Washington State School Seismic Safety Assessments Project

SEISMIC UPGRADES CONCEPT DESIGN REPORT

Pacific Beach Elementary School – Gym

North Beach School District

June 2019

PREPARED FOR

PREPARED BY

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

This page intentionally left blank.

WASHINGTON STATE SCHOOL SEISMIC SAFETY ASSESSMENTS PROJECT

SEISMIC UPGRADES CONCEPT DESIGN REPORT

North Beach Elementary School – Gym

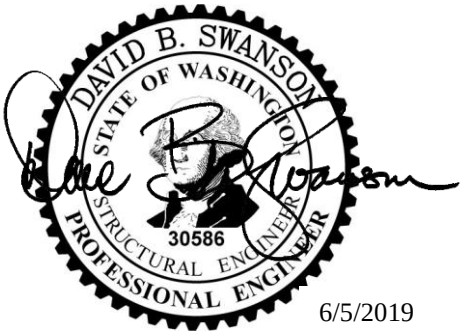
Pacific Beach School District

June 2019

Prepared for:

State of Washington
Department of Natural Resources and Office of Superintendent of Public Instruction

Prepared by:



6/5/2019

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

This page intentionally left blank.

EXECUTIVE SUMMARY

This report documents the findings of a preliminary seismic evaluation of the Pacific Beach Elementary School Gymnasium in Pacific Beach, Washington. The school is an elementary school for approximately 150 students. The building is a 10,000-square-foot, single-story building that houses the cafeteria, gymnasium, lockers, kitchen, and theater space. The building was originally constructed in the 1950s. The building is wood-framed structure with brick masonry walls at the lockers and other exterior walls around the building. The roof is constructed with wood decking or sheathing over joists, supported by heavy glulam girders. Girders are supported on wood posts, and low roof areas are supported on wood and brick masonry bearing walls. The foundation system for the building is composed of shallow spread footings below columns and continuous wall footings under brick masonry or wood-frame walls.

Reid Middleton performed a Tier 1 screening in accordance with ASCE 41-17. The evaluation included field observations and review of record drawings to verify the existing construction. The structural seismic evaluation indicated that the building has multiple seismic deficiencies, including overstressed or poorly detailed wood and masonry bearing walls and irregular geometry of the lateral-force-resisting system. Other deficient items include insufficient masonry wall anchorage to transfer wall out-of-plane loading and an overstressed diaphragm at the roof.

Conceptual seismic upgrade recommendations for structural and nonstructural systems are provided to improve the performance of the building to meet the Immediate Occupancy structural performance objective criteria of ASCE 41-17. Sketches for the concept-level seismic upgrades are provided in Appendix B. The structural upgrades include installing supplemental concrete shotcrete walls along the existing brick masonry walls, reinforcing existing wood-frame walls, providing foundation upgrades at supplemental concrete walls, and upgrading the roof diaphragm. Upgrades to the roof diaphragm include installing a new layer of plywood over the existing decking, additional wall anchorages at the tops of walls, and adding wood blocking below the roof sheathing. The recommendations for nonstructural upgrades include restraining containers holding hazardous materials, bracing ceiling framing, providing independent supports for light fixtures, and providing seismic bracing for mechanical equipment.

This page intentionally left blank.

Table of Contents

Appendix List

Figure List

Table List

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

2015 IBC, *2015 International Building Code,* prepared by the International Code Council, Washington, D.C.

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.

ASCE 41-06, 2007, *Seismic Rehabilitation of Existing Buildings*, prepared by the Structural Engineering Institute of the American Society of Civil Engineers, Reston, Virginia.

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.

ATC-14, *Evaluating the Seismic Resistance of Existing Buildings,* prepared for Applied Technology Council by H.J. Degenkolb Associates, San Francisco, California.

FEMA E-74, 1994, *Reducing the Risks of Nonstructural Earthquake Damage: A Practical Guide*, prepared by Wiss, Janney, Elstner Associates, Inc., under contract from the Federal Emergency Management Agency (FEMA), Washington, D.C.

FEMA E-74-FM, 2005, *Earthquake Hazard Mitigation for Nonstructural Elements, Field Manual*, prepared by Wiss, Janney, Elstner Associates, Inc., under contract with URS Corporation for the Federal Emergency Management Agency (FEMA), Washington, D.C.

FEMA 310, 1998, *Handbook for Seismic Evaluations of Buildings – A Prestandard*, prepared by America Society of Civil Engineers, Reston, Virginia.

FEMA 547, 2006, *Techniques for the Seismic Rehabilitation of Existing Buildings*, prepared by Rutherford & Chekene Consulting Engineers under contract with the National Institute of Standards and Technology (NIST), funded by the Federal Emergency Management Agency (FEMA).

NFPA 13, 2019, *Standard for the Installation of Sprinkler Systems*, prepared by National Fire Protection Association.

FEMA P-1000, *Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety*. Prepared by www.fema.gov/media-library/assets/documents/132592

Case Studies of Successful U.S. School Seismic Screening Programs. Prepared by EERI Staff, Members and Volunteers. https://www.eeri.org/wp-content/uploads/SESI_Screening_BestPractices_Version1_Dec2016.pdf

Incremental Seismic Rehabilitation of School Buildings (K-12): Providing Protection to People and Buildings (2003). Prepared by https://www.fema.gov/media-library/assets/documents/5154

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

BJSS Duarte Bryant Architecture, April 2004, existing drawings titled “Pacific Beach Elementary School Capital Improvements” North Beach School District (Architectural, Mechanical, and Electrical drawings only, no structural drawings).

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.

This page intentionally left blank.

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

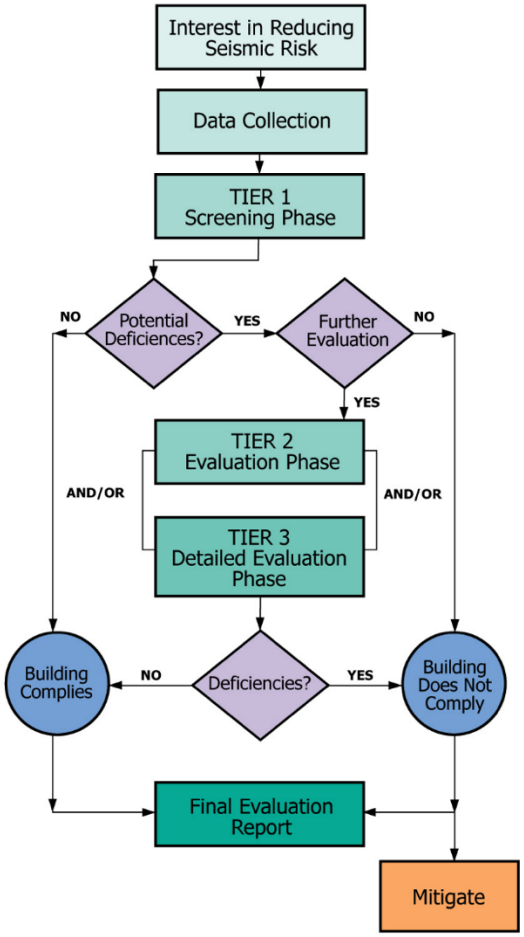


Figure 2-1. Flow Chart and Description of ASCE 41 Seismic Evaluation Procedure.

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 shear walls and wall anchorage. 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 Pacific Beach Elementary 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 0.982 g, and the design 1-second period spectral acceleration, S_{D1} is 0.737 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 Pacific Beach Elementary 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	0.341 g	0.2 Seconds	0.982 g	0.2 Seconds	1.00 g	0.2 Seconds	1.473 g
1.0 Seconds	0.137 g	1.0 Seconds	0.491 g	1.0 Seconds	0.491 g	1.0 Seconds	0.737 g

2.2.2 Pacific Beach Elementary Gym Structural Performance Objective

For the purposes of this study, the gymnasium building is considered an essential facility (Risk Category IV) and will require immediate use following an earthquake. Risk Category IV buildings are structures that represent a substantial hazard to the community in the event of failure. According to ASCE 41, the BPOE for Risk Category IV structures is the Immediate Occupancy structural performance level at the BSE-1E seismic hazard level and the Life 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 **Immediate Occupancy** 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 Immediate Occupancy performance level, the building may sustain limited damage but will remain safe to occupy after an earthquake. Structural and nonstructural components may be damaged, but structural framing is expected to retain pre-earthquake strength and stiffness, and nonstructural components will remain anchored to the structure to prevent falling. Continued use of the building will not be limited by its structural condition, but might be limited by damage to nonstructural elements, equipment, or utility services.

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 as a combination of a Reinforced Masonry shear wall building with flexible diaphragms, **RM1**; and a Wood Framed Building with Flexible Diaphragms, **W2.** Reinforced masonry shear wall buildings (RM1) include those that have bearing shear walls constructed of reinforced masonry with elevated floor and roof framing structural systems consisting of wood framing. Wood Framed (W2) buildings include those that have bearing walls, columns, beams, and shear walls constructed of timber, with floor and roof diaphragms sheathed with plywood or decking. For the purposes of the Tier 1 screening the building was evaluated primarily as an RM1 structure.

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: 1956
Building Code: Unknown

Number of Stories: 1
Floor Area: 10,049 SF

FEMA Building Type: RM1 and W2
ASCE 41 Level of Seismicity: High
Site Class: D

The building is a single-story gymnasium, also used as a lunchroom and theater space. The structural system consists of wood-framed columns, beams, and walls. Several of the exterior walls are also constructed of reinforced brick masonry. Based on the age of the building, the roof deck is likely constructed of straight or diagonal wood decking. Roof decking is supported on wood joists and glulam roof girders. Each roof girder is supported on each end by a timber column that is framed into the exterior wall. The lateral-force-resisting system of the building is composed of wood shear walls and reinforced brick masonry walls.

The foundation system for the building is composed of shallow spread footings and conventional slab on grade.

3.1.2 Building Use

The Pacific Beach Elementary Gymnasium supports approximately 150 students and the school faculty. The gymnasium is currently used as a cafeteria, athletic court, theater, locker room, and main kitchen. In small communities like Pacific Beach school gymnasiums are often used as gathering areas following a natural disaster. For the purpose of this study, the gymnasium building has been classified as a Risk Category IV structure, and the structural concept upgrades are targeting an Immediate Occupancy structural performance objective. The purpose of the Immediate Occupancy structural performance objective is to provide a building that sustains only limited structural damage in an earthquake and can be safely occupied immediately after an earthquake. Nonstructural upgrades proposed in this report are based on a Life Safety performance level.

3.1.3 Structural System

Table 3.1.3-1. Structural System Descriptions.

Structural System	Description
Roof	The roof framing consists of either decking or plywood sheathing supported on wood joists that span to heavy glulam girders.
Floor	The ground floor at Pacific Beach Elementary consists of a conventional slab on-grade.
Foundation	Foundations consist of cast-in-place reinforced concrete shallow spread footings supporting columns and concrete strip footings supporting bearing walls.
Gravity System	The gravity system consists of wood decking, wood joists with heavy timber girders and columns, wood bearing walls, and reinforced brick masonry bearing walls.
Lateral System	The lateral system consists of wood decking or plywood diaphragms, laterally supported by wood shear walls or reinforced brick masonry walls. Sliding and overturning forces from lateral loads are resisted by concrete spread footings.

3.1.4 Structural System Visual Condition

Table 3.1.4-1. Structural System Condition Descriptions.

Structural System	Description
Roof	The roof and ceilings appeared to be in good condition. No damage was observed.
Floor	Good. No major damage observed in the slab on grade.
Foundations Condition	No damage was observed that could likely be attributed to settlement. The foundations were not directly observed. The liquefaction potential is low based on information from the ICOS database.
Gravity System Condition	The condition of the gravity system appears to be functional and intact. Cracking was observed in several locations in the brick masonry walls, which is likely due to thermal shrinkage and expansion. The brick appeared to be damaged from impact in a few places.
Lateral System Condition	Shear walls appeared to be in good condition, except for cracking in the brick walls noted above. See structural deficiencies below for additional comments on the lateral system.

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
Adjacent Buildings	The main building and walkway canopies do not appear to be adequately separated from the gymnasium.
Vertical Irregularities	The east wall of the gym is discontinuous and supported by a transfer beam.
Ties Between Foundation Elements	Foundations are assumed to be conventional spread footings tied into the slab on grade without ties between elements.
Reinforcing Steel	Brick masonry units of this vintage are sometimes reinforced with rebar. However, reinforcing information was not available for this study. This should be verified by testing.
Wall Anchorage	Many buildings of similar construction type and vintage are noncompliant. Connections at the top of masonry walls should be verified by removing finishes.

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	Liquefaction potential to be confirmed with the site-specific geotechnical study.
Slope Failure	Requires further investigation by a licensed geotechnical engineer to determine susceptibility to slope failure.

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

Deficiency	Description
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	The foundations are assumed to be conventional spread footings tied into the slab on grade. Further investigation should be performed. Additional foundation ties may be appropriate to mitigate seismic risk.
Reinforcing Steel	Brick masonry units of this vintage are sometimes reinforced with rebar.
Wall Anchorage	Many buildings of similar construction type and similar vintage are noncompliant. The top of wall conditions should be verified.
Transfer to Shear Walls	Buildings of this type and vintage are usually compliant for transfer of forces in the plane of the shear walls.
Foundation Dowels	Foundation detail is unknown. Further investigation should be performed. Additional shear wall anchoring may be appropriate to mitigate seismic risk.
Cross Ties	Diaphragm chord details are unknown. Further investigation should be performed. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
Stiffness of Wall Anchors	Anchor details are unknown. Further investigation should be performed. Additional anchoring may be appropriate to mitigate seismic risk.

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	Not able to verify during site investigation. This item is commonly noncompliant for contents meeting the criteria. Brace tops of shelves taller than 6 feet to nearest backing wall or provide overturning base restraint.

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

Deficiency	Description
CF-3 Fall-Prone Contents	Not able to verify during site investigation. This item is commonly not compliant for contents meeting the criteria. Heavy items on upper shelves should be restrained by netting or cabling to avoid becoming falling hazards.
ME-1 Fall-Prone Equipment	Large air-handling units suspended from the walls and roof of the gymnasium are likely not braced adequately for earthquake forces.

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-3 Emergency Power	Use of emergency power was not verified with maintenance or facility staff.
HM-3 Hazardous Material Distribution	Use of natural gas for heating was not verified with maintenance or facility staff. If gas is used, verify that gas lines are laterally braced and anchored.
HM-4 Shutoff Valves	If natural gas is used, verify working shutoff valves are installed.
HM-5 Flexible Couplings	If natural gas is used, verify flexible couplings are installed.
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.

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

Deficiency	Description
C-2 Suspended Gypsum Board	Dropped ceilings and soffits occur in some areas, but drawings of these elements were not available for review. The construction of the ceilings and soffits should be verified.
ME-2 In-Line Equipment	Not all mechanical/electrical equipment was observed. Units not exposed to view should be verified to have adequate bracing.
ME-3 Tall Narrow Equipment	Not able to verify during site investigation. Further investigation should be performed. Brace tops of equipment taller than 6 feet to nearest backing wall or provide overturning base restraint.
EL-1 Retainer Guards	Elevator equipment was not observed. The elevator checklist items should be verified by an elevator designer or supplier.
EL-2 Retainer Plate	Elevator equipment was not observed. The elevator checklist items should be verified by an elevator designer or supplier.

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 Concrete Shotcrete Walls

Concrete shotcrete walls are recommended at select locations against the existing brick masonry walls. The proposed shotcrete walls are recommended over the full height, from the foundation to the roof level, with sufficient strength and stiffness to resist seismic loads in the plane of the wall. A drag strut beam should be added at the end of the concrete wall to transfer diaphragm loading to the new concrete shear walls. Where existing beams occur on the drag strut line, the connections should be upgraded to reliably transfer the seismic loads.

4.1.2 New Plywood Sheathing at Wood-Frame Walls

Existing wood-frame walls require strengthening with a new layer of plywood sheathing. The sheathing must be nailed directly to the wall framing, or over the top of existing wood panels. The additional layer of plywood extends from the foundation to the roof. Existing attachments of the roof framing to the tops of the walls will be upgraded by adding continuous ledgers along the entire length of the wall.

4.1.3 Foundation Systems

At the supplemental concrete shotcrete wall locations, foundations should be upgraded to support the lateral load-carrying capacity of the new concrete shear walls. The existing foundation system consists of shallow spread footings. Based on the design of the existing shallow foundation system, the upgrades should be shallow concrete spread footings to match the existing system.

4.1.4 Roof Diaphragm and Blocking

Similar to the wood-frame walls, the existing roof diaphragm requires strengthening with a new layer of plywood sheathing. The diaphragm seismic strength and stiffness capacity will also be enhanced by adding blocking at the panel edges. Blocked diaphragms at panel edges have more strength to transfer lateral forces than those that are unblocked. This will require the installation of a new roof membrane.

4.1.5 Wall Anchorage at Roof

Brick masonry wall-to-roof diaphragm anchors should be added. These will consist of tension ties between the walls and the wood roof diaphragms. The tension ties can be Simpson Strong-Tie strap ties nailed to wood framing, with post-installed epoxy-grout anchors embedded in the masonry wall.

4.2 Nonstructural Upgrade Recommendations

Table 3.2.3-1 identifies several nonstructural deficiencies that do not meet the performance objective selected for the Gymnasium. 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, was 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. 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. During the on-site review of the building, Reid Middleton did not observe fire suppression piping or smoke ducts.

The recommended seismic mitigation related to the life safety system is to 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 recommendations should be implemented to prevent the release of hazardous materials:

- Breakable containers that hold hazardous material, including gas cylinders, should be restrained by latched doors, shelf lips, wires, or other methods.
- Piping containing hazardous material, including natural gas, should have shutoff valves or other devices to limit spills or leaks.
- 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.

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 current accessibility standards per the American 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, fire alarm system, etc. 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.

Shotcrete Shear Walls

At proposed shotcrete shear wall locations, existing gypsum board and furring on the interior will need to be removed and reinstalled. With the thicker walls at the locker rooms, the exit widths will be affected, requiring a reconfiguration of both locker rooms, and will affect the existing boys single-occupancy restroom to make it ADA accessible.

Existing Shear Wall Upgrade

Assuming the plywood shear walls will be installed on the exterior side of the gym walls. Existing lap siding would be removed and reinstalled over new plywood sheathing, weather barrier, and drainage mat to the lower roof line or foundation. Below the roof line, the existing gypsum board would be removed at the kitchen, storage area, and corridor. The plumbing chase at the locker rooms would need to be opened up in order to install the plywood on the north side of the chase interior. Locker room drywall and finishes would need to be removed and replaced.

Foundation Work

In order to access the footings, the existing concrete slab on grade and floor finishes would be removed. After the floor slab is replaced, new flooring can be installed at the stage, kitchen, corridor, locker room, and gym. Foundation work will require removal and installation of new wood flooring at the perimeter of gym. The flooring will need to be stitched into the existing flooring in order to eliminate continuous seams.

Roof Diaphragm and Blocking

Roof diaphragm upgrades require the removal of finishes above and below the roof deck for access to install new work. If existing insulation is above the roof rigid insulation, it will need to be replaced with additional insulation to meet current energy code requirements (R-38). Gypsum

board ceilings will need to be removed and replace to allow access to the underside of the deck in order to install blocking and perimeter roof and wall connections.

Given the amount of seismic work required in and around the locker rooms, these rooms will need to be completely demolished and rebuilt with all new finishes in a new layout. This may also require relocation of plumbing fixtures and waste and water lines.

Ceiling

The ceilings in the building appear to be hard lid ceiling finishes attached directly to framing. Some ceilings appear to be hung below the roof framing with additional wood framing. The recommended seismic mitigation for the architectural systems are:

- Ceiling finishes should be attached securely to the ceiling framing to prevent falling. Damaged finishes should be replaced.
- Ceiling framing should be braced laterally to prevent damage during an earthquake.

Contents and Furnishings

The building contains various tall and narrow furniture, such as shelving and storage units, that are freestanding 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.

4.2.4 Mechanical/Electrical/Plumbing (MEP) Systems

The main seismic concerns for mechanical equipment, ducting, and piping are sliding, swinging, and overturning. Inadequate lateral restraint or anchorage can shift equipment off its supports or topple equipment to the ground or onto other equipment. Inadequate bracing of piping and ducting, or the inability for piping to tolerate differential movement from the equipment it is attached to, can damage or dislodge connections. Such damage in fluid piping can potentially lead to major leaks or loss and disruption by damaging contents. The recommended seismic mitigation for MEP systems is:

- Provide seismic bracing for equipment that weighs more than 20 pounds, has a center of mass more than 4 feet above the adjacent floor level, and is not in-line equipment.

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 Pacific Beach Elementary Gymnasium ranges between approximately $1.46M and $2.74M (-20 percent/+50 percent). The estimated construction cost to seismically upgrade this building is approximately $1.83M. On a per-square-foot basis, the seismic upgrade construction cost is estimated to be approximately $182 per square foot in 2019 dollars, with a variance range between $145 per square foot and $273 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)
Pacific Beach Elementary, Gymnasium	RM1	High / D	**Structural**			
			Immediate Occupancy	10,049 SF	$98 ($981K) - $183 ($1.84M)	$122 ($1.23M)
			Nonstructural			
			Life Safety	10,049 SF	$48 ($481K) - $90 ($902K)	$60 ($601K)
			Total			
				10,049 SF	$145 ($1.46M) - $273 ($2.74M)	$182 ($1.83)

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

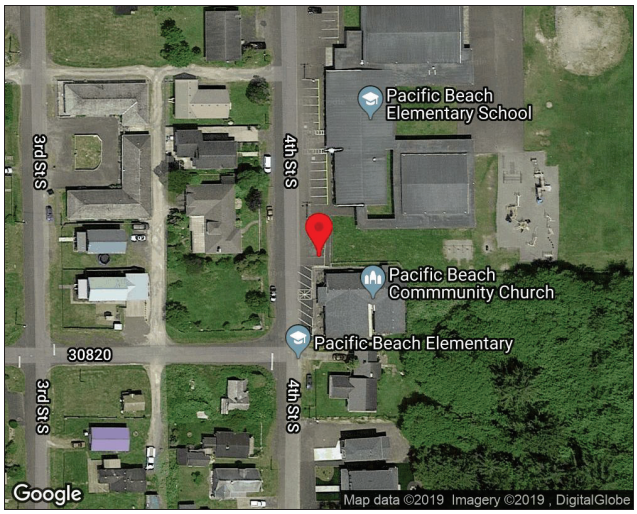
Appendix A: Field Investigation Report and Tier 1 Checklists

This page intentionally left blank.

1. North Beach, Pacific Beach Elementary School, Gym/Lunchroom

1.1 Building Description

Building Name:	Gym/Lunchroom
Facility Name:	Pacific Beach Elementary School
District Name:	North Beach
ICOS Latitude:	47.208
ICOS Longitude:	-124.2
ICOS County/District ID:	14064
ICOS Building ID:	20660
ASCE 41 Bldg Type:	RM1
Enrollment:	150
Gross Sq. Ft. :	10,049
Year Built:	1956
Number of Stories:	1
$S_{XS\ BSE\text{-}2E}$:	1.098
$S_{X1\ BSE\text{-}2E}$:	0.741
ASCE 41 Level of Seismicity:	High
Site Class:	D
V_{S30}(m/s):	272
Liquefaction Potential:	very low
Tsunami Risk:	High or Very High
Structural Drawings Available:	No
Evaluating Firm:	Reid Middleton, Inc.



The Gymnasium Building at Pacific Beach Elementary covers a footprint of 105 feet x 90 feet and approximately 9,500 square feet. The Gymnasium is a wood-framed roof structure with wood sheathing on timber and heavy glulam beams spanning to brick masonry and wood bearing walls. Original drawings of the building structure were not available, but the structural description is based on a brief walk through. Foundations are probably conventional concrete spread footings. Lateral forces are resisted by a combination of wood and brick masonry shear walls.

1.1.1 Building Use

Gymnasium / Cafeteria

1.1.2 Structural System

Table 1.1-1. Structural System Description of Pacific Beach Elementary School

Structural System	Description
Structural Roof	Roof framing consists of wood sheathing (either decking or plywood) over timber joists and heavy glulam beams.
Structural Floor(s)	The ground floor at Pacific Beach Elementary consists of a conventional slab-on-grade.
Foundations	The building is probably supported on spread footings. Based on a brief walk through and discussions with school staff we do not believe that the building is supported on deep foundations.
Gravity System	The building frame consists of wood sheathing on timber joists, glulam beams and bearing walls. Bearing walls are reinforced brick masonry and wood-frame.
Lateral System	Lateral loads are resisted by a combination of reinforced brick masonry walls and wood-frame walls.

1.1.3 Structural System Visual Condition

Table 1.1-2. Structural System Condition Description of Pacific Beach Elementary School

Structural System	Description
Structural Roof	Fair, obviously weathered but no major damage was observed
Structural Floor(s)	Good. No major damage observed in the slab-on-grade
Foundations	Good no settlement observed
Gravity System	Roof structure appeared to be in good condition.
Lateral System	Exterior brick walls are weathered, mortar is loose in many locations and several cracks were observed. At a few locations the brick was missing or damaged.

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 North Beach Pacific Beach Elementary School Gym/Lunchroom

Deficiency	Description
Adjacent Buildings	The Main building and walkway canopies do not appear to be adequately separated from the gymnasium. Further investigation should be performed. Increasing clear distance between buildings or tying seismic joints together may be appropriate to mitigate seismic risk.
Vertical Irregularities	East Wall of Gym is discontinuous. Supported by transfer beam. Further investigation should be performed. Transfer beam strengthening or additional shear walls may be appropriate to mitigate seismic risk.
Straight Sheathing	It does not appear that the diaphragm meets the aspect ratio requirements. Further investigation should be performed. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
Spans	It does not appear that the diaphragm meets the span requirements. Further investigation should be performed. Diaphragm reinforcement 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 North Beach Pacific Beach Elementary School Gym/Lunchroom

Unknown Item	Description
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	The foundations are assumed to be conventional spread footings tied into the slab on grade. Further investigation should be performed. Additional foundation ties may be appropriate to mitigate seismic risk.
Reinforcing Steel	Brick masonry units of this vintage are sometimes reinforced with reinforcing steel. Further investigation should be performed. Lateral system strengthening or additional shear walls may be appropriate to mitigate seismic risk.
Wall Anchorage	Many buildings of similar construction type and similar vintage are non compliant. Further investigation should be performed. Additional diaphragm shear wall anchoring may be appropriate to mitigate seismic risk.
Wood Ledgers	Connection detail is unknown. Further investigation should be performed. Additional blocking and strapping may be appropriate to mitigate seismic risk.
Transfer to Shear Walls	Buildings of this type and vintage are usually compliant for transfer of forces in the plane of the shear walls. Further investigation should be performed. Additional diaphragm shear wall anchoring may be appropriate to mitigate seismic risk.
Foundation Dowels	Foundation detail is unknown. Further investigation should be performed. Additional shear wall anchoring may be appropriate to mitigate seismic risk.
Cross Ties	Diaphragm chord details are unknown. Further investigation should be performed. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
Stiffness of Wall Anchors	Anchor details are unknown. 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 North Beach Pacific Beach Elementary School Gym/Lunchroom

Deficiency	Description
CF-2 Tall Narrow Contents. HR-not required; LS-H; PR-MH.	Not able to verify during site investigation. This item is commonly noncompliant for contents meeting the criteria. 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.	Not able to verify during site investigation. This item is commonly not compliant for contents meeting the criteria. Heavy items on upper shelves should be restrained by netting or cabling to avoid becoming falling hazards.
ME-1 Fall-Prone Equipment. HR-not required; LS-H; PR-H.	Large air handling units suspended from the walls and roof of the gymnasium are likely not braced adequately for earthquake forces. Bracing or anchoring of equipment may be appropriate to mitigate seismic risk.

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 North Beach Pacific Beach Elementary School Gym/Lunchroom

Unknown Item	Description
LSS-3 Emergency Power. HR-not required; LS-LMH; PR-LMH.	Use of emergency power was not verified with maintenance or facility staff. Evaluation of emergency power equipment may be appropriate to mitigate seismic risk.
HM-3 Hazardous Material Distribution. HR-MH; LS-MH; PR-MH.	Use of natural gas for heating was not verified with maintenance or facility staff. If gas is used, verify that gas lines are laterally braced and anchored.
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.
HM-5 Flexible Couplings. HR-LMH; LS-LMH; PR-LMH.	If natural gas is used, verify flexible couplings are installed.
HM-6 Piping or Ducts Crossing Seismic Joints. HR-MH; LS-MH; PR-MH.	
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.	Dropped ceilings and soffits occur in some areas, but drawings of these elements were not available for review. The construction of the ceilings and soffits should be verified. Bracing for ceilings may be appropriate to mitigate seismic risk.
ME-2 In-Line Equipment. HR-not required; LS-H; PR-H.	Not all mechanical / electrical equipment was observed. Units not exposed to view should be verified to have adequate bracing. Bracing or anchoring of equipment may be appropriate to mitigate seismic risk.
ME-3 Tall Narrow Equipment. HR-not required; LS-H; PR-MH.	Not able to verify during site investigation. Further investigation should be performed. Brace tops of equipment taller than 6 feet to nearest backing wall or provide overturning base restraint.
EL-1 Retainer Guards. HR-not required; LS-H; PR-H.	Elevator equipment was not observed. The elevator checklist items should be verified by an elevator designer or supplier.
EL-2 Retainer Plate. HR-not required; LS-H; PR-H.	Elevator equipment was not observed. The elevator checklist items should be verified by an elevator designer or supplier.

Photos:

Figure 1-1. Northeast Corner

Figure 1-2. Gym Roof Framing

Figure 1-3. East Elevation

Figure 1-4. Transfer Beam at East Side of Gym

Figure 1-5. South masonry wall and canopy

Figure 1-6. Gymnasium roof framing

Figure 1-7. Brick masonry wall at south elevation

Figure 1-8. Brick walls at the North Elevation

North Beach, Pacific Beach Elementary School, Gym/Lunchroom

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				Wood-framed diaphragm framed to brick masonry walls
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			The Main building and walkway canopies do not appear to be adequately separated from the gymnasium. Further investigation should be performed. Increasing clear distance between buildings or tying seismic joints together may be appropriate to mitigate seismic risk.
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 does not appear to be an interior mezzanine.

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		Since this is a one story structure, this check does not apply.
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		Since this is a one story structure, this check does not apply.

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			East Wall of Gym is discontinuous. Supported by transfer beam. Further investigation should be performed. Transfer beam strengthening or additional shear walls may be appropriate to mitigate seismic risk.
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		The building is a one story structure.
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		The building is a one story structure.
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	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				Building does not appear to have elements of the seismic force-resisting system that would be a concern for excessive overturning.
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	The foundations are assumed to be conventional spread footings tied into the slab on grade. 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				Shear stress approximately = 20psi.
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	Brick masonry units of this vintage are sometimes reinforced with reinforcing steel. 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		

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	Many buildings of similar construction type and similar vintage are non compliant. 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	Connection detail is unknown. 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	Buildings of this type and vintage are usually compliant for transfer of forces in the plane of the shear walls. Further investigation should be performed. Additional diaphragm shear wall anchoring may be appropriate to mitigate seismic risk.
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		
Foundation Dowels	Wall reinforcement is doweled into the foundation. (Tier 2: Sec. 5.7.3.4; Commentary: Sec. A.5.3.5)				X	Foundation detail is unknown. Further investigation should be performed. Additional shear wall anchoring may be appropriate to mitigate seismic risk.
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	Diaphragm chord details are unknown. Further investigation should be performed. 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		
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		
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			It does not appear that the diaphragm meets the aspect ratio requirements. Further investigation should be performed. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
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			It does not appear that the diaphragm meets the span requirements. Further investigation should be performed. Diaphragm reinforcement may be appropriate to mitigate seismic risk.
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		
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	Anchor details are unknown. Further investigation should be performed. Additional anchoring may be appropriate to mitigate seismic risk.

North Beach, Pacific Beach Elementary School, Gym/Lunchroom

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		Fire suppression piping was not observed in the Gymnasium
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		Fire suppression piping was not observed in the Gymnasium
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	Use of emergency power was not verified with maintenance or facility staff. 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		Fire suppression piping was not observed in the Gymnasium.
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		Equipment on vibration isolators was not observed.
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		Breakable containers with hazardous contents were not 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	Use of natural gas for heating was not verified with maintenance or facility staff. If gas is used, verify that gas lines are laterally braced and anchored.
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	If natural gas is used, verify flexible couplings are installed.
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	If natural gas is used, the path of the piping should be verified or reviewed by an engineer to ensure the piping is protected against differential seismic displacement.

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		Unreinforced Partitions were not observed.
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 there are heavy partitions.

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		Based on the age of the original construction, the building does not have lath and plaster ceilings.
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	Dropped ceilings and soffits occur in some areas, but drawings of these elements were not available for review. The construction of the ceilings and soffits should be verified. 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		Suspended ceilings are not used in the Gymnasium

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		There does not appear to be any glazing panels that meet the area criteria.

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		Exterior walls are constructed of reinforced brick, not veneer.
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		Exterior walls are constructed of reinforced brick, not veneer.

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		Exterior walls are constructed of reinforced brick, not veneer.
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		Exterior walls are constructed of reinforced brick, not veneer.
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		Exterior walls are constructed of reinforced brick, not veneer.
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		Exterior walls are constructed of reinforced brick, not veneer.
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 contain 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 and framing.
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		There are no 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 are no cornices, parapets, signs, and other ornamentation or 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 unreinforced masonry chimney in the 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		There are no masonry chimneys.

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		This is a one story building without stairs.
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		This is a one story building without stairs.

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		It is unlikely that there are 12 ft high storage racks in the building.
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			Not able to verify during site investigation. This item is commonly noncompliant for contents meeting the criteria. 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			Not able to verify during site investigation. This item is commonly not compliant for contents meeting the criteria. Heavy items on upper shelves should be restrained by netting or cabling to avoid becoming falling hazards.
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			Large air handling units suspended from the walls and roof of the gymnasium are likely not braced adequately for earthquake forces. Bracing or anchoring of equipment may be appropriate to mitigate seismic risk.

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	Not all mechanical / electrical equipment was observed. Units not exposed to view should be verified to have adequate bracing. Bracing or anchoring of equipment may be appropriate to mitigate seismic risk.
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	Not able to verify during site investigation. Further investigation should be performed. Brace tops of equipment taller than 6 feet to nearest backing wall or provide overturning base restraint.
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.

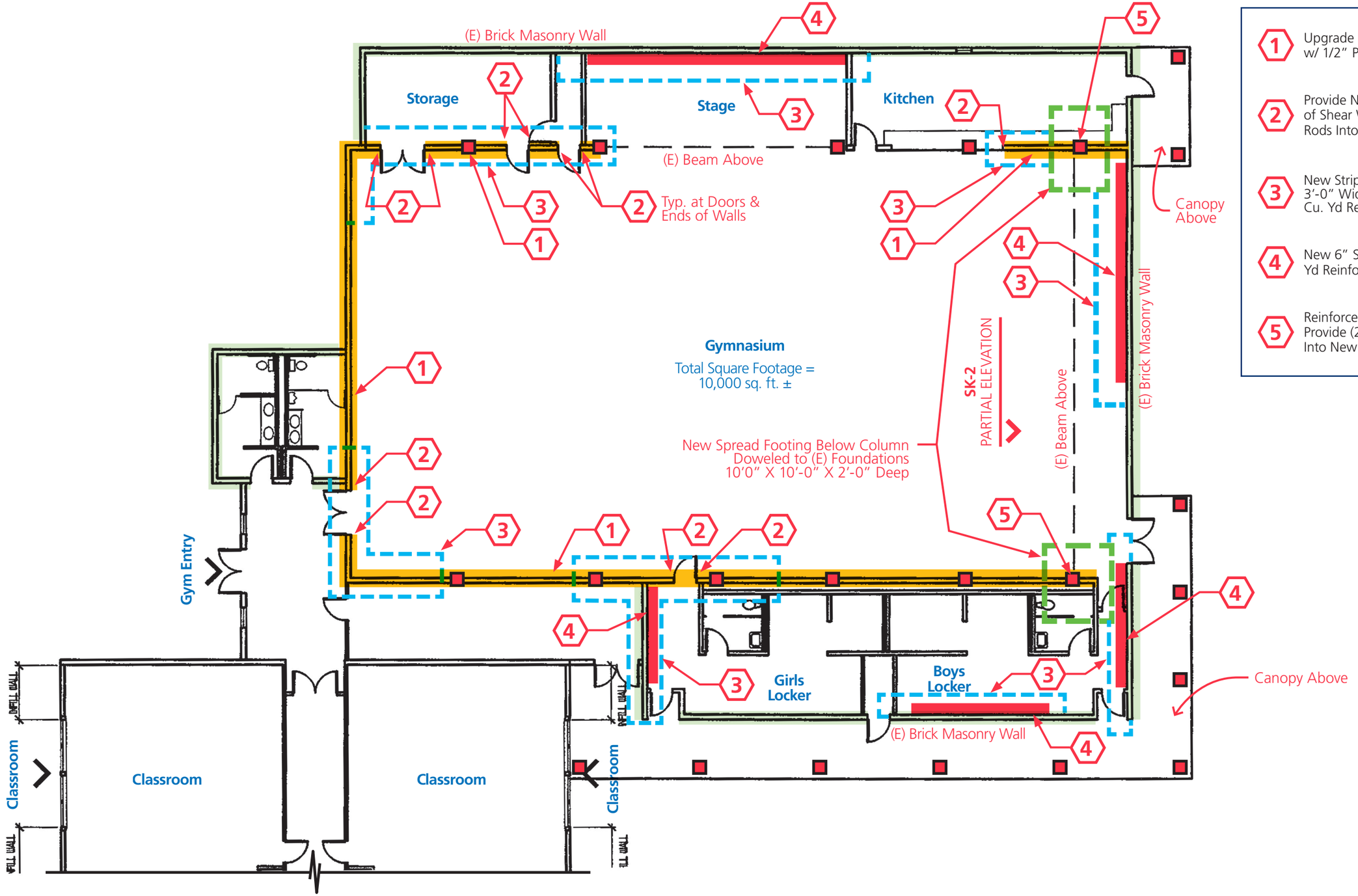
Elevators

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	Elevator equipment was not observed. The elevator checklist items should be verified by an elevator designer or supplier.
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	Elevator equipment was not observed. The elevator checklist items should be verified by an elevator designer or supplier.
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.

Appendix B: Concept-Level Seismic Upgrade Figures

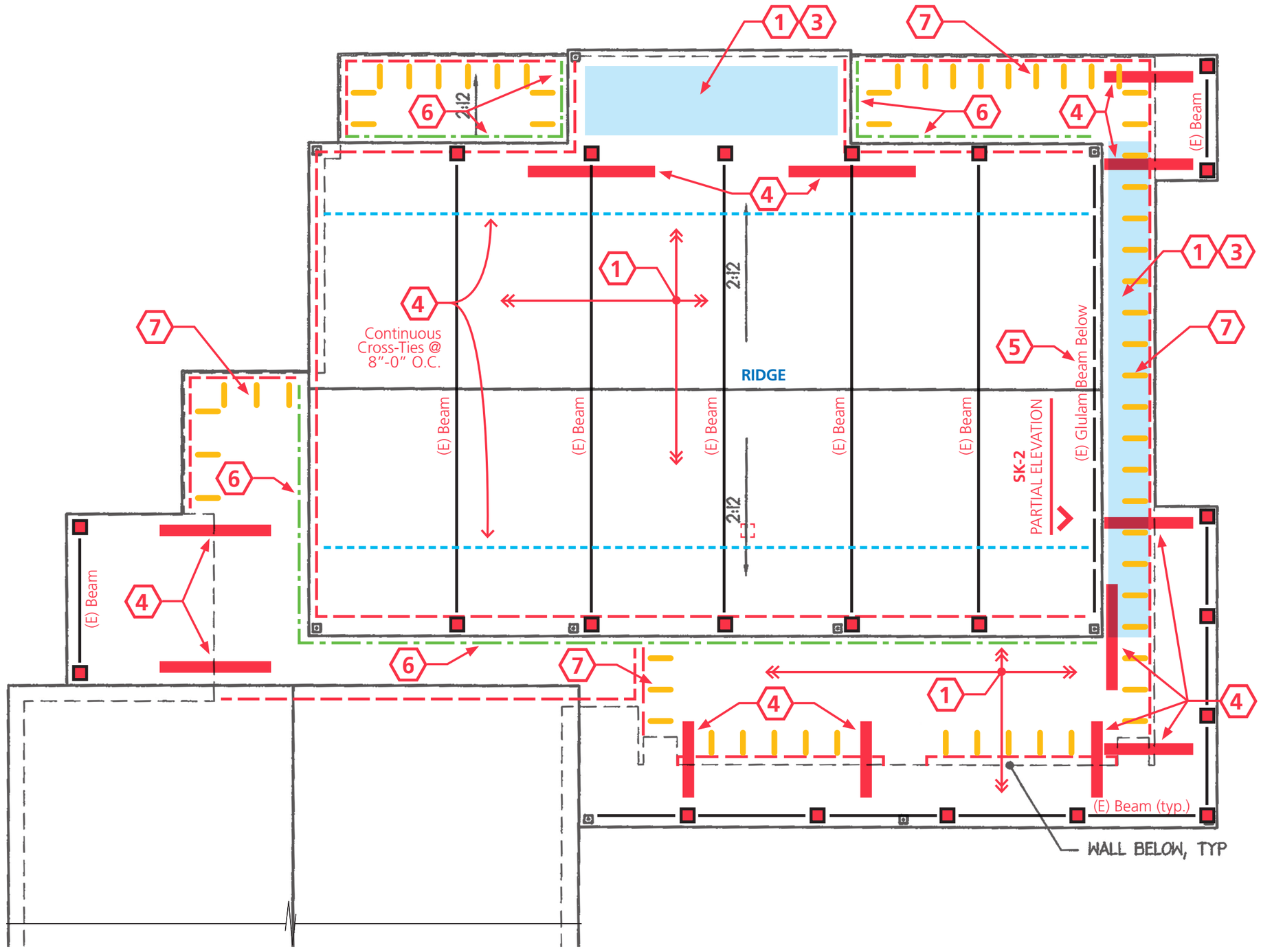
This page intentionally left blank.



ReidMiddleton

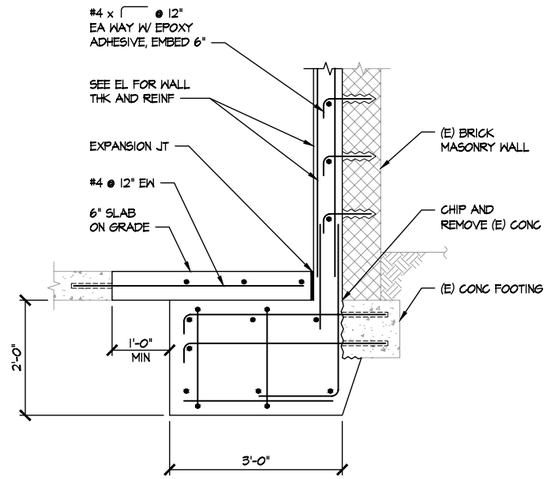
Pacific Beach Elementary School Seismic Upgrades
Washington State School Seismic Safety Assessments Project – North Beach School District – June 2019

Figure 1 - Gym First Floor Plan



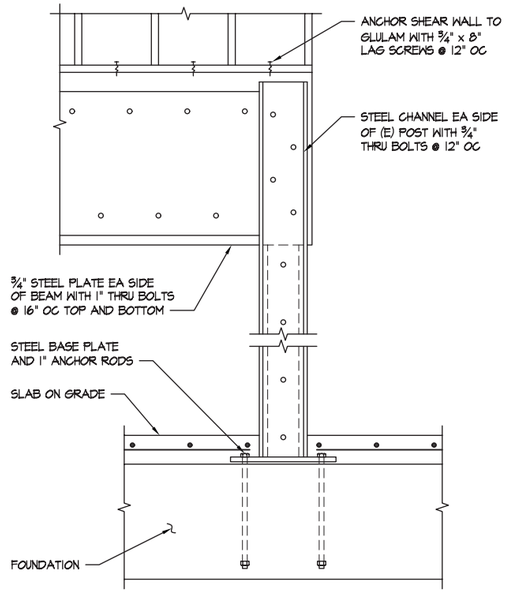
1. Provide New 1/2" Plywood Sheathing Over Roof
   Block All Unframed Panel Edges
2. Upgrade Existing Wood Shear Wall
3. Upgrade Existing Diaphragm & Connections to Shear Walls
4. Coil Strap Nailed Down to New Strut Beams or Blocking Below
5. Reinforce Existing Beam to Support Shear Wall
   Strap Beam to Column @ Each End w/ Steel Plates & Lag Bolts - *See Section SK-2*
6. Upgrade Existing Low-Roof Attachments with Ledger Bolted to Wall & Nail Diaphragm to Ledger *(10d@4"* O.C.*)*
7. Provide Wall-to-Roof Tie Anchors @ 4'-0" O.C. at all Brick Masonry Walls

Figure 2 - Gym Roof Plan



SECTION SK-1

Conceptual Section Through Shocrete Shear Wall & Foundation Upgrades



SECTION SK-2

Partial Elevation East Wall of Gym

Figure 3 - Conceptual Sections

This page intentionally left blank.

Appendix C: Opinion of Probable Construction Costs

This page intentionally left blank.

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:	**Pacific Beach ES Gym**
Location:	**State of Washington**
Design Phase:	**ROM Cost Estimates**
Date of Estimate:	**April 26, 2019**
Date of Revision:	
Month of Cost Basis:	**1Q, 2019**

Pacific Beach ES Gym

Master Estimate Summary

Project Name		Total Estimated Construction Cost
Pacific Beach ES Gym	**Structural Costs**	**$1,225,900**
Pacific Beach ES Gym	**Non-Structural Costs**	**$601,298**
TOTAL ESTIMATED CONSTRUCTION COST		**$1,827,197**

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

Name: Wa State School Seismic Safety Assessment
Second Name: Pacific Beach ES Gym
Location: Pacific Beach, WA
Design Phase: ROM Cost Estimates
Date of Estimate: April 26, 2019
Date of Revision:
Month of Cost Basis: 4Q, 2018, 1Q, 2019

Areas	sqft
Building Area	10,050
Total Areas	10,050

Pacific Beach ES Gym

Construction Cost Estimate

Subtotal Direct Cost From the Estimate Detail Below $ 935,801

	Percentage of Previous Subtotal	Amount	Running Subtotal
Scope Contingency	10.0%	$ 93,580	$ 1,029,381
General Conditions	10.0%	$ 93,580	$ 1,122,962
Home Office Overhead	5.0%	$ 46,790	$ 1,169,752
Profit	6.0%	$ 56,148	$ 1,225,900
Escalation Not Included-Costs in 1Q, 2019 Dollars	0.0%	$ -	$ 1,225,900
Washington State Sales Tax	0.0%	$ -	$ 1,225,900

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

		$/sqft
TOTAL ESTIMATED CONSTRUCTION COST-->	**$ 1,225,900**	**$ 121.98**
-20% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE -->	**$ 980,720**	**$ 97.58**
+50% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE -->	**$ 1,838,850**	**$ 182.97**

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.	73.0	cuyd	$ 464.00	$ 33,872.00	$ 261.00	$ 19,053.00	$ 43.50	$ 3,175.50	$ 768.50	$ 56,100.50
	New Footing System for Existing Beams - Excavation, Backfill, Formwork, Concrete, Reinforcing and detailing.	14.8	cuyd	$ 464.00	$ 6,874.07	$ 261.00	$ 3,866.67	$ 43.50	$ 644.44	$ 768.50	$ 11,385.19
	Temporary Shoring of Beam to install New Footings	1	set	$ 3,600.00	$ 3,600.00	$ 900.00	$ 900.00	$ 270.00	$ 270.00	$ 4,770.00	$ 4,770.00
	Substructure										
	Remove and Reinstall Slab on Grade System with Reinforcing, New Flooring System at Thickened Slab Installation	1,600	sqft	$ 13.20	$ 21,120.00	$ 10.80	$ 17,280.00	$ 1.44	$ 2,304.00	$ 25.44	$ 40,704.00
	Superstructure										
	Roof Systems										
	Reinforce Column with Steel Channel each side with 3/4" Bolts at 12" o.c.	2	each	$ 1,350.00	$ 2,700.00	$ 1,150.00	$ 2,300.00	$ 150.00	$ 300.00	$ 2,650.00	$ 5,300.00
	Add Holddown at Shearwall	18	each	$ 121.50	$ 2,187.00	$ 103.50	$ 1,863.00	$ 13.50	$ 243.00	$ 238.50	$ 4,293.00
	Add 3/4" x 8" Lag Screw at Shearwall	70	each	$ 15.36	$ 1,075.20	$ 8.64	$ 604.80	$ 1.44	$ 100.80	$ 25.44	$ 1,780.80
	Add Plywood Sheathing/Blocking at Walls	6,350	sqft	$ 2.31	$ 14,652.63	$ 1.24	$ 7,889.88	$ 0.21	$ 1,352.55	$ 3.76	$ 23,895.05
	Ledger with Anchor Bolt and Nailed for Attachment of Wall to diaphragm	258	lnft	$ 13.92	$ 3,591.36	$ 10.08	$ 2,600.64	$ 1.44	$ 371.52	$ 25.44	$ 6,563.52
	Shotcrete Wall Systems - Shotcrete, Formwork, Reinforcing, Screeding at Perimeter of Building	20	cuyd	$ 666.40	$ 13,328.00	$ 313.60	$ 6,272.00	$ 58.80	$ 1,176.00	$ 1,038.80	$ 20,776.00
	Add Plywood Sheathing/Edge Blocking at Roof System	18,050	sqft	$ 2.31	$ 41,650.38	$ 1.24	$ 22,427.13	$ 0.21	$ 3,844.65	$ 3.76	$ 67,922.15
	3/4" Steel Plates Through Bolted onto Beam at East Wall of Gym	5.4	tons	$ 8,510.00	$ 45,962.30	$ 2,990.00	$ 16,148.92	$ 690.00	$ 3,726.67	$ 12,190.00	$ 65,837.89
	1" Dia Through Bolted with Nut and Washer and Drilling Hole at Beam at East Wall of Gym	140	each	$ 110.88	$ 15,523.20	$ 87.12	$ 12,196.80	$ 11.88	$ 1,663.20	$ 209.88	$ 29,383.20
	Coil Strap at Roof Diaphragm	190	lnft	$ 18.48	$ 3,511.20	$ 25.52	$ 4,848.80	$ 2.64	$ 501.60	$ 46.64	$ 8,861.60
	Wall to Roof Anchor System of Anchors and Straps nailed to wood at 4' o.c.	175	each	$ 385.00	$ 67,375.00	$ 165.00	$ 28,875.00	$ 33.00	$ 5,775.00	$ 583.00	$ 102,025.00

WBS	Description	Quantity	U of M	Labor	Labor Total	Material	Material Total	Equipment	Equipment Total	Total $/U of M	Direct Cost
Exterior Closure											
Exterior Wall System											
	Remove and Reinstall Inside Finish System of Exterior Wall Along with New Detailing for the addition of the Plywood Shearwalls	6,350	sqft	$ 6.96	$ 44,196.00	$ 5.04	$ 32,004.00	$ 0.72	$ 4,572.00	$ 12.72	$ 80,772.00
Roofing System		Roof Area larger than the Enclosed Space									
	Remove Existing Roofing System	18,050	sqft	$ 2.02	$ 36,388.80	$ 0.08	$ 1,516.20	$ 0.13	$ 2,274.30	$ 2.23	$ 40,179.30
	Install New Roofing System - Including Roof Membrane, New Insulation, Coverboard and Flashing and Trim for a Complete System	18,050	sqft	$ 10.02	$ 180,806.85	$ 8.53	$ 154,020.65	$ 1.11	$ 20,089.65	$ 19.66	$ 354,917.15
Interiors											
Interior Wall/Door/Casework/Specialties Systems											
	Remove and Reinstall New Interior Wall Finish System - Allowance	1,500	sqft	$ 3.77	$ 5,655.00	$ 2.73	$ 4,095.00	$ 0.39	$ 585.00	$ 6.89	$ 10,335.00
Subtotal of the Direct Cost of Construction		**Pacific Beach ES Gym**									**$ 935,801**

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: **Pacific Beach ES Gym**
Location: **Pacific Beach, WA**
Design Phase: **ROM Cost Estimates**
Date of Estimate: **April 26, 2019**
Date of Revision:
Month of Cost Basis: **4Q, 2018, 1Q, 2019**

Areas	sqft
Building Area	10,050
Total Areas	**10,050**

Pacific Beach ES Gym

Construction Cost Estimate

Subtotal Direct Cost From the Estimate Detail Below $ 459,006

	Percentage of Previous Subtotal	Amount	Running Subtotal
Scope Contingency	10.0%	$ 45,901	$ 504,906
General Conditions	10.0%	$ 45,901	$ 550,807
Home Office Overhead	5.0%	$ 22,950	$ 573,757
Profit	6.0%	$ 27,540	$ 601,298
Escalation Not Included-Costs in 1Q, 2019 Dollars	0.0%	$ -	$ 601,298
Washington State Sales Tax	0.0%	$ -	$ 601,298

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

		$/sqft
TOTAL ESTIMATED CONSTRUCTION COST--→	**$ 601,298**	**$ 59.83**
-20% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE --→	**$ 481,038**	**$ 47.86**
+50% TOTAL ESTIMATED CONSTRUCTION COST VARIANCE --→	**$ 901,947**	**$ 89.75**

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										
	New Flooring Finishes for Installation of Seismic Work	10,050	sqft	$ 5.19	$ 52,109.25	$ 3.32	$ 33,315.75	$ 0.51	$ 5,125.50	$ 9.01	$ 90,550.50
	New Wall Finishes for Installation of Seismic Work	7,850	sqft	$ 2.14	$ 16,759.75	$ 1.37	$ 10,715.25	$ 0.21	$ 1,648.50	$ 3.71	$ 29,123.50
	New Ceilings and Finishes for Installation of Seismic Work	10,050	sqft	$ 3.36	$ 33,717.75	$ 2.15	$ 21,557.25	$ 0.33	$ 3,316.50	$ 5.83	$ 58,591.50
	Mechanical/Electrical/Fire Protection Systems	10,050	sqft	$ 14.49	$ 145,667.19	$ 11.86	$ 119,182.25	$ 1.58	$ 15,890.97	$ 27.93	$ 280,740.40
*Allows 30 percent of existing nonstructural systems M/E/P/FP require upgrades/replacement.											
Subtotal of the Direct Cost of Construction				**Pacific Beach ES Gym**							**$ 459,006**

Appendix D: Earthquake Performance Assessment Tool (EPAT) Worksheet

This page intentionally left blank.

Washington Schools Earthquake Performance Assessment Tool (EPAT)
MAIN PAGE

Full District Name	North Beach		
Point of Contact	Stan Sturgeon		
Telephone	360-581-6386		
E-Mail	ssturgeon@northbeachschools.org		
File Name	North Beach, Pacific Beach Elementary School, Gym Lunchroom EPAT.xlsm	**File Date:**	7/6/2018

District	North Beach
Facility Name	Pacific Beach Elementary School
Building Part Name	Gym/Lunchroom

Earthquake Ground Motion (% g)		**Earthquake Hazards**	
20% in 50 year PGA	21.1%	**Site Class**	D
10% in 50 year PGA	33.5%	**Ground Shaking Hazard**	Very High
2% in 50 year PGA	77.5%	**Liquefaction Potential**	Very Low
Percentile S_s *Among all WA Campuses*	100%	**Combined Earthquake Hazard Level**	Very High

Total Building Part Area (Square Feet)	**Building Evaluated By**	**Input Data by Person(s)**
10,049	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	Pacific Beach Elementary School
Building Name	Gym/Lunchroom
Building Use	Assembly

Data Entry Item	User Entered Values	Default Values	Used for BCA
Seismic Data			
Decimal Latitude	47.208419	47.208419	47.208419
Decimal Longitude	-124.200092	-124.200092	-124.200092
Site Class (Soil/Rock Type)	D	C-D	D
Liquefaction Potential	Very Low	Very Low	Very Low
Geographic Region for Seismic Zones	Coastal	Coastal	Coastal
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***	1956		1956
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)	<1973		<1973
Severe Vertical Irregularity***	Yes		Yes
Moderate Vertical Irregularity***	No		No
Plan (Horizontal) Irregularity***	No		No

*** **Mandatory Data Entry**

Washington Schools Earthquake Performance Assessment Tool (EPAT)
RESULTS SUMMARY

District Name	North Beach	**Existing Building Life Safety Risk & Priority for Retrofit or Replacement**
School Name	Pacific Beach Elementary School	
Building Name	Gym/Lunchroom	Very High

Building Data

HAZUS Building Type	RM1	Reinforced Masonry Bearing Walls w/ Wood or Metal Diaphragms
Year Built	1956	These parameters determine the capacity of the existing building to withstand earthquake forces.
Building Design Code	<1973 UBC	
Existing Building Code Level	Pre	
Geographic Area	Coastal	
Severe Vertical Irregularity	Yes	Buildings with irregularities have greater earthquake damage than otherwise similar buildings that are regular.
Moderate Vertical Irregularity	No	
Plan Irregularity	No	

Seismic Data

Earthquake Ground Shaking Hazard Level	Very High	Frequency and severity of earthquakes at this site
Percentile S_s Among WA K-12 Campuses	100%	Earthquake ground shaking hazard is higher than 100% 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	Very 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	91%	92%	Very High	Red
Life Safety Retrofit Building	31%	23%	Low-Moderate	Yellow
Current Code Building	26%	18%	Low	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

This page intentionally left blank.

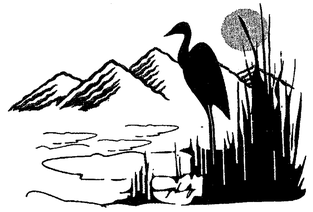
Appendix E: Pacific Beach Elementary Record Drawings

This page intentionally left blank.

PACIFIC BEACH ELEMENTARY SCHOOL

CAPITAL IMPROVEMENTS

NORTH BEACH SCHOOL DISTRICT



PROJECT TEAM

OWNER

NORTH BEACH SCHOOL DISTRICT #64
2652 State Route 109
P.O. Box 159
Ocean Shores WA 98569
TEL : 1.360.289.2447
FAX : 1.360.289.2492
SUPERINTENDENT
Stanley Pinnick

PACIFIC BEACH ELEMENTARY SCHOOL
11 4th Street
P.O. Box H
Pacific Beach WA 98571
TEL : 1.360.276.4512
PRINCIPAL
Glen Cooper

CONSTRUCTION MANAGER
Anderson Construction Management
Box 187
Ocean Shores WA 98569
TEL : 1.360.580-5888
PRINCIPAL
Paul Anderson

ARCHITECT
BJSS DUARTE BRYANT
724 Columbia Street NW, Suite 400
Olympia, WA 98501
TEL : 1.360.943.4650
FAX : 1.360.357.9022
PRINCIPAL
Frank Smith
email : frank@bjssdb.com
STUDIO LEAD
Trent Hart
email : trent@bjssdb.com
PROJECT MANAGER
Mel Murray
email : mel@bjssdb.com
PROJECT ARCHITECT
Paul Smith
email : pauls@bjssdb.com

MECHANICAL ENGINEER
BCE Engineers, Inc.
6021 12th Street East, Suite 200
Tacoma, WA 98424
TEL : 1.253.922.0446
FAX : 1.253.922.0896
PROJECT MANAGER
Scott Zimbelman, P.E.
email : scottz@bceeng.com
PROJECT ENGINEER
J. Scott Crick, P.E.

ELECTRICAL ENGINEER
BCE Engineers, Inc.
6021 12th Street East, Suite 200
Tacoma, WA 98424
TEL : 1.253.922.0446
FAX : 1.253.922.0896
PROJECT MANAGER
Mike Cozart, P.E.
email : mikec@bceeng.com
PROJECT ENGINEER
J. Scott Crick. P.E.

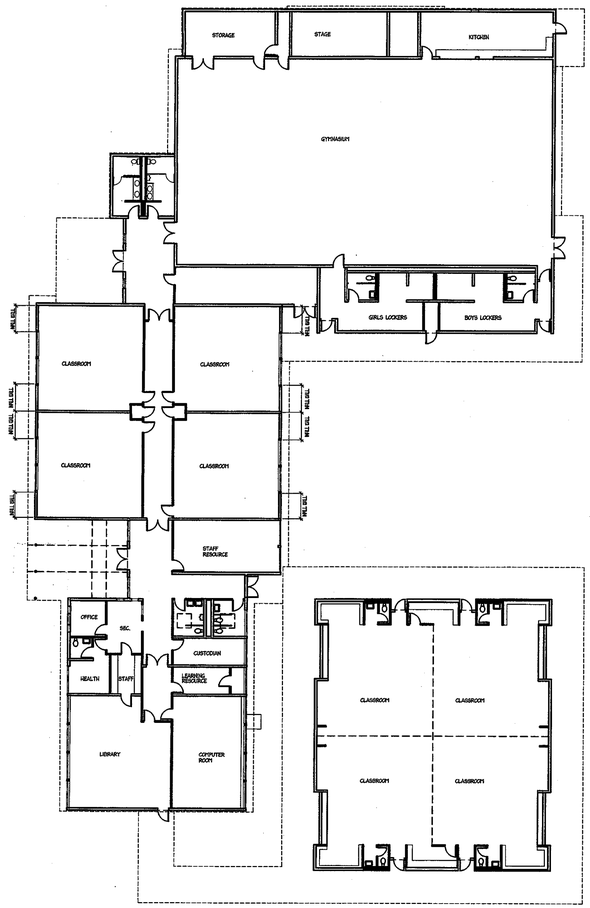
GENERAL NOTES

1. ALL WORK PERFORMED SHALL COMPLY WITH THESE GENERAL NOTES UNLESS OTHERWISE NOTED ON DRAWINGS AND SPECIFICATIONS. THE GENERAL CONTRACTOR SHALL COORDINATE THE GENERAL NOTES WITH THE WORK OF ALL TRADES, INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, AND CIVIL TRADES.
2. PRIOR TO BID, THE CONTRACTOR SHALL VISIT THE SITE ASSOCIATED WITH THE WORK AND BE KNOWLEDGEABLE OF CONDITIONS THEREOF. THE CONTRACTOR SHALL INVESTIGATE, VERIFY AND BE RESPONSIBLE FOR ALL CONDITIONS OF THE PROJECT AND SHALL NOTIFY THE OWNER/ARCHITECT OF CONDITIONS REQUIRING MODIFICATION PRIOR TO SUBMITTING BIDS. NO BID SHALL BE SUBMITTED WITHOUT FIRST VISITING THE SITE TO PERSONALLY ASSESS THE EXISTING CONDITIONS.
3. BIDS RECEIVED SHALL BE CONSIDERED TO INCLUDE ALL ITEMS SHOWN, NOTED AND/OR SPECIFIED FOR A COMPLETE PROJECT.
4. WHERE DISCREPANCIES EXIST, THE CONTRACTOR SHALL CONSULT THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
5. CONDITIONS WHICH ARE NOT DETAILED SHALL BE ASSUMED TO BE SIMILAR IN CHARACTER TO THOSE DETAILED. WHERE SPECIFIC DIMENSIONS, DETAILS OR DESIGN CANNOT BE DETERMINED, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
6. CONSTRUCTION OF WORK INDICATED ON DRAWINGS AS (NIC) IS NOT IN THE CONTRACT. THE CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES, WHETHER DIRECTLY OR INDIRECTLY INVOLVED, WITH THE NIC WORK.
7. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF ALL APPLICABLE CODES AND GOVERNING AUTHORITIES AND SHALL BE OF THE BEST PRACTICE OF EACH TRADE.
8. ALL DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE.
9. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO PROCEEDING WITH THE WORK. THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
10. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO PREVENT MOLECULAR BREAKDOWN AND GALVANIC ACTION.
11. CONTRACTOR TO LEAVE ALL WORK SUBJECT TO INSPECTION UNCOVERED TO ALLOW PROPER AND ADEQUATE CLEARANCE TO CITY INSPECTOR FOR THE PERFORMANCE OF THE INSPECTION.
12. SECURE AREAS AT THE END OF EACH WORKDAY. WORK SHALL TAKE PLACE DURING THE SUMMER BREAK. CONTRACTOR WILL BE PROVIDED ACCESS TO ALL AREAS REQUIRED TO COMPLETE THE WORK DURING REGULAR WORK HOURS.
13. USE OF TOBACCO PRODUCTS IS PROHIBITED ON SCHOOL PROPERTY.

PROJECT DESCRIPTION

THIS PROJECTS BASE BID CONSISTS OF REMOVING AND REPLACING THE EXISTING ROOFING, MODIFYING EXISTING REST ROOMS TO PROVIDE INCREASED ACCESSIBILITY, REPLACING ALL THE EXISTING EXTERIOR WINDOWS IN THE MAIN BUILDING AND PROVIDING INFILL FOR THE OUTER BAYS OF THE CLASSROOM WINDOWS AND REPLACING ALL THE EXISTING INCANDESCENT LIGHTING. PROVIDING A NEW COMMUNICATION/CLOCK SYSTEM (ALTERNATES 1a AND 1b), REFINISHING THE SOFFITED AREA AT THE CLASSROOM BUILDING (ALTERNATES 2, 3 AND 4) ARE INCLUDED AS ALTERNATES TO THE BASE BID.

LIFE SAFETY INFORMATION



MAIN BUILDING

CLASSROOMS / GYMNASIUM / KITCHEN / OFFICES / RESTROOMS / STORAGE

E-1 OCCUPANCY
TYPE V-N CONSTRUCTION

ACTUAL EXISITING BUILDING SQUARE FOOTAGE = 17,906 SF

EXTERIOR WALLS: TWO-HOUR LESS THAN 5'
ONE-HOUR LESS THAN 10'
NON-RATED ELSEWHERE

OPENINGS: NOT ALLOWED LESS THAN 5'
PROTECTED LESS THAN 10'

INTERIOR WALLS	N
STRUCTURAL FRAME	N
PARTITIONS	N
FLOOR/CEILING	N
ROOF/CEILING	N

NO FIRE SPRINKLERS

CLASSROOM BUILDING

CLASSROOMS / TOILETS

E-1 OCCUPANCY
TYPE V-N CONSTRUCTION

ACTUAL EXISTING BUILDING SQUARE FOOTAGE = 4,884 SF

INTERIOR WALLS	N
STRUCTURAL FRAME	N
PARTITIONS	N
FLOOR/CEILING	N
ROOF/CEILING	N

NO FIRE SPRINKLERS

SCALE : 1" = 20'-0"

ABBREVIATIONS

A/C	AIR CONDITIONING	CH	COLD WATER	GA	GAUGE	MEZZ	MEZZANINE	REV	REVISION, REVERSE	UTIL	UTILITY
AB	ANCHOR BOLT	CY	CUBIC YARD	GAL	GALLON	MFR	MANUFACTURER	RH	RIGHT HAND	VAC	VACUUM
ACP	ACOUSTICAL CEILING PANEL			GALV	GALVANIZED	MH	MANHOLE	RH	ROOM	VCT	VINYL COMPOSITION TILE
ACT	ACOUSTICAL CEILING TILE	DBL	DOUBLE	GFRC	GLASS FIBER REINF. CONCRETE	MIN	MINIMUM	RO	ROUGH OPENING	VENT	VENTILATE, VENTILATOR,
AD	AREA DRAIN	DEPT	DEPARTMENT	GFRP	GLASS FIBER REINF. PLASTER	MIR	MIRROR	RPM	REVOLUTIONS PER MINUTE		VENTILATION
ADH	ADHESIVE	DET	DETAIL	GL	GLASS, GLAZING, GLAZED	MISC	MISCELLANEOUS	RT	RESILIENT TILE	VER	VERIFY
ADJ	ADJUSTABLE, ADJUST	DF	DRINKING FOUNTAIN	GLU-LAM	GLUED LAMINATED BEAM	mm	MILLIMETER	RWL	RAIN WATER LEADER	VERT	VERTICAL
AFF	ABOVE FINISH FLOOR	DIA	DIAMETER	GR	GUARDRAIL	MS	MACHINE SCREW			VEST	VESTIBULE
AGGR	AGGREGATE	DIAG	DIAGONAL	GWB	GYPSUM WALL BOARD	MTD	MOUNTED			VG	VERTICAL GRAIN
ALIGN	ALIGNMENT	DIM	DIMENSION	GYP	GYPSUM	MTG	MOUNTING	S	SOUTH	VIF	VERIFY IN FIELD
ALT	ALTERNATE	DIR	DIRECTORY			MTL	METAL	SAV	STAIN & VARNISH	VOL	VOLUME
ALUM	ALUMINUM	DL	DEAD LOAD	H	HIGH			SCH	SURFACED 1 SIDE		
ANOD	ANODIZED	DN	DOWN	HB	HOSE BIBB	N	NORTH	S2S	SURFACED 2 SIDES	W	WEST, WATT, WIDTH
ANSI	AMERICAN NATIONAL	DP	DAMP-PROOFING	HC	HOLLOW CORE	NEG	NEGATIVE	S4S	SURFACED 4 SIDES	W/	WITH
	STANDARD INSTITUTE	DR	DAMPER	HCT	HOLLOW CLAY TILE	NFPA	NATIONAL FIRE	SAN	SANITARY	W/O	WITHOUT
APPROX	APPROXIMATE	DS	DOWNSPOUT	HDR	HEADER		PROTECTION AGENCY	SC	SOLID CORE	WAIN	WAINSCOT
ARCH	ARCHITECTURAL	DT	DRAIN TILE	HDWD	HARDWOOD	NIC	NOT IN CONTRACT	SCHED	SCHEDULE, SCHEDULED	WB	WOOD BASE
AUTO	AUTOMATIC	DW	DISHWASHER	HDWR	HARDWARE	NO	NUMBER	SD	SOAP DISPENSER, STORM	WC	WATER CLOSET
AVE	AVENUE	DWG	DRAWING	HEX	HEXAGON	NOM	NOMINAL		DRAIN, SMOKE DETECTOR,	WD	WOOD
AVG	AVERAGE	DWR	DRAWER	HGR	HANGER	NONCOM	NONCOMBUSTIBLE		SHOWER DRAIN	WG	WIRE GLASS
				HH	HOLLOW METAL	NTS	NOT TO SCALE	SEAL	SEALANT	WNDW	WINDOW
BAL	BALANCE	E	EAST	HORIZ	HORIZONTAL			SF	SQUARE FEET	WP	WATERPROOFING,
BD	BOARD	EA	EACH	HR	HOUR	OBSC	OBSCURE	SHTL	SHEET METAL		WEATHERPROOF
BDRM	BEDROOM	EB	EXPANSION BOLT	HT	HEIGHT	OC	ON CENTER	SHT	SHEET, SHEETING	WR	WASTE RECEPTACLE,
BLDG	BUILDING	EJ	EXPANSION JOINT	HTG	HEATING	OD	OUTSIDE DIAMETER,	SHTHG	SHEATHING		WATER RESISTANT
BLKG	BLOCKING	ELEC	ELECTRIC, ELECTRICAL	HVAC	HEATING/VENTILATING/		OUTSIDE DIMENSION	SHWR	SHOWER	MS	WATER-STRIP
BM	BEAM	ELEV	ELEVATOR, ELEVATION		AIR CONDITIONING	OFD	OVERFLOW DRAIN	SIM	SIMILAR	WT	WEIGHT
BOT	BOTTOM	EMER	EMERGENCY	HW	HOT WATER	OH	OPPOSITE HEAD	SJ	SEISMIC JOINT	WWF	WELDED WIRE FABRIC
BOW	BOTTOM OF WALL	ENCL	ENCLOSE, ENCLOSURE	HWT	HOT WATER HEATER	OPNG	OPENING	SND	SANITARY NAPKIN		
BSMT	BASEMENT	ENGR	ENGINEER			OPP	OPPOSITE		DISPENSER	YD	YARD DRAIN
BTR	BETTER	EP	ELECTRICAL PANEL	ID	INSIDE DIAMETER,			SOG	SLAB ON GRADE		
BTU	BRITISH THERMAL UNIT	EQ	EQUAL		INSIDE DIMENSION	PB	PUSH BUTTON	SPECS	SPECIFICATIONS		
BTWN	BETWEEN	EQUIP	EQUIPMENT	INSUL	INSULATION, INSULATE	PBD	PARTICLE BOARD	SQ	SQUARE		
BUR	BUILT-UP ROOFING	EW	EACH WAY	INT	INTERIOR	PC	PRECAST, POWDER COAT(ED)	SS	STAINLESS STEEL		
		EXH	EXHAUST	INV	INVERT	PERF	PERFORATED	SSD	SEE STRUCTURAL DRAWINGS		
C	CHANNEL	EXIST	EXISTING			PGL	PLATE GLASS	ST	STREET		
CAB	CABINET	EXT	EXTERIOR	JAN	JANITOR	PIP	POURED IN PLACE	STD	STANDARD		
CABHTR	CABINET HEATER	EYH	EYE WASH	J-BOX	JUNCTION BOX	PL	PLATE, PROPERTY LINE	STL	STEEL		
CARP	CARPET			JT	JOINT	PLAM	PLASTIC LAMINATE	STOR	STORAGE		
CB	CATCH BASIN	FAB	FABRICATE			PLBG	PLUMBING	STRUCT	STRUCTURAL		
CEM	CEMENT	FB	FLAT BAR	KB	KEY BOX	PLYWD	PLYWOOD	SUB	SUBSTITUTE		
CENT	CENTRIFUGE	FCP	FIBER CEMENT BOARD	KD	KILN DRIED	PNL	PANEL, PANELING	SUSP	SUSPEND, SUSPENDED		
CF	CUBIC FOOT	FD	FLOOR DRAIN, FIRE DAMPER	KIT	KITCHEN	PNT	PAINT(ED)	SWG	STANDARD WIRE GAUGE		
CFM	CUBIC FEET PER MINUTE	FDN	FOUNDATION	KO	KNOCK OUT	PR	PAIR	SYM	SYMMETRICAL		
CG	CORNER GUARD	FE	FIRE EXTINGUISHER			PREFAB	PREFABRICATE(D)				
CH	COAT HOOK	FEC	FIRE EXTINGUISHER CABINET	LAB	LABORATORY	PRELIM	PRELIMINARY	T	TREAD		
CHBD	CHALKBOARD	FF	FACTORY FINISH	LAM	LAMINATED, LAMINATE	PS	PROJECTION SCREEN	TAB	TOP AND BOTTOM		
CI	CAST IRON	FFPP	FLAT FACED METAL PANEL	LAT	LATERAL	PSF	POUNDS PER SQUARE FOOT	TAG	TONGUE AND GROOVE		
CIP	CAST-IN-PLACE	FH	FIRE HOOD	LAV	LAVATORY	PSI	POUNDS PER SQUARE INCH	TB	TACK BOARD		
CIRC	CIRCUMFERENCE	FHS	FLAT HEAD SCREW	LF	LINEAL FOOT	PT	PRESSURE TREATED	TEL	TELEPHONE		
CJ	CONTROL JOINT	FIN	FINISH	LH	LEFT HAND	PTD	PAPER TOWEL DISPENSER	TEMP	TEMPERATURE, TEMPERED,		
CLG	CEILING	FIO	FURNISHED AND INSTALLED	LL	LIVE LOAD	PTD/D	PAPER TOWEL DISPENSER/		TEMPORARY		
CLKG	CAULKING		BY OWNER	LRM	LIVING ROOM		DISPOSAL	THERMO	THERMOSTAT		
CLR	CLEARANCE, CLEAR	FLEX	FLEXIBLE	LSL	LAMINATED STRAND BOARD	PVC	POLYVINYL CHLORIDE	THRES	THRESHOLD	∠	ANGLE (DEGREE)
cm	CENTIMETER	FLG	FLASHING	LT	LIGHT			TOC	TOP OF CURB	L	ANGLE (STEEL)
CMU	CONCRETE MASONRY UNITS	FLOR	FLUORESCENT	LTG	LIGHTING	QT	QUARRY TILE	TOL	TOLERANCE	@	AT
CO	CLEAN OUT	FLR	FLOOR	LVL	LAMINATED VENEER BOARD	QTR	QUARTER	TOP	TOP OF PARAPET	℄	CENTER LINE
COL	COLUMN	FOC	FACE OF CONCRETE	LW	LIGHTWEIGHT			TOM	TOP OF MALL	C	CHANNEL
CONC	CONCRETE	FOF	FACE OF FINISH			R	RADIUS, RISER	TPD	TOILET PAPER DISPENSER	°	DEGREE (TEMP & ANGLE)
CONN	CONNECTION, CONNECT	FOC	FURNISHED BY OWNER,	M	METER (METRIC SYSTEM)	R/F	REFRIGERATOR/ FREEZER	TRANSF	TRANSFORMER	'	FEET
CONSTR	CONSTRUCTION		INSTALLED BY CONTRACTOR	MAINT	MAINTENANCE	RAD	RADIATOR	TS	TUBE STEEL	"	INCHES
CONT	CONTINUOUS	FOS	FACE OF STUD	MAT	MATERIAL	RB	RESILIENT BASE	TV	TELEVISION	#	NUMBER, POUNDS
CONTR	CONTRACTOR	FR	FIRE RESISTIVE	MAX	MAXIMUM	RCP	REFLECTED CEILING PLAN	TYP	TYPICAL	℄	PROPERTY LINE
CP	CONTROL PANEL	FS	FLOOR SINK	MBD	MARKER BOARD	RD	ROOF DRAIN			±	PLUS OR MINUS
CSK	COUNTERSINK, COUNTERSUNK	FT	FOOT, FEET	MC	MEDICINE CABINET	RECD	RECEIVED	UBC	UNIFORM BUILDING CODE	ø	ROUND, DIAMETER
CT	CERAMIC TILE	FTG	FOOTING	MDF	MEDIUM DENSITY FIBER BOARD	REF	REFERENCE, REFRIGERATOR	UL	UNDERWRITERS LAB, INC.	#	SQUARE FEET
CTR	CENTER, COUNTER	FURN	FURNISH	MECH	MECHANICAL	REINF	REINFORCE, REINFORCING	UNFIN	UNFINISHED	H	HIDE FLANGE
CTSK	COUNTERSUNK SCREW			MEMB	MEMBRANE	REQD	REQUIRED	UNO	UNLESS NOTED OTHERWISE		

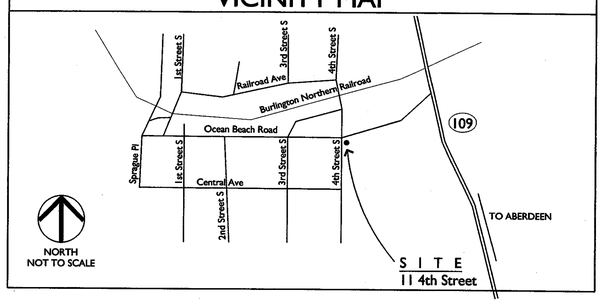
PARCEL # AND LEGAL DESCRIPTION

PARCEL # : 795501000100
Site Address 00011S4TH ST P.BE

LEGAL DESCRIPTION - PACIFIC BEACH TOWNSITE LOTS 1-6 INC & 26 VAC ST ADJ ON E BLK 10

SHEET INDEX

VICINITY MAP



MATERIALS & SYMBOLS

MATERIALS

- COMPACTED FILL
- GRAVEL, ROCK
- CONCRETE
- MASONRY CONSTRUCTION
- METAL FRAMING
- GYPSUM WALLBOARD
- GROUT, STUCCO, PLASTER
- GLASS (ELEVATION)
- FINISH GRADE WOOD
- WOOD FRAMING
- PLYWOOD
- PARTICLE BOARD
- CERAMIC TILE
- ALUMINUM
- FERROUS METAL
- RIGID INSULATION
- LOOSE OR BATT INSULATION
- CERAMIC TILE (ELEVATION)

SYMBOLS

- BUILDING SECTION: SECTION NUMBER / SHEET NUMBER
- WALL SECTION: SECTION NUMBER / SHEET NUMBER
- DETAIL ENLARGEMENT: DETAIL NUMBER / SHEET NUMBER
- ELEV. INDICATOR: ELEVATION NUMBER / SHEET NUMBER
- DOOR NUMBER INDICATOR: DOOR NUMBER

SYMBOLS (Cont.)

- ROOM NUMBER/NAME INDICATOR: ROOM NUMBER, ROOM NAME
- GRID SYMBOLS: GRID LETTER, GRID NUMBER, GRID LINE
- DRAWING NUMBER
- DRAWING TITLE
- INDICATED
- SCALE
- NORTH ARROW
- REVISION NUMBER
- REVISION CLOUD
- EXISTING WALL
- WALL TO BE REMOVED
- NEW WALL
- EXISTING DOOR
- DOOR TO BE REMOVED
- NEW DOOR
- WALL TYPE
- CONTROL POINT OR DATUM
- URINAL
- WATER CLOSET
- LAVATORY
- DRINKING FOUNTAIN
- ELECTRICAL PANEL
- FIRE EXTINGUISHER CABINET

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022

108 First Avenue South
Suite 200
Seattle, Washington 98104

Pacific Beach Elementary School Capital Improvements

North Beach School District

1888 REGISTERED ARCHITECT Frank L. Smith STATE OF WASHINGTON

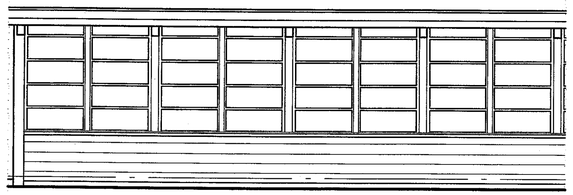
JOB NO. 23048.00
DRAWN BY GZ
CHECKED BY
DATE 4-5-2004
REVISIONS

CONTRACT DOCUMENTS

DWG INDEX ; PROJECT INFORMATION

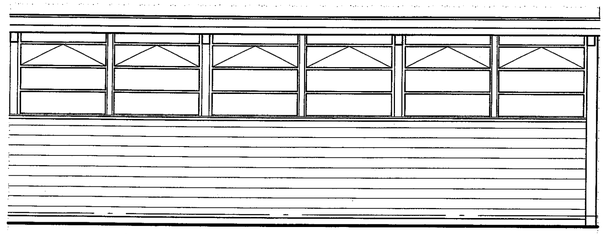
G001

DEMO



EXISTING STEEL FRAMED WINDOWS TO BE REMOVED
EXISTING WINDOW PUTTY TESTED POSITIVE FOR ASBESTOS, ABATEMENT REQUIRED.
REFER TO SPECIFICATION SECTION FOR ABATEMENT REQUIREMENTS
(4) CLASSROOMS LOCATIONS, (4) EXISTING BAYS AT EACH CLASSROOM

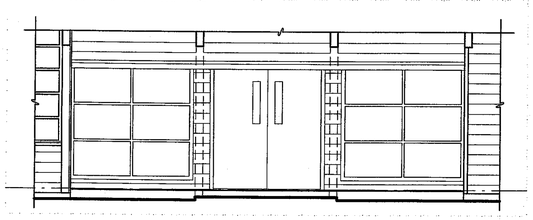
TYP @ CLASSROOM



EXISTING STEEL FRAMED WINDOWS TO BE REMOVED
EXISTING WINDOW PUTTY TESTED POSITIVE FOR ASBESTOS, ABATEMENT REQUIRED.
REFER TO SPECIFICATION SECTION FOR ABATEMENT REQUIREMENTS

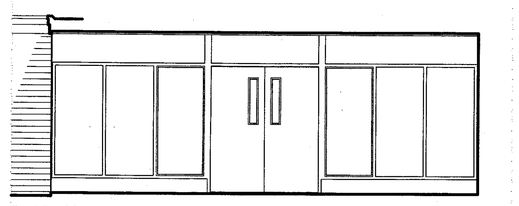
(3) TYPICAL BAYS SHOWN, (5) BAYS AT WEST WALL, (7) BAYS AT EAST WALL
(2) BANKS OF WINDOWS AT EACH BAY, BETWEEN BEAMS, APPROXIMATELY 8'-0" BETWEEN BEAMS
MATCH EXISTING MULLION LAYOUT WITH NEW WINDOWS AT EACH BANK OF WINDOWS.

LIBRARY ALSO INCLUDES HEALTH, COMPUTER ROOM, LEARNING RESOURSE AND CUSTODIAN



REMOVE EXISTING STOPPED-IN GLASS.
REMOVE EXISTING MULLIONS AND TRIM.

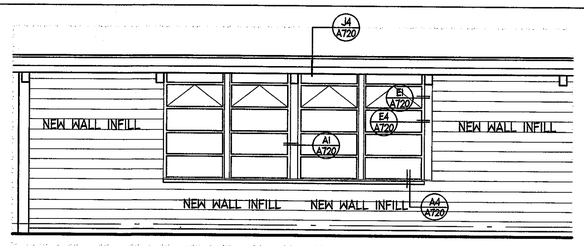
MAIN ENTRY



REMOVE EXISTING STOPPED IN GLASS AND PLYWOOD.
REMOVE EXISTING MULLIONS AND TRIM.

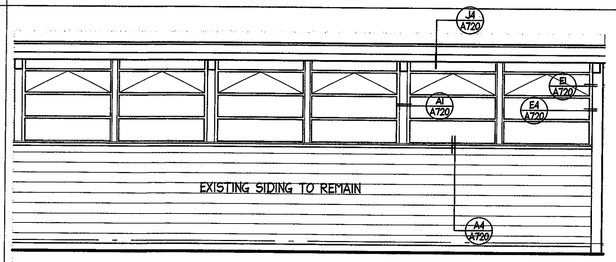
GYM ENTRY

NEW



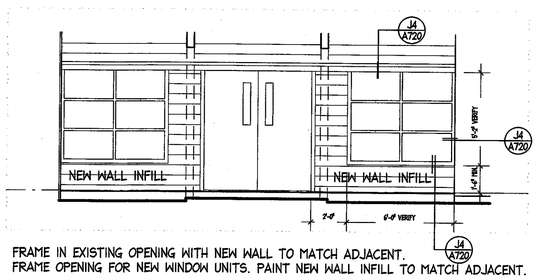
(4) CLASSROOM LOCATIONS - (2) BAYS AT STAFF RESOURSE
INFILL (2) OUTER WINDOW BAYS (AT CLASSROOMS ONLY) WITH WALLS
TO MATCH ADJACENT EXISTING WALLS. PAINT TO MATCH ADJACENT.
PROVIDE NEW VINYL FRAMED WINDOWS OF SIMILAR CONFIGURATION

TYP @ CLASSROOM



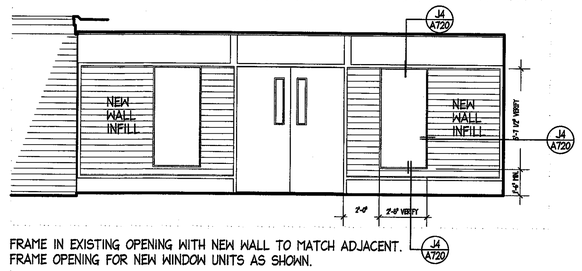
(3) TYPICAL BAYS SHOWN, (5) BAYS AT WEST WALL, (7) BAYS AT EAST WALL
(2) BANKS OF WINDOWS AT EACH BAY, BETWEEN BEAMS, APPROXIMATELY 8'-0" BETWEEN BEAMS.
MATCH EXISTING MULLION LAYOUT WITH NEW WINDOWS AT EACH BANK OF WINDOWS.
PROVIDE NEW VINYL FRAMED WINDOWS OF SIMILAR CONFIGURATION

LIBRARY ALSO INCLUDES HEALTH, COMPUTER ROOM, LEARNING RESOURSE AND CUSTODIAN



FRAME IN EXISTING OPENING WITH NEW WALL TO MATCH ADJACENT.
FRAME OPENING FOR NEW WINDOW UNITS. PAINT NEW WALL INFILL TO MATCH ADJACENT.

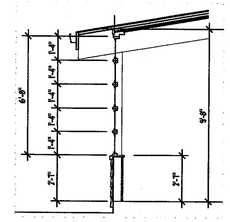
MAIN ENTRY



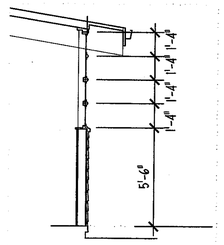
FRAME IN EXISTING OPENING WITH NEW WALL TO MATCH ADJACENT.
FRAME OPENING FOR NEW WINDOW UNITS AS SHOWN.

GYM ENTRY

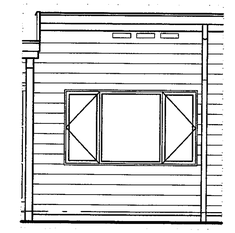
SECTIONS



TYP @ CLASSROOM



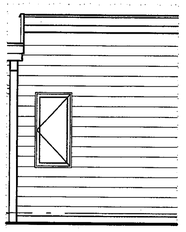
LIBRARY



2' X 4' 3' X 4' 2' X 4'

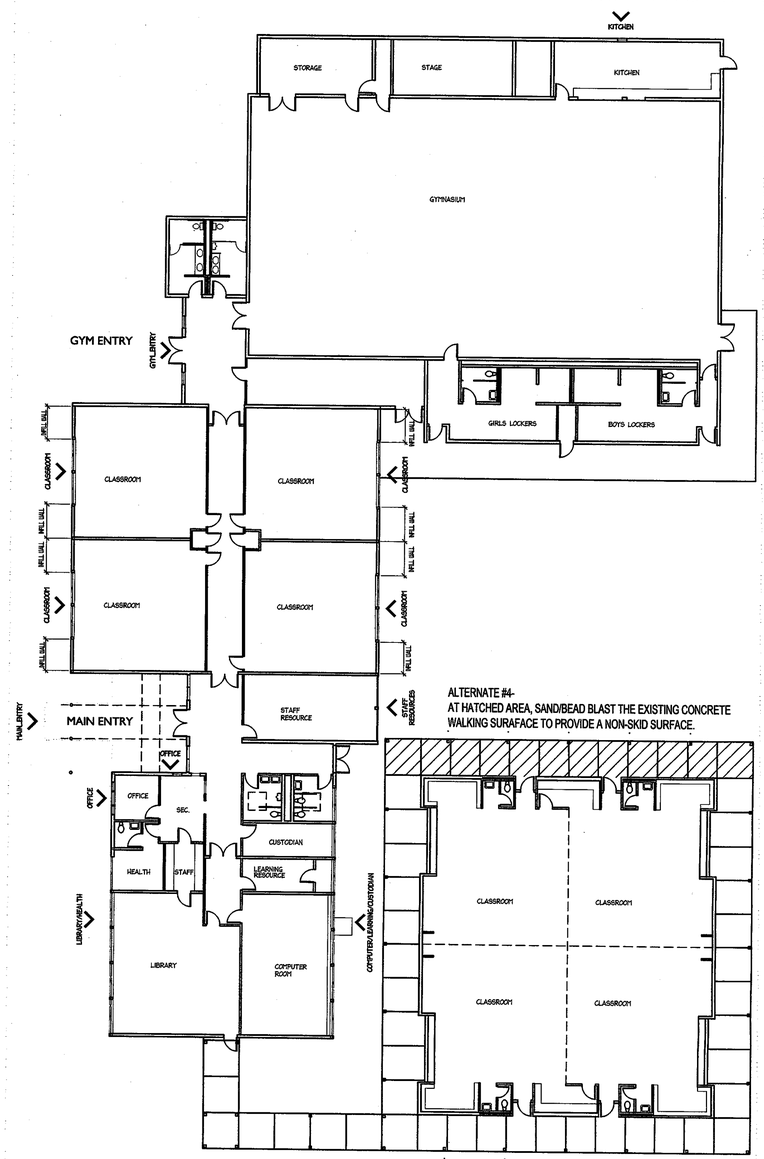
REMOVE EXISTING ALUMINUM WINDOWS.
PROVIDE NEW VINYL FRAMED WINDOWS
IN SIMILAR CONFIGURATION.

OFFICE



2' X 4' - CASEMENT
2'-8" x 3'-0" AT KITCHEN - CASEMENT

OFFICE



ALTERNATE #4-
AT HATCHED AREA, SAND/BEAD BLAST THE EXISTING CONCRETE WALKING SURAFACE TO PROVIDE A NON-SKID SURFACE.

NO WINDOW REPLACEMENT IN CLASSROOM BUILDING.

WINDOW AND WINDOW DETAIL CONFIGURATIONS HAVE BEEN TAKEN FROM ON SITE OBSERVATIONS. ACTUAL CONDITIONS MAY VARY. VERIFY ACTUAL FIELD CONDITIONS PRIOR TO INSTALLING NEW WINDOWS. VERIFY QUANTITIES AND LOCATIONS FOR ALL WINDOWS TO BE REPLACED.

PROVIDE MINI-BLINDS AT WINDOWS AT ALL CLASSROOMS, LIBRARY, COMPUTER LAB, HEALTH ROOM, STAFF LOUNGE AND LEARNING RESOURSE, OFFICE AND ADMINISTRATION.
AT THE CLASSROOM BUILDING, PROVIDE MINI-BLINDS AT THE LITE ADJACENT TO THE DOOR, ±12" WIDE X ±72" HIGH, AND AT THE CLASSROOM WINDOWS, ±14' WIDE X ±4' HIGH (4 LOCATIONS).

NORTH

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104

Pacific Beach Elementary School
Capital Improvements
North Beach School District

1888 REGISTERED ARCHITECT Frank L. Smith STATE OF WASHINGTON

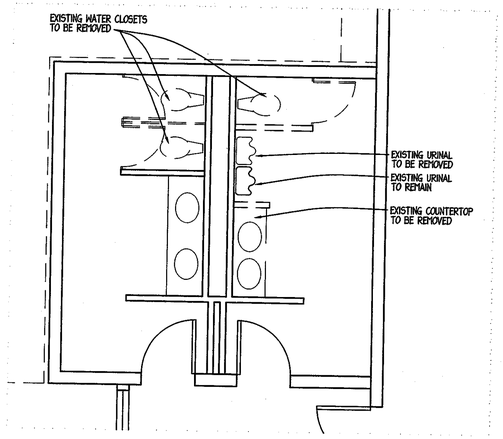
JOB NO. 23048.00
DRAWN BY CHECKED BY
DATE 4-5-2004
REVISIONS

CONTRACT DOCUMENTS

FLOOR PLAN & WINDOW ELEVATIONS

A201

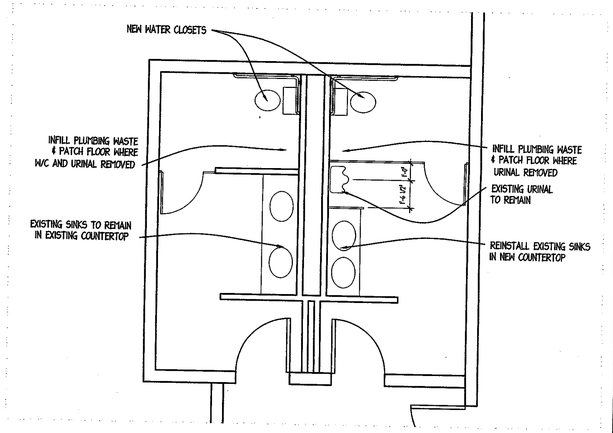
A1	WINDOW EXTERIOR ELEVATIONS		A9	WALL SECT/ELEV		A11	FLOOR PLAN
1/4 ' = 1'-0"			1/4" = 1'-0"			1/16" = 1'-0"	



DEMOLITION NOTES

1. EXISTING TOILET FIXTURES, W/C'S AND URINAL, TO BE REMOVED AS SHOWN. SEE MECHANICAL DRAWINGS. (1) EXISTING URINAL TO REMAIN.
2. ALL EXISTING TOILET PARTITIONS TO BE REMOVED AS SHOWN.
3. EXISTING APRON AT THE EXISTING LAVATORY CASEWORK AT THE WOMEN'S TOILET ROOM TO BE TRIMMED TO COMPLY WITH H/C CODES.
4. EXISTING LAVATORY COUNTER AT MEN'S TOILET ROOM TO BE REMOVED. LAVATORIES TO BE REINSTALLED IN NEW COUNTERTOP.
5. ALL EXISTING TOILET ACCESSORIES TO REMAIN WHERE PARTITIONS ARE NOT REMOVED.
6. ALL LIGHTING FIXTURES TO BE REPLACED WITH NEW. SEE LIGHTING PLAN E2 .

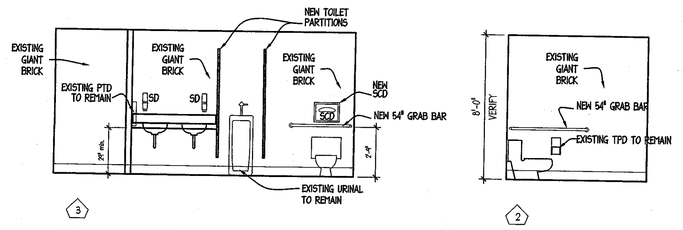
G8 | DEMOLITION FLOOR PLAN
1/4" = 1'-0"



GENERAL NOTES

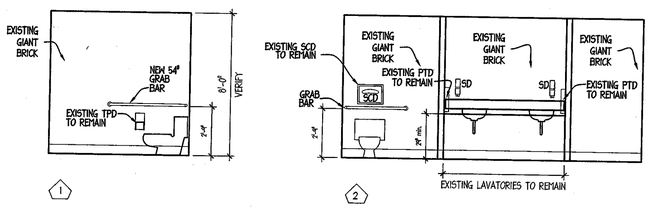
1. NEW W/CS TO BE PROVIDED. SEE MECHANICAL DRAWINGS.
2. ALL NEW TOILET PARTITIONS TO BE PROVIDED AS SHOWN.
3. APRON AT EXISTING LAVATORY COUNTERTOP AT WOMEN'S TOILET ROOM TO BE MODIFIED TO COMPLY WITH H/C CODES AND ADA.
4. PROVIDE NEW COUNTERTOP AT MEN'S TOILET ROOM. EXISTING LAVATORIES TO BE REINSTALLED IN NEW COUNTERTOP.
5. ALL EXISTING TOILET ACCESSORIES TO REMAIN WHERE PARTITIONS ARE NOT REMOVED.
6. ALL LIGHTING FIXTURES TO BE REPLACED WITH NEW. SEE LIGHTING PLAN E2 .
7. PATCH FLOOR/BASE TILE WHERE BRICK PARTITIONS AND URINAL ARE TO BE REMOVED.

G13 | NEW FLOOR PLAN
1/4" = 1'-0"



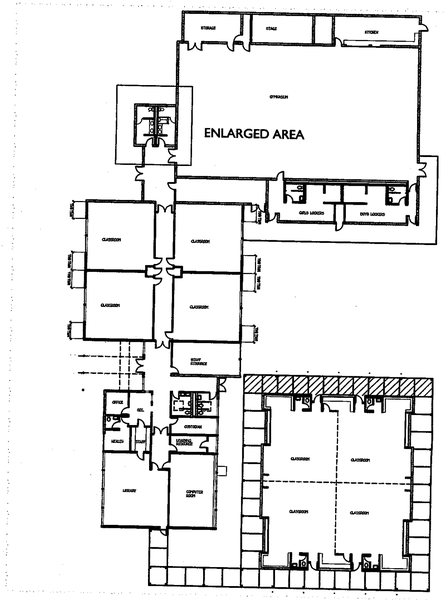
1A MENS TOILET ROOM

SOAP DISP. SHOWN ARE EXISTING TO REMAIN, TYP.



1A WOMENS TOILET ROOM

A1 | INTERIOR ELEVATIONS
1/4" = 1'-0"



A13 | KEY PLAN
NO SCALE

NORTH

BJSS DUARTE BRYANT
ARCHITECTURE

www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022

108 First Avenue South
Suite 200
Seattle, Washington 98104

Pacific Beach Elementary School
Capital Improvements
North Beach School District

1888 REGISTERED ARCHITECT
Frank L. Smith
STATE OF WASHINGTON

JOB NO.
23048.00
DRAWN BY CHECKED BY

DATE
4-5-2004
REVISIONS

CONTRACT DOCUMENTS

ENLARGED TOILET ROOM PLANS & ELEVATIONS

A202

FLAG NOTES:

1. REMOVE EXISTING CORRUGATED PLASTIC SKYLIGHT. INFILL EXISTING ROOF OPENING WITH DECKING MATERIAL TO MATCH EXISTING. PAINT UNDERSIDE TO MATCH.
2. REMOVE EXISTING SKYLIGHT. INFILL EXISTING OPENING WITH MATERIAL TO MATCH ADJACENT AND ROOF OVER.
3. PROVIDE NEW STAINLESS STEEL SCUPPER IN EXISTING CONFIGURATION. PROVIDE NEW DOWNSPOUT.
4. REMOVE EXISTING SCUPPER BOX. INSTALL NEW STAINLESS STEEL SCUPPER BOX IN EXISTING OPENING AND IN EXISTING CONFIGURATION. PROVIDE NEW DOWNSPOUTS.
5. EXISTING EXHAUST HOOD TO REMAIN. PROVIDE NEW STAINLESS STEEL ROOF FLASHING.
6. EXISTING AIR INTAKES TO REMAIN. PROVIDE NEW STAINLESS STEEL ROOF FLASHING AND COVERS.
7. PROVIDE NEW GUTTERS AND DOWNSPOUTS.

GENERAL NOTES:

ALL EXISTING ROOFING TO BE ABATED TO SHEATHING. ROOFING HAS BEEN TESTED AND CONTAINS ASBESTOS. EXISTING SHEATHING TO BE INSPECTED BY THE CONSTRUCTION MANAGER AND ARCHITECT PRIOR TO NEW ROOFING INSTALLATION.

COORDINATE REMOVAL OF ANY/ALL EXISTING MECHANICAL STRUCTURES, SUCH AS EXHAUST FANS, VENTS, ETC., WITH MECHANICAL ENGINEER.

EXISTING SKYLIGHTS TO BE REMOVED.

INFILL ALL ABANDONED ROOF OPENINGS, TYP. PROVIDE ROOF SHEATHING / DECKING TO MATCH EXISTING MATERIAL TO INFILL OPENINGS LEFT BY REMOVAL OF EXITING SKYLIGHTS.

HATCHED AREA ON PLAN INDICATES SOFFIT AREA OF CANOPY TO BE PAINTED AS PART OF ALTERNATE 3.

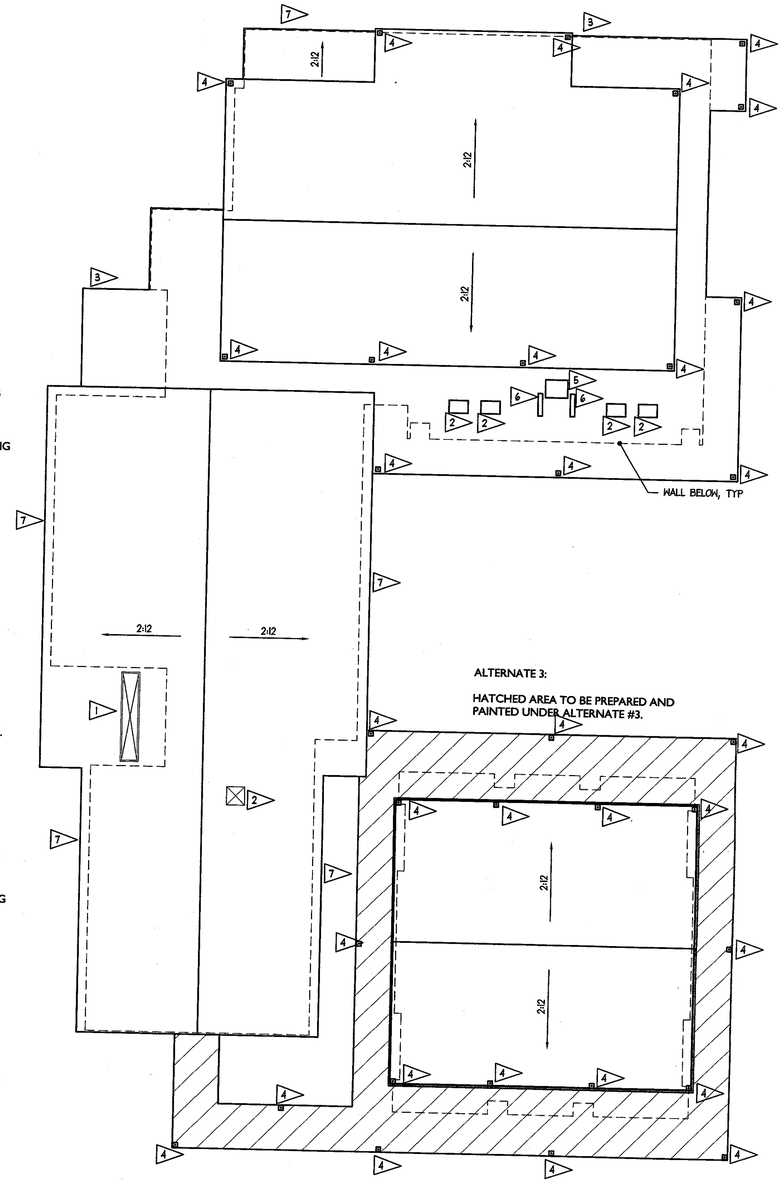
PROVIDE NEW ROOFING FOR ENTIRE ROOF SURFACE.

ROOF DETAILS TO BE BY ROOFING MANUFACTURER. PROVIDE SHOP DRAWINGS FOR ARCHITECT REVIEW.

ALL METAL FLASHING TO BE STAINLESS STEEL.

PROVIDE ALL NEW GUTTERS AND DOWN SPOUTS ALL ALL EXISTING LOCATIONS

COORDINATE PENETRATIONS AT ROOF NOT SHOWN.



A9 | NEW ROOF PLAN

1/16" = 1'-0"

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104

Pacific Beach Elementary School
Capital Improvements
North Beach School District

1888 REGISTERED ARCHITECT Frank L. Smith STATE OF WASHINGTON

JOB NO. 23048.00

DRAWN BY | CHECKED BY

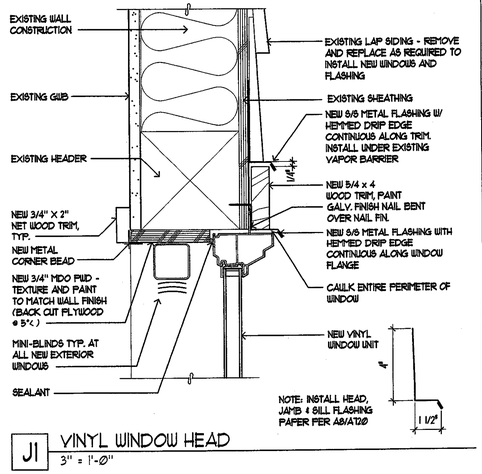
DATE 4-5-2004

REVISIONS

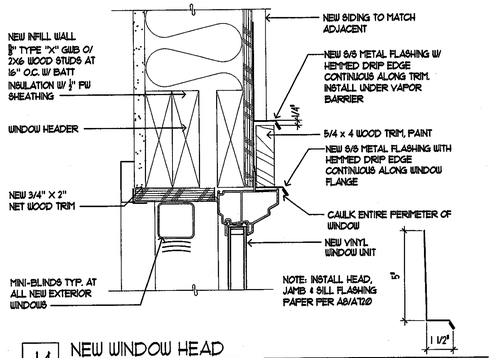
CONTRACT DOCUMENTS

ROOF DEMOLITION AND NEW PLANS

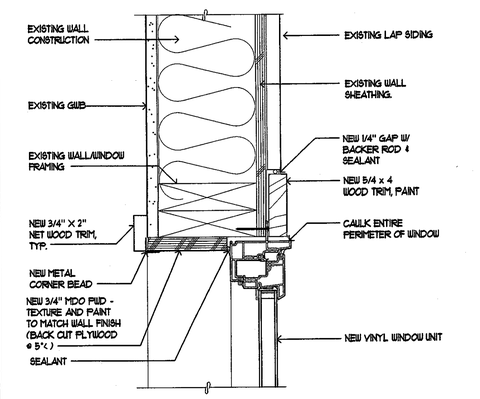
A401



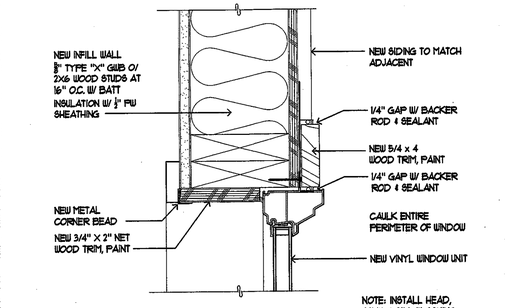
J1 VINYL WINDOW HEAD
3" = 1'-0"



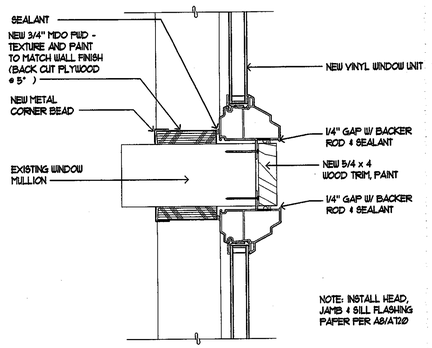
J4 NEW WINDOW HEAD
3" = 1'-0"



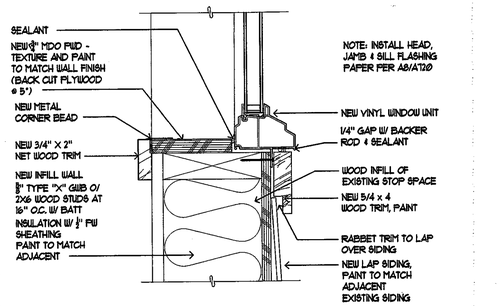
E1 VINYL WINDOW JAMB
3" = 1'-0"



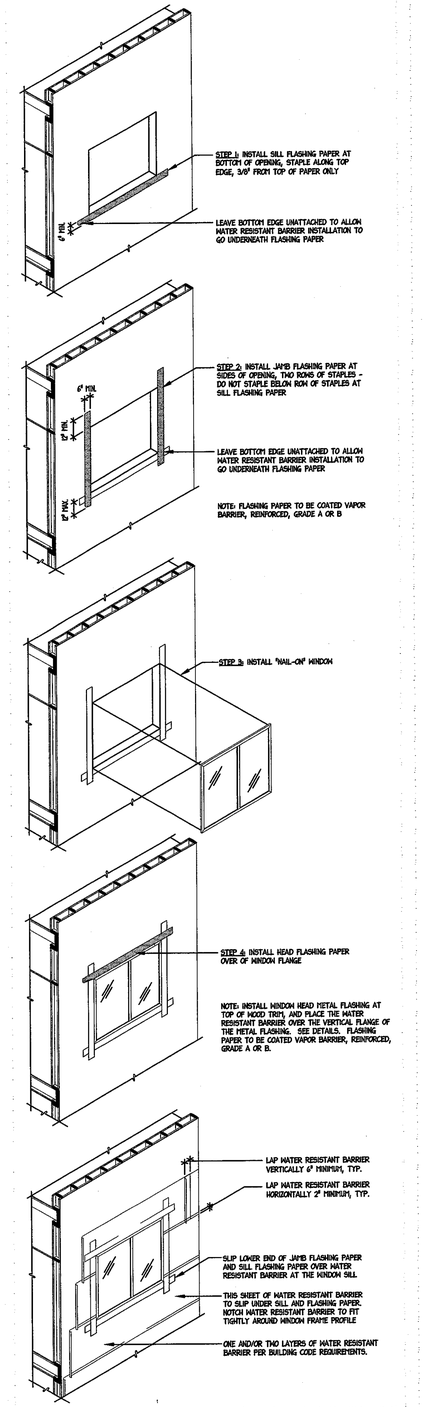
E4 NEW WINDOW JAMB
3" = 1'-0"



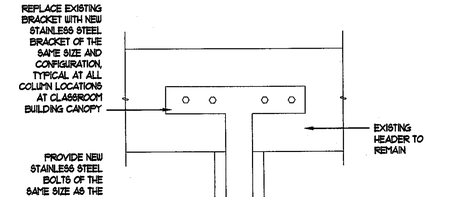
A1 NEW WINDOW MULLION
3" = 1'-0"



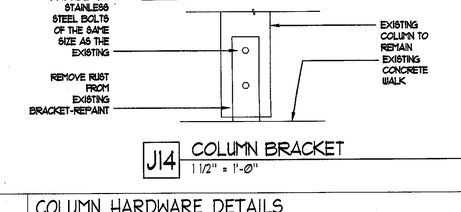
A4 NEW WINDOW SILL
3" = 1'-0"



A8 TYP. SEQUENCE FOR PAPER FLASHING

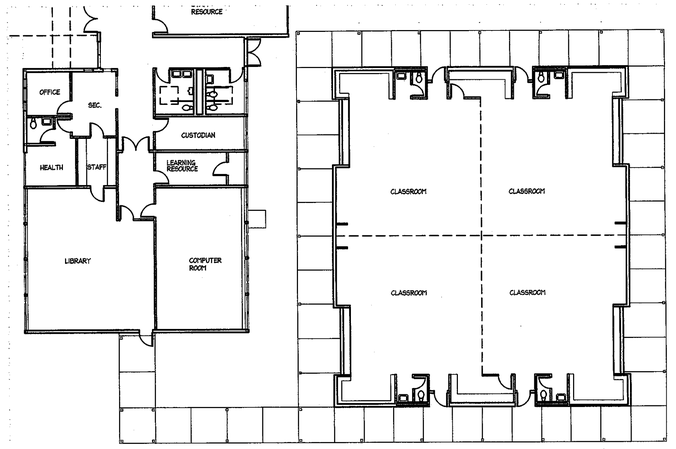


K14 COLUMN BRACKET
1 1/2" = 1'-0"



J14 COLUMN BRACKET
1 1/2" = 1'-0"

F12 COLUMN HARDWARE DETAILS
3" = 1'-0"



GENERAL NOTES - ALTERNATES 2, 3 AND 4:

ALTERNATE 2 - SEE ELECTRICAL DRAWINGS FOR NEW SOFFIT LIGHTING.

ALTERNATE 3 - PAINT ALL THE SOFFIT OF THE CANOPY SURROUNDING THE CLASSROOM BUILDING AND EXTENDING TO THE LIBRARY. SEE ROOF PLAN, A401. REPLACE THE COLUMN HARDWARE PER DETAILS AT EACH CANOPY SUPPORT COLUMN. FIELD VERIFY QUANTITY OF COLUMNS.

ALTERNATE 4 - SAND OR BEAD BLAST CONCRETE WALK AT THE NORTH OF THE CLASSROOM BUILDING AS INDICATED ON THE FLOOR PLAN.

NORTH

A11 CLASSROOM BUILDING FLOOR PLAN
1/16" = 1'-0"

A1 WINDOW EXTERIOR DETAILS
3" = 1'-0"

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104

Pacific Beach Elementary School
Capital Improvements
North Beach School District

1888 REGISTERED ARCHITECT
Frank L. Smith
STATE OF WASHINGTON

JOB NO.
23048.00
DRAWN BY CHECKED BY

DATE
4-5-2004
REVISIONS

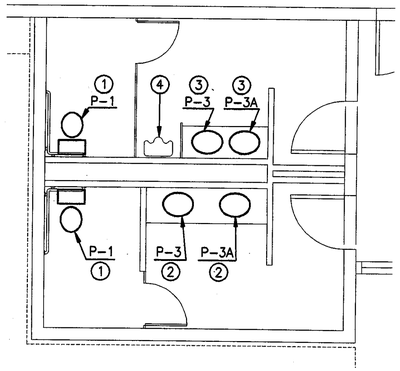
CONTRACT DOCUMENTS

WINDOW DETAILS

A720

PLUMBING FIXTURE SCHEDULE

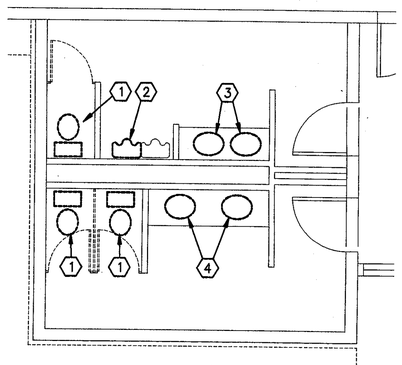
UNIT NO	FIXTURE	MOUNTING	MANUFACTURER AND MODEL NUMBERS	W	V	HW	CW	REMARKS
P-1	WATER CLOSET TANK TYPE ADA	FLOOR	TOILET: KOHLER, HIGHLINE #K-3427 SEAT: CHURCH #9500C SUPPLY: EBC #CAH12	4"	2"	-	½"	ADA COMPLIANT, SEAT MUST BE 17" HIGH MINIMUM, PROVIDE BOLT CAPS.
P-2	URINAL	FLOOR	URINAL: EXISTING FLUSH VALVE: SLOAN ROYAL #186-1	EXISTING TO BE REUSED				
P-3	LAVATORY	WALL	SINK: EXISTING FITTINGS: SYMMONS SCOT #S-60-G SUPPLIES: EBC #LAH16 TRAP: EBC #TS140	2"	1½"	½"	½"	
P-3A	LAVATORY	WALL	SINK: EXISTING FITTINGS: SYMMONS SCOT #S-60-G-H SUPPLIES: EBC #LAH16 TRAP: EBC #TS140	2"	1½"	½"	½"	ADA COMPLIANT, PROVIDE WITH OFFSET TRAP AND EBC INSTITUTIONAL ADA INSULATOR KIT.



PARTIAL FLOOR PLAN
SCALE: 1/4"=1'-0"

DEMOLITION NOTES

1. REMOVE WATER CLOSET AND APPURTENANCES. ASSOCIATED PIPING TO BE CAPPED FOR FUTURE USE.
2. REMOVE URINAL, FLUSH VALVE AND APPURTENANCES. ASSOCIATED PIPING TO BE CAPPED BEHIND FINISHED SURFACES. PATCH FLOOR TO MATCH EXISTING.
3. REMOVE LAVATORY, FAUCET, RISERS, STOPS AND APPURTENANCES. ASSOCIATED PIPING TO BE CAPPED FOR FUTURE USE. LAVATORY TO BE RETAINED FOR FUTURE USE.
4. REMOVE EXISTING FAUCET, RISERS, STOPS AND APPURTENANCES. FIXTURE TO REMAIN IN PLACE.



PARTIAL DEMOLITION PLAN
SCALE: 1/4"=1'-0"

CONSTRUCTION NOTES

1. INSTALL NEW FIXTURE TO EXISTING UTILITIES. VERIFY ROUGH IN DISTANCE PRIOR TO ORDERING AND INSTALLING NEW FIXTURE.
2. CLEAN FIXTURE PRIOR TO INSTALLING NEW FAUCET AND DEVICES.
3. CLEAN FIXTURE PRIOR TO REINSTALLATION IN NEW COUNTER.
4. CLEAN FIXTURE PRIOR TO INSTALLING NEW FLUSH VALVE AND PROVIDE NECESSARY FINISHING CAPS FOR CLEAN FINISH ON ALL EDGES. PATCH FLOOR ASSOCIATED WITH URINAL REMOVAL.

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104
T 206.340.1552
F 206.340.0412

Pacific Beach Elementary School
Capital Improvements
North Beach

SCOTT P. ZIMBELMAN
STATE OF WASHINGTON
21598
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 03/17/06

JOB NO. 23048.00
DRAWN BY BKH
CHECKED BY SZ
DATE 04-05-04
REVISIONS

BID SET

M1

GENERAL NOTES FOR LIGHTING FIXTURE SCHEDULE

1. SEE DRAWINGS FOR LOCATIONS AND QUANTITIES OF FIXTURES WITH EMERGENCY BATTERY PACKS.

LIGHTING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	LAMPS	VOLTS / WATTS	MOUNTING & REMARKS
PF1	CORELITE # NBSH-1T5-1C-120-AC48-ST-DC60-95	(1) T5HO RS/35K	120 62	AIR CRAFT CABLE HUNG, OCCUPANCY SENSOR MOUNTED IN FIXTURE SEE PLANS FOR DETIALS
PF2	CORELITE # NBSH-2T5-1C-120-AC48-ST-DC60-95	(2) T5HO RS/35K	120 117	AIR CRAFT CABLE HUNG, OCCUPANCY SENSOR MOUNTED IN FIXTURE SEE PLANS FOR DETIALS
RF1	COOPER # 2GC8-232A125	(2)FO32 T8 RS/35K	120 57W	2x4 RECESSD TROFFER
RF2	COOPER # 2EP3GX-232S28I	(2) F032 T8 RS/35K	120 57	RECESSED PARABOLIC
SF1	KENALL # MR13FL-PP-LG-32P-1-120	(1) 32W PL 35K	120 39	13" SURFACE MOUNT FIXTURE
SF2	COOPER # SA-232IMA-120-EB81-U	(2) F032 T8 RS/35K	120 57	
SF3	COOPER # FPS-232-120-EB81	(2) F032 T8 RS/35K	120 57	
SF4	COOPER # SA-232A-120-EB81-U	(2) F032 T8 RS/35K	120 57	
SF5	FAIL-SAFE # FPS 132 120 EB81 7710, MOUNT IN CONTINUS ROW	(1) F032 T8 RS/35K	120 29	SURFACE MOUNT FIXTURE
SF6	KENALL # MR17FD-PP-LG-42P-3-120	(3) 42W PL 35K	120 139	SURFACE MOUNT 17" DIA FIXTURE
SF7	COOPER # SA-323IMA-120-EB81-U	(3) F032 T8 RS/35K	120 89	SURFACE MOUNT 2x4 FIXTURE
SF8	COOPER # 2EP3MX-332S36I-120-EB81-U	(3) F032 T8 RS/35K	120 89	SURFACE MOUNT PARABOLIC
UC1	COOPER # MTS-32-120-IK12-EB81	(1) F032 T8 RS/35K	120 29	MOUNT UNDER CABINET
WF1	DAY-BRIGHT # CD 1 17- W -120-	(1) F017 T8 RS/35K	120 19	MOUNT ABOVE MIRROR
WF2	DAY-BRIGHT # ACB 2 17 A - 120	(2) F017 T8 RS/35K	120 30	MOUNT ABOVE MIRROR
SH1	KENALL # MR17FD-PP-LG-50M-1-120	(1) 50W METAL HALIDE	120 62	
SH2	KENALL # MR17FD-PP-LG-100M-1-120	(1) 100W METAL HALIDE	120 129	
PH1	HUBBELL # BL-175W-1-WH	(1) 175W METAL HALIDE	120 210	PROVIDE WITH 2FT PENDANT
PH2	HUBBELL # BL-175W-1-WH	(1) 175W METAL HALIDE	120 210	PROVIDE WITH 2FT PENDANT
EX1	SURE-LITE # LPX 7 R WH VS1	LED	120 1.5	
EX2	SURE-LITE # LPXH-7O-RWH120-DH-WG17-VS2	LED	120 1.5	EXIT/EMERGENCY LIGHT
EX3	SURE-LITE # LPXH-7O-RWH120-DH-WG17-VS2	LED	120 1.5	EXIT/EMERGENCY LIGHT WITH WIRE GUARD
EM1	SURE-LITE # CU-1PCL	INCLUDED	120	EMERGENCY LIGHT
EM2	SURE-LITE # CC-5WH WG-1	INCLUDED	120	EMERGENCY LIGHT WITH WIRE GUARD

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	LIGHTING
	RECESSED FLUORESCENT LIGHT FIXTURE
	SURFACE OR PENDANT MOUNT FLUORESCENT LIGHT FIXTURE
	WALL MOUNT H.I.D. LIGHT FIXTURE
	WALL MOUNT COMPACT FLUORESCENT LIGHT FIXTURE
	SURFACE OR RECESSED H.I.D. OR FLUORESCENT LIGHT FIXTURE
	SURFACE OR RECESSED H.I.D. OR COMPACT FLUORESCENT LIGHT FIXTURE
	SURFACE OR PENDANT MOUNT STRIP LIGHT
	FIXTURE WITH EMERGENCY BATTERY PACK
	INCANDESCENT LIGHT FIXTURE
	WALL MOUNTED INCANDESCENT LIGHT FIXTURE
	EXIT LIGHT FIXTURE (PROVIDE DIRECTION ARROWS AS INDICATED)
	WALL MOUNTED EXIT LIGHT FIXTURE (PROVIDE DIRECTION ARROWS AS INDICATED)
	EMERGENCY BATTERY PACK WITH TWIN HEAD FLOOD
	COMBINATION EXIT / TWIN HEAD FLOOD (PROVIDE DIRECTION ARROWS AS INDICATED)
	RECEPTACLES
	FOURPLEX RECEPTACLE
	EQUIPMENT AND WIRING
	CONDUIT STUB OUT (PROVIDE CONCRETE MARKER ON EXTERIOR)
	HOMERUN TO PANEL & CIRCUIT NUMBERS AS INDICATED ON PLANS
	RACEWAY CONCEALED IN WALL OR CEILING
	MARKS INDICATE NUMBER OF #12 AWG UNLESS NOTED OTHERWISE
	SURFACE METAL RACEWAY
	GROUNDING SYSTEM PER CODE
J	JUNCTION BOX - SIZE PER CODE
	EXISTING PANELBOARD TO BE RETAINED
	MAIN DISTRIBUTION BOARD
	MISCELLANEOUS
①	CONSTRUCTION NOTES
W	W INDICATES WEATHERPROOF FOR ALL DEVICES, PROVIDE LOCKING COVER ON RECEPTACLES.
$	ALL DEVICES WITH LIGHT LINE WEIGHT INDICATES EXISTING TO BE RETAINED
$	ALL DEVICES WITH DASH LINE INDICATES EXISTING TO BE REMOVED
①	DEMOLITION NOTES
⚠1	CEILING TYPE NOTES

SYMBOL	DESCRIPTION
	SWITCHES
$	SINGLE POLE SWITCH
$3	THREE WAY SWITCH
$a $b	MULTI-GANGED SWITCH (LOWER CASE LETTERS INDICATES SWITCHING)
OS	OCCUPANCY SENSOR (LIGHTING CONTROL)
	INTERCOM AND SOUND SYSTEM
12:10	CLOCK
S	COMBINATION CLOCK / SPEAKER (DIGITAL)
S	LOUDSPEAKER ASSEMBLY - CEILING MOUNTED
S	LOUDSPEAKER ASSEMBLY - WALL MOUNTED
S	LOUDSPEAKER - COMPRESSION HORN TYPE
V	VOLUME CONTROL
CS	CALL SWITCH
ICC	INTERCOM CONTROL CONSOLE
	COMMUNICATION SYSTEM
▲	TELEPHONE OUTLET UNLESS NOTED OTHERWISE, PROVIDE SURFACE WIREMOLD BOX AND 700 SERIES WIREMOLD TO ACCESSIBLE CEILING SPACE. PROVIDE CAT 5 JACK AND CABLE TO TELEPHONE SWITCH.
▲A	SAME AS ABOVE WITH ADMINISTRATIVE TELEPHONE INSTRUMENT
▲S	SAME AS ABOVE WITH STAFF TELEPHONE INSTRUMENT.

ELECTRICAL LEGEND AND LIGHT FIXTURE SCHEDULE

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104
T 206.340.1552
F 206.340.0412

Pacific Beach Elementary School
Capital Improvements
North Beach

MICHAEL L. COUNTRYMAN
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 7/12/04

JOB NO. 23048.00
DRAWN BY CHECKED BY
DATE 04-19-04
REVISIONS

BID

E1

CONSTRUCTION NOTES

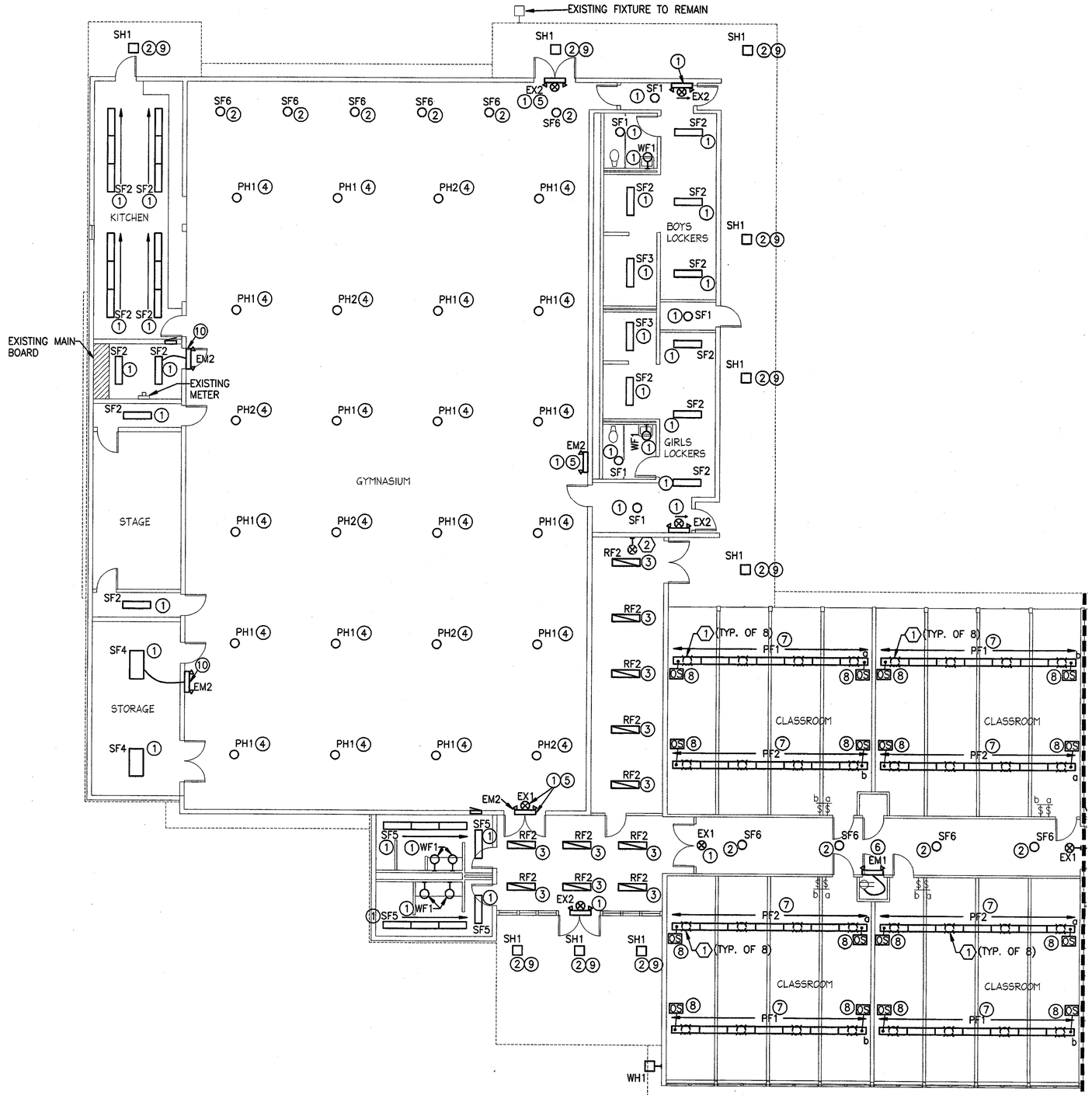
1. REMOVE EXISTING SURFACE MOUNT FIXTURE AND INSTALL NEW. EXTEND CIRCUITING AS REQUIRED.
2. REMOVE EXISTING RECESSED DOWN LIGHT, TRIM RING AND SOCKET ASSEMBLY. RETAIN J-BOX ON FIXTURE AND EXTEND CIRCUITING TO NEW FIXTURE AS REQUIRED. PROVIDE 1/2" ACX PLYWOOD BACKING AS REQUIRED WITH A MINIMUM 5" SQUARE HOLE TO MOUNT NEW FIXTURE OVER EXISTING OPENING. BACKING IS TO BE SIZED 1/2" SMALLER THAN NEW FIXTURE OUTSIDE DIMENSIONS. PAINT PLYWOOD OUT TO MATCH ADJACENT SURFACE.
3. REMOVE EXISTING RECESSED TROFFER AND FIXTURE WHIP. INSTALL NEW FIXTURE AND WHIP. EXTEND CIRCUITING AS REQUIRED.
4. REMOVE EXISTING PENDANT MOUNT INCANDESCENT HIGH BAY FIXTURES AND PENDANTS. PROVIDE NEW BALL JOINT FLEXIBLE FIXTURE HANGER AND INSTALL NEW HID FIXTURE. EXTEND CIRCUITING AS REQUIRED.
5. PROVIDE NEW WIRE GUARD.
6. SURFACE MOUNT NEW FIXTURE TO WALL ABOVE DOOR. CUT BOX INTO WALL AND EXTEND CIRCUITING FROM EXISTING RECEPTACLE IN CLOSET.
7. NEW CABLE HUNG FIXTURE. USE ONE OF THE EXISTING J-BOXES FOR POWER FEED. FIXTURE TO BE MOUNT 18" BELOW CEILING TO TOP OF FIXTURE.
8. OCCUPANCY SENSOR FACTORY MOUNTED IN FIXTURE BY MANUFACTURE.
9. UNDER ADDITIVE ALTERNATE BID No.2
10. WALL MOUNT NEW EMERGENCY LIGHT FIXTURE AT +12'-0" EXTEND CIRCUITING FROM EXISTING UN-SWITCHED POWER FEEDING LIGHTING IN STORAGE ROOM. CORE DRILL EXISTING BRICK WALL AS REQUIRED. PROVIDE WIREMOLD 700 SERIES WHERE EXPOSED IN GYM.

DEMOLITION NOTES

1. REMOVE EXISTING FIXTURE AND PENDANT. REMOVE WIRING BACK TO FIRST FIXTURE IN ROW. J-BOXES TO REMAIN. PROVIDE BLANK COVER PLATE. E.C. SHALL PAINT TO MATCH ADJACENT SURFACE
2. REMOVE EXISTING FIXTURE AND PROVIDE BLANK COVER PLATE.

GENERAL NOTES

1. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, PATCHING AND PAINTING CALLED OUT ON THE ELECTRICAL DRAWINGS.
2. CONTRACTOR TO REMOVE AND DELIVER TO OWNER ALL DEVICES THAT ARE IDENTIFIED BY OWNER TO BE RETAINED. CONTRACTOR SHALL COORDINATE WITH OWNER TO ASSURE THAT ALL ITEMS TO BE RETAINED ARE IDENTIFIED PRIOR TO THE START OF DEMOLITION. ALL ITEMS NOT SO IDENTIFIED SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF SITE.
3. ALL SURFACE BOXES AND RACEWAYS SHALL BE PAINTED TO MATCH ADJACENT SURFACE.



PARTIAL LIGHTING PLAN

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

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104
T 206.340.1552
F 206.340.0412

Pacific Beach Elementary School
Capital Improvements
North Beach

MICHAEL L. CONARD STATE OF WASHINGTON 5888 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 7/12/04

JOB NO. 23048.00
DRAWN BY CHECKED BY
DATE 04-19-04
REVISIONS

BID

E2

no Apr 02,2004 - 10:00am R:\dwgs\2003\203-141\elec\E2-E3-23141.dwg limo

CONSTRUCTION NOTES

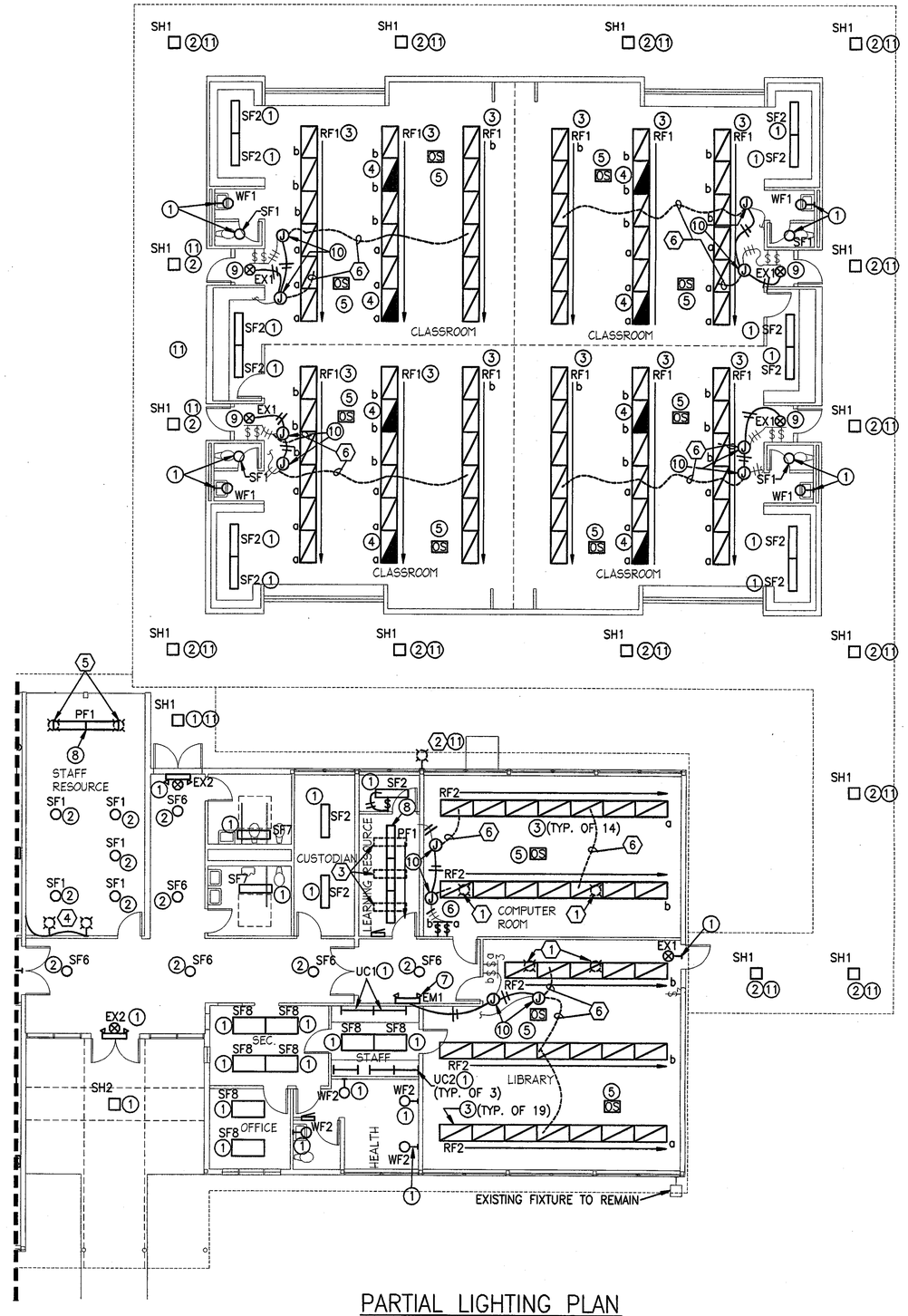
1. REMOVE EXISTING SURFACE MOUNT FIXTURE AND INSTALL NEW. EXTEND CIRCUITING AS REQUIRED.
2. REMOVE EXISTING RECESSED DOWN LIGHT, TRIM RING AND SOCKET ASSEMBLY. RETAIN J-BOX ON FIXTURE AND EXTEND CIRCUITING TO NEW FIXTURE AS REQUIRED. PROVIDE 1/2" ACX PLYWOOD BACKING AS REQUIRED WITH A MINIMUM 5" SQUARE HOLE TO MOUNT NEW FIXTURE OVER EXISTING OPENING. BACKING IS TO BE SIZED 1/2" SMALLER THAN NEW FIXTURE OUTSIDE DIMENSIONS. PAINT PLYWOOD OUT TO MATCH ADJACENT SURFACE.
3. REPLACE EXISTING RECESSED TROFFER AND PROVIDE A FLEXIBLE WIRING SYSTEM, AMERICAN CABLE SYSTEMS OR APPROVED EQUAL, TO TIE FIXTURES TOGETHER WITHIN ROOM, PROVIDING SWITCHING AS INDICATED.
4. EXTEND NON-SWITCHED POWER TO EMERGENCY FIXTURE AS REQUIRED.
5. MOUNT MOTION SENSOR CENTERED IN EXISTING CEILING TILE. CONNECT TO LIGHTING CIRCUITS AS REQUIRED FOR COMPLETE OPERATION.
6. REMOVE EXISTING SWITCH AND COVER PLATE. PROVIDE WIREMOLD SHALLOW DOUBLE GANG EXTENSION BOX MOUNTED OVER EXISTING J-BOX. PULL AN ADDITIONAL #12 CU. FROM SWITCHES NEW J-BOX ABOVE CEILING IN EXISTING CONDUIT. EXTEND WIRING AS REQUIRED AND PROVIDE NEW SWITCHES AND COVER PLATE.
7. WALL MOUNT TIGHT TO CEILING. FEED POWER FROM ABOVE.
8. NEW CABLE HUNG FIXTURE. USE ONE OF THE EXISTING J-BOXES FOR POWER FEED. MOUNT FIXTURE WITH BOTTOM AT +9'-6".
9. CEILING MOUNT EXIT SIGN. EXTEND NON-SWITCHED POWER TO FIXTURE AS REQUIRED.
10. PROVIDE J-BOX AND EXTEND POWER TO TIE IN MOTION SENSOR POWER PACKS. THEN PROVIDE A FLEXIBLE WIRING SYSTEM TO EXTEND POWER TO THE FIXTURES SEE CONSTRUCTION NOTE 3 FOR DETAILS.
11. UNDER ADDITIVE ALTERNATE BID No.2

DEMOLITION NOTES

1. REMOVE EXISTING FIXTURE AND PENDANT. REMOVE WIRING BACK TO FIRST FIXTURE IN ROW. J-BOXES TO REMAIN. PROVIDE BLANK COVER PLATE. E.C. SHALL PAINT TO MATCH ADJACENT SURFACE
2. REMOVE EXISTING FIXTURE AND PROVIDE BLANK COVER PLATE.

GENERAL NOTES

1. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, PATCHING AND PAINTING CALLED OUT ON THE ELECTRICAL DRAWINGS.
2. CONTRACTOR TO REMOVE AND DELIVER TO OWNER ALL DEVICES THAT ARE IDENTIFIED BY OWNER TO BE RETAINED. CONTRACTOR SHALL COORDINATE WITH OWNER TO ASSURE THAT ALL ITEMS TO BE RETAINED ARE IDENTIFIED PRIOR TO THE START OF DEMOLITION. ALL ITEMS NOT SO IDENTIFIED SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF SITE.
3. ALL SURFACE BOXES AND RACEWAYS SHALL BE PAINTED TO MATCH ADJACENT SURFACE.
4. SEE SHEET E4 FOR INFORMATION ON CEILINGS AND ATTIC SPACES.



PARTIAL LIGHTING PLAN

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

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104
T 206.340.1552
F 206.340.0412

Pacific Beach Elementary School
Capital Improvements
North Beach

MICHAEL L COVARRUBIAS — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 7/12/04

JOB NO. 23048.00
DRAWN BY CHECKED BY
DATE 04-19-04
REVISIONS

BID

E3

jmo Apr 02,2004 – 10:00am R:\dwgs\2003\203-141\elec\E2-E3-23141.dwg jmo

CONSTRUCTION NOTES

1. REMOVE EXISTING INTERCOM SPEAKER AND CABLE. PROVIDE BLANK COVER PLATE AND PROVIDE NEW SURFACE MOUNT CLOCK/ SPEAKER MOUNTED DIRECTLY OVER EXISTING BACK BOX. PROVIDE WIRE BACK TO NEW INTERCOM SYSTEM. PROVIDE 700 SERIES WIREMOLD FROM CLOCK/SPEAKER DOWN TO NEW CALL SWITCH AT +48" AFF. PROVIDE SHALLOW DEVICE BOX FOR CALL SWITCH. PROVIDE WIRE BACK TO NEW INTERCOM SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE.
2. NEW WALL MOUNTED PHONE JACK. SURFACE MOUNT AT +58" AFF USING WIREMOLD 700 SERIES TO ACCESSIBLE ATTIC SPACE ABOVE CORRIDOR AND SHALLOW DEVICE BOX FOR JACK. PROVIDE PHONE AND WIRE TO NEW PHONE SYSTEM.
3. NEW SURFACE MOUNT SPEAKER. PROVIDE CONDUIT TO ACCESSIBLE CEILING SPACE OR ATTIC. PROVIDE WIRE TO NEW INTERCOM SYSTEM.
4. REMOVE EXISTING CLOCK AND CABLE. PROVIDE BLANK COVER PLATE AND PROVIDE NEW SURFACE MOUNT CLOCK MOUNTED DIRECTLY OVER EXISTING BACK BOX. PROVIDE WIRE BACK TO NEW INTERCOM SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE. PROVIDE NEW WIRE GUARD
5. NEW SURFACE MOUNT INTERCOM LOUD SPEAKER. PROVIDE WIREMOLD 700 SERIES UP TO TRUSSES THEN ROUTE OPEN WIRE TO OTHER SPEAKER BACK TO NEW INTERCOM SYSTEM.
6. DROP WIREMOLD DOWN WALL TO ELEVATION WHERE YOU CAN ENTER THE ACCESSIBLE CEILING SPACE OF THE STORAGE ROOM.
7. NEW SURFACE MOUNT EXTERIOR INTERCOM LOUD SPEAKER SEAL PENETRATION AS REQUIRED. ROUTE CABLE THROUGH TO TRUSS SPACE OF GYM THEN OVER TO FIRST SPEAKER IN GYM SEE CONSTRUCTION NOTE #6.
8. REMOVE EXISTING PHONE JACK AND TERMINATE NEW JACK. TIE EXISTING CABLE INTO NEW PHONE SYSTEM IN CUSTODIAN ROOM ON SHEET E5.
9. REMOVE EXISTING INTERCOM SPEAKER AND CABLE. PROVIDE BLANK COVER PLATE AND PROVIDE NEW SURFACE MOUNT CLOCK/SPEAKER MOUNTED DIRECTLY OVER EXISTING BACKBOX. PROVIDE WIRE BACK TO NEW INTERCOM SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE.

CEILING NOTES

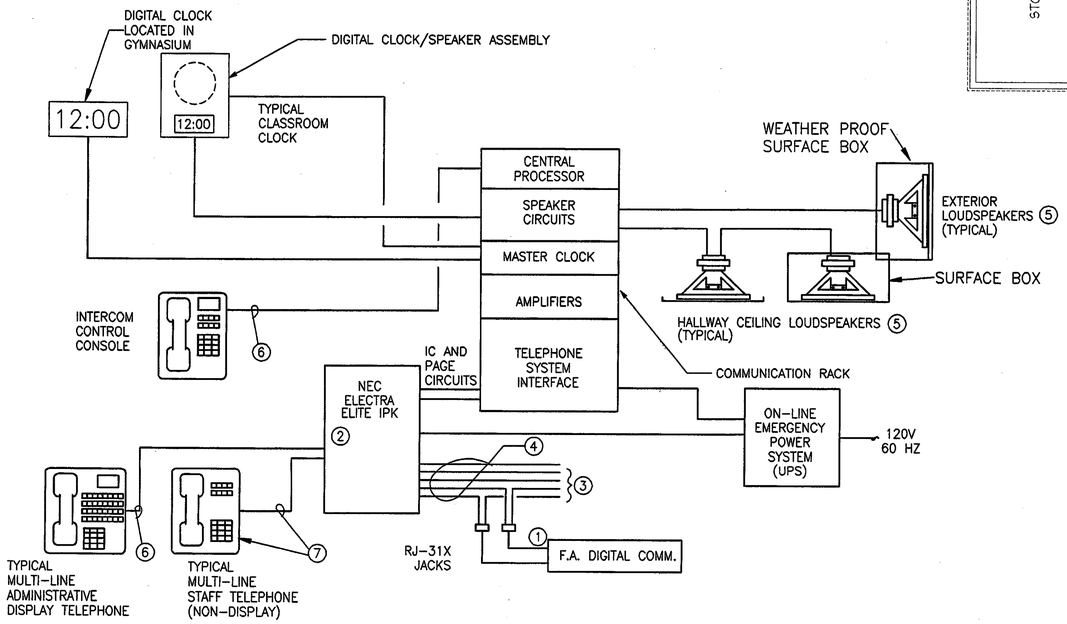
1. T-BAR CEILING TILES
2. HARD LID CEILING
3. ACCESSIBLE ATTIC SPACE ABOVE HARD CEILING
4. OPEN TO STRUCTURE

GENERAL NOTES

1. ALL EXISTING CLOCK AND INTERCOM SYSTEMS HEAD END, FIELD EQUIPMENT, AND WIRING SHALL BE REMOVED. ALL WIRING TO EXISTING SYSTEMS THAT SHALL REMAIN SHALL BE LEFT IN AN OPERATING CONDITION.
2. UNLESS NOTED OTHERWISE, ALL NEW CLOCK/INTERCOM DEVICES SHALL BE SURFACE MOUNTED. ALL CABLE SHALL BE ROUTED TO ACCESSIBLE ATTIC OR CEILING SPACE VIA WIREMOLD RACEWAYS AND BOXES UNLESS NOTED OTHER WISE.
3. E.C TO PAINT ALL SURFACE BOXES, BLANK COVER PLATES AND RACEWAYS TO MATCH ADJACENT SURFACE.
4. ALL WORK ON THIS SHEET IS UNDER ADDITIVE ALTERNATE No. 1.

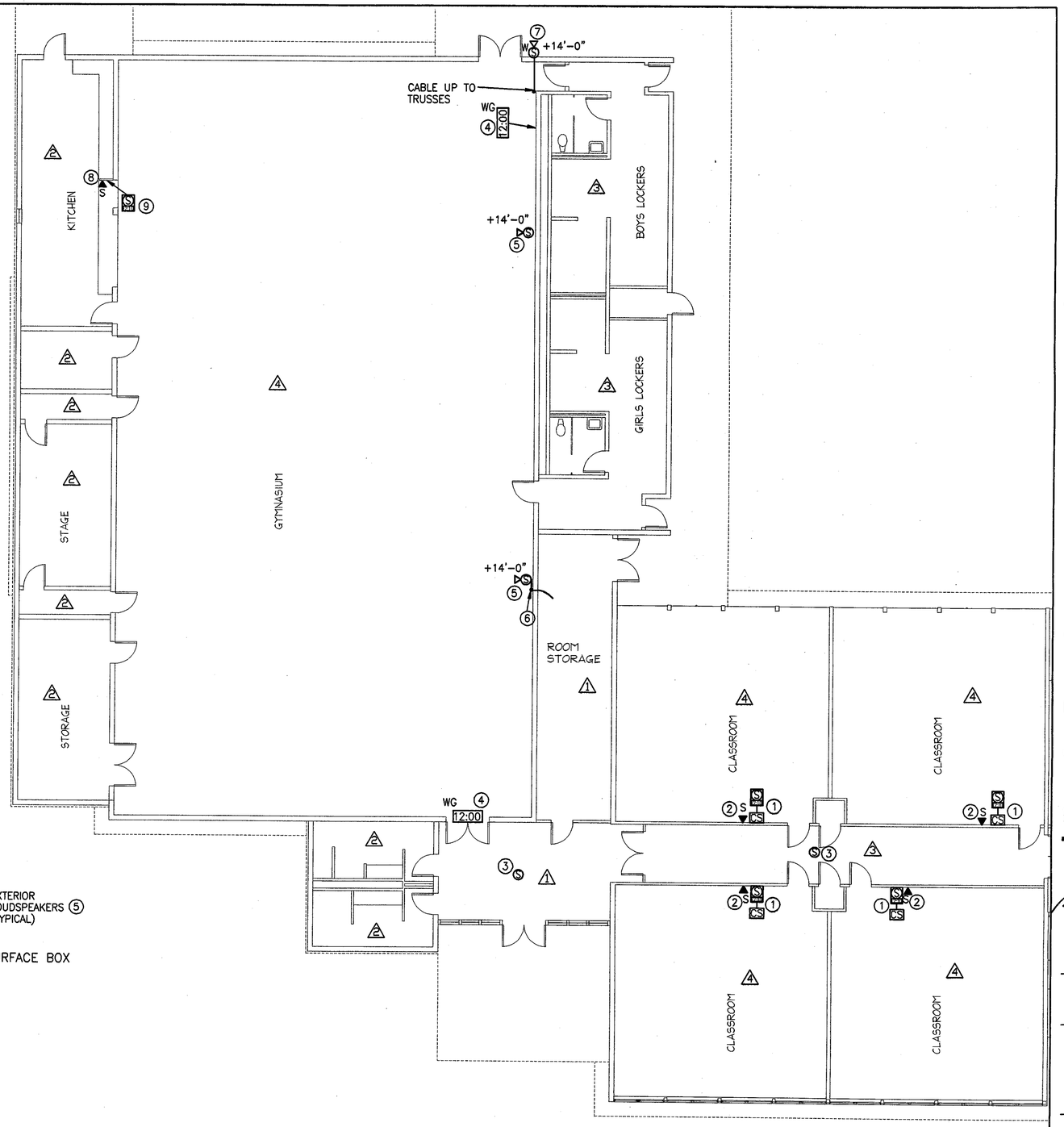
COMMUNICATION SYSTEM NOTES

1. RECONNECT FIRE ALARM SYSTEM AS REQUIRED.
2. SWITCH SHALL CONFORM TO E911 STANDARDS.
3. PROVIDE 4-PAIR 22 GAUGE WIRE BACK TO RJ21 PUNCHDOWN BLOCK AT TELEPHONE TERMINAL BOARD.
4. EXISTING (5) TELCO LINES BY CENTURY TEL
5. SPEAKERS SHALL BE ARRANGED IN THE FOLLOWING ZONES: GYMNASIUM LOUDSPEAKERS, CLASSROOM BUILDING, MAIN BUILDING AND OUTDOOR LOUDSPEAKERS
6. PROVIDE CAT 5e RJ45 JACK AND CAT 5e CABLE BACK TO NEW PHONE SWITCH.
7. PROVIDE WALL MOUNT PHONE PLATE AND JACK WITH CAT 5e CABLE BACK TO NEW PHONE SWITCH.



INTEGRATED COMMUNICATION SYSTEM – BLOCK DIAGRAM

DIAGRAMMATIC



PARTIAL SYSTEMS PLAN

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

BJSS DUARTE BRYANT
ARCHITECTURE

www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104
T 206.340.1552
F 206.340.0412

Pacific Beach Elementary School
Capital Improvements
North Beach

MICHAEL L. DUARTE STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER
EXPIRES 7/12/04

JOB NO. 23048.00
DRAWN BY CHECKED BY
DATE 04-05-04
REVISIONS

BID SET

E4

CONSTRUCTION NOTES

1. EXISTING INTERCOM SPEAKER BACKBOX. PROVIDE NEW BLANK COVER PLATE AND PROVIDE NEW SURFACE MOUNT CLOCK/SPEAKER MOUNTED DIRECTLY OVER EXISTING BACKBOX. REPLACE EXISTING WIRING BACK TO NEW INTERCOM SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE.
2. NEW SURFACE MOUNT CLOCK/SPEAKER AT +84" AND VOLUME CONTROL AT +48". PROVIDE 700 SERIES WIREMOLD FROM ATTIC SPACE DOWN TO CLOCK/SPEAKER ASSEMBLY, THEN FROM CLOCK/SPEAKER DOWN TO VOLUME CONTROL. PROVIDE SHALLOW DEVICE BOX FOR VOLUME CONTROL. PROVIDE WIRE BACK TO NEW INTERCOM SYSTEM.
3. PROVIDE NEW PHONE SWITCH AND INTERCOM SYSTEM. CONNECT EXISTING INCOMING PHONE LINES TO NEW PHONE SWITCH AS REQUIRED. CONNECT NEW AND EXISTING PHONE STATION CABLES AS REQUIRED. SEE DETAIL THIS SHEET FOR ADDITIONAL INFORMATION. PROVIDE 3/4" ACX PLYWOOD BACKBOARD PAINTED WITH TWO COATS OF FIRE RETANDANT PAINT, MOUNT BOARD HORIZONTAL ON WALL 36" AFF.
4. NEW WALL MOUNTED PHONE JACK. SURFACE MOUNT AT +58" AFF USING WIREMOLD 700 SERIES TO ACCESSIBLE CEILING SPACE AND SHALLOW DEVICE BOX FOR JACK. PROVIDE PHONE AND WIRE TO NEW PHONE SYSTEM.
5. REMOVE EXISTING INTERCOM SPEAKER AND CABLE. PROVIDE BLANK COVER PLATE AND PROVIDE NEW SURFACE MOUNT CLOCK/ SPEAKER MOUNTED DIRECTLY OVER EXISTING BACK BOX. PROVIDE WIRE BACK TO NEW INTERCOM SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE.
6. REMOVE EXISTING CALL SWITCH AND WIRE. PROVIDE NEW CALL SWITCH AND WIRE BACK TO NEW INTERCOM SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE.
7. PROVIDE 2" CONDUIT BETWEEN MAIN BUILDING AND CLASSROOM BUILDING FOR NEW SYSTEM WIRING. ROUTE CONDUIT FROM ATTIC SPACE OVER RESTROOMS IN MAIN BUILDING, UNDERNEATH EXISTING COVERED WALKWAY HOLDING TIGHT TO STRUCTURE, TO ACCESSIBLE CEILING SPACE IN CLASSROOM BUILDING. FOLLOW ROUTE OF EXISTING WIRING.
8. NEW SURFACE MOUNT CLOCK/SPEAKER AT +84" AFF. PROVIDE WIREMOLD 700 SERIES TO ACCESSIBLE CEILING SPACE. PROVIDE WIRE TO NEW INTERCOM SYSTEM.
9. REMOVE EXISTING PHONE OUTLET AND WIRE. PROVIDE NEW OUTLET, PHONE AND WIRE BACK TO NEW PHONE SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE.
10. NEW SURFACE MOUNT SPEAKER. PROVIDE CONDUIT TO ACCESSIBLE CEILING SPACE OR ATTIC. PROVIDE WIRE TO NEW INTERCOM SYSTEM.
11. SURFACE MOUNT CALL SWITCH AT +48". PROVIDE 500 SERIES WIRE MOLD FROM CLOCK/SPEAKER. PROVIDE SHALLOW DEVICE BOX FOR CALL SWITCH. PROVIDE WIRE BACK TO NEW INTERCOM SYSTEM.
12. NEW SURFACE MOUNT SPEAKER ON EXISTING BRICK WALL CORE DRILL BRICK AS REQUIRED. MOUNT 6" BELOW SOFFIT AND PROVIDE CONDUIT TO ACCESSIBLE CEILING SPACE.
13. NEW WALL MOUNT PHONE JACK AT +58". PROVIDE 700 SERIES WIRE MOLD FROM CLOCK/SPEAKER. PROVIDE SHALLOW DEVICE BOX FOR PHONE OUTLET. PROVIDE PHONE AND WIRE BACK TO NEW INTERCOM SYSTEM.
14. REMOVE EXISTING PHONE OUTLET AND WIRE. PROVIDE NEW (2) JACKS AND WIRE BACK TO NEW PHONE SYSTEM VIA EXISTING CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE THEN OPEN CABLE. PROVIDE NEW PHONE AND INTERCOM CONTROL CONSOLE.
15. NEW SURFACE MOUNT SPEAKER ON EXISTING WALL. MOUNT 6" BELOW SOFFIT AND PROVIDE CONDUIT TO ACCESSIBLE CEILING SPACE.

DEMOLITION NOTES

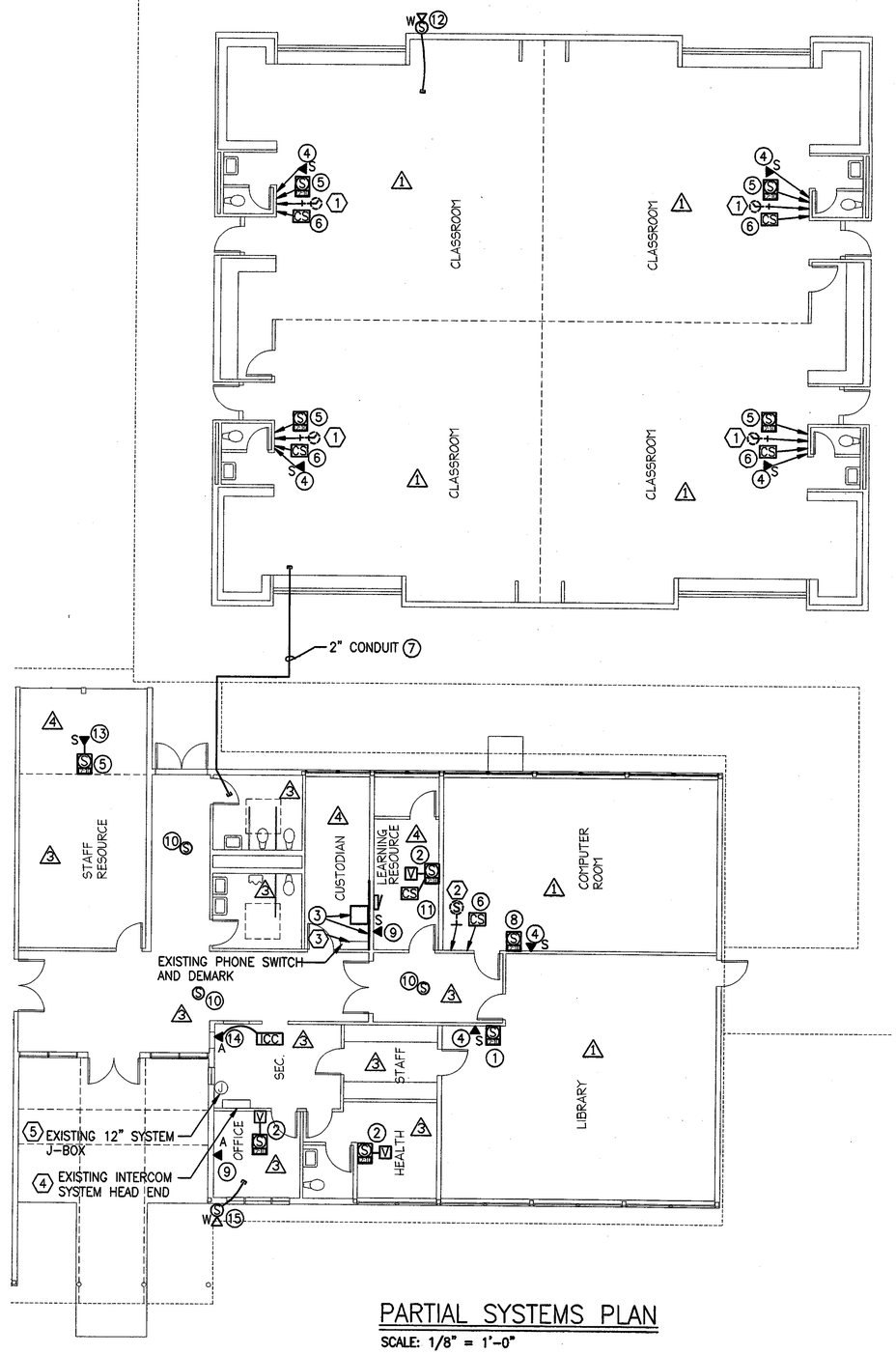
1. REMOVE EXISTING CLOCK AND WIRING. PROVIDE BLANK COVER PLATE. PAINT COVER PLATE TO MATCH IVORY WIREMOLD PRIOR TO INSTALLATION.
2. REMOVE EXISTING SPEAKER AND WIRING. PROVIDE BLANK COVER PLATE. PAINT COVER PLATE TO MATCH ADJACENT SURFACE.
3. REMOVE ALL UNUSED CABLES AND EQUIPMENT AT COMPLETION OF PROJECT.
4. REMOVE EXISTING MASTER CLOCK AND ASSOCIATED WIRING. REMOVE 120 VOLT WIRING BACK TO SOURCE. PROVIDE 16 GAUGE SHEET METAL COVER OVER OPENING LEFT IN WALL AND PAINT TO MATCH ADJACENT SURFACE.
5. EXISTING INTERCOM JUNCTION BOX REMOVE ALL UNUSED CABLES LEFT AT END OF PROJECT. PROVIDE BLANK COVER PLATE PAINT TO MATCH ADJACENT SURFACE.

CEILING NOTES

1. T-BAR CEILING TILES
2. HARD LID CEILING
3. ACCESSIBLE ATTIC SPACE ABOVE HARD CEILING
4. OPEN TO STRUCTURE

GENERAL NOTES

1. ALL EXISTING CLOCK AND INTERCOM SYSTEMS HEAD END, FIELD EQUIPMENT, AND WIRING SHALL BE REMOVED. ALL WIRING TO EXISTING SYSTEMS THAT SHALL REMAIN SHALL BE LEFT IN AN OPERATING CONDITION.
2. UNLESS NOTED OTHERWISE, ALL NEW CLOCK/INTERCOM DEVICES SHALL BE SURFACE MOUNTED. ALL CABLE SHALL BE ROUTED TO ACCESSIBLE ATTIC OR CEILING SPACE VIA WIREMOLD RACEWAYS AND BOXES UNLESS NOTED OTHER WISE.
3. E.C TO PAINT ALL SURFACE BOXES, BLANK COVER PLATES AND RACEWAYS TO MATCH ADJACENT SURFACE.
4. ALL WORK ON THIS SHEET IS UNDER ADDITIVE ALTERNATE No. 1.



PARTIAL SYSTEMS PLAN

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

BJSS DUARTE BRYANT
ARCHITECTURE
www.bjssdb.com
724 Columbia Street NW
Suite 400
Olympia, Washington 98501
T 360.943.4650
F 360.357.9022
108 First Avenue South
Suite 200
Seattle, Washington 98104
T 206.340.1552
F 206.340.0412

Pacific Beach Elementary School Capital Improvements

North Beach

MICHAEL L. COMARA — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 7/12/04

JOB NO. 23048.00
DRAWN BY CHECKED BY
DATE 04-05-04
REVISIONS

BID SET

E5

Appendix F: FEMA E-74 Nonstructural Seismic Bracing Excerpts

This page intentionally left blank.

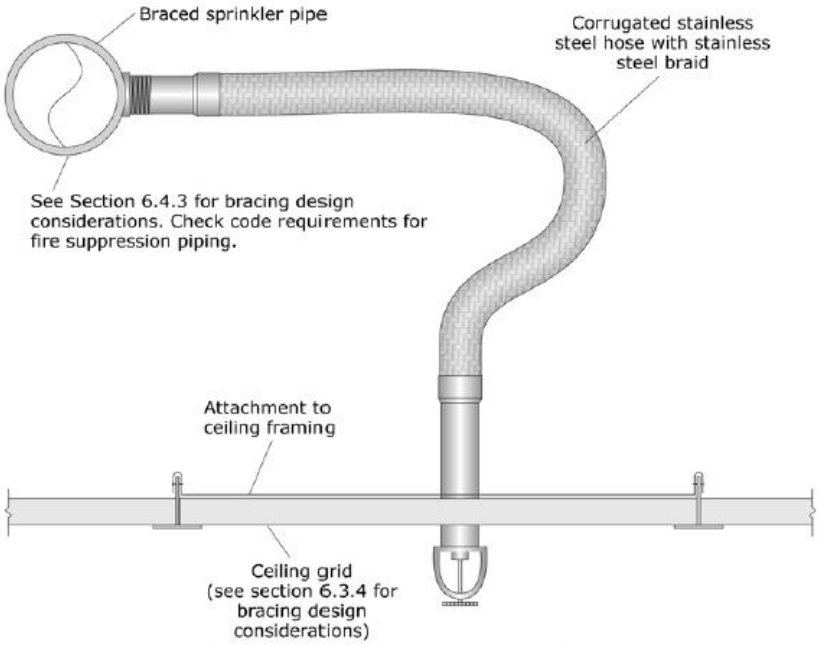


Figure G-1. Flexible Sprinkler Drop.

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

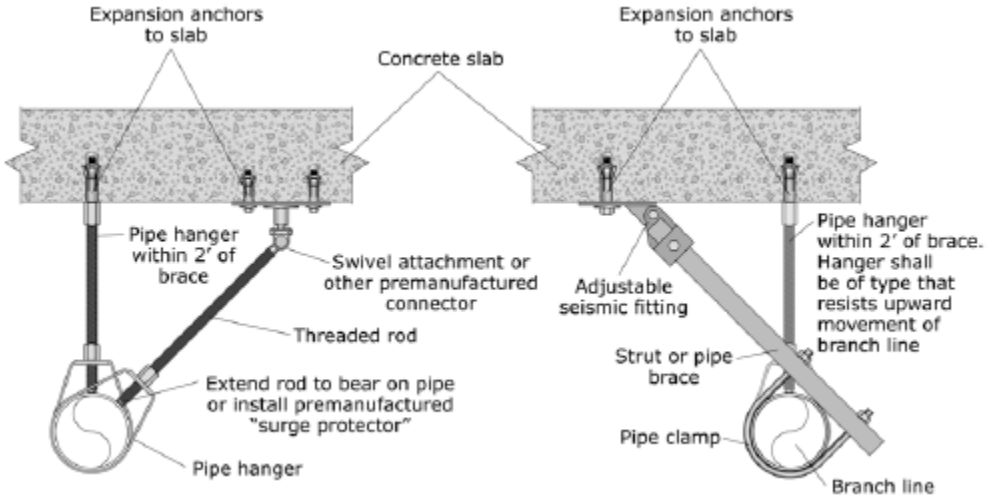


Figure G-2. End of Line Restraint.

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

Partitions

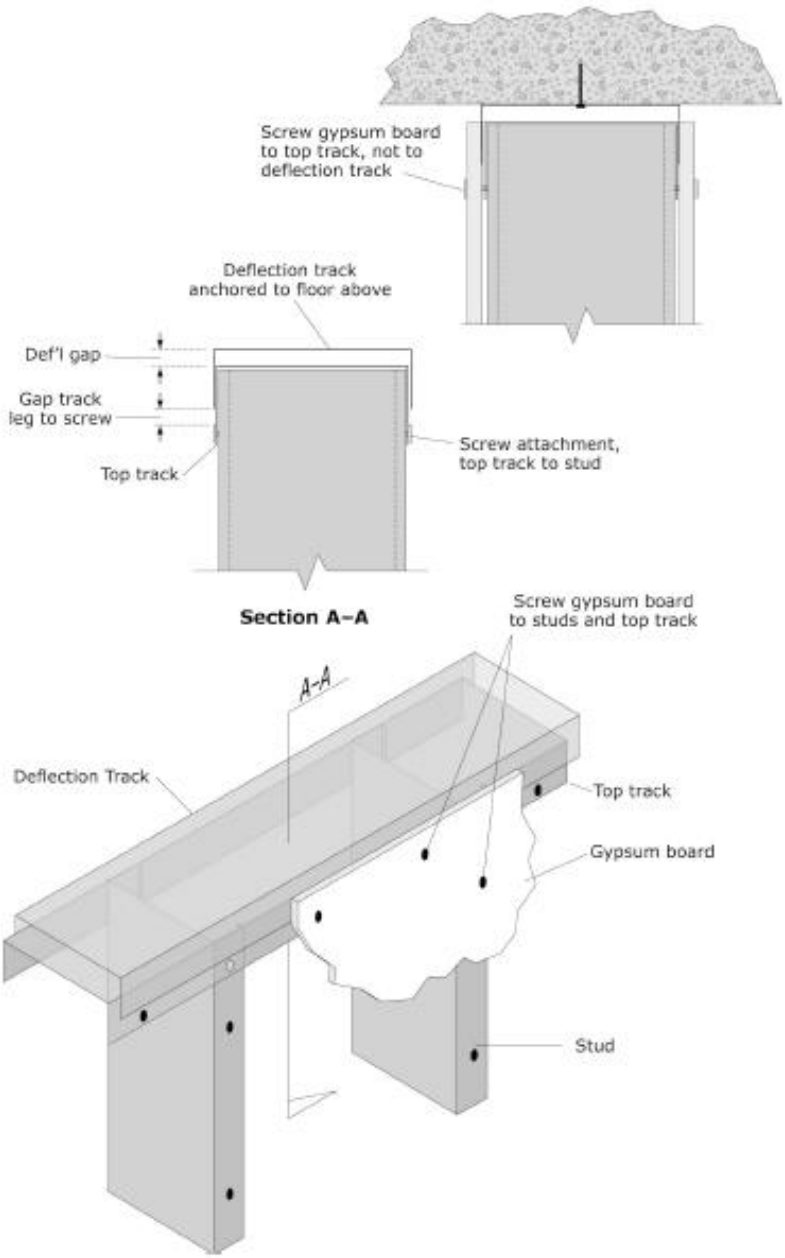


Figure G-3. Mitigation Schemes for Bracing the Tops of Metal Stud Partitions Walls.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

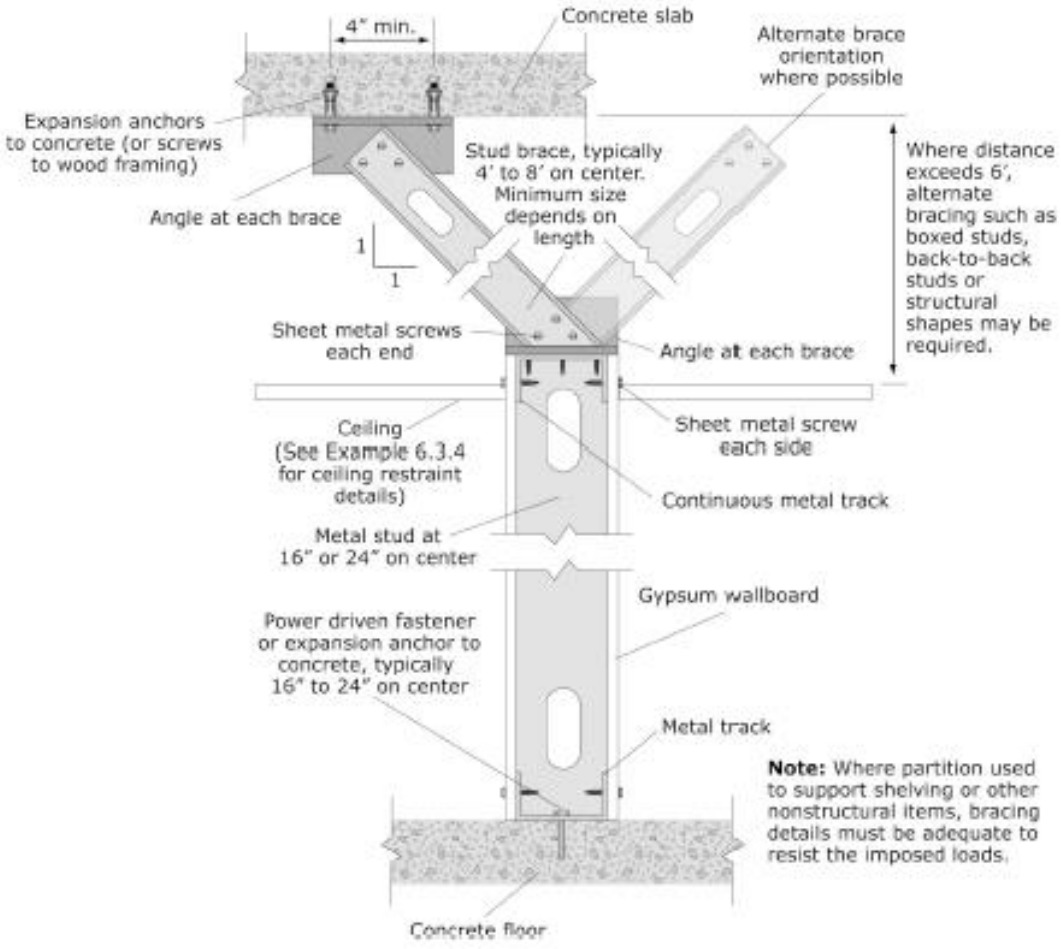
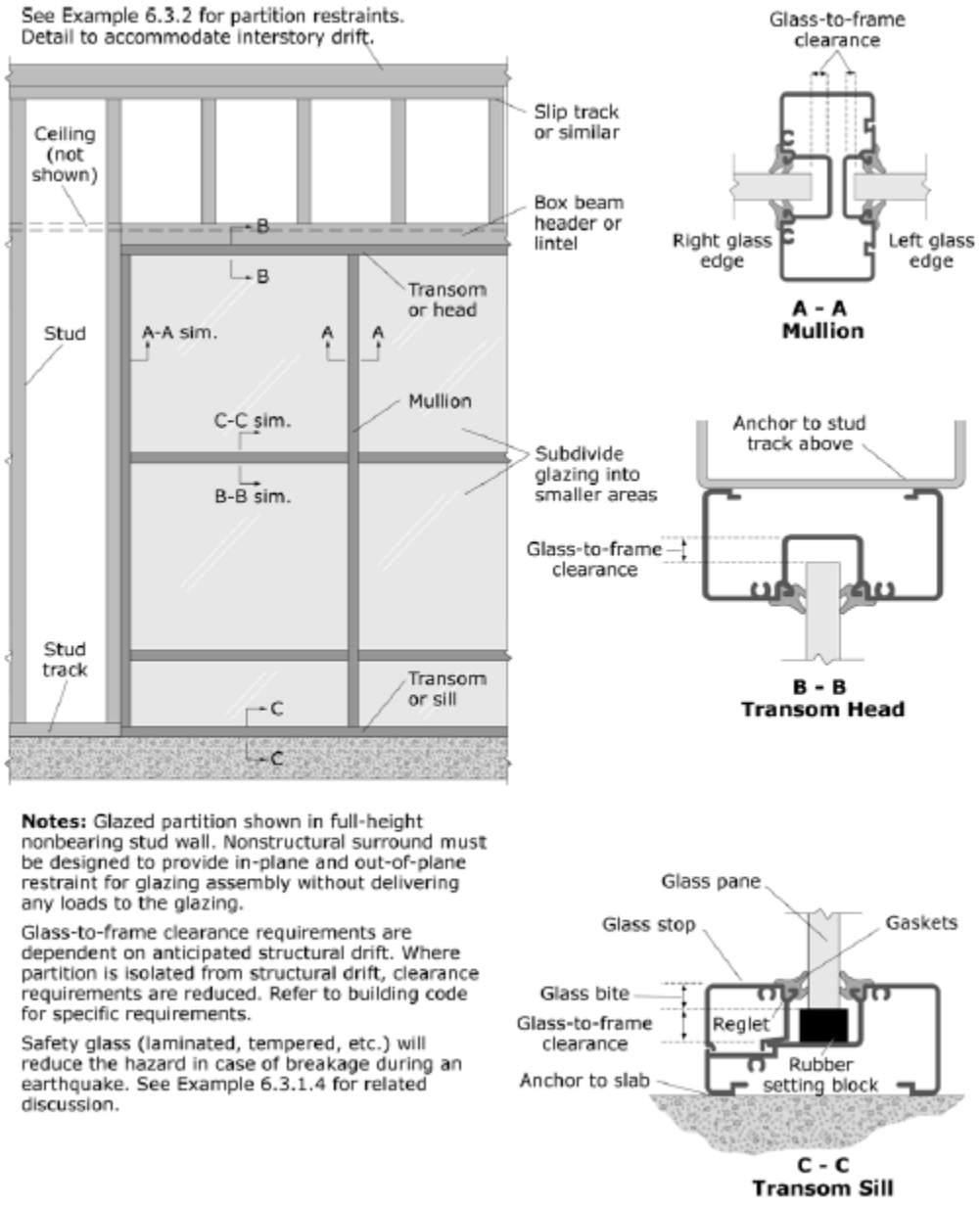


Figure G-4. Mitigation Schemes for Bracing the Tops of Metal Stud Partitions Walls.

(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)

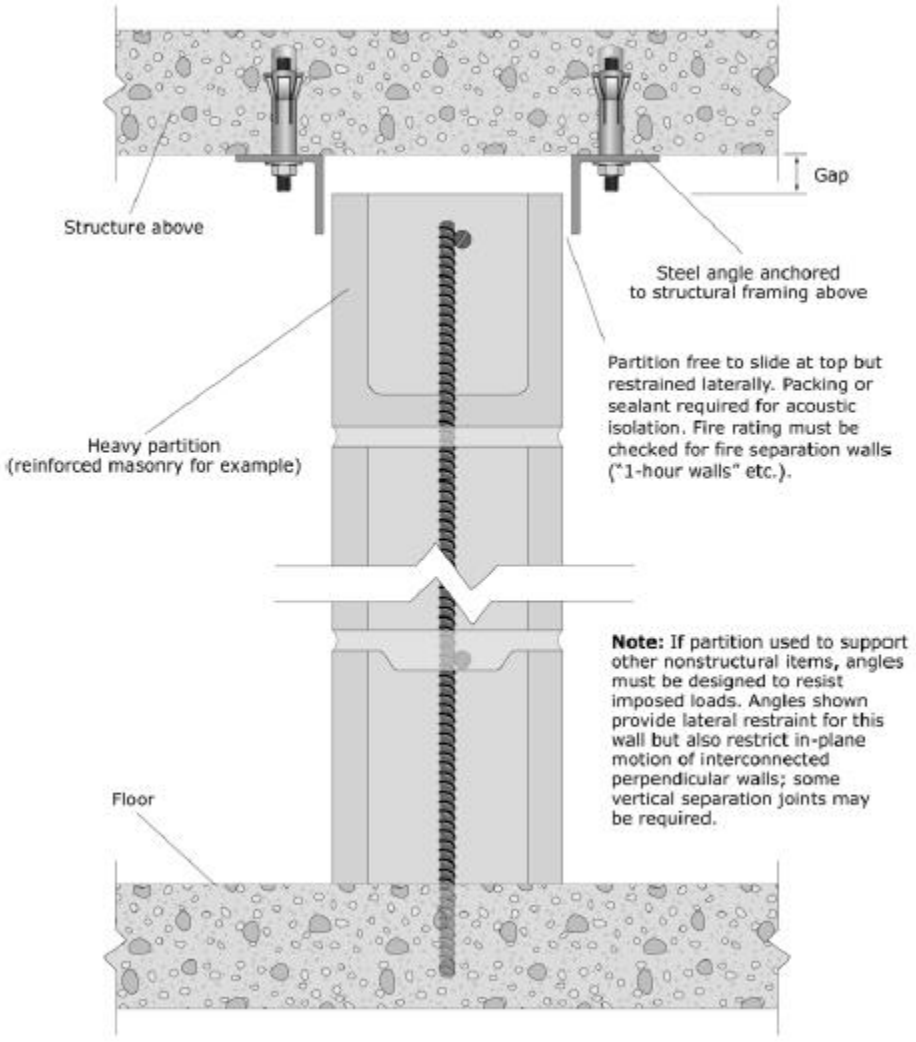


Figure G-6. Full-height Heavy Partition.

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

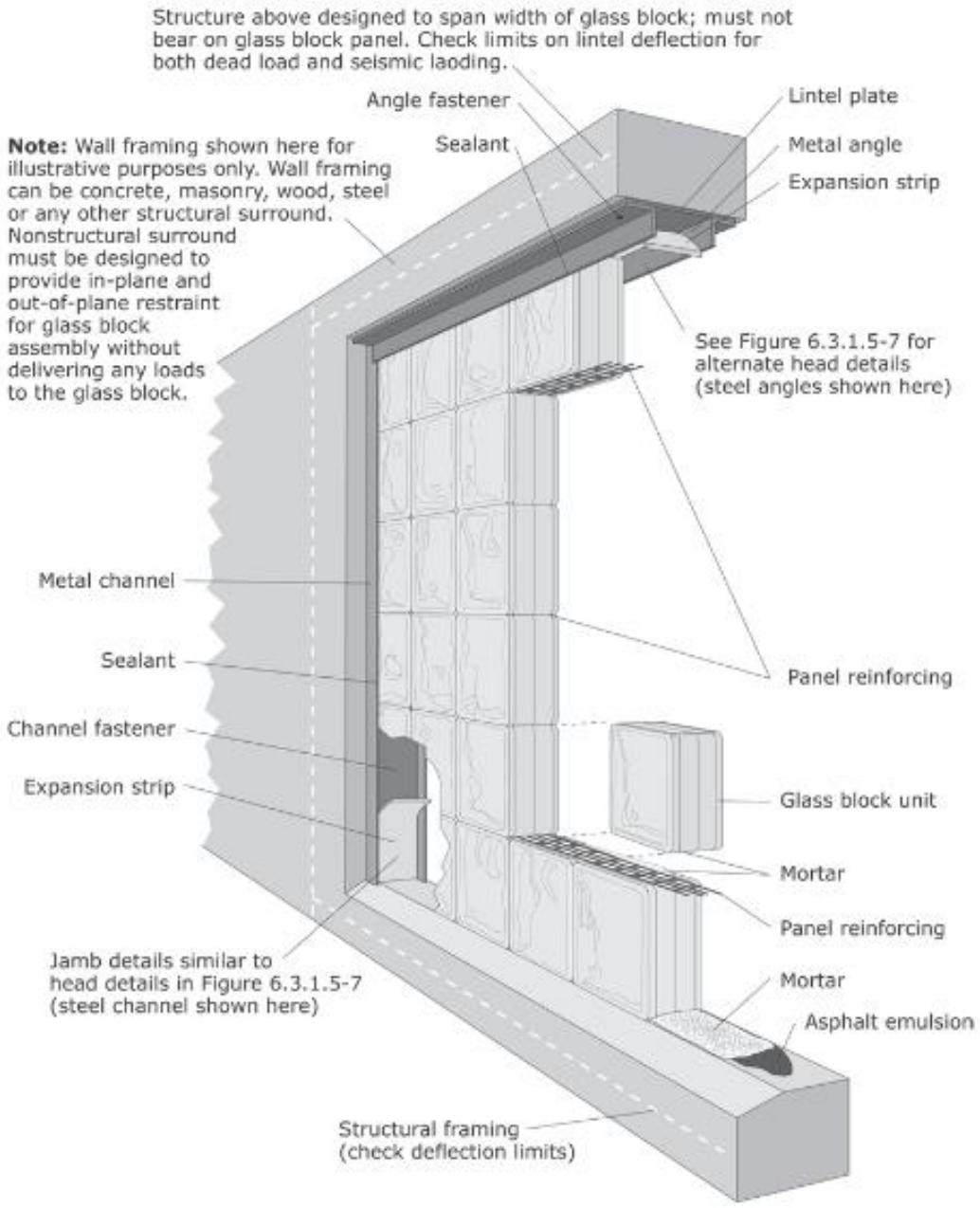


Figure G-7. Typical Glass Block Panel Details.

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

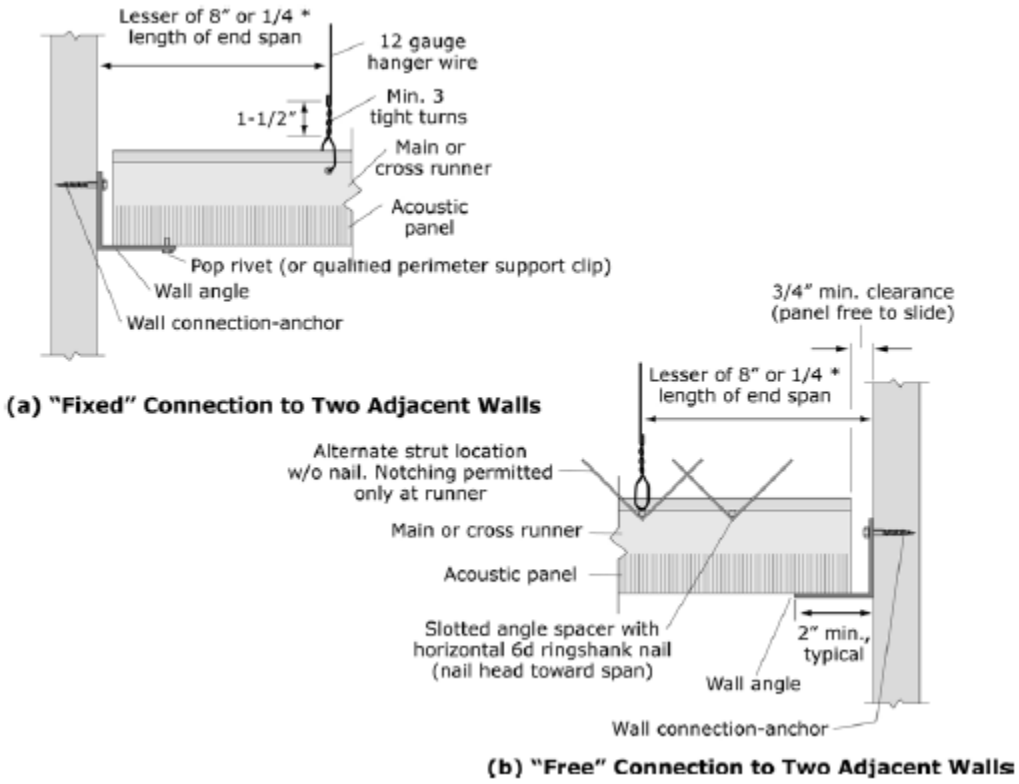
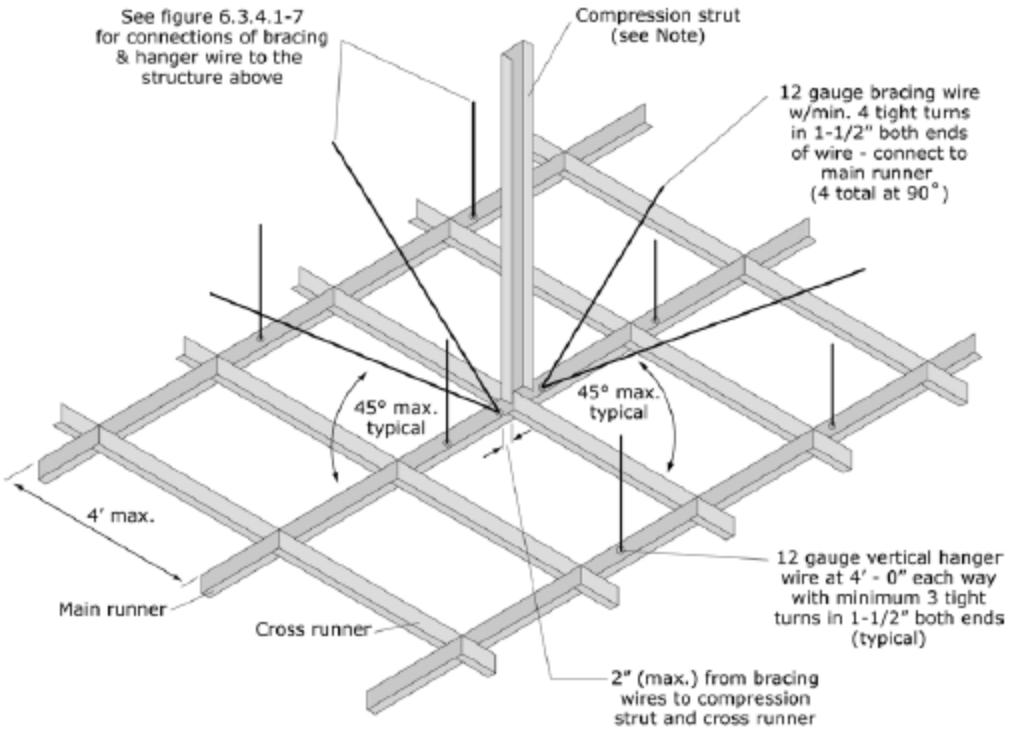


Figure G-8. Suspension System for Acoustic Lay-in Panel Ceilings – Edge Conditions.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



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 ($l/r \leq 200$). 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)

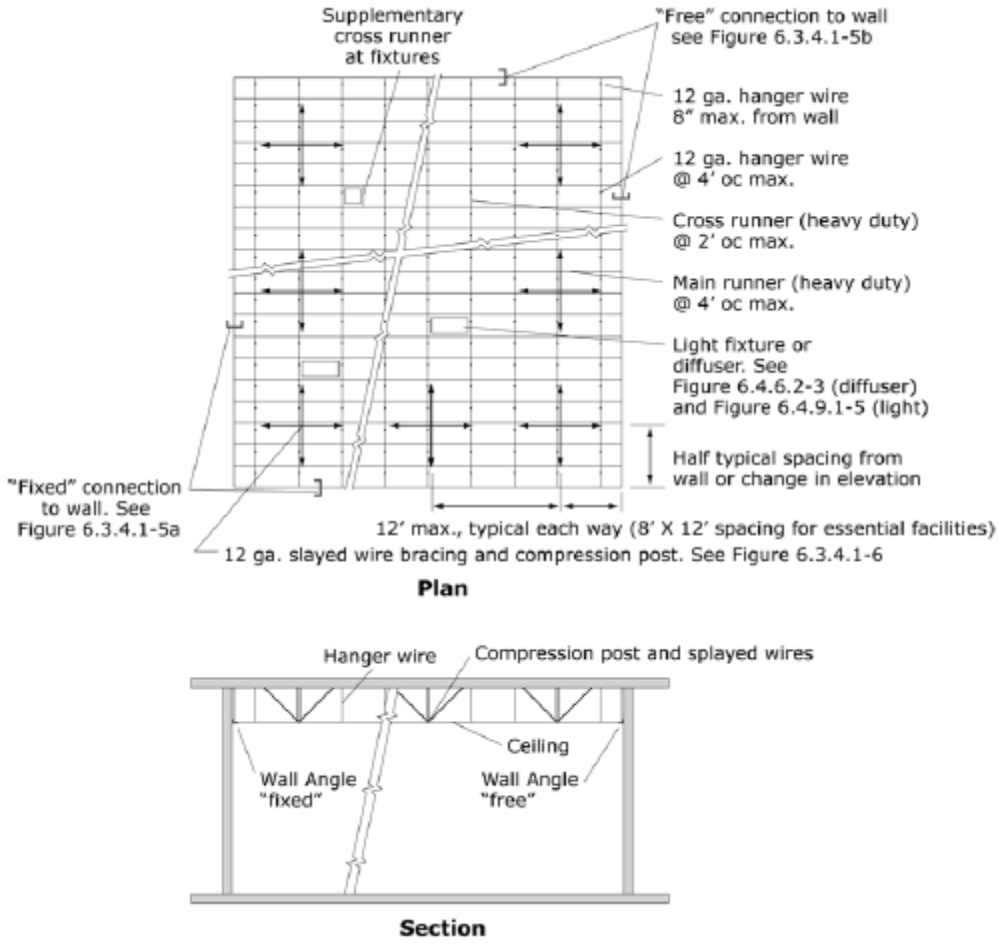


Figure G-10. Suspension System for Acoustic Lay-in Panel Ceilings – General Bracing Layout.

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

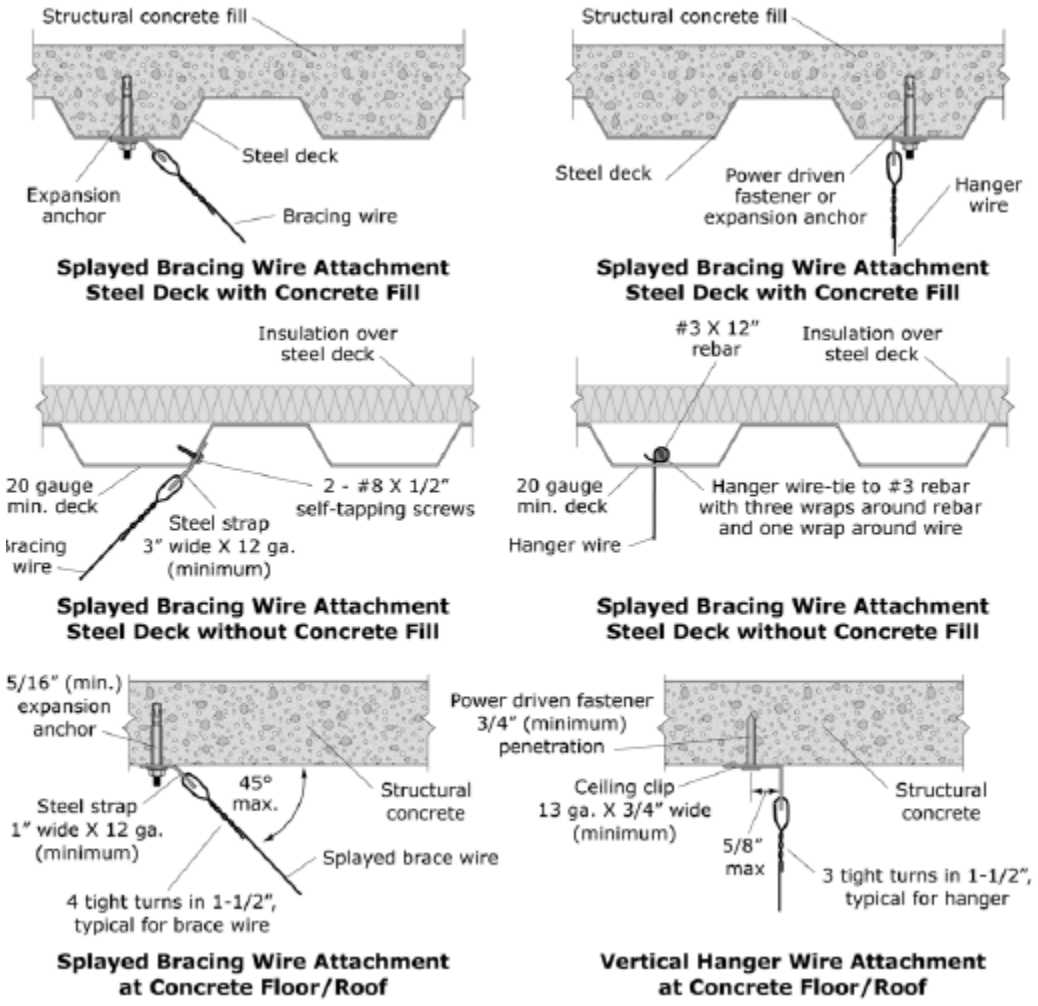
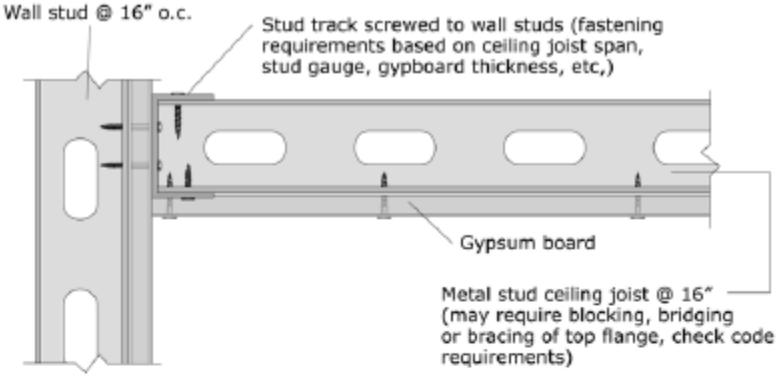
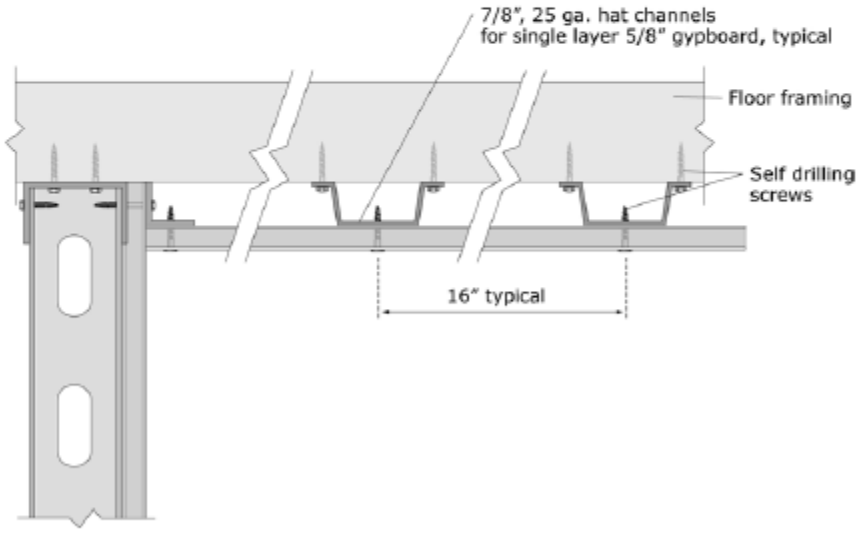


Figure G-11. Suspension System for Acoustic Lay-in Panel Ceilings – Overhead Attachment Details.

(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)

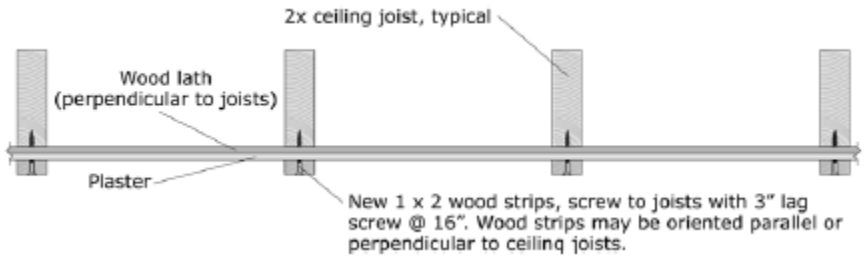


Figure G-13. Retrofit Detail for Existing Lath and Plaster.

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

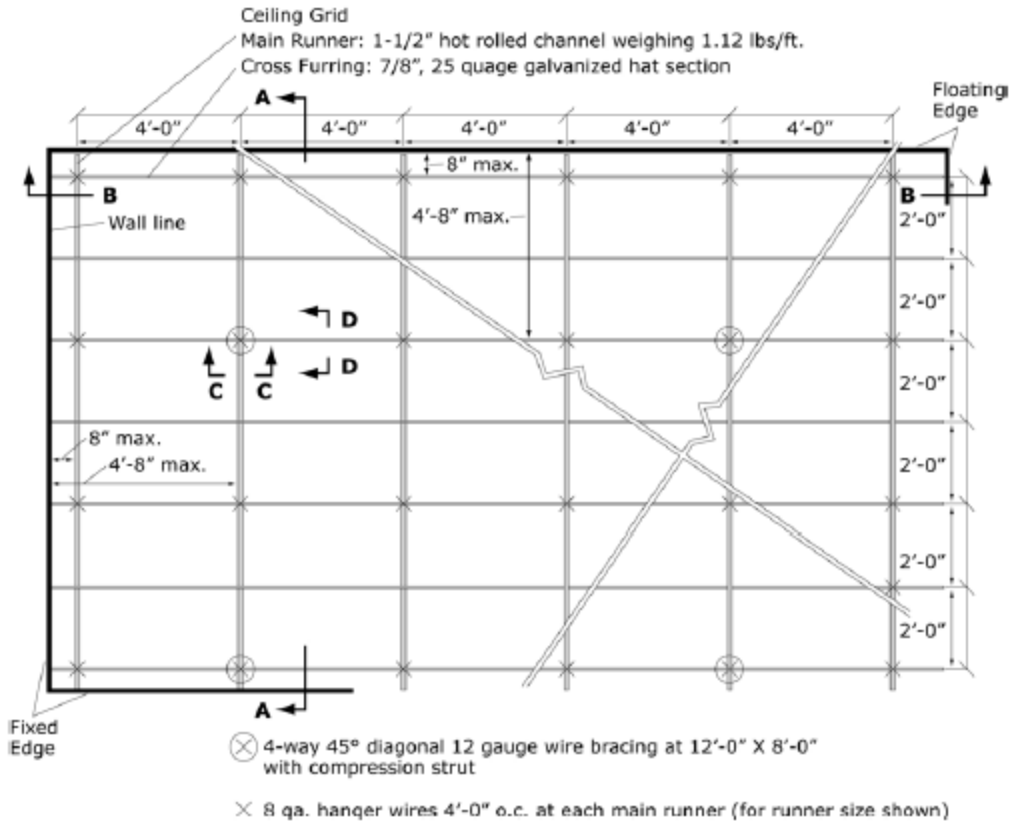


Figure G-14. Diagrammatic View of Suspended Heavy Ceiling Grid and Lateral Bracing.

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

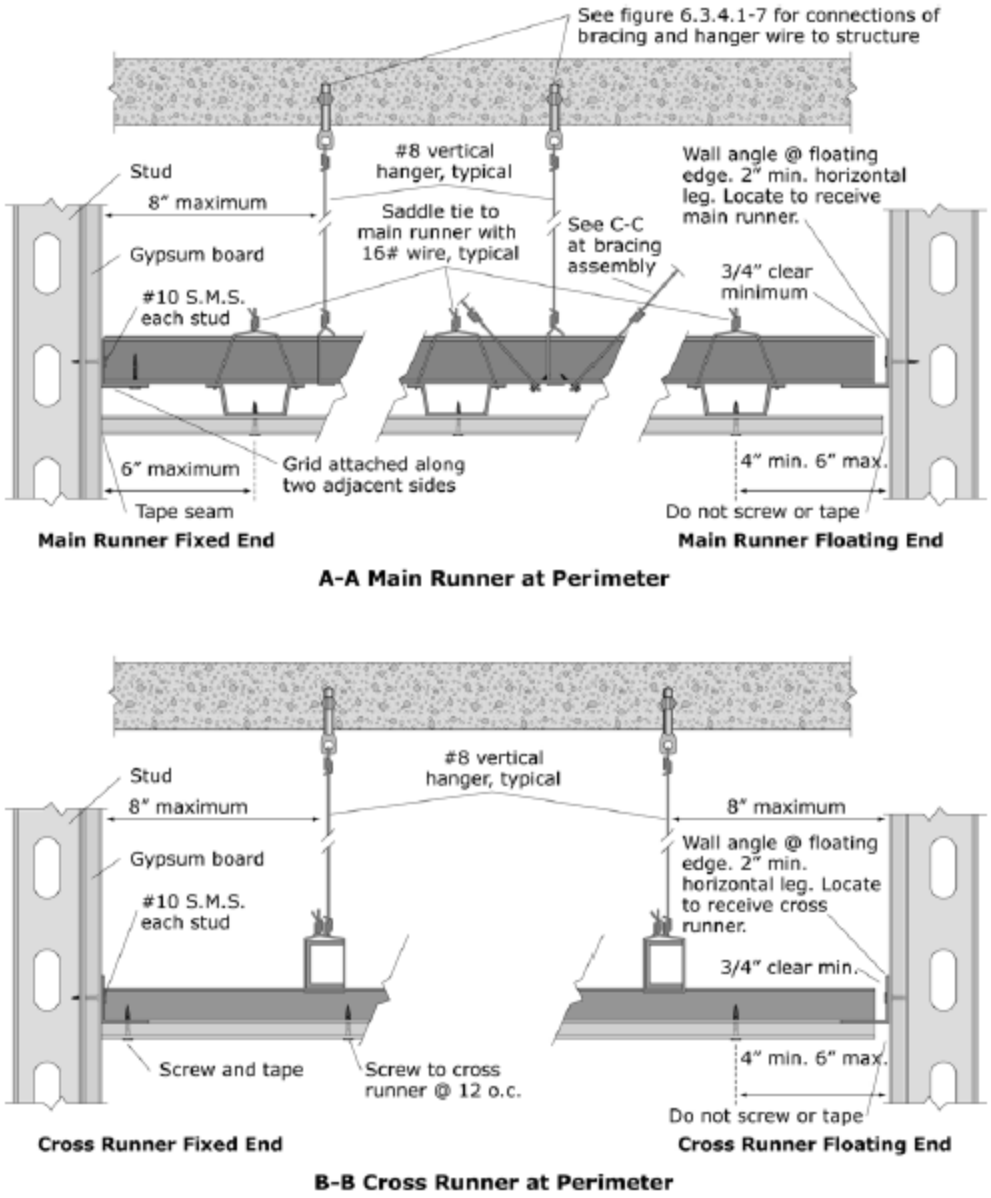
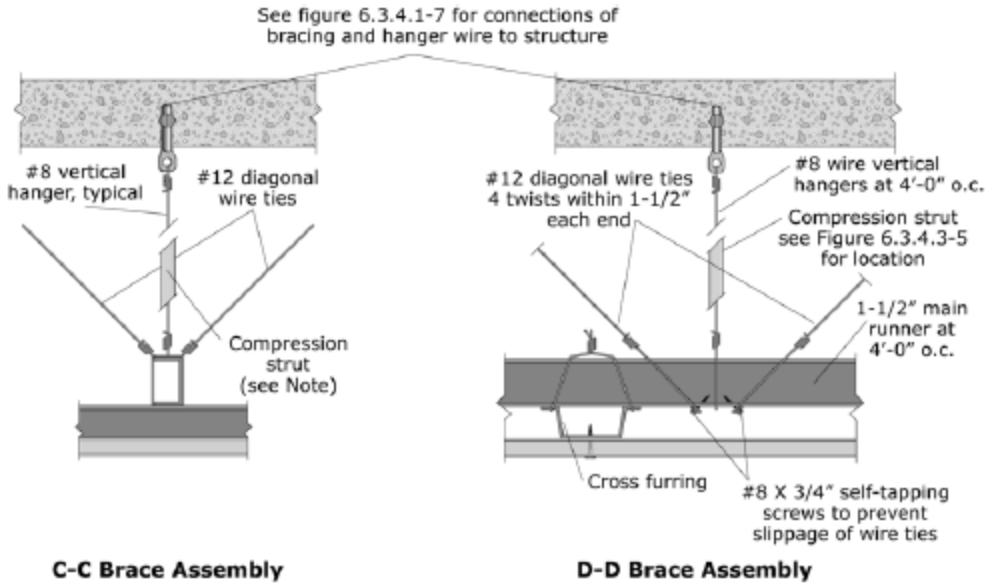


Figure G-15. Perimeter Details for Suspended Gypsum Board Ceiling.

(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 ($l/r \leq 200$). 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

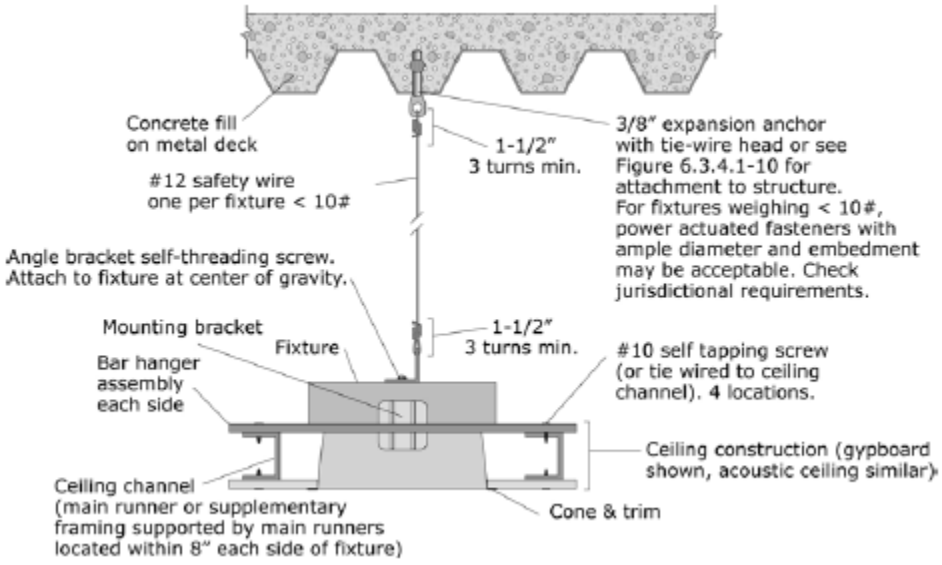


Figure G-17. Recessed Light Fixture in suspended Ceiling (Fixture Weight < 10 pounds).

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

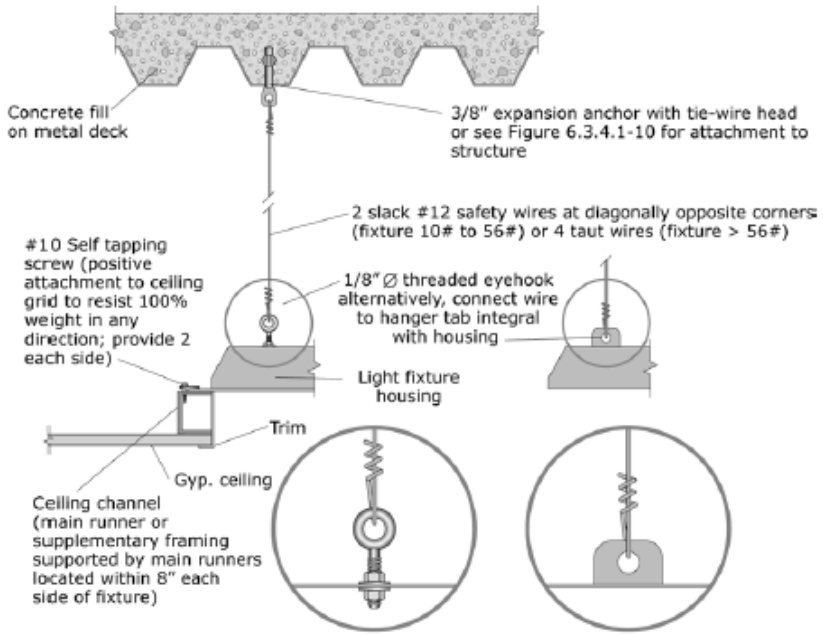


Figure G-18. Recessed Light Fixture in suspended Ceiling (Fixture Weight 10 to 56 pounds).

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

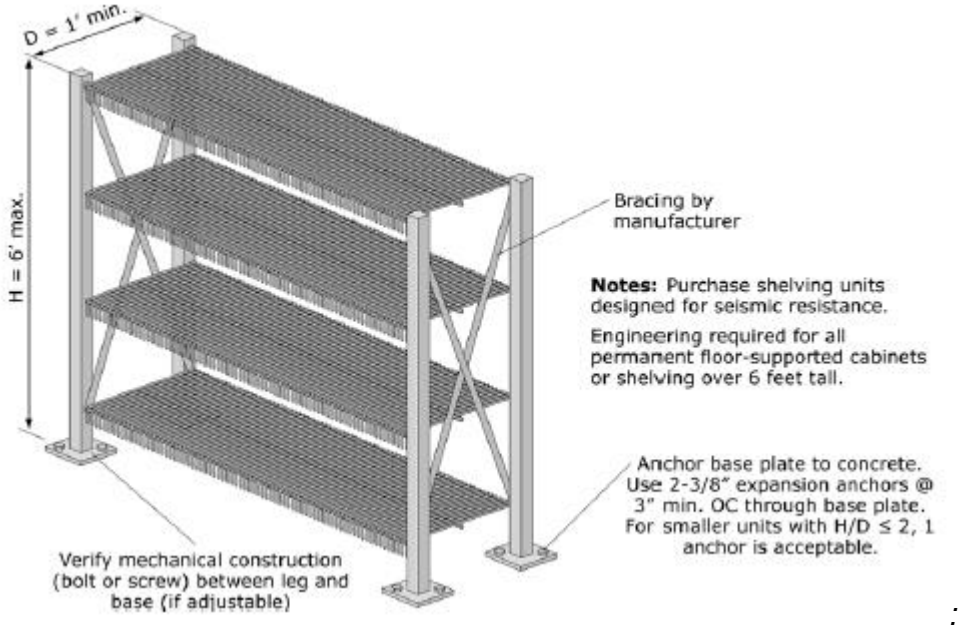


Figure G-19. Light Storage Racks.

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

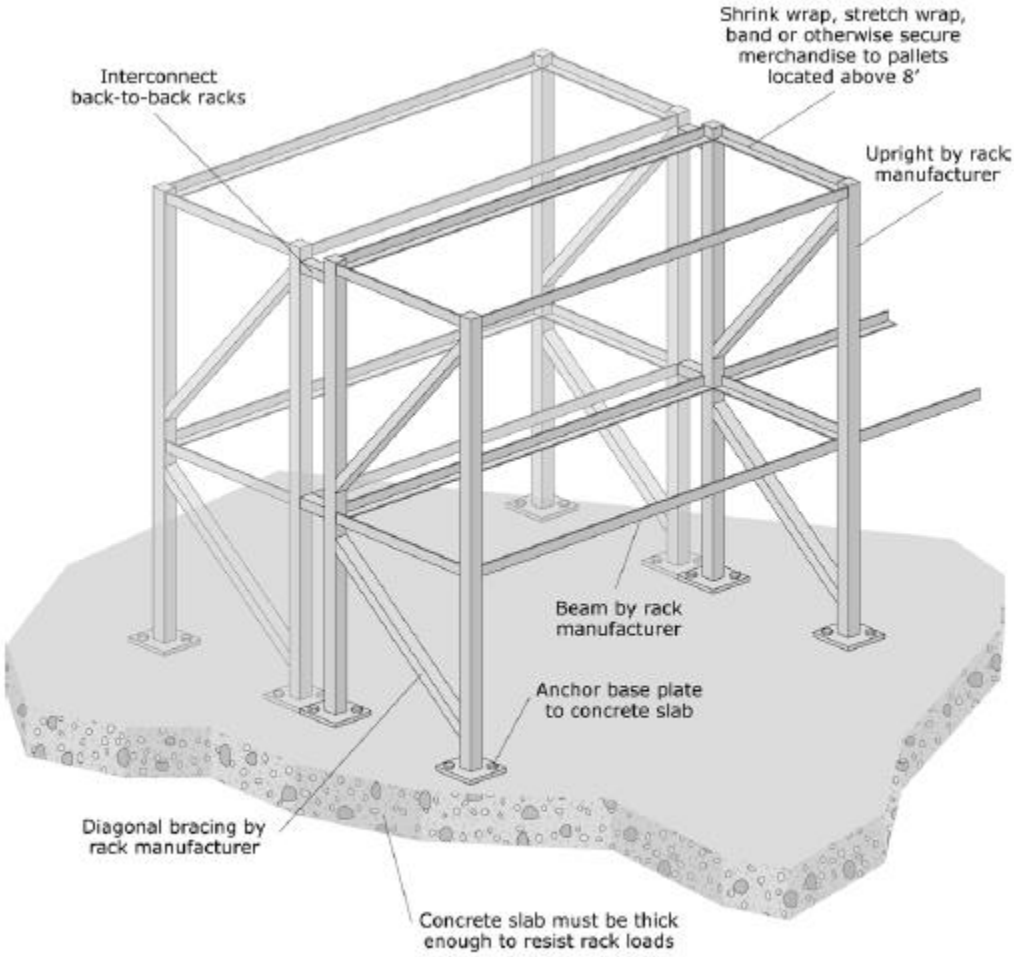


Figure G-20. Industrial Storage Racks.

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

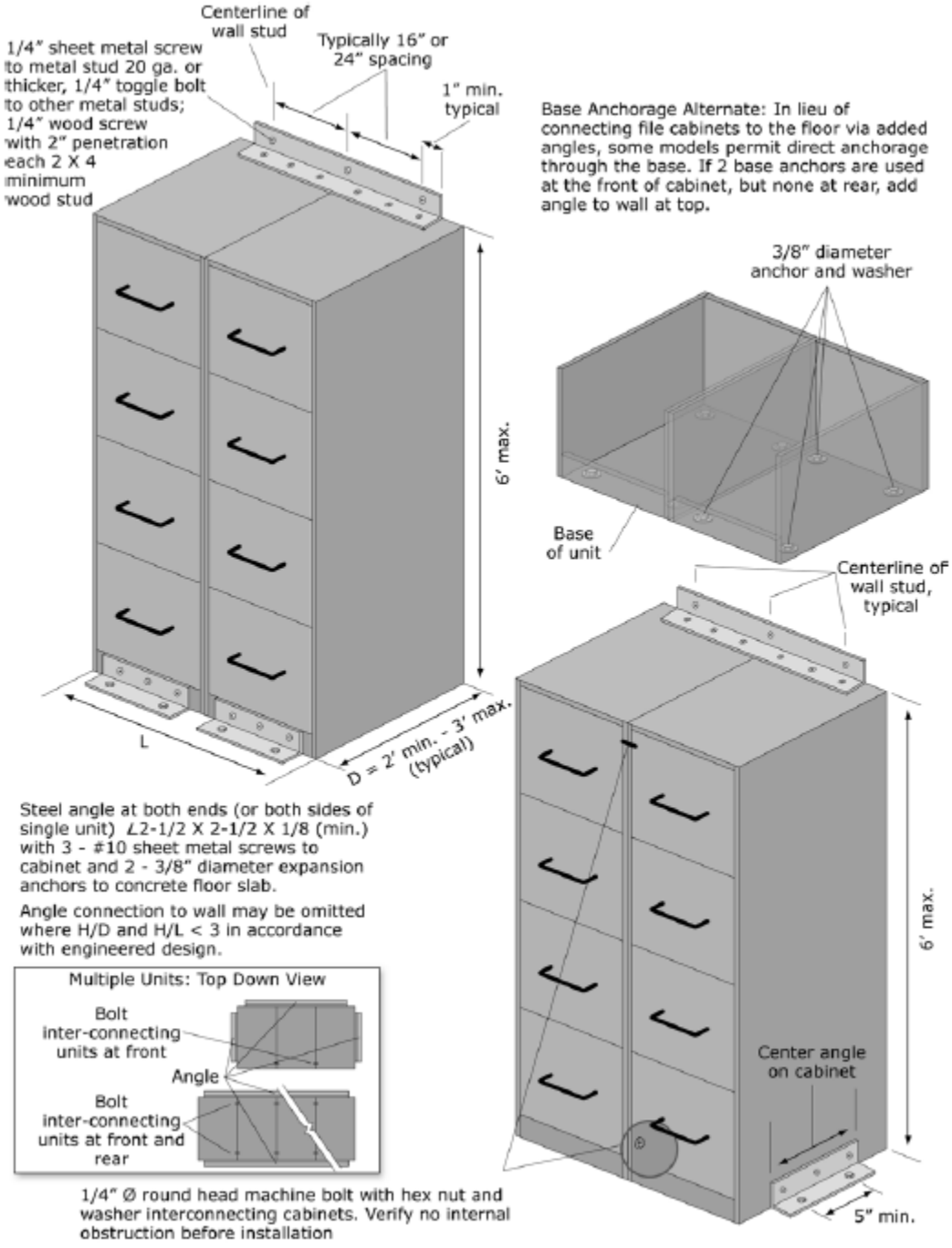


Figure G-21. Wall-mounted File Cabinets.

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

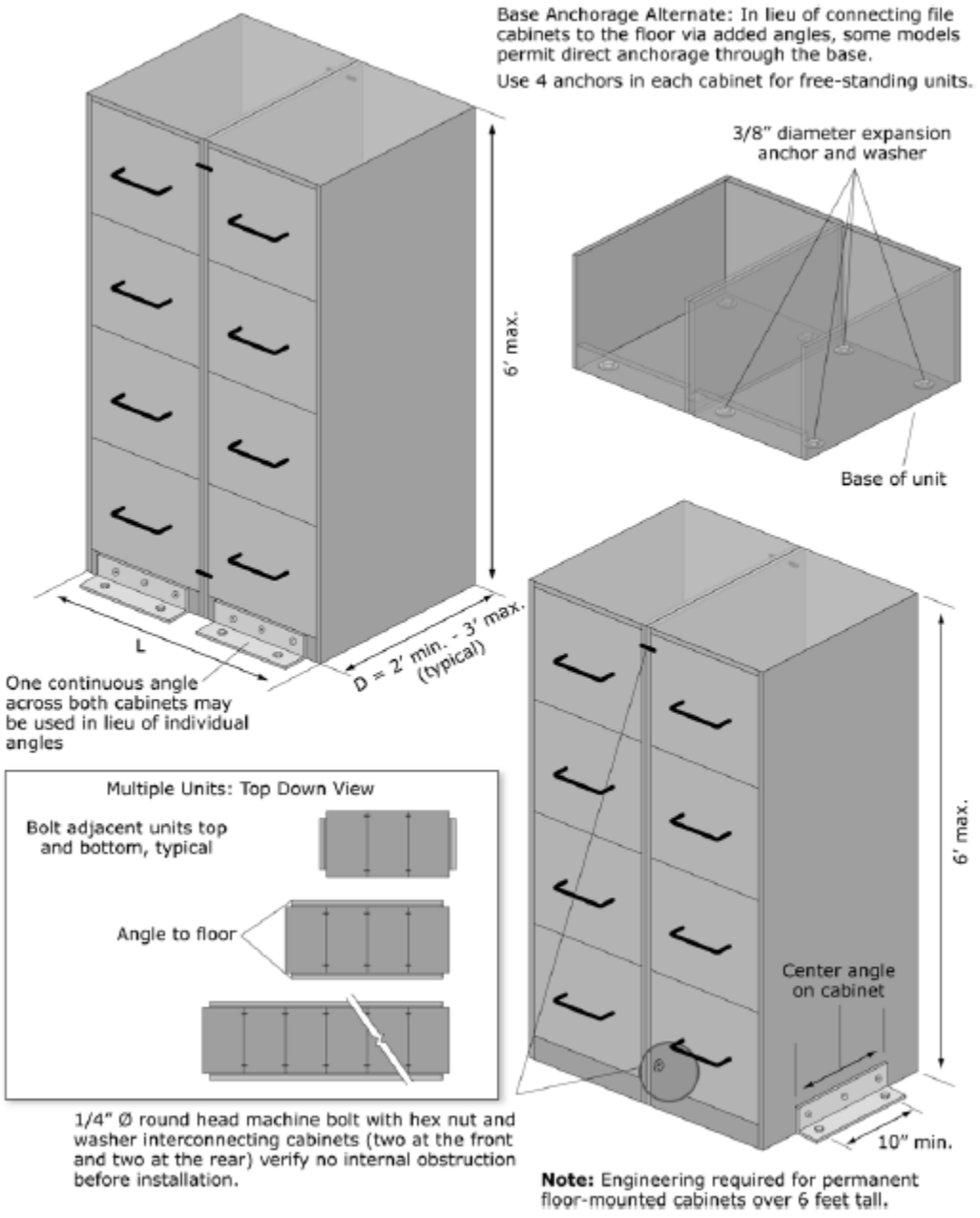


Figure G-22. Base Anchored File Cabinets.

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

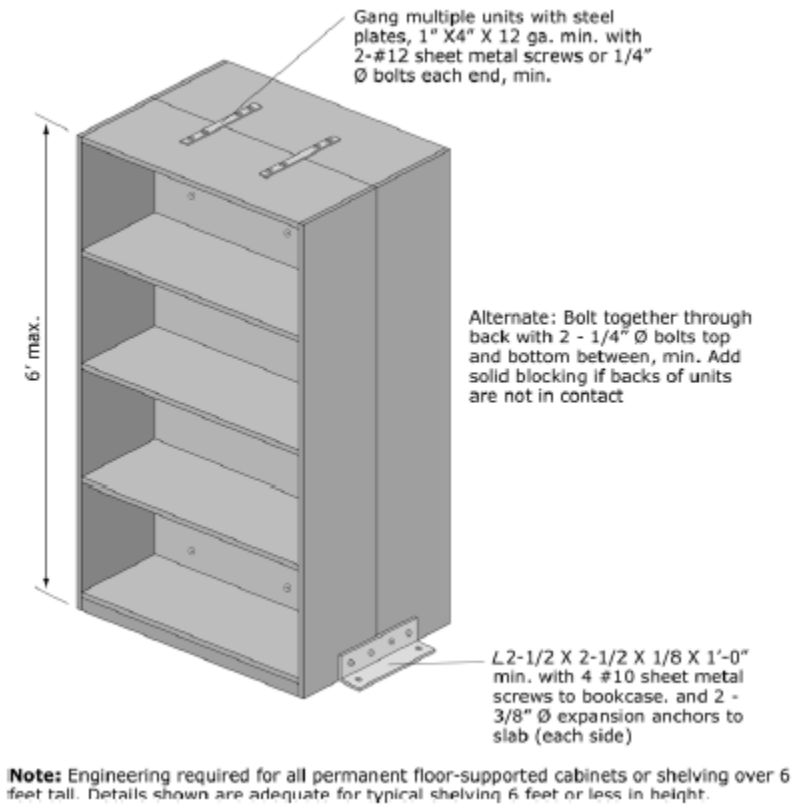


Figure G-23. Anchorage of Freestanding Book Cases Arranged Back to Back.

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

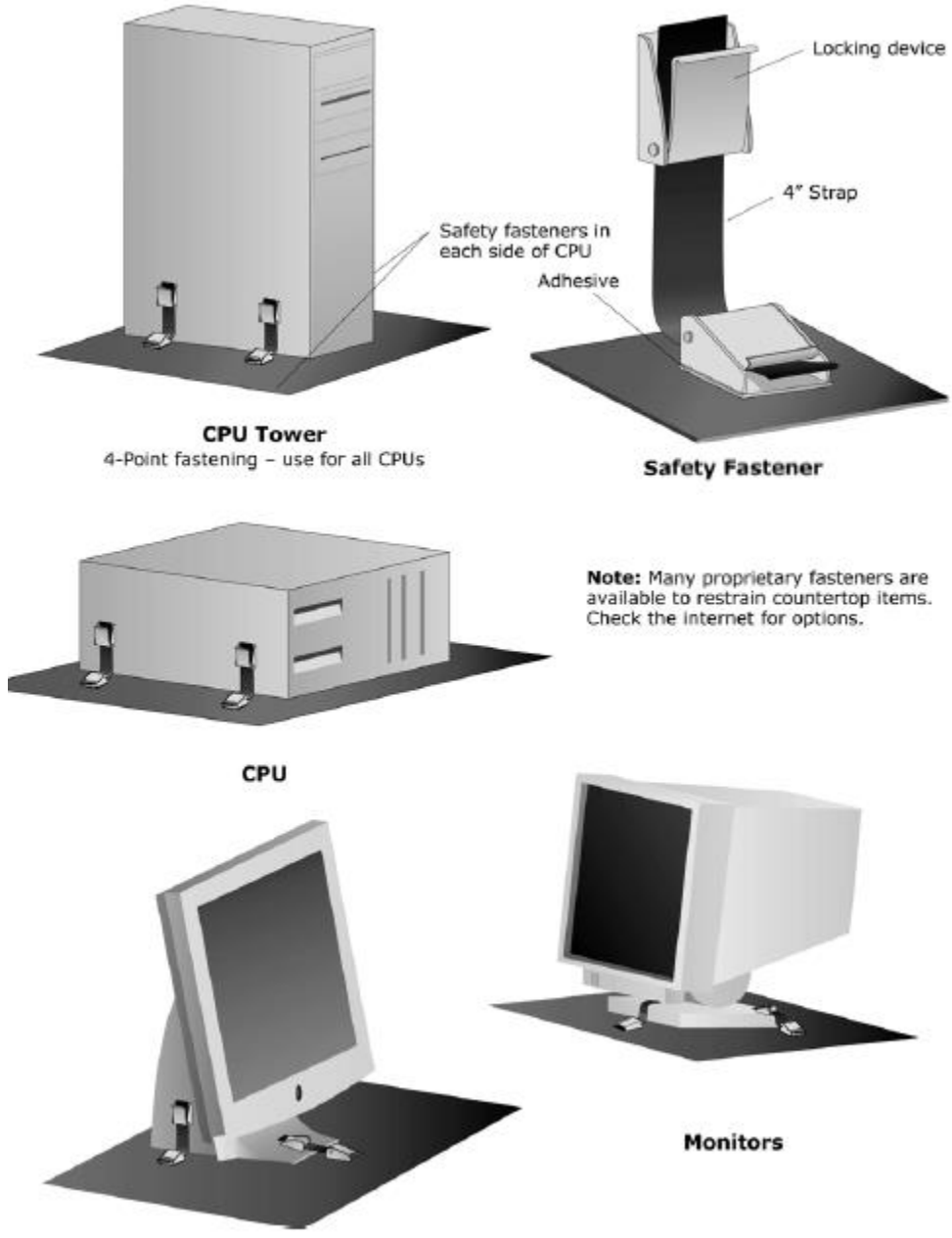
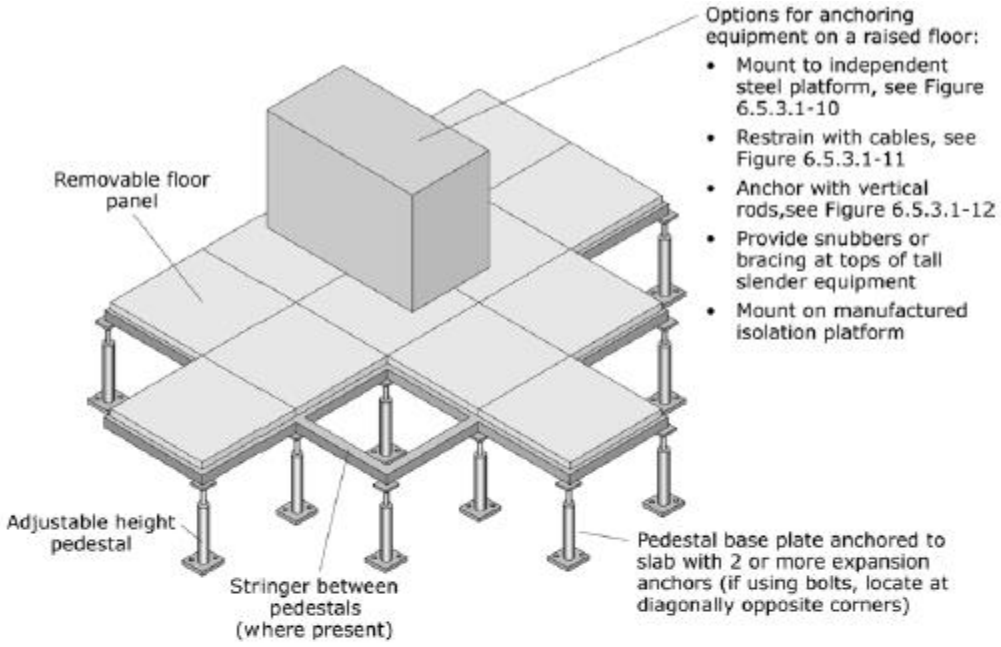
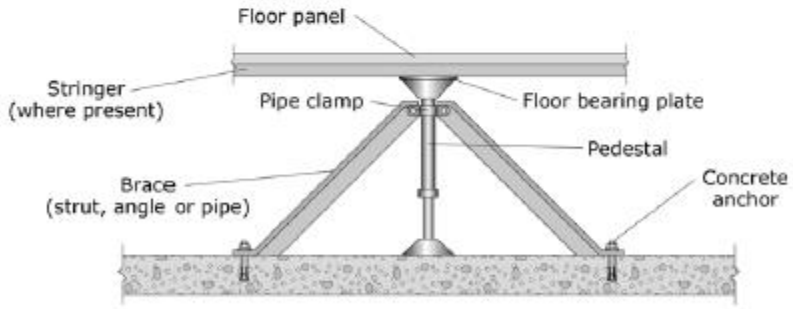


Figure G-24. Desktop Computers and Accessories.

(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)

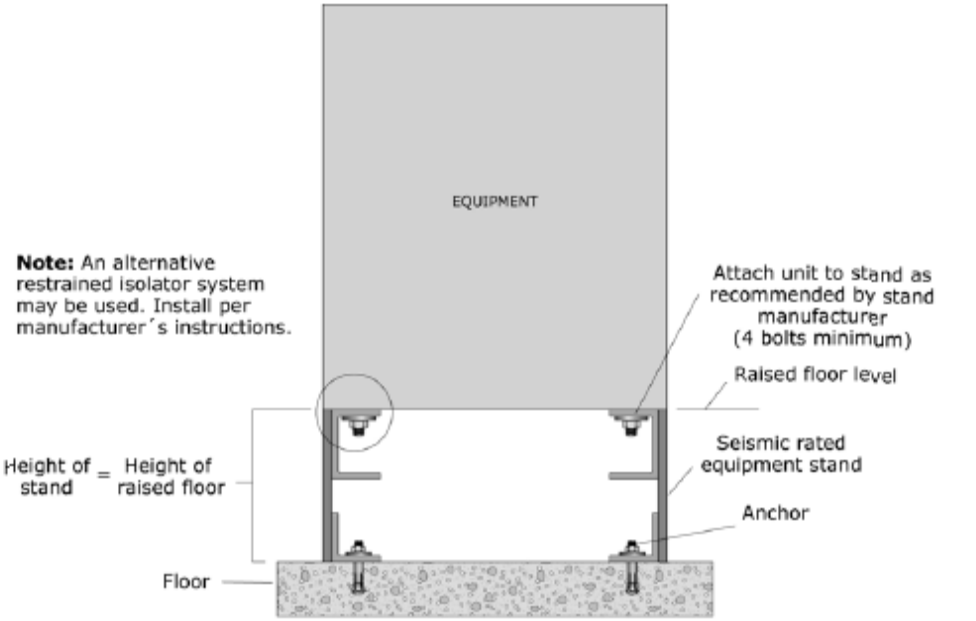


Figure G-26. Equipment Mounted on Access Floor – Independent Base.

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

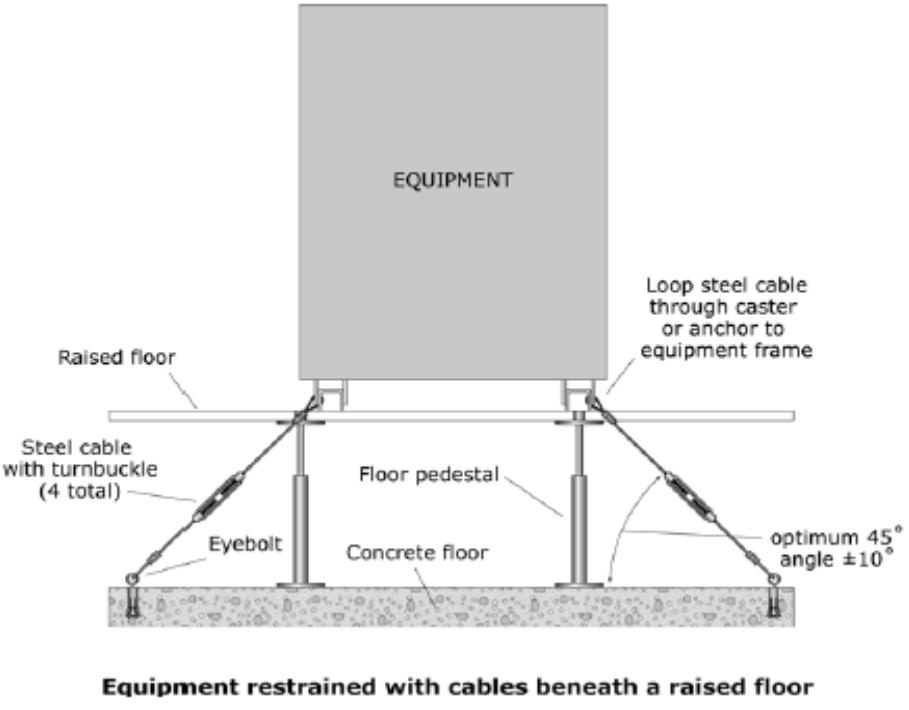


Figure G-27. Equipment Mounted on Access Floor – Cable Braced.

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

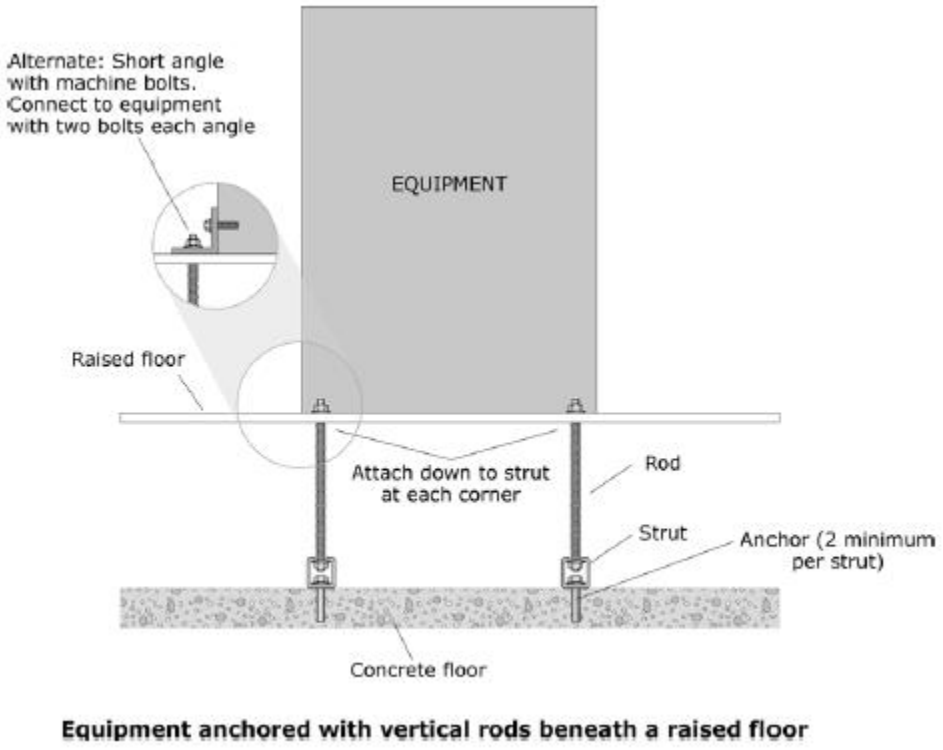
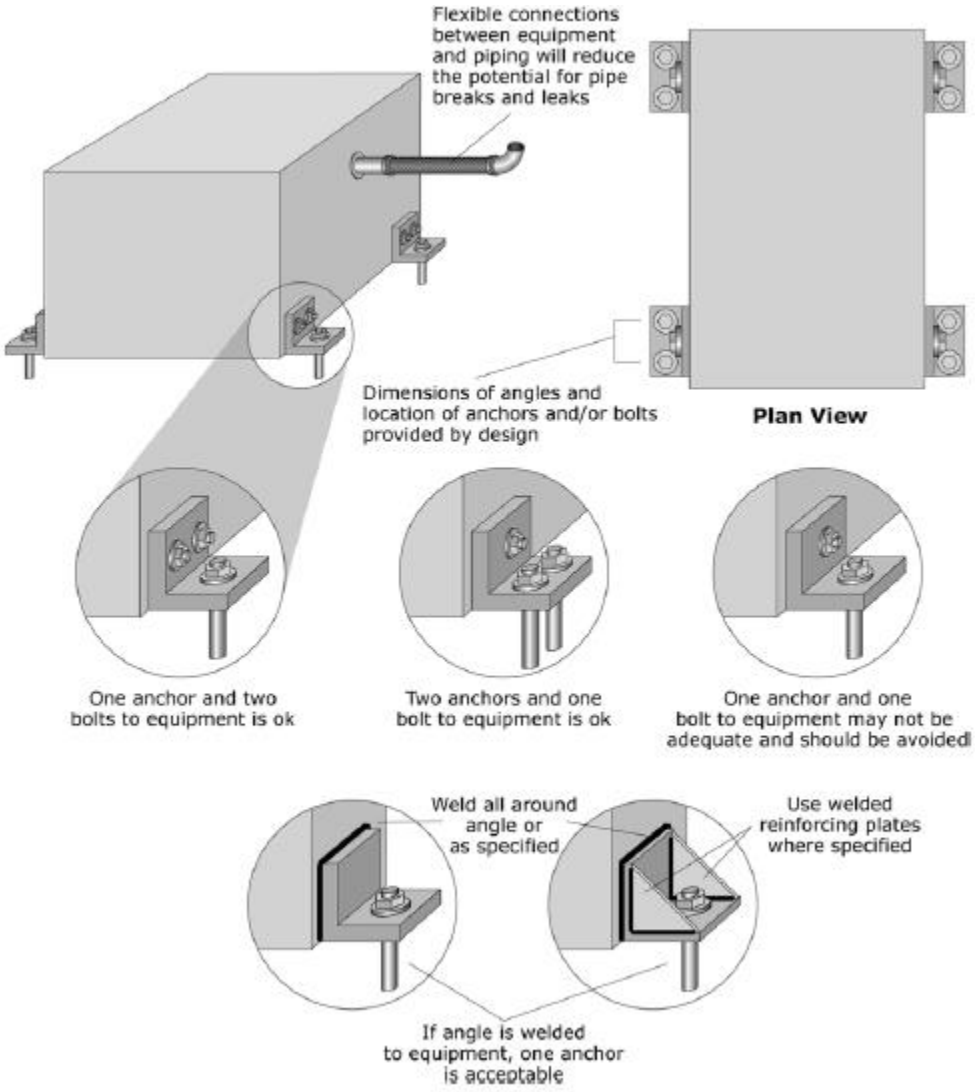


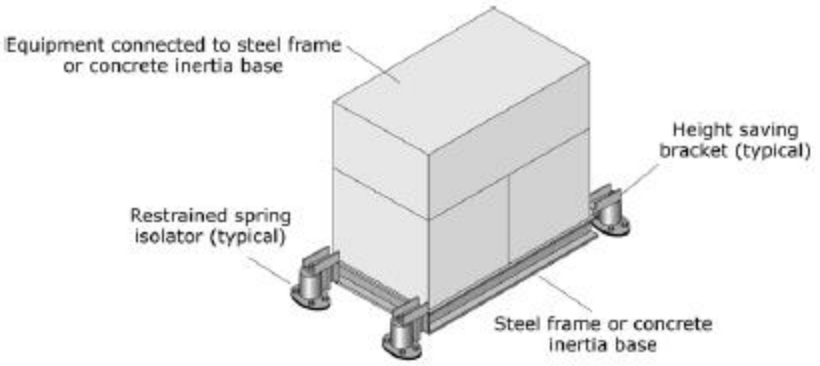
Figure G-28. Equipment Mounted on Access Floor – Tie-down Rods.

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

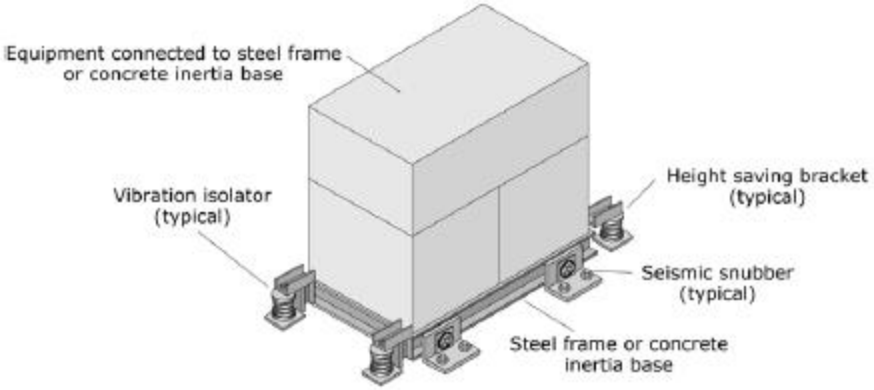


Note: Rigidly mounted equipment shall have flexible connections for the fuel lines and piping.

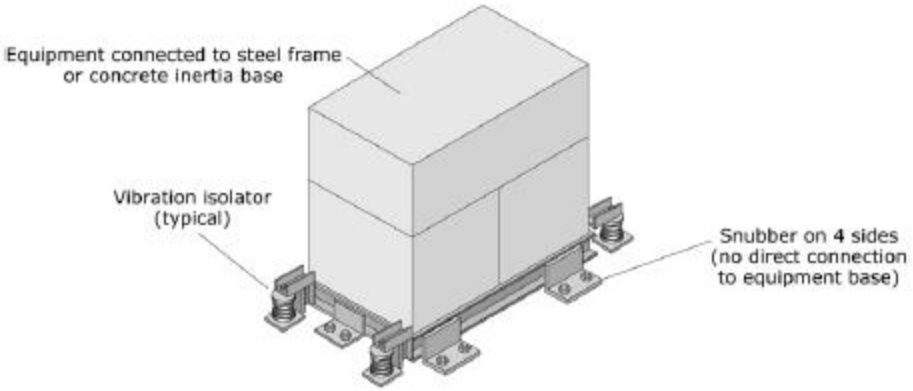
Figure G-29. Rigidly Floor-mounted Equipment with Added Angles.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)



Supplemental base with restrained spring isolators



Supplemental base with open springs and all-directional snubbers



Supplemental base with open springs and one-directional snubbers

Figure G-30. HVAC Equipment with Vibration Isolation.

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

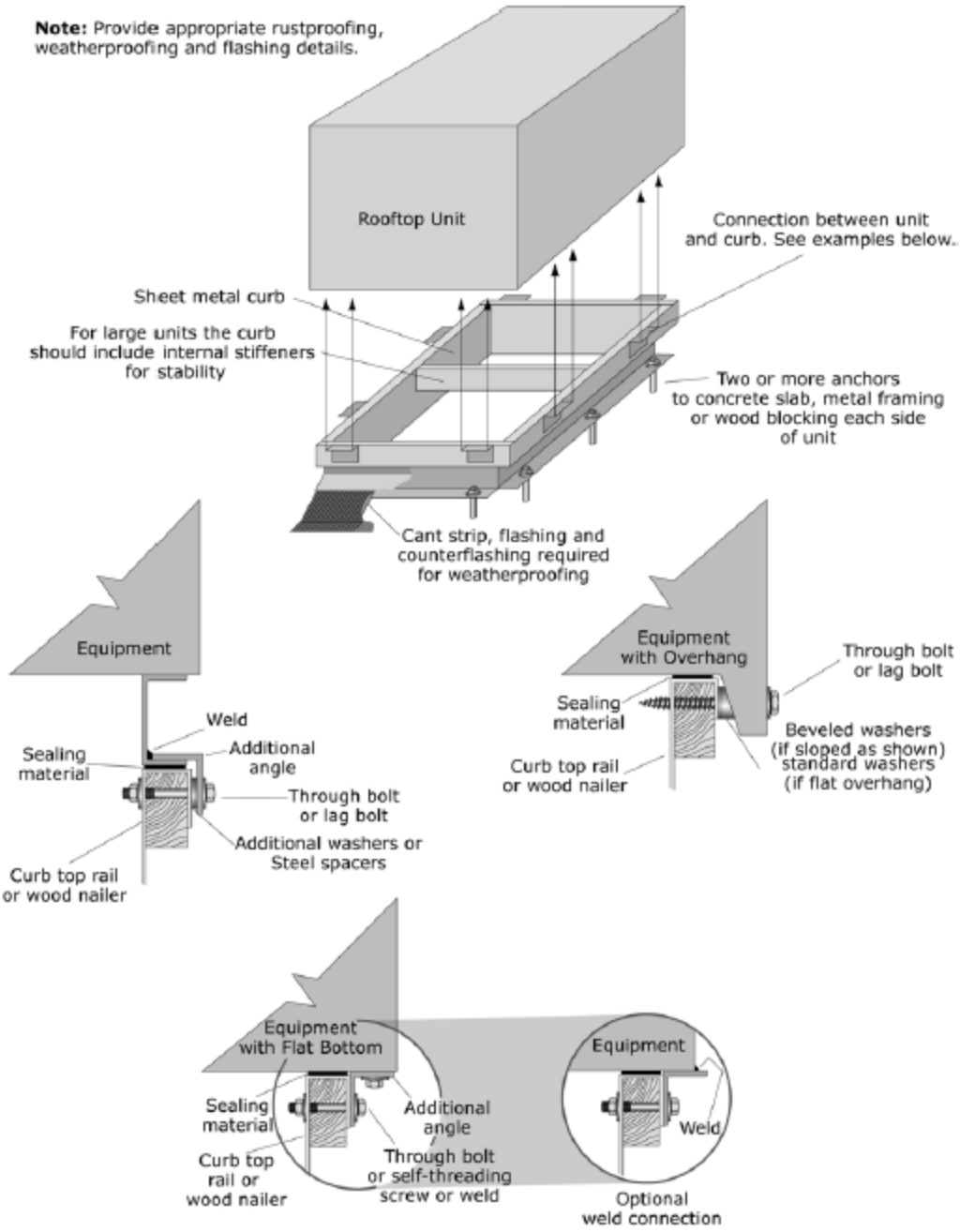


Figure G-31. Rooftop HVAC Equipment.

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

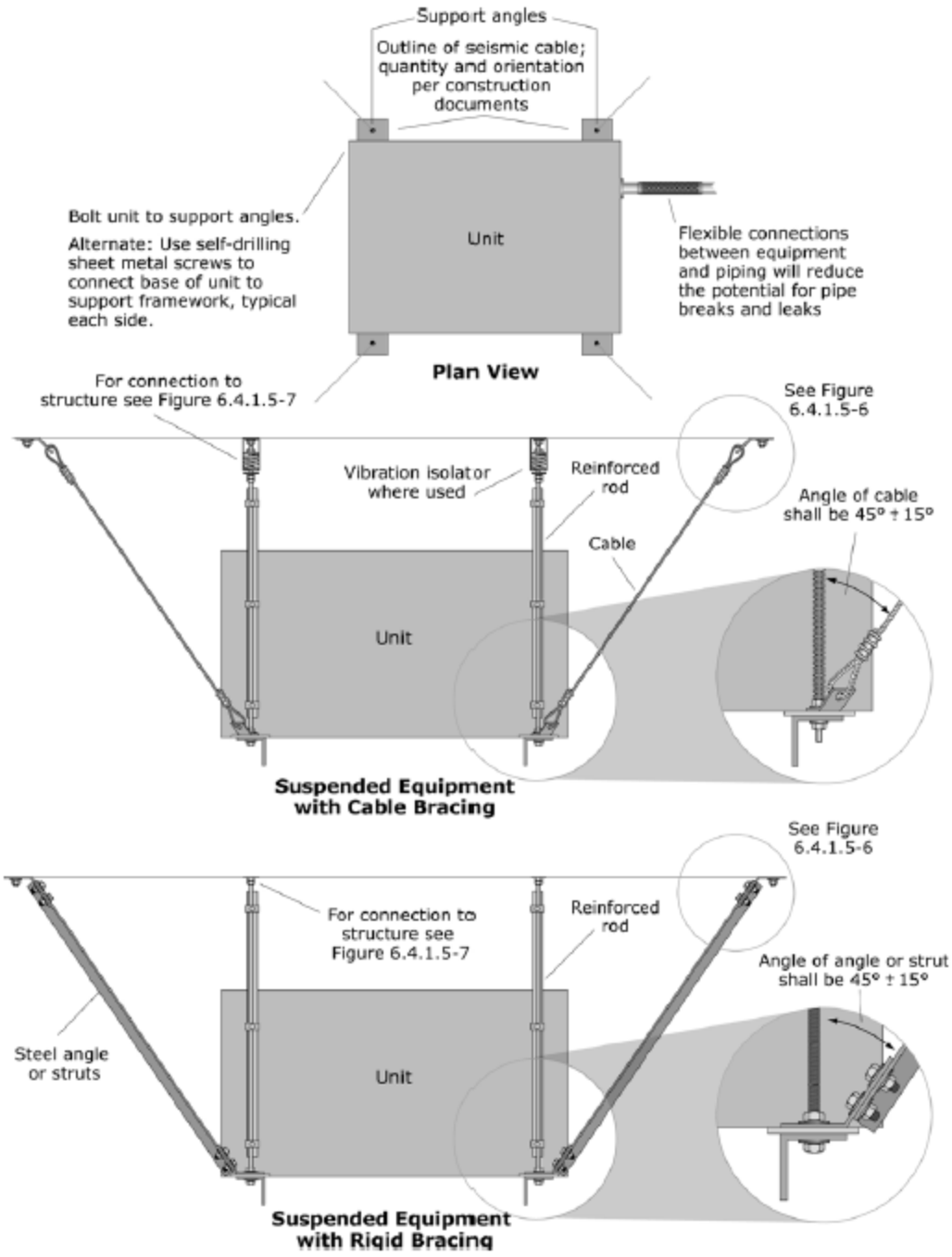


Figure G-32. Suspended Equipment.

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

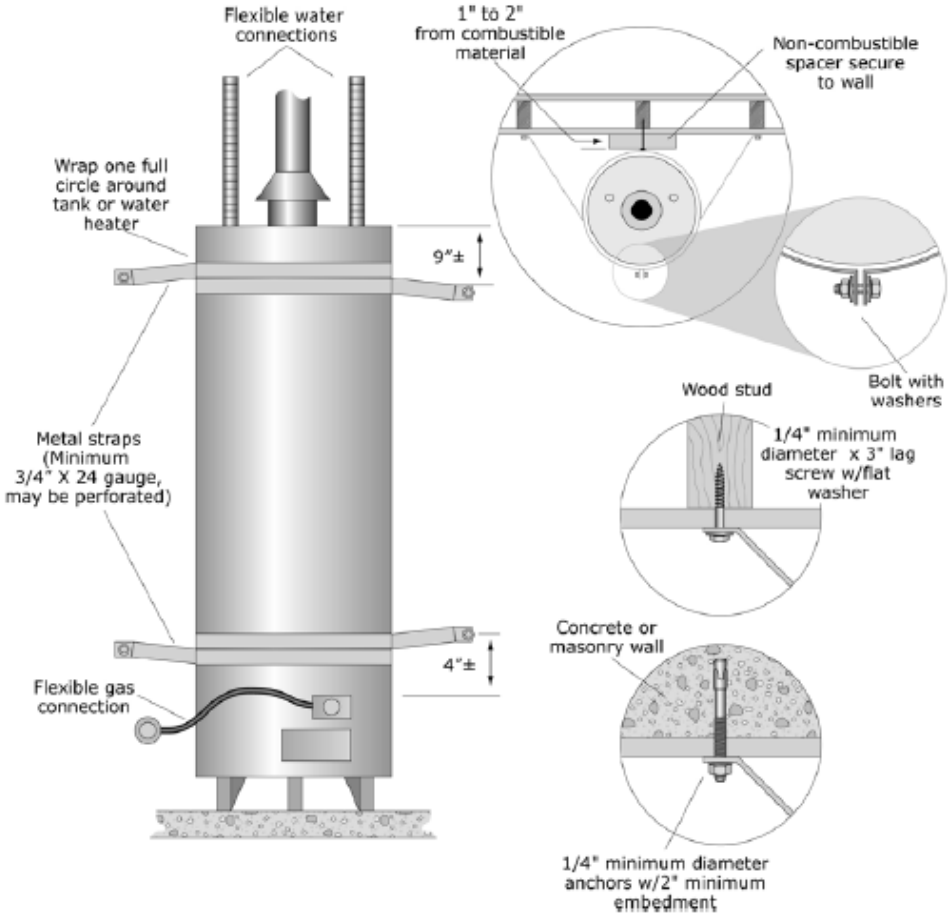


Figure G-33. Water Heater Strapping to Backing Wall.

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

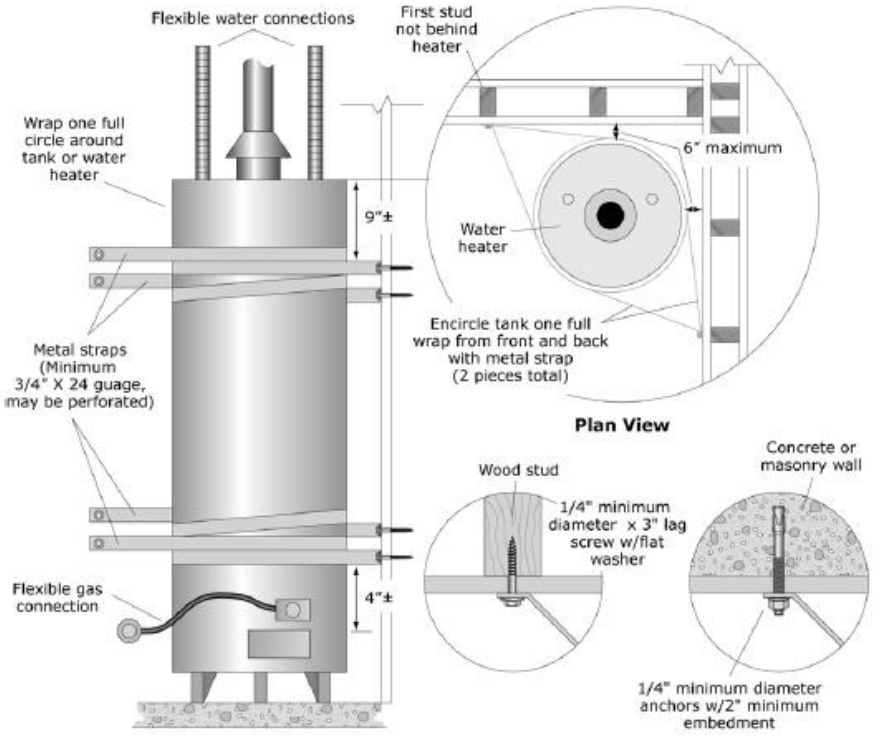


Figure G-34. Water Heater – Strapping at Corner Installation.

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

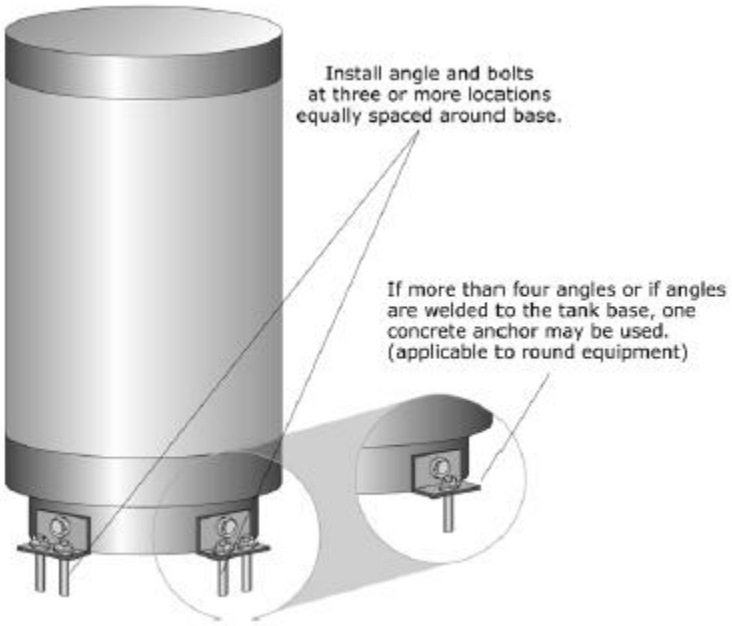


Figure G-35. Water Heater – Base Mounted.

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

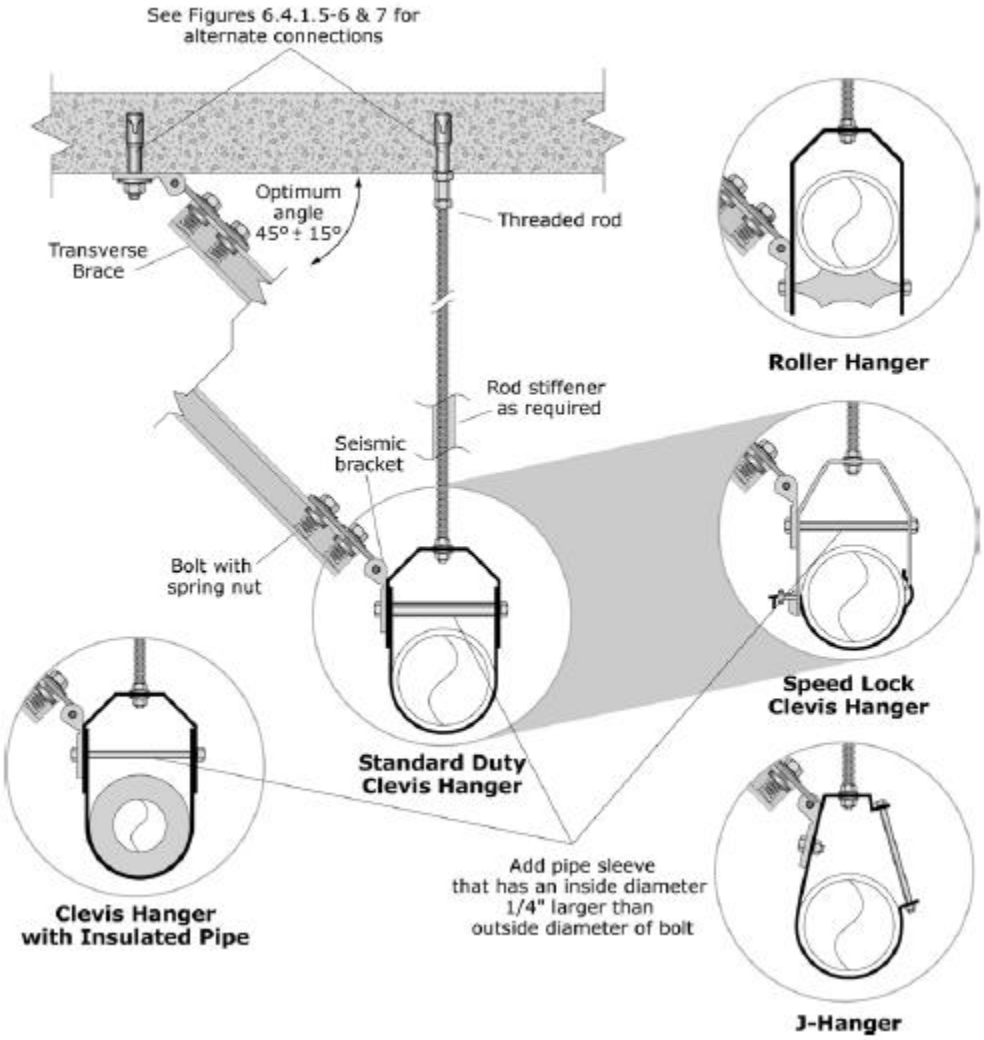


Figure G-36. Rigid Bracing – Single Pipe Transverse.

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

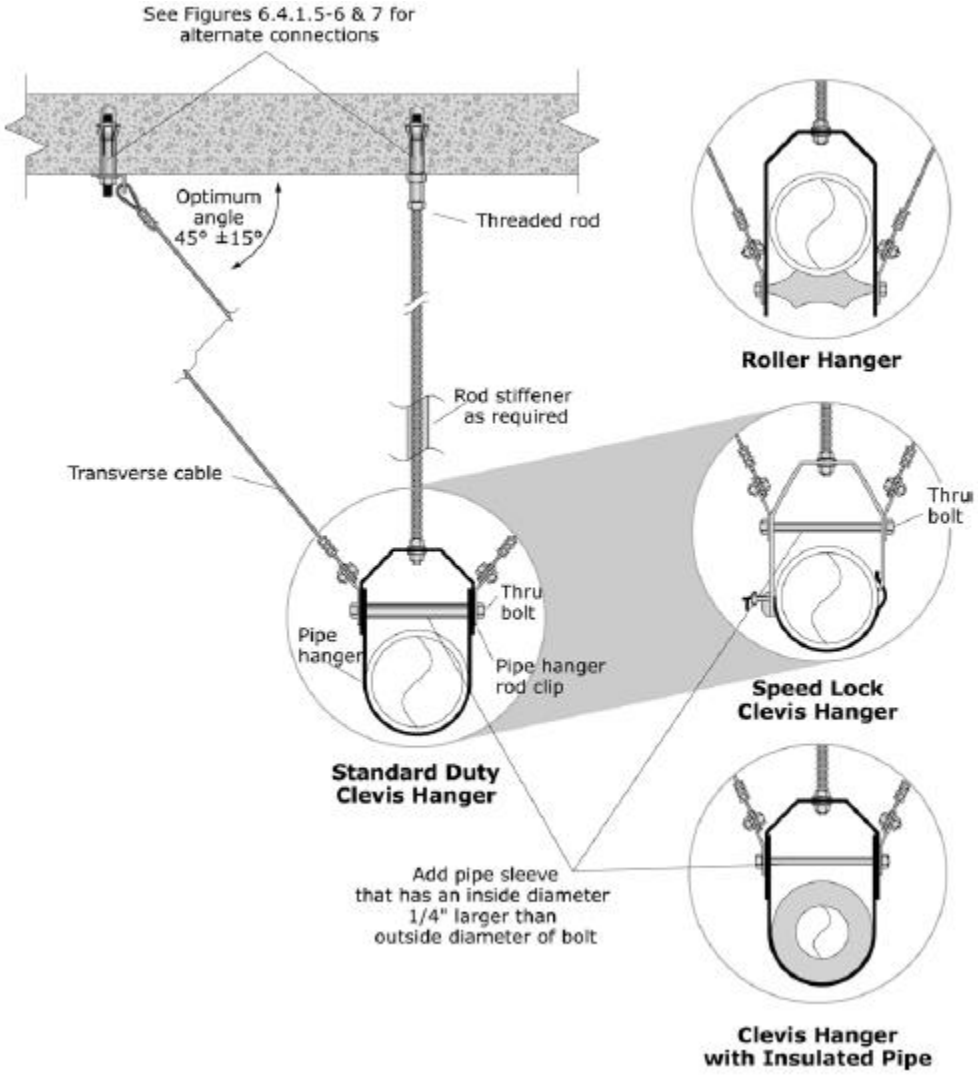


Figure G-37. Cable Bracing – Single Pipe Transverse.

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

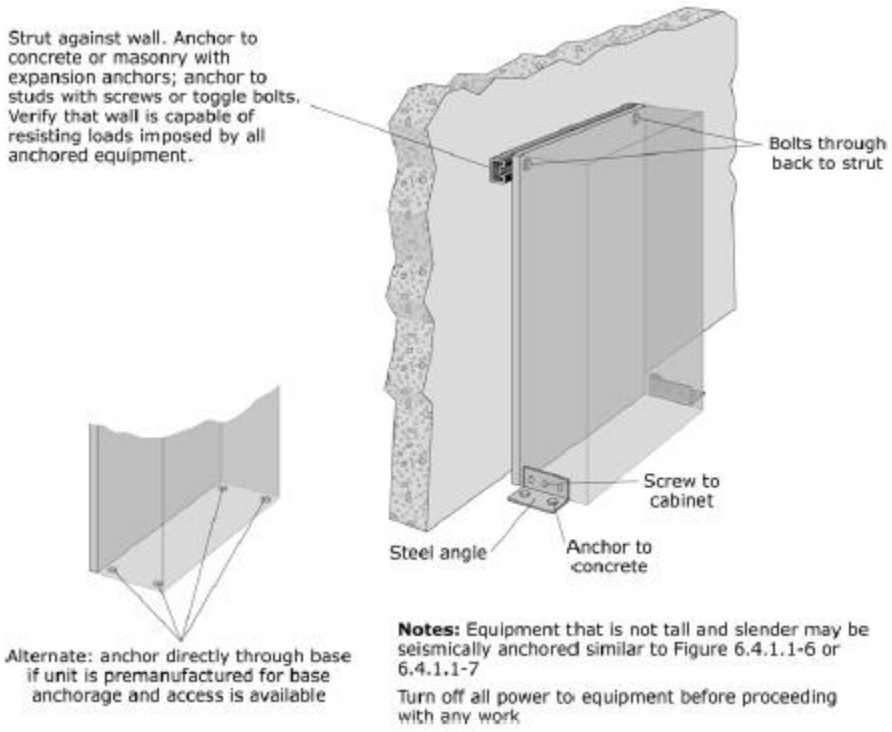


Figure G-38. Electrical Control Panels, Motor Controls Centers, or Switchgear.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

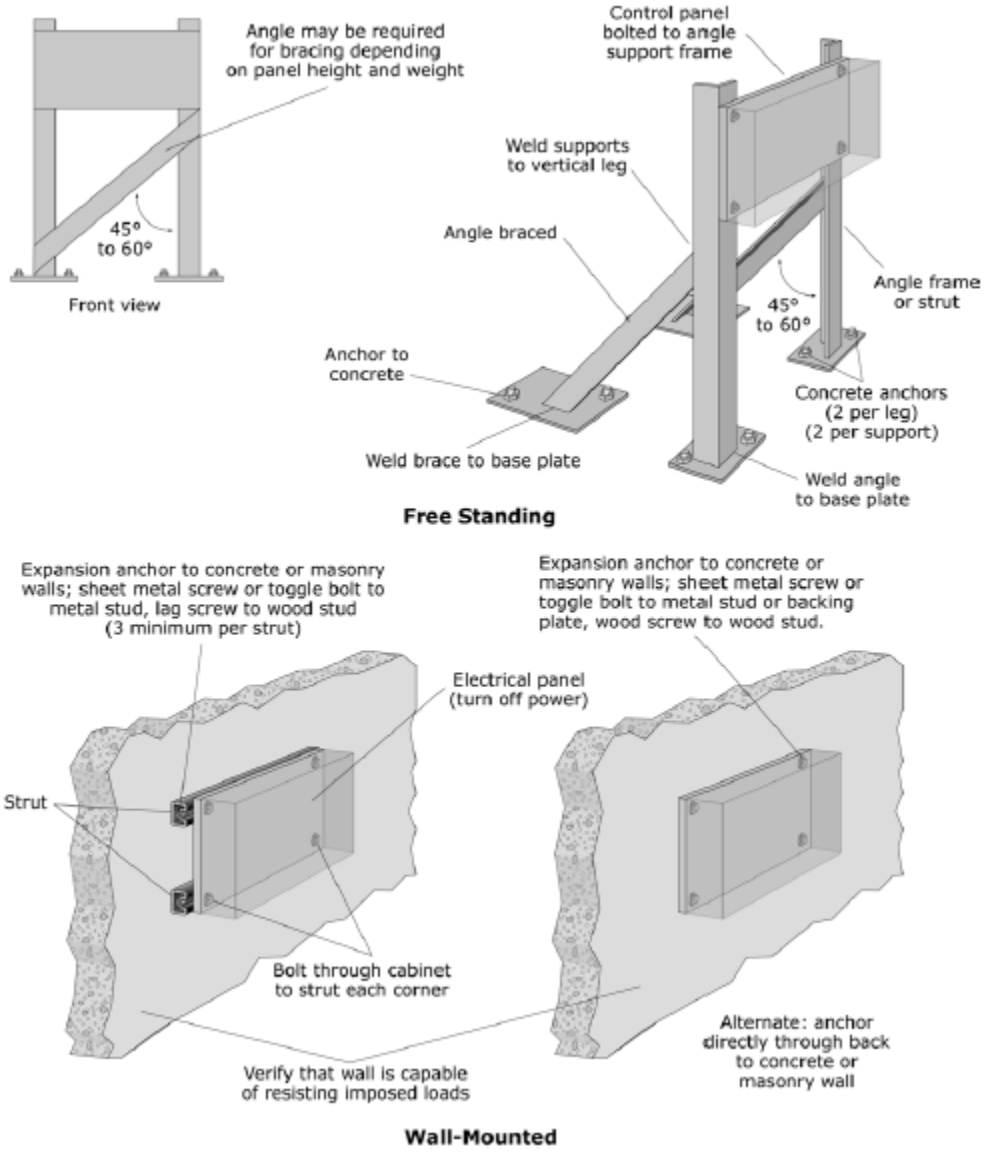


Figure G-39. Freestanding and Wall-mounted Electrical Control Panels, Motor Controls Centers, or Switchgear.

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

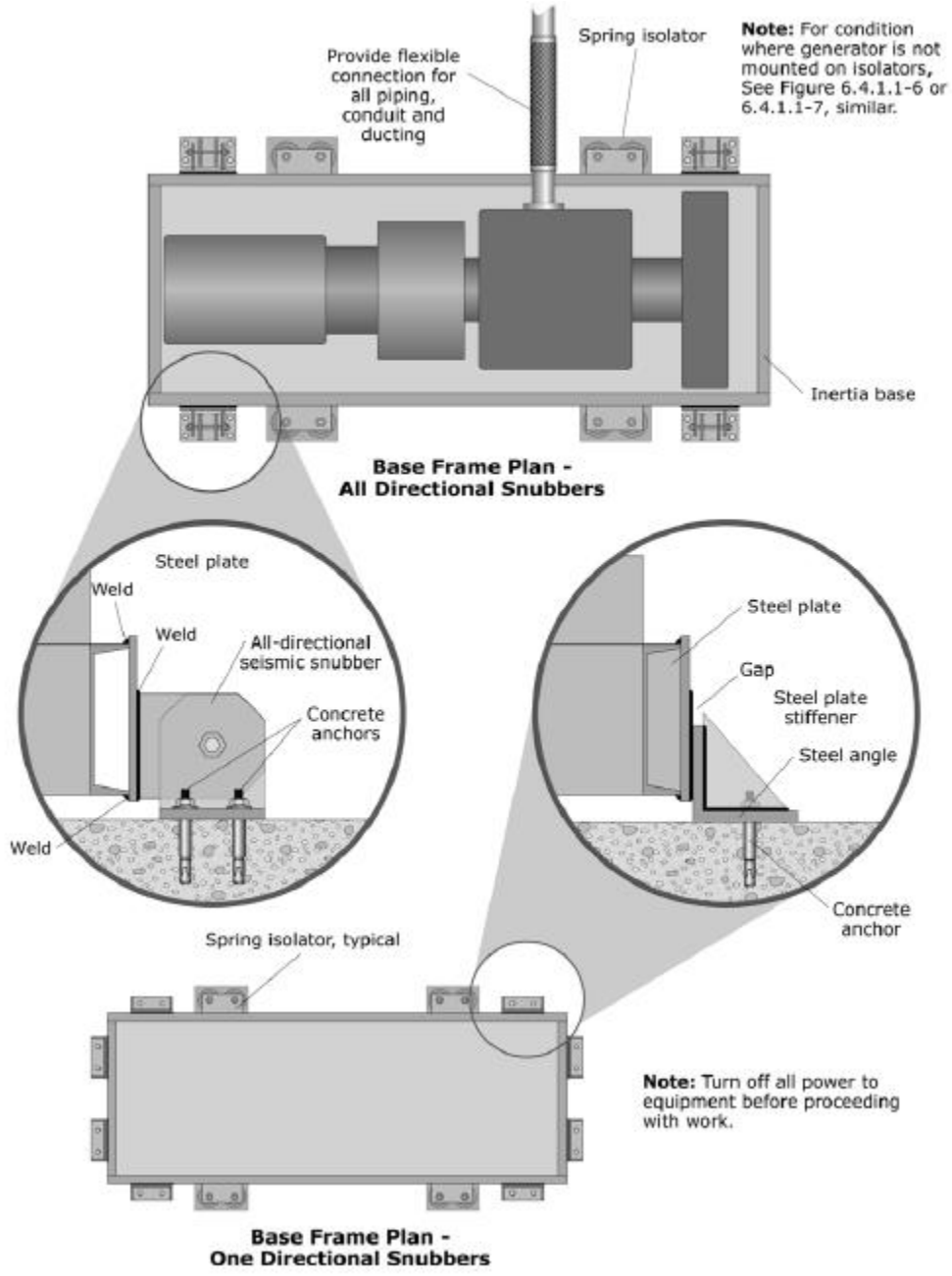


Figure G-40. Emergency Generator.
(FEMA E-74, 2012, Reducing the Risks of Nonstructural Earthquake Damage)

This page intentionally left blank.

ReidMiddleton

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

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

www.reidmiddleton.com
File No. 262018.063