GENERAL NOTES:

1. STRUCTURAL TECHNOLOGIES' (ST) SCOPE OF WORK IS LIMITED TO DETERMINING THE REQUIRED EXTERNALLY BONDED FRP REINFORCEMENT TO PROVIDE:
   1.1. THE ULTIMATE SHEAR CAPACITY OF FOUR WALL PIERS ON THE SOUTH SHEAR WALL OF MULTNOMAH COUNTY JUSTICE CENTER, FROM LEVELS 3 TO 4, SPECIFIED IN THE STRUCTURAL DRAWINGS SHEET S510 DATED 01/30/2025 BY IMEG CORP., THE ENGINEER OF RECORD (EOR).
   1.2. THE ULTIMATE SHEAR CAPACITY OF FOUR WALL SPANDRELS ON THE SOUTH SHEAR WALL OF MULTNOMAH COUNTY JUSTICE CENTER, FROM LEVELS 3 TO 6, SPECIFIED IN THE STRUCTURAL DRAWINGS SHEET S510 DATED 01/30/2025 BY EOR.
   1.3. THE ULTIMATE IN-PLANE MOMENT CAPACITY OF THE 4 WALL PIERS AND 2 WALL SPANDRELS ON LEVELS 3 AND 4 ON THE SOUTH SHEAR WALL OF MULTNOMAH COUNTY JUSTICE CENTER, SPECIFIED IN THE STRUCTURAL DRAWINGS SHEET S510 DATED 01/30/2025 BY EOR.

   PIER AND SPANDREL WALL GEOMETRIES AND REINFORCEMENT AND OTHER DESIGN INFORMATION ARE SPECIFIED IN THE EMAIL CORRESPONDING DATED 11/19/2024. AN UPDATED INFORMATION REGARDING THE EXISTING REBARS INSIDE THE WALL SECTION IS PROVIDED IN THE SNAPSHOTS DATED 04/10/2025. THE STRENGTHENING DEMAND VALUES AND EXTENT OF WALLS REQUIRED STRENGTHENING ARE SPECIFIED ON THE STRUCTURAL DRAWINGS SHEET S510 AND DATA SHEET IN THE EXCEL FILE RESPONSE SPECTRUM ANALYSIS V4 - FINAL DATED 01/30/2025. THIS INFORMATION IS PROVIDED BY IMEG CORP., THE ENGINEER OF RECORD (EOR) FOR THIS PROJECT.
2. ALL OTHER FRP DESIGN LIMITS, AS PER ACI 440.2R-17, OTHER THAN THE ULTIMATE AND ADDITIONAL STRENGTH OF FRP REINFORCEMENT, ARE NOT PART OF STRUCTURAL TECHNOLOGIES' SCOPE OF WORK. DETERMINING LOCATIONS OF THE FRP, AND OTHER DESIGN CONSIDERATIONS INCLUDING STRENGTHENING CONCEPT, GENERAL STABILITY OF THE STRUCTURE, AND LOAD PATH COMPLETENESS, SERVICEABILITY, FIRE-RATING, AND EXISTING STRENGTH OF STRUCTURES ARE OUT OF SCOPE OF THIS DESIGN.
3. DESIGN OF FRP FOR FLEXURAL STRENGTHENING WAS BASED ON NORMALWEIGHT CONCRETE WITH A MINIMUM LOWER-BOUND COMPRESSIVE STRENGTH (f'_{cL}) OF 6,000 PSI AND LOWER-BOUND STEEL YIELD STRENGTH (f_{yL}) OF 73,000 PSI.
4. DESIGN OF FRP FOR SHEAR STRENGTHENING WAS BASED ON NORMALWEIGHT CONCRETE WITH A MINIMUM EXPECTED COMPRESSIVE STRENGTH (f_{cE}) OF 6,000 PSI AND EXPECTED STEEL YIELD STRENGTH (f_{yE}) OF 73,000 PSI.
5. THESE SHOP DRAWINGS ARE SPECIFIC TO CSS V-WRAP SYSTEM BY SIMPSON STRONG-TIE AND ARE NOT APPLICABLE TO FRP COMPOSITE SYSTEM BY OTHER MANUFACTURERS. IF AN ALTERNATE SYSTEM IS USED, THESE SHOP DRAWINGS AND ACCOMPANYING CALCULATIONS ARE VOID, AND AN ALTERNATE SUBMITTAL IS REQUIRED.
6. NO WARRANTY EXPRESSED OR IMPLIED TO THE ADEQUACY AND CODE COMPLIANCE OF THE EXISTING STRUCTURE OR THE SPECIFIED FRP DESIGN CRITERIA IS MADE BY VIRTUE OF THIS SUBMITTAL. THIS DESIGN IS NOT TO BE USED UNLESS APPROVED BY ENGINEER OF RECORD, AND STRUCTURAL TECHNOLOGIES STRONGPOINT DISCLAIMS ANY LIABILITY FOR DESIGN OR DETAILS OF OTHERS.

NOTES FOR EXTERNALLY BONDED FRP:

1. REVIEW PROJECT SPECIFICATIONS. VISIT JOB SITE TO VERIFY EXISTING CONDITIONS AND DIMENSIONS AT WORK AREAS PRIOR TO COMMENCEMENT OF WORK.
2. EXTERNALLY BONDED FRP STRENGTHENING SYSTEM SHALL BE CSS V-WRAP FRP STRENGTHENING SYSTEM, AS MANUFACTURED BY SIMPSON STRONG-TIE, INC., PLEASANTON, CA, AND SUPPLIED BY STRUCTURAL TECHNOLOGIES, COLUMBIA, MD.
   2.1. CSS V-WRAP C440HM, UNIDIRECTIONAL HIGH STRENGTH CARBON SHEET.
   2.2. CSS V-WRAP 770 EPOXY ADHESIVE.
   2.3. CAB-O-SIL TS-720 FUMED SILICA, OR APPROVED EQUAL.
   2.4. CSS V-WRAP PF EPOXY PUTTY FILLER.
3. ALL CONCRETE SURFACES SHALL BE DRY AND FREE OF MOISTURE AT THE TIME OF FRP INSTALLATION.
4. SURFACE PREPARATION OF THE SUBSTRATE SHALL BE ACHIEVED USING ABRASIVE BLASTING TO PRODUCE A MINIMUM CONCRETE SURFACE PROFILE CSP-3 OR ROUGHER (AS DEFINED BY ICRI GUIDELINE 310.2R). SURFACE PREPARATION USING GRINDING TO PRODUCE A CONCRETE SURFACE PROFILE OF CSP-2 OR ROUGHER IS ACCEPTABLE PROVIDED THAT THE FRP BOND TEST RESULTS MEET THE REQUIREMENTS OF THE DIRECT TENSION ADHESION TEST.
5. MINOR REPAIRS SUCH AS BUG HOLES, SURFACE DEVIATIONS, AND LOCALIZED OUT-OF-PLANE VARIATIONS CAN BE SMOOTHED OVER USING THICKENED CSS V-WRAP 770 EPOXY OR CSS V-WRAP PF AFTER PRIMING THE SURFACES. FUMED SILICA MAY BE ADDED TO ACHIEVE PROPER CONSISTENCY PER MANUFACTURER'S SPECIFICATIONS.
6. OUT-OF-PLANE VARIATIONS GREATER THAN 1-1/2" CAN BE BUILT UP USING AN APPROPRIATE REPAIR MORTAR SUCH AS SIKAQUICK VOH, MASTEREMACO T430, OR APPROVED EQUAL. ROUGHEN THE CONCRETE SURFACE TO CSP-7 PRIOR TO INSTALLATION OF REPAIR MORTAR. THE MORTAR SURFACE SHALL BE ROUGHENED TO CSP-3 OR ROUGHER AS DEFINED BY ICRI PRIOR TO FRP INSTALLATION.
8. ROUND ALL CORNERS TO RECEIVE FRP TO 1/2" RADIUS (MIN.).
9. THICKENED CSS V-WRAP 770 EPOXY IS ACHIEVED BY ADDING FUMED SILICA TO THE CSS V-WRAP 770 EPOXY AT A MAXIMUM MIX RATIO OF 1.5 PART FUMED SILICA TO 1 PART OF CSS V-WRAP 770 EPOXY BY VOLUME.
10. VERIFY AMBIENT AND CONCRETE TEMPERATURES. NO WORK SHALL PROCEED IF THE TEMPERATURE OF THE CONCRETE SURFACE IS LESS THAN 40°F (4°C) OR GREATER THAN 100°F (38°C), UNLESS OTHERWISE SPECIFIED ON THE EPOXY COMPONENT LABELS.
11. MIX EPOXIES BY COMBINING COMPONENTS AT A WEIGHT (OR VOLUME) RATIO SPECIFIED BY THE MANUFACTURER. THE COMPONENTS OF EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER UNTIL UNIFORMLY MIXED, PER MANUFACTURER'S RECOMMENDED PROCEDURE.
12. COMPONENTS THAT HAVE EXCEEDED THEIR SHELF LIFE SHALL NOT BE USED.
13. SATURATION OF THE FABRIC SHALL BE PERFORMED USING A SATURATOR MACHINE AND SHALL BE MONITORED BY A CERTIFIED INSTALLER. FABRIC SHALL BE COMPLETELY SATURATED PRIOR TO APPLICATION CONCRETE SURFACE.
14. ALL CUTTING OF FABRICS, MIXING OF ADHESIVE RESIN, AND COMBINATION THEREOF SHALL TAKE PLACE IN A PROTECTED AREA AWAY FROM ANY ELECTRICAL EQUIPMENT.
15. USING A ROLLER, APPLY ONE PRIME COAT OF CSS V-WRAP 770 EPOXY RESIN TO THE SUBSTRATE. ALLOW PRIMER TO BECOME TACKY TO THE TOUCH.
16. FILL ANY UNEVEN SURFACES OR RECESSES WITH THICKENED CSS V-WRAP 770 EPOXY OR CSS V-WRAP PF.
17. APPLY SATURATED LAYERS OF CSS V-WRAP FABRIC, UNTIL NUMBER OF LAYERS SPECIFIED ON PROJECT DRAWINGS IS ACHIEVED.
18. USING A ROLLER OR HAND PRESSURE, RELEASE OR ROLL OUT ENTRAPPED AIR, AND ENSURE THAT EACH INDIVIDUAL LAYER IS FIRMLY ADHERED TO THE LAYER OR SUBSTRATE.
19. WHEN NEEDED, FRP SHEETS SHALL BE LAPPED IN THE FIBER DIRECTION AT LEAST 12" TO ACHIEVE CONTINUITY.
20. FIELD LAYOUT OF FRP STRIPS MAY VARY TO ACCOMMODATE FIELD CONDITIONS (EXISTING PIPES, CONDUITS, ATTACHMENTS, ETC.). THESE VARIATIONS SHALL BE REPORTED TO THE ENGINEER FOR APPROVAL.
21. DIRECT CONTACT BETWEEN CARBON FIBER FRP FABRIC AND ANY METALLIC PART SHALL NOT BE PERMITTED. A BARRIER OF GLASS FRP OR EPOXY PASTE (60 MILS THICK MIN.) SHALL BE PROVIDED BETWEEN THE CARBON FRP AND METAL TO ENSURE NO ELECTRICAL CONNECTION BETWEEN THE TWO MATERIALS.
23. AFTER CURE OF THE FRP SYSTEM, APPLY TWO COATS OF CSS V-WRAP TSTRATA TC PROTECTIVE TOPCOAT.

NOTES FOR CSS V-WRAP SPLAY/CORD CARBON FIBER ANCHORS:

1. EXTERNALLY BONDED FRP ANCHOR SHALL BE CSS V-WRAP FRP ANCHOR, AS MANUFACTURED BY SIMPSON STRONG-TIE, INC., PLEASANTON, CA, AND SUPPLIED BY STRUCTURAL TECHNOLOGIES, COLUMBIA, MD.
   1.1. CSS V-WRAP CARBON FIBER ANCHORS (1" DIAMETERS).
   1.2. CSS V-WRAP 770 EPOXY ADHESIVE.
   1.3. CSS V-WRAP PF PUTTY FILLER.
   1.4. CAB-O-SIL TS-720 FUMED SILICA, OR APPROVED EQUAL.
2. VERIFY LAYOUT AND DEPTH OF EXISTING REINFORCING STEEL PRIOR TO DRILLING HOLES. DO NOT DAMAGE/CUT EXISTING STEEL.
3. DRILL HOLES USING A ROTARY DRILL. HOLE DIAMETER SHOULD BE 1/8 IN. GREATER THAN THE ANCHOR DIAMETER.
4. ROUND EDGE OF ANCHOR HOLE TO 1/2" MIN. RADIUS AT FRP ANCHOR BEND.
5. USE COMPRESSED AIR TO BLOW OUT DRILLED HOLES. BLOW FROM THE BACK OF THE HOLE TO REMOVE DUST CREATED FROM DRILLING PROCEDURE.
6. CLEAN HOLE SURFACES WITH WIRE BRUSH, INSERT BRUSH TO BACK OF THE HOLE IN TWISTING MOTION THEN REMOVE IT.
7. BLOW OUT DRILLED HOLES TO REMOVE DUST CREATED FROM WIRE BRUSH CLEANING.
8. APPLY ONE PRIME COAT OF CSS V-WRAP 770 EPOXY RESIN TO HOLES, AND TO THE SURFACE OF THE FABRIC RECEIVING THE ANCHOR SPLAY.
9. INJECT THICKENED CSS V-WRAP 770 EPOXY OR PUTTY FILLER ADHESIVE STARTING FROM THE BACK OF HOLE. SLOWLY WITHDRAW THE TIP WITH EACH TRIGGER PULL. FILL HOLES APPROXIMATELY 2/3 FULL, OR AS REQUIRED TO ENSURE THAT THE ANNULAR GAP BETWEEN ANCHOR AND THE CONCRETE IS FILLED WITH ADHESIVE ALONG EMBEDMENT LENGTH.
10. FUMED SILICA MAY BE ADDED TO CSS V-WRAP 770 EPOXY TO MODIFY THE CONSISTENCY PER MANUFACTURER'S SPECIFICATION AT A MAXIMUM MIX RATIO OF 1.5 PART FUMED SILICA TO 1 PART CSS V-WRAP 770 BY VOLUME.
11. SATURATE THE ANCHOR WITH CSS V-WRAP 770 EPOXY RESIN. SATURATION OF THE ANCHORS SHALL BE MONITORED BY A CERTIFIED INSTALLER.
12. INSERT ANCHOR INTO THE HOLE THROUGH THE FRP SHEET. MARK AND SET ANCHOR TO THE SPECIFIED EMBEDMENT DEPTH. TO EASE INSTALLATION, ANCHOR MAY BE SLOWLY TWISTED AS IT IS INSERTED.
13. SPREAD FIBER IN A SPLAYED TRIANGULAR PATTERN OVER THE FRP SHEET AT THE LENGTH AND WIDTH SPECIFIED ON THESE DRAWINGS.

FRP INSPECTION AND TESTING:

1. FRP INSPECTION SHALL BE PERFORMED BY THE INDEPENDENT INSPECTOR HIRED BY THE OWNER.
2. MAINTAIN DAILY RECORDS OF LOT NUMBER FOR FABRIC AND EPOXY RESIN USED, AND LOCATION OF INSTALLATION.
3. A CERTIFIED INSTALLER / INSPECTOR SHALL PERIODICALLY OBSERVE ALL ASPECTS OF SURFACE PREPARATION, MIXING, AND APPLICATION.
4. ALL INSTALLED FRP SHALL BE INSPECTED FOR VOIDS, BUBBLES, AND DELAMINATIONS. ALL DEFECTIVE AREAS SHALL BE REPAIRED, IN ACCORDANCE WITH THE MANUFACTURER'S REPAIR PROCEDURES.
   4.1. SMALL DELAMINATIONS LESS THAN 2 SQUARE INCHES ARE ACCEPTABLE SO LONG AS THE DELAMINATED AREA IS LESS THAN 5% OF THE TOTAL LAMINATE AREA AND THERE ARE NO MORE THAN 10 SUCH DELAMINATIONS PER 10 SQUARE FEET.
   4.2. DELAMINATIONS BETWEEN 2 SQUARE INCHES AND 25 SQUARE INCHES SHALL BE INJECTED WITH EPOXY OR REPLACED, DEPENDING ON THE SIZE, NUMBER OF DELAMINATIONS, AND LOCATIONS.
   4.3. LARGE DELAMINATIONS GREATER THAN 25 SQUARE INCHES SHALL BE LOCALLY CUT AWAY AND A NEW MATERIAL SHALL BE APPLIED WITH AN EQUIVALENT NUMBER OF LAYERS AND SUFFICIENT DEVELOPMENT LENGTH OVERLAPS.
5. FRP DIRECT TENSION ADHESION TEST PER ASTM D7522.
   5.1. DIRECT TENSION ADHESION TESTING OF CORED SAMPLES SHALL BE CONDUCTED USING THE METHOD DESCRIBED BY ASTM D7522. A MINIMUM OF TWO TESTS SHALL BE PERFORMED FOR EACH DAY OF PRODUCTION OR FOR EACH 1000 FT² OF FRP APPLICATION, WHICHEVER IS LESS.
   5.2. PULL-OFF TESTS SHALL BE PERFORMED ON A REPRESENTATIVE AREA ADJACENT TO THE AREA BEING STRENGTHENED WHENEVER POSSIBLE. DO NOT DAMAGE FRP REQUIRED FOR STRENGTHENING.
   5.3. LOCATIONS OF THE PULL-OFF TESTS SHALL BE REPRESENTATIVE AND ON FLAT SURFACES.
   5.4. THE FRP SYSTEM SHALL BE ALLOWED TO CURE A MINIMUM OF 72 HOURS BEFORE EXECUTION OF THE DIRECT TENSION PULL-OFF TEST.
   5.5. THE MINIMUM ACCEPTABLE VALUE FOR ANY SINGLE TENSION TEST IS 200 PSI. ADDITIONAL TESTS MAY BE PERFORMED TO QUALIFY THE WORK.
   5.6. TEST LOCATIONS SHALL BE FILLED WITH THICKENED ADHESIVE AFTER THE VALUES HAVE BEEN OBTAINED. THE TEST DOLLIES SHALL BE LABELED AND STORED FOR FUTURE REFERENCE.
6. FRP SAMPLING AND TESTING PER ASTM D3039.
   6.1. A SAMPLE SHALL CONSIST OF 12" BY 12" PANEL OF CURED COMPOSITE UTILIZED IN THE PROJECT. A MINIMUM OF TWO SAMPLES SHALL BE MADE DAILY.
   6.2. FRP WITNESS PANEL SHALL BE MANUFACTURED AND LABELED WITH THE FOLLOWING (USE LABEL PROVIDED BY STRUCTURAL TECHNOLOGIES):
      6.2.1. JOB NAME AND NUMBER
      6.2.2. INSTALLATION LOCATION (E.G. SLAB, BEAM, COLUMN, WALL)
      6.2.3. FABRIC TYPE AND LOT NUMBER
      6.2.4. EPOXY TYPE AND BATCH NUMBER FOR PART A AND PART B
      6.2.5. DATE THE PANEL IS MADE
      6.2.6. NAME OF THE TECHNICIAN PREPARING THE WITNESS PANEL
   6.3. SAMPLES SHALL BE STORED ON A FLAT SURFACE AND SHALL NOT BE MOVED FOR A MINIMUM 48 HOURS AFTER CASTING.
   6.4. THE CLEARLY LABELED AND IDENTIFIED SAMPLES SHALL BE GIVEN TO A PRE-APPROVED TESTING LABORATORY.
   6.5. SAMPLES SHALL BE TESTED FOR ULTIMATE TENSILE STRENGTH, TENSILE MODULUS, AND PERCENTAGE ELONGATION AS PER ASTM D3039 IN THE LONGITUDINAL FIBER DIRECTION.
   6.6. TEST A MINIMUM OF ONE WITNESS PANEL FOR EACH TYPE OF COMPOSITE MATERIALS USED ON THE PROJECT. WITNESS PANELS SHALL BE RANDOMLY SELECTED.
   6.7. ACCEPTABLE MINIMUM VALUES FOR ULTIMATE TENSILE STRENGTH, TENSILE MODULUS, AND ELONGATION FROM ASTM D3039 SHALL BE GREATER THAN THE PRODUCT DESIGN VALUES.

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REGISTERED PROFESSIONAL ENGINEER
105901PE
OREGON
06-05-2025
SEPTEMBER 10, 2024
MOHAMMAD JALALPOUR
EXPIRES:06/30/2027

NO.	DATE	REVISION	BY

DES	K.T.	06/05/25
DRN	K.T.	06/05/25
CHK	M.J.	06/05/25

TECHNOLOGIES JOB NO. IND147

SIMPSON StrongTie — Smarter Strengthening Solutions

STRUCTURAL TECHNOLOGIES STRONGPOINT, LLC.
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structural TECHNOLOGIES

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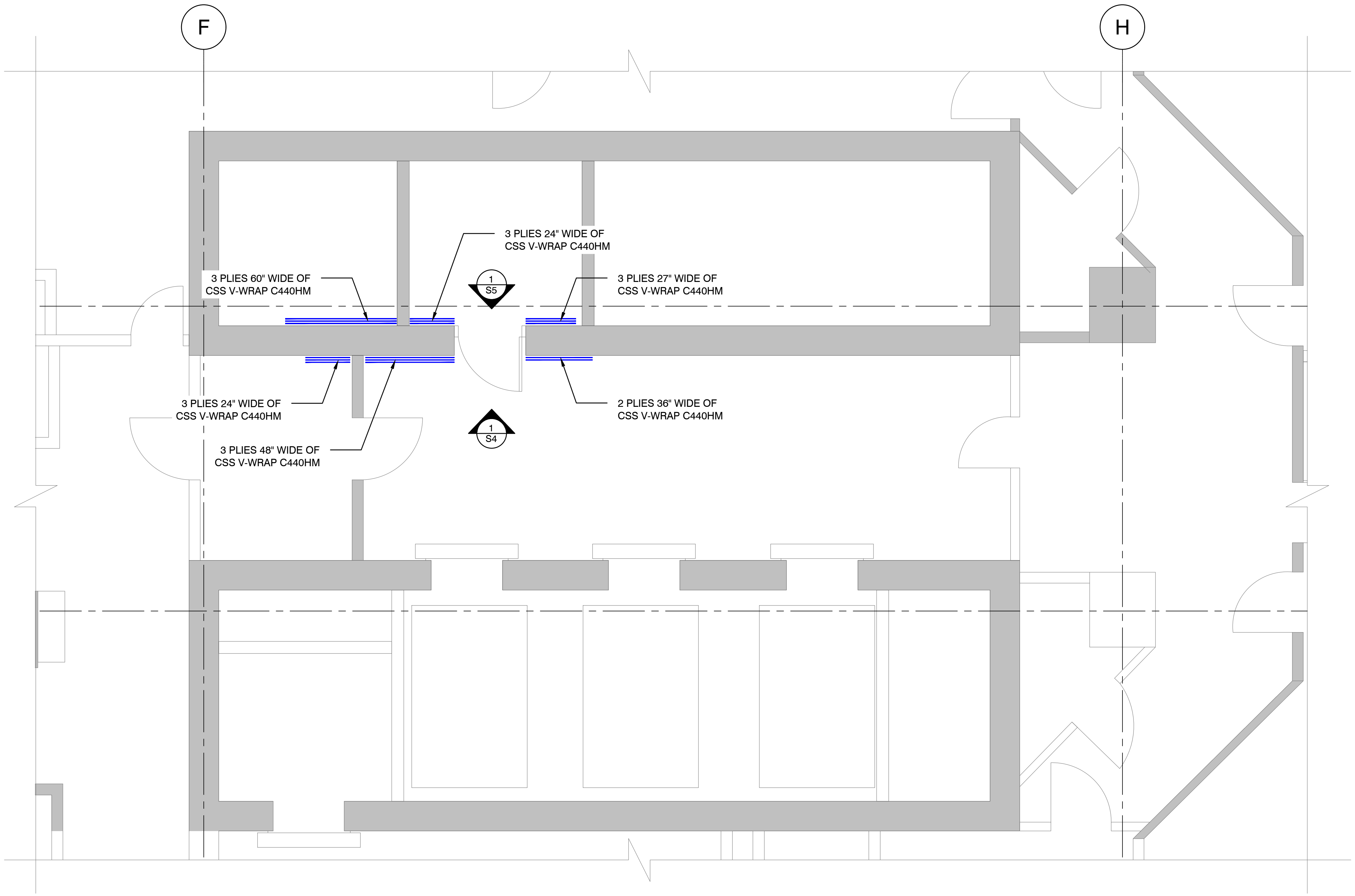
120 SW 3RD AVE, PORTLAND, OR 97204

WALL PIER AND SPANDREL STRENGTHENING WITH FRP
FRP GENERAL NOTES

CONTRACTOR: PULLMAN
JOB NO: 677928
SHEET: S1



1/S2 LEVEL 3 TO LEVEL 4 - WALL FLEXURAL FRP LAYOUT
PARTIAL PLAN

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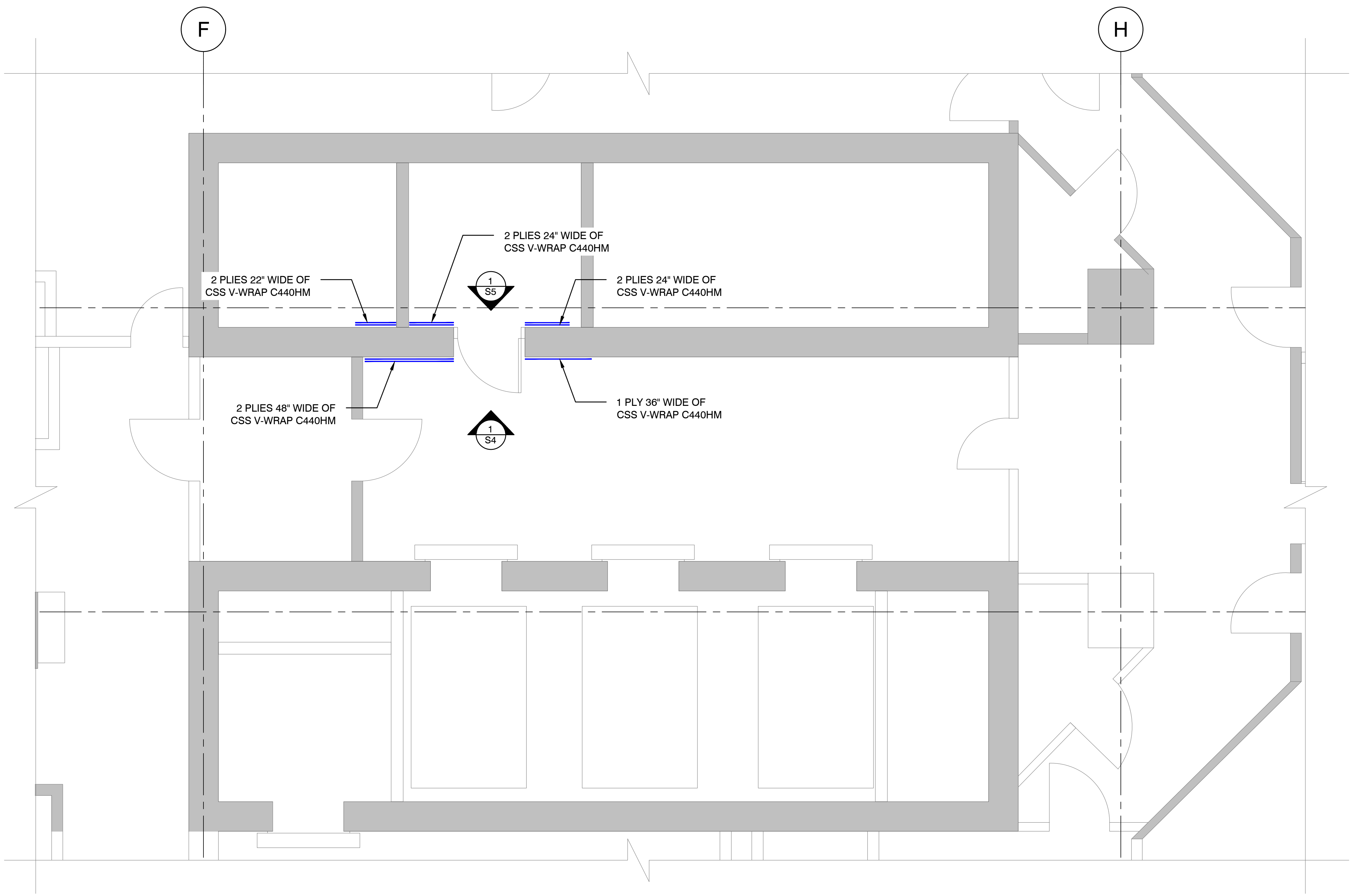
WALL PIER STRENGTHENING WITH FRP
LEVEL 3 TO LEVEL 4 - WALL FRP LAYOUT

CONTRACTOR: PULLMAN
JOB NO: 677928
SHEET: S2



1 / S3 LEVEL 4 TO LEVEL 5 - WALL FLEXURAL FRP LAYOUT
PARTIAL PLAN

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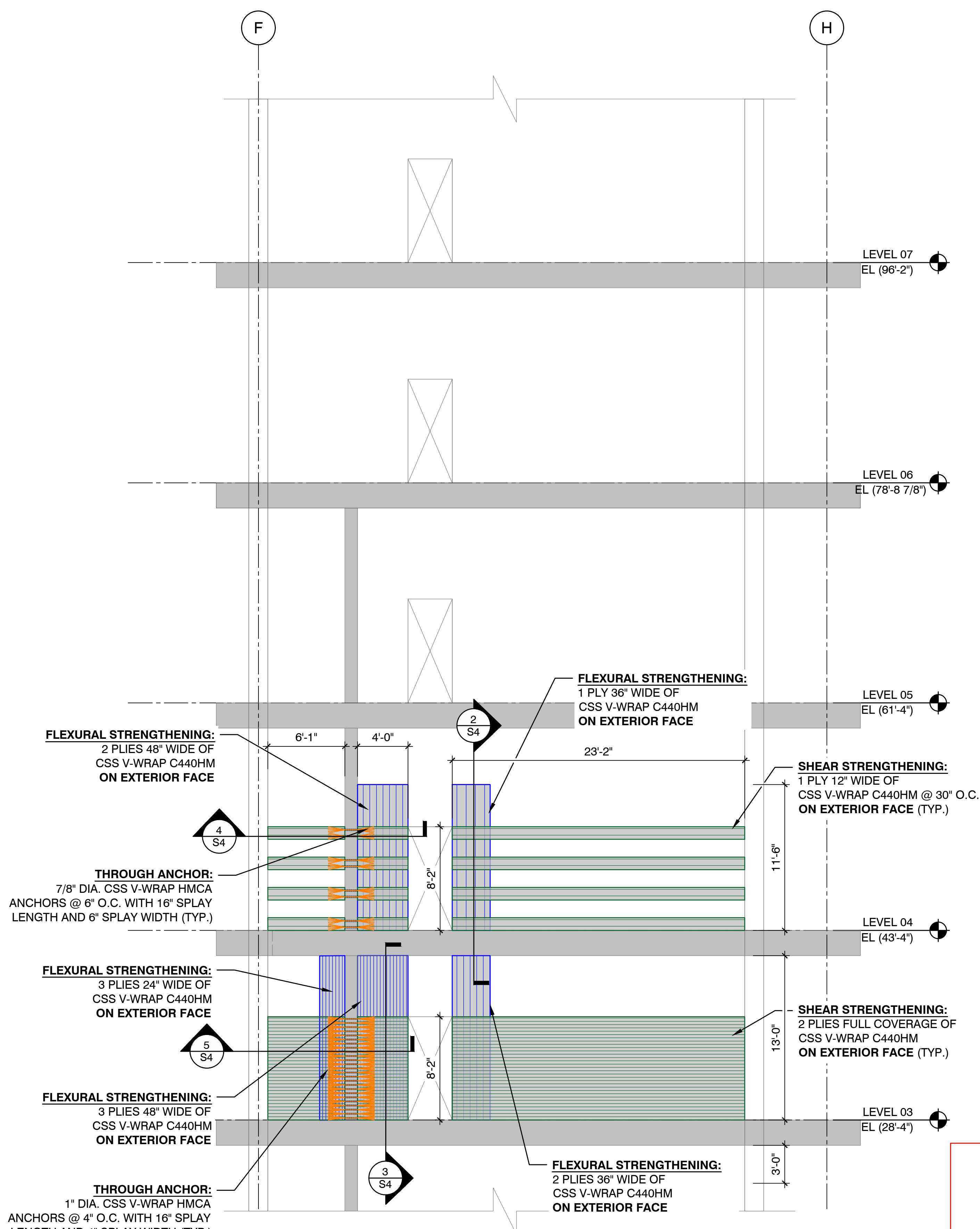
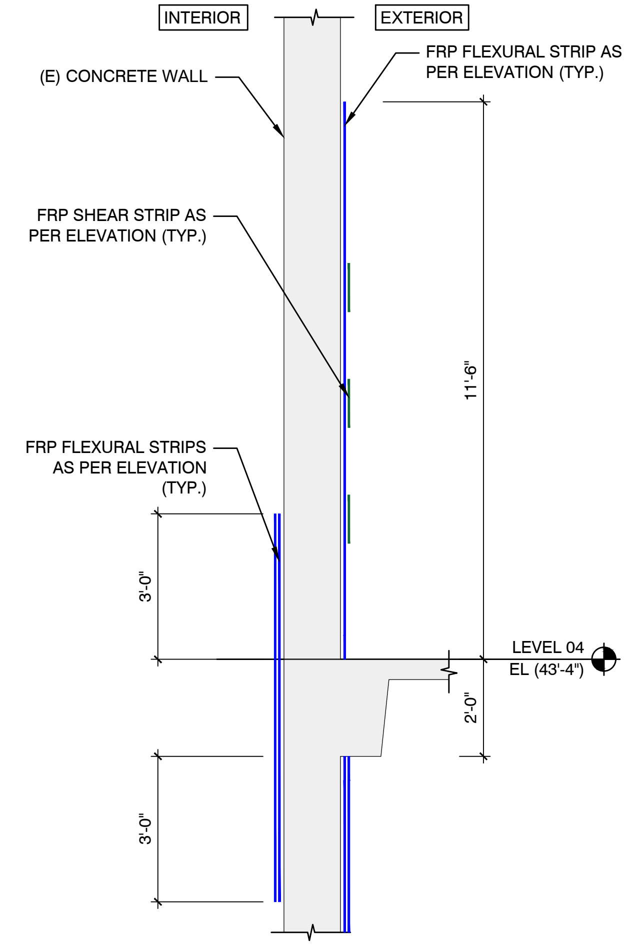
WALL PIER STRENGTHENING WITH FRP
LEVEL 4 TO LEVEL 5 - WALL FRP LAYOUT

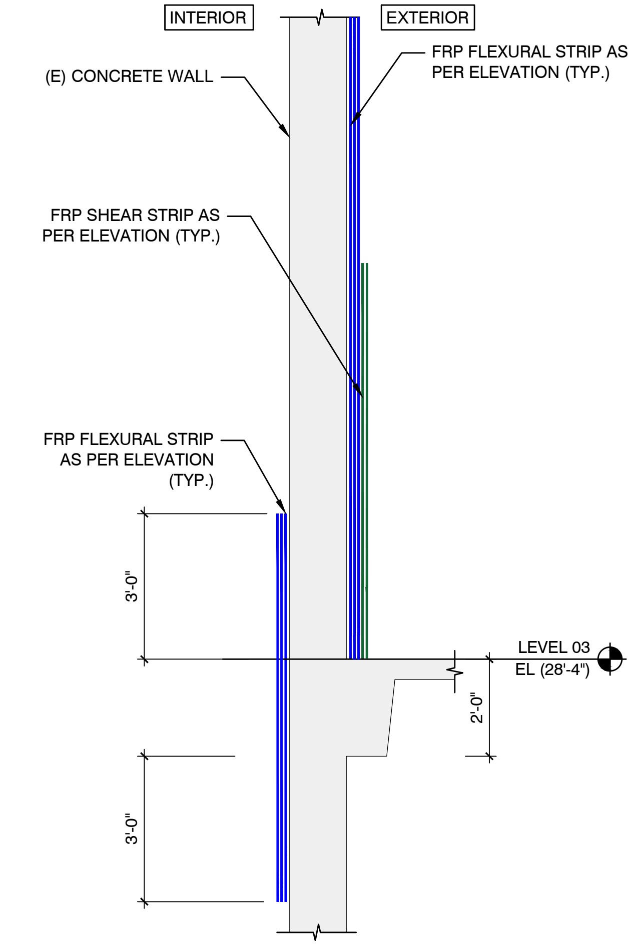
CONTRACTOR: PULLMAN
JOB NO: 677928
SHEET: S3



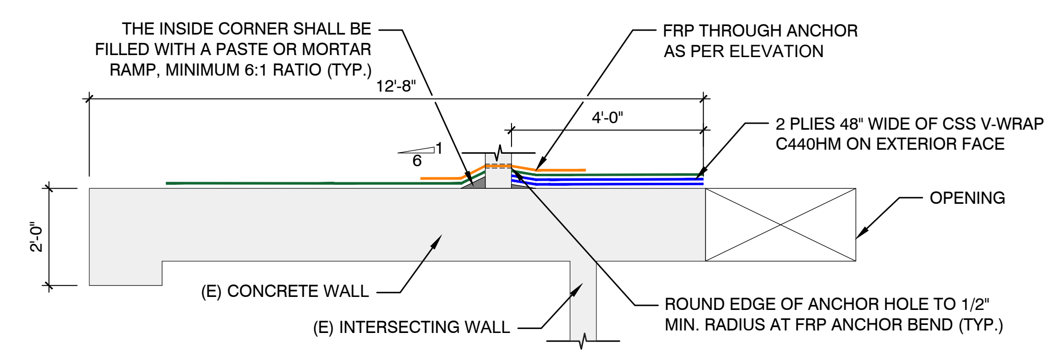
1 S4 SOUTH SHEAR WALL - EXTERIOR FACE - WALL PIER STRENGTHENING
PARTIAL ELEVATION



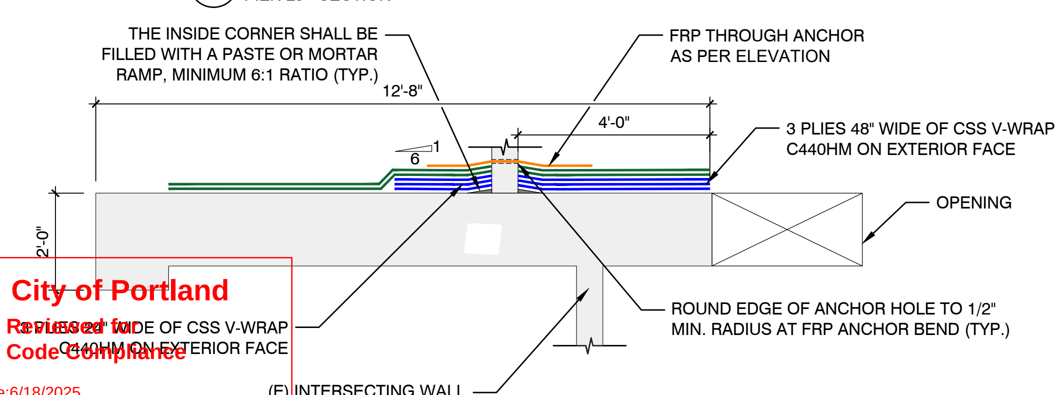
2 S4 WALL STRENGTHENING
SECTION



3 S4 WALL STRENGTHENING
SECTION



4 S4 WALL AT LEVEL 4 TO LEVEL 5 STRENGTHENING
PIER L5 - SECTION



5 S4 WALL AT LEVEL 3 TO LEVEL 4 STRENGTHENING
PIER L4 - L5 - SECTION

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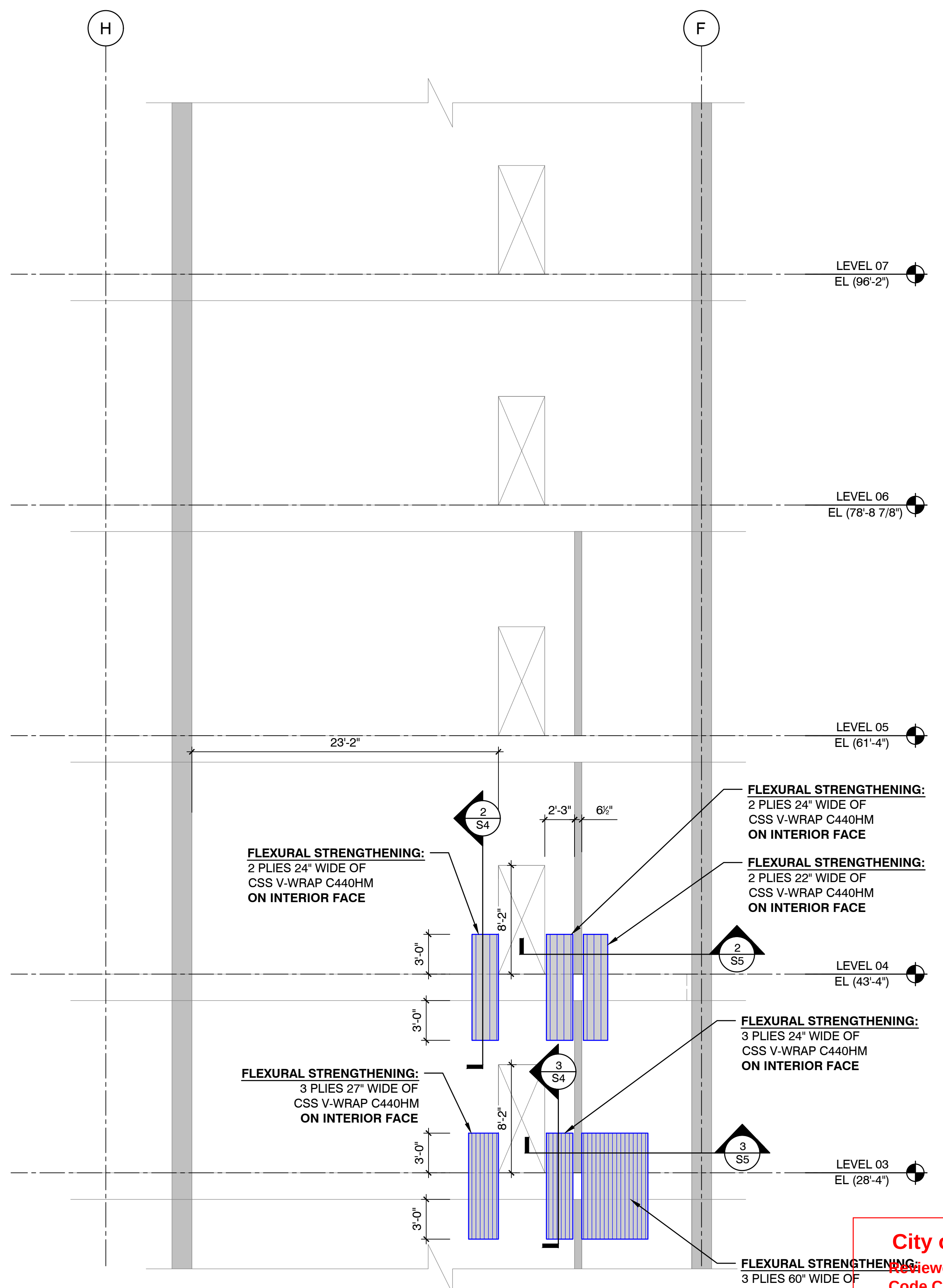
WALL PIER STRENGTHENING WITH FRP
SOUTH SHEAR WALL ELEVATION AND SECTIONS

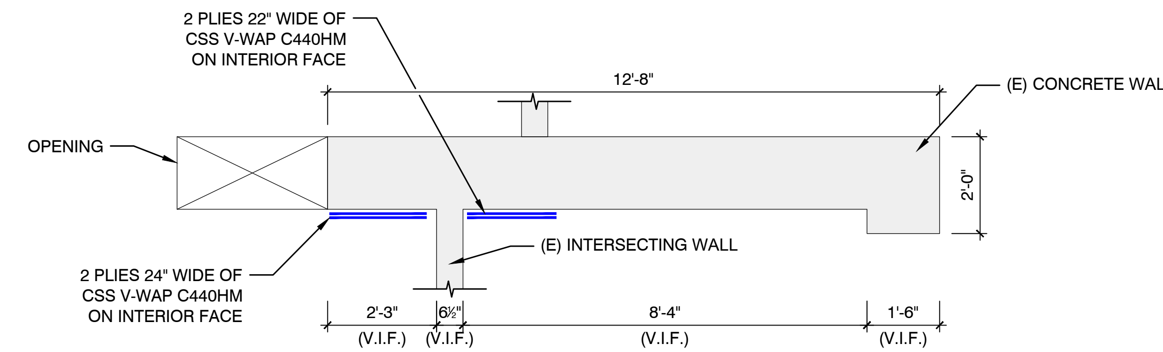
CONTRACTOR: PULLMAN

JOB NO: 677928

SHEET: S4



1
S5
SOUTH SHEAR WALL - INTERIOR FACE - WALL PIER STRENGTHENING
PARTIAL ELEVATION



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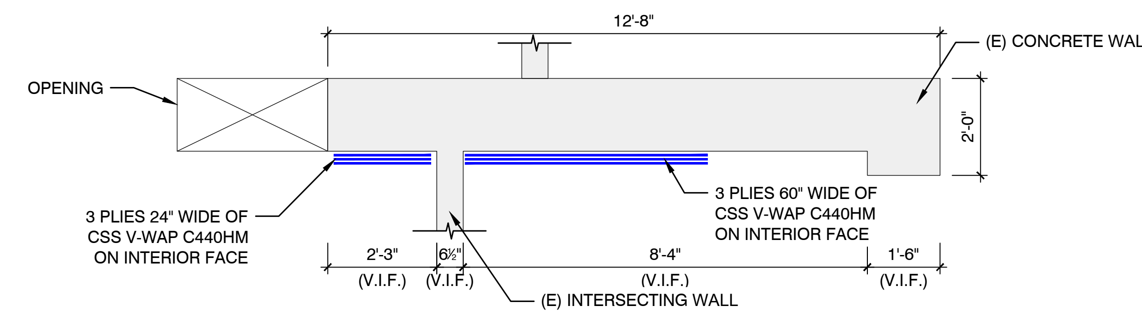
S5
WALL AT LEVEL 4 TO LEVEL 5 STRENGTHENING
PIER L5 - SECTION



3
S5
WALL AT LEVEL 3 TO LEVEL 4 STRENGTHENING
PIER L4 - SECTION

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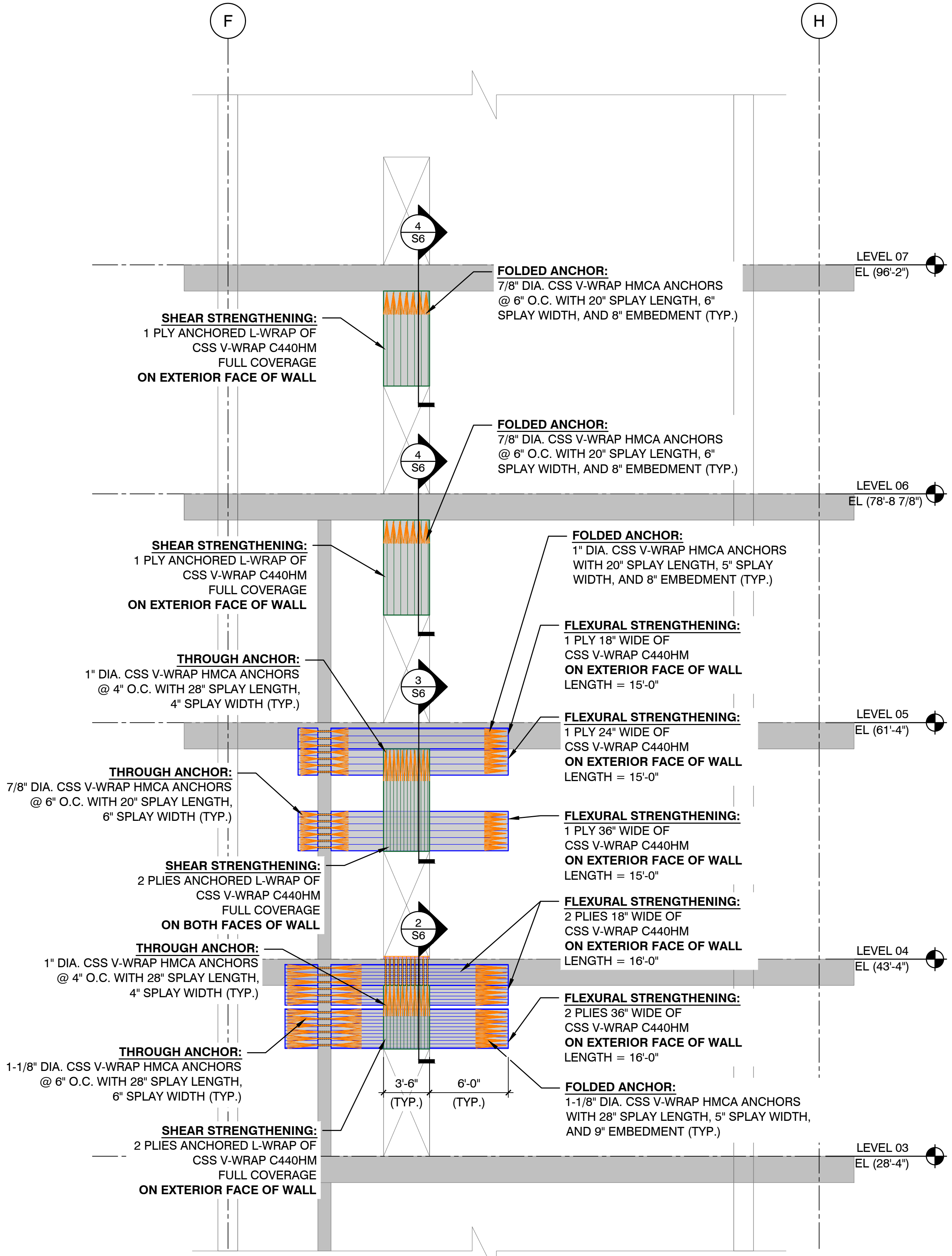
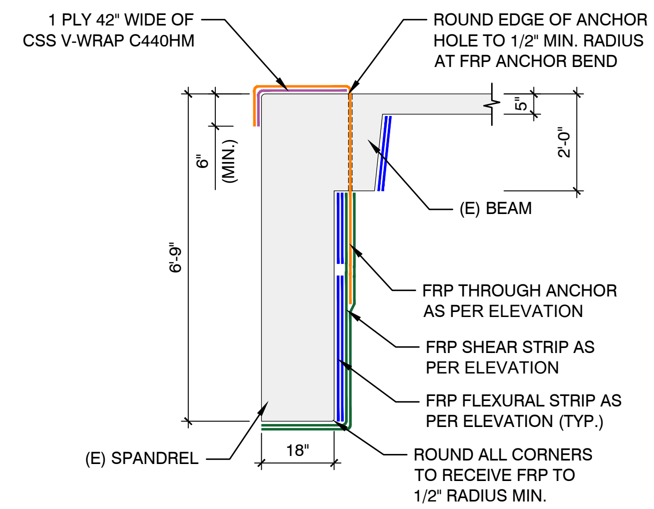
WALL PIER STRENGTHENING WITH FRP
SOUTH SHEAR WALL ELEVATION AND SECTIONS

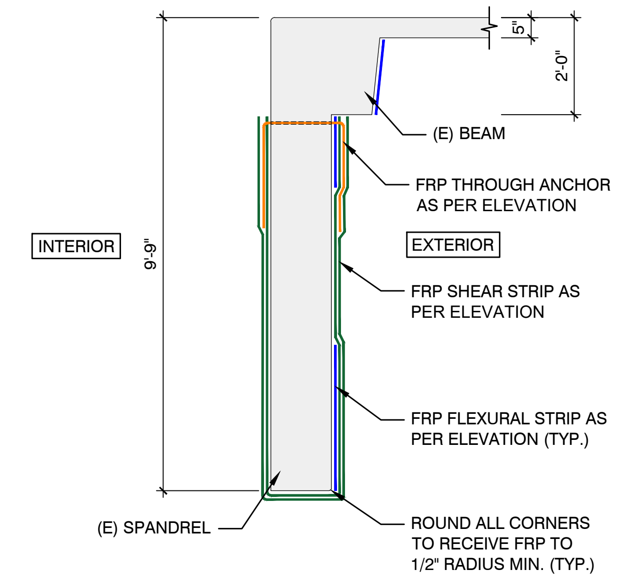
CONTRACTOR: PULLMAN
JOB NO: 677928
SHEET: S5



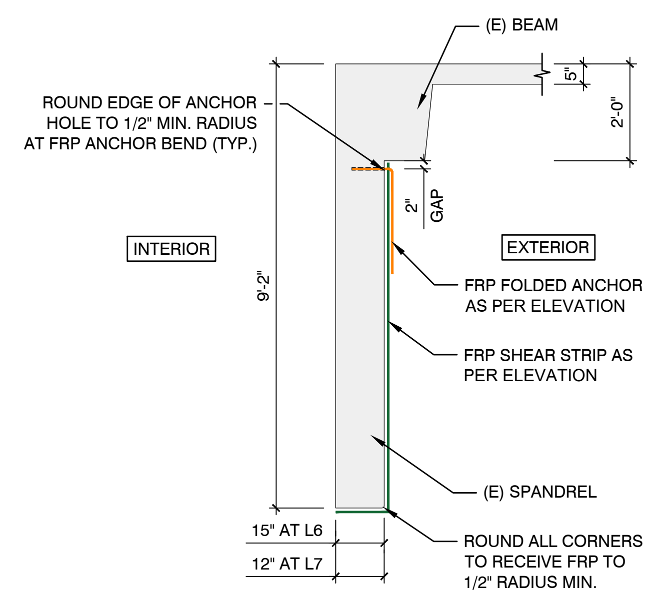
1 / S6 SOUTH SHEAR WALL - EXTERIOR FACE - WALL SPANDREL STRENGTHENING
PARTIAL ELEVATION



2 / S6 WALL SPANDREL STRENGTHENING
SPANDREL L4 - SECTION



3 / S6 WALL SPANDREL STRENGTHENING
SPANDREL L5 - SECTION



4 / S6 WALL SPANDREL STRENGTHENING
SPANDRELS L6 AND L7 - SECTION

NOTES:

1. ALL DIMENSIONS SHALL BE VERIFIED IN FIELD.
2. WHEN NEEDED, FRP SHEETS SHALL BE LAPPED IN THE FIBER DIRECTION AT LEAST 12" TO ACHIEVE CONTINUITY. WHERE MULTIPLE PLIES ARE USED, STAGGER LAP SPLICES 12" MINIMUM.
3. PROVIDE CSS V-WRAP TSTRATA TC COATING OVER ALL FRP.

City of Portland
Reviewed for Code Compliance
Date:6/18/2025
Permit #: 24-065475-DFS-01-FA

REGISTERED PROFESSIONAL ENGINEER
105901PE
OREGON
SEPTEMBER 10, 2024
MOHAMMAD JALALPOUR
06-05-2025
EXPIRES:06/30/2027

NO.	DATE	REVISION	BY

DES	K.T.	06/05/25
DRN	K.T.	06/05/25
CHK	M.J.	06/05/25

TECHNOLOGIES JOB NO. IND147

Smarter Strengthening Solutions
SIMPSON Strong-Tie
structural TECHNOLOGIES
STRUCTURAL TECHNOLOGIES STRONGPOINT, LLC.
10150 Old Columbia Rd. COLUMBIA, MD 21046
Phone: 410/850-7000
Fax: 410/850-4111

120 SW 3RD - MULTNOMAH COUNTY JUSTICE CENTER
120 SW 3RD AVE, PORTLAND, OR 97204

WALL SPANDREL STRENGTHENING WITH FRP
SOUTH SHEAR WALL ELEVATION AND SECTIONS

CONTRACTOR: PULLMAN
JOB NO: 677928
SHEET: S6