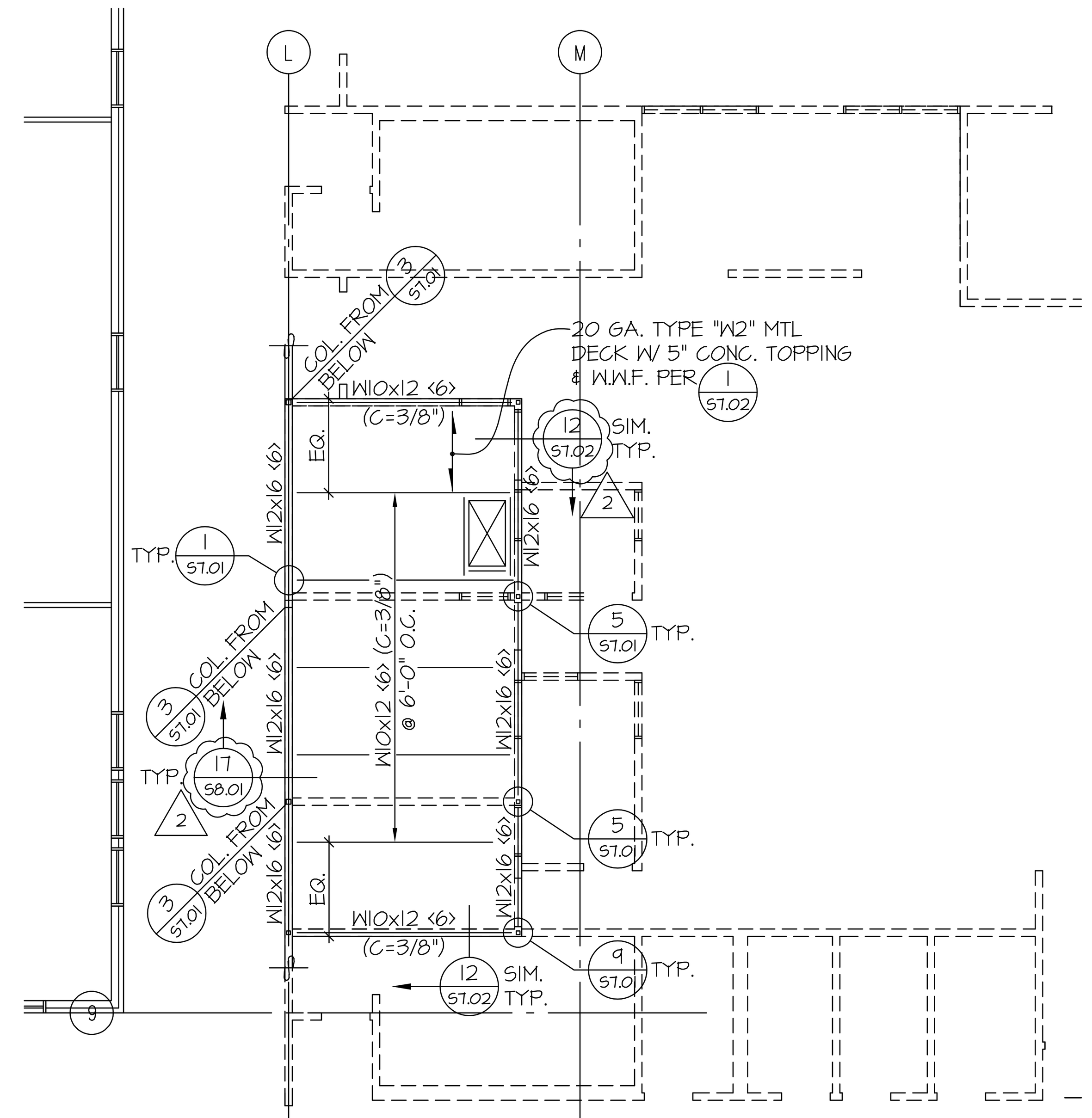
checked_

sheet_
S2.21



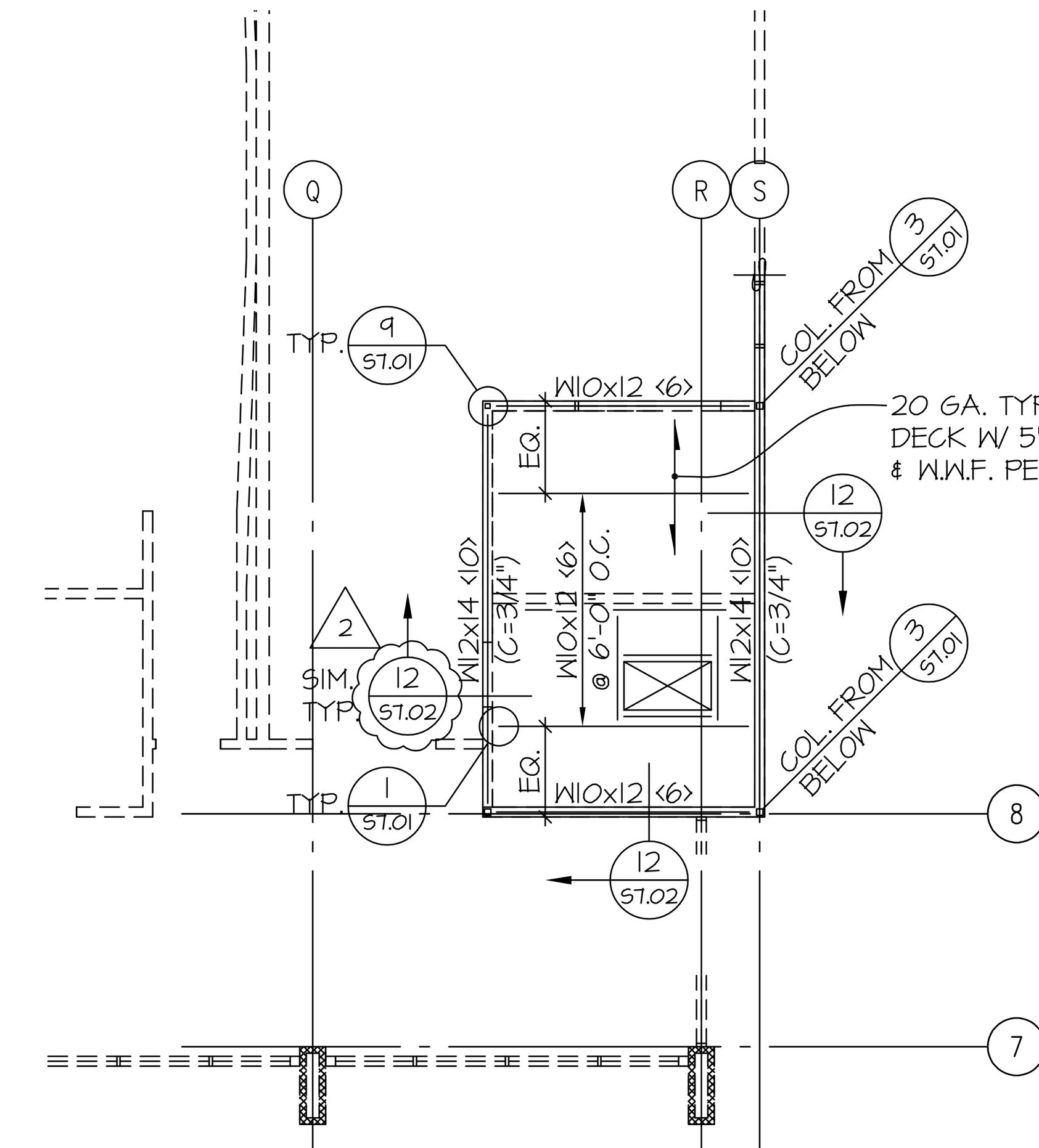
FOR FLOOR FRAMING NOTES SEE SHEET S2.11

MECHANICAL ATTIC FRAMING PLAN 1/S2.22
1/8"=1'-0"



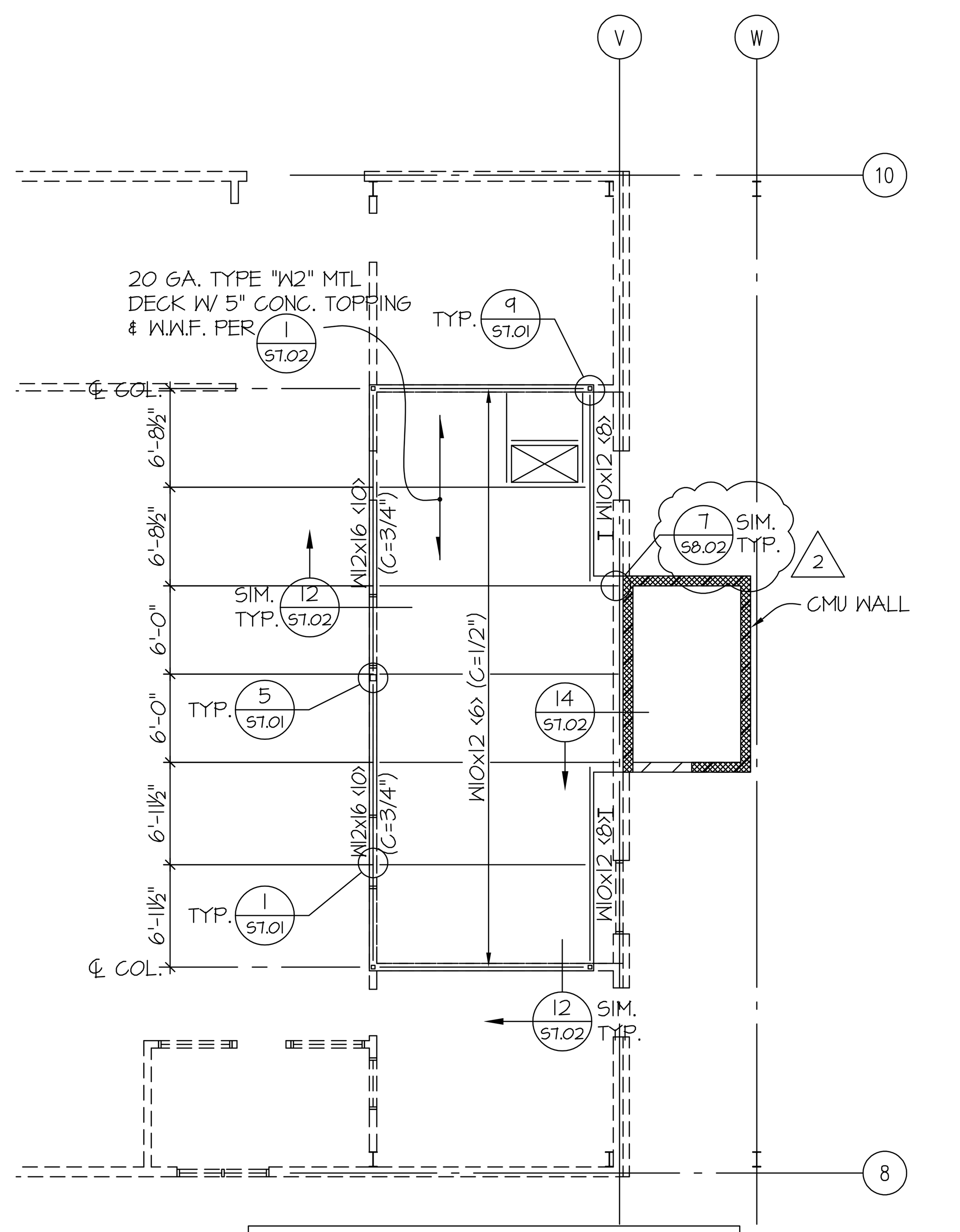
FOR FLOOR FRAMING NOTES SEE SHEET S2.11

MECHANICAL ATTIC FRAMING PLAN 2/S2.22
1/8"=1'-0"



FOR FLOOR FRAMING NOTES SEE SHEET S2.11

MECHANICAL ATTIC FRAMING PLAN 3/S2.22
1/8"=1'-0"



FOR FLOOR FRAMING NOTES SEE SHEET S2.11

MECHANICAL ATTIC FRAMING PLAN 4/S2.22
1/8"=1'-0"

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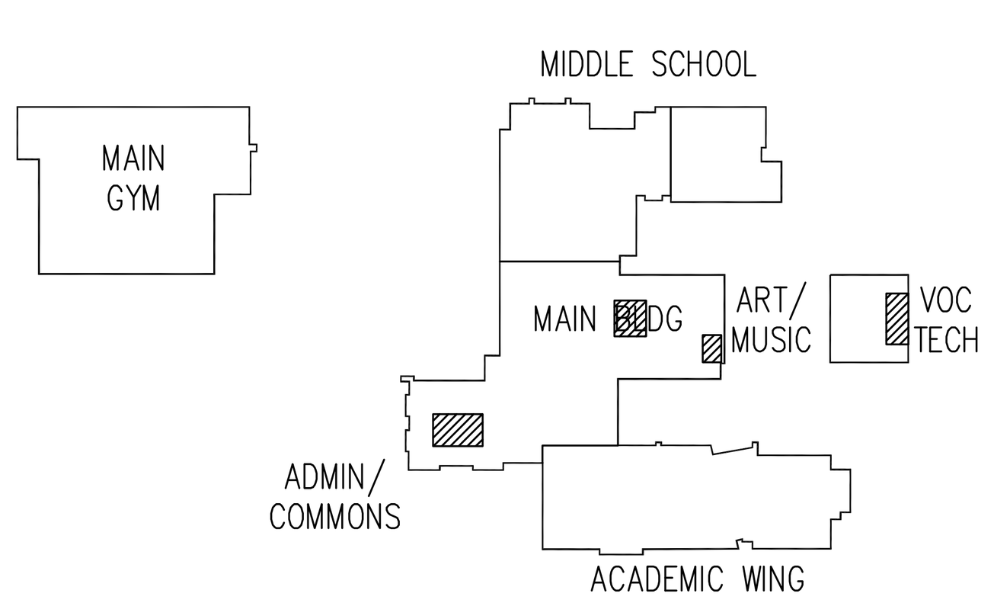
ORIGINAL SHEET IS 30" x 42".



KEY PLAN

mcG·ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

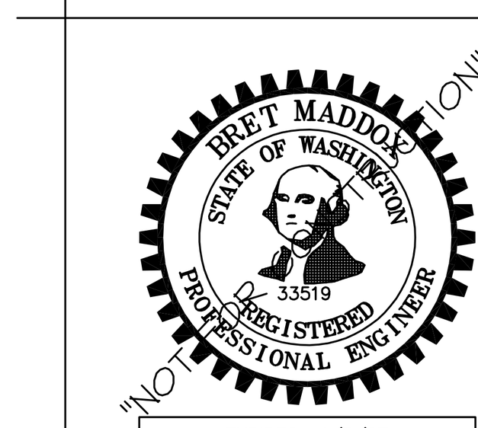
structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS



EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL
PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

MECHANICAL ATTIC FRAMING PLANS

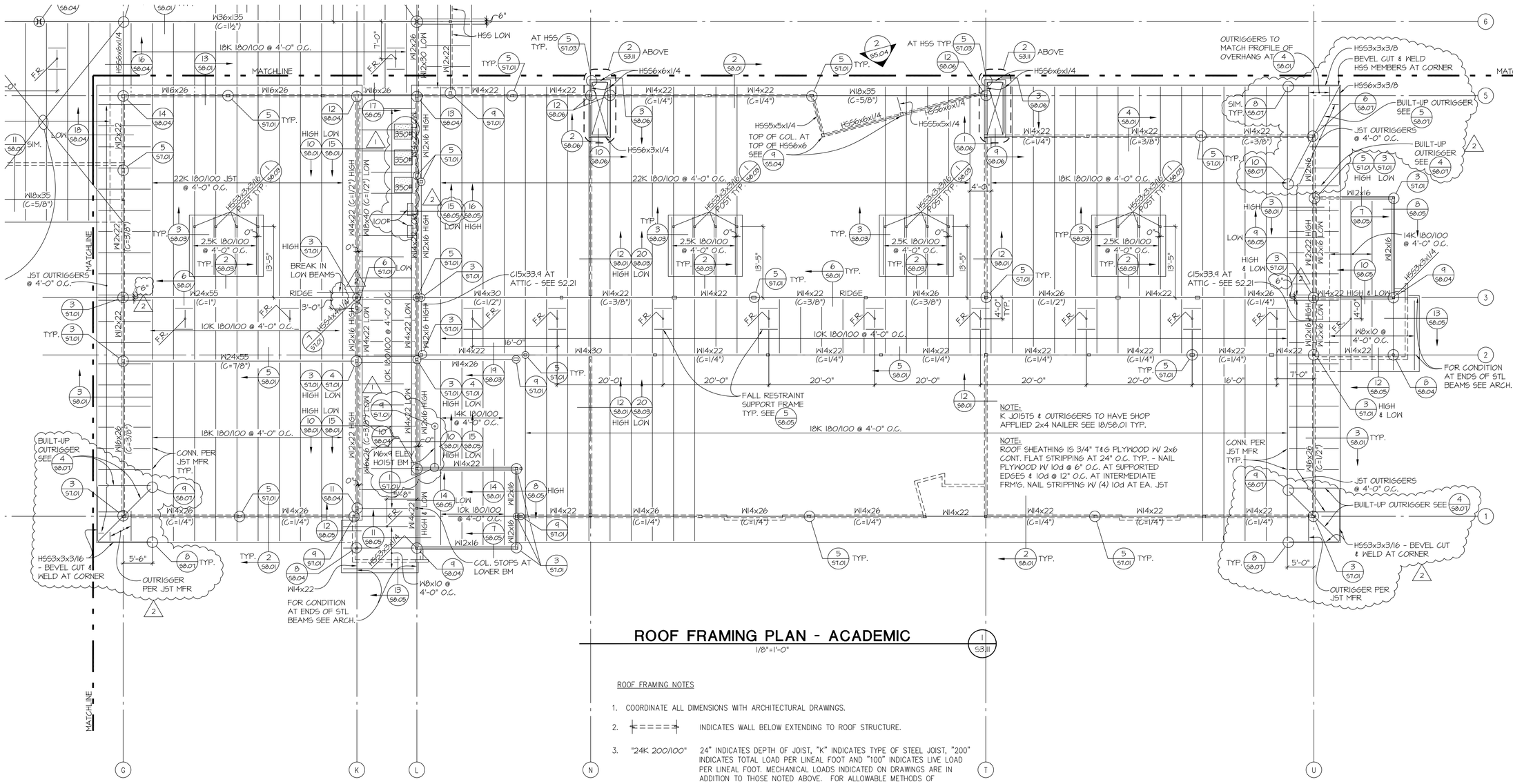
revision_

issued_
PERMIT 26 MAY 06

drawn_

checked_

sheet_
S2.22

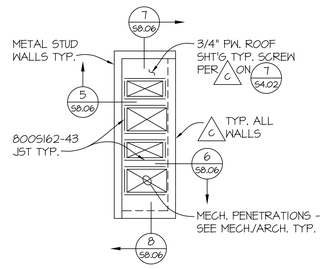


ROOF FRAMING PLAN - ACADEMIC

1/8"=1'-0"

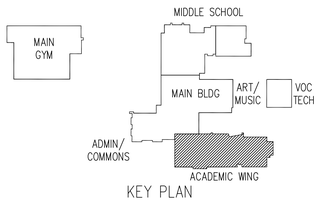
ROOF FRAMING NOTES

1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
2. INDICATES WALL BELOW EXTENDING TO ROOF STRUCTURE.
3. "24K 200/100" 24" INDICATES DEPTH OF JOIST, "K" INDICATES TYPE OF STEEL JOIST, "200" INDICATES TOTAL LOAD PER LINEAL FOOT AND "100" INDICATES LIVE LOAD PER LINEAL FOOT. MECHANICAL LOADS INDICATED ON DRAWINGS ARE IN ADDITION TO THOSE NOTED ABOVE. FOR ALLOWABLE METHODS OF HANGING FROM JOISTS SEE 7/S8.01.
4. JOIST DETAILER TO DETERMINE HORIZONTAL BRIDGING AND CROSS-BRIDGING QUANTITY AND LOCATION PER SJI REQUIREMENTS. JOIST MANUFACTURER TO PROVIDE BRIDGING AND ERECTOR TO INSTALL PER SHOP DRAWINGS. FOR TYPICAL BRIDGING DETAILS SEE 8/S8.01 & 9/S8.01.
5. INDICATES PENETRATION IN ROOF. FOR ADDITIONAL MISCELLANEOUS OPENINGS IN ROOF FOR MECHANICAL PENETRATIONS SEE MECHANICAL DRAWINGS. FOR SUPPORT DETAILS SEE 18/S8.05, 19/S8.05 AND 2/S8.02.
6. INDICATES MECHANICAL UNIT SUPPORTED BY ROOF STRUCTURE. SEE PLAN FOR MAXIMUM WEIGHT.
7. FOR MAXIMUM ALLOWABLE MISCELLANEOUS LOADS SUPPORTED FROM ROOF JOISTS SEE 7/S8.01.
8. F.R. INDICATES FALL RESTRAINT ANCHOR. FOR DETAILS SEE 4/S8.05 AND 5/S8.05.



FRAMING PLAN

1/4"=1'-0"



KEY PLAN

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER/WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NOT FOR CONSTRUCTION" — EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

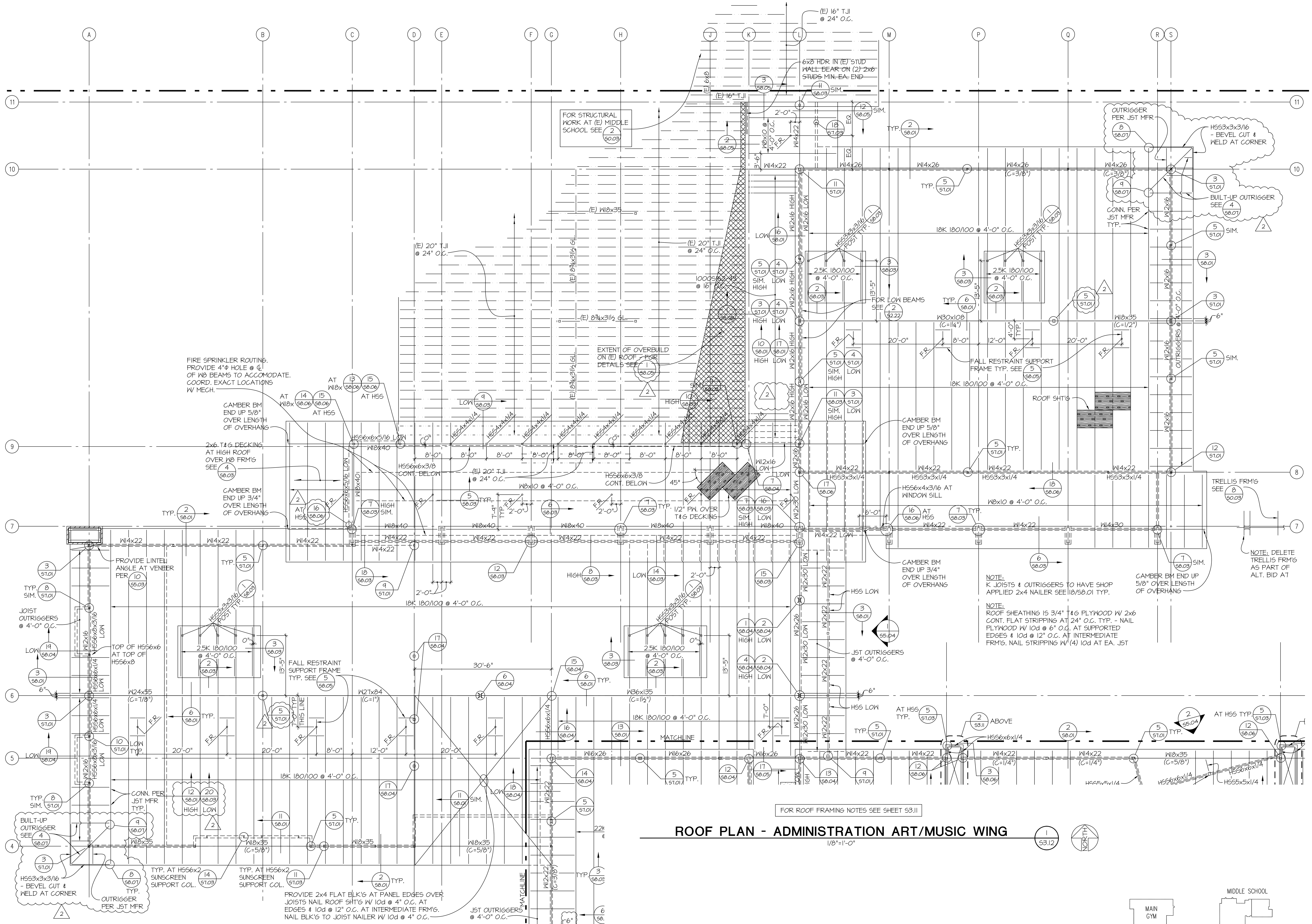
revision_

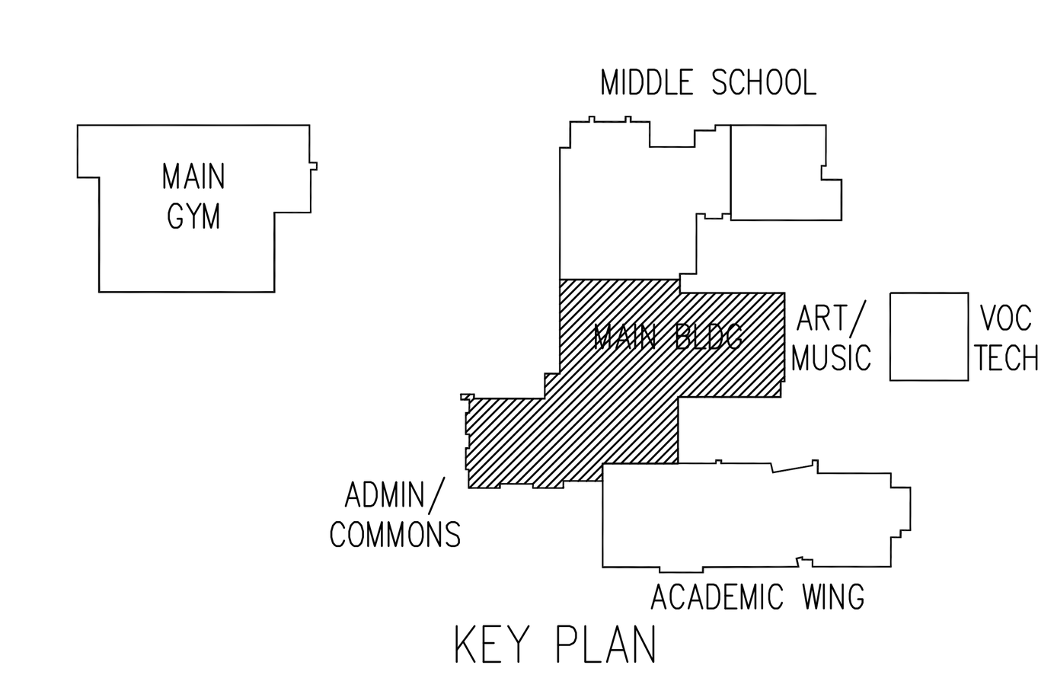
issued_
PERMIT 26 MAY 06

drawn_

checked_

sheet_
S3.11





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ORIGINAL SHEET IS 30" x 42".

mcg•ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

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acoustical design-
SSA ACOUSTICS

BRET MADDOX — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 4/5/07

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COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING PLAN - ADMINISTRATION ART/MUSIC WING

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PERMIT 26 MAY 06

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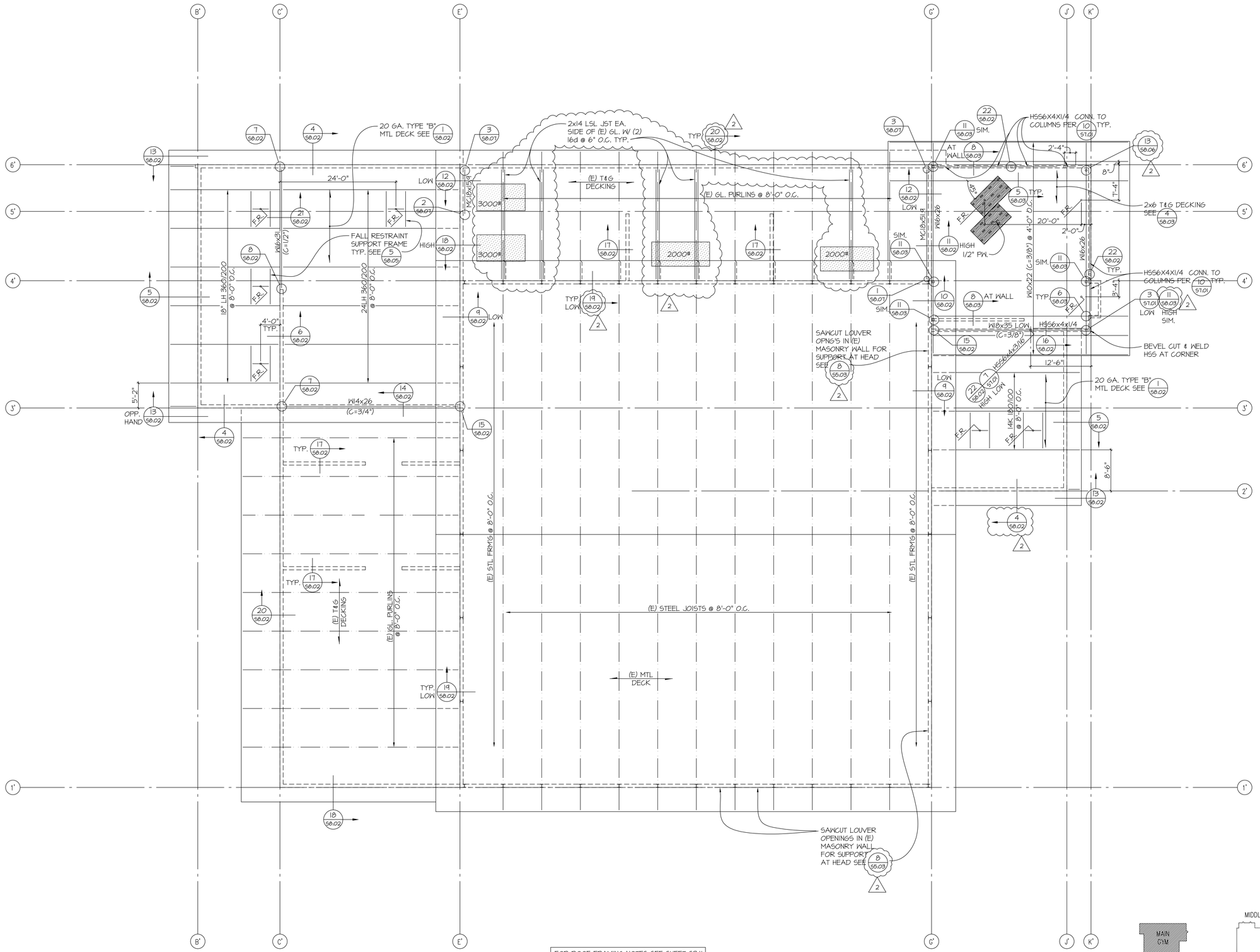
checked_

sheet_
S3.12



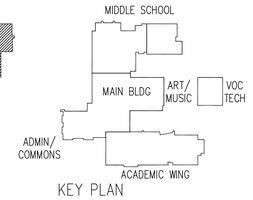
FOR ROOF FRAMING NOTES SEE SHEET S3.11

ROOF FRAMING PLAN - GYMNASIUM

1/8"=1'-0"

1 S3.14

MAIN GYM



KEY PLAN

mcG+ARC

architect_
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acoustical design-
SSA ACOUSTICS

"NOT VALID UNLESS SIGNED" — BRENT MADISON — STATE OF WASHINGTON — 22015 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING PLAN - GYM

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checked_

sheet_
S3.14

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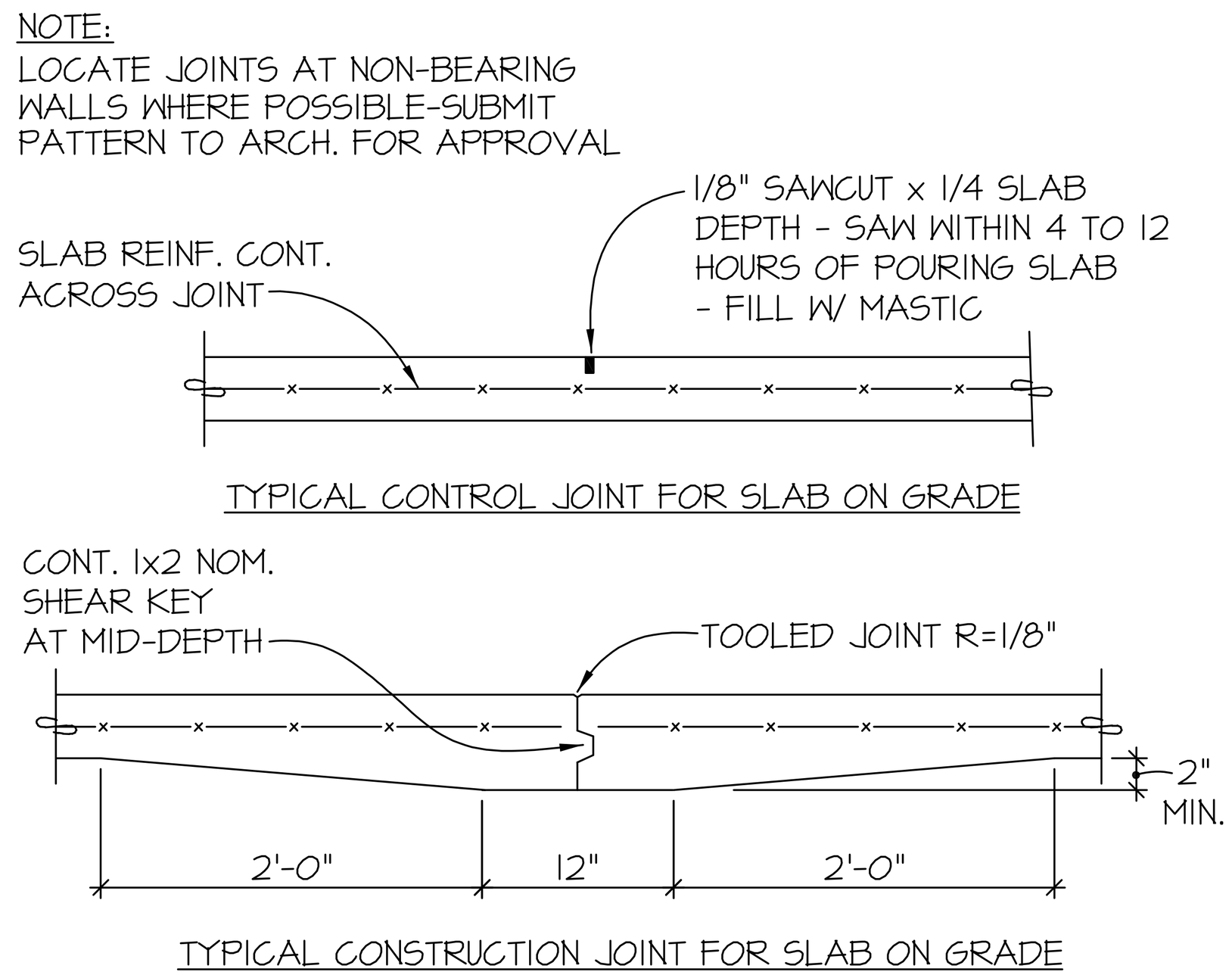

SECTION 1/S4.01
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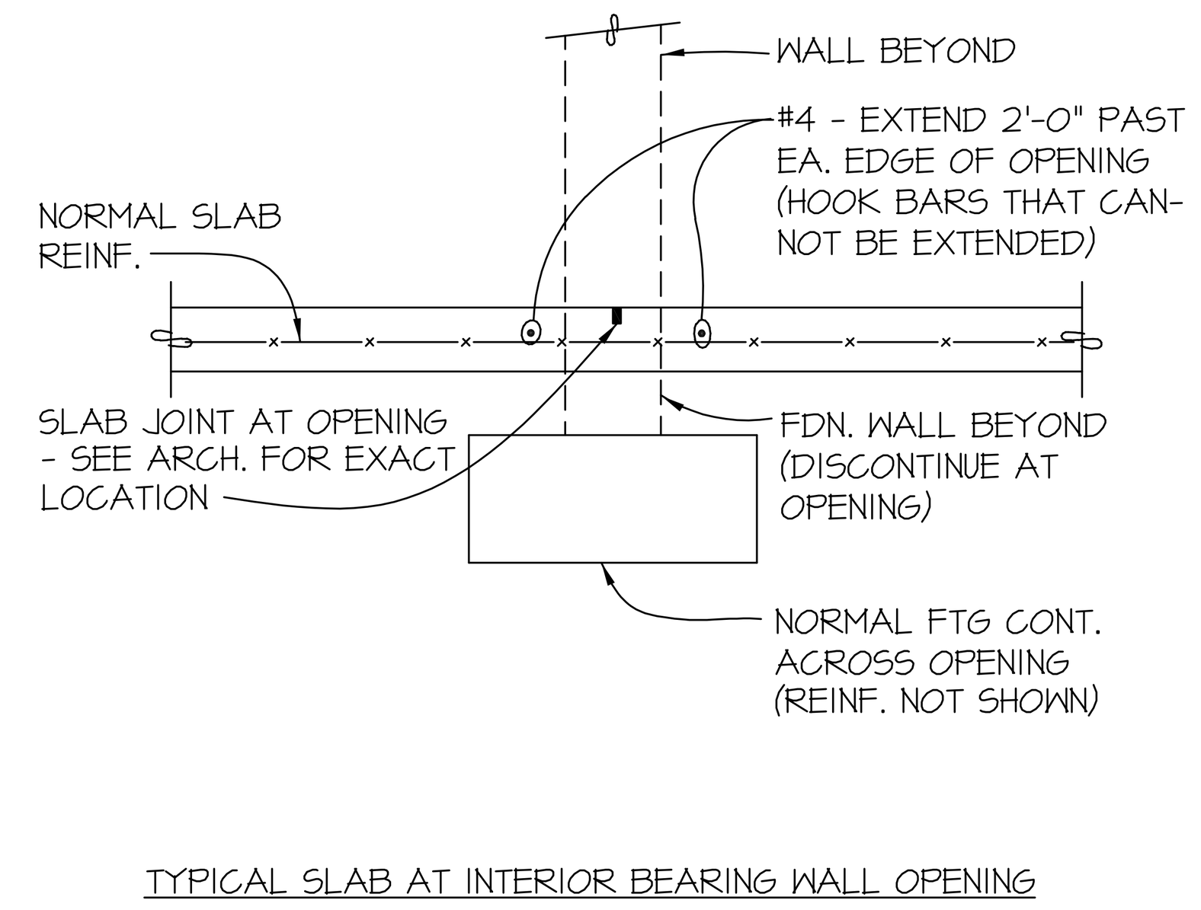

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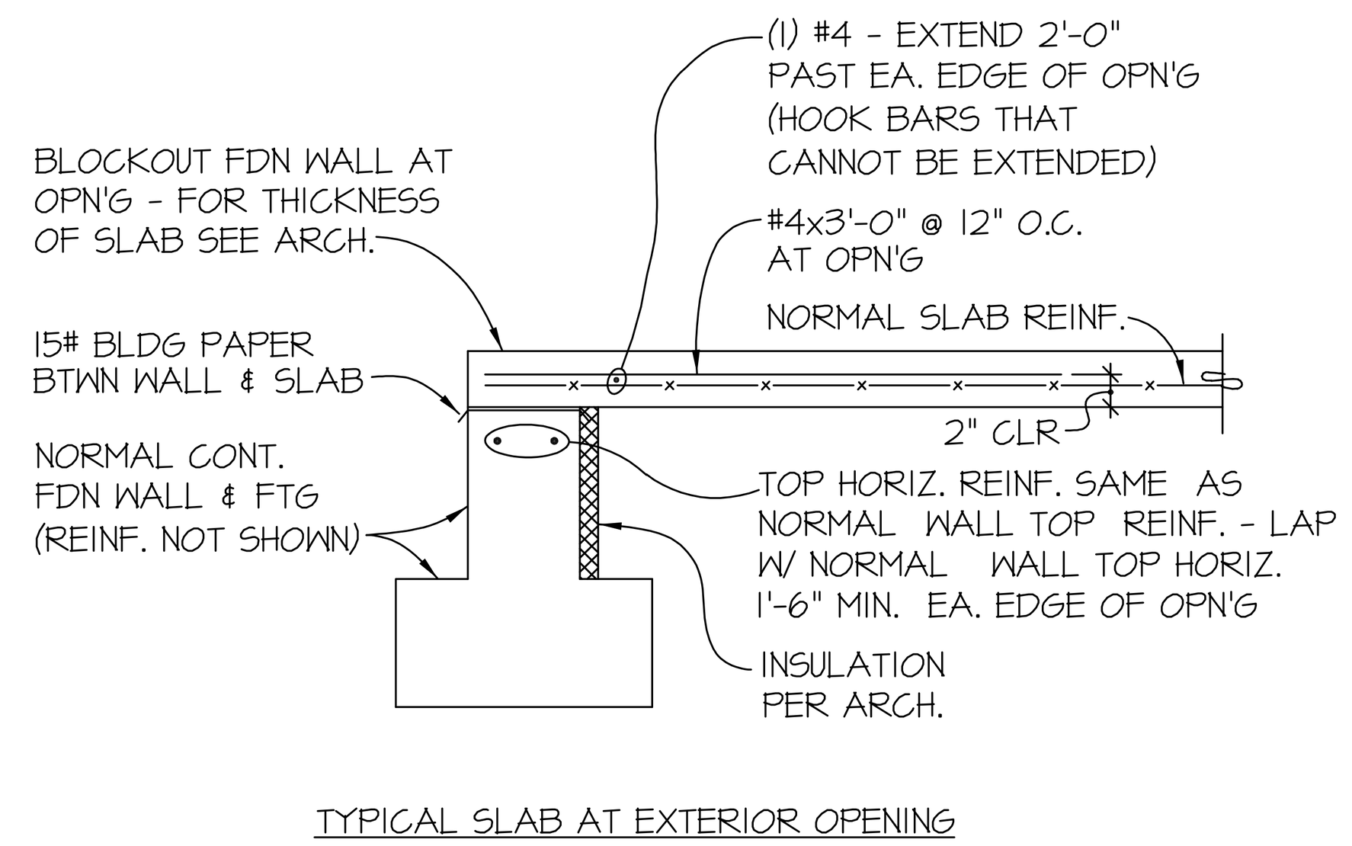

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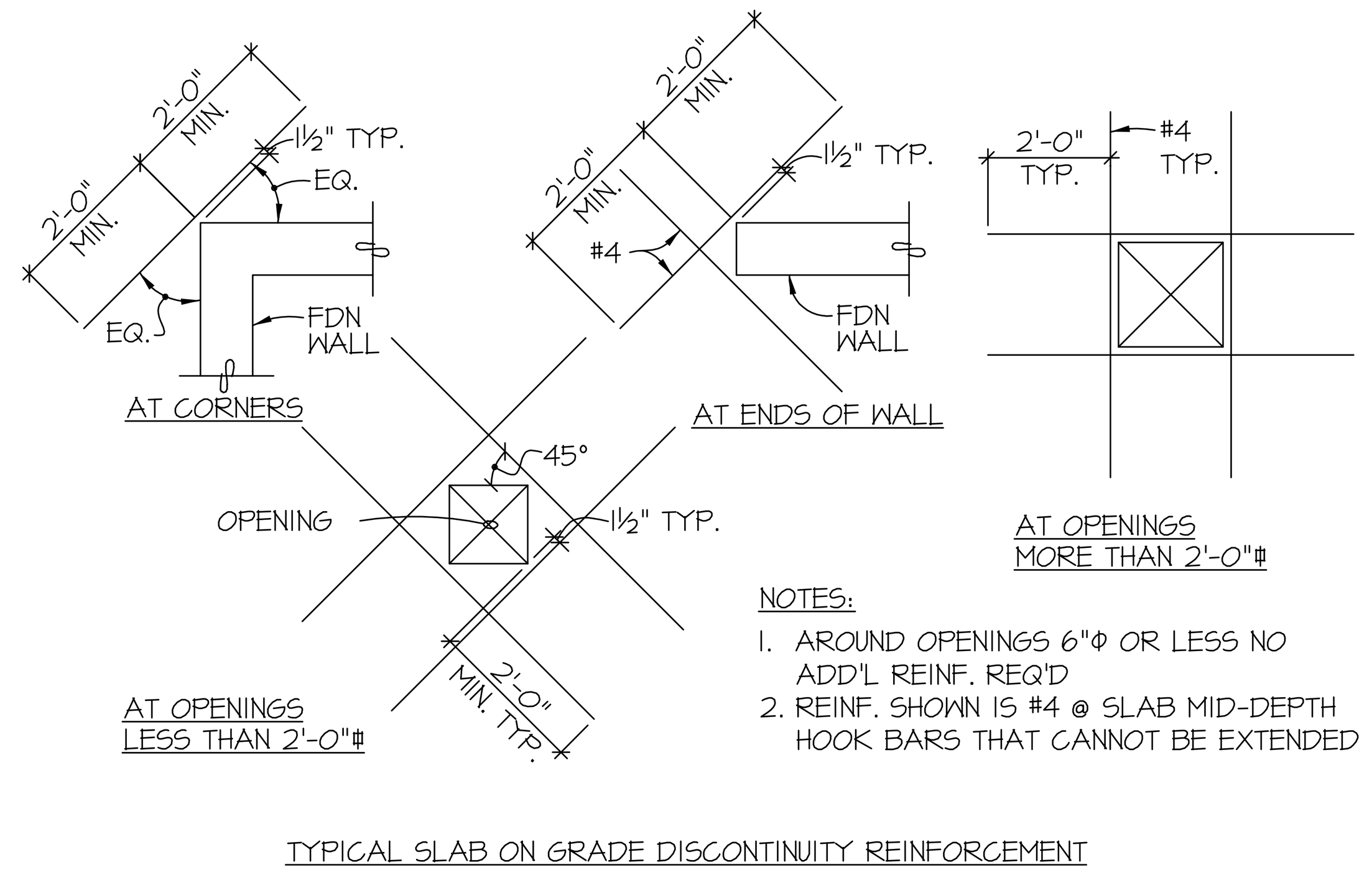

PLAN DETAILS 4/S4.01
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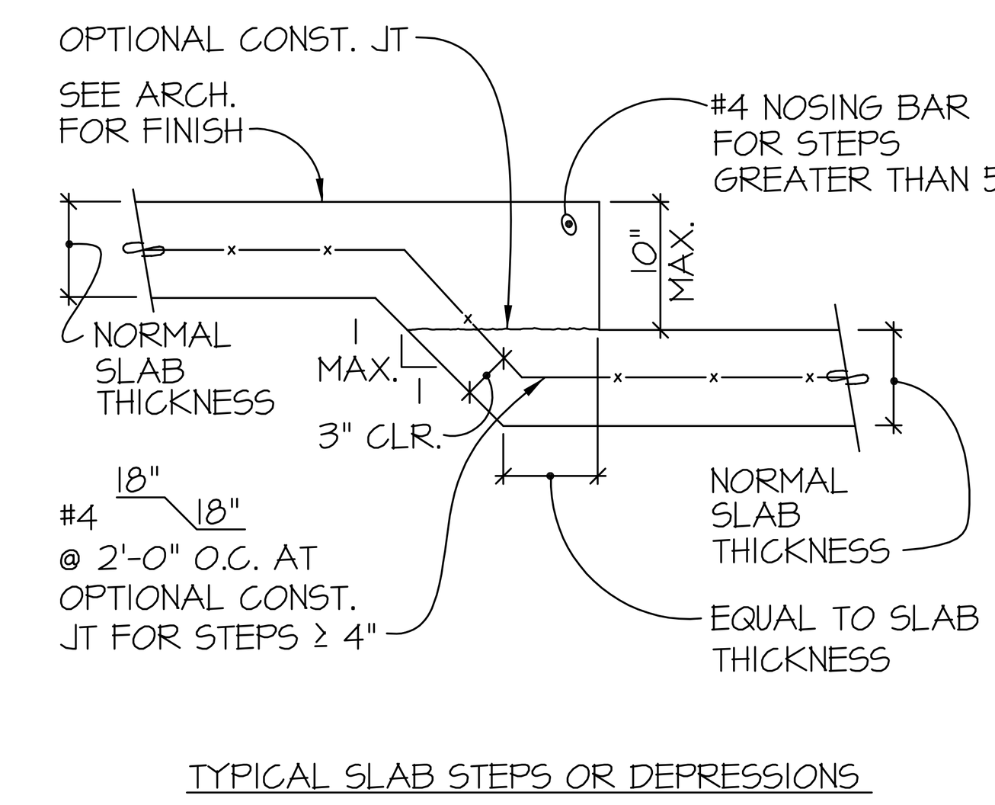

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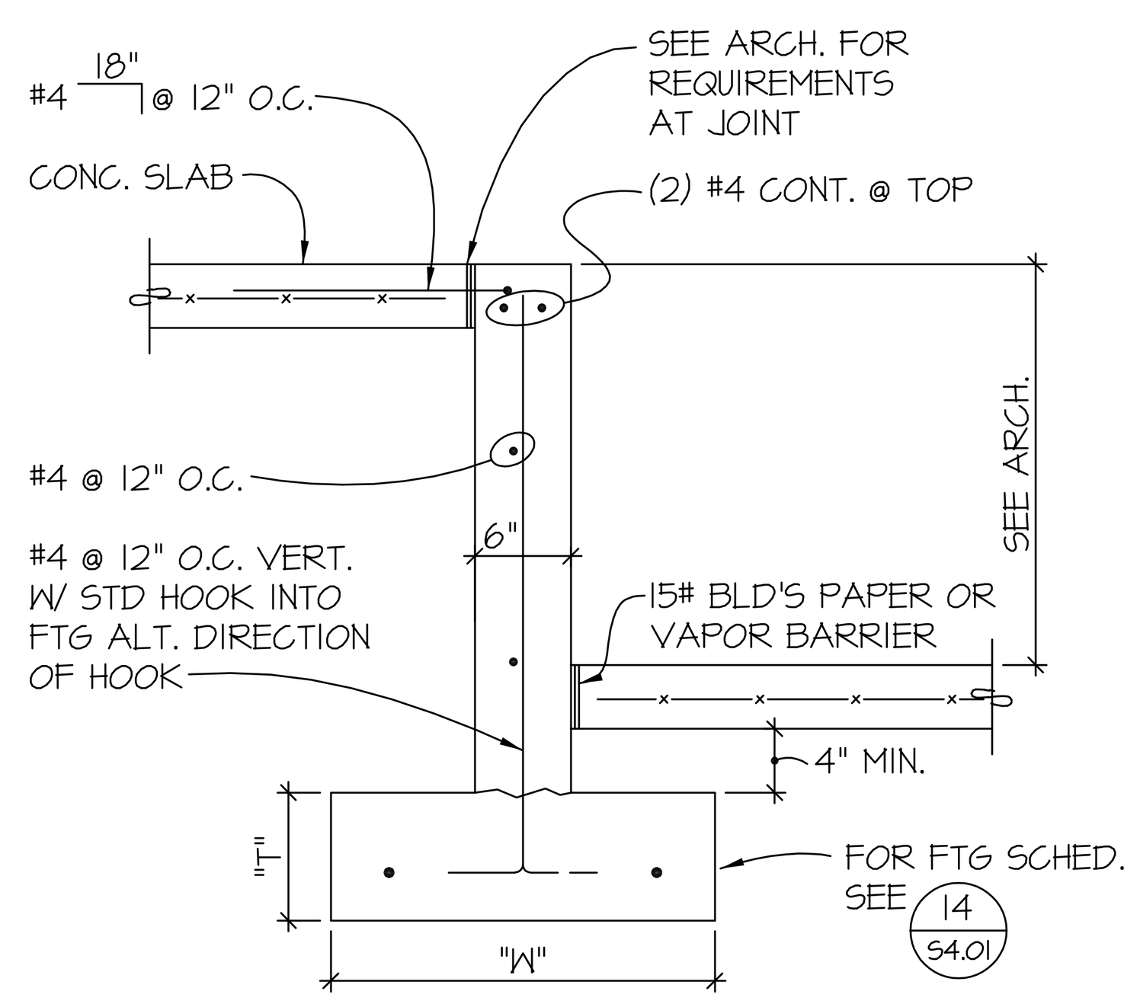

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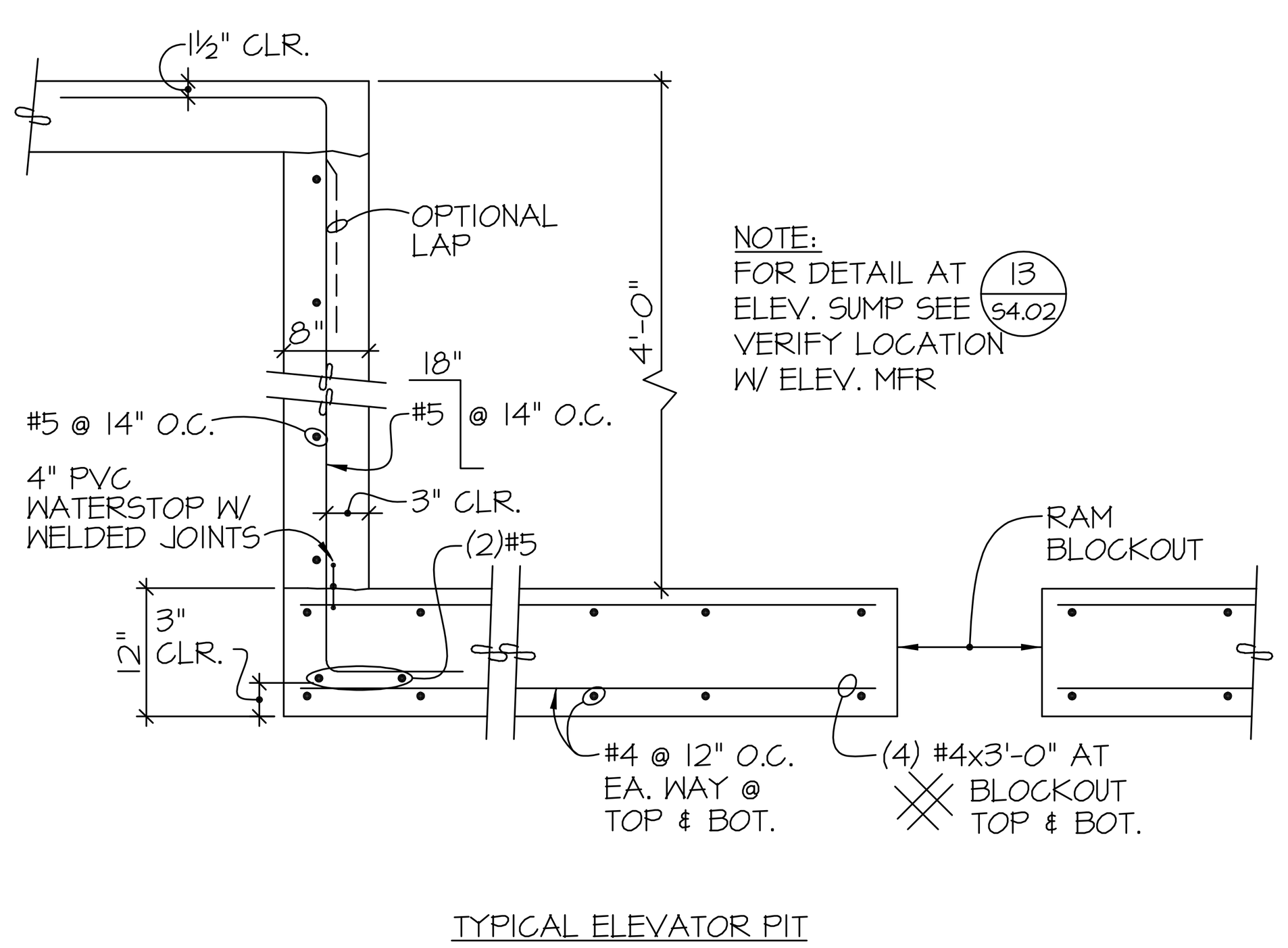

SECTION 7/S4.01
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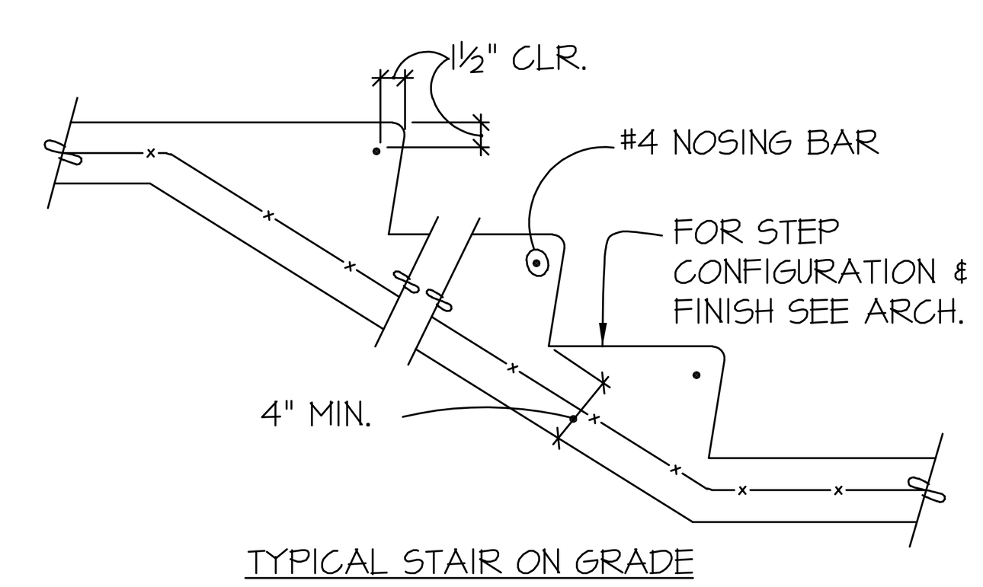

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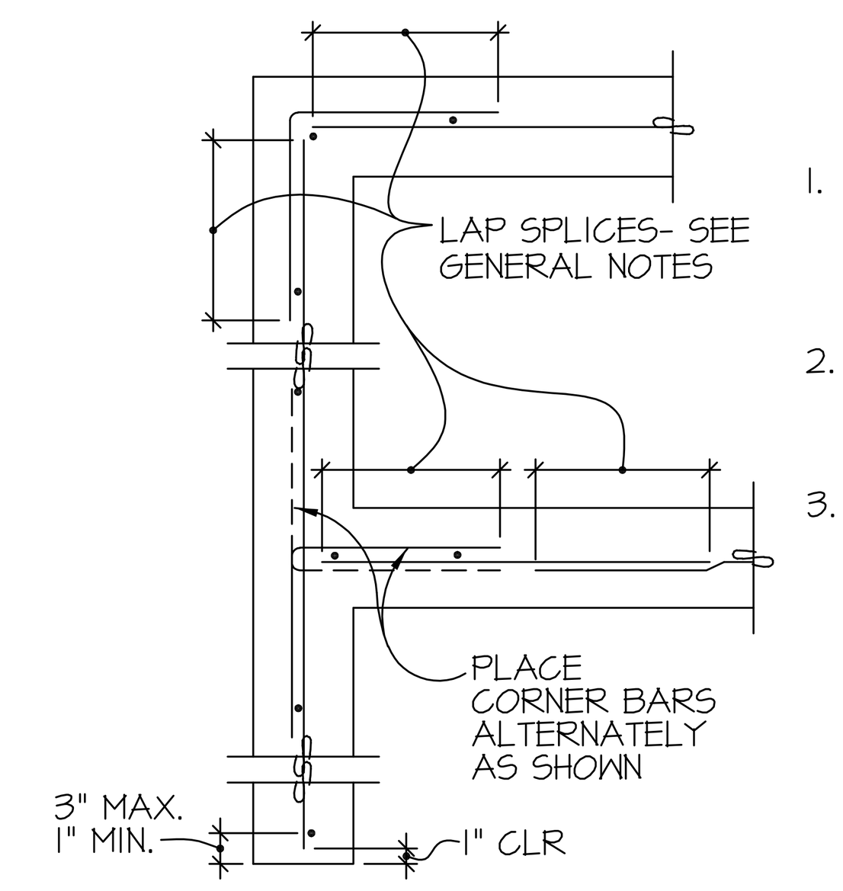
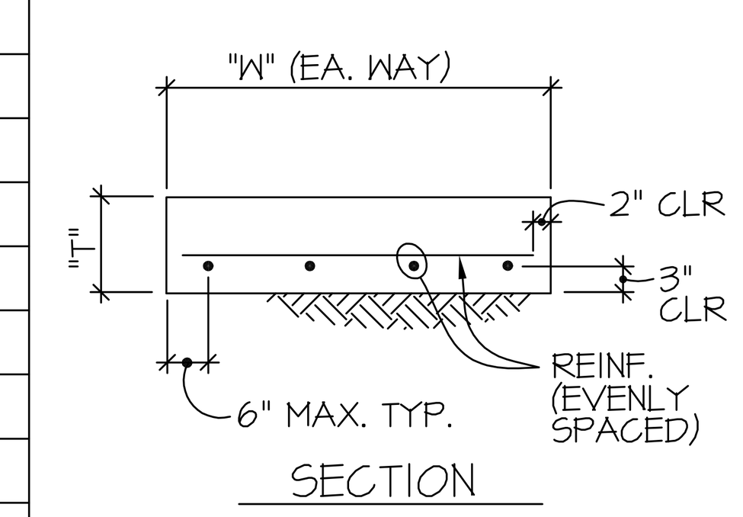


NOTES:
1. VERT. REINF. SHOWN IS ADD'L IF NORMAL STEM WALL REINF. IS NOT IN PROPER LOCATION.
2. CORNER BARS ARE SAME SIZE & SPACING AS HORIZ REINF.
3. STD HOOK MAY BE SUBSTITUTED FOR CORNER BARS

TYPICAL REINFORCING PLACEMENT PLAN FOR CONCRETE STEM WALLS

SECTION 9/S4.01
NO SCALE

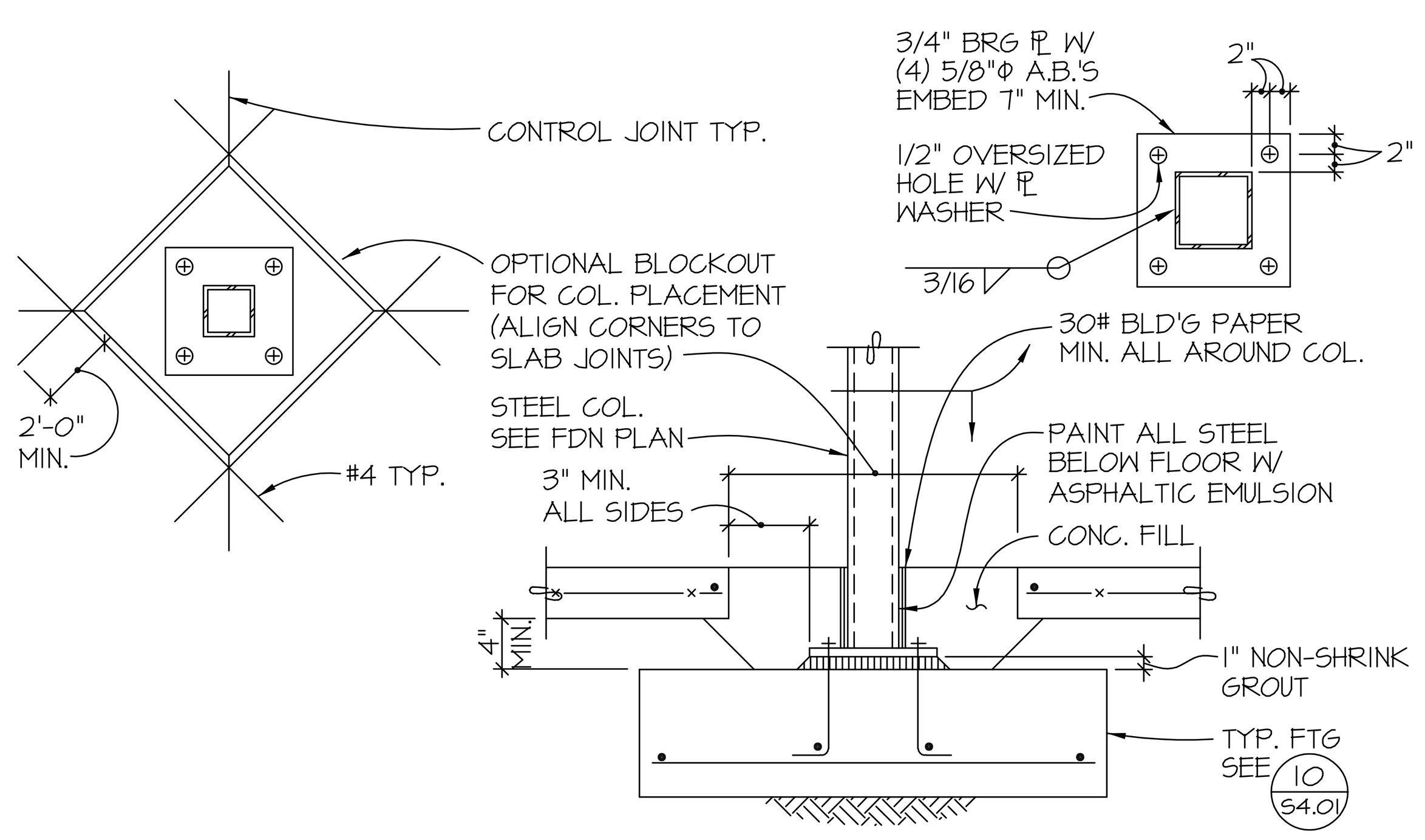
MARK	DIMENSIONS "W"	DIMENSIONS "T"	REINF. EACH WAY
F3.0	3'-0"	10"	(2)#5
F3.5	3'-6"	10"	(3)#5
F4.0	4'-0"	10"	(4)#5
F4.5	4'-6"	12"	(4)#6
F5.0	5'-0"	12"	(4)#6
F5.5	5'-6"	12"	(5)#6
F6.0	6'-0"	14"	(6)#6
F6.5	6'-6"	14"	(7)#6
F7.0	7'-0"	16"	(6)#7
F7.5	7'-6"	16"	(7)#7
F8.0	8'-0"	16"	(8)#7



NOTES:
1. CENTER ALL FOOTINGS ON COLUMN ABOVE EXCEPT AS SHOWN OTHERWISE.
2. FOOTINGS SHALL BEAR ON UNDISTURBED OR COMPACTED MATERIAL, SEE GENERAL NOTES. DESIGN BEARING PRESSURE IS 2500 PSF.

TYPICAL CONCRETE SPREAD FOOTING DETAILS

SECTION 10/S4.01
NO SCALE



SECTION 11/S4.01
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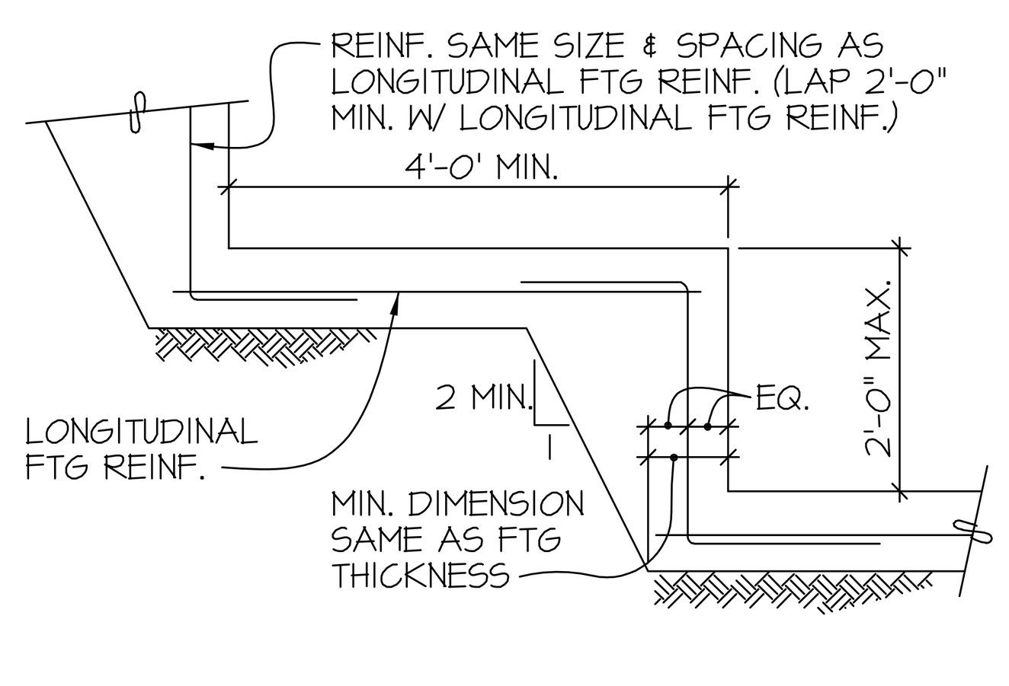

DETAIL 12/S4.01
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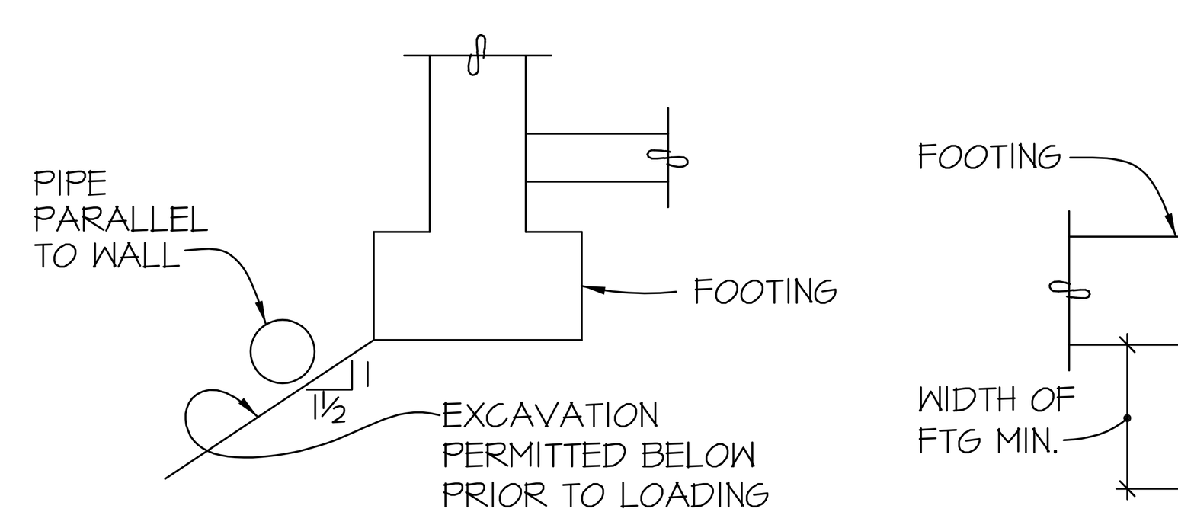
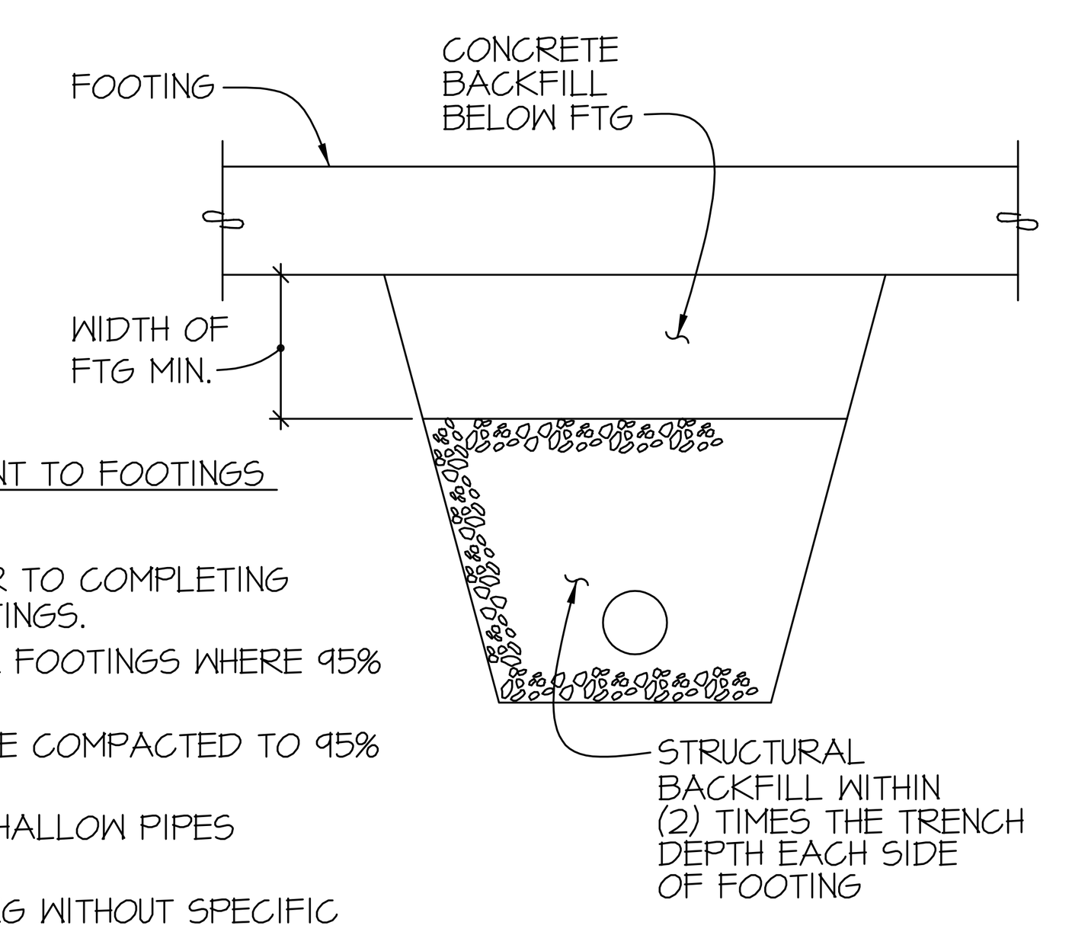
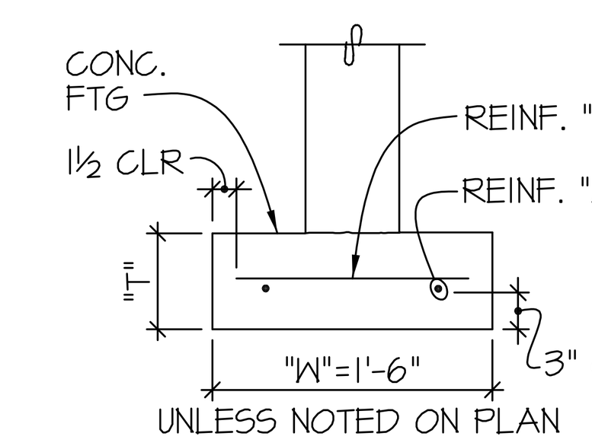




NOTES:
1. FOUNDATIONS SHALL NOT BE LOADED PRIOR TO COMPLETING STRUCTURAL BACKFILL UNDER & NEAR FOOTINGS.
2. CONCRETE BACKFILL SHALL BE USED UNDER FOOTINGS WHERE 95% COMPACTION CANNOT BE ACCOMPLISHED.
3. ALL STRUCTURAL BACKFILL NOTED SHALL BE COMPACTED TO 95% OF MAX. DENSITY PER ASTM.
4. A PIPE SLEEVE SHALL BE PROVIDED FOR SHALLOW PIPES CAST IN CONCRETE.
5. PIPES SHALL NOT BE PLACED IN THE FOOTING WITHOUT SPECIFIC APPROVAL FROM THE ENGINEER.
6. FOR VARIATIONS CONTACT ENGINEER.

SECTION 13/S4.01
NO SCALE

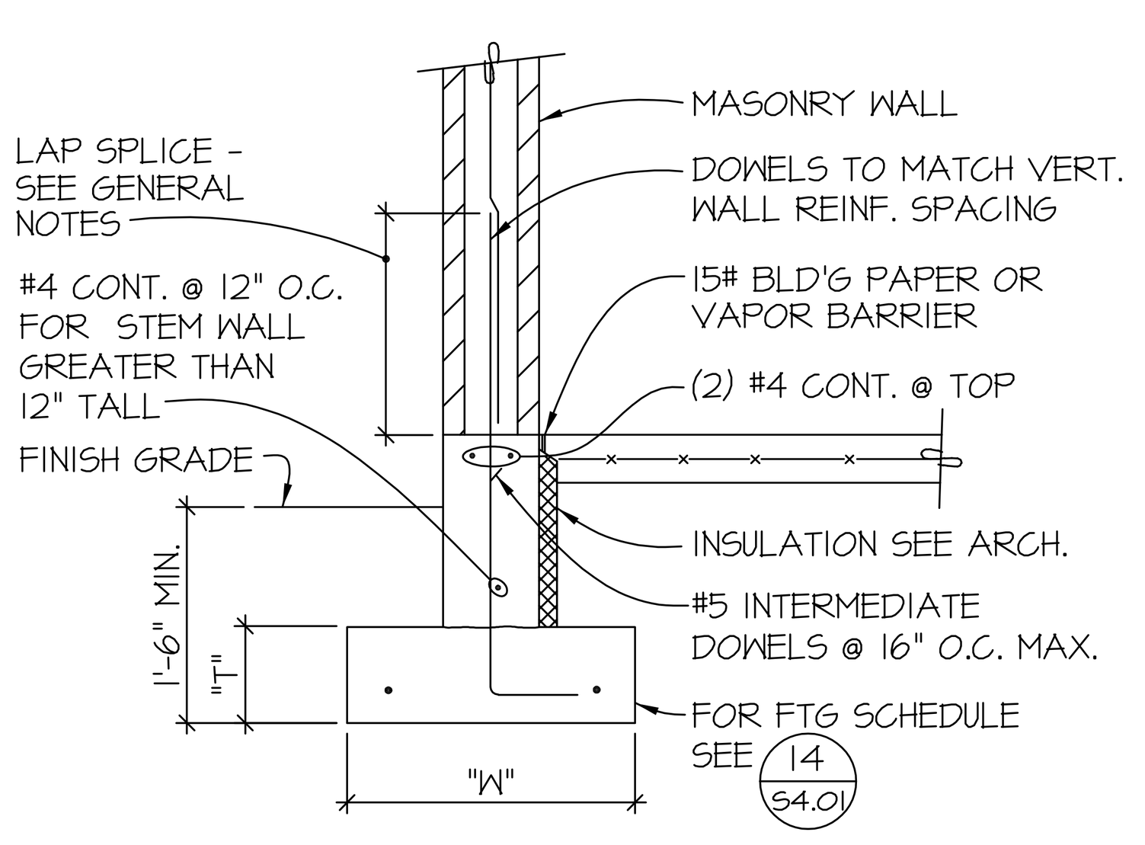
WIDTH "W"	"T"	REINF. "A" CONT.	REINF. "B"
1'-6"	10"	(2)#5	———
2'-0"	10"	(2)#5	———



NOTES:
1. FOOTINGS SHALL BEAR ON UNDISTURBED OR COMPACTED MATERIAL - SEE GENERAL NOTES.
2. EXTEND FOOTINGS 6" MIN. PAST ENDS OF WALL UNLESS OTHER-WISE NOTED.
3. WHERE FOOTINGS CHANGE WIDTHS LAP REINFORCING "A". "Ls" PER GENERAL NOTES.

TYPICAL CONTINUOUS FOOTING DETAILS

SECTION 14/S4.01
NO SCALE



SECTION 15/S4.01
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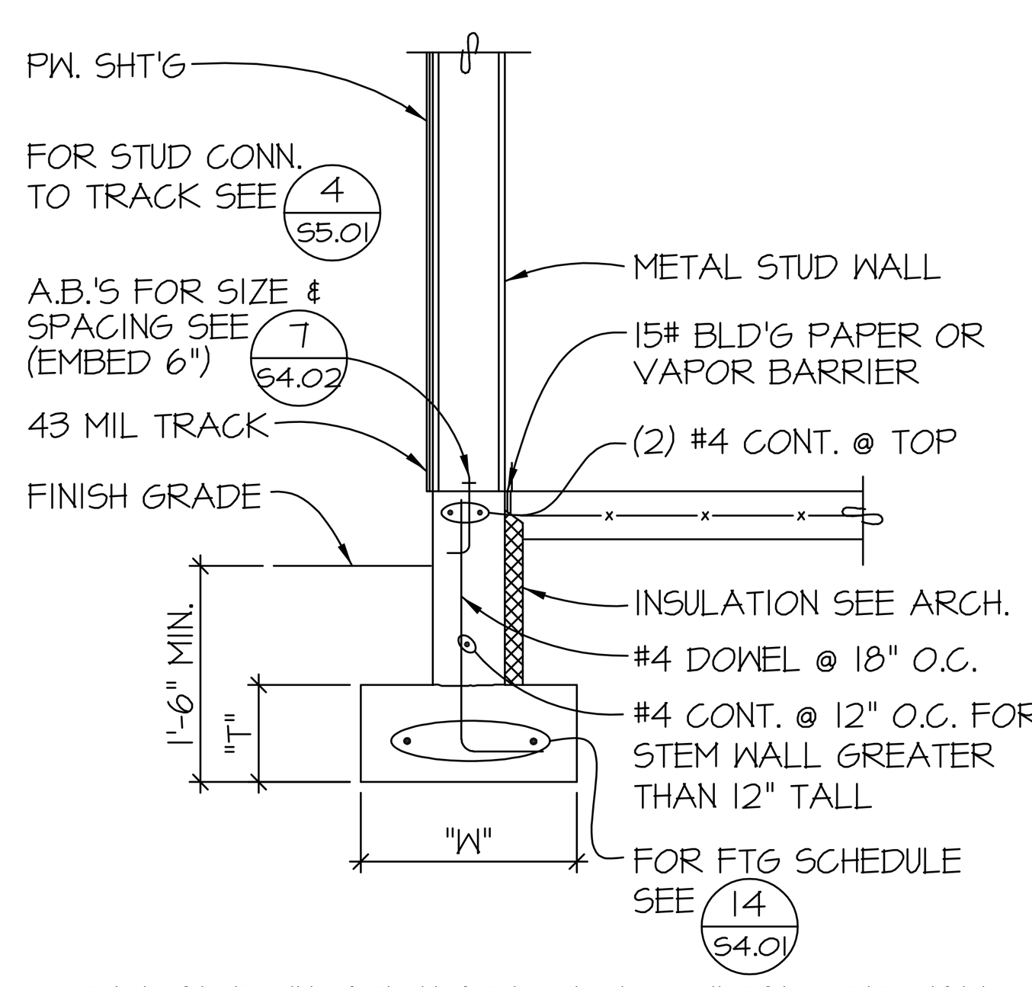

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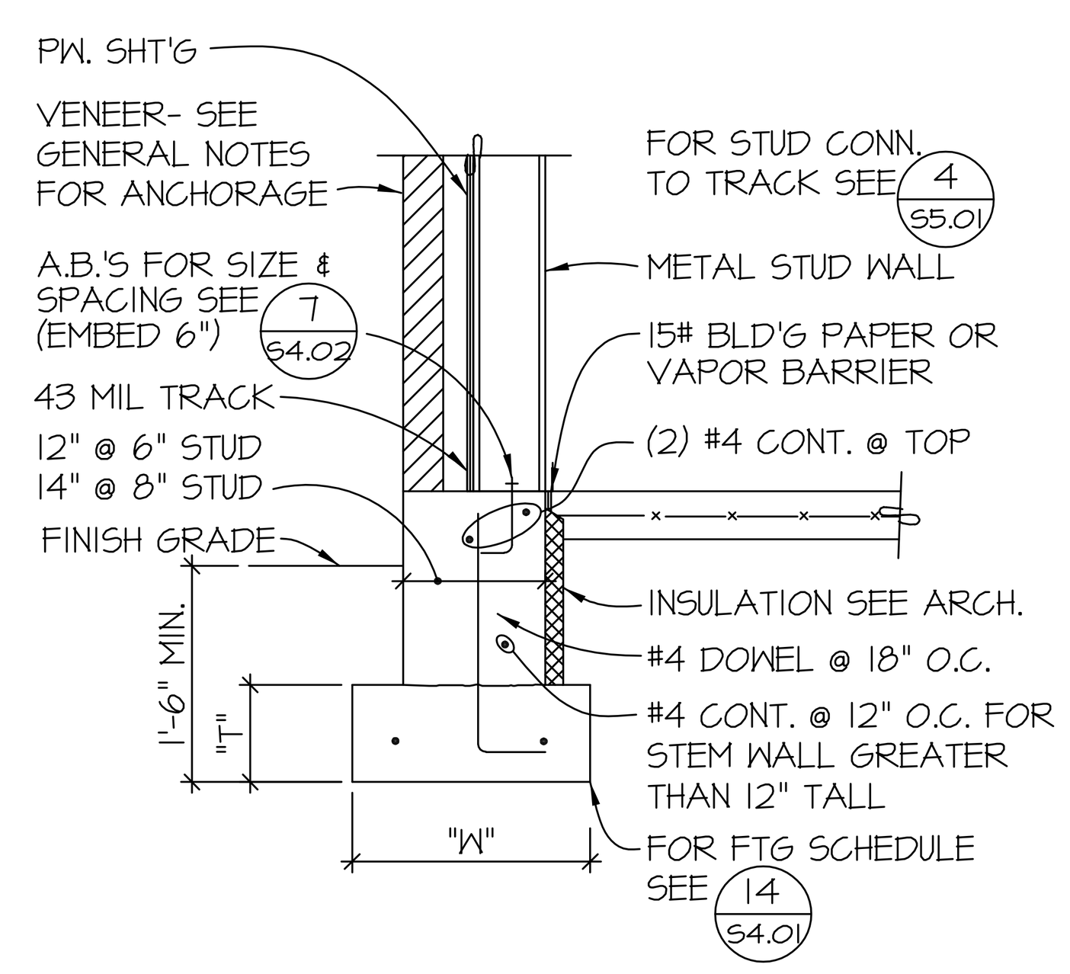

SECTION 17/S4.01
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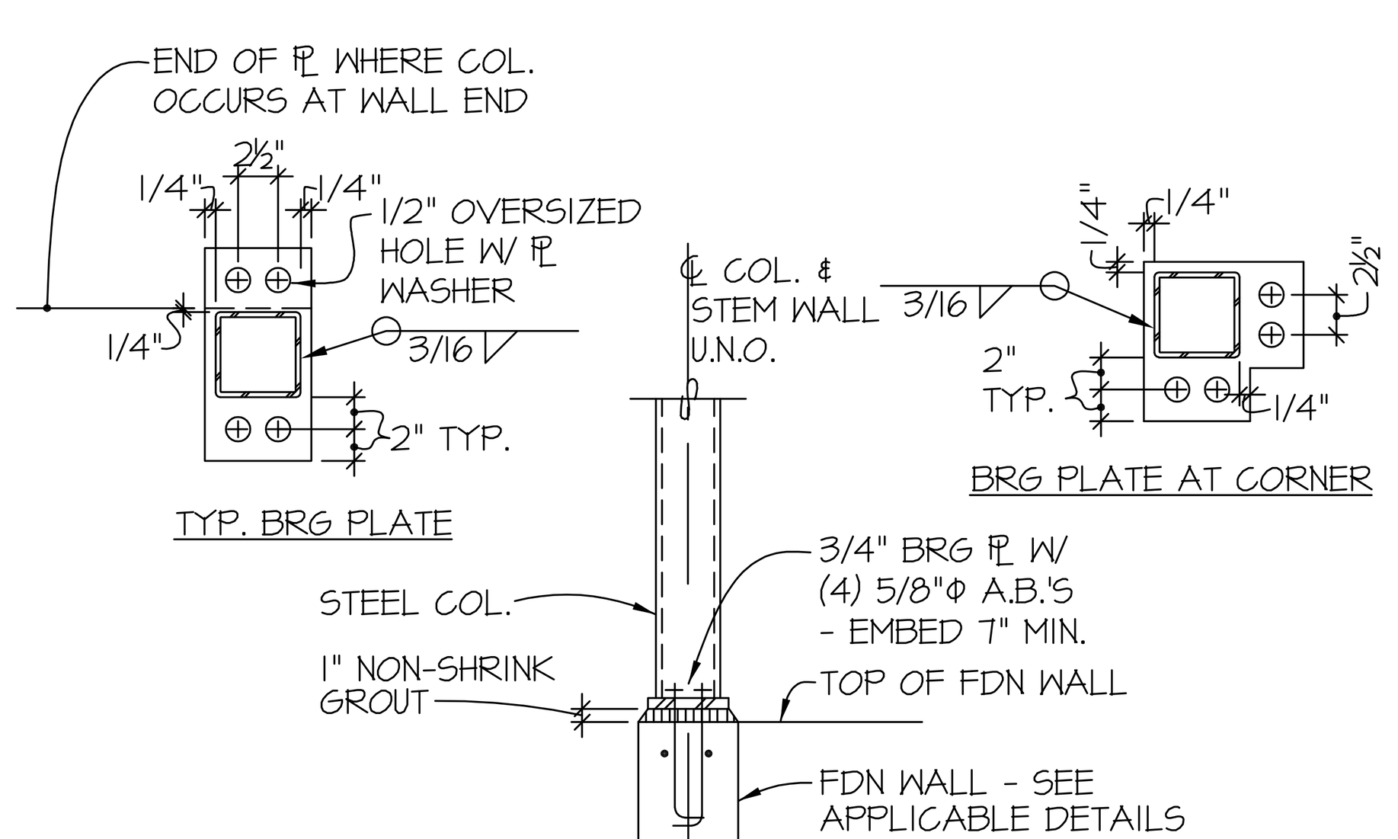

SECTION 18/S4.01
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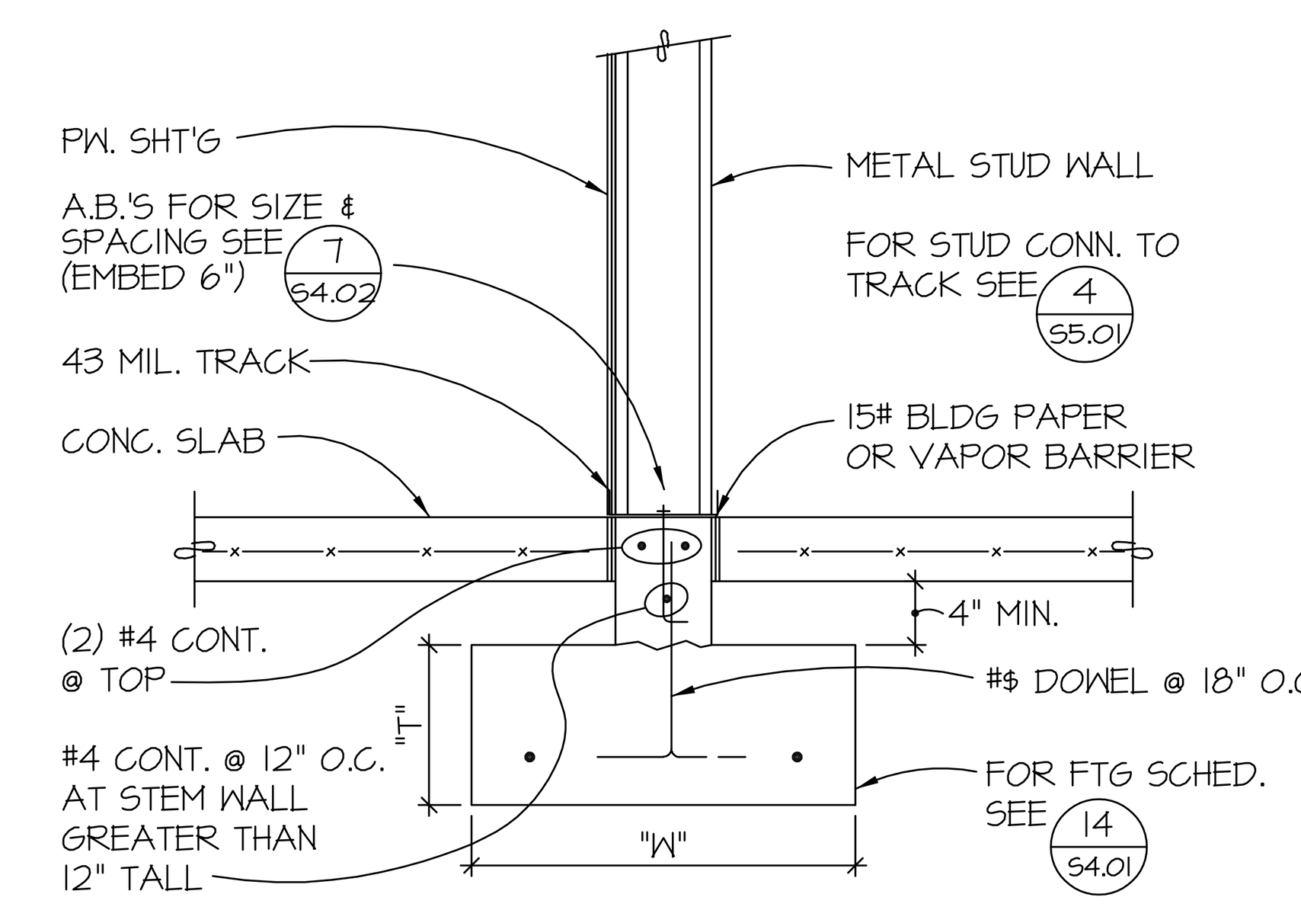

SECTION 19/S4.01
NO SCALE

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ORIGINAL SHEET IS 30" x 42".

mc9-ARC

architect_
McGRANAHAN ARCHITECTS
civil engineer_
HARMSEN AND ASSOCIATES INC.
landscape design_
BERGER PARTNERSHIP
structural engineer_
PCS STRUCTURAL SOLUTIONS
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BCE ENGINEERS
electrical engineer_
BCE ENGINEERS
food service_
CHANDLER|WILSON DESIGN
acoustical design-
SSA ACOUSTICS

BRET MADDOX STATE OF WASHINGTON 33519 REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II
client_
COUPEVILLE SCHOOL DISTRICT #204
location_
COUPEVILLE, WASHINGTON
Project No. 0418.040

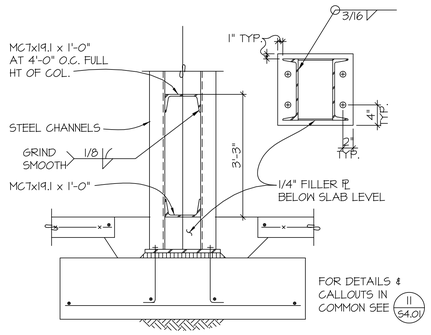
FOUNDATION DETAILS

revision_

issued_
PERMIT 26 MAY 06

drawn_
RSC
checked_
BAM

sheet_
S4.01



SECTION
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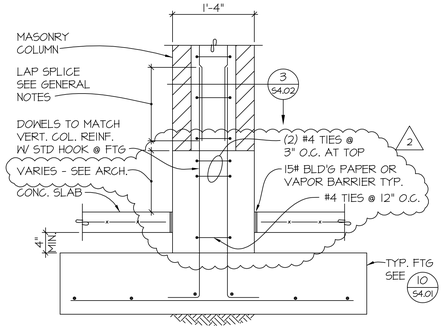
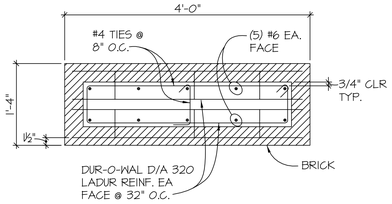
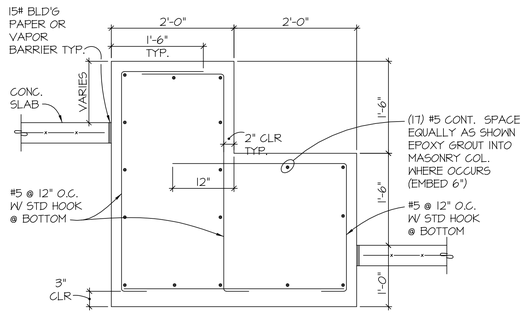


TYPICAL MASONRY COLUMN AT FOOTING

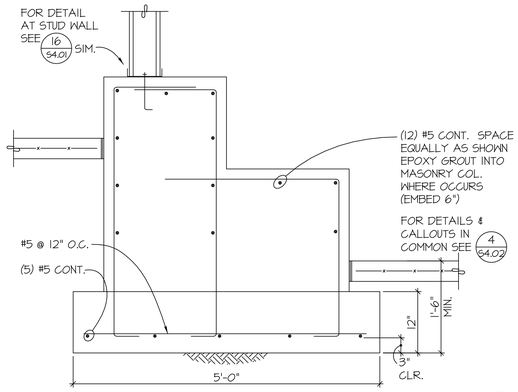
SECTION
NO SCALE — 2 / 54.02



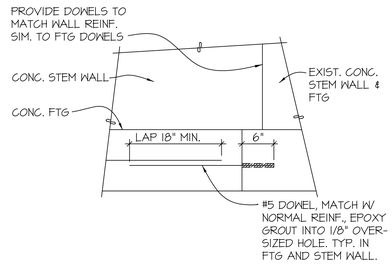
PLAN DETAIL
NO SCALE — 3 / 54.02



SECTION
NO SCALE — 4 / 54.02



SECTION
NO SCALE — 5 / 54.02



TYPICAL AT NEW/EXISTING FOOTING TRANSITION

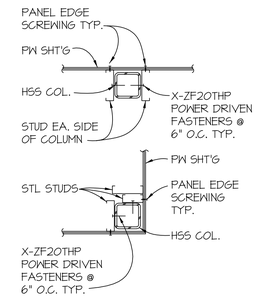
DETAIL
NO SCALE — 6 / 54.02

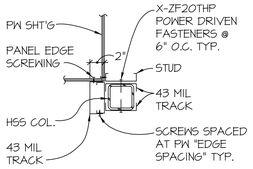
SHEAR WALL SCHEDULE				
MARK	WOOD SHEATHING REQUIRED	EDGE SCREW SPACING	FIELD SCREW SPACING	5/8" ANCHOR (6) BOLT SPACING
△A	1/2" PW OR OSB	6" O.C.	12" O.C.	32" O.C.
△B	1/2" PW OR OSB	4" O.C.	12" O.C.	24" O.C.
△C	1/2" PW OR OSB	3" O.C.	12" O.C.	16" O.C.
△D	1/2" PW OR OSB	2" O.C.	12" O.C.	16" O.C.

NOTES:

1. △ INDICATES SPECIAL STRUCTURAL WALL TYPE
2. ALL EXTERIOR WALLS AND ALL DESIGNATED SHEAR WALLS SHALL BE BLOCKED AT ALL SHEATHING EDGES. EDGE SCREWING APPLIES TO ALL TOP AND BOTTOM TRACKS, VERTICAL JOINTS, HORIZONTAL BLOCKED JOINTS, WALL CORNERS, AND COLUMN ANCHORED STUDS.
3. SCREWS SHALL BE #10x1" LONG SELF TAPPING PAN HEAD SCREWS WITH MINIMUM 0.241" DIAMETER HEAD.
4. ALL STUDS SHALL BE MINIMUM THICKNESS OF 33 MIL ALL TRACKS SHALL BE MINIMUM 43 MIL.
5. HORIZONTAL BLOCKING SHALL BE MINIMUM OF 1½" WIDE SAME THICKNESS AS STUDS.
6. PROVIDE PL WASHER 1/8x3x3 MINIMUM AT ALL PLYWOOD SHEATHED WALLS.

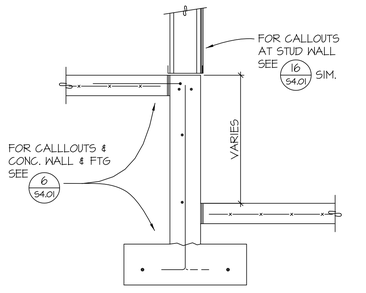
SCHEDULE
NO SCALE — 7 / 54.02



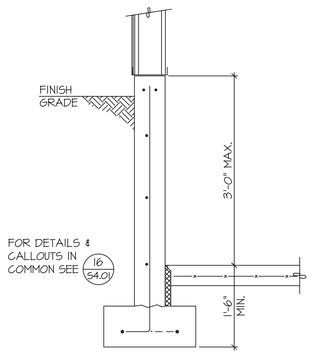


TYPICAL STRUCTURAL MTL STUD WALL CONNECTION TO COLUMN

PLAN DETAIL
NO SCALE — 8 / 54.02



SECTION
NO SCALE — 9 / 54.02



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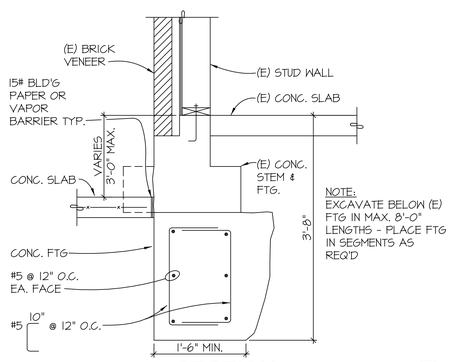

SECTION
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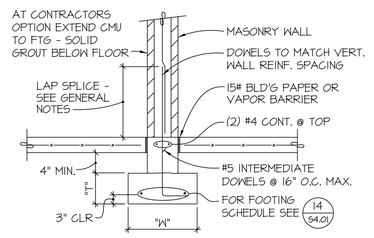
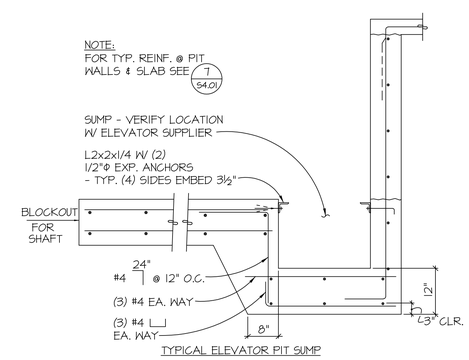


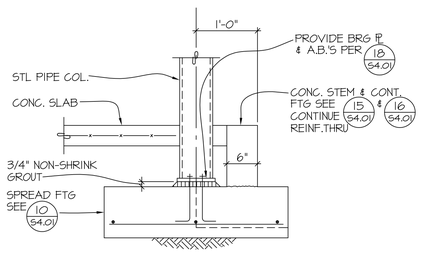
TYPICAL FOUNDATION AT INTERIOR MASONRY WALL

SECTION
NO SCALE — 12 / 54.02



TYPICAL ELEVATOR PIT SUMP

SECTION
NO SCALE — 13 / 54.02



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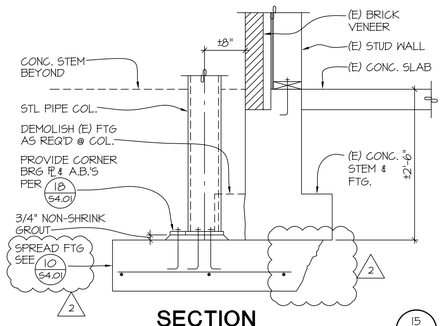

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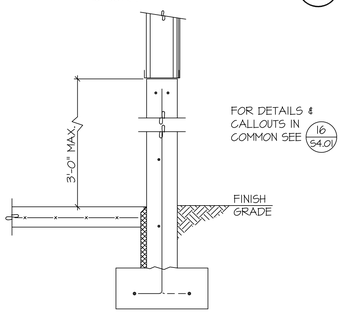
NO SCALE — 15 / 54.02



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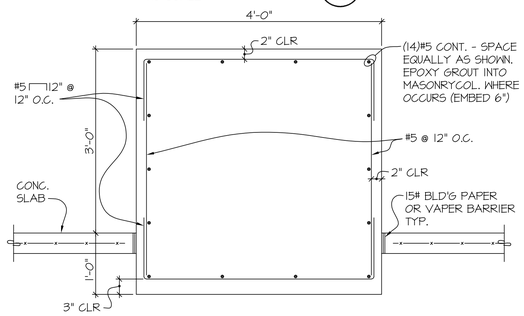
NO SCALE — 16 / 54.02



SECTION
NO SCALE — 17 / 54.02

C:\Users\donh\Desktop\coupeville\Dwgs\4524s402.dwg Plotted: Nov 01, 2017 - 8:03am By: DonH

mcgranahan architects

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NOTHING FOLLOWS"
BRENT MADDOX
STATE OF WASHINGTON
21609
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

revision_

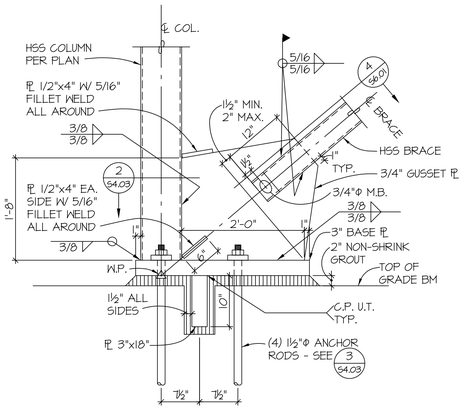
issued_
PERMIT 26 MAY 06

drawn_
rdw

checked_
MO

sheet_
S4.02

FOUNDATION DETAILS



DETAIL 1 S4.03
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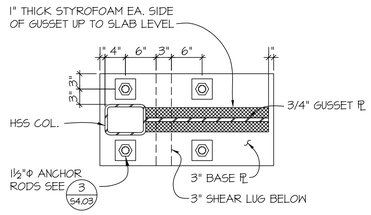
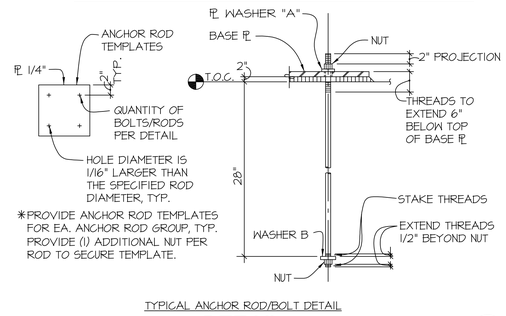


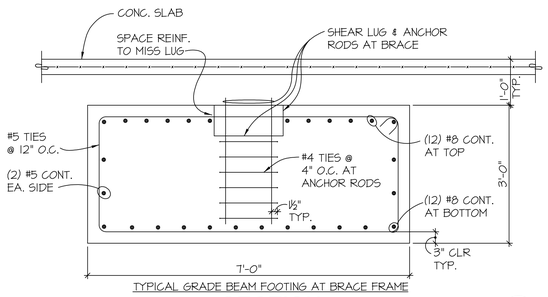
PLAN DETAIL 2 S4.03
NO SCALE

ANCHOR ROD		WASHER		NUT
SIZE	MATERIAL	TYPE	SIZE	
1½"Φ	F1554 GRADE 105	A	PL 1"x4"x0'-4" W/ 1⅜"Φ HOLE CENTERED	A563 GRADE DH HEAVY HEX
		B	ASTM F844 CARBON FLAT WASHER	



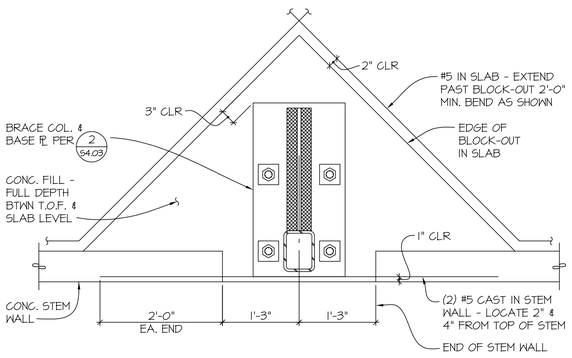
TYPICAL ANCHOR ROD/BOLT DETAIL

DETAIL 3 S4.03
NO SCALE



TYPICAL GRADE BEAM FOOTING AT BRACE FRAME

SECTION 4 S4.03
NO SCALE



PLAN DETAIL 5 S4.03
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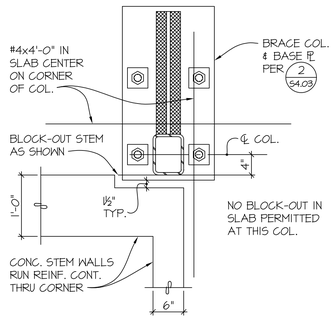

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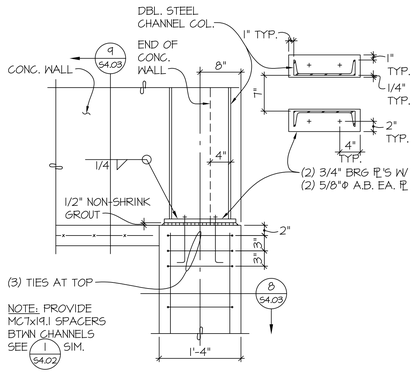
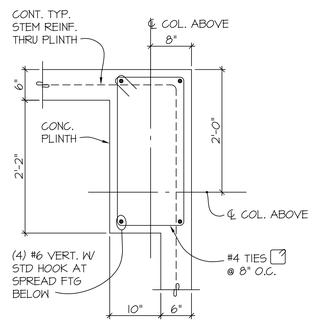


SECTION 7 S4.03
NO SCALE



PLAN DETAIL 8 S4.03
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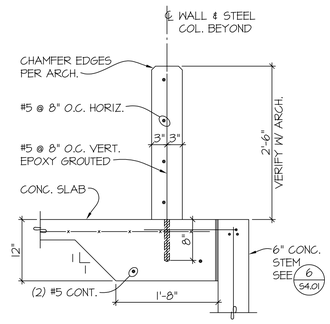
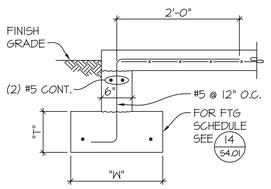
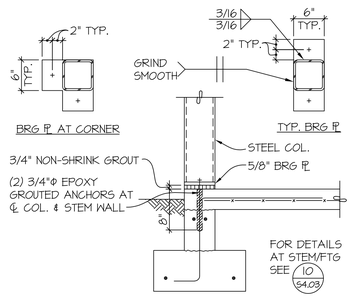


SECTION 9 S4.03
NO SCALE



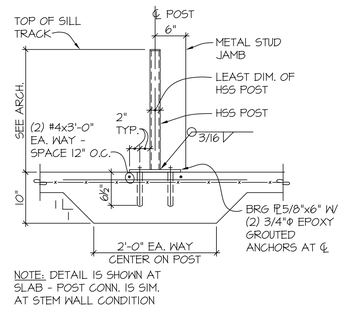
TYPICAL SLAB EDGE AT EXTERIOR STOREFRONT

SECTION 10 S4.03
NO SCALE



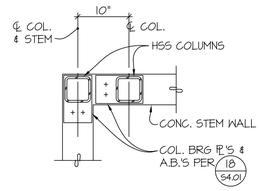
TYPICAL STOREFRONT COLUMN AT FOUNDATION WALL

SECTION 11 S4.03
NO SCALE



NOTE: DETAIL IS SHOWN AT SLAB - POST CONN. IS SIM. AT STEM WALL CONDITION

SECTION 12 S4.03
NO SCALE



PLAN DETAIL 13 S4.03
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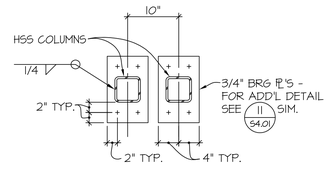

PLAN DETAIL 14 S4.03
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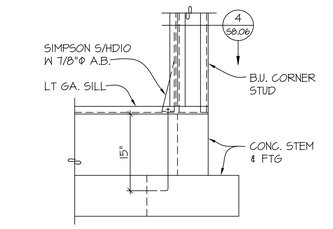


DETAIL 1 15 S4.03
NO SCALE

mcG+ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

FOUNDATION DETAILS

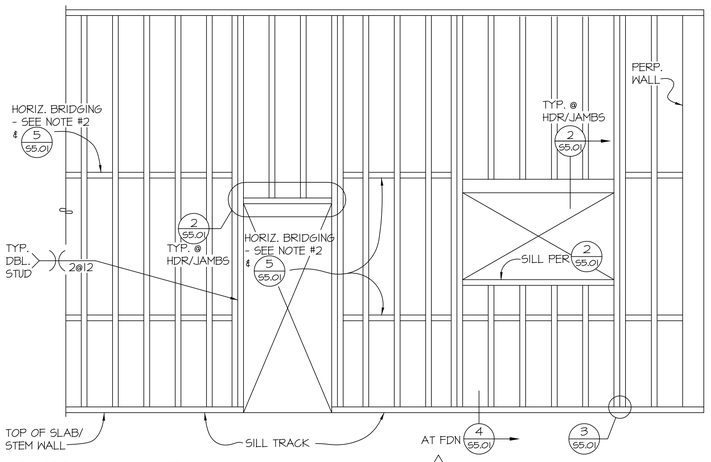
revision_

issued_
PERMIT 26 MAY 06

drawn_
AAG

checked_
MO

sheet_
S4.03



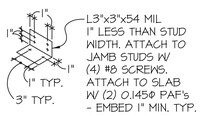
METAL STUD WALL FRAMING NOTES:

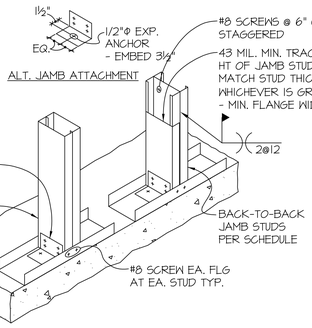
1. ALL EXTERIOR NON-BEARING METAL STUD WALLS SHALL BE 600S162-43 AT 16" O.C. MINIMUM UNLESS NOTED OTHERWISE ON PLAN.
2. PROVIDE HORIZONTAL BRIDGING/STRAPPING AT ALL NON-LOAD BEARING WALLS WITHOUT GWB OR GYPSHEATHING ON EACH FLANGE AS SHOWN ON 5/55.01.
3. FOR LIGHT GAUGE METAL STUD WALL SCHEDULE FOR VARIOUS WALL HEIGHTS SEE 6/55.02.
4. FOR NON-BEARING WALLS EXTENDING TO STRUCTURE REQUIRING DEFLECTION ALLOWANCE SEE 1 & 7/55.02.
5. FOR NON-BEARING WALLS BRACED TO ADJACENT WALLS OR TO ROOF/FLOOR STRUCTURE ABOVE SEE 2/55.02.
6. FOR TYPICAL CEILING FRAMING SCHEDULE AND DETAILS SEE 5/55.02.
8. ALL WELDS SHALL BE 1/8" FILLET MAXIMUM. FOR MATERIALS THINNER THAN 0.15", EFFECTIVE THROAT SHALL NOT BE LESS THAN THINNEST MATERIAL.

TYPICAL METAL STUD WALL FRAMING

ELEVATION

NO SCALE — 1 / 55.01



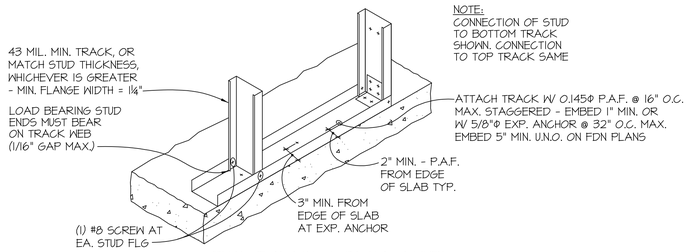


NOTES:
1. PROVIDE L3"x3" EA. SIDE OF JAMB STUDS WHERE NOTED IN SCHEDULE.
2. ALTERNATE JAMB ATTACHMENT PERMITTED AT ANGLE EA. SIDE OF JAMB STUDS ONLY & REQ'D WHERE NOTED IN SCHEDULE.
3. PROVIDE (2) JAMB STUDS MIN. FOR ADD'L JAMB STUD REQUIREMENTS SEE SCHEDULE
4. CONNECTION OF BOTTOM TRACK SHOWN. CONNECTION TO TOP TRACK SAME.

TYPICAL JAMB STUD ATTACHMENT TO FOUNDATION

DETAIL

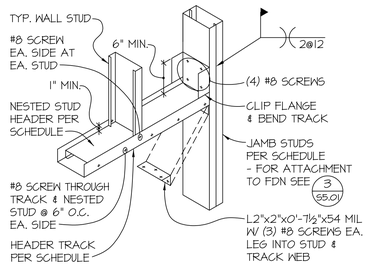
1"=1'-0" — 3 / 55.01



TYPICAL METAL STUD TO TRACK ATTACHMENT

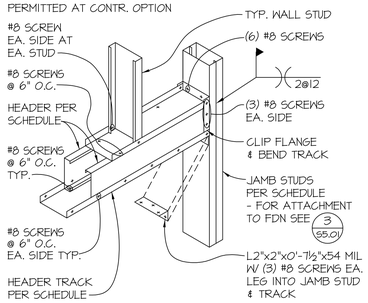
DETAIL

NO SCALE — 4 / 55.01



TYPICAL SINGLE TRACK/NESTED STUD HEADER

NOTE:
BOXED JAMB STUDS SHOWN. BACK-TO-BACK JAMB STUDS PERMITTED AT CONTR. OPTION



TYPICAL NON-LOAD BEARING HEADER ATTACHMENT TO JAMB STUDS

NON-LOAD BEARING WALLS - 6" STUDS @ 16" O.C.

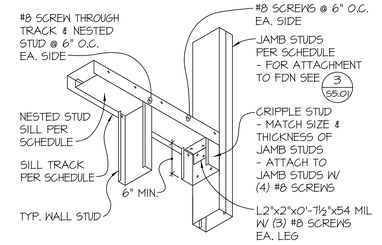
OPNG SIZE	≤ 4'-0"			≤ 6'-0"		
MAX. WALL HEIGHT	HEADER SIZE	HEADER TRACKS (b)	JAMB STUDS	HEADER SIZE	HEADER TRACKS	JAMB STUDS
8'-0"	600S137-43	600T250-43	(2) 600S162-43	(2) 400S137-43	(2) 600T150-43	(2) 600S162-43
10'-0"	600S137-43	600T250-43	(2) 600S162-43	(2) 400S137-43	(2) 600T150-43	(2) 600S162-43
14'-0"	600S137-43	600T250-43	(2) 600S162-43	(2) 400S137-43	(2) 600T150-43	(c)(d) (2) 600S162-43
18'-0"	600S137-43	600T250-43	(c)(d) (2) 600S200-54	(2) 400S137-43	(2) 600T150-43	(c)(d) (2) 600S200-54
SILL TRACK (a)	(1) 600T150-43			(1) 600T150-43		

OPNG SIZE	≤ 8'-0"			≤ 12'-0"		
MAX. WALL HEIGHT	HEADER SIZE	HEADER TRACKS	JAMB STUDS	HEADER SIZE	HEADER TRACKS	JAMB STUDS
8'-0"	(2) 600S137-43	(2) 600T150-43	(2) 600S162-43	(2) 600S137-43	(2) 600T200-54	(d) (2) 600S162-43
10'-0"	(2) 600S137-43	(2) 600T150-43	(d) (2) 600S162-43	(2) 600S137-43	(2) 600T200-54	(d) (2) 600S162-43
14'-0"	(2) 600S137-43	(2) 600T150-43	(c)(d) (3) 600S162-43	(2) 600S137-43	(2) 600T200-54	(c)(d) (3) 600S162-43
18'-0"	(2) 600S137-43	(2) 600T150-43	(c)(e) (3) 600S200-54	(2) 600S137-43	(2) 600T200-54	(c)(e) (4) 600S200-54
SILL TRACK (a)(f)	600S137-43, 600T250-43			600S137-43, 600T250-43		

OPNG SIZE	≤ 16'-0"		
MAX. WALL HEIGHT	HEADER SIZE	HEADER TRACKS	JAMB STUDS
8'-0"	(2) 800S137-43	(2) 600T200-54	(d) (2) 600S162-43
10'-0"	(2) 800S137-43	(2) 600T200-54	(d) (2) 600S162-43
14'-0"	(2) 800S137-43	(3) 600T200-54	(c)(d) (3) 600S162-43
18'-0"	(2) 800S137-43	(3) 600T200-54	(c)(e) (4) 600S200-54
SILL TRACK (a)(f)	600S137-54, 600T250-54		

NOTES:
1. 75 PLF VERTICAL
2. 15 PSF HORIZONTAL

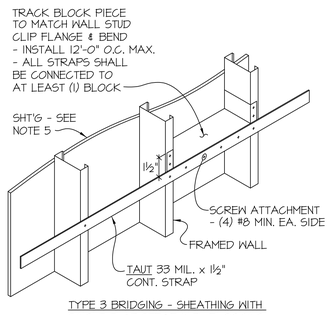
(a) WHERE APPLICABLE
(b) INDICATES SINGLE TRACK/NESTED HEADER DETAIL APPLIES.
(c) PROVIDE ANGLE EACH SIDE OF JAMB STUDS AT TOP TRACK ATTACHMENT.
(d) PROVIDE ANGLE EACH SIDE OF JAMB STUDS AT BOTTOM TRACK ATTACHMENT PER 3 / 55.01
(e) PROVIDE ALTERNATE JAMB ATTACHMENT TO FOUNDATION PER 3 / 55.01
(f) PROVIDE NESTED STUD AT SILL TRACK.



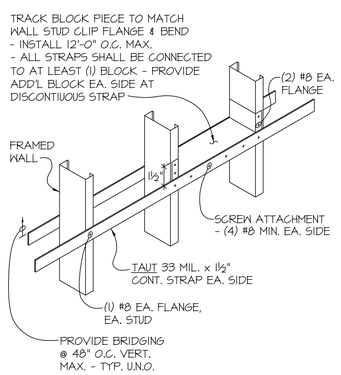
TYPICAL SINGLE TRACK/NESTED STUD SILL

WALL PENETRATION SCHEDULE

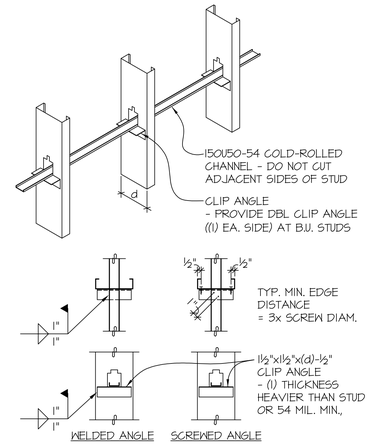
NO SCALE — 2 / 55.01



TYPE 3 BRIDGING - SHEATHING WITH SINGLE FLAT STRAP WITH BLOCKING



TYPE 1 BRIDGING - DOUBLE FLAT STRAP WITH BLOCKING



TYPE 2 BRIDGING - COLD-ROLLED CHANNEL WITH CLIP ANGLE

NOTES:
1. PROVIDE BRIDGING ON ALL CURTAIN WALL STUDS.
2. INSTALL ALL BRIDGING PRIOR TO INSTALLATION OF SUPPORTED FRAMING.
3. SEE 1 / 55.01 FOR ADDITIONAL INFORMATION.
4. TYPE 2 BRIDGING NOT ALLOWED ON STUDS GREATER THAN 6" DEEP.
5. QUALIFIED SHEATHING SHALL BE GWB, GYPSHEATHING, PW., OR OSB ONLY.

DETAIL

NO SCALE — 5 / 55.01

C:\Users\donh\Desktop\coupeville\Dwgs\4524s501.dwg Plotted: Nov 01, 2017 - 8:04am By: DonH

mcG+ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

WALL FRAMING DETAILS

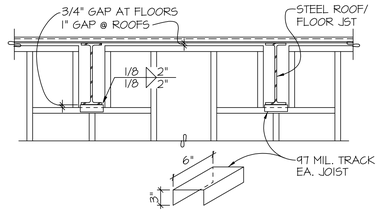
revision_

issued_
PERMIT 26 MAY 06

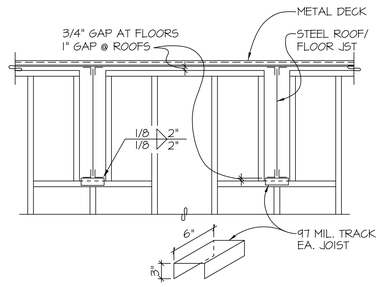
drawn_
AAG

checked_
MO

sheet_
S5.01

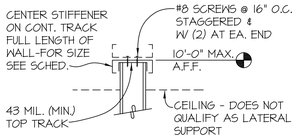


TYPICAL AT NON-BEARING WALL PERPENDICULAR TO JOISTS EXTENDING TO STRUCTURE



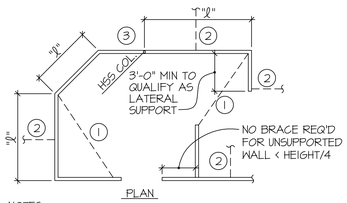
TYPICAL AT NON-BEARING WALL PERPENDICULAR TO JOISTS EXTENDING TO STRUCTURE ABOVE

DETAIL 1 / 55.02
NO SCALE



UNBRACED WALL LENGTH "L"	STIFF. CONT MEMBER
< 10'	NONE REQ'D
10'-13'	6005125-54
13'-16'	8005125-54
16'-20'	(2) 8005125-54
20'-24'	(2) 10005162-54

TOP OF WALL STIFFENER



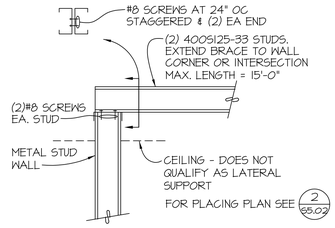
PLAN

NOTES:

1. THIS PLAN IS AN EXAMPLE ONLY. IT DOES NOT REPRESENT A SPECIFIC WALL.
2. "L" INDICATES UNBRACED LENGTH OF WALLS, SEE SCHEDULE FOR TOP OF WALL STIFFENER SIZE.
3. AT CONTRACTORS OPTION, IN LIEU OF TOP OF WALL STIFFENER:
   - (1) INDICATES HORIZ BRACE EXTENDING TO ADJACENT CORNER SEE 3/55.02
   - (2) INDICATES BRACE UP TO STRUCTURE SEE 4/55.02
   - (3) INDICATES WALL BRACED AT STRUCTURAL STEEL COLUMN - PROVIDE 68 MIL. x 1½x1½x6" ANGLE W/ (6) #8 SCREWS TO TOP TRACK - WELD CONN. ANGLE TO T.S. COLUMN.
4. ALL TRACK SPLICES SHALL BE AT BRACE LOCATIONS.

TYPICAL LATERAL SUPPORT FOR NON-BEARING METAL STUD WALLS NOT EXTENDING TO STRUCTURE

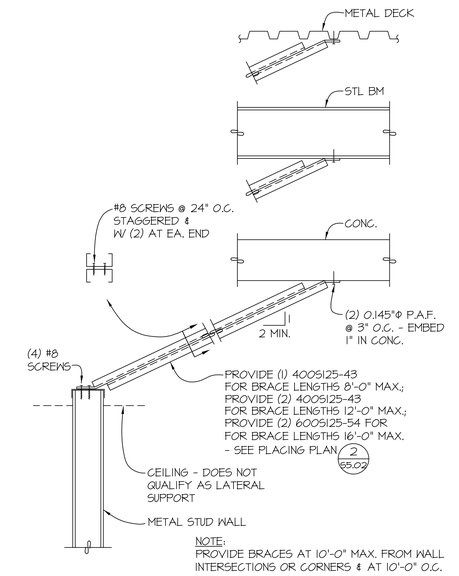
DETAIL 2 / 55.02
NO SCALE



NOTE:
PROVIDE BRACES AT 10'-0" MAX. FROM WALL INTERSECTIONS OR CORNERS & AT 10'-0" O.C.

TYPICAL METAL STUD WALL HORIZONTAL LATERAL BRACE

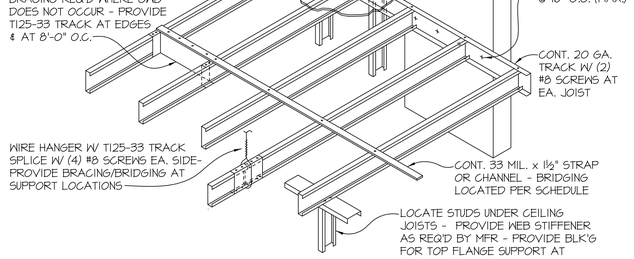
DETAIL 3 / 55.02
NO SCALE



NOTE:
PROVIDE BRACES AT 10'-0" MAX. FROM WALL INTERSECTIONS OR CORNERS & AT 10'-0" O.C.

TYPICAL METAL STUD WALL LATERAL BRACE UP TO STRUCTURE

DETAIL 4 / 55.02
NO SCALE



STEEL JOIST CEILING FRAMING SCHEDULE		
MAX. SPAN	JOIST SIZE & SPACING	BRIDGING LOCATION
6'-0"	2505125-33 AT 16" O.C.	------
9'-0"	4005125-43 AT 16" O.C.	ONE ROW AT MID-SPAN
12'-0"	6005125-43 AT 16" O.C.	ONE ROW AT MID-SPAN
15'-0"	6005125-54 AT 16" O.C.	TWO ROWS AT 1/3 POINTS
18'-0"	8005125-54 AT 16" O.C.	THREE ROWS AT 1/4 POINTS
21'-0"	10005200-54 AT 16" O.C.	THREE ROWS AT 1/4 POINTS
33'-0"	10005200-97 AT 12" O.C.	THREE ROWS AT 1/4 POINTS

NOTES:

1. FRAMING DESIGNED FOR 10 PSF LIVE LOAD & (2) LAYERS 5/8" GWB
2. SEE ARCHITECT FOR LATERAL SUPPORT OF SUSPENDED FRAMING.

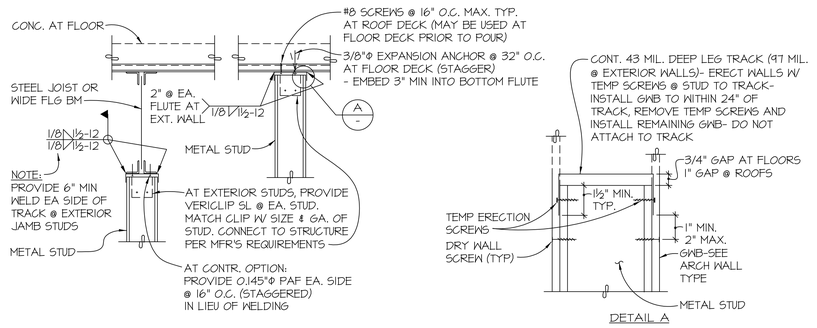
DETAIL 5 / 55.02
NO SCALE

INTERIOR NON-BEARING METAL STUD SCHEDULE [1]		
	MAX. HEIGHT	METAL STUD
4" STUDS	18'-0"	4005137-33 @ 16" O.C.
	21'-0"	4005200-43 @ 16" O.C.
6" STUDS	27'-0"	6005200-33 @ 16" O.C.
	29'-0"	6005200-43 @ 16" O.C.
	31'-0"	6005200-54 @ 16" O.C.
	35'-0"	6005200-54 @ 12" O.C.
8" STUDS	34'-0"	8005200-33 @ 16" O.C.
	37'-0"	8005200-43 @ 16" O.C.
	40'-0"	8005200-54 @ 16" O.C.

NOTES:

1. THIS TABLE MEETS A DEFLECTION CRITERIA OF L/360

SCHEDULE 6 / 55.02
NO SCALE



TYPICAL AT NON-BEARING WALL PARALLEL TO FRAMING EXTENDING TO STRUCTURE ABOVE

SECTION 7 / 55.02
NO SCALE

mcgranahan architects

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NO BRAD MADDOX" REGISTERED PROFESSIONAL ENGINEER STATE OF WASHINGTON EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

WALL FRAMING DETAILS

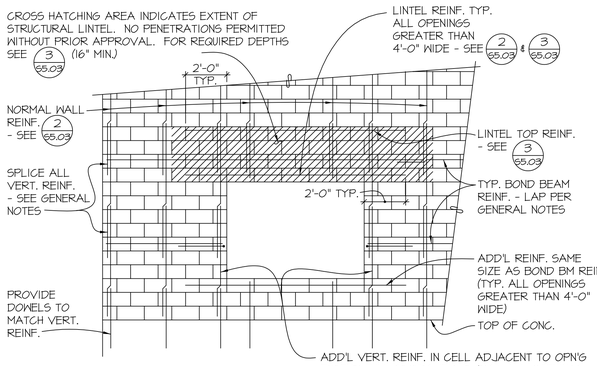
revision_

issued_
PERMIT 26 MAY 06

drawn_
AAG

checked_
MO

sheet_
S5.02



HOLLOW UNIT MASONRY WALL REINFORCING SCHEDULE

* SEE PLANS & APPLICABLE DETAILS FOR WALL THICKNESS AND ANY SPECIAL REINFORCING.

WALL SIZE	MAXIMUM BRACE SPACING AT TOP OF NON-BEARING WALL	MINIMUM REINFORCEMENT *		LINTELS (SAME REINF AS BOND BEAM)				
		VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	MINIMUM DEPTH OF LINTEL				
				MAXIMUM SPAN OF LINTEL	15.5	23.5	31.5	39.5	47.5
6"	10'-0"	#4 @ 24" O.C.	(2) #4 @ 48" O.C.	4'-0"	5'-6"	8'-0"	10'-4"	13'-6"
8"	14'-0"	#5 @ 24" O.C.	(2) #5 @ 48" O.C.	-	3'-6"	7'-6"	10'-0"	12'-0"
				-	3'-6"	7'-6"	10'-0"	12'-0"

NOTES:

1. PROVIDE BOND BEAM WITH MINIMUM HORIZONTAL REINFORCEMENT SHOWN AT TOP OF ALL WALLS, UNLESS NOTED OTHERWISE ON PLANS OR DETAILS.
2. FOR SPECIAL LINTELS SEE FRAMING PLANS AND 3/S5.03.

SCHEDULE — NO SCALE — 2/S5.03

TOP REINF. SAME AS BOTTOM (OMIT TOP REINF. FOR OPENINGS LESS THAN 4'-0" WIDE) NORMAL BOND BEAM MAY REPLACE TOP REINF. IF MIN. LINTEL DEPTH IS MAINTAINED.

STIRRUP LOCATED AT SPECIAL LINTEL -- ALTERNATE HOOKS SEE SCHEDULE

1½" CLR AT LINTEL BLOCK

PROVIDE LINTEL BLOCK WHERE EXPOSED TO VIEW

BOT. LINTEL REINF.

MIN. LINTEL DEPTH

SPECIAL LINTEL SCHEDULE

MARK	MIN. LINTEL DEPTH	MIN. REINF. TOP & BOT.	JAMB REINF. EA. SIDE (4)	STIRRUPS
L-1	64"	(2) #8	SEE PLAN	#4 @ 16" O.C.
L-2	40"	(2) #6	SEE PLAN	#4 @ 16" O.C.
L-3	32"	(2) #6	#6	—

NOTES:

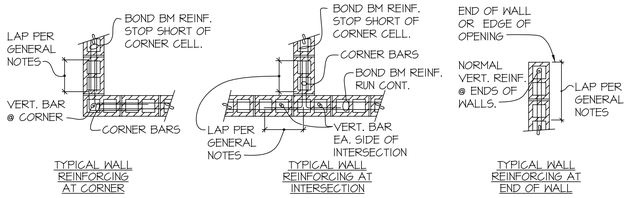
1. SEE 2/S5.03 MAXIMUM SPAN/MINIMUM TYPICAL LINTEL DEPTH.
2. SEE FRAMING PLANS FOR LOCATION OF SPECIAL LINTELS.
3. EXTEND TOP & BOTTOM BARS TO END OF PIERS AND PROVIDE 90° HOOK.
4. MINIMUM JAMB REINFORCING. SEE PLAN FOR ADDITIONAL REINFORCING.

TYPICAL CMU WALL LINTEL

DETAIL — NO SCALE — 3/S5.03

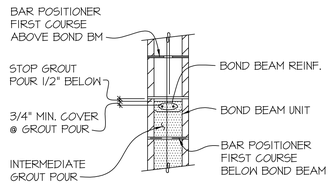
NOTES:

1. SOLID GROUT ALL CELLS. LAY UP BLOCK IN RUNNING BOND PATTERN.
2. FOR TYPICAL WALL REINFORCEMENT SIZE AND LOCATION SEE 2/S5.03.
3. HOOK ALL REINFORCING THAT CANNOT BE EXTENDED.
4. TYP. REINF. SHOWN. PROVIDE ADDITIONAL REINF. WHERE NOTED ON PLANS OR DETAILS.
5. PROVIDE (1) #4 MIN. AROUND OPENINGS GREATER THAN 2'-0" BUT LESS THAN 4'-0" IN EITHER DIRECTION. EXTEND 2'-0" BEYOND FACE OF OPENINGS.
6. NO CONDUIT ALLOWED IN CELLS WITH REINFORCEMENT.
7. PROVIDE BAR POSITIONERS FOR VERTICAL REINFORCEMENT AT FIRST COURSE ABOVE AND BELOW BOND BEAMS. SEE GENERAL NOTES FOR POSITIONER TYPE.



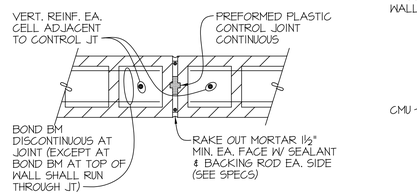
TYPICAL WALL REINFORCING AT CORNER — TYPICAL WALL REINFORCING AT INTERSECTION — TYPICAL WALL REINFORCING AT END OF WALL

TYPICAL HOLLOW UNIT MASONRY WALL — NO SCALE — 1/S5.03



TYPICAL CMU WALL BOND BEAM

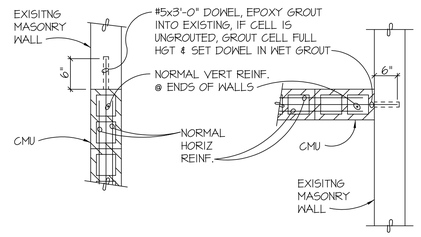
DETAIL — NO SCALE — 4/S5.03



NOTE:
SEE FOUNDATION PLAN FOR LOCATION OF CONTROL JOINTS.

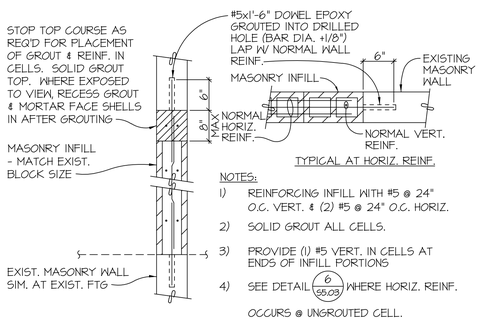
TYPICAL CMU WALL CONTROL JOINT

PLAN DETAIL — NO SCALE — 5/S5.03



TYPICAL CMU WALL TO EXISTING WALL

PLAN DETAIL — NO SCALE — 6/S5.03



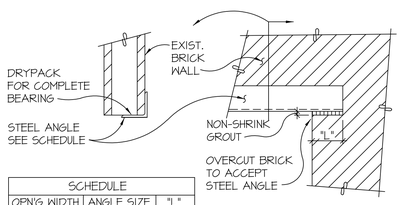
TYPICAL AT HORIZ. REINF.

NOTES:

1) REINFORCING INFILL WITH #5 @ 24" O.C. VERT. & (2) #5 @ 24" O.C. HORIZ.
2) SOLID GROUT ALL CELLS.
3) PROVIDE (1) #5 VERT. IN CELLS AT ENDS OF INFILL PORTIONS
4) SEE DETAIL 6/S5.03 WHERE HORIZ. REINF. OCCURS @ UNGROUTED CELL.

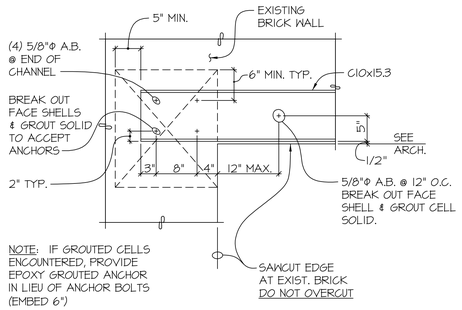
TYPICAL MASONRY WALL INFILL

DETAIL — NO SCALE — 7/S5.03



SCHEDULE		
OPN'G WIDTH	ANGLE SIZE	"L"
< 6'-0"	L5x5x1/4	6"
< 10'-0"	L8x6x1/16	8"

DETAIL — NO SCALE — 8/S5.03



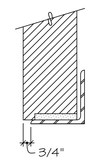
NOTE: IF GROUTED CELLS ENCOUNTERED, PROVIDE EPOXY GROUTED ANCHOR IN LIEU OF ANCHOR BOLTS (EMBED 6")

DETAIL — NO SCALE — 9/S5.03

LINTEL ANGLE SCHEDULE		
MAX. WIDTH OF OPENING	ANGLE SIZE	MIN. BEARING REQ'D AT END OF ANGLE
5'	L3½x3½x1/4	4"
8'	L6x3½x5/16	4"
10'	LTx4x3/8	8"

NOTES:

1. ALL LINTEL ANGLES SHALL BE GALVANIZED.



DETAIL — NO SCALE — 10/S5.03

mcGRANAHAN ARCHITECTS

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
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location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

MASONRY DETAILS

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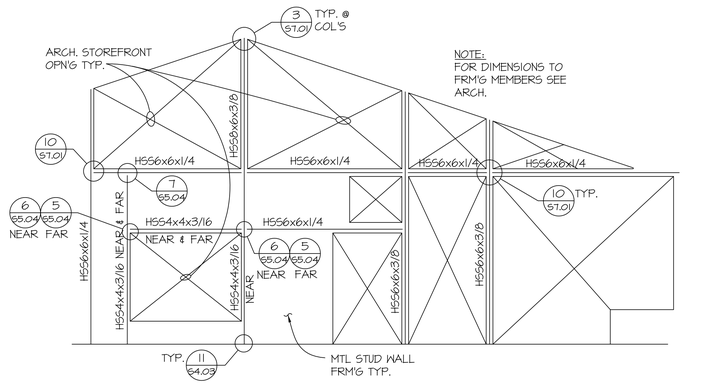
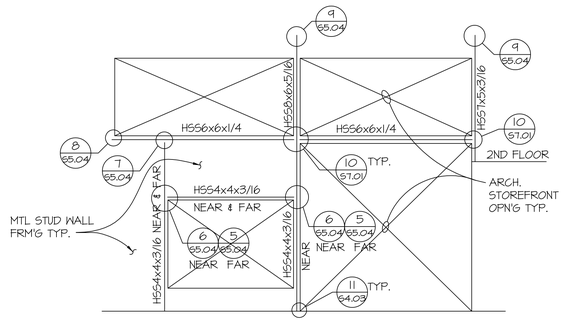
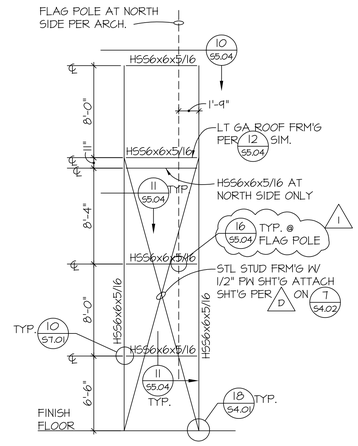


ELEVATION
3/16"=1'-0"
1 55.04

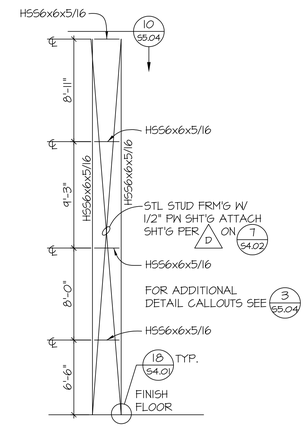


ELEVATION
3/16"=1'-0"
2 55.04



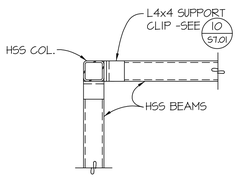
NORTH & SOUTH BELL TOWER SIDES

ELEVATION
3/16"=1'-0"
3 55.04

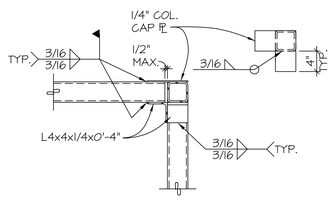


EAST & WEST BELL TOWER SIDES

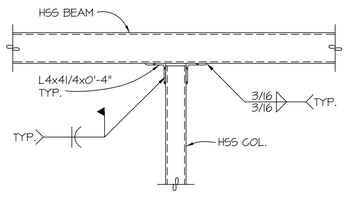
ELEVATION
3/16"=1'-0"
4 55.04



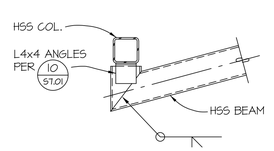
PLAN DETAIL
NO SCALE
5 55.04



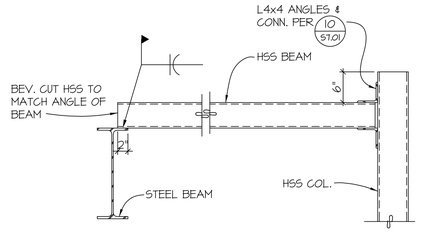
DETAIL
NO SCALE
6 55.04



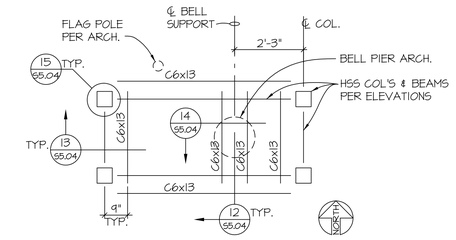
DETAIL
NO SCALE
7 55.04



PLAN DETAIL
NO SCALE
8 55.04

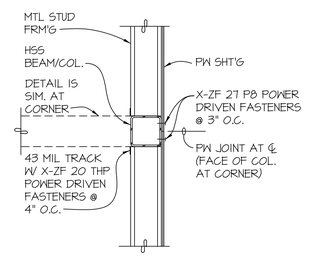


DETAIL
NO SCALE
9 55.04

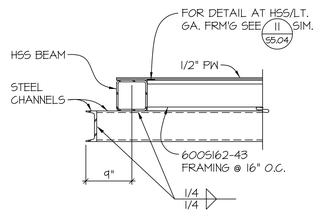


BELL TOWER ROOF FRAMING

FRAMING PLAN
1/2"=1'-0"
10 55.04



DETAIL
NO SCALE
11 55.04



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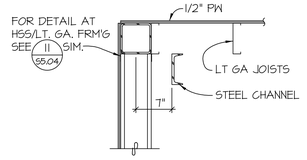

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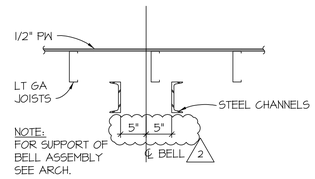

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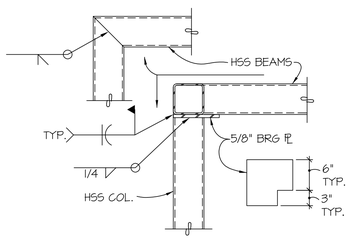

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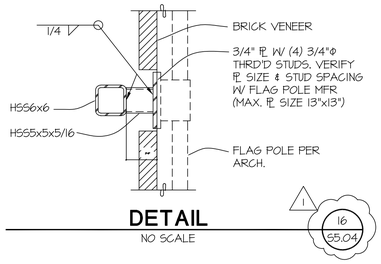


DETAIL
NO SCALE

mcG+ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

WALL ELEVATIONS AND DETAILS

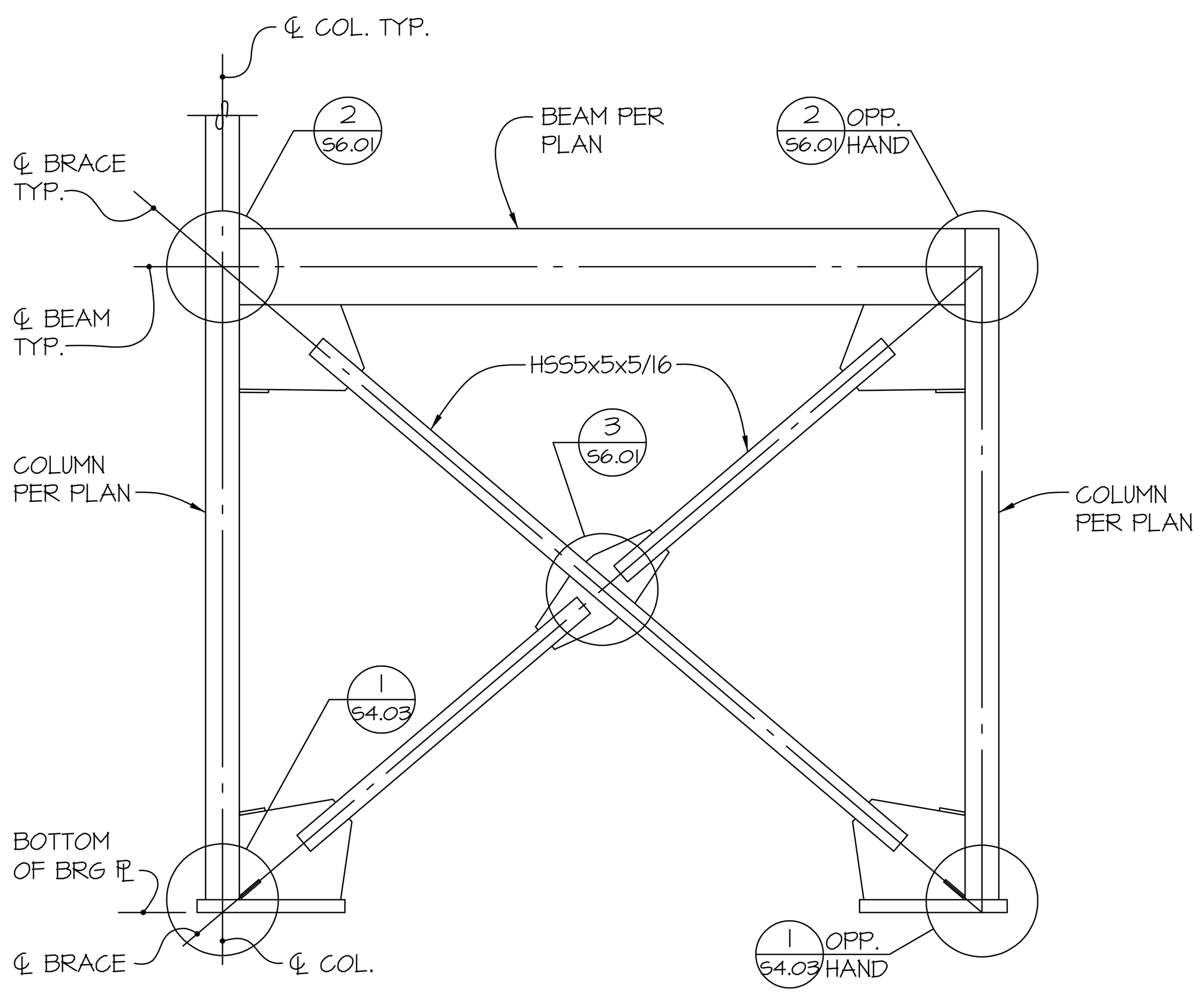
revision_

issued_
PERMIT 26 MAY 06

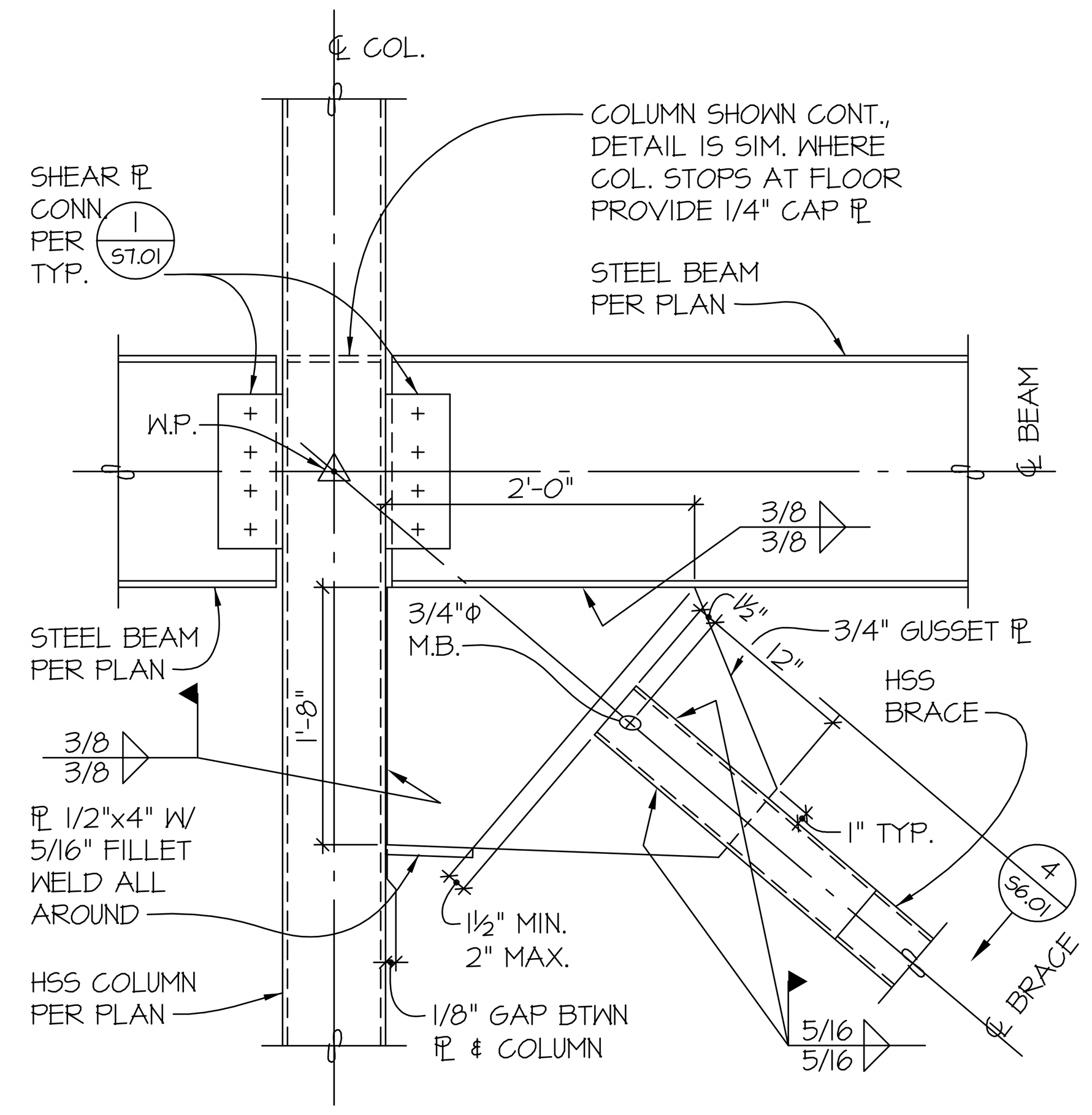
drawn_
DM

checked_
BM

sheet_
S5.04



BRACE FRAME ELEVATION
3/8"=1'-0"
1 S6.01



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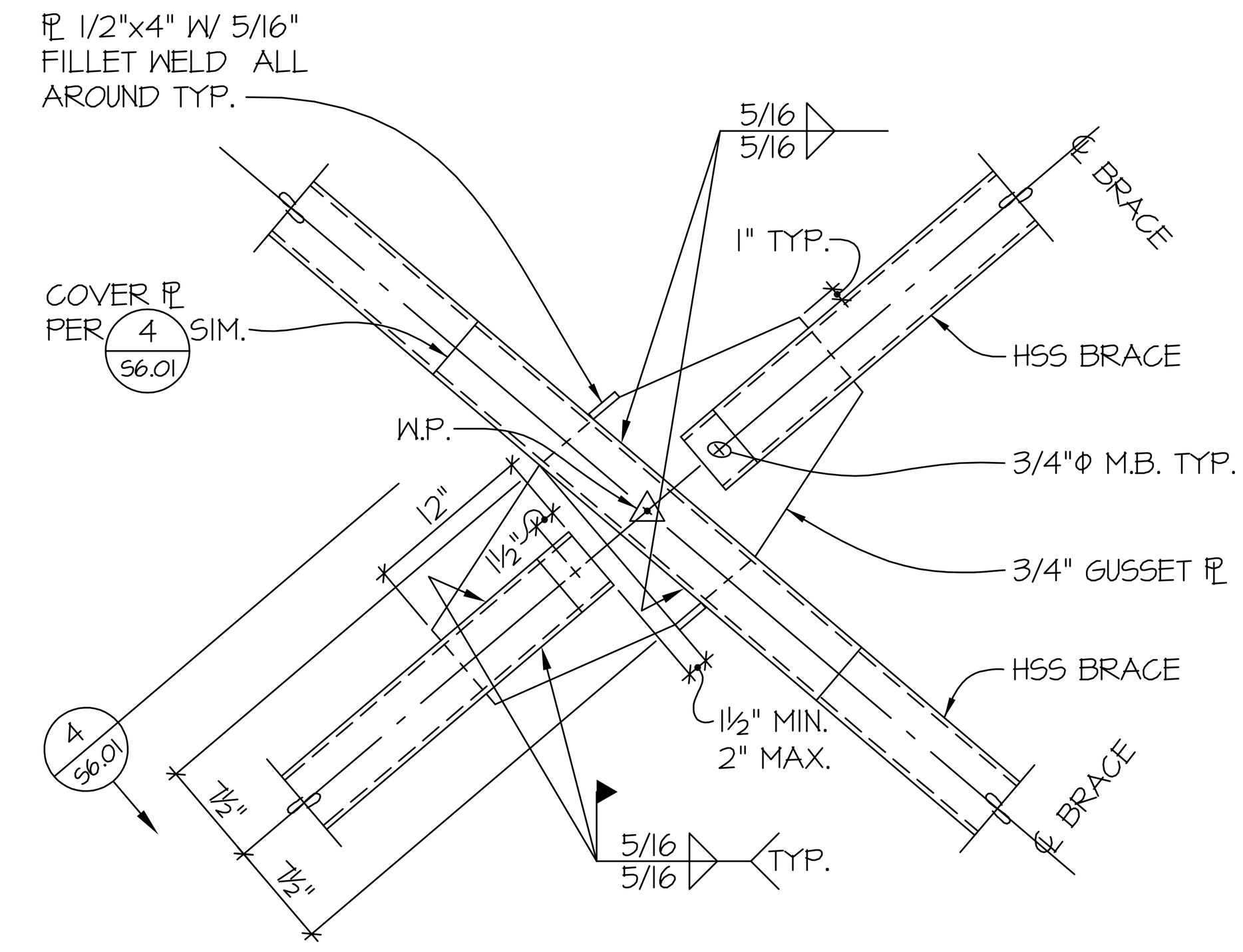

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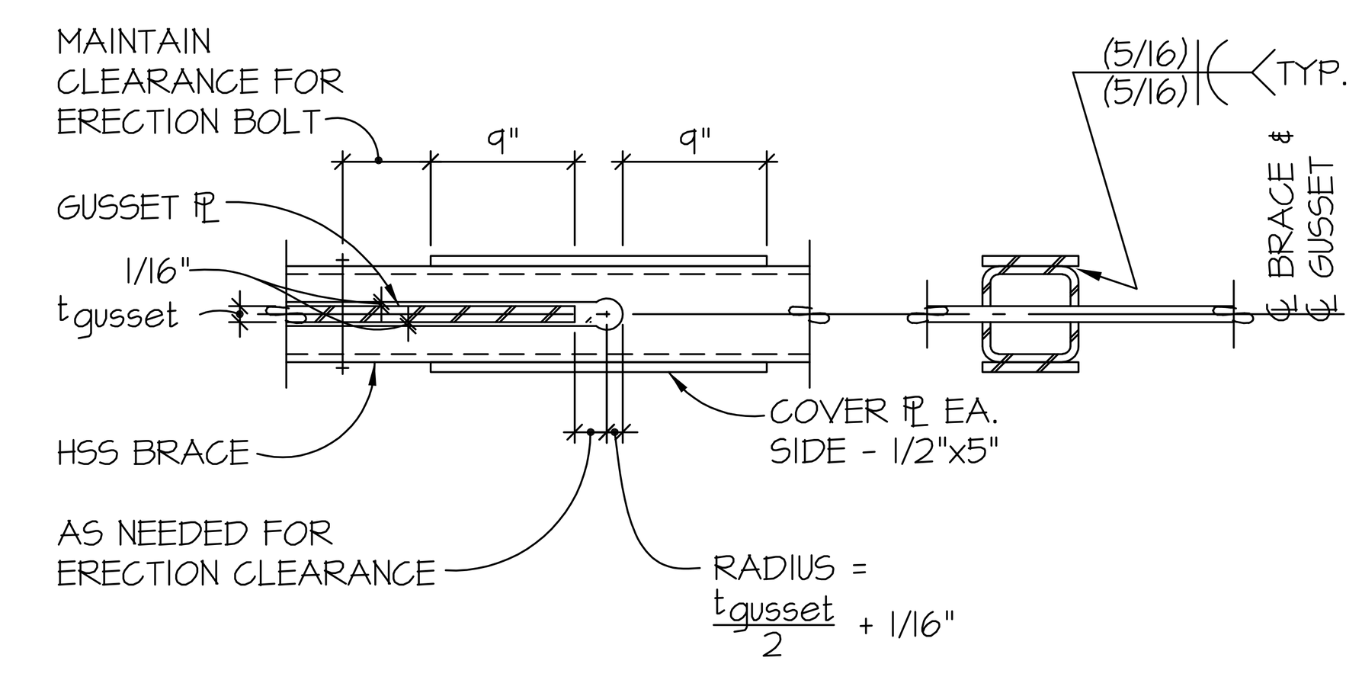

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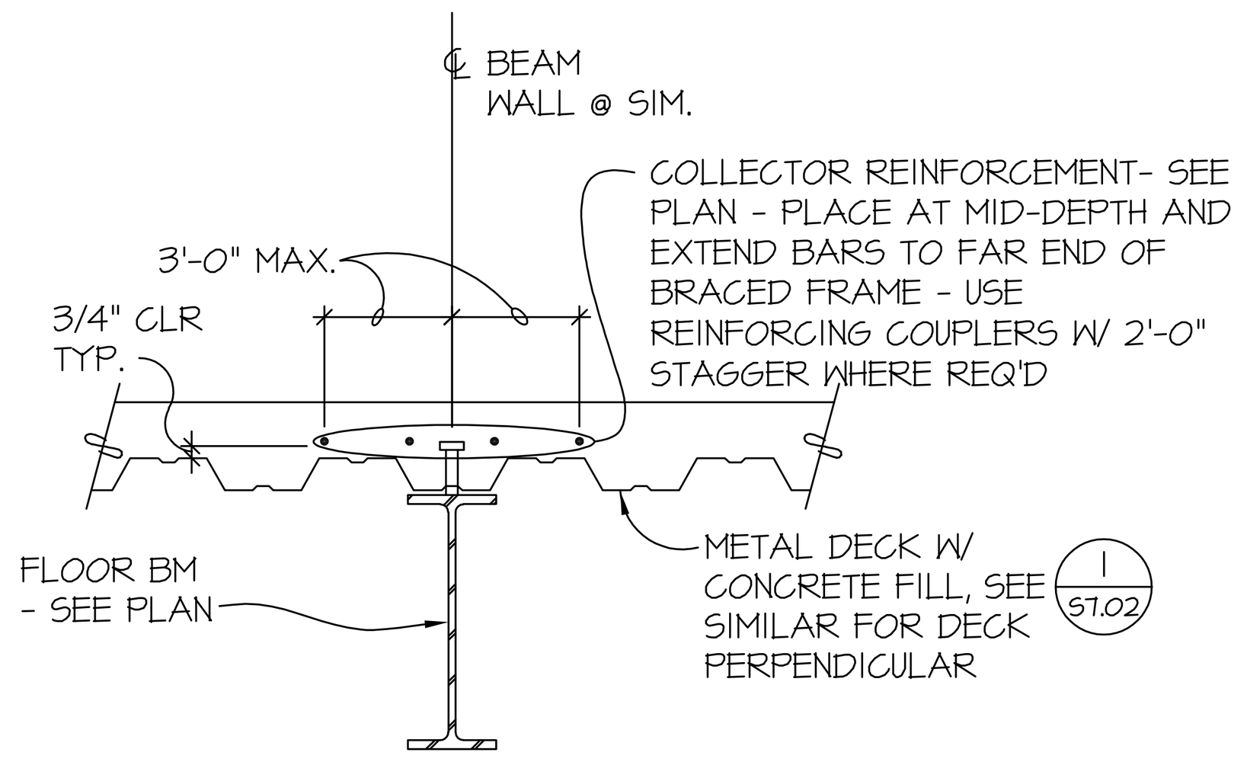

SECTION
1"=1'-0"
5 S6.01

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ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_
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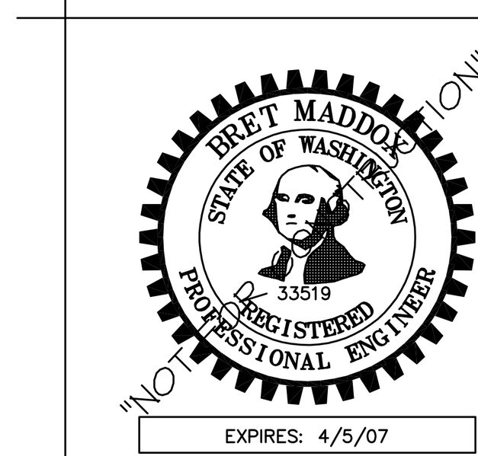
SSA ACOUSTICS



project_
COUPEVILLE HIGH SCHOOL
PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

BRACED FRAME ELEVATIONS & DETAILS

revision_

issued_
PERMIT 26 MAY 06

drawn_
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checked_
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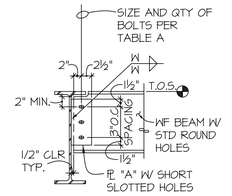
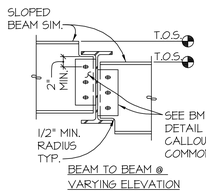
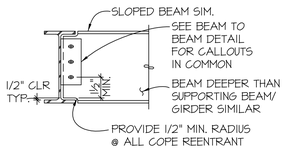
sheet_
S6.01



BEAM TO BEAM



BEAM TO BEAM @ VARYING ELEVATION



BEAM TO BEAM SAME DEPTH

TABLE A

SUPPORTED BM SIZE	# OF 7/8"Φ A325N BOLTS	SHEAR ℙ THICKNESS "A"	WELD "W" NOTE 1.
W10	2	3/8"	5/16"
W12, W14, C15	3	"	"
W16, W18	4	"	"
W21	5	"	"
W24	6	"	"
W27	7	"	"
W30	7	3/8"	5/16"
W33	8	3/8"	5/16"

NOTE:
1. WELD SIZE SHOWN IS FOR BEAM/GIRDERS FRAMING PERPENDICULAR INTO SUPPORTS. FOR SKEWED FRAMING CONNECTIONS - SEE TYPICAL STEEL DETAIL. (2/S1.01)

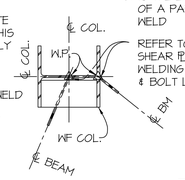
DETAIL
NO SCALE — 1 / S1.01

TABLE B

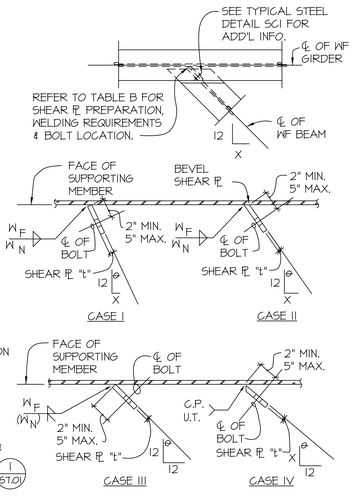
"t"	SKEW ANGLE θ	DETAIL CASE	X	W_N	W_F
3/8"	θ ≤ 2°	CASE I	X ≤ 1/2	5/16	5/16
3/8"	2° < θ ≤ 11°	CASE I	1/2 < X ≤ 2⅜	3/8	5/16
3/8"	11° < θ ≤ 25°	CASE I	2⅜ < X ≤ 5½	1/2	5/16
3/8"	25° < θ ≤ 30°	CASE I	5½ < X ≤ 7	9/16	5/16
3/8"	30° < θ < 45°	CASE II	7 < X < 12	3/8	5/16
3/8"	θ = 45°	CASE III	X = 12	1/4 *	5/16
3/8"	θ > 45°	CASE IV	X < 12	C.P.	-
	θ ≤ 2°	CASE I	X ≤ 1/2	5/16	5/16
	2° < θ ≤ 10°	CASE I	1/2 < X ≤ 2⅛	1/2	5/16
	10° < θ ≤ 16°	CASE I	2⅛ < X ≤ 3⅜	9/16	3/8
	16° < θ ≤ 21°	CASE I	3⅜ < X ≤ 4½	5/8	3/8
	21° < θ < 45°	CASE II	4½ < X < 12	1/2	3/8
	θ = 45°	CASE III	X = 12	3/8*	3/8
	θ > 45°	CASE IV	X < 12	C.P.	-

NOTE:
1. THE NUT MAY BE PLACED ON THE ACUTE ANGLE SIDE OF SHEAR PLATE. WHEN THIS SITUATION OCCURS, THE BOLT ASSEMBLY MAY BE INSTALLED AS SNUG TIGHT IN LIEU OF FULLY PRETENSIONED.
2. PROVIDE A COMPLETE PENETRATION WELD OF THE SHEAR ℙ TO THE SUPPORTING MEMBER WHERE THERE IS INSUFFICIENT CLEARANCE TO PLACE FILLET WELDS ON BOTH SIDES OF THE SHEAR ℙ.

W_N IS THE EFFECTIVE THROAT OF A PARTIAL PENETRATION WELD



FOR DETAILS & CALLOUTS IN COMMON SEE (1/S1.01)



DETAIL
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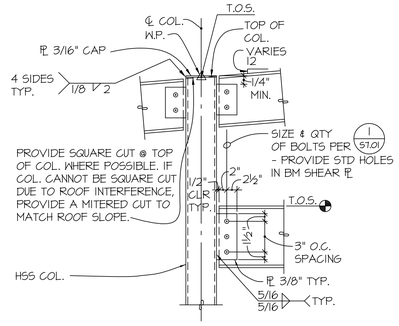
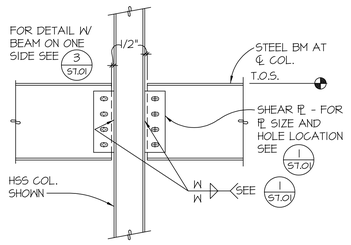
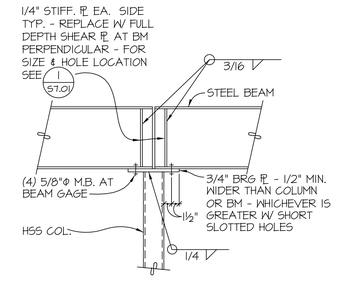


DETAIL
NO SCALE — 3 / S1.01



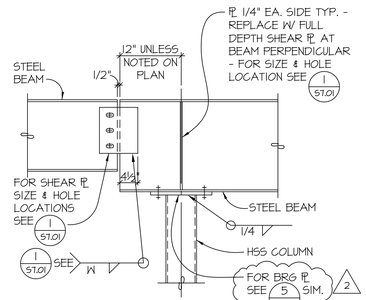
SHEAR ℙ BEAM CONNECTION AT HSS COLUMN

DETAIL
NO SCALE — 4 / S1.01

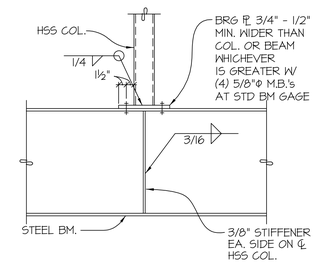


TYPICAL STEEL BEAM BOTH SIDES TO COLUMN CONNECTION

SECTION
NO SCALE — 5 / S1.01

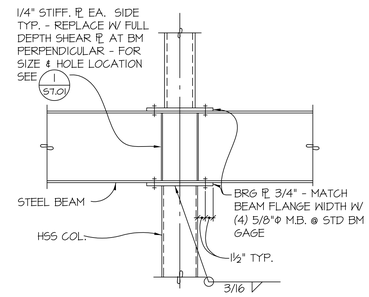


SECTION
NO SCALE — 6 / S1.01



TYPICAL STEEL BEAM CONNECTION TO COLUMN ABOVE

SECTION
NO SCALE — 7 / S1.01



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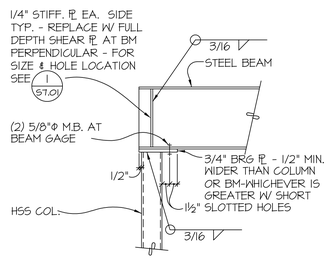
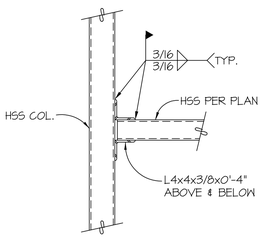


TYPICAL STEEL BEAM ONE SIDE TO COLUMN CONNECTION

SECTION
NO SCALE — 9 / S1.01



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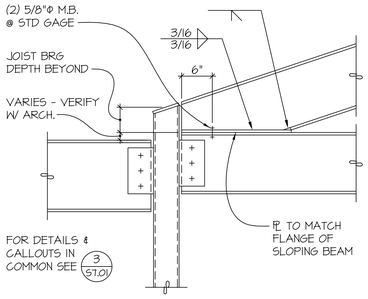
NO SCALE — 10 / S1.01



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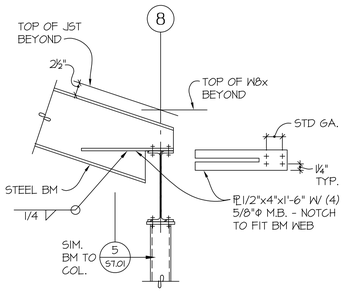

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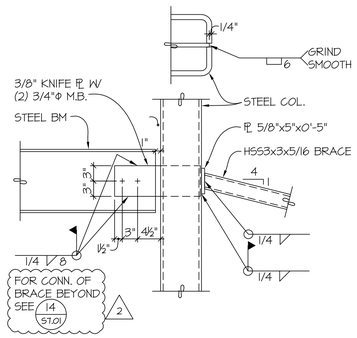

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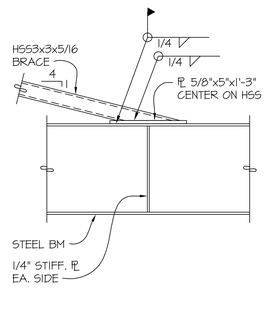

DETAIL
NO SCALE — 14 / S1.01

architect_
McGRANAHAN ARCHITECTS
civil engineer_
HARMSEN AND ASSOCIATES INC.
landscape design_
BERGER PARTNERSHIP
structural engineer_
PCS STRUCTURAL SOLUTIONS
mechanical engineer_
BCE ENGINEERS
electrical engineer_
BCE ENGINEERS
food service_
CHANDLER|WILSON DESIGN
acoustical design-
SSA ACOUSTICS

EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II
client_
COUPEVILLE SCHOOL DISTRICT #204
location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

revision_

issued_
PERMIT 26 MAY 06

drawn_
AAG
checked_
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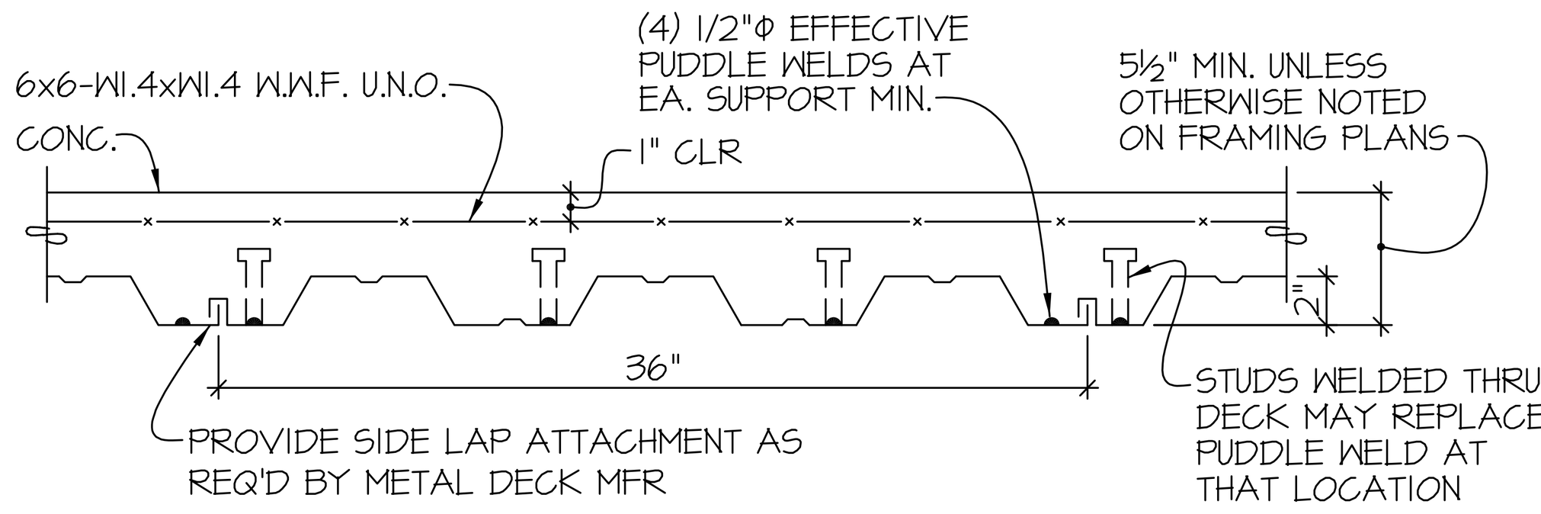
sheet_

FLOOR FRAMING DETAILS

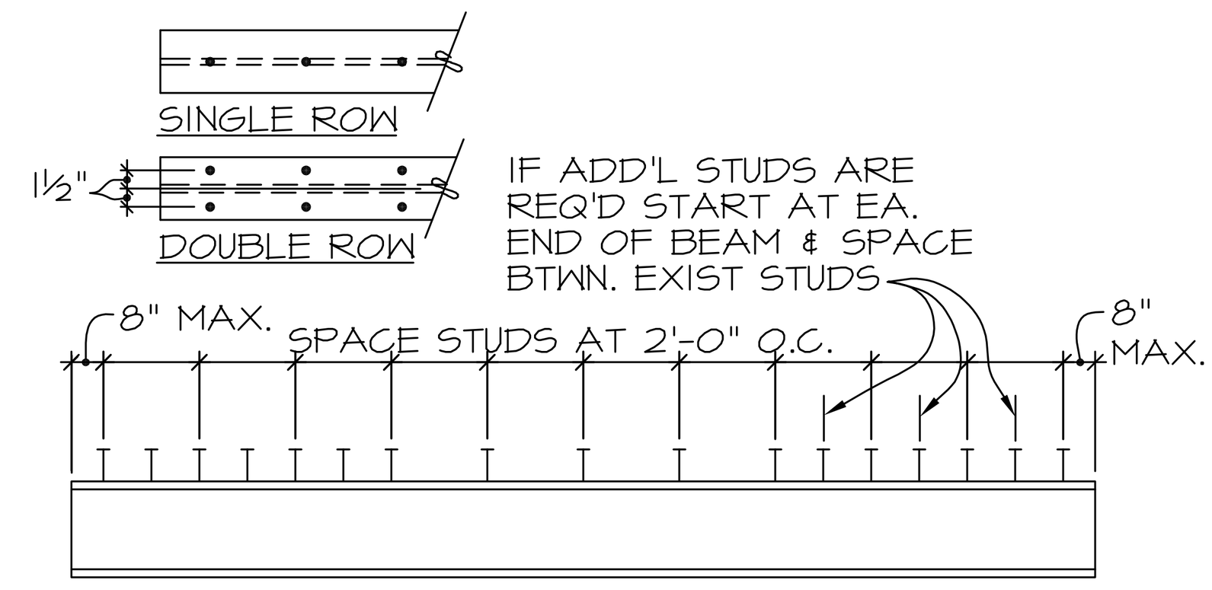
S7.01



TYPE "W-2" MIN. DECK PROPERTIES		
GAUGE	I = (in.⁴/ft.)	+S/-S = (in.³/ft)
20	.423	.361/.370

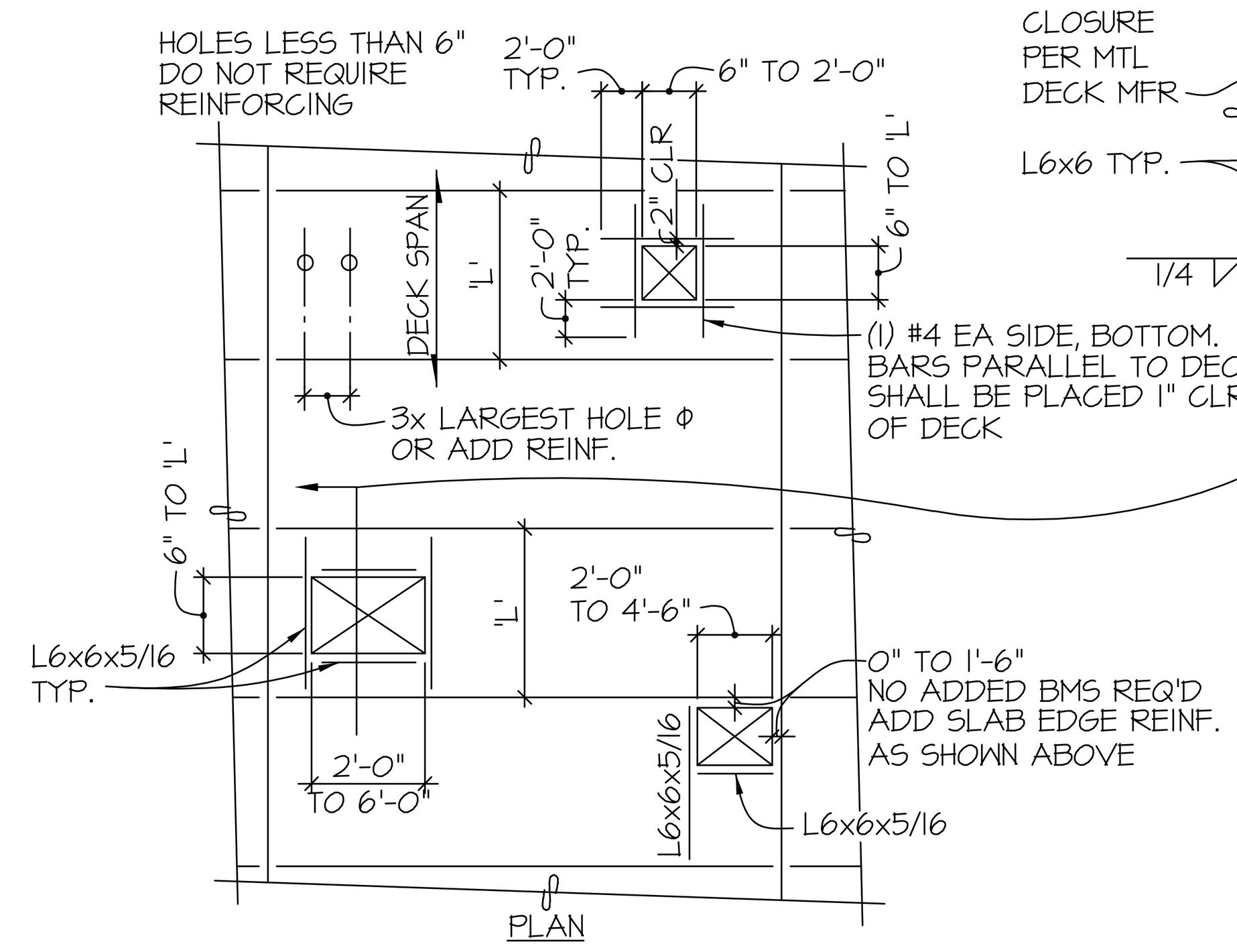
NOTES:
1. (2) SPAN MIN., (3) SPAN PREFERRED - WHERE SIMPLE SPAN SHOWN ON DRAWINGS GENERAL CONTRACTOR TO PROVIDE SHORING
2. AT SUPPORTS PARALLEL TO CORRUGATIONS, PROVIDE PUDDLE WELDS @ 24" O.C. MAX.
3. CONDUIT NOT PERMITTED IN SLAB

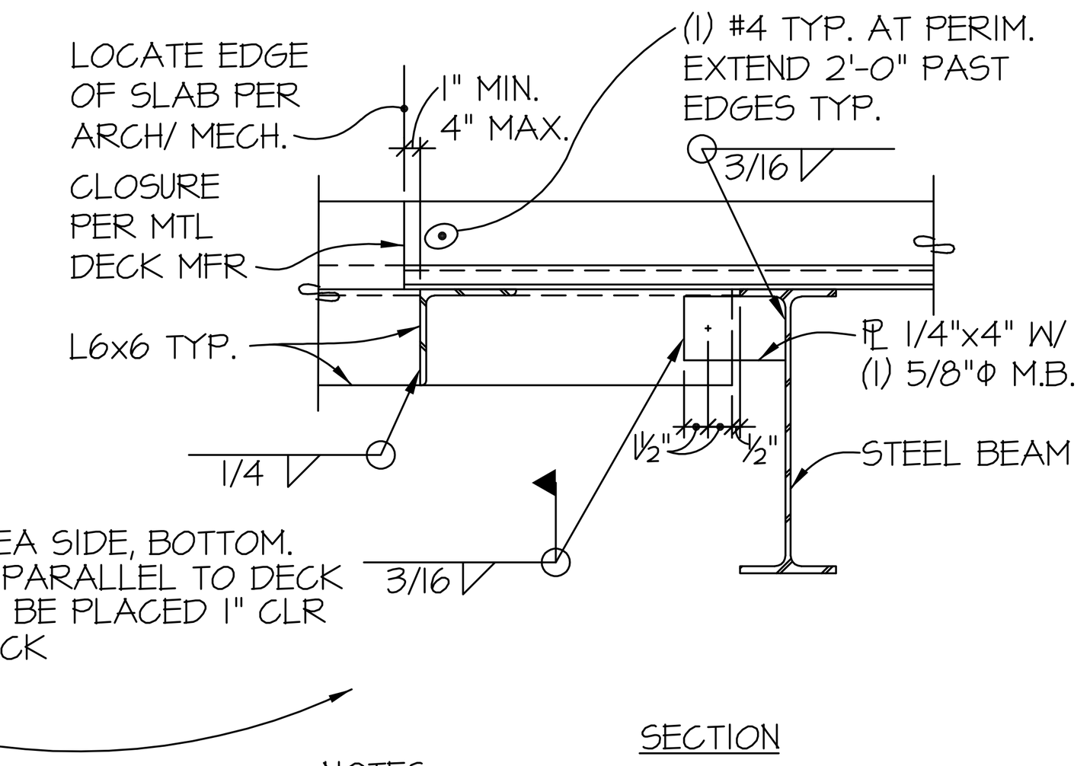
TYPICAL COMPOSITE FLOOR DECK
DETAIL 1 / S7.02
NO SCALE



NOTES:
1. LOCATE STUDS AT CENTER OF BEAM FLANGE.
2. STUDS ARE 3/4"Φ x 4½" LONG AFTER WELDING. (4" LONG STUDS AT 5" DECK)
3. SEE FRAMING PLANS FOR NUMBER OF STUDS.
4. ALL BEAMS WITH STUDS ARE COMPOSITE STEEL BEAMS AND ARE 50ksi MATERIAL. SEE GENERAL NOTES.
5. PROVIDE A DOUBLE ROW OF STUDS AT BEAMS WHERE THE REQUIRED NUMBER OF STUDS EXCEEDS THE NUMBER THAT CAN FIT IN A SINGLE ROW AT 6" O.C. @ DECK PARALLEL TO BM. OR 12" O.C. @ DECK PERPENDICULAR TO BM.
6. STUDS SHOULD BE LOCATED IN DECK FLUTES PER AISC STRONG POSITION.

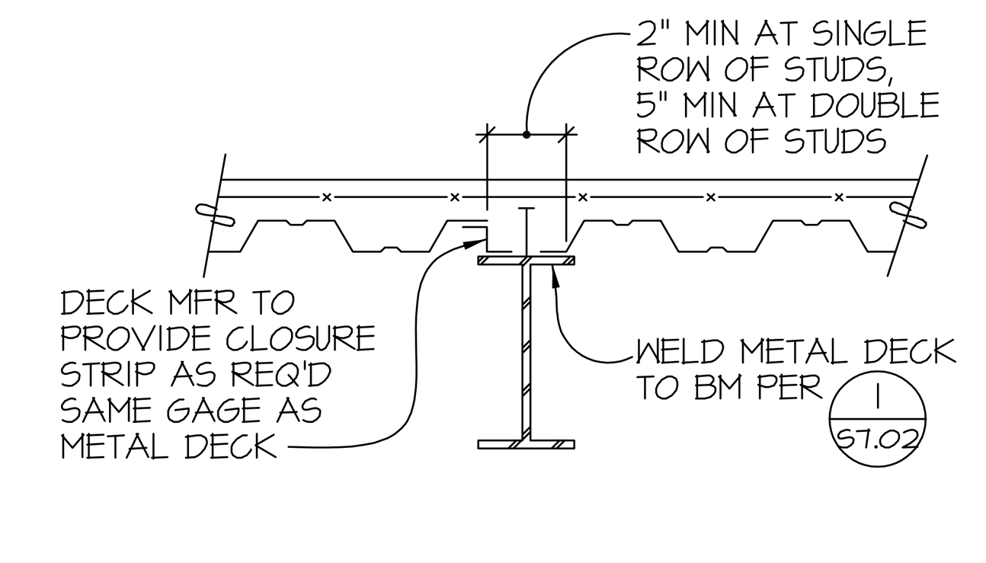
TYPICAL COMPOSITE BEAM DETAIL
DETAIL 2 / S7.02
NO SCALE





NOTES:
1. BLOCK OUT OPENING BEFORE PLACING CONCRETE.
2. REMOVE BLOCKOUT AND CUT DECK AFTER CONCRETE HAS CURED.
3. CONTRACTOR SHALL COORDINATE OPENING SIZE AND LOCATION WITH MECHANICAL AND ELECTRICAL CONTRACTORS AND ARCHITECTURAL DRAWINGS.

TYPICAL FLOOR PENETRATION REINFORCING
DETAIL 3 / S7.02
NO SCALE



TYPICAL AT METAL DECK PARALLEL TO BEAM
SECTION 4 / S7.02
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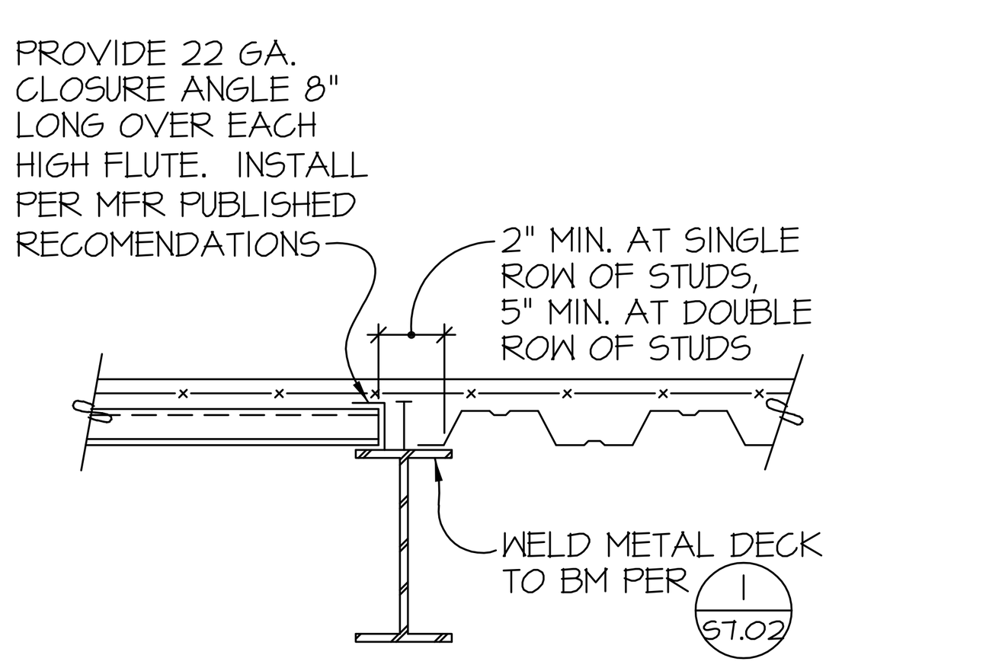

TYPICAL AT METAL DECK TRANSITION AT BEAM
SECTION 5 / S7.02
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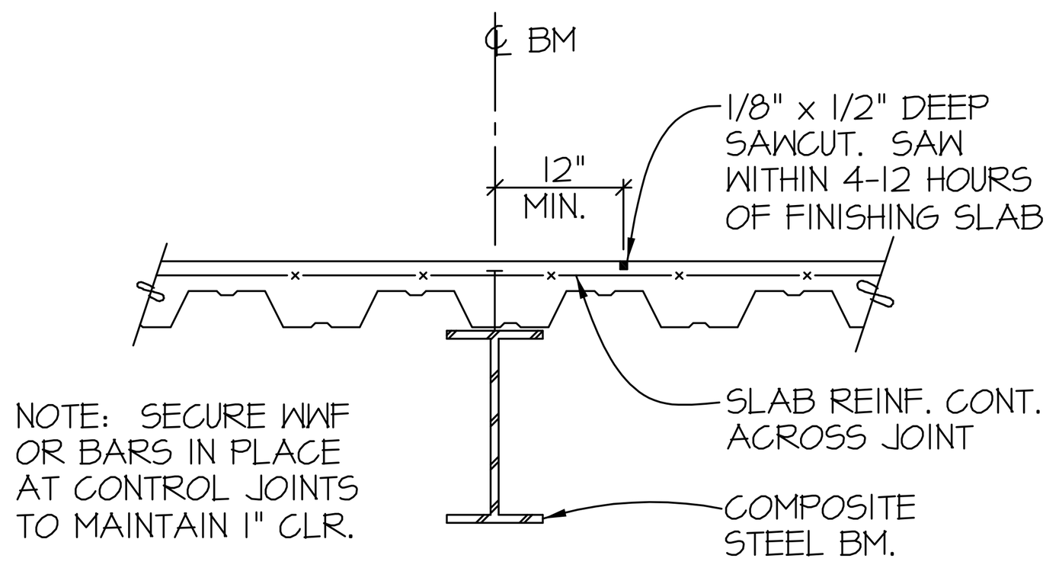

TYPICAL COMPOSITE DECK CONTROL JOINT
SECTION 6 / S7.02
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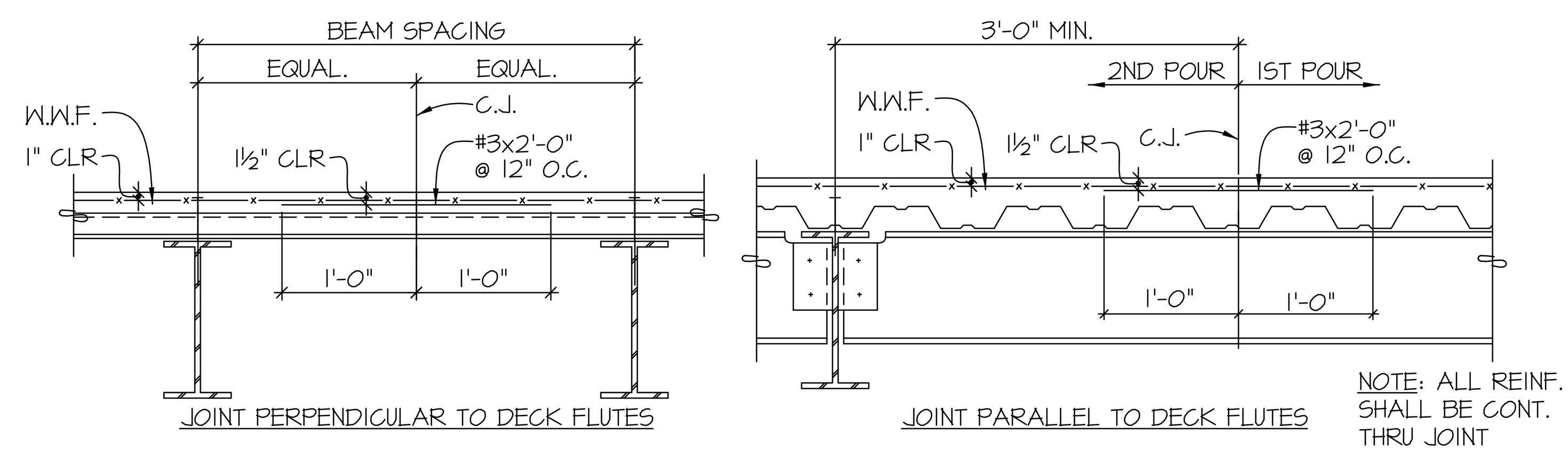

TYPICAL COMPOSITE DECK CONSTRUCTION JOINT
SECTION 7 / S7.02
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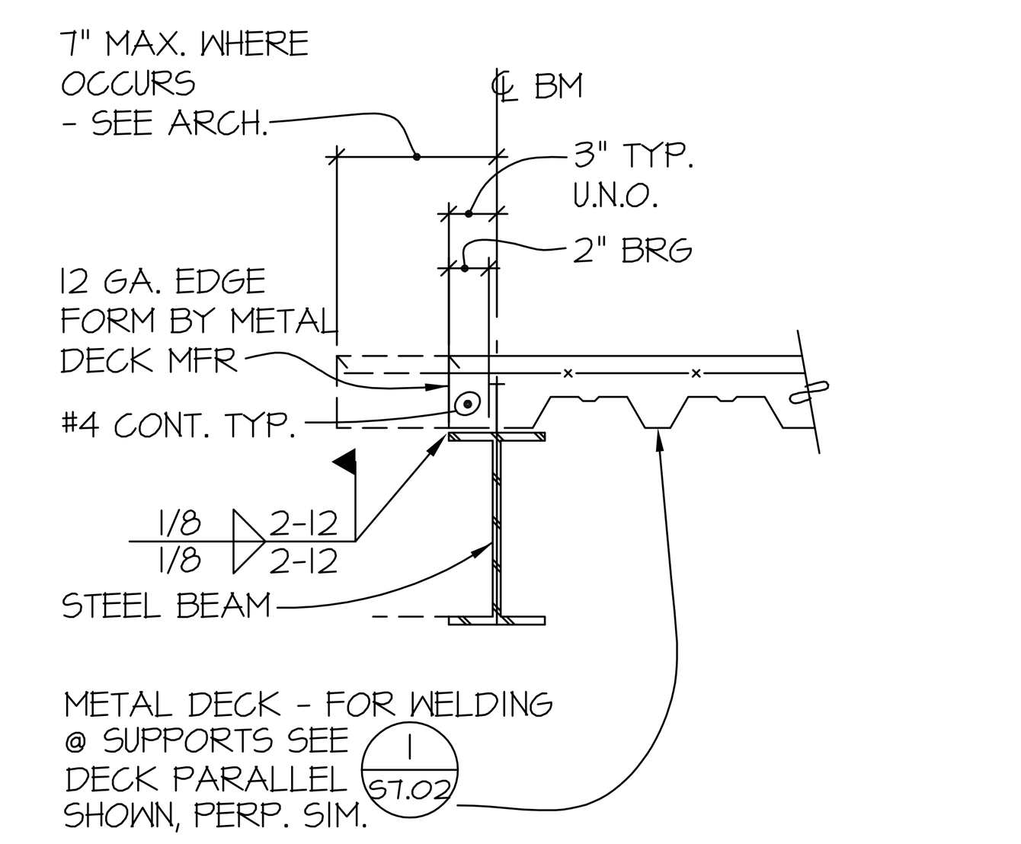

SECTION 8 / S7.02
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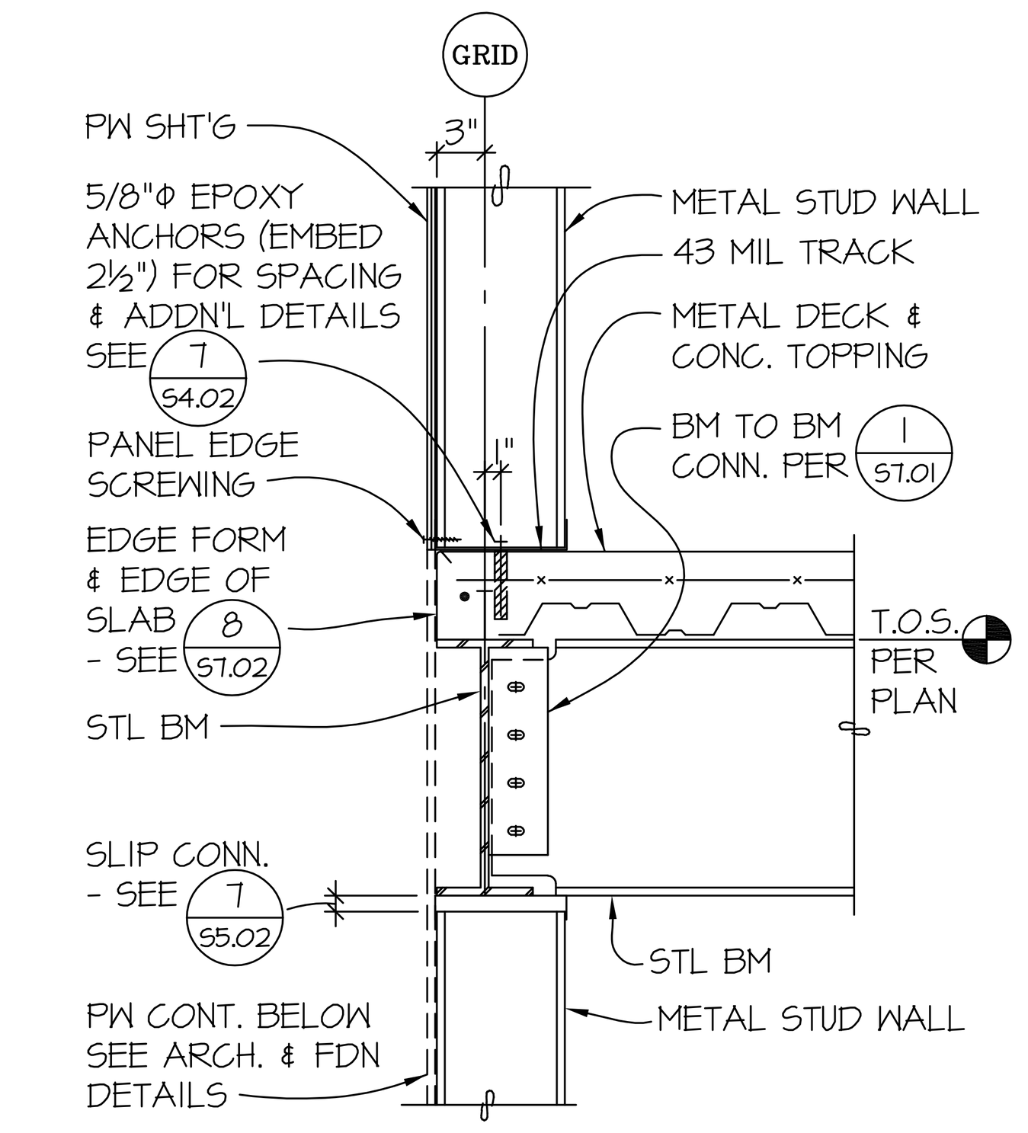

PERIMETER BEAM PERPENDICULAR TO FLOOR BEAMS
SECTION 9 / S7.02
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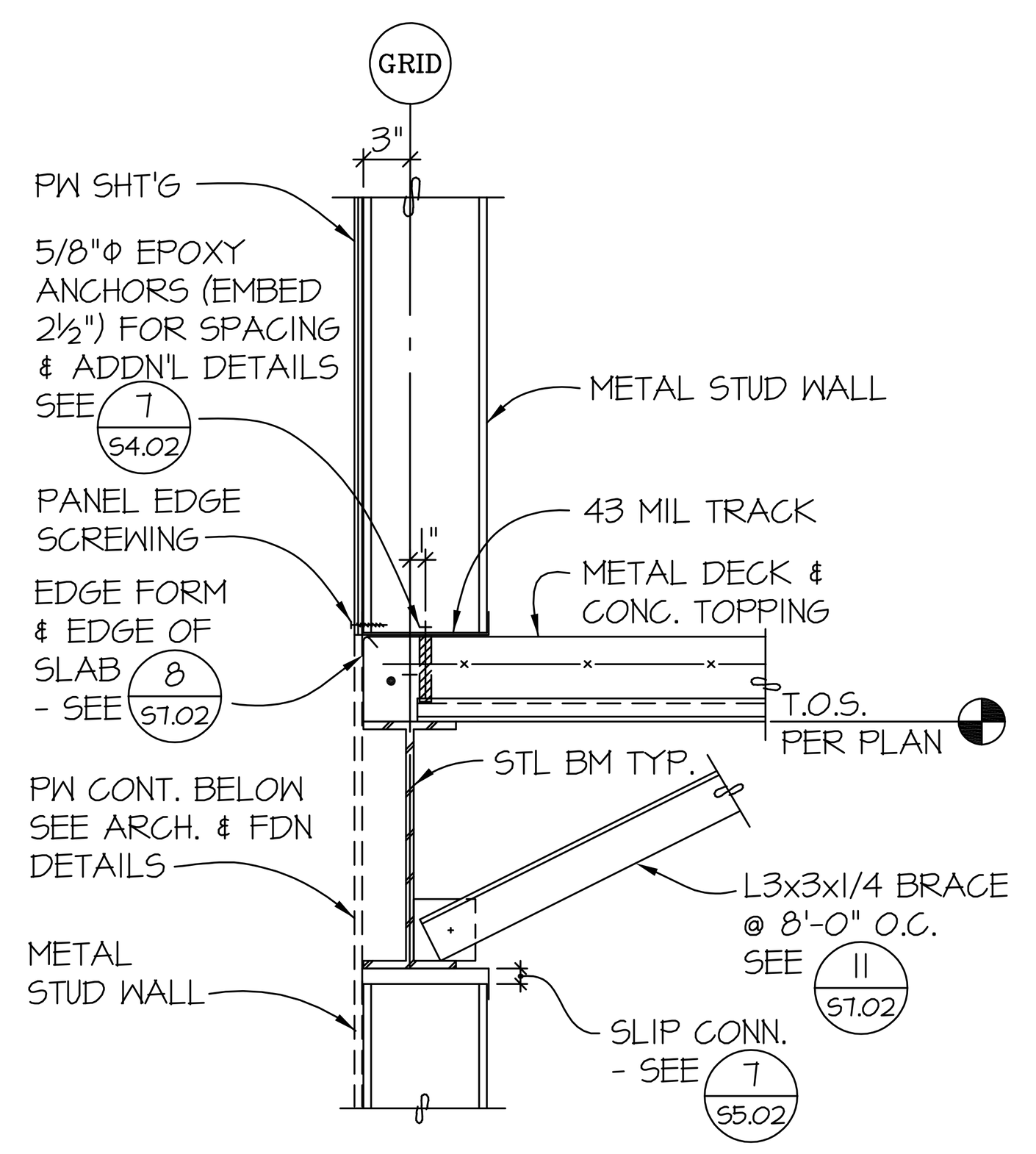

PERIMETER BEAM PARALLEL TO FLOOR BEAMS
SECTION 10 / S7.02
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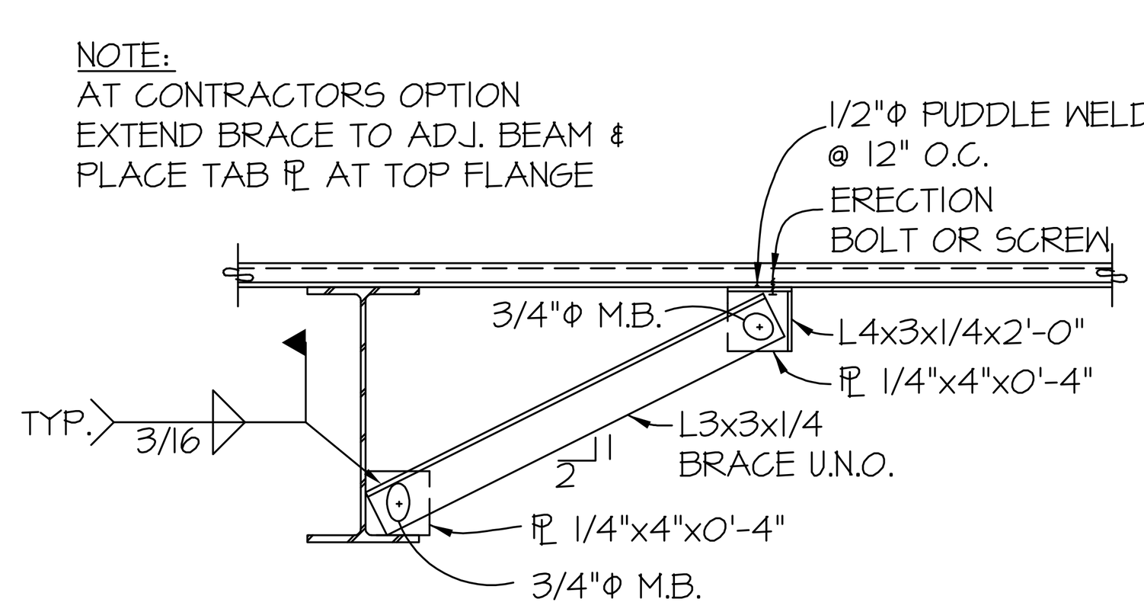

TYPICAL BEAM BRACE
SECTION 11 / S7.02
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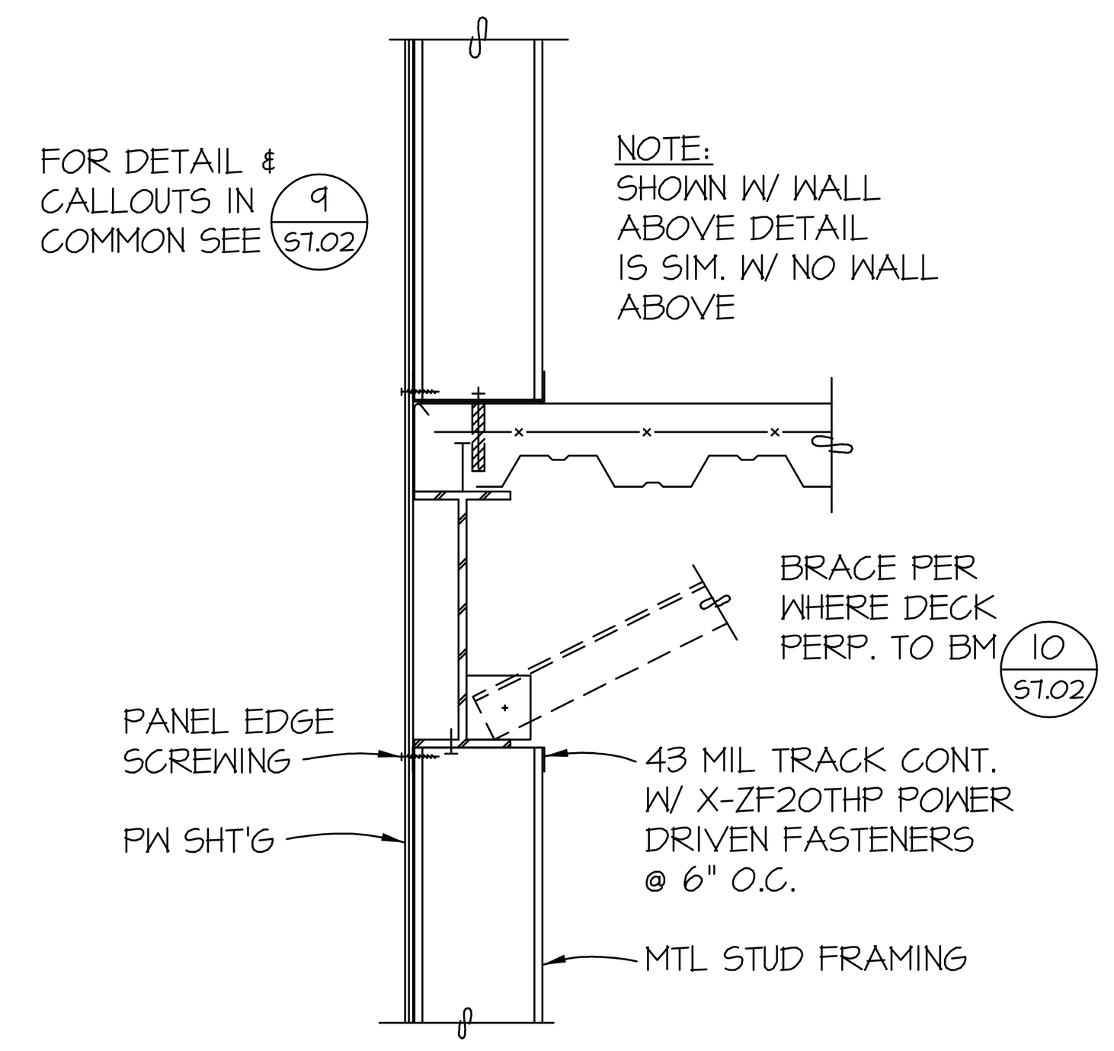

SECTION 12 / S7.02
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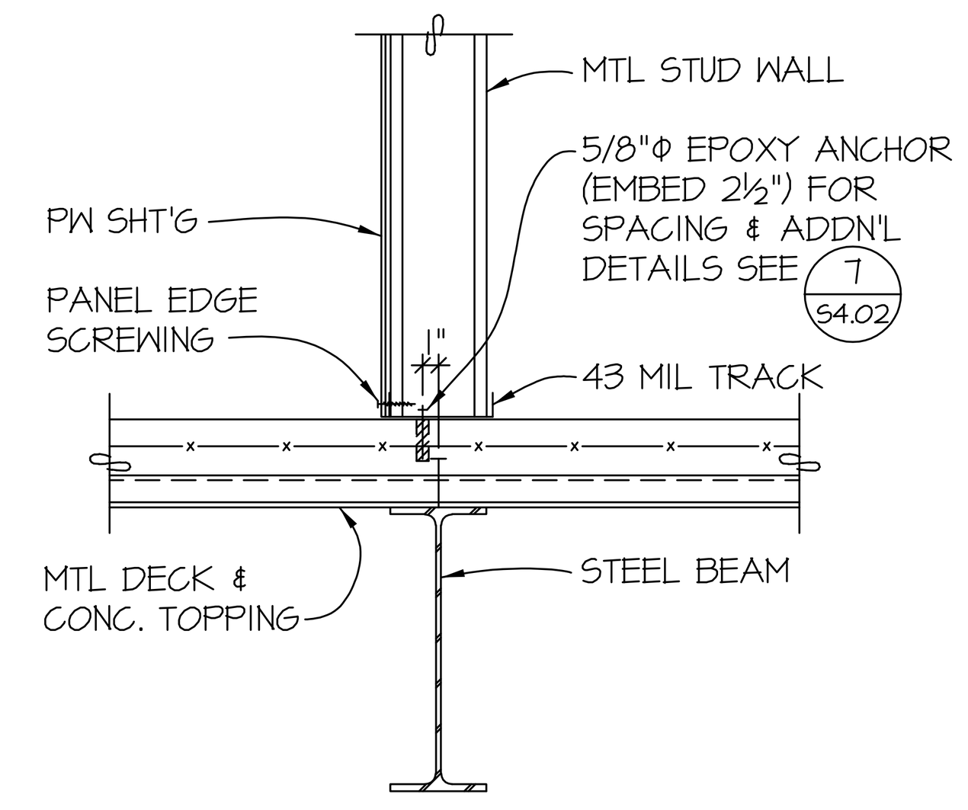
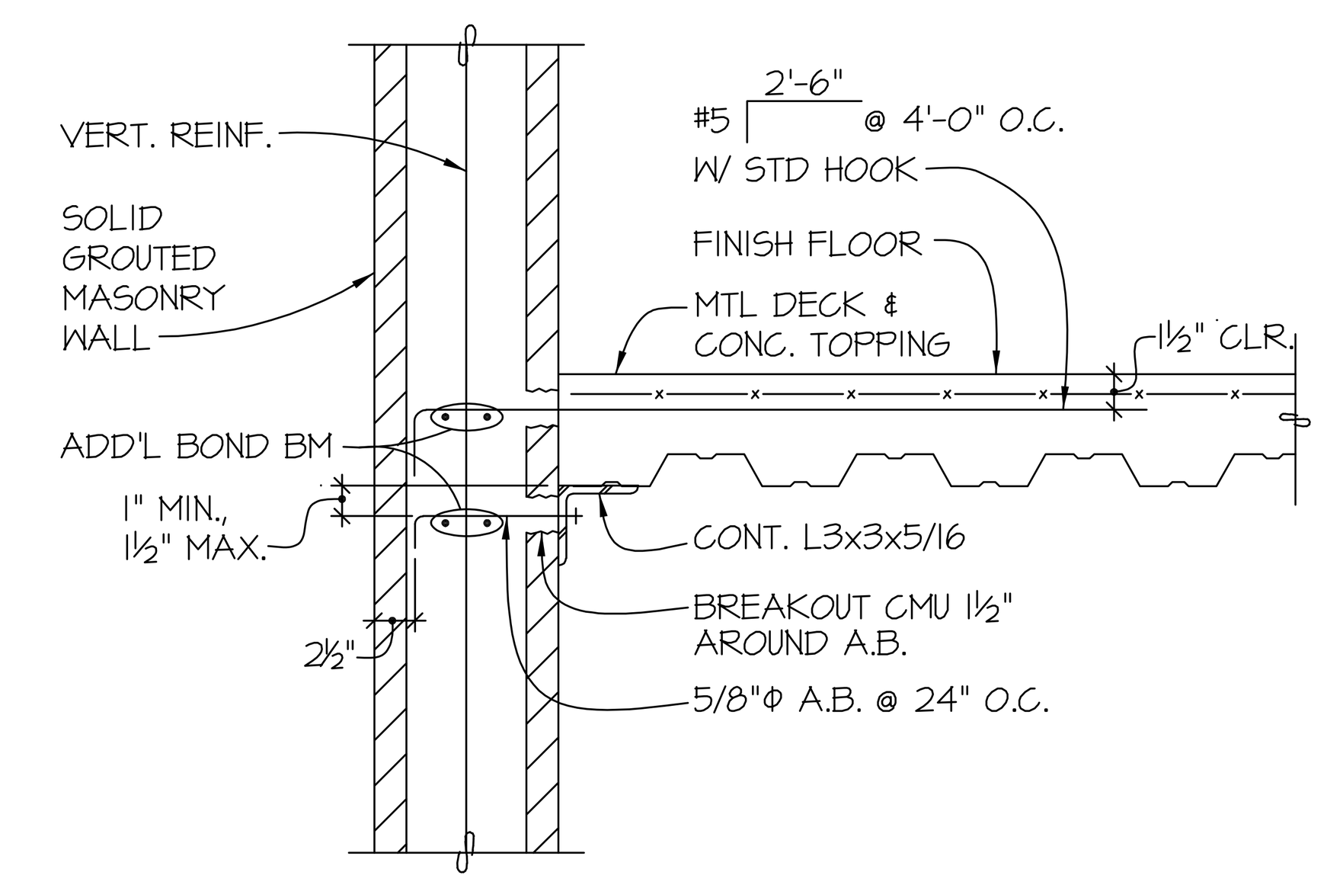
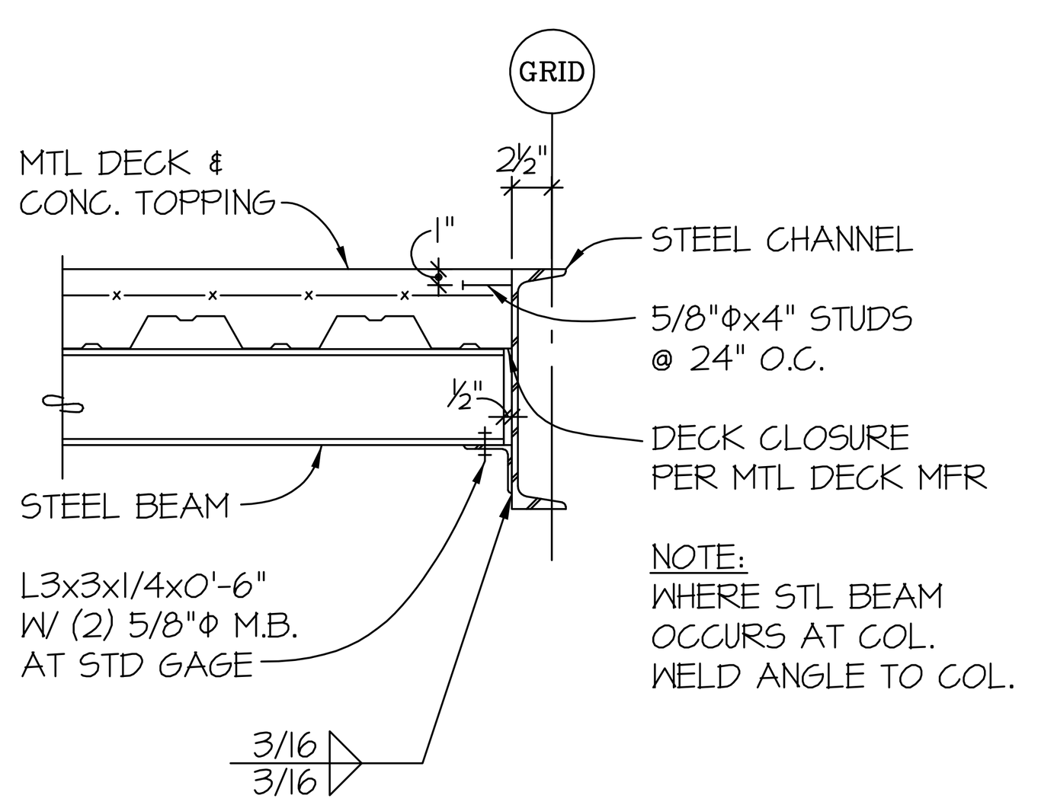


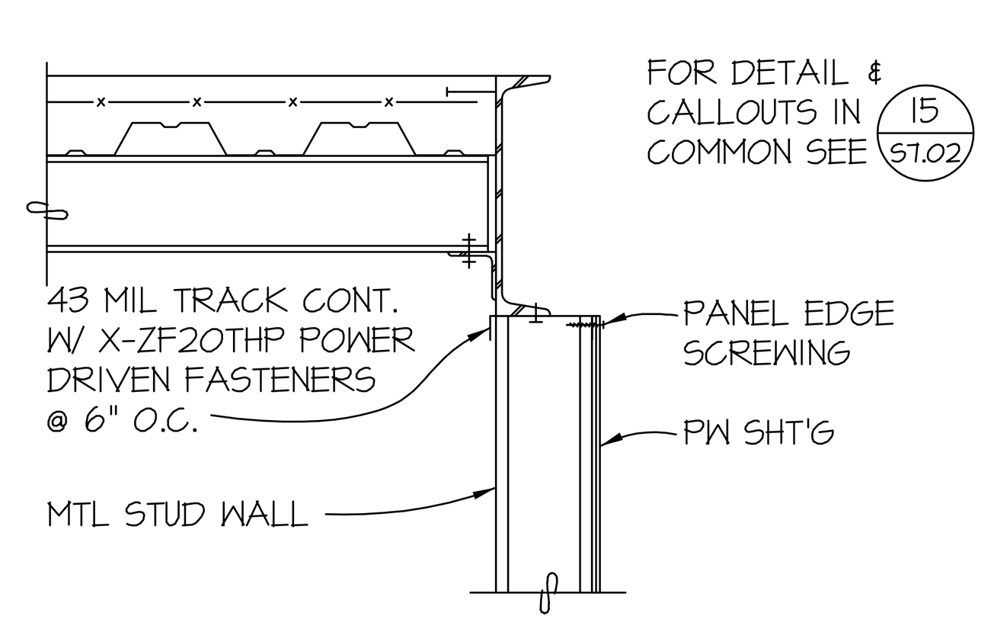
TYPICAL INTERIOR PW SHEAR WALL ABOVE FLOOR FRAMING
SECTION 13 / S7.02
NO SCALE



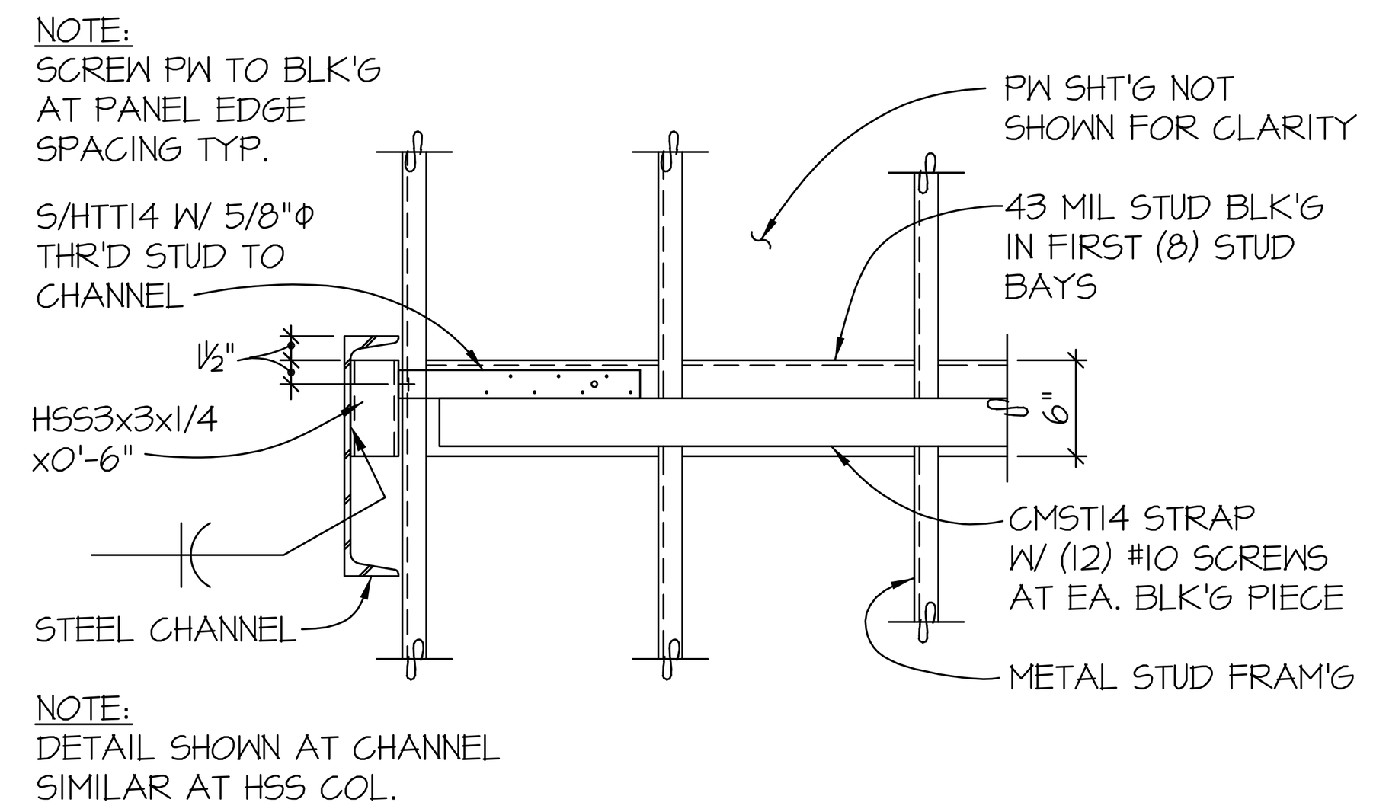
TYPICAL FLOOR METAL DECK CONNECTION AT MASONRY WALL
SECTION 14 / S7.02
NO SCALE



SECTION 15 / S7.02
NO SCALE



SECTION 16 / S7.02
NO SCALE



DETAIL 17 / S7.02
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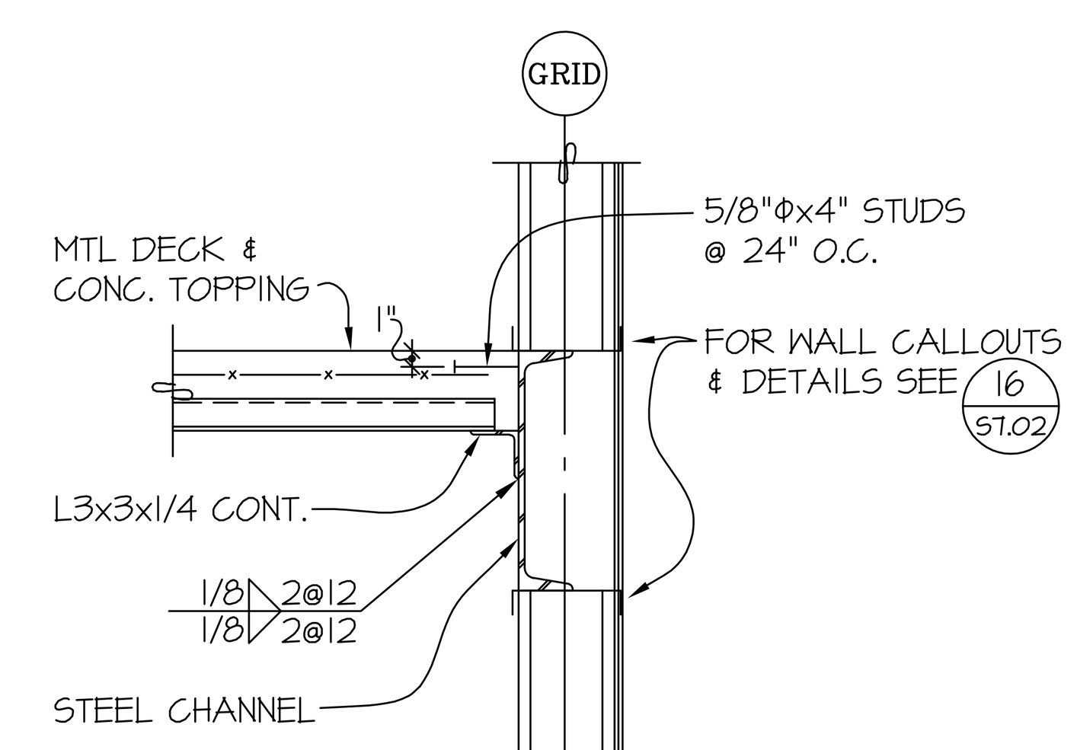
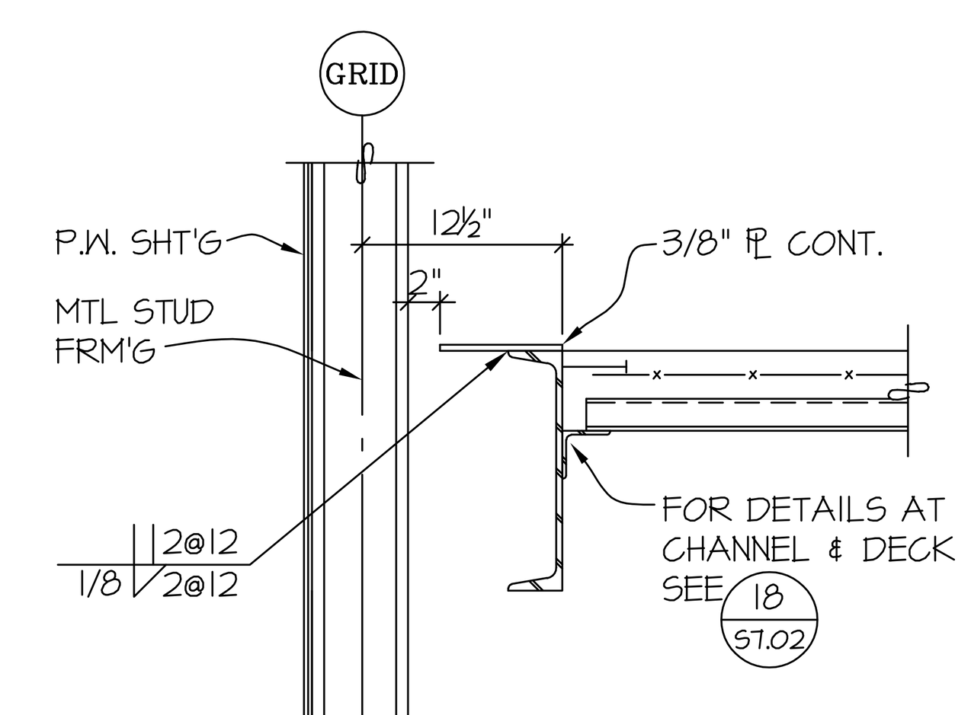


SECTION 18 / S7.02
NO SCALE



SECTION 19 / S7.02
NO SCALE

ORIGINAL SHEET IS 30" x 42".

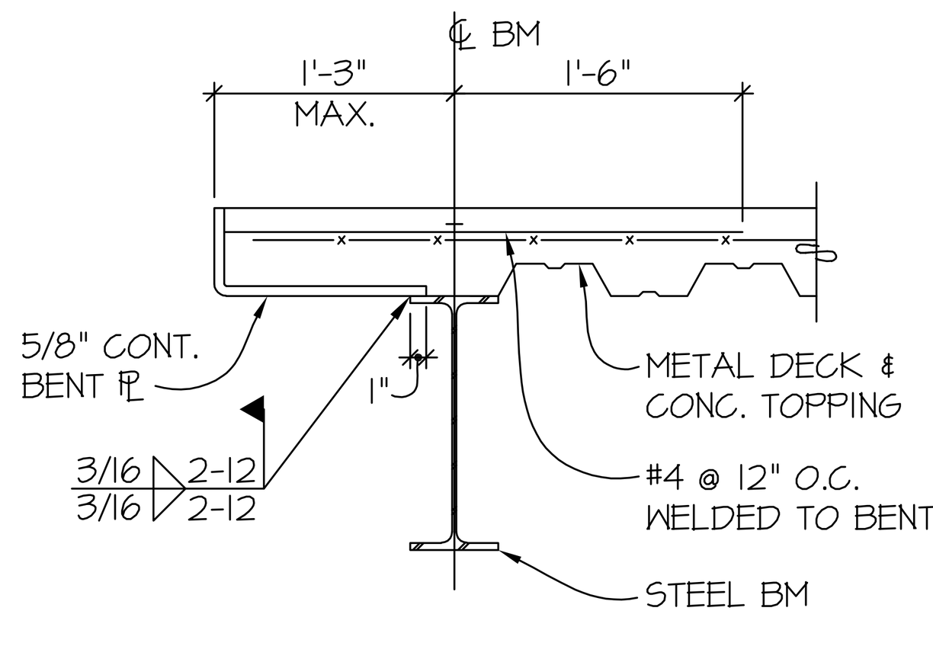
mc9-ARC
architect_ McGRANAHAN ARCHITECTS
civil engineer_ HARMSEN AND ASSOCIATES INC.
landscape design_ BERGER PARTNERSHIP
structural engineer_ PCS STRUCTURAL SOLUTIONS
mechanical engineer_ BCE ENGINEERS
electrical engineer_ BCE ENGINEERS
food service_ CHANDLER|WILSON DESIGN
acoustical design- SSA ACOUSTICS

BRET MADDOX, STATE OF WASHINGTON, 33519, REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

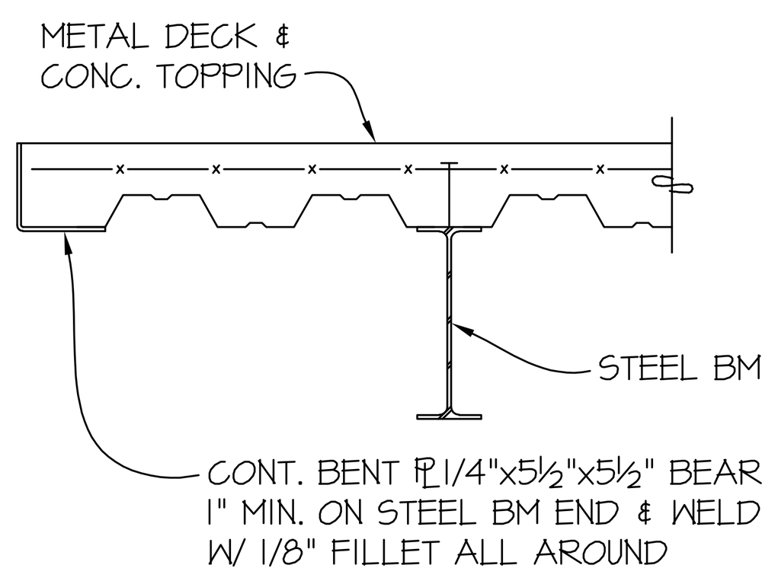
project_ COUPEVILLE HIGH SCHOOL PHASE II
client_ COUPEVILLE SCHOOL DISTRICT #204
location_ COUPEVILLE, WASHINGTON
Project No. 0418.040

FLOOR FRAMING DETAILS

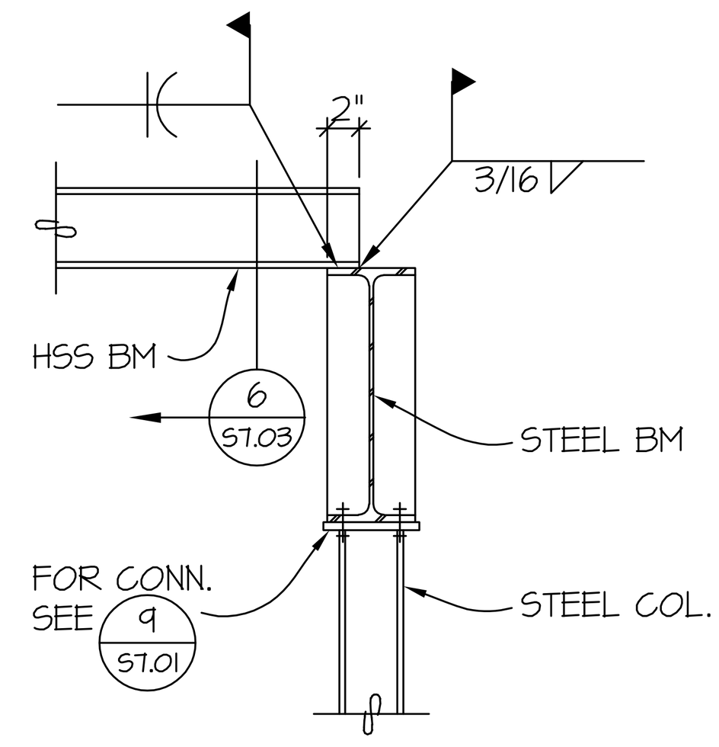
revision_
issued_ PERMIT 26 MAY 06
drawn_ AAG
checked_ MO
sheet_ **S7.02**



SECTION 1 / S7.03
NO SCALE



SECTION 2 / S7.03
NO SCALE



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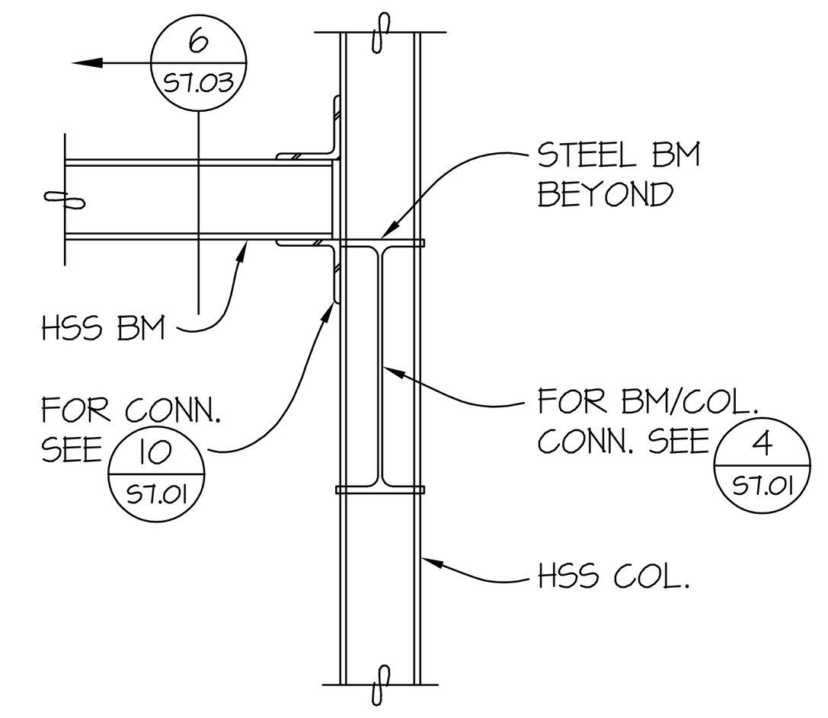

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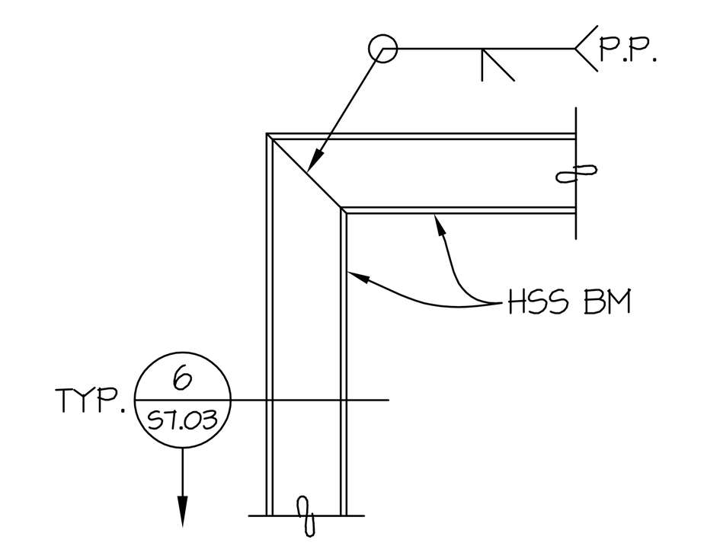
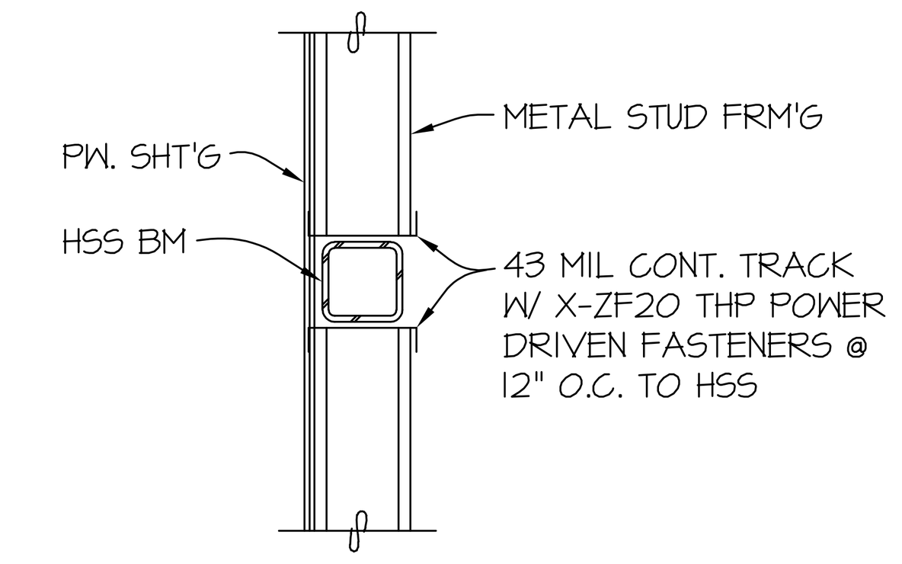
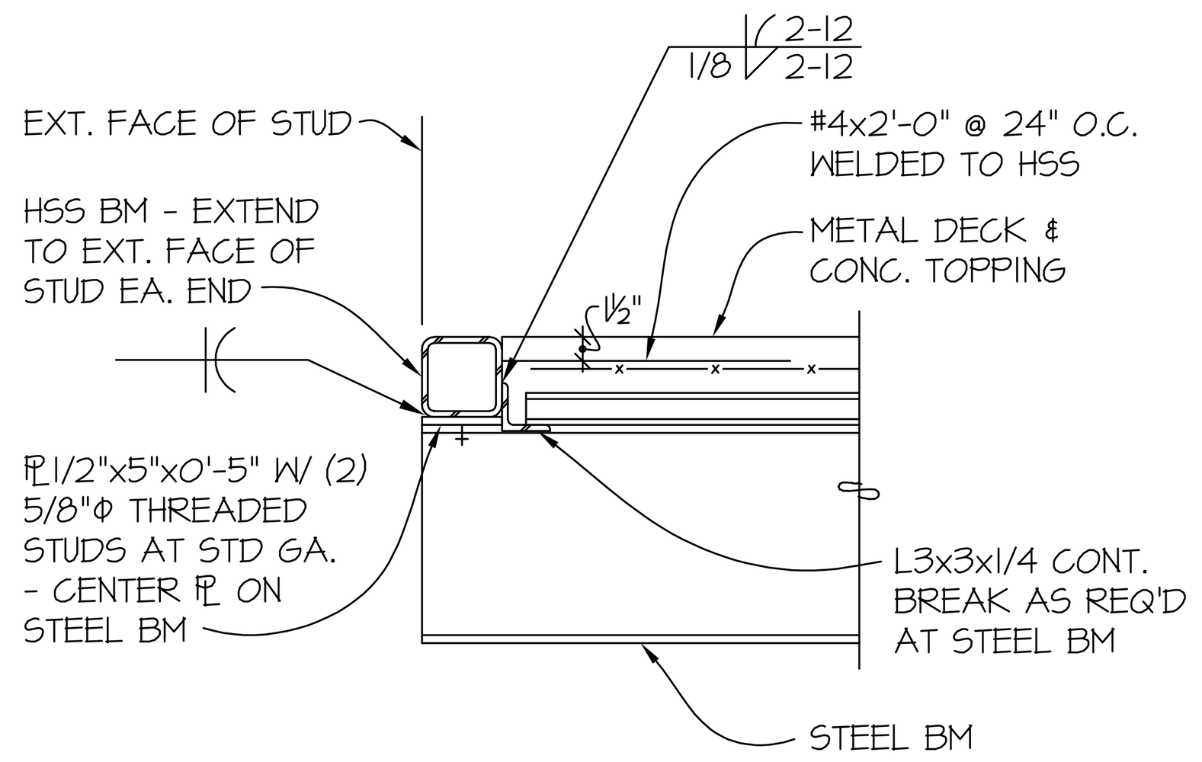


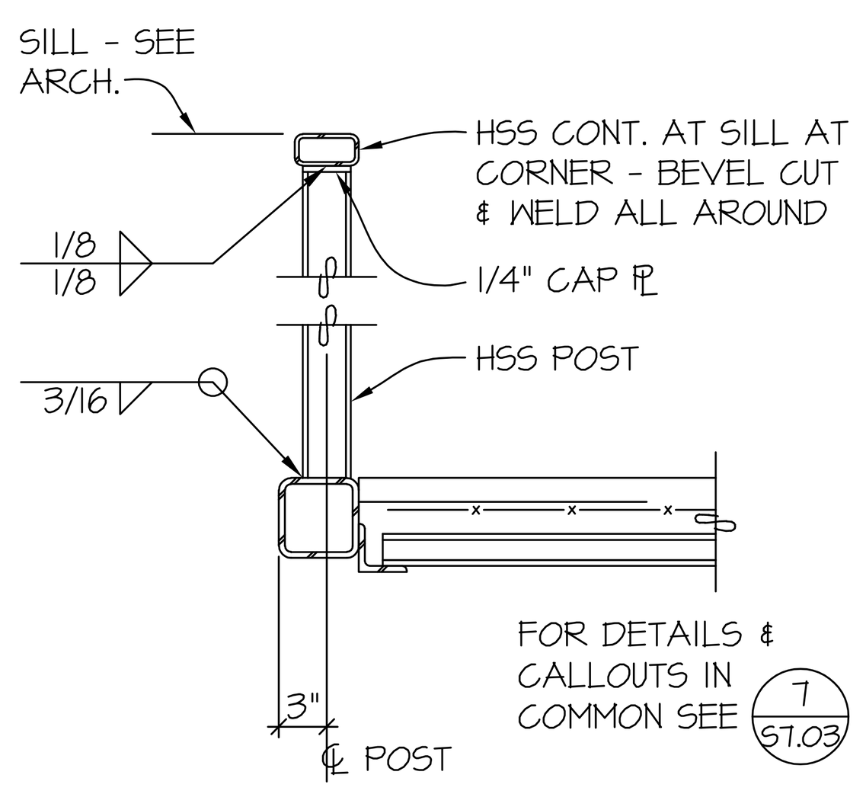
PLAN DETAIL 5 / S7.03
NO SCALE



SECTION 6 / S7.03
1"=1'-0"



SECTION 7 / S7.03
NO SCALE



DETAIL 8 / S7.03
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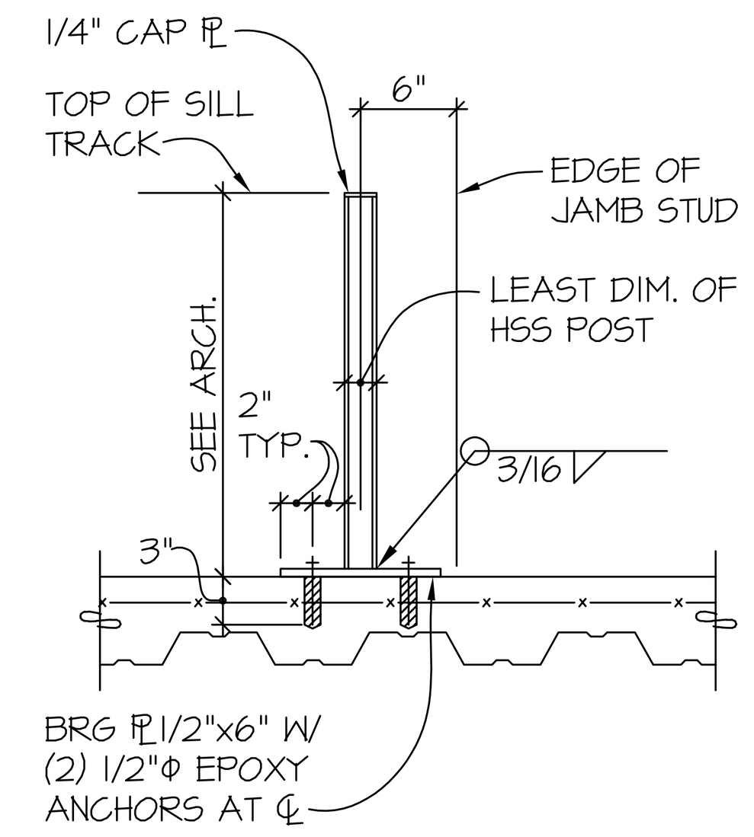

DETAIL 9 / S7.03
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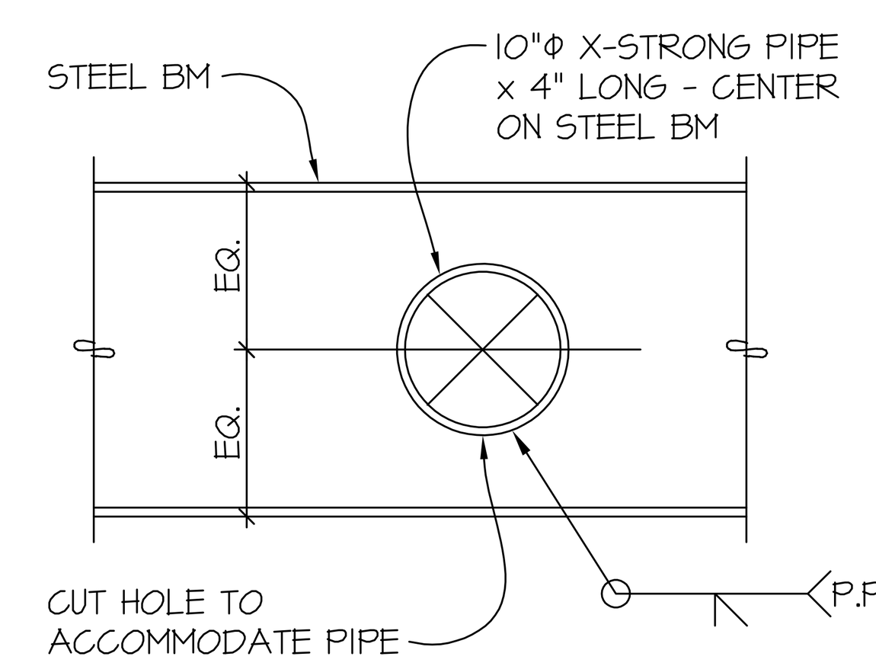

DETAIL 10 / S7.03
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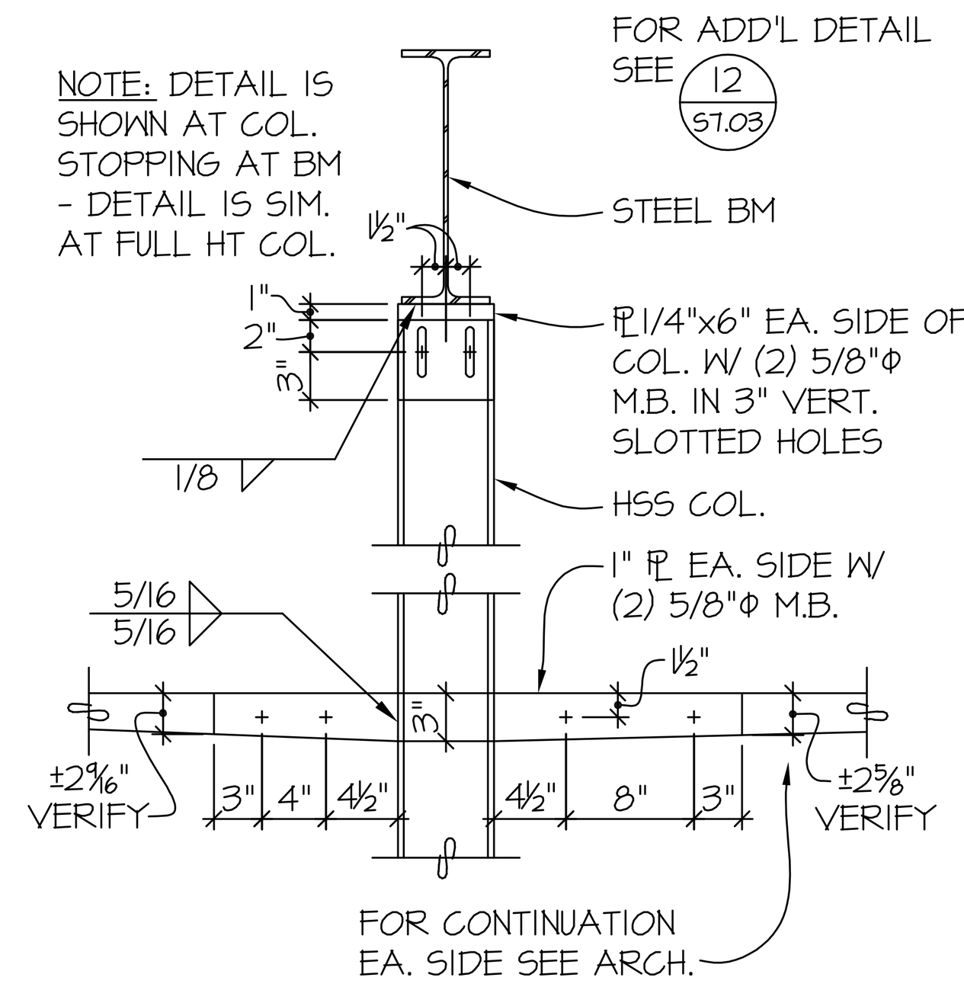
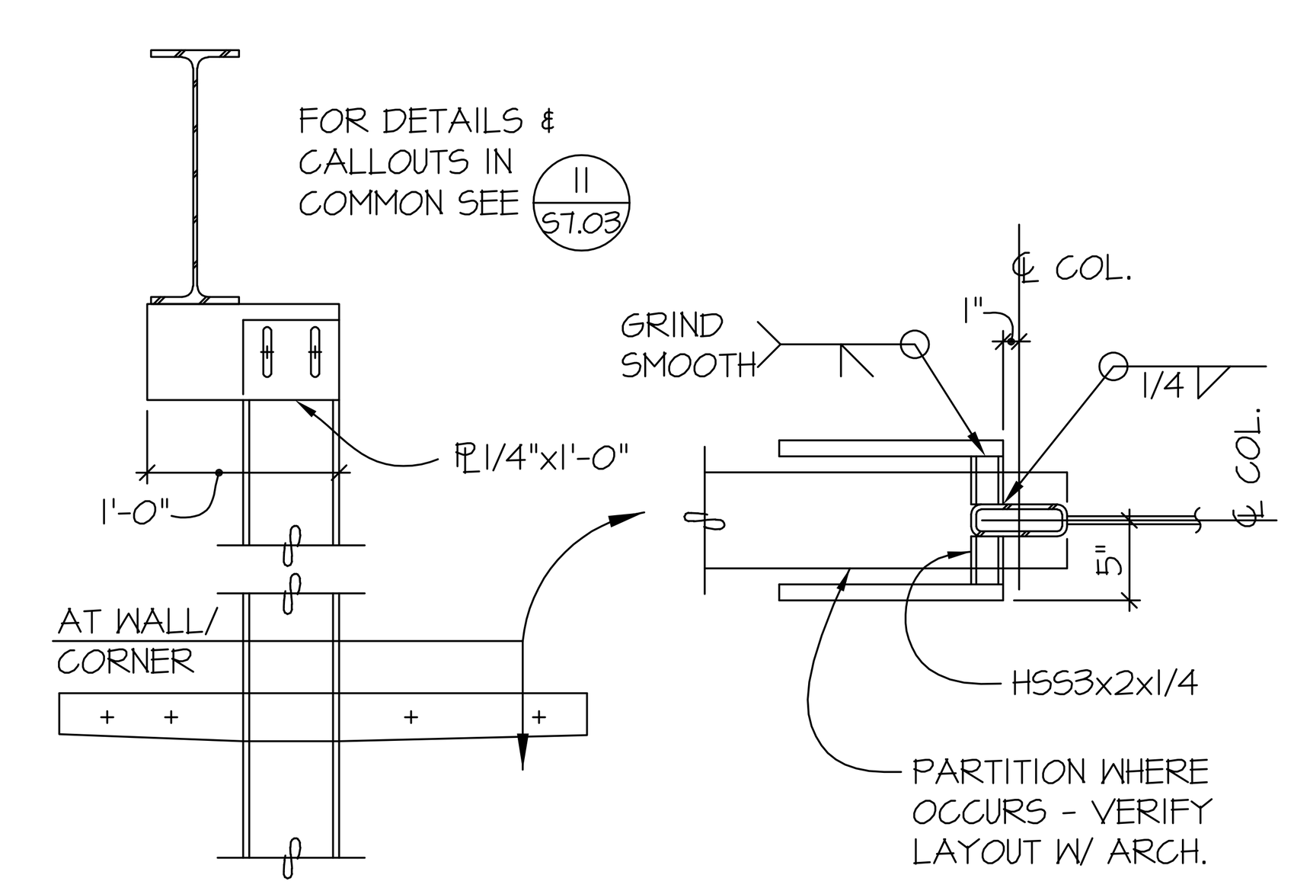
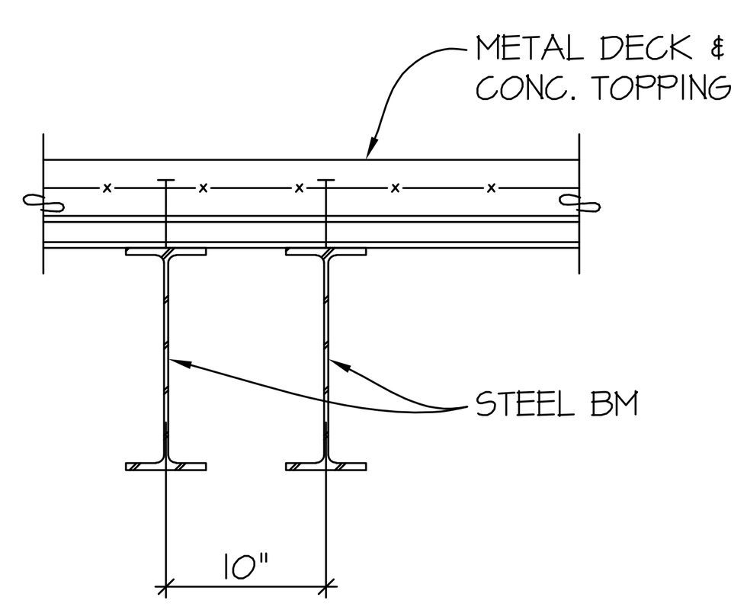


TYPICAL SUNSCREEN SUPPORT AT COLUMN

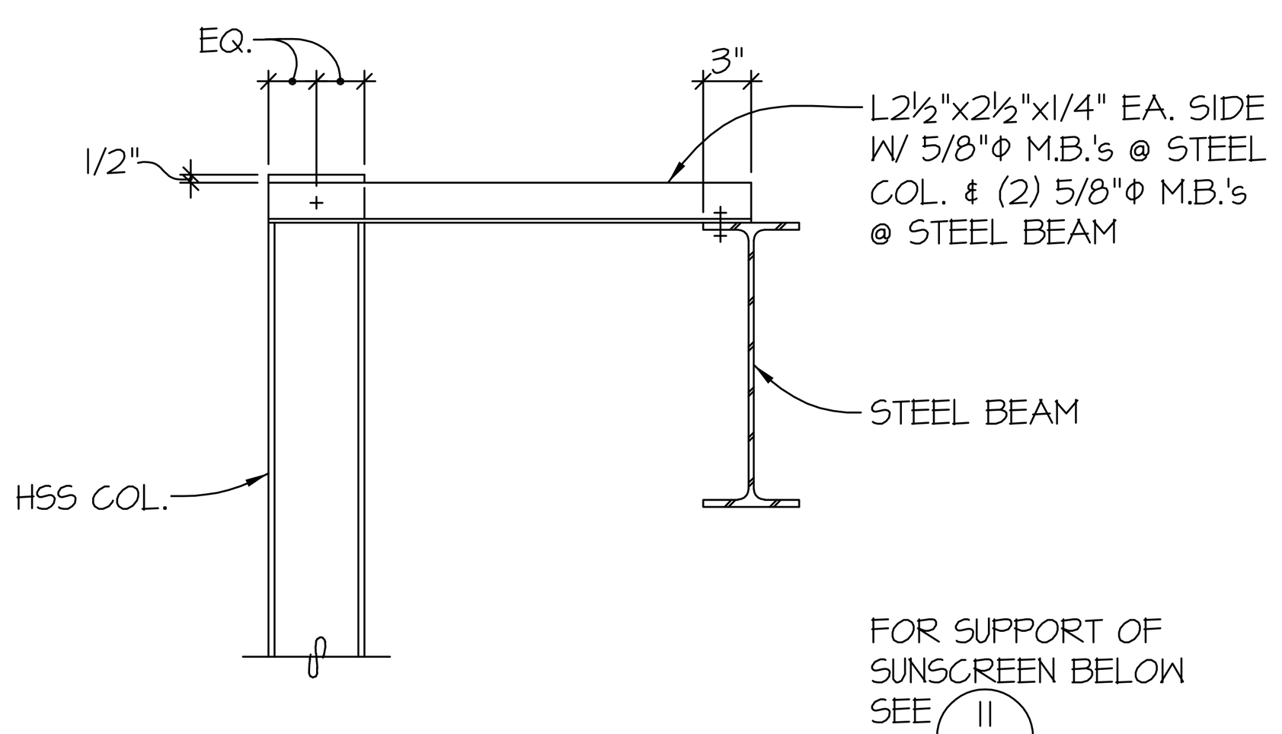
DETAIL 11 / S7.03
NO SCALE



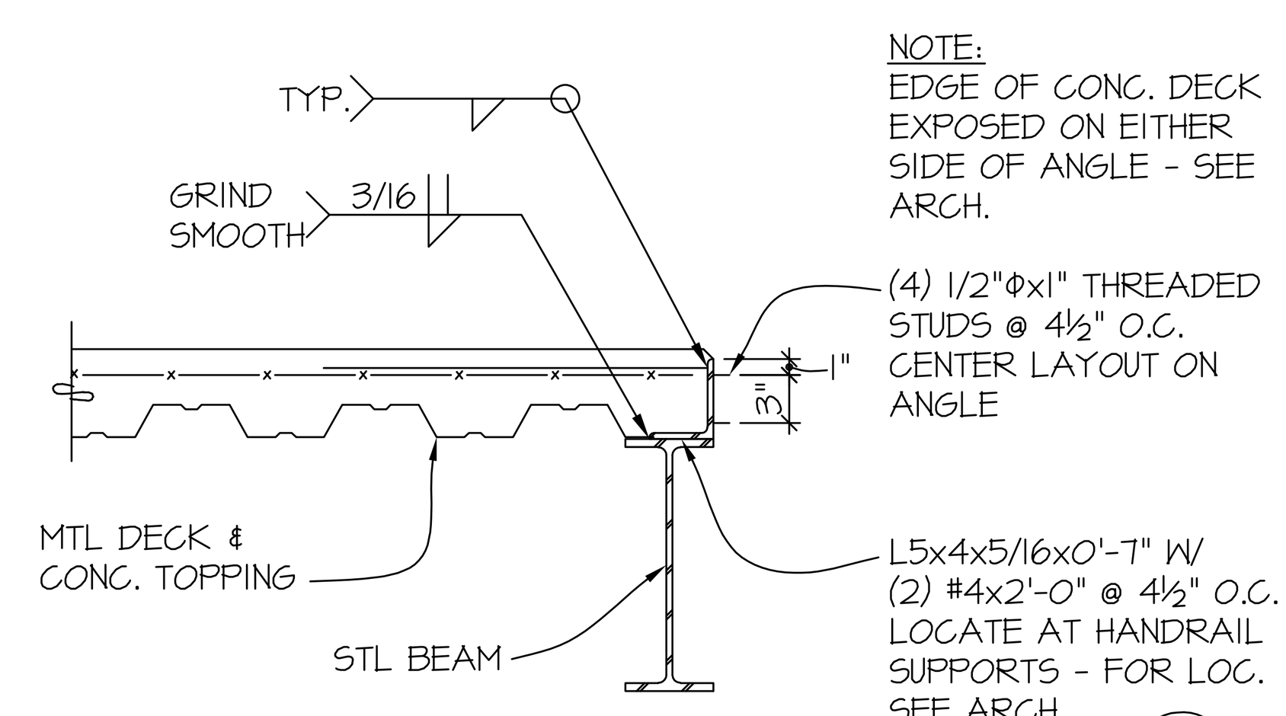
DETAIL 12 / S7.03
NO SCALE



SECTION 13 / S7.03
NO SCALE



SECTION 14 / S7.03
NO SCALE



SECTION 15 / S7.03
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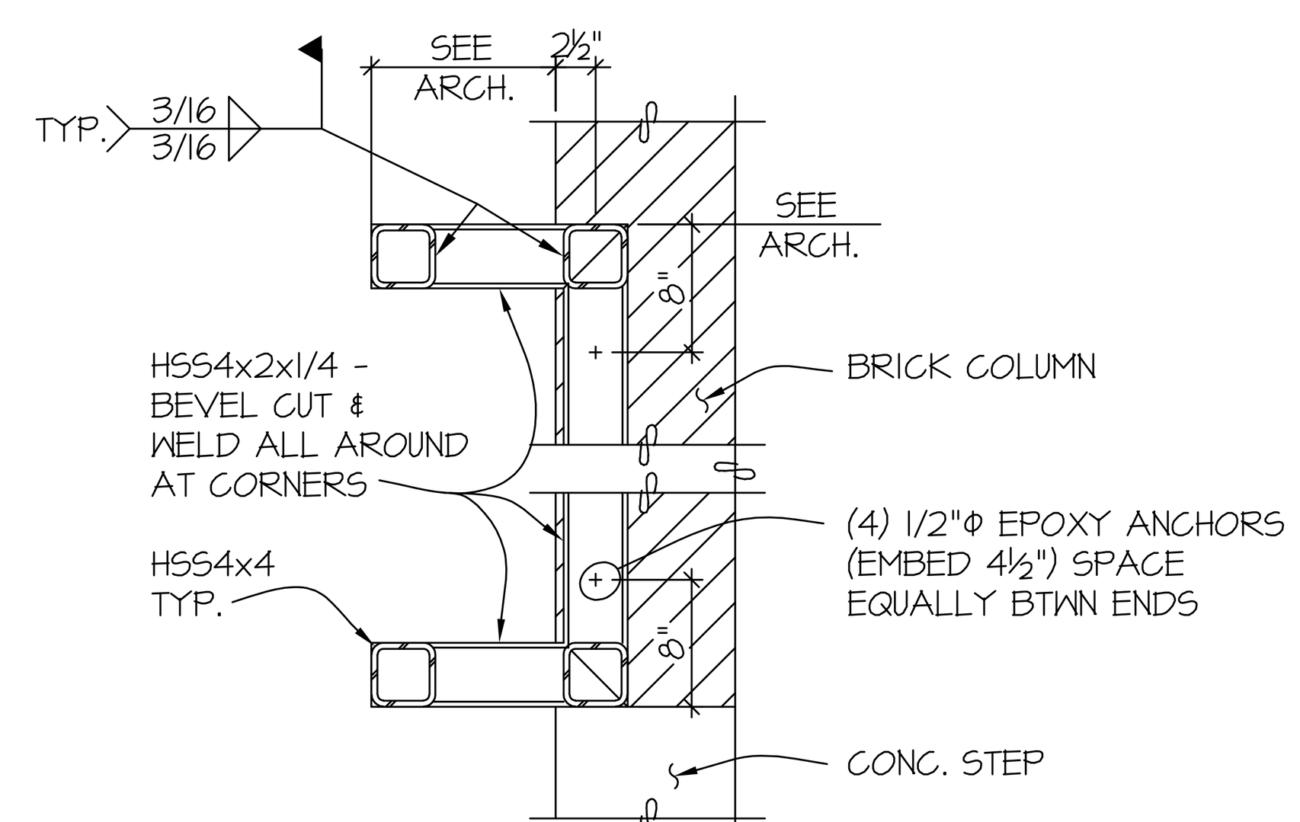

DETAIL 16 / S7.03
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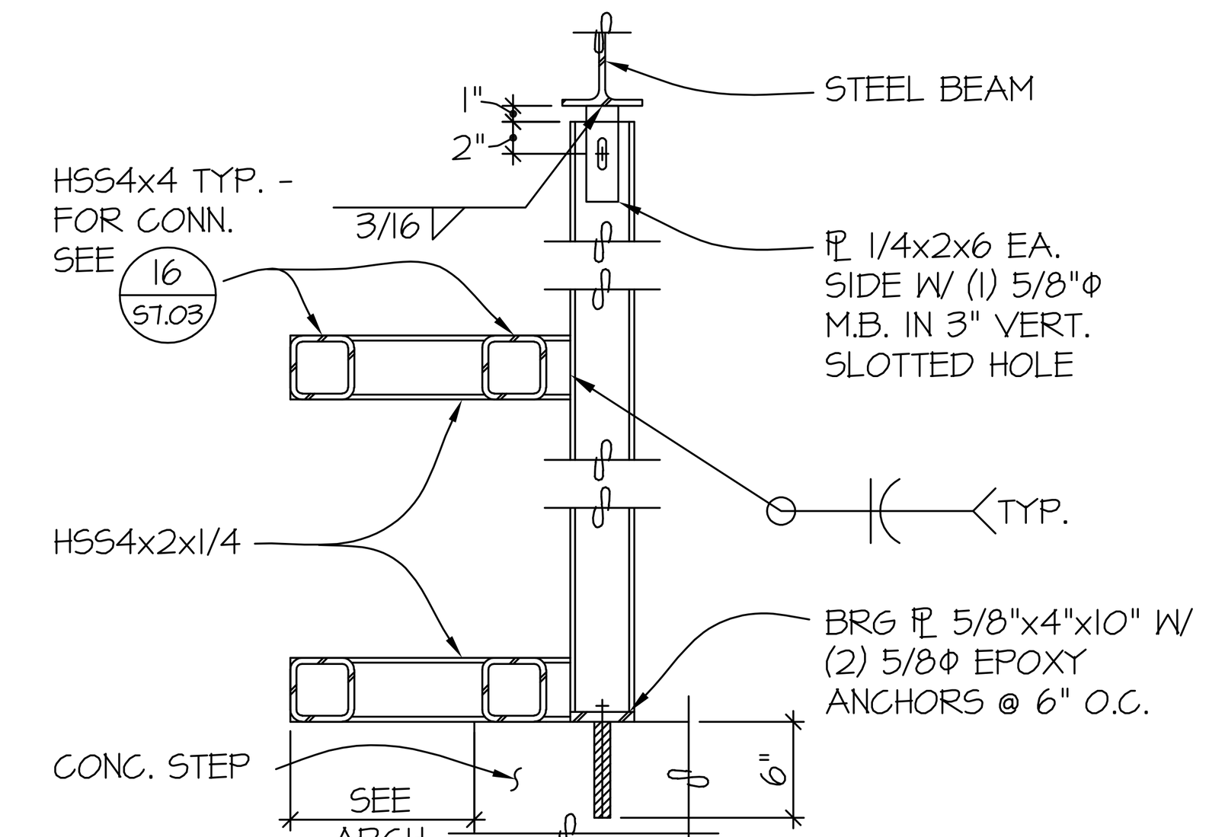

DETAIL 17 / S7.03
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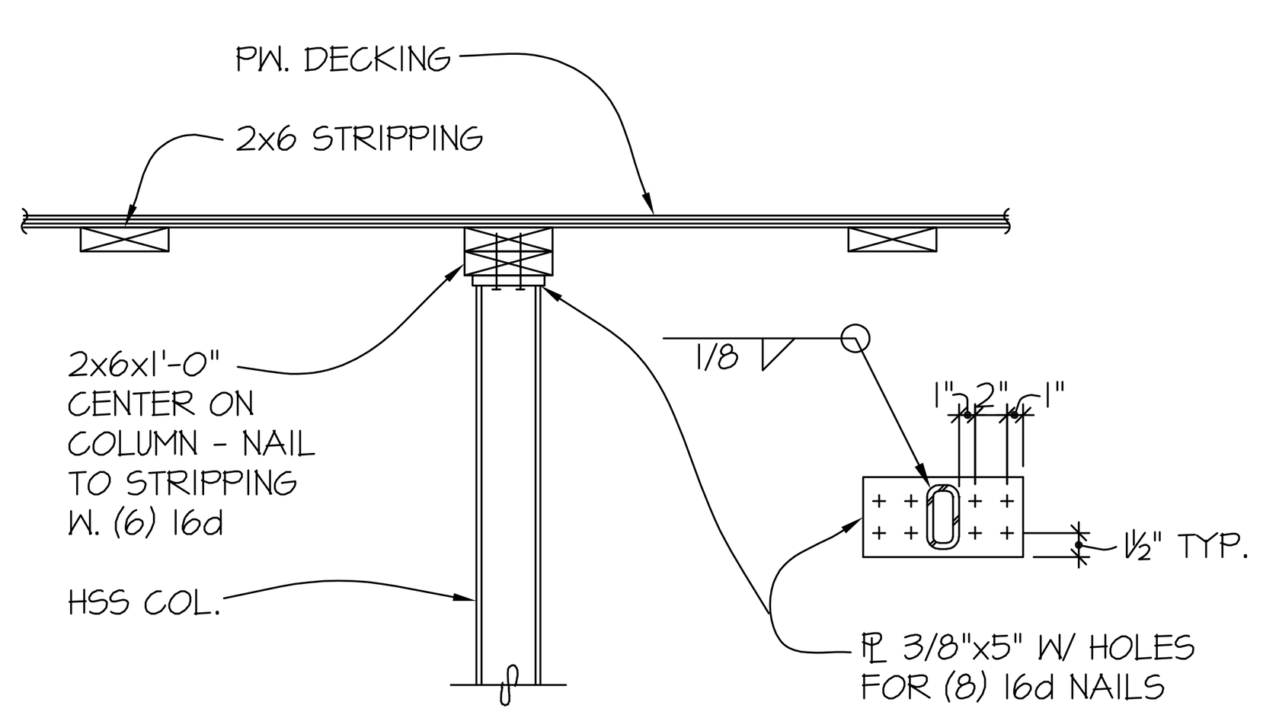

DETAIL 18 / S7.03
NO SCALE

C:\Users\donh\Desktop\coupeville\Dwgs\4524s703.dwg Plotted: Nov 01, 2017 - 8:05am By: DonH

ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_
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BERGER PARTNERSHIP
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acoustical design-
SSA ACOUSTICS

BRET MADDOX — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 33519
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project_
COUPEVILLE HIGH SCHOOL PHASE II
client_
COUPEVILLE SCHOOL DISTRICT #204
location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

FLOOR FRAMING DETAILS

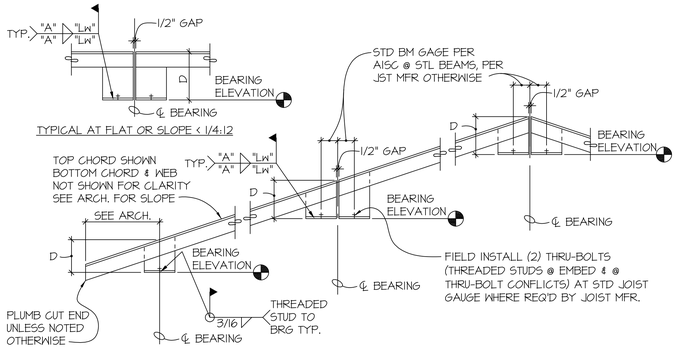
revision_

issued_
PERMIT 26 MAY 06

drawn_
JMW

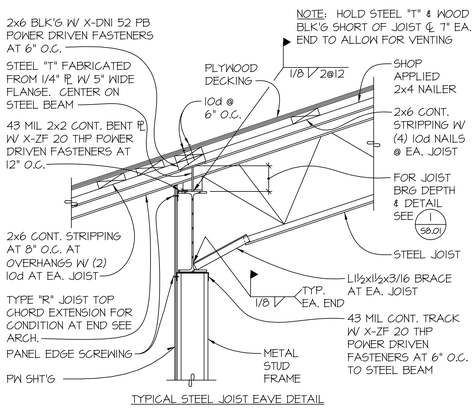
checked_
BAM

sheet_
S7.03



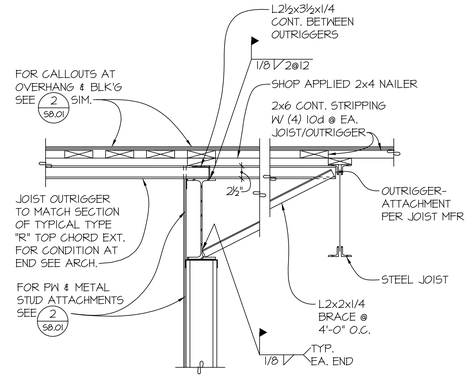
JOIST TYPE	BEARING DEPTH D		FIELD INSTALLED BOLT SIZE	WELD SIZE "A"	WELD LENGTH "Lw"	BOLT TYPE
"K" & OTHER	5"		1/2"Φ	1/8"	2½"	A307
"LH"	7"		3/4"Φ	1/4"	4"	A307

TYPICAL JOIST BEARING
NO SCALE — 1 / S8.01



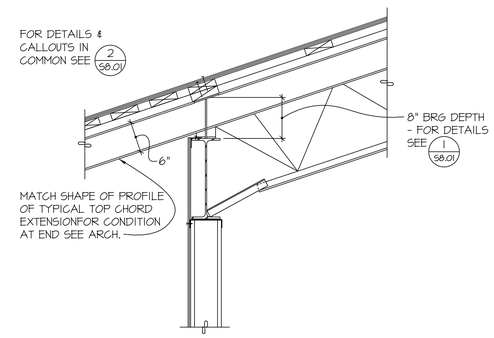
TYPICAL STEEL JOIST EAVE DETAIL

SECTION
NO SCALE — 2 / S8.01

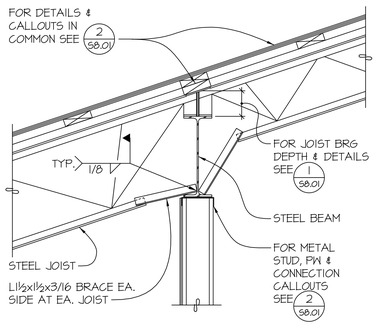


TYPICAL RAKE EDGE DETAIL

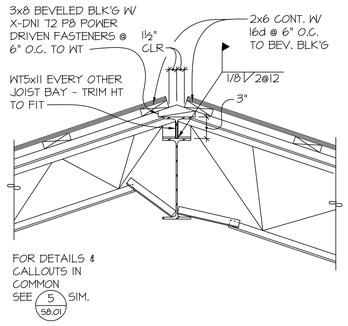
SECTION
NO SCALE — 3 / S8.01



SECTION
NO SCALE — 4 / S8.01



SECTION
NO SCALE — 5 / S8.01



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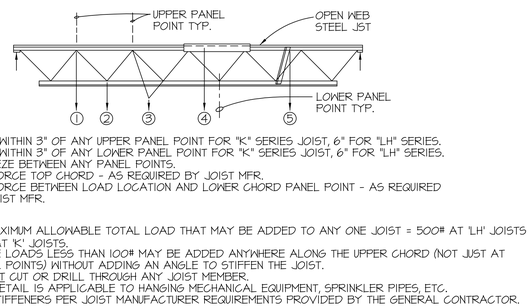
NO SCALE — 6 / S8.01

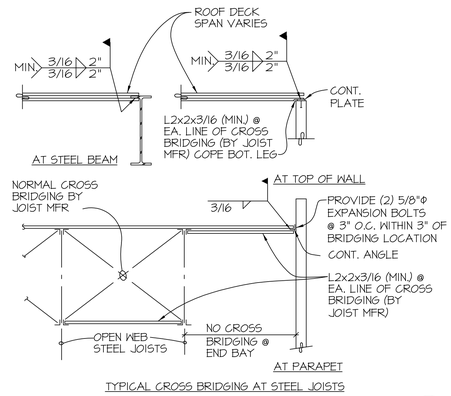


① HANG WITHIN 3" OF ANY UPPER PANEL POINT FOR "K" SERIES JOIST, 6" FOR "LH" SERIES.
② HANG WITHIN 3" OF ANY LOWER PANEL POINT FOR "K" SERIES JOIST, 6" FOR "LH" SERIES.
③ TRAPEZE BETWEEN ANY PANEL POINTS.
④ REINFORCE TOP CHORD - AS REQUIRED BY JOIST MFR.
⑤ REINFORCE BETWEEN LOAD LOCATION AND LOWER CHORD PANEL POINT - AS REQUIRED BY JOIST MFR.

NOTES:
1. THE MAXIMUM ALLOWABLE TOTAL LOAD THAT MAY BE ADDED TO ANY ONE JOIST = 500# AT 'LH' JOISTS 300# AT 'K' JOISTS.
2. SINGLE LOADS LESS THAN 100# MAY BE ADDED ANYWHERE ALONG THE UPPER CHORD (NOT JUST AT PANEL POINTS) WITHOUT ADDING AN ANGLE TO STIFFEN THE JOIST.
3. DO NOT CUT OR DRILL THROUGH ANY JOIST MEMBER.
4. THIS DETAIL IS APPLICABLE TO HANGING MECHANICAL EQUIPMENT, SPRINKLER PIPES, ETC.
5. ALL STIFFENERS PER JOIST MANUFACTURER REQUIREMENTS PROVIDED BY THE GENERAL CONTRACTOR.

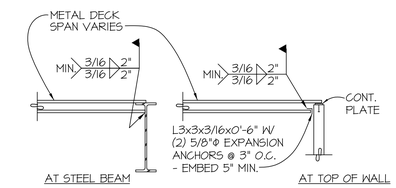
ALLOWABLE METHODS & LOCATIONS FOR HANGING LOADS FROM OPEN WEB STEEL JOIST

DETAIL
NO SCALE — 7 / S8.01



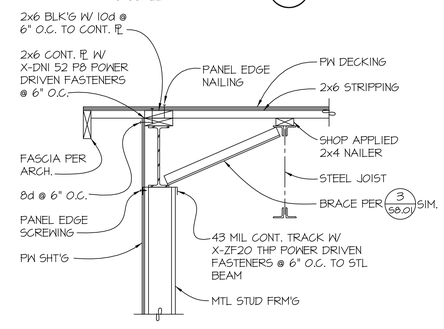
TYPICAL CROSS BRIDGING AT STEEL JOISTS

DETAIL
NO SCALE — 8 / S8.01

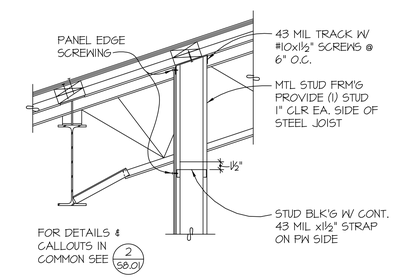


TYPICAL HORIZONTAL BRIDGING AT STEEL JOISTS

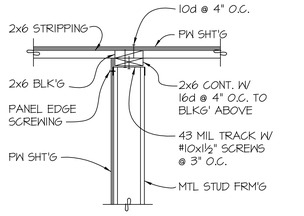
DETAIL
NO SCALE — 9 / S8.01



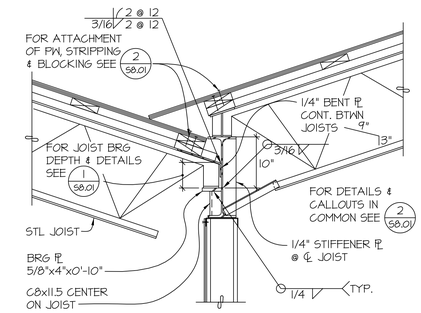
SECTION
NO SCALE — 10 / S8.01



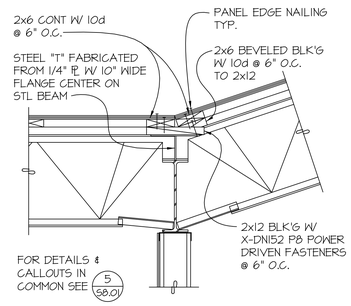
SECTION
NO SCALE — 11 / S8.01



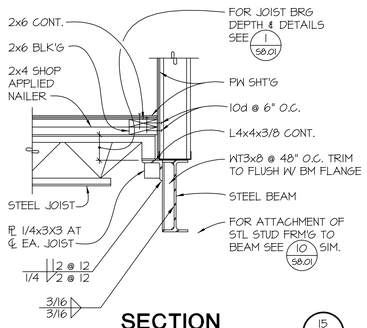
SECTION
NO SCALE — 12 / S8.01



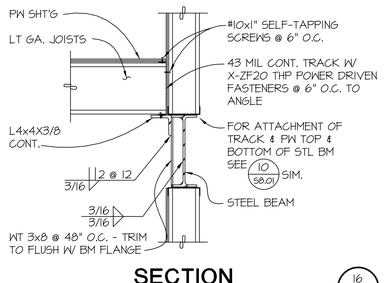
SECTION
NO SCALE — 13 / S8.01



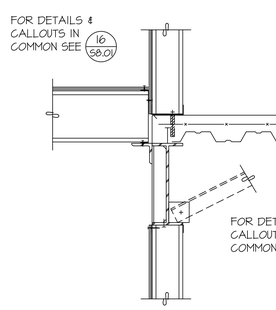
SECTION
NO SCALE — 14 / S8.01



SECTION
NO SCALE — 15 / S8.01



SECTION
NO SCALE — 16 / S8.01



SECTION
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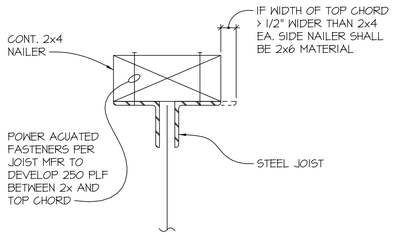

SECTION
NO SCALE — 2 / 18 / S8.01

mcgranahan architects

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
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PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

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acoustical design-
SSA ACOUSTICS

"NOT VALID UNLESS SIGNED" — BRENT MADISON HARMSEN — STATE OF WASHINGTON — 22 — 16078 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING DETAILS

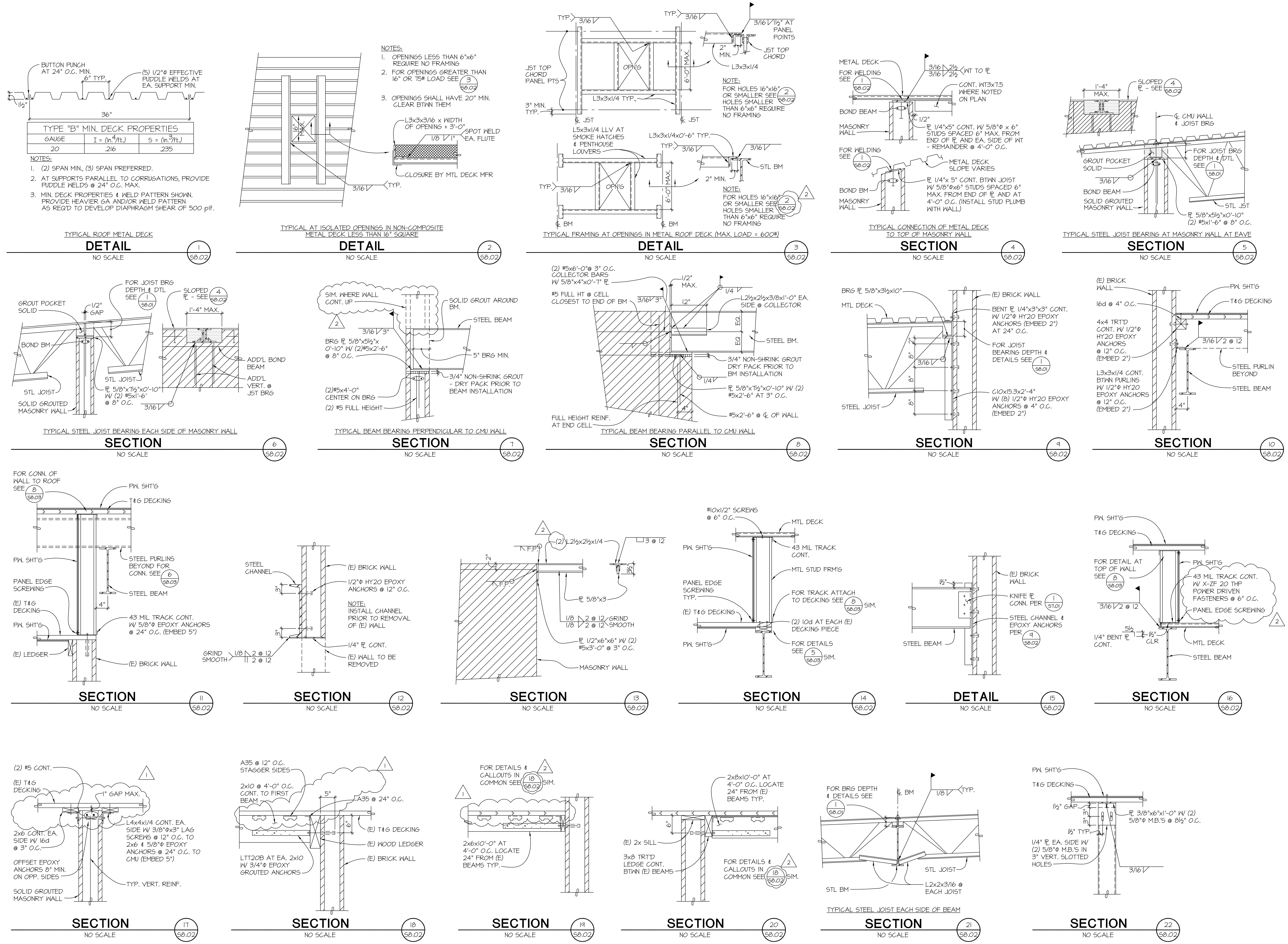
revision_

issued_
PERMIT 26 MAY 06

drawn_
AAG

checked_
MO

sheet_
S8.01



BUTTON PUNCH AT 24" O.C. MIN.
6" TYP.
(5) 1/2"Φ EFFECTIVE PUDDLE WELDS AT EA. SUPPORT MIN.
1½"
36"
NOTES:
1. (2) SPAN MIN., (3) SPAN PREFERRED.
2. AT SUPPORTS PARALLEL TO CORRUGATIONS, PROVIDE PUDDLE WELDS @ 24" O.C. MAX.
3. MIN. DECK PROPERTIES & WELD PATTERN SHOWN. PROVIDE HEAVIER GA AND/OR WELD PATTERN AS REQ'D TO DEVELOP DIAPHRAGM SHEAR OF 500 plf.
TYPICAL ROOF METAL DECK
DETAIL 1 S8.02
NO SCALE
NOTES:
1. OPENINGS LESS THAN 6"x6" REQUIRE NO FRAMING
2. FOR OPENINGS GREATER THAN 16" OR 75# LOAD SEE 3 S8.02
3. OPENINGS SHALL HAVE 20" MIN. CLEAR BTWN THEM
L3x3x3/16 x WIDTH OF OPENING + 3'-0"
SPOT WELD EA. FLUTE
CLOSURE BY MTL DECK MFR
3/16 TYP.
TYPICAL AT ISOLATED OPENINGS IN NON-COMPOSITE METAL DECK LESS THAN 16" SQUARE
DETAIL 2 S8.02
NO SCALE
JST TOP CHORD PANEL PTS
3" MIN. TYP.
OPN'G
L3x3x1/4 TYP.
℄ JST
L5x3x1/4 LLV AT SMOKE HATCHES & PENTHOUSE LOUVERS
L3x3x1/4x0'-6" TYP.
2" MIN.
STL BM
℄ BM
3/16 1½" AT PANEL POINTS
JST TOP CHORD
L3x3x1/4
NOTE:
FOR HOLES 16"x16" OR SMALLER SEE 2 S8.02 HOLES SMALLER THAN 6"x6" REQUIRE NO FRAMING
TYPICAL FRAMING AT OPENINGS IN METAL ROOF DECK (MAX. LOAD = 600#)
DETAIL 3 S8.02
NO SCALE
METAL DECK
FOR WELDING SEE 1 S8.02
3/16 2½ WT TO ℙ
CONT. WT3x7.5 WHERE NOTED ON PLAN
BOND BEAM
MASONRY WALL
ℙ 1/4"x5" CONT. W/ 5/8"Φ x 6" STUDS SPACED 6" MAX. FROM END OF ℙ AND EA. SIDE OF WT - REMAINDER @ 4'-0" O.C.
METAL DECK SLOPE VARIES
ℙ 1/4"x 5" CONT. BTWN JOIST W/ 5/8"Φx6" STUDS SPACED 6" MAX. FROM END OF ℙ AND AT 4'-0" O.C. (INSTALL STUD PLUMB WITH WALL)
TYPICAL CONNECTION OF METAL DECK TO TOP OF MASONRY WALL
SECTION 4 S8.02
NO SCALE
1'-4" MAX.
SLOPED ℙ - SEE 4 S8.02
℄ CMU WALL & JOIST BRG
FOR JOIST BRG DEPTH & DTL SEE 1 S8.01
GROUT POCKET SOLID
BOND BEAM
SOLID GROUTED MASONRY WALL
STL JST
ℙ 5/8"x5½"x0'-10" (2) #5x1'-6" @ 8" O.C.
TYPICAL STEEL JOIST BEARING AT MASONRY WALL AT EAVE
SECTION 5 S8.02
NO SCALE
FOR JOIST BRG DEPTH & DTL SEE 1 S8.01
SLOPED ℙ - SEE 4 S8.02
GROUT POCKET SOLID
1/2" GAP
1'-4" MAX.
BOND BM
ADD'L BOND BEAM
ADD'L VERT. @ JST BRG
STL JOIST
ℙ 5/8"x7½"x0'-10" W/ (2) #5x1'-6" @ 8" O.C.
SOLID GROUTED MASONRY WALL
TYPICAL STEEL JOIST BEARING EACH SIDE OF MASONRY WALL
SECTION 6 S8.02
NO SCALE
SIM. WHERE WALL CONT. UP
SOLID GROUT AROUND BM.
STEEL BEAM
BRG ℙ 5/8"x5½"x 0'-10" W/ (2)#5x2'-6" @ 8" O.C.
5" BRG MIN.
3/4" NON-SHRINK GROUT - DRY PACK PRIOR TO BEAM INSTALLATION
(2)#5x4'-0" CENTER ON BRG
(2) #5 FULL HEIGHT
TYPICAL BEAM BEARING PERPENDICULAR TO CMU WALL
SECTION 7 S8.02
NO SCALE
(2) #5x6'-0" @ 3" O.C. COLLECTOR BARS W/ 5/8"x4"x0'-7" ℙ
#5 FULL HT @ CELL CLOSEST TO END OF BM
1/2" MAX.
L2½x2½x3/8x1'-0" EA. SIDE @ COLLECTOR
STEEL BM.
3/4" NON-SHRINK GROUT DRY PACK PRIOR TO BM INSTALLATION
ℙ 5/8"x7½"x0'-10" W/ (2) #5x2'-6" AT 3" O.C.
#5x2'-6" @ ℄ OF WALL
FULL HEIGHT REINF. AT END CELL
TYPICAL BEAM BEARING PARALLEL TO CMU WALL
SECTION 8 S8.02
NO SCALE
BRG ℙ 5/8"x3½x10"
MTL DECK
(E) BRICK WALL
BENT ℙ 1/4"x3"x3" CONT. W/ 1/2"Φ HY20 EPOXY ANCHORS (EMBED 2") AT 24" O.C.
FOR JOIST BEARING DEPTH & DETAILS SEE 1 S8.01
C10x15.3x2'-4" W/ (8) 1/2"Φ HY20 EPOXY ANCHORS @ 4" O.C. (EMBED 2")
STEEL JOIST
SECTION 9 S8.02
NO SCALE
(E) BRICK WALL
16d @ 4" O.C.
4x4 TRT'D CONT. W/ 1/2"Φ HY20 EPOXY ANCHORS @ 12" O.C. (EMBED 2")
L3x3x1/4 CONT. BTWN PURLINS W/ 1/2"Φ HY20 EPOXY ANCHORS @ 12" O.C. (EMBED 2")
PW. SHT'G
T&G DECKING
STEEL PURLIN BEYOND
STEEL BEAM
SECTION 10 S8.02
NO SCALE
FOR CONN. OF WALL TO ROOF SEE 8 S8.03
PW. SHT'G
T&G DECKING
STEEL PURLINS BEYOND FOR CONN. SEE 6 S8.03
PANEL EDGE SCREWING
STEEL BEAM
(E) T&G DECKING
43 MIL TRACK CONT. W/ 5/8"Φ EPOXY ANCHORS @ 24" O.C. (EMBED 5")
(E) LEDGER
(E) BRICK WALL
SECTION 11 S8.02
NO SCALE
STEEL CHANNEL
(E) BRICK WALL
1/2"Φ HY20 EPOXY ANCHORS @ 12" O.C.
NOTE: INSTALL CHANNEL PRIOR TO REMOVAL OF (E) WALL
1/4" ℙ CONT.
(E) WALL TO BE REMOVED
GRIND SMOOTH 1/8 2 @ 12
SECTION 12 S8.02
NO SCALE
(2) L2½x2½x1/4
3 @ 12
ℙ 5/8"x3
1/8 2 @ 12 GRIND SMOOTH
ℙ 1/2"x6"x6" W/ (2) #5x3'-0" @ 3" O.C.
MASONRY WALL
SECTION 13 S8.02
NO SCALE
#10x1/2" SCREWS @ 6" O.C.
MTL DECK
PW. SHT'G
43 MIL TRACK CONT.
MTL STUD FRM'G
PANEL EDGE SCREWING TYP.
FOR TRACK ATTACH TO DECKING SEE 8 S8.03 SIM.
(E) T&G DECKING
(2) 10d AT EACH (E) DECKING PIECE
FOR DETAILS SEE 5 S8.03 SIM.
SECTION 14 S8.02
NO SCALE
(E) BRICK WALL
KNIFE ℙ CONN. PER 1 ST.01
STEEL CHANNEL & EPOXY ANCHORS PER 9 S8.02
STEEL BEAM
DETAIL 15 S8.02
NO SCALE
PW. SHT'G
T&G DECKING
FOR DETAIL AT TOP OF WALL SEE 8 S8.03
43 MIL TRACK CONT. W/ X-ZF 20 THP POWER DRIVEN FASTENERS @ 6" O.C.
PANEL EDGE SCREWING
3/16 2 @ 12
1/4" BENT ℙ CONT.
½" CLR
MTL DECK
STEEL BEAM
SECTION 16 S8.02
NO SCALE
(2) #5 CONT.
(E) T&G DECKING
1" GAP MAX.
L4x4x1/4 CONT. EA. SIDE W/ 3/8"Φx3" LAG SCREWS @ 12" O.C. TO 2x6 & 5/8"Φ EPOXY ANCHORS @ 24" O.C. TO CMU (EMBED 5")
2x6 CONT. EA. SIDE W/ 16d @ 3" O.C.
OFFSET EPOXY ANCHORS 8" MIN. ON OPP. SIDES
TYP. VERT. REINF.
SOLID GROUTED MASONRY WALL
SECTION 17 S8.02
NO SCALE
A35 @ 12" O.C. STAGGER SIDES
2x10 @ 4'-0" O.C. CONT. TO FIRST BEAM
A35 @ 24" O.C.
(E) T&G DECKING
(E) WOOD LEDGER
(E) BRICK WALL
LTT20B AT EA. 2x10 W/ 3/4"Φ EPOXY GROUTED ANCHORS
SECTION 18 S8.02
NO SCALE
FOR DETAILS & CALLOUTS IN COMMON SEE 18 S8.02 SIM.
2x6x10'-0" AT 4'-0" O.C. LOCATE 24" FROM (E) BEAMS TYP.
SECTION 19 S8.02
NO SCALE
2x8x10'-0" AT 4'-0" O.C. LOCATE 24" FROM (E) BEAMS TYP.
(E) 2x SILL
3x8 TRT'D LEDGE CONT. BTWN (E) BEAMS
FOR DETAILS & CALLOUTS IN COMMON SEE 18 S8.02 SIM.
SECTION 20 S8.02
NO SCALE
FOR BRG DEPTH & DETAILS SEE 1 S8.01
℄ BM
1/8 TYP.
STL JOIST
STL BM
L2x2x3/16 @ EACH JOIST
TYPICAL STEEL JOIST EACH SIDE OF BEAM
SECTION 21 S8.02
NO SCALE
PW. SHT'G
T&G DECKING
1½" GAP
ℙ 3/8"x6"x1'-0" W/ (2) 5/8"Φ M.B.'S @ 8½" O.C.
1½" TYP.
1/4" ℙ EA. SIDE W/ (2) 5/8"Φ M.B.'S IN 3" VERT. SLOTTED HOLES
3/16
SECTION 22 S8.02
NO SCALE

TYPE "B" MIN. DECK PROPERTIES		
GAUGE	I = (in.⁴/ft.)	S = (in.³/ft.)
20	.216	.235

C:\Users\donh\Desktop\coupeville\Dwgs\4524s802.dwg Plotted: Nov 01, 2017 - 8:05am By: DonH

ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_ McGRANAHAN ARCHITECTS
civil engineer_ HARMSEN AND ASSOCIATES INC.
landscape design_ BERGER PARTNERSHIP
structural engineer_ PCS STRUCTURAL SOLUTIONS
mechanical engineer_ BCE ENGINEERS
electrical engineer_ BCE ENGINEERS
food service_ CHANDLER|WILSON DESIGN
acoustical design- SSA ACOUSTICS

BRET MADDOX — STATE OF WASHINGTON — 33519 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 4/5/07

project_ COUPEVILLE HIGH SCHOOL PHASE II
client_ COUPEVILLE SCHOOL DISTRICT #204
location_ COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING DETAILS

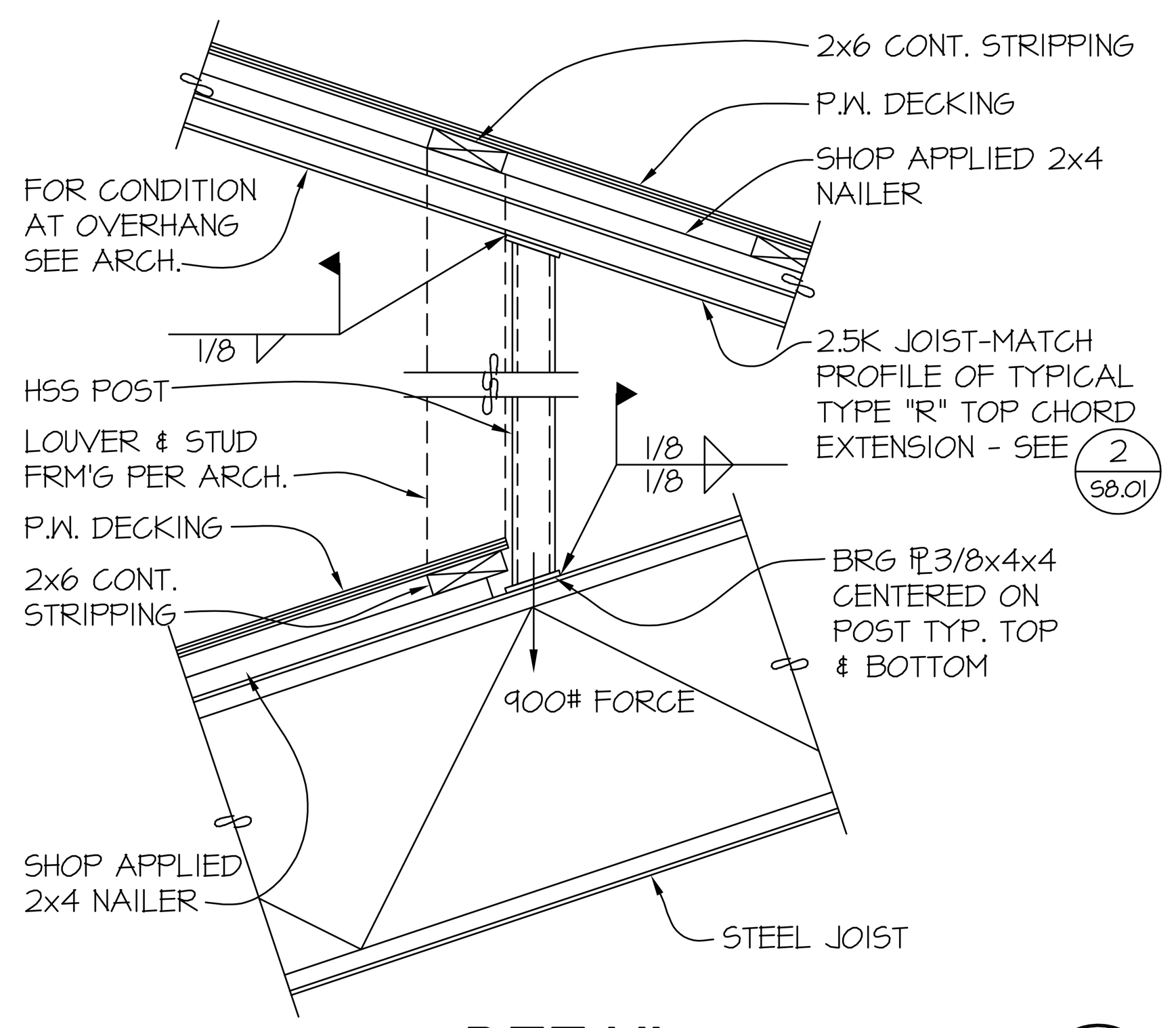
revision_

issued_ PERMIT 26 MAY 06

drawn_ AAG

checked_ MO

sheet_ S8.02



DETAIL 1 S8.03
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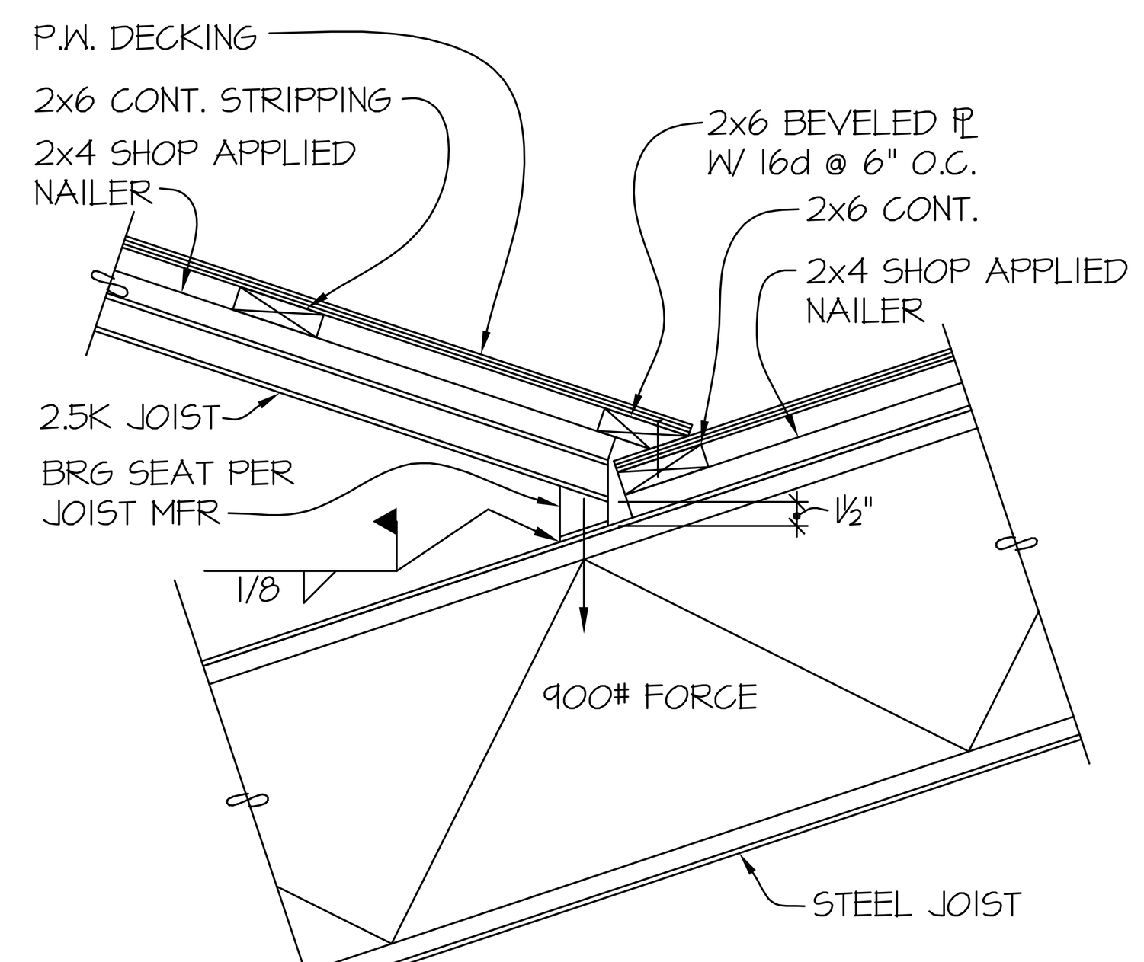

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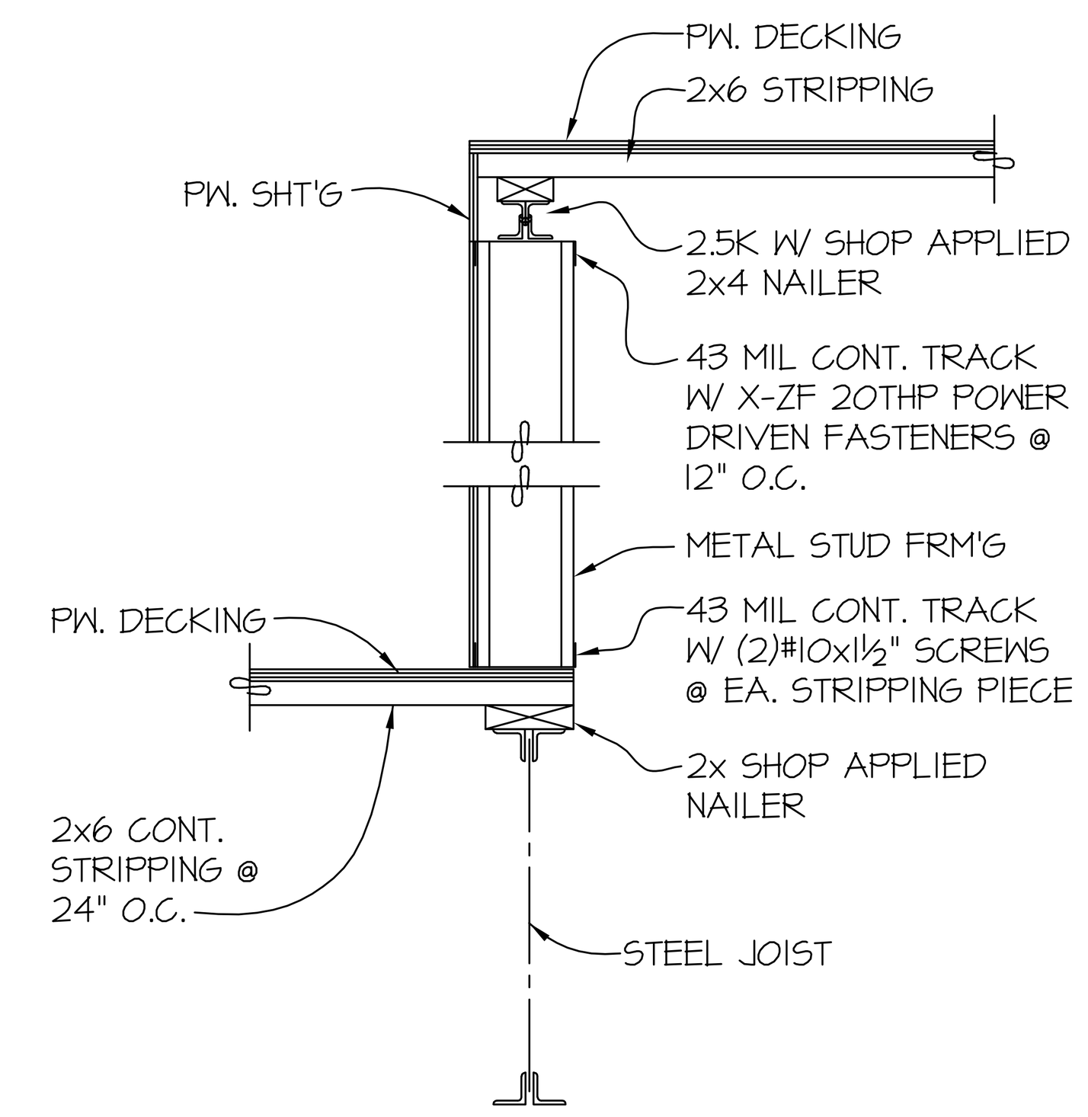

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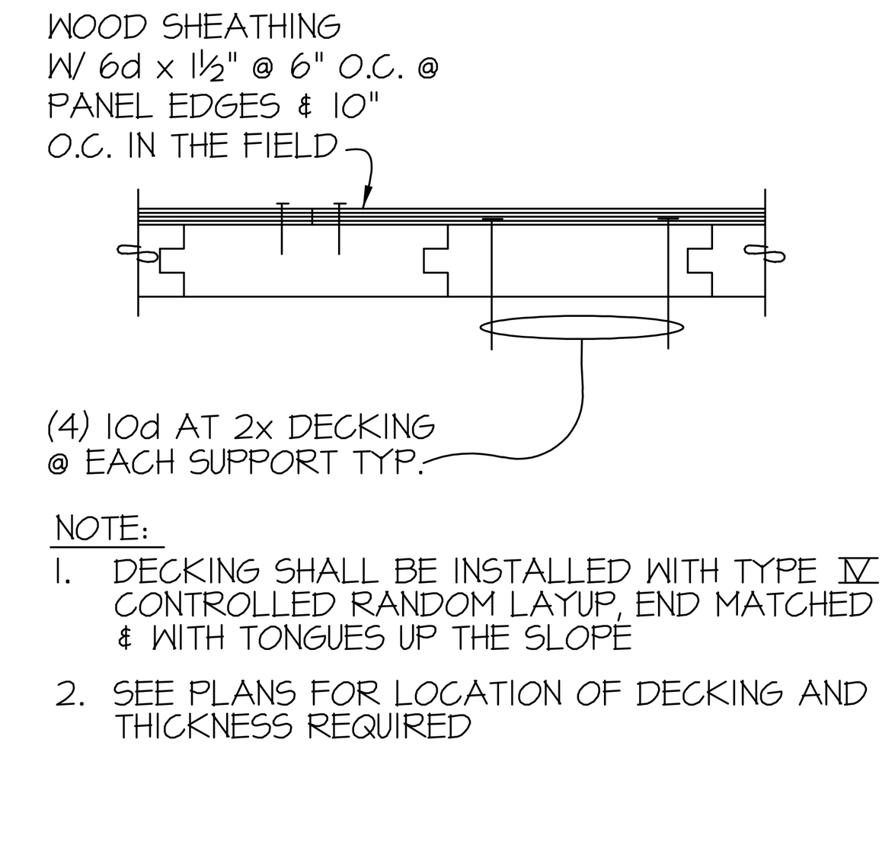
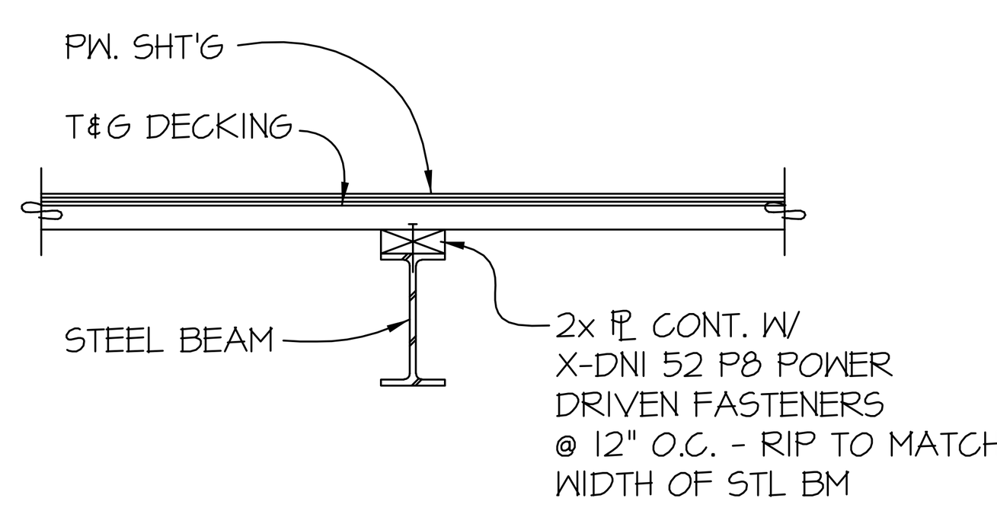


TYPICAL ROOF DECKING LAYUP & FASTENINGS

DETAIL 4 S8.03
NO SCALE



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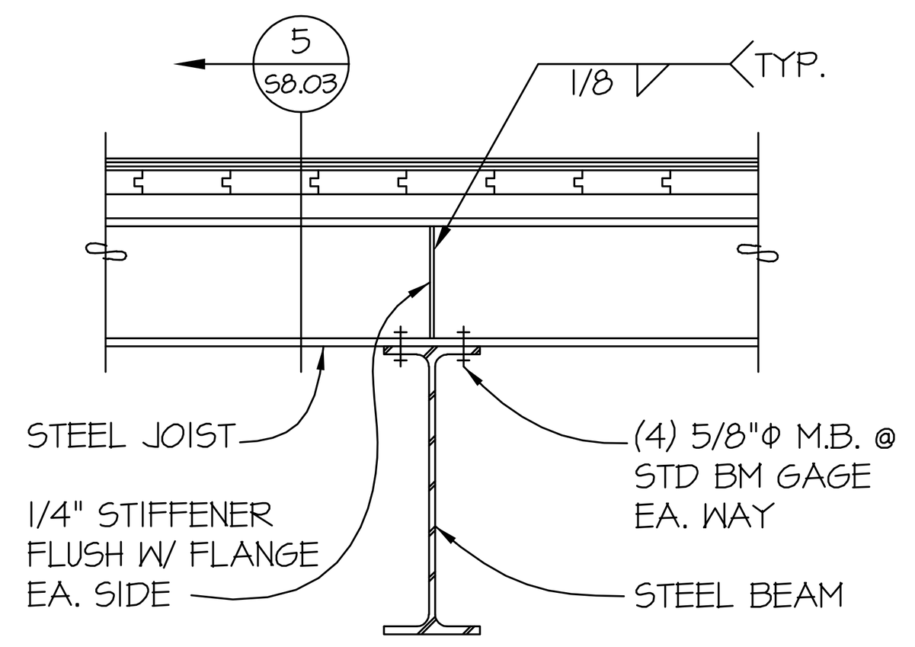

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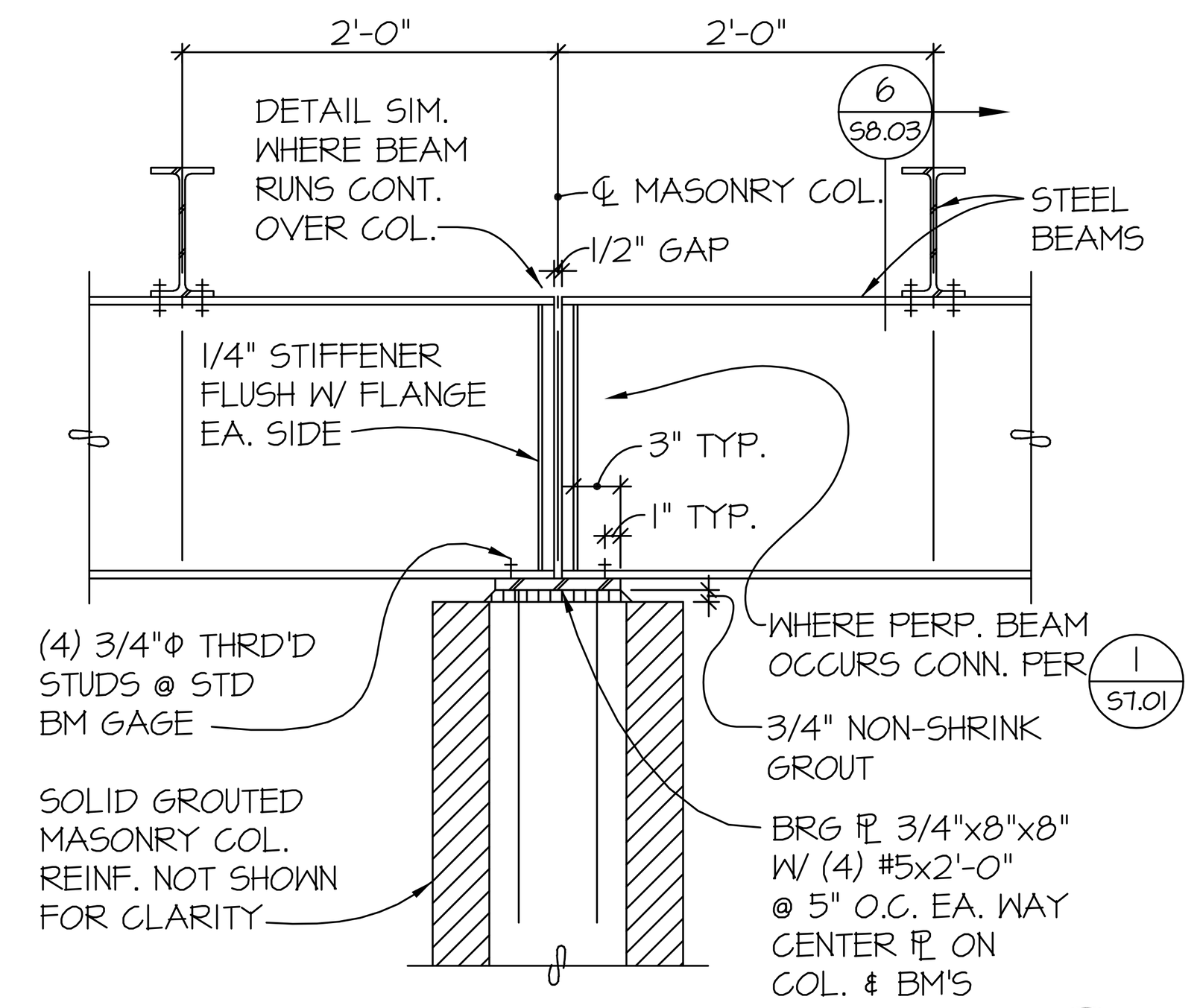

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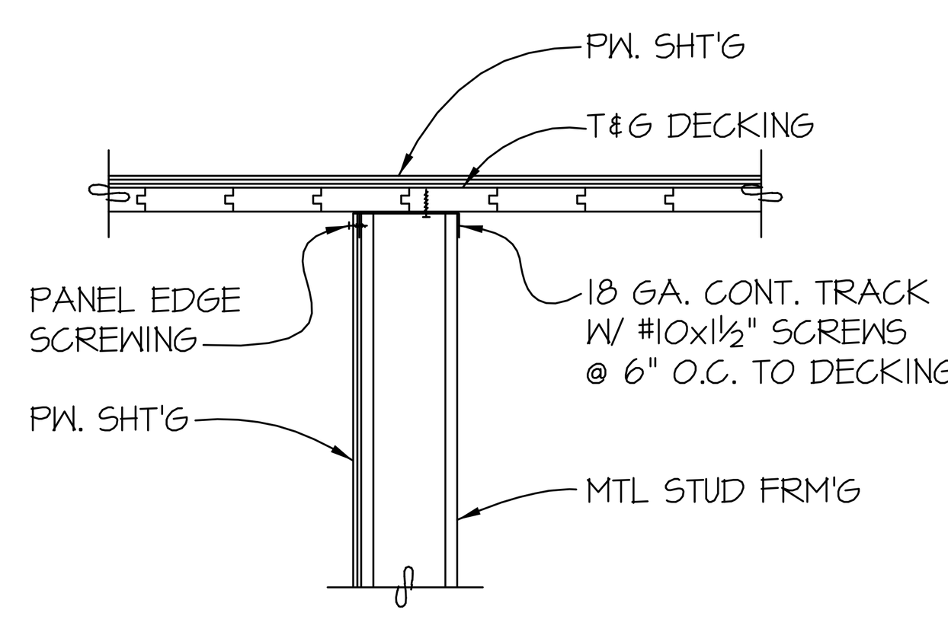

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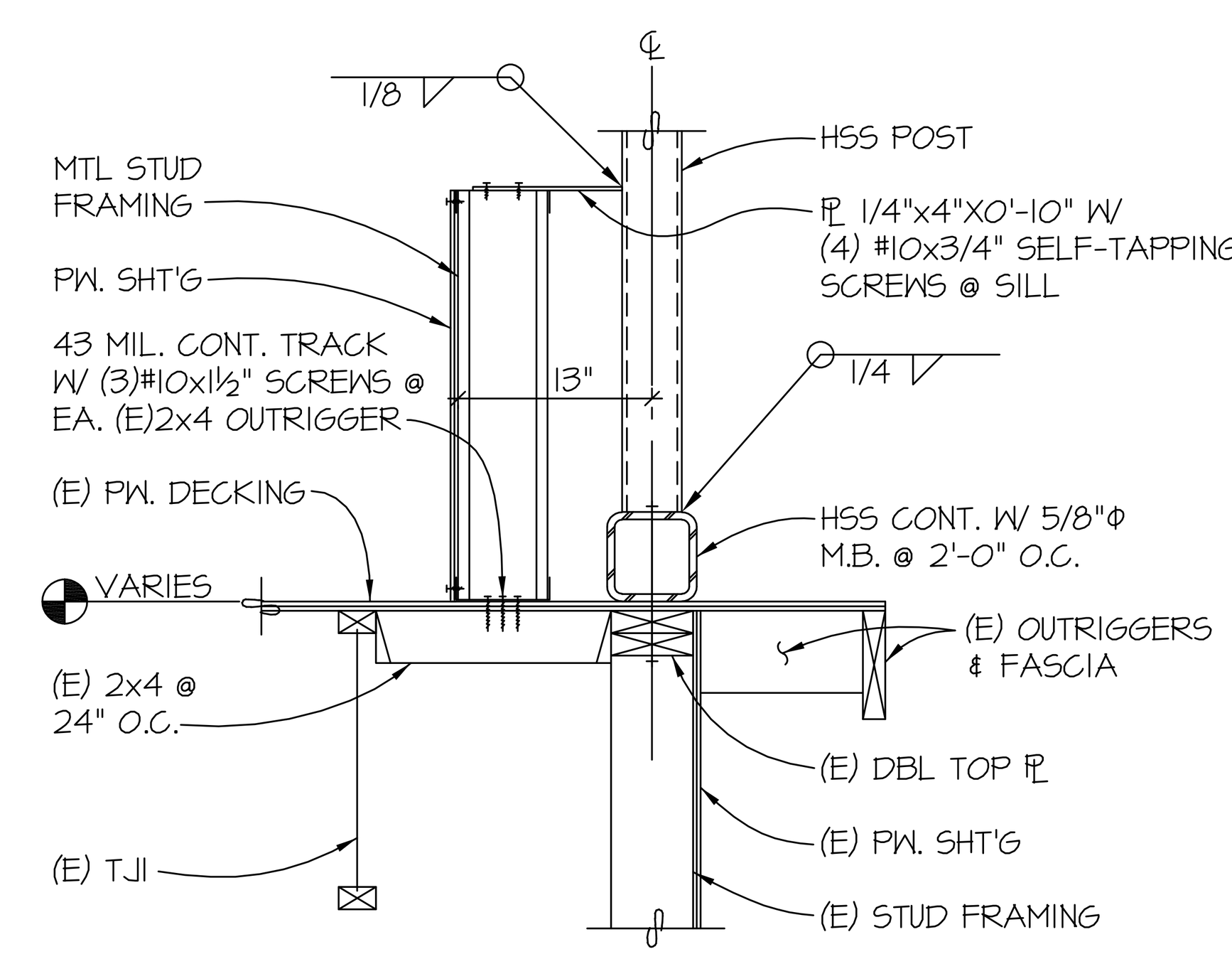

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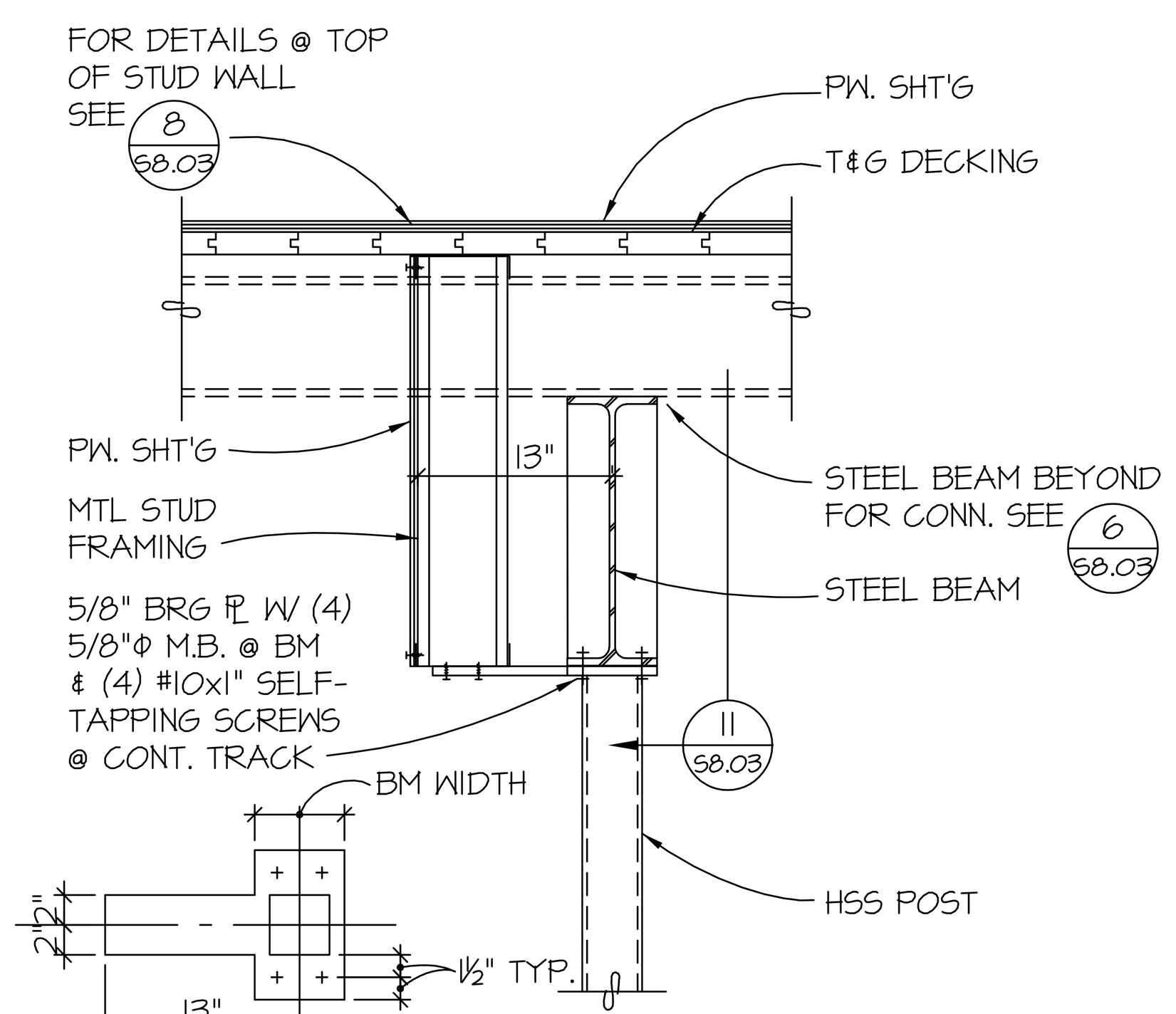

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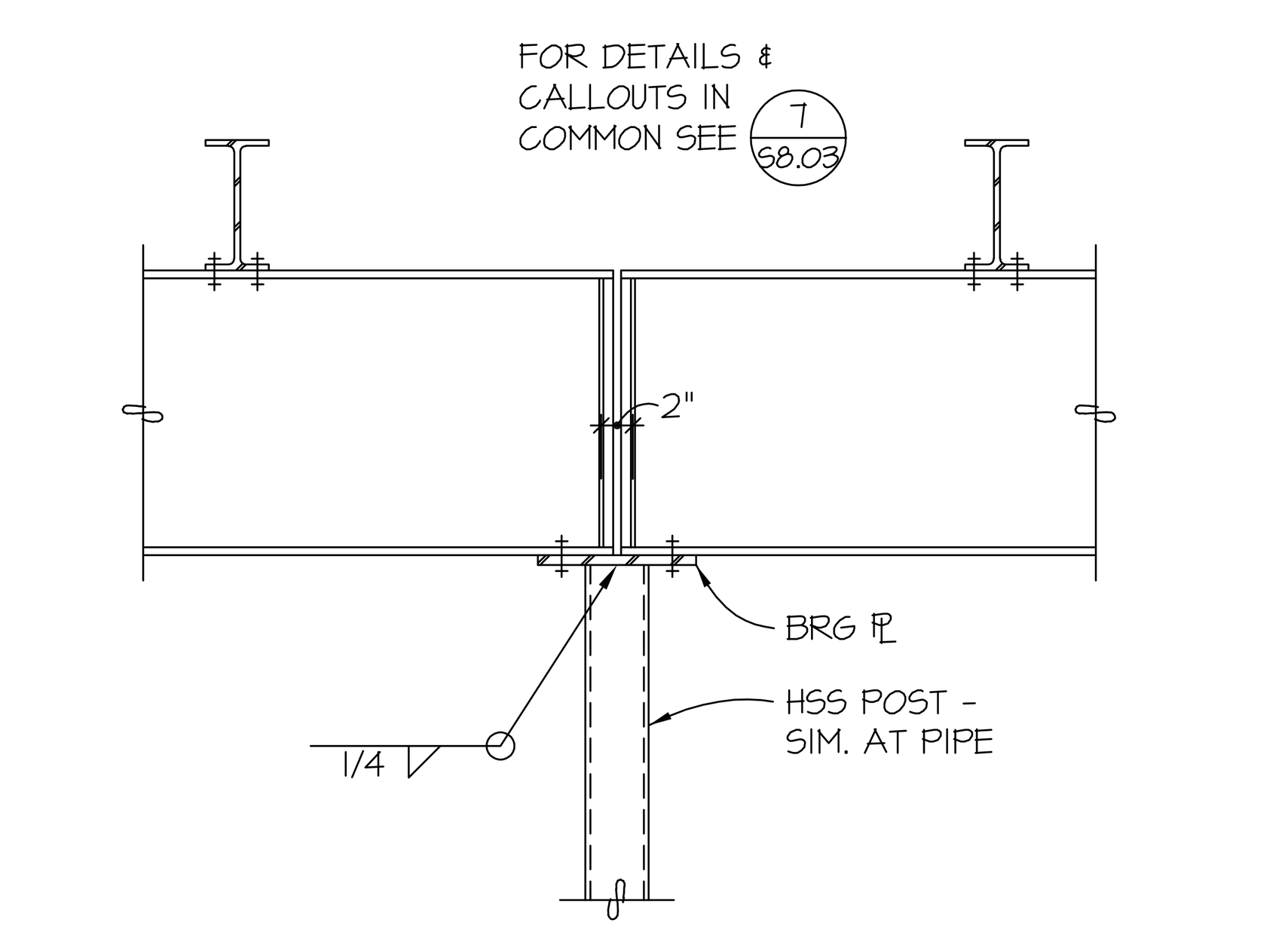

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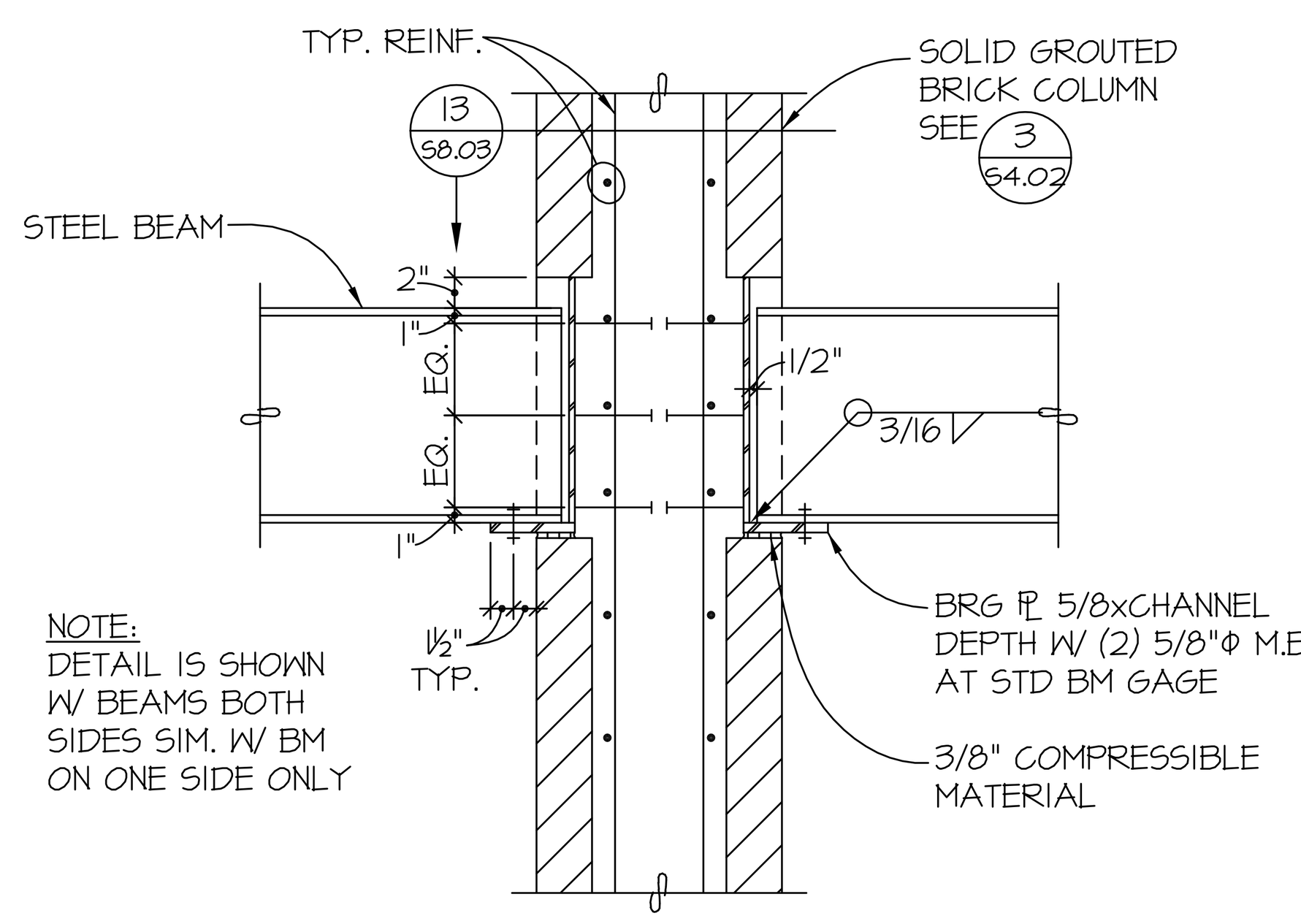

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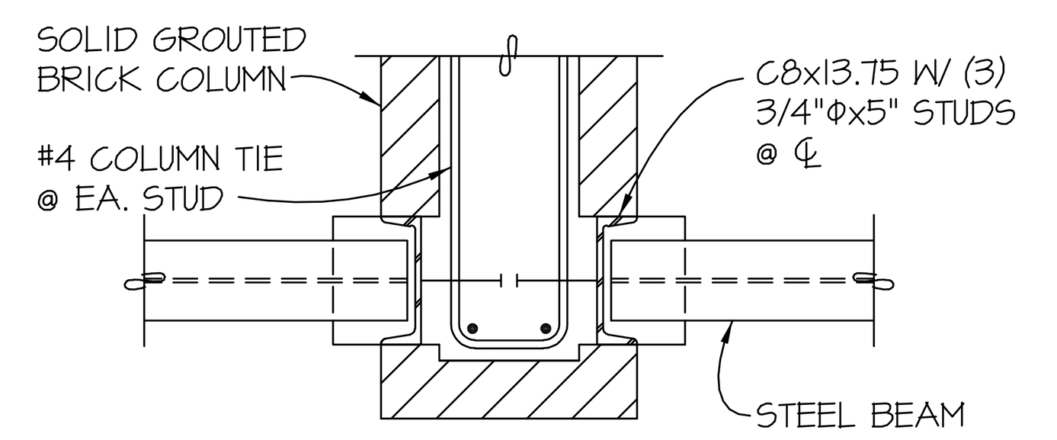

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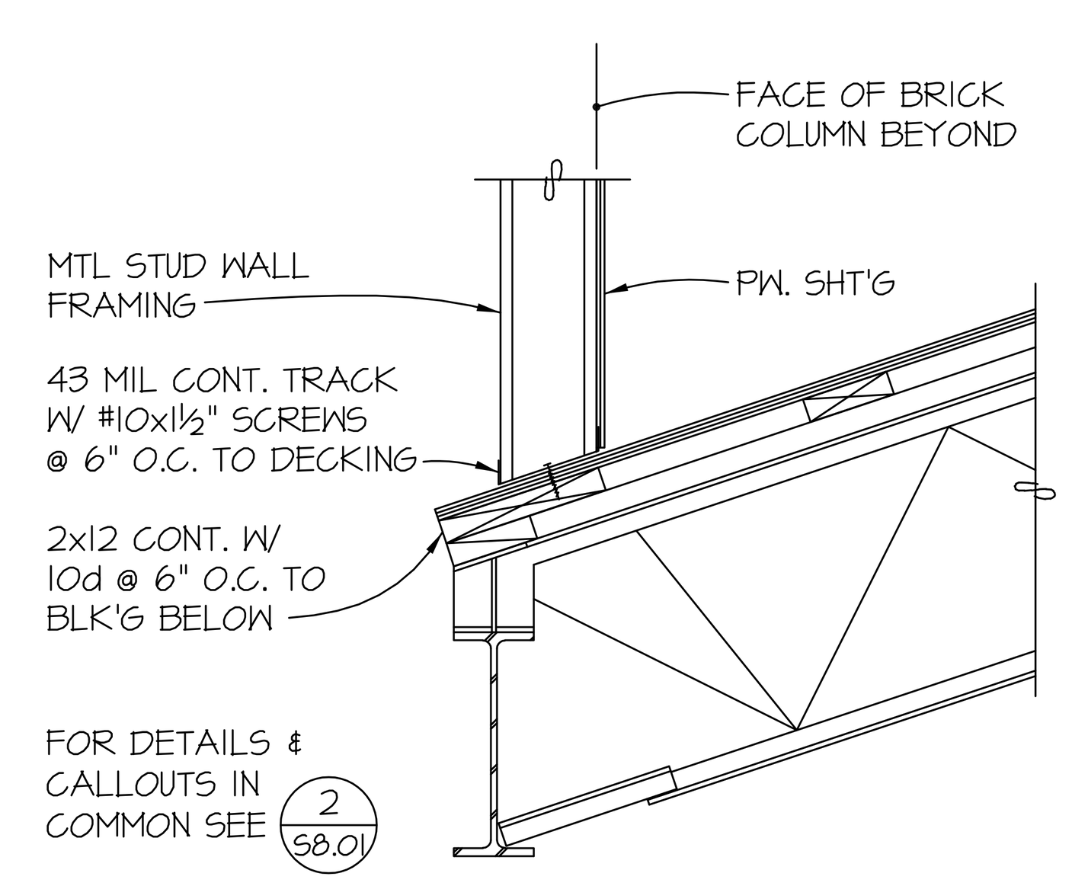

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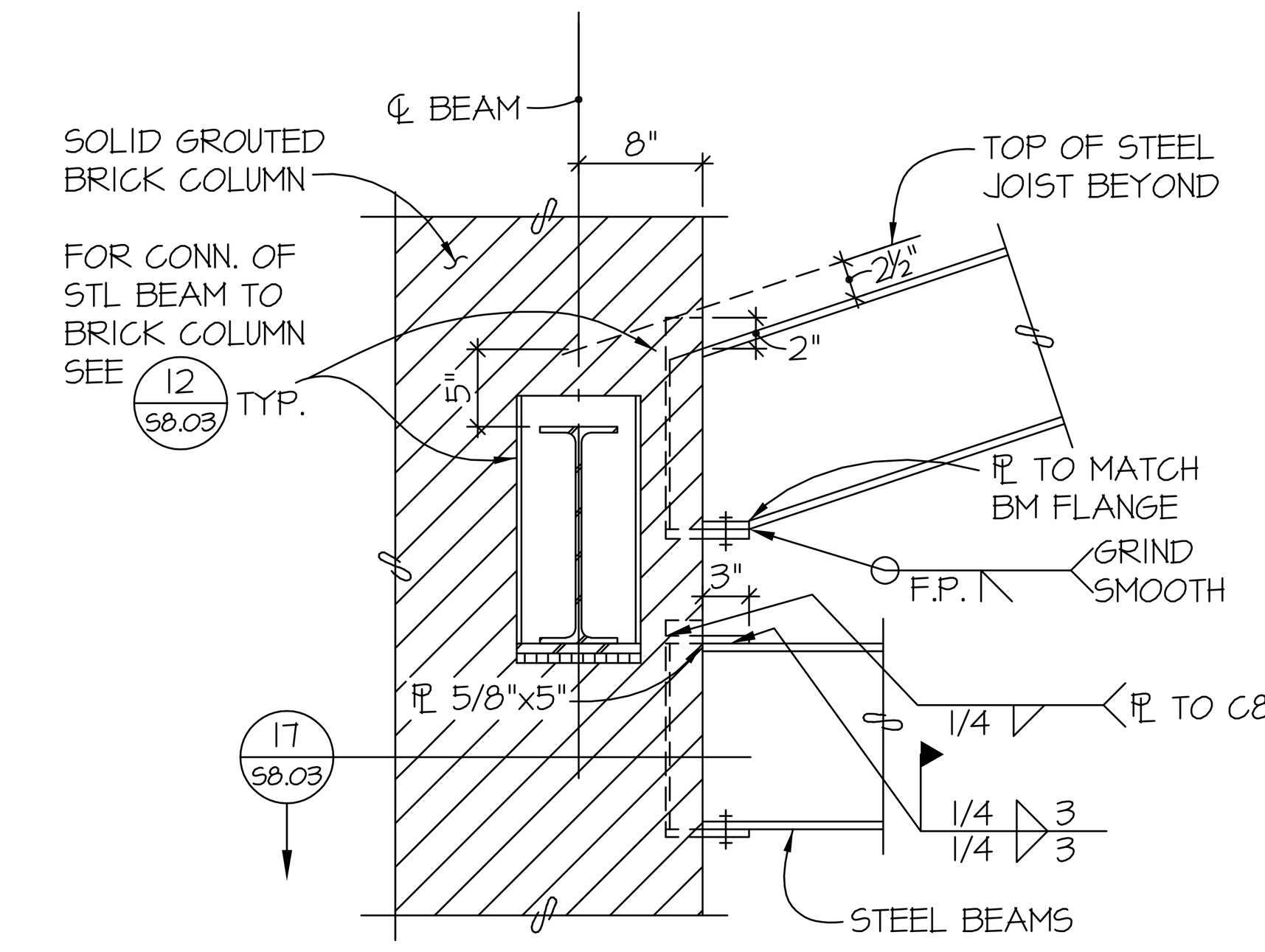

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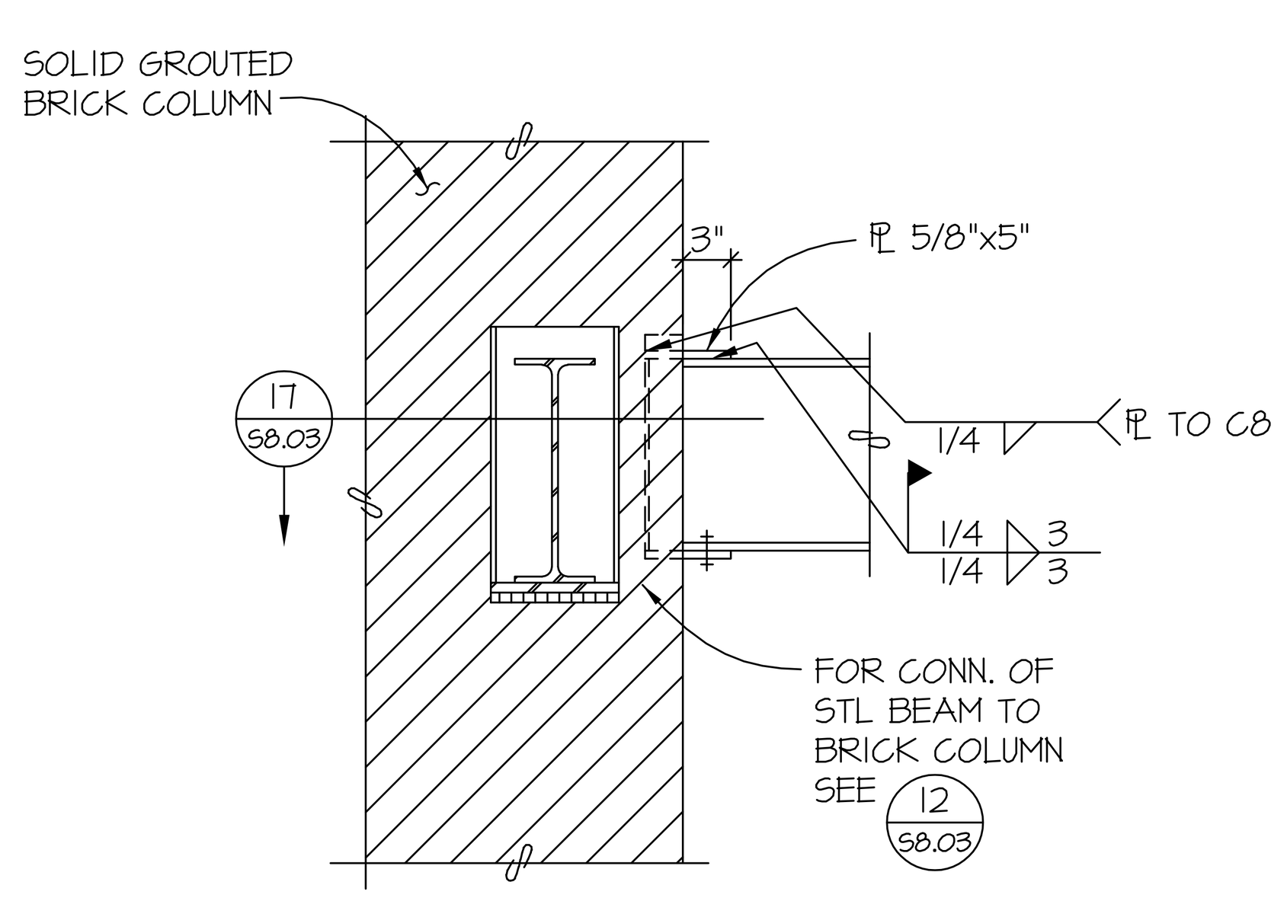

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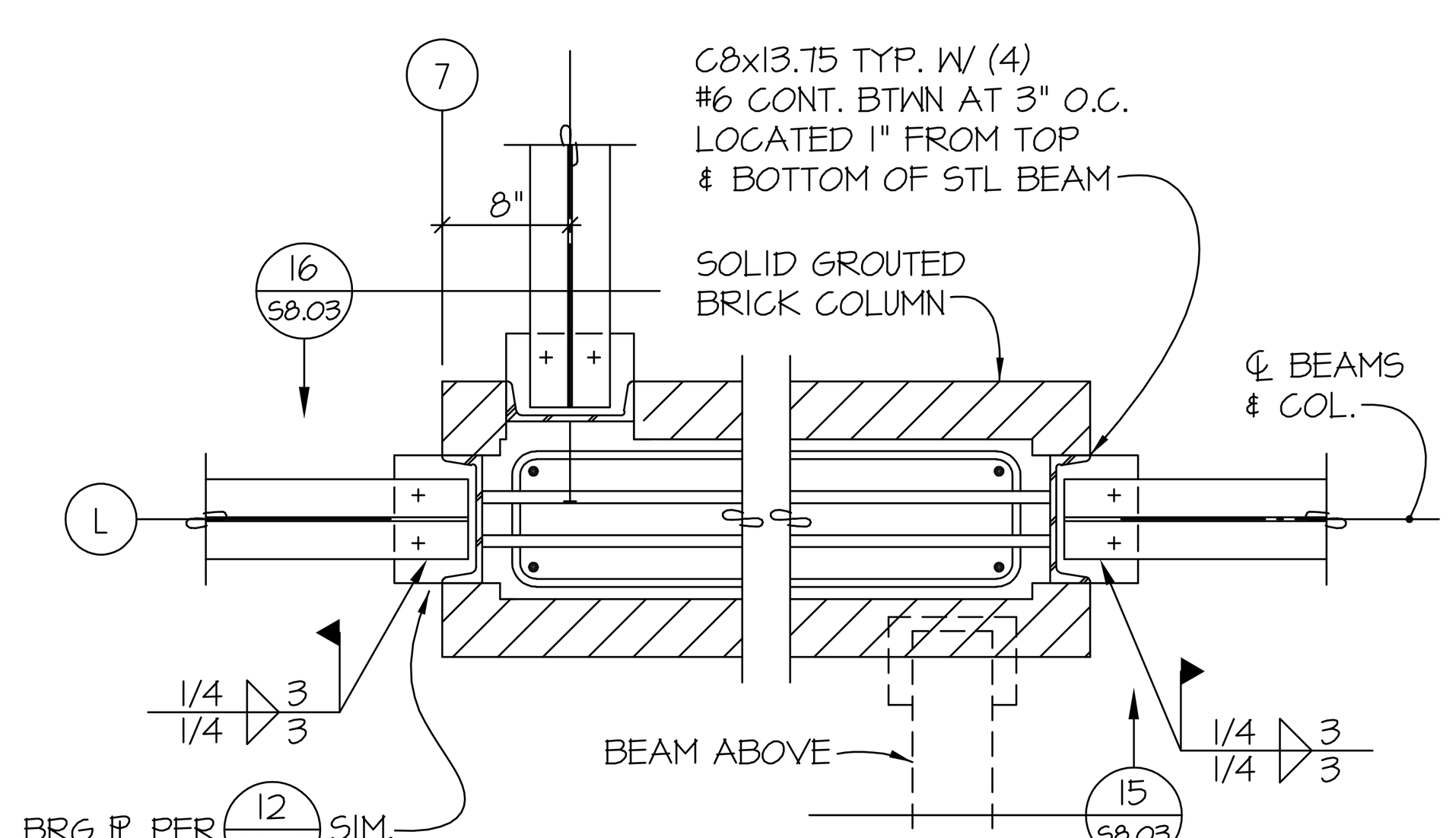

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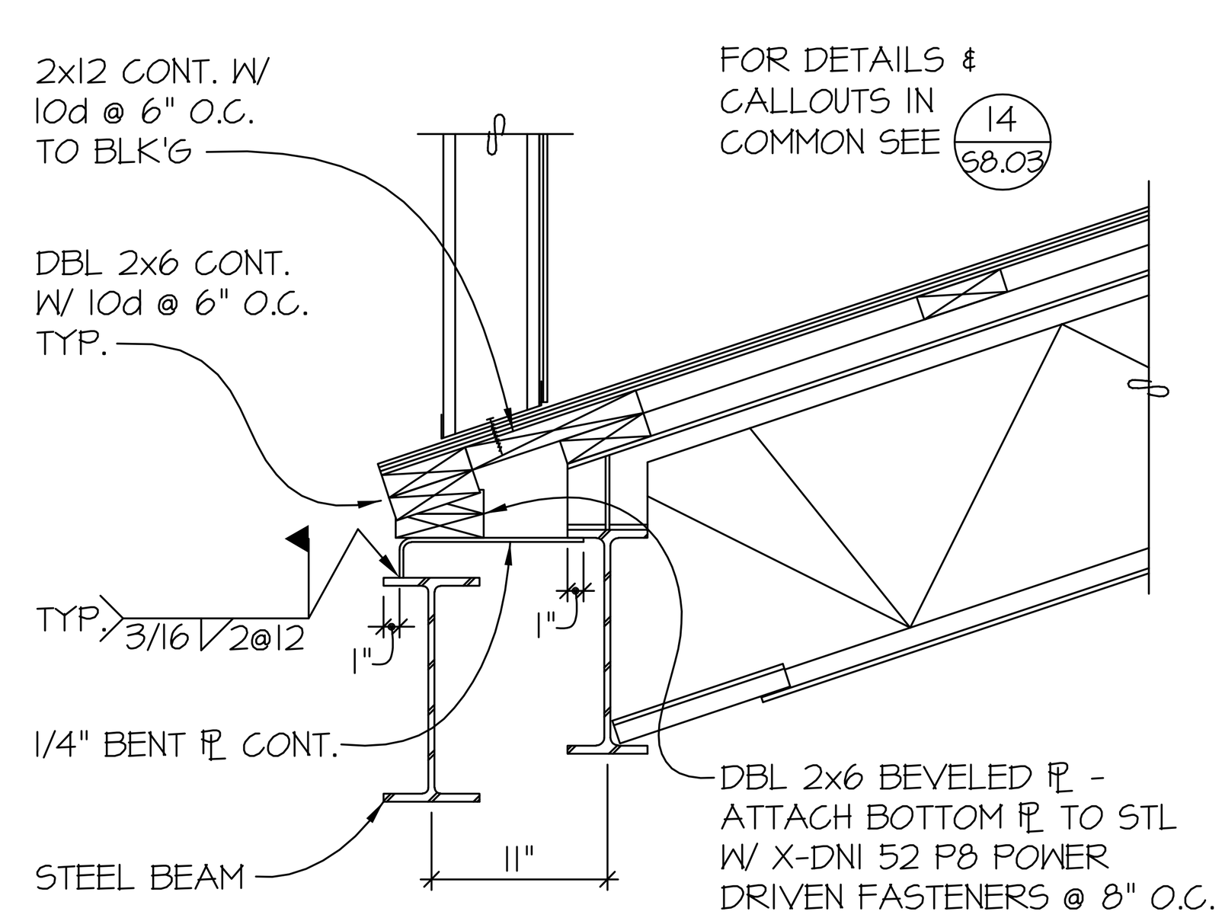

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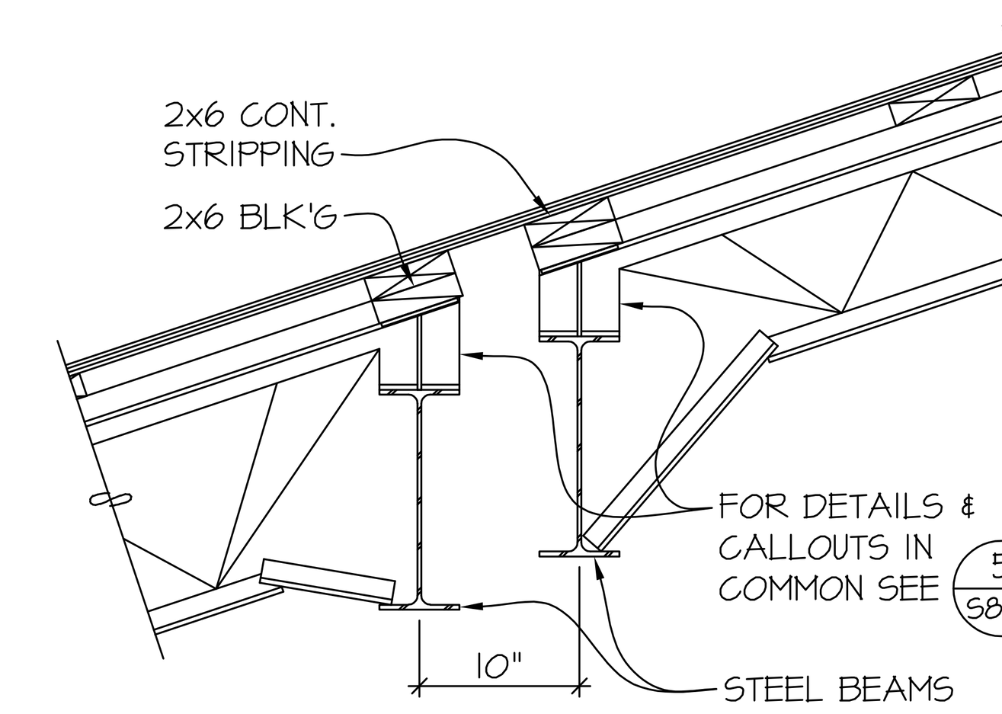

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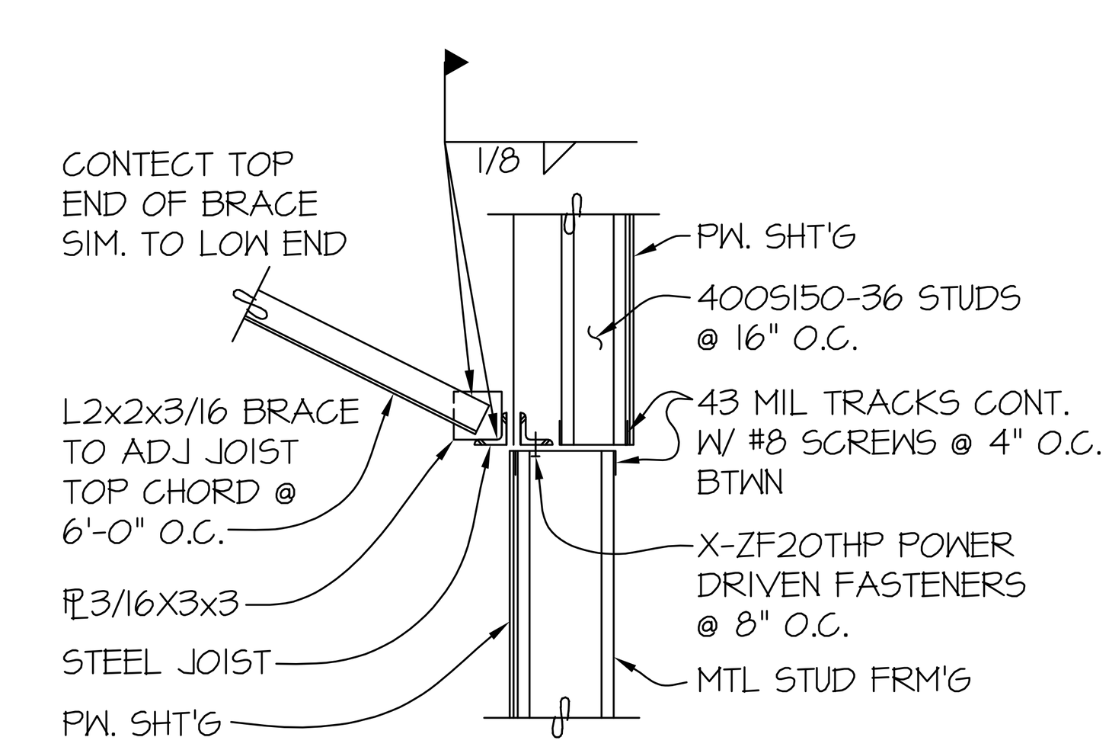

SECTION 20 S8.03
NO SCALE

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ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

BRET MADDOX — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 33519
"NOT FOR CONSTRUCTION"
EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING DETAILS

revision_

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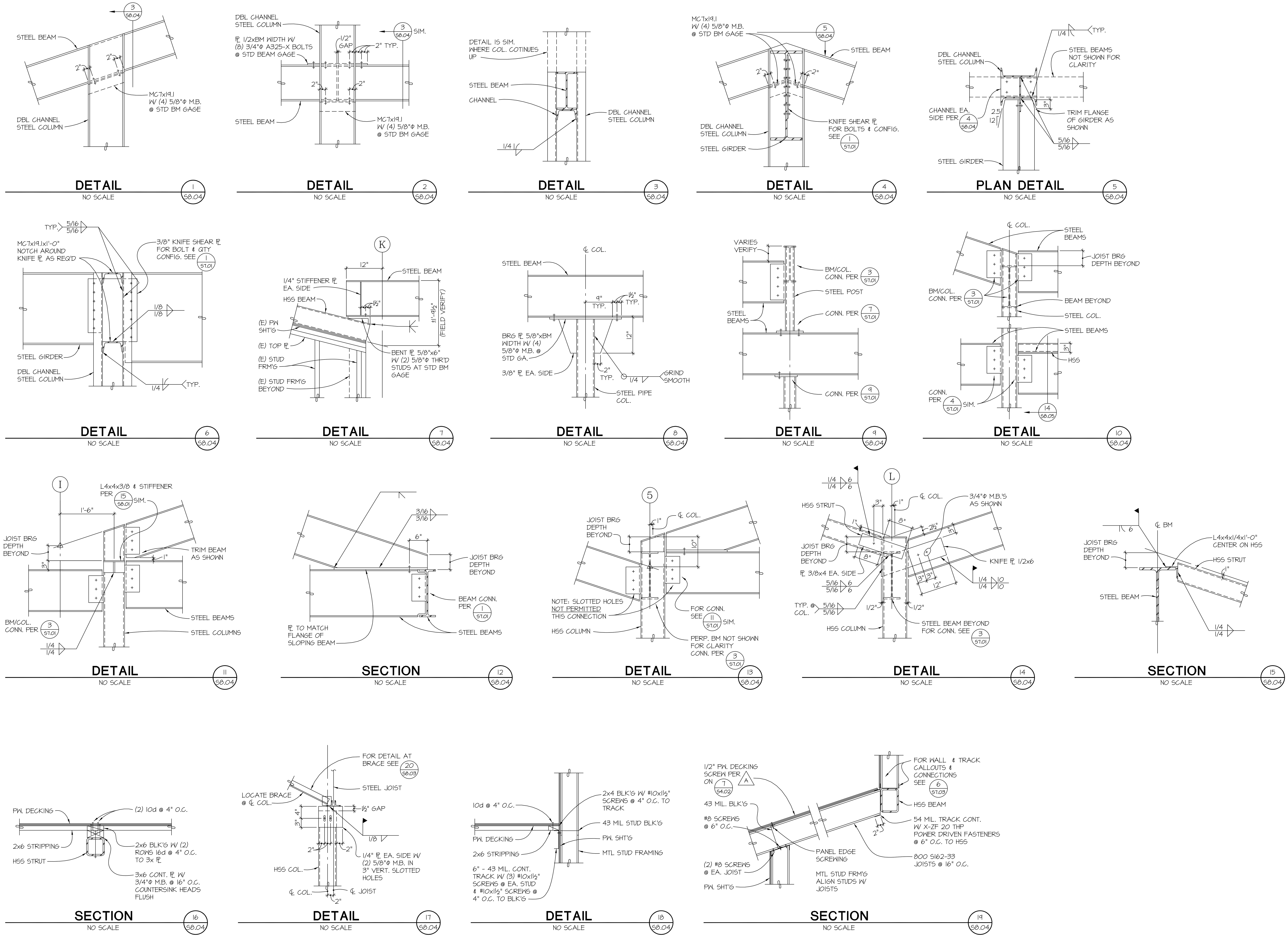
PERMIT 26 MAY 06

drawn_
rdw

checked_
MO

sheet_
S8.03



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electrical engineer_
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food service_
CHANDLER|WILSON DESIGN
acoustical design-
SSA ACOUSTICS

BRET MADDOX STATE OF WASHINGTON 33519 REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

project_
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location_
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revision_

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PERMIT 26 MAY 06

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rdw

checked_
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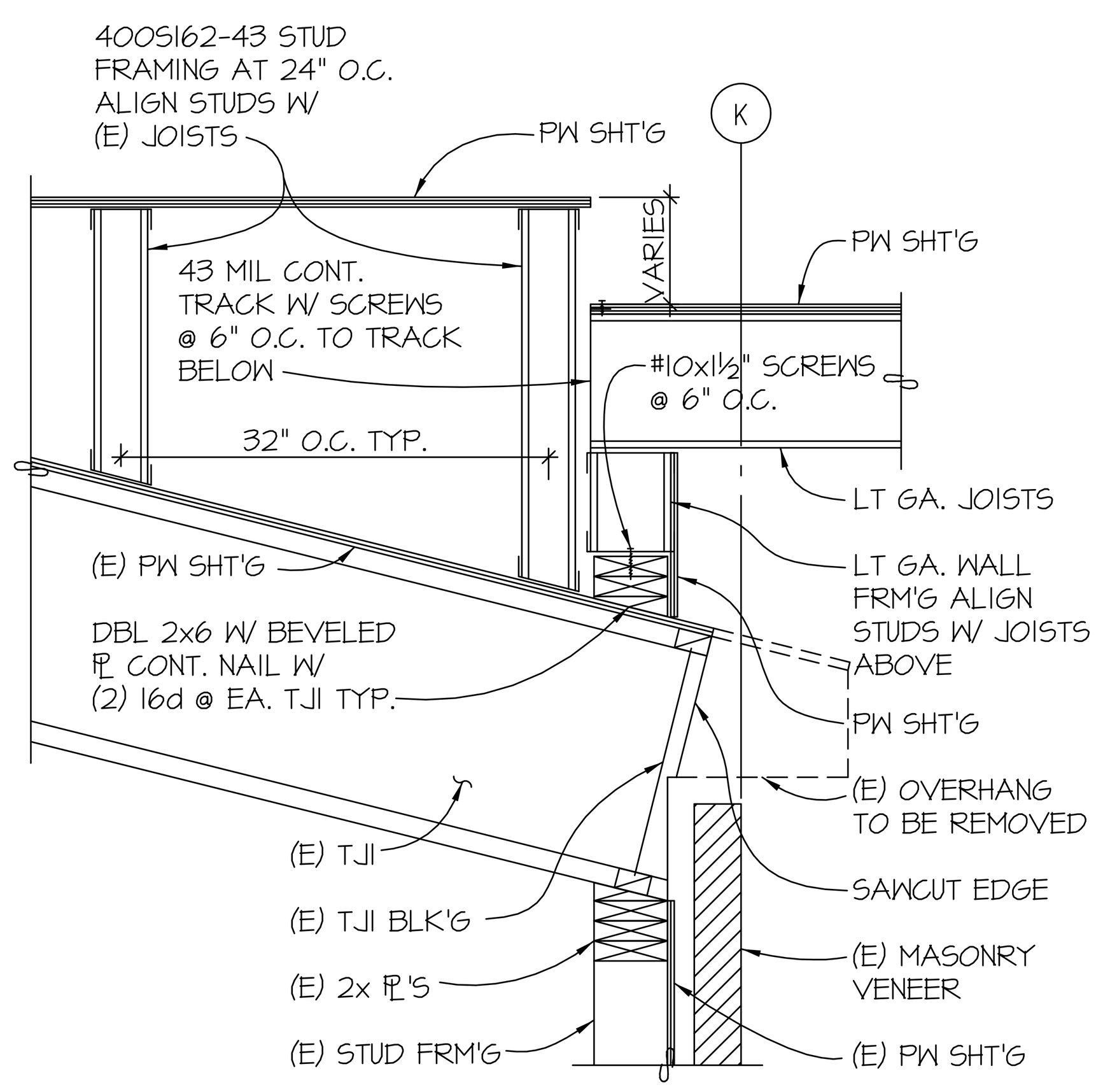
S8.04



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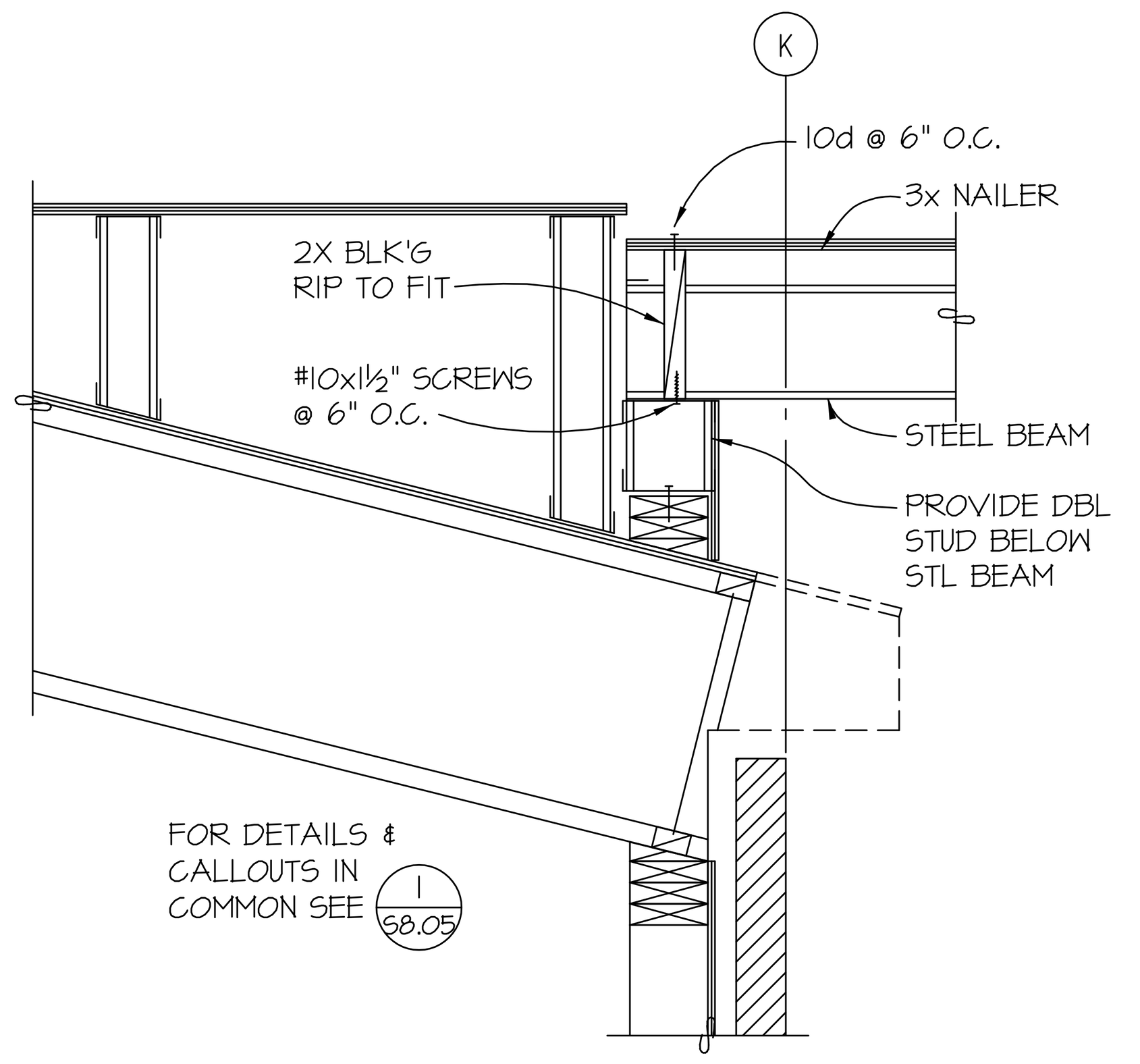

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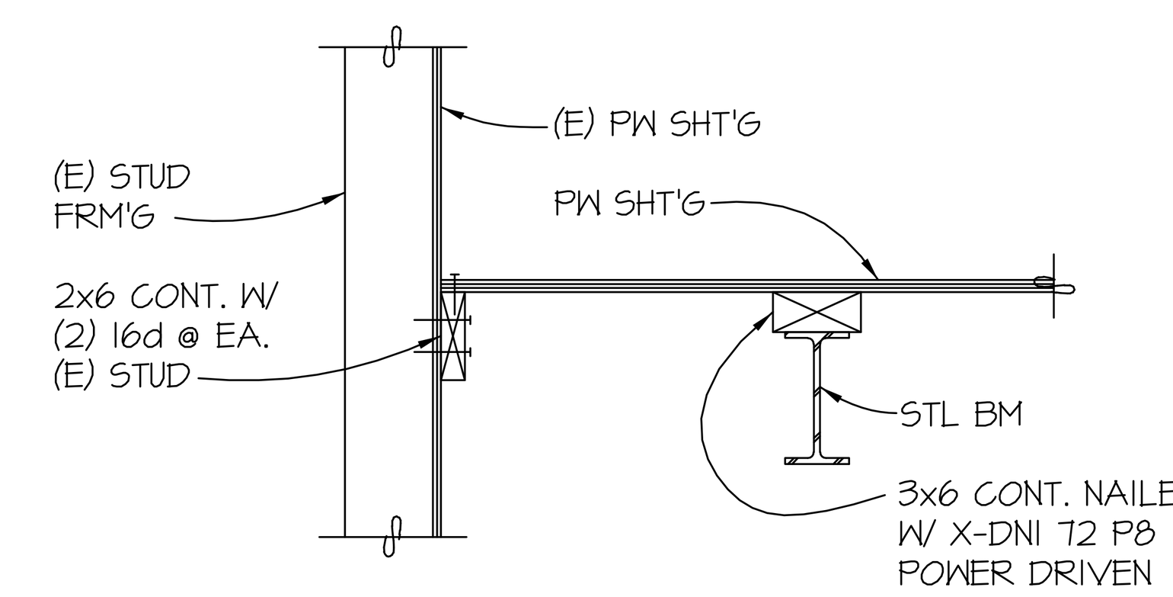

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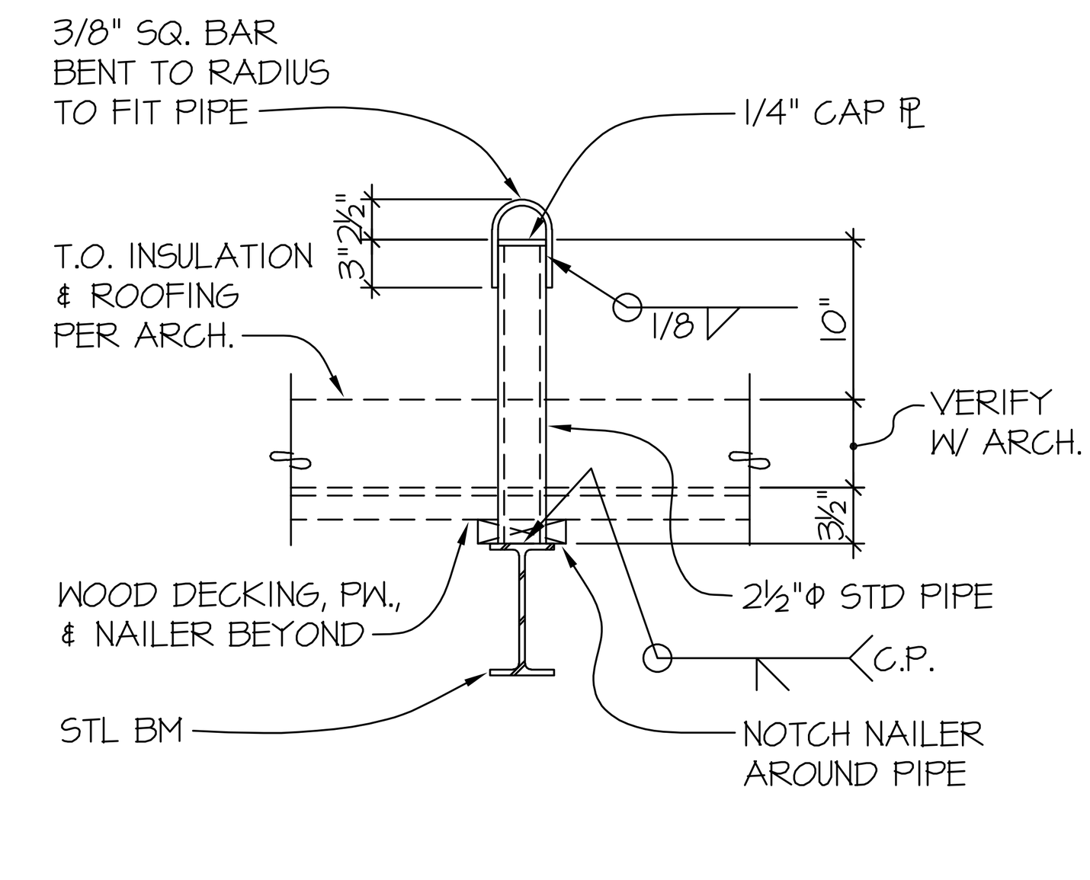

TYPICAL FALL RESTRAINT ANCHOR AT STEEL BEAM

SECTION 4 / S8.05
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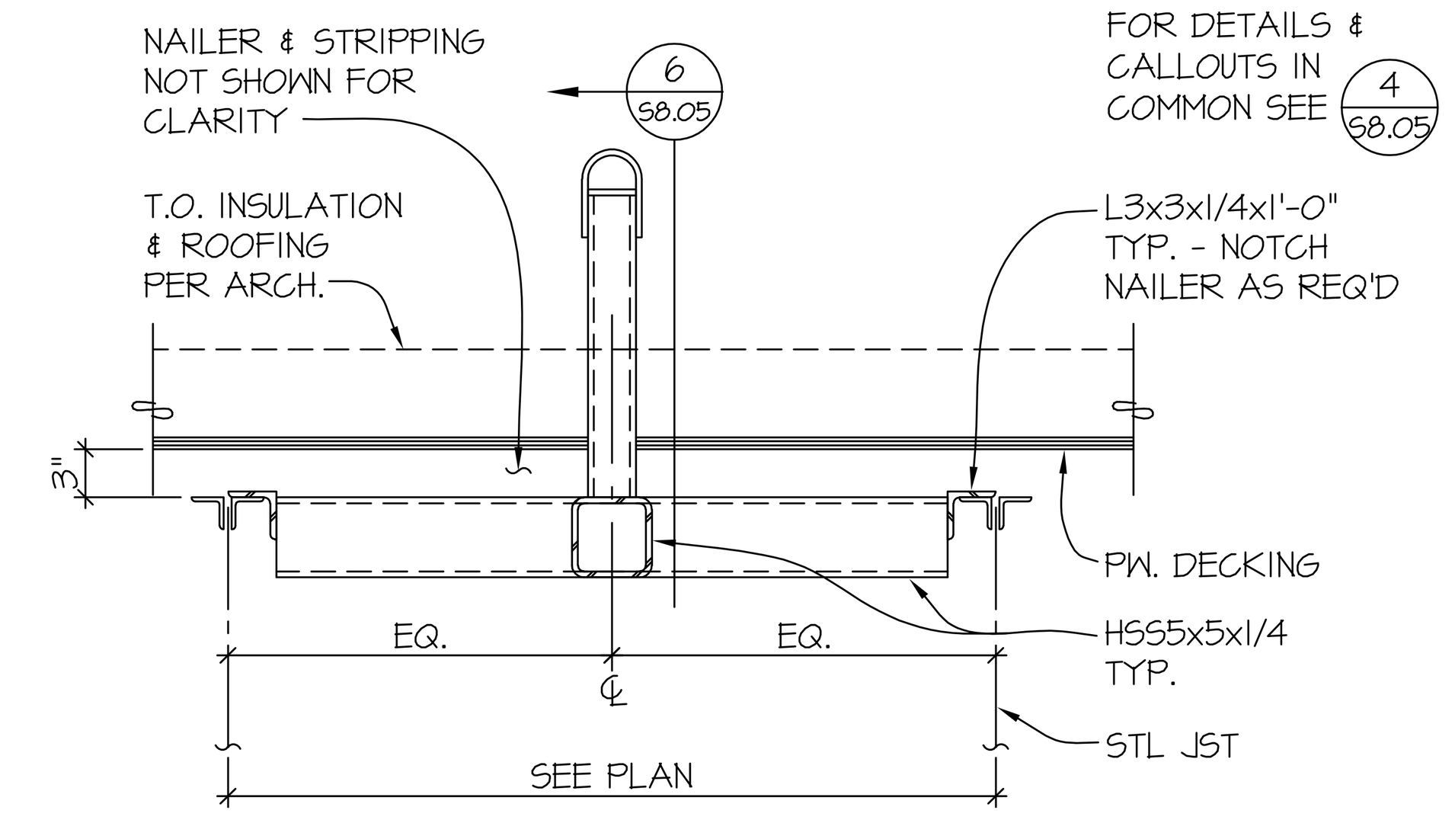
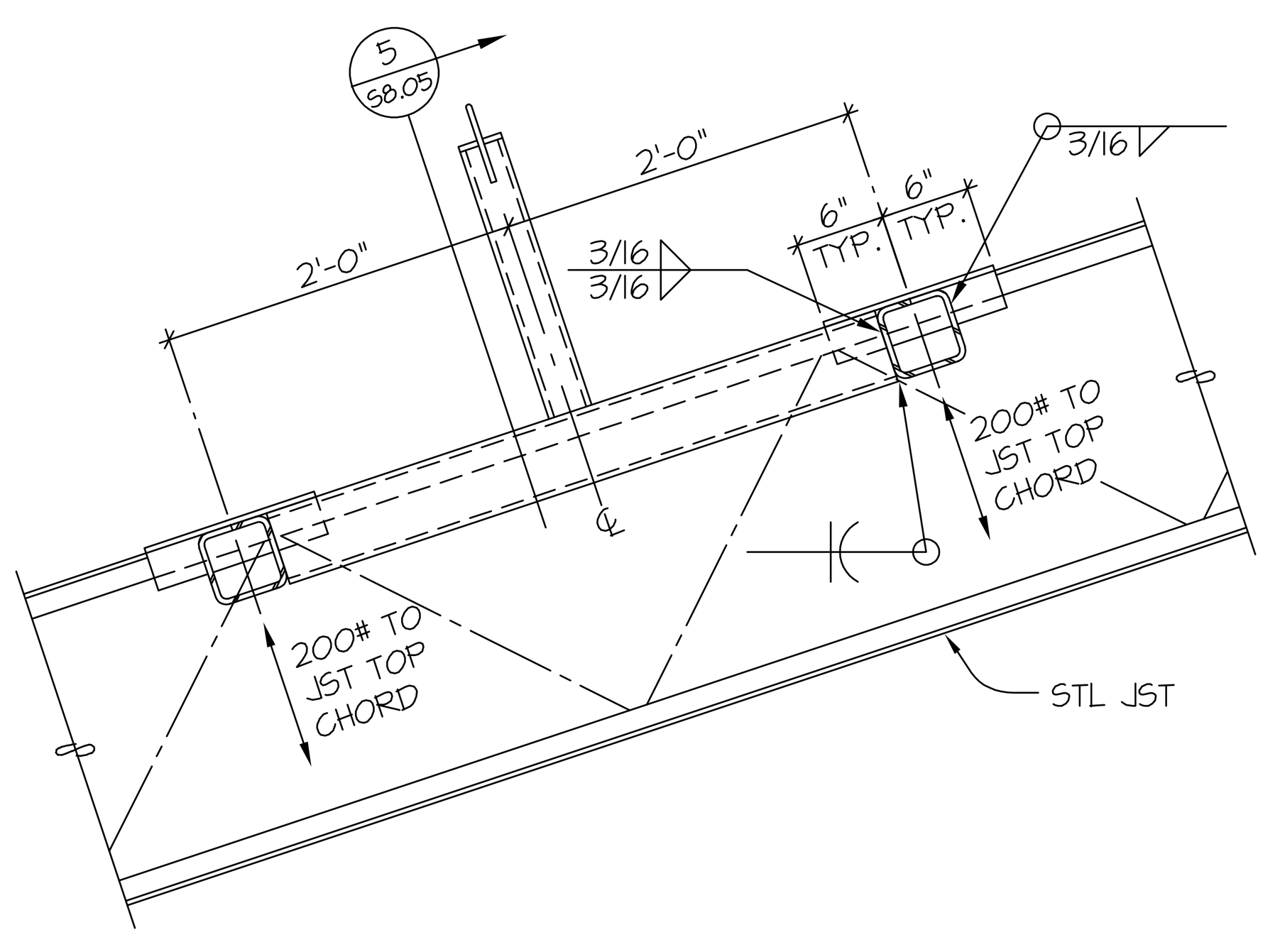


TYPICAL FALL RESTRAINT ANCHOR AT STEEL BAR JOIST

SECTION 5 / S8.05
NO SCALE



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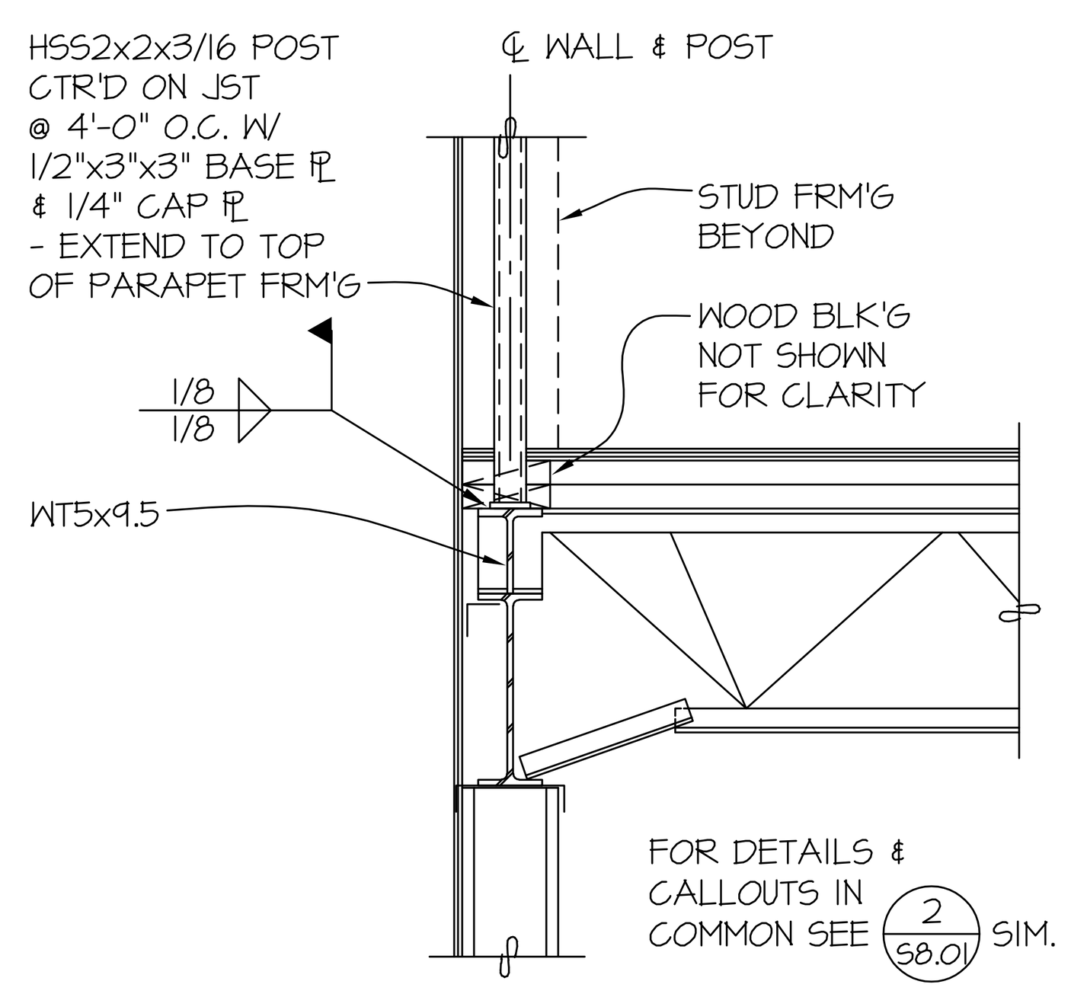

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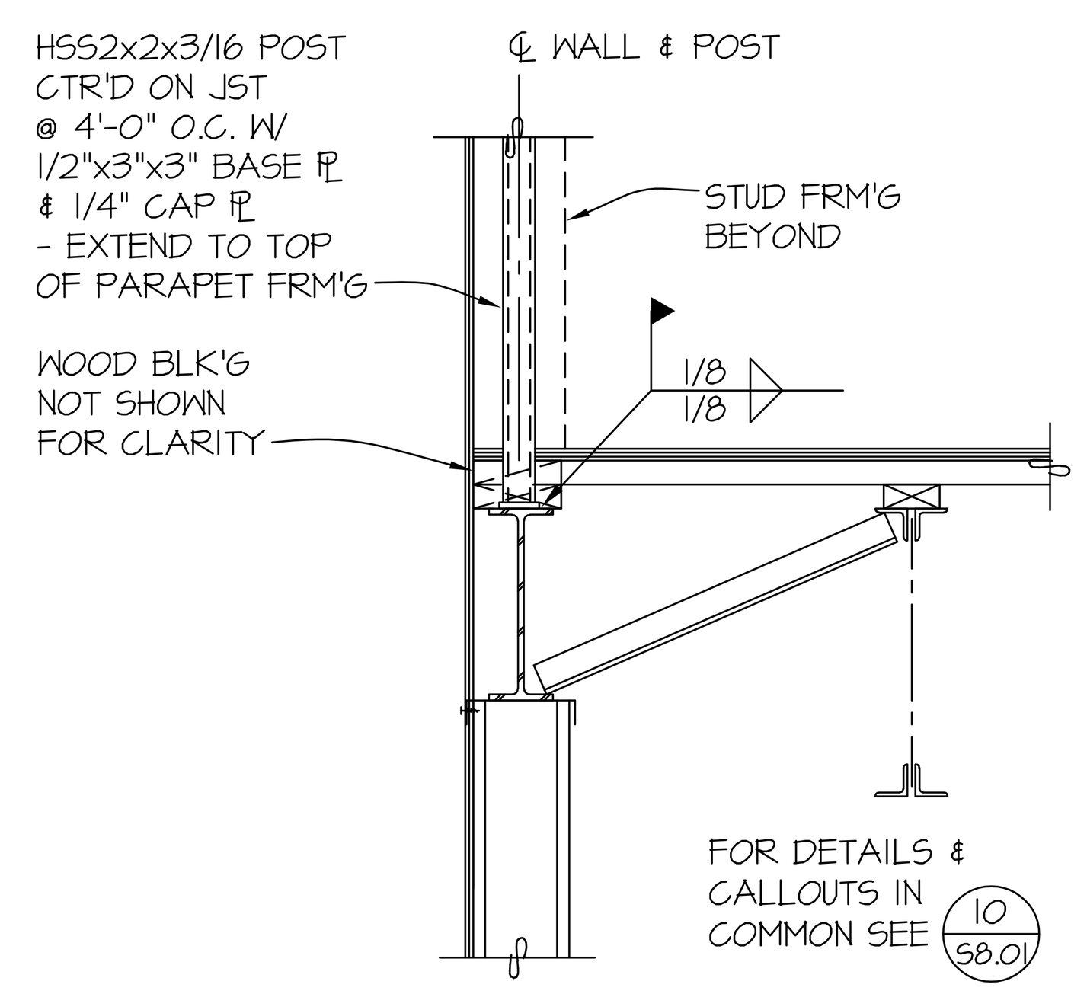

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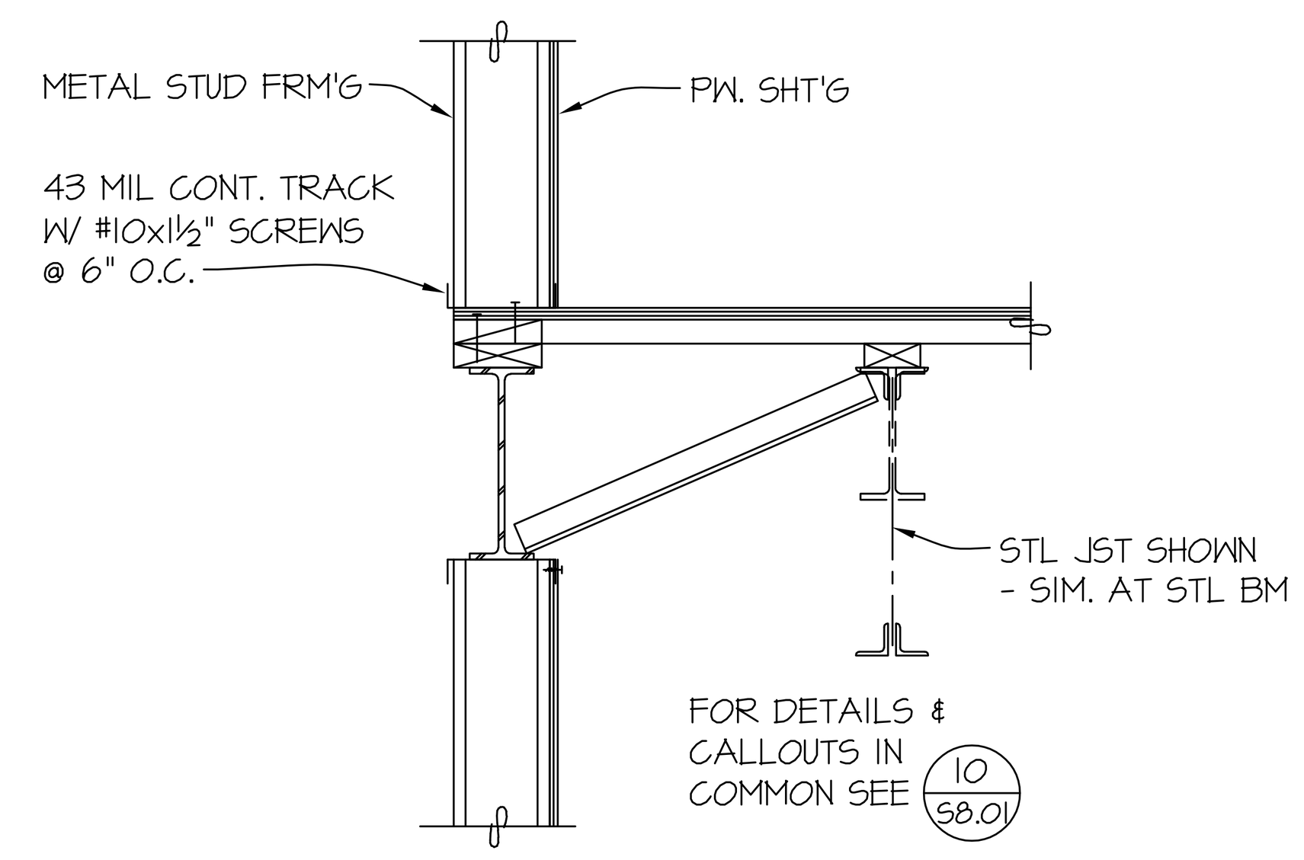

SECTION 9 / S8.05
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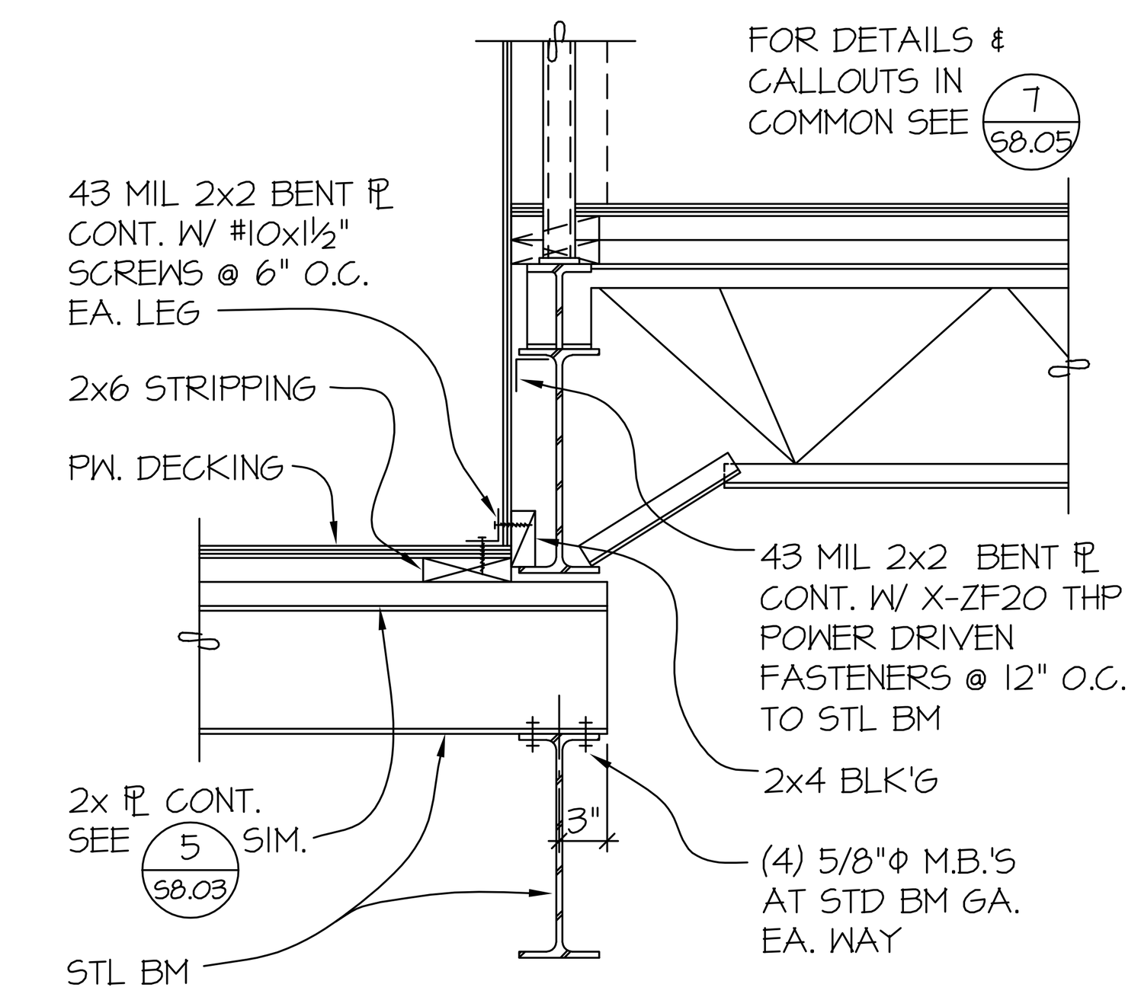

SECTION 10 / S8.05
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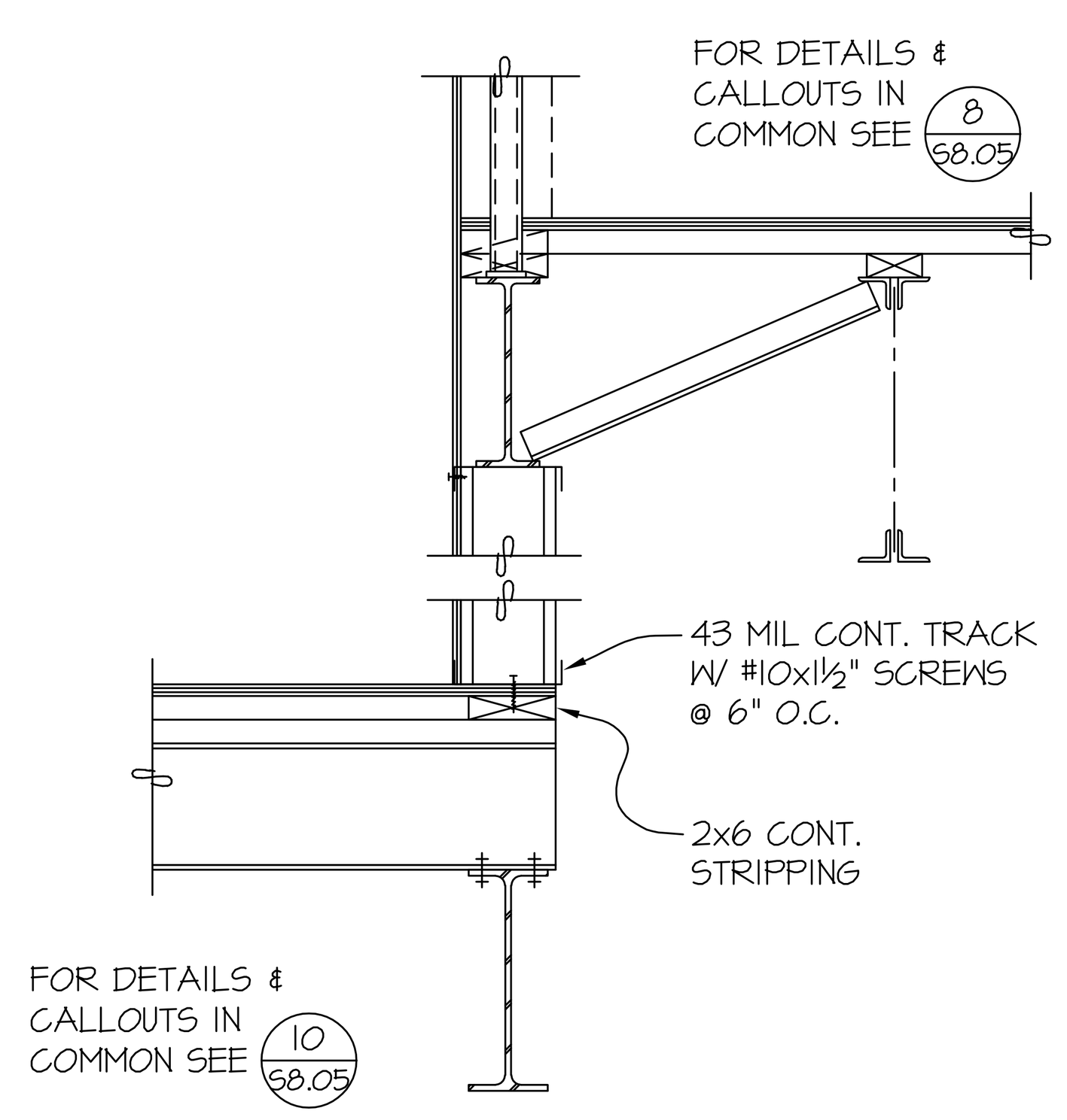

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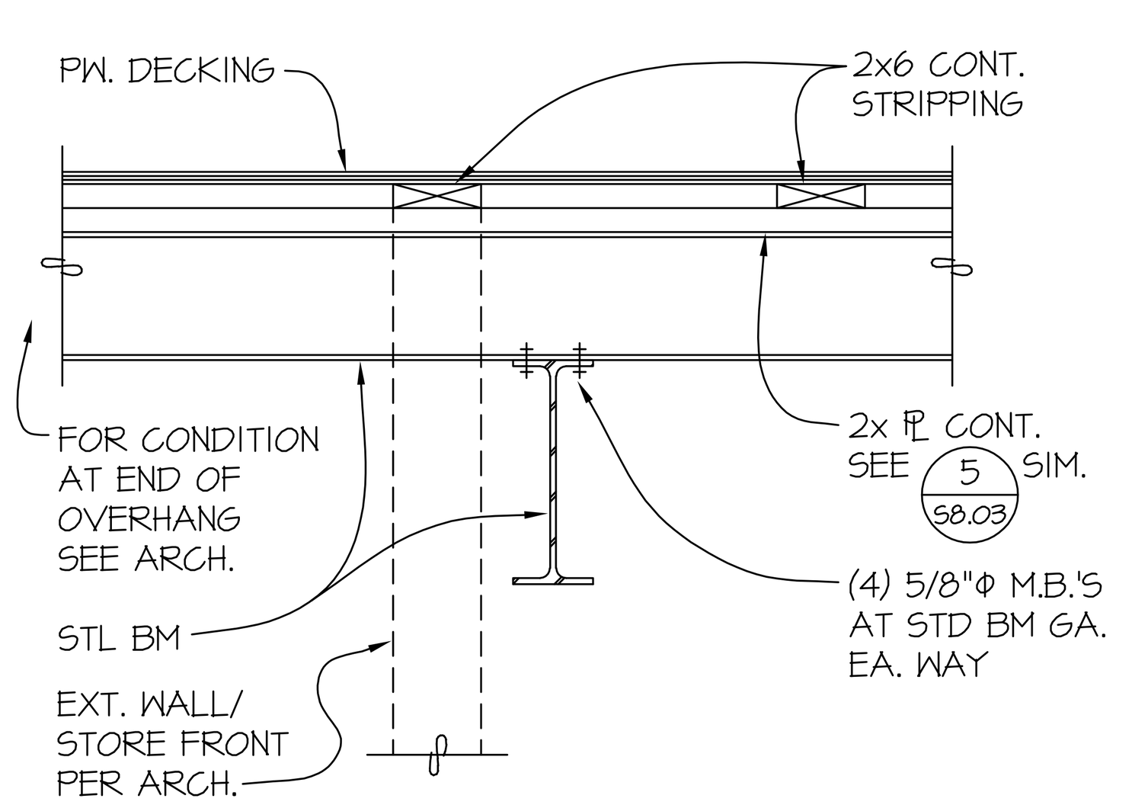

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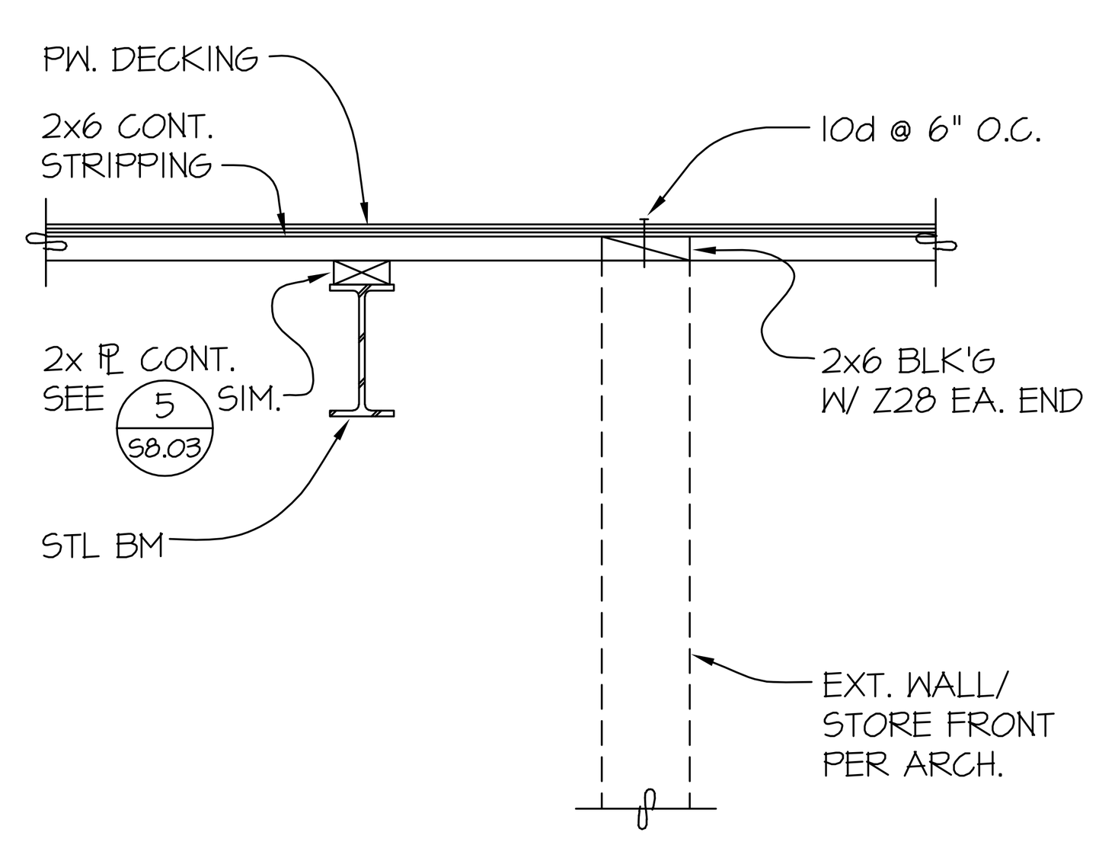

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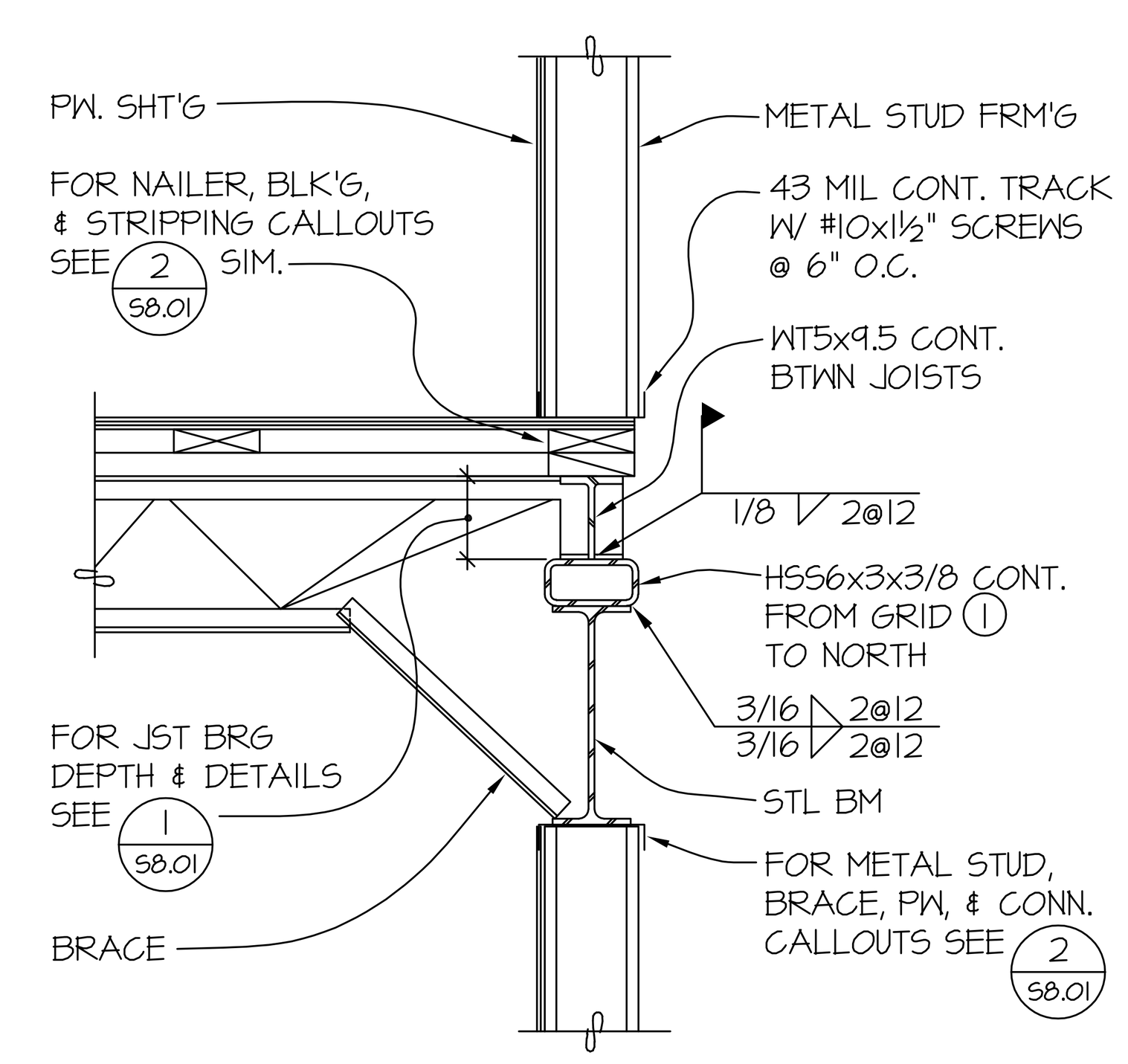

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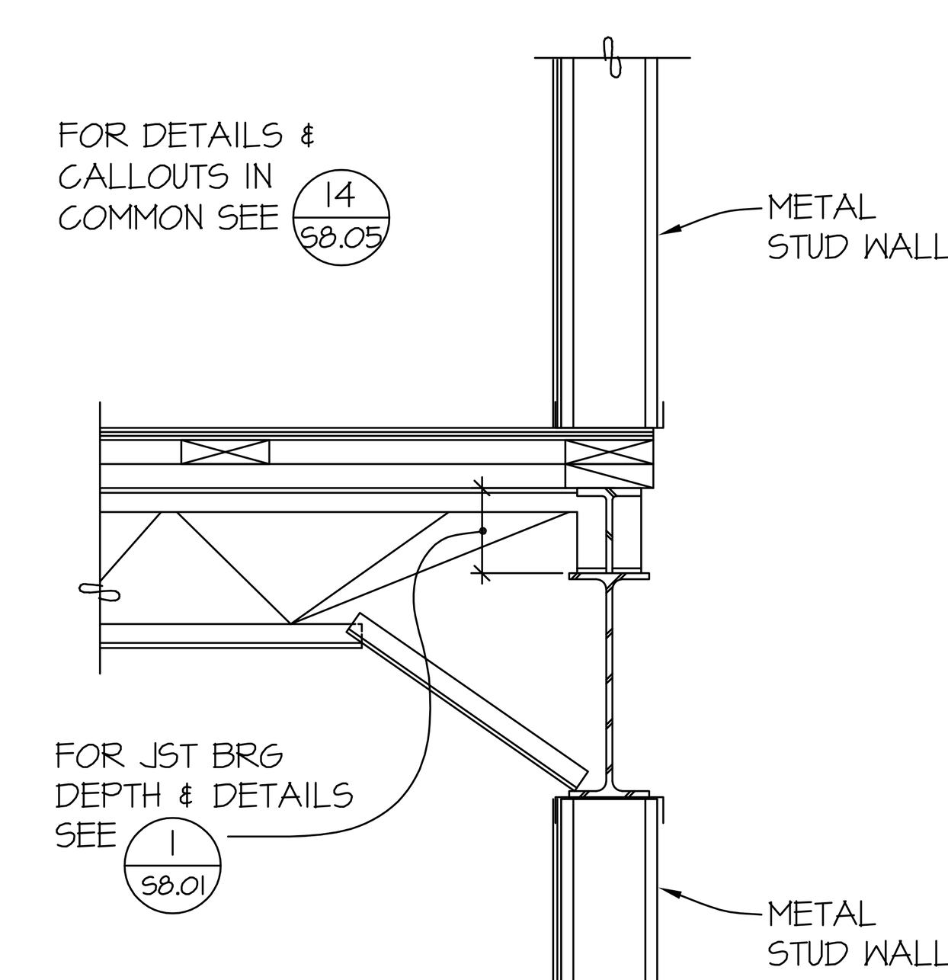

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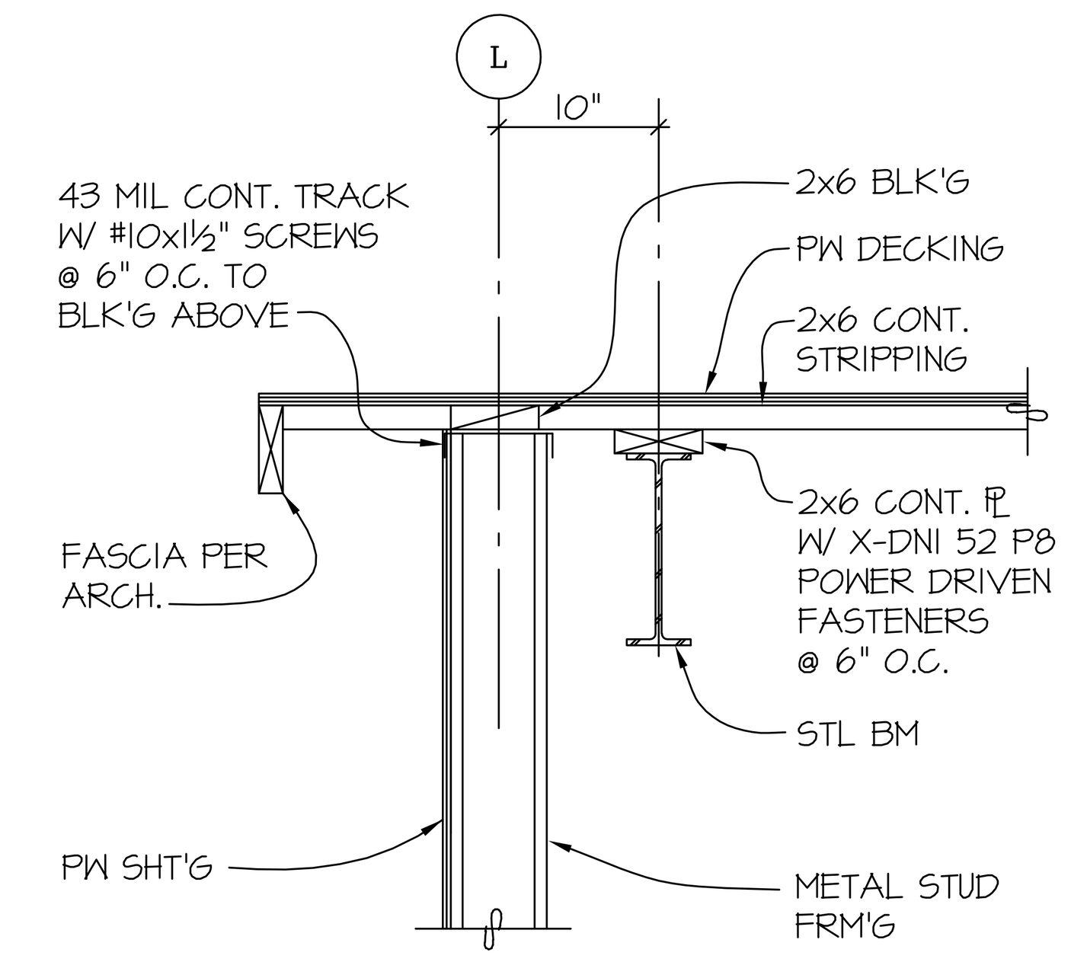

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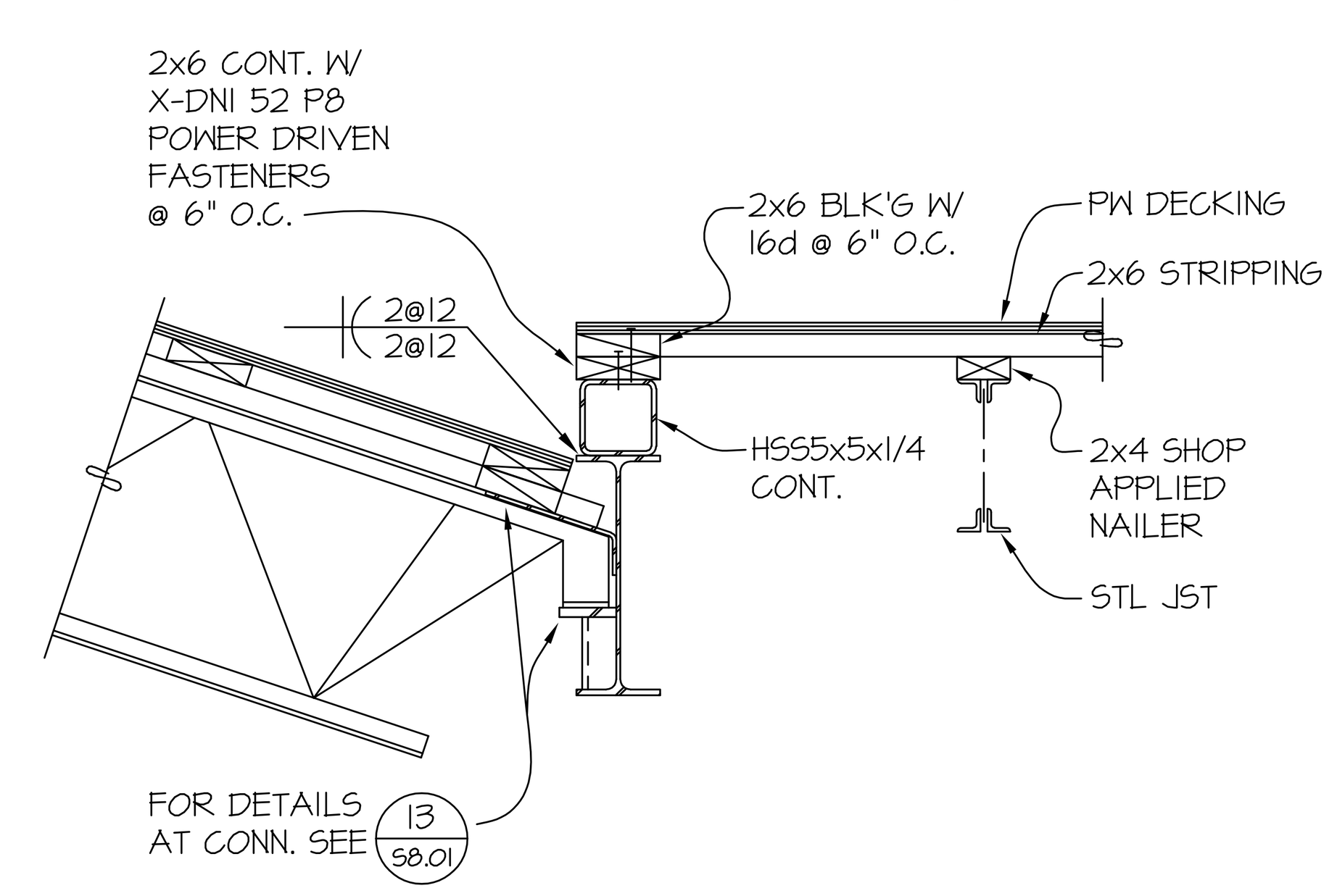

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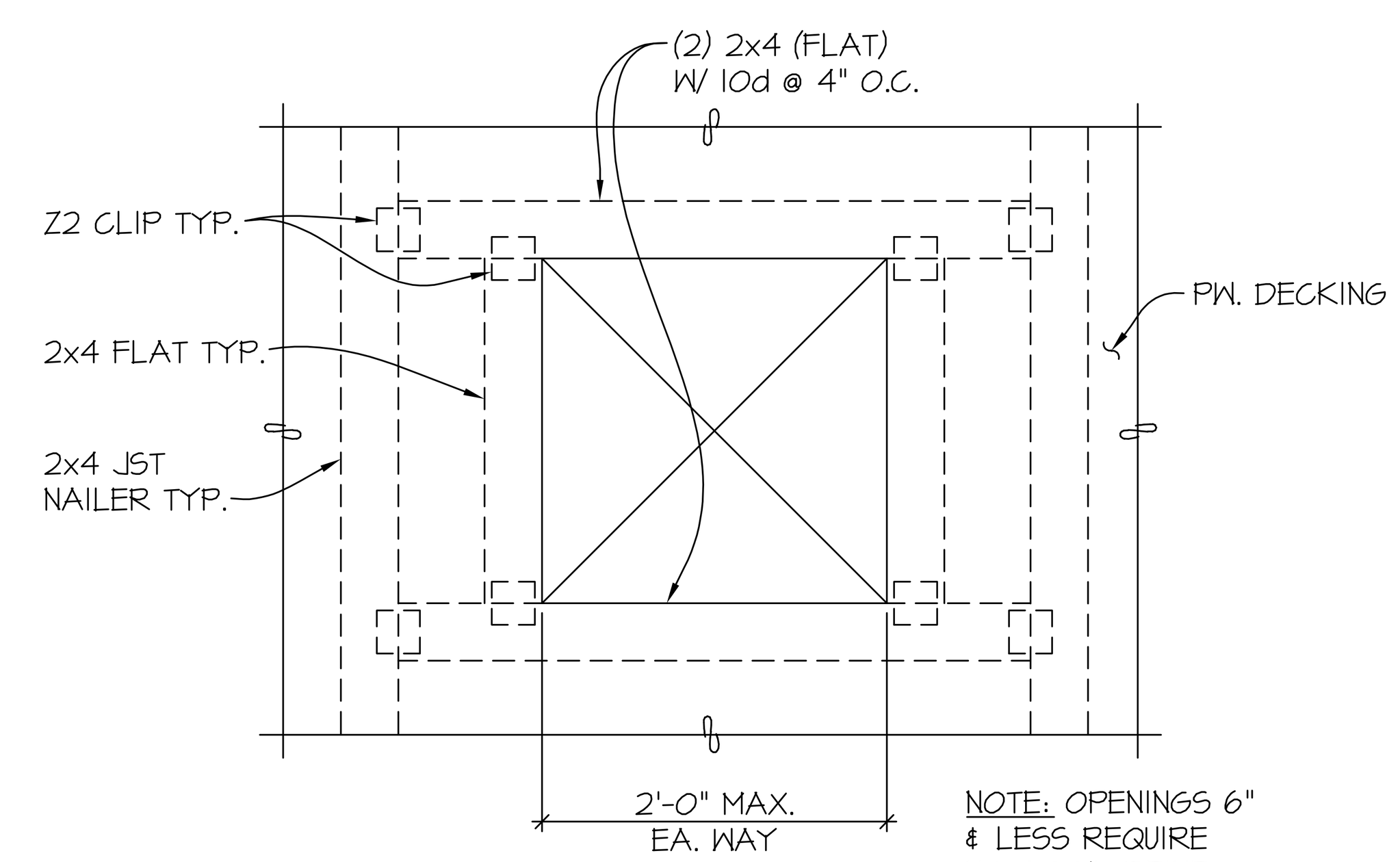
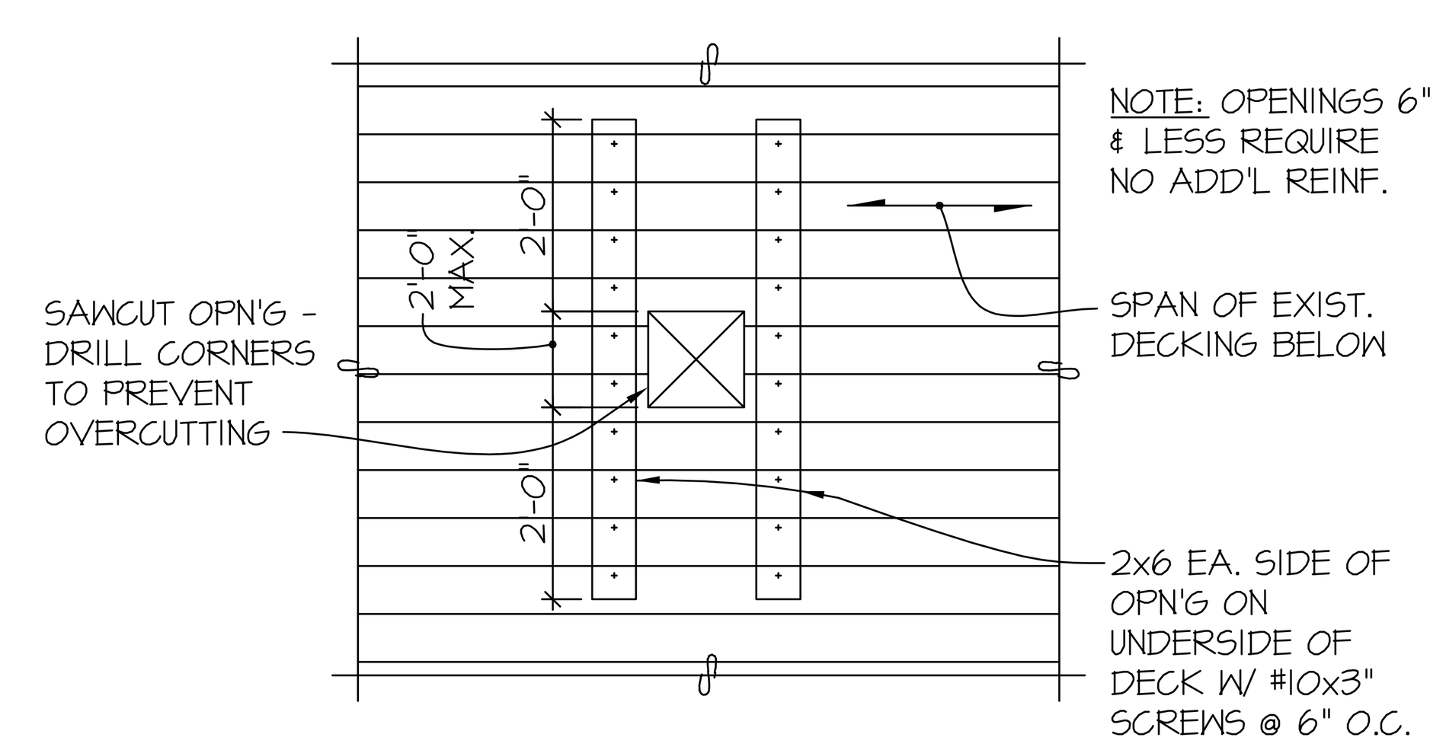


TYPICAL PENETRATION IN WOOD ROOF DECKING 2

PLAN DETAIL 18 / S8.05
NO SCALE



TYPICAL MECHANICAL PENETRATION IN EXISTING ROOF DECKING 2

PLAN DETAIL 19 / S8.05
NO SCALE

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ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_ McGRANAHAN ARCHITECTS
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ROOF FRAMING DETAILS

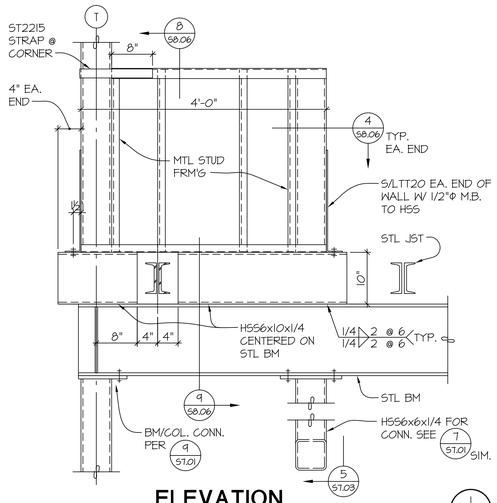
revision_

issued_ PERMIT 26 MAY 06

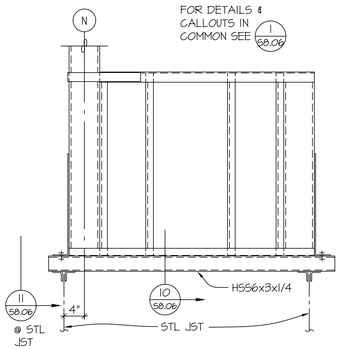
drawn_ rdw

checked_ MO

sheet_ **S8.05**



ELEVATION
NO SCALE — 1 / S8.06



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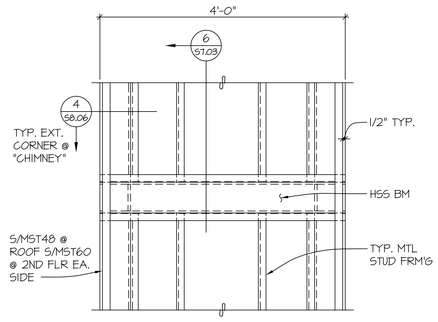

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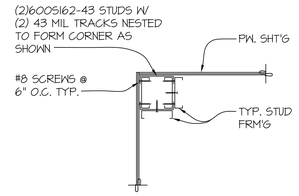

PLAN SECTION
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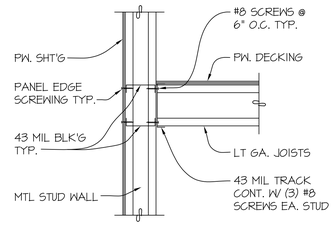

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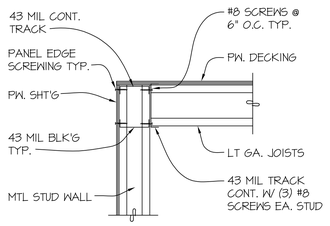

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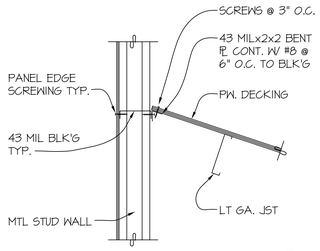

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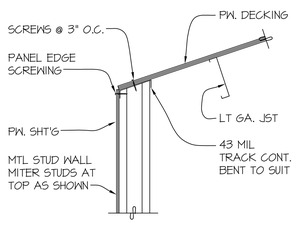

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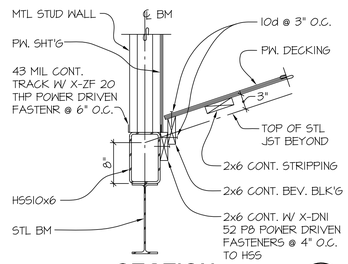

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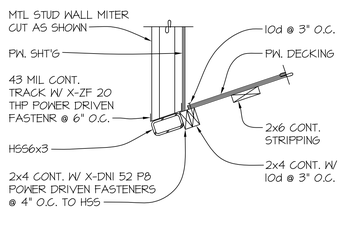

SECTION
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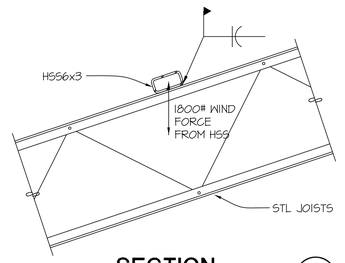

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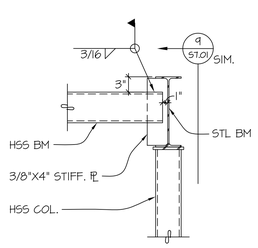

SECTION
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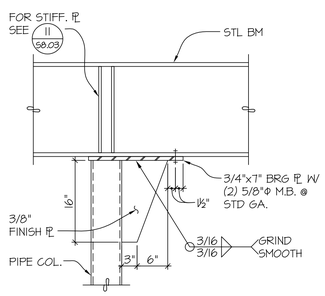
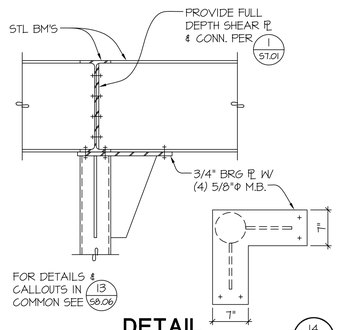


DETAIL
NO SCALE — 13 / S8.06



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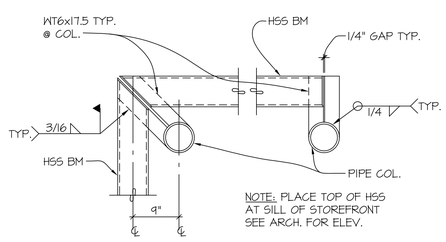
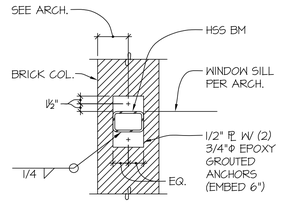
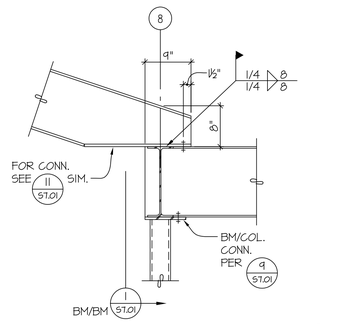


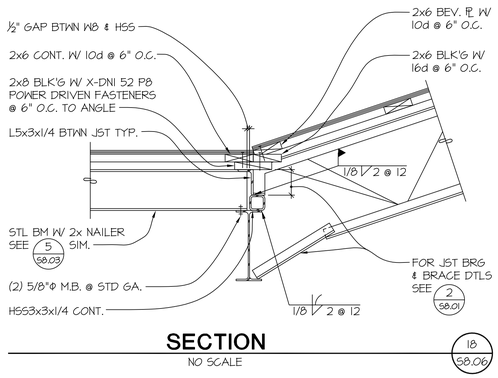
PLAN DETAIL
NO SCALE — 15 / S8.06



DETAIL
NO SCALE — 16 / S8.06



DETAIL
NO SCALE — 17 / S8.06



SECTION
NO SCALE — 18 / S8.06

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mcG+arc

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NOT VALID UNLESS SIGNED" — BRENT MADISON — STATE OF WASHINGTON — 12 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING DETAILS

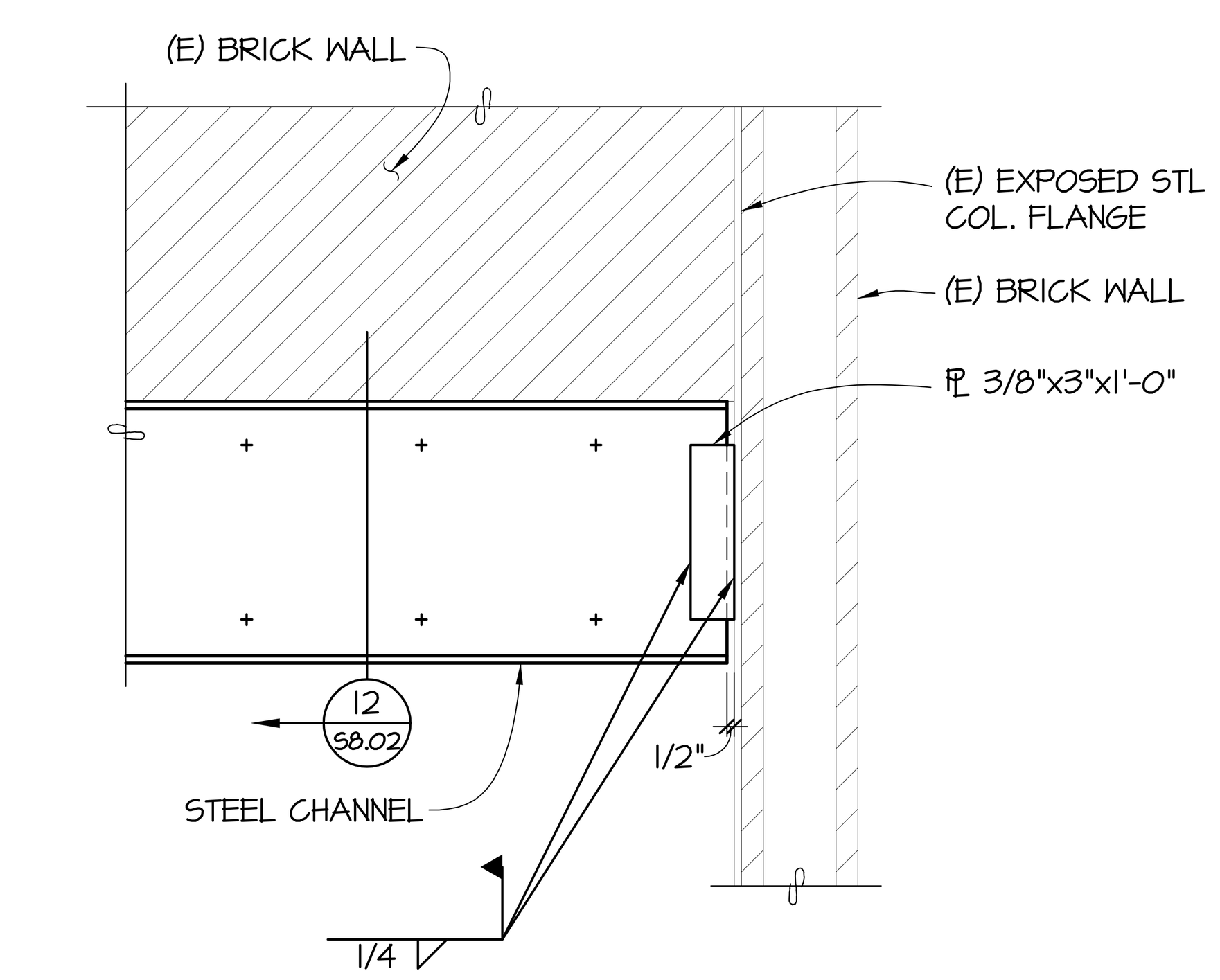
revision_

issued_
PERMIT 26 MAY 06

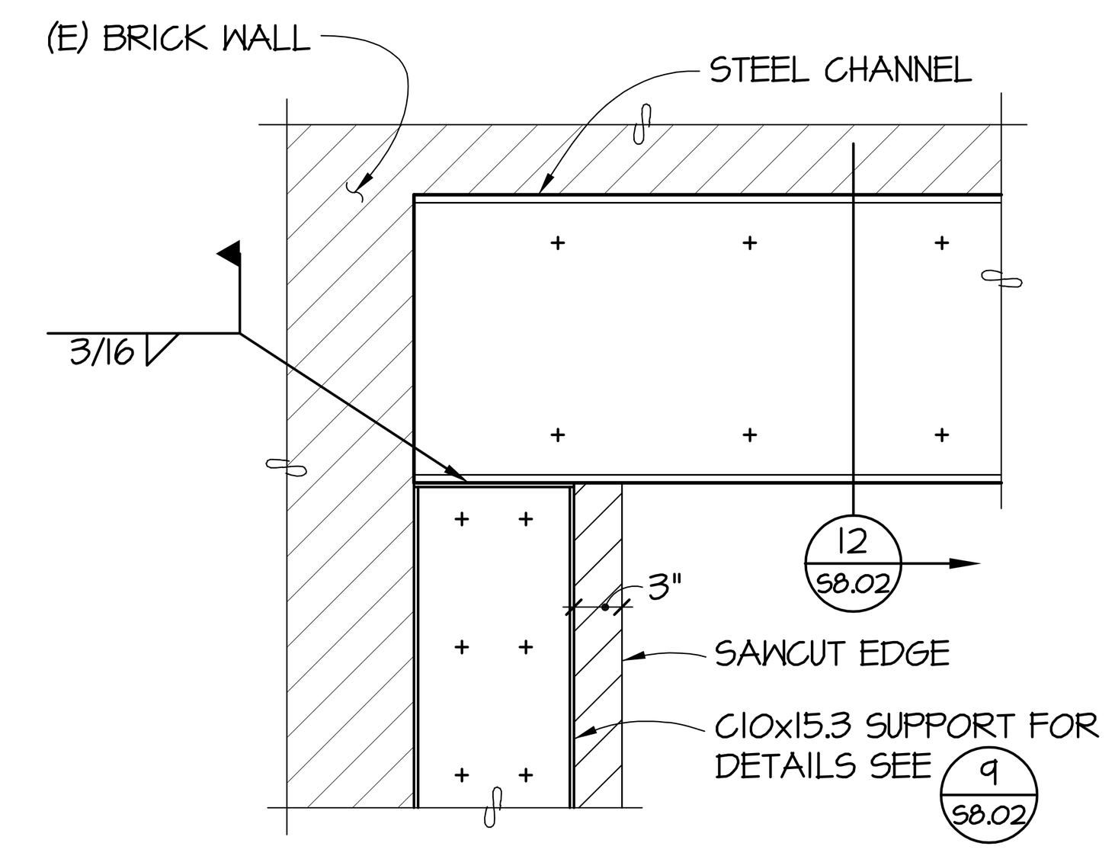
drawn_
rdw

checked_
MD

sheet_
S8.06



DETAIL 1 S8.07
NO SCALE



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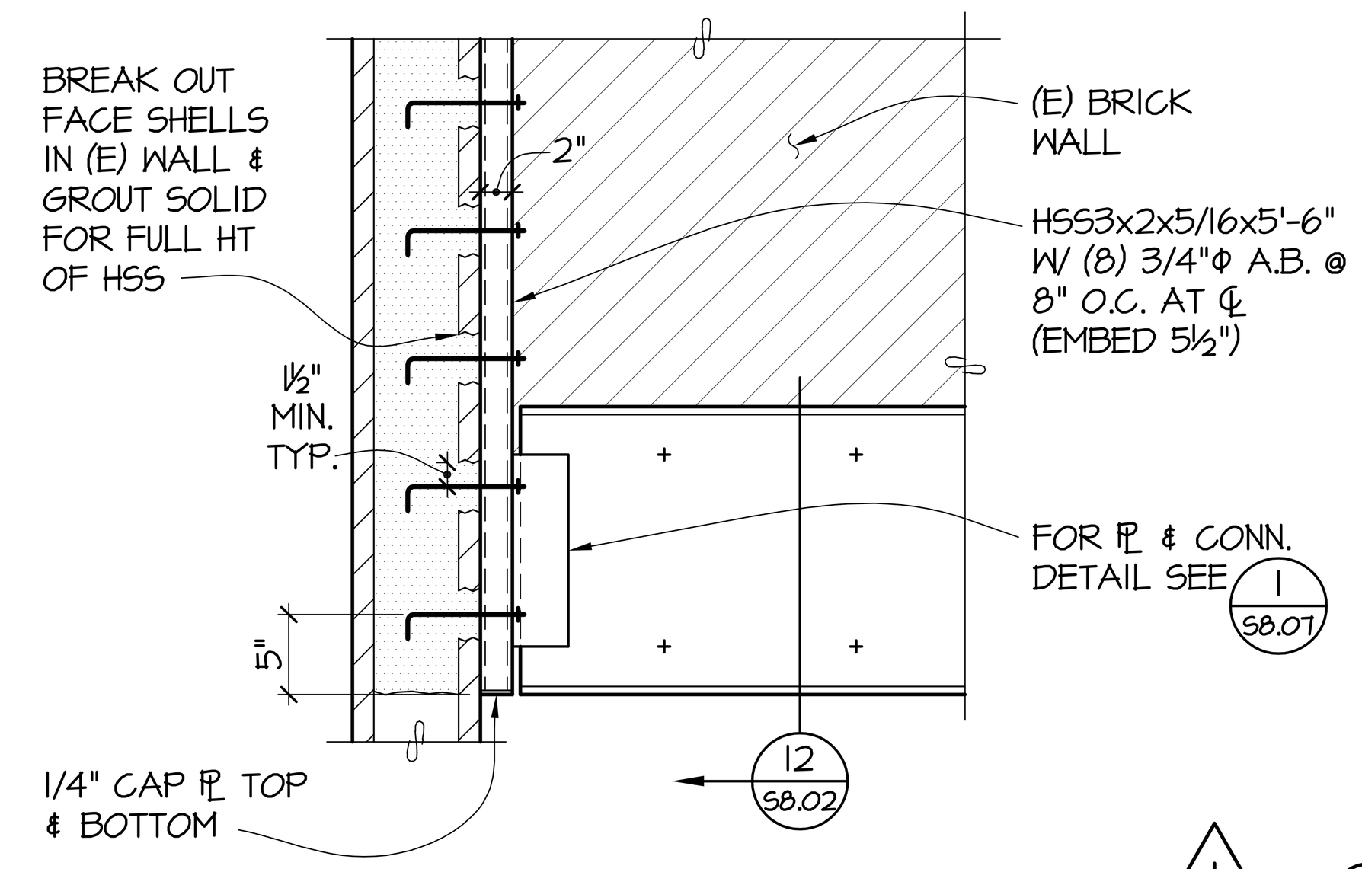
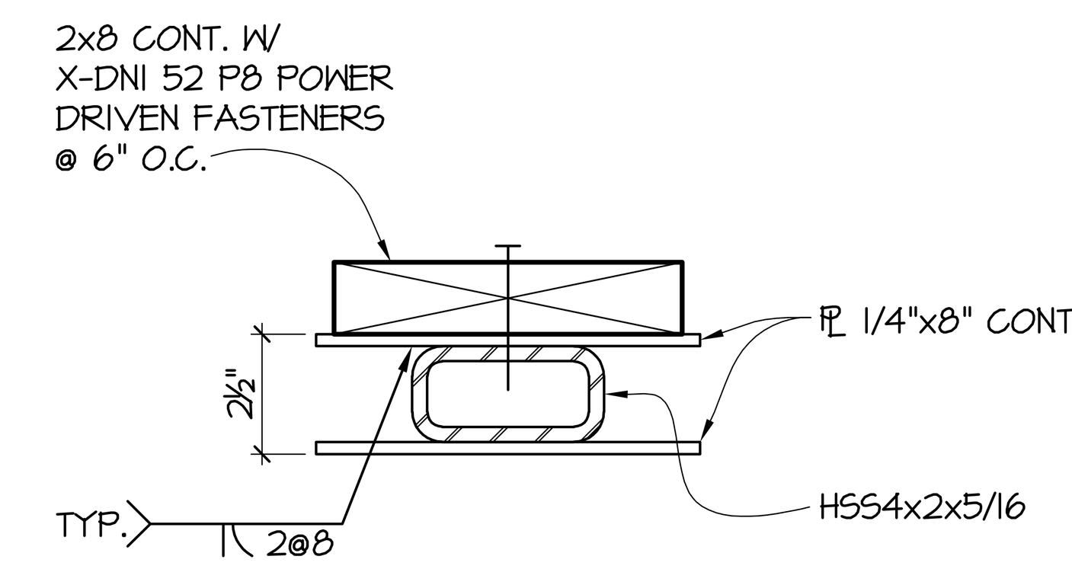


DETAIL 3 S8.07
NO SCALE



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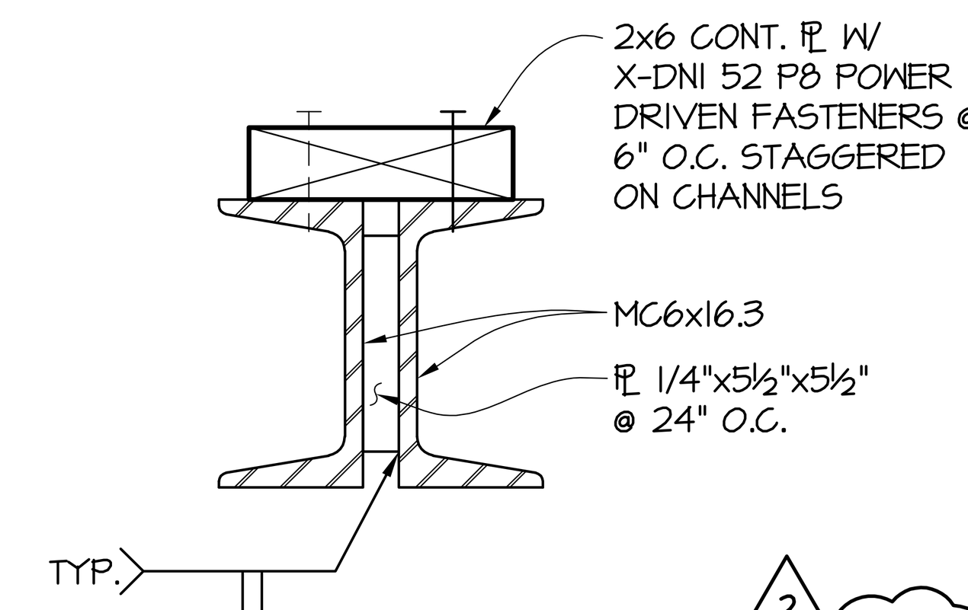

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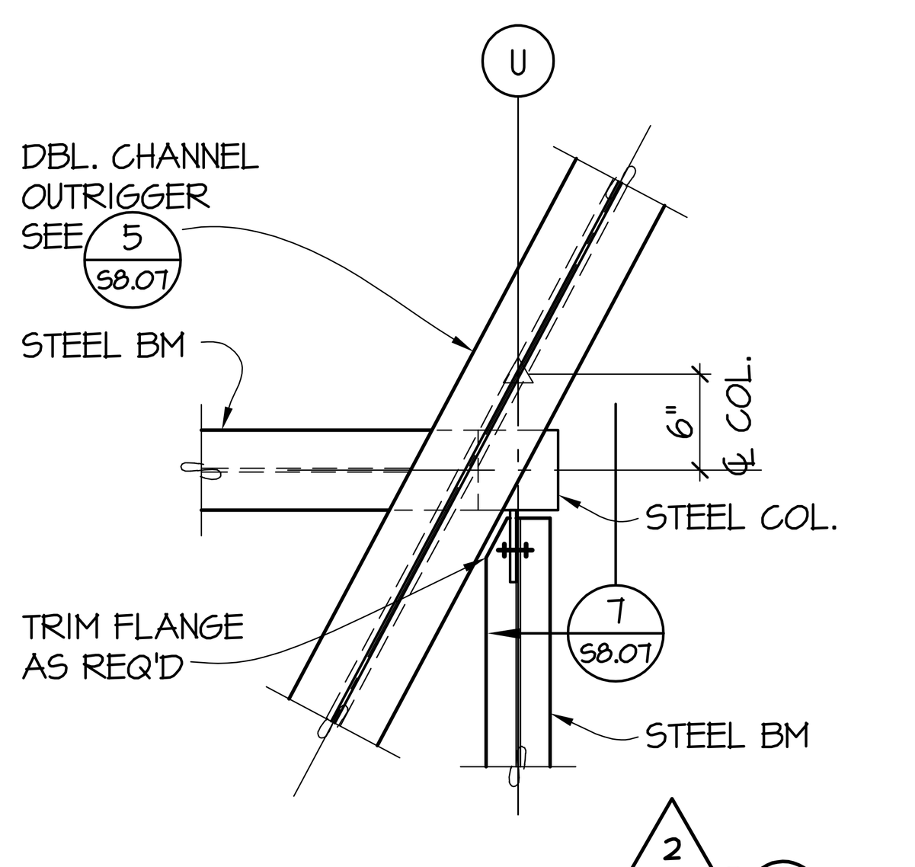

PLAN DETAIL 6 S8.07
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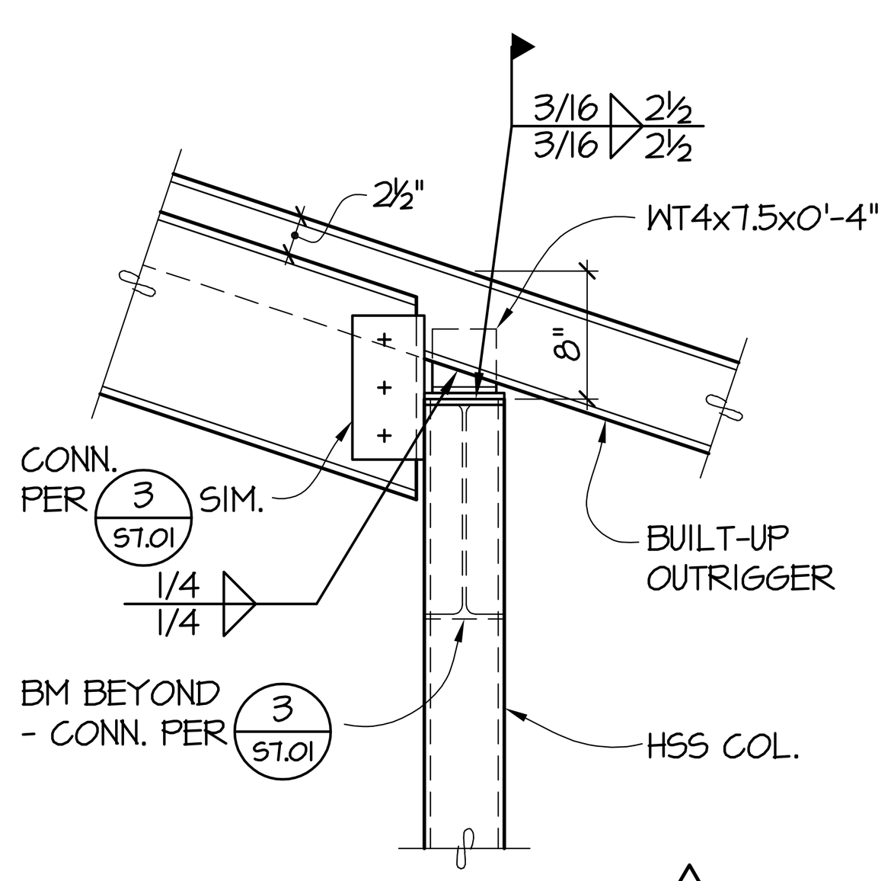

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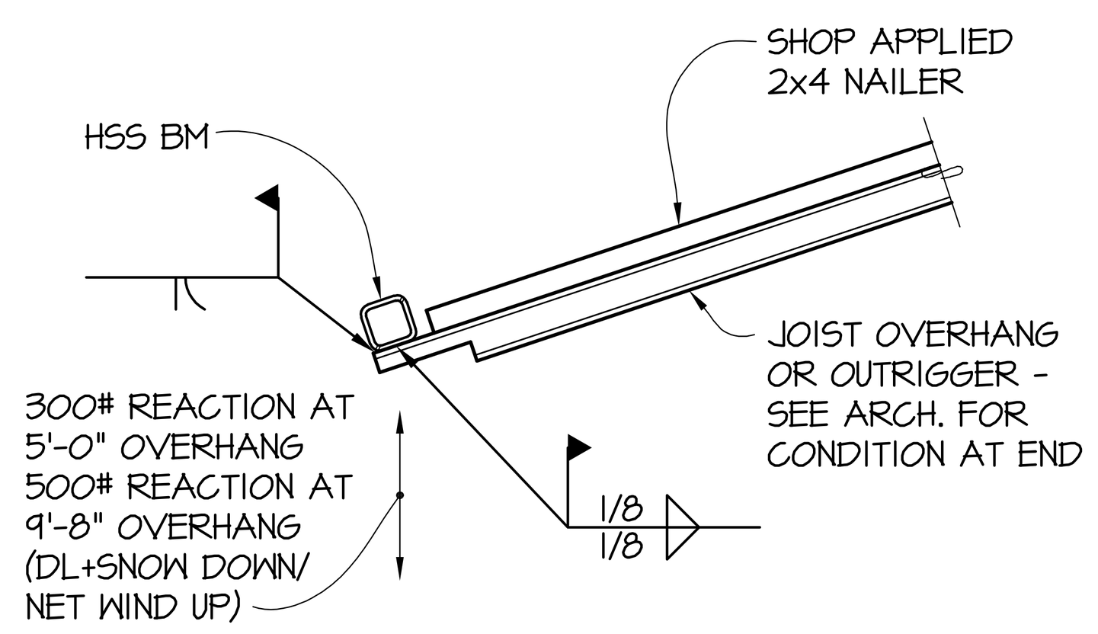

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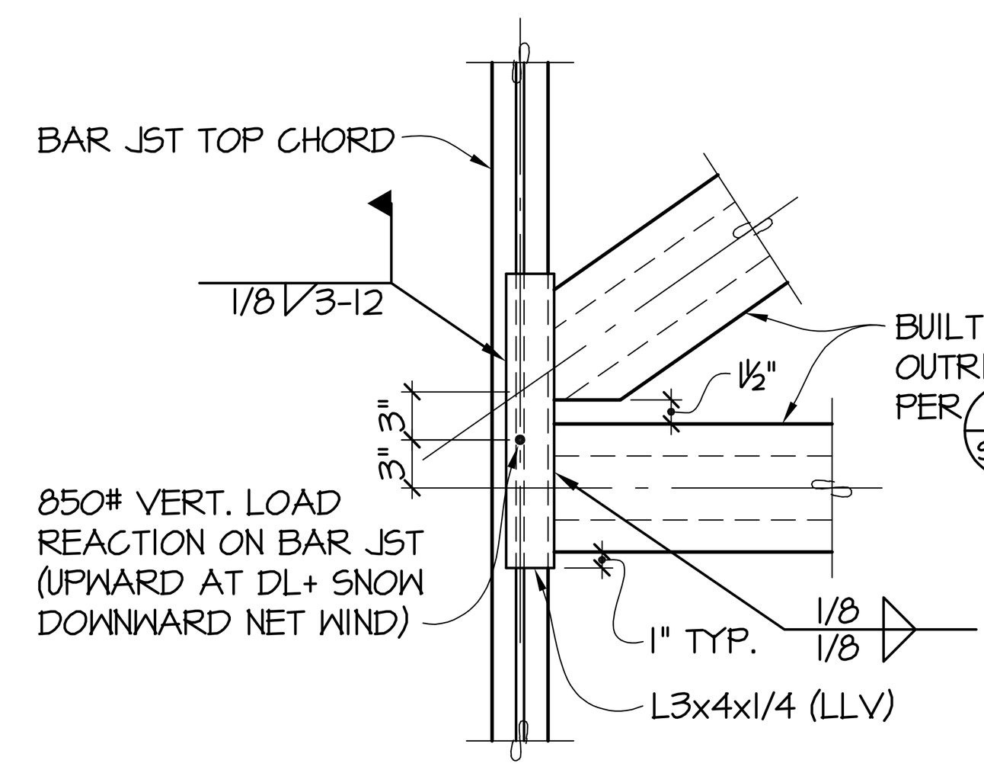

PLAN DETAIL 9 S8.07
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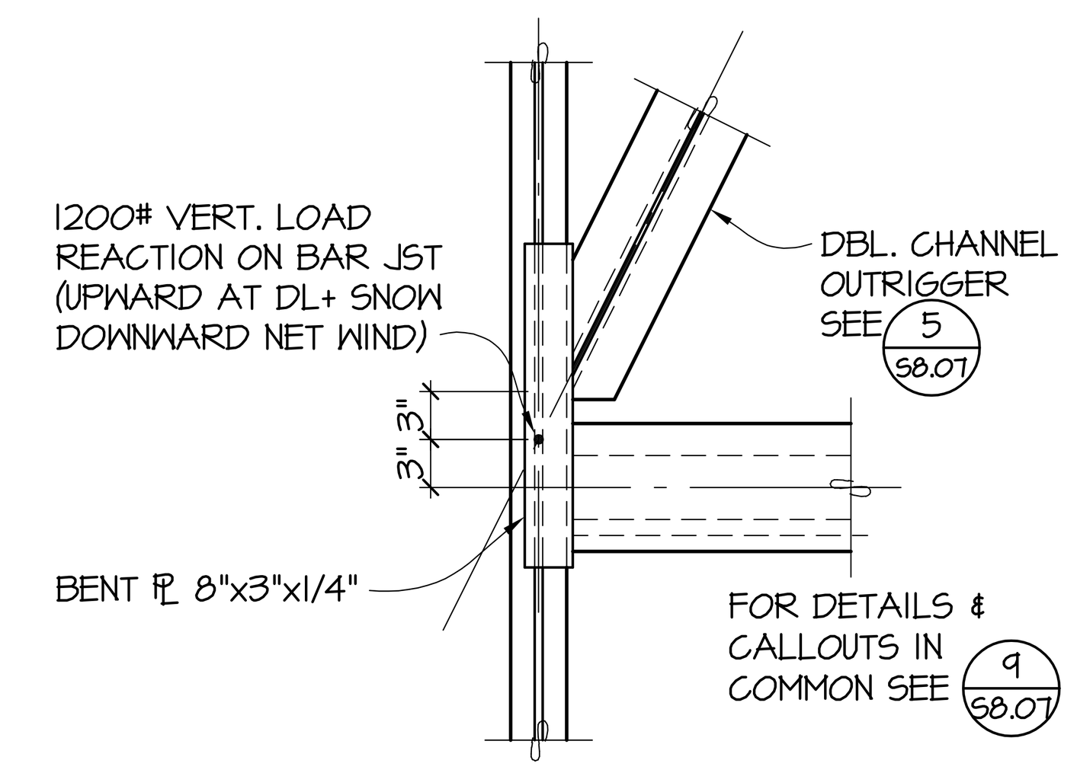

PLAN DETAIL 10 S8.07
NO SCALE

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ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
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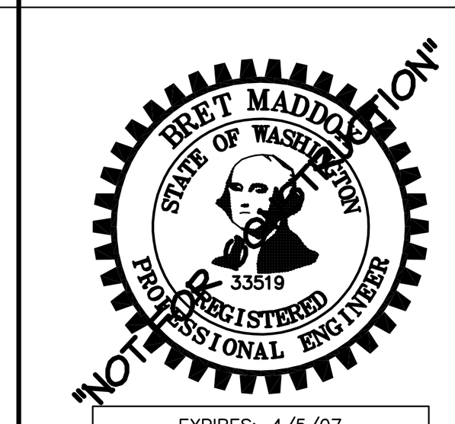
food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS



EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL
PHASE II

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING DETAILS

revision_

issued_
PERMIT 26 MAY 06

drawn_
DM

checked_
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sheet_
S8.07

GENERAL NOTES

THESE GENERAL NOTES ARE TO BE USED AS A SUPPLEMENT TO THE SPECIFICATIONS. ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THE SPECIFICATIONS, THESE GENERAL NOTES AND THE SITE CONDITIONS SHALL BE REPORTED TO THE ARCHITECT, WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK. THE GENERAL CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION. THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE REQUIRED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOB SITE SAFETY; ERECTION MEANS, METHODS, AND SEQUENCES; TEMPORARY SHORING, FORMWORK, AND BRACING; USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES. PROVIDE ADEQUATE RESISTANCE TO LOADS ON THE STRUCTURES DURING CONSTRUCTION PER SEI/ASCE STANDARD NO. 37-02 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION."

CONSTRUCTION OBSERVATION BY THE STRUCTURAL ENGINEER IS FOR GENERAL CONFORMANCE WITH DESIGN ASPECTS ONLY AND IS NOT INTENDED IN ANY WAY TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

STANDARDS

ALL METHODS, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2003 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED AND ADOPTED BY THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION.

CONTRACT DRAWINGS / DIMENSIONS

ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. CONSULTANT DRAWINGS BY OTHER DISCIPLINES ARE SUPPLEMENTARY TO ARCHITECTURAL DRAWINGS. REPORT DIMENSIONAL OMISSIONS OR DISCREPANCIES BETWEEN ARCHITECTURAL DRAWINGS AND STRUCTURAL, MECHANICAL, ELECTRICAL OR CIVIL DRAWINGS TO ARCHITECT PRIOR TO PROCEEDING WITH WORK.

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS. PRIMARY STRUCTURAL ELEMENTS ARE DIMENSIONED ON STRUCTURAL PLANS AND DETAILS AND OVERALL LAYOUT OF STRUCTURAL PORTION OF WORK. SOME SECONDARY ELEMENTS ARE NOT DIMENSIONED SUCH AS, WALL CONFIGURATIONS, INCLUDING EXACT DOOR AND WINDOW LOCATIONS, ALCOVES, SLAB SLOPES AND DEPRESSIONS, CURBS, ETC. VERTICAL DIMENSIONAL CONTROL IS DEFINED BY ARCHITECTURAL WALL SECTIONS AND BUILDING SECTIONS. STRUCTURAL DETAILS SHOW DIMENSIONAL RELATIONSHIPS TO CONTROL DIMENSIONS DEFINED BY ARCHITECTURAL DRAWINGS. DETAILING AND SHOP DRAWING PRODUCTION FOR STRUCTURAL ELEMENTS WILL REQUIRE DIMENSIONAL INFORMATION CONTAINED IN **BOTH** ARCHITECTURAL AND STRUCTURAL DRAWINGS.

DESIGN CRITERIA

VERTICAL LOADS

AREA	DESIGN DEAD LOAD	LIVE LOAD (2)	PARTITION LOAD	CONCENTRATED LOADS
ROOF		25 PSF (1)		
CLASSROOM		50 PSF		
CORRIDORS (1ST FLOOR)		100 PSF		2,000#
ASSEMBLY (MOVEABLE SEATS)		100 PSF		

(1) DRIFT LOAD AND UNBALANCED LOAD PER ASCE 7-02, SECTION 7.7.
(2) LIVE LOADS EXCEPT SNOW LOADS ARE REDUCED PER IBC SECTION 1607.9.

LATERAL FORCES

LATERAL FORCES ARE TRANSMITTED BY DIAPHRAGM ACTION OF ROOF AND FLOORS TO SHEAR WALLS. LOADS ARE THEN TRANSFERRED TO FOUNDATION BY SHEAR WALL ACTION WHERE ULTIMATE DISPLACEMENT IS RESISTED BY PASSIVE PRESSURE OF EARTH AND/OR SLIDING FRICTION. OVERTURNING IS RESISTED BY DEAD LOAD OF THE STRUCTURE.

WIND:

THE BUILDING MEETS THE CRITERIA TO USE THE "METHOD 1 – SIMPLIFIED PROCEDURE" PER ASCE 7-02.

- EXPOSURE CATEGORY = B
- BASIC WIND SPEED, V_{3S} = 85 MPH
- WIND IMPORTANCE FACTOR, I_W = 1.15
- BUILDING CATEGORY PER TABLE 1604.5 = II
- INTERNAL PRESSURE COEFFICIENT (ENCLOSED) = ± 0.18
- COMPONENTS AND CLADDING LOADS

ROOF SURFACES						
EFFECTIVE WIND AREA	POSITIVE PRESSURES (PSF)			NEGATIVE PRESSURES (PSF)		
	ZONE					
	1	2	3	1	2	3
10 SF	10.0	10.0	10.0	–15.0	–25.1	–37.7
20 SF	10.0	10.0	10.0	–14.6	–22.4	–31.3
50 SF	10.0	10.0	10.0	–14.0	–18.9	–22.7
100 SF	10.0	10.0	10.0	–13.7	–16.2	–16.2

WALL SURFACES AND ROOF OVERHANGS						
EFFECTIVE WIND AREA	POSITIVE PRESSURES (PSF)		NEGATIVE PRESSURES (PSF)		ROOF OVERHANGS (PSF)	
	ZONE					
	4	5	4	5	4	5
10 SF	15.0	15.0	–16.2	–20.0	–21.5	–35.5
20 SF	14.3	14.3	–15.5	–18.6	–21.2	–27.8
50 SF	13.3	13.3	–14.6	–16.9	–20.6	–17.7
100 SF	12.8	12.8	–14.0	–15.5	–20.4	–10.2
500 SF	11.2	11.2	–12.4	–12.4	–	–

1. NET WIND PRESSURES AT ROOF SURFACES = VALUE FROM TABLE ABOVE –2/3 DEAD LOAD.
2. ZONES ARE AS DEFINED BY FIGURE 1609.6.2.2 IN THE 2003 IBC.

SEISMIC: $V = C_sW$

WHERE $C_s = \frac{S_{DS}}{(\frac{R}{I_e})}$; WITH

C_s MINIMUM $= 0.044\, S_{DS}\, I_e$

&

C_s MAXIMUM $= \frac{S_{D1}}{(\frac{R}{I_e})T}$

SEISMIC IMPORTANCE FACTOR, I_e = 1.25
SEISMIC USE GROUP PER TABLE 1604.5 FOOTNOTE A = II
SPECTRAL RESPONSE ACCELERATIONS S_s = 1.315 S_1 = 0.498
SITE CLASS PER TABLE 1615.1 = C
SPECTRAL RESPONSE COEFFICIENTS S_{DS} = 0.877 & S_{D1} = 0.427
SEISMIC DESIGN CATEGORY = D
W = DEAD LOAD OF BUILDING
ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE ANALYSIS
RESPONSE MODIFICATION FACTOR PER TABLE 1617.6.2 R = 5.0
C_s = 0.219 (ULTIMATE), 0.157 (SERVICE)

PIPES, DUCTS AND MECHANICAL EQUIPMENT SUPPORTED OR BRACED FROM STRUCTURE: CONFORM TO SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC. PUBLICATION "SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS". SPRINKLER LINE ATTACHMENTS SHALL CONFORM TO NFPA PAMPHLET 13.

FOUNDATION DESIGN CRITERIA ("GEOTECHNICAL INVESTIGATION, NEW COUPEVILLE HIGH SCHOOL" BY MATERIALS TESTING & CONSULTING INC., MARCH 2005).

SOIL BEARING PRESSURE: 2,500 PSF *
ACTIVE PRESSURE – RESTRAINED: 50 PCF (ASSUMED)
ACTIVE PRESSURE – UNRESTRAINED: 40 PCF (ASSUMED)
PASSIVE RESISTANCE: 300 PCF
COEFFICIENT OF FRICTION: .35
*1/3 INCREASE ALLOWED FOR SEISMIC OR WIND LOADING

ALL FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED EARTH OR "STRUCTURAL BACKFILL". NATIVE EARTH BEARING SHALL BE SURFACE COMPACTED. AREAS OVER-EXCAVATED SHALL BE BACKFILLED WITH LEAN CONCRETE (F'c=2000 PSI) OR "STRUCTURAL BACKFILL". AREAS DESIGNATED "STRUCTURAL BACKFILL" SHALL BE FILLED WITH APPROVED WELL-GRADED BANKRUN MATERIAL. MAXIMUM SIZE OF ROCK 4". FROZEN SOIL, ORGANIC MATERIAL AND DELETERIOUS MATTER NOT ALLOWED. COMPACT TO AT LEAST 95% OF ITS MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557. CONTRACTOR SHALL EXERCISE EXTREME CARE DURING EXCAVATION TO AVOID DAMAGE TO BURIED LINES, TANKS, AND OTHER CONCEALED ITEMS. UPON DISCOVERY, DO NOT PROCEED WITH WORK UNTIL RECEIVING WRITTEN INSTRUCTIONS FROM ARCHITECT. A COMPETENT REPRESENTATIVE OF THE OWNER SHALL INSPECT ALL FOOTING EXCAVATIONS FOR SUITABILITY OF BEARING SURFACES PRIOR TO PLACEMENT OF REINFORCING STEEL. PROVIDE DRAINAGE AND DEWATERING AROUND ALL WORK TO AVOID WATER-SOFTENED FOOTINGS. PILE SHALL CONFORM TO THE REQUIREMENTS OF IBC SECTIONS 1808 & 1810.

FREE DRAINING BACKFILL MATERIAL FOR RETAINING & BASEMENT WALLS

A CLEAN, FREE DRAINING, WELL GRADED GRANULAR MATERIAL CONFORMING TO ASTM D2487 GW OR SW WHOSE MAXIMUM PARTICLE SIZE DOES NOT EXCEED 3/4" AND WHOSE FINES CONTENT (MATERIAL PASSING THE NO. 200 SIEVE) DOES NOT EXCEED 5%

$$\text{WITH A MAXIMUM. DUST RATIO} = \frac{\text{\% PASSING U.S. NO. 200 SIEVE}}{\text{\% PASSING U.S. NO. 40 SIEVE}} = 2/3 \text{ MAX.}$$

CONCRETE

MIX DESIGNS: THE CONTRACTOR SHALL DESIGN CONCRETE MIXES THAT, MEET OR EXCEED THE REQUIREMENTS OF THE CONCRETE MIX TABLE. THE MIX DESIGNS SHALL FACILITATE ANTICIPATED PLACEMENT METHODS, WEATHER, REBAR CONGESTION, ARCHITECTURAL FINISHES, CONSTRUCTION SEQUENCING, STRUCTURAL DETAILS, AND ALL OTHER FACTORS REQUIRED TO PROVIDE A STRUCTURALLY SOUND, AESTHETICALLY ACCEPTABLE FINISHED PRODUCT. WATER REDUCING ADMIXTURES WILL LIKELY BE REQUIRED TO MEET THESE REQUIREMENTS. CONCRETE MIX DESIGNS SHALL CLEARLY INDICATE THE TARGET SLUMP. SLUMP TOLERANCE SHALL BE ± 1-1/2 INCHES.

AGGREGATE: COARSE AND FINE AGGREGATE SHALL CONFORM TO ASTM C-33

CEMENT: CEMENT SHALL CONFORM TO ASTM-150, TYPE II PORTLAND CEMENT, UNLESS NOTED OTHERWISE.

ALTERNATE MIX DESIGNS: VARIATIONS TO THE MIX DESIGN PROPORTIONS MAY BE ACCEPTED IF SUBSTANTIATED IN ACCORDANCE WITH ACI-318, CHAPTER 5. PROVIDE SUBMITTALS A MINIMUM OF TWO WEEKS PRIOR TO BID FOR DETERMINATION OF ACCEPTABILITY.

ADMIXTURES: ADMIXTURES SHALL BE BY MASTER BUILDERS, W.R. GRACE, OR PRE-APPROVED EQUAL. ALL MANUFACTURERS RECOMMENDATIONS SHALL BE FOLLOWED.

WATER: SHALL BE CLEAN AND POTABLE.

MAXIMUM CHLORIDE CONTENT: THE MAXIMUM WATER SOLUBLE CHLORIDE CONTENT SHALL NOT EXCEED 0.15% BY WEIGHT OF CEMENTITIOUS MATERIAL UNLESS NOTED OTHERWISE.

CONCRETE EXPOSED TO WEATHER: PROVIDE 5.0% TOTAL AIR CONTENT FOR ALL CONCRETE EXPOSED TO WEATHER. TOTAL AIR CONTENT IS THE SUM OF ENTRAINED AIR PROVIDED BY ADMIXTURES AND NATURALLY OCCURRING ENTRAPPED AIR. AIR CONTENT SHALL BE TESTED PRIOR TO BEING PLACED IN THE PUMP HOPPER OR BUCKET; IT IS NOT REQUIRED TO BE TESTED AT THE DISCHARGE END OF THE PUMP HOSE. THE TOLERANCE ON ENTRAPPED AIR SHALL BE +2.0% AND –1.5% WITH THE AVERAGE OF ALL TESTS NOT LESS THAN THE SPECIFIED AMOUNT.

ITEM	DESIGN f'c (PSI)	MAX. W/C RATIO	MIN. (2) FLYASH (PCY)	MAX. AGGREGATE SIZE (IN)	NOTES	MIN. CEMENTITOUS (1) MATERIAL (SACKS/YARD)
STEM WALLS	4000 @ 28 DAYS	0.45	100	3/4		5-1/2
FOUNDATIONS	3000 @ 28 DAYS	0.50	--	3/4		5
SLAB ON GRADE	4000 @ 28 DAYS	0.45	100	3/4	3	5-1/2
ALL OTHER CONCRETE	4000 @ 28 DAYS	0.50	--	3/4		5-1/2

CONCRETE MIX NOTES:

1. TOTAL CEMENTITOUS MATERIAL IS THE SUM OF ALL CEMENT PLUS FLYASH.

2. AT THE CONTRACTORS OPTION FLYASH MAY BE SUBSTITUTED FOR CEMENT BUT SHALL NOT EXCEED 25% BY WEIGHT OF TOTAL CEMENTITIOUS MATERIAL.

3. FIBROUS CONCRETE REINFORCEMENT SHALL BE "FIBERMESH" MANUFACTURED BY SI CONCRETE SYSTEMS OR PRE-APPROVED EQUAL AND SHALL CONFORM TO ASTM C-1116 TYPE III 4.1.3, PERFORMANCE LEVEL 1, AND SHALL BE 100 PERCENT VIRGIN POLYPROPYLENE, FIBRILLATED FIBERS CONTAINING NO REPROCESSED OLEFIN MATERIALS AND SPECIFICALLY MANUFACTURED FOR USE AS CONCRETE SECONDARY REINFORCEMENT. DOSAGE SHALL FOLLOW MANUFACTURER'S RECOMMENDATION BUT NOT LESS THAN 1.5 LB/CU. YD.

CONCRETE PLACEMENT

PLACE CONCRETE FOLLOWING ALL APPLICABLE ACI RECOMMENDATIONS. CONCRETE SHALL BE PROPERLY CONSOLIDATED PER ACI 309 USING INTERIOR MECHANICAL VIBRATORS, DO NOT OVER-VIBRATE. CONCRETE SHALL BE POURED MONOLITHICALLY BETWEEN CONSTRUCTION OR EXPANSION JOINTS. IF CONCRETE IS PLACED BY THE PUMP METHOD, HORSES SHALL BE PROVIDED TO SUPPORT THE HOSE. WEATHER FORECASTS SHALL BE MONITORED AND ACI RECOMMENDATIONS FOR HOT AND COLD WEATHER CONCRETING SHALL BE FOLLOWED AS REQUIRED. CONCRETE SHALL NOT FREE FALL MORE THAN 5 FEET DURING PLACEMENT WITHOUT WRITTEN APPROVAL OF ENGINEER.

FORMWORK STRIPPING

COLUMNS & WALLS – COLUMNS AND WALLS NOT SUPPORTING FRAMING WEIGHT MAY BE STRIPPED AS SOON AS FORMS CAN BE REMOVED WITHOUT DAMAGING THE CONCRETE AND THE CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 500 PSI.

BEAMS & SLABS – BEAMS AND SLABS MAY BE STRIPPED AND BECOME SELF SUPPORTING AS SOON AS THEIR COMPRESSIVE STRENGTH REACHES 75% OF THE SPECIFIED DESIGN STRENGTH. RESHORING SHALL BE PROVIDED FOR ALL CONSTRUCTION LOADS THEREAFTER PER THE GENERAL CONTRACTOR.

COLD WEATHER PLACEMENT

1. COLD WEATHER IS DEFINED BY ACI 306 AS "A PERIOD WHEN FOR MORE THAN 3 SUCCESSIVE DAYS THE MEAN DAILY TEMPERATURE DROPS BELOW 40° F."
2. NO CONCRETE SHALL BE PLACED ON FROZEN OR PARTIALLY FROZEN GROUND. THAWING THE GROUND WITH HEATERS IS PERMISSIBLE.
3. CONCRETE MIX TEMPERATURES SHALL BE AS SHOWN BELOW. HEATING OF WATER AND/OR AGGREGATES MAY BE REQUIRED TO ATTAIN THESE TEMPERATURES.
4. THE CONCRETE MAY REQUIRE PROTECTION FOR 4-7 DAYS AFTER POURING. IF TEMPERATURES REMAIN BELOW FREEZING, INSULATING BLANKET COVERAGE IS REQUIRED. IF TEMPERATURES ARE SLIGHTLY BELOW FREEZING (30° F MIN.) AT NIGHT AND ABOVE FREEZING DURING THE DAY, KRAFT PAPER WITH COMPLETE COVERAGE MAY BE USED IN LIEU OF INSULATED BLANKETS.
5. NO ADDITIVES CONTAINING CHLORIDES SHALL BE USED. USE "POZZUTEC 20" BY MASTER BUILDERS OR "POLARSET" BY W.R. GRACE OR PRE-APPROVED EQUAL.

CONDITION OF PLACEMENT AND CURING		WALLS & SLABS	FOOTINGS
MIN. TEMP. FRESH CONCRETE AS MIXED FOR WEATHER INDICATED, DEGREES F.	ABOVE 30° F. 0 TO 30° F. BELOW 0° F.	60 65 70	55 60 65
MIN. TEMP. FRESH CONCRETE AS PLACED AND MAINTAINED, DEGREES F.		55	50
MAX. ALLOWABLE GRADUAL DROP IN TEMP. THROUGHOUT FIRST 24 HOURS AFTER END OF PROTECTION, DEGREES F.		50	40

HOT OR WINDY WEATHER PLACEMENT

HOT WEATHER IS DEFINED BY ACI 305 AS "ANY COMBINATION OF HIGH AIR TEMPERATURE, LOW RELATIVE HUMIDITY, AND WIND VELOCITY, TENDING TO IMPAIR THE QUALITY OF FRESH HARDENED CONCRETE." ACI 305 FIGURE 2.1.5 SHALL BE USED BY THE CONTRACTOR TO ESTIMATE THE RATE OF EVAPORATION. WHEN THE ESTIMATED RATE OF EVAPORATION IS GREATER THAN 0.2 PSF/HOUR THE PLACEMENT SHALL BE CONSIDERED A HOT WEATHER PLACEMENT. PRECAUTIONS AGAINST PLASTIC SHRINKAGE CRACKING ARE NECESSARY. PRECAUTIONS TAKEN BY THE CONTRACTOR VARY DEPENDING UPON THE FACTORS ASSOCIATED WITH WATER EVAPORATION AND INCLUDE BUT ARE NOT LIMITED TO:

1. LIMITING CONCRETE TEMPERATURE TO 100°F AT TIME OF PLACEMENT.
2. APPLICATION OF AN EVAPORATION RETARDER.
3. USE OF FOG SPRAY.
4. REDUCTION OF POUR SIZE.
5. PLACING CONCRETE AT NIGHT.

CONTROL AND CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL MEET THE REQUIREMENTS OF ACI 301 SECTIONS 2.2.2.5 AND 5.3.2.6. SPECIAL BONDING METHODS PER SECTION 5.3.2.6 SHALL BE SATISFIED BY ITEM 6 BELOW UNLESS OTHERWISE DETAILED ON THE STRUCTURAL DRAWINGS. WHERE CONSTRUCTION JOINTS ARE NOT SHOWN ON PLAN OR ADDITIONAL CONSTRUCTION JOINTS ARE REQUIRED SUBMIT PROPOSED JOINTING FOR STRUCTURAL ENGINEERS APPROVAL. PROVIDE CONSTRUCTION JOINTS AS INDICATED BELOW UNLESS NOTED OTHERWISE ON THE PLANS:

1. SLABS ON GRADE: PROVIDE CONSTRUCTION AND/OR CONTROL JOINTS AT 16 FEET O.C. MAXIMUM FOR UNEXPOSED SLABS ON GRADE AND 12 FEET O.C. FOR EXPOSED SLABS ON GRADE.

2.. BONDING AGENT: WHERE BONDING AGENT IS SPECIFICALLY CALLED OUT ON THE STRUCTURAL DRAWINGS USE "WELD CRETE" BY LARSON PRODUCTS CORPORATION OR PRE-APPROVED EQUAL. FOLLOW ALL MANUFACTURERS RECOMMENDATIONS.

3. ATTACHMENT OF NEW CONCRETE TO EXISTING: WHERE SHOWN, ROUGHEN CONCRETE TO A MINIMUM AMPLITUDE OF 1/4" USING IMPACT HAMMER. REMOVE ALL LOOSE OR DAMAGED CONCRETE, THOROUGHLY FLUSH ALL SURFACES WITH POTABLE WATER, AIR BLAST WITH OIL FREE COMPRESSED AIR TO REMOVE ALL WATER.

EMBEDDED ITEMS

EMBEDDED CONDUIT IS NOT PERMITTED IN SLAB EXCEPT WHERE SPECIFICALLY SHOWN. WHERE ALLOWED IT SHALL BE PLACED AND REINFORCED PER THE TYPICAL CONCRETE DETAILS. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE. ALL EMBED PLATES SHALL BE SECURELY FASTENED IN PLACE. ALL EMBEDDED STEEL ITEMS EXPOSED TO EARTH OR WEATHER SHALL BE HOT-DIP GALVANIZED UNLESS NOTED OTHERWISE.

GROUT

NON-SHRINK GROUT: MASTER BUILDERS "MASTERFLOW 555" OR PRE-APPROVED EQUAL. GROUT SHALL CONFORM TO CRD-C621 AND ASTM C1107 GRADE B WHEN TESTED AT A FLUID CONSISTENCY PER CRD- C611-85 FOR 30 MINUTES. GROUT MAY BE PLACED FROM A 25 SECOND FLOW TO A STIFF PACKING CONSISTENCY. FILL OR PACK ENTIRE SPACE UNDER PLATES OR SHAPES. NO GROUTING SHALL BE DONE BELOW 40° F. PREPARE THE EXISTING CONCRETE SURFACES TO PREVENT PREMATURE LOSE OF WATER FROM THE GROUT THAT WOULD AFFECT PROPER CURING.

EPOXY GROUT: MASTER BUILDERS "PASTE LPL", OR HILTI "HY-150", OR SIMPSON "S.E.T.", OR COVERT OPERATIONS "CIA-GEL 7000", OR PRE-APPROVED EQUAL. TWO PART LOW SAG EPOXY. GROUT MAY CONTAIN QUARTZ SAND AGGREGATE AS PROPORTIONED BY THE MANUFACTURER. USE EQUIPMENT WHICH WILL ACCURATELY MIX AND DISPENSE THE COMPONENTS. HOLE SHALL BE DRY AND CLEANED WITH WIRE BRUSH AND PRESSURIZED AIR JUST PRIOR TO INSTALLING GROUT. THE REBAR OR ROD SHALL BE CLEAN AND INSTALLED SLOWLY, AND SHALL BE ROTATED AS IT IS PUSHED INTO THE HOLE. COLD WEATHER GROUTING SHALL BE DONE WITH PROPER GROUT FORMULA. FIRST STAGES OF THE GROUTING OPERATION SHALL BE INSPECTED BY AN AGENT AS RECOMMENDED BY THE OWNER.

REINFORCING STEEL

REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60 (GRADE A706 FOR WELDED BARS UNLESS OTHERWISE NOTED, GRADE 40 FOR BEND OUT BARS). DETAIL, FABRICATE AND PLACE PER ACI 315 AND ACI 318. HORIZONTAL BEAM BARS, VERTICAL COLUMN BARS AND VERTICAL SHEAR WALL BARS SHALL MEET THE REQUIREMENTS OF ACI SECTION 21.2.5. REINFORCEMENT SHALL COMPLY WITH ASTM A706 FOR LOW ALLOY STEEL. BILLET STEEL A615 GRADE 60 REINFORCEMENT MAY BE USED IF THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED STRENGTH BY MORE THAN 18,000 PSI AND THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRESS TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.

WELDED WIRE FABRIC REINFORCEMENT. SHALL CONFORM TO ASTM A-82 AND A-185. LAP ONE FULL MESH ON SIDES AND ENDS.

REINFORCING SPLICE AND DEVELOPMENT LENGTH SCHEDULE

BAR SIZE	MINIMUM LAP SPLICE LENGTHS ("Ls") TOP BARS(1)	MINIMUM LAP SPLICE LENGTHS ("Ls") OTHER BARS	MINIMUM DEVELOPMENT LENGTHS ("Ld") TOP BARS(1)	MINIMUM DEVELOPMENT LENGTHS ("Ld") OTHER BARS	MINIMUM EMBEDMENT LENGTH FOR STANDARD END HOOKS ("Ldh")
#3	2'-0"	1'-6"	1'-6"	1'-3"	0'-7"
#4	2'-8"	2'-0"	2'-0"	1'-7"	0'-9"
#5	3'-4"	2-7"	2-7"	2-0"	1'-0"
#6	4'-0"	3'-1"	3'-1"	2'-4"	1'-2"
#7	5'-10"	4'-6"	4'-6"	3'-6"	1'-5"
#8	6'-8"	5'-2"	5'-2"	3'-11"	1'-7"
#9	7'-6"	5'-10"	5'-10"	4'-6"	1'-9"
#10	8'-6"	6'-6"	6'-6"	5'-0"	2'-0"
#11	9'-5"	7'-3"	7'-3"	5'-7"	2'-3"
#14	MECHANICAL SPLICE REQUIRED		8'-8"	6'-8"	2'-8"
#18	MECHANICAL SPLICE REQUIRED		11'-7"	8'-11"	3'-7"

SPLICE TABLE NOTES:

1. "TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12" DEPTH OF CONCRETE CAST BELOW THEM.

REINFORCING STEEL COVER

PROVIDE CONCRETE COVER OVER REINFORCEMENT AS FOLLOWS, UNLESS NOTED OTHERWISE.

CONCRETE CAST AGAINST EARTH ------------ 3"
EXPOSED TO WEATHER OR EARTH ------------ 2"
TIES ON BEAMS AND COLUMNS ------------- 1-1/2"
WALLS AND SLABS NOT EXPOSED TO WEATHER---- 3/4"

MASONRY

MASONRY ASSEMBLIES: SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE REQUIREMENTS OF CHAPTER 21 OF THE IBC, AND SHALL BE TESTED PER SECTION 2105.2 OF THE IBC FOR COMPLIANCE WITH f'm. MINIMUM SPECIFIED COMPRESSIVE STRENGTH, f'm, SHALL BE 1500 PSI FOR CONCRETE MASONRY ASSEMBLIES AND 2700 PSI FOR HOLLOW CLAY MASONRY ASSEMBLIES.

HOLLOW CONCRETE MASONRY UNITS (CMU): SHALL CONFORM TO ASTM C90. MINIMUM FACE SHELL THICKNESS AS DEFINED BY ASTM C90, SECTION 5.3.1. PROVIDE GRADE N, MEDIUM WEIGHT BLOCK WITH MINIMUM SPECIFIED COMPRESSIVE STRENGTH AS NOTED ABOVE. CMU CONSTRUCTION SHALL BE SOLID GROUTED UNLESS NOTED OTHERWISE.

HOLLOW CLAY MASONRY UNITS: SHALL CONFORM TO ASTM C652. BRICK SHALL BE SOLID SHELL HOLLOW BRICK UNITS. MINIMUM FACE SHELL AND WEB THICKNESSES AS DEFINED BY TABLE 1 OF ASTM C652. PROVIDE GRADE SW, TYPE HBS, CLASS H60V BRICK WITH MINIMUM SPECIFIED COMPRESSIVE STRENGTH AS NOTED ABOVE. HOLLOW BRICK CONSTRUCTION SHALL BE SOLID GROUTED UNLESS NOTED OTHERWISE.

MORTAR: SHALL BE TYPE S PER IBC. CONFORM TO ASTM C270. MINIMUM COMPRESSIVE STRENGTH = 1800 PSI.

GROUT: GROUT FOR POURING SHALL BE A FLUID CONSISTENCY. CONFORM TO ASTM C476 AND ACI 530.1. f'g=2500 PSI MINIMUM AT 28 DAYS.

GROUT SHALL BE CONSOLIDATED BY MECHANICAL VIBRATION DURING PLACING BEFORE LOSS OF PLASTICITY IN A MANNER TO FILL THE GROUT SPACE. GROUT POURS GREATER THAN 12 INCHES SHALL BE RECONSOLIDATED BY MECHANICAL VIBRATION 15 TO 20 MINUTES AFTER PLACEMENT TO MINIMIZE VOIDS DUE TO WATER LOSS. GROUT POURS 12 INCHES OR LESS IN HEIGHT SHALL BE MECHANICALLY VIBRATED, OR PUDDLED. COVER AND KEEP DRY ALL MASONRY WORK DURING CONSTRUCTION AND PREVENT MOISTURE ABSORPTION INTO MASONRY UNTIL THE ROOFING IS COMPLETE.

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
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food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

BRET MADDOX
STATE OF WASHINGTON
33519
REGISTERED PROFESSIONAL ENGINEER
"NOT FOR CONSTRUCTION"
EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL
PHASE III

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

GENERAL NOTES

revision_

issued_
FINAL CD 28 JUN 06

drawn_
JMW

checked_
BAM

REQUIREMENTS FOR ALL-WEATHER MASONRY CONSTRUCTION:

COLD WEATHER CONSTRUCTION: WHEN AMBIENT TEMPERATURE IS BELOW 40° F, IMPLEMENT COLD WEATHER PROCEDURES

PREPARATION	CONSTRUCTION	PROTECTION
COMPLY WITH THE FOLLOWING REQUIREMENTS PRIOR TO CONDUCTING MASONRY WORK: A. DO NOT LAY MASONRY UNITS HAVING EITHER A TEMPERATURE BELOW 20°F OR CONTAINING FROZEN MOISTURE, VISIBLE ICE, OR SNOW ON THEIR SURFACE. B. REMOVE VISIBLE ICE AND SNOW FROM THE TOP SURFACE OF EXISTING FOUNDATIONS AND MASONRY TO RECEIVE NEW CONSTRUCTION. HEAT THESE SURFACES ABOVE FREEZING, USING METHODS THAT DO NOT RESULT IN DAMAGE.	THESE REQUIREMENTS APPLY TO WORK IN PROGRESS AND ARE BASED ON AMBIENT TEMPERATURE. DO NOT HEAT WATER OR AGGREGATES USED IN MORTAR OR GROUT ABOVE 140° F (60° C). COMPLY WITH THE FOLLOWING REQUIREMENTS DURING THE FOLLOWING AMBIENT CONDITIONS: A. 40° F TO 32° F : (4.4° TO 3.2° C) HEAT SAND OR MIXING WATER TO PRODUCE MORTAR TEMPERATURE BETWEEN 40°F AND 120°F AT THE TIME OF MIXING. GROUT DOES NOT REQUIRE HEATED MATERIALS, UNLESS THE TEMPERATURE OF THE MATERIALS IS LESS THAT 32° F B. 32° F TO 25° F : (0° TO −3.9° C) HEAT SAND AND MIXING WATER TO PRODUCE MORTAR TEMPERATURE BETWEEN 40° F AND 120° F AT THE TIME OF MIXING. MAINTAIN MORTAR TEMPERATURE ABOVE FREEZING UNTIL USED IN MASONRY. HEAT GROUT AGGREGATES AND MIXING WATER TO PRODUCE GROUT TEMPERATURES BETWEEN 70° F AND 120° F AT THE TIME OF MIXING. MAINTAIN GROUT TEMPERATURE ABOVE 70° F AT THE TIME OF GROUT PLACEMENT. C. 25° F TO 20° F: (−3.9° TO −6.7° C) COMPLY WITH REQUIREMENTS ABOVE AND THE FOLLOWING: HEAT MASONRY SURFACES UNDER CONSTRUCTION TO 40° F (4.4° C) AND USE WIND BREAKS OR ENCLOSURES WHEN THE WIND VELOCITY EXCEEDS 15 MPH (24 KM/H). HEAT MASONRY TO A MINIMUM OF 40° F (4.4° C) PRIOR TO GROUTING. D. 20° F AND BELOW : (−6.7° C) COMPLY WITH REQUIREMENTS ABOVE AND THE FOLLOWING: PROVIDE AN ENCLOSURE AND AUXILIARY HEAT TO MAINTAIN AIR TEMPERATURE ABOVE 32° F (0° C) WITHIN THE ENCLOSURE.	THESE REQUIREMENTS APPLY AFTER MASONRY IS PLACED AND ARE BASED ON ANTICIPATED MINIMUM DAILY TEMPERATURE FOR GROUTED MASONRY AND ANTICIPATED MEAN DAILY TEMPERATURE FOR UNGROUTED MASONRY. PROTECT COMPLETED MASONRY IN THE FOLLOWING MANNER: A. MAINTAIN THE TEMPERATURE OF GLASS UNIT MASONRY ABOVE 40° F (4.4° C) FOR THE FIRST 48 HR AFTER CONSTRUCTION. B. 40° F TO 25° F : (4.4° C TO −3.9° C) PROTECT NEWLY CONSTRUCTED MASONRY BY COVERING WITH A WEATHER−RESISTIVE INSULATING MEMBRANE FOR 24 HR AFTER BEING COMPLETED. C. 25° F TO 20° F : (−3.9° C TO−6.7° C) COVER NEWLY CONSTRUCTED MASONRY COMPLETELY WITH WEATHER−RESISTIVE INSULATING BLANKETS, OR EQUAL PROTECTION, FOR 24 HR AFTER COMPLETION OF WORK. EXTEND TIME PERIOD TO 48 HR FOR GROUTED MASONRY, UNLESS THE ONLY CEMENT IN THE GROUT IS TYPE III PORTLAND CEMENT. D. 20° F AND BELOW : (−6.7° C) MAINTAIN NEWLY CONSTRUCTED MASONRY TEMPERATURE ABOVE 32° F (0° C) FOR AT LEAST 24 HR AFTER BEING COMPLETED BY USING HEATED ENCLOSURES, ELECTRIC HEATING BLANKETS, INFRARED LAMPS, OR OTHER ACCEPTABLE METHODS. EXTEND TIME PERIOD TO 48 HR FOR GROUTED MASONRY, UNLESS THE ONLY CEMENT IN THE GROUT IS TYPE III PORTLAND CEMENT.

HOT WEATHER CONSTRUCTION: IMPLEMENT APPROVED HOT WEATHER PROCEDURES AND COMPLY WITH THE FOLLOWING PROVISIONS

PREPARATION	CONSTRUCTION	PROTECTION
PRIOR TO CONDUCTING MASONRY WORK: A. WHEN THE AMBIENT AIR TEMPERATURE EXCEEDS 100° F (37.8°C), OR EXCEEDS 90° F (32.2° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR): 1. MAINTAIN SAND PILES IN A DAMP, LOOSE CONDITION. 2. PROVIDE NECESSARY CONDITIONS AND EQUIPMENT TO PRODUCE MORTAR HAVING A TEMPERATURE BELOW 120° F (48.9° C). B. WHEN THE AMBIENT TEMPERATURE EXCEEDS 115° F (46.1° C), OR EXCEEDS 105°F (40.6° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR), IMPLEMENT THE REQUIREMENTS ABOVE AND SHADE MATERIALS AND MIXING EQUIPMENT FROM DIRECT SUNLIGHT.	WHILE MASONRY WORK IS IN PROGRESS: A. WHEN THE AMBIENT AIR TEMPERATURE EXCEEDS 100° F (37.8°C), OR EXCEEDS 90° F (32.2° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR): 1. MAINTAIN TEMPERATURE OF MORTAR AND GROUT BELOW 120° F (48.9° C). 2. FLUSH MIXER, MORTAR TRANSPORT CONTAINER, AND MORTAR BOARDS WITH COOL WATER BEFORE THEY COME INTO CONTACT WITH MORTAR INGREDIENTS OR MORTAR. 3. MAINTAIN MORTAR CONSISTENCY BY RETEMPERING WITH COOL WATER. 4. USE MORTAR WITHIN 2 HR OF INITIAL MIXING. B. WHEN THE AMBIENT TEMPERATURE EXCEEDS 115° F (46.1° C), OR EXCEEDS 105° F (40.6° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR), IMPLEMENT THE REQUIREMENTS ABOVE AND USE COOL MIXING WATER FOR MORTAR AND GROUT. ICE IS PERMITTED IN THE MIXING WATER PRIOR TO USE. DO NOT PERMIT ICE IN THE MIXING WATER WHEN ADDED TO THE OTHER MORTAR OR GROUT MATERIALS.	WHEN THE MEAN DAILY TEMPERATURE EXCEEDS 100° F (37.8° C) OR EXCEEDS 90° F (32.2° C) WITH A WIND VELOCITY GREATER THAN 8 MPH (12.9 KM/HR), FOG SPRAY ALL NEWLY CONSTRUCTED MASONRY UNTIL DAMP, AT LEAST THREE TIMES A DAY UNTIL THE MASONRY IS THREE DAYS OLD

METAL REINFORCEMENT (MASONRY): REINFORCING SHALL CONFORM TO ASTM A−615, GRADE 60 (GRADE A706 FOR WELDED BARS UNLESS OTHERWISE NOTED). DETAIL, FABRICATE AND PLACE PER ACI 315 AND ACI 318. SPLICES SHALL BE AS NOTED BELOW.

MINIMUM LAP SPLICE LENGTHS "L_d" FOR TYPICAL CONDITIONS (1)					
BAR SIZE	CORNER BARS	FOUNDATION DOWELS	VERTICAL WALL REINFORCING	HORIZONTAL WALL REINFORCING	LONG. LINTEL REINFORCING
#3	18"	18"	18"	18"	18"
#4	24"	24"	33"	24"	33"
#5	30"	30"	48"	30"	48"
#6	36"	36"	48"	36"	48"
#7	42"	42"	– (2)	– (2)	– (2)
#8	48"	48"	– (2)	– (2)	– (2)

(1) FOR SPECIAL SPLICE CONDITIONS, REFER TO STRUCTURAL DRAWINGS FOR LAP LENGTH REQUIREMENTS.
(2) MECHANICAL COUPLERS ARE REQUIRED

VERTICAL BAR POSITIONERS: VERTICAL REINFORCING SHALL BE SECURED AGAINST DISPLACEMENT PRIOR TO GROUTING BY "D/A 811" VERTICAL BAR POSITIONERS FOR SINGLY REINFORCED CELLS AND "D/A 816" VERTICAL BAR POSITIONERS FOR DOUBLY REINFORCED CELLS BY DUR−O−WALL INC. OR PRE−APPROVED EQUAL.

MASONRY WALL COORDINATION DRAWINGS: THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING MASONRY WALL COORDINATION DRAWINGS FOR ALL CONCRETE UNIT MASONRY WALLS. THE DRAWINGS SHALL CONSIST OF FULL HEIGHT WALL ELEVATIONS DRAWN TO SCALE AT NOT LESS THAN 1/4" = 1'−0". THE WALL ELEVATIONS SHALL INCLUDE DIMENSIONAL SIZES AND LOCATIONS FOR ALL DOOR, WINDOW, AND MECHANICAL OPENINGS AND PENETRATIONS, BEAM AND JOIST BEARING POCKETS, LEDGER ANGLES, EMBEDDED PLATE CONNECTIONS, ANCHOR BOLTS, CONTROL JOINTS, AND SOUND BLOCK LAYOUT. ALL MISCELLANEOUS STEEL TO BE EMBEDDED IN THE UNIT MASONRY WALL SHALL BE REFERENCED BY SHOP DRAWING MARK NUMBER OR STRUCTURAL DETAIL NUMBER.

MASONRY WALL COORDINATION DRAWINGS SHALL BE REVIEWED AND APPROVED BY INTERFACING TRADES AND GENERAL CONTRACTOR PRIOR TO SUBMITTAL TO THE ARCHITECT.

MASONRY WALL REINFORCING DRAWINGS: SHOP DRAWINGS FOR MASONRY REINFORCEMENT SHALL BE AN "OVERLAY" OF THE MASONRY WALL COORDINATION DRAWINGS. DETAIL, FABRICATE AND PLACE PER ACI 315. REINFORCING SHOP DRAWING ELEVATIONS SHALL SHOW ALL VERTICAL AND HORIZONTAL REINFORCING LAYOUTS; SPECIAL REINFORCEMENT AT LINTELS AND JAMBS AT DOORS, WINDOWS, MECHANICAL OPENINGS, AND AS CALLED OUT ON THE STRUCTURAL DRAWINGS.

STRUCTURAL STEEL

DETAILING, FABRICATION AND ERECTION

ALL WORKMANSHIP SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION, THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN, JUNE 1, 1989 INCLUDING SUPPLEMENT NO. 1, DECEMBER 17, 2001 AND THE AISC CODE OF STANDARD PRACTICE, MARCH 2000.

STEEL MEMBERS ARE EQUALLY SPACED BETWEEN DIMENSION POINTS UNLESS NOTED OTHERWISE.

ALL FABRICATION SHALL BE PERFORMED BY A FABRICATOR CERTIFIED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AISC. THE FABRICATOR SHALL BE CERTIFIED AT THE TIME OF BID AND SHALL MAINTAIN THIS CERTIFICATION FOR THE DURATION OF THE PROJECT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES, AND OTHER AIDES, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, WELD EXTENSION TABS, COPES, SURFACE ROUGHNESS VALUES AND TAPERS OF UNEQUAL PARTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH ALL CURRENT OSHA REQUIREMENTS.

HOLES, COPES OR OTHER CUTS OR MODIFICATIONS OF THE STRUCTURAL STEEL MEMBERS SHALL NOT BE MADE IN THE FIELD WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER.

MATERIAL PROPERTIES

WIDE FLANGE SECTIONS: ASTM A992 (F_y = 50 KSI)

OTHER SHAPES AND PLATES: ASTM A36 (F_y = 36 KSI)

STRUCTURAL STEEL PIPES: ASTM A53, GRADE B, TYPE E OR S (F_y =35 KSI).

STEEL STRUCTURAL TUBING: ASTM A500, GRADE B, (F_y =46 KSI).

MACHINE BOLTS (M.B.): ASTM A307, GRADE A

ANCHOR BOLTS (A.B.): ASTM F1554, GRADE 36, CLASS 2A

WELDING

STRUCTURAL STEEL: WELD IN ACCORDANCE WITH "STRUCTURAL WELDING CODE" AWS D−1.1.

REINFORCING STEEL: WELD IN ACCORDANCE WITH "REINFORCING STEEL WELDING CODE" AWS D−1.4. WELD ONLY WITH SPECIFIC APPROVAL OF THE STRUCTURAL ENGINEER. IN NO CASE SHALL A WELD BE MADE WITHIN 6 BAR DIAMETERS OF A "COLD BEND".

CERTIFICATION: ALL WELDING SHALL BE PERFORMED BY WABO/AWS CERTIFIED WELDERS. WELDERS SHALL BE PREQUALIFIED FOR EACH POSITION AND WELD TYPE WHICH THE WELDER WILL BE PERFORMING.

WELD TABS (ALSO KNOWN AS WELD "EXTENSION" TABS OR "RUN OFF" TABS) SHALL BE USED. AFTER THE WELD HAS BEEN COMPLETED THE WELD TABS SHALL BE REMOVED AND THE WELD END GROUND TO A SMOOTH CONTOUR. WELD "DAMS" OR "END DAMS" SHALL NOT BE USED.

THE PROCESS CONSUMABLES FOR ALL WELD FILLER METAL INCLUDING TACK WELDS, ROOT PASS AND SUBSEQUENT PASSES DEPOSITED IN A JOINT SHALL BE COMPATIBLE.

ALL WELD FILLER METAL AND WELD PROCESS SHALL PROVIDE THE TENSILE STRENGTH CHARPY V−NOTCH RATINGS AS FOLLOWS:

GRAVITY FRAME

WELD TYPE	FILLER METAL TENSILE STRENGTH	CHARPY V−NOTCH (CVN) RATING
FILLET	70 KSI	-----
PARTIAL PENETRATION	70 KSI	-----
COMPLETE PENETRATION	70 KSI	20 FT−LBS @ −20 DEG F

WELDED CONNECTIONS INSPECTION:

1. ALL WELDING SHALL BE CHECKED BY VISUAL MEANS AND BY OTHER METHODS DEEMED NECESSARY BY THE WELDING INSPECTOR.

ALL WELDS FOUND TO BE DEFECTIVE SHALL BE REPAIRED AND REINSPECTED BY THE SAME METHODS ORIGINALLY USED, AND THIS REPAIR AND REINSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.

GENERAL REQUIREMENTS

BOLTED CONNECTIONS INSPECTION: CONNECTIONS MADE WITH BEARING TYPE BOLTS SHALL BE INSPECTED PER SECTION 9.1 OF RCSC SPECIFICATION.

EPOXY GROUTED ANCHORS: "ALL−THREAD" − ASTM A36 (FY = 36 KSI)

EXPANSION ANCHORS: "KWIKBOLT II" BY HILTI, INC., OR "POWER−BOLT" BY POWERS/RAWL FASTENING, INC., OR PRE−APPROVED EQUAL. EMBED BOLT INTO CONCRETE OR MASONRY 8 BOLT DIAMETERS MINIMUM, UNLESS NOTED OTHERWISE. INSTALL ANCHOR PER MANUFACTURER'S PUBLISHED RECOMMENDATIONS.

POWDER ACTUATED FASTENERS: SHALL BE AS MANUFACTURED BY HILTI, INC., OR PRE−APPROVED EQUAL. INSTALL PER MANUFACTURERS PUBLISHED INSTALLATION INSTRUCTIONS. SEE PLANS AND DETAILS FOR CALLOUTS.

HEADED STUDS: SHALL BE "S3L SHEAR CONNECTORS" AS MANUFACTURED BY NELSON STUD WELDING, INC. OR PRE−APPROVED EQUAL AND SHALL CONFORM TO AWS D1.1. ALL HEADED STUDS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS USING A NELSON WELD GUN, UNLESS NOTED OTHERWISE ON DETAILS. ALL WELDS SHALL BE MADE AND INSPECTED IN ACCORDANCE WITH AWS D1.1.

FINISH: STRUCTURAL STEEL SHALL BE UNPAINTED, UNLESS NOTED OTHERWISE, AND SHALL BE CLEAN OF LOOSE RUST, LOOSE MILL SCALE, OIL, GREASE AND OTHER FOREIGN SUBSTANCES AND SHALL MEET THE REQUIREMENTS OF SSPC−SP1. WHERE STRUCTURAL STEEL IS NOTED TO BE PAINTED, ALL AREAS COMPROMISING THE FAYING SURFACES OF BOLTED CONNECTIONS MADE WITH SLIP−CRITICAL TYPE BOLTS (A325SC OR A490SC) SHALL COMPLY WITH THE REQUIREMENTS OF THE RCSC SPECIFICATION. WHERE STRUCTURAL STEEL IS NOTED TO BE GALVANIZED, IT SHALL BE HOT−DIP GALVANIZED IN ACCORDANCE WITH ASTM A123, A384, AND A385. ALL SURFACES WITHIN TWO INCHES OF ANY FIELD WELD LOCATION SHALL BE FREE OF MATERIALS THAT WOULD PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES. FIELD TOUCH−UP OF PRIMED, PAINTED, AND GALVANIZED SURFACES SHALL BE PERFORMED TO REPAIR COATING ABRASIONS, AS WELL AS TO PROTECT ALL AREAS AT CONNECTIONS.

METAL JOISTS: SHALL BE MANUFACTURED BY CANAM STEEL CORPORATION, VULCRAFT A DIVISION OF NUCOR CORPORATION OR PRE−APPROVED EQUAL, AND SHALL CONFORM TO THE STEEL JOIST INSTITUTE (SJI) AND AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) STANDARDS AND SHALL BE DESIGNED TO CARRY THE LOADS LISTED IN THE DESIGN CRITERION AND THOSE INDICATED ON THE FRAMING PLANS. JOIST MANUFACTURER SHALL VERIFY AND INCLUDE FIRE RATING STRESS REDUCTIONS AND SIZE LIMITATIONS IN ORDER TO CONFORM TO THE ASSEMBLY REQUIREMENTS AS SHOWN ON THE ARCHITECTURAL DRAWINGS. THE MATERIAL STRESS INCREASE (1.33) SHALL NOT BE ALLOWED FOR THE DESIGN OF THE JOISTS UNLESS THE ALTERNATE LOAD COMBINATIONS PER IBC SECTION 1605.3.2 ARE USED. PROVIDE BRACING TO RESIST WIND UPLIFT PRESSURES AS DEFINED IN THE DESIGN CRITERIA OF THESE GENERAL NOTES. FOR OTHER SPECIAL REQUIREMENTS, SEE STRUCTURAL DRAWINGS. JOISTS SHALL BE DESIGNED AND DETAILED TO MEET ALL CURRENT OSHA STANDARDS. THE GENERAL CONTRACTOR SHALL COORDINATE ALL OSHA REQUIREMENTS BETWEEN THE STEEL DETAILER AND JOIST MANUFACTURER. SEE ADDITIONAL INFORMATION IN THE STRUCTURAL STEEL "DETAILING, FABRICATION, AND ERECTION" SECTION.

THE ENGINEER OF RECORD FOR THE METAL JOIST DESIGN SHALL HAVE A MINIMUM OF (5) YEARS EXPERIENCE IN THE DESIGN OF METAL JOISTS OF SIMILAR SIZE PROJECTS AND BE LICENSED AS A PROFESSIONAL ENGINEER IN THE STATE OF WASHINGTON. THE ENGINEER OF RECORD FOR THE JOIST DESIGN SHALL SUBMIT A STAMPED LETTER OF COMPLIANCE INDICATING YEARS OF EXPERIENCE. THE LETTER SHALL ALSO STATE THAT THEY HAVE REVIEWED THE JOIST PLACEMENT DRAWINGS AND BILLS OF MATERIAL FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, ALONG WITH VERIFICATION THAT THE JOISTS CONFORM TO THE DESIGN CRITERIA AND ADDITIONAL LOADING REQUIREMENTS LISTED IN THE CONTRACT DOCUMENTS (INCLUDING BUT NOT LIMITED TO SNOW DRIFT, WIND UPLIFT, JOIST AXIAL LOADS AND MECHANICAL UNIT LOADING).

METAL ROOF DECK: SHALL CONTAIN THE MINIMUM PROPERTIES SHOWN ON THE STRUCTURAL DRAWINGS AND SHALL BE MANUFACTURED BY VERCO MANUFACTURING CO., ASC STEEL DECK, EPIC METALS, OR PRE−APPROVED EQUAL. THE ROOF DECK SHALL BE FORMED FROM STEEL SHEETS CONFORMING TO ASTM A−611 OR A−653, AND SHALL BE GALVANIZED PER ASTM A−924. THE ROOF DECK SHALL BE PLACED ON THE SUPPORTING FRAMEWORK WITH A MINIMUM END LAP OF TWO INCHES. SUBMIT SHOP DRAWINGS SHOWING LAYOUT AND FASTENING PATTERN. ALL ACCESSORIES SHALL BE PROVIDED TO COMPLETE THE ERECTION OF THE STEEL DECK.

COLD−FORMED STEEL FRAMING CONSTRUCTION: THE DESIGN, INSTALLATION AND CONSTRUCTION OF COLD−FORMED CARBON OR LOW−ALLOY STEEL, STRUCTURAL AND NONSTRUCTURAL STEEL FRAMING, SHALL BE IN ACCORDANCE WITH THE STANDARD FOR COLD−FORMED STEEL FRAMING, GENERAL PROVISIONS, AMERICAN IRON AND STEEL INSTITUTE (AISI−GENERAL) AND AISI−NASPEC.

ALL 54 MIL AND HEAVIER GALVANIZED MEMBERS SHALL BE FORMED FROM STEEL THAT MEETS THE REQUIREMENTS OF ASTM A−653, QUALITY SQ, GRADE 50, CLASS 1, FY=50 KSI. ALL 43 MIL AND LIGHTER GALVANIZED MEMBERS SHALL BE FORMED FROM STEEL THAT MEETS THE REQUIREMENTS OF ASTM A−653, QUALITY SQ, GRADE 33, FY=33 KSI. BRIDGING PER MANUFACTURER'S REQUIREMENTS AND AS SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE IN PLACE PRIOR TO PLACING OF ANY CONSTRUCTION LOADS. ALL RUNS SHALL BE RIGIDLY ANCHORED TO END WALLS.

INTERIOR NON−BEARING WALL COLD−FORMED STEEL FRAMING: COLD−FORMED STEEL FRAMING MEMBERS SHALL MEET THE TYPE, SIZE AND THICKNESS AS INDICATED ON THE STRUCTURAL PLANS AND SPECIFICATIONS, AND SHALL BE MANUFACTURED BY A MEMBER OF THE STEEL STUD MANUFACTURER'S ASSOCIATION (SSMA), OR PRE−APPROVED EQUAL, IN ACCORDANCE WITH SSMA ICC ER−4943P.

SLIP CONNECTIONS: THE STEEL NETWORK "VERTICLIP" OR PRE−APPROVED EQUAL.

AT THE CONTRACTOR'S OPTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, DETAILING, FABRICATION AND ERECTION OF THE INTERIOR PARTITION AND NON−BEARING COLD−FORMED STEEL FRAMING AND THE CONNECTION TO THE COLD−FORMED STEEL FRAMING TO THE STRUCTURE. THE DESIGN AND DETAILING OF THE COLD−FORMED STEEL FRAMING. AND CONNECTION TO THE STRUCTURE SHALL BE PREPARED UNDER THE DIRECTION OF, AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF WASHINGTON AND SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO CONSTRUCTION.

PRE−APPROVED SUBSTITUTIONS

SUBSTITUTIONS MAY BE ALLOWED ONLY IF THEY MEET THE REQUIREMENTS OF THESE GENERAL NOTES AND THE SPECIFICATIONS, AND IF COMPLETE WRITTEN ENGINEERING DATA FOR EACH CONDITION REQUIRED FOR THIS PROJECT IS PROVIDED TO THE STRUCTURAL ENGINEER TWO WEEKS PRIOR TO BID DATE AND APPROVED IN WRITTEN ADDENDA BY THE ARCHITECT. DATA IS TO INDICATE CODE BASIS BY YEAR, AUTHORITY FOR STRESSES AND STRESS INCREASES, IF ANY, AND AMOUNT OF EXPECTED DEFLECTION FOR FLEXURAL MEMBERS UNDER (1) TOTAL LOAD AND (2) LIVE LOAD ONLY. ALL INCREASED COSTS IN MECHANICAL, SPRINKLER, ELECTRICAL OR GENERAL INSTALLATION AND ANY ARCHITECTURAL OR STRUCTURAL REDESIGN RESULTING FROM SUBSTITUTION SHALL BE BORNE BY THE GENERAL CONTRACTOR.

SHOP DRAWINGS

THE FOLLOWING SHOP DRAWINGS/SUBMITTALS SHALL BE PROVIDED FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION OR DELIVERY.

		STRUCTURAL ENGR.	BLDG. DEPT.
1.	CONCRETE MIX DESIGNS	X	X
2.	REINFORCING STEEL SHOP DRAWINGS	X	
3.	MASONRY WALL ELEVATIONS	X	X
4.	STRUCTURAL STEEL	X	X
5.	METAL JOISTS	X	X
6.	METAL DECK	X	X
7.	LIGHT−GAUGE METAL FRAMING	X	X
8.	MISCELLANEOUS STEEL	X	X

SPECIAL INSPECTION: SPECIAL INSPECTION SHALL BE PROVIDED BY AN INDEPENDENT TESTING LABORATORY PER THE REQUIREMENTS OF IBC CHAPTER 17 AND THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION AND THE CONTRACT DOCUMENTS. THE SPECIAL INSPECTOR SHALL SUBMIT INSPECTION REPORTS AND A FINAL SIGNED REPORT TO THE BUILDING OFFICIAL FOR THE ITEMS LISTED IN THE QUALITY ASSURANCE/SPECIAL INSPECTION SECTION:

ABBREVIATION LIST			
ADD'L	ADDITIONAL	HORIZ.	HORIZONTAL
A.B.	ANCHOR BOLT	HSS	HOLLOW STRUCTURAL SECTION
A.F.F.	ABOVE FINISH FLOOR	INT.	INTERIOR
ALT.	ALTERNATE	JT	JOINT
ARCH.	ARCHITECTURAL	JST	JOIST
@	AT	L	ANGLE
BM	BEAM	LGR	LEDGER
BRG	BEARING	L.L.	LIVE LOAD
BTWN	BETWEEN	LOC.	LOCATION
BLK'G	BLOCKING	LSL	TIMBERSTRAND
BOT.	BOTTOM	LVL	MICROLAM
B.O.F.	BOTTOM OF FOOTING	MAX.	MAXIMUM
BLD'G	BUILDING	M.B.	MACHINE BOLT
B.U.	BUILT UP	MFR	MANUFACTURER
(C=)	CAMBER	MECH.	MECHANICAL
C.I.P.	CAST IN PLACE	MEZZ.	MEZZANINE
C.J.	CONTROL/CONSTRUCTION JOINT	MIN.	MINIMUM
C.P.	COMPLETE PENETRATION	MISC.	MISCELLANEOUS
℄	CENTERLINE	NOM.	NOMINAL
CLR	CLEAR	N.S.	NEAR SIDE
COL.	COLUMN	NTS	NOT TO SCALE
CONC.	CONCRETE	O.C.	ON CENTER
CONFIG.	CONFIGURATION	OPN'G	OPENING
CMU	CONCRETE MASONRY UNIT	OPP.	OPPOSITE
CONN.	CONNECTION	OSB	ORIENTED STRAND BOARD
CONST.	CONSTRUCTION	⅊	PLATE
CONT.	CONTINUOUS	PAF	POWDER ACTUATED FASTENER
CONTR.	CONTRACTOR	PERP.	PERPENDICULAR
COORD.	COORDINATE	P.L.F.	POUNDS PER LINEAL FOOT
CTR'D	CENTERED	P.P.	PARTIAL PENETRATION
CU.	CUBIC	P.S.F.	POUNDS PER SQUARE FOOT
D.L.	DEAD LOAD	PSL	PARALLAM
DIA. OR Φ	DIAMETER	PW.	PLYWOOD
DO	DITTO	REINF.	REINFORCING
DBL.	DOUBLE	REQ'D	REQUIRED
D.F.	DOUGLAS FIR	R.O.	ROUGH OPENING
DWG	DRAWING	SHT'G	SHEATHING
DWL	DOWEL	SHT	SHEET
EA.	EACH	SIM.	SIMILAR
EL.	ELEVATION	S.O.G.	SLAB ON GRADE
ENGR.	ENGINEER	SQ.	SQUARE
EQ.	EQUAL	STD	STANDARD
EXIST. OR (E)	EXISTING	STL	STEEL
EXT.	EXTERIOR	STIFF.	STIFFENER
EXP.	EXPANSION	STRUCT.	STRUCTURAL
FTG	FOOTING	T&G	TONGUE AND GROOVE
FDN	FOUNDATION	T.O.F.	TOP OF FOOTING
FLG	FLANGE	T.O.S.	TOP OF STEEL
FLR	FLOOR	TRT'D	TREATED
F.S.	FAR SIDE	TYP.	TYPICAL
FRM'G	FRAMING	U.N.O.	UNLESS NOTED OTHERWISE
GALV.	GALVANIZED	U.T.	ULTRASONIC TESTED
GA.	GAGE	VERT.	VERTICAL
GL.	GLULAM	W.P.	WORK POINT
GR.	GRADE	WT	WEIGHT
GWB	GYPSUM WALL BOARD	W.W.F.	WELDED WIRE FABRIC
HGR	HANGER	W/	WITH
HDR	HEADER	YD	YARD
HT	HEIGHT		

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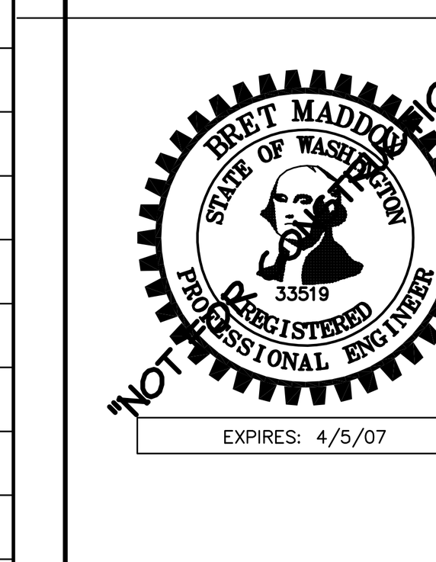

project_
COUPEVILLE HIGH SCHOOL PHASE III

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COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

GENERAL NOTES

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ORIGINAL SHEET IS 30" x 42".

QUALITY ASSURANCE/SPECIAL INSPECTION:

QUALITY ASSURANCE PLAN: QUALITY ASSURANCE SHALL BE PROVIDED PER THE REQUIREMENTS OF IBC SECTION 1705.2 AND AS NOTED HEREIN.

STRUCTURAL SYSTEM	VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	COMMENTS	REFERENCES
SOILS	PRIOR TO PLACEMENT OF PREPARED FILL, THE SPECIAL INSPECTOR SHALL DETERMINE THAT THE SITE HAS BEEN PREPARED IN ACCORDANCE WITH THE APPROVED SOILS REPORT.		X	SOIL SPECIAL INSPECTION IS NOT REQUIRED WHERE FILL PLACEMENT IS LESS THAN 12 IN.	IBC 1704.7
	DURING FILL PLACEMENT AND COMPACTION OF FILL MATERIAL	X			
	EVALUATION OF IN-PLACE DENSITY OF COMPACTED FILL		X		
STEEL CONSTRUCTION	STRUCTURAL STEEL WELDING 1. COMPLETE AND PARTIAL PENETRATION WELDS 2. MULTI-PASS FILLET WELDS 3. SINGLE-PASS FILLET WELDS >5/16" 4. SINGLE-PASS FILLET WELDS <5/16" 5. FLOOR AND ROOF METAL DECKING 6. FIELD-INSTALLED WELDED STUDS 7. WELDING OF STAIRS AND RAILING SYSTEMS	X X X	 X X X X	SPECIAL INSPECTIONS IN THIS SECTION ARE WAIVED WHERE FABRICATION IS PERFORMED ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED IN ACCORDANCE WITH IBC SECTION 1704.2	AWS D1.1 IBC 1704.3.1 AWS D1.3
	REINFORCING STEEL WELDING 1. VERIFICATION OF WELDABILITY 2. SHEAR REINFORCEMENT 3. OTHER REINFORCEMENT 4. REINFORCEMENT IN MOMENT FRAMES, SHEAR WALL BOUNDARY ELEMENTS	 X X	X X 		AWS D1.4 ACI 318:3.5.2 IBC 1903.5.2
	MATERIAL VERIFICATION OF STRUCTURAL STEEL 1. IDENTIFICATION MARKINGS CONFORM TO ASTM STANDARDS LISTED IN GENERAL NOTES 2. MANUFACTURER'S CERTIFIED MILL TEST REPORTS		X X	MANUFACTURER TO PROVIDE CERTIFIED MILL TEST REPORTS	IBC 1708.4 ASTM A6 OR A568
	MATERIAL VERIFICATION OF WELD FILLER MATERIALS. 1. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATIONS LISTED IN GENERAL NOTES 2. MANUFACTURE'S CERTIFICATE OF COMPLIANCE		X X	MANUFACTURER TO PROVIDE CERTIFICATE OF COMPLIANCE	AISC, ASD, SECTION A3.6 AISC LRFD, SECTION A3.5
CONCRETE	REINFORCING STEEL AND PLACEMENT		X	SPECIAL INSPECTIONS NOT REQUIRED FOR THE FOLLOWING CONDITIONS: NON-STRUCTURAL SLAB ON GRADE CONCRETE FOUNDATION WALLS ISOLATED SPREAD FOOTINGS FOR BUILDINGS THREE-STORIES AND LESS CONTINUOUS FOOTINGS SUPPORTING WALLS OF THREE-STORIES AND LESS WHERE WALLS ARE LIGHT-FRAME CONSTRUCTION AND F'C=2500 PSI	ACI 318:3-5,7.1-7.7 IBC 1903.5, 1907.1, 1907.7, 1914.4
	BOLTS TO BE INSTALLED IN CONCRETE-PRIOR TO AND DURING PLACEMENT OF CONCRETE	X			IBC 1912.5
	VERIFY USE OF REQUIRED DESIGN MIX		X		ACI 318, CH4,5.2-5.4 IBC 1904,1905.2-1905.4 1914.2, 1914.3
	SAMPLING OF FRESH CONCRETE, SLUMP TEST, AIR CONTENT, TEMPERATURE OF CONCRETE AT TIME OF MAKING SPECIMENS	X			ASTM C172, C31 ACI 318:5.6, 5.8 IBC 1905.6, 1914.10
	CONCRETE PLACEMENT FOR PROPER APPLICATION	X			ACI 318:5.9, 5.10 IBC 1905.9, 1905.10 1914.6, 1914.7, 1914.8
	INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X		ACI 318:5.11-5.13 IBC 1905.11, 1905.13 1914.9
	MATERIAL VERIFICATION OF REINFORCEMENT STEEL			MANUFACTURER SHALL PROVIDE MILL TEST REPORTS	IBC 1708.3
	ANCHORS TO BE INSTALLED IN HARDENED CONCRETE	X			IBC 1912.5
MASONRY	AT BEGINNING OF CONSTRUCTION THE FOLLOWING SHALL BE VERIFIED: 1. PROPORTIONS OF SITE-PREPARED MORTAR. 2. CONSTRUCTION OF MORTAR JOINTS 3. LOCATION OF REINFORCEMENT AND CONNECTORS		 X X X		ACI 530.1 ARTS 2.6A, 3.3B, 3A
	INSPECTION PROGRAM SHALL VERIFY THE FOLLOWING: 1. SIZE AND LOCATION OF STRUCTURAL ELEMENTS 2. TYPE, SIZE AND LOCATION OF ANCHORS IN MASONRY 3. SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT 4. WELDING OF REINFORCING BARS 5. PROTECTION OF MASONRY DURING COLD WEATHER OR HOT WEATHER	 X 	 X X X X		IBC SEC. 2108.9.2.11 ITEM 2, SEC. 2104.3, SEC. 2104.4 ACI 530 ACI 530.1 ARTS 3.3G, 2.4, 3.4, 1.8
	PRIOR TO GROUTING THE FOLLOWING SHALL BE VERIFIED: 1. GROUT SPACE IS CLEAN 2. PLACEMENT OF REINFORCEMENT AND CONNECTORS 3. PROPORTIONS OF SITE-PREPARED GROUT 4. CONSTRUCTION OF MORTAR JOINTS		 X X X X		ACI 530, SEC. 1.12 ACI 530.1 ARTS 3.2D, 3.4, 2.6B, 3.3B
	GROUT PLACEMENT	X			ACI 530.1, ART 3.5
	PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS	X			ACI 530.1, ART 1.4
	COMPLIANCE WITH INSPECTION PROVISIONS OF CONSTRUCTION DOCUMENTS		X		ACI 530.1, ART 1.5
COLD-FORMED STEEL FRAMING	SCREW ATTACHMENT, BOLTING, ANCHORING AND FASTENING OF DRAG STRUTS, BRACES AND HOLD-DOWNS THAT ARE PART OF SEISMIC RESISTING SYSTEM		X		IBC 1707.4
SUSPENDED CEILINGS	ANCHORAGE AND SEISMIC BRACING		X		IBC 1621, 1705.1 ASCE 9.6.2.6

TESTING AND SPECIAL INSPECTION REPORTS SHALL BE PREPARED FOR EACH INSPECTION ITEM ON A DAILY BASIS WHENEVER WORK IS PERFORMED ON THAT ITEM. REPORTS SHALL BE DISTRIBUTED TO OWNER, CONTRACTOR, BUILDING OFFICIAL, ARCHITECT AND STRUCTURAL ENGINEER.

STRUCTURAL OBSERVATIONS SHALL BE PERFORMED BY THE STRUCTURAL ENGINEER OF RECORD OR DESIGNATED REPRESENTATIVE IN ACCORDANCE WITH IBC 1709. STRUCTURAL OBSERVATION SHALL BE PERFORMED AS FOLLOWS:

- PERIODIC VISUAL OBSERVATION OF STRUCTURAL SYSTEMS FOR GENERAL CONFORMANCE TO CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES.
- REVIEW OF TESTING AND INSPECTION REPORTS.
- REPORTS SHALL BE PREPARED FOR EACH SITE VISIT AND SHALL BE DISTRIBUTED TO ARCHITECT.

GENERAL CONTRACTOR SHALL SUBMIT A WRITTEN CONTRACTOR'S STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL INCLUDE THE FOLLOWING:

- ACKNOWLEDGMENT OF AWARENESS OF REQUIREMENTS OF QUALITY ASSURANCE PLAN.
- ACKNOWLEDGMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.
- PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION AND THE METHOD AND FREQUENCY OF REPORTING AND DISTRIBUTION.
- IDENTIFICATION OF PERSONS EXERCISING SUCH CONTROL AND THEIR POSITIONS IN THE ORGANIZATION.

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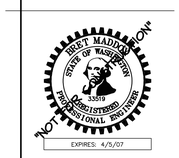
acoustical design-
SSA ACOUSTICS



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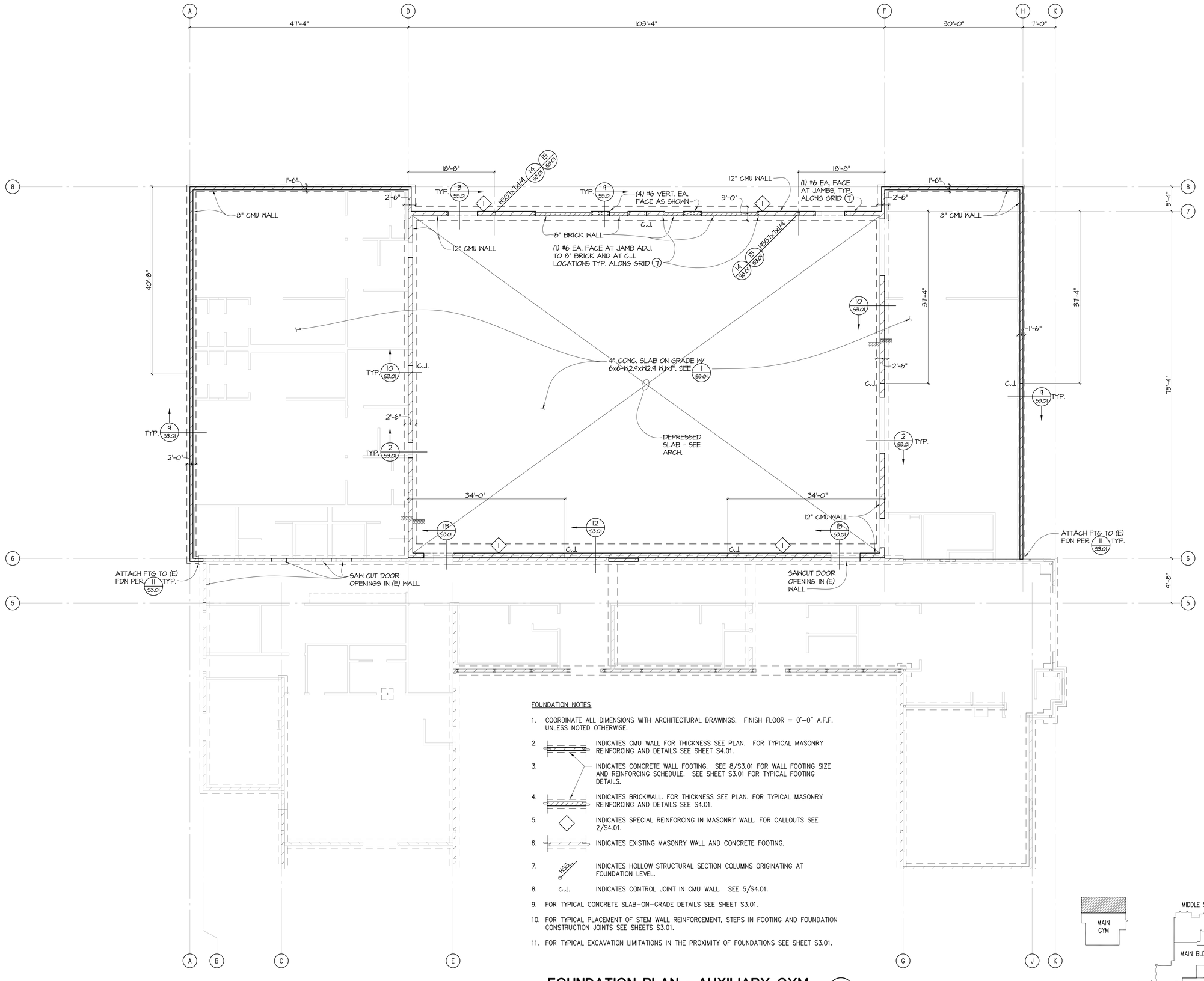


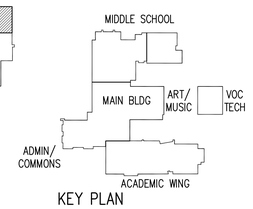
FOUNDATION NOTES

1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. FINISH FLOOR = 0'-0" A.F.F. UNLESS NOTED OTHERWISE.
2. INDICATES CMU WALL FOR THICKNESS SEE PLAN. FOR TYPICAL MASONRY REINFORCING AND DETAILS SEE SHEET S4.01.
3. INDICATES CONCRETE WALL FOOTING. SEE 8/S3.01 FOR WALL FOOTING SIZE AND REINFORCING SCHEDULE. SEE SHEET S3.01 FOR TYPICAL FOOTING DETAILS.
4. INDICATES BRICKWALL. FOR THICKNESS SEE PLAN. FOR TYPICAL MASONRY REINFORCING AND DETAILS SEE S4.01.
5. INDICATES SPECIAL REINFORCING IN MASONRY WALL. FOR CALLOUTS SEE 2/S4.01.
6. INDICATES EXISTING MASONRY WALL AND CONCRETE FOOTING.
7. HSS — INDICATES HOLLOW STRUCTURAL SECTION COLUMNS ORIGINATING AT FOUNDATION LEVEL.
8. C.J. — INDICATES CONTROL JOINT IN CMU WALL. SEE 5/S4.01.
9. FOR TYPICAL CONCRETE SLAB-ON-GRADE DETAILS SEE SHEET S3.01.
10. FOR TYPICAL PLACEMENT OF STEM WALL REINFORCEMENT, STEPS IN FOOTING AND FOUNDATION CONSTRUCTION JOINTS SEE SHEETS S3.01.
11. FOR TYPICAL EXCAVATION LIMITATIONS IN THE PROXIMITY OF FOUNDATIONS SEE SHEET S3.01.

FOUNDATION PLAN - AUXILIARY GYM

1/8"=1'-0"

1 / S1.01



KEY PLAN

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architect_
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civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

"NOT APPROVED" BRADY MADISON STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

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FOUNDATION PLAN - AUXILIARY GYM

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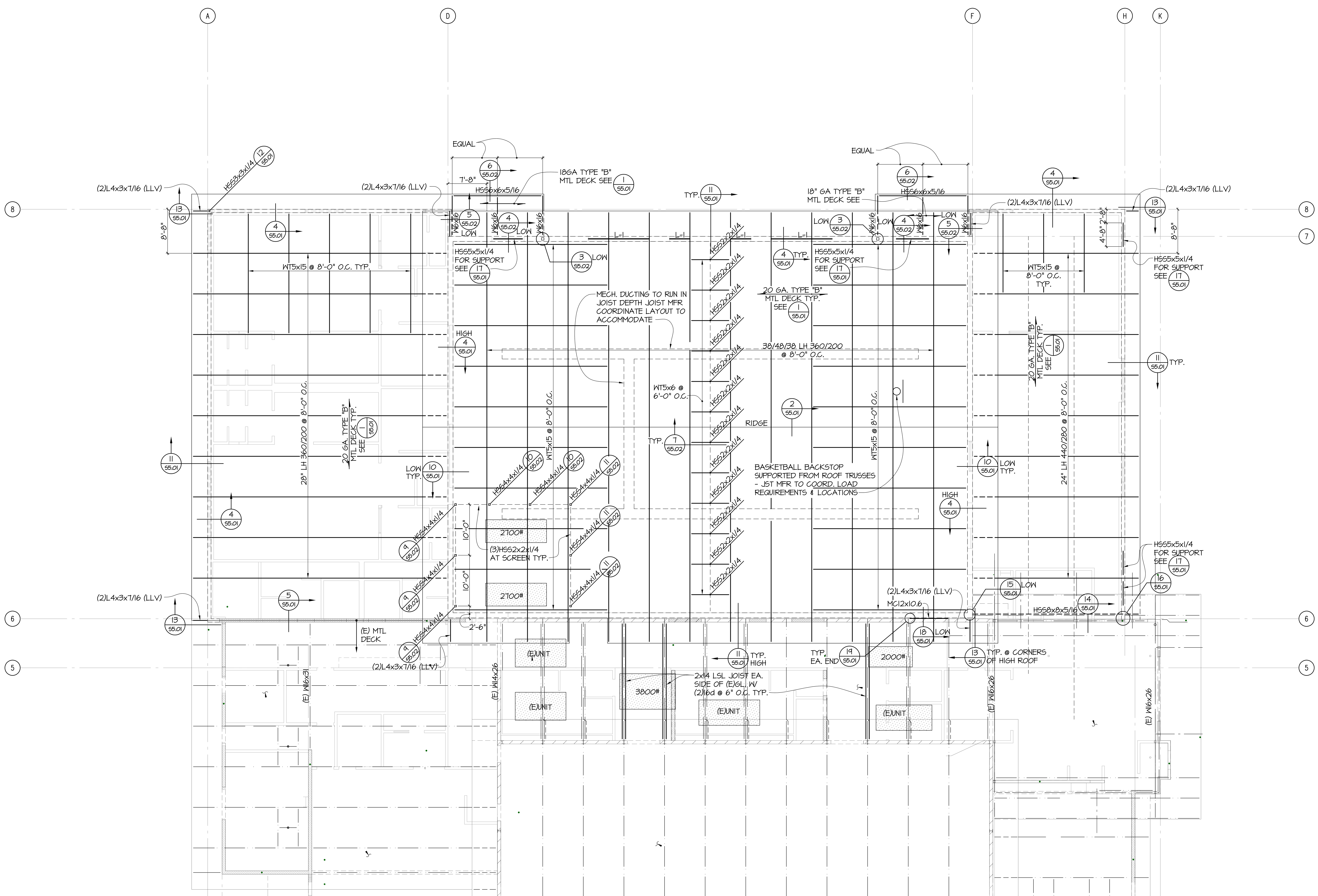
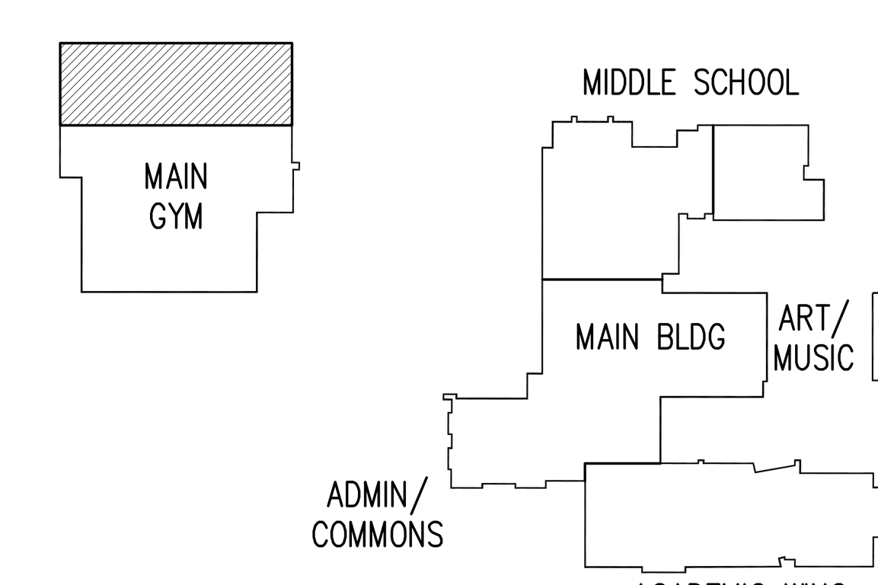


ROOF FRAMING PLAN - AUXILIARY GYM

1/8"=1'-0" (1/S2.01)

ROOF FRAMING NOTES

1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. FINISH FLOOR = 0'-0" A.F.F. UNLESS NOTED OTHERWISE.
2. INDICATES WALL BELOW EXTENDING TO ROOF STRUCTURE
3. "24LH 180/100" 24" INDICATES DEPTH OF JOIST, "LH" INDICATES TYPE OF STEEL JOIST, "180" INDICATES TOTAL LOAD PER LINEAL FOOT AND "100" INDICATES LIVE LOAD PER LINEAL FOOT. MECHANICAL LOADS INDICATED ON DRAWINGS ARE IN ADDITION TO THOSE NOTED ABOVE. SEE S5.02 FOR WIND UPLIFT MAP. FOR ALLOWABLE METHODS OF HANGING FROM JOISTS SEE 9/S5.01.
4. JOIST DETAILER TO DETERMINE HORIZONTAL BRIDGING AND CROSS-BRIDGING QUANTITY AND LOCATION PER SJI REQUIREMENTS. JOIST MANUFACTURER TO PROVIDE BRIDGING AND ERECTOR TO INSTALL PER SHOP DRAWINGS.
5. INDICATES DIRECTION OF SPAN FOR METAL DECK. FOR TYPICAL METAL DECK SEE 1/S5.01.
6. INDICATES PENETRATION IN ROOF. FOR ADDITIONAL MISCELLANEOUS OPENINGS IN ROOF FOR MECHANICAL PENETRATIONS SEE MECHANICAL DRAWINGS. SEE SHEET S5.01. FOR TYPICAL SUPPORT AROUND OPENINGS.
7. INDICATES MECHANICAL UNIT. SEE PLAN FOR MAXIMUM WEIGHT. SEE SHEET S5.01 FOR SUPPORT DETAILS.
8. "L-_" INDICATES SPECIAL MASONRY LINTEL. SEE 3/S4.01 FOR MINIMUM DEPTH AND REINFORCING.
9. FOR MAXIMUM ALLOWABLE MISCELLANEOUS LOADS SUPPORTED FROM ROOF JOISTS SEE 9/S5.01.
10. FOR WIND UPLIFT MAP AND ROOF DIAPHRAGM SHEAR MAP SEE 1/S5.02 & 2/S5.02.



KEY PLAN

C:\Users\danh\Desktop\coupeville\Dwgs\Aux Gym\4524-auxs201.dwg Plotted: Nov 01, 2017 – 8:30am By: DanH

ORIGINAL SHEET IS 30" x 42".

mcG-ARC

architect_ McGRANAHAN ARCHITECTS
civil engineer_ HARMSEN AND ASSOCIATES INC.
landscape design_ BERGER PARTNERSHIP
structural engineer_ PCS STRUCTURAL SOLUTIONS
mechanical engineer_ BCE ENGINEERS
electrical engineer_ BCE ENGINEERS
food service_ CHANDLER|WILSON DESIGN
acoustical design_ SSA ACOUSTICS

EXPIRES: 4/5/07

project_ COUPEVILLE HIGH SCHOOL PHASE III
client_ COUPEVILLE SCHOOL DISTRICT #204
location_ COUPEVILLE, WASHINGTON

Project No. 0418.040

ROOF FRAMING PLAN - AUXILIARY GYM

revision_

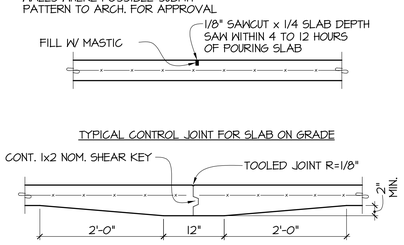
issued_ FINAL CD 28 JUN 06

drawn_

checked_

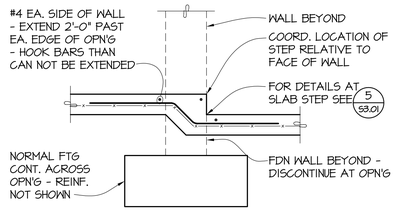
sheet_ S2.01

NOTE:
LOCATE JOINTS AT NON-BEARING WALLS WHERE POSSIBLE-SUBMIT PATTERN TO ARCH. FOR APPROVAL



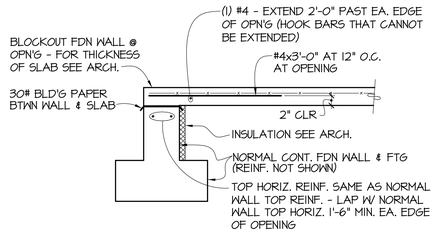
TYPICAL CONSTRUCTION JOINT FOR SLAB ON GRADE

SECTION 1 / 53.01
NO SCALE



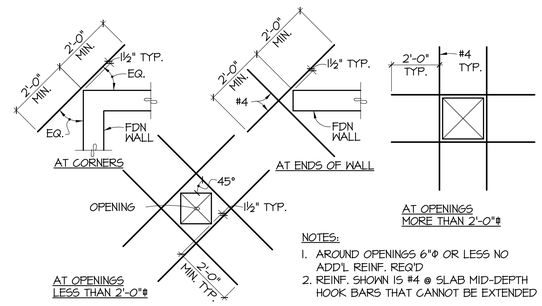
TYPICAL SLAB AT INTERIOR MASONRY WALL OPENING

SECTION 2 / 53.01
NO SCALE



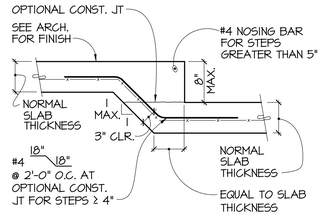
TYPICAL SLAB AT EXTERIOR OPENING

SECTION 3 / 53.01
NO SCALE



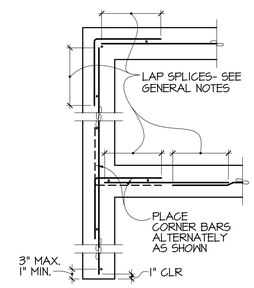
TYPICAL SLAB ON GRADE DISCONTINUITY REINFORCEMENT

PLAN DETAILS 4 / 53.01
NO SCALE



TYPICAL SLAB STEPS OR DEPRESSIONS

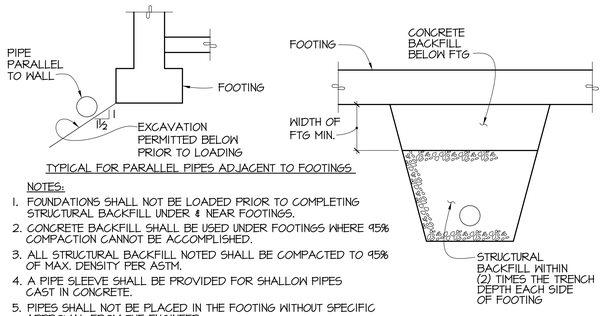
DETAIL 5 / 53.01
NO SCALE



NOTES:
1. VERT. REINF. SHOWN IS ADD'L IF NORMAL STEM WALL REINF. IS NOT IN PROPER LOCATION.
2. CORNER BARS ARE SAME SIZE & SPACING AS HORIZ. REINF.
3. STD HOOK MAY BE SUBSTITUTED FOR CORNER BARS

TYPICAL REINFORCING PLACEMENT PLAN FOR CONCRETE STEM WALLS

SECTION 6 / 53.01
NO SCALE



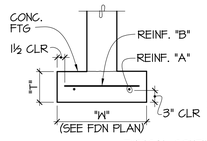
TYPICAL FOR PARALLEL PIPES ADJACENT TO FOOTINGS

NOTES:
1. FOUNDATIONS SHALL NOT BE LOADED PRIOR TO COMPLETING STRUCTURAL BACKFILL UNDER & NEAR FOOTINGS.
2. CONCRETE BACKFILL SHALL BE USED UNDER FOOTINGS WHERE 95% COMPACTION CANNOT BE ACCOMPLISHED.
3. ALL STRUCTURAL BACKFILL NOTED SHALL BE COMPACTED TO 95% OF MAX. DENSITY PER ASTM.
4. A PIPE SLEEVE SHALL BE PROVIDED FOR SHALLOW PIPES CAST IN CONCRETE.
5. PIPES SHALL NOT BE PLACED IN THE FOOTING WITHOUT SPECIFIC APPROVAL FROM THE ENGINEER.
6. FOR VARIATIONS CONTACT ENGINEER.

TYPICAL FOR PERPENDICULAR PIPES UNDER FOOTINGS

SECTION 7 / 53.01
NO SCALE

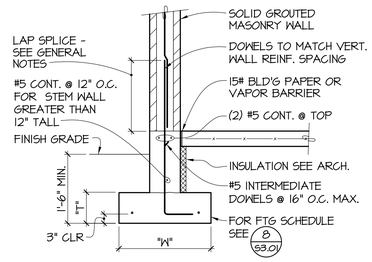
WIDTH "W"	"T"	REINF. "A" CONT.	REINF. "B"
1'-6"	10"	(2)#5	———
2'-0"	10"	(2)#5	———
2'-6"	10"	(3)#5	#5 @ 24" O.C.
3'-0"	10"	(3)#5	#5 @ 16" O.C.



NOTES:
1. FOOTINGS SHALL BEAR ON UNDISTURBED OR COMPACTED MATERIAL - SEE GENERAL NOTES.
2. EXTEND FOOTINGS 6" MIN. PAST ENDS OF WALL UNLESS OTHERWISE NOTED.
3. WHERE FOOTINGS CHANGE WIDTHS LAP REINFORCING "A". **"Ls"** PER GENERAL NOTES.

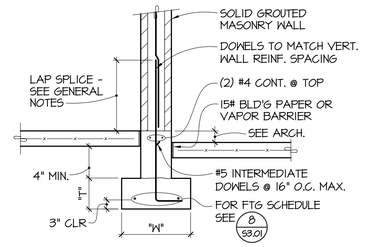
TYPICAL CONTINUOUS FOOTING DETAILS

SECTION 8 / 53.01
NO SCALE



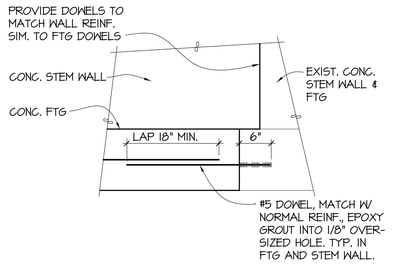
TYPICAL FOUNDATION AT EXTERIOR MASONRY WALL

SECTION 9 / 53.01
NO SCALE



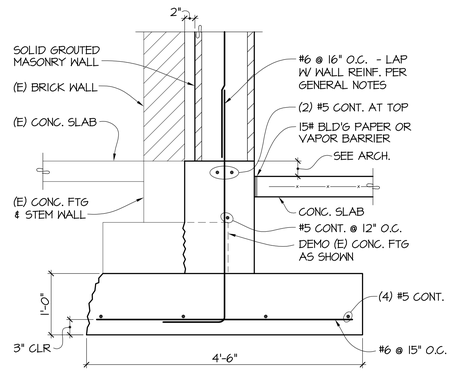
TYPICAL FOUNDATION AT INTERIOR MASONRY WALL

SECTION 10 / 53.01
NO SCALE

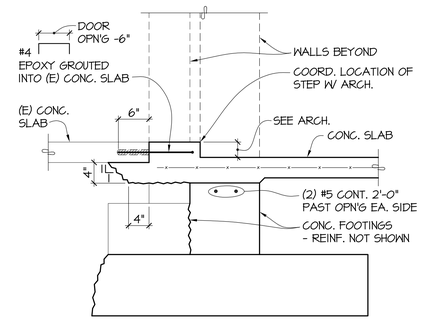


TYPICAL AT NEW/EXISTING FOOTING TRANSITION

DETAIL 11 / 53.01
NO SCALE



SECTION 12 / 53.01
NO SCALE



SECTION 13 / 53.01
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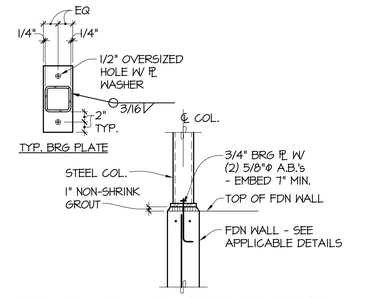
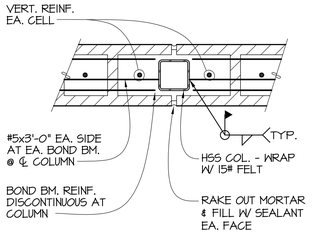


TYPICAL STEEL COLUMN BASE AT CONTINUOUS FOUNDATION WALL

SECTION 14 / 53.01
NO SCALE



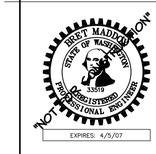
TYPICAL AT COLUMN IN CMU WALL

PLAN DETAIL 15 / 53.01
NO SCALE

ORIGINAL SHEET IS 30" x 42".

mcgranahan

architect_
McGRANAHAN ARCHITECTS
civil engineer_
HARMSEN AND ASSOCIATES INC.
landscape design_
BERGER PARTNERSHIP
structural engineer_
PCS STRUCTURAL SOLUTIONS
mechanical engineer_
BCE ENGINEERS
electrical engineer_
BCE ENGINEERS
food service_
CHANDLER|WILSON DESIGN
acoustical design-
SSA ACOUSTICS

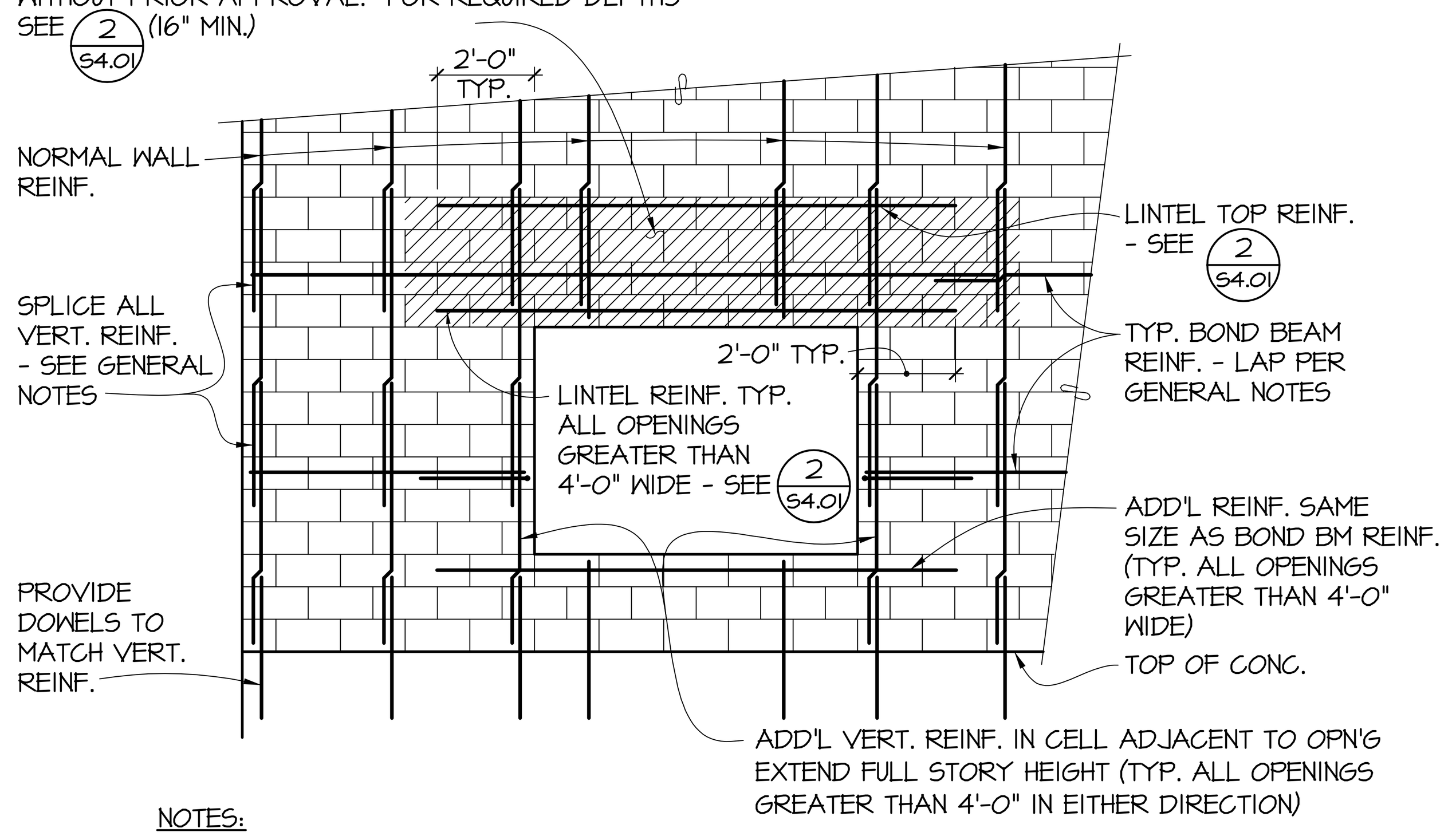


project_
COUPEVILLE HIGH SCHOOL PHASE III
client_
COUPEVILLE SCHOOL DISTRICT #204
location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

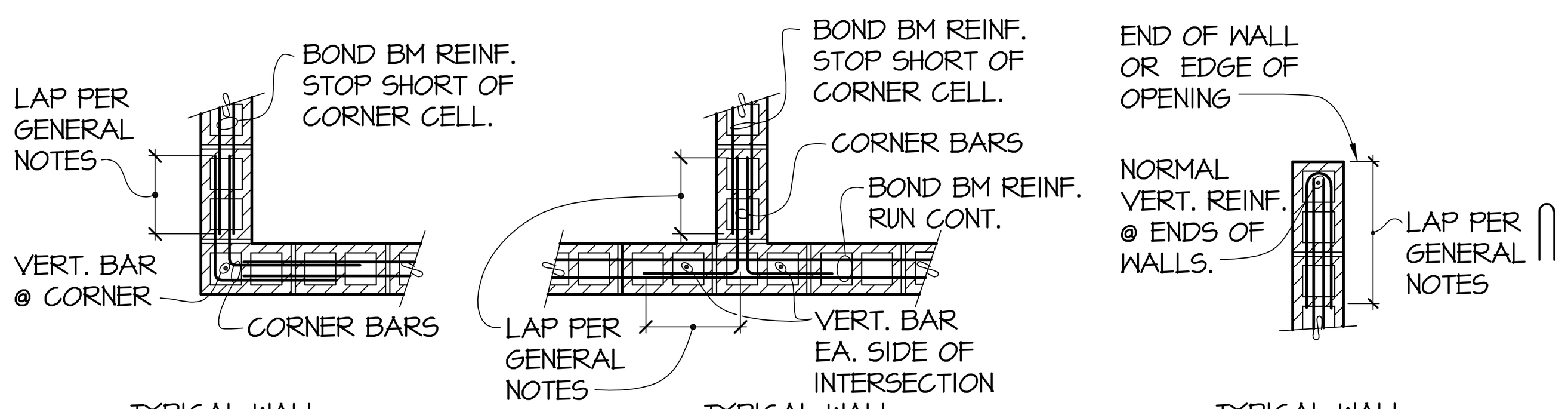
FOUNDATION DETAILS - AUXILIARY GYM

revision_
issued_
FINAL CD 28 JUN 06
drawn_
RSC
checked_
BAM
sheet_
S3.01



NOTES:

1. SOLID GROUT ALL CELLS. LAY UP BLOCK IN RUNNING BOND PATTERN.
2. FOR TYPICAL WALL REINFORCEMENT SIZE AND LOCATION SEE 2/S4.01.
3. HOOK ALL REINFORCING THAT CANNOT BE EXTENDED.
4. TYP. REINF. SHOWN. PROVIDE ADDITIONAL REINF. WHERE NOTED ON PLANS OR DETAILS.
5. PROVIDE (1) #4 MIN. AROUND OPENINGS GREATER THAN 2'-0" BUT LESS THAN 4'-0" IN EITHER DIRECTION. EXTEND 2'-0" BEYOND FACE OF OPENINGS.
6. NO CONDUIT ALLOWED IN CELLS WITH REINFORCEMENT.
7. PROVIDE BAR POSITIONERS FOR VERTICAL REINFORCEMENT AT FIRST COURSE ABOVE AND BELOW BOND BEAMS. SEE GENERAL NOTES FOR POSITIONER TYPE.



TYPICAL HOLLOW UNIT MASONRY WALL

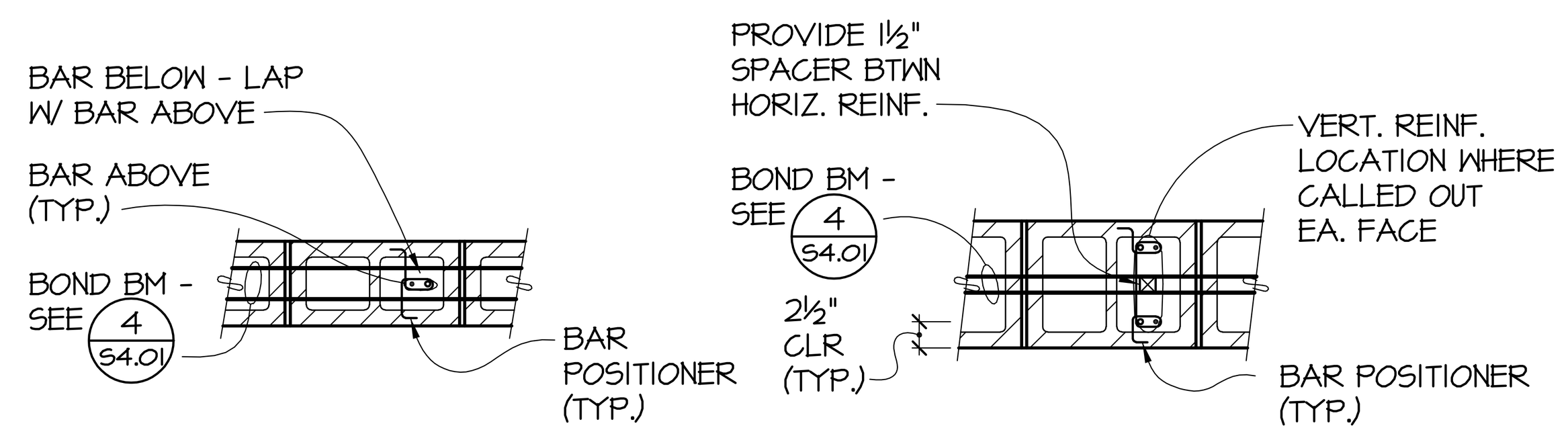
NO SCALE — 1/S4.01

HOLLOW UNIT MASONRY WALL REINFORCING SCHEDULE

* SEE PLANS & APPLICABLE DETAILS FOR WALL THICKNESS & ANY SPECIAL REINF.

	WALL SIZE	MINIMUM REINFORCEMENT *			LINTELS (SAME REINF. AS BOND BEAM)				
		VERT. REINF.	HORIZ. REINF.		MIN. DEPTH				
					15.5	23.5	31.5	39.5	47.5
TYPICAL REINF.	6"	#4 @ 48" O.C.	(2) #4 @ 48" O.C.	MAX. SPAN OF LINTEL	3'-0"	5'-6"	8'-0"	10'-9"	13'-6"
	8"	#5 @ 48" O.C.	(2) #5 @ 48" O.C.		——	3'-6"	7'-6"	10'-0"	12'-0"
	12"	#6 @ 48" O.C.	(2) #6 @ 48" O.C.		——	3'-6"	7'-6"	10'-0"	12'-0"

	WALL CALLOUT	WALL SIZE	TYPE	REINFORCEMENT		REMARKS
				VERT. REINF.	HORIZ. REINF.	
SPECIAL REINF.	◇ 1	12"	I	#6 @ 16" O.C.	(2) #6 @ 48" O.C.	TYPE II REINF. AT JAMBS - SEE PLAN

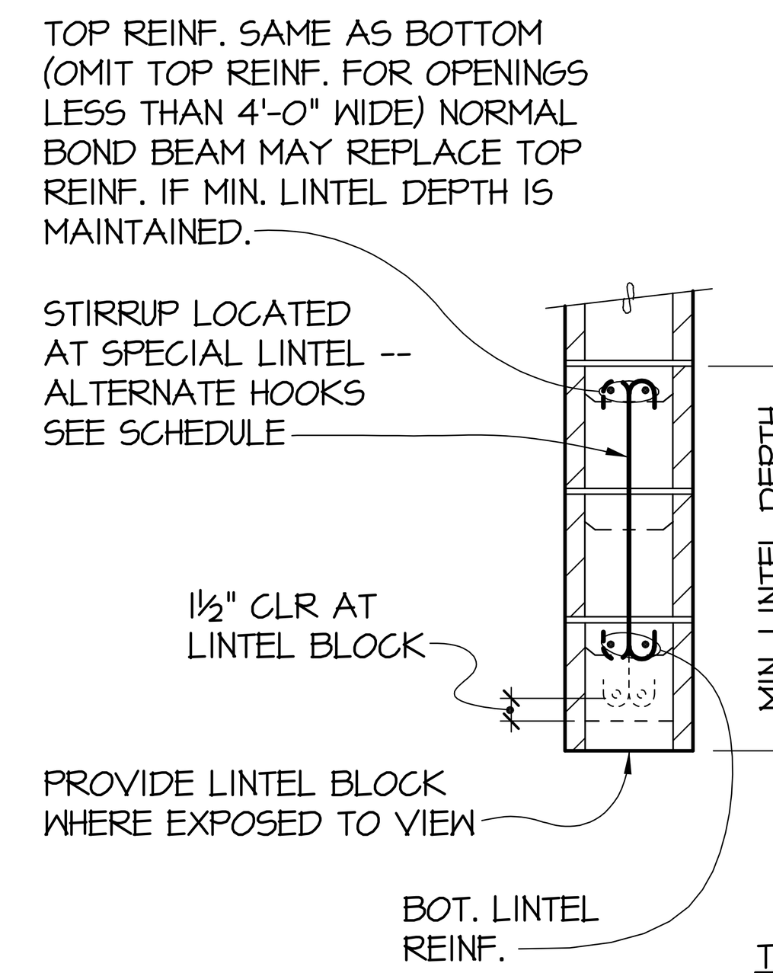


NOTES:

1. WALLS NOT SPECIFICALLY CALLED OUT ON THE PLANS WITH ◇ SHALL BE REINFORCED AS SHOWN ON TYPICAL REINF.
2. PROVIDE BOND BEAM W/ MIN. HORIZ. REINF. SHOWN AT TOP OF ALL WALLS, UNLESS OTHERWISE NOTED ON PLANS OR DETAILS.
3. FOR SPECIAL LINTELS SEE FRAMING PLANS AND 3/S4.01.
4. PROVIDE BAR POSITIONERS AT FIRST COURSE ABOVE AND BELOW BOND BEAM LOCATIONS AT ALL VERTICAL REINFORCING. SEE GENERAL NOTES FOR POSITIONER TYPE.

SCHEDULE

NO SCALE — 2/S4.01



SPECIAL LINTEL SCHEDULE

MARK	MIN. LINTEL DEPTH	MIN. REINF. TOP & BOT.	JAMB REINF. EA. SIDE (4)	STIRRUPS
L-1	32"	(2) #6	SEE PLAN	#4 @ 16" O.C.

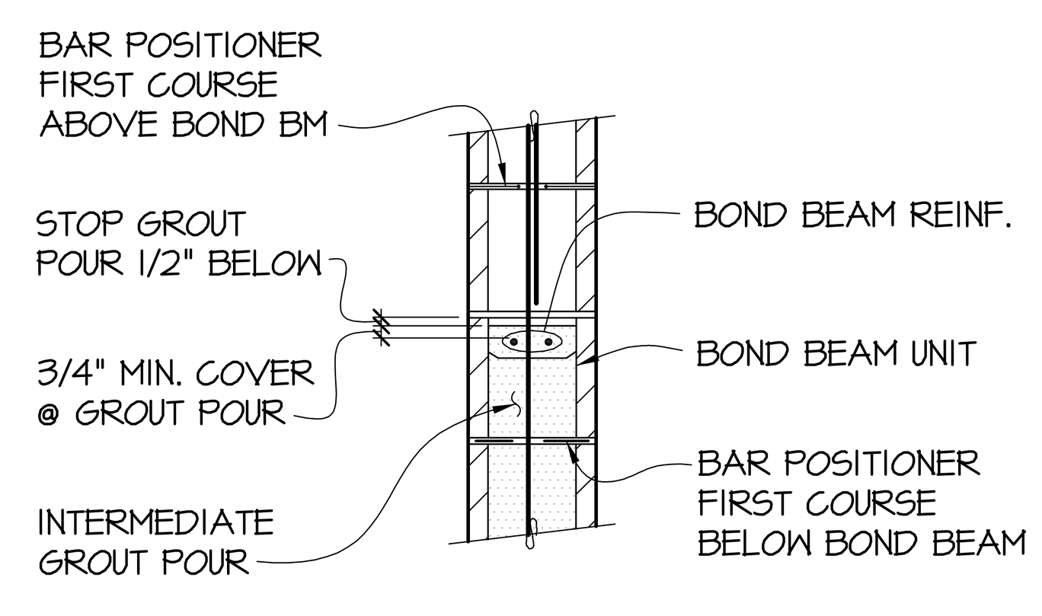
NOTES:

1. SEE 2/S4.01 MAXIMUM SPAN/MINIMUM TYPICAL LINTEL DEPTH.
2. SEE FRAMING PLANS FOR LOCATION OF SPECIAL LINTELS.
3. EXTEND TOP & BOTTOM BARS TO END OF PIERS AND PROVIDE 90° HOOK.
4. MINIMUM JAMB REINFORCING. SEE PLAN FOR ADDITIONAL REINFORCING.

TYPICAL CMU WALL LINTEL

DETAIL

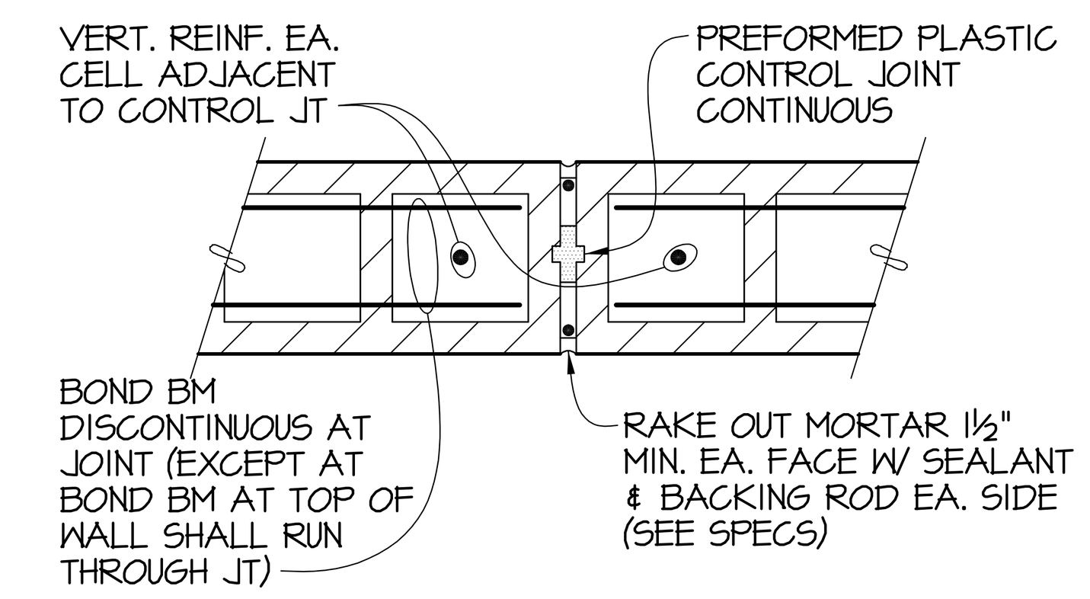
NO SCALE — 3/S4.01



TYPICAL CMU WALL BOND BEAM

DETAIL

NO SCALE — 4/S4.01



NOTE:
SEE FOUNDATION PLAN FOR LOCATION OF CONTROL JOINTS.

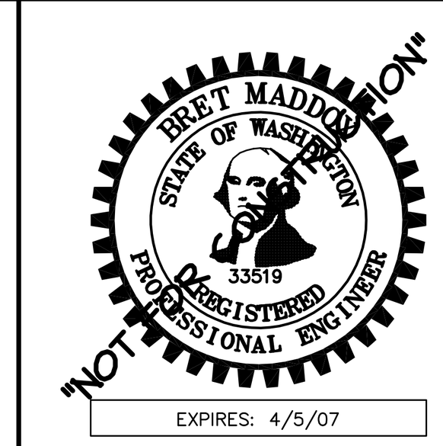
TYPICAL CMU WALL CONTROL JOINT

PLAN DETAIL

NO SCALE — 5/S4.01

mcg-ARC

architect_ McGRANAHAN ARCHITECTS
civil engineer_ HARMSEN AND ASSOCIATES INC.
landscape design_ BERGER PARTNERSHIP
structural engineer_ PCS STRUCTURAL SOLUTIONS
mechanical engineer_ BCE ENGINEERS
electrical engineer_ BCE ENGINEERS
food service_ CHANDLER|WILSON DESIGN
acoustical design_ SSA ACOUSTICS



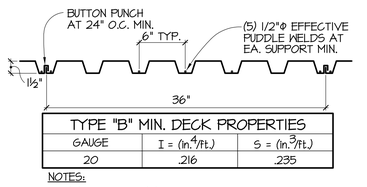
project_ COUPEVILLE HIGH SCHOOL PHASE III
client_ COUPEVILLE SCHOOL DISTRICT #204
location_ COUPEVILLE, WASHINGTON
Project No. 0418.040

MASONRY DETAILS - AUXILIARY GYM

revision_
issued_ FINAL CD 28 JUN 06
drawn_ RSC
checked_ BAM
sheet_ S4.01

C:\Users\danh\Desktop\coupeville\Dwgs\Aux Gym\4524-auxs401.dwg Plotted: Nov 01, 2017 - 8:30am By: DanH

ORIGINAL SHEET IS 30" x 42".

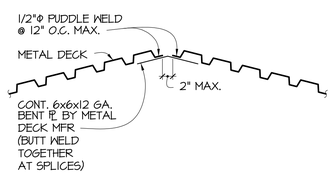


TYPE "B" MIN. DECK PROPERTIES		
GAUGE	I = (in.⁴/ft.)	S = (in.³/ft.)
20	.216	.235

NOTES:
1. (2) SPAN MIN., (3) SPAN PREFERRED.
2. AT SUPPORTS PARALLEL TO CORRUGATIONS, PROVIDE PUDDLE WELDS @ 24" O.C. MAX.
3. MIN. DECK PROPERTIES & WELD PATTERN SHOWN. PROVIDE HEAVIER GA AND/OR WELD PATTERN AS REQ'D TO DEVELOP DIAPHRAGM SHEARS.
4. FOR ROOF DIAPHRAGM SHEARS - SEE 2/S5.03

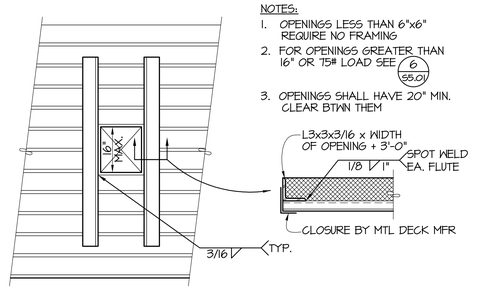
TYPICAL ROOF METAL DECK

DETAIL 1/S5.01
NO SCALE



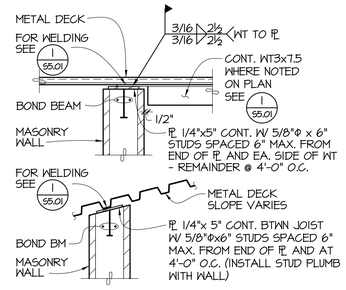
TYPICAL METAL DECK AT RIDGE

SECTION 2/S5.01
NO SCALE



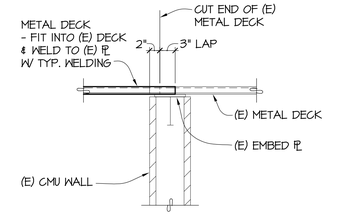
TYPICAL AT ISOLATED OPENINGS IN NON-COMPOSITE METAL DECK LESS THAN 16" SQUARE

DETAIL 3/S5.01
NO SCALE



TYPICAL CONNECTION OF METAL DECK TO TOP OF MASONRY WALL

SECTION 4/S5.01
NO SCALE



SECTION 5/S5.01
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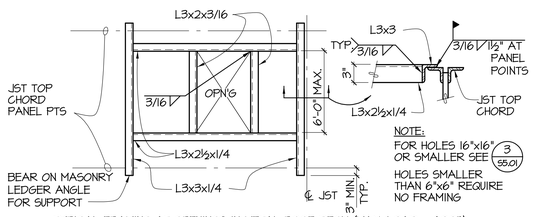
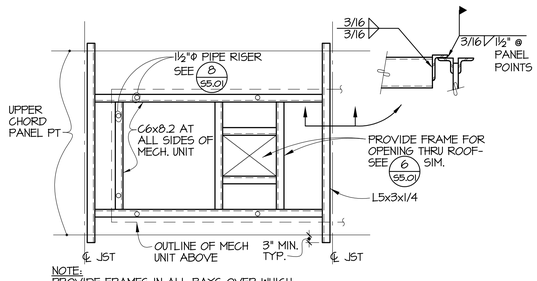


TYPICAL FRAMING AT OPENINGS IN METAL ROOF DECK (MAX. LOAD = 600#)

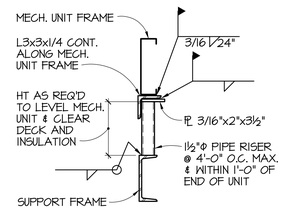
DETAIL 6/S5.01
NO SCALE



NOTE:
PROVIDE FRAMES IN ALL BAYS OVER WHICH MECHANICAL UNIT RESTS. VERIFY SIZE AND LOCATION OF UNIT WITH MECHANICAL CONTRACTOR

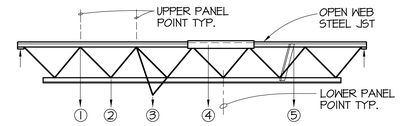
TYPICAL MECHANICAL UNIT SUPPORT FRAME (MAX. WT ON THIS FRAME = 6000#)

DETAIL 7/S5.01
NO SCALE



RISER SUPPORT FOR MECHANICAL UNIT FRAME

SECTION 8/S5.01
NO SCALE



1. HANG WITHIN 3" OF ANY UPPER PANEL POINT FOR "K" SERIES JOIST, 6" FOR "LH" SERIES.
2. HANG WITHIN 3" OF ANY LOWER PANEL POINT FOR "K" SERIES JOIST, 6" FOR "LH" SERIES.
3. TRAPEZE BETWEEN ANY PANEL POINTS.
4. REINFORCE TOP CHORD - AS REQUIRED BY JOIST MFR.
5. REINFORCE BETWEEN LOAD LOCATION AND LOWER CHORD PANEL POINT - AS REQUIRED BY JOIST MFR.

NOTES:
1. JOIST MFR DESIGN JOIST FOR 300# ADLOAD.
2. THE MAXIMUM ALLOWABLE TOTAL LOAD THAT MAY BE ADDED TO ANY ONE JOIST = .
3. SINGLE LOADS LESS THAN 100# MAY BE ADDED ANYWHERE ALONG THE UPPER CHORD (NOT JUST AT PANEL POINTS) WITHOUT ADDING AN ANGLE TO STIFFEN THE JOIST.
4. DO NOT CUT OR DRILL THROUGH ANY JOIST MEMBER.
5. THIS DETAIL IS APPLICABLE TO HANGING MECHANICAL EQUIPMENT, SPRINKLER PIPES, ETC.
6. ALL STIFFENERS PER JOIST MANUFACTURER REQUIREMENTS PROVIDED BY THE GENERAL CONTRACTOR.

ALLOWABLE METHODS & LOCATIONS FOR HANGING LOADS FROM OPEN WEB STEEL JOIST

DETAIL 9/S5.01
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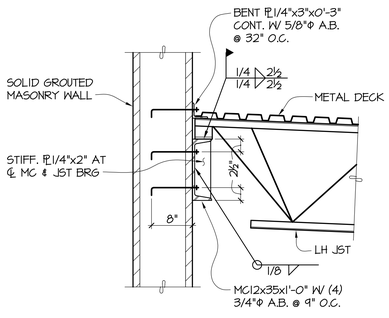

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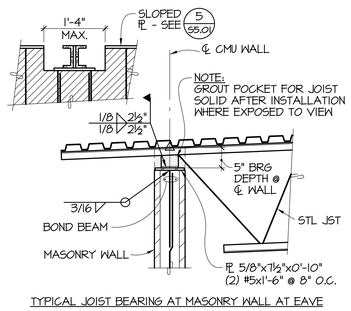

TYPICAL JOIST BEARING AT MASONRY WALL AT EAVE

SECTION 11/S5.01
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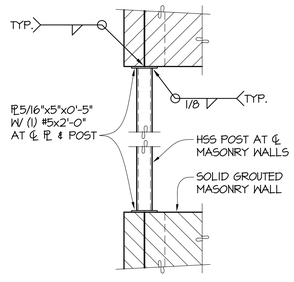

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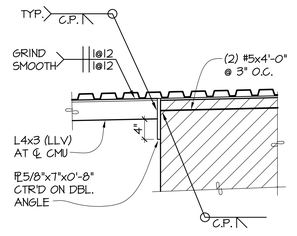

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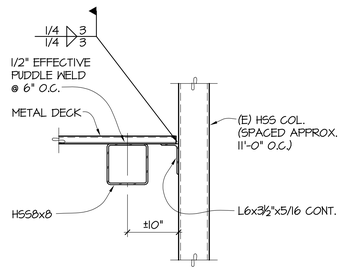

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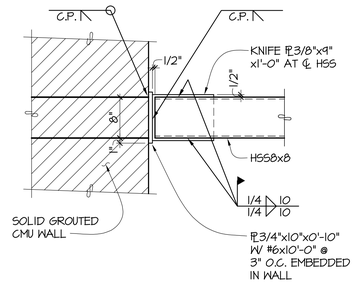

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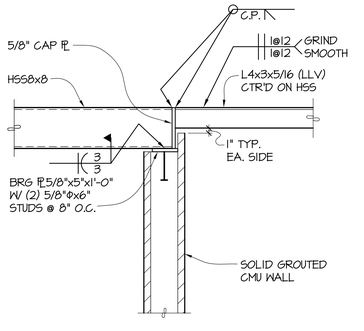

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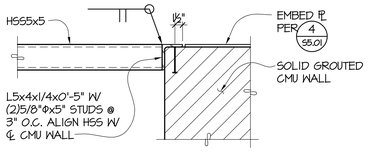

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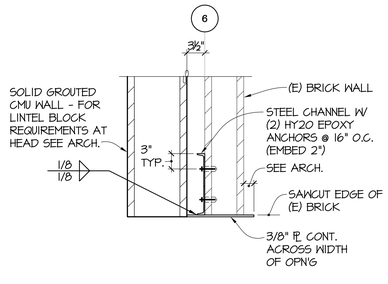

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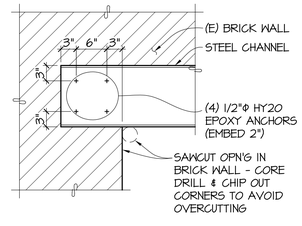

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NO SCALE

mcgranahan architects

architect_
McGRANAHAN ARCHITECTS
civil engineer_
HARMSEN AND ASSOCIATES INC.
landscape design_
BERGER PARTNERSHIP
structural engineer_
PCS STRUCTURAL SOLUTIONS
mechanical engineer_
BCE ENGINEERS
electrical engineer_
BCE ENGINEERS
food service_
CHANDLER|WILSON DESIGN
acoustical design-
SSA ACOUSTICS

STATE OF WASHINGTON DONALD H. MCGRANAHAN 13019 REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE III
client_
COUPEVILLE SCHOOL DISTRICT #204
location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

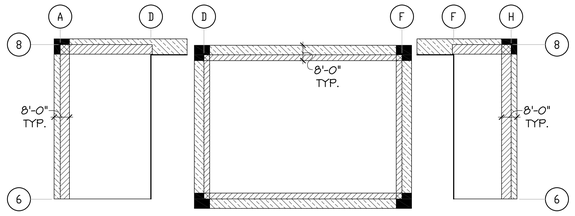
FRAMING DETAILS - AUXILIARY GYM

revision_

issued_
FINAL CD 28 JUN 06

drawn_
RSC
checked_
BAM

sheet_
S5.01



WIND UPLIFT MAP

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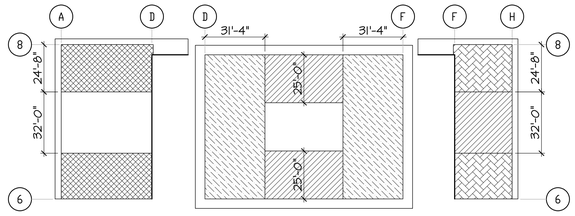
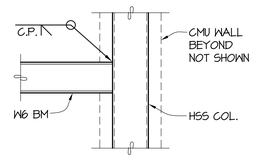


ROOF DIAPHRAGM SHEAR MAP

NO SCALE

2 / 55.02



DETAIL

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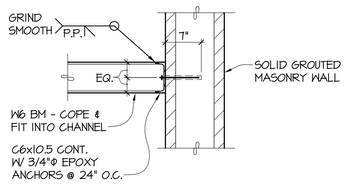
3 / 55.02



SECTION

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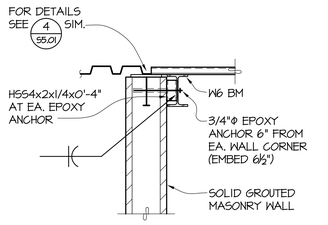
4 / 55.02



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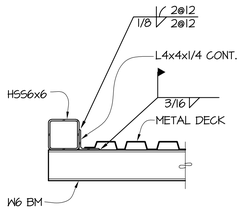

SECTION

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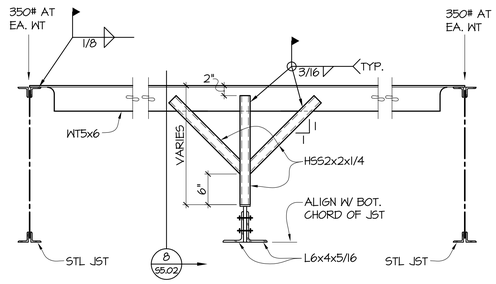
6 / 55.02



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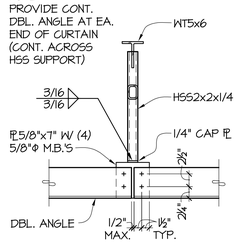
7 / 55.02



SECTION

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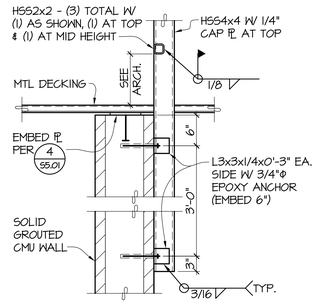
8 / 55.02



DETAIL

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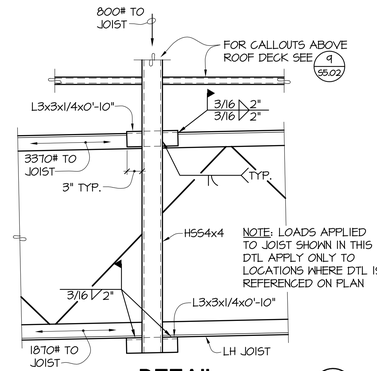
9 / 55.02



DETAIL

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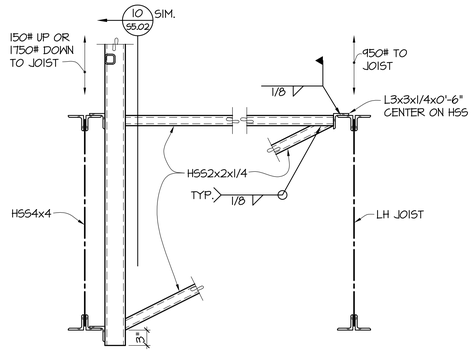
10 / 55.02



SECTION

NO SCALE

11 / 55.02

architect_
McGRANAHAN ARCHITECTS

civil engineer_
HARMSEN AND ASSOCIATES INC.

landscape design_
BERGER PARTNERSHIP

structural engineer_
PCS STRUCTURAL SOLUTIONS

mechanical engineer_
BCE ENGINEERS

electrical engineer_
BCE ENGINEERS

food service_
CHANDLER|WILSON DESIGN

acoustical design-
SSA ACOUSTICS

EXPIRES: 4/5/07

project_
COUPEVILLE HIGH SCHOOL PHASE III

client_
COUPEVILLE SCHOOL DISTRICT #204

location_
COUPEVILLE, WASHINGTON

Project No. 0418.040

FRAMING DETAILS - AUXILIARY GYM

revision_

issued_
FINAL CD 28 JUN 06

drawn_
RSC

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BAM

sheet_
S5.02

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Appendix F: FEMA E-74 Nonstructural Seismic Bracing Excerpts

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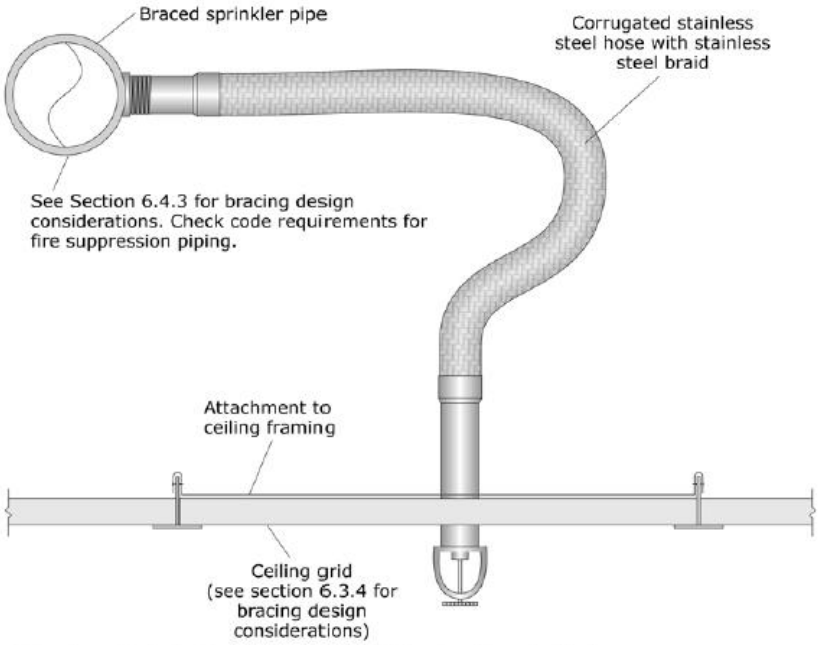


Figure G-1. Flexible Sprinkler Drop.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

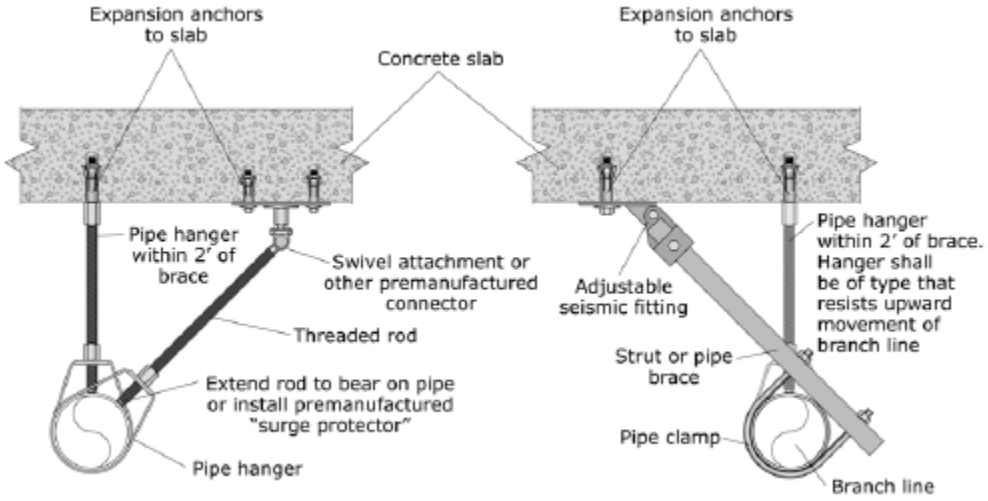


Figure G-2. End of Line Restraint.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

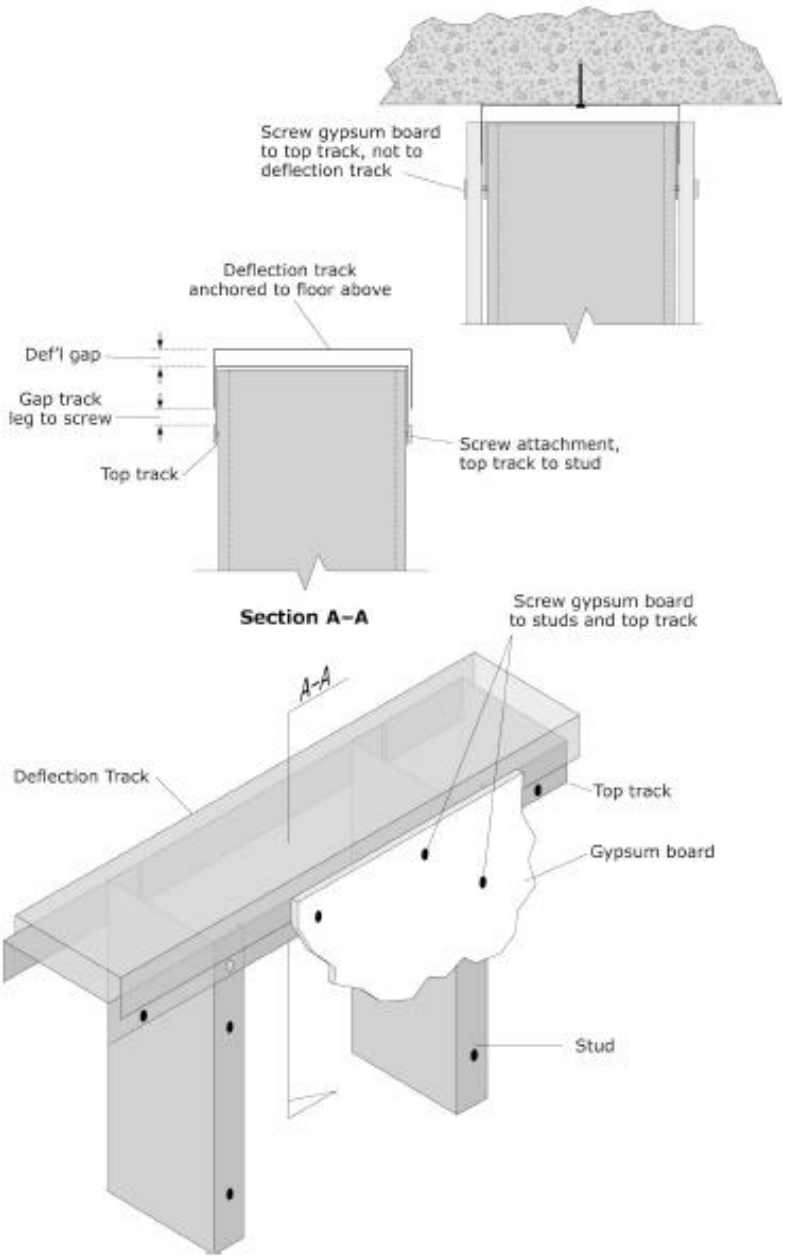


Figure G-3. Mitigation Schemes for Bracing the Tops of Metal Stud Partitions Walls.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

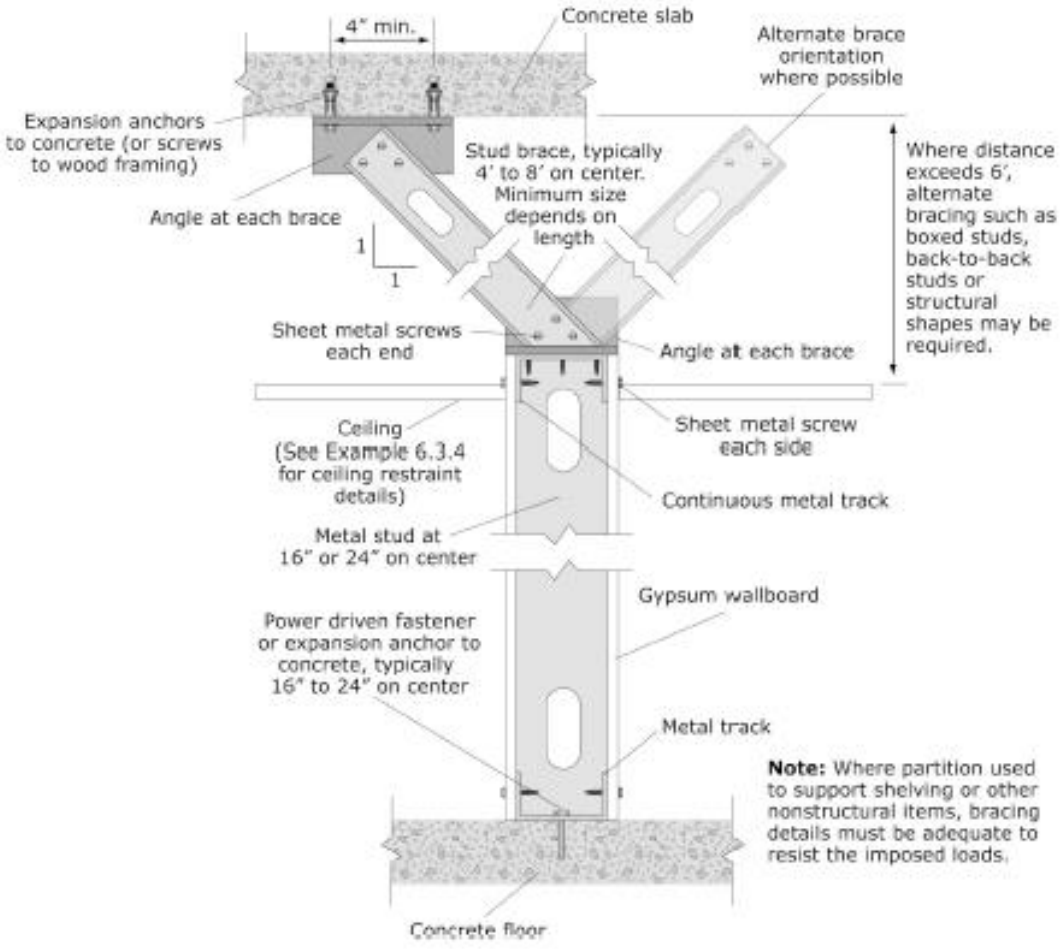
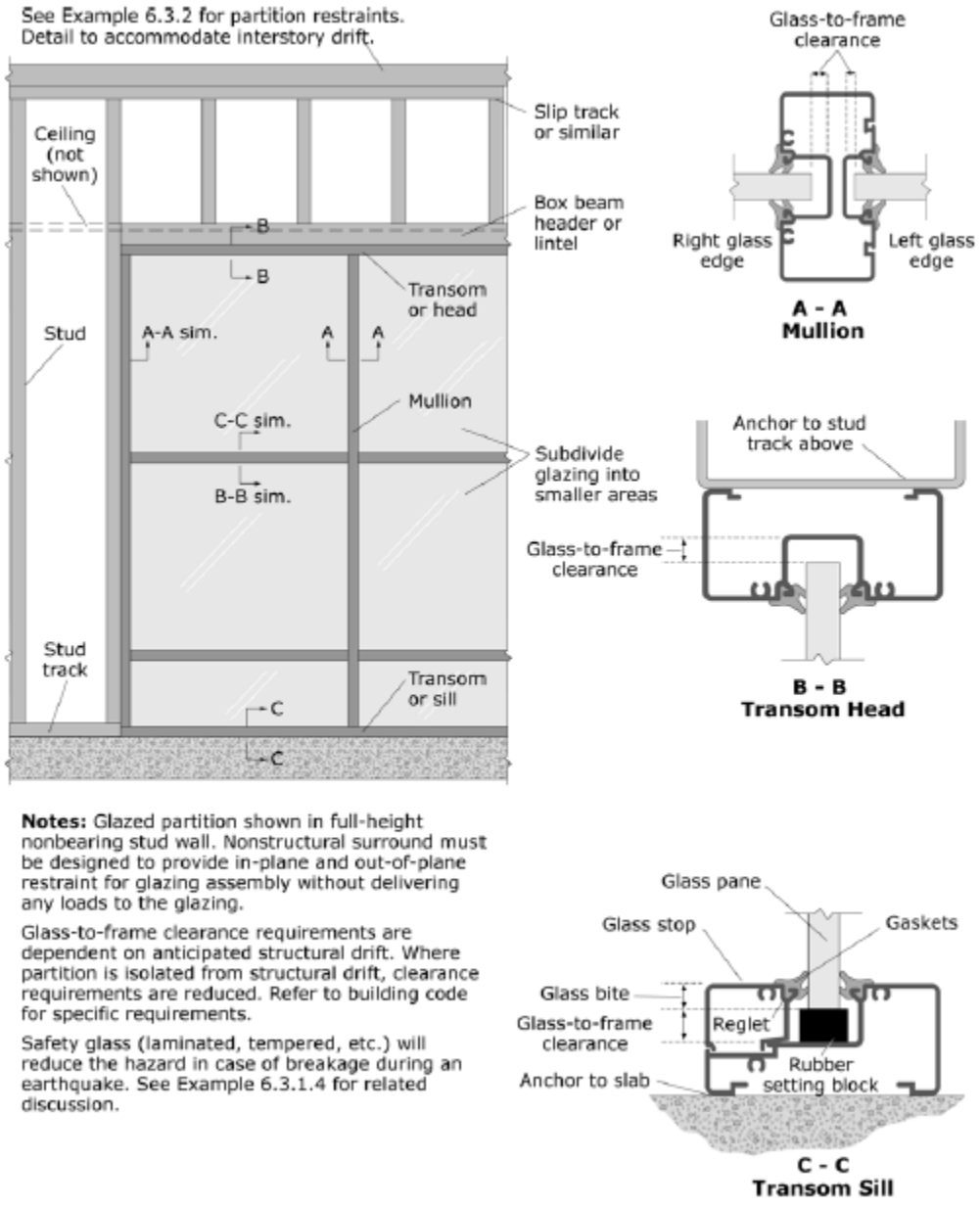


Figure G-4. Mitigation Schemes for Bracing the Tops of Metal Stud Partitions Walls.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



Notes: Glazed partition shown in full-height nonbearing stud wall. Nonstructural surround must be designed to provide in-plane and out-of-plane restraint for glazing assembly without delivering any loads to the glazing.

Glass-to-frame clearance requirements are dependent on anticipated structural drift. Where partition is isolated from structural drift, clearance requirements are reduced. Refer to building code for specific requirements.

Safety glass (laminated, tempered, etc.) will reduce the hazard in case of breakage during an earthquake. See Example 6.3.1.4 for related discussion.

Figure G-5. Full-height Glazed Partition.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

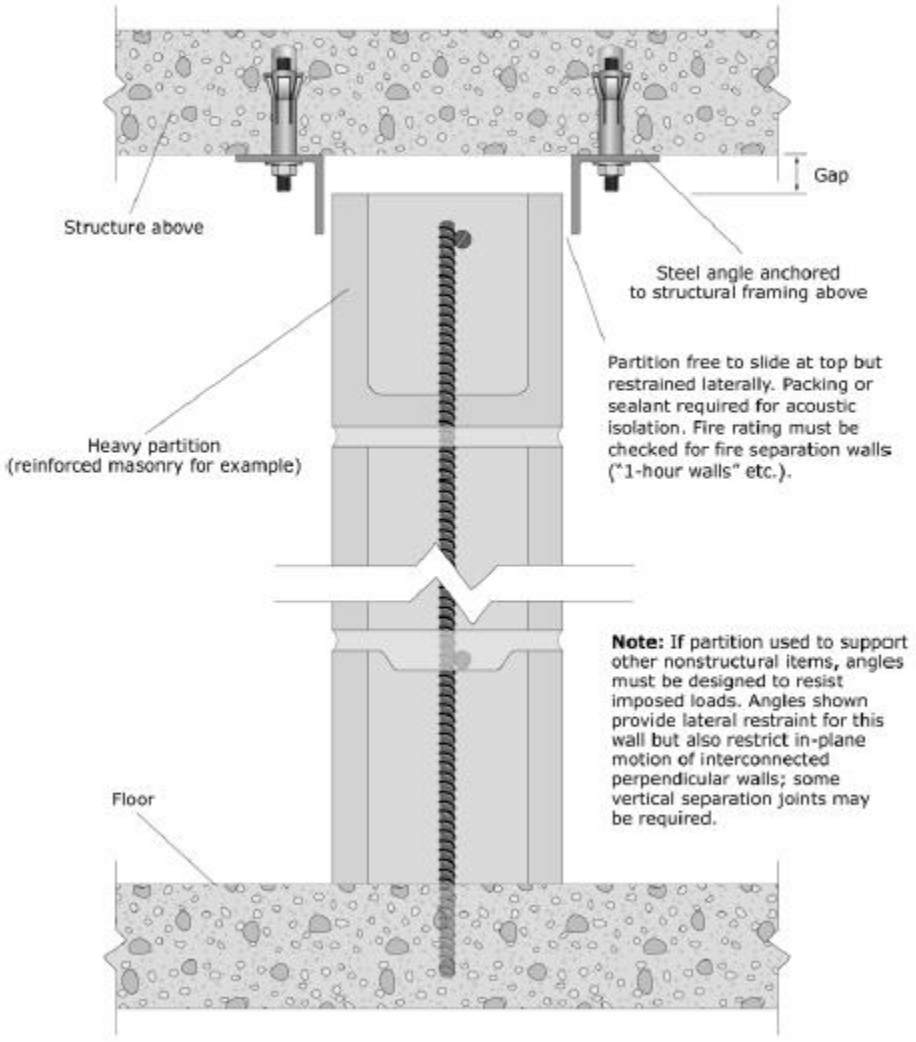


Figure G-6. Full-height Heavy Partition.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

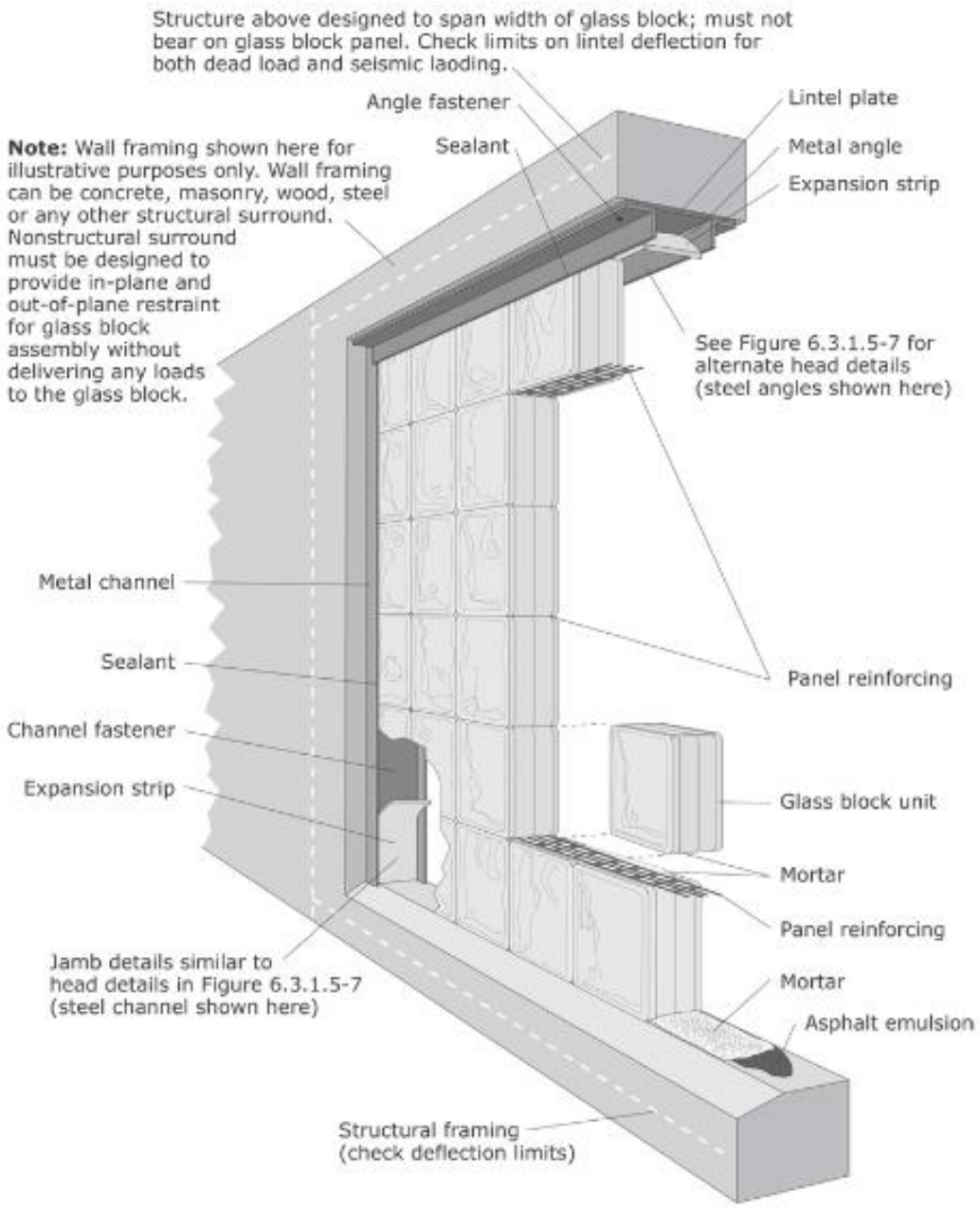


Figure G-7. Typical Glass Block Panel Details.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

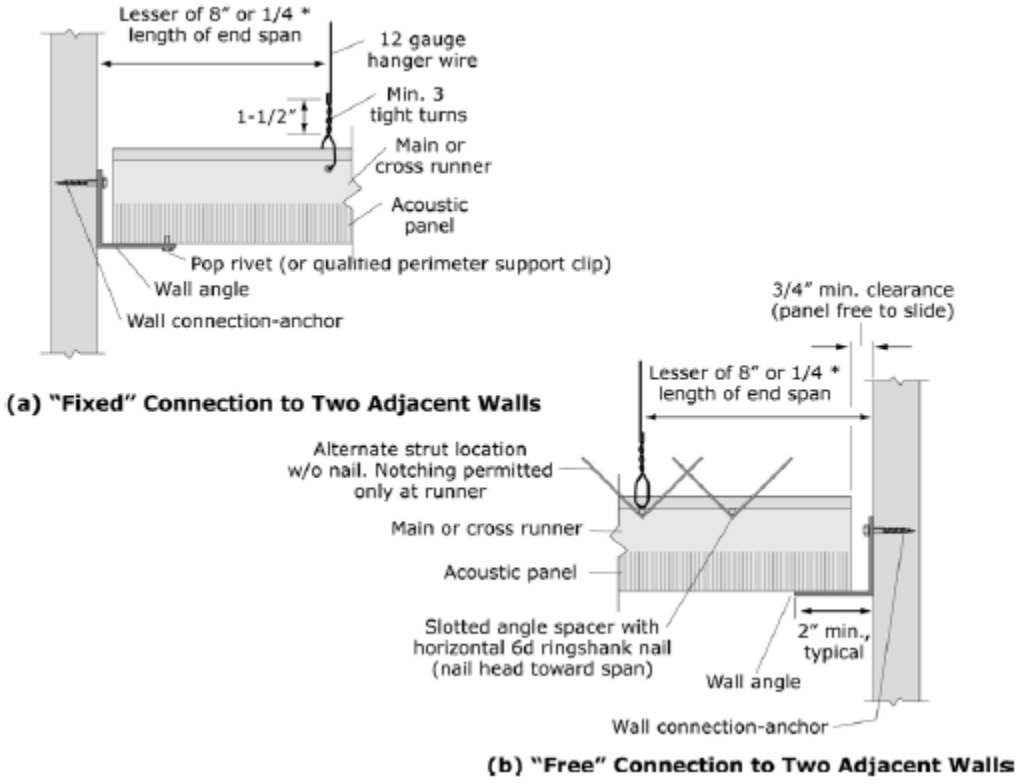
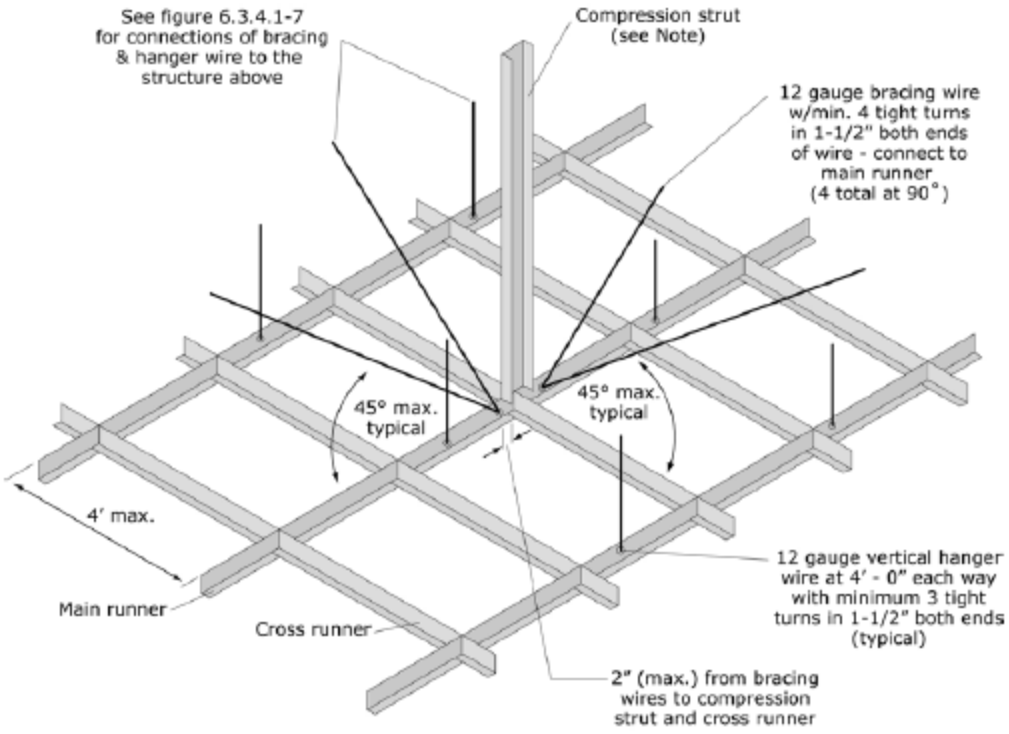


Figure G-8. Suspension System for Acoustic Lay-in Panel Ceilings – Edge Conditions.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



Note: Compression strut shall not replace hanger wire. Compression strut consists of a steel section attached to main runner with 2 - #12 sheet metal screws and to structure with 2 - #12 screws to wood or 1/4" min. expansion anchor to structure. Size of strut is dependent on distance between ceiling and structure (l/r ≤ 200). A 1" diameter conduit can be used for up to 6', a 1-5/8" X 1-1/4" metal stud can be used for up to 10'

Per DSA IR 25-5, ceiling areas less than 144 sq. ft, or fire rated ceilings less than 96 sq. ft., surrounded by walls braced to the structure above do not require lateral bracing assemblies when they are attached to two adjacent walls. (ASTM E580 does not require lateral bracing assemblies for ceilings less than 1000 sq. ft.; see text.)

Figure G-9. Suspension System for Acoustic Lay-in Panel Ceilings – General Bracing Assembly.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

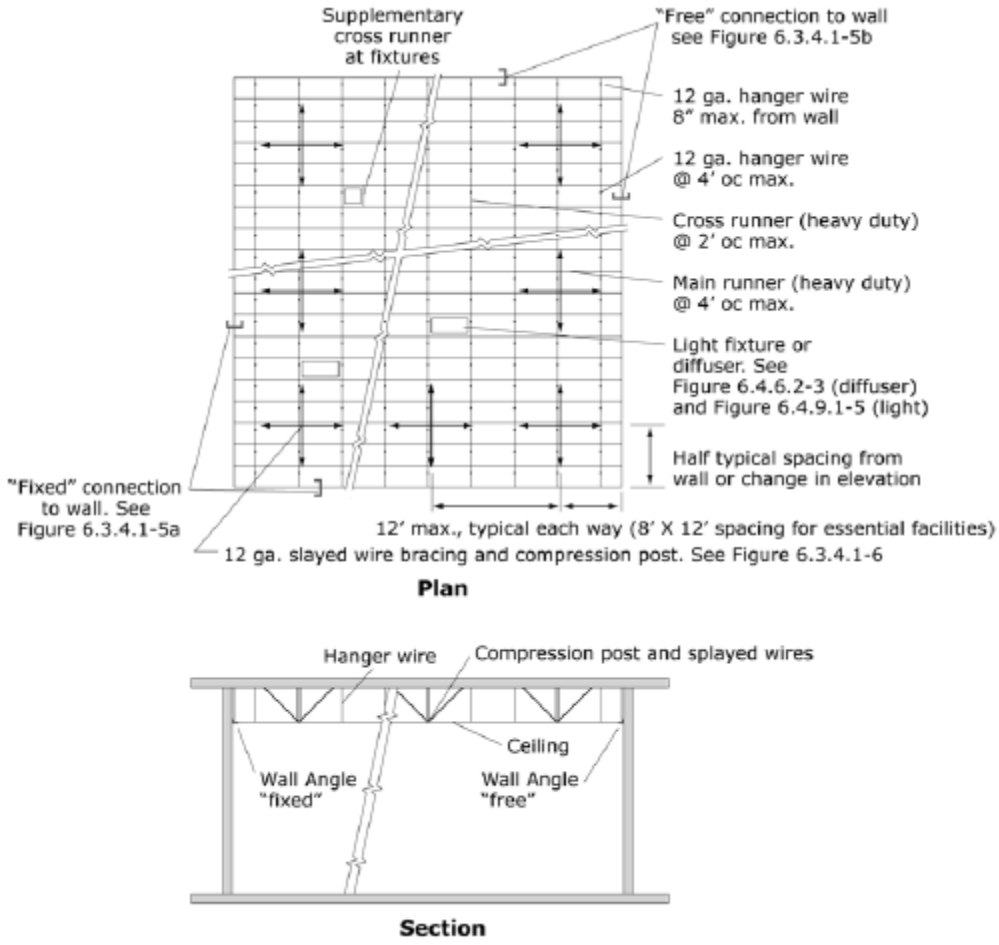
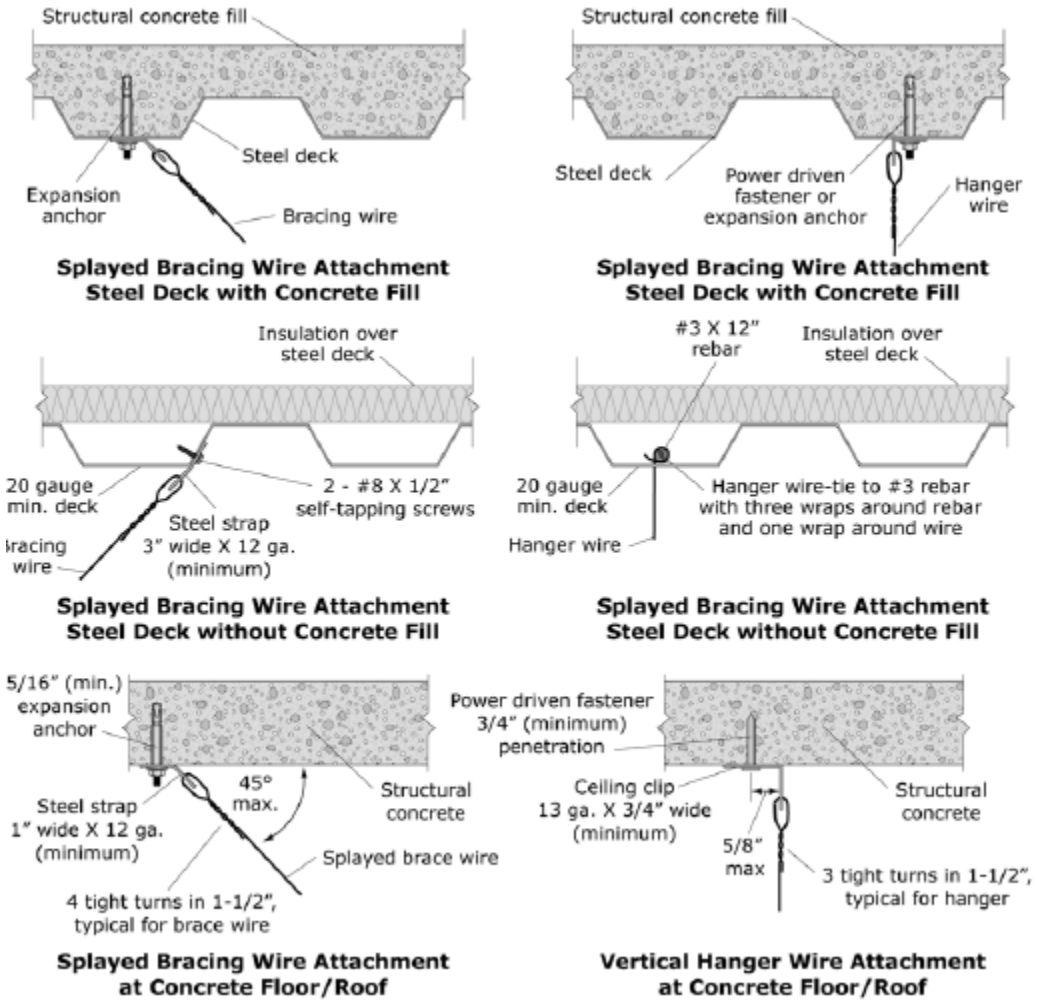


Figure G-10. Suspension System for Acoustic Lay-in Panel Ceilings – General Bracing Layout.

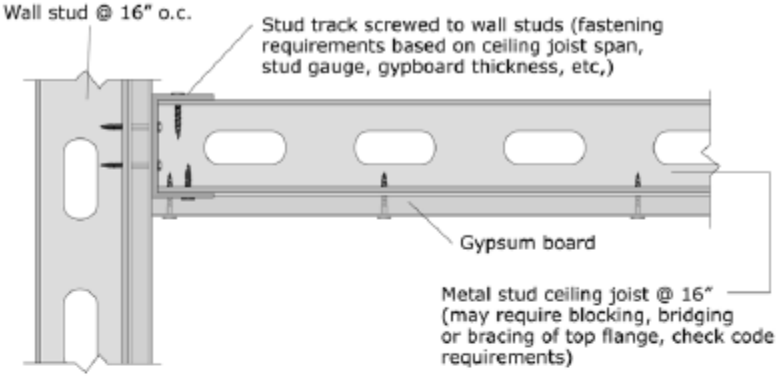
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



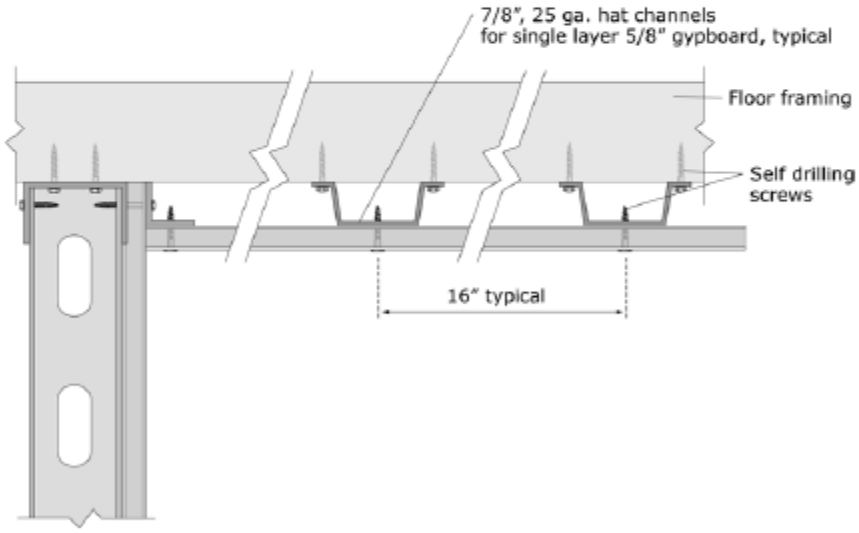
Note: See California DSA IR 25-5 (06-22-09) for additional information.

Figure G-11. Suspension System for Acoustic Lay-in Panel Ceilings – Overhead Attachment Details.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



a) Gypsum board attached directly to ceiling joists



b) Gypsum board attached directly to furring strips (hat channel or similar)

Note: Commonly used details shown; no special seismic details are required as long as furring and gypboard secured. Check for certified assemblies (UL listed, FM approved, etc.) if fire or sound rating required.

Figure G-12. Gypsum Board Ceiling Applied Directly to Structure.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

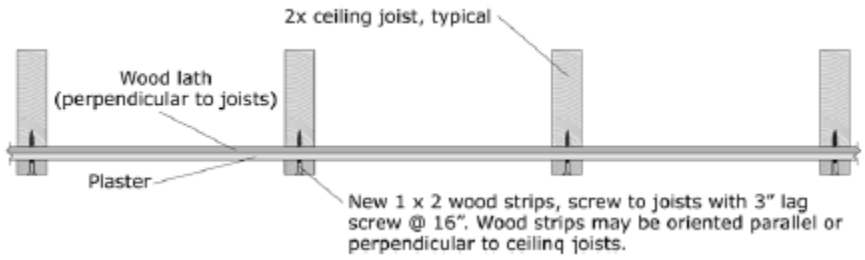


Figure G-13. Retrofit Detail for Existing Lath and Plaster.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

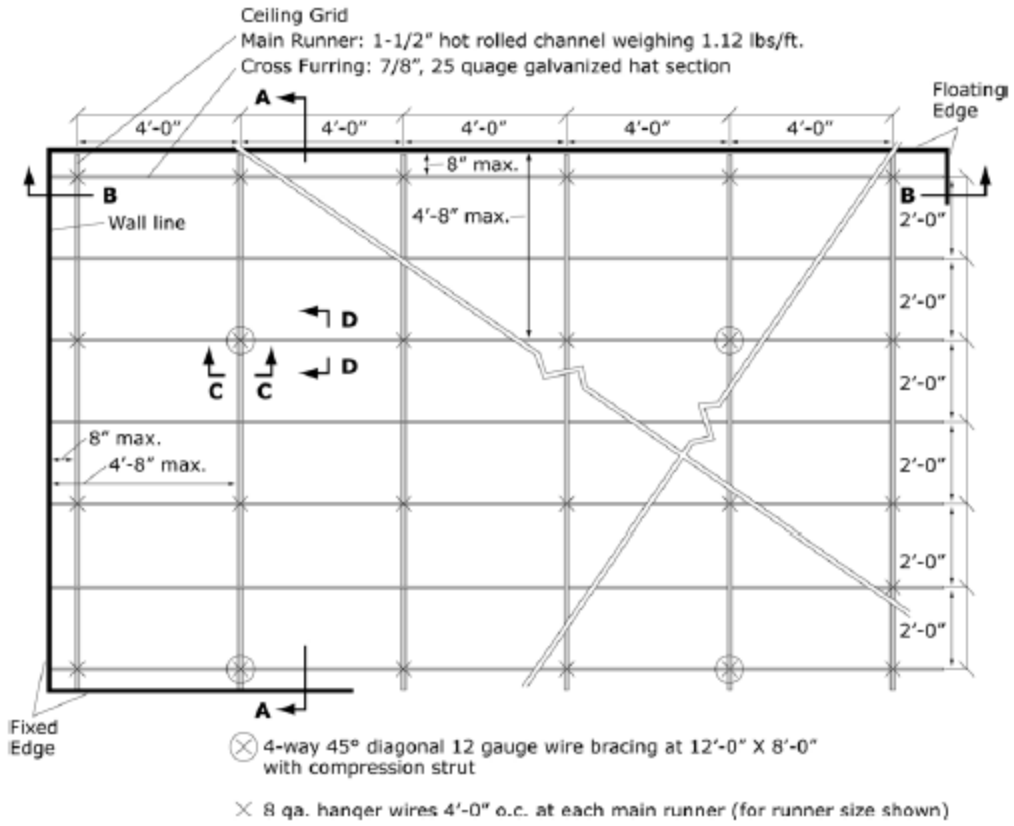


Figure G-14. Diagrammatic View of Suspended Heavy Ceiling Grid and Lateral Bracing.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

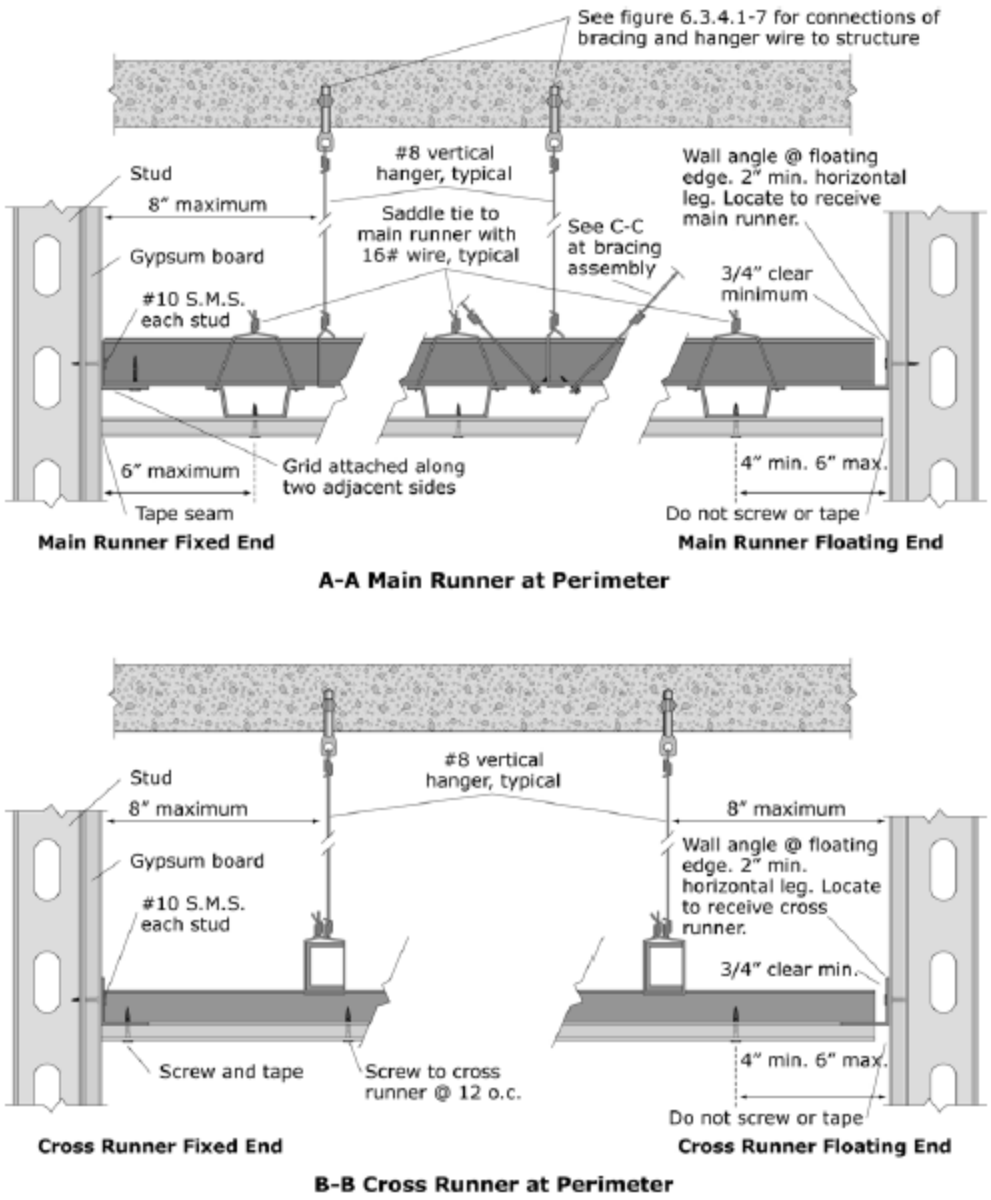
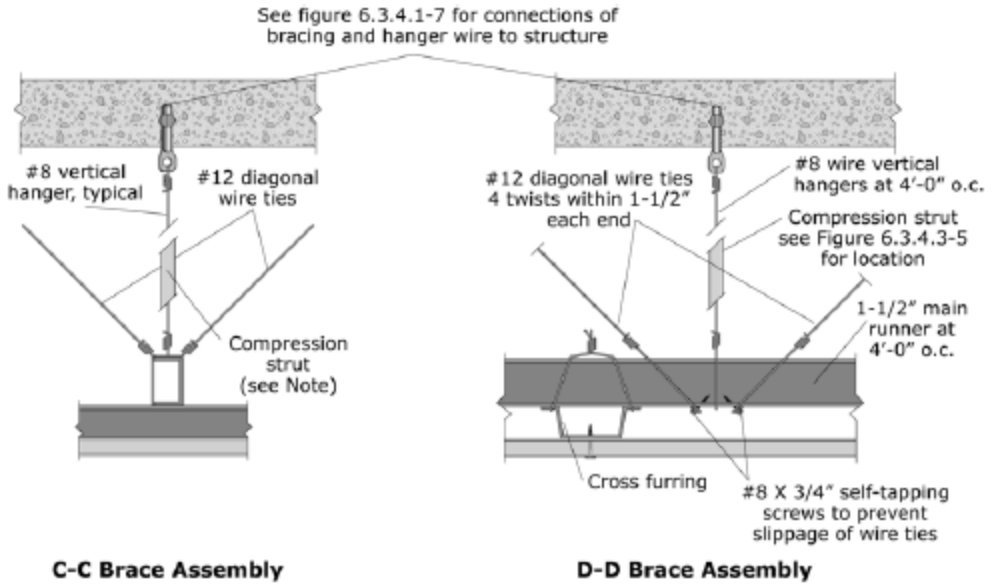


Figure G-15. Perimeter Details for Suspended Gypsum Board Ceiling.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



Note: Compression strut shall not replace hanger wire. Compresion strut consists of a steel section attached to main runner with 2 - #12 sheet metal screws and to structure with 2 - #12 screws to wood or 1/4" min. expansion anchor to concrete. Size of strut is dependent on distance between ceiling and structure (l/r ≤ 200). A 1" diameter conduit can be used for up to 6', a 1-5/8" X 1-1/4" metal stud can be used for up to 10'. See figure 6.3.4.1-6 for example of bracing assembly.

Figure G-16. Details for Lateral Bracing Assembly for Suspended Gypsum Board Ceiling.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

Light Fixtures

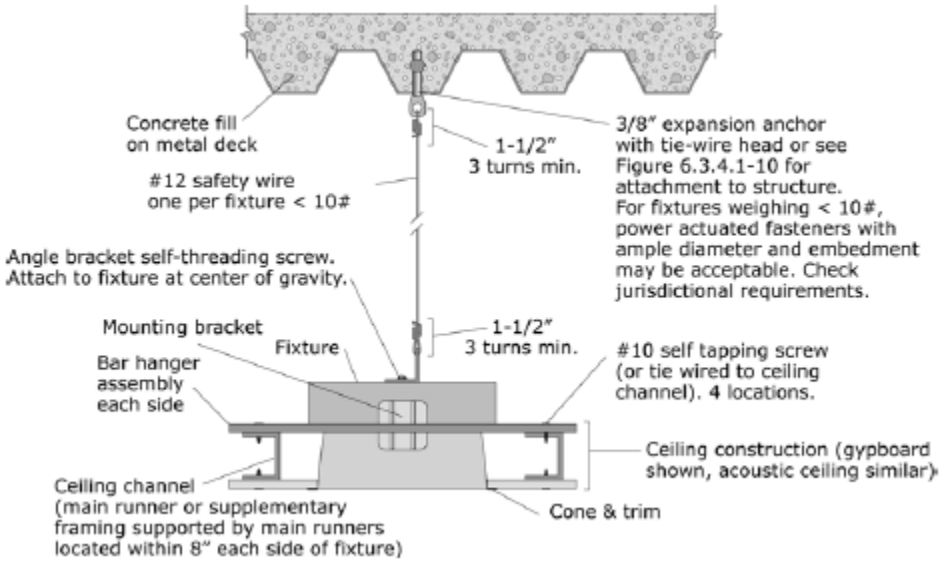


Figure G-17. Recessed Light Fixture in suspended Ceiling (Fixture Weight < 10 pounds).

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

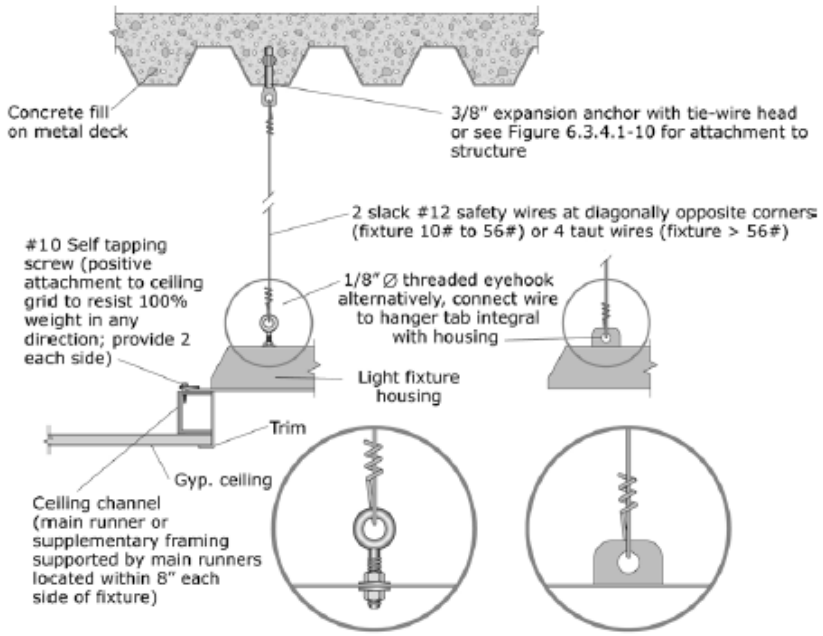


Figure G-18. Recessed Light Fixture in suspended Ceiling (Fixture Weight 10 to 56 pounds).

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

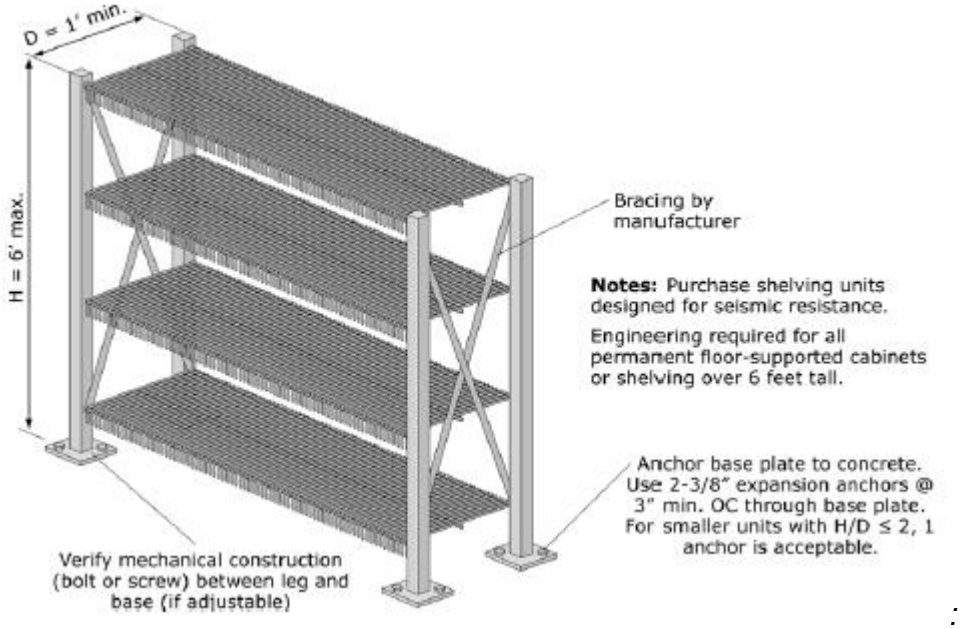


Figure G-19. Light Storage Racks.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

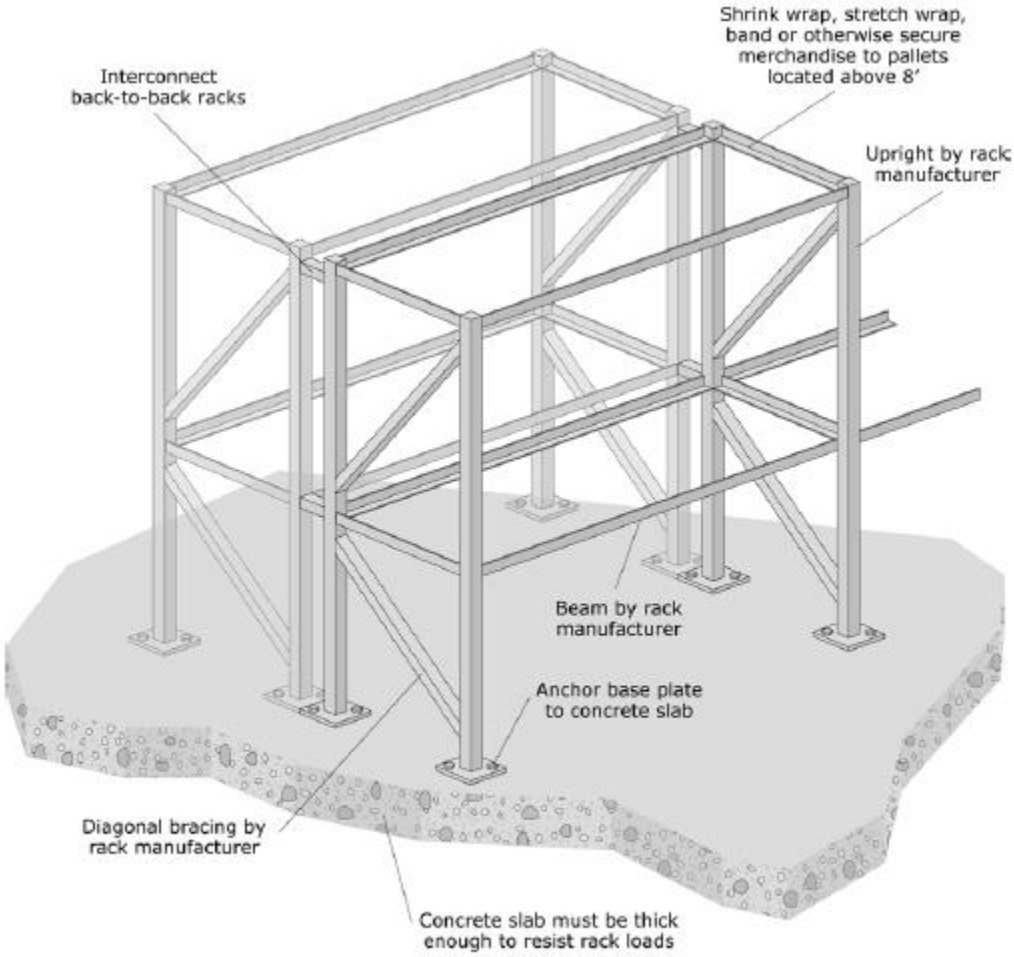


Figure G-20. Industrial Storage Racks.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

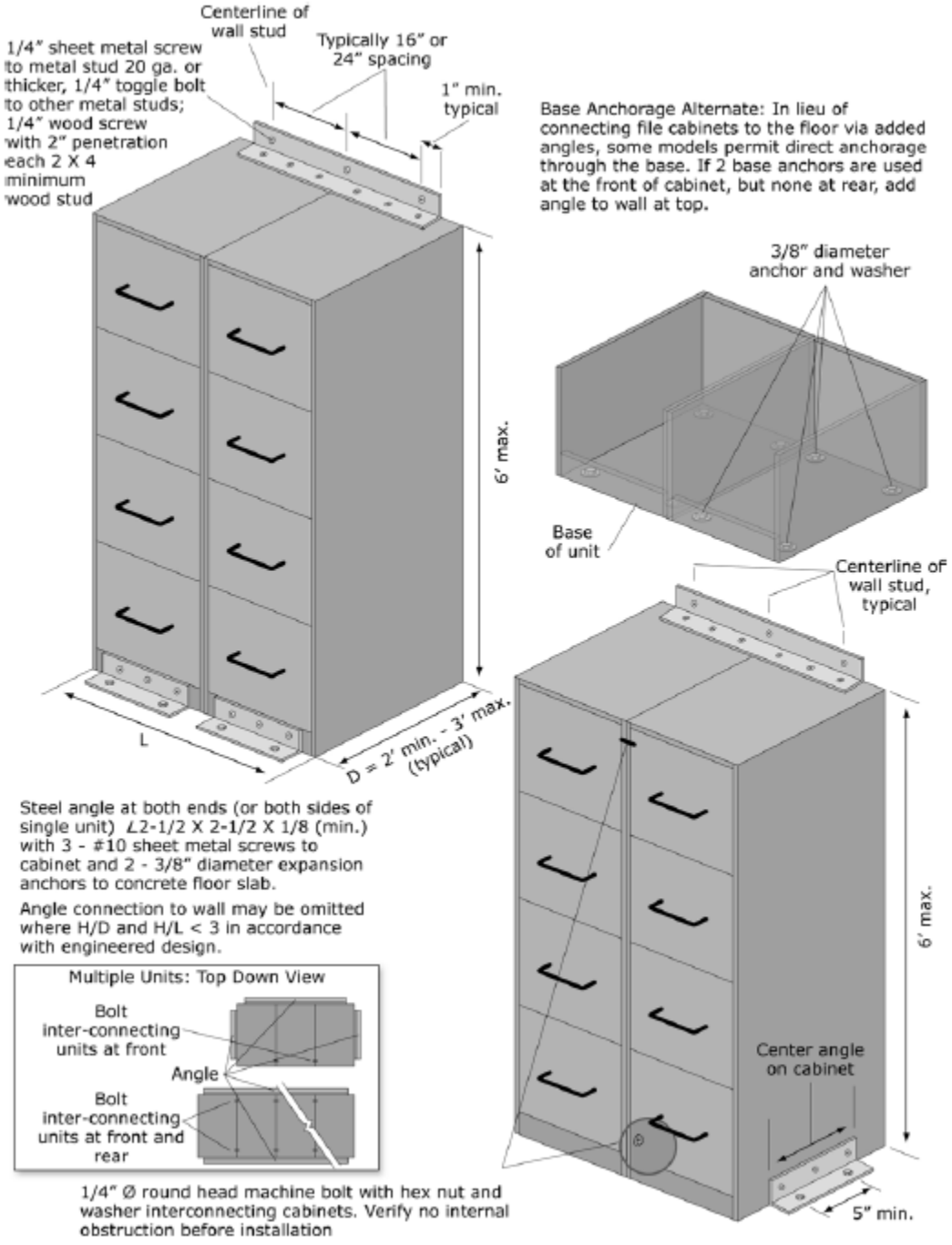


Figure G-21. Wall-mounted File Cabinets.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

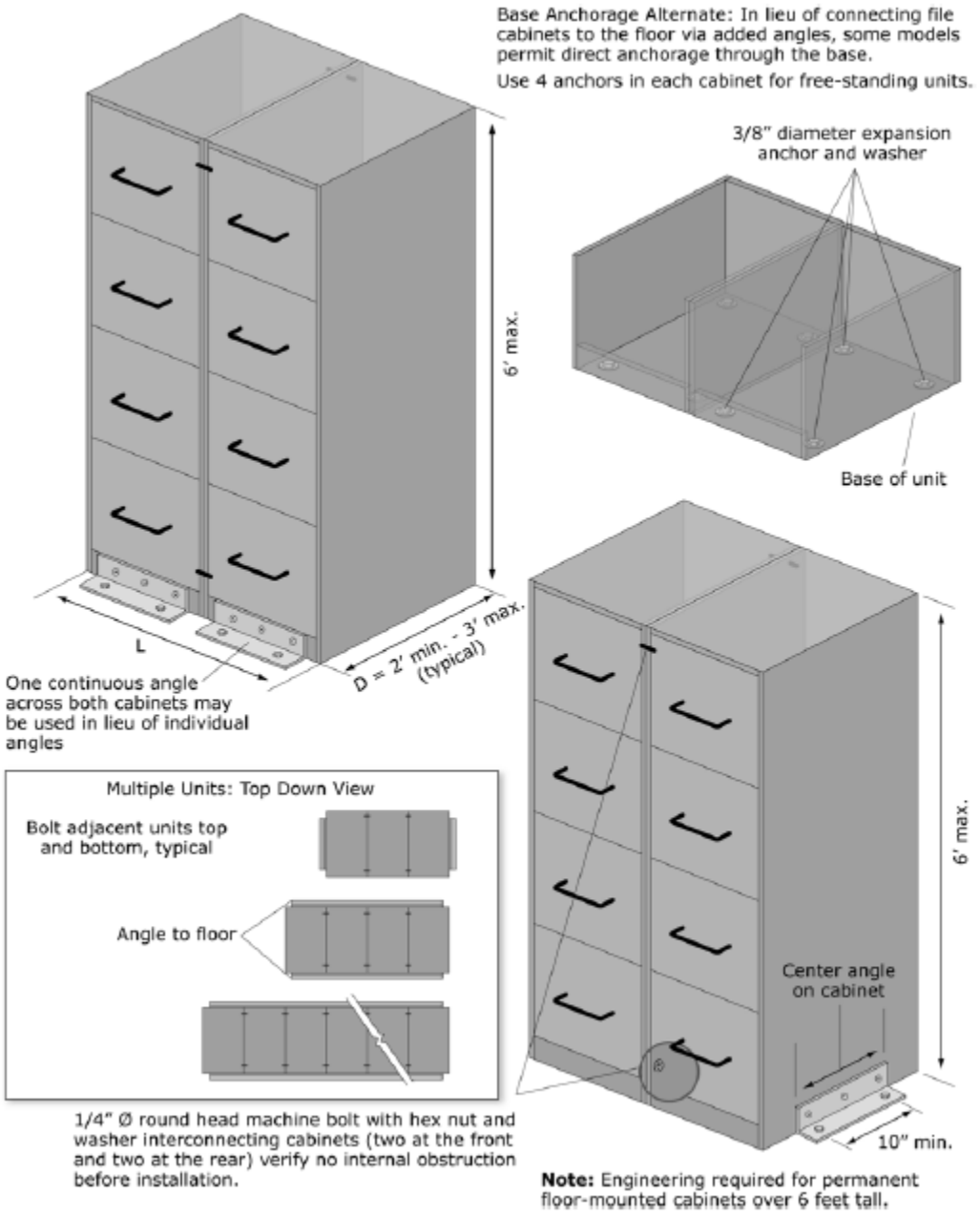


Figure G-22. Base Anchored File Cabinets.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

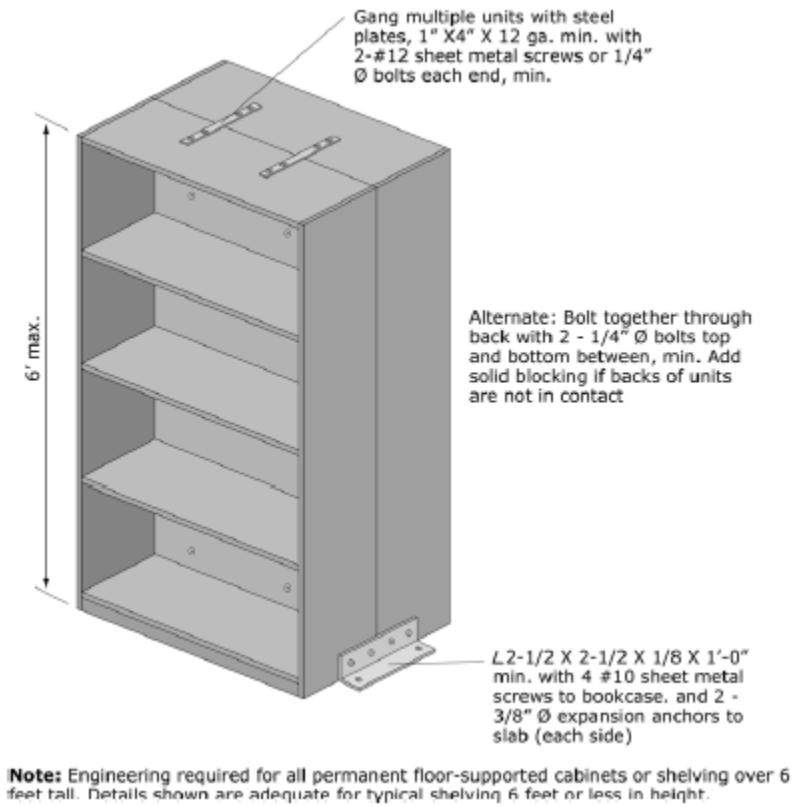


Figure G-23. Anchorage of Freestanding Book Cases Arranged Back to Back.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

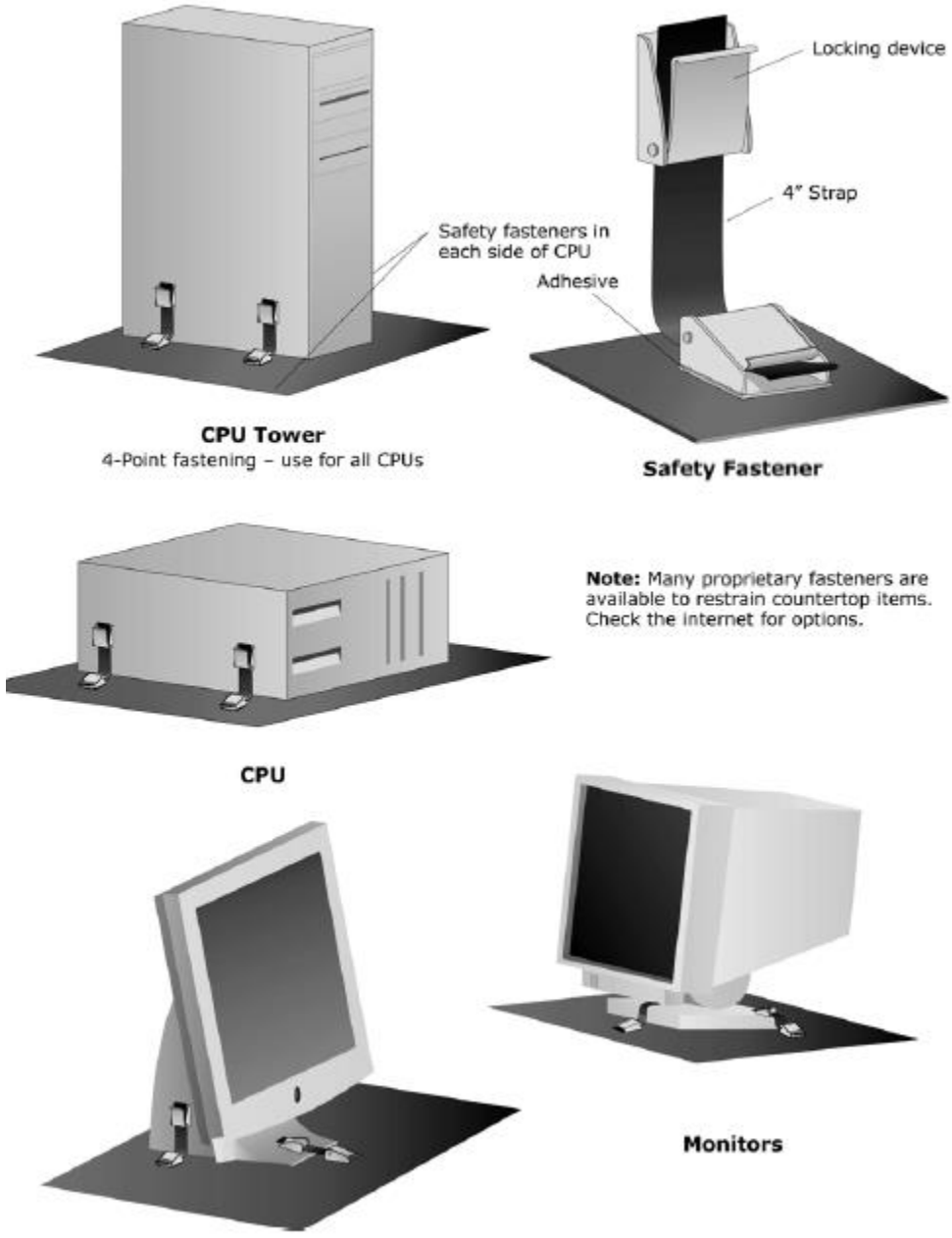
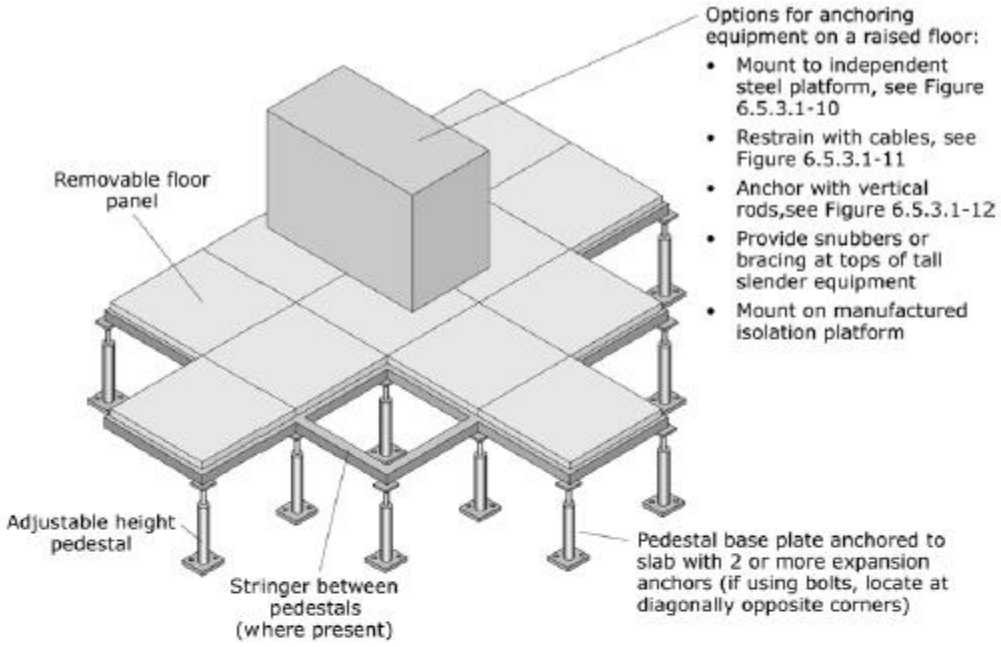
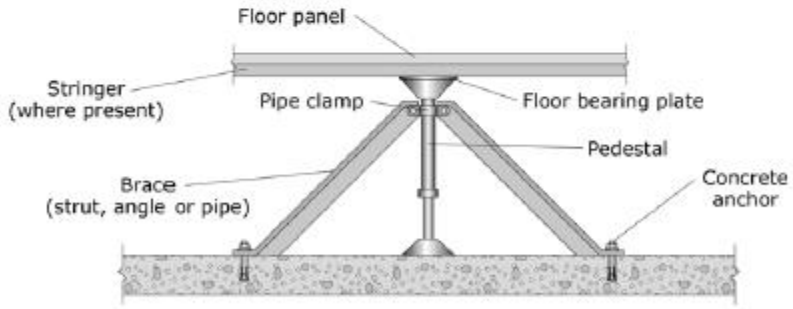


Figure G-24. Desktop Computers and Accessories.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



Cantilevered Access Floor Pedestal



Braced Access Floor Pedestal
(use for tall floors or where pedestals are not strong enough to resist seismic forces)

Note: For new floors in areas of high seismicity, purchase and install systems that meet the applicable code provisions for "special access floors."

Figure G-25. Equipment Mounted on Access Floor.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

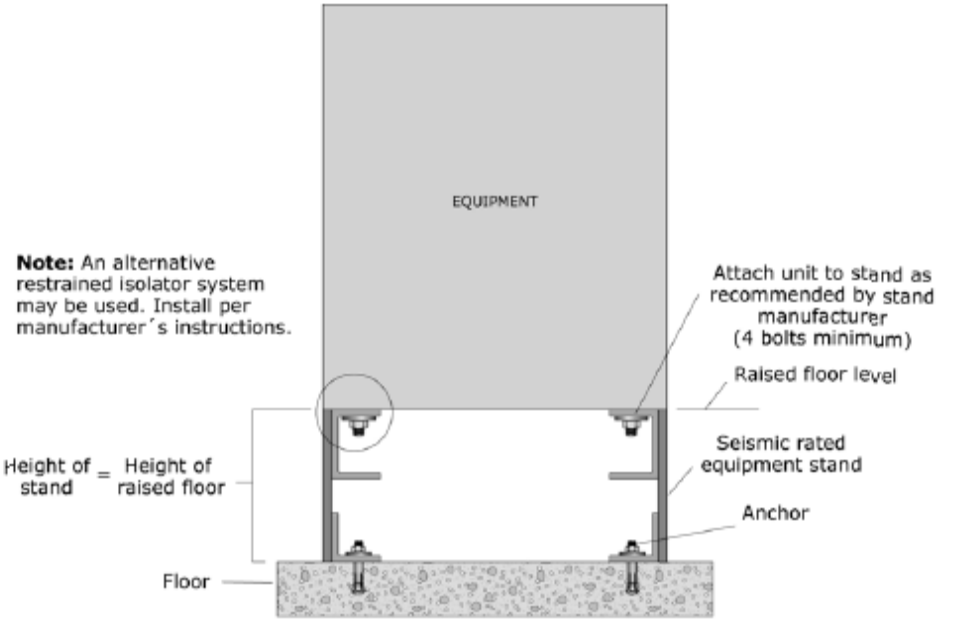


Figure G-26. Equipment Mounted on Access Floor – Independent Base.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

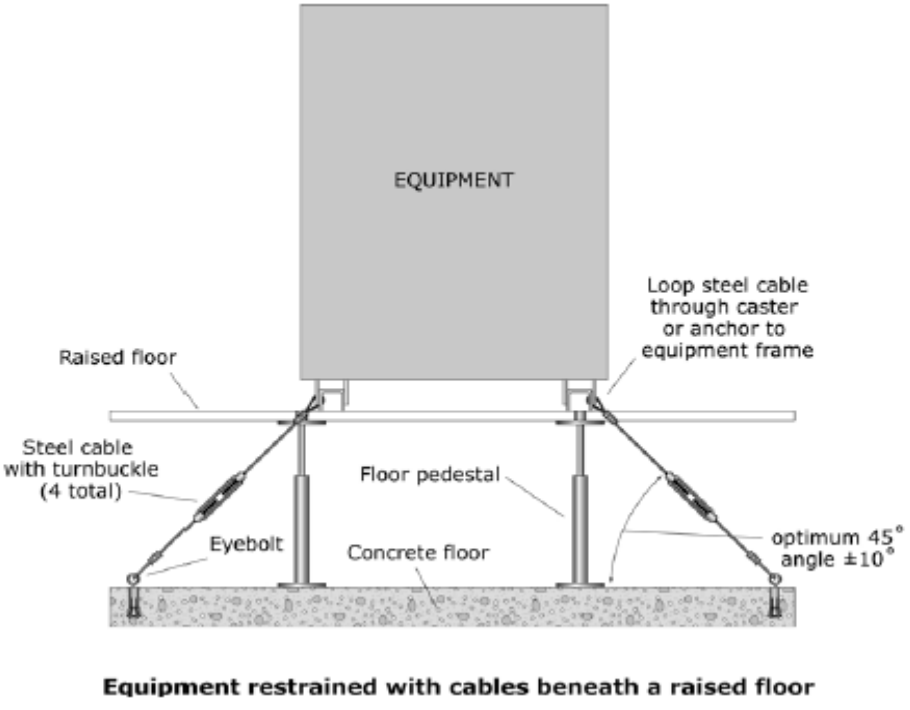


Figure G-27. Equipment Mounted on Access Floor – Cable Braced.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

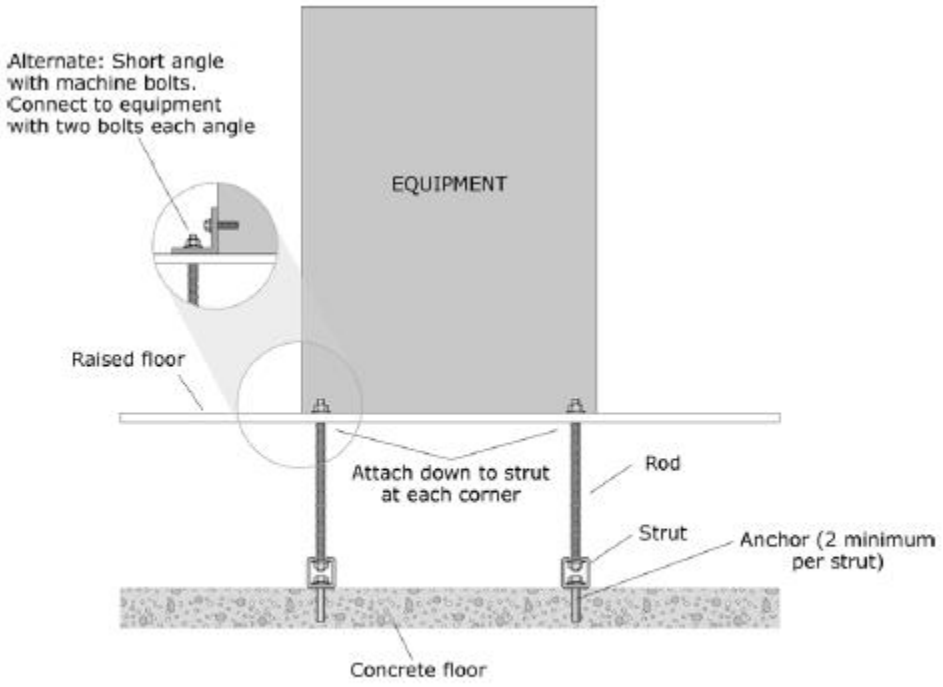
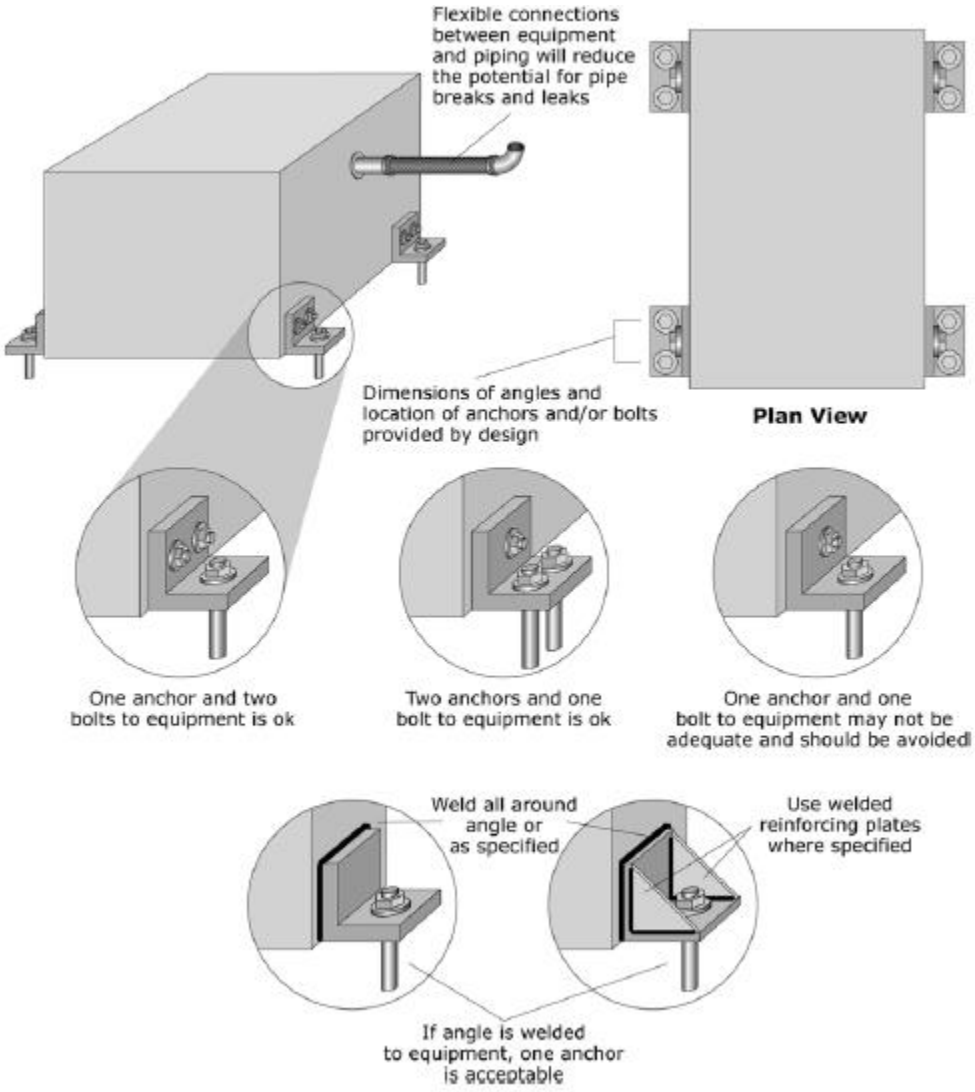


Figure G-28. Equipment Mounted on Access Floor – Tie-down Rods.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



Note: Rigidly mounted equipment shall have flexible connections for the fuel lines and piping.

Figure G-29. Rigidly Floor-mounted Equipment with Added Angles.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

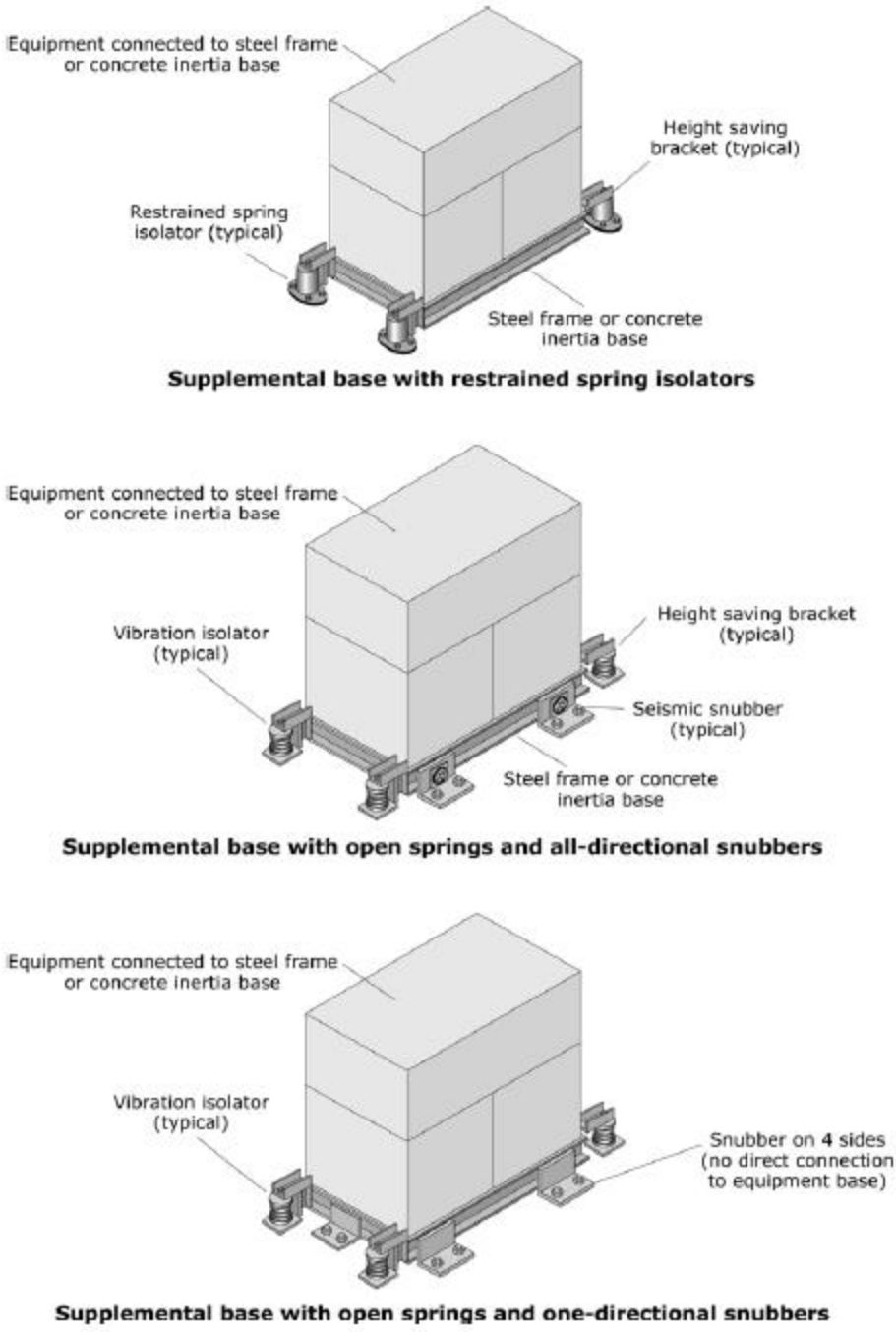


Figure G-30. HVAC Equipment with Vibration Isolation.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

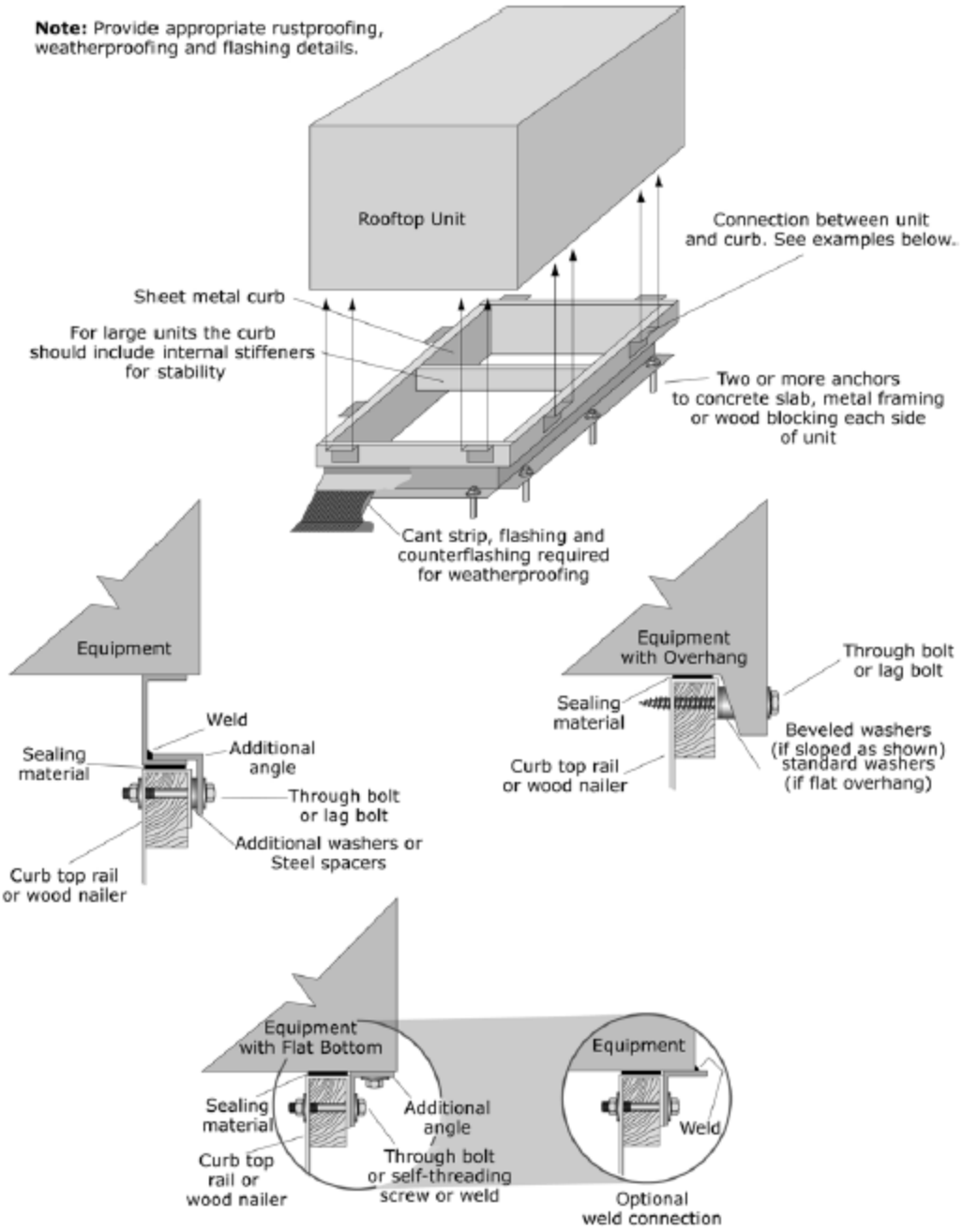


Figure G-31. Rooftop HVAC Equipment.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

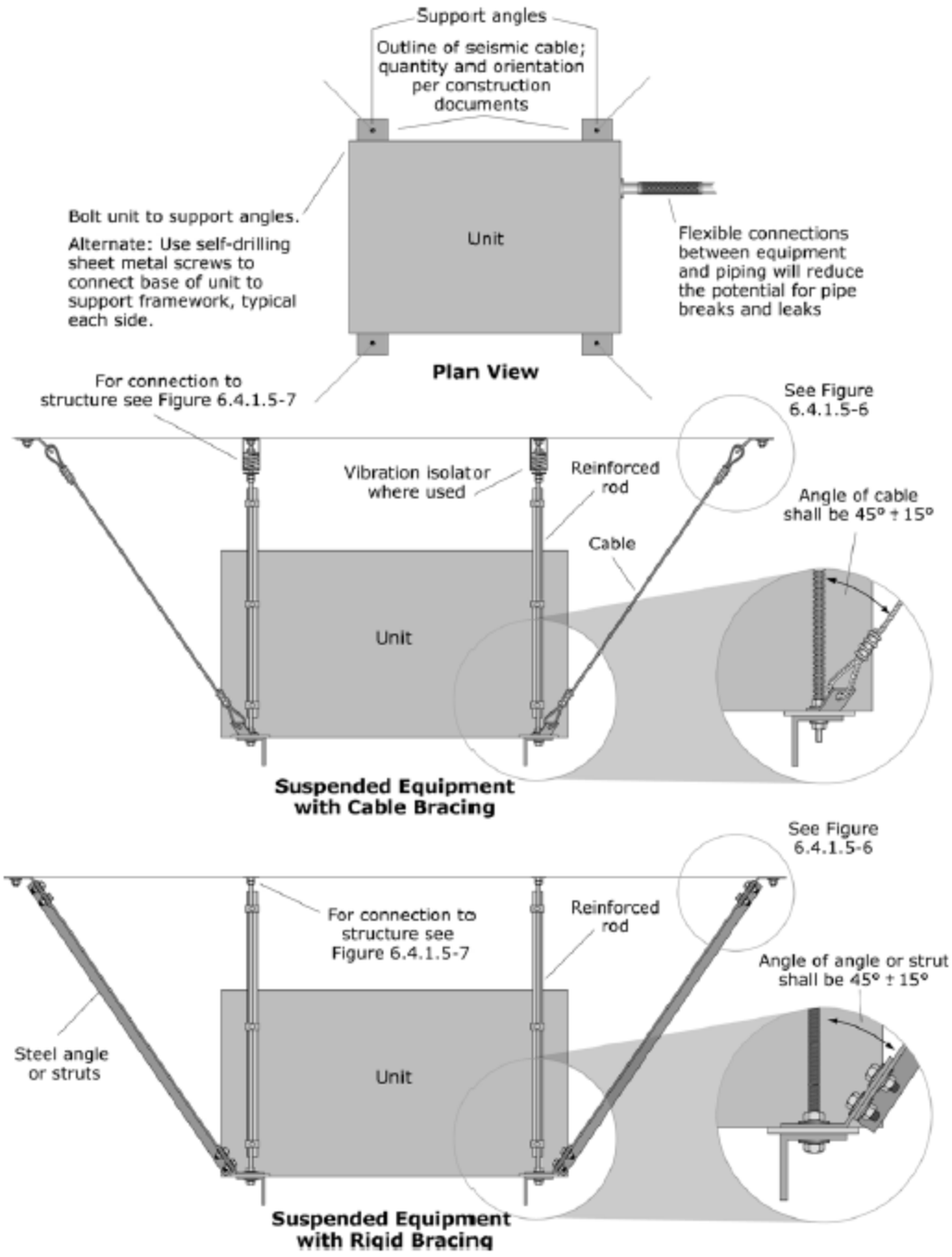


Figure G-32. Suspended Equipment.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

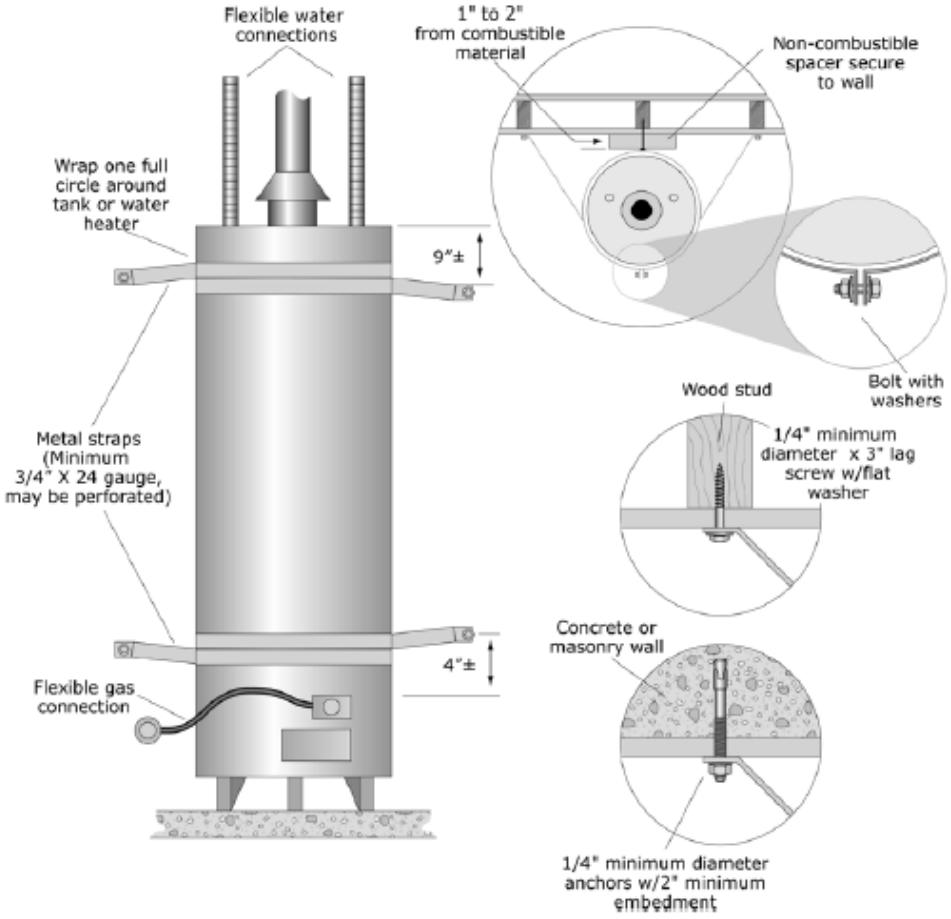


Figure G-33. Water Heater Strapping to Backing Wall.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

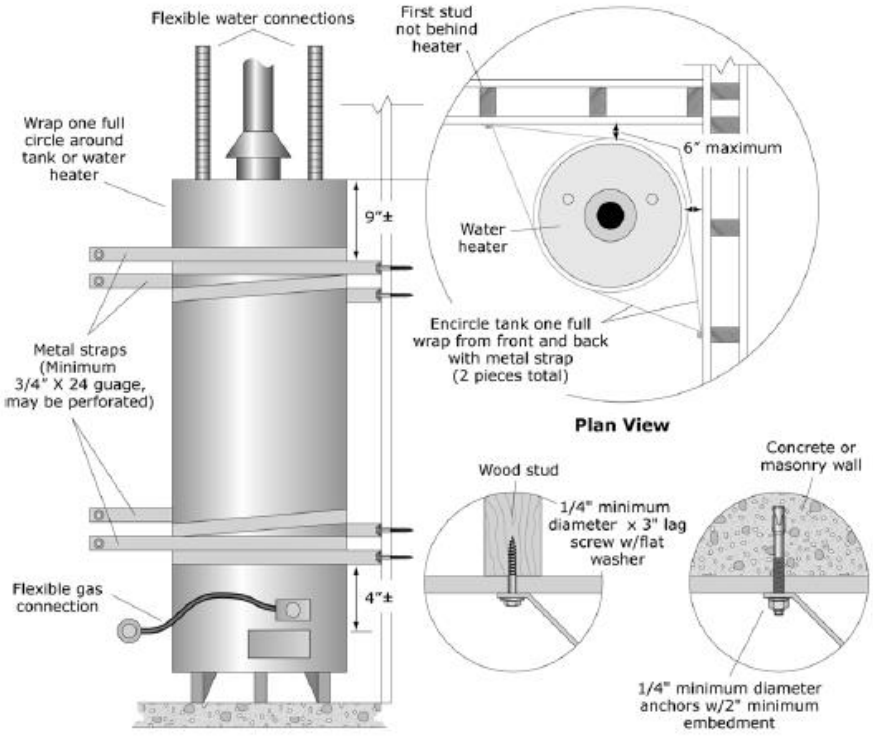


Figure G-34. Water Heater – Strapping at Corner Installation.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

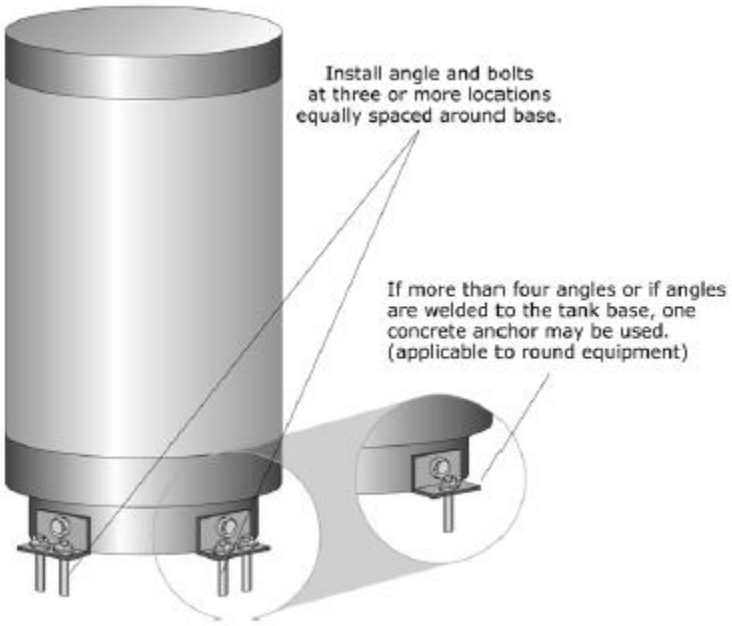


Figure G-35. Water Heater – Base Mounted.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

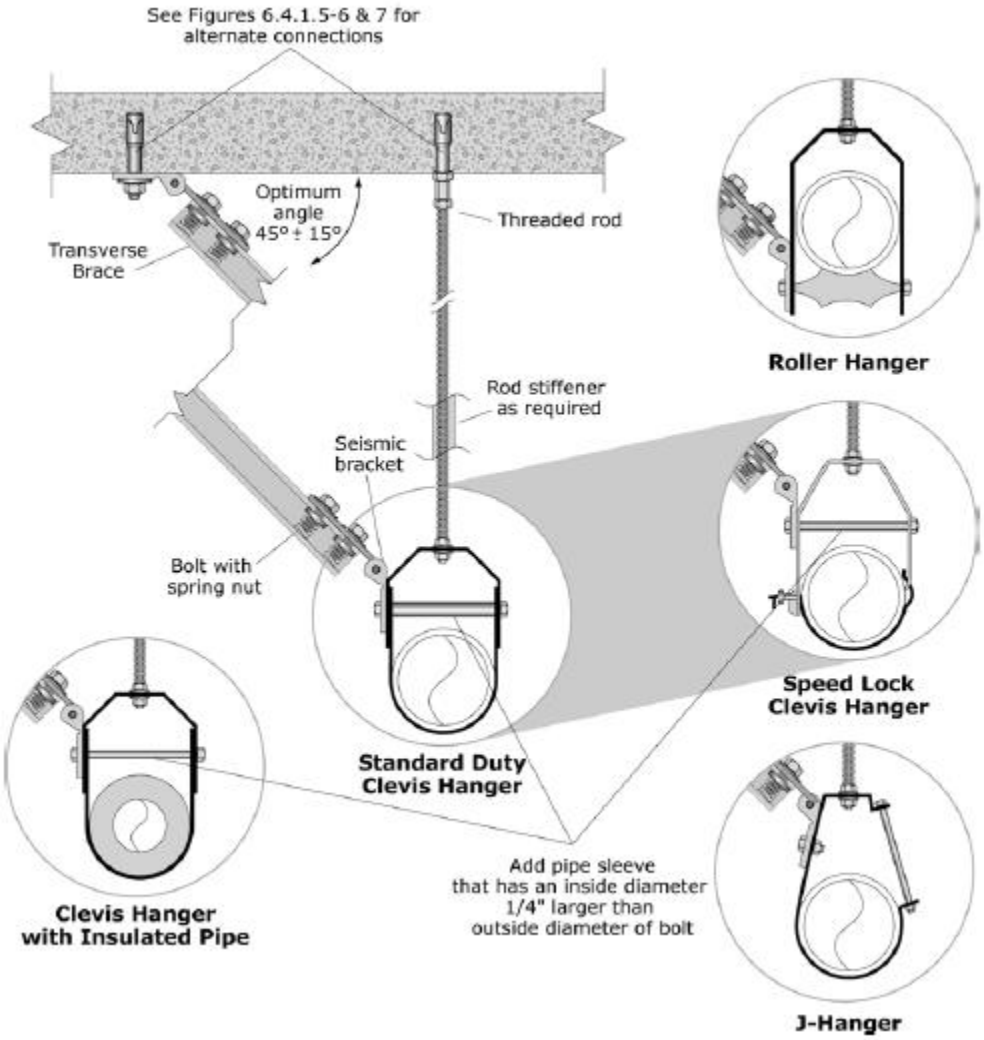


Figure G-36. Rigid Bracing – Single Pipe Transverse.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

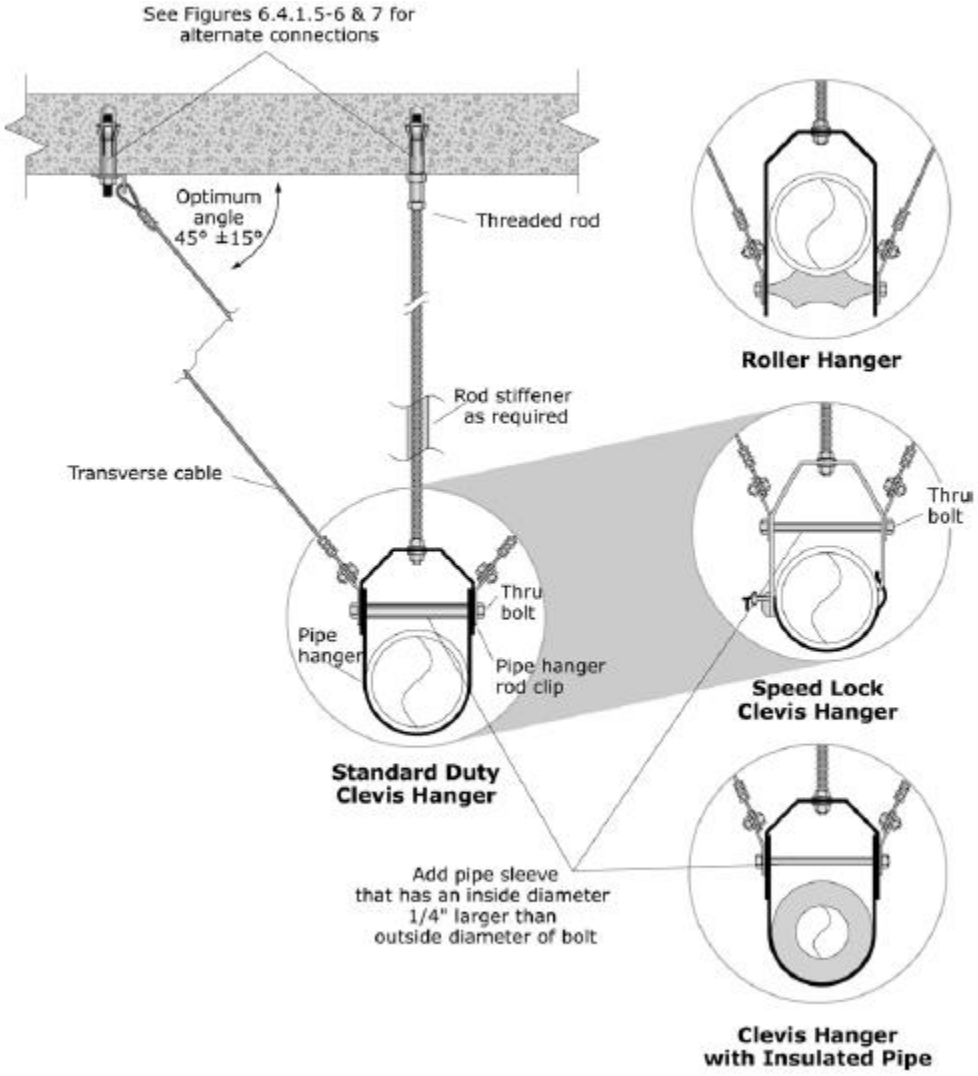


Figure G-37. Cable Bracing – Single Pipe Transverse.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

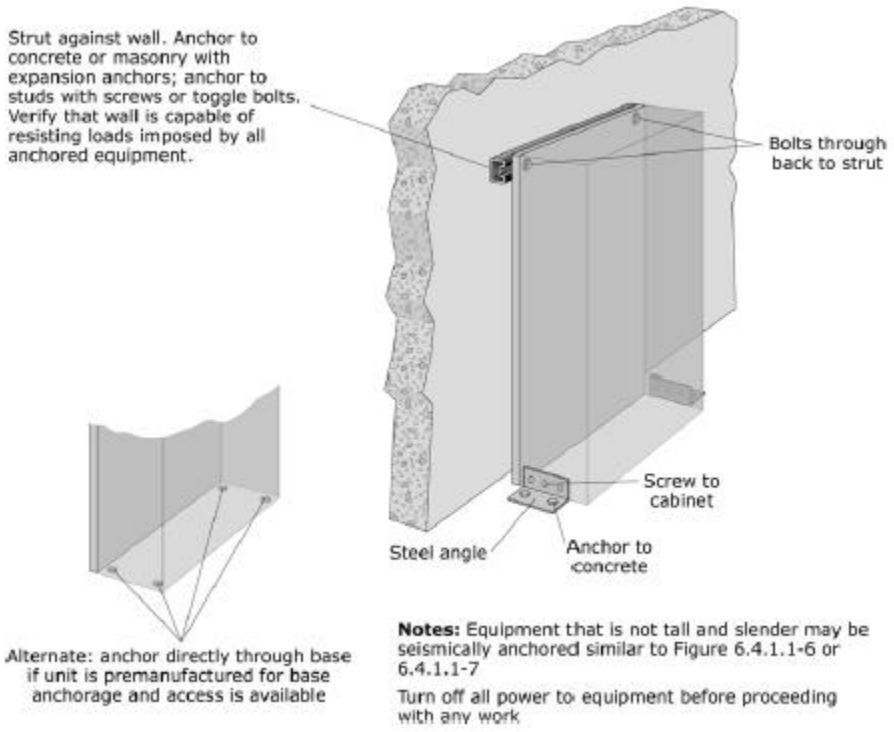


Figure G-38. Electrical Control Panels, Motor Controls Centers, or Switchgear.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

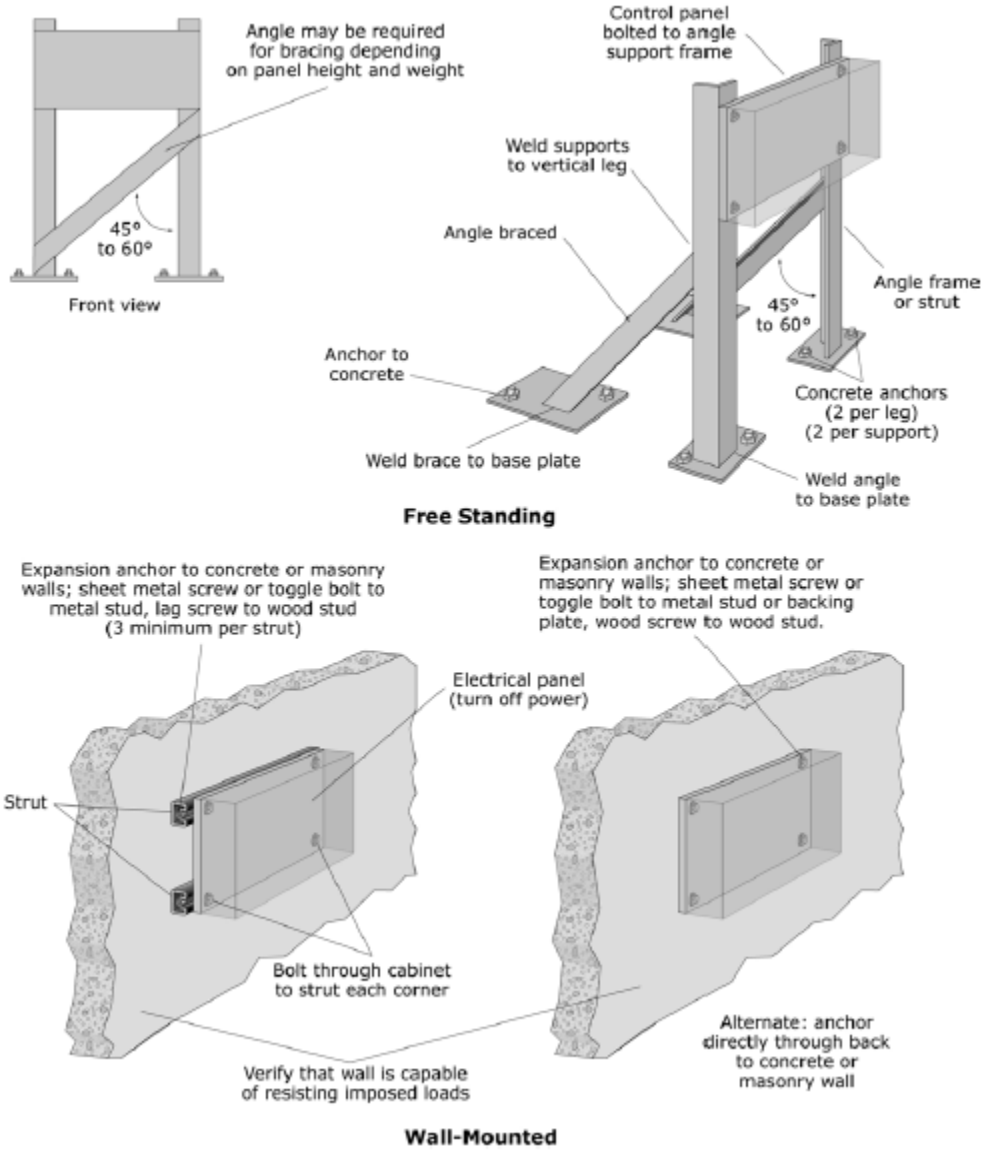


Figure G-39. Freestanding and Wall-mounted Electrical Control Panels, Motor Controls Centers, or Switchgear.

(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

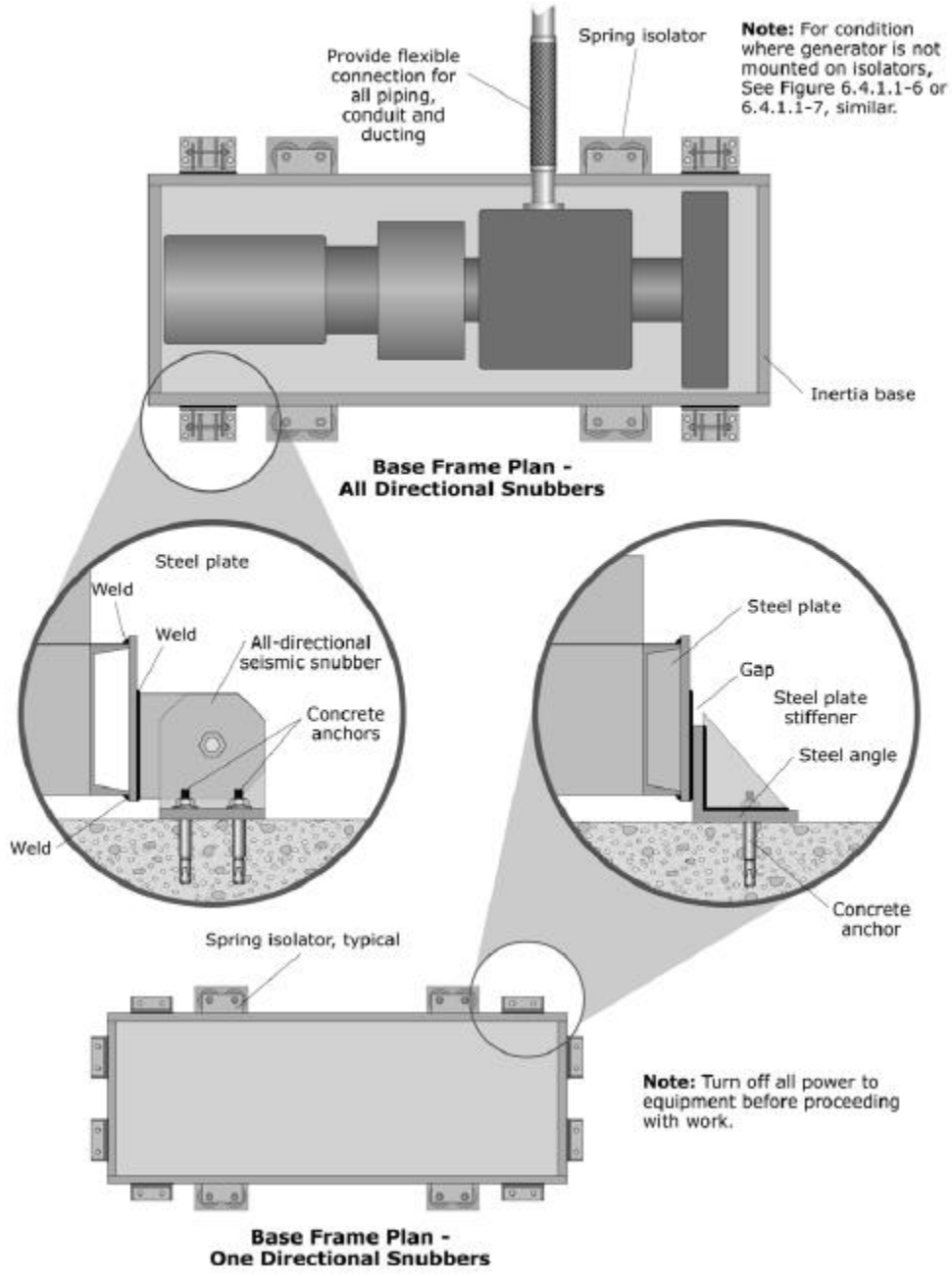


Figure G-40. Emergency Generator.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

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ReidMiddleton

728 – 134th St SW
Suite 200
Everett, WA 98204

Tel 425-741-3800
Fax 425-741-3900

www.reidmiddleton.com
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