



# Building Permit Application

## City of Portland, Oregon - Bureau of Development Services

1900 SW 4th Avenue, Portland, Oregon 97201 • 503-823-7300 • TTY 503-823-6868 • www.portlandoregon.gov/bds

### Type of work

- ☒ New construction ☐ Addition/alteration/replacement  
☐ Demolition ☐ Other:

### Category of construction

- ☐ 1 & 2 family dwelling ☐ Commercial/industrial ☐ Accessory building  
☒ Multifamily ☐ Master builder ☐ Other:

### Job site information and location

Job no.:   
Job address: 1010 NE Grand Avenue  
City/State/ZIP: Portland, Oregon 97232  
Suite/bldg./apt. no.:   
Project name: Grand Avenue Apartments  
Cross street/directions to job site: Grand Avenue between Hassalo and Holladay  
Subdivision:   
Lot no.   
Tax map/parcel no.

### Description of work

New construction: 12- story plus basement apartment building with ground floor retail

Provide RS Permit no.

### Property owner

### Tenant

Name: Home Forward   
E-mail: julie.livingston@homeforward.org  
Address: 135 SW Ash Street  
City/State/ZIP: Portland, Oregon 97204  
Phone: 503-802-8579   
FAX:

Owner installation: This installation is being made on property that I own, which is not intended for sale, lease, rent, or exchange.

Owner signature:   
Date: 7/14/2017

### Contractor

Business name: OWCB, Inc   
E-mail: dsnow@walshconstructionco.com  
Address: 2905 SW 1st Avenue  
City/State/ZIP: Portland, Oregon 97201  
Phone: 503.219.2941   
FAX:  
CCB lic. no. 194754

Authorized signature:   
Print name: Mike Steffen   
Date: 7/10/2017

5033219.2941

### Applicant

### Contact Person

Business name: LRS Architects, Inc  
Contact name: Michael Stanner  
Address: 720 SW Davis Street, Ste 300  
City/State/ZIP: Portland, Oregon 97209  
Phone: 503-211-1121   
FAX:  
E-mail: mstanner@lrsarchitects.com

Authorized signature:   
Print name: MICHAEL STANNER   
Date: 07/17/2017

### Office Use Only

Permit no: 17-204621 CO  
Date received: 7/17/17  
By: DK

### Required Data: One and Two Family Dwelling

Permit fees\* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation: \$38,000,000  
Number of bedrooms:  
Number of bathrooms:  
Total number of floors:  
New dwelling area: square feet  
Garage/carport area: square feet  
Covered porch area: square feet  
Deck area: square feet  
Other structure area: square feet

### Required Data: Commercial Use

Permit fees\* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation: \$38,000,000  
Existing building area: n/a square feet  
New building area: 166,050 square feet  
Number of stories: 12 + basement  
Type of construction: 1-A  
Occupancy groups  
Existing:  
New: A-2, B, M, S-1, S-2, R-2

### Notice

All contractors and subcontractors are required to be licensed with the Oregon Construction Contractors Board under ORS 701 and may be required to be licensed in the jurisdiction in which work is being performed.

**Statement of Fact:** I certify that the facts and information set forth in this application are true and complete to the best of my knowledge. I understand that any falsification, misrepresentation or omission of fact (whether intentional or not) in this application or any other required document, as well as any misleading statement or omission, may be cause for revocation of permit and/or certificate of occupancy, regardless of how or when discovered.

I acknowledge that work related to this Building Permit Application may be subject to regulations governing the handling, removal and/or disposal of asbestos and/or lead-based paint. If the work is subject to regulations governing asbestos and/or lead-based paint, I will comply with all such regulations. (initials)

### Building Permit Fees\*

Please refer to fee schedule

Fees due upon application  
Amount received  
Date received

This permit application expires if a permit is not obtained within 180 days after it has been accepted as complete.



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1900 SW Fourth Avenue • Portland, Oregon 97201 | 503-823-7300 | [www.portlandoregon.gov/bds](http://www.portlandoregon.gov/bds)



### Shell Permit Acknowledgement Statement

Address: 1010 NE GRAND AVE

Shell permit number: 17-204627 CO

This letter is a formal acknowledgement by the owner of the property described above of the limitations on the scope of the Shell Permit and the potential building improvements that may be required as tenant improvements are permitted.

This statement acknowledges that you, the building owner or authorized agent of the owner, are aware of the requirements to comply fully with the Oregon Energy Specialty Code, the Oregon Structural Specialty Code, City of Portland Codes and all other applicable regulations and laws.

In permitting the shell building described above as "No Occupancy This Permit", I acknowledge that, when permitting future tenant spaces as uses or occupancies other than that designated on the Shell Permit submittal, changes may be required under future permits, which include, but are not limited to:

- Structural seismic upgrade and retrofit work for the entire building as required by Title 24.85.
- Energy Code compliance work that may require work to the exterior walls, glazing, ceilings, roof, lighting, mechanical units and other aspects of the shell building
- Plumbing fixtures and/or rest rooms may be required in addition to what is shown in the shell permit
- Shell building work may need to be removed or redone to comply with all of the applicable codes

As part of the permit submittal for the shell space, the drawings must include a list of known items that are not included and are deferred to the Tenant Improvement Permit, for example, installation of wall insulation, lighting, exit signs, door hardware, or finishes.

**Please note that all first time Tenant Improvement Permits will be taken in for review, regardless of change of use or occupancy. Tenant Improvement Permits will not be accepted for review until the Shell Permit has been issued.**

By signing below, I hereby acknowledge that I understand the statements above and that I am the owner of the property or the owner's authorized agent.

Date 7/14/2017

Signature *Julie Livingston*

Name JULIE LIVINGSTON

Street Address HOME FORWARD / 135 SW ASH ST, 5TH FLOOR

City PORTLAND State OR Zip Code 97204

Phone 503-802-8424 email JULIE.LIVINGSTON@HOMEFORWARD.ORG

02/05/2015





**City of Portland, Oregon**  
**Bureau of Development Services**  
**Land Use Services**  
FROM CONCEPT TO CONSTRUCTION

Chloe Eudaly, Commissioner  
Paul L. Scarlett, Director  
Phone: (503) 823-7300  
Fax: (503) 823-5630  
TTY: (503) 823-6868  
[www.portlandoregon.gov/bds](http://www.portlandoregon.gov/bds)

**Certificate of Compliance**  
(Design and Historic Resource Review Approvals)

Thank you for participating in the City of Portland's Design/Historic Resource Review process. We look forward to your building's contribution to the City of Portland.

The Design/Historic Resource Review approval grants entitlements for the proposed work to be built. The expectation is that the building permit will reflect the elevations, sections, details, material samples, etc. that were stamped and signed by the land use case planner. Additionally, compliance with all Conditions of Approval is expected at the time of permit review and construction.

Land Use Services staff will review the permit drawings for compliance with the Design/Historic Resource Review decision. At the time of permit submittal, you will be required to submit this Certification of Compliance form. It is the applicant's responsibility, in the permit drawings, to demonstrate compliance with the Design/Historic Resource Review approved project. It is also the applicant's responsibility to identify for Land Use Services staff any and all revisions made to the project since Design/Historic Resource Review approval, whether the changes were made by choice, for value-engineering purposes, due to Code requirements, or for any other reason.

The Bureau of Development Services expects the project team to coordinate directly with the Design/Historic Resource Review planner once a change is being contemplated. Changes to the Design/Historic Resource Review drawings are subject to another land use review, which must be approved prior to the issuance of building permits; it is therefore critical for early engagement to have the time for the necessary coordination and process.

We (architect of record and owner) certify that the project plans submitted with the building permit application, and subsequent revisions and deferred submittals, are consistent with the Design Review or Historic Resource Review approval and meet the Conditions of Approval.

Architect Name: CALISTA FITZGERALD - LRS ARCHITECTS.  
Architect Signature: Calista Fitzgerald Date: 7/14/2017  
Owner Name: WILLIAM LIVINGSTON  
Owner Signature: JULIE LIVINGSTON Date: 7/14/2017

Project Name and Address: GRAND AVENUE APTS - 1010 NE GRAND  
Design/Historic Review Case File Number: LU 16-287887 DZM



**City of Portland, Oregon**  
**Bureau of Development Services**  
**Plan Review / Permitting Services**  
FROM CONCEPT TO CONSTRUCTION

Dan Saltzman, Commissioner  
Paul L. Scarlett, Director  
Phone: (503) 823-7310  
Fax: (503) 823-4172  
TTY: (503) 823-6868  
[www.portlandoregon.gov/bds](http://www.portlandoregon.gov/bds)

**DEFERRED SUBMITTAL REQUIREMENTS & AGREEMENT**

Building Permit number:

Description/Scope of work:

Commonly deferred items are listed below. Complete information regarding who will be responsible for submittal of the item, when it will be submitted, and the date it will be required.

Deferred Item	Responsible Party	Proposed Date to be Submitted	Actual Date Submitted	Date Required
Attachment of Equipment				
Canopies				
Curtain Wall	OWCB	11/13/17		02/05/18
Exterior Metal Stud Framing				
Fall Protection				
Fireproofing				
Guardrails				
Metal Panel				
Micropiles				
Post Tensioning	OWCB	10/09/17		01/02/18
Precast Concrete				
Rooftop HVAC Screening				
Seismic Bracing of MEP Piping				
Seismic Instrumentation				
Skylights				
Steel Joists				
Steel Stairs or Handrails	OWCB	10/19/17		01/12/18
Store front				
Tieback Anchors				
Trusses				
Windows				
Wood Joists				
Other <u>Fire Alarm</u>	OWCB	11/27/17		02/19/18
Other <u>Fire Suppression / Sprinklers</u>	OWCB	11/20/17		02/12/18
Other _____				

I certify that the above information is correct, and understand that incorrect or missing information will cause the application to be rejected, resulting in delays for the applicant.

Signature: \_\_\_\_\_

Date: 07/14/2017



**City of Portland, Oregon**  
**Bureau of Development Services**  
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**DEFERRED SUBMITTAL REQUIREMENTS & AGREEMENT**

**DEFERRED SUBMITTAL PROCEDURES:**

1. A list of deferred submittal items (DFS) must be provided on the cover sheet of the submitted plan and called out in the structural notes of the structural plans.
2. Prior to issuance of the Building Permit, a signed copy of this Agreement with a current list of deferred submittal items is required. **Components and systems covered by deferred submittals MAY NOT BE INSTALLED prior to approval and issuance of deferred submittal permit.**

**DEFERRED SUBMITTAL FEES:**

Deferred submittal (DFS) fees are collected in addition to the standard building review fee paid on the main building permit. DFS fees cover the cost of the additional processing and review time associated with the design build element.

Please reference the current Fee Schedule at [www.portlandoregon.gov/bds](http://www.portlandoregon.gov/bds) | select the Fees tab.

**Submittal Requirements for deferred items:**

1. Plans and supporting material for deferred submittal items must be stamped by a Registered Design Professional (RDP) registered in Oregon.
2. Plans and supporting materials shall be submitted to the Engineer of Records and/or RDP in responsible charge for the building who shall review them and add a notation indicating that the deferred submittal documents have been reviewed and found to be in general conformance to the design of the building. The notation shall be made on the deferred submittal drawings. Review stamps on letters of transmission are not acceptable.
3. Plan views and elevations identifying the locations(s) of deferred submittals, as approved by the RDP of record must be submitted as part of the DFS package. The submittal shall include a summary of all applicable codes and include drawings, engineering calculations, product "cut-sheets" and other information necessary to demonstrate code compliance.
4. First review goals for DFS permits are 4 weeks. Please allow ample time for review and approval.
5. **The Approved Copy of an approved deferred submittal must be on site at the time of installation.**

**I certify that I have read the above document and agree to follow the deferral process as outlined.**

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

07/14/2017

CCB#: \_\_\_\_\_

194754



# Fee Data Sheet

City of Portland

Page 1 of 1

July 17, 2017

1:36 pm

Receipt Number: 2014983

Paid By: HOME FORWARD (JULIE LIVINGSTON)

Folder Number	Roll Number	Payment	Payment Amount	Amount Applied	Amount Refunded	Amount Tendered	Rate
17 204627 000 00 CO	1N1E35BB 03500	CHECK	273,526.79	273,526.79	0.00	273,526.79	1.00
Fee	Fee Amount	Amount Applied					
Fire & Life Safety Review	\$56,690.82	\$56,690.82					
Land Use Plan Review Coml	\$80,560.00	\$80,560.00					
Fire - Plan Review	\$22,676.33	\$22,676.33					
Bldg Plan Rvw/Processing CO/MG	\$92,122.58	\$92,122.58					
Site Review Fee	\$21,259.06	\$21,259.06					
Erosion Control Plan Review	\$218.00	\$218.00					
Total:	\$273,526.79	\$273,526.79					
17 204636 000 00 MT	1N1E35BB 03500	CHECK	23,967.77	23,967.77	0.00	23,967.77	1.00
Fee	Fee Amount	Amount Applied					
Mechanical Plan Check CO	\$23,967.77	\$23,967.77					
Total:	\$23,967.77	\$23,967.77					
Grand Total:			297,494.56	297,494.56	0.00		

5 car

## GRAND AVENUE APARTMENTS

1010-1034 NE Grand Avenue  
Portland, Oregon

### PROJECT MANUAL

Permit Set  
Project Number: 215349  
July 14, 2017

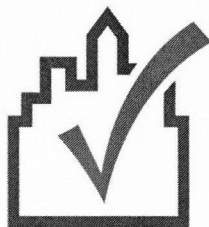


OWCB  
2905 SW First Avenue  
Portland, Oregon 97201

**LRS**  
ARCHITECTS

720 NW Davis Suite 300 Portland, Oregon 97209  
☎ 503.221.1121 📠 503.221.2077

17-204621 3



COMcheck Software Version 4.0.6.1

# Envelope Compliance Certificate

Scan

## Section 1: Project Information

Energy Code: **2014 Oregon Energy Efficiency Specialty Code**

Project Title: GRAND Avenue Apartments

Project Type: New Construction

Envelope Compliance Method: Simplified Trade-Off

**Construction Site:**1010 NE Grand Avenue  
Portland, OR 97232**Owner/Agent:**Julie Livingston  
Home Forward  
135 SW Ash Street  
Portland, OR 97204  
503.802.8424  
Julie.Livingston@homeforward.org**Designer/Contractor:**Michael Stanner  
LRS Architects  
720 NW Davis Street  
Suite 300  
Portland, OR 97209  
503.265.1555  
mstanner@lrsarchitects.com

Building Location (for weather data):

Portland, Oregon

Climate Zone:

4c

Vertical Glazing / Wall Area Pct.:

26%

**Building Use: Area Type**

1-Multifamily : Residential

2-Retail : Nonresidential

**Floor Area**

175417

13228

## Section 2: Envelope Assemblies and Requirements Checklist

Envelope **PASSES**: Design 3% better than code.**Envelope Assemblies:**

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor <sup>(a)</sup>
Roof 1 - Main Deck: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	14794	---	25.0	0.039	0.048
Roof 2 - Stair #02: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	248	---	25.0	0.039	0.048
Roof 3 - Penthouse (Utilities): Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	256	---	25.0	0.039	0.048
Roof 4 - Elevator & Machine Rooms: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	320	---	25.0	0.039	0.048
Roof 5 - Lower Roof at Courtyard - Lobby Side: Attic Roof with Steel Joists, [Bldg. Use 1 - Multifamily]	353	38.0	0.0	0.035	0.027
Roof 6 - Lower Roof at Courtyard - Utility Side: Attic Roof with Steel Joists, [Bldg. Use 2 - Retail]	353	38.0	0.0	0.035	0.027
Exterior Wall 1 - Slim Brick, Metal Panel, Plaster [ Levels 2 thru 12 & Roof ]: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	70844	21.0	8.0	0.057	0.064
Window 1a - Innotech vinyl window system: Vinyl/Fiberglass Frame, Perf. Specs.: Product ID Innotech: Defender 76 TS, SHGC 0.28, [Bldg. Use 1 - Multifamily] (b)	19041	---	---	0.260	0.350
Window 1b - Curtain Wall -: Metal Frame Curtain Wall/Storefront, Perf. Specs.: Product ID Arcadia T-500 Series OPG-1500, SHGC 0.40, [Bldg. Use 1 - Multifamily] (b)	450	---	---	0.400	0.450
-Door 1c - Curtain Wall - Arcadia Door: Glass (> 50% glazing):Metal Frame, Entrance Door, Perf. Type: Energy code default, Double Pane with Low-E, Clear , SHGC 0.70, [Bldg. Use 1 - Multifamily]	54	---	---	0.800	0.800
Door 1d - All Glass - Avanti Entry Door: Glass (> 50% glazing):Nonmetal Frame, Entrance Door, Perf. Type: Energy	54	---	---	0.950	0.350



code default, Single Pane, Clear , SHGC 0.80, [Bldg. Use 1 - Multifamily]					
Door 1e - Hollow Metal Door & Frame: Insulated Metal, Swinging, [Bldg. Use 1 - Multifamily]	142	---	---	0.130	0.700
Exterior Wall 2 - CMU [ Levels 2 thru 12 ]: Concrete Block:6", Solid Grouted,Normal Density , Furring: Metal, [Bldg. Use 1 - Multifamily]	7703	13.0	8.0	0.066	0.090
Exterior Wall 3 - CMU [ Level 1 ]: Concrete Block:8", Solid Grouted,Normal Density , Furring: Metal, [Bldg. Use 1 - Multifamily]	1289	13.0	8.0	0.066	0.090
Exterior Wall 4 - Slim Brick, Metal Panel, Plaster [ Level 1 ]: Steel-Framed, 16" o.c., [Bldg. Use 2 - Retail]	8098	21.0	8.0	0.057	0.064
Window 4a - Curtain Wall -: Metal Frame Curtain Wall/Storefront, Perf. Specs.: Product ID Arcadia T-500 Series OPG-1500, SHGC 0.40, [Bldg. Use 2 - Retail] (b)	3160	---	---	0.400	0.450
Door 4b - Curtain Wall - Arcadia Door: Glass (> 50% glazing):Metal Frame, Entrance Door, Perf. Type: Energy code default, Double Pane with Low-E, Clear , SHGC 0.70, [Bldg. Use 2 - Retail]	443	---	---	0.800	0.800
Door 4c - Hollow Metal Door & Frame: Insulated Metal, Swinging, [Bldg. Use 2 - Retail]	183	---	---	0.130	0.700
Door 4d - OH Sectional - Loading / Trash Area: Insulated Metal, Non-Swinging, [Bldg. Use 2 - Retail]	130	---	---	0.140	0.500
Exterior Wall 5 - CMU [ Level 1 ]: Concrete Block:8", Solid Grouted,Normal Density , Furring: Metal, [Bldg. Use 2 - Retail]	1037	13.0	8.0	0.066	0.150
Basement Wall 1: Solid Concrete:12" Thickness, Normal Density, Furring: None, Wall Ht 11.0, Depth B.G. 11.0, [Bldg. Use 2 - Retail]	3223	---	7.5	0.110	0.108
Floor 1 - SOG - [ Level 1 - Lobby ]: Slab-On-Grade:Unheated, [Bldg. Use 1 - Multifamily]	301	---	---	---	---
Floor 2 - SOG - [ Level 1 & Basement ]: Slab-On-Grade:Unheated, [Bldg. Use 2 - Retail]	742	---	---	---	---
Floor 3 - Level 2 above the Alleyway & Canopy overhang: Concrete Floor (over unconditioned space), [Bldg. Use 1 - Multifamily]	2834	---	12.5	0.064	0.064

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.

In the following requirements, blank checkboxes identify requirements that the applicant has not acknowledged as being met. Checkmarks identify requirements that the applicant acknowledges are met or excepted from compliance. 'Plans reference page/section' identifies where in the plans/specs the requirement can be verified as being satisfied.

### Fenestration Product Rating:

- ☒ 1. U-factors of fenestration products (windows, doors and skylights) are determined in accordance with NFRC 100 by an accredited, independent laboratory, and labeled and certified by the manufacturer or are determined using the commercial size category values listed in Chapter 15 of the 2009 ASHRAE Handbook of Fundamentals, Table No.4 and shall include the effects of the window frame. The temporary label affixed to the fenestration products must not be removed prior to inspection.

Exception(s):

- ☐ Site-built fenestration products shall have a single certificate specifying glazing type, special coatings, spacers, gas fills, center-of-glass and overall U-factor, and center-of-glass SHGC for every type of site built glass used. These certificates shall be maintained on the jobsite and made available to the inspector.

SPECIFICATION SECTIONS: 08 116 ALUMINUM DOORS & FRAMES, 08 4413 GLAZED

Plans reference page/section: ALUMINUM CURTAIN WALLS, 08 5313 VINYL WINDOWS & 08 8000 GLAZING

- ☒ 2. Solar heat gain coefficient (SHGC) of glazed fenestration products (windows, glazed doors and skylights) shall be determined in accordance with NFRC 200 by an accredited, independent laboratory, and labeled and certified by the manufacturer or be determined using the Solar Heat Gain Coefficients (SHGC) in Chapter 15 of the 2009 ASHRAE Handbook of Fundamentals, Table No.10. The overall values must consider type of frame material and operator for the SHGC at normal incidence.

Exception(s):

- ☐ Site-built fenestration products shall have a single certificate specifying glazing type, special coatings, spacers, gas fills, center-of-glass and overall U-factor, and center-of-glass SHGC for every type of site built glass used. These certificates shall be maintained on the jobsite and made available to the inspector.

SPECIFICATION SECTIONS: 08 116 ALUMINUM DOORS & FRAMES, 08 4413 GLAZED ALUMINUM

Plans reference page/section: CURTAIN WALLS, 08 5313 VINYL WINDOWS & 08 8000 GLAZING

### Air Leakage, Insulation, and Component Certification:

- ☒ 3. Sealing of the building envelope. Openings and penetrations in the building envelope are sealed with caulking materials or closed with gasketing systems compatible with the construction materials and location. Joints and seams are sealed in the same manner or taped or covered with a moisture vapor-permeable wrapping material. Sealing materials spanning joints between construction materials allow for expansion and contraction of the construction materials.

Plans reference page/section:

- ☒ 4. Window and door assemblies. The air leakage of window and sliding or swinging door assemblies that are part of the building envelope are determined in accordance with AAMA/WDMA/CSA 101/I.S.2/A440, or NFRC 400 by an accredited, independent laboratory, and labeled and certified by the manufacturer.

Exception(s):

- ☐ Site-constructed windows and doors that are weatherstripped or sealed in accordance with Section 502.4.3.

SPECIFICATION SECTIONS: 08 1113 HOLLOW METAL DOORS & FRAMES, 08 5313 VINYL

Plans reference page/section: WINDOWS

- ☒ 5. Curtain wall, storefront glazing and commercial entrance doors. Curtain wall, storefront glazing and commercial-glazed swinging entrance doors and revolving doors are tested for air leakage in accordance with ASTM E 283. For curtain walls and storefront glazing, the maximum air leakage rate is 0.3 cubic foot per minute per square foot of fenestration area. For commercial glazed swinging entrance doors and revolving doors, the maximum air leakage rate is 1.00 cfm/ft<sup>2</sup> of door area.

Exception(s):

- ☐ Requirement is not applicable.

SPECIFICATION SECTIONS: 08 1116 ALUMINUM DOOR & FRAMES, 08 4413 GLAZED

Plans reference page/section: ALUMINUM CURTAIN WALLS

- ☒ 6. Building thermal envelope insulation. An R-value identification mark is applied (by manufacturer) to each piece of insulation 12 inches or greater in width. Alternately, the insulation installers have provided a signed, dated and posted certification listing the type, manufacturer and R-value of insulation installed. Refer to code section for blown or sprayed insulation installation/settling depths and marker requirements.
- ☒ 7. Insulation mark installation. Insulating materials are installed such that the manufacturer's R-value mark is readily observable upon inspection.
- ☒ 8. Insulation product rating. The thermal resistance (R-value) of insulation has been determined in accordance with the U.S. FTC R-value rule.
- ☒ 9. Installation. All material, systems and equipment are installed in accordance with the manufacturer's installation instructions and the International Building Code.
- ☒ 10. Outdoor air intakes and exhaust openings. Stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be equipped with not less than a Class I motorized, leakage-rated damper with a maximum leakage rate of 4 cfm per square foot at 1.0 inch water gauge when tested in accordance with AMCA 500D. Stair and shaft vent dampers shall be capable of being automatically closed during normal building operation and interlocked to open as required by fire and smoke detection systems.

Exception(s):

- ☐ Requirement is not applicable.

Plans reference page/section: MECHANICAL DRAWING SHEETS: M001 & M301.

- ☒ 11. Loading dock weatherseals. Cargo doors and loading dock doors are equipped with weather seals to restrict infiltration when vehicles are parked in the doorway.

Exception(s):

- ☐ Requirement is not applicable.

Plans reference page/section: SPECIFICATION SECTION: 08 3613 SECTIONAL DOORS

- ☒ 12. Recessed lighting. Recessed luminaires installed in the building thermal envelope are sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires are IC-rated and labeled as meeting ASTM E 283. All recessed luminaires are sealed with a gasket or caulk between the housing and interior wall or ceiling covering.

Exception(s):

- ☐ Requirement is not applicable.

Plans reference page/section: ARCHITECTURAL SHEET: A954 DETAIL 1

- ☒ 13. Vestibules. Doors that separate conditioned space from the exterior are protected with an enclosed vestibule, with all doors of the vestibule equipped with self-closing devices. Vestibules are designed so interior and exterior doors to not operate simultaneously.

Exception(s):

- ☒ Doors not intended to be used as a building entrance door, such as doors to mechanical or electrical equipment rooms.
- ☐ Doors opening directly from a sleeping unit or dwelling unit.
- ☒ Doors that open directly from a space less than 3000 sq. ft. in area.
- ☐ Revolving doors.
- ☒ Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.
- ☒ Requirement is not applicable.

Plans reference page/section: ARCHITECTURAL SHEETS: A101 LEVEL 1 CODE ANALYSIS PLAN & A201 LEVEL 1 - FLOOR PLAN.

☒ 14. 'Other' components have supporting documentation for proposed U-Factors.

Exception(s):

☐ Requirement is not applicable.

Plans reference page/section: SPECIFICATION SECTION: 07 7233 ROOF HATCHES

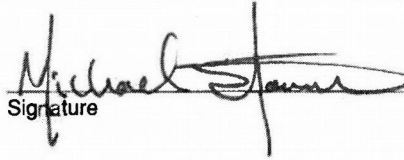
### Section 3: Compliance Statement

*Compliance Statement:* The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 2014 Oregon Energy Efficiency Specialty Code requirements in COMcheck Version 4.0.6.1 and to comply with the mandatory requirements in the Requirements Checklist.

MICHAEL STANNER, SENIOR PROJECT ARCHITECT

Name - Title

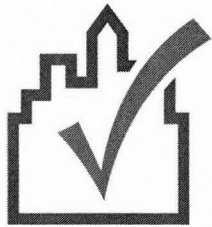
Signature



JULY 14, 2017

Date





COMcheck Software Version 4.0.5.1

# Mechanical Compliance Certificate

## Section 1: Project Information

Energy Code: **2014 Oregon Energy Efficiency Specialty Code**

Project Title: Grand Avenue Apartments

Project Type: New Construction

Construction Site:

1010 NE Grand Ave  
Portland, OR 97232

Owner/Agent:

Designer/Contractor:

## Section 2: General Information

Building Location (for weather data):

Portland, Oregon

Climate Zone:

4c

## Section 3: Mechanical Systems List

### Quantity System Type & Description

- 1 HP-1 (Single Zone) : Split System Heat Pump  
Heating Mode: Capacity = 188 kBtu/h,  
Proposed Efficiency = 3.30 COP, Required Efficiency = 3.20 COP  
Cooling Mode: Capacity = 168 kBtu/h, , No Economizer , Economizer exception: VRF Outdoor/Central Unit  
Proposed Efficiency = 19.50 EER, Required Efficiency: 10.60 EER (10.7 IEER)  
Fan System: None  
SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.
- 1 HP-2 (Single Zone) : Split System Heat Pump  
Heating Mode: Capacity = 34 kBtu/h,  
Proposed Efficiency = 9.70 HSPF, Required Efficiency = 7.70 HSPF  
Cooling Mode: Capacity = 30 kBtu/h,  
Proposed Efficiency = 15.80 SEER, Required Efficiency: 13.00 SEER  
Fan System: None

## Section 4: Requirements Checklist

*In the following requirements, blank checkboxes identify requirements that the applicant has not acknowledged as being met. Checkmarks identify requirements that the applicant acknowledges are met or excepted from compliance. 'Plans reference page/section' identifies where in the plans/specs the requirement can be verified as being satisfied.*

### Requirements Specific To: HP-1 :

- ✓ 1. Equipment meets minimum efficiency: Heat Pump: 3.20 COP 10.60 EER (10.7 IEER)
- ✓ 2. Energy recovery ventilation systems. Individual fan systems that have both a design supply air capacity of 5,000 cfm or greater and a minimum outside air supply of 70 percent or greater of the design supply air quantity have an energy recovery system.

Plans reference page/section: \_\_\_\_\_

- ✓ 3. Supply air economizers shall be provided on each cooling system and are capable of providing 100-percent outdoor air, even if additional mechanical cooling is required to meet the cooling load of the building. Systems provide a means to relieve excess outdoor air during economizer operation to prevent overpressurizing the building.

Plans reference page/section: VRF Exception

### Requirements Specific To: HP-2 :

- ✓ 1. Equipment meets minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER
- ✓ 2. Energy recovery ventilation systems. Individual fan systems that have both a design supply air capacity of 5,000 cfm or greater and a minimum outside air supply of 70 percent or greater of the design supply air quantity have an energy recovery system.

Plans reference page/section: \_\_\_\_\_

**Generic Requirements: Must be met by all systems to which the requirement is applicable:**

- ✓ 1. Calculation of heating and cooling loads. Design loads are determined in accordance with the procedures described in the ASHRAE/ACCA Standard 183. Alternatively, design loads have been determined by an approved equivalent computation procedure.
- ✓ 2. Cooling equipment economizers: The total capacity of all cooling equipment without economizers must be less than 240 kBtu/h. This project lists 198 kBtu/h capacity without economizers. That portion of the equipment serving dwelling units and guest rooms is not included in determining the total capacity of units without economizers.

Plans reference page/section: \_\_\_\_\_

- ✓ 3. Equipment and system sizing. Heating and cooling equipment and systems capacity do not exceed the loads calculated in accordance with Section 503.2.1.

Plans reference page/section: \_\_\_\_\_

- ✓ 4. HVAC Equipment Performance Requirements. Reported efficiencies have been tested and rated in accordance with the applicable test procedure. The efficiency has been verified through certification under an approved certification program or, if no certification program exists, the equipment efficiency ratings are supported by data furnished by the manufacturer.
- ✓ 5. Thermostatic Controls. The supply of heating and cooling energy to each zone is controlled by individual thermostatic controls that respond to temperature within the zone.

Plans reference page/section: \_\_\_\_\_

- ✓ 6. Heat pump supplementary heat. Heat pumps having supplementary electric resistance heat have controls that, except during defrost, prevent supplementary heat operation when the heat pump can meet the heating load.

Plans reference page/section: \_\_\_\_\_

- ✓ 7. Set point overlap restriction. Where used to control both heating and cooling, zone thermostatic controls provide a temperature range or deadband of at least 5°F (2.8°C) within which the supply of heating and cooling energy to the zone is capable of being shut off or reduced to a minimum.

Plans reference page/section: \_\_\_\_\_

- ✓ 8. Optimum Start Controls. Each HVAC system has controls that vary the start-up time of the system to just meet the temperature set point at time of occupancy.

Plans reference page/section: \_\_\_\_\_

- ✓ 9. Off-hour controls. Each zone is provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.

Plans reference page/section: \_\_\_\_\_

- ✓ 10. Shutoff damper controls. Both outdoor air supply and exhaust are equipped with not less than Class I motorized dampers.

Plans reference page/section: \_\_\_\_\_

- ✓ 11. Freeze Protection and Snow melt system controls. Freeze protection systems, such as heat tracing of outdoor piping and heat exchangers, including self-regulating heat tracing, include automatic controls capable of shutting off the systems when outdoor air temperatures meet code criteria.

Plans reference page/section: \_\_\_\_\_

- ✓ 12. Separate air distribution systems. Zones with special process temperature requirements and/or humidity requirements are served by separate air distribution systems from those serving zones requiring only comfort conditions; or shall include supplementary control provisions so that the primary systems may be specifically controlled for comfort purposes only.

Plans reference page/section: \_\_\_\_\_

- ✓ 13. Humidity control. Where a humidity control device exists it is set to prevent the use of fossil fuel or electricity to produce relative humidity in excess of 30 percent. Where a humidity control device is used for dehumidification, it is set to prevent the use of fossil fuel or electricity to reduce relative humidity below 60 percent.

Plans reference page/section: \_\_\_\_\_

- ✓ 14. Humidity control. Where a humidity control device exists it is set to maintain a deadband of at least 10% relative humidity where no active humidification or dehumidification takes place.

Plans reference page/section: \_\_\_\_\_

- ✓ 15. Ventilation. Ventilation, either natural or mechanical, is provided in accordance with Chapter 4 of the International Mechanical Code. Where mechanical ventilation is provided, the system has the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the International Mechanical Code.

Plans reference page/section: \_\_\_\_\_

- ✓ 16. Demand controlled ventilation (DCV). DCV is required for spaces larger than 500 ft<sup>2</sup> for simple systems and spaces larger than 150 ft<sup>2</sup> for multiple zone systems.

Plans reference page/section: N/A

- ✓ 17. Kitchen hoods. Kitchen makeup is provided as required by the Oregon Mechanical Specialty Code.

Plans reference page/section: N/A

- ✓ 18. Enclosed parking garage ventilation controls. In Group S-2, enclosed parking garages used for storing or handling automobiles employ automatic carbon monoxide sensing devices.

Plans reference page/section: N/A

- ✓ 19. Duct and plenum insulation and sealing. All supply and return air ducts and plenums are insulated with the specified insulation. When located within a building envelope assembly, the duct or plenum is separated from the building exterior or unconditioned or exempt spaces by a minimum of R-8 insulation. All ducts, air handlers and filter boxes are sealed. Joints and seams comply with Section 603.9 of the International Mechanical Code.

- ✓ 20. Low-pressure duct systems. All longitudinal and transverse joints, seams and connections of low-pressure supply and return ducts are securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes installed in accordance with the manufacturer's installation instructions.

Plans reference page/section: \_\_\_\_\_

- ✓ 21. Medium-pressure duct systems. All ducts and plenums designed to operate medium-pressure are insulated and sealed in accordance with Section 503.2.7. Pressure classifications specific to the duct system are clearly indicated on the construction documents.

Plans reference page/section: \_\_\_\_\_

- ✓ 22. High-pressure duct systems. Ducts designed to operate at high-pressure are insulated and sealed in accordance with Section 503.2.7. In addition, ducts and plenums are leak-tested in accordance with the SMACNA HVAC Air Duct Leakage Test Manual.

Plans reference page/section: N/A

- ✓ 23. Air system balancing. Each supply air outlet and zone terminal device is equipped with means for air balancing in accordance with the requirements of IMC 603.17. Discharge dampers intended to modulate airflow are prohibited on constant volume fans and variable volume fans with motors 10 horsepower.

Plans reference page/section: \_\_\_\_\_

- ✓ 24. Manuals. The construction documents require that an operating and maintenance manual be provided to the building owner by the mechanical contractor. See long description for specifications.

Plans reference page/section: \_\_\_\_\_

- ✓ 25. Air System Design and Control. Each HVAC system having a total fan system motor nameplate hp exceeding 5 hp meets the provisions of Sections 503.2.10.1 through 503.2.10.2.

Plans reference page/section: \_\_\_\_\_

- ✓ 26. Allowable fan floor horsepower. Each HVAC system at fan system design conditions does not exceed the allowable fan system motor nameplate hp (Option 1) or fan system bhp (Option 2) as shown and calculated in requirement details.

Plans reference page/section: \_\_\_\_\_

- ✓ 27. Motor nameplate horsepower. For each fan, the selected fan motor is no larger than the first available motor size greater than the brake horsepower (bhp).

Plans reference page/section: \_\_\_\_\_

- ✓ 28. Large Volume Fan Systems. Fan systems over 8,000 (7 m<sup>3</sup>/s) cfm without direct expansion cooling coils that serve single zones reduce airflow based on space thermostat heating and cooling demand. A two-speed motor or variable frequency drive reduces airflow to a maximum 60 percent of peak airflow or minimum ventilation air requirement as required by Chapter 4 of the International Mechanical Code, whichever is greater.

Plans reference page/section: \_\_\_\_\_

- ✓ 29. All air-conditioning equipment and air-handling units with direct expansion cooling and a cooling capacity at ARI conditions greater than or equal to 110,000 Btu/h that serve single zones have their supply fan operation controlled according to code specific requirements.

Plans reference page/section: \_\_\_\_\_

## Section 5: Compliance Statement

*Compliance Statement:* The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2014 Oregon Energy Efficiency Specialty Code requirements in COMcheck Version 4.0.5.1 and to comply with the mandatory requirements in the Requirements Checklist.



## Section 6: Post Construction Compliance Statement

- ☐ HVAC record drawings of the actual installation, system capacities, calibration information, and performance data for each equipment provided to the owner.
- ☐ HVAC O&M documents for all mechanical equipment and system provided to the owner by the mechanical contractor.
- ☐ Written HVAC balancing and operations report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name

Signature

Date

2.	Locks/Latches:	Schlage	None- Owner Standard
3.	Cylinders:	Schlage	None- Owner Standard
4.	Panic Devices:	Falcon	Precision
5.	Flush Bolts:	Ives	DCI, Trimco
6.	Surface Closers:	LCN	Norton
7.	Auto Operators:	LCN	Norton
8.	Push/Pulls:	Ives	Tice, Trimco
9.	Stops:	Ives	Trimco
10.	Overhead Stops:	Glynn Johnson	Rixson
11.	Kickplates:	Ives	Tice, Trimco
12.	Weatherstripping/ Gasketing:	Zero	NGP, Pemko
13.	Door Bottoms:	Zero	NGP, Pemko
14.	Thresholds:	Zero	NGP, Pemko

### PART 3 EXECUTION

#### 3.1 COORDINATION

- A. Coordinate as necessary with other trades to assure proper and adequate provision in work of those trades for interface with work of this Section.

#### 3.2 INSTALLATION

- A. Install work of this Section in accordance with:

1. Hardware groups specified.
2. Approved Schedule.
3. Applicable requirements of governmental agencies having jurisdiction.
4. Templates.
5. Manufacturer's and referenced standard's recommended installation procedures.

- B. Hardware Locations: Mount hardware at locations recommended by manufacturer, requirements of ANSI A117.1, ADA, and State Building Code, as applicable.

- C. Set units level, plumb and true to line and location.

1. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

- D. Cut and fit threshold or floor plates to door frame profile with mitered corner joints; weld multiple pieces together. Set in full bead of sealant.

1. At carpet, install closer floor plates flush with structural substrate under carpet.
2. Secure to substrate with positive anchoring devices.

- E. After fitting mortised hardware to surfaces to be painted, remove and store hardware in original package in a secure place, and permanently reinstall after painting has been completed.

1. Properly wrap installed hardware subjected to hand usage during construction for protection; Replace hardware units at no expense to Owner where finish has been damaged by construction activities.

### 3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. Upon completion of Work, and as a condition of acceptance, provide inspection, and adjustment of operating hardware, to ensure proper operation or function of every unit.
1. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
  2. Clean operating units as necessary to restore proper function and finish of hardware and doors.
- B. After ventilation system has been balanced, adjust closers as necessary to meet ADA and State Building Code requirements for time required for closing operation and opening force.
- C. Clean adjacent surfaces soiled by hardware installation and repair damaged surfaces.
- D. Six Month and One Year Adjustment: Approximately six months, and prior to one year, after date of Substantial Completion, the installer, accompanied by representatives of the manufacturers of latchsets and locksets and door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
1. Examine and adjust each item of door hardware as necessary to restore proper operation and function of doors and hardware to comply with specified requirements.
  2. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
  3. Prepare a written report of current and predictable problems of substantial nature in the performance of the hardware.

### 3.4 DOOR HARDWARE GROUPS

#### HARDWARE GROUP NO. 01

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-NL	626	FAL
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	1450 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER

#### HARDWARE GROUP NO. 02

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	SURFACE CLOSER	1450 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER



HARDWARE GROUP NO. 03

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8192AA	AA	ZER
1	EA	THRESHOLD	545A-MSLA-10	A	ZER

HARDWARE GROUP NO. 04

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	SURFACE CLOSER	1450 RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER

HARDWARE GROUP NO. 05

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	CLOSER W/STOP ARM	1450 SCUSH	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	EDGE/ASTRAGAL	552	630	NGP
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	GASKETING	488S-BK	S-BK	ZER
			(APPLY TO ASTRAGAL)		

HARDWARE GROUP NO. 06

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	AL10S JUP	626	SCH
1	EA	SURFACE CLOSER	1450 RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER

HARDWARE GROUP NO. 07

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	MAGNETIC LOCK	M452P	628	SCE
2	EA	PUSH BAR	9100HD-O	630	IVE
2	EA	LONG DOOR PULL	9264 96" MB 80" O	630	IVE
1	EA	CONC. AUTO OPERATOR	2863 STD/CP2 POS MS	ANCLR	LCN
2	EA	NARROW ACTUATOR	8310-818T	630	LCN
2	EA	FLUSH MOUNT BOX	8310-819F	689	LCN
1	EA	PUSHBUTTON	623GIDEX DA NS	629	SCE
1	EA	MOTION SENSOR	SCANII	WHT	SCE
1	EA	POWER SUPPLY	PS902 900-BBK 900-4RL-FA FA900	LGR	SCE
1		ACCESS CONTROL - WORK OF DIVISION 28 BALANCE OF HARDWARE BY GATE MANUFACTURER			
1	EA	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			

AUTO OPERATOR & POWER SUPPLY REQUIRE 110VAC. AUTO OPERATOR INCLUDES THE ALUMINUM FRAME HEAD ASSEMBLY. INSTALL MOTION SENSOR ABOVE DOORS AT INTERIOR. INSTALL EXIT BUTTON AT INTERIOR SIDE WITHIN 5' OF DOORS AS REQUIRED BY CODE. CONFIRM IF DOORS ARE CENTER PIVOTED OR OFFSET TYPE PRIOR TO ORDERING AUTO DOOR OPERATOR.

HARDWARE GROUP NO. 08

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	CLOSER W/STOP ARM	1450 SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	RAIN DRIP	142A	A	ZER

HARDWARE GROUP NO. 09

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
8	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	EL-24-C-C-718	626	FAL
1	EA	ELEC PANIC HARDWARE	EL-24-C-EO	626	FAL
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
2	EA	LONG DOOR PULL	9264 96" MB 80" O	630	IVE
1	EA	CONC. AUTO OPERATOR	2863 STD/OP2 MS	ANCLR	LCN
2	EA	NARROW ACTUATOR	8310-818T	630	LCN
2	EA	FLUSH MOUNT BOX	8310-819F	689	LCN
2	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	POWER SUPPLY	PS914 900-2RS	LGR	VON
1		ACCESS CONTROL - WORK OF DIVISION 28			
1	EA	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			

AUTO OPERATOR & POWER SUPPLY REQUIRE 110VAC. AUTO OPERATOR INCLUDES THE ALUMINUM FRAME HEAD ASSEMBLY.

HARDWARE GROUP NO. 10

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	AL50PD JUP	626	SCH
1	EA	SURFACE CLOSER	1450 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS436	626	IVE
3	EA	SILENCER	SR66	GRY	IVE

HARDWARE GROUP NO. 11

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	AL50PD JUP	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR66	GRY	IVE



HARDWARE GROUP NO. 12

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	AL50PD JUP	626	SCH
1	EA	SURFACE CLOSER	1450 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER

HARDWARE GROUP NO. 13

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR66	GRY	IVE

HARDWARE GROUP NO. 14

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-L-BE-AVA	626	FAL
1	EA	SURFACE CLOSER	1450 RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	545A-MSLA-10	A	ZER

HARDWARE GROUP NO. 15

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC FIRE EXIT HARDWARE	FSE-F-25-R-L-511-AVA	626	FAL
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	4050 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS441	626	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1		ACCESS CONTROL - WORK OF DIVISION 28			

HARDWARE GROUP NO. 16

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	EA	CONST LATCHING BOLT	FB61T	630	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	EDGE/ASTRAGAL	552	630	NGP
2	EA	WALL STOP	WS406/407CVX	630	IVE
2	EA	SILENCER	SR66	GRY	IVE

VERIFY IF THERE IS ELECTRICAL EQUIPMENT 800 AMPS OR ABOVE, OR METERING EQUIPMENT IN THE ELECTRICAL ROOMS. IF SO, PANIC HARDWARE WILL BE REQUIRED.

HARDWARE GROUP NO. 17

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	1450 RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8192AA	AA	ZER
1	EA	THRESHOLD	545A-MSLA-10	A	ZER

HARDWARE GROUP NO. 18

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
8	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	DUST PROOF STRIKE	DP1	626	IVE
1	EA	EU STOREROOM LOCK	ND80PDEU ATH	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4050 EDA	689	LCN
2	EA	BLADE STOP SPACER	4050-61	689	LCN
2	EA	WALL STOP	WS406/407CVX	630	IVE
2	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	RAIN DRIP	142A	A	ZER
1		ACCESS CONTROL - WORK OF DIVISION 28			
1	EA	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			

5" MINIMUM VERTICAL STILES ARE REQUIRED FOR THE SPECIFIED LOCKSET.

HARDWARE GROUP NO. 19

HARDWARE BY DOOR  
MANUFACTURER

HARDWARE GROUP NO. 20

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
8	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	DUST PROOF STRIKE	DP1	626	IVE
1	EA	STOREROOM LOCK	ND80PD ATH	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	OH STOP	100S	630	GLY
2	EA	DELAYED CLOSER	4050 DEL RW/PA	689	LCN
2	EA	KICK PLATE	8400 16" X 2" LDW B-CS	630	IVE
1	EA	EDGE/ASTRAGAL	562	630	NGP
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	GASKETING	488S-BK	S-BK	ZER
		(APPLY TO ASTRAGAL)			
2	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	545A-MSLA-10	A	ZER

HARDWARE GROUP NO. 21

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	1450 EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	EDGE/ASTRAGAL	552	630	NGP
2	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	GASKETING	488S-BK	S-BK	ZER
		(APPLY TO ASTRAGAL)			



HARDWARE GROUP NO. 22

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-NL	626	FAL
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	CLOSER W/STOP ARM	4050 CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	RAIN DRIP	142A	A	ZER
1		ACCESS CONTROL - WORK OF DIVISION 28			

HARDWARE GROUP NO. 23

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	CLOSER W/STOP ARM	4050 SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	RAIN DRIP	142A	A	ZER

HARDWARE GROUP NO. 24

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	SURFACE CLOSER	1450 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER

HARDWARE GROUP NO. 25

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
5	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1 4.5 X 4.5 TW4	652	IVE
1	SET	AUTO FLUSH BOLT	FB41P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	EU STOREROOM LOCK	ND80PDEU ATH	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	DELAYED CLOSER	1450 DEL RW/PA	689	LCN
2	EA	KICK PLATE	8400 16" X 2" LDW B-CS	630	IVE
1	EA	EDGE/ASTRAGAL	562	630	NGP
2	EA	FLOOR STOP	FS436	626	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	GASKETING	488S-BK	S-BK	ZER
		(APPLY TO ASTRAGAL)			
1		ACCESS CONTROL - WORK OF			
		DIVISION 28			

HARDWARE GROUP NO. 26

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1 4.5 X 4.5 TW4	652	IVE
1	EA	EU STOREROOM LOCK	ND80PDEU ATH	626	SCH
1	EA	SURFACE CLOSER	1450 RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488S-BK	S-BK	ZER
1		ACCESS CONTROL - WORK OF			
		DIVISION 28			

HARDWARE GROUP NO. 27

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM W/INDICATOR	L9480T 07A L583-363 L283-722	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	ELECTRIC STRIKE	6216 FSE	630	VON
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488S-BK	S-BK	ZER
		(FOR SOUND)			
1		ACCESS CONTROL - WORK OF			
		DIVISION 28			

THIS OPENING MUST HAVE A WELDED HM FRAME.

HARDWARE GROUP NO. 28

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	CLOSER W/STOP ARM	4050 SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	RAIN DRIP	142A	A	ZER

HARDWARE GROUP NO. 29

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	EL STOREROOM LOCK	ND80PDEL ATH	626	SCH
1	EA	SURFACE CLOSER	4050 RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	545A-MSLA-10	A	ZER
1	EA	POWER SUPPLY	PS902 FA900	LGR	SCE

POWER SUPPLY REQUIRES 110VAC AND NORMALLY CLOSED FIRE ALARM. LEVER ON STAIR SIDE MUST UNLOCK ON FIRE ALARM PER CODE. ROOF SIDE MUST ALWAYS REMAIN UNLOCKED FOR EGRESS.

HARDWARE GROUP NO. 30

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
8	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	1690-EO-ER9-HEX	628	FAL
1	EA	PANIC HARDWARE	1692-NL-OP-ER9-HEX	628	FAL
1	EA	RIM CYLINDER	20-057-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
2	EA	LONG DOOR PULL	9264 96" MB 80" O	630	IVE
2	EA	CLOSER W/STOP ARM	4050 SCUSH	689	LCN
2	EA	CUSH SHOE SUPPORT	4050-30	689	LCN
2	EA	BLADE STOP SPACER	4050-61	689	LCN
2	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			



HARDWARE GROUP NO. 31

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	1792-NL-OP	628	FAL
1	EA	RIM CYLINDER	20-057-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	LONG DOOR PULL	9264 96" MB 80" O	630	IVE
1	EA	CLOSER W/STOP ARM	4050 SCUSH	689	LCN
1	EA	CUSH SHOE SUPPORT	4050-30	689	LCN
1	EA	BLADE STOP SPACER	4050-61	689	LCN
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			

HARDWARE GROUP NO. 32

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY W/INDICATOR	L9456T 07A L583-363 L283-722	626	SCH
1	EA	SURFACE CLOSER	1450 RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	488S-BK	S-BK	ZER
		(FOR SOUND)			

HARDWARE GROUP NO. 33

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	CS210TD JUP JAZPLY	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	1250 RW/PA SLIM	689	LCN
1	EA	KICK PLATE	8400 6" X 2" LDW B-CS	630	IVE
1	EA	DOOR STOP	061	652	IVE
1	SET	SOUND/SMOKE SEAL	S773	BRN	PEM
1	EA	AUTO DR BTM	434ARL	AL	PEM
1	EA	THRESHOLD	151A	AL	PEM
1	EA	DOOR VIEWER	U698	626	IVE

INSTALL (2) VIEWERS AT ACCESSIBLE ROOMS. CONFIRM MOUNTING HEIGHT WITH ARCHITECT. COORDINATE REQUIRED THRESHOLD TYPE WITH FLOORING PROVIDER PRIOR TO ORDERING.

HARDWARE GROUP NO. 34

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	F40 JAZ	626	SCH
1	EA	DOOR STOP	061	652	IVE
3	EA	SILENCER	SR66	GRY	IVE

HARDWARE GROUP NO. 35

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	F10 JAZ	626	SCH
1	EA	DOOR STOP	061	652	IVE
3	EA	SILENCER	SR66	GRY	IVE

HARDWARE GROUP NO. 36

PROVIDE EACH SL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SET	BYPASS TRACK	BPC60		STA
2	EA	FLUSH PULL	227	626	IVE

HARDWARE GROUP NO. 37

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	AL10S JUP	626	SCH
1	EA	DELAYED CLOSER	1450 DEL RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER

HARDWARE GROUP NO. 38

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	CLOSER W/STOP ARM	1450 SCUSH	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	EDGE/ASTRAGAL	552	630	NGP
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	GASKETING	488S-BK	S-BK	ZER
(APPLY TO ASTRAGAL)					

VERIFY IF THERE IS ELECTRICAL EQUIPMENT 800 AMPS OR ABOVE, OR METERING EQUIPMENT IN THIS ROOM. IF SO, PANIC HARDWARE WILL BE REQUIRED.

HARDWARE GROUP NO. 39

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	EU STOREROOM LOCK	ND80PDEU ATH	626	SCH
1	EA	DELAYED CLOSER	4050 DEL EDA	689	LCN
1	EA	KICK PLATE	8400 16" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1		ACCESS CONTROL - WORK OF DIVISION 28			

HARDWARE GROUP NO. 40

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	AL70PD JUP	626	SCH
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR66	GRY	IVE

HARDWARE GROUP NO. 41

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	AL80PD JUP	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	CLOSER W/STOP ARM	1450 SCUSH	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	EDGE/ASTRAGAL	552	630	NGP
2	EA	SILENCER	SR64	GRY	IVE

VERIFY IF THERE IS ELECTRICAL EQUIPMENT 800 AMPS OR ABOVE, OR METERING EQUIPMENT IN THIS ROOM. IF SO, PANIC HARDWARE WILL BE REQUIRED.

HARDWARE GROUP NO. 42

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	AL50PD JUP	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 43

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	F-25-C-EO	626	FAL
1	EA	FIRE EXIT HARDWARE	F-25-C-L-AVA	626	FAL
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
2	EA	SURFACE CLOSER	1450 EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
2	EA	MEETING STILE	8193AA (ONE SET)	AA	ZER



HARDWARE GROUP NO. 44

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	700	630	IVE
1	EA	PANIC HARDWARE	LD-24-R-NL-OP	630	FAL
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	ELECTRIC STRIKE	6300 FSE	630	VON
1	EA	90 DEG OFFSET PULL	8190HD 12" O	630	IVE
1	EA	GATE CLOSER	SAMSON-2	SS	LOX
1		ACCESS CONTROL - WORK OF DIVISION 28			

SPECIFIED HARDWARE IS FOR THE EXIT/MAN GATE ONLY. BALANCE OF HARDWARE SHALL BE FURNISHED BY THE DOOR MANUFACTURER.

HARDWARE GROUP NO. 45

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-NL	626	FAL
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
1	EA	FINAL CORE	23-030	626	SCH
1	EA	CLOSER W/STOP ARM	4050 CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188S-BK	S-BK	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	65A-MSLA-10	A	ZER
1	EA	RAIN DRIP	142A	A	ZER
1		ACCESS CONTROL - WORK OF DIVISION 28			

END OF SECTION

Scan

PART 1 GENERAL

1.1 SUMMARY

A. Section includes glazing for the following applications:

1. Windows
2. Doors
3. Interior borrowed lites
4. Curtain walls

B. Related Sections:

1. Section 08 1113: Hollow Metal Doors and Frames
2. Section 08 1116: Aluminum Doors and Frames
3. Section 08 1400: Wood Doors
4. Section 08 4413: Glazed Aluminum Curtain Walls
5. Section 08 5313: Vinyl Windows
6. Section 08 8300: Mirrors

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thicknesses indicated are minimum and are for detailing only. Confirm glass thicknesses indicated in Glass Product Schedule by analyzing Project loads and in-service conditions. Provide glass in lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Select minimum glass thicknesses to comply with ASTM E 1300 according to design wind loads applicable to Project according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures."
  - a. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
    - 1) Load Duration: 60 seconds or less.
  - b. Minimum Glass Thickness for Exterior Lites: Not less than 6 mm, except where window system is shop glazed and tested by manufacturer of window to perform as specified.

1.3 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Samples: With each product data submitted, other than monolithic clear float glass, include:

1. Glass: 12 by 12 inch samples of each type.
2. Sealants and Gaskets: 12 inches long of each type installed between samples of material to be glazed, fully cured.

- C. Glazing Schedule: Use same designations indicated in Drawings, listing glass types and thicknesses for each size opening and location.
- D. Warranties: Special warranties specified in this Section.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Use skilled workers trained and experienced in necessary crafts, familiar with specified requirements and methods of installation for proper performance of Work of this Section.
- B. Source Limitations: Provide glass materials from one primary glass manufacturer for each type of glass specified.
  - 1. Insulating Glass: Obtain components for each type of unit from same source as used in other applications for same components.
  - 2. Provide glazing accessories from one source for each product and installation method indicated.
- C. Comply with applicable recommendations contained in the following publications, unless more stringent requirements are indicated:
  - 1. GANA Publications: GANA's "Glazing Manual."
  - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000. "Glazing Guidelines for Sealed Insulated Glass Units."
- D. Safety Glass: Comply with ANSI Z97.1 and testing requirements of 16 CFR, Part 1201.
- E. Insulating Glass Certification: Permanently mark on each unit with appropriate certification label of Insulating Glass Certification Council.

#### 1.5 REGULATORY REQUIREMENTS

- A. Comply with safety glazing requirements of State Building Code, Section 2406.
- B. Comply with wind loading requirements of State Building Code.
- C. Glazing for Fire-Rated Door Assemblies: Glazing that complies with NFPA 80 and are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 for door assemblies.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions, and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

#### 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

#### 1.8 WARRANTY

- A. General Warranty: Provide written warranty against failure of glazing products due to defective materials or installation, including water leakage or air infiltration in excess of specified standard, for a period of 2 years after date of Substantial Completion.

- B. Manufacturer's Special Warranties: Provide the following on manufacturer's standard form, made out to Owner and signed by manufacturer:

1. Insulating Glass: 10 year labor and materials to warrant units against failure of hermetic seal.
2. Coated Glass: 10 year labor and materials to replace unit deterioration including peeling, cracking, and other indications of deterioration in metallic coating.

## PART 2 PRODUCTS

### 2.1 GLASS MATERIALS

- A. Products: Provide products that comply with requirements indicated in the Glass Product Schedule at end of PART 3.

1. Overall Glass Thickness: For single pane and insulated glass products that are factory glazed, overall glass thickness may be less than indicated in the Glass Product Schedule if documentation is submitted that indicate the performance minimum of the lesser overall glass thickness is equal or better than that specified.

- B. Annealed Float Glass: ASTM C 1036, Type I (transparent flat glass), Quality Q3 (glazing select), of class indicated in the Glass Product Schedule.

- C. Heat-Treated Float Glass: ASTM C 1048, Type I, (transparent flat glass) Quality Q3 (glazing select), class, kind, and condition indicated in the Glass Product Schedule.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated.
2. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses produced by differential shading of individual lites and to comply with glass design requirements.
3. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS float glass where safety glass is indicated or required by State Building Code.

- a. Safety Glass: Where fully tempered glass is used as safety glass, provide products complying with ANSI Z97.1 and testing requirements of 16 CFR, Part 1201, for Category I or II materials as applicable.

- D. Sputter Coated (Low E) Float Glass: ASTM C 1376, float glass with metallic oxide or metallic nitride deposited by vacuum deposition process after manufacture and heat treatment (if any).

- E. Insulating Glass: ASTM E 774 for Class CBA units or ASTM E 2190, complying with requirements in Glass Product Schedule, and following:

1. Sealing System: Dual Seal.
2. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses produced by differential shading of lites and to comply with glass design requirements.
3. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS glass where safety glass is indicated or required by State Building Code.

- F. Fire-Rated Glass: Ceramic clear and wireless glazing material passing positive pressure test standards of UL10C, and NFPA 252 for door assemblies, as manufactured by one of the following, unless otherwise indicated in Glass Product Schedule, or approved by Architect.

1. Nippon Electric Glass Company, Ltd., and distributed by Technical Glass Products.
2. SafiFirst, a division of O'Keefe's Inc.



3. Vetrotech Saint-Gobain North America, Inc.

## 2.2 GLAZING SEALANTS

- A. General: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Elastomeric Glazing Sealants: Comply with ASTM C 920, Type S (single component), Class 100/50, Grade NS (non-sag); Use NT (nontraffic), M, G, A, and, as applicable to glazing substrates, O.
  1. Acceptable Manufacturers and Types, or approved as recommended by window assembly manufacturer:
    - a. Dow Corning: 790.
    - b. GE Advanced Materials: SilPruf LM SCS2700.
    - c. Pecora: 890.
    - d. Sika Corporation: SikaSil-C990.
    - e. Tremco: Spectrem 1.
- C. Glazing Sealant for Fire-Resistive Glazing Assemblies: Provide products identical to those used in test assembly to obtain fire protection rating.

## 2.3 GLAZING TAPE

- A. Back-Bedding Mastic Glazing Tape: Preformed, butyl based elastomeric tape complying with ASTM C 1281 and AAMA 800.
- B. Expanded Cellular Glazing Tape: Closed cell, PVC foam tape, factory coated with adhesive on both surfaces, complying with AAMA 800, for applications where tape acts as a primary seal or is used in combination with a full bead of sealant.

## 2.4 GLAZING GASKETS

- A. Compression Gaskets: Molded or extruded gaskets of material and type recommended by window assembly manufacturer for application, of profile and hardness required to maintain watertight seal.

## 2.5 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide other materials complying with referenced glazing standard and requirements of glass manufacturers as required for applications indicated.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85 plus or minus 5.
- D. Spacers and Edge Blocks: Elastomeric blocks or continuous extrusions of Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place and to limit glass lateral movement.
  1. Provide dark colored spacer when window framing system is dark bronze or black.
- E. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistive rating.

2.6 FABRICATION

- A. Fabricate glass and other glazing products in sizes required to glaze openings as indicated for Project.
  - 1. Provide edge and face clearances, edge and surface conditions, and bite complying with referenced standards and requirements of product manufacturers.
  - 2. Grind smooth and polish exposed glass edges.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine framing glazing for compliance with the following:
  - 1. Manufacturing and installation tolerances for size, squareness, and offsets at corners.
  - 2. Presence and functioning of weep system for exterior glazing.
  - 3. Minimum required face or edge clearances.
  - 4. Effective sealing between joints of glass framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 COORDINATION

- A. Coordinate as required with other trades to assure proper and adequate provision in work of those trades for interface with work of this Section.

3.4 GLAZING, GENERAL

- A. General: Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
  - 1. Protect glass edges from damage during handling and installation.
  - 2. Apply primers to joint surfaces where required for adhesion of sealants, as determined by sealant compatibility and adhesion testing.
- B. Install setting blocks sized and located to comply with referenced glazing publications, unless otherwise recommended by glass manufacturer.
  - 1. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- C. Provide spacers for glass lites where length plus width is larger than 50 inches, and as follows:
  - 1. Locate spacers directly opposite each other on both inside and outside faces of glass.
  - 2. Install correct size and spacing of spacers to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances.

3. Provide 1/8 inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- D. Inspect each piece of glass immediately prior to start of installation.
  1. Do not install items that are improperly sized, have damaged edges, or are scratched, abraded, or damaged in any other manner.
  2. Set glass so distortion waves, if present, run in horizontal direction.
  3. Set glass in a manner which produces greatest possible degree of uniformity in appearance
- E. Glaze steelwork with closed cell tape bedding and silicone sealant.
- F. Do not use 2 different glazing materials in same joint system.
- G. Miter-cut and seal joints of glazing gaskets in accordance with manufacturer's recommendations to provide watertight and airtight seal at corners and other locations where joints are required.
- H. Compress glazing tape or gaskets at least 25 percent of material thickness, with minimum finished thickness of 3/32 inch.
- I. Install fire-rated glazing in accordance with requirements of NFPA 80.

### 3.5 CLEANING AND PROTECTION

- A. Protect glass from damage after installation by attaching crossed streamers or ribbons to framing held free from glass. Do not apply markers to glass surface.
- B. Remove excessive glazing compound from glazing and adjacent surfaces without damaging glass or adjacent surfaces.
- C. Replace broken, cracked, scratched, or otherwise damaged glass.
- D. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter.
  1. Protect glass surfaces adjacent to or below exterior concrete and masonry surfaces from build up of dirt, scum, alkaline deposits, or stains.
- E. Remove nonpermanent labels and clean glass surfaces on both sides no more than four days before date of Substantial Completion.

### 3.6 GLASS PRODUCT SCHEDULE

- A. Glass Type GL-1 (Curtain Wall) : Insulating glass units complying with following requirements:
  1. Overall Unit Thickness: Minimum 25 mm (1 inch).
  2. Interspace Content: Argon.
  3. Uncoated Clear Indoor Lite: Class 1 (clear) float glass.
  4. Coated Clear Outdoor Lite: Condition C (other coated glass), Class 1 (clear) float glass.
  5. Low-Emissivity Coating: Sputter coat on second surface.

6. Performance Minimums: Basis-of-Design, PPG Solarban 70XL.
  - a. Daylight Transmittance: 64 percent minimum
  - b. Winter U-Value: 0.28 maximum
  - c. Solar Heat Gain Coefficient 0.27 maximum
- B. Glass Type GL-2 (Vinyl Window) : Insulating glass units complying with following requirements:
  1. Overall Unit Thickness: Minimum 25 mm (1 inch).
  2. Interspace Content: Argon.
  3. Uncoated Clear Indoor Lite: Class 1 (clear) float glass; 4mm thick lite.
  4. Coated Clear Outdoor Lite: Condition C (other coated glass), Class 1 (clear) float glass; 4mm thick lite.
  5. Low-Emissivity Coating: Sputter coat on second surface.
  6. Performance Minimums: Basis-of-Design, Viracon.
    - a. Daylight Transmittance: 54 percent minimum
    - b. Winter U-Value: 0.26 maximum
    - c. Solar Heat Gain Coefficient 0.28 maximum
    - d. Sound Transmission Rating 32 STC
- C. Glass Type GL-3 (Vinyl Window) : Insulating glass units complying with following requirements:
  1. Overall Unit Thickness: Minimum 25 mm (1 inch).
  2. Interspace Content: Argon.
  3. Uncoated Clear Indoor Lite: Class 1 (clear) float glass; 6mm thick lite.
  4. Coated Clear Outdoor Lite: Condition C (other coated glass), Class 1 (clear) float glass; 5 mm thick lite.
  5. Low-Emissivity Coating: Sputter coat on second surface.
  6. Performance Minimums: Basis-of-Design, Viracon.
    - a. Daylight Transmittance: 53 percent minimum
    - b. Winter U-Value: 0.26 maximum
    - c. Solar Heat Gain Coefficient 0.28 maximum
    - d. Sound Transmission Rating 37 STC
- D. Glass Type GL-4: Tempered, uncoated, single pane glass units complying with following requirements:
  1. Thickness of Lite: 6.0 mm.
  2. Kind FT (fully tempered), Condition A, (uncoated) Class 1 (clear) float glass.
- E. Glass Type GL-5: Multiple lite glass units complying with the following requirements:
  1. Fire-rated glass within a 90 minute labeled assembly for interior door applications with no radiant heat barrier requirement:
    - a. Technical Glass Products: FireLite Plus Premium Grade.
    - b. SaftiFirst: SuperLite X-90.
    - c. Vetrotech Saint-Gobain North America, Inc.: Keralite FR-L.
  2. Thickness of Lite:
    - a. FireLite Plus Premium Grade: 5/16 inch.
    - b. SuperLite X-90: 3/4 inch
    - c. Keralite FR-L: 5/16 inch.



- F. Glass Type GL-6: Multiple lite glass units complying with the following requirements:
1. Fire-rated glass within a 90 minute labeled assembly for interior door applications with radiant heat barrier requirement:
    - a. Technical Glass Products: Pilkington Pyrostop.
    - b. SaftiFirst: SuperLite II-XL 90.
    - c. Vetrotech Saint-Gobain North America, Inc.: Contraflam 90.
  2. Thickness of Lite:
    - a. Pilkington Pyrostop: 1-7/16 inch.
    - b. SuperLite II-XL 90: 1-1/2 inch.
    - c. Contraflam 90: 1-7/16 inch.

END OF SECTION



9750 SW Nimbus Avenue  
Beaverton, OR 97008-7172  
p | 503-641-3478 f | 503-644-8034

SCAN

August 30, 2017

5932 AUGERCAST PILE LTR

Home Forward  
135 SW Ash Street  
Portland, OR 97204

Attention: Julie Livingston

**SUBJECT: Augercast Pile Foundations  
NE Grand Avenue Affordable Housing  
1010 – 1034 NE Grand Avenue  
Portland, Oregon**

RECEIVED  
SEP 06 2017  
BDS  
DOCUMENT SERVICES

At the request of Jeff Diephuis with KPFF Consulting Engineers (KPFF), the project structural engineer, GRI reviewed the Site Development Checksheet prepared by the City of Portland Bureau of Development Services dated August 16, 2017, for permit application #17-204627-000-00-CO. The permit set plans were provided to GRI by Home Forward and are titled "Grand Avenue Apartments, 1010 NE Grand Ave. Portland, Oregon 97232, Permit Set – Volumes I and II" and dated July 14, 2017. GRI completed a geotechnical investigation for the project and the results of our investigation were provided to Home Forward in our March 9, 2017, report titled, "Geotechnical Investigation and Site-Specific Seismic Hazard Evaluation, NE Grand Avenue Affordable Housing, 1010 - 1034 NE Grand Avenue, Portland, Oregon." We understand the City of Portland Bureau of Development Services has included the following questions regarding the augercast piles planned for the project on their Site Development Checksheet for permit application #17-204627-000-00-CO:

- Item #2) "Please provide a construction specification for the continuous flight auger (CFA) piles, aka *auger-cast piles*. At a minimum, the specifications should include:
- CFA rig requirements (torque, size, min crowd, etc.)
  - Requirements for Automated Monitoring Control (elevation, drill rate, and grout feed).
  - Specifications for auger rotation and penetration rate.
  - Auger withdrawl requirements.
  - Reinforcing cage and installation requirements.
  - Re-drill requirements where obstructions or grout interruptions occur (*the code requires re-drill to 5-foot deeper than point of interruption*)
  - Offset requirement to adjoining "wet" piles (typically 6 diameters).
  - Grout/concrete requirements.
  - Pump and grout delivery requirements
  - QA/QC requirements.
  - Material testing requirements.

- Requirement for measuring grout/concrete volumes for each CFA (take vs. theoretical)."

- Item #3) "Please provide post-construction integrity testing of the CFA piles. Typical testing is between 10 and 20 percent. See 2007 FHWA manual for CFA piles."
- Item #4) "Please revise Sheet S501 and S502 to show a minimum CFA length of 45 feet. Page 8 of the geotechnical report indicates that the allowable design capacities are based on a minimum length of 45 feet."
- Item #7) "Please request that the geotechnical engineer clarify if the allowable CFA capacities shown on Page 8 of the geotechnical report can be applied to the CFA piles at the north core. The "basement" configuration of the north core places these CFAs below their first-floor counterparts, thus making a shorter CFA shaft relative to the target bearing layer. It's unclear if the geotechnical engineer would otherwise reduce the shaft capacities for "basement-located" CFAs to accommodate some loss in length and friction resistance to the bearing layer."

## RESPONSES

**Item #2.** As requested in Item #2 of the Site Development Checksheet, GRI has prepared construction specifications for the augercast piles, which are provided as an attachment to this document. The specifications address the items listed above and, in our opinion, satisfy the intent of Section 107.2 of the 2014 Oregon Structural Specialty Code (OSSC).

**Item #3 and #4.** GRI reviewed the permit set plans in order to respond to Items #3 and #4 of the Site Development Checksheet. For Item #3, Section 1810 of the 2014 OSSC requires load testing of deep foundation elements when the design compressive capacity exceeds the allowable stresses provided in Table 1810.3.2.6. Augercast piles are cast-in-place without a permanent casing, and per Table 1810.3.2.6, the maximum allowable stress in the pile cannot exceed 30% of the compressive strength of the concrete without completing a load test. The maximum allowable compressive capacities provided in our geotechnical report for 30- and 36-in.-diameter augercast piles are 950 and 1,300 kips, respectively. Based on the allowable capacities and pile diameters, a concrete compressive strength of 4,500 psi is required for the piles to satisfy Table 1810.3.2.6. Following our review, the structural engineer modified Sheets S501 and S502 of the permit set to specify 4,500 psi concrete for the piles. In our opinion, based on our experience with similar projects in the Portland area and review of the 2014 OSSC, load testing of the piles is not required if the compressive strength of the concrete is at least 4,500 psi; therefore, we request the City omit Item #3 of the Site Development Checksheet.

In addition, as requested in Item #4 of the Site Development Checksheet, the structural engineer modified Sheets S501 and S502 of the permit set to specify minimum augercast pile lengths of 35 and 45 ft for piles installed in the basement and at-grade, respectively. In our opinion, the minimum pile lengths listed above are consistent with the recommendations provided in our geotechnical report.

**Item #7.** The augercast piles will develop the majority of their capacity through skin friction and end bearing resistance in the gravel and sand deposits that underlie the site. The allowable capacities provided in our geotechnical report were based on the pile tops being embedded a minimum of 5 ft below existing site grade and are a function of embedment into the dense to very dense upper gravel, sand, and lower

gravel layers. GRI understands the basement excavation will generally be on the order of 12 ft below existing grade, with the elevator core extending about 20 ft below existing grade.

As requested in Item #7 of the Site Development Checksheet, GRI reviewed Sheet S200 of the permit set to determine the locations and configuration of the piles supporting the basement and elevator core. Our review indicates a total of six piles will be installed in the middle of the basement/elevator core excavation where the decrease in overburden stress will affect the pile capacities the most. Each of the six piles will be embedded a minimum of 5 ft into the lower gravel layer, where the majority of the pile capacity will be developed. We estimate the overburden stress in the gravel bearing layer will be about 95% of the initial overburden stress due to the basement/elevator core excavation. In our opinion, based on the relatively minor overburden stress decrease in the gravel bearing layer, the design criteria provided in our geotechnical report are appropriate for the basement and elevator core piles.

This letter has been prepared to aid the project team in the design and construction of this project and should be considered an addendum to our March 9, 2017, report and subject to the limitations stated therein. Please contact the undersigned if you have any questions or require additional information.

Submitted for GRI,



Renews 06/2018

A. Wesley Spang, PhD, PE, GE  
Principal

A handwritten signature in black ink, appearing to read "Nicholas M. Hatch".

Nicholas M. Hatch, PE  
Project Engineer

**Enclosures:** August 16, 2017, Site Development Checksheet  
Augercast Pile Specifications

This document has been submitted electronically.





**City of Portland, Oregon**  
**Bureau of Development Services**  
**Site Development**  
**FROM CONCEPT TO CONSTRUCTION**

Chloe Eudaly, Commissioner  
Rebecca Esau, Interim Director  
Phone: (503) 823-6892  
Fax: (503) 823-5433  
TTY: (503) 823-6868  
[www.portlandoregon.gov/bds](http://www.portlandoregon.gov/bds)

**SITE DEVELOPMENT CHECKSHEET**

Application #: **17-204627-000-00-CO**

Review Date: August 16, 2017

To:	APPLICANT	<b>MICHAEL STANNER</b> <b>LRS ARCHITECTS</b> <b>720 NW DAVIS STREET SUITE</b> <b>300</b> <b>PORTLAND OR 97209</b>	Work 503 211-1121 Fax 503 - Email <a href="mailto:MSTANNER@LRSARCHITECTS.COM">MSTANNER@LRSARCHITECTS.COM</a>
From:	GEOTECHNICAL ENGINEER	<b>KEVIN WELLS</b>	Phone 503-823-5618 Fax 503-823-5433 e-mail <a href="mailto:Kevin.Wells@portlandoregon.gov">Kevin.Wells@portlandoregon.gov</a>
Cc:	OWNER	<b>PORTLAND CITY OF (PORTLAND &amp; HOUSING BUREAU</b> <b>421 SW 6TH AVE #500</b> <b>PORTLAND, OR 97204-1620</b>	

**PROJECT INFORMATION**

Street Address:	<b>515 NE HOLLADAY ST</b>
Description of Work:	<b>NEW 12-STORY MIXED USE BUILDING; 240 APARTMENT UNITS WITH GROUND FLOOR RETAIL; BASEMENT FOR BIKE PARKING</b>

**PLAN REVIEW**

Based on the plans and specifications submitted, the following items appear to be missing or not in conformance with the Oregon Structural Specialty Code, Oregon One and Two Family Dwelling Specialty Code and/or other city, state, or federal requirements.

Item #	Location on plans	Code Section	Clarification / Correction Required
1	na	Title 24.20	Special inspection will be required for this permit. Please complete Part C of the attached <i>Soils Special Inspections</i> form. Please return the completed form either in person at 1900 SW 4 <sup>th</sup> Ave, by fax to (503) 823-4172 or by email to <a href="mailto:specialinspectionschecksheets@portlandoregon.gov">specialinspectionschecksheets@portlandoregon.gov</a> .  <b>The project owner shall provide a copy of this checksheet to the soils inspector.</b>
2	TBD	OSSC 107.2	Please provide a construction specification for the continuous flight auger (CFA) piles, <i>aka auger-cast piles</i> . At a minimum, the specifications should include: <ul style="list-style-type: none"><li>• CFA rig requirements (torque, size, min crowd, etc.)</li><li>• Requirements for Automated Monitoring Control (elevation, drill rate, and grout feed).</li><li>• Specifications for auger rotation and penetration rate.</li><li>• Auger withdrawal requirements.</li><li>• Reinforcing cage and installation requirements.</li><li>• Re-drill requirements where obstructions or grout interruptions occur (<i>the code requires re-drill to 5-foot deeper than point of interruption</i>)</li></ul>

# SITE DEVELOPMENT CHECKSHEET

Application # 17-204627-000-00-CO

Review Date: August 16, 2017

			<ul style="list-style-type: none"> <li>• Offset requirement to adjoining "wet" piles (typically 6 diameters).</li> <li>• Grout/concrete requirements.</li> <li>• Pump and grout delivery requirements</li> <li>• QA/QC requirements.</li> <li>• Material testing requirements.</li> <li>• Requirement for measuring grout/concrete volumes for each CFA (take vs. theoretical).</li> </ul>
3	TBD	OSSC 1810.3.3, 1810.3.3.1.2, Title 24.20	Please provide post-construction integrity testing of the CFA piles. Typical testing is between 10 and 20 percent. See 2007 FHWA manual for CFA piles.
4	S501, S502	OSSC 107.2, 1810.1	Please revise Sheet S501 and S502 to show a minimum CFA length of 45 feet. Page 8 of the geotechnical report indicates that the allowable design capacities are based on a minimum length of 45 feet.
5	Structural Calcs	OSSC 1810.2.4	Please clarify if P-modifiers were used in the L-pile analysis to accommodate group effects where piles (at the cores) have less than 6D center-to-center spacing. If not, please revise the lateral analysis in accordance with the recommendations of the geotechnical engineer.
6	Structural Calcs	OSSC 107.2, 1810.3.3.1.5	Please clarify the uplift loads on the North Core and South Core CFAs as shown on Sheets 127 through 129 of the structural calculations. It appears the uplift load, $P_{min}$ , for certain CFAs exceeds the allowable uplift capacity of 800 kips. $P_{min}$ for CFAs 1,3,6, and 8 is over 800 kips (uplift) in several cases.
7	Geo Report	OSSC 1810.3.3	Please request that the geotechnical engineer clarify if the allowable CFA capacities shown on Page 8 of the geotechnical report can be applied to the CFA piles at the north core. The "basement" configuration of the north core places these CFAs below their first-floor counterparts, thus making a shorter CFA shaft relative to the target bearing layer. It's unclear if the geotechnical engineer would otherwise reduce the shaft capacities for "basement-located" CFAs to accommodate some loss in length and friction resistance to the bearing layer.
8	S501, S502	OSSC 1810.3.9.4.2	Please clarify or revise the length of the longitudinal bars in the CFA piles. The details on Sheets S501 and S502 show the minimum length as $L/2$ . However, the controlling condition (for short piles) appears to be the length at which the induced moment in the pile is below the cracked section modulus. See OSSC 1810.3.9.4.2.
9	S501, S502	OSSC 1810.3.9.4.2	<p>The steel reinforcement of the "non-core" CFA piles appears to be at the code minimum and without consideration for lateral displacements experienced during ground shaking. Please evaluate the lateral capacity for the CFA piles outside the north and south cores based on an estimated pile displacement. Also provide an L-pile analysis for these piles showing estimated deflections, shears, and moments induced along the pile. The analysis should confirm that the non-core CFA piles maintain sufficient ductility throughout ground shaking and maintain a vertical load path after shaking ceases (that does not otherwise result in building collapse). To the degree that the "code minimum" reinforcement shown on Sheets S501 and S502 provides this function is unknown.</p> <p><u>Discussion:</u> Site Development is aware that the OSSC is somewhat vague with regard to reinforcing requirements for drilled shafts (subject to displacement) when compared to code requirements for columns subject to drift. Nonetheless, the design team should be aware that CFA piles outside the two cores will displace laterally since all CFAs are tied together as a "fixed" foundation (as these piles are pushed/dragged with the core during ground shaking). Although some transfer loss may be realized in the actual displacement, Site Development anticipates these non-core CFA piles will be roughly strain compatible with the core.</p> <p>Site Development suggests discussing soil-structure interaction effects and</p>

**SITE DEVELOPMENT CHECKSHEET**

Application # 17-204627-000-00-CO

Review Date: August 16, 2017

			<p>foundation displacements with the geotechnical engineer. Site Development also suggests reviewing Section 8.4 of ASCE 41-13 for helpful methods of analysis.</p> <p>The design team should consider lateral analyses for both fix-head and free-head conditions at the cap. The design team should also consider the importance of maintaining foundation ductility within a few diameters of the cap and when/where plastic deformation occurs under seismic loads. If some energy dissipation is anticipated due to yielding at the pile/cap connection, which could otherwise reduce lateral displacement, this condition should be reasonably explained with supporting analyses, and show that a vertical load path is maintained.</p>
10	SH2	OSSC 3307.1	<p>Please indicate the following on Sheet SH2 of the shoring drawings:</p> <ul style="list-style-type: none"><li>• Tie-back anchors shall not cross the property line.</li><li>• The installation of tie-back anchors shall not adversely impact adjoining property.</li></ul>
11	Shoring Calcs	OSS 3307.1, 107.2	<p>Please revise the shoring calculations for the 15-foot cantilever wall along the west side of the property as follows:</p> <ul style="list-style-type: none"><li>• Revise the "auger diameter" shown on Sheet 8 of the calculations from 2.5 to 2 feet to reflect the diameter shown on the plans.</li><li>• Revise the embedment shown on the plans to accommodate the above revised calculations.</li></ul>
12	TBD	Title 10	<p><b>Erosion Control Plan Required</b></p> <p>An erosion control plan was not located in the drawings submitted for permit. Please revise the drawings to include an erosion control plan prepared in accordance with the City of Portland Erosion Control Manual. The plan should identify the location of the following erosion control measures:</p> <ul style="list-style-type: none"><li>• Sediment retention (silt fencing) downslope of ground disturbing activities. (</li><li>• Inlet protection downslope of ground disturbing activities.</li><li>• Covered material stockpiles.</li><li>• Gravel construction entrance.</li><li>• 24-hour erosion control contact (name and phone number).</li></ul> <p>The Erosion Control Manual is available on line at <a href="http://www.portlandonline.com/shared/cfm/image.cfm?id=94539">http://www.portlandonline.com/shared/cfm/image.cfm?id=94539</a> (Applications/Handouts tab.)</p>

**INSTRUCTIONS**

To respond to this checksheet, come to the Bureau of Development Services located at 1900 SW Fourth Ave. The Development Service Center (1st floor) and Permitting Services (2nd floor) are open Monday through Friday from 8:00 a.m. to 3:00 p.m. (close at noon on Thursday). Please update all sets of submitted drawings by either replacing the original sheets with new sheets, or editing the originally submitted sheets. You can review "How to Update Your Plans in Response to a Checksheat" at <http://www.portlandoregon.gov/bds/article/93028> Visit the BDS website for more helpful information and a current listing of services available in the Development Services Center.

Please complete the attached Checksheat Response Form and include it with your re-submittal.

## SITE DEVELOPMENT CHECKSHEET

Application # 17-204627-000-00-CO

Review Date: August 16, 2017

If you have specific questions concerning this Checksheet, please call me at the phone number listed above. To check the status of your project, go to <http://www.portlandonline.com/bds/index.cfm?c=34194>. Or, you may request the status to be faxed to you by calling 503-823-7000 and selecting option 4.

You may receive separate Checksheets from other City agencies that will require separate responses.

**NEW RECHECK FEE:** Please note that for plans submitted on or after July 1, 2010 plan review fees for Life Safety, Structural, Site Development and Planning and Zoning will cover the initial review and up to two checksheets and the reviews of the applicant's responses to those checksheets. All additional checksheets and reviews of applicant responses will be charged \$175.00 per checksheet.

**Appeals:** Pursuant to City Code Chapters 24.10, 25.07, 26.03, 27.02, and 28.03, you may appeal any code provision cited in this Checksheet to the BDS Administrative Board of Appeal within 180 calendar days of the review date. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to [www.portlandoregon.gov/bds/appeals](http://www.portlandoregon.gov/bds/appeals), call (503) 823-7300 or come in to the Development Services Center. Permit application expiration will not be extended pending resolution of any administrative appeal.





# Wells, K. *Scan*

## Site Development Checksheet Response

*Erosion Control*

Permit #: 17-204627-000-00-CO

Date: 09.05.2017

Customer name and phone number: Michael Stanner 503.265.1555

Note: Please number each change in the '#' column. Use as many lines as necessary to describe your changes. Indicate which reviewer's checksheet you are responding to and the item your change addresses. If the item is not in response to a checksheet, write **customer** in the last column.

#	Description of changes, revisions, additions, etc.	Checksheet and Item #
1	Soils Special Inspection form is attached.	Form - attachment
2	GRI provided a construction specification for the continuous flight auger (CFA) piles. Reference the attached memo from GRI dated 08.30.2017 and associated specification section 31 6313 Augercast Grout Piles.	Memo - attachment Spec: 31 6313
3	For response to item 3, please reference the attached memo from GRI dated 08.30.2017.	Memo - attachment
4	For response to item 4, please reference the attached memo from GRI dated 08.30.2017. Additionally the structural sheets were updated, please reference the attached memo from KPFF dated 08.30.2017.	Memo - attachments
5	For response to item 5, please reference the attached memo from KPFF dated 08.30.2017.	Memo - attachment
6	For response to item 6, please reference the attached memo from KPFF dated 08.30.2017.	Memo - attachment
7	For response to item 7, please reference the attached memo from GRI dated 08.30.2017.	Memo - attachment
8	For response to item 8, please reference the attached memo from KPFF dated 08.30.2017.	Memo - attachment
9	For response to item 9, please reference the attached memo from KPFF dated 08.30.2017.	Memo - attachment
10	For response to item 10, please reference the attached memo from BergerABAM dated 08.28.2017.	Memo - attachment Shoring - SH2
11	For response to item 11, please reference the attached memo from BergerABAM dated 08.28.2017.	Memo - attachment Shoring - SH4
12	Please refer to sheets C1.0 and C3.0 for erosion control measures proposed for the existing conditions and proposed conditions of the site.	Civil - C1.0 & C3.0

(For office use only)

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## **AUGERCAST PILES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This document specifies the minimum requirements for the installation and testing of Augercast piles.

#### **1.2 SYSTEM DESCRIPTION**

- A. Contractor's scope of work consists of furnishing all labor, equipment, tools, supervision, supplies, and transportation required to install foundation piling with embedded reinforcing for the structure.
- B. Pile type and design loads are as follows:
  - 1. Augercast Piles. Diameter and length of piles to be as shown on design drawings.

#### **1.3 SUBMITTALS**

- A. Submit detailed information about installation procedures and the proposed grout mix to Owner's Representative at least three weeks prior to pile installation.
- B. The information shall include:
  - 1. Mix proportions and evidence that proposed mix provides adequate strength and uniform consistency of grout either from a currently prepared mix design for this Contract with documented 28-day breaks or from previous construction test records using the same concrete supplier and mix proportion.
  - 2. Type, manufacturer, and chemical composition of cement.
  - 3. Type, manufacturer or source, and purpose of admixtures.
  - 4. Gradation, fineness modulus, and source of fine aggregates.
  - 5. Certification of grout mix materials to be in compliance with "Applicable Standards, including cement, aggregate, and all admixtures.
  - 6. Type of equipment, capacities of grout pump equipment and proposed method of pile installation.
- B. Submit to Owner's Representative a record of each pile placed including, but not limited to:
  - 1. Name of structure or reference location.
  - 2. Pile cap number.
  - 3. Pile number.



4. Pile length cast.
5. Elevation of pile tip.
6. Date and time of grouting.
7. Amount of grout used.
8. Grout head at surface.
9. Reinforcing steel installed.
10. Description of subsoils penetrated.
11. Bearing strata encountered.
12. Nature and location of obstructions, if encountered.
13. Remarks concerning installation of pile.

#### 1.4 QUALITY ASSURANCE

- A. Owner's Geotechnical Engineer will monitor drilling and installation operations and will observe and record piling lengths, injection pressure, and grout volume for each pile. Owner's Geotechnical Engineer shall immediately notify Owner's Representative of any pile not meeting specification.
- B. Installer qualifications:
  1. The Augercast Pile Contractor and Contractor's Site Foreman shall have not less than five years experience in augercast pile construction, including experience with similar subsurface materials, water conditions, pile sizes, and special techniques required. Contractor shall have appropriate equipment to perform the work.

#### 1.5 PROJECT/SITE CONDITIONS

- A. Site Information
  1. Data on the subsurface conditions may be obtained by referencing the geotechnical engineering report for the project. A copy of this report can be obtained from the Owner's Representative.
  2. Data on subsurface conditions are not intended as representations or warranties of continuity of such conditions. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn there from by the Contractor. Data are made available for convenience of the Contractor and are not guaranteed to represent conditions that may be encountered.

**B. Existing Utilities**

1. Should uncharted utilities be encountered during drilling, consult Owner immediately for directions as to proceed. Cooperate with Owner in keeping services and facilities in operation. Repair damaged utilities to satisfaction of Owner.
2. Do not interrupt existing utilities except when permitted in writing by Owner and acceptable temporary utilities services have been provided.

**1.6 MEASUREMENT PROCEDURES**

- A. A unit price for adding or deducting installed piles should be outlined in the bid. Pay length per lineal foot shall be defined as that length of pile measured from the pile tip elevation to the cutoff elevation indicated, to within the nearest 1.0 foot.
- B. Include for payment only the piles meeting the requirements of these Specifications. Do not include waste, broken, withdrawn, misplaced, or rejected piles that do not meet the Specifications. In case more than one pile is required to replace a rejected pile, do not include the additional pile or piles beyond the one originally indicated.

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. Portland Cement: Type I or II conforming to ASTM C 150.
- B. Fly Ash: If fly ash is used, it shall meet the requirements of ASTM C618, Type F.
- C. Grouting Agent: Use a grouting agent (fluidizer) that will reduce the mixing water requirements of the cement mortar, retard the setting time, decrease bleeding, eliminate setting shrinkage, increase fluidity, and conform to ASTM C 494.
- D. Water: Use fresh clean water free from injurious amounts of sewage, oil, acid, alkali, and organic matter.
- E. Fine Aggregate:
  1. Meet the requirements of ASTM C33.
  2. Consist of clean, natural sand or of hard, dense, durable, uncoated rock particles and be free from injurious amounts of silt loam, lumps, soft or flaky particles, shale, alkali organic matter, mica, and other deleterious substances.
  3. Be well graded from coarse to fine, with a fineness modulus between 1.40 and 3.40.
- F. Reinforcing Steel: Deformed billet steel bars conforming to requirements of ASTM A 615, Grade 60, unless otherwise indicated on the drawings.

## 2.2 MIXES

- A. Cement-based grout: Consist of the following mixture so proportioned to produce a hardened mortar with a compressive strength in 28 days of 4,500 psi., unless otherwise indicated on the drawings.

## PART 3 – EXECUTION

### 3.1 PREPARATION

- A. Contractor shall engage the services of a licensed land surveyor to establish the proper location of all piles. Piles shall be located and constructed as shown on the Drawings to accuracy as defined in this specification and as indicated on the drawings.
- B. Mixing
  - 1. Mix the cement grout with approved equipment and accurately measure all materials by volume or weight. Rotate mixing drum 25 revolutions following placement of grouting agent or additives in the field, in order to provide proper mixing of grout.
  - 2. Mixing time shall not be less than one minute. Mix to a homogenous grout having a consistency ranging between 16 and 35 seconds when tested with a flow cone in accordance with ASTM C 939. Provide flow cone and perform flow cone test at least once for each truck load of grout or as otherwise directed by Owner's Representative.
  - 3. The grout shall have a maximum temperature during placement of 95 °F. Place grout within 60 minutes after mixing. This period may be extended to 1 hour and 30 minutes or longer as approved by Owner's Representative
- C. Pumping
  - 1. Use approved pumping equipment having a screen no larger than 3/8-inch mesh between mixer and pump and having a working pressure gauge in clear view of the operator.
  - 2. Perform calibration of the pump in the field prior to installation of piles with Owner's Representative present to observe.
  - 3. Calibrate pump by placing grout into the hopper and pump through the line into a large container of known volume; i.e., a barrel or 55-gallon drum.
  - 4. Perform similar calibration of the pump stroke rate at Owner's Representative request if Contractor changes or varies equipment, or should volumes of grout calculated during grout placement become suspect due to variations in calculated quantities or missing complete strokes.

### 3.2 INSTALLATION

- A. Place the pile using a continuous helical flight, hollow-shaft auger drilled to the specified pile tip elevation or penetration. Do not withdraw auger prior to drilling to scheduled pile tip elevation. Place piles without excessive duration or delay in one continuous operation to the required cutoff elevation, so as to preclude the possibility of grout setting up prior to the completion of pile placement or cold joints forming in the pile.

- B. Install with a leads system restrained from rapid twisting rotation, movement, or shifting while drilling with a rigid bar attachment or fixed leads to the crane, and also provide a series of penetrating feet at the base of the leads section to prevent walking.
- C. Use of pressure injection during drilling with water and/or compressed air will not be permitted without prior approval from Owner's Representative.
- D. Pump the cement-based grout through the hollow auger shaft as the auger is withdrawn.
- E. Maintain a positive head of not less than 10 feet of grout above the tip of the auger at all times as the auger is withdrawn.
- F. Upon drilling to scheduled tip elevation, reduce the rate of rotation, then carefully and slowly withdraw auger to preclude the possibility of earth or mud caving into the hole. If the auger is raised by a sudden jerk for any appreciable distance, redrill the hole to the original tip elevation and restart the grout operation.
- G. If calculated quantities of grout volume placed are less than 110 percent of the theoretical volume calculated as necessary to complete the pile in place, then redrill the hole, to the original tip elevation and restart grouting operation.
- H. Volume of grout placed will be calculated according to pump calibration as described in Pumping, see section 3.1.C.
- I. Do not permit counter rotation of the auger as the auger is withdrawn.
- J. Equipment or materials made of aluminum shall not be used to transport, convey, form, or place grout.
- K. Do not install piles within six pile diameters of freshly placed piles until 24 hours have elapsed from time of placement or until the freshly placed piles have hardened sufficiently as to preclude the possibility of hydrostatic head causing the grout to break through to the hole being drilled. Because of potential variations in site conditions that may exist both in lateral extent and vertical depth, Contractor shall be responsible for determining:
  - 1. The time at which piles have hardened sufficiently if less than 24 hours, and
  - 2. The minimum acceptable radial distance to which a new pile can be placed within the near vicinity to freshly placed, hardened piles.
- L. The acceptable radial distance, whether to an immediately adjacent pile or pile in close proximity, shall not under any circumstances be less than 10 feet in a radial distance from the center line of freshly placed piles.
- M. If a freshly placed pile breaks through to the hole being drilled, regardless of time for curing or radial distance, the freshly placed pile breaking through will be rejected immediately, and Contractor shall be responsible for replacement of the rejected pile along with the following:
  - 1. The hole being drilled shall be completed,
  - 2. The pile to break through shall be brought back up to grade with either fresh grout or fine sand, at Owner's Representative direction; and



- 3 The reinforcing steel shall either be left in place or shall be removed and salvaged, at the Owner's Representative direction.
- N. Any concentrated loads from equipment must be distributed to prevent compressing or shearing the soil in the top area of the piles. Concentrated loads must be kept at least 8 feet away from the pile until final set of the grout has occurred.
- O. In the event non-augerable material is encountered, remove the obstruction and complete the pile or install a short pile and place another pile in a location as directed by Owner's Representative.
- P. Prevent all debris and foreign material from falling into fresh mortar.
- Q. Provide hot weather protection of grout mix and installation equipment during placement, and fresh grout during curing in conformance with ACI 305, or as directed by Owner's Representative.
- R. Provide cold weather protection to grout mix and installation equipment during placement to prevent installation of frozen grout in accordance with ACI 306.
- S. Reinforcing Steel Placement
1. Place as indicated with appropriate spacing and clearances. Provide spacers to maintain appropriate clearance from walls.
  2. Do not position the reinforcing steel in the pile until the reinforcing steel assembly has been inspected by Owner's Representative.
  3. Clean reinforcing steel of all foreign matter including oil prior to placement into pile.
  4. Immediately after placement, secure the reinforcing steel, adequately support, and protect from all construction activity until the grout has sufficiently hardened.
  5. Reinforcing steel shall not be forced to the design elevation by excessive impact loading or by more than 500 lbs of dead weight. The use of mechanized equipment (front-end loader bucket, bobcat, etc.) is not permitted to push the reinforcing steel. The method of reinforcement steel placement shall not cause the potential for tie steel displacement. If reinforcing steel cannot be readily placed to the design elevation with reasonable effort, in the opinion of the Owner's Representative, the pile shall be redrilled full length and regouted.

### 3.3 CONSTRUCTION

#### A. Pile Penetration

1. Pile tips shall penetrate to depth or elevation shown on drawings or as directed by Owner's Geotechnical Engineer.
2. In the event of dispute concerning bearing materials and only when requested by Owner's Representative, withdraw the auger to permit visual inspection of auger cuttings and auger tip.

3. Upon visual examination of the cuttings at the intended pile tip elevation, extend, terminate, or adjust pile penetration as required by Owner's Representative.

#### B. Cutoff

1. At Contractor's option, terminate the piles at the cutoff elevation or extend to the ground surface to be cut off after final set of grout and the excavation for the pile cap has been made.
2. Cut off piles by methods that will not damage the reinforcing steel and/or the pile portion left in place.
3. If excavation around the piles is required to achieve pile cutoff, remove and dispose of the excavated material as directed by Owner's Representative.
4. If pile installation requires placement of pile cutoff elevation above the ground surface, use temporary steel casing, round fiber column form, Sonotube, or other formwork to extend the pile cutoff.
5. Steel casing, round fiber column form, Sonotube, or formwork shall be:
  - a. Of a minimum inside diameter equal to the nominal diameter of the pile.
  - b. Of sufficient thickness and stiffness to restrain it from excessive deformation during grout placement and to provide adequate support to the entire required grout column during curing.
  - c. Contractor shall be responsible for structural adequacy of steel casing, round fiber column form, Sonotube, or formwork.

#### C. Installation Tolerance

1. Piles shall not exceed a variation from the vertical more than 1/4 inch per foot of pile length.
2. The center of the pile head shall not vary from plan location at cutoff by more than 3 inches.
3. Acceptable tolerance of top of pile from indicated cutoff elevation shall not be more than 1/2 inch. Contractor may elect to trim piles to cutoff elevation after the pile cap is excavated.
4. Acceptable tolerance of steel reinforcement from that indicated shall not be more than 1/2 inch.

### 3.4 FIELD QUALITY CONTROL

#### A. Cement Grout Compression Tests

- B. A qualified and independent testing laboratory will be retained and compensated by the Owner to perform required grout compression tests. Provide test reports promptly to Owner's Representative.

1. Obtain and furnish cube molds of 2 inches x 2 inches x 2 inches for testing in accordance with the provisions of ASTM C 109. Store and cure samples in accordance with ASTM standards.
2. Furnish to the testing laboratory 6 test cubes for each 24 cubic yards of grout placed, with a minimum of 6 cubes for each day's placement; if less than 24 cubic yards are placed in a day. Owner's Representative may revise this frequency of obtaining and furnishing grout cubes throughout course of construction contingent upon Contractor providing substantiated evidence of adequate strength and uniform consistency of grout.
3. Evidence may consist of either previous job performance records and submittals by the grout Contractor or statistical demonstration of grout strength based upon laboratory test results from piles installed during construction,
4. Two cubes shall be tested in compression at 7 days and 28 days, and two retained for testing at 56 days, if the need is so determined.

### 3.5 CLEANING

- A. Contractor to remove waste reinforcing steel, grout, augered subsurface materials, and excavated materials to achieve pile cutoff elevation and dispose of off site.

END OF SECTION



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241 SOUTH LANDER ST, SUITE 200  
SEATTLE, WA 98134  
(206) 792-7796  
www.a3acoustics.com

August 29, 2017

Calista Fitzgerald  
LRS Architects  
720 NW Davis, Suite 300  
Portland, OR 97209

*Predicted Acoustic Performance for the Grand Avenue Apartments Corridor Wall*

Dear Ms. Fitzgerald,

This letter presents the results from our acoustic analysis of the wall and door to show compliance with the City of Portland Building Code performance for the Grand Avenue Apartments to be located at 1010 NE Grand Ave in Portland, Oregon. The airborne sound transmission performance has been evaluated for the proposed wall and doors for the residences.

## II. Performance Standards

### City of Portland Building Code

The City of Portland Development Services Center states that common wall and floor/ceiling assemblies between adjacent units and between dwelling units and adjacent public areas such as halls, corridors, stairs, or services areas have a minimum Sound Transmission Class (STC) of 50 and floor-ceiling assemblies also have a minimum Impact Insulation Class (IIC) of 50.

The designer has three options for documenting required STC and IIC ratings:

1. Detail listed and approved STC and IIC assemblies on the plans from approved list of published assemblies, noted [here](#).
2. Obtain approval from Administrative Appeal Board for an alternative assembly. To be approved, the Appeal must include a detail of the proposed assembly, and an analysis stamped by a qualified state of Oregon licensed professional that concludes that the proposed assembly will provide the required STC and IIC ratings.
3. Specify an assembly to be Field Tested. Be aware there is a risk that an assembly can fail the field test, and require modifications after the building is finished.

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## International Building Code (IBC)

### Section 1207 – Sound Transmission

**1207.1 Scope.** This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent dwelling units or between dwelling units and adjacent public areas such as hall, corridors, stairs and service areas.

**1207.2 Air-borne sound.** Walls, partitions, and floor/ceiling assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.

**1207.3 Structure-borne sound.** Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area within the structure shall have an impact insulation class (IIC) rating of not less than 50 (45 if field tested) when tested in accordance with ASTM E 492.

These ASTM standards are the laboratory equivalent of the field tests conducted for finished assemblies.

### III. Predicted Acoustical Performance

The following proposed corridor wall assembly with a door was evaluated with respect to air-borne sound.

The IBC Code section 1207.2, which the City of Portland adopts for Air-borne and Structure-borne sound, states that the STC 50 “requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.”

The proposed entrance doors into the apartments at Grand Avenue Apartments include solid core doors with full jamb gasket seals and a threshold seal to maximize the sound isolation for the entrance door. Most tight fitting solid-core doors with full seals will have an airborne-sound transmission performance of STC 28 to STC 32. Due to the size of the door, over 20 square feet, of the total wall area, which for the larger kitchens is approximately 125 square feet. The acoustic effectiveness of the door limits the overall performance. The table below outlines the estimated field-tested sound transmission performance with an STC 30 door and an STC 45 wall (as shown in drawings), and STC 50 wall (as noted for other walls to satisfy code) using composite Sound Transmission Class (cSTC) calculations.

STC of Door (20 sq ft)	STC of Wall (100 sq ft)	Composite STC
STC 30	STC 45	cSTC 37
STC 30	STC 50	cSTC 37

Due to the limited acoustic performance of the door increasing the acoustic performance of the wall directly adjacent to that door does not improve the perceived or measured sound transmission performance. The project and residents will not benefit for additional improvements or alterations to the wall containing the door because the air-borne sound transmission performance of the door dominates the acoustic performance.

#### IV. Conclusion

The proposed corridor wall assembly with a door is exempt from the STC 50 due to the acoustical limits of the doors performance and that the IBC notes this requirement shall not apply to entrance doors.

Please contact us if you have any questions or for additional information.

Sincerely,

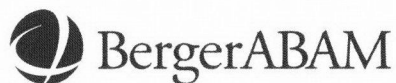


Erik Miller-Klein, P.E., INCE Bd. Cert.  
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RENEWAL DATE: 12/31/2018



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## Job Memorandum

**To:** Michael Zeman **Date:** August 28, 2017

**Firm:** Pacific Foundation **Project:** Grand Ave Apartments

**Address:** 7206 NE 47th Ave **Our Project No.:** A17.0241.00  
Vancouver, WA 98661 **Your Project No.:** \_\_\_\_\_

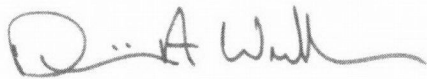
**Basis:** ☐ Telephone ☐ Conference ☐ Observation ☒ Other \_\_\_\_\_

**Subject:** Application #17-204627.000.00.CO Structural Checksheet Response

The following are responses to the City of Portland Structural plan review performed by David Tarries, dated August 15, 2017. The responses pertain to the plan review items that are within our design scope:

20. Table 12. "Recommended thickness of temporary timber lagging" is from FHWA-IF-99-015 Geotechnical Circular No. 4 Ground Anchor Systems and is the current design information. Because the wall is well below the 60 ft (18 m) recommended depth to use the 4" lagging, construction grade lumber should be considered adequate. The lagging notes are updated to indicate construction grade lumber is required.
21. Please see attached spreadsheet breakdown. This spreadsheet has been successfully used in permitting multiple temporary shoring projects in the City of Portland over the past several years.
22. The vertical pressure of 200 psf referenced in GRI's figure 5 corresponds to a 60psf horizontal load ( $200 \times K_a$ ). This is less than the 100 psf used in design. The surcharge load was not disregarded. Temporary shoring is not required to resist seismic loads.
23. Please see attached spreadsheet breakdown. This spreadsheet has been successfully used in permitting multiple temporary shoring projects in the City of Portland over the past several years.
24. The vertical pressure of 200 psf referenced in GRI's figure 6 corresponds to a 60psf horizontal load ( $200 \times K_a$ ). This is less than the 100 psf used in design. The surcharge load was not disregarded. Temporary shoring is not required to resist seismic loads.
25. Per FHWA NHI-05-039 section 5.5.3, the bond between cement grout and smooth steel is 145 to 254 psi. The surface area of a W16x50 is 4.33 ft<sup>2</sup>/ft (624 in<sup>2</sup>/ft). The lower bound bond is 145 psi x 624 in<sup>2</sup>/ft = 90,480 lb/ft >> 6.3 klf.

26. It is demonstrated on page 15 of the calculations that the surcharge from the streetcar is less than the construction surcharge used for the design of the temporary shoring. No additional calculations are needed.



Prepared by: Dominic Webber



**State of Oregon**  
**Form OSSC 915**  
**Emergency Responder Radio Coverage (ERRC) Checklist**

For use to determine compliance with 2014 OSSC 403.4.5 and 915.

SCAN

This checklist provides the minimum necessary required information and shall be provided to the local Building Code Official at time of building permit application where a proposed new building meets any one of the following criteria established by the state building code:

1. Any building with one or more basement or below-grade building levels (OSSC 915).
2. Any underground building (OSSC 915).
3. Any building more than five stories in height (OSSC 915).
4. Any building 50,000 square feet in size or larger (OSSC 915).
5. Any building regulated as a high-rise under OSSC 403.1 (OSSC 403.4.5).

**Part I Project Information** (to be completed by permit applicant or representative)

**Applicant or representative name:** Michael Stanner **Phone number:** 503.265.1555

**Project name:** Grand Avenue Apartments

**Address / location:** 1010 NE Grand Avenue / between cross streets NE Hassalo & NE Holladay Streets

**Building height:** 134' (12 stories) **Construction type:** I-A

**Number of floors below grade:** 1 **Number of floors above grade:** 12 **Building square footage:** 177,155 sf

**Acknowledgement:** I understand, unless exempted by the building official, this project is required to comply with the construction requirements for emergency responder radio coverage systems, and that a building permit cannot be issued without this form being properly completed. If the project is an approved deferred submittal, only Parts I and II need to be completed at the time of permit application. I also understand that the fire official may waive the ERRC requirements. I have consulted with the local fire official.

Michael Stanner 10.09.2017  
**Applicant / Representative signature** **Date**

**Part II Deferred Submittal** (signed by local fire official, permit applicant and building official)

By signature below, the designated parties acknowledge that ERRC compliance documentation for this project is being deferred (see OSSC 107.3.4.2). As provided by Section 915.2, only Parts I and II need to initially be completed. Parts III through VII of this form must be completed as necessary to demonstrate compliance and be submitted to the building official when appropriate in the deferred submittal process.

Michael Stanner 10.09.2017  
**Applicant/Representative** **Date** **Building Official** **Date**

**Local Fire Official / Title / Jurisdiction** **Date**

**Part III Local Fire Official Requirement** (to be completed by the Fire Code Official)

Does the local fire official require Emergency Responder Radio Coverage?

- ☐ **Yes** If yes, complete Part IV Technical Criteria.
- ☐ **No** If no, indicate the reason below and return this form to the Building Official for approval.
- ☐ Wired communication system is being installed.
- ☐ Other (specify):

**Local Fire Official / Title / Jurisdiction** **Signature** **Date**

#### **Part IV**      **Technical Criteria** *(to be completed by the local fire official)*

The following technical criteria are provided to aid in design where equipment is necessary to achieve compliance. This part may not be able to contain all necessary information and additional information may be required. This information is required as a condition of building permit issuance, but it is not adopted or made part of the state building code. If part of a deferred submittal, this section must be completed when appropriate in the process.

Technologies Used / Frequencies / Channels Required:

FCC License Holder for Emergency Radio frequency:

Contact Person / Phone Number:

Location and Technical Specifications of Agency Antennas Available at:

FCC Frequency Holder Special Requirements for Equipment:

Repeater type(s):

Minimum distance to closest repeater:

Effective radiated power of donor site:

Specific standards for maximum spurious oscillation levels:

Any other specific criteria:

Anticipated frequency changes:

Specific testing requirements:

Legal agreement required with FCC license holder? ☐ Yes ☐ No

Plan and specification submittal required? ☐ Yes ☐ No

☐ Additional local information is attached.

#### **Part V**      **System Design** *(to be completed by the applicant and FCC license holder)*

Systems must comply with local fire service requirements, Section 510 of the fire code, FCC rules, and all conditions of FCC license holder use agreements. This information is required as a condition of building permit issuance, but it is not adopted or made part of the state building code.

**System Type:**                      ☐ DAS with signal booster                      ☐ Other:

**Signal Booster Make / Model:**

**Donor Antenna Type:**

**Proposed Frequency Range or Number of Channels:**

#### **Part VI**      **FCC License Holder Verification**

Additional information not contained in this form may be required to obtain license holder approval. This information is required as a condition of building permit issuance, but it is not adopted or made part of the state building code.

The proposed design meets FCC license holder requirements.

---

**License Holder / Title / Jurisdiction**

---

**Signature**

---

**Date**

#### **Part VII**      **Building Official Approval**

Where Emergency Responder Radio Coverage is required by the fire official, the building official regulates the ERRC construction components through the state building code. Only a building official may waive the construction requirements after a determination by the local fire official that ERRC is not necessary for the building.

---

**Building Official Name**

---

**Signature**

---

**Date**



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kpff

September 27, 2017

Mr. Michael Stanner  
LRS Architects  
720 NW Davis Street, Suite 300  
Portland, OR 97209

Re: Site Development Checksheet Response  
Application #: 17-204627-000-00-CO  
Grand Avenue Apartments  
515 NE Holladay Street  
Portland, OR 97209

Dear Michael:

Please find attached revised structural drawings to address comments from the City of Portland listed in the Site Development checksheet dated September 13, 2017. Below is a brief narrative of our responses to the comments related to the structural engineering:

**Site Development:**

3. *Please request that KPFF clarify page A48 of the revised structural calculations and L-Pile analysis for the CFA piles. Is the deflection compatibility check shown on this page intended to account for differing elevations of the north and south core? Please call this reviewer at 503-823-5618 to clarify this check.*

**KPFF Response:** The intent of the calculation was to show that at similar elevations in the soil profile the piles had similar deflections.

The structural analysis model of the building was completed in accordance with ASCE 7-10 Section 12.7.1 which permits design using a fixed-base assumption.

4. *Please request that KPFF clarify the cracking modulus checks on pages A42 and A49 of the addendum structural calculations. Since the computed reinforcing depths at the north and south cores exceed the L/2 for a minimum pile depth of 45 feet, it appears that the minimum steel length on Sheets S501 and S502 should be footnoted to indicate:*
  - *The minimum steel length for the north core is L/2 or 25 feet, whichever results in the greater steel length.*
  - *The minimum steel length for the south core is L/2 or 29 feet, whichever results in the greater steel length.*

**KPFF Response:** Concur. Please see revised sheet S5.02 which adds a 29' minimum extent requirement for pile type P6.

Mr. Michael Stanner / LRS Architects  
Re: Structural Checksheet Response  
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Page 2

5. *Comment 9 of Site Development's August 16, 2017 checksheet remains unclear. Please clarify or evaluate the lateral capacity for the CFA piles outside the north and south cores based on an estimated pile displacement. As discussed previously, it's unclear if the code minimum steel reinforcement is adequate for the estimated displacements of the core (assuming strain compatibility between core and non-core piles). Site Development suggests a simple check of lateral capacity of the non-core piles at the estimated .18 inches of displacement shown in the revised calculations. Please review Section 12.13.3 of ASCE 7-10 for clarification of pile design in term of ground deformation and structure response. Please call this reviewer at 503-823-5618 to clarify this check.*

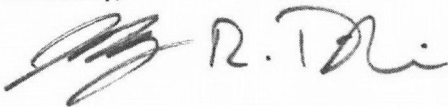
**KPFF Response:** Section 12.13.3 applies only when foundation flexibility is included in the building analysis. According to Section 12.7.1 these procedures are an optional alternative to a fixed base analysis.

KPFF believes that current code does not require an explicit evaluation of deflection compatibility between lateral and non-lateral pile elements. Rather, code requires various prescriptive requirements which are intended ensure an acceptable level of ductility in the design. Non-core piles are detailed in accordance with these requirements.

However, the attached calculations demonstrate that the gravity piles do have sufficient reinforcing to meet compatibility demands during earthquake displacements. Our analysis takes a capacity-based approach. We demonstrate that when the pile head is displaced equal to the deflection of the lateral piles and also develops the *expected* plastic moment capacity of the pile the reinforcing steel cut-off depth and the shear capacity of the pile are adequate to resist the resulting pile loads.

If you have any questions or need further information, please call me.

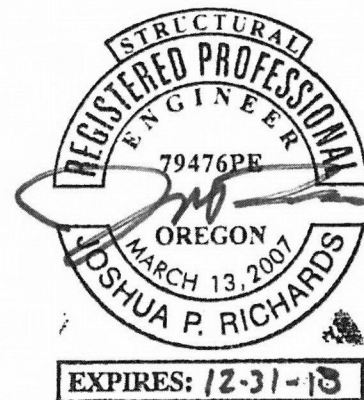
Sincerely,



Jeffrey R. Diephuis PE SE  
Associate

JRD:kw

2017-09-27\_Grand Avenue Apartments\_Plan Check letter\_10021600385







August 30, 2017

Mr. Michael Stanner  
LRS Architects  
720 NW Davis Street, Suite 300  
Portland, OR 97209

Re: Structural Checksheet Response  
Application #: 17-204627-000-00-CO  
Grand Avenue Project  
Portland, OR 97209



Dear Michael:

Please find attached revised structural drawings and structural calculation addendum to address comments from the City of Portland listed in the Structural and Site Development checksheets dated August 15, 2017. Below is a brief narrative of our responses to the comments related to the structural engineering:

**Site Development:**

4. *Please revise sheet S501 and S502 to show a minimum CFA length of 45 feet. Page 8 of the geotechnical report indicates that the allowable design capacities are based on a minimum length of 45 feet.*

**KPFF Response:** Reference revised details on sheets S501 and S502.

5. *Please clarify if P-modifiers were used in the L-pile analysis to accommodate group effects where piles (at the cores) have less than 6D center-to-center spacing. If not, please revise the lateral analysis in accordance with the recommendations of the geotechnical engineer.*

**KPFF Response:** Reference revised drilled shaft calculations in the structural calculation addendum accounting for P-modifiers to lateral loads recommended in the geotechnical report.

6. *Please clarify if the uplift loads on the North Core and South Core CFAs as shown on Sheets 127 through 129 of the structural calculations. It appears the uplift load,  $P_{min}$ , for certain CFAs exceeds the allowable uplift capacity of 800 kips.  $P_{min}$  for CFAs 1, 3, 6 and 8 is over 800 kips (uplift) in several cases.*

Mr. Michael Stanner / LRS Architects

Re: Structural Checksheet Response

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Page 2

**KPFF Response:** Allowable uplift for combinations including short-term loading (wind/seismic) is increased by 1/3 to 1066.7 kips per the recommendation of the geotechnical report (page 9).

8. *Please clarify or revise the length of the longitudinal bars in the CFA piles. The details on Sheets S501 and S502 show the minimum length as L/2. However, the controlling condition (for short piles) appears to be the length at which the induced moment in the pile is below the cracked section modulus. See OSSC 1810.3.9.4.2.*

**KPFF Response:** Reference revised drilled shaft calculations in the structural calculation addendum and revised details on sheets S501 and S502.

9. *The steel reinforcement of "non-core" CFA piles appears to be at the code minimum and without consideration for lateral displacements experienced during ground shaking. Please evaluate the lateral capacity for the CFA piles outside the north and south cores based on an estimated pile displacement. Also provide an L-pile analysis for these piles showing estimated deflections, shears and moments induced along the pile. The analysis should confirm that the non-core CFA piles maintain sufficient ductility throughout ground shaking and maintain a vertical load path after shaking ceases (that does not otherwise result in building collapse). To the degree that the "code minimum" reinforcement shown on Sheets S501 and S502 provides this function is unknown.*

**KPFF Response:** "Non-core" piles are designed and detailed per the requirements of OSSC 1810, ASCE 7-10 and ACI Chapter 21. The provisions of ACI Chapter 21 are specifically designed to address high flexural demands during earthquakes. Reference ACI 318-11 R21.12.4.4.

**Structural:**

3. *Please note that alternates are not allowed for city permit drawings. There are multiple allowed anchor/fastener types shown in the general notes. These should be reduced to only one type for each. It could be acceptable to leave the general notes as is if each time an anchor is called out in the plans or details is has a specific manufacturer/type indicated so that there are not options.*

**KPFF Response:** Reference revised table on drawing S003 showing one specified anchor for each anchor type.

4. *Please clarify if the stairwell areas are 100 psf exit paths on the loading plans.*

**KPFF Response:** Reference revised loading plans on drawing S010 for updated extents of 100 psf live loading.

Mr. Michael Stanner / LRS Architects

Re: Structural Checksheet Response

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5. *Please clarify the concrete reinforcing for the slab over the basement. It appears the calcs on page 66 indicate #6@10" and not the typical #5@12. Do the drawings match the calcs? Please confirm future work on S201A is included in the loading used in the calcs and that the constraints of the future loading are shown clearly on the drawings, see item 6.*

**KPFF Response:** Reference revised drawing S201 showing revised slab reinforcement to match the calculations. Reference drawing S010 showing assumed loading on the slab.

6. *Please clarify the future slab and soil cover assumed in the design over the north core basement. Review of future work will be limited to the restrictions indicated in the drawings (and justified in the calcs).*

**KPFF Response:** As shown on calculation page 58, a superimposed dead load of 190 psf was applied across the entire slab. This 190 psf accounts for future 5" slab-on-grade as well as ~1'-0" of structural backfill. Reference drawing S010 showing the assumed superimposed dead load on the slab and a description of the elements that account for that superimposed load.

7. *Please clarify where in the calcs the diaphragm justification can be found, such as at grids 3 and 7 where there are openings adjacent to shearwalls. Also please provide calculations for the transfer of lateral loading in the drag bars at the main floor to the floor slab/basement walls at the ground level. Re-entrant corner steel and chord steel considerations should also be shown.*

**KPFF Response:** Reference structural calculation addendum for calculations justifying collection of diaphragm forces at the concrete shearwalls and resolution of diaphragm chord forces. Reference revised R-plan drawings showing additional reinforcing required.

8. *Please verify the SSR detail provided for slab corners and edges matches the calcs where there is an adjacent opening, such as at grid 8.8/C. An additional detail may be needed. Typical all floors.*

**KPFF Response:** The intent of note 9 in detail 1/S522 is to cover edge and corner conditions. An additional partial plan was added to 1/S522 to clarify conditions such as grid 8.8/C. The slab edge dimensions will allow rails on all 4 sides, though one may be shifted a small amount for proper clearance. See calc. page 27 for examples of punching shear perimeter checks which show that at conditions such as 8.8/C the perimeter is checked both near the column and out to the exterior edge of the slab. The controlling punching condition does not require a stud rail out to the exterior edge, but the added detail shows rails on all sides.

9. *Please verify the concrete beam between shear wall sections is capable of resisting the drift and shear between the two sides and has adequate stability.*

**KPFF Response:** Reference structural calculation addendum for design of coupling beam on elevation F. Reference revised drawing S303 showing reinforcement required in the beam.

10. *Please confirm the shear wall boundary elements in detail 1/S305 meet the requirements of ACI 318 21.9.6.4(b) at the corners and that the minimum boundary elements are continued up to  $0.15f'_c$  per 21.9.6.3. Maintaining tied cores above those locations, as is currently shown, is recommended in order to justify the use of  $R=6$  for special concrete shear walls not in a bearing condition.*

**KPFF Response:** Reference structural calculation addendum showing compressive stress less than  $0.15f'_c$  (0.9 ksi) above the 8<sup>th</sup> floor. Reference revised detail 1/S305 showing tied boundary elements up to the 8<sup>th</sup> floor.

11. *Please clarify the threaded bar anchorage information can be found in this permit set or is listed as a deferred submittal.*

**KPFF Response:** Reference structural calculation addendum for analysis and design of threaded bar anchorage. Reference new details 5/S501 and 6/S501 for detailing.

12. *Please confirm that Geofoam information is listed on S003 as suggested in details on S504.*

**KPFF Response:** Detail 3/S504 is not being used on this project and has been removed from the revised drawing set.

13. *Please confirm if detail 13/S521 information is completely shown on plans as suggested.*

**KPFF Response:** Confirmed, all profile points of post-tensioning tendons are shown on plan as suggested in the detail. 13/S521 has been revised to indicate that all profile points are measured from the concrete soffit. 14/S521 has been modified to reference detail 13.

14. *Please clarify where detail 4/S530 occurs. It appears there is a composite deck with loading onto a CMU bearing wall.*

**KPFF Response:** Reference revised drawing S201 showing the section cut. This detail is showing the roof over the stair between the 1<sup>st</sup> and 2<sup>nd</sup> floors.

15. *A) Please confirm the glazing is indicated as a deferred submittal. B) Please confirm if the brick veneer is a deferred submittal or this part of KPFF scope. Connections and calcs needed.*

**KPFF Response:** Confirmed. Storefront glazing and windows are deferred submittals. Brick on this project is an adhered product installed according to manufacturer specifications.



Mr. Michael Stanner / LRS Architects  
Re: Structural Checksheet Response  
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**All metal stud back-up framing has been designed and detailed by KPFF. Reference structural calculation addendum for supporting calculations.**

16. *Detail 8/S706 appears to have post-installed anchor into a PT deck without more information. Also clarify that calcs have been provided for the cladding work in general.*

**KPFF Response: Reference revised detail 8/S706 for specified anchors. Reference structural calculation addendum for supporting calculations.**

17. *Page 97: Please review the dowel capacity calculations. Should the area of the rebar be removed from the gross area of concrete for bearing capacity that needs to be combined with rebar dowels to meet axial requirements? This would be similar to the concrete axial capacity checks in ACI Chapter 10.3.6. Is there adequate bearing capacity in all rotating columns (such as #5)?*

**KPFF Response: Reference structural calculation addendum for revised column bearing calculations and revised drawing S401 for dowel requirements.**

18. *Page 153: Please provide calculations for the transfer of lateral loading in the drag bars at the main floor to the floor slab/basement walls at the ground level. General drag calcs for the other floors should also be provided.*

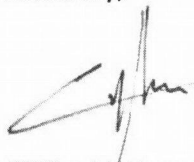
**KPFF Response: Reference structural calculation addendum for supporting calculations for diaphragms and drag reinforcing at all floors.**

19. *Page 206: Please clarify if there are calcs for the stud framing for the wall not at the penthouse. It appears there may be details provided in the S700 series, but calcs are not seen.*

**KPFF Response: Reference structural calculation addendum for supporting calculations for the cold-formed façade back-up steel.**

If you have any questions or need further information, please call me.

Sincerely,



Clifford L Horton, PE



**EXPIRES: 12-31-18**

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**Date:** 10.09.2017

**Note:** In the spaces below, please provide specific information concerning the changes that you have made in response to the checklist. Note the checklist item number, your response or a description of the revision, and the location of the change on the plans (i.e. page number and/or detail number). Use as many lines as needed. *If the item is not in response to a checklist, write “**Applicant**” in the column labeled “Checksheet item number.”*

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# DAVIS, N.

## Life Safety Checksheet Response

SCAN

Permit #: 17-204627-000-00-CO

Date: 09.05.2017

Customer name and phone number: Michael Stanner 503.265.1555

*Note:* In the spaces below, please provide specific information concerning the changes that you have made in response to the checksheet. Note the checksheet item number, your response or a description of the revision, and the location of the change on the plans (i.e. page number and/or detail number). Use as many lines as needed. *If the item is not in response to a checksheet, write "Applicant" in the column labeled "Checksheet item number."*

Checksheet item number	Description of changes, corrections, additions, etc.	Location on plans
1	The Fire and Life Safety Summary binder was added to the Deferred Submittal list on the Cover sheet of both volumes.	CS-1 & CS-2
2	Sheets CS-1 (Volume I) & CS-2 (Volume II) were revised accordingly. 1. Fire Alarm and Fire Suppression / Sprinklers were removed from the Deferred Submittals list.	CS-1 & CS-2
3	Plan sheets were revised to provide clarification: 1. Sheet A001 was revised to show the Public Entries, Egress Path and Accessible Routing. 2. The Wall Types legend and wall graphic representing the Partition walls vs. the Fire Barrier walls on the code plans were revised to provide clarity (sheets A100 thru A104).	A001, A100, A101, A102, A102, A103, A104
4	The floor slab in the future Retail (TI) spaces was added to the Shell Permit Acknowledgment Statement on sheet A100i	A100i
5	The Appeals Summary is listed on sheet A100i. The title of the list was updated for clarity.	A100i
6	The following revisions were made to the Occupancy Classifications: 1. The back of house spaces were changed to S-1 on the Code Analysis Plan sheets. 2. The Courtyard was changed to A-3. 3. The level 12 restroom adjacent to the Lounge was change to B.	A100, A101, A102, A102, A103, A104, A105
7	The 900 series drawings were reviewed and updated to remove the 'Needs Further Review' notation from various details. Details deemed non-applicable were identified with a 'Not Used' notation.	A911, A920, A930, A940, A950, A951, A952, A954, A955, A956, A957, A960, A963, A964, A970, A972, A973, A975, A976, A977, A980
8	High-Rise Requirements (summary) was added to sheet A101i. Appeal items were referenced for the water supply to fire pumps and luminous markings.	A101i
9	The Level 1 Code Analysis Plan was updated as follows: 1. The FSD dimensions in Courtyard were revised to show the FSD between the north and south walls. Additionally, the FSD at the upper levels of the north & south walls in the Courtyard space was added to sheet A102. 2. Notation was added on sheet A101 at the northwest corner of the building under the FSD notation for the upper levels. 3. On sheet A101 along the east property there is a note indicating the FSD and indicating 'No Openings Allowed'.	A101, A102
10	Section drawing sheets were updated with notations, detail tags &	A602, A604, A605, A606,

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	ceiling / roof assemblies. Sheets A602, A604, A610, and A614 were issued in Addendum #01 and are included in the plan check resubmittal. Sheets A605, A606, A607, A608, A609, A611, A612 and A613 include updates associated with city plan review comments.	A607, A608, A609, A610, A611, A612, A613, A614
11	Notations were added to the Trash Chute section on sheet A613 to clarify how the rating requirements are being met at the chute termination room. The trash chute information is also provided in specification section 14 9182.	A613
12	The notation regarding the Firestopping meeting (General Contractor, Sub-Contractors & Inspector) was added to sheet A100i as requested.	A100i
13	Smoke Detectors and Carbon Monoxide Detectors were added to the enlarged unit plan sheets (A260 thru A268) as requested.	A260, A261, A262, A263, A264, A265, A266, A267, A268
14	Attached is a completed copy of the OSSC 915 form as requested.	Form 915 - attachment
15	The Building Area calculations were updated on sheet A100i to reflect the gross area with the vent shafts excluded.	A100i
16	Notations pertaining to the egress lighting with backup power were added to the Code Analysis Plan sheets as requested. Additionally, egress lighting is shown on sheets E300, E301, E302, E307, E311, E312, E313 and E401 in Volume II.	A100, A101, A102, A103, A104, A105
17	Notations pertaining to the Two-Way Communication system for each elevator landing were added to the Code Analysis Plan sheets. Additionally sheet A964 detail 1 (notes) were updated to show the Two-Way Communication system and the associated Directional Signage.	A100, A101, A102, A103, A104, A105, A964
18	The gate shown on A702 does not have glass. Coverage for the gate is to be a perforated metal screen (reference detail 4). A dimension was added to the plan in detail 2. Detail 5 includes a notation indicating the panic hardware. Sheet A700 identifies the hardware group for the gate (door #140) as hardware group 44. Hardware group 44 is in the spec. under section Door Hardware 08 7100.	A702
19	A guardrail was added along the parapet at the roof access hatch (second means of fire access) on sheet A300.	A300
20	The intent of the Maintenance Office is to have a secured area for the storage of replacement parts for items throughout the building. The room name has been changed to Maintenance Storage and the Occupancy was changed to S-1.	A101
21	Per Section 1203.4.1, ventilation calculations are provided in a table titled 'OMSC 2014 Table 403.3 - Min. Ventilation Rates' on sheet M001 in Volume II.	M001
22	Regarding the acoustical performance of wall assembly D, please see the attached memo prepared by A3 Acoustics and dated 08/29/2017.	Memo - attachment
23	Sheets A700 and A701 were updated to show the 'T' at window areas to received Tempered glazing. Dimensions were added to the windows to show sill heights.	A700, A701
24	The plumbing calculations were updated to reflect the updated occupancy modifications and square footage / occupant counts. The notation regarding the M occupancy was modified for clarity. The intent; if a T.I. has a different occupancy type, the plumbing calculations will need to be confirmed. Additional fixtures may be required as part of the T.I.	A100i

Plan Bin Location:



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## Fire Safety Plan Review Checksheet Response

Permit #: 17-204627-000-00-CO

Date: 09.29.2017

Customer name and phone number: Michael Stanner 503.265.1555

Note: *10/18/17* Please number each change in the '#' column. Use as many lines as necessary to describe your changes. Indicate which reviewer's checksheet you are responding to and the item your change addresses. If the item is not in response to a checksheet, write **customer** in the last column.

#	Description of changes, revisions, additions, etc.	Cheetsheet and item #
9	<p>The location of the remote fill station was updated on sheet A270 to align with the location proposed in the email diagram and follow up discussion on 8/21 and 8/25, as was intended for inclusion in the previous response from the first review. Additionally, the associated detail on sheet A971 was updated as well.</p> <p>Previous response: <i>The remote fill station was moved to the west along the north façade of the building to provide 5' clearance from adjacent openings, reference sheet A270 and A503.</i></p> <p>(Revised sheet A503 showing the new location was included in the previous response).</p>	A270 & A971
10	<p>A <i>draft</i> of the Fire Safety and Evacuation plans (maps) are attached – please reference the 11x17 sheets (EV001 thru EV300). Additionally, an updated <i>draft</i> of the narrative portion of the Fire Safety and Evacuation Plans / Procedures are attached. The intent is to provide these plans in the Fire and Life Safety binder to be completed and approved prior to issuance of the CFO. Per previous request on the first round of the Life Safety Plan Check comments, the Fire and Life Safety binder was listed as a deferred submittal.</p>	EV001 thru EV300 A120 thru A125 Fire & Life Safety Summary

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# Johnson, A.

## Fire Safety Plan Review Checksheet Response

Permit #: 17-204627-000-00-CO

Date: 09.05.2017

Customer name and phone number: Michael Stanner 503.265.1555

Note: Please number each change in the '#' column. Use as many lines as necessary to describe your changes. Indicate which reviewer's checksheet you are responding to and the item your change addresses. If the item is not in response to a checksheet, write **customer** in the last column.

#	Description of changes, revisions, additions, etc.	Checksheet and item #
1	Sheets CS-1 (Volume I) & CS-2 (Volume II) were revised accordingly. 1. Fire Alarm and Fire Suppression / Sprinklers were removed from the Deferred Submittals list. 2. The 'Separate Permits from Fire Marshal's Office' section was updated as requested.	CS-1 & CS-2
2	Notations for Stairway Identification Signage were added to Code Sheets A100, A102, A103, A104 & A105. Enlarged Stair Plan sheets A250, A251 & A252 were also updated to include signage location and notations.	A100, A102, A103, A104, A105, A250, A251 & A252
3	Sheet A101i detail 5 was updated to include all 19 of the required features of the Fire Command Center (FCC).	A101i
4	Fire Hydrant fire-flow availability estimate is attached.	Form - attachment
5	The requested notation regarding location of Smoke Alarms in the dwelling units was added to sheet A100i under the 'Fire Protection Notes', reference note 4. Additionally, smoke detectors were added to the RCPs on the enlarged unit plan sheets A260 thru A268.	A100i, A260, A261, A262, A263, A264, A265, A266, A267, A268
6	The requested notation regarding location of Carbon Monoxide Alarms in the dwelling units was added to sheet A100i under the 'Fire Protection Notes', reference note 5. Additionally, carbon monoxide detectors were added to the RCPs on the enlarged unit plan sheets A260 thru A268.	A100i, A260, A261, A262, A263, A264, A265, A266, A267, A268
7	The Fire Pump room is separated from the other building areas by a 2-hour fire barrier. Notation is indicated on code sheet A100.	
8	Appeal Summary is located on sheet A100i and includes Appeal ID 15318 item #3 (both summary and appeal decision).	A100i
9	The remote fill station was moved to the west along the north façade of the building to provide 5' clearance from adjacent openings, reference sheet A270 and A503. The tank vent was moved to the north wall of the Courtyard (south wall of the Generator Room) to allow for the 12' above grade and provide 5' clearance from adjacent openings, reference sheets A506 & A507. The generator (engine) exhaust is to be exhausted up through the roof, reference sheets A300 and A613.	A270, A503, A506, A507
10	Fire safety and evacuation plans were provided in the 'draft' Fire and Life Safety Summary binder. A copy of the plans (draft) are provided for your review, please see attached. The plans will be updated and provided in the binder. The Fire and Life Safety binder was added to the Deferred Submittal list on cover sheet CS-1 and CS-2 based on comment #1 from the Life Safety Checksheet.	CS-1, CS-2 Evacuation plans - attachment

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# Tarries, D.

## Structural Checksheet Response

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Permit #: 17-204627-000-00-CO

Date: 09.05.2017

Customer name and phone number: Michael Stanner 503.265.1555

Note: Please number each change in the '#' column. Use as many lines as necessary to describe your changes. Indicate which reviewer's checksheet you are responding to and the item your change addresses. If the item is not in response to a checksheet, write **customer** in the last column.

#	Description of changes, revisions, additions, etc.	Checksheet and item #
1	The owner is currently seeking fee proposals from several Special Inspection Agencies. Once an inspection agency is selected we will complete and return a copy of the Special Inspection form to BDS.	
2	List of Deferred Submittals and Separate Permits are summarized on cover sheet CS1 (volume I) and CS2 (volume II). The lists were updated per comments from Fire and Mechanical reviewers.	CS1 & CS2
3	For response to item 3, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S003
4	For response to item 4, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S010
5	For response to item 5, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S201
6	For response to item 6, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment
7	For response to item 7, please refer to the attached memo from KPFF dated 08.30.2017	Structural Calculations Addendum, S213R attachment
8	For response to item 8, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S522
9	For response to item 9, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S303
10	For response to item 10, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S305
11	For response to item 11, please refer to the attached memo from KPFF dated 08.30.2017	Structural Calculations Addendum - attachment
12	For response to item 12, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S304
13	For response to item 13, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S521
14	For response to item 14, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment
15	For response to item 15, please refer to the attached memo from KPFF dated 08.30.2017	Structural Calculations Addendum - attachment
16	For response to item 16, please refer to the attached memo from KPFF dated 08.30.2017	Memo - attachment S706
17	For response to item 17, please refer to the attached memo from KPFF dated 08.30.2017	Structural Calculations Addendum, S401- attachment
18	For response to item 18, please refer to the attached memo from KPFF dated 08.30.2017	Structural Calculations Addendum - attachment
19	For response to item 19, please refer to the attached memo from KPFF dated 08.30.2017	Structural Calculations Addendum - attachment
20	For response to item 20, please refer to the attached memo from BergerABAM dated 08.28.2017	Memo- attachment Shoring Calculations
21	For response to item 21, please refer to the attached memo from BergerABAM dated 08.28.2017+	Memo-attachment Shoring Calculations



. 9, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100



22	For response to item 22, please refer to the attached memo from BergerABAM dated 08.28.2017	Memo- attachment Shoring Calculations
23	For response to item 23, please refer to the attached memo from BergerABAM dated 08.28.2017	Memo- attachment Shoring Calculations
24	For response to item 24, please refer to the attached memo from BergerABAM dated 08.28.2017	Memo- attachment Shoring Calculations
25	The cladding and canopy conditions (details) are shown in the structural drawings on sheets S705 and S706. The corresponding calculations are provided in the Structural Calculation Addendum.	Structural Calculations Addendum, S705 & S706 attachments

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Scan

**Date: 8/31/2017**

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## Water Bureau Checksheet Response

**Permit #: 17-204627-000-00-CO**

**Date:** 9/20/2017

**Customer name and phone number:** Michael Stanner 503-211-1121

**NOTE:** Please number each change in the ‘#’ column. Use as many lines as necessary to describe your changes. Indicate which reviewer’s checksheet you are responding to and the item your change addresses. If the item is not in response to a checksheet, write **customer** in the last column.

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# Portland Water Bureau

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<b>TO:</b>	Derrick Korey	<b>FROM:</b>	Pat Easley
<b>COMPANY:</b>	Dowl		Portland Water Bureau
<b>FAX:</b>	None	<b>PHONE:</b>	503-823-7005
<b>PHONE:</b>	971-280-8659	<b>DATE:</b>	8/23/2017
<b>EMAIL:</b>	kderrick@dowl.com	<b># PAGES:</b>	2

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## Fire Flow Availability Estimate

*A hydrant flow test was not available or could not be completed at the requested location.  
This is an estimated flow obtained using a hydraulic model.*

Simulation ID Number:	<b>2602</b>
Simulation Date:	<b>4/26/2016</b>
Assumed fire service location:	<b>500 NE Multnomah St.</b>
Map Number (quartersection):	<b>2931</b>
Pressure Zone:	<b>KELLY BUTTE 305</b>
Main size:	<b>8 inch</b>
Assumed fire service elevation:	<b>132 feet</b>
Maximum Static Hydraulic Grade Line:	<b>305 feet</b>
Maximum Static Pressure:	<b>75 psi</b>
<b>STATIC PRESSURE to use for design: (80% of the nominal max static pressure)</b>	<b>60 psi</b>
<b>ESTIMATED FLOW:</b>	<b>2500 gpm</b>
<b>ESTIMATED RESIDUAL PRESSURE: (in the system, with the simulated flow)</b>	<b>51 psi</b>

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NOTE: The Water Bureau reserves the right to make future operational changes that may affect flow available at this location. The reported flow is available in the main before any service pipe, backflow prevention device, or meter. Less flow may be available through a hydrant at the given residual pressure.