Framework
an urban + rural ecology

Basis of Design - Performance-Based Design

March 24th 2017

KPFF Consulting Engineers
111 SW Fifth Avenue, Suite 2500
Portland, OR 97204
(503) 227-3251 | www.kpff.com

INTRODUCTION AND BACKGROUND

This document outlines the basis of design for the performance-based design and nonlinear response history analysis of the Framework Project in Portland, OR. It is intended to be a living document that will be modified and revised as the project develops and in response to peer review comments.

Performance-based design is pursued for this project because the proposed lateral force-resisting system, consisting of post-tensioned rocking cross-laminated timber (CLT) walls is not included in ASCE/SEI 7-10 Table 12.2-1. Lateral force-resisting systems included in ASCE/SEI 7-10 Table 12.2-1 may be designed for earthquake effects using the prescriptive provisions in ASCE/SEI 7-10. Lateral force-resisting systems not included are still permitted but must be demonstrated to have performance not less than that expected for included systems. This option is available via the performance-based procedures of ASCE/SEI 7-10 Section 1.3.1.3. Note that lateral force-resisting systems for wind effects are not restricted in ASCE/SEI 7-10. Therefore, design for wind effects will still be approached within the performance-based design framework but in a more state-of-the-practice manner.

"Reliability not less than expected" for systems included in ASCE/SEI 7-10 Table 12.2-1 is demonstrated through the following:

- *Design for strength level wind loads* – This evaluation is equivalent to that required for any building, regardless of whether performance-based design is pursued.
- *Emulation of rocking precast concrete walls* – Rocking precast concrete walls are considered equivalent to a special reinforced concrete shear wall (a conforming system in ASCE/SEI 7-10) via ACI 318-11 Section 21.10.3. The prescriptive provisions for earthquake effects of ASCE/SEI 7-10 using the force reduction factor, R, for special reinforced concrete shear walls will therefore serve as a lower-bound on the design.
- *Low probability of collapse* – Nonlinear response history analysis at the Risk Targeted Maximum Considered Earthquake (MCE_R) will be conducted to demonstrate a low probability of collapse when subjected to extremely rare earthquake ground motions consistent with the performance objective described in ASCE/SEI 7-10 Chapter C1 (although no explicit calculation of probability of collapse will be pursued).

While the above requirements are sufficient to demonstrate code conformance, the project goals for Framework include an emphasis on sustainability and resilience. These goals are adopted in the structural system through the additional, voluntary criteria which intend to enhance occupant comfort under wind effects and improve structural repairability and performance (low damage design concept) under earthquake effects. These additional, voluntary criteria include:

- *Occupant comfort under a service-level wind event* – This evaluation limits wind drift and acceleration under a service-level wind event.

- *Essentially elastic performance under a serviceability earthquake*
- *Repairable performance under a moderate earthquake* – This evaluation provides additional criteria on structural element damage and residual drifts for an earthquake hazard having a 475 year return period.

Note that these additional, voluntary criteria are not necessary to demonstrate “reliability not less than expected” for systems included in ASCE/SEI 7-10 Table 12.2-1. Therefore, while these criteria are included in this document for reference, peer review comments solely related to the additional, voluntary criteria are not intended to be formalized/issued to the Authority Having Jurisdiction (State of Oregon).

PRIMARY POINTS OF CONTACT

In discussing issues related to the structural peer review for this project, the following persons shall be considered the primary points of contact:

Structural Engineer of Record's Representatives	Eric McDonnell KPFF Consulting Engineers eric.mcdonnell@kpff.com Reid Zimmerman KPFF Consulting Engineers reid.zimmerman@kpff.com
Geotechnical Engineer of Record's Representatives	Brett Shipton GeoDesign Incorporated bshipton@geodesigninc.com Nick Paveglio GeoDesign Incorporated npaveglio@geodesigninc.com
Structural Peer Reviewer's Representatives	Stuart Oliver Holmes Consulting Group stuarto@holmesgroup.com Didier Pettinga Holmes Consulting Group didierp@holmesgroup.com
Academic Peer Reviewer's Representative	Jeff Berman University of Washington jwberman@myuw.net
Ground Motions Peer Reviewer's Representative	Ivan Wong AECOM wong@lettisci.com

SITE DESCRIPTION

Framework will be located on a quarter block in Portland's Pearl District at 430 NE 10th Avenue, Portland, OR. There is an existing 2-story office building that currently sits on the site that will be demolished for the construction of the new building. The site is approximately 10,000 square feet and is bordered on the south by an existing 2-story building and to the east by a project that will be under construction for a new 10-story hotel with one level below grade.

Figure 1. Description of project site

BUILDING DESCRIPTION

Framework is a proposed 130ft mass timber building in Portland, OR consisting of 12-stories above grade with one floor of retail, five levels of office, five levels of residential and a penthouse. Its floor plate is approximately 90ft in the east-west direction and north-south directions and is fairly consistent for the entire structural height.

Framework's gravity system will consist of 2" gypsum concrete topping over cross-laminated (CLT) floor panels spanning to glue-laminated timber (GLT) beams and GLT columns. CLT panels and GLT beams will act compositely via the use of long, self-tapping screws.

Framework's lateral force-resisting system for both wind and earthquake demands will be post-tensioned rocking CLT walls. The post-tensioned rocking CLT walls consist of (1) CLT wall panels, (2) GLT columns at each end of the CLT wall panels, (3) external threaded rods running the full building height for post-tensioning, (4) energy dissipation devices at the base of the wall, and (5) energy dissipation devices along the full building height between CLT wall panels and GLT columns. The lateral force-resisting system is intended to emulate the Precast Wall with End Columns (PreWEC) system developed for precast concrete. The CLT floor panels will serve as the diaphragm for distributing loads to the lateral force-resisting system with steel plate collectors running above the CLT floor panels (covered by gypsum concrete).

A reinforced concrete mat (raft) foundation at grade will serve as the foundation system below the rocking walls. A combination of strip footings and spread footings will support the remainder of the gravity system. Ground improvements will be located under all primary foundation elements.

CODES AND REFERENCES

The following codes and references are applicable.

- *2014 Oregon Structural Specialty Code*
- *An Alternative Procedure for Seismic Analysis and Design of Tall Buildings located in the Los Angeles Region, 2014 Edition*, Los Angeles Tall Buildings Structural Design Council (LATBSDC).
- *Building Code Requirements for Structural Concrete ACI 318-11*, American Concrete Institute.
- *Minimum Design Loads for Buildings and Other Structures ASCE/SEI 7-10,* American Society of Civil Engineers, Structural Engineering Institute.
- *Minimum Design Loads for Buildings and Other Structures ASCE/SEI 7-16,* American Society of Civil Engineers, Structural Engineering Institute (not yet published – see Appendix).
- *Requirements for Design of a Special Unbonded Post-Tensioned Precast Shear Wall Satisfying ACI ITG-5.1 and Commentary*, American Concrete Institute.
- *Seismic Evaluation and Retrofit of Existing Buildings, ASCE/SEI 41-13*, American Society of Civil Engineers, Structural Engineering Institute.
- *Seismic Performance Assessment of Buildings, Volume 1 – Methodology, FEMA P-58-1,* Federal Emergency Management Agency.
- *User Guide, PERFORM-3D, Nonlinear Analysis and Performance Assessment of 3D Structures*, Computers and Structures Incorporated.

RESPONSE SPECTRA AND GROUND MOTIONS

Site-specific response spectra and ground motions for Framework have been provided by GeoDesign Incorporated. Reference their reports entitled “Performance-Based Seismic Design, Spectral Matching Results” dated June 20th 2016 and “Performance-Based Seismic Design, Ground Motion Evaluation” dated September 7th 2016.

REQUIREMENTS TO DEMONSTRATE CODE EQUIVALENT PERFORMANCE

As discussed in the section entitled “Introduction and Background”, the use of post-tensioned rocking CLT walls requires demonstration that Framework’s lateral force-resisting system has equivalent performance to a conforming system in ASCE/SEI 7-10. The following subsections address the design criteria for these requirements.

Strength-Level Wind Criteria

The strength-level wind event and criteria are taken the same as for any conforming system in ASCE/SEI 7-10 in accordance with Table 1 below. In fact, there is no distinction between a conforming and a non-conforming lateral force-resisting system in ASCE/SEI 7-10 for wind effects. The velocity has been determined based on a site-specific wind study performed by International Climatic Evaluations Incorporated. Reference their report entitled “Site-Specific Wind Data for the Framework Project in Portland, Oregon” dated March 8th 2016. The velocity determined by International Climatic Evaluations Incorporated matches very closely with the velocity to be published in ASCE 7-16 for Portland. It should be noted that ASCE/SEI 7-10 only requires strength design for wind effects. No drift or acceleration limits exist.

Table 1. Strength-level wind criteria

Criteria	Value	Notes
Risk Category	II	ASCE/SEI 7-10 Table 1.5-1
V	97mph (700 year mean recurrence interval, 3 second gust, 33ft, Exposure Category C)	Site-Specific Wind Study
K_d	0.85	ASCE/SEI 7-10 Table 26.6-1
Exposure Category	B	ASCE/SEI 7-10 Section 26.7
K_{zt}	1.0	ASCE/SEI 7-10 Section 26.8
G	varies	ASCE/SEI 7-10 Section 26.9.5
GC_{pi}	+/- 0.18	ASCE/SEI 7-10 Table 26.11-1

C_p	0.8 (windward wall) -0.5 (leeward wall) -0.7 (side walls)	ASCE/SEI 7-10 Figure 27.4-1
K_z	varies	ASCE/SEI 7-10 Table 27.3-1
Load Cases	Cases 1 through 4	ASCE/SEI 7-10 Figure 27.4-8
Strength Load Combinations	1.2D+1.0W+0.5L+0.5(L_r or S or R) 0.9D+1.0W	ASCE/SEI 7-10 Section 2.3.2

Design-Level Seismic Criteria

As described in the section entitled “Introduction and Background”, the purpose of the design-level seismic criteria is to establish equivalency to the strength requirements enforced for rocking precast concrete walls (which Framework’s lateral force-resisting system is emulating) in ASCE/SEI 7-10. Prescriptive design taking design values for special reinforced concrete walls is therefore pursued as shown in Table 2. Although design values for special reinforced concrete walls are being used, modeling will be based on the actual geometry and materials, not on those for an equivalent concrete wall. Design will also be in accordance with ACI ITG-5.2-09.

Table 2. Design-level seismic criteria

Criteria	Value	Notes
Analysis Procedure	Modal Response Spectrum	ASCE/SEI 7-10 Section 12.9
Software	ETABS 2016	
P-Delta Effects	Considered	
Risk Category	II	ASCE/SEI 7-10 Table 1.5-1
I_e	1.0	ASCE/SEI 7-10 Table 1.5-2
Seismic Design Category	D	ASCE/SEI 7-10 Section 11.6
R	6	ASCE/SEI 7-10 Table 12.2-1
ρ	1.0	ASCE/SEI 7-16 Section 16.1.2
T_a	0.76 sec East-West 0.76 sec North-South	ASCE/SEI 7-10 Section 12.8.2.1
C_u	1.4	ASCE/SEI 7-10 Table 12.8-1
C_s	0.0488 East-West 0.0488 North-South	ASCE/SEI 7-10 Section 12.8.1.1
Accidental Torsion	All four cases	ASCE/SEI 7-10 Section 12.9.5
Strength Load Combinations	$(1.2+0.2S_{DS})D+ \rho E+0.5L+0.2S$ $(0.9-0.2S_{DS})D+ \rho E$	ASCE/SEI 7-10 Section 12.4.2.3
Drift Ratio	No Limit	Drift limits enforced at MCE_R

Note: Base shear for modal response spectrum analysis scaled to 100% of base shear for equivalent lateral force procedure. ASCE/SEI 7-10 Section 12.9.4.1 only requires scaling to 85%; however, this factor is known to increase to 100% in the next code cycle of ASCE/SEI 7 (ASCE/SEI 7-16).

MCE_R Seismic Criteria

While the design-level seismic criteria establish a minimum building strength, additional checks are performed at the MCE_R to ensure adequate ductility in deformation-controlled actions and protection of force-controlled actions. In general, the MCE_R seismic criteria target a collapse prevention performance objective by adopting criteria from several sources of performance-based seismic design including ASCE/SEI 41-13, the 2014 Los Angeles Tall Building Structural Design Council document, and Chapter 16 of the upcoming ASCE/SEI 7-16. Although ASCE/SEI 7-10 only requires that buildings not cross the property line under the design-level event, a more stringent criteria is proposed here because of the potential for building pounding at MCE_R. Pounding is known to be detrimental to building performance, especially when floor levels of the two buildings do not coincide in elevation (i.e., one building's floor may come in contact with the other building's column). As mentioned in the section entitled "Site Description", a new concrete building is also under design in the adjacent property and will have floor levels which do not align with those in Framework. Therefore, a displacement limit at MCE_R is enforced.

Table 3. General MCE_R seismic criteria

Criteria	Value	Notes
Analysis Procedure	Nonlinear Response History	
Software	PERFORM-3D Version 5	
P-Delta Effects	Considered	
Ground Motions	11 two-component ground motions spectrally matched to a 5% damped MCE_R spectrum	Percentage of motions will be selected to reflect the hazard contribution from the different tectonic regimes (i.e., shallow crustal versus subduction). Ground motions to be applied to building model for one set of axes. Analyses with multiple axes/orientations will not be pursued.
Deformation-Controlled Actions	See Table 4	
Force-Controlled Actions	$\gamma * I_e * (Q_u - Q_{ns}) + Q_{ns} \leq Q_e$ See Table 5	ASCE/SEI 7-16 Section 16.4.2.1
Inherent Damping	Less than or equal to 2.5%	Reference ASCE/SEI 7-16 Section 16.3.5. Inherent damping to be distributed between modal and Rayleigh damping as recommended in PERFORM-3D User Guide.
Accidental Torsion	Not evaluated	Accidental torsion is checked at design-level. Furthermore, the 2014 LATBSDC does not require consideration of accidental torsion at this hazard level for regular buildings.

Strength Load Combination	$D+0.2L_0$	Load combination per ASCE/SEI 7-16 Section 16.3.2. L_0 is the unreduced live load in accordance with ASCE/SEI 7-10 Chapter 4.
Drift Ratio Limit	3%	Drift ratio limit taken as 1.5x those prescribed in ASCE/SEI 7-10 Table 12.12-1
Displacement Limit	Stay within East and South property lines	ASCE/SEI 7-10 Section 12.12.3 only requires that the building not cross the property line under the design-level event. For reasons described above, a more stringent limit is applied.

Table 4. Criteria for deformation-controlled actions under MCE_R seismic hazard

Component	Action	Criteria[1]	Notes
U-Shaped Flexural Plate (UFP) Connectors	Flexure	suite mean $\Delta_u \leq 0.75*\Delta_{limit}$	Δ_{limit} taken as the distance from nearest bolt/weld to point of tangency for the bend Value of 0.75 taken from ASCE/SEI 41-13 Section 7.6.3 for collapse prevention performance of primary components
CLT Crushing at Wall Toe	Axial	suite maximum $\varepsilon_u \leq \varepsilon_{limit}$	ε_{limit} based on valid range of modeling from CLT crushing tests to be completed. See section entitled "Proposed Experimental Testing".
Post-Tensioned Threaded Rods	Axial	suite mean $\varepsilon_u \leq 0.75*\varepsilon_{limit}$	ε_{limit} based on fracture strain of threaded rods Value of 0.75 taken from ASCE/SEI 41-13 Section 7.6.3 for collapse prevention performance of primary components

[1] Suite mean calculated as average of response quantity over all ground motion records

[2] Suite maximum calculated as maximum of response quantity over all ground motion records

Table 5. Criteria for force-controlled actions under MCE_R seismic hazard

Component	Action	Criteria[1,2,3,4]
Reinforced Concrete Mat Foundation	Flexure	suite mean M_u $\gamma = 1.0$
	Shear	suite mean V_u $\gamma = 1.5$
CLT Walls	Axial-Flexural	suite mean (P_u, M_u) $\gamma = 1.0$
	Shear	suite mean V_u, $\gamma = 1.5$ suite maximum V_u, $\gamma = 1.0$
CLT Wall-to-Wall Connections	Flexure	suite mean Q_u, $\gamma = 1.5$ suite maximum Q_u, $\gamma = 1.0$
	Shear	suite mean Q_u, $\gamma = 1.5$ suite maximum Q_u, $\gamma = 1.0$
CLT Wall-to-Floor and Wall-to-Foundation Connections	Shear	suite mean Q_u, $\gamma = 1.5$ suite maximum Q_u, $\gamma = 1.0$
Diaphragm Chords and Collectors	Axial	suite mean Q_u, $\gamma = 1.5$ suite maximum Q_u, $\gamma = 1.0$
UFP Connections to CLT Wall and GLT Column	Shear	capacity design to ultimate strength of UFP
Post-Tensioned Rod-to-Foundation Connection	Axial	suite mean Q_u, $\gamma = 2.0$ suite maximum Q_u, $\gamma = 1.0$
Post-Tensioned Rod-to-Wall Connection	Axial	suite mean Q_u, $\gamma = 1.5$ suite maximum Q_u, $\gamma = 1.0$
GLT Lateral Columns	PMM	suite mean P_u, $\gamma = 2.0$ suite maximum P_u, $\gamma = 1.0$
Gravity Connections	All	No loss of gravity-carrying capacity under expected lateral drifts (deformation compatibility)
Façade	All	No falling hazard. Damage to façade not otherwise limited.

Stair Stringer Support	Displacement	2.0*suite mean $\Delta_u \leq L_{support}$ suite maximum $\Delta_u \leq L_{support}$

[1] Refer to Table 3 and ASCE/SEI 7-16 Section 16.4.2.1 for Q_u and γ
[2] Suite mean calculated as average of response quantity over all ground motion records
[3] Suite maximum calculated as maximum of response quantity over all ground motion records
[4] All demands may be limited by capacity-design procedures, where a well-defined mechanism can be identified

ADDITIONAL VOLUNTARY CRITERIA

This section lists additional criteria which, although not necessary to demonstrate code equivalent performance, are pursued to meet the sustainability and resilience goals for this project. As mentioned previously, while the criteria are included in this document for reference, peer review comments solely related to the following additional, voluntary criteria are not intended to be formalized/issued to the Authority Having Jurisdiction (State of Oregon).

Service-Level Wind Criteria

The service-level wind event is taken as the wind velocity corresponding to a 25 year mean recurrence interval. However, the 3-second gust velocity is used for evaluating drifts while the mean hourly velocity is used for accelerations. As a reminder, the wind loads in ASCE/SEI 7-10 used for strength design are based on a 3-second gust velocity corresponding to a 700 year mean recurrence interval. The 3-second gust velocity corresponding to a 25 year mean recurrence interval, and the associated pressures, were provided by the site-specific wind study performed by International Climatic Evaluations Incorporated. This velocity can be converted to a mean hourly wind velocity using ASCE/SEI 7-10 Equation 26.9-16.

Table 6. Service-level wind criteria

Criteria	**Value**	**Notes**
Analysis Procedure	Linear Static	
Software	ETABS 2016	
Load Combination	D+0.5L+W	ASCE/SEI 7-10 Equation CC-3
Drift Ratio Limit	0.2% for 3-second gust velocity	
Peak Along-Wind Acceleration	0.015g for mean hourly velocity at residential floors 0.020g for mean hourly velocity at office floors	Procedure available in ASCE/SEI 7-10 Section C26.9 will be used to estimate peak along-wind acceleration

Base Rocking	No uplift for 3-second gust velocity

Service-Level Seismic Criteria

The service-level seismic hazard is taken as a 2.5% damped response spectrum having a 43 year return period. It was determined that the service-level response spectra was always less than the design-level hazard reduced by the response modification factor, R. Therefore the requirements for the design-level hazard will result in essentially elastic performance under the service-level hazard and it would be redundant to also evaluate the structure under the service-level hazard. The only check performed at the service-level hazard is that no base rocking occurs, similar to the criteria proposed for the service-level wind evaluation.

Repairability Seismic Criteria

While performance of the majority of the deformation- and force-controlled components are assured via the MCE_R evaluation, several additional criteria are necessary to achieve a repairable building under a seismic hazard having a 475 year return period (equivalent to a probability of exceedance of 10% in 50 years). These criteria are shown below in Table 7.

Table 7. Repairability seismic criteria

Criteria	Value	Notes
Analysis Procedure	Nonlinear Response History	
Software	PERFORM-3D Version 5	
P-Delta Effects	Considered	
Ground Motions	11 two-component ground motions spectrally matched to 5% damped 475 year return period target spectrum	Reference Table 3
Inherent Damping	Less than 2.5%	Reference Table 3
Strength Load Combination	$D+0.2L_0$	Reference Table 3
Residual Drift	Suite median less than 0.2%	Limit taken from FEMA P58-1 Table C-1 for Damage State 1. Suite median used instead of suite mean because it is recognized that residual drifts can be highly variable between ground motion records.
Post-Tensioned Threaded Rods	No yielding for suite median	Considered deformation-controlled for MCE_R but force-controlled here
CLT Wall Toe	No crushing for suite median	Considered deformation-controlled for MCE_R but force-controlled here

Framework
an urban + rural ecology

DELIVERABLE 14
Structural, CD Drawings (100% CD)

June 15, 2017

Report Deliverables:

A. CD Drawings (100% CD)
B. Final Permit Report

Produced by: KPFF

<u>DISCLAIMERS REGARDING INSTRUMENTS OF SERVICE</u>

By downloading or otherwise receiving the attached or enclosed information and/or document(s) (collectively, "Instruments of Service"), you ("Recipient") are deemed to agree to the following:

The Instruments of Service are provided solely for personal or non-commercial use. No part of the Instruments of Services may be reproduced, published, or transmitted for commercial purposes in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, whether or not in translated form, without the prior written permission of the owner of the rights in such Instruments of Service.

The Instruments of Service are provided without any representation, warranty, covenant or guaranty of any kind or nature, express or implied, and no liability or responsibility is assumed by any party (including without limitation the author, owner or distributor of the Instruments of Service) with respect to the use, application of, and/or reference to opinions, findings, conclusions, or recommendations included in the Instruments of Service. Recipient is responsible to verify all information. Accordingly, Recipient has no right to rely upon the Instruments of Service or any part thereof for any purpose or in any respect, including without limitation the accuracy, adequacy, quality, completeness or correctness thereof or its fitness for a particular purpose. The receipt and use of any Instruments of Service by Recipient is at Recipient's sole risk and without any liability whatsoever to any other party, including without limitation the author, owner, and distributor of the Instruments of Service.

Recipient acknowledges and agrees that the receipt of any Instruments of Service does not convey any property rights or licenses. All rights (including common law, statutory or other reserved rights) in the Instruments of Service shall remain with the party who owned such rights prior to receipt.

The author, owner, and distributor of the Instruments of Service have no obligation or liability whatsoever to Recipient with respect to the Instruments of Service or any information therein or use made thereof. To the fullest extent permitted by law, Recipient releases any and all claims of every kind or nature against the author, owner, and distributor of the Instruments of Service relating to or that arises in any manner out of Recipient's receipt or use of the Instruments of Service.

Recipient acknowledges that anomalies and errors can be introduced into electronic files when it is transferred or used in a different or incompatible computer systems. Further, if any translation of the information and data on electronic files occurs then Recipient acknowledges that such translation cannot be accomplished without the possible introduction of inexactitudes, anomalies, or errors. Recipient agrees and acknowledges that electronic files transferred to, used, altered or translated by Recipient may not necessarily show the same information and data, or in the same format, as the hard copy originals thereof. Recipient agrees to assume all risks associated with such transfer, use, alteration and translation of electronic files, and to the fullest extent permitted by applicable law, to release all claims of every kind against the author, owner or distributor arising from, related to, or in any manner in connection with the transfer, use, alteration and translation of electronic files to or by Recipient.

The Instruments of Service were developed as an element in the design of a specific project, is provided for information only, and therefore is not intended to provide professional advice with respect to any other project or activity. Recipient and users of the Instruments of Service are responsible for exercising independent professional knowledge and judgment in the application of this information.

REPORT DELIVERABLE 14-A:
CD Drawings (100% CD)

DRAWING INDEX

SHEET	TITLE	100% SD	100% DD	50% CD	GMP SET
S002	GENERAL STRUCTURAL NOTES	X	X	X	X
S003	GENERAL STRUCTURAL NOTES (CONT.)	X	X	X	X
S004	GENERAL STRUCTURAL NOTES (CONT.)	X	X	X	X
S005	SPECIAL INSPECTIONS			X	X
S006	SPECIAL INSPECTIONS (CONT.)			X	X
S007	SPECIAL INSPECTIONS (CONT.)			X	X
S008	SPECIAL INSPECTIONS (CONT.)			X	X
S010	LOADING PLANS			X	X
S011	LOADING PLANS			X	X
S012	LOADING PLANS			X	X
S101	FIRST FLOOR / FOUNDATION PLAN	X	X	X	X
S102	SECOND FLOOR FRAMING PLAN	X	X	X	X
S103	THIRD FLOOR FRAMING PLAN	X	X	X	X
S107	SEVENTH FLOOR FRAMING PLAN	X	X	X	X
S108	EIGHTH THRU ELEVENTH FLOOR FRAMING PLAN		X	X	X
S112	TWELFTH FLOOR/ROOF FRAMING PLAN	X	X	X	X
S113	PENTHOUSE FRAMING PLAN	X	X	X	X
S201	FOUNDATION BOTTOM REINFORCING PARTIAL PLANS			X	X
S202	FOUNDATION TOP REINFORCING PARTIAL PLANS			X	X
S211	ENLARGED ENTRY CANOPY PLAN				X
S212	ENLARGED WEST SHAFT PLAN				X
S221	ENLARGED STAIR PLANS				X
S231	LEVEL 12 RAISED FLOOR FRAMING PLAN				X
S301	BUILDING SECTIONS	X	X	X	X
S311	EXTERIOR WALL SECTIONS				X
S312	EXTERIOR WALL SECTIONS				X
S313	EXTERIOR WALL SECTIONS				X
S401	COLUMN SCHEDULE		X	X	X
S411	SHEAR WALL ELEVATIONS	X	X	X	X
S412	SHEAR WALL ELEVATIONS	X	X	X	X
S413	SHEAR WALL ELEVATIONS				X
S421	SHEAR WALL DETAILS	X	X	X	X
S422	SHEAR WALL DETAILS	X	X	X	X
S501	CONCRETE DETAILS	X	X	X	X
S502	CONCRETE DETAILS	X	X	X	X
S503	CONCRETE DETAILS	X	X	X	X
S504	CONCRETE DETAILS	X	X	X	X
S505	FRAMING DETAILS				X
S511	CONCRETE DETAILS			X	X
S601	STEEL CANOPY DETAILS				X
S602	WEST SHEAR WALL SHAFT DETAILS				X
S604	DETAIL				X
S605	ROOF FRAMING DETAILS				X
S701	TIMBER FRAMING DETAILS	X	X	X	X
S711	TIMBER FRAMING DETAILS	X	X	X	X
S712	TIMBER FRAMING DETAILS			X	X
S713	TIMBER RAMING DETAILS			X	X
S714	TIMBER FRAMING DETAILS			X	X
S801	EXTERIOR WALL ELEVATIONS				X
S802	EXTERIOR WALL ELEVATIONS				X
S803	EXTERIOR WALL ELEVATIONS				X
S804	EXTERIOR WALL ELEVATIONS				X
S805	EXTERIOR WALL ELEVATIONS				X
S811	EXTERIOR WALL DETAILS				X
S812	EXTERIOR WALL DETAILS				X
S813	EXTERIOR WALL DETAILS				X
S821	PENTHOUSE FRAMING DETAILS				X
S822	ROOF FRAMING DETAILS				X
S823	ROOF FRAMING DETAILS				X
	DATE	12/04/2015	04/01/2016	07/22/2016	11/04/2016

ISSUE LOG

ISSUE LOG KEY:
' X ' ISSUED AS PART OF A SET
' - ' NOT A PART OF ISSUED SET
' * ' FOR INFORMATION ONLY

LIST OF ABBREVIATIONS

A.B.	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADD'L.	ADDITIONAL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION INCORPORATED
ALT.	ALTERNATE
ALUM.	ALUMINUM
ARCH.	ARCHITECT
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
BLDG.	BUILDING
BOT.	BOTTOM
C.G.	CENTER OF GRAVITY
C.I.P.	CAST IN PLACE
C.J.	CONTROL JOINT
C.J.P.	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLR.	CLEAR
CLT	CROSS LAMINATED TIMBER
CMU	CONCRETE MASONRY UNIT
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
db	BAR DIAMETER
DBA	DEFORMED BAR ANCHOR
DET.	DETAIL
DIA., Ø	DIAMETER
DIAG.	DIAGONAL
D.L.	DEAD LOAD
DWG.	DRAWING
ELEC.	ELECTRICAL
EL.	ELEVATION
EQ.	EQUAL
EXP.	EXPANSION
EXT.	EXTERIOR
FDN.	FOUNDATION
FIN.	FINISH
FLR.	FLOOR
FT.	FOOT
FTG.	FOOTING
GA.	GAUGE
GALV.	GALVANIZED
GL	GLULAM
GLB	GLULAM BEAM
GLC	GLULAM COLUMN
HORIZ.	HORIZONTAL
HSS	HOLLOW STRUCTURAL STEEL
IBC	INTERNATIONAL BUILDING CODE
I.D.	INSIDE DIAMETER
IN.	INCH
INT.	INTERIOR
K	KIPS
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
LB.	POUND
L.L.	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC.	LOCATION
LONG.	LONGITUDINAL
LVF	LOW VELOCITY FASTENER
MAX.	MAXIMUM
MECH.	MECHANICAL
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MPH	MILES PER HOUR
MT	MAGNETIC PARTICLE TESTING
NOM.	NOMINAL
NO.	NUMBER
N.T.S.	NOT TO SCALE
o.c.	ON CENTER
O.D.	OUTSIDE DIAMETER
OPP.	OPPOSITE
PART.	PARTITION
PCF	POUNDS PER CUBIC FOOT
PERIM.	PERIMETER
PL	PLATE
PP	PARTIAL PENETRATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
P/T	POST-TENSIONED
P.T.	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
R, RAD.	RADIUS
RCSC	RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS
REF.	REFERENCE
RET.	RETURN
REINF.	REINFORCING
REQ'D.	REQUIRED
REQ'MTS.	REQUIREMENTS
SCHED.	SCHEDULE
SIM.	SIMILAR
SLRS	SEISMIC LOAD RESISTING SYSTEM
S.O.G.	SLAB ON GRADE
SPEC.	SPECIFICATION
SQ.	SQUARE
SS	STAINLESS STEEL
SSMA	STEEL STUD MANUFACTURERS ASSOCIATION
STD.	STANDARD
STRUCT.	STRUCTURAL
SYM.	SYMMETRICAL
THRU	THROUGH
T & G	TONGUE AND GROOVE
TRANS.	TRANSVERSE
TYP.	TYPICAL
UFP	U-SHAPED FLEXURAL PLATE
U.N.O.	UNLESS NOTED OTHERWISE
U.T.	ULTRASONIC TESTING
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
w/	WITH
WF	WIDE FLANGE
w/o	WITHOUT
W.P.	WORK POINT
WPS	WELDING PROCEDURE SPECIFICATION

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
DRAWING INDEX AND LIST OF ABBREVIATIONS

S001

GMP SET

11/4/2016 9:54:15 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

GENERAL STRUCTURAL NOTES

STRUCTURAL DRAWINGS ARE A PORTION OF THE CONTRACT DOCUMENTS AND ARE INTENDED TO BE USED WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE REQUIREMENTS FROM THESE DRAWINGS INTO THEIR SHOP DRAWINGS AND WORK.

THESE GENERAL NOTES SUPPLEMENT THE PROJECT SPECIFICATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.

CODE REQUIREMENTS:

CONFORM TO THE 2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC), BASED ON THE 2012 INTERNATIONAL BUILDING CODE (IBC).

TEMPORARY CONDITIONS:

THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND/OR SEQUENCES.

CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.

EXISTING CONDITIONS:

ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER OF ANY SIGNIFICANT DISCREPANCIES FROM CONDITIONS SHOWN ON THE DRAWINGS.

ASSUMED FUTURE CONSTRUCTION:

VERTICAL: NONE
HORIZONTAL: NONE

DESIGN CRITERIA:

DESIGN WAS BASED ON THE STRENGTH AND DEFLECTION CRITERIA OF THE OSSC. IN ADDITION TO THE DEAD LOADS, THE FOLLOWING LOADS AND ALLOWABLES WERE USED FOR DESIGN, WITH LIVE LOADS (L.L.) REDUCED PER OSSC:

DESIGN CRITERIA

GRAVITY SYSTEM CRITERIA

ROOF LIVE/SNOW LOAD	25 PSF L.L. (ALSO SEE SNOW LOAD CRITERIA BELOW)	
FLOOR LIVE LOADS:	UNIFORM LOAD	CONCENTRATED LOAD
OFFICES	50 PSF L.L. + 15 PSF FOR PARTITIONS	2,000 LBS.
CORRIDORS AND STAIRS	100 PSF L.L.	2,000 LBS. (300 LBS. @ STAIRS)
RESIDENTIAL	40 PSF L.L. + 15 PSF PARTITIONS	-
ASSEMBLY AREAS, RETAIL	100 PSF L.L.	2,000 LBS.
ASSEMBLY AREAS, ROOF DECK	100 PSF L.L.	2,000 LBS.
STORAGE (LIGHT)	125 PSF L.L	2,000 LBS.
VERTICAL FLOOR DEFLECTION (CLADDING DESIGN)	0.75" OR L/360 WHICHEVER IS LESS LONG TERM DEAD LOAD PLUS LIVE LOAD	
VERTICAL FLOOR DEFLECTION (INTERIOR)	L/360 LIVE LOAD AT RESIDENTIAL, L/480 LIVE LOAD AT OFFICE PER OSSC TABLE 1604.3	
NOTES:	1. LIVE LOADS REDUCED PER OSSC.	
	2. MEMBER DESIGNED FOR MORE CRITICAL OF UNIFORM OR CONCENTRATED LOAD.	

SNOW CRITERIA

DESIGN ROOF SNOW LOAD	25 PSF MINIMUM IN ACCORDANCE WITH OSSC
SNOW DRIFT	PER OSSC AS SHOWN ON PLANS
GROUND SNOW LOAD	Pg= 10 PSF IN ACCORDANCE WITH 2007 SNOW LOAD ANALYSIS FOR OREGON
FLAT ROOF SNOW LOAD	Pf = 11 PSF
SNOW EXPOSURE FACTOR	Ce = 1.0
SNOW LOAD IMPORTANCE FACTOR	Is = 1.0
THERMAL FACTOR	Ct = 1.0

GEOTECHNICAL CRITERIA

DESIGN BASED ON REPORT BY:	GEODESIGN INCORPORATED
RETAINING WALLS - CANTILEVERED	35 PCF (EQUIVALENT FLUID PRESSURE)
RETAINING WALLS - BRACED AT TOP	55 PCF (EQUIVALENT FLUID PRESSURE)
ALLOWABLE SOIL PRESSURE (ON STONE AGGREGATE PILES)	5000 PSF ALLOWABLE (DEAD + LIVE) 15000 PSF ULTIMATE (DEAD + LIVE + SEISMIC)

WIND CRITERIA

RISK CATEGORY	II	
MAIN WIND FORCE RESISTING SYSTEM	Vult = 97 MPH ULTIMATE DESIGN WIND SPEED (3-SECOND GUST) DESIGN BASED ON REPORT "SITE SPECIFIC WIND DATA FOR THE FRAMEWORK PROJECT IN PORTLAND, OR" BY INTERNATIONAL CLIMATIC EVALUATIONS DATED MARCH 8, 2016.	
COMPONENTS AND CLADDINGS	Vult = 97 MPH ULTIMATE DESIGN WIND SPEED (3-SECOND GUST)	
EXPOSURE CATEGORY	B	
TOPOGRAPHIC FACTOR	Kzt = 1.0	
EXTERNAL PRESSURE	Cp = 0.8 (WINDWARD WALL) Cp= -0.5 (LEEWARD WALLS) Cp =-0.7 (SIDE WALLS)	
GUST/INTERNAL PRESSURE	GCpi = +/- 0.18	
	X DIRECTION (E / W)	Y DIRECTION (N / S)
DESIGN BASE SHEAR	300 KIPS	355 KIPS

SEISMIC CRITERIA

DESIGN BASED ON REPORT:	"FRAMEWORK, BASIS OF DESIGN - PERFORMANCE-BASED DESIGN" BY KPFF CONSULTING ENGINEERS DATED OCTOBER 7, 2016.	
RISK CATEGORY	II	
SEISMIC DESIGN CATEGORY	D	
SITE CLASS	C	
IMPORTANCE FACTOR	Ie = 1.0	
MCER SPECTRAL ACCELERATION	Ss = 0.98	S1 = 0.42
SITE COEFFICIENT	Fa = 1.01	Fv = 1.38
DESIGN SPECTRAL ACCELERATION	SDS = 0.66	SD1 = 0.39
	X DIRECTION (E / W)	Y DIRECTION (N / S)
SEISMIC FORCE RESISTING SYSTEM (SFRS)	ROCKING, POST-TENSIONED CROSS-LAMINATED TIMBER WALLS	ROCKING, POST-TENSIONED CROSS-LAMINATED TIMBER WALLS
DESIGN-LEVEL CRITERIA		
ANALYSIS PROCEDURE	MODAL RESPONSE SPECTRUM	
	X DIRECTION (E / W)	Y DIRECTION (N / S)
RESPONSE MODIFICATION FACTOR	R = 6	R = 6
SEISMIC RESPONSE COEFFICIENT	Cs = 0.049	Cs = 0.049
DESIGN BASE SHEAR	Vb = 350 KIPS	Vb = 350 KIPS
REDUNDANCY FACTOR	rho = 1.0	rho = 1.0
MCER-LEVEL CRITERIA		
ANALYSIS PROCEDURE	NONLINEAR RESPONSE HISTORY	
PERFORMANCE OBJECTIVE	COLLAPSE PREVENTION UNDER A RISK-TARGETED MAXIMUM CONSIDERED EVENT	
INELASTIC STORY DRIFT RATIO	θ ≤ 3%	
DISPLACEMENT LIMIT	STAY WITHIN PROPERTY LINE ON SOUTH AND EAST	

VOLUNTARY LATERAL CRITERIA

DESIGN BASED ON REPORT:	"FRAMEWORK, BASIS OF DESIGN - PERFORMANCE-BASED DESIGN" BY KPFF CONSULTING ENGINEERS DATED OCTOBER 7, 2016.
SERVICE-LEVEL WIND CRITERIA	
3-SECOND GUST PRESSURES	DESIGN BASED ON 25 YEAR MEAN RECURRENCE INTERVAL EXPOSURE CATEGORY ADJUSTED PRESSURES DOCUMENTED IN REPORT "SITE SPECIFIC WIND DATA FOR THE FRAMEWORK PROJECT IN PORTLAND, OR" BY INTERNATIONAL CLIMATIC EVALUATIONS DATED MARCH 8, 2016.
STORY DRIFT RATIO	θ ≤ 0.2% FOR 3-SECOND GUST VELOCITY
PEAK ALONG-WIND ACCELERATION	≤0.015g AT RESIDENTIAL ≤0.02g AT OFFICES
BASE ROCKING	NO UPLIFT
REPAIRABILITY SEISMIC CRITERIA	
ANALYSIS PROCEDURE	NONLINEAR RESPONSE HISTORY
PERFORMANCE OBJECTIVE	REPAIRABLE UNDER A 475 YEAR MEAN RETURN PERIOD EVENT
RESIDUAL DRIFT RATIO	θres ≤ 0.2%

STRUCTURAL OBSERVATION:

THE STRUCTURAL ENGINEER OF RECORD (SER) WILL PERFORM STRUCTURAL OBSERVATION BASED ON THE REQUIREMENTS OF THE OSSC AT THE STAGES OF CONSTRUCTION LISTED BELOW. CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE AND ACCESS FOR THE SER TO PERFORM THESE OBSERVATIONS.

STRUCTURAL OBSERVATIONS

ITEM	OBSERVED BY (2) AOR	OBSERVED BY (2) SER	COMMENTS
PRIOR TO FIRST CONCRETE POUR		X	REF. NOTES 1,3,4,5
DURING INITIAL GLULAM & CLT ERECTION		X	REF. NOTES 1,3,4
AS REQUIRED TO ADDRESS STRUCTURAL ISSUES		X	REF. NOTES 1,3,4

FOOTNOTES:

1. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE SER IN ADVANCE.
2. SER - STRUCTURAL ENGINEER OF RECORD.
   AOR - ARCHITECT OF RECORD.
3. A FIELD REPORT WILL BE SUBMITTED TO THE ARCHITECT AND CONRACTOR FOLLOWING EACH SITE VISIT.
4. STRUCTURAL OBSERVATION IS FOR THE GENERAL CONFORMANCE OF THE STRUCTURAL DRAWING, SPECIAL INSPECTION IS STILL REQUIRED.
5. AFTER REINFORCING STEEL HAS BEEN INSTALLED.

SPECIAL INSPECTION AND TESTING:

SPECIAL INSPECTION WILL BE PROVIDED BY THE OWNER BASED ON THE REQUIREMENTS OF THE OSSC AS SUMMARIZED IN THE SPECIAL INSPECTION AND TESTING PROGRAM ON SHEET S00X. CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE AND ACCESS FOR THE SPECIAL INSPECTOR TO PERFORM THESE INSPECTIONS.

SUBMITTALS:

SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION AND CONSTRUCTION OF ALL STRUCTURAL ITEMS, INCLUDING THE FOLLOWING:

SUBMITTALS

ITEM	SUBMITTAL (1,4)	DEFERRED SUBMITTAL (2,4)	COMMENTS
STONE AGGREGATE PIER INSTALLATION PROCEDURE	X		
STONE AGGREGATE PIER REINFORCING	X		
CONCRETE MIX DESIGNS	X		
CONCRETE REINFORCEMENT	X		
CONCRETE ANCHORAGES	X		
EMBEDDED STEEL ITEMS	X		
STRUCTURAL STEEL	X		
STEEL WELDING PROCEDURES	X		
STEEL FASTENERS	X		
GLUE-LAMINATED MEMBERS	X		
CROSS-LAMINATED TIMBER MEMBERS	X		
STRUCTURAL WOOD FASTENERS	X		
EXTERIOR METAL STUD FRAMING	X		
INTERIOR METAL STUD FRAMING	X		
CURTAIN WALL, WINDOW WALL AND OTHER GLAZING SYSTEMS		X	
STAIRS AND RAILINGS		X	
MEP EQUIPMENT ANCHORAGE AND BRACING		X	REF. NOTES

FOOTNOTES:

1. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION AND CONSTRUCTION OF STRUCTURAL ITEMS. IF THE SHOP DRAWINGS DIFFER FROM OR ADD TO THE DESIGN OF THE STRUCTURAL DRAWINGS, THEY SHALL BEAR THE SEAL AND SIGNATURE OF A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF OREGON. ANY CHANGES TO THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ARE SUBJECT TO REVIEW AND ACCEPTANCE OF THE STRUCTURAL ENGINEER.

2. DESIGN DRAWINGS, SHOP DRAWINGS, AND CALCULATIONS FOR THE DESIGN AND FABRICATION OF ITEMS THAT ARE DESIGNED BY OTHERS SHALL BEAR THE SEAL AND SIGNATURE OF A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF OREGON, AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION. CALCULATIONS SHALL BE INCLUDED FOR ALL CONNECTIONS TO THE STRUCTURE, CONSIDERING LOCALIZED EFFECTS ON STRUCTURAL ELEMENTS INDUCED BY THE CONNECTION LOADS. DESIGN SHALL BE BASED ON THE REQUIREMENTS OF THE OSSC AND AS NOTED UNDER "DESIGN CRITERIA".

3. THE CONTRACTOR SHALL COORDINATE SEISMIC RESTRAINTS OF MECHANICAL, PLUMBING, AND ELECTRICAL EQUIPMENT, MACHINERY, AND ASSOCIATED PIPING WITH THE STRUCTURE. CONNECTIONS TO STRUCTURE SHALL CONFORM TO ASCE 7-10 CHAPTER 13, BE DESIGNED BY AN ENGINEER REGISTERED IN THE STATE OF OREGON, AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION.

4. FIELD ENGINEERED DETAILS DEVELOPED BY THE CONTRACTOR THAT DIFFER FROM OR ADD TO THE STRUCTURAL DRAWINGS SHALL BEAR THE SEAL AND SIGNATURE OF A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF OREGON AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO CONSTRUCTION.

CONCRETE:

CONCRETE WORK SHALL CONFORM TO CHAPTER 19 OF THE OSSC. CONCRETE STRENGTHS SHALL BE VERIFIED BY STANDARD CYLINDER TESTS PER ASTM C39. MIX DESIGNS SHALL BE AS FOLLOWS:

CONCRETE MIX DESIGNS

USE	f'c (PSI)	TEST AGE (DAYS)	MAX. W/CM RATIO (NOTE 1)	MAX. AGGREGATE SIZE
MISC. CONCRETE, CURBS, SIDEWALKS, ETC.	3,000	28	0.50	1"
EXPOSED SLABS ON GRADE	3,000	56	0.42	1-1/2"
INTERIOR SLABS ON GRADE	4,000	28	0.50	1"
WALLS, SPREAD FOOTINGS AND MAT FOUNDATIONS	4,000	28	0.45	1"

TABLES NOTES:

1. VERIFY WATER-CEMENTITOUS MATERIAL RATIO WITH FLOOR COVERING MANUFACTURER FOR CONCRETE FLOORS WITH MOISTURE SENSITIVE FLOOR COVERINGS.
2. ESTABLISH WATER-CEMENTITOUS MATERIAL RATIO PER ACI 318-11 CHAPTER 5.
3. REFERENCE EXPOSED SLAB GENERAL NOTES FOR ADDITIONAL MIX REQUIREMENTS.

PORTLAND CEMENT CONTENT MAY BE REPLACED UP TO 20% WITH FLYASH CONFORMING TO ASTM C618 (INCLUDING TABLE 2A) TYPE F OR TYPE C OR UP TO 50% WITH SLAG CEMENT CONFORMING TO ASTM C989, PROVIDED THAT THE MIX STRENGTH IS SUBSTANTIATED BY TEST DATA. FOR MIX DESIGNS WITH f'c = 5,000 PSI OR LESS, SLAG CEMENT MAY BE SUBSTITUTED FOR FLYASH AT A 1:1 RATIO WITHOUT TEST DATA. WHEN SLAG CEMENT IS SUBSTITUTED IN HIGHER STRENGTH MIXES OR AT DIFFERENT RATIO, THE MIX STRENGTH MUST BE SUBSTANTIATED BY TEST DATA.

A WATER-REDUCING ADMIXTURE CONFORMING TO ASTM C494 USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SHALL BE INCORPORATED IN CONCRETE DESIGN MIXES. A HIGH-RANGE WATER-REDUCING (HRWR) ADMIXTURE CONFORMING TO ASTM C494 TYPE F OR G MAY BE USED IN CONCRETE MIXES PROVIDING THAT THE SLUMP DOES NOT EXCEED 10". AN AIR-ENTRAINING AGENT CONFORMING TO ASTM C260 SHALL BE USED IN CONCRETE MIXES FOR ALL CONCRETE EXPOSED TO WEATHER. THE AMOUNT OF ENTRAINED AIR BY VOLUME SHALL BE AS FOLLOWS ± 1.5%:

CONCRETE MIX AIR CONTENT

MAX. AGGREGATE SIZE	CONCRETE SUBJECT TO FREEZE/THAW
3/8"	6.0%
1/2"	5.5%
3/4"	5.0%
1"	4.5%
1-1/2"	4.5%

CONCRETE ELEMENTS SUBJECT TO FREEZE/THAW INCLUDE ALL MISC. CONCRETE, CURBS, SIDEWALKS AND EXTERIOR SLABS.

THE CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS ALONG WITH TEST DATA COMPLIANT WITH ACI 318-11 OSSC SECTION 1905 A MINIMUM OF TWO WEEKS PRIOR TO PLACING CONCRETE. NO WATER MAY BE ADDED TO CONCRETE IN THE FIELD UNLESS SPECIFICALLY APPROVED IN WRITING BY THE CONCRETE SUPPLIER IN CONJUNCTION WITH THE CONCRETE MIX DESIGN.

REINFORCING STEEL:

ALL LONGITUDINAL FLEXURAL REINFORCEMENT IN ABOVE GROUND LEVEL BEAMS, COLUMNS AND SHEAR WALLS SHALL BE ASTM A706, GRADE 60. ALL OTHER DEFORMED BAR REINFORCEMENT MAY BE ASTM A615 GRADE 60 OR ASTM A706 GRADE 60. ASTM A615 REINFORCEMENT MAY BE SUBSITUTED FOR ASTM A706 REINFORCEMENT PROVIDED THAT THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED 78,000 PSI AND THE RATIO OF ACTUAL TENSILE STRENGTH TO ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25. MILL TESTS CERTIFICATIONS FOR SUBSTITUTED BARS SHALL BE SUBMITTED TO THE SPECIAL INSPECTOR AND EOR PRIOR TO PLACEMENT.

SMOOTH WELDED WIRE FABRIC (WWF) SHALL BE ASTM A1064, UNLESS NOTED OTHERWISE. REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A706. WELDING SHALL COMPLY WITH AWS D1.4. COLUMN SPIRALS SHALL BE PLAIN OR DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60. REINFORCING STEEL SHALL BE SECURELY TIED IN PLACE WITH #16 ANNEALED IRON WIRE.

BARS IN BEAMS AND SLABS SHALL BE SUPPORTED ON WELL-CURED CONCRETE BLOCKS OR APPROVED METAL OR PLASTIC CHAIRS, AS SPECIFIED BY THE CRSI MANUAL OF STANDARD PRACTICE, MSP-1. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE "ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES," ACI 315. SHOP DRAWINGS SHALL INCLUDE ELEVATIONS OF ALL BEAMS, WALLS AND COLUMNS SHOWING BAR LOCATIONS. LAP ALL REINFORCING BARS PER THE TYPICAL LAP SPLICE LENGTH SCHEDULES, EXCEPT AS NOTED ON DRAWINGS. USE LAP LENGTH FOR SMALLER BAR WHEN SPLICING DIFFERENT BAR SIZES. BARS SPLICED WITH NONCONTACT LAPS SHALL BE SPACED NO FARTHER THAN 1/5TH THE LAP LENGTH OR 6 INCHES. MECHANICAL SPLICES NOTED ON THE PLANS SHALL BE DAYTON SUPERIOR BAR-LOCK (ICC ESR-2495) OR TAPERLOCK COUPLERS (IAPMO ES-0319) OR APPROVED WITH A CURRENT EVALUATION APPROVAL REPORT.

TYP. WALL AND SLAB LAP SPLICE LENGTH SCHEDULE (IN.)

BAR SIZE	WALL VERTICAL AND SLAB BOTTOM BARS (NOTE 7)			WALL HORIZONTAL AND SLAB TOP BARS (NOTE 7)		
	f'c = 3,000 PSI	f'c = 4,000 PSI	f'c = 5,000 PSI	f'c = 3,000 PSI	f'c = 4,000 PSI	f'c = 5,000 PSI
#3	14	12	12	18	16	14
#4	22	20	18	28	26	22
#5	32	28	26	42	36	32
#6	44	38	34	58	50	44
#7	70	62	54	92	78	70
#8	86	74	68	112	98	88
#9	104	92	82	136	118	106
#10	126	108	98	164	142	126
#11	148	128	116	192	166	150

TYP. BEAM AND COLUMN LAP SPLICE LENGTH SCHEDULE (IN.)

BAR SIZE	f'c = 3,000 PSI		f'c = 4,000 PSI		f'c = 5,000 PSI	
	BEAM TOP BARS	OTHER BARS	BEAM TOP BARS	OTHER BARS	BEAM TOP BARS	OTHER BARS
#4	24	18	20	16	18	14
#5	30	22	26	20	22	18
#6	34	28	30	24	28	22
#7	50	38	43	34	40	30
#8	56	44	49	38	44	34
#9	70	56	61	48	56	42
#10	88	68	75	58	68	54
#11	104	80	91	70	82	64

TYP. FOUNDATION AND MAT LAP SPLICE LENGTH SCHEDULE (IN.)

BAR SIZE	BOTTOM BARS (NOTE 7)			TOP BARS (NOTE 7)		
	f'c = 3,000 PSI	f'c = 4,000 PSI	f'c = 5,000 PSI	f'c = 3,000 PSI	f'c = 4,000 PSI	f'c = 5,000 PSI
#3	14	12	12	18	16	14
#4	18	16	14	24	20	18
#5	22	20	18	30	26	22
#6	28	24	22	36	32	28
#7	44	40	36	58	50	46
#8	54	48	42	70	62	54
#9	62	54	48	80	70	62
#10	70	60	54	90	78	70
#11	78	68	60	104	90	82

TABLE NOTES:

1. MINIMUM LAP SPLICES NOTED ARE FOR NON-LATERAL LOAD RESISTING ELEMENTS. FOR REBAR LAPS SPLICES AT LATERAL LOAD RESISTING ELEMENTS, REFERENCE PLANS AND ELEVATIONS.
2. ASTM A615 OR ASTM A706, GRADE 60 DEFORMED REINFORCING BARS
3. MINIMUM CLEAR COVER AND BAR SPACING of 4db TO BE PROVIDED.
4. NORMAL WEIGHT CONCRETE, FOR LIGHT-WEIGHT CONCRETE MULTIPLY TABLE VALUES BY 1.3.
5. UNCOATED BARS, FOR EPOXY-COATED BARS MULTIPLY TABLE VALUES BY 1.5.
6. COMBINATIONS OF EFFECTS DUE TO CONCRETE STRENGTH, CONCRETE WEIGHT, AND EPOXY COATING ARE CUMULATIVE.
7. SLAB, FOUNDATION AND MAT TOP BARS ARE BARS CAST ABOVE MORE THAN 12" OF FRESH CONCRETE. ALL OTHER SLAB BARS MAY BE CONSIDERED BOTTOM BARS.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
GENERAL STRUCTURAL NOTES

S002

GMP SET

11/4/2016 9:54:16 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

GENERAL STRUCTURAL NOTES CONT.

REINFORCING STEEL SHALL HAVE PROTECTION AS FOLLOWS:

REINFORCING STEEL CONCRETE COVER	
USE	CLEAR COVER
BEAMS AND COLUMNS	1-1/2" (TO STIRRUPS OR TIES)
SLABS	1"
WALLS: INTERIOR FACES	3/4"
WALLS: EXPOSED TO EARTH OR WEATHER	1-1/2" (#5 AND SMALLER)
	2" (#6 AND LARGER)
CONCRETE CAST AGAINST AND EXPOSED TO EARTH	3"
BOTTOM OF MAT SLAB	2"

CONCRETE ACCESSORIES:
HEADED SHEAR STUDS SHALL BE NELSON HEADED ANCHORS WITH FLUXED ENDS (ICC ESR-2856) OR APPROVED. DEFORMED BAR ANCHORS (D.B.A.) SHALL BE NELSON, TYPE D2L (ICC ESR-2907), OR APPROVED. STUDS AND D.B.A. SHALL BE AUTOMATICALLY END-WELDED WITH THE MANUFACTURER'S STANDARD EQUIPMENT IN ACCORDANCE WITH THEIR RECOMMENDATIONS.

POST-INSTALLED ANCHORS SHALL BE OF THE TYPE AND PRODUCT SPECIFIED ON THE DRAWINGS OR AS FOLLOWS:

POST INSTALLED CONCRETE ANCHORS	
TYPE	APPROVED ANCHORS
EXPANSION	HILTI KWIK BOLT TZ (ICC ESR-1917) or SIMPSON STRONG-BOLT 2 (ICC ESR-3037)
CONCRETE SCREW	HILTI KWIK HUS-EZ (ICC ESR-3027) or SIMPSON TITEN HD (ICC ESR-2713)
EPOXY ADHESIVE	HILTI HIT-HY200 (ICC ESR-3187) or SIMPSON SET-XP (ICC ESR-2508)

ALL ANCHORS SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND PRODUCT EVALUATION REPORTS. EMBEDMENTS SPECIFIED ON DRAWINGS ARE "EFFECTIVE" EMBEDMENTS. REFERENCE MANUFACTURER LITERATURE FOR CORRESPONDING ACTUAL EMBEDMENT DEPTHS.

REQUESTS FOR ANCHOR SUBSTITUTIONS SHALL BE SUBMITTED TO THE EOR IN WRITING ALONG WITH EVIDENCE OF EQUAL OR GREATER CAPACITY TO THE SPECIFIED CONNECTION. DO NOT CUT REINFORCING IN NEW OR EXISTING CONCRETE DURING INSTALLATION.

INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED SHALL BE PERFORMED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER AS CERTIFIED THROUGH ACI/CRSI AND IN ACCORDANCE WITH ACI 318-11 SECTION D.9.2.2. PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE EOR PRIOR TO INSTALLATION.

ANCHORS EXPOSED TO EARTH OR WEATHER SHALL BE PROTECTED FROM CORROSION BY HOT-DIP GALVANIZING OR USE OF STAINLESS STEEL. PERMANENTLY EXPOSED EMBEDDED PLATES AND ANGLES SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION, UNLESS NOTED OTHERWISE.

NO LOADS OR WELDS SHALL BE PLACED ON EMBEDDED PLATES OR ANGLES FOR A MINIMUM OF 7 DAYS AFTER CASTING. IN ACCORDANCE WITH ACI 318-11 SECTION D.2.2 ADHESIVE ANCHORS SHALL NOT BE INSTALLED FOR A MINIMUM OF 21 DAYS AFTER CASTING.

REINFORCED CONCRETE MASONRY:
CONCRETE MASONRY UNITS SHALL COMPLY WITH ASTM C90, MEDIUM WEIGHT, SAMPLED AND TESTED IN ACCORDANCE w/ ASTM C140. LINEAL SHRINKAGE FOR UNITS SHALL NOT EXCEED 0.065%. BLOCK COMPRESSIVE STRENGTH SHALL BE AS INDICATED IN BELOW TABLE. ASSEMBLIES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f 'm) AS INDICATED IN BELOW TABLE AS VERIFIED BY THE UNIT STRENGTH METHOD CONFORMING TO OSSC SECTION 2105. WALLS SHALL BE REINFORCED AS SHOWN ON THE PLANS AND DETAILS AND, IF NOT SHOWN, SHALL BE AS NOTED UNDER "MASONRY REINFORCING STEEL". PROVIDE VERTICAL EXPANSION JOINTS IN CONTINUOUS MASONRY SUCH THAT THE DISTANCE BETWEEN JOINTS DOES NOT EXCEED THE LESSER OF A LENGTH-TO-HEIGHT RATIO OF 1.5 OR 25 FT. REFERENCE ARCHITECTURAL DRAWINGS FOR LOCATIONS.

CONCRETE MASONRY ASSEMBLY STRENGTH			
f'm (PSI)	BLOCK UNIT STRENGTH (PSI)	GROUT STRENGTH (PSI)	MORTAR
1,500	1,900	2,000	TYPE M OR S

MORTAR:

MORTAR SHALL BE OF THE TYPE INDICATED IN THE PRECEDING TABLE, WITH A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 1,800 PSI AND SHALL CONFORM TO OSSC SECTION 2103.

MASONRY GROUT:
GROUT SHALL HAVE COMPRESSIVE STRENGTH AS INDICATED IN THE PRECEDING TABLE AND SHALL CONFORM TO OSSC SECTION 2103. GROUT SHALL CONSIST OF A MIXTURE OF CEMENTITIOUS MATERIALS AND AGGREGATE TO WHICH SUFFICIENT WATER HAS BEEN ADDED TO CAUSE THE MIXTURE TO FLOW WITHOUT SEGREGATION OF THE CONSTITUENTS. ALL CELLS CONTAINING VERTICAL BARS AND ALL BOND BEAMS SHALL BE FILLED WITH GROUT. FULLY GROUT ALL STRUCTURAL MASONRY WALLS UNLESS NOTED OTHERWISE.

THE MAXIMUM GROUT POUR HEIGHT SHALL BE 12'-8". CLEAN-OUTS ARE REQUIRED FOR ANY POUR HEIGHT GREATER THAN 5'-4". WHERE REQUIRED, CLEAN-OUTS SHALL BE LOCATED AT ALL CORES CONTAINING VERTICAL REINFORCEMENT AND AT A MAXIMUM OF 32" O.C. GROUT LIFTS GREATER THAN 5'-4" ARE LIMITED IN HEIGHT TO THE BOTTOM OF THE LOWEST BOND BEAM THAT IS MORE THAN 5'-4" ABOVE THE BOTTOM OF THE LIFT, PROVIDED THAT: 1) THE MASONRY HAS CURED FOR AT LEAST 4 HOURS, AND 2) THE GROUT SLUMP IS MAINTAINED BETWEEN 10 AND 11 INCHES. IF EITHER OF THESE TWO CONDITIONS ARE NOT MET, THEN THE MAXIMUM LIFT HEIGHT SHALL BE 5'-4". REFERENCE TYPICAL MASONRY DETAILS.

MASONRY REINFORCING STEEL:
REINFORCING SHALL CONFORM TO OSSC SECTION 2103.14. DEFORMED BARS SHALL BE ASTM A615 GRADE 60, AND SHALL BE SECURELY PLACED IN ACCORDANCE WITH ACI 530.1-11 SPECIFICATION SECTION 3.4. WELDED REINFORCEMENT SHALL CONFORM TO ASTM A706 GRADE 60.

BOND BEAMS WITH TWO #5 BARS HORIZONTALLY SHALL BE PROVIDED AT ALL FLOOR AND ROOF LINES AND AT THE TOP OF WALLS. STEP BOND BEAMS AS REQUIRED TO MATCH ROOF SLOPES. PROVIDE A BOND BEAM WITH TWO #5 BARS HORIZONTALLY ABOVE AND BELOW ALL OPENINGS, AND EXTEND THESE BARS 2'-0" PAST THE OPENING AT EACH SIDE. PROVIDE ONE BAR, MATCHING VERTICAL BAR SIZE, FOR THE FULL HEIGHT OF THE WALL AT EACH SIDE OF OPENINGS, WALL ENDS, AND INTERSECTIONS. DOWELS TO MASONRY WALLS SHALL BE EMBEDDED A MINIMUM OF 1'-0" OR HOOKED INTO THE SUPPORTING STRUCTURE AND BE OF THE SAME SIZE AND SPACING AS WALL REINFORCING. PROVIDE CORNER BARS TO MATCH THE HORIZONTAL WALL REINFORCING AT WALL INTERSECTIONS. LAP ALL REINFORCING BARS AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

TYP. LAP SPLICE LENGTH SCHEDULE (IN.)				
f'm=1,500 PSI	CASE 1	CASE 2		
BAR SIZE	ALL BLOCK	8" BLOCK	10" BLOCK	12" BLOCK
#3	19	12	12	12
#4	34	14	12	12
#5	45	22	17	14
#6	54	43	33	27
#7	63	59	46	37
#8	72	72	70	57
#9	81	81	81	73

NOTES:
CASE 1: BARS LOCATED NEAR THE FACE OF BLOCK WITH ONLY MINIMUM COVER OR CELLS WITH MORE THAN (1) BAR.

CASE 2: SINGLE BARS LOCATED AT THE CENTER OF A CELL.

1. FOR EPOXY COATED BARS, MULTIPLY LAP LENGTHS BY 1.5.

2. MAXIMUM OF (2) BARS IN (1) CELL ((4) AT LAP SPLICE.)

3. AT CONTRACTOR'S OPTION: PROVIDE MECHANICAL SPLICES FOR #8 AND #9 BARS.

STRUCTURAL STEEL	
MATERIAL GRADE	SHAPE
ASTM A992, GRADE 50	WIDE FLANGE SHAPES
ASTM A572, GRADE 50	PLATES
ASTM A36	CHANNELS AND ANGLES
ASTM A500, GRADE B (FY=46KSI)	HOLLOW STRUCTURAL SECTIONS (TUBES)
ASTM A53, GRADE B (FY=35 KSI)	PIPES

DESIGN, FABRICATION, AND ERECTION SHALL BE IN ACCORDANCE WITH THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" WITH "COMMENTARY" AND THE "CODE OF STANDARD PRACTICE", WITH EXCEPTIONS NOTED IN SPECIFICATIONS. REFERENCE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR MEMBERS PART OF THE SEISMIC FORCE RESISTING SYSTEM (SFRS).

BOLTS SHALL CONFORM TO THE ASTM AND RCSC SPECIFICATIONS FOR JOINTS USING A325 OR A490 HIGH STRENGTH BOLTS. BOLTS SHALL BE SNUG-TIGHT UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS USED AS PART OF THE SEISMIC FORCE RESISTING SYSTEM (SFRS) NOTED ON THE DRAWINGS AND DETAILS SHALL BE FULLY TENSIONED AND ALL FAYING SURFACES SHALL BE PREPARED AS REQUIRED FOR CLASS A OR BETTER SLIP-CRITICAL JOINTS.

WELDING SHALL CONFORM TO THE AWS CODES FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH A WELDED PROCEDURE SPECIFICATION (WPS) AS REQUIRED IN AWS D1.1 AND APPROVED BY THE STRUCTURAL ENGINEER. THE WPS VARIABLES SHALL BE WITHIN THE PARAMETERS ESTABLISHED BY THE FILLER-METAL MANUFACTURER. FOR MEMBERS INCLUDED IN THE SEISMIC FORCE RESISTING SYSTEM (SFRS), REQUIREMENTS OF AWS D1.8 (SEISMIC SUPPLEMENT) SHALL APPLY

WELDS SHALL BE MADE USING E70XX ELECTRODES AND SHALL BE 3/16" MINIMUM, UNLESS OTHERWISE NOTED. WELDING SHALL BE BY AWS CERTIFIED WELDERS MEETING CITY OF PORTLAND STANDARDS.

PROVIDE WEEP HOLES AT EXTERIOR CLOSED SECTIONS WHERE MOISTURE MAY ACCUMULATE.

COLD-FORMED METAL FRAMING:
COLD_FORMED METAL STUDS SHALL BE C-STUDS WITH A MINIMUM YIELD STRENGTH OF 33,000 PSI FOR 33 AND 43 MIL AND 50,000 PSI FOR 54, 68 AND 97 MIL THICKNESSES. GAUGE PLATE AND STRAPS SHALL HAVE A MINIMUM YIELD STRENGTH OF 30,000 PSI FOR 33 AND 43 MIL AND 50,000 PSI FOR 54, 68 AND 97 MIL THICKNESSES. LIGHT GAUGE FRAMING SHALL BE OF THE SIZE, GAUGE, AND SPACING SHOWN ON THE DRAWINGS.

THE AMERICAN IRON AND STEEL INSTITUTE AND STEEL STUD MANUFACTURES ASSOCIATION (SSMA) STANDARDS ARE USED IN THIS PACKAGE. PRODUCTS USED SHALL MEET OR EXCEED AISI STANDARDS AND ARE DESIGNATED BY:

362 S 162 - 33

WEB SIZE — THICKNESS (MILS)

MEMBER TYPE — FLANGE SIZE

PROVIDE BRIDGING ADEQUATE TO DEVELOP THE FULL MOMENT CAPACITY OF STUDS IN CONFORMANCE WITH THE STEEL STUD MANUFACTURERS ASSOCIATION'S (SSMA) RECOMMENDATIONS.

ALL FIELD CUTTING OF STUDS MUST BE BY SAWING, SHEARING, OR PLASMA CUTTING. OTHER CUTTING METHODS OF COLD-FORMED MEMBERS ARE UNACCEPTABLE.

NO NOTCHING OR COPING OF STUDS IS ALLOWED, UNLESS NOTED OTHERWISE.

ENDS OF STUDS MUST SEAT FIRMLY IN RUNNER TRACK TO PROVIDE FULL STUD BEARING.

SPLICING OF WALL STUDS OR HEADERS IS NOT ALLOWED, UNLESS NOTED OTHERWISE.

CONTRACTOR TO ENSURE PUNCH OUT ALIGNMENT WHEN ASSEMBLING LATERAL BRACING AND FIELD CUTTING STUDS TO LENGTH.

ALL HEADERS/BUILT-UP BEAMS ARE TO BE CONSTRUCTED WITH UNPUNCHED MATERIAL ONLY.

COLD_FORMED FRAMING CONNECTIONS SHALL BE AS FOLLOWS:

COLD-FORMED METAL FRAMING CONNECTIONS	
FASTENER	PRODUCT
SCREWS	ELCO DRIL-FLEX OR HILTI KWIK-FLEX (ESR-3332)
PAF'S	HILTI X-U (ESR-2269)

FOR SCREWS, PROVIDE 3/4" MINIMUM CLEARANCE FROM ALL EDGES AND 3/4" MINIMUM CENTER TO CENTER SPACING.

FASTENERS OF COMPARABLE SPECIFICATIONS AND LOAD CAPACITIES MAY BE SUBMITTED FOR APPROVAL.

WELDING SHALL CONFORM WITH AWS D1.3.

RIGID POLYSTYRENE GEOFOAM (EPS):
EPS GEOFOAM USED IN OVER-FRAMING APPLICATIONS SHALL CONFORM TO ASTM D6817 WITH THE FOLLOWING PROPERTIES:

AT TYPICAL FLOOR AREAS, USE GEOFOAM TYPE EPS19 WITH A MINIMUM COMPRESSIVE RESISTANCE OF 5.8 PSI AT 1% DEFORMATION.

AT LOADING DOCKS, SIDEWALKS AND OTHER HEAVILY LOADED AREAS, USE GEOFOAM TYPE EPS29 WITH A MINIMUM COMPRESSIVE RESISTANCE OF 10.9 PSI AT 1% DEFORMATION.

SAWN LUMBER:
SAWN LUMBER SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE CURRENTLY ACCEPTED NATIONAL DESIGN SPECIFICATION (NDS) DESIGN VALUES FOR WOOD CONSTRUCTIONAND CONFORMING TO THE WEST COAST LUMBER INSPECTION BUREAU OR WESTERN WOOD PRODUCTS ASSOCIATION GRADING RULES. LUMBER SHALL BE THE SPECIES, GRADE, AND MOISTURE CONTENT NOTED BELOW:

SAWN LUMBER		
USE	SPECIES AND GRADE	MOISTURE CONTENT
LUMBER 2" TO 4" THICK x 5" OR WIDER (JOISTS/RAFTERS)	DOUGLAS FIR-LARCH NO. 2 & BTR	S-DRY
LUMBER 2" TO 3" THICK x 4" TO 6" WIDE (STUDS)	DOUGLAS FIR-LARCH STUD	S-DRY
LUMBER 2" TO 3" THICK x 4" TO 6" WIDE (PLATES)	DOUGLAS FIR-LARCH STUD	MC/KD 15
LUMBER 5x5 AND GREATER (BEAMS)	DOUGLAS FIR-LARCH NO. 1	S-DRY
LUMBER 5x5 AND GREATER (POSTS)	DOUGLAS FIR-LARCH NO. 1	S-DRY

ALL LUMBER IN CONTACT WITH CONCRETE OR CMU SHALL BE PRESSURE TREATED, UNLESS AN APPROVED MOISTURE BARRIER IS PROVIDED.

FRAMING ACCESSORIES SHALL BE MANUFACTURED BY SIMPSON STRONG TIE (OR APPROVED EQUAL) AND OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS. ALL NAIL HOLES SHALL BE FILLED WITH STRUCTURAL FASTENERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS AND FASTENERS SHALL BE INSTALLED FOLLOWING ALL MANUFACTURERS REQUIREMENTS. IF A SUBSTITUTION IS MADE, A DOCUMENT SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL OUTLINING THE FRAMING ACCESSORIES BEING REPLACED AND THE SUBSTITUTED FRAMING ACCESSORIES. ALLOWABLE LOADS FOR THE SIMPSON ACCESSORIES SHALL BE TABULATED ALONG WITH ALLOWABLE LOADS FOR THE SUBSTITUTED ACCESSORIES, WHICH CLEARLY INDICATE THE SUBSTITUTED ACCESSORIES HAVING AN EQUAL OR GREATER CAPACITY.

ALL FRAMING NAILS SHALL BE OF THE SIZE AND QUANTITY INDICATED ON THE DRAWINGS AND CONFORM TO ASTM F 1667, "STANDARD SPECIFICATION OF DRIVEN FASTENERS: NAILS, SPIKES, AND STAPLES AND ICC-ES REPORT ESR-1539 "POWER-DRIVEN STAPLES AND NAILS". NAILS SHALL BE IDENTIFIED BY LABELS (ATTACHED TO THEIR CONTAINERS) THAT SHOW THE MANUFACTURER'S NAME AND ICC-ES REPORT NUMBER, NAIL SHANK DIAMETER, AND LENGTH AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FRAMING. NAILING NOT SHOWN SHALL BE AS INDICATED ON OSSC TABLE 2304.9.1 OR ESR-1539. THE FOLLOWING NAIL SIZES SHALL BE USED WITH THE NAIL LENGTH DETERMINED BY MINIMUM PENETRATION INTO FRAMING MEMBER:

FRAMING NAILS		
NAIL TYPE	SHANK DIAMETER (IN.)	MINIMUM PENETRATION INTO FRAMING MEMBER (IN.)
6d	0.113	1.125
8d	0.131	1.375
10d	0.148	1.5
16d	0.162	1.625

BOLTS AND LAG SCREWS SHALL CONFORM TO ANSI/ASME STANDARD B18.2.1. ALL BOLTS AND LAG SCREWS SHALL BE INSTALLED WITH STANDARD CUT WASHERS.

CUTTING AND NOTCHING OF JOISTS AND STUDS SHALL CONFORM TO THE TYPICAL WOOD DETAILS PROVIDED OR OSSC SECTIONS 2308.4.2.4, 2308.5.9 AND 2308.7.4 WHERE NO DETAILS ARE SPECIFIED.

WOOD STRUCTURAL PANELS:
THE TERM "WOOD STRUCTURAL PANEL" REFERS TO A WOOD-BASED PANEL PRODUCT BONDED WITH A WATERPROOF ADHESIVE. INCLUDED UNDER THIS DESIGNATION ARE BOTH PLYWOOD AND ORIENTED STRAND BOARD (OSB). WOOD STRUCTURAL PANELS SHALL CONFORM TO U.S. DEPARTMENT OF COMMERCE VOLUNTARY PRODUCT STANDARDS PS1 OR PS2 FOR WOOD-BASED STRUCTURAL USE PANELS, OR APA PERFORMANCE STANDARD PRP-108 (ICC-ES ESR-2586). PANELS SHALL BE APA RATED SHEATHING OR APA RATED STURD-I-FLOOR, EXTERIOR OR EXPOSURE 1, OF THE THICKNESS AND SPAN RATING SHOWN ON THE DRAWINGS. PANELS SHALL BE STAMPED WITH THE APA TRADEMARK.

WOOD STRUCTURAL PANEL INSTALLATION SHALL BE IN CONFORMANCE WITH APA RECOMMENDATIONS. ALLOW 1/8" SPACING AT PANEL ENDS AND EDGES, UNLESS OTHERWISE RECOMMENDED BY THE PANEL MANUFACTURER.

ALL ROOF SHEATHING AND FLOOR SHEATHING SHALL BE INSTALLED WITH FACE GRAIN OR STRENGTH AXIS PERPENDICULAR TO SUPPORTS, EXCEPT AS INDICATED ON THE DRAWINGS. ROOF SHEATHING SHALL EITHER BE BLOCKED, TONGUE-AND-GROOVE, OR HAVE EDGES SUPPORTED BY PLYCLIPS. WHERE BLOCKING IS SPECIFICALLY INDICATED ON THE DRAWINGS, T&G EDGES OR PLYCLIPS MAY NOT BE SUBSTITUTED. SHEATHING SHALL BE UNBLOCKED, EXCEPT AS INDICATED ON DRAWINGS. FLOOR SHEATHING SHALL BE FIELD GLUED TO THE FRAMING USING ADHESIVES MEETING APA SPECIFICATION AFG-01 OR ASTM D3498. TONGUE AND GROOVE PANELS SHALL ALSO BE GLUED AT THE T&G JOINT.

SHEAR WALL SHEATHING SHALL BE INSTALLED EITHER HORIZONTALLY OR VERTICALLY AND BE BLOCKED WITH 2x FRAMING AT ALL PANEL EDGES. NAILING NOT SHOWN SHALL BE AS INDICATED ON OSSC TABLE 2304.9.1.

WOOD STRUCTURAL PANEL SHEAR WALLS:
SHEAR WALL WOOD STRUCTURAL PANELS SHALL BE PLYWOOD OR OSB PANELS CONFORMING TO THE REQUIREMENTS FOR ITS TYPE SPECIFIED IN U.S. DOC PS1 OR PS2. SHEATHING SHALL BE APPLIED EITHER HORIZONTALLY OR VERTICALLY. SHEET SIZES SHALL BE 4x8 UNLESS AT BOUNDARIES OR FRAMING CHANGES.

NAIL HEADS SHALL BE DRIVEN FLUSH WITH SHEATHING. DO NOT PENETRATE SURFACE PLY WITH NAIL HEADS. IF NAIL HEADS ARE NOT FLUSH NOTIFY E.O.R. CONTRACTOR IS RESPONSIBLE FOR ANY REPAIRS NECESSARY DUE TO OVER-PENETRATION OF NAILS.

ALL SHEAR WALL PANEL SHEATHING EDGES SHALL BE BLOCKED. EDGE NAILS SHALL BE AT LEAST 3/8" FROM EDGES AND ENDS OF PANELS. STAGGER NAILING ON EDGES.

GLUED-LAMINATED MEMBERS:
GLUED-LAMINATED (GLULAM) MEMBERS SHALL BE FABRICATED IN CONFORMANCE WITH ANSI STANDARD A190.1, AMERICAN NATIONAL STANDARD FOR STRUCTURAL GLUED LAMINATED TIMBER OR EN 14080: 2013, TIMBER STRUCTURES, GLUED LAMINATED TIMBER AND GLUED SOLID TIMBER REQUIREMENTS. EACH MEMBER SHALL BEAR AN AITC OR APA-EWS IDENTIFICATION MARK OR BE ACCOMPANIED BY A CERTIFICATE OF CONFORMANCE. ONE COAT OF END SEALER SHALL BE APPLIED IMMEDIATELY AFTER TRIMMING IN EITHER THE SHOP OR THE FIELD.

GLULAM MEMBERS SHALL BE ARCHITECTURAL EXPOSED IN APPEARANCE CLASSIFICATION AND OF THE STRENGTH INDICATED BELOW:

GLUED-LAMINATED MEMBERS					
STRENGTH CLASS	USE	FLEXURAL STRENGTH Fm,g,k (MPa)	HORIZONTAL SHEAR STRENGTH Fv,g,k (MPa)	COMPRESSIVE STRENGTH Fc,0,g,k (MPa)	MODULUS OF ELASTICITY E0,g,mean (MPa)
GL28C	BEAMS	28	3.5	24	12,500
GL28H	COLUMNS	28	3.5	28	12,600

ADHESIVE SHALL BE WET-USE EXTERIOR, WATERPROOF GLUE. FIELD NOTCHING AND BORING OF GLULAM MEMBERS NOT ALLOWED UNLESS APPROVED BY SER.

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
GENERAL STRUCTURAL NOTES (CONT.)

S003

GMP SET

11/4/2016 9:54:17 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

GENERAL STRUCTURAL NOTES CONT.

CROSS LAMINATED TIMBER PANELS:

CROSS LAMINATED TIMBER (CLT) MEMBERS SHALL BE MANUFACTURED IN CONFORMANCE WITH ANSI/APA PRG 320-2012 STANDARD FOR PERFORMANCE-RATED CROSS-LAMINATED TIMBER AND APA PRODUCT REPORT PR-L314. OR EQUUIVALENT. DEMONSTRATION OF EQUIVALENCE SHALL BE RESPONSIBILITY OF THE MANUFACTURER PANELS SHALL BE INDUSTRIAL (HIDDEN) OR ARCHITECTURAL (EXPOSED) WITH LAYUPS AS NOTED ON THE STRUCTURAL PLANS AND OF THE STRENGTHS INDICATED BELOW.

CROSS LAMINATED TIMBER (CLT) PANELS-MINIMUM ALLOWABLE DESIGN PROPERTIES							
LAYUP#	THICKNESS (IN)	GRADE	MAJOR STRENGTH DIRECTION		MINOR STRENGTH DIRECTION		IN-PLANE DIRECTION
			Fb (PSI)	E (PSI)	Fb (PSI)	E (PSI)	V_{ALL} (#)
CLT5 FLOOR PANELS	6.875	V1	1,890	1,600,000	1,100	1,400,000	-
CLT7 WALL PANELS	9.625	E1-M5	2,100	1,800,000	875	1,400,000	8,718
CLT9 WALL PANELS	12.375	E1-M5	2,100	1,800,000	875	1,400,000	11,600

CLT CONNECTIONS, SPLINES AND FASTENERS SHALL BE AS SHOWN IN THE STRUCTURAL DRAWINGS OR AS APPROVED BY THE SER.

UNLESS OTHERWISE NOTED IN PLAN, CLT PANELS SHALL BE ORIENTED WITH EXTERIOR LAYERS PERPENDICULAR TO SUPPORTS.

FIELD NOTCHING AND BORING OF CLT PANELS IS NOT ALLOWED UNLESS APPROVED BY SER.

SELF-DRILLING SCREWS

SELF-DRILLING SCREWS FOR WOOD AND WOOD TO STEEL CONNECTIONS SHALL BE AS SHOWN IN THE STRUCTURAL DRAWINGS FROM THE FOLLOWING APPROVED MANUFACTURERS.

APPROVED SELF-DRILLING SCREWS		
SCREW TYPE (CALL OUT)	MANUFACTURER	ICC REPORT
SDS SERIES WOOD SCREWS (SDS)	SIMPSON STRING-TIE	ESR-2236
SWG ASSY STRUCTURAL SCREWS (ASSY 3.0/VG)	MyTiCon TIMBER CONNECTORS	ESR-3178 & ESR-3179

BUILDING RESPONSE INSTRUMENTATION

BUILDING RESPONSE INSTRUMENTATION SHALL BE INSTALLED TO MEASURE POST-TENSIONING LOSS AND EARTHQUAKE ACCELERATIONS.

POST-TENSIONING LOSS INSTRUMENTATION SHALL INCLUDE PERMANENT MEASURING DEVICES AT THE TOP OF THE P/T RODS AND SHALL BE INSTALLED PRIOR TO ANY POST-TENSIONING OPERATIONS. ACCESS TO DATA AND TO MEASURING DEVICES SHALL BE MAINTAINED AT ALL TIMES.

EARTHQUAKE RECORDING INSTRUMENTATION SHALL INCLUDE PERMANENT ACCELEROMETERS, AS FOLLOWS:

1. (1) TRI-AXIAL SENSOR AND (1) UNIAXIAL SENSOR LOCATED AT LEVEL 1
2. (1) BIAXIAL SENSOR AND (1) UNIAXIAL SENSOR LOCATED AT LEVEL 3, 6, 9 AND ROOF

ACCELEROMETERS SHALL BE INTERCONNECTED FOR COMMON START, TIMING AND RECORDING. ACCESS TO DATA AND TO ACCELEROMETERS SHALL BE MAINTAINED AT ALL TIMES. A SIGN STATING "MAINTAIN CLEAR ACCESS TO THIS INSTRUMENT" SHALL BE POSTED IN A CONSPICUOUS LOCATION FOR EACH ACCELEROMETER AND THE DATA RECORDER.

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
GENERAL STRUCTURAL NOTES (CONT.)

S004

GMP SET

11/4/2016 9:54:18 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

SPECIAL INSPECTIONS

STATEMENT OF SPECIAL INSPECTION NOTES:

1. SPECIAL INSPECTIONS SHALL CONFORM TO SECTION 1705 OF THE 2014 OSSC, CONTRACT DOCUMENTS AND APPROVED SUBMITTALS. REFER TO TABLES 1 THROUGH 3 FOR SPECIAL INSPECTION AND TABLE 4 FOR TESTING REQUIREMENTS.

2. SPECIAL INSPECTIONS AND ASSOCIATED TESTING SHALL BE PERFORMED BY AN APPROVED ACCREDITED INDEPENDENT AGENCY MEETING THE REQUIREMENTS OF ASTM E329 (MATERIALS). THE INSPECTION AND TESTING AGENCY SHALL FURNISH TO THE STRUCTURAL ENGINEER AND ARCHITECT A COPY OF THEIR SCOPE OF ACCREDITATION. SPECIAL INSPECTORS SHALL BE APPROVED BY THE BUILDING OFFICIAL. WELDING INSPECTORS SHALL BE QUALIFIED PER SECTION 6.1.4.1.1 OF AWS D1.1.

3. THE SPECIAL INSPECTOR SHALL OBSERVE THE INDICATED WORK FOR COMPLIANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION AND NOTED IN THE INSPECTION REPORTS.

4. THE SPECIAL INSPECTOR AND GEOTECHNICAL ENGINEER SHALL FURNISH INSPECTION REPORTS FOR EACH INSPECTION TO THE BUILDING OFFICIAL, STRUCTURAL ENGINEER, ARCHITECT, CONTRACTOR, AND OWNER. THE SPECIAL INSPECTION AGENCY SHALL SUBMIT A FINAL REPORT STATING THAT THE WORK REQUIRING SPECIAL INSPECTION WAS INSPECTED AND IS IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THAT ALL DISCREPANCIES NOTED IN THE INSPECTION REPORTS HAVE BEEN CORRECTED.

5 FOR STEEL INSPECTIONS PER AISC 360 AND 341 (TABLES 2A):
QUALITY ASSURANCE (QA) IS REQUIRED FOR EACH ITEM IN TABLES UNLESS SPECIFICALLY NOTED OTHERWISE.
QUALITY CONTORL (QC) TO BE PROVIDED BY THE FABRICATOR, ERECTOR OR OTHER RESPONSIBLE CONTRACTOR AS APPLICABLE. CONTRACTOR AND SPECIAL INSPECTOR TO DOCUMENT QUALITY CONTROL AS REQUIRED IN AISC 360 SECTION N3 AND AISC 341 SECTION J2.

6 INSPECTION TYPES
CONTINUOUS : THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED.
PERIODIC : THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK.
OBSERVE : OBSERVE THESE FUNCTIONS ON A RANDOM, DAILY BASIS. OPERATIONS NEED NOT BE DELAYED PENDING OBSERVATIONS.
PERFORM : INSPECTIONS SHALL BE PERFORMED PRIOR TO THE FINAL ACCEPTANCE OF THE ITEM.

7 PERFORM INSPECTION PRIOR TO FINAL ACCEPTANCE OF THE ITEM FOR TEN WELDS TO BE MADE BY A GIVEN WELDER, WITH THE WELDER DEMONSTRATING UNDERSTANDING OF REQUIREMENTS AND POSSESSION OF SKILLS AND TOOLS TO VERIFY THESE ITEMS, THE PERFORM DESIGNATION OF THIS TASK SHALL BE REDUCED TO OBSERVE, AND THE WELDER SHALL PERFORM THIS TASK. SHOULD THE INSPECTOR DETERMINE THAT THE WELDER HAS DISCONTINUED PERFORMANCE OF THIS TASK, THE TASK SHALL BE RETURNED TO PERFORM UNTIL SUCH TIME AS THE INSPECTOR HAS RE-ESTABLISHED ADEQUATE ASSURANCE THAT THE WELDER WILL PERFORM THE INSPECTION TASKS LISTED

8 SPECIAL INSPECTION OF MECHANICAL POST INSTALLED ANCHORS SHALL BE IN STRICT CONFORMANCE WITH THE ICC REPORT AND MANUFACTURERS INSTALLATION REQUIREMENTS. ANCHOR INSTALLERS SHALL BE QUALIFIED AS REQUIRED BY JURISDICTION REQUIREMENTS.
- INSPECTION REPORTS SHALL IDENTIFY NAMES OF INSTALLERS.
- SPECIAL INSPECTOR SHALL PROVIDE DOCUMENTATION AT THE END OF ANCHOR INSTALLATIONS STATING THAT THE ANCHORS WERE INSPECTED PER APPROVED ANCHOR EVAULATION REPORT.

9 **TABLE 7 ABBREVIATIONS:**
NDT - NON-DESTRUCTIVE TESTING
CJP - COMPLETE JOINT PENETRATION
MT - MAGNETIC PARTICLE TESTING

10 DOCUMENT (D): INDICATES CONTRACTOR AND SPECIAL INSPECTOR TO PROVIDE DOCUMENTATION IN ACCORDANCE WITH AISC 341.

CONTRACTOR RESPONSIBILITY:

THE CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF THE SEISMIC-FORCE-RESISTING SYSTEM, OR SEISMIC-RESISTING COMPONENT LISTED IN TABLE 3 SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN THE FOLLOWING:

ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.

1. ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.

2. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND DISTRIBUTION OF THE REPORTS.

3. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.

TABLE 1 - REQUIRED GEOTECHNICAL SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	INSPECTION				REMARKS
	OSSC CODE REFERENCE	CODE OR STANDARDS REFERENCE	FREQUENCY (NOTE 6)		
			CONTINUOUS	PERIODIC	
SOILS					
VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	1705.6	GEOTECHNICAL REPORT		X	BY THE GEOTECHNICAL ENGINEER
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL				X	
PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS				X	
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL			X		
PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY				X	
STONE AGGREGATE PIERS					
INSTALLATION	1707.1	GEOTECHNICAL AND ICC EVALUATION REPORTS	X		BY THE GEOTECHNICAL ENGINEER SPECIAL INSPECTIONS APPLY TO VERIFYING HOLE SIZE AND DEPTH, AGGREGATE MATERIAL, NUMBER AND LIFTS OF AGGREGATE, INSTALLATION RAMMER ENERGY, AND TOP OF PIER ELEVATION

TABLE 2 - REQUIRED STRUCTURAL SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	INSPECTION				REMARKS
	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6)		
			CONTINUOUS	PERIODIC	
FABRICATORS					
FABRICATORS	1704.2.5			X	SPECIAL INSPECTION IS REQUIRED FOR STRUCTURAL LOAD-BEARING MEMBERS AND ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP PER TABLE 2 AND AS REQUIRED ELSEWHERE IN THE SPECIAL INSPECTION PROGRAM. THE SPECIAL INSPECTOR SHALL VERIFY THAT THE FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES AND SHALL REVIEW FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE CODE REQUIREMENT. REFERENCE SECTION 1704.2.5.2 FOR APPROVED FABRICATOR EXCEPTION.
DEFERRED SUBMITTALS					
DEFERRED SUBMITTALS			X	X	SPECIAL INSPECTION REQUIREMENTS FOR DEFERRED SUBMITTAL ITEMS TO BE SPECIFIED BY THE SYSTEMS ENGINEER AND INCLUDED WITH DEFERRED SUBMITTAL DOCUMENTS.
CONCRETE					
GENERAL	1705.3 1901.4	ACI 318 1.3			SPECIAL INSPECTIONS OF CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1705.3 OF THE OSSC AND SECTION 1.3 OF ACI 318.
REINFORCING STEEL	1910.4 1901.3.2	ACI 318 3.5 ACI 318 7.1 TO 7.7		X	REINFORCING TO COMPLY WITH ALL CODE PROTECTION, SPACING AND TOLERANCE LIMITS.
WELDING REINFORCING STEEL	1705.2.2 1903.1	AWS D1.4 ACI 318: 3.5.2			
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706				X	
3. SHEAR REINFORCEMENT			X		
4. OTHER REINFORCING STEEL				X	
PLACEMENT OF CAST-IN-PLACE BOLTS	1908.5 1909.1		X		ALL BOLTS VISUALLY INSPECTED
VERIFYING USE OF REQUIRED MIX DESIGN(S)	1904.2 1910.2 1910.3	ACI 318, CH. 4 ACI 318 5.2-5.4		X	
CONCRETE PLACEMENT, NON-SHRINK GROUT		ACI 318 5.9-5.10	X		
EMBEDDED ITEMS IN CONCRETE				X	ALL NON-STRUCTRAL EMBEDDED ITEMS, SUCH AS CONDUITS, PIPES AND SLEEVES, SHALL BE REVIEWED FOR CONFORMANCE WITH STRUCTURAL DOCUMENTS FOR SIZE, SPACING, LOCATION, EDGE DISTANCE AND TRIM REINFORING.
REINFORCING STEEL MECHANICAL COUPLERS, TERMINATORS AND FORMSAVERS		ICC EVALUATION REPORTS		X	
MASONRY LEVEL A QUALITY ASSURANCE					
VERIFY COMPLIANCE WITH THE CONTRACT DOCUMENTS AND APPROVED SUBMITTALS		TMS 602 ART. 1.5		X	

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
SPECIAL INSPECTIONS

S005

GMP SET

SPECIAL INSPECTIONS CONT.

TABLE 2 - REQUIRED STRUCTURAL SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	INSPECTION: OSSC CODE REFERENCE	INSPECTION: CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6): CONTINUOUS	FREQUENCY (NOTE 6): PERIODIC	REMARKS
STEEL					
REFERENCE TABLE 2A FOR REQUIRED SPECIAL INSPECTIONS FOR STEEL					
COLD-FORMED STEEL FRAMING					
MATERIAL VERIFICATION OF WELD FILLER METALS		AWS D1.3 SECTION 7		X	MANUFACTURER'S CERTIFIED TEST REPORTS
VERIFYING USE OF PROPER WPS'S				X	RETAIN A RECORD OF WELDING PROCEDURE SPECIFICATIONS
VERIFYING WELDER QUALIFICATIONS	1705.2.2.1			X	RETAIN A RECORD OF QUALIFICATION CARDS
WELDED FRAMING CONNECTIONS	1705.2.2.1	AWS D1.3 SECTION 7		X	ALL WELDS VISUALLY INSPECTED PER AWS D1.3 7.1
POST INSTALLED CONCRETE ANCHORS					
POST INSTALLED ANCHORS INSTALLATION IN HARDENED CONCRETE AND COMPLETED MASONRY	1908.5 1909.1	ACI 318: 1.3, 3.8.6		X (NOTE 8)	INSPECTION REQUIREMENTS PER ICC EVALUATION REPORT
WOOD					
MATERIAL VERIFICATION					
1. GLULAMINATED TIMBER (GLT) MEMBERS				X	VERIFY MEMBER SIZES AND GRADES
2. CROSS-LAMINATED TIMBER (CLT) PANELS				X	VERIFY MEMBER SIZES AND GRADES
GRAVITY CONNECTIONS					
1. BEAM CONNECTORS					
A. PLACEMENT				X	VERIFY PLACEMENT INCLUDING GAPS SPECIFIED
B. SCREWS				X	VERIFY QUANTITY, SIZE AND GRADE
C. DISC SPRINGS				X	VERIFY QUANTITY, SIZE AND GRADE
D. FIRE BOARD, TAPE, AND CAULKING				X	VERIFY MATERIAL GRADE AND PLACEMENT
2. COLUMN SPLICE CONNECTORS					
A. PLACEMENT				X	
B. SCREWS				X	VERIFY QUANTITY, SIZE AND GRADE
C. FIELD EPOXY			X		VERIFY INSTALLATION PROCEDURE AND EPOXY GRADE
D. FIRE TAPE AND CAULKING				X	VERIFY MATERIAL GRADE AND PLACEMENT
E. THREADED ROD				X	VERIFY MATERIAL GRADE AND PLACEMENT

TABLE 2A - REQUIRED STRUCTURAL STEEL SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	INSPECTION: OSSC CODE REFERENCE	INSPECTION: CODE OR STANDARD REFERENCE	INSPECTION (NOTES 5 AND 6): CONTINUOUS	INSPECTION (NOTES 5 AND 6): PERIODIC	INSPECTION (NOTES 5 AND 6): OBSERVE	INSPECTION (NOTES 5 AND 6): PERFORM	REMARKS
STEEL							
CONTRACTOR QUALITY CONTROL REQUIREMENTS		AISC 360 CHAPTER N			X	X	CONTRACTOR TO PROVIDE QUALITY CONTROL FOR ALL ITEMS INDICATED TO BE OBSERVE AND/OR PERFORM IN TABLE BELOW
STEEL FABRICATION							
FABRICATION OF STRUCTURAL ELEMENTS	1704.2.5.2	AISC 360 N2		X			REFER TO INSPECTION OF FABRICATOR REQUIREMENTS
MATERIAL VERIFICATION OF STRUCTURAL STEEL	1705.2.1 2203.1 TABLE 1705.2	ASTM A6 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS AISC 360 A3.1 AISC 360 N3.2		X			CERTIFIED MILL TEST REPORTS
FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	TABLE 1705.2	APPLICABLE ASTM STANDARDS		X			MANUFACTURER'S CERTIFIED TEST REPORTS
MATERIAL VERIFICATION OF HIGH STRENGTH BOLTS, NUTS, AND WASHERS		AISC 360 A3.3 AISC 360 N3.2 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS RCSC 2.1		X			MANUFACTURER'S CERTIFIED TEST REPORTS
MATERIAL VERIFICATION OF ANCHOR BOLTS AND THREADED RODS		AISC 360 A3.4 AISC 360 N3.2 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS		X			MANUFACTURER'S CERTIFIED TEST REPORTS
MATERIAL VERIFICATION OF WELD FILLER METALS	TABLE 1705.2	AISC 360 A3.5 AISC 360 N3.2 APPLICABLE AWS A5 DOCUMENTS		X			MANUFACTURER'S CERTIFIED TEST REPORTS

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
SPECIAL INSPECTIONS (CONT.)

S006

GMP SET

SPECIAL INSPECTIONS CONT.

TABLE 2A - REQUIRED STRUCTURAL STEEL SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	INSPECTION						REMARKS
	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	INSPECTION (NOTES 5 AND 6)				
			CONTINUOUS	PERIODIC	OBSERVE	PERFORM	
STEEL							
STRUCTURAL STEEL WELDING							
VERIFYING USE OF PROPER WPS'S		AISC 360 N3.2					RETAIN A RECORD OF WELDING PROCEDURE SPECIFICATIONS
VERIFYING WELDER QUALIFICATIONS	1705.2.2.1			X			RETAIN A RECORD OF QUALIFICATION CARDS
COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	TABLE 1705.2	AWS D1.1 SECTION 6	X				
MULTIPASS FILLET WELDS			X				
SINGLE PASS FILLET WELDS GREATER THAN 5/16"			X				ALL WELDS VISUALLY INSPECTED PER AWS D1.16.9
PLUG AND SLOT WELDS			X				
SINGLE PASS FILLET WELDS LESS THAN OR EQUAL TO 5/16"				X			
WELDING STAIR AND RAILING SYSTEMS	1705.2(2.5)	AWS D1.1 SECTION 6		X			ALL WELDS VISUALLY INSPECTED PER AWS D1.1 6.9
REINFORCING STEEL WELDING							SEE CONCRETET SECTION
DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS						x	
HIGH-STRENGTH BOLTING							
SNUG-TIGHT HIGH STRENGTH BOLT INSTALLATION	1705.2.1	RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS SECTION 9 AISC 360 SECTION M2.5		X			ALL CONNECTIONS VISUALLY INSPECTED AND VERIFIED SNUG
PRETENSIONED HIGH STRENGTH BOLT INSTALLATION USING TURN-OF-THE-NUT METHOD WITH MATCH MARKING, DIRECT TENSION INDICATOR METHOD, OR TWIST-OFF TYPE TENSION CONTROL BOLT METHOD	1705.2.1			X			ALL CONNECTIONS VISUALLY INSPECTED. CONNECTIONS USING DIRECT TENSION INDICATORS, ALL BOLTS SHALL BE INSPECTED AFTER SNUGGING AND AFTER PRETENSIONING
PRETENSIONED HIGH STRENGTH BOLT INSTALLATION USING TURN-OF-THE-NUT METHOD WITHOUT MATCH MARKING OR CALIBRATED WRENCH METHOD	1705.2.1		X				ALL CONNECTIONS VISUALLY INSPECTED
INSPECTION TASKS PRIOR TO BOLTING	1705.2	AISC 360 TABLE N5.6-1					
MANUFACTURER"S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS						X	
FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS					X		
PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH, IF THREADS ARE TO BE EXCLUDED FROM THE SHEAR PLANE)					X		
PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL					X		
PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS					X		
INSPECTION TASKS DURING BOLTING	1705.2	AISC 360 TABLE N5.6-2 RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS SECTION 9					
FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED					X		
JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION					X		
FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING					X		
FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES					X		
INSPECTION TASKS AFTER BOLTING							
DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	1705.2	AISC 360 TABLE N5.6-3				X	

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE

NOVEMBER 4, 2016

PROJECT NUMBER

215135

SCALE

AS INDICATED

SHEET TITLE

SPECIAL INSPECTIONS (CONT.)

S007

GMP SET

11/4/2016 9:54:20 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

SPECIAL INSPECTIONS CONT.

TABLE 3 - REQUIRED SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE					
	INSPECTION				
SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6) CONTINUOUS	FREQUENCY (NOTE 6) PERIODIC	REMARKS
WOOD					
CROSS-LAMINATED TIMBER (CLT) DIAPHRAGMS					
1. PANEL CONNECTIONS				X	VERIFY PANEL CONNECTION TYPE, CONNECTOR SIZE AND SPACING
2. STEEL PLATE CHORDS AND COLLECTORS				X	VERIFY PLATE SIZE, CONNECTOR SIZE AND SPACING
3. STEEL FLOOR TO WALL CONNECTION					
A. PLACEMENT				X	VERIFY PLACEMENT OF CONNECTORS
B. SCREWS				X	VERIFY QUANTITY, SIZE AND GRADE
CROSS-LAMINATED TIMBER (CLT) POST-TENSIONED ROCKING SHEAR WALLS					
1. POST-TENSIONED RODS					
A. MATERIAL				X	VARIFY THREADED ROD, COUPLER AND ANCHOR SIZE AND GRADE
B. PLACEMENT				X	VERIFY PLACEMENT
C. POST-TENSIONING			X		OBSERVE POST-TENSIONING PROCESS. RECORD JACKING LOADS, SEATING LENGTH AND ROD ELONGATION
2. WALL PANEL SPLICES					
A. PLACEMENT				X	VERIFY PLACEMENT OF CONNECTORS
B. SCREWS				X	VERIFY QUANTITY, SIZE AND GRADE
C. FIELD EPOXY			X		VERIFY INSTALLATION PROCEDURE AND EPOXY GRADE
D. FIRE TAPE AND CAULKING				X	VERIFY MATERIAL GRADE AND PLACEMENT
3. U-SHAPED FLEXURAL PLATES (UFP's)					
A. FABRICATION				X	VERIFY MATERIAL GRADE, FABRICATION PROCEDURE AND RADIUS
B. PLACEMENT				X	VERIFY PLACEMENT OF CONNECTORS
4. ENERGY DISSIPATION DEVICES					
A. FABRICATION				X	VERIFY MATERIAL GRADE AND FABRICATION PROCEDURE
B. PLACEMENT				X	VERIFY PLACEMENT OF CONNECTORS
FASTENING OF PLYWOOD DIAPHRAGM AND "SUREBOARD" SHEAR WALL SHEATHING WITH EDGE NAILING/SCREWING ≤ 4"				X	FOR "SUREBOARD" SHEAR WALLS, SHEAR PANELS, AND PLYWOOD DIAPHRAGMS. THIS INCLUDES NAILING, BOLTING, ANCHORING AND OTHER FASTENING TO OTHER COMPONENTS IN THE SEISMIC FORCE RESISTING SYSTEM

TESTING

TABLE 4 - REQUIRED TESTING FOR SPECIAL INSPECTIONS					
	INSPECTION				
SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6) CONTINUOUS	FREQUENCY (NOTE 6) PERIODIC	REMARKS
GEOTECHNICAL					
FILL IN-PLACE DENSITY OR PREPARED SUBGRADE DENSITY	1705.6	VARIES; GEOTECHNICAL REPORT OR MINIMUM PER IBC APPENDIX J107.5, WHICHEVER IS GREATER		X	BY THE GEOTECHNICAL ENGINEER
MATERIAL VERIFICATION		VARIES; CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X	BY THE GEOTECHNICAL ENGINEER
TEST PAGGREGATE PIERS					BY THE GEOTECHNICAL ENGINEER
TENSION ANCHORS	1705.6		REFERENCE SPECIFICATIONS FOR PERFORMANCE AND PROOF LOAD TESTING REQUIREMENTS		PER GEOTECHNICAL REPORT
CONCRETE					
CONCRETE STRENGTH	1705.3 ASTM C172 ASTM C 31 ACI318:5.6,5.8	ASTM C39	EACH 150 CY		FABRICATE SPECIMENS AT TIME FRESH CONCRETET IS PLACED
CONCRETE SLUMP		ASTM C143			
CONCRETE AIR CONTENT		ASTM C231			
CONCRETE TEMPERATURE		ASTM C1064			
STEEL					
ULTRASONIC (UT) TESTING OF WELDS	1705.2.2	AWS D1.1 6.13 & 6.14.3			ALL C.J.P. WELDS 5/16" AND THICKER REQUIRE UT TESTING.
PRE-INSTALLATION VERIFICATION OF PRETENSIONED HIGH STRENGTH BOLTS AND POST-TENSIONED THREADED ROD	1705.2.2	RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS SECTION 7	EACH COMBINATION OF DIAMETER, LENGTH, GRADE, AND LOT TO BE USED IN THE WORK		

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

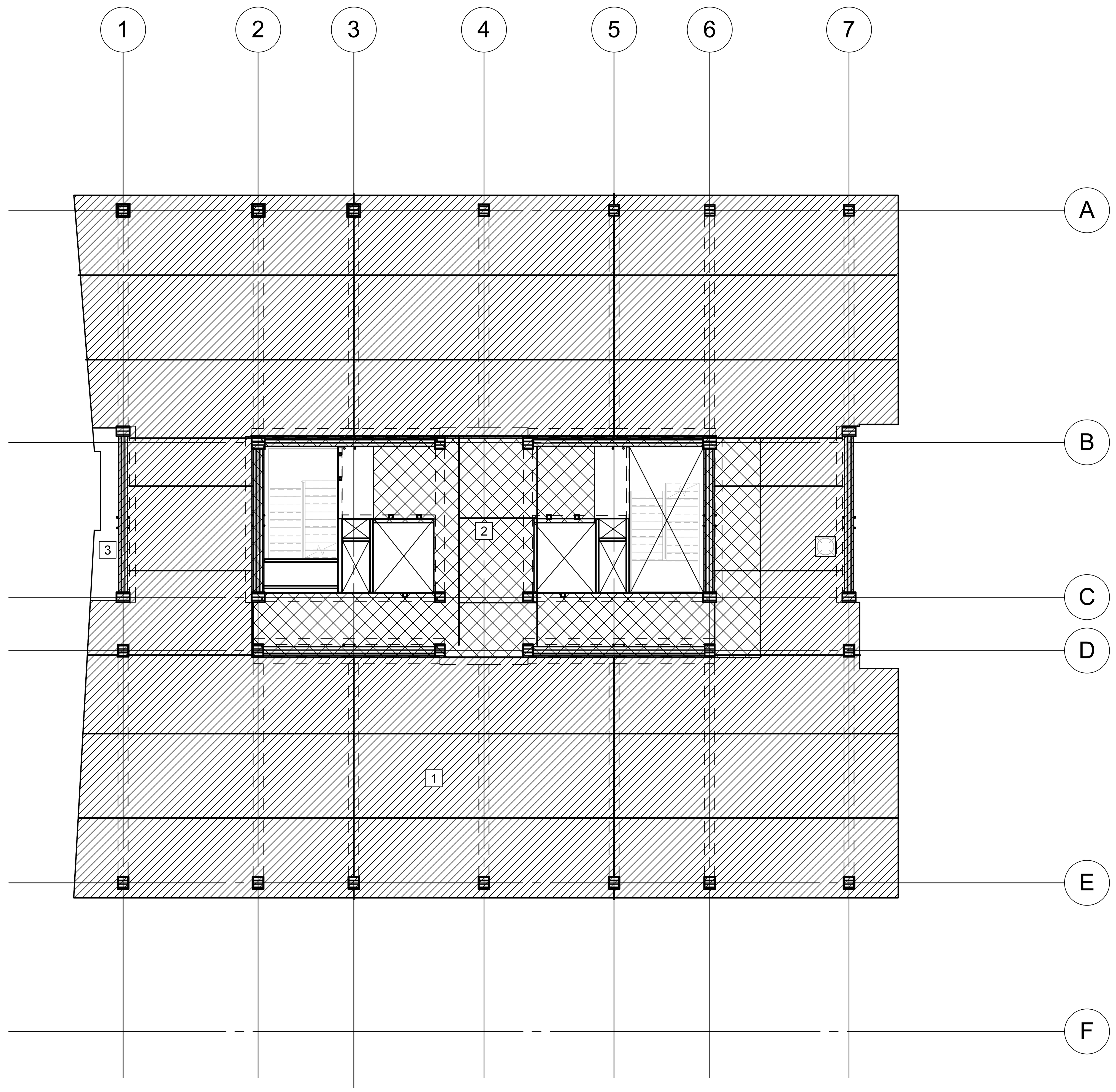
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
SPECIAL INSPECTIONS (CONT.)

S008

GMP SET

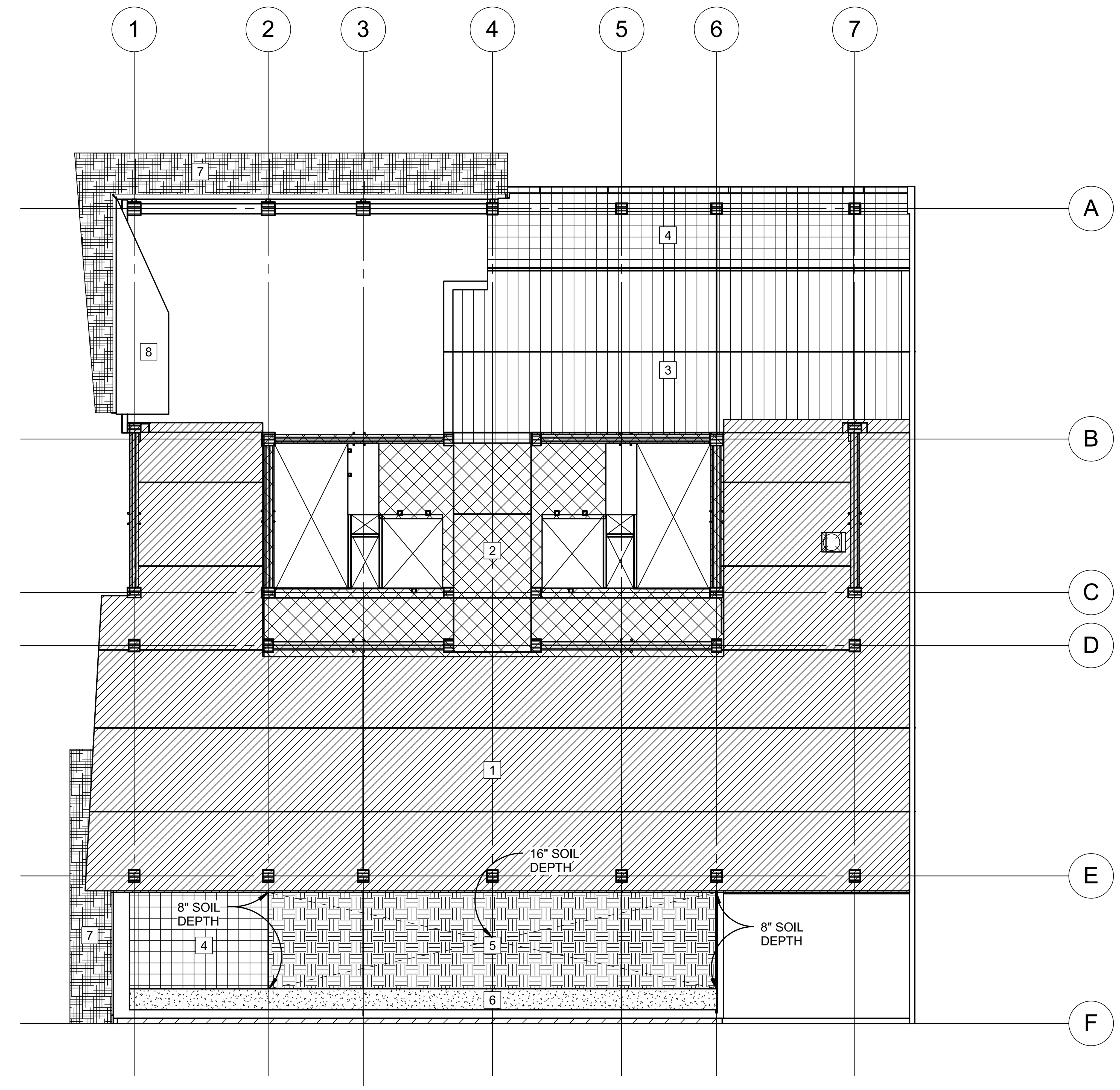


SUPERIMPOSED LOADING KEY:

1	OFFICE:	LL = 50 PSF + 15 PSF PARTITIONS
2	CORRIDORS:	LL = 80 PSF
3	MAINTENACE ACCESS:	LL = 20 PSF

2 THIRD THRU SIXTH FLOOR LOADING PLAN

3/32" = 1'-0"



SUPERIMPOSED LOADING KEY:

1	OFFICE:	LL = 50 PSF + 15 PSF PARTITIONS		
2	CORRIDORS:	LL = 80 PSF		
3	ASSEMBLY:	LL = 100 PSF		
4	ROOF TERRACE/PAVERS:	DL = 30 PSF	LL = 100 PSF	SL = 25 PSF
5	EXTENSIVE ECOROOF: *8" TO 16" SOIL DEPTH (94 PCF MAX.)	DL = 94 PSF AVG.	LL = 20 PSF	SL = 25 PSF
6	INTENSIVE ECOROOF: *24" SOIL DEPTH (94 PCF MAX.)	DL = 180 PSF	LL = 20 PSF	SL = 25 PSF
7	CANOPY:	LL = 20 PSF	SL = 25 PSF	
8	ENTRY ROOF / MAINTENANCE ACCESS:		LL = 20 PSF	

1 SECOND FLOOR LOADING PLAN

3/32" = 1'-0"

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE

NOVEMBER 4, 2016

PROJECT NUMBER

215135

SCALE

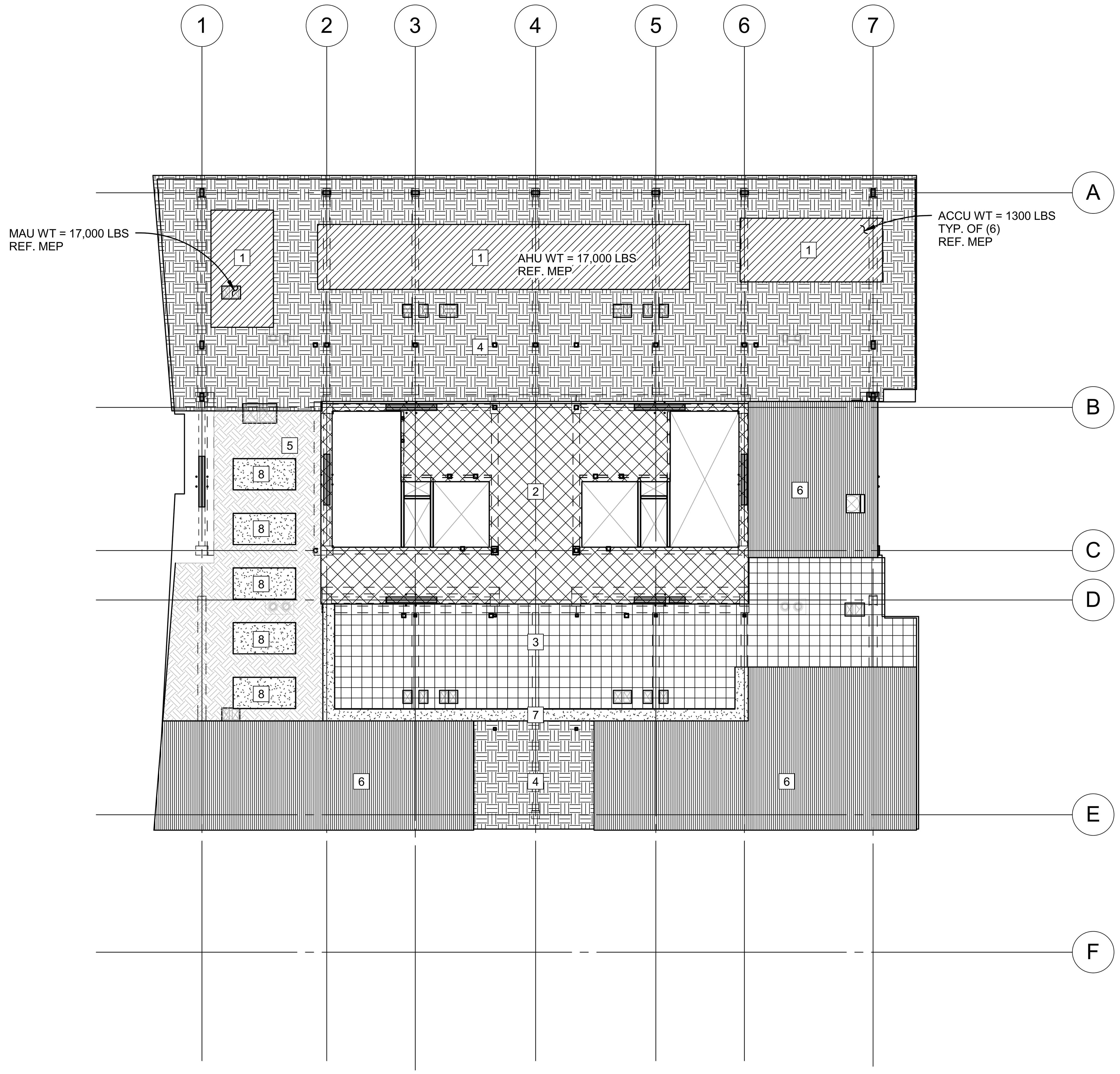
AS INDICATED

SHEET TITLE

LOADING PLANS

S010

GMP SET

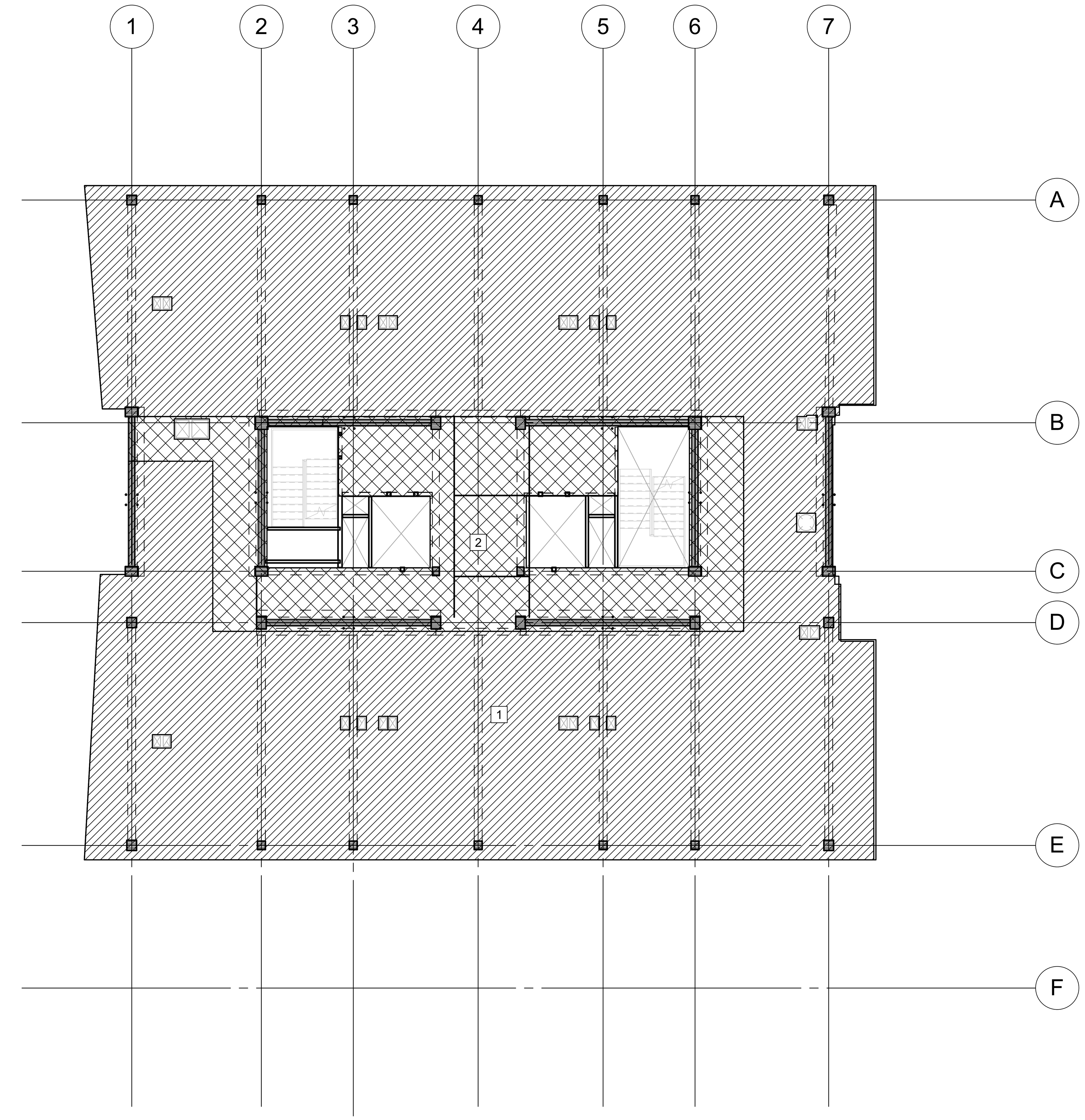


SUPERIMPOSED LOADING KEY:

1 ROOF MECHANICAL: *2 1/2" CONC. PAD	DL = 38 PSF (REF. PLAN FOR ADD'L MECH. UNIT WT)	LL = 20 PSF	SL = 25PSF
2 STAIR AND CORRIDORS:		LL = 100 PSF	
3 ROOF TERRACE/PAVERS:	DL = 32 PSF	LL = 100 PSF	SL = 25 PSF
4 EXTENSIVE ECOROOF: *4" SOIL DEPTH (64 PCF MAX.)	DL = 22 PSF	LL = 20 PSF	SL = 25 PSF
5 STEEL GRATE OVER: EXTENSIVE ECOROOF *4" SOIL DEPTH (64 PCF MAX.)	DL = 27 PSF	LL = 100 PSF	SL = 25 PSF
6 EXTENSIVE ECOROOF: *7" AVERAGE SOIL DEPTH (64 PCF MAX.)	DL = 38 PSF	LL = 20 PSF	SL = 25 PSF
7 INTENSIVE ECOROOF: *18" SOIL DEPTH (64 PCF MAX.)	DL = 96 PSF	LL = 20 PSF	SL = 25 PSF
8 PLANTER BEDS: *14" SOIL DEPTH (69 PCF MAX.) OVER 4" PUMICE (46 PCF MAX.)	DL = 96 PSF	LL = 20 PSF	SL = 25 PSF

2 TWELFTH FLOOR LOADING PLAN

3/32" = 1'-0"



SUPERIMPOSED LOADING KEY:

1 RESIDENTIAL:	LL = 40 PSF + 15 PSF PARTITIONS
2 CORRIDORS:	LL = 80 PSF

1 SEVENTH THRU ELEVENTH FLOOR LOADING PLAN

3/32" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

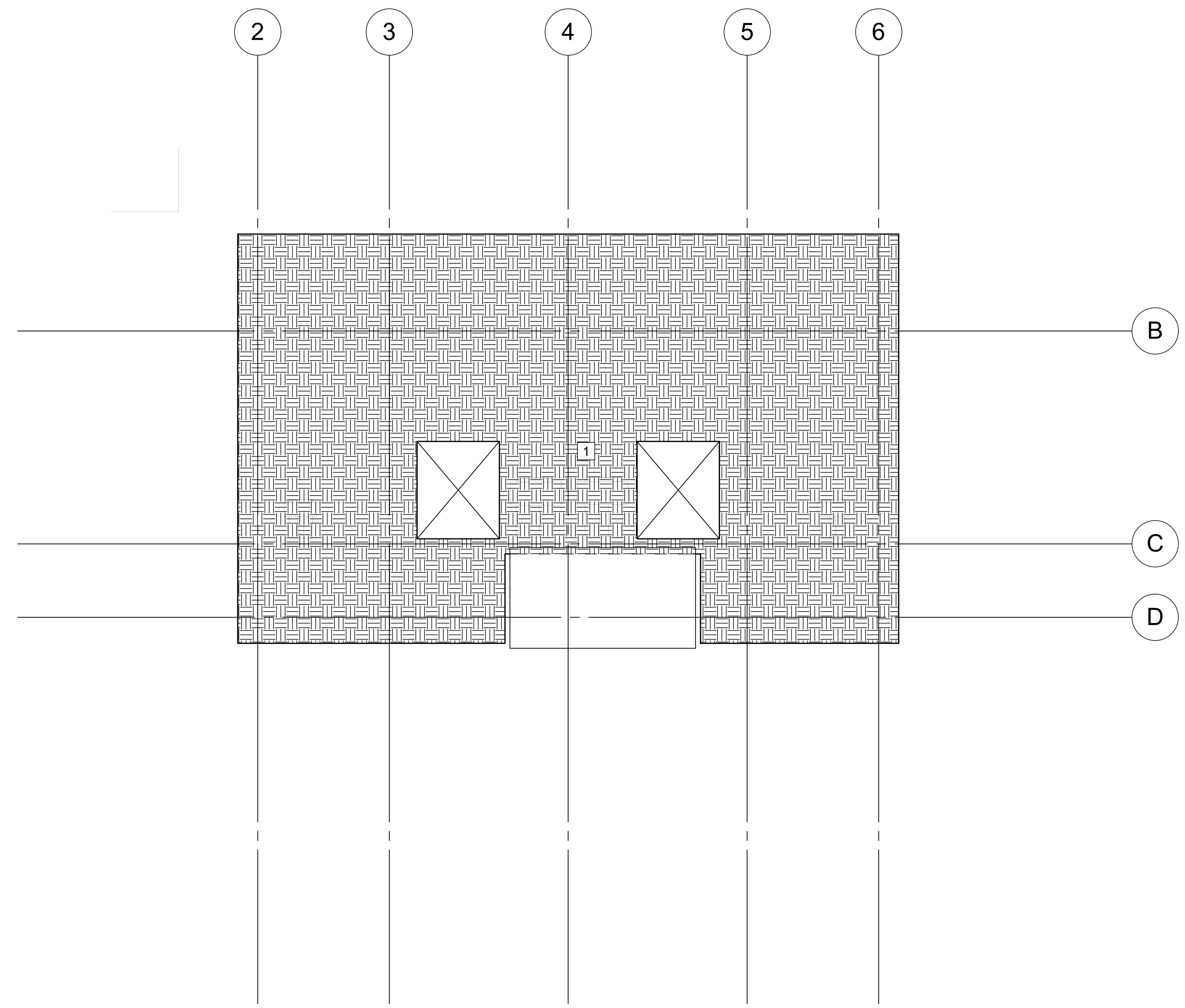
SCALE
AS INDICATED

SHEET TITLE
LOADING PLANS

S011

GMP SET

11/4/2016 9:54:22 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



SUPERIMPOSED LOADING KEY:

1	EXTENSIVE ECOROOF: "4" SOIL DEPTH (64 FCF MAX.	SOIL DL = 22 PSF	LL = 20 PSF	SL=25 PSF

1 HIGH ROOF FLOOR LOADING PLAN
1/8" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
LOADING PLANS

S012

GMP SET

FRAMEWORK

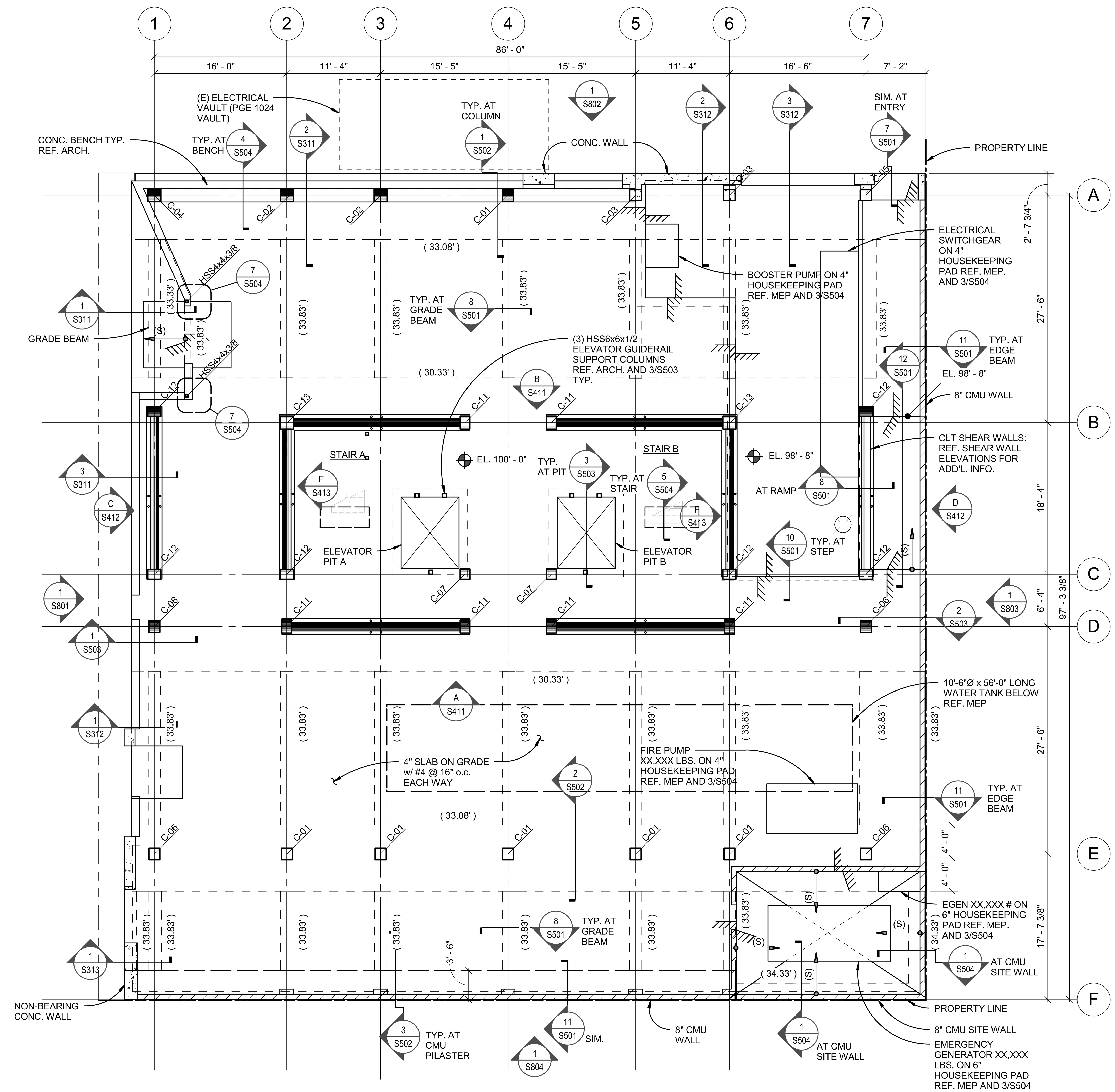
project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION



SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO SHEETS S00X SERIES.
2. FOR FOUNDATION DETAILS REFER TO S5XX SERIES.
3. FOR COLUMN SCHEDULE REF. 1/S401.
4. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
5. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
6. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
7. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
8. (XXX.XX') INDICATES BOTTOM OF FOOTING ELEVATION.
9. (XXX'-XX") INDICATES TOP OF STRUCTURAL SLAB ELEVATION. WHERE 100'-0" = USGS 36'-7".
10. (S) INDICATES SLOPE IN STRUCTURAL SLAB
11. INDICATES STEP IN ELEVATION. REF. 10/S501.
12. INDICATES CLT ROCKING SHEAR WALL.
INDICATES CONCRETE WALL.
INDICATES CMU WALL.
INDICATES CONCRETE CURB.

1 FOUNDATION/FIRST FLOOR PLAN
1/8" = 1'-0"

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

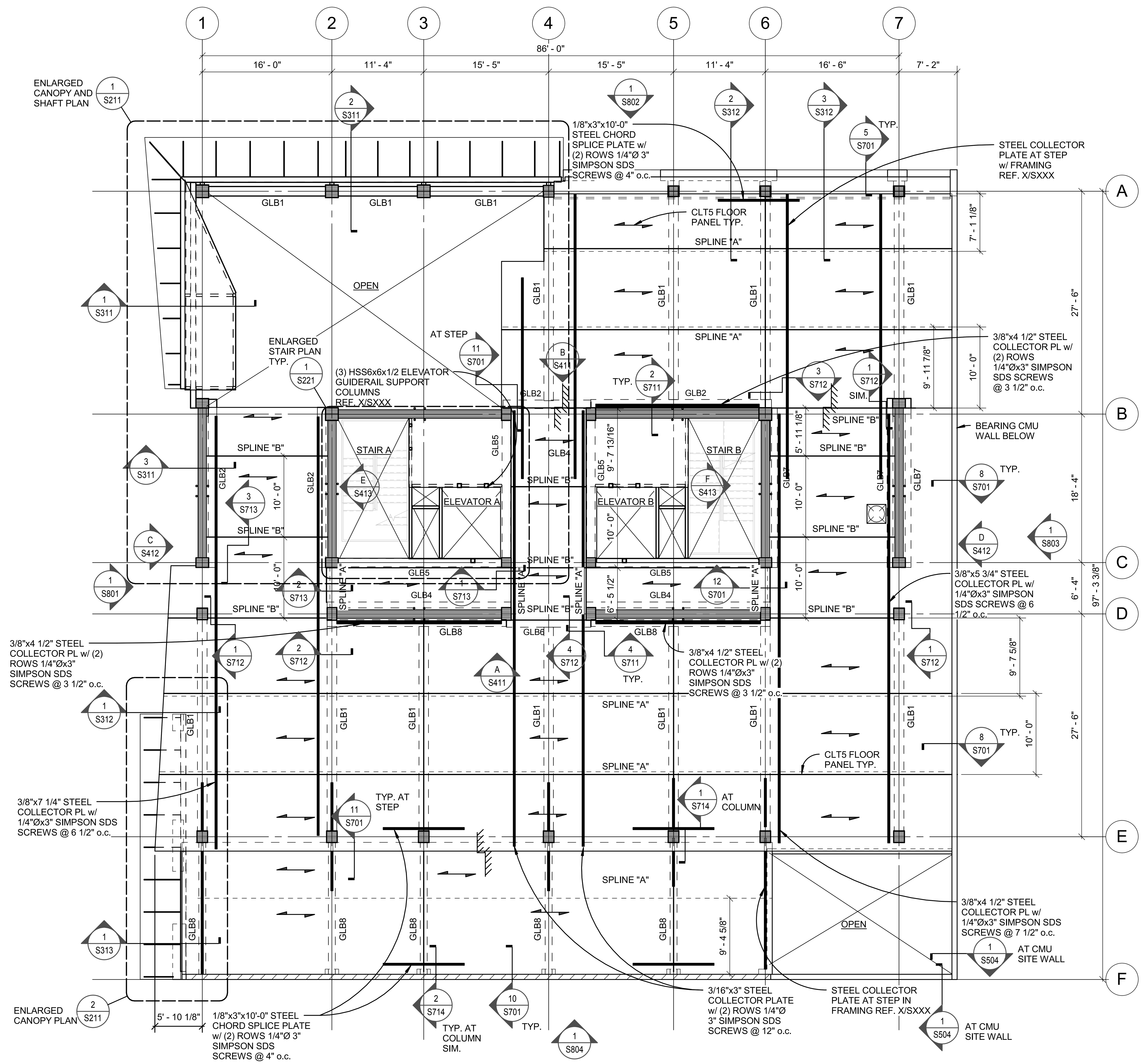
SCALE
AS INDICATED

SHEET TITLE
FIRST FLOOR / FOUNDATION PLAN

S101

GMP SET

11/4/2016 9:54:24 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 SECOND FLOOR FRAMING PLAN

1/8" = 1'-0"

N

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL FLOOR FRAMING DETAILS REFER TO S7XX SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF STRUCTURAL CLT ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7".
8. (S) INDICATES SLOPE IN STRUCTURAL PANEL
9. INDICATES STEP IN ELEVATION.
10. INDICATES PRIMARY SPAN DIRECTION OF CLT FLOOR/ROOF PANEL.
11. CLT5 FLOOR PANELS TO ACHIEVE A MINIMUM 2-HOUR FIRE RATING. REF. DETAIL 1/S701 FOR TYPICAL FLOOR ASSEMBLY.
12. FOR SPLINE TYPE "A" AND "B" REF. DETAIL 2/S701.
13. GLULAM BEAM SCHEDULE:

GLULAM BEAM SCHEDULE

MARK	SIZE (in)		SIZE (mm)		REMARKS
	W	D	W	D	
GLB1	14.17"	25.20"	360	640	GL28C BEAM
GLB2	12.59"	20.47"	320	560	GL28C COLLAR BEAM
GLB3	10.24"	20.47"	260	560	GL28C COLLAR BEAM
GLB4	8.66"	15.75"	220	400	GL28C COLLAR BEAM
GLB5	12.59"	20.47"	320	520	GL28C BEAM
GLB6	10.24"	15.75"	260	400	GL28C BEAM
GLB7	8.66"	20.47"	300	520	GL28C COLLAR BEAM
GLB8	10.24"	23.62"	260	600	GL28C BEAM
GLB11	11.81"	22.05"	300	560	GL28C BEAM
GLB12	10.24"	22.05"	260	560	GL28C COLLAR BEAM
GLB13	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB14	10.24"	17.32"	260	440	GL28C BEAM
GLB15	11.81"	22.05"	300	560	GL28C BEAM
GLB21	10.24"	25.20"	260	640	GL28C BEAM
GLB22	10.24"	23.62"	260	600	GL28C COLLAR BEAM
GLB23	10.24"	18.90"	260	480	GL28C COLLAR BEAM
GLB24	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB25	10.24"	17.32"	260	440	GL28C BEAM
GLB26	12.59"	25.20"	320	640	GL28C BEAM

14. INDICATES CLT ROCKING SHEAR WALL.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

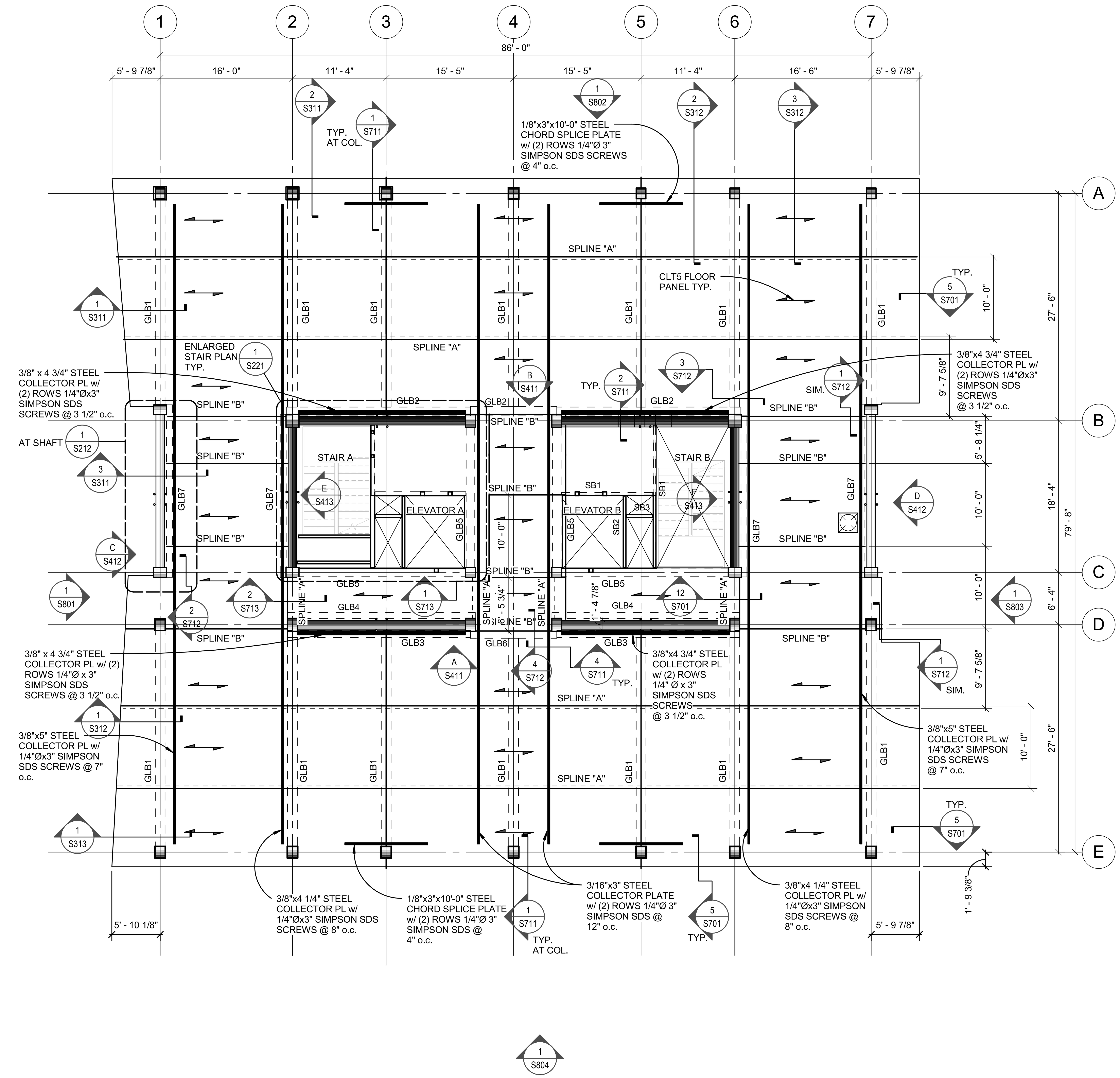
SCALE
AS INDICATED

SHEET TITLE
SECOND FLOOR FRAMING PLAN

S102

GMP SET

11/4/2016 9:54:26 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 THIRD FLOOR FRAMING PLAN

1/8" = 1'-0"

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL FLOOR FRAMING DETAILS REFER TO S7XX SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF STRUCTURAL CLT ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7".
8. (S) INDICATES SLOPE IN STRUCTURAL PANEL
9. INDICATES STEP IN ELEVATION.
10. INDICATES PRIMARY SPAN DIRECTION OF CLT FLOOR/ROOF PANEL.
11. CLT5 FLOOR PANELS TO ACHIEVE A MINIMUM 2-HOUR FIRE RATING. REF. DETAIL 1/S701 FOR TYPICAL FLOOR ASSEMBLY.
12. FOR SPLINE TYPE "A" AND "B" REF. DETAIL 2/S701.
13. GLULAM BEAM SCHEDULE:

GLULAM BEAM SCHEDULE

MARK	SIZE (in)		SIZE (mm)		REMARKS
	W	D	W	D	
GLB1	14.17"	25.20"	360	640	GL28C BEAM
GLB2	12.59"	20.47"	320	560	GL28C COLLAR BEAM
GLB3	10.24"	20.47"	260	560	GL28C COLLAR BEAM
GLB4	8.66"	15.75"	220	400	GL28C COLLAR BEAM
GLB5	12.59"	20.47"	320	520	GL28C BEAM
GLB6	10.24"	15.75"	260	400	GL28C BEAM
GLB7	8.66"	20.47"	300	520	GL28C COLLAR BEAM
GLB8	10.24"	23.62"	260	600	GL28C BEAM
GLB11	11.81"	22.05"	300	560	GL28C BEAM
GLB12	10.24"	22.05"	260	560	GL28C COLLAR BEAM
GLB13	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB14	10.24"	17.32"	260	440	GL28C BEAM
GLB15	11.81"	22.05"	300	560	GL28C BEAM
GLB21	10.24"	25.20"	260	640	GL28C BEAM
GLB22	10.24"	23.62"	260	600	GL28C COLLAR BEAM
GLB23	10.24"	18.90"	260	480	GL28C COLLAR BEAM
GLB24	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB25	10.24"	17.32"	260	440	GL28C BEAM
GLB26	12.59"	25.20"	320	640	GL28C BEAM

14. INDICATES CLT ROCKING SHEAR WALL.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

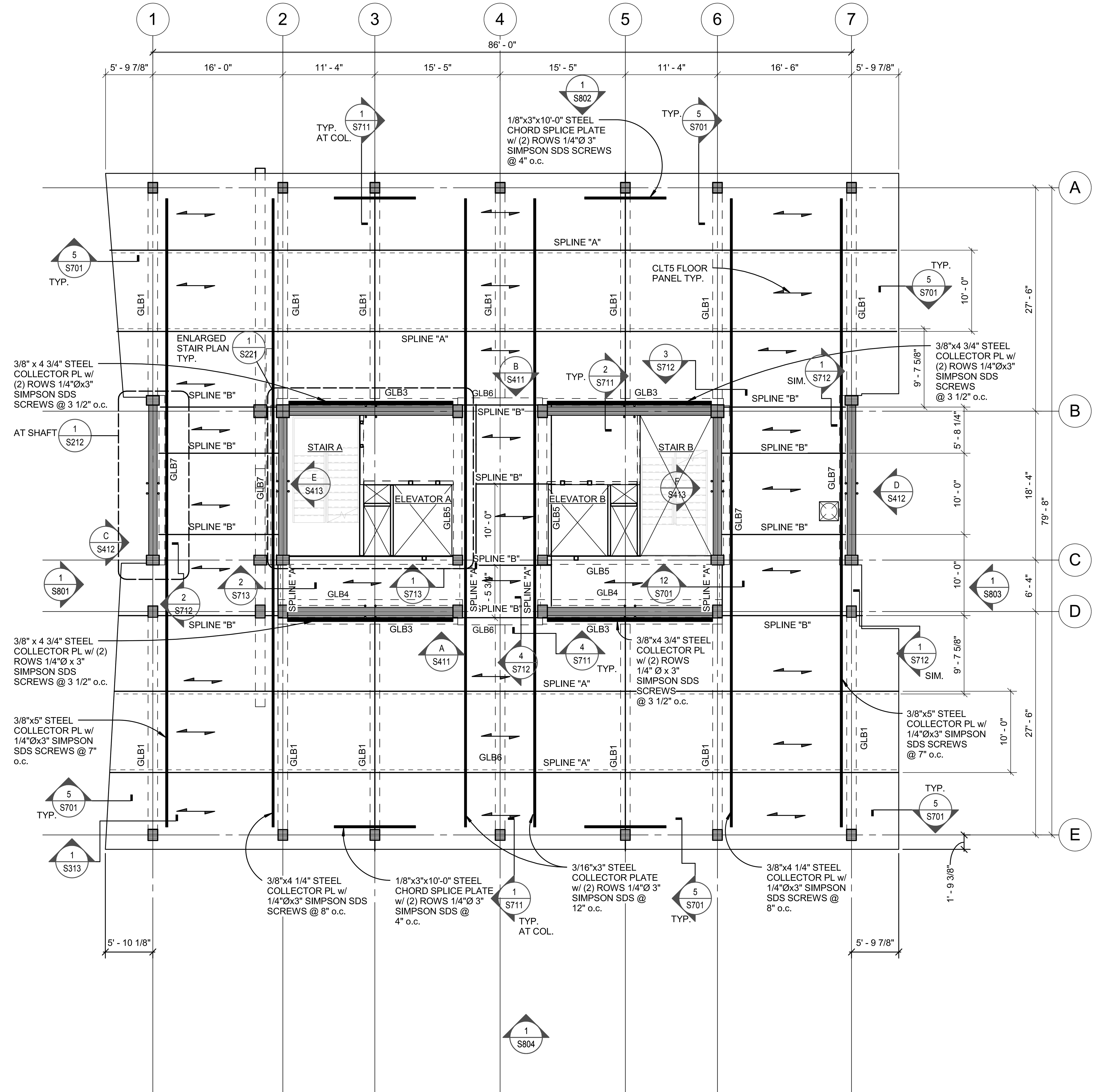
SCALE
AS INDICATED

SHEET TITLE
THIRD FLOOR FRAMING PLAN

S103

GMP SET

11/4/2016 9:54:27 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 FOURTH THRU SIXTH FLOOR FRAMING PLAN

1/8" = 1'-0"

N

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL FLOOR FRAMING DETAILS REFER TO S7XX SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF STRUCTURAL CLT ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7".
8. (S) INDICATES SLOPE IN STRUCTURAL PANEL
9. INDICATES STEP IN ELEVATION.
10. INDICATES PRIMARY SPAN DIRECTION OF CLT FLOOR/ROOF PANEL.
11. CLT5 FLOOR PANELS TO ACHIEVE A MINIMUM 2-HOUR FIRE RATING. REF. DETAIL 1/S701 FOR TYPICAL FLOOR ASSEMBLY.
12. FOR SPLINE TYPE "A" AND "B" REF. DETAIL 2/S701.
13. GLULAM BEAM SCHEDULE:

GLULAM BEAM SCHEDULE

MARK	SIZE (in)		SIZE (mm)		REMARKS
	W	D	W	D	
GLB1	14.17"	25.20"	360	640	GL28C BEAM
GLB2	12.59"	20.47"	320	560	GL28C COLLAR BEAM
GLB3	10.24"	20.47"	260	560	GL28C COLLAR BEAM
GLB4	8.66"	15.75"	220	400	GL28C COLLAR BEAM
GLB5	12.59"	20.47"	320	520	GL28C BEAM
GLB6	10.24"	15.75"	260	400	GL28C BEAM
GLB7	8.66"	20.47"	300	520	GL28C COLLAR BEAM
GLB8	10.24"	23.62"	260	600	GL28C BEAM
GLB11	11.81"	22.05"	300	560	GL28C BEAM
GLB12	10.24"	22.05"	260	560	GL28C COLLAR BEAM
GLB13	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB14	10.24"	17.32"	260	440	GL28C BEAM
GLB15	11.81"	22.05"	300	560	GL28C BEAM
GLB21	10.24"	25.20"	260	640	GL28C BEAM
GLB22	10.24"	23.62"	260	600	GL28C COLLAR BEAM
GLB23	10.24"	18.90"	260	480	GL28C COLLAR BEAM
GLB24	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB25	10.24"	17.32"	260	440	GL28C BEAM
GLB26	12.59"	25.20"	320	640	GL28C BEAM

14. INDICATES CLT ROCKING SHEAR WALL.

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

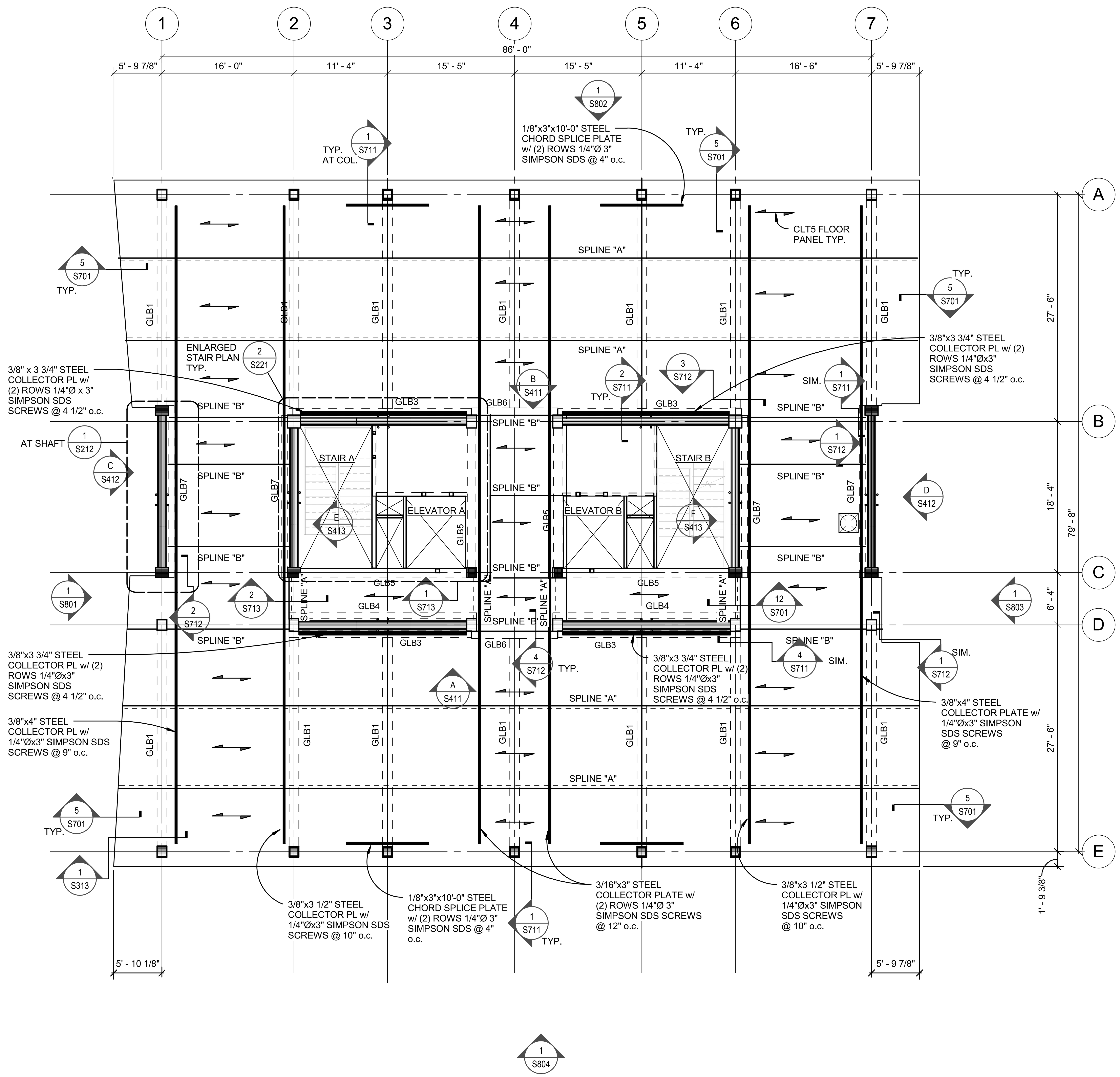
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
FOURTH THRU SIXTH FLOOR FRAMING PLAN

S104

GMP SET



1 SEVENTH FLOOR FRAMING PLAN

1/8" = 1'-0"

N

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL FLOOR FRAMING DETAILS REFER TO S7XX SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF STRUCTURAL CLT ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7".
8. (S) INDICATES SLOPE IN STRUCTURAL PANEL
9. INDICATES STEP IN ELEVATION.
10. INDICATES PRIMARY SPAN DIRECTION OF CLT FLOOR/ROOF PANEL.
11. CLT5 FLOOR PANELS TO ACHIEVE A MINIMUM 2-HOUR FIRE RATING. REF. DETAIL 1/S701 FOR TYPICAL FLOOR ASSEMBLY.
12. FOR SPLINE TYPE "A" AND "B" REF. DETAIL 2/S701.
13. GLULAM BEAM SCHEDULE:

GLULAM BEAM SCHEDULE

MARK	SIZE (in)		SIZE (mm)		REMARKS
	W	D	W	D	
GLB1	14.17"	25.20"	360	640	GL28C BEAM
GLB2	12.59"	20.47"	320	560	GL28C COLLAR BEAM
GLB3	10.24"	20.47"	260	560	GL28C COLLAR BEAM
GLB4	8.66"	15.75"	220	400	GL28C COLLAR BEAM
GLB5	12.59"	20.47"	320	520	GL28C BEAM
GLB6	10.24"	15.75"	260	400	GL28C BEAM
GLB7	8.66"	20.47"	300	520	GL28C COLLAR BEAM
GLB8	10.24"	23.62"	260	600	GL28C BEAM
GLB11	11.81"	22.05"	300	560	GL28C BEAM
GLB12	10.24"	22.05"	260	560	GL28C COLLAR BEAM
GLB13	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB14	10.24"	17.32"	260	440	GL28C BEAM
GLB15	11.81"	22.05"	300	560	GL28C BEAM
GLB21	10.24"	25.20"	260	640	GL28C BEAM
GLB22	10.24"	23.62"	260	600	GL28C COLLAR BEAM
GLB23	10.24"	18.90"	260	480	GL28C COLLAR BEAM
GLB24	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB25	10.24"	17.32"	260	440	GL28C BEAM
GLB26	12.59"	25.20"	320	640	GL28C BEAM

14. INDICATES CLT ROCKING SHEAR WALL.

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

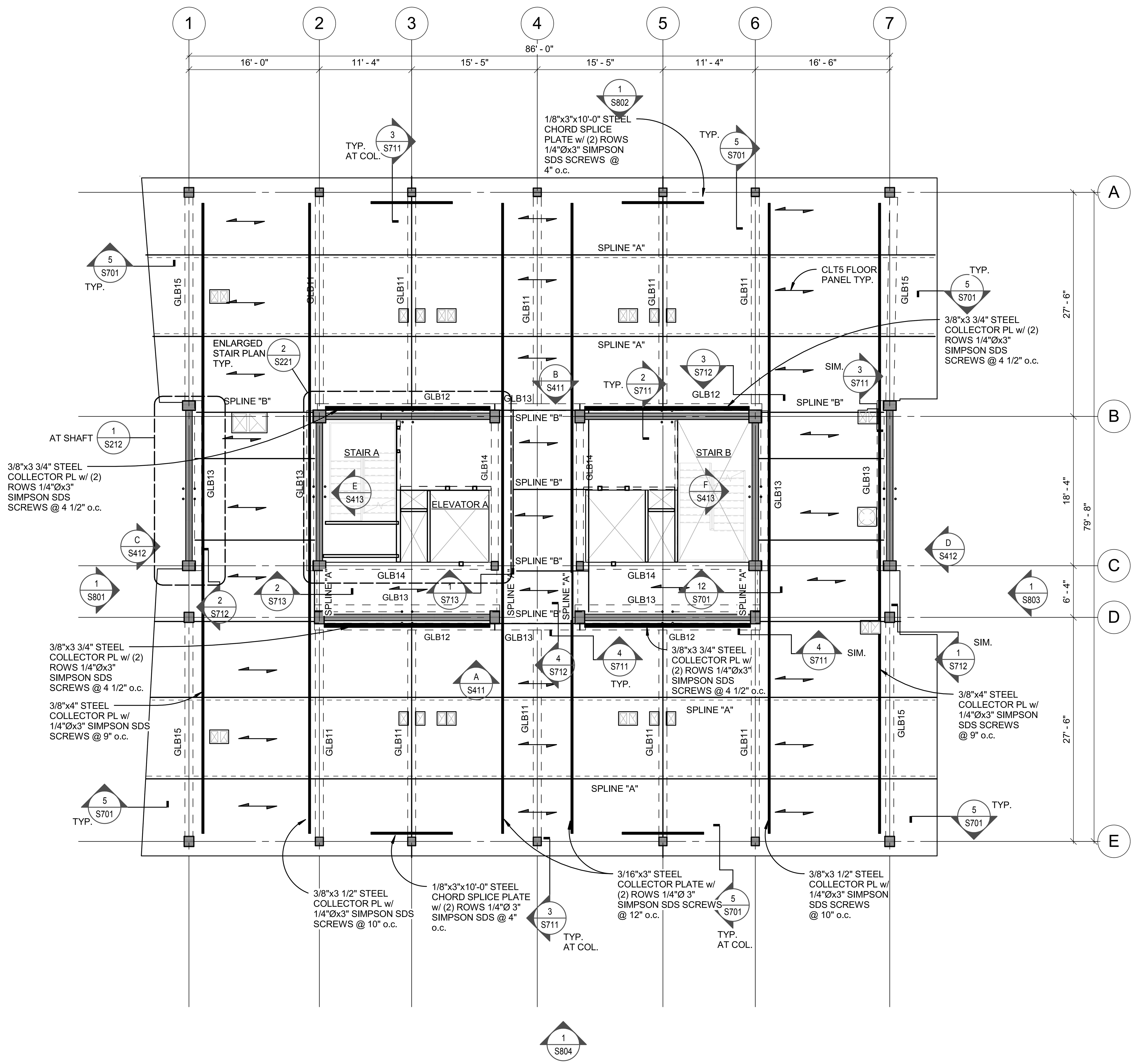
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
SEVENTH FLOOR FRAMING PLAN

S107

GMP SET



1 EIGHTH THRU ELEVENTH FLOOR FRAMING PLAN

1/8" = 1'-0"

N

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL FLOOR FRAMING DETAILS REFER TO S7XX SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF STRUCTURAL CLT ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7".
8. (S) INDICATES SLOPE IN STRUCTURAL PANEL
9. INDICATES STEP IN ELEVATION.
10. INDICATES PRIMARY SPAN DIRECTION OF CLT FLOOR/ROOF PANEL.
11. CLT5 FLOOR PANELS TO ACHIEVE A MINIMUM 2-HOUR FIRE RATING. REF. DETAIL 1/S701 FOR TYPICAL FLOOR ASSEMBLY.
12. FOR SPLINE TYPE "A" AND "B" REF. DETAIL 2/S701.
13. GLULAM BEAM SCHEDULE:

GLULAM BEAM SCHEDULE

MARK	SIZE (in)		SIZE (mm)		REMARKS
	W	D	W	D	
GLB1	14.17"	25.20"	360	640	GL28C BEAM
GLB2	12.59"	20.47"	320	560	GL28C COLLAR BEAM
GLB3	10.24"	20.47"	260	560	GL28C COLLAR BEAM
GLB4	8.66"	15.75"	220	400	GL28C COLLAR BEAM
GLB5	12.59"	20.47"	320	520	GL28C BEAM
GLB6	10.24"	15.75"	260	400	GL28C BEAM
GLB7	8.66"	20.47"	300	520	GL28C COLLAR BEAM
GLB8	10.24"	23.62"	260	600	GL28C BEAM
GLB11	11.81"	22.05"	300	560	GL28C BEAM
GLB12	10.24"	22.05"	260	560	GL28C COLLAR BEAM
GLB13	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB14	10.24"	17.32"	260	440	GL28C BEAM
GLB15	11.81"	22.05"	300	560	GL28C BEAM
GLB21	10.24"	25.20"	260	640	GL28C BEAM
GLB22	10.24"	23.62"	260	600	GL28C COLLAR BEAM
GLB23	10.24"	18.90"	260	480	GL28C COLLAR BEAM
GLB24	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB25	10.24"	17.32"	260	440	GL28C BEAM
GLB26	12.59"	25.20"	320	640	GL28C BEAM

14. INDICATES CLT ROCKING SHEAR WALL.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

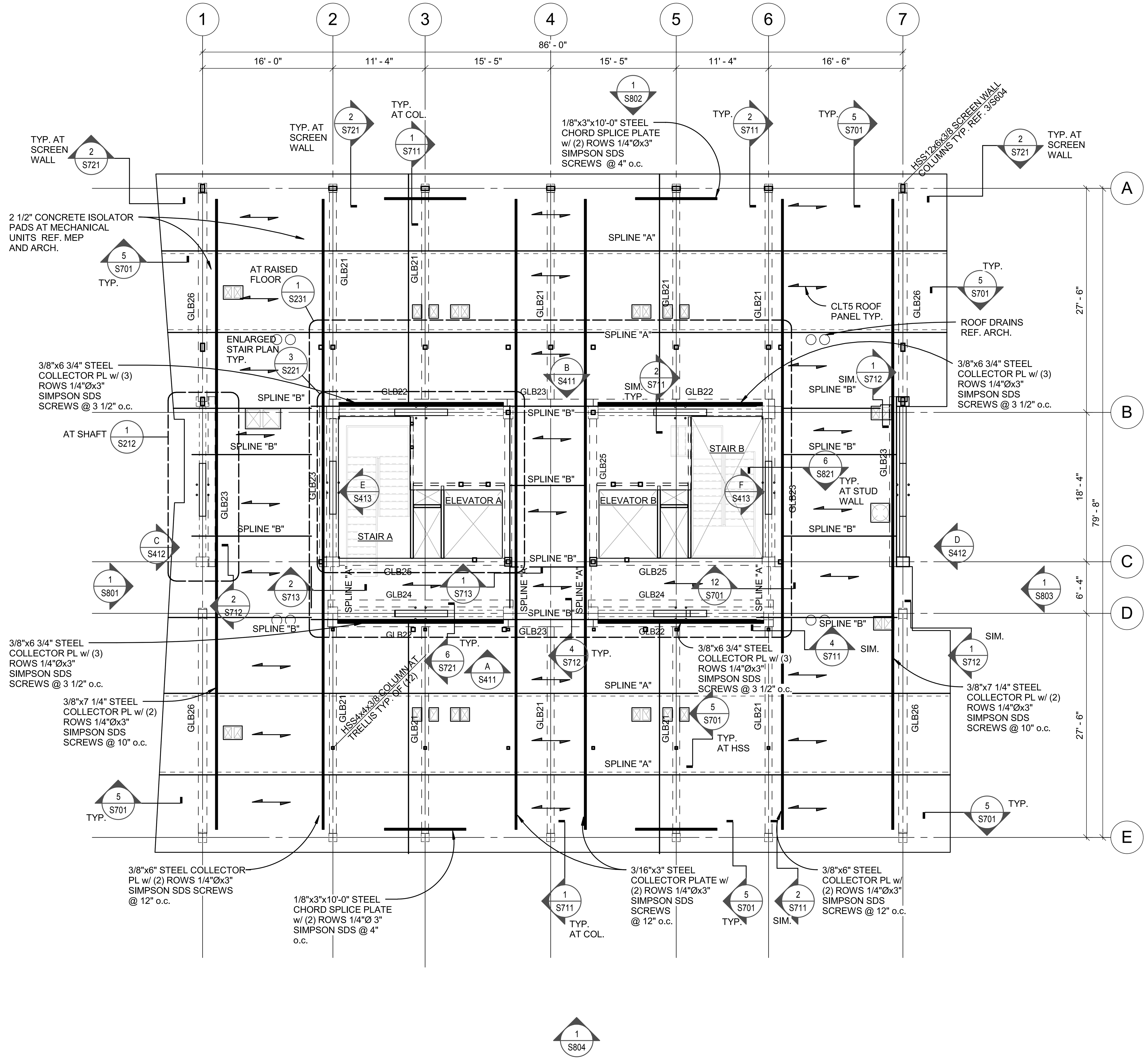
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
EIGHTH THRU ELEVENTH FLOOR FRAMING PLAN

S108

GMP SET



1 TWELFTH FLOOR/ROOF FRAMING PLAN
1/8" = 1'-0"

N

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL FLOOR FRAMING DETAILS REFER TO S7XX SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF STRUCTURAL CLT ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7".
8. (S) INDICATES SLOPE IN STRUCTURAL PANEL
9. INDICATES STEP IN ELEVATION.
10. INDICATES PRIMARY SPAN DIRECTION OF CLT FLOOR/ROOF PANEL.
11. CLT5 FLOOR PANELS TO ACHIEVE A MINIMUM 2-HOUR FIRE RATING. REF. DETAIL 1/S701 FOR TYPICAL FLOOR ASSEMBLY.
12. FOR SPLINE TYPE "A" AND "B" REF. DETAIL 2/S701.
13. GLULAM BEAM SCHEDULE:

GLULAM BEAM SCHEDULE

MARK	SIZE (in)		SIZE (mm)		REMARKS
	W	D	W	D	
GLB1	14.17"	25.20"	360	640	GL28C BEAM
GLB2	12.59"	20.47"	320	560	GL28C COLLAR BEAM
GLB3	10.24"	20.47"	260	560	GL28C COLLAR BEAM
GLB4	8.66"	15.75"	220	400	GL28C COLLAR BEAM
GLB5	12.59"	20.47"	320	520	GL28C BEAM
GLB6	10.24"	15.75"	260	400	GL28C BEAM
GLB7	8.66"	20.47"	300	520	GL28C COLLAR BEAM
GLB8	10.24"	23.62"	260	600	GL28C BEAM
GLB11	11.81"	22.05"	300	560	GL28C BEAM
GLB12	10.24"	22.05"	260	560	GL28C COLLAR BEAM
GLB13	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB14	10.24"	17.32"	260	440	GL28C BEAM
GLB15	11.81"	22.05"	300	560	GL28C BEAM
GLB21	10.24"	25.20"	260	640	GL28C BEAM
GLB22	10.24"	23.62"	260	600	GL28C COLLAR BEAM
GLB23	10.24"	18.90"	260	480	GL28C COLLAR BEAM
GLB24	10.24"	15.75"	260	400	GL28C COLLAR BEAM
GLB25	10.24"	17.32"	260	440	GL28C BEAM
GLB26	12.59"	25.20"	320	640	GL28C BEAM

14. INDICATES CLT ROCKING SHEAR WALL.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

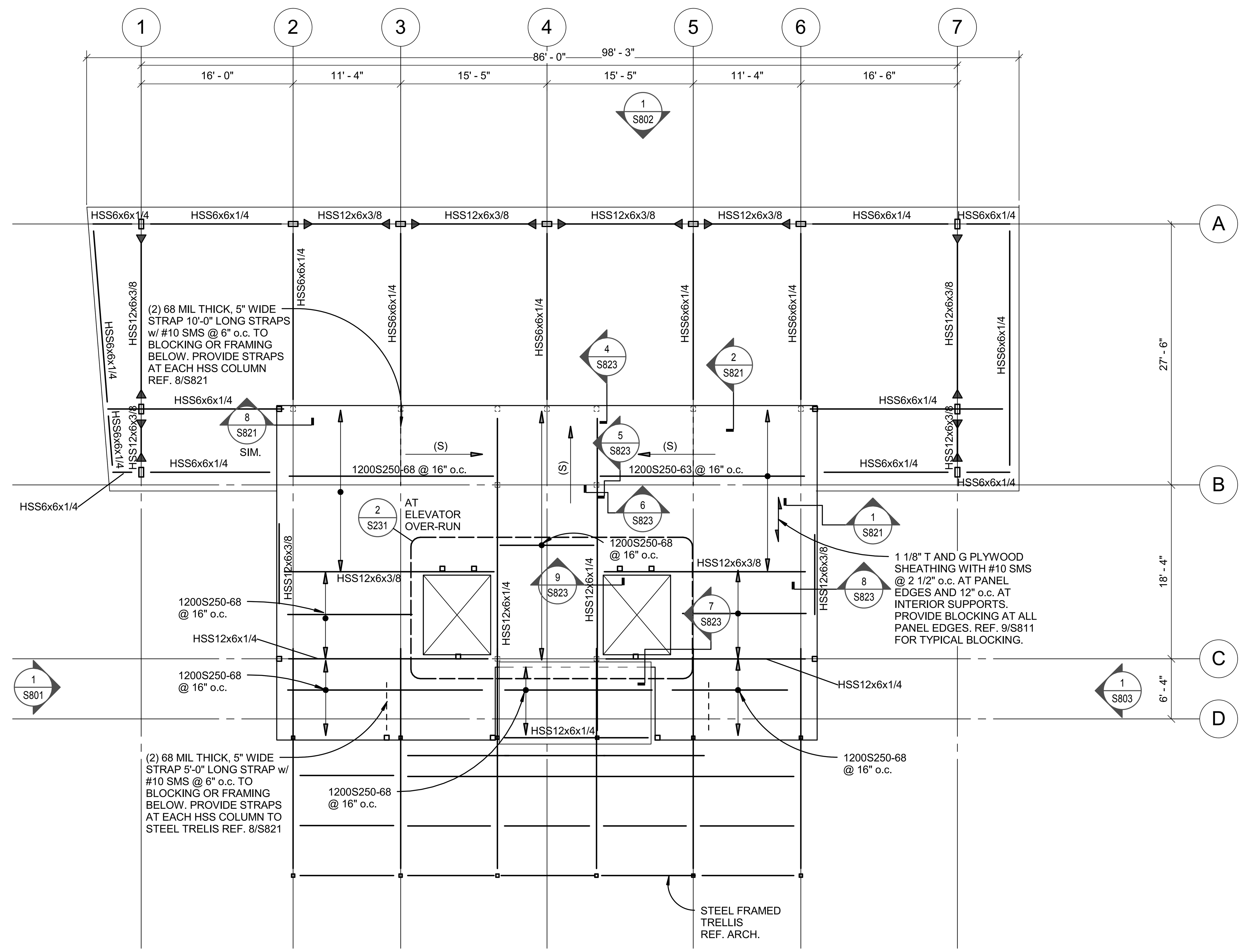
SCALE
AS INDICATED

SHEET TITLE
TWELFTH FLOOR/ROOF FRAMING PLAN

S112

GMP SET

11/4/2016 9:54:33 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



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

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL ROOF FRAMING DETAILS REFER TO S72X SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF SHEATHING ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7".
8. (S) INDICATES SLOPE IN STRUCTURAL FRAMING
9. INDICATES STEP IN ELEVATION.
10. INDICATES BEARING STUD WALL BELOW.
11. INDICATES MOMENT CONNECTION. REF. 2/S604 FOR DETAILS.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

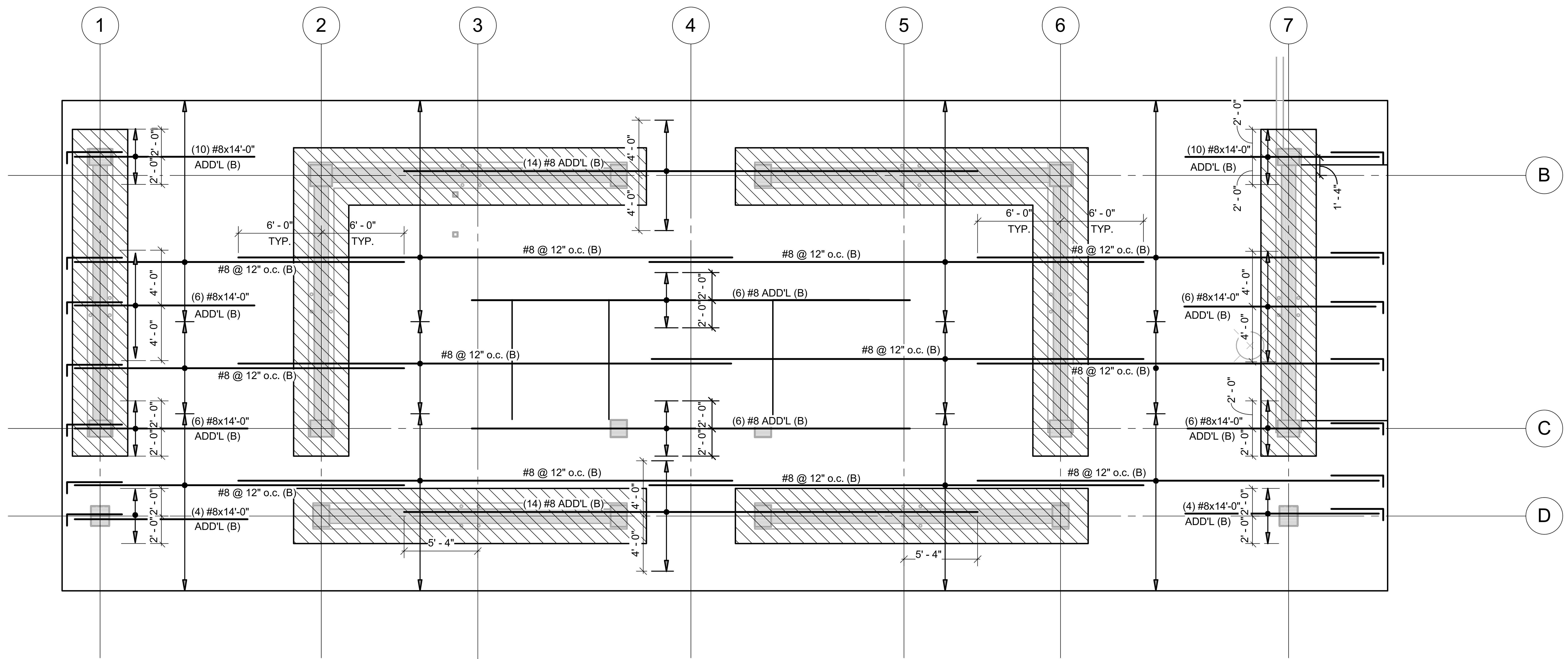
PROJECT NUMBER
215135

SCALE
AS INDICATED

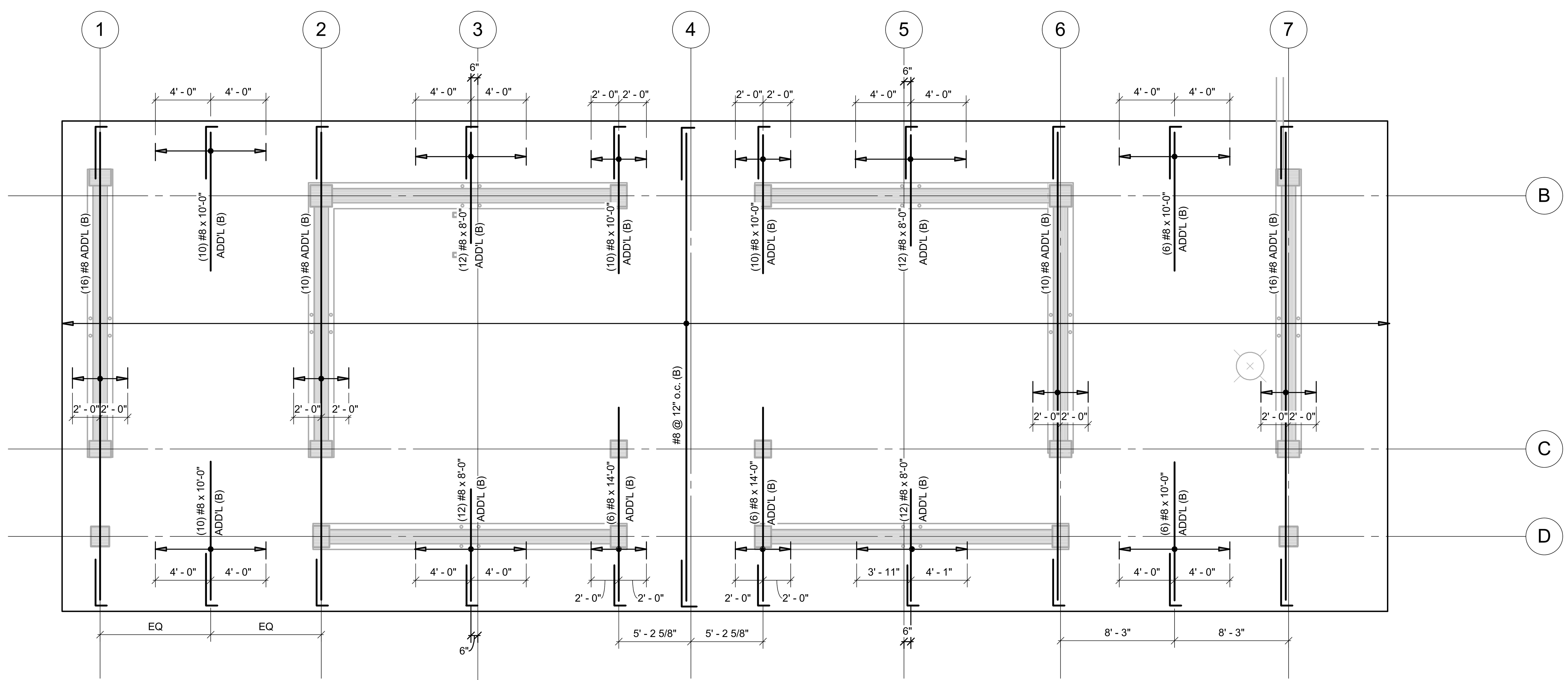
SHEET TITLE
PENTHOUSE FRAMING PLAN

S113

GMP SET



1 FOUNDATION BOTTOM LONGITUDINAL REINF. PLAN
3/16" = 1'-0"



2 FOUNDATION BOTTOM TRANSVERSE REINF. PLAN
3/16" = 1'-0"

NOTES:

1. (X) #X ADD'L (T) — INDICATES ADD'L. TOP REINFORCING. REF. DETAIL 10/S511 FOR LAYOUT AND SPACING.
2. (X) #X ADD'L (B) — INDICATES ADD'L, BOTTOM REINFORCING. REF. DETAIL 10/S512 FOR LAYOUT AND SPACING.
3. (T) — INDICATES TOP.
4. (B) — INDICATES BOTTOM.
5. [hatched box] — PROVIDE #5 SHEAR TIES @ 8" o.c. REF. S503 FOR TYPICAL SHEAR TIE SPACING.
6. REF. ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCKOUTS AND OTHER ITEMS TO BE COORDINATED WITH THE STRUCTURAL DRAWINGS.
7. REF. SHEETS S501 THRU S504 FOR TYP. REINFORCING AND P/T DETAILS.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

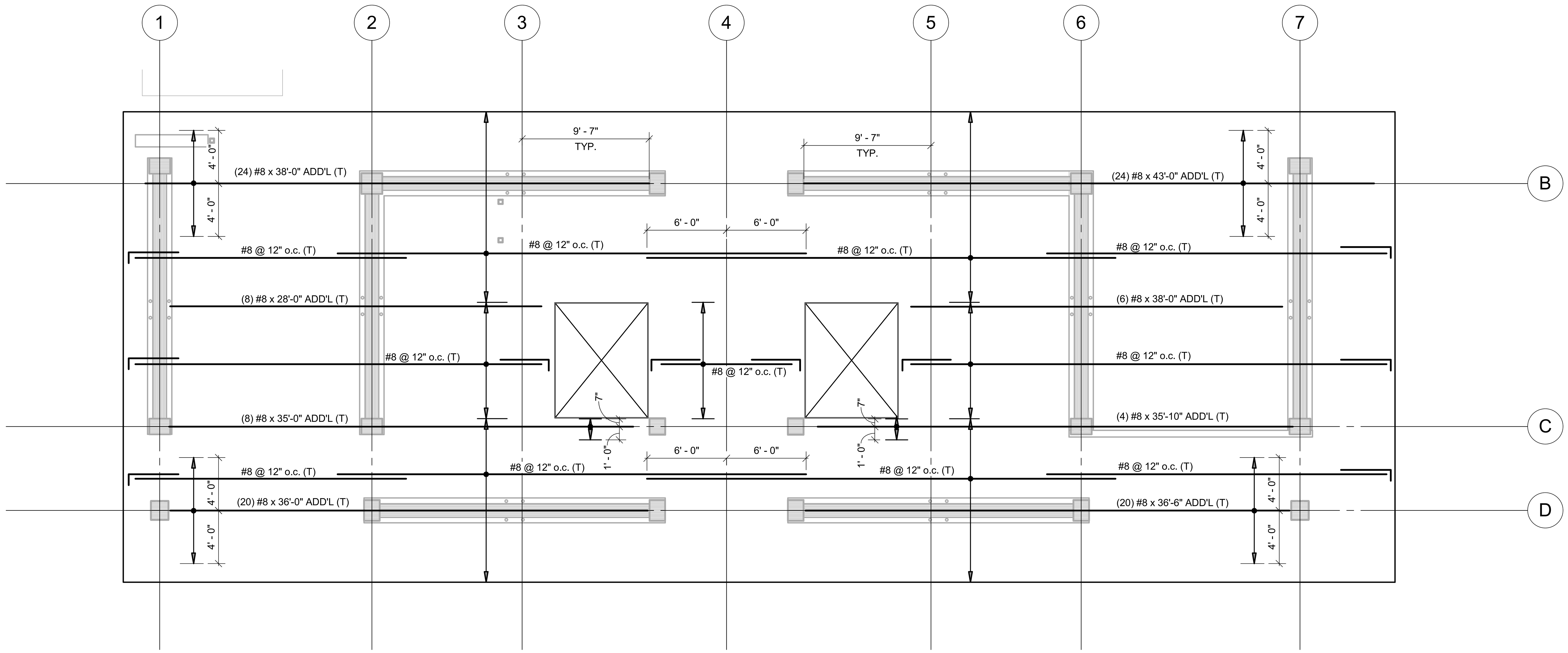
SCALE
AS INDICATED

SHEET TITLE
FOUNDATION BOTTOM REINFORCING PARTIAL PLANS

S201

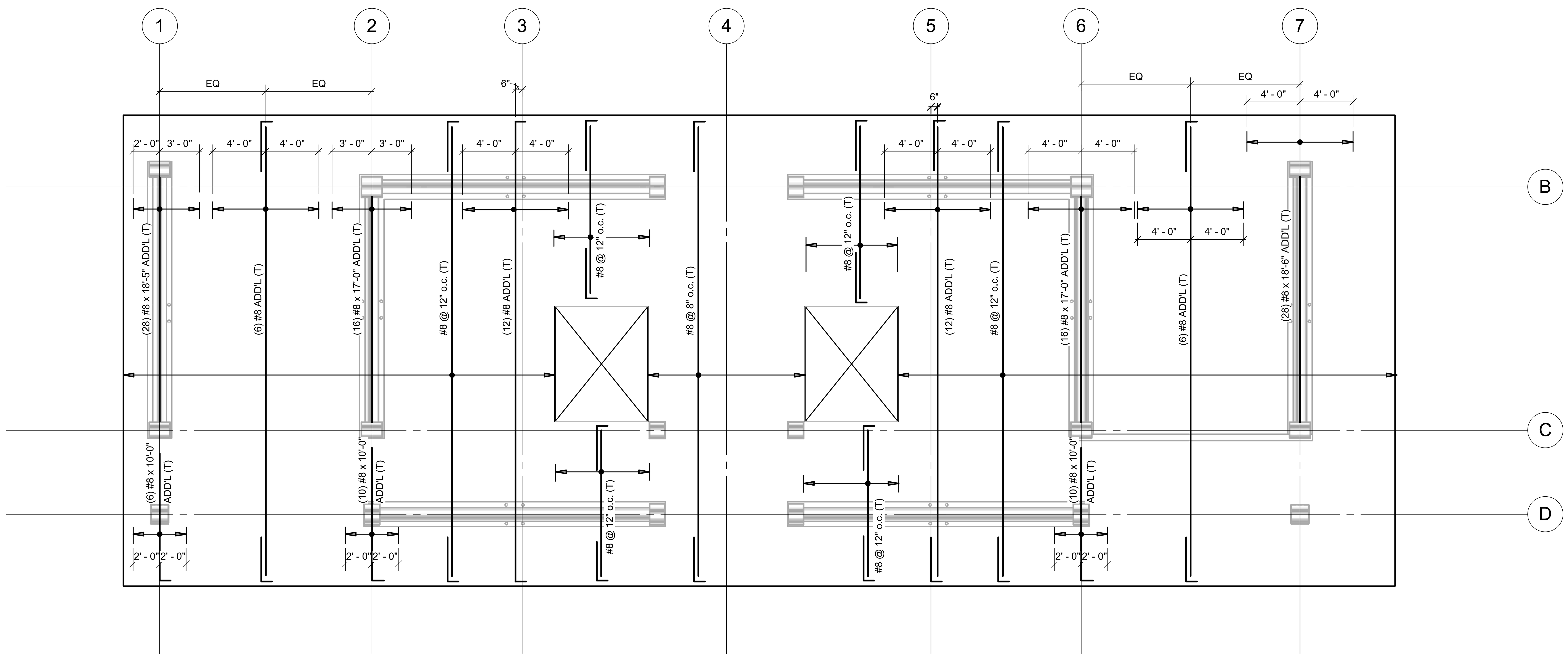
GMP SET

11/4/2016 9:54:34 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 FOUNDATION TOP LONGITUDINAL REINF. PLAN

3/16" = 1'-0"



2 FOUNDATION TOP TRANSVERSE REINF. PLAN

3/16" = 1'-0"

NOTES:

1. (X) #X ADD'L (T) INDICATES ADD'L. TOP REINFORCING. REF. DETAIL 10/S511 FOR LAYOUT AND SPACING.
2. (X) #X ADD'L (B) INDICATES ADD'L. BOTTOM REINFORCING. REF. DETAIL 10/S512 FOR LAYOUT AND SPACING.
3. (T) INDICATES TOP.
4. (B) INDICATES BOTTOM.
5. PROVIDE #5 SHEAR TIES @ 8" o.c. REF. S503 FOR TYPICAL SHEAR TIE SPACING.
6. REF. ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCKOUTS AND OTHER ITEMS TO BE COORDINATED WITH THE STRUCTURAL DRAWINGS.
7. REF. SHEETS S501 THRU S504 FOR TYP. REINFORCING AND P/T DETAILS.

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

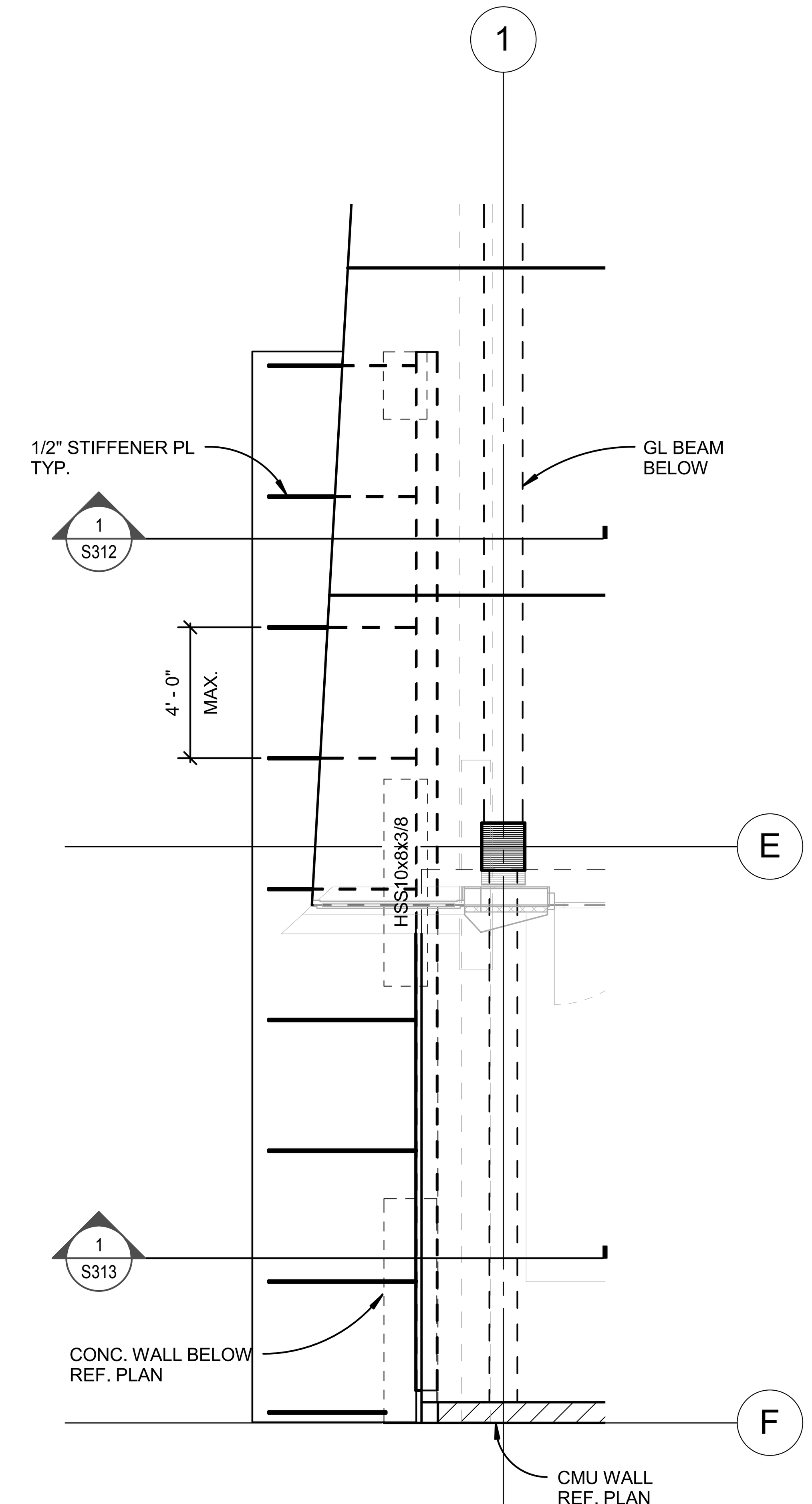
SCALE
AS INDICATED

SHEET TITLE
FOUNDATION TOP REINFORCING PARTIAL PLANS

S202

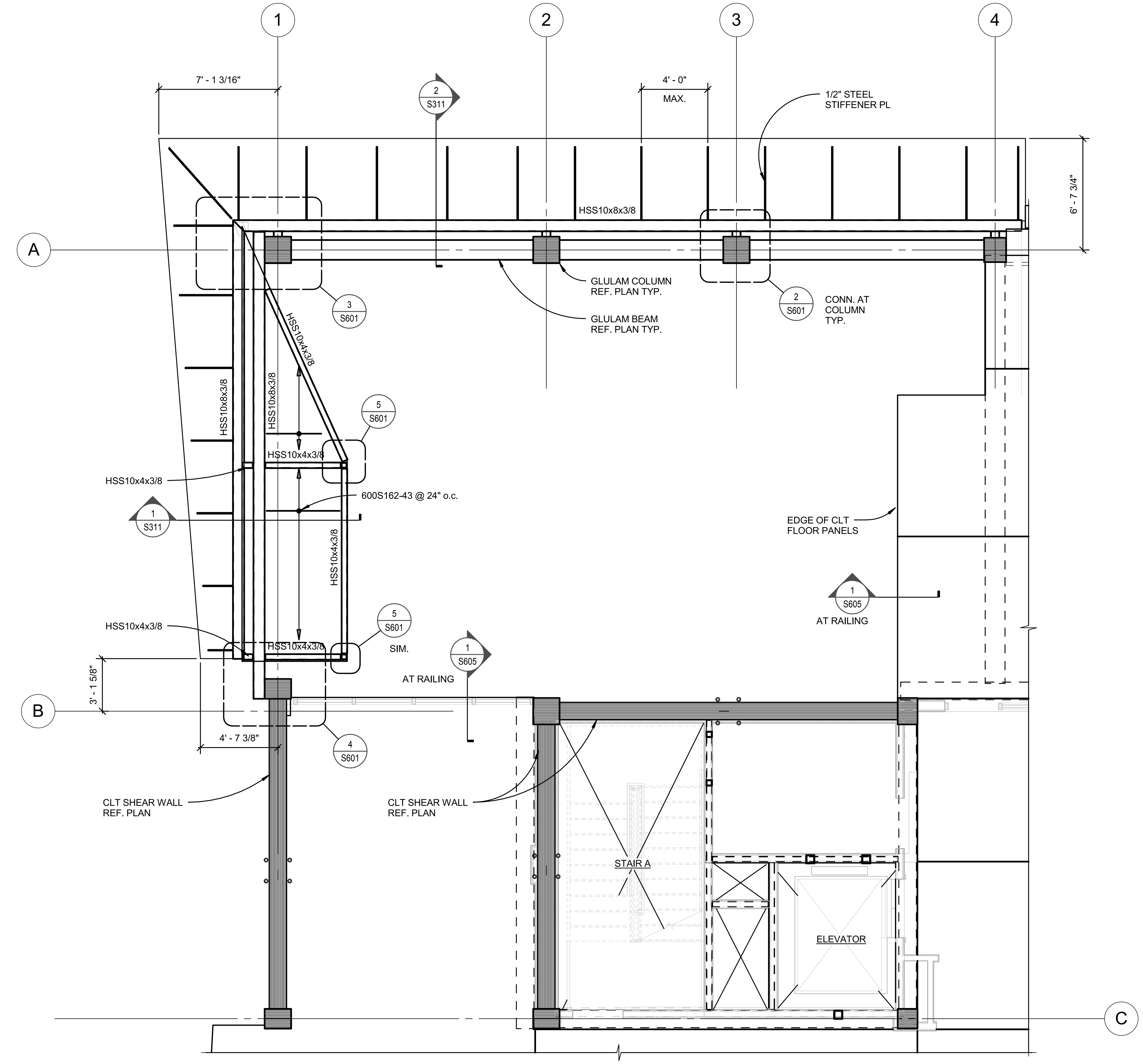
GMP SET

11/4/2016 9:54:35 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



2 ENLARGED SOUTHWEST CANOPY PLAN

1/4" = 1'-0"



NOTE:
FOR INFORMATION NOT NOTED REF. PLAN AND 1/S221.

1 ENLARGED ENTRY CANOPY AND SHAFT PLAN

1/4" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

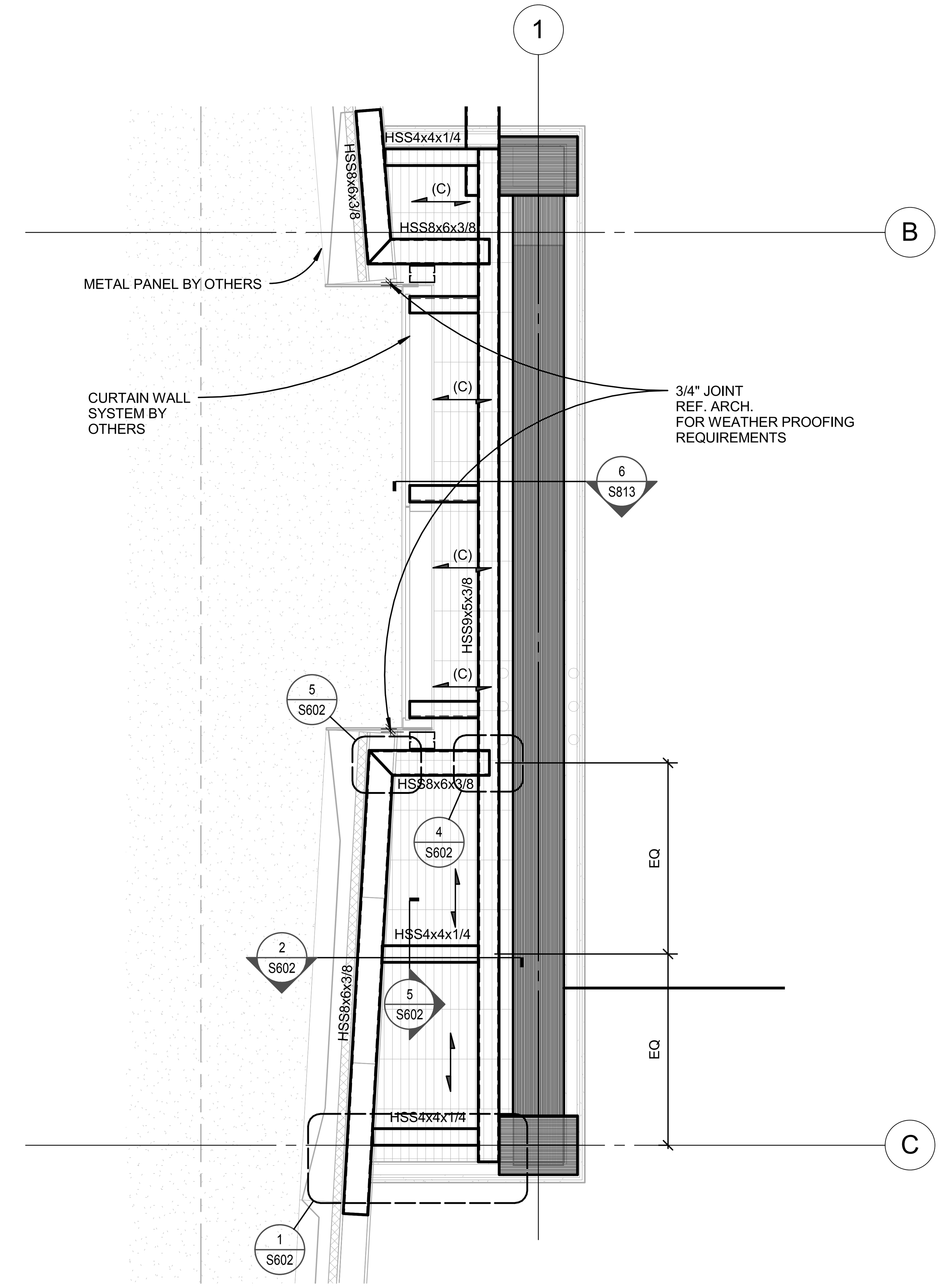
SCALE
AS INDICATED

SHEET TITLE
ENLARGED ENTRY CANOPY PLAN

S211

GMP SET

11/4/2016 9:54:36 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



NOTE:

1. INDICATES SPAN DIRECTION OF WELDED METAL BAR GRATING WITH BEARING BARS 1 1/2"x3/16" @ 1 3/16" SPACING SERRATED TO 1/4" MAX. DEPTH WITH CROSS BARS @ 4" MAX. o.c.

2. (C) INDICATES CANTILEVER.

1 WEST SHEAR WALL/SHAFT

1/2" = 1'-0" S103

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

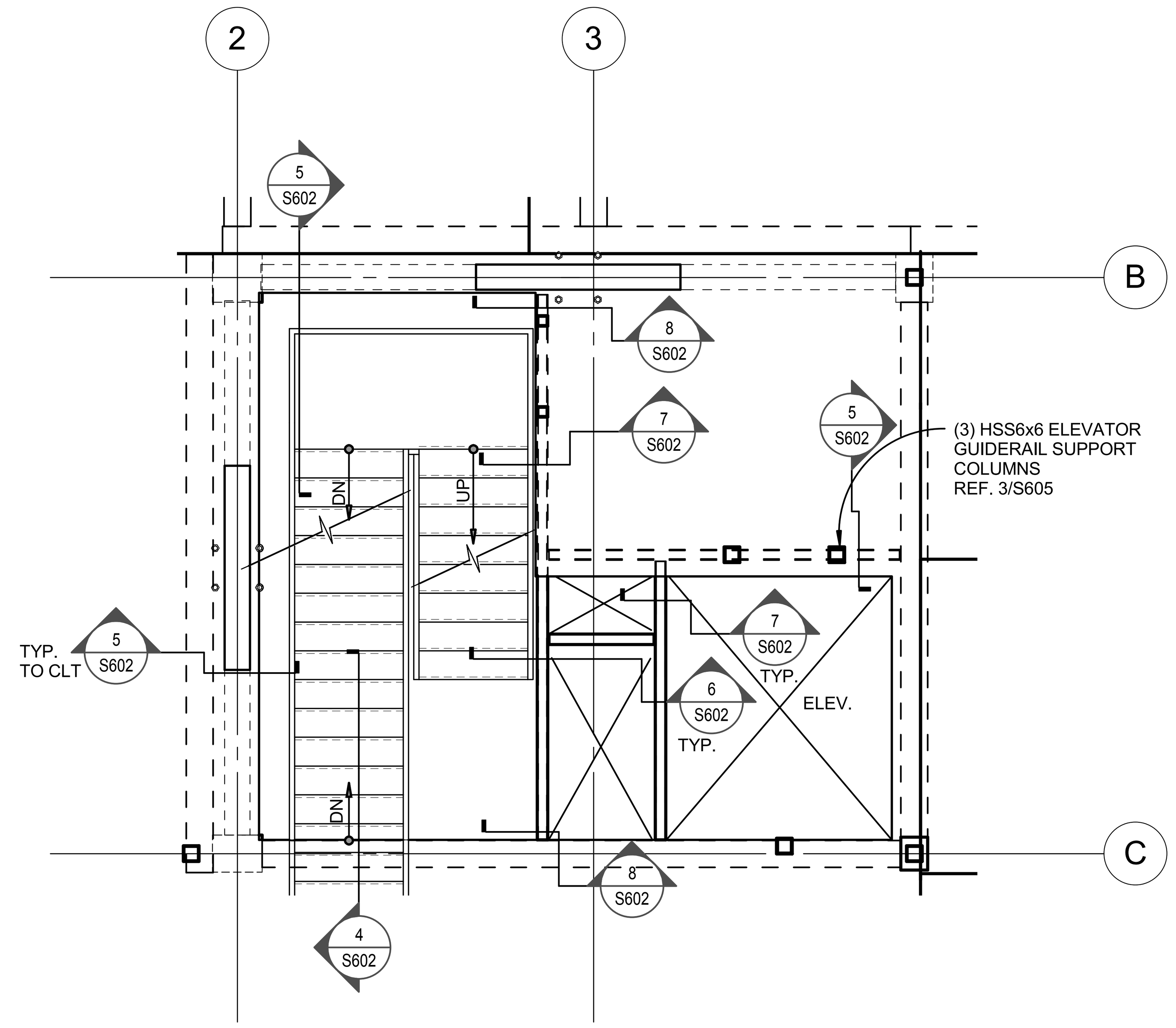
SCALE
AS INDICATED

SHEET TITLE
ENLARGED WEST SHAFT PLAN

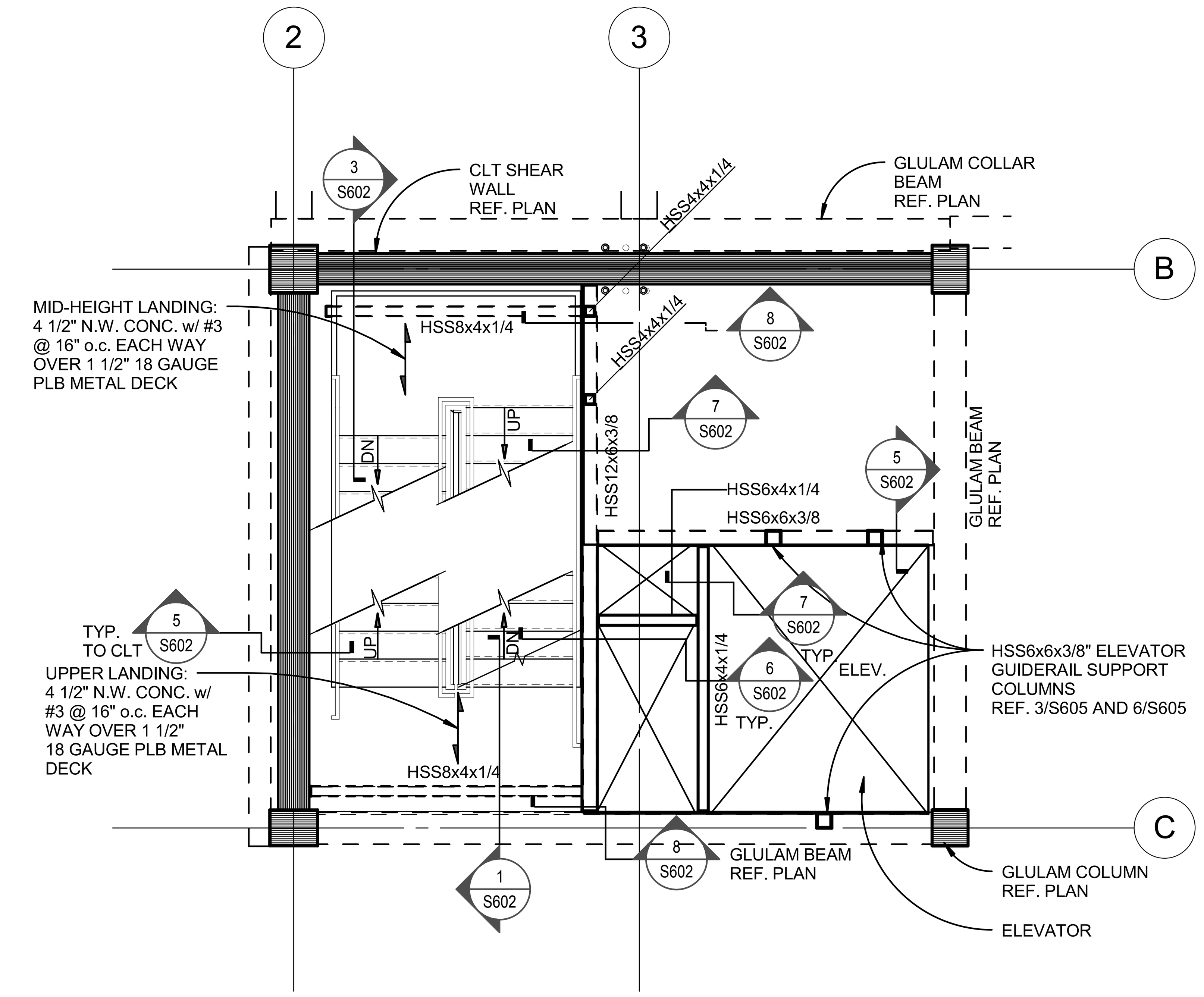
S212

GMP SET

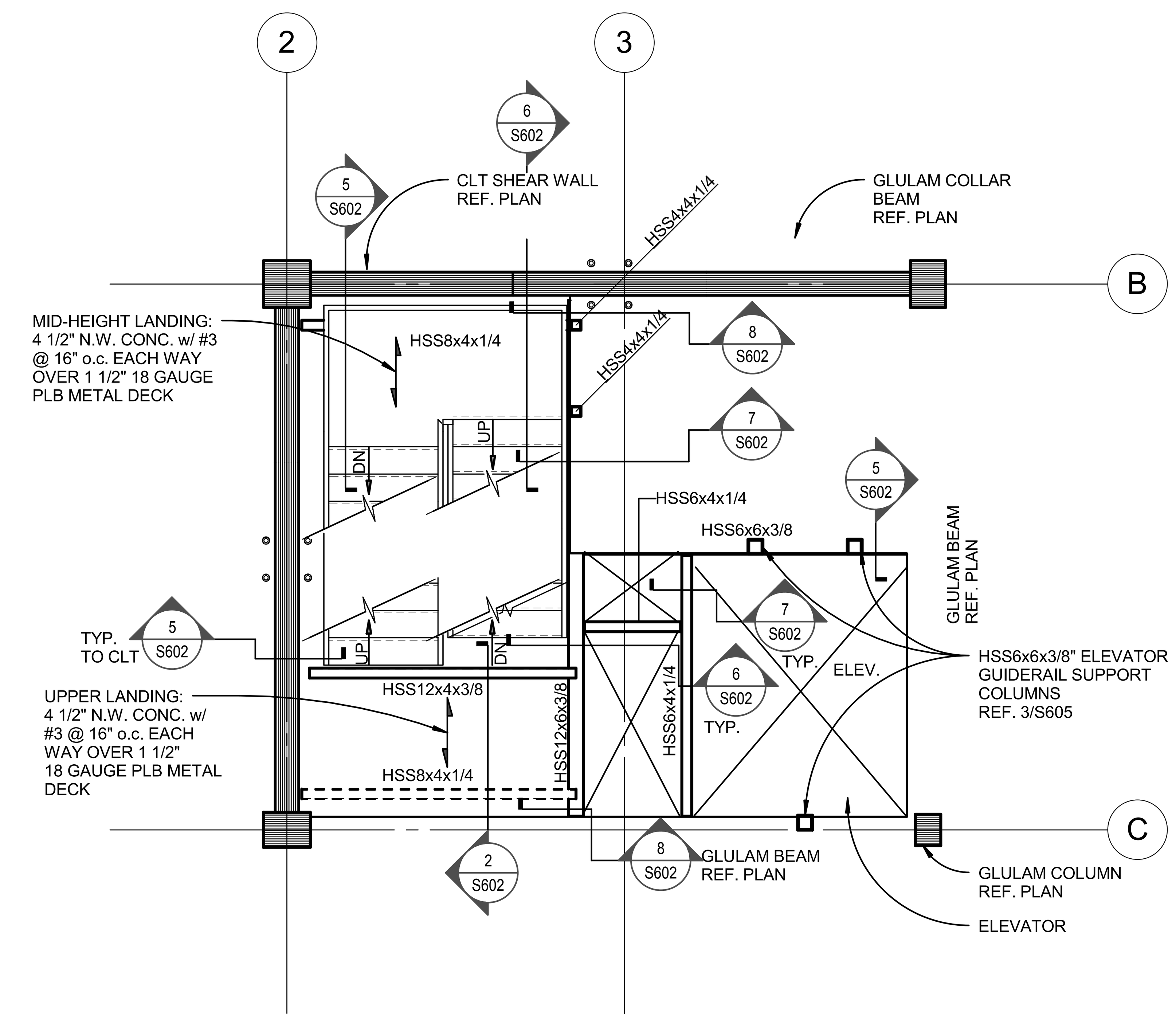
11/4/2016 9:54:37 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



3 PARTIAL STAIR PLAN LEVEL 12
1/4" = 1'-0" S112



1 PARTIAL STAIR PLAN - OFFICE LEVEL
1/4" = 1'-0" S102



2 PARTIAL STAIR PLAN RESIDENTIAL LEVEL
1/4" = 1'-0" S107

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

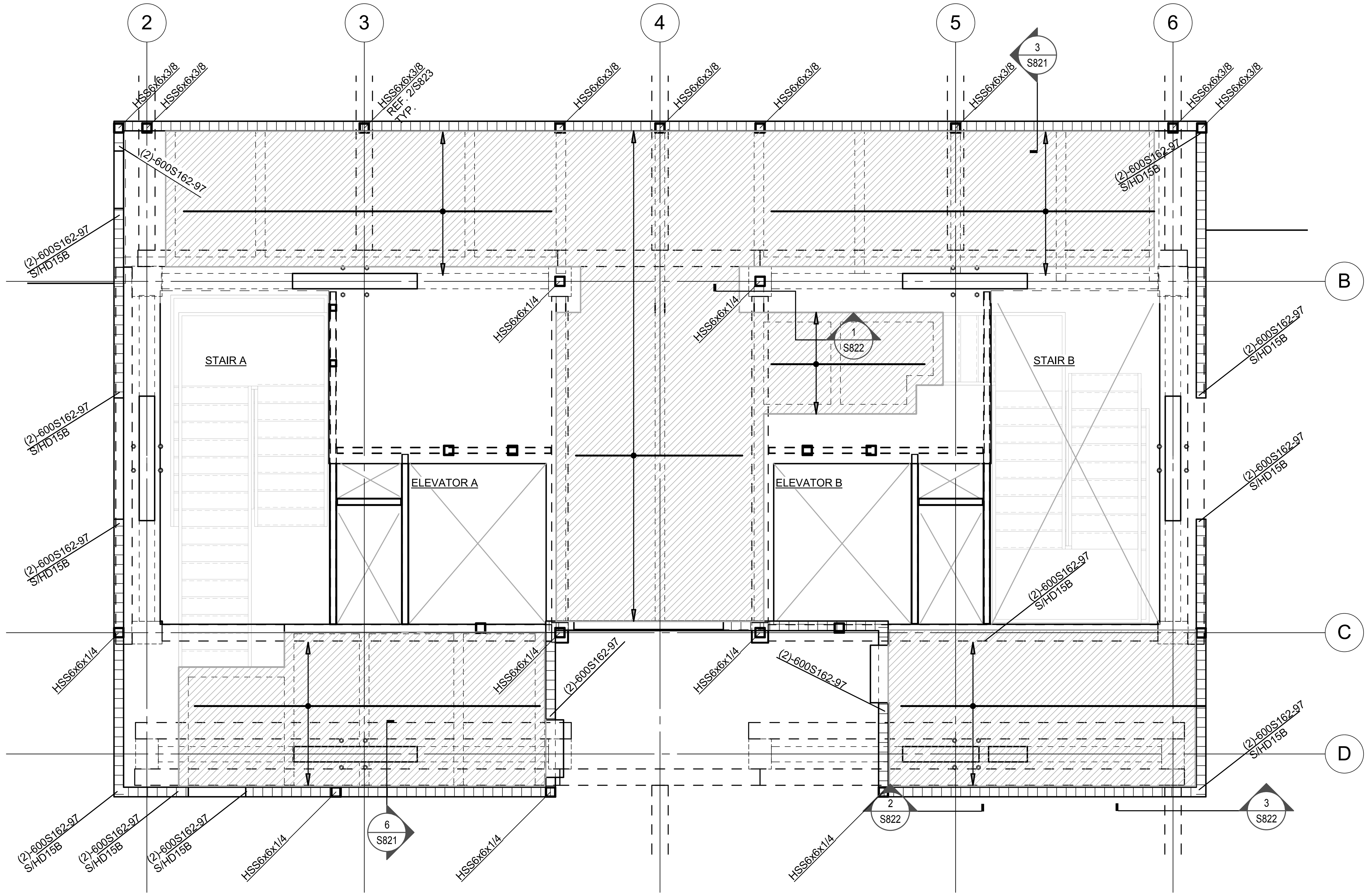
SCALE
AS INDICATED

SHEET TITLE
ENLARGED STAIR PLANS

S221

GMP SET

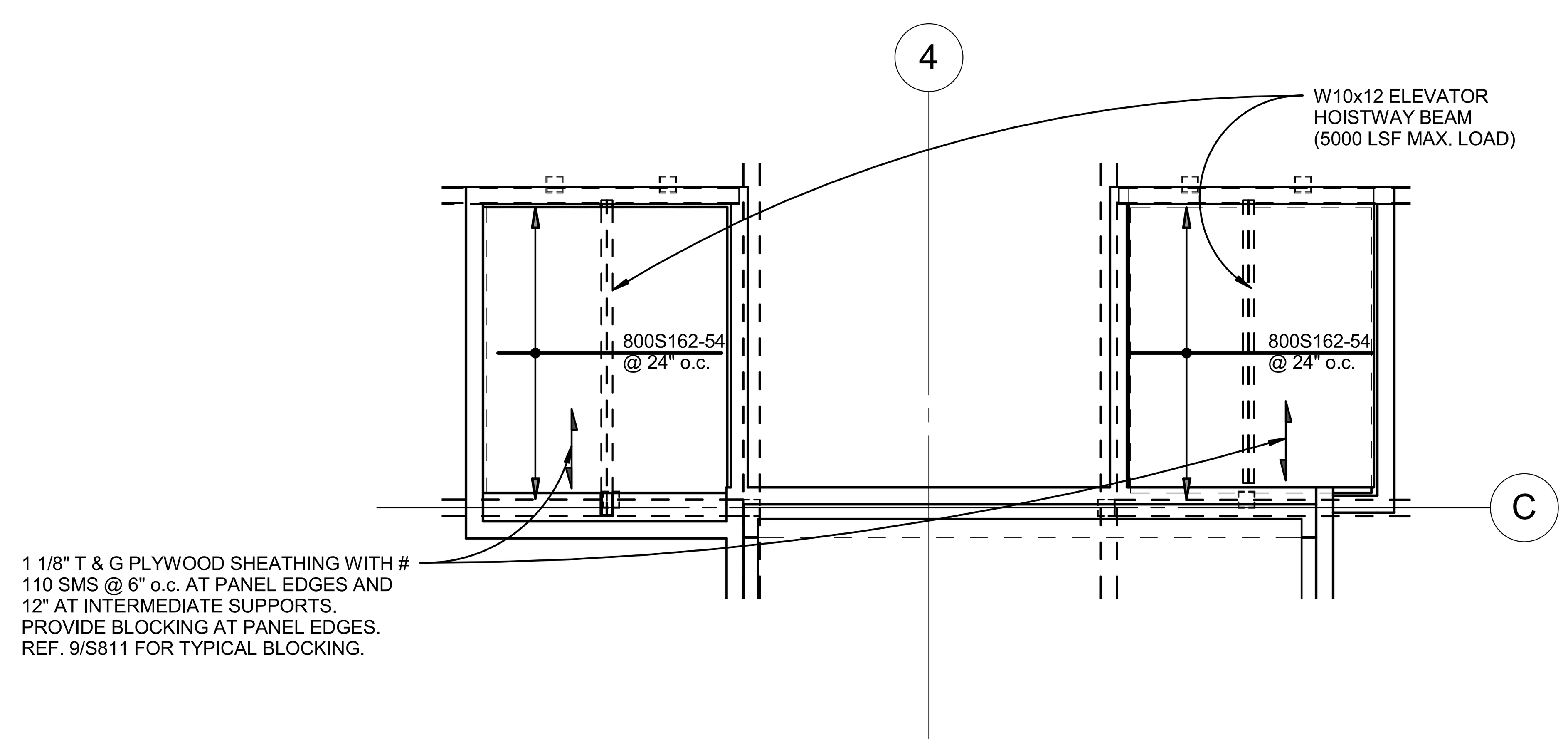
11/4/2016 9:54:38 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



FOR INFORMATION NOT SHOWN REF. 3/S221

1 ROOF TOP PENTHOUSE RAISED FLOOR PLAN

1/4" = 1'-0"



2 MECHANICAL PENTHOUSE ELEVATOR OVER-RUN FRAMING

1/4" = 1'-0"

SHEET NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS REFER TO S00X SERIES.
2. FOR TYPICAL RAISED FLOOR FRAMING DETAILS REFER TO S8XX SERIES.
3. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, DRAINS, SLAB DEPRESSIONS, CURBS, ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION.
4. VERIFY ELEVATOR OPENINGS AND PIT DIMENSIONS WITH ELEVATOR MANUFACTURER PRIOR TO THE START OF CONSTRUCTION.
5. REF. ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCK OUTS AND OTHER ITEMS TO BE COORDINATED WITH STRUCTURAL DRAWINGS.
6. SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS ALTHOUGH INDICATED ON THE STRUCTURAL DRAWINGS FOR INFORMATION PURPOSES ONLY, ARE THE DESIGN RESPONSIBILITY OF OTHER.
7. (XXX'-XX") INDICATES TOP OF STRUCTURAL CLT ELEVATION, RELATIVE TO TYPICAL TOP OF FINISHED GROUND FLOOR ELEVATION = X'-X", WHERE 100'-0" = USGS 36'-7"-X".
8. (S) INDICATES SLOPE IN STRUCTURAL PANEL
9. INDICATES STEP IN ELEVATION.
10. INDICATES METAL STUD BEARING WALL.
11. INDICATES METAL STUD BEARING WALL BELOW.
12. INDICATES METAL STUD SHEAR WALL SHEATHED ONE SIDE WITH SURE-BOARD 200 SERIES PANELS (96"x16" MIN. PANEL SIZE) WITH #10 SMS FASTENER @ 3" o.c. AT PANEL EDGES AND 12" o.c. AT INTERMEDIATE SUPPORTS ALL PANEL EDGES SHALL BE FULLY BLOCKED REF. 9/S811.
13. COLUMN HOLD-DOWN INDICATES COLUMN AND SIMPSON STRONG-TIE HOLD-DOWN.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

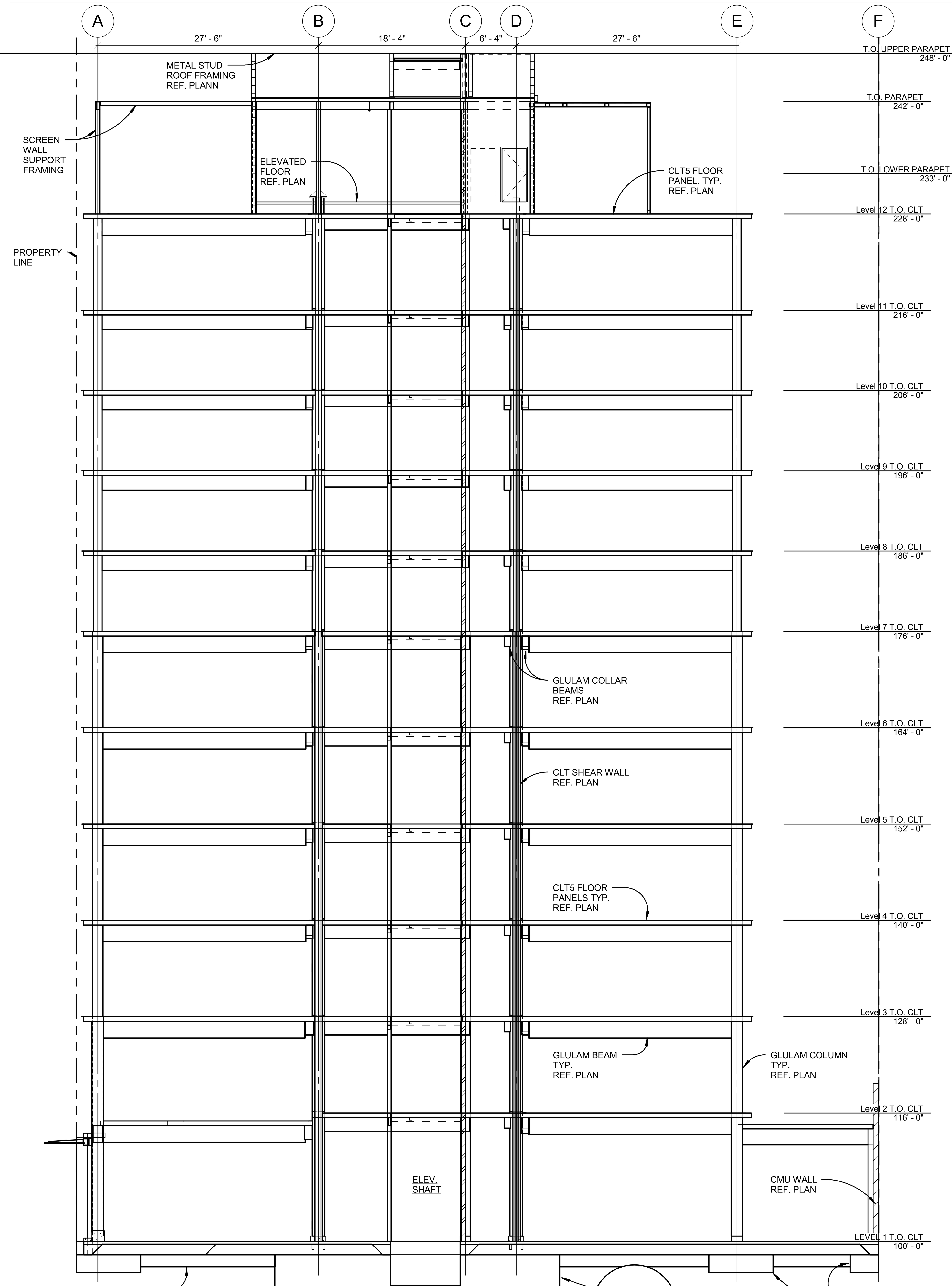
SCALE
AS INDICATED

SHEET TITLE
LEVEL 12 RAISED FLOOR FRAMING PLAN

S231

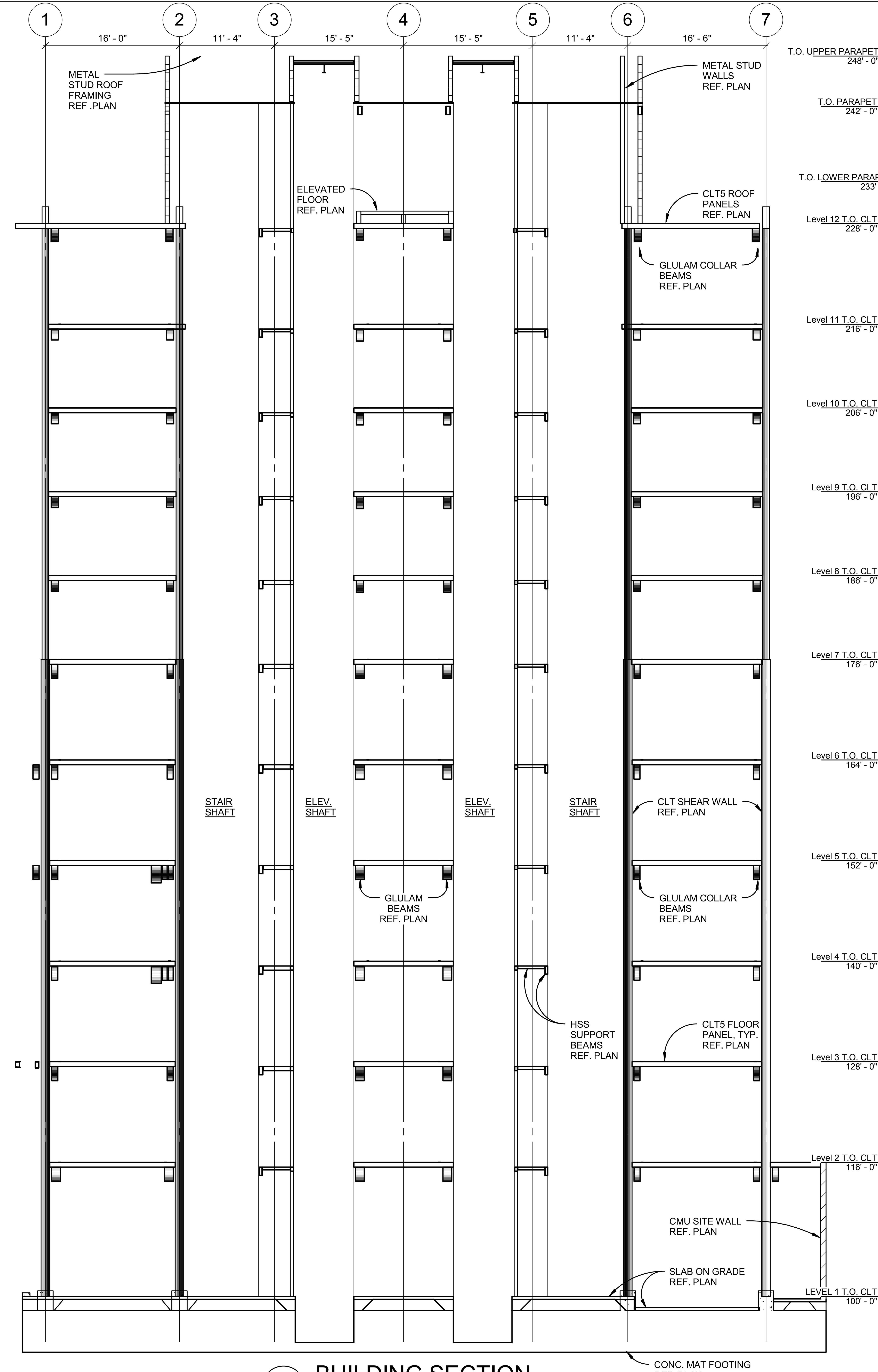
GMP SET

11/4/2016 9:54:39 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



2 BUILDING SECTION

1/8" = 1'-0"



1 BUILDING SECTION

1/8" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

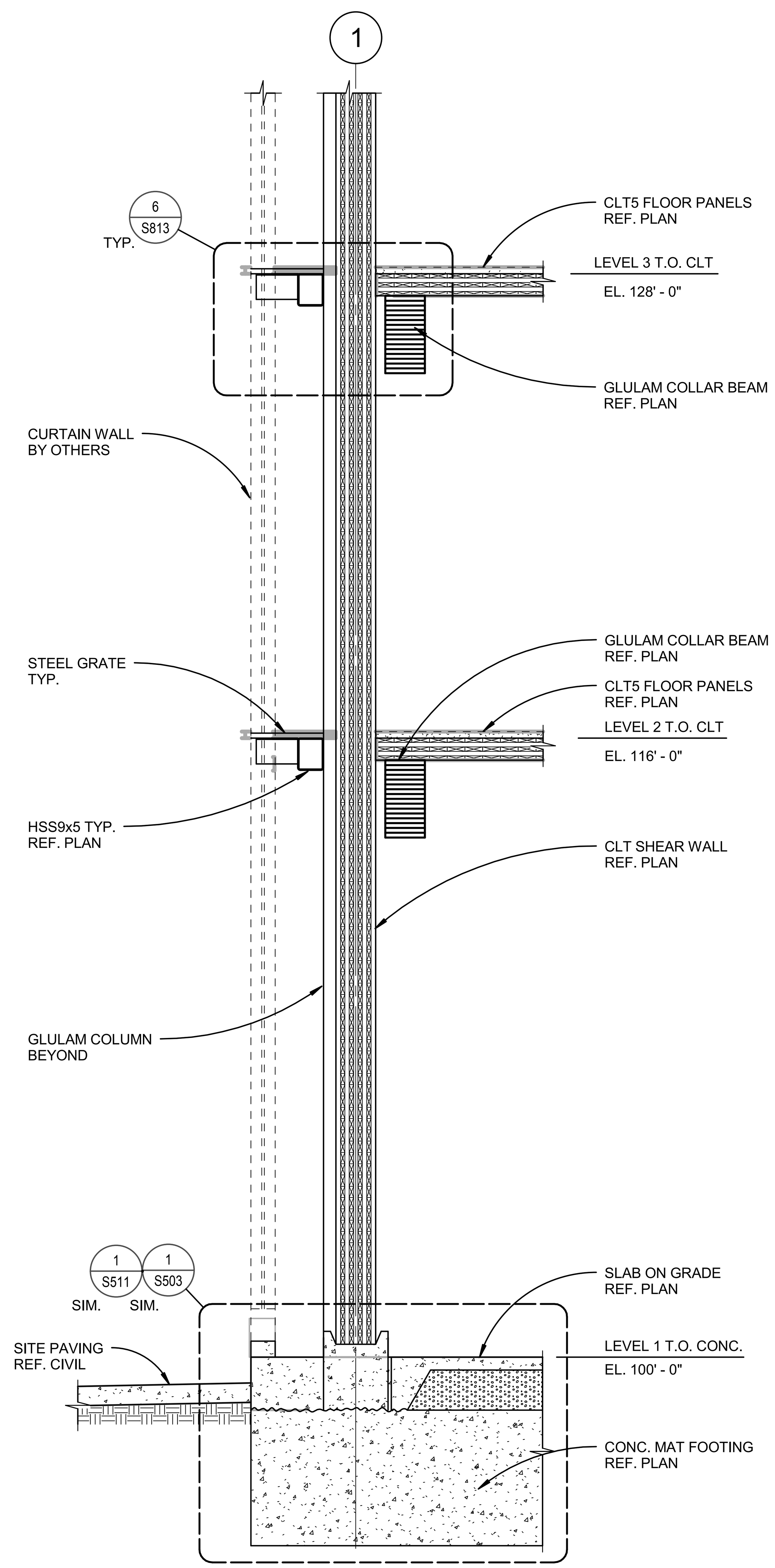
SCALE
AS INDICATED

SHEET TITLE
BUILDING SECTIONS

S301

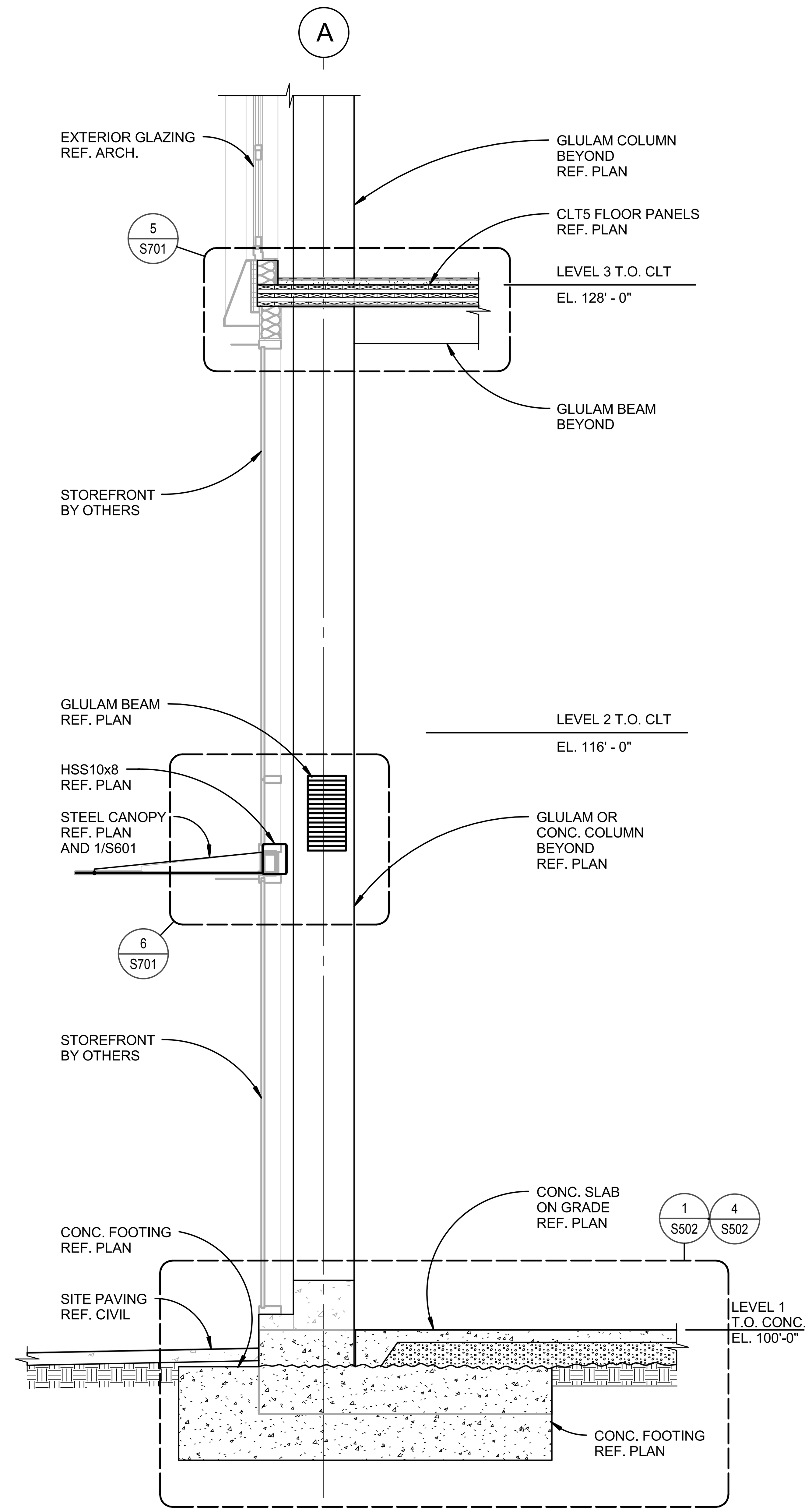
GMP SET

11/4/2016 9:54:40 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



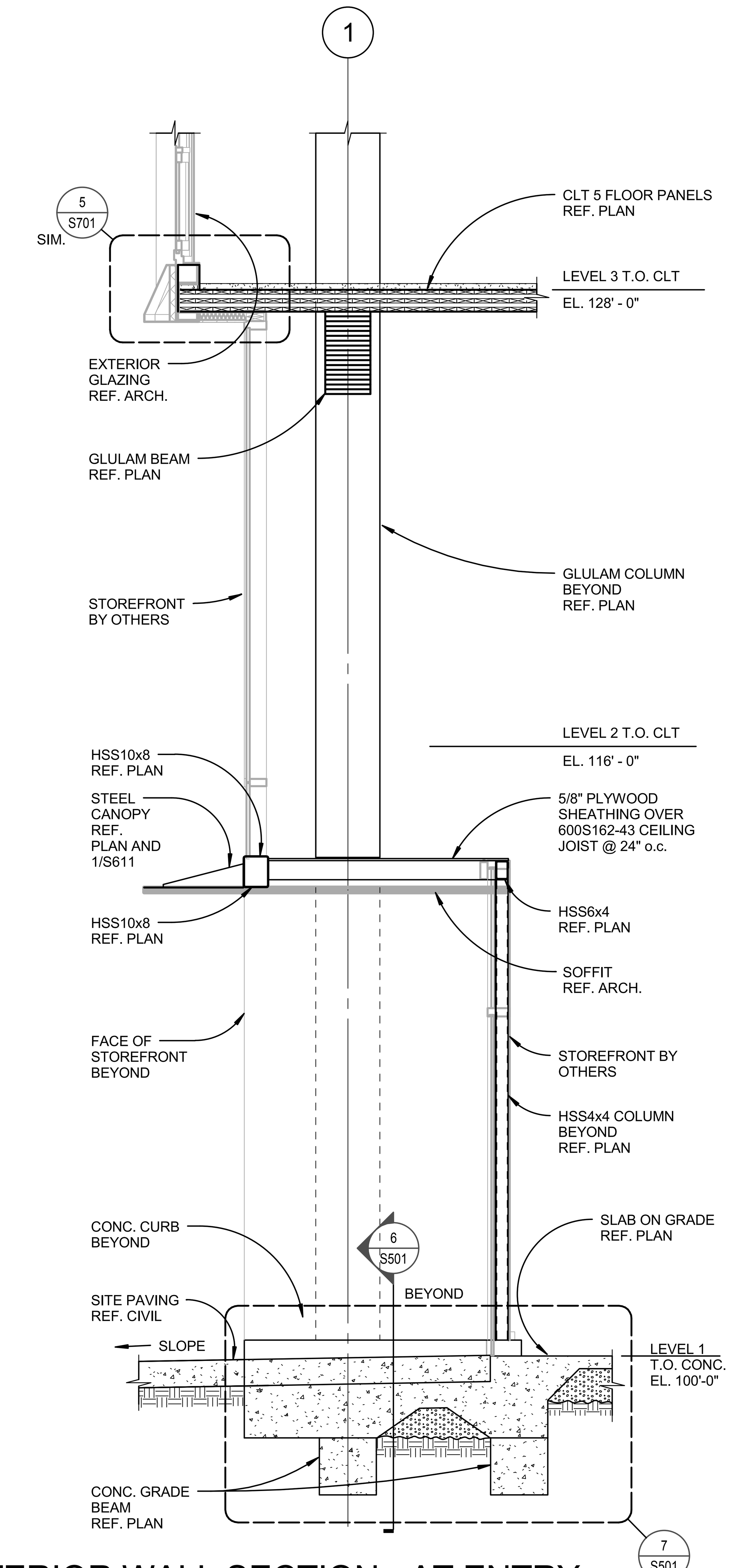
3 EXTERIOR WALL SECTION - AT CURTAIN WALL

3/8" = 1'-0" S101



2 EXTERIOR WALL SECTION - AT CANOPY

3/8" = 1'-0" S101



1 EXTERIOR WALL SECTION - AT ENTRY

3/8" = 1'-0" S101

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

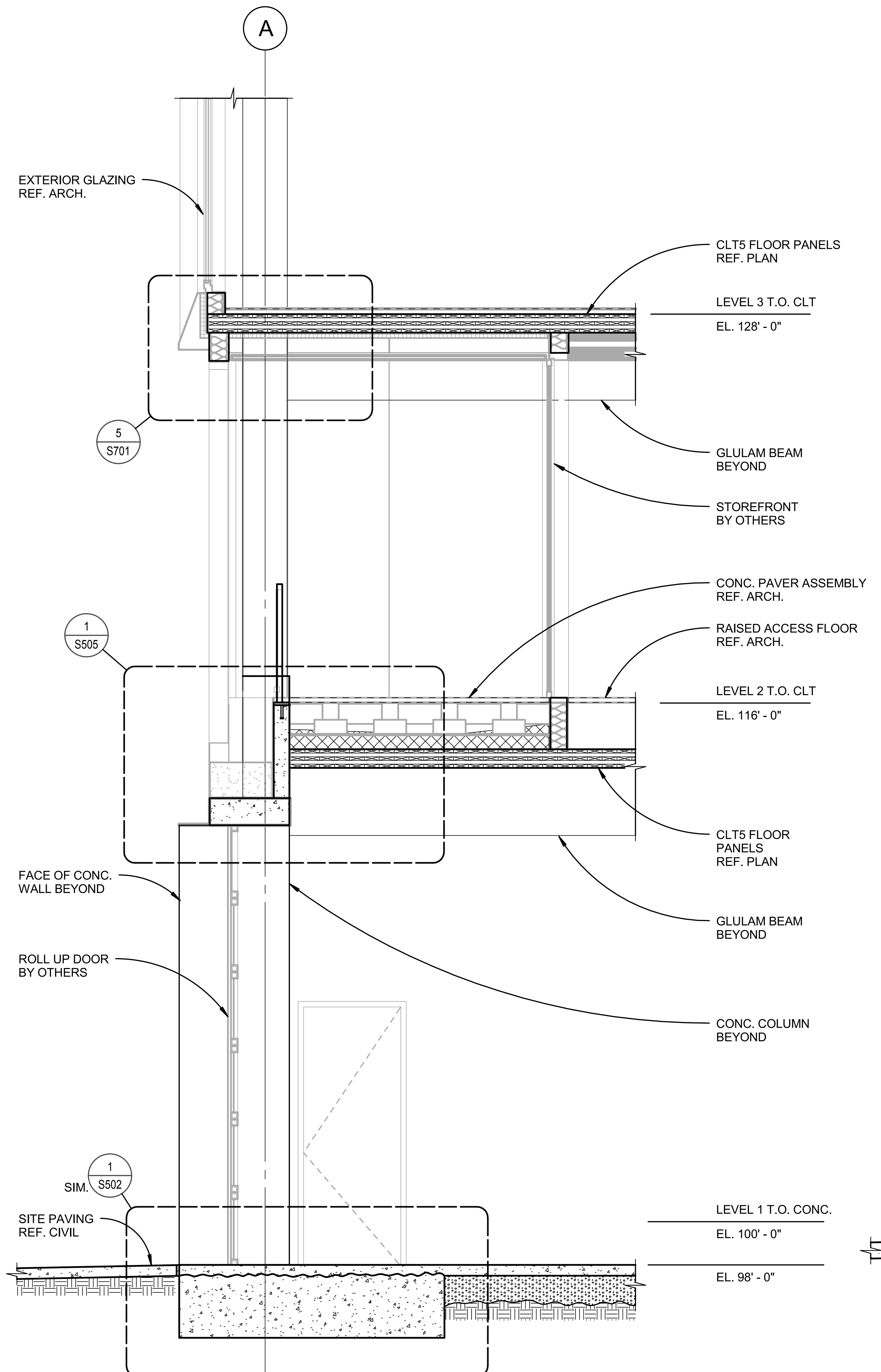
SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL SECTIONS

S311

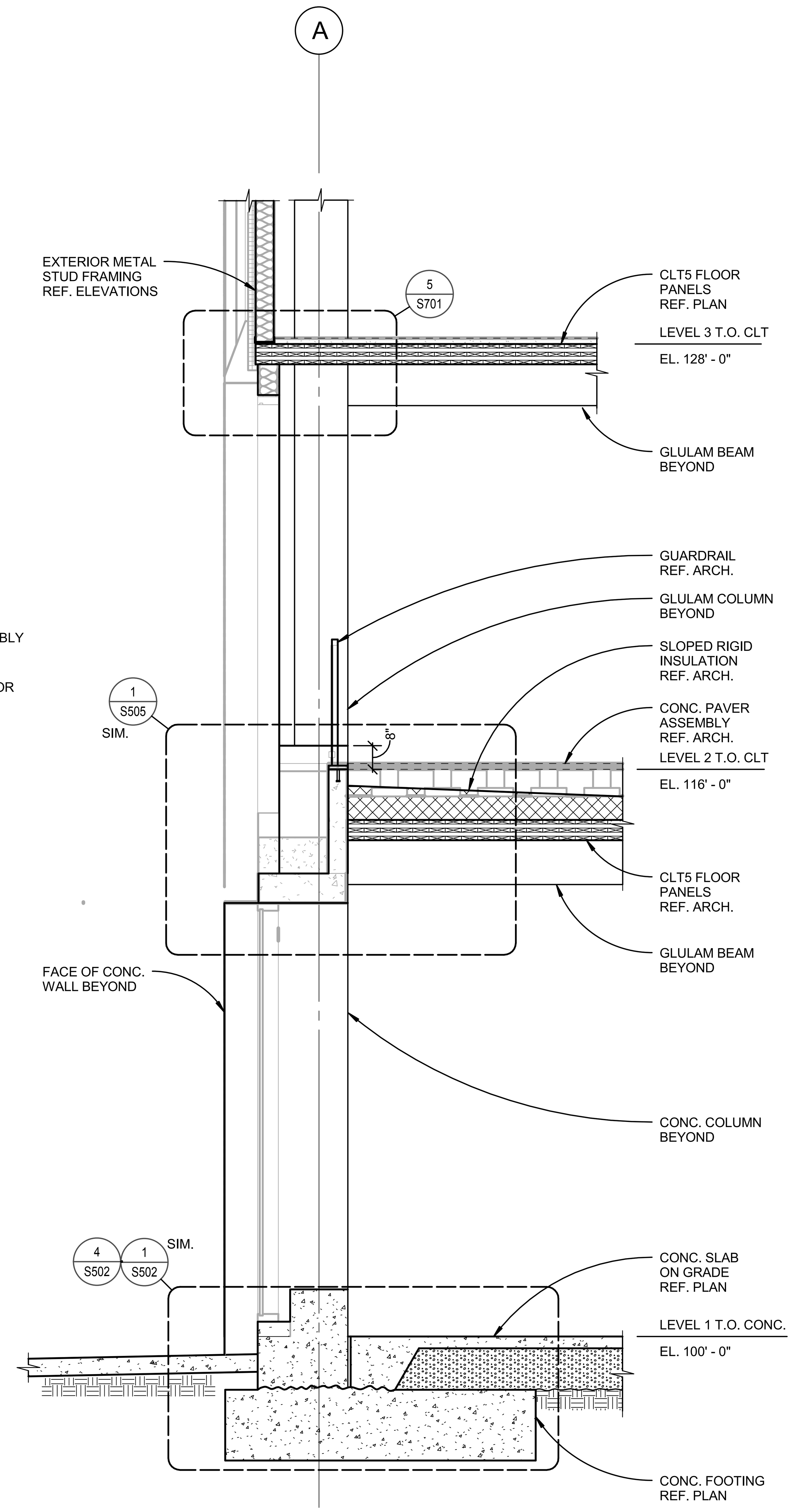
GMP SET

11/4/2016 9:54:41 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



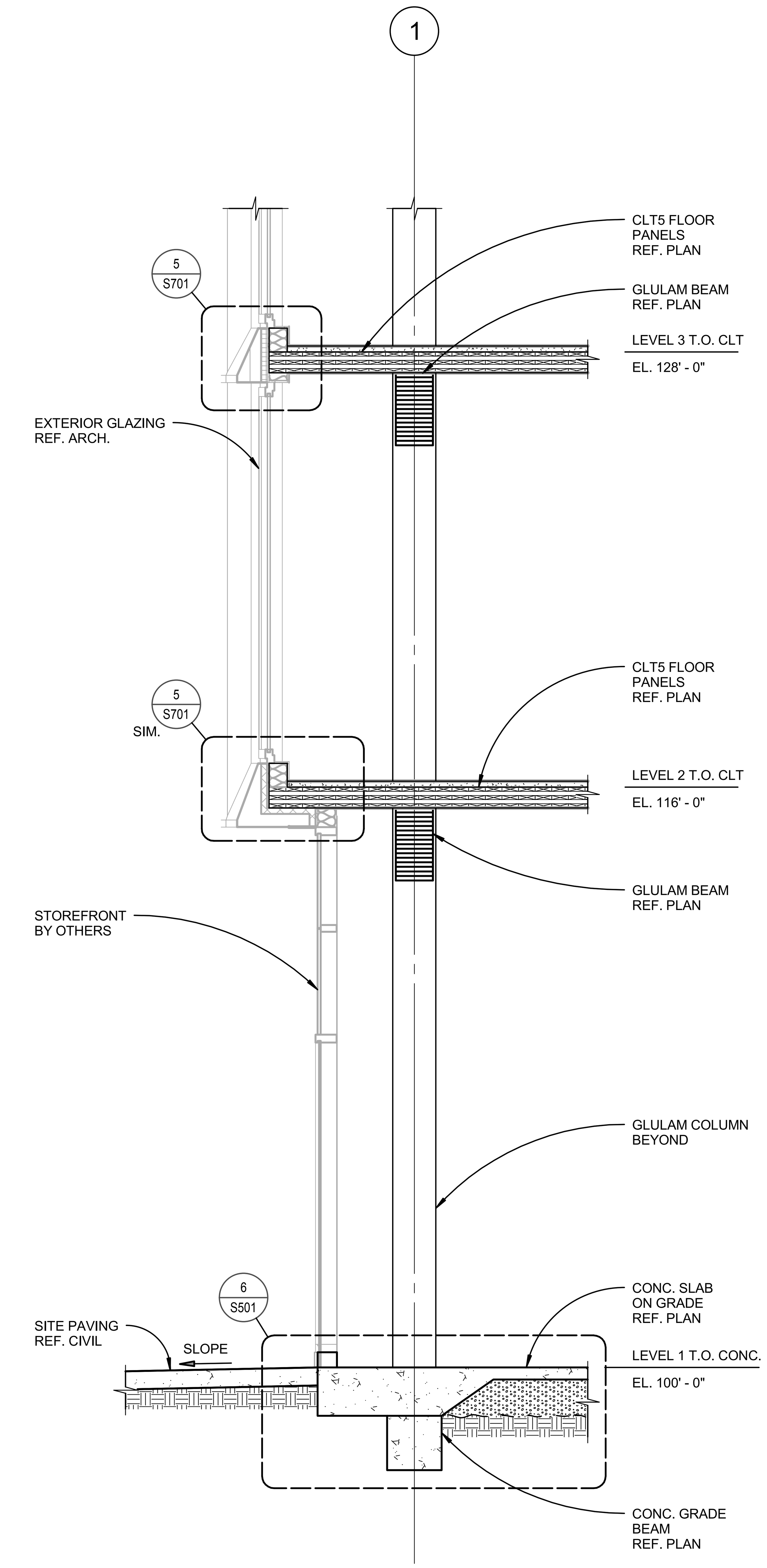
3 EXTERIOR SECTION - AT BALCONY

3/8" = 1'-0" S101



2 EXTERIOR WALL SECTION - AT BALCONY

3/8" = 1'-0" S101



1 EXTERIOR WALL SECTION - GRID 1

3/8" = 1'-0" S101

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER
ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

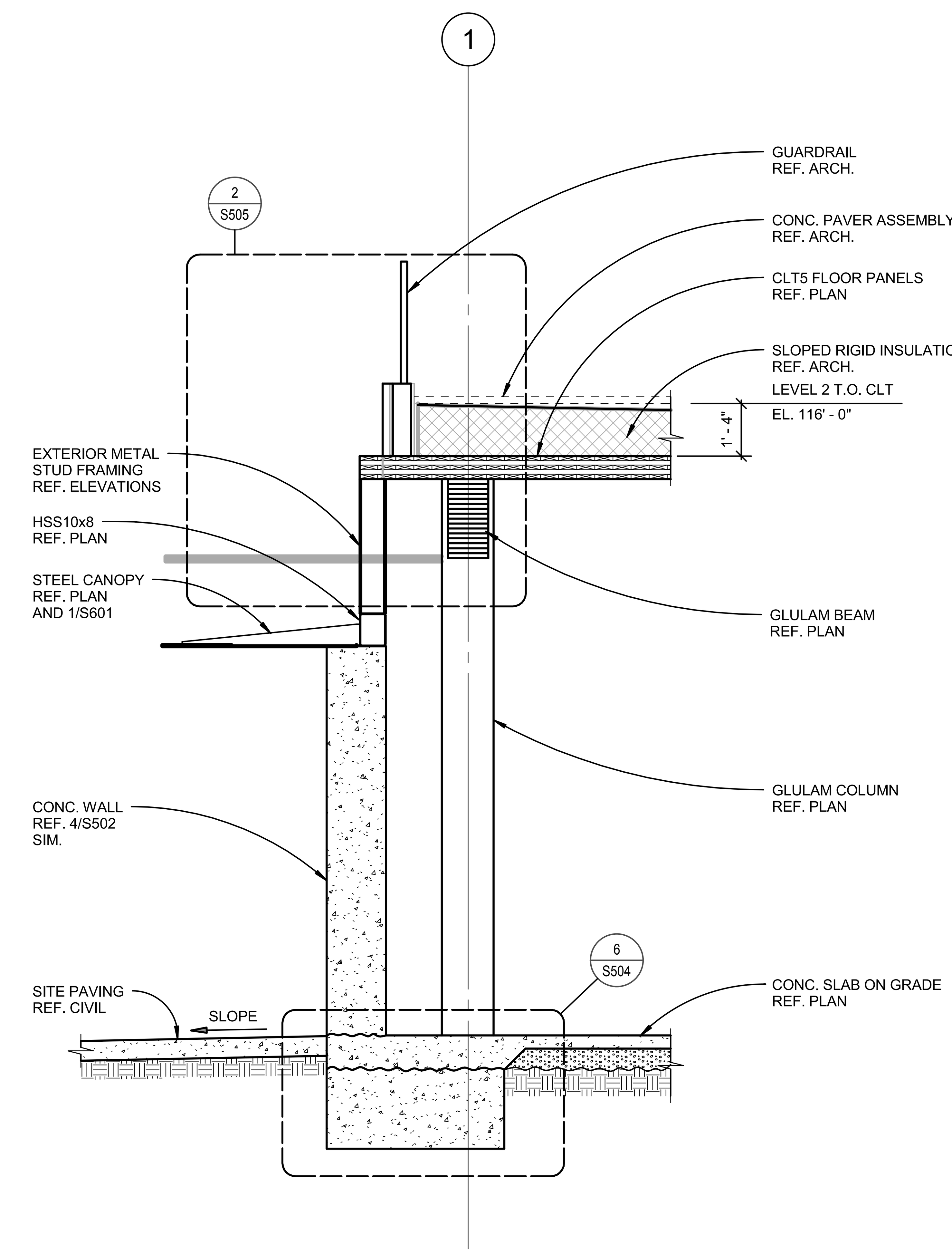
SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL SECTIONS

S312

GMP SET

11/4/2016 9:54:42 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 EXTERIOR WALL SECTION - AT SOUTH DECK
3/8" = 1'-0" S101

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER
ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL SECTIONS

S313

GMP SET

11/4/2016 9:54:43 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

COLUMN SCHEDULE

MARK	C-01	C-02	C-03	C-04	C-05	C-06	C-07	C-08	C-11	C-12	C-13
HIGH ROOF											
LEVEL 12/ROOF DECK											
LEVEL 11	H	H	H	F	F	F	G				
LEVEL 10											
LEVEL 09	H	H	H	F	F	F	G				
LEVEL 08											
LEVEL 07	H	H	H	E	E	E	G				
LEVEL 06											
LEVEL 05	D	D	D	D	D	D	E		C	C	A
LEVEL 04											
LEVEL 03	D	D	D	D	D	D	E				
LEVEL 02	B	A	D	A	D	B	E				
FOUNDATION/LEVEL 01			J		J			F			

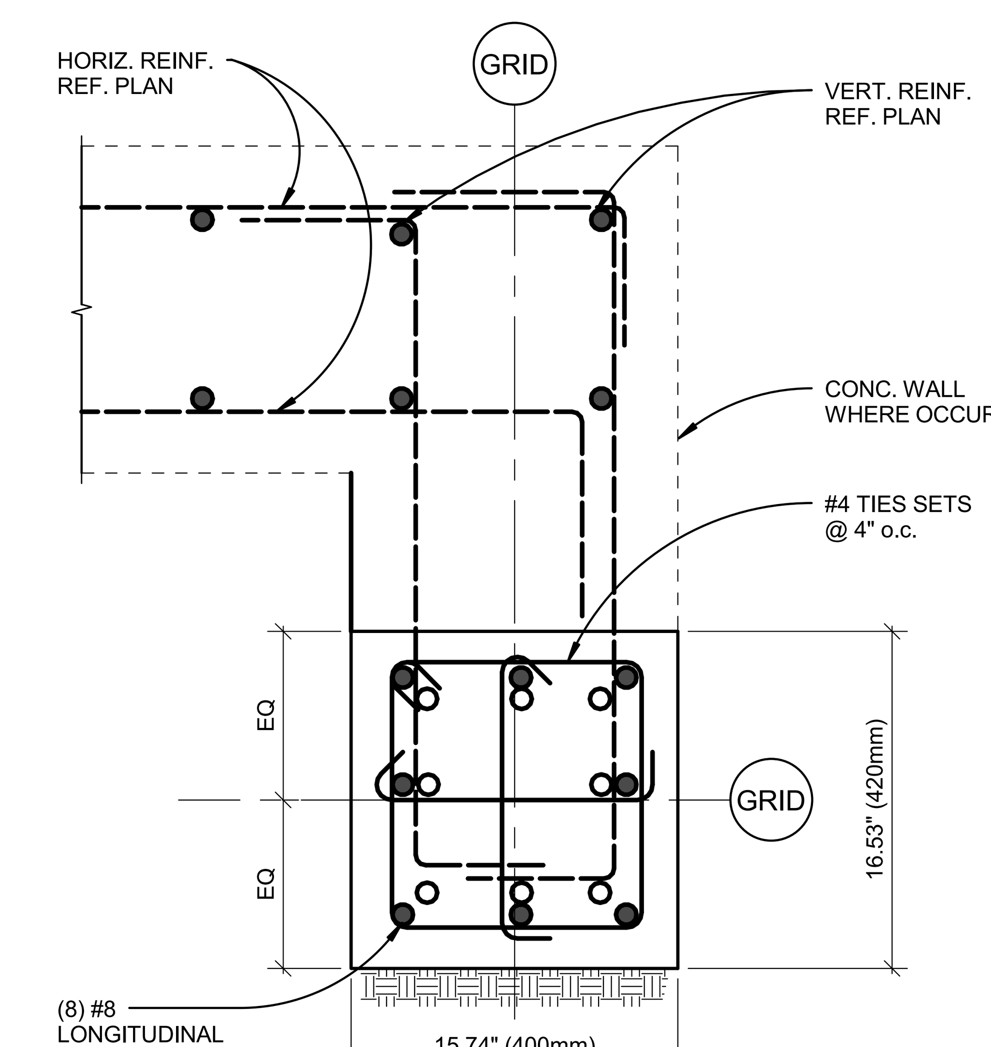
1. AT BOUNDING COLUMNS C-11, C-12 AND C-13 REF. SHEAR WALL ELEVATIONS FOR SPLICE LOCATIONS.

2. REF. DETAIL 1/S502 SIM FOR COLUMN TYPE D TO TYPE J CONNECTION

COLUMN SECTIONS

COLUMN TYPE	SIZE (in)		SIZE (mm)		REMARKS
	W	D	W	D	
A	18.90"	18.90"	480	480	GL28H
B	15.74"	17.32"	400	440	GL28H
C	14.17"	18.90"	360	480	GL28H
D	14.17"	15.75"	360	400	GL28H
E	14.17"	14.17"	360	360	GL28H
G	10.24"	12.60"	260	320	GL28H
H	11.81"	12.60"	300	320	GL28H
J	15.74"	16.53"	400	420	CONC. COLUMN REF 2/S401

1 COLUMN SCHEDULE



2 CONCRETE COLUMN SECTION
1 1/2" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

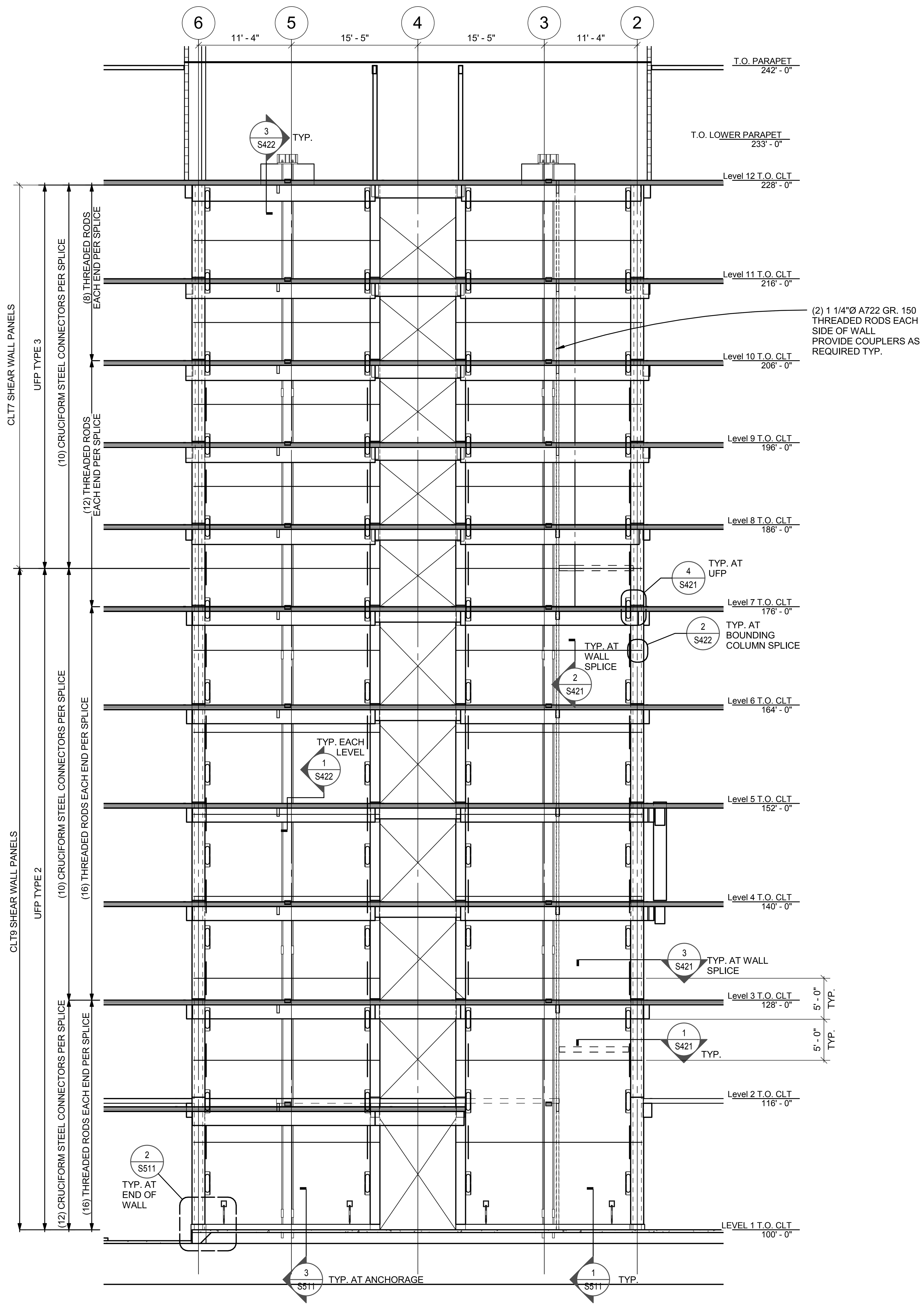
SCALE
AS INDICATED

SHEET TITLE
COLUMN SCHEDULE

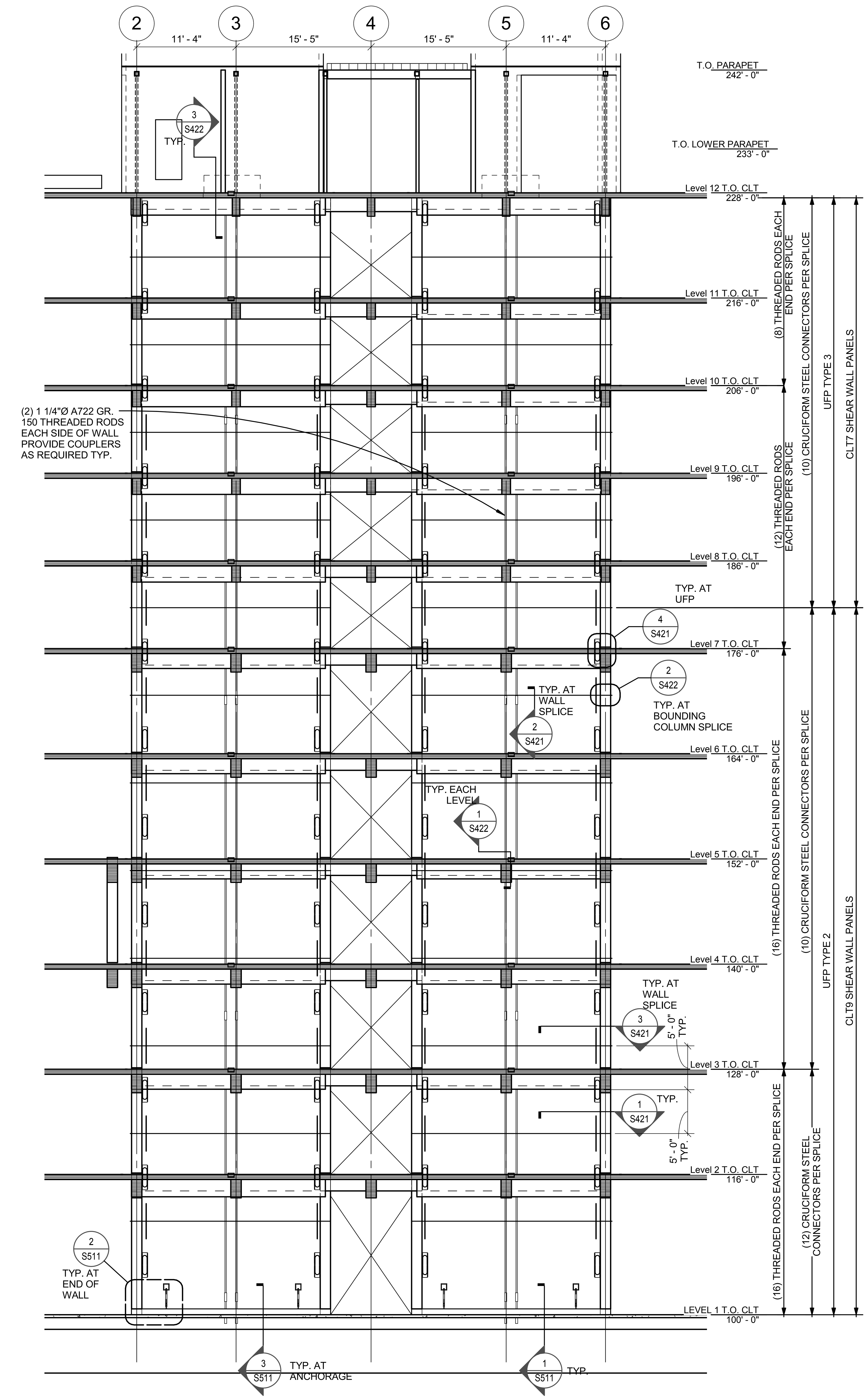
S401

GMP SET

11/4/2016 9:54:44 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



B NORTH WALLS ELEVATION
1/8" = 1'-0"



A SOUTH WALLS ELEVATION
1/8" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

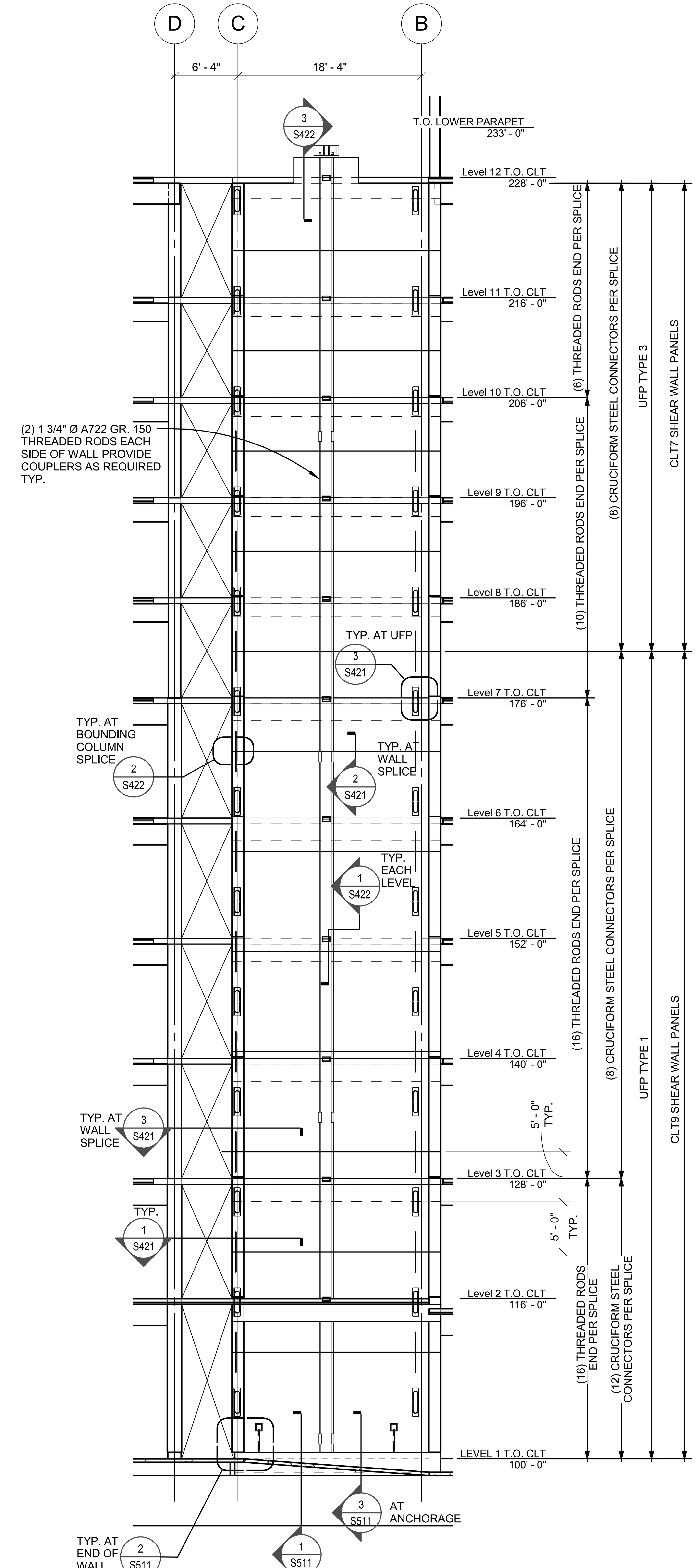
SCALE
AS INDICATED

SHEET TITLE
SHEAR WALL ELEVATIONS

S411

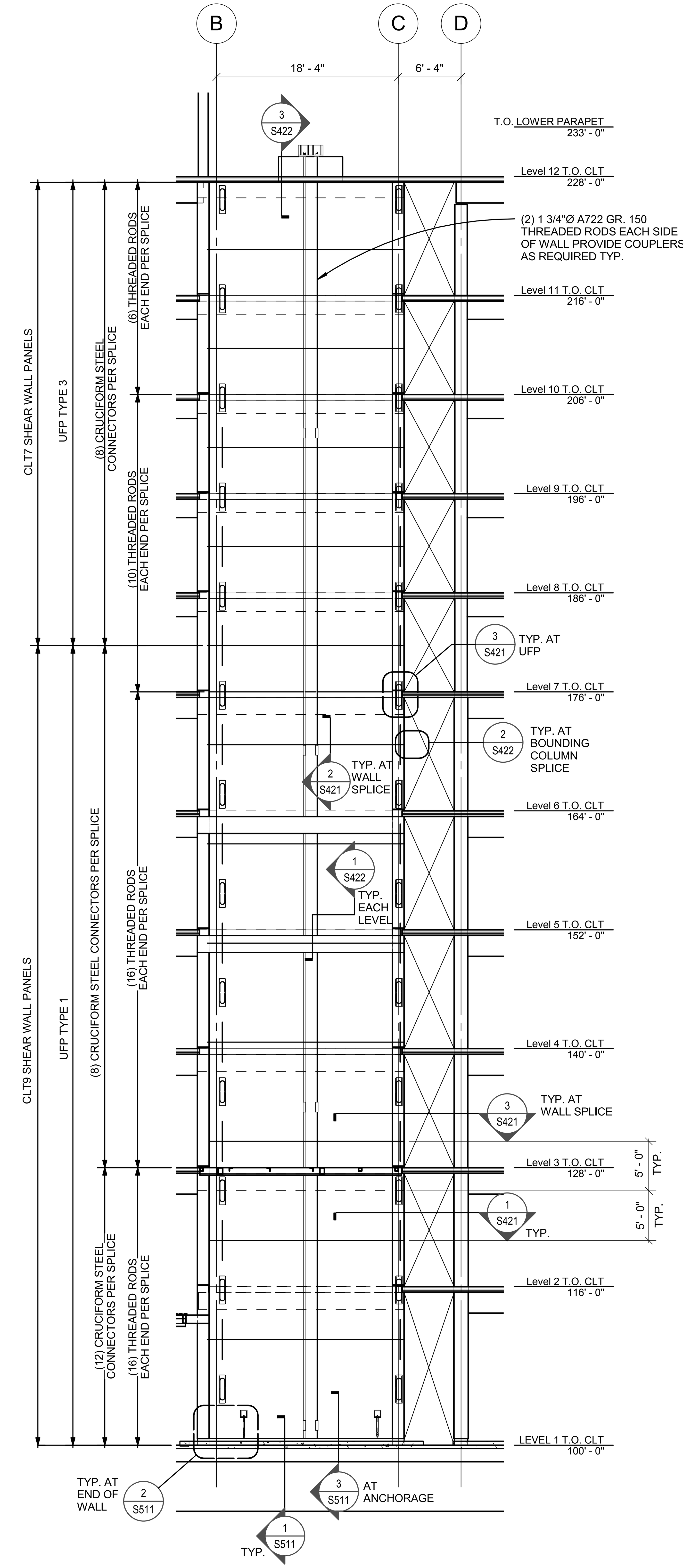
GMP SET

11/4/2016 9:54:45 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



D WALL D ELEVATION

1/8" = 1'-0"



C WALL C ELEVATION

1/8" = 1'-0"

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE

NOVEMBER 4, 2016

PROJECT NUMBER

215135

SCALE

AS INDICATED

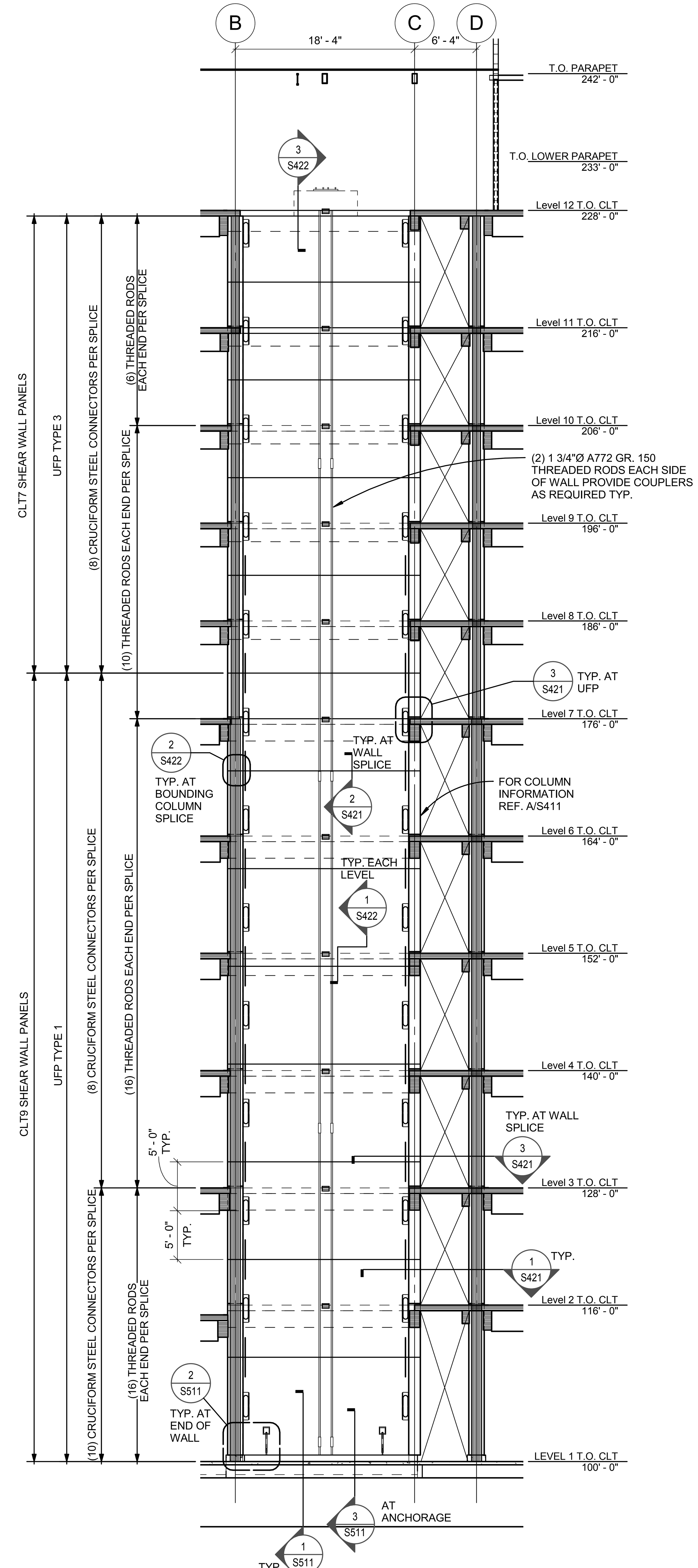
SHEET TITLE

SHEAR WALL ELEVATIONS

S412

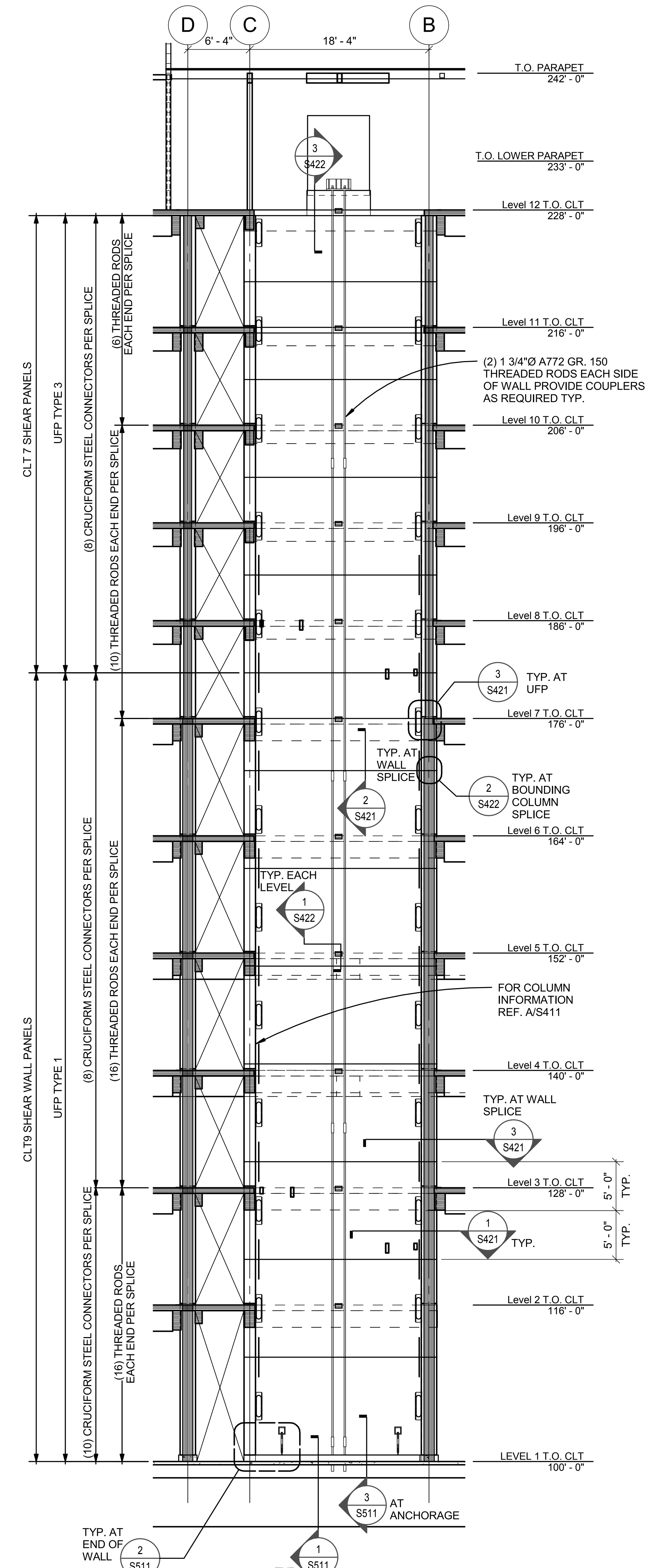
GMP SET

11/4/2016 9:54:46 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



F WALL F ELEVATION

1/8" = 1'-0"



E WALL E ELEVATION

1/8" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

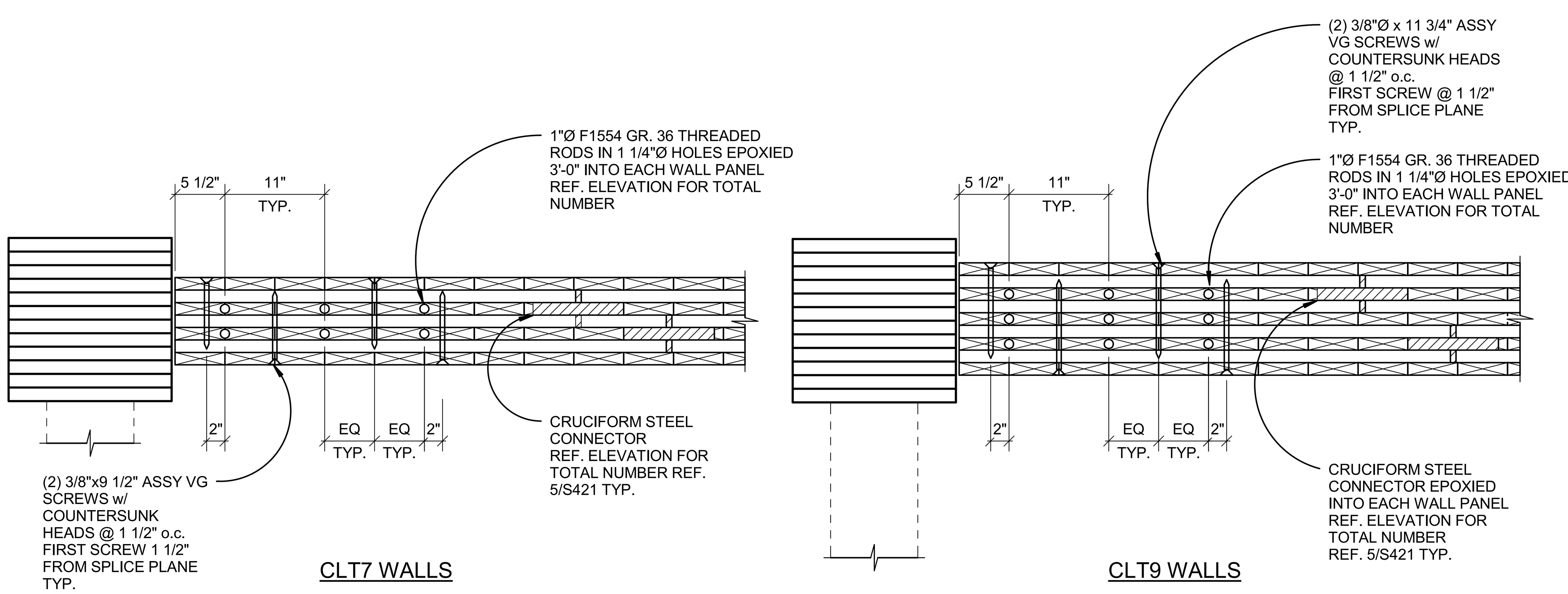
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
SHEAR WALL ELEVATIONS

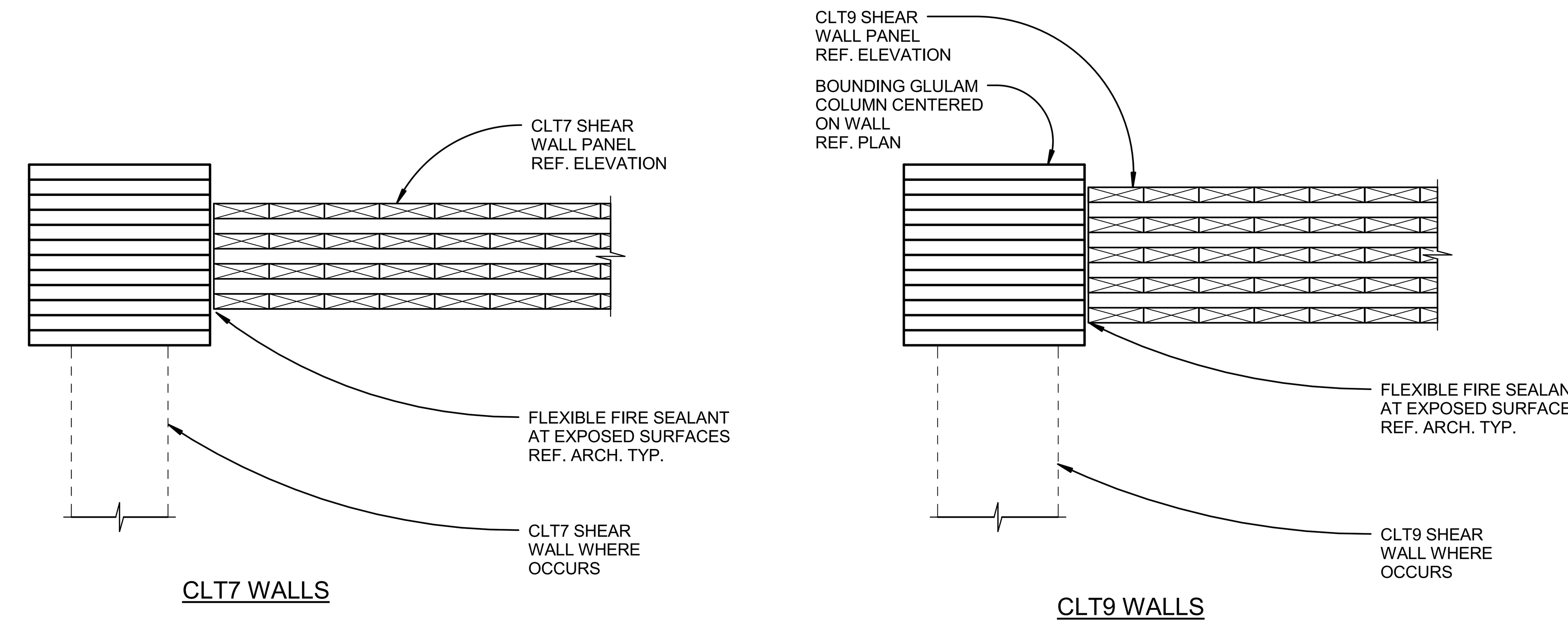
S413

GMP SET



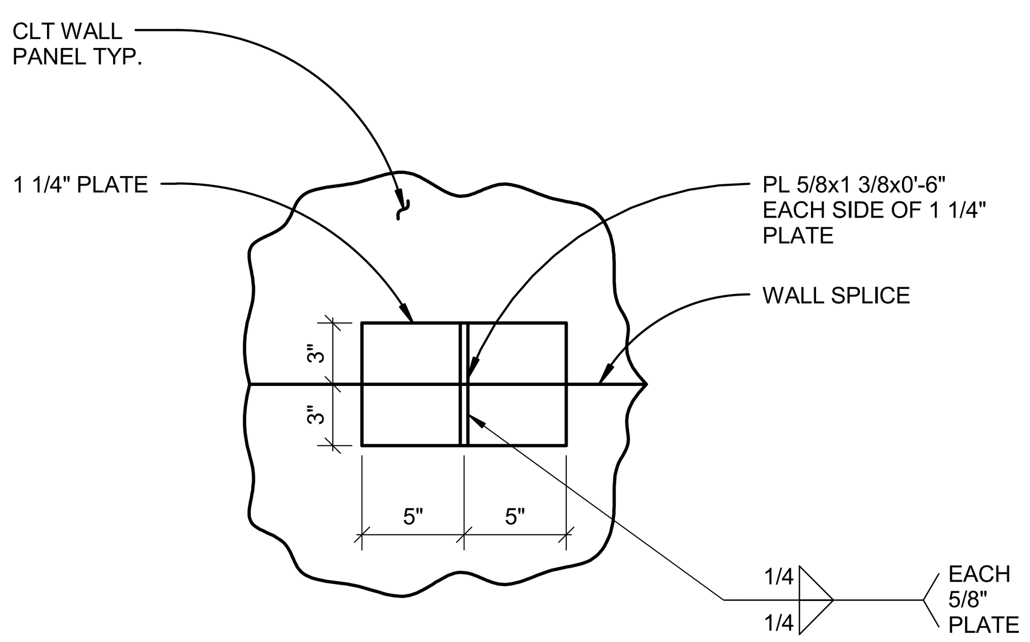
3 SHEAR WALL SPLICE PLAN

1" = 1'-0" S411



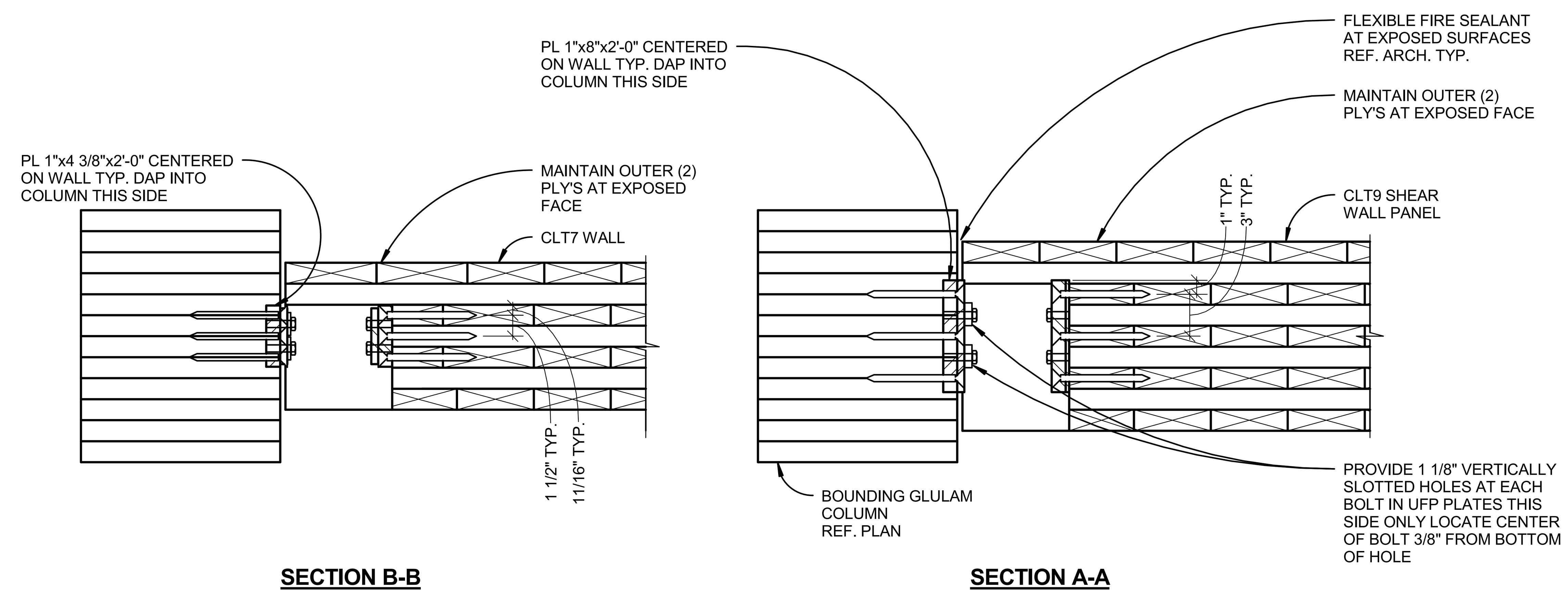
1 SHEAR WALL PLAN

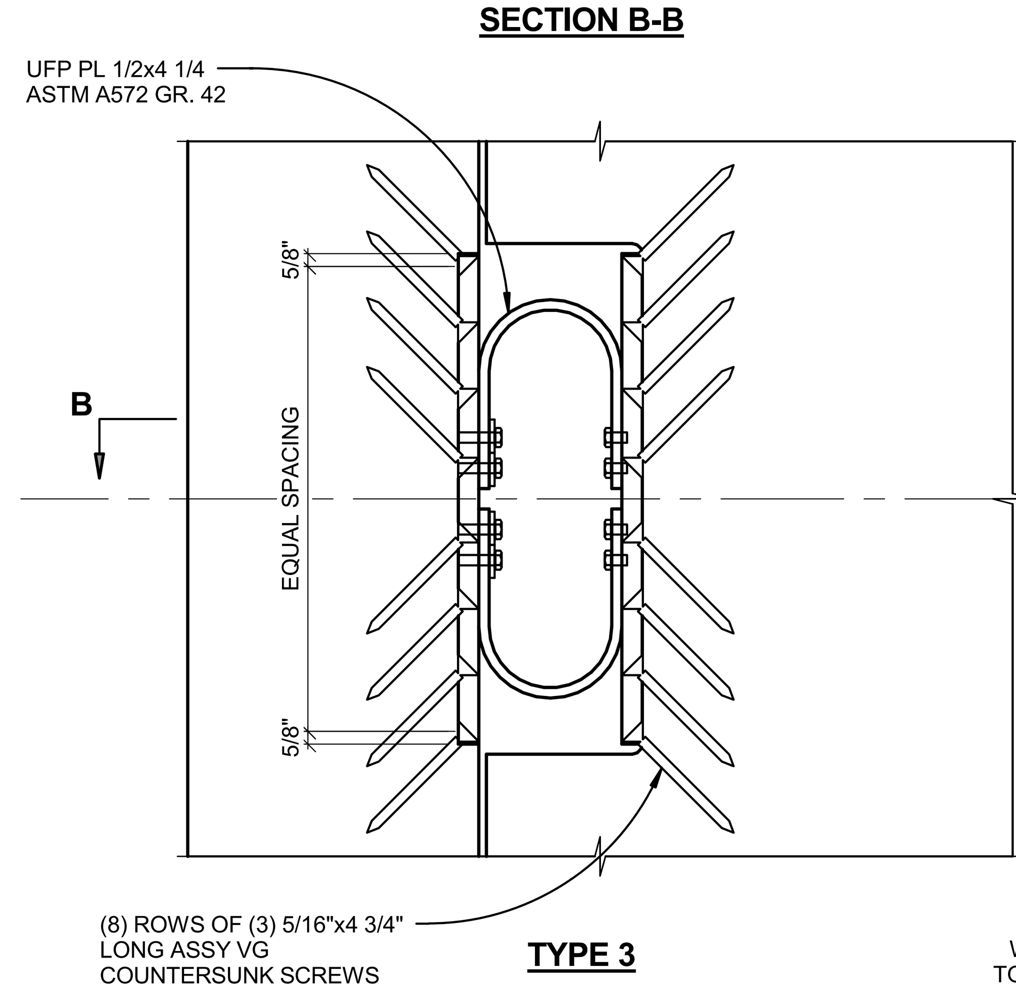
1" = 1'-0" S411

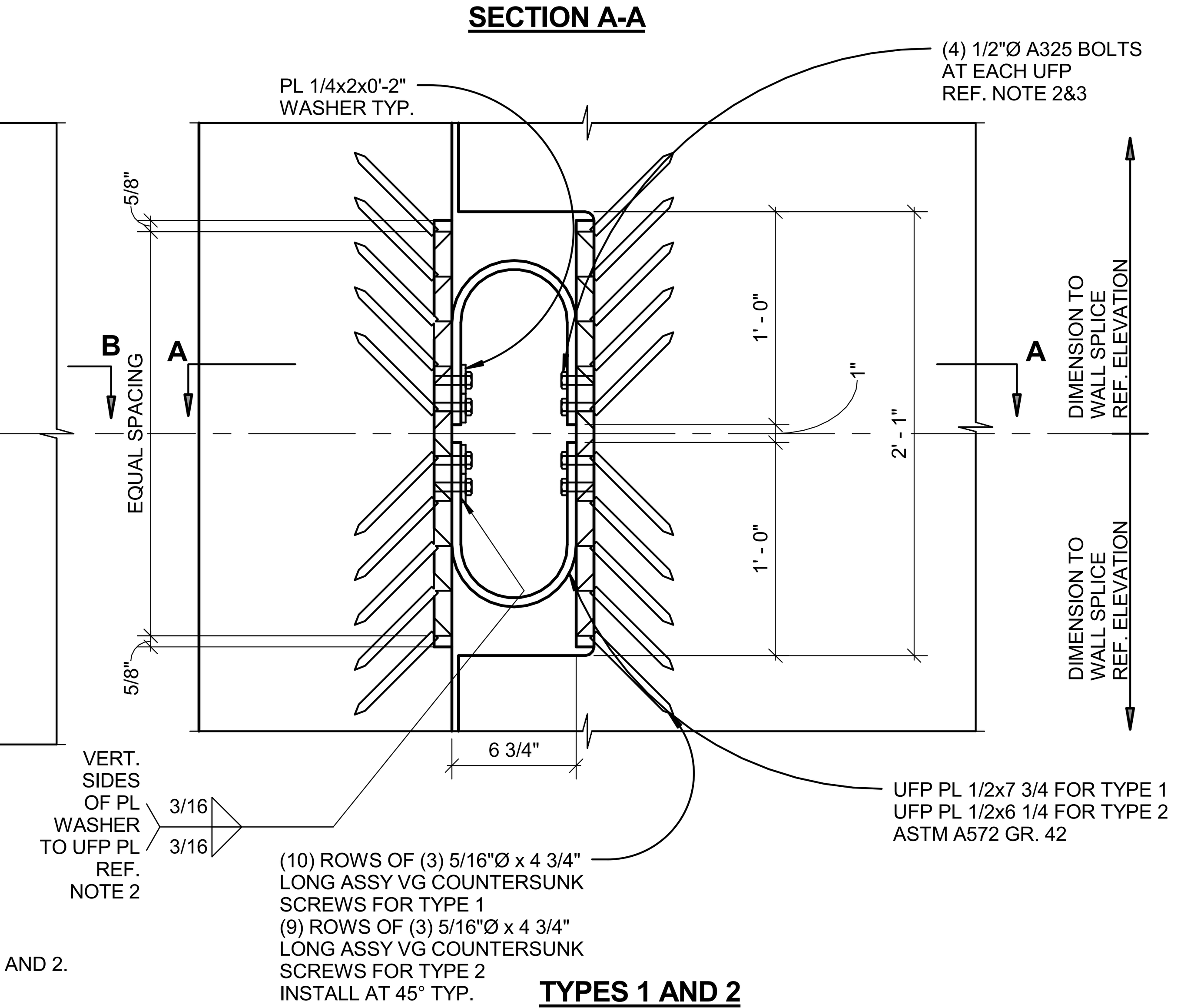


5 CRUCIFORM STEEL CONNECTOR

1 1/2" = 1'-0"





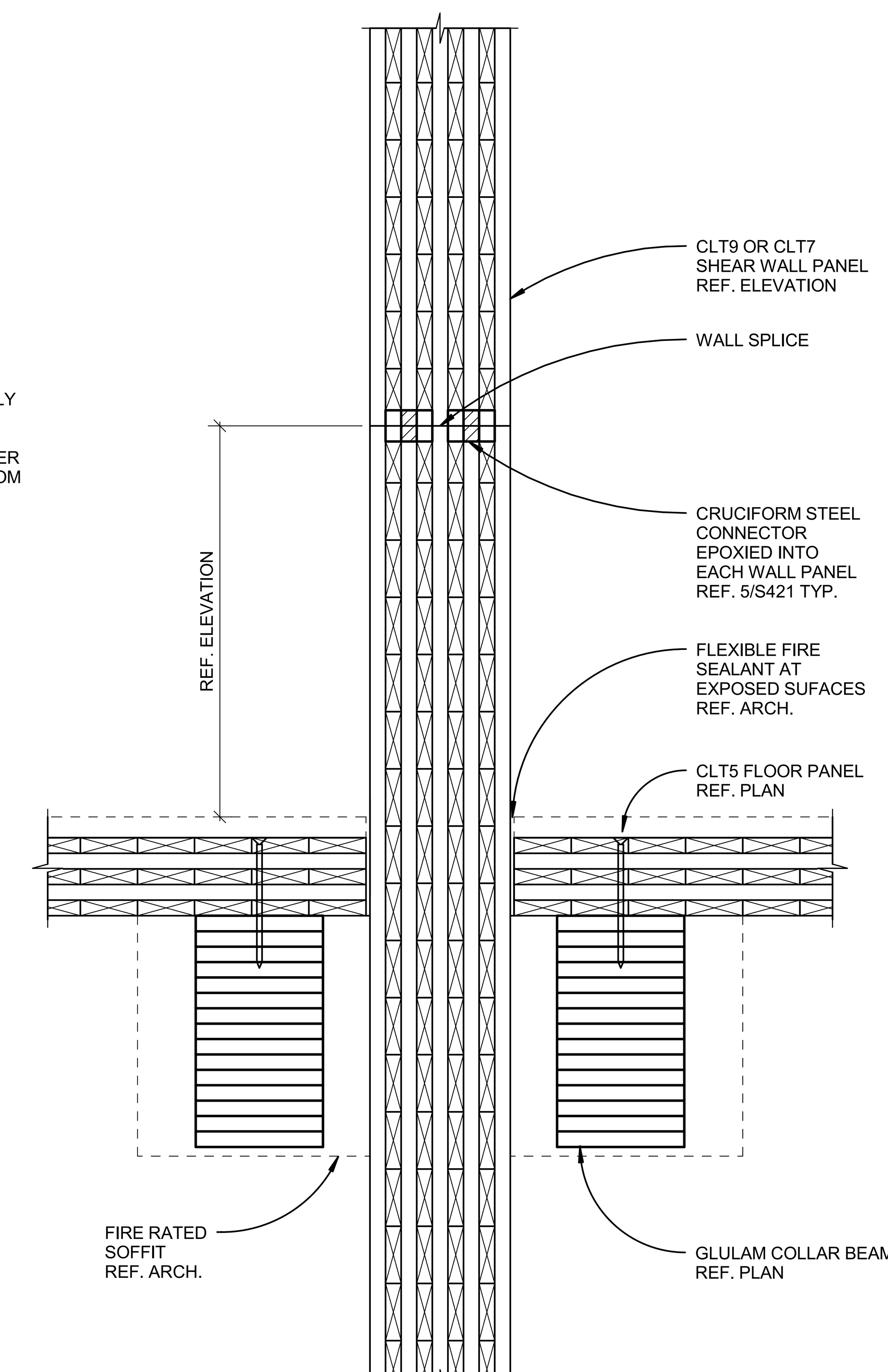


NOTE:

1. FOR INFORMATION NOT SHOWN OR NOTED ON TYPE 3 REF. TYPES 1 AND 2.
2. 1/2"Ø BOLTS ON COLUMN SIDE OF UFP MUST BE LOOSE AND FREE TO MOVE IN VERTICALLY SLOTTED HOLES UNTIL AFTER POST-TENSIONING OF SHEAR WALLS HAS OCCURRED. THEN BOLTS MAY BE TIGHTENED AND PL WASHERS WELDED TO UFP.
3. PRE-THREAD 1" THICK BACKER PLATE TO RECIEVE BOLTS FROM UFP CONNECTORS.

4 UFP CONNECTION DETAIL

1 1/2" = 1'-0" S411



2 SHEAR WALL SPLICE DETAIL

1" = 1'-0" S411

11/4/2016 9:54:48 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

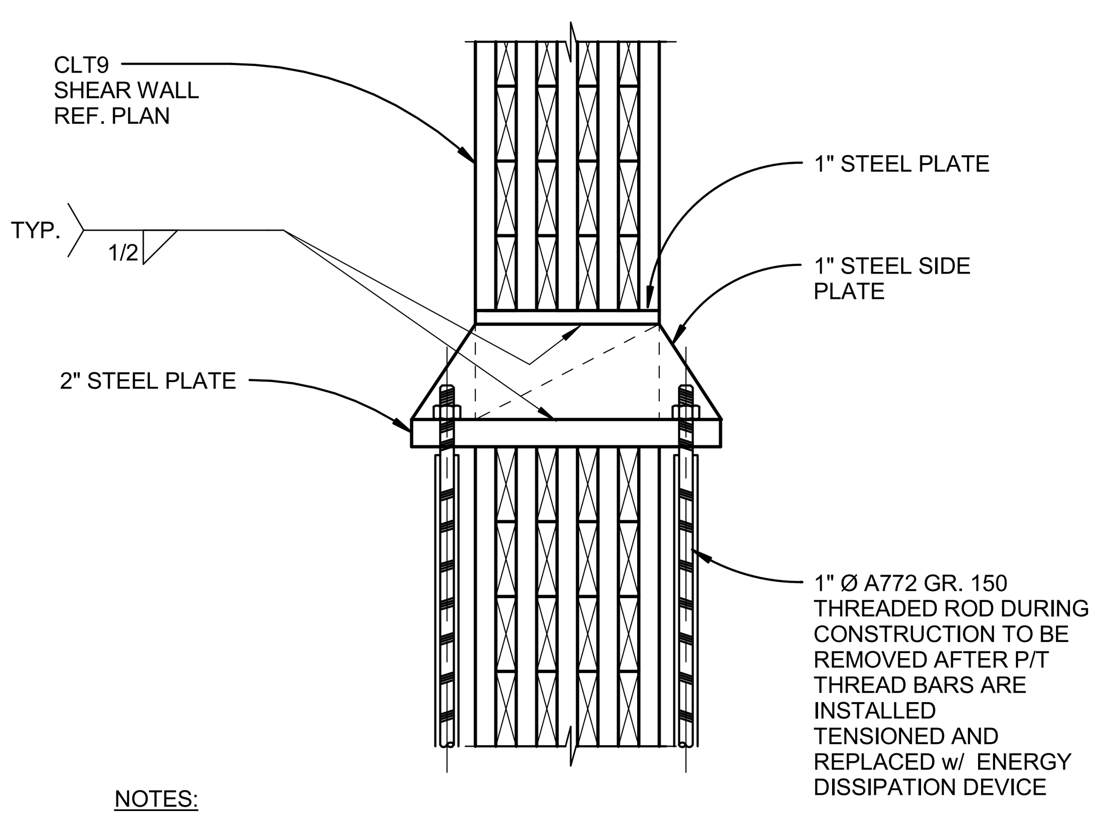
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
SHEAR WALL DETAILS

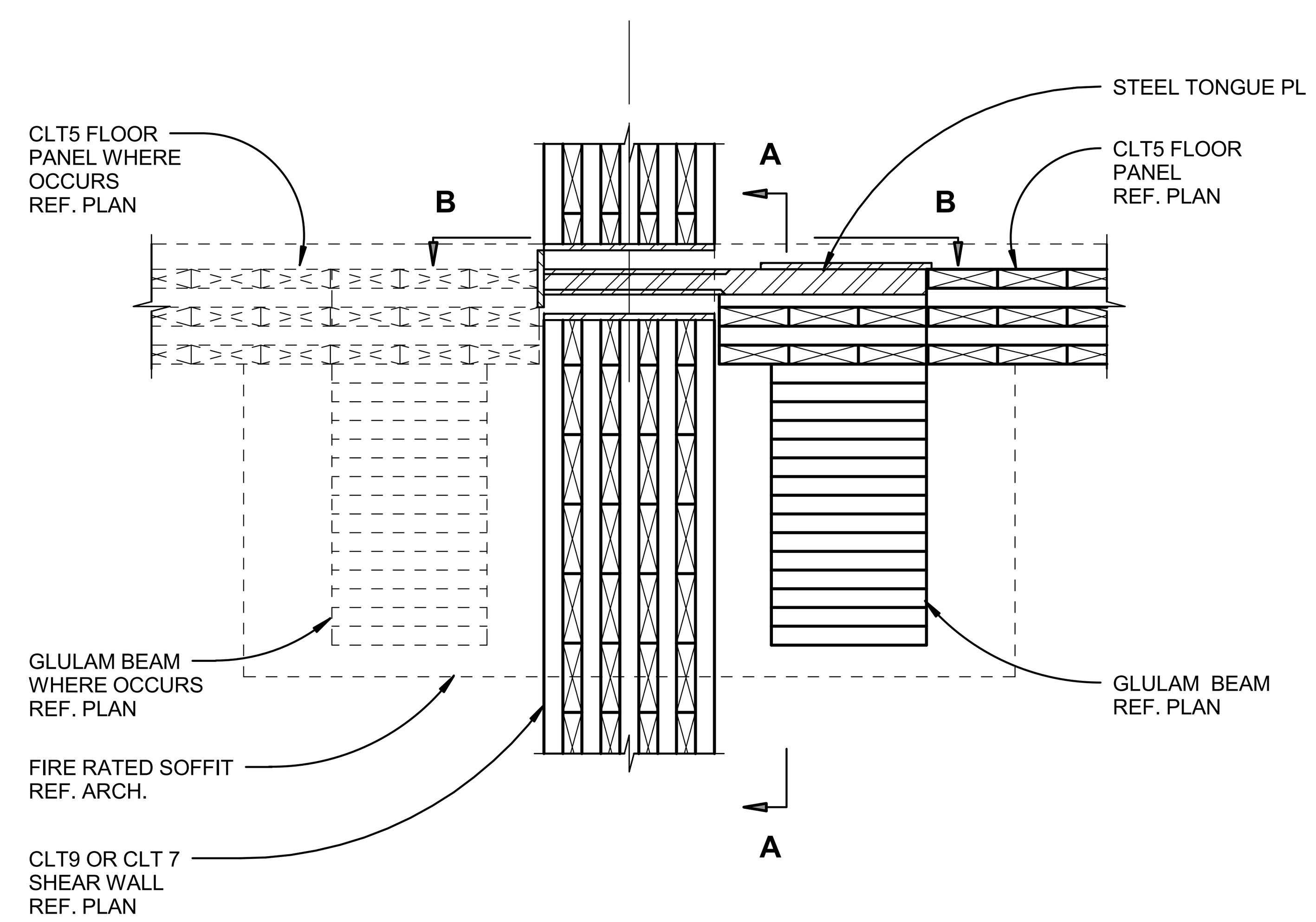
S421

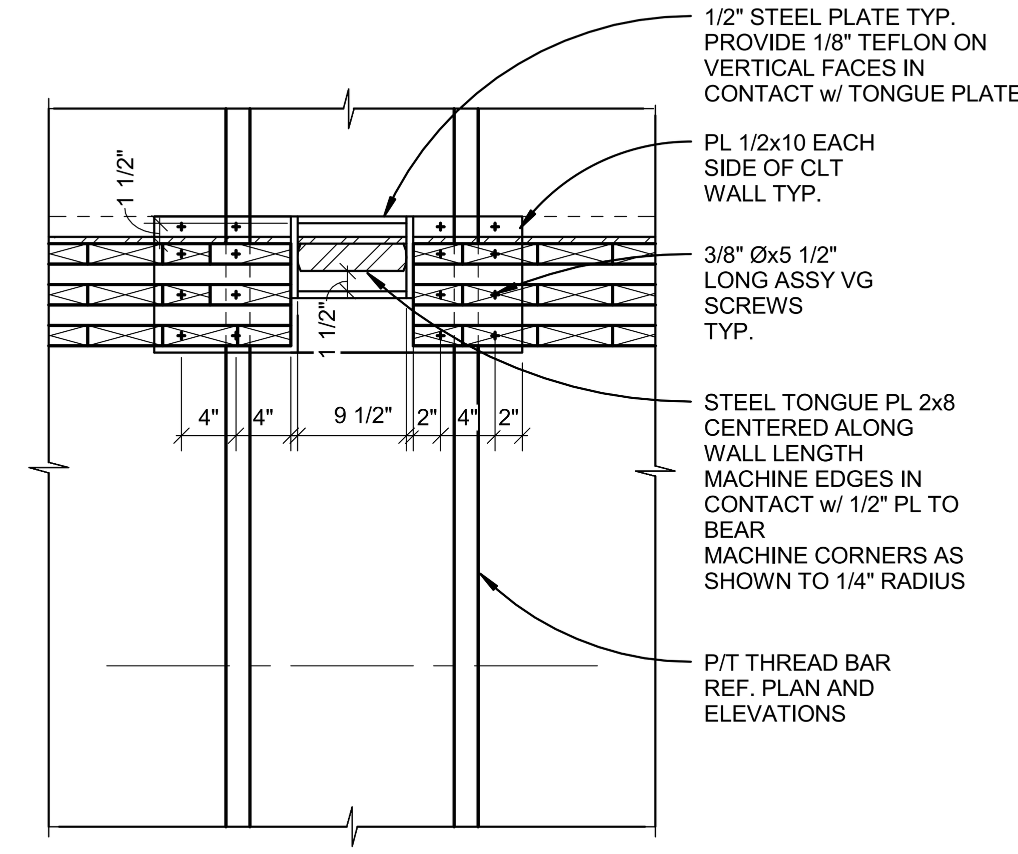
GMP SET



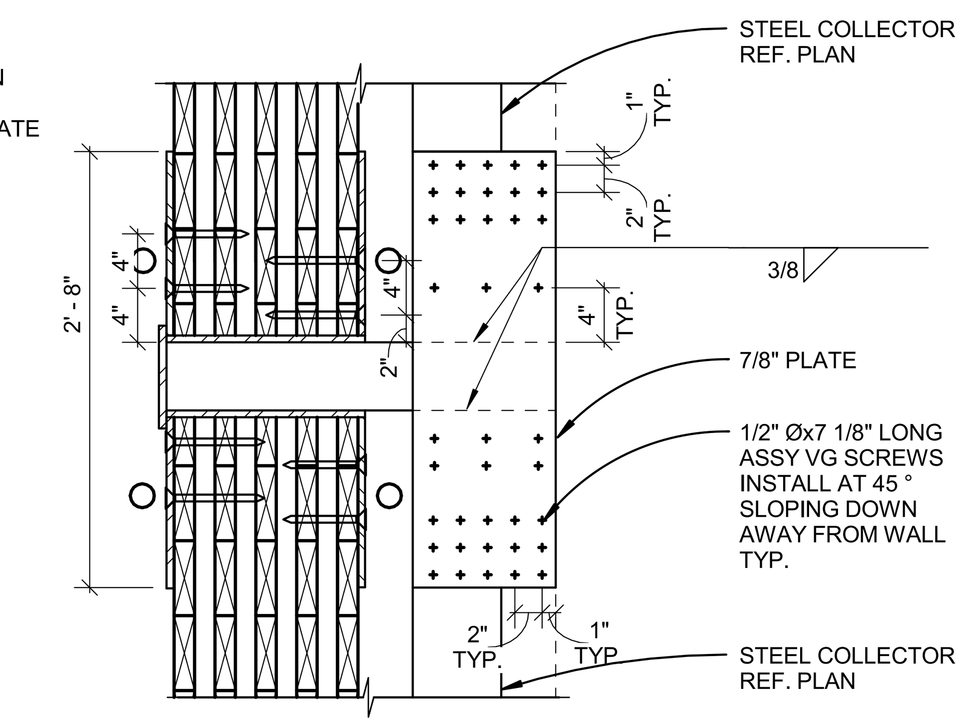
NOTES:
1. PLACE BUILT UP PLATE IN 8" WIDE x 9" POCKET EPOXY IN PLACE.
2. PROVIDE INTUMESCENT PAINT COATING ON STEEL PLATE.
3. FILL VOID w/ WOOD INFILL BLOCK REF. ARCH.

4 ANCHOR DETAIL
1" = 1'-0"



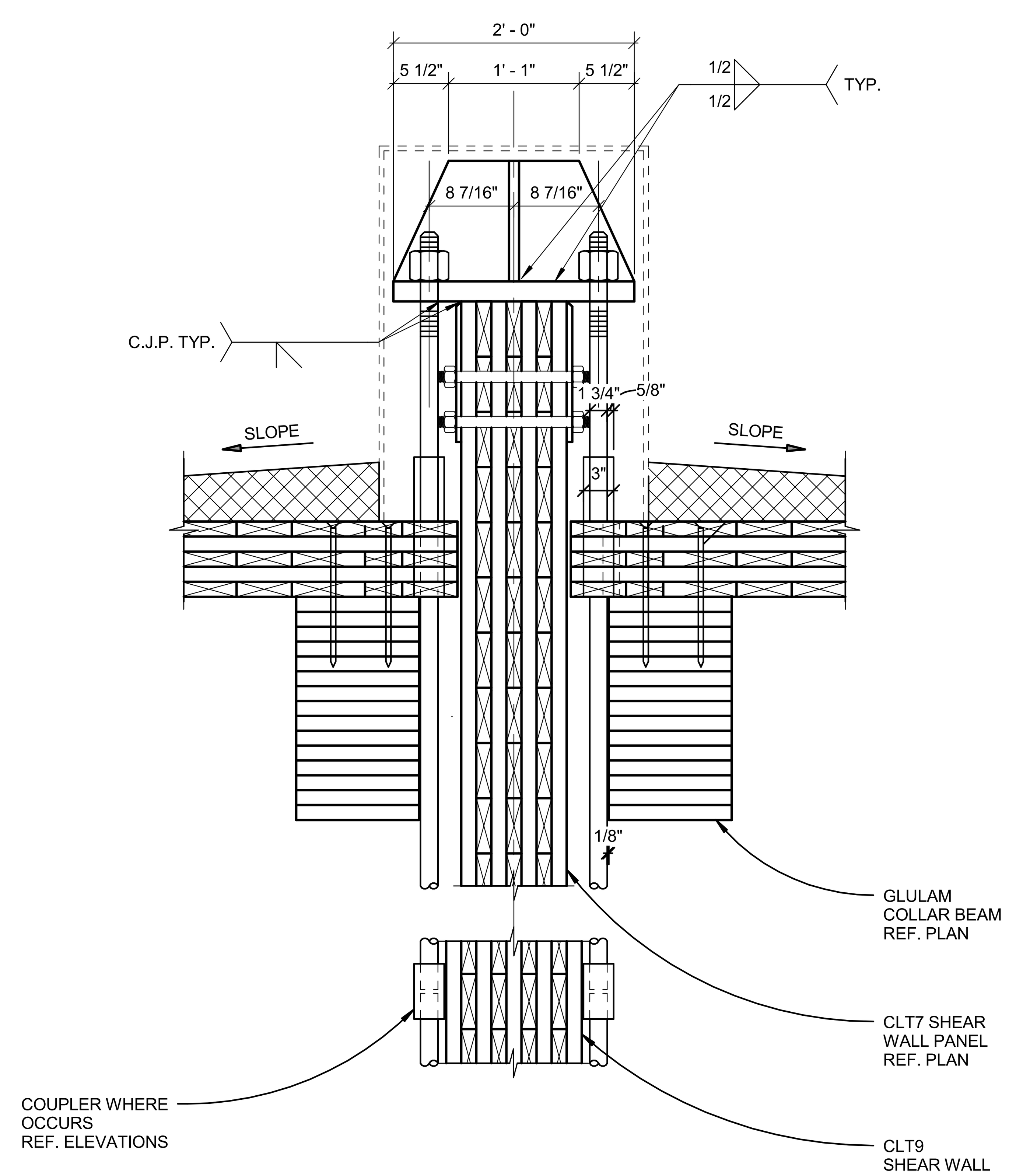


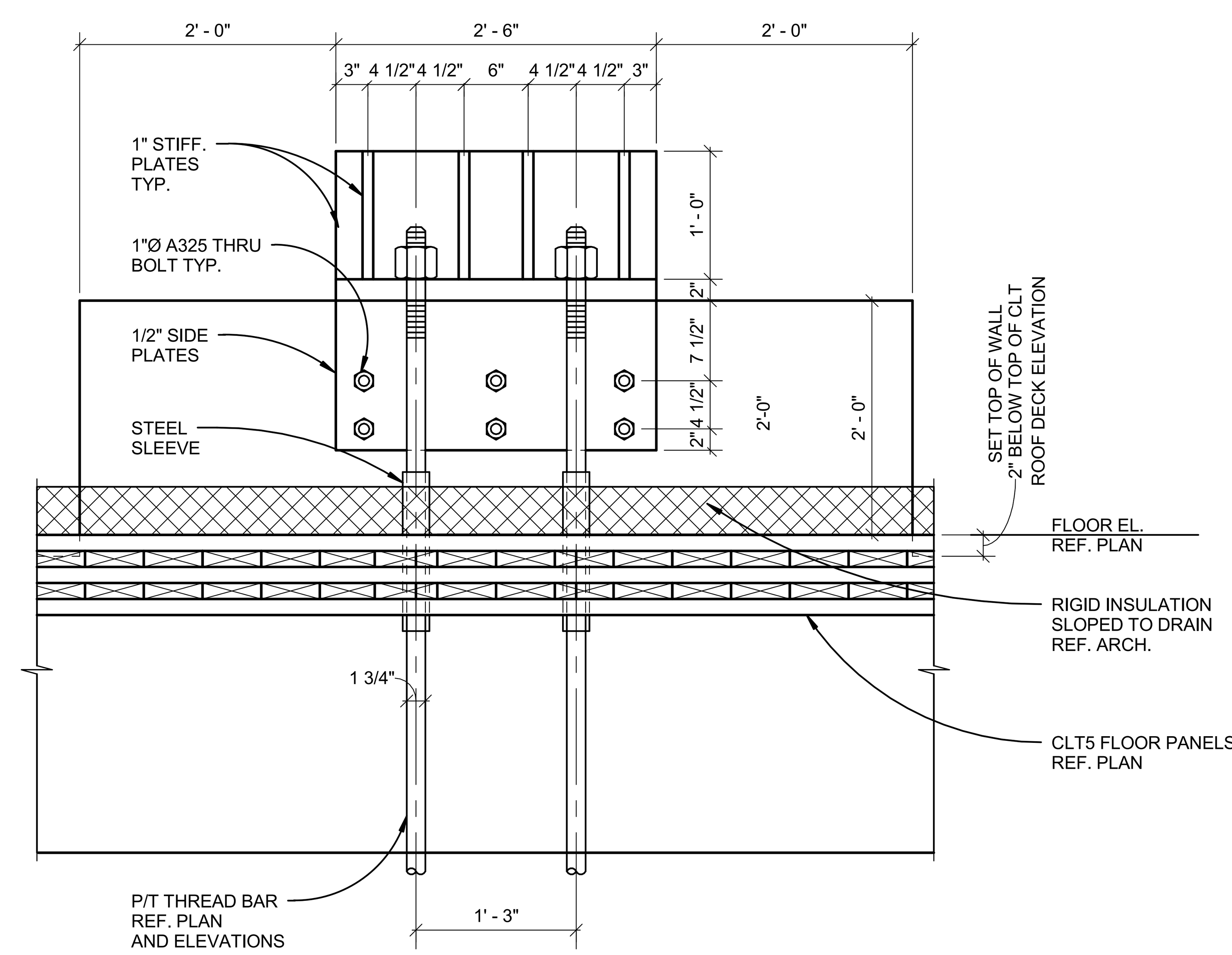
SECTION A-A



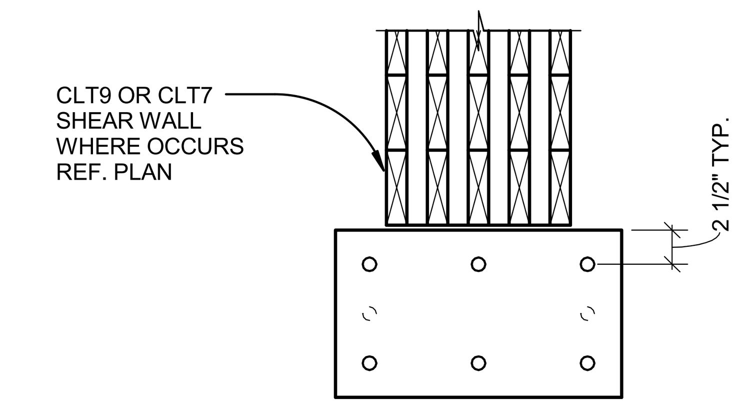
SECTION B-B

1 CLT FLOOR TO SHEAR WALL CONN.
1" = 1'-0" S411

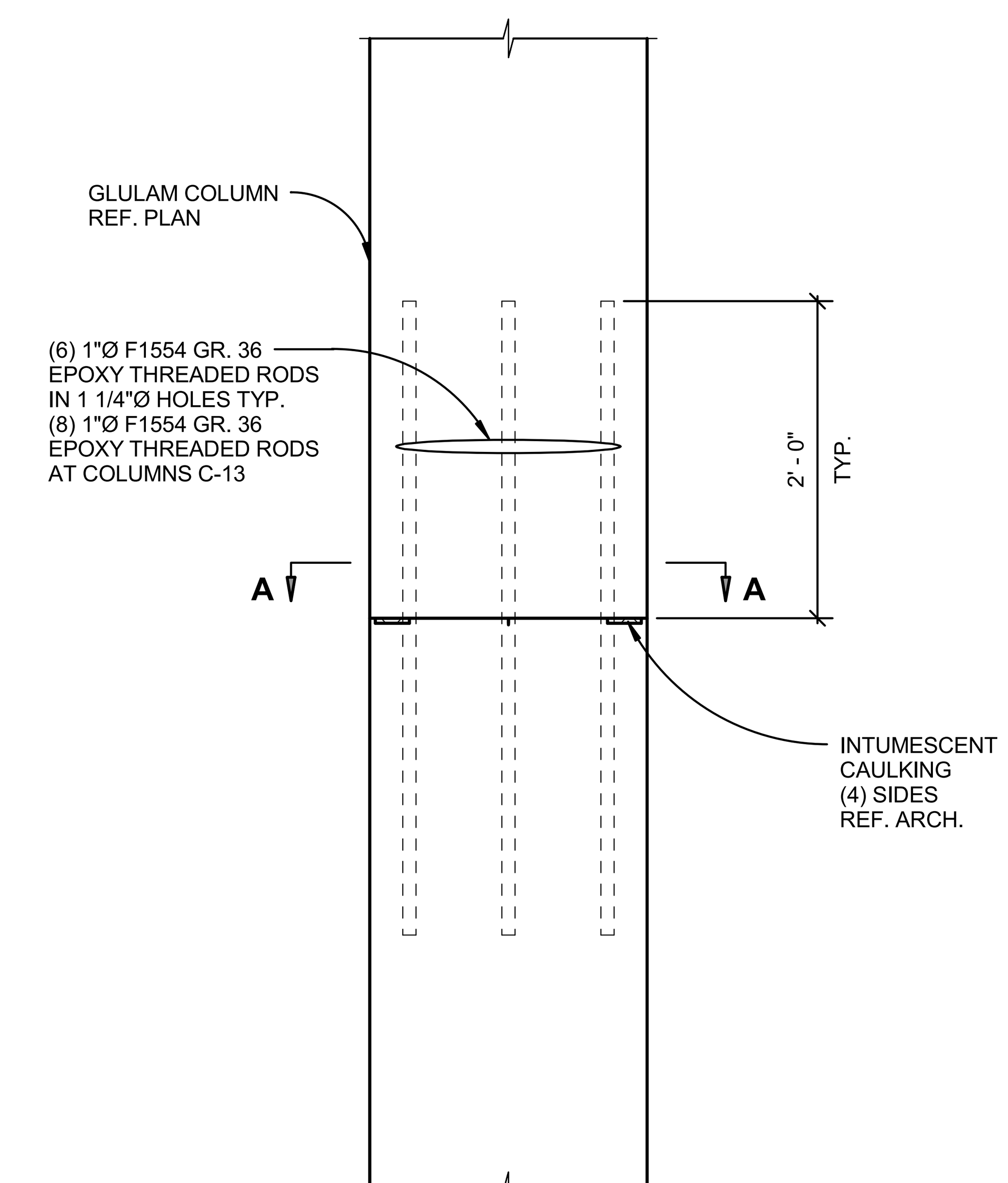




3 TOP OF SHEAR WALL - P/T ANCHOR DETAIL
1" = 1'-0" S411



SECTION A-A



NOTE:
PROVIDE INTUMESCENT COATING ON 1" BEARING PLATES, BELOW LVL 7.

2 BOUNDING COLUMN SPLICE CONN.
1" = 1'-0" S411

FRAMEWORK
project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

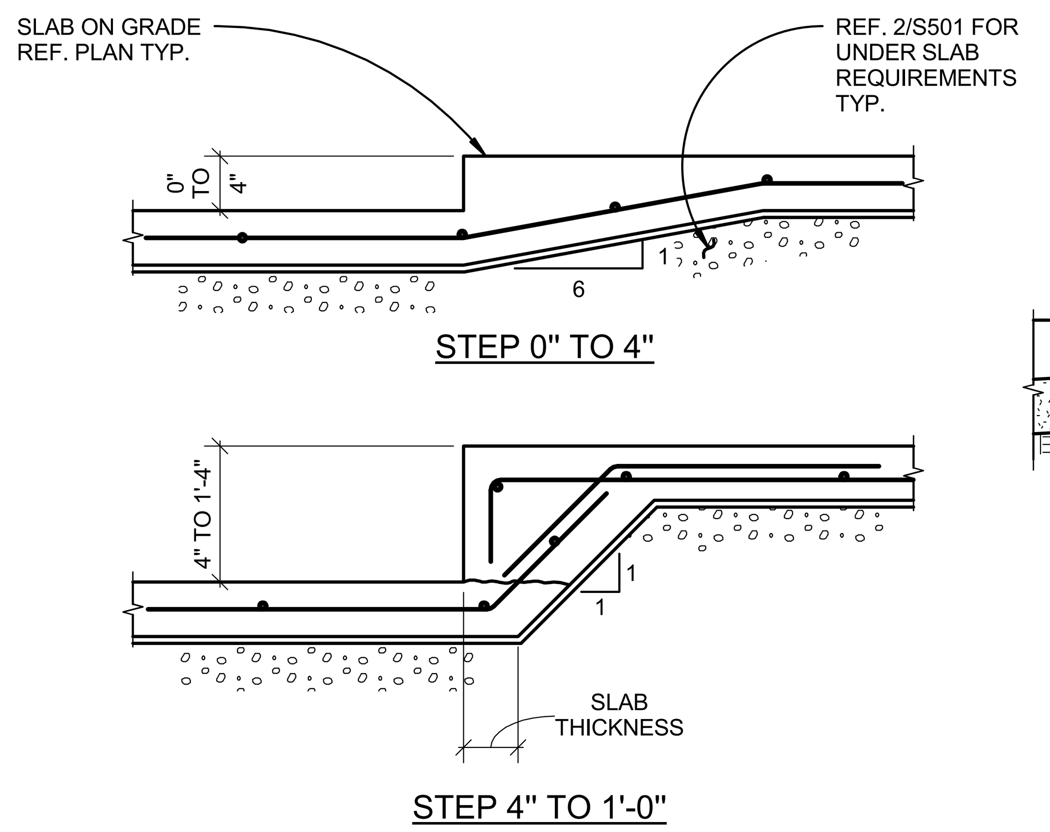
SCALE
AS INDICATED

SHEET TITLE
SHEAR WALL DETAILS

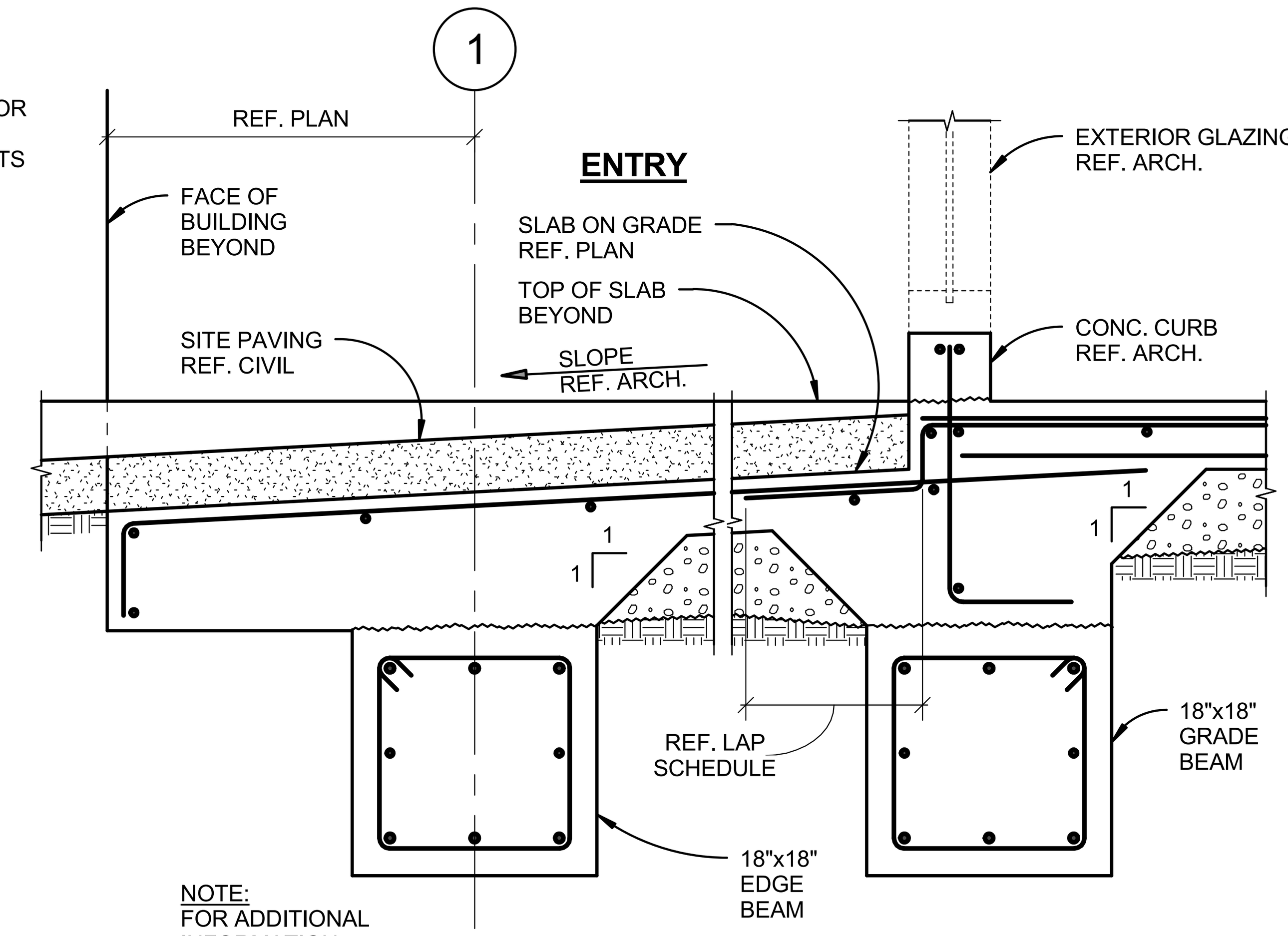
S422

GMP SET

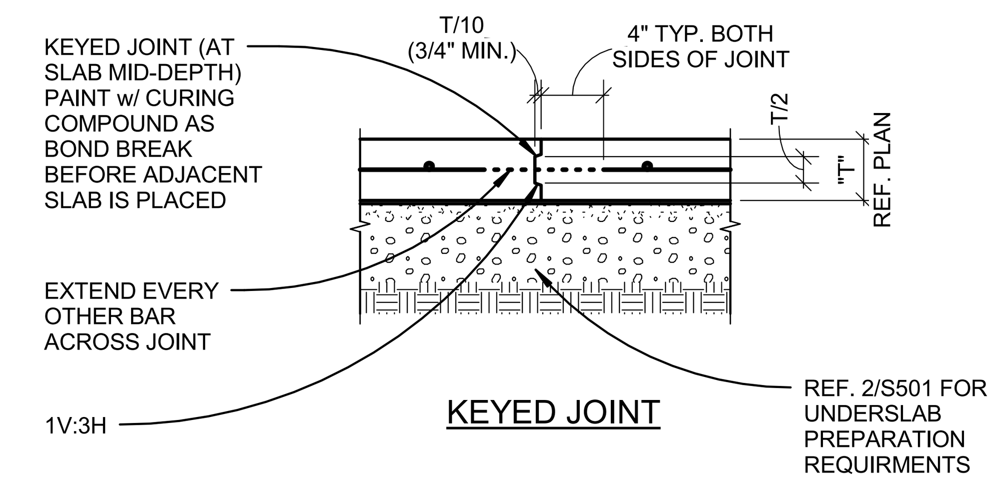
11/4/2016 9:54:48 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



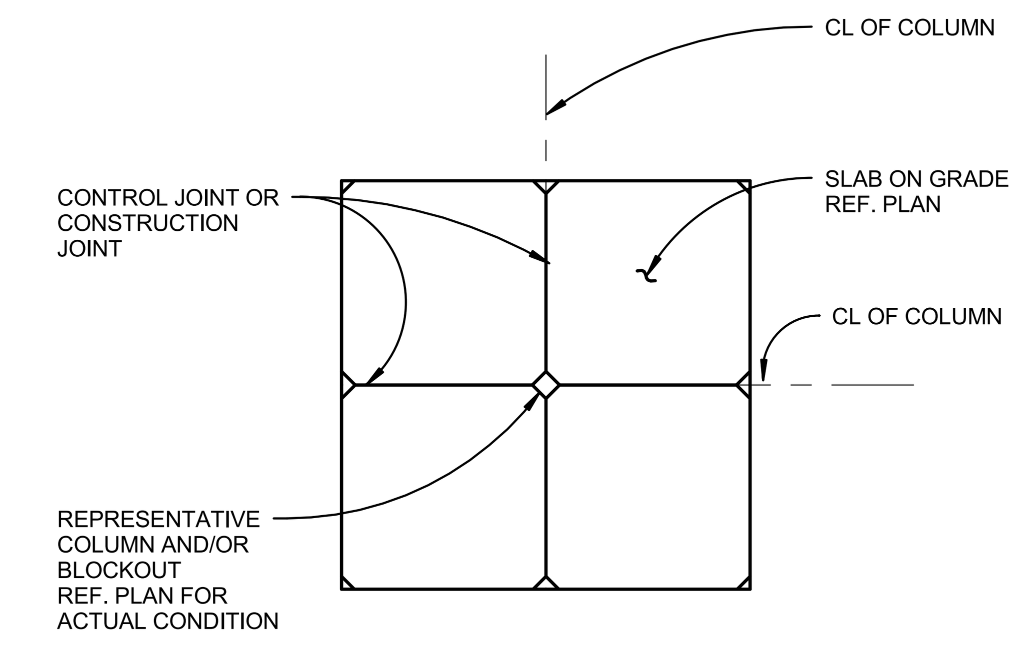
10 TYPICAL STEP IN SLAB ON GRADE DETAILS
1" = 1'-0" S101



7 EDGE BEAM AT ENTRY
1" = 1'-0" S101



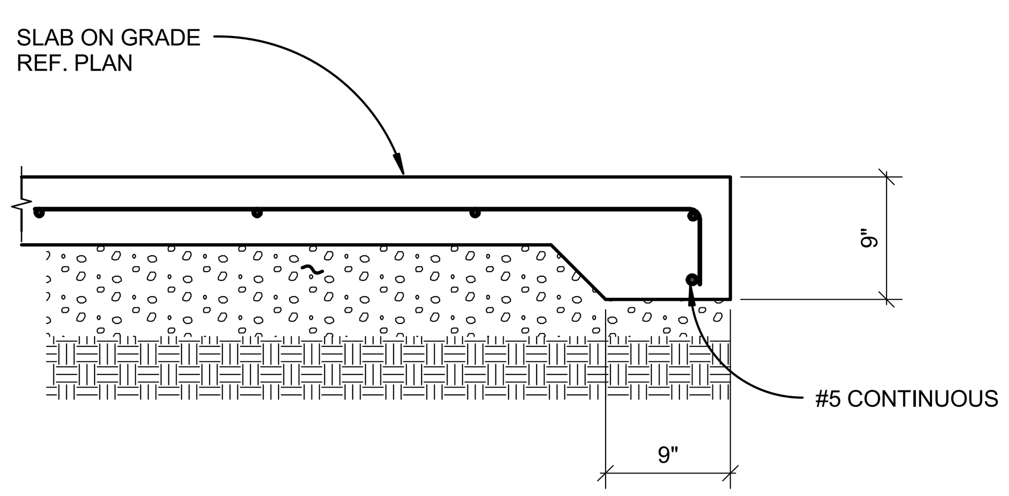
4 CONSTRUCTION JOINTS AT S.O.G.
1" = 1'-0"



NOTES:

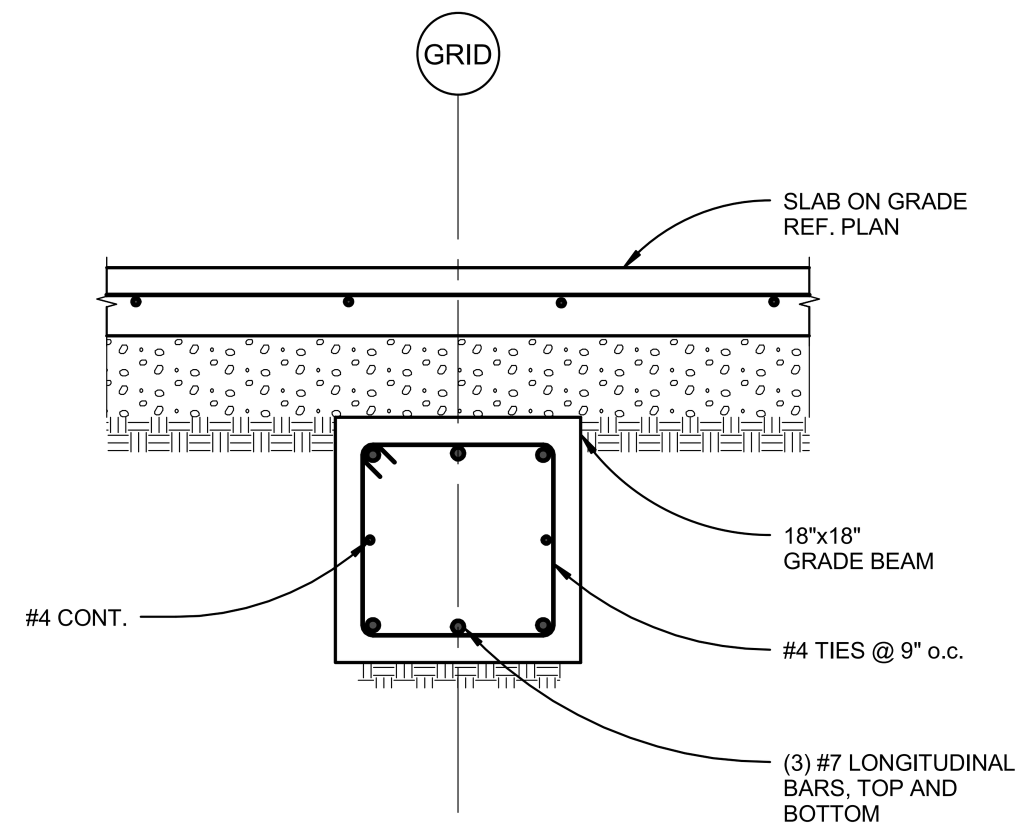
1. REF. PLAN FOR SLAB ON GRADE THICKNESS AND REINFORCEMENT.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING JOINT LAYOUT FOR REVIEW AND APPROVAL BY ARCHITECT AND STRUCTURAL ENGINEER.
3. PROVIDE JOINTS ON ALL COLUMN LINES AND AT A MAXIMUM SPACING OF 36x THE SLAB THICKNESS EACH WAY BETWEEN COLUMN LINES. PROVIDE JOINTS AT ALL RE-ENTRANT CORNERS.
4. SAWED JOINTS SHALL BE MADE AS SOON AS THE JOINT CAN BE CUT WITHOUT EDGES RAVELING AND WITHIN 12 HOURS OF SLAB PLACEMENT. SAWED JOINTS

1 JOINTS AT SLAB ON GRADE
1" = 1'-0"

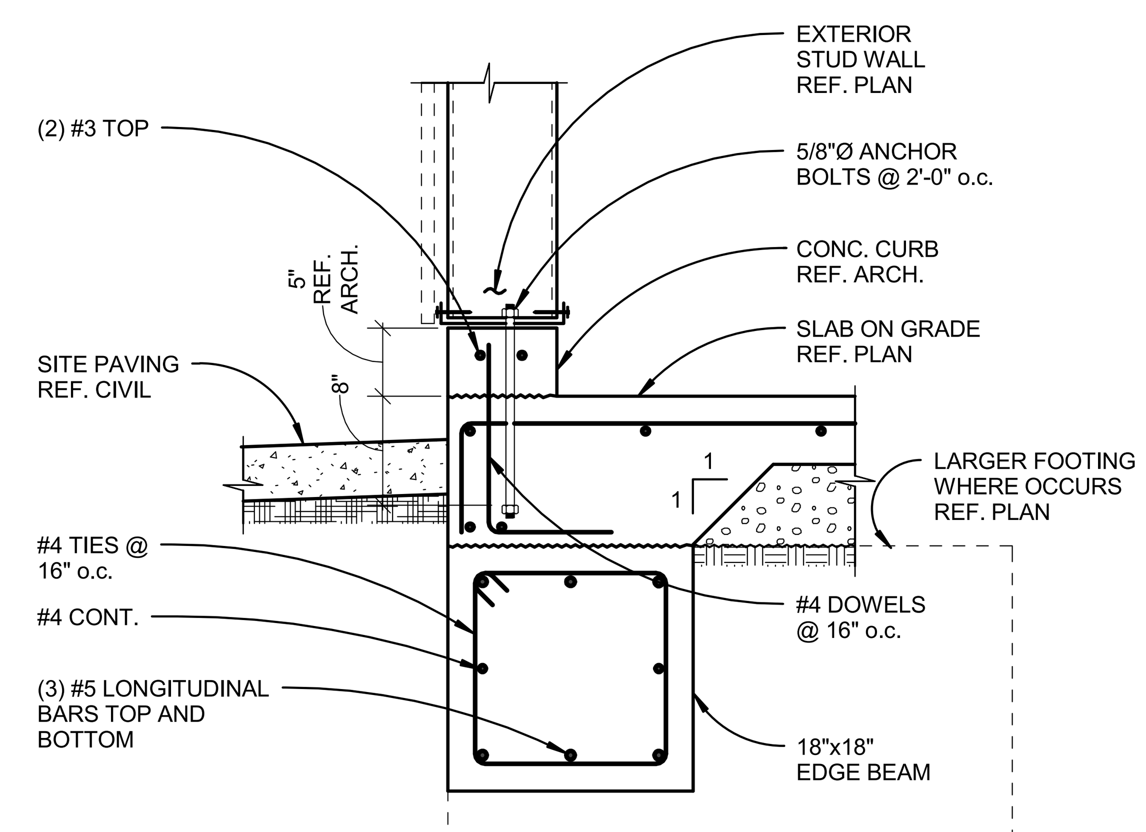


INTERIOR SLAB EDGE

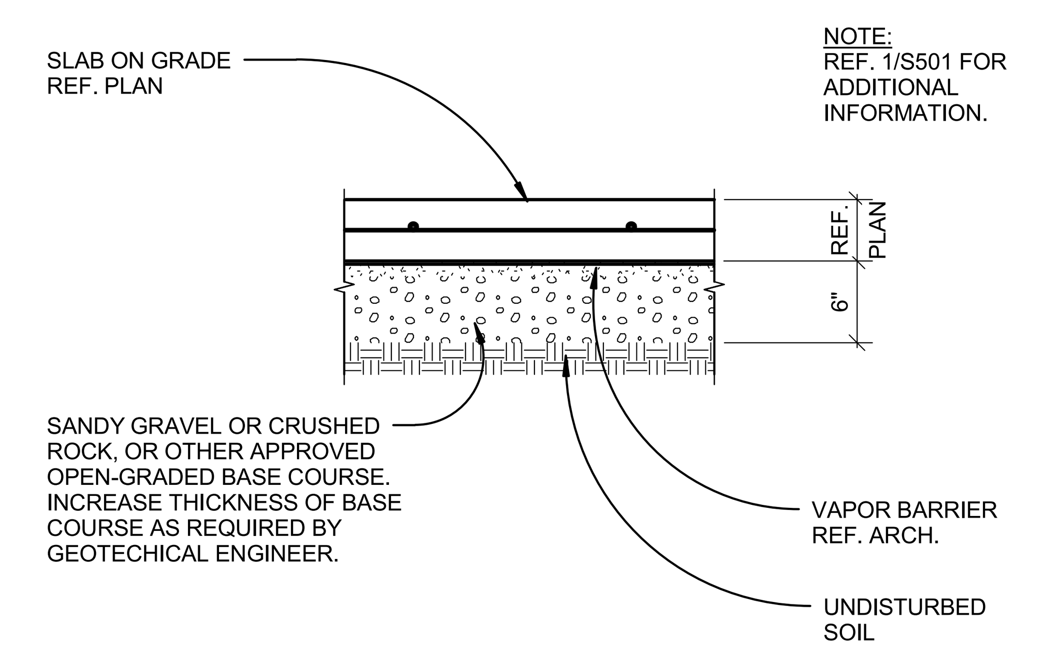
11 THICKENED SLAB EDGE
1" = 1'-0" S101



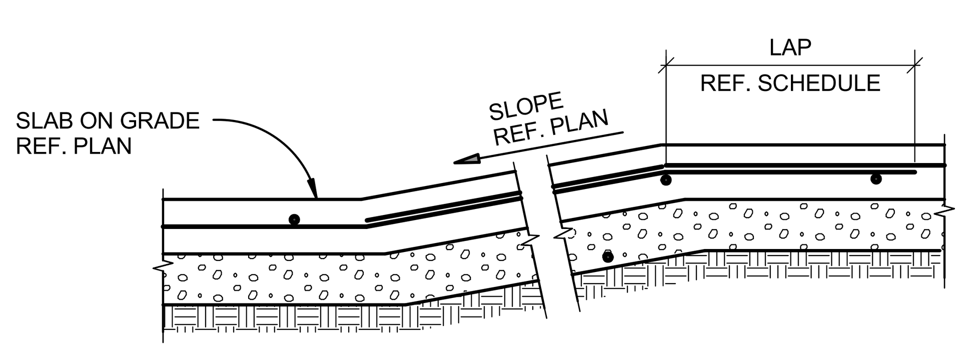
8 GRADE BEAM SECTION
1" = 1'-0" S101



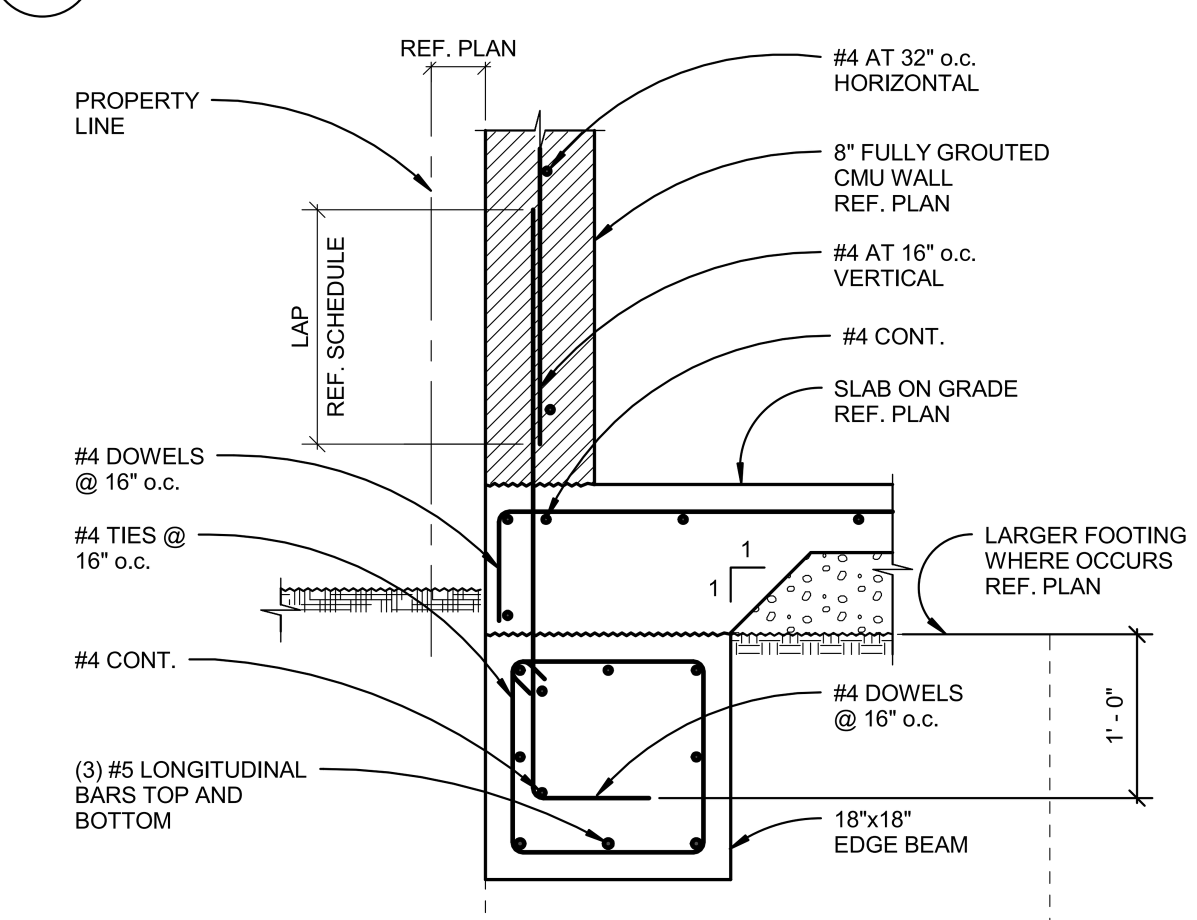
5 EDGE BEAM SECTION - AT EXT. STUD WALL
1" = 1'-0"



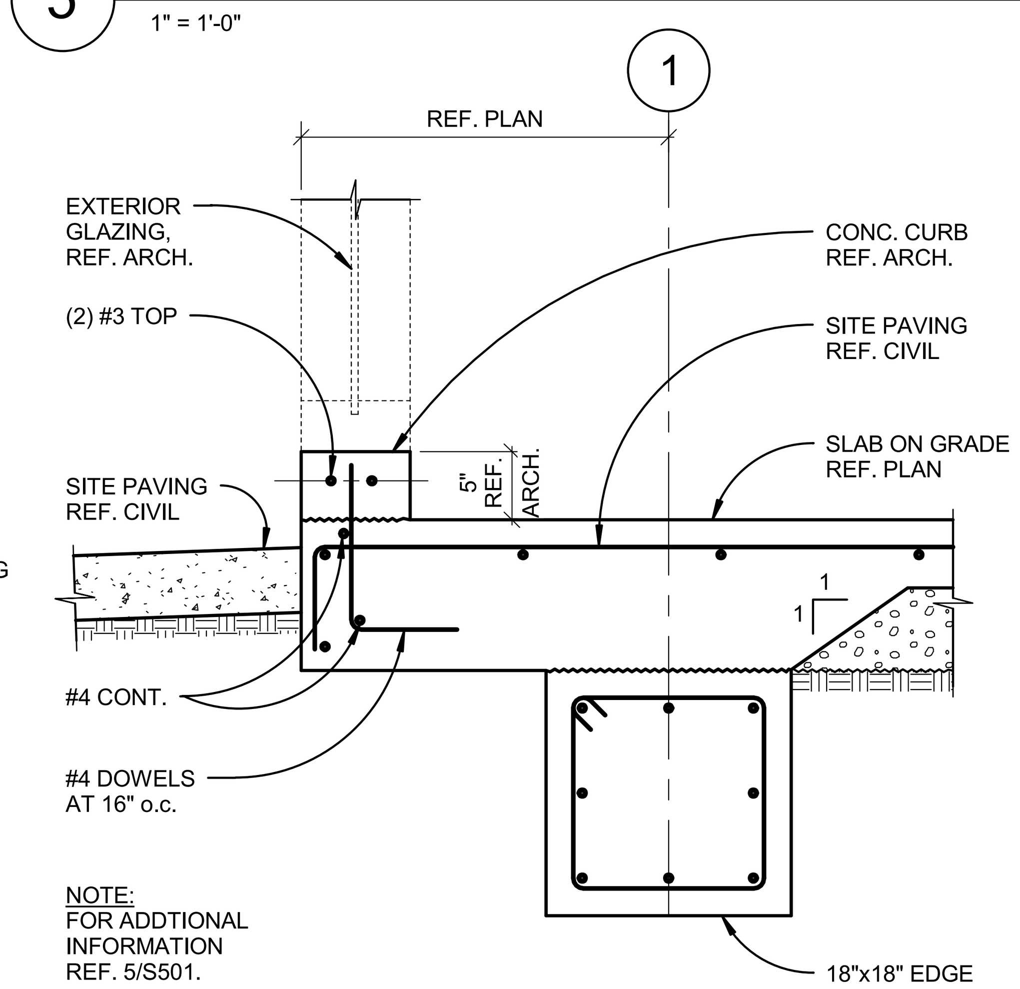
2 UNDERSLAB PREPARATION AT S.O.G.
1" = 1'-0"



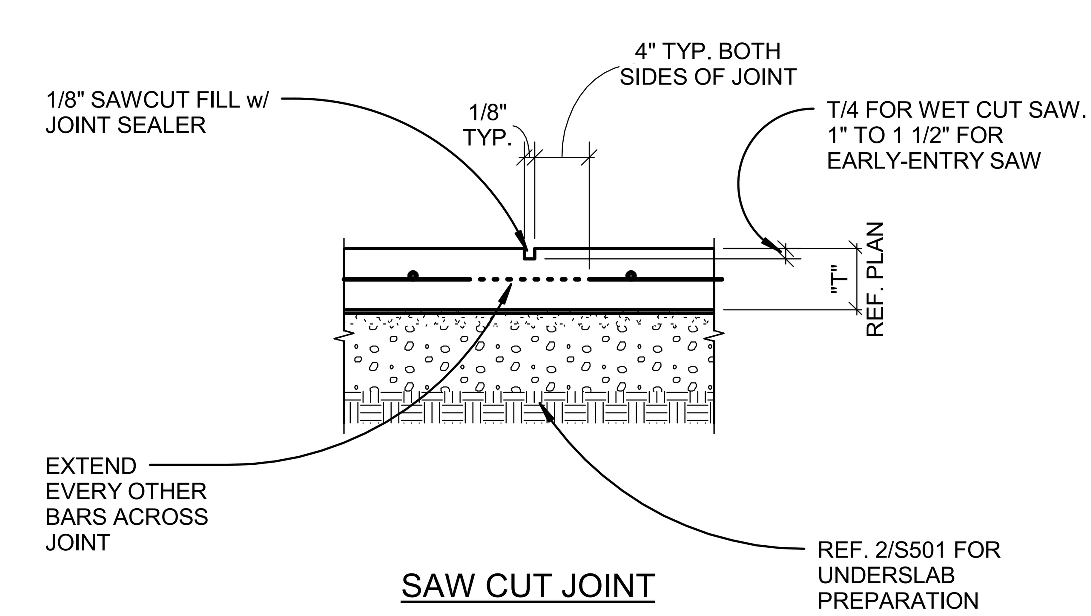
12 SLOPED SLAB ON GRADE DETAIL
1" = 1'-0"



9 EDGE BEAM SECTION-AT EXTERIOR CMU WALL
1" = 1'-0"



6 EDGE BEAM SECTION - AT EXT. GLAZING
1" = 1'-0" S311



NOTE:
REF.1/S501 FOR ADDITIONAL INFORMATION.

3 CONTROL JOINTS IN SLAB ON GRADE
1" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

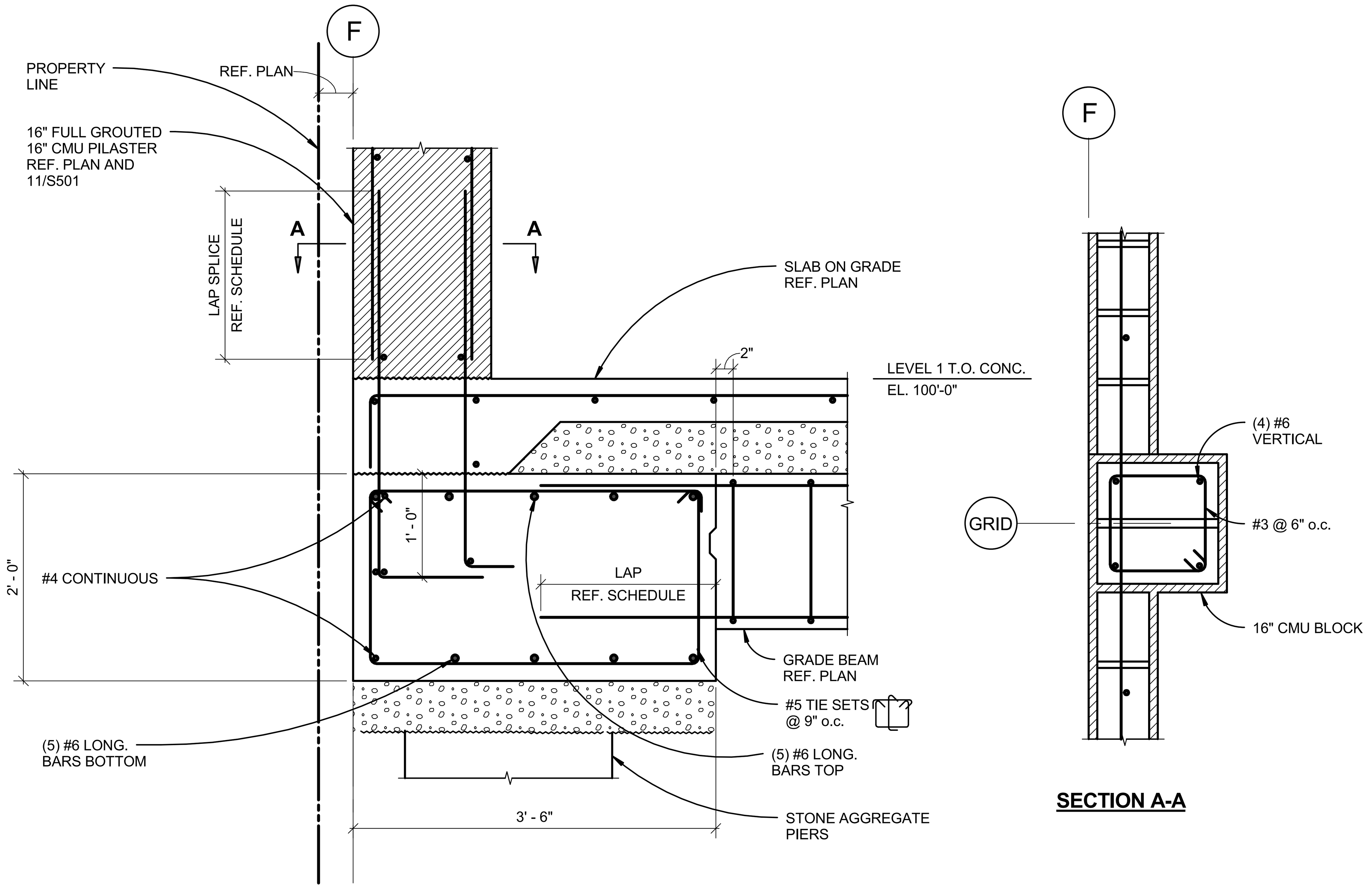
SCALE
AS INDICATED

SHEET TITLE
CONCRETE DETAILS

S501

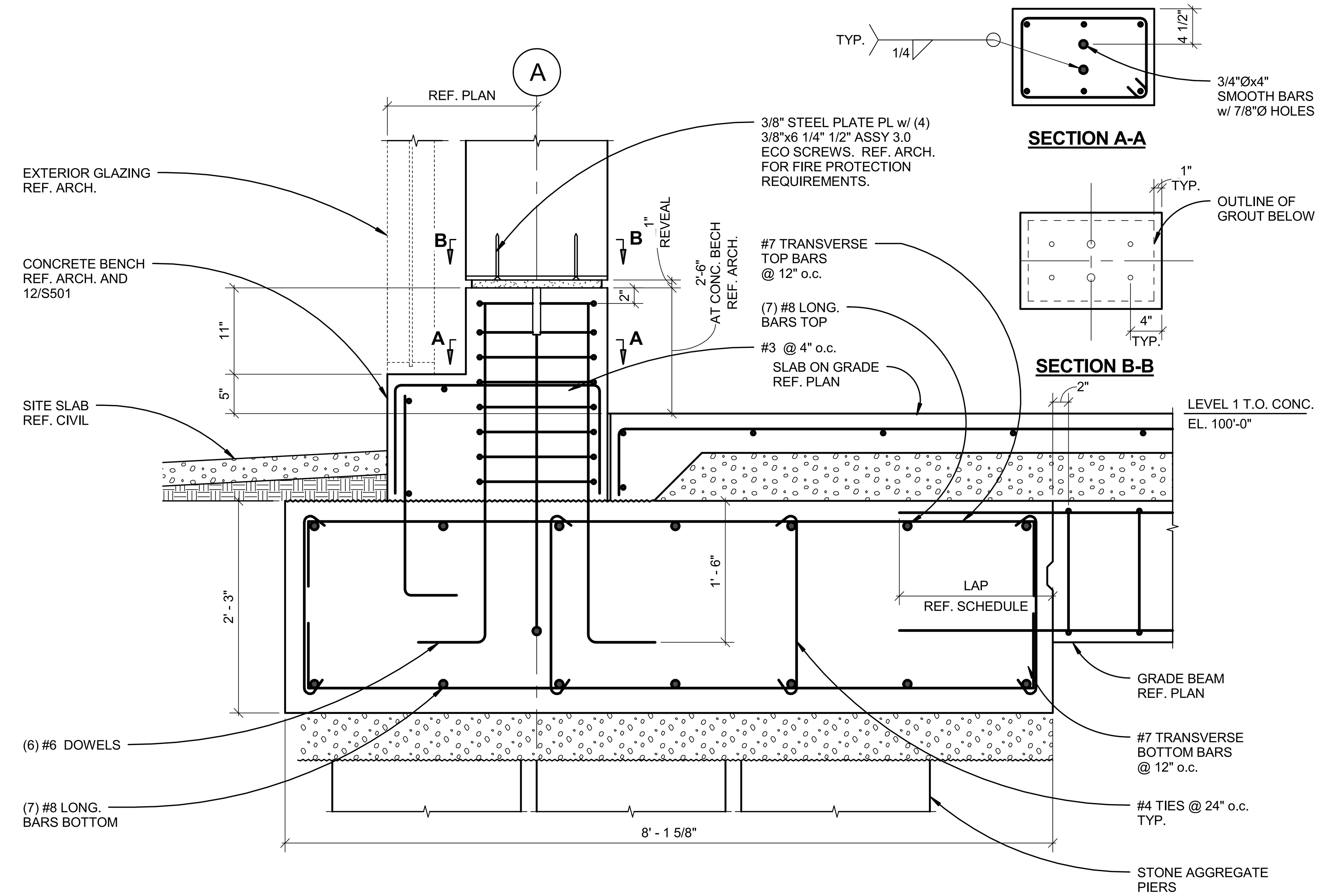
GMP SET

11/4/2016 9:54:50 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



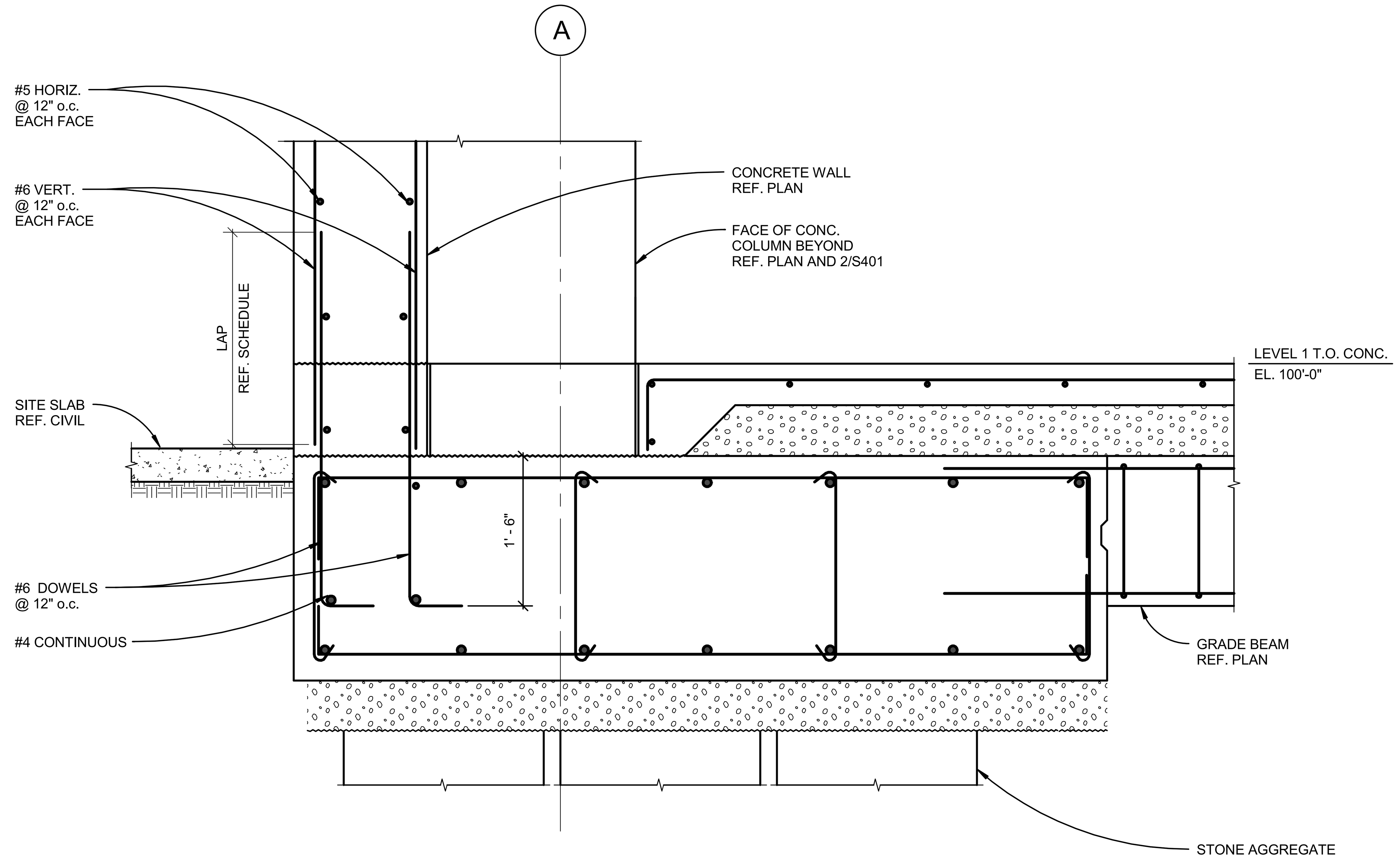
3 STRIP FOOTING SECTION - AT PERIMETER

1" = 1'-0" S101



1 STRIP FOOTING SECTION - AT PERIMETER

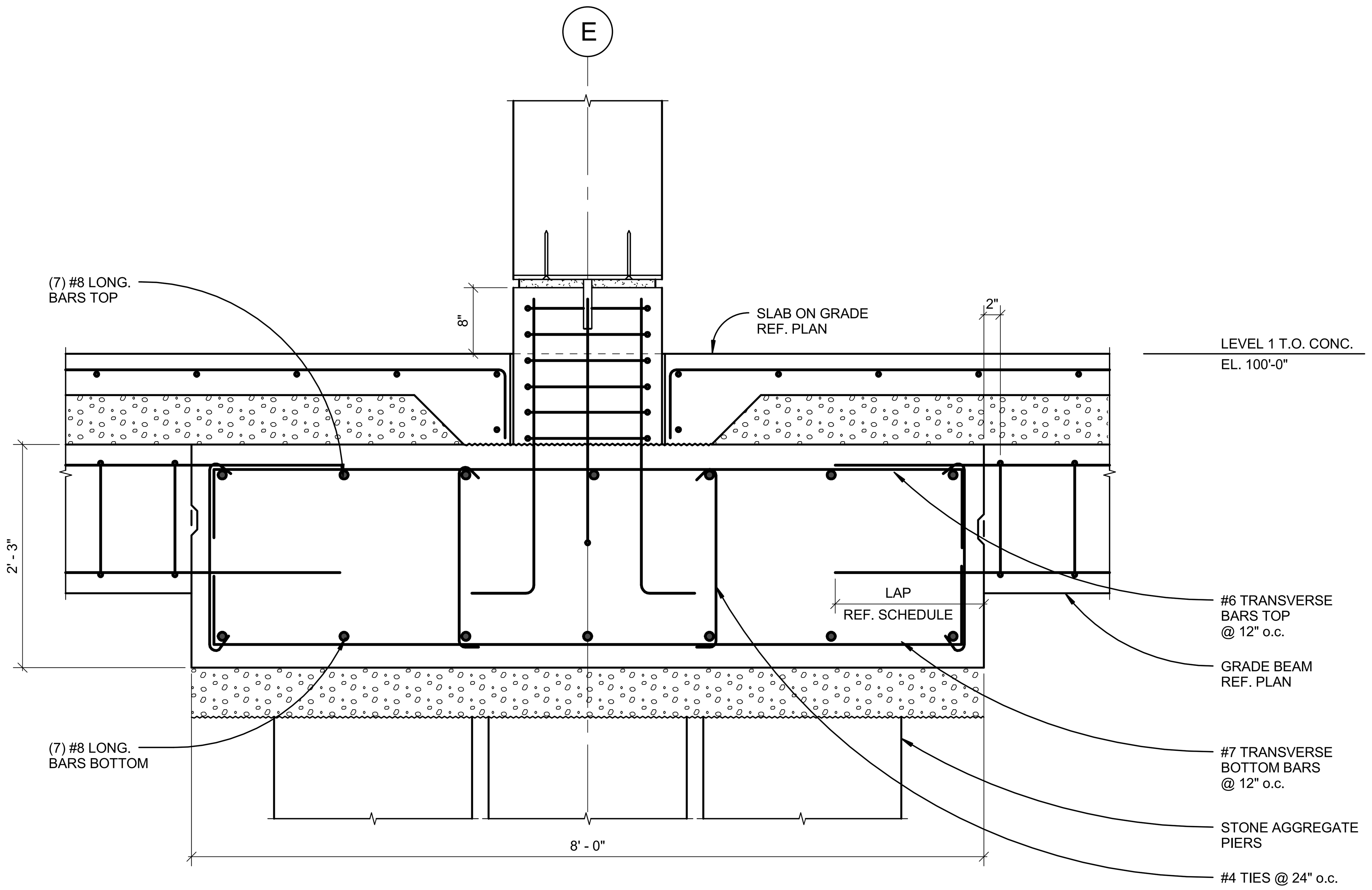
1" = 1'-0" S101



NOTE:
FOR INFORMATION NOT NOTED REF. 2/S502

4 CONCRETE WALL SECTION - AT PERIMETER

1" = 1'-0" S311



NOTE:
FOR INFORMATION NOT NOTED REF. 1/S502

2 STRIP FOOTING SECTION - AT INTERIOR

1" = 1'-0" S101

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

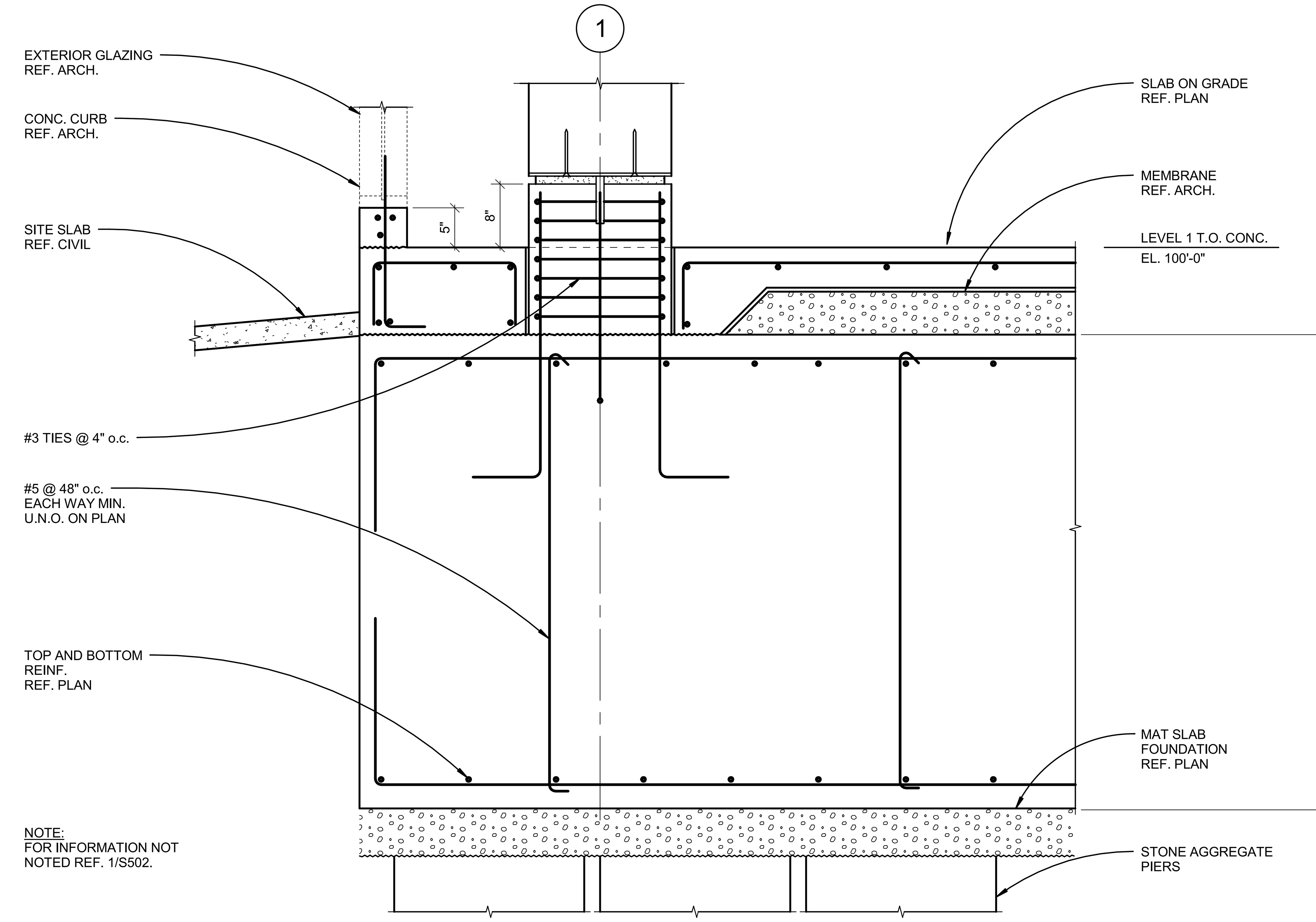
SCALE
AS INDICATED

SHEET TITLE
CONCRETE DETAILS

S502

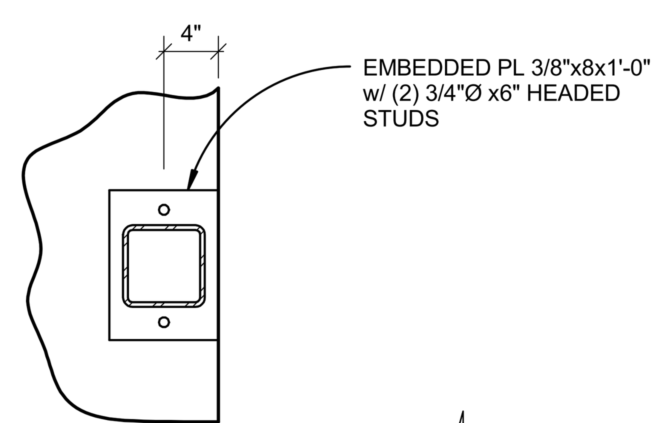
GMP SET

11/4/2016 9:54:50 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

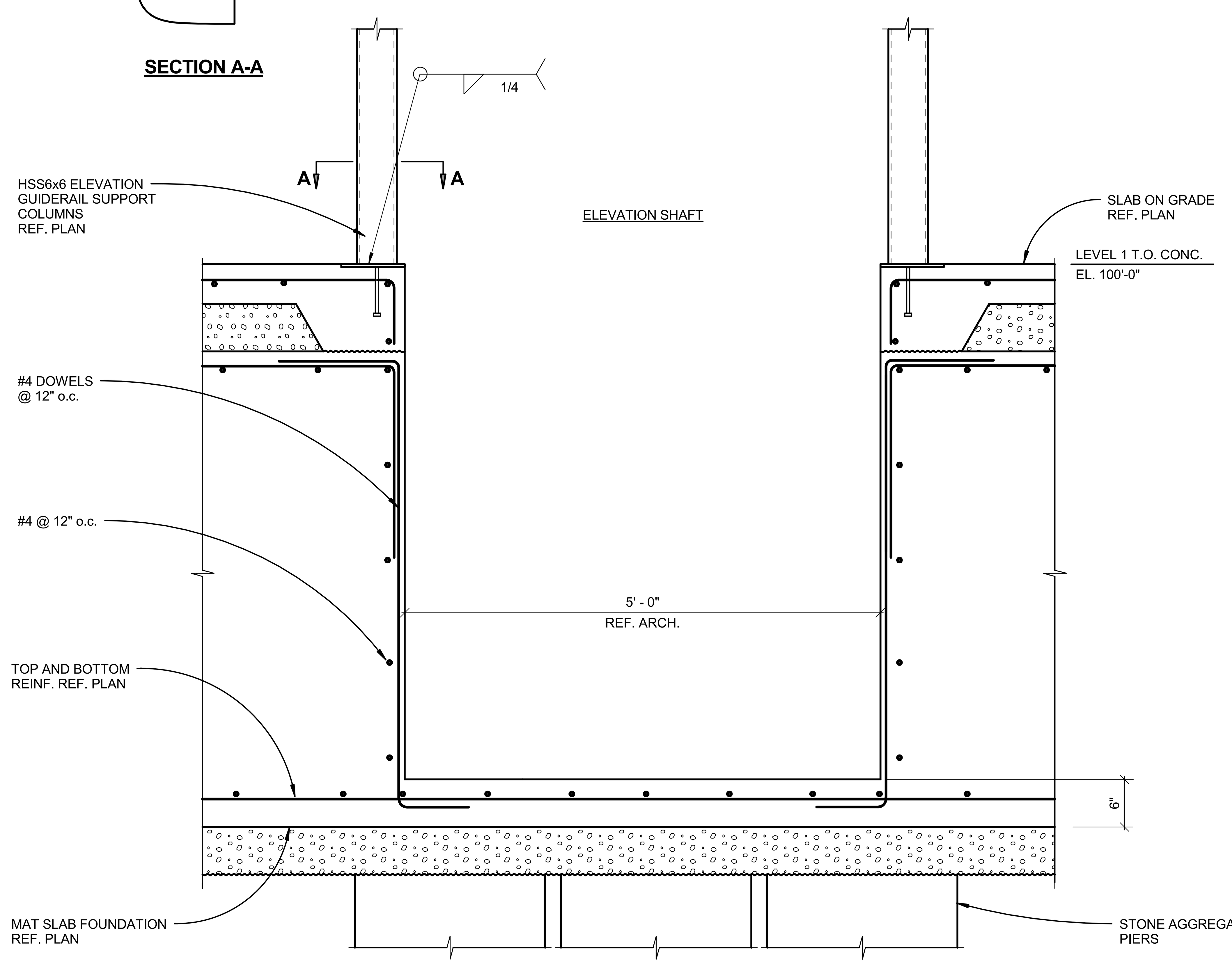


NOTE:
FOR INFORMATION NOT NOTED REF. 1/S502.

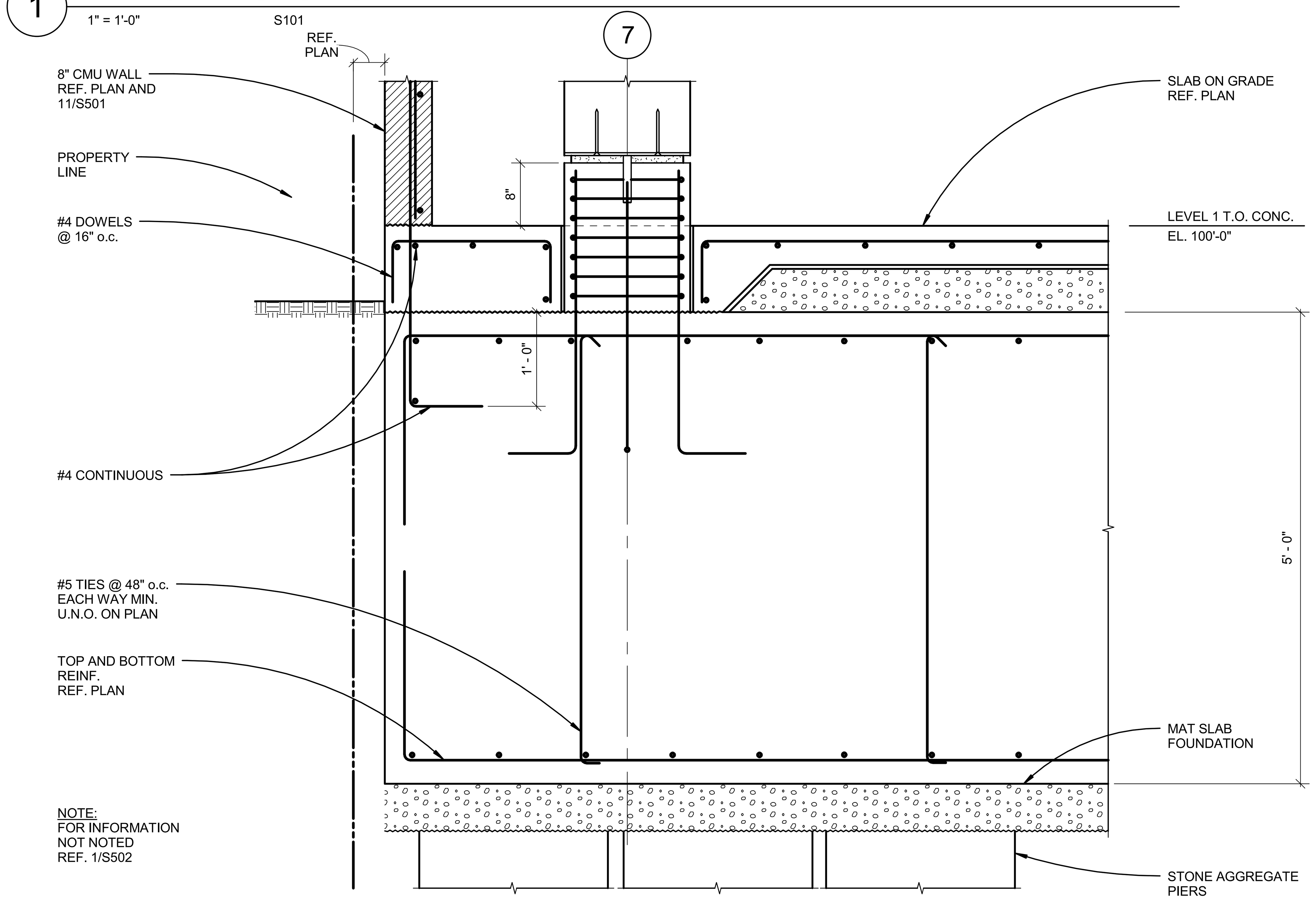
1 MAT SLAB SECTION - AT PERIMETER
1" = 1'-0" S101



SECTION A-A



3 SECTION AT ELEVATOR PIT
1" = 1'-0" S101



NOTE:
FOR INFORMATION
NOT NOTED
REF. 1/S502

2 MAT SLAB SECTION - AT PERIMETER
1" = 1'-0" S101

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

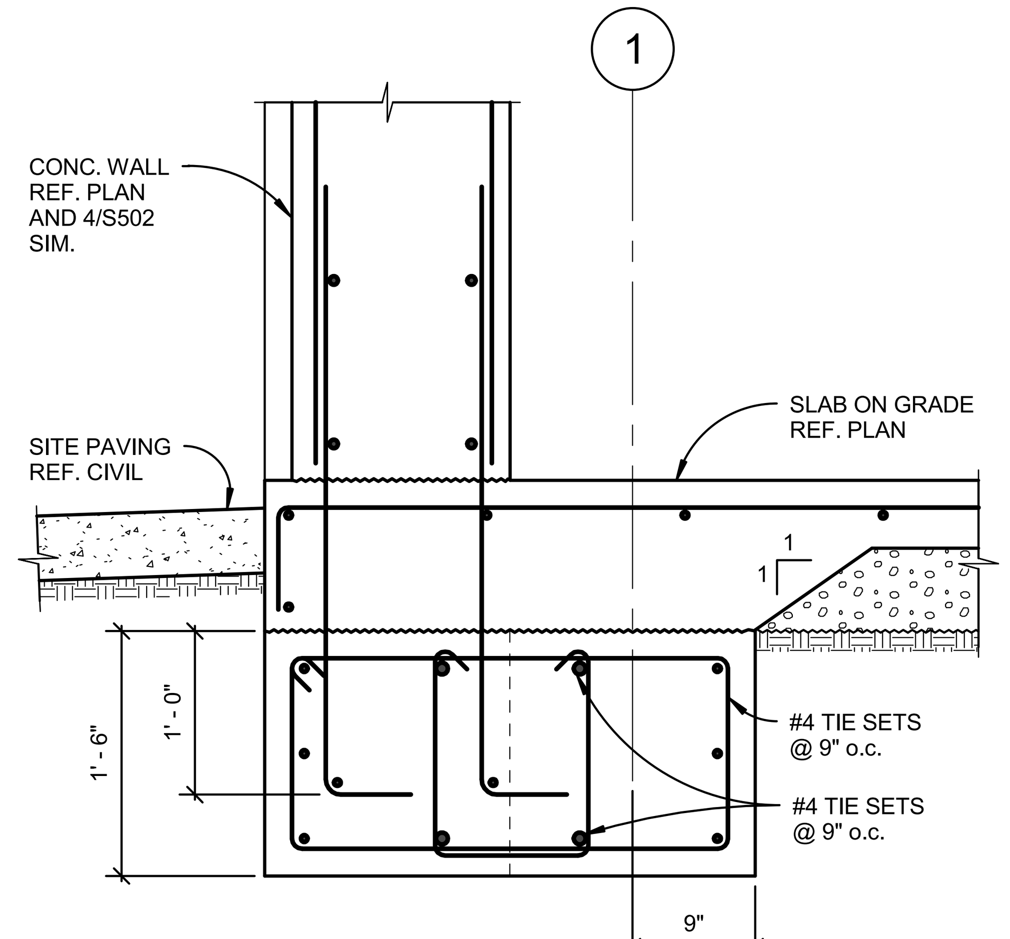
SCALE
AS INDICATED

SHEET TITLE
CONCRETE DETAILS

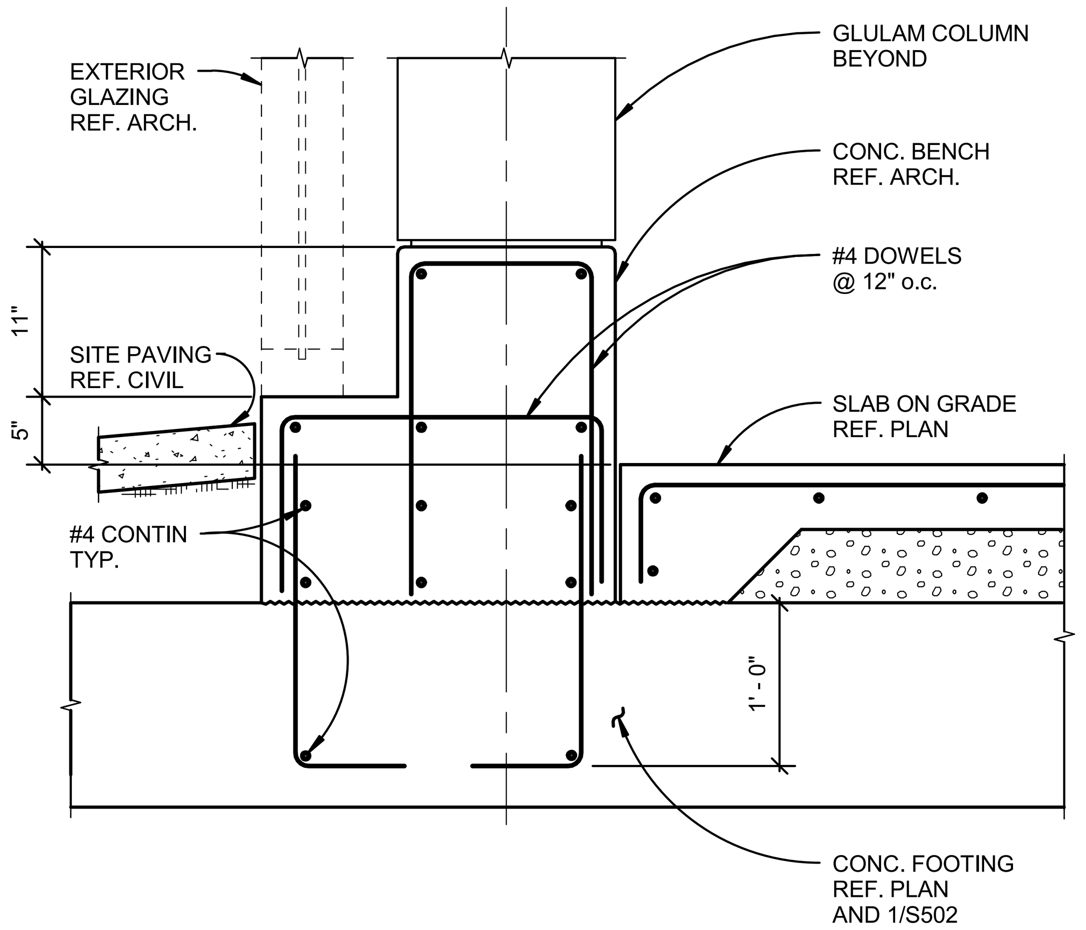
S503

GMP SET

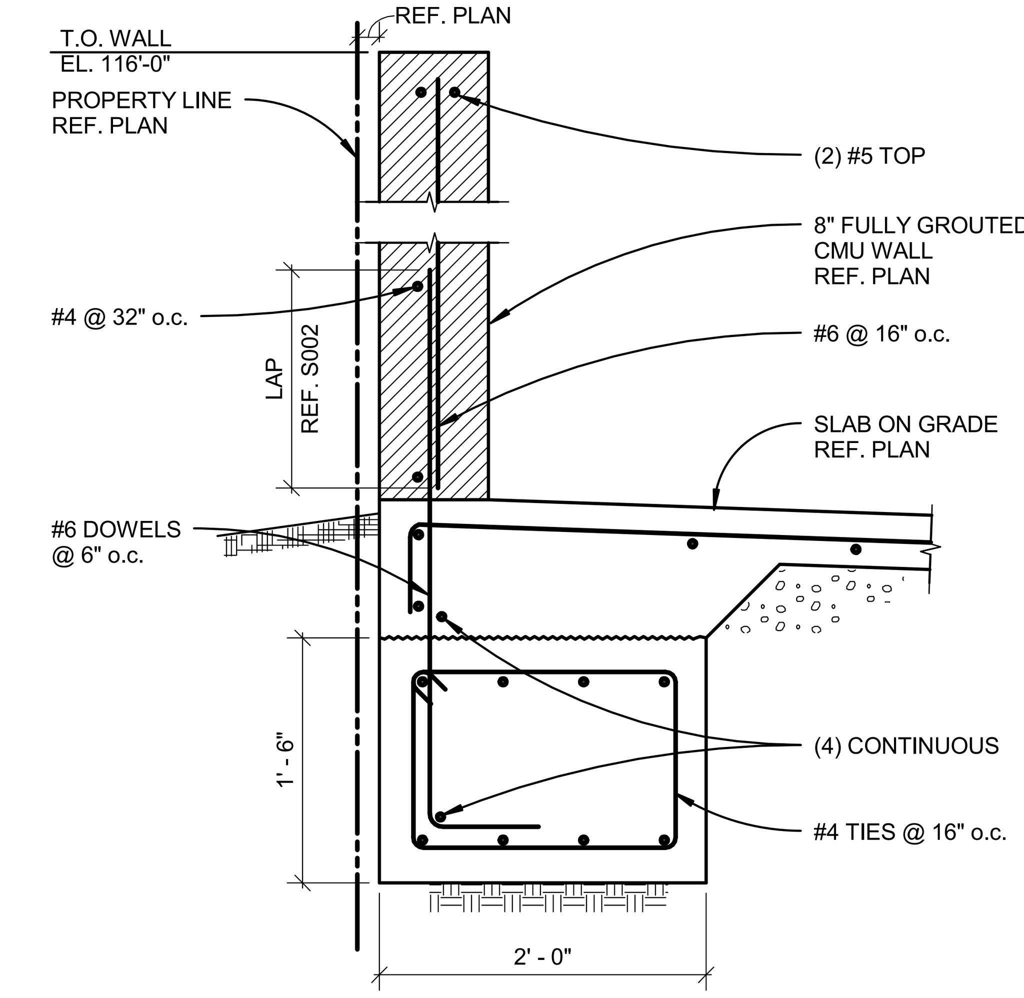
11/4/2016 9:54:51 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



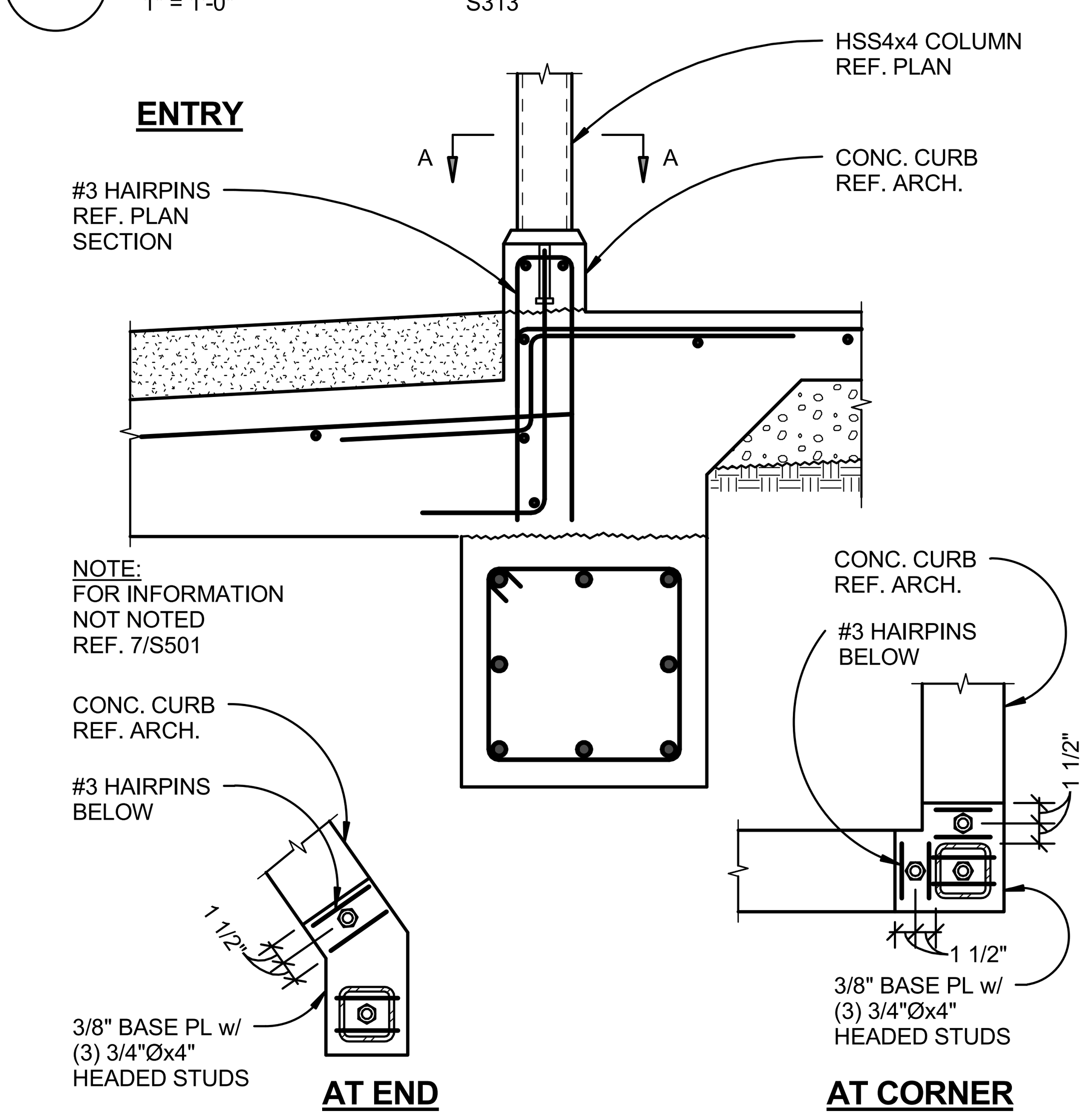
6 EDGE BEAM SECTION - AT CONC. WALL
1" = 1'-0" S313



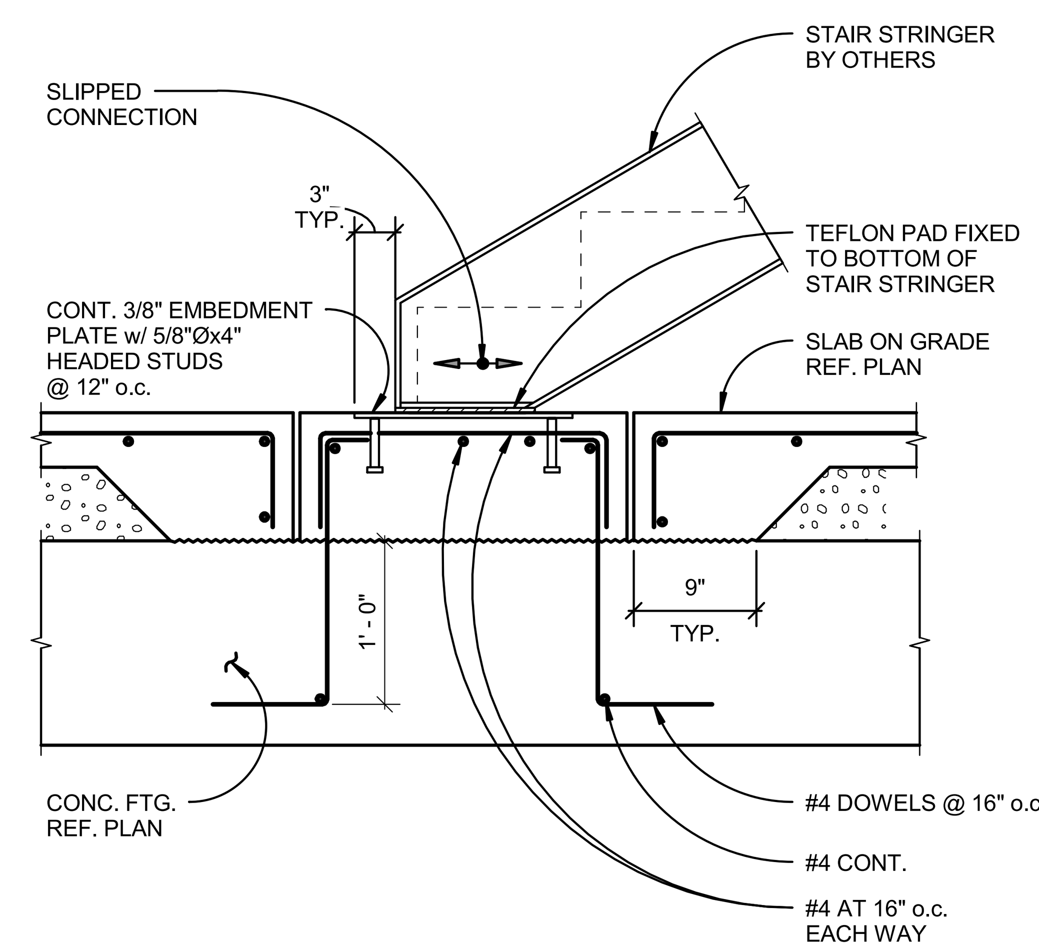
4 CONCRETE BENCH DETAIL - GRID A
1" = 1'-0" S101



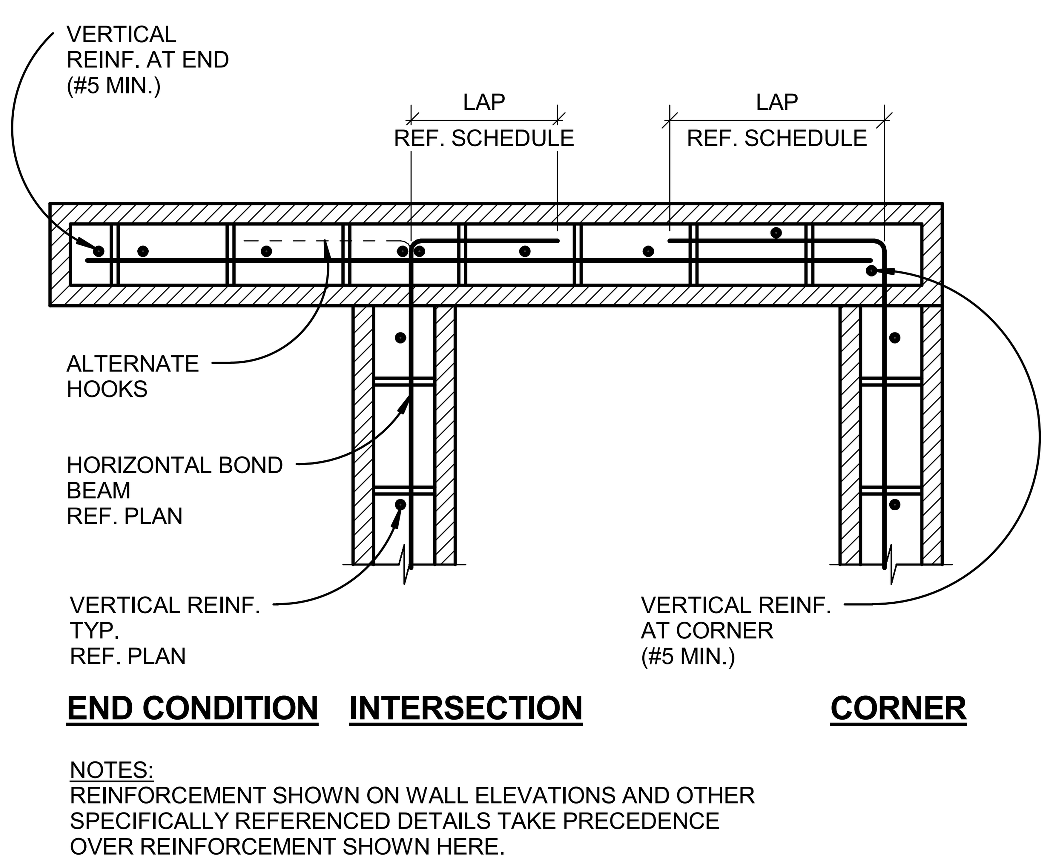
1 CMU SITE WALL SECTION
1" = 1'-0" S101



7 HSS COLUMN BASE DETAILS
1" = 1'-0" S101

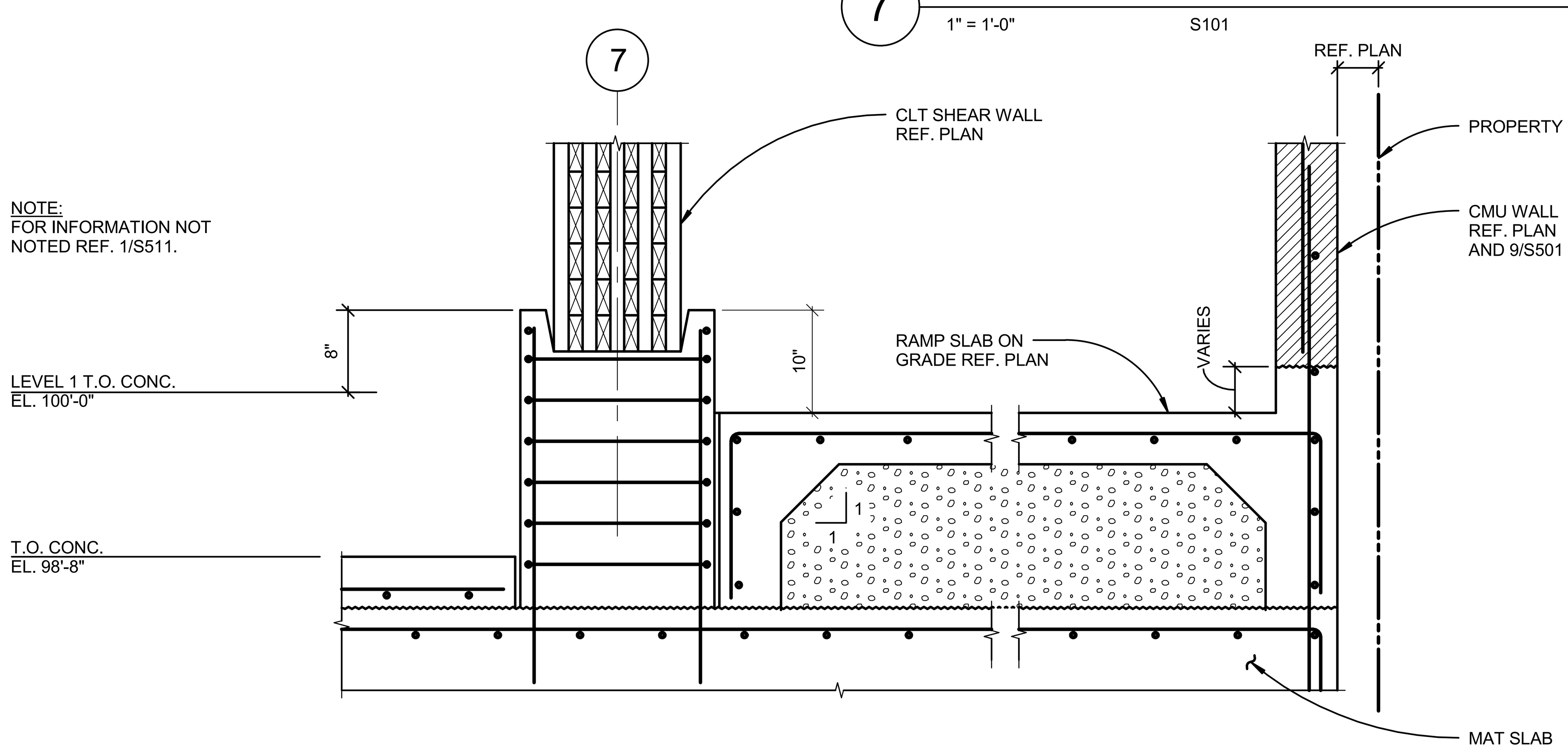


5 STAIR BASE DETAIL
1" = 1'-0" S101

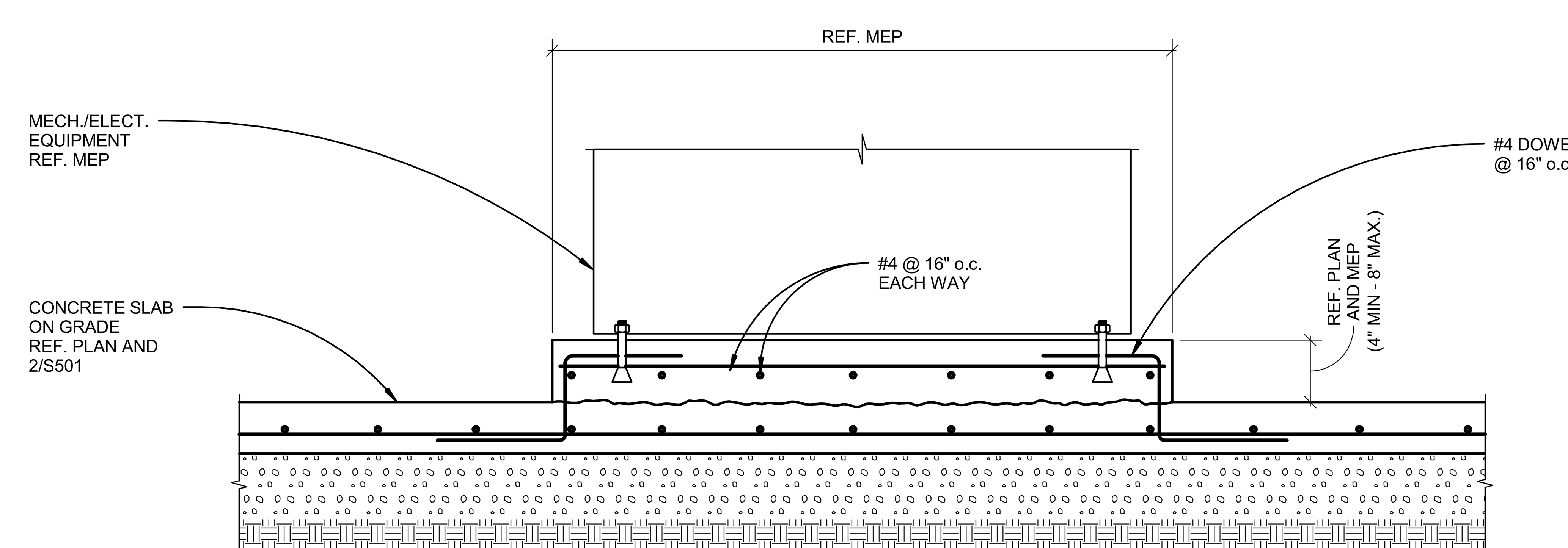


2 8" CMU WALL CORNER DETAIL
1" = 1'-0"

NOTE:
FOR INFORMATION NOT
NOTED REF. 1/S511.



8 SECTION AT RAMP
1" = 1'-0"



3 MEP HOUSEKEEPING PAD
1" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

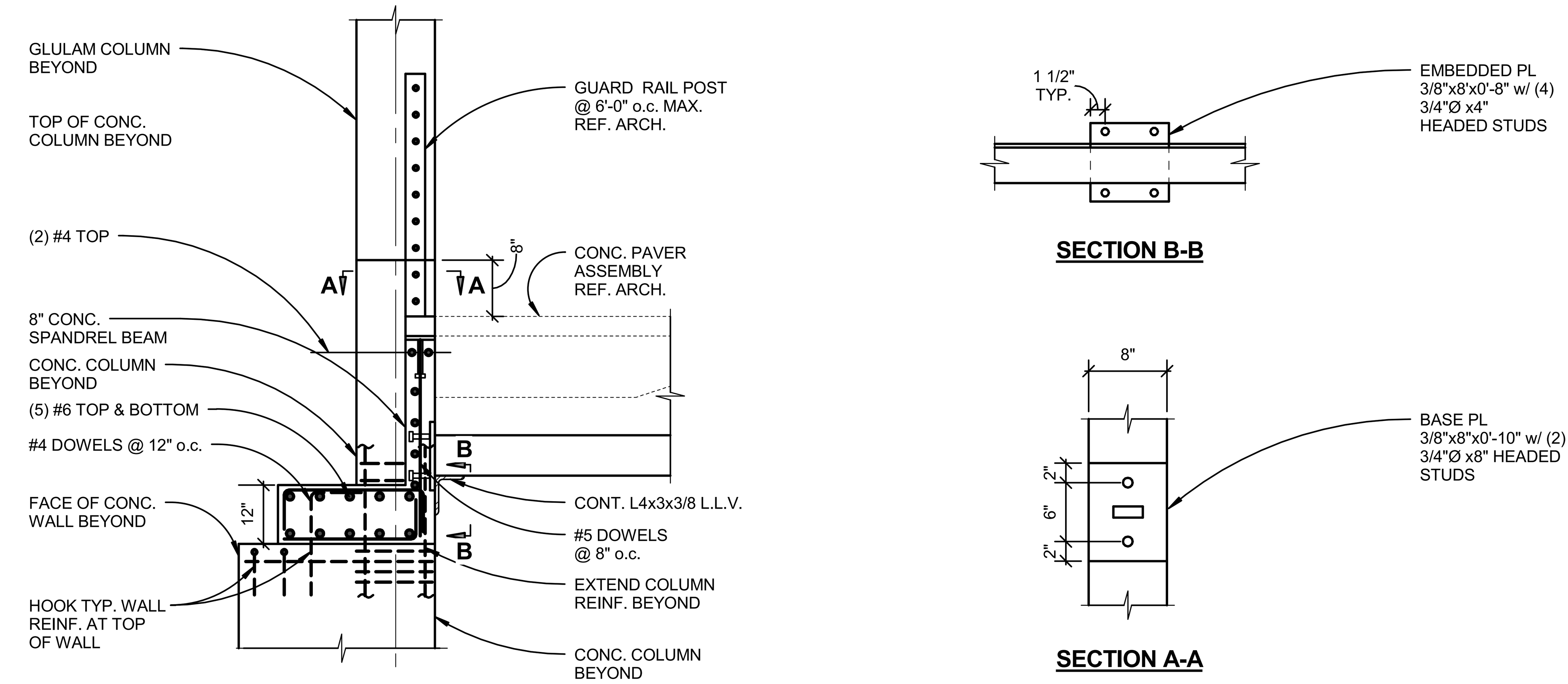
SCALE
AS INDICATED

SHEET TITLE
CONCRETE DETAILS

S504

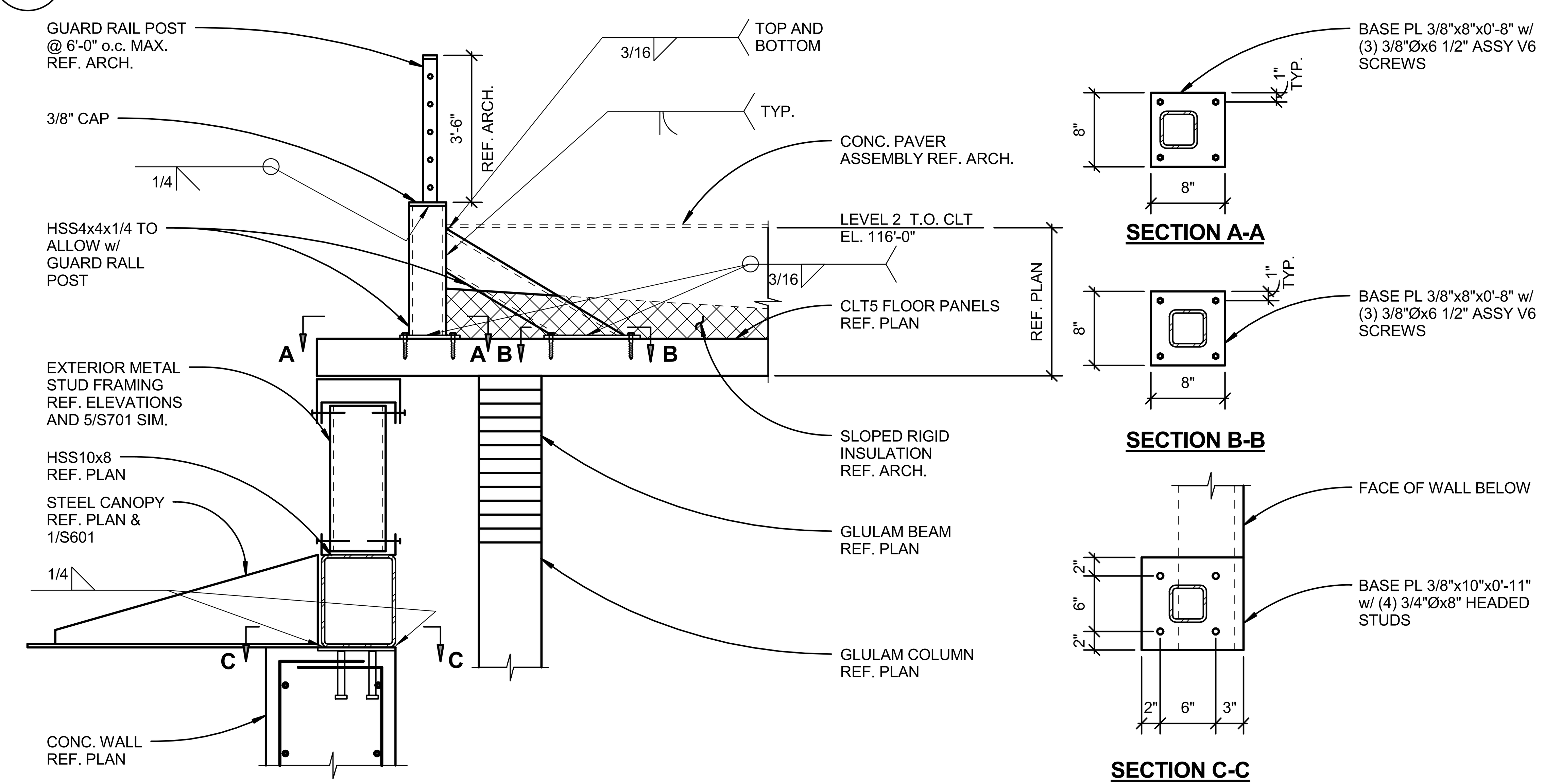
GMP SET

11/4/2016 9:54:52 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 SECTION AT NORTH BALCONY

1" = 1'-0" S312



2 SOUTH BALCONY DETAIL

1" = 1'-0" S313

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

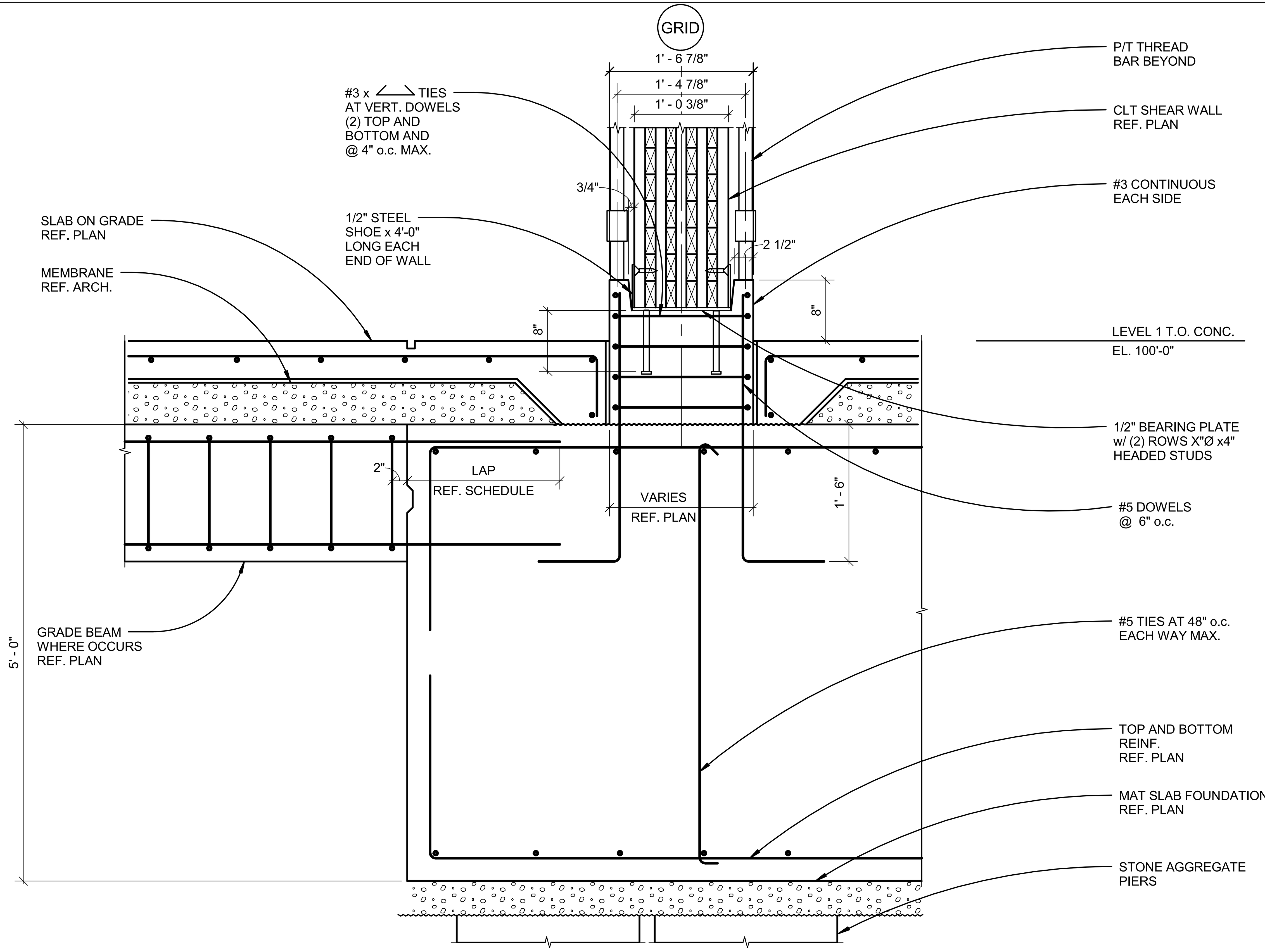
SCALE
AS INDICATED

SHEET TITLE
FRAMING DETAILS

S505

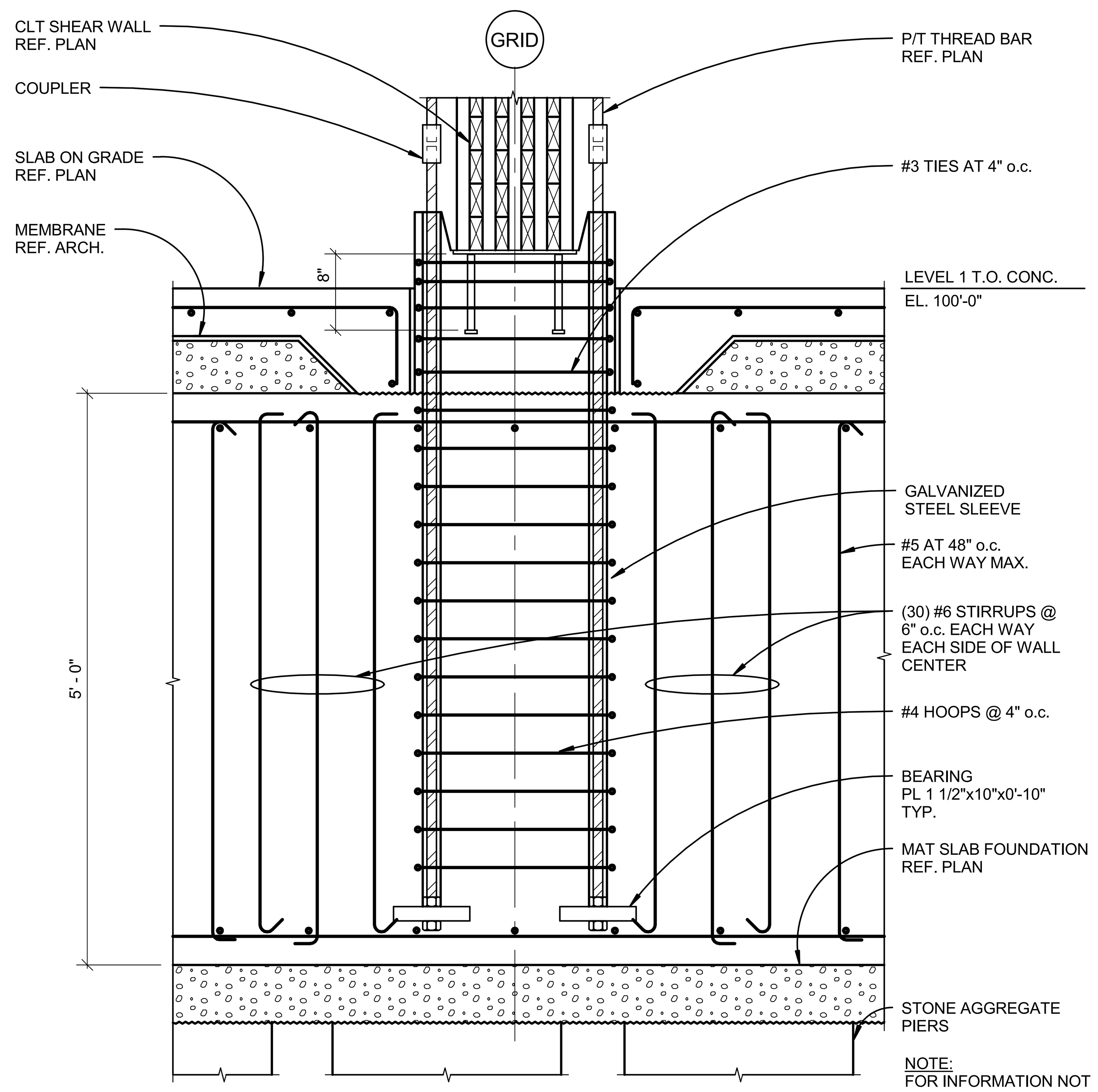
GMP SET

11/4/2016 9:54:53 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



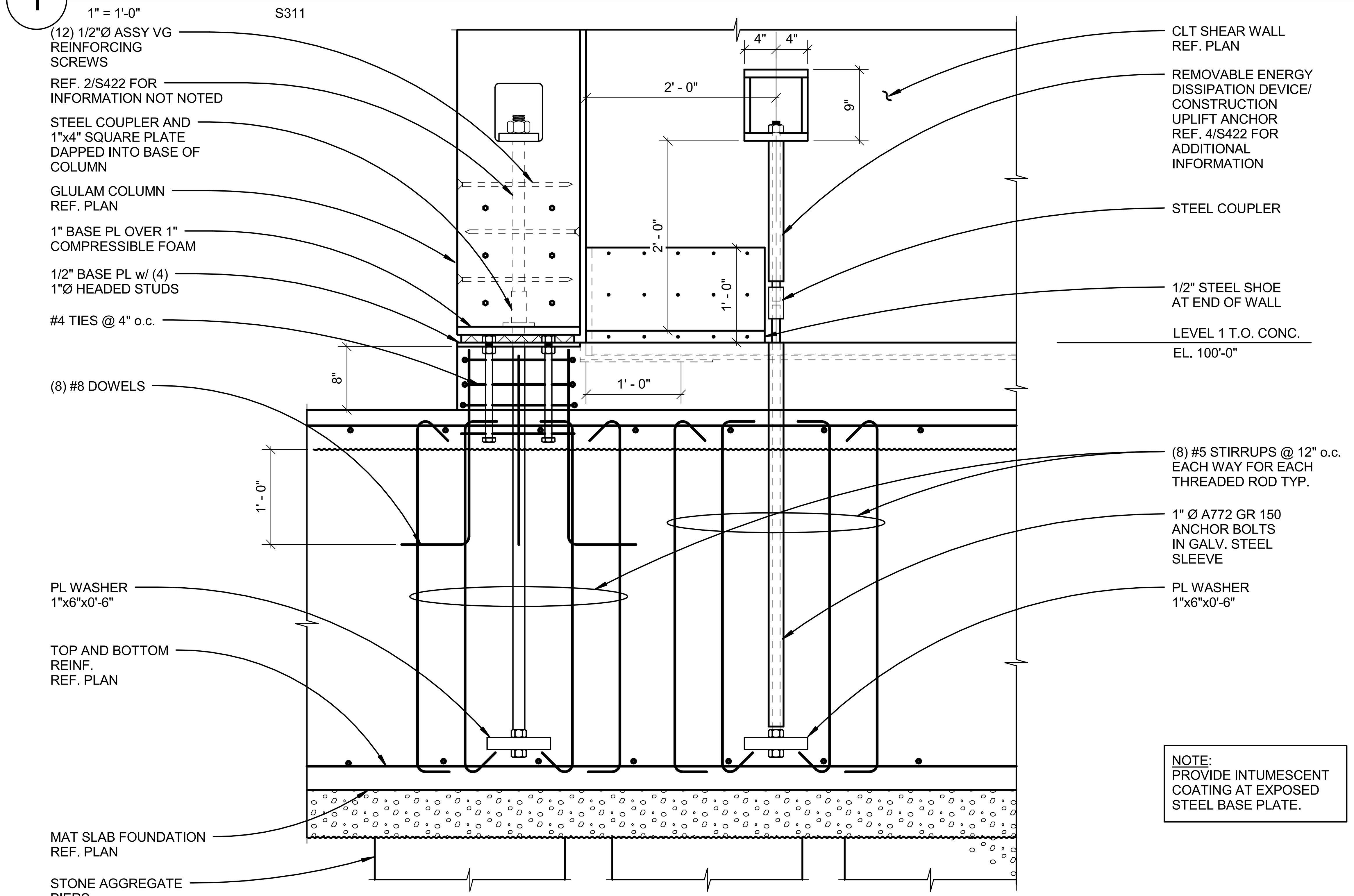
1 GRADE BEAM TO MAT SLAB FOUNDATION

1" = 1'-0" S311



3 CLT WALL TO MAT SLAB CONNECTION

1" = 1'-0" S411



2 SHEAR WALL TO BOUNDING COLUMN DETAIL

1" = 1'-0" S411

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

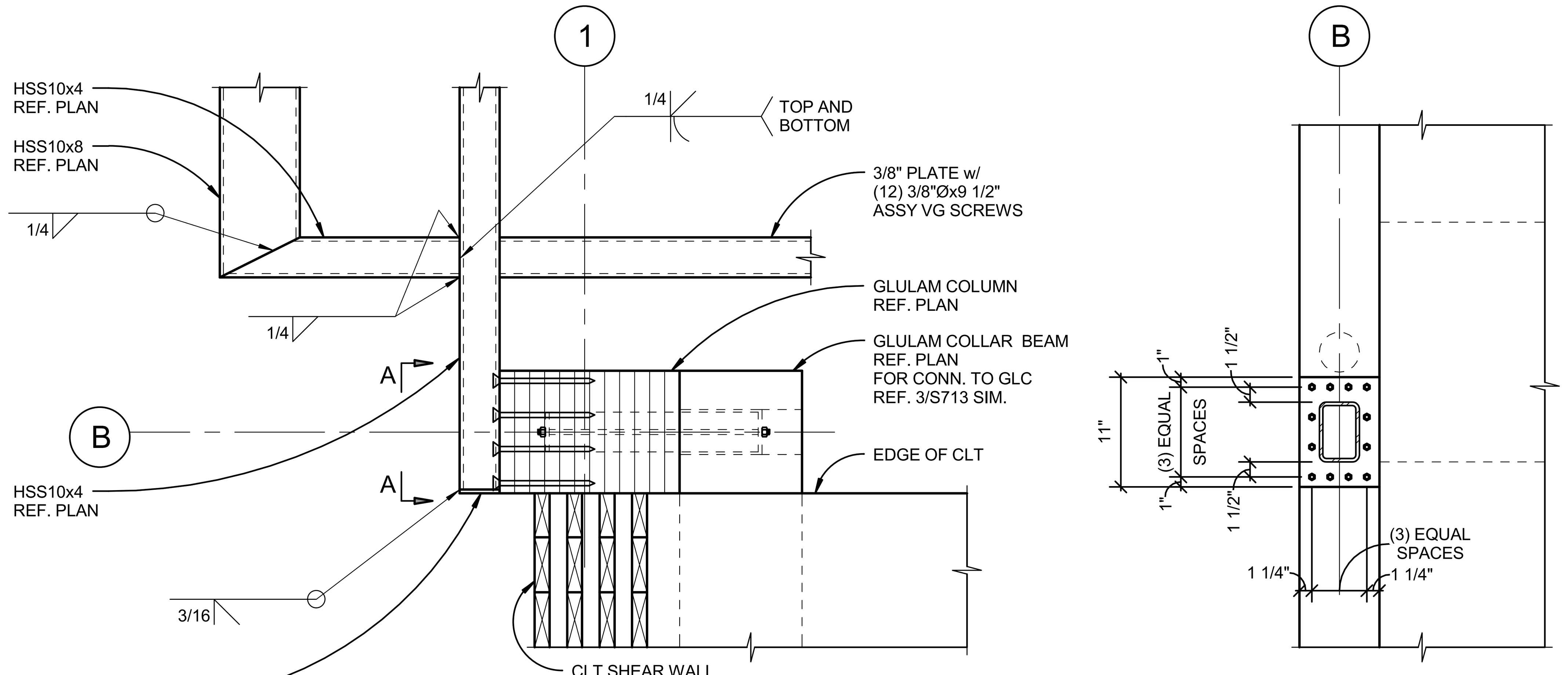
SCALE
AS INDICATED

SHEET TITLE
CONCRETE DETAILS

S511

GMP SET

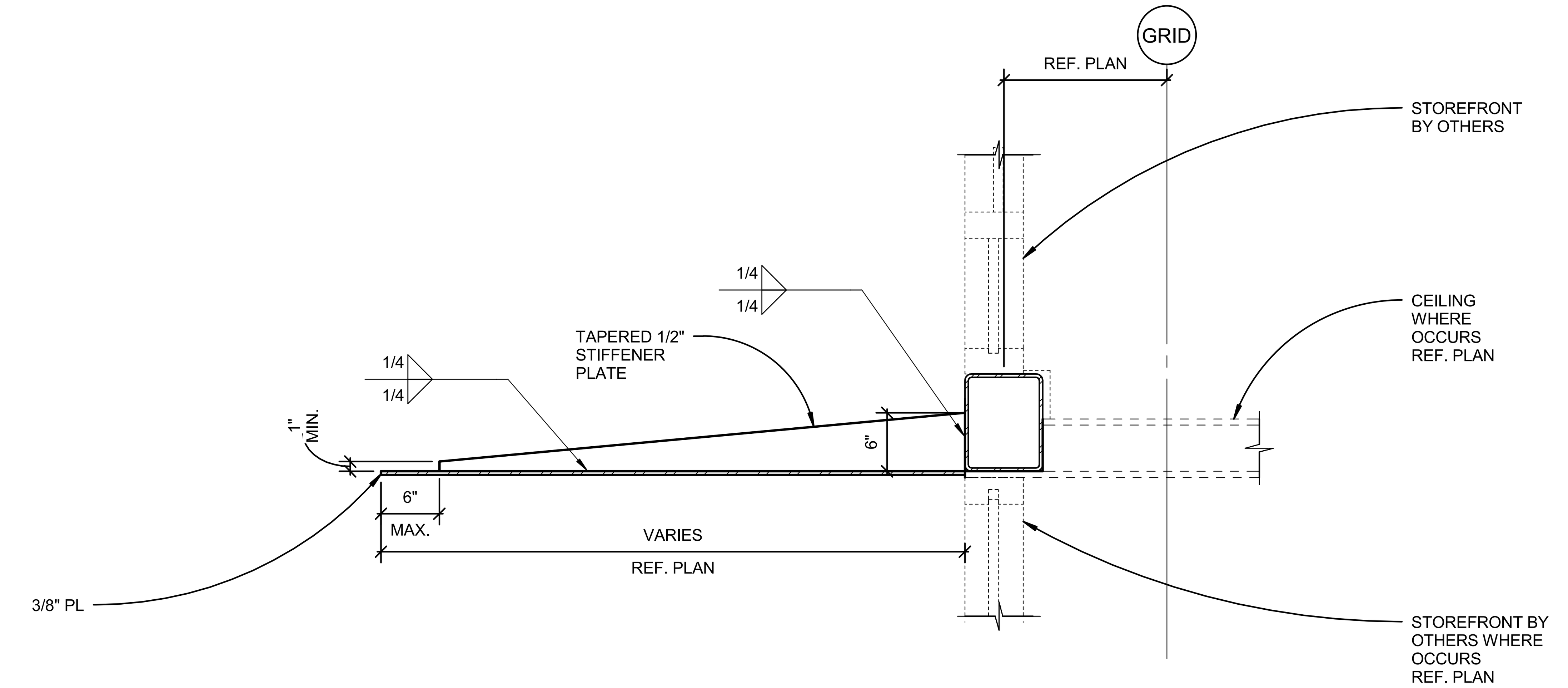
11/4/2016 9:54:53 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



SECTION A-A

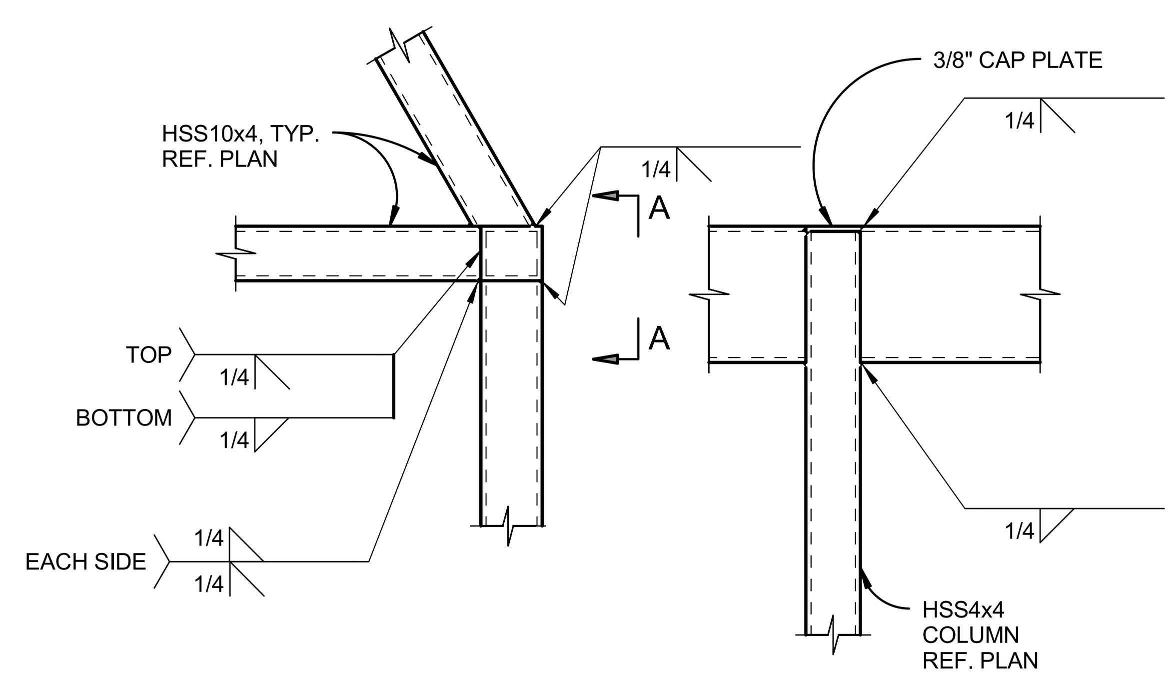
4 HSS TO END GLC CONNECTION

1" = 1'-0" S211



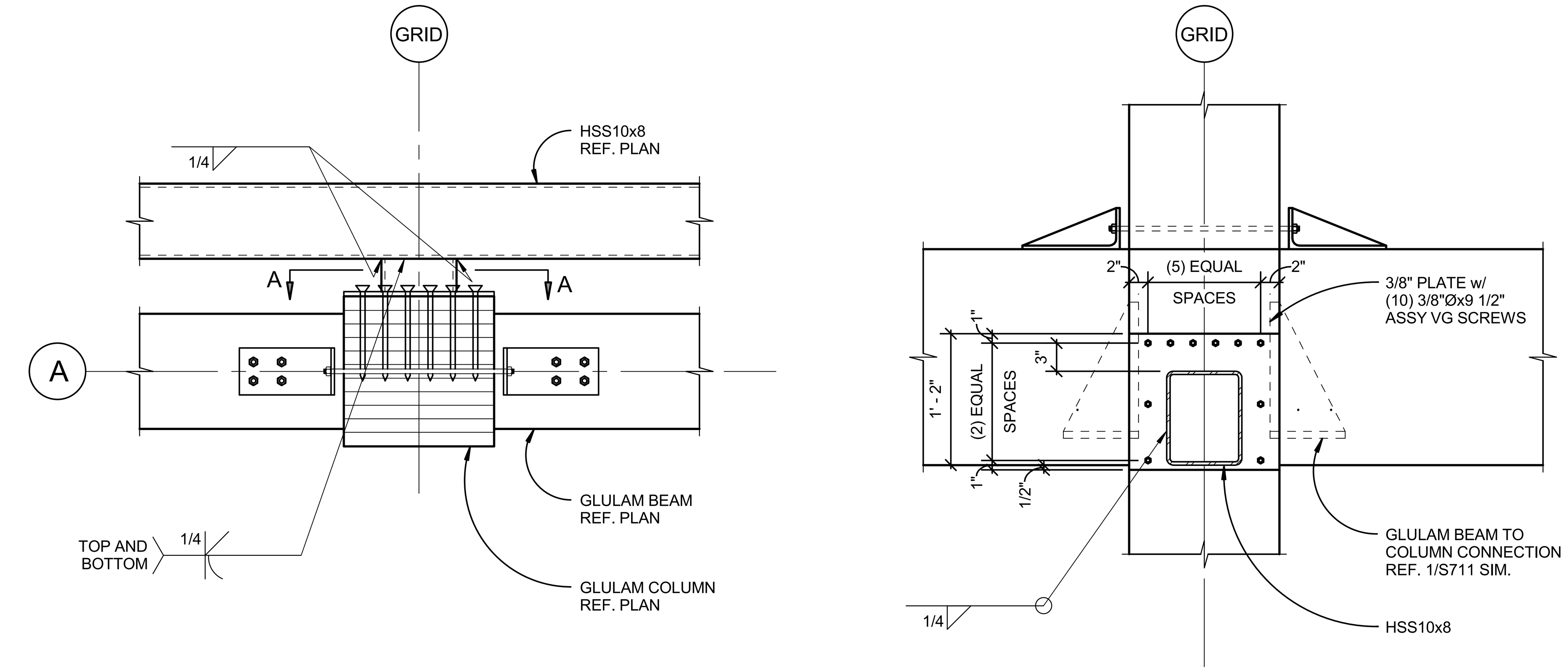
1 CANOPY SECTION

1" = 1'-0"



5 HSS BEAM TO COLUMN DETAIL

1" = 1'-0" S211



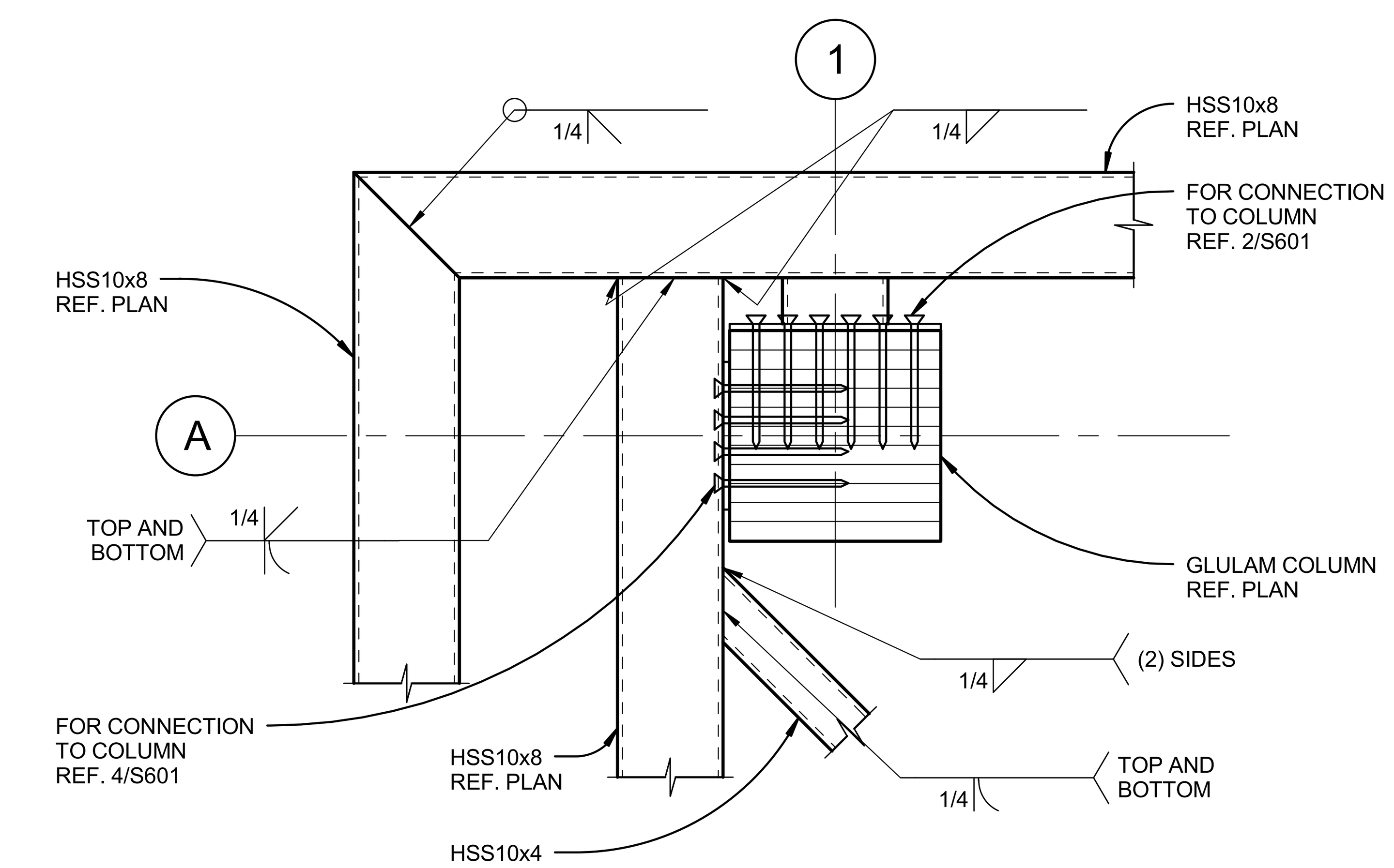
SECTION A-A

2 HSS TO GLC CONNECTION

1" = 1'-0" S211

6 S601-06

1" = 1'-0"



3 HSS TO CORNER GLC CONNECTION

1" = 1'-0" S211

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

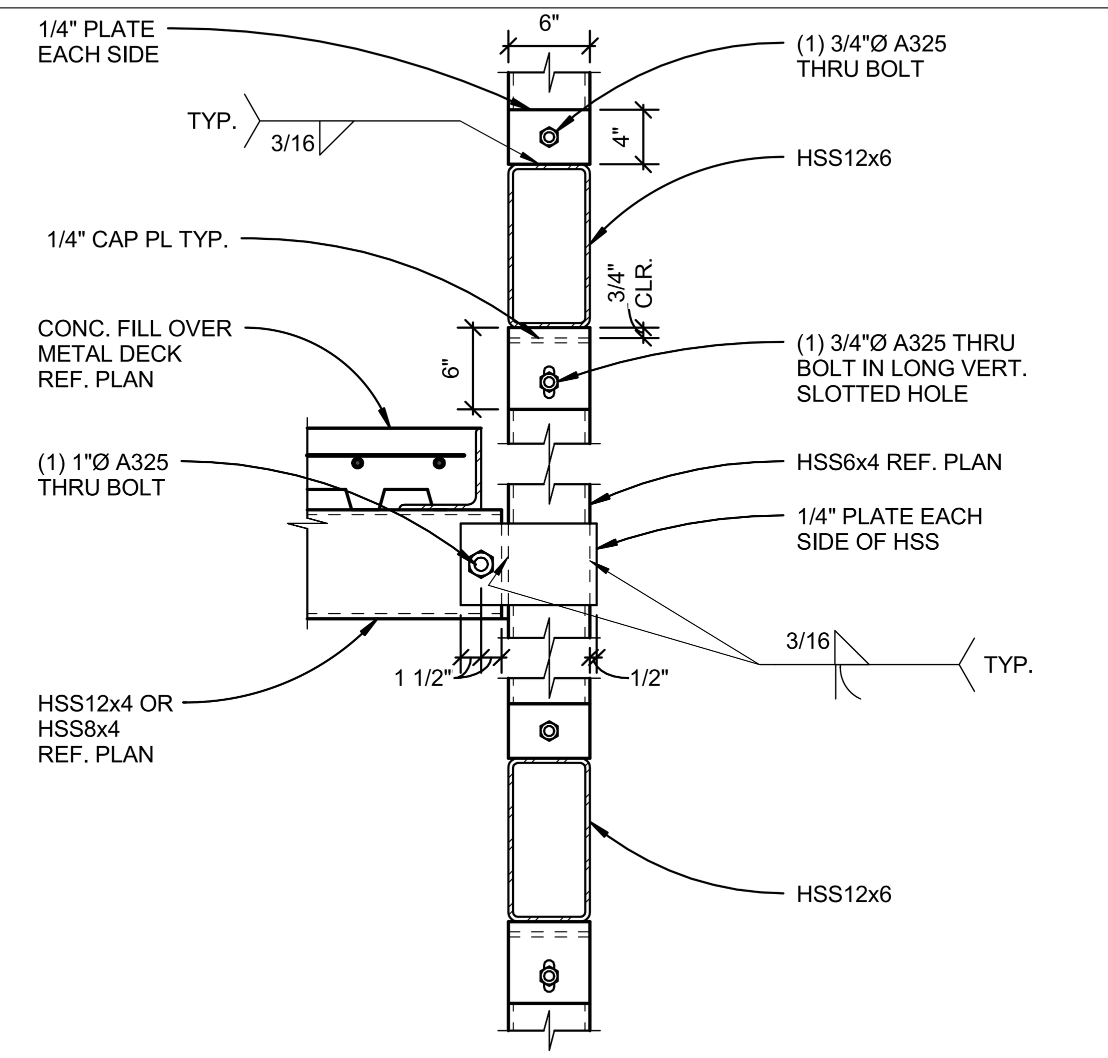
SCALE
AS INDICATED

SHEET TITLE
STEEL CANOPY DETAILS

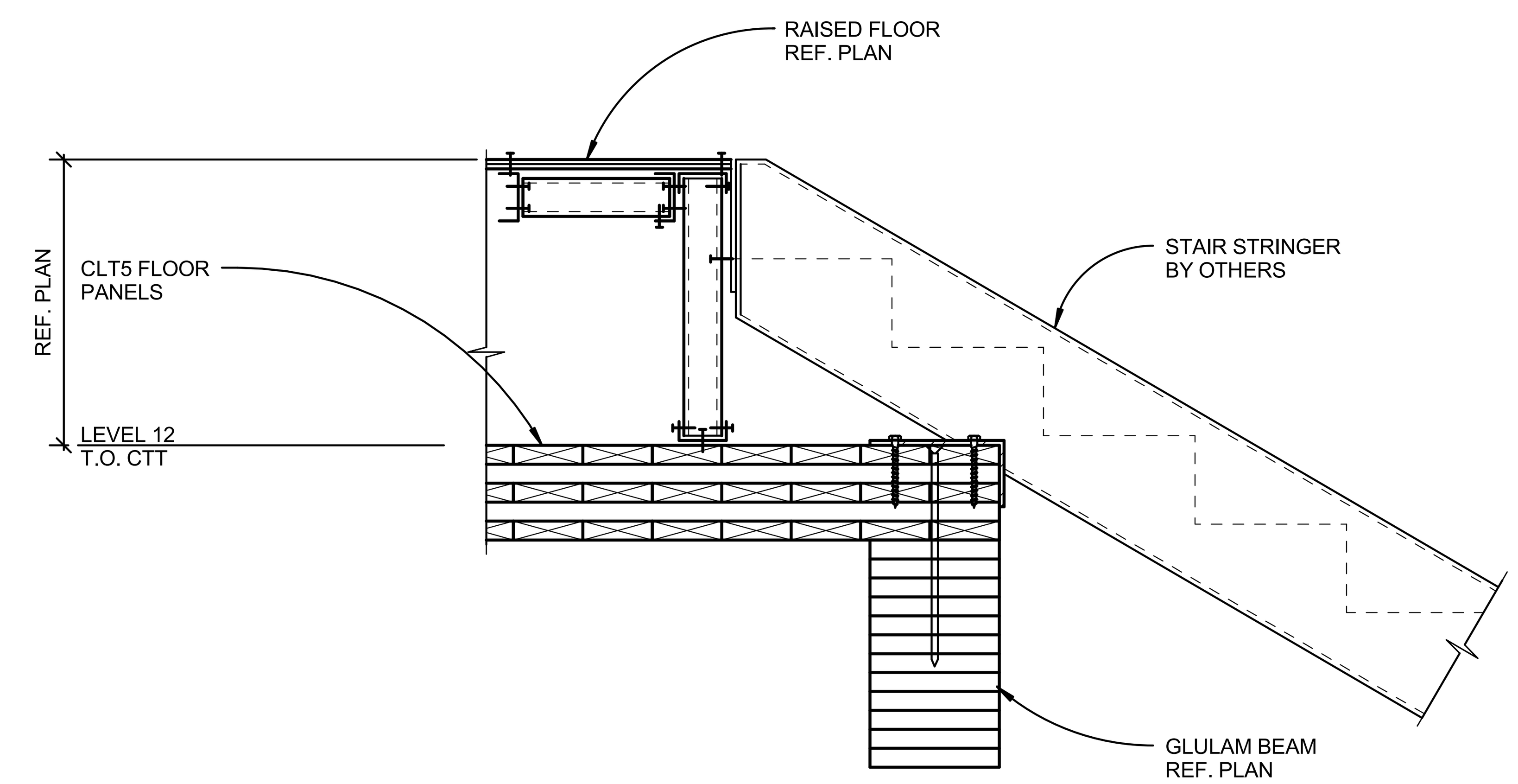
S601

GMP SET

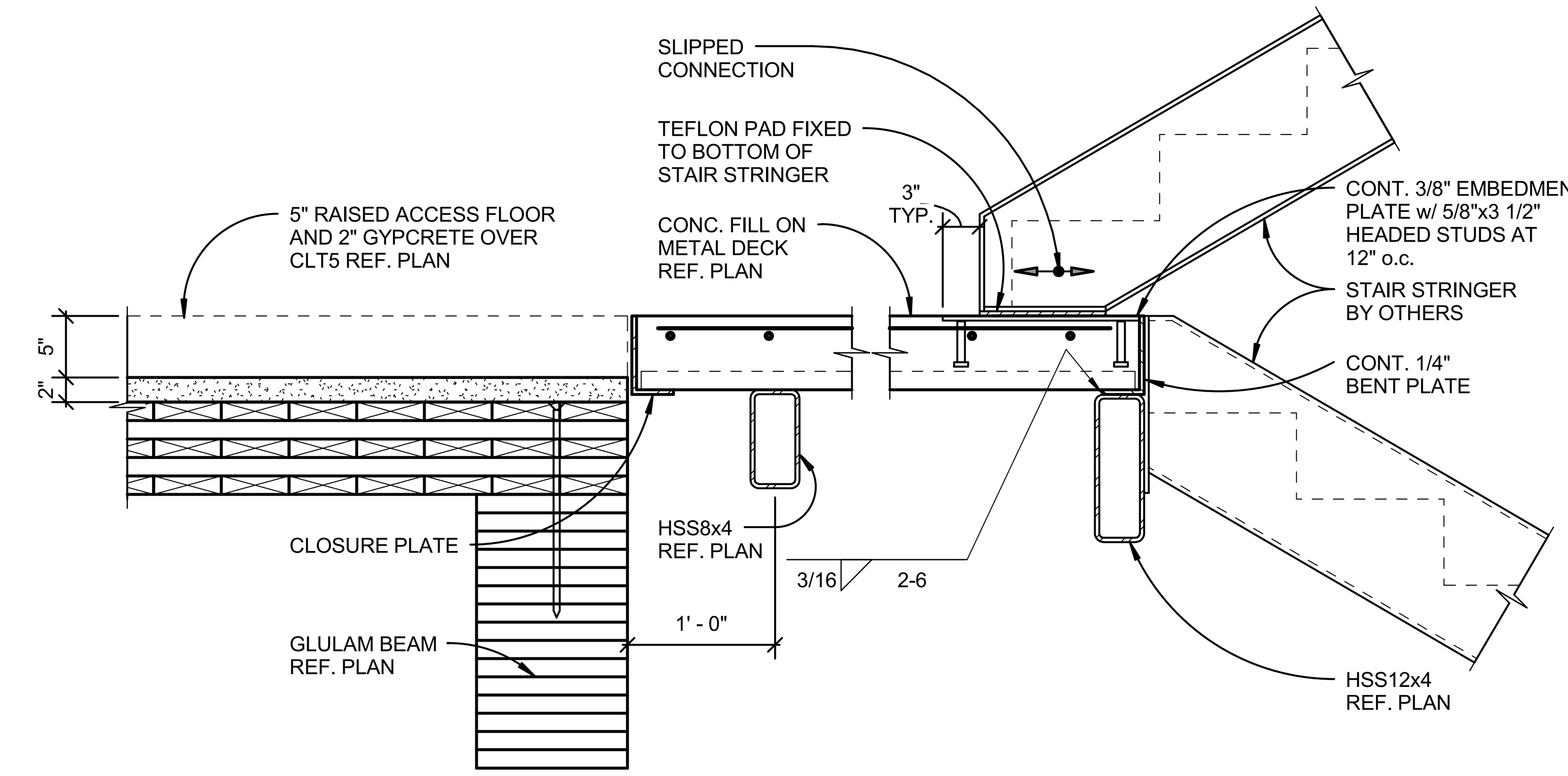
11/4/2016 9:54:54 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



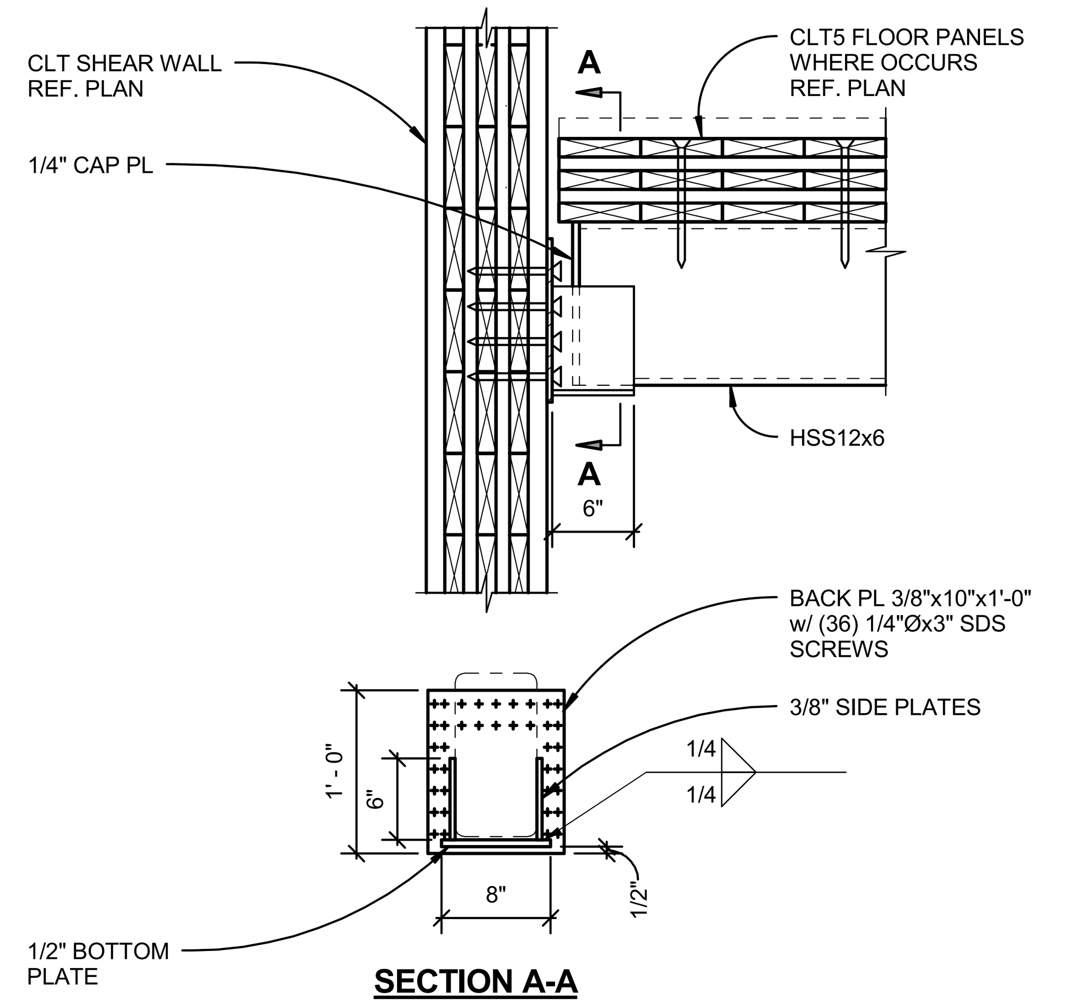
7 MID-HEIGHT STAIR LANDING TO HSS
1" = 1'-0" S221



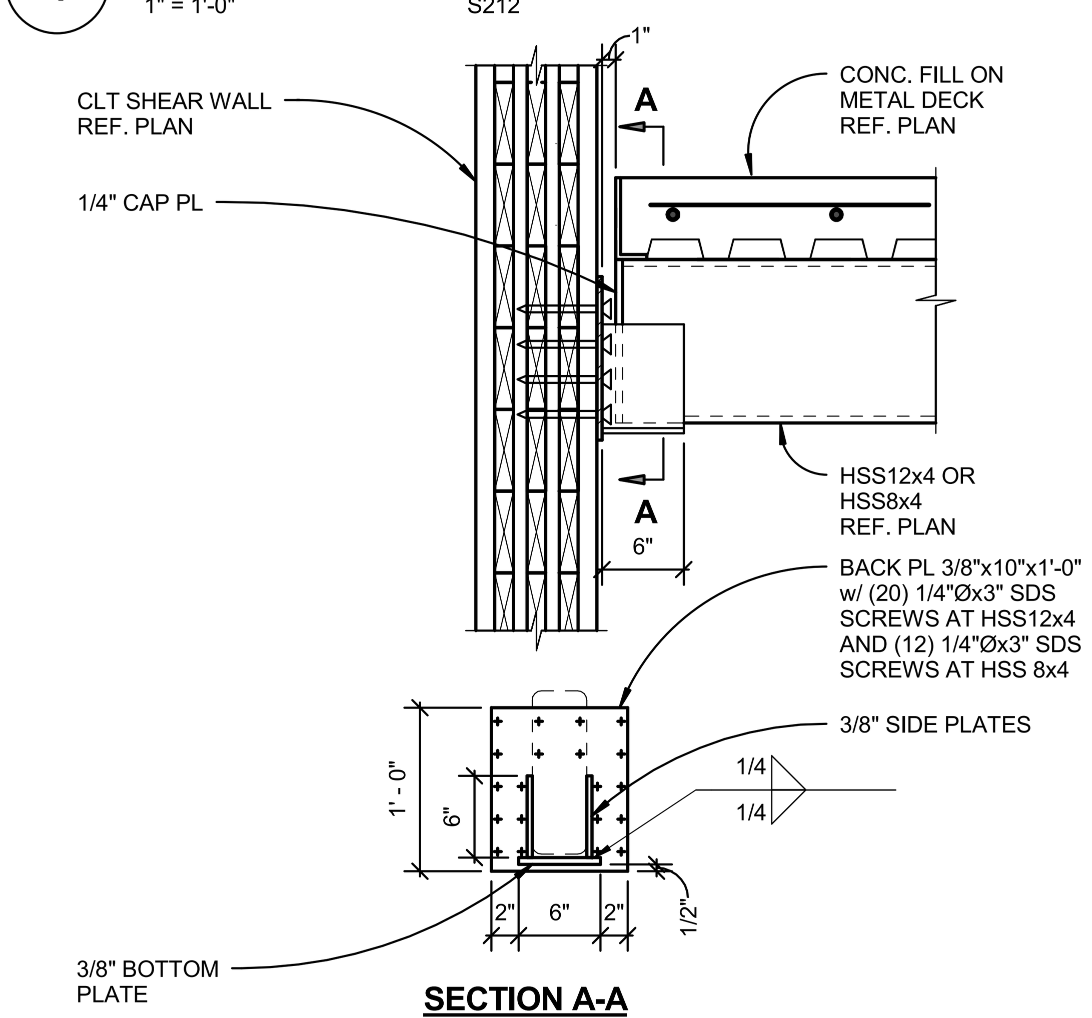
4 STAIR SECTION - LEVEL 12
1" = 1'-0" S212



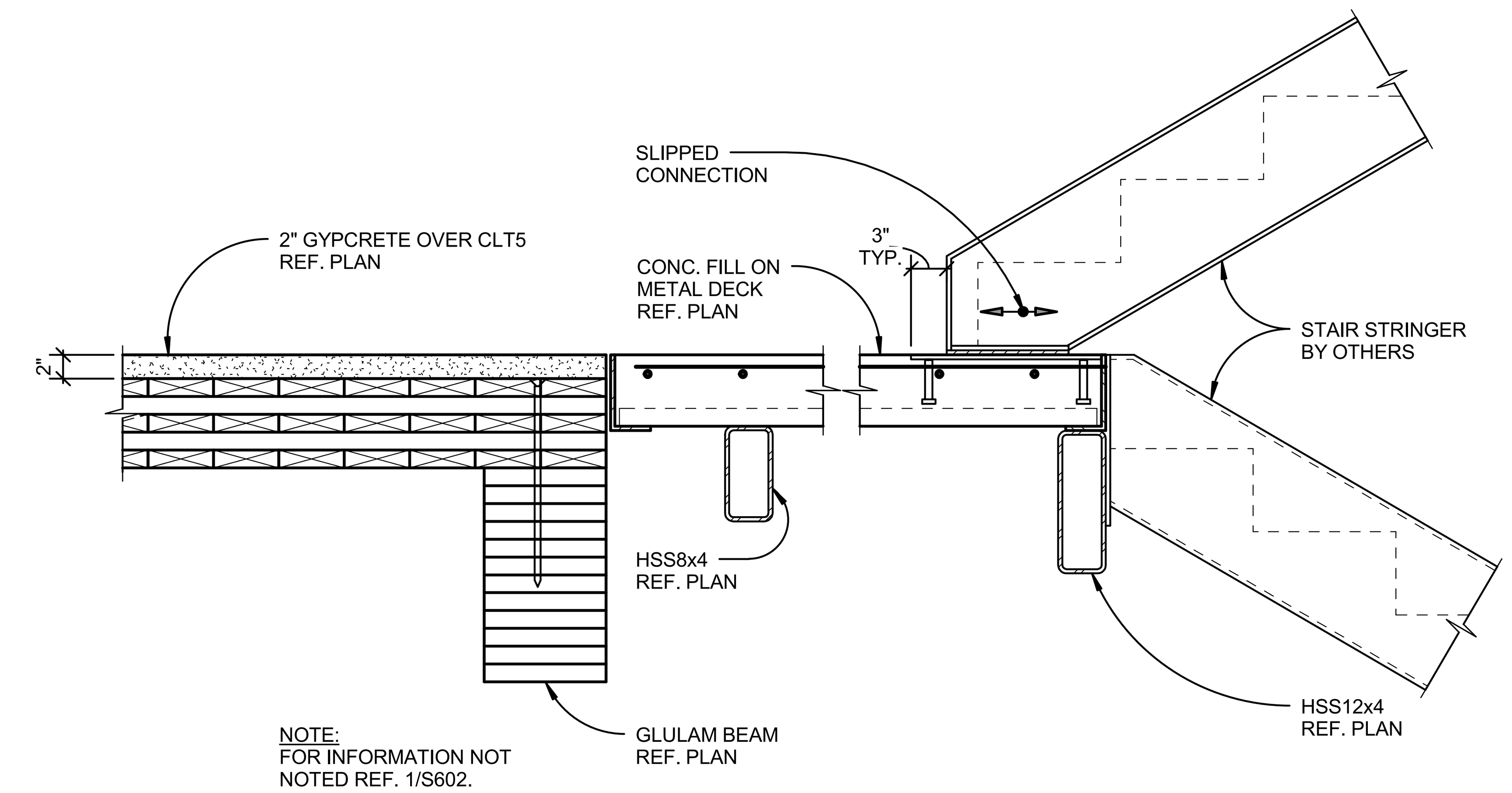
1 STAIR SECTION - AT OFFICE
1" = 1'-0" S212



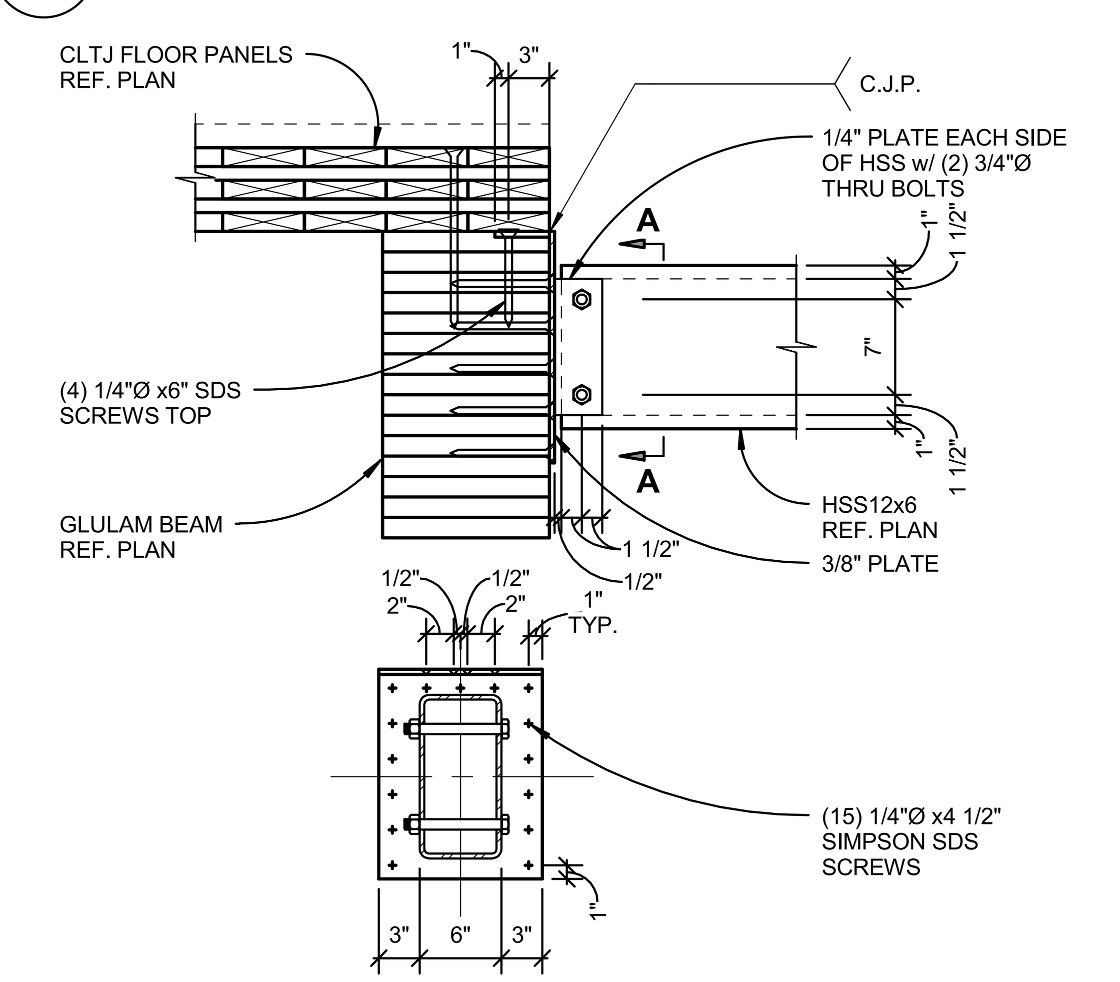
8 HSS12x6 TO CLT WALL
1" = 1'-0" S221



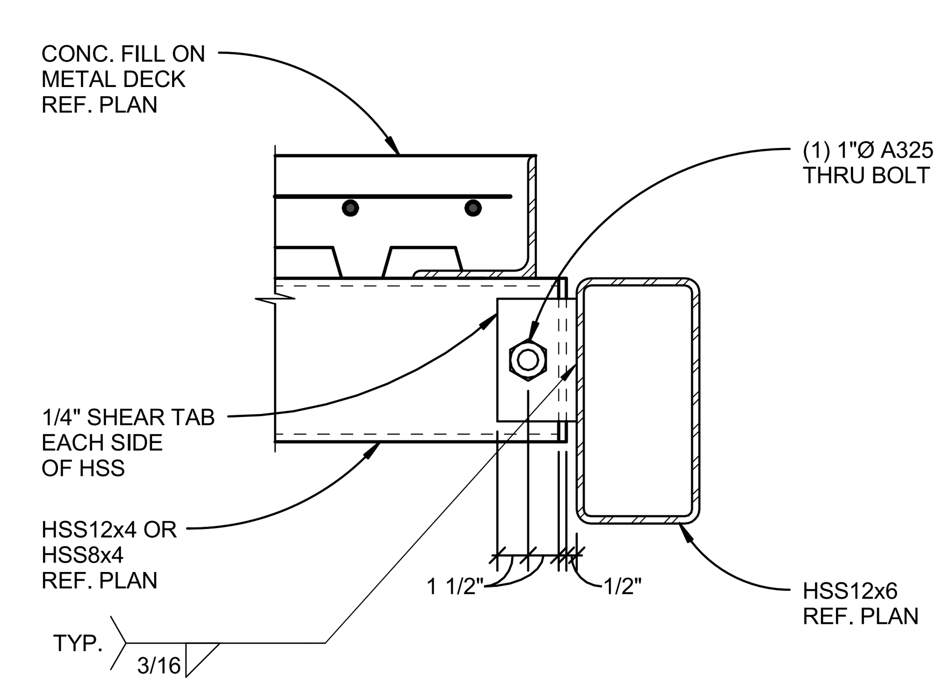
5 STAIR LANDING TO CLT WALL
1" = 1'-0" S212



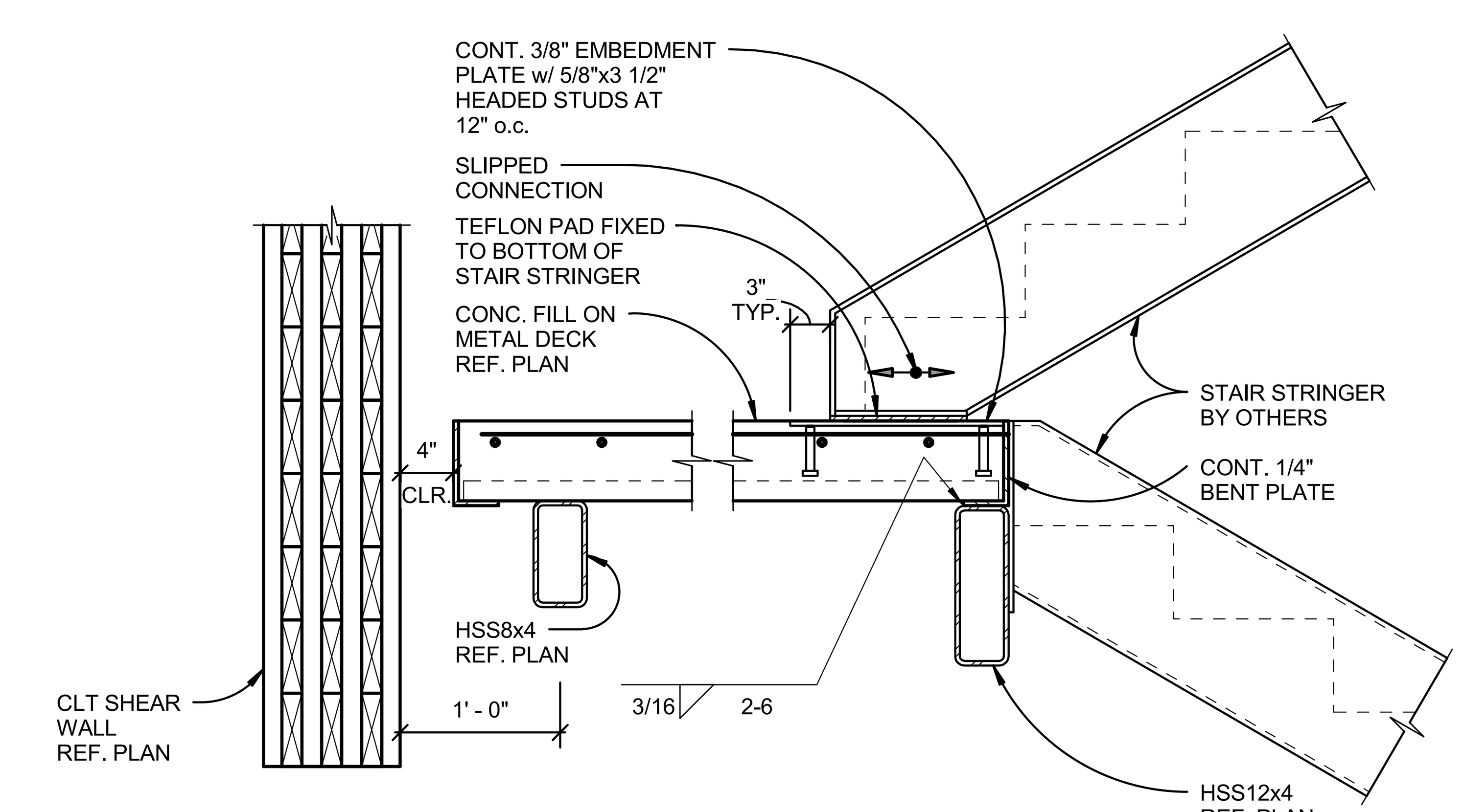
2 STAIR SECTION - AT RESIDENTIAL
1" = 1'-0" S212



9 HSS12x6 TO GL BEAM
1" = 1'-0"



6 STAIR LANDING TO HSS12x6
1 1/2" = 1'-0" S221



3 STAIR SECTION - AT MID - HEIGHT LANDING
1" = 1'-0" S221

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

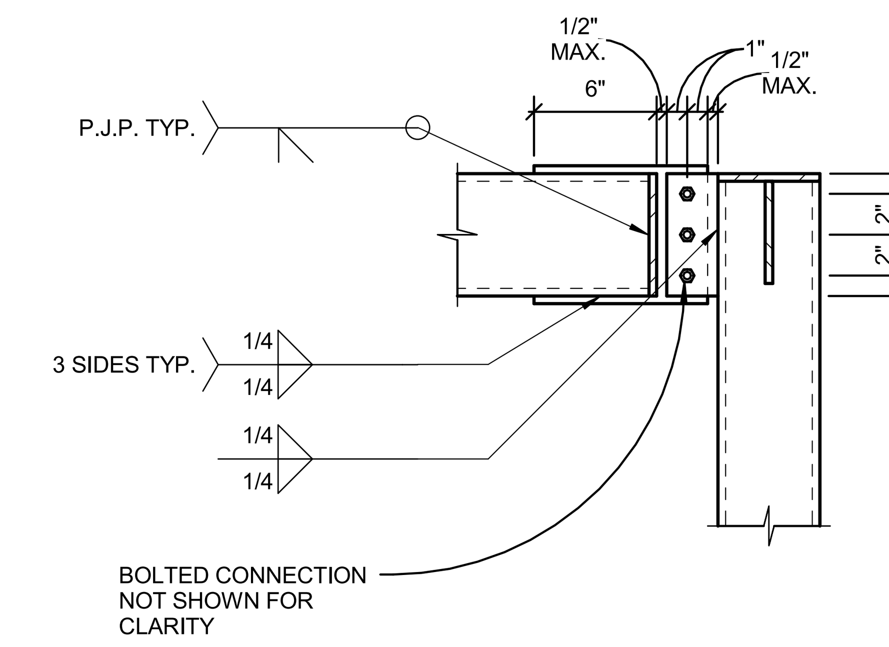
SCALE
AS INDICATED

SHEET TITLE
WEST SHEAR WALL SHAFT DETAILS

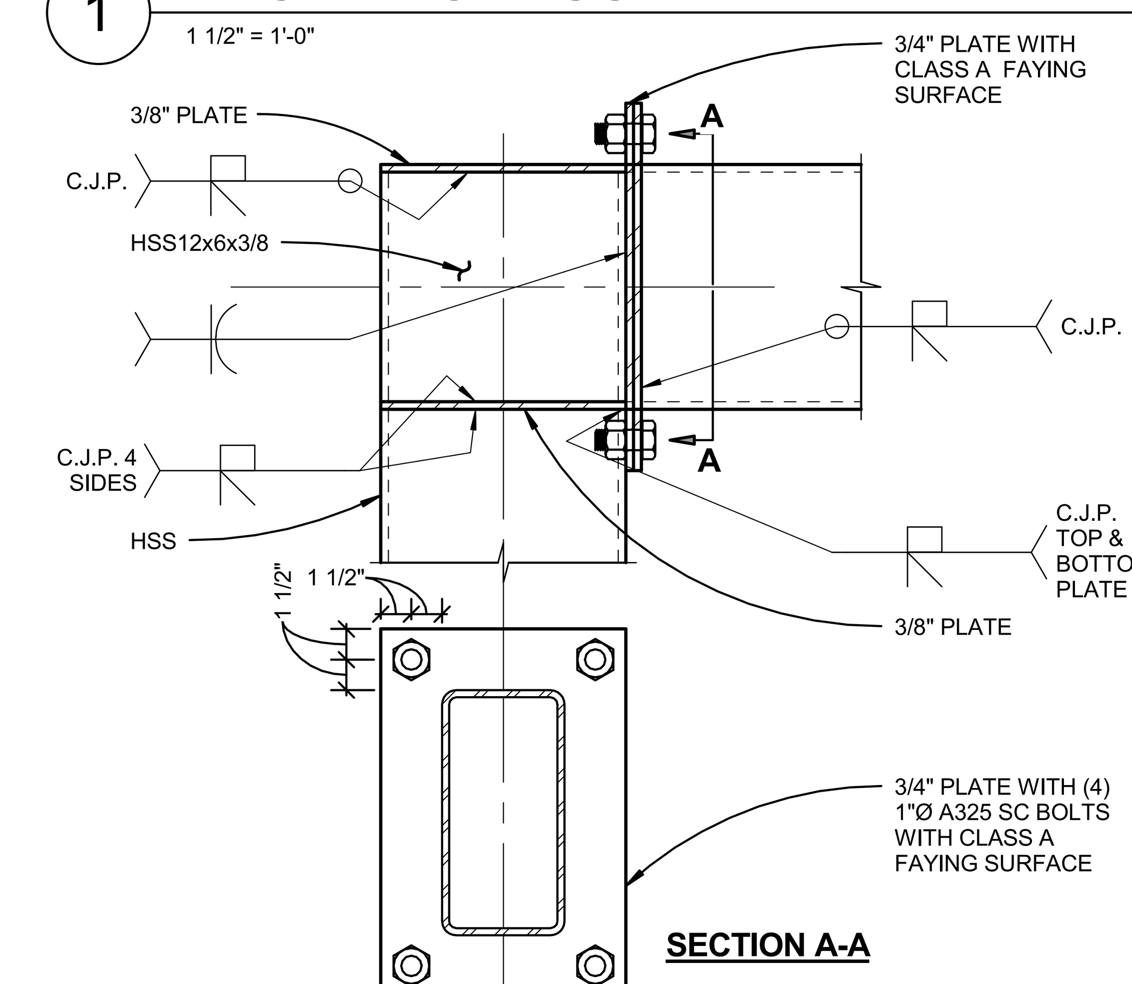
S602

GMP SET

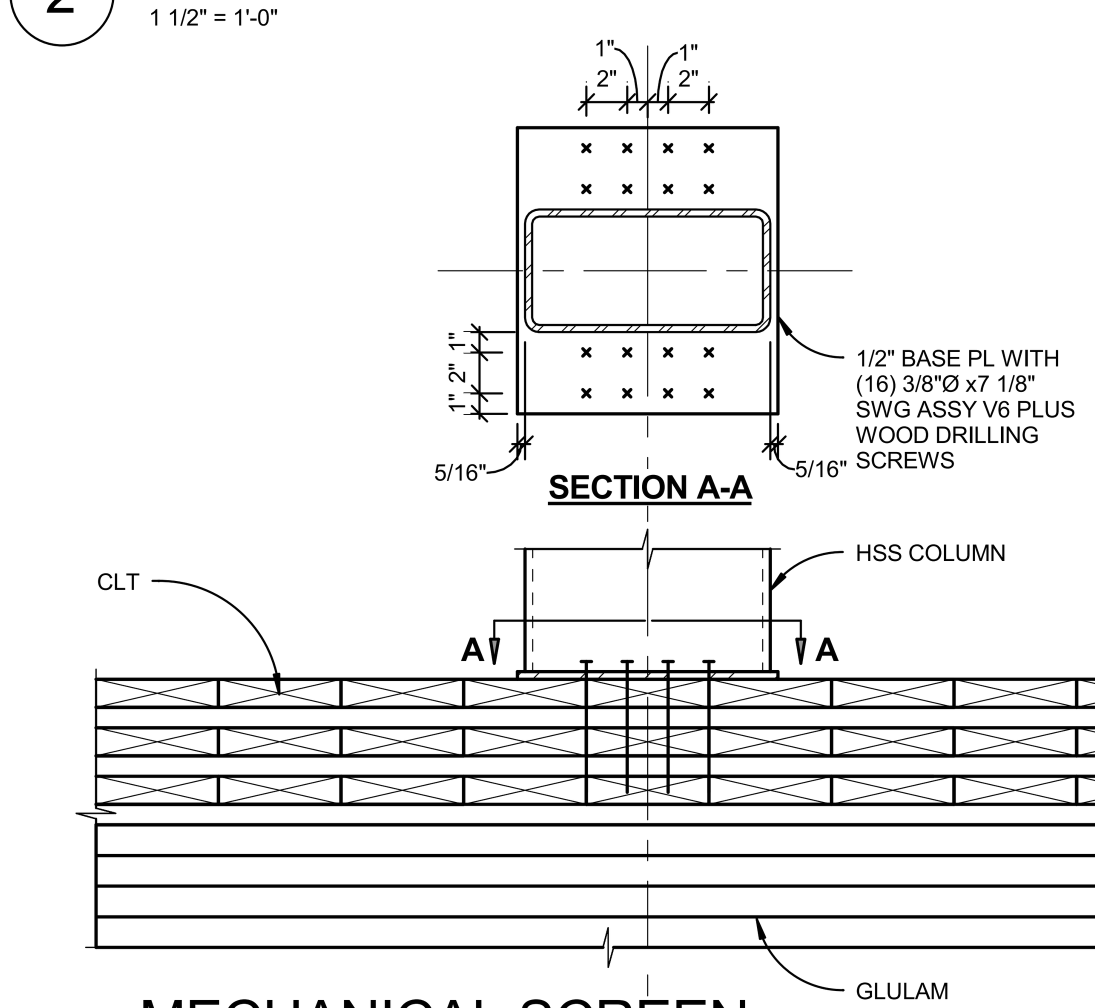
11/4/2016 9:54:55 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 MECHANICAL SCREEN DETAIL
1 1/2" = 1'-0"



2 MECHANICAL SCREENS MOMENT CONNECTION
1 1/2" = 1'-0"



3 MECHANICAL SCREEN BASE PLATE DETAIL
1 1/2" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

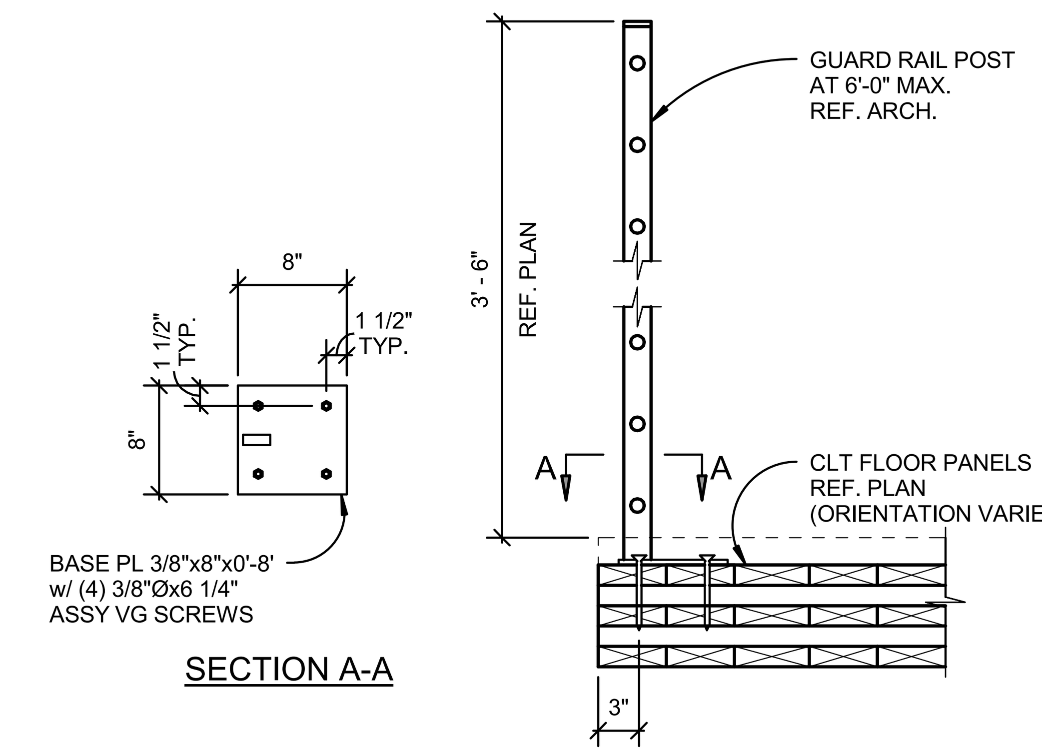
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
DETAIL

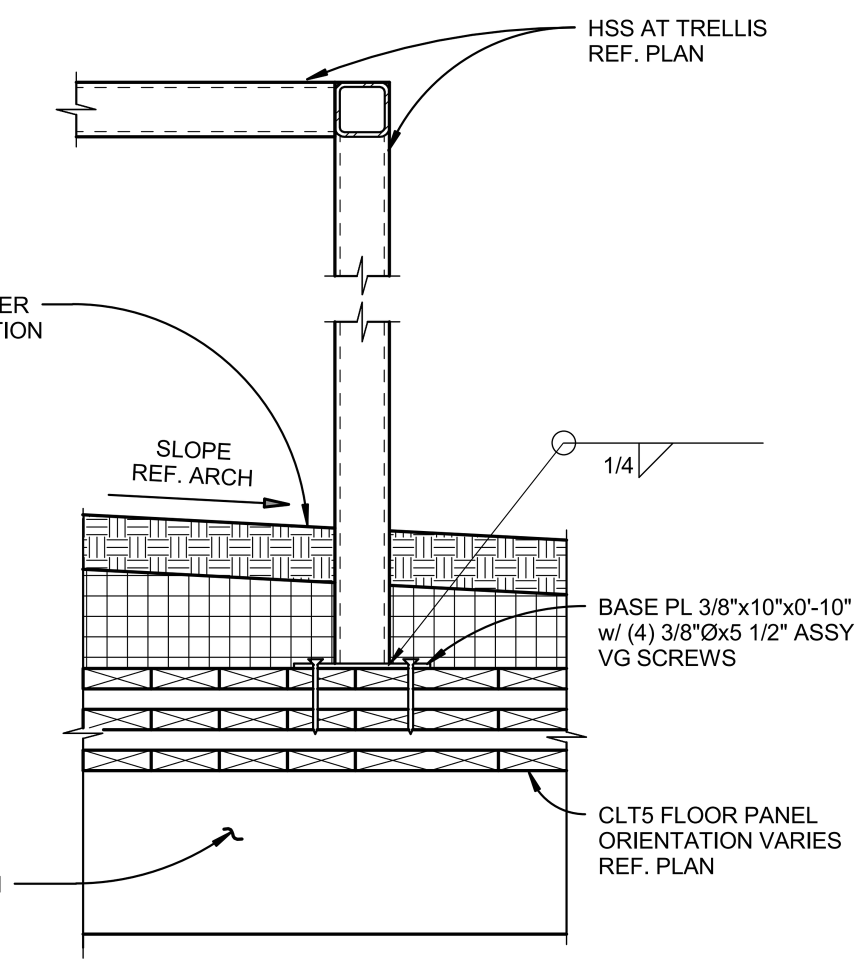
S604

GMP SET



1 GUARD RAIL POST TO CLT5 CONNECTION

1" = 1'-0" S211



2 TRELLIS SECTION - LEVEL 12

1" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

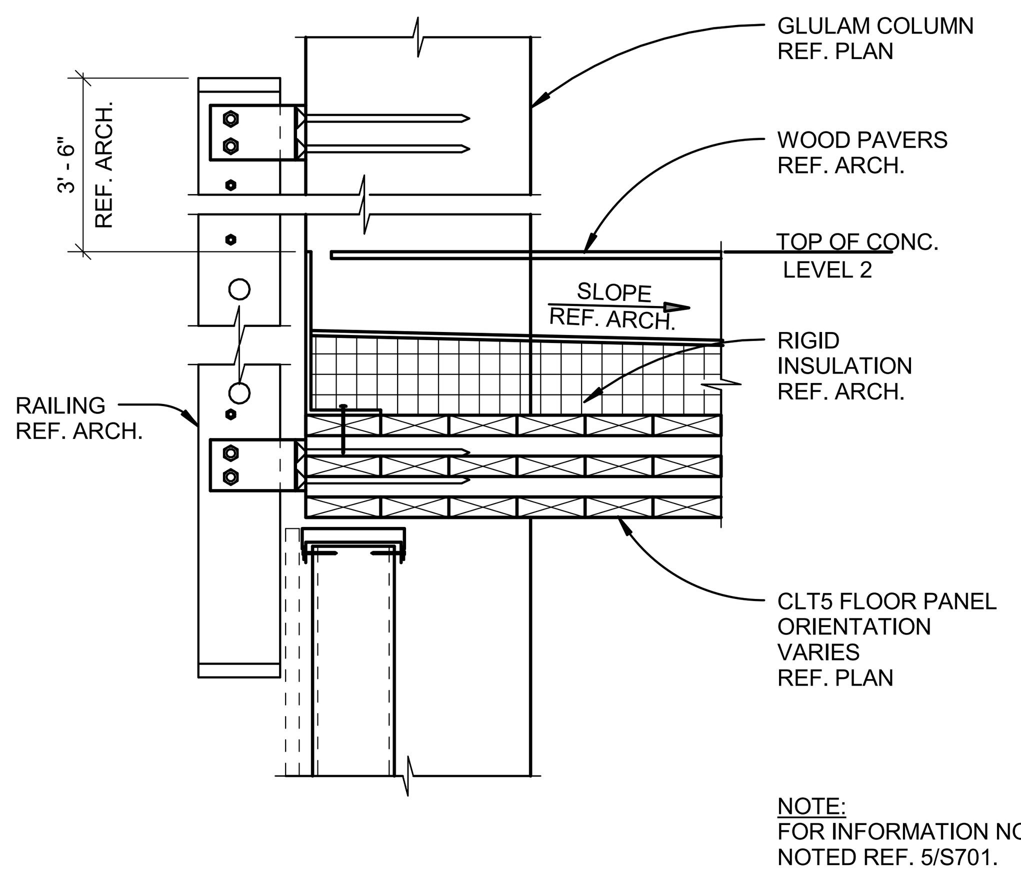
PROJECT NUMBER
215135

SCALE
AS INDICATED

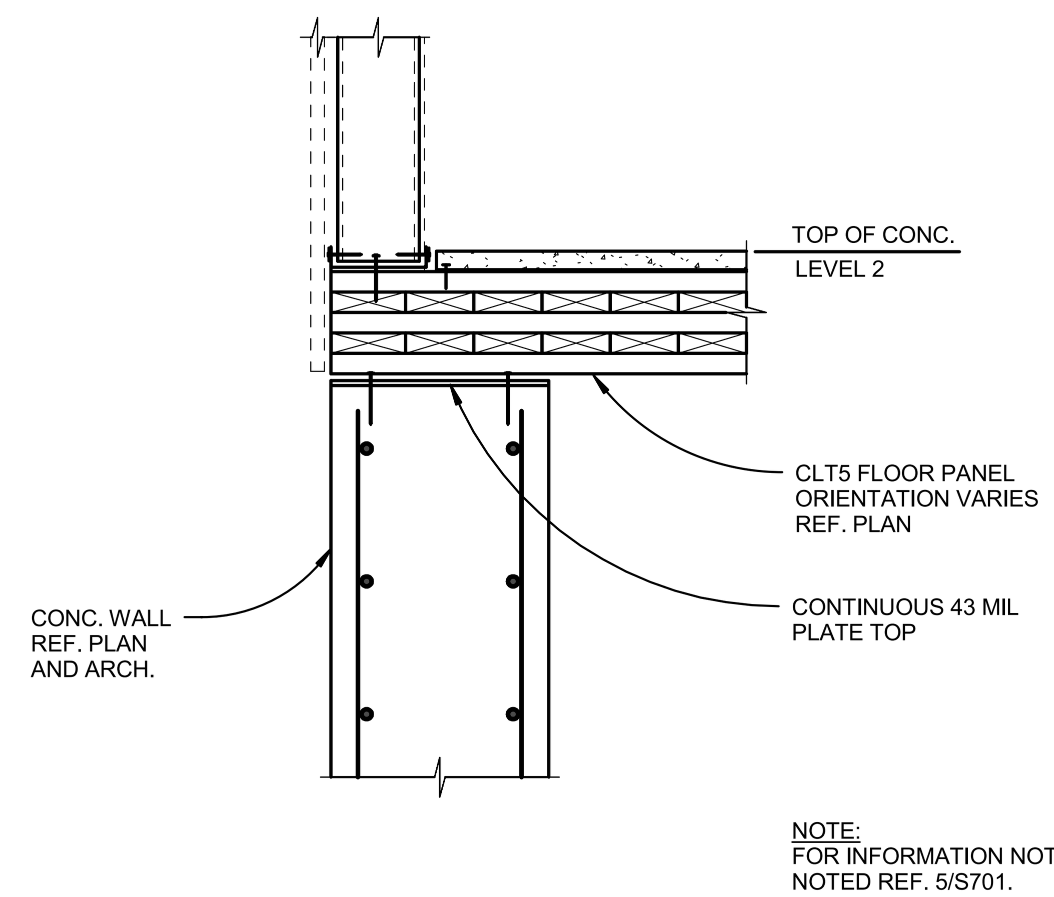
SHEET TITLE
ROOF FRAMING DETAILS

S605

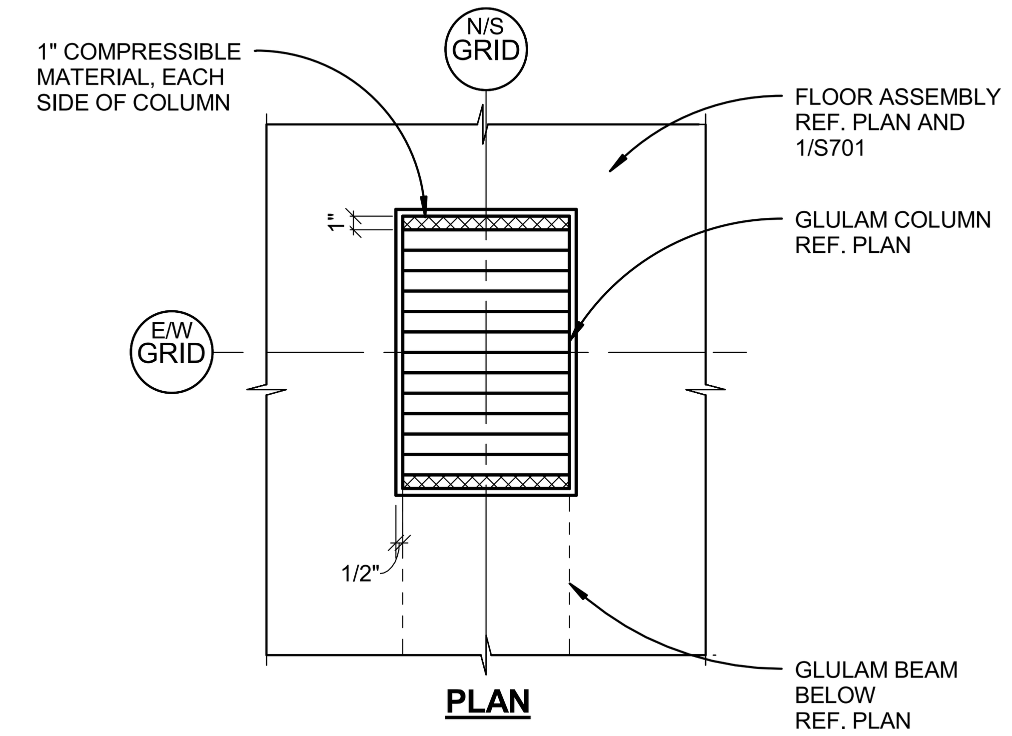
GMP SET



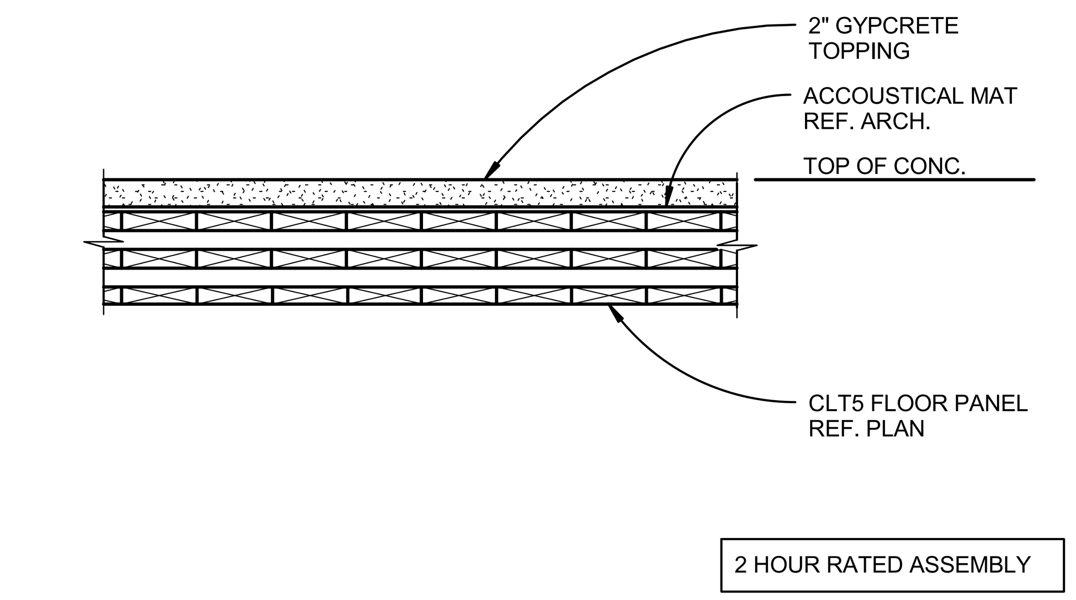
10 EXTERIOR SECTION AT BALCONY
1" = 1'-0" S102



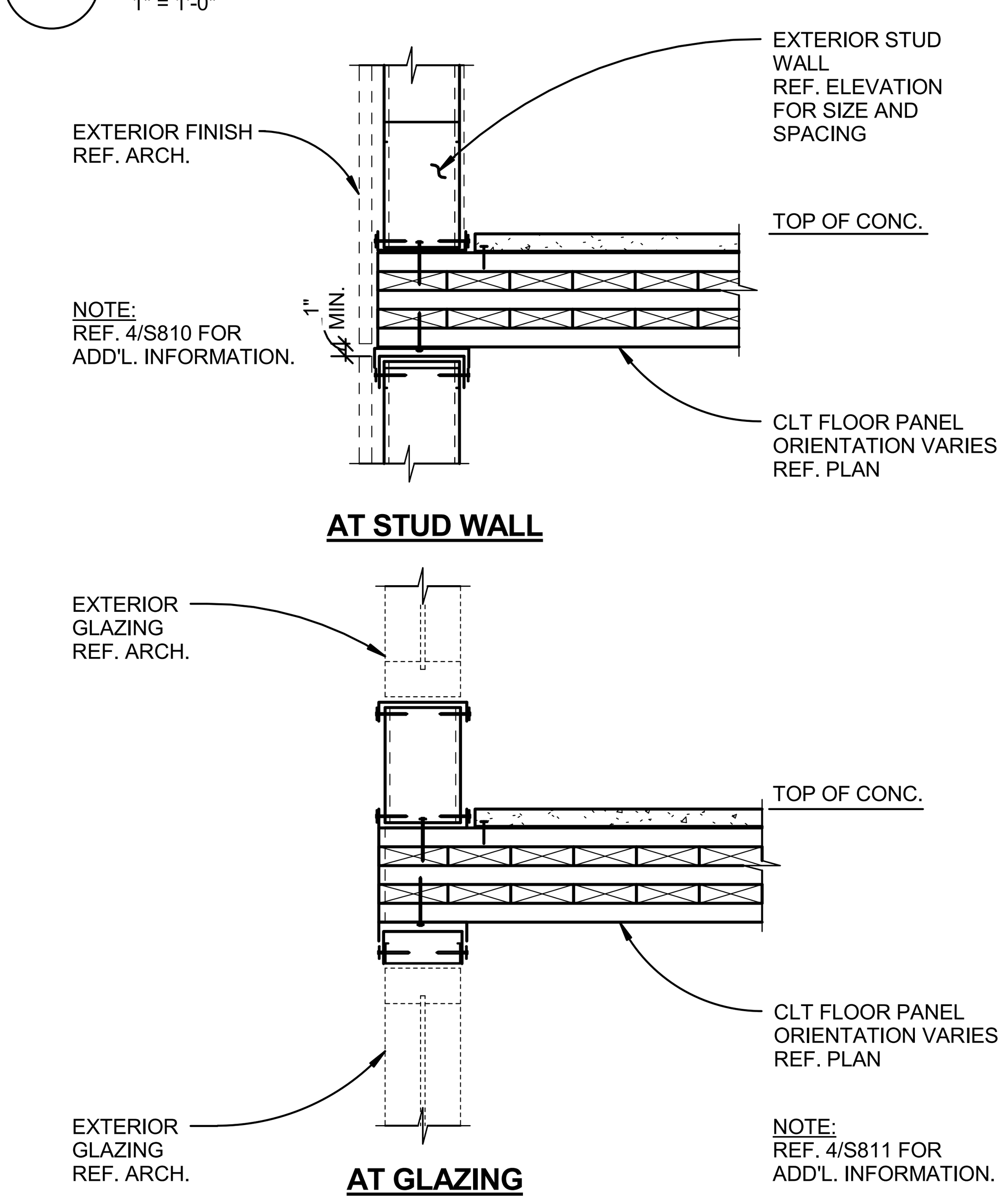
7 EXTERIOR SECTION AT CONC. WALL
1" = 1'-0"



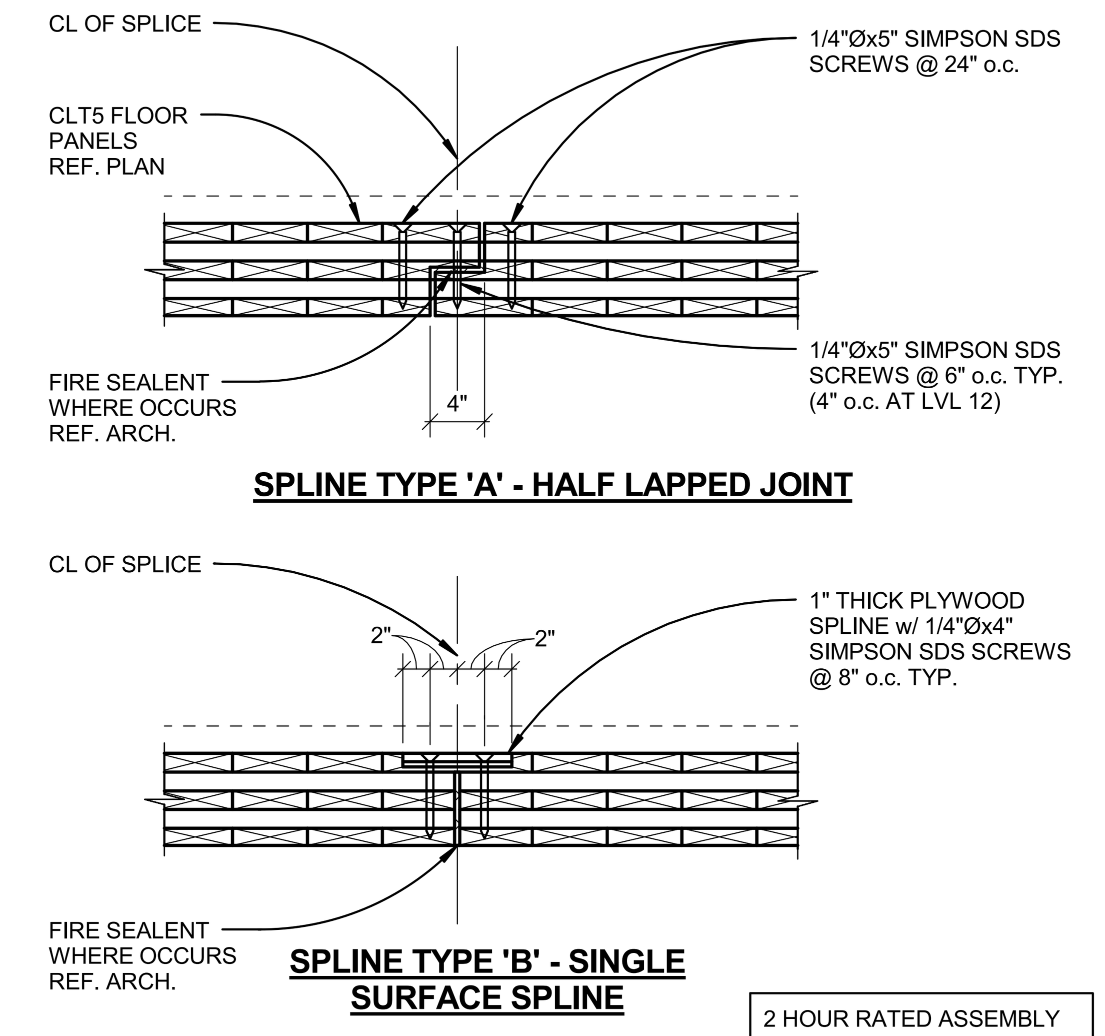
4 GRAVITY COLUMN JOINTS
1" = 1'-0"



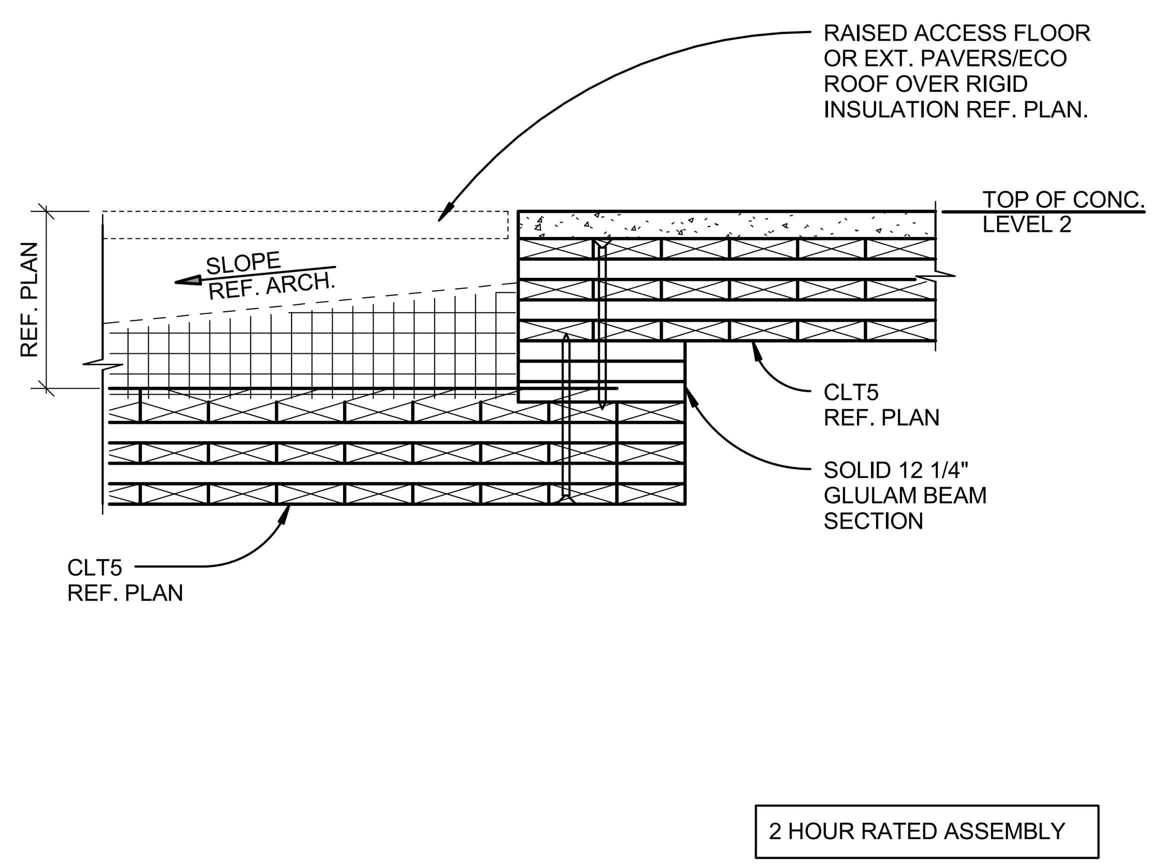
1 TYP. CLT FLOOR ASSEMBLY
1" = 1'-0"



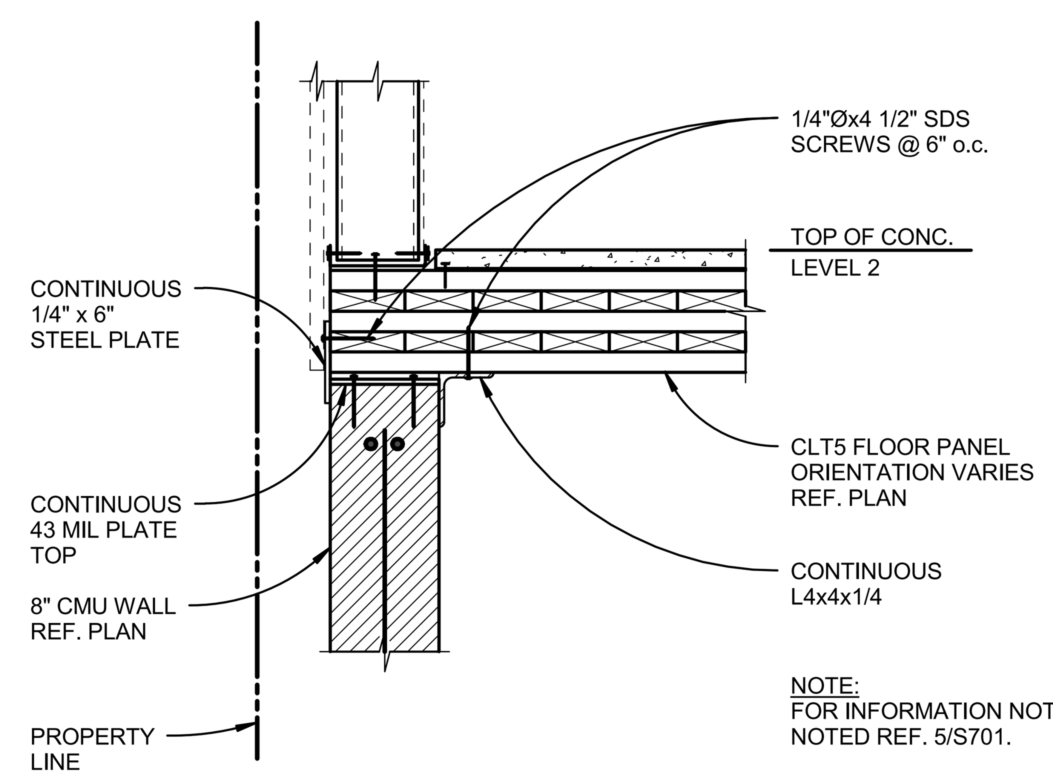
5 TYP. EXTERIOR WALL SECTION
1" = 1'-0" S102



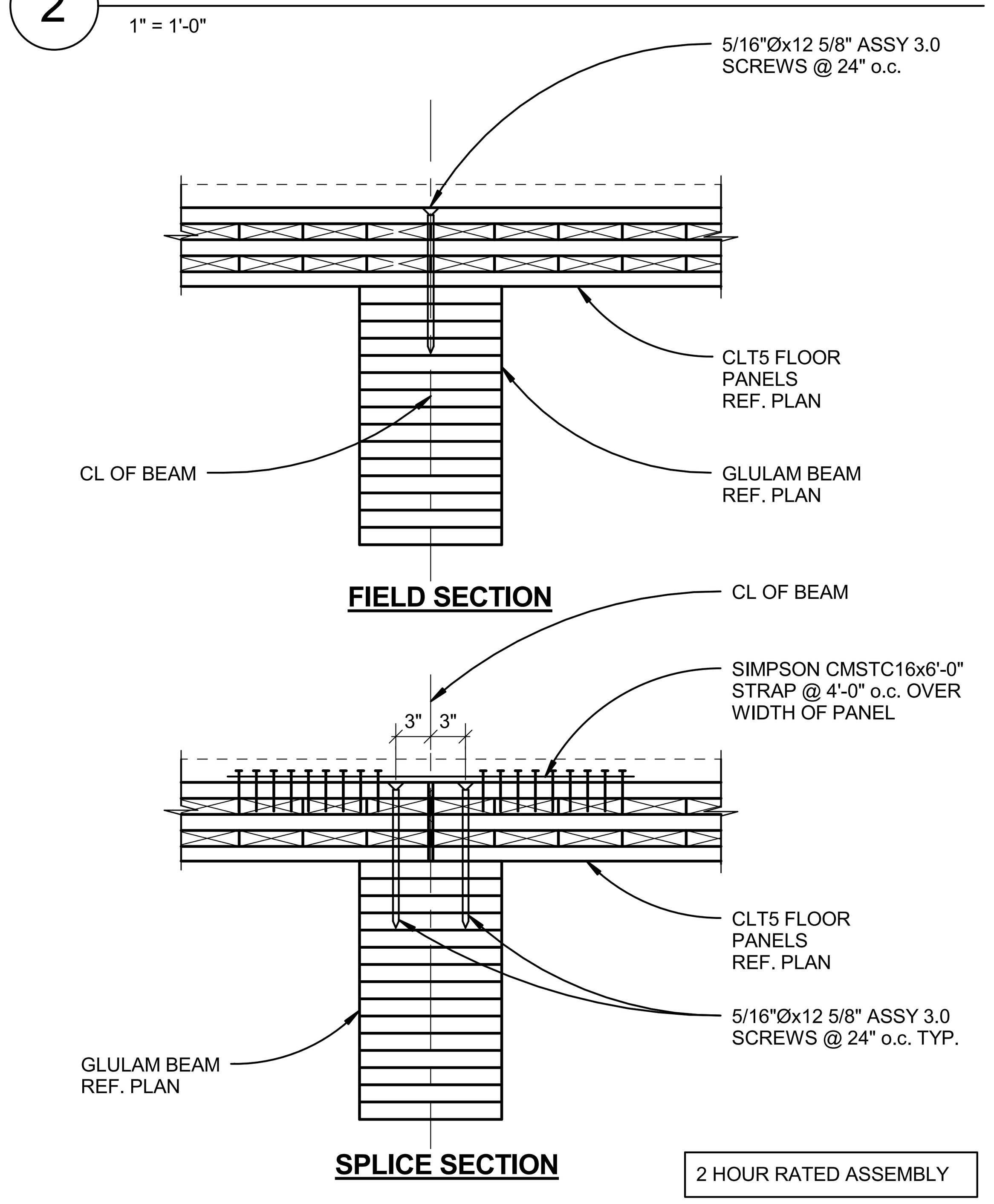
2 CLT5 SPLINE DETAIL
1" = 1'-0"



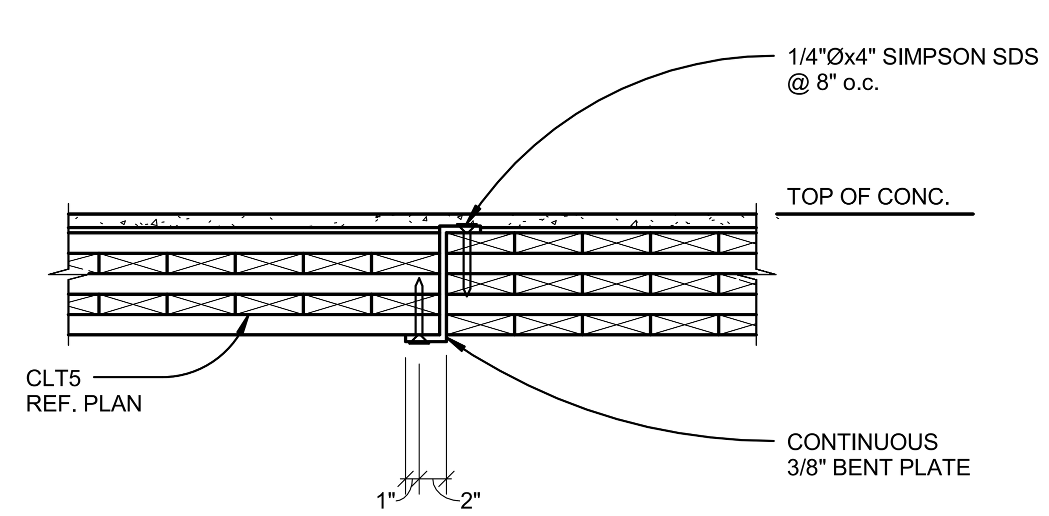
11 STEP IN CLT FLOOR PLATE
1" = 1'-0" S102



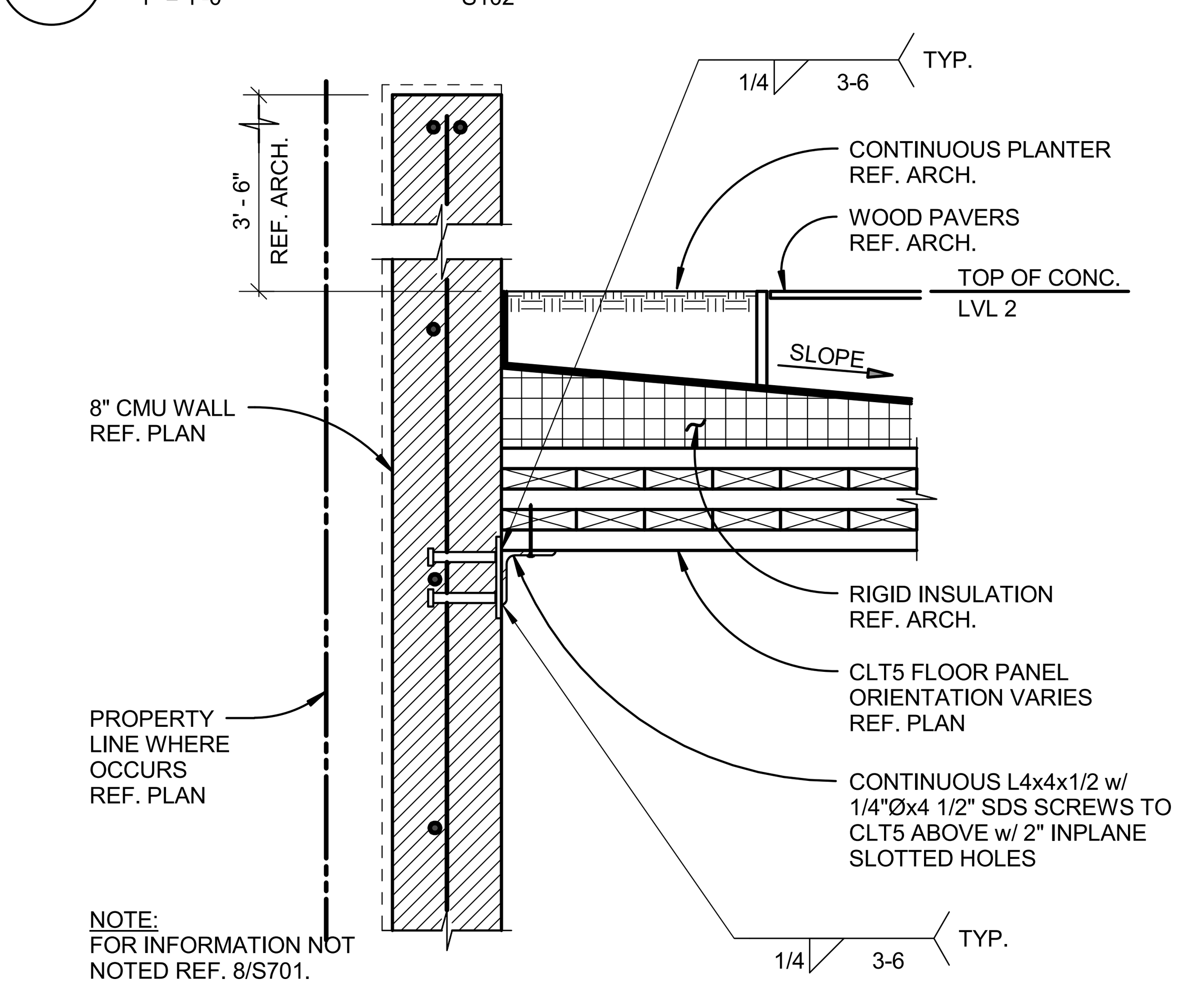
8 EXTERIOR SECTION AT CMU WALL
1" = 1'-0" S102



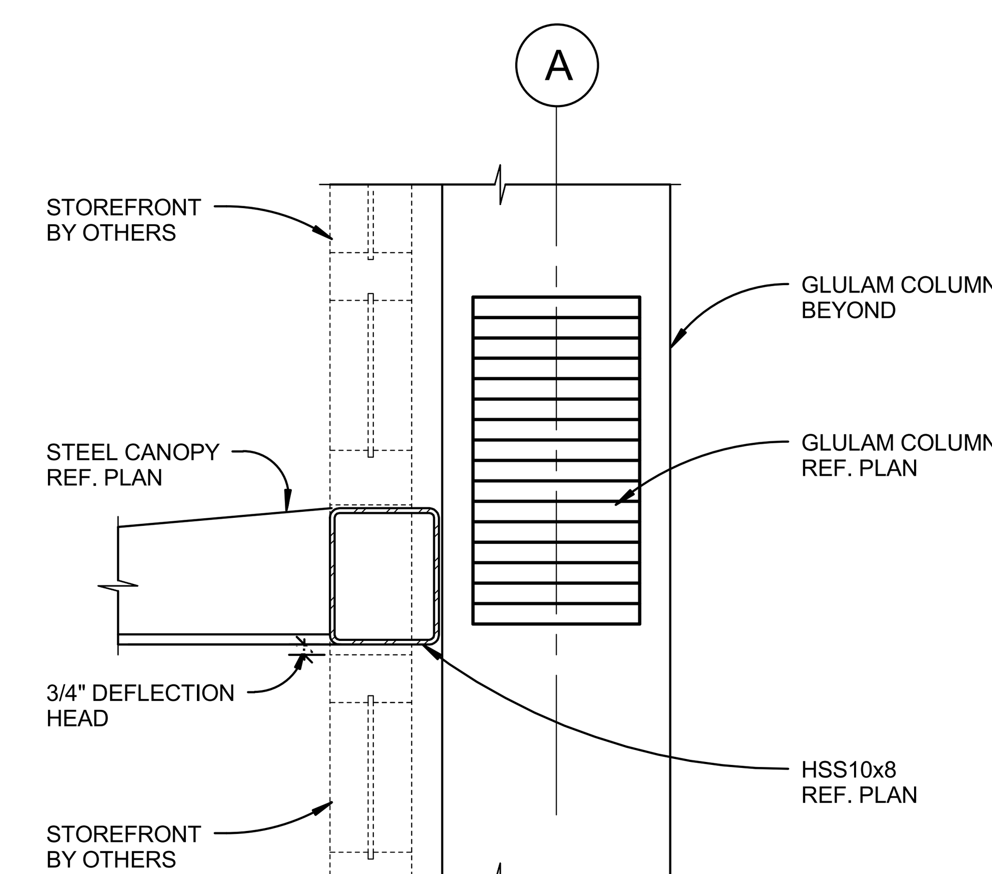
3 TYP. CLT5 TO GLB CONNECTIONS
1" = 1'-0"



12 CLT PANEL JOINT DETAIL
1" = 1'-0" S102



9 EXTERIOR SECTION AT LOW ROOF
1" = 1'-0"



6 EXTERIOR SECTION AT ENTRY
1" = 1'-0" S311

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

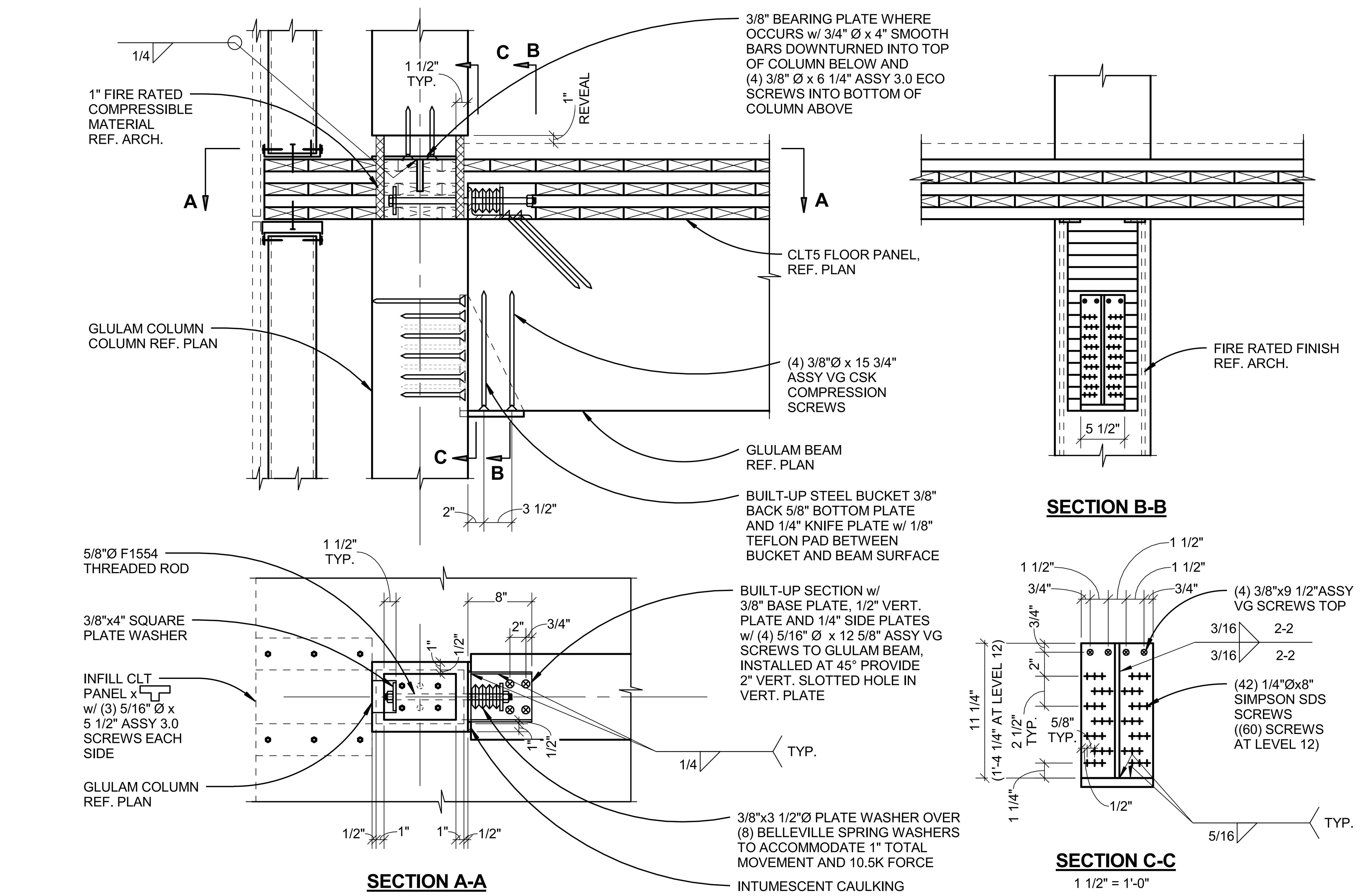
SCALE
AS INDICATED

SHEET TITLE
TIMBER FRAMING DETAILS

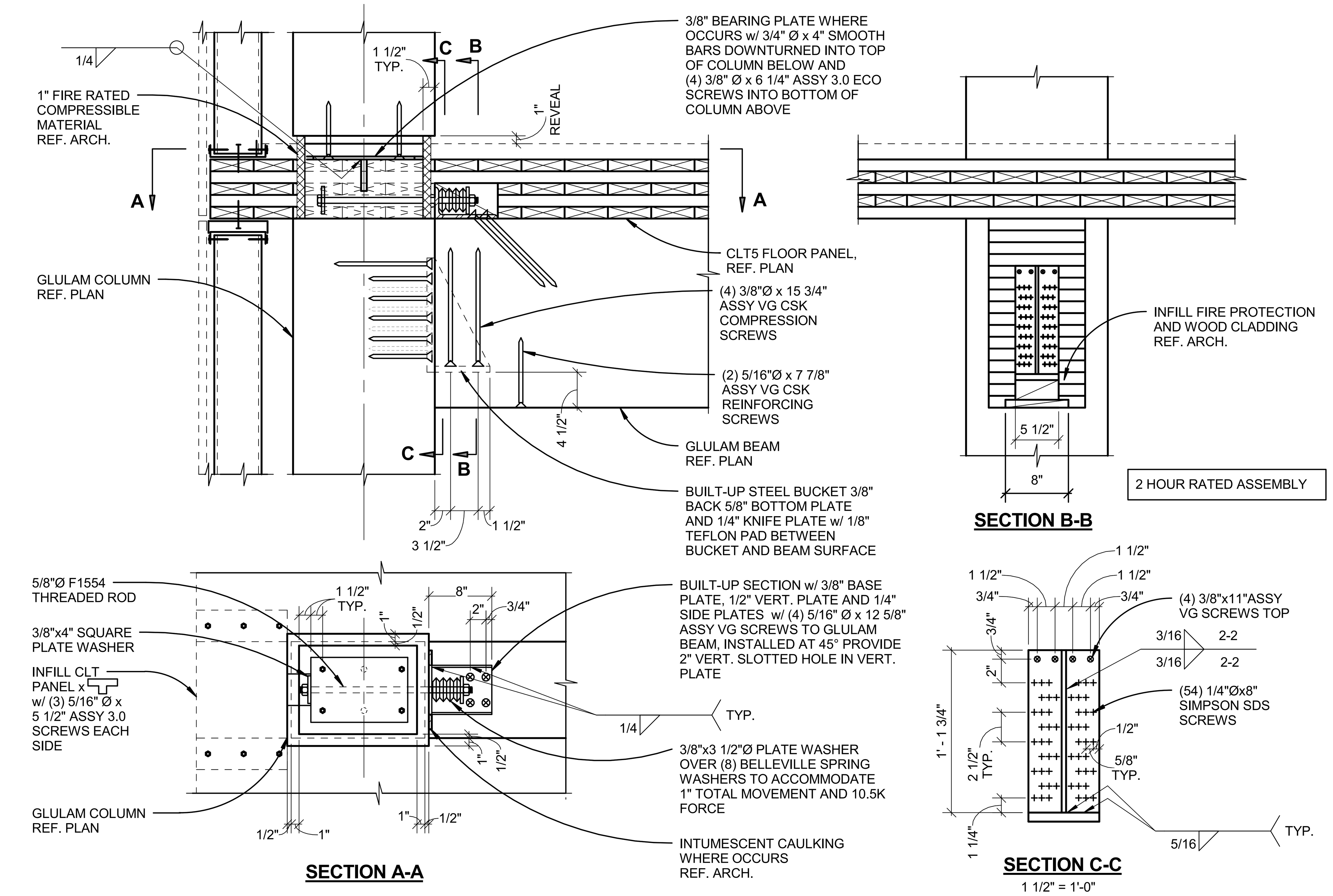
S701

GMP SET

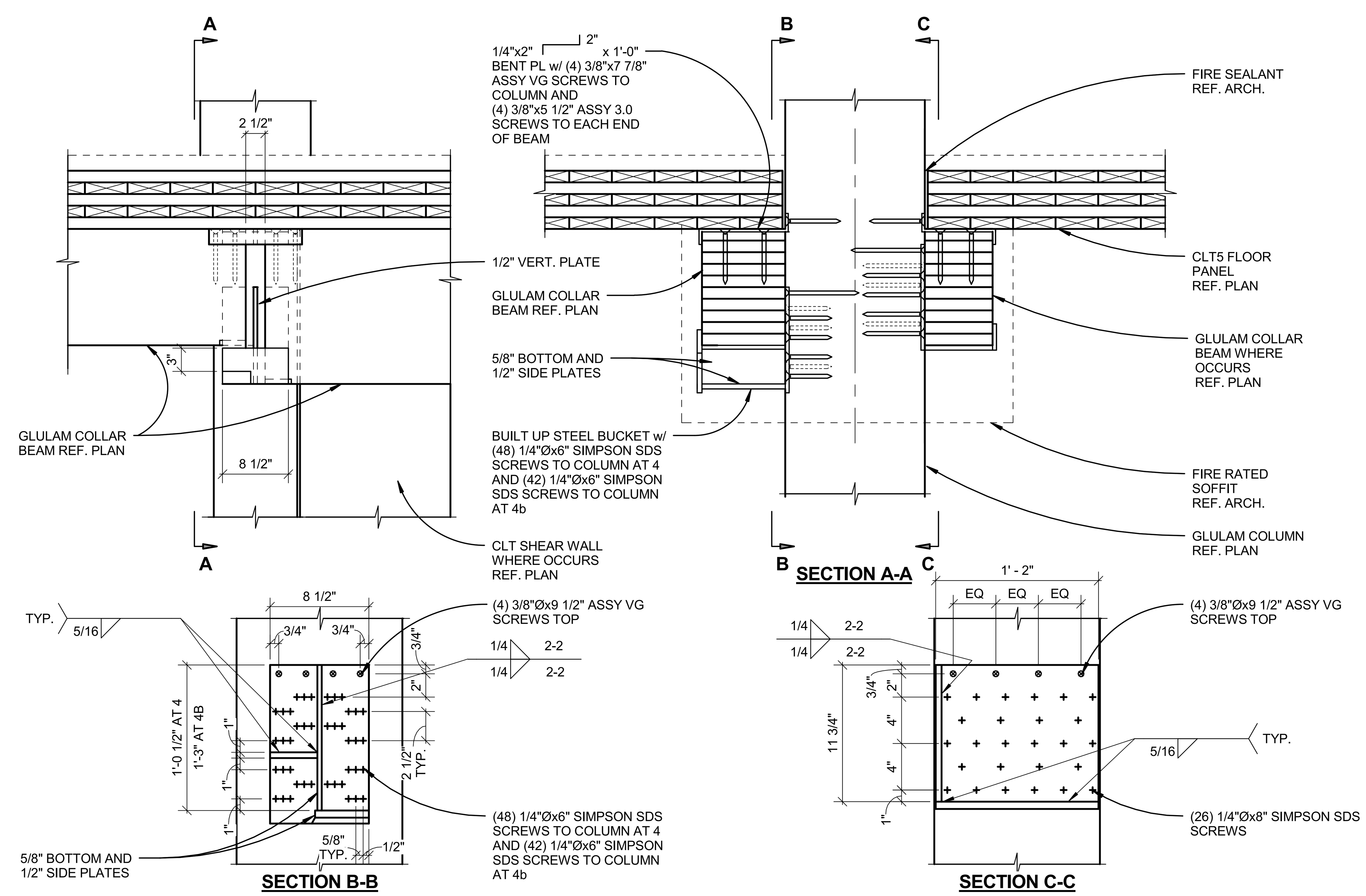
11/4/2016 9:54:57 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



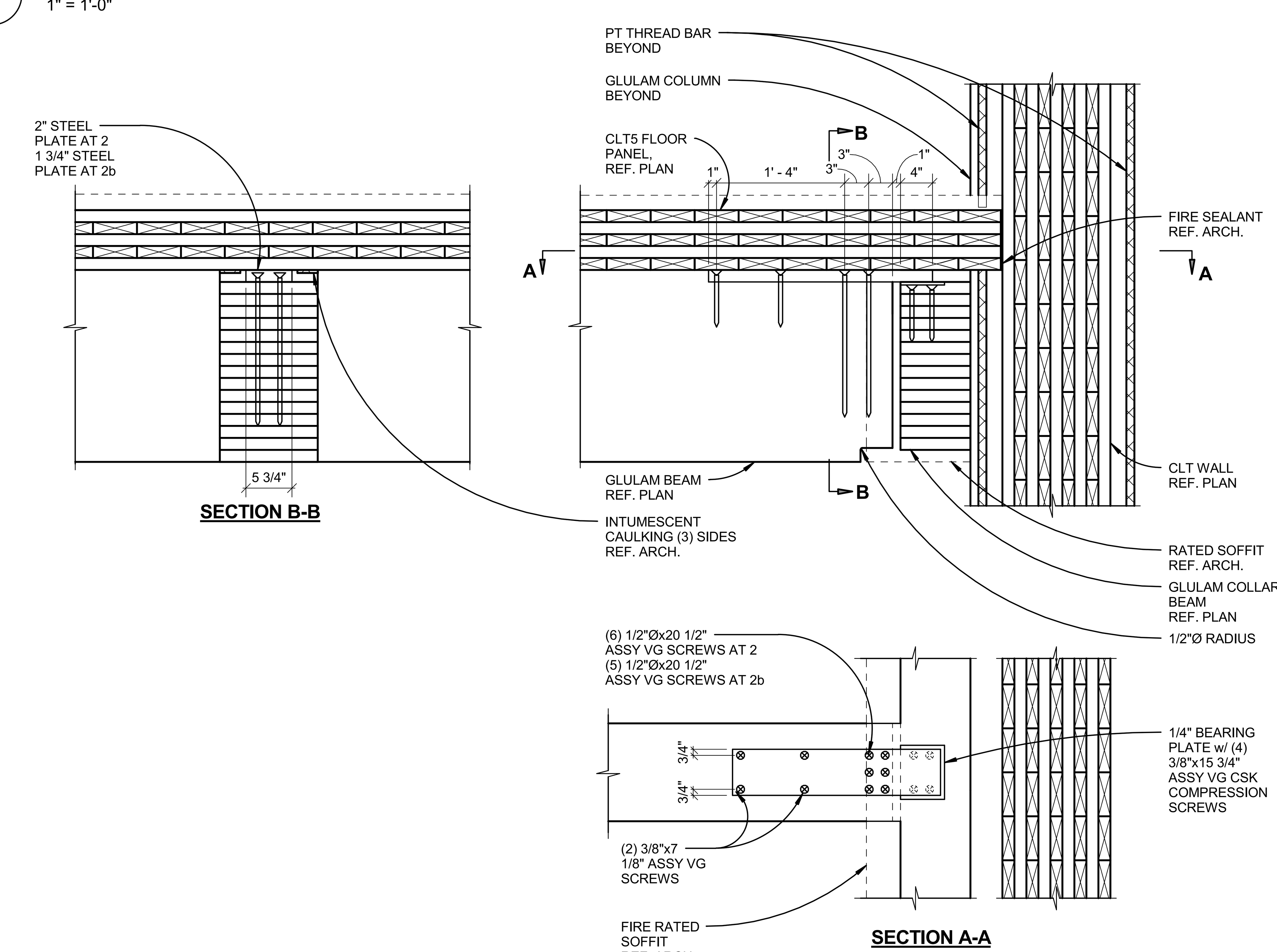
3 CLAD CONCEALED BEAM TO COLUMN CONNECTION - LEVEL 8 THRU 12
1" = 1'-0"



1 EXPOSED BEAM TO COLUMN CONNECTION - LEVEL 2 THRU 12
1" = 1'-0"



4 CLAD COLLAR BEAM TO COLUMN CONNECTION
1" = 1'-0" S102



2 CLAD BEAM TO BEAM CONNECTION
1" = 1'-0" S102

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

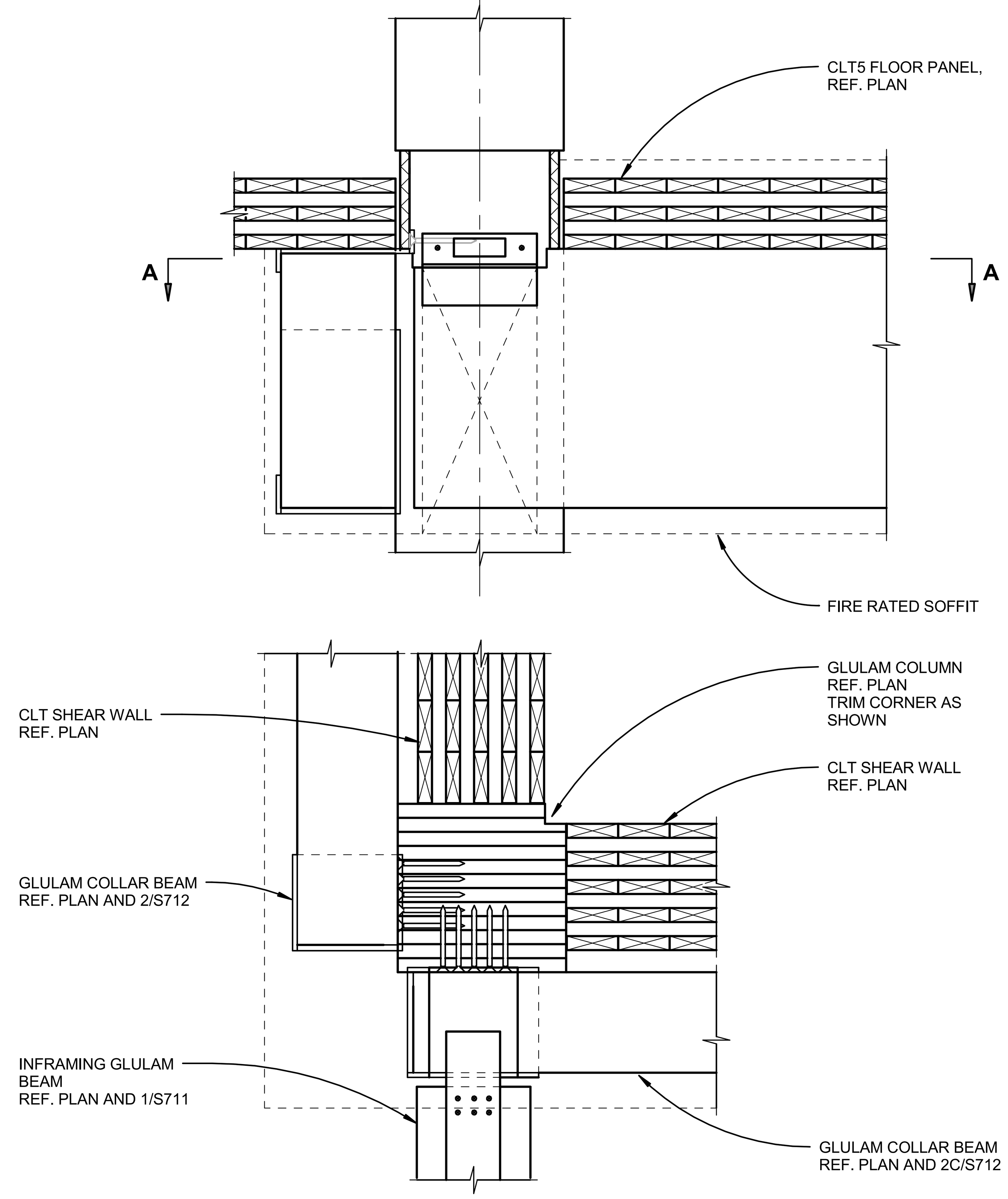
SCALE
AS INDICATED

SHEET TITLE
TIMBER FRAMING DETAILS

S711

GMP SET

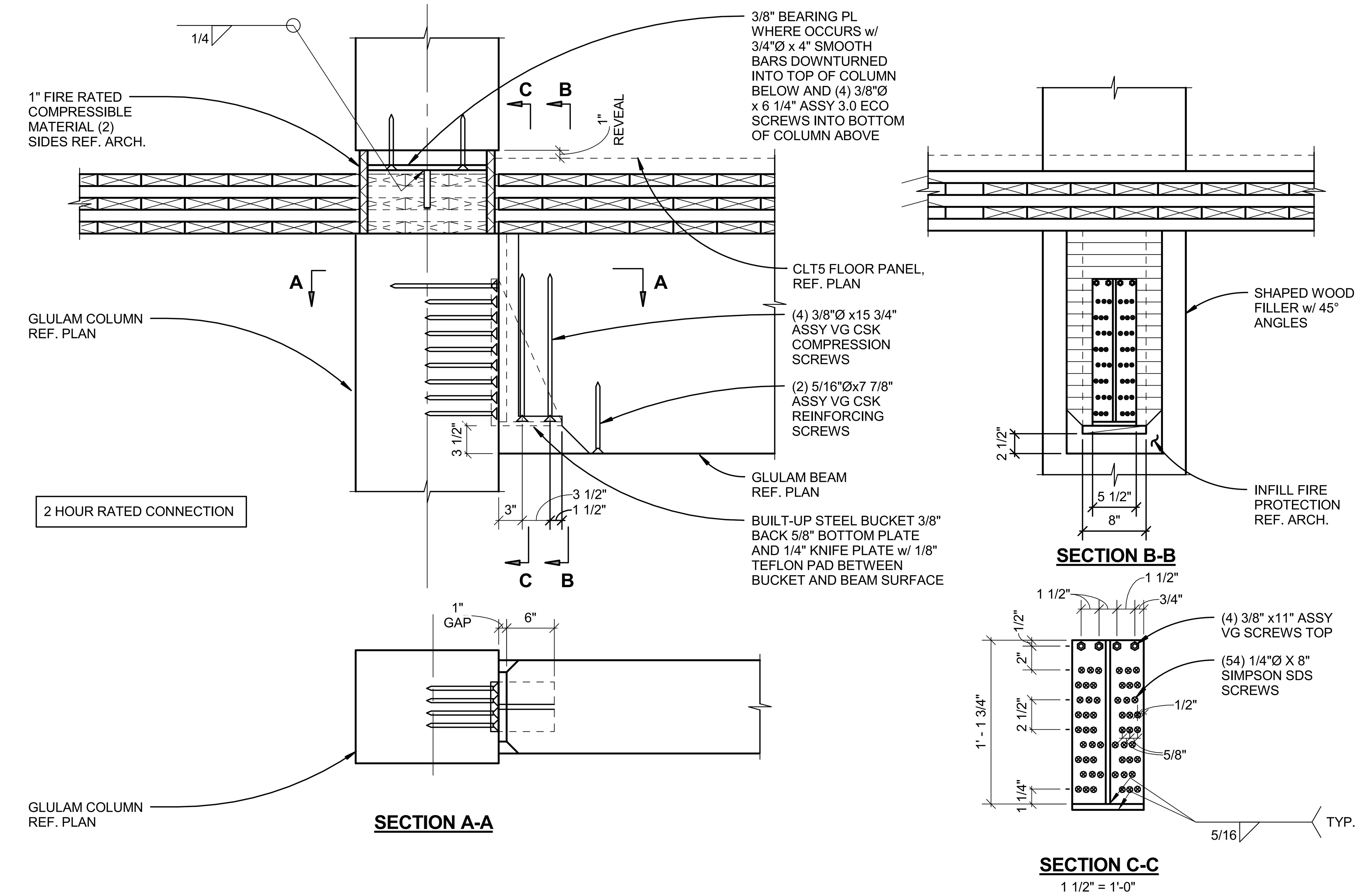
11/4/2016 9:54:58 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



SECTION A-A

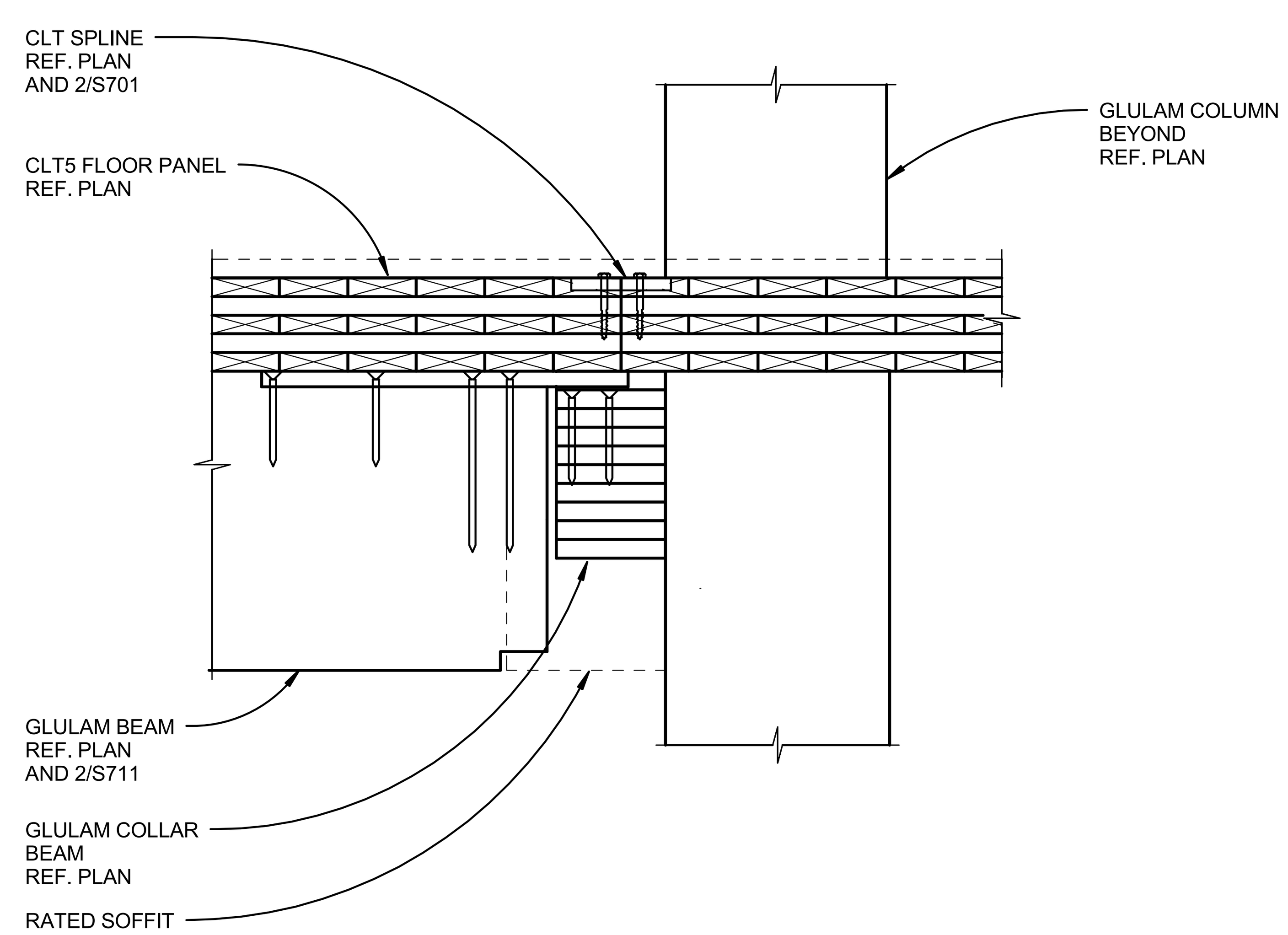
3 CLAD GLULAM COLLAR BEAM TO COLLAR BEAM DETAIL

1" = 1'-0"



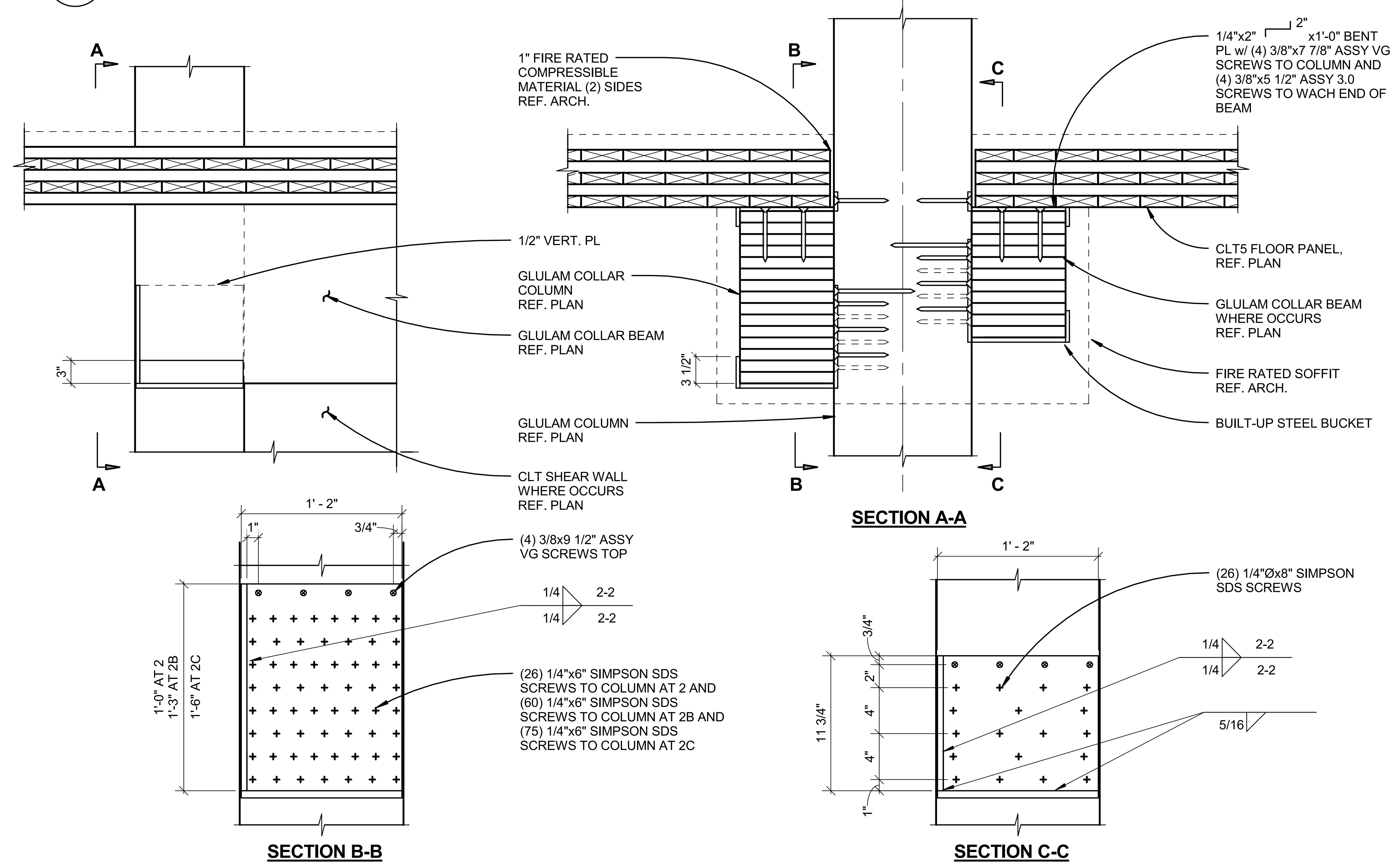
1 EXPOSED BEAM TO COLUMN CONNECTION-LEVEL 2 THRU 12

1" = 1'-0"



4 CLAD BEAM TO BEAM CONNECTION

1" = 1'-0"



2 CLAD COLLAR BEAM TO COLUMN CONNECTION

1" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

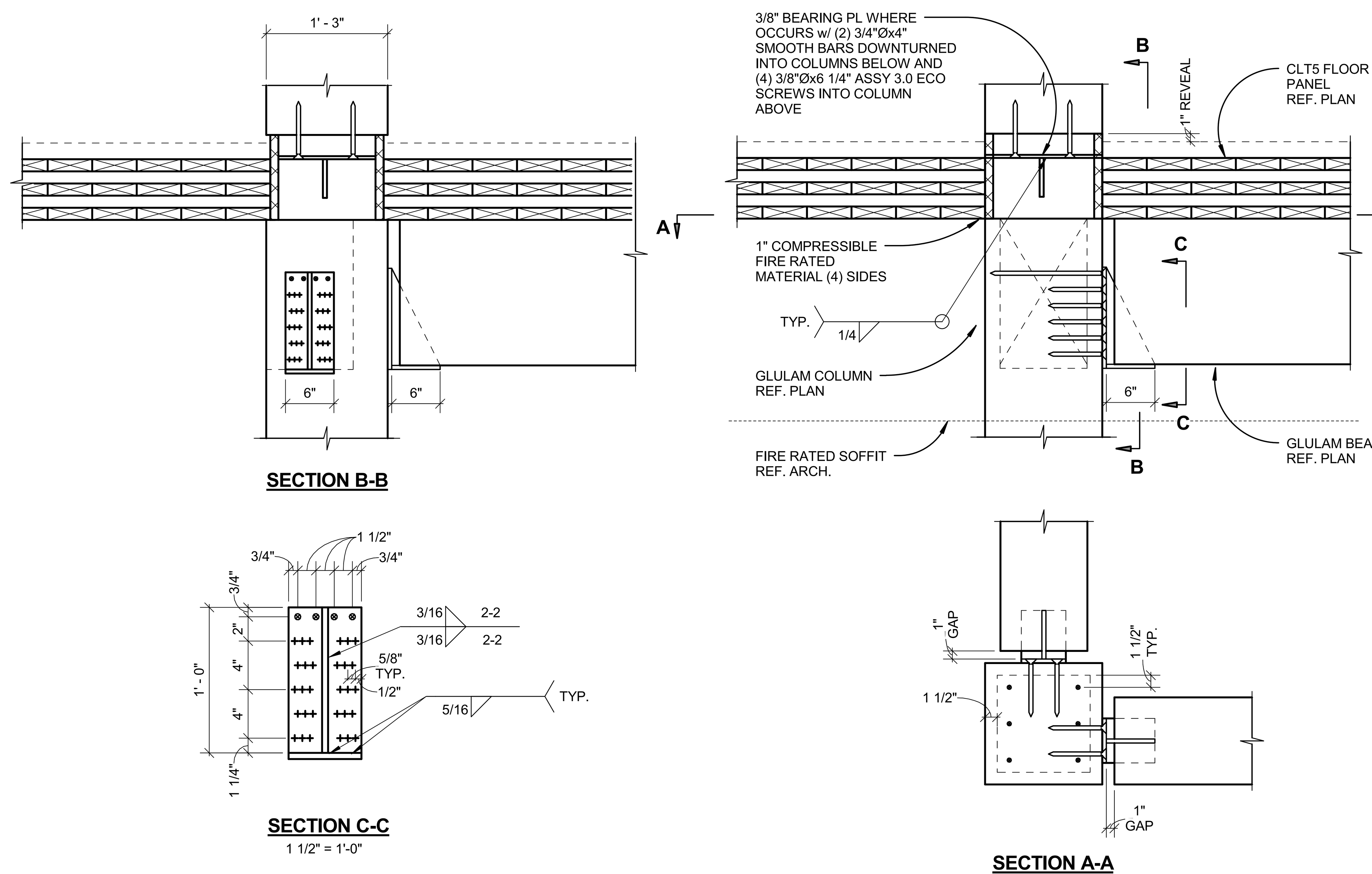
SCALE
AS INDICATED

SHEET TITLE
TIMBER FRAMING DETAILS

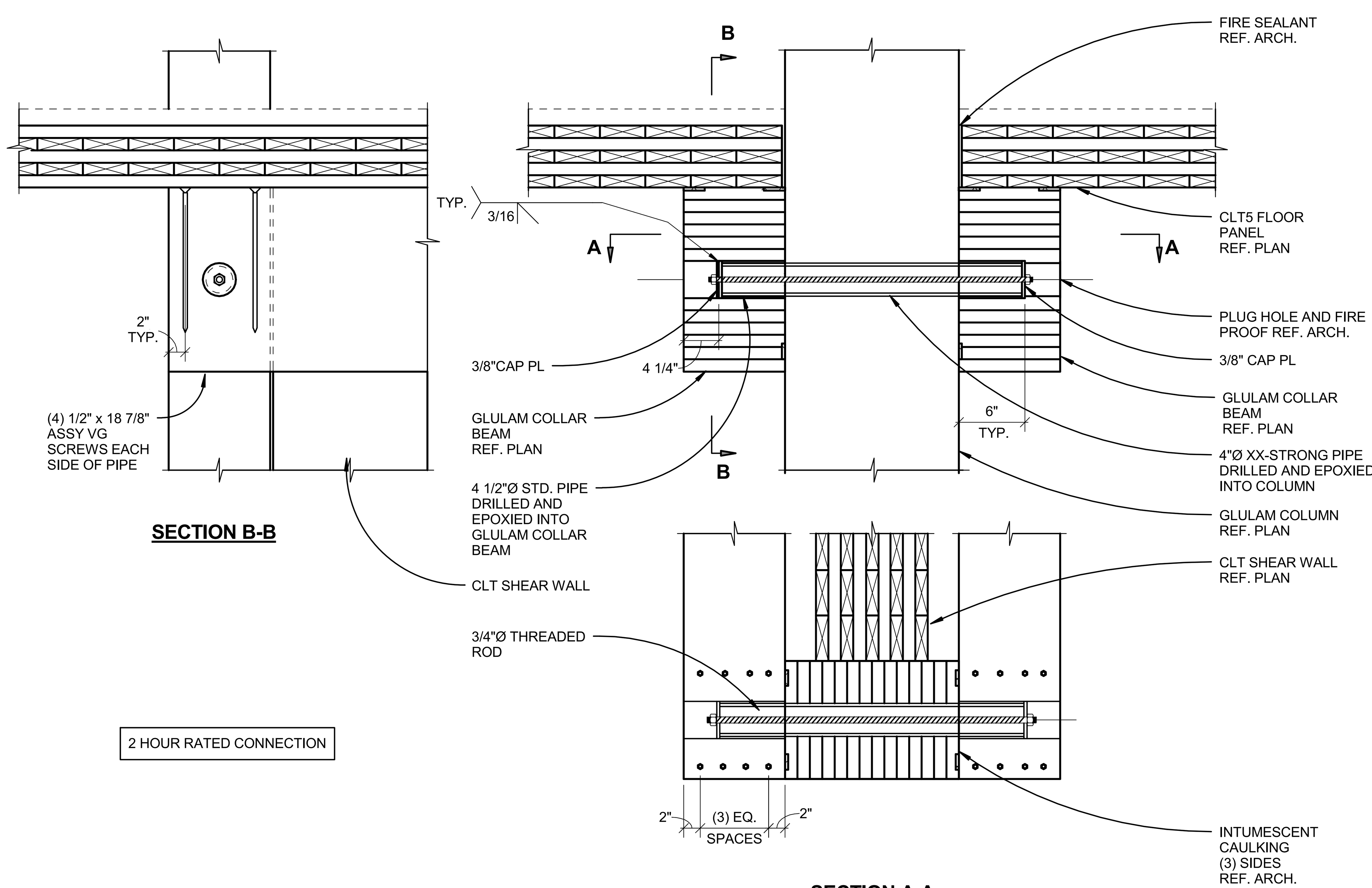
S712

GMP SET

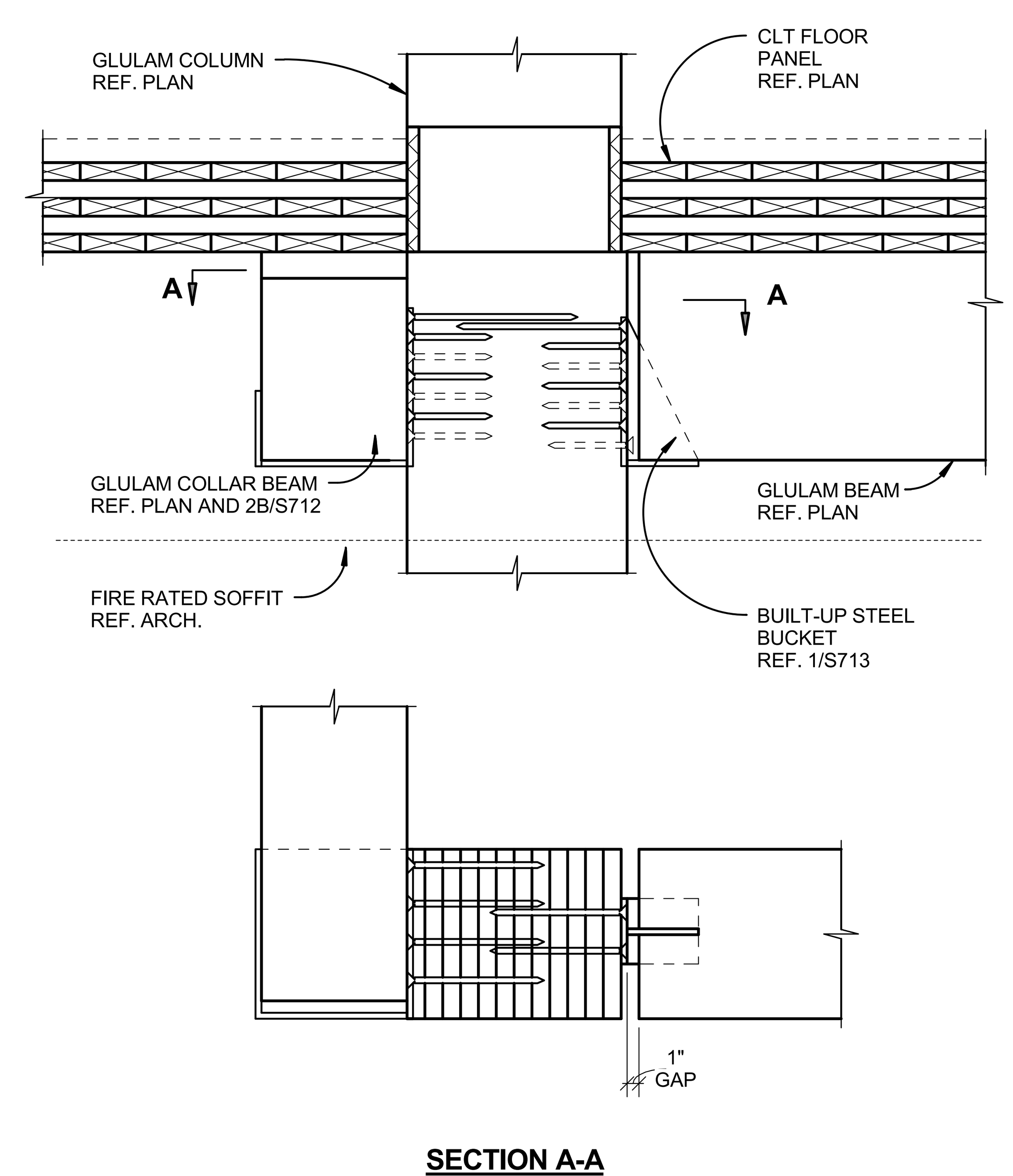
11/4/2016 9:54:59 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 CLAD BEAM TO COLUMN CONNECTION
1" = 1'-0" S102



3 EXPOSED COLLAR BEAM TO COLUMN DETAIL
1" = 1'-0" S102



2 BEAM TO COLUMN DETAIL
1" = 1'-0" S102

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

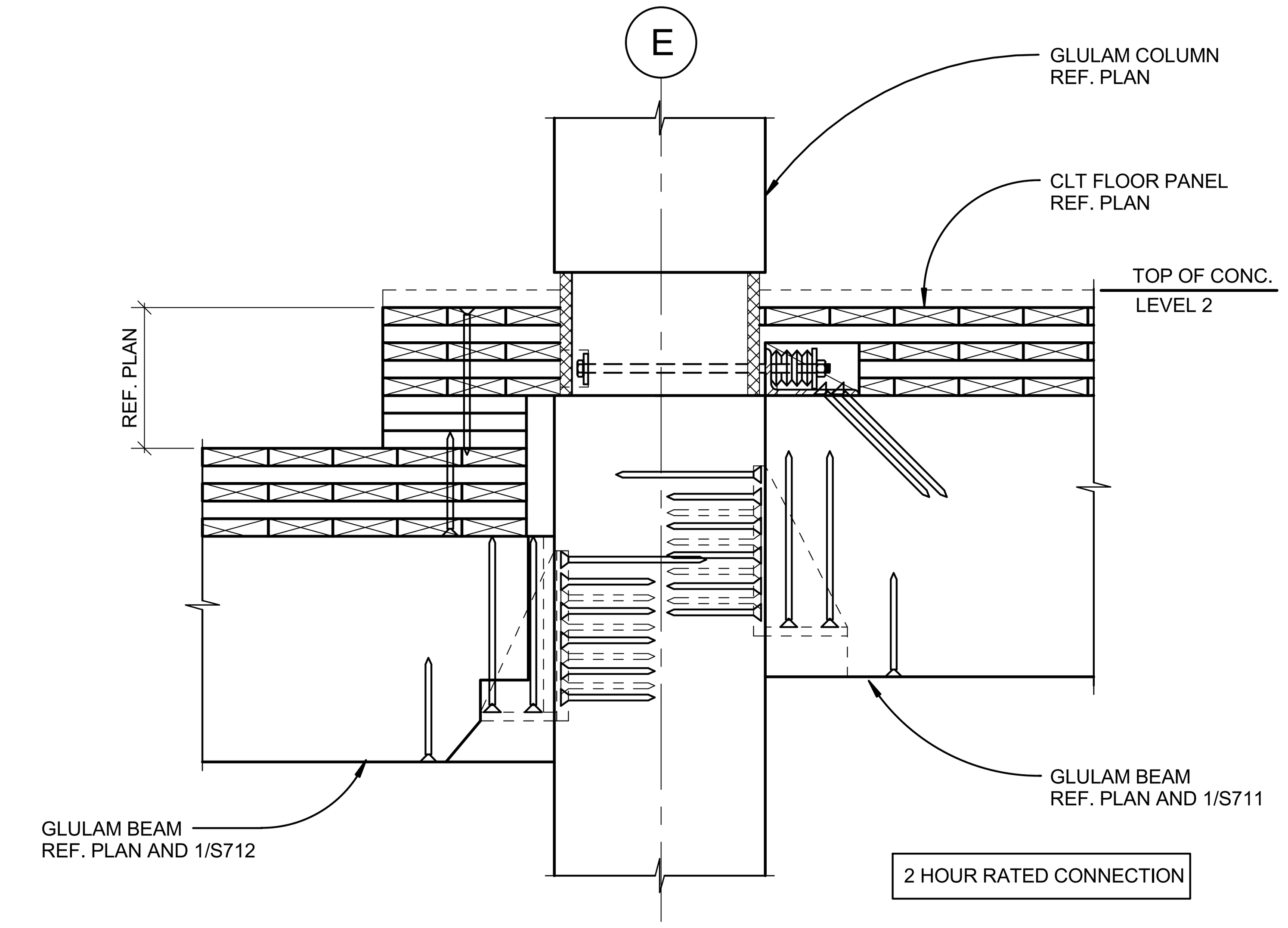
SCALE
AS INDICATED

SHEET TITLE
TIMBER RAMING DETAILS

S713

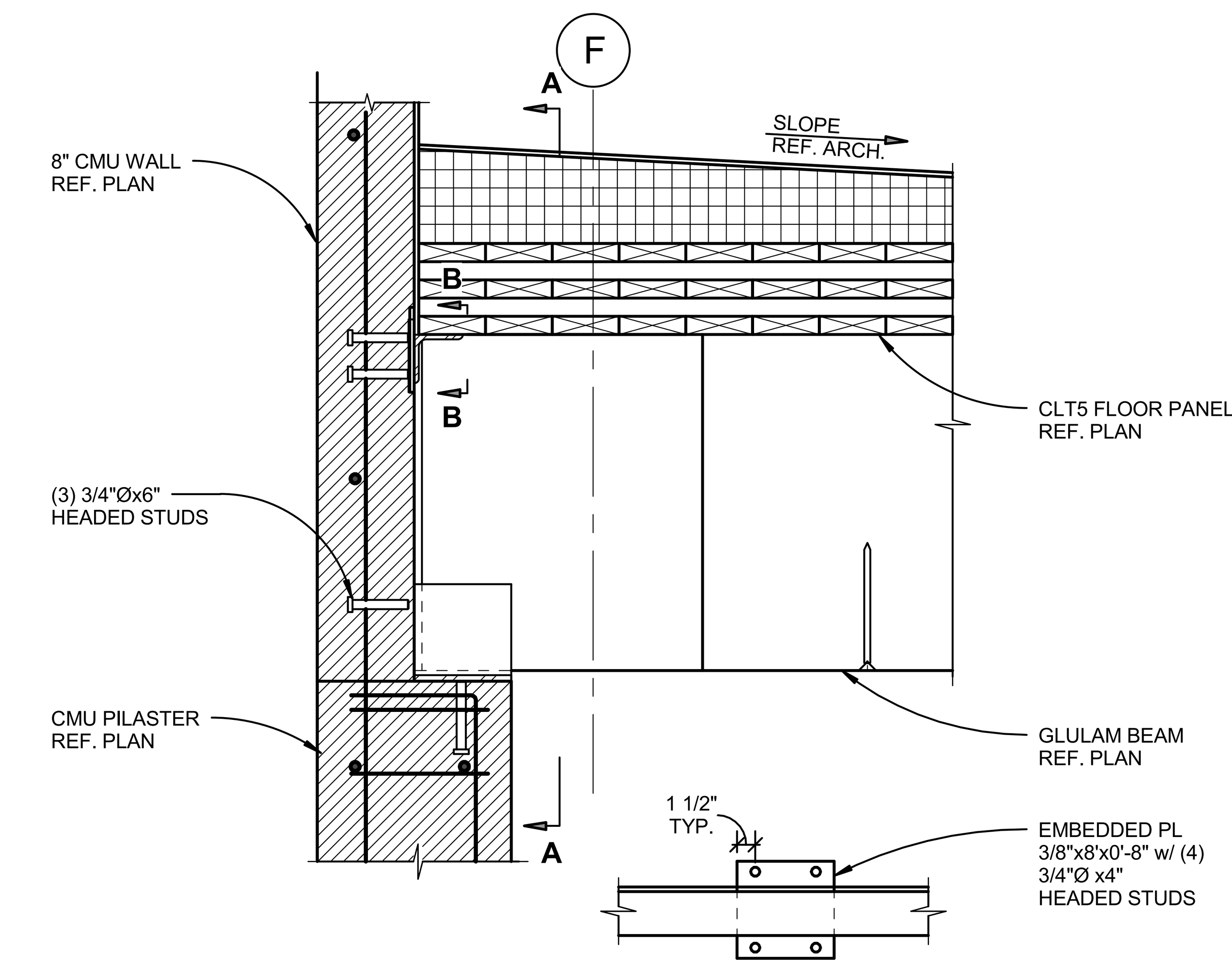
GMP SET

11/4/2016 9:55:00 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

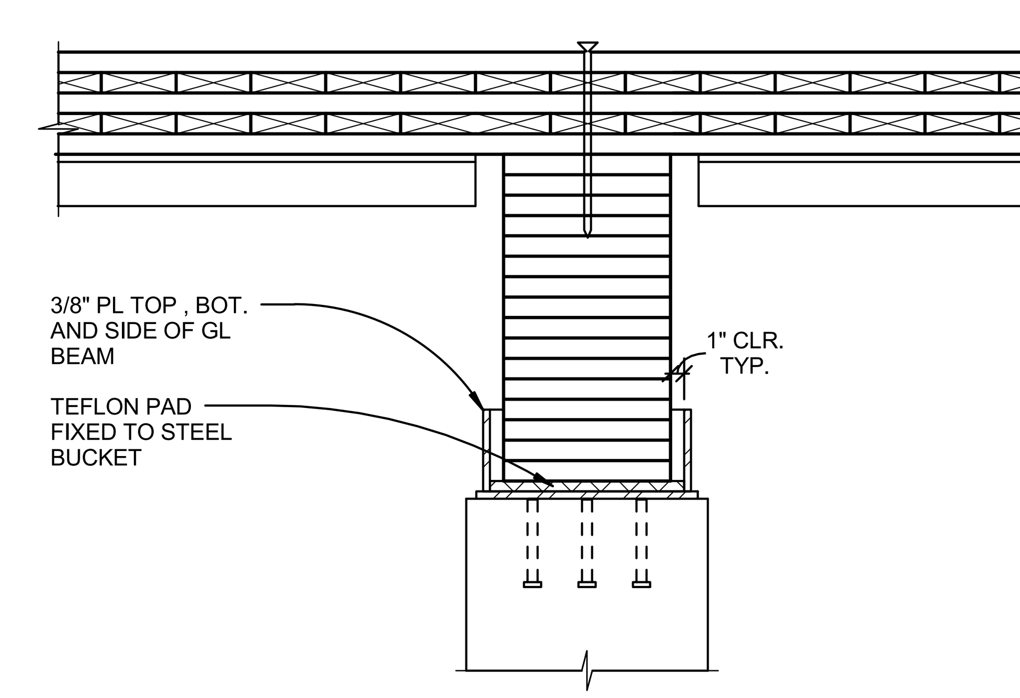


1 EXPOSED BEAM TO COLUMN DETAIL AT STEP

1" = 1'-0" S102



SECTION B-B



2 CLAD BEAM TO CMU PILASTER

1" = 1'-0" S102

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

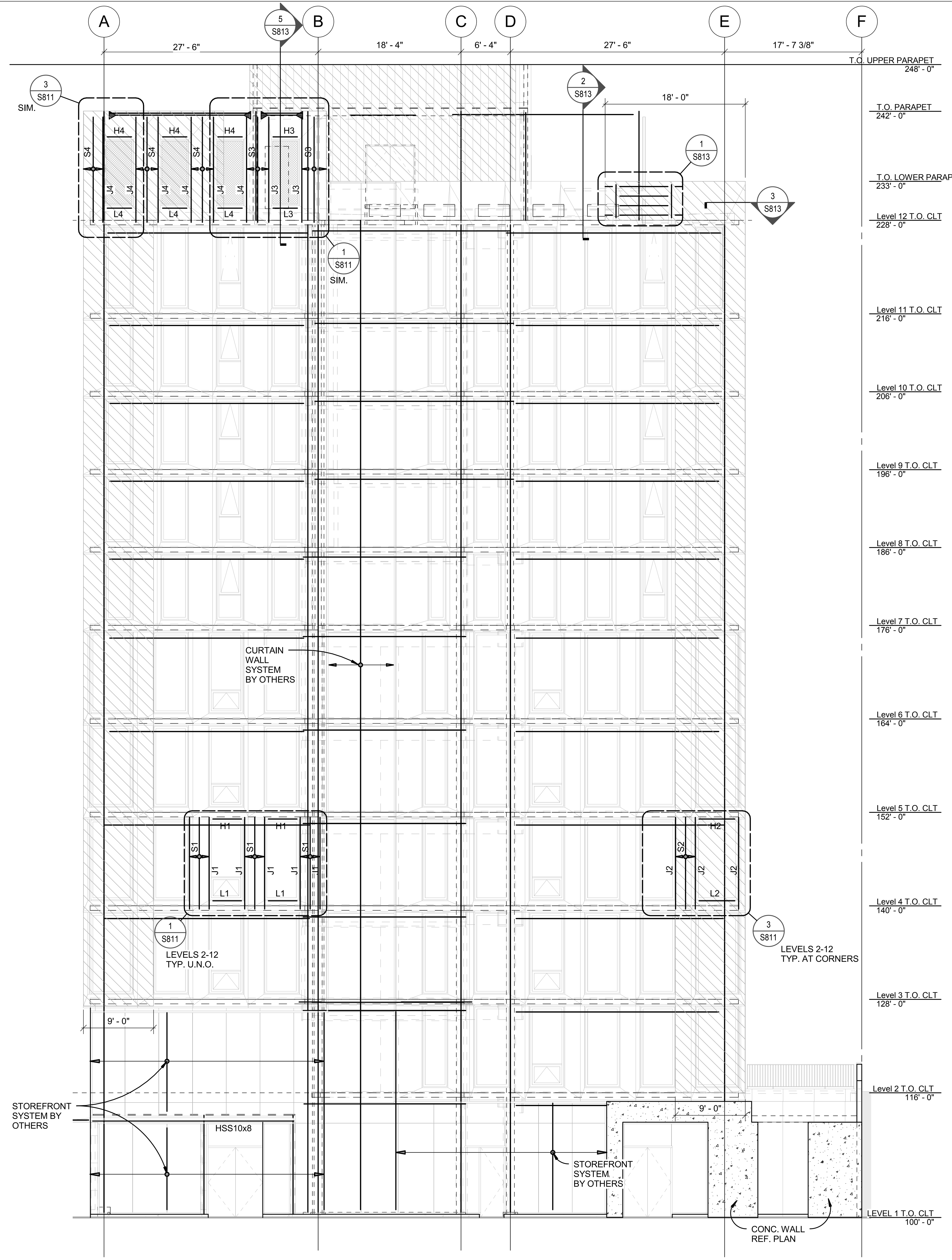
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
TIMBER FRAMING DETAILS

S714

GMP SET



1 WEST ELEVATION

1/8" = 1'-0"

LEGEND

- WIND CORNER ZONE
- S1 METAL STUD MARK REF. SCHEDULE
- H1 JAMB, HEADER AND SILL MARK REF. SCHEDULE

NOTES:

1. FOR METAL STUD, HEADER, JAMB AND SILL SCHEDULES REF. 2/S811.
2. PROVIDE BLOCKING AT THIRD POINTS REF. 9/S811.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

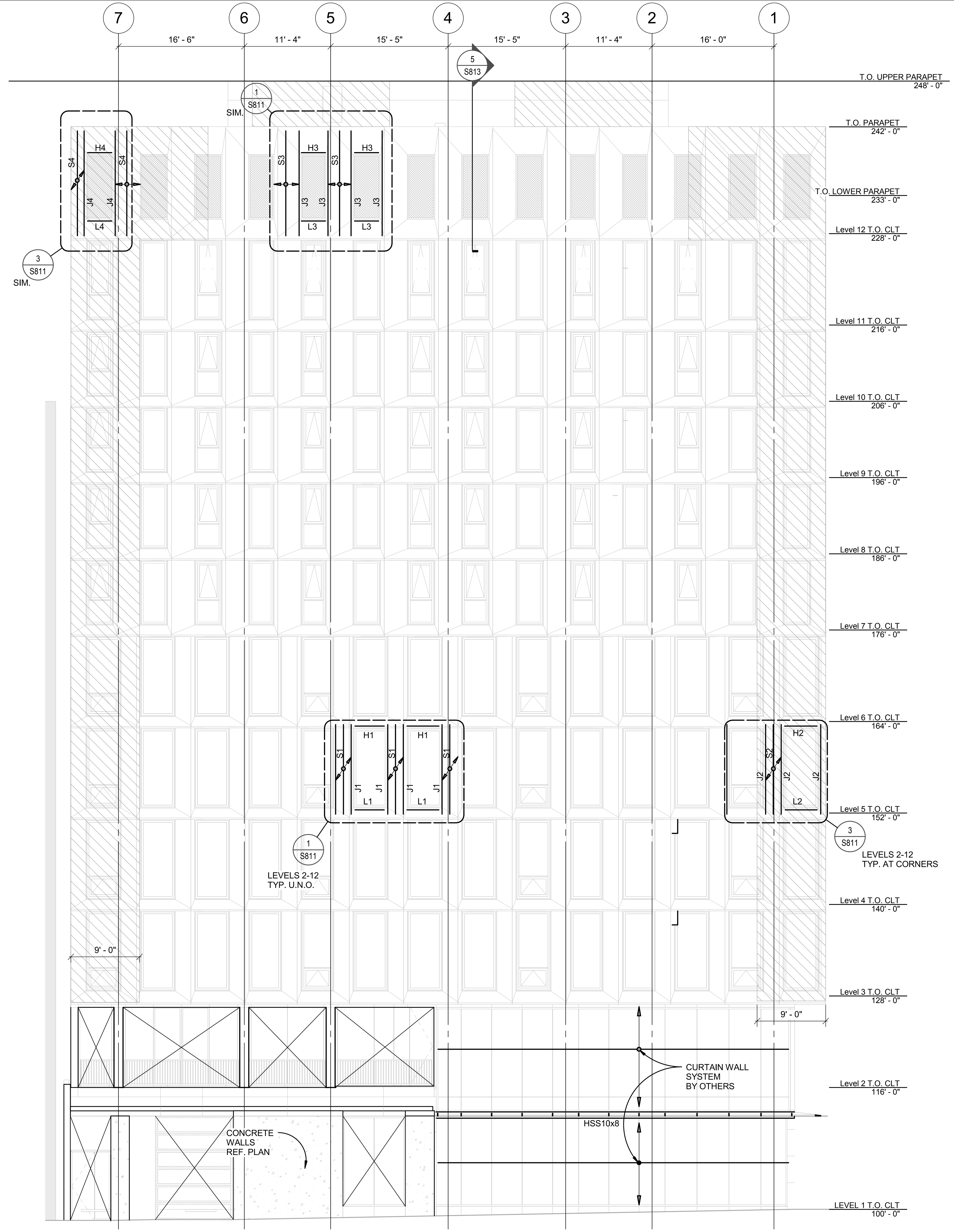
SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL ELEVATIONS

S801

GMP SET

11/4/2016 9:55:03 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



1 NORTH ELEVATION

1/8" = 1'-0"

LEGEND

(hatch)	WIND CORNER ZONE
S1	METAL STUD MARK REF. SCHEDULE
H1	JAMB, HEADER AND SILL MARK REF. SCHEDULE

NOTES:

1. FOR METAL STUD, HEADER, JAMB AND SILL SCHEDULES REF. 2/S811.
2. PROVIDE BLOCKING AT THIRD POINTS REF. 9/S811.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

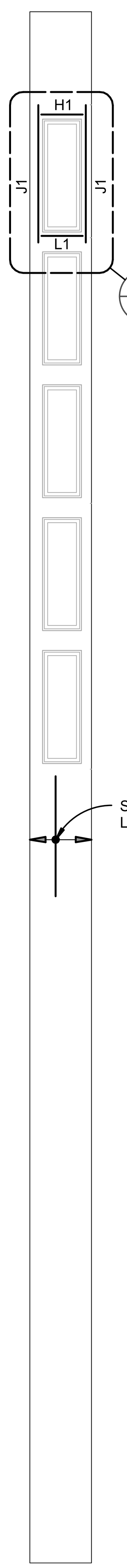
SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL ELEVATIONS

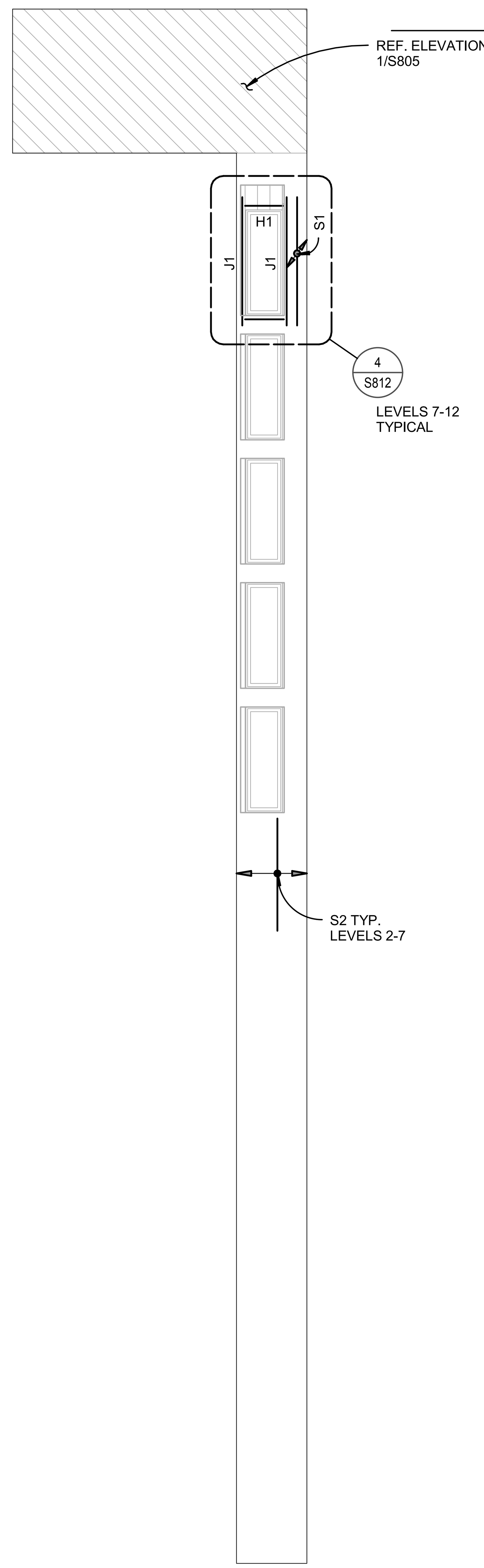
S802

GMP SET

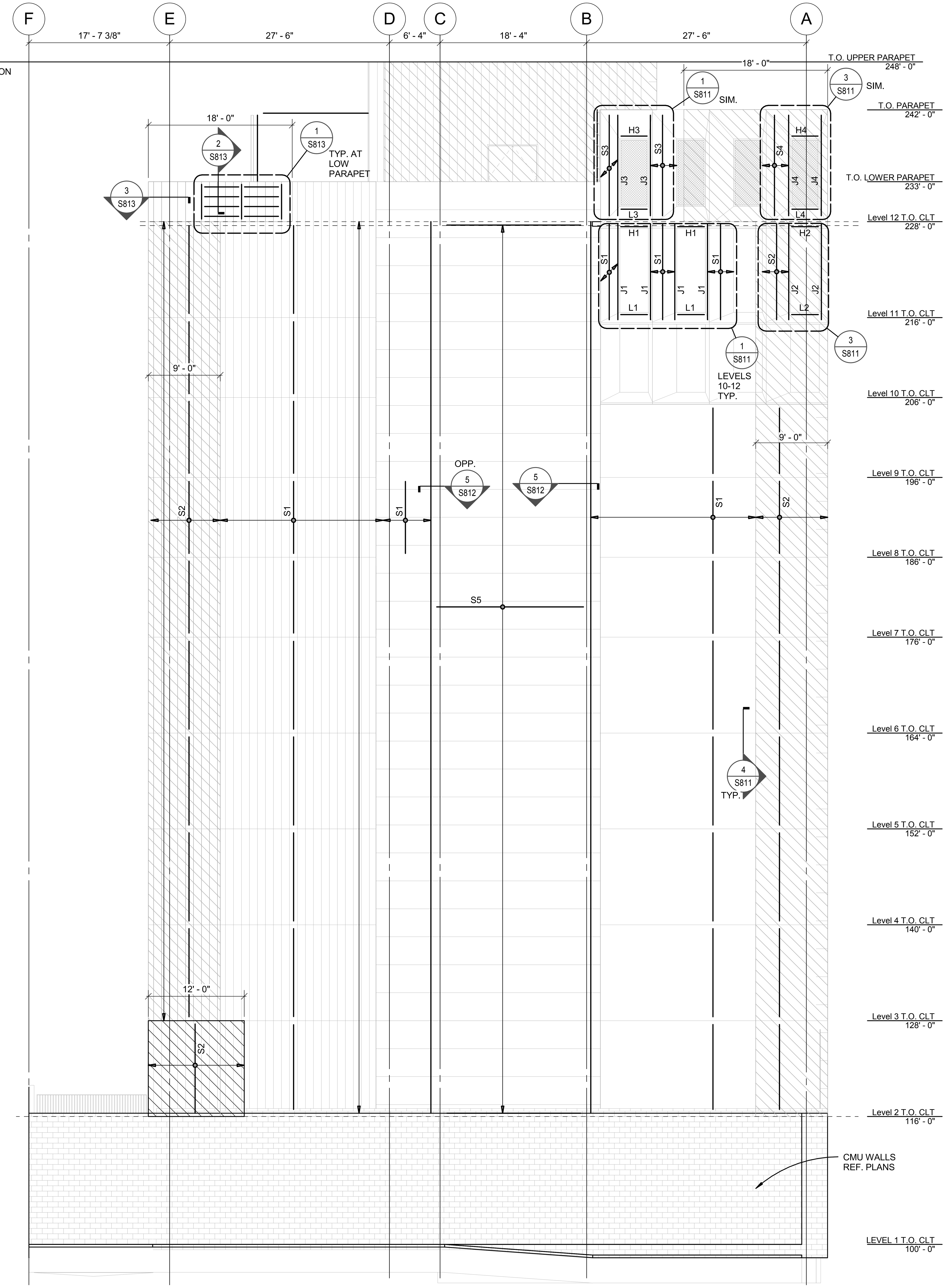
11/4/2016 9:55:04 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



3 NORTH ELEVATION
1/8" = 1'-0"



2 SOUTH ELEVATION
1/8" = 1'-0"



1 EAST ELEVATION
1/8" = 1'-0"

LEGEND

(hatch)	WIND CORNER ZONE
S1	METAL STUD MARK REF. SCHEDULE
H1	JAMB, HEADER AND SILL MARK REF. SCHEDULE

NOTES:

1. FOR METAL STUD, HEADER, JAMB AND SILL SCHEDULES REF. 2/S811.
2. PROVIDE BLOCKING AT THIRD POINTS REF. 9/S811.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

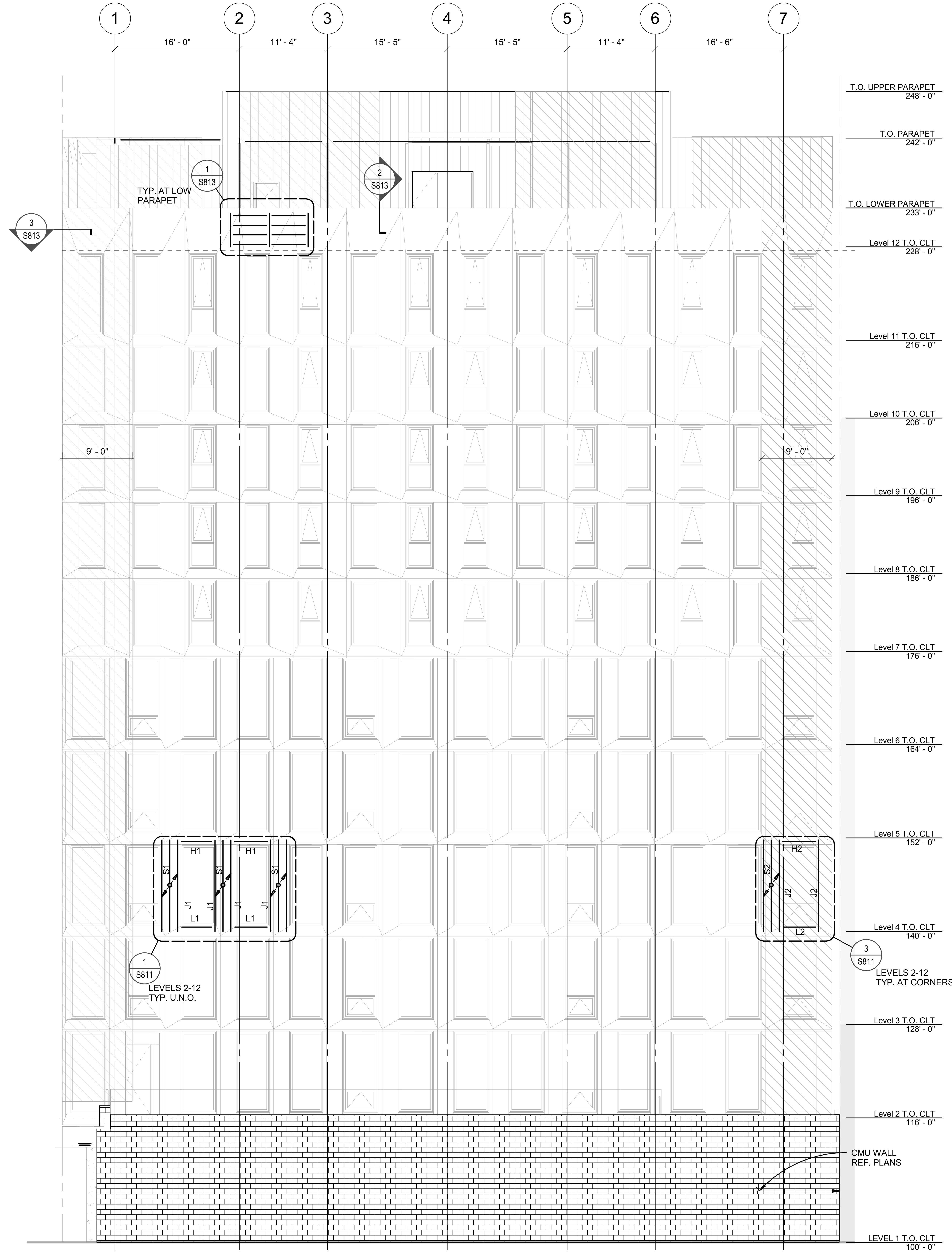
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL ELEVATIONS

S803

GMP SET



1 SOUTH ELEVATION

1/8" = 1'-0"

LEGEND

WIND CORNER ZONE

S1 METAL STUD MARK REF. SCHEDULE

H1 JAMB, HEADER AND SILL MARK REF. SCHEDULE

NOTES:

1. FOR METAL STUD, HEADER, JAMB AND SILL SCHEDULES REF. 2/S811.
2. PROVIDE BLOCKING AT THIRD POINTS REF. 9/S811.

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

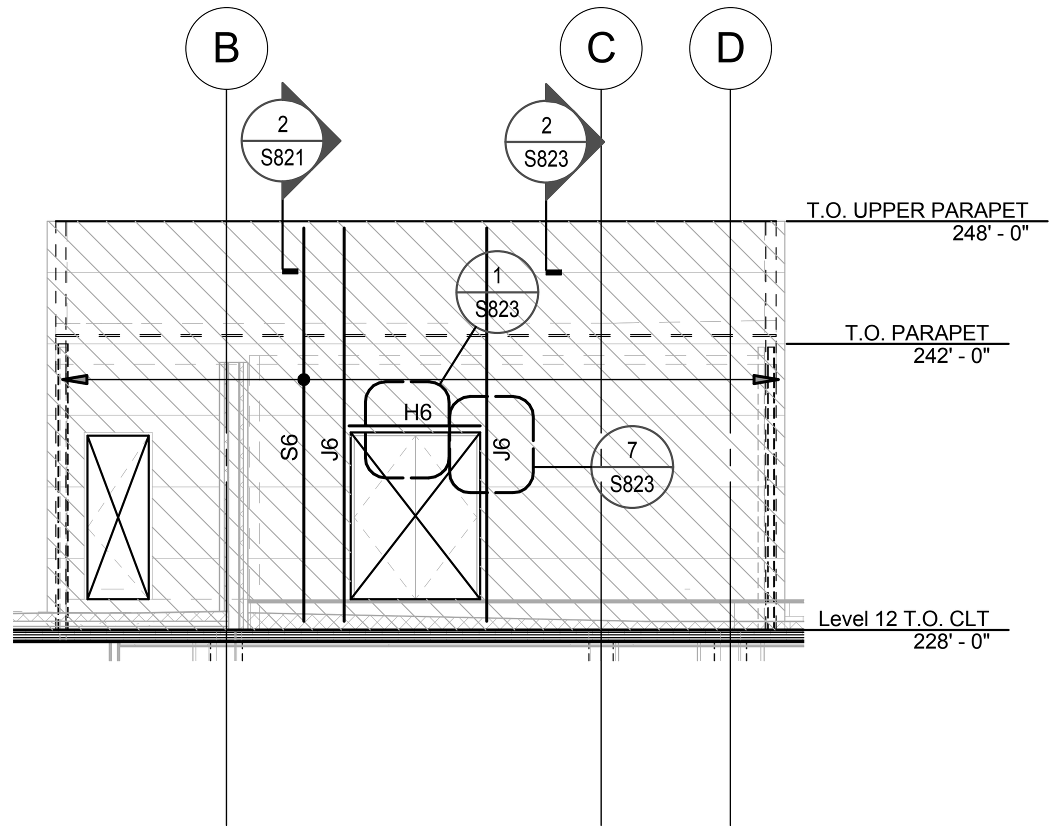
PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL ELEVATIONS

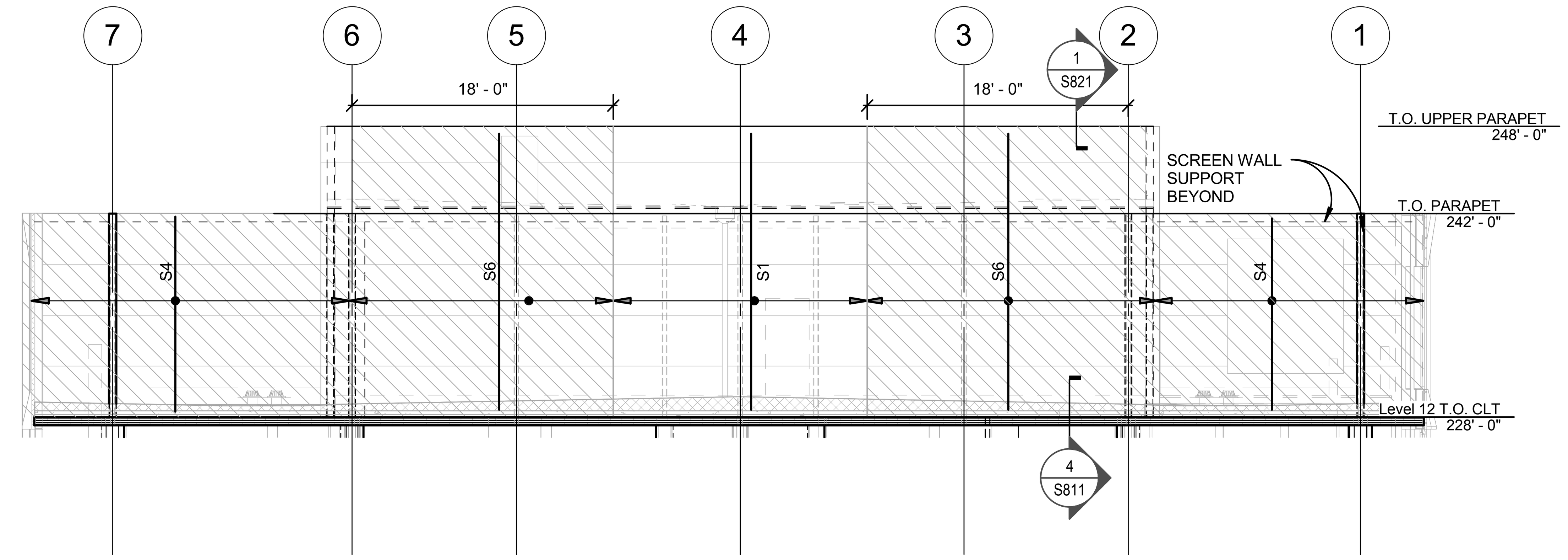
S804

GMP SET



3 MECHANICAL PENTHOUSE ELEVATIONS WEST

1/8" = 1'-0"



1 MECHANICAL PENTHOUSE ELEVATIONS NORTH

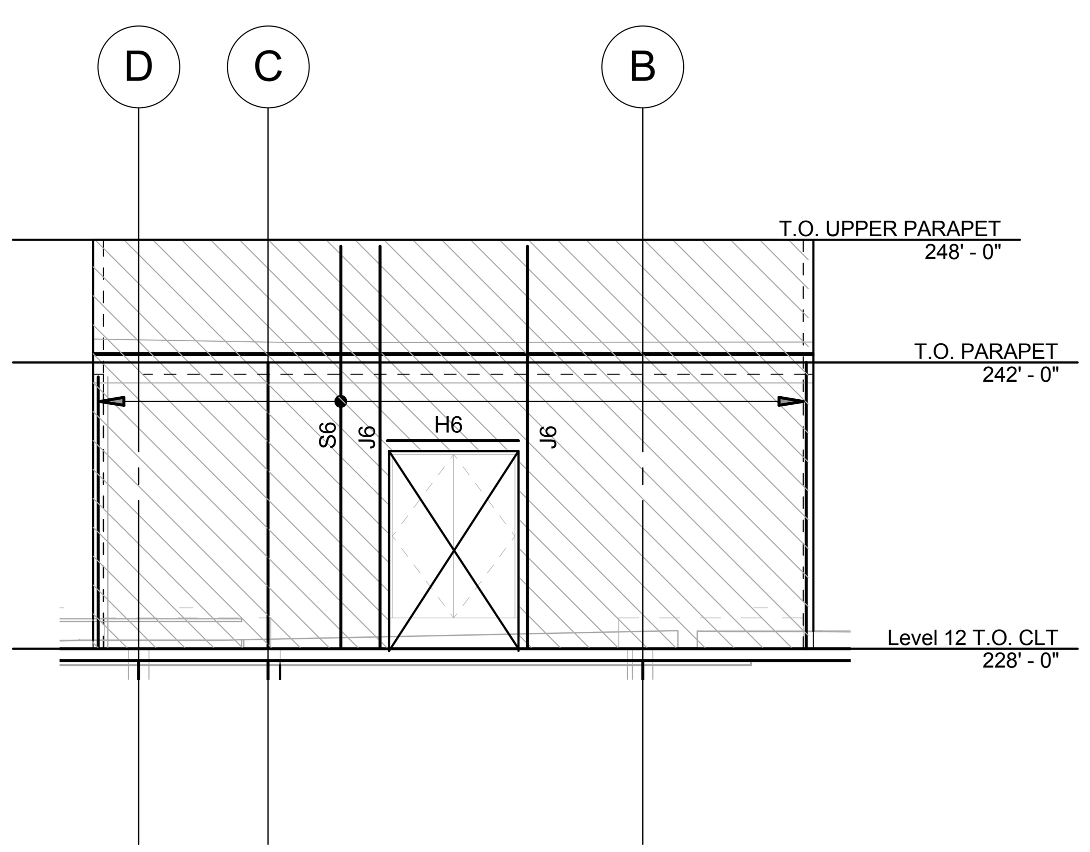
1/8" = 1'-0"

LEGEND

[hatch]	WIND CORNER ZONE
S1	METAL STUD MARK REF. SCHEDULE
H1	JAMB, HEADER AND SILL MARK REF. SCHEDULE

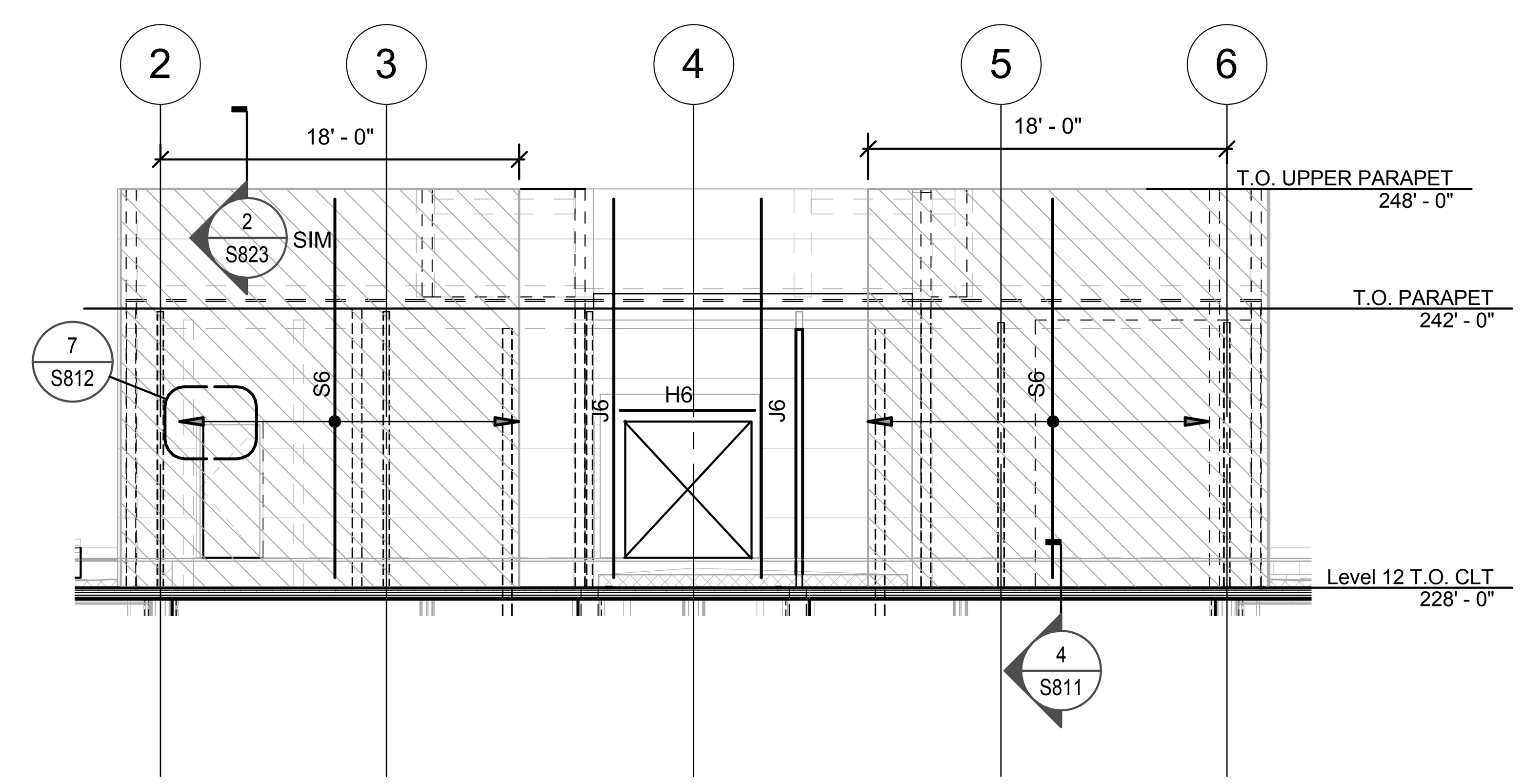
NOTES:

1. FOR METAL STUD, HEADER, JAMB AND SILL SCHEDULES REF. 2/S811.
2. PROVIDE BLOCKING AT THIRD POINTS REF. 9/S811.



4 MECHANICAL PENTHOUSE ELEVATIONS EAST

1/8" = 1'-0"



2 MECHANICAL PENTHOUSE ELEVATIONS SOUTH

1/8" = 1'-0"

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE

239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff

111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE

NOVEMBER 4, 2016

PROJECT NUMBER

215135

SCALE

AS INDICATED

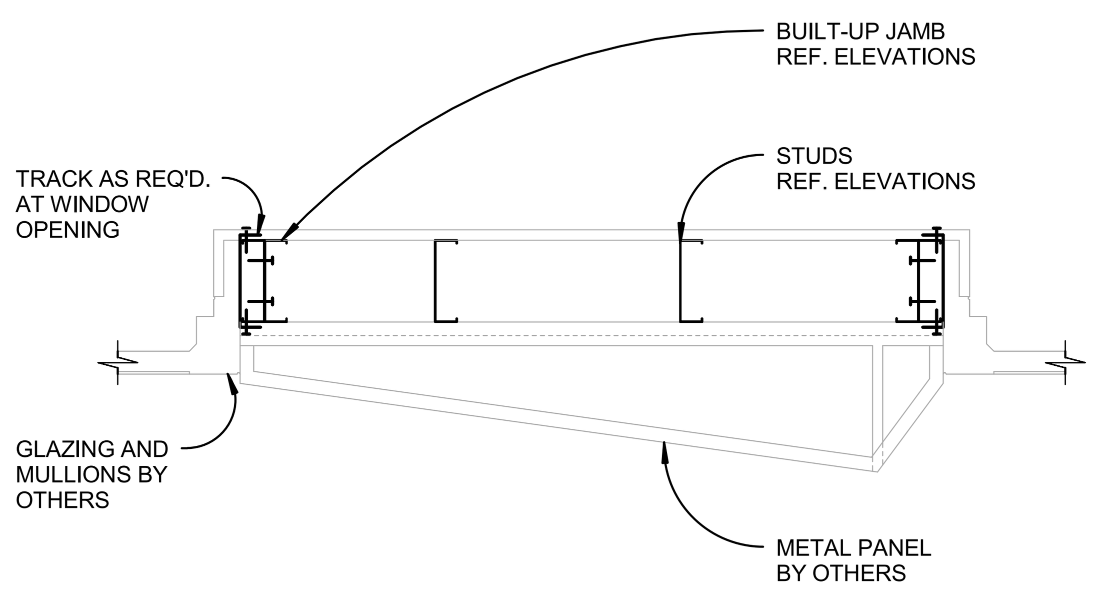
SHEET TITLE

EXTERIOR WALL ELEVATIONS

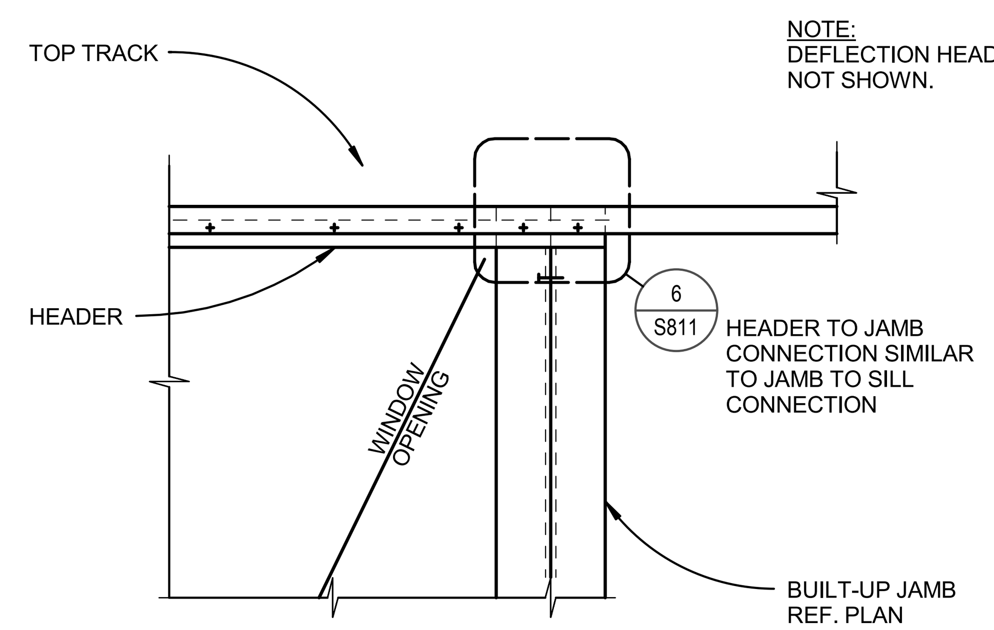
S805

GMP SET

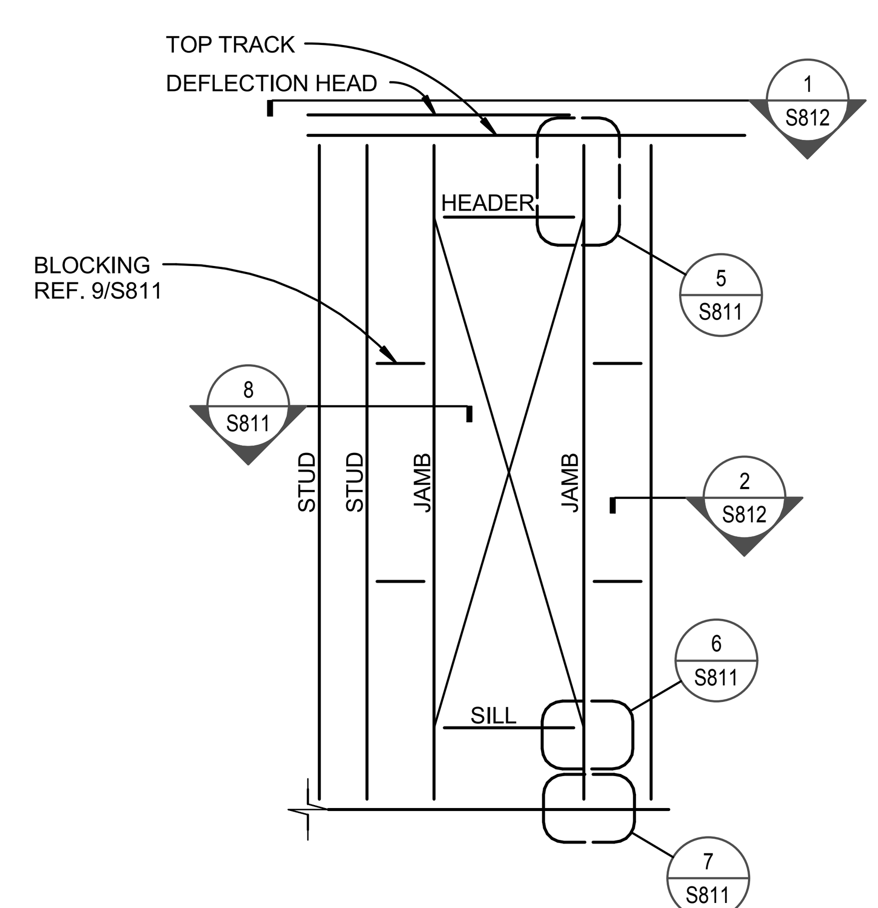
11/4/2016 9:55:08 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



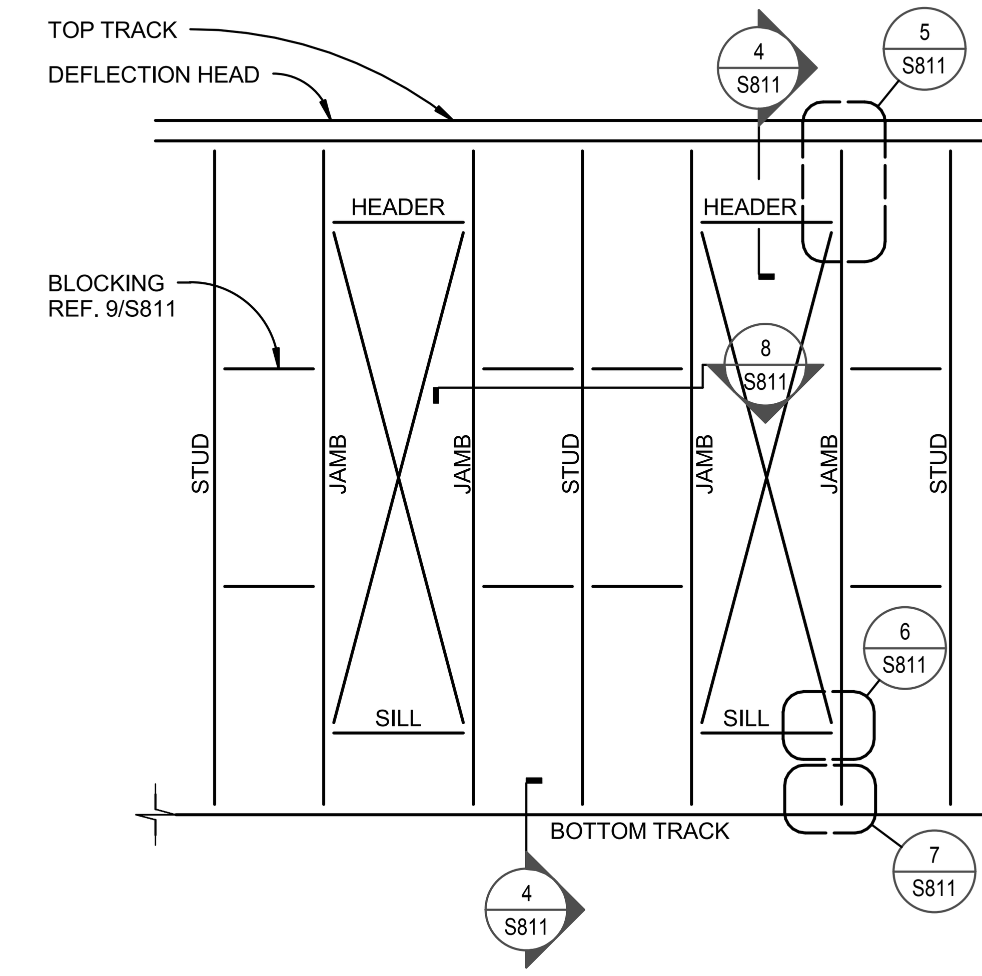
8 JAMB DETAIL
1" = 1'-0" S811



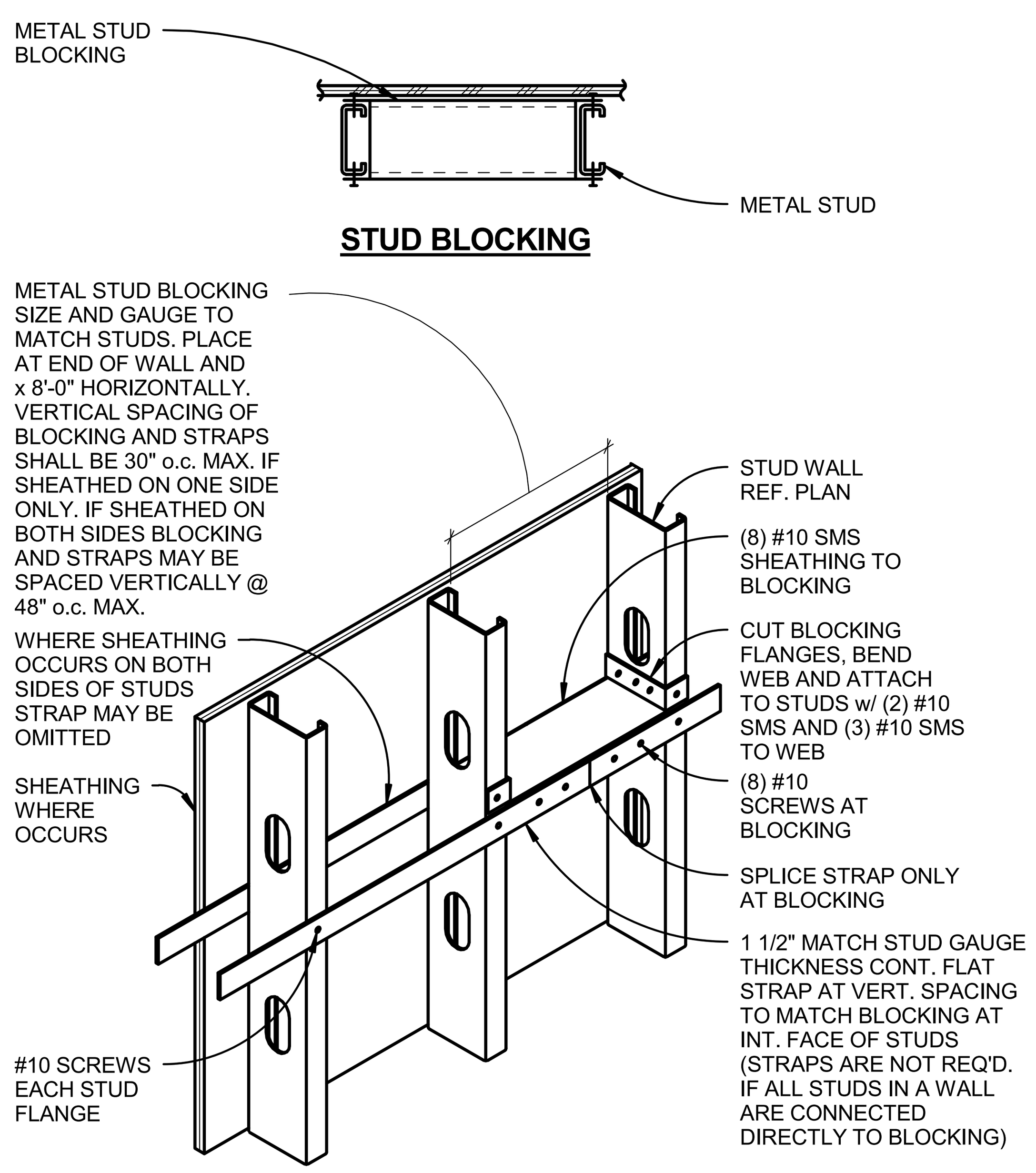
5 HEADER TO JAMB
1" = 1'-0" S811



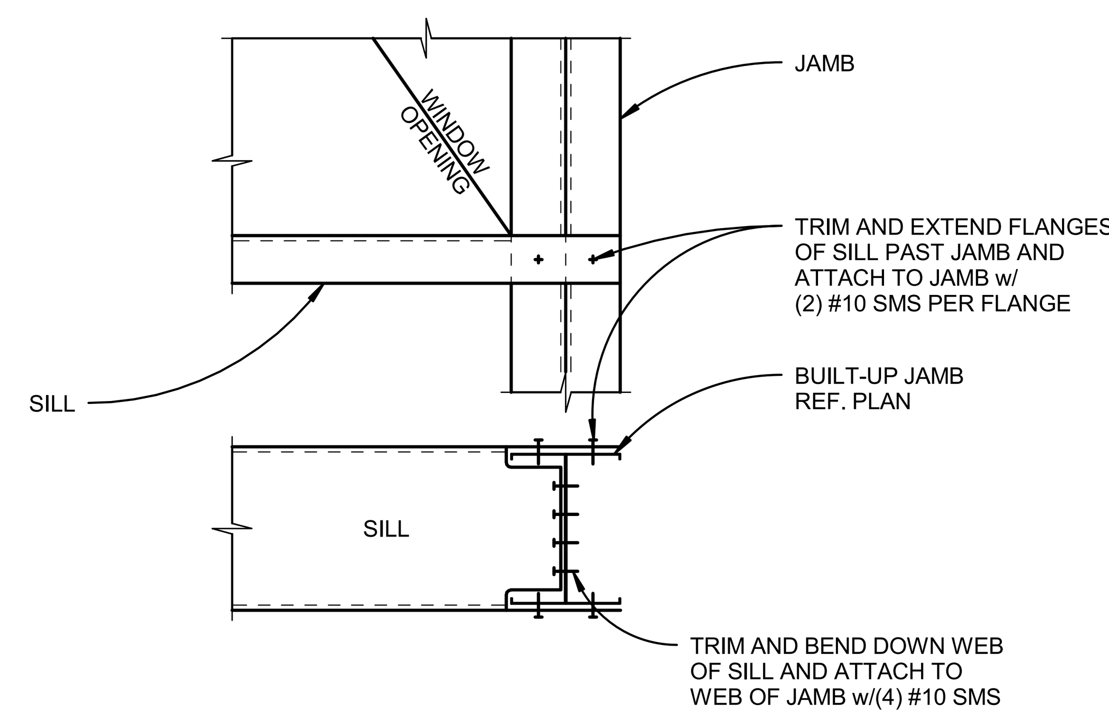
3 TYPICAL CORNER TOWER ELEVATION
1/4" = 1'-0" S801



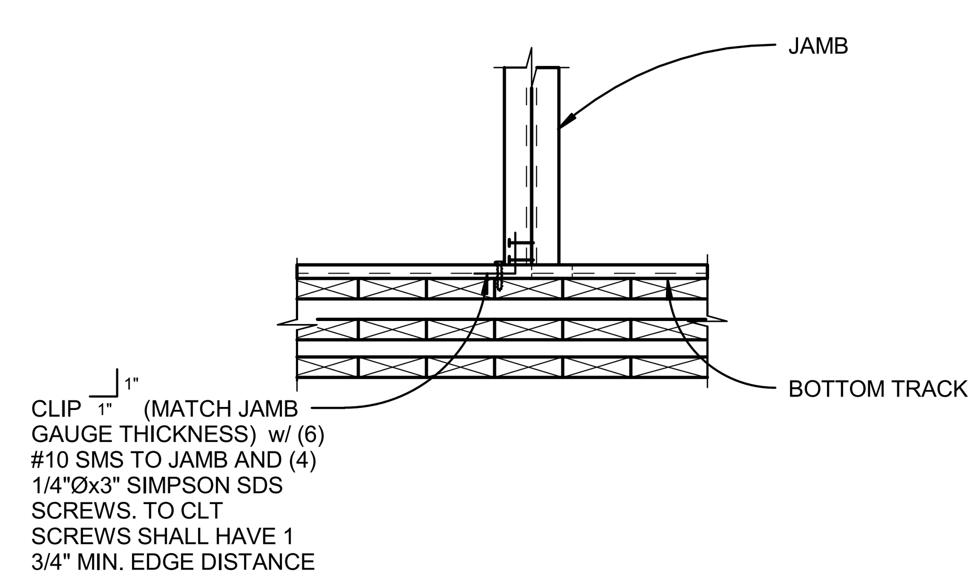
1 TYPICAL FIELD ELEVATION
1/4" = 1'-0" S801



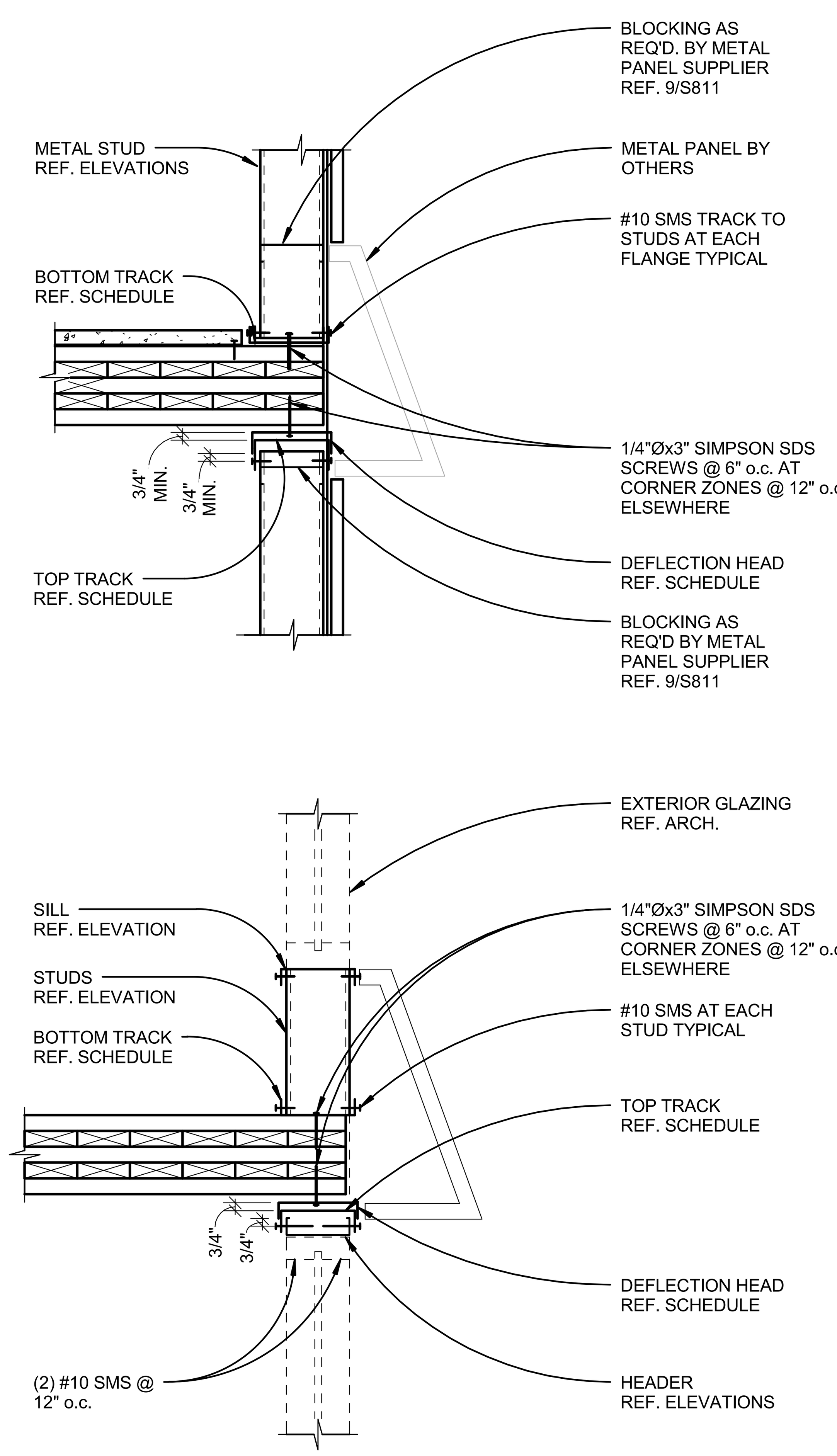
9 TYPICAL BLOCKING DETAIL
1" = 1'-0"



6 SILL TO JAMB
1" = 1'-0" S811



7 JAMB TO CLT AND BOTTOM TRACK
1" = 1'-0" S811



4 TYPICAL WALL SECTION
1" = 1'-0" S803

EXTERIOR STUD AND TRACK SCHEDULE					
MARK	STUD SIZE	SPACING	BOT. TRACK	TOP TRACK	DEFLECTION HEAD
S1	600S162-43	@ 24" o.c.	600T150-43	600T200-43	600T200-68
S2	600S162-43	@ 12" o.c.	600T150-43	600T200-43	600T200-68
S3	600S162-68	@ 24" o.c.	600T150-68	600T150-68	N/A
S4	600S200-68	@ 12" o.c.	600T150-68	600T150-68	N/A
S5	600S350-68	@ 12" o.c.	600T200-68	600T200-68	N/A
S6	600S167-68	@ 16" o.c.	600T150-68	600T150-68	N/A

JAMB, HEADER AND SILL SCHEDULE					
JAMB		HEADER		SILL	
MARK	SIZE	MARK	SIZE	MARK	SIZE
J1	(2) 600S162-43	H1	600S162-43	L1	600T150-43
J2	(2) 600S200-43	H2	600S200-43	L2	600T200-43
J3	(2) 600S162-68	H3	600S162-68	L3	600T150-68
J4	(2) 600S200-68	H4	600S200-68	L4	600T200-68
J5	NOT USED	H5	BOX HEADER (2) 350S200-43 (2) 600T150-43	L5	NOT USED
J6	(20 600S162-07	H6	BOX HEADER (2) 600S167-68 (2) 600T150-68	L6	600T150-68

2 EXTERIOR FRAMING SCHEDULE
1" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

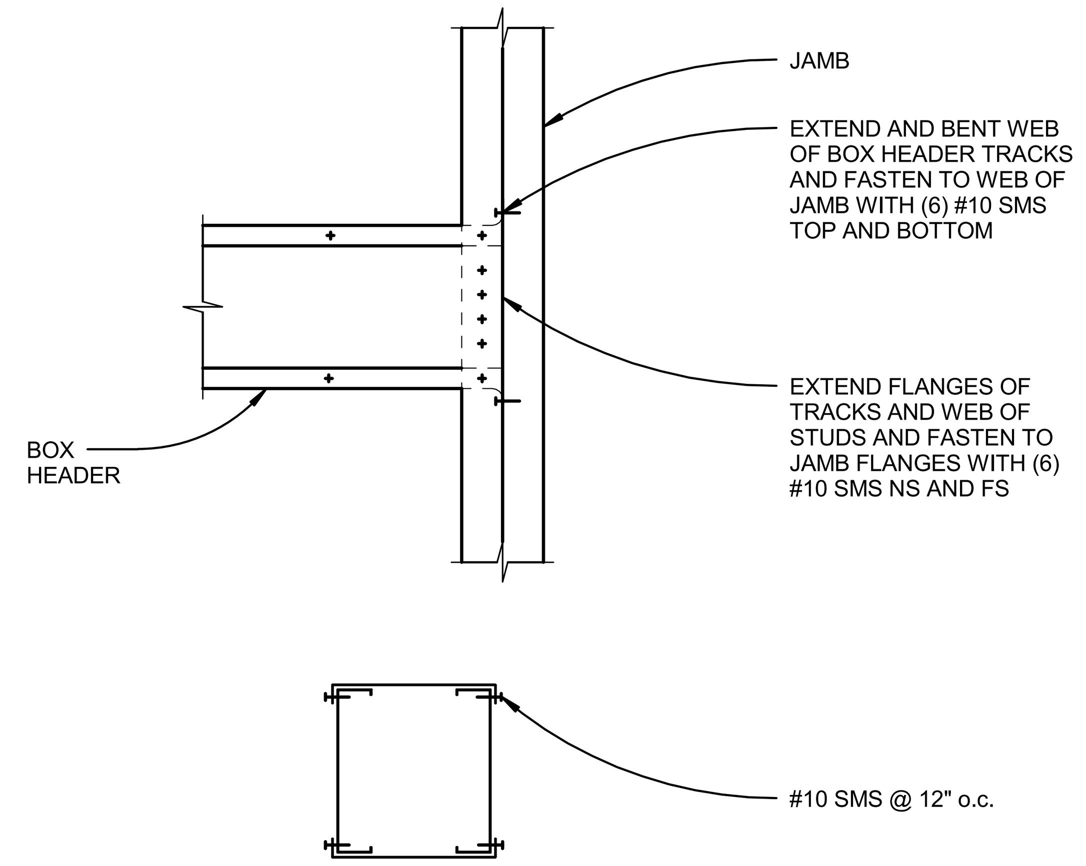
PROJECT NUMBER
215135

SCALE
AS INDICATED

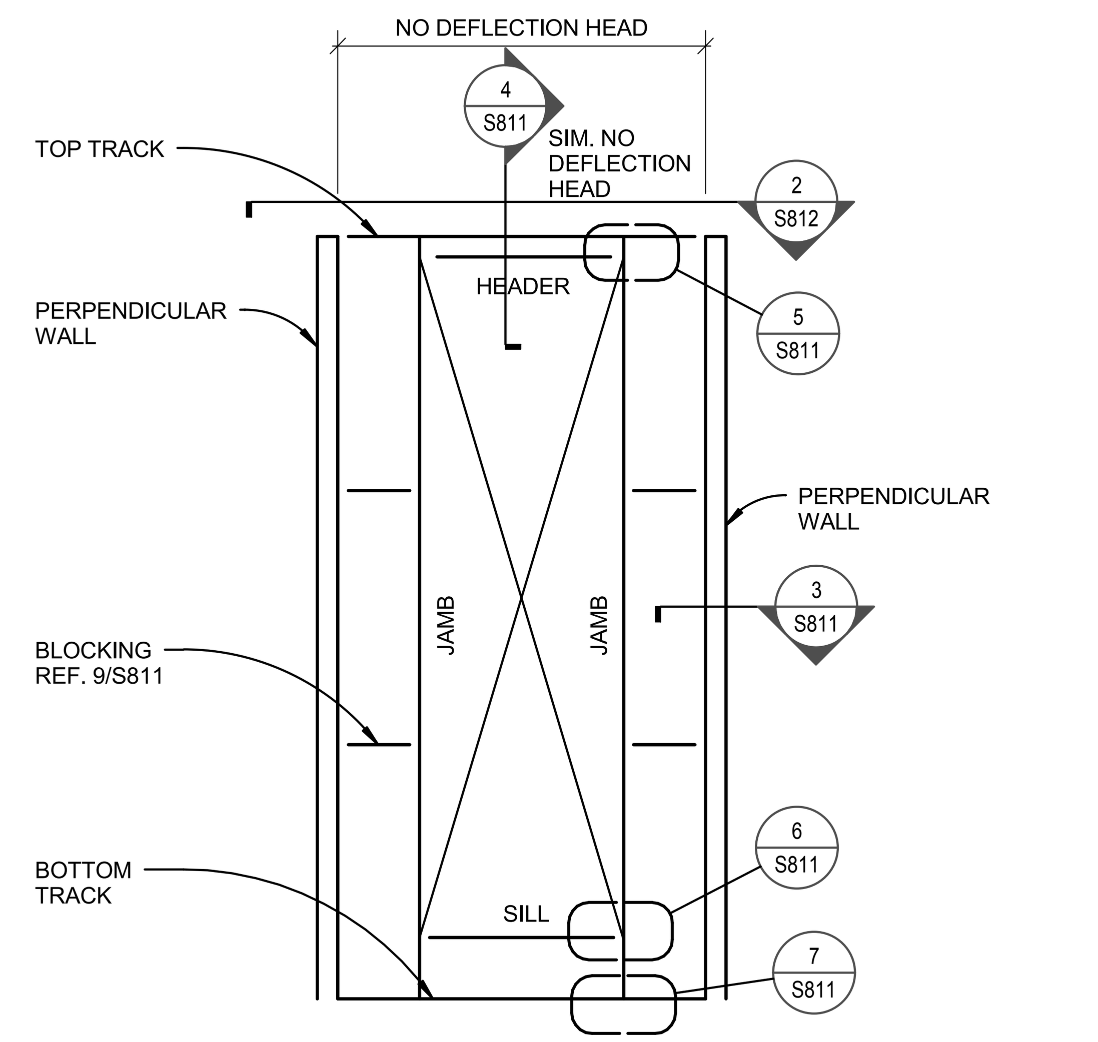
SHEET TITLE
EXTERIOR WALL DETAILS

S811

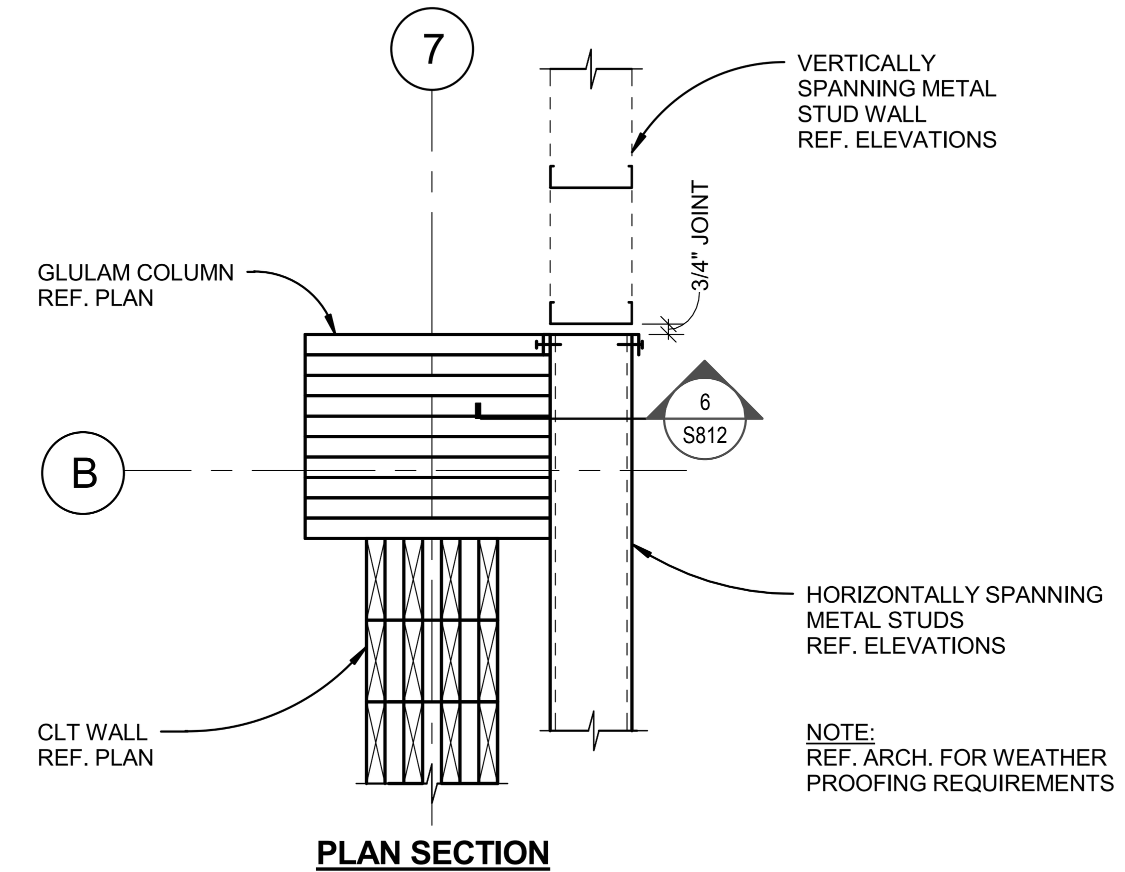
GMP SET



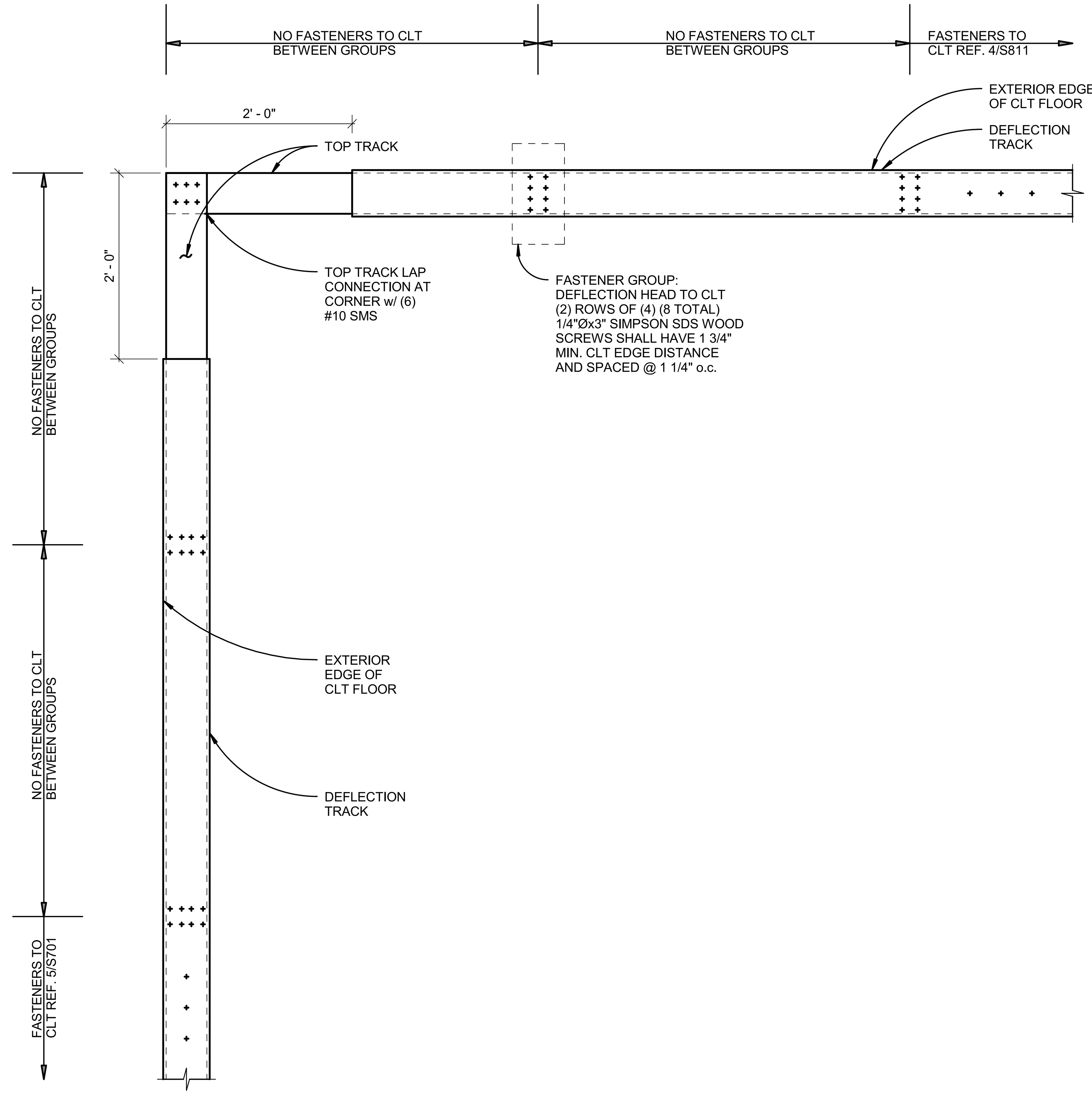
7 JAMB TO BOX HEADER
1" = 1'-0" S805



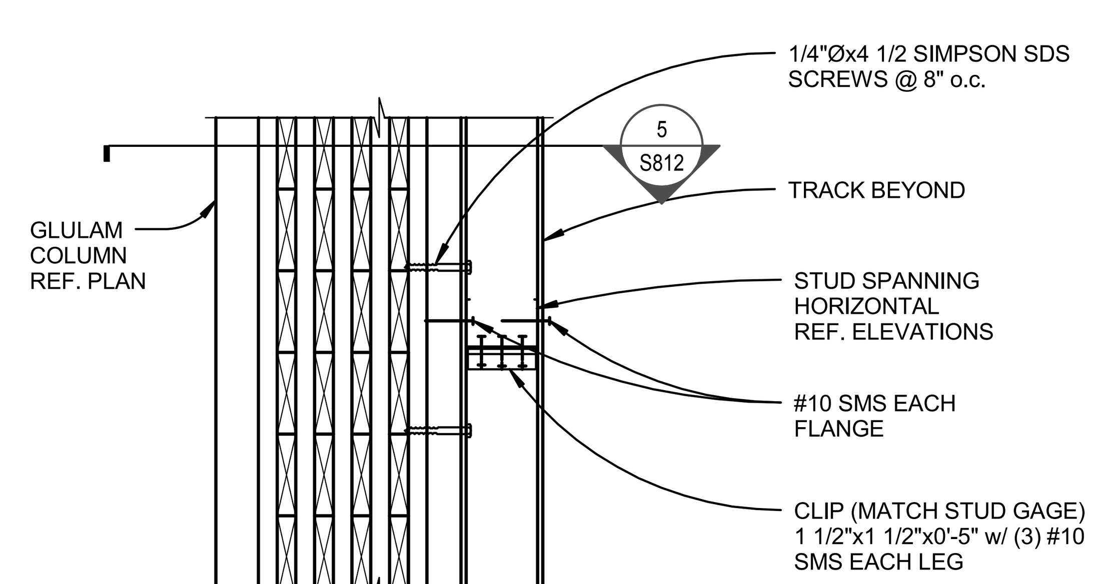
4 ELEVATION AT JOG IN FACADE
1" = 1'-0" S803



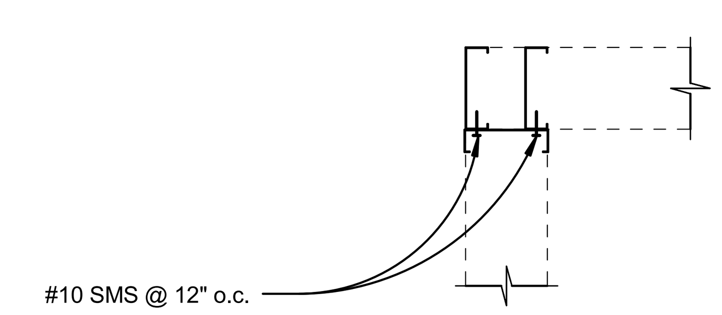
5 HORIZONTAL STUD AT EAST SHEAR WALL
1" = 1'-0" S803



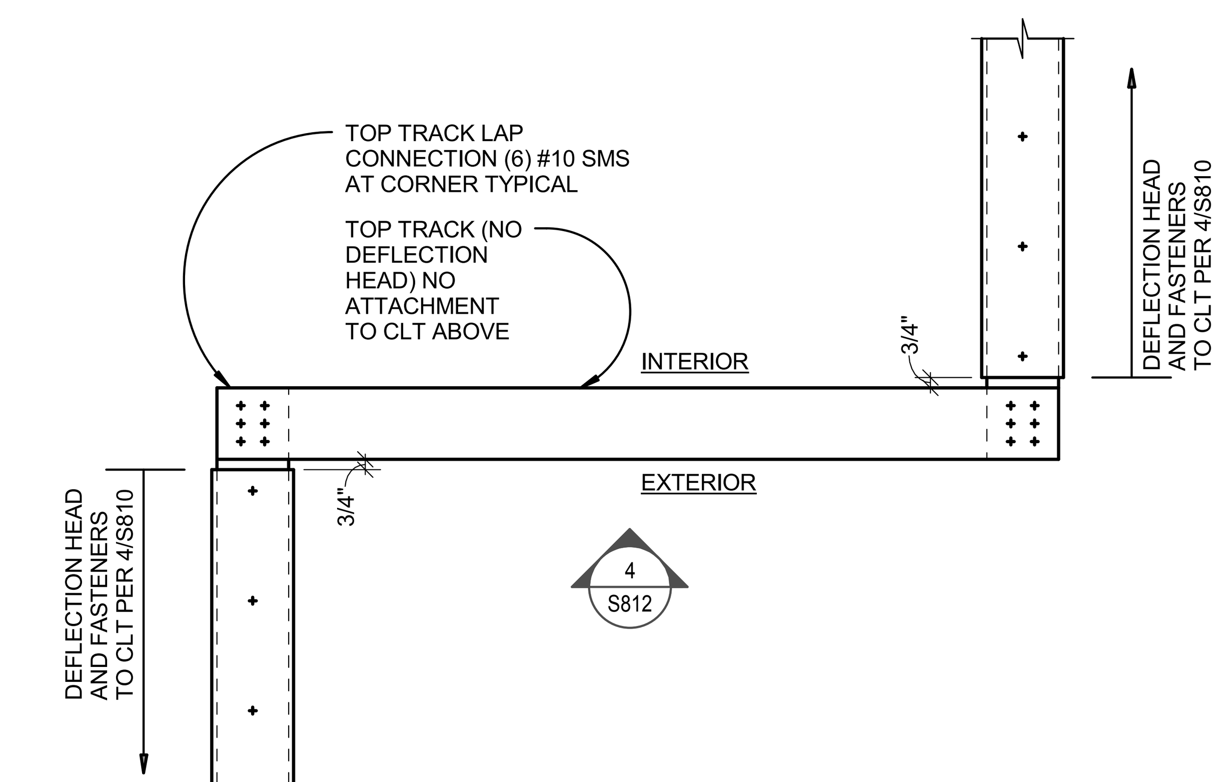
1 PLAN DETAIL EXTERIOR CORNER
1" = 1'-0" S811



6 HORIZONTAL STUD AT EAST SHEAR WALL
1" = 1'-0" S812



3 TYPICAL CORNER AT STUDS
1" = 1'-0"



2 DEFLECTION HEAD PLAN EAST FACADE
1" = 1'-0" S811

FRAMEWORK
project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

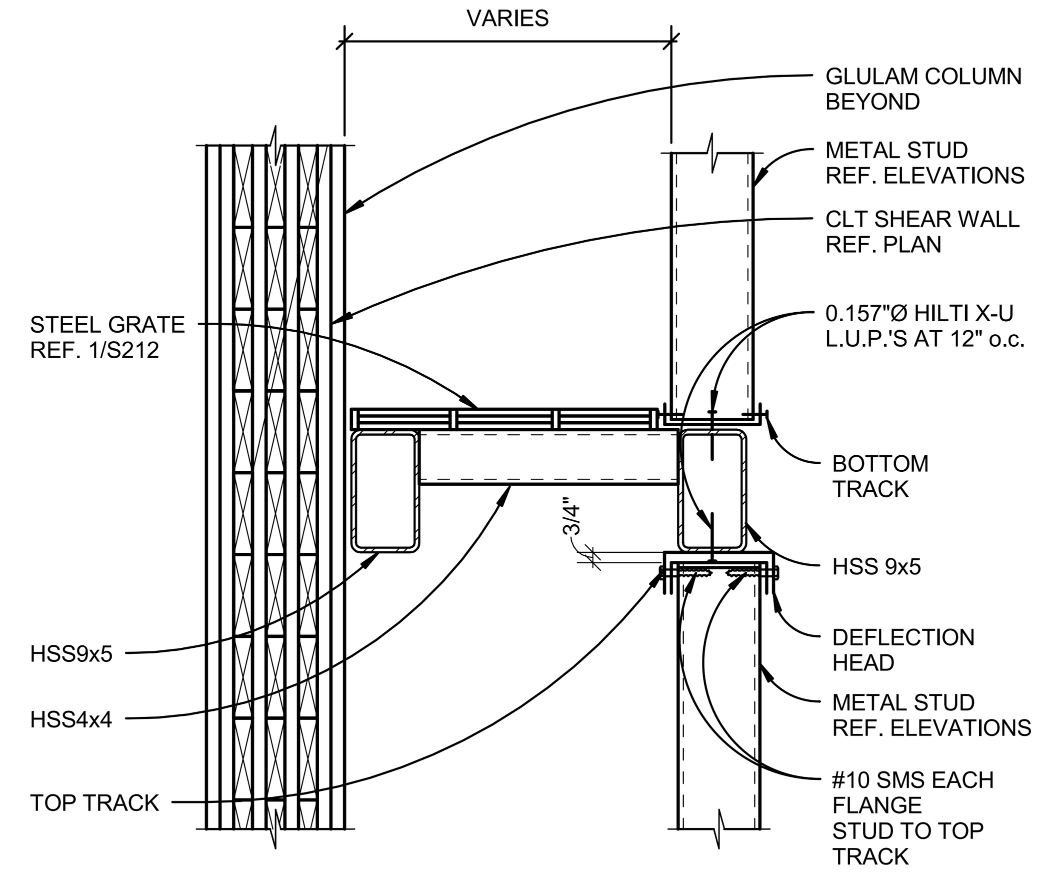
REVISIONS

DATE
NOVEMBER 4, 2016
PROJECT NUMBER
215135
SCALE
AS INDICATED
SHEET TITLE
EXTERIOR WALL DETAILS

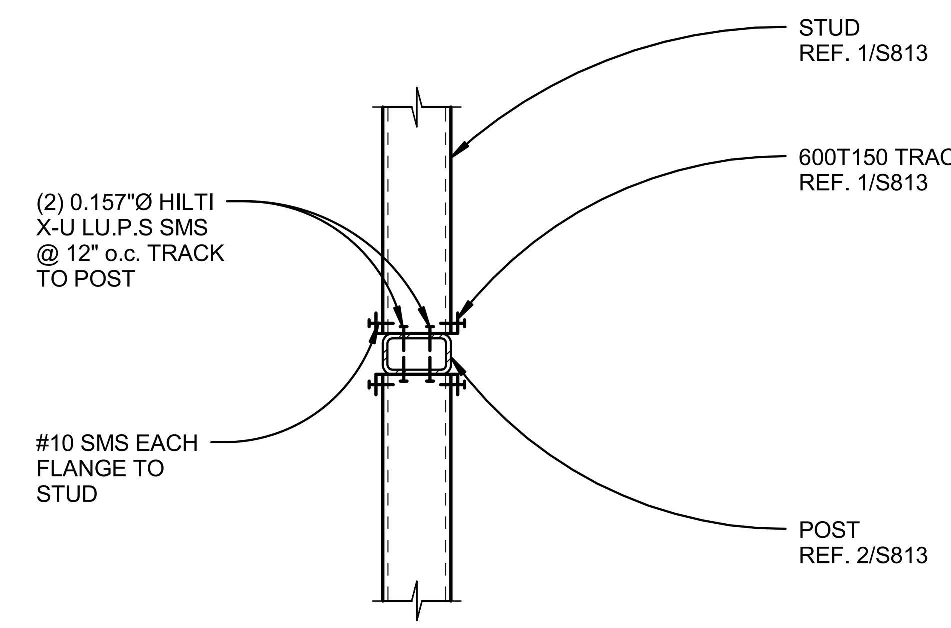
S812

GMP SET

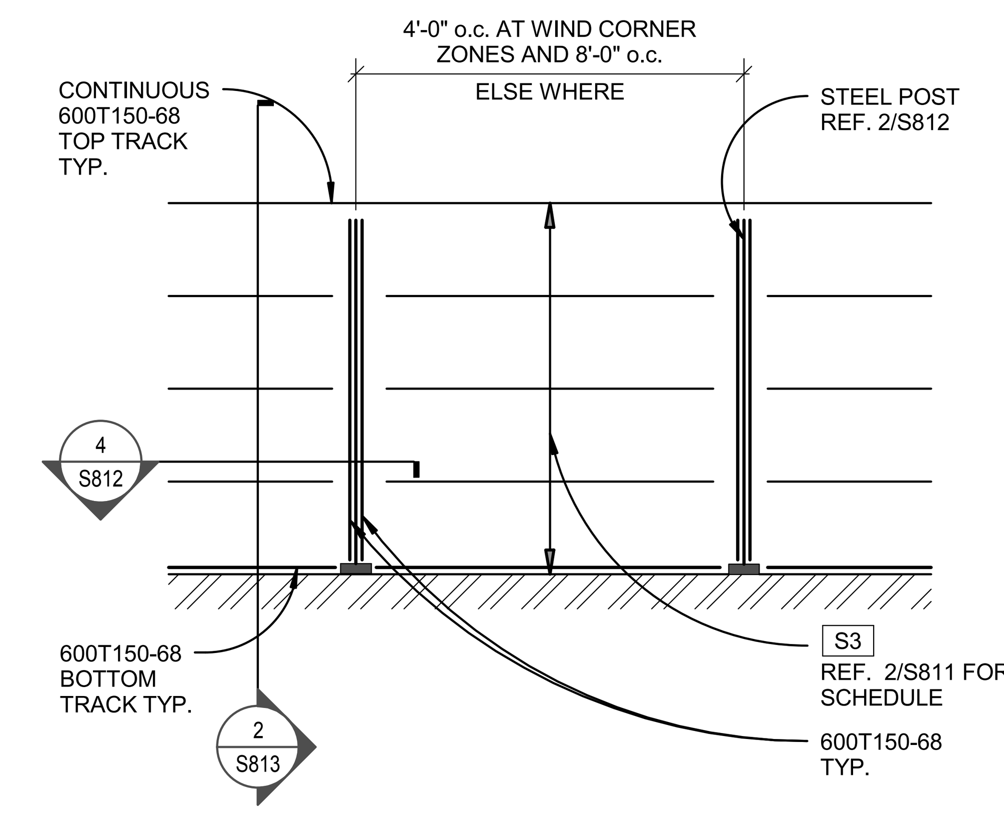
11/4/2016 9:55:09 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



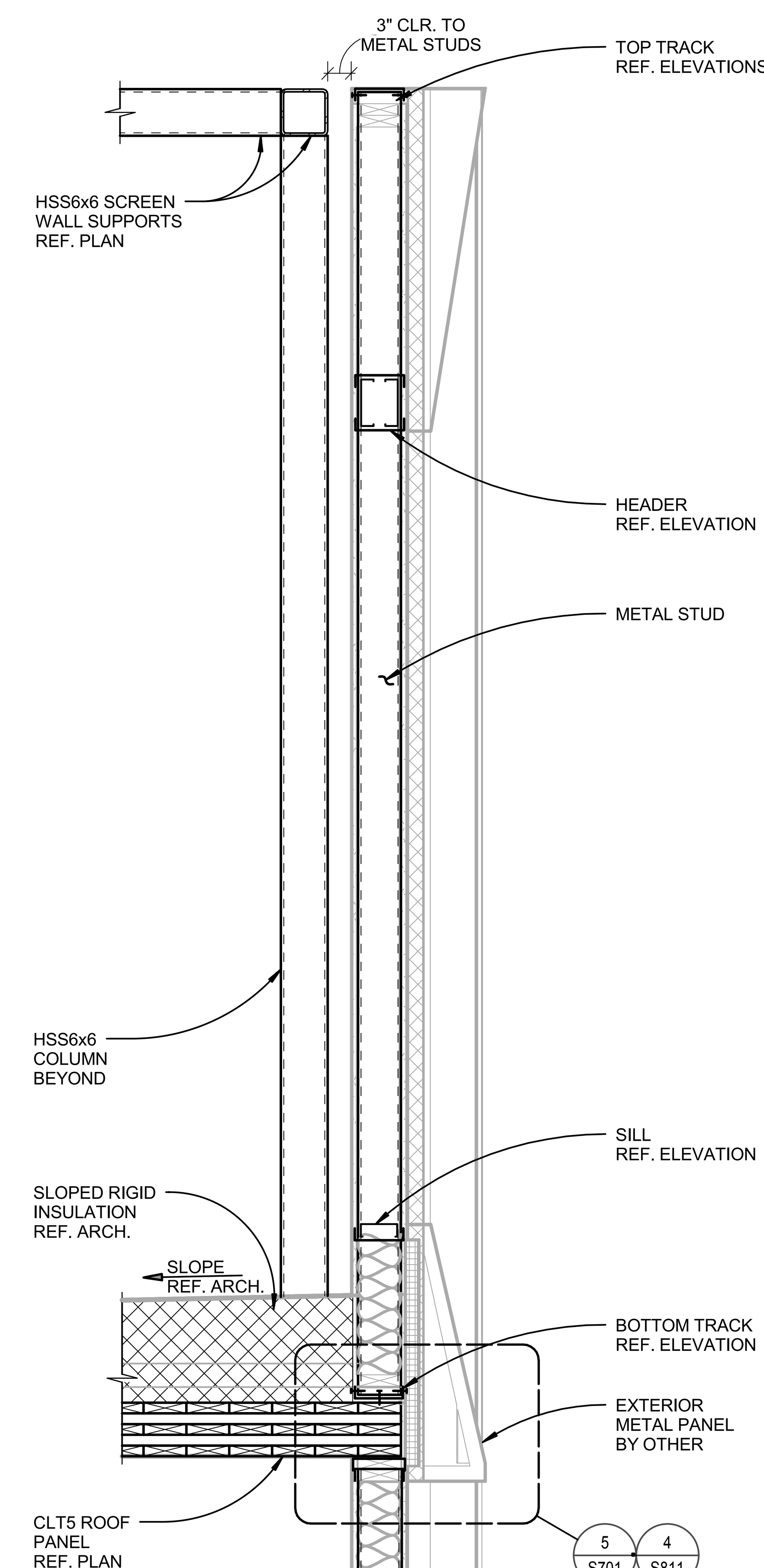
6 HSS FRAME TO METAL STUDS
1" = 1'-0" S212



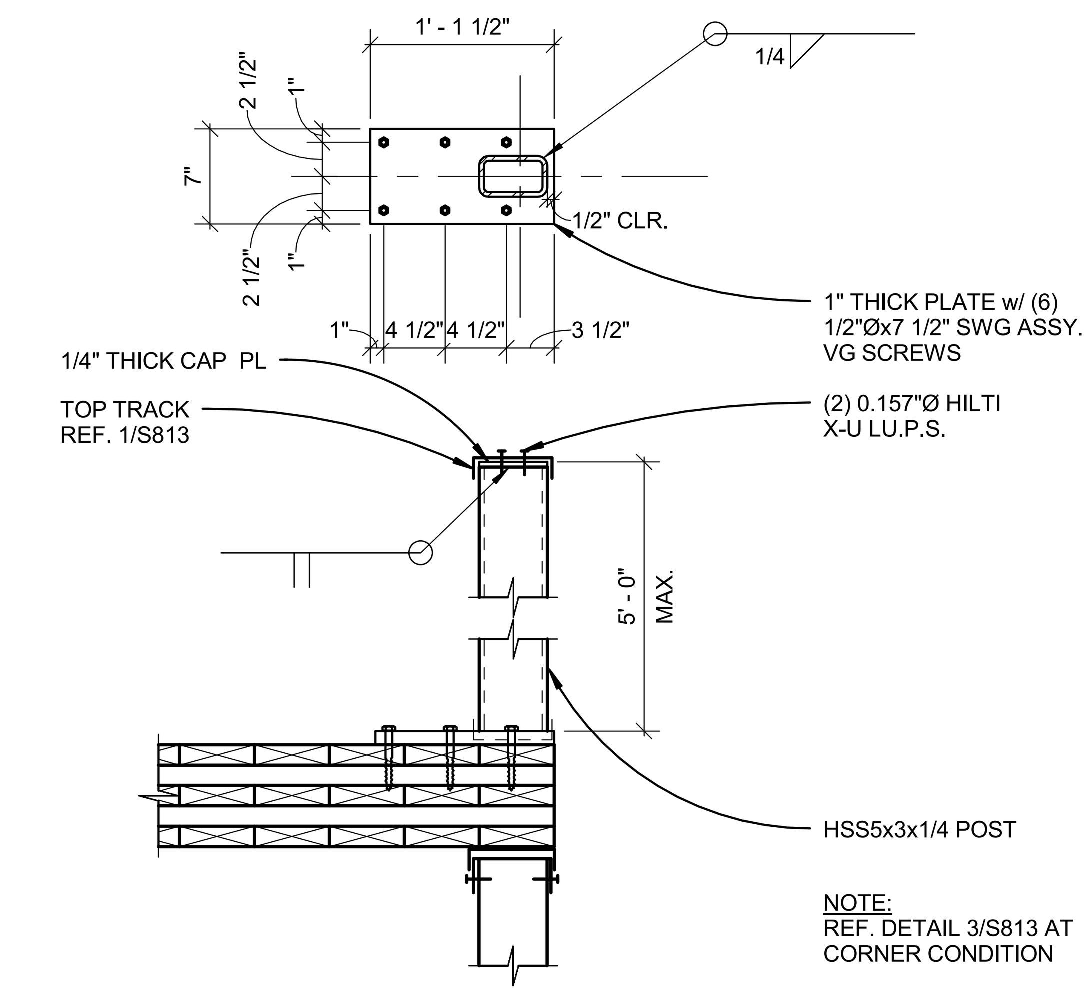
4 PARAPET SECTION AT STEEL POST
1" = 1'-0"



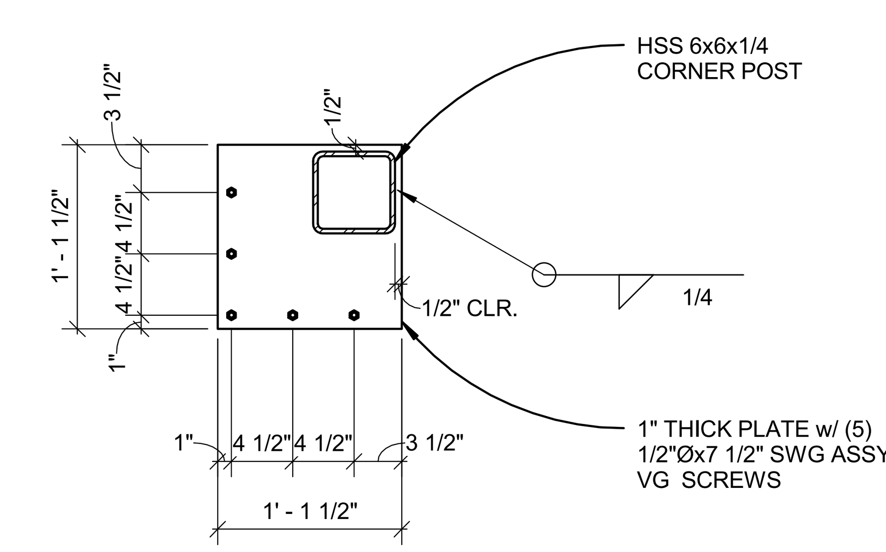
1 TYPICAL PARAPET
1" = 1'-0" S801



5 ENLARGED SECTION AT PARAPET WALL
3/4" = 1'-0" S801



2 PARAPET STEEL POST
1" = 1'-0" S801



3 PARAPET CORNER POST
1" = 1'-0" S801

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

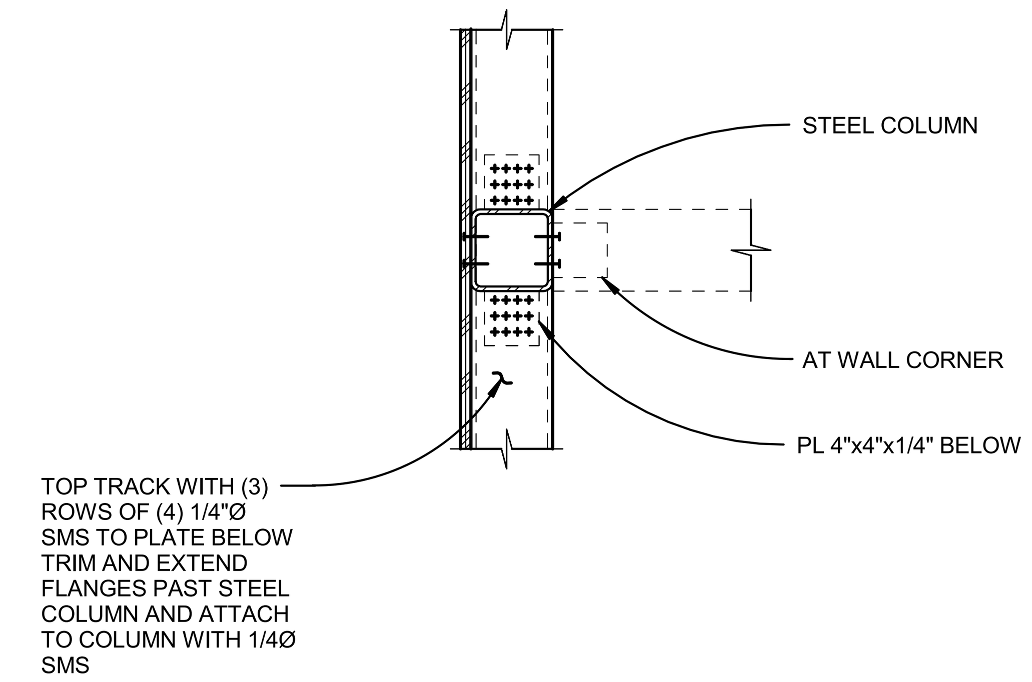
SCALE
AS INDICATED

SHEET TITLE
EXTERIOR WALL DETAILS

S813

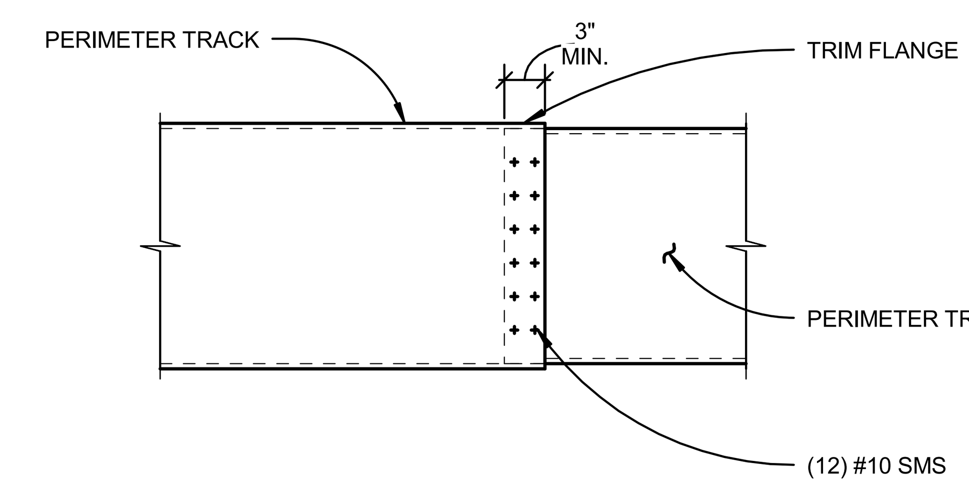
GMP SET

11/4/2016 9:55:10 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



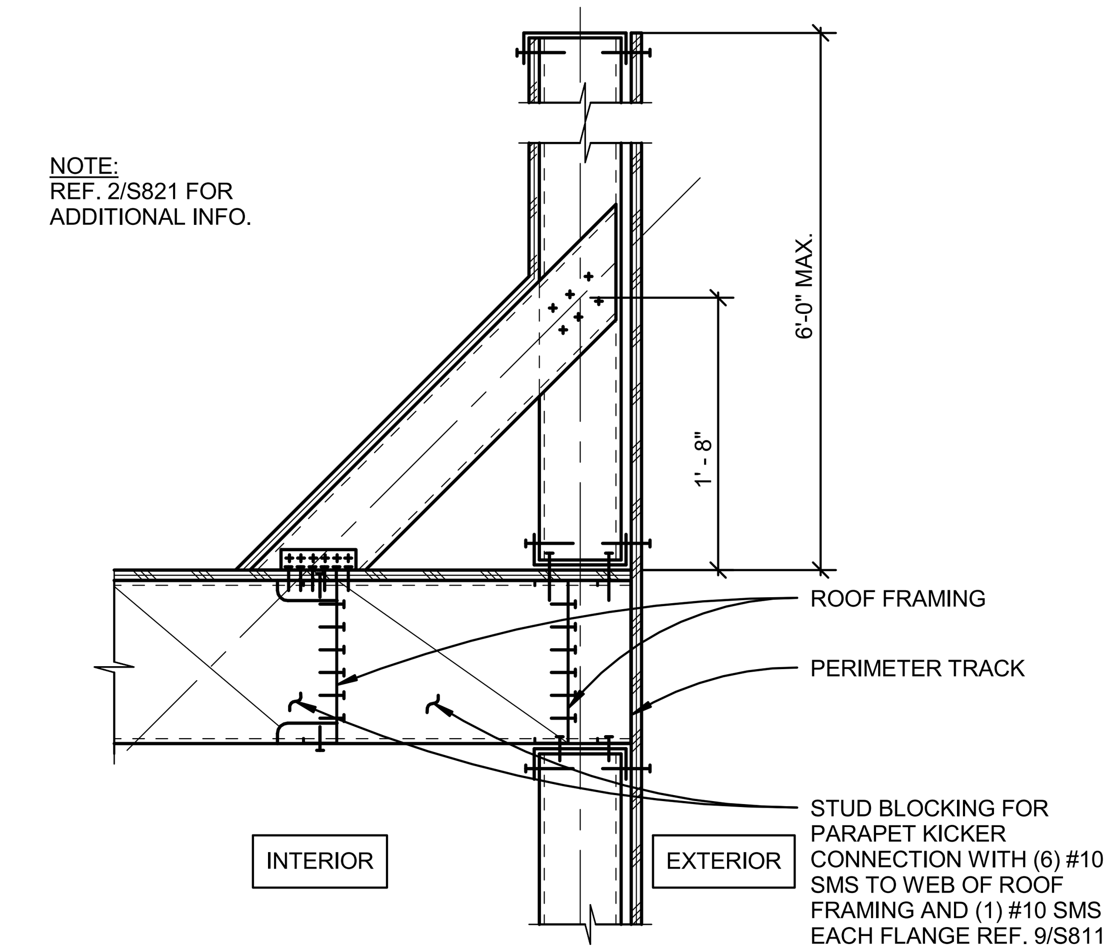
7 TOP TRACK TO STEEL COLUMN

1" = 1'-0" S821



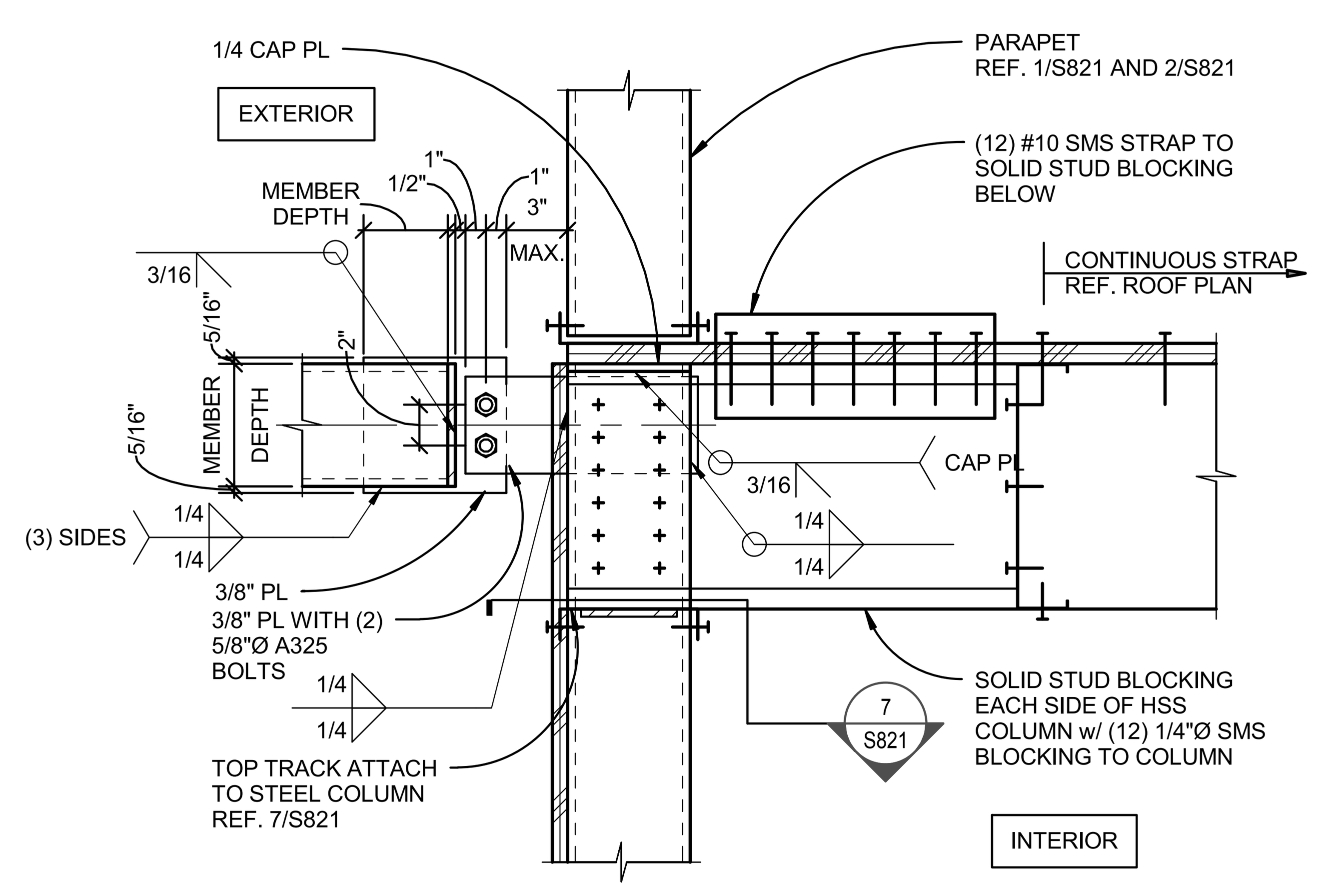
4 TRACK SPLICE DETAIL

1" = 1'-0"



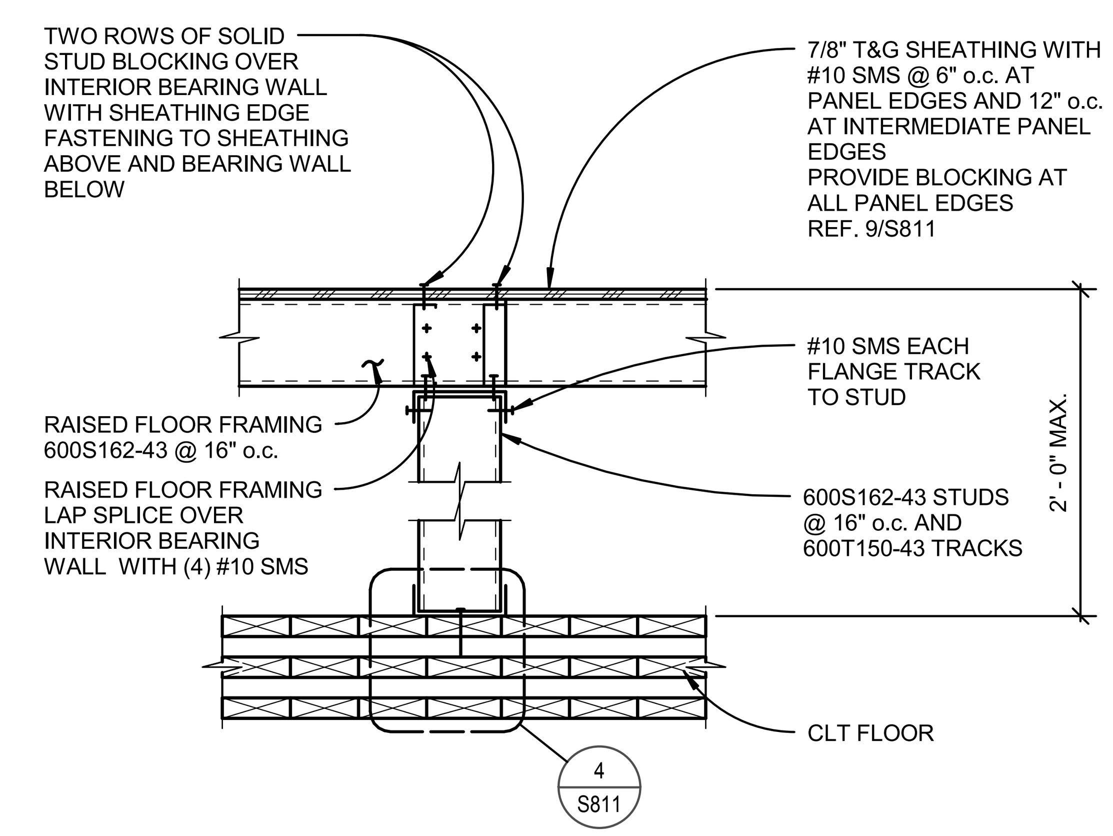
1 PENTHOUSE PARAPET DETAIL

1" = 1'-0" S113



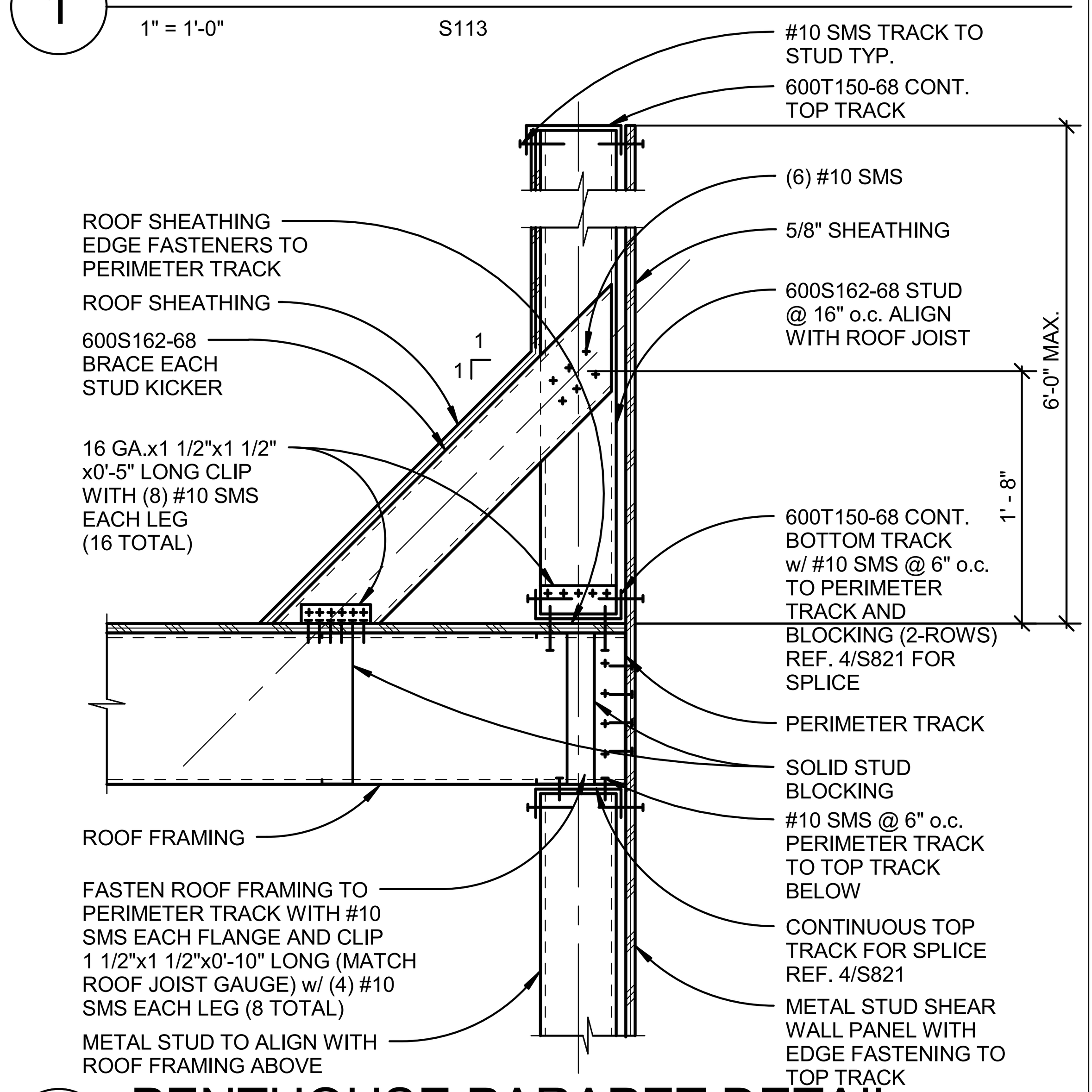
8 PENTHOUSE STEEL COLUMN TO HSS FRAME

1 1/2" = 1'-0" S113



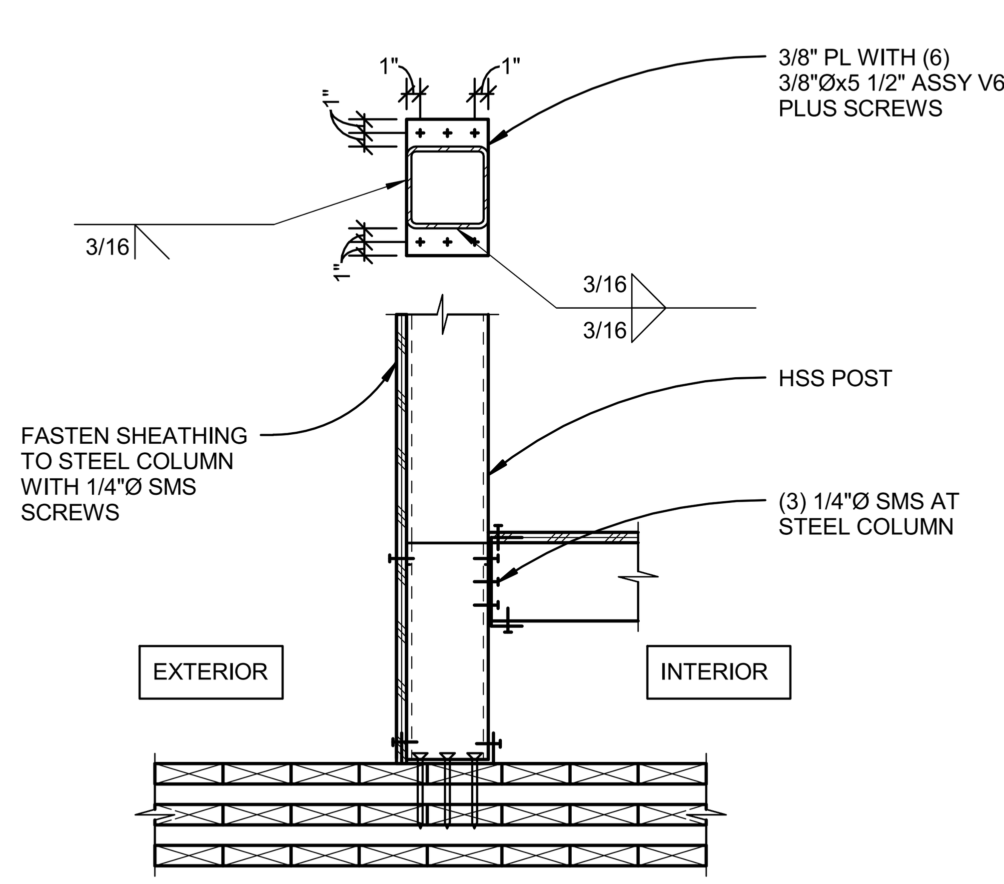
5 PENTHOUSE RAISED FLOOR DETAIL

1" = 1'-0"



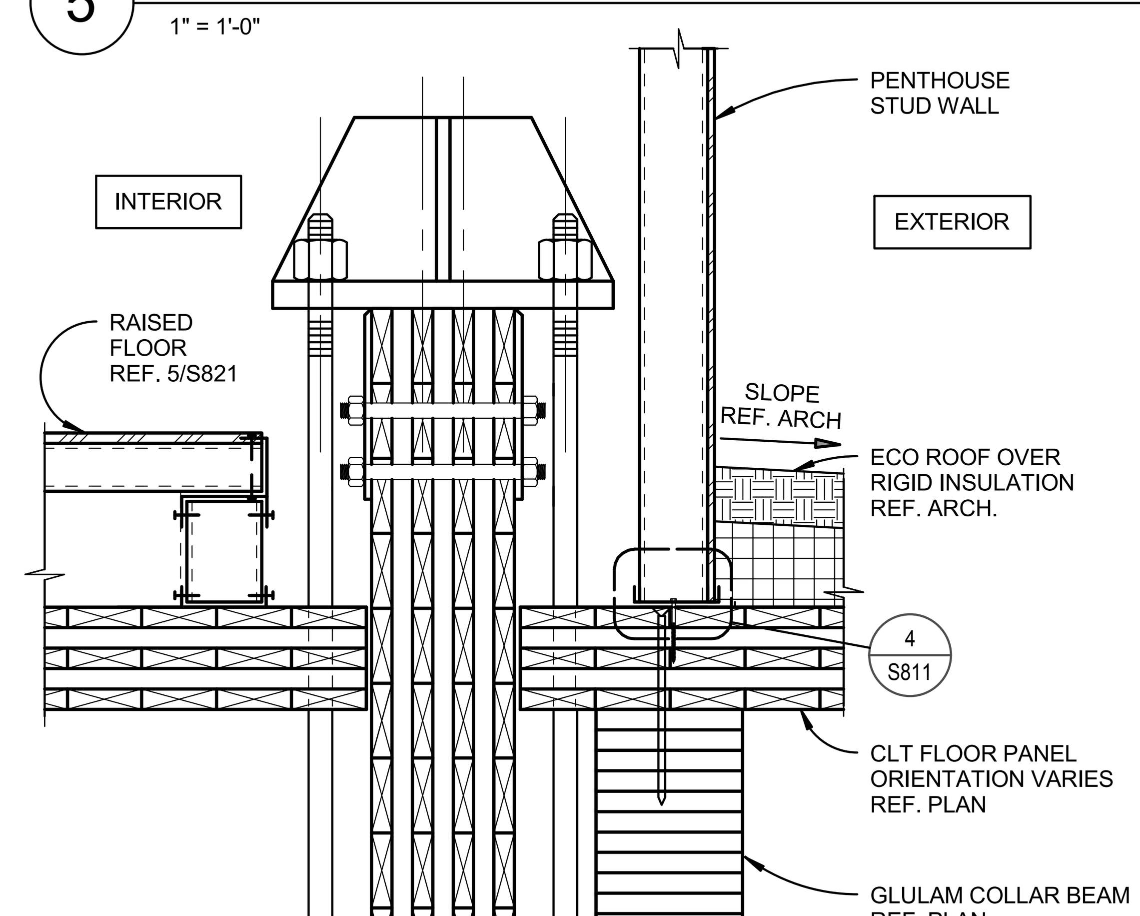
2 PENTHOUSE PARAPET DETAIL

1" = 1'-0" S113



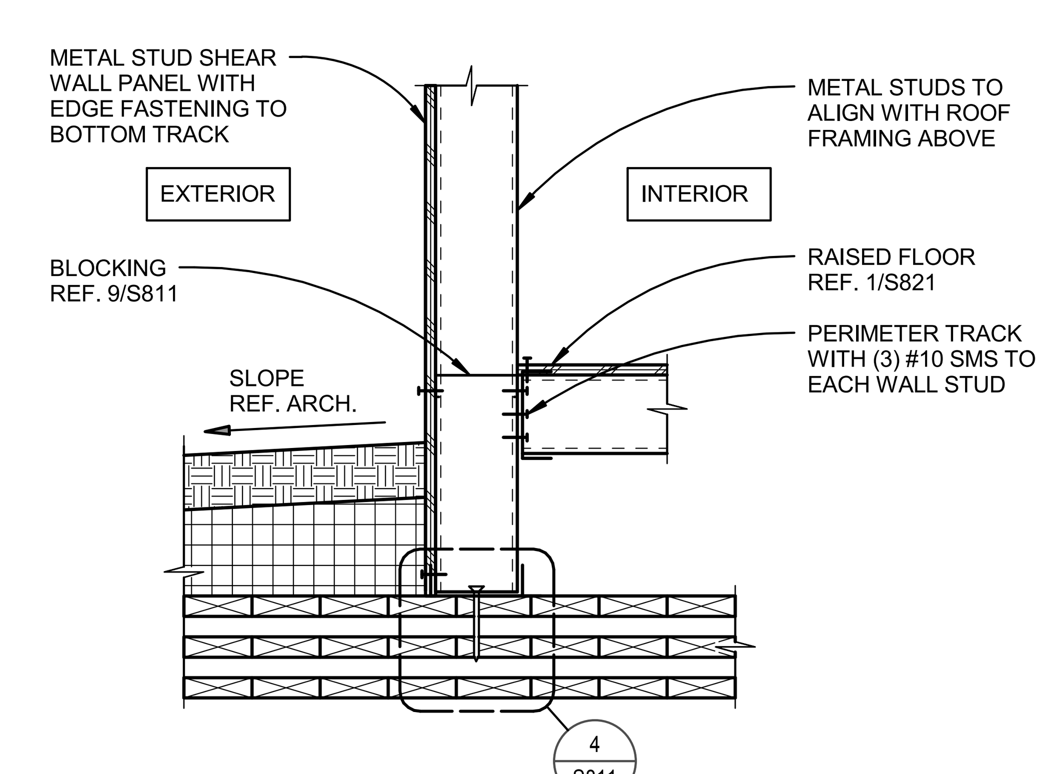
9 PENTHOUSE EXTERIOR WALL DETAIL

1" = 1'-0"



6 EXTERIOR STUD WALL SECTION LEVEL 12

1" = 1'-0" S112



3 PENTHOUSE EXTERIOR WALL TO CLT DETAIL

1" = 1'-0" S231

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
PENTHOUSE FRAMING DETAILS

S821

GMP SET

11/4/2016 9:55:11 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

FRAMEWORK

project^

413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT

LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT

kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

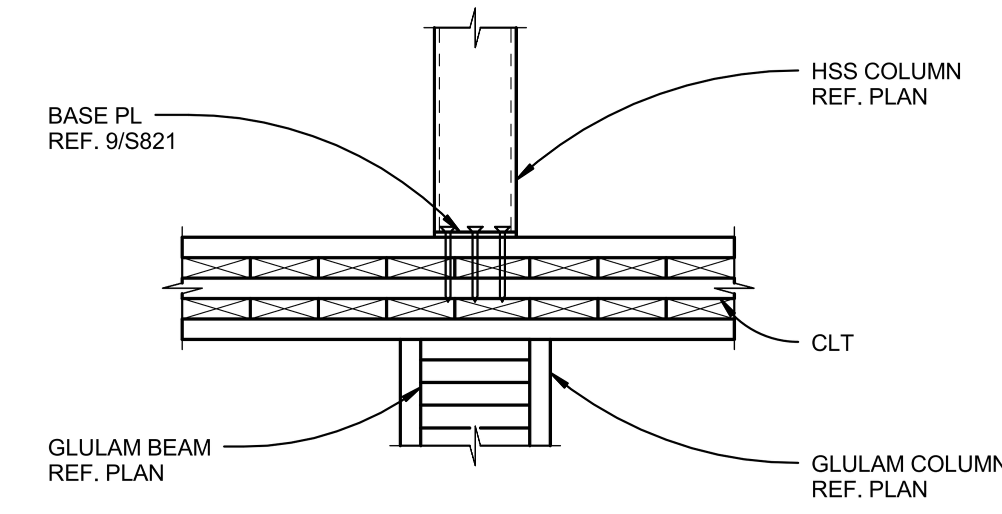
DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

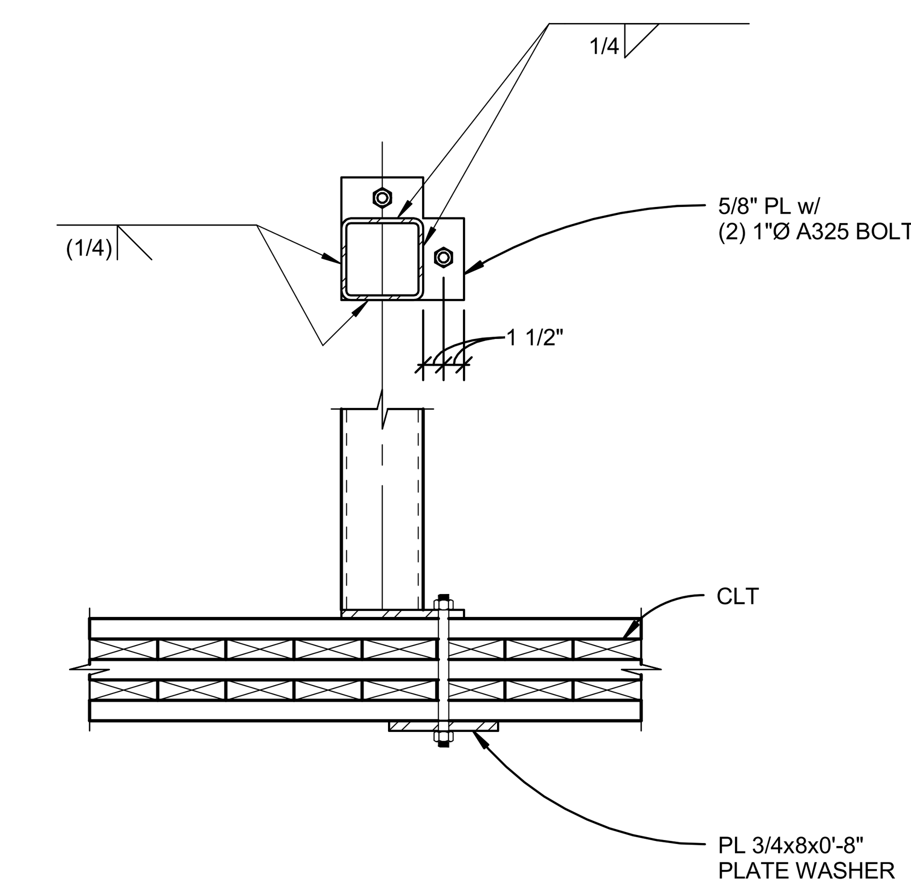
SCALE
AS INDICATED

SHEET TITLE
ROOF FRAMING DETAILS

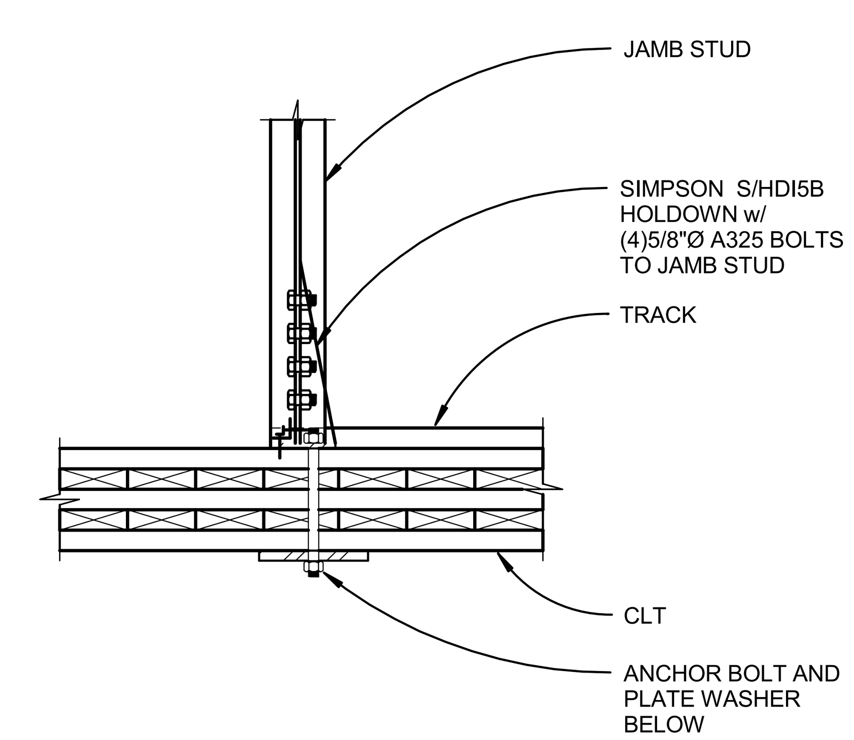
S822



1 BASE PLATE DETAIL
1" = 1'-0" S231



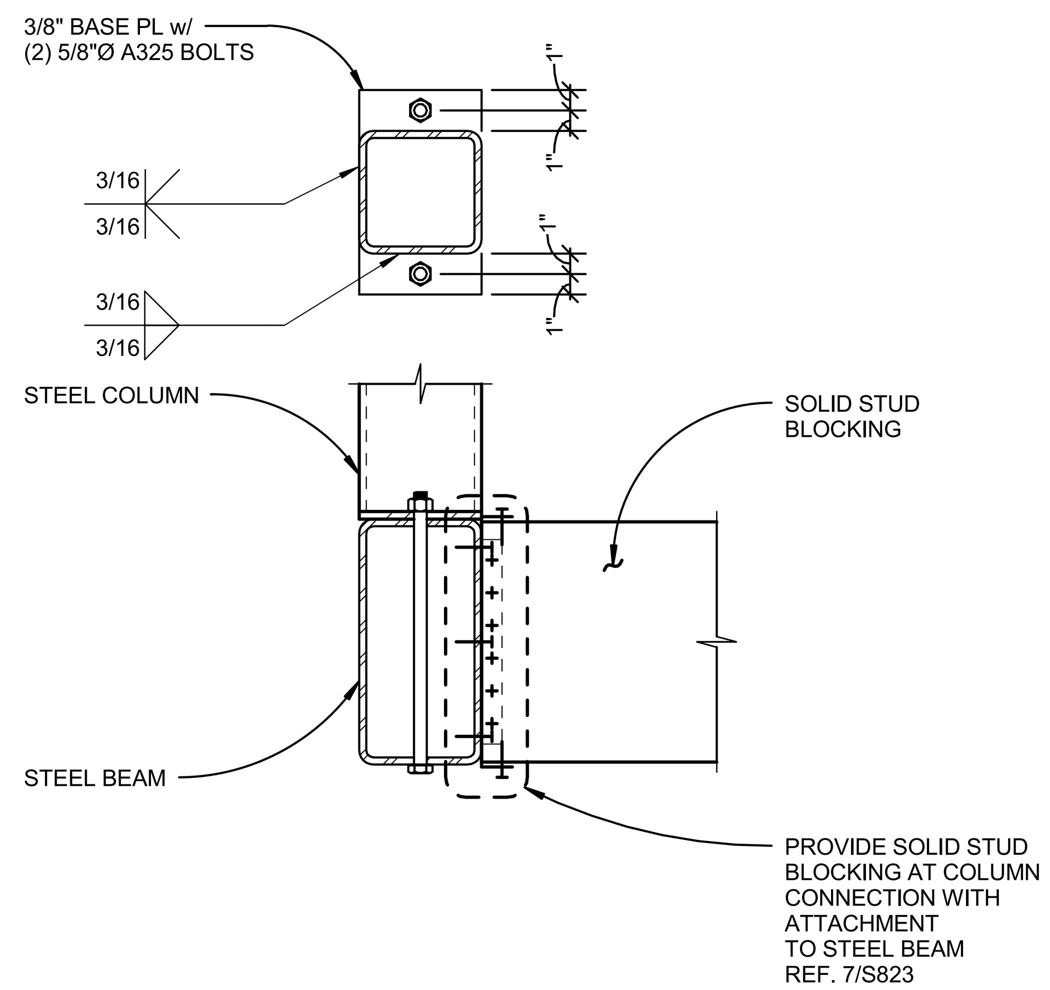
2 STEEL COLUMN HOLD-DOWN
1" = 1'-0" S231



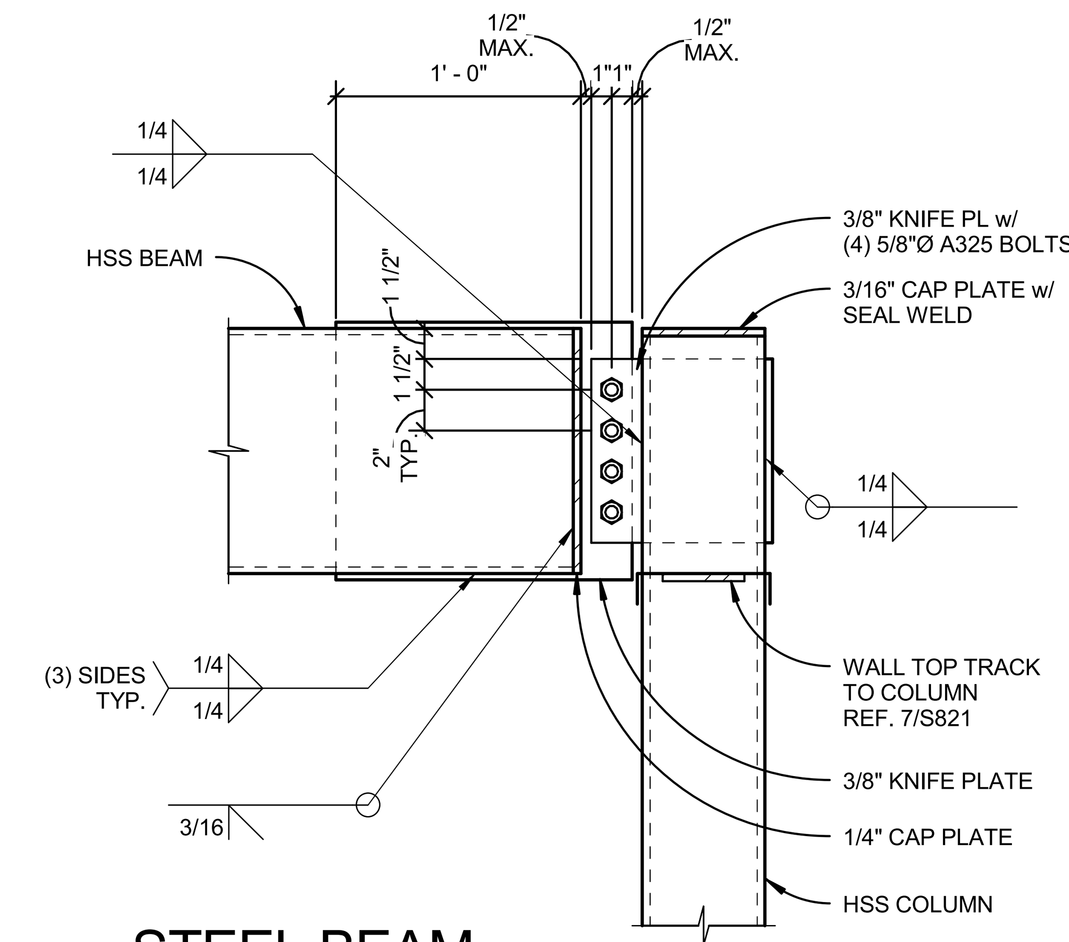
3 PENTHOUSE HOLD-DOWN
1" = 1'-0" S231

GMP SET

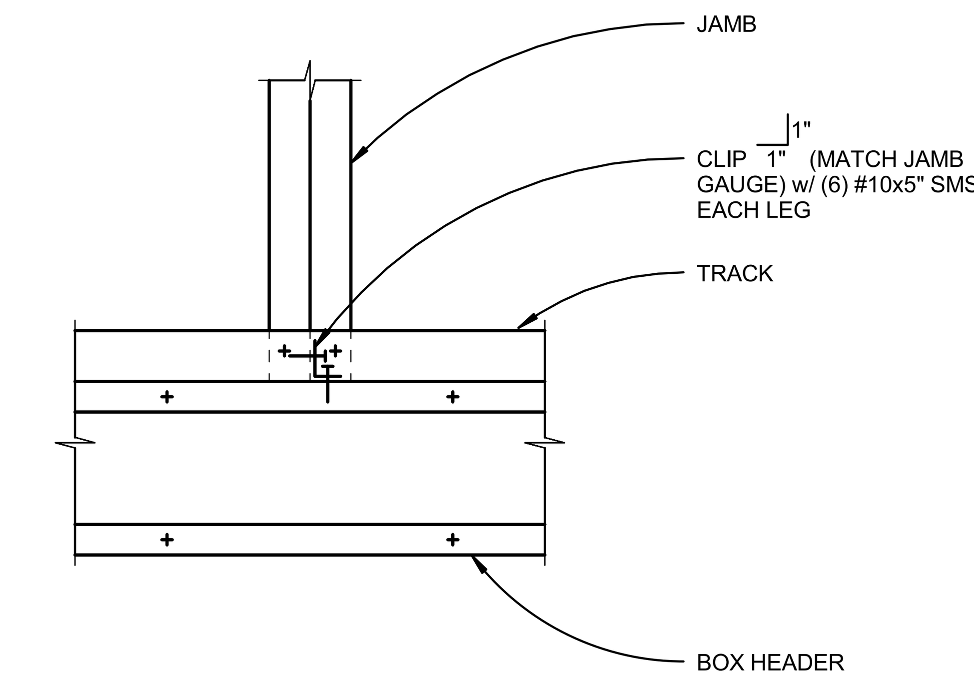
11/4/2016 9:55:11 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt



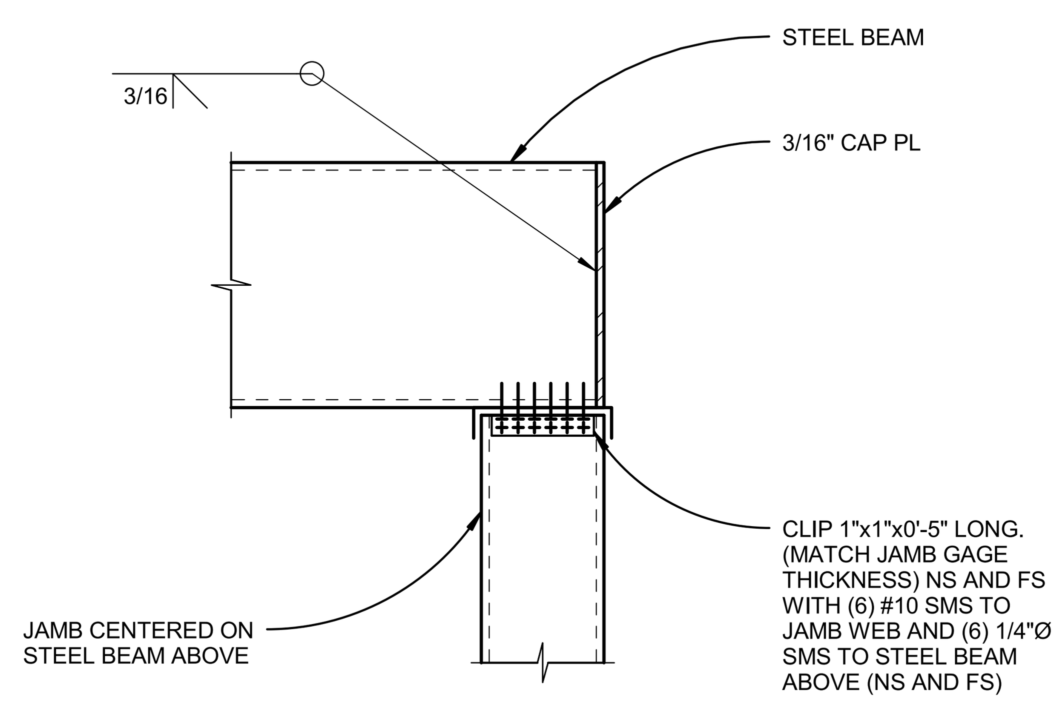
7 STEEL COLUMN TO BEAM DETAIL
1 1/2" = 1'-0" S113



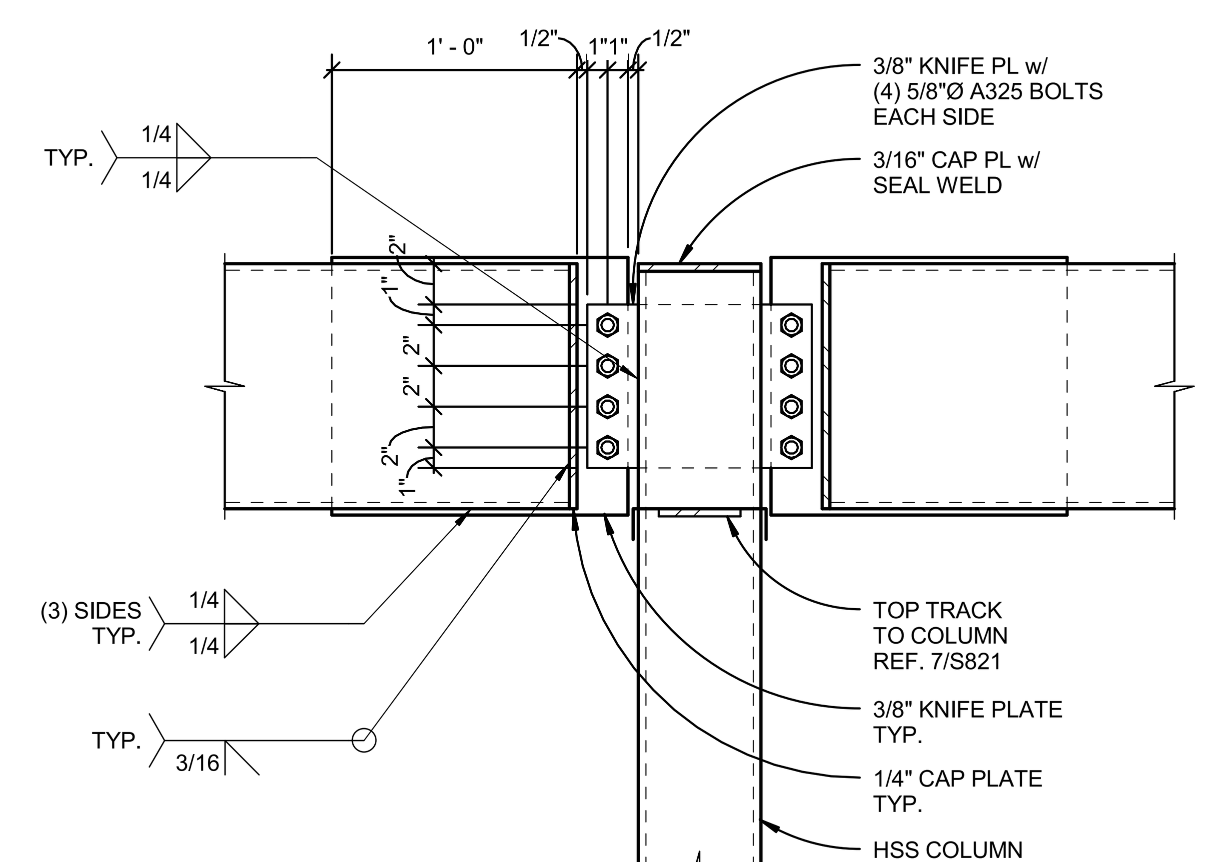
4 STEEL BEAM
TO COLUMN AT WALL DETAIL
1 1/2" = 1'-0" S113



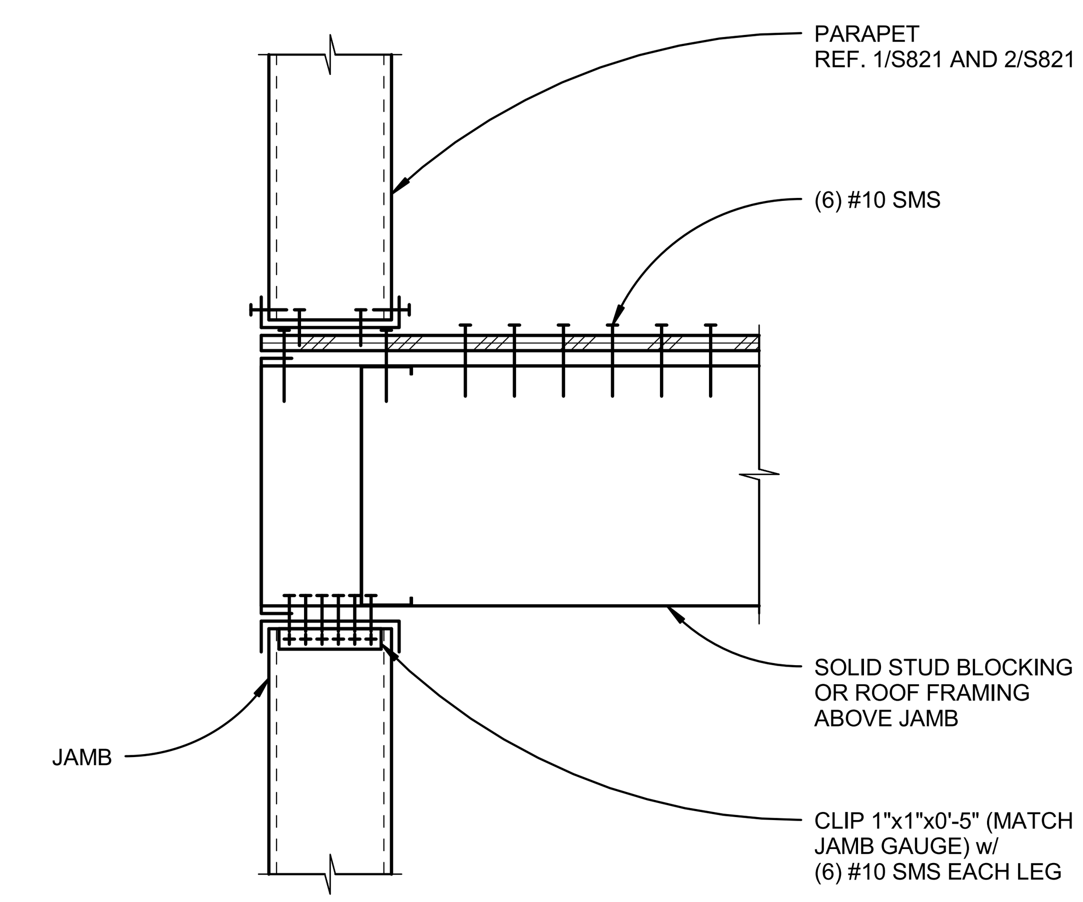
1 JAMB ABOVE HEADER DETAIL
1 1/2" = 1'-0" S805



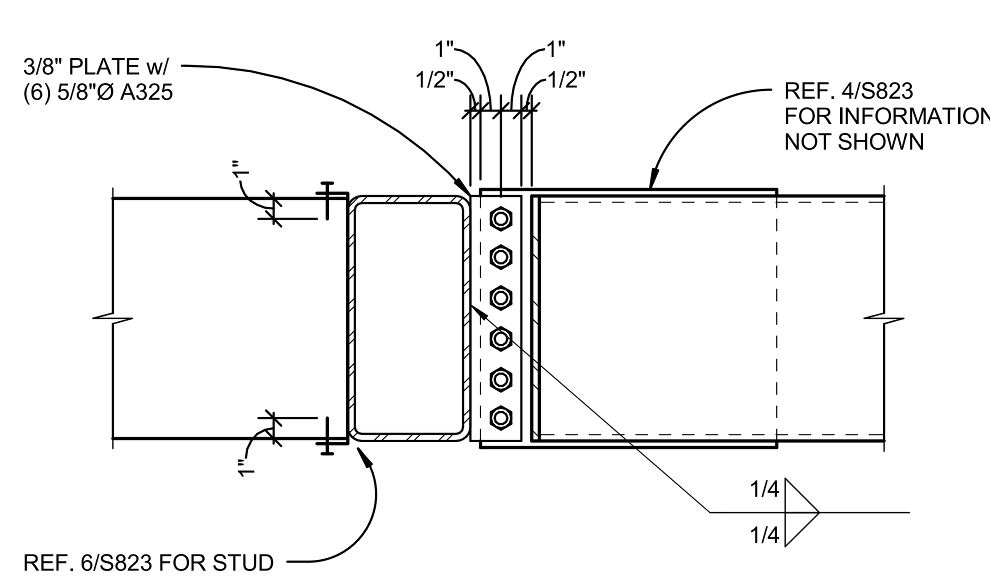
8 STEEL BEAM TO JAMB DETAIL
1 1/2" = 1'-0" S113



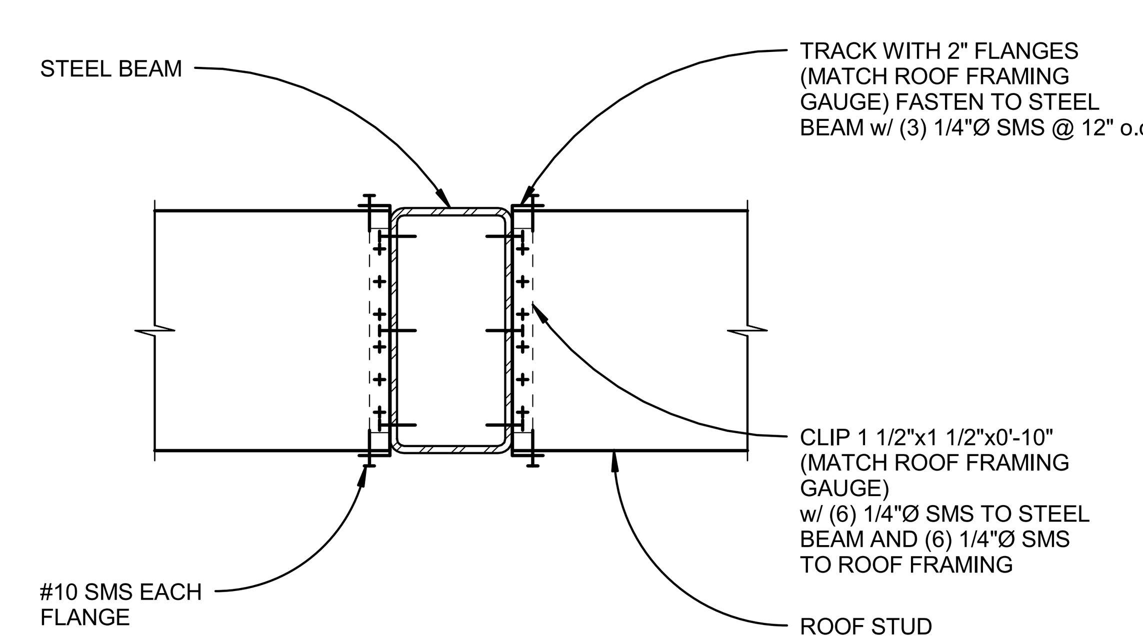
5 STEEL BEAMS TO INTERIOR COLUMN
1 1/2" = 1'-0" S113



2 JAMB TO ROOF DETAIL
1 1/2" = 1'-0" S805



9 STEEL BEAM TO BEAM DETAIL
1 1/2" = 1'-0" S113



6 ROOF
FRAMING TO STEEL BEAM DETAIL
1 1/2" = 1'-0" S113

3 NOT USED
1" = 1'-0"

FRAMEWORK

project^
413 SW 13th Ave, Suite 300
Portland, Oregon 97205
t. 503.922.0056

ARCHITECT
LEVER ARCHITECTURE
239 NW 13TH Ave,Ste 303
Portland, Oregon 97209
t. 503.928.6040
www.leverarchitecture.com

CONSULTANT
kpff
111 SW Fifth Ave., Suite 2500
Portland, OR 97204
O: 503.227.3251
F: 503.227.7980
www.kpff.com

STAMP

NOT FOR CONSTRUCTION

REVISIONS

DATE
NOVEMBER 4, 2016

PROJECT NUMBER
215135

SCALE
AS INDICATED

SHEET TITLE
ROOF FRAMING DETAILS

S823

GMP SET

11/4/2016 9:55:12 AM
C:\1REVIT\215135-Framework_STRUCT-16_chrisb.rvt

REPORT DELIVERABLE 14-B:
Final Permit Report