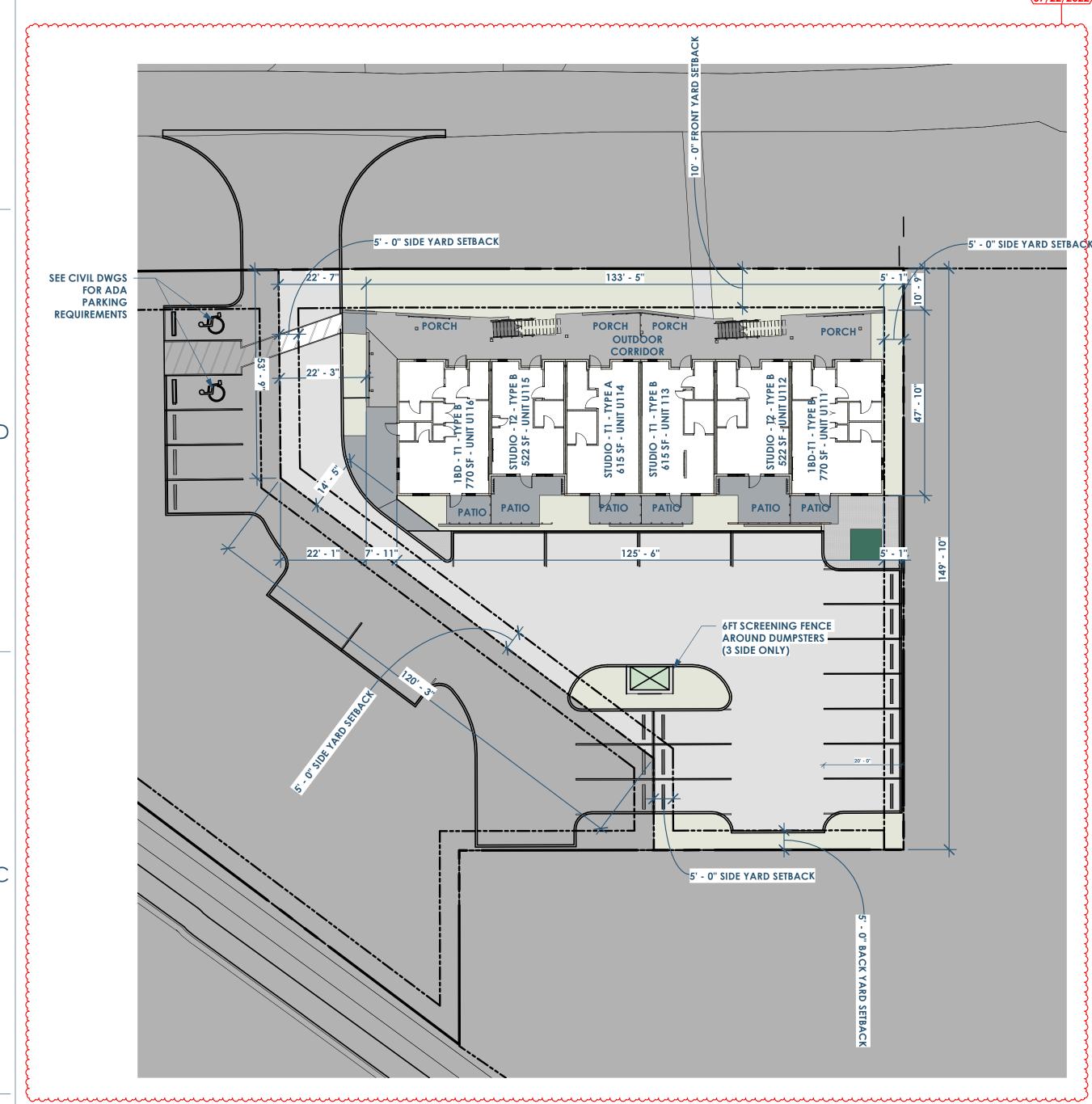
MARCO POLO - 101 W 33RD STREET

CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY





DEFERRED SUBMITTALS

DEFERRED SUBMITTALS ARE DEFINED AS THOSE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED DURING THE INTIAL PERMIT APPLICATION, BUT INSTEAD ARE SUBMITTED TO THE BUILDING OFFICIAL WITHIN A SPECIFIED PERIOD AFTER THE PERMIT HAS BEEN ISSUED. DEFERRAL OF ANY SUBMITTAL ITEMS SHALL HAVE THE PRIOR APPROVAL OF THE BUILDING OFFICIAL. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND BEEN FOUND TO BE IN GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

IRRIGATION

- BUILDING SIGNAGE • FIRE SPRINKLERS
- WINDOWS STAIRS AND RAILING DETAILING METAL PLATE CONNECTED WOOD TRUSSES
- FIELD MARKING OF AVAILABLE FAULT CURRENT BACK FLOW TEST REPORT • THIRD PARTY INSPECTIONS







CODE INFORMATION

• BUILDING/DWELLING CODE IBC 2015 & BRYAN,TX AMENDMENTS

• PLUMBING CODE IMC 2015 & BRYAN,TX AMENDMENTS

• MECHANICAL CODE IMC 2015 & BRYAN,TX AMENDMENTS

• FIRE/LIFE SAFETY CODE 2009 NFPA-1 & BRYAN,TX AMENDMENTS

• INTERNATIONAL FUEL GAS CODE 2015 & BRYAN,TX AMENDMENTS

HORIZONTAL ASSEMBLIES IN ACCORDANCE WITH SECTION 711.

• TABULAR PER FLOOR AREA LIMIT PER CHAPTER 5 = 7000 SQ.FT.

• WEIGHTED AVERAGE DISTANCE FROM 'F' = 228.75 FT

• MAXIMUM ALLOWABLE AREA = AA X 3 = 75362.83 SQ.FT.

• COMPUTE AREA INCREASE DUE TO FRONTAGE: FRONTAGE COEFFICIENT, IF 0.589

• COMPUTE ALLOWABLE PER STORY AREA, AA = AT +(NS X IF) = 25120.94 SQ.FT.

• MAXIMUM NUMBER OF STORIES FOR GROUP R WITH NFPA 13R SPRINKLERS, PER SEC. 903.3.1.2.THIS

• ALLOW HEIGHT = 60 FT; ALLOW STORIES = 3

• 'FRONTAGE' PERIMETER, F 306 FT

CRITERIA IS MET, SO STORY LIMIT = 3

• THE REVISED ALLOWABLE HEIGHT IS 60 FT.

• ELECTRICAL CODE NEC 2020 & BRYAN,TX AMENDMENTS

• FIRE PARTITIONS IN ACCORDANCE WITH SECTION 708

• ANSI STANDARD A117.1-2009- FOR ACCESSIBILITY

• INTERNATIONAL ENERGY CONSERVATION CODE 2015 & BRYAN,TX AMENDMENTS

ENERGY CONSERVATION:

• FAIR HOUSING ACT

R-2 – TYPE VB (SPRINKLERED):

R-2 – TYPE VB (SPRINKLERED):

NFPA 13 SPRINKLERS

• PERIMETER, P 354 FT

• (ALL FLOORS): 16,826SF

STRUCTURAL FRAME: 0 HR

BEARING WALLS- EXTERIOR: 0 HR

BEARING WALLS-INTERIOR: 0 HR

FLOOR CONSTRUCTION: 0 HR ROOF CONSTRUCTION: 0 HR

• $5 \le X \le 10 = 1 HR$

• 10 ≤ X ≤ 30 = 0 HR

CORRIDORS: 1/2HR RATED

RESIDENTIAL: 200 GROSS

OCCUPANT LOAD AND COMMON | MAXIMUM COMMON PATH WITH SPRINKLER SYSTEM: 125FT

PATH OF EGRESS TRAVEL DISTANCE: | MAXIMUM OCCUPANT LOAD OF SPACE WITH ONE EXIT: 49

PARTITIONS.

50FT (WITH NFPA13 SPRINKLERS)

CLASSIFICATION & OCCUPANCY:

• X ≥ 30 = 0 HR

NON-BEARING WALLS-INTERIOR: 0 HR

BETWEEN DWELLING UNITS: 1/2HR RATED

NFPA13 SPRINKLER THROUGHOUT PROJECT (R-2)

MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

SECTION 1021 EGRESS BALCONIES EXTERIOR EGRESS BALCONIES SHALL BE SEPARATED FROM THE INTERIOR OF THE BUILDING BY WALLS

AND OPENING PROTECTIVES AS REQUIRED FOR CORRIDORS.

SECTION 1020 CORRIDORS 1020.1 CONSTRUCTION

REQUIREMENTS BASED ON GROUP INTERIOR EXIT STAIRWAYS AND RAMPS AND EXIT PASSAGEWAYS: CLASS C

ROOMS AND ENCLOSED: CLASS C

NON-BEARING WALLS-EXTERIOR – (SEE TABLE 602)

DWELLING UNIT AND SLEEPING UNIT SEPARATIONS: 1/2HR RATED

CORRIDORS AND ENCLOSURE FOR EXIT ACCESS STAIRWAYS AND RAMPS: CLASS C

SEE SECTION 1021 EGRESS BALCONIES FOR CORRIDOR RATING AT EXTERIOR WALL

CORRIDORS SHALL BE FIRE-RESISTANCE-RATED IN ACCORDANCE WITH TABLE 1020.1. THE CORRIDOR

UNPROTECTED OPENINGS ON UNRATED EXTERIOR WALLS WHERE UNRATED WALLS ARE PERMITTED BY

WALLS REQUIRED TO BE FIRE-RESISTANCE-RATED SHALL COMPLY WITH SECTION 708 FOR FIRE

CORRIDORS ADJACENT TO THE EXTERIOR WALLS OF BUILDINGS SHALL BE PERMITTED TO HAVE

TABLE 602 AND UNPROTECTED OPENINGS ARE PERMITTED BY TABLE 705.8.

• FLOORS: 3

N/A

REQUIREMENTS FOR EXTERIOR WALLS FIRE SEPARATION DISTANCE

ACTUAL: 35FT

ACTUAL: 3

ALLOWED: 4

ALLOWED: 60FT

MECHANICAL

ELECTRICAL:

CHAPTER 3 USE AND OCCUPANCY 310.4 RESIDENTIAL GROUP R-2

APPLICABLE CODES:

CLASSIFICATION:

504.3 HEIGHT IN FEET

504.4 NUMBER OF STORIES

506.3 FRONTAGE INCREASE:

506.2 ALLOWABLE AREA

508.3 NONSEPARATED

FIRE-RESISTANCE RATING

FIRE-RESISTANCE RATING

SLEEPING UNITS

803.11 INTERIOR FINISH

SPRINKLERS (SECTION 903

SECTION 1020 CORRIDORS

1006.2.1 EGRESS BASED ON

2902.1 MINIMUM NUMBER OF

DISTANCE:

FIXTURES

1020.4 DEAD ENDS:

BASED ON FIRE SEPARATION

708.3 FIRE-RESISTANCE RATING

711.2.4.3 DWELLING UNITS AND

AUTOMATIC SPRINKLER SYSTEMS):

SECTION 1004 OCCUPANT LOAD TABLE 1004.1.2

SECTION 1017 EXIT ACCESS TRAVEL FOR R-2: 250 (W/SPRINKLER)

ELEMENTS (HOURS)

REQUIREMENTS FOR BUILDING

508.4 SEPARATED OCCUPANCIES

OCCUPANCIES:

DETERMINATION

CHAPTER 5 CLASSIFICATION OF

R-3 AND R-4



• TYPE B ADA UNITS = 5 (THE REMAINING UNITS ON THE 1ST FLOOR) • ACCESSIBLE SPACES REQUIRED: 2 PER 26-50 SPACES

GENERAL NOTES

COMMENCING

APPROVED FIRE STOP.

ALTERNATE DISCIPLINES.

THROUGHOUT THE PROJECT.

AWAY FROM THE BUILDING.

ON THE DRAWINGS.

FINISHED SURFACE.

DRAWINGS.

THAT MAY HAVE RESULTED FROM THEIR WORK.

THE OWNER/ARCHITECT PRIOR TO CONSTRUCTION.

AIR/WATER LEAKAGE PER IBC CODE REQUIREMENTS.

DISPOSAL OF ALL CONSTRUCTION WASTE.

LOCATION PRIOR TO FRAMING.

ARCH/STRUCT DRAWING SET.

ACCUMULATION OF DEBRIS AND/OR UNUSED EQUIPMENT.

• DO NOT SCALE THE DRAWINGS.

GENERAL CONTRACTOR RESPONSIBLE FOR ALL FEES ASSOCIATED WITH PERMITS,

ANY CONSTRUCTION THAT DEVIATES FROM THE DRAWING IS UNAUTHORIZED, IF

NOT AUTHORIZED BY THE ARCHITECT. IN SUCH AN EVENT, CONTRACTOR IS

AUTHORITY HAVING JURISDICTION. INCLUDED, BUT NOT LIMITED TO ALL CITY,

TOWNSHIP, COUNTY, STATE, AND FEDERAL CODES, STATUTES, AND ORDINANCES.

• CONTRACTOR TO NOTIFY ARCHITECT IF THERE ARE ANY OMISSIONS, CONFLICTS,

OR DISCREPANCIES IN THE DRAWINGS BEFORE ANY CONSTRUCTION TAKES PLACE.

CONTRACTOR IS RESPONSIBLE FOR ALL THE RULES/REGULATIONS OF THE

HOW NEW CONSTRUCTION IS COMPATIBLE WITH EXISTING CONDITIONS.

A FAILURE TO SO WILL RESULT IN THE CONTRACTOR RESPONSIBLE FOR ANY

 ALL THROUGH AND MEMBRANE PENETRATIONS AT ALL FIRE/SMOKE RATED PARTITIONS/CEILINGS/FLOORS TO BE SEALED WITH A CODE COMPLIANT, U.L.

CONTRACTOR RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND TAKEOFFS

BEFORE BIDDING AND/OR ORDERING MATERIALS. CONTRACTOR WILL NOTIFY ARCHITECT IF THERE ANY DRAWING CONFLICTS AND AWAIT DIRECTION BEFORE

GENERAL CONTRACTOR TO COORDINATE THE SIZE/LOCATION OF ANY ACCESS

ALL CONTRACTORS AND VENDORS TO FAMILIARIZE THEMSELVES WITH THE ENTIRE

DRAWING SET, AS REQUIRED INFORMATION MAY BE ON MULTIPLE SHEETS AND

CONTRACTORS SHALL BE RESPONSIBLE FOR REPAIRING ANY PROPERTY DAMAGE

• ANY FURNITURE SHOWN IS FOR REFERENCE AND IS NOT IN THE CONTRACTOR.

OWNER RESPONSIBLE FOR ANY WORK NOT SPECIFICALLY CALLED OUT IN THE

ANY CHANGE THAT RESULTS IN ADDITIONAL COST/TIME MUST TO APPROVED BY

CALLED OUT OTHERWISE, THE DETAIL IS TO BE APPLIED TO SIMILAR CONDITIONS

• ALL EXTERIOR FLATWORK AROUND THE BUILDING TO SLOPE A MINIMUM OF 2%

• ANY PENETRATIONS IN THE EXTERIOR ENVELOPE TO BE SEALED TO PREVENT ANY

• UNLESS OTHERWISE NOTED, SLOPE FLOOR 2% TOWARD ANY DRAINS INDICATED

ALL FINISH AND COLOR SELECTIONS TO BE VERIFIED WITH ARCHITECT

LICENSED STRUCTURAL ENGINEER RETAINED BY THE CONTRACTOR.

• CONTRACTOR SHALL KEEP THE CONSTRUCTION CLEAN-REMOVING ANY

CONTRACTOR TO BE RESPONSIBLE FOR THE COLLECTION, TRANSPORT AND

• CONTRACTORS RESPONSIBLE FOR ANY TEMPORARY SHORING THAT MIGHT BE

NECESSARY DURING CONSTRUCTION. ALL SHORING TO BE DESIGNED BY A

GENERAL CONTRACTOR TO VERIFY WITH THE M/E/P CONTRACTORS ALL PIPE/DUCT

MANUFACTURED MATERIAL/EQUIPMENT TO BE INSTALLED PER MANUFACTURER'S

• CONTRACTOR TO PROTECT ANY EXPOSED CONCRETE THAT IS MEANT TO BE A

GENERAL CONTRACTOR TO PROVIDE ARCHITECT AT LEAST (2) WEEKS WHEN

THE WORK. THE CONTRACTOR SHALL CALL THE ARCHITECT'S ATTENTION TO

• REVIEW OF SHOP DRAWINGS DOES NOT CONSTITUTE THE APPROVAL OF SAFETY

• THE PRESENCE OF THE ARCHITECT ON SITE DOES NOT CONSTITUTE APPROVAL OF

ONLY ARCHITECTURAL AND STRUCTURAL DRAWINGS HAVE BEEN COORDINATED

WITH THE ARCHITECT. CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY WORK

OUTSIDE THESE SCOPES (M/E/P, FOR EXAMPLE) THAT INTERFERES WITH THIS

GENERAL CONTRACTOR TO EDUCATE THE OWNER ON THE OPERATION AND

PRIOR TO SUBSTANTIAL COMPLETION, THE CONTRACTOR SHALL CLEAN SITE AND

• ARCHITECT NOT RESPONSIBLE FOR THE EXPLORATION, PRESENCE, HANDLING,

AND/OR ADVERSE EXPOSURE OF ANY HAZARDOUS MATERIALS, IN ANY FROM.

REQUIRED FOR PROPER INSTALLATION AND PERFORMANCE OF THE WORK. SHALL

ANY CHANGES TO THE PLANS DURING CONSTRUCTION NEED TO BE APPROVED BY

THE ARCHITECT AND/OR ENGINEER OF RECORD AND THE CITY. THE CHANGES WILL

NEED TO BE SUBMITTED AS AN AMENDED SET OF CONSTRUCTION DOCUMENTS. SEE

MCFERON, FIRE MARSHAL, MMCFERON@BRYANTX.GOV OR KIMBERLY FREDERICK,

• FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, ETC. OR ANY OTHER WALL REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE IDENTIFIED WITH

PER IFC 906.1 ALL DWELLING UNITS SHOULD INCLUDE A MINIMUM RATED (1-A:10-

B:C) FIRE EXTINGUISHER IN A CONSPICIOUS, READY ACCESS AREA. NO FIRE

• FIRE SPRINKLER/FIRE ALARM DRAWINGS NEED TO BE SUBMITTED TO THE FIRE

MARSHAL'S OFFICE (414 LAWRENCE STREET, BRYAN, TEXAS, 77801 OR MARC

INCLUDED BY NOT LIMITED TO GRAB BARS, PLUMBING FIXTURES, MILLWORK AND 107/22/20

INCLUDING, BUT NOT LIMITED TO ASBESTOS PRODUCTS, POLYCHLORINATED

• ALL EXTERIOR STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED. ALL

NOTCHING, DRILLING, WELDING AND BENDING DONE PRIOR TO DIPPING. • ANY PRODUCT OR MATERIALS THAT ARE NOT CALLED OUT IN THE DRAWINGS, BUT

• THE CONTRACTOR TO PROVIDE ALL THE NECESSARY BLOCKING AND/OR STRUCTURAL SUPPORT REQUIRE TO PROPERLY INSTALL MOUNTED ASSEMBLIES,

DELIVER ALL REQUIRED GUARANTEES, LIEN WAITERS AND MAINTENANCE MANUALS

REVIEWING ANY SHOP DRAWINGS AND/OR SUBSTITUTION REQUESTS.

REQUIREMENTS AND/OR CONSTRUCTION MEAN AND METHODS.

ANYTHING SPECIFICALLY NEEDS THE ARCHITECT'S APPROVAL.

MAINTENANCE OF ALL INSTALLED PRODUCT AND/OR EQUIPMENT.

BIPHENYL (PCB) OR OTHER TOXIC SUBSTANCES.

MAINTAIN INGRESS AND EGRESS TO THE PROJECT SITE.

SIGNS OR STENCILING. SEE SECTION 703.5 OF 2015 IBC.

EXTINGUISHERS ARE REQUIRED IN THE COMMON AREAS.

BE PROVIDED BY THE CONTRACTOR.

SECTION 107.4 OF THE 2015 IBC.

KFREDERICK@BRYANTX.GOV).

• DETAILS ARE TO BE INTERPRETED AS TYPICAL. THAT IS, UNLESS SPECIFICALLY

PANELS AND/OR CLEAN OUTS WITH THE M/E/P CONTRACTOR AND ARCHITECT.

APPLICATIONS, TAXES, AND CERTIFICATES OF INSPECTIONS.

RESPONSIBLE FOR ANY REWORK THAT MIGHT BE REQUIRED.

	\$0.0	TYPICAL GENERAL NOTES	07/22/22 - Permit Revisions
	\$0.01	STATEMENT OF SPECIAL INSPECTIONS	07/22/22 – Permit Revisions
	\$0.1	FOUNDATION PLAN	07/22/22 - Permit Revisions
- 1	S0.1A	FOUNDATION NOTES AND 3D	07/22/22 - Permit Revisions
- 1			
H	\$0.2	FRAMING PLAN - 2ND FLOOR	07/22/22 – Permit Revisions
	\$0.3	FRAMING PLAN - 3RD FLOOR	07/22/22 - Permit Revisions
	\$0.4	FRAMING PLAN - ROOF	07/22/22 – Permit Revisions
Ī	\$3.0	FOUNDATION DETAILS	07/22/22 - Permit Revisions
- +	\$3.1	FOUNDATION DETAILS	07/22/22 – Permit Revisions
- +			
- +	\$4.0	TYPICAL WOOD FRAMING DETAILS	07/22/22 – Permit Revisions
	\$4.1	TYPICAL WOOD FRAMING WALL DETAILS	07/22/22 - Permit Revisions
	\$4.2	TYPICAL WOOD FLOOR TRUSS DETAILS	07/22/22 - Permit Revisions
- 1	\$4.3	TYPICAL WOOD FRAMING LATERAL DETAILS	07/22/22 - Permit Revisions
- 1			
ļ	\$4.4	TYPICAL WOOD ROOF TRUSS DETAILS	07/22/22 – Permit Revisions
	\$4.5	TYPICAL STEEL DETAILS	07/22/22 - Permit Revisions
	A101	FLOOR PLAN - 1ST	07/22/22 - Permit Revisions
- 1	A102	FLOOR PLAN - 2ND	07/22/22 - Permit Revisions
- 1			· · ·
ļ	A103	FLOOR PLAN - 3RD	07/22/22 – Permit Revisions
	A104	FLOOR PLAN - ROOF	07/22/22 – Permit Revisions
	A150	REFLECTED CEILING PLANS	07/22/22 - Permit Revisions
∼	A151	REFLECTED CEILING PLANS	07/22/22 – Permit Revisions
H			
	A200	BUILDING ÉLÉVATION - NORTH/WEST	07/22/22 - Permit Revisions
	A201	BUILDING ELEVATION - SOUTH/EAST	07/22/22 - Permit Revisions
- 1	A300	BUILDING SECTIONS	
- 1			07/22/22 - Permit Revisions
	A301	BUILDING SECTIONS	07/22/22 – Permit Revisions
	A302	BUILDING SECTIONS	07/22/22 – Permit Revisions
t	A303	BUILDING SECTIONS	07/22/22 - Permit Revisions
- +			
H	A400	WALL SECTIONS	07/22/22 - Permit Revisions
	A401	WALL SECTIONS	07/22/22 – Permit Revisions
	A402	WALL SECTIONS	07/22/22 - Permit Revisions
- 1	A410	STAIR SECTIONS	07/22/22 – Permit Revisions
- +			
ļ	A411	STAIR SECTIONS	07/22/22 – Permit Revisions
	A412	STAIR SECTIONS	07/22/22 – Permit Revisions
	A470	UNIT PLANS - STUDIOS - LONG AND SHORT -	07/22/22 - Permit Revisions
	7470	(TYPE B ADA UNIT - 1ST FLOOR ONLY)	OT / ZZ/ZZ T CITIM RC VISIONS
ŀ	A 477		07/00/00 P !! P !!
	A471	UNIT PLANS - (TYPE A ADA UNIT - 1ST FLOOR	07/22/22 – Permit Revisions
		ONLY)	
	A472	UNIT PLANS - 1BD - END UNITS	07/22/22 – Permit Revisions
ı	A500	LARGE SCALE DETAILS	07/22/22 - Permit Revisions
H			
ļ	A501	LARGE SCALE DETAILS	07/22/22 – Permit Revisions
	A502	LARGE SCALE DETAILS	07/22/22 – Permit Revisions
	A503	LARGE SCALE DETAILS	07/22/22 - Permit Revisions
- 1	A504	LARGE SCALE DETAILS	07/22/22 - Permit Revisions
- +			· · ·
ļ	A505	LARGE SCALE DETAILS	07/22/22 – Permit Revisions
	A506	LARGE SCALE DETAILS	07/22/22 - Permit Revisions
ı	A600	SCHEDULES	07/22/22 - Permit Revisions
H			07/22/22 – Permit Revisions
- 1	A610	WALL -FIRE RATED ASSEMBLY DETAIL -U341	
	A611	WALL -FIRE RATED ASSEMBLY DETAIL -U305	07/22/22 - Permit Revisions
	A612	FLOOR -FIRE RATED ASSEMBLY DETAIL -L521	07/22/22 - Permit Revisions
Ī	A613	FLOOR -FIRE RATED ASSEMBLY DETAIL -L521	07/22/22 - Permit Revisions
	7010	CONT.	or, zz, zz remin kevisions
ŀ	A / 1 /		07/00/00 Daniel Daniel
- 1	A614	FIRE STOP DETAILS -FLOOR	07/22/22 – Permit Revisions
	A615	FIRE STOP DETAILS -FLOOR	07/22/22 - Permit Revisions
	A616	FIRE STOP DETAILS -FLOOR	07/22/22 - Permit Revisions
-	A617	FIRE STOP DETAILS - WALLS	07/22/22 – Permit Revisions
H			
- 1	A751	ADA -TYPE A AND B	07/22/22 – Permit Revisions
	A800	PARTITION DETAILS - WOOD STUDS	07/22/22 – Permit Revisions
Ī	P100	PLUMBING PLAN TYPICAL UNIT	07/22/22 - Permit Revisions
- 1	P101	PLUMBING PLAN 1ST FLOOR	07/22/22 – Permit Revisions
- 1			
- 1	P102	PLUMBING PLAN 2ND FLOOR	07/22/22 – Permit Revisions
	P103	PLUMBING PLAN 3RD FLOOR	07/22/22 – Permit Revisions
Ī	P104	PLUMBING PLAN ROOF	07/22/22 - Permit Revisions
- +	P200	PLUMBING RISERS	07/22/22 – Permit Revisions
H			
- 1	P201	PLUMBING DETAILS	07/22/22 – Permit Revisions
	P300	PLUMBING NOTES & SCHEDULES	07/22/22 – Permit Revisions
İ	MEP100	MEP SITE PLAN	07/22/22 - Permit Revisions
H	MEP101	SITE LIGHTING LEVELS	07/22/22 - Permit Revisions
H			· · ·
- +	M100	MECHANICAL PLAN TYPICAL UNIT	07/22/22 – Permit Revisions
22	M101	MECHANICAL PLAN 1ST FLOOR	07/22/22 - Permit Revisions
-4	M102	MECHANICAL PLAN 2ND FLOOR	07/22/22 - Permit Revisions
- +			
- +	M103	MECHANICAL PLAN 3RD FLOOR	07/22/22 – Permit Revisions
	M104	MECHANICAL PLAN ROOF	07/22/22 - Permit Revisions
	M200	MECHANICAL DETAILS	07/22/22 - Permit Revisions
- 1	M300	MECHANICAL NOTES & SCHEDULES	07/22/22 – Permit Revisions
- 1			
- 1	E100	ELECTRICAL POWER PLAN TYPICAL UNIT	07/22/22 – Permit Revisions
	E101	ELECTRICAL POWER PLAN 1ST FLOOR	07/22/22 – Permit Revisions
H	LIUI	ELECTRICAL POWER PLAN 2ND FLOOR	07/22/22 - Permit Revisions
			// I CITIIII I/C VISIO 113
	E102		07/00/00 Dame!! Do 1:1:
	E102 E103	ELECTRICAL POWER PLAN 3RD FLOOR	07/22/22 - Permit Revisions
	E102		07/22/22 - Permit Revisions 07/22/22 - Permit Revisions
-	E102 E103	ELECTRICAL POWER PLAN 3RD FLOOR	07/22/22 - Permit Revisions
-	E102 E103 E104 E120	ELECTRICAL POWER PLAN 3RD FLOOR ELECTRICAL POWER PLAN ROOF ELECTRICAL LIGHTING PLAN TYPICAL UNIT	07/22/22 – Permit Revisions 07/22/22 – Permit Revisions
	E102 E103 E104 E120 E121	ELECTRICAL POWER PLAN 3RD FLOOR ELECTRICAL POWER PLAN ROOF ELECTRICAL LIGHTING PLAN TYPICAL UNIT ELECTRICAL LIGHTING PLAN 1ST FLOOR	07/22/22 - Permit Revisions 07/22/22 - Permit Revisions 07/22/22 - Permit Revisions
-	E102 E103 E104 E120	ELECTRICAL POWER PLAN 3RD FLOOR ELECTRICAL POWER PLAN ROOF ELECTRICAL LIGHTING PLAN TYPICAL UNIT	07/22/22 - Permit Revisions 07/22/22 - Permit Revisions 07/22/22 - Permit Revisions
-	E102 E103 E104 E120 E121	ELECTRICAL POWER PLAN 3RD FLOOR ELECTRICAL POWER PLAN ROOF ELECTRICAL LIGHTING PLAN TYPICAL UNIT ELECTRICAL LIGHTING PLAN 1ST FLOOR	07/22/22 - Permit Revisions 07/22/22 - Permit Revisions 07/22/22 - Permit Revisions
-	E102 E103 E104 E120 E121 E122	ELECTRICAL POWER PLAN 3RD FLOOR ELECTRICAL POWER PLAN ROOF ELECTRICAL LIGHTING PLAN TYPICAL UNIT ELECTRICAL LIGHTING PLAN 1ST FLOOR ELECTRICAL LIGHTING PLAN 2ND & 3RD FLOOR	07/22/22 - Permit Revisions 07/22/22 - Permit Revisions 07/22/22 - Permit Revisions 07/22/22 - Permit Revisions

SHEET INDEX

CODE & LIFE SAFETY

CODE & LIFE SAFETY

TYPICAL GENERAL NOTES



2A G000 1" = 200'-0"

* **Owner:** Renovation Wranglers 102 E 26th St Bryan, TX 77803

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Houston, TX 77019

lisa@lkbarchitecture.com | 713.425.3076

Firm# 18677 6102 Imperial Loop Drive

College Station, TX 77845

oorieka@dudleyeng.com | (979) 777-0720

Texas Firm #9441

508 E Jackson Sf # 552

Burnet, TX 78611

info@amcengineers.com | 512.535.6427

FOR CONSTRUCTION

07/22/22 – Permit Revisions

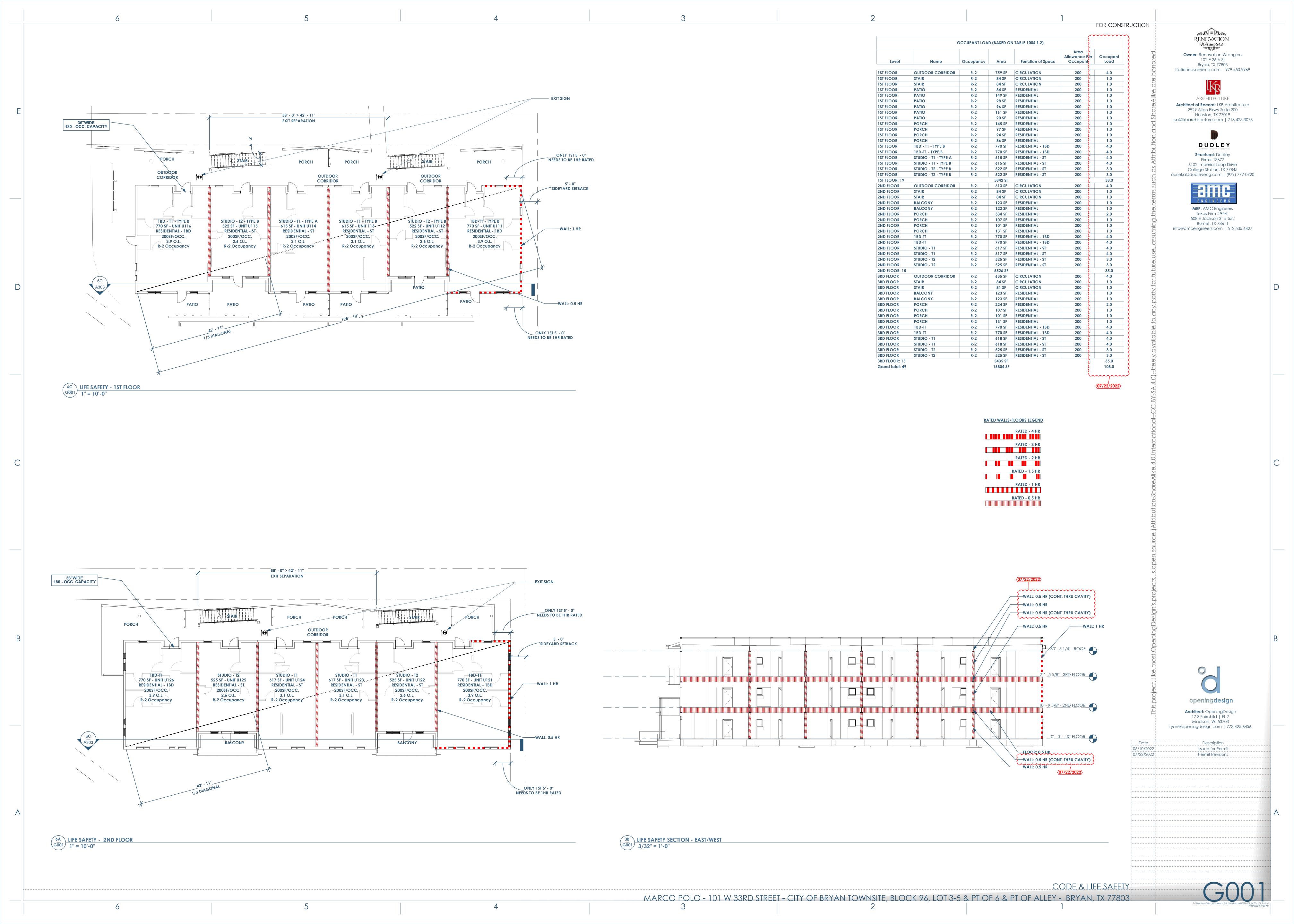
07/22/22 - Permit Revisions

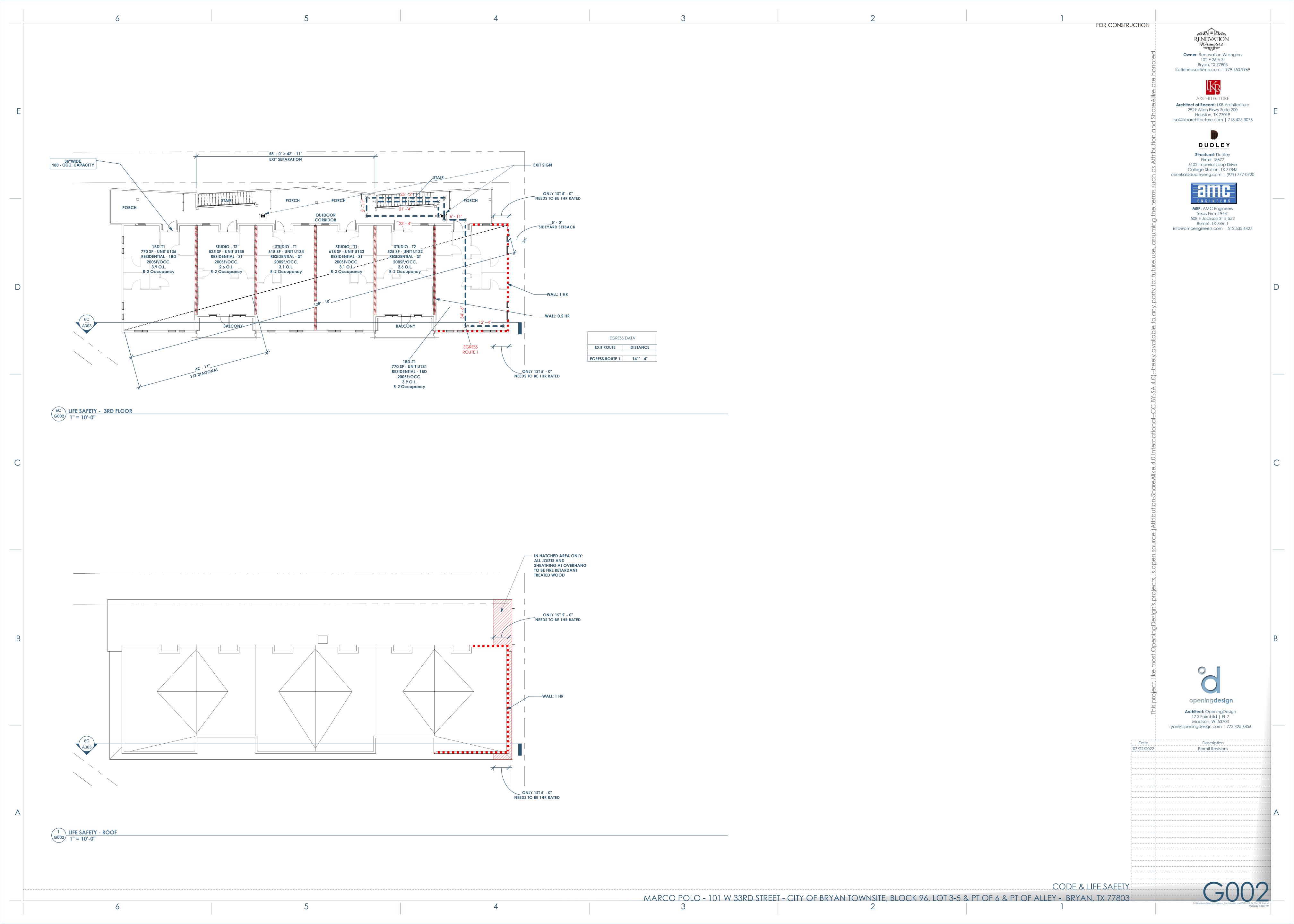
07/22/22 - Permit Revisions

COVER

MARCO POLO - 101 W 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

Architect: OpeningDesign 17 S Fairchild | FL 7 Madison, WI 53703 ryan@openingdesign.com | 773.425.6456 Issued for Permit Permit Revisions





c. STONE / BRICK VENEER - 40 PSF

C. RISK CATEGORY:..... 2. DEAD LOADS: A. DEAD LOADS ARE BASED UPON THE ACTUAL WEIGHTS OF MATERIALS OF CONSTRUCTION AND FIXED SERVICE EQUIPMENT. ASSUMPTIONS FOR WALL AND ROOF ASSEMBLIES ARE SHOWN BELOW: a. METAL PANELS - 3 PSF b. CURTAIN WALLS - 10 PS

 d. ADHERED STONE/BRICK - 10 PSF e. SINGLE PLY MEMBRANE ROOF WITH INSULATION ASSEMBLY - 10 PSF

CONTRACTOR SHALL NOTIFY THE EOR PRIOR TO SUBMISSION OF SHOP DRAWINGS.

a. ASSUMED LOADS FOR KNOWN EQUIPMENT ARE INDICATED ON THE STRUCTURAL DRAWINGS. ANY CHANGES IN THE TYPE, SIZE, LOCATION OR WEIGHT OF EQUIPMENT SHALL BE REPORTED TO THE EOR FOR VERIFICATION OF THE ADEQUACY OF SUPPORTING MEMBERS PRIOR TO THE SUBMISSION OF SHOP DRAWINGS. b. ASSUMED EQUIPMENT WEIGHTS INCLUDE THE WEIGHT OF CONCRETE PADS OR CURBS (IF APPLICABLE) C. FOR EQUIPMENT NOT INDICATED ON THE STRUCTURAL DRAWINGS IN WHICH THE WEIGHT OF THE EQUIPMENTS DIVIDED BY ITS SURFACE AREA EXCEEDS THE INDICATED LIVE LOAD FOR THE LOCATION, THE

C. HANGING CEILING AND MECHANICAL LOADS: AN ALLOWANCE OF 5 PSF HAS BEEN MADE FOR HANGING CEILING AND MECHANICAL EQUIPMENTS SUCH AS DUCT WORK AND SPRINKLER PIPES. A. BALCONIES AND DECKS. ...1.5 x SAME AS OCCUPANCY SERVED B. PRIVATE ROOMS AND CORRIDORS SERVING THEM.

C. PUBLIC ROOMS AND CORRIDORS SERVING THEM..... D. STAIRS AND EXITS.... ...100 PSF | 300 LB 4. ROOF LIVE LOAD a. ORDINARY, FLAT, PITCHED AND CURVED UNOCCUPIED ROOFS:20 PSF, 300 LB 5. SNOW LOAD: A. GROUND SNOW LOAD, P A. ULTIMATE DESIGN WIND SPEED Vult 5 MPH (3-SEC PEAK GUS B. NOMINAL DESIGN WIND SPEED, Vasd:.... 89 MPH (3-SEC PEAK GUST) C. WIND EXPOSURE CATEGORY:... D. INTERNAL PRESSURE COEFFICIENT SEE SCHEDULE E. COMPONENTS AND CLADDING PRESSURE F. MAIN WIND FORCE RESISTING SYSTEM:.. WOOD SHEAR WALLS A. 100-YEAR RAINFALL INTENSITY (IN/HR): B. MAXIMUM ROOF RAIN LOAD:... C. MAXIMUM RAINWATER LEVEL - PONDING (STATIC + HYDRAULIC HEAD):....

0.057 & 0.040

1% SEISMIC WEIGH

D. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IF THE TOTAL RAIN WATER LEVEL EXCEEDS THE DESIGNED RAIN ROOF LOAD. MAPPED SPECTRAL RESPONSE VALUES, DESIGN SPECTRAL RESPONSE VALUES, AND AS SITE CLASS, HAVE BEEN PROVIDED BY A. GEOTECHNICAL COMPANY AND REPORT NO B. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS. Sc & S

C&C - GROSS ULTIMATE WIND PRESSURES

C. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS, SDS & SD1:..

E. SEISMIC DESIGN CATEGORY, SDC:

F. DESIGN BASE SHEAR:..

Cladding Location Effective Coefficients Wind pressures OF LEAST HORIZONTAL DIMENSION OR 3FT Area (sf) +GCp -GCp +p (psf) -p (psf) h = MEAN ROOF HEIGHT OF A BUILDING, EXCEPT THAT EAVE HEIGHT SHALL BE USED FOR ROOF 10 0.90 -0.99 +30.6 ANGLES LESS THAN OR EQUAL TO 10° (~2:12 ROOF PITCH) 40 0.80 -0.89 +27.9 50 0.79 -0.88 +27.5 MEAN ROOF HEIGHT = THE AVERAGE OF THE ROOF EAVE HEIGHT AND HEIGHT TO THE HIGHEST 100 0.74 -0.83 +26.1 POINT ON THE ROOF SURFACE. 500 0.63 -0.72 +23.0 10 0.90 -1.26 +30.6 -1.07 +27.9 40 0.80 50 0.79 -1.04 +27.5 100 0.74 -0.94 +26.1 500 0.63 -0.72 +23.0 Roof Interior 10 0.30 -1.00 +13.6 40 0.24 -0.94 +11.9 -31.8 0.23 -0.93 +11.6 -31.5 +10.8 341 0.20 -0.90 +10.8 10 0.90 -1.80 +30.6 40 0.80 -1.38 +27.9 50 0.79 -1.31 +27.5 -42.3 100 0.74 -1.10 +26.1 -36.3 +23.0 10 0.90 -1.80 +30.6 40 0.80 -1.38 +27.9 50 0.79 -1.31 +27.5 100 0.74 -1.10 +26.1 -36.3 500 0.63 -1.10 +23.0 10 0.00 -1.70 +10.0 & Edge 40 0.00 -1.64 +10.0 -46.5

500 0.00 -1.10 +10.0

100 0.00 -1.60 +10.0

40 2.18 -1.70 +61.9

100 1.84 -1.57 +52.2

500 1.73 -1.35 +49.1

40 2.18 -1.87 +61.9

100 1.84 -1.68 +52.2

10 2.70 -2.16 +76.6 -61.3

50 2.10 -1.83 +59.6 -51.8

50 2.10 -1.67 +59.6

10 0.00 -1.70 +10.0 -48.2

40 0.00 -1.64 +10.0 -46.5

50 0.00 -1.63 +10.0 -46.2

COMPONENTS AND CLADDING DESCRIPTION ROOF INTERIOR ROOF CORNER WALL INTERIOR 50 0.00 -1.63 +10.0 -46.2 100 0.00 -1.60 +10.0 -45.4

FLAT /HIP/ GABLE ROOF - h ≤ 60

 0° (0:12) < SLOPE $\leq 7^{\circ}$ (1.5:12)

a = MINIMUM OF (10% OF LEAST HORIZONTAL DIMENSION OR 0.4h) BUT NOT LESS THAN 4%

. GEOTECHNICAL REPORT: THIS FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS PROVIDED IN SITE-SPECIFIC GEOTECHNICAL REPORT. IN DESIGNING THE FOUNDATION FOR THE PROPOSED STRUCTURE, THE FOUNDATION DESIGN ENGINEER DOES NOT ASSUME RESPONSIBILITY FOR THE ACCURACY OF THE GEOTECHNICAL ENGINEER'S REPORT OR ANY INFORMATION CONTAINED THEREIN, INFORMATION CONTAINED IN THE GEOTECHNICAL REPORT(S) REFLECTS CONDITIONS AS FOUND AT THE LOCATION OF THE BORINGS, ACTUAL CONDITIONS AT I OCATIONS BETWEEN AND SURROUNDING THE BORINGS MAY DIFFER FROM THE SOIL STRATIGRAPHY DEPICTED BY THE BORINGS. IE THERE ARE ANY CONDITIONS DIFFERING FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT, OR IF ANY CHANGES HAVE BEEN IMPOSED ON THE SOILS IN QUESTION SINCE THE REPORT WAS WRITTEN, THEN THE DESIGN ENGINEER OF RECORD SHOULD BE NOTIFIED IN WRITING PRIOR TO CONSTRUCTION OF THE FOUNDATION IN ORDER TO REVIEW THE EFFECTS ON THE PERFORMANCE OF THE DESIGNED FOUNDATION. A. GEOTECHNICAL ENGINEER: DUDLEY

B. REPORT NUMBER: 22-00109 REPORT DATE: D. THE FOUNDATION DESIGN PARAMETERS PROVIDED WILL NOT ELIMINATE POST-CONSTRUCTION FOUNDATION MOVEMENT. AS SUCH, MEASURES SHALL BE TAKEN TO INCREASE THE TOLERANCE OF THE STRUCTURE SUPPORTED BY THE FOUNDATION, MEASURES INCLUDE BUT ARE NOT LIMITED TO FREQUENT CONTROL JOINTS FOR MASONRY/BRICK/STONE/STUCCO EXTERIOR VENEER (15'-0 MAXIMUM), VERTICALLY SLOTTED CLIPS TO ATTACH ROOF TRUSSES TO NON-LOAD BEARING WALLS, ETC. ABNORMAL CONDITIONS: IF THE FOUNDATION IS INSTALLED DURING A DRY OR WET PERIOD, WHICH IS CONSIDERED EXTREME OR ABNORMAL, THEN THE BUILDER SHALL NOTIFY THE GEOTECHNICAL ENGINEER AND FOUNDATION ENGINEER PRIOR TO CONSTRUCTION FOR POSSIBLE SOIL CONDITIONING OR FOUNDATION RE-DESIGN .

FOUNDATION MOVEMENT: THE FOUNDATION HAS BEEN DESIGNED WITH THE ASSUMPTION THAT MOVEMENT CAN BE TOLERATED WITHIN A STANDARD PERFORMANCE LIMIT:

A. STANDARD PERFORMANCE DEFLECTION LIMIT: L/360 B. STANDARD PERFORMANCE TILT LIMIT: 178 . SOIL MOISTURE LEVEL; A REASONABLY UNIFORM SOIL MOISTURE LEVEL IS MAINTAINED AROUND THE FOUNDATION FOR THE LIFE OF THE STRUCTURE . FOUNDATION MAINTENANCE: POSITIVE DRAINAGE AWAY FROM THE STRUCTURE SHALL BE MAINTAINED FOR THE LIFE OF THE STRUCTURE AND THE CONTRACTOR SHALL CONVEY THIS REQUIREMENT TO THE OWNER, THE INITIAL AND ALL SUBSEQUENT OWNERS MAINTAIN THE FOUNDATION IN ACCORDANCE WITH THE LATEST REVISION OF DOCUMENT NO. FPA-SC-07. "FOUNDATION MAINTENANCE AND INSPECTION GUIDE FOR RESIDENTIAL AND OTHER LOW-RISE BUILDINGS", AVAILABLE ON THE FOUNDATION PERFORMANCE ASSOCIATION'S WEBSITE: WWW.FOUNDATIONPERFORMANCE.ORG. CONTRACTOR SHALL PROVIDE THIS DOCUMENT TO OWNER.

EXPIRATION: PLANS ARE VALID FOR 6-MONTHS FROM THE DATE THE PLANS ARE ISSUED OR REVISED BY THE ENGINEER. CONTACT ENGINEER FOR REVIEW IF PLANS HAVE EXPIRED OR IF

CONSTRUCTION OF THE FOUNDATION HAS NOT COMMENCED WITHIN THIS TIME FRAME. LATERAL LOAD RESISTING SYSTEM

1. ALLI ATERAL LOAD RESISTANCE AND STABILITY OF THE BUILDING IS PROVIDED EXCLUSIVELY BY VERTICAL LATERAL LOAD RESISTING SYSTEM, THE HORIZONTAL DIAPHRAGMS DISTRIBUTE THE LATERAL WIND AND SEISMIC FORCES HORIZONTALLY TO THE VERTICAL LATERAL LOAD RESISTING SYSTEM. A. VERTICAL LATERAL LOAD RESISTING SYSTEM: WOOD-FRAMED SHEAR WALLS B. HORIZONTAL LATERAL LOAD RESISTING SYSTEM: WOOD STRUCTURAL PANEL ROOF DECK

1. ALL STAIRS, GUARDRAILS AND HANDRAILS SHALL BE DESIGNED BY A REGISTERED STRUCTURAL ENGINEER BASED ON THE FOLLOWING DESIGN CRITERIA:

Stair. Handrails. restroom accessories and guardrail specifications:

a. STAIR STRINGERS, TREADS AND RISERS SHALL BE DESIGNED TO SUPPORT 100 PSF LIVE LOAD.

b. INDIVIDUAL STAIR TREADS SHALL BE DESIGNED TO SUPPORT A 300 LB CONCENTRATED LOAD PLACED IN A POSITION THAT WOULD CAUSE THE MAX STRESS B. HANDRAIL AND GUARDS a. Guard top rail and handrails: the top rail of guardrails and handrails shall be designed to withstand a load of 50 PLF applied horizontally at right angles, or a b. INTERMEDIATE RAILS, PANEL FILLER AND THEIR CONNECTIONS SHALL BE DESIGNED TO WITHSTAND A LOAD OF 50 PSF APPLIED HORIZONTALLY AT RIGHT ANGLES OVER THE ENTIRE TRIBUTARY

AREA, INCLUDING OPENINGS AND SPACES BETWEEN RAILS. C. RESTROOM ACCESSORIES: a. Grab bars, tub and shower seats, fasteners, and mounting devices shall be designed to resist a concentrated load of 250 pounds at any location and in any

STRUCTURAL DEFERRED SUBMITTALS

. Structural deferred submittals are those portions of the design which require structural engineering that are not submitted at the time of the application but are to be submitted to the building OFFICIAL AT A LATER DATE. DEFERRED SUBMITTALS SHALL BE SUBMITTED TO AND APPROVED BY THE BUILDING OFFICIAL PRIOR TO INSTALLATION OF ANY SAID WORK. 2. COMPLETE STRUCTURAL SHOP DRAWINGS FOR CONSTRUCTION OF EACH BUILDING COMPONENT NOT DESIGNED BY THE STRUCTURAL ENGINEER-OF-RECORD (SER) AND NOT SPECIFIED ON THE PROJECT CONSTRUCTION DOCUMENTS SHALL RE SEALED AND SIGNED BY A SPECIALTY STRUCTURAL ENGINEER (SSEL WHO IS A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS REING CONSTRUCTED WHO IS QUALIFIED TO PERFORM SAID WORK, A SEAL BY A LICENSED PROFESSIONAL ENGINEER IS NOT REQUIRED FOR EITHER PRODUCTS WHICH HAVE BEEN TESTED AND CERTIFIED BY AN APPROVED AGENCY SUCH AS THE ICC NOR FOR COMPONENTS WHICH ARE FABRICATED BY A FABRICATOR THAT IS CERTIFIED BY AN APPROVED AGENCY IN WHICH THE AGENCY SPECIFIED THAT SEALING OF THE SHOP DRAWINGS IS NOT REQUIRED (E.G. STEEL JOIST INSTITUTE IN REGARDS TO OPEN

3. THE SPECIALTY STRUCTURAL ENGINEER (SSE) SHALL SPECIFICALLY INDICATE IN A COVER PAGE AT THE FRONT OF THE SHOP DRAWING THAT THEY ARE THE STRUCTURAL ENGINEER IN RESPONSIBLE CHARGE FOR THE DEFERRED SUBMITTAL AND THAT THEY HAVE REVIEWED THE SHOP DRAWING TO ENSURE COMPLIANCE WITH THEIR DESIGN AND CALCULATIONS. 4. ALL STRUCTURAL DEFERRED SUBMITTALS SHALL BE REVIEWED BY THE SER AND MARKED AS EITHER NO EXCEPTIONS OR EXCEPTION NOTED, PRIOR TO SUBMITTING TO THE "FOR CONSTRUCTION" VERSION TO THE AUTHORITY HAVING JURISDICTION (AHJ) AND PRIOR TO RELEASE FOR FABRICATION.

A. STAIRS, GUARDRAIL, HANDRAILS, GRAB BARS, LADDERS, ETC. (NOT REQUIRED IF USING CERTIFIED AND TESTED PRODUCTS/ASSEMBLIES) B. CURTAINWALL, STOREFRONT, WINDOWS (NOT REQUIRED IF USING CERTIFIED AND TESTED PRODUCTS/ASSEMBLIES) C. METAL PLATE CONNECTED WOOD TRUSSES

5. STRUCTURAL DEFERRED SUBMITTALS ON THIS PROJECT INCLUDE:

1. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, METHODS, PROCEDURES AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES

2. THE CONTRACTOR IS RESPONSIBLE FOR QUALITY CONTROL, INCLUDING WORKMANSHIP AND MATERIALS FURNISHED BY SUBCONTRACTORS AND SUPPLIERS. 3. REFER TO DRAWINGS OTHER THAN STRUCTURAL FOR COMPLETE INFORMATION REGARDING: SLEEVES, CURBS, INSERTS, DEPRESSIONS, OPENINGS, ETC.

4. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND LATEST REVISIONS/ADDENDA AND TO SUBMIT SUCH DOCUMENTS TO ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS OR MATERIAL PROCUREMENT. 5. THE USE OR REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, DUE TO ANY ERRORS THAT MAY OCCUR

6. ALL WORK SHALL CONFORM TO OSHA STANDARDS. 7. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH ALL CODES AND REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. 8. THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND REPORT ANY DISCREPANCIES BETWEEN EACH SET OF DRAWINGS AND

WITHIN EACH SET OF DRAWINGS TO THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS. 9. FRAMING LAYOUTS ARE PROVIDED TO REPRESENT DESIGN CONCEPTS AND SYSTEMS CONSTRUCTION. THE CONTRACTOR AND SUBCONTRACTORS ARE RESPONSIBLE FOR MATERIAL QUANTITIES AND ANY AND ALL UNSPECIFIED COMPONENTS REQUIRED FOR CONSTRUCTION. 10. WHERE MEMBER LOCATIONS ARE NOT SPECIFICALLY DIMENSIONED, MEMBERS ARE EITHER LOCATED ON COLUMN LINES OR ARE EQUALLY SPACED BETWEEN THE LOCATED 11. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS SHOWN

OR SPECIFIED IN SIMILAR CONDITIONS. 12. WHERE CONFLICT EXISTS AMONG THE VARIOUS PARTS OF THE STRUCTURAL CONTRACT DOCUMENTS, STRUCTURAL DRAWINGS, GENERAL NOTES AND SPECIFICATIONS, THE STRICTEST REQUIREMENTS. AS INDICATED BY THE ENGINEER, SHALL GOVERN. 13. THE FLOOR DESIGN LIVE LOAD FOR EACH ELEVATED FLOOR STRUCTURE OR PORTION THEREOF THAT EXCEEDS 50 POUNDS PER SQUARE FOOT (PSF) SHALL BE STATED ON DURABLE SIGNS AND CONSPICUOUSLY POSTED BY THE OWNER IN THE APPLICABLE AREA(S) OF THE BUILDING. 14. ALL STRUCTURES REQUIRE PERIODIC MAINTENANCE TO EXTEND LIFESPAN AND ENSURE STRUCTURAL INTEGRITY FROM EXPOSURE TO THE ENVIRONMENT. A PLANNED PROGRAM OF

MAINTENANCE SHALL BE ESTABLISHED BY THE BUILDING OWNER. THIS PROGRAM SHALL INCLUDE SUCH ITEMS AS, BUT NOT LIMITED TO, PAINTING OF STRUCTURAL STEEL, PROTECTIVE COATING FOR CONCRETE, SEALANTS, CAULKED JOINTS, EXPANSION JOINTS, CONTROL JOINTS, SPALLS AND CRACKS IN CONCRETE, AND PRESSURE WASHING OF EXPOSED STRUCTURAL ELEMENTS EXPOSED TO A SALT ENVIRONMENT OR OTHER HARSH CHEMICALS. 15. THE STRUCTURAL ENGINEER'S ROLE DURING CONSTRUCTION A. THE ENGINEER SHALL NOT HAVE CONTROL NOR CHARGE OF, AND SHALL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. B. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF THE STRUCTURAL ENGINEER IS SOLELY FOR THE PURPOSE OF BECOMING GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF THE WORK COMPLETED AND DETERMINING, IN GENERAL, IF THE WORK OBSERVED IS BEING PERFORMED IN A MANNER INDICATING THAT THE WORK, WHEN

FULLY COMPLETED, WILL BE IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE

OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR. 16. WATERPROOFING OF THE BUILDING ENVELOPE IS OF CRITICAL IMPORTANCE TO LONG-TERM STRUCTURAL PERFORMANCE. WATERPROOFING DESIGN SHALL BE THE RESPONSIBILITY OF THE ARCHITECT/CONTRACTOR AND SHALL BE IN ACCORDANCE WITH BEST PRACTICES FOR THE LOCALITY AND THE PARTICULAR ASSEMBLY.

1. WORK SHALL BE PERFORMED BY A QUALIFIED CONSTRUCTION CONTRACTOR AND SUBCONTRACTOR EXPERIENCED IN THIS TYPE OF WORK. SUCH KNOWLEDGE SHALL INCLUDE MAKING ALLOWANCES FOR PERFORMING WORK OF THIS NATURE FOLLOWING INDUSTRY STANDARDS OF CARE. 2. THE CONSTRUCTION CONTRACTOR AND SUBCONTRACTORS SHALL UNDERSTAND THE NATURE OF DRAWING PRODUCTION AND COORDINATION BETWEEN CONSULTANTS AND SHALL NOT ENTER INTO A CONTRACT BASED ON DRAWINGS THAT ARE BELIEVED TO CONTAIN DISCREPANCIES OR ARE OTHERWISE INCOMPLETE UNLESS PROPER ALLOWANCES HAVE BEEN MADE FOR COST IMPLICATIONS THAT MAY ARISE DUE TO FUTURE DRAWING CHANGES MADE IN PREPARATION OF FINAL CONSTRUCTION DOCUMENTS. 3. IN THE COURSE OF PRODUCING AND ISSUING DRAWINGS, VARIOUS STAGES OF COMPLETION ARE DEVELOPED. THE CONSTRUCTION CONTRACTOR AND SUBCONTRACTORS SHALL UNDERSTAND

THE PURPOSE AND CONTENT CONTAINED IN PERMIT, PRICING, AND CONSTRUCTION DRAWINGS. COST IMPLICATIONS AND CONTRACTIBILITY ARE THE RESPONSIBILITY OF THE CONSTRUCTION

1. NO PROVISIONS FOR ANY FUTURE EXPANSION HAVE BEEN MADE IN THE STRUCTURAL DESIGN

CONTRACTOR AND SUBCONTRACTORS UNLESS PRIOR ARRANGEMENTS HAVE BEEN MADE WITH THE OWNER.

1. ALL REQUESTS FOR SUBSTITUTIONS OF MATERIALS OR DETAILS SHOWN IN THE CONTRACT DOCUMENTS SHALL BE SUBMITTED FOR APPROVAL DURING THE BIDDING PERIOD. ONCE BIDS ARE ACCEPTED, PROPOSED SUBSTITUTIONS WILL BE CONSIDERED ONLY WHEN THEY ARE OFFICIALLY SUBMITTED WITH AN IDENTIFIED SAVINGS TO BE DEDUCTED FROM THE

REQUEST FOR INFORMATION (RFI)

D. DATE RESPONSE NEED BY

1. RFI'S MUST INCLUDE A TRANSMITTAL SHEET THAT INDICATES THE FOLLOWING: B. RFI CATEGORY: a. REQUEST FOR SUBSTITUTION b. CORRECTIVE REPAIR c. ADDITIONAL INFORMATION REQUIRED d. DISCREPANCY BETWEEN CONSTRUCTION DOCUMENTS C. DATE SUBMITTED

E. SUBMITTED BY (INCLUDE EMAIL AND PHONE NUMBER) F. RFI DESCRIPTION INCLUDING: a. SHEET NUMBER, DETAIL AND/OR SPECIFICATION NUMBER IF APPLICABLE b. SKETCHES IF APPLICABLE

C. PHOTOS IF APPLICABLE.

1. SUBMITTAL LIST AND SCHEDULE A. THE GENERAL CONTRACTOR SHALL PREPARE A DETAILED LIST AND SCHEDULE OF ALL SUBMITTAL ITEMS TO BE SENT TO THE STRUCTURAL ENGINEER PRIOR TO THE START OF CONSTRUCTION. THIS LIST SHALL BE UPDATED AND REVISED AS THE JOB PROGRESSES.

A. ALL SUBMITTALS MUST BE REVIEWED AND ELECTRONICALLY STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL TO THE DESIGN TEAM AS NO EXCEPTIONS. B. ALL SUBMITTALS MUST INCLUDE A TRANSMITTAL SHEET WHICH INDICATES: a. Submittal number per the following format: e.g. 03 30 00-01.00 (Division, Submittal # for Division, Issue # - the example indicates the first submittal, first issue of a

b. BRIEF DESCRIPTION OF SUBMITTAL CONTENTS d. REQUESTED RETURN DATE

e. ISSUING PARTY INCLUDING NAME, PHONE NUMBER AND EMAIL C. CONTRACTOR SHALL PROVIDE THE SUBMITTAL IN ELECTRONIC (PDF) FORMAT. SUBMITTALS SHALL NOT BE SCANNED COPIES OF PRINTED DOCUMENTS. D. THE OMISSION FROM THE SHOP DRAWINGS OF ANY MATERIALS REQUIRED BY THE CONTRACT DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING AND INSTALLING SUCH MATERIALS, REGARDLESS OF WHETHER SHOWN OR COMMENTED IN THE SHOP DRAWING

E. THE CONTRACTOR MUST ALLOW A MINIMUM OF 14 DAYS FOR STRUCTURAL REVIEW OF ALL SUBMITTALS. THE CONTRACTOR CAN REQUEST AN EXPEDITED REVIEW AT AN AGREED UPON FEE WITH F. STRUCTURAL STEEL SUBMITTALS MUST BE ACCOMPANIED BY THE SDS/2 OR TEKLA MODEL WHICH WILL BE USED BY THE DESIGN TEAM AS A VISUAL AID TO THE SHOP DRAWINGS. 3. REFER TO THE SPECIFICATIONS FOR A LIST OF ALL THE REQUIRED SUBMITTALS.

4. ENGINEER REVIEW STAMP DESIGNATIONS: ALL DESIGNATIONS ARE INDICATIVE OF A REVIEW FOR GENERAL CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS.

a. NO ITEMS WERE FOUND TO BE IN CONFLICT WITH THE CONSTRUCTION DOCUMENTS, NO "FOR REVIEW" RESUBMITTAL REQUIRED B. EXCEPTIONS NOTED a. ITEMS WERE FOUND IN CONFLICT WITH THE CONSTRUCTION DOCUMENTS AND NEED TO BE REVISED PRIOR TO SUBMITTING "FOR CONSTRUCTION" SUBMITTAL C. REVISE AND RESUBMIT

a. SIGNIFICANT ITEMS WERE FOUND IN CONFLICT WITH THE CONSTRUCTION DOCUMENTS. THE SUBMITTAL NEEDS TO BE RESUBMITTED "FOR REVIEW"

D. NOT REVIEWED g. THE SUBMITTAL WAS NOT STRUCTURAL. E. FOR INFORMATION ONLY a. THE SUBMITTAL DID NOT REQUIRE REVIEW BUT HAS BEEN FILED FOR THE RECORD.

F. IMPACT TO STRUCTURE a. THE SUBMITTAL HAS BEEN REVIEWED FOR THE STRUCTURALLY IMPACT TO THE STRUCTURE ONLY

1. CONSTRUCTION OR WORK FOR WHICH A PERMIT IS REQUIRED SHALL BE SUBJECT TO INSPECTION BY THE BUILDING OFFICIAL AND SUCH CONSTRUCTION OR WORK SHALL REMAIN ACCESSIBLE AND EXPOSED FOR INSPECTION PURPOSES UNTIL APPROVED. REQUIRED TESTING INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

A. FOUNDATION INSPECTION: a. FOOTING AND FOUNDATION INSPECTIONS SHALL BE MADE AFTER EXCAVATIONS FOR FOOTINGS ARE COMPLETE AND ANY REQUIRED REINFORCING STEEL IS IN PLACE. FOR CONCRETE FOUNDATIONS, ANY REQUIRED FORMS SHALL BE IN PLACE PRIOR TO INSPECTION. MATERIALS FOR THE FOUNDATION SHALL BE ON THE JOB, EXCEPT WHERE CONCRETE IS READY MIXED IN ACCORDANCE WITH ASTM C94, THE CONCRETE NEED NOT BE ON THE JOB. B. CONCRETE SLAB AND UNDER-FLOOR INSPECTION:

a. Concrete slab and under-floor inspections shall be made after in-slab or under-floor reinforcing steel and building service equipment, conduit. PIPING ACCESSORIES AND OTHER ANCILLARY EQUIPMENT ITEMS ARE IN PLACE, BUT BEFORE ANY CONCRETE IS PLACED OR FLOOR SHEATHING INSTALLED, INCLUDING C. FRAME INSPECTION

a. Framing inspections shall be made after the roof deck or sheathing, all framing, fireblocking and bracing are in place and pipes, chimneys and VENTS TO BE CONCEALED ARE COMPLETE AND THE ROUGH ELECTRICAL, PLUMBING, HEATING WIRES, PIPES AND DUCTS ARE APPROVED. SPECIAL INSPECTIONS - REFER TO THE STATEMENT OF SPECIAL INSPECTION FOR REQUIRED STRUCTURAL SPECIAL INSPECTIONS 3. ADDITIONAL INSPECTIONS REQUIRED BY STRUCTURAL ENGINEER: REFERENCE SPECIFICATIONS

 DRAWING VIEWS LABELED AS TYPICAL A. PARTIAL PLANS, ELEVATIONS, SECTIONS, DETAIL OR SCHEDULES LABELED WITH "TYPICAL" AT THE BEGINNING OF THEIR TITLE SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THE THOSE SPECIFICALLY SHOWN. THE APPLICABILITY OF THE CONTENT OF THESE VIEWS TO LOCATIONS ON THE PLAN CAN BE DETERMINED FROM THE TITLE OF THE VIEW. SUCH VIEWS SHALL APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION, DECISIONS REGARDING APPLICABILITY OF THESE "TYPICAL" VIEWS SHALL BE DETERMINED BY THE STRUCTURAL ENGINEER. 2. COLOR: THESE DRAWINGS ARE INTENDED TO BE VIEWED IN COLOR. IF THE FOLLOWING COLORS ARE NOT RED. GREEN BLUE THEN THIS DRAWING SET IS NOT BEING VIEWED AS INTENDED. 3. SCALE: IF THE FOLLOWING LINE IS NOT EXACTLY 1" LONG, THEN THIS SET HAS BEEN SCALED.

1. DETAILING OF CONCRETE REINFORCEMENT BARS AND ACCESSORIES SHALL CONFORM TO THE RECOMMENDATIONS OF THE ACI DETAILING MANUAL ACI 315 AND SP-66 (ACI DETAILING MANUAL)

2. CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615, GRADE 60, WITH SUPPLEMENTARY REQUIREMENTS. 3. COMPLETE REINFORCING PLACEMENT DRAWINGS PREPARED IN ACCORDANCE WITH ACI315 SHALL BE REVIEWED BY THE ENGINEER AND AVAILABLE ON THE JOB SITE PRIOR TO &

DURING THE PLACING OF CONCRETE. 4. ALL REINFORCING STEEL SHALL BE SUPPORTED AT DESIGNED DEPTH USING PLASTIC OR METALLIC CHAIRS SPACED AT 48" OC IN ALL DIRECTIONS TO SUPPORT FULL LENGTH OF REINFORCEMENT. IF ALTERNATE IS TO BE USED, PROPOSED CHAIR IS TO BE SUBMITTED IN WRITING AND APPROVED BY E.O.R. 5. END HOOKS, DEVELOPMENT LENGTHS, AND SPLICES SHALL CONFORM TO THE REQUIREMENTS OF ACI 318.

6. REINFORCEMENT MAY BE PLACED IN BUNDLES OF NOT MORE THAN TWO W/ THE CLEAR DISTANCE BETWEEN BUNDLES OF REINFORCEMENT OR TENDONS OF 3 INCHES MINIMUM. CONCRETE COVER NOT SPECIFICALLY DETAILED ON THE DRAWINGS SHALL BE IN ACCORDANCE WITH ACL 318. 7. COVERAGE: THE FOLLOWING SHALL BE THE MINIMUM REINFORCEMENT CONCRETE COVERAGE (INCLUDING TENDONS)

B. CONCRETE EXPOSED TO EARTH OR WEATHER: a. NO. 6 AND LARGER b. NO. 5 BAR AND SMALLER

C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND 3/4" 8. UNO, ALL LAP SPLICES OF REINFORCEMENT IN GROUND SUPPORTED ELEMENTS (GRADE BEAMS, FOOTINGS, MAT FOUNDATIONS) SHALL BE A MINIMUM OF 48Ø, WHERE Ø = THE DIAMETER OF THE BAR, REINFORCEMENT IN ELEVATED STRUCTURES SHALL REFER TO THE TYPICAL LAP SPLICE DETAIL.

REINFORCED CONCRETE - 03 30 00

A. CONCRETE WORK SHALL CONFORM TO THE LATEST ED. OF ACI 301 (SPECIFICATIONS FOR STRUCTURAL CONCRETE) UNO IN THESE CONSTRUCTION DOCUMENTS.

A. ALL CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED REGISTERED ENGINEER, MIX DESIGN DATA RESULTS EITHER COMPLYING WITH THE FIELD EXPERIENCE OR TRIAL MIXTURE METHOD PER ACI 301/318 SHALL BE SUBMITTED FOR EACH CONCRETE MIX, PROPORTIONS OF MATERIALS FOR CONCRETE SHALL BE ESTABLISHED TO a. PROVIDE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO FORMS AND AROUND REINFORCEMENT UNDER CONDITIONS OF PLACEMENT TO BE EMPLOYED, WITHOUT SEGREGATION OR EXCESSIVE BLEEDING.

b. MEET REQUIREMENTS FOR APPLICABLE EXPOSURE REQUIREMENTS. c. MEET OR EXCEED THE REQUIRED F'C. d. NOT EXCEED THE MAXIMUM W/C RATIO B. THE CONTRACTOR MUST INDICATE THE PLANNED PLACEMENT METHOD FOR EACH CONCRETE MIX.

C. WATER MAY NOT BE ADDED TO THE CONCRETE MIX IN THE FIELD TO ADJUST THE SLUMP (RETEMPERING) WITHOUT THE SPECIAL INSPECTOR BEING PRESENT TO CONFIRM THAT IT DOES NOT EXCEED THE W/C RATIO OR DESIGN SLUMP. THE READY-MIX COMPANY MUST INDICATE THE MAXIMUM WATER WITHHELD AT THE PLANT. IF THE AMOUNT, THE W/C RATIO OR DESIGN SLUMP IS EXCEEDED D. SLUMP TESTS SHALL BE PERFORMED AT THE POINT OF PLACEMENT WITH THE EXCEPTIONS NOTED BELOW: a. IF THE POINT OF DELIVERY IS THE SAME AS THE POINT OF PLACEMENT (CONCRETE IS PLACED DIRECTLY FROM TRUCK)

b. IF THE CONTRACTOR HAS DEVELOPED AN ACCEPTABLE (APPROVED BY SPECIAL INSPECTOR AND EOR) CORRELATION BETWEEN FRESH CONCRETE PROPERTIES AT THE POINT OF DELIVERY AND E. AIR-ENTRAINED CONCRETE SHALL NOT BE USED IN ANY NORMALWEIGHT CONCRETE FLOOR SLAB THAT IS TO RECEIVE A HARD-TROWELED FINISH. CONCRETE MATERIALS:

A. HYDRAULIC CEMENT: a. USE ASTM C150 TYPE I OR TYPE III, EXCEPT WHERE SPECFICALLY INDICATED OTHERWISE IN TABLE BELOW. a. FLY ASH MAY BE USED TO REPLACE A PORTION OF THE PORTLAND CEMENT, SUBJECT TO THE APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER NOT TO EXCEED THE AMOUNTS LISTED IN THE CONCRETE TABLE.

C. NORMAL WEIGHT AGGREGATE: b. MATERIAL CERTIFICATES FROM THE AGGREGATE SUPPLIER MUST BE SUBMITTED WITH THE CONCRETE MIX DESIGN

c. RIVER ROCK OR PEA STONE AGGREGATES ARE NOT ACCEPTABLE.

b. USE ASTM C618 CLASS C OR F

a. COMPLY WITH THE REQUIREMENTS OF ASTM C1602. A. FOR CORROSION PROTECTION OF REINFORCEMENT IN CONCRETE, MAXIMUM WATER SOLUBLE ION CONCENTRATIONS IN HARDENED CONCRETE AT AGES FROM 28 TO 42 DAYS CONTRIBUTED FROM THE THE INGREDIENTS INCLUDING WATER, AGGREGATES, CEMENTITIOUS MATERIALS, AND ADMIXTURES SHALL NOT EXCEED THE LIMITS INDICATED IN THE TABLE BELOW.

A. CONCRETE SHALL BE PLACED CAREFULLY SO AS NOT TO DEVIATE REINFORCEMENT FROM THE DESIGN LOCATION.

B. CONCRETE SHALL BE PROPERLY VIBRATED, ESPECIALLY AROUND POST-TENSIONED ANCHORAGES AND CONGESTED AREAS SUCH AS COLUMN JOINTS. C. PLACEMENT OF CONCRETE SHALL BE COMPLETED WITHIN 90 MINUTES AFTER THE INTRODUCTION OF THE MIXING WATER, IN ACCORDANCE WITH ASTM C94.

D. TOLERANCES FOR CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST ED. OF ACI 117 (SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS).

ELEMENT	f'c	EXPOSURE CATEGORY	MAX CL-	MAX FLY ASH	MAX W/CM RATIO	MAX COARSE AGG. SIZE	MIN. AIR CONTENT
INTERIOR SLABS-ON-GROUND ^A	3,500	F0,S0,P(W)0,C1	0.30	20%	0.45	1"	N/A

. FINISHING: FINISHING OPERATIONS AND BULL FLOATING SHALL BE COMPLETED PRIOR TO THE ACCUMULATION OF BLEED WATER ON THE SURFACE. FINAL FINISHING SHOULD NOT BEGIN UNTIL THE

BLEED WATER HAS EVAPORATED AND THE WATER SHEEN HAS DISAPPEARED FROM THE SURFACE. TROWELLING THE WET SURFACE WILL WEAKEN IT AND CAN RESULT IN SURFACE CRAZING AND DUSTING. REFER TO ARCHITECTURE FOR FINAL FINISHING REQUIREMENTS (STEEL TROWEL, BROOM FINISH, ETC.). 2. EXCESSIVE BLEED WATER REMOVAL: BLEEDING (FREE SURFACE WATER) OCCURS AS AGGREGATES SETTLE IN THE PLACED CONCRETE, DISPLACING WATER TO THE SURFACE. IF ALLOWED TO REMAIN ON THE SURFACE, IT DILUTES THE CEMENT CONTENT, SIGNIFICANTLY REDUCING THE STRENGTH NEAR THE SURFACE. THE CONTRACTOR SHALL REMOVE BLEED WATER. ONE METHOD OF REMOVING

BLEED WATER IS TO DRAG THE SURFACE WITH A GARDEN HOSE. 3. CONTROL JOINTS (SAW CUTS) IF REQUIRED, SHALL BE MADE AS SOON AS THE CONCRETE CAN SUPPORT THE WEIGHT OF WORKER AND THE EQUIPMENT 4. CURING: IMMEDIATELY AFTER FINISHING THE SLAB, THE SLAB MUST BE CURED FOR A MINIMUM OF 7 DAYS BY EITHER:

A. APPLYING A WATER-BASED DISSIPATING RESIN TYPE CURING COMPOUND WHICH CHEMICALLY BREAKS DOWN AFTER APPROXIMATELY 4 WEEKS. MEMBRANE FORMING COMPOUND SHALL ADHERE TO ASTMIC 309, TYPE O OR 1D, CLASS B. THE COMPOUND SHALL BE APPLIED IN TWO COATS, EACH AT RIGHT ANGLES TO THE OTHER TO ENSURE A TIGHTLY SEALED SURFACE. B. WET-CURED BY KEEPING THE SURFACE WET AFTER THE CONCRETE HAS SET AND FINISHING IS COMPLETE.

CONCRETE CRACKS

1. EVEN WITH PROPER DESIGN AND CONSTRUCTION ALL CONCRETE WILL CRACK, PLASTIC SHRINKAGE CRACKS CONTINUE TO OPEN AS THE SLAB AGES UP TO APPROXIMATELY ONE YEAR, AND REACH 50% OF THEIR FINAL SIZE IN APPROXIMATELY 30 DAYS, MANY PLASTIC SHRINKAGE CRACKS ARE VERY SMALL WHICH MAKE THEM BARELY NOTICEABLE AND INCONSEQUENTIAL TO THE STRUCTURAL PERFORMANCE OF THE CONCRETE. CRACKS WIDER THAN APPROXIMATELY 0.06" ARE LIKELY INDICATIVE OF CONCRETE THAT DID NOT ADHERE TO THE CONCRETE MIX REQUIREMENTS, PLACEMENT, FINISHING AND CURING REQUIREMENTS. IN ADDITION TO BEING VISIBLY OBJECTIONABLE, IF THESE CRACKS EXIST IN REGULAR CONSISTENCY, THEY MAY REDUCE THE STRUCTURAL PERFORMANCE OF THE CONCRETE AND REQUIRE STRUCTURAL REPAIR (FILL CRACKS WITH EPOXY PRODUCT) OR REPLACEMENT. 2. PLASTIC SHRINKAGE CRACKS: OCCUR SOON AFTER THE CONCRETE IS PLACED AND WHILE IT IS STILL PLASTIC. IT IS CAUSED BY OVERLY RAPID DRYING OF THE SURFACE, USUALLY DUE TO HOT

ETEMPERING (ADDING WATER TO CONCRETE ON-SITE)

WEATHER, HIGH WIND, LOW HUMIDITY, OR A DELAY IN APPLYING THE CURING MEMBRANE.

AND THE READY MIX SUPPLIER HAD INDICATED THE VOLUME OF WITHHELD (TRIM) WATER.

1. WATER SHALL NOT BE ADDED TO THE MIX TRUCKS ON THE JOB SITE IN EXCESS OF THE VOLUME OF WATER THAT IS SPECIFICALLY INDICATED TO HAVE BEEN WITHHELD FROM THE READY MIX . PRIOR TO ADDING WATER, THE CONTRACTOR SHALL CONFIRM THAT THE MIX IS NOT ALREADY WITHIN TOLERANCE ON SLUMP. WATER SHALL ONLY BE ADDED IF THE SLUMP IS BELOW TOLERANCE

FLOOR FLATNESS AND LEVELNESS

1. SPECIFIED OVERALL VALUES FOR FLATNESS (SOF,) AND LEVELNESS (SOF,) SHALL CONFORM TO THE VALUES LISTED BELOW FOR THE FLOOR SURFACE CLASSIFICATION NOTED FOR EACH SLAB CATEGORY NOTED.

CLASSIFICATION SOFE SOFE TYPICAL APPLICABLIITY OF CLASSIFICATION 15 SLABS IN NONPUBLIC AREAS, MECHANICAL ROOMS, SURFACES TO HAVE THICK-SET TILE OR A TOPPING, AND PARKING STRUCTURES

25 INDUSTRIAL SLABS, EXPOSED SLABS IN PUBLIC SPACES, SLABS TO RECEIVE THIN-SET FLOORING 35. ICE OR ROLLER RINKS: GYMNASIUM FLOORS SCHEDULED TO RECEIVE WOOD PLAYING FLOOR D VFRY FLAT E. SUPER FLAT 60 40 MOVIE OR TELEVISION STUDIOS

2. MINIMUM LOCAL VALUES FOR FLATNESS (MLF_t) AND LEVELNESS (MLF_t) SHALL EQUAL 3/5 OF THE SOF_t AND SOF_t VALUES, RESPECTIVELY, UNLESS NOTED OTHERWISE. < FOR INDUSTRIAL SLABS, MLF_t SHALL BE 23 AND MLF1 SHALL BE 17. >THE MLF1 AND MLF1 VALUES SHALL APPLY TO THE MINIMUM AREAS BOUNDED BY THE COLUMN LINES AND HALF-COLUMN LINES, OR THE MINIMUM AREAS BOUNDED BY THE CONSTRUCTION AND CONTRACTION JOINTS, WHICHEVER ARE THE SMALLER AREAS. 3. THE SOF, AND MFL, TOLERANCE VALUES SHALL APPLY ONLY TO LEVEL SLABS-ON-GROUND OR TO LEVEL, UNCAMBERED SUSPENDED SLABS THAT ARE SHORED SUCH THAT IT CANNOT DEFLECT

FROM THE TIME THE FLOOR IS PLACED TO THE TIME IT IS MEASURED. 4. SLABS SPECIFIED TO SLOPE SHALL HAVE A TOLERANCE FROM THE SPECIFIED SLOPE OF 3/8" IN 10 FEET AT ANY POINT.

STRUCTURAL STEEL - 05 12 00

A. ALL STRUCTURAL STEEL IS TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF AISC 360 (SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS).

a. Steel located within permanently conditioned, non-corrosive space and within the building envelope does not require shop paint unless steel wil BE EXPOSED TO THE ELEMENTS FOR A YEAR OR MORE DURING CONSTRUCTION. b. ALL STEEL LOCATED IN UNCONDITIONED SPACE AND/OR OUTSIDE THE BUILDING ENVELOPE SHALL EITHER BE HOT-DIP GALVANIZED OR PAINTED WITH A ZINC RICH PAINT. THE CONTRACTOR SHALL PREPARE THE STEEL IN ACCORDANCE WITH THE GALVANIZING OR PAINT REQUIREMENTS. :. WHERE GALVANIZATION IS REQUIRED, STRUCTURAL STEEL MEMBERS, FABRICATIONS, AND WELDED ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION BY HOT DIP PROCESS IN ACCORDANCE WITH ASTM A123. WEIGHT OF ZINC COATING SHALL CONFORM TO THE REQUIREMENTS SPECIFIED UNDER "WEIGHT OF COATING" IN ASTM A123

OR ASTM A386, AS APPLICABLE. THE AFFECTED PORTIONS OF FIELD WELDED GALVANIZED ASSEMBLIES SHALL BE FIELD PAINTED WITH ZINC RICH CORROSION RESISTANT

d. CLOSED SHAPES SUCH AS TUBES AND PIPES TO BE GALVANIZED THAT REQUIRE A HOLE FOR FABRICATION SHALL HAVE THE HOLE EITHER FILLED WITH WELD MATERIAL AND GALVANIZATION REPAIRED OR SEALED WITH EXTERIOR GRADE SEALANT APPROPRIATE FOR THAT USE. 2. STRUCTURAL STEEL MEMBERS TO RECEIVE FIREPROOFING SHALL NOT BE PRIMED NOR PAINTED. FIREPROOFING MATERIAL THICKNESS SHALL BE INCREASED AS REQUIRED FOR

STEEL MEMBERS NOT CONFORMING TO THE MINIMUM SIZES INDICATED IN THE U.L. FIRE RESISTANCE DIRECTORY-VOLUME 1 AND FOR STEEL MEMBERS DETERMINED D. BEAMS SHALL BE CAMBERED UPWARD WHERE SHOWN ON THE CONTRACT DOCUMENTS. WHERE NO UPWARD CAMBER IS INDICATED, ANY MILL CAMBER SHALL BE DETAILED UPWARD IN THE BEAMS.

E. THE CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER OF ANY MISFABRICATED STRUCTURAL STEEL PRIOR TO ERECTION OF SAME. f. Penetrations shall not be cut in structural steel members unless so indicated in the drawings or as reviewed by the engineer. A. ALL HOT ROLLED STEEL PLATES, SHAPES AND BARS SHALL BE NEW STEEL CONFORMING TO ASTM SPECIFICATION A6, LATEST ED.

a W-SHAPES b. Channels, angles, plates: A36 c. RECTANGULAR HSS: A500, GR.C ($F_Y = 50 \text{ KSI}$) d. ROUND HSS: A500, GR.B $(F_Y = 42 \text{ KSI})$

A. STRUCTURAL STEEL SUBMITTALS MUST BE ACCOMPANIED BY THE SDS/2 OR TEKLA MODEL WHICH WILL BE USED BY THE DESIGN TEAM AS A VISUAL AID TO THE SHOP DRAWINGS B. SHOP DRAWINGS MUST BE PRODUCED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE. 4. CONNECTIONS

a. CONNECTION DESIGN: ALL STEEL CONNECTIONS NOT FULLY DETAILED WITHIN THESE DRAWINGS SHALL BE DESIGNED BY A CONNECTION ENGINEER TO BE HIRED BY THE CONTRACTOR. THE CONTRACTOR'S CONNECTION ENGINEER SHALL BE A PROFESSIONAL ENGINEER FAMILIAR WITH THE DESIGN OF SUCH ELEMENTS AND SHALL BE LICENSED TO PRACTICE ENGINEERING IN THE STATE IN WHICH THE PROJECT IS BEING CONSTRUCTED. CONNECTION DESIGNS AND DETAILS SHOWN ON THE DRAWINGS ARE CONCEPTUAL. THE FINAL CONFIGURATION, PLATE AND ANGLE THICKNESS, NUMBER OF BOLTS ETC. SHALL BE DESIGNED BY THE CONNECTION ENGINEER. b. Structural Bolts: All Bolts In Structural Connection shall conform to ASTM A325 type 1, unless noted otherwise on the drawings.

:. THREADED ROUND STOCK: THREADED RODS SHALL CONFORM TO ASTM F1554 GR55 S1 d. WELDING: UNLESS NOTED OTHERWISE, ELECTRODES FOR WELDING SHALL CONFORM TO E70XX (SMAW), F7XX-EXX (SAW), ER70S-X (GMAW) OR E8XT-X (FCAW). FIELD WELDING TO BE DONE BY CERTIFIED WELDERS FOR STRUCTURAL STEEL. CONTINUOUS INSPECTION BY A SPECIAL INSPECTOR IS REQUIRED. SHOP WELDS MUST BE PERFORMED IN FABRICATION SHOP THAT IS CERTIFIED BY THE AUTHORITY HAVING JURISDICTION.

e. ANCHOR RODS: ALL ANCHOR RODS SHALL CONFORM TO ASTM F1554. THE TYPICAL SIZE SHALL BE 3/4"Ø AND SHALL BE EMBEDDED A MINIMUM OF 1'-0" WITH A HEAVY HEX NUT AT THE EMBEDDED UNLESS NOTED OTHERWISE. ANCHOR RODS SHALL BE GR. 55 \$1 UNO. . GROUT: GROUT BELOW STRUCTURAL STEEL BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI WHEN BEARING ON A 3,000 PSI CONCRETE OR LESS.

3. SPLICING STEEL MEMBERS WHERE NOT DETAILED ON THE DRAWINGS IS PROHIBITED WITHOUT WRITTEN APPROVAL FROM EOR. I. HEADED CONCRETE STUD ANCHORS ("HSA") SHALL BE NELSON OR KSM HEADED CONCRETE ANCHORS (OR APPROVED ALTERNATIVE), AND SHALL CONFORM TO ASTM A108, GRADES C-1010 THROUGH C-1020. ANCHORS SHALL BE AUTOMATICALLY END WELDED WITH SUITABLE STUD WELDING EQUIPMENT IN THE SHOP OR IN THE FIELD. WELDING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE NELSON STUD WELDING COMPANY OR THE KSM WELDING SYSTEMS COMPANY. DEFORMED BAR ANCHORS ("DBA"), SHALL BE NELSON OR KSM DEFORMED BAR ANCHORS (OR APPROVED ALTERNATIVE), AND SHALL BE MADE FROM COLD DRAWN WIRE per astm a496 conforming to astm a108 with a minimum yield strength of 70 ksi. anchors shall be automatically end welded with suitable welding EQUIPMENT IN THE SHOP OR IN THE FIELD. WELDING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE NELSON STUD WELDING COMPANY OR THE KSM

WELDING SYSTEMS COMPANY . ALL FILLET WELDS SHALL HAVE A MINIMUM SIZE PER THE FOLLOWING, UNO IN SPECIFIC DETAILS. MATERIAL THICKNESS OF THINNER PART JOINED "T"
 SIZE OF FILLET WELD

 T= 1/4 T = 5/16 T = 7/16 T = 1/2 T = 3/4 T > 3/4"

WOOD FRAMING SPECIFICATIONS (06 10 00)

1. WOOD FRAMING SIZES, FIRESTOPS, ANCHORAGE, FURRING AND CONNECTORS NOT SHOWN ON THE CONSTRUCTION DOCUMENTS SHALL AT A MINIMUM ADHERE TO THE PRESCRIPTIVE DESIGN PER THE BUILDING CODE.

2. STRUCTURAL LUMBER IN PERMANENTLY CONDITIONED SPACE SHALL MEET OR EXCEED THE FOLLOWING GRADES, PRODUCT LINE OR CRITERIA:

b. STUD GRADE DOUGLAS FIR-LARCH C. VERTICAL STUD USE ONLY CERTIFIED FINGER-JOINTED OF HEM-FIR. SOUTHERN PINE OR DOUGLAS-FIR

 HRA DESIGNATION (HEAT RESISTANT ADHESIVE) REQUIRED FOR STUDS IN FIRE-RESISTANCE RATED ASSEMBLIES. a. NO.2 GRADE SOUTHERN YELLOW PINE b. NO.2 GRADE DOUGLAS FIR-LARCH C. LAMINATED VENEER LUMBER (LVL) BEAM / HEADER / GIRDER

a. WEYERHAEUSER 2.0E MICROLAM LVL b. BOISE CASCADE VERSA-LAM 2.0E 3100Fb D. GLUED LAMINATED (GLULAM) BEAM / HEADER / GIRDER a. 3½" & 5½" WIDE: ANTHONY POWER BEAM 3000Fb - 2.1E - 300Fv b. 7" WIDE: ANTHONY POWER BEAM 2800Fb - 2.1E - 300Fv E. RAFTERS:

a. NO.2 GRADE SOUTHERN YELLOW PINE b. NO.2 GRADE DOUGLAS FIR-LARCH c. NO.2 STRUCTURAL FINGER-JOINTED OF HEM-FIR, SOUTHERN PINE OR DOUGLAS FIR HRA DESIGNATION (HEAT RESISTANT ADHESIVE) REQUIRED FOR STUDS IN FIRE-RESISTANCE RATED ASSEMBLIES

a. DIMENSIONAL LUMBER/TIMBERS: NO.2 GRADE SOUTHERN YELLOW PINE OR DOUGLAS FIR-LARCH b. Parallel Strand Lumber (PSL): Trusjoist 1.8E Parallam PSL Posts

a. NO.3 GRADE SOUTHERN YELLOW PINE b. NO.3 GRADE DOUGLAS FIR-LARCH

A. DIMENSION LUMBER a. Same species and grades as listed above, however they must be pressure-treated.

A. WOOD STRUCTURAL PANELS. WHEN USED STRUCTURALLY (INCLUDING THOSE USED FOR SIDING, ROOF AND WALL SHEATHING, SUBFLOORING, DIAPHRAGMS AND BUILT-UP MEMBERS). SHALL BE APA PERFORMANCE-RATED CONFORMING TO DOC PS 1, DOC PS 2 OR ANSI/APA PRP 210, EACH PANEL OR MEMBER SHALL BE IDENTIFIED FOR GRADE.

a. SUBFLOOR: 23/32 PERFORMANCE CATEGORY APA RATED STURD-I-FLOOR. 24 o.c., EXPOSURE 1 b. Sheathing/decking: 7/16 (unless noted otherwise, ref shear wall schedule) performance category apa rated sheathing, 32/16, exposure 1 B. WOOD STRUCTURAL PANELS WHEN PERMANENTLY EXPOSED IN OUTDOOR APPLICATIONS SHALL BE OF EXTERIOR TYPE, EXCEPT THAT WOOD STRUCTURAL PANEL ROOF

5. ALL LUMBER SHALL BE KILN DRIED WITH A MAXIMUM MOISTURE CONTENT OF 19%. 6. ALL GLUED-LAMINATED (GLULAM) MEMBERS SHALL ADHERE TO ANSI A 190.1 & ASTM D 3737 AND BE MANUFACTURED BY ANTHONY POWER BEAM (3000Fb - 2.1E).

A. NAILS AND STAPLES SHALL CONFORM TO REQUIREMENTS OF ASTM F 1667. NAILS USED FOR FRAMING AND SHEATHING CONNECTIONS SHALL HAVE MINIMUM AVERAGE BENDING YIELD STRENGTHS AS FOLLOWS: 80 KIPS PER SQUARE INCH (KSI) (551 MPA) FOR SHANK DIAMETERS LARGER THAN 0.177 INCH (4.50 MM) BUT NOT LARGER THAN 0.254 INCH (6.45 MM), 90 KSI (620 MPA) FOR SHANK DIAMETERS LARGER THAN 0.142 INCH (3.61 MM) BUT NOT LARGER THAN 0.177 INCH (4.50 MM) AND 100 KSI (689 MPA) FOR SHANK DIAMETERS OF AT LEAST 0.099 INCH (2.51 MM) BUT NOT LARGER THAN 0.142 INCH (3.61 MM).

. TRUSSES SHALL BE DESIGNED BY THE TRUSS MANUFACTURER IN ACCORDANCE WITH THE TRUSS PLATE INSTITUTE "NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION" (ANSI/TPI 1-2014) AND SHALL CONFORM TO IBC §2303.4. THE DESIGN SHALL INCLUDE ALL TEMPORARY AND PERMANENT BRACING. TEMPORARY BRACING MAY REMAIN IN-PLACE IF IT DOES NOT INTERFERE WITH ARCHITECTURAL REQUIREMENTS.

SEALED BY AN ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED. THE TRUSS SUBMITTAL PACKAGE SHALL INCLUDE AT A MINIMUM:

d. BLOCKING REQUIREMENTS e. REQUIRED BEARING WIDTHS f. NUMBER OF PLIES IF GREATER THAN ONE g. LUMBER SPECIES AND GRADE

C. CALCULATIONS INCLUDING BUT NOT LIMITED TO: BUILDING CODE

 STRESS REDUCTION FACTORS USED FOR PLATES THE SHEAR WALL (IF SHEAR WALLS ARE ABOVE AND BELOW THE LARGE ALLOWABLE SHEAR LOAD SHALL APPLY). 5. TRUSS DEFLECTION LIMITS: TRUSSES SHALL BE LIMITED TO THE FOLLOWING DEFLECTION LIMITS:

B. PITCHED ROOF TRUSS : LIVE LOAD (L/240) TOTAL LOAD (L/180) C. SHALLOW (< = 4:12) PITCHED ROOF TRUSSES: LIVE LOAD (L/360) TOTAL LOAD (L/240) 6. CAMBER SHALL BE BUILT INTO ROOF TRUSSES TO COMPENSATE FOR VERTICAL DEFLECTION. THE CAMBER SHALL BE LARGEST AT THE MID-SPAN OF THE TRUSS. A. PITCHED ROOF TRUSS: 1.00 X DEFLECTION FROM ACTUAL DEAD LOAD.

FRAMING IS BELOW 1.5% b. THE CONSTRUCTION OF A WOOD FRAMED BUILDING REQUIRES AN UNDERSTANDING OF FRAMING TOLERANCES, SHRINKAGE, AND INTERACTION WITH DISSIMILAR c. ROUGH OPENINGS IN EXTERIOR WALLS SHALL BE UPSIZED APPROXIMATELY 1/2" TO ACCOMMODATE SHRINKAGE.

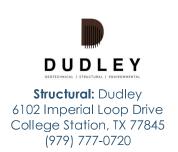
d. PROVIDE 1/8" WIDE JOINTS IN SHEATHING e. THE CONTRACTOR SHALL INCORPORATE DIFFERENTIAL VERTICAL MOVEMENT INTO THE DESIGN OF THE PLUMBING SYSTEM INCLUDING VERTICAL EXPANSION JOINTS, GAPS AROUND HORIZONTAL PLUMBING RUNS, AVOIDING HORIZONTAL PLUMBING RUNS IN LOAD BEARING STUDS. f. CARE SHALL BE TAKEN DURING CONSTRUCTION TO LIMIT THE MOISTURE EXPOSURE OF THE LUMBER, IF THE LUMBER DOES BECOME WET, MEASURES SHALL BE TAKEN TO BRING THE MOISTURE CONTENT BACK TO OR BELOW 15% PRIOR TO INSTALLING ARCHITECTURAL FINISHES.

10% IS AS FOLLOWS: 3rd STORY BOTTOM PLATE: FLOOR TRUSS: DOUBLE TOP PLATE: 0.067" 2ND STORY BOTTOM PLATE: FLOOR TRUSS:

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Review before Permit PERMIT REVISIONS

TYPICAL GENERAL NOTES

a. NO.3 GRADE SOUTHERN YELLOW PINE

b. NO.3 GRADE DOUGLAS FIR-LARCH

B. GLUED LAMINATED BEAM / HEADERS / GIRDER: a. POWER PRESERVED GLULAM BEAM (24F-V5M1/\$P) TREATED WITH COPPER GUARD AT 0.04 PCF OR CLEAR-GUARD AT 0.055 PCF.

BOND CLASSIFICATION, AND PERFORMANCE CATEGORY BY THE TRADEMARKS OF AN APPROVED TESTING AND GRADING AGENCY. THE PERFORMANCE CATEGORY VALUE SHALL BE USED AS THE "NOMINAL PANEL THICKNESS" OR "PANEL THICKNESS".

SHEATHING EXPOSED TO THE OUTDOORS ON THE UNDERSIDE IS PERMITTED TO BE EXPOSURE 1 TYPE. 7. ALL LUMBER SHALL BE IDENTIFIED BY THE GRADE MARK OF A LUMBER GRADING OR INSPECTION AGENCY THAT HAS BEEN APPROVED BY AN ACCREDITATION AGENCY THAT

10. FASTENERS FOR FIRE-RETARDANT TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED STEEL OR STAINLESS STEEL

2. SUBMITTALS: THE TRUSS MANUFACTURER SHALL PREPARE AND SUBMIT A TRUSS SUBMITTAL PACKAGE (PRODUCT DATA AND SHOP DRAWINGS) FOR THE WOOD TRUSSES TO THE CONTRACTOR. THE CONTRACTOR AFTER REVIEWING AND APPROVING THE TRUSS SUBMITTAL PACKAGE, SHALL FORWARD THE TRUSS SUBMITTAL PACKAGE TO DUDLEY FOR REVIEW. DUDLEY WILL REVIEW THE TRUSS SUBMITTAL PACKAGE FOR GENERAL CONFORMANCE WITH THE STRUCTURAL DRAWINGS. TRUSS SUBMITTAL PACKAGES SHALL BE PREPARED, SIGNED AND

B. SHOP DRAWINGS SHALL INCLUDE AT A MINIMUM a. PROJECT NAME, LOCATION AND BUILDING CODE b. LAYOUTS INCLUDING TEMPORARY AND PERMANENT BRIDGING REQUIREMENTS. c. PROFILES INCLUDING ALL JOINTS, BEARING POINTS, DEFLECTION RATIOS, AND REACTIONS.

h. SIZE, GAUGE AND LOCATION OF PLATE TRUSS TO TRUSS HARDWARE REQUIREMENTS NAME AND TRADEMARK OF PLATE MFR AND TRUSS FABRICATOR

3. DRAG TRUSS SHALL BE PROVIDED ABOVE AND BELOW ALL INTERIOR SHEAR WALLS. THE DRAG TRUSSES SHALL BE DESIGNED TO SUPPORT AN ALLOWABLE LINEAR LOAD EQUAL TO THAT OF 4. TRUSS RESTRAINT/BRACING METHODS SHALL BE IN ACCORDANCE WITH BCSI-B3 (PERMANENT RESTRAINT/BRACING OF CHORDS AND WEB MEMBERS) UNLESS NOTED OTHERWISE

7. TRUSSES SPANNING 60 FEET OR FURTHER A. THE TRUSS MFR. SHALL CONTRACT WITH A QUALIFIED REGISTERED DESIGN PROFESSIONAL FOR THE DESIGN OF THE TEMPORARY INSTALLATION RESTRAINT/BRACING AND THE PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT/BRACING FOR ALL TRUSSES WITH CLEAR SPANS 60 FEET OR GREATER.

g. THE APPROXIMATE WOOD SHRINKAGE ASSUMING ALL LUMBER IS SOUTHERN PINE WITH AN INSTALLED MOISTURE CONTENT OF 19% AND A FINAL MOISTURE CONTENT OF

 DOUBLE TOP PLATE: 0.067" 1ST STORY • BOTTOM PLATE: 0.034"

A. FLOOR TRUSSES LIVE LOAD (L/360) TOTAL LOAD (L/240

WOOD SHRINKAGE

a. REGARDLESS OF THE BUILDING TYPE, BUILDING DESIGNS MUST COMPENSATE FOR THE FACT THAT WOOD SHRINKS AS IT DRIES. SHRINKAGE CONTINUES UNTIL WOOD REACHES IT EQUILIBRIUM MOISTURE CONTENT (EMC), WHICH AVERAGES 8-12% OF MOISTURE CONTENT FOR MOST STRUCTURES IN THE U.S., THE CONTRACTOR SHALL PREPARE AND ENFORCE A PLAN TO MINIMIZE MOISTURE IN THE WOOD FRAMING, DRYWALL SHALL NOT BE INSTALLED UNTIL THE MOISTURE CONTENT OF ALL WOOD

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3. STRUCTURAL LUMBER <u>NOT IN PERMANENTLY CONDITIONED SPACE</u> SHALL ADHERE TO THE FOLLOWING SPECIFICATIONS:

8. ALL WOOD IN CONTACT WITH CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESERVATIVE TREATED WOOD, ALL FASTENERS INCLUDING ANCHOR BOLTS, POWER-ACTUATED FASTENERS, NAILS, CLIPS, AND HANGERS ATTACHED TO PRESERVATIVE TREATED SHALL BE APPROVED FOR THE ENVIRONMENT.

A. PRODUCT DATA AND ICC APPROVAL FOR FRAMING MEMBERS AND FASTENERS THAT HAVE BEEN DESIGNED BY OTHERS.

DESIGN LOADS

A. WOOD SHRINKAGE:

TOTAL ESTIMATED SHRINKAGE: [0.370"]

- 1. SPECIAL INSPECTIONS AND STRUCTURAL TESTING SHALL BE PROVIDED BY AN INDEPENDENT AGENCY EMPLOYED BY THE OWNER FOR THE ITEMS IDENTIFIED IN THIS SECTION AND IN OTHER AREAS OF THE APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS. (SEE IBC CHAPTER 17).

 2. THE NAMES AND CREDENTIALS OF THE SPECIAL INSPECTIONS. WE RECOMMEND THAT THE PROJECT GEOTECHNICAL ENGINEER BE SOLICITED TO PROVIDE SPECIAL INSPECTIONS FOR THE SOILS AND TESTING FOR THE SOIL AND CONCRETE.
- 3. DUTIES OF THE SPECIAL INSPECTOR: A. THE SPECIAL INSPECTOR SHALL REVIEW ALL WORK LISTED BELOW FOR CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS AND THE IBC. B. THE SPECIAL INSPECTOR SHALL FURNISH SPECIAL INSPECTION REPORTS TO THE EOR, CONTRACTOR, OWNER AND BUILDING OFFICIAL ON A WEEKLY BASIS, OR MORE FREQUENTLY AS REQUIRED BY THE BUILDING OFFICIAL. ALL ITEMS NOT IN COMPLIANCE SHALL BE BROUGHT TO THE
- IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND IF UNCORRECTED, TO THE EOR AND THE BUILDING OFFICIAL.

 C. ONCE CORRECTIONS HAVE BEEN MADE BY THE CONTRACTOR, THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO THE BUILDING OFFICIAL STATING THAT THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE SPECIAL INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS AS WELL AS THE APPLICABLE WORKMANSHIP PROVISIONS OF THE IBC.
- A. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE OWNER AND THE BUILDING OFFICIAL PRIOR TO THE COMMENCEMENT OF WORK, IN ACCORDANCE WITH IBC 1704.4, THE STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF THE SPECIAL INSPECTION REQUIREMENTS CONTAINED WITHIN THIS "STATEMENT OF SPECIAL INSPECTIONS". B. THE CONTRACTOR SHALL NOTIFY THE RESPONSIBLE SPECIAL INSPECTOR THAT WORK IS READY FOR INSPECTION AT LEAST ONE WORKING DAY (24 HOURS MINIMUM) BEFORE SUCH INSPECTION IS REQUIRED.
- C. ALL WORK REQUIRING SPECIAL INSPECTION SHALL REMAIN ACCESSIBLE AND EXPOSED UNTIL IT HAS BEEN OBSERVED BY THE SPECIAL INSPECTOR. 5. PLEASE SEE THE "SPECIAL INSPECTION SCHEDULE" FOR THE TYPES, EXTENTS AND FREQUENCY OF SPECIFIC ITEMS REQUIRING SPECIAL INSPECTIONS AND STRUCTURAL TESTS AS PART OF THIS PROJECT.

 6. REFER TO ARCHITECTURAL AND/OR MEP DRAWINGS FOR ADDITIONAL SPECIAL INSPECTION REQUIRED. DUDLEY ENGINEERING HAS LISTED THE STRUCTURAL SPECIAL INSPECTIONS AND TESTING.

WIND-RESISTING COMPONENTS (1705.11.3)

PERIODIC SPECIAL INSPECTION IS REQUIRED FOR FASTENING OF THE FOLLOWING SYSTEMS AND COMPONENTS: 1. ROOF COVERING, ROOF DECK AND ROOF FRAMING CONNECTIONS. 2. EXTERIOR WALL COVERING AND WALL CONNECTIONS TO ROOF AND FLOOR DIAPHRAGMS AND FRAMING

4. DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR:

REQUIRED VERIFICATION AND INSPECTION OF GRADING AND DRAINAGE FOR FOUNDATIONS ON EXPANSIVE SOILS

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
AFTER BUILDING CONSTRUCTION AND LANDSCAPING HAVE BEEN COMPLETED, FINAL GRADES SHALL BE VERIFIED TO DOCUMENT REQUIRED DRAINAGE	-	X	YES
AFTER BUILDING CONSTRUCTION AND LANDSCAPING HAVE BEEN COMPLETED, DOWNSPOUTS SHALL BE INSPECTED TO CONFIRM CONFORMANCE.	-	Х	YES
GRADES AROUND THE STRUCTURE SHALL BE PERIODICALLY INSPECTED AND ADJUSTED AS PART OF THE BUILDING'S MAINTENANCE PROGRAM	-	X	YES
PLUMBING LEAK "HYRDROSTATIC" TEST PERFORMED BY A LICENSED PLUMBER. TEST TO OCCUR AFTER ROUGH PLUMBING INSTALL	-	X	YES
WHERE PAVING/FLATWORK ABUT THE FOUNDATION, A MAINTENANCE PROGRAM SHALL BE ESTABLISHED TO EFFECTIVELY SEAL AND MAINTAIN JOINTS AND PREVENT SURFACE WATER INFILTRATION.	-	Х	YES

REQUIRED VERIFICATION AND INSPECTION OF SOILS (TABLE 1705.6)

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	-	X	YES
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIALS	-	X	YES
PERFORM CLASSIFICATION AND TESTING OF COMPACTED MATERIALS	-	Х	YES
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X	-	YES
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THE SITE HAS BEEN PREPARED PROPERLY	-	X	YES

REQUIRED VERIFICATION AND INSPECTION OF WOOD CONSTRUCTION (§1705.5)

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
PREFABRICATED WOOD STRUCTURAL ELEMENTS (METAL PLATE CONNECTED WOOD TRUSSES) FABRICATION AND IMPLEMENTATION PROCEDURES (NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION	-	X	YES
HIGH-LOAD DIAPHRAGMS A. INSPECT GRADE AND THICKNESS OF WOOD STRUCTURAL PANEL SHEATHING. B. VERIFY NOMINAL SIZE OF FRAMING MEMBERS AT ADJOINING PANEL EDGES, THE NAILS OR STAPLE DIAMETER AND LENGTH, THE NUMBER OF FASTENER LINES AND THAT THE SPACING BETWEEN FASTENERS IN EACH LINE AND AT EDGE MARGINS AGREES WITH THE APPROVED BUILDING PLANS	-	X	NO
METAL-PLATE-CONNECTED WOOD TRUSSES SPANNING 60 FT OR GREATER A. VERIFY THAT TEMPORARY INSTALLATION RESTRAINT/BRACING AND THE PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAIN/BRACING ARE INSTALLED IN ACCORDANCE WITH THE APPROVED TRUSS SUBMITTAL PACKAGE	-	X	NO
INSPECTION OF NAILING, BOLTING, ANCHORING AND OTHER FASTENING COMPONENTS WITHIN THE SEISMIC / MAIN WIND FORCE RESISTING SYSTEM, INCLUDING WOOD SHEAR WALLS, WOOD DIAPHRAGMS, DRAG STRUTS, BRACES, SHEAR WALLS AND HOLD-DOWNS.	-	Х	YES
MOISTURE CONTENT OF LOAD BEARING WOOD FRAMING: • MOISTURE CONTENT JUST PRIOR TO INSTALLING SHEET ROCK SHOULD BE AT OR BELOW 15%. SPECIAL ATTENTION SHALL BE PAID TO MEMBERS ORIENTED WITH THEIR VERTICAL AXIS PERPENDICULAR TO THE VERTICAL PLANE (PLATES, JOISTS, TRUSS CHORDS, ETC.)	-	X	YES

REQUIRED VERIFICATION AND INSPECTION OF STRUCTURAL STEEL CONSTRUCTION (§1705.2.1)

STRUCTURAL STEEL - GENERAL
OR SHALL INSPECT THE FABRICATED OR ERECTED STEEL FRAME, AS APPROPRIATE, TO VERIFY COMPLIANCE WITH THE DETAIL ISTRUCTION DOCUMENTS, SUCH AS BRACES, STIFFENERS, MEMBER LOCATIONS AND PROPER APPLICATION OF JOINT NNECTION.
STRUCTURAL STEEL - ANCHOR RODS / EMBED PLATES

	THE SPECIAL INSPECTOR SHALL BE ON THE PREMISES FOR INSPECTION DURING THE PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENT SUPPORTING STRUCTURAL STEEL FOR COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS. AS A MINIMUM, THE DIAMETER, GRADE, TYPE AND LENGTH OF THE ANCHOR RODS OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT INTO THE CONCRETE, SHALL BE VERIFIED PRIOR TO PLACEMENT OF CONCRETE.
,	

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
INSPECTION TASKS PRIOR TO WELDING (AISC 360 TABLE N5.4-1)			<u> </u>
WELDING PROCEDURE SPECIFICATION (WPS'S) AVAILABLE	X	_	YES
MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	X	-	YES
MATERIAL IDENTIFICATION (TYPE / GRADE)	_	X	YES
WELDER IDENTIFICATION SYSTEM	-	X	YES
FIT-UP GROOVE WELDS	_	X	NO
CONFIGURATION AND FINISH OF ACCESS HOLES	_	X	NO
FIT-UP FILLET WELDS	_	X	YES
CHECK WELDING EQUIPMENT	_	X	YES
INSPECTION TASKS DURING WELDING (AISC 360 TABLE N5.4-2)			
USE OF QUALIFIED WELDERS	_	X	YES
CONTROL AND HANDLING OF WELDING CONSUMABLES	_	X	YES
NO WELDING OVER CRACKED TACK WELDS	_	X	YES
ENVIRONMENTAL CONDITIONS (WIND SPEED WITHIN LIMITS, PRECIPITATION AND TEMPERATURE	-	X	YES
WPS FOLLOWED SETTINGS ON WELDING EQUIPMENT TRAVEL SPEED SELECTED WELDING MATERIALS SHIELDING GAS TYPE / FLOW RATE PREHEAT APPLIED INTERPASS TEMPERATURE MAINTAINED (MIN/ MAX) PROPER POSITION (F, V, H, OH)	-	X	YES
VELDING TECHNIQUES INTERPASS AND FINAL CLEANING EACH PASS WITHIN PROFILE LIMITATIONS EACH PASS MEET QUALITY REQUIREMENTS	-	Х	YES
WELDS CLEANED	-	Х	YES
SIZE, LENGTH AND LOCATION OF WELDS	Х	-	YES
WELDS MEET VISUAL ACCEPTANCE CRITERIA CRACK PROHIBITION WELD / BASE-METAL FUSION CRATER CROSS SECTION WELD PROFILES WELD SIZE UNDERCUT POROSITY	X	-	YES
ARC STRIKES	Х	-	YES
k-AREA	X	-	YES
BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	X	-	YES
REPAIR ACTIVITIES	X	-	YES
DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT MEMBER	X	-	YES
	Х	-	YES
NON-DESTRUCTIVE TESTING OF WEL	DED JOINTS		
ILLET WELDS:	ı		
MT TEST A MINIMUM OF 10% OF THE LENGTH OF EACH FILLET WELD EXCEEDING 5/16".	-	Х	YES
PERIODIC MT TESTING OF REPRESENTATIVE FILLET WELDS 5/16" AND LESS BUT NEED NOT EXCEED 10% OF ALL SUCH WELDS, EXCEPT AS REQUIRED FOR HIGH REJECTION RATES AS	-	Х	YES

	Х	-	YES
NON-DESTRUCTIVE TESTING OF WELDED JOI	NTS		
FILLET WELDS:			
MT TEST A MINIMUM OF 10% OF THE LENGTH OF EACH FILLET WELD EXCEEDING 5/16".	-	X	YES
PERIODIC MT TESTING OF REPRESENTATIVE FILLET WELDS 5/16" AND LESS BUT NEED NOT EXCEED 10% OF ALL SUCH WELDS, EXCEPT AS REQUIRED FOR HIGH REJECTION RATES AS INDICATED IN THE FOLLOWING PARAGRAPH.	-	Х	YES
INCREASE MT TESTING RATE FOR WELDERS HAVING A HIGH REJECTION RATE AS REQUIRED TO ENSURE ACCEPTABLE WELDS.	Х	-	YES
PARTIAL JOINT PENETRATION (PJP) WELDS INCLUDING FLARE BEVEL WELDS			
MT TEST A MINIMUM OF 25% OF THE LENGTH OF EACH PJP WELD EXCEEDING 5/16" EFFECTIVE THROAT.	-	Х	YES
PERIODIC MT TESTING OF REPRESENTATIVE PJP WELDS 5/16" AND LESS BUT NEED NOT EXCEED 10% OF ALL SUCH WELDS, EXCEPT AS REQUIRED FOR HIGH REJECTION RATES AS INDICATED IN THE FOLLOWING PARAGRAPH.	-	Х	YES
INCREASE MT TESTING RATE FOR WELDERS HAVING A HIGH REJECTION RATE AS REQUIRED TO ENSURE ACCEPTABLE WELDS	Х	-	YES
COMPLETE JOINT PENETRATION (CJP) WELDS	•		
ALL CJP WELDS EXCEEDING 5/16" THICKNESS SHALL BE 100% UT TESTED PER AWS D1.1 CLAUSE 6 PART F. THE TESTING LABORATORY SHALL REVIEW THE CJP JOINTS TO DETERMINE WHERE GEOMETRY OR ACCESSIBILITY PRECLUDES THE USE OF STANDARD SCANNING PATTERNS PER	Х	-	YES

INCREASE MT TESTING RATE FOR WELDERS HAVING A HIGH REJECTION RATE AS REQUIRED TO ENSURE ACCEPTABLE WELDS	X	-	YES
COMPLETE JOINT PENETRATION (CJP) WELDS			
ALL CJP WELDS EXCEEDING 5/16" THICKNESS SHALL BE 100% UT TESTED PER AWS D1.1 CLAUSE 6 PART F. THE TESTING LABORATORY SHALL REVIEW THE CJP JOINTS TO DETERMINE WHERE GEOMETRY OR ACCESSIBILITY PRECLUDES THE USE OF STANDARD SCANNING PATTERNS PER AWS D1.1 CLAUSE 6 PART F. AT THESE LOCATIONS THE TESTING LABORATORY SHALL DEVELOP AND SUBMIT FOR APPROVAL A WRITTEN TESTING PROCEDURE IN ACCORDANCE WITH AWS D1.1 ANNEX S.	X	-	YES
PERIODIC MT TESTING OF REPRESENTATIVE CJP WELDS 5/16" AND LESS NOT TO EXCEED 10% OF ALL SUCH WELDS.	-	Х	YES
INCREASE MT TESTING RATE FOR WELDERS HAVING A HIGH REJECTION RATE AS REQUIRED TO ENSURE ACCEPTABLE WELDS.	Х	-	YES

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (TURN-OF-NUT)

TURN-OF-NUT PRETENSIONING: THE INSPECTOR SHALL OBSERVE THE PRE-INSTALLATION VERIFICATION TESTING REQUIRED IN SECTION 8.2. SUBSEQUENTLY, IT SHALL BE ENSURED BY ROUTINE OBSERVATION THAT THE BOLTING CREW PROPERLY ROTATES THE TURNED ELEMENT RELATIVE TO THE UNTURNED ELEMENT BY THE AMOUNT SPECIFIED IN TABLE 8.2. ALTERNATIVELY, WHEN FASTENER ASSEMBLIES ARE MATCH-MARKED AFTER THE INITIAL FIT-UP OF THE JOINT BUT PRIOR TO PRETENSIONING, VISUAL INSPECTION AFTER PRETENSIONING IS PERMITTED IN LIEU OF ROUTINE OBSERVATION. NO FURTHER EVIDENCE OF CONFORMITY IS REQUIRED. A PRETENSION THAT IS GREATER THAN THE VALUE SPECIFIED IN TABLE 8.1 SHALL NOT BE CAUSE FOR REJECTION. A ROTATION THAT EXCEEDS THE REQUIRED VALUES, INCLUDING TOLERANCE, SPECIFIED IN TABLE 8.2 SHALL NOT BE CAUSE FOR REJECTION.

BOLT LENGTH	DISPOSITION OF OUTER FACES OF BOLTED PARTS			
	BOTH FACE NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS	
LENGTH≤ 4db	1/3 TURN	1/2 TURN	2/3 TURN	
4d _b < LENGTH ≤ 8d _b	1/2 TURN	2/3 TURN	5/6 TURN	
8d _b < LENGTH ≤ 12d _b	2/3 TURN	5/6 TURN	1 TURN	

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (SNUG-TIGHT) - INSPECTION TASKS PRIOR TO BOLTING				
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED	
DOCUMENTATION AND ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	-	χ	YES	

b. APPLICABLE TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (SNUG-TIGHT) - INSPECTION TASKS DURING BOLTING					
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED		
DOCUMENTATION OF ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS.	-	Х	YES		



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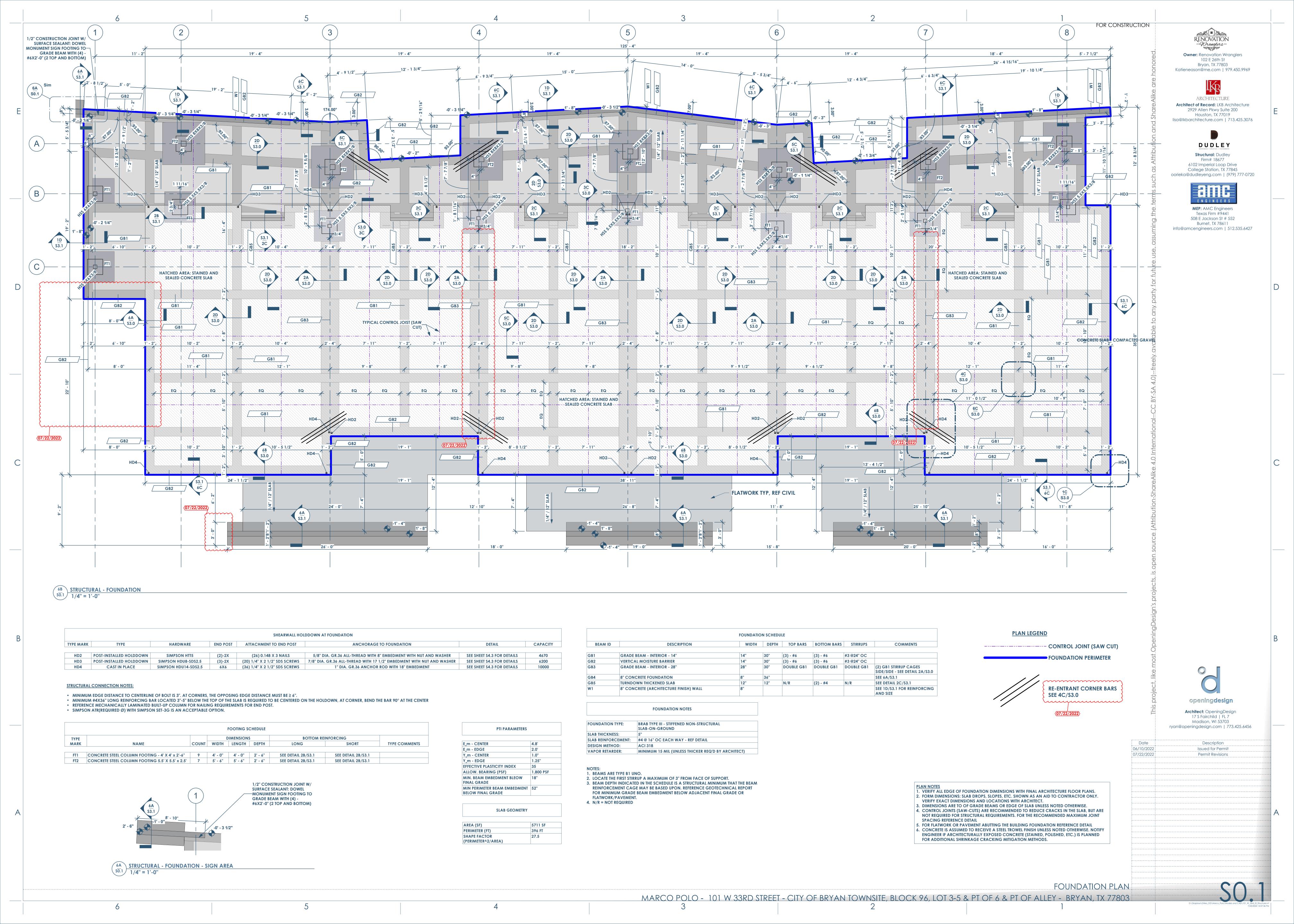


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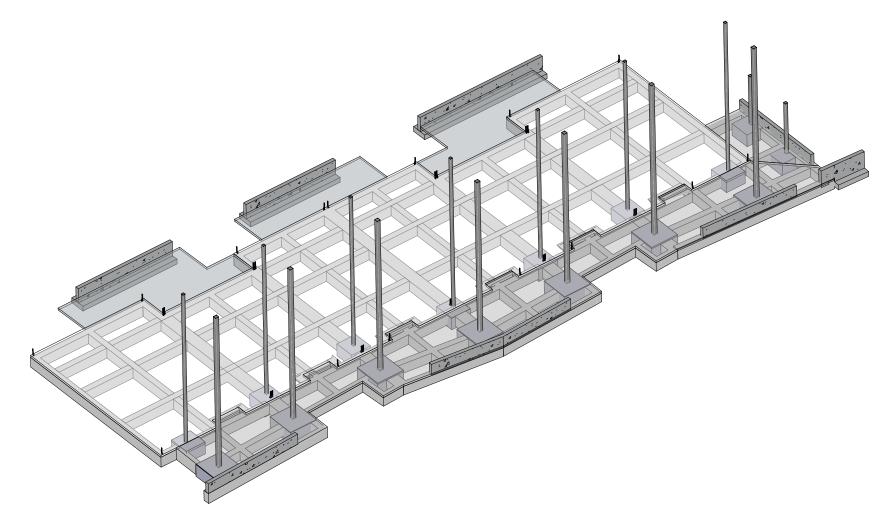
ryan@openingdesign.com | 773.425.6456 Review before Permit PERMIT REVISIONS

STATEMENT OF SPECIAL INSPECTIONS

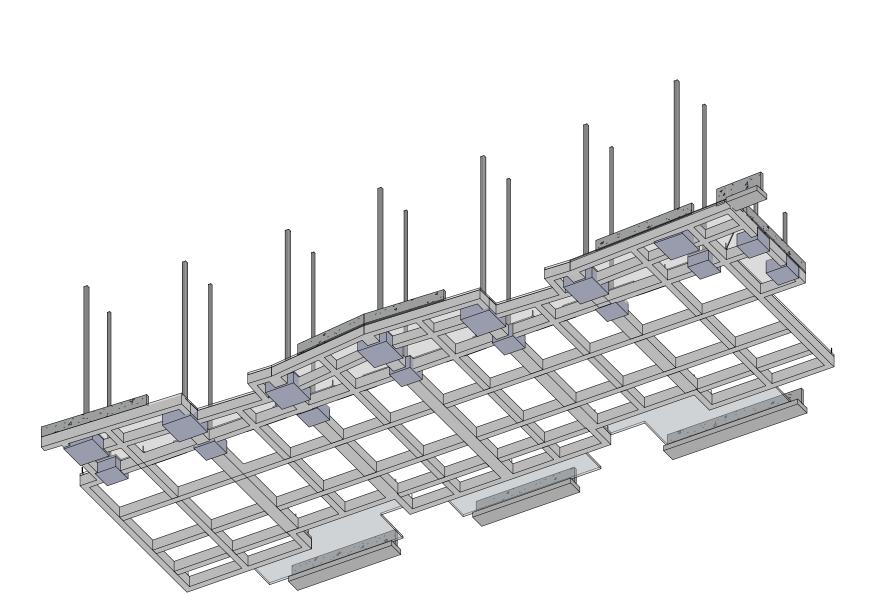
MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803



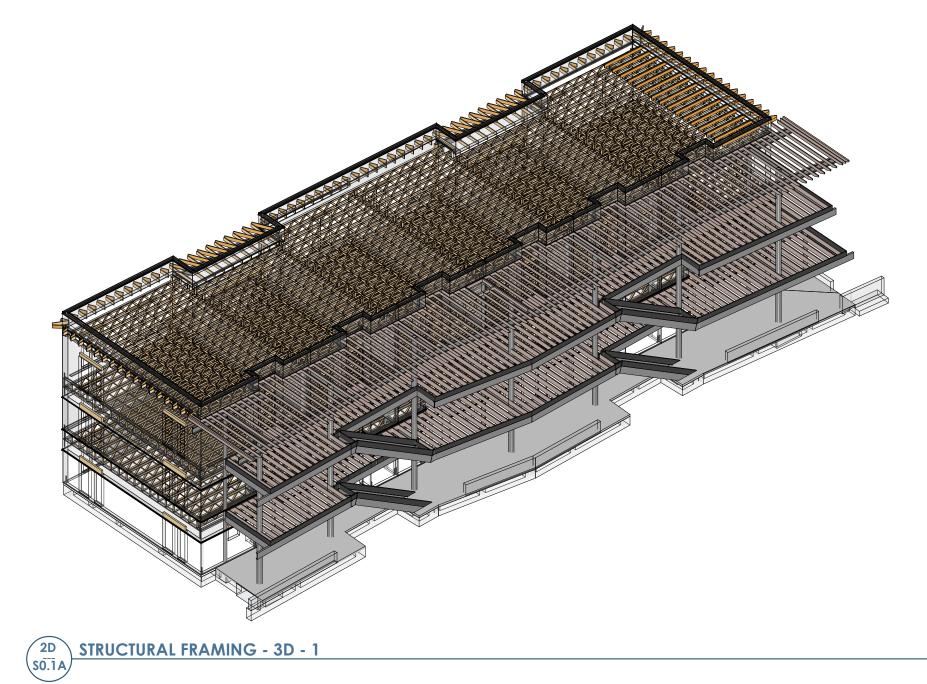
- 1. SUBGRADE IMPROVEMENT: A. PROVIDE MINIMUM 2 FEET SELECT FILL TO TOP OF BUILDING PAD ELEVATION. THE SELECT FILL PAD MUST BE OF UNIFORM THICKNESS UNO BY GEOTECHNICAL ENGINEER.
- 2. SITE PREPARATION: A. SOFT SOILS SHOULD BE REMOVED UNTIL FIRM SOIL IS REACHED. THE SOFT SOILS CAN BE AERATED AND PLACED BACK IN SIX-INCH LOOSE LIFTS AND COMPACTED TO 95% AS SPECIFIED BY ASTM D-698. TREE STUMPS, TREE roots, old slabs, old foundations and existing pavements should be removed from the STRUCTURE AREA. IF THE TREE STUMPS AND ROOTS ARE LEFT IN PLACE, SETTLEMENT AND TERMITE INFESTATION MAY OCCUR. ONCE A ROOT SYSTEM IS REMOVED, A VOID IS CREATED IN THE SUBSOIL. IT IS RECOMMENDED TO FILL THESE VOIDS WITH STRUCTURAL FILL OR CEMENT-STABILIZED SAND AND COMPACT TO 95% AS SPECIFIED
- B. ANY LOW-LYING AREAS INCLUDING RAVINES, DITCHES, SWAMPS, ETC. SHOULD BE FILLED WITH STRUCTURAL FILL AND PLACED IN EIGHT-INCH LIFTS. EACH LIFT SHOULD BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS SPECIFIED BY ASTM D-698.
- C. THE EXPOSED SUBGRADE SHOULD BE SCARIFIED TO A MINIMUM DEPTH OF SIX (6) INCHES FOUNDATION AREAS or per subgrade improvement requirements. The subgrade should then be compacted to 95% of THE MAXIMUM DENSITY AS DETERMINED BY THE STANDARD MOISTURE DENSITY RELATIONSHIP (ASTM D-698). IN THE EVENT THAT THE UPPER SIX (6) INCHES CANNOT BE COMPACTED DUE TO EXCESSIVE MOISTURE, WE RECOMMEND THAT THESE SOILS BE EXCAVATED AND REMOVED OR CHEMICALLY STABILIZED TO PROVIDE A FIRM BASE FOR FILL PLACEMENT. PROOF ROLLING SHOULD BE PERFORMED USING A HEAVY TIRED LOADED TRUCK OR PNEUMATIC RUBBER-TIRED WEIGHING 20 TONS.
- D. THE SELECT FILL SOILS SHALL BE LIMITED TO THE FOOTPRINT OF THE FOUNDATION. IF OVERBUILD IS REQUIRED, INSTALL HORIZONTAL CLAY CAP TO COVER THE FILL OVERBUILD.
- BEYOND THE PERIMETER OF THE STRUCTURE. E. THE FLOOR SLAB SHOULD BE PLACED AS SOON AS POSSIBLE AFTER THE BUILDING PAD IS PREPARED. IF THE BUILDING PAD IS LEFT EXPOSED TO RAINFALL, PERCHED GROUNDWATER CONDITIONS MAY DEVELOP WHICH WILL UNDERMINE THE INTEGRITY OF THE FLOOR SLAB. ALL TRENCHES (WATER, CABLE, ELECTRICAL) SHOULD BE PROPERLY BACKFILLED AND COMPACTED TO 95% OF THE MAXIMUM DRY DENSITIES. SAND OR PERMEABLE MATERIALS SHOULD NOT BE USED AS BACKFILL. IMPROPERLY BACKFILLED AND IMPROPERLY COMPACTED TRENCH, IF LEFT EXPOSED WILL ALSO BE ANOTHER SOURCE FOR PERCHED GROUNDWATER CONDITIONS. IN GENERAL PERCHED WATER TENDS TO BE TRAPPED WITHIN THE FILL. THE TRAPPED GROUNDWATER TENDS TO SOFTEN THE SUBGRADE. POSITIVE DRAINAGE SHOULD BE MAINTAINED ACROSS THE ENTIRE BUILDING PAD. f. a qualified soil technician should monitor all earthwork operations, field density tests should BE CONDUCTED ON EACH LIFT USING A NUCLEAR DENSITY GAUGE. THE GAUGE SHOULD BE CALIBRATED EVERY DAY. PRIOR TO FIELD DENSITY TESTS, A 50-POUND SAMPLE FROM THE SUBGRADE SOILS SHOULD BE OBTAINED. A SIMILAR SAMPLE SHOULD BE OBTAINED FROM THE FILL SOILS. A STANDARD MOISTURE DENSITY RELATIONSHIP (ASTM D-698) SHOULD BE PERFORMED ON EACH SAMPLE IN ORDER TO OBTAIN AN OPTIMUM MOISTURE CONTENT AND A MAXIMUM DRY DENSITY. THE FIELD DENSITY TESTS SHOULD BE COMPARED TO THESE RESULTS EVERY TIME THE SOILS ARE TESTED IN THE FIELD.
- 3. LOW SWELL POTENTIAL STRUCTURAL FILL (SELECT FILL) A. LOW SWELL POTENTIAL SELECT FILL SHOULD CONSIST OF COHESIVE SOILS FREE OF ORGANICS OR OTHER DELETERIOUS MATERIALS AND SHOULD HAVE A PLASTICITY INDEX NOT LESS THAN 7 OR MORE THAN 20. SANDY CLAYS ARE RECOMMENDED FOR USE. THE LOW SWELL POTENTIAL SELECT FILL SHOULD BE CLEANED AND FREE OF ORGANIC MATTER OR OTHER DELETERIOUS MATERIAL. THE FILL SHOULD BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 (STANDARD PROCTOR). THE MOISTURE CONTENT AT THE TIME OF COMPACTION SHOULD BE -2%, +3% OF THE OPTIMUM VALUE AS DEFINED BY ASTM D 698. THE REFERENCED MOISTURE CONTENT AND DENSITY SHOULD BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
- 4. HORIZONTAL MOISTURE BARRIER A. WHERE THE PERIMETER OF THE FOUNDATION DOES NOT HAVE LOW PERMEABILITY FLATWORK (SIDEWALK, PAVEMENT, PATIO, ETC.) ABUTTING THE FOUNDATION, A HORIZONTAL MOISTURE BARRIER VIA CLAY CAP AND VAPOR RETARDER MUST BE PROVIDED.
- a. CLAY CAP: A MINIMUM 5' WIDE LOW PERMEABILITY CLAY "CAP" SHALL BE PLACED ALONG THE EXTERIOR OF THE FOUNDATION TO HELP MINIMIZE MOISTURE INFILTRATION INTO THE SELECT FILL SOIL PADS. THE LOW PERMEABILITY, 1-FOOT THICK CLAY "CAP" SHALL HAVE A MINIMUM PLASTICITY INDEX (PI) OF 30. b. VAPOR RETARDER: BELOW THE CLAY CAP, A MIN 15 MIL VAPOR RETARDER MUST BE PROVIDED ON A MINIMUM 5% SLOPE. RETARDER MUST BE SECURED TO THE FOUNDATION.
- 5. DRAINAGE A. ROOF DRAINAGE SHOULD BE COLLECTED BY A SYSTEM OF GUTTERS AND DOWN SPOUTS AND TRANSMITTED A MINIMUM DISTANCE OF 5' AWAY FROM THE FOUNDATION TO AN AREA WITH POSITIVE DRAINAGE AWAY FROM THE FOUNDATION, PREFERABLY TO A PAVED SURFACE WHERE WATER CAN DRAIN RAPIDLY AWAY FROM THE STRUCTURE. SIDEWALKS, PARKING AREAS, BUILDING ACCESS DRIVES, AND THE GENERAL GROUND SURFACE SHOULD BE SLOPED SO THAT WATER WILL DRAIN AWAY FROM THE STRUCTURE. WATER SHOULD NOT BE ALLOWED TO POND NEAR THE BUILDING FOUNDATIONS.
- B. FINAL GRADES SHALL SLOPE A MINIMUM OF 5% FOR THE FIRST 10 FEET AWAY FROM THE FOUNDATION IN ALL DIRECTIONS. THIS SLOPE SHALL OCCUR IN THE SELECT FILL OR IN-SITU SOIL. MERELY SLOPING TOPSOIL IS NOT SUFFICIENT.
- A. AVOID THE USE OF METAL EDGING OR OTHER DAMMING DEVICES WITHIN FIVE FEET OF THE FOUNDATION. THE ROOTS OF TREES AND LARGE PLANTS REMOVE LARGE QUANTITIES OF WATER FROM THE SOIL. IF THESE TREES AND SHRUBS ARE NEAR THE FOUNDATION AND IF SUFFICIENT WATER IS NOT SUPPLIED, THE SOILS MAY SHRINK IF EXPANSIVE, CAUSING SUBSIDENCE IN THE FOUNDATION. DURING DRY PERIODS, ENOUGH WATER SHOULD BE SUPPLIED TO TREES TO MINIMIZE SHRINKING OF EXPANSIVE SOILS AROUND THEM. MOST OF THE IRRIGATION WATER SHOULD BE APPLIED WELL AWAY FROM THE FOUNDATION TO ATTRACT THE TREE ROOTS IN THAT DIRECTION. WHEN TREES MATURE TO THE POINT OF SHADING THE ENTIRE LOT, REGULAR PRUNING WILL BE NEEDED TO REDUCE THEIR WATER UPTAKE. LANDSCAPING (PLANTS, SHRUBS, FLOWERS, ETC.) SHOULD NOT TRAP WATER AGAINST THE FOUNDATION. PROVIDE A SLOPE IN SOILS BELOW LANDSCAPE BEDDING AND IN THE BEDDING AWAY FROM THE FOUNDATION. ALTERNATIVELY, PROVIDE SWALES AROUND AND THROUGH THE LANDSCAPING TO DRAIN WATER AWAY. PROVIDE UNIFORM GROUND COVER AROUND THE FOUNDATION. THIS WILL HELP KEEP THE MOISTURE EVAPORATION RATE UNIFORM. IN AREAS THAT ARE NOT PLANTED, USE MULCH. EXTEND THE GROUND COVER AT LEAST FIVE FEET FROM THE FOUNDATION.
- B. ANY/ALL TREES SHALL BE PLANTED AT A MINIMUM DISTANCE EQUIVALENT TO THE HEIGHT OF THE TREE OR THE DRIP LINE PLUS 10 FEET WHICHEVER IS GREATER. 7. SOIL MOISTURE
- A. EXPANSIVE SOILS HEAVE AND SUBSIDE DUE TO CHANGES IN MOISTURE CONTENT. CHANGES IN MOISTURE CONTENT CAN CAUSE VERY LARGE CHANGES IN SOIL VOLUME WHEN GOING FROM A DRY TO A SATURATED CONDITION, AND VICE VERSA. THIS MOVEMENT DOES NOT MEAN THE FOUNDATION IS IMPROPERLY DESIGNED OR THAT IT HAS FAILED. THE FOUNDATION DESIGN ENGINEER CANNOT CONTROL THE MOISTURE CONTENT OF THE SOIL, BUT OFTEN THE OWNER/TENANT CAN. UNIFORMITY IS THE KEY: UNIFORM MOISTURE CONTENT IN THE SOIL, UNIFORMLY MAINTAINED IN ALL AREAS AROUND THE FOUNDATION. IF CHANGES IN MOISTURE CONTENT ARE UNIFORM, THEN MOVEMENT OF THE FOUNDATION WILL BE UNIFORM AND LESS DISTRESS WILL BE CREATED IN THE STRUCTURE. IF CHANGES IN MOISTURE CONTENT ARE NON-UNIFORM, THEN THERE MAY BE DIFFERENTIAL MOVEMENT IN THE FOUNDATION. DIFFERENTIAL MOVEMENT CAN CAUSE GREATER (AND MORE OBVIOUS) DISTRESS IN THE STRUCTURE. LEAKING POOLS, LEAKING PLUMBING LINES, LEAKING DRAINS, DRIPPING FAUCETS, DRIPPING AIR CONDITIONING CONDENSATE LINES, AND MISDIRECTED WATER FROM CLOGGED AND BROKEN GUTTERS AND DOWNSPOUTS CAN CAUSE LOCAL HIGH MOISTURE CONTENTS THAT CAN RESULT IN DIFFERENTIAL MOVEMENT IN AREAS OF EXPANSIVE SOILS. THESE CONDITIONS SHOULD BE REMEDIED AS SOON AS POSSIBLE. TREES IN OR NEAR THE FOOTPRINT OF THE FOUNDATION, EITHER REMOVED OR PLANTED DURING CONSTRUCTION, CAUSE THE MAJORITY OF FOUNDATION PROBLEMS REQUIRING REPAIR IN THIS AREA. TREES REMOVED DURING CONSTRUCTION TEND TO CAUSE HEAVE OF EXPANSIVE SOILS DURING THE FIRST FEW YEARS, WITH INITIAL DISTRESS OFTEN EVIDENT AT THE TIME OF MOVE-IN. TREES PLANTED DURING OR AFTER CONSTRUCTION TEND TO CAUSE SUBSIDENCE OF EXPANSIVE SOILS. HOWEVER, SIGNIFICANT SUBSIDENCE DISTRESS WILL USUALLY NOT OCCUR FOR TEN TO TWENTY YEARS AS THE TREES MATURE.
- 8. CLIMATE A. DURING PERIODS OF DRY WEATHER, THE SOIL AROUND THE FOUNDATION SHOULD BE IRRIGATED IF THE BUILDING IS LOCATED IN AN AREA WHERE EXPANSIVE SOILS ARE KNOWN TO OCCUR. THE MOST COMMONLY USED IRRIGATION SYSTEM IS ABOVEGROUND TIMED SPRINKLERS WITH A MANUAL OVERRIDE SO THEY CAN BE TURNED OFF IN RAINY WEATHER. AN AUTOMATIC BELOWGROUND IRRIGATION SYSTEM THAT SENSES THE MOISTURE CONTENT OF THE SOIL MAY ALSO BE USED. TEND TO KEEP THE IRRIGATION SYSTEM SET ON "MANUAL", AND ONLY USE IT IN DRIER PERIODS WHEN WILTING OF THE LAWN GRASSES AND OTHER VEGETATION OCCURS. THE IRRIGATION SHOULD BE DONE AT LEAST ONE TO TWO FEET AWAY FROM THE FOUNDATION, AND THEN LIGHTLY SO THAT TREE ROOTS ARE NOT ATTRACTED THERE. DO NOT ALLOW SPRINKLERS TO SPRAY WATER AGAINST THE STRUCTURE. IN EXTENDED DRY PERIODS, SHOULD THE SOIL CRACK AND PULL AWAY FROM THE FOUNDATION, DO NOT WATER DIRECTLY INTO THE GAP.
- UTILITIES A. CONNECTIONS FOR UTILITIES (PLUMBING, ELECTRICAL, GAS, ETC.) THAT ARE UNDERNEATH, GO THROUGH OR ARE ATTACHED TO THE FOUNDATION SHALL HAVE BE FLEXIBLE TO ACCOMMODATE FOUNDATION MOVEMENT OF AT LEAST 2". ALL DRAINAGE PIPING, AND GENERAL PLUMBING SYSTEMS ASSOCIATED WITH THE FOUNDATION OR IN PROXIMITY TO THE FOUNDATION SHALL BE LEAK TESTED FOLLOWING INSTALLATION AND ON AN ANNUAL BASIS.
- 10. ARCHITECTURAL FINISHES A. TILE FLOORS SHALL BE JOINTED FREQUENTLY TO MINIMIZE CRACKING.
- B. WALL COVERINGS SHALL BE JOINTED ON EACH SIDE OF DOOR AND WINDOW OPENINGS. C. ALL ARCHITECTURAL FINISHES SHALL MIRROR CONTROL, EXPANSION OR CONSTRUCTION JOINTS IN THE FOUNDATION.

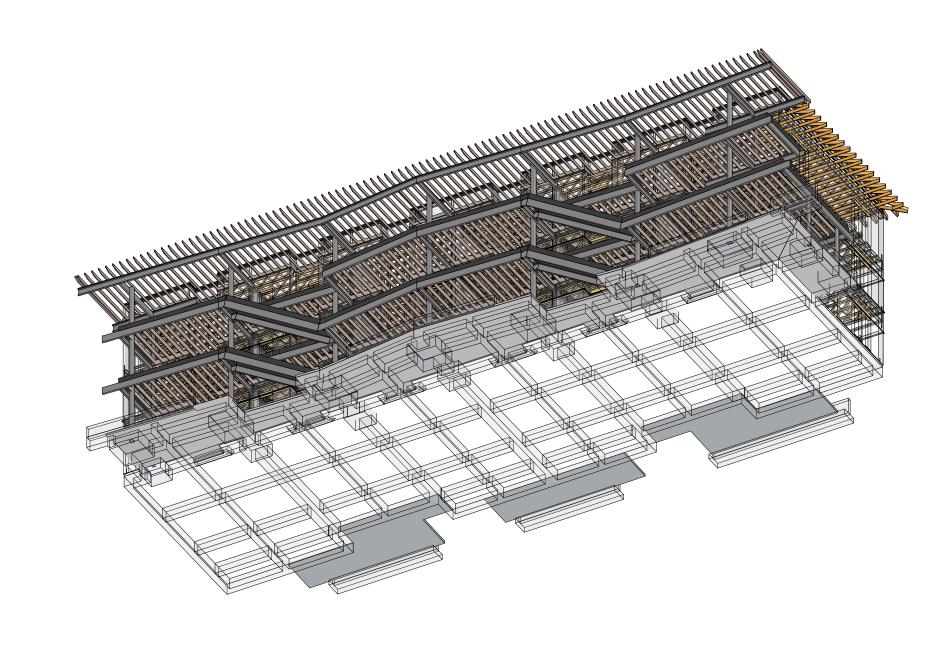


(4D) STRUCTURAL FOUNDATION - 3D - 1



4B STRUCTURAL FOUNDATION - 3D - 2





2B STRUCTURAL FRAMING - 3D - 2



FOR CONSTRUCTION

ARCHITECTURE Architect of Record: LKB Architecture 2929 Allen Pkwy Suite 200 Houston, TX 77019

Katieneason@me.com | 979.450.9969

DUDLEY Structural: Dudley Firm# 18677 6102 Imperial Loop Drive College Station, TX 77845

lisa@lkbarchitecture.com | 713.425.3076

MEP: AMC Engineers Texas Firm #9441 508 E Jackson St # 552

oorieka@dudleyeng.com | (979) 777-0720

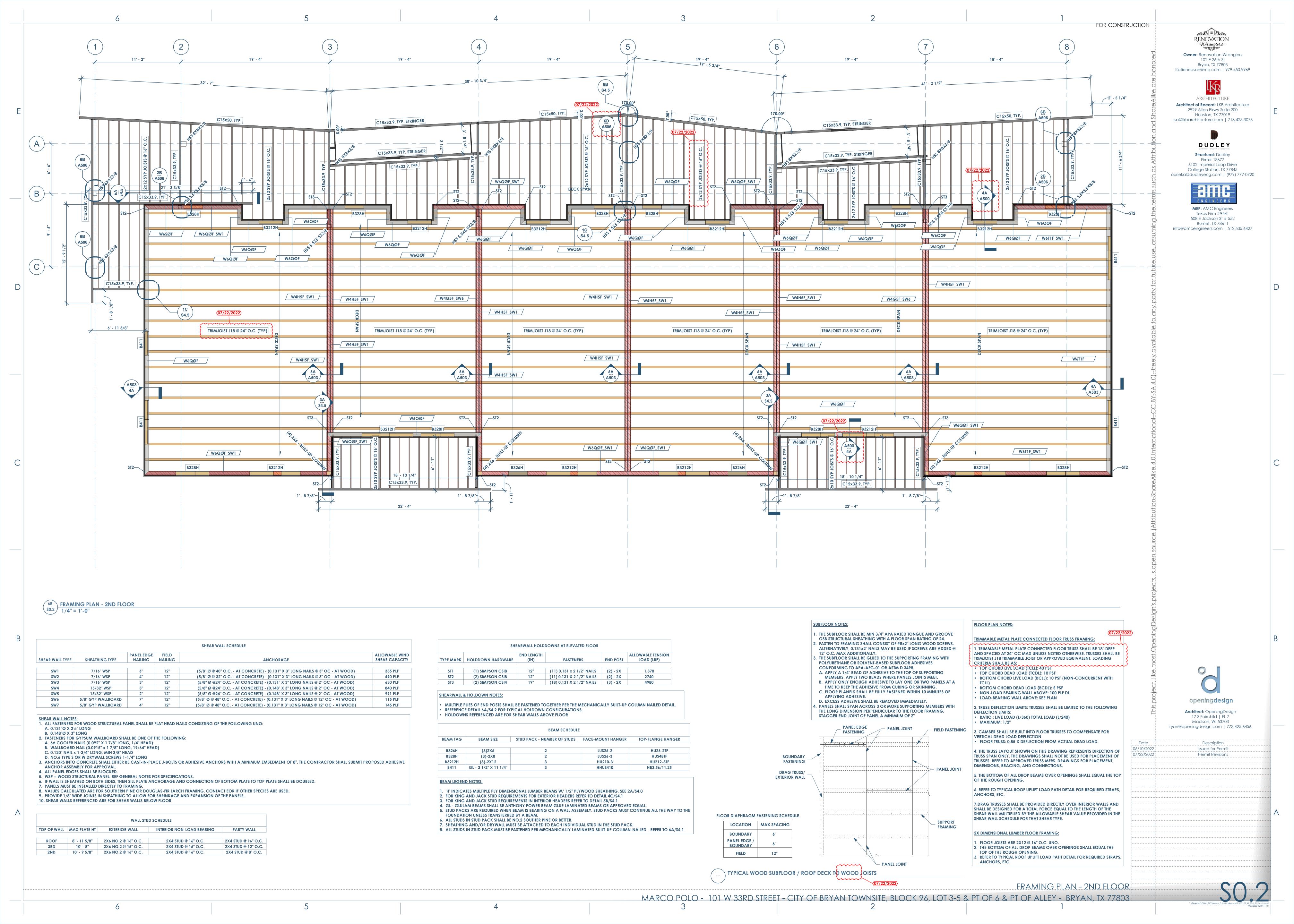
Burnet, TX 78611 info@amcengineers.com | 512.535.6427

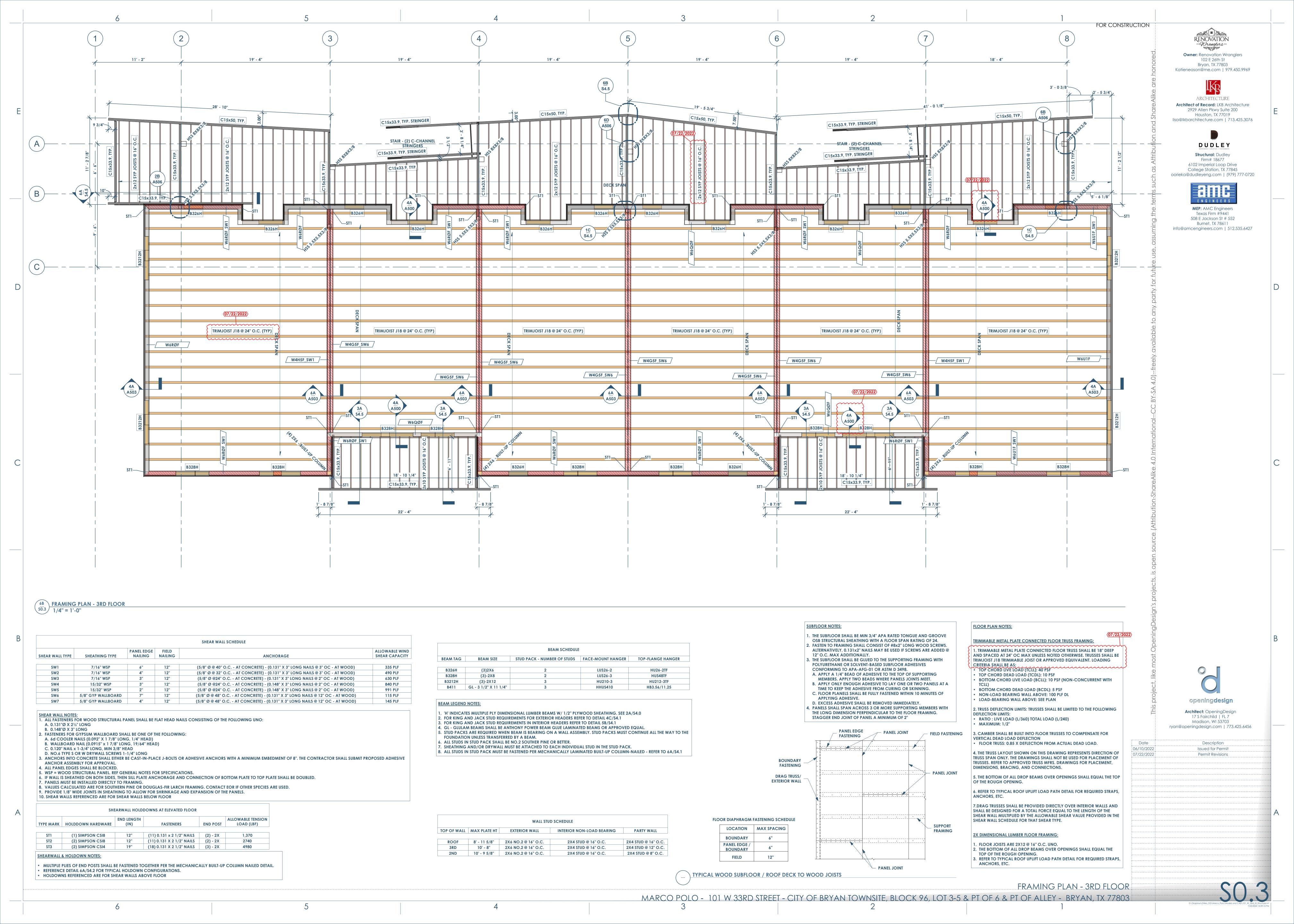
> **Architect:** OpeningDesign 17 S Fairchild | FL 7 Madison, WI 53703

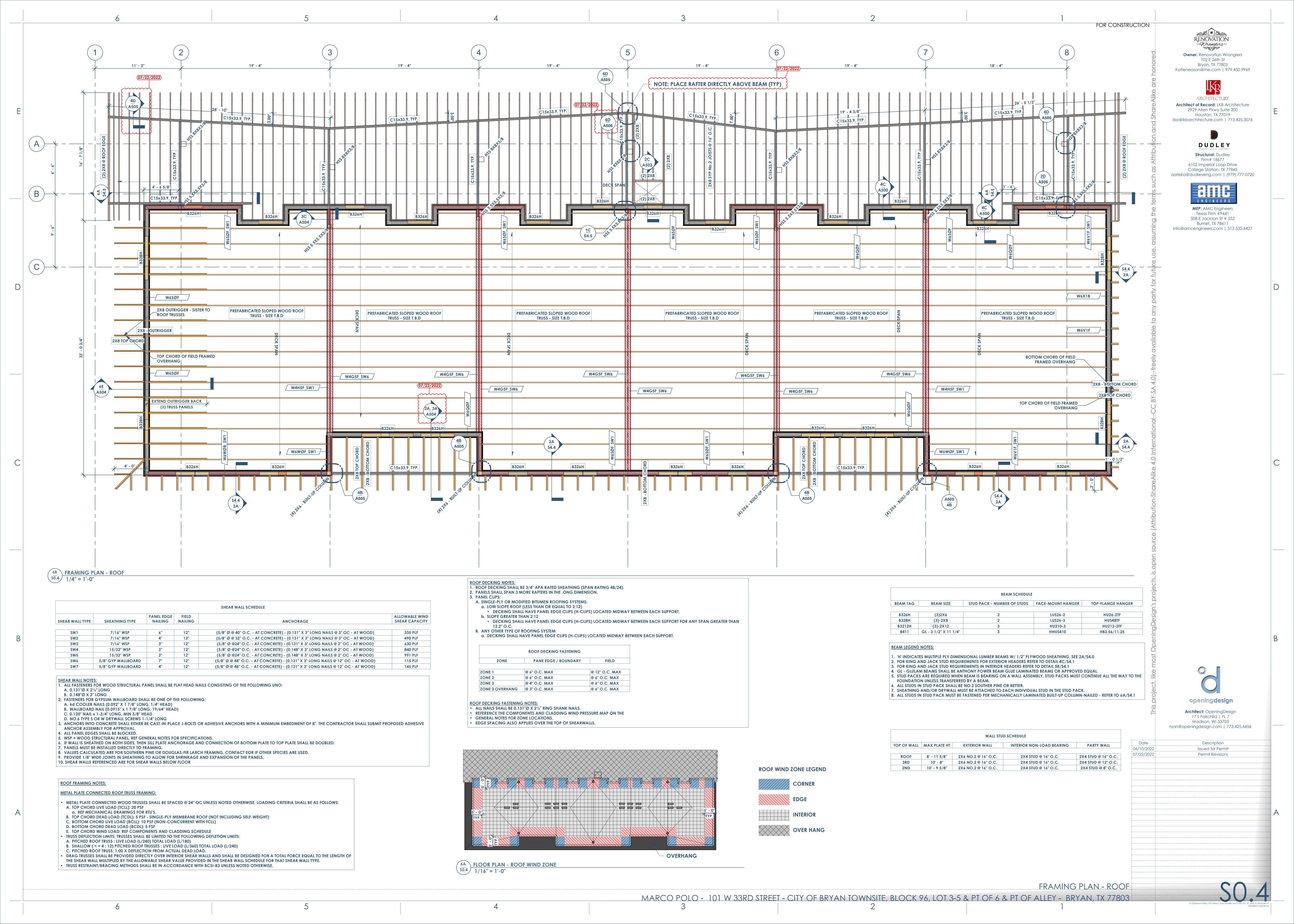
ryan@openingdesign.com | 773.425.6456 **Issued for Permit**

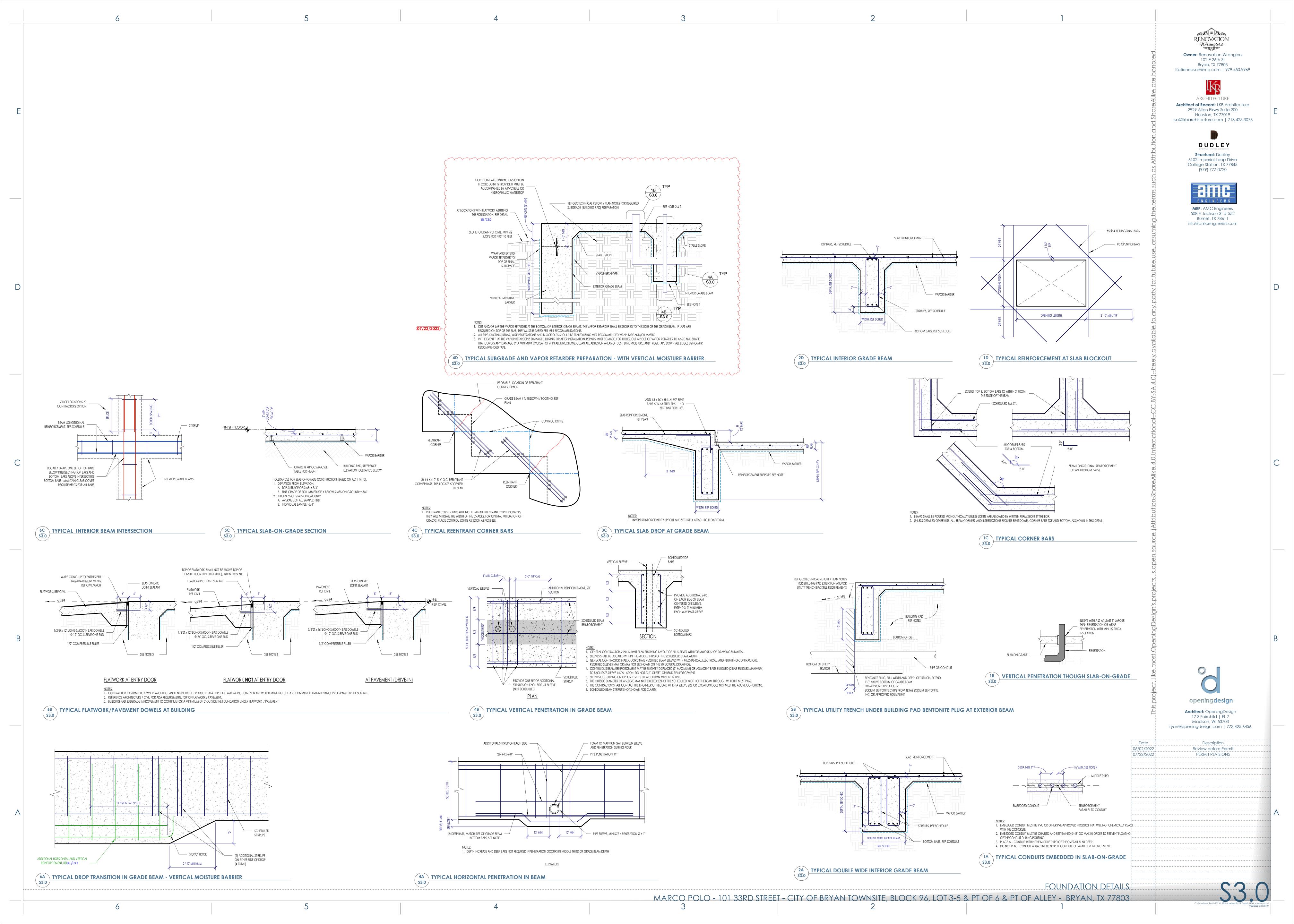
Permit Revisions

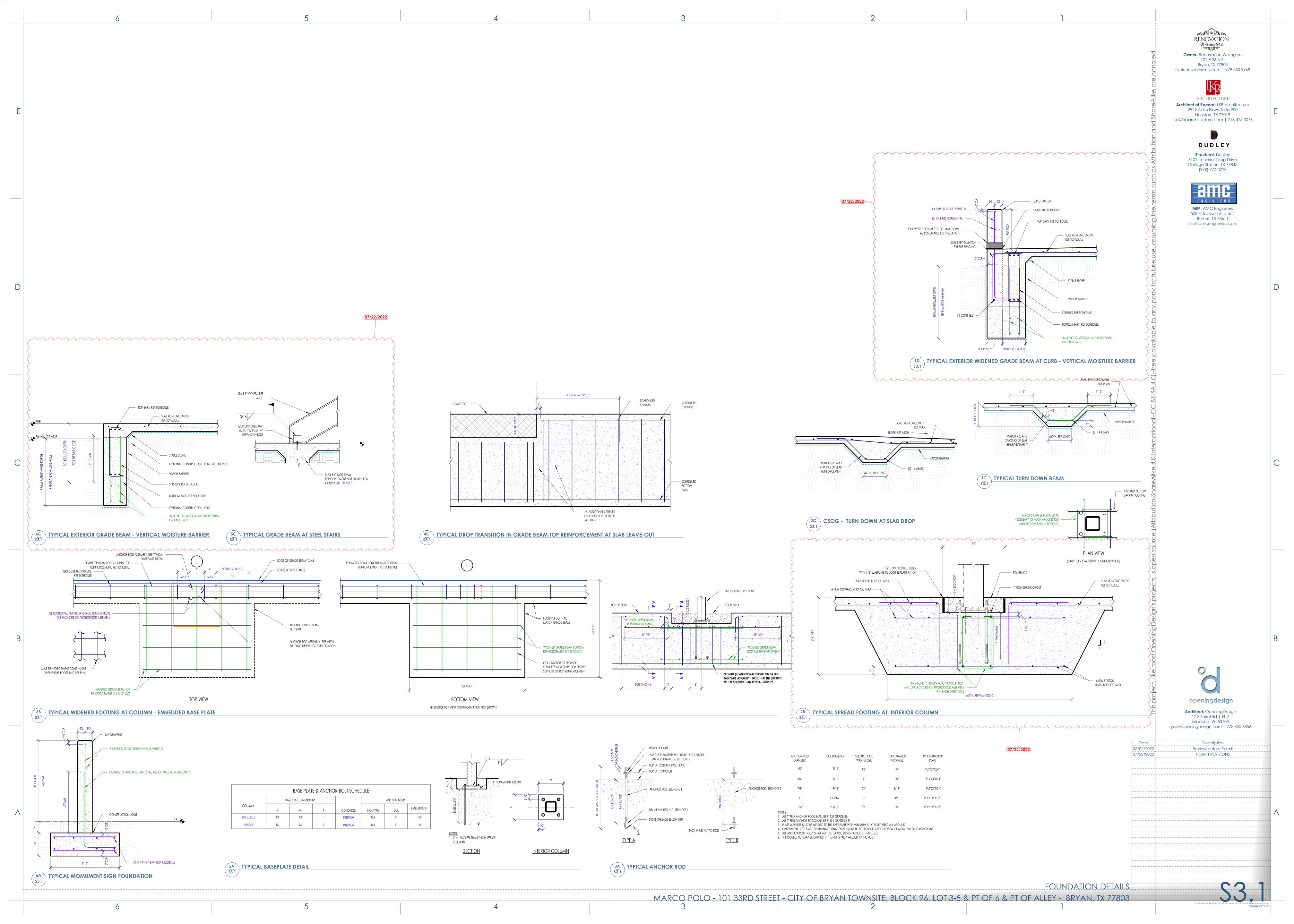
FOUNDATION NOTES AND 3D MARCO POLO - 101 W 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803



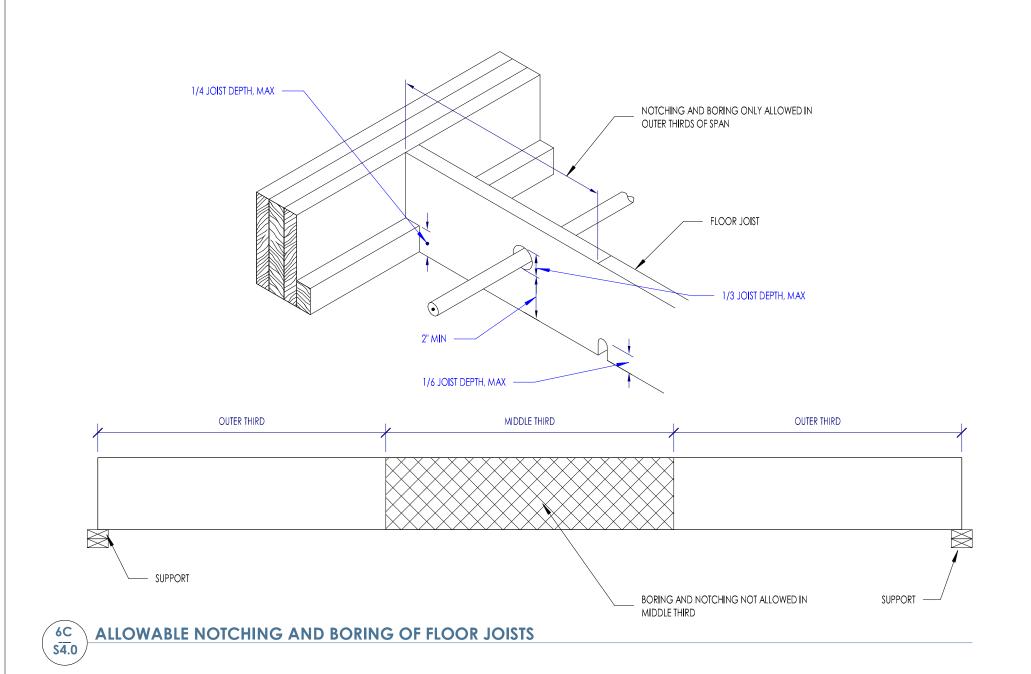


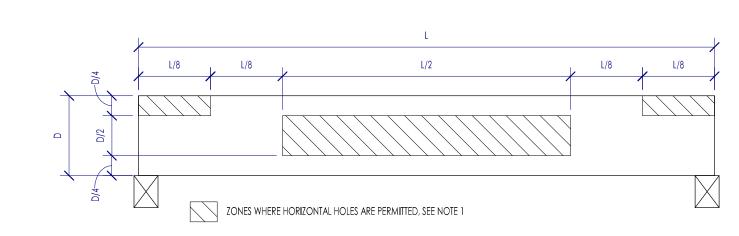






TYPICAL FASTENING SCHEDULE				
ONNECTION ID	CONNECTION TYPE	FASTENING	FASTENING ORIENTATION	
1	JOIST TO SILL OR GIRDER	(3) - 0.131"Ø X 3"	TOENAIL	
2	SOLE PLATE TO JOIST OR BLOCKING	0.148"Ø X 31/4" NAILS @ 12" OC NAILS	FACE NAIL	
3	TOP PLATE TO STUD	(3) - 0.131"Ø X 3" NAILS	END NAIL	
4	STUD TO SOLE PLATE - OPTION 1	(2) - 16d COMMON (3) - 0.131"Ø X 3" NAILS	END NAIL	
5	STUD TO SOLE PLATE - OPTION 2	(4) 0.131"Ø X 3" NAILS	TOENAIL	
6	DOUBLE/MULTIPLE STUDS	REFERENCE DETAIL 6A/\$4.1	FACE NAIL	
7	DOUBLE TOP PLATES	0.131"Ø X 3" NAILS @ 12" OC	FACE NAIL	
8	DOUBLE TOP PLATE SPLICE	REFERENCE DETAIL 3A / \$4.1	FACE NAIL	
9	BLOCKING BETWEEN JOISTS/RAFTERS TO TOP PLATE	(3) - 0.131"Ø X 3" NAILS	TOENAIL	
10	RIM JOIST TO TOP PLATE	0.131"Ø X 3" NAILS @ 6" OC	TOENAIL	
11	CEILING JOIST TO TOP PLATE	(5) - 0.131"Ø X 3" NAILS	TOENAIL	
12	CEILING JOIST LAP OVER PARTITIONS	(4) - 0.131"Ø X 3" NAILS	FACE NAIL	
13	CEILING JOIST TO PARALLEL RAFTERS	(4) - 0.131"Ø X 3" NAILS	FACE NAIL	
14	RAFTER TO TOP PLATE	(3) - 0.131"Ø X 3" NAILS	TOENAL	
15	BUILT-UP CORNER STUDS	0.131"Ø X 3" NAILS @ 16" OC	FACE NAIL	
16	BUILT-UP BEAMS	REFERENCE DETAIL 2A / S4.0	FACE NAIL	
17	COLLAR TIE TO RAFTER	(4) - 0.131"Ø X 3" NAILS	FACE NAIL	
18	JACK RAFTER TO HIP	(4) - 0.131"Ø X 3" NAILS	TOENAL	
19	RAFTER TO RIDGE BOARD/BEAM	(3) - 0.131"Ø X 3" NAILS	TOENAL	
20	BLOCKING B/T STUDS	(3) - 0.131"Ø X 3" NAILS EACH SIDE	TOENAIL	
	ARE TO BE APPLIED UNLESS NOTED OTHERWISE IN PLAN, SECTION, ELEVATION ASTENING SCHEDULE	On Or Detail Views.		



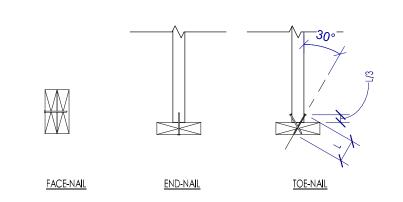


NOTES:

1. HOLE SIZE: THE HOLE DIAMETER SHALL NOT EXCEED 1½" OR D/10, WHICHEVER IS SMALLEST. 2. <u>VARIANCE:</u> FOR LARGER HOLE DIAMETERS' OR FOR HOLES OUTSIDE OF THE PERMITTED ZONES, WRITTEN PERMISSION MUST BE OBTAINED FROM THE EOR.

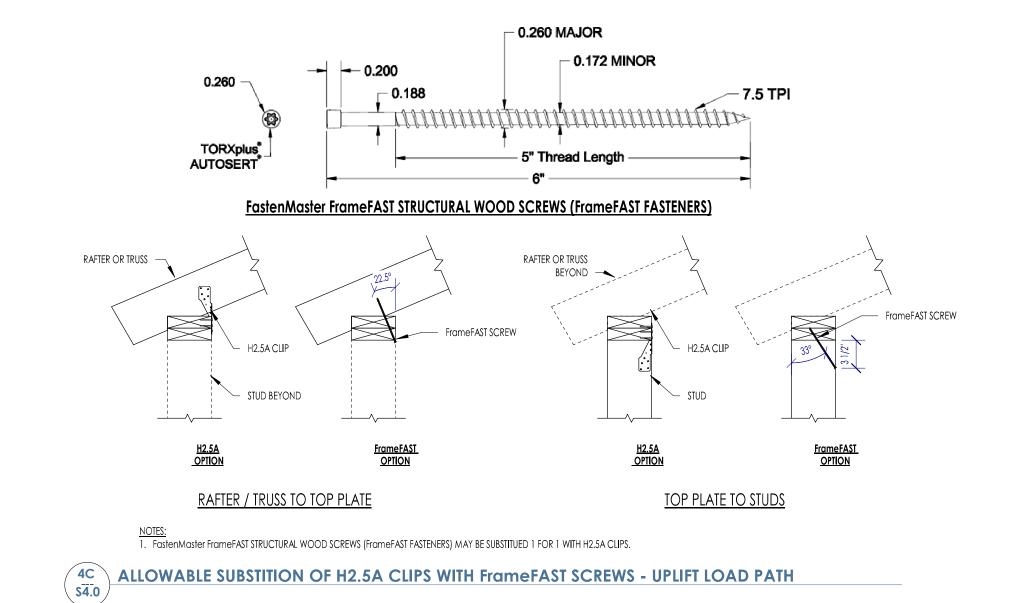
3. <u>LIMITATIONS:</u> THE ABOVE CRITERIA ONLY APPLY TO SIMPLY-SUPPORTED, UNIFORMLY LOADED GLUE LAMINATED BEAMS. FOR BEAMS THAT ARE EITHER CONTINUOUS ACROSS MULTIPLE SPANS OR THAT ARE SUPPORTING NON-UNIFORM LOADS, WRITTEN PERMISSION MUST BE OBTAINED FROM THE EOR.

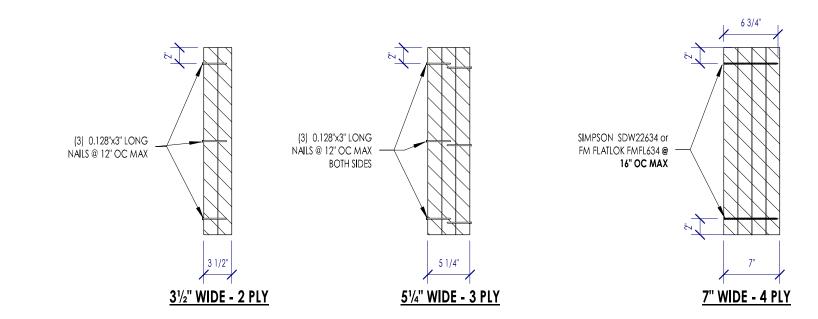
4E S4.0 ALLOWABLE HORIZONTAL HOLE LOCATIONS IN GLUE LAMINATED TIMBER BEAMS



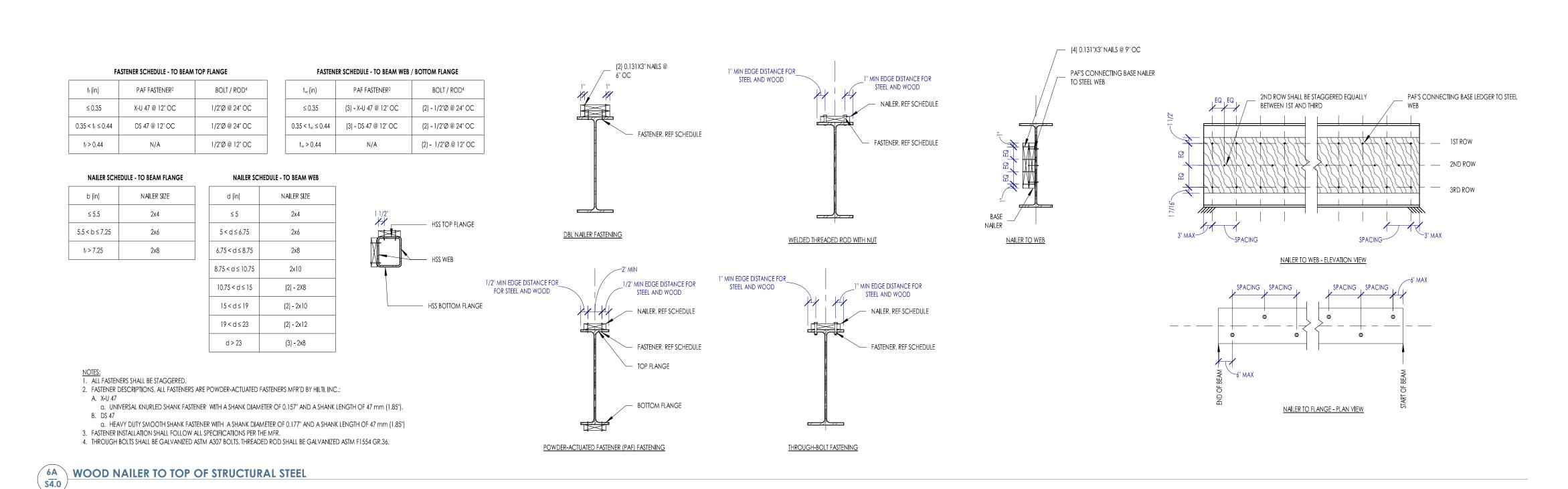
TYPICAL NAILING CONFIGURATIONS

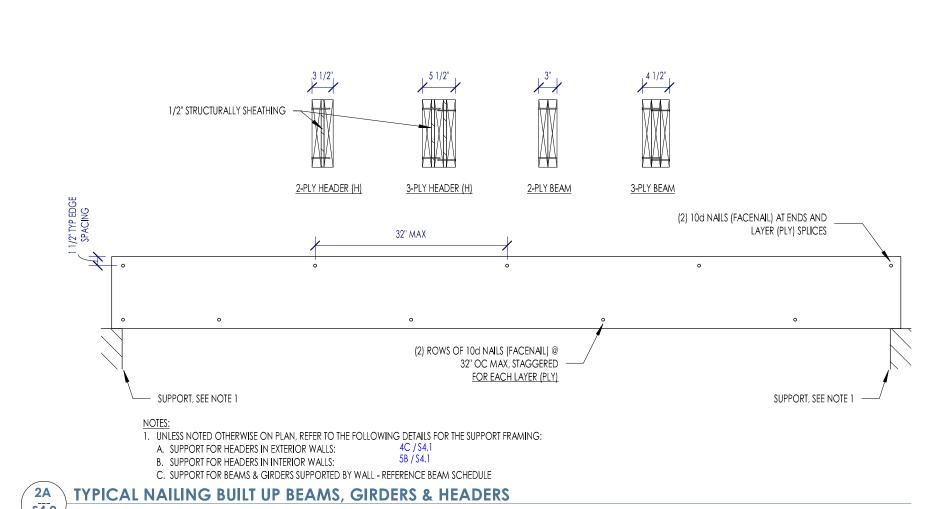
S4.0





2C TYPICAL LVL MULTIPLE PLY FASTENING REQUIREMENTS





TYPICAL WOOD FRAMING DETAILS

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

Architect: OpeningDesign

17 S Fairchild | FL 7

Madison, WI 53703 ryan@openingdesign.com | 773.425.6456

> Description Review before Permit

PERMIT REVISIONS

-Wranglers-*(**** Owner: Renovation Wranglers 102 E 26th St Bryan, TX 77803 Katieneason@me.com | 979.450.9969

ARCHITECTURE Architect of Record: LKB Architecture 2929 Allen Pkwy Suite 200

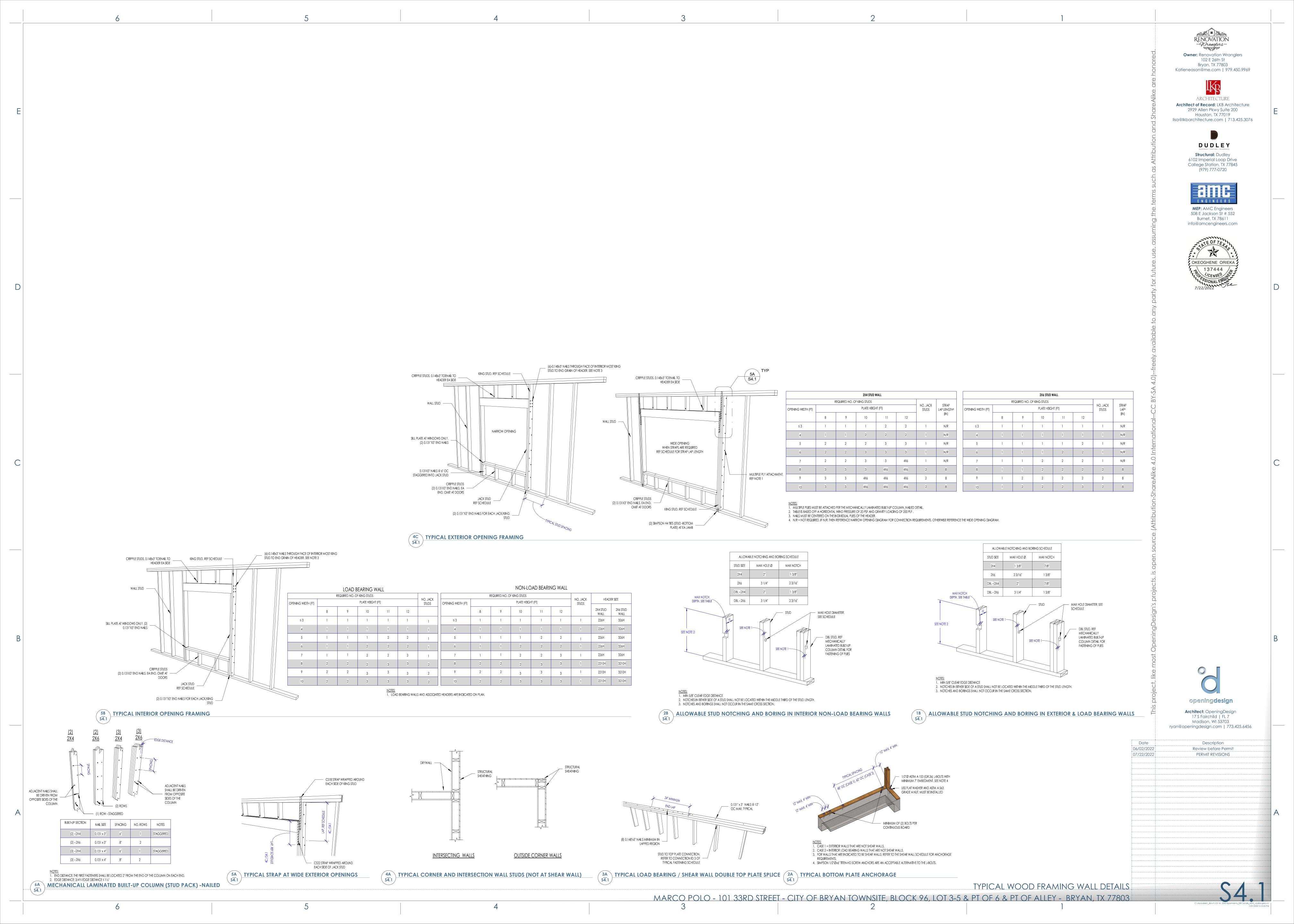
Houston, TX 77019 lisa@lkbarchitecture.com | 713.425.3076

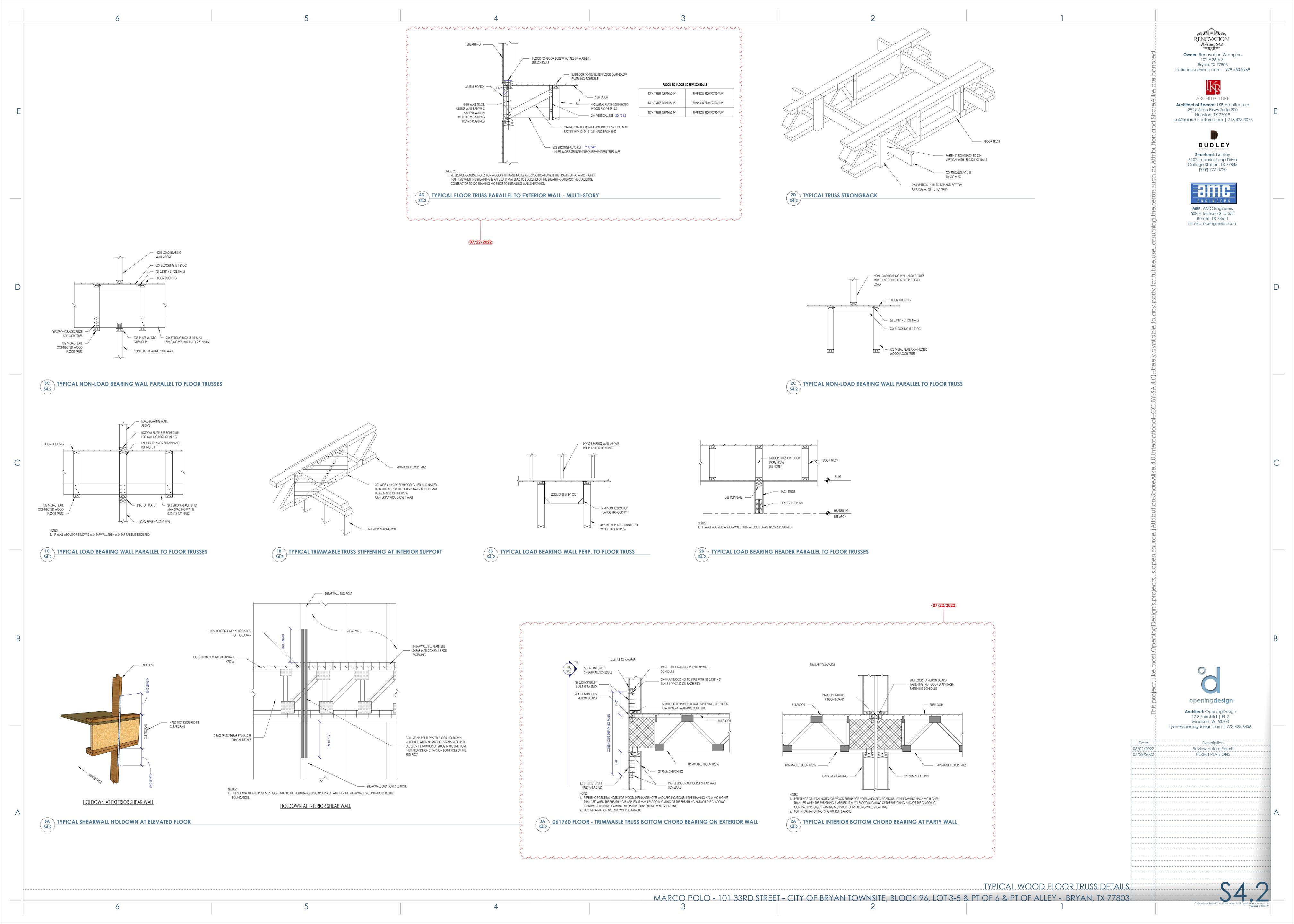
DUDLEY

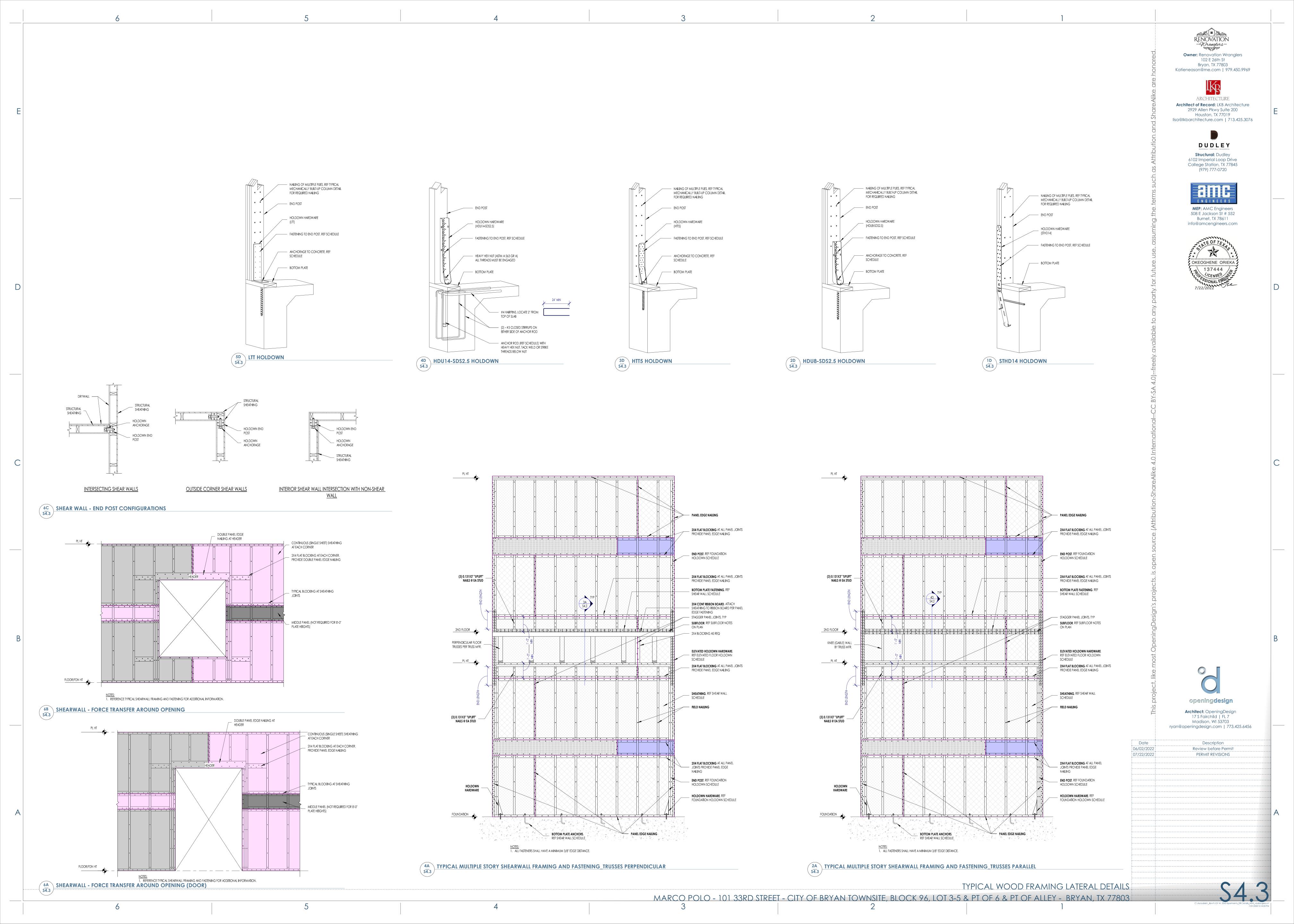
Structural: Dudley 6102 Imperial Loop Drive

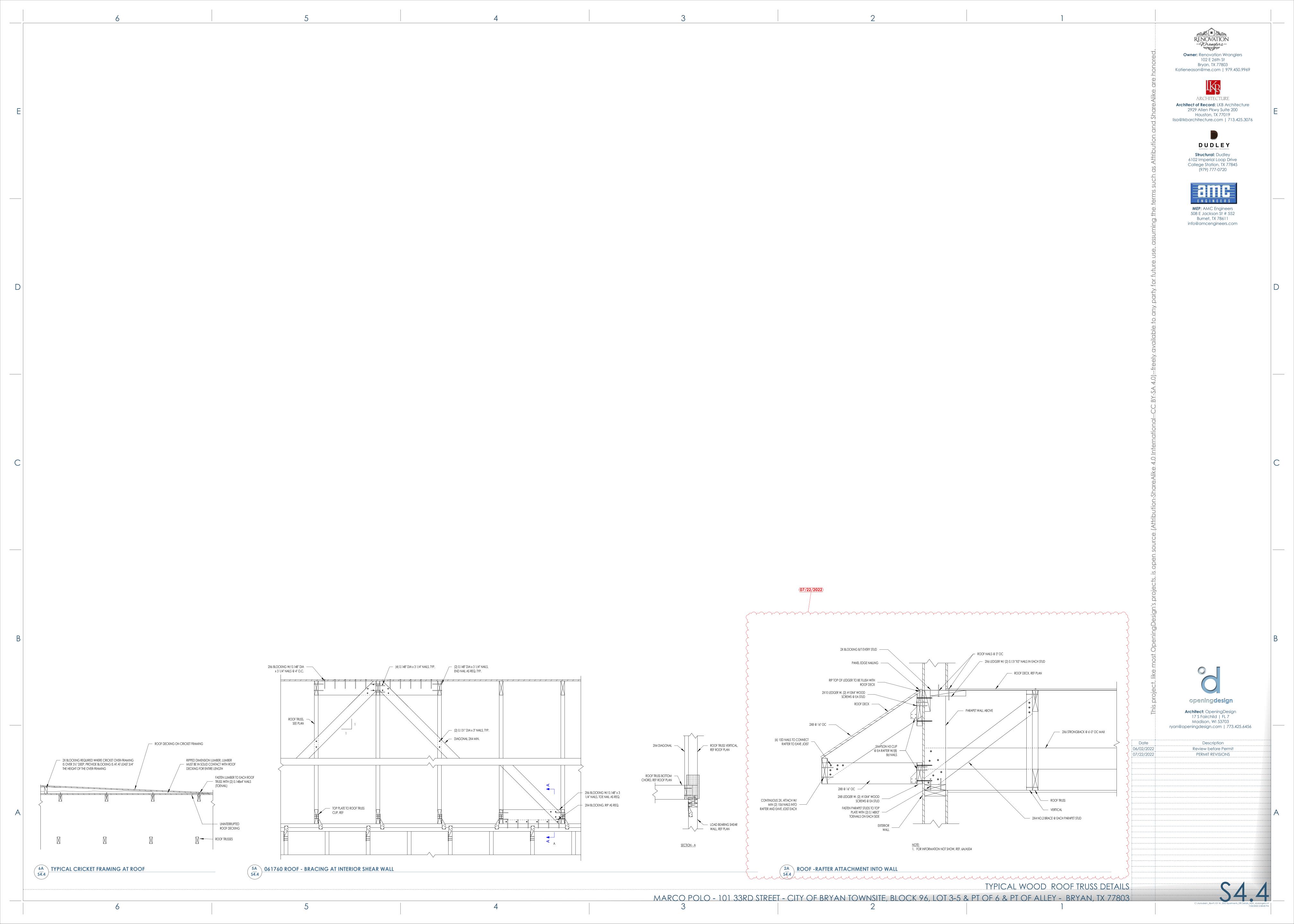
College Station, TX 77845 (979) 777-0720

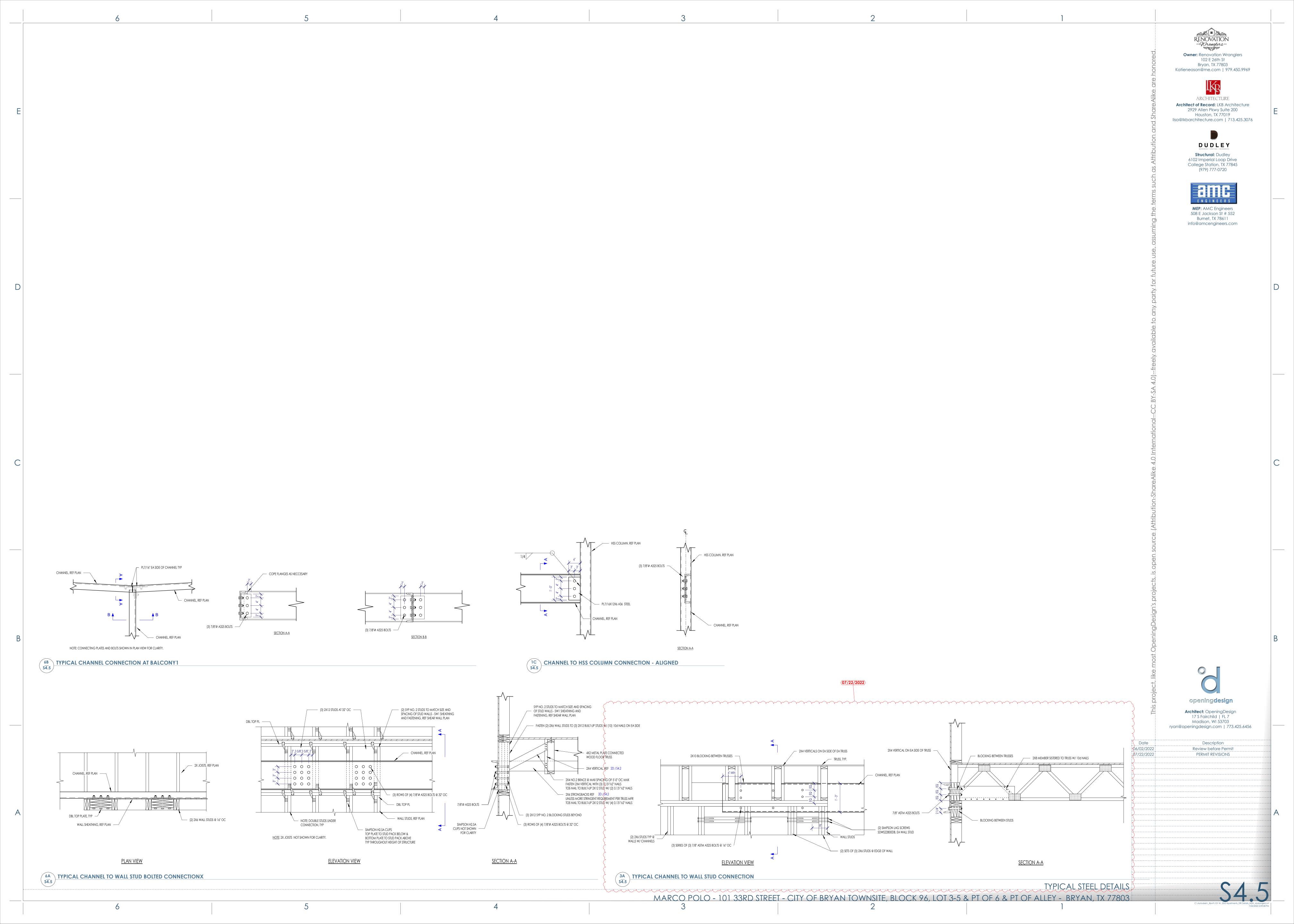
MEP: AMC Engineers 508 E Jackson St # 552 Burnet, TX 78611 info@amcengineers.com

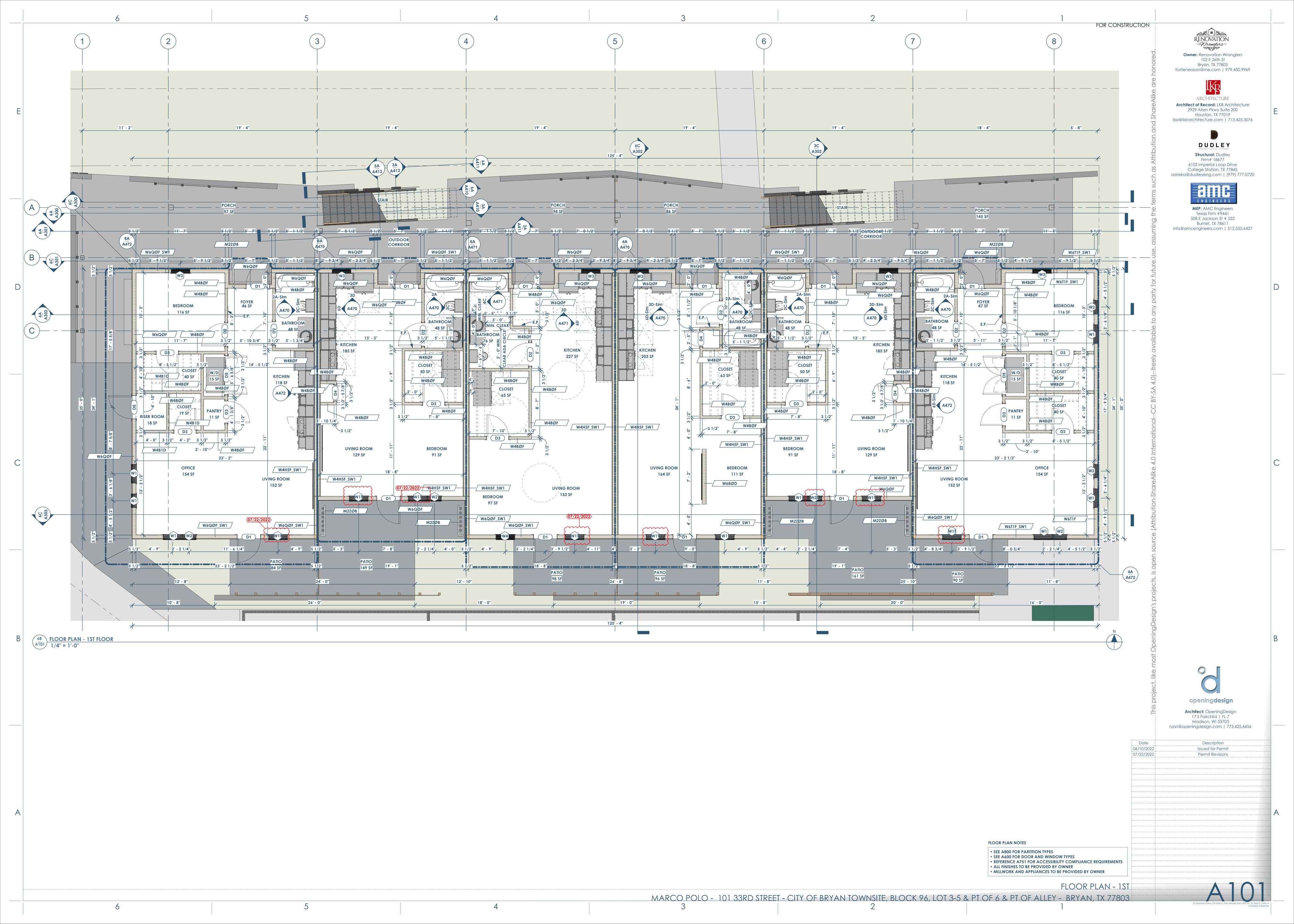


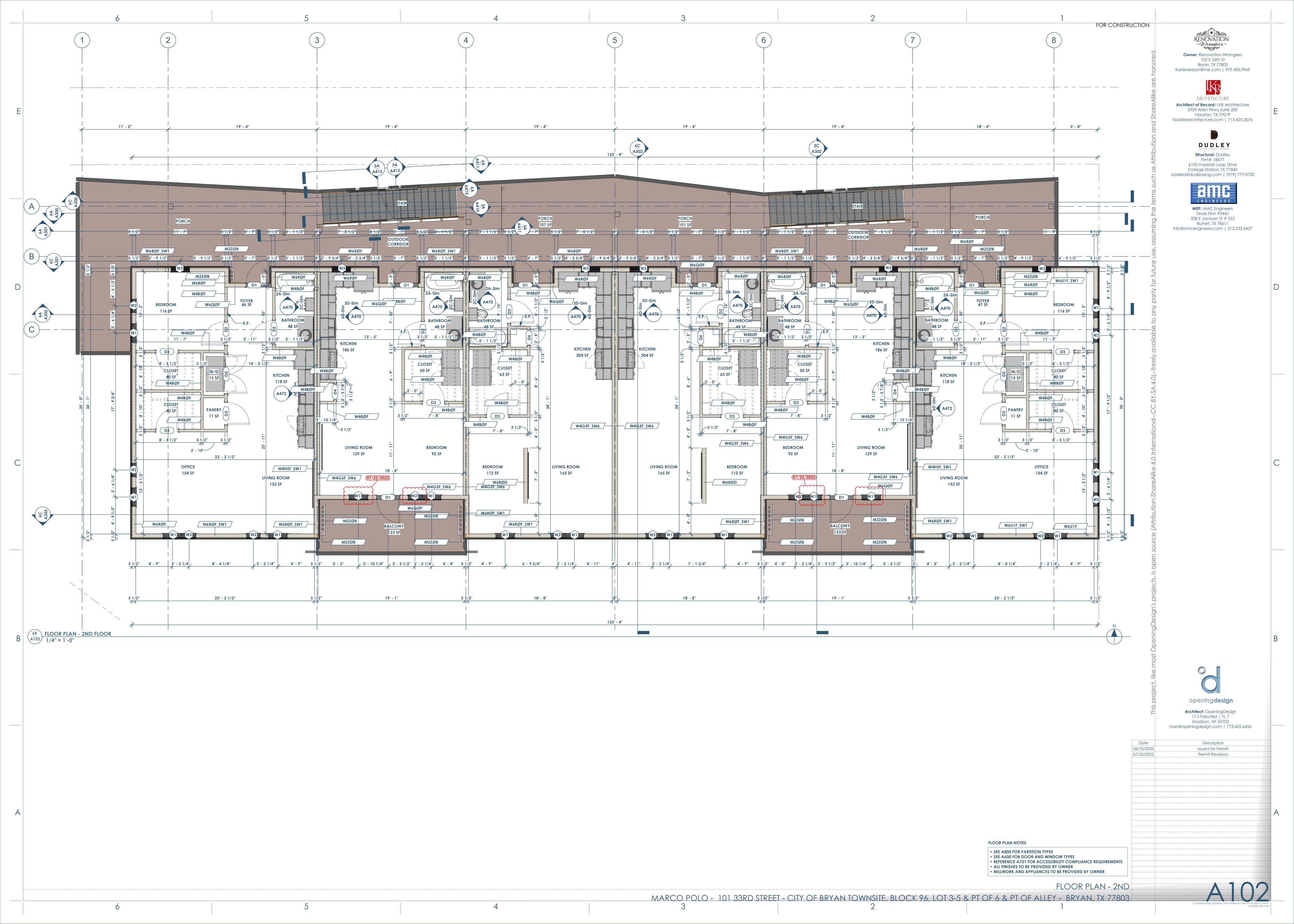


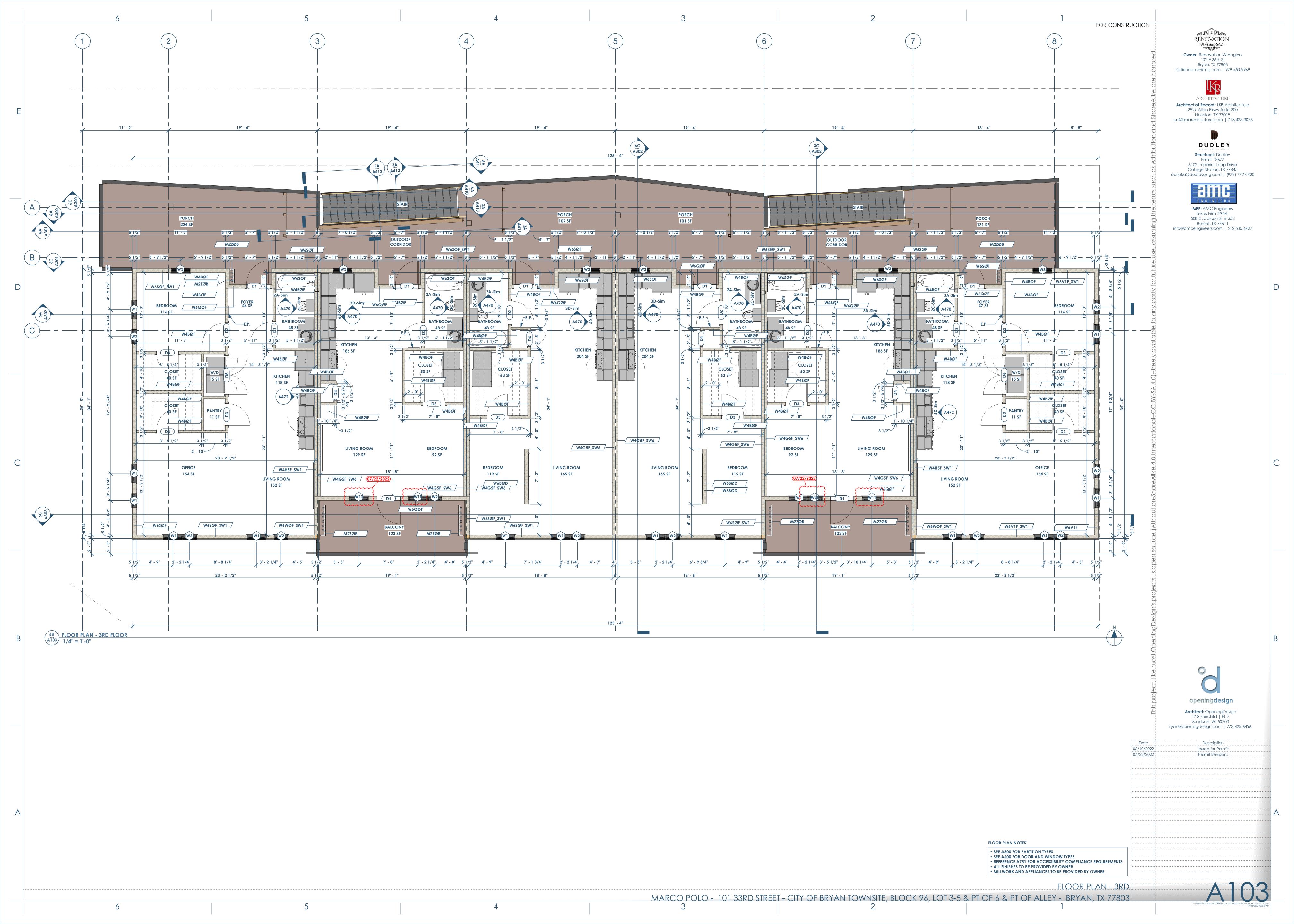


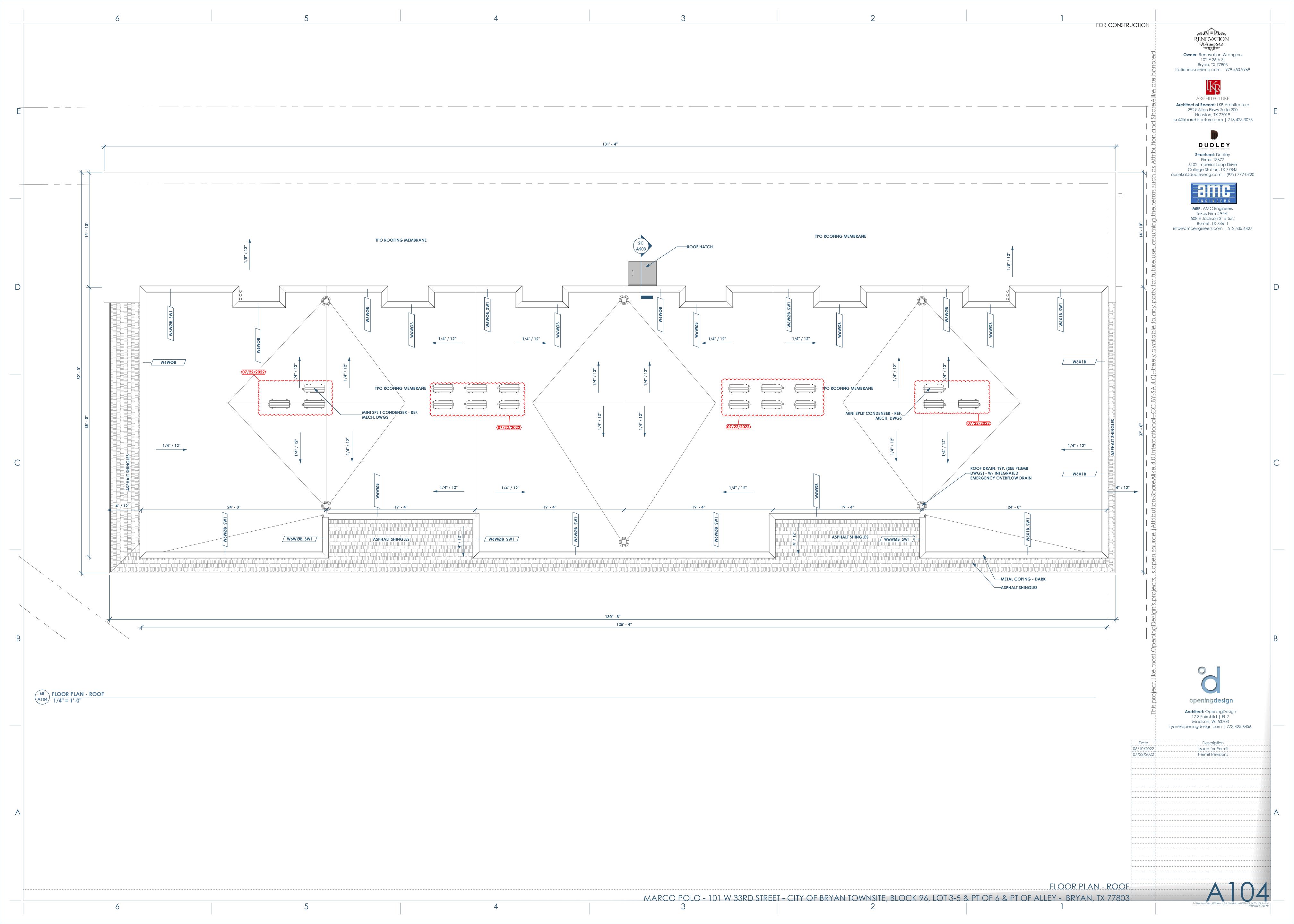


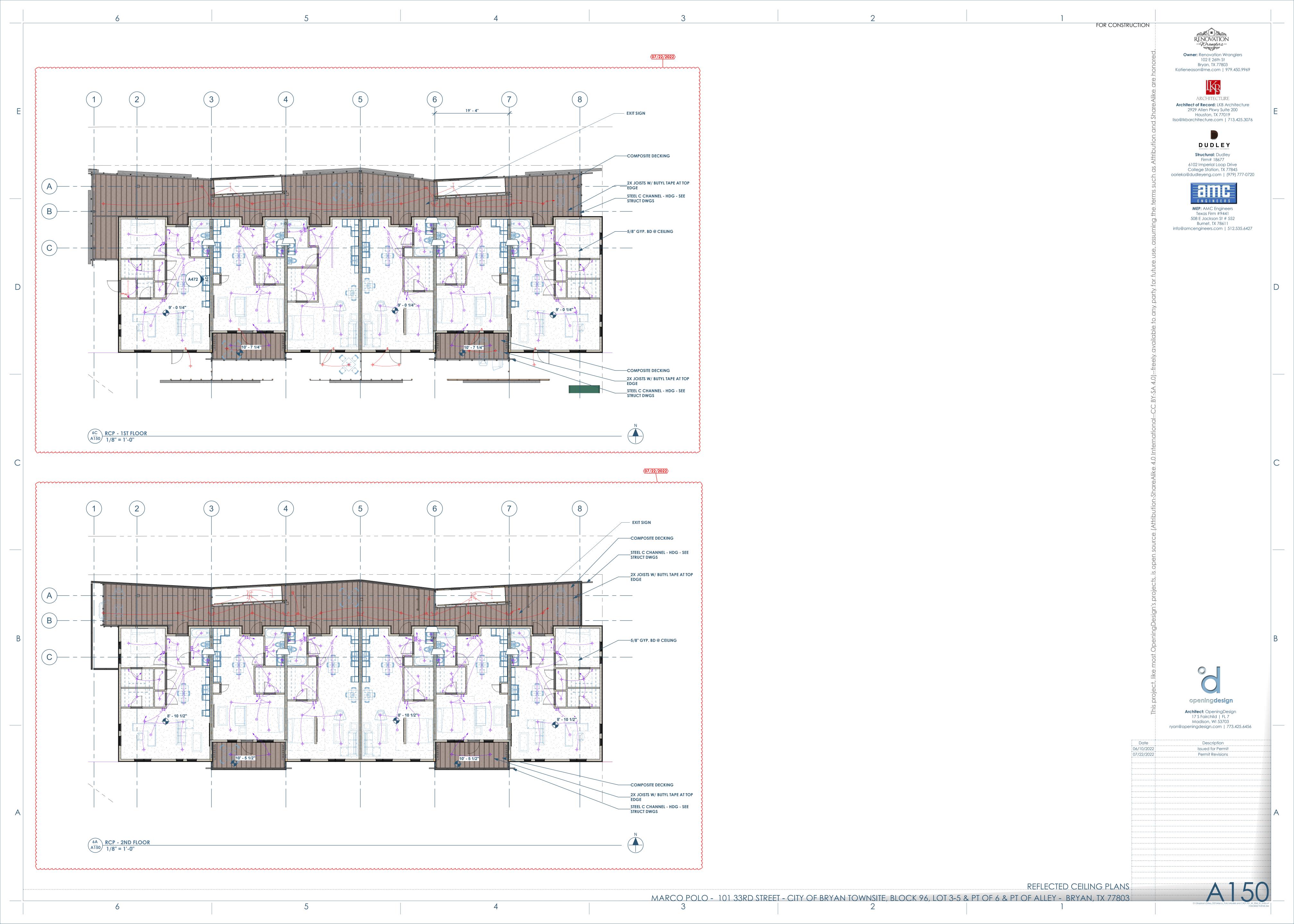
















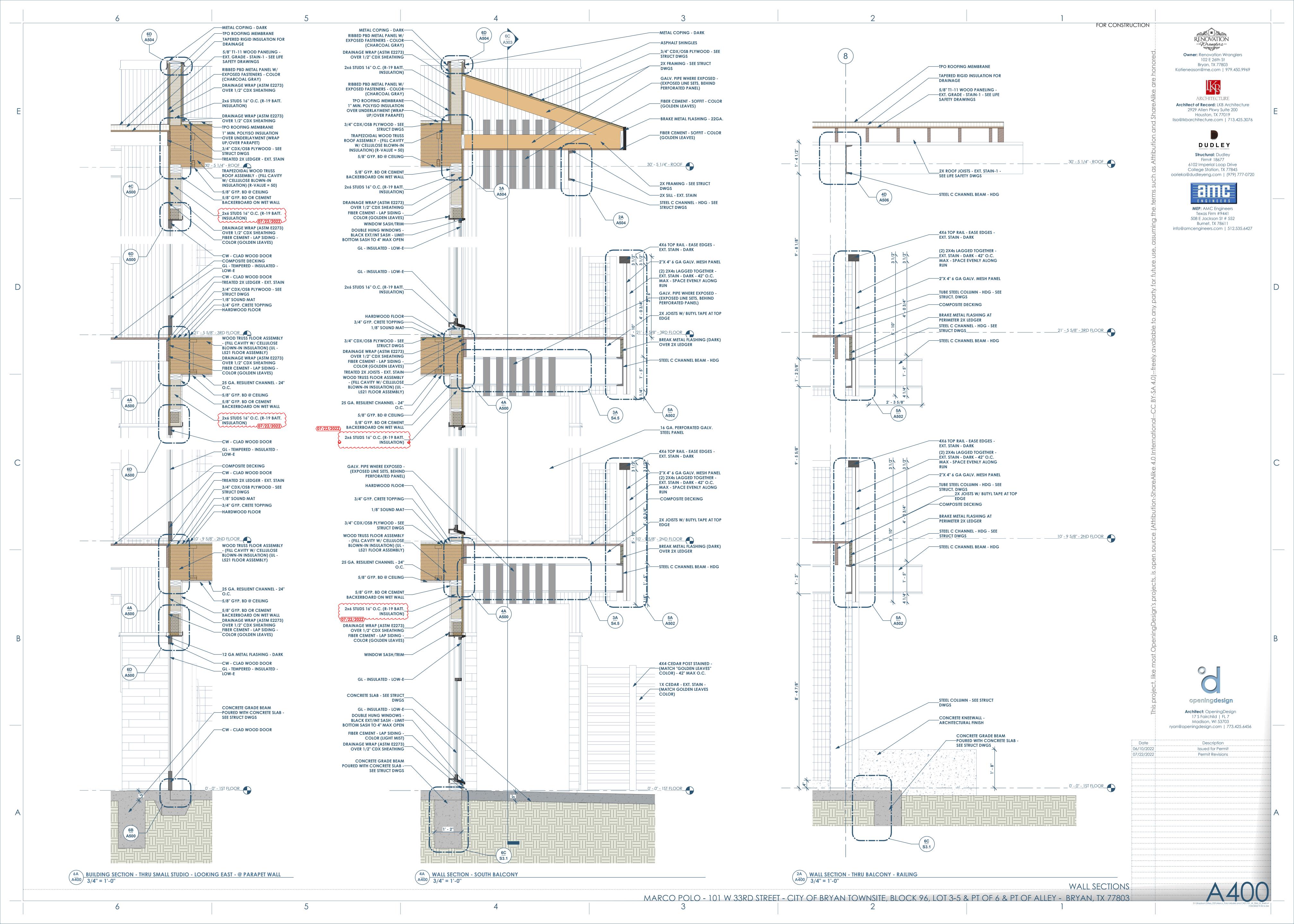


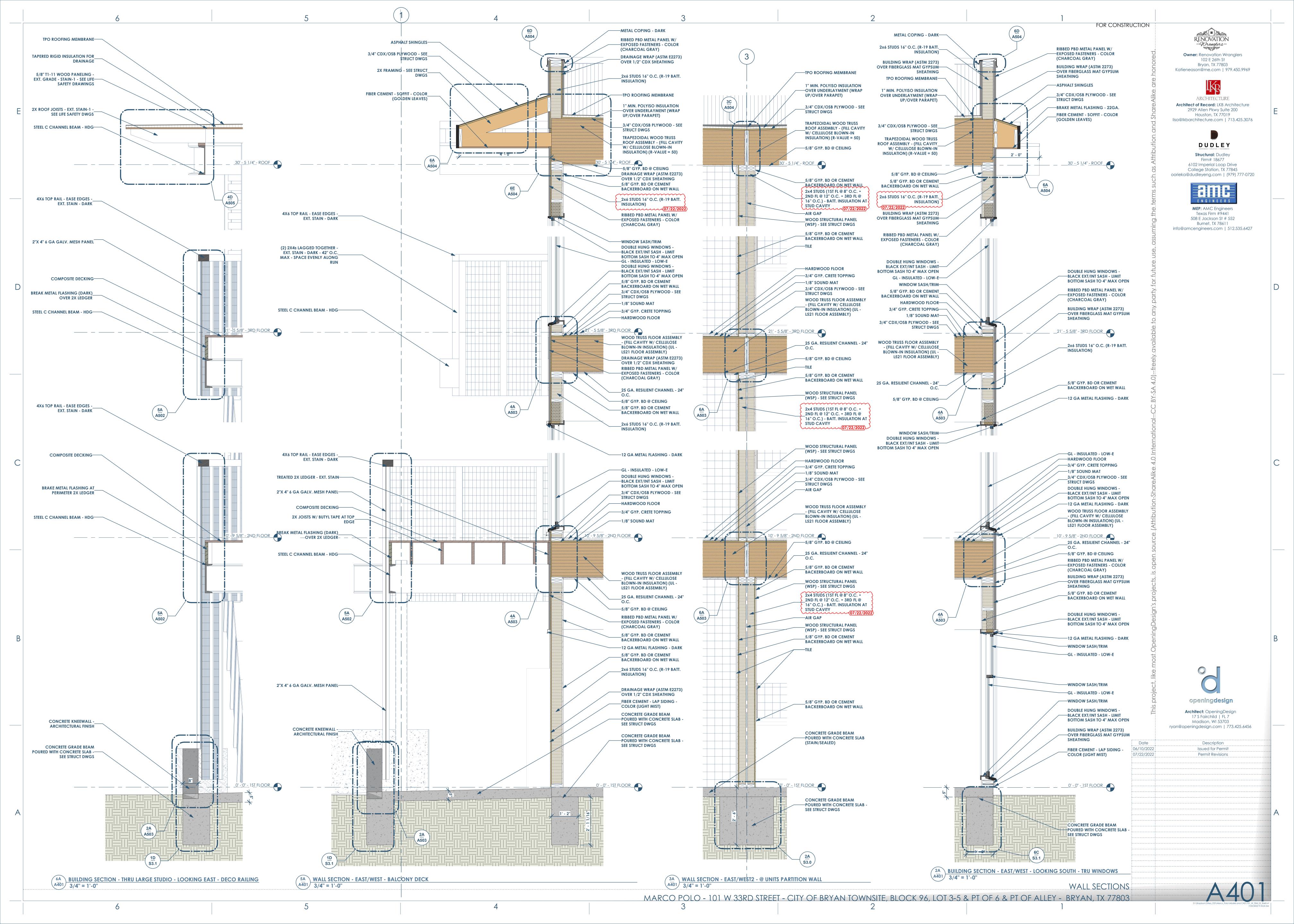


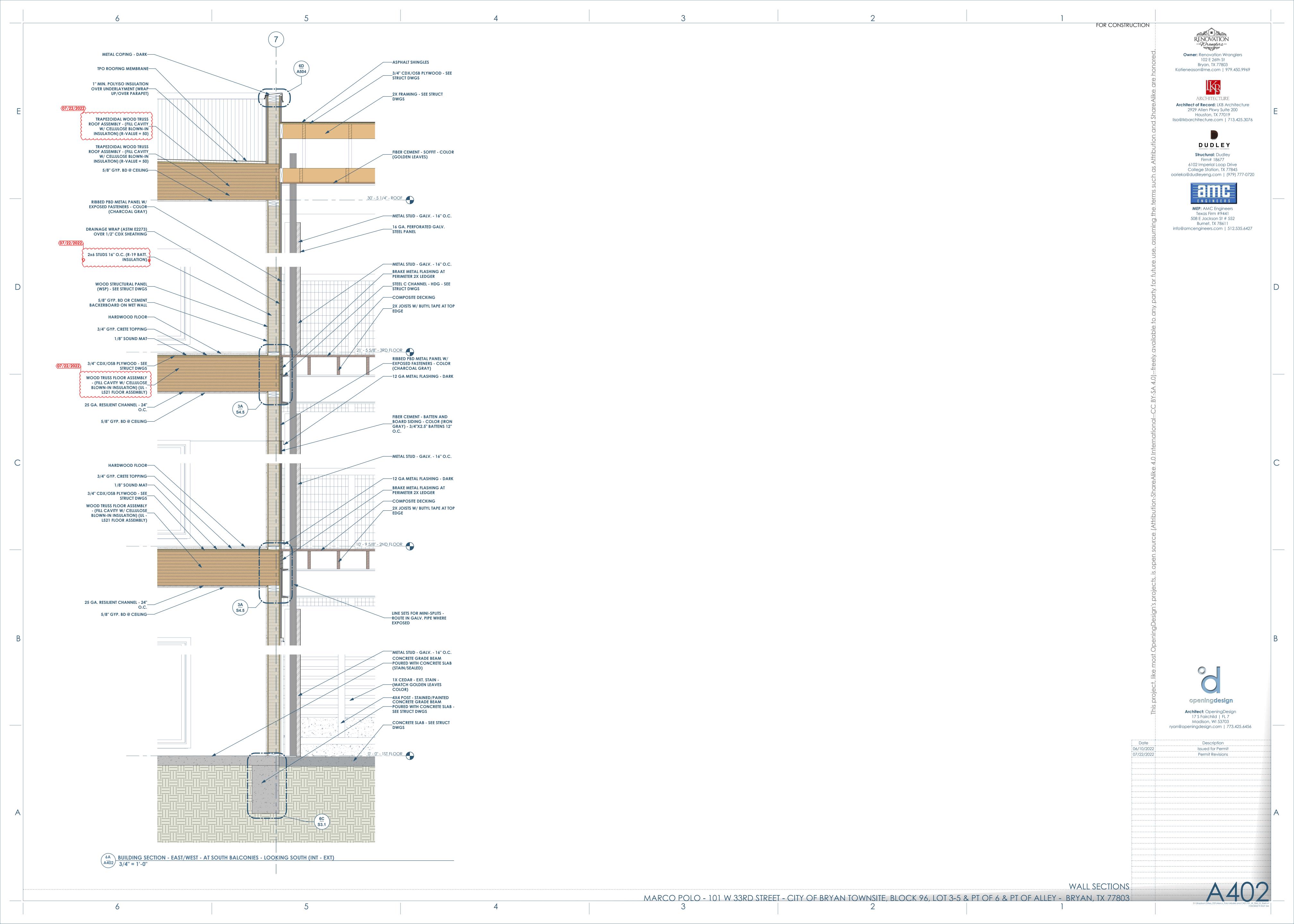


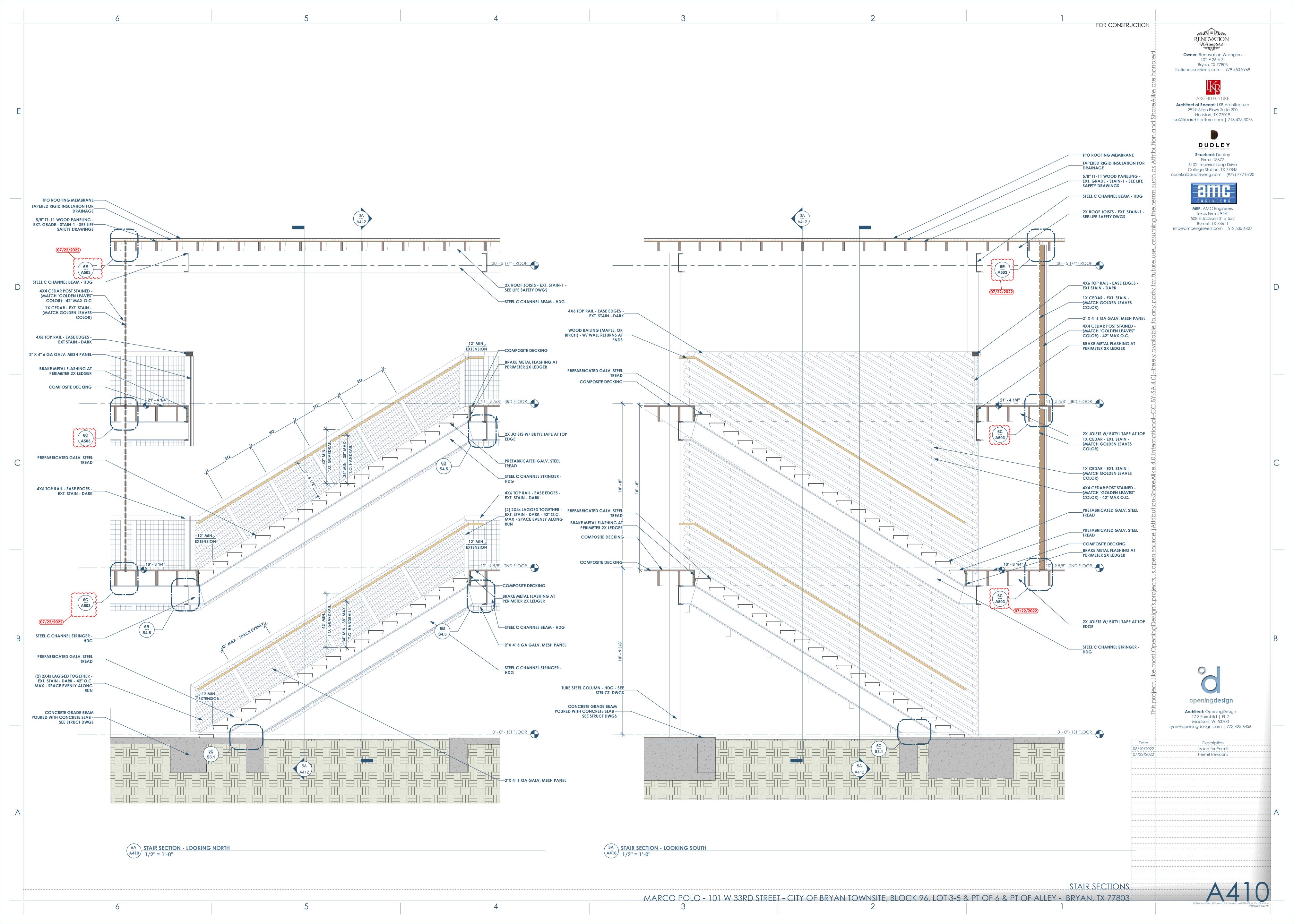


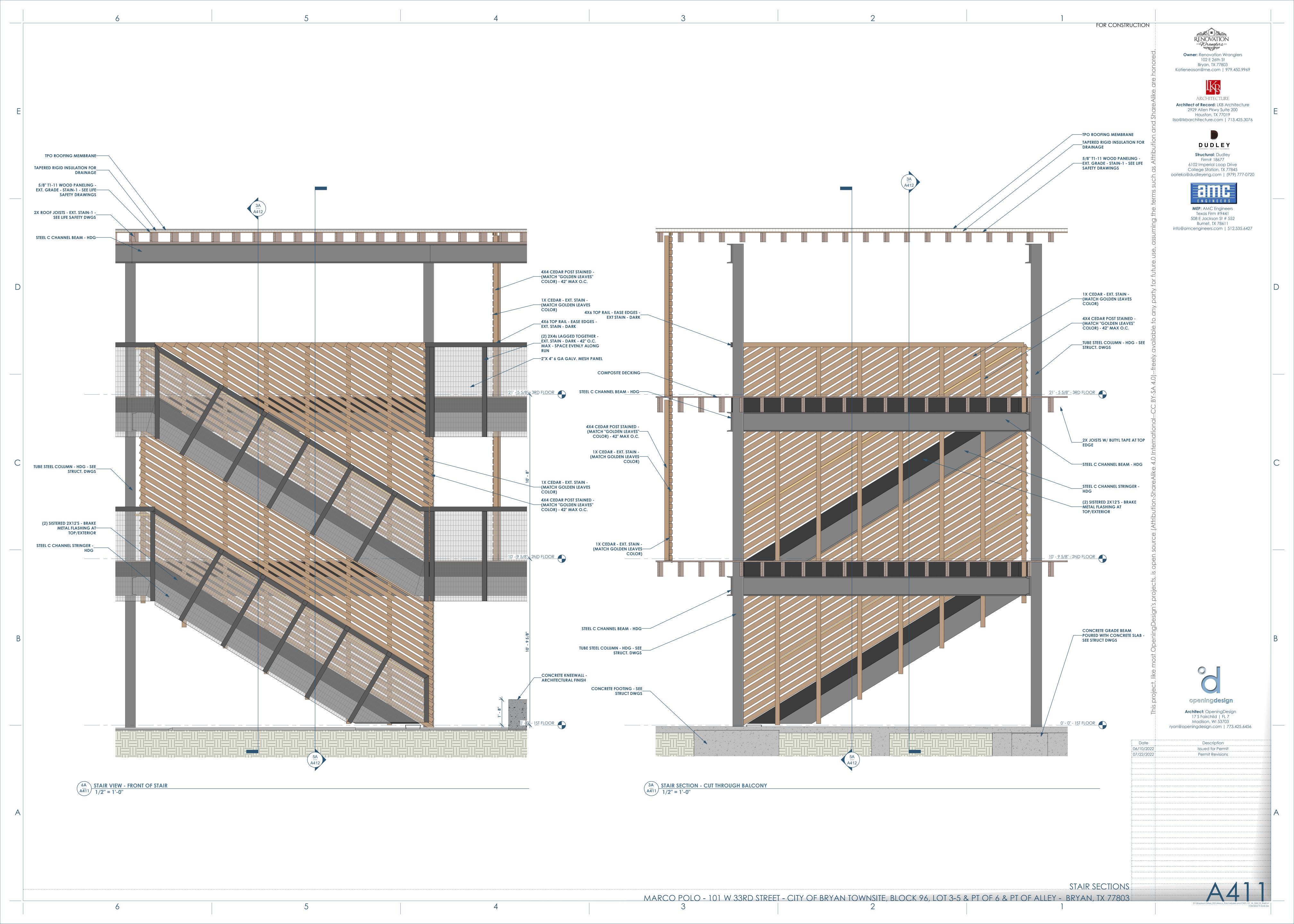


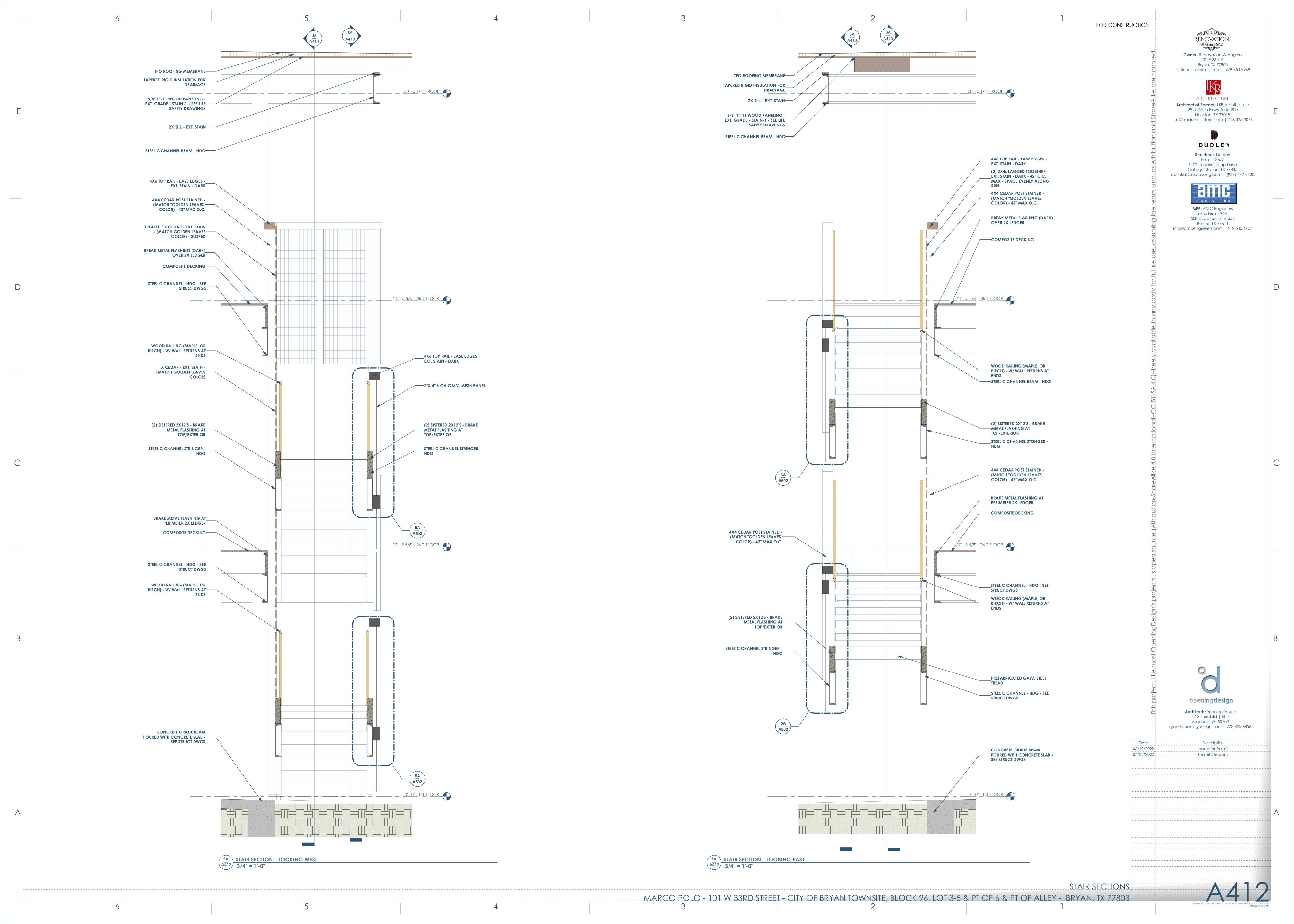


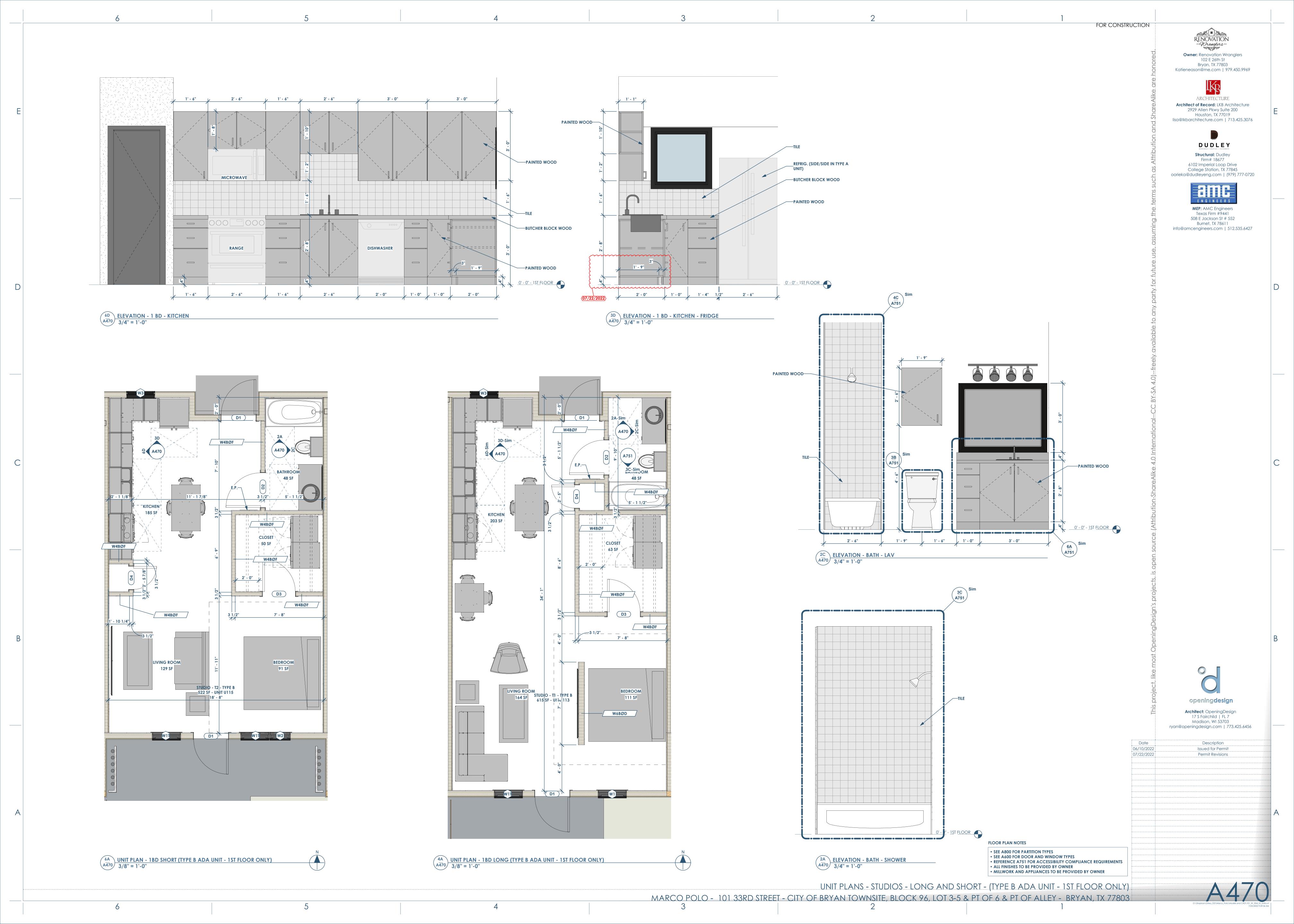


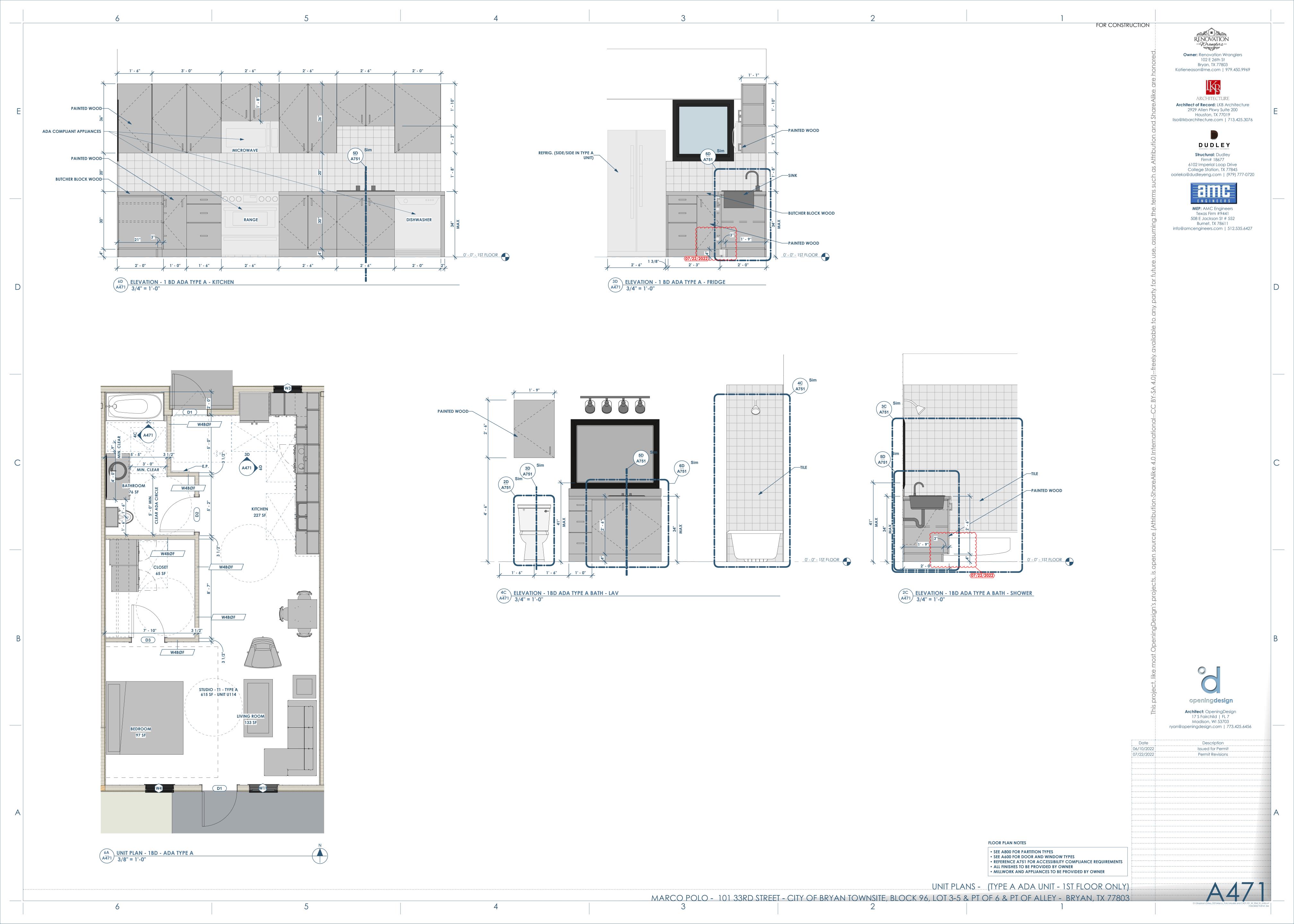


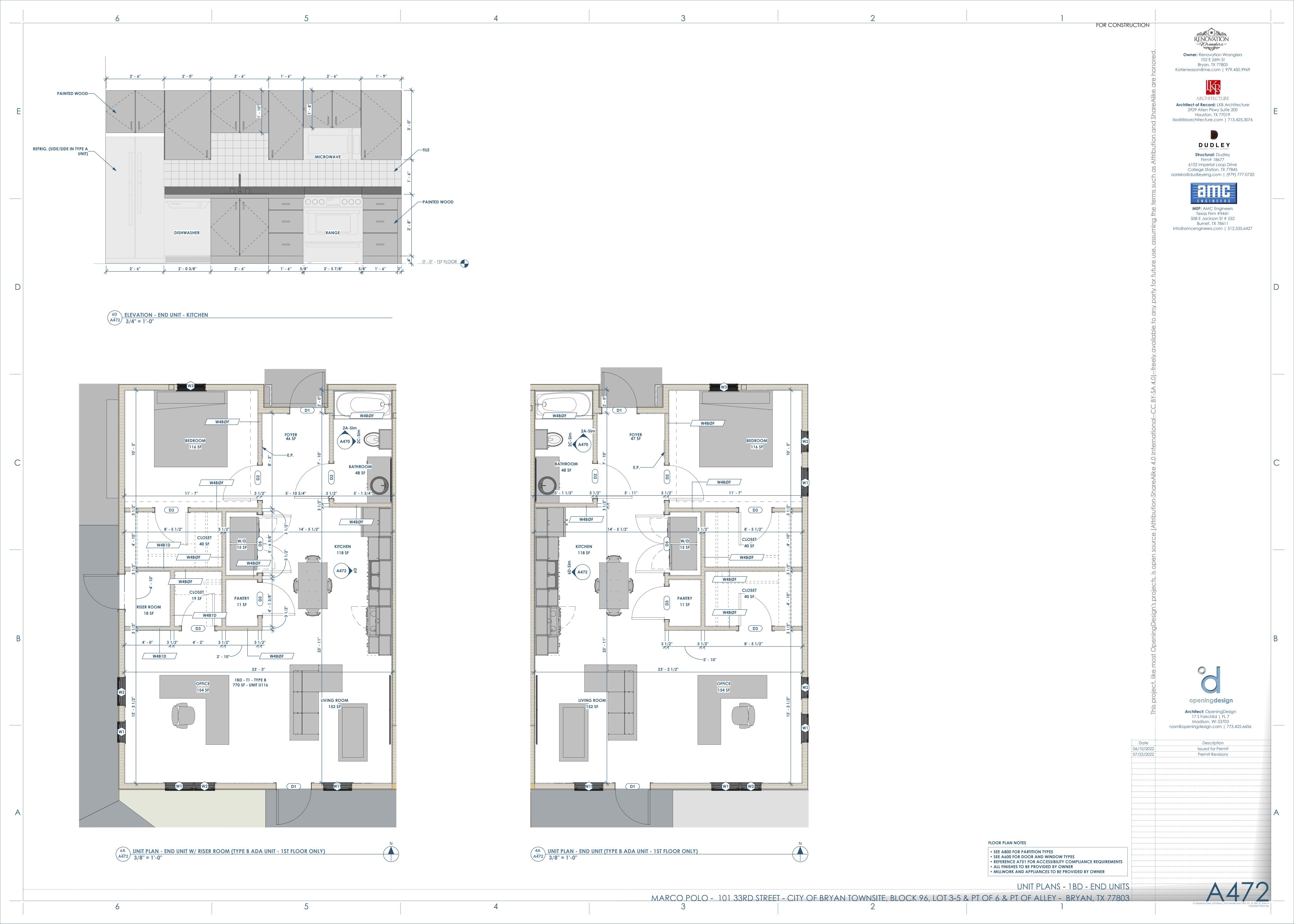


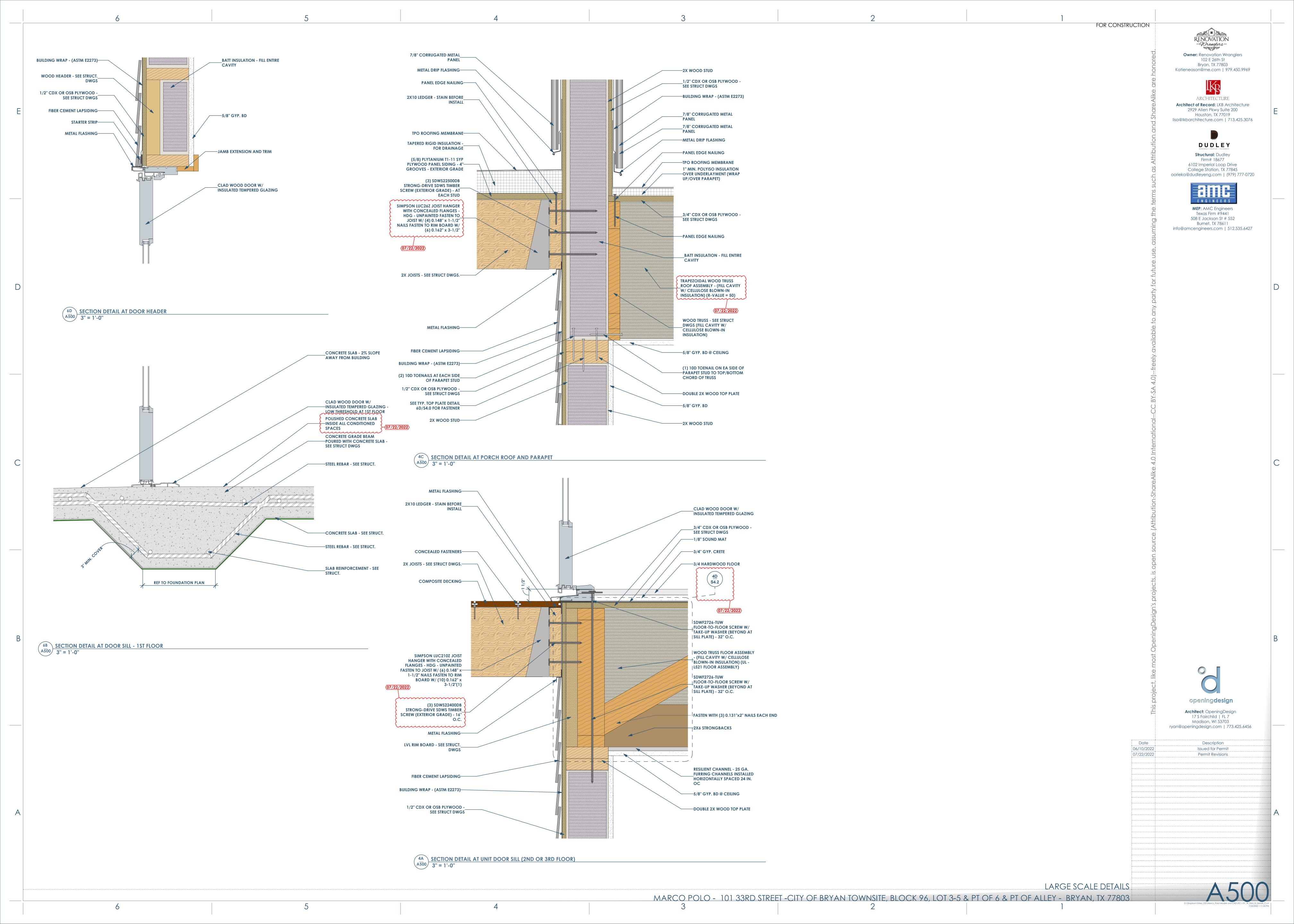


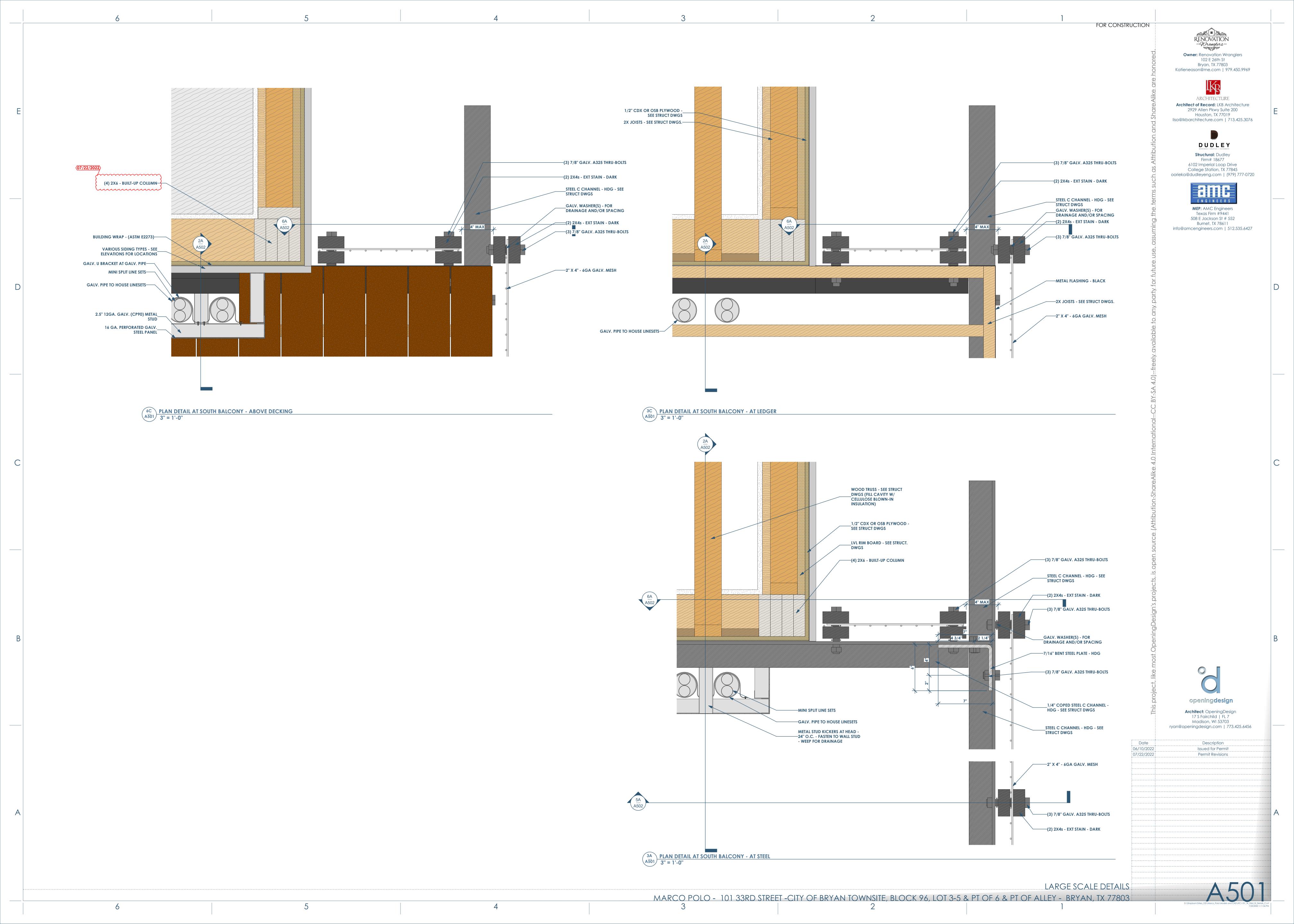


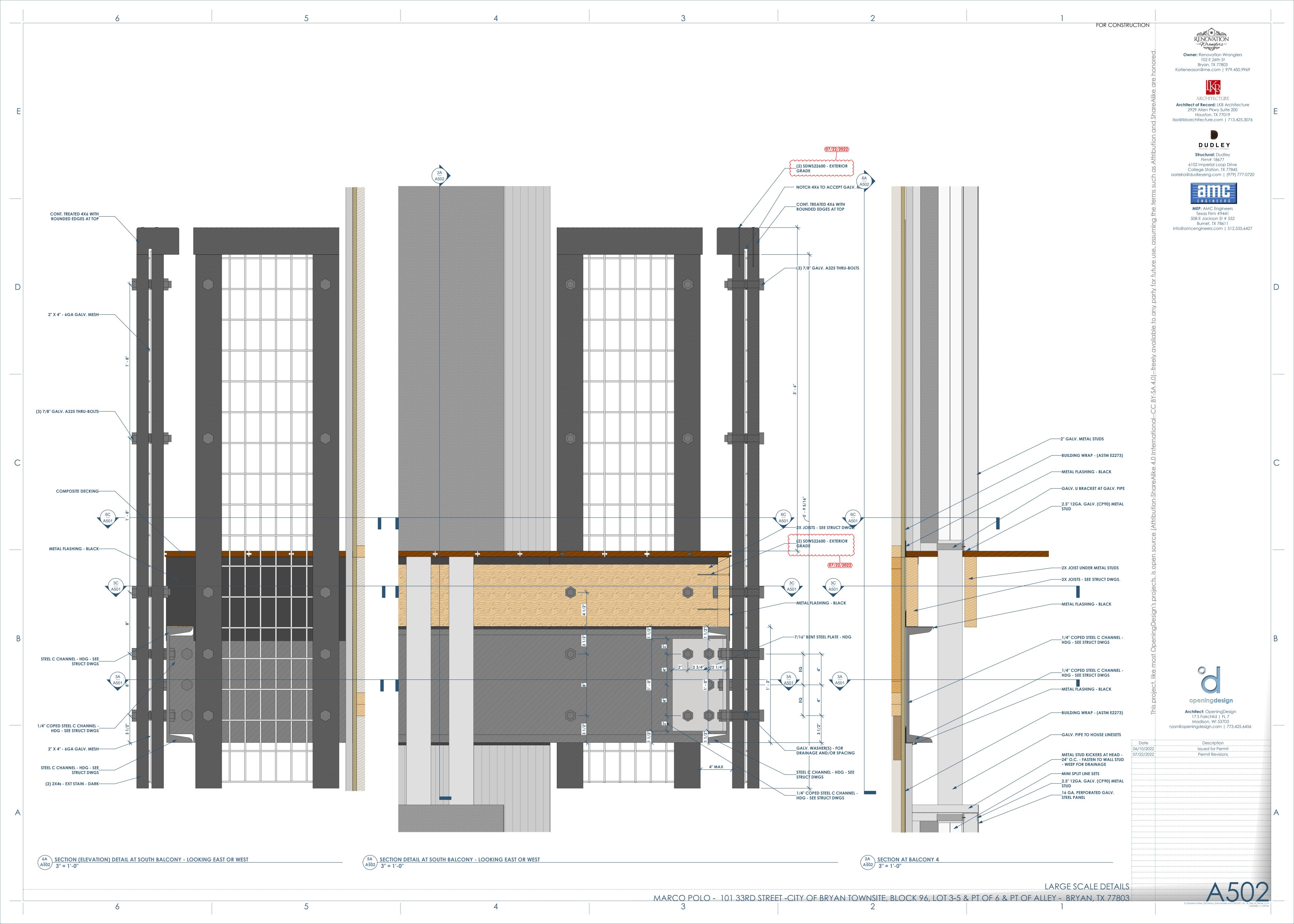


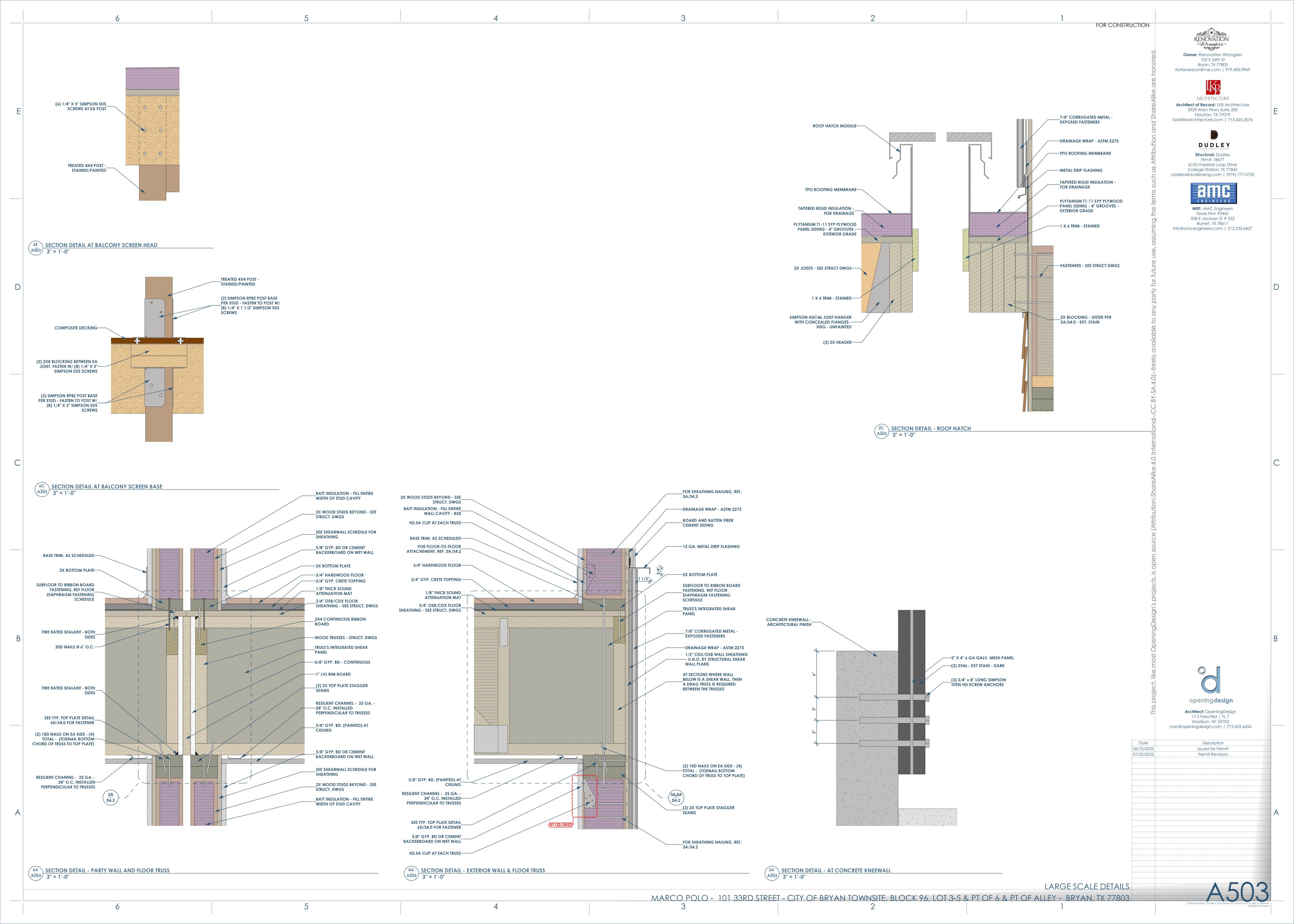


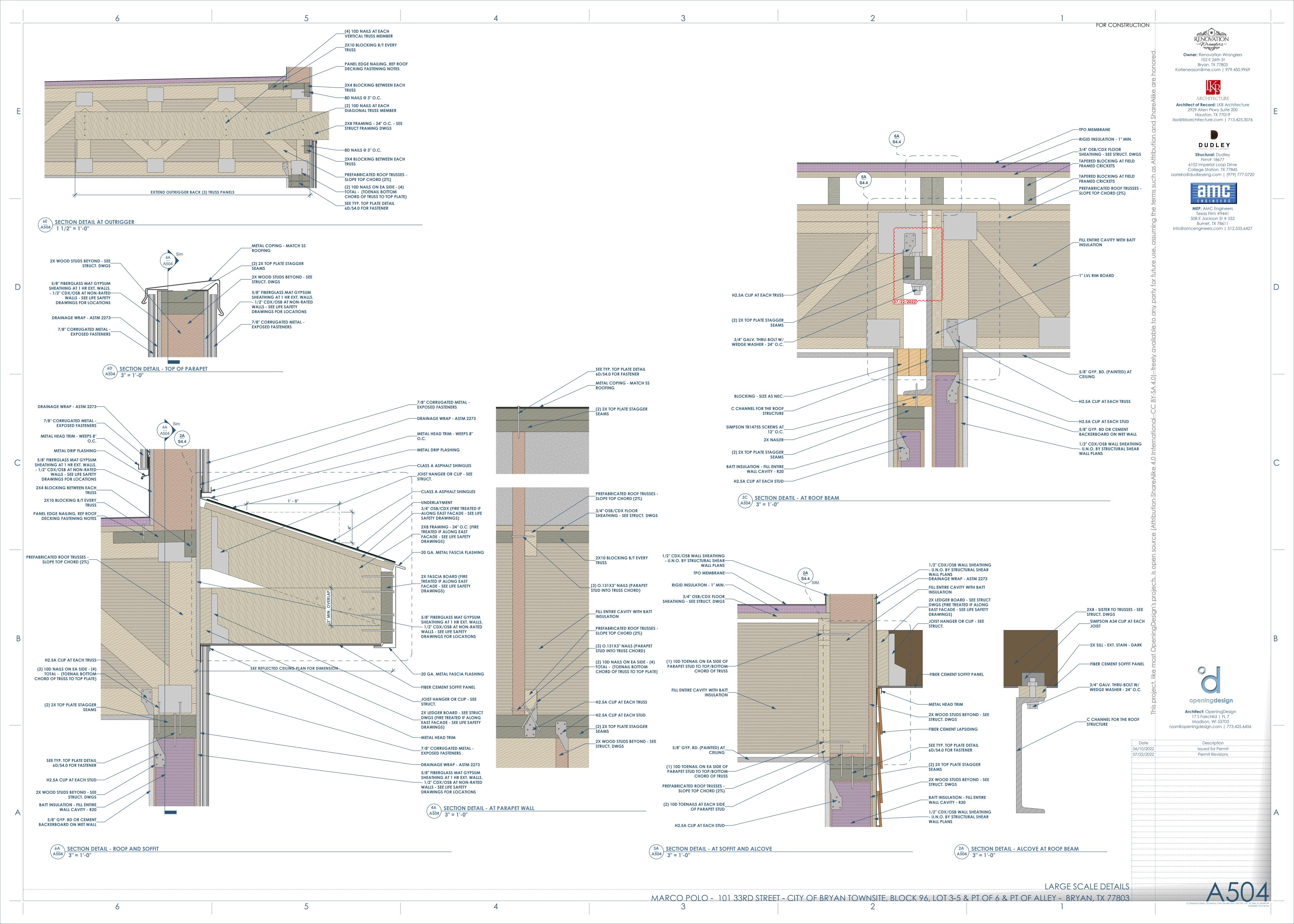


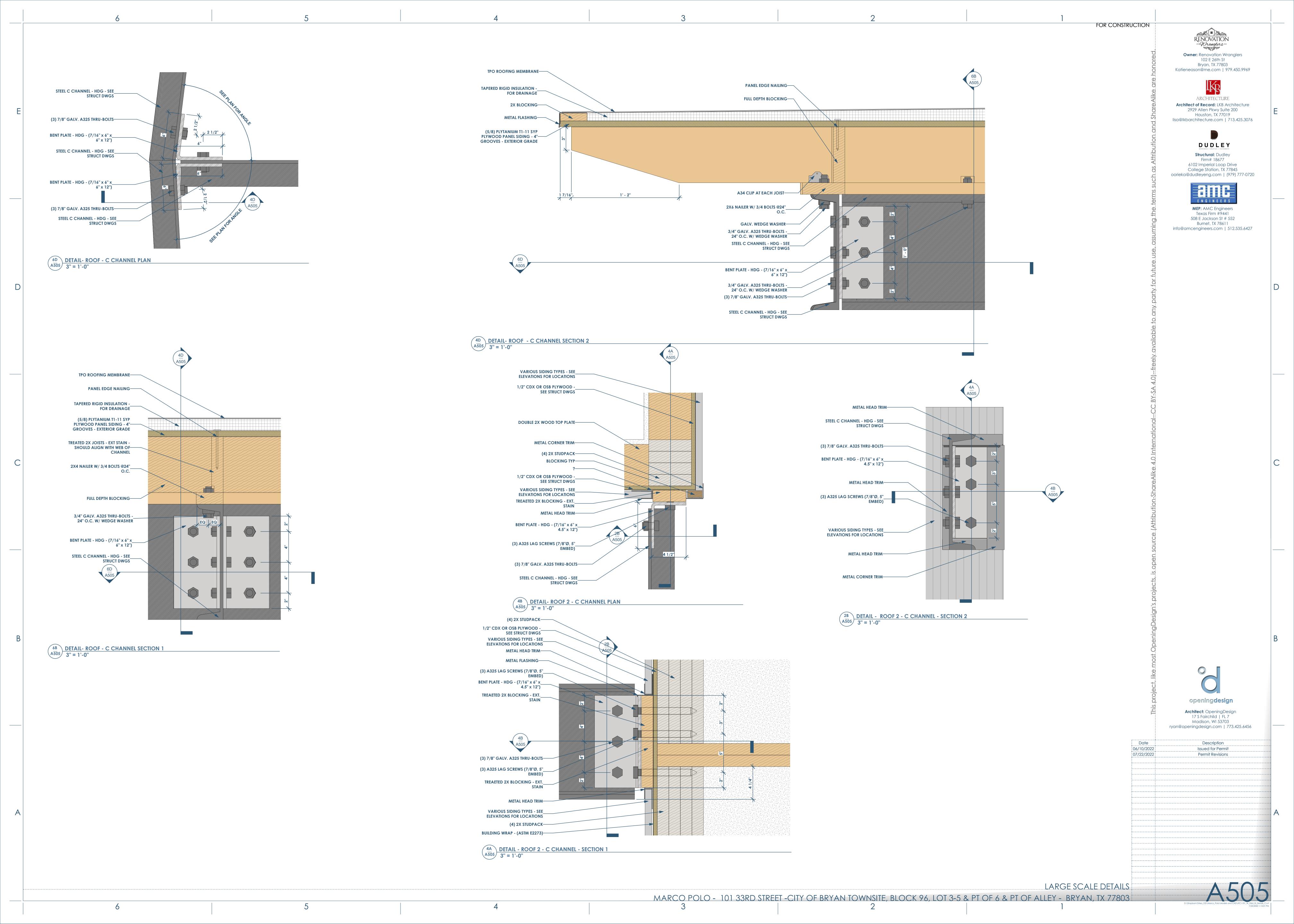


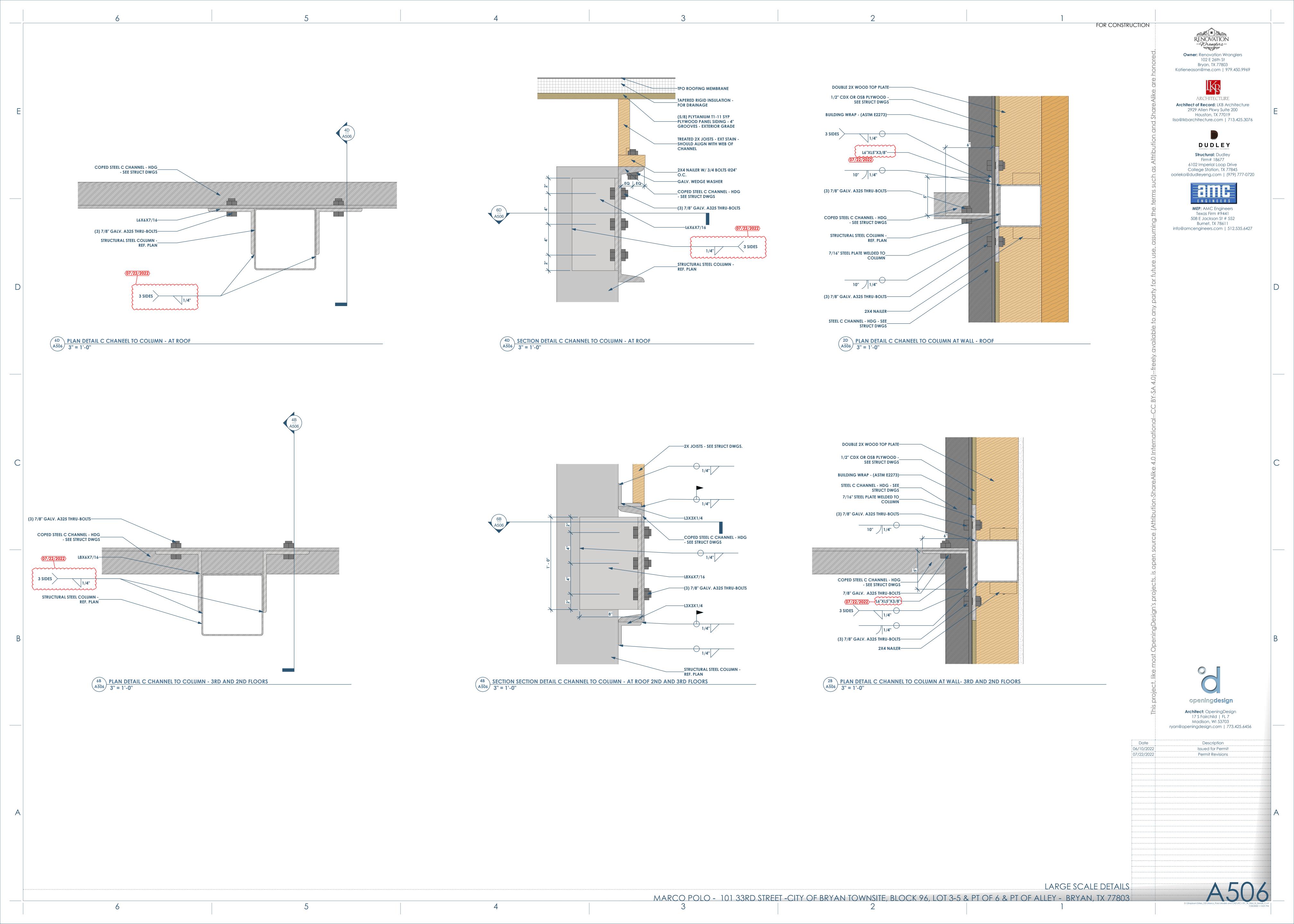






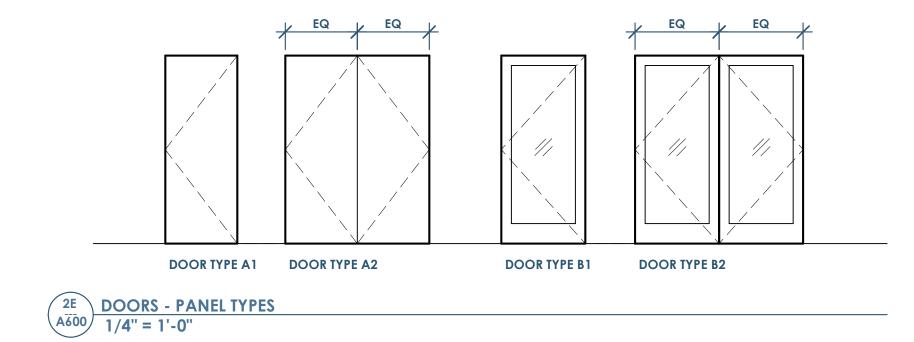


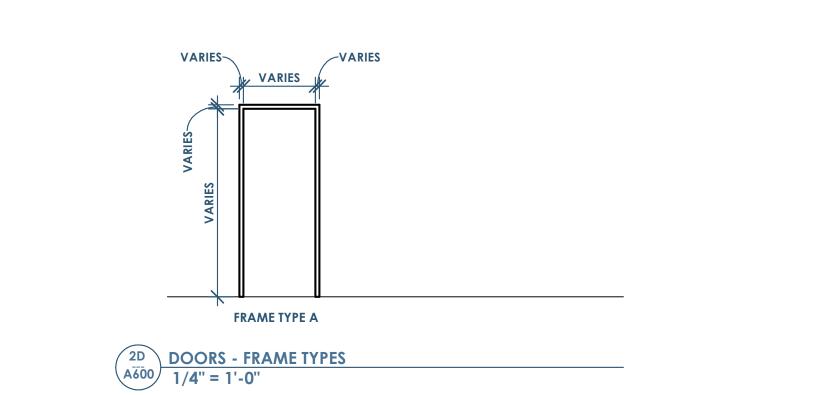


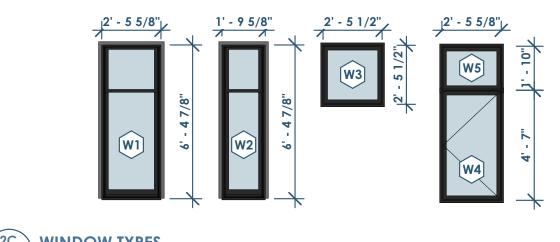


DOOR SCHEDULE - TYPE										
TYPE MARK	COUNT	ТҮРЕ	WIDTH	HEIGHT	FIRE RATING TYPE	DOOR MATERIAL	FRAM TYPE	FRAME MATERIAL	GLAZING	TYPE COMMENTS
D1	28	SINGLE - LITE - MUNTINS - 3-0 x 6-8	3' - 0"	6' - 8"	B1	CW - CLAD WOOD DOOR	A	CW - CLAD WOOD DOOR	GL - TEMPERED - INSULATED - LOW-E	
D2	24	SINGLE - FLUSH - 3-0 x 6-8	3' - 0"	6' - 8"	A1	WD - HOLLOW CORE	Α	WD	-	
D3	30	SINGLE - FLUSH - 2-10 x 6-8	2' - 10"	6' - 8"	A1	WD - HOLLOW CORE	Α	WD	-	
D4	11	SINGLE - FLUSH - 2-0 x 6-8	2' - 0"	6' - 8"	A1	WD - HOLLOW CORE	Α	WD	-	
D5	6	DOUBLE - FLUSH - 5-0 x 6-8	5' - 0"	6' - 8"	A2	WD - HOLLOW CORE	Α	WD	-	
D6	1	SINGLE - HOLLOW METAL - 3-0 x 6-8	3' - 0"	6' - 8"	A1	нм	Α	HM	N/A	

SIMPLIFIED WINDOW SCHEDULE						
PHASE CREATED	TYPE MARK	COUNT	ТҮРЕ	WIDTH	HEIGHT	TYPE COMMENTS
IST PHASE	W1	33	SINGLE HUNG - TYPE 2	2' - 5 5/8"	6' - 4 7/8"	<u></u>
IST PHASE	W1T	13	SINGLE HUNG - TYPE 2 - TEMPERED	2' - 5 5/8"	6' - 4 7/8"	TEMPERED GLAZING
ST PHASE	W2	28	SINGLE HUNG - TYPE 1	1' - 9 5/8"	6' - 4 7/8"	07/72/2022
ST PHASE	W2T	3	SINGLE HUNG - TYPE 1 - TEMPERED	1' - 9 5/8"	6' - 4 7/8"	TEMPERED GLAZING
ST PHASE	W3	18	FIXED PICTURE - TYPE 1	2' - 5 1/2"	2' - 5 1/2"	
ST PHASE	W4	1	CASEMENT - TYPE 1	2' - 5 5/8"	4' - 7"	ADA REACH REQUIREMENTS FOR TYPE A UNITS
IST PHASE	W5	1	FIXED PICTURE - TYPE 2	2' - 5 5/8"	1' - 10"	







2C WINDOW TYPES 1/4" = 1'-0"

RENOVATION
-Wranglers-Owner: Renovation Wranglers 102 E 26th St

FOR CONSTRUCTION

Bryan, TX 77803 Katieneason@me.com | 979.450.9969

ARCHITECTURE Architect of Record: LKB Architecture 2929 Allen Pkwy Suite 200 Houston, TX 77019 lisa@lkbarchitecture.com | 713.425.3076

DUDLEY Structural: Dudley Firm# 18677 6102 Imperial Loop Drive College Station, TX 77845 oorieka@dudleyeng.com | (979) 777-0720

anc ENGINEERS

MEP: AMC Engineers
Texas Firm #9441
508 E Jackson St # 552
Burnet, TX 78611
info@amcengineers.com | 512.535.6427

opening **design** Architect: OpeningDesign
17 S Fairchild | FL 7
Madison, WI 53703
ryan@openingdesign.com | 773.425.6456

	I
Date	Description
06/10/2022	Issued for Permit
07/22/2022	Permit Revisions
1	
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SCHEDULES

BXUV.U341

Design/System/Construction/Assembly Usage Disclaimer

• Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance

• Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and

• When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product

manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for

each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

Design No. U341

August 19, 2020

Bearing Wall Rating — 1 Hr.

Finish Rating — Min 20 min.

This design was evaluated using a load design method other than the Limit States

Design Method (e.g., Working Stress Design Method). For jurisdictions employing

the Limit States Design Method, such as Canada, a load restriction factor shall be

used — See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for

jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

BXUV.U341 | UL Product iQ

4. Sheathing — (Optional) — Septum may be sheathed with min 7/16 in. thick wood structural panels min grade "C-D" or

5. Batts and Blankets* — 3-1/2 in. max thickness glass or mineral fiber batt insulation. Optional when sheathing (Item 4) is

5A. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 5) — Spray applied cellulose material. The fiber is applied

with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with

U S GREENFIBER L L C — INS735, INS745 and INS750LD for use with wet or dry application. INS515LD, INS541LD, INS735, INS765LD, and

5B. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 5) when Sheathing (Item 4) is used on both halves of wall -

application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3

5C. Batts and Blankets* — (Required for use with Wall and Partition Facings and Accessories, Item 2A. Use of Sheathing, Item

4, does not nullify requirement of Item 5C for use with Item 2A) — Glass fiber insulation, nom 3-1/2 in. thick, min. density of

0.80 pcf, with a flame spread of 25 or less and a smoke developed of 50 or less, friction-fitted to completely fill the stud

Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the

a nominal dry density of 2.7 lb/ft³. Alternate Application Method: The fiber is applied without water or adhesive at a nominal

use of UL Certified products, equipment, system, devices, and materials.

Authorities Having Jurisdiction should be consulted before construction.

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

surface of Classified veneer baseboard with joints reinforced with paper tape.

See Batts and Blankets (BZJZ) category for list of Classified companies.

cavities. See Batts and Blankets Category (BKNV) for names of manufacturers.

See Mineral and Fiber Boards (CERZ) category for names of Classified companies.

dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product.

"Sheathing" or min 1/2 in. thick Mineral and Fiber Boards*.

UL Product **iQ**™

encountered in the field.

Design Criteria and Allowable Variances

Design Criteria and Allowable Variances

https://iq.ulprospector.com/en/profile?e=14916

used on both halves of wall.

pounds per cubic ft.

https://iq.ulprospector.com/en/profile?e=14916

INS773LD are to be used for dry application only.

NU-WOOL CO INC — Cellulose Insulation

and alternate methods of construction.

Only products which bear UL's Mark are considered Certified.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) — CKNX.R7094

2A. **Gypsum Board*** — (As an alternate to Item 2, not shown) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically to studs and bearing plates on one side of the assembly with 1-5/8 in. long Type S screws spaced 12 in. OC at perimeter of panels and 8 in. OC in the field. Horizontal joints of vertically applied panels need not be backed by studs. Panel joints covered with

paper tape and two layers of joint compound. Screwheads covered with two layers of joint compound. Batts and Blankets

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-530 (finish rating 23 min).

placed in stud cavity as described in Item 5C. Not evaluated for use with Steel Framing Members, Furring Channels or Fiber,

2B. **Gypsum Board*** — (As an alternate to Item 2, not shown) — Any 5/8 in. thick gypsum panels that are eligible for use in

category. Applied horizontally or vertically and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread

gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths other than 48

2C. **Gypsum Board*** — (As an alternate to Item 2, Not Shown) — 5/8 in. thick gypsum panels applied horizontally or vertically

and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8

NATIONAL GYPSUM CO — Type FSK, Type FSK-G, Type FSW, Type FSW-3, Type FSW-5, Type FSW-G, Type FSK-C, Type FSW-C, Type

BXUV.U341 | UL Product iQ

6E. Steel Framing Members* — (Optional, Not Shown) — Used as an alternate method to attach resilient channels to wall

in. O.C. Channel ends butted and centered under the structural members and attached with one accessory at each end.

studs. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 24

Additional accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the

mounting edge of the resilient channel. The accessory and resilient channel are fastened to the structural members with the

recommendations. When the QR-500 or QR-510 panel is installed between the wood framing and the UL Classified gypsum

board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing,

9. Non-Bearing Wall Partition Intersection — (Optional) — Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed

together with two 3in. long 10d nails spaced a max. 16 in. OC. vertically and fastened to one side of the minimum 2 by 4 in.

10d nails spaced a max. 16 in. OC. vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-

stud with 3 in. long 10d nails spaced a max 16 in. OC. vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by with a second 2 by 4 in. wood stud fastened with 3 in. long

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-500 and QR-510

bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute

in. OC, with last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum board to be installed

Design Nos. L501, G512 or U305, supplied by the Classified companies listed below shown in the **Gypsum Board*** (CKNX)

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) — CKNX.R19262

THAI GYPSUM PRODUCTS PCL (View Classification) — CKNX.R27517

UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG MEXICO S A DE C V (View Classification) — CKNX.R16089

in., gypsum board to be installed horizontally.

AMERICAN GYPSUM CO — Types AGX-1, M-Glass, AG-C, LightRoc

CERTAINTEED GYPSUM INC — Type C, Type X or Type X-1

THAI GYPSUM PRODUCTS PCL — Type C or Type X

PAC INTERNATIONAL L L C — Type RC-1 Boost

for the required layer(s) of UL Classified Gypsum Board.

UNITED STATES GYPSUM CO

USG BORAL DRYWALL SFZ LLC

FSMR-C, Type FSW-6, Type FSL

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USG MEXICO S A DE C V

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

PANEL REY S A (View Classification) — CKNX.R21796

2D. **Gypsum Board*** — (As an alternate to Items 2, 2A, 2B and 2C) — 5/8 in. thick gypsum panels, with square edges, applied

either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel

steel screws spaced a max 8 in. OC, with last 2 screws 1 and 4 in. from edge of board or nailed as described in Item 2. When

2E. Gypsum Board* — (As an alternate to Items 2 through 2D) — 5/8 in. thick, 4 ft. wide, paper surfaced applied vertically only

2F. Gypsum Board* — (As an alternate to Items 2 through 2E) - Installed as described in Item 2. 5/8 in. thick, 4 ft. wide, paper

2G. Gypsum Board* — (As an alternate to Items 2 through 2F) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and

2H. Gypsum Board* — (As an alternate to Items 2 through 2G) — Installed as described in Item 2. 5/8 in. thick, 4 ft. wide,

paper surfaced, applied vertically or horizontally fastened to the studs and plates with 1-1/4 in. long Type W coarse thread

21. Wall and Partition Facings and Accessories* — (As an alternate to Items 2 through 2H) — Nominal 5/8 in. thick, 4 ft wide

2J. Gypsum Board* — (As an alternate to 5/8 in. Type FSW in Item 2) — 2 layers nom. 5/16 in. thick gypsum panels applied

vertically or horizontally. Horizontal joints on the same side need not be staggered. Inner layer attached with fasteners, as

2K. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum

panel steel screws spaced a maximum 10 in. OC with the last two screws 4 and 1 in. from the edges of the board. When used

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C — Type LGFC6A (finish rating 21 min), Type LGFC2A, Type LGFC-C/A, Type

3. Joints and Nailheads — Gypsum board joints of outer layer covered with tape and joint compound. Nail heads of outer

layer covered with joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire

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10D. **Gypsum Board*** — (For use with Item 10) — 5/8 in. thick, 4 ft wide, applied vertically over Mineral and Fiber Board (Item

14A) with vertical joints located anywhere over stud cavities. Secured to mineral and fiber boards with 1-1/2 in. Type G Screws

spaced 8 in. OC along edges of each vertical joint and 12 in. OC in intermediate field of the Mineral and Fiber Board (Item 10).

* Indicates such products shall bear the UL or cUL Certification Mark for

jurisdictions employing the UL or cUL Certification (such as Canada),

respectively.

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Secured to outermost studs and bearing plates with 2 in. long Type S screws spaced 8 in. OC. Gypsum Board joints covered

with paper tape and joint compound. Screw heads covered with joint compound. Finish Rating 30 Min.

surfaced, applied vertically only and fastened to the studs and plates with 6d cement coated nails 1-7/8 in. long, 0.0915 in.

used in widths of other than 48 in., gypsum boards are to be installed horizontally.

GEORGIA-PACIFIC GYPSUM L L C — Type X ComfortGuard Sound Deadening Gypsum Board.

GEORGIA-PACIFIC GYPSUM L L C — GreenGlass Type X, Type DGG.

shank diam and 1/4 in. diam heads, 7 in. OC. Not for use with item #6.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types QuietRock ES.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 527.

described in item 2, spaced 24 in. OC. Outer layer attached per Item 2.

in widths other than 48 in., gypsum panels are to be installed horizontally.

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C — Type LGFC-C/A

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-C

GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C

UNITED STATES GYPSUM CO — Type CTypes C, IP-X2, IPC-AR

NATIONAL GYPSUM CO — Types FSK-C, FSW-C

THAI GYPSUM PRODUCTS PCL — Type C

USG BORAL DRYWALL SFZ LLC — Type C

Service. Always look for the Mark on the product.

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

PANEL REY S A — Type PRC

gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board.

and secured as described in Item 2.

NATIONAL GYPSUM CO — Type SBWB

CERTAINTEED GYPSUM INC — Type SilentFX

NATIONAL GYPSUM CO — Type FSW.

LGFC-WD, Type LGLLX

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AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C

panels, applied vertically and secured as described in Item 2.

secured as described in Item 2.

8/28/2020

FOR CONSTRUCTION

ARCHITECTURE Architect of Record: LKB Architecture 2929 Allen Pkwy Suite 200 Houston, TX 77019

DUDLEY **Structural:** Dudley Firm# 18677 6102 Imperial Loop Drive College Station, TX 77845 oorieka@dudleyeng.com | (979) 777-0720

MEP: AMC Engineers Texas Firm #9441 508 E Jackson St # 552 Burnet, TX 78611

lisa@lkbarchitecture.com | 713.425.3076

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Description Issued for Permit

Permit Revisions

07/22/2022

17 S Fairchild | FL 7 Madison, WI 53703

06/10/2022

Architect: OpeningDesign

ryan@openingdesign.com | 773.425.6456

WALL - FIRE RATED ASSEMBLY DETAIL - U341

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

10C. Adhesive — (For use with Item 10) — Construction grade adhesive applied in vertical, serpentine, nominal 3/8 in. wide

THERMAFIBER INC — Type SAFB, SAFB FF

beads down the length of both vertical edges of Mineral and Fiber Board (Item 14A).

clips with one No. 10 x 1/2 in. pan-head self-drilling screw. **KEENE BUILDING PRODUCTS CO INC** — Type RC+ Assurance Clip B. Steel Framing Members* — Used to attach furring channels (Item a) to studs (Item 1) . Clips spaced 48 in. OC., and

OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Wallboard

attached to furring channels as described in Item 2.

A. Furring Channels — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 24 in.

secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction

the studs. The minimum dry density shall be 5.79 lbs/ft³. **APPLEGATE HOLDINGS L L C** — Applegate Advanced Stabilized Cellulose Insulation

6. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below:

5D. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 5) and Item 5A when Sheathing (Item 4) is used on both halves of wall - Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft³. INTERNATIONAL CELLULOSE CORP — Celbar-RL No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2. 5E. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 5) - Spray-applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. To facilitate the installation of the material, any thin, woven or non-woven netting may be attached by any means possible to the **REGUPOL AMERICA** — Type SonusClip outer face the studs. The material shall reach equilibrium moisture content before the installation of materials on either face of

6C. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below: A. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 6Cb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of

1. Wood Studs — Nom 2 by 4 in., spaced 24 in. OC max. Cross braced at mid-height and effectively firestopped at top and

bottom of wall. No min. air space between stud rows except to accommodate attachment of sheathing, where required. See

2. Gypsum Board* — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or

U305. Nom 5/8 in. thick 4 ft wide. Gypsum board applied horizontally or vertically, unless specified below, and nailed to studs

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fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in. wide

6A. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below:

perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6

in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min.

7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to

b. Steel Framing Members* — Used to attach furring channels (Item a) to studs. Clips spaced 48 in. OC. Genie clips

6B. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below:

b. Steel Framing Members* — Used to attach furring channels (Item 6Ba) to studs. Clips spaced 48 in. OC., and

No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured

to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of

secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are

secured to studs with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted

a. Furring Channels — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC

and bearing plates 7 in. OC with 6d cement coated nails, 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam head. As an

When Steel Framing Members* (Item 6-6C) are used, wallboard attached to furring channels with 1 in. long Type S bugle-head steel

alternate, No. 6 bugle head drywall screws, 1-7/8 in. long, may be substituted for the 6d cement coated nails.

When used in widths other than 48 in., gypsum board to be installed horizontally.

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) — CKNX.R19374

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C (View Classification) — CKNX.R18482

AMERICAN GYPSUM CO (View Classification) — CKNX.R14196

CABOT MANUFACTURING ULC (View Classification) — CKNX.R25370

GEORGIA-PACIFIC GYPSUM L L C (View Classification) — CKNX.R2717

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75).

furring channels as described in Item 2.

PLITEQ INC — Type Genie Clip

friction fitted into clips.

LOADMASTER SYSTEMS INC (View Classification) — CKNX.R11809

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

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furring channels.

B. Steel Framing Members* — Used to attach furring channels (Item 6CA) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted

6D. **Steel Framing Members*** — (Optional, Not Shown) — Resilient channels and Steel Framing Members as described below: a. Resilient Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels

secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. resilient channels as described in Item 2.

8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to

b. Steel Framing Members* — Used to attach resilient channels (Item 6Da) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to

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HOMASOTE CO — Homasote Type 440-32

screws supplied with the accessory and per the accessory manufacturer's installation instructions. 7. Wall and Partition Facings and Accessories* — (Optional, Not shown) — Nominal 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's

8. Mineral and Fiber Board* — ((Optional, Not Shown) — For optional use as an additional layer on one or both sides of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing as described in Item 2. The required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board. **HOMASOTE CO** — Homasote Type 440-32

(Optional, Not Shown) Alternate Construction For Use On One Side Of The Wall. 10. Mineral and Fiber Board* — For use with Items 10A-10D) — Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing with minimum 1-3/8 in. long ring shanked nails or 1-1/4 in. long Type W steel screws, spaced 12 in. OC along board edges and 24 in. OC in field of board along intermediate framing. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

categories for names of Classified companies. 10B. Batts and Blankets* — (As an alternate to Item 10B, For use with Item 10), 3 in. thick mineral wool batts, placed to fill interior of wall, attached to the 3-1/2 in. face of the studs with staples placed 24 in. OC.

10A. Glass Fiber Insulation — (For use with Item 10) — 3-1/2 in. thick glass fiber batts bearing the UL Classification Marking

as to Surface Burning and/or Fire Resistance, placed to fill the interior of the wall. See Batts and Blankets (BKNV or BZJZ)

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- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction. • Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance
- manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction Only products which bear UL's Mark are considered Certified.

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada <u>See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States</u>

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

May 27, 2022

5/28/22, 5:11 PM

UL Product **iQ**°

STC Rating - 56 (See Item 9) Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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iq.ulprospector.com_en/profile_BXUV.U305 - Fire-resistance Ratings - ANSI/UL 263 | UL Product iQ in. long, 0.0915 in. shank diam and 15/64 in. diam heads. When used in widths of other than 48 in., gypsum boards are to be installed

3F. Gypsum Board* — (As an alternate to Items 3, 3A, 3B, 3C, 3D, and 3E) — 5/8 in. glass-mat faced with square edges, applied either horizontally or vertically. Gypsum panels nailed 7 in. OC around the perimeter and in the field with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. Nails shall be placed 1 inch and 3 inch from horizontal joints and 7 inch OC CGC INC — Type USGX (finish rating 22 min)

UNITED STATES GYPSUM CO — Type USGX (finish rating 22 min.)

USG BORAL DRYWALL SFZ LLC — , Type USGX (finish rating 22 min.

USG MEXICO S A DE C V — Type USGX (finish rating 22 min.)

3G. Gypsum Board* — (As an alternate to Items 3 through 3F) — 5/8 in. thick paper surfaced applied vertically. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. **GEORGIA-PACIFIC GYPSUM L L C** — Type X ComfortGuard Sound Deadening Gypsum Board (finish rating 27 min)

3H. **Gypsum Board*** — (As an alternate to Items 3) — Not to be used with items 6 or 7. 5/8 in. thick paper surfaced applied vertically only. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads.

3I. Gypsum Board* — (As an alternate to Items 3 through 3H, Not Shown) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically. Panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. Panel joints covered

3J. Gypsum Board* — (As an alternate to Item 3) — 5/8 in. thick paper surfaced applied vertically or horizontally. Gypsum panels secured with 1-1/4 in. Type W coarse thread gypsum panel steel screws spaced a maximum of 12 in. OC. CERTAINTEED GYPSUM INC — Type SilentFX

3K. Gypsum Board* — (As an alternate to Item 3) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a maximum 8 in. OC with the last screw 1 in. from the edge of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally NATIONAL GYPSUM CO — Type FSK (finish rating 20 min), Type FSK-G (finish rating 20 min), Type FSW (finish rating 20 min), Type FSW-2 (finish rating 24 min), Type FSW-3 (finish rating 20 min), Type FSW-5 (finish rating 22 min), Type FSW-G (finish rating 20 min), Type FSK-C (finish rating 20

3L. Gypsum Board* — (As an alternate to Item 3) — For Direct Application to Studs Only — Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-5/8 in. long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 10 ft long with a max thickness of 0.140 in. placed on the face of studs and attached to the stud with two 1 in. long Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, max 5/16 in. diam by max 0.140 in. thick. compression fitted or adhered over the screw heads. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D".

3M. **Gypsum Board*** — (As an alternate to Items 3) — For Direct Application to Studs Only — For use as the base layer or as the face layer. Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-5/8 in. long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the field when applied as the base layer. When applied as the https://ig.ulprospector.com/en/profile?e=14888

5/28/22, 5:11 PM iq.ulprospector.com_en/profile_BXUV.U305 - Fire-resistance Ratings - ANSI/UL 263 | UL Product iQ b. Steel Framing Members* — Used to attach furring channels (Item 6a) to studs. Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to studs with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring

6A. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members on one side of studs as described below:

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75)

furring channels as described in Item 3.

b. Steel Framing Members* — Used to attach furring channels (Item 6Aa) to one side of studs only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips. KINETICS NOISE CONTROL INC — Type Isomax

6B. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below: a. Furring Channels — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 3.

b. Steel Framing Members* — Used to attach furring channels (Item 6Ba) to studs. Clips spaced 48 in. OC. Genie clips secured to studs with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. PLITEQ INC — Type Genie Clip

6C. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below: a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 3.

No. 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips. STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

6D. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below: a. Furring Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with a double strand of No. 18 AWG twisted

b. Steel Framing Members* — Used to attach furring channels (Item 6Da) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.

6E. Steel Framing Members* — (Optional, Not Shown) — Resilient channels and Steel Framing Members as described below: a. Resilient Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 3.

b. Steel Framing Members* — Used to attach resilient channels (Item 6Ea) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in.

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perimeter for sound control.

alternatives for obtaining STC rating.

5/28/22, 5:11 PM iq.ulprospector.com_en/profile_BXUV.U305 - Fire-resistance Ratings - ANSI/UL 263 | UL Product iQ CERTAINTEED GYPSUM INC — Type C, Type X-1 (finish rating 26 min); Type EGRG or GlasRoc (finish rating 23 min), GlasRoc-2, Type Habito (finish rating 26 min), Type LWTX (finish rating 18 min), Type LGFC6A (finish rating 34 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLLX (finish rating 21 min), Type CLLX (finish rating 24 min)

CGC INC — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SCX (finish rating 24 min), Type SHX (finish rating 24 min), Type ULX (finish rating 22 min), Type WRC (finish rating 24 min), Type WRX (finish rating 24 min), Type ULIX (finish rating 20 min)

GEORGIA-PACIFIC GYPSUM L L C — Type 5 (finish rating 26 min), Type 6 (finish rating 23 min), Type 9 (finish rating 26 min), Type C (finish rating 26 min), Type 7 (finish rating 26 min), Type 8 (finish rating 26 min), Type 8 (finish rating 26 min), Type 9 (finish rating 26 min), Type 8 (finish rating 26 min), Type 9 (finish rating 26 min), 26 min), Type DGG (finish rating 20 min), Type GPFS1 (finish rating 20 min), Type GPFS2 (finish rating 20 min), Type GPFS6 (finish rating 26 min), Type DS, Type DAP, Type DD (finish rating 20 min), Type DA, Type DAPC, Type LS (finish rating 23 min), Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X, Type LWX (finish rating 22 min), Veneer Plaster Base-Type LWX (finish rating 22 min), Water Rated-Type LWX (finish rating 22 min), Sheathing Type-LWX (finish rating 22 min), Soffit-Type LWX (finish rating 22 min), Type DGLW (finish ra 22 min), Water Rated-Type DGLW (finish rating 22 min), Sheathing Type- DGLW (finish rating 22 min), Soffit-Type DGLW (finish rating 22 min), Type LWX (finish rating 22 min), Type LW2X (finish rating 22 min), Veneer Plaster Base - Type LW2X (finish rating 22 min), Water Rated - Type LW2X (finish rating 22 min), Sheathing - Type LW2X (finish rating 22 min), Soffit - Type LW2X (finish rating 22 min), Type DGL2W (finish rating 22 min), Water Rated - Type DGL2W (finish rating 22 min), Sheathing - Type DGL2W (finish rating 22 min)

NATIONAL GYPSUM CO — Type FSK (finish rating 20 min), Type FSK-G (finish rating 20 min), Type FSW (rating 24 min), Type FSW-3 (finish rating 20 min), Type FSW-5 (finish rating 22 min), Type FSW-G (finish rating 20 min), Type FSK-C (finish rating 20 nin), Type FSW-C (finish rating 20 min), Type FSMR-C, Type FSW-6 (finish rating 20 min), Type FSL (finish rating 24 min), Type FSW-8, Type FSLX (finish rating 21 min), Type RSX (finish rating 26 min).

NATIONAL GYPSUM CO — Riyadh, Saudi Arabia — Type FR, or WR.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types C, PG-2 (finish rating 20 min), PG-3 (finish rating 20 min), Types PG-3W, PG-5W (finish rating 20 min), Type PG-4 (finish rating 20 min), Type PG-6 (finish rating 23 min), Types PG-3WS, PG-5WS, PGS-WRS (finish rating 20 min), Types PG-5, PG-9 (finish rating 26 min), PG-11 PG-13 (Nails increased to 2 in.), Type PG-C or PGI (finish rating 26 min)

PANEL REY S A — Type ARX, GREX, GRIX, PRX, PRC, PRC2; Types RHX, Guard Rey, MDX, ETX (finish rating 22 min), PRX2 (finish rating 21 min)

THAI GYPSUM PRODUCTS PCL — Type C, Type X (finish rating 26 min)

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1 (finish rating 26 min)

UNITED STATES GYPSUM CO — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type FRX-G (finish rating 29 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SHX (finish rating 24 min), Type IP-X2 (finish rating 24 min), T min), Type SCX (finish rating 24 min), Type SGX (finish rating 24 min), Type ULX (finish rating 22 min), Type WRX (finish rating 24 min), Type WRC (finish rating 24 min), Type ULIX (finish rating 20 min)

USG BORAL DRYWALL SFZ LLC — Type SGX (finish rating 24 min).

USG MEXICO S A DE C V — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type WRX (fi 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SHX (finish rating 24 min), SCX (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min), Type ULX (finish rating 22 min)

3A. Gypsum Board* — (As an alternate to Item 3) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths of other than 48 in., gypsum boards are

AMERICAN GYPSUM CO — Types AGX-1 (finish rating 25 min.), M-Glass (finish rating 25 min.), AG-C (finish rating 25 min.), LighttRoc (finish https://iq.ulprospector.com/en/profile?e=14888

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CGC INC — Type SCX

PANEL REY S A — Type ARX, PRX

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1

THAI GYPSUM PRODUCTS PCL — Type X

UNITED STATES GYPSUM CO — Types SCX and SGX USG BORAL DRYWALL SFZ LLC — Types SCX and SGX

USG MEXICO S A DE C V — Type SCX

3V. Gypsum Board* — (As an alternate to Item 3. For use with Item 5K) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 3 above Applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels secured to studs with 1-5/8 in. long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the

4. Steel Corner Fasteners — (Optional) — For use at wall corners. Channel shaped, 2 in. long by 1 in. high on the back side with two 1/8 in. wide cleats protruding into the 5/8 in. wide channel, fabricated from 24 gauge galv steel. Fasteners applied only to the end or cut edge (not along tapered edges) of the gypsum board, no greater than 2 in. from corner of gypsum board, max spacing 16 in. OC. Nailed to adjacent stud through tab using one No. 6d cement coated nail per fastener. Corners of wall board shall be nailed to top and bottom plate using No. 6d cement coated nails.

5. Batts and Blankets* — (Optional — Required when Item 6A is used (RC-1)) — Glass fiber or mineral wool insulation. Placed to completely or partially fill the stud cavities. When Item 6A is used, glass fiber or mineral wool insulation shall be friction-fitted to completely fill the stud cavities. CERTAINTEED CORP

MANSON INSULATION INC **ROCKWOOL** — Types Acoustical Fire Batts and Type AFB, min. density 1.69 pcf / 27.0 kg/m³

ROCKWOOL MALAYSIA SDN BHD — Type Acoustical Fire Batts

ROCK WOOL MANUFACTURING CO — Delta Board

THERMAFIBER INC — Type SAFB, SAFB FF

JOHNS MANVILLE

KNAUF INSULATION LLC

5A. Fiber, Sprayed* — (Not Shown — Not for use with Item 6) — As an alternate to Batts and Blankets (Item 5) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with a nominal dry density of 2.7 lb/ft³. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product. When Item 6B is used, Fiber, Sprayed shall be INS735, INS745, INS750LD, INS765LD, INS773LD or SANCTUARY.

U S GREENFIBER L L C — INS735, INS745, INS750LD and SANCTUARY for use with wet or dry application. INS515LD, INS541LD, INS735, INS765LD, and INS773LD are to be used for dry application only

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5/28/22, 5:11 PM iq.ulprospector.com en/profile BXUV.U305 - Fire-resistance Ratings - ANSI/UL 263 | UL Product iQ 11. Cementitious Backer Units* — (Optional Item Not Shown — For Use On Face Of 1 Hr Systems With All Standard Items Required) - 7/16 in., 1/2 in., 5/8 in., 3/4 in. or 1 in. thick, min. 32 in. wide. Applied vertically or horizontally with vertical joints centered over studs. Fastened to study and runners with cement board screws of adequate length to penetrate stud by a minimum of 3/8 in. for steel framing members, and a minimum of 3/4 in. for wood framing members spaced a max of 8 in. OC. When 4 ft. wide boards are used, horizontal joints need not be backed by framing **NATIONAL GYPSUM CO** — Type DuraBacker, PermaBase, DuraBacker Plus, or PermaBase Plus

12. Non-Bearing Wall Partition Intersection — (Optional) —Two nominal 2 by 4 in. studs or nominal 2 by 6 in. studs nailed together with two 3 in. long 10d nails spaced a max. 16 in. OC. vertically and fastened to one side of the minimum 2 by 4 in. stud with 3 in. long 10d nails spaced a max. 16 in. OC. vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by with a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC. vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

13. Mesh Netting — (Not Shown) — Any thin, woven or non-woven fibrous netting material attached with staples to the outer face of one row of studs to facilitate the installation of the sprayed fiber from the opposite row.

14. Mineral and Fiber Board* — (Optional, Not Shown) — For optional use as an additional layer on one side of wall, Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing with 2 in. long Type W steel screws, spaced 12 in. OC. The required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board. **HOMASOTE CO** — Homasote Type 440-32

14A. Mineral and Fiber Board* — (Optional, Not Shown) — For use with Items 14B-14E) — For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing with minimum 1-3/8 in. long ring shanked nails or 1-1/4 in. long Type W steel screws, spaced 12 in. OC along board edges and 24 in. OC in field of board along intermediate framing. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board. **HOMASOTE CO** — Homasote Type 440-32

14B. Glass Fiber Insulation — (For use with Item 14A) — 3-1/2 in. thick glass fiber batts bearing the UL Classification Marking as to

Surface Burning and/or Fire Resistance, placed to fill the interior of the wall. See Batts and Blankets (BKNV or BZJZ) categories for names of Classified companies.

14C. Batts and Blankets* — (As an alternate to Item 14B. For use with Item 14A), 3 in, thick mineral wool batts, placed to fill interior of wall, attached to the 3-1/2 in, face of the studs with staples placed 24 in, OC. THERMAFIBER INC — Type SAFB, SAFB FF

14D. Adhesive — (For use with Item 14A) — Construction grade adhesive applied in vertical, serpentine, nominal 3/8 in. wide beads down the length of both vertical edges of Mineral and Fiber Board (Item 14A).

14E. **Gypsum Board*** — (For use with Item 14A) — 5/8 in. thick, 4 ft wide, applied vertically over Mineral and Fiber Board (Item 14A) with vertical joints located anywhere over stud cavities. Secured to mineral and fiber boards with 1-1/2 in. Type G Screws spaced 8 in. OC along edges of each vertical joint and 12 in, OC in intermediate field of the Mineral and Fiber Board (Item 14A). Secured to outermost studs and bearing plates with 2 in. long Type S screws spaced 8 in. OC. Gypsum Board joints covered with paper tape and joint compound. Screw heads covered with joint compound. Finish Rating 30 Min. AMERICAN GYPSUM CO — Type AG-C

CGC INC — Types C, IP-X2, IPC-AR

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CERTAINTEED GYPSUM INC — Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C

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CERTAINTEED GYPSUM INC — Type C, Type X-1 (finish rating 26 min), Type EGRG or GlasRoc.

CGC INC — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SCX (finish rating 24 min), Type SHX (finish rating 24 min), Type WRC (finish rating 24 min), Type WRX (finish rating 24 min)

NATIONAL GYPSUM CO — Type FSW (finish rating 24 min)

UNITED STATES GYPSUM CO — Type AR (finish rating 24 min), Type SCX (finish rating 24 min), Type SGX rating 24 min), Type WRX (finish rating 24 min), Type WRC (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type Type SHX (finish rating 24 min), Type FRX-G (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min)

USG BORAL DRYWALL SFZ LLC — Types C, SCX, SGX (finish rating 24 min).

USG MEXICO S A DE C V — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type WRX (fi 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SHX (finish rating 24 min), Type SCX, Type IP-AR (finish rating 24 min), Type SHX (finish rating 24 min), Type IP-AR (finish rating 24 min), T min), Type IPC-AR (finish rating 24 min)

3B. **Gypsum Board*** — (As an alternate to Item 3) — Nom 3/4 in. thick, installed with 1-7/8 in. long cement coated nails as described in Item 3 or 1-3/8 in. long Type W coarse thread gypsum panel steel screws as described in Item 3A. CGC INC — Types AR, IP-AR

UNITED STATES GYPSUM CO — Types AR, IP-AR

USG MEXICO S A DE C V — Types AR, IP-AR

3C. Gypsum Board* — (As an alternate to Items 3, 3A and 3B) — 5/8 in. thick, 2 ft wide, tongue and groove edge, applied horizontally to one side of the assembly. Installed with 1-7/8 in. long cement coated nails as described in Item 3 or 1-1/4 in. long Type W coarse thread gypsum panel steel screws as described in Item 3A. Joint covering (Item 2) not required. **CGC INC** — Type SHX

UNITED STATES GYPSUM CO — Type SHX

USG MEXICO S A DE C V — Type SHX

3D. **Gypsum Board*** — (As an alternate to Items 3, 3A, 3B, or 3C — Not Shown) — For Direct Application to Studs Only- Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-5/8 in, long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 1-1/2 in, wide, max 10 ft long with a max thickness of 0.125 in. placed on the face of studs and attached to the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs or tabs may be used in lieu of or in addition to the lead batten strips or optional at other locations. Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards underneath screw locations prior to the installation of the screws. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". **RAY-BAR ENGINEERING CORP** — Type RB-LBG (finish rating 24 min)

3E. **Gypsum Board*** — (As an alternate to Items 3, 3A, 3B, 3C, and 3D) — 5/8 in. thick gypsum panels, with square edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last 2 screws 1 and 4 in. from edge of board or nailed 7 in. OC with 6d cement coated nails 1-7/8

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5/28/22, 5:11 PM iq.ulprospector.com_en/profile_BXUV.U305 - Fire-resistance Ratings - ANSI/UL 263 | UL Product iQ 5B. Fiber, Sprayed* — (Not Shown - Not for use with Item 6) — As an alternate to Batts and Blankets (Item 5) - Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft. **NU-WOOL CO INC** — Cellulose Insulation

5C. Batts and Blankets* — Required for use with resilient channels, Item 7, 3 in. thick mineral wool batts, friction-fitted to fill interior THERMAFIBER INC — Type SAFB, SAFB FF

5D. Glass Fiber Insulation — (As an alternate to Item 5C) — 3 in. thick glass fiber batts bearing the UL Classification Marking as to Surface Burning and/or Fire Resistance, friction-fitted to fill the interior of the wall. See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

5E. Batts and Blankets* — (Required for use with Wall and Partition Facings and Accessories, Item 3D) — Glass fiber insulation, nom 3-1/2 in. thick, min. density of 0.80 pcf, with a flame spread of 25 or less and a smoke developed of 50 or less, friction-fitted to completely fill the stud cavities. See Batts and Blankets Category (BKNV) for names of manufacturers.

5F. Fiber, Sprayed* — (Optional, Not Shown — Not for use with Items 6, 6A, 6B, 6C, or 6D) — As an alternate to Batts and Blankets (Item 5) and Item 5A - Spray applied granulated mineral fiber material. The fiber is applied with adhesive, at a minimum density of 4.0 pcf, to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. See Fiber,

AMERICAN ROCKWOOL MANUFACTURING, LLC — Type Rockwool Premium Plus 5G. Fiber, Sprayed* — (Optional, Not Shown — Not for use with Items 6, 6A, 6B, 6C, or 6D). — As an alternate to Batts and Blankets (Item 5) and Item 5A - Brown Colored Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed stud cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft³.

5H. Foamed Plastic* — (Optional -For use with Item 3R) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity. **SES FOAM INC** — Nexseal[™] 2.0 or Nexseal[™] 2.0 LE Spray Foam and Sucraseal Spray Foam.

51. **Fiber, Sprayed*** — (Not Shown — Not for use with Item 6) — As an alternate to Batts and Blankets (Item 5) - Spray-applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. To facilitate the installation of the material, any thin, woven or non-woven netting may be attached by any means possible to the outer face the studs. The material shall reach equilibrium moisture content before the installation of materials on either face of the studs. The minimum dry density shall be 5.79 lbs/ft³. **APPLEGATE HOLDINGS L L C** — Applegate Advanced Stabilized Cellulose Insulation

5J. Foamed Plastic* — (Optional, Not Shown - For use with Item 3U) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity. GACO WESTERN L L C — Types GacoEZSpray F4500, GacoProFill FR6500R, Gaco 052N, GacoOnePass F1850, GacoOnePass Low GWP F1880, and

5K. Foamed Plastic* — (Optional, Not Shown - For use with Item 3V) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity. CARLISLE SPRAY FOAM INSULATION — Types SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, and Foamsulate HFO.

6. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below: a. Furring Channels — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 3.

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iq.ulprospector.com_en/profile_BXUV.U305 - Fire-resistance Ratings - ANSI/UL 263 | UL Product iQ 5/28/22, 5:11 PM NATIONAL GYPSUM CO — Types FSK-C, FSW-C

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-C

intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

PANEL REY S A — Type PRC

THAI GYPSUM PRODUCTS PCL — Type C

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR **USG BORAL DRYWALL SFZ LLC** — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

BLUE RIDGE FIBERBOARD INC — SoundStop

14F. Mineral and Fiber Board — (Optional, Not Shown) — For optional use as an additional layer on one side of wall - Nom 1/2 in. thick, 4 ft wide, square edge fiber boards applied vertically to studs on one side of the wall in between the wood studs and the UL Classified Gypsum Board (Item 3). Fiber boards installed with 1-1/4 in. long, Type W, bugle head, coarse thread gypsum board screws spaced 12 in. OC max, with the last screws spaced 2 in. and 6 in. from edge of board. Gypsum board (Item 3) installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively. Last Updated on 2022-05-27

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FOR CONSTRUCTION

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Issued for Permit Permit Revisions

06/10/2022

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

WALL - FIRE RATED ASSEMBLY DETAIL - U305

5/28/22, 5:11 PM

1. **Wood Studs** — Nom 2 by 4 in. spaced 16 in. OC max, effectively firestopped.

gypsum panels, refer to Items 6 through 6F, Steel Framing Members*.

side of wood stud without furring channels as described in Item 3.

(finish rating 22 min), Type LightRoc (finish rating 23 min.) or Type AG-C

S-12 bugle head steel screws spaced as described in Item 4.

spaced 8 in. OC starting with a 4" stagger.

perimeter and 12 in. OC in the field.

CABOT MANUFACTURING ULC — Type X

CERTAINTEED GYPSUM INC — Type X

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pan-head self-drilling screw.

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NATIONAL GYPSUM CO — Type FSW (finish rating 25 min)

48 in., gypsum panels are to be installed horizontally

used in widths other than 48 in., gypsum panels are to be installed horizontally.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 545

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO — Type DBX-1

KEENE BUILDING PRODUCTS CO INC - Type RC+ Assurance Clip

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

accessory manufacturer's installation instructions.

PAC INTERNATIONAL L L C — Type RC-1 Boost

RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

head steel screws spaced 12 in. OC.

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2. Joints and Nail-Heads — Joints covered with joint compound and paper tape. Joint compound and paper tape may be omitted

3. **Gypsum Board*** — 5/8 in. thick paper or vinyl surfaced, with beveled, square, or tapered edges, applied either horizontally or

When Item 6A, Steel Framing Members*, is used, two layers of gypsum panels attached to furring channels. Base layer attached to furring

vertically. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. When used in widths other than 48 in,, gypsum panels are to be installed horizontally. For an alternate method of attachment of

When Items 6, 6B, 6C, 6D, 6E, or 6F, Steel Framing Members*, are used, gypsum panels attached to furring channels with 1 in. long Type S bugle-

channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC. Face layer attached to furring channels with 1-5/8 in. long Type S bugle-

When Item 7, resilient channels are used, 5/8 in. thick, 4 ft wide gypsum panels applied vertically. Screw attached furring channels with 1 in. long,

AMERICAN GYPSUM CO — Types AGX-1(finish rating 23 min.), M-Glass (finish rating 23 min.), Type AGX-11 (finish rating 26 min), Type AGX-12

CABOT MANUFACTURING ULC — Type X (finish rating 22 min), 5/8 Type X, Moisture Resistant Type X, Gypsum Sheathing Type X, Mold &

face layer screw length to be increased to 2-1/2 in. Lead batten strips required behind vertical joints of lead backed gypsum wallboard

and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on

the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the

adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Fasteners for face layer gypsum panels (Items 4, 4A or 4B) when installed over lead backed board to be min 2-1/2 in. Type

top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or

3N. **Gypsum Board*** — (As an alternate to Item 3) — 5/8 in. thick, 4 ft. wide, applied horizontally or vertically with vertical joints

3O. Wall and Partition Facings and Accessories* — (As an alternate to Item 3, Not Shown) — Nominal 5/8 in. thick, 4 ft wide panels,

applied vertically. Panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads.

3P. Gypsum Board* — (As an alternate to Item 3, Not Shown) — Two layers nom. 5/16 in. thick gypsum panels applied vertically or

horizontally. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by wood

studs. Horizontal joints on the same side between face and base layers need not be staggered. Base layer gypsum panels fastened to studs with 1-1/4 in. long drywall nails spaced 8 in. OC. Face layer gypsum panels fastened to studs with 1-7/8 in. long drywall nails

3Q. **Gypsum Board*** — (As an alternate to Item 3) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied

screws spaced a maximum 10 in. OC with the last two screws 4 and 1 in. from the edges of the board. When used in widths other than

3R. Gypsum Board* — (As an alternate to Item 3. For use with Item 5H) — Any 5/8 in, thick, 4 ft, wide, Gypsum Board listed in Item 3.

above. Applied either horizontally or vertically, and screwed to panels with 1-5/8 in. long Type W coarse thread steel screws at 8 in. OC

at perimeter and in the field with the last two screws 4 and 3/4 in. from the edges of the board when applied as the base layer. When

3T. Wall and Partition Facings and Accessories* — (As an alternate to 5/8 in. thick board as outlined in Item 3) — Nominal 1-3/8 in.

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thick, 4 ft wide panels, applied vertically or horizontally. Fastened with #6 x 2 in. long drywall screws spaced 8 in. OC along the

6F. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below:

each flange of the channel. Gypsum board attached to furring channels as described in Item 3.

head steel screws. When resilient channels are used, insulation, Items 5C or 5D is required.

A. Item 2, above — Nailheads Shall be covered with joint compound.

insulation batts measuring 6-1/4 in. thick and 15-1/4 in. wide.

No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips.

a. Furring Channels — Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs.

and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on

b. Steel Framing Members* — Used to attach furring channels (Item 6Fa) to studs. Clips spaced 48 in. OC. Clips secured to studs with

6G. Steel Framing Members* — (Optional, Not Shown) — Used as an alternate method to attach resilient channels to wall studs. A

resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 16 in. O.C. Channel

ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to

hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge of the resilient channel.

The accessory and resilient channel are fastened to the structural members with the screws supplied with the accessory and per the

7. Furring Channel — Optional — Not Shown — For use on one side of the wall - Resilient channels, 25 MSG galv steel, spaced

vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped point, double lead Phillips

8. Caulking and Sealants — (Not Shown, Optional) — A bead of acoustical sealant applied around the partition perimeter for sound

D. Item 6, above — Steel Framing Members* Type RSIC-1 clips shall be used to attach gypsum board to studs on either side of

E. Item 8, above — Caulking and Sealants (Not Shown) A bead of acoustical sealant shall be applied around the partition

F. Steel Corner Fasteners (Item 4), Fiber, Sprayed (Items 5A and 5B) and Steel Framing Members (Item 6A), not evaluated as

10. Wall and Partition Facings and Accessories* — (Optional, Not Shown) — Nominal 1/2 in. thick, 4 ft wide panels, for optional use

as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations.

When the QR-500 or QR-510 panel is installed between the wood framing and the UL Classified gypsum board, the required UL

Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener

9. **STC Rating** — The STC Rating of the wall assembly is 56 when it is constructed as described by Items 1 through 6, except:

B. Item 2, above — Joints As described, shall be covered with fiber tape and joint compound.

Channels secured to stude as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in.

either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel

CERTAINTEED GYPSUM INC — Type LGFC6A (finish rating 21 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLLX

Panel joints covered with paper tape and two layers of joint compound. Nailheads covered with two layers of joint compound.

centered over study and staggered one stud cavity on opposite sides of study. Secured as described in Item 3 or 3A.

CERTAINTEED GYPSUM INC — Easi-Lite Type X (finish rating 24 min), Easi-Lite Type X-2 (finish rating 24 min)

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 527 (finish rating 24 min).

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self-drilling, self-tapping Type S or S-12 steel screws spaced 8 in. OC, vertical joints located midway between studs.

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO — Type DBX-1 (finish rating 24 min)

Mildew Resistant Type X and Mold & Mildew Resistant AR Type X, Type Blueglass Exterior Sheathing

head steel screws spaced 12 in, OC, All joints in face layers staggered with joints in base layers. One layer of gypsum board attached to opposite

Classified veneer baseboard with the joints reinforced with paper tape. Nailheads exposed or covered with joint compound.

when square edge boards are used. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of

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encountered in the field.

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Design Criteria and Allowable Variances

Design No. **U305**

Bearing Wall Rating — 1 Hr Finish Rating — See Items 3, 3A, 3D, 3E, 3F, 3G, 3H, 3J and 3L. This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress

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with paper tape and two layers of joint compound. Nailheads covered with two layers of joint compound. PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock ES (finish rating 20 min)

min), Type FSW-C (finish rating 20 min), Type FSMR-C, Type FSW-6 (finish rating 20 min), Type FSL (finish rating 24 min).

MAYCO INDUSTRIES INC — "X-Ray Shielded Gypsum"

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Design/System/Construction/Assembly Usage Disclaimer

• When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product

GEORGIA-PACIFIC GYPSUM L L C — Type DGG (finish rating 20 min), GreenGlass Type X (finish rating 23 min)

Design Criteria and Allowable Variances

3S. Gypsum Board* — 3/4 in. thick paper or vinyl surfaced, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels secured as described in Item 3 with nail length increased to 2 in. PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-13

3U. **Gypsum Board*** — (As an alternate to Item 3 - For use with Foamed Plastic products, Item 5J) — 5/8 in. thick, 4 ft. wide, applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. AMERICAN GYPSUM CO — Types AGX-1

a. Furring Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. Batts and Blankets placed in stud cavity as described in Item 5. Two layers of gypsum board attached to

b. Steel Framing Members* — Used to attach furring channels (Item 6Ca) to studs, Clips spaced 48 in, OC., and secured to studs with

steel wire. Gypsum board attached to furring channels as described in Item 3. REGUPOL AMERICA — Type SonusClip

> length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-500 and QR-510

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encountered in the field.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

UNITED STATES GYPSUM CO — Types LRK, HSLRK, CSD

LATICRETE SUPERCAP L L C — Types LRK, HSLRK

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

GRASSWORX L L C — SC Types

the perimeter.

edges of the panel.

minimum thickness of floor topping over each floor mat material.

UNITED STATES GYPSUM CO — Types STRUCTO-CRETE, USGSP

UNITED STATES GYPSUM CO — Types LRK, HSLRK, CSD

LATICRETE SUPERCAP L L C — Types LRK, HSLRK

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

instructions regarding minimum thickness of floor topping over floor mat.

1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

Finish Flooring* — Floor Topping Mixture — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the

Alternate Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

System No. 3 (For Use with Item 7A Only)

Finish Floor — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood

Structural Cement-Fiber Units* — Nom 3/4 in. thick, with long edges tongue and grooved. Long dimension of panels to be

perpendicular to wood trusses with end joints staggered a min of 2 ft and centered over the trusses. Panels secured to wood

trusses with 1-5/8 in. long, No. 8, self- countersinking wood screw spaced a max of 12 in. OC in the field with a screw located 1 in.

and 2 in. from each edge, and 8 in. OC on the perimeter with a screw located 2 in. from each edge, located 1/2 in. from the end

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive

strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

or panels secured to trusses with construction adhesive and 2-1/2 in. long nails, spaced 12 in. OC along each truss and 8 in. OC at

FOR CONSTRUCTION

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Architect of Record: LKB Architecture lisa@lkbarchitecture.com | 713.425.3076

Fire-resistance Ratings - ANSI/UL 263

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Design/System/Construction/Assembly Usage Disclaimer

• Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for

compliance with applicable requirements. The published information cannot always address every construction nuance

• When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the

product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide

Information for each product category and each group of assemblies. The Guide Information includes specifics concerning

• Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation

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BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for

Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States Design Criteria and Allowable Variances

and use of UL Certified products, equipment, system, devices, and materials.

• Authorities Having Jurisdiction should be consulted before construction.

alternate materials and alternate methods of construction.

• Only products which bear UL's Mark are considered Certified.

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada Design Criteria and Allowable Variances

February 14, 2022

Unrestrained Assembly Rating — 1 Hr Finish Rating — 25 Min (See Items 5 and 5A), 20 Min (See Items 6H and 7A)

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

Design No. **L521**

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL

Certification (such as Canada), respectively.

Alternate Insulation Placement 1. **Flooring System** — The flooring system shall consist of one of the following:

Subflooring — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Floor — Min 1 by 4 in. T & G lumber installed perpendicular to trusses, or min 15/32 in. thick wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

System No. 2

Subflooring — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

regarding the minimum thickness of floor topping over each floor mat material.

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

Structural Cement-Fiber Units* — Nom 3/4 in. thick, with long edges tongue and grooved. Long dimension of panels to be perpendicular to wood trusses with end joints staggered a min of 2 ft and centered over the trusses. Panels secured to wood trusses with 1-5/8 in. long, No. 8, self- countersinking wood screw spaced a max of 12 in. OC in the field with a screw located 1 in. and 2 in. from each edge, and 8 in. OC on the perimeter with a screw located 2 in. from each edge, located 1/2 in. from the end edges of the panel. **UNITED STATES GYPSUM CO** — Types STRUCTO-CRETE, USGSP

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Vapor Barrier — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt. Floor Mat Materials* — (Optional) — Floor mat material nom 5/64 in. (2 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of floor-topping mixture. Floor topping thickness a min 1 in. over the floor mat.

Finish Floor* — Mineral and Fiber Board — Min 1/2 in. thick, supplied in sizes ranging from 3 ft by 4 ft to 8 ft by 12 ft.

Subflooring — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood

or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples

Floor Mat Materials* — (Optional) — Floor mat material nom 1/8 in. (3 mm) thick loose laid over the subfloor. Floor topping

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick loose laid over the subfloor. Floor

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/8 in. (10 mm) thick loose laid over the subfloor. Floor

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/4 in. (19 mm) thick loose laid over the subfloor. Floor

diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the

Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall

accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness

Subflooring — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood

or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples

System No. 8

Subflooring —Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels

secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or

Metal Lath (Optional) — (Optional) — For use with 3/8 in. (10 mm), or greater, floor mat materials, 3/8 in. expanded steel

metal lath. When metal lath is used, floor topping thickness a nom 1 in. (25 mm) over the floor mat. Finish Flooring — Floor

consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand. Refer to the manufacturer's instructions

HACKER INDUSTRIES INC — Firm-Fill Gypsum Concrete, Firm-Fill 2010, Firm-Fill 3310, Firm-Fill 4010, Gyp-Span Radiant

having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

thickness shall be a min of 3/4 in. (19 mm).

HACKER INDUSTRIES INC — FIRM-FILL SCM 125

topping thickness shall be a min of 1 in. (25 mm).

HACKER INDUSTRIES INC — Type FIRM-FILL SCM 250

topping thickness shall be a min of 1-1/4 in. (32 mm)

topping thickness shall be a min of 1-1/2 in. (38 mm). **HACKER INDUSTRIES INC** — Type FIRM-FILL SCM 750

recommended for use with eligible floor mat(s).

HOMASOTE CO — Type 440-32 Mineral and Fiber Board

HACKER INDUSTRIES INC — FIRM-FILL SCM 400

HACKER INDUSTRIES INC — Type Hacker Sound-Mat

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Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick adhered to subfloor with Hacker Floor Primer.

Primer to be applied to the surface of the mat prior to the placement of a min 1-1/4 in. (32 mm) of floor-topping mixture. **HACKER INDUSTRIES INC** — Type Hacker Sound-Mat II

Metal Lath (Optional) — For use with 3/8 in. (10 mm) floor mat materials, 3/8 in. expanded steel diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the metal lath. When metal lath is used, floor topping thickness a nom 1-1/4 in. over the floor mat.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

HACKER INDUSTRIES INC — Firm-Fill Gypsum Concrete, Firm-Fill High Strength, Gyp-Span Radiant

2. **Trusses** — Parallel chord trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Min truss depth is 12 in. when no **Ceiling Damper*** is used and 18 in. when a **Ceiling Damper*** is used. Truss members secured together with min 0.0356 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each

tooth has a twist for stiffness. The pairs are repeated on approx. 7/8 in. centers with four rows of teeth per inch of plate width.

3. Air Duct* — Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper

4. **Ceiling Damper*** — For use with min 18 in. deep trusses. Max nom area shall be 324 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 14 in. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions. C&S AIR PRODUCTS — Model RD-521

POTTORFF — Model CFD-521

4A. Alternate Ceiling Damper* — For use with min 18 in. deep trusses. Max nom area shall be 196 sq in. with the length not to exceed 26 in. and the width not to exceed 14 in. Max height of damper shall be 7 in. Aggregate damper openings shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) not to exceed 144 in.² shall be installed in accordance with installation instructions. C&S AIR PRODUCTS — Model RD-521-BT

POTTORFF — Model CFD-521-BT

4B. Alternate Ceiling Damper* — For use with min 18 in. deep trusses. Max nom area shall be 256 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 17 in. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

POTTORFF — Models CFD-521-IP, CFD-521-NP

C&S AIR PRODUCTS — Models RD-521-IP, RD-521-NP

4C. Alternate Ceiling Damper* — For use with min 18 in. deep trusses. Max nom area shall be 144 sq in. with the length not to exceed 14 in. and the width not to exceed 12 in. Max height of damper shall be 17-7/8 in. Aggregate damper openings shall not exceed 74 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions. C&S AIR PRODUCTS — Models RD-521-90, RD-521-NP90

POTTORFF — Models CFD-521-90, CFD-521-90NP

BROAN-NUTONE L L C — Model RDFUWT

BROAN-NUTONE L L C — Models RDJ1 and RDH

4D. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 75 sq in. with the length not to exceed 8-9/16 in. and the width not to exceed 8-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 38 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions. **DELTA ELECTRONICS INC** — Models CRD2, GBR-CRD, ITG-CRD

4E. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 75 sq in. with the length not to exceed 9-1/4 in. and the width not to exceed 9-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 45 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions. **DELTA ELECTRONICS INC** — Model SIG-CRD

4F. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 131 sq in. with the length not to exceed 11-1/16 in. and the width not to exceed 11-7/8 in. Aggregate damper openings shall not exceed 66 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions. **DELTA ELECTRONICS INC** — Model SMT-CRD

4G. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 103 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 10-1/8 in. Aggregate damper openings shall not exceed 52 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

4H. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 113 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 11-1/8 in. Aggregate damper openings shall not exceed 57 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA — Model PC-RD05C5

41. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 79 sq in. with the length not to exceed 10 in. and the width not to exceed 7-15/16 in. Aggregate damper openings shall not exceed 40 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A metallic grille (Item 9) shall be installed in accordance with installation instructions.

4J. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions. BROAN-NUTONE L L C — Model RDMWT

4K. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions. **BROAN-NUTONE L L C** — Model RDMWT2

5. Batts and Blankets* — (Optional) — Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. When the resilient channels (Item 6) or furring channels (Item 6A) are spaced 24 in. OC, no insulation shall be installed in the concealed space. When the resilient channels (Item 6) or furring channels (Item 6A) are spaced 16 in. OC, the insulation shall be a max of 3-1/2 in. thick, and shall be secured against the subflooring with staples at 12 in. OC or held suspended in the concealed space with 0.090 in. diam galv steel wires attached to the wood trusses at 12 in. OC. When the resilient channels (Item 6) or furring channels (Item 6A) are spaced a max of 12 in. OC or when the Steel Framing Members (Item 6B) are used, there is no limit in the overall thickness of insulation, and the insulation can be secured against the subflooring, held suspended in the concealed space or draped over the resilient or furring channels (or Steel Framing Members) and gypsum panel membrane. When **Steel Framing Members** (Item 6C) are used, max 3-1/2 in. thick insulation shall be draped over the furring channels (Item 6Ca) and gypsum board ceiling membrane, and friction-fitted between trusses and Steel Framing Members

5A. Fiber, Sprayed* — (Dry Dense Packed 100% Borate Formulation) — (Optional) — As an alternate to Item 5, When used, the resilient channel and gypsum board attachment is modified as specified in Items 6 and 7 and wire mesh (Item 10) shall be attached to the furring channels to facilitate installation of the material. The finished rating when Fiber, Sprayed is used has not been determined. The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product. When Item 5A (Fiber, Sprayed) is used, two layers of gypsum board required as described in Item 7. Not evaluated for use with Item 6B, 6C, 6G or 6H. U S GREENFIBER L L C — INS735, INS745, INS750LD, INS765LD, INS773LD, & SANCTUARY to be used with dry application only.

(Item 6Cd). The finished rating has only been determined when the insulation is secured to the subflooring.

5B. **Fiber, Sprayed*** — (Loose Fill 100% Borate Formulation) — (Optional) — As an alternate to Items 5 and 5A, The finished rating when Fiber, Sprayed is used has not been determined. The fiber is applied without water or adhesive at a minimum dry density of 0.5 lb/ft³ and at a max thickness of 3-1/2 in., in accordance with the application instructions supplied with the product. Wire mesh (Item 10) shall be attached to the furring channels to facilitate installation of the material. When Item 5B (Fiber, Sprayed) is used, two layers of gypsum board required as described in Item 7. Not evaluated for use with Item 6B, 6C, 6D, 6E, 6F, 6G, 6H or 6I. U S GREENFIBER L L C — INS735, INS745, INS750LD, INS765LD, INS773LD, & SANCTUARY to be used with dry application only.

5C. Foamed Plastic* — (As alternate to Item 5, 5A, or 5B, Not Shown) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft³ density, while maintaining a minimum 8-1/2 in. clearance between the spray foam insulation and the gypsum board (Item 7). Spray foam insulation is limited for use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) spaced maximum 3 in. away from gypsum butt joints. Gypsum board (Item 7) to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 4 through 4K) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 5 through 5B, or 6A through 6I. SES FOAM INC — Sucraseal

5D. Cavity Insulation - Batts and Blankets* or Fiber, Sprayed* — (As described above in Items 5 through 5B) — (For Use with Item 7A, Not Shown) — Min. 3-1/2 in thick with no limit on maximum thickness fitted in the concealed space, draped over the resilient channel (Item 6H)/gypsum board (Item 7A) ceiling membrane.

5E. Foamed Plastic* — (As alternate to Item 5, 5A, or 5C, Not Shown) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft³ or 2.0 lb/ft³ density, depending on the product installed. Spray foam insulation is limited to use with minimum 18 in. deep trusses (Item 2).

When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) spaced maximum 3 in. away from gypsum butt joints. Gypsum board (Item 7) to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 4 through 4H) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 5 through 5B, or 6A through 6I.

BASF CORP — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, and

5F. Foamed Plastic* — (As alternate to Item 5, 5A, 5B, 5C or 5E, Not Shown) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 17 in. at a nominal 0.5 lb/ft³ density, while maintaining a minimum 1-1/2 in. clearance between the spray foam insulation and the gypsum board (Item 7). Spray foam insulation is limited for use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) spaced maximum 3 in. away from gypsum butt joints. Gypsum board (Item 7) to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 4 through 4K) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Not evaluated for use with Items 5 through 5B, or 6A through 6l. SES FOAM INC — EasySeal.5

5G. **Foamed Plastic*** — (As alternate to Item 5 - not to be used in combination with any alternates to item 5) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 11 in. at a nominal 0.5 lb/ft³ - 2.5 lb/ft³ density, while maintaining a minimum 7 in. clearance between the spray foam insulation and the gypsum board (Item 7). Spray foam insulation is limited for use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board spaced maximum 3 in. away from gypsum butt joints. Gypsum board to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 4 through 4K) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Only for use with item 6 not evaluated for use with

Trim 21, SealTite Pro One Zero, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, and Foamsulate HFO. 6. **Resilient Channels** — Formed from min 25 MSG galv steel installed perpendicular to trusses. When there is no insulation installed in the concealed space the resilient channels are spaced 24 in. OC. When insulation (Item 5) is secured to the underside of the subfloor the resilient channels are spaced 16 in. OC. When insulation, Items 5, 5A or 5B is applied over the resilient channel/gypsum panel ceiling membrane, or when Item 5C, 5E or 5F is applied to underside of subflooring, the resilient channels are spaced 12 in. OC. Channels secured to each truss with 1-1/4 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint as shown in the above illustration.

CARLISLE SPRAY FOAM INSULATION — Types SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No

6A. **Steel Framing Members*** — (Not Shown) — As an alternate to Item 6. a. Furring Channels — Formed of No. 25 MSG galv steel, 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to wood structural members. When insulation, Items 5, 5A or 5B is applied over the furring channel/gypsum panel ceiling membrane, the furring channel spacing shall be reduced to 12 in. OC. Channels secured to trusses as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galv steel wire near each end of

b. Steel Framing Members* —

Additional channels shall extend min 6 in. beyond each side edge of panel.

Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to alternating trusses with No. 8 x 2-1/2 in. course drywall screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to alternating trusses with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. RSIC-Si-X secured to alternating trusses with No 10. X 3-1/2 in. coarse screw. Furring channels are friction fitted into clips. RSIC-1, RSIC-V and RSIC-Si-X clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that

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06/10/2022 Issued for Permit 07/22/2022

Permit Revisions

FLOOR - FIRE RATED ASSEMBLY DETAIL - L521

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MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

as listed below.

CGC INC — Type DGL or RX

USG INTERIORS LLC — Type DGL or RX

channels as described in Item 7.

wide gypsum board shall be installed as described in Item 7.

angle or channel to facilitate the ceiling installation.

6C. **Steel Framing Members*** — (Not Shown) — As an alternate to Item 6.

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75), RSIC-Si-X

supports the gypsum board butt joints, as described in Item 7. When Fiber, Sprayed (Item 5B) is used, two layers of nom 5/8 in. thick, 4 ft

6B. Steel Framing Members — (Not Shown) — As an alternate to Item 6, main runners, cross tees, cross channels and wall angle

a. Main Runners — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12

wires wrapped and twist-tied on 16d nails driven in to side of trusses at least 5 in. above the bottom face.

SWG galv steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger

b. Cross Tees or Channels — Nom 4 ft long cross tees, with 15/16 in. or 1-1/2 in. wide face, or nom 4 ft long cross channels, with

1-1/2 in. wide face, either spaced 16 in. OC, installed perpendicular to the main runners. Additional cross tees or channels used 8

c. Wall Angle or Channel — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls

at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum

a. Furring Channels — Hat-shaped furring channels, 7/8 in. deep by 2-5/8 in. wide at the base and 1-1/4 in. wide at the face,

formed from No. 25 ga. galv steel, spaced max. 16 in. OC perpendicular to trusses and Cold Rolled Channels (Item 6Cb). Furring

channels secured to Cold Rolled Channels at every intersection with a 1/2 in. pan head self-drilling screw through each furring

one at each end of overlap. Supplemental furring channels at base layer and outer layer gypsum board butt joints are not

channel leg. Ends of adjoining channels overlapped 4 in. and tied together with two double strand No. 18 SWG galv steel wire ties,

required. Batts and Blankets draped over furring channels as described in Item 5. Two layers of gypsum board attached to furring

b. Cold Rolled Channels — 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses,

min. 6 in. and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

the top and bottom of the blocking at each Steel Framing Member (Item 6Cd) location.

Spring gauge of hanger chosen per manufacturer's instructions.

6D. **Steel Framing Members*** — (Not Shown) — As an alternate to Item 6.

KINETICS NOISE CONTROL INC — Type ICW

BXUV.L521 - Fire-resistance Ratings - ANSI/UL 263 | UL Product iQ

friction-fitted into the channel caddy on the Steel Framing Members (Item 6Cd). Adjoining lengths of cold rolled channels lapped

c. **Blocking** — Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber

(blocking), min. 6 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the truss (Item 2) at

d. Steel Framing Members* — Hangers spaced 48 in. OC. max along truss, and secured to the Blocking (Item 6Cc) on alternating

trusses with a single 5/16 in. by 2 in. hex head lag bolt or four #6 1-1/4 in. drywall screws through mounting hole(s) on the hanger

bracket. The two 1/4 in. long steel teeth on the hanger are embedded in the side of the blocking. Hanger positioned on blocking

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to wood

b. Steel Framing Members* — Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 48 in. OC, and secured to

structural members. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the

furring channel spacing shall be reduced to 12 in. OC. Channels secured to trusses as described in Item b. Ends of adjoining

channels overlapped 6 in. and tied together with double strand of No. 18 AWG galv steel wire near each end of overlap.

and leveling bolt height adjusted such that furring channels are flush with bottom of trusses before gypsum board installation.

in. from each side of butted gypsum board end joints. The cross tees or channels may be riveted or screw-attached to the wall

Item 5B.

PLITEQ INC — Type Genie Clip

USG INTERIORS LLC — Type DGL or RX

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FOR CONSTRUCTION

perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels. b. **Blocking** — Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top

and bottom of the blocking at each Steel Framing Member (Item 6c) location with 16d nails or minimum 2-1/2 in. screws.

c. Steel Framing Members* — Used to attach furring channels (Item 6La) to trusses. Clips spaced 48 in. OC and secured along

6N. Steel Framing Members* — (Optional, Not Shown) — Used as an alternate method to attach resilient channels to structural

members. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 24

in. O.C. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional

accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge

of the resilient channel. The accessory and resilient channel are fastened to the structural members with the screws supplied with

the accessory and per the accessory manufacturer's installation instructions. Gypsum Board butt joints staggered minimum 24 in.

7. **Gypsum Board*** — Nom 5/8 in. thick, 48 in. wide gypsum panels. When resilient channels (Item 6) are used, gypsum panels

installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel

screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. When insulation (Items 5 or 5A)

is applied over the resilient channel/gypsum panel ceiling membrane screw spacing shall be reduced to 8 in. OC. When insulation

(Item 5C, 5E or 5F) is applied to the underside of the subflooring, screw spacing shall be reduced to 8 in. OC and minimum 1-1/4

in. long Type S screws to install gypsum to the resilient channels (Item 6), and butted end joints shall be staggered min. 2 ft within

the assembly, and occur midway between the continuous furring channels. End joints secured to both resilient channels as shown

perpendicular to furring channels. Panels attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced

8 in. OC along butted end joints and in the field of the panel. Butted end joints shall be staggered min. 2 ft within the assembly,

of furring channel equal to the width of the gypsum panel plus 6 in. on each end. The two support furring channels shall be

spaced approximately 3-1/2 in. OC, and be attached to underside of the truss with one clip at each end of the channel. When

Steel Framing Members* (Item 6B) are used, gypsum panels installed with long dimension perpendicular to cross tees with side

joints centered along main runners and end joints centered along cross tees. Panels fastened to cross tees with 1 in. long. Type S

bugle-head screws spaced midway between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel

edge. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 4 2 ft OC. When Fiber,

perpendicular to furring channels. Base layer gypsum board secured with 1 in. long Type S bugle head steel screws spaced 12 in.

shown in end joint detail. Outer layer gypsum board secured with 1-5/8 in. long Type S bugle head steel screws spaced 12 in. OC

When both Steel Framing Members (Item 6A) and Fiber, Sprayed (Items 5A or 5B) are used, furring channels spaced 12 in. OC

and two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimension perpendicular to furring channels.

Base layer secured to furring channels with nom 1 in. long Type S bugle head screws spaced 8 in. OC along butted end joints and

continuous furring channels. Each end of each gypsum board shall be supported by a single length of furring channel equal to the

width of the gypsum board plus 6 in. on each end. The two support furring channels shall be spaced approximately 3-1/2 in. OC,

and be attached to the underside of the truss with one clip at each end of the channel. Outer layer secured to furring channels

using 1-5/8 in. long Type S screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min. of 8 in.

in the field of the board. Butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the

bugle-head screws spaced in the field and 8 in. OC along end joints. Panels fastened to main runners with 1 in. long . Type S

Sprayed (Items 5A or 5B) is used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions

OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. End joints secured to both resilient channels as

and located a min of 1/2 in. from side joints and 3 in. from the end joints. Outer layer shall be finished as described in Item 8.

and occur midway between the continuous furring channels. Each end of each gypsum panel shall be supported by a single length

in end joint detail. When Steel Framing Members (Item 6A) are used, gypsum panels installed with long dimensions

truss webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 1-1/2 in. screws through each of the

provided hole locations. Furring channels are friction fitted into clips.

PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

OC and Gypsum Board screws spaced 8 in. OC when used.

PAC INTERNATIONAL L L C — Types RC-1 Boost

back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than

length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection

of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run

OC on adjacent trusses, and secured to trusses with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet hole. Channels secured to clips with one #10 x 1/2 in. pan-head self-drilling screw. Ends of adjoining channels overlapped 6 in. and secured together with two #8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board butt joints require additional resilient channels spaced 3 in. from the butt joint on either side. One edge of the extra

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6K. Steel Framing Members* — (Not Shown) — As an alternate to Item 6. furring channels and Steel Framing Members as

b. Steel Framing Members* — Used to attach furring channels (Item 6la) to the trusses (Item 2). Clips spaced 48 in. OC on

alternating trusses and secured to the bottom chord of the trusses with one 2-1/2 in. coarse drywall screw through the center

channels are overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are

6J. Steel Framing Members* — (Not Shown) — Used to attach resilient channels (Item 6) to trusses (Item 2). Clips spaced 48 in.

required to hold the furring channel that supports one end of the gypsum board butt joints as described in Item 7.

grommet in accordance with the manufacturer's installation instructions. Furring channels are then friction fitted into clips. Ends of

a. Furring Channels — Hat channels formed of No. 25 MSG galv steel, nom. 2-23/32 in. wide by 7/8 in. deep, When there is no insulation installed in the concealed space the resilient channels are spaced 24 in. OC. When insulation (Item 5) is secured to the underside of the subfloor the resilient channels are spaced 16 in. OC. When insulation, Items 5, 5A or 5B is applied over the resilient channel/gypsum panel ceiling membrane, or when Item 5C, 5E or 5F is applied to underside of subflooring, the resilient channels are spaced 12 in. OC. Channels secured to trusses as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galv steel wire near each end of overlap.

b. Steel Framing Members* — Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 48 in. OC with No. 8 x 2-1/2 in. course drywall screw through the center grommet. Furring channels are friction fitted into clips. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.

6L. Steel Framing Members* — (Not Shown

channels will extend to an adjacent truss where it is secured with a clip.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

a. Furring Channels — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to the trusses. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels used at end joints of gypsum board (Item 7), each extending a min of 6 in. beyond both side edges of the board.

b. Cold Rolled Channels — 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Ld) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking** — Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 6Ld) location with 16d nails or minimum 2-1/2 in. screws.

d. Steel Framing Members* — Spaced 48 in. OC. max along truss, and secured to the truss on alternating trusses with two, #10 x 1-1/2 in. screws through mounting holes on the hanger bracket.

PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

6M. **Steel Framing Members*** — (Not Shown) — As an alternate to Item 6. a. Furring Channels — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to trusses and friction fit into Steel Framing Members (Item 6Mc). Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap or with two TEK screws along each leg of the 6 in. overlap. Two furring channels used at end joints of gypsum board (Item 7). Butt joint channels held in place by strong

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joints staggered minimum 48 in. OC. When Steel Framing Members (Item 6M) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Butt joints staggered minimum 24 in. OC.

When Steel Framing Members (Item 6L) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Adjacent butt

the bottom chord of alternating trusses with two No. 8 x 2-1/2 in. course drywall screws, one through the hole at each end of the

clip. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the clip spacing shall be

overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with

channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7. Two

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to wood

structural members. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the

channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire near each end of overlap.

b. Steel Framing Members* — Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 48 in. OC, and secured to

the bottom chord of alternating trusses with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet. When insulation,

Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 24 in. OC

and secured to consecutive trusses. Furring channels are friction fitted into clips. Adjoining channels are overlapped as described

in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6

framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips

required to hold furring channel that supports the gypsum board butt joints, as described in Item 7. Not evaluated for use with

6F. Steel Framing Members* — (Not Shown) — As an alternate to Items 6, furring channels and Steel Framing Members as

b. Steel Framing Members* — Used to attach furring channels (Item a) to the trusses (Item 2). Clips spaced at 48" OC and

galvanized steel wire. Additional clips are required to hold furring channel that supports the gypsum board butt joints as

secured to the bottom of the joists with one 2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring

channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG

6G. Steel Framing Members* — (Not Shown) — As an alternate to Item 6 — Not for use with Items 5, 5A or 5B — Main runners

gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. The main runners and

nom 12 ft long, spaced 72 in. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Cross tees,

nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each

6H. Resilient Channels — For Use With Item 7A - Formed from min 25 MSG galv steel installed perpendicular to trusses and

beyond each side edge of panel. Insulation, Item 5D is applied over the resilient channel/gypsum panel ceiling membrane.

6l. Steel Framing Members* — (Not Shown) — As an alternate to Item 6, furring channels and Steel Framing Members as

spaced 16 in. OC. Channels secured to each truss with 1-5/8 in. long Type S bugle head steel screws. Channels overlapped 4 in. at

splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint. Additional channels shall extend min 6 in.

a. Furring Channels — Formed of No. 25 MSG galvanized steel, 2-1/2 in. wide by 7/8 in deep, spaced 16 in OC, perpendicular to

trusses. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the furring channel

cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in deep, spaced 16 in OC, perpendicular to joists.

When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the furring channel spacing

furring channel spacing shall be reduced to 12 in. OC. Channels secured to trusses as described in Item b. Ends of adjoining

reduced to 24 in. OC and secured to consecutive trusses. Furring channels are friction fitted into clips. Adjoining channels are

two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the

layers of gypsum board required as described in Item 7. Not evaluated for use with Item 5B.

6E. **Steel Framing Members*** — (Not Shown) — As an alternate to Item 6.

shall be reduced to 12 in. OC. Channels secured to joists as described in Item b.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

spacing shall be reduced to 12 in. OC. Channels secured to trusses as described in Item b.

KINETICS NOISE CONTROL INC — Type Isomax

USG BORAL DRYWALL SFZ LLC — Type C

CGC INC — Types C, IP-X2, IPC-AR

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

7A. **Gypsum Board*** — For use with Items 5D and 6H. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. Finish Rating with this ceiling system is 20 min.

9. **Grille** — Grille installed in accordance with the installation instructions provided with the ceiling damper.

furring channels and gypsum board. The poultry netting is attached with washers and 1/2 in. wafer head screws, spaced 24 in. OC., trusses. The cut-openings in the poultry netting shall be staggered at a maximum of 6 ft.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL

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from base layer end joints. Butted side joints of outer layer to be offset min. 18 in. from butted side joints of base layer. When Steel Framing Members (Item 6C) are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels (Item 6Ca). Base layer attached to the furring channels using 1 in. long Type S bugle head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the board. Butted end joints centered on the continuous furring channels. Butted base layer end joints to be offset a min of 16 in. in adjacent courses. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle head steel screws spaced 8 in. OC at butted end joints and 12 in. OC in the field. Butted end joints centered on the continuous furring channels and offset a min of 16 in. from butted end joints of base layer. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer. When **Steel Framing Members** (Item 6D) are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels. Base layer attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 12 in. OC in the field of the board. Butted end joints shall be staggered min 2 ft. within the assembly, and occur midway between the continuous furring channels. Each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. The two furring channels shall be spaced approximately 4 in. OC, and be attached to underside of the truss with one Isomax clip at each end of the channel. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle-head steel screws spaced 12 in. OC in the field. The end of the outer layer boards at the butt joint shall be attached to the base layer boards with 1-5/8 in. long Type G screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min of 8 in. from base layer end joints. Butted side joints of outer layer to be offset min 18 in. from butted side joints of base layer. Outer layer shall be finished as described in Item 8. When Steel Framing Members (Item 6E) are used, one layer of nom 5/8 in. thick, 4 ft wide are installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels using 1 in. long No. 6 Type S buglehead steel screws spaced 12 in. OC in the field of the board. Butted end joints shall be staggered minimum 2 ft. within the assembly. Additional furring channels constructed as per Item 6E shall be used to support each end of each gypsum board. These additional furring channels shall be attached to underside of the truss with Genie clips as described in Item 6E. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer attached to the furring channels using 1-5/8 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field. The outer layer boards at the butt joint shall be attached to the base layer boards with No. 10, 1-1/2 in. long drywall screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min of 24 in. from base layer end joints. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer. When Steel Framing Members (Item 6F) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S buglehead steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the aforementioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be When alternate Steel Framing Members* (Item 6G) are used, gypsum board sheets installed with long dimension (side joints) perpendicular to the 6 ft long cross tees with the end joints staggered min 4 ft and centered between cross tees which are spaced 8 in. OC. Gypsum board

side joints may occur beneath or between main runners. Prior to installation of the gypsum board sheets, backer strips consisting of nom 7-3/4 in. wide pieces of gypsum board are to be laid atop the cross tee flanges and centered over each butted end joint location. The backer strips are to be secured to the flanges of the cross tees at opposite corners of the backer strip with hold down clips to prevent the backer strips from being uplifted during screw-attachment of the gypsum board sheets. Gypsum board fastened to cross tees with 1 in. drywall screws spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board. The butted end joints are to be secured to the backer strip with No. 10 by 1-1/2 in. long Type G laminating screws located 1 in. from each side of the butted end joint and spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board. When Steel Framing Members (Item 6I) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions

screws spaced 8 in. OC along butt joints and in the field of the board. Gypsum board butted end joints shall be staggered minimum 24 in. and occur 3 in. from the continuous furring channels. At the gypsum board butt joints, an additional single length of furring channel shall be installed and be spaced approximately 3 in. from the butt joint (6 in. from the continuous furring channels) to support the floating end of the gypsum board. Each of these shorter sections of furring channel shall extend one truss beyond the width of the gypsum panel and be attached to the adjacent trusses with one SonusClip at every truss involved with the butt joint.

When Steel Framing Members (Item 6J) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to resilient channels. Gypsum board secured to resilient channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board and located 3/4 in. from side joints and 3 in. end joints. Gypsum board joints are to be staggered by a

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FLOOR - FIRE RATED ASSEMBLY DETAIL - L521 CONT.

Architect: OpeningDesign

17 S Fairchild | FL 7

Madison, WI 53703

ryan@openingdesign.com | 773.425.6456

Issued for Permit

Permit Revisions

06/10/2022

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

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6A A613 L521 2 12" = 1'-0"

attached with one RESILMOUNT Sound Isolation Clip at each end of the channel.

perpendicular to furring channels. Gypsum board secured to furring channels with nom 1-1/4 in. long, fine thread, #6, Type S bugle-head steel

minimum of 24 in.

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR

CGC INC — Type ULIX

UNITED STATES GYPSUM CO — Type ULIX

8. Finishing System — (Not Shown) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board.

10. Wire Mesh — (Not Shown) — For use with Item 5A and 5B — 1 in. 20 gauge galvanized poultry netting installed between the to the furring channels. The **Fiber, Sprayed** (Item 5A or 5B) is installed through cut-openings in the poultry netting, in-between

Certification (such as Canada), respectively.

misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory

XHEZ.F-C-3012 - Through-penetration Firestop Systems

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- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials
- and alternate methods of construction. • Only products which bear UL's Mark are considered Certified.

XHEZ - Through-penetration Firestop Systems

XHEZ7 - Through-penetration Firestop Systems Certified for Canada See General Information for Through-penetration Firestop Systems

<u>See General Information for Through-penetration Firestop Systems Certified for Canada</u>

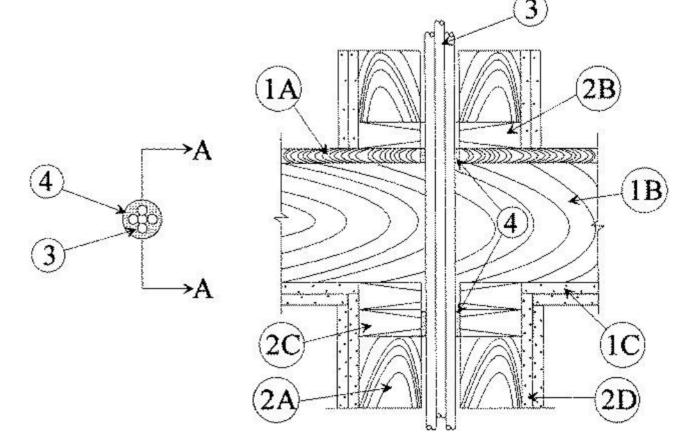
System No. F-C-3012

April 06, 2018

ANSI/UL1479 (ASTM E814)	CAN/ULC S115		
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)		
T Ratings — 0, 1 and 1-3/4 Hr (See Item 3)	FT Ratings — 0, 1 and 1-3/4 Hr (See Item 3)		
	FH Ratings — 1 and 2 Hr (See Item 1)		
	FTH Ratings — 0, 1 and 1-3/4 Hr (See Item 3)		

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1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:

A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening for 1 or 2 hr assembly is 2-1/2 in. (64 mm) or 2 in. (51 mm), respectively.

B. Wood Joists* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.

C. Furring Channels — (Not Shown) — (As required) - Resilient galvanized steel furring installed in accordance with the manner specified in the individual L500 Series Designs in the Fire Resistance Directory.

Ceiling Design. Max diam of opening for 1 or 2 hr assembly is 2-1/2 in. (64 mm) or 2 in. (51 mm), respectively.

D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-

The F Rating of the firestop system is equal to the rating of the floor-ceiling assembly.

2. Chase Wall — (Optional) - The through penetrant (Item 3) may be routed through a fire-rated or non-rated single, double or staggered wood stud/gypsum wallboard chase wall. The chase wall shall be constructed to include the following A. Studs — Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.

B. Sole Plate — Nom 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening for 1 or 2 hr rated assembly is 2-1/2 in. (64 mm) or 2 in. (51 mm), respectively.

C. **Top Plate** — The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening for 1 or 2 hr rated assembly is 2-1/2 in. (64 mm) https://iq.ulprospector.com/en/profile?e=175270

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D. **Gypsum Board*** — One or two layers of min 1/2 in. (13 mm) gypsum board.

3. Cables — In 1 hr fire-rated assemblies, aggregate cross-sectional area of cables in opening to be max 45 percent of the cross-sectional area of the opening (max 2 in. (51 mm) diam bundle). Cables to be rigidly supported on both sides of floor assembly. Any combination of the following types and sizes of copper conductors may be used: A. RG 59 coaxial cable with single copper conductor, cellular polyethylene cellular foam insulation and polyvinyl chloride (PVC) jacket.

B. Max 8/C No. 22 AWG telephone cable with polyvinyl chloride (PVC) jacketing.

C. Max 2/C No. 12 AWG cable with polyvinyl chloride (PVC) insulation and jacketing.

D. Max 3/C with ground No. 2/0 AWG aluminum or copper Type SER cable with polyvinyl chloride (PVC) insulation.

E. Max 3/C with ground No. 2/0 AWG Type NM cable with polyvinyl chloride (PVC) insulation.

F. Max 3/C No. 12 AWG MC (BX) cable with polyvinyl chloride (PVC) insulation.

G. Max 1 in. diam metal clad TEK cable with PVC jacket.

H. Max 4/C with ground No. 300 kcmil (or smaller) aluminum SER cable with PVC insulation and jacket.

I. Through Penetrating Product* - Any cables, Metal-Clad Cable+ or Armored Cable+ currently Classified under the **Through Penetrating Products** category.

See Through Penetrating Product (XHLY) category in the Fire Resistance Directory for names of manufacturers.

The T Rating is 1 and 1-3/4 hr for 1 and 2 hr rated assemblies, respectively, for cables 3A through 3G. The T Rating is 0 hr for

4. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with top surface of floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material also applied within the annulus, flush with bottom surface of ceiling or lower top plate. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS611A Sealant or FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

<u>Last Updated</u> on 2018-04-06

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FIRE STOP - FLOOR - FRAMED - ELECTRIC CABLE - F_1HR&2HR - T_1HR&2HR - L_NA - HILTI - XHEZ.F-C-3012

12" = 1'-0"

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UL Product iQ®

XHEZ.F-C-8009 - Through-penetration Firestop

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- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field. • When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product
- manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
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See General Information for Through-penetration Firestop Systems

XHEZ - Through-penetration Firestop Systems XHEZ7 - Through-penetration Firestop Systems Certified for Canada

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. F-C-8009

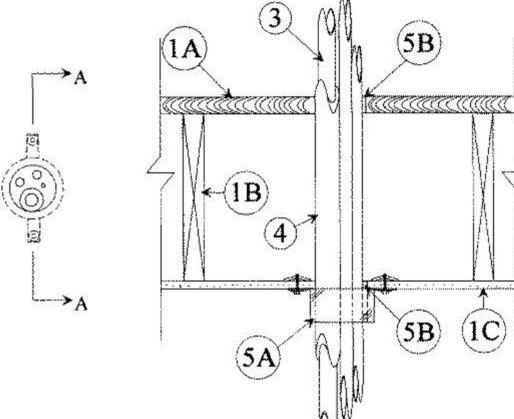
January 21, 2015

CAN/ULC S115 ANSI/UL1479 (ASTM E814)

F Rating — 1 Hr	F Rating — 1 Hr	
T Rating — 1 Hr	FT Rating — 1 Hr	
	FH Rating — 1 Hr	
	FTH Rating — 1 Hr	

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SECTION A-A

System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. Floor-Ceiling Assembly — The 1 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized

A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening is 3 in. (76 mm).

B. Wood Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.

C. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Max diam of opening in ceiling [when chase wall (Item 2) is not provided] is 3 in. (76 mm).

2. Chase Wall — (Optional, Not Shown) — The through penetrant (Item 3) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum wallboard chase wall constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Nom 2 by 6 in. (51 by 152 mm) lumber or double nom 2 by 4 in. (51 by 102 mm) lumber studs.

B. Sole Plate — Nom 2 by 6 in. (51 by 152 mm) lumber or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening shall be 3 in. (76 mm).

C. **Top Plate** — The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) lumber plates or 2 sets of parallel nom 2 by 4 in. (51 by 102 mm) lumber, tightly butted. Max diam of opening is 3 in. (76 mm).

D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.

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3. Through Penetrants — Pipe, cable and tubing to be bundled and rigidly supported on both sides of floor assembly. A nom annular space of min 0 in. (point contact) to max 1/2 in. (13 mm) is required within the firestop system. The following types and sizes of pipe, cable and tubing are to be used in the firestop system in sufficient quantities to fill the firestop device: A. **Cable** — Type PJT thermoset cable, 5/C No. 18 AWG copper conductor, plastic insulation and jacket.

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B. Polyvinyl Chloride (PVC) Pipe — Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

C. **Copper Tubing** — Nom 3/4 in. (19 mm) diam (or smaller) Type L (or heavier) copper tubing.

D. Copper Tubing — Nom 1/2 in. (13 mm) diam (or smaller) Type L (or heavier) copper tubing.

4. Tube Insulation — Plastics+ — Nom 1/2 in. (13 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Insulation to be installed only on one through reverant having a max nom diam of 3/4 in. (19

See Plastics+ (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used. 5. **Firestop System** — The firestop system shall consist of the following:

A. Firestop Device* — Firestop Collar — Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the penetrants and secured to underside of gypsum wallboard ceiling using the anchor hooks provided with the collar. The anchor hooks are to be secured to the surface of the ceiling with min 3/16 in. diam min 2-1/2 in. long toggle bolts. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 64-3 90/3"N, CP 64-3 63/2"N, CP 64-3 50/1-1/2"N.

B. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with top surface of floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with bottom surface of ceiling or lower top plate. Caulk to be forced into interstices of penetration group to max extent possible at top surface of floor or sole plate and bottom surface of ceiling or lower top plate. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS611A, FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

+Bearing the UL Recognized Component Mark *Bearing the UL Classification Marking

Last Updated on 2015-01-21

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6A FIRE STOP - FLOOR - FRAMED - GROUPINGS - F_1HR&2HR - T_1HR&2HR - L_NA - HILTI - XHEZ.F-C-8009

FIRE STOP DETAILS - FLOOR

Architect: OpeningDesign 17 S Fairchild | FL 7 Madison, WI 53703 ryan@openingdesign.com | 773.425.6456

Owner: Renovation Wranglers 102 E 26th St

Bryan, TX 77803

Katieneason@me.com | 979.450.9969

ARCHITECTURE

Architect of Record: LKB Architecture

2929 Allen Pkwy Suite 200

Houston, TX 77019

lisa@lkbarchitecture.com | 713.425.3076

DUDLEY

Structural: Dudley

Firm# 18677

6102 Imperial Loop Drive

College Station, TX 77845

oorieka@dudleyeng.com | (979) 777-0720

MEP: AMC Engineers

Texas Firm #9441

508 E Jackson St # 552

Burnet, TX 78611

info@amcengineers.com | 512.535.6427

Issued for Permit Permit Revisions

06/10/2022

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

Owner: Renovation Wranglers 102 E 26th St Bryan, TX 77803

Katieneason@me.com | 979.450.9969

ARCHITECTURE

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DUDLEY

Structural: Dudley Firm# 18677

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College Station, TX 77845

oorieka@dudleyeng.com | (979) 777-0720

MEP: AMC Engineers Texas Firm #9441

508 E Jackson St # 552 Burnet, TX 78611

info@amcengineers.com | 512.535.6427

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XHEZ.F-C-1168 - Through-penetration Firestop Systems

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XHEZ - Through-penetration Firestop Systems

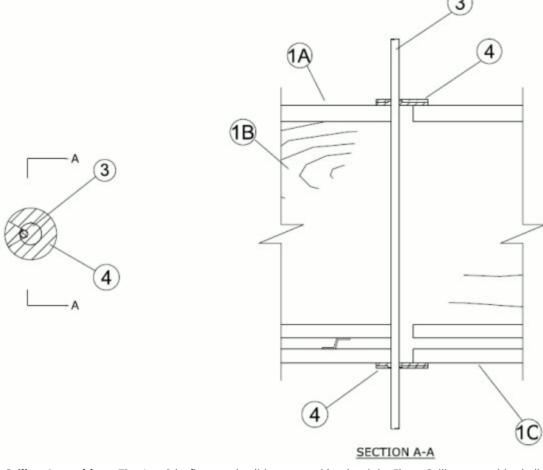
XHEZ7 - Through-penetration Firestop Systems Certified for Canada See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. F-C-1168

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)	FT Ratings — 1 and 2 Hr (See Item 1)
L Rating at Ambient — Less than 1 CFM/Opening	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating at 400 F — Less than 1 CFM/Opening	FTH Ratings — 1 and 2 Hr (See Item 1)
	L Rating at Ambient — Less than 1 CFM/Opening
	L Rating at 400 F — Less than 1 CFM/Opening

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1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist Floor-Ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized below:

A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Opening may be round, rectangular or irregular with a max diam or dimension of 1 in. (25 mm).

B. Joists — Nom 10 in. (254 mm) deep (or deeper) lumber and steel joist, trusses or Structural Wood Members* with bridging as required and with ends firestopped.

C. Gypsum Board* — Nom 4 ft (122 cm) wide by 5/8 in. (16 mm) thick. Gypsum board direct-attached to joists or screw-attached to furring channels as specified in the individual Floor-Ceiling Design. Opening may be round, rectangular or irregular with a max diam or dimension of 1 in. (25 mm).

The F, FT, FH and FTH Rating of the firestop system is equal to the rating of the floor-ceiling assembly.

2. Chase Wall — (Optional. Not Shown) — The through penetrants (Item 3) may be routed through a fire-rated or non-rated single, double or staggered wood stud/gypsum board chase wall constructed of the materials and Partition design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs** — Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or 2 by 8 in. (51 by 203 mm) lumber studs.

B. Sole Plate — Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or 2 by 8 in. (51 by 203 mm) lumber plates. Opening to be centered in sole plate. Opening may be round, rectangular or irregular with a max diam or dimension of 1 in. (25 mm).

C. Top Plate — The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or 2 by 8 in. (51 by 203 mm) lumber. Opening to be centered in top plate. Opening may be round, rectangular or irregular with a max diam or dimension of 1 in. (25 mm).

5/26/22, 11:28 AM iq.ulprospector.com_en/profile_XHEZ.F-C-1168 - Through-penetration Firestop Systems | UL Product iQ D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.

3. **Through Penetrant** — Max one metallic pipe, tubing or conduit installed either concentrically or eccentrically within the firestop system. The annular space between penetrant and periphery of the opening shall be min 0 in. (point contact). Pipe or tubing to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of pipes, tubing or conduit may be used:

A. Steel Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. Iron Pipe — Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe.

C. Copper Tubing — Nom 1/2 in. (13 mm) diam (or smaller) Type L and Type K (or heavier) copper tubing.

D. **Copper Pipe** — Nom 1/2 in. (13 mm) diam (or smaller) Regular (or heavier) copper pipe. E. **Conduit** — Nom 3/4 in. (19 mm) diam (or smaller) rigid or flexible steel conduit.

F. Conduit — Nom 3/4 in. (19 mm) diam (or smaller) electrical metallic tubing (EMT).

4. Fill, Void or Cavity Material* — Nom 60 mm diam by 3 mm thick putty disc with one seam at radius. Paper-backer of disc to be removed and disc firmly pressed around the penetrant lapping nom 5 mm onto penetrant to completely cover opening and firmly pressed to lap onto the floor and ceiling (or plates) around periphery of opening. Disc seam to be firmly pressed and sealed tight, Disc to be installed at both sides of opening in floor-ceiling assembly. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-D 1" Firestop Putty Disc

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),

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FIRE STOP - FLOOR - FRAMED - METALLIC PIPE, CONDUIT OR TUBING - F_1HR&2HR - T_1HR&2HR - L_NA - HILTI - XHEZ.F-C-1168

12" = 1'-0"

5/26/22, 11:25 AM iq.ulprospector.com_en/profile_XHEZ.F-C-2030 - Through-penetration Firestop Systems | UL Product iQ

XHEZ.F-C-2030 - Through-penetration Firestop

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- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
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XHEZ - Through-penetration Firestop Systems

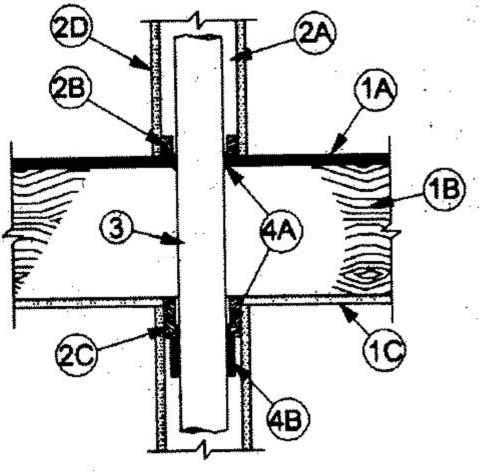
See General Information for Through-penetration Firestop Systems

System No. F-C-2030

April 06, 2018 F Ratings — 1 and 2 Hr (See tem 1) T Ratings — 0, 3/4, 1, 1-1/2 and 2 Hr (See Item 3)

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System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The F Rating of the firestop system is equal to the rating of the floor-ceiling and wall assemblies. The general construction features of the floor-ceiling assembly are summarized below:

A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).

B. Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with end firestopped.

C. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).

D. Furring Channels — (Not Shown) (As required) - Resilient galvanized steel furring installed in accordance with the manner specified in the individual L500 Series Designs in the Fire Resistance Directory.

2. Chase Wall — (Optional) - The through penetrant (Item 3) may be routed through a fire-rated or non-rated single, double or staggered wood stud/gypsum wallboard chase wall. The chase wall shall be constructed to include the following

A. **Studs** — Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.

B. Sole Plate — Nom 2 by 6 in. (51 by 152 mm) (or larger) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3). https://iq.ulprospector.com/en/profile?e=175154

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D. **Gypsum Board*** — One or two layers of min 1/2 in. (13 mm) gypsum board.

3. Through-Penetrants — One nom 1-1/2 in. (38 mm), 2 in. (51 mm), 3 in. (76 mm) or 4 in. (102 mm) diam nonmetallic pipe to be installed within the firestop system. Diam of opening through flooring system and through sole and top plates of chase wall to be max 2-1/8 in. (54 mm), 2-5/8 in. (67 mm), 4 in. (102 mm) or 5 in. (127 mm) for nom 1-1/2 in. (38 mm), 2 in. (51 mm), 3 in. (76 mm) or 4 in. (102 mm) diam nonmetallic pipe sizes, respectively. Pipe to be rigidly supported on both sides of the floor-ceiling assembly. The T Rating is dependent on the size of the through-penetrant. For 2 hr rated assemblies, the T Rating is 2 hr for 1-1/2 in. (38 mm) diam (and smaller) pipes and 1-1/2 hr for pipes greater than 1-1/2 in. (38 mm) diam. For 1 hr rated assemblies, the T rating is 1 hr for 1-1/2 in. (38 mm) diam (and smaller) pipes, 3/4 hr for 2 in. (51 mm) diam pipes and 0 hr for pipes greater than 2 in. (51 mm) diam. The following types of nonmetallic pipes may be used:

A. Polyvinyl Chloride (PVC) Pipe — Schedule 40 solid-core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.

B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

C. Acrylonitrile Butadiene Styrene (ABS) pipe — Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

D. Flame Retardant Polypropylene(FRPP) Pipe — Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.

4. **Firestop System** — The details of the firestop system shall be as follows:

A. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material to be installed within the annular space between the pipe and the flooring (Item 1A) or sole plate. Min 5/8 in. (16 mm) thickness applied within the annular space, flush with the bottom surface of ceiling or lower top plate. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealantor FS-ONE MAX Intumescent Sealant.

B. Firestop Device* — Firestop Collar — Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to underside of ceiling or chase wall top plate (Item 2C) using the anchor hooks provided with the collar. (Minimum 2 anchor hooks for 1-1/2 (38 mm) and 2 in. (51 mm) diam pipes and 3 anchor hooks for 3 in. (76 mm) diam pipes). The anchor hooks are to be secured to the ceiling with min 3/16 in. (5 mm) diam steel toggler bolts or to the chase wall top plate with min No. 12 by min 1 in. (25 mm) long steel wood screws in conjunction with steel washers.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5"N, CP643 63/2"N, CP 643 90/3"N or CP643 110/4"N

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> opening design Architect: OpeningDesign 17 S Fairchild | FL 7 Madison, WI 53703

ryan@openingdesign.com | 773.425.6456

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06/10/2022

FIRE STOP DETAILS - FLOOR

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

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A615 12" = 1'-0"

6A FIRE STOP - FLOOR - FRAMED - NONMETALLIC PIPE_CONDUIT_TUBING - F_1HR&2HR - T_1HR&2HR - L_NA - HILTI - XHEZ.F-C-2030

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XHEZ.W-L-3441 - Through-penetration Firestop

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- and alternate methods of construction. Only products which bear UL's Mark are considered Certified.

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XHEZ7 - Through-penetration Firestop Systems Certified for Canada See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

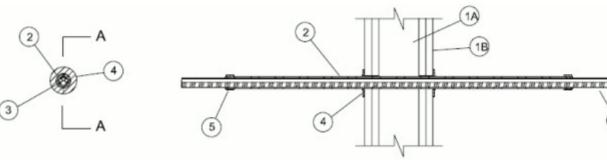
System No. W-L-3441

April 29, 2020

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See item 1)	FT Ratings — 1 and 2 Hr (See item 1)
L Rating at Ambient — Less than 1 CFM/Opening	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating at 400 F — Less than 1 CFM/Opening	FTH Ratings— 1 and 2 Hr (See item 1)
	L Rating at Ambient — Less than 5.1 L/s/m²/Opening
	L Rating at 204 C — Less than 5.1 L/s/m²/Opening

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1. Wall Assembly — The 1 or 2 fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 5/8 in. (16 mm) thick gypsum board, with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Opening may be round, rectangular or irregular with a max diam or

The Ratings of the firestop system are equal to the fire rating of the wall assembly.

2. Metallic Sleeve — Nom 1 in. (25 mm) diam (or smaller) rigid steel conduit installed flush with wall surfaces. The annular space between steel sleeve and periphery of opening shall be min 0 in. (point contact) to max 1/8 in. (3 mm). When opening dimension exceeds 1 in. (25 mm), max annular space is 3/8 in. (10 mm). The sleeve shall extend up to 12 in. (305 mm) beyond one or both wall surfaces. As an option, sleeve may extend continuously beyond one wall surface. The conduit sleeve shall be secured to the adjacent stud within the wall cavity with a steel conduit strap attached to web of stud with min two no. 8 sheet metal screws with washers or shall be rigidly supported on those sides of the wall where the sleeve is extended. As an option, the sleeve may be provided with a plastic grommet at the ends of the sleeve.

3. Cables — Within the sleeve (Item 2), the cables may represent a 0 to 100 percent visual fill. Cables to be tightly bundled within the sleeve and rigidly supported on both sides of wall assembly. Any combination of the following types of cables may

A. Max 3/C No. 8 AWG NM copper conductor cable (Romex) with PVC insulation and jacket.

B. Type RG 6/U coaxial cable with fluorinated ethylene or PVC insulation and jacketing.

C. Max 24 fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation.

D. Max 4 pr No. 22 AWG (or smaller) Cat 5 or Cat 6 computer cables with PVC or plenum rated insulation and jacketing.

E. Maximum 3/C No. 10 AWG copper conductor metal-clad cable.

AFC CABLE SYSTEMS INC

F. **Through Penetrating Product*** — Max two copper conductor No. 18 AWG (or smaller) Power or Non-Power Limited Fire Alarm Cable with or without a jacket under a metal armor.

G. Max 7/C-No. 12 AWG copper conductor control cable with PVC or XLPE insulation and jacket.

H. Max 100 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with PVC or plenum rated insulation and jacketing.

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4. Fill, Void or Cavity Material* — Nom 60 mm diam by 3 mm thick putty disc with one seam at radius. Paper-backer of disc to be removed and disc firmly pressed around the sleeve at each surface of wall to lap min 5 mm onto sleeve and firmly pressed to lap onto the wall around periphery of opening. Disc seams to be firmly pressed and sealed tight, Discs to be installed at both sides of wall opening.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-D 1" Firestop Cable Disc

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-D 1" Firestop Putty Disc

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 606 or FS-ONE MAX Intumescent Sealant

5. Fill, Void or Cavity Material* — Nom 60 mm diam by 3 mm thick putty disc with one seam at radius. Paper-backer of disc to be removed and disc firmly pressed around the cable/cable bundle at exit from each end of sleeve, lapping min 5 mm onto cables to completely cover opening and firmly pressed to lap onto the sleeve periphery. Disc seam to be firmly pressed and sealed tight, Discs to be installed at both sides of wall opening.

6. Fill, Void or Cavity Material*— Sealant — As an alternate to Item 4, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the sleeve/wall interface. Fill material installed symmetrically on both sides of the wall.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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FIRE STOP - WALLS - FRAMED WALLS - ELECTRIC CABLE - F_1HR&2HR - T_1HR&2HR - L_5 - HILTI - XHEZ.W-L-3441

12" = 1'-0"

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5/26/22, 11:16 AM

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XHEZ.W-L-1095 - Through-penetration Firestop

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XHEZ - Through-penetration Firestop Systems

XHEZ7 - Through-penetration Firestop Systems Certified for Canada See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

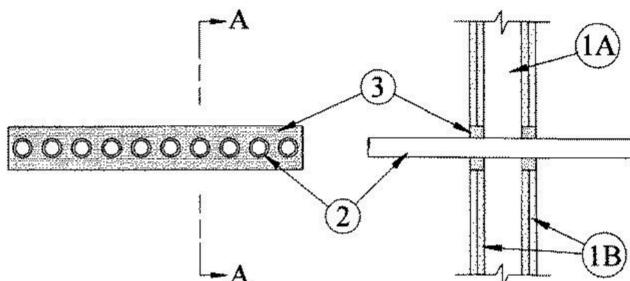
System No. W-L-1095

January 21, 2015

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 & 2 Hr (See Item 1)	F Ratings — 1 & 2 Hr (See Item 1)
T Ratings — 1 & 2 Hr (See Item 3)	FT Ratings — 1 & 2 Hr (See Item 3)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 & 2 Hr (See Item 1)
L Rating At 400 F — 4 CFM/sq ft	FTH Ratings — 1 & 2 Hr (See Item 3)
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft

5/26/22, 11:16 AM

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SECTION A-A

1. Wall Assembly — The 1 or 2 h fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.

B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max size of opening 2-5/8 in. (67 mm) by 18 in. (457 mm). The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is

2. **Electric Metallic Tubing (EMT)** — One or more nom 1 in. (25 mm) diam steel electric tubing. The annular space shall be min 1/2 in. (13 mm) to a max 1 in. (25 mm). Conduit to be rigidly supported on both sides of wall assembly.

3. Fill, Void or Cavity Material* — Sealant — For 2 h F Rating, min 1-1/4 in. (32 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 1 h F Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

<u>Last Updated</u> on 2015-01-21

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6A FIRE STOP - WALLS - FRAMED WALLS - METALLIC PIPE, CONDUIT OR TUBING - F_1HR&2HR - T_1HR&2HR - L_5 - HILTI - XHEZ.W-L-1095

FIRE STOP DETAILS - WALLS

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

Owner: Renovation Wranglers 102 E 26th St Bryan, TX 77803 Katieneason@me.com | 979.450.9969

FOR CONSTRUCTION

ARCHITECTURE **Architect of Record:** LKB Architecture 2929 Allen Pkwy Suite 200 Houston, TX 77019 lisa@lkbarchitecture.com | 713.425.3076

DUDLEY Structural: Dudley Firm# 18677 6102 Imperial Loop Drive College Station, TX 77845 oorieka@dudleyeng.com | (979) 777-0720

MEP: AMC Engineers Texas Firm #9441 508 E Jackson St # 552 Burnet, TX 78611

info@amcengineers.com | 512.535.6427

Architect: OpeningDesign 17 S Fairchild | FL 7 Madison, WI 53703 ryan@openingdesign.com | 773.425.6456

Description Issued for Permit Permit Revisions

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Owner: Renovation Wranglers

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Texas Firm #9441

Burnet, TX 78611

info@amcengineers.com | 512.535.6427

508 E Jackson St # 552

Bryan, TX 77803

5/26/22, 11:04 AM

XHEZ.W-L-2649 - Through-penetration Firestop

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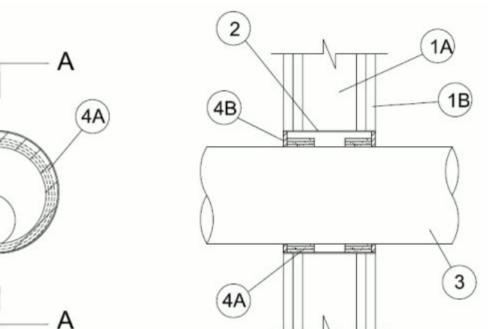
Through-penetration Firestop Systems XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-L-2649

August 2, 2021

F Ratings — 1 and 2 Hr (See Item 1) T Ratings — 1 and 2 Hr (See Item 1) L Rating At Ambient - 1.2 CFM/sq ft L Rating At 400°F - Less Than 1 CFM/sq ft 5/26/22, 11:04 AM iq.ulprospector.com_en/profile_XHEZ.W-L-2649 - Through-penetration Firestop Systems | UL Product iQ



SECTION A-A

The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is

- 1. Wall Assembly The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
- A. Studs Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — One or two layers of nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Maximum diam of opening is 8 in. (203 mm).

2. Steel Sleeve — Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) thick galv sheet steel (28 gauge or heavier) and having a min 1 in. (25 mm) lap along the longitudinal seam. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil. The ends of the steel sleeve shall be flush with each surface of the wall. Gypsum board compound shall be used at ends of sleeve to finish any gaps between sleeve and cut edge of gypsum board at both sides of wall.

3. **Through Penetrants** — One nonmetallic pipe to be installed concentrically or eccentrically within the firestop system. Annular space within the firestop system is dependent upon the max diam and type of penetrant used as tabulated in Item 4A. Pipe to be rigidly supported on both sides of wall assembly. The following types and sizes of nonmetallic pipes may be used: A. Polypropylene Random (PP-R) Pipe — Nom 6 in. (160 mm) diam (or smaller) Cosmoplast PP-R SDR 6 pipe for use in closed (process or supply) piping systems.

B. Polypropylene Random (PP-R) Pipe — Nom 6 in. (160 mm) diam (or smaller) Coprax PP-R SDR 6 pipe for use in closed (process or supply) piping systems.

C. Polypropylene Random (PP-R) Pipe — Nom 6 in. (160 mm OD) diam (or smaller) Aquatherm Greenpipe PP-R SDR 7.4 and SDR 11 pipe for use in closed (process or supply) piping systems.

D. High Density Polyethylene (HDPE) Pipe — Nom 6 in. (152 mm) diam (or smaller) SDR11 HDPE pipe for use in closed (process or supply) piping systems.

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5/26/22, 11:04 AM iq.ulprospector.com_en/profile_XHEZ.W-L-2649 - Through-penetration Firestop Systems | UL Product iQ E. Polypropylene (PP-RCT) Pipe — Nom 6 in. (160 mm OD) diam (or smaller) Aquatherm Bluepipe PP-R SDR 9 or 11 pipe for use in closed (process or supply) piping systems.

F. Polypropylene (PP-RCT) Pipe — Nom 6 in. (160 mm OD) diam (or smaller) Nupi Americas Niron pipe PP-R SDR 7.3, 9 or 11 pipe for use in closed (process or supply) piping systems.

G. Polypropylene (PP-RCT) Pipe — Nom 6 in. (160 mm OD) diam (or smaller) Aquatechnik NA Fusion-Tech pipe PP-R SDR 7.4 or 11 pipe for use in closed (process or supply) piping systems.

H. Polypropylene (PP-RCT) Pipe — Nom 6 in. (160 mm OD) diam (or smaller) Uponor pipe PP-R SDR 9 or 11 pipe for use in closed (process or supply) piping systems.

4. **Firestop System** — The firestop system shall consist of the following: A. Fill, Void or Cavity Material* — Wrap Strip — Nom 3/16 in. (4.8 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Layers of wrap strip are continuously wrapped around the pipe with ends tightly butted and held in place with tape. Wrap strip

installed within the opening at each side of wall and recessed from both surfaces of wall to accommodate the required thickness of

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W45/1-3/4" Firestop Wrap Strip Diam, in. of Layers 4-1/2 (114) 3/16 (4.8)

sealant (Item 4B). The number of layers for a given size penetrant is shown in table below:

6 (152)

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

Metric dimensions shown for pipes (Items 3A, 3B and 3C) in parenthesis are actual metric OD's marked on pipe.

B. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For L Rating, the sealant shall extend over the edge of sleeve and lap onto the gypsum wall surface at both sides of

3/8 (10)

9/16 (14)

1-1/8 (29)

1-3/16 (30)

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Last Updated on 2021-08-02

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6C TIRE STOP - WALLS - FRAMED WALLS - NONMETALLIC PIPE_CONDUIT_TUBING - F_1HR&2HR - T_1HR&2HR - L_5 - HILTI - XHEZ.W-L-2649

5/29/22, 8:39 AM

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XHEZ.W-L-8081 - Through-penetration Firestop

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XHEZ - Through-penetration Firestop Systems XHEZ7 - Through-penetration Firestop Systems Certified for Canada

See General Information for Through-penetration Firestop Systems See General Information for Through-penetration Firestop Systems Certified for Canada

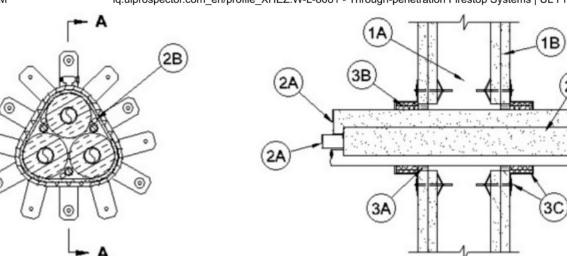
https://iq.ulprospector.com/en/profile?e=178189

System No. W-L-8081

January 28, 2015

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating —0 and 1 Hr (See Item 1)	FT Rating —0 and 1 Hr (See Item 1)
	FH Rating — 1 and 2 Hr (See Item 1)
	FTH Rating — 0 and 1 Hr (See Item 1)

5/29/22, 8:39 AM iq.ulprospector.com_en/profile_XHEZ.W-L-8081 - Through-penetration Firestop Systems | UL Product iQ



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 6 in. (152 mm).

The hourly F, FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T, FT, FTH Ratings of the firestop system are 0 hr for 1 hr fire rated wall assemblies and 1 hr for 2 hr

2. Air Conditioning (AC) Line Set — Max of three AC line sets bundled within the opening. Each line set consists of one metallic pipe, one insulated metallic pipe and one electrical cable. The aggregate cross-sectional area of the penetrants does not exceed 84 percent of the cross-sectional area of the wall opening. The annular space between the penetrants and the periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). Penetrants to be rigidly supported on both sides of wall assembly.

2A. **Metallic Pipes** — The following types and sizes of metallic pipes, conduits or tubing may be used: A. Steel Pipe — Nom 1 in. (25 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe** — Nom 1 in. (25 mm) diam (or smaller) cast or ductile iron pipe.

C. Conduit — Nom 1/2 in (13 mm) diam (or smaller) steel conduit or EMT.

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D. Copper Pipe or Tube — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tube or Regular (or heavier) copper pipe.

2B. Cables — Max 4 pair No. 18 AWG (or smaller) thermostat cable with PVC insulation and jacket.

2C. **Pipe Covering** — The following pipe covering shall be used with the metallic pipes (Types 2A, 2B and 2D only) having a nom diam greater than 1/2 in. (13 mm): A. Tube Insulation - Plastics# — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC)

flexible foam furnished in the form of tubing. See Plastics (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

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3. **Firestop System** — The details of the firestop system shall be as follows: A. Fill, Void or Cavity Material* - Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Fill material forced into grouped penetrant interstices to max extent possible

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

B. Fill, Void or Cavity Material* — Wrap Strip - Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Wrap strip is continuously wrapped around the outer circumference of bundled penetrants two times with ends butted and held in place with tape. Wrap strip installed flush with both surfaces of wall assembly. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E- W25/1-3/4" Wrap Strip

C. Steel Collar — Steel collar fabricated from coils of precut min 0.016 in. (0.41 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be min 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs on 1-3/4 in. (44 mm) centers for securement to both surfaces of wall. In addition, collars contain preformed retainer tabs 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, located opposite the anchor tabs. Collar shall be tightly wrapped over the wrap strip, overlapping min 1 in. (25 mm) at seam and compressed with a min 1/2 in. (13 mm) wide by 0.028 in. (0.71 mm) thick stainless steel band at collar mid-height. Every other anchor tab of collar secured to surface of wall with min 1-1/2 in. (38 mm) long drywall or laminate screws with min 3/4 in. (19 mm) steel washers.

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Bearing the UL Recognized Component Marking

<u>Last Updated</u> on 2015-01-28

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6A WALLS - FRAMED WALLS - GROUPINGS - F_1HR&2HR - T_1HR&2HR - L_NA - HILTI - XHEZ.W-L-8081

FIRE STOP DETAILS - WALLS

MARCO POLO - 101 33RD STREET - CITY OF BRYAN TOWNSITE, BLOCK 96, LOT 3-5 & PT OF 6 & PT OF ALLEY - BRYAN, TX 77803

06/10/2022

Permit Revisions

Description Issued for Permit

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