

**Seattle-Tacoma International Airport
SeaTac, Washington**

**Rental Car Facility (RCF)
Tenant Design and Construction Standards**

October 2012



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Seattle-Tacoma International Airport
Rental Car Facility (RCF)
Tenant Design and Construction Standards

(Updated October 2012)

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1.0 INTRODUCTION

These Rental Car Facility (RCF) Tenant Design and Construction Standards apply to the development of proprietary exclusive leasehold improvements and/or modifications within each Tenant's allocated premises at the Seattle-Tacoma International Airport Consolidated Rental Car Facility (RCF). These standards apply to all common-use and exclusive use Tenant components, including: allocated vehicle ready/return facilities, customer service building lease areas, quick turn around (QTA) vehicle service areas, exit security booths and customer service booths. These standards and criteria are intended to provide each Tenant, its designers and its contractors with information required for the design and construction of each Tenant's leasehold improvements.

These standards are generally organized to describe the work included in the base building, and the responsibility of the Port, and work that shall be Tenant Improvements within the respective Exclusive Use Premises (EUP) and the responsibility of the RCF Tenants. The design section is further subdivided into the three major building components:

1. Customer Service Building (CSB)
2. Ready/Return Areas (Operational Floor Plates)
3. Quick Turn Around Areas (QTA)

These standards must be read and applied in their entirety. Should there be any inconsistencies or ambiguities in this document, the Port will be the sole interpreter of these standards. Should there be any inconsistencies or ambiguities between the Tenant Design and Construction Standards and the Rental Car Lease and Concession Agreements, the Lease and Concession Agreements shall govern.

Design standards and criteria incorporated herein apply to building materials, appearance and durability of improvements, signage, uses of the buildings and surrounding site, and RCF standards for Tenant improvements on the RCF site.

The construction section describes general issues.

1.1 DEFINITIONS

- Airport - "Airport" shall mean the Seattle-Tacoma International Airport. Airport specifically includes the Consolidated Rental Car Facility Site. The term as used in this document means the same as Owner, which is the Port of Seattle (the Port) or its authorized representative.
- Airport Building Department (ABD)
- Alteration - "Alteration" shall have the meaning set forth in Section 13.1 of the Lease Agreement.
- Approval - "Approve", "approved", "approval" and words of similar import will mean that approval of the Airport or its authorized representatives is required unless stated otherwise. Approval will always be in writing.
- Architectural Review Committee (ARC) – Port of Seattle Architectural Review Committee, which will review Tenant-proposed lease improvements for compliance with Port design standards.
- Base Building (BB) – Includes all improvements that were designed, funded and constructed including Site Development, Customer Service Building and the Parking Structure, but exclusive of tenant improvements within tenant exclusive use premises. In the Lease Agreement it is known as the Project. "Project" shall mean and refer to the initial construction of the Consolidated Rental Car Facility on the

Consolidated Rental Car Facility Site together with the construction of the Bus Maintenance Facility and the Off-Site Roadway Improvements.

- Concession Agreement - “Concession Agreement” shall mean and refer to that certain concession agreement between the Port and a particular Operator, together with the exhibits to the concession agreement and all agreements supplemental to or modifying the concession agreement, whether made contemporaneously therewith or subsequent thereto. Since it is expected that the Concession Term for this initial Concession Agreement will be less than the Lease Term, the term Concession Agreement specifically includes each successor Concession Agreement to which the Port and Operator are a party.
- Consolidated Rental Car Facility - “Consolidated Rental Car Facility” shall mean and refer to the consolidated rental car facility constructed by the Port. The Consolidated Rental Car Facility includes (but is not limited to) the Customer Service Building, the Ready/Return Area, the QTA Areas and all improvements (including Additional Special Facilities, if any) on the Consolidated Rental Car Facility Site.
- Cubic Feet per Minute (CFM)
- Customer Service Building (CSB) – “Customer Service Building” shall mean and refer to the customer service building located on the fifth floor of the Consolidated Rental Car Facility and providing areas for customer service counters and back-office support areas for the operation of a Rental Car Concession.
- Days. “Days” (whether capitalized or not) shall, unless otherwise specified, mean and refer to calendar days, not business days.
- Engineer – Port Engineer – Port of Seattle Construction Manager and/or Port of Seattle Resident Engineer.
- Exclusive Use Premises (EUP) - “Exclusive Use Premises” shall mean and refer to those portions of the Customer Service Building, the Ready/Return Area, the QTA Space, and the North Parcel (if any) as determined in accordance with Article 11 of the Lease Agreement and as thereafter indicated on Lease Agreement Exhibit B and depicted on Lease Agreement Exhibits C-1, C-2, C-3, C-4, and/or C-6.
- RCF Tenant Design and Construction Standards (Tenant Standards) – Document that governs the development, design and construction of the RCF exclusive use premises.
- Facility Manager - “Facility Manager” shall mean and refer to the party chosen by the Operators to operate and maintain the Common Use Area pursuant to Section 15.1.3.2.1 of the Lease Agreement.
- Fixtures, Furniture & Equipment (FF&E) – Improvements that are not affixed to any permanent structure and that can be removed without damage to the premises.
- Fuel Facility Manager - “Fuel Facility Manager” shall mean and refer to the party chosen by the Operators to operate, and be financially responsible for, the Fueling Facilities pursuant to Section 19.1.1 of the Lease Agreement.
- Interlocal Agreement (ILA) - The landscape and zoning requirements that apply to the development of Port-owned property and that have been agreed to by the Port and the City of SeaTac.
- Lease Line - The line of demarcation separating the Base Building construction and the area in which the Tenant shall design, construct and fund its proprietary leasehold improvements.
- Lease Agreement - “Lease Agreement” shall mean and refer to that certain lease agreement between the Port and a particular Operator, together with the exhibits to the lease agreement and all agreements supplemental to or modifying the lease agreement, whether made contemporaneously therewith or subsequent thereto.
- Manual of Uniform Traffic Control Devices (MUTCD)
- Mechanical Utilities Systems Team (MUST) – The Port of Seattle staff who review Tenant proposed projects and assist the Tenant in coordinating mechanical system connections and requirements. Will review Tenant proposed lease improvements for

- compliance with Port design standards.
- Multi Branding – The operation of two or more “brand” or “trade names” under a single Concession Agreement. “Brand” or “Trade Names” are identified in Exhibit R of the Operator’s Lease and Concession Agreements.
- Operational Floor Plate – Areas within the building used for Rental Car Ready/Return operations.
- Operator - “Operator,” when used in the singular, shall mean and refer to the particular Operator executing a particular Lease Agreement or Concession Agreement related to the operation of a Rental Car Concession in the Consolidated Rental Car Facility. “Operator,” when used in the plural, shall mean and refer to all Operators having executed a Lease Agreement and Concession Agreement related to the operation of a Rental Car Concession in the Consolidated Rental Car Facility.
- Perform - “Perform” shall mean that the Tenant Contractor, at Contractor’s expense, shall perform all the operations necessary to complete the Work or the mentioned portions of the Work, including furnishing and installing materials indicated, specified, or required.
- Port “Port” or “the Port” shall mean and refer to the Port of Seattle.
- Pounds per Linear Foot (PLF)
- Pounds per Square Foot (PSF)
- Premises. “Premises” shall mean and refer to the Exclusive Use Premises together with the Fuel Facilities and QTA Equipment, Common Use Area, and, for any Operator that is a Small Operator, the Small Operator Shared Area.
- Proactive Electrical Systems Team (PEST) - The Port of Seattle staff who reviews Tenant proposed projects and assist the Tenant in coordinating electrical system connections and requirements. Will review Tenant proposed lease improvements for compliance with Port design standards.
- Port Project Manager – Designated representative of the Seattle-Tacoma International Airport project management staff assigned to coordinate Tenant Projects.
- Provide - “Provide” shall mean that the Tenant Contractor, at Tenant Contractor’s expense, will furnish and install the work or mentioned portion of the work, complete in place and ready for the intended use. This definition applies the same to future, present, and past tenses except “provided” may mean “contingent upon” where such is the context.
- Quick Turn Around (QTA) Space - “QTA Space” shall mean and refer to the quick turnaround areas to be located immediately to the northeast and southwest of the main Consolidated Rental Car Facility building and to be utilized by Operators for purposes of car washing, cleaning, fueling or Light Vehicle Maintenance activities.
- QTA Equipment - “QTA Equipment” shall mean and refer to all equipment supplied by the Port, located in the QTA Space and used in connection with car washing, cleaning and fueling activities other than the Fuel Facilities. The QTA Equipment includes, without limitation, the car washes and all associated equipment, the vacuums, and all fluid and/or compressed air dispensing systems.
- Ready/Return Area - “Ready/Return Area” shall mean and refer to those portions of the Consolidated Rental Car Facility located on the first through fourth floors and to be utilized by the Operators for purposes of stacking, staging, returning and delivering rental cars. May also be referred to as Operational Floor Plate.
- RCF Tenants (Tenants or Tenant) – Rental car companies who lease space and operate vehicle rental services at the Rental Car Facility. Also other tenants that lease space within the RCF.
- Required - The word “required” and “required by the Port” and words of similar import shall mean “as required to complete the work”, as is applicable to the context of the place where used, unless stated otherwise.
- Roughed In - Extended and terminated near or within the tenant space, with the

Tenant completing the remaining portions of work as required. In the case of building systems required to receive beneficial occupancy prior to the commencement of Tenant Improvements, “roughed in” refers to the installation of fire protection, fire detection, plumbing, and HVAC systems to extent required for beneficial occupancy of the Base Building.

- Seattle City Light (City Light) – Electrical utility providing electric service to the site.
- Seattle-Tacoma International Airport – Sea-Tac, STIA or Owner
- Sea-Tac Technical Architecture Review Team (START) – Consortium of Sea-Tac Airport departments (Maintenance, Facilities & Infrastructure, Operations, Information & Communication Technology, Project Management) that allocates and manages the Port’s technological resources (fiber infrastructure, rack placement, wireless, Wi-Fi, etc.) Will review Tenant proposed lease improvements for compliance with Port design standards.
- Small Operator - “Small Operator” shall generally mean and refer to an Operator whose market share constitutes less than two percent (2%) of the overall market share for rental cars at the Airport and who operates from the Small Operator Area; provided, however, the Port shall have the right to treat an Operator that otherwise falls under this Market Share standard but which is showing significant growth and approaching the Market Share standard as other than a Small Operator. Also referred to as Small Operator Tenants (SOT).
- Small Operator Area (SOA) - “Small Operator Area” shall mean and refer to those portions of the Customer Service Building, Ready/Return Areas and QTA Space that are set aside by the Port for the use of the Small Operators and as reflected in Lease Agreement Exhibit C-4. The Small Operator Areas consist of both Exclusive Use Premises assigned to individual Small Operators and the Small Operator Shared Area for use, in common, by all of the small Operators.
- Small Operator Shared Area - “Small Operator Shared Area” shall mean and refer to those portions of the Small Operator Area that identified for use, in common, by those Operators that are Small Operators and operating from the Small Operator Area. The Small Operator Shared Area will be reflected on Lease Agreement Exhibit C-4.
- Submit - “Submit”, “submittal”, “submission”, and other terms of similar importance will include the meaning of the phrase “submit to STIA for approval” unless otherwise stated.
- Tenant Construction Manager (Tenant CM) – Construction Manager designated by each individual RCF Tenant to construct its respective exclusive-use premises improvements.
- Tenant Design and Construction Process Manual – Guide to the plan review process for Projects at Seattle-Tacoma International Airport. Available on line at: <http://www.portseattle.org/Business/Construction-Projects/Airport-Tenants/Pages/Reference-Documents.aspx>
- Tenant Design Team – Design Team(s) selected by each Tenant to design its respective exclusive use premises.
- Tenant Lease Area - Also referred to as exclusive use premises (EUP).
- Tenant Project Manager – Refers to each Tenant’s authorized representative.
- Variable Air Volume (VAV) boxes

1.2 LEASEHOLD IMPROVEMENTS

Each Tenant shall be solely responsible for the funding, design, construction and commissioning of its EUP Improvements.

The following descriptions indicate the general anticipated scope for the specific items of the Tenant Leasehold Improvements to its EUP. The EUP shall include: 1) Customer Service Building retail improvements; 2) Ready/Return Area Operational Floor Plate improvements; 3) Quick Turn-Around improvements; and 4) Exclusive Use Premises Furniture, Fixtures and Equipment (FF&E).

1.2.1 Customer Service Building Retail Improvements

Base Building Scope

Similar to an office building, the main components of the basic building systems (fire protection, mechanical, electrical, communications, data and plumbing) were “roughed-in” as part of the base building construction. These design standards have been established to identify acceptable materials and quality to which each Tenant shall adhere.

Tenant Scope

Each Tenant shall be responsible for the costs of improvements including but not limited to interior wall construction, flooring, ceilings, all finishes, specialty millwork, modifications to or extension of the mechanical / electrical / plumbing systems, modifications to or extension of the fire detection and protection systems, data and communications wiring, lighting, signage and other Leasehold Improvements.

All proprietary signage located within EUP and requiring electrical power will be powered from the tenant electrical panels. The Tenant shall be responsible for extending electrical service to proprietary signage. Similarly, all Tenant signage requiring data connectivity shall be connected through the tenant data demarcation locations.

1.2.2 Customer Service Building Small Operator Area

Base Building Scope

Base building construction includes the CSB lease area allocated to Small Operator Tenants whose market share in total is less than 2% (two percent). Construction of this small operator area includes walls, floors, ceiling and building systems required by applicable codes for occupancy. Small operator area construction includes all interior finishes for the areas accessible to the public and for the associated common-use administrative offices within the CSB. The base building provided a continuous standard rental counter shell. The shell includes demarcation points for power, telephone and data connections.

Tenant Scope

Each small operator provided insert will typically include a computer, supply storage, and telephone. Each small operator within this area will provide its own

proprietary backwall signage, furnishings and equipment required for operations. Each small operator will connect to the Base Building data and communication network demarcation box located in the assigned counter shell.

1.2.3 Ready/Return Areas / Operational Floor Plate Improvements

Base Building Scope

Base building construction includes the operational floor plates structure, vertical circulation cores, wayfinding signage, lighting, common area striping, fire protection, and roughed-in utilities.

Tenant Scope

The operational floor plates (vehicle rental, return, parking and staging areas) shall be organized with each Tenant occupying a portion (or all) of a single level. Each Tenant shall secure its parking allocations and control its public entry / exit by exit booths, and access control devices such as “tiger teeth” and gate arms. Tenants with larger market shares may utilize multiple exit points and exit booths.

Each Tenant shall be responsible for the costs of enhancements that may include but not be limited to signage elements associated with preferred customer convenience (booths, signs, etc.) and other items dedicated to customer convenience and satisfaction. Other basic requirements within the ready and return areas of a Tenant’s Exclusive Premises operational floor plate area covered by this category include:

- Vehicular control system, “tiger teeth” devices and gate arms. Such passive and active systems shall be surface mounted.
- Company unique parking space designation signs, electrical wiring for all EUP equipment, paint striping and wheel stops.
- Other miscellaneous temporary and permanent traffic circulation signage.
- Pavement markings required for circulation within the lease areas.
- Exit Booths
- Customer Service Booths
- Other Booths

The location of exit booths and customer service booths shall be restricted to areas of the operational floor plate that are structurally reinforced to accommodate the increased floor loads as part of the base building. Exit booths, customer service booths, and other booths shall not be constructed or located to obstruct customer visibility or interfere with access to or visibility of booths owned by another Tenant.

Electrical, communications, HVAC, fire and other utility services to customer service, exit booths, and other booths shall be provided by the Tenant.

1.2.3.1 Barriers

Base Building Scope

The perimeter of the secured vehicle storage areas located on the operational floor plates shall be separated from non-secured areas with a re-locatable concrete divider system provided by the base building.

Tenant Scope

Barriers within Tenant EUPs shall be provided by the Tenant.

1.2.4 Quick Turn Around (QTA) Areas

1.2.4.1 Support Areas

Base Building Scope

Each QTA back of house building includes space to be exclusively leased to each Tenant for its construction of office space to support other service functions or to provide additional administrative functions.

Similar to an office building, the building shell and main components of the QTA service equipment including basic building systems (fire protection, mechanical, electrical, communications, etc.) are “roughed-in” as part of the base building. Design standards have been established that address acceptable materials and quality to which each Tenant shall adhere.

Common use features include:

- 1) One pair of common use employee restrooms and a multi-purpose room.
- 2) Windshield fluid storage drums (two per each QTA)
- 3) Common use vacuum system
- 4) Common use compressed air system
- 5) Security provisions in common use areas
- 6) Traffic control signage for circulation, and signage required by applicable building codes, located in the common use areas between exclusive use lease areas.
- 7) Miscellaneous pavement markings in common use areas

Tenant Scope

Each tenant is responsible for the design and construction of improvements within its exclusive use premises including but not limited to administration areas and exclusive use employee break rooms.

Each Tenant shall be solely responsible for the costs of improvements including but not limited to interior wall construction, flooring, ceilings, all finishes, specialty millwork, extension of the mechanical / electrical / plumbing systems, extension and modifications to the fire detection and protection systems, data and communications wiring, lighting, signage and other Leasehold Improvements.

1.2.4.2 Car Wash Area

Base Building Scope

Each wash bay includes an automated car washing system with a water reclamation system, including flush drains at the perimeter of the car wash area. The infrastructure (physical space and utility allowances) for

optional pieces of equipment is provided.

Tenant Scope

Optional pieces of equipment include: Air blowers, fast-acting doors, pre-wash system and blasters, reverse osmosis system, and plastic slats at car wash entry and exit openings.

1.2.4.3 Light Maintenance Bay

Tenant Scope

The Base Building will not include vehicle light maintenance equipment. Tenants leasing more than one car wash bay may with the Port's prior review and approval, and as a Tenant Improvement, convert a wash bay into a light maintenance area. Light maintenance shall mean and refer to the changing of belts, wiper blades, hoses and light bulbs, the changing of motor oil, oil filters and air filters, the flushing and changing of antifreeze/coolant or transmission fluid and other minor repairs or replacements of similar nature and as approved by the Port. Tenant is responsible for all permitting.

1.2.4.4 Fueling Area

Base Building Scope

Each fuel dispenser will serve two cars under a lighted canopy structure. There will be three rows of dispensers. A concrete fuel island will separate the traffic lanes.

Equipment includes:

- Fuel dispensers
- Fuel storage tanks
- Drainage for the fueling area, including storm water retention and oil separators
- Lighted canopy structure
- Hose bibb at each column
- Overhead vacuum(s)
- Overhead compressed air
- Overhead windshield fluid dispensers

Tenant Scope

Tenant may install card reader for additional tracking of fueling system use. Tenant may install other equipment such as cameras or productivity meters as long as they do not interfere with the base building systems.

End of Section One

2.0 DESIGN STANDARDS

2.1 GENERAL REQUIREMENTS

2.1.1 Design Contract

Each RCF Tenant shall include the following language in the contract with its selected Design Team:

Construction Documents – All construction documents must comply with STIA Regulations for Airport Construction and Port of Seattle Drafting Standards.

Record Documents - As-Built Drawings (Record Documents) shall comply with STIA CAD and AFUS standards. At the completion of the work, the Tenant shall furnish the STIA Program Manager with three (3) half-size set of Record Documents printed on bond paper and one (1) set of the Record Documents in editable electronic format compatible with the STIA CAD system.

2.1.2 Insurance

Reference Lease Agreement Sections 17 and 20 for insurance requirements.

2.1.3 Design Standards and Criteria for the Tenant EUP Leasehold Improvements

These standards and attached supporting exhibits shall constitute the Design Standards and Criteria for the EUP Leasehold Improvements. The design and construction of the Tenant Leasehold Improvements shall be completed in accordance with the following standards referenced herein within the Airport Regulations for Airport Construction. Refer to the Regulations for Airport Construction for additional requirements and for the most current editions / versions of these standards.

<http://www.portseattle.org/Business/Construction-Projects/Airport-Tenants/Pages/Reference-Documents.aspx>

- Rental Car Facility Tenant Design and Construction Standards
- Port of Seattle Application for Compliance of Port Standards (COPS)
- Port of Seattle Plan Submittal Checklists
- International Building Code as amended and adopted by the Port of Seattle
- International Mechanical Code as amended and adopted by Washington State
- International Fuel Gas Code as amended and adopted by Washington State
- NFPS Standard 58, the “National Liquefied Petroleum Gas Code as amended and adopted by Washington State
- The Uniform Plumbing Code as amended and adopted by Washington State
- International Fire Code as amended and adopted by the Port of Seattle
- STIA Regulations for Airport Construction
- Port of Seattle Health and Safety Manual
- Port of Seattle Document 0860 – Safety Management
- Port of Seattle Communications Systems Standards
- Port of Seattle Electrical Systems Standards
- Port of Seattle Mechanical Systems Standards
- Port of Seattle Radio Frequency Standards
- Port of Seattle Signage Standards

- Port of Seattle Tenant Design and Construction Process Manual
- Port of Seattle Water and Sanitary Sewer System Standards
- SEPA (State Environmental Policy Act – RCW 43.21C and implementing regulations – WAC 197-11)
- Port of Seattle Drafting Standards
- Port of Seattle Architectural Standards
- Washington State Non-Residential Energy Code
- National Electric Code (NFPA 70)
- The Consolidated Rental Car Facility is subject to State of Washington Laws and is a non-smoking facility. The base building is providing no smoking signage within common areas. Tenants are reminded to provide no smoking signage, within exclusive use premises, that meets the requirements of RCW 70.160.030.

In limited cases the Rental Car Facility deviates from Port Standards. In these cases the RCF Tenant Design and Construction Standards supersede the Port Design Standards.

These standards will be followed and maintained unless specific deviations have been requested in writing by the Tenant and approved in writing by the Port.

2.1.5 Professional Licensing

All work and designs shall bear the seal of an Architect and/or Engineer licensed, insured and qualified to perform such work. All Architects and Engineers “sealing” the drawings and specifications shall be registered in the State of Washington. Out of state firms are allowed to team with A/Es licensed in the State of Washington to the extent allowed by the State of Washington.

2.1.6 Interpretation / Clarifications

These RCF Tenant Design and Construction Standards must be read and applied in their entirety. These standards complement other legal agreements between each Tenant and the Port. Should there be any inconsistencies or ambiguities in this document, the Port shall be the sole interpreter. Should there be any ambiguities between these standards and the Lease or Concession Agreement, the Lease or Concession Agreement shall govern.

2.1.7 Variance Requests

Tenant may request a variance from any Port Standard. All such requests must provide justification of the variance and shall be made in writing to the Port Project Manager who shall coordinate the approval or disapproval of the request within thirty days of receipt. If approved a variance shall be issued in writing. If disapproved the Port Project Manager shall provide a written statement setting out the reasons for disapproval. It is recommended all requests be made with the submittal of Schematic Design (30%) or earlier. Variance requests will be considered during the 100% design phase, but shall be submitted and approved prior to submittal of 100% Design.

If conditions in the field preclude construction as designed, the Port will consider Variance requests on a case-by-case basis.

2.1.8 Leadership in Energy and Environmental Design (LEEDTM)

The Rental Car Facility achieved a Leadership in Energy and Environmental Design (LEEDTM) Silver Certification for New Construction (NC) from the United States Green Building Council (USGBC).

Energy and environmental performance components of the project included efficient mechanical systems, on-site recycling, enhanced stormwater management systems, heat island reduction through the use of light concrete on the fifth floor deck, reduced light pollution and light spill-out throughout the operational floor plates 1-4, high efficiency site irrigation systems, day-lighting controls, tenant sub-metering, construction indoor air quality management plans, alternative transportation opportunities with bike storage racks and changing rooms, access to local bus and light rail systems, and energy efficient lighting lamps and fixtures.

The Port of Seattle encourages tenants to maintain and improve the energy and environmental performance of the facility. The USGBC's LEED Green Building Rating System for Existing Buildings: Operations and Maintenance, Commercial Interiors, and Core & Shell offer a framework that would continually satisfy the projects sustainability objectives. Sustainability Elements that should be considered include:

- Materials with recycled content
- Regionally extracted, processed, and manufactured materials (within 500 miles of RCF site)
- Use of salvaged, refurbished, or reused materials
- Use of rapidly renewable materials for building materials and products (made from plants that are harvested within a ten-year life cycle or less)
- Use of certified wood for wood-based materials and products, by the Forest Stewardship Council's (FSC) Principles and Criteria
- Low volatile organic compound (VOC) carpet systems, paints, coatings, adhesives, and sealants.
- Use of composite wood and agrifiber products that are urea-formaldehyde free
- High efficiency equipment, i.e. Energy Star

2.2 DESIGN REVIEW AND APPROVAL PROCESS

2.2.1 Concept Review

Prior to commencement of Tenant design or construction, the proposed project must be conceptually approved by Airport Management. Tenant is responsible for requesting concept approval which entails submitting a concept drawing and narrative to the Port's Rental Car Property Manager. The Property Manager will circulate the concept for comments and advise Tenant if they have approval to proceed. Any concept comments will be provided to the Tenant and the Port Project Manager assigned to the project, and must be addressed by the tenant.

2.2.2 Pre-Design Kick-Off Meeting

Before the commencement of Tenant Design work, a mandatory Pre-Design Kick-Off meeting shall occur. Attendees shall include the Tenant representative, Tenant design team representative, Port representative and Port Project

Manager. The agenda shall include but not be limited to: introduction of participants, the RCF Tenant Design and Construction Standards, communication plan, required submittals and schedule. Each Tenant shall submit to the Port a complete Gantt project schedule in Microsoft Project or Primavera including all project activities noted as bar tasks, milestones or critical path tasks. Each task shall show its respective commencement and completion dates. This schedule shall be reviewed in the kick-off meeting by the Tenant with the Port Project Manager, and accepted, before any EUP design work is commenced on this project.

2.2.3 Record Drawings

As-built drawings may be accessed through the Port of Seattle Drawing Vault at Pier 69. The Project identification number is STIA-0617. The project name is "Remote Consolidated Rental Car Facility". The project number is 103640.

2.2.4 Design Review Requirements

The Port will review the design submittals for adherence to the design standards and building utility allowances and will provide comments back to the Tenant. The drawings and specifications for the proposed Tenant EUP Leasehold Improvements shall be submitted to the Port Project Manager at conceptual design, 30% and 100% completion phases. Refer to the Tenant Design and Construction Process Manual and Lease Agreement Exhibit G for content and process requirements.

In addition to drawing reviews each Tenant shall present its design documents to the Technical Review Committees. The Tenant shall comply with the requirements and findings of the respective committees. These reviews will be coordinated through the Port Project Manager. Refer to the Regulations for Airport Construction, and the Tenant Design and Construction Process Manual, for additional design / review information.

2.2.5 Permit Procedures

The Tenant's EUP Design Team shall be responsible for submitting for all required permits. The Airport Building Department reviews and approves all public and private construction projects at STIA and issues building permits. Electrical permits are issued by the Washington State Department of Labor and Industry (L&I). Airport Building Department reviews can take up to six weeks for the first review and four weeks for subsequent review, approval or re-submittal. All Tenants shall go through the Port Project Manager for coordination of submittals to the Airport Building Department. Refer to the Tenant Design and Construction Process Manual that illustrates the Port's plan review process.

In addition to the Building Permit, other permits may be required. Each EUP design team shall determine the applicability and requirements of these local governing agencies (this list may not be all-inclusive):

- Building Permit / Tenant Improvement Permit
- Dust and Erosion Control
- NPDES (National Pollution Discharge Elimination System)
- Factory Built Building Permit(s)

- Hazardous Waste Registration for Disposal of Chemical Waste
- Notice to Connect to Port Water Distribution System
- Puget Sound Air Quality (related to quick turn-around fueling areas)

Tenants shall keep the Port Project Manager formally advised of their respective permitting posture at each submission.

2.2.6 Tenant Construction Coordination Services

See Section 3.0 Construction Standards for requirements prior to start of construction.

2.3 CUSTOMER SERVICE BUILDING (CSB)

2.3.1 Introduction / Base Building

Within the Customer Service Building, each Tenant leases its Exclusive Customer Service Area for customer processing. The layout of the leased area is determined by how each respective Tenant responds to its specific operations. The layout of this leased area(s) shall include, but not be limited to: customer counters, queuing space and support offices. All customer operations and any other activity shall be contained within the physical boundaries of the leased area. All improvements, signage, furnishings, etc. shall be contained within the limits of the leased area.

Interior finishes and architectural elements including flooring, ceiling, lighting, wall treatments and millwork within the lease space shall be at the discretion of the individual Tenant subject to the standards reference herein.

2.3.2 CSB Operational

2.3.2.1 Separation of Common-Use and Leased Areas, No Build Zone

A painted gypsum board soffit and flooring transition strip at the tenant lease line separates the base building common areas from Tenant lease premises. Each Tenant EUP includes a no build zone extending from the Tenant lease line back four feet (4'-0") into its EUP from common-use areas; see Exhibit 1. See Section 2.3.4 for signage requirements.

Tenant construction within the no build zone includes painting the ceiling and soffit, installing a finished floor, installing two blade sign faces, and installing a storefront sign. Tenant shall not install furniture, fixtures, equipment, signage (except blade and storefront signs) or other permanent features within the no build zone. Port will not allow lighting in the no-build zone, nor will it allow down-lighting from the tenant signage. Tenants may place lights adjacent to the no-build zone that will light the four foot zone.

2.3.2.2 Customer Queuing

Tenant improvements shall be designed and located to accommodate customer queuing within the Tenant's EUP. Customer queuing in common use areas is prohibited.

2.3.2.3 Public and Non-Public Areas of Leased Premises

Public areas of Tenant leased premises shall be defined as those areas occupied by or in direct view of the public. The Tenant shall provide finishes in these areas, based upon these Standards, the Lease Agreement and applicable building codes.

Tenant finishes in areas not exposed to public view shall be at the Tenant's option and shall conform to all applicable building codes and standards. In addition these areas are subject to the signage, mechanical, electrical, and communications requirements within these Standards.

2.3.2.4 Enclosed Customer Service Functions

Enclosed Tenant customer service areas, such as business centers, customer service rooms, and others, are considered to be public areas. All finishes shall be consistent with the finishes within the Tenant public areas and these Standards. Storefront type window systems are required. Window coverings are prohibited.

2.3.2.5 CSB Break Rooms

If a Tenant constructs an exclusive-use break room within its exclusive lease area, the Tenant shall provide fixtures, branch cold water, waste and vent piping to nearest tenant cap. Power for the electric hot water heaters shall be included as part of the metered power allowance assigned to the Tenant. The Tenant is responsible for costs of removal of break room plumbing fixtures, repair of structural floor and replacement of interior walls and finishes upon termination of lease. Location and use of break rooms shall not adversely impact adjacent Tenant(s). CSB break rooms shall be located between grid lines F.5 and H designated on the RCF Base Building Construction Drawings. Break rooms shall be properly insulated, ventilated, and sound proofed so as not to disturb adjacent Tenants and customers. Break rooms shall be negatively pressurized via tenant provided connection to tenant exhaust fans. See Exhibit 1 for location zones.

2.3.2.6 Restrooms

Tenants may not locate restrooms within their exclusive lease premises.

2.3.2.7 Accessories/Equipment/Public Furniture

- 1) Tenants are allowed to provide various accessory items such as trash receptacles and planters.
- 2) Tenant equipment such as wheel chairs, child seats, etc shall be stored out of public view.
- 3) Vending machines are prohibited in the Tenant's leased public areas. Vending machines are allowed in EUP break rooms out of public view.

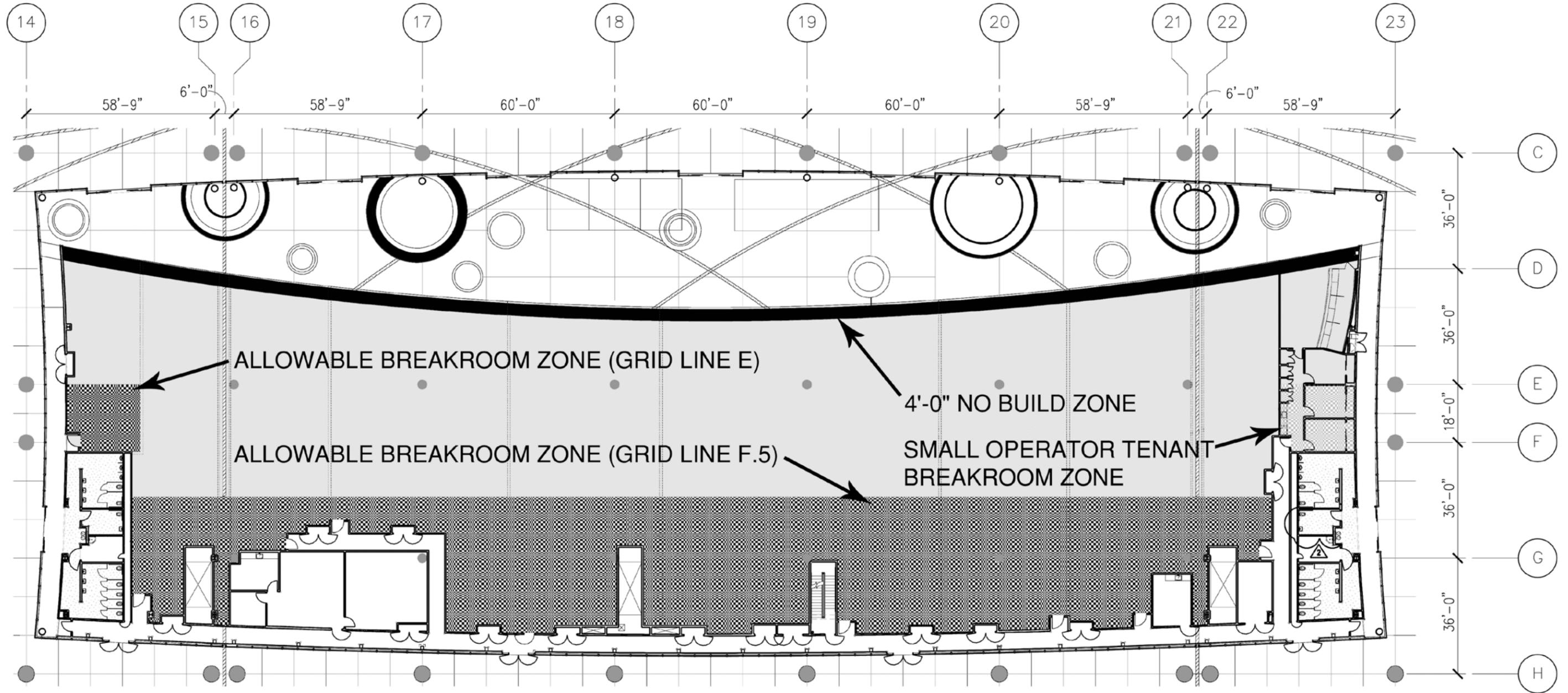


Exhibit 1
 CSB FLOOR PLAN (TENANT LEASE AREA SHADED)

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- 4) Rope stanchions or tensile barriers may be used for queuing. All queuing shall remain fully within the Tenant leased premises.
- 5) CSB Public Seating and Furniture
The Base Building installed furnishings, fixtures and equipment located in common use areas of the CSB. These include but are not necessarily limited to public seating and trash receptacles. The Tenant may provide, install and maintain public seating within its EUP waiting area. Minimum aisle widths and clearances for exiting as specified by the Building Code shall be maintained. Public seating shall be compatible with the overall design, color and finishes used in the Tenant leased premises and shall be submitted to the Port for prior written approval.

2.3.2.8 Illustration of CSB Tenant Exclusive Use Premises

Exhibit 2 depicts typical elements/features of a tenant space in the Customer Service Building. It summarizes operational features discussed in Section 2.3.2, some architectural features discussed in Section 2.3.3, and signage requirements discussed in Section 2.3.4.

2.3.3 CSB Architectural

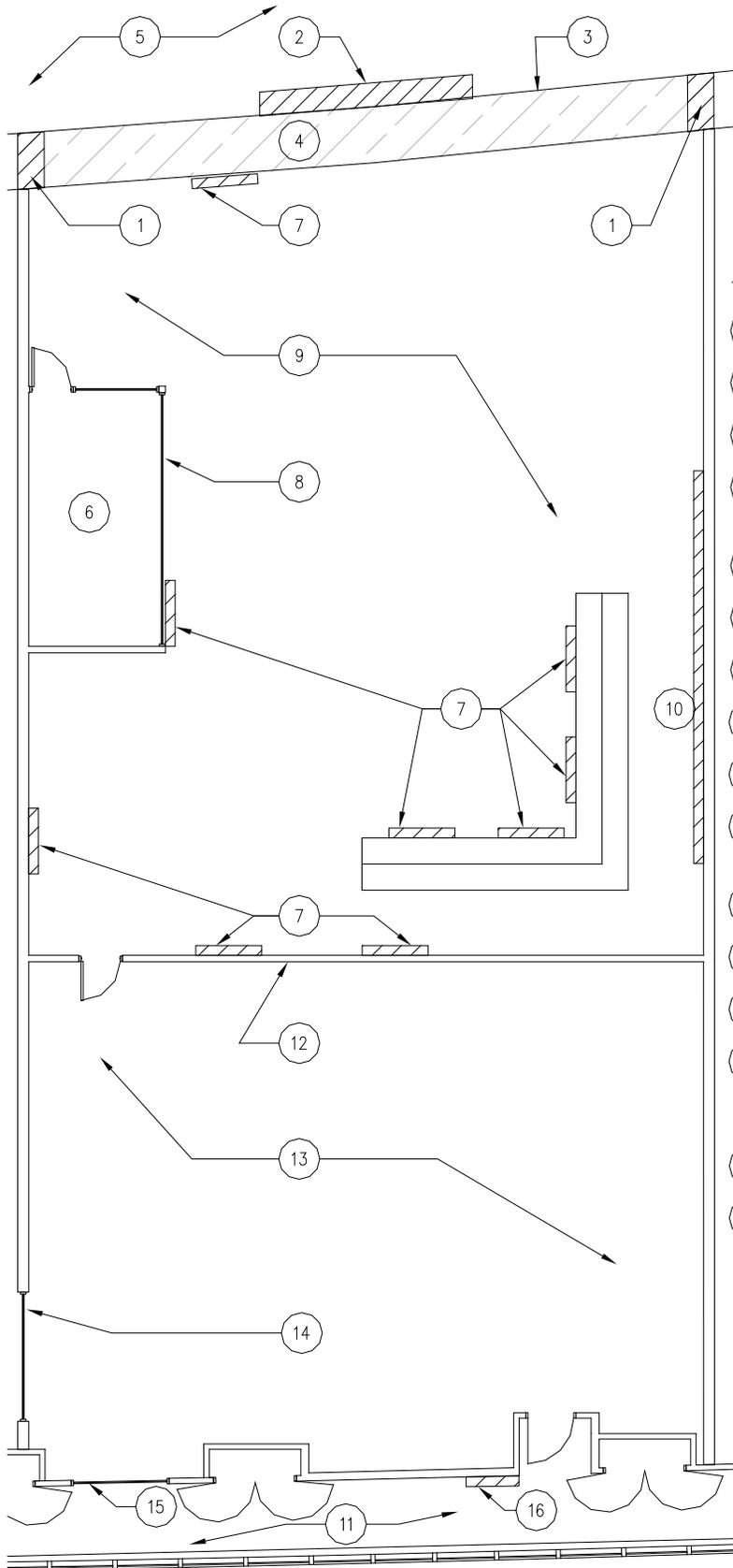
2.3.3.1 CSB Demising Partitions

- 1) Base building provided demising partitions between Tenants and Common Use Areas, and between Tenants and the Public Lobby within the CSB;
- 2) Demising walls separating adjacent Tenant lease premises, are constructed using nominal 2" by 6" metal studs.
- 3) Demising wall gypsum board shall not extend above the finish ceiling unless required by applicable codes. Areas above the finish ceiling shall remain unobstructed to allow passage of HVAC return air between metal studs.

2.3.3.2 Neutral surface between tenants

At the demising wall, base building provided a stainless steel end guard. The Tenant wall shall have a clean finish where it abuts this end guard. Any modifications to demising partitions shall be constructed by the Tenant contractor to match the CSB standards. See Exhibit 3 for a detail of the demising partition end guard.

At the ceiling, base building provided a metal plate at the blade sign. See Exhibit 7 for an elevation of the stainless steel signage armature. At the floor, base building provided a terrazzo strip directly below the blade sign structure.



KEY NOTES

- ① BLADE SIGN (TRADE NAME ONLY - 2.3.4.1,.2,.4 & EXHIBIT 7)
- ② SOFFIT SIGN (TRADE NAME ONLY - 2.3.4.1,.2,.3 & EXHIBIT 6)
- ③ LEASE LINE
- ④ NO BUILD ZONE 4'-0" (EXCEPT FINISHES, SOFFIT SIGN, BLADE SIGN - 2.3.2.1)
- ⑤ PUBLIC LOBBY
- ⑥ ENCLOSED CUSTOMER SERVICE FUNCTION (2.3.2.4)
- ⑦ PROPRIETARY INFORMATIONAL SIGNAGE (2.3.4.1,.6)
- ⑧ STORE FRONT WINDOW SYSTEM (2.3.2.4, NO WINDOW COVERINGS)
- ⑨ TENANT RENTAL CAR CUSTOMER LOBBY
- ⑩ FEATURE WALL W/ SIGN (TRADE NAME ONLY - 2.3.4.1,.2,.5, EXHIBIT 6)
- ⑪ SERVICE CORRIDOR
- ⑫ NO WINDOWS ON THIS WALL (2.3.3.9)
- ⑬ SUPPORT OFFICES
- ⑭ WINDOW AT PUBLIC SIDE CORRIDOR (BOTTOM OF WINDOW 6' NO SIGNS OR ADVERTISING) (2.3.3.9)
- ⑮ WINDOW (NO SIGNS OR ADVERTISING - 2.3.3.9)
- ⑯ BACKDOOR SIGN (TRADE NAME ONLY - 2.3.4.7)

NOTE:
STANDARDS ONLY ADDRESS
PERMANENT SIGNAGE, NOT
TEMPORARY SIGNAGE.

NO SCALE

**Exhibit 2
CSB TENANT EXCLUSIVE USE PREMISES ELEMENTS**

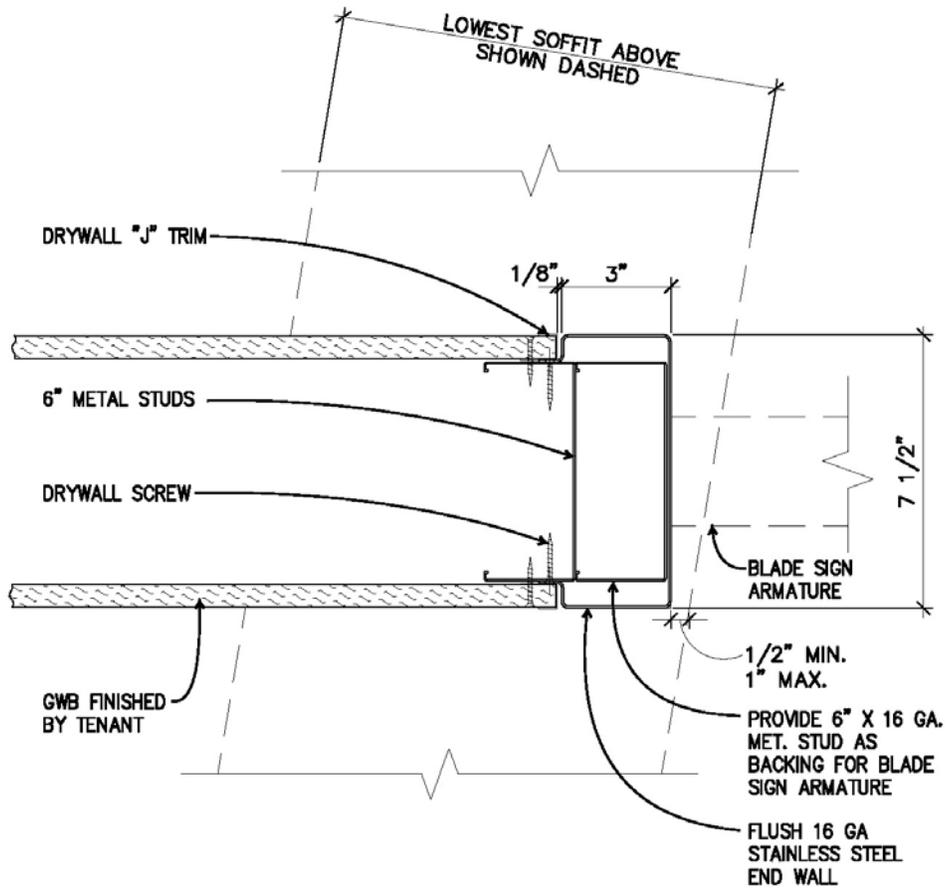


Exhibit 3
STAINLESS STEEL END GUARD

2.3.3.1 Other Walls CSB Partitions

Interior Tenant partitions, when not required to be fire-rated or a plumbing chase, may terminate just above the suspended ceiling, unless otherwise required by Code.

Demising walls (partition walls) greater than 6'-0" in height shall be laterally braced to the building structure. All connections to the structure for the lateral bracing of demising walls shall conform to Section 2.3.5.

Gypsum wallboard systems shall be installed in accordance with recommendations of ASTM C754 - Installation of Steel Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board or Water Resistant Backing Board, and GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

2.3.3.2 Feature Wall

Each tenant is required to install a minimum of one feature wall in their retail space. The feature wall shall meet all requirements of section 2.3.3.5. The feature wall shall have a dimensional, multi-textured finish accomplished through three dimensional elements and/or multiple materials, and shall include an illuminated element. See Exhibit 6 for an example feature wall.

2.3.3.3 CSB Wall Finishes

Tenant wall finishes shall be of Class A flame-spread construction as defined by the STIA Building Code. All wall finishes shall be high-impact resistant, scratch and scrape resistant. All wall finishes shall be washable in place. The following finishes are permitted:

1) Plastic Laminate Panels

Plastic laminate shall be general purpose type with a nominal 0.050 inch thickness applied to either 3/4 inch fire retardant plywood or industrial grade wood particle board meeting ANSI 1-M-3, with a maximum 45 pound density. Panel backing shall have a flame spread of 25 maximum (ASTM-E84). Edges of the plastic panels shall be protected from chipping or scratching in high traffic public areas, either through butt joints, or metal edge protectors. All exposed edges shall be finished with plastic laminate or metal banding.

2) Aluminum or Steel-Faced Panels

Aluminum or steel-faced panels shall be painted, anodized or of a natural finish and shall be identical to or coordinate with similar adjacent materials. Panel thickness shall be appropriate to resist impact without denting. Panels shall be removable for maintenance and repair.

All metals shall conform to the National Association of Architectural Metal Manufacturers' "Metal Finishes Manual".

3) Glass Partitions

Interior glass partitions, glass doors and sidelights in all public areas or facing public areas shall be constructed of clear tempered safety or laminated glass, 3/8-inch thickness minimum.

Frames shall be clear anodized aluminum or 16-gauge hollow metal.

Installation shall be in conformance with the Flat Glass Marketing Association Glazing Manual and 16CFR1201 Safety Standard for Architectural Glazing Material by the Consumer Product Safety Commission.

4) Gypsum Wall Surfaces

All gypsum wallboard partitions shall be constructed of 5/8" thick Type "X" gypsum board. Acceptable finishes for gypsum wall surfaces include:

- Vinyl Wall Covering

Wall coverings shall be Type 2 with minimum face weight of 22 ounces, washable, and manufactured and installed to meet Federal Specification CCJ-W-408 - Wall Covering Vinyl Coated. Nicks, gouges and other minor imperfections of gypsum wallboard surfaces shall be filled, sanded smooth and sealed prior to wall covering application. Paper-based wall coverings are prohibited.

- Fabric Wall Covering

Fabric and backing panels shall meet Class A flame spread requirements as a complete system. Wall coverings shall be manufactured and installed to meet Federal Specifications. Nicks, gouges and other minor imperfections of gypsum wallboard surfaces shall be filled, sanded smooth and sealed prior to wall covering application. Paper-based and carpet-faced wall coverings are prohibited.

- Paint

Paint shall be latex based, three-coat application, with a manufacturer's required minimum thickness and shall have an eggshell / satin finish. Oil-based and other paints with hazardous fumes or offensive odors are prohibited.

Specialty paints or troweled finishes shall be submitted to the Port for prior written approval. Textured finishes are prohibited.

- Stone Wall Surfaces

Stone wall surfaces shall be installed to be highly impact and scratch resistant. Stone slab veneer wall panels shall be a minimum of 5/8 inches thick. Installation shall be as recommended by the stone veneer associations.

5) Corner guards in customer service areas

Surface applied corner guards are not allowed. Corner guards shall be integral to the wall design. Corner guards shall be of durable materials.

6) Wall protection in customer service areas

In areas accessible to the public it is suggested that wall surfaces have a durable finish to 48 inches above finish floor.

7) Wall base

Rubber/vinyl wall base is not allowed in public customer service areas.

2.3.3.4 CSB Floors

1) Structure

The CSB floor is concrete floor construction. Each Tenant is responsible for modifications to the base building concrete floor slab within its exclusive lease premises as required by the installation of the Tenant's finish flooring materials. The concrete floor surface is recessed approximately three-eighths inch (3/8") at the lease line separating public and exclusive lease premises within the CSB, except at the service corridor. The elevation of the service corridor and exclusive lease premises floors are the same.

2) CSB Floor Loading

The floor structure has been designed for 60 pounds per square foot live load. The Tenant shall provide any requirements for special loading above sixty (60) pounds per square foot including the weight of areas of dense filing, heavy equipment, libraries, etc. for Port review and written approval. The maximum area for the special loading shall not exceed a 15'-0" by 15'-0" A special loading area in excess of 60 pounds per square feet shall not occur within 18'-0" of an adjacent special loading area with loads in excess of 60 pounds per square feet. Any loading in excess of 60 pounds per square feet will require special investigation of the structural system by a structural engineer.

Where required the Tenant's structural engineer shall provide calculations and structural plans and details, and it shall be coordinated with the Tenant's Leasehold Improvement construction documents prior to submittal to the Port for review.

3) CSB Floor Materials

The Tenant shall provide appropriate floor finish material(s) in areas accessible and visible to the Public. In no case shall the weight of a proposed floor finish exceed twenty (20) pounds per square foot.

Permitted Floor Materials:

- Terrazzo / Terrazzo Tile
- Porcelain Tile – thin set, through-body color
- Natural Stone
- Carpet
- Wood
- Tinted and Sealed Concrete (through color only)

Prohibited Floor Materials:

- Glazed Ceramic Tile
- Vinyl Composition Tile (VCT)
- Vinyl or Rubber
- Paint and Epoxy

All finish floor surfaces shall be installed level and smooth with a maximum surface variation of ¼" vertical in 10 feet (Class A floor finish). Under no circumstances may the existing concrete slab be chipped to accommodate flooring underlayment or any other construction. Transitions between Tenant floor and the Port-controlled finish floor materials shall be the responsibility of the Tenant. Transitions between any finish floor elevations cannot vary by more than 1/8" vertically. Ramping of floor materials at transitions is prohibited. The transition of Tenant provided flooring shall be made at the Tenant's interior line of the EUP common lobby flooring transition strip and at the back door to the tenant space. See Exhibit 4 for a detail of the transition at the common lobby.

Floor materials and their respective methods of adhesion shall be submitted to the Port for written approval. Adhesives, thin-set mastic, applied backings, etc. shall be of such properties to eliminate or drastically reduce the occurrence of cracking, delaminating, shifting, popping, off-gassing and other negative results.

Anti-fatigue mats for customer service staff are allowed behind counters out of public view.

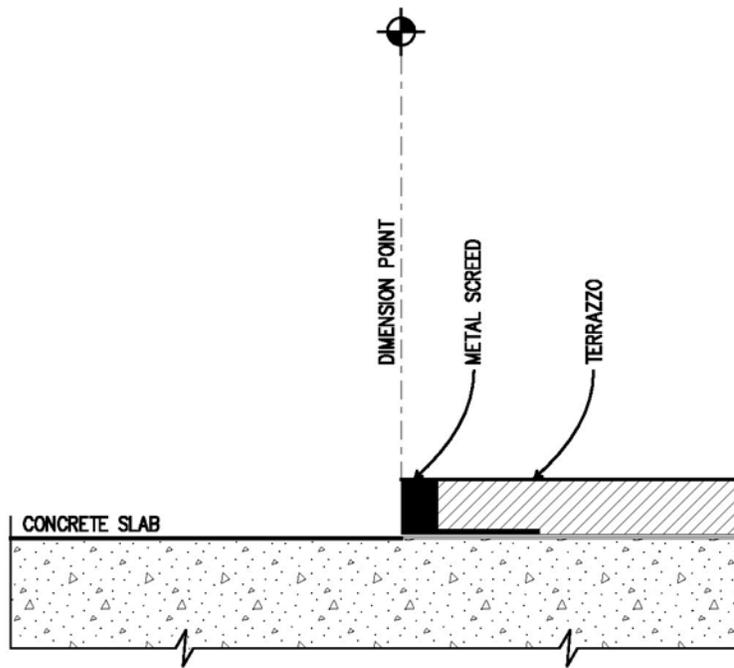


Exhibit 4
TERRAZZO EDGE AT LOBBY AT TENANT LEASE SPACE
(See detail 6/A7.28)

2.3.3.5 CSB Ceilings

No ceiling system (grid, tile, etc.) is provided by the Port in Tenant leased premises with the exception of the provision of a suspended acoustical ceiling system within the SOA lease premises. The base building was constructed to allow a finish ceiling height of approximately 11'-0" at the front of the EUP at approximately grid line D, approximately 10'-0" at the midpoint of the EUP at approximately grid line E.5, and 8'-6" at approximately grid line G. Also see height limits on base building mechanical sections Sheet M 11.0. Exact locations of ceiling height transitions vary with the curve of the tenant lease line. See Exhibit 5 Section through CSB showing allowable ceiling heights. Mechanical Equipment (sound attenuation enclosures) located at approximately column lines 17/E and 20/E create small zones where ceiling heights will be limited to approximately 9' feet. Base building transfer grilles in the demising walls between tenants may impact the 11' ceiling height near the public lobby.

Tenant to field verify the allowable ceiling height within their allocated lease space based on the installed height of mechanical equipment. The Tenant shall provide a ceiling that meets code and adheres to the following standards and criteria:

In no case shall the weight of the ceiling finishes exceed 3 PSF without prior written approval of the Port.

The ceiling in areas visible to the public shall not hang below the bottom of the base building sign soffit band at 11'-0". Soffits, signage or other decorative architectural features within the Tenant space may hang below the base building soffit band upon prior written approval of the Port.

Open grid ceiling systems are not allowed.

CSB Diffusers / Ductwork in the Ceiling

Supply and return air grilles shall comply with Port standards as depicted in the base building details on Sheet M 12.2. Tenants must obtain prior approval from the Port prior to installing linear diffusers. Supply ductwork shall be insulated sheet steel in conformance with the latest Sheet Metal and Air Conditioning Contractor's Association (SMACNA) Standards.

Ductwork, diffusers and grilles shall be seismically restrained where required by Code. Return/relief air grille openings to common VAV system return air cavity shall have acoustic lined "cans" above them to prevent sound transmission to adjacent Tenant per base building Detail 10 on Sheet MH 12.2

Acoustic lined "cans" shall be located at least 8 feet from adjacent tenant "cans" and openings through full height walls above ceiling to minimize "crosstalk" or noise transmission via common ceiling air plenum.

2.3.3.6 CSB Doors and Frames

Tenant installed doors and frames visible to the public shall be consistent with the Tenant public finishes. In general, interior doors shall be solid core paint-grade wood doors. Frames shall be a minimum of 16-gauge hollow metal.

The exclusive customer service lobby area within the customer service building may not be closed at any time.

The use of lease area closure systems, including but not limited to sliding doors, sliding grilles, rolling overhead aluminum grilles, and vertical stacking doors, is prohibited.

CSB Hardware

Tenant lock systems shall be coordinated with the Facility Manager's proprietary lock system to enable access by Port emergency response personnel. All door hardware shall meet the requirements of the Americans with Disabilities Act (ADA) and current STIA Building Code.

All hardware shall have satin chrome US 62B finish. The Port/Facility Manager uses a proprietary lock system manufactured by Best. All Tenant hardware must accommodate the Best figure 8, 7-pin and interchangeable core lock system.

Keying will be performed by the Facility Manager.

2.3.3.7 CSB Window Treatment

Window coverings and the application of decorative films are prohibited on windows fronting public areas. No signs or advertising may be applied to or displayed against windows visible from other Tenant or public areas.

Windows fronting the public side corridors shall be no lower than 6 feet.

The Port shall review and approve all window sizes and placement and shall disapprove those it deems to conflict with the best interest of the CSB environment. Windows are prohibited between the Tenant public customer service lobby and Tenant non-public space. This includes manager's and supervisor's offices.

Small door relites or vision panels for personnel to see that someone is on the other side of a door are allowed.

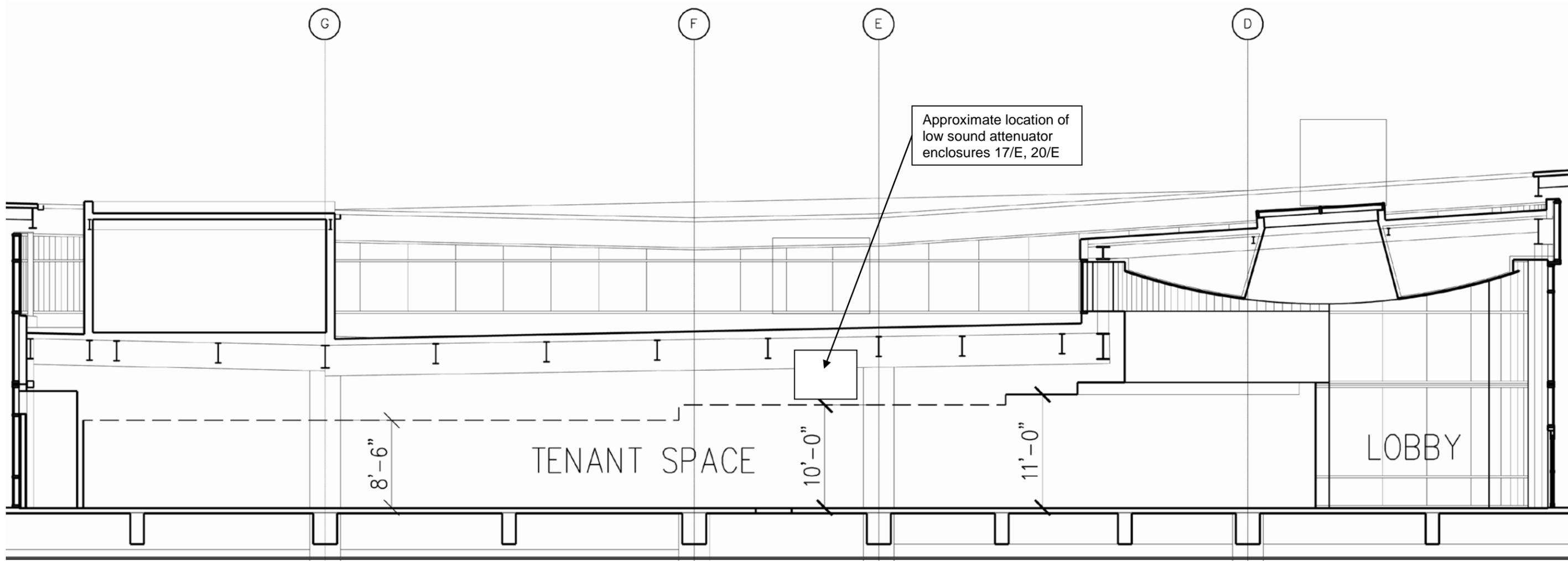


Exhibit 5
TENANT SPACE CEILING HEIGHTS

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2.3.3.8 CSB Millwork

All millwork shall comply with American Woodworking Institute (AWI), Custom Grade Specification.

Miscellaneous millwork items such as lecterns, displays, television consoles, counters, countertop dies, wall details and storage cabinets visible from public areas shall match the other millwork within the Tenant leased public areas in style, finish, appearance and quality.

Surface applied corner guards are not allowed. Corner guards shall be integral to millwork. Rubber/vinyl base on public facing side of millwork is not allowed.

2.3.4 CSB Signage

Tenants shall have corporate brand identification signs designed in a manner compatible with the guidelines established in section 2.3.4.1 through 2.3.4.8. All Tenant improvements visible to the general public shall be submitted to the Port Architectural Review Committee for review and approval.

Flashing signs, moving lights, or sound are prohibited. Tenant shall not be permitted to advertise any products and/or services other than those of the Tenant connected to the operation of a Rental Car Concession. Moving images are allowed on a limited basis. The moving images shall minimize exposure to the public lobby. The moving images shall be projected inward to the tenant space. Tenant shall provide purpose, size, location, and image content. The Port will review in detail.

The Port reserves the right to require the removal of any Tenant advertising, displays or decorating that in the Port's sole opinion is distasteful or in any way in conflict with the best interest of the CSB environment. All graphics, images, and signage shall be submitted to the Port for written approval prior to implementation or fabrication.

Power requirements for all electrical signage will be the responsibility of the Tenant, and part of the Tenant's Lease space power allotment. See Section 2.3.7.2.

See Section 2.3.4.9 for signage and other requirements for Tenant's that "Multi Brand".

2.3.4.1 General Signage Specifications

All signs shall comply with applicable codes regarding materials, electrical connections and general construction, must bear the U.L. label and must have current sign permits. All permits shall be the responsibility of the Tenant.

Lighted signs are to remain on at all times. Signs shall be externally illuminated, back-illuminated or internally illuminated. Backlit components must be contained wholly within the depth of letters and forms. Maximum brightness may not exceed one hundred foot

lamberts and is subject to Port approval. When internally illuminated letters are used, letters must be dimensional with returns. Hums, flickers and light leaks are not permitted.

Attachment devices, bolts, clips, threaded rods, fasteners, tubes, raceways, conduit and other mechanisms are to be concealed from public view. There shall be no visible labels and/or codes permitted on the completed signs, except UL label.

- Letter size: Final letter dimensions shall be approved by Port.
- Neon: Brightness of neon tubes is subject to Port's review. Backs of neon tubes are to be blacked out. Rheostat controls are to be integral with transformers for adjustment. Transformers shall be concealed, but shall be easily accessible. Skeleton neon is not permitted; all neon is to be supported by a rigid shape.

Signs must be of premium quality. It is strongly recommended that the Tenant employ a graphic designer and/or sign fabricator to design and/or fabricate the storefront sign concept.

The Port reserves the right to reject any sign design or installation, or portions thereof, visible to the viewing public if, in the sole opinion of the Port, it is deemed unacceptable workmanship or lacking in craftsmanship. The Port will base its "premium quality" determination upon aesthetic guidelines discussed throughout this criteria, and specifically upon the following:

- All forms shall be crisp, sharp, free of nicks, ragged edges and discontinuous or deformed curves. Signs shall have smooth, even, level panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus-or-minus .0625" measured diagonally. No gaps, light leaks, waviness or oil canning of surfaces will be acceptable. Joints and seams shall be filled, ground and finished flat and smooth without distortion, pitting or other blemishes. Seams shall be invisible after final primer and finish has been applied. Spot welded joints shall not be visible on exterior of signs after final finish has been applied.
- All cutting and routing shall be executed in such a manner that all edges and corners of finished forms are true and clean.
- Paint, Sealants and Finishes shall not, within 5 years, develop excessive fading or excessive non-uniformity of color or shade, and will not crack, peel, pit, corrode or otherwise fail as a result of defects in material or workmanship, and said defects shall not be discernible from a distance of 10' (3m), resulting from the natural elements in the atmosphere at the project site.
- Sign assemblies and components shall be completely fabricated at the factory before delivery to the Rental Car Facility. All finishing and applications are to be completed in the Sign Contractor's fabricating facility. No site application or finishing will be permitted except for touch-up.

- Signs shall be set plumb, level and true as measured from established reference points and from other signs already in place.
- All installed signs shall be cleaned and free of soil, grease or other foreign matter prior to the Tenant's Sign Contractor leaving the site.
- The Port recommends that as part of the agreement between Tenant and Sign Fabrication Contractor, contractor shall agree to repair or replace Work which has failed as a result of defects in materials, workmanship or installation. In addition, Tenant shall be responsible to replace signs which have over time deteriorated below the minimum standards requirement.

The Tenant is responsible for all signs, permits, power sources, connections and installations.

Tenant is responsible for all sign designs, workmanship, coordination, permits, power sources, connections and installations. All sign work for tenancy will be done solely at Tenant's expense.

Prior to fabrication of any sign, Tenant shall submit signage shop drawings for Port review and approval. Drawings shall illustrate complete information for Port to understand the signage design and appearance. Submitted drawings shall provide the following:

1. Type and size of all lettering and other sign elements in scale.
2. Dimensioned overall elevation of sign in context with storefront soffit.
3. Sections and details through sign and mounting method.
4. Materials, color swatches and specifications, fabrication technique and illumination.

Port approval of sign shop drawing submittal is required prior to fabrication or installation. Signs that have not been approved by Port; but installed by the Tenant may be removed by Port at Tenant's expense.

2.3.4.2 Soffit Signage, Blade Sign, and Feature Wall Signage General Specifications

See Exhibit 6 and Exhibit 7 for illustrations of soffit signage, blade signage, and feature wall signage.

Sign wording is limited to the Tenant's Trade Name and shall not include specification of merchandise sold or services rendered, regardless of the Tenant's legal name. Corporate crests, logos or insignia may be acceptable pending Port approval and provided they are part of the Tenant's identity.

Box or cabinet-type of signs are not allowed.

Sign types encouraged include:

1. Dimensional Open Face Channel
Visually exposed neon tube or bulb illumination as part of an intricate, themed and stylistically designed sign. Brightness levels will be reviewed and approved.
2. Dimensional Channel
Internally illuminated individual letters and graphics with Lexan faces as a base component. Sign shall incorporate additional dimensional and/or illumination effects.
3. Tube-formed Neon Signs
Exposed multicolored neon tubes outlining letters or graphics used in a decorative fashion.
4. Sculpted or Formed Graphics.
Polyfiber resin or fabricated shapes with internal, indirect or direct illumination.
5. Dimensional Channel or Reverse Channel with Halo Illumination
 - a. Illuminated letterforms with non-illuminated face pin mounted to a background form
 - b. Letterforms with illuminated Lexan faces shall additionally illuminate from rear (halo).
 - c. Letterforms outlined in neon shall illuminate from rear (halo).
6. Rear Illuminated Cut-Out Letters and Graphics
Opaque cut-out forms and letters with rear illumination.

Primary sign shall be integrated into the storefront design and be compatible with the color and material palette of the leased premises. Letter size and location shall be proportional to the overall storefront design, and in compliance with these design criteria. Advertising placards, banners, pennants, names, insignia, trademarks and other temporary descriptive material, may not be attached to the soffit nor neutral pier.

2.3.4.3 Soffit Sign Band

Tenant is required to install one primary illuminated identity sign/structure centered on the lobby soffit directly over the leased location. Sign shall be limited to the letters and/or icon graphic designating Tenant's trade name set forth on the Tenant lease. Sign shall be vertically centered on soffit and appear no lower than 9" above the bottom edge nor higher than 9" below the top edge. Maximum height of letterforms shall be 2'-6". Signs shall appear architecturally integrated into the overall leased premises design and shall appear as individual letters and/or symbols in dimensional form. All signs must be 3-dimensional and finished on all sides.

See Exhibit 6 for a rendering of example soffit signage, and Exhibit 7 for a section through the soffit.

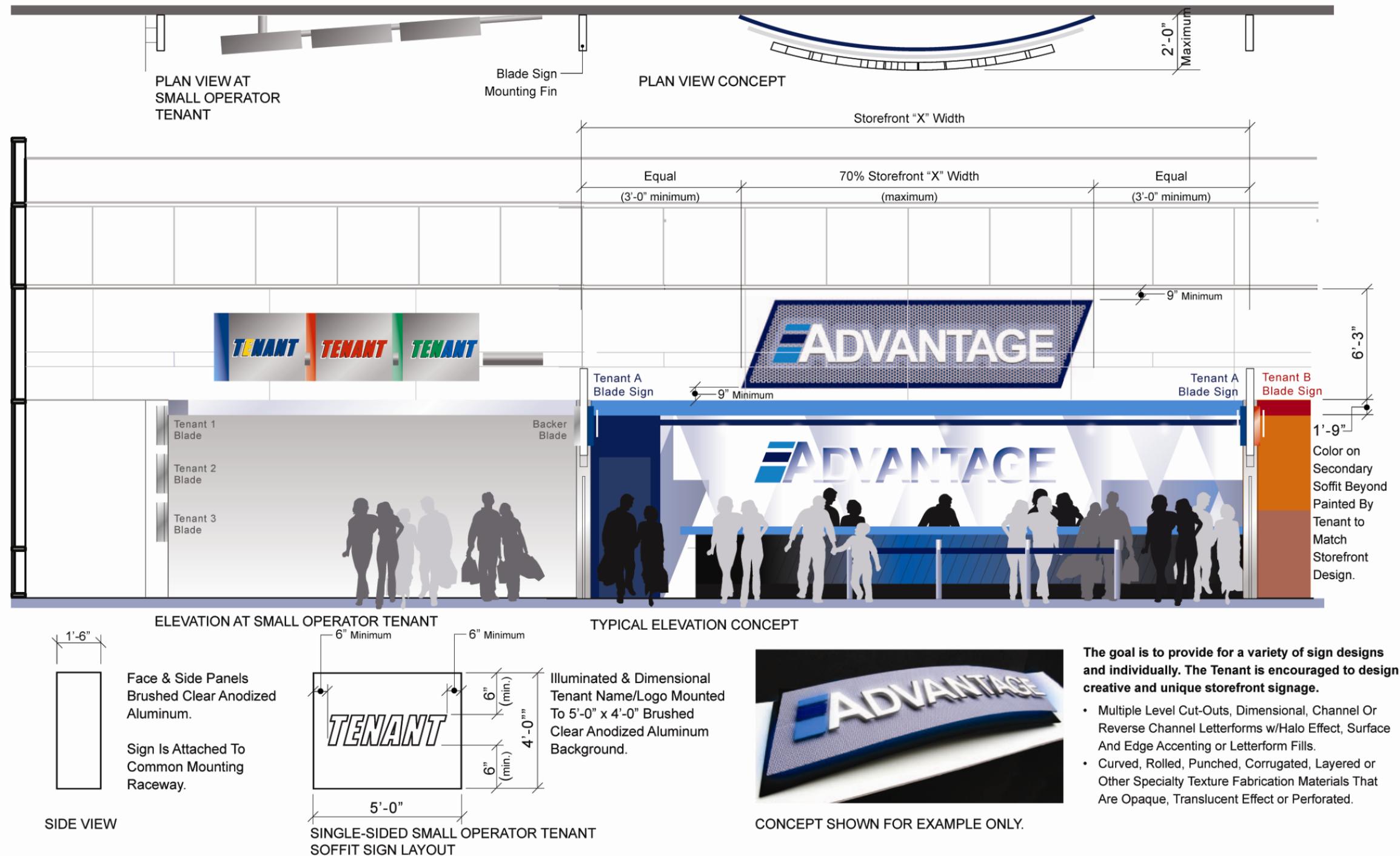


Exhibit 6
PARTIAL STOREFRONT ELEVATION

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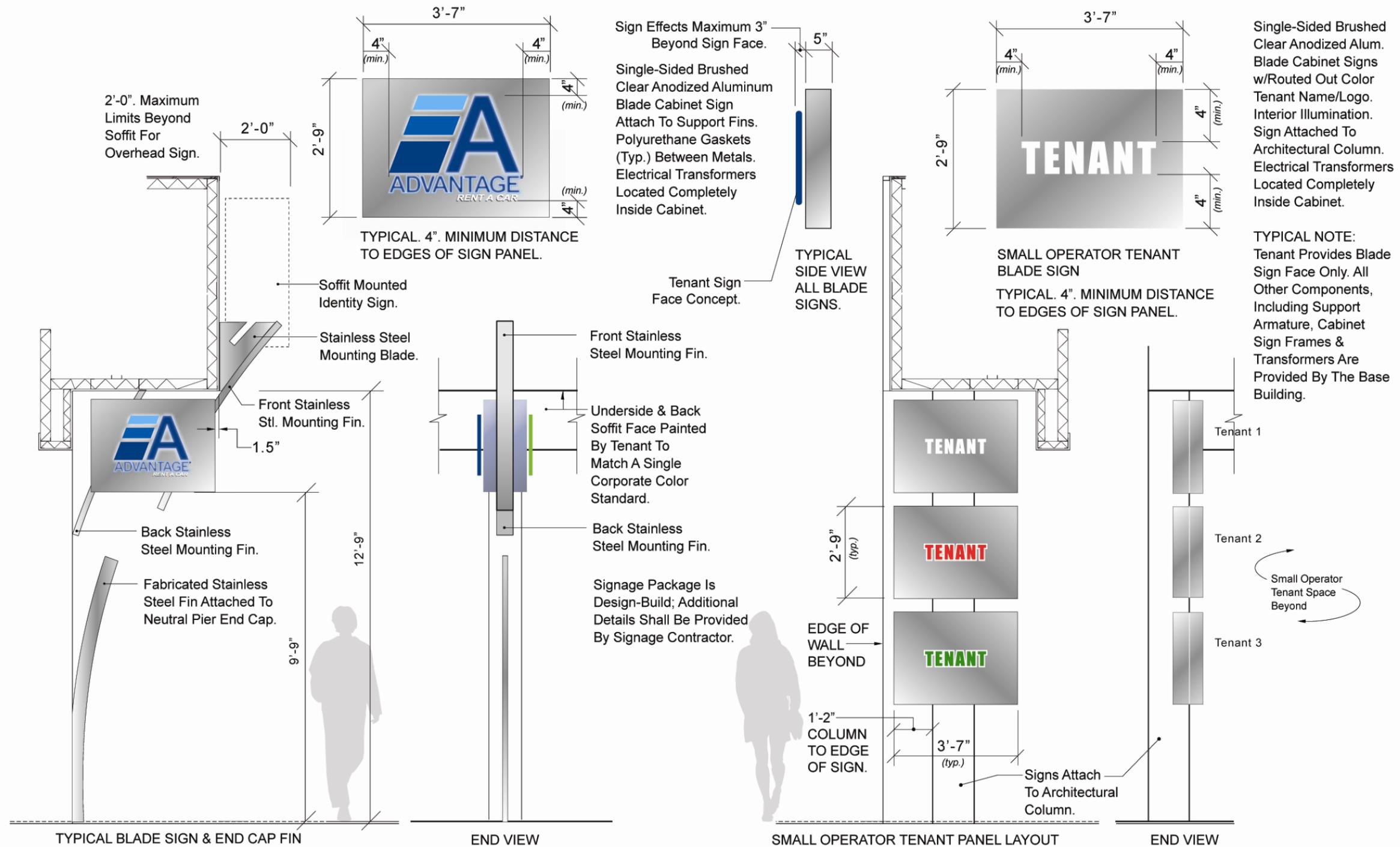


Exhibit 7
STOREFRONT SECTIONS

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See Exhibit 8 for weight limits for signage on sign band soffit and mounting details. See Appendix B for additional information on signage support channel and approximate locations.

2.3.4.4 Blade Sign

Base building installed blade sign cabinets. Each Tenant shall install two blade sign faces with graphics per Exhibit 7. Blade sign face to be installed per Exhibit 7. Blade sign shop drawings are included in Appendix B.

2.3.4.5 Feature Wall Signage

Each Tenant is required to install identification signage on one feature wall within its leased retail space. The signage shall be compatible with the aesthetic of the wall and shall incorporate Tenant-specific corporate standard colors. The Tenant shall submit its proposed signage concepts to the Port for approval. Signs shall be illuminated either directly or indirectly.

Small Operator Tenants Area back wall signage shall be installed on the base building sign system provided within Small Operator Tenant Area lease premises. See Exhibit 9 for details of the sign system and requirements for Small Operator Tenant signage.

2.3.4.6 Proprietary informational signage

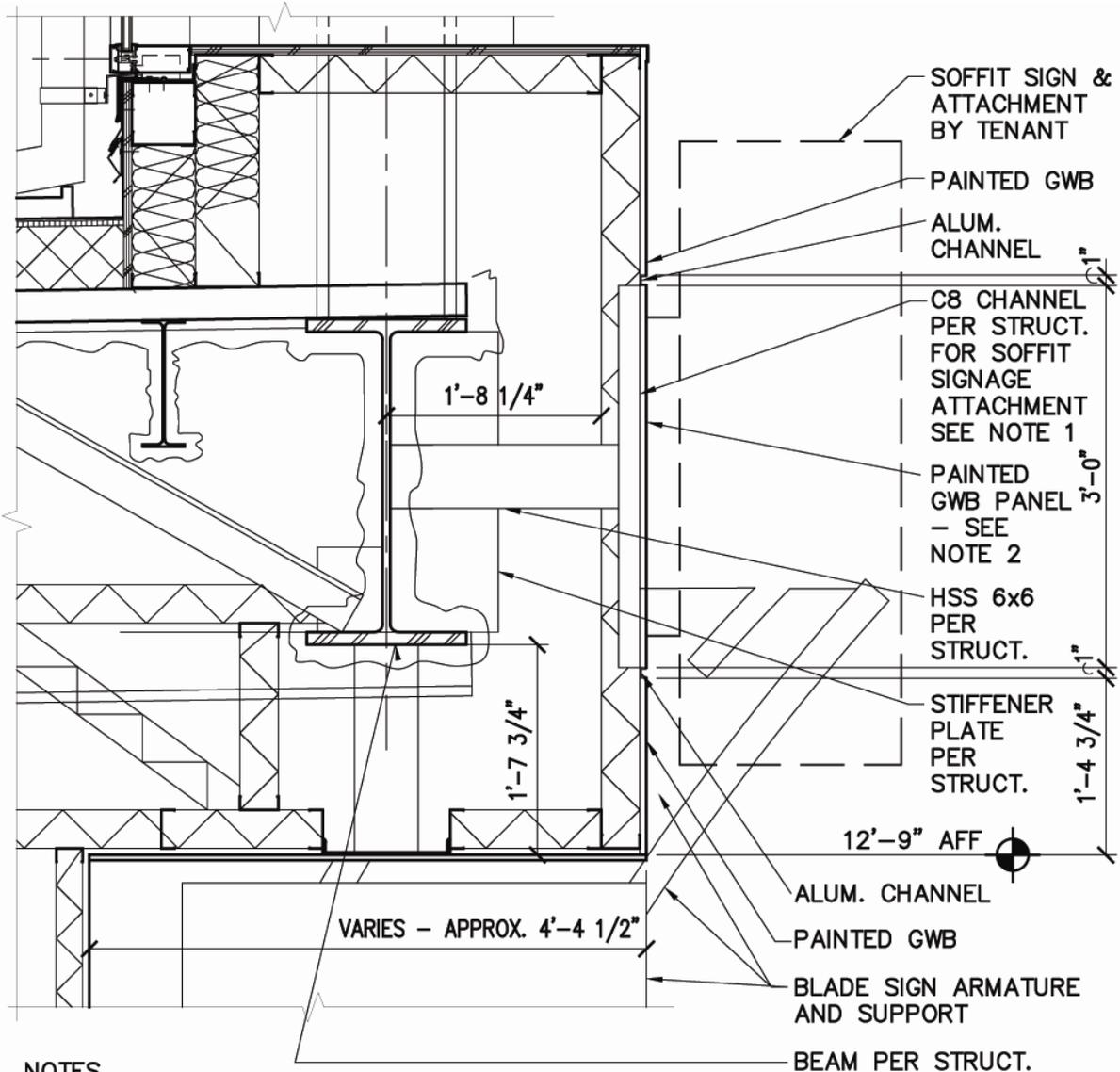
Each Tenant shall be allowed customer information signage located within its leased retail premises. Tenants are encouraged to use their Tenant-specific corporate standard colors. The Tenant shall submit its proposed signage to the Port for approval.

2.3.4.7 Tenant Backdoor Signage

The base building will provide one (1) identification sign adjacent to each door entering each Tenant's EUP for the sole purpose of identifying the staff entrance into the Tenant lease area. The sign shall contain the corporate name only and placement is to be contiguous with leased Tenant space.

2.3.4.8 Directional Signage Elements

The Port will provide all necessary wayfinding and Code required signage within the facility common areas and for vehicular approach to the facility areas. Tenants shall provide current corporate identity graphic standards, including corporate colors and dimensions, in vector file format (i.e. EPS or AI), along with any pertinent usage specifications to the Port for its use in providing these directional signs. The Port will apply Tenant identification as required and appropriate for facility wayfinding.



NOTES

1. SOFFIT SIGNAGE WEIGHT LIMITS: MAX. VERT. LOAD PLACED ON C8 SHALL NOT EXCEED 1000 LB (FACTORED LEVEL FORCE) AT LOCATION OF HSS 6x6. MAX. TORSIONAL MOMENT PLACED ON C8 SHALL NOT EXCEED 36 K-IN (FACTORED LEVEL FORCE) AT LOCATION OF HSS 6x6. DUE TO CONSTRUCTION TOLERANCES C8 MAY NOT ALIGN WITH THE FACE OF STUD, BUT WILL PROJECT NO FARTHER THAN FACE OF STUD.
2. GWB PANELS – VERTICAL JOINTS ALIGNED W/ CLERESTORY MULLIONS ABOVE. TENANT TO REMOVE GWB PANELS AS REQUIRED TO ATTACH SOFFIT SIGNAGE. NO OTHER PORTION OF SOFFIT FACE IS TO BE REMOVED. SIGNAGE IS TO BE ATTACHED DIRECTLY TO C8; SIGNAGE IS NOT TO BE ATTACHED TO METAL STUDS. TENANT TO REPLACE GWB PANELS WHERE VISIBLE THROUGH OR ADJACENT TO INSTALLED SIGNAGE AND FINISH PANELS TO MATCH ADJACENT PANELS. TENANT TO REPLACE AND FINISH FULL GWB PANELS WHEN SIGNS ARE REMOVED OR RELOCATED.
3. ALL NOTED ITEMS ARE PROVIDED AS PART OF THE BASE BUILDING UNLESS NOTED OTHERWISE. SEE BASE BUILDING SHEET S4.62 FOR ADDITIONAL DETAILS OF SOFFIT STRUCTURE AND SHEETS S2.61 AND S2.63 FOR C8 CHANNEL SPACING.

Exhibit 8
SOFFIT SIGNAGE WEIGHT LIMITS AND ATTACHMENT DETAILS

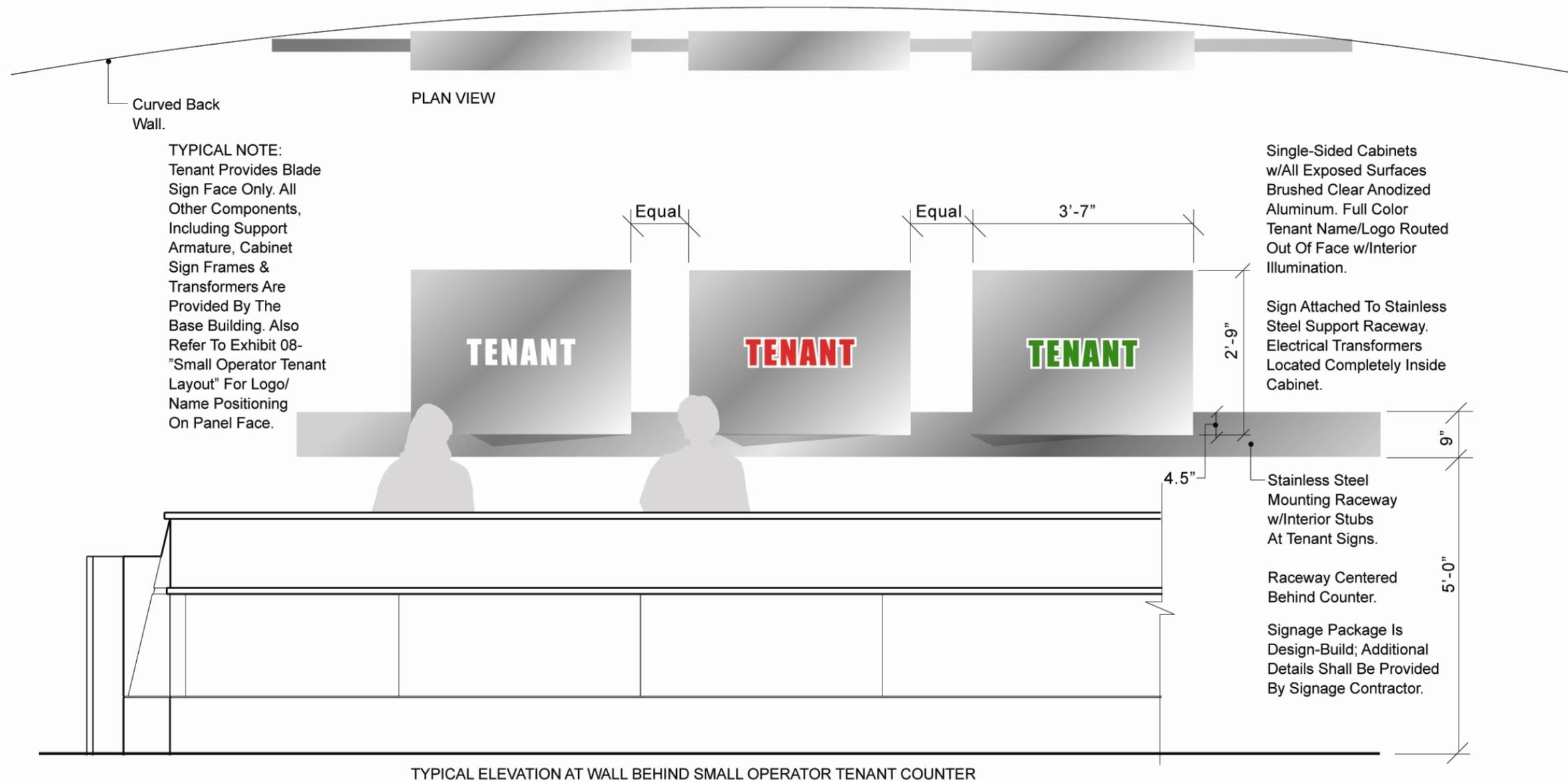


Exhibit 9
 SMALL OPERATOR TENANT DEMOUNTABLE SIGNAGE ELEVATION

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2.3.4.9 Additional Requirements for Tenant's that "Multi Brand"

For Tenants with more than one "brand" within its exclusive lease premises, additional signage and demising is required. In no case will a single company be allowed multiple signs to differentiate corporate products.

1. Soffit Sign Band – Install one soffit sign per "brand" following requirements in Sections 2.3.4.2 and 2.3.4.3.
2. Blade Sign – Install two blade sign faces per "brand" following requirements in Sections 2.3.4.2 and 2.3.4.4.
3. Feature Wall – Tenant shall design and construct "Feature Wall" for each "brand". Tenant shall install feature wall signage following requirements of Sections 2.3.4.2 and 2.3.4.5.
4. Tenant Backdoor Signage – Only one back door sign is provided. One corporate name or "brand" may be on the sign. Directional Signage Elements – At wayfinding signage throughout the facility, Tenant may have one signage insert per "brand".

2.3.5 CSB Structural

All elements of the Tenant's proposed improvements that are suspended from the structure above the Tenant's leased premises or from a shell building wall, floor, or roof shall be detailed (including methods of attachment and load calculations) in the Tenant's Leasehold Improvement construction documents as submitted to the Port for review. Load calculations shall be prepared by a structural engineer licensed in the State of Washington and sealed as a part of the Tenant's submittal for approval.

Floor penetrations shall be kept to a minimum. Floor penetrations shall be located by the Tenant to eliminate the possibility of compromising the structural integrity of the floor. Plans and test results shall be submitted to the Port for written approval prior to drilling holes. Tenant is responsible to repair any base building systems or tenant systems damaged by penetrations or attachment to the structure.

The Tenant shall coordinate mechanical, electrical, plumbing and fire sprinkler work with existing structural members. All floor/roof or wall openings shall be properly fire-safed.

2.3.5.1 Floor loading limits

See Exhibit 10 for CSB floor load limits.

2.3.5.2 Roof loading limits

See Specification Sections 01610 and 01611 in Appendix A for detailed requirements.

2.3.5.3 Attachment to structure

See Specification Sections 01610 and 01611 in Appendix A for detailed requirements.

Attachments to the roof deck as part of the tenant build-out are allowed provided that the following criteria are met:

- The load does not exceed 50 pounds.
- The attachment is made using a Sammy anchor for vertical loads, or a Sammy Swivel anchor for other orientations. Other products that attach in the same manner and have the same bearing area on the deck may be used. Verify with your structural engineer.
- Space anchors no closer to any other attachments to the roof deck than 5 feet on center in the direction parallel to the deck flutes, and 2 feet on center perpendicular to the flutes.

Attachments which do not fit within the noted criteria require formal review and approval by a licensed Structural Engineer in the State of Washington. The review would need to include criteria for the minimum spacing from other attachment points to allow coordination with attachments installed by other trades or as part of the original build-out.

2.3.5.4 Penetrations of Structure

In addition to the detailed requirements in Specification Sections 01610 and 01611 in Appendix A, the following also applies:

1) Roof Deck:

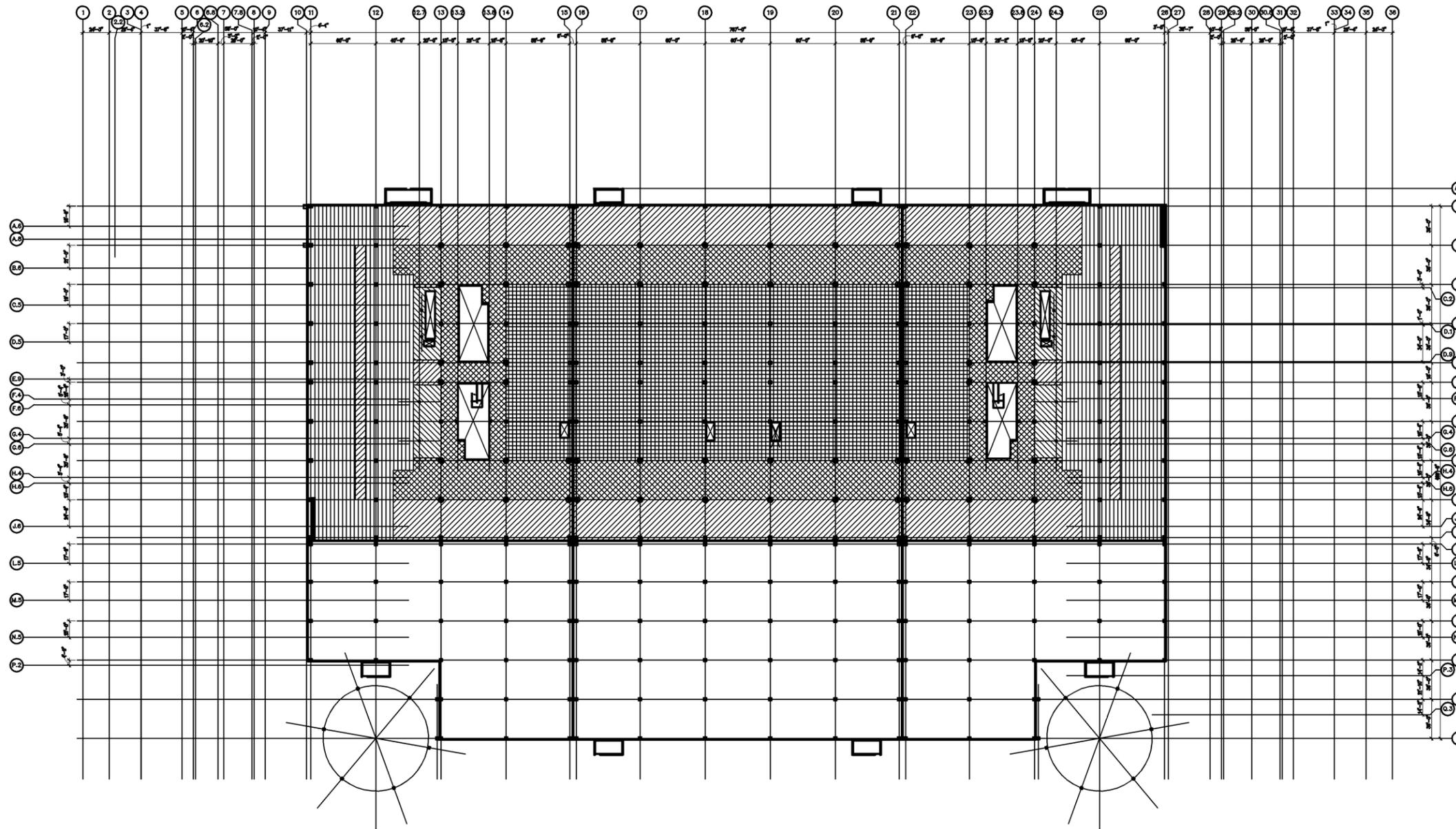
Holes 6" diameter or smaller that cut no more than one web are acceptable provided that no other penetrations are within 2'-0". Penetrations not meeting the above limits require review by a licensed structural engineer and approval from the Port.

2) Slab-on-deck and cast-in-place conventionally reinforced concrete slabs:

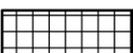
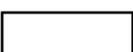
Holes 6" diameter or smaller and complying with spacing limits of Exhibit 11 are acceptable provided that:
X-ray or ferro-scan is used to locate mild reinforcing in the vicinity of the proposed penetration.
Penetrations are located to miss mild reinforcing.
Penetrations not meeting the above limits require review by a licensed structural engineer and approval from the Port.

3) Structural Steel Framing:

All modifications of structural steel members require review by a licensed structural engineer.



SUPERIMPOSED LOAD LEGEND

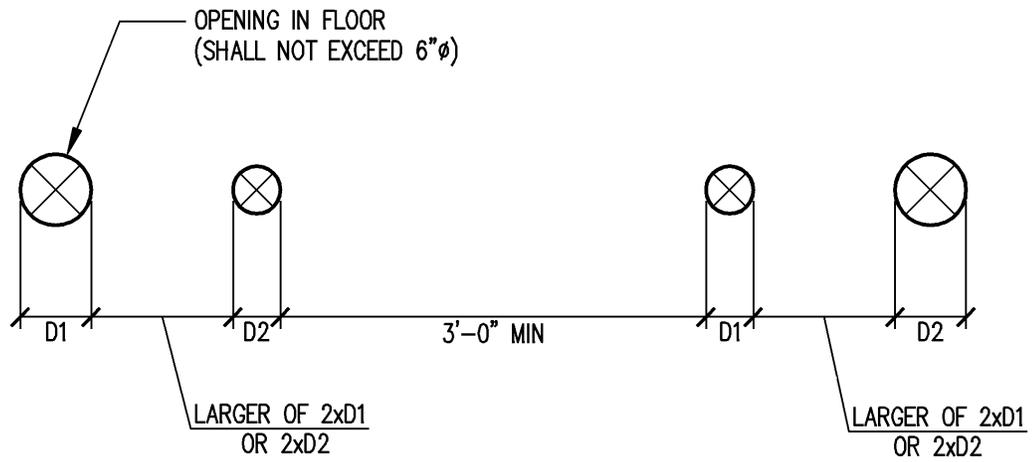
	80 psf DL; 100 psf LL (NON-REDUCIBLE); NOTE 4
	80 psf DL; 110 psf LL (NON-REDUCIBLE); NOTE 4
	80 psf DL; 125 psf LL (NON-REDUCIBLE)
	5 psf DL; 100 psf LL (NON-REDUCIBLE)
	30 psf DL; 100 psf LL (REDUCE TO 60 psf); NOTE 1.
	5 psf DL; 50 psf LL (REDUCIBLE TO COLUMNS ONLY), NOTE 2

PLAN NOTES

1. THE 30 psf SUPERIMPOSED DL IN THE TENANT AREA INCLUDES A 25 psf ALLOWANCE FOR FLOOR FINISH.
2. 50 psf ROOF LL AT PARKING AREA IS TO ACCOUNT FOR CAR LIVE LOAD IN COMBINATION WITH SNOW $\left(\frac{1.0(40 \text{ psf}) + 1.6(25 \text{ psf})}{1.6}\right)$ IN ACCORDANCE WITH ASCE 7-05.
3. DESIGN ALSO CONSIDERED DESIGN VEHICLES SHOWN ON S0.33.
4. BUS BARRIERS WERE DESIGNED FOR A 450 k NON-LINEAR LOAD FOR A BUS TRAVELLING AT 35 MPH. TUBE STEEL BUS BARRIERS WERE DESIGNED IN ACCORDANCE WITH AASHTO REQUIREMENTS FOR COMBINED RAILS (7.5k AT BOTTOM RAILS, 1.2k AT TOP RAIL). CABLE BARRIERS WERE DESIGNED FOR A 6,000 # LOAD ACTING 18" ABOVE SLAB.
5. BARRIERS PLACED ON STRUCTURE IN EMPLOYEE PARKING AREA SHALL NOT EXCEED 300 PLF IN WEIGHT AND SHALL BE PLACED DIRECTLY ON TOP OF BEAMS. SEE SECTION 2.4.5 AND SECTION 2.4.7.1 FOR PLACEMENT REQUIREMENTS.

Exhibit 10
LOADING ON FIFTH FLOOR

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PLAN

HOLES IN SLAB-ON-DECK, CONVENTIONALLY REINFORCED SLAB, AND POST-TENSIONED SLABS

Exhibit 11
 HOLES IN SLAB-ON-DECK, CONVENTIONALLY REINFORCED SLABS, AND POST-TENSIONED SLABS

4) Post-tensioned Concrete Slabs:

Holes 6" diameter or smaller that are at 2'-0" or more from tendon anchors and that comply with spacing limits of Exhibit 11 are acceptable provided that:

X-ray or ferro-scan is used to locate post-tensioning tendons and mild reinforcing in the vicinity of the proposed penetration.

Penetrations are located to miss mild reinforcing and to be 6" clear from post-tensioned tendons.

Penetrations not meeting the above limits require review by a licensed structural engineer and approval from the Port.

5) Post-tensioned Concrete Beams and Girders:

All modifications of post-tensioned beams and girders require review by a licensed structural engineer and approval from the Port.

6) Columns:

All modifications of columns require review by a licensed structural engineer.

7) Concrete or Masonry Walls:

Holes 6" diameter or smaller that are spaced at least 2'-0" from any adjacent penetrations, and that are no closer than 6'-0" to the end of the wall are acceptable provided that:

X-ray or ferro-scan is used to locate reinforcing in the vicinity of the proposed penetration.

Penetrations are located to miss reinforcing.

Penetrations not meeting the above limits require review by a licensed structural engineer.

2.3.6 CSB Mechanical Systems

2.3.6.1 CSB Space Central Heating and Cooling Systems

The CSB Base Building includes HVAC systems with capacity for normal space conditioning and ventilation as described in this document. The base building HVAC system that has been provided for tenants consists of roof-top air handler units located on the roof of the CSB Tenant lease premises. Each air handler provides 35% minimum outside ventilation air and necessary cooling supply air distributed to series fan type variable air volume terminal units at a temperature of 55°F- 58°F and 0.5 inches W.G. pressure. Heating is accomplished at the variable air volume (VAV) units utilizing heating water supply/return (HWS/R) piping. The VAV units have been designed to provide maximum primary air flows (from AHU) in the cooling mode and minimum primary airflows in the heating mode as identified on base building drawing Terminal Unit Schedules on Sheet MH1.1. A Direct Digital Control System (DDC) will control all aspects of the HVAC System. Thermostats with 50 feet of coiled wire have been provided under the base building contract for use by the tenants as identified on

base building sheets MH 8.1 and MH 8.2. Any modifications to the ductwork, DDC controls or supply/return heating water systems required due to installation of walls, partitions or other Tenant improvements shall be submitted to the Port for prior written approval.

Tenant modifications to the VAV system shall be designed such that the Tenant space is neutral pressurization in relation to the adjacent spaces with break rooms negatively pressurized. The Tenant HVAC design engineer shall define the minimum primary air flow at each VAV unit to meet the latest Washington State Ventilation and Indoor Air Quality Code assuming that the main air handlers have 35% minimum outside ventilation air.

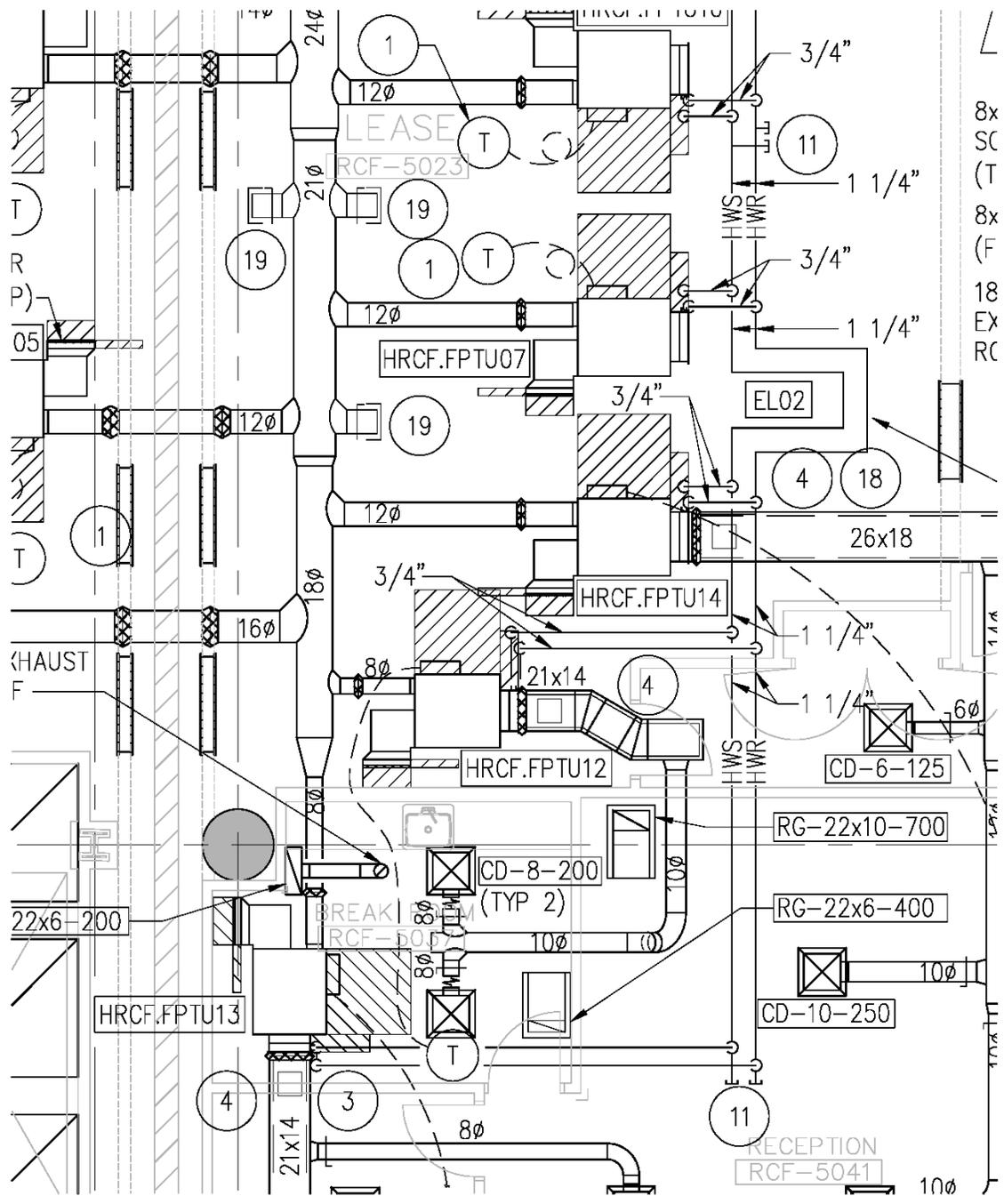
2.3.6.2 CSB Tenant Area HVAC System Responsibility

At start of design, tenant shall perform HVAC system Test and Balance per Port Mechanical Standards to verify current conditions and available air and heating water.

Within each Tenant EUP, the CSB base building includes a fully operational HVAC system including supply ducts, a return air plenum and VAV boxes located to provide conditioned air into the unobstructed EUP area. The Tenant shall be responsible for modifying the base building HVAC system components within its EUP as required by the Tenant improvements within the EUP. It is assumed that each Tenant EUP will have maximum heat loads of 1.0 watts per square foot for lighting, 1 person for each 30 square feet at 250 Btu/h sensible load/250 Btu/h latent load, and 10.5 watts per square foot for equipment.

During the design process, each Tenant will be assigned individual variable air volume (VAV) boxes. VAV boxes have been provided with a capacity of approximately 1.0 CFM of primary supply air per SF. Relocation of base building DDC controlled thermostats for temperature control within the EUP shall be a Tenant responsibility. Each VAV box will had a thermostat and 50 feet of coiled wire for installation in walls furnished by the Tenant. The Tenant is responsible for air distribution within its space including ductwork, grilles, dampers, etc. Each Tenant shall utilize wrap insulated or acoustic lined sheet steel ductwork. Insulated flexible ductwork 4'-0" and shorter may be used to connect the steel ducts to air diffuser devices as shown on base building mechanical installation details on Sheet M12.2. Tenants shall be responsible to contract with the base building DDC system controls contractor to provide DDC programming to reset VAV system airflows to those required by the tenant design if lower than the base building scheduled values. Tenants may relocate VAV boxes at their expense. Tenants may add additional temperature control zones/VAV boxes and thermostats (including control system programming/ installation) at their expense assuming that the primary supply air flow to their lease premises from the main air handlers is not increased with the addition of the Tenant's VAV boxes. Capped primary air supply ducts and HWS/R lines are available at various locations in the tenant lease premises..

See Exhibit 12 for Typical Mechanical Information.



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RELEVANT NOTES FROM DRAWINGS

- 1. PROVIDE THERMOSTAT WITH 50 FT. COILED WIRE FOR EACH FPTU SERVING FUTURE TENANT IMPROVEMENT.
- 11. PROVIDE 1" HWS AND HWR ISOLATION VALVES (NORMALLY CLOSED) AND CAP FOR USE BY TENANT.
- 19. 12" ROUND CAPPED CONICAL TAKEOFF FOR FUTURE.

Exhibit 12
 CSB DUCTWORK AND PIPING CAPS
 See Sheets MH8.1, MH8.2

Tenants must provide unobstructed access to all VAV units for maintenance purposes. A 6' x 6' floor area must be provided directly beneath all units free of any Tenant improvements or equipment per National Electric Code to access electrical clearance areas shown slashed on base building Sheets MH 8.1 and MH 8.2. Unobstructed access must also be available above the ceiling for ease of filter maintenance.

Each Tenant must provide return air paths such that the velocity of the air through the return openings shall not exceed 600 feet/minute such that return air from the space has a path back to the associated main air handler serving its space. Opening(s) shall vary in size relating to the size of the Tenant space.

The controls within Tenant leased premises shall utilize DDC (direct digital controls) provided by the base building DDC system control contractor. VAV units added by the tenant shall be controlled per the base building control drawing 3 on Sheet MH 3.2 and all points shall be addressed to and graphically displayed at the front end DDC user interface computer in the building manager's office that has been provided with the base building DDC system.

2.3.6.3 CSB HVAC Noise Mitigation Guidelines

The following are recommended guidelines for noise mitigation due to noise originating from VAV boxes above Tenant spaces, and it provides general principles for ductwork downstream of VAV boxes. For further information on HVAC noise control beyond the items addressed below, please refer to Chapter 47 of the ASHRAE Handbook.

Radiated Noise

Radiated (casing) noise passes through the sides of the VAV box. Tables 1 and 2 show maximum radiated sound power levels in octave bands for NC-35 and ND-40 criteria based on the base building engineer's experience with these units and various ceiling types. The information below can be compared to manufacturer's published octave band data. Where VAV boxes exceed limits established below, it is recommended multiple smaller boxes be used instead or different ceiling types constructed. In general, mineral board ceiling tiles are recommended as a minimum.

Table 1: VAV Maximum Radiated Sound Power Levels to Achieve NC-35

Ceiling Type	1/1 Octave Band Frequency (Hz)					
	125	250	500	1000	2000	4000
No Ceiling	60	55	49	43	39	37
Fiberglass ACT	62	57	51	46	42	40
Mineral Board ACT (CAC 35 or better)	65	62	57	53	50	48
GWB Ceiling	70	67	63	61	58	55

Table 2: VAV Maximum Radiated Sound Power Levels to Achieve NC-40

Ceiling Type	1/1 Octave Band Frequency (Hz)					
	125	250	500	1000	2000	4000
No Ceiling	64	60	54	48	44	42
Fiberglass ACT	66	62	56	51	47	45
Mineral Board ACT (CAC 35 or better)	69	67	62	58	55	53
GWB Ceiling	74	72	68	66	63	60

Ductborne Noise

Noise traveling through the ductwork, radiating out the diffuser is called “ductborne” noise. This noise may be mitigated by adhering to the following design guidelines:

- Minimum three (3) duct diameters from nearest elbow, branch, or other turbulence source to FPTU box inlet to allow straightening of air flow into VAV box.
- Minimum ten (10) feet trunk duct work with 1” acoustical lining extending from the outlet of the VAV box.
- Minimum two (2) branches from trunk ductwork utilizing a minimum of five (5) feet of fiberglass flex duct and one elbow.

Diffuser Noise

Diffusers generate noise as supply air passes through the vanes. It is recommended selected diffusers not exceed 7 NC point less than the room’s design criteria. For example, catalog data for a given diffuser should not exceed 28 for an NC-35 space. As a note, the chosen value accounts for the 10 dB loss typically included in manufacturer published data.

2.3.6.4 CSB Tenant Area Exhaust

Each Tenant must provide exhaust connections for break rooms and all other environmental exhaust odor producing rooms/ devices within its Tenant area as required by relevant codes and to maintain the required air pressure relationship to adjacent Tenant areas. Exhaust shall be ducted by the Tenant in airtight galvanized steel ducts to shared tenant exhaust fans furnished for this purpose or to new exhaust fans installed by tenants. Exhaust fans serving tenants shall be controlled per the base building control drawing 6 on Sheet MH 3.3 and all points shall be addressed to and graphically displayed at the front end DDC user interface computer in the building manager’s office that has been provided with the base building DDC system.

See Exhibit 13 for Typical Capped Tenant Exhaust System.

2.3.6.5 CSB Sanitary and Potable Water Systems

Branch waste and vent discharge pipe(s) will be available to each Tenant. Each Tenant shall be responsible for coring the floor (See structural section for requirements.) and making the tie-in to the branch waste pipe at a capped tee such that the tie-in does not interfere with the waste from another tenant. Waste pipe routing below the Tenant premises shall not be installed with bottom of pipe below the bottom of the beams without prior Port's written approval. Tenant traps and trap primer piping shall be insulated and electric heat traced where it is installed in unheated spaces. 3" vent pipes through the roof are available to the Tenants. The Tenant is responsible for connecting to capped vents for any sanitary fixture installed as required by the Uniform Plumbing Code.

2.3.6.6 CSB Potable Water System

The Base Building construction will provide domestic cold water to the vicinity of Tenant leased premises where it is capped and provided with a shut-off valve. The Tenant shall connect cold domestic water to its plumbing fixtures, drinking fountains, etc. Cost of this water piping connection shall be borne by the Tenant. All necessary plumbing fixtures, water heating devices and water meters (when required) shall be provided by the Tenant. Water heater power shall be part of the Tenant's metered, maximum power allowance.

2.3.6.7 CSB Sprinkler Systems

The CSB Base Building includes an automatic fire sprinkler system in accordance with applicable codes. EUP will be provided with an automatic sprinkler system with turned up heads. The Tenant shall design and provide additional sprinkler heads / branches or modify the existing sprinkler system in its EUP as required by the applicable Building Codes for its Tenant improvements. See the fire sprinkler routing drawings and base building MF series sheets for fire sprinkler system logic.

The tenant shall contract with a licensed fire sprinkler subcontractor to perform hydraulic calculations to assure that tenant sprinkler extensions from the wet system meet the Code mandated flow rate and coverage requirements. The Tenant shall be responsible for acquiring the required permits for all fire sprinkler system modifications.

Any alternative fire sprinkler systems other than those used in the base building fire sprinkler system, like CO₂, Pre-Action Dry-Pipe, FM200, etc. shall be submitted to the Port for approval, in writing, prior to installation.

Tenant fire protection system modifications shall include all drain valves, test valves and tamper switches required by authority having jurisdiction.

2.3.7 CSB Electrical Systems

2.3.7.1 CSB Lighting and Electrical Devices

The Tenant shall provide all lighting fixtures within its exclusive lease areas, including emergency lighting, lamps and all related equipment, as required by Code. All exit lights shall match the CSB standard, with regards to placement, size, colors, fonts, and illumination.

In order to keep Tenant electrical and air conditioning (AC) loads within the planned CSB allowable loads, Tenants are encouraged to use low wattage (high efficiency) lighting and other energy efficient fixtures within their exclusive-use space. General lighting fixtures shall be 277V. Lighting power density and controls shall meet or exceed the requirements of the Washington State Non-Residential Energy Code. Power requirements shall be part of the Tenant's lease space metered power allotment. See Section 2.3.7.2.

2.3.7.2 CSB Distribution

Combined electrical / communications closets have been provided as part of Base building construction, to serve as the electrical/communication demarcation points for the Tenants' CSB EUP's. See Exhibit 14 for typical utility closet information. These combined electrical / communications closets are located adjacent to the Tenants' EUP rear or side lease line approximately between grid lines G and H. Each Tenant will be provided with access to a minimum of one closet adjacent to his lease space.

Tenants may not install any equipment in the CSB utility closets.

The maximum power allowance for each Tenant EUP is eight watts per square feet (8 w/sq ft). This value is comprised of 1 w/sqft lighting, 0.5 w/sqft signage, 2 w/sqft miscellaneous power loads, 2 w/sqft auxiliary cooling, and 2.5 w/sqft for hot water electric heaters. From this demarcation point, the Tenant shall be responsible for installing all electrical panels, power panels, transformers, electrical conduit, wiring, fixtures, etc. required to serve the lighting and power needs of its space. All Tenant electrical panels or equipment shall be located within the Tenant's EUP.

The Base Building construction provided, 100 ampere, 480/277 volt, 3-phase, 4-wire, metered, designated conduit and 480/277V feeder cable, sized per Tenant power allowance to an individual fused disconnect switch within each combined electrical / communications closet. This fused, disconnect switch will serve as the base building power demarcation point for the Tenant EUP. Fusing will be provided by the Tenant, to match their maximum, permitted Tenant power allowance.

It is the Tenant's responsibility to verify service capacity and availability for its space. Each Tenant shall be responsible for providing sizing requirements based on its specific need.

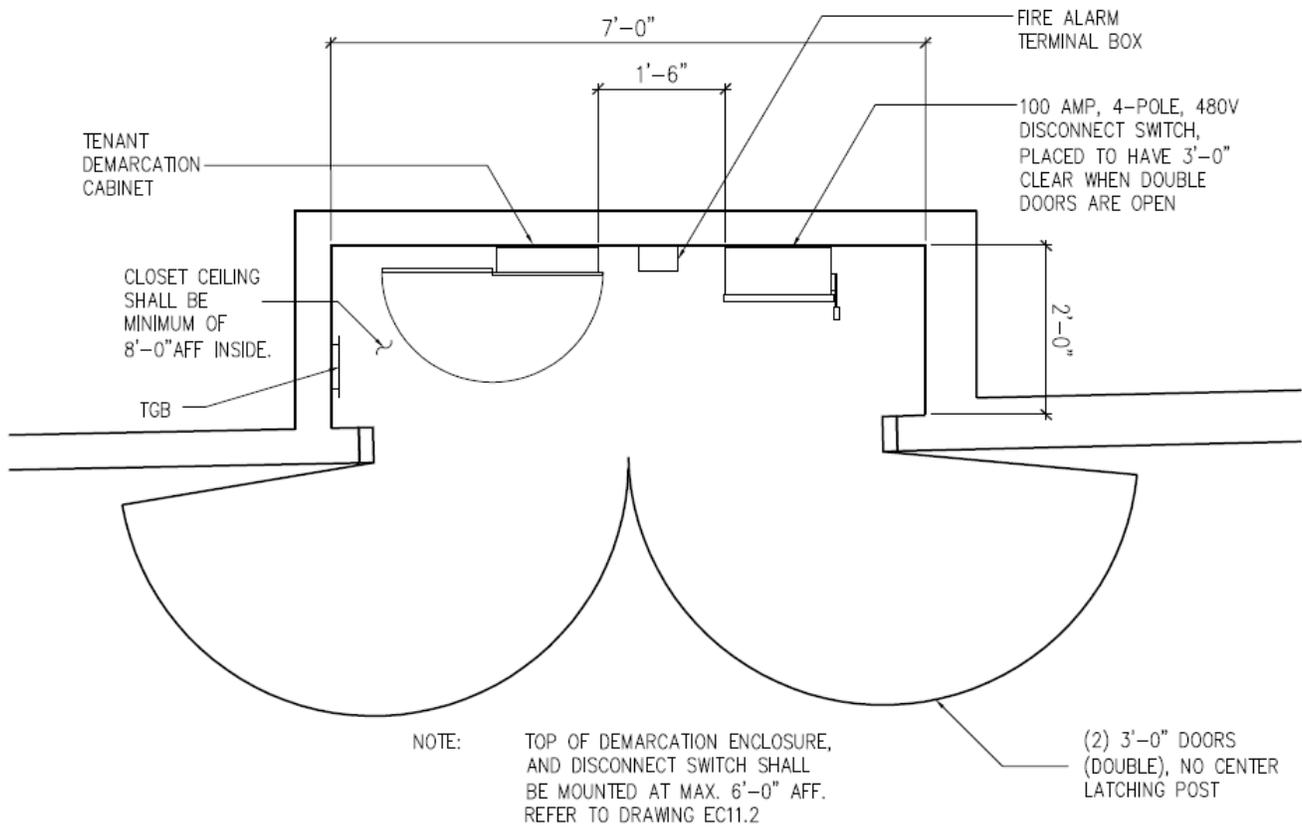


Exhibit 14
TYPICAL UTILITY CLOSET PLAN

2.3.7.3 CSB Electrical Meters

The CSB Base Building installed an electrical meter for each electrical/communication demarcation closet. Meters are located within the Port CSB electrical room, and connected to the Port's Power Monitoring and Data Gathering System.

2.3.7.4 CSB Emergency Power

Emergency power for the Rental Car facility common areas and QTAs is provided by a diesel generator with automatic transfer switches and emergency distribution panels. This emergency distribution provides emergency power for the RCF Common Area life safety and legally-required standby power circuits (Common area emergency lighting, fire alarm, elevators, etc.). No emergency or legally-required standby power is provided for Tenant CSB lease premises. Tenants are responsible for providing all emergency and life safety systems for their lease premises. Tenants may not connect to base building emergency power.

2.3.7.5 CSB Auxiliary Power

No auxiliary backup power (optional standby) has been provided for the Rental Car Facility. For Tenant critical computer applications, uninterruptible power supplies (UPS) are recommended in the event of temporary power loss. All UPS systems shall be the Tenant's responsibility to provide, install and maintain, and shall be included as part of the Tenant's power load allowance.

2.3.8 CSB Communication Systems

For purposes of the following, "service provider" shall be understood as the phone company (Century Link (previously Qwest)). "Access Provider" shall be understood as the Port Information and Communication Technology (ICT) group.

The CSB base building construction installed a cable tray and/or conduit distribution system including a premises wiring system for Tenant communication and data. See Exhibit 15 for overview of premise wiring system. The premise wiring system terminates in a demarcation box located within a common-use communications closet adjacent to the Tenant lease areas. See Exhibit 14 for typical closet information. All Tenants are required to use this premise wiring system. The Tenant shall connect its equipment to the base building demarcation box(es). All low voltage wiring shall be installed within conduit. All Tenant cables shall be marked every 50 feet or less with the Tenant name, vendor, type of system served, and a phone number to be called for additional information.

Tenants should ensure that their communications designers consider the distances involved when navigating between leased spaces. To provide maximum flexibility between equipment rooms, cross connections have been utilized. These connection points introduce line loss that will affect the performance characteristics depending on the available loss budget for the application. It is the responsibility of the Tenant to choose solutions that will effectively work in this environment, and on the intended media.

No active Tenant equipment shall be installed in Port-owned communications rooms.

RCF Overview Of Premise Wiring System

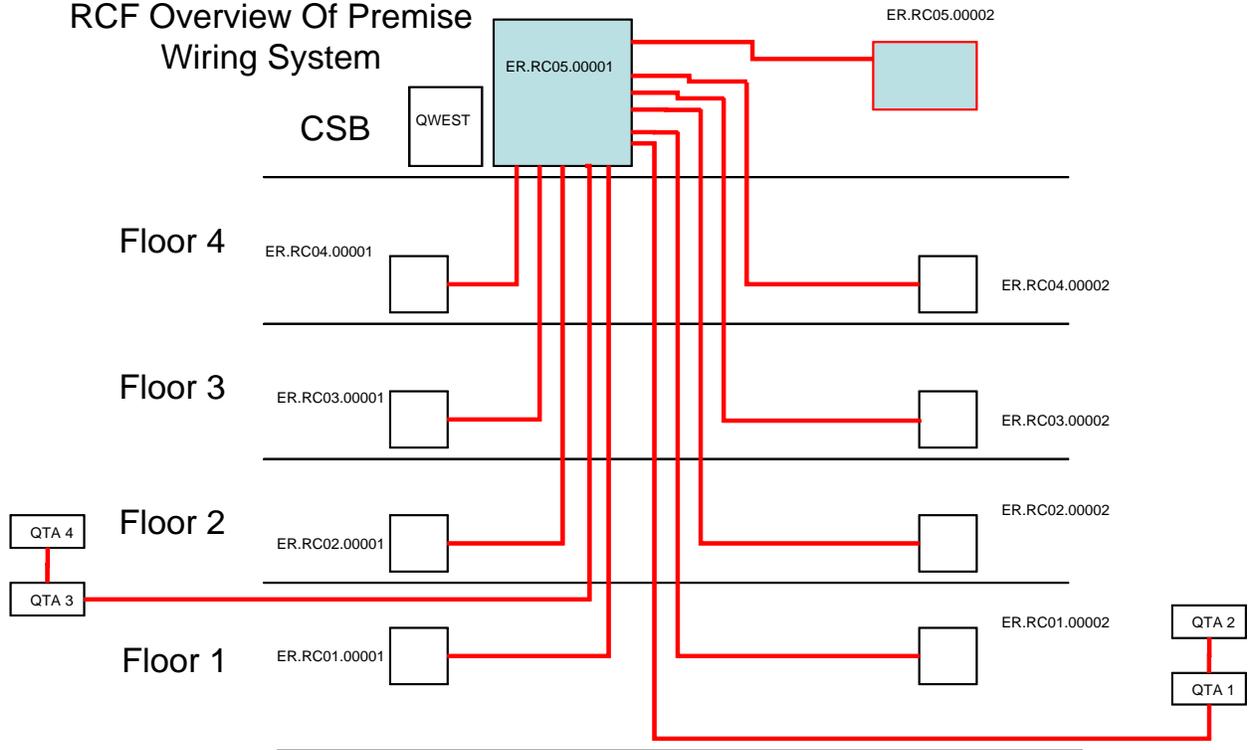


Exhibit 15
OVERVIEW OF PREMISE WIRING

Conduit and associated cable removed from service shall be promptly removed from the plenum by the responsible Tenant. Under no circumstances shall conduit be attached to the suspended ceiling. Conduits shall be supported independent of wires used for support of lights, ceiling or other items.

2.3.8.1 CSB Wired Systems

The CSB Base Building construction includes a separate, secured and unmonitored “demarcation box” for each Tenant. Each demarcation box will house a standard compliment of fiber for data and copper cabling for telephone comprising the premise wiring system. If the Tenant requires additional cabling, it shall be the responsibility of the Tenant to obtain permission for additional conduit, cabling, and infrastructure. Wherever possible, any additional routes shall follow the path of the existing demarcation box conduit back to the nearest communications room. See Exhibit 16 for typical CSB “demarcation box” contents. Exhibit 16 also indicates typical tenant terminations within the demarcation box.

Prior to installing any conduit, raceway, pull box or communications cables, the Tenant shall submit construction plans that are in accordance with the Port Standards and obtain written approval from START. All cables, inner-ducts, pull ropes, splice enclosures, cross-connects, termination equipment and associated accessories that are installed within the access provider’s conduit infrastructure and within the access provider’s communications rooms shall become the property of the access provider.

The Tenant shall coordinate with START when developing the construction documents and adhere to any location-specific installation directions provided by START.

The “demarcation box” provided by the base building shall only be used as a conduit and cable access and connection point and shall not function as a storage area in any way. The Tenant may add cable termination blocks, splice closures, and patch panels in its area of the “demarcation box,” that are in conformance with Port Standards. Electronic equipment or any other type of device that requires a power source to function shall not be permitted in the “demarcation box”, nor in the utility closet.

2.3.8.2 CSB Wireless Systems

Tenants may utilize any wireless frequency for which they own or hold the license. Frequency use will be restricted in accordance with the Port’s wireless standard operating procedure and subject to approval by START. Tenant wireless equipment shall not in any way interfere with the operation of the existing 800MHZ POS radio system. Because of the proximity of users, there may be limitations to the use of non-licensed wireless. Any wireless systems must first be approved via the Tenant improvement process through START prior to installation and use. Each Tenant may install and maintain its own wireless system within its exclusive use premises once the installation has been approved by

START. In addition, the Tenant shall not be permitted to sub-lease its space to wireless service providers.

2.3.8.3 CSB CCTV System

The Base Building includes a CCTV system with cameras installed at interior and exterior common use locations to enable the building Facility Manager and the Port to monitor the operation of the CSB. Locations include but are not limited to access roadway, exterior plazas, escalators and elevator cores on each floor level, arrival and departure areas, and the CSB lobby. Tenants will not have access to these cameras or views. Each Tenant may install and maintain its own CCTV system within its exclusive use premises.

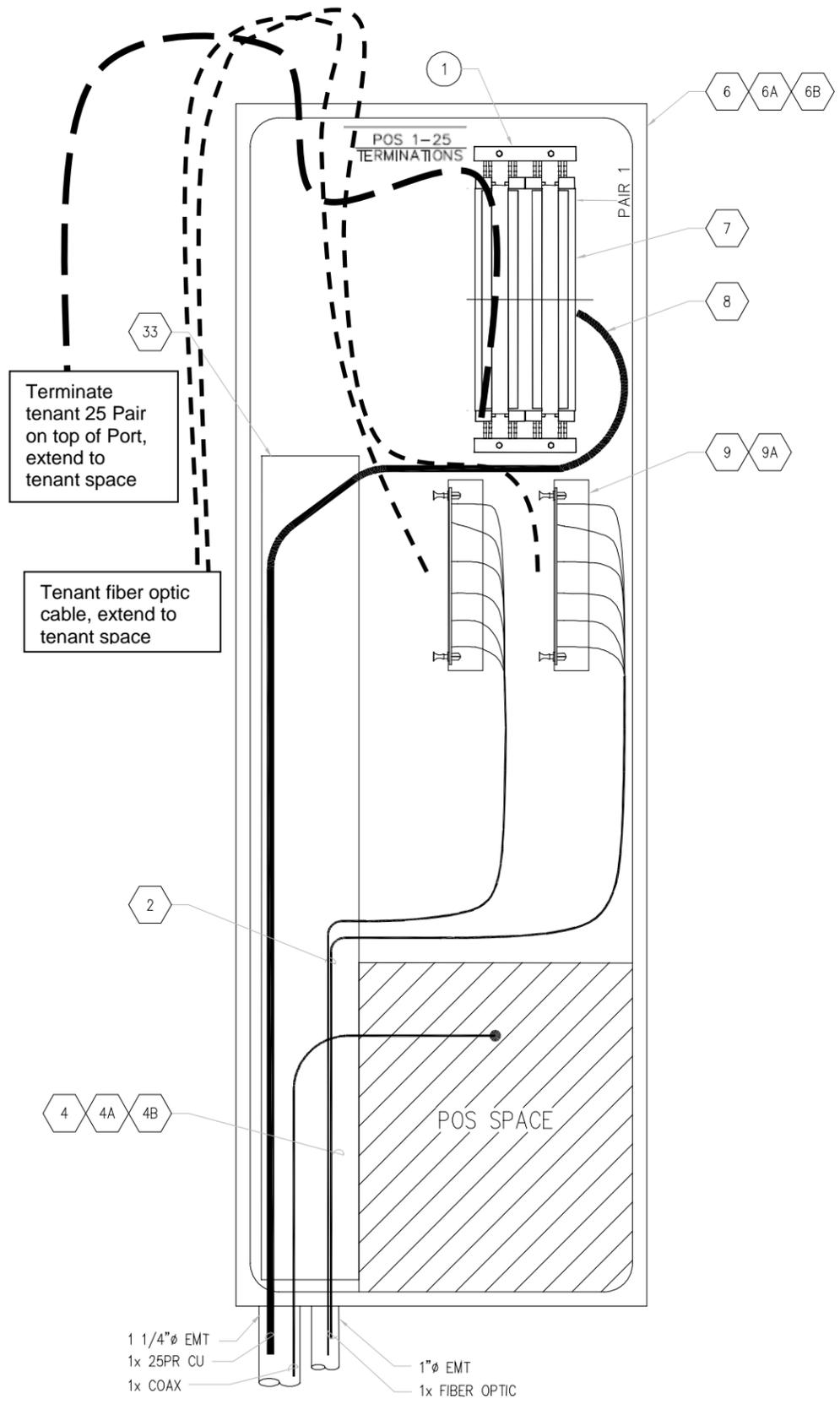
2.3.8.4 CSB Cable and Satellite Television Systems

Cable TV is not available. Satellite dishes may be installed with approval by the Port. Installation must meet all Codes and Port Standards.

2.3.8.5 CSB Fire Detection and Alarm System

The base building provided a Fire Alarm and detection system for the RCF and QTA areas. The Port uses a proprietary fire alarm system manufactured by Simplex. The main fire alarm control panel is located in the CSB lobby or an alternate location approved by the Port Fire Marshal. Fire detection and alarm of the CSB common areas is provided as part of the base building construction.

Each Tenant lease area is provided with fire alarm/detection circuit connection points (Fire Alarm terminal box (FTC)) located within a each combined electrical / communications closet. See Exhibit 14 for typical closet information. Each FTC contains connection terminal points for a fire detection signal and a fire alarm notification circuit from the Tenant EUP lease space. Each Tenant is responsible for providing and installing Simplex compatible fire detection and alarm devices within its EUP, and the associated conduit and wiring to connect these devices to the fire alarm panel connection points (FTC) provided by the base building. The fire alarm system design, and testing and commissioning of the fire alarm detection and alarm circuits and devices within the Tenant EUP lease areas, is the Tenant's responsibility. All design and installation will be reviewed and approved by the Port Fire Marshal and performed in accordance with Port standards, applicable codes and ordinances, and Fire Marshal/AHJ requirements.



WALL-MOUNT DEMARCATION CABINET
SCALE: NTS
REFER TO DRAWING EC11.2

WALL-MOUNT DEMARCATION CABINET BILL OF MATERIAL

ITEM	DESCRIPTION	QTY	MANUFACTURER	PART NO.	RELATED ITEMS
2	COMPOSITE CABLE 12 STRAND SINGLE MODE, 12 STRAND MULTI MODE	VARIES	SYSTIMAX SOLUTIONS	5124 12/12A W/ MRBK	
4	RG6/U COAX WITH MALE "F" CONNECTOR	VARIES	COMM SCOPE	5700 NON-PLENUM RATED	
4A	RG6 COMPRESSION CONNECTOR	1	GENCOM OR EQUIVALENT	XXXX	
4B	75 OHM RF TERMINATOR HIHG FREQUENCY RETURN LOSS	1	GENCOM	XXXX	
6	SMC 420 ENCLOSURE (BACK BOX)	1	LEVITON	47605-42N (BACK BOX)	
6A	HINGED COVER, 42"Hx14.38"Wx3.6"D, FLUSH MOUNT (RECESSED)	1	LEVITON	47605-42D	
6B	LOCK	1	LEVITON	5L000-LOK	
7	WIRING BLOCK WITH CLIPS (SEE DETAIL)	1	SYSTIMAX SOLUTIONS	110AW2-100 110C-5	
8	CAT 5 CABLE - 25 PAIRS	VARIES	SYSTIMAX SOLUTIONS	1061 025CSL 25/24	
9	MULTIMEDIA BRACKET	2	LEVITON	47612-MMA	
9A	MOUNTING PLATE WITH (3) SC-DUPLEX CONNECTORS	2	LEVITON	5F100-3SC	
33	WIRING DUCT, WIDE SLOT 2.25"x5", LIGHT GRAY, W/ COVER	VARIES	PANDUIT	G2.5X3LG6	

NOTES:

1. ALLOW FOR PATHWAY TO PATCH FROM THIS DEMARCATION BOX TO TENANT SYSTEMS EQUIPMENT OR PATCH PANELS OUTSIDE OF THIS BOX. METHOD AND SIZE OF PATHWAY TO BE SUBMITTED TO AND APPROVED BY POS START AT TIME OF CONSTRUCTION.
2. ROUTE ALL FIBER OPTIC CABLES TO ALLOW FOR MINIMUM CABLE BEND RADIUS AND TO MAXIMIZE USABLE SPACE IN BOX AND TO NOT BLOCK EASY ACCESS TO JACKS AND CONNECTORS.
3. OBTAIN APPROVAL FOR ROUTING AND FASTENING FIBER OPTIC CABLES FROM POS START AT THE OF CONSTRUCTION PRIOR TO TERMINATION.
4. USE SYSTIMAX SOLUTIONS SC CONNECTORS FOR SINGLEMODE AND MULTIMODE APPLICATIONS.
5. AFFIX CABLES TO PREVENT STRAIN ON EXPOSED FIBER STRANDS AND TERMINATIONS.

Exhibit 16
TYPICAL CSB DEMARCATION BOX CONTENTS
See Sheet EC11.2

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2.3.8.6 Voice Evacuation System

A Master Emergency Voice Evacuation system is required in the Customer Service Building. The base building construction has provided voice evacuation in the CSB common areas and unfinished lease spaces as part of the base building construction fire alarm and detection system. Each Tenant is responsible for providing and installing Simplex compatible voice evacuation speakers and devices within its EUP, and the associated conduit and wiring to connect these devices to the fire alarm panel connection points provided by the base building. Design, testing and commissioning of voice evacuation system shall be the Tenant's responsibility. All design and installation shall be reviewed and approved by the Port Fire Marshal and performed in accordance with Port standards, applicable codes and ordinances, and Fire Marshal/AHJ requirements.

2.3.8.7 Self Service Car Rental Kiosks

It is anticipated that each Tenant may have self-service electronic car rental kiosks comparable to airline E-ticket kiosks. If provided, self-service kiosks and their associated queuing must be located within each Tenant's EUP. Each Tenant shall be responsible for installing the conduit and wiring for these kiosks. Power requirements shall be part of the Tenant permitted power allowance for the CSB lease space, as identified in section 2.3.7.2. The design and location of the kiosks shall be reviewed and approved by the Port prior to installation.

2.3.9 CSB Utilities Installed Below CSB Floor

Utilities that serve the CSB may be installed in the ceiling of the 4th floor. Those utilities shall comply with the requirements of Section 2.4.3 Tenant Improvements in addition to any requirements described in Section 2.3 Customer Service Building.

2.3.10 Small Operator Area

Small Operator Companies shall provide furnishings and equipment for the customer counter, within the manager's office, and in the storage closet. The companies shall provide their back wall signage, blade sign face, and the storefront sign face. See CSB signage section 2.3.4 for more information. Small operators shall supply inserts at the retail customer service area counter shells.

2.4 READY/RETURN AREAS / PARKING FACILITY (OPERATIONAL FLOOR PLATES)

2.4.1 Introduction / Base Facility

The operational floor plates are levels one through four of the rental car facility. Customers will pick-up and return cars in these areas. Expected tenant improvements in this area include customer service booths, exit booths, tenant signage, and support systems.

2.4.2 Separation of Common Use / Leased Areas

An area around each core shall be designated as common area. See Exhibit 17 for extents of Common Use Areas.

2.4.3 Tenant Improvements

Any utilities, such as ductwork, hangers, conduit or other items, installed by the Tenant shall be concealed from public view or painted to match the adjacent surfaces to which they are attached. Tenants are encouraged to locate utilities between Grid Lines “E” and “F” as this section of the structure does not have beam crossings. Minimize impact while maintaining National Electrical Code clearance requirements.

The ceilings of the operational floor plates are painted white to improve lighting levels on the floors. Utilities that tenants install in these areas shall be painted to match the base building finish. Utility surfaces shall be primed and then painted. The base building has used the following products: Primer for ferrous metals – Sherwin Williams OPTI-BOND; primer for concrete Sherwin Williams Masonry Conditioner, Finish Coat for all surfaces – Sherwin Williams Low Temperature 35 Weatherclad Exterior Satin Latex. Paint colors are included in Appendix A. While utilities are painted, the identification markings must be visible.

Tenant shall not install any utilities below 10'-0" above the finish floor.

2.4.4 Operational Elements

Exhibit 18 summarizes operational aspects of a ready/return floor such as barrier types and locations, barrier providers, exit/entrance lanes, and various functions on a typical floor.

2.4.4.1 Pavement Markings

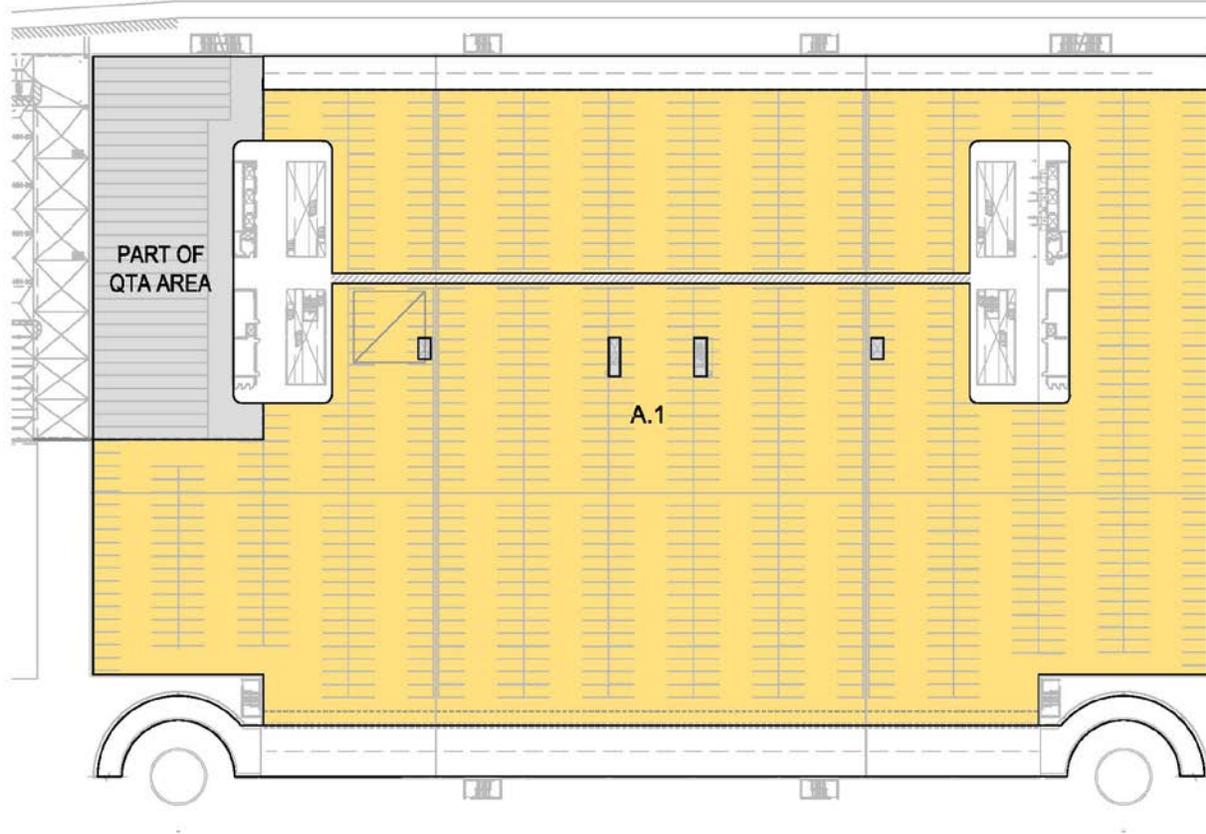
Tenants are responsible for furnishing and installing all pavement markings within their Exclusive Use Premises Ready/Return Areas. At a minimum, pavement markings shall be provided to delineate parking spaces, space identifiers, pedestrian walkways, exit directions, and vehicle circulation flow. Areas of accessibility to fire cabinets are painted by the base building and are further defined by bollards included in the base building construction. All pavement markings will be as required by Code and will be installed as per the Port approved Tenant Construction Documents. Pavement marking paint within the Ready/Return Areas Parking Facility shall be a non-reflective latex waterborne emulsion. “No Parking” zones are painted by the base building in common use areas and where required by applicable codes.

2.4.4.2 Primary Perimeter Barriers

Each Tenant’s Ready/Return Area and the perimeter boundary of the parking areas, between a Ready/Return Area and the common customer roadway is delineated and secured by use of semi-permanent barriers provided and installed by the base building. Primary perimeter boundaries shall be provided with openings for entrances and exits provided by the Tenant and approved by the Port.

See structural Section 2.4.7.1 for barrier placement limitations.

– Map of Operator’s Ready/Return Area –



	Lease Area		Common Area
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Exhibit 17
READY/RETURN FLOOR COMMON VS. LEASE AREAS

2.4.4.3 Lease Delineation Barriers

The base building provided barriers between each Tenant's exclusive use premises. See structural Section 2.4.7.1 for barrier placement limitations. See Appendix A for barrier shop drawings.

2.4.4.4 Internal Barriers

Barriers within Tenant EUPs shall be provided by the Tenant. Barriers are not required to match the base building, but shall all be the same within the Tenant EUP. See structural section 2.4.7.1 for barrier placement limitations.

2.4.4.5 Trash Receptacles

Each Tenant shall provide adequate trash and recycling receptacles within the ready / return areas of the Parking Facility.

2.4.4.6 Tenant Equipment

Tenant equipment such as roof racks, baby seats, wheel chairs, etc. shall be stored out of public view.

2.4.4.7 Fire Department Access

The Port Fire Department plans to access the floors via the QTA gates (Click-to-Enter). If the tenant installs a gate system between their space and the QTA gate, then the gate system must have Click-to-Enter. It is not necessary to provide Click-to-Enter at the tenant customer entrances and exits along column line Q.

2.4.5 Architectural

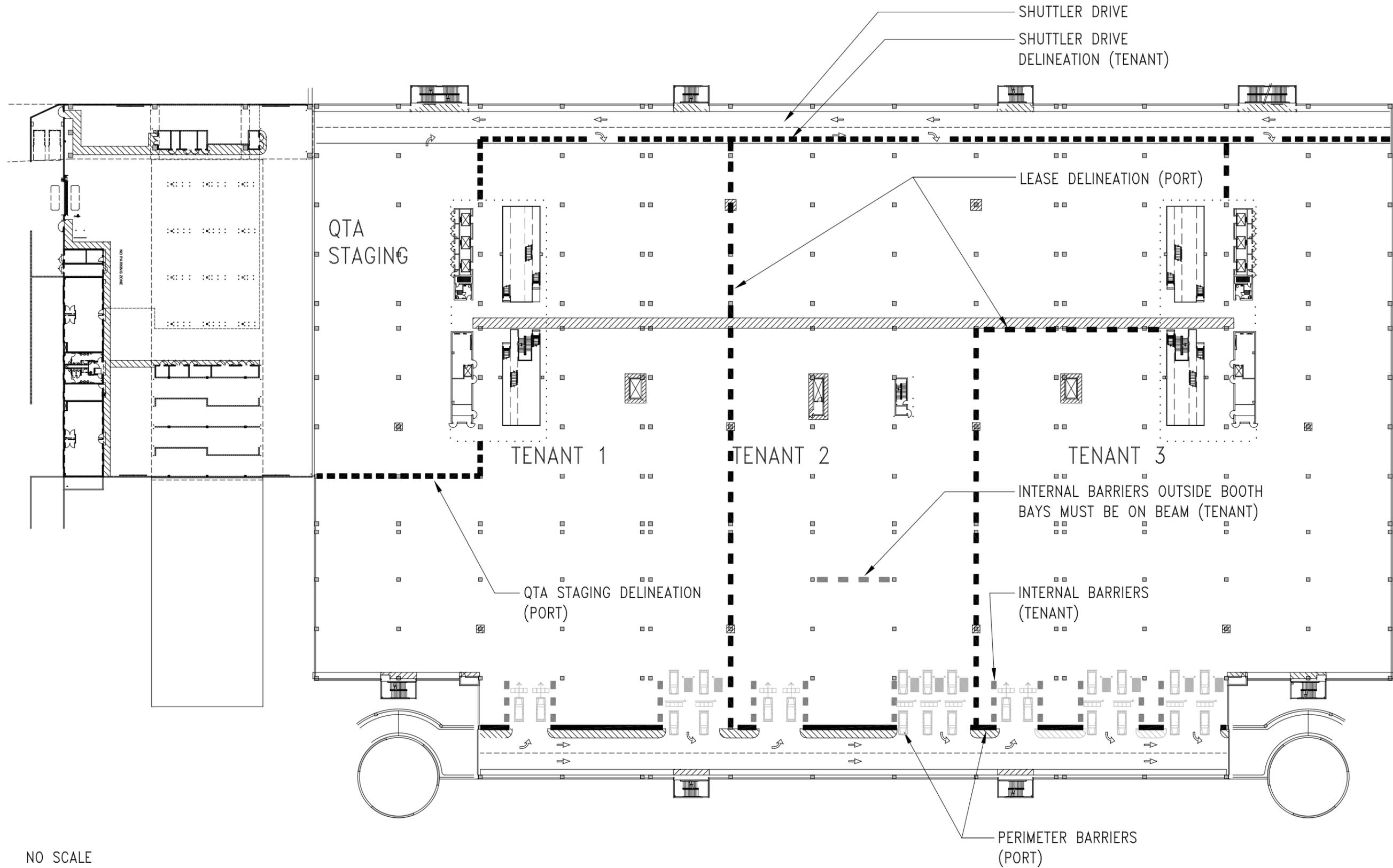
2.4.5.1 Exit booths and exit control devices

Locations for customer service and exit booths are limited. See Exhibit 19 for locations.

Exit booths and access control devices shall be provided and installed by the Tenant within the Tenant's Ready/Return Area. These devices and/or structures shall be installed behind the perimeter barrier and with a setback from the perimeter roadway to permit at least one car to stop clear of the traffic lane. Access control devices such as gate arms, tiger teeth, etc shall be located within the leased premises.

Exit booths shall be self-contained prefabricated booths with tubular steel welded frame and metal or glass panel inserts. Booths shall be shop painted a standard color selected by the Tenant, sealed for weather protection, and protected from cars with curbs and/or bollards.

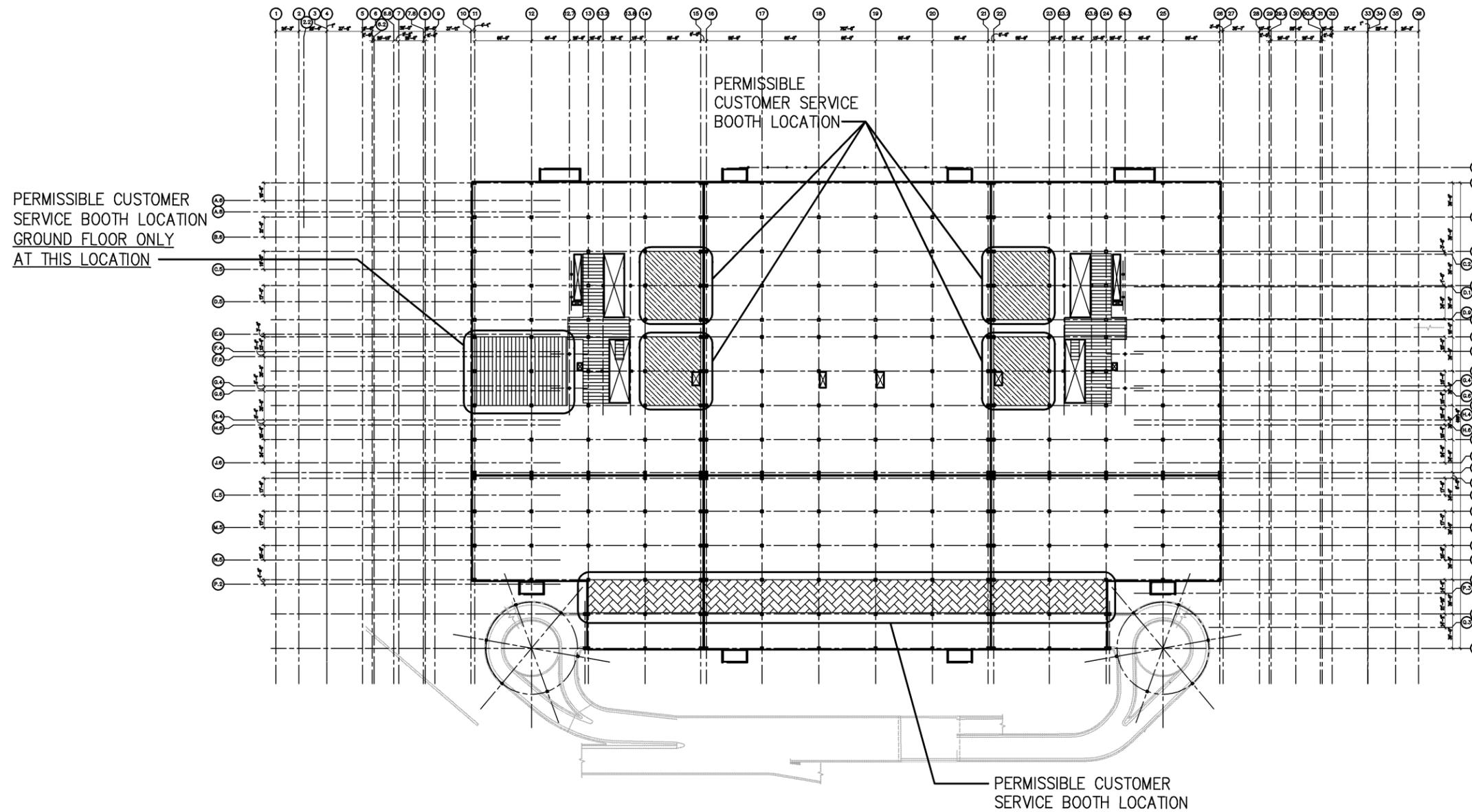
Access control devices at exits shall be manually controlled or controlled by key pad, card swipe, bar code scanner or other secure technology, from adjacent booth; only entrances shall have automatic access control devices.



NO SCALE

TYPICAL READY/RETURN FLOOR BARRIERS AND FUNCTIONS

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SUPERIMPOSED LOAD LEGEND

	5 PSF DL; 40 PSF LL
	115 PSF TOTAL; NOTE 2
	115 PSF TOTAL; (OCCURS @ GROUND FLOOR ONLY)
	75 PSF TOTAL; NOTE 3
	5 PSF DL; 100 PSF LL

PLAN NOTES

1. HELIX STRUCTURES WERE DESIGNED FOR 5 PSF MISC. DL AND 40 PSF LL ON ALL LEVELS.
2. THE 115 PSF TOTAL SUPERIMPOSED LOAD INCLUDES THE WEIGHT OF THE CUSTOMER SERVICE BOOTHS, ANY MATERIALS REQUIRED TO LEVEL THE FLOOR STRUCTURE, AND THE OCCUPANT LOAD. THE SLABS WERE DESIGNED FOR 1.2 k/ft OF SEISMIC UPLIFT LOADS APPLIED AT MIDSPAN.
3. THE 75 PSF TOTAL SUPERIMPOSED LOAD INCLUDES THE WEIGHT OF THE EXIT BOOTHS, ANY MATERIALS REQUIRED TO LEVEL THE FLOOR STRUCTURE, AND THE OCCUPANT LOAD. EXIT BOOTHS SHALL NOT BE PLACED CLOSER THAN 8'-0" CLEAR OF AN ADJACENT EXIT BOOTH, CUSTOMER SERVICE BOOTH, OR BARRIER. THE SLABS WERE DESIGNED FOR 1.2 k/ft OF SEISMIC UPLIFT LOADS APPLIED AT MIDSPAN.
4. BARRIERS PLACED ON STRUCTURE SHALL NOT EXCEED 300 PLF IN WEIGHT AND SHALL BE PLACED DIRECTLY ON TOP OF BEAMS. SEE SECTION 2.4.5 AND SECTION 2.4.7.1 FOR PLACEMENT REQUIREMENTS.
5. STAIR STRUCTURES WERE DESIGNED FOR 100 PSF LIVE LOAD.
6. CABLE BARRIERS WERE DESIGNED FOR A 6,000 # LOAD ACTING 18" ABOVE SLAB PER ASCE 7-05.

Exhibit 19
 Acceptable Customer Service Booth And Exit
 Booth Locations And Structural Design
 Loads On Operational Floor Plates
 Ground Floor Through Fourth Floor

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Booths that are factory built structures as defined by the Washington State Department of Labor and Industry (L&I) must be a State gold labeled structure. The foundation (in this case the RCF operational floor deck or slab) and the connections there to must be designed to meet the IBC requirements for the wind & seismic loads imposed. This will be evaluated and permitted by the ABD, which will also check access to these structures (ramp or stairs) for code compliance. Booths in excess of 300 square feet will require a ramp and landing.

Booths that are component structures must comply with the ABD's approval process and must meet the assembly Quality Assurance (Q.A.) standards of the International Building Code (IBC). A component structure is defined as a structure that is built in sections or panels and is assembled on site. The manufacturers or plants where these components are built must have the IBC Q.A. procedures in place and must provide the ABD with written certification to verify compliance with these procedures. The component connections to each other and to the structure below must be designed by a licensed design professional to meet all loads imposed in accordance with the IBC. All other applicable codes must be met, including but not limited to electrical, ventilation, energy code, access to structure, etc.

The Tenant shall provide the Port with written certification that the booths meet Washington State regulations before the booths are delivered to the RCF site.

Exit booths shall be delivered to the site fully wired per UL requirements with an electrical sub-panel. Booth(s) shall have rooftop/ sidewall mounted HVAC units connected to outside air. Doors shall either swing open or be integrally sliding doors with deadbolt locks. Booth(s) may have counters and sliding windows for the Tenant Customer Service Representative to interface with the Tenant customer. The maximum floor area of an exit booth shall be 8' x 10'. The exit booths shall not exceed 75 PSF in weight, including occupant load, and shall not be placed closer than 8'-0" to an adjacent exit booth or customer service booth. Booths shall not be placed closer than 8'-0" to an adjacent barrier unless the barrier is located directly over a beam, at which point the exit booths shall not occur within 4'-0" of an adjacent barrier. See Section 2.4.7.1 and Exhibit 19 for acceptable locations of barriers. Booths shall not be located so as to limit or obstruct the visibility of booths operated by other Tenants. See structural Section 2.4.7 for exit booth location, seismic information, and weight limitations.

Tenant restrooms and breakrooms shall not be located in the exit booths, customer service booths or elsewhere on the floor.

Portable exit booths are prohibited.

2.4.5.2 Customer Service Booths

Requirements for Tenant customer service booths are identical to the requirements listed in the Exit Booth section above, excluding size limitations. Such booths or structures shall be located entirely within the Tenant's leased premises in designated areas. The maximum total

superimposed weight of Customer Service Booths, including occupant load and any materials required to level the garage operational floor plates, shall not exceed 115 PSF. A customer service booth shall not be placed closer than 8'-0" to an adjacent customer service booth or exit booth. Customer service booths shall not be placed closer than 8'-0" to an adjacent barrier unless the barrier is located directly above a beam at which point the customer service booths shall not occur within 4'-0" of an adjacent barrier. See Section 2.4.7.1 and Exhibit 19 for acceptable locations of barriers. Booths shall be fully self-contained and have finishes similar to those used at the customer service building. See structural section 2.4.7 for customer service booth location and weight limitations.

See Exhibit 19 for locations of exit and customer service booths.

2.4.5.3 Other Booths

Requirements for other booths such as return booths, storage booths, etc are identical to the requirements listed in the Exit Booth section above, excluding size limitations.

2.4.5.4 Fourth Floor Ceiling System

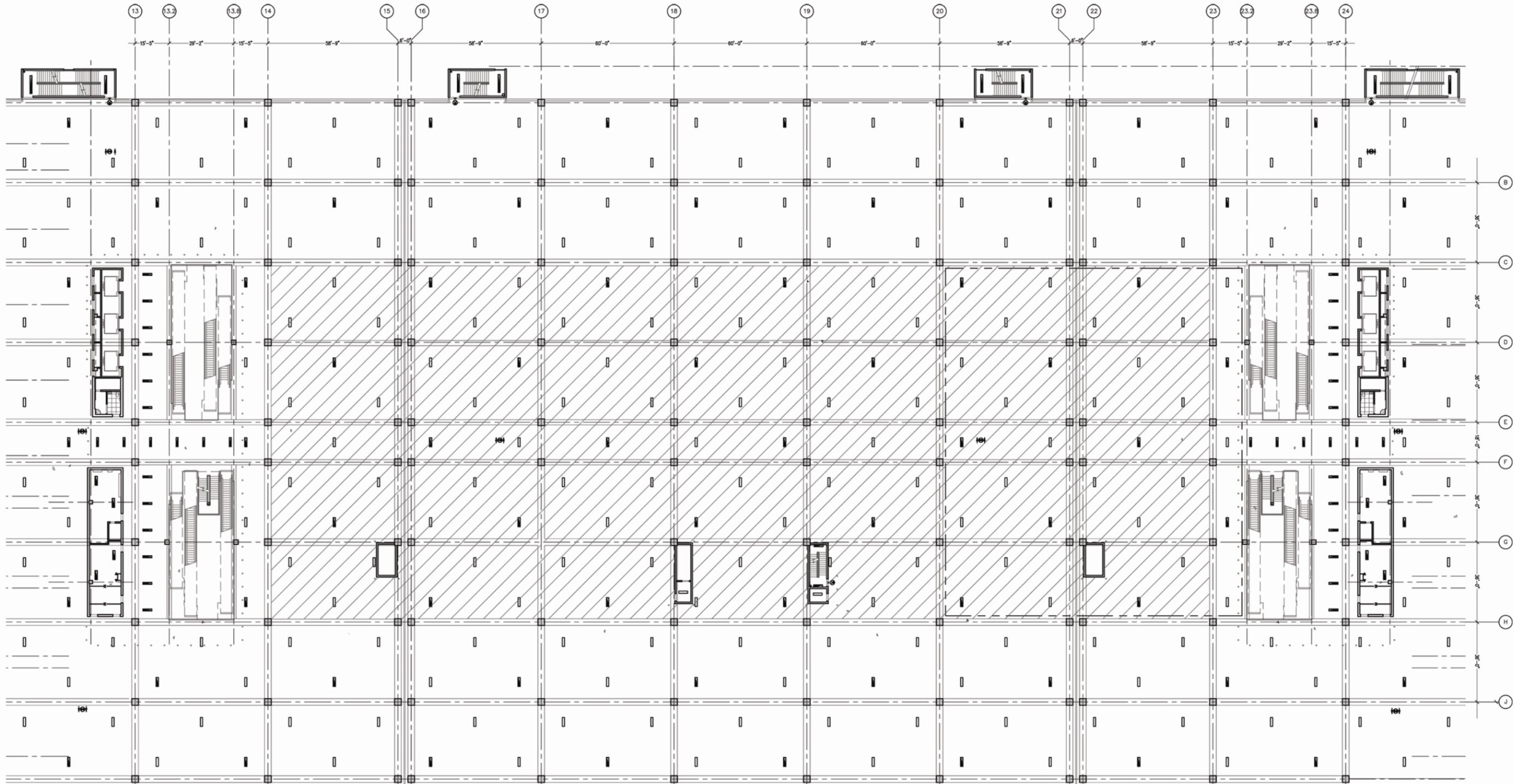
The Base Building includes three (3) inches of fire-resistive extruded polyisocyanurate insulation located beneath the footprint of the Customer Service Building (CSB). See Exhibit 20 for the extent of the insulated ceiling panel system.

The insulation is installed on the underside of the concrete slab and wraps the beams. The concealed surface of the insulation is a 1.25 mil reflective aluminum facing. The insulation surface exposed to view is an embossed light-duty 1.25 mil embossed white acrylic-coated aluminum facing. The insulation is mechanically fastened to the concrete structure. Insulation panel joints are taped using the manufacturer's standard white metal foil adhesive tape. Product submittal information is included in Appendix A.

Items suspended from the ceiling must be attached to the structure above. Items cannot be suspended from or attached to the ceiling insulation panels. Maintain a minimum distance of two (2) inches between insulation panel penetrations and insulation panel joints. Due to seismic considerations, the size of penetrations and type of mechanical attachments shall be coordinated with the Airport Building Department. Holes within the insulation shall be neatly cut. The Tenant shall re-insulate and seal holes within the base building insulation using fire-resistive polyisocyanurate insulation.

The Tenant shall replace insulation panels damaged by the Tenant or its contractors using the same product and same finish. If items suspended from the ceiling are removed, the holes within the tiles must be reinsulated and patched using pre-finished polyisocyanurate insulation matching the existing insulation in thickness and appearance.

Conduit or pipe shall not be located between insulation panel and concrete deck or beam. Conduit, pipe, and fasteners exposed to view shall be painted white to match the pre-finished insulation panels.



LEGEND
 EXTENT OF POLYISOCYANURATE INSULATION

Exhibit 20
 4TH FLOOR CEILING PLAN

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2.4.1 Signage

See section 2.3.4 and 2.3.4.1 for general signage requirements. In addition, for exterior applications, metal sign materials, fastenings and clips of all types, shall be hot dipped galvanized iron, stainless steel or brass.

Tenants should be aware that seismic design requirements are more stringent in this geographic area. Coordinate signage attachment with the Airport Building Department.

With the exception of variable message reader board signs directing customers to vehicles and required for Tenant operations, variable message signs, moving images, or moving lights are prohibited. No advertising slogans shall be permitted. (Advertising slogans being language used in promotions, marketing, or advertising campaigns that is intended for all customers and that creates an association with the brand.) The Port reserves the right to require the removal of any Tenant advertising, displays or decorating that in its sole opinion is distasteful or in any way in conflict with the best interest of the RCF environment.

2.4.6.1 Tenant Signage

Tenant-specific identification signage furnished and installed by the Tenant is permitted on the interior of the Facility in the Tenants' Ready/Return Area for rental return, special programs, space numbering and other directional information. Signs shall be surface mounted to the structural columns with compression fittings or hung from the surface of the beams or from structure. See structural section 2.4.7 for penetration and attachment limitations and information. All Tenant signage within drive aisles shall be mounted with 8'-9" clear above the finish floor.

The location and orientation of tenant signage may not block other tenant signage nor the base building wayfinding / directional signage.

All regulatory and warning signage and pavement markings shall comply with Washington State and Manual on Uniform Traffic Control Devices (MUTCD) standards.

Power requirements for all electrical signage shall be the responsibility of the Tenant, and part of the Tenant's lease space metered power allotment. See Section 2.4.9.

2.4.6.2 Customer Service Booth Signage

Signage on the customer service booths is restricted to maximum 24 inches in height. Temporary promotional banners are prohibited and all promotional signage must be placed in stanchions or a wall mounted frame. Interior booth signage is permitted. Preferred service reader boards may be mounted to the exterior of the customer service booth.

2.4.6.3 Exit Booth Signage

The exit booths may have an 18 inch sign band at the top. The sign band may be a company color.

2.4.6.4 Entrance Lane Signage

Tenant shall provide signs at entrance lanes. Tenant shall provide no more than one sign adjacent to the entrance lane. The sign shall be located within the Tenant EUP. The sign face shall not exceed 98" wide or long by 15" high. Only Tenant trade or "brand" names, Car Return text and an arrow shall be used on the sign. The sign shall be permanently mounted, ceiling hung, and shall not block views of other Tenant's signage.

2.4.6.5 Facility Directional Signage

The Port will provide all necessary wayfinding and code required signage within the Facility common areas. Tenants are required to provide current corporate identity graphics along with any pertinent usage specifications to the Port for their use in providing these directional signs. The Port will apply Tenant identification as required and appropriate for facility wayfinding. See Section 2.3.4.8 for submission requirements.

Tenants may not install tenant specific signage in facility common areas.

2.4.6.6 Multi Branding

Multi Branding Tenants shall indicate how they intend to separate or share entrances, customer service booths, exit lanes/booths as part of the Conceptual Design Submittal. The Port reserves the right to require changes to improve customer wayfinding, building operation, or to address other concerns.

At wayfinding signage throughout the facility, Tenant may have one signage insert per "brand".

2.4.2 Structural

All elements of the Tenant's proposed improvements that are suspended from the structure above the Tenant's leased premises or from a shell building wall, floor, or roof shall be detailed (including methods of attachment and load calculations) in the Tenant's Leasehold Improvement construction documents as submitted to the Port for review. Load calculations shall be prepared by a structural engineer licensed in the State of Washington and sealed as a part of the Tenant's submittal for approval.

Floor penetrations shall be kept to a minimum. Floor penetrations shall be located by the Tenant to eliminate the possibility of compromising the structural integrity of the floor. Plans and test results shall be submitted to the Port for written approval prior to drilling holes. Tenant is responsible to repair any base building systems or tenant systems damaged by penetrations or attachment to the structure.

The Tenant shall coordinate mechanical, electrical, plumbing and fire sprinkler work with existing structural members. All floor/roof or wall openings shall be properly fire-safed.

2.4.7.1 Floor loading limits

Locations for customer service booths, exit booths, and barriers are limited. The floor loading limit for customer service booths, exit booths and barriers are defined on Exhibit 19. The weight limit and placement of barriers shall conform to the following:

- The weight of a barrier shall not exceed 300 pounds per linear foot.
- Barriers shall be placed directly above beams.
- At locations defined for exit booth or customer service booth loading in Exhibit 19, barriers may be placed on the slab without being directly above beams provided the barriers do not occur within 8'-0" of an adjacent barrier, exit booth or customer service booth.
- At locations defined for exits booths or customer service booth loading in Exhibit 19, if a barrier is placed directly over a beam, adjacent barriers, exit booth or customer service booth may not be placed closer than 4'-0".
- Barriers shall not be placed within 1'-0" of any seismic cover.
- Seismic joint covers shall be protected from wheel loads when barriers are being installed and relocated.

2.4.7.2 Floor penetrations and openings

See Specification Sections 01610 and 01611 in Appendix A and Section 2.3.5.4 for detailed requirements.

2.4.7.3 Attachment to structure

See Specification Sections 01610 and 01611 in Appendix A for detailed requirements.

The as-built concrete strength of the concrete floor slab located in the northwest corner of the structural floor plate on Level 2, bounded by grid lines 22 through 26 and A through G, does not meet the specified 6,000 psi strength. The actual strength ranges from 4,800 to 5,760 psi. While this does not affect the loads placed on the structure, this deviation does affect attachments to the structure within this area. Tenant designers / engineers will be required to use the reduced concrete strength in their calculations for attachments. Additional background information is included in the "Seattle-Tacoma International Airport Consolidated Rental Car Facility Structural Acceptance Evaluation" dated July 6, 2010. The report is in Appendix C.

All attachments to the concrete floor slab located in the northwest corner of the structural floor plate on Level 2, bounded by grid lines 22 through 26 and A through G must use the as-built concrete structural strength in lieu of the design concrete strength of 6,000 psi. This affects attachments to the ceiling of Level 1 and floor of Level 2.

2.4.7.4 Traffic Loops

Saw-cutting for traffic loops on all elevated post tensioned slab decks is prohibited.

Saw-cuts for traffic loops at slab on grade locations are limited to 1½” depth.

2.4.3 Mechanical Systems

2.4.8.1 HVAC

Outside air is supplied by the main building mechanical system for use in the customer service booths and exit booths. This air is not heated or cooled but has been filtered (activated carbon filters) to remove fuel odors. This minimum ventilation air is provided for use by the tenant at a maximum of 20 CFM (at 0.2” Static Pressure) per occupant of customer service or exit booths. This value is based on a total combined square footage for all customer service booths on each level of 3000 square feet, and total number of exit booths of 8 for Tenant ventilation allowances and base system calculations. It is tenant responsibility to extend ductwork from the capped ducts to the return air inlet of their equipment. It is the tenant responsibility to heat or cool the air as needed. See Exhibit 21 for Operational Floorplate Typical Ductwork Caps.

Ducts shall be insulated the same as the base building.

Condensate from ready/return floor booth HVAC systems shall be piped to a floor drain. The pipe may be terminated at the column instead of continuing horizontally to the drain in the following cases: 1) If the water flowing to the drain is not a slip hazard. 2) If the pipe is not protected to prevent trip hazard.

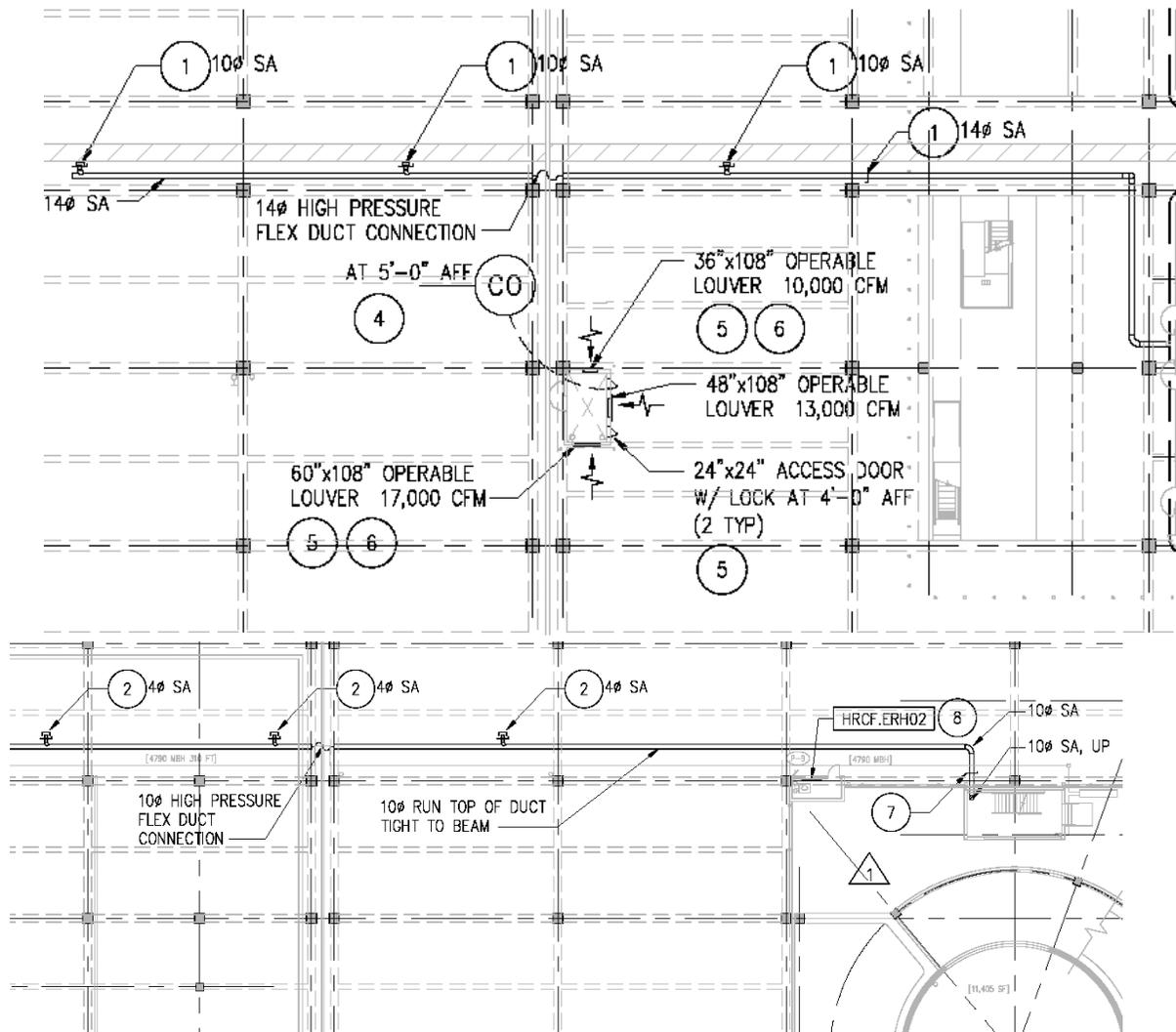
2.4.8.2 Domestic Water System

Water service (hose bibbs) are provided at each core on each level of the Facility. Water, sewer, and vent are not provided for the customer service booths or exit booths.

2.4.8.3 Fire Sprinkler System

The base building provided a dry automatic standpipe fire sprinkler system at operational floor plate locations in accordance with applicable Code. Hose valves are provided at locations approximately every 130 feet as shown on base building MF series drawings. Manual Dry standpipe systems are provided for the unheated open public stairs. The systems are sized per NFPA and local code requirements. Dry standpipe locations include emergency response telephones and fire alarm devices.

The base building included an automatic fire sprinkler system in common use enclosed areas located on the operational floor plates, including but not limited to the public restrooms and the elevators. Customer Service Booths shall require the addition of branch valves, inspector test/drain and sprinkler mains extended from the capped services at combination standpipes. See the fire sprinkler routing drawings and base building MF series drawings for fire sprinkler system logic. The tenant shall contract with a fire sprinkler subcontractor to perform hydraulic calculations to assure that tenant sprinkler extensions from combination dry standpipes meet the code mandated flow rate and delivery time requirements.



RELEVANT NOTES FROM DRAWINGS

1. FURNISH AND INSTALL RUSKIN DAMPER MODEL NUMBER CDR82 HEAVY DUTY ROUND CONTROL DAMPER AND CAP (FUTURE CUSTOMER SERVICE BOOTH PRESSURIZATION W/ ISOLATION DAMPER). DAMPER SIZE INDICATED ON PLAN.
2. FURNISH AND INSTALL RUSKIN DAMPER MODEL NUMBER CDR82 HEAVY DUTY ROUND CONTROL DAMPER AND CAP (FUTURE EXIT BOOTH PRESSURIZATION W/ ISOLATION DAMPER). DAMPER SIZE INDICATED ON PLAN.
8. FURNISH AND INSTALL RUSKIN DAMPER MODEL CDR82 HEAVY DUTY ROUND CONTROL DAMPER FOR BALANCING.

Exhibit 21
OPERATIONAL FLOORPLATE TYPICAL DUCTWORK CAPS

Each Tenant shall be responsible for extending the automatic dry fire protection (sprinkler) system to and within its customer service and exit booths, etc. Each Tenant shall design its fire protection systems whereby the main fire alarm panel will be able to distinguish the difference between the flow signals for customer service booths by floor, from the signals coming from other facility branch flow switch detectors. Each Tenant shall be responsible for acquiring the required permits for all modifications to the RCF fire protection system.

Each Tenant shall modify the system as necessary to suit its booths or alterations.

The project has made provisions for booth fire sprinkler connections on the ready/return floors. For a small, single person booth, fire sprinklers will likely not be required. The requirement for fire sprinklers will vary depending upon the use and fire load within the booth. The Port Fire Department will review each booth. Fire Sprinkler shop drawings may be a deferred submittal for the Building Permit submittal.

2.4.4 Electrical Systems

2.4.9.1 Power

Secure, tenant electrical demarcation rooms (RAC electrical rooms) have been provided as part of base building construction to serve as the POS/RCF electrical demarcation points for the Tenants' Operational floorplate Ready/Return Area. RCF electrical rooms are located at each core on each level of the Operational floorplate (two per floor for a total of eight), adjacent to the Port electrical room.

Each Tenant has been provided with access to one or two RCF electrical rooms adjacent to his lease space, dependent on the Tenant lease premises. The base building construction includes two (2), designated, 100 ampere, 480/277 volt, 3-phase, 4-wire, metered, conduit and feeder cable, to individual fused disconnect switches (2) within each RCF electrical room (total of 4 switches per operational floorplate level). One or all of these fused, disconnect switches will serve as the base building power demarcation point for the Tenant EUP, dependent on the Tenant lease space area. Fusing will be provided by the tenant, to match their maximum, permitted Tenant power allowance.

Maximum power allowance per Tenant has been estimated at fourteen (14) watts per square foot (w/sqft), of Tenant Customer Service Booth plus signage and exit booth power loads. This value is comprised of 1 w/sqft lighting, 2 w/sqft miscellaneous power loads, 11 w/sqft heating loads, with an additional allowance of 3000 watts for each of the Tenant's exit booths and 3000 watts for Tenant signage on the operational floor plate. This value is based on a total combined square footage for all customer service booths on each level of 3000 square feet, and a total number of eight (8) exit booths on each level for a combined Tenant power allowance per floor and base system calculations. From this demarcation point, each Tenant shall be responsible for installing all electrical lighting panels and power

subpanels, electrical conduit, wiring, fixtures, etc., to serve its supplementary lighting and power needs in the Facility (i.e. booths, gates, illuminated signage, security systems, etc.). All Tenant electrical panels or equipment, with the exception of the Tenant's main power panel and disconnect switch, will be located within the Tenant's lease space area.

It is the Tenant's responsibility to verify service capacity and availability for its space. Each Tenant shall be responsible for providing sizing requirements based on its specific need.

Tenants with separate leases may not borrow power from one another. If a tenant requires additional power it will be responsible for any upgrades to the electrical system supporting that tenant's exclusive use premises.

On the Ready/Return floors the design assumption was 19,500 Watts per tenant for up to four tenants. If a tenant has the entire floor it may use the entire 78,000 Watts. If a tenant shares a floor with other tenants each tenant receives a minimum of 19,500 Watts.

The Standards describe how the allowance was developed, but tenants may use the allowance as needed to support their operation. For instance, if the booths require less power than the allowance and the signage requires more power than the allowance that is acceptable.

The base building has provided an electrical meter for each Tenant EUP (two for each RCF electrical room), and lighting on each level of the Operational floorplate, Meters are located within the Port Operational Floorplate electrical room, and connected to the Port's Power Monitoring and Data Gathering System.

2.4.9.2 Lighting

Lighting throughout the Facility is provided as a part of the base building. Lighting levels have been established at an average of 10 foot-candles at 30 inches above the parking surface level. Perimeter lighting will be screened to prevent glare at the perimeter of the building and will be zoned and automatically controlled by the use of photocells, centralized timers or switching. Operational Floorplate lighting is provided by T8 fluorescent lamps. Additional lighting may be installed by the Tenant upon written approval of the Port and shall match or complement the building standards.

Tenant is responsible for lighting within customer service and exit booths.

2.4.9.3 Emergency Lighting / Standby Power

Tenant is responsible for emergency lighting and standby power for its customer service, exit, and other booths.

2.4.5 Communications Systems

For purposes of the following, "service provider" shall be understood as the phone company (Century Link). "Access Provider" shall be understood as the

Port Information and Communications Technology group (ICT).

2.4.10.1 Wired Systems

The Base Building construction includes a separate, secured and unmonitored “demarcation box” for each Tenant. Each demarcation box houses a standard compliment of fiber for data and copper cabling for telephone comprising the premise wiring system. The Base Building provided the necessary conduit and premise wiring infrastructure from the CSB to the Ready/Return communication room and from the communication room to the Tenants demarcation box that will function as the demarcation point for the service providers. If the Tenant requires additional cabling, it shall be the responsibility of the Tenant to obtain permission for additional conduit, cabling, and infrastructure. Wherever possible, any additional routes shall follow the path of the existing demarcation box conduit back to the nearest communications room. See Exhibit 22 for typical “demarcation box” contents. See Exhibit 16 for typical terminations within the demarcation box.

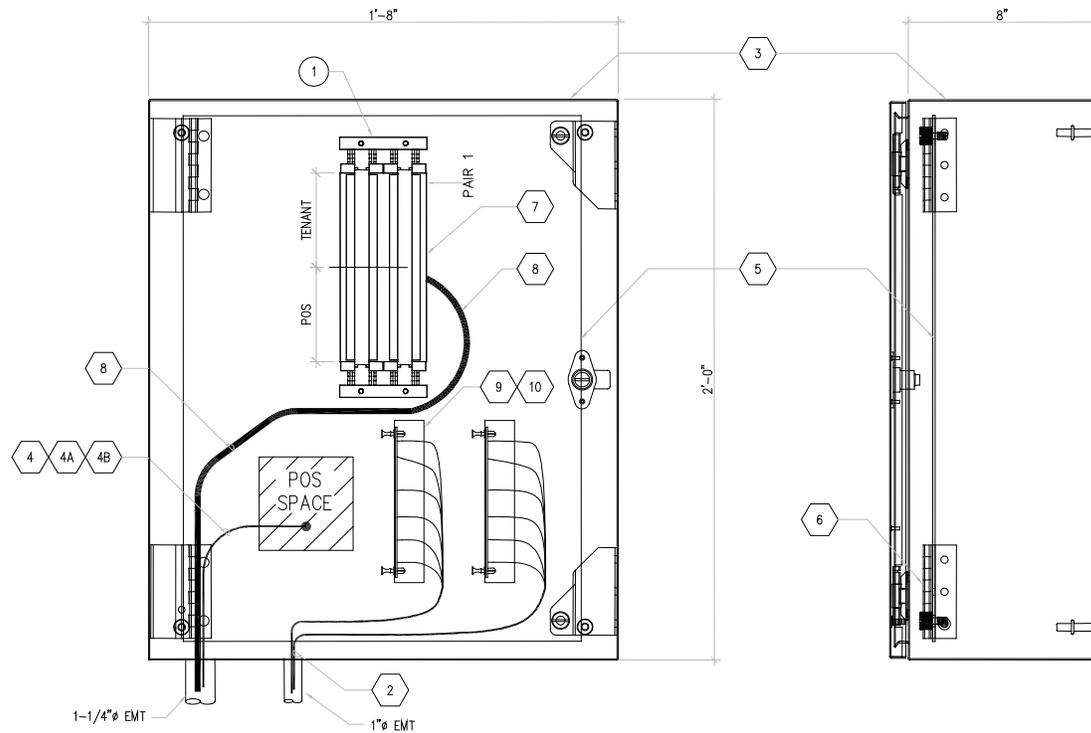
The telecommunication rooms provided by the base building will only be used as a conduit and cable access and connection points and will not function as storage area in any way. The Tenant may add cable termination blocks, splice closures, and patch panels in its EUP only. Electronic equipment or any other type of device that requires a power source to function will not be permitted in the telecommunication rooms or the demarcation boxes. Tenants shall label all communications conduits, boxes, etc. per Port Standards. All communications/data cabling shall be in conduit.

2.4.10.2 Wireless Systems

Tenants may utilize any wireless frequency for which they own or hold the license, subject to review and approval by START. Frequency use may be restricted in accordance with the Port’s wireless standard operating procedure. Tenant wireless equipment shall not in any way interfere with the operation of the existing 800MHZ Port radio system. There may be limitations to the use of non-licensed wireless because of the proximity of users. Any wireless systems must first be approved via the Tenant Improvement process through START prior to installation and use. Each Tenant may install and maintain its own wireless system within its exclusive use premises once the installation has been approved by START. In addition, the Tenant shall not be permitted to sub-lease its space to wireless service providers.

2.4.10.3 Fire Detection and Alarm System

The base building provided a Fire Alarm and detection system for the RCF and QTA areas. The Port uses a proprietary fire alarm system manufactured by Simplex. The main fire alarm control panel is located at the South end of the CSB lobby with remote panels located in the POS communication rooms on each level at each core. Fire detection and alarm of the Facility zones on each floor (Ready/Return floor open areas and cores) is provided as part of the base building construction.



CEILING-MOUNT DEMARCATION ENCLOSURE
 FOR USE ON FLOOR PLATES 1-4
 REFER TO DRAWING EC11.2

CEILING MOUNT DEMARCATION ENCLOSURE BILL OF MATERIAL					
ITEM	DESCRIPTION	QTY	MANUFACTURER	PART NO.	RELATED ITEMS
2	COMPOSITE CABLE 12 STRAND SINGLE MODE, 12 STRAND MULTI MODE	VARIABLES	SYSTEMAX SOLUTIONS	5124 12/12A W/ MRBK	
3	NEMA 4X STAINLESS STEEL ENCLOSURE 24"Hx20"Wx8"D	1	HOFFMAN	CSD24208SS	
4	RG6/U WAX WITH MALE "F" CONNECTOR	VARIABLES	COMM SCOPE	5700 NON-PLENUM RATED	
4A	RG6 COMPRESSION CONNECTOR	1	GENCOM OR EQUIVALENT	XXXX	
4B	75 OHM RF TERMINATOR HIHG FREQUENCY RETURN LOSS	1	GENCOM	XXXX	
5	PANEL	1	HOFFMAN	CP2420	
6	SWING OUT PANEL KIT	1	HOFFMAN	ANADFK	
7	WIRING BLOCK WITH CLIPS (SEE DETAIL)	1	SYSTEMAX SOLUTIONS	110AW2-100 110C-5	
8	CAT 5 CABLE - 25 PAIRS	VARIABLES	SYSTEMAX SOLUTIONS	1061 025CSL 25/24	
9	MULTIMEDIA BRACKET	1	LEVITON	47612-MMA	
10	MOUNTING PLATE WITH (3) SC-DUPLEX CONNECTORS	2	LEVITON	5F100-3SC	

Exhibit 22
OPERATIONAL FLOOR PLATE DEMARCATION BOX AND MOUNTING DETAIL
 Reference Sheet EC 11.2

Each Tenant is responsible for any necessary fire alarm/detection design and installation associated with their customer service and exit booths. The base building construction has provided fire alarm/detection circuit panel connection points (Fire Alarm terminal box (FTC)) located within each Communication Room at each core. Each FTC contains connection terminal points for a fire detection signal and a fire alarm notification circuit from the Tenant EUP. Each Tenant is responsible for providing and installing Simplex compatible fire detection and alarm devices within its EUP, and the associated conduit and wiring to connect these devices to the fire alarm panel connection points (FTC) provided by the Base Building. The fire alarm system design, testing and commissioning of the fire alarm detection and alarm circuits and devices within the Tenant EUP, will be the Tenant's responsibility. All design and installation will be reviewed and approved by the Port Fire Marshal and performed in accordance with Port standards, applicable codes and ordinances, and Fire Marshal/AHJ requirements.

2.4.6 Conduit Installation

All tenant electrical and communications conduits shall be routed on that tenant's floor plate as opposed to being fed from the floor below or above. For example all free standing signs, gates, or booths shall be fed from above, not from under the floor.

For conduits 2" diameter and larger, conduits may be placed as tight to the underside of the beam as possible, and run horizontal at that elevation. For conduits smaller than 2" diameter, the conduit shall run up to slab between beams. See Exhibit 23 for typical beam wrap, including these provisions: 1. Provide galvanized steel condulets on both sides of beam where galvanized rigid conduit is routed under beams. 2. Provide conduit adapters above condulets to provide transitions from rigid to EMT conduit.

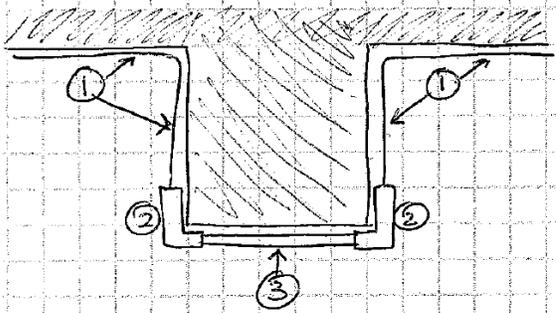
Use of EMT vs. Rigid Steel Conduit

- Rigid steel conduit shall be used in the operational floor plate areas where mounted below ceiling beams or where subject to damage.
- Rigid steel conduit shall be used up to 8 feet above finish floor in all other traffic areas subject to damage
- Rigid steel conduit shall be used in the Operational Floor plates within 4 feet of exterior openings or where exposed to outside elements

Tenants may route or install conduits in the joint cavities between the buildings of the RCF with the following limitations. The joint cavities are generally located between column lines 15 & 16, 21 & 22, and K & L:

- Conduit may not be installed in the open space between the slabs.
- Conduit may not be installed on the underside of the slab.
- Conduit may be installed on the side of the beam.
- Please review RCF Standards Appendix A Specification Section 01611 Attachment to Structure for specific structural limitations. See Exhibit 24 for typical routing along expansion joints.

RFI #1154



- ① EMT
- ② Malleable Iron Condulette
- ③ GRS

Exhibit 23
BEAM WRAPPING WITH CONDUIT

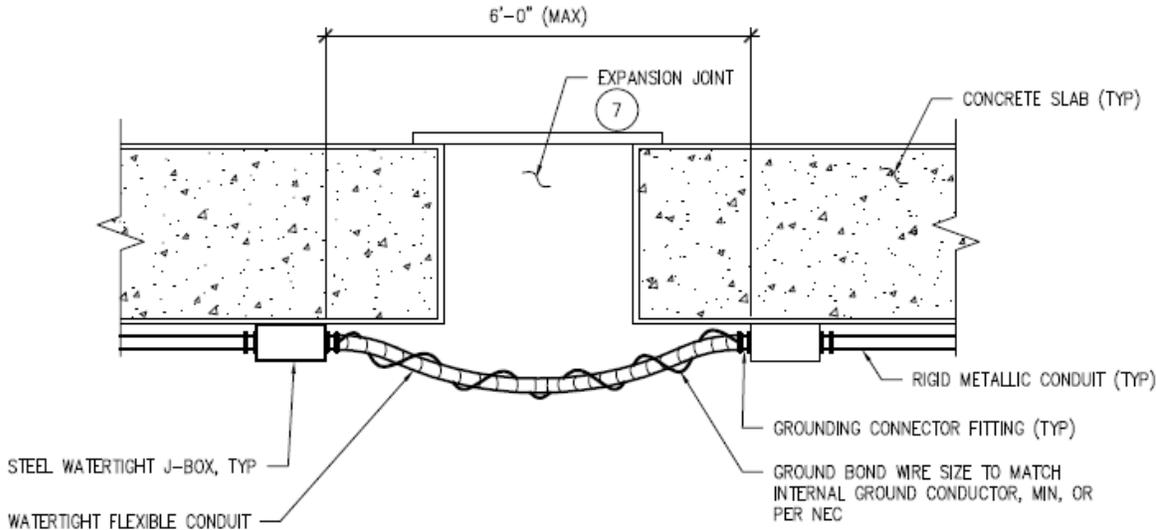


Conduits not allowed on underside of slab

Conduits allowed on side of beam

Exhibit 24
CONDUIT ALONG EXPANSION JOINTS

When crossing Expansion Joints on the Ready/Return floors and to the QTAs use Detail 6 from Base Building Sheet E12.13. See Exhibit 25:



NOTE:
 PROVIDE SUFFICIENT SLACK IN ALL CONDUCTORS AND FLEXIBLE CONDUIT CROSSING EXPANSION JOINTS TO ALLOW FOR STRUCTURE EXPANSION/CONTRACTION. COORDINATE REQUIREMENTS WITH POS RESIDENT ENGINEER.

DETAIL 6
 CONDUIT SPANNING BUILDING EXPANSION JOINT
 SCALE: NTS

Exhibit 25
 CONDUIT SPANNING BUILDING EXPANSION JOINT

2.4.7 Small Operator Areas

Small Operator Area companies shall provide signage for their ready/return stalls, signage for customer kiosks, furnishings and equipment for the customer kiosk, the signage graphic for the customer return sign, and other equipment to support their ready/return operation.

2.5 QUICK TURN AROUND (QTA) AREAS

2.5.1 Introduction / QTA Base Building

2.5.1.1 QTA Base Building Operations

The base building includes a QTA area associated with each operational floor. The general layout of each QTA is similar. See Exhibit 26 for typical information.

The base building constructs the QTA back-of-house building shell, small operator break room and offices (See Section 2.5.10), common-use employee restrooms, pre-wash slabs, car washes and refueling areas. Within each QTA area, each Tenant shall lease the exclusive use premises required to support its QTA operations, and shall construct its respective QTA lease area improvements as required to support its rental operations. All improvements, signage, furnishings, etc. shall be contained within the limits of the leased area.

2.5.1.2 QTA General Information

The layout of the lease area(s) shall include but not be limited to: support offices, locker rooms, employee break rooms and miscellaneous exclusive use storage areas. Each Tenant support area shall be contained within the physical boundaries of the Tenant's leased area.

The QTA on each level may be shared or exclusive use dependent upon lease area allocations. The size and design of each QTA service area may vary. The construction of exclusive use restrooms by each Tenant is not allowed.

All exposed exterior equipment will be painted to match the base building construction.

Location and use of break rooms shall not adversely impact adjacent Tenant(s). Break rooms shall be properly insulated, ventilated, and sound proofed so as not to disturb adjacent Tenants.

Tenant finishes not exposed to public view shall be at the Tenant's option and shall conform to all applicable building codes and standards, subject to the following sections.

2.5.2 QTA Back of House Architectural/Operational

2.5.2.1 Demising Partitions

The base building has provided partitions between Tenants and Common Use Areas.

Any modifications to demising partitions shall be constructed by the Tenant contractor to match the base building standards.

- Map of Operator's QTA Space -

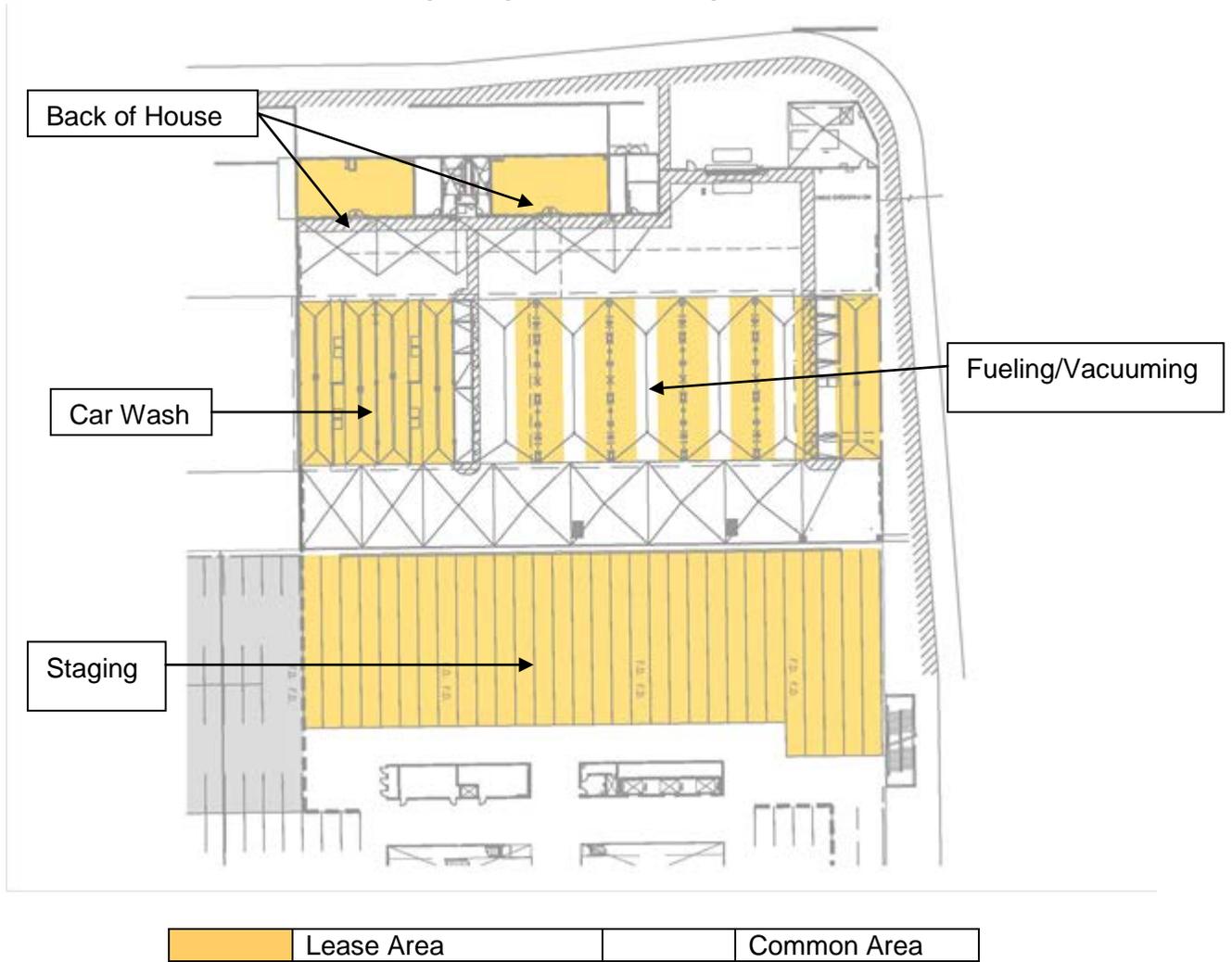


Exhibit 26
TYPICAL QTA COMMON VS. LEASE AREAS

2.5.2.2 Exterior Walls

The exterior walls of the Back of House Buildings are either CMU or cast in place concrete. The base building provided rigid insulation and furring. The Tenants installed gypsum wall board and all finishes.

2.5.2.3 Interior Walls

Interior Tenant partitions, when not required to be fire-rated or a plumbing chase, may terminate above the suspended ceiling, unless otherwise required by Code.

2.5.2.4 Wall Finishes

All wall finishes shall be high-impact resistant, scratch and scrape resistant and easily removable for repair or capable of being repaired in place. All wall finishes shall be washable in place.

2.5.2.5 Floors

The Tenant may provide floor finish material(s) as selected by the Tenant and as appropriate for the conditions of use.

All finish floor surfaces shall be installed level and smooth with a maximum surface variation of ¼" vertical in 10 feet (Class A floor finish). Under no circumstances may the existing concrete slab be chipped to accommodate flooring underlayment or any other construction. Transitions between Tenant floor and the Port controlled finish floor materials shall be the responsibility of the Tenant. Transitions between any finish floor elevations cannot vary by more than 1/8" vertically. Ramping of floor materials at transitions is prohibited.

Floor materials and their respective methods of adhesion shall be submitted to the Port for written approval. Adhesives, thin-set mastic, applied backings, etc. shall be of such properties to eliminate or drastically reduce the occurrence of cracking, delaminating, shifting, popping and other negative results.

2.5.2.6 Ceilings

No ceiling system (grid, tile, etc.) will be provided by the Port in exclusive use Tenant lease premises. The Tenant shall provide a ceiling that meets Code. In no case shall the weight of the ceiling finishes exceed 3 PSF without prior written approval of the Port.

2.5.2.7 In a few locations crossing mechanical duct work limits ceiling heights. Where possible the recommended ceiling height is 9'-0". Doors, Frames, and Hardware

Tenant doors and frames shall match those in the base building construction areas.

All interior doors at service buildings shall be solid core wood stain-grade or 18- gauge (minimum) hollow-core metal doors with hollow metal, 16- gauge (minimum) frames.

All hardware will have satin chrome US 62B finish. The Port uses a proprietary lock system manufactured by Best. All Tenant hardware must accommodate the Best figure 8, 7-pin and interchangeable core lock system.

2.5.2.8 Windows and window treatments

Window coverings may be installed by the Tenant subject to the review and approval by the Port Project Manager. Advertising and the application of decorative films are prohibited on all exterior windows.

2.5.2.9 Millwork

Millwork within exclusive lease areas shall be provided by the Tenant.

2.5.2.10 Accessories / Equipment

Tenant equipment such as wheel chairs, luggage racks, baby seats shall be stored out of public view.

Vending machines are prohibited on the exterior of the QTA service buildings.

2.5.3 QTA Signage

See section 2.3.4 and 2.3.4.1 for general signage requirements. In addition, for exterior applications, metal sign materials, fastenings and clips of all types, shall be hot dipped galvanized iron, stainless steel or brass.

2.5.3.1 QTA Traffic Control Signage

The base building included traffic control signage. Each Tenant may install additional Traffic Control Signage in its respective exclusive lease premises as required. Tenants shall follow Washington State and MUTCD Standards for regulatory and warning signage and pavement markings.

2.5.3.2 Exterior QTA Building Signage

The base building provided one (1) identification sign adjacent to each door entering each Tenant's EUP for the sole purpose of identifying the staff entrance into the Tenant lease premises. The sign contains the corporate name only and placement is contiguous with leased Tenant space. Tenant identification signage is non-illuminated letterforms/graphics using Tenant-specific corporate standard colors as applicable. Tenants are required to provide current corporate identity graphic standards, along with any pertinent usage specifications, to the Port for its use in providing these identification signs.

2.5.4 QTA Structural

All elements of the Tenant's proposed improvements that are suspended from the structure above the Tenant's leased premises or from a shell building wall, floor, or roof shall be detailed (including methods of attachment and load calculations) in the Tenant's Leasehold Improvement construction documents as submitted to the Port for review. Load calculations shall be prepared by a structural engineer licensed in the State of Washington and sealed as a part of the Tenant's submittal for approval.

Floor penetrations shall be kept to a minimum. Floor penetrations shall be located by the Tenant to eliminate the possibility of compromising the structural integrity of the floor. Plans and test results shall be submitted to the Port for written approval prior to drilling holes. Tenant is responsible to repair any base building systems or tenant systems damaged by penetrations or attachment to the structure.

The Tenant shall coordinate mechanical, electrical, plumbing and fire sprinkler work with existing structural members. All floor/roof or wall openings shall be properly fire-safed.

2.5.4.1 Floor Load Limits

See Exhibit 27, Exhibit 28, Exhibit 29, and Exhibit 30 for floor load limits in this area.

2.5.4.2 Roof Load Limits

See Specification Sections 01610 and 01611 in Appendix A for detailed requirements. Support rooms at the car wash and fueling areas have standing seam metal roofs. Tenant shall not attach to or hang any loads from standing seam metal roofs.

2.5.4.3 QTA Canopy

The QTA canopies will be supported on a separate foundation. Tenants shall not attach anything, including signage, to the canopies.

Conduit (and anything else) may not be attached to the quick-turn-around area canopy metal roof. The canopy support structure (beams and columns) has made some allowance for incidental loads. Minor conduit runs of 3/4" or less can likely be accommodated within this allowance.

2.5.4.4 Floor/Roof/Wall Penetrations

See specification sections 01610 and 01611 in Appendix A for detailed requirements. See Section 2.3.5.4 for additional requirements.

2.5.4.5 QTA Attachment to Structure

See specification sections 01610 and 01611 in Appendix A for detailed requirements.

2.5.5 QTA Back of House Mechanical Systems

2.5.5.1 Space Heating and Cooling Systems

The QTA Base Building includes HVAC systems for all space conditioning. The HVAC system consists of packaged units providing fresh air and cooling. A Direct Digital Control System (DDC) controls all aspects of the HVAC System. Any modifications to the supply/return systems required due to installation of walls, partitions or other Tenant improvements shall be submitted to the Port for prior written approval. Each tenant space has been allocated 1 cubic feet per minute (CFM) of conditioned air per square feet.

Temperature control within the Tenant exclusive areas shall be Tenant specific through temperature sensors located within each Tenant space and managed through the building Energy Management System. The Tenant is responsible for air distribution within its space including variable air volume (VAV) boxes, ductwork, grilles, dampers, etc. Each Tenant shall utilize insulated sheet steel ductwork. Insulated flexible ductwork 4'-0" and shorter may be used to connect the steel ducts to air diffuser devices.

Capped heating water supply and return (HWS/R) pipes are provided for tenants to connect to VAV boxes for heat.

Base building provided J-box in ceiling area for base building power for VAV box.

Tenants must provide unobstructed access to all mechanical units for maintenance purposes. A 6' x 6' floor area must be provided directly beneath all units free of any Tenant improvements or equipment. Unobstructed access must also be available above the ceiling for ease of filter and other maintenance.

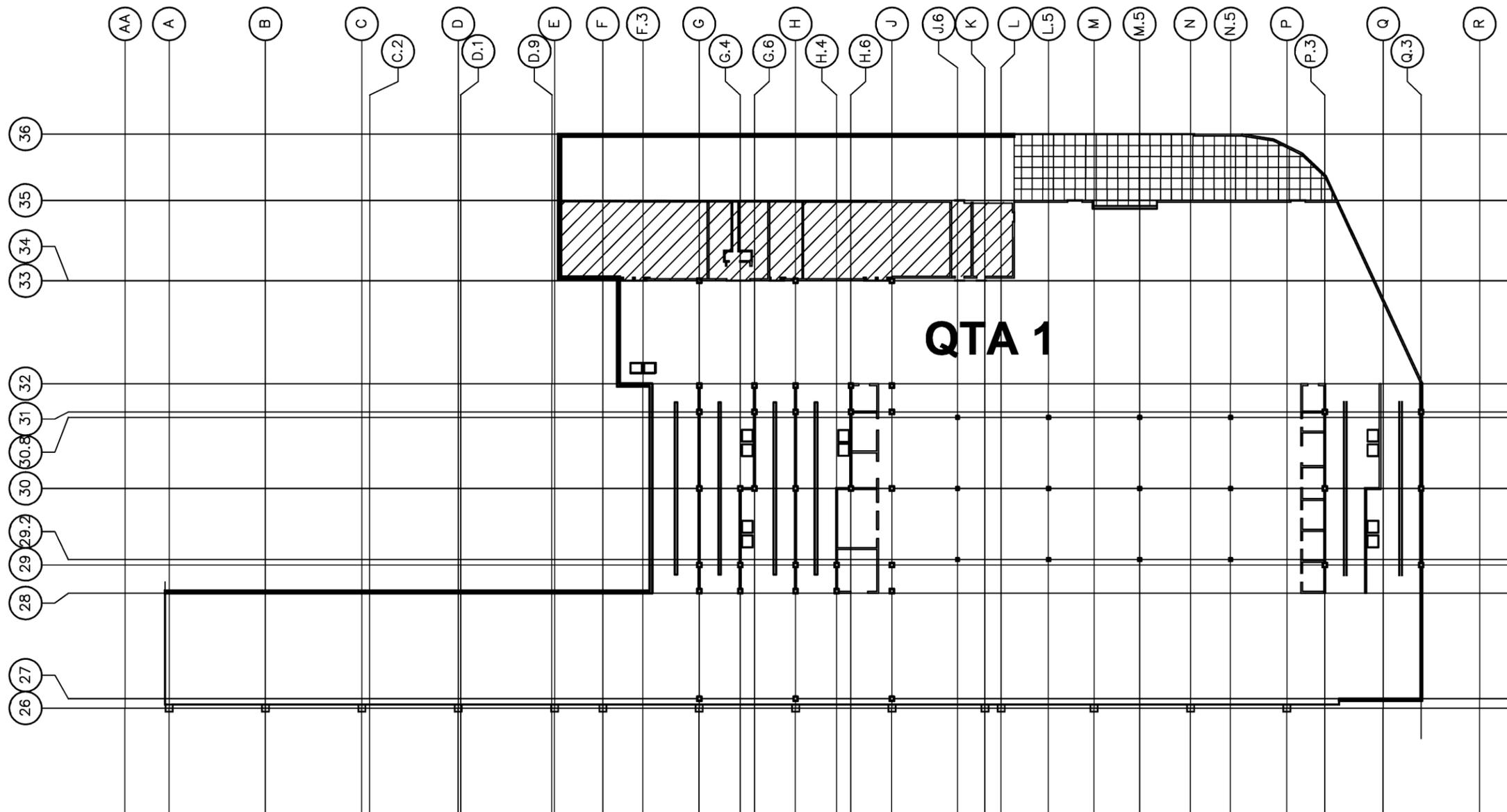
See Exhibit 31 for typical Back of House Area mechanical, include HVAC, piping, and plumbing.

2.5.5.2 Sanitary and Domestic Water Systems

A main, 3", waste line is available for Tenants use. Each Tenant shall be responsible for coring the floor and making the tie-in to the waste line. One 3" vent through the roof is available to each Tenant. The Tenant is responsible for tying in the venting for any fixture installed by the Tenant.

The Tenant shall connect water to its plumbing fixtures, drinking fountains, etc. Cost of this water connection shall be borne by the Tenant. All necessary plumbing fixtures, water heating devices and water meters (when required by the Port) shall be provided by the Tenant. Water heaters shall be electric and shall not be larger than 25 KW. A domestic 1" water cold water line has been provided for each Tenant space.

See Exhibit 31 for typical Back of House Area mechanical.



SUPERIMPOSED LOAD LEGEND

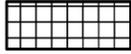
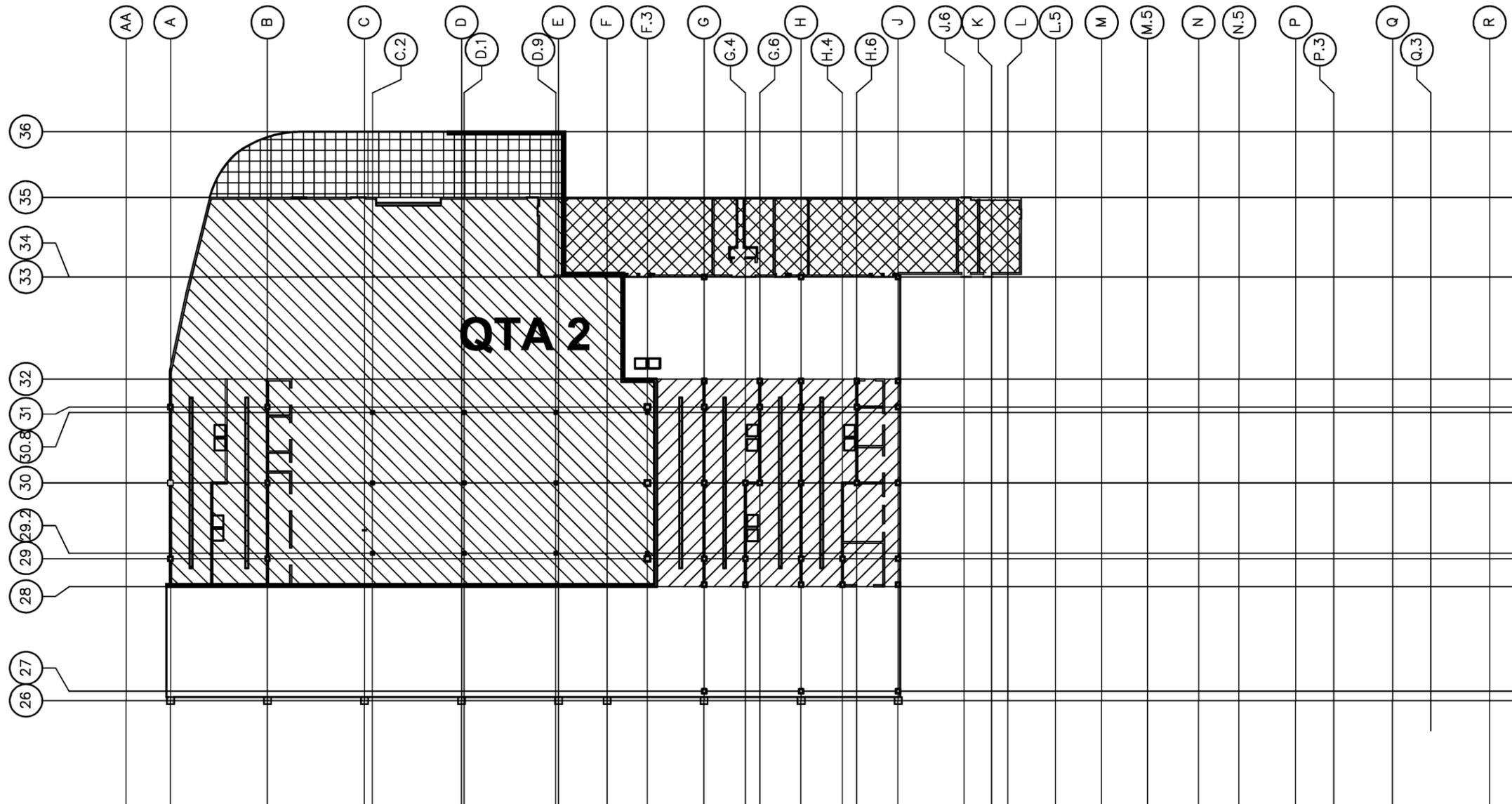
-  15 PSF DL; 60 PSF LL
-  250 PSF LL
-  100 PSF LL

Exhibit 27
 QUICK TURN AROUND (QTA) 1 SUPERIMPOSED DESIGN LOADS
 SLAB-ON-GRADE

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SUPERIMPOSED LOAD LEGEND

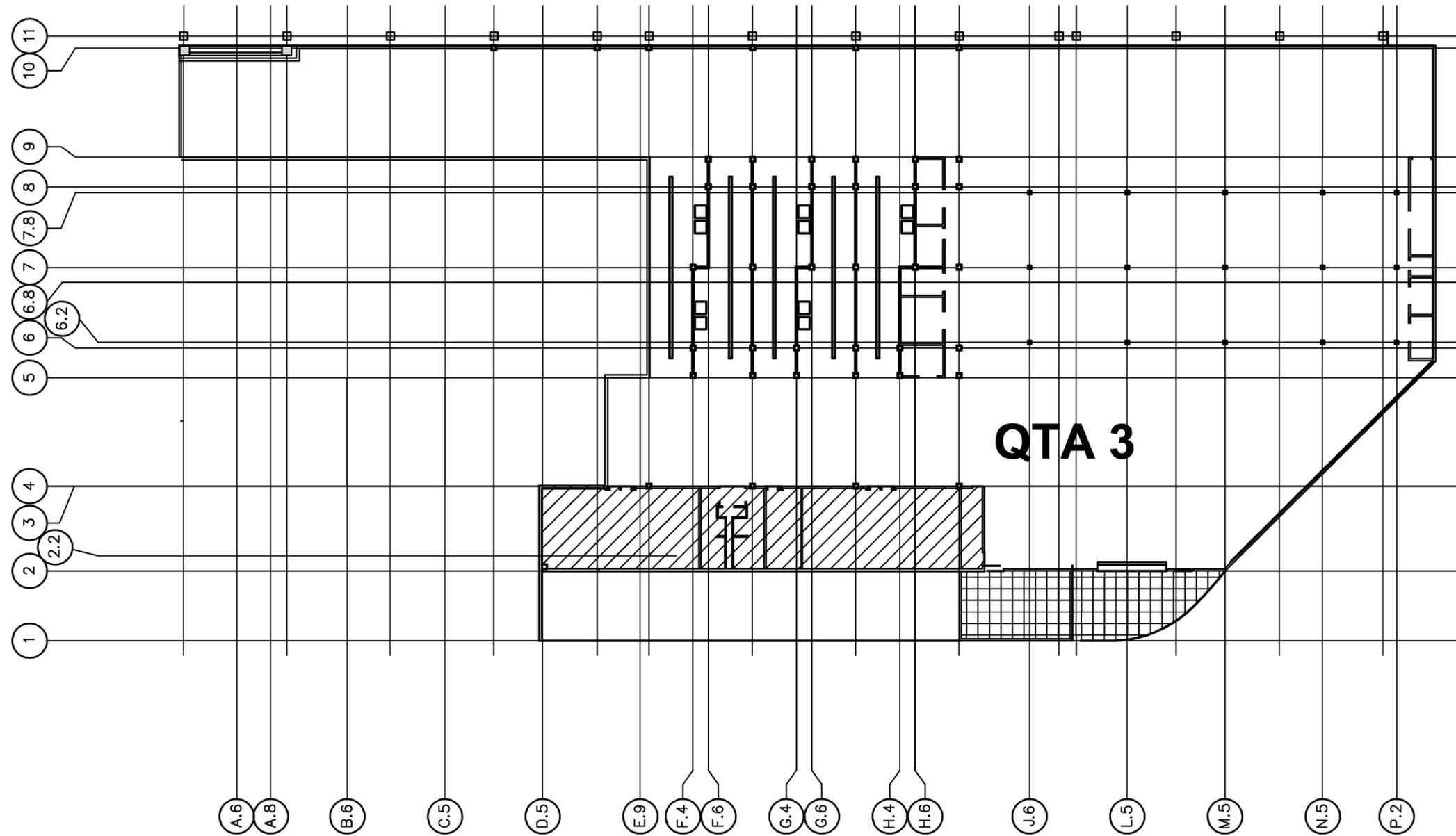
	15 PSF DL; 60 PSF LL
	55 PSF DL; 40 PSF LL; NOTE 1
	5 PSF DL; 50 PSF LL; NOTE 2
	250 PSF LL
	100 PSF LL

PLAN NOTES

1. AN ADDITIONAL 11 kp POINT LOAD IS INCLUDED AT EACH WATER STORAGE TANK.
2. 50 PSF ROOF LL AT PARKING AREA IS TO ACCOUNT FOR CAR LIVE LOAD IN COMBINATION WITH SNOW $\left(\frac{[(1.0)(40 \text{ PSF}) + (1.6)(25 \text{ PSF})]}{1.6}\right)$ IN ACCORDANCE WITH ASCE 7-05.
3. BARRIERS PLACED ON STRUCTURE SHALL NOT EXCEED 300 PLF IN WEIGHT AND SHALL BE PLACED DIRECTLY ON TOP OF BEAMS. SEE SECTION 2.4.5 AND SECTION 2.4.7.1 FOR PLACEMENT REQUIREMENTS.

Exhibit 28
 QUICK TURN AROUND (QTA) 2 SUPERIMPOSED DESIGN LOADS
 ELEVATED SLABS

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SUPERIMPOSED LOAD LEGEND

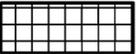
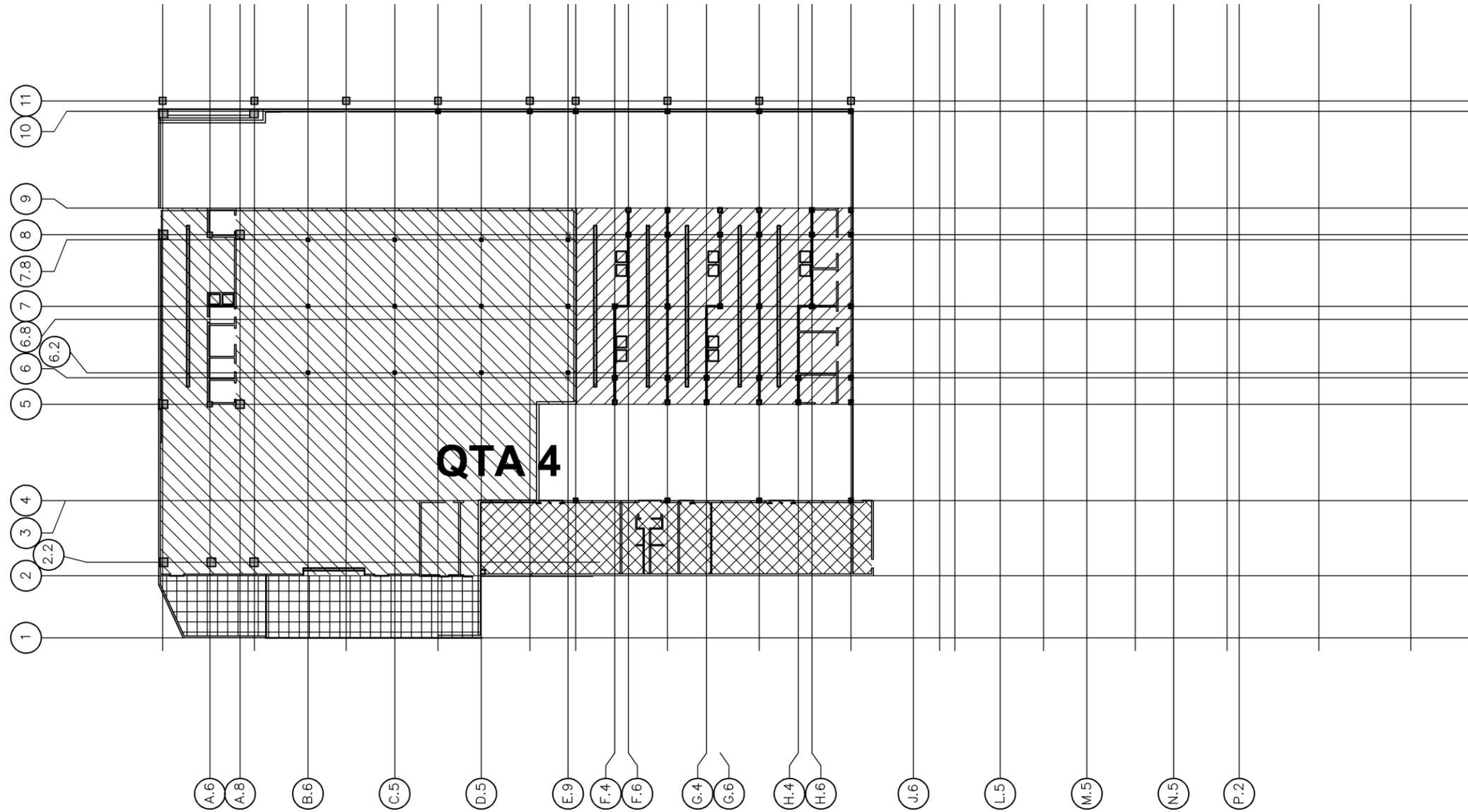
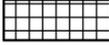
-  15 PSF DL; 60 PSF LL
-  250 PSF LL
-  100 PSF LL

Exhibit 29
 QUICK TURN AROUND (QTA) 3 SUPERIMPOSED DESIGN LOADS
 SLAB-ON-GRADE

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SUPERIMPOSED LOAD LEGEND

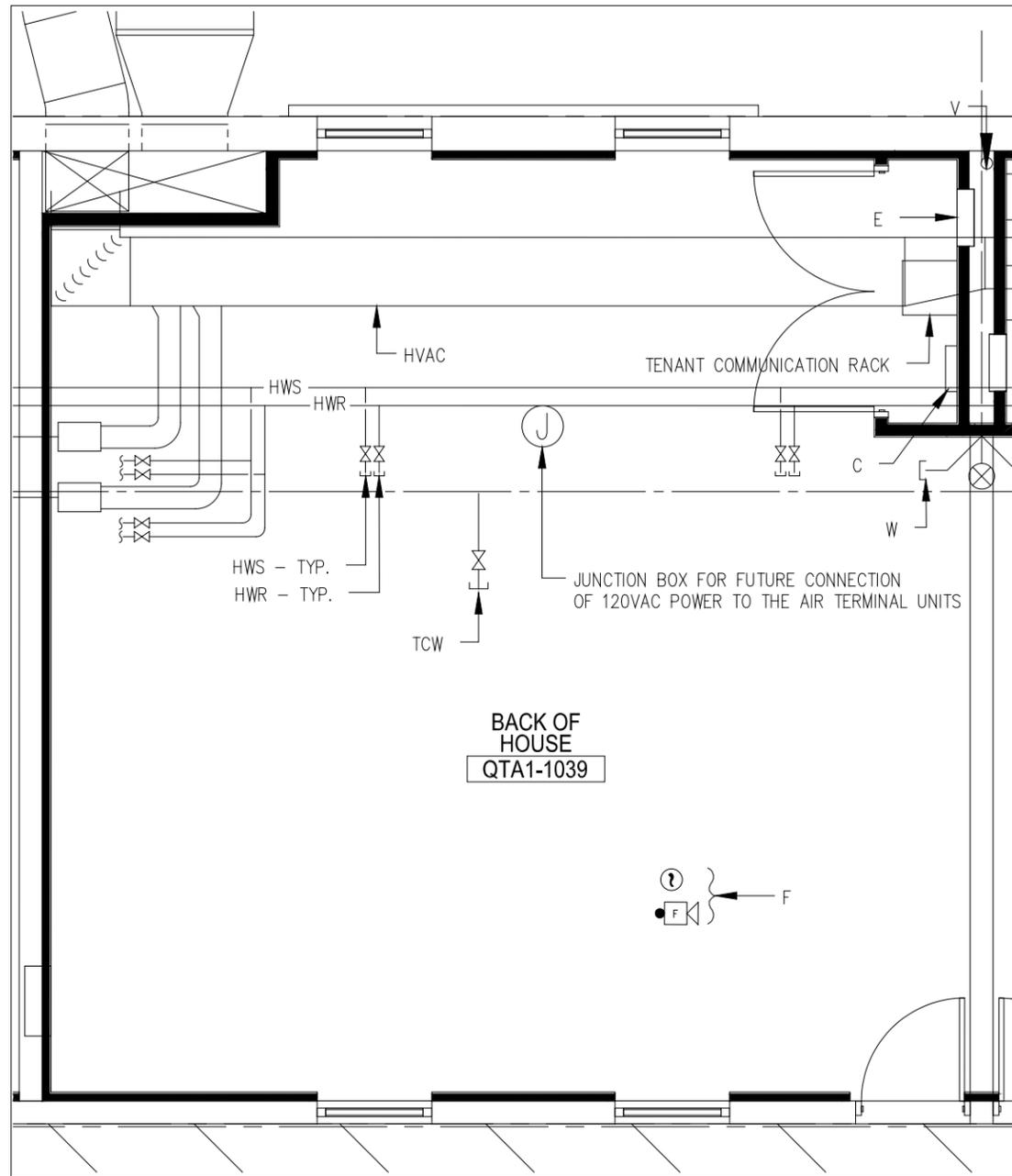
	15 PSF DL; 60 PSF LL
	55 PSF DL; 40 PSF LL; NOTE 1
	5 PSF DL; 50 PSF LL; NOTE 2
	250 PSF LL
	100 PSF LL

PLAN NOTES

1. AN ADDITIONAL 11 kp POINT LOAD IS INCLUDED AT EACH WATER STORAGE TANK.
2. 50 PSF ROOF LL AT PARKING AREA IS TO ACCOUNT FOR CAR LIVE LOAD IN COMBINATION WITH SNOW $(((1.0)(40 \text{ PSF}) + (1.6)(25 \text{ PSF}))/1.6)$ IN ACCORDANCE WITH ASCE 7-05.
3. BARRIERS PLACED ON STRUCTURE SHALL NOT EXCEED 300 PLF IN WEIGHT AND SHALL BE PLACED DIRECTLY ON TOP OF BEAMS. SEE SECTION 2.4.5 AND SECTION 2.4.7.1 FOR PLACEMENT REQUIREMENTS.

Exhibit 30
 QUICK TURN AROUND (QTA) 4 SUPERIMPOSED DESIGN LOADS
 ELEVATED SLABS

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TENANT SPACE UTILITY CONNECTIONS			
LINE	CONNECTION POINT	REF. DWG.	NOTES
E	ELECTRICAL PANEL	EQ1.04, 1.08, 1.12, 1.16 & EQ7.01-7.02	120/208, 1PH PANEL FOR PWR & LIGHTS, TENANT TO INSTALL CONDUIT, WIRE & BREAKERS
C	COMMUNICATIONS (TELEPHONE/DATA)	EQ7.01 & EQ7.02	DEMARCATON BOX
F	FIRE ALARM	EQ8.01 TO EQ8.04	J-BOX FOR TENANT TO USE FOR ADDITIONAL SMOKE DETECTORS
HVAC	HEATING/COOLING AIR DUCT	MQ4.01 TO MQ4.04	TENANT TO INSTALL VAV BOXES
HWS/R	HOT WATER SUPPLY & RETURN FOR HVAC TERMINAL UNIT	PQ4.05 TO PQ4.08	TENANT TO INSTALL VAV BOXES
TCW	TENANT COLD WATER (DOMESTIC)	PQ4.05 TO PQ4.08	TENANT CONNECTION POINT
SCHS	SECONDARY CHILLED WATER SUPPLY	NOT USED	-
SCHR	SECONDARY CHILLED WATER RETURN	NOT USED	-
LPS/GR	LOW PRESSURE STEAM/GRAVITY RETURN	NOT USED	-
W	WASTE/SOIL	PQ4.05 TO PQ4.08	TENANT CONNECTION POINT
GW	GREASE WASTE	NOT USED	-
V	VENT	PQ4.05 TO PQ4.08	TENANT CONNECTION POINT
SPR	SPRINKLER MAIN	NOT USED	-
GD	GREASE DUCT	NOT USED	-



Exhibit 31
QTA MECHANICAL – HVAC, PIPING, WATER, SEWER, AND VENT

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2.5.5.1 Fire Sprinkler Systems

The QTA Base Building has an automatic fire sprinkler system with turned up heads in accordance with applicable codes.

The Tenant shall design and provide additional sprinkler heads / lines or modify the base building sprinkler system in its EUP as required by the applicable Building Codes for its Tenant improvements. The Tenant shall be responsible for acquiring the required permits for all modifications. Any alternative fire sprinkler system other than the automatic fire sprinkler system (i.e. CO₂, Pre-Action Dry-Pipe, FM200, etc.) shall be submitted to the Port for approval in writing prior to installation.

2.5.6 QTA Back of House Electrical Systems

2.5.6.1 Distribution

The back of house base building construction included conduit, feeder cable and breaker panel in the tenant utility closet. See Exhibit 32 for plan and elevation of tenant utility closet where electrical panel is located.

From the base building panel, the Tenant is responsible for installing all electrical breakers, conduit, wiring, fixtures, etc. required to serve the lighting and power needs of its space.

Each Tenant space is sub-metered and is supplied with 120/208 volt single phase 3-wire panel, with an average demand of capacity of 5.5 Kva. Each Tenant shall verify its service capacity and availability for its space.

Each QTA has four potential back of house spaces. One Tenant space is one of these four back of house spaces. Each is approximately 800 square feet.

2.5.6.2 Lighting

QTA Canopy lighting is designed to provide an average illumination level of 70 foot candles.

Lighting for the QTA perimeter areas is metal halide and designed to provide average minimum illumination levels of 5.0 foot-candles.

The Tenant shall provide all lighting fixtures within its exclusive lease premises. Lighting is limited to 1 watt per square foot with a maximum of 800 watts per tenant space.

The Tenant shall provide and be responsible for the installation, connection and operation of all exit lights within its exclusive lease premises in accordance with Code requirements.

In order to keep Tenant electrical and AC loads within the planned QTA service building allowable loads, Tenants are encouraged to use low-voltage lighting and other energy efficient fixtures within their exclusive-use space.

2.5.6.3 Emergency and Auxiliary Power

Emergency power and auxiliary power is not provided at the QTAs. For Tenant critical computer applications, Uninterruptible Power Supplies (UPS) are recommended in the event of temporary power loss. All UPS systems shall be the Tenant's responsibility to provide, install and maintain.

2.5.7 QTA Back of House Communications Systems

For purposes of the following, "service provider" shall be understood as the phone company (Century Link). "Access Provider" shall be understood as the Port Information and Communication Technology (ICT) group.

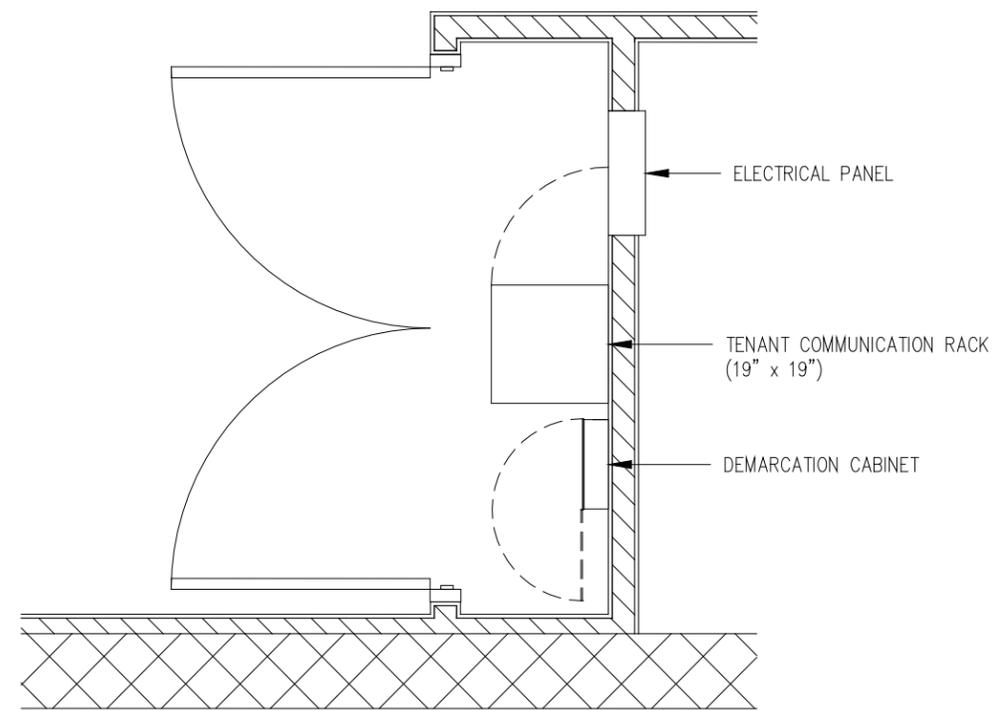
2.5.7.1 Wired Systems

The Base Building provided an unmonitored "demarcation box" for each Tenant. The base building provided the necessary conduit and premise wiring infrastructure from the CSB to the QTA communication room and from the communication room to the Tenants utility closet that will function as the demarcation point for the service providers. Each Tenant shall be responsible for providing the conduit infrastructure from the demarcation box to, and within, its EUP. Each Tenant shall also be responsible for providing the communications cables and any required inner-duct and pull ropes within all conduit infrastructures from the demarcation box to equipment within its EUP.

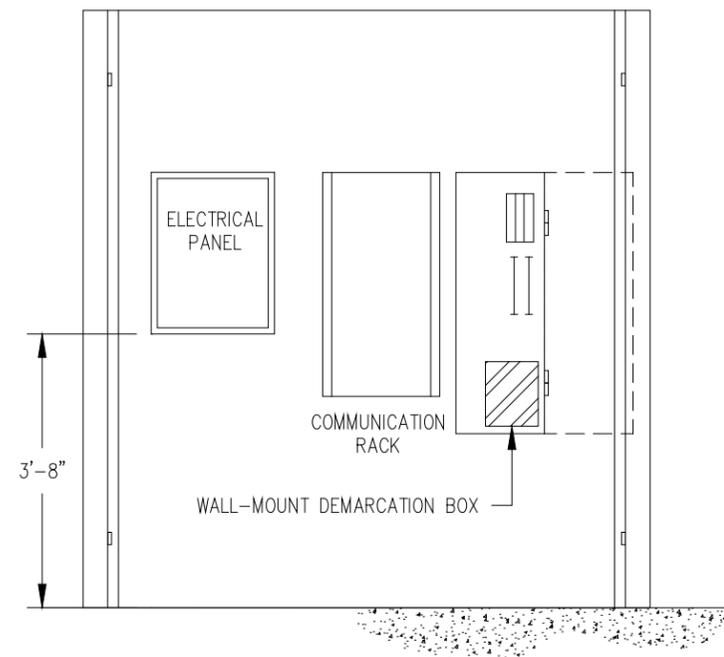
See Exhibit 30 for plan and elevation of utility closet where demarcation box is located. See Exhibit 16 for demarcation box interior details.

Prior to installing any conduit, pull box or communications cable, the Tenant shall submit construction plans that are in accordance with the Port Standards and obtain written approval from START. All cables, inner-ducts, pull ropes, splice enclosures, cross-connects, termination equipment and associated accessories that are installed within the access provider's conduit infrastructure shall become the property of the access provider. The Tenant shall coordinate with START when developing the construction documents and adhere to any location-specific installation directions provided by START.

The demarcation box provided by the base building will only be used as a conduit and cable access and connection point and will not function as a storage area in anyway. The Tenant may add cable termination blocks, splice closures, and patch panels in its area of the demarcation box, if these components are in conformance with Port standards. Electronic equipment or any other type of device that requires power shall not be installed in the demarcation box.



TENANT UTILITY CLOSET PLAN



TENANT UTILITY CLOSET ELEVATION

Exhibit 32
QTA TYPICAL UTILITY CLOSET PLAN AND ELEVATION

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2.5.7.2 Wireless System

Tenants may utilize any wireless frequency for which they own or hold the license. Frequency use will be restricted in accordance with the Port's wireless standard operating procedure and subject to approval by the Port. Tenant's wireless equipment shall not in any way interfere with the operation of the existing 800MHZ POS radio system. Because of the proximity of users, there may be limitations to the use of non-licensed wireless. Any wireless systems must first be approved via the Tenant improvement process prior to installation and use. The Tenant shall not be permitted to sub-lease its space to wireless service providers.

2.5.7.3 Fire Detection and Alarm System

Each Tenant lease area includes a junction box with fire alarm and detection circuits. Each Tenant shall be responsible for installing Simplex compatible fire detection and alarm devices within its EUP, and for installing the conduit and wiring to connect these devices to the fire alarm connection points provided by the base building.

2.5.8 QTA Washing, Fueling, and Other Equipment

2.5.8.1 Fueling System

Base building construction included a vehicle fueling system that is operated and maintained by the Facility Manager. Underground fuel storage tanks are located adjacent to the QTA perimeter service vehicle road.

The fueling system includes a fuel management system for the purposes of tracking the use of fuel at each nozzle by each Tenant. The base building provided junction boxes, with wiring, for power and communication at two locations at each fuel island. If desired for security purposes or more detailed fuel usage tracking, each Tenant can, at its sole discretion and expense, install its own compatible card readers at these junction box locations. The Tenant shall coordinate tracking and reporting requirements with the Facility Manager.

Contact the Facility Manager for information.

See Exhibit 33 for layout of typical fueling area and potential card reader locations. Tenant shall remove existing enclosure. Tenant shall replace enclosure if card reader is removed.

2.5.8.2 Fuel Island Hazardous Areas

For fueling islands hazardous areas please reference Rental Car Facility Drawings Sheets EQ 1.02, EQ 1.06, EQ 1.10, and EQ 1.15 for specific limitations.

2.5.8.3 Car Washes

2.5.8.3.1 Car Wash

The Base Building included QTA car wash facilities that provide a minimum of 90% recycled water. Car wash units and equipment is enclosed within the car wash tunnel of each QTA building. Car

wash operation runoff drains to the sanitary sewer system, pretreated and discharged as required by local and Federal codes. Base building construction did not include air blowers, fast-acting doors, pre-wash system, blasters, reverse osmosis system, or plastic slats at car wash entry and exit openings. Any pre-wash will be on pavement that drains into the wash collection system and is returned to the car wash system.

The base building includes a five brush system, rinse arch and reclaim system and a domestic water stub to each car wash equipment area with reduced pressure valve, water meter, and shut-off valve.

Power to the car washes is individually metered. Power for tenant installed equipment will be run from designated panels. Conduit in this area shall be rigid galvanized due to harsh environment.

Water to car washes is individually metered.

See Exhibit 34 for typical car wash equipment layout. Tenant shall provide detergent for the system.

2.5.8.3.2 Tenant Installed Equipment

Space and power allowances have been made for tenant installation of the following equipment: Blower, pre-wash, blasters, and reverse osmosis system. Please reference RCF Quick Turn Around Area Electrical Panel Schedules Sheets EQ6.02, EQ6.05, EQ6.08, and EQ6.11 for allowances.

Conduit and wire shall be provided by the Tenant for equipment noted. Conduit shall be installed similar to existing conduit.

Water lines shall be extended downstream of the backflow preventer for pre-wash and reverse osmosis systems.

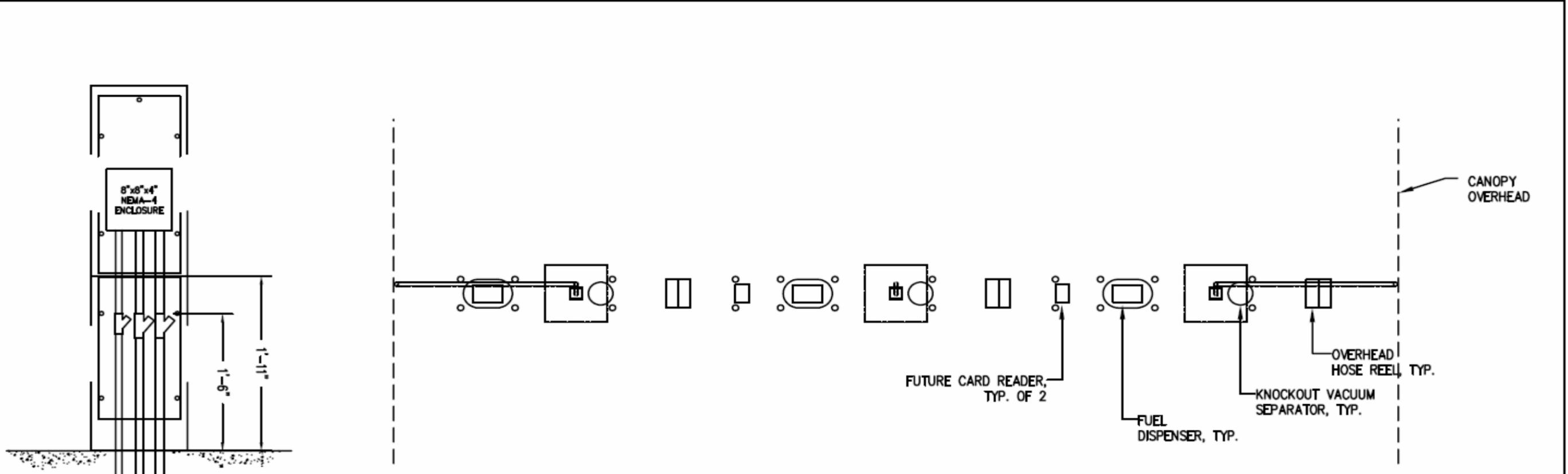
See Exhibit 34 for typical location of floor slab attachment zone. Tenant is required to follow procedures in specification sections 01610 and 01611 in Appendix A for attachment to structure.

2.5.8.3.3 Light Vehicle Maintenance Modifications

Tenant's desiring to perform light vehicle maintenance in a car wash bay shall submit a request to the Port in writing at the Conceptual submittal. Only car wash bays that are located at slab-on-grade may be used for this purpose. Tenant shall obtain all required permits. Tenant is responsible to remove and reinstall all car wash equipment at the end of use.

Modifications to an existing car wash area include, but are not limited to:

- Open/slotted grating over the sumps and trenches shall be changed to solid covers.
- Plug the drain pipes inside the trenches and sumps.



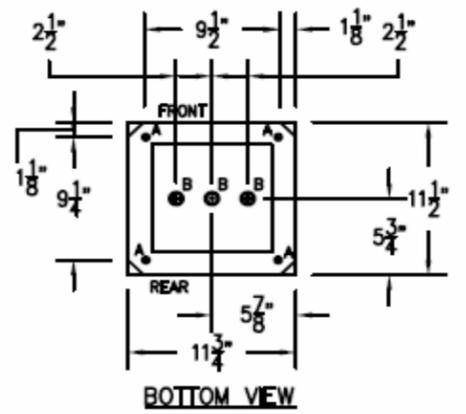
TO POWER & DISPENSERS (2)1\"/>

A - 1/2\"/>

B - DUAL KNOCKOUTS FOR 3/4\"/>

QTA FUEL ISLAND TYPICAL CARD READER LOCATIONS

NOTE:
 ALL EQUIPMENT SHOWN ON THIS EXHIBIT IS BASE BUILDING. IF TENANT WILL INSTALL CARD READER, MOUNTING ENCLOSURE WILL BE REMOVED BY TENANT.



TYPICAL CARD READER MOUNTING ENCLOSURE

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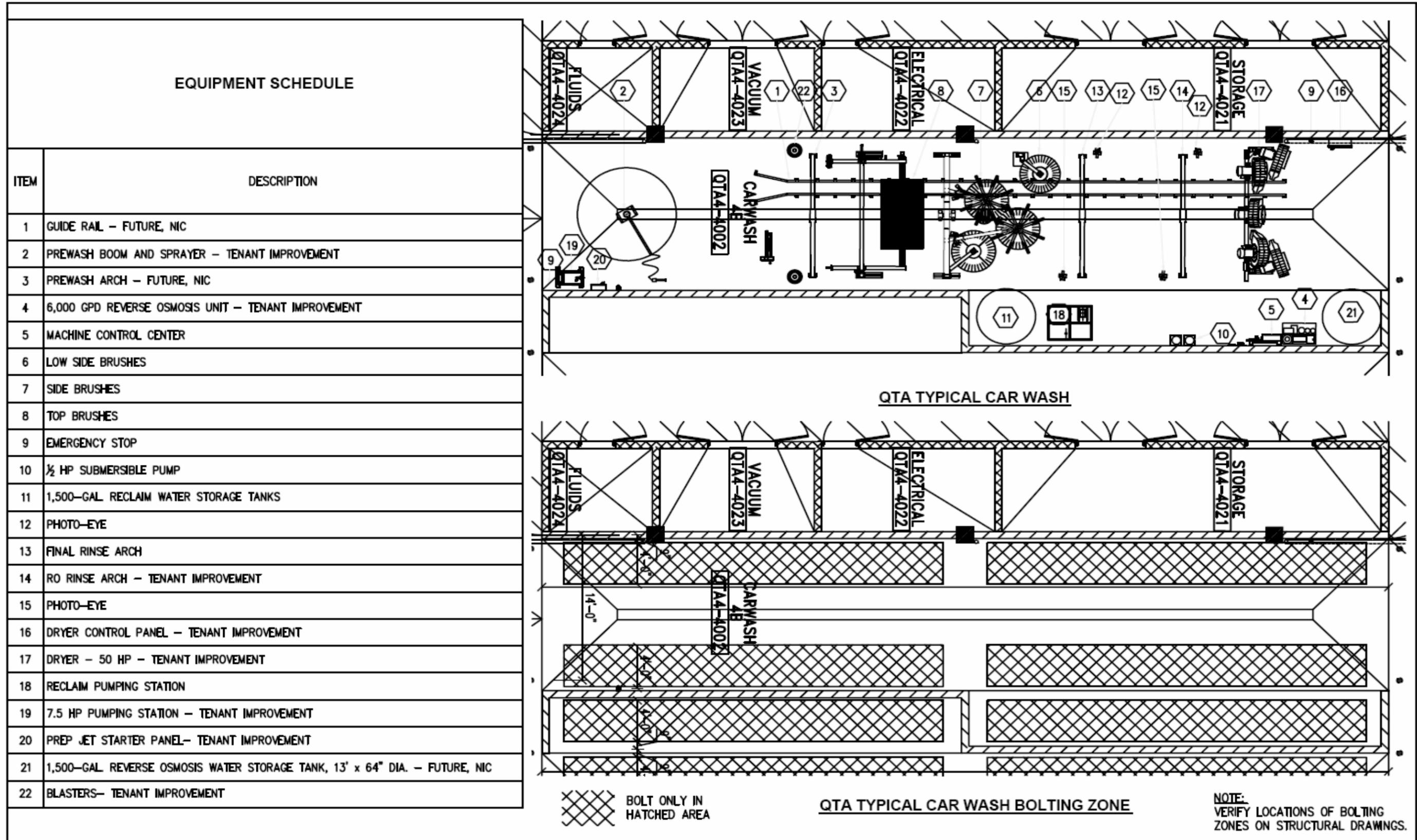


Exhibit 34
QUICK TURN AROUND (QTA) TYPICAL CAR WASH

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- New motor oil will be stored in a double-walled steel tank.
- Waste oil will be stored in same size tank as motor oil. Waste oil tank shall have a high level alarm that will prevent the pump from filling the tank at high level.
- Oil will be pumped via reels into the vehicle (no pouring out of cans/jugs)
- Waste oil will be collected from under the car in a low profile rolling caddy. The waste oil will be pumped from the caddy in to the waste oil tank.
- Oil tanks will be located in what is now the carwash equipment alcove.
- If a hydraulic car lift is used, hydraulic oil quantities may not exceed 3 gallons.
- Any other fluids will be dispensed out of 1 gallon (or smaller) containers (eg antifreeze, brake fluid, automatic transmission fluid, etc.)
- If a Tenant decides to install a lift for light vehicle maintenance, the Tenant is responsible for all required structural modifications. Required structural modifications will depend on the type and weight of lift installed.
- The concrete soffit in QTA Car Wash Bays 1C, 1D, 3C, 3D, and 3E was modified to provide clearance for the upper car wash brush. This may impact the use of these bays as maintenance bays.

Construction of additional structures within the QTA area for vehicle maintenance or other functions is not allowed. It is expected that most vehicle maintenance will occur off-site. The Rental Car Facility design did not envision maintenance being performed on-site. The provision to change a car wash bay to a maintenance bay was requested late in the design process.

2.5.8.4 Other Equipment

- 2.5.8.4.1 Vacuum System – A fully operational system is located at fueling islands.
- 2.5.8.4.2 Windshield Washer Fluid – A fully operational system, including pumps and hose reels, is located at the fuel islands. Tenant or Fueling Manger provides drum of washer fluid. One drum serves two islands.
- 2.5.8.4.3 Compressed Air – A fully operational system, including air compressor and hose reels, is located at the fuel islands.

2.5.8.5 Natural Gas at QTAs

During the design of the Rental Car Facility, tenants did not request and provisions were not made for tenants to connect to natural gas. A few tenants requested that natural gas be made available at the quick-turn-around areas. These tenants intend to use natural gas to heat the light vehicle maintenance bays and/or to heat car wash bays to prevent freezing.

To accommodate this request, the Port worked with Puget Sound Energy to upgrade the natural gas service to the quick-turn-around areas. Puget Sound Energy increased the size of the service pipe, increased the service pressure, and increased the meter size. The tenant capacity for QTA 1 and 2 is 6000 MBH. The tenant capacity for QTA 3 and 4 is 6000 MBH. The service pressure at the meter is 2 psig. The meters for QTAs 1 and 2 are on the north side of the QTA 1 BOH. The meters for QTA 3 and 4 are on the south side of QTA3 BOH.

The Port provided a manifold for tenants to connect to at the service locations. An isometric of the manifold is shown in Exhibit 35.

Those tenants that install natural gas are responsible for installation of meter, seismic valve, valves, piping, and other items in compliance with Code and Port Mechanical Standards. Tenants shall submit natural gas connection forms. Puget Sound Energy provides a single meter for QTA 1/2 and QTA 3/4, the Facility Manager bills individual tenants for natural gas usage.

Please refer to the Port Mechanical Systems Standards for natural gas system materials, installation, and identification requirements. The Natural Gas meter shall be Diaphragm model type with ability to accept pulse output for the DDC system with external digital readout in SCFH with 0 +/- 5% accuracy. Meter to be ANSI B109.1 compliant, Aluminum case with Buna-N diaphragm. American meter, Dresser, Itron, or approved equal.

Please note that all natural gas pipe, in addition to required banding, shall be painted yellow. The QTA exit gates are controlled by a card reader system. It is not expected that Tenants will install exit booths at these locations. Provisions for power, communications, and fire life/safety have not been made. If a Tenant were to decide to install an exit booth, the location would need to be carefully evaluated to prevent interference with emergency vehicle access and not exceed slab load limits. Prefabricated structures shall be limited to approved metal and glass materials that comply with all pertinent building codes.

2.5.9 QTA Optional Exit Booths

The QTA exit gates are controlled by a card reader system. It is not expected that Tenants will install exit booths at these locations. Provisions for power, communications, and fire life/safety have not been made. If a tenant were to decide to install an exit booth, the location would need to be carefully evaluated to prevent interference with emergency vehicle access and not exceed slab load limits. Prefabricated structures shall be limited to approved metal and glass materials that comply with all pertinent building codes.

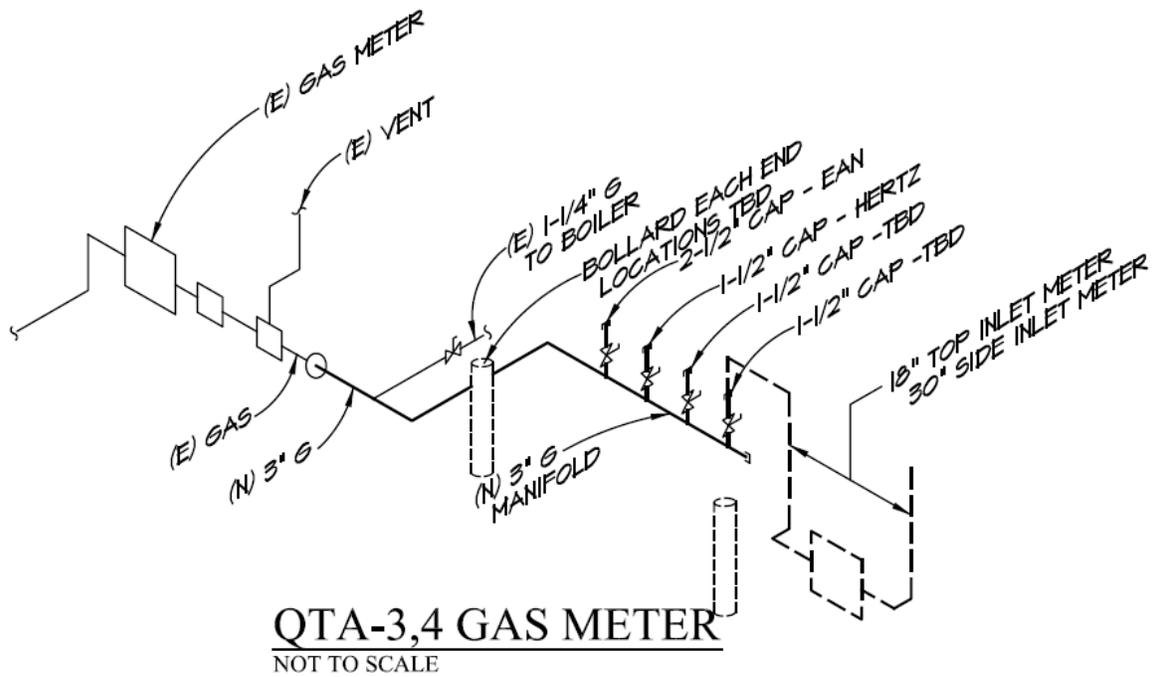
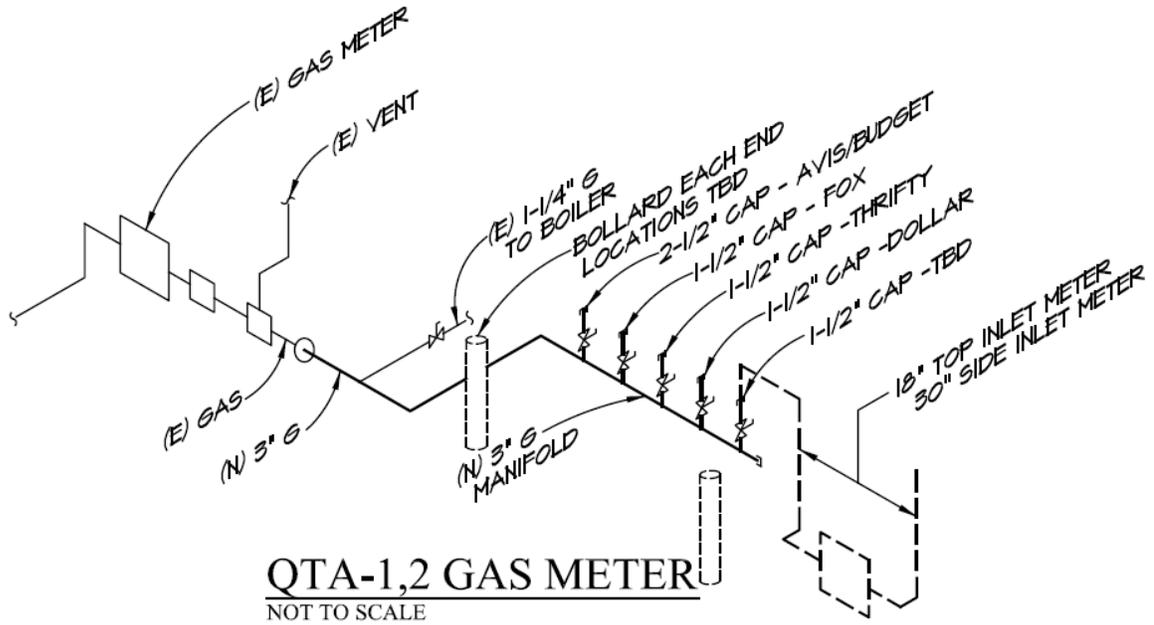


Exhibit 35
NATURAL GAS MANIFOLDS

2.5.10 Small Operator Areas

The QTA back-of-house small operator area consisting of one break room and three offices, were part of the base building construction. The break room includes casework with one sink, and each of the offices contains one storage closet. All the partitions in the small operator area include painted gypsum wall board. The ceiling throughout is suspended acoustical tile.

Small Operator Tenants in this area shall provide office furnishings and equipment within their respective offices and in the storage closets. Tenant shall provide all signage in its assigned area.

End of Section Two

3.0 CONSTRUCTION STANDARDS

3.1 GENERAL REQUIREMENTS

3.1.1 Introduction - Purpose and Scope

This section of the RCF Tenant Design and Construction Standards applies to the development of leasehold improvements and / or Alterations to lease Premises within the Seattle-Tacoma International Airport Rental Car Facility (RCF). More specifically, it shall apply to the following components: Exclusive-Use Premises, including the Customer Service Building retail areas, Ready/Return Areas and Quick Turn Around (QTA) Service Areas. The following standards and criteria are intended to provide the Rental Car Operators (Tenants), and contractors with information required for the construction of their leasehold improvements.

This document complements the Regulations for Airport Construction, but does not supersede it. It is the intent of the document to clarify Tenant construction logistics at the Rental Car Facility and allocate responsibilities for the various logistics actions. All Port Regulations and Standards apply and it is the responsibility of the Tenant contractor to comply with them.

3.1.2 Construction Standards

Each Tenant shall comply with all rules and regulations set forth in the Revised Codes of Washington (RCW) and the Port of Seattle Regulations for Airport Construction. To ensure that all standards are met, Port will provide each Tenant with the most recent edition of Port's Regulations for Airport Construction and these RCF Tenant Design and Construction Standards.

3.1.3 Construction Notice-to-Proceed

The Regulations for Airport Construction, the Lease, Lease Exhibit G, and the Tenant Design and Construction Process Manual describe documents and tasks that must be completed prior to a Tenant contractor starting construction. A summary of the activities is below, but other items may be added or deleted as the various Standards are updated. Tenant may not begin construction without a Notice-to-Proceed letter from the Port Project Manager.

Construction schedules and responsibilities shall comply with the Agreements between the Port and each Tenant. Each Tenant and/or its respective design and construction team shall field verify all utilities and other existing construction or utility conditions.

Summary of Tasks and Documents:

- Permits: Each Tenant is responsible for acquiring all necessary permits required for constructing its portion of the work in a timely manner, to meet their schedules. Copies of all permits shall be submitted to the Port Project Manager.

- Certificates of Insurance: Each Tenant shall meet the insurance and indemnification requirements included in the Lease and the Regulations for Airport Construction.
- Pre-Construction Meeting: A Pre-Construction Meeting shall be held with the Airport Project Management Team, Construction Management Team and other interested parties.
- Emergency Contact Numbers: Emergency contact phone numbers shall be provided for general contractor and all subcontractors.
- Tenant Construction Management Erosion Control Plan / Air Quality Permit (as applicable)
- Construction Schedule: – Bar Chart (Gantt) shall be provided indicating activities and dates for each trade and the entire construction project, including indication of required mechanical and electrical shutdowns.
- Copy of executed construction contract or contract summary containing AIA or equally explicit construction cost breakdown.
- Accepted Safety Plan
- Submittal Log

Within 90 days of receiving its Temporary Certificate of Occupancy for its EUP Leasehold Improvements, each Tenant shall submit to the Port the Tenant's final "As-Built" / Record Drawings. (Refer to Lease.)

Updated Schedules: Submit an updated monthly Construction Progress Schedule to the Port Project Manager.

3.1.4 Insurance

Refer to Articles 17 and 20 of the Lease Agreement for detailed insurance requirements. Required insurance includes but is not limited to: Commercial General Liability, Automobile Liability, and Industrial Insurance (Worker's Compensation).

3.1.5 Business Licensing

All work shall be performed by contractors licensed in Washington State for that applicable scope of work. Contractors are likewise required to be licensed in the City of SeaTac.

3.1.6 Interpretation / Clarifications

These standards must be read and applied in their entirety. These standards complement other legal agreements between the Tenant(s) and the Airport. Should there be any ambiguities between the Standards and the Lease, the Lease shall govern.

3.1.7 As-Built Drawings

Construction of the Rental Car Facility was completed in 2012. The as-built drawings may be accessed at the Port Drawing Vault at Pier 69. The Project Tracking Number is STIA-0617. The project name is "Remote Consolidated Rental Car Facility". Contact your Port Project Manager with any questions.

3.2 TENANT ALTERATIONS

3.2.1 Safety

Tenant contractors are required to comply with Port safety program. Port requires a hard-hat, proper eye and hearing protection, gloves, safety vest, and hard leather shoes for all workers and visitors on the job site. The following items will be required in addition to those called out within the 00860 Safety Management specifications:

- Personal Protective Equipment will be donned at all areas of the construction site.
- Contractors are responsible for compliance with housekeeping regulations WAC 296-155-020 and sanitation regulations WAC 296-155-140 regardless of what is provided on-site by other contractors. There is a no smoking/tobacco use policy in place.
- Only temporary power provided for the contract will be used. All temporary power will be provided with Ground Fault Circuit Interrupter protection.
- All concrete slab penetrations shall be properly evaluated so that post tension cables or in-slab utilities will not be impacted.
- Crane activity will need to be coordinated.
- Contractors are responsible for their own scaffolding, ladders, or other equipment.
- Motor vehicles and equipment shall be operated in a safe manner around the project.
- Barricade policy in place on the site is as follows:
 - All barricades will have a sign posted identifying person in charge.
 - Yellow Caution Tape –Do not cross unless hazard is identified and safe passage or access is assured.
 - Red Danger Tape - Do not cross. Permission to cross is granted only by the person identified on barricade tape signage.

All workers are required to attend a Port provided Contractor Safety Orientation as listed in the document 00860 Safety Management specifications. Each worker will receive a hard-hat sticker upon completion.

Hardhat sticker safety rules will be strictly enforced.

To ensure a safe work place for all, Drug Testing of all employees is recommended.

Additional information will be provided at the Pre-Construction meeting.

3.2.2 Airport Personnel Identification / Access Control

The Rental Car Facility is not located within or directly adjacent to the Airport Operations Area (AOA). Airport Identification Badges are not required.

3.2.3 Photo Verification of Existing Conditions Prior to Starting Work

Tenant contractors shall provide photos documenting condition of adjacent base building finishes prior to starting work to the Port Tenant Construction Inspector.

3.2.4 Coordination with Facility Manager for Utility Shutdowns

The day-to-day operation and maintenance of the Rental Car Facility is performed by a Facility Manager contracted by the Rental Car companies. Operational and Shut-down procedures in the Regulations for Airport Construction still apply. Shutdowns of most systems will be performed by the Facility Manager rather than Port of Seattle Maintenance.

3.2.5 Cutting and Patching, Attachment to Structure

For floor penetrations and openings and attachment to structure see Specification Sections 01610 and 01611 in Appendix A for detailed requirements. Results of testing will be provided to Port Tenant Construction Inspector prior to any penetration of or attachment to structure. Port Tenant Construction Inspector shall be present during all drilling or cutting activities.

All fire proofing, paint, insulation, or other materials damaged by the Tenant Contractor during installation of Tenant Improvements shall be repaired by the Tenant Contractor or Tenant with identical materials. Code required materials are subject to inspection and acceptance by the Airport Building Department or Port Fire Department.

Roof Penetrations – Work must be performed by a qualified firm that is approved, authorized, or licensed as a qualified Alliance Sarnafil roofing applicator in good standing, and is eligible to receive/maintain the manufacturer warranty on the Alliance Sarnafil roofing system. Any work performed on the roofing system must be inspected by the roofing system manufacturer (Alliance Sarnafil), certifying that the system warranty has not been compromised by the performed work. Provide a copy of the manufacturer's inspection report and certification to the Port Construction Inspector. Perform the work while maintaining the overall roofing system insulation rating (R value) and roof drainage. Refer to the Remote Consolidated Rental Car Facility Record Drawings for the specifics of the roofing system buildup. Any damage to the existing roof membrane shall be the responsibility of the Tenant and its Contractor(s), and repairs shall be made in accordance with the roofing manufacturer's recommendations.

Changes or additions of new windows or doors – Tenant and its Contractor(s) are responsible to ensure the installation of new windows or doors do not compromise the integrity of the building. Tenant is responsible to relocate any base building utilities or other features impacted by the new opening.

3.2.6 Floor Loading

In general, the elevated slabs in the Rental Car Facility do not have capacity for loaded forklifts. Carefully review the load limits on Exhibit 10, Exhibit 19, Exhibit 27, Exhibit 28, Exhibit 29, and Exhibit 30. Tenant Contractors shall protect all expansion joints from construction loads.

See Appendix D for examples of vehicles and forklifts that were used during the base building construction and initial tenant construction. Tenant and/or tenant contractor is responsible to verify that loads will not exceed structure load limits.

3.2.7 Logistics

Tenant Contractor may not utilize any Common Use Areas for equipment and materials storage and staging, employee parking, hoisting, contractor vehicle parking, etc.

3.2.8 Material and Equipment Deliveries

Tenant Contractors are responsible for unloading and transporting materials. Material deliveries shall be coordinated with the assigned Port Tenant Construction Inspector.

3.2.9 Elevators/Hoistways/Hoisting

Elevators are not available for Tenant Contractor use.

3.2.10 Equipment

All lifts and equipment shall have pneumatic, non-marring or white rubber tires to avoid damage to finish floors. Any damage shall be repaired immediately.

3.2.11 Temporary Facilities and Controls / Construction Barricades

Construction barricades shall be shown on the Tenant Construction Drawings.

Tenant Contractors are responsible for installing temporary construction barricades where Tenant construction abuts a public space, specifically the Customer Service Building. See Regulations for Airport Construction for detailed requirements.

Barricades may be located no more than six feet beyond the Tenant lease line.

End of Section Three

End of Rental Car Facility Tenant Design and Construction Standards

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Appendix A

Specification Section 01610 Seismic Requirements for Nonstructural Components	A3
Specification Section 01611 Attachment to Structure	A7

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DIVISION 01 – GENERAL REQUIREMENTS**Section 01610 – Seismic Requirements For Nonstructural Components****PART 1 - GENERAL****1.01 SUMMARY**

- A. Nonstructural components and their attachments to the structure shall meet all requirements of the contract documents, including the governing seismic design code as specified in the contract documents, which includes the requirements of ASCE 7-05, Chapter 13
- B. This section includes seismic design requirements for design/build nonstructural components.

1.02 RELATED SECTIONS

- A. 01611, “Attachment to Structure.”

1.03 DESIGN CRITERIA

- A. Seismic Forces: SEI/ASCE 7-05, “Minimum Design Loads for Buildings and Other Structures,” Chapter 13 as amended by IBC 2006 Section 1613, using the following parameters: Chapter 13
 - 1. Seismic Use Group II
 - 2. Seismic Design Category D
 - 3. $S_{DS} = 0.97g$
 - 4. $I_p = 1.5$, unless noted otherwise
 - 5. For the purpose of seismic design calculations, roof height shall be treated as follows:
 - a. RCF
 - (1) Levels 1 through 4: The base of the building shall be considered to be reference ground floor datum, elevation 367’-0”. Average roof height, with respect to the base, shall be 52 feet.
 - (2) Level 5: All portions shall be considered to be at the mean roof height.
 - b. CSB Roof: All portions shall be considered to be at the mean roof height.
 - c. High Roof: All portions shall be considered to be at the mean roof height.

DIVISION 01 – GENERAL REQUIREMENTS**Section 01610 – Seismic Requirements For Nonstructural Components**

- d. Helices and bridges attached to helices: The base of the helices shall be considered to be reference ground floor datum, elevation 367'-0". Average roof height, with respect to the base, shall be 67 feet.
 - e. Bridges not attached to helices: All portions shall be considered to be at the mean roof height.
 - f. Stair Towers: The base of the stair towers shall be considered to be reference ground floor datum, elevation 367'-0". Average roof height, with respect to the base, shall be 52 feet.
 - g. QTA Deck Structures: All portions shall be considered to be at the mean roof height.
 - h. QTA Canopies: All portions shall be considered to be at the mean roof height.
 - i. QTA Back-of-House structures: Floors shall be considered to be at one half of the mean roof height. Roofs shall be considered to be at the mean roof height.
6. F_p shall be determined in accordance with Equations 13.3-1, 13.3-2, and 13.3-3.

B. Seismic Relative Displacements:

- 1a. Interstory Drifts: Accommodate the following interstory drifts. See item 1b for interstory drifts at the four support buildings on the 5th floor.

	RCF / CSB	Stair Towers	Helices	Bridges 2 and 4	QTA Structure	QTA Canopy
5th Floor to High Roof	8 1/2"	-	-	-	-	-
5th Floor to Roof (or CSB Roof)	7"	-	-	-	-	-
4th to 5th Floor (or Roof)	2"	2"	-	-	2"	4 1/2"
3rd to 4th Floor	2"	2"	2"	-	2"	4 1/2"
2nd to 3rd Floor (or Roof)	2"	2"	2"	-	2"	4 1/2"
Ground to Second Floor	2"	2"	2"	2"	2"	4 1/2"

- 1b. Interstory Drifts: The four 5th floor support buildings adjacent to the CSB shall accommodate 1% interstory drift. Note that this interstory drift does **not** apply to the CSB. See item 1a above for CSB interstory drift limit.

DIVISION 01 – GENERAL REQUIREMENTS**Section 01610 – Seismic Requirements For Nonstructural Components**

2. Seismic Joints: Systems crossing seismic joints shall accommodate the following movements. The movements listed below are the amount that the building separation may increase or decrease in the course of a seismic event.

	Seismic Joint Between RCF and					
	RCF	Site Wall	Stair	Helix	Bridge 4	QTA
High Roof	14"	-	-	-	-	-
CSB Roof	11"	-	-	-	-	-
5th Floor	9"	-	9"	9"	9"	-
4th Floor	7"	-	7"	7"	-	6"
3rd Floor	4 1/2"	4"	4 1/2"	4 1/2"	-	4"
2nd Floor	2 1/2"	2"	2 1/2"	2 1/2"	-	4"

1.04 DETAILED SYSTEM REQUIREMENTS

- A. See 01611 for requirements for attachment to structure, and permissible anchor types.

1.05 SUBMITTALS

- A. These submittal requirements are in addition to other submittal requirements stated elsewhere in the contract documents.
- B. Construction Documents: Prepare in accordance with ASCE 7-05 Section 13.2.7 sealed and signed by the registered design professional responsible for their preparation.
- C. Statement of Special Inspections: Prepare in accordance IBC 2006 Section 1705.
- D. Component Certification: Mechanical and electrical components shall meet the Component Certification requirements of ASCE 7-05, Section 13.2.2, including submission of manufacturer's certificates of compliance for review by the Architect and Structural Engineer.
- E. Shop Drawings: Submit shop drawings for all attachments to the structure. These attachments include, but are not limited to, seismic bracing for equipment, conveyances, and architectural components; seismic restraints of vibration isolation systems; and details of seismic bracing and attachment systems designed to accommodate differential seismic moving between building levels.

DIVISION 01 – GENERAL REQUIREMENTS

Section 01610 – Seismic Requirements For Nonstructural Components

- F. Structural Calculations: Submit calculations sealed and signed by the registered design professional responsible for their preparation. These calculations are for information only, and will not be stamped as reviewed or returned to the submitter.
- G. Contractor’s Statement of Responsibility: Submit in accordance with the International Building Code 1706.

1.06 QUALITY ASSURANCE

- A. The registered design professional responsible for the design of structural elements of non-structural components shall be a Professional licensed to practice in Washington State.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

End of Section

DIVISION 01 – GENERAL REQUIREMENTS**Section 01611 – Attachment to Structure****PART 1 - GENERAL****1.01 SUMMARY**

- A. Attachments to the structure shall meet all requirements of the contract documents, including the governing seismic design code where applicable.
- B. This section includes requirements for all design/build attachments to structure.

1.02 RELATED SECTIONS

- A. 01610, “Seismic Requirements For Nonstructural Components.”
- B. 03300, “Cast-In-Place Concrete.”
- C. 05120, “Structural Steel.”

1.03 LIMITATIONS ON ATTACHMENT TO STRUCTURE

- A. Roof Deck: Attachment to roof deck is not permitted.
- B. Slab-on-deck and cast-in-place conventionally reinforced concrete slabs:
 - 1. Loading not to exceed 2,000 pounds vertically and 4,000 pounds horizontally.
 - 2. Anchorage shall not damage reinforcing.
 - 3. When selecting and designing anchors, consider all concrete to be cracked.
- C. Structural Steel Framing:
 - 1. Horizontal
 - a. Loading parallel to beam: Attachment shall be centered on beam web and loading shall not exceed 2,000 pounds.
 - b. Loading perpendicular to beam: Attachment shall be within top 1/3 of beam and loading shall not exceed 2,000 pounds.
 - 2. Vertical: Attachment shall be centered on beam web.
- D. Post-tensioned Concrete Slabs, Beams and Girders:
 - 1. Loading not to exceed 2,000 pounds vertically and 4,000 pounds horizontally.
 - 2. Attachment to the structure using post-installed anchors is subject to the following limitations:

DIVISION 01 – GENERAL REQUIREMENTS**Section 01611 – Attachment to Structure**

- a. Anchorage shall not damage the post-tensioning tendons or mild reinforcing.
 - b. When selecting and designing anchors, consider all concrete to be cracked.
 - c. Anchors with an embedment depth and hole depth of $\frac{3}{4}$ " or less may be used at any location in the structure.
 - d. Anchors with an embedment and hole depth of 1 $\frac{1}{4}$ " or less may be used at the following locations:
 - (1) Slab soffits, within 5 feet of the centerline of the supporting element
 - (2) Beam sides and soffits.
 - e. Where anchor embedment or hole depth does not meet limitations (c) or (d) above, comply with the following:
 - (1) Slabs: X-ray or ferro-scan to locate post-tensioning tendons and mild reinforcing in the vicinity of the anchor. Anchors shall be located to miss mild reinforcing and to be 6" clear from post-tensioned tendons.
 - (2) Beams: Attach to sides of beam only. Where anchor embedment or hole depth exceeds 2", x-ray or ferro-scan beam to locate post-tensioning tendons and mild reinforcing in the vicinity of the anchor. Anchors shall be located to miss mild reinforcing and to be 6" clear from post-tensioned tendons.
- E. Concrete Columns and Walls:
- 1. Loading not to exceed 4,000 pounds.
 - 2. Anchorage shall not damage reinforcing.
 - 3. When selecting and designing anchors, consider all concrete to be cracked.

1.04 SUBMITTALS

- A. These submittal requirements are in addition to other submittal requirements stated elsewhere in the contract documents.
- B. Anchor Installation Plan: For all post-installed concrete anchors, submit anchor installation plan, including the following information:

DIVISION 01 – GENERAL REQUIREMENTS**Section 01611 – Attachment to Structure**

1. Anchor types, applications and locations
 2. Pre-installation inspection requirements
 3. Installation inspection requirements
- C. ICC-ES Reports: Submit ICC-ES report valid for the 2006 IBC for the following post-installed anchor types:
1. Mechanical anchors.
 2. Adhesive anchors.
 3. Power actuated fasteners.
 4. Drop-In anchors
- D. Repair Grout: Submit material certificate
- E. Shop Drawings: Submit for embedded plates in accordance with 05120.

PART 2 - PRODUCTS – ATTACHMENT TO CONCRETE

- 2.01 ALL ATTACHMENTS TO STRUCTURE SHALL BE PROTECTED AGAINST CORROSION THROUGH THE USE OF EITHER:
- A. Carbon steel, zinc plated in accordance with ASTM B 633, or hot-dipped galvanized in accordance with ASTM A-153. Provide mill test reports and manufacturer's quality control certification upon Engineer's request.
 - B. Stainless steel anchors, manufactured from ASTM A303, A304, or A306 stainless steel. Provide mill test reports and manufacturer's quality control certification upon Engineer's request.
- 2.02 ATTACHMENTS SHALL BE MADE USING ONE OF THE FOLLOWING SYSTEMS:
- A. Embedded Plates
 1. Anchorage to concrete shall be made using one of the following anchors:
 - a. ASTM A108 welded headed studs installed in accordance with specification section 05120.
 - b. ASTM A706 reinforcing steel welded to the embed plate in accordance with specification section 03300.
 2. Design Capacities

DIVISION 01 – GENERAL REQUIREMENTS**Section 01611 – Attachment to Structure**

- a. The design shall consider the effects of eccentricities, including eccentricities due to construction tolerances.
 - b. The capacity of the steel plate shall be determined in accordance with the AISC 13th Edition.
 - c. The capacity of the reinforcing steel shall be determined in accordance with ACI 318-05.
 - d. The capacity of the welded headed studs shall be determined in accordance with ACI 318-05 Appendix D.
- B. Post-Installed mechanical and adhesive anchors:
1. Anchors shall be manufactured by Hilti Fastening Systems, ITW Ramset/Red Head, Simpson Anchor Systems, or accepted equivalent and shall have ICC-ES reports demonstrating compliance with the 2006 IBC for use in cracked concrete. Pre-approved ICC-ES reports include the following:
 - a. ESR-1917: Hilti Kwik Bolt TZ
 - b. ESR-1771: Simpson Strong-Bolt
 - c. ESR-2322: Hilti HIT-RE 500-SD
 2. Adhesive anchors shall not be used to resist pullout forces in overhead and wall installations unless proper consideration is given to fire conditions. Consult with manufacturer's engineer.
 3. If necessary for purposes of determining tensile and/or shear capacity in questionable base material, testing shall be done prior to actual anchor installation. A maximum of five tension and/or shear tests shall be performed by manufacturer's engineer. Anchors shall be proof loaded in tension and/or shear to assure that working load capacity is within specified allowable load limit as published in the ICC-ES report.
 4. Anchor spacing and edge distance per ICC-ES report.
 5. Anchor installation shall be as required by manufacturers written instructions and the ICC-ES report.
- C. Concrete Inserts:
1. Inserts shall be manufactured by Unistrut, Cooper B-Line, Mason Industries, or accepted equivalent and shall be positively anchored to the concrete by means of headed or hooked element that conforms to ACI

DIVISION 01 – GENERAL REQUIREMENTS**Section 01611 – Attachment to Structure**

Appendix D. Products which are pre-approved as being in conformance with ACI Appendix D for anchorage geometry are:

- a. Cooper B-Line:
 - (1) Spot Inserts
 - (a) Wood-Knocker
 - (b) Bang-It
 - (c) B25 series
 - (2) Continuous Inserts
 - (a) B22 series
 - (b) B32 series
 - (c) B52 series
 - b. Unistrut:
 - (1) Spot Inserts
 - (a) M26/M2812
 - (b) M3245
 - (c) M24/M2512
 - (2) Continuous Inserts
 - (a) P32 series
 - (b) P33 series
2. Capacity of the insert shall be determined by the lesser of:
- a. The concrete capacity as determined by Appendix D of ACI 318-05.
 - b. The manufacturer's published capacity. Where the manufacturer's published capacity is expressed in terms of allowable load, this capacity may be increased by a factor of 1.5 for comparison to the capacity calculated in accordance with ACI Appendix D.

DIVISION 01 – GENERAL REQUIREMENTS**Section 01611 – Attachment to Structure**

- D. Shallow Anchors: Post-Installed Power Actuated and Drop-In Fasteners.
1. Fasteners shall be manufactured by Hilti Fastening Systems, Tulsa Oklahoma, ITW Ramset/Red Head, Wood Dale, IL, Simpson Anchor Systems, Columbus, OH, or accepted equivalent and shall have a current ICC-ES report demonstrating compliance with ICC-ES acceptance criteria AC70. Pre-approved ICC-ES reports include the following:
 - a. ESR-1663: Hilti Low-Velocity Power-Driven Fasteners
 - b. ESR-2269: Hilti Low-Velocity X-U Universal Powder Driven Fasteners
 - c. ESR-1799: Ramset Powder-Driven Fasteners
 - d. ESR-1955: Ramset T3 Powder Driven Fasteners
 - e. ESR-2138: Simpson Powder-Driven Fasteners
 2. These anchors shall not be used to resist tension loads, except for surface mounted, non-emergency electrical and communications conduit weighing five pounds per lineal foot or less. When used in cracked concrete, the allowable tension capacity published in the ICC-ES report shall be divided by five.
- E. Repair Grout: SikaGrout 328 or other approved.

PART 3 - EXECUTION**3.01 ANCHOR INSTALLATION**

- A. Coordinate installation of anchors with special inspector where special inspection is required by the designated design professional responsible for the anchor.
- B. Comply with installation requirements of ICC-ES and manufacturer's recommendations.
- C. Locate anchor to miss reinforcing as required by Section 1.03 of this specification.
- D. Stop installation immediately if reinforcing steel or post-tensioning tendons are encountered. Relocate anchor as required to miss reinforcing steel or post-tensioning tendons.
- E. Notify the Port of Seattle if reinforcing steel or post-tensioning tendons are damaged during anchor installation.

DIVISION 01 – GENERAL REQUIREMENTS

Section 01611 – Attachment to Structure

3.02 REPAIR

- A. Grout any holes not used with specified repair grout.
- B. If reinforcing steel or post-tensioning tendons are damaged:
 - 1. Submit proposal repair procedure. Proposed repair procedure to be stamped by a structural engineer licensed in the State of Washington.
 - 2. Repair structure in accordance with the approved repair procedure.

End of Section

Appendix B

Customer Service Building Blade and Small Operator Sign Shop Drawings, Submittal 02890-016.00	B3
Soffit Signage Support Locations and Structural Detail, A-SK-014, S-SK-137	B12-B13
Paint Colors, Submittal 09900-03.00	B14
Insulation on ceiling of fourth floor under the customer service building, Rigid insulation and tape, Specification section	B26-30
Lease Delineation Barrier Shop Drawings, Submittal 03410-009.00	B31

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Demattei Wong Submittal Review Cover Sheet

Submittal Title: DCN 040 Tenant and Small Operator Signs - Trade Marx
 Submittal No. 02890-016.00



Page 1 of 1

Project: Remote Consolidated Rental Car Facility
 Port Work No.: #103640
 Walker Project No.: #33-1300.10 KPFF Project No.: #104125
 DWA Project No.: 20680.04
 Owner: Port of Seattle
 Date Returned to KPFF: 04/21/11

Demattei Wong Architecture Comments:

02890-016.00 - DCN 040 Tenant and Small Operator Signs - Trade Marx:

Item 02890-016.00-0112-0-1.02 - DCN 040 Tenant and Small Operator Signs:

1. DWA has reviewed the submittal and corrected as shown in the attached mark-up.
2. DWA requests the subcontractor to fabricate one aluminum cabinet box for inspection by the Port and DWA prior to fabrication of remaining boxes.

Review Action: 2 Furnish As Corrected

Design Team Stamp:

<input type="checkbox"/> REVIEWED	<input checked="" type="checkbox"/> FURNISH AS CORRECTED
<input type="checkbox"/> REJECTED	<input type="checkbox"/> REVISE AND RESUBMIT
<input type="checkbox"/> RECEIPT ACKNOWLEDGED	<input type="checkbox"/> SUBMIT SPECIFIED ITEM

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications and applicable laws, codes and regulations. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

BY: Kathryn Willems

DATE: 04/21/11



Trade Marx Sign & Display Corporation
 818 S. Dakota St.
 Seattle, WA 98108
 Telephone 206.623.7676
 Fax 206.623.5007

CLIENT INFORMATION:
Port of Seattle
 Seatac International Airport
 Rental Car Facility

APPROVALS

ACCOUNT MANAGER:
TM

PROJECT MANAGER:
Kelly Garrett

DESIGNER:
TM

FILE NAME:
DCN-40

START DATE:
2-15-11

REVISION DATES:

- 1
- 2
- 3
- 4
- 5

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JOB NUMBER:
110326

SIGN TYPE:

Port of Seattle

Seattle-Tacoma International Airport

DCN-40 Storefront Signage

ISSUE DATE: April 14, 2011

THIS SIGNAGE PROJECT IS TO BE PRODUCED FROM THESE CONSTRUCTION DRAWINGS. CLIENT TO VERIFY ALL DIMENSIONS, SPELLING, MATERIALS, AND ACCURACY. PRODUCTION WILL BEGIN ONCE THE FINAL APPROVED SHOP DRAWINGS ARE RECEIVED BY TRADE-MARX SIGN & DISPLAY CORPORATION.

MATERIALS & FINISHES

Finish Aluminum
 #4 Horizontal
Satin Brush

Finish Stainless Steel
 #4 Horizontal
Satin Brush

TURNER CONSTRUCTION COMPANY
 Reviewed for general acceptance only. This review does not relieve the Subcontractors of the responsibility for making the work conform to the requirements of the contract. The subcontractor is responsible for all dimensions correct fabrication and accurate fit with the work of other trades.
SUBJECT TO ARCHITECTS APPROVAL
 Signed: Robert Mace Date: 4/15/2011
 Submittal No. 02890-016.00



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 Rental Car Facility

APPROVALS

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TM

PROJECT MANAGER:

Kelly Garrett

DESIGNER:

TM

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JOB NUMBER:

110326

SIGN TYPE:

Specification

Post Cabinets

A CABINETS

1/8" fabricated cabinets. Cabinets to have removable face. Face to have inset returns to attach to cabinet sides. Sides to attach with 4ea, per side, square drive set screws. Cabinet to have ~~22 gauge stainless steel~~ Aluminum finish with #4 horizontal brush.

Aluminum
#4 Horizontal Brushed Finish
 DWA KAW 04/20/11

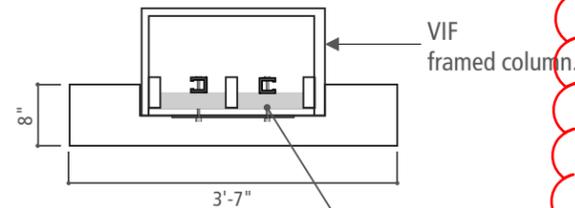
B LIGHTING

Cabinets are internally illuminated with white LED lighting. LEDs to be mounted to white alum. composite sheeting. LEDs to be spaced so lighting will be even across future logo area.

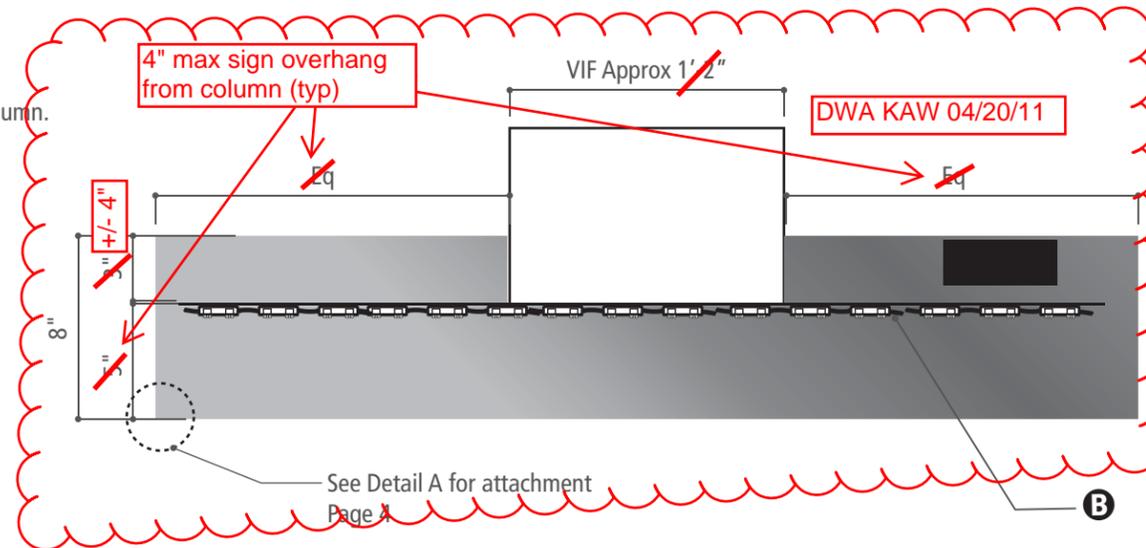
Transformers to mount in sign.

C MOUNTING

Signs mounted to unistrut previously installed in column with 4ea per cabinet snap toggle bolts.

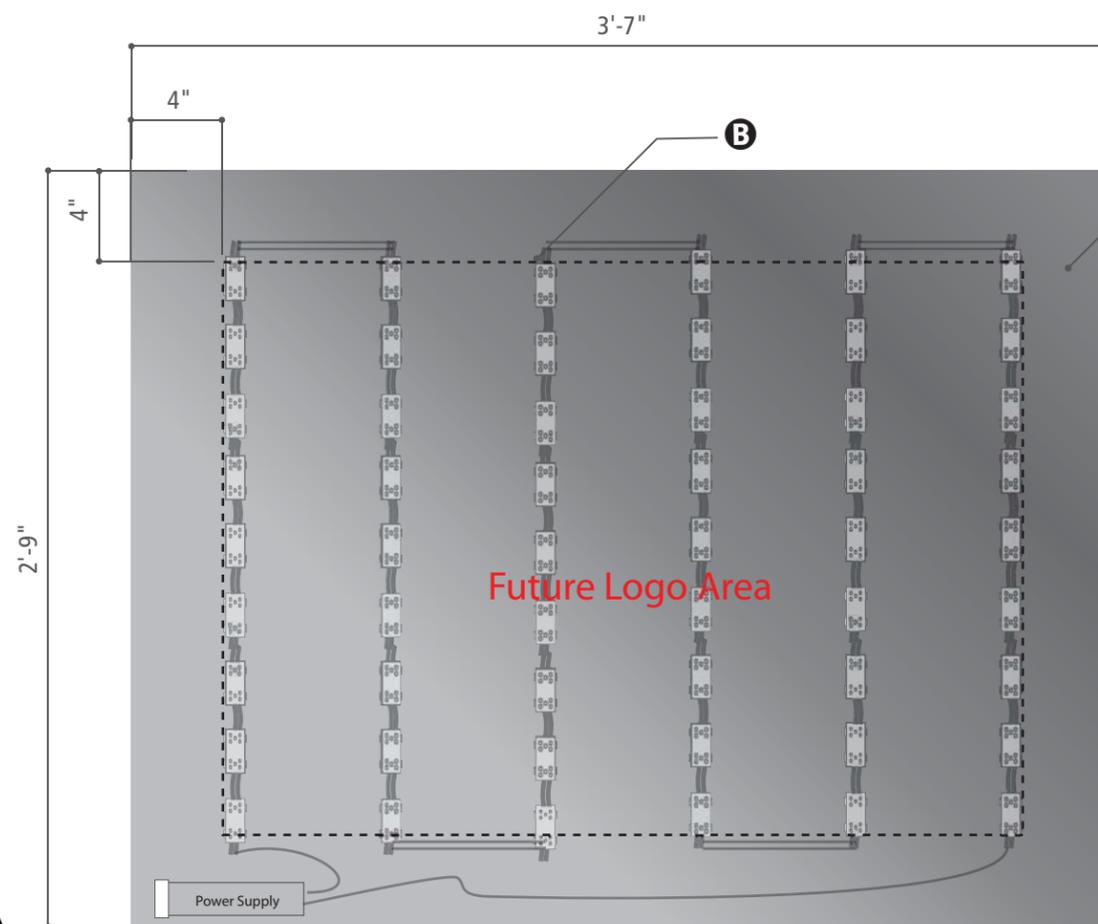


Plan View
 Scale : 1/2" = 1'

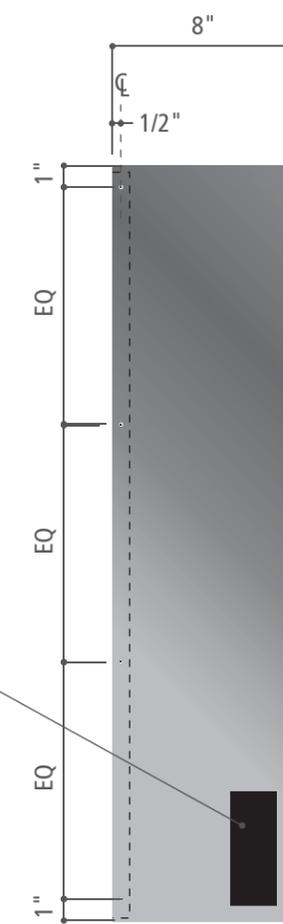


Cabinet Detail Plan View
 Scale : 1 1/2" = 1'

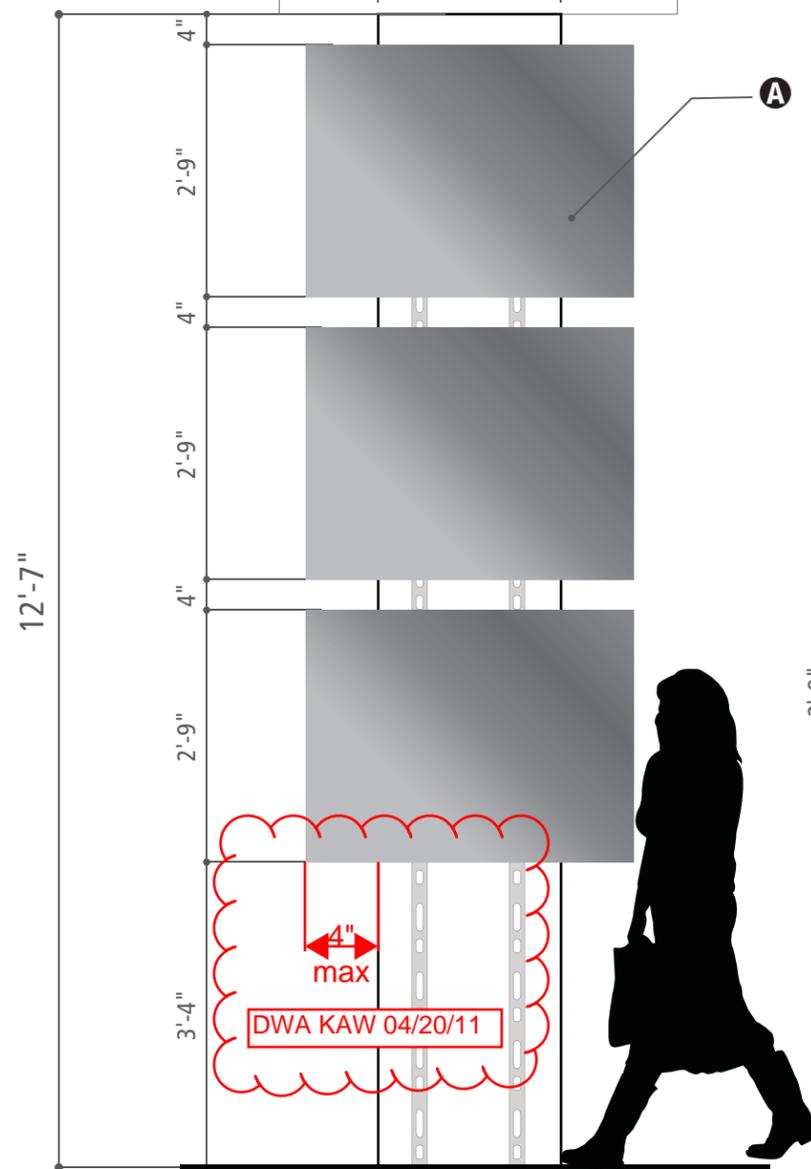
Note: Faces to be blank, Tenant logos for face NIC.



Cabinet Detail View
 Scale : 1 1/2" = 1'



Side Cabinet Detail View
 Scale : 1 1/2" = 1'



Elevation View
 Scale : 1/2" = 1'

Submittal
 #02890-016.00



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 PROJECT MANAGER:
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JOB NUMBER:
110326
 SIGN TYPE:

Qty: 1 [One] (One sign 3 cabinets)

Specification

RC-22 One sign with 3 cabinets DWA KAW 04/20/11

A MOUNTING TUBE Stainless Steel
 4" X 9" X 17'-0" with ~~aluminum~~ rec. tube to mount 3 cabinets to brackets. Rec tube to be capped on both ends. 3ea 4 1/2" square tube mounting posts. Square tube to be used to sleeve over 4" sign mount installed by others.
 [Sign Mounting Square tube to be welded between grid 22 & 23 at locations 38.17 [41.14], 34.21[40.48], & 30.17[39.81] on BEST Construction as-built drawings sheet dated 9-16-10 Page 7 of 8 By Others. NIC.]

Brushed Aluminum Stainless Steel
#4 Horizontal Brushed Finish with clear coat

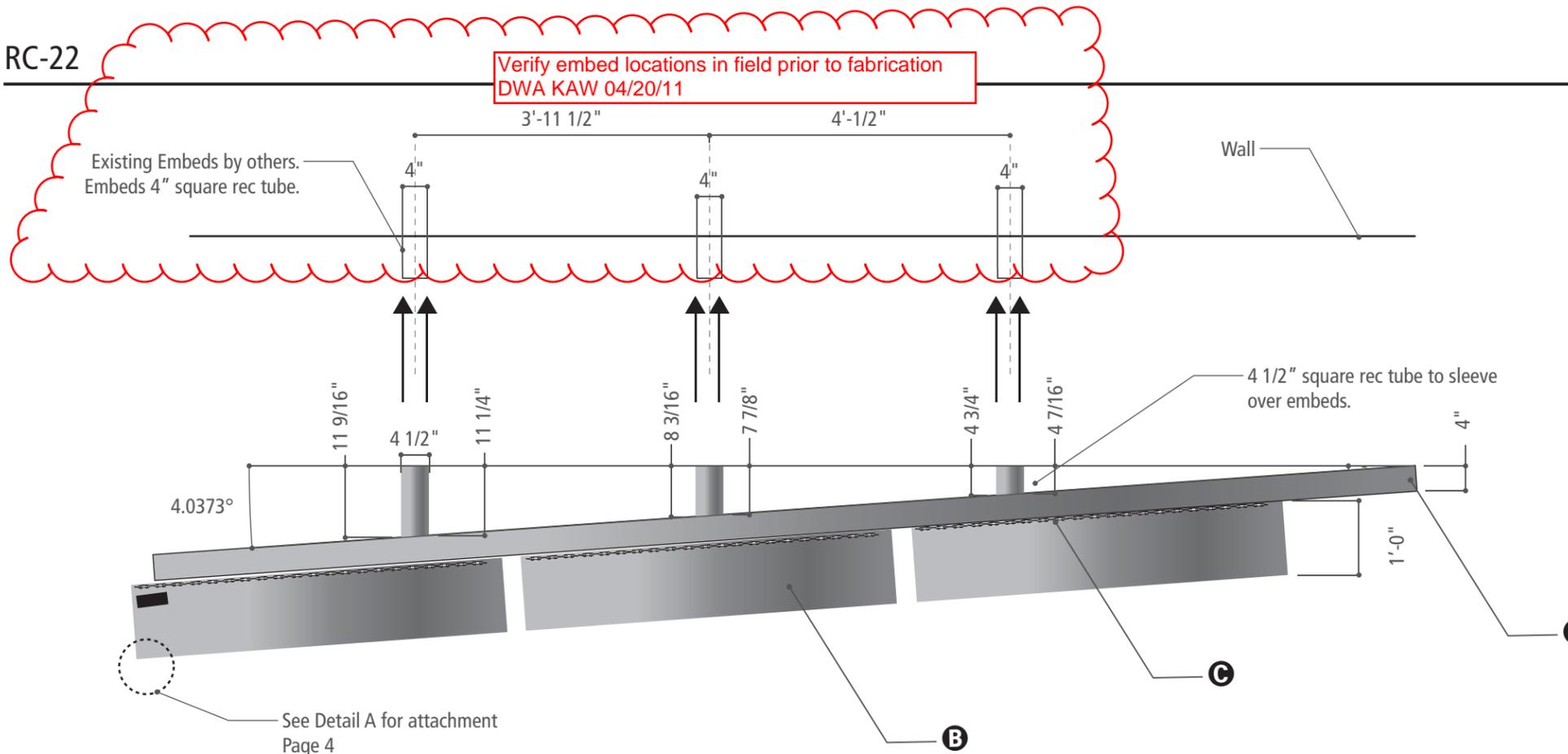
B CABINETS
 Cabinets to be made of .125" aluminum with welded returns. Cabinets to be welded to 4" X 9" ~~alum~~ rec tube on back side. Cabinets to have removable faces with set screws in the returns. Cabinet Faces to be blank. Tenant logos NIC.

Brushed Aluminum Stainless Steel Tube
#4 Horizontal Brushed Finish with clear coat

C LIGHTING
 Cabinets are internally illuminated with white LED lighting. LEDs to be mounted to back of cabinet. Transformers to mount in sign. LEDs to be spaced so lighting will be even over entire future logo area.

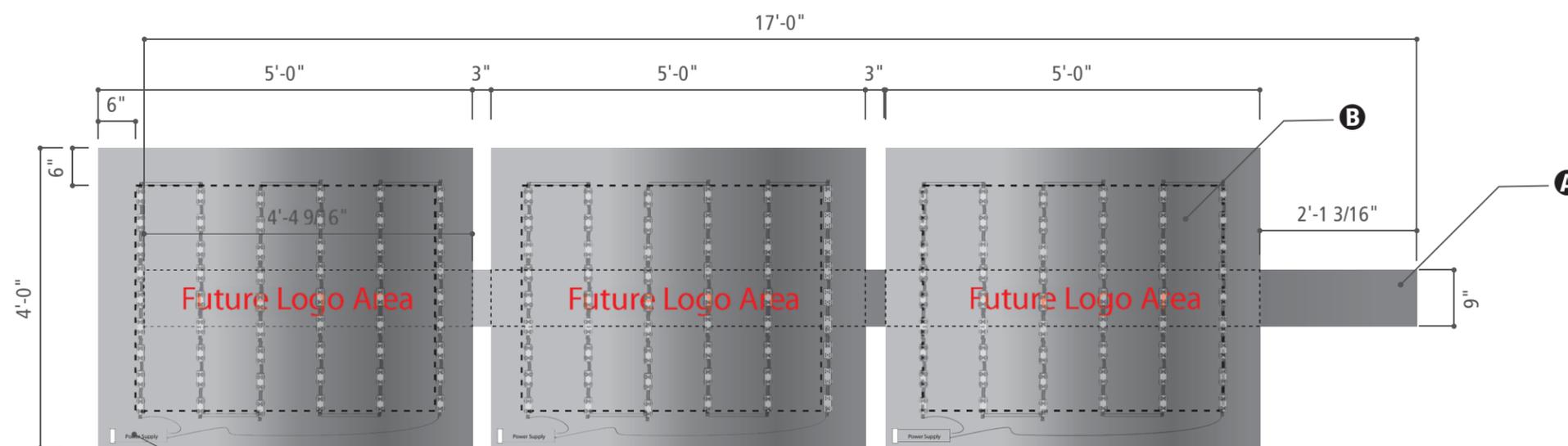
RC-22

Verify embed locations in field prior to fabrication
 DWA KAW 04/20/11



Plan View
 Scale : 1/2"=1'

Note: Faces to be blank, Tenant logos for face NIC.



Front View
 Scale : 1/2"=1'

Submittal
 #02890-016.00



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2-15-11

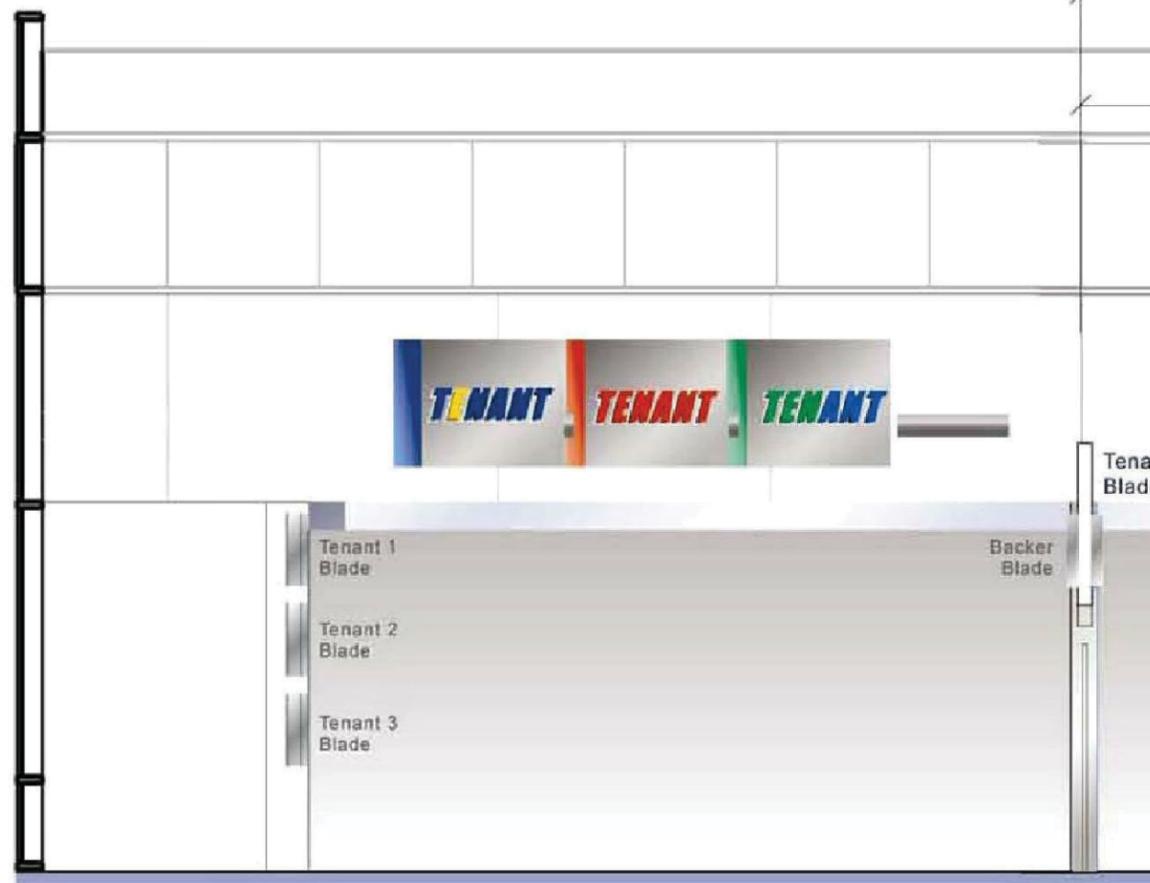
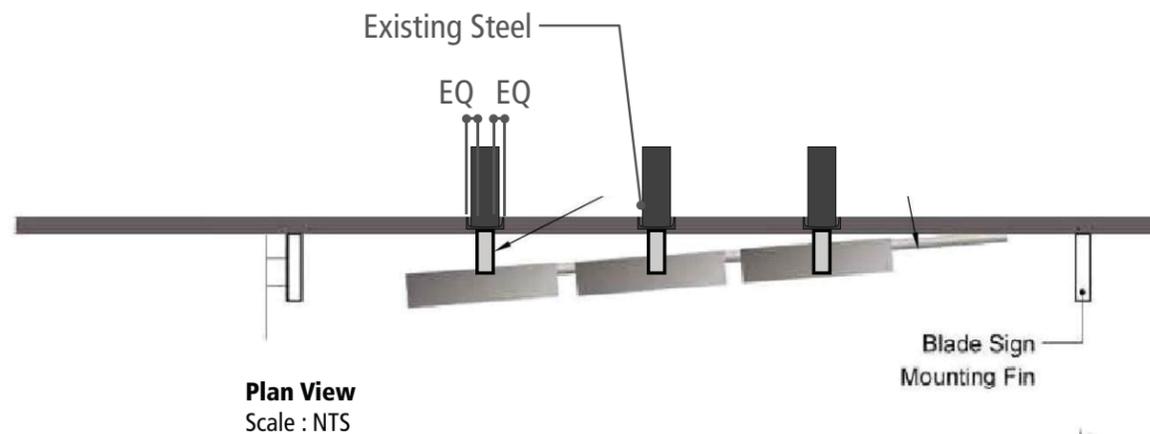
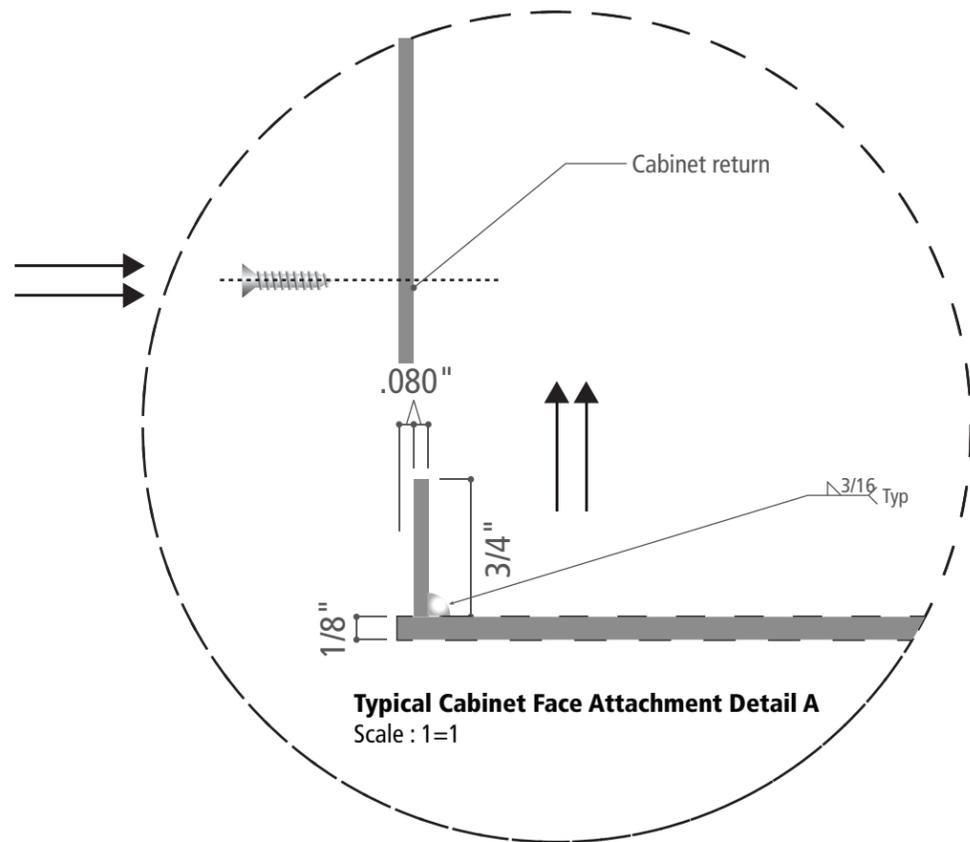
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JOB NUMBER:
110326
 SIGN TYPE:



Submittal
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JOB NUMBER:
110326

SIGN TYPE:

Specification

RC-20

A CABINETS

1/8" fabricated 6" deep aluminum cabinets. Cabinets to have removable face. Face to have inset returns to attach to cabinet sides. Sides to attach with 6ea, per side, square drive set screws. Cabinet to have brushed aluminum with #4 horizontal brush. Face panels to be blank logos NIC.

Brushed Aluminum
 #4 Horizontal Brushed Finish with clear coat

B LIGHTING

Cabinets are internally illuminated with white LED lighting. LEDs to be mounted to white alum. composite sheeting. Transformers to mount in sign at each location.

C SIGNAGE ACCENT TUBES

3" X 6" stainless steel rec tube to be rolled to specified radius. Sign cabinets to mount to rec. tubes through sign back with

SS
 #4 Horizontal Brushed Finish

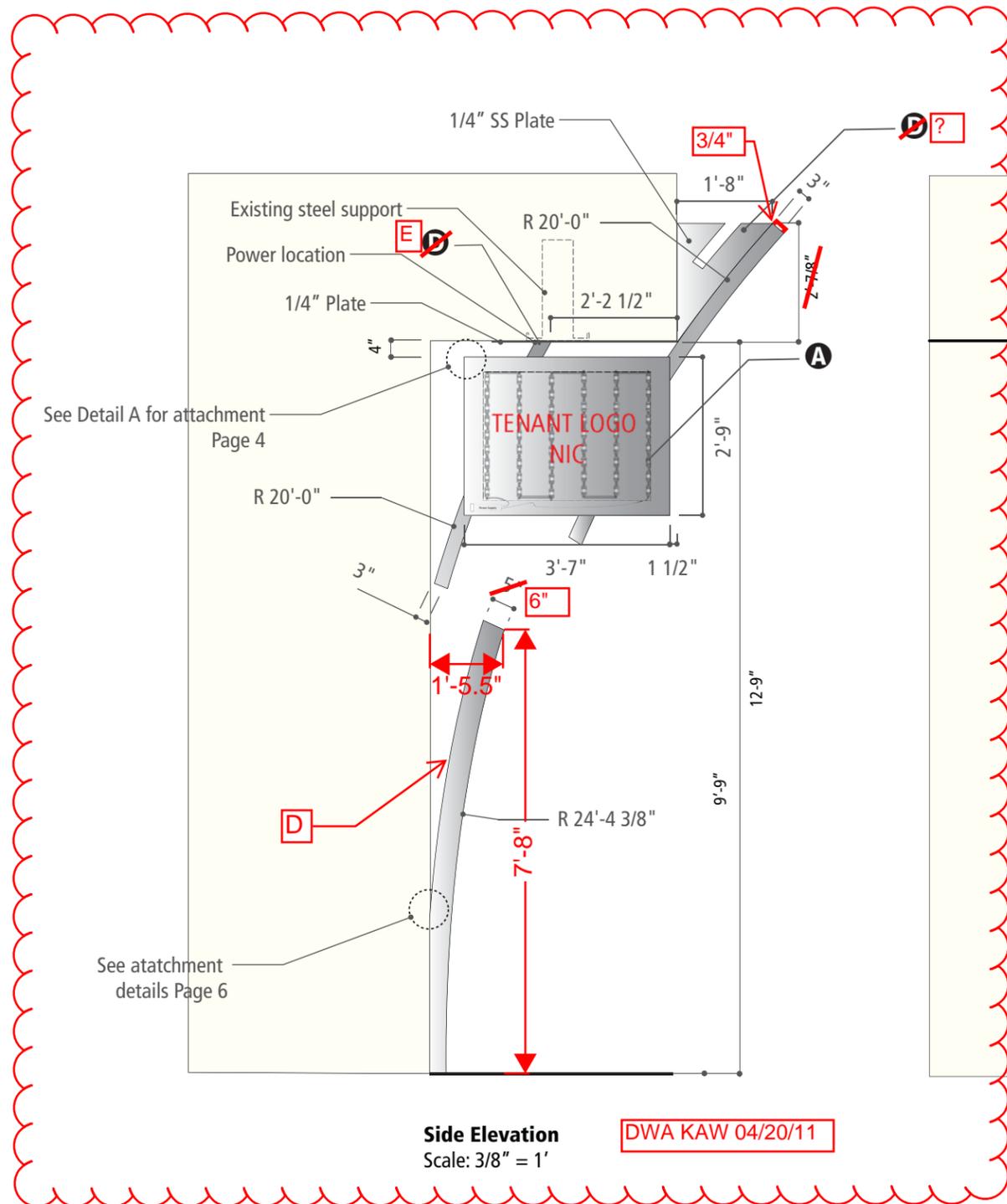
D ACCENT TRIM

3" x 6" 2" X 5" stainless steel rec tube to be rolled to specified radius. See details next page for attachment.

SS
 #4 Horizontal Brushed Finish

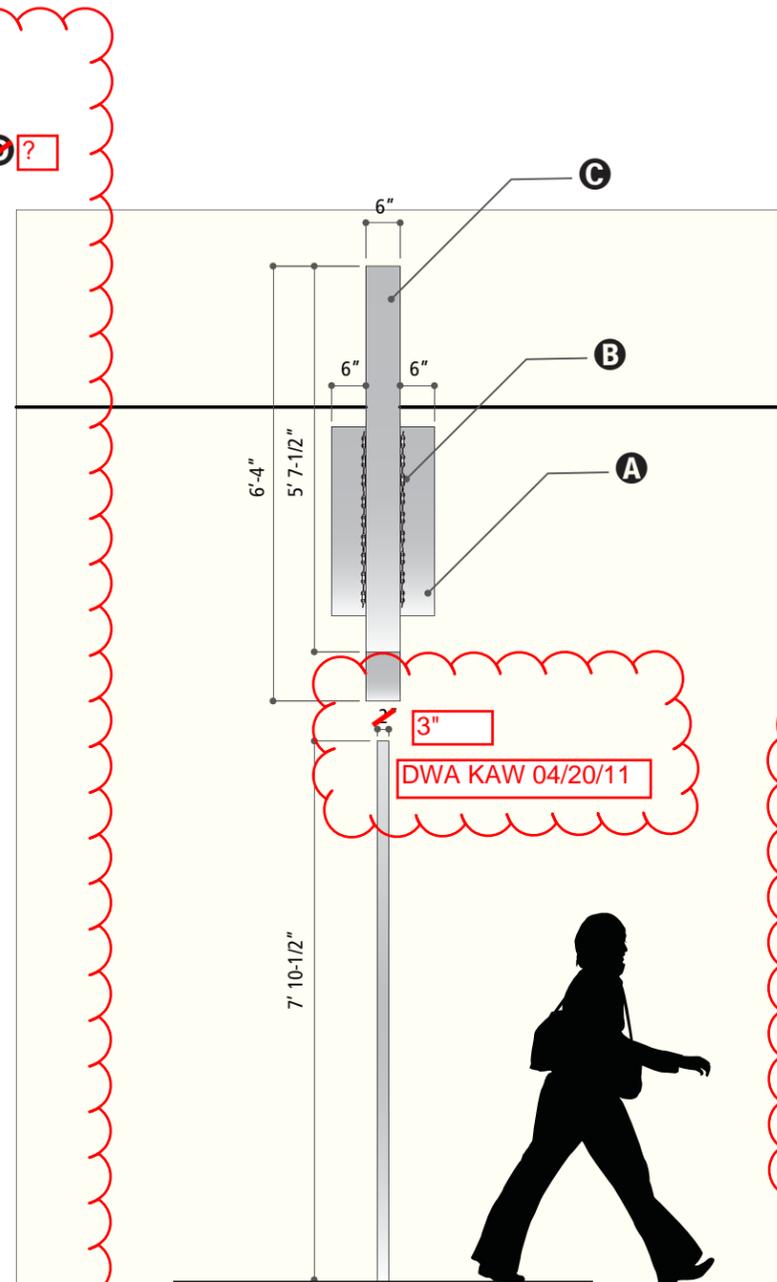
E MOUNTING

Signs mounted SS accent tubes with bolts through back of cabinet. SS tubes to be drilled and tapped. SS tubes to be welded to 1/4" thick SS plates which will bolt through soffit to existing steel horizontal plate. Vertical plate to mount with 4ea countersunk snap toggle bolts, SS.



Side Elevation
 Scale: 3/8" = 1'

DWA KAW 04/20/11



Front Elevation
 Scale: 3/8" = 1'

DWA KAW 04/20/11

Submittal
 #02890-016.00



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818 S. Dakota St.
Seattle, WA 98108
Telephone 206.623.7676
Fax 206.623.5007

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TM
PROJECT MANAGER:
Kelly Garrett
DESIGNER:
TM
FILE NAME:
DCN-40
START DATE:
2-15-11

REVISION DATES:

- 1
- 2
- 3
- 4
- 5

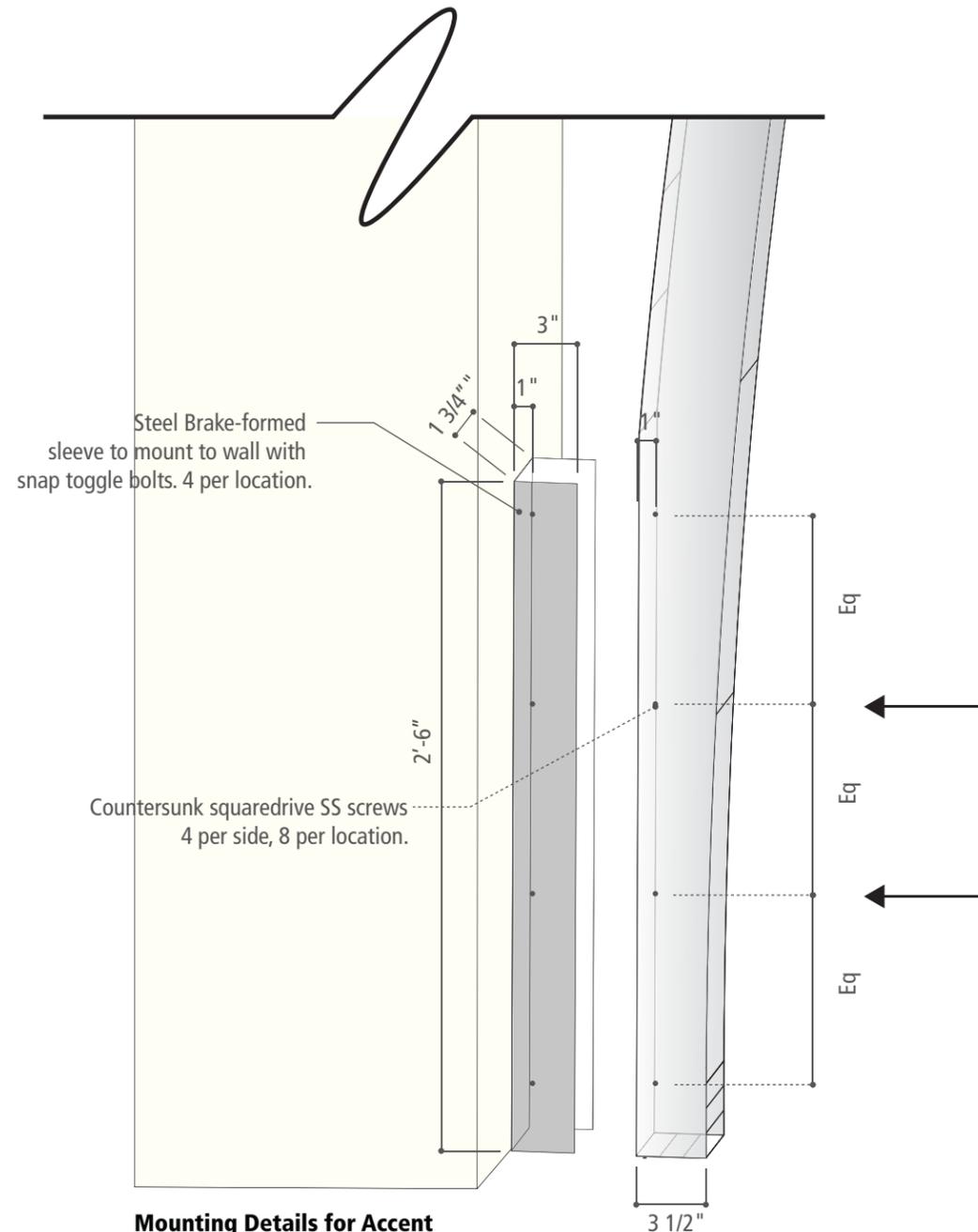
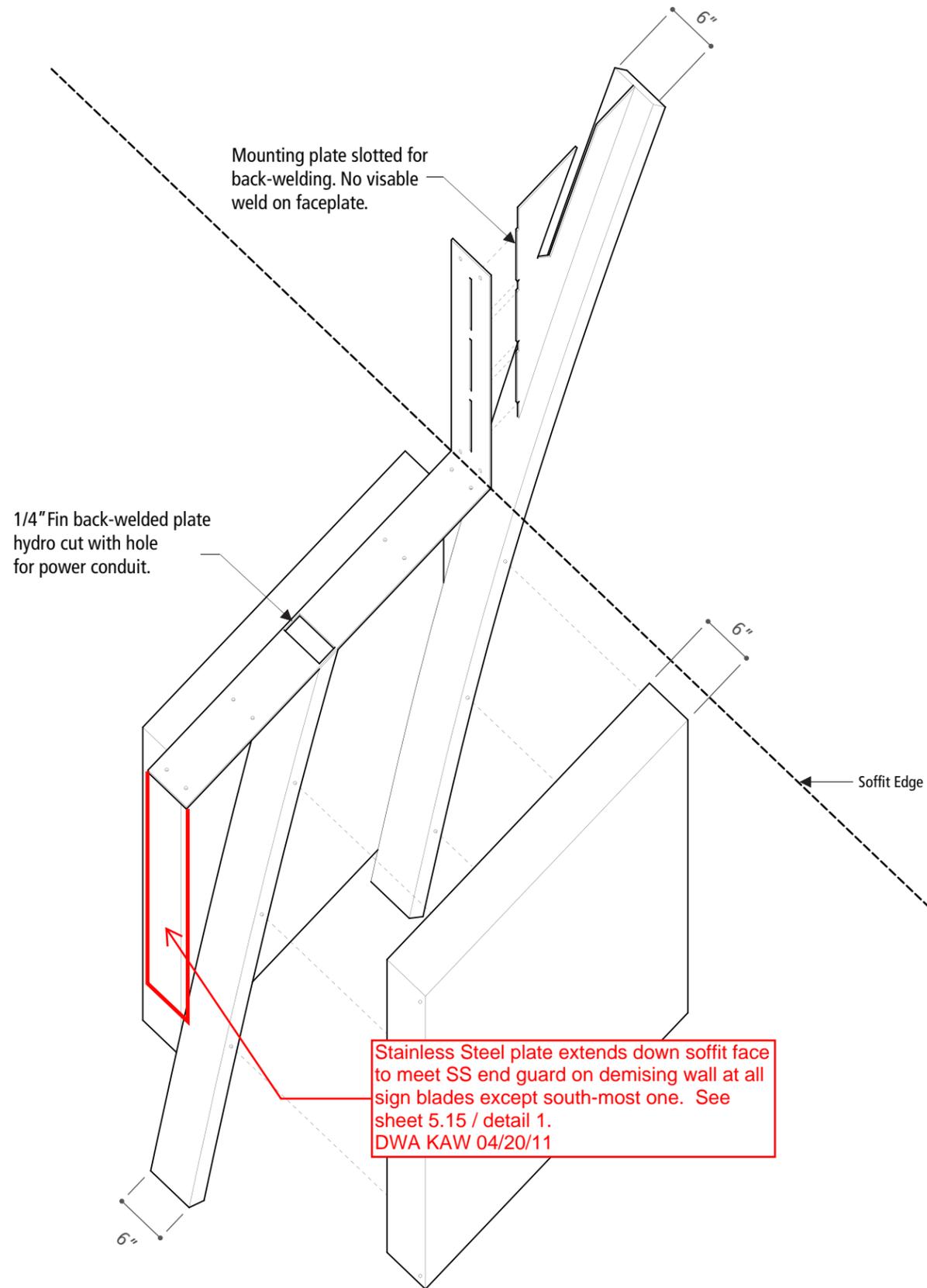
COLORS REPRESENTED IN THIS DESIGN ARE FOR PRESENTATION PURPOSES ONLY. THEY WILL NOT MATCH YOUR FINISHED PRODUCT PERFECTLY. COLOR CALL OUTS ARE FOR A MATCH AS CLOSE AS POSSIBLE.

THIS ORIGINAL UNPUBLISHED DESIGN IS THE SOLE PROPERTY OF TRADE-MARK SIGN & DISPLAY CORP. IT HAS BEEN SUBMITTED FOR YOUR PERSONAL USE IN CONNECTION WITH A PROPOSED PROJECT BEING PLANNED FOR YOU BY TRADE-MARK. IT CANNOT BE REPRODUCED, COPIED OR EXHIBITED, IN WHOLE OR PART, WITHOUT FIRST OBTAINING WRITTEN CONSENT FROM TRADE-MARK SIGN & DISPLAY CORP.

JOB NUMBER:
110326
SIGN TYPE:

Qty: 21 [Twenty One]

RC-20 Details



Mounting Details for Accent
No Scale

Stainless Steel plate extends down soffit face to meet SS end guard on demising wall at all sign blades except south-most one. See sheet 5.15 / detail 1. DWA KAW 04/20/11

Submittal
#02890-016.00

Isometric View
No Scale



Trade Marx Sign & Display Corporation
 818 S. Dakota St.
 Seattle, WA 98108
 Telephone 206.623.7676
 Fax 206.623.5007

CLIENT INFORMATION:
Port of Seattle
 Seatac International Airport
 Rental Car Facility

APPROVALS

ACCOUNT MANAGER:
TM

PROJECT MANAGER:
Kelly Garrett

DESIGNER:
TM

FILE NAME:
DCN-40

START DATE:
2-15-11

REVISION DATES:

- 1
- 2
- 3
- 4
- 5

COLORS REPRESENTED IN THIS DESIGN ARE FOR PRESENTATION PURPOSES ONLY. THEY WILL NOT MATCH YOUR FINISHED PRODUCT PERFECTLY. COLOR CALL OUTS ARE FOR A MATCH AS CLOSE AS POSSIBLE.

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JOB NUMBER:
110326

SIGN TYPE:

Qty: 1 [One] (One sign 3 cabinets)

Specification

RC-23 One sign with 3 cabinets

A CABINETS

Cabinets to be made of .125" aluminum with welded 6" returns. Cabinets to have removable faces with set screws in the returns. Cabinet Faces to be blank. Tenant logos NIC. 3 cabinets to be recessed into openings at location (openings by others)

Brushed Aluminum
#4 Horizontal Brushed Finish
with clear coat

B LIGHTING

Cabinets are internally illuminated with white LED lighting. LEDs to be mounted to back of cabinet. LEDs to be installed so that there is even lighting behind logo area. Transformers to mount in sign.

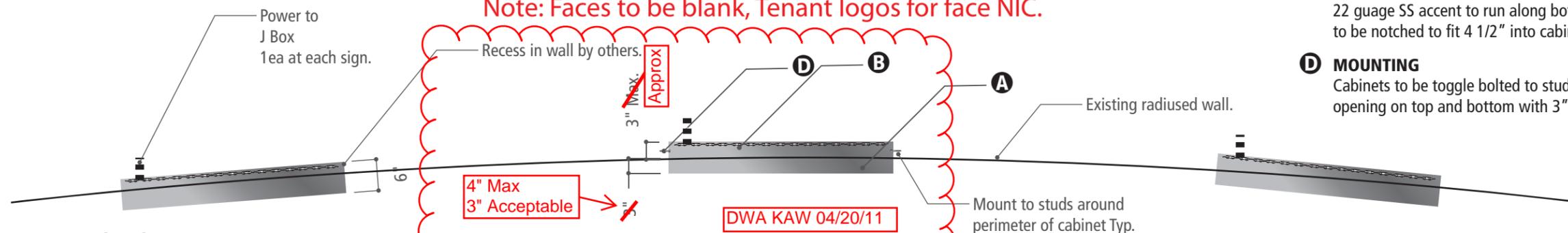
C ACCENT

22 gauge SS accent to run along bottom of signs. Accent to be notched to fit 4 1/2" into cabinets.

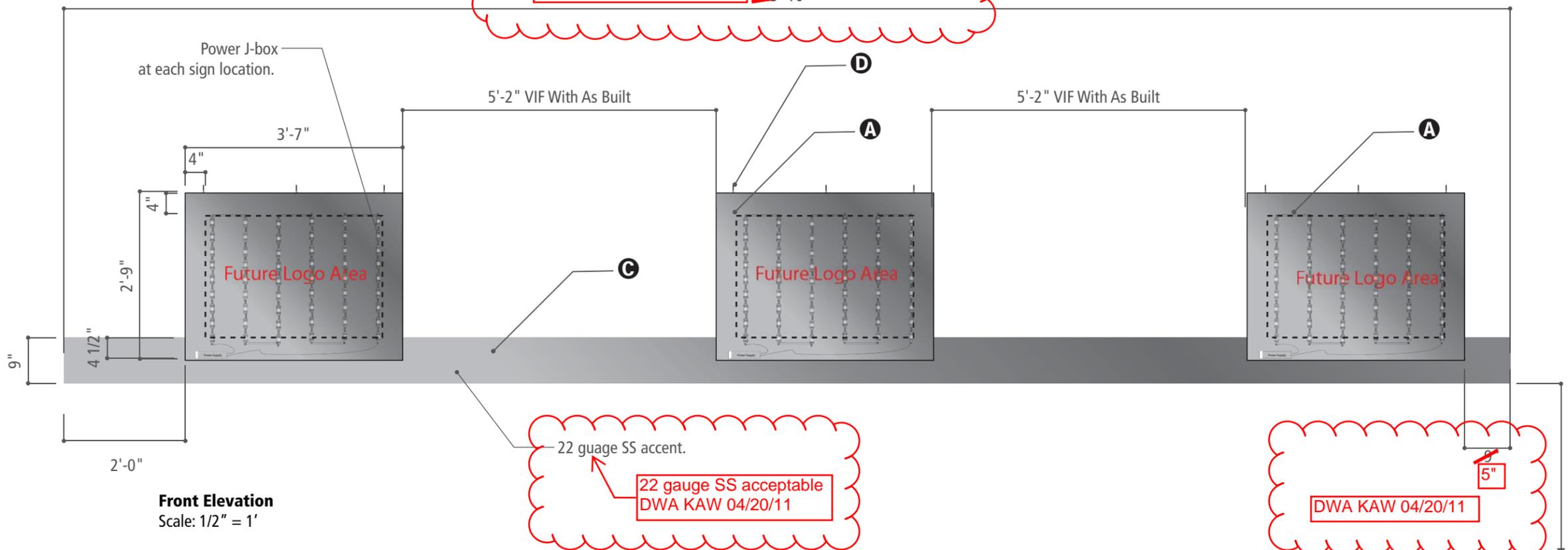
D MOUNTING

Cabinets to be toggle bolted to studs placed around opening on top and bottom with 3" lag bolts.

Note: Faces to be blank, Tenant logos for face NIC.

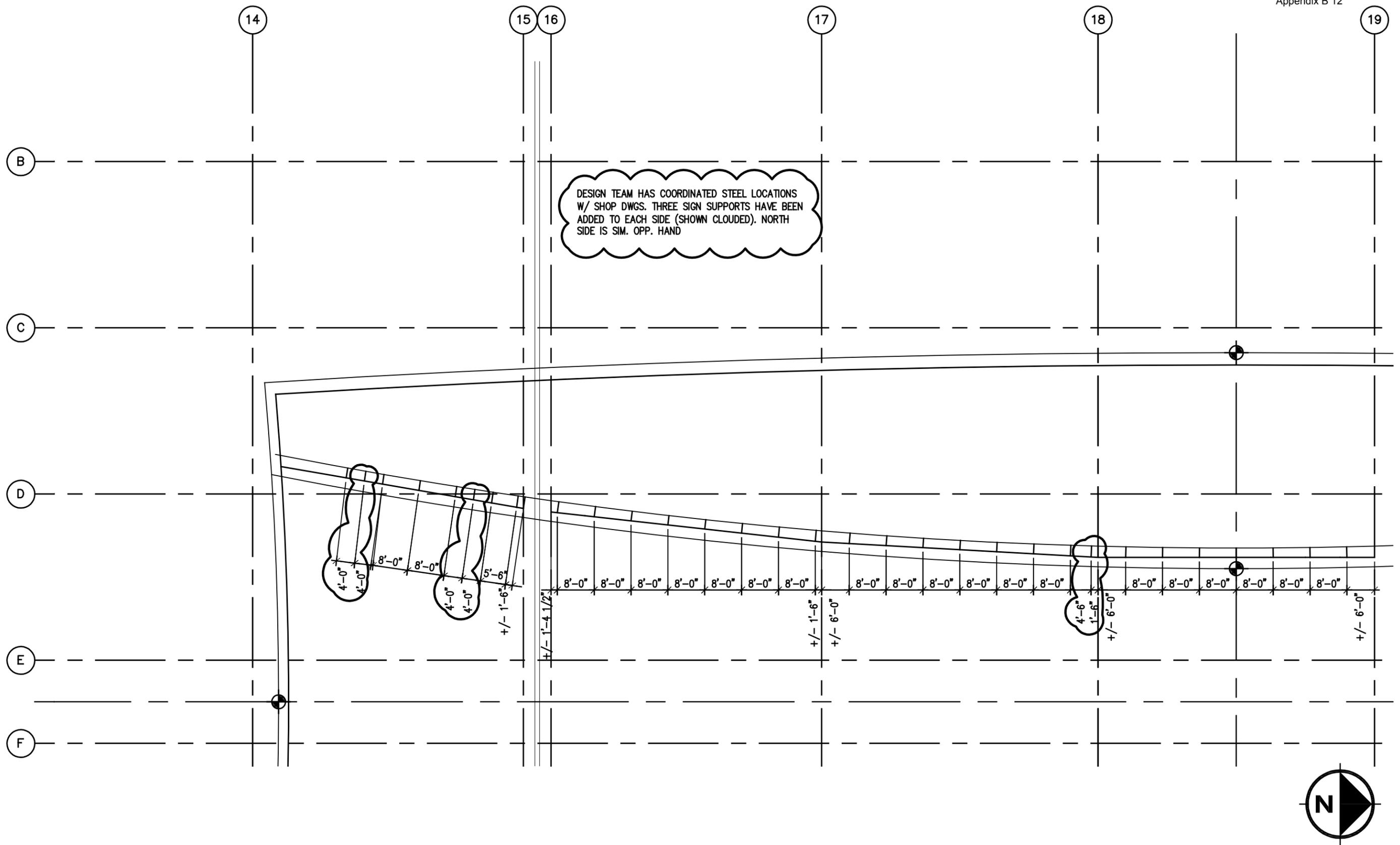


Plan View
 Scale: 1/2" = 1'



Front Elevation
 Scale: 1/2" = 1'

Submittal
 #02890-016.00

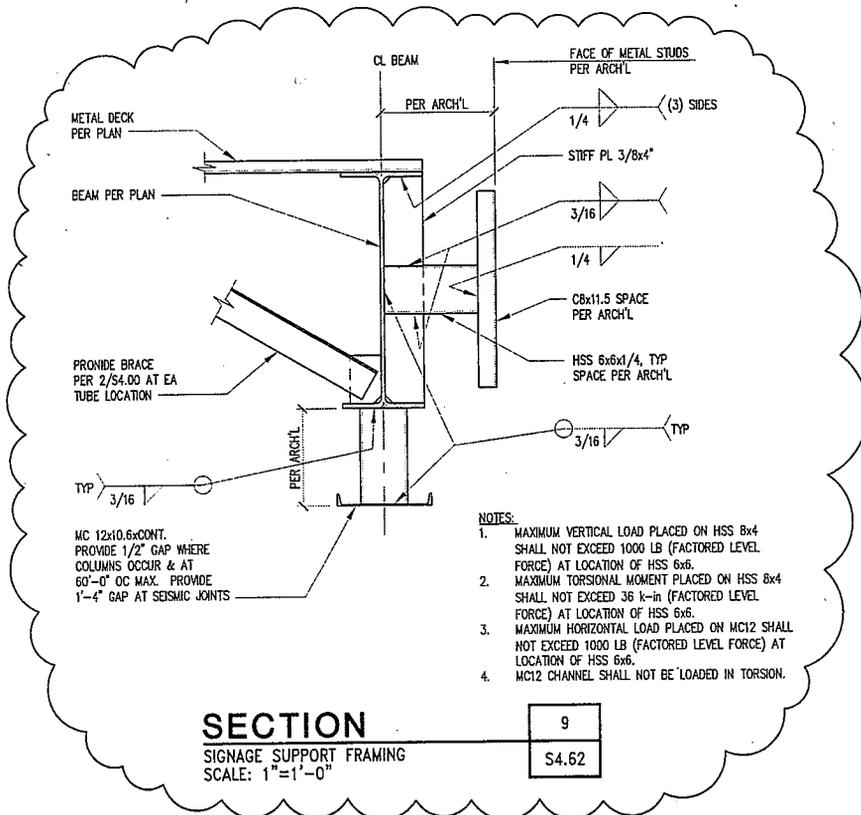


DESIGN TEAM HAS COORDINATED STEEL LOCATIONS W/ SHOP DWGS. THREE SIGN SUPPORTS HAVE BEEN ADDED TO EACH SIDE (SHOWN CLOUDED). NORTH SIDE IS SIM. OPP. HAND



DW 5TH FLOOR CSB LOBBY
 STOREFRONT SOFFIT FRAMING LAYOUT
 1"=20'-0"
 Demattai Wong
 architecture 1/13/10

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
REMOTE CONSOLIDATED RENTAL CAR FACILITY



- NOTES:
1. MAXIMUM VERTICAL LOAD PLACED ON HSS 6x4 SHALL NOT EXCEED 1000 LB (FACTORED LEVEL FORCE) AT LOCATION OF HSS 6x6.
 2. MAXIMUM TORSIONAL MOMENT PLACED ON HSS 6x4 SHALL NOT EXCEED 36 k-in (FACTORED LEVEL FORCE) AT LOCATION OF HSS 6x6.
 3. MAXIMUM HORIZONTAL LOAD PLACED ON MC12 SHALL NOT EXCEED 1000 LB (FACTORED LEVEL FORCE) AT LOCATION OF HSS 6x6.
 4. MC12 CHANNEL SHALL NOT BE LOADED IN TORSION.



kpfi Consulting Engineers

1601 Fifth Avenue, Suite 1600
Seattle, Washington 98101
(206) 622-5822 Fax (206) 622-8130

Project: Rental Car Facility (RCF)

Port Work No. 103640

Ref: 9/54.62

Date: 1/13/10

S-SK-137

Turner

POS Consolidated Rental Car Facility
Project # 1374100

3150 S 160th, SeaTac, WA
98188

Telephone: 206-588-8001

Fax: 206-588-8013

Submittal Transmittal
[For Reviewer]

August 27, 2009

Date: 8/27/09

Transmittal No: 1036

Transmitted To: Rad Milosavljevic Port of Seattle 3150 S 160th Street SeaTac, WA 98188 Tel: 206-248-4812 Fax: 206-835-5784	Transmitted By: Cynthia Tran Turner Construction Company 3150 S 160th SeaTac, WA 98198 Tel: 206-588-8001 x119 Fax: 206-588-8013
---	--

Submittal Package No		Description							Due Date
003-09900 - 09900 - 0		Spec 09900 Package 003 Painting Samples							9/10/09
Items	Qty	Spec	Sub Sectio	Item #	Rev	Type	Description	Notes	Item Action
001	3	09900-0091.04.D		09900-00 91	0	Sample	Painting Samples		AP AN RR RJ

AP=Approved
AN=Approved as noted
RR=Revise and resubmit
RJ=Rejected

Cc: Company Name	Contact Name	Fax Number	Copies	Notes
Remarks				


Signature

8/27/09
Signed Date

Port of Seattle

STIA 0617 - Remote Consolidated Rental Car Facility

Work Project No. 103640

Seattle-Tacoma International Airport, WA

Turner Construction Company

TURNER CONSTRUCTION COMPANY

Reviewed for general Acceptance only. This review does not relieve the Subcontractor of the responsibility for making the work conform to the requirements of the contract. The subcontractor is responsible for all dimensions, correct fabrication and accurate fit with the work of other trades.

SUBJECT TO ARCHITECTS APPROVAL

Reviewed By: [Signature] Date: 8/27/09

Submittal Package: 09900-003.00

Submittal Item(s): 0091 70

Specification Section: 09900

Sub Section: 1.04.D

Drawing Reference:

Nature: Painting samples (MP-1, MP-2, P-4, P-5, & P-6)

MP-1 & MP-2 samples are attached. P-4 & P-6 are the same color as P-1 and P-5 is the same color as the weather clad exterior (new labels for these previously submitted samples are attached).

RFI

POS Consolidated Rental Car Facility

Project # 1374100

3150 S 160th, SeaTac, WA
98188

Telephone: 206-588-8001

Fax: 206-588-8013

June 10, 2009

RFI #: 0539**Date Created:****5/13/2009****Date Required:****5/20/2009****TO:**

Rad Milosavljevic

Port of Seattle

3150 S 160th Street
SeaTac, WA 98188

Phone: 206-248-4812

Fax: 206-835-5784

FROM:

Cynthia Tran

Turner Construction Company

3150 S 160th
SeaTac, WA 98188

Phone: 206-588-8001 x11 Fax: 206-588-8013

Subject

Paint Color Schedule

Discipline

Architectural

Category

Specification Clarification

Drawing References:

Dwg No. Rev No Revision Date Title

Spec Section References:

Sketch References:

Question:

Clarification of paint colors is needed for the following: interior/exterior doors and frames, exterior metals, and colors at the QTAs for MP-1, MP-2, P-4, P-5, & P-6.

Suggestion:**Answer:**

Date Answered:6/9/2009

GCV assigns to DWA (05/18/09).

MP-1: Epoxy/Polyurethane Paint - Exterior Metal. This will be the same color as the exposed structural steel on the CSB. I do not believe this paint product has been submitted for review yet. Port to confirm color selection based on color board submitted by Callison.

MP-2: Acrylic Latex Paint - Exterior Paint System for Metal. This is for exposed metal deck ceilings and will be the same color as the Garage Floorplate ceilings: white.

P-4: Latex Paint - Gyp. Bd. This is in the tenant utility closets and small operator offices: white.

P-5: Latex Paint - Concrete. This is the same product and same color as the Garage Floorplate ceilings: white. Note that this product has been reviewed and accepted in RFI 496.

P-6: Latex Paint - Moisture Resistant Gyp. Bd. This is in the Fire Suppression Room: white. (DWA PAG 06/03/09).

For continuity and ease of touch up by future maintenance staff, the interior paint color for use on gypsum board (paint colors P-4 and P-6) should match the comparable product specified for use in the main structure of the RCF. In lieu of "white" as indicated above for P-4 and P-6, please use "Simply White" (manufacturer's color number OC-117) as manufactured by Benjamin Moore Paints or an approved equal. The paint color or interior doors and frames is intended to match the adjacent wall surface. GCV (6/9/09)

POS Consolidated Rental Car Facility
Project # 1374100

RFI
[One Per Page]
June 10, 2009

Reviewed and forwarded by KL - POS Engineering Team 06/09/09

Andie to send to Long Painting and MEP subcontractors 6/10/09; CHT

Cc:	Company Name	Contact Name	Copies	Fax Number	Notes
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RFI

POS Consolidated Rental Car Facility

Project # 1374100

 3150 S 160th, SeaTac, WA
 98188

Telephone: 206-588-8001

Fax: 206-588-8013

August 10, 2009

RFI #: 0539.1
Date Created: 7/2/2009
Date Required: 7/9/2009
TO:

Rad Milosavljevic

Port of Seattle

 3150 S 160th Street
 SeaTac, WA 98188

Phone: 206-248-4812

Fax: 206-835-5784

FROM:

Cynthia Tran

Turner Construction Company

 3150 S 160th
 SeaTac, WA 98198

Phone: 206-588-8001 x11 Fax: 206-588-8013

Subject

Paint Color Schedule

Discipline

Architectural

Category

Specification Clarification

Drawing References:
Dwg No. Rev No Revision Date Title
Spec Section References:

Sketch References:

Question:

The clarification of the MP-1 paint color was never addressed in RFI 0539. Please provide a color.

Suggestion:
Answer:

Date Answered: 8/7/2009

GCV assigns to DWA. Long Painting submitted Sherwin Williams brand for the MP-1 paint product. The primary locations for MP-1 are the CSB canopy, QTA canopies, and ceilings within several QTA enclosed rooms. In general terms, the preferred paint color is a neutral white that will reflect lighting, and serve as a background for exterior signage. DWA will propose a paint color for review and approval by the Port. (7/6/09)

DWA proposes Sherwin-Williams Extra White SW7006, LRV 85%, for the MP-1 paint product (Acrolon 218 HS), for review and approval by the Port. (DWA PAG 07/13/09).

GCV concurs with DWA. Finish shall be semi-gloss. (8-3-09)

Reference DWA response, above. KL - POS Engineering Team (08/07/09)

Andie to send to Long Painting 8/10/09; CHT

Cc:	Company Name	Contact Name	Copies	Fax Number	Notes
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LETTER OF TRANSMITTAL

August 26, 2009

Heather Ross
Turner Construction
839 Fourth Avenue S., Suite 400
Seattle, WA 98134

**RE: Consolidated Rental Car Facility
Long Painting Co. Job #L080154**

Enclosed, please find the following:

(if you do not receive the items as noted please call immediately)

Paint Samples Section 09900 Painting; 1.04D

- | | |
|----------------------------|---|
| 3 Product: Acrolon 218 S/G | Color: MP-1, SW7006 Extra White
Match:8156-47417 |
| 3 Product: A100 Gloss | Color: MP-2 White (match to garage ceiling)
Match 8156-46976 |

PLEASE NOTE: These items are for your **REVIEW and APPROVAL**. When approved or rejected, please **SIGN and RETURN: one** Drawdown of each color to our office.

Feel free to call if I may be of further assistance, 253-234-8050. Thank you.

LONG PAINTING COMPANY

Les Gustafson
Project Manger

LS;dh

Turner Construction Co.

AUG 26 2009

RECEIVED

POS Consolidated Rental Car Facility
LPC Job# L080154
August 20, 2009
Manufacturer: Sherwin Williams
Type of Paint: Acrolon 218
Color: **MP-1**, SW7006 Extra White
Match: 8156-47417
Sheen: Semi gloss
Substrate: Structural Steel
Application: CSB &QTA Canopies



2940 6th Ave. S.
Seattle, WA. 98134
(206) 622-3896

Long
Job: Consolidated
Rental Car
Product: Acrolon 218 S/G
Color: MP-1 SW7006
Match#: 8156-47417

Date: 8-14-09

To ensure consistency, please refer to the MATCH# when ordering

POS Consolidated Rental Car Facility

LPC Job# L080154

August 20, 2009

Manufacturer: Sherwin Williams

Type of Paint: A-100

Color: **MP-2**, White (match to garage ceiling)

Match: 8156-46976

Sheen: Gloss

Substrate: Exterior metals

Application: Exposed metal deck ceilings

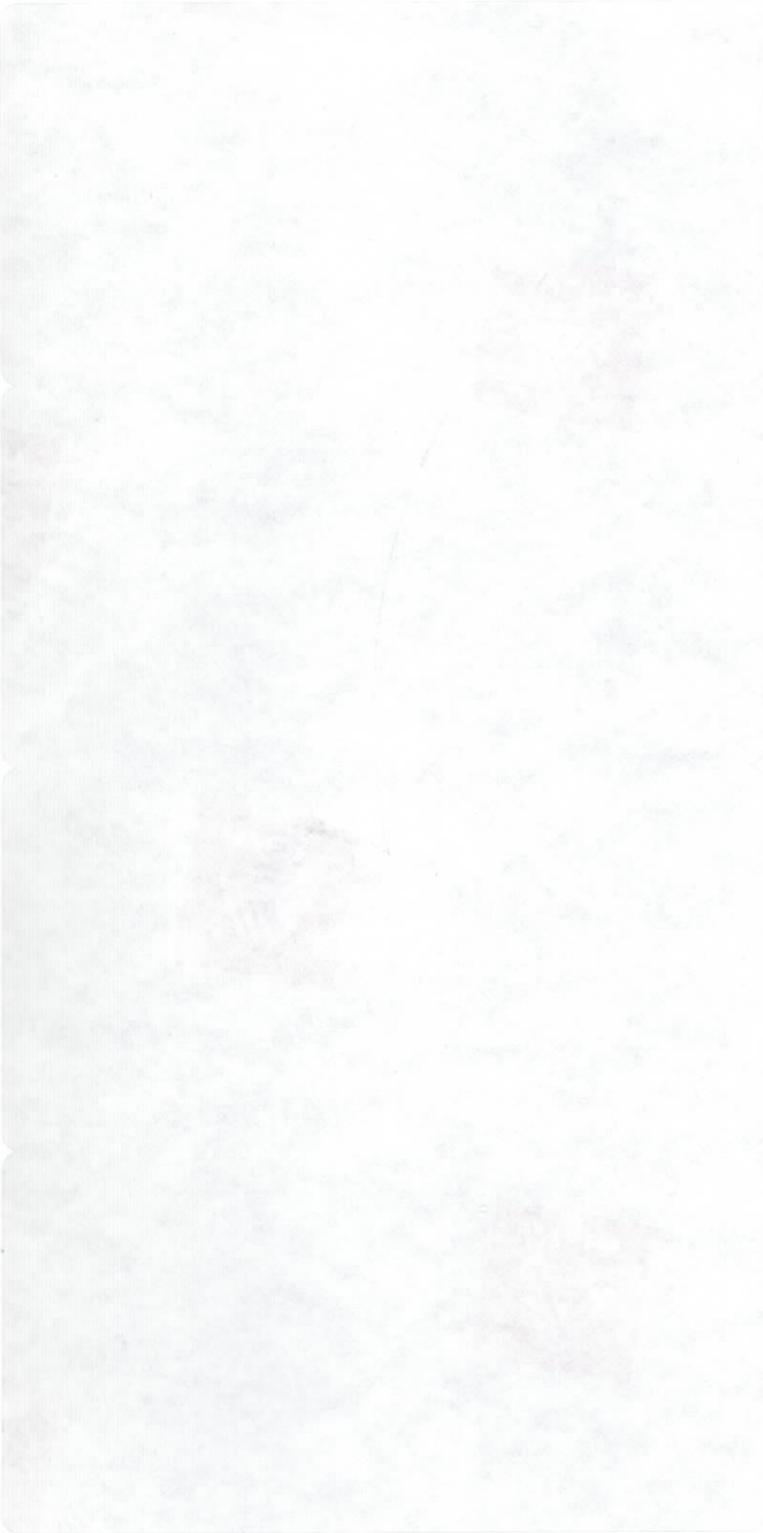


2940 6th Ave. S.
Seattle, WA. 98134
(206) 622-3896

Long
Job: Consolidated
Rental Car
Product: Acrolon 218 S/G
Color: MP-2 SW7006
Match#: 8156-47417

Date: 8-14-09

To ensure consistency, please refer to the MATCH# when ordering



POS Consolidated Rental Car Facility
LPC Job# L080154
August 29,2009
Manufacturer: Sherwin Williams
Type of Paint: Harmony Latex
Color: **P-1, P-4 & P-6** OC-117 Simply White
Match: 8156-46512
Sheen: Eggshell
Substrate: GWB & CMU Walls
Application: All area not called out for Semi Gloss

POS Consolidated Rental Car Facility
LPC Job# L080154
August 29,2009
Manufacturer: Sherwin Williams
Type of Paint: Harmony Latex
Color: **P-1, P-4 & P-6** OC-117 Simply White
Match: 8156-46512
Sheen: Eggshell
Substrate: GWB & CMU Walls
Application: All area not called out for Semi Gloss





POS Consolidated Rental Car Facility
LPC Job# L080154
August 26, 2009
Manufacturer: Sherwin Williams
Type of Paint: Weather Clad Exterior
Color: P-5---White
Sheen: Satin
Match: 8156-46543
Substrate: Concrete, steel
Application: Ceiling structure at Operational
Floorplates and QTA concrete walls

POS Consolidated Rental Car Facility
LPC Job# L080154
August 26, 2009
Manufacturer: Sherwin Williams
Type of Paint: Weather Clad Exterior
Color: P-5---White
Sheen: Satin
Match: 8156-46543
Substrate: Concrete, steel
Application: Ceiling structure at Operational
Floorplates and QTA concrete walls





TSX-8510

Insulation for Exposed Use

SPECIALTY

Doing one thing well in so many ways...

Rmax is a U.S. owned company that only manufactures polyiso insulation. TSX-8510 is manufactured in the U.S. It is considered a special order item. Production of an order will be scheduled when the plant has accumulated orders for at least 15,000 board feet of any one thickness. Contact Rmax Sales at your regional Customer Service Center for product availability, pricing information, and your nearest distribution center.

Corporate & Technical

Rmax Operating, LLC
13524 Welch Road
Dallas, Texas 75244-5291
Phone: (972) 387-4500
Fax: (972) 387-4673
Email: rmax@rmax.com
Web: www.rmax.com

Customer Service & Plant Locations

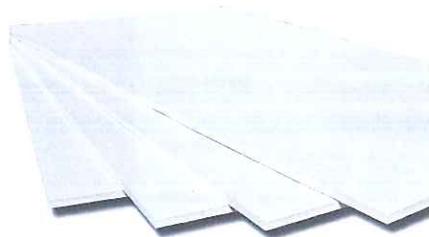
Central Region
Dallas, Texas
(800) 527-0890 Ext. 102

Eastern Region
Greer, South Carolina
(800) 845-4455 Ext. 156

Western Region
Fernley, Nevada
(800) 762-9462 Ext. 156

PRODUCT DESCRIPTION

Rmax TSX-8510 is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate (polyiso) foam core bonded to glass fiber reinforced aluminum foil facers on both sides. The exposed side of the board has a heavy 1.5mil white aluminum surface. The other side is marked in production to ensure proper installation. TSX-8510 utilizes a CFC-, HCFC- and HFC-free blowing agent that has zero Ozone Depletion Potential (ODP) and negligible Global Warming Potential (GWP). This insulation is suitable for use in walls, ceilings and some limited roofing applications in new construction for commercial, residential, agricultural and industrial buildings and in thermal retrofit construction within existing buildings. It is also suitable within pre-engineered metal buildings, laminate panel products and other similar applications. TSX-8510 is designed for use without a thermal barrier to provide an attractive interior finish.



COMPLIANCES

- ASTM C1289 Type I, Class 1
- International Building Code (IBC) Section 2603, Foam Plastic
- Tested per UL1715 to comply with Section 2603.9, Special Approval, of the International Building Code (ICC)
- ASHRAE 90.1
- Miami-Dade County Product Control Approved
- California Code of Regulations, Title 24

CONSTRUCTION APPLICATIONS

- Masonry walls; stud walls; pre-engineered metal buildings; agricultural, farm, storage buildings and other light commercial structures; laminate panel products

INCENTIVE OPPORTUNITIES

- Reduces energy costs
- Reduces material and labor costs
- Contributes toward LEED® credits
- Offers tax credits, where applicable

THERMAL PROPERTIES / PRODUCT DATA

"R" means resistance to heat flow. The higher the R-value, the greater the insulating power.

Nominal Thickness	Thermal R-Value ¹	R/Inch	System R-Value ²
Inches	°F·ft ² ·hr/Btu	°F·ft ² ·hr/Btu·in	°F·ft ² ·hr/Btu
1.00	6.0	6.00	8.77
1.50	9.6	6.40	12.37
1.60	10.3	6.44	13.07
2.00	13.1	6.55	15.87
2.50	16.7	6.68	19.47
3.00	20.3	6.77	23.07
3.50	23.9	6.83	26.67
4.00	27.4	6.85	30.17
4.50	31.0	6.89	33.77

¹Thermal values are determined by using ASTM C518 test method at 75°F mean temperature on material conditioned according to PIMA Technical Bulletin No. 101.

²Includes the ASHRAE assigned 2.77 R-value of a ¾" dead-air space against a reflective foil in a typical wall assembly.

TSX-8510 is shipped in bundles that are approximately 48 inches high and wrapped in plastic for easy handling. Visit www.rmax.com/resources.asp for a complete list of thicknesses and packaging information.



TSX-8510

TYPICAL PHYSICAL PROPERTIES

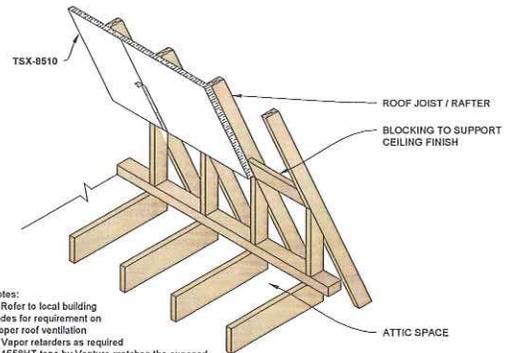
Physical properties shown are based on data obtained under controlled conditions and are subject to normal manufacturing tolerances.

Property	Test Method	Results
Density, Overall, Nominal	ASTM D1622	2.0 pcf
Compressive Strength	ASTM D1621	20 psi ¹
Flame Spread, Faced ²	ASTM E84	25 or Less
Smoke Developed, Faced ²	ASTM E84	< 450
Water Vapor Transmission	ASTM E96	< 0.3 perm
Water Absorption	ASTM C209	< 1% Vol.
Dimensional Stability	ASTM D2126, 7 days, 158°F, 98% rh	< 2% Linear Change
Service Temperatures		-40°F to +250°F

¹Also available in 25 psi upon request.

²Flame spread and smoke numbers are shown for comparison purposes only and are not intended to represent the performance of TSX-8510 and related components under actual fire conditions.

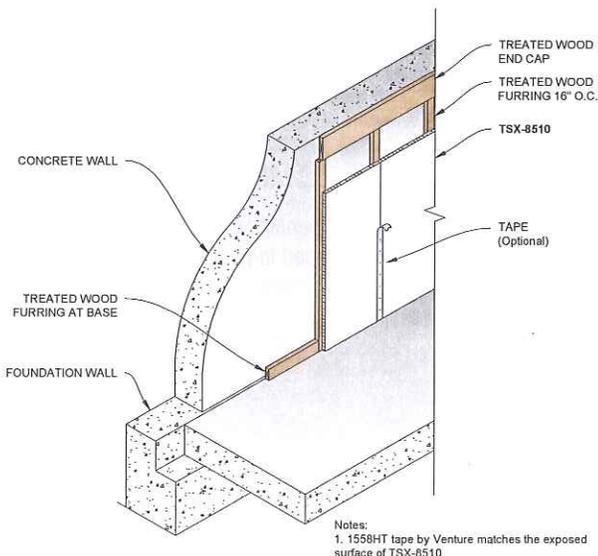
Stud Wall Construction - TSX-8510 may be applied to the interior face of wood or metal studs to provide a layer of continuous insulation (ci) over the entire surface. Simply secure the TSX-8510 directly to the framing members. For example, TSX-8510 is an outstanding product for use in insulating the walls or ceilings of attics and crawl spaces. Consult your local Building Code for ventilation requirements within attics and crawl spaces.



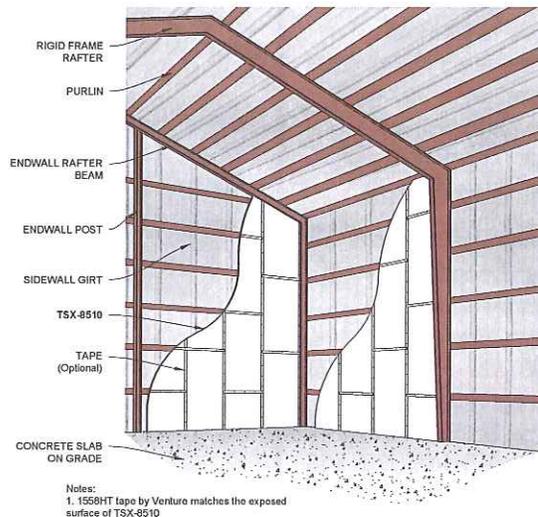
APPLICATION / INSTALLATION

General - TSX-8510 passed UL1715 (walls only or ceilings only) without joint treatment of any kind. Therefore, the boards only need to be tightly butted. However, taping the seams is acceptable using Venture 1558HT or equivalent. TSX-8510 may be covered with an interior finish product provided it is compliant with the requirements of IBC Chapter 8.

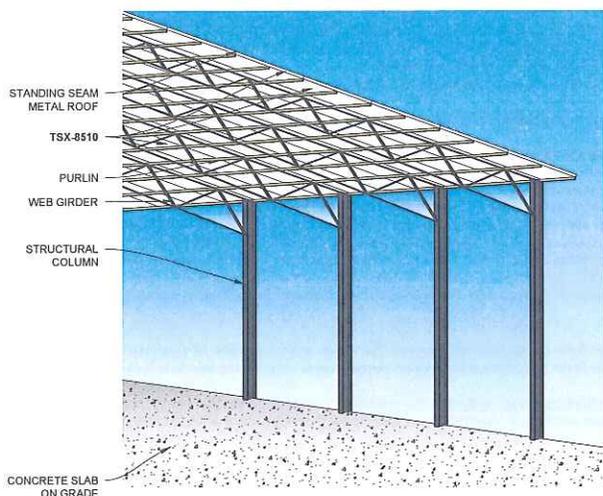
Masonry Wall Construction - TSX-8510 is applied to the interior face of concrete or concrete masonry walls to provide a layer of continuous insulation (ci) over the entire surface. It may be attached directly to the furring strips. For example, TSX-8510 is an excellent product for use in insulating basement walls, parking structures and standard cavity walls. It can also be used in conjunction with tilt-up wall panels.



Pre-Engineered Metal Buildings - TSX-8510 provides a layer of continuous insulation (ci) for pre-engineered metal buildings in one easy step. The TSX-8510 is simply fastened to the face of the girts or between the girts and the metal exterior skin of the building.



Agricultural, Farm, Storage Buildings and Other Light Commercial Structures - TSX-8510 is **pressure washable*** and may be used as an exposed, finished, continuous insulation (ci) system in agricultural, farm and other light commercial structures where local Building Codes will permit such use.



***Pressure washable** up to 1000 psi using a cleaning spray rig. Wand nozzle must have a fan spray tip with an angle of at least 15 degrees. The washing wand should not be used at a distance of less than 3 feet from the surface of the insulation facer. Pressures greater than 1000 psi may result in damage to the insulation facer.

LIMITATIONS

TSX-8510 is not recommended, nor warranted, for use as a commercial roof insulation directly under membrane systems. Consult Rmax Sales for suitable commercial roof insulation products.

TSX-8510 is not a structural panel. It must not be used as a nailing base for any other building products. Furthermore, stud walls insulated with TSX-8510 must be properly braced for lateral loads according to the requirements of local Building Codes.

WARNING

Polyiso foam is an organic material which will burn when exposed to an ignition source of sufficient heat and intensity and may contribute to flames spreading.

Consult local Building Codes and insurance authorities regarding special applications or details required when using TSX-8510 as an exposed product.

The interior and/or exterior of the building should be protected with a suitable vapor retarder and/or a water resistive barrier, if required, based on local Building Codes and climate zone.

WARRANTY

See Rmax "Sales Policy" for warranty conditions. Rmax does not assume any responsibility or liability for the performance of any products other than those manufactured by Rmax. **NOTE: All Rmax products must be tarped, placed on skids and kept dry before and throughout construction.**

LIMITED WARRANTY

Notwithstanding anything herein to the contrary, neither Rmax Operating, LLC, nor any of its employees representatives, agents or other affiliates (collectively, "Rmax") makes any representation or warranty whatsoever, whether express or implied, concerning the Product, except that the Product was manufactured in accordance with specifications set forth in ASTM C1289, at the time of purchase is free from any lien or encumbrance, and, for a period of one (1) year from the date of delivery of the Product, is free from defects in materials and workmanship. BUYER ACKNOWLEDGES AND AGREES THAT, EXCEPT AS PROVIDED ABOVE, THE PRODUCT IS BEING DELIVERED IN AN "AS IS, WHERE IS" CONDITION, AND WITH ALL FAULTS. RMAX, HEREBY DISCLAIMS, AND BUYER HEREBY WAIVES, ANY AND ALL OBLIGATIONS AND LIABILITIES OF RMAX AND RIGHTS, CLAIMS, AND REMEDIES OF BUYER AGAINST RMAX, WHETHER EXPRESS OR IMPLIED, AND WHETHER ARISING BY LAW OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IMPLIED WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING, AND USAGE OF TRADE, ANY WARRANTY WITH REGARD TO ANY CLAIM OF INFRINGEMENT THAT MAY BE PROVIDED IN SECTION 2.312(3) OF THE UNIFORM COMMERCIAL CODE, AND ANY AND ALL LIABILITY WITH RESPECT TO THE PRODUCT OR SERVICES PERFORMED OR PROVIDED BY RMAX. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THE WARRANTIES EXPRESSED HEREIN ARE EXCLUSIVE AND ARE GIVEN IN LIEU OF (I) ANY AND ALL OTHER WARRANTIES EXPRESS OR IMPLIED, AND (II) ANY OBLIGATION, LIABILITY, RIGHT, CLAIM OR REMEDY, IN CONTRACT, TORT OR STRICT LIABILITY, WHETHER OR NOT ARISING FROM NEGLIGENCE, ACTUAL OR IMPUTED. THE WARRANTIES EXPRESSED HEREIN SHALL BE THE EXCLUSIVE REMEDY FOR A DEFECT IN/OR DAMAGES RELATED TO THE PRODUCT.

LIMITATION OF LIABILITY AND BUYER'S REMEDIES

IN THE EVENT OF A DEFECT IN THE PRODUCT COVERED BY THE LIMITED WARRANTY SET FORTH ABOVE, RMAX SHALL, AT RMAX'S OPTION AND EXPENSE, REPAIR OR REPLACE THE DEFECTIVE PRODUCT OR REFUND THE AMOUNT PAID BY THE BUYER FOR THE DEFECTIVE PRODUCT. THE LIABILITY OF RMAX, IF ANY, AND BUYER'S SOLE AND EXCLUSIVE REMEDY FOR DAMAGES FOR ANY CLAIM OF ANY KIND WHATSOEVER, REGARDLESS OF THE LEGAL THEORY AND WHETHER ARISING IN TORT, CONTRACT, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY, SHALL NOT BE GREATER THAN THE ACTUAL PURCHASE PRICE OF THE PRODUCT WITH RESPECT TO WHICH SUCH CLAIM IS MADE. WITHOUT LIMITATION THE FOREGOING, RMAX SHALL NOT BE LIABLE FOR BUYER'S LOSS OF USE, REVENUE OR PROFIT, OR FOR ANY OTHER DIRECT, INDIRECT, INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING, WITHOUT LIMITATION, LOSS OF GOODWILL OR ANTICIPATED PROFITS OR LOST BUSINESS), AND BUYER HEREBY WAIVES ANY RIGHT IT MAY HAVE TO SUCH DAMAGES.

This LIMITED WARRANTY shall not be applicable to defects or damages which, upon inspection by Rmax, are determined by Rmax to be caused by any of the following:

- a) Normal wear and tear;
- b) Intentional vandalism or abuse, or negligent use, misuse or abuse (including any usage not in accordance with the product instructions);
- c) Use of parts not manufactured or sold by Rmax;
- d) Accident or natural disasters, including, but not limited to, fire, flood, lightning, earthquake, tornadoes, hail, hurricanes, wind storms, acts of war, acts of terrorism or acts of God; or
- e) Improper installation, operating, handling, storage, application or design, modification, alteration, structural movement or maintenance.

Claims against Rmax under the provisions of the LIMITED WARRANTY must be made within thirty (30) days after the alleged defect to which the claim relates is discovered or should have been discovered, by written notice to Rmax at the following address: 13524 Welch Road, Dallas, Texas, 75244; Attention - Technical Services. The written notice must be accompanied by the dated invoice or receipt received by the Buyer at the time of purchase. Rmax shall have sixty (60) days from receipt of such notice to inspect and analyze the alleged defective material. Under no circumstances shall the material to be disposed or to be returned be delivered to Rmax unless the Buyer has received written instructions to do so. Buyer shall have no right to deduct the amount of any claim from Rmax's invoice until the claim is allowed or adjusted. Failure on the part of the Buyer to follow these provisions shall waive all rights under this LIMITED WARRANTY. Unless modified in writing signed by both Rmax and Buyer, this LIMITED WARRANTY is understood to be the complete and exclusive agreement between the parties, and supersedes all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this LIMITED WARRANTY. Some states and certain federal laws do not allow limitations on how long an implied warranty lasts, so such limitations or exclusions may not apply to you. In addition, some states do not allow the exclusion or limitation of incidental or consequential damages, so such limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

GENERAL CONDITIONS

Descriptions, specifications, and recommendations described herein are subject to change without notice. Consult with Rmax Sales for the latest information. The design and construction of a roof deck and supporting structure are the responsibility of the project architect, engineer, general contractor and the building owner. The selection and use of Rmax Insulation and other roofing system components to meet the requirements for a project is at the sole discretion of the owner or his designated agent or representative.

No warranty, express or implied, as to characteristics, physical properties, or performance under any variations from controlled conditions at the time of manufacture is made. These provisions may not be altered in any way by a salesperson, employee, agent, or any other representative of Rmax, except by a letter from an officer of Rmax. Rmax does not assume any responsibility or liability for the performance of any product other than those manufactured by Rmax.

ACCEPTANCE OF ORDERS

All orders are subject to acceptance by Rmax at its corporate office in Dallas, Texas and are not binding on Rmax unless so accepted. This acceptance constitutes a complete and binding contract which cannot be modified or canceled without written consent of both parties. The conditions stated herein shall take precedence over any other conditions, and no contrary, additional or different provisions or conditions shall be binding on Rmax unless accepted by Rmax in writing. An order has been accepted by Rmax when it has been acknowledged in writing or shipped. No order will be accepted or produced until the manufacturing plant has accumulated orders of at least 15,000 board feet of any one product in any one thickness. Orders of less than 15,000 board feet can only be accepted if the manufacturing plant can coordinate the order with another order of similar thickness.

REVISION OF ORDERS

Change and/or cancellations of orders will be accepted providing the plant is notified five working days in advance of the requested shipping date. Notification of changes and/or cancellations must be verified in writing. On cancellations that occur after the five working day limit, the Buyer will be charged a restocking charge of 20% if the material has already been produced.

RETURN OF ORDERS

Requests to return material to Rmax's plant must be cleared in advance by Rmax's Plant Manager. Credit for approved requests to return material, when such requests are for reasons other than material of workmanship, will be issued on the basis of the price at which the goods were originally invoiced, less the actual price of re-conditioning and restocking as determined by Rmax. Such restocking charges will be no less than 20% of the invoice price of the goods. All return freight is the Buyer's responsibility.

TITLE-SHIPMENT-RISK OF LOSS

Title to all goods furnished under this contract of sale pass to the Buyer upon delivery by Rmax to the Carrier at Rmax's shipping point. All deliveries of goods are F.O.B. Rmax's shipping point, unless otherwise noted in the face of Rmax's quotation. Routing of shipments shall be at the sole discretion of Rmax, unless directed otherwise by the Buyer at the time of placing an order. Rmax makes every effort to deliver orders at the requested delivery time; however, Rmax does not guarantee time deliveries. A delay in delivery or shipment will not be accepted as a basis for charge-back or claim for damage. Charges for re-consignment, diversions, driver-assisted unloading, detention, and/or demurrage assessed by the Carrier in accordance with provisions of the Carrier's tariffs, will be the Buyer's responsibility. All risks of loss or damage during transit pass to the Buyer with the transfer of title as noted above. All claims for loss or damage in transit must be filed with the Carrier by the Buyer. Material is loaded in accordance with the Carrier's loading instructions to insure delivery without damage. Rmax will give all reasonable assistance to the Buyer in collecting loss or damage claims from Carrier's by furnishing duplicate invoices, affidavits showing count when loaded, method of loading, etc. Buyer should in all cases immediately report loss and/or damage to Carrier and request inspection in case of damage.

FORCE MAJEURE

Rmax will not be liable for damages resulting from an interruption, delay, or failure to ship any order in accordance with the terms of the order where such failure is caused by any requirements of a government agency or authority, shortage of raw materials, strikes or other labor trouble, transportation delay, breakdowns, accidents, fires, riots, wars, acts of terrorism, Acts of God, or other causes beyond the control of Rmax.

TERMS OF PAYMENT

Payment due per terms as listed on the invoice and contingent upon the Buyer having made prior satisfactory credit arrangements. Interest at the maximum rate permitted by law will be added to all invoices not paid within the stated terms as listed on the invoice.

PRICE POLICY - All products will be invoiced at the price in effect on the date of shipment. In the event of a price increase, all unshipped orders accepted by Rmax prior to the effective date of the price increase shall be invoiced at the increased prices in effect at the time of shipment.

TAXES - All applicable taxes on the production, transportation, or sale of Rmax's products shall be for the Buyer's account.

SHIPPING AREAS - The fifty states of the United States of America, Mexico and Canada.

SHIPPING POINTS AND MANUFACTURING PLANTS - (1) Rmax Operating, LLC; 1649 S. Batesville Road; Greer, South Carolina 29650. (2) Rmax Operating, LLC; 13524 Welch Road; Dallas, Texas 75244. (3) Rmax Operating, LLC; 210 Lyon Drive; Fernley, Nevada 89408

SHIPPING METHODS - Rmax reserves the right to choose the Carrier and routing, unless otherwise directed by the Buyer in writing at the time of placing an order. Additional costs associated with Buyer specified Carriers and/or routes shall be for the Buyer's account. The standard method of shipment shall be via forty-five (45) foot, forty-eight (48) foot, or tandem flatbed trailers, where authority allows, at Rmax's option. Stopover or pooled truckloads are permitted, but limited to one stop and a final destination. The stopover location must be in line with the final destination and not in excess of 150 miles between stops. Applicable stopover charges shall be applied to the face of the invoice.

TRUCKLOAD QUANTITIES

1. 4' X 8' panels- twenty-four (24) units per forty-eight (48) foot flatbed trailer;
2. 4' X 4' panels- forty-eight (48) units per forty-eight (48) foot flatbed trailer;
3. Custom length panels-Orders for lengths other than those standards noted above usually cannot be accommodated on standard flatbed trailers to permit loading of the full truckload quantity required. Buyers ordering other than standard four or eight foot panels are required to order a variable item of standard length and size to fill out the load, or pay any increase in freight due to any inability to load full truckload quantity caused by nonstandard length of item(s) ordered.

SPECIAL ORDERS -No order will be accepted or produced until the manufacturing plant has accumulated orders of at least 15,000 board feet of any one product in any one thickness. Orders of less than 15,000 board feet can only be accepted if the manufacturing plant can coordinate the order with another order of like thickness.

LEAD TIMES - Lead time for the standard insulation products shall be five (5) to ten (10) working days from the receipt of the order at Rmax's manufacturing plant. Lead time for nonstandard length insulation products shall be ten (10) to twenty (20) working days from the receipt of the order at Rmax's plant. This is based upon minimum orders of 30,000 board feet. Lead time for stopover or pooled freight loads shall be as noted above except that the time shall apply only from the time that Rmax can arrange the required pool truck.

LTL SHIPMENTS

LTL shipments are permitted subject to the following conditions:

1. Minimum order is approximately 15,000 board feet.
2. All LTL shipments shall be invoiced at the applicable list price plus a carton charge.
3. Shipments will be freight collect with all freight charges for the Buyer's account.

CUSTOMER PICKUP - Customer pickup of ordered goods shall be permitted provided that the Buyer makes prior arrangement with Rmax's Plant Order Department. The Buyer shall be required to pick up goods ordered for Customer Pickup within 48 hours of notice of availability. The minimum pickup shall be ten (10) bundles.

GENERAL PROVISIONS

This document with all attachments constitutes the entire agreement between Rmax Operating, LLC, and the Buyer and is intended as a final, complete and exclusive expression of the agreement. This agreement supersedes all prior representations, understandings and agreements. Any failure on the part of Rmax Operating, LLC to insist upon the performance of any term herein shall not be construed as a waiver or relinquishment of Rmax Operating, LLC's right to such performance and Buyer's obligation shall continue in full force and effect.

WARNING - Polysiocyanurate is an organic material which will burn when exposed to an ignition source of sufficient heat and intensity, and may contribute to flames spreading.

CHOICE OF LAW

THE AGREEMENT SHALL BE GOVERNED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS, WITHOUT REGARD TO ITS CONFLICTS OF LAW OR CHOICE OF LAW PRINCIPLES.

FORUM SELECTION CLAUSE

ANY DISPUTE ARISING OUT OF OR RELATING TO THIS TRANSACTION SHALL ONLY BE LITIGATED IN AN APPROPRIATE FEDERAL OR STATE COURT LOCATED IN DALLAS COUNTY, TEXAS

WAIVER OF JURY

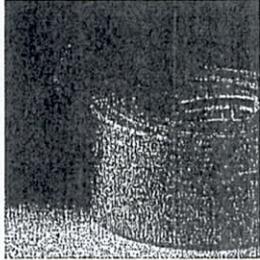
EACH PARTY HEREBY IRREVOCABLY WAIVES ANY AND ALL RIGHTS TO TRIAL BY JURY WITH RESPECT TO ANY LEGAL PROCEEDING ARISING OUT OF OR RELATING TO THIS TRANSACTION

SALES POLICY

(01-10)

07210 2.04 B

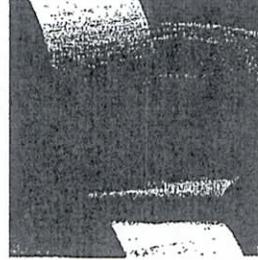
Vapor Retarder Tape

Metal Building Facing Systems**WMP®-10
Polypropylene
Facing Tape****1531CW**

White metalized polypropylene/scrim/kraft laminated facing tape. 4 x 4/sq.in. (2.5 x 2.5 cm) Tridirectional scrim reinforcement. C.W. acrylic adhesive.
Colors: Black, White

Primary use: Closure system and vapor seal on Lamtec WMP®-10 faced thermal insulation.

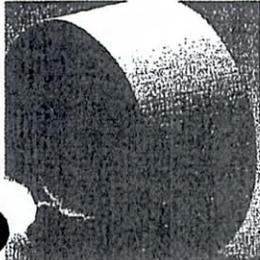
Thickness: 7.0 mils (175 µ) (exclusive of liner)
Adhesion: 68 oz./inch width (19.2 N/2.5 cm)
Tensile: 40 lbs./inch width (181 N/2.5 cm)
Widths: 3, 5 inches (7.6, 12.7 cm)
Lengths: 50, 100 yards (46, 91 m) on 3 inch (7.6 cm) core

**VRP®-3 Vinyl
Facing Tape****1545CW**

White vinyl/scrim/metalized polyester lamination. 4 x 4/sq.in. (2.5 x 2.5 cm) Bidirectional scrim reinforcement. C.W. cold weather acrylic adhesive system.

Primary use: Closure system and vapor seal on Alpha Associates VRP-3 faced thermal insulation.

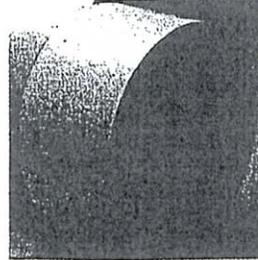
Thickness: 10.5 mils (262 µ) (exclusive of liner)
Adhesion: 60 oz./inch width (16.9 N/2.5 cm)
Tensile: 40 lbs./inch width (181 N/2.5 cm)
Width: 3 inches (7.6 cm)
Length: 50 yards (46 m) on 3 inch (7.6 cm) core

**Reinforced Vinyl
Facing Tape****1532CW NS****New!**

A 4x4 bidirectionally reinforced, UL listed, white vinyl/scrim/aluminum foil lamination coated with a special cold weather acrylic, pressure sensitive adhesive system. The ultimate in cold weather tapes, this product combines superior quick stick at normal temperatures with superior performance down to 10°F. Also recommended for use at elevated temperatures

Primary use: Vapor seal and closure system on Lamtec VSF-HD® facing.

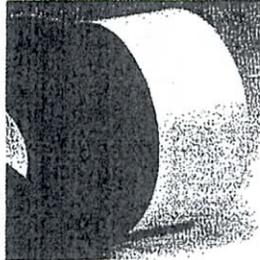
Thickness: 11.5 mils (287 µ) (exclusive of liner)
Adhesion: 60 oz./inch width (16.6 N/2.5 cm)
Tensile: 45 lbs./inch width (200 N/2.5 cm)
Width: 3 inches (7.6 cm)
Length: 50 yards (46 m) on 3 inch (7.6 cm) core

**WMP®-VR-R
Polypropylene
Facing Tape****1547CW**

A triple ply laminate of white polypropylene film with a metalized polyester film backing, and fiberglass scrim reinforcement.

Primary use: Closure system and vapor seal on Lamtec WMP®-VR-R metal building facings.

Thickness: 8.6 mils (218 µ) (exclusive of liner)
Adhesion: 68 oz./inch width (19.2 N/2.5 cm)
Tensile: 30 lbs./inch width (5.25 N/2.5 cm)
Width: 3 inches (7.6 cm)
Length: 50 yards (46 m) on 3 inch (7.6 cm) core

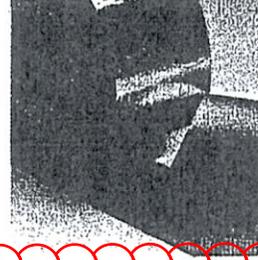
**WMP®-VR
Polypropylene
Facing Tape****1537CW**

Tridirectionally reinforced U.L. listed white polypropylene/scrim/kraft lamination. Coated with Venture's C.W. cold weather acrylic adhesive system for superior quick stick at temperatures as low as 10°F (-12°C). Better in humid as well as hot conditions.

Colors: Black, White

Primary use: Closure system and vapor seal on Lamtec WMP®-VR and WMP-50 faced thermal insulation.

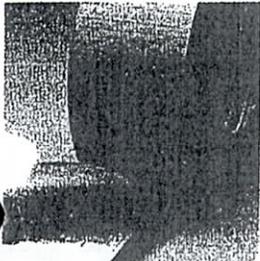
Thickness: 7.5 mils (187 µ) (exclusive of liner)
Adhesion: 68 oz./inch width (19.2 N/2.5 cm)
Tensile: 40 lbs./inch width (181 N/2.5 cm)
Widths: 3, 5 inches (7.6, 12.7 cm)
Lengths: 50, 100 yards (46, 91 m) on 3 inch (7.6 cm) core

**Heavy Duty
FSK Facing Tape****1549CW****New!**

Heavy duty aluminum foil/scrim/kraft lamination constructed with fiberglass and polyester yarn reinforcement. Special vapor barrier coating maintains 0.02 perm WVTR. Highly abuse resistant. Flame resistant adhesive bond. CW cold weather adhesive system allows application at 10°F (-12°C).

Primary use: Closure system and vapor seal on FSK faced fiberglass ductboard and blanket systems.

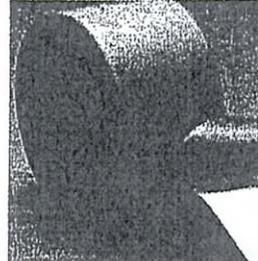
Thickness: 6.5 mils (165 µ) (exclusive of liner)
Adhesion: 92 oz./inch width (26.0 N/2.5 cm)
Tensile: 45 lbs./inch width (203.8 N/2.5 cm)
Width: 3 inches (7.6 cm)
Length: 50 yards (46 m) on 3 inch (7.6 cm) core

**WMP®-VRP-HD
Facing Tape****1539CW**

A bidirectionally reinforced white vinyl/scrim/metalized PET lamination. This tape conforms well to irregular surfaces. Coated with Venture's "CW" Plus adhesive system, which combines superior quick stick at normal temperatures with superior low temperature performance down to -25°F.

Primary use: Used as a vapor barrier for Lamtec VRP-HD metal building insulation.

Thickness: 13 mils (325 µ)
Adhesion: 50 oz./inch width (14 N/2.5 cm)
Elongation: 2%
Tensile: 30 lbs./inch width (54 N/2.5 cm)
Width: 3 inches (7.6 cm)
Length: 50 yards (46 m) on 3 inch (7.6 cm) core

**2 mil (50 micron)
White Aluminum Foil
Tape****1558HT**

A 2.0 mil (50 µ) white aluminum foil coated with an aggressive cold weather acrylic adhesive system which offers superior quick stick at below zero and elevated temperatures. Zero temper, dead soft aluminum foil conforms well to smooth surfaces.

Primary use: Matching lap joint and vapor seal for both smooth and satin foil faced board. Matches Thermax® and Atlas® products.

Thickness: 3.5 mils (88 µ) (exclusive of liner)
Adhesion: 100 oz./inch width (28.3 N/2.5 cm)
Tensile: 34 lbs./inch width (154 N/2.5 cm)
Width: 3 inches (7.6 cm)
Length: 50 yards (46 m) on 3 inch (7.6 cm) core

Products designated "NS" are not available from stock. Contact Venture Tape for minimum order requirements.

Turner

POS Consolidated Rental Car Facility

Project # 1374100

3150 S 160th, SeaTac, WA

98188

Telephone: 206-588-8001

Fax: 206-588-8013

Submittal Transmittal

[For Reviewer]

September 23, 2010

Date: 9/23/10

Transmittal No: 2546

Transmitted To: Rad Milosavljevic
 Port of Seattle
 3150 S 160th Street
 SeaTac, WA 98188
 Tel: 206-787-4812
 Fax: 206-787-5784

Transmitted By: Elaine Zaragoza
 Turner Construction Company
 3150 S 160th
 SeaTac, WA 98198
 Tel: 206-588-8001 x103
 Fax: 206-588-8013

Submittal Package No	Description	Due Date
009-03410 - 03410 - 0	Spec 03410 Package 009 Delineators - Lease Demising and Security Barriers - Turner	10/7/10

Item	Qty	Spec	Sub Section	Item #	Rev	Type	Description	Notes	Item Action
									AP AN RR RJ
001	1	03410-0170	1.04.C	03410-0170	0	Product Data / Cut Sheet	Delineators - Concrete Mix Design		<input type="checkbox"/>
002	1	03410-0180	1.04.D	03410-0180	0	Shop Drawings	Delineators - Shop Drawings - Lease Demising and Security Barriers	WITH CALCS	<input type="checkbox"/>
003	1	05500-0430	1.04.A	05500-0430	0	Shop Drawings	Delineators - Shop Drawings - Barrier Rails		<input type="checkbox"/>
004	1	03410-0230	1.04.K	03410-0230	0	Certificates	Delineators - PCI Certification		<input type="checkbox"/>

AP=Approved
 AN=Approved as noted
 RR=Revise and resubmit
 RJ=Rejected

Cc	Company Name	Contact Name	Fax Number	Copies	Notes
	Turner Construction Company	Engineering File		1	03410-009.00 - Turner
	Turner Construction Company	Engineering File		1	13741DL - Submittals

Remarks



Signature



Signed Date

Port of Seattle

STIA 0617 – Remote Consolidated Rental Car Facility

Work Project No. 103640

Seattle-Tacoma International Airport, WA

TURNER CONSTRUCTION COMPANY	
Reviewed for general acceptance only. This review does not relieve the Subcontractor of the responsibility for making the work conform to the requirements of the contract. The Subcontractor is responsible for all dimensions, correct fabrication and accurate fit with the work of other trades.	
SUBJECT TO ARCHITECT'S APPROVAL	
Submittal Package	03410-009.00
Reviewed by: <u> <i>Elaine Zaragoza</i> </u>	Date: <u> 09/23/10 </u>
(Signature)	

Subcontractor	Turner Construction Company	Specification Section	03410
Nature	Delineators – Lease Demising and Security Barriers		
Drawings			
POS Submittal Item(s) No	Spec/Sub Section	Submittal Type	Description
03410-0170	1.04.C	Product Data	Delineators – Concrete Mix Design
03410-0180	1.04.D	Shop Drawings	Delineators – Shop Drawings – Lease Demising and Security Barriers with Calculations
03410-0230	1.04.A	Certificates	Delineators – PCI Certification
05500-0430	1.04.K	Shop Drawings	Delineators – Shop Drawings – Barrier Rails

CROSS REFERENCE SUBMITTAL INFORMATION:
Remote Consolidated Rental Car Facility
Port of Seattle Project MC 0315405: Work Project 103640

SUBMITTAL PROCESS ATTACHMENT "B"

PRIMARY SUBMITTAL:

Submittal Package No.	03410-009.00
Submittal Item No.	0170
Paragraph No.	1.04.C
Title	Delinators
Responsible Company ID	Turner Construction Company

SECONDARY SUBMITTAL(S):

Specification Section:	05500
Submittal Item No:	0430
Paragraph No:	1.04.A
Title	Shop Drawings - Barrier Rails
Responsible Company ID	Turner Construction Company

The "primary" submittal item has been reviewed and verified complete for the most stringent requirements of both the "primary" and "secondary" specification sections.

Elaine Zaragoza

Turner Construction Co.

Specification Section:	
Submittal Item No:	
Paragraph No:	
Title	
Responsible Company ID	

Specification Section:	
Submittal Item No:	
Paragraph No:	
Title	
Responsible Company ID	

Specification Section:	
Submittal Item No:	
Paragraph No:	
Title	
Responsible Company ID	

Specification Section:	
Submittal Item No:	
Paragraph No:	
Title	
Responsible Company ID	

Zaragoza, Elaine - (SEA)

From: Kelsey Erholm [kelsey@graniteprecast.com]
Sent: Tuesday, September 21, 2010 3:51 PM
To: Zaragoza, Elaine - (SEA)
Cc: Stuart Gorka; Steve Johnson
Subject: CRCF Barrier Submittal with Engineering
Attachments: Seattle-Barrier-StampedSubmittal(9-21-10).pdf; Primary Security Barrier Drawing.pdf; Lease Demising Barrier Drawing.pdf; Mix Design Recipe 6.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Elaine,

Here are our shop drawings, engineering, and the mix design we plan to use. In order to meet the delivery schedule, I need to order the form by the end of September. Is there any way the engineer could approve the barriers by then or at least approve the dimensions? I will type up a schedule for delivery of the barriers tomorrow to make sure we are both on the same page.

Let me know if you have any questions.

Thank you,

Kelsey Erholm



GRANITE
PRECAST & CONCRETE, INC.

4116 BAKERVIEW SPUR

BELLINGHAM, WA.

PH. 360.671.2251

FX. 360.671.0780

C. 360.303.5571

www.graniteprecast.com

This transmittal and any documents, files or previous email messages attached to it may contain information that is confidential or legally privileged. Any drawings or other intellectual property are the property of Granite Precasting, and are not to be shared with any person or entity other than the intended recipient. If you are not the intended recipient or a person responsible for delivering this transmission to the intended recipient, you are hereby notified that you must not read this transmission and that any disclosure, copying, printing, distribution or use of this transmission is strictly prohibited. If you have received this transmission in error, or in any manner not specifically authorized by Granite Precasting, please immediately notify the sender by telephone or return email and delete or destroy the original transmission and its attachments without reading or saving in any manner. Thank you.



GRANITE PRECASTING & CONCRETE INC.

Recipe #6 7 Sack, 7,000 PSI Concrete

<u>Material</u>	<u>Class/Typ</u>	<u>Wt. Lbs.</u>
Cement	Type III	725
Concrete Sand	Class 1	1424
3/8" Coarse Aggregate (pea-gravel)	AASHTO Grading No. 8	650
5/8" Coarse Aggregate	AASHTO Grading No. 67	902
Water (8.33 lbs per gallon)		

Air- Entrainment	AEA-92	3oz
Super Plasticizer	PLASTOL 6000	50oz
Slump Flow		22"-28"
Water/Cement Ratio		0.31

<u>AGGREGATE</u>	<u>SOURCE</u>	<u>SP. GR.</u>
Concrete Sand	Concrete Norwest State Pit #197	2.67
3/8" Aggregate (pea gravel)	Concrete Norwest State Pit #197	2.669
5/8" Aggregate	Aggregates West State Pit #192	2.712

4116 Bakerview Spur Bellingham, WA 98226 · 360-671-2251 · 1-800-808-2251 · Fax 360-671-0780

03410-0170
1.04.C

Primary Security Barriers

DESIGN NOTES:

- 1) Concrete: Fc= 6,000 psi @ 28 Days
- 2) Reinforcement: ASTM A-615 Grade 60
- 3) 1 1/2" Bar Cover Typ.
- 4) Weight = 1,350 lbs. (~270 lb/ft)
- 5) Concrete Barrier designed to withstand 1,500 lbs. horizontal impact (18" Above Grade). (Note, Potential exists for units to slide or overturn with 1,500 lb. load. Granite Precasting can not be responsible for overall stability of system.)



PLAN VIEW

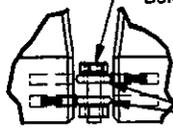
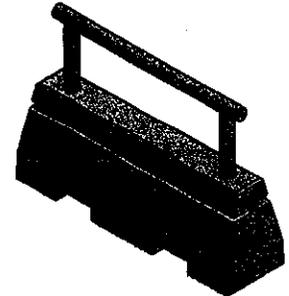


1 1/4"Ø x 4 1/2" Lg. Bolt & Nut

Note:

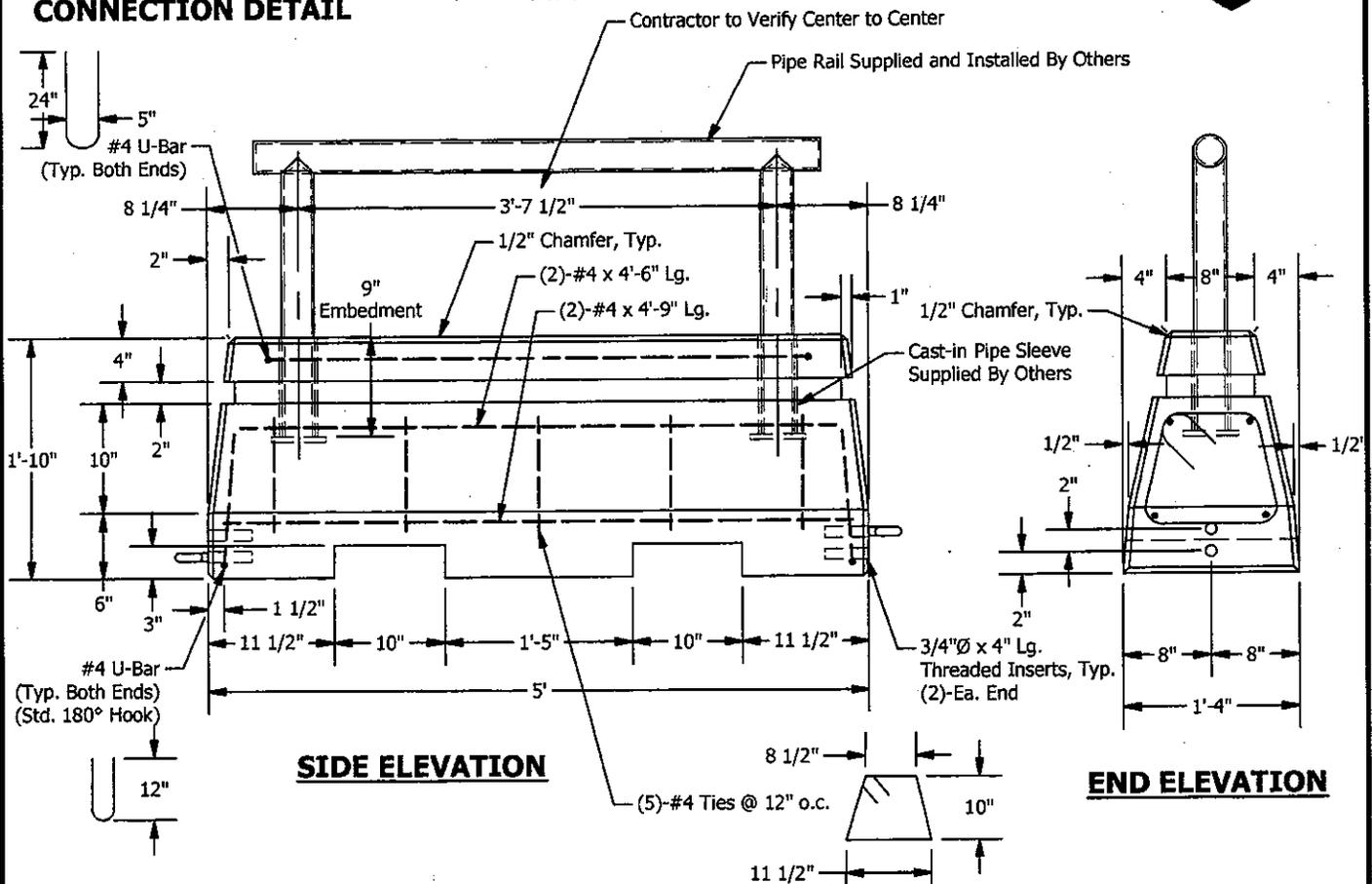
321 Barriers Cast with Threaded Inserts. Granite Precast to Supply 642 Eye Bolts, 321 Bolts, & 321 Nuts. Contractor to Install.

Granite Precast Shall Fabricate One Mock-Up For Approval.



3/4"Ø Drop-Forged Shoulder Eye Bolts (Typ.)

CONNECTION DETAIL



PROJECT: **PORT OF SEATTLE CRCP**

STRUCTURE: **PRIMARY SECURITY BARRIER**

CUSTOMER: **TURNER**



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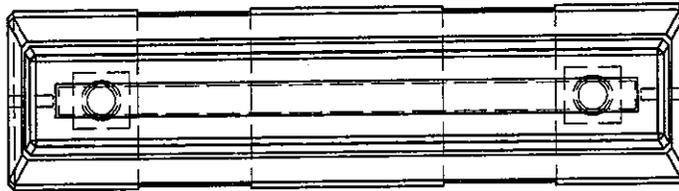
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1.04.D

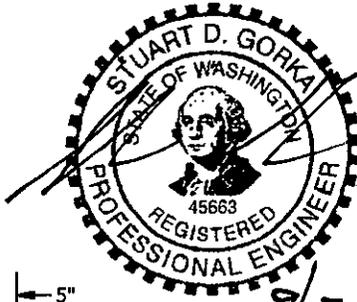
Lease Demising Barriers

DESIGN NOTES:

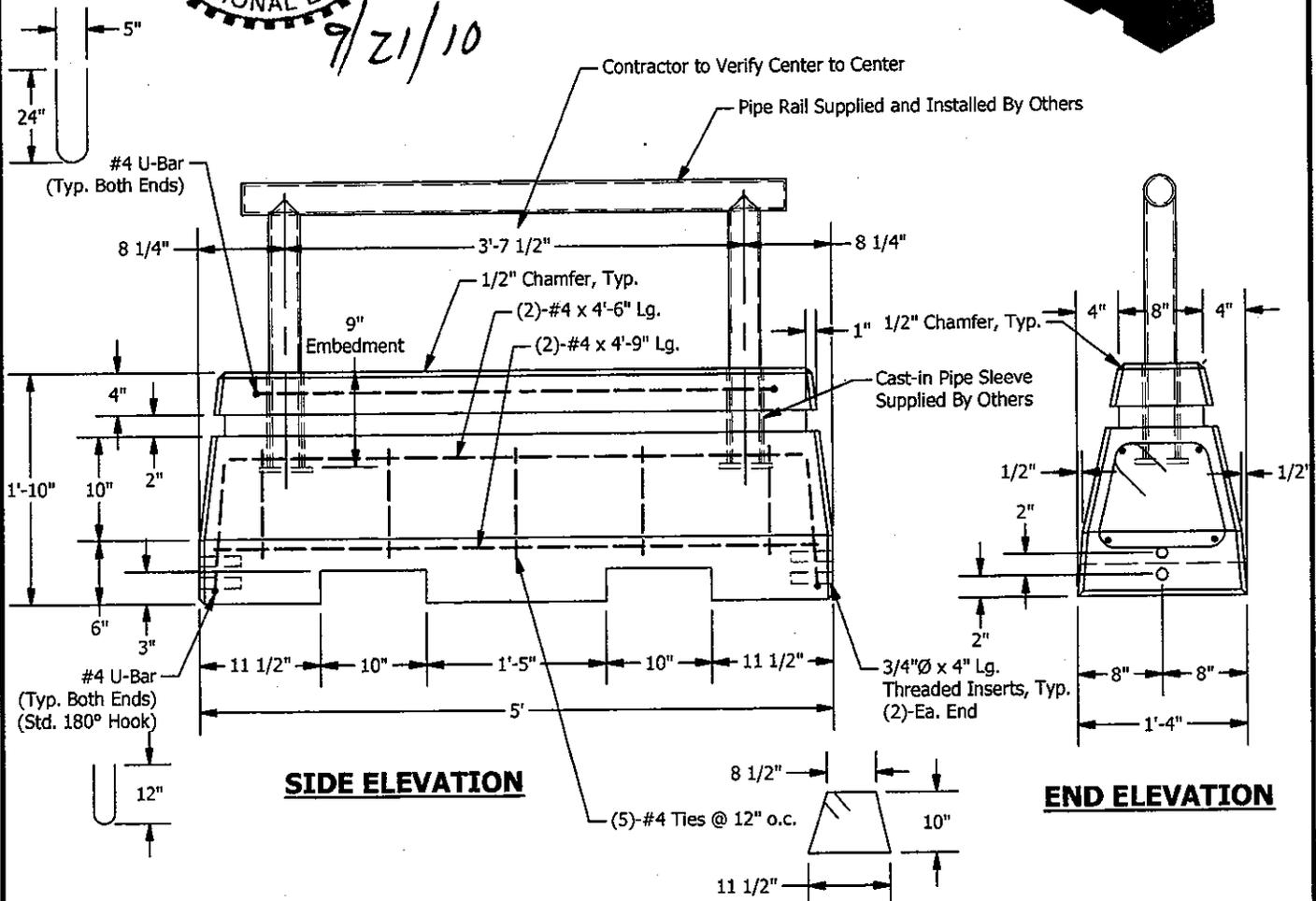
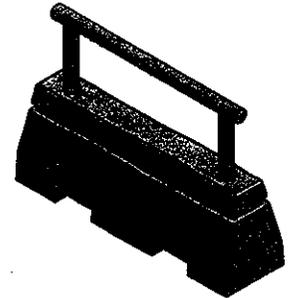
- 1) Concrete: Fc= 6,000 psi @ 28 Days
- 2) Reinforcement: ASTM A-615 Grade 60
- 3) 1 1/2" Bar Cover Typ.
- 4) Weight = 1,350 lbs. (~270 lb/ft)
- 5) Concrete Barrier designed to withstand 1,500 lbs. horizontal impact (18" Above Grade). (Note, Potential exists for units to slide or overturn with 1,500 lb. load. Granite Precasting can not be responsible for overall stability of system.)



PLAN VIEW



Note:
398 Barriers Cast with Threaded Inserts
Do Not Require Any Additional Hardware.



PROJECT: PORT OF SEATTLE CRCP	STRUCTURE: LEASE DEMISING BARRIER	CUSTOMER: TURNER
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03410-0180
1.04.D

DESIGN COMPUTATIONS PREPARED FOR:

Turner

PROJECT:

Port of Seattle CRCF

PRODUCT:

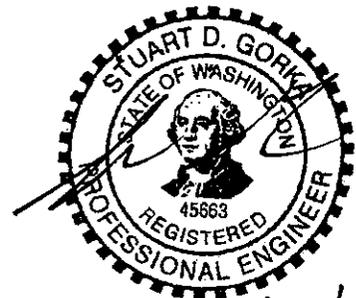
Precast Barriers

PREPARED BY:



GRANITE
PRECAST STONE & CONCRETE INC.

4116 Bakerview Spur
Bellingham, WA 98226
Phone: (360) 671-2251
Fax: (360) 671-0780



9/21/10

03410-0180
1.04.D



GRANITE PRECASTING & CONCRETE INC.

4116 Bakerview Spur Ph: (360) 671-2251
 Bellingham, WA 98226 Fax: (360) 671-0780

Project: PORT OF SEATTLE - BARRIKAS

Sheet No: 2 of 5

Engineer: S/D 6 Date: 9/2/00

Drafter: _____ Date: _____

DESIGN PRECAST BARRIKAS:

- DESIGN FOR 1500 LB IMPACT LOAD, LOCATED 18" ABOVE GRADE (HORIZONTAL)

DESIGN CHECKS:

- DESIGN BARRIKAS AS BEAM FOR HORIZONTAL LOADING.
- CHECK STABILITY OF SINGLE UNIT FOR SLIDING + OVERTURNING.
- IF BARRIKAS WILL MOVE WITH IMPACT, DESIGN EYE BOLT CONNECTION TO CARRY ANTICIPATED LOADS.

DESIGN CONCRETE BEAM: (USING REINF. SPECIFIED IN CONTRACT PLANS)

$$\text{AVG THICKNESS} = \frac{8" + 14"}{2} = 12"$$

$$M = 1.5K (5') / 4 = 1.88 \text{ K-FT (LOAD @ MID-POINT)}$$

$$M_u = 1.6 (1.88) = 3.0 \text{ K-FT}$$

$$V_u = 1.6 (1.5K) = 2.4K \text{ (LOAD @ END)}$$

→ SEE FOLLOWING SHEET FOR BEAM ANALYSIS.



4116 Bakerview Spur, Bellingham, WA 98226
 Phone: (360) 671-2251, Fax: (360) 671-0780

Customer: Turner
 Project Name: Port of Seattle CRCF
 Job Number: N/A
 Structure Name: Precast Barrier

Member: Precast Barrier

Member Thickness:	12"	
Bar Cover:	3.0"	(Max. , 2" min. - 1 1/2" + #4 Stirrups)
Concrete Strength, f'c:	7000 PSI	
Beam Width, b:	22.0"	
Factored Moment, Mu:	3.00 K-FT	
Service Moment, Ms:	1.88 K-FT	

Calculate Flexural Capacity:

Bar Size/Qty: (2)- #4.0 (As Provided =0.39 sq.in./ft.)

$\phi Mn = \phi A_s f_y (d - a/2):$ 15.30 k-ft OK

$c = A_s F_y / (.85 f'_c \beta_1 b) = 0.26"$
 Where, $\beta_1 = [0.85 - .05 (f'_c - 4 \text{ksi})] = 0.70$
 $a = c \beta_1 = 0.18"$
 $d = \text{Thickness} - \text{Cover} - 1/2 \text{Bar Dia.} = 8.75"$

Check Min A. Provided: (Ref. ACI318, 10.5.1)

$A_s, \text{min} = 3 \sqrt{f'_c} / f_y * b * d:$ 0.81 sq.in./ft. OR $200 * b * d / f_y:$ 0.64 sq.in./ft.
 (Controls)

As Provided > As,min: NG
 4/3 As Provided, OK

Check Max Bar Spacing & Serviceability: (Ref. ACI318, 10.6.4)

$\rho = A_s / b * d =$ 0.00204 $\rho_{\text{max}} = (.75 \rho_b) =$ 0.03081 OK
 $E_s =$ 29000000
 $E_c = 57000 * \sqrt{f'_c} =$ 4768962
 $n = E_s / E_c =$ 6.08
 $\rho * n =$ 0.0124
 $k = \sqrt{2 \rho n + (\rho n)^2} - \rho n =$ 0.1456
 $j = 1 - (k/3) =$ 0.951
 $f_s = M_s / (A_s * j * d) =$ 6,900 PSI < $2/3 f_y = 40,000$ PSI OK

Max Spacing, $s = 15(40000 / f_s) - 2.5 C_c =$ 79.5" OR $12(40000 / f_s) =$ 69.6"
 (Controls)

Actual Spacing=16" OK

Check Shear:

Factored Shear, Vu: 2.40 KIPS
 Shear Capacity, $\phi V_n:$ 24.16 KIPS
 ($\phi V_n = 2 * \sqrt{f'_c} * b * d / 1000$)



GRANITE PRECASTING & CONCRETE INC.

4116 Bakerview Spur Ph: (360) 671-2251
 Bellingham, WA 98226 Fax: (360) 671-0780

Project: POINT OF SEATTLE BARRIERS
 Sheet No: 4 of 5
 Engineer: SDG Date: 7/21/10
 Drafter: _____ Date: _____

STABILITY OF UNIT:

$$WT \text{ OF SINGLE BARRIER} = 1350 \text{ LB}$$

NOTE: UNIT WT BARRIER/FT = $1350 \text{ LB} / 5 = 270 \text{ LB/FT}$
 OVERTURNING:

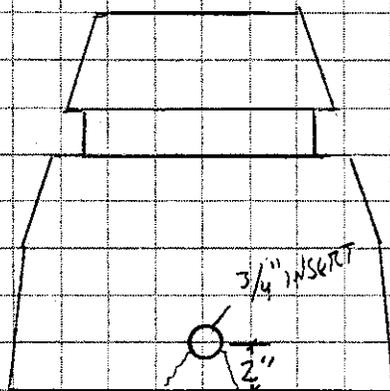
$$M_o = 1.5 \text{ K} (1.5') = 2.25 \text{ K-FT}$$

$$M_r = 1.35 \text{ K} (0.67') = 0.90 \text{ K-FT} < M_o \therefore \text{SINGLE BARRIER MAY OVERTURN}$$

/ SLIDING COEFF. (ASSUMED)

$$\text{SLIDING: } \frac{1.35 \text{ K} (0.3)}{1.5 \text{ K}} = 0.27 \therefore \text{SINGLE BARRIER MAY SLIDE.}$$

VERIFY EYE BOLT CONNECTION ADEQUATE TO RESIST BREAKOUT:



$$\frac{2.25 \text{ K-FT}}{0.67'} = 3.36 \text{ K} / 2 \text{ ANCHORS} = 1.68 \text{ K}$$



GRANITE & CONCRETE INC.

4116 Bakerview Spur Ph: (360) 671-2251
 Bellingham, WA 98226 Fax: (360) 671-0780

Project: PORT OF SEATTLE-BARRIERS

Sheet No: 5 of 5

Engineer: SD6 Date: 7/2/10

Drafter: _____ Date: _____

BREAKOUT CAPACITY: (REF. ACI 318, APPENDIX D)

$$V_{cb} = \frac{A_{vc}}{A_{ico}} \psi_{ed,v} \psi_{c,v} \psi_{h,v} V_b ; A_{ico} = 4.5(c_{a1})^2 ; c_{a1} = 2''$$

$$\phi V_{cb} = \left(\frac{18}{18}\right) (1.0) (1.2) (1.0) (1856 \text{ lb}) (0.75)$$

$$\phi V_{cb} = 1167 \text{ K} \approx 1168 \text{ K, SATOK}$$

$$A_{ico} = 4.5(2'')^2 = 18 \text{ in}^2$$

$$A_{vc} = [1.5(2'')] [1.5(2'')(2'')] = 18 \text{ in}^2$$

$$\psi_{ed,v} = 1.0$$

$$\psi_{c,v} = 1.2$$

$$\psi_{h,v} = 1.0$$

$$V_b = 7 \left(\frac{4''}{0.75''}\right)^{0.2} \sqrt{0.75''} \left(\sqrt{6000}\right) (2'')^{1.5}$$

$$V_b = 1856 \text{ lb}$$

→ BY INSPECTION, BARRIER CONNECTION ADEQUATE FOR LATERAL SHEAR FORCES.

EYE BOLT LOADING: (COMBINED SHEAR FORCES)

$$\sigma = \sqrt{[1.68(1.16)]^2 + (2.4 \text{ K})^2}$$

$$\sigma = 3.6 \text{ K (FACTORED)}$$

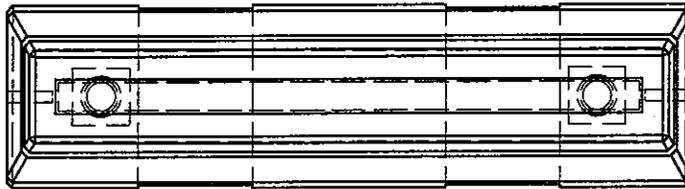
$$3.6 \text{ K} / 1.6 = 2.25 \text{ K (UNFACTORED)}$$

EFFECTIVE SHEAR AREA OF 3/4-10 EYEBOLT = 0.334 in²

f_y (A1030 STEEL) = 50 KSI

$$\text{ALLOWABLE SHEAR STRENGTH OF EYEBOLT} = 50 \text{ KSI} (0.4) (0.334 \text{ in}^2) = 6.68 \text{ K} > 2.25 \text{ K, OKAY}$$

Primary Security Barriers



PLAN VIEW

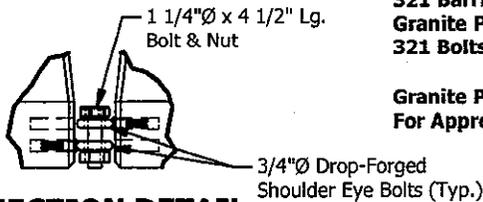
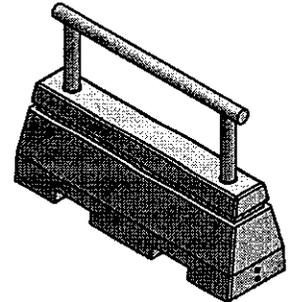
DESIGN NOTES:

- 1) Concrete: Fc= 6,000 psi @ 28 Days
- 2) Reinforcement: ASTM A-615 Grade 60
- 3) 1 1/2" Bar Cover Typ.
- 4) Weight = 1,350 lbs. (~270 lb/ft)
- 5) Concrete Barrier designed to withstand 1,500 lbs. horizontal impact (18" Above Grade). (Note, Potential exists for units to slide or overturn with 1,500 lb. load. Granite Precasting can not be responsible for overall stability of system.

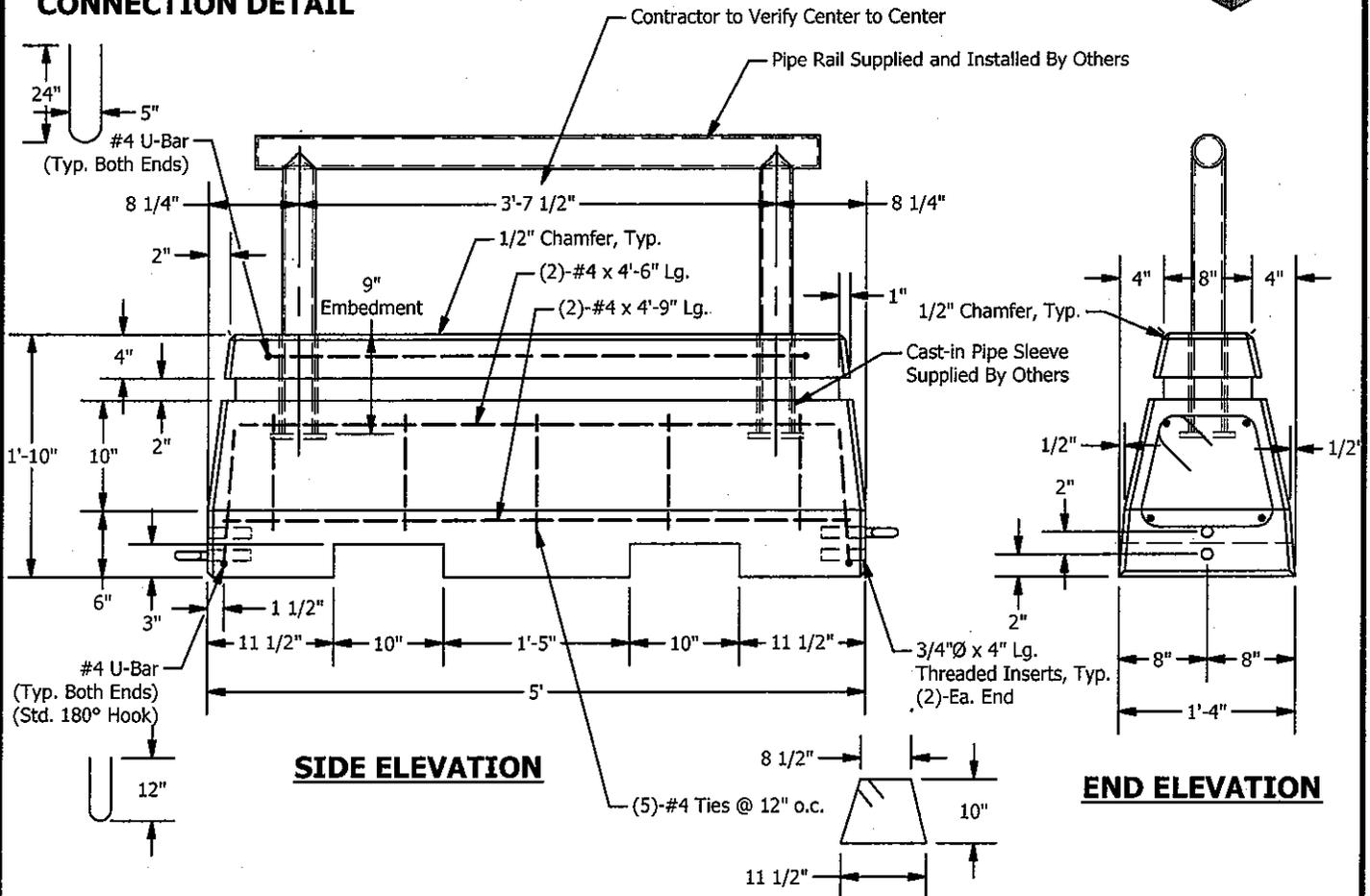
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Granite Precast Shall Fabricate One Mock-Up
For Approval.



CONNECTION DETAIL



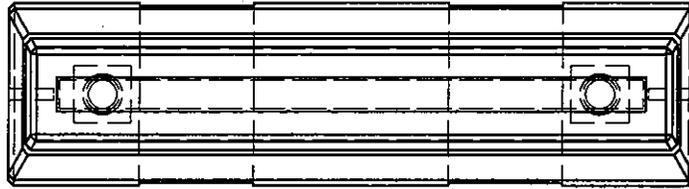
PROJECT: PORT OF SEATTLE CRCF	STRUCTURE: PRIMARY SECURITY BARRIER	CUSTOMER: TURNER
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Lease Demising Barriers



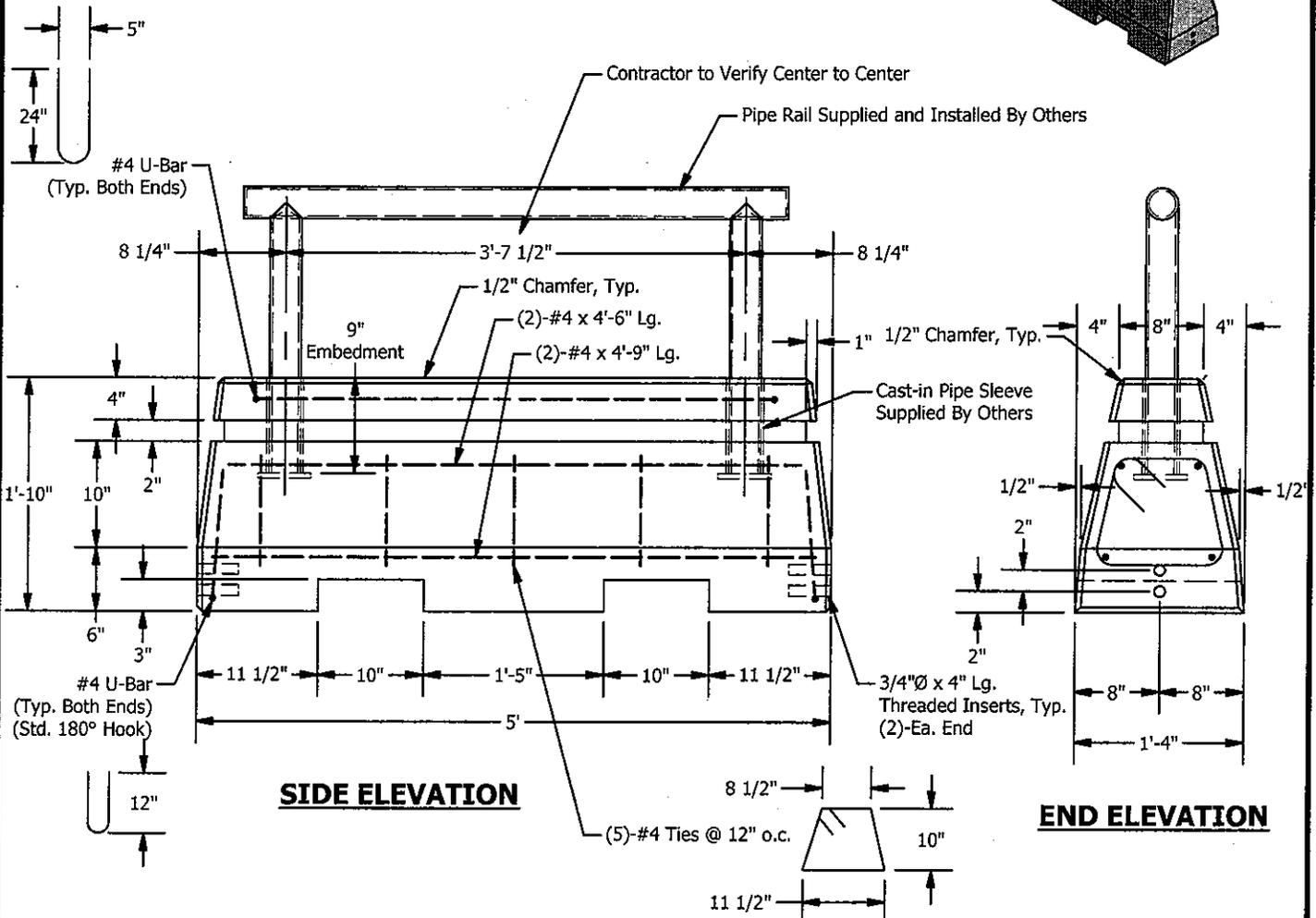
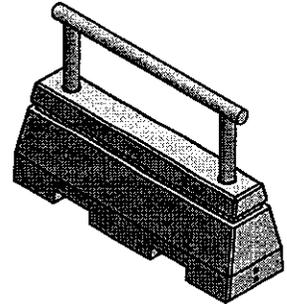
PLAN VIEW

DESIGN NOTES:

- 1) Concrete: Fc= 6,000 psi @ 28 Days
- 2) Reinforcement: ASTM A-615 Grade 60
- 3) 1 1/2" Bar Cover Typ.
- 4) Weight = 1,350 lbs. (~270 lb/ft)
- 5) Concrete Barrier designed to withstand 1,500 lbs. horizontal impact (18" Above Grade).
(Note, Potential exists for units to slide or overturn with 1,500 lb. load. Granite Precasting can not be responsible for overall stability of system.)

Note:

398 Barriers Cast with Threaded Inserts
Do Not Require Any Additional Hardware.



SIDE ELEVATION

END ELEVATION

PROJECT: PORT OF SEATTLE CRCF	STRUCTURE: LEASE DEMISING BARRIER	CUSTOMER: TURNER
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Zaragoza, Elaine - (SEA)

Subject: FW: CRCF Delineator Bid Package

From: Kelsey Erholm [mailto:kelsey@graniteprecast.com]

Sent: Thursday, June 03, 2010 10:34 AM

To: Zaragoza, Elaine - (SEA)

Subject: RE: CRCF Delineator Bid Package

Hi Elaine,

It was nice talking to you as well. We are not PCI Certified. However, we are NPCA certified. This certification relates more to our line of work and to this project. I have attached a link <http://www.precast.org> . We are also a WSDOT approved supplier. Feel free to call with any questions.

Thank you!

Kelsey Erholm



GRANITE
PRECASTING & CONCRETE CO.

4116 BAKERVIEW SPUR

BELLINGHAM, WA.

PH. 360.671.2251

FX. 360.671.0780

C. 360.303.5571

www.graniteprecast.com

REF PRE-BID RFI #225 (ATTACHED)

Rental Car Facility
Turner Sub Bid Questions/RFIs

Note: All bidding substitution requests shall be submitted with full documentation as per IP-01.01.D, IP-04.03, 00800, SC-04.07 and 01630.



Question/RFI No.	RFI Author	Date Submitted	Answer Due	Answer Rec'd	Turner, Port or Designer Assignment	Subcontractor Bidding Question	Port Direction to Designer	Answer
224	Mowal Construction	02/14/08	02/21/08	02/19/08	KPFF	Section 03410 - Precast Structural Concrete, 1.02 C.1. says as Assigned Work. All provisions of Division 07 Section "Waterproofing System" shall remain in effect. That section indicates a "Single licensed installer shall be responsible for providing complete sealant, expansion joint and waterproofing system...". We are confused as to what waterproofing requirements, if any, are required of the precast supplier of bridge slabs. Please clarify. It would seem that whoever is doing Division 7 waterproofing system would also do any treatment of the finished bridge decks (since the precast receives a topping slab).		Delete Section 1.02.C "Assigned Work" from Specification Section 03410. (John Hochwat, KPFF, 2/15/08)
225	Mowal Construction	02/14/08	02/21/08	02/19/08	KPFF	Also under Section 03410, 1.04 M, N, and O, require PCI proof of qualification for the erector, and proof of their superintendent as a Certified Field Auditor. It appears this Section is intended for erection of building precast, and not for bridge beams. The inspection of erecting the bridge beams would already be documented by the Owner's inspection agency. To prevent additional cost to the Bridge package, please consider waiving this requirement for a PCI qualified erector for the bridge beams.		Owner inspection is not a replacement for contractor quality control. We would, however, accept compliance with these provisions of the WSDOT Standard Specifications addressing lifting, handling and erection of precast in lieu of having a PCI certified erector and a PCI Certified Field Auditor as the superintendent. (John Hochwat, KPFF, 2/19/08)
226	Tony Toppenberg, TCCo	02/28/08	03/06/08	03/10/08	KPFF	Please confirm that Specification Section 03300, paragraph 3.14.B.2 is revised to read as follows: Sample freshly-mixed concrete at point of final placement in accordance with ASTM C172 and conduct one air content test in accordance with ASTM C231 or ASTM C173 for each of the first five trucks and every 10 trucks thereafter of ready-mix, air-entrained concrete delivered to Project for each day's concrete placement.		Confirmed. (John Hochwat, KPFF, 3/10/08)
227	Tony Toppenberg, TCCo	02/28/08	03/06/08	03/10/08	KPFF	Please confirm that Specification Section 03300, paragraph 3.14.B.3 is revised to read as follows: Sample fresh concrete immediately following placement and screeding and conduct air content tests in accordance with ASTM C231 or ASTM C173. An initial test shall be performed within the first five trucks of ready-mix, air-entrained concrete delivered to Project for each day's placement. If this test meets project requirements, no further testing following placement and screeding will be required. If the initial test does not meet project requirements, adjustments to the concrete can be made with Engineer's approval. Adjustments to pumping or placement operations can be made with Contractor's approval. After any adjustments are made, air content tests shall be performed again following placement and screeding within the next 5 truck loads placed. Repeat procedure until re-testing meets project requirements. For small or half-loads, obtain Engineer's acceptance of procedure 2 weeks before situation arises. This testing will be used to monitor concrete placement and will not be used as a sole criteria to reject hardened concrete.		Confirmed. (John Hochwat, KPFF, 3/10/08)
228	Tony Toppenberg, TCCo	02/28/08	03/06/08	03/10/08	KPFF	Regarding Specification Section 03300, paragraph 3.13.D.8.a & b and Specification Section 03300, paragraph 3.13.D.8.c. Turner is recommending to revise the specification to indicate that the cost for epoxy injection for crack repair would apply to all cracks 1/8" or larger. This is to provide direction to the subcontracting community to create a more competitive bidding environment. Cracks smaller than 1/8" wide will be repaired at the direction of the Port of Seattle and funded out of an Allowance of an amount to be mutually agreed to by Turner and the Port of Seattle prior to TCC Execution. Please confirm that the clarifications to the these specification sections as indicated below is acceptable.		This scope of work issue to be agreed upon by the Port and Turner. This does not require a change to the technical specifications. (John Hochwat, KPFF, 3/10/08)
229	Tony Toppenberg, TCCo	02/28/08	03/06/08	03/10/08	KPFF	Clarification on Section 03300, paragraph 3.13.D.8.a & b: Costs for the repair of isolated random cracks greater than 0.05 in. wide and less than 0.125 in. do not need to be carried by this subcontractor. Turner will hold an allowance with the owner to cover this cost and repairs will be reviewed on a case by case basis. This contractor is still required to repair all cracks greater than 0.125 in. per the project specifications. This excludes areas with integral waterproofing admixtures (Calite, Hycrete or approved equal), those areas still must be completed in accordance with spec section 2.05.P.		This scope of work issue to be agreed upon by the Port and Turner. This does not require a change to the technical specifications. (John Hochwat, KPFF, 3/10/08)
230	Tony Toppenberg, TCCo	02/28/08	03/06/08	03/10/08	KPFF	Clarification on Section 03300, paragraph 3.13.D.8.c: Costs for the repair of isolated random cracks greater than 0.01 in. wide and less than 0.125 in. do not need to be carried by this subcontractor. Turner will hold an allowance with the owner to cover this cost and repairs will be reviewed on a case by case basis. This contractor is still required to repair all cracks greater than 0.125 in. per the project specifications. This excludes areas with integral waterproofing admixtures (Calite, Hycrete or approved equal), those areas still must be completed in accordance with spec section 2.05.P.		This scope of work issue to be agreed upon by the Port and Turner. This does not require a change to the technical specifications. (John Hochwat, KPFF, 3/10/08)
231	John Schneider, Malcolm Drilling	02/28/08	03/06/08	03/07/08	KPFF	Portions of the soil excavation and shoring will extend into advance outwash material which doesn't stand vertically or remain stable for very long. This will make the multiple operations of neat face excavating (face-cutting), placement of drainage composite and wall reinforcing, and final shoring (closure of soil face) very difficult if not impossible to do in a single work shift as specified. This further assumes that the soil nails will have been previously installed through a soil berm. In order to compensate for this, we have considered adding considerable cost to our bid to use fascioating of the exposed soil face in order to allow for an extended period of stability in which to do all of our work. If this is what you suggest as the prudent thing to do, please advise. Otherwise we could not allow for any fascioating and treat such problematic areas as an unbuildable condition as specified, which would translate to extra work for any related delays or costs.		See Addendum #9 for fascioat specification information. Turner will be issuing bidding instructions to include a specified quantity of fascioat for soil nail walls. Per Specification 2350, the closure time may be extended at the discretion of the geotechnical engineer on site during excavation observation. (Sara Roberts, KPFF, 3/7/08)
232	Tamie Hoover, Corona Steel	02/28/08	03/09/08	03/04/08	DeMarte Wong	Regarding Trash Compactor Guide Rails - Please refer to SO1.2-1.4 trash compactor guide rails. Please provide details or requirements for this item and embeds. Please advise how many locations this occurs. Per specification 13300 3.04D, the mechanical subcontractor is required to provide appropriate fuel to fill (4) 30,000 gallon tanks at project turnover.		Trash and Recycle Compactor Guide Rails are provided by the Trash and Recycle Compactor Supplier. (Patrick George, DWA, 3/4/08)
233	Vern Waldenberg, TCCo	02/28/08	03/06/08	03/03/08	Blumyer	This is not a normal requirement for mechanical trade. And due to volatility of fuel prices, estimating the cost for 120,000 gallons of fuel could be very difficult. Therefore, the mechanical subcontractor could charge additional mark-up on fuel. Please consider deleting this requirement from the mechanical subcontractor scope of work.		The contractor is required to have enough fuel in the tank for testing and start-up purposes, they do NOT need to provide 120,000 gallons of fuel. A minimum of 1,500 gallons of unleaded regular gasoline per fuel tank is recommended for the required priming, testing and start-up of the system. (Bjorn Enstrom, Blumyer, 3/3/08)

Appendix C

Seattle-Tacoma International Airport Consolidated Rental Car Facility Services C3
for the Conco Companies – Structural Acceptance Evaluation, Dated July 6, 2010,
Prepared by KPFF Consulting Engineers (Partial)

Note: In the interests of space, only the report text has been included here. The appendices may be found in the As-Built archive for the Consolidated Rental Car Facility Project, Project number 103640.

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Seattle-Tacoma International Airport Consolidated Rental Car Facility

Services for The Conco Companies

Structural Acceptance Evaluation



July 6, 2010 | Final Report





Structural Acceptance Evaluation

July 6, 2010

Prepared for:

Maizer Oujdani
The Conco Companies

Prepared by:

John M. Hochwalt, PE, SE/Associate
Craig D. Olson, PE, SE/Principal
KPF Consulting Engineers
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
(206) 622-5822
KPF No. 110035.10



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- Appendix A – Report on Determination of In-Place Strength (KPFF)
- Appendix B – Basis of Lateral Design (KPFF)
- Appendix C – Deficiency Checks – Structural Calculations (KPFF)
- Appendix D – Proposed Repairs (KPFF)
- Appendix E – Petrographic Analysis (Dominion Consulting)
- Appendix F – ADA Compliance (Demattei Wong Architecture)
- Appendix G – Utility Study (Turner)
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1. Executive Summary

As demonstrated by a program of field testing (see KPF report dated July 2, 2010), two-thirds of the floor structure on level 2 in area A (see Figure 1 for the location) was built with concrete strengths less than specified. This represents about 46,000 square feet of construction, or 2.5 percent of the floor area.

We were retained by The Conco Companies to evaluate the strength and serviceability of the structure based on the in-place strengths we had previously determined. The specified strength was 6,000 psi, and the in-place strengths determined through field testing, and as stated in our report dated June 1, 2010, ranged from 4,800 psi to 5,760 psi. The extent and location of the reduced strengths may be seen in Figure 2.

Our evaluation demonstrates that there are eight deficiencies in the strength of the beam-column joints under seismic loads, and one location where the tensile stress at the bottom of a beam exceeds the project criteria for serviceability. See Figure 3 for the locations of the deficiencies.

The beam-column joint deficiencies are a seismic life safety issue and must be addressed. The beam-column joint deficiencies occur at locations where beams frame into three of the four sides of the column. We recommend addressing this deficiency by adding a beam stub to the fourth face, as illustrated in the sketches in Appendix D.

The elevated tensile stress at the bottom of a beam indicates a slightly increased risk of cracking at this location. We are not recommending corrective action since this is a serviceability issue at a location that is inherently less vulnerable to corrosion, and the as-built condition is within 3 percent of the project criteria.

Finally, the lower concrete strength and the repairs it will require will have some functional impacts. Any future attachments to the structure in these areas will need to be designed for the as-built concrete strengths. The repairs will create localized areas with increased slope of the top of the slab. Demattei Wong Architecture (DWA) has determined that the resulting slopes will meet the requirements of the Americans with Disabilities Act (ADA) and recommend that a painted demarcation be provided to further assist facility users. The repairs will also result in reduced ceiling above the ground floor and level 2 for the distribution of utilities and placement of signage, as shown in Figure 4. As shown in the repair sketches in Appendix D, the repairs will also result in additional length of sealant and area of traffic bearing membrane requiring maintenance.

2. Recommendations

2.1 FUNCTIONAL RECOMMENDATIONS

We believe that the structure with the eight repairs recommended in Section 2.2 will meet the project's functional requirements. We do not recommend any additional measures be taken to improve the functionality of the completed structure.

2.2 STRENGTH AND SAFETY RECOMMENDATIONS

We recommend using beam stubs as shown in Appendix D to improve the capacity of the deficient joints. This is possible because all locations with joint shear deficiencies have beams framing into three faces of the column. By adding a beam to the fourth face of the column, the shear stress capacity of the joint increases from $15\sqrt{f'_c}$ to $20\sqrt{f'_c}$, a 33 percent increase, which is more than enough to resolve the worse case demand to capacity ratio (DCR), which is 14 percent deficient.

ACI 352R, "Recommendations for Design of Beam-Column Connections in Monolithic Reinforced Concrete Structures," Section 4.3.2, recognizes that beam stubs can be used to provide confinement of beam column joints. To be effective, the beam stub needs to be at least as long as it is deep, while meeting the minimum dimensional and reinforcing requirements of ACI 352R.

2.3 LONG TERM SERVICEABILITY AND DURABILITY RECOMMENDATIONS

Our assessment of the long term effects on serviceability and durability of the non-conforming concrete is that there is one location where the tension stresses at a beam soffit slightly exceed the project criteria. This means that there is a slight risk of additional cracking at this location. The cracking, should it occur, would be expected to be similar to the frequency and type of cracking that may occur at other locations in the structure.

It is our opinion that this non-conformance does not warrant corrective action.

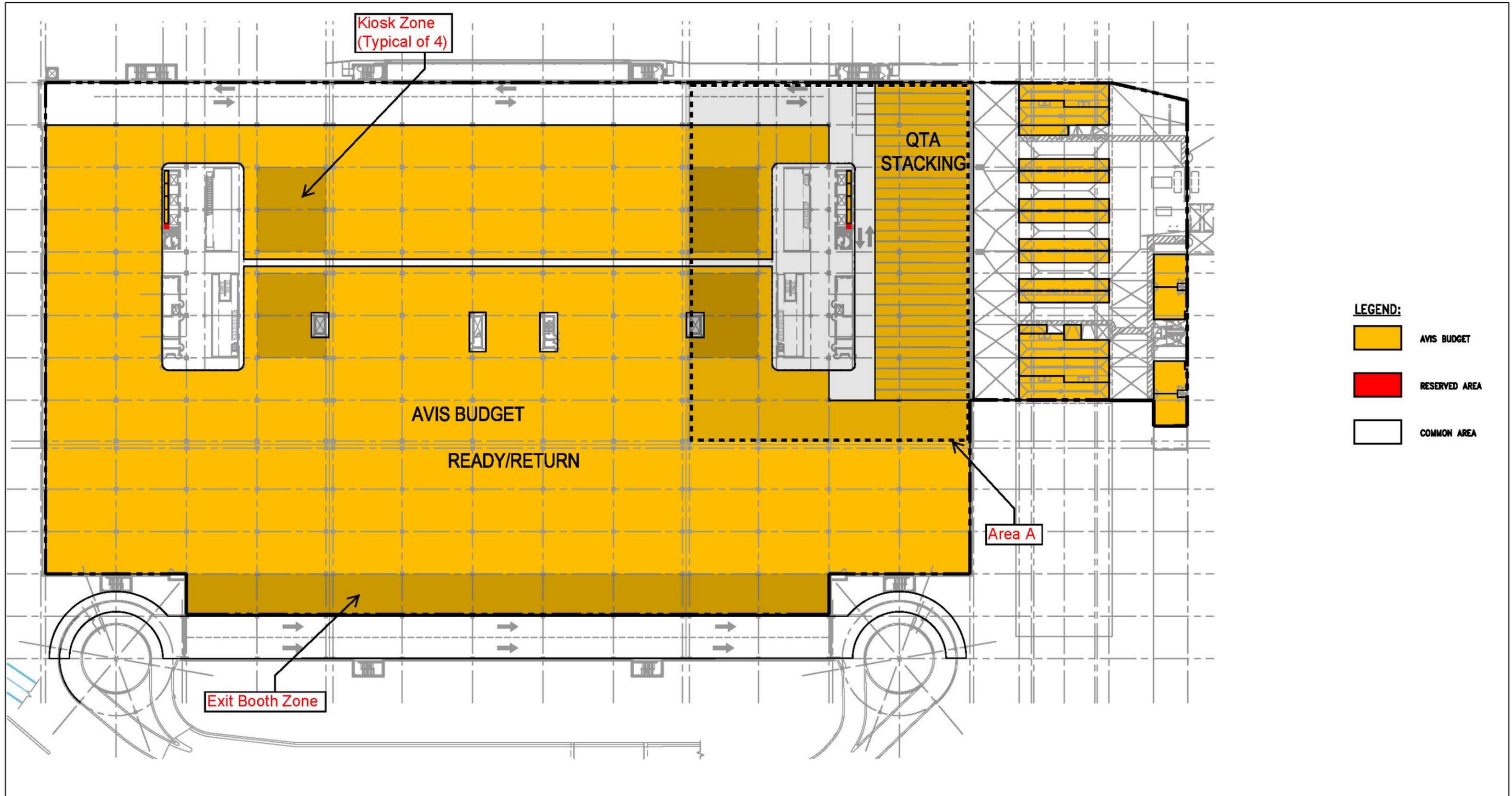


Figure 1: Level 2 Floor Map



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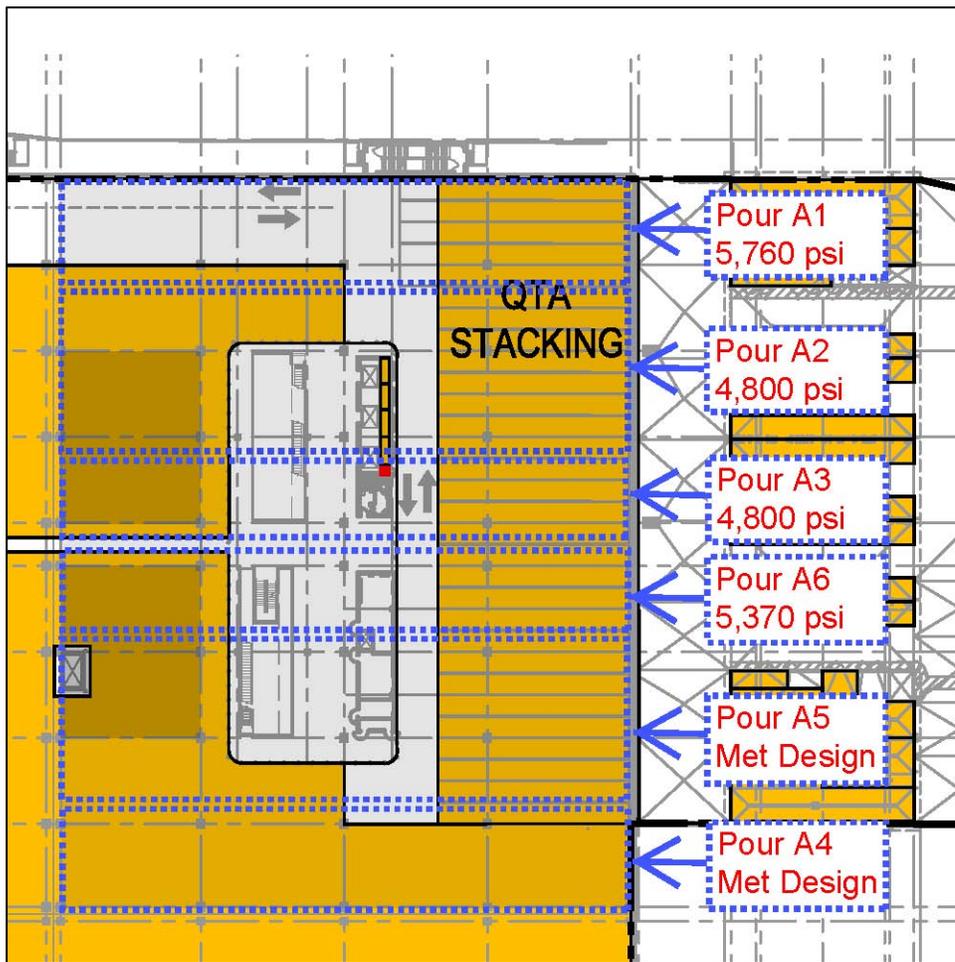


Figure 2: Area A Pours and As-Built Concrete Strengths

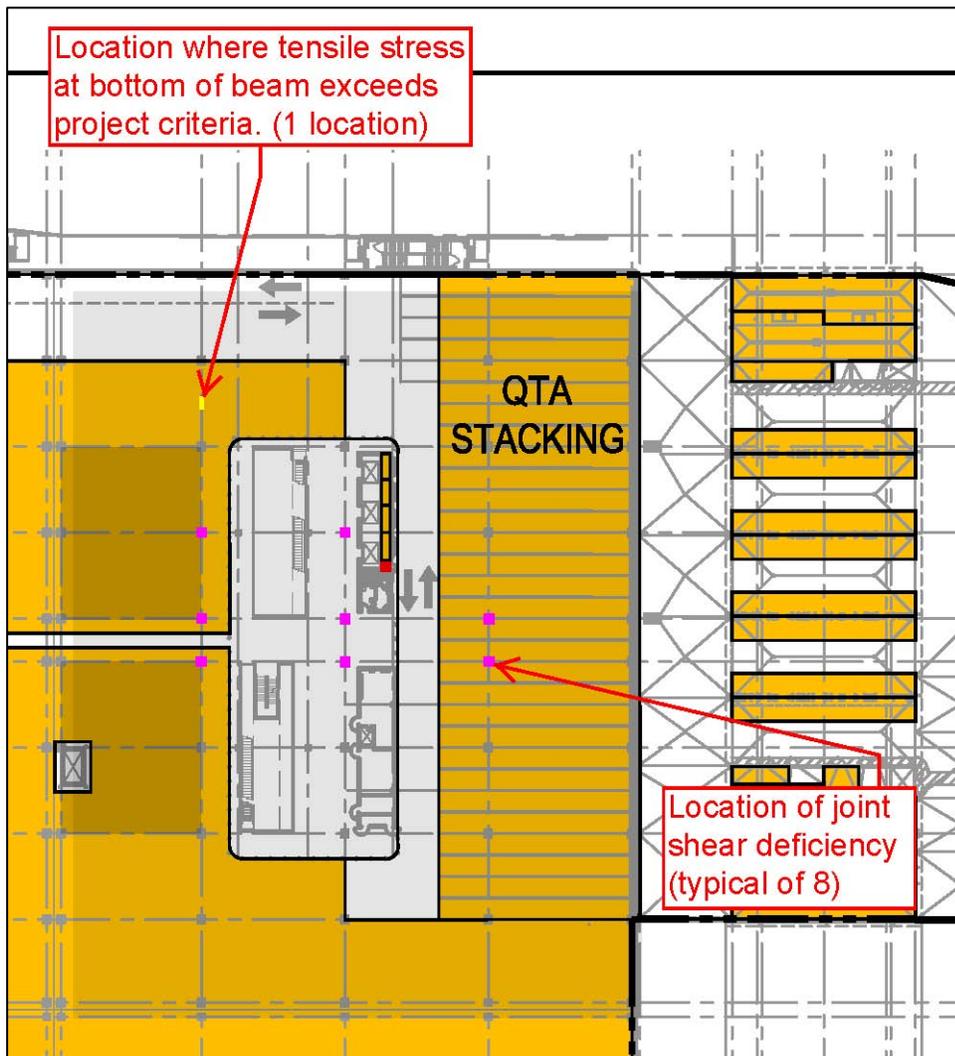


Figure 3: Deficiency Locations

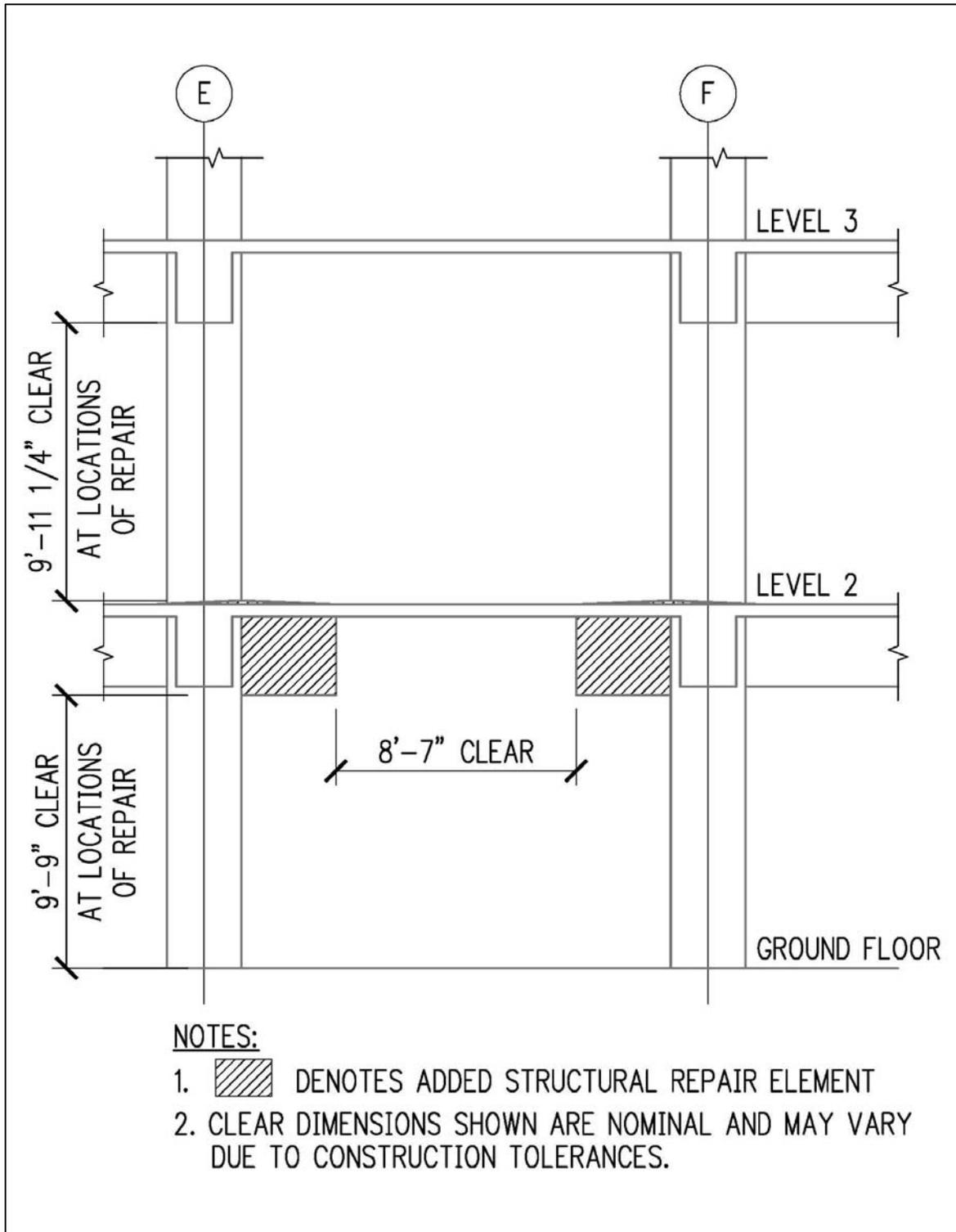


Figure 4: Reduced Clearances

3. Structural System and Design Approach

The Consolidated Rental Car Facility consists of four elevated concrete levels above one slab on grade level. The concrete levels are for the parking of rental cars and support a steel framed Customer Service Building and ancillary structures on the fifth level.

Because of the size of the floor plates, the rental car parking structure is divided into six independent structures, separated by seismic joints. Each of these segments has been given a letter designation by the construction team, as shown on Figure 4.

The only area with concrete strength less than specified is the northwest segment, Segment A, Level 2.

The structural system for support of gravity loads in Segment A is typical of all segments—it consists of one-way post-tensioned slabs, supported by post-tensioned beams and girders, which in turn are supported by reinforced concrete columns on spread footings. The floor system was designed using the ADAPT 2D software for strength and serviceability. To control cracking, the post-tensioning was proportioned to limit the maximum tensile stress under service loads to $7.5\sqrt{f'_c}$.

The lateral force resisting system in Segment A is also typical of all segments and consists of concrete moment frames in each orthogonal direction. Almost every column in the building and every beam that frames into a column is part of the lateral force resisting system. As required by building code, the ends of the moment frame beams are designed to yield in a strong earthquake. This yielding will create hinges at the beam ends, which will dissipate the energy of the earthquake. The rest of the moment frame is designed to be stronger than these “weak link” hinges. In a code level earthquake, these hinge locations would be severely damaged but they will have acted as fuses to prevent more catastrophic damage elsewhere. The significance of this design methodology to this report is that we were able to mitigate the extent of repairs required by rigorously assessing the capacity of these weak links. This is discussed in more detail in Section 5.6.

A more complete description of the lateral design may be found in Appendix B.

4. Functionality

The low strength concrete and the proposed repairs will have a minor impact on the functionality of the completed structure. The four impacts will be:

- Attachments to structure will need to be designed for the as-built concrete strengths shown in Figure 1, rather than the concrete strengths shown on the contract documents.
- The repairs will result in:
 - A localized reduction in the ceiling space available for utility distribution between grids E and F as shown in Figure 3 and Appendix G.
 - Changes in the slopes of the level 2 deck.
 - An additional 70 feet of sealants and 450 square feet of traffic bearing membrane requiring maintenance.

More detailed evaluations specific to the impacts on the ground and second floor tenants follow.

Ground Floor Tenants

Since the area of low strength concrete is above the ground floor tenants, there are two potential impacts on the ground floor-tenants-attachments to structure above and overhead utilities.

Attachments to the bottom of the level 2 structure in area A will need to be based on the in-place concrete strengths instead of the specified concrete strength. To convey this to designers of attachments to structure, Figure 1 should be incorporated into the Tenant Design and Construction manual.

The proposed repair will constrict the space available to distribute utilities in the ground floor ceiling between grids E and F. See Figure 3 for a rendering of the space available for distribution of utilities by tenants. Additional information on existing utilities in this area may be found in Appendix G.

Second Floor Tenants

The low strength concrete will not change the load limitations for the tenants from those stated in the Tenant Design and Construction manual. There will be no additional restrictions of the location of kiosks or exit booths, or on the placement of barriers as our evaluation of the impact of the low strength concrete on the strength, safety, serviceability, and durability of the structure used the same loading criteria as appears in the tenant manual. Further details of those evaluations may be found in Sections 5 and 6 of this report.



Attachments to the level 2 floor in area A will need to be based on the in-place concrete strengths instead of the specified concrete strength. To convey this to designers of attachments to structure, Figure 1 should be incorporated into the Tenant Design and Construction manual.

The proposed repair will require raising the floor in the area of the repairs by approximately 1-1/2 inches, which will reduce the available space overhead for utilities and signage by 1-1/2 inches in order to maintain the programmed clearance for vehicles. The raise in the top of the floor will be accomplished by gradually sloping the concrete surface upwards as shown in the repair sketches in Appendix D. These slopes have been reviewed by DWA and have been determined to comply with the ADA. See Appendix F for DWA sketches addressing ADA compliance. The proposed slopes have also been reviewed for compatibility with the floor drains.

Similar to the existing closure pour between grids E and F, the repairs will need to be protected from the intrusion of water by use of sealants and, where the repair is subject to vehicular traffic, a traffic bearing membrane. Like other locations where sealants and membranes exist (for example, the pour strip between grids E and F), these sealants and membranes will require maintenance over the life of the structure.

5. Strength and Safety

5.1 SCOPE

In order to understand the consequences of reduced concrete strength in level 2 Pours A1, A2, A3, and A6 for the strength and safety of the structure, we considered the following potential failure modes:

- Slabs
 - Flexure
 - Shear
- Beams
 - Flexure
 - Shear
- Moment Frames
 - Beam Flexure
 - Beam Shear
 - Joint Shear

5.2 ACCEPTANCE CRITERIA

The general approach to determining whether the strength of a structure is acceptable is to compare the demand on each member to the capacity of that member. As long as the capacity is greater than the demand, the member is deemed to be adequate. For the purposes of this report, a deficiency is defined as any location where the demand on a member exceeds its capacity. In terms of a DCR, any DCR in excess of one is deemed deficient.

Most commonly, the demand on the member is the result of the loads applied to the structure – for example, dead, live, snow, wind, and seismic loads. In seismic design, however, the demand is often defined by the code to be the result of the strength of the weak link, or fuse, of the lateral system.

The capacity is the strength of the member in resisting the applied loads.

In order to reach a decision about acceptance of this structure, it is important to closely examine both the demands and the capacities.

5.3 VERIFICATION OF DEMANDS

The demands used to determine whether the structure meets the acceptance criteria for strength were determined through the use of computer software and manual calculations. The principal software used were:

- Adapt 2D: Used to determine the flexural and shear demands due to gravity loads for the evaluation of the post-tensioned slabs, beams, and girders.
- SAP: Used to determine flexural and shear demands due to seismic loads for the evaluation of the post-tensioned beams and girders. Also used to determine the influence of post-tensioning on the capacity of the hinges (weak links) of the moment frame, which establishes the shear demands on the moment frame beams, girders, and joints.
- Excel Spreadsheets: Used to combine flexural and shear demands from Adapt and SAP for the evaluation of moment frame beams and girders. Also used to determine the capacity of the hinges of the moment frame, which establishes the shear demands on the moment frame beams, girders, and joints.

The demand verification process started with checking program input against the loads listed on the contract documents and project design criteria. Similarly, we checked the input used to determine hinge capacities against the final construction drawings and submitted shop drawings.

The result of these reviews was minor changes to the applied loads and hinge reinforcing used in the analysis.

We did, however, identify one significant opportunity to refine our design approach that had the potential to provide more accurate, and lower, hinge capacities. The refinement involved a more precise method of determining the contribution of post-tensioning to the hinge capacity. The building code does not explicitly address the contribution of post-tensioning to hinge capacities, leaving it to the judgment of the engineer. The post-tensioning does not contribute directly to the hinge capacity like the mild steel because it is not bonded to the concrete. The post-tensioning affects the hinge behavior by producing compression forces in the concrete, which have the effect of squeezing the beams tight to the columns. Thus, for a hinge to form (which opens a gap between the top or bottom of the beam and the column), the compression force from the post-tensioning must first be overcome.

The approach used during design was to simply determine the compression force based on the post-tensioned reinforcing within the beam. At anchor locations, this is an accurate assumption, as the compression is applied directly to the joint by the anchors. As the location being examined is increasingly removed from the anchors, the compression force tends to spread out into a larger section of the slab. To investigate this effect as part of this evaluation, we created a finite element model of the floor and applied the compression forces to the floor at the anchor locations around the

perimeter of the floor. This results in large compression forces being applied to the perimeter at beam locations with the much smaller forces from the slab tendons between.

The model demonstrates that, in general, the large compression forces at the beam ends spread out across the slab width. The compression stresses in the beam and the slab become more uniform the further the location is from the anchors. The effect is especially pronounced in the east-west direction where the post-tensioned moment frame girders are spaced 60 feet on center. There were some locations where this approach resulted in higher compression forces at the joint than the approach used in the original design. Principally this occurred adjacent to the escalator openings where the openings tended to funnel the compression forces into the adjacent beams.

We extracted the compression forces from the beam and a portion of the slab on either side of the beam that is commonly considered to contribute to the beam capacity. Based on these compression forces, we determined an equivalent number of tendons that were effective at each joint. These effective tendons were then used to compute the hinging forces in the beams. These forces were then used to evaluate the moment frame beams and the beam-column joints for shear.

5.4 INFLUENCE OF CONCRETE STRENGTH ON MEMBER CAPACITIES

It is possible to draw some general conclusions about influence of concrete strength on member capacities. Understanding the degree of the influence of concrete compressive strengths on member capacities will provide a useful frame of reference for the more detailed findings that follow.

There are two basic properties of concrete that influence the strength of reinforced concrete members: its compressive strength and its tensile strength.

The compressive strength is specified as f'_c , and it is this property that is tested to determine whether the strength of the concrete meets specifications.

The tensile strength is not usually specified or measured directly. A large body of research has, however, demonstrated that the tensile strength of concrete is a function of the square root of the compressive strength, $\sqrt{f'_c}$. It is this formulation of tensile strength that is used by the building code. One consequence of this relationship between the compressive and tensile strength of concrete is that changes in the compressive strength of concrete produce smaller changes in the tensile strength. For example, a 20 percent reduction in the compressive strength of concrete will be associated with an 11 percent reduction in tensile strength.

All of the potential failure modes that we have evaluated are dependent on either the compressive or tensile strength of the concrete.

5.5 DETERMINATION OF CAPACITIES

The capacities used to determine whether the structure meets the acceptance criteria for strength are generally determined through the use of computer software. The principal software used were:

- Adapt 2D: Used to determine the flexural and shear capacity of post-tensioned slabs and post-tensioned beams carrying gravity loads only.
- Excel Spreadsheets: Used to determine flexural and shear capacities of moment frame beams and girders, as well as joint shear strengths.

The first step in verifying the capacities was to revise the concrete strength to match as-built concrete strength. Next, we checked the reinforcing used in the software against the reinforcing shown on the contract documents.

5.6 FINDINGS

Flexure – Beams and Slabs

The compressive strength of the concrete has only a minor influence on the flexural (bending) strength of reinforced concrete members. Bending forces in members are resisted by tension in the steel on one side of the member, balanced by compression in the concrete on the opposite side of the member. The flexural strength is computed by multiplying the capacity of the steel by the lever arm between the center of the steel and the center of that portion of the concrete that is in compression. The weaker the concrete is, the more concrete area is needed to balance the tension in the steel, and the smaller the lever arm is. This is a minor effect, however. For a moderately reinforced member, a 20 percent reduction in concrete strength only corresponds to about a 1 percent reduction in the lever arm and the flexural strength.

As a result, we did not expect that our evaluation would show deficiencies in the flexural strength of beams and slabs. This expectation was confirmed by our detailed calculations which demonstrate that the flexural strength of the as-built beams and slabs was adequate.

Shear – Beams and Slabs

In members without shear reinforcing, like the post-tensioned slabs, the shear strength of the member is solely dependent on the tensile strength of the concrete. This means that a 20 percent reduction in the compressive strength of the concrete results in an 11 percent reduction in the shear strength.

In members with shear reinforcing, like the post-tensioned beams and girders, the shear strength is a combination of strength provided by the concrete and strength provided by the steel. In these particular beams and girders, the steel provides half or more of the total strength. Because of the

steel contribution, a 20 percent reduction in the compressive strength of the concrete results in a 5 percent or less reduction in the shear strength.

While the reduction in shear strength is greater for the slabs because they do not have shear reinforcing, we did not expect this to result in shear deficiencies in the slabs, as slab systems tend to inherently have much more shear strength than is needed to resist the applied loads. This expectation was confirmed by our detailed calculations.

The reduction in shear strength of the beams and girders had the potential to result in deficiencies and closer study was required. With this approach, we were able to determine that the shear strength of the as-built beams and girders was adequate. This closer study included the revised approach to determining the contribution of the post-tensioning to the strength of the hinges. The revised approach resulted in lower demands at the interior joints, which were the locations with the highest shear demands previously. With this approach, we were able to determine that the shear strength of the as-built beams and girders was adequate.

Shear – Moment Frame Joints

The joints of the moment frame are the portions of the columns that fall within the depth of the beam. As the beams framing into the column yield and hinge, this region of the column is subject to large shear forces. While the building code requires a significant amount of reinforcing in these joint regions, the shear strength of the joint is computed as being solely dependent on the tensile strength of the concrete and the number of beams framing into the column. This means that a 20 percent reduction in the compressive strength of the concrete results in an 11 percent reduction in the shear strength.

Our detailed calculations identified eight deficient locations that were deficient in beam-column joint shear. Since there are approximately 1,000 joints in the structure, this represents less than 1 percent of the joints. These locations are shown on Figure 1, and the DCRs for these deficiencies are listed in Table 1. The DCRs range from 1.04 to 1.14. The DCRs are calculated using our revised approach for determining the influence of the post-tensioning on hinge capacity. This resulted in higher demands at a few locations than the design calculations indicated. However, the revised approach is analytically valid and resulted in our limiting the overall amount of corrective action required.

Table 1: Demand To Capacity Ratios (DCRs)

Column	DCR
E-25	1.12
F-25	1.10
D-24	1.10
E-24	1.07
F-24	1.06
D-23	1.04
E-23	1.14
F-23	1.12

Our recommendations for the correction of these deficiencies may be found in Section 2.2 of this report.

6. Serviceability and Durability

6.1 SCOPE

In addition to evaluating the strength of the structure to determine whether it meets the life safety requirements of the building code, we evaluated the structure to assess whether the in-place concrete has compromised the ability of the structure to meet the project serviceability and durability requirements.

In the original design, serviceability requirements were addressed as follows:

- Deflections: Live load deflection not to exceed the length of the span in inches divided by 360.

When establishing the project criteria before the start of design, durability requirements were addressed by establishing the following criteria:

- Corrosion:
 - Limit water – cementitious materials ratio in the concrete to 0.4.
 - Concrete shrinkage – maximum 0.04% at 28 days.
 - Post-tension the concrete to achieve a maximum tensile stress of $7.5\sqrt{f'_c}$ in service.
- Freeze-Thaw: Air entrainment 5.0% \pm 1.5%.
- Abrasion: Minimum concrete strength of 5,000 psi. The concrete strength was increased during design to 6,000 psi at 56 days for reasons unrelated to the abrasion performance of the structure.

6.2 ASSESSMENT OF SERVICEABILITY

Deflection

One of the benefits of post-tensioned reinforcement is that, when properly profiled, the post-tensioning produces upward forces on the structure that counteract the downward forces induced by gravity. As a result, post-tensioned structures typically have small deflections, well within the usual limit of a live load deflection not exceeding the span of the element divided by 360.

The stiffness (elastic modulus) of the concrete is proportional to $\sqrt{f'_c}$. As a result, the concrete strength being reduced from 6,000 psi to 4,800 psi would be expected to increase the deflections by

11 percent. This incremental increase in deflections, which were small to begin with, will not compromise the deflection performance of the structure.

Our experience and published research suggests, however, that the vibration characteristics of concrete structures are insensitive to changes in concrete strength. The reduction in concrete strength is not expected to result in a measurable degradation of the vibration performance.

The non-conforming concrete has not measurably affected the serviceability of the structure.

6.3 ASSESSMENT OF DURABILITY

Corrosion

Limiting the ingress of water into the concrete is the single most important measure to achieve a durable parking structure. To achieve this goal, three basic strategies were incorporated into the contract documents: reduce permeability by specifying a concrete with a low water cementitious materials ratio, reduce concrete shrinkage by explicitly specifying a limit on concrete shrinkage, and limit cracking through post-tensioning the structure so that tensile stresses do not exceed $7.5\sqrt{f'_c}$.

Water-Cementitious Materials Ratio

A maximum water-cementitious materials ratio of 0.4 was specified in accordance with the recommendations of ACI 362.1R, *Guide for the Design of Durable Parking Structures*, to produce less permeable and more durable concrete. The lower the water-cementitious materials ratio is, the less water is left over after the water chemically reacts with the cementitious materials. The water that is not consumed in the chemical reaction remains in the concrete as freely available water, creating a more porous matrix. The w/c ratio for Mix 15LCD2 as submitted was 0.34.

A review of the available batch tickets (pours A1 and A6) indicates that the mix was placed at a water-cement ratio not exceeding 0.37. This is consistent with the results of a Petrographic analysis that was performed on samples from pours A2 and A3 by Dominion Consulting for Lafarge North America (the cement supplier) on behalf of Miles Sand and Gravel. The analysis, which may be found in Appendix E, documents water cement ratio of between 0.36 and 0.40.

Based on the information available to us, it appears that the in-place concrete was a water-cement ratio of 0.4 or less, conforming to the project criteria.

Shrinkage

The data submitted for the approval of Mix 15LCD2 demonstrated a shrinkage rate of 0.029 percent, less than the 0.04 percent specified.

We do not have any data that would indicate the shrinkage of the in-place concrete. We did, however, visually observe the area in question of May 24, 2010. We did not observe shrinkage cracking in excess of what would ordinarily be expected.

It appears that the shrinkage behavior of the in-place concrete is acceptable.

Post-Tensioning

A post-tensioned structure was selected to limit cracking due to shrinkage at service loads. Post-tensioning limits cracking by two mechanisms. First, the post-tensioning imposes a compression load on the concrete at the end anchorages. These compression forces in effect squeeze the concrete tight, reducing the likelihood that cracks will form. Second, the post-tensioned tendons are profiled to counteract the effects of gravity. Gravity will cause members to sag in the middle. To counter this, the tendons are placed in a profile that imposes an upward force on the member. These upward forces effectively balance some of the dead load, resulting in lower tension stresses on the concrete.

The design criteria for this project was selected to meet the requirements of ACI 318 for serviceability Class U, which means that the tension stresses were limited to $7.5\sqrt{f'_c}$. Serviceability Class U is intended to keep the tension stresses low enough that the concrete can be assumed to behave as if it were uncracked. Cracking may occur, but it would be expected to be limited in extent and size. Higher stress limits—most commonly $9\sqrt{f'_c}$ or $12\sqrt{f'_c}$ —are permitted on some projects, especially for tension stresses on the bottom of the structure. Allowing these higher stress limits involves a trade-off between the risk of increased cracking and the associated maintenance and a reduced initial cost.

During the original design, the Adapt 2D software was used to determine the post-tensioning force and profile needed to limit the tension stresses to $7.5\sqrt{f'_c}$ or less.

In order to determine whether the as-built structure still met the design criteria, we checked the input against the loads listed on the contract documents and project design criteria, verified the member geometry, and then adjusted the post-tensioning force and profile to match the contract documents. The only changes made in the analysis based on the review of the original design were refining some of the loads to more closely match the drawings.

Once we verified that all of the input was correct, we checked the final in service tension stresses against the $7.5\sqrt{f'_c}$ limit. We identified one location where the tension stresses were $7.7\sqrt{f'_c}$. This occurs at the beam soffit on grid line 23, between grids B and C (see Figure 2). While this location is slightly more likely to crack, the crack, should it occur, would not be expected to be wider or more noticeable than other cracks that may occur. In addition, cracks which occur on the bottom of a beam are less critical than cracks on the top of the slab as there is less opportunity for water to enter the crack.



Freeze-Thaw

The testing performed by Mayes Testing Engineers indicated the air entrainments of pours A1, A2, and A3 were within specifications. On pour A6, the concrete supplier experienced difficulty in controlling the air content; it was reported by Mayes Testing Engineers to have reached as high as 8.1 percent.

The Petrographic analysis, found in Appendix E, indicates, however, that the difficulties with control of air were not confined to pour A6. The samples examined in that analysis were taken from pours A2 and A3, and had total air contents ranging from 12 to 18 percent. The report further states that only 1 to 2 percent of this was due to entrapped air; the balance would be characterized as entrained air.

While these high air contents likely contributed to reduced strength, they would not reduce the effectiveness of the air entrainment in mitigating freeze-thaw damage.

The non-conforming concrete has not compromised the resistance of the structure to freeze-thaw damage.

Abrasion

ACI 362.1R, *Guide for the Design of Durable Parking Structures*, recommends a minimum concrete strength of 4,000 psi for this region to produce durable and abrasion resistant concrete. The original project criteria for durability required a minimum strength of 5,000 psi. Subsequently, the concrete strength was increased to 6,000 psi to allow for more efficient post-tensioning and to allow the use of 32- by 32-inch columns. The available data (see Appendix A) demonstrates that the strength of the in-place concrete is at least 4,800 psi. We believe the as-built structure will have adequate resistance to abrasion.

Our recommendations for serviceability and durability may be found in Section 2.3 of this report.

7. Conclusions

Our evaluation demonstrates that there are eight deficiencies in the strength of the beam-column joints under seismic loads, and one location where the tensile stress at the bottom of a beam slightly exceeds the project criteria for serviceability. See Figure 1 for the locations of the deficiencies.

The joint deficiencies are a seismic life safety issue and must be addressed. The beam-column joint deficiencies occur at locations where beams frame into three of the four sides of the column. The deficiency can be addressed by adding a beam stub to the fourth face, as illustrated in Appendix D.

These proposed repairs have been reviewed by CKC, structural engineers contracted by Miles Sand and Gravel, who concurred that the proposed repave will enhance the joint shear capacity. Their letter may be found in Appendix H.

The elevated tensile stress indicates a slightly increased risk of cracking at this location. We are not recommending corrective action since this is a serviceability issue at a location that is inherently less vulnerable to corrosion, and the as-built condition is within 3 percent of the project criteria.



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Appendix D

Handout prepared by Turner Construction with examples of Forklifts used during the initial construction of the Consolidated Rental Car Facility.

D3

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Toyota 3,000# Pneumatic

Model 8FGU15 / 8FDU15



Approved areas of operation...

Maximum allowable load on forks 1500 lbs

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas use load chart for max load

Allowable loads set by the Structural Engineer

Toyota 3,000# Pneumatic

Model 8FGU15 / 8FDU15



Approved areas of operation...

Maximum allowable load on forks 1500 lbs

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas use load chart for max load

Allowable loads set by the Structural Engineer

MITSUBISHI FG15N & KOMATSU 30



Approved areas of operation...

Maximum allowable load on forks 1600 lbs or less within 24" of the vertical mast of lift

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas use load chart for max load

Allowable loads set by the Structural Engineer

MITSUBISHI FG15N & KOMATSU 30



Approved areas of operation...

Maximum allowable load on forks 1600 lbs or less within 24" of the vertical mast of lift

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✓ RCF Levels 2-4

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All other areas use load chart for max load

Allowable loads set by the Structural Engineer

MITSUBISHI FG18N



Approved areas of operation...

No Access to the following areas

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas use load chart for max load

Allowable loads set by the Structural Engineer

MITSUBISHI FG18N



Approved areas of operation...

No Access to the following areas

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas use load chart for max load

Allowable loads set by the Structural Engineer

HYSTER S 30 FT



Approved areas of operation...

Maximum allowable load on forks 1200 lbs.

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas use load chart for max load

Allowable loads set by the Structural Engineer

HYSTER S 30 FT



Approved areas of operation...

Maximum allowable load on forks 1200 lbs.

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas use load chart for max load

Allowable loads set by the Structural Engineer

HYSTER 35 Forklift



Appendix D 7

- Approved areas of operation...
- No Access to the following areas
- ✓ RCF level 1 Vault lid (Zone E)
- ✓ RCF Levels 2-4
- ✓ Level 5 Zone D, E and F
- All other areas use load chart for max load
- Allowable loads set by the Structural Engineer

HYSTER 35 Forklift



- Approved areas of operation...
- No Access to the following areas
- ✓ RCF level 1 Vault lid (Zone E)
- ✓ RCF Levels 2-4
- ✓ Level 5 Zone D, E and F
- All other areas use load chart for max load
- Allowable loads set by the Structural Engineer

HYSTER H 50 FT



- Approved areas of operation...
- No Access to the following areas
- ✓ RCF level 1 Vault lid (Zone E)
- ✓ RCF Levels 2-4
- ✓ Level 5 Zone D, E and F
- All other areas use load chart for max load
- Allowable loads set by the Structural Engineer

HYSTER H 50 FT



- Approved areas of operation...
- No Access to the following areas
- ✓ RCF level 1 Vault lid (Zone E)
- ✓ RCF Levels 2-4
- ✓ Level 5 Zone D, E and F
- All other areas use load chart for max load
- Allowable loads set by the Structural Engineer

Komatsu BX 50



- Approved areas of operation...
 - No Access to the following areas**
 - ✓ RCF level 1 Vault lid (Zone E)
 - ✓ RCF Levels 2-4
 - ✓ Level 5 Zone D, E and F
- All other areas use load chart for max load
- Allowable loads set by the Structural Engineer

Komatsu BX 50



- Approved areas of operation...
 - No Access to the following areas**
 - ✓ RCF level 1 Vault lid (Zone E)
 - ✓ RCF Levels 2-4
 - ✓ Level 5 Zone D, E and F
- All other areas use load chart for max load
- Allowable loads set by the Structural Engineer

Genie GHT 5519



Approved areas of operation...

No Access to the following areas

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas **Max load is 5500 lbs**

Allowable loads set by the Structural Engineer

Genie GHT 5519



Approved areas of operation...

No Access to the following areas

✓ RCF level 1 Vault lid (Zone E)

✓ RCF Levels 2-4

✓ Level 5 Zone D, E and F

All other areas **Max load is 5500 lbs**

Allowable loads set by the Structural Engineer