Business Services
Procurement and Contracting
16550 SW Merlo Road
Beaverton, OR 97003
(503) 356-4324

March 11, 2022

SOLICITATION ADDENDUM NO. 1
ITB 21-0022
Seismic Red Zones- Sunset High School Auditorium/Rock Creek Elementary Covered Play

THE FOLLOWING CHANGES/ADDITIONS TO THE ABOVE CITED SOLICITATION ARE ANNOUNCED:

This Addendum modifies the Invitation to Bid (ITB) document(s) only to the extent indicated herein. All other areas not changed or otherwise modified by this Addendum shall remain in full force and effect. This Addendum is hereby made an integral part of the ITB document. Bidder must be responsive to any requirements of this Addendum as if the requirements were set forth in the ITB. Failure to do so may result in Bid rejection. See the ITB regarding requests for clarification or change and protests of this Addendum, and the deadlines for the foregoing.

This addendum is to be acknowledged in the space provided on the Bidder Certification form supplied in the solicitation document. Failure to acknowledge receipt of this addendum may be cause to reject your offer.

The closing date **REMAINS UNCHANGED:**
March 29, 2022 at 2:00 PM Pacific Time

CLARIFICATIONS

PRE-BID CONFERENCE SIGN IN SHEET
See the attached sign in sheets for the attendees at the Pre-Bid Conference.

SPECIFICATIONS

1. 01 41 00 REGULATORY REQUIREMENTS 1.1 A.; Replace with, "Permit Applications: The Owner's Architect, Engineers and Consultants have produced the permit drawings. The Contractor will file the permit drawings with the Authority having Jurisdiction, will complete all required applications and will follow through with the Authority having Jurisdiction to ensure all permits are issued prior to the start of work."
2. 01 73 00 EXECUTION AND CLOSEOUT REQUIREMENTS 3.03 ADD;
   "J. Any welding work at indoor spaces to be done in conjunction with smoke capture equipment to minimize residual odors after work completed."

DRAWINGS

1. Sheet SK-3; Replace the Sheet with the attached revised sheet SK-3 dated 3/10/22.
2. KPFF drawings for Rock Creek; Replace with KPFF set dated 3/1/22. Drawing sheets include:
   S001 Drawing Index and List of Abbreviations
   S002 General Structural Notes
   S003 General Structural Notes Cont.
   S010 Special Inspections and Testing

S011 Special Inspections and Testing Cont.
S012 Special Inspections and Testing Cont.
S201 Foundation and Roof Framing Plan
S501 Foundation Details
S601 Framing Details

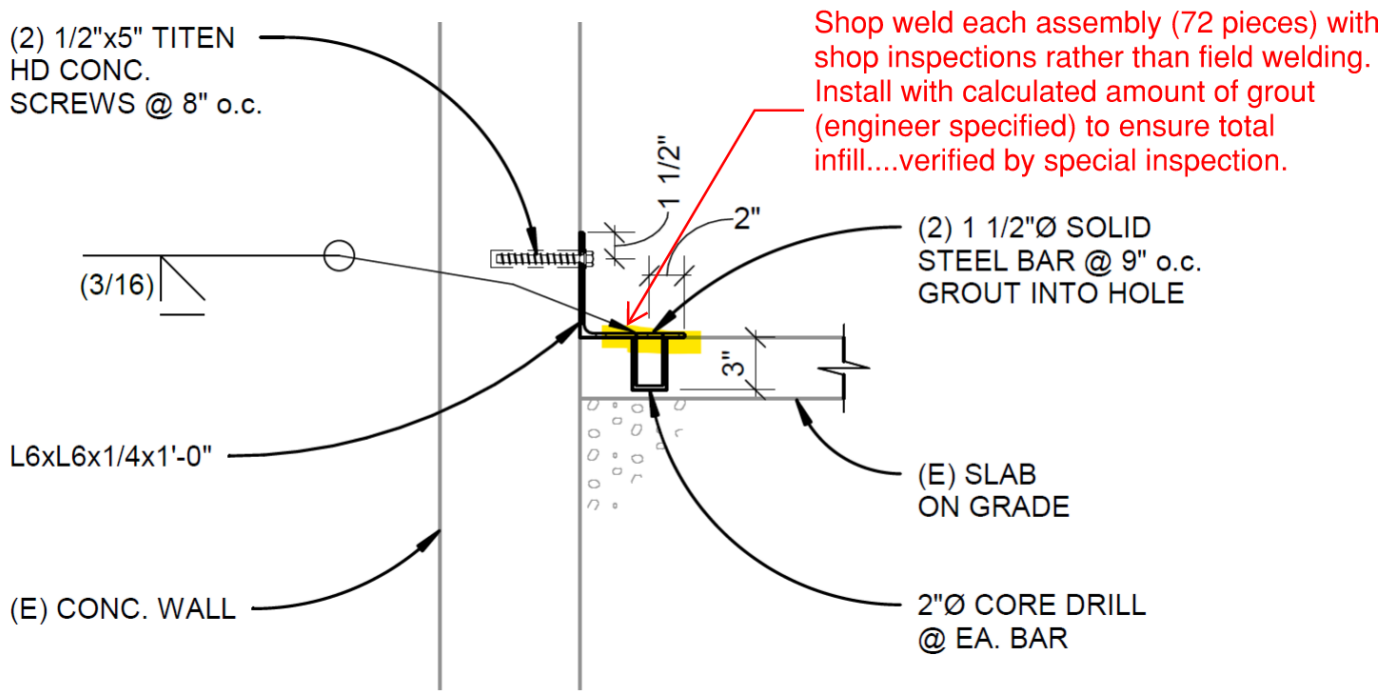
3. Please add KPFF Structural Calcs to the bid documents, 42 pages, with cover page dated 3/1. See attached.

ATTACHMENTS TO THIS ADDENDUM

1. Pre-Bid Conference sign in sheets (2 pages)
2. Revised Sheet SK-3 dated 3/10/22 (1 page)
3. Revised KPFF Rock Creek drawings dated 3/1/22 (9 pages)
4. Rock Creek Elementary Calculation Sheets by KPFF (42 pages)

BIDDER QUESTIONS

QUESTION: At today's site walk at Sunset High School we discussed shop welding the 1 ½" solid steel bar to the L6x6 rather than field welding, then installing the entire assembly into the 2" core drilled hole using a pre-measured amount of grout to ensure the correct amount to completely fill the space surrounding the steel bar. Based on calculations we could overfill the epoxy by xx% to ensure complete fill with minimal overspill. All amounts specified by engineer of record. Is this a possibility?



ANSWER: The approach would be acceptable in general, but determining the amount of grout would be part of the Contractor's means and methods work, not by KPFF as EOR.

QUESTION: At Rock Creek Elementary there was discussion of patching the asphalt in the area of the new footings where the asphalt is not currently scheduled to be replaced in the concurrent project. It seems to make more sense based on the condition of all of the asphalt to simply replace all of it under the contract for the asphalt and concrete project. Is this a possibility?

ANSWER: Please refer to Addendum #1 -SK-3. Asphalt to be replaced under this contract.

BEAVERTON
SCHOOL DISTRICT

ATTENDANCE SHEET

Meeting: ITB 21-0022 Pre-Bid Conference
Project: Seismic Upgrades- SHS Auditorium/RC Elementary Covered Play
Date & Time: March 9, 2022- 3:00PM

Name	Organization / Address	Phone Number	Email Address
John Darke	A Five Const.	503 984 9061	john@afiveconstruction.net
Aaron Hakala	A Five Construction	971-235-3614	aaron@afiveconstruction.net
Travis Haycraft	TH builders Corp.	503 502-7244	thaycraft@toddhess bldg.
Kurt Meenuga	BSD	503 964-2091	Kurt_Meenuga@beaverton.k12.or.us
Brad Dunkroup	~~AGC~~ ASA	503 887-1728	HEATHER@ASA CONSTRUCTION.COM

BEAVERTON
SCHOOL DISTRICT

ATTENDANCE SHEET

Meeting: ITB 21-0022 Pre-Bid Conference
Project: Seismic Upgrades- SHS Auditorium/RC Elementary Covered Play
Date & Time: March 9, 2022- 3:00PM

Name	Organization / Address	Phone Number	Email Address
[illegible]	Harkins Drywall	360.414.0721	Daniel@Harkinsdrywall.com
Josh Philippi	Buildskape	503-277-9549	Josh@Build-skape.com
Pete Chei	Buildskape	503-351-6526	Pete@Build-skape.com
CURTIS ROTHENBUHLER	INLINE	503-619-9998	curtisr@inline-cc.com
PATRICK O'Herron	BSD	—	—

March 1, 2022

Mr. Kurt Meeuwsen
Beaverton School District
16550 SW Merlo Road
Beaverton, OR 97003

Re: Rock Creek Elementary School: Covered Play Seismic Upgrades

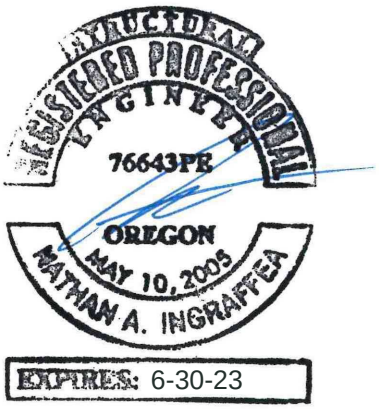
Dear Kurt:

Attached please find calculation sheets 1 through A7, dated March 1, 2022, which verify the structural adequacy of the Rock Creek Elementary School: Covered Play Seismic Upgrades project, as shown on drawings S001 through S601 dated March 1, 2022. Design is a voluntary seismic upgrade but based on the requirements of the 2019 Oregon Structural Specialty Code, based on the 2018 International Building Code.

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

Sincerely,

Mike Dutton, SE
Associate



Attachments

Project No. 10022100871

kpff Portland, Oregon	Project ROCK CREEK ELEM.	By MJD	Sheet No. 1
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-210087
		Date	

SCOPE

- VOLUNTARY SEISMIC UPGRACE FOR COVERED PLAY AREA
- INCLUDES:
  - (2) NEW MOMENT FRAMES + FOOTINGS
  - TENSION TIES + DIAPHRAGM ATTACHMENT TO NEW LATERAL SYSTEM

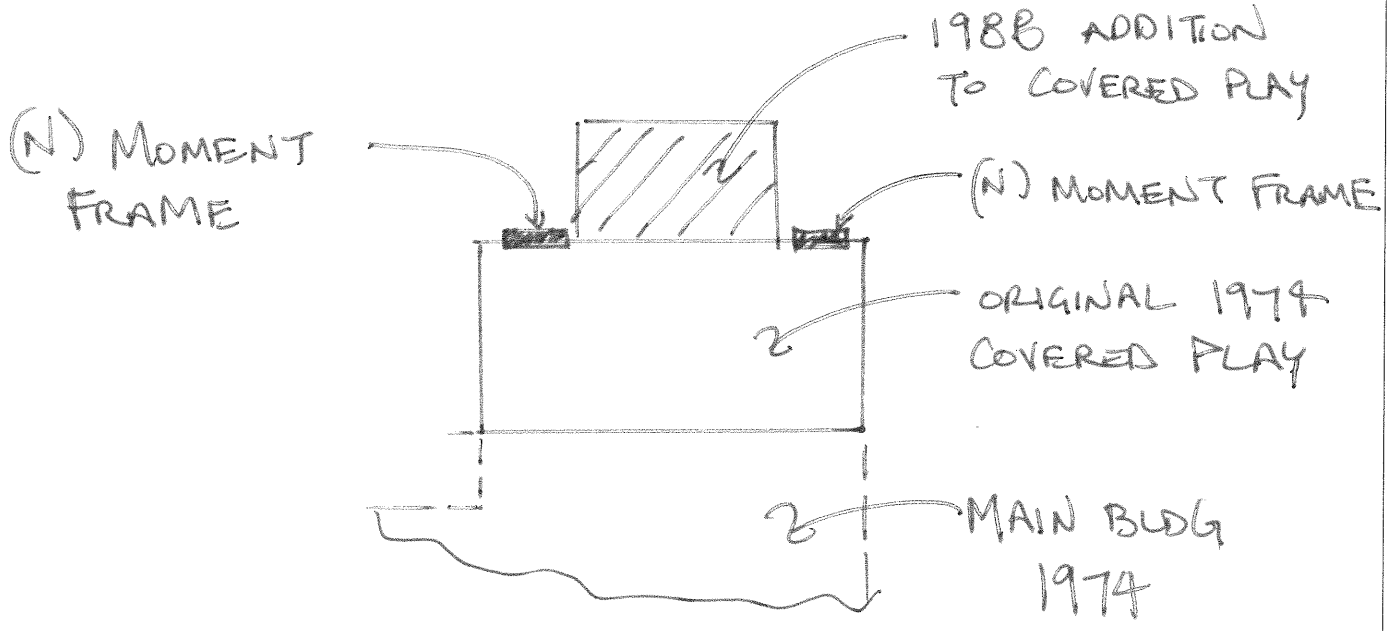
CODE

(N) ELEMENTS DESIGNED TO:

- 2019 OSSC
  - ASCE 7-16

REF. DWGS

- 1974 ORIGINAL DRAWINGS
- 1988 ADDITION DRAWINGS



kpff Portland, Oregon	Project ROCK CREEK ELEM	By MJD	Sheet No. 2
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-2100871
		Date	

SEISMIC

ADDRESS: 4125 NW 185TH AVE, PORTLAND OR 97229

LAT = 45.549800

LONG. = -122.869480

RISK CATEGORY: ~~III~~

SITE CLASS: D (DEFAULT)

S_{DS} = 0.729g

(FROM ATC HAZARDS BY LOCATION WEBSITE)

SEE ATTACHED

→ SEISMIC DESIGN CATEGORY D

Hazards by Location

Search Information

Coordinates: 45.5498, -122.86948

Elevation: 230 ft

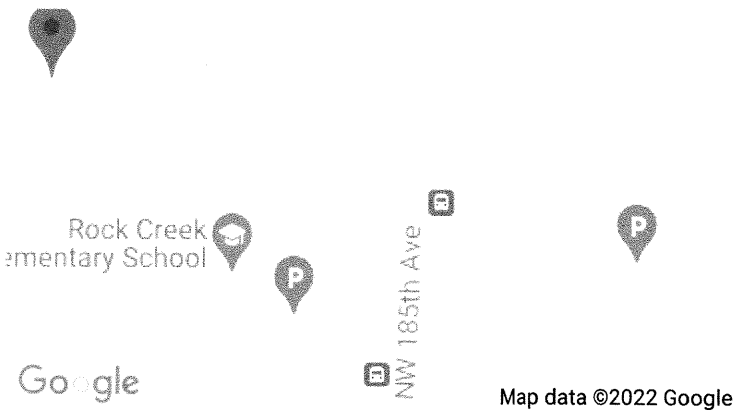
Timestamp: 2022-01-21T00:24:02.879Z

Hazard Type: Seismic

Reference Document: ASCE7-16

Risk Category: III

Site Class: D-default



Basic Parameters

Name	Value	Description
S_S	0.911	MCE_R ground motion (period=0.2s)
S_1	0.422	MCE_R ground motion (period=1.0s)
S_{MS}	1.093	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	0.729	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.885	Coefficient of risk (0.2s)
CR_1	0.868	Coefficient of risk (1.0s)
PGA	0.416	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.499	Site modified peak ground acceleration
T_L	16	Long-period transition period (s)

SsRT	0.911	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.03	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.422	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.486	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.638	Factored deterministic acceleration value (1.0s)
PGAd	0.522	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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SEISMIC (CONT.)

LATERAL SYSTEM:

(E) → AB. INTERMEDIATE REINF. MASONRY SHEAR WALL

(N) → C4. STEEL ORDINARY MOMENT FRAMES

$R = 3.5$ (FOR BOTH SYSTEMS)

HT LIMIT FOR SYSTEM IN SDC 'D'

FOOTNOTE "l" ⇒ §12.2.5.6

(2) → SINGLE STORY ✓
→ SDC D OR E ✓
→ HT < 65 FT ✓
→ DL < 20 PSF ✓
→ DL EXTERIOR WALLS → N/A

§12.8 ELF PROCEDURE

$V = C_S W$

$C_S = \frac{S_{DS}}{R/I_e}$, $I_e = 1.25$ FOR RISK CAT. III

$C_S = \frac{0.729}{3.5/1.25} = 0.260$

MIN $C_S = 0.044 S_{DS} I_e \geq 0.01$

$= 0.04$

CONTROLLING $C_S = 0.260$

VERTICAL COMPONENT § 12.4.2.2

$E_V = 0.2 S_{DS} D = 0.146 D$

$\rho = 1.0$

DIAPHRAGM § 12.10.1

F_{px} = FULL AMOUT $C_S W_p = 0.260 w_{px}$

MIN $F_{px} = 0.2 S_{DS} I_e w_{px} = 0.182 w_{px}$ ✓

MAX $F_{px} = 0.4 S_{DS} I_e w_{px} = 0.35 w_{px}$ ✓

∴ $F_{px} = 0.260 w_{px}$

COLLECTORS § 12.10.3

USE $\Omega_0 = 3$

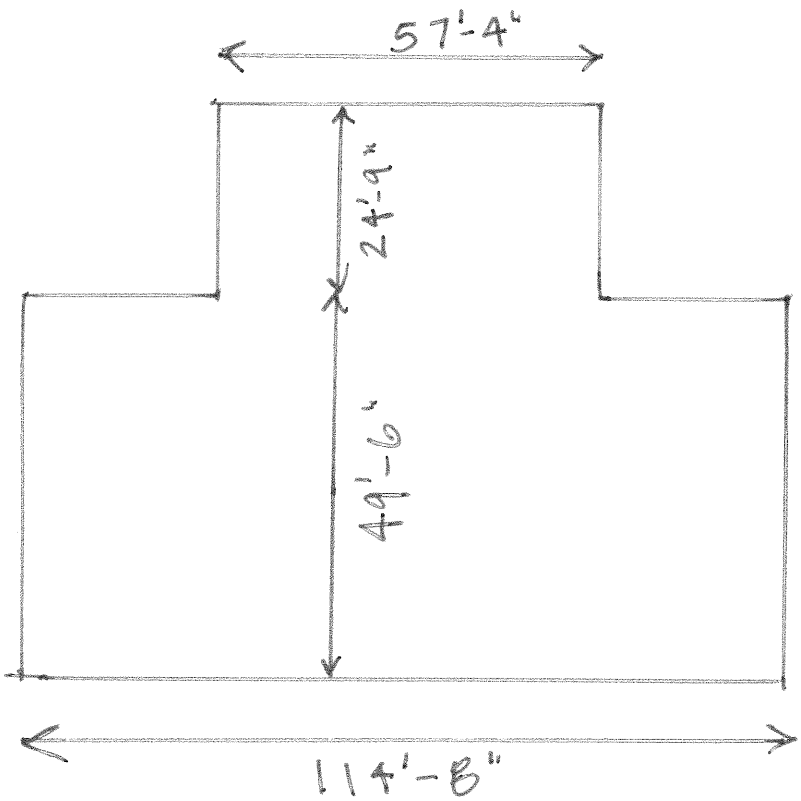
FOR COLLECTORS + C_{NN},

kpff Portland, Oregon	Project ROCK CREEK ELEM.	By MJD	Sheet No. 7
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-2100871
		Date	

MASS TAKE OFF

ROOFING	6.0 PSF
1 1/8" PLYWOOD	3.4 PSF
4x12 @ 4'-6" o.c.	2.3 PSF
GL 5 1/8x24 @ 25' o.c.	1.2 PSF
3"ϕ STEEL COLS 28'-8" o.c. x 24'-9" o.c. x 10'-2" TALL	0.2 PSF
	13.1 PSF

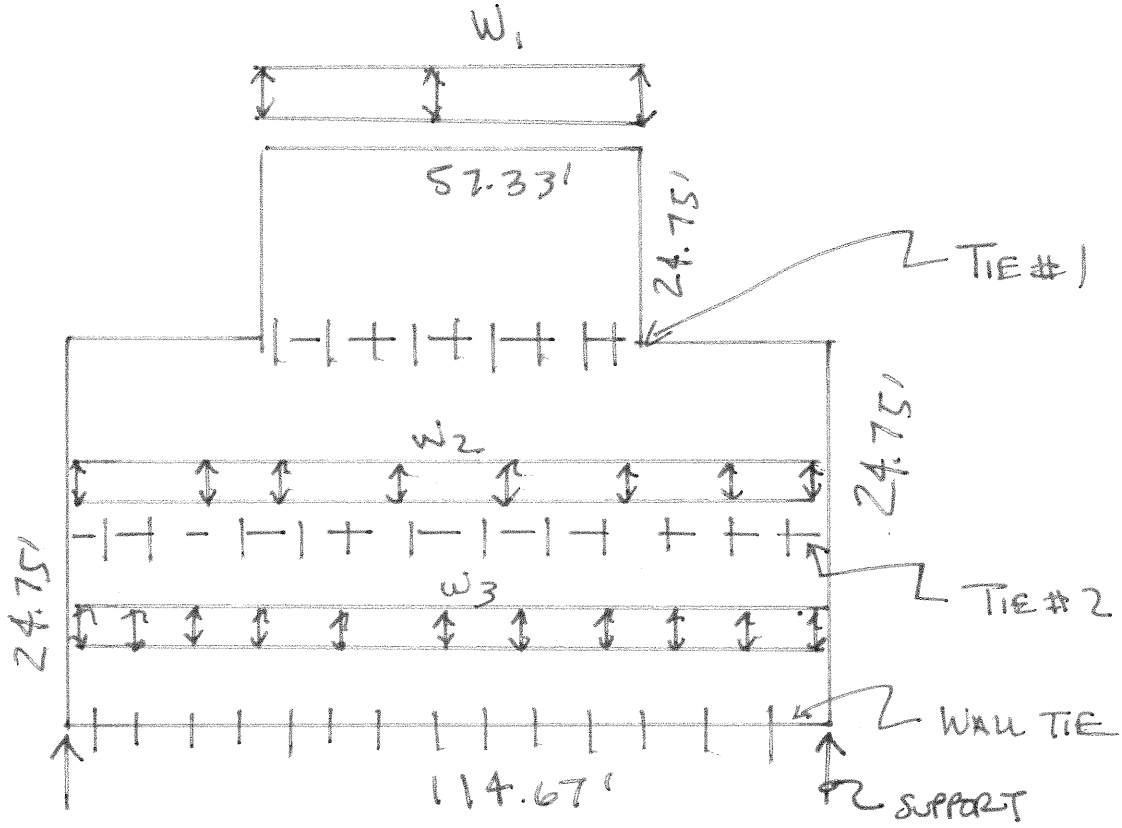
SAY 14 PSF w/ MISC. WT



PLAN

kpff Portland, Oregon	Project ROCK CREEK ELEM	By MJD	Sheet No. 8
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-210087
		Date	

LOADING E/W



$W_1 = 0.26\,(14\text{PSF})(24.75')(0.7) = 63$ PLF (ASD)

$W_2 = 0.26\,(14\text{ PSF})(24.75')(0.7) = 63$ PLF (ASD)

$W_3 = 0.26\,(14\text{PSF})(24.75')(0.7) = 63$ PLF (ASD)

TIE #1 = 63 PLF × 12' = 756 # / TIE

TIE #2 = (63+63) × 12' = 1512 # / TIE

WALL TIE = (63+63+63)(4') = 756 # / TIE (ACD)

(TIES EVERY 3RD JOIST)
(EVERY JOIST @ WALL)

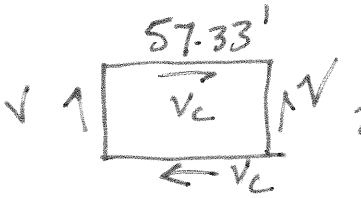
DIAPHRAGM CHECKS

1⅛" T&G PLYWOOD W/ MIN 10d NAILS @ 6" o.c. @ ALL SUPPORTS (PER (E) DOCUMENTS)

MIN v_s = 480 PLF (TABLE 4.2C NDS FOR UNBLOCKED DIAPH.)

E/W EQ DIRECTION

DIRECT SHEAR



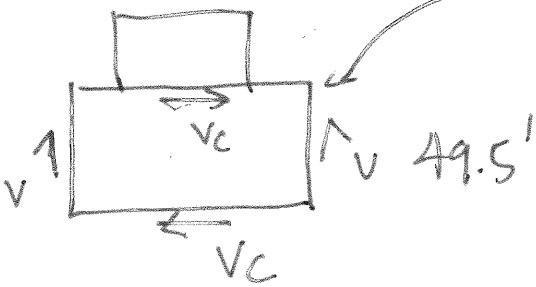
← UPPER PORTION

$$v = \frac{63\text{PLF} \times 57.33'}{2(24.75')} = 73\text{PLF (ASD)} < v_s \text{ OK}$$

CHORDS

$$v_c = \frac{63\text{PLF} \times (57.33')^2}{8(24.75)(57.33)} = 18\text{PLF (ASD)} \checkmark \text{ OK}$$

LOWER PORTION



$$v = [126\text{PLF}(114.67')/2 + 63(57.33')/2]/49.5'$$

v = 182 PLF < 480 PLF OK

kpff
Portland, Oregon

Project: Rock Creek Elem.	By: MJH	Sheet No.: 10	
Location: Portland, OR	Date: 2/9/22		
Client: BSD	Revised	Job No.: 1002-210871	
	Date		

Lower Portion Chords

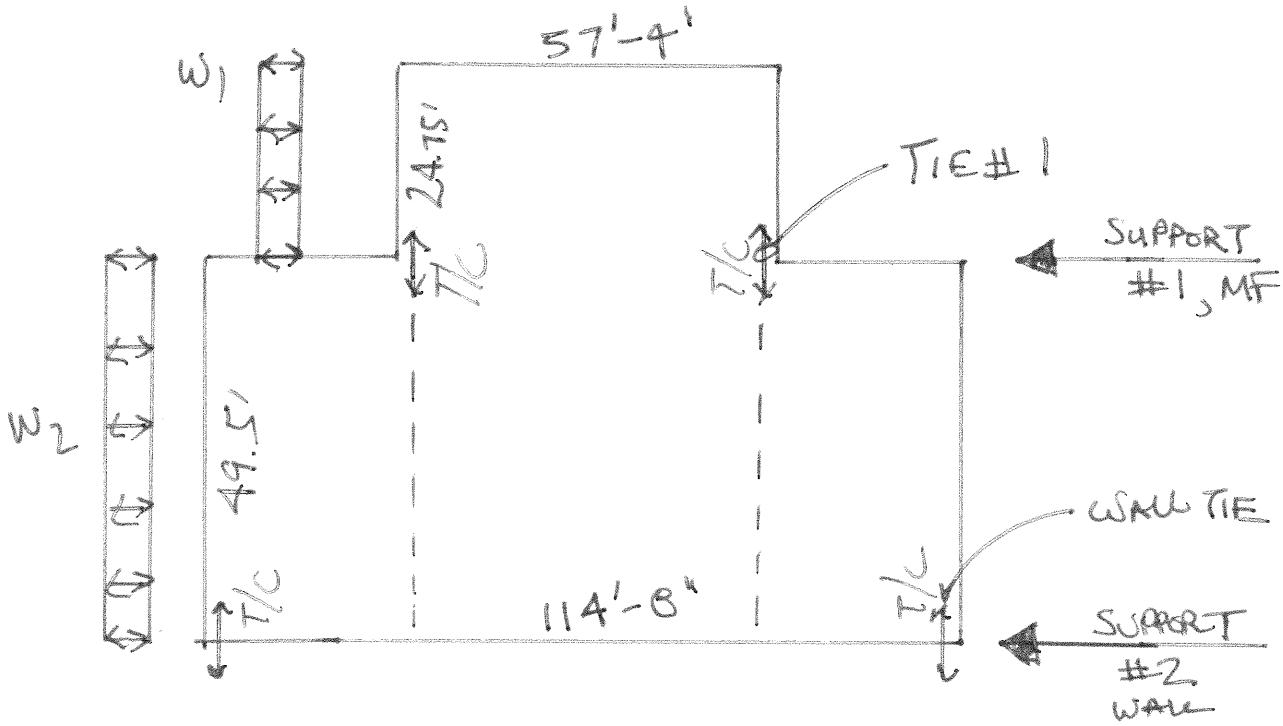
Conservatively add in upper portion as full width

$$V_c = \frac{189\ PLF \times (114.67')^2/8}{(49.5')(114.67')}$$

$= 55\ PLF$ OK

kpff Portland, Oregon	Project ROCK CREEK ELEM.	By MJD	Sheet No. 11
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-210871
		Date	

LOADING N/S



$W_1 = 0.26(14\,PSF)(0.7)(57.33') = 146\,PLF\ (ASD)$

$W_2 = 0.26(14PSF)(0.7)(114.67') = 292\,PLF\ (ASD)$

SUPPORT #1

$$V_1 = \frac{(146\,PLF)(49.5' + 24.75')^2}{2(49.5')} + (292PLF - 146)\left(\frac{49.5}{2}\right)$$

$= 8,131\# + 3,614\#$

$V_1 = 11,744\#$

$$V_2 = \frac{146PLF(49.5^2 - 24.75^2)}{2(49.5)} + (292 - 146)\left(\frac{49.5}{2}\right)$$

$V_2 = 6,324\#$

LOADING N/S (CONT.)
CHORD FORCES

@ TIE #1

$M = 146\ PLF (24.75')^2/2 = 44,717\ \#-'$

$T/C = \frac{M}{57.33'} = 780\ \#\ (ASD)$

(DOES NOT CONTROL OF E/W DIRECT)

@ WALL TIE

$M = 292\ PLF (49.5')^2/8 = 89,434\ \#-'$

$T/C = \frac{M}{114.67'} = 780\ \#\ (ASD)$

(DOES NOT CONTROL OVER E/W DIRECT)

kpff Portland, Oregon	Project ROCK CREEK ELEM	By MJD	Sheet No. 13
	Location PORTLAND, OR	Date 2/9/22	
	Client PSD	Revised	Job No. 1002-210087.1
		Date	

DIAPHRAGM CHECKS

DIAPH. CAP. $v_s = 480$ PLF

DIRECT $v = \frac{8,131\#}{57.33'} = 142$ PLF < 480 PLF ✓ OK

DIRECT $v = \frac{11,744\#}{114.67'} = 102$ PLF ✓ OK

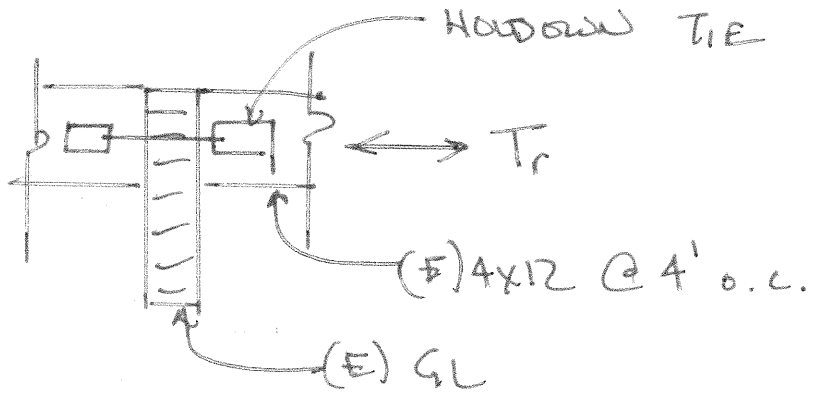
SUPPORT @ WALL

DIRECT $v = \frac{6,329\#}{114.67'} = 55$ PLF ✓ OK

→ CHORDS → LOWER SHEAR ✓ OK

kpff Portland, Oregon	Project ROCK CREEK ELEM.	By MJD	Sheet No. 14
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-2100871
		Date	

BEAM TO BEAM TIES



T_r:

DIRECT = 1512# / TIE — (ASD) — MAX @ TIE #2 LOCATION

CHORD = 780 # / TIE (MAX) — (ASD)

SIMPSON IHTT4 ⇒ T_{ALL} = 3,610 # ✓ OK

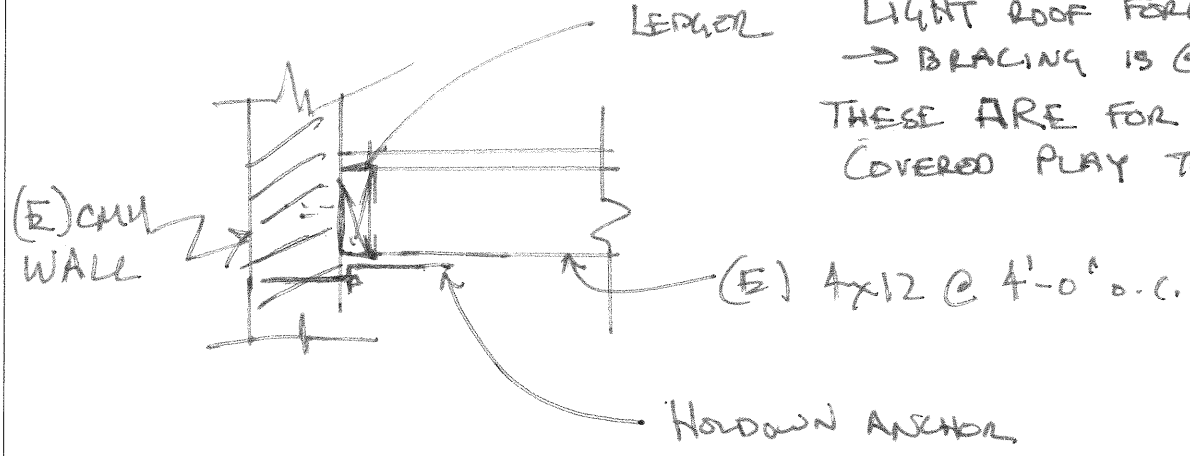
ANCHOR ⌀ ⇒ 5/8" ⌀ THRD'D ROD

(18) 0.148 x 1 1/2, IN MIN 4X BEAM

* TENSION TIES EVERY 3RD JOIST (12' o.c.) MAX

kpff Portland, Oregon	Project ROCK CREEK ELEM	By MJD	Sheet No. 15
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-240081
		Date	

BEAM TO WALL TIES → THIS IS NOT TO BRACE THE WALL FOR HEAVY WALL/LIGHT ROOF FORCES.
→ BRACING IS @ MAIN ROOF.
THESE ARE FOR TIEING COVERED PLAY TO BUILDING.



Tr:

DIRECT = 756 # / TIE (ASD)

CHORD = 780 # / TIE (ASD)

SIMPSON LTTP2 → T_{ALL} = 2,275 # ✓OK

→ COMPATIBLE W/ 1/2", 5/8" OR 3/4" ROD

ANCHOR TO (E) CMU WALL W/ EPOXY ANCHORS
→ GROUTED CELLS @ COVERED PLAY ROOF LINE
→ NO EDGE DISTANCE RESTRICTIONS
→ PER (E) DRAWINGS

5/8" ϕ IN BRICK MASONRY → HY-270

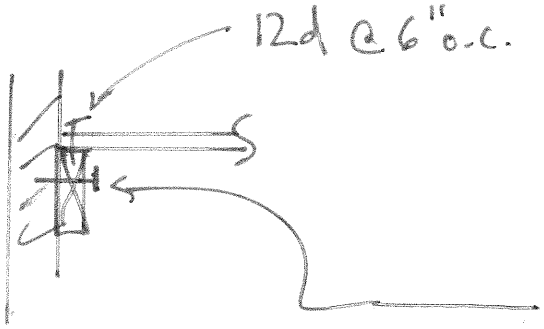
T_{ALL} = 1025 # FOR 6" EMBEDMENT ✓OK

5/8" ϕ THRD ROD IN HY-270, 6" EMBED @ 4'-0" o.c.

SHEAR @ (E) WALL LINE

$V_2 = 6,324^{\#}$ (ASD)

$v = \frac{6324^{\#}}{114.67'} = 55 PLF$ (ASD)



→ ADD NEW ANCHORS FOR SEISMIC SHEAR TRANSFER

$V = 55 PLF \times 1.33' = 74^{\#}$ / BOLT

5/8" ϕ x 6" EMBED, HY 270

$V_{ALL} = 1,405^{\#}$ / BOLT

ADD 5/8" ϕ x 6" EMBED EPOXY ANCHORS IN HY-270 @ 4'-0" o.c. THRU LEDGER

kpff Portland, Oregon	Project ROCK CREEK ELEM.	By MJD	Sheet No. 17
	Location PORTLAND, OR	Date 2/9/22	
	Client BSD	Revised	Job No. 1002-210871
		Date	

MOMENT FRAMES

SUPPORT #1

$V = 11,744^{\#}$ TOTAL

→ USE (2) MOMENT FRAMES OF EQUAL STIFFNESS

→ DIVIDE LOAD BY 2

$V_{FRAME} = 5872^{\#}$ (ASD) PER FRAME

→ STRONG FRAME DESIGN

→ SEE STRONG FRAME CALC PACKAGE

ATTACHMENT TO FRAMES

$V = 5872^{\#}$

$v = \frac{5872^{\#}}{15'} = 391$ PLF

SIMPSON LTP5 CLIPS: $V_{ALL} = 565^{\#}$ / CLIP

(12) 0.131 X 1 1/2" NAILS

kpff Portland, Oregon	Project ROCK CREEK ELEM.	By MJD	Sheet No. 18
	Location PORTLAND, OR.	Date 2/9/22	
	Client BSD	Revised	Job No. 1052-21,00871
		Date	

USE CLIP ON EA. SIDE:

$2(565^{\#}) \times 6 = 6780^{\#} > V$ OK

USE (6) LTPS CLIPS PER SIDE
(12) TOTAL

DIAPHRAGM TO FRAME

DIAPHRAGM CAP = 480PLF > 391 PLF CAPACITY

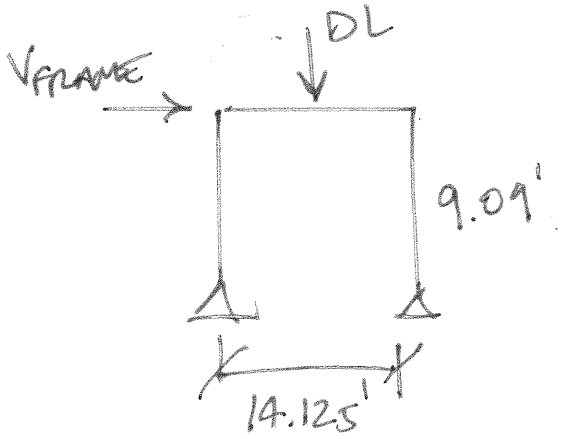
LOADS TO FRAME CAN BE DELIVERED DIRECT TO FRAME W/O COLLECTORS

→ CHECK TENSION TIES FOR CHORD FORCES

DEMAND = 756#

HDU 8-SDS 2.5 W/ 7/8"Ø ANCHOR BOLT → TALL = 7,870# OK

FOUNDATION DESIGN



$V_{FRAME} = 5872^{\#}$ (ASD) $/ 0.7 = 8389^{\#}$ (LRFD)

$M_{OT} = 8389^{\#} \times 9.09' = 76{,}256^{\#-'}$

$DL = 180PLF \times 15' + 85PLF \times 13.3' + 30PLF \times 2 \times 9.09'$ (BM) (COLS)

$= 3711^{\#}$

$M_R = 0.9 \times 3711^{\#} \times \frac{14.125'}{2} = 23{,}588^{\#-'}$

$T_{UPLIFT} = \frac{76{,}256 - 23588}{14.125'} = 3729^{\#}$ UP.

$FTG = \frac{3729^{\#}/0.9}{150PCF \times 1' \text{ THICK}} = 27.6SF \rightarrow 5.25'$ ✗

MIN SIZE = $5.5' \times 5.5' \times 1'$ THICK

Tekla Tedds KPFF	Project: Rock Creek Elem.				Job Ref.: 1002210071
	Section				Sheet no./rev.: 21
	Calc. by: M	Date: 2/7/2022	Chk'd by: MJO	Date	App'd by / Date

FOOTING ANALYSIS

In accordance with ACI318-14

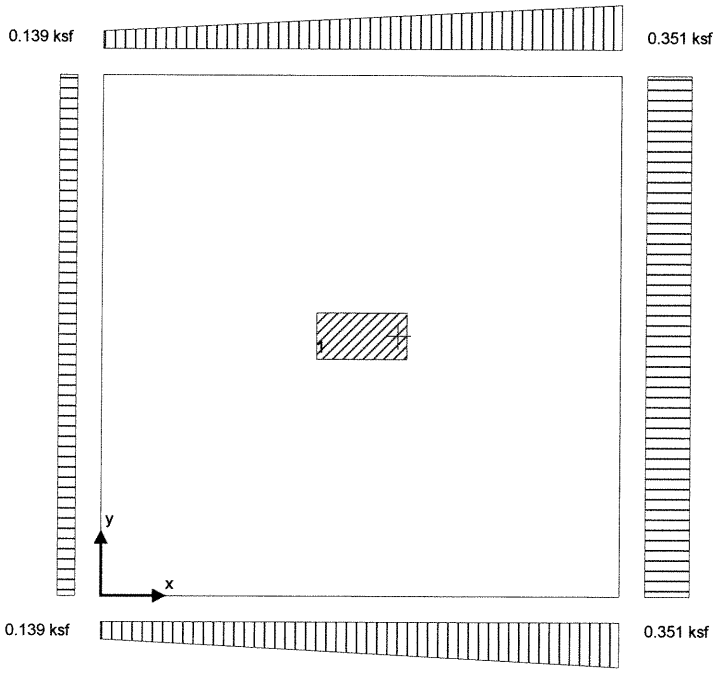
Tedds calculation version 3.3.02

Summary results

Description	Unit	Applied	Resisting	FoS	Result
Uplift verification	kips	7.4			Pass
Overturning stability, x	kip_ft	2.94	-20.40	6.94	Pass
Sliding stability, x	kips	2.9	4.3	1.457	Fail
Description	**Unit**	**Applied**	**Resisting**	**Utilization**	**Result**
Soil bearing	ksf	0.351	1.5	0.234	Pass
Description	**Unit**	**Provided**	**Required**	**Utilization**	**Result**
Moment, positive, x-direction	kip_ft	5.5	75.1	0.073	Pass
Moment, positive, y-direction	kip_ft	4.8	82.5	0.058	Pass
Shear, one-way, x-direction	kips	3.4	49.3	0.069	Pass
Shear, one-way, y-direction	kips	2.8	49.3	0.057	Pass
Shear, two-way, Col 1	psi	13.981	189.737	0.074	Pass
Min.area of reinf, bot., x-direction	in^2	1.426	2.200		Pass
Max.reinf.spacing, bot, x-direction	in	18.0	14.8		Pass
Min.area of reinf, bot., y-direction	in^2	1.426	2.200		Pass
Max.reinf.spacing, bot, y-direction	in	18.0	14.8		Pass

Pad footing details

Length of footing	L_x = **5.5** ft
Width of footing	L_y = **5.5** ft
Footing area	$A = L_x \times L_y$ = **30.25** ft^2
Depth of footing	h = **12** in
Depth of soil over footing	h_{soil} = **3** in
Density of concrete	γ_{conc} = **150.0** lb/ft^3



Column no.1 details

Length of column	l_{x1} = **11.50** in
Width of column	l_{y1} = **5.88** in
position in x-axis	x_1 = **33.00** in
position in y-axis	y_1 = **33.00** in

SIZE PER STRONG FRAME

Soil properties

Gross allowable bearing pressure	q_{allow_Gross} = **1.5** ksf
Density of soil	γ_{soil} = **120.0** lb/ft^3
Angle of internal friction	ϕ_b = **30.0** deg
Design base friction angle	δ_{bb} = **30.0** deg
Coefficient of base friction	$\tan(\delta_{bb})$ = **0.577**
Self weight	$F_{swt} = h \times \gamma_{conc}$ = **150** psf
Soil weight	$F_{soil} = h_{soil} \times \gamma_{soil}$ = **30** psf

Column no.1 loads

Dead load in z	F_{Dz1} = **1.9** kips
Live roof load in z	F_{Lrz1} = **1.9** kips
Snow load in z	F_{Sz1} = **2.3** kips
Seismic load in z	F_{Ez1} = **5.4** kips
Seismic load in x	F_{Ex1} = **4.2** kips

Footing analysis for soil and stability

Load combinations per ASCE 7-16

1.0D (0.161)

1.0D + 1.0L (0.161)

1.0D + 1.0Lr (0.202)
1.0D + 1.0S (0.212)
1.0D + 0.75L + 0.75Lr (0.192)
1.0D + 0.75L + 0.75S (0.200)
$(1.0 + 0.14 \times S_{DS})D + 0.7E$ (0.430)
$(1.0 + 0.10 \times S_{DS})D + 0.75L + 0.75S + 0.525E$ (0.327)
$(0.6 - 0.14 \times S_{DS})D + 0.7E$ (0.687)

Combination 16 results: $(0.6 - 0.14 \times S_{DS})D + 0.7E$

Forces on footing

Force in x-axis — $F_{dx} = \gamma_E \times F_{Ex1}$ = **2.9** kips

Force in z-axis — $F_{dz} = \gamma_D \times A \times (F_{swt} + F_{soil}) + \gamma_D \times F_{Dz1} + \gamma_E \times F_{Ez1}$ = **7.4** kips

Moments on footing

Moment in x-axis, about x is 0 — $M_{dx} = \gamma_D \times (A \times (F_{swt} + F_{soil}) \times L_x / 2) + \gamma_D \times (F_{Dz1} \times x_1) + \gamma_E \times (F_{Ez1} \times x_1 + F_{Ex1} \times h)$ = **23.3** kip_ft

Moment in y-axis, about y is 0 — $M_{dy} = \gamma_D \times (A \times (F_{swt} + F_{soil}) \times L_y / 2) + \gamma_D \times (F_{Dz1} \times y_1) + \gamma_E \times (F_{Ez1} \times y_1)$ = **20.4** kip_ft

Uplift verification

Vertical force — F_{dz} = **7.417** kips

PASS - Footing is not subject to uplift

Stability against overturning in x direction, moment about x is L_x

Overturning moment — $M_{OTxL} = \gamma_E \times (F_{Ex1} \times h)$ = **2.94** kip_ft

Resisting moment — $M_{RxL} = -1 \times (\gamma_D \times (A \times (F_{swt} + F_{soil}) \times L_x / 2)) + \gamma_D \times (F_{Dz1} \times (x_1 - L_x)) + \gamma_E \times (F_{Ez1} \times (x_1 - L_x))$ = **-20.4** kip_ft

Factor of safety — $abs(M_{RxL} / M_{OTxL})$ = **6.938**

PASS - Overturning moment safety factor exceeds the minimum of 1.50

Stability against sliding

Resistance due to base friction — $F_{RFriction} = max(F_{dz}, 0\ kN) \times tan(\delta_{bb})$ = **4.282** kips

Stability against sliding in x direction

Total sliding resistance — $F_{Rx} = F_{RFriction}$ = **4.282** kips

Factor of safety — $abs(F_{Rx} / F_{dx})$ = **1.46**

FAIL - Minimum sliding factor of safety,1.50, exceeds the actual factor of safety

OK, w/in 4%, NOT ACCOUNTING FOR SOIL BEARING RESISTANCE WHICH WILL GET FS OVER 1.5

Bearing resistance

Eccentricity of base reaction

Eccentricity of base reaction in x-axis — $e_{dx} = M_{dx} / F_{dz} - L_x / 2$ = **4.756** in

Eccentricity of base reaction in y-axis — $e_{dy} = M_{dy} / F_{dz} - L_y / 2$ = **0** in

Pad base pressures

$q_1 = F_{dz} \times (1 - 6 \times e_{dx} / L_x - 6 \times e_{dy} / L_y) / (L_x \times L_y)$ = **0.139** ksf

$q_2 = F_{dz} \times (1 - 6 \times e_{dx} / L_x + 6 \times e_{dy} / L_y) / (L_x \times L_y)$ = **0.139** ksf

$q_3 = F_{dz} \times (1 + 6 \times e_{dx} / L_x - 6 \times e_{dy} / L_y) / (L_x \times L_y)$ = **0.351** ksf

$q_4 = F_{dz} \times (1 + 6 \times e_{dx} / L_x + 6 \times e_{dy} / L_y) / (L_x \times L_y)$ = **0.351** ksf

Minimum base pressure — $q_{min} = min(q_1, q_2, q_3, q_4)$ = **0.139** ksf

Maximum base pressure — $q_{max} = \max(q_1,q_2,q_3,q_4) = \mathbf{0.351}$ ksf

Allowable bearing capacity

Allowable bearing capacity — $q_{allow} = q_{allow\_Gross} = \mathbf{1.5}$ ksf

$q_{max} / q_{allow} = \mathbf{0.234}$

PASS - Allowable bearing capacity exceeds design base pressure

FOOTING DESIGN

In accordance with ACI318-14

Tedds calculation version 3.3.02

Material details

Compressive strength of concrete	$f'_c = \mathbf{4000}$ psi
Yield strength of reinforcement	$f_y = \mathbf{60000}$ psi
Compression-controlled strain limit (21.2.2)	$\varepsilon_{ty} = \mathbf{0.00200}$
Cover to top of footing	$c_{nom\_t} = \mathbf{3}$ in
Cover to side of footing	$c_{nom\_s} = \mathbf{3}$ in
Cover to bottom of footing	$c_{nom\_b} = \mathbf{3}$ in
Concrete type	Normal weight
Concrete modification factor	$\lambda = \mathbf{1.00}$
Column type	Concrete

Analysis and design of concrete footing

Load combinations per ASCE 7-16

1.4D (0.024)
1.2D + 1.6L + 0.5Lr (0.030)
1.2D + 1.6L + 0.5S (0.032)
1.2D + 0.5L + 1.6Lr (0.050)
1.2D + 0.5L + 1.6S (0.056)
1.2D + 0.5L + 0.5Lr + 1.0W (0.030)
1.2D + 0.5L + 0.5S + 1.0W (0.032)
$(1.2 + 0.2 \times S_{DS})D + 0.5L + 0.2S + 1.0E$ (0.074)
$(0.9 - 0.2 \times S_{DS})D + 1.0E$ (0.064)

Combination 14 results: $(1.2 + 0.2 \times S_{DS})D + 0.5L + 0.2S + 1.0E$

Forces on footing

Ultimate force in x-axis — $F_{ux} = \gamma_E \times F_{Ex1} = \mathbf{4.2}$ kips

Ultimate force in z-axis — $F_{uz} = \gamma_D \times A \times (F_{swt} + F_{soil}) + \gamma_D \times F_{Dz1} + \gamma_S \times F_{Sz1} + \gamma_E \times F_{Ez1} = \mathbf{15.7}$ kips

Moments on footing

Ultimate moment in x-axis, about x is 0 — $M_{ux} = \gamma_D \times (A \times (F_{swt} + F_{soil}) \times L_x / 2) + \gamma_D \times (F_{Dz1} \times x_1) + \gamma_S \times (F_{Sz1} \times x_1) + \gamma_E \times (F_{Ez1} \times x_1 + F_{Ex1} \times h) = \mathbf{47.4}$ kip_ft

Ultimate moment in y-axis, about y is 0 — $M_{uy} = \gamma_D \times (A \times (F_{swt} + F_{soil}) \times L_y / 2) + \gamma_D \times (F_{Dz1} \times y_1) + \gamma_S \times (F_{Sz1} \times y_1) + \gamma_E \times (F_{Ez1} \times y_1) = \mathbf{43.2}$ kip_ft

Eccentricity of base reaction

Eccentricity of base reaction in x-axis — $e_{ux} = M_{ux} / F_{uz} - L_x / 2 = \mathbf{3.211}$ in

Eccentricity of base reaction in y-axis — $e_{uy} = M_{uy} / F_{uz} - L_y / 2 = \mathbf{0}$ in

Pad base pressures

$q_{u1} = F_{uz} \times (1 - 6 \times e_{ux} / L_x - 6 \times e_{uy} / L_y) / (L_x \times L_y) =$ **0.367** ksf

$q_{u2} = F_{uz} \times (1 - 6 \times e_{ux} / L_x + 6 \times e_{uy} / L_y) / (L_x \times L_y) =$ **0.367** ksf

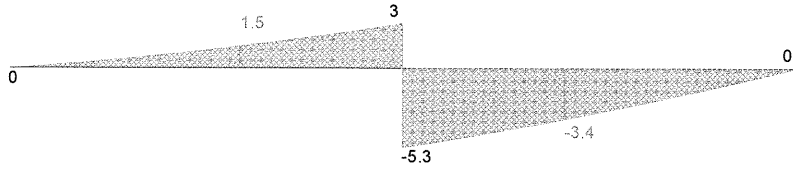
$q_{u3} = F_{uz} \times (1 + 6 \times e_{ux} / L_x - 6 \times e_{uy} / L_y) / (L_x \times L_y) =$ **0.67** ksf

$q_{u4} = F_{uz} \times (1 + 6 \times e_{ux} / L_x + 6 \times e_{uy} / L_y) / (L_x \times L_y) =$ **0.67** ksf

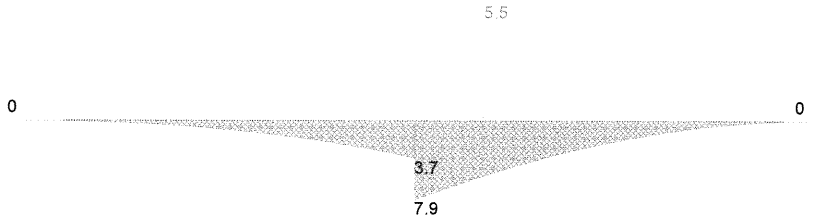
Minimum ultimate base pressure $q_{umin} = \min(q_{u1},q_{u2},q_{u3},q_{u4}) =$ **0.367** ksf

Maximum ultimate base pressure $q_{umax} = \max(q_{u1},q_{u2},q_{u3},q_{u4}) =$ **0.67** ksf

Shear diagram, x axis (kips)



Moment diagram, x axis (kip_ft)



Moment design, x direction, positive moment

Ultimate bending moment $M_{u.x.max} =$ **5.48** kip_ft

Tension reinforcement provided 5 No.6 bottom bars (14.8 in c/c)

Area of tension reinforcement provided $A_{sx.bot.prov} =$ **2.2** in^2

Minimum area of reinforcement (8.6.1.1) $A_{s.min} = 0.0018 \times L_y \times h =$ **1.426** in^2

PASS - Area of reinforcement provided exceeds minimum

Maximum spacing of reinforcement (8.7.2.2) $s_{max} = \min(2 \times h, 18\text{ in}) =$ **18** in

PASS - Maximum permissible reinforcement spacing exceeds actual spacing

Depth to tension reinforcement $d = h - c_{nom\_b} - \phi_{x.bot} / 2 =$ **8.625** in

Depth of compression block $a = A_{sx.bot.prov} \times f_y / (0.85 \times f'_c \times L_y) =$ **0.588** in

Neutral axis factor $\beta_1 =$ **0.85**

Depth to neutral axis $c = a / \beta_1 =$ **0.692** in

Strain in tensile reinforcement $\varepsilon_t = 0.003 \times d / c - 0.003 =$ **0.03439**

Minimum tensile strain(8.3.3.1) $\varepsilon_{min} = 0.004 =$ **0.00400**

PASS - Tensile strain exceeds minimum required

Nominal moment capacity $M_n = A_{sx.bot.prov} \times f_y \times (d - a / 2) =$ **91.64** kip_ft

Flexural strength reduction factor $\phi_f = \min(\max(0.65 + 0.25 \times (\varepsilon_t - \varepsilon_{ty}) / (0.005 - \varepsilon_{ty}), 0.65), 0.9) =$ **0.900**

Design moment capacity $\phi M_n = \phi_f \times M_n =$ **82.476** kip_ft

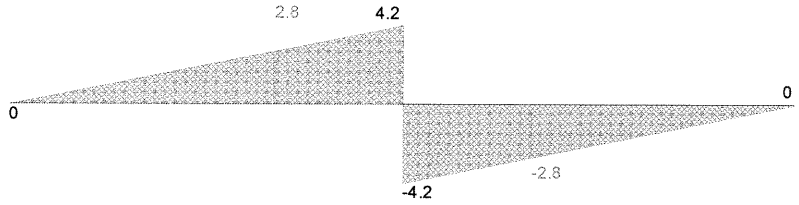
$M_{u.x.max} / \phi M_n =$ **0.066**

PASS - Design moment capacity exceeds ultimate moment load

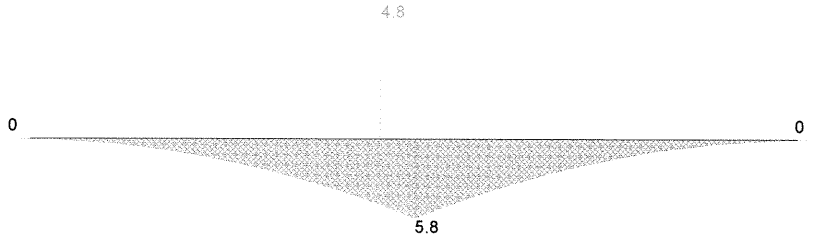
One-way shear design, x direction

Ultimate shear force	$V_{u.x}$ = **3.407** kips
Depth to reinforcement	$d_v = h - c_{nom\_b} - \phi_{x.bot} / 2$ = **8.625** in
Shear strength reduction factor	ϕ_v = **0.75**
Nominal shear capacity (Eq. 22.5.5.1)	$V_n = 2 \times \lambda \times \sqrt{(f'_c \times 1\ psi)} \times L_y \times d_v$ = **72.005** kips
Design shear capacity	$\phi V_n = \phi_v \times V_n$ = **54.004** kips
	$V_{u.x} / \phi V_n$ = **0.063**
	PASS - Design shear capacity exceeds ultimate shear load

Shear diagram, y axis (kips)



Moment diagram, y axis (kip_ft)



Moment design, y direction, positive moment

Ultimate bending moment	$M_{u.y.max}$ = **4.776** kip_ft
Tension reinforcement provided	5 No.6 bottom bars (14.8 in c/c)
Area of tension reinforcement provided	$A_{sy.bot.prov}$ = **2.2** in^2
Minimum area of reinforcement (8.6.1.1)	$A_{s.min} = 0.0018 \times L_x \times h$ = **1.426** in^2
	PASS - Area of reinforcement provided exceeds minimum
Maximum spacing of reinforcement (8.7.2.2)	$s_{max} = \min(2 \times h, 18\ in)$ = **18** in
	PASS - Maximum permissible reinforcement spacing exceeds actual spacing
Depth to tension reinforcement	$d = h - c_{nom\_b} - \phi_{x.bot} - \phi_{y.bot} / 2$ = **7.875** in
Depth of compression block	$a = A_{sy.bot.prov} \times f_y / (0.85 \times f'_c \times L_x)$ = **0.588** in
Neutral axis factor	β_1 = **0.85**
Depth to neutral axis	$c = a / \beta_1$ = **0.692** in
Strain in tensile reinforcement	$\varepsilon_t = 0.003 \times d / c - 0.003$ = **0.03114**
Minimum tensile strain(8.3.3.1)	ε_{min} = 0.004 = **0.00400**
	PASS - Tensile strain exceeds minimum required
Nominal moment capacity	$M_n = A_{sy.bot.prov} \times f_y \times (d - a / 2)$ = **83.39** kip_ft
Flexural strength reduction factor	$\phi_f = \min(\max(0.65 + 0.25 \times (\varepsilon_t - \varepsilon_{ty}) / (0.005 - \varepsilon_{ty}), 0.65), 0.9)$ = **0.900**
Design moment capacity	$\phi M_n = \phi_f \times M_n$ = **75.051** kip_ft

$M_{u.y.max} / \phi M_n$ = **0.064**

PASS - Design moment capacity exceeds ultimate moment load

One-way shear design, y direction

Ultimate shear force	$V_{u.y}$ = **2.814** kips
Depth to reinforcement	$d_v = h - c_{nom\_b} - \phi_{x.bot} - \phi_{y.bot} / 2$ = **7.875** in
Shear strength reduction factor	ϕ_v = **0.75**
Nominal shear capacity (Eq. 22.5.5.1)	$V_n = 2 \times \lambda \times \sqrt{(f'_c \times 1\ psi)} \times L_x \times d_v$ = **65.744** kips
Design shear capacity	$\phi V_n = \phi_v \times V_n$ = **49.308** kips
	$V_{u.y} / \phi V_n$ = **0.057**

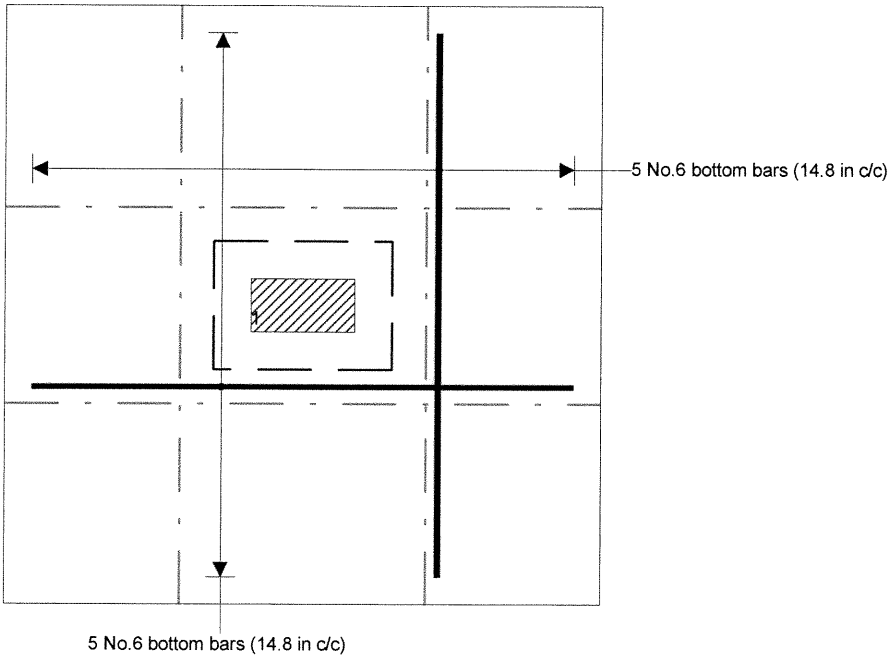
PASS - Design shear capacity exceeds ultimate shear load

Two-way shear design at column 1

Depth to reinforcement	d_{v2} = **8.25** in
Shear perimeter length (22.6.4)	l_{xp} = **19.750** in
Shear perimeter width (22.6.4)	l_{yp} = **14.125** in
Shear perimeter (22.6.4)	$b_o = 2 \times (l_{x1} + d_{v2}) + 2 \times (l_{y1} + d_{v2})$ = **67.750** in
Shear area	$A_p = l_{x,perim} \times l_{y,perim}$ = **278.969** in^2
Surcharge loaded area	$A_{sur} = A_p - l_{x1} \times l_{y1}$ = **211.406** in^2
Ultimate bearing pressure at center of shear area	$q_{up.avg}$ = **0.519** ksf
Ultimate shear load	$F_{up} = \gamma_D \times F_{Dz1} + \gamma_S \times F_{Sz1} + \gamma_E \times F_{Ez1} + \gamma_D \times A_p \times F_{swt} + \gamma_D \times A_{sur} \times F_{soil} - q_{up.avg} \times A_p$ = **7.814** kips
Ultimate shear stress from vertical load	$v_{ug} = \max(F_{up} / (b_o \times d_{v2}), 0\ psi)$ = **13.981** psi
Column geometry factor (Table 22.6.5.2)	$\beta = l_{x1} / l_{y1}$ = **1.96**
Column location factor (22.6.5.3)	α_s =**40**
Concrete shear strength (22.6.5.2)	$v_{cpa} = (2 + 4 / \beta) \times \lambda \times \sqrt{(f'_c \times 1\ psi)}$ = **255.732** psi
	$v_{cpb} = (\alpha_s \times d_{v2} / b_o + 2) \times \lambda \times \sqrt{(f'_c \times 1\ psi)}$ = **434.551** psi
	$v_{cpc} = 4 \times \lambda \times \sqrt{(f'_c \times 1\ psi)}$ = **252.982** psi
	$v_{cp} = \min(v_{cpa}, v_{cpb}, v_{cpc})$ = **252.982** psi
Shear strength reduction factor	ϕ_v = **0.75**
Nominal shear stress capacity (Eq. 22.6.1.2)	$v_n = v_{cp}$ = **252.982** psi
Design shear stress capacity (8.5.1.1(d))	$\phi v_n = \phi_v \times v_n$ = **189.737** psi
	$v_{ug} / \phi v_n$ = **0.074**

PASS - Design shear stress capacity exceeds ultimate shear stress load

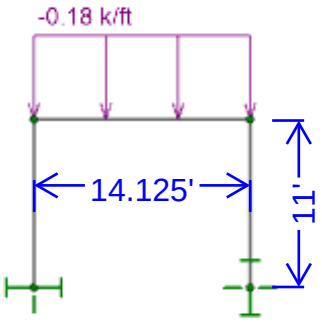
Tekla Tedds KPFF	Project: Rock Creek				Job Ref.: 100221008 71
	Section				Sheet no./rev.: 28
	Calc. by: M	Date: 2/7/2022	Chk'd by	Date	App'd by / Date



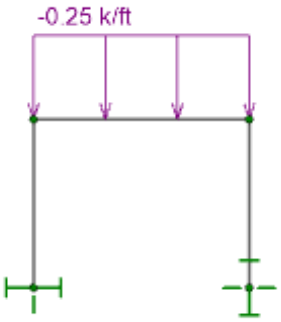
kpff Portland, Oregon	Project ROCK CREEK ELEMENTARY	By KM	Sheet No. 29
	Location PORTLAND, OR	Date 03/01/22	
	Client BSD	Revised	Job No. 10022100871
		Date	

ORDINARY MOMENT FRAME ANALYSIS:
(3) HSS10x10x3/8 A500 GR. B MEMBERS

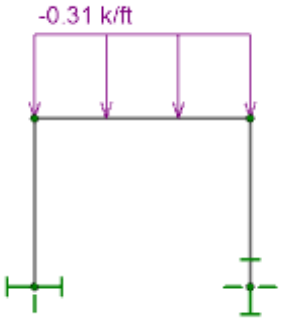
RISA INPUT: ASD LOADS



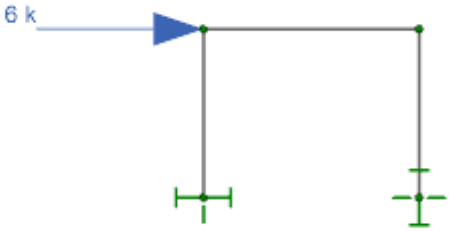
RISA LOADING
[DEAD LOAD]



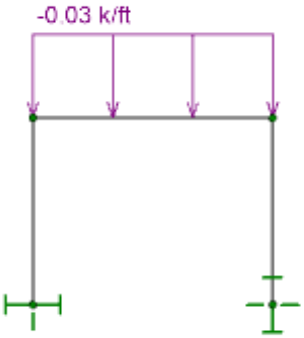
RISA LOADING
[LIVE LOAD]



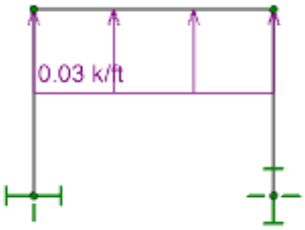
RISA LOADING
[SNOW LOAD]



RISA LOADING
[SEISMIC HORIZONTAL LOAD]

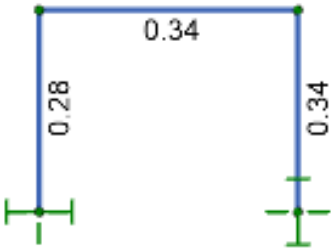


RISA LOADING
[SEISMIC NEG. VERTICAL LOAD]

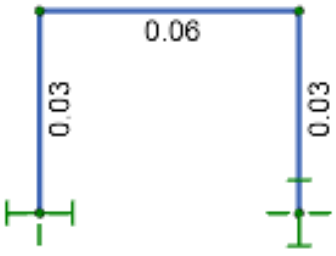


RISA LOADING
[SEISMIC POS. VERTICAL LOAD]

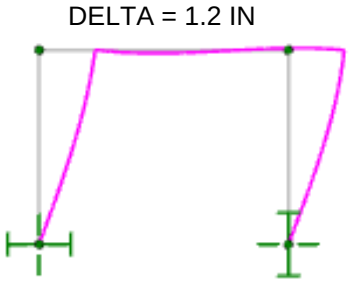
RISA OUTPUT:



BOUNDING UNITY CHECK
[D+0.7*E HORIZ + E VERT NEG.]



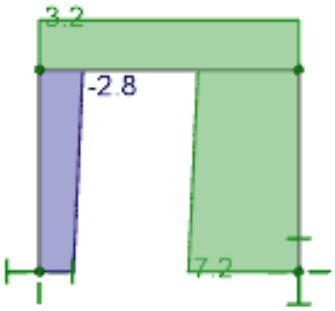
BOUNDING SHEAR CHECK
[D+0.7*E HORIZ + E VERT NEG.]



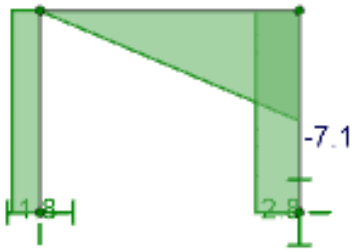
DRIFT CHECK
[D+E HORIZ + E VERT NEG.]

ORDINARY MOMENT FRAME ANALYSIS (CONT...):

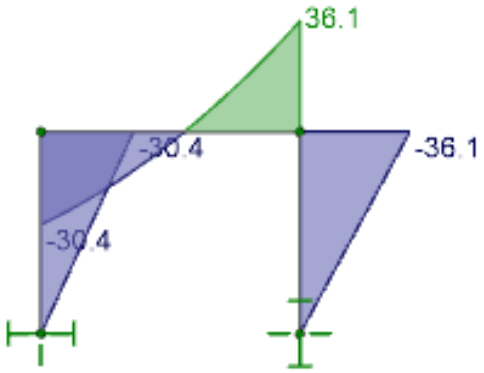
RISA OUTPUT: ASD FORCES FOR CONNECTION CHECKS



AXIAL FORCES [k]
[D+0.7*E HORIZ + E VERT NEG.]

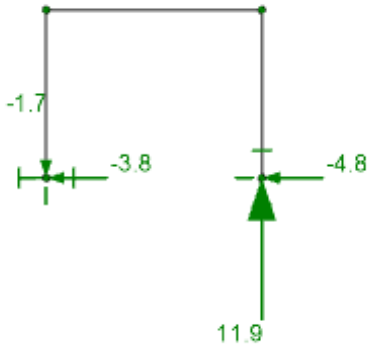


SHEAR FORCES [k]
[D+0.75 E HORIZ + E VERT NEG. + 0.75 SNOW]



IN-PLANE MOMENT [k-ft]
[D+0.7*E HORIZ + E VERT NEG.]

RISA OUTPUT: LRFD REACTIONS FOR ANCHOR BOLT CHECKS



BOUNDING REACTIONS [k]
[1.2*D+ E HORIZ + E VERT NEG. + LIVE + 0.2 SNOW]

CHECK GLOBAL DRIFT OF MOMENT FRAME:

H = 13.25 ft	Mean story height
Cd = 3	Deflection amplification factor (ASCE 7-16, Table 12.2-1)
Delta.xe = 1.2 in	Deflection determined by elastic analysis (Ref. RISA output)
Ie = 1.25	Importance factor (ASCE 7-16, Table 1.5-2)
Delta.x = Cd*Delta.xe/Ie = 2.88 in	Story drift (ASCE 7-16, Eqn. 12.8-15)
Delta.allow = 0.02*H = 3.18 in	Allowable story drift (ASCE 7-16, Table 12.12-1)

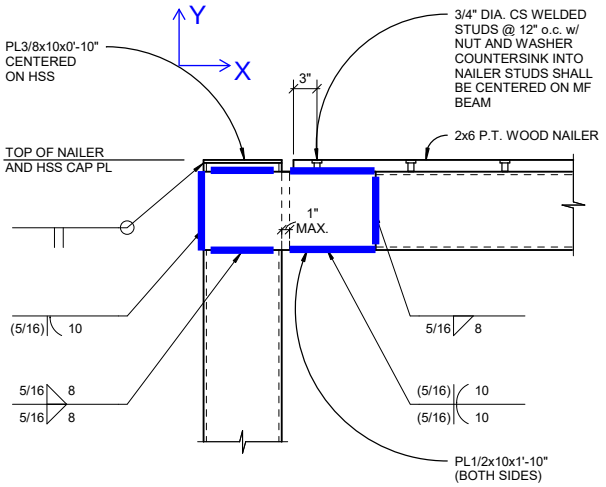
DCR = Delta.x / Delta.allow = 0.9 < 1.0 (OK)

ORDINARY MOMENT FRAME ANALYSIS (CONT...):

CHECK CONNECTION FROM HSS TO HSS:
PR CONNECTION PER AISC 341-16

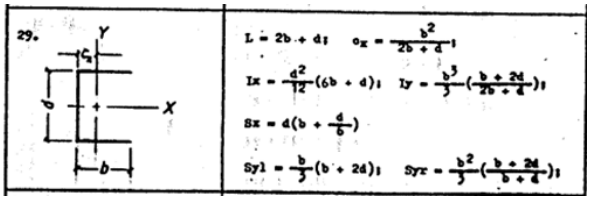
CHECK WELD:

Fx = 3.2 k (Ref. RISA output)
Fy = 7.1 k (Ref. RISA output)
Fz = 0 k (Ref. RISA output)
Mx = 0 k-in (Ref. RISA output)
My = 0 k-in (Ref. RISA output)
Mz = 433.2 k-in (Ref. RISA output)



HSS TO HSS CONNECTION DETAIL

Note: conservative weld properties used to bound both weld from beam to plate and plate to column.
n = 2 weld groups
d = 8 in
b = 8 in
L = 2*b+d = 24 in
J = Ix + Iy = d^2/12*(6*b+d) + b^3/3*((b+2*d)/(2b+d)) = 469 in3
Cx = 2.66 in
Cx' = b-Cx = 5.34 in



WELD PROPERTIES FOR C-SHAPED WELD

f.w = sqrt(sumsq(Fx/L + Mz*0.5*b/J, Fy/L + Mz*Cx'/J))/n
= 3.3k/in Stress in weld
f.w.all = 21ksi*0.707*5/16" = 4.6 k/in Allowable stress
DCR = f.w / f.w.all = 0.72 < 1.0 (OK)

CHECK FLEXURE IN PL:

b = 0.5 in PL width
t = 10 in PL length
Z = b*t^2/4 = 12.5 in3 Plastic section modulus of PL

f.b = Mz/Z/n = 17.4 ksi Stress in PL
f.b.all = 50 ksi / 1.67 = 29.9 ksi Allowable flexural stress
DCR = f.b / f.b.all = 0.58 < 1.0 (OK)

CHECK CONNECTION DEVELOPS 50% OF FLEXURAL CAPACITY OF HSS10x10x3/8 BEAM:
(AISC 341-16, SECTION E1.6C.C)

F.u = 70 ksi Ultimate tensile strength of weld filler material
M.w = sqrt(F.u*J^2 / (2*Cx'+2*0.5*d))*n = 151.3 k-ft Nominal plastic strength of weld

Z.b = 47.2 in3 Plastic section modulus of HSS10x10x3/8 beam
Fy.b = 46 ksi Yield strength of HSS beam
M.b = Z.b*Fy.b = 180.9 k-ft Nominal plastic strength of beam/column

SECTION E1.6C.C: (M.w / M.b) = 0.84 > 0.50 (OK)

kpff Portland, Oregon	Project ROCK CREEK ELEMENTARY	By KM	Sheet No. 32
	Location PORTLAND, OR	Date 03/01/22	
	Client BSD	Revised	Job No. 10022100871
		Date	

MOMENT FRAME ANALYSIS (CONT...):

CHECK CONNECTION FROM HSS TO CONCRETE:

CHECK WELD:

Fx = 2.8 k (Ref. RISA output)
Fy = 7.1 k (Ref. RISA output)
Fz = 0 k (Ref. RISA output)
Mx = 0 k-in (Ref. RISA output)
My = 0 k-in (Ref. RISA output)
Mz = 0 k-in (Ref. RISA output)

d = 8 in
b = 8 in
L = 2*b+2*d = 32 in

f.w = sqrt(sumsq(Fx/L, Fy/L)) = 0.2 k/in Stress in weld
f.w.all = 21ksi*0.707*5/16" = 4.6 k/in Allowable stress
DCR = f.w / f.w.all = 0.04 < 1.0 (OK)

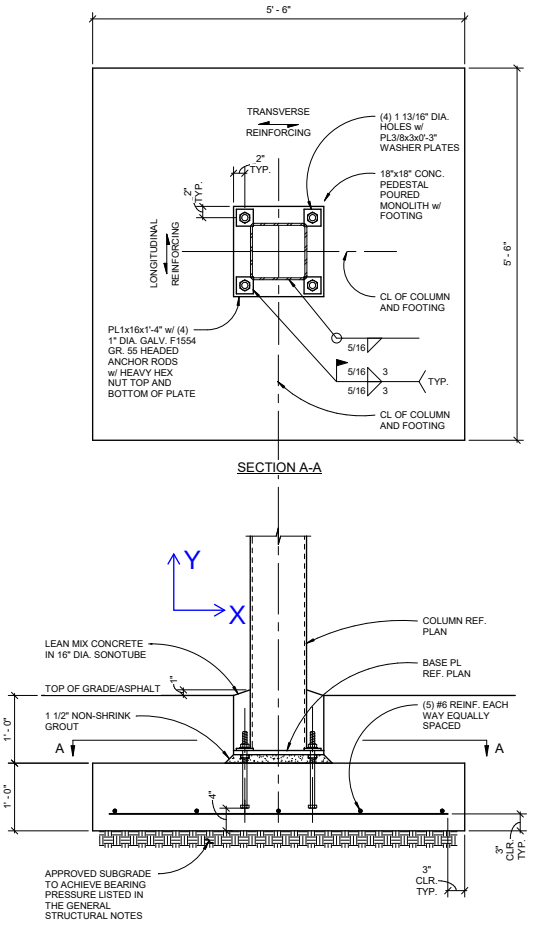
CHECK FLEXURE IN PL:

b = 16 in PL width
t = 1 in PL thickness
Z.w = b*t^2/4 = 4 in3 Weak axis plastic section modulus
Z.s = t*b^2/4 = 64 in3 Strong axis plastic section modulus

s = 12 in Spacing of bolts

M.w = Fy*s/4 = 21.3 k-in Weak axis bending moment
M.s = Fx*s/4 = 8.4 k-in Strong axis bending moment

f.b = M.w/Z.w + M.s/Z.s = 5.5 ksi Stress in PL
f.b.all = 50 ksi / 1.67 = 29.9 ksi Allowable flexural stress
DCR = f.b / f.b.all = 0.18 < 1.0 (OK)



HSS TO CONCRETE DETAIL

kpff Portland, Oregon	Project ROCK CREEK ELEMENTARY	By KM	Sheet No. 33
	Location PORTLAND, OR	Date 03/01/22	
	Client BSD	Revised	Job No. 10022100871
		Date	

MOMENT FRAME ANALYSIS (CONT...):

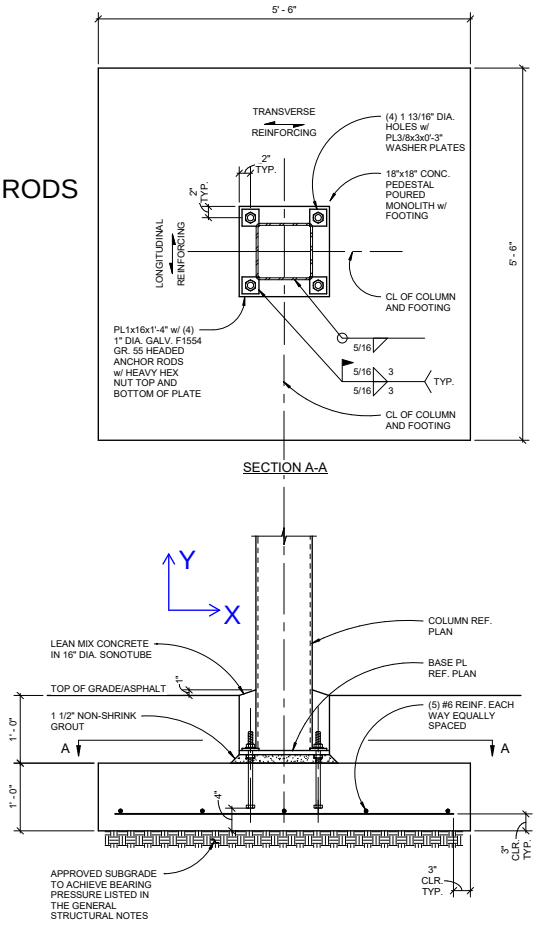
CHECK CONNECTION FROM HSS TO CONCRETE (CONT...):

CHECK ANCHOR BOLTS: 1" DIA. GR. 55 HEADED ANCHOR RODS

Fx = 4.8 k (LRFD - Ref. RISA output)
Fy = 11.9 k (LRFD - Ref. RISA output)
Fz = 0 k (LRFD - Ref. RISA output)
Mx = 0 k-in (LRFD - Ref. RISA output)
My = 0 k-in (LRFD - Ref. RISA output)
Mz = 0 k-in (LRFD - Ref. RISA output)

Ω = 3.0 Overstrength factor

Ref. next page for HILTI Profis analysis of anchor rods.



HSS TO CONCRETE DETAIL

MOMENT FRAME ANALYSIS (CONT...):

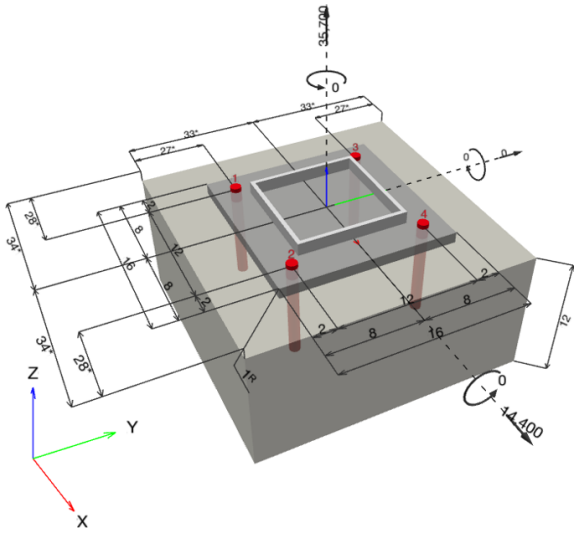
CHECK CONNECTION FROM HSS TO CONCRETE (CONT...):

1 Input data

Anchor type and diameter:	**Heavy Hex Head ASTM F 1554 GR. 55 1**
Item number:	not available
Additional plate or washer (17.4.2.8):	d_{plate} = 3.000 in., t_{plate} = 0.375 in.
Effective embedment depth:	h_{ef} = 8.000 in., $h_{ef,17.4.2.8}$ = 8.819 in.
Material:	ASTM F 1554
Evaluation Service Report:	Hilti Technical Data
Issued I Valid:	- | -
Proof:	Design Method ACI 318-14 / CIP
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 1.000 in.
Anchor plate[R] :	l_x x l_y x t = 16.000 in. x 16.000 in. x 1.000 in.; (Recommended plate thickness: not calculated)
Profile:	Square HSS (AISC), HSS10X10X.375; (L x W x T) = 10.000 in. x 10.000 in. x 0.375 in.
Base material:	cracked concrete, 4000, f_c' = 4,000 psi; h = 12.000 in.
Reinforcement:	tension: condition A, shear: condition A; edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.2.3.4.3 (d)) Shear load: yes (17.2.3.5.3 (c))

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]



2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Concrete Breakout Failure	35,700	47,244	76 / -	OK
Shear	Concrete edge failure in direction x+	14,400	26,564	- / 55	OK

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	0.756	0.542	5/3	99	OK

LTT/HTT

Tension Ties

Tension ties offer a solution for resisting tension loads that are fastened with nails or Strong-Drive® SD Connector screws. The new LTTP2 light tension tie, designed for wood joist attachments to concrete or masonry walls, features two separate nailing patterns: obround holes spaced 3" apart for I-joist purlins and square holes spaced to accommodate the narrow face of 2x solid-sawn purlins. LTTP2 may also be installed vertically on the wide face of a minimum 2x4 stud for holdown application. It features an extruded anchor bolt hole to accommodate ¾", ⅝" and ½" bolt diameters.

The LTTI31 is designed for wood chord open-web truss attachments to concrete or masonry walls and may also be installed vertically on a minimum 2x6 stud.

The HTT4 and HTT5 tension ties feature an optimized nailing pattern which results in better performance with less deflection. HTT5KT is sold as a kit with the holdown, bearing plate washer and Strong-Drive SD Connector screws.

The HTT5-¾ is designed to use a ¾"-diameter anchor bolt.

When using LTT or HTT tension ties with unreinforced concrete masonry, ¾" post-installed anchor bolts are commonly used.

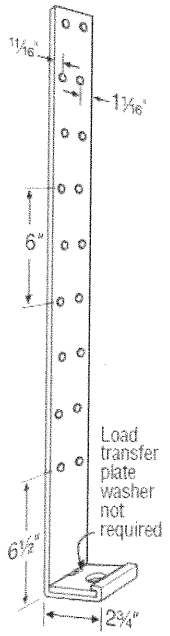
Material: See table

Finish: Galvanized. May be ordered HDG; contact Simpson Strong-Tie.

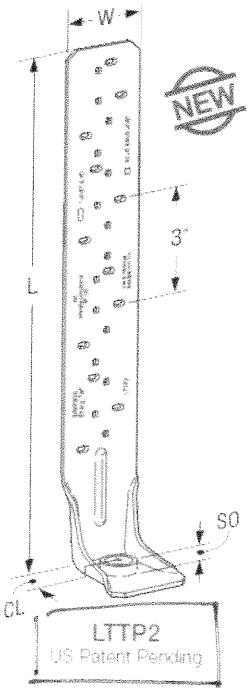
Installation:

- See Holdown and Tension Tie General Notes on pp. 49–50.
- LTTP2 — one standard cut-washer is required when using ½" and ⅝" anchor bolts; and no additional washer is required for ¾" anchor bolts.
- LTTP2 — For installations on narrow edge of solid sawn (2x, 3x) joists use (15) square holes; for all other installations use (12) obround holes.
- For tension ties installed over wood structural panel sheathing, use a 2½"-long fastener minimum.
- For information about marriage strap at panelized roof applications, see **strongtie.com**.
- HTT5-KT requires BP 5/8-2 bearing plate and #10 x 2½" SD Strong-Drive screws (included in kit).

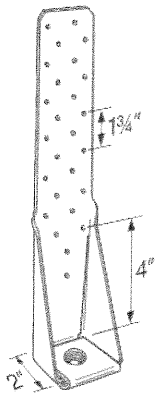
Codes: See p. 11 for Code Reference Key Chart



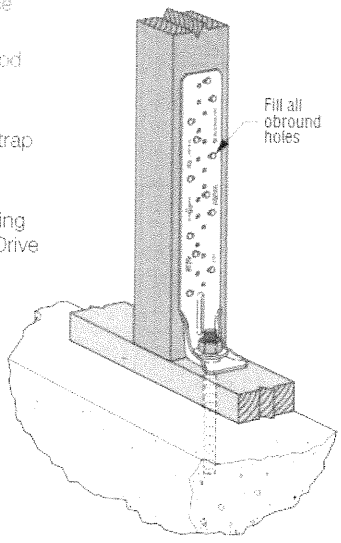
LTTI31



LTTP2
US Patent Pending

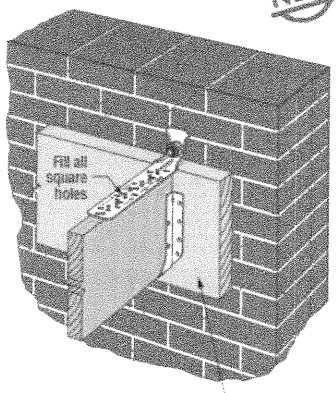


HTT5
(HTT4 similar)

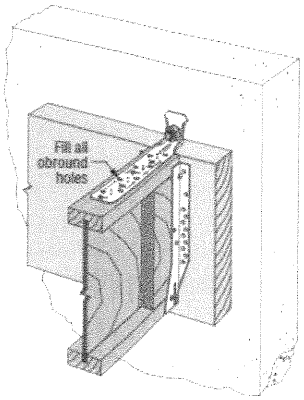


Typical LTTP2 Installation for Holdown Application

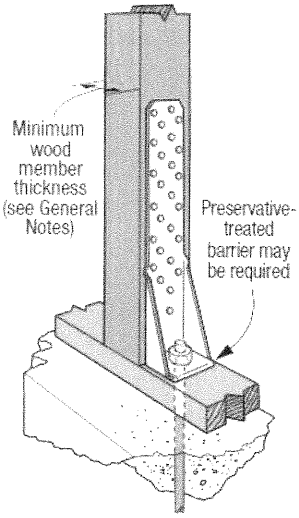
NEW



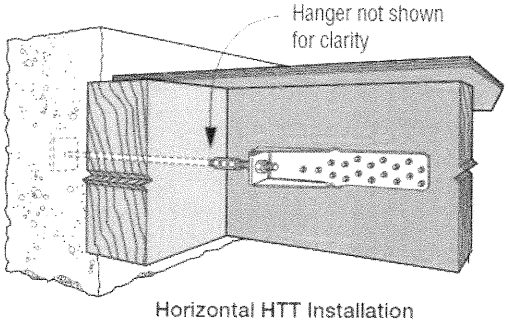
Typical LTTP2 Installation for Solid Sawn Joist



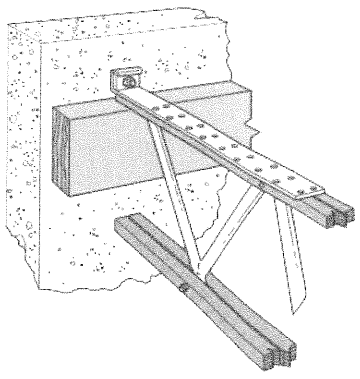
Typical LTTP2 Installation for I-joist



Vertical HTT5 Installation
(HTT4 similar)



Horizontal HTT Installation



Horizontal LTTI31 Installation

A2

SIMPSON Strong-Tie

LTT/HTT

Tension Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 14.

SD Many of these products are approved for installation with Strong-Drive® SD Connector screws. See pp. 348–352 for more information.

Model No.	Ga.	Dimensions (in.) W	L	CL	SO (in.)	Fasteners (in.) Anchor Rod Diameter	Wood Fasteners	Minimum Wood Member Size (in.)	Allowable Tension Loads (160) DF/SP	SPF/HF	Deflection at Highest Allowable Load (in.)	Code Ref.
LTTP2	10	2⅜	14 1⅝	1⅛	7/16	½, ⅝, ¾	(15) 0.148 x 2½	1½ x 3½ (narrow edge)[4,7]	1,845	1,695	0.104	IBC, FL, LA
						½	(12) 0.148 x 1½	1½ x 3½	1,680[6]	1,545[6]	0.138	
						⅝, ¾			2,135	1,965	0.112	
						½	(12) #9 x 1½" SD	1½ x 3½	2,320	1,970	0.112	
						⅝, ¾			2,570	2,045	0.136	
						½, ⅝, ¾	(12) 0.148 x 2½	3 x 3½	2,275	2,230	0.128	
LTTI31	18	3¾	31	1⅜	¼	⅝	(18) 0.148 x 1½	3 x 3½	1,350	1,160	0.193	
HTT4	11	2½	12⅜	1 5/16	7/16	⅝	(18) 0.148 x 1½	1½ x 3½	3,000	2,580	0.090	—
							(18) 0.148 x 1½	3 x 3½	3,610	3,105	0.086	IBC, FL, LA
							(18) 0.162 x 2½	3 x 3½	4,235	3,640	0.123	
							(18) #10 x 1½" SD	1½ x 5½	4,455	3,830	0.112	—
							(18) #10 x 1½" SD	3 x 3½	4,455	3,830	0.112	
HTT5	11	2½	16	1 7/16	7/16	⅝	(26) 0.148 x 1½	3 x 3½	4,350	3,740	0.120	IBC, FL, LA
							(26) 0.148 x 3	3 x 3½	4,670	4,015	0.116	
							(26) 0.162 x 2½	3 x 3½	5,090	4,375	0.135	
							(26) #10 x 1½" SD	1½ x 5½	4,555	3,915	0.114	—
HTT5KT	11	2½	16	1 7/16	7/16	⅝	(26) #10 x 2½" SD	3 x 3½	5,445	5,360	0.103	
HTT5-3/4	11	2½	16	1 7/16	7/16	¾	(26) 0.148 x 1½	1½ x 5½	4,065	3,495	0.103	IBC, FL
							(26) 0.162 x 2½	3 x 3½	5,090	4,375	0.121	
							(26) #10 x 1½" SD	1½ x 7¼	4,830	4,155	0.100	

1. LTTI31 installed flush with concrete or masonry has an allowable load of 2,285 lb.
2. Allowable load for HTT5 with a BP5/8-2 bearing-plate washer installed in the seat of the holdown is 5,295 lb. for DF/SP and 4,555 lb. for SPF/HF.
3. For LTTP2, standard cut washer is required when using ½" and ⅝" anchor rods.
4. For (15) nail installations on narrow edge of 2x4 (minimum) joist, LTTP2 installed flush with concrete or masonry has an allowable load of 2,560 lb. for DF/SP and 2,355 lb. for SPF/HF.
5. LTTP2 installed with (15) #9 x 1½" SD screws on narrow edge of 2x joist has an allowable load of 2,105 lb. for DF/SP and 1,935 lb. for SPF/HF.
6. For (12) nail installations on I-joist or wide face of 2x member, LTTP2 installed flush with concrete or masonry has an allowable load of 1,950 lb. for DF/SP and 1,795 lb. for SPF/HF.
7. **Fasteners:** Nail dimensions are listed diameter by length. SD screws are Simpson Strong-Tie® Strong-Drive SD Connector screws. See pp. 21–22 for fastener information.

Table 1 — Anchorage Selection Guide for Holdowns Attached to DF/SP Lumber

Holdown on DF/SP Lumber	Stemwall: Stemwall Width (in.)	Stemwall: Wind and Seismic Design Category A&B: Midwall/Corner	Stemwall: Wind and Seismic Design Category A&B: End Wall	Stemwall: Seismic Design Category C–F: Midwall/Corner	Stemwall: Seismic Design Category C–F: End Wall	Slab on Grade: Wind and Seismic Design Category A&B: Midwall/Corner	Slab on Grade: Wind and Seismic Design Category A&B: Garage Curb	Slab on Grade: Seismic Design Category C–F: Midwall/Corner	Slab on Grade: Seismic Design Category C–F: Garage Curb
HDU2	6	SSTB16		SSTB16		SSTB16		SSTB16	SSTB20[1] (2,960)
HDU4	6	SB5/8X24		SB5/8X24		SSTB16	SB5/8X24	SSTB20	SB5/8X24
HDU5	6	SB5/8X24		SB5/8X24		SSTB20	SB5/8X24	SSTB24	SB5/8X24
HDU8									
HDQ8									
HDU11									
HHDQ11									
HDU14									
HHDQ14									
LTTP2									
LTTI31									
HTT4									
HTT5									
HD3B									
HD5B									
HD7B									
HD9B									
HD12									

See footnotes be

Table 2 — Anchorage Selection Guide for Holdowns Attached to SPF/HF Lumber

Holdown on SPF/HF Lumber	Stemwall: Stemwall Width (in.)	Stemwall: Wind and Seismic Design Category A&B: Midwall/Corner	Stemwall: Wind and Seismic Design Category A&B: End Wall	Stemwall: Seismic Design Category C–F: Midwall/Corner	Stemwall: Seismic Design Category C–F: End Wall	Slab on Grade: Wind and Seismic Design Category A&B: Midwall/Corner	Slab on Grade: Wind and Seismic Design Category A&B: Garage Curb	Slab on Grade: Seismic Design Category C–F: Midwall/Corner	Slab on Grade: Seismic Design Category C–F: Garage Curb
HDU2	6	SSTB16		SSTB16		SSTB16		SSTB16	
HDU4	6	SSTB16		SSTB24		SSTB16		SSTB16	SSTB24
HDU5	6	SSTB24[1] (4,295)		SB5/8X24		SSTB16	SSTB24[1] (4,295)	SSTB20	SB5/8X24
HDU8	8	SSTB28		SSTB28	SSTB28* (6,395)	SSTB28		SSTB28	SSTB28
HDQ8	8	SSTB28		SSTB28	SSTB28* (6,395)	SSTB28		SSTB28	SSTB28
HDU11	8	SB1X36* (9,505)	PAB8	PAB8	PAB8	SB1x30		SB1x30	
HHDQ11	8	SB1X30	PAB8	PAB8					
HDU14		PAB8		PAB8		SB1x30		SB1x30	
HHDQ14	—								
LTTP2	6	SSTB16		SSTB16		SSTB16		SSTB16	
LTTI31	6								
HTT4	6	SSTB20		SB5/8X24		SSTB16	SSTB20	SSTB16* (3,780)	SB5/8X24
HTT5	6	SB5/8X24		SB5/8X24		SSTB20	SB5/8X24	SSTB24	SB5/8X24
HTT8B	8	SSTB28		SSTB24				SSTB16	SSTB28* (5,660)

A3

HDU/DTT

Holdowns

This product is preferable to similar connectors because of (a) easier installation, (b) higher loads, (c) lower installed cost, or a combination of these features.

HDU holdowns are pre-deflected during the manufacturing process, virtually eliminating deflection under load due to material stretch. They use Strong-Drive® SDS Heavy-Duty Connector screws which install easily, reduce fastener slip and provide a greater net section when compared to bolts.

The DTT tension ties are designed for lighter-duty holdown applications on single 2x posts. The DTT1Z is installed with nails or Strong-Drive SD Connector screws and the DTT2 installs easily with the Strong-Drive SDS Heavy-Duty Connector screws (included). The DTT1Z holdowns have been tested for use in designed shearwalls and prescriptive braced wall panels as well as prescriptive wood-deck applications (see p. 295 for deck applications).

For more information on holdown options, contact Simpson Strong-Tie.

HDU Features:

- Uses Strong-Drive SDS Heavy-Duty Connector screws which install easily, reduce fastener slip and provide a greater net section area of the post compared to bolts
- Strong-Drive SDS Heavy-Duty Connector screws are supplied with the holdowns to ensure proper fasteners are used
- No stud bolts to countersink at openings

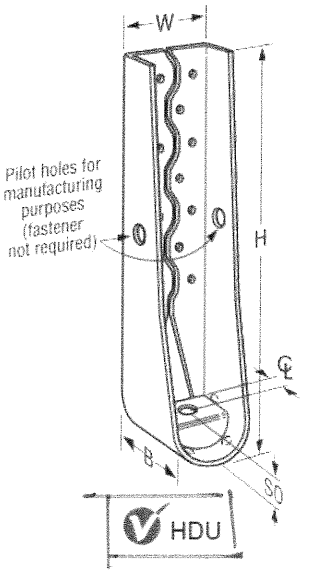
Material: See table

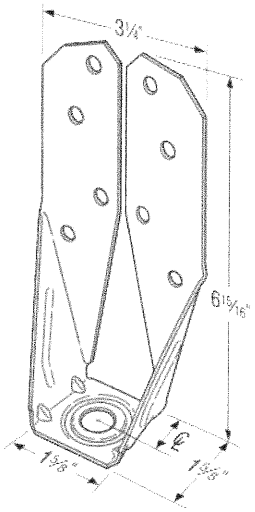
Finish: HDU — galvanized; DTT1Z and DTT2Z — ZMAX® coating; DTT2SS — stainless steel

Installation:

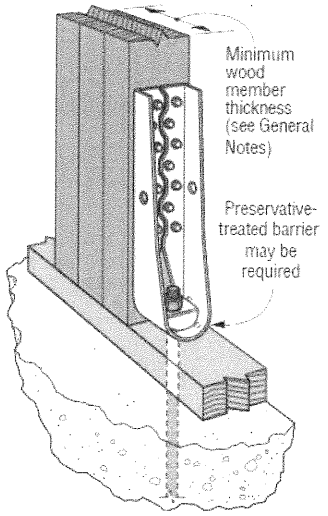
- See Holdown and Tension Tie General Notes on pp. 49–50.
- The HDU requires no additional washer; the DTT requires a standard-cut washer (included) be installed between the nut and the seat.
- Strong-Drive SDS Heavy-Duty Connector screws install best with a low-speed high-torque drill with a ⅜" hex-head driver.
- Fasteners and crescent washer are included with the holdowns. For replacements, order part no. SDS25212-HDU__. (Fill in the size needed, e.g., HDU2.)

Codes: See p. 11 for Code Reference Key Chart

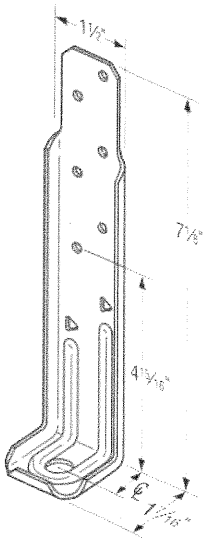




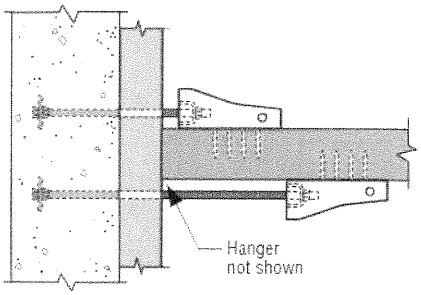
DTT2Z
US Patent
8,555,580



Vertical HDU Installation



DTT1Z
US Patent
10,865,558



Horizontal HDU Offset Installation
(plan view)
See Holdown and Tension Tie General Notes.

HDU/DTT

Holdowns (cont.)

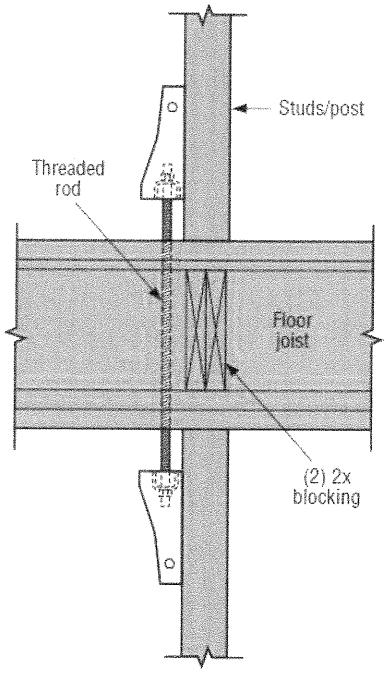
These products are available with additional corrosion protection. For more information, see p. 14.

SS For stainless-steel fasteners, see p. 21.

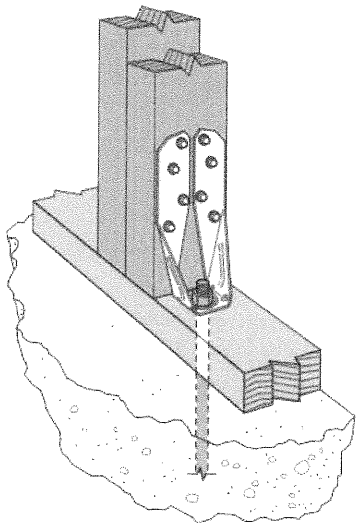
SD Many of these products are approved for installation with Strong-Drive® SD Connector screws. See pp. 348–352 for more information.

Model No.	Ga.	Dimensions (in.) W	H	B	CL	SO	Fasteners (in.) Anchor Bolt Dia. (in.)	Wood Fasteners	Minimum Wood Member Size (in.)	Allowable Tension Loads (160) DF/SP	SPF/HF	Deflection at Allowable Load (in.)	Code Ref.
DTT1Z	14	1½	7⅛	1⅞	¾	⅜	⅜	(6) #9 x 1½" SD	1½ x 5½	840	840	0.17	
								(6) 0.148 x 1½		910	640	0.167	
								(8) 0.148 x 1½		910	850	0.167	
SS DTT2Z	14	3¼	6¹⁵⁄₁₆	1⅝	¹³⁄₁₆	⅜	½	(8) ¼ x 1½ SDS	1½ x 3½	1,825	1,800	0.105	
								(8) ¼ x 1½ SDS	3 x 3½	2,145	1,835	0.128	
SS DTT2Z-SDS2.5								(8) ¼ x 2½ SDS	3 x 3½	2,145	2,105	0.128	
HDU2-SDS2.5	14	3	8¹¹⁄₁₆	3¼	1⁵⁄₁₆	1⅜	⅝	(6) ¼ x 2½ SDS	3 x 3½	3,075	2,215	0.088	IBC, FL, LA
HDU4-SDS2.5	14	3	10¹⁵⁄₁₆	3¼	1⁵⁄₁₆	1⅜	⅝	(10) ¼ x 2½ SDS	3 x 3½	4,565	3,285	0.114	
HDU5-SDS2.5	14	3	13³⁄₁₆	3¼	1⁵⁄₁₆	1⅜	⅝	(14) ¼ x 2½ SDS	3 x 3½	5,645	4,340	0.115	
HDU8-SDS2.5	10	3	16⅝	3½	1⅜	1½	⅞	(20) ¼ x 2½ SDS	3 x 3½	6,765	5,820	0.11	
									3½ x 3½	6,970	5,995	0.116	
									3½ x 4½	7,870	6,580	0.113	
HDU11-SDS2.5	10	3	22¼	3½	1⅜	1½	1	(30) ¼ x 2½ SDS	3½ x 5½	9,535	8,030	0.137	
									3½ x 7¼	11,175	9,610	0.137	
HDU14-SDS2.5	7	3	25¹¹⁄₁₆	3½	1⁹⁄₁₆	1⁹⁄₁₆	1	(36) ¼ x 2½ SDS	3½ x 5½	10,770	9,260	0.122	—
									3½ x 7¼	14,390	12,375	0.177	IBC, FL, LA
									5½ x 5½	14,445	12,425	0.172	

1. HDU14 requires heavy-hex anchor nut to achieve tabulated loads (supplied with holdown).
2. HDU14 loads on 4x6 post are applicable to installation on either the narrow or the wide face of the post.
3. **Fasteners:** Nail dimensions are listed diameter by length. SD and SDS screws are Simpson Strong-Tie® Strong-Drive SD Connector and SDS Heavy-Duty Connector screws. See pp. 21–22 for fastener information.



Typical HDU Tie Between Floors



Typical DTT2Z Installation

LTP4/LTP5/A34/A35

Framing Angles and Plates

The larger LTP5 spans subfloor at the top of the blocking or rim board. The embossments enhance performance.

The LTP4 lateral tie plate transfers shear forces for top plate-to-rim board or blocking connections. Nail holes are spaced to prevent wood splitting for single and double top-plate applications. May be installed over plywood sheathing.

The A35 angle's exclusive bending slot allows instant, accurate field bends for all two- and three-way ties. Balanced, completely reversible design permits the A35 to secure a great variety of connections.

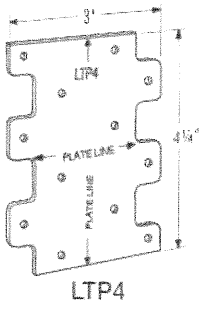
Material: LTP4/LTP5 — 20 gauge; all others — 18 gauge

Finish: Galvanized. Some products available in stainless steel or ZMAX® coating. See Corrosion Information, pp. 12–15.

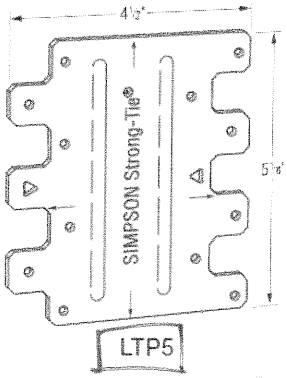
Installation:

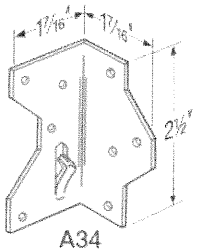
- Use all specified fasteners; see General Notes
- A35 — Bend one time only

Codes: See p. 11 for Code Reference Key Chart

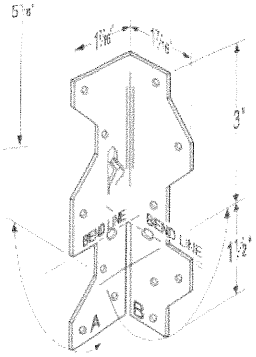


LTP4

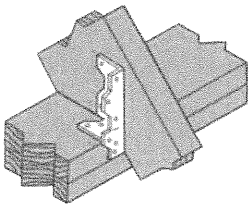


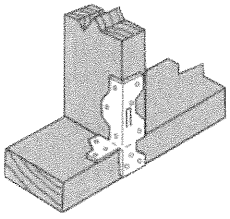


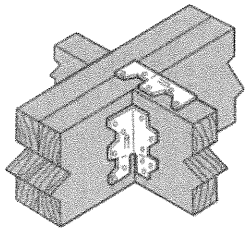
A34

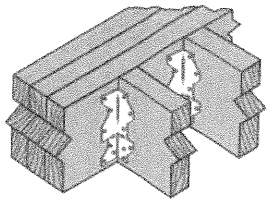


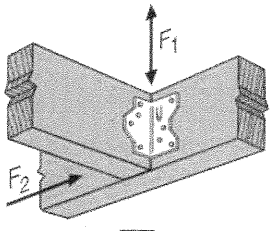
A35


Joists to Plate with A Leg Inside


Studs to Plate with B Leg Outside


Joists to Beams


Ceiling Joists to Beam



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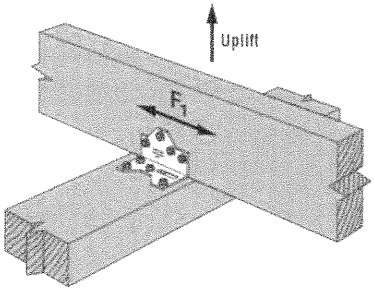
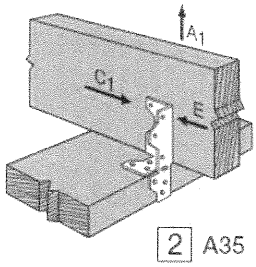
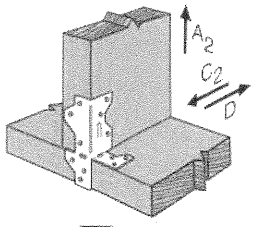


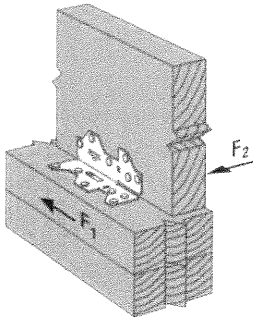
1 A34 Installed with SD Screws



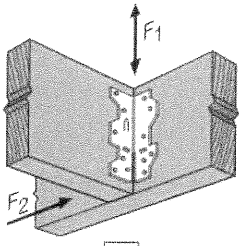
2 A35



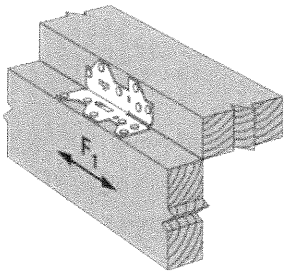
3 A35



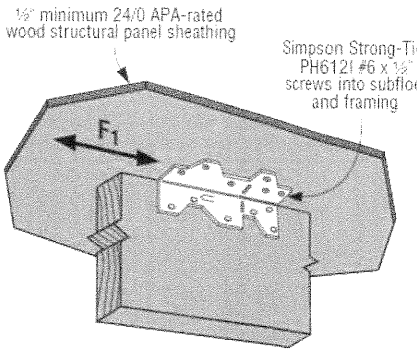
4 A35



4 A35



5 A35



6 A35

LTP4/LTP5/A34/A35

Framing Angles and Plates (cont.)

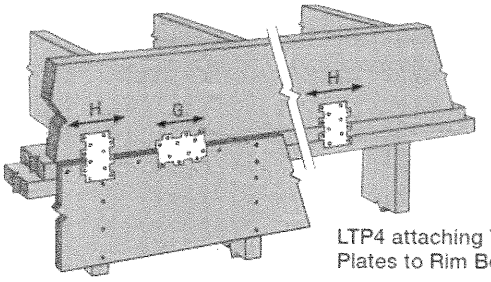
These products are available with additional corrosion protection. For more information, see p. 14.

SS For stainless-steel fasteners, see p. 21.

SD Many of these products are approved for installation with Strong-Drive® SD Connector screws. See pp. 348–352 for more information.

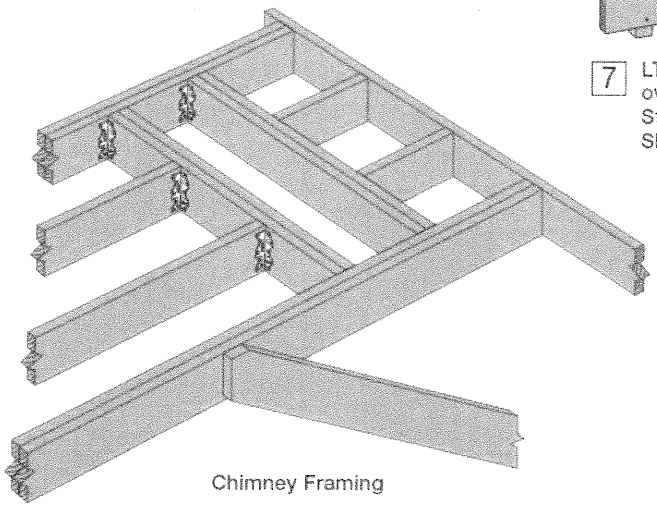
	Model No.	Type of Connection	Fasteners (in.)	Direction of Load	DF/SP Allowable Loads			SPF/HF Allowable Loads			Code Ref.
					Floor (100)	Roof (125)	(160)	Floor (100)	Roof (125)	(160)	
SS	A34	1	(8) 0.131 x 1½	F_1	395	480	545	340	415	480	IBC, FL, LA
				F_2[5]	395	430	430	340	370	370	
SS			(8) #9 x 1½" SD	F_1	640	640	640	550	550	550	
				F_2	495	495	495	425	425	425	
				Uplift	240	240	240	170	170	170	—
SS	A35	2	(9) 0.131 x 1½	A_1	295	350	350	255	300	300	IBC, FL, LA
				E	295	360	385	255	310	330	
				C_1	185	185	185	160	160	160	
		3	(12) 0.131 x 1½	A_2	295	325	325	255	280	280	
				C_2	295	330	330	255	285	285	
				D	225	225	225	195	195	195	
		4	(12) 0.131 x 1½	F_1	590	650	650	510	560	560	
				F_2[5]	590	670	670	510	575	575	
		5	(12) 0.131 x 1½	F_1	555	555	555	475	475	475	
		6	(12) PH612I	F_1	420	420	420	360	360	360	—
	LTP4	7	(12) 0.131 x 1½	G	580	715	715	500	615	615	IBC, FL, LA
				H	525	525	525	450	450	450	
	LTP5	8	(12) 0.131 x 1½	G	565	565	565	485	485	485	
				H	490	490	490	420	420	420	

1. Allowable loads are for one angle. When angles are installed on each side of the joist, the minimum joist thickness is 3".
2. Some illustrations show connections that could cause cross-grain tension or bending of the wood during loading if not reinforced sufficiently. In this case, mechanical reinforcement should be considered.
3. LTP4 can be installed over ⅜" wood structural panel sheathing with 0.131" x 1½" nails and achieve 0.72 of the listed load, or over ½" sheathing and achieve 0.64 of the listed load. 0.131" x 2½" nails will achieve 100% load.
4. LTP4 satisfies the IRC continuously sheathed portal frame (CS-PF) framing anchor requirements when installed over raised wood floor framing per Figure R602.10.6.4.
5. The LTP5 may be installed over wood structural panel sheathing up to ½" thick using 0.131" x 1½" nails with no reduction in load.
6. Connectors are required on both sides to achieve F_2 loads in both directions.
7. A34 and A35 installed with 0.131" x 1½" nails into 1¾" LSL material will achieve 0.90 of the listed F_1 and F_2 loads.
8. **Fasteners:** Nail dimensions are listed diameter by length. SD screws are Simpson Strong-Tie® Strong-Drive® SD Connector screws. PH612I is a pan-head #6 x ½" screw available from Simpson Strong-Tie. See pp. 21–22 for other nail sizes and information.

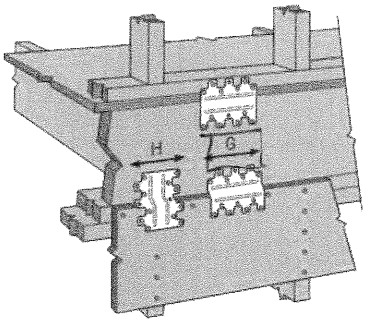


LTP4 attaching Top Plates to Rim Board

7 LTP4 Installed over Wood Structural Panel Sheathing



Chimney Framing



8 LTP5 Installed over Wood Structural Panel Sheathing or Attaching Plate to Rim Board

Table 14 - Hilti HIT-HY 270 allowable adhesive bond loads for threaded rods in multi-wythe solid brick wall[1,2,3,4,5,6,8]

Nominal anchor diameter in.	Effective embedment[7] in. (mm)	Tension		Shear		Minimum spacing s_{min} in. (mm)	Edge distance		
		lb	(kN)	lb	(kN)		Critical c_{cr} in. (mm)	Minimum c_{min} in. (mm)	Load reduction factor@ c_{min}
3/8	6 (152)	895	(4.0)	680	(3.0)	16 (406)	16 (406)	8 (203)	0.50
	10 (254)	1,325	(5.9)	795	(3.5)				
1/2	6 (152)	895	(4.0)	1,075	(4.8)				
	10 (254)	1,455	(6.5)	1,115	(5.0)				
5/8	6 (152)	1,025	(4.6)	1,405	(6.3)				
	10 (254)	1,955	(8.7)	1,445	(6.4)				
3/4	8 (203)	1,575	(7.0)	1,985	(8.8)				
	13 (330)	2,135	(9.5)	1,985	(8.8)				

1 All values are based on mortar shear strength of 45 psi or greater. Allowable loads are calculated using a safety factor of 5.

2 Anchors must be installed in the face of the multi-wythe URM wall. The wall must have a minimum thickness of 13 inches made up of 3 wythes of brick.

3 Tabulated values are for maximum one anchor installed in the center of the brick of the multi-wythe URM wall.

4 Edge distance, c_{min}, and spacing, s_{min}, are the minimum distances for which values are available and installation is recommended. Edge distance is measured from the center of the anchor to each edge. Spacing is measured from the center of one anchor to the center of an adjacent anchor.

5 Allowable loads must be the lesser of the adjusted bond tabulated values and the steel values given in table 3.

6 Allowable loads shall be adjusted for increased base material temperature in accordance with Figure13.

7 Tabulated embedment depth is limited by the length of the plastic HIT-SC screens.

8 For combined loading: $(T_{applied} / T_{allowable}) + (V_{applied} / V_{allowable}) \leq 1$

REINF. & GROUTED BRICK WALL

Table 15 - Hilti HIT-HY 270 allowable adhesive bond loads for threaded rods in multi-wythe hollow brick wall [1,3,4,5,7]

Nominal anchor diameter in.	Effective embedment[6] in. (mm)	Tension		Shear		Minimum edge distance c_{min} in. (mm)	Spacing			
		lb	(kN)	lb	(kN)		Critical s_{cr} in. (mm)	Minimum s_{min} in. (mm)	Load reduction factor in tension @ s_{min}	Load reduction factor in shear @ s_{min}
Anchor installed into the face of brick masonry wall[2]										
3/8	6-1/4 (160)	880	(3.9)	560	(2.5)	4 (102)	16 (406)	8 (203)	0.89	1.00
	9-3/4 (248)	1,540	(6.9)	895	(4.0)				0.96	0.75
1/2	6-1/4 (160)	1,430	(6.4)	655	(2.9)				0.59	0.75
	9-3/4 (248)	2,020	(9.0)	895	(4.0)				0.89	0.78
5/8	6-1/4 (160)	1,695	(7.5)	655	(2.9)				0.50	0.71
	9-3/4 (248)	2,165	(9.6)	895	(4.0)				0.71	0.58
3/4	8 (203)	1,380	(6.1)	855	(3.8)				1.00	0.67
	10 (250)	2,075	(9.2)	1,070	(4.8)				0.79	0.54
Anchor installed into the top of brick masonry wall										
3/8	3-1/2 (79)	315	(1.4)	220	(1.0)	2.5 (64)	8 (203)	8 (203)	1	1
Anchor installed into the side of brick masonry wall										
3/8	3-1/2 (79)	570	(2.5)	290	(1.3)	2.5 (64)	8 (203)	8 (203)	1	1

1 All values are for anchors installed in brick masonry with minimum masonry strength of 3000 psi. Brick units must be in conformance with ASTM C652. Allowable loads have been calculated using a safety factor of 5.

2 Anchors must be installed in the face of the multi-wythe URM wall. 2-wythe brick walls must have minimum of 6 inches thickness. Anchors with the effective embedment larger than 6-1/4" inches must be installed in the wall with minimum thickness of 13 inches made up of 3-wythe brick walls.

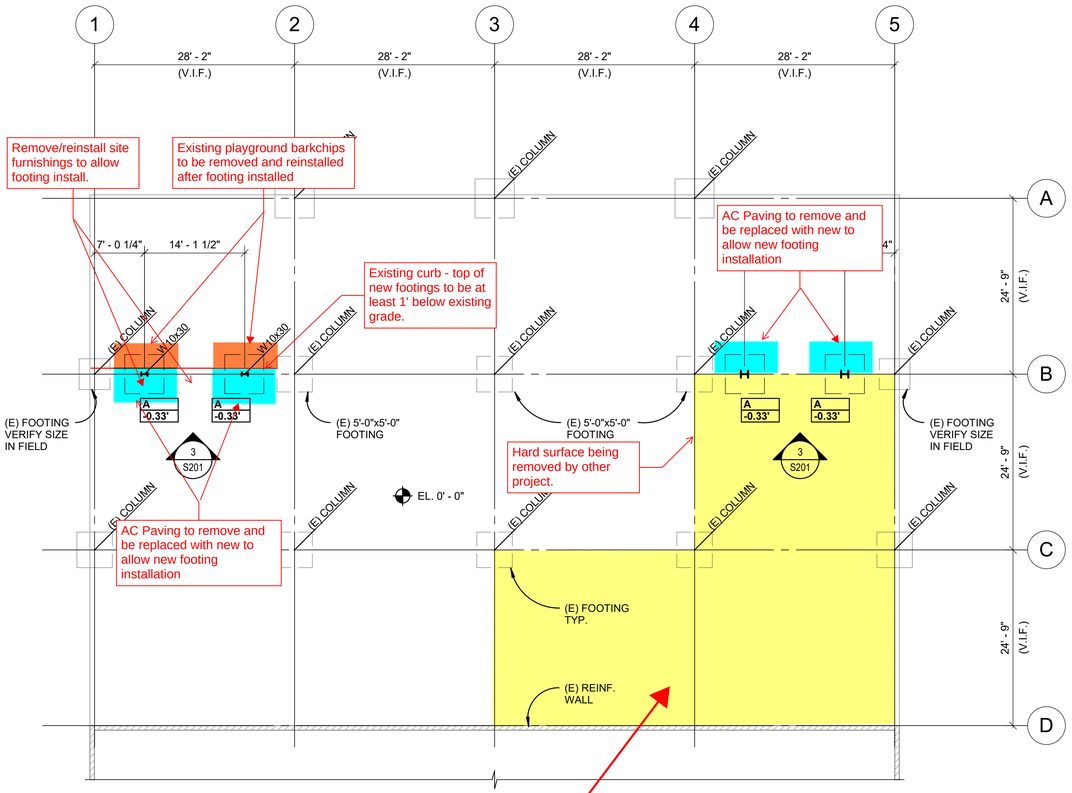
3 Edge distance, c_{min}, and spacing, s_{min}, are the minimum distances for which values are available and installation is recommended. Edge distance is measured from the center of the anchor to each edge. Spacing is measured from the center of one anchor to the center of an adjacent anchor.

4 Allowable loads must be the lesser of the adjusted bond tabulated values and the steel values given in table 3.

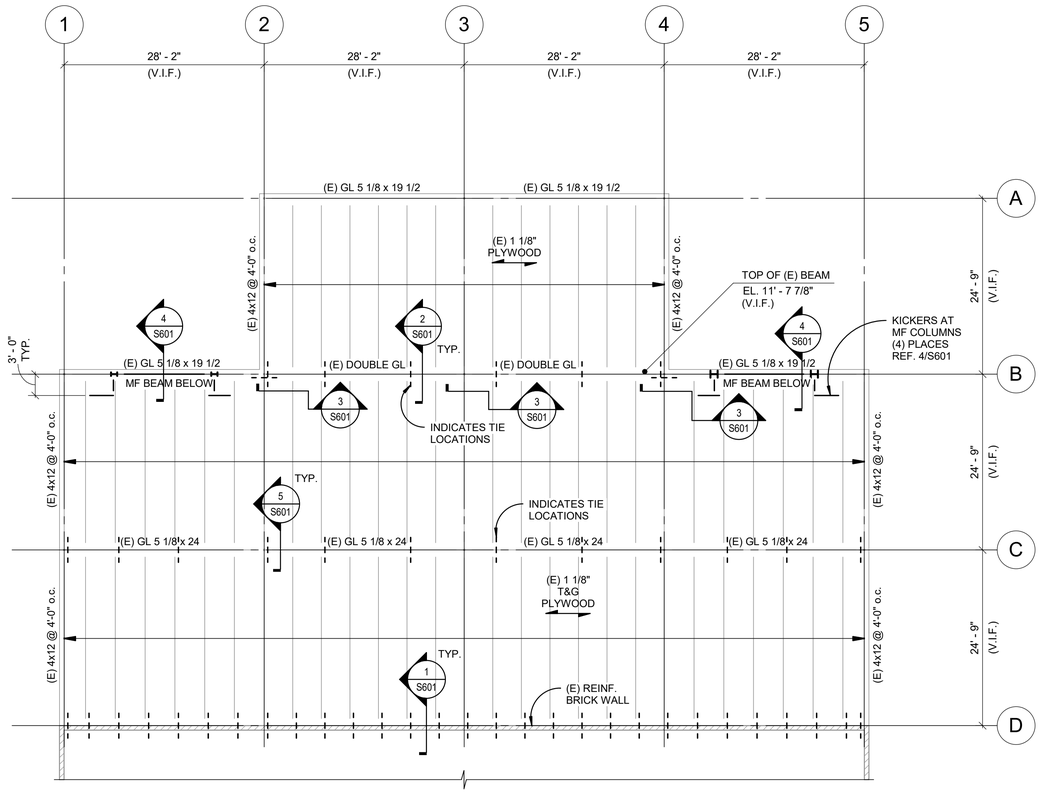
5 Allowable loads shall be adjusted for increased base material temperature in accordance with Figure 13.

6 Tabulated embedment depth is limited by the length of the plastic HIT-SC screens.

7 For combined loading: $(T_{applied} / T_{allowable}) + (V_{applied} / V_{allowable}) \leq 1$



WORK UNDER SEPARATE CONTRACT
Contractor to coordinate with work by others
Separate contract schedule:
Demolition starts 6/27
Placing concrete starts in Area A and B 7/11.
AC placement in Area C to be delayed to no later than 8/29 to allow footings to be placed



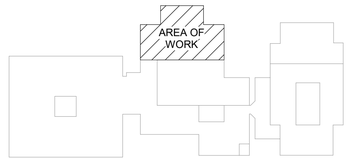
NOTES:

1. VERIFY ALL EXISTING DIMENSIONS AND FRAMING SIZES IN FIELD.
2. NOTIFY EOR OF ANY DRYROT DAMAGE OF EXISTING WOOD FRAMING MEMBERS.

Reference Only

2 ROOF FRAMING PLAN
3/32" = 1'-0"

PROJECT NORTH



KEY PLAN

PROJECT NORTH

UPDATED 3/10/22

BEAVERTON SCHOOL DISTRICT

BEAVERTON SCHOOL DISTRICT
ROCK CREEK ELEMENTARY SCHOOL
COVERED PLAY SEISMIC UPGRADES
4125 NW 185th Ave, PORTLAND, OR 97229

LINE IS 2 INCHES AT FULL SCALE
(IF NOT 2 INCHES THEN SCALE ACCORDINGLY)

Seismic Upgrade:
SHS Auditorium
and Rock Creek
Covered Play

SK-3

FOUNDATION AND ROOF FRAMING PLAN

ADDENDA 1

DRAWING INDEX

		ISSUE LOG: Permit Set
S001	DRAWING INDEX AND LIST OF ABBREVIATIONS	X
S002	GENERAL STRUCTURAL NOTES	X
S003	GENERAL STRUCTURAL NOTES CONT.	X
S010	SPECIAL INSPECTIONS AND TESTING	X
S011	SPECIAL INSPECTION AND TESTING CONT.	X
S012	SPECIAL INSPECTION AND TESTING CONT.	X
S201	FOUNDATION AND ROOF FRAMING PLAN	X
S501	FOUNDATION DETAILS	X
S601	FRAMING DETAILS	X

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

DATE: 03/01/2022

LIST OF ABBREVIATIONS

A.B.	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADD'L.	ADDITIONAL
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL
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
BRBF	BUCKLING RESTRAINED BRACED FRAME
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
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
EXIST., (E)	EXISTING
EXP.	EXPANSION
EXT.	EXTERIOR
FDN.	FOUNDATION
FIN.	FINISH
FLR.	FLOOR
FT.	FOOT
FTG.	FOOTING
GA.	GAUGE
GALV.	GALVANIZED
GL	GLULAM
HORIZ.	HORIZONTAL
HSS	HOLLOW STRUCTURAL STEEL
IBC	INTERNATIONAL BUILDING CODE
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
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
LSL	LAMINATED STRAND LUMBER BEAM
LVF	LOW VELOCITY FASTENER
LVL	LAMINATED VENEER LUMBER BEAM
MAX.	MAXIMUM
MBMA	METAL BUILDING MANUFACTURERS ASSOCIATION
MECH.	MECHANICAL
MF	MOMENT FRAME
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MPH	MILES PER HOUR
MT	MAGNETIC PARTICLE TESTING
(N)	NEW
N.I.C.	NOT IN CONTRACT
NOM.	NOMINAL
NO.	NUMBER
N.T.S.	NOT TO SCALE
o.c.	ON CENTER
O.D.	OUTSIDE DIAMETER
OPP.	OPPOSITE
OWJ	OPEN WEB JOIST
PAF	POWDER ACTUATED FASTENER
PART.	PARTITION
P/C	PRECAST
PCF	POUNDS PER CUBIC FOOT
PERIM.	PERIMETER
PL	PLATE
PP	PARTIAL PENETRATION
PSF	POUNDS PER SQUARE FOOT
PSL	PARALLEL STRAND LUMBER
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
S.C.	SLIP CRITICAL
SCL	STRUCTURAL COMPOSITE LUMBER
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
TJ	TRUSS JOIST
TS	LIGHT GAUGE TUBE STEEL
TYP.	TYPICAL
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
WWF	WELDED WIRE FABRIC

STRUCTURAL
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OREGON
MAY 10, 2013
NATHAN A. INGRAFFEA
EXPIRES 06-30-23

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date: 01 MAR 2022
drawn by: RL
checked: MD
job no.: 10022100871

Sheet
S001

ADDENDA 1

GENERAL

STRUCTURAL DRAWINGS ARE A PART OF THE CONTRACT DOCUMENTS AND ARE COMPLEMENTARY TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING DRAWINGS, THE SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE REQUIREMENTS FROM THE CONTRACT DOCUMENTS INTO THEIR SHOP DRAWINGS AND WORK. AS REQUIRED BY THE GENERAL CONDITIONS, THE CONTRACTOR SHALL PROMPTLY REPORT TO THE ARCHITECT ANY ERRORS, INCONSISTENCIES, OR OMISSIONS IN THE CONTRACT DOCUMENTS DISCOVERED BY OR MADE KNOWN TO THE CONTRACTOR.

THE GENERAL STRUCTURAL 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 STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK. WHERE CONFLICT EXISTS, THE MORE STRINGENT OR RESTRICTIVE REQUIREMENT SHALL GOVERN UNITL CLARIFICATION IS REQUESTED.

CODE REQUIREMENTS:
CONFORM TO THE 2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC), BASED ON THE 2018 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 UNTIL COMPLETION.

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

EXCAVATIONS SHALL NOT REDUCE THE VERTICAL OR LATERAL SUPPORT FOR ANY FOUNDATION OF THIS PROJECT OR ANY ADJACENT STRUCTURE WITHOUT FIRST UNDERPINNING OR PROTECTING THE FOUNDATION AGAINST DETRIMENTAL LATERAL AND/OR VERTICAL MOVEMENT.

EXISTING CONDITIONS:
ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED. THE CONTRACTOR SHALL NOTIFY THE 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:

GRAVITY SYSTEM CRITERIA		
OCCUPANCY OR USE	**UNIFORM LOAD**	**CONCENTRATED LOAD**
ROOF LIVE/SNOW LOAD	25 PSF L.L. (ALSO SEE SNOW LOAD CRITERIA BELOW)	
GRAVITY LOADING NOTES:	1. LIVE LOADS REDUCED PER OSSC. 2. MEMBERS DESIGNED FOR MORE CRITICAL OF UNIFORM OR CONCENTRATED LOAD.	
SNOW CRITERIA		
DESIGN ROOF SNOW LOAD	25 PSF MINIMUM IN ACCORDANCE WITH OSSC	
GEOTECHNICAL CRITERIA		
DESIGN BASED ON REPORT BY:	OSSC TABLE 1806.2	
ALLOWABLE SOIL PRESSURE:	1,500 PSF	
WIND CRITERIA		
RISK CATEGORY	II	
MAIN WIND FORCE RESISTING SYSTEM	V = 103 MPH BASIC DESIGN WIND SPEED (3-SECOND GUST)	
COMPONENTS AND CLADDING	V = 103 MPH BASIC DESIGN WIND SPEED (3-SECOND GUST)	
EXPOSURE CATEGORY	B	
SEISMIC CRITERIA		
RISK CATEGORY	III	
SEISMIC DESIGN CATEGORY	D	
SITE CLASS	D (Default)	
IMPORTANCE FACTOR	IE = 1.25	
MAPPED MCE SPECTRAL ACCELERATION	Ss = 0.91	S1 = 0.42
SITE COEFFICIENT	Fa = 1.136	
DESIGN SPECTRAL ACCELERATION	SDS = 0.729	
ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE PER ASCE 7-16, SECTION 12.8	
	X DIRECTION (EAST / WEST)	Y DIRECTION (NORTH / SOUTH)
SEISMIC FORCE RESISTING SYSTEM (SFRS)	INTERMEDIATE REINFORCED MASONRY SHEAR WALL	INTERMEDIATE REINFORCED MASONRY SHEAR WALL
RESPONSE MODIFICATION FACTOR	R = 3.5	R = 3.5
SEISMIC RESPONSE COEFFICIENT	Cs = 0.260	Cs = 0.260
REDUNDANCY FACTOR	rho = 1.0	rho = 1.0

SEISMIC FORCE-RESISTING SYSTEM

THE SEISMIC FORCE-RESISTING SYSTEM (SFRS) FOR THE COMPLETED STRUCTURE IS AS FOLLOWS:

NEW STEEL ORDINARY MOMENT FRAMES ALONG GRIDLINE B FOR THE COVERED PLAY AREA. EXISTING MASONRY SHEAR WALLS AT GRIDS D, 1 AND 5 AT THE MAIN BUILDING.

REFERENCE SHEETS S201 FOR SFRS ELEVATIONS. REFERENCE PLANS AND MOMENT FRAME DRAWINGS (BY OTHERS) FOR ADDITIONAL SFRS COMPONENTS AND DETAILS.

REFER TO THE GENERAL STRUCTURAL NOTES AND SPECIFICATIONS FOR ADDITIONAL FABRICATING, INSTALLATION, TESTING AND INSPECTION REQUIREMENTS FOR MEMBERS THAT ARE PART OF THE SFRS.

STRUCTURAL OBSERVATIONS

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

ITEM	COMMENTS
AS REQUIRED TO ADDRESS STRUCTURAL ISSUES	

A FIELD REPORT WILL BE SUBMITTED TO THE BUILDING DEPARTMENT FOLLOWING EACH SITE VISIT.

STRUCTURAL OBSERVATION IS FOR THE GENERAL CONFORMANCE OF THE STRUCTURAL DRAWINGS AND DOES NOT ALLEVIATE ANY SPECIAL INSPECTION REQUIREMENTS.

SPECIAL INSPECTIONS 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 SHEETS S010-S012. CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE AND ACCESS FOR THE SPECIAL INSPECTOR TO PERFORM THESE INSPECTIONS.

SUBMITTALS

SUBMIT SHOP DRAWINGS AND OTHER SUBMITTALS TO THE ARCHITECT AND ENGINEER PRIOR TO FABRICATION AND CONSTRUCTION OF STRUCTURAL ITEMS. IF THE SUBMITTALS DIFFER FROM OR ADD TO THE STRUCTURAL CONTRACT DOCUMENTS, 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 BY THE SEOR.

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

THE USE OF REPRODUCTIONS OR PHOTOCOPIES OF THE CONTRACT DRAWINGS SHALL NOT BE PERMITTED. WHEN CAD OR REVIT FILES ARE PROVIDED TO THE CONTRACTOR OR SUBCONTRACTORS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR/SUBCONTRACTOR TO REMOVE ALL INFORMATION NOT DIRECTLY RELEVANT TO THE SCOPE OF THE SUBMITTAL AS WELL AS ALL REFERENCES TO OUTSIDE SOURCE FILES.

DELEGATED DESIGN SUBMITTALS SHALL INCLUDE DESIGN DRAWINGS AND CALCULATIONS FOR ITEMS THAT ARE DESIGNED BY OTHERS. DELEGATED DESIGN SUBMITTALS SHALL BEAR THE SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OREGON ON EVERY DRAWING SHEET AND ON THE CALCULATION COVER SHEET, AND SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER PRIOR TO FABRICATION. CALCULATIONS AND DETAILS SHALL BE INCLUDED FOR ALL CONNECTIONS TO THE STRUCTURE, CONSIDERING LOCALIZED EFFECTS ON STRUCTURAL ELEMENTS. DESIGN SHALL BE BASED ON THE REQUIREMENTS OF THE OSSC AND AS NOTED UNDER "DESIGN CRITERIA".

SUBMITTALS AND DELEGATED DESIGN SUBMITTALS SHALL INCLUDE THE FOLLOWING:

ITEM	SUBMITTAL	DELEGATED DESIGN SUBMITTAL	COMMENTS
CONCRETE MIX DESIGNS	X		
CONCRETE REINFORCEMENT	X		
CONCRETE ANCHORAGES	X		
EMBEDDED STEEL ITEMS	X		
STRUCTURAL STEEL	X		
STEEL WELDING PROCEDURES	X		

TABLE NOTES:

1 CONTRACTOR SHALL ENGAGE A PROFESSIONAL ENGINEER TO PREPARE AN ASSESSMENT OF ANY EXCAVATIONS THAT MAY REDUCE THE VERTICAL OR LATERAL SUPPORT OF AN EXISTING FOUNDATION AS REQUIRED BY OSSC SECTION 1803.5.7. THE ASSESSMENT SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND SHALL INCLUDE DETAILS AND SEQUENCING FOR CONSTRUCTION OF ANY UNDERPINNING OR BRACING THAT IS REQUIRED.

2. CONTRACTOR SHALL COORDINATE AND SHOW ALL REQUIRED PENETRATIONS, WITH DIMENSIONS FOR MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, TECHNOLOGY AND OTHER SERVICES ON A SINGLE DRAWING FOR REVIEW AT EACH SLAB/DECK, STRUCTURAL WALL AND/OR BEAM.

CONCRETE MIX DESIGNS

CONCRETE WORK SHALL CONFORM TO CHAPTER 19 OF THE OSSC. CONCRETE STRENGTHS SHALL BE VERIFIED BY STANDARD CYLINDER TESTS PER ASTM C39. CONCRETE MIX TO BE DESIGNED AND PROPORTIONED BY THE CONTRACTOR IN ACCORDANCE WITH ACI 318-14 CHAPTER 26, ACI 301-16 CHAPTER 4 AND THE FOLLOWING INFORMATION:

MIX TYPE	USE	f'c (PSI)	TEST AGE (DAYS)	MAX. W/CM RATIO	MAX. AGG. SIZE	EXPOSURE CLASS			
E	SPREAD FOOTINGS	4,000	28	N/A	1"	F0	S0	W0	C0

TABLE NOTES:
1. REF. ACI 318-14 TABLE 19.3.2.1 FOR ADDITIONAL MIX REQUIREMENTS SPECIFIC TO EXPOSURE CLASS.
2. ALL CONCRETE MIXES TO BE NORMAL WEIGHT CONCRETE, U.N.O.
3. EXPOSURE CATEGORY "F" APPLIES TO LEVEL OF FREEZE THAW EXPOSURE.
4. EXPOSURE CATEGORY "S" APPLIES TO LEVEL OF SULFATE EXPOSURE.
5. EXPOSURE CATEGORY "W" APPLIES TO REQUIRED LEVEL OF PERMEABILITY.
6. EXPOSURE CATEGORY "C" APPLIES TO CORROSIVE LOCATIONS - INCLUDING SURROUNDING ENVIRONMENT (SUCH AS MARINE ENVIRONMENT) AND CORROSIVE SOILS.
7. ESTABLISH WATER-CEMENTITIOUS MATERIAL RATIO PER ACI 301-16 CHAPTER 4.

PORTLAND CEMENT CONTENT MAY BE REPLACED WITH FLY ASH CONFORMING TO ASTM C618 (INCLUDING TABLE 2A) TYPE F OR TYPE C, SLAG CEMENT CONFORMING TO ASTM C989, AND SILICA FUME CONFORMING TO ASTM C1240 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 FLY ASH AT A 1:1 RATIO WITHOUT TEST DATA. WHEN SLAG CEMENT IS SUBSTITUTED IN HIGHER STRENGTH MIXES OR AT A DIFFERENT RATIO, THE MIX STRENGTH MUST BE SUBSTANTIATED BY TEST DATA.

ALL CONCRETE SUBJECT TO EXPOSURE CLASSES F1, F2 OR F3 SHALL BE AIR ENTRAINED. AIR-ENTRAINING AGENTS SHALL CONFORM TO ASTM C260. THE AMOUNT OF ENTRAINED AIR SHALL BE ACCORDING TO ACI 318-14 TABLE 19.3.3.1 AS INDICATED BELOW WITH A FIELD TOLERANCE OF ± 1.5 PERCENT BY VOLUME. THE AMOUNT OF ENTRAINED AIR SHALL BE MEASURED IN THE FIELD AT THE DISCHARGE FROM THE TRUCK.

CONCRETE MIX AIR CONTENT		
MAX. AGGREGATE SIZE	**CONCRETE SUBJECT TO FREEZE/THAW (EXPOSURE CLASS F1)**	**CONCRETE SUBJECT TO CONT. MOISTURE AND/OR DEICING CHEMICALS (EXPOSURE CLASS F2 AND F3)**
3/8"	6.0%	7.5%
1/2"	5.5%	7.0%
3/4"	5.0%	6.0%
1"	4.5%	6.0%
1-1/2"	4.5%	5.5%

A WATER-REDUCING ADMIXTURE CONFORMING TO ASTM C494 USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SHALL BE INCORPORATED IN CONCRETE MIX DESIGNS. 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".

THE CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS ALONG WITH TEST DATA COMPLIANT WITH ACI 301-16 AND ACI 318-14 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 AND SEOR IN CONJUNCTION WITH THE CONCRETE MIX DESIGN.

CONCRETE REINFORCING STEEL

CONCRETE REINFORCEMENT SHALL BE AS LISTED BELOW. ASTM A615 REINFORCEMENT MAY BE SUBSTITUTED FOR ASTM A706 REINFORCEMENT PROVIDED THAT THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED Fy BY MORE THAN 18,000 PSI AND THE RATIO OF ACTUAL TENSILE STRENGTH TO ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25 AND THE ELONGATION REQUIREMENTS OF ASTM A706 ARE MET PER ACI 318-14 SECTION 20.2.2.5. MILL TESTS CERTIFICATIONS FOR SUBSTITUTED BARS SHALL BE SUBMITTED TO THE SPECIAL INSPECTOR AND SEOR PRIOR TO PLACEMENT. ASTM A706 REINFORCEMENT MAY BE SUBSTITUTED FOR ASTM A615 REINFORCEMENT.

REINFORCING LOCATION	MATERIAL GRADE
REINFORCING TO BE WELDED	ASTM A706 GRADE 60
ALL OTHER USES U.N.O.	ASTM A615 GRADE 60

ALL 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 ACI MNL-66 "ACI DETAILING MANUAL". SHOP DRAWINGS SHALL INCLUDE ELEVATIONS OF ALL BEAMS, WALLS AND COLUMNS SHOWING BAR LOCATIONS.

REINFORCING BARS SHALL NOT BE BENT OR STRAIGHTENED IN THE FIELD WITHOUT APPROVAL OF THE SEOR. PREHEATING METHODS SHALL BE SUBMITTED TO THE SEOR FOR APPROVAL PRIOR TO BENDING OF BARS #6 OR LARGER.

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 OR TAPER-LOCK COUPLERS (UES ER-319) OR APPROVED EQUAL WITH A CURRENT EVALUATION REPORT.

TYP. FOUNDATION AND MAT LAP SPLICE LENGTH SCHEDULE (IN.) - 60 KSI		
BAR SIZE	**BOTTOM BARS**	**TOP BARS**
	4,000 PSI	**4,000 PSI**
#3	14	20
#4	20	26
#5	24	32
#6	28	38
#7	42	54
#8	48	62
#9	54	70
#10	60	78
#11	70	90

TABLE NOTES:
1. SPLICE LENGTHS APPLY TO ASTM A615 OR ASTM A706 GRADE 60 DEFORMED REINFORCING BARS ONLY.
2.. SPLICE LENGTHS ARE BASED ON THE CLEAR COVER AND MINIMUM BAR CLEAR SPACING INDICATED BELOW.
3. SPLICE LENGTHS APPLY TO NORMAL WEIGHT CONCRETE ONLY. MULTIPLY TABLE VALUES BY 1.3 FOR LIGHT-WEIGHT CONCRETE.
4. SPLICE LENGTHS APPLY TO UNCOATED BARS ONLY. MULTIPLY TABLE VALUES BY 1.5 FOR EPOXY-COATED BARS.
5. COMBINATIONS OF EFFECTS DUE TO CONCRETE STRENGTH, CONCRETE WEIGHT, AND EPOXY COATING ARE CUMULATIVE.
6. 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.

REINFORCING STEEL SHALL HAVE PROTECTION AND SPACING AS FOLLOWS:

CONCRETE COVER		
USE	**CLEAR COVER**	**MIN. CLEAR SPACING**
CONCRETE EXPOSED TO EARTH OR WEATHER	1-1/2" (#5 AND SMALLER) 2" (#6 AND LARGER)	2db OR 1"
CONCRETE CAST AGAINST AND EXPOSED TO EARTH	3"	3db OR 1"

STRUCTURAL
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drawn by: RL
checked: MD
job no.: 10022100871

Sheet
S002

GENERAL STRUCTURAL NOTES

ADDENDA 1

CAST-IN-PLACE ANCHOR BOLTS SHALL BE HEADED BOLTS CONFORMING TO ASTM F1554 GRADE 55, MEETING SUPPLEMENTAL REQUIREMENT S1 (WELDABLE) U.N.O.

SLEEVES, OPENINGS, CONDUIT, AND OTHER EMBEDDED ITEMS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER BEFORE PLACING CONCRETE.

VERIFY ALL BLOCK OUTS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING REQUIREMENTS.

POST-INSTALLED CONCRETE ANCHORS

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. DO NOT CUT REINFORCING IN NEW OR EXISTING CONCRETE DURING INSTALLATION.

REQUESTS FOR ANCHOR SUBSTITUTIONS SHALL BE SUBMITTED TO THE SEOR IN WRITING ALONG WITH EVIDENCE OF EQUAL OR GREATER CAPACITY TO THE SPECIFIED CONNECTION.

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 318-14 SECTION 17.8.2.2. PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE SEOR PRIOR TO INSTALLATION.

ALL-THREAD ROD FOR ADHESIVE ANCHORS SHALL CONFORM TO ASTM F1554 GRADE 55, U.N.O. 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, U.N.O.

NO LOADS OR WELDS SHALL BE PLACED ON EMBEDDED PLATES OR ANGLES FOR A MINIMUM OF 7 DAYS AFTER CASTING. ADHESIVE ANCHORS SHALL NOT BE INSTALLED FOR A MINIMUM OF 21 DAYS AFTER CASTING CONCRETE IN ACCORDANCE WITH ACI 318-14 SECTION 17.1.2.

STRUCTURAL STEEL

STRUCTURAL STEEL SHALL BE OF THE MATERIAL AND TYPE LISTED BELOW, U.N.O.:

STRUCTURAL STEEL	
SHAPE	**MATERIAL GRADE**
WIDE FLANGE SHAPES	ASTM A992, GRADE 50

STRUCTURAL STEEL THAT IS PART OF THE SEISMIC FORCE-RESISTING SYSTEM SHALL MEET THE FOLLOWING MATERIAL SPECIFICATIONS, U.N.O.:

STRUCTURAL STEEL - SFRS	
SHAPE	**MATERIAL GRADE**
PLATES	ASTM A572, GRADE 50
HSS	ASTM A500, GRADE B

DESIGN, DETAILING, FABRICATION, AND ERECTION SHALL BE IN ACCORDANCE WITH THE AISC 360, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" WITH "COMMENTARY" AND THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", WITH THE FOLLOWING CLARIFICATIONS AND ADDITIONS:

1. CLARIFY SECTIONS 7.5.1 AND 7.5.3 AS FOLLOWS:
   EMBEDMENT LOCATION DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD FOR INFORMATION ONLY. THE SEOR IS NOT RESPONSIBLE FOR THE APPROVAL OF EMBEDMENT LOCATION DRAWINGS.
2. ADD THE FOLLOWING PARAGRAPH TO SECTION 7.10.3:
   "THE ERECTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR DETERMINING THE MEANS AND METHODS USED TO PROPERLY AND ADEQUATELY BRACE THE FRAMING DURING ERECTION."

WELDING SHALL CONFORM TO THE AWS CODES FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH A WELDING 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 SHALL APPLY.

FOR MEMBERS AND CONNECTIONS THAT ARE PART OF THE SEISMIC FORCE RESISTING SYSTEM, DISCONTINUITIES CREATED BY ERRORS OR BY FABRICATION OR ERECTION OPERATIONS, SUCH AS TACK WELDS, ERECTION AIDS, AIR-ARC GOUGING, AND FLAME CUTTING, SHALL BE REPAIRED AS REQUIRED BY THE STRUCTURAL ENGINEER.

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

PROVIDE WEEP HOLES AT EXTERIOR CLOSED SECTIONS WHERE MOISTURE MAY ACCUMULATE. LOCATE WEEP HOLES AT BOTTOM OF HORIZONTAL MEMBERS AT MIDSPAN UNLESS OTHER NOTED. LOCATE WEEP HOLES AT BOTTOM OF VERTICAL MEMBERS EXCEPT AT ROOF ASSEMBLIES. ALL WEEP HOLES TO BE APPROVED PRIOR TO FABRICATION.

NON-SHRINK GROUT USED UNDER BEARING AND BASE PLATES SHALL BE ASTM C 1107, FACTORY-PACKAGED, NONMETALLIC AGGREGATE GROUT, NONCORROSIVE, NONSTAINING, MIXED WITH WATER TO CONSISTENCY SUITABLE FOR APPLICATION AND A 30-MINUTE WORKING TIME. GROUT STRENGTH SHALL BE 8,000 PSI MINIMUM AT 28 DAYS.

DISSIMILAR METALS SHALL BE SEPARATED AS REQUIRED TO PREVENT GALVANIC CORROSION BY COMPLETELY COVERING CONTACT AREAS WITH HESKINS 3453 CORROSION PROTECTION TAPE OR APPROVED EQUAL MATERIAL.

SAWN LUMBER

SAWN LUMBER SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE CURRENTLY ACCEPTED NATIONAL DESIGN SPECIFICATION (NDS) DESIGN VALUES FOR WOOD CONSTRUCTION AND 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, U.N.O.:

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

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

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.

SALVAGED LUMBER IS ACCEPTABLE PROVIDED IT IS GRADED BY AN APPROVED GRADING AGENCY PRIOR TO USE AND MEETS A MINIMUM ALLOWABLE BENDING STRESS (Fb) OF 1,000 PSI. CONTRACTOR TO SUBMIT A GRADING REPORT ON EACH MEMBER TO THE ARCHITECT PRIOR TO INSTALLATION.

LUMBER FASTENERS AND ACCESSORIES

FRAMING ACCESSORIES INDICATED SHALL BE MANUFACTURED BY SIMPSON STRONG TIE (OR APPROVED EQUAL) AND OF THE SIZE AND TYPE SPECIFIED. ALL NAIL HOLES SHALL BE FILLED WITH STRUCTURAL FASTENERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS AND FASTENERS SHALL BE INSTALLED FOLLOWING ALL MANUFACTURERS REQUIREMENTS. ACCESSORIES SHALL BE GALVANIZED UNLESS INDICATED OTHERWISE. PROVIDE G90 COATING EXCEPT WHERE IN CONTACT WITH PRESERVATIVE OR FIRE RETARDANT TREATED WOOD IN WHICH CASE G185 SHALL BE PROVIDED. SUBMIT SUBSTITUTION REQUESTS TO ENGINEER FOR APPROVAL OUTLINING THE FRAMING ACCESSORIES BEING REPLACED AND THE SUBSTITUTED FRAMING ACCESSORIES. ALLOWABLE LOADS FOR THE SPECIFIED ACCESSORIES SHALL BE TABULATED ALONG WITH THE ALLOWABLE LOADS FOR THE SUBSTITUTED ACCESSORIES. SUBSTITUTION REQUESTS WILL ONLY BE APPROVED WHERE SUBSTITUTED PRODUCTS ARE CLEARLY DOCUMENTED TO HAVE EQUAL OR GREATER CAPACITY IN ALL DIRECTIONS.

ALL FRAMING NAILS SHALL BE THE SIZE AND QUANTITY INDICATED AND CONFORM TO ASTM F 1667, INCLUDING SUPPLEMENT 1, "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 ENGINEER PRIOR TO FRAMING. NAILING NOT SHOWN SHALL BE AS INDICATED IN OSSC TABLE 2304.10.1 OR ICC 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
12d	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.

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STATEMENT OF SPECIAL INSPECTION NOTES:

1. SPECIAL INSPECTIONS SHALL CONFORM TO SECTION 1705 OF THE 2019 OSSC, CONTRACT DOCUMENTS AND APPROVED SUBMITTALS. REFER TO SPECIAL INSPECTION AND TESTING TABLES FOR PROJECT 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 OWNER 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 SHALL FURNISH INSPECTION REPORTS FOR EACH INSPECTION TO THE BUILDING OFFICIAL, STRUCTURAL ENGINEER, 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 QUALITY ASSURANCE (QA) IS REQURIED FOR STRUCTURAL STEEL ITEMS PER AISC 360 AND 341 UNLESS SPECIFICALLY NOTED OTHERWISE. QUALITY CONTROL (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 MANUFACTURER'S 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 EVALUATION REPORT.

9 **TESTING ABBREVIATIONS:**

NDT - NON-DESTRUCTIVE TESTING
C.J.P. - COMPLETE JOINT PENETRATION
MT - MAGNETIC PARTICLE TESTING
RBS - REDUCED BEAM SECTION

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

CONTRACTOR RESPONSIBILITY:

EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF THE MAIN WIND-OR SEISMIC-FORCE-RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM OR A WIND-OR SEISMIC-RESISTING COMPONENT LISTED THE TABLES 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.

GENERAL - SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6)		REMARKS
			CONTINUOUS	PERIODIC	
FABRICATORS	1705.10 1704.2.5				SPECIAL INSPECTION IS REQUIRED FOR STRUCTURAL LOAD-BEARING MEMBERS AND ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTIONS SHALL BE PERFORMED DURING FABRICATION. PERFORMING SPECIAL INSPECTIONS IS NOT REQUIRED, WHERE FABRICATOR HAS BEEN APPROVED AS AN APPROVED FABRICATOR, PER SECTION 1704.2.5.1.
DELEGATED SUBMITTALS				X	SPECIAL INSPECTION REQUIREMENTS FOR DEFERRED/DELEGATED SUBMITTAL ITEMS, INCLUDING REQUIREMENTS FOR DESIGNATED SEISMIC SYSTEMS IN ACCORDANCE WITH OSSC SECTION 1705.12.4 IF APPLICABLE, TO BE SPECIFIED BY THE SYSTEM ENGINEER AND INCLUDED WITH DEFERRED SUBMITAL DOCUMENTS.
SUBMITTALS TO THE BUILDING OFFICIAL	1704.5			X	CERTIFICATES OF COMPLIANCE, REPORTS OF PRE-CONSTRUCTION TESTS, OR REPORTS OF MATERIAL PROPERTIES SHALL BE SUBMITTED TO THE BUILDING OFFICIAL.
POST INSTALLED MECHANICAL ANCHORS AND ADHESIVE ANCHORS IN HARDENED CONCRETE AND COMPLETED MASONRY				X	

SOILS/GEOTECHNICAL - SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARDS REFERENCE	FREQUENCY (NOTE 6)		REMARKS
			CONTINUOUS	PERIODIC	
SOILS					
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	1705.6			X	BY QUALIFIED SPECIAL INSPECTOR
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL				X	
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS				X	
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL			X		
PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY				X	

SOILS/GEOTECHNICAL - TESTING

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6)		REMARKS
			CONTINUOUS	PERIODIC	
FILL IN-PLACE DENSITY OR PREPARED SUBGRADE DENSITY	1705.6	VARIES; GEOTECHNICAL REPORT OR MINIMUM PER OSSC APPENDIX J107.5, WHICHEVER IS GREATER		X	BY QUALIFIED SPECIAL INSPECTOR
MATERIAL VERIFICATION		VARIES; CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X	BY QUALIFIED SPECIAL INSPECTOR

ADDENDA 1

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SPECIAL INSPECTIONS AND TESTING

ADDENDA 1

CONCRETE - SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6)		REMARKS
			CONTINUOUS	PERIODIC	
GENERAL	1705.3 1901.6	ACI 318: 26.13			SPECIAL INSPECTIONS OF CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1705.3 OF THE IBC AND SECTION 26.13 OF ACI 318.
REINFORCING STEEL PLACEMENT	1901.5.2 1908.4	ACI 318: CH. 20, 25.2, 25.3, 26.6.1-26.6.3, 26.13.3.3		X	REINFORCING TO COMPLY WITH ALL CODE PROTECTION, SPACING AND TOLERANCE LIMITS.
INSPECT ANCHORS/BOLTS CAST IN CONCRETE	-	ACI 318: 17.8.2	X	X	ALL CAST-IN-PLACE ANCHORS/BOLTS SHALL BE VISUALLY INSPECTED. REFERENCE STEEL INSPECTIONS FOR ADDITIONAL INSTALLATION, MATERIAL AND WELDING INSPECTIONS OF STEEL ITEMS EMBEDDED IN CONCRETE (HEADED STUDS, DBA's, ETC.)
VERIFYING USE OF REQUIRED MIX DESIGN(S)	1904.1 1904.2 1908.2 1908.3	ACI 318: CH. 19, 26.4.3, 26.4.4		X	
CONCRETE SPECIMENS FOR TESTING	1908.10	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12	X		PRIOR TO CONCRETE PLACEMENT, FABRICATE CONCRETE SPECIMENS FOR TESTING. SEE THE CONCRETE TESTING TABLE FOR ADDITIONAL INFORMATION.
CONCRETE PLACEMENT, NON-SHRINK GROUT	1908.6, 1908.7, 1908.8	ACI 318: 26.5, 26.13.3.2(a)	X		
CONCRETE CURING	1908.9	ACI 318: 26.5.3 - 26.5.5, 26.13.3.3		X	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURES AND TECHNIQUES
VERIFICATION OF FORMWORK		ACI 318: 26.11.1.2(b), 26.13.3.3		X	SPECIAL INSPECTIONS APPLY TO SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED
EMBEDDED ITEMS IN CONCRETE				X	ALL NON-STRUCTURAL EMBEDDED ITEMS, SUCH AS CONDUITS, PIPES AND SLEEVES, SHALL BE REVIEWED FOR CONFORMANCE WITH STRUCTURAL DOCUMENTS FOR SIZE, SPACING, LOCATION, EDGE DISTANCE AND TRIM REINFORCING.
REINFORCING STEEL MECHANICAL COUPLERS, TERMINATORS AND FORMSAVERS		ICC EVALUATION REPORTS		X	

CONCRETE - TESTING

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6)	REMARKS
CONCRETE STRENGTH	1705.3 ASTM C172 ASTM C 31 ACI 318 26.12 ACI 318 26.5	ASTM C39	EACH 150 CY NOR LESS THAN EACH 5000 SF OF SLAB OR WALL PLACED EACH SHIFT	FABRICATE SPECIMENS AT TIME FRESH CONCRETE IS PLACED
CONCRETE SLUMP		ASTM C143		
CONCRETE AIR CONTENT		ASTM C231		
CONCRETE TEMPERATURE		ASTM C1064		

STEEL - SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	INSPECTION (NOTES 5 AND 6)		REMARKS
			CONTINUOUS/ PERFORM	PERIODIC/ OBSERVE	
CONTRACTOR QUALITY CONTROL REQUIREMENTS		AISC 360 CHAPTER N	X	X	CONTRACTOR TO PROVIDE QUALITY CONTROL FOR ALL ITEMS INDICATED TO BE OBSERVED AND/OR PERFORMED IN TABLE BELOW
STEEL FABRICATION					
FABRICATION OF STRUCTURAL ELEMENTS	1704.2.5.1	AISC 360		X	REFER TO INSPECTION OF FABRICATOR REQUIREMENTS
MATERIAL VERIFICATION OF STRUCTURAL STEEL COMPONENTS	1505.2.1 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
MATERIAL VERIFICATION OF HIGH STRENGTH BOLTS, NUTS, AND WASHERS	1705.2.1.2 AISC 360 N5 TABLE 1705.2-2	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	1705.2.1.1 TABLE 1705.2-5	AISC 360 A3.5 AISC 360 N3.2 APPLICABLE AWS A5 DOCUMENTS		X	MANUFACTURER'S CERTIFIED TEST REPORTS
STRUCTURAL STEEL WELDING					
VERIFYING USE OF PROPER WPS'S	1705.2.1 AWS D1.1	AISC 360 N3.2			RETAIN A RECORD OF WELDING PROCEDURE SPECIFICATIONS
VERIFYING WELDER QUALIFICATIONS		AWS D1.1		X	RETAIN A RECORD OF QUALIFICATION CARDS
COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	TABLE 1705.2-6	AWS D1.1 CLAUSE 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	
VERIFICATION OF JOINT & CONNECTION DETAILS INCLUDING MEMBER AND COMPONENT LOCATIONS, BRACING, AND STIFFENERS	TABLE 1705.2-7	AWS D1.1		X	
HIGH-STRENGTH BOLTING					
SNUG-TIGHT BOLT INSTALLATION	1705.2.1 TABLE 1705.2-2 AISC 360 M2-5 AISC 360 N5-6	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 BOLT INSTALLATION USING TURN-OF-THE-NUT METHOD WITH MATCH MARKING, DIRECT TENSION INDICATOR METHOD, OR TWIST-OFF TYPE TENSION CONTROL BOLT METHOD				X	ALL CONNECTIONS VISUALLY INSPECTED. CONNECTIONS USING DIRECT TENSION INDICATORS, ALL BOLTS SHALL BE INSPECTED AFTER SNUGGING AND AFTER PRETENSIONING
PRETENSIONED BOLT INSTALLATION USING TURN-OF-THE-NUT METHOD WITHOUT MATCH MARKING OR CALIBRATED WRENCH METHOD			X		ALL CONNECTIONS VISUALLY INSPECTED
INSPECTION TASKS PRIOR TO BOLTING					
MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	1705.2.1.2 TABLE 1705.2-2	AISC 360 TABLE N5.6-1 AISC 360 M2.5	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	
CONNECTING ELEMENTS< INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS				X	
PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED				X	
PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS				X	
INSPECTION TASKS DURING BOLTING					
FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	1705.2.1.2 TABLE 1705.2-2	AISC 360 TABLE N5.6-2 AISC M2.5 RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS SECTION 9		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	1705.2.1.2 TABLE 1705.2-2	AISC 360 TABLE N5.6-3	X		

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EXPIRES 06-30-23

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BEAVERTON SCHOOL DISTRICT

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ROCK CREEK ELEMENTARY SCHOOL
COVERED PLAY SEISMIC UPGRADES
4125 NW 185th Ave, PORTLAND, OR 97229

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S011

SPECIAL INSPECTION AND TESTING CONT.

STEEL LATERAL SYSTEM - SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	QA/QC TASKS (NOTES 5,6,10) OBSERVE	QA/QC TASKS (NOTES 5,6,10) PERFORM	REMARKS
VISUAL INSPECTION TASKS PRIOR TO WELDING					
MATERIAL IDENTIFICATION (TYPE/GRADE)	1705.12.1	AISC 341 TABLE J6.1 AWS D1.8/D1.8M	X		
WELDER IDENTIFICATION SYSTEM			X		
FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY)					
JOINT PREPARATION			X		NOTE 7
DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)			X		
CLEANLINESS (CONDITION OF STEEL SURFACES)			X		
TACKING (TACK WELD QUALITY AND LOCATION)			X		
BACKING TYPE AND FIT (IF APPLICABLE)			X		
CONFIGURATION AND FINISH OF ACCESS HOLES			X		
FIT-UP OF FILLET WELDS					
DIMENSIONS (ALIGNMENT, GAPS AT ROOT)			X		NOTE 7
CLEANLINESS(CONDITION OF STEEL SURFACES)			X		
TACKING (TACK WELD QUALITY AND LOCATION)			X		
VISUAL INSPECTION TASKS DURING WELDING					
WPS FOLLOWED	1705.12.1	AISC 341 TABLE J6.2 AWS D1.8/D1.8M			
SETTINGS ON WELDING EQUIPMENT			X		
TRAVEL SPEED			X		
SELECTED WELDING MATERIALS			X		
SHIELDING GAS TYPE/FLOW RATE			X		
PREHEAT APPLIED			X		
INTERPASS TEMPERATURE MAINTAINED (MIN/MAX.)			X		
PROPER POSITION (F, V, H, OH)			X		
INTERMIX OF FILLER METALS AVOIDED UNLESS APPROVED			X		
USE OF QUALIFIED WELDERS			X		
CONTROL AND HANDLING OF WELDING CONSUMABLES					
PACKAGING			X		
EXPOSURE CONTROL			X		
ENVIRONMENTAL CONDITIONS					
WIND SPEED WITHIN LIMITS			X		
PRECIPITATION AND TEMPERATURE			X		
WELDING TECHNIQUES					
INTERPASS AND FINAL CLEANING			X		
EACH PASS WITHIN PROFILE LIMITATIONS			X		
EACH PASS MEETS QUALITY REQUIREMENTS			X		
NO WELDING OVER CRACKED TACKS			X		
FIELD INSTALLED DBA'S IN DIAPHRAGMS		AWS D1.1 CLAUSE 7		X	
WELDED REBAR ANCHORS IN DIAPHRAGMS		AWS D1.4		X	#6 AND LARGER BARS ARE TO BE WELDED
VISUAL INSPECTION TASKS AFTER WELDING					
WELDS CLEANED	1705.12.1	AISC 341 TABLE J6.3 AWS D1.8/D1.8M	X		
SIZE, LENGTH, AND LOCATION OF WELDS				X	(D)DOCUMENT - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. * WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES, OR STIFFENERS HAS BEEN PERFORMED IN THE K-AREA, VISUALLY INSPECT THE WEB K-AREA FOR CRACKS WITHIN 3 INCHES OF THE WELD. THE VISUAL INSPECTION SHALL BE PERFORMED NO SOONER THAN 48 HOURS FOLLOWING COMPLETION OF THE WELDING
WELDS MEET VISUAL ACCEPTANCE CRITERIA					
CRACK PROHIBITION				X(D)	
WELD/BASE-METAL FUSION				X(D)	
CRATER CROSS SECTION				X(D)	
WELD PROFILE AND SIZE				X(D)	
UNDERCUT				X(D)	
POROSITY				X(D)	
K-AREA *				X(D)	
PLACEMENT OF REINFORCING OR CONTOURING FILLET WELDS (IF REQUIRED)					
BACKING REMOVED, WELD TABS REMOVED AND FINISHED, AND FILLET WELDS ADDED (IF REQUIRED)				X(D)	
REPAIR ACTIVITIES				X(D)	
INSPECTION TASKS PRIOR TO BOLTING					
PROPER FASTENERS SELECTED FOR THE JOINT DETAIL	1705.12.1	AISC 341 TABLE J7.1 RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS	X		
PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL			X		
CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS			X		
PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED FOR FASTENER ASSEMBLIES AND METHODS USED			X (D)		(D)DOCUMENT - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS			X		
INSPECTION TASKS DURING BOLTING					
FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	1705.12.1	AISC 341 TABLE J7.2 RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS	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		
BOLTS ARE PRETENSIONED PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES			X		
INSPECTION TASKS AFTER BOLTING					
DOCUMENT ACCEPTED AND REJECTED CONNECTION	1705.12.1	AISC 341 TABLE J7.3		X(D)	(D)DOCUMENT - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

OTHER INSPECTION TASKS					
RBS REQUIREMENTS, IF APPLICABLE	1705.12.1	AISC 341 TABLE J8.1 AISC 358 5.7			(D)DOCUMENT - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
CONTOUR AND FINISH				X(D)	
DIMENSIONAL TOLERANCES				X(D)	
PROTECTED ZONE - NO HOLES AND UNAPPROVED ATTACHMENTS MADE BY FABRICATOR OR ERECTOR, AS APPLICABLE		AISC 341 TABLE J8.1 AISC 341 D1.3 AISC 341 I2.1		X(D)	(D)DOCUMENT - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
PROPRIETARY SYSTEMS					
PROPRIETARY MOMENT RESISTING FRAME CONNECTION SYSTEMS	1705.1.1				REFER TO WELDING AND HIGH STRENGTH BOLTING SPECIAL INSPECTION REQUIREMENTS AND MATERIAL SPECIFIC TESTING REQUIREMENTS. REFER TO DEFERRED SUBMITTAL FOR ADDITIONAL INFORMATION

STEEL - TESTING

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6)	REMARKS
STEEL				
ULTRASONIC (UT) TESTING OF WELDS	**1705.2.1**	AWS D1.1 6.13 & 6.14.3		ALL C.J.P. WELDS 5/16" AND THICKER REQUIRE UT TESTING.
MAGNETIC PARTICLE (MT) TESTING OF WELDS	**1705.2.1**	AWS D1.1 6.14.4 AISC360 N5.5c		REQUIRED AT THERMALLY CUT ACCESS HOLES WHERE FLANGE THICKNESS EXCEEDS 2" FOR ROLLED SHAPES OR WHEN THE WEB THICKNESS EXCEEDS 2" FOR BUILT-UP SHAPES. REQUIRED WHERE SPECIFICALLY NOTED ON DRAWINGS
PRE-CONSTRUCTION TESTING OF WELDING STUDS	**1705.2.1**	AWS D1.1 7.7.1	EACH SIZE AND TYPE OF STUD/BAR EACH SHIFT	THIS TESTING PERFORMED BY CONTRACTOR AND CONFIRMED BY SPECIAL INSPECTOR
STUD APPLICATION QUALIFICATION	**1705.2.1**	AWS D1.1 7.6	NON-PREQUALIFIED APPLICATIONS	THIS TESTING PERFORMED BY CONTRACTOR AND CONFIRMED BY SPECIAL INSPECTOR
PRE-INSTALLATION VERIFICATION OF PRETENSIONED HIGH STRENGTH BOLTS	**1705.2.1**	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	

STEEL LATERAL SYSTEM - TESTING

SYSTEM OR MATERIAL	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	DESCRIPTION/FREQUENCY	REMARKS
2a) CJP GROOVE WELD NDT	**1705.13.1**	AISC 341 SECTION J6	UT SHALL BE PERFORMED ON 5/16" THICKNESS AND GREATER. MT SHALL BE PERFORMED ON 25% OF ALL BEAM-TO-COLUMN CJP GROOVE WELDS.	WELD DISCONTINUITIES SHALL BE ACCEPTED OR REJECTED ON THE BASIS OF CRITERIA OF AWS D1.1/D1.1M TABLE 6.2. UT TESTING NOT REQUIRED ON THICKNESS LESS THAN 5/16"
2b) COLUMN SPLICE AND COLUMN TO BASE PL PJP GROOVE WELD NDT			UT SHALL BE PERFORMED ON PJP GROOVE WELDS IN COLUMN SPLICES AND COLUMN TO BASE PL WELDS	
2c) BASE METAL NDT FOR LAMELLAR TEARING AND LAMINATIONS			FOR BASE METAL THICKNESS (t) OF 1 1/2" AND GREATER AND CONNECTED MATERIAL THICKNESS OF 3/4" AND GREATER, UT FOR DISCONTINUITIES BEHIND AND ADJACENT TO THE FUSION LINE.	ANY BASE METAL DISCONTINUITIES FOUND WITHIN t/4 OF THE STEEL SURFACE SHALL BE ACCEPTED OR REJECTED ON THE BASIS OF THE CRITERIA OF AWS D1.1/D1.1M TABLE 6.2. t IS THE THICKNESS OF THE PART SUBJECTED TO THE THROUGH-THICKNESS STRAIN
2d) BEAM COPE AND ACCESS HOLE NDT			MT OR PENETRANT TESTING OF WELD SPLICES AND CONNECTIONS, THERMALLY CUT SURFACES OF BEAM COPES AND ACCESS HOLES WHERE FLANGE THICKNESS EXCEEDS 1 1/2" FOR ROLLED SHAPES OR WHEN THE WEB THICKNESS EXCEEDS 1 1/2" FOR BUILT-UP SHAPES	
2e) REDUCED BEAM SECTION REPAIR NDT			MT SHALL BE PERFORMED ON ANY WELD AND ADJACENT AREA OF THE RBS CUT SURFACE THAT HAS BEEN REPAIRED BY WELDING OR ON THE BASE METAL OF THE RBS CUT SURFACE IF A SHARP NOTCH HAS BEEN REMOVED BY GRINDING	
2f) WELD TAB REMOVAL SITES			AT THE END OF WELDS WHERE WELD TABS HAVE BEEN REMOVED, MT SHALL BE PERFORMED ON THE SAME BEAM-TO-COLUMN JOINTS RECEIVING UT AS REQUIRED UNDER ITEM 2a	MT OF CONTINUITY PLATE WELD TABS REMOVAL SITES IS NOT REQUIRED.

STRUCTURAL
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76643PE
OREGON
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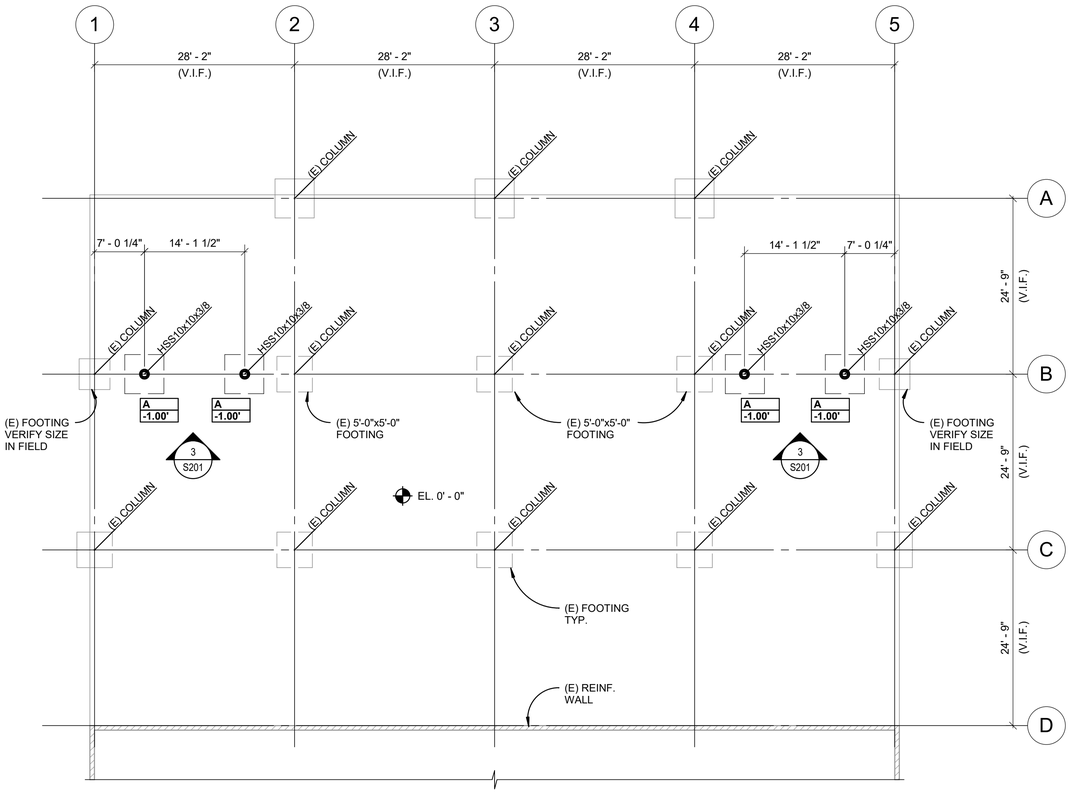
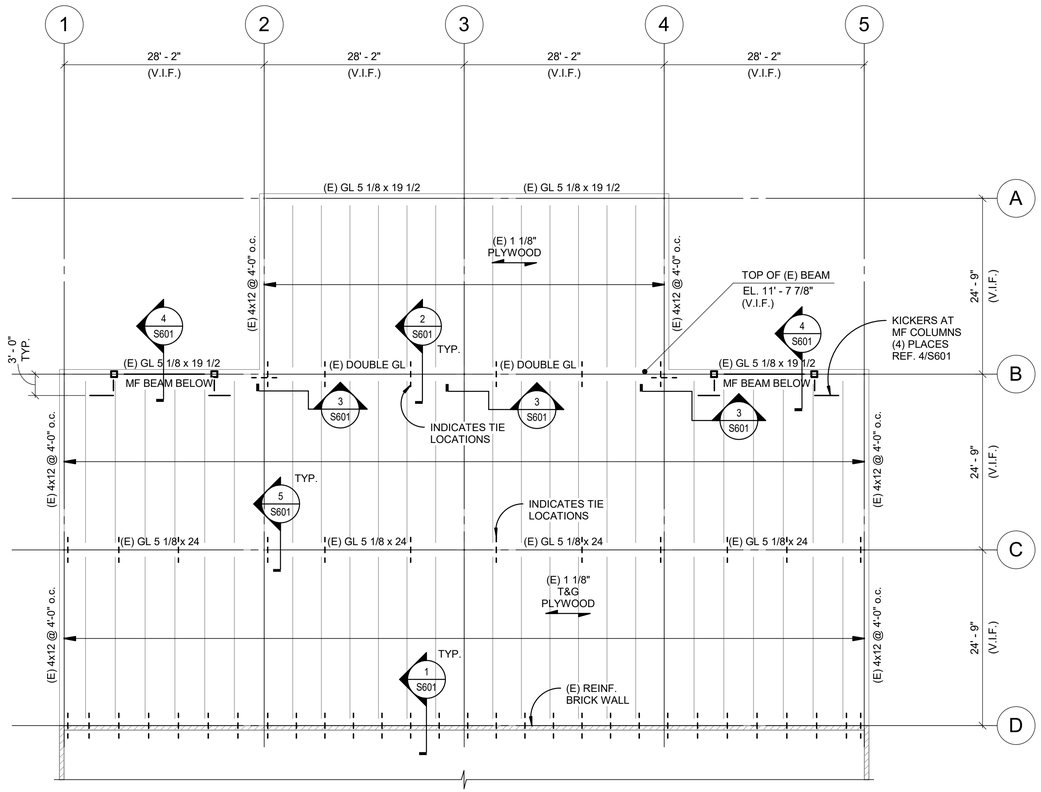
ADDENDA 1





NOTES:

1. VERIFY ALL EXISTING DIMENSIONS AND FRAMING SIZES IN FIELD.
2. NOTIFY EOR OF ANY DRYROT DAMAGE OF EXISTING WOOD FRAMING MEMBERS.

1 FOUNDATION PLAN

3/32" = 1'-0"

PROJECT NORTH

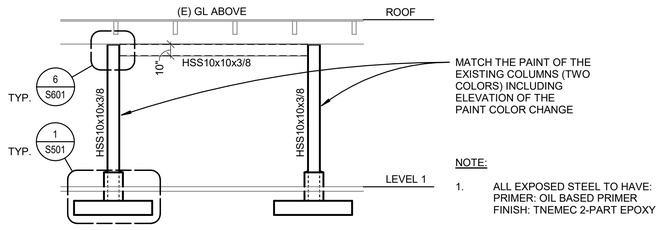
NOTES:

1. X / -XX.XX" — INDICATES FOOTING TYPE. REF. 1/S501 FOR SCHEDULE. INDICATES TOP OF FOOTING ELEVATION RELATIVE TO GRADE.
2. EL. XXX'-XX" — INDICATES TOP OF SLAB ELEVATION.
3. INDICATES EXISTING STRUCTURE.
4. FIELD VERIFY EXISTING DIMENSIONS AND ELEVATIONS.

2 ROOF FRAMING PLAN

3/32" = 1'-0"

PROJECT NORTH

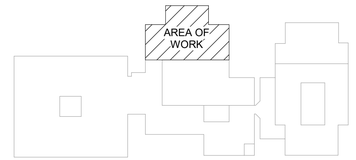


NOTE:

1. ALL EXPOSED STEEL TO HAVE:
   PRIMER: OIL BASED PRIMER
   FINISH: TNEMEC 2-PART EPOXY

3 MOMENT FRAME ELEVATION

3/16" = 1'-0"



KEY PLAN

PROJECT NORTH

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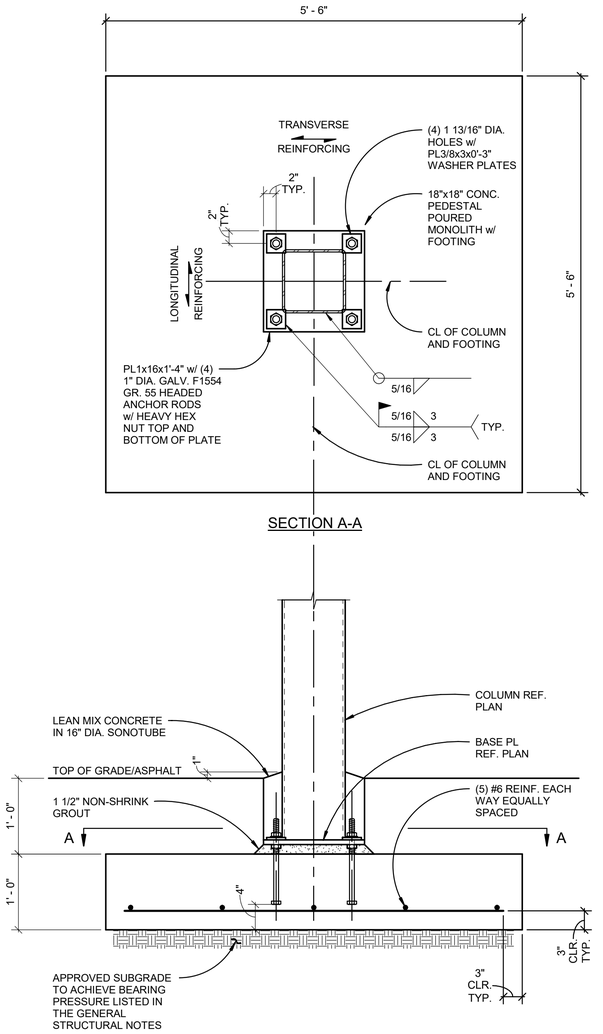
FOUNDATION AND ROOF FRAMING PLAN



1 TYP. FOOTING AT STEEL COLUMN

1" = 1'-0"

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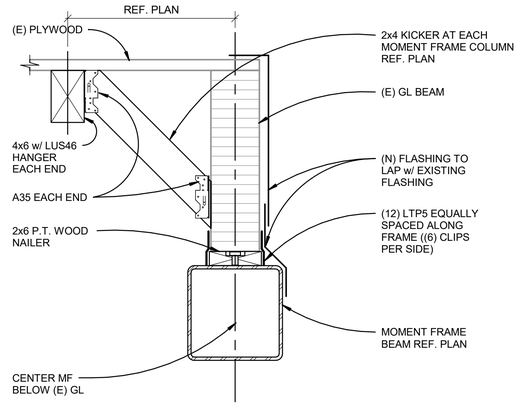
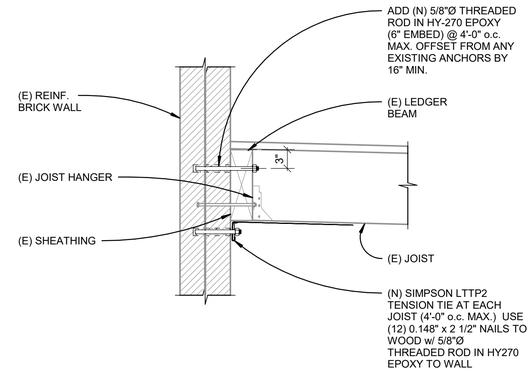
FOUNDATION DETAILS

ADDENDA 1



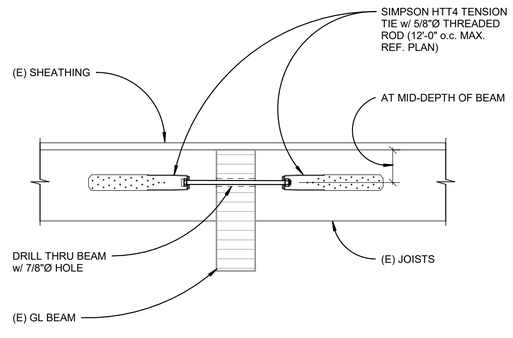
4 TYP. MOMENT FRAME CONN. TO (E) GL

1 1/2" = 1'-0"



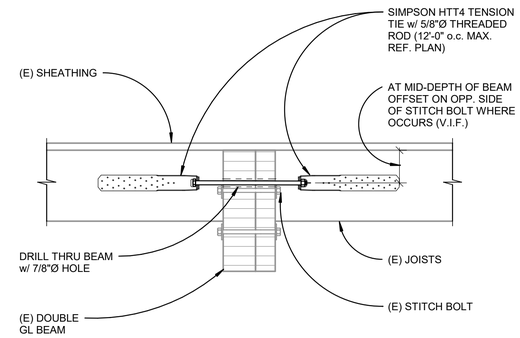
1 TYP. CONN. TO (E) WALL

1" = 1'-0"



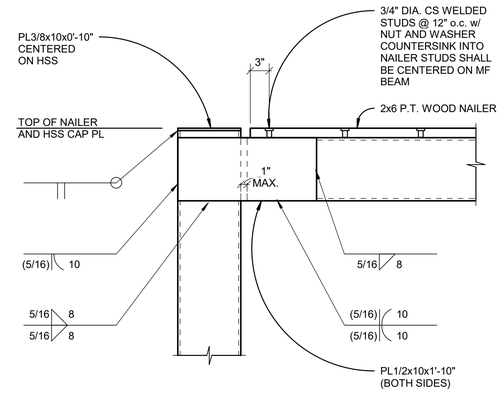
5 TYP. JOIST TIE

1" = 1'-0"



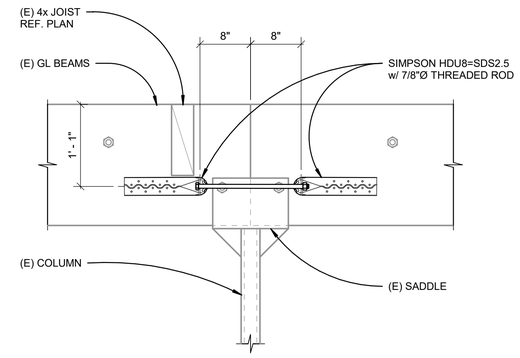
2 TYP. JOIST TIE AT DOUBLE GL BEAM

1" = 1'-0"



6 MOMENT FRAME BEAM TO COLUMN CONNECTION

1" = 1'-0"



3 TYP. GIRDER TIE

1" = 1'-0"

FRAMING DETAILS

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