

General Notes

THESE DRAWINGS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. THE GENERAL CONTRACTOR SHALL PROVIDE FOR THE SAFETY, CARE OF UTILITIES AND ADJACENT PROPERTIES DURING CONSTRUCTION, AND SHALL COMPLY WITH THE STATE AND FEDERAL SAFETY REGULATIONS.

THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR SATISFYING ALL APPLICABLE BUILDING CODES REGARDING BUILDING, BUILDING STRUCTURE, ZONING, ELECTRICAL, MECHANICAL, PLUMBING AND FIRE AND OBTAINING ALL PERMITS AND REQUIRED APPROVALS. THE DRAWINGS AND SPECIFICATIONS SHALL NOT PERMIT WORK THAT DOES NOT CONFORM TO THESE CODES. ANY DISCREPANCIES BETWEEN CODE REQUIREMENTS AND THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.

LIMITED ARCHITECTURAL AND ENGINEERING SERVICE HAS BEEN PROVIDED FOR THIS HOUSE DESIGN. ADDITIONAL CONSTRUCTION DETAILS, INFORMATION AND SPECIFICATIONS ARE NEEDED BY THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ALL SPECIFIED HOUSE STRUCTURE THAT THE SPECIFIED STRUCTURE IS AS REQUIRED TO CONSTRUCT THE HOUSE FOR THE LOCATION OF WHERE THIS HOUSE IS BUILT. THE GENERAL CONTRACTOR MUST GET AN APPROVAL OF HOUSE REQUIRED STRUCTURE FROM WITH LOCAL STRUCTURAL ENGINEER.

ELECTRICAL INSTALLATION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND THE LOCAL BUILDING AUTHORITY.

MECHANICAL WORK SHALL BE EXECUTED AND INSPECTED IN ACCORDANCE WITH PUBLIC UTILITY REGULATIONS AND LOCAL APPLICABLE CODES.

DO NOT PROCEED IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED WITH WRITTEN DIRECTION FROM THE ARCHITECT. THE ARCHITECT IS NOT RESPONSIBLE FOR CONSTRUCTION PROCEDURES, TECHNIQUES OR THE FAILURE OF THE SUB-CONTRACTORS TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS, INDUSTRY STANDARDS, OR REQUIRED CODES.

WRITTEN DIMENSIONS ALWAYS TAKE PRECEDENCE OVER SCALED DIMENSIONS. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS SHOWN PRIOR TO BEGINNING ANY WORK AND NOTIFY THE ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES FOR INTERPRETATION OR CLARIFICATION PRIOR TO BEGINNING ANY ASSOCIATED WORK. PLAN DIMENSIONS ARE TAKEN FROM THE CENTER AND FACE OF FRAMING MEMBERS UNLESS OTHERWISE NOTED. SECTION OR ELEVATION DIMENSIONS ARE TO TOP OF CONCRETE, TOP OF PLYWOOD, OR BEAMS UNLESS OTHERWISE NOTED.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR OR OWNER TO VERIFY THE ACCURACY AND COMPLETENESS OF THE DOCUMENTS AS PRESENTED AND TO VERIFY ALL CONDITIONS AND DIMENSIONS AT THE JOB SITE SUFFICIENTLY IN ADVANCE OF THE WORK TO BE PERFORMED TO ASSURE THE ORDERLY PROGRESS OF THE WORK. ANY DISCREPANCIES BETWEEN THESE CONSTRUCTION DOCUMENTS AND ACTUAL JOB SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO BEGINNING ANY CONSTRUCTION.

THE GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL GRADES INCLUDING PAVED AREA SLOPES PRIOR TO PLACING ANY FOUNDATIONS. SURVEY WORK SHOULD BE VERIFIED IN DETAIL. VERIFY ALL DIMENSIONS, CONDITIONS, AND UTILITY LOCATIONS ON THE JOB PRIOR TO BEGINNING ANY WORK OR ORDERING ANY MATERIALS. NOTIFY THE ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES IN THE DRAWINGS IMMEDIATELY. STAKE ALL BUILDING CORNERS AND DRIVEWAY LOCATIONS FOR OWNER, BUILDER, AND DESIGN FIRM.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT THE EXISTING TREES TO REMAIN AND ADJACENT PROPERTIES FROM DAMAGE DURING CONSTRUCTION. PROVIDE PROTECTIVE FENCING THROUGHOUT CONSTRUCTION.

IT IS THE INTENT AND MEANING OF THESE DRAWINGS THAT THE CONTRACTOR AND EACH SUBCONTRACTOR PROVIDE ALL LABOR, MATERIALS, TRANSPORTATION, SUPPLIES, EQUIPMENT, ETC., TO OBTAIN A COMPLETE JOB WITHIN THE RECOGNIZED STANDARDS OF THE INDUSTRY.

THE CONTRACTOR & HIS SUBCONTRACTORS SHALL MAINTAIN THE PREMISES CLEAN AND FREE OF ALL TRASH, DEBRIS AND SHALL PROTECT ALL ADJACENT WORK FROM DAMAGE, SOILING, PAINT OVERSPRAY, ETC. ALL FIXTURES, EQUIPMENT, GLAZING, FLOORS, ETC. SHALL BE LEFT CLEAN AND READY FOR OCCUPANCY UPON COMPLETION OF THE PROJECT.

FIELD MEASUREMENTS TO BE VERIFIED FOR PROPER FIT AND ATTACHMENT FOR ALL DOORS, WINDOWS, CABINETRY, APPLIANCES, HARDWARE, FIXTURES, AND SPECIALIZED EQUIPMENT. ITEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ALL WINDOWS AND DOORS DIMENSIONS ARE SHOWN OF AN ACTUAL UNIT SIZE. THE CONTRACTOR MUST LEAVE EXTRA SPACE FOR WINDOWS AND DOORS INSTALLATION.

FLOOR JOIST SUPPLIER TO VERIFY DIMENSIONS AND COORDINATE JOIST LAYOUT PLAN AND APPROPRIATE DETAILS.

ROOF RAFTER AND BEAM SUPPLIER TO VERIFY DIMENSIONS AND COORDINATE RAFTER AND BEAM LAYOUT PLAN AND APPROPRIATE DETAILS.

PROVIDE FIRE & SMOKE DETECTORS AS REQUIRED BY LOCAL JURISDICTION.

PROVIDE INSULATION AROUND ALL PLUMBING AND HEATING LINES EXPOSED TO TEMPERATURE DIFFERENTIALS.

SUBSTITUTION OF "EQUAL" PRODUCTS WILL BE ACCEPTABLE.

IN THE LOCATIONS OF HARSH WINTER CONDITIONS, ROOF AND DECK SURFACES MUST BE MAINTAINED REASONABLY FREE OF ICE AND SNOW TO ENSURE MINIMAL PROBLEMS WITH THESE SURFACES.

CODES HAVING JURISDICTION SHALL BE OBSERVED STRICTLY IN THE CONSTRUCTION OF THE PROJECT. ALL APPLICABLE STATE, COUNTY AND CITY REQUIREMENTS REGARDING BUILDING, BUILDING STRUCTURE, ZONING, ELECTRICAL, MECHANICAL, PLUMBING AND FIRE CODES SHALL BE VERIFIED BY THE GENERAL CONTRACTOR & SUBCONTRACTORS BEFORE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES BETWEEN CODE REQUIREMENTS AND THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.

MINOR DETAILS NOT SHOWN OR SPECIFIED BUT NECESSARY FOR PROPER INSTALLATION OR FOR BUILDING CODE COMPLIANCE OR STANDARDS LISTED HEREIN SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR'S CLARIFICATION.

IF GENERAL CONTRACTOR IS NOT HIRED FOR THE CONSTRUCTION WORK THE OWNER OF THE HOUSE IS RESPONSIBLE FOR ABOVE MENTIONED GENERAL CONTRACTOR'S DUTIES.



TRUOBA
TRUOBA MINI 217

House Area: 858 sq. ft.

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Company Title

TRUOBA

UAB Truoba
Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Truoba Mini 217

Drawing Name

Cover Sheet

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Layout ID

01

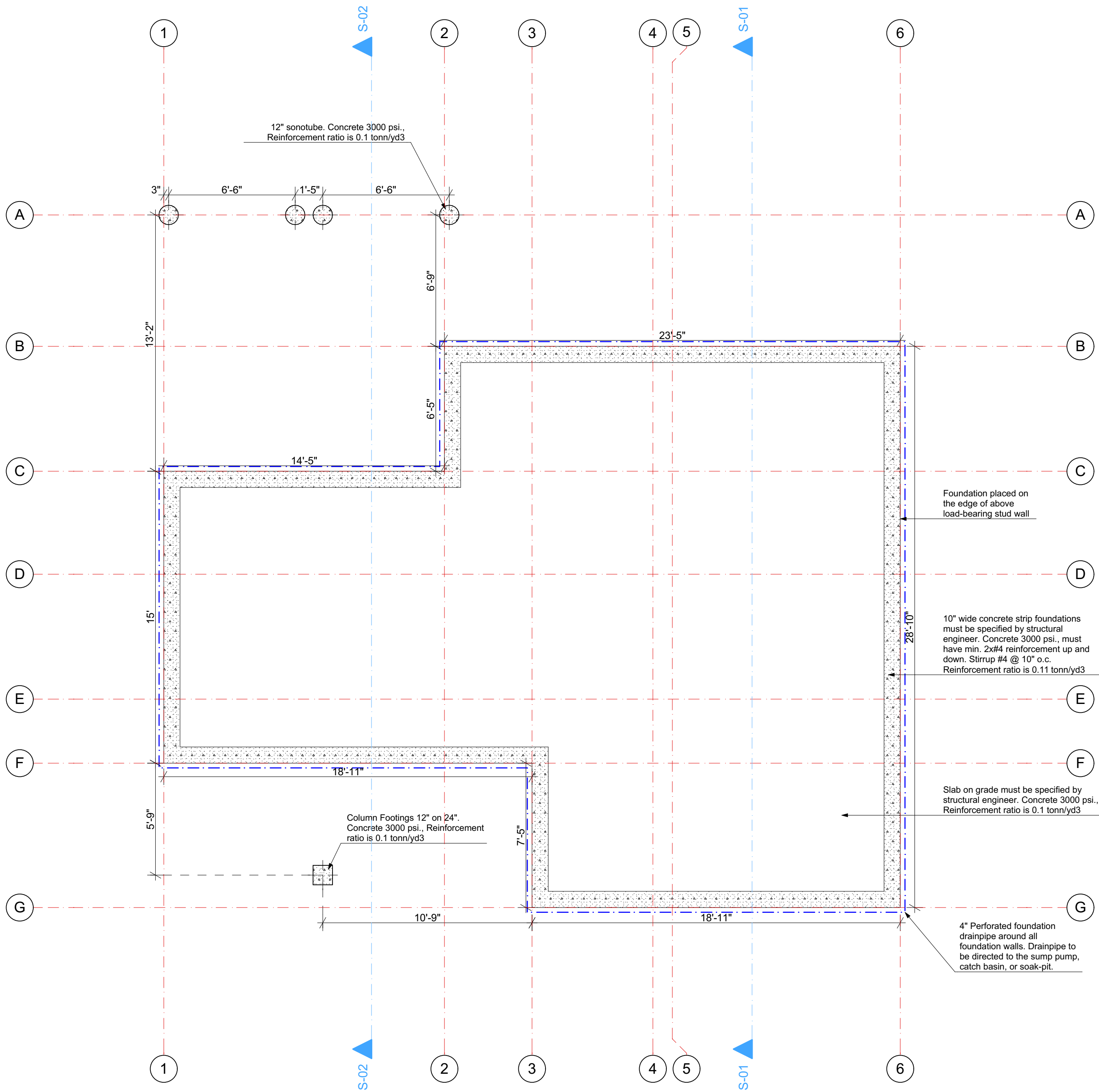
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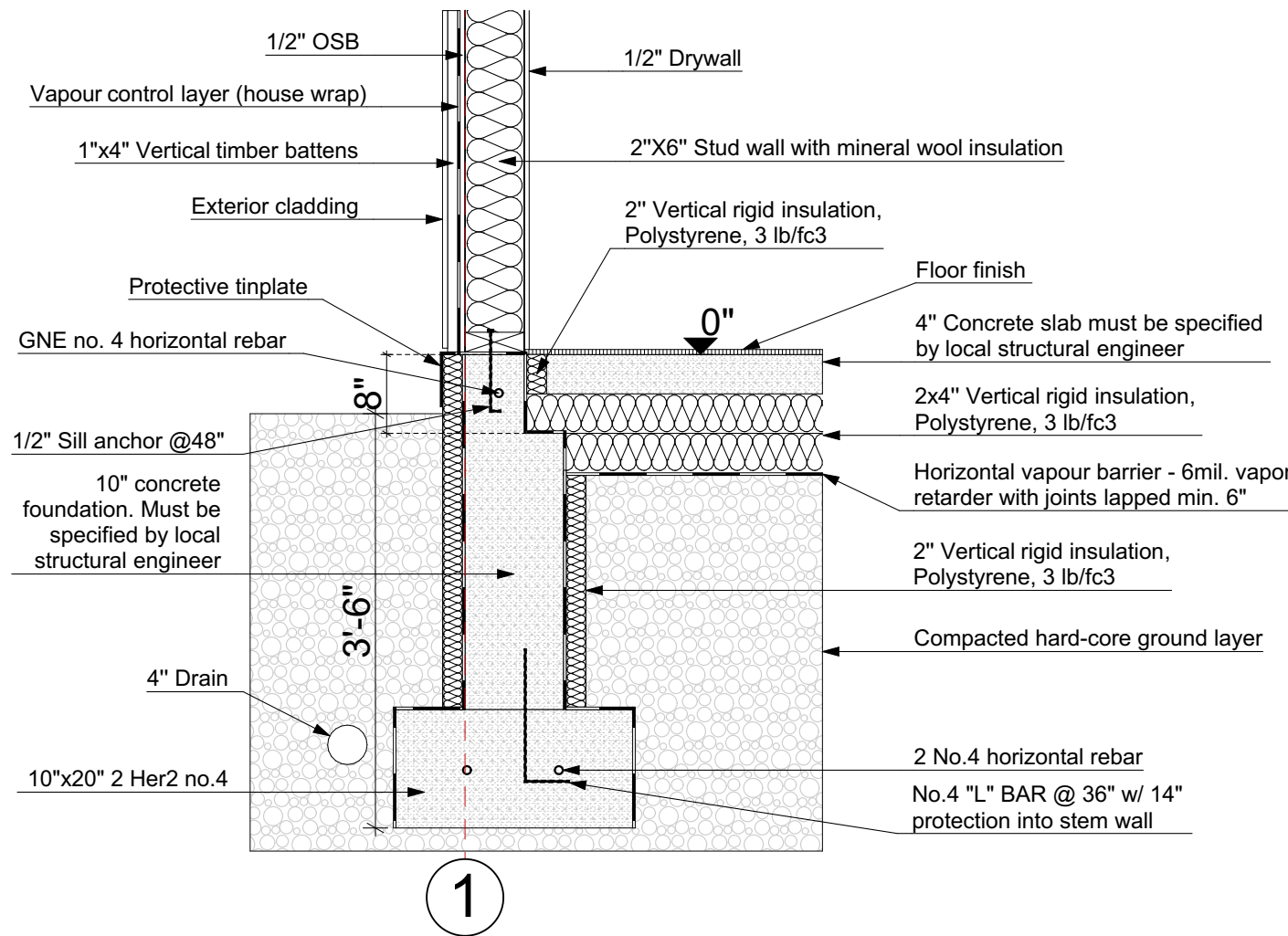
Revision



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Adam R. Taddese
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01 Slab Foundation Plan
1/4" = 1'-0"



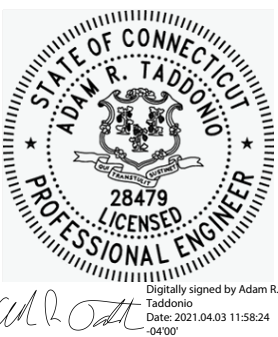
02 Slab foundation construction detail

FOUNDATION NOTES

- DIMENSIONS ARE TO OUTSIDE EDGE OF CONCRETE STEM WALL.
- SLOPE ALL EXTERIOR FINISHED GRADES AWAY FROM THE BUILDING 6" IN FALL IN FIRST 10'.
- CONTRACTOR IS RESPONSIBLE FOR ALL SHORING, CRIBBING, SHEET PILING, ETC. AS REQUIRED TO SAFELY RETAIN EXCAVATIONS DURING CONSTRUCTION.
- FOUNDATION PLATES SHALL BE REDWOOD CONSTRUCTION COMMON OR PRESSURE TREATED DOUG-FIR AND ANCHORED TO FOUNDATION W/ 1/2" DIA. ANCHOR BOLTS W/ 7" MIN. EMBEDMENT MAX. SPACING 8' O.C. UNLESS NOTED OTHERWISE. MINIMUM 2 ANCHOR BOLTS PER PLATE SECTION. MAX. 12" AND MIN 7 BOLT DIAMETER FROM END OF SILL. MIDDLE 1/3 OF WIDTH.
- ALL CAST IN PLACE CONCRETE SHALL CONFORM TO REQUIREMENTS OF THE AC 1301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE."
- CONCRETE SHALL BE READY MIXED CONCRETE IN ACCORDANCE WITH ASTM C 94. USE TYPE 'A' CEMENT. AIR ENTRAINMENT SHALL BE 4-6% U.N.O. ALL CONCRETE TO ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS. CEMENT SHALL CONFORM TO ASTM C 150, TYPE A.
- AGGREGATE TO BE 3/4 NOMINAL COURSE. MAXIMUM 4" SLUMP FOR SLABS ON GRADE, AND A MAXIMUM 7" FOR WALLS AND FOOTERS.
- DO NOT TAMP SLABS. FOR ALL CONCRETE USE ROLLER BUD, VIBRATING SCREED OR BULL FLOAT AS NECESSARY TO PREVENT HONEYCOMBING BUT NOT TO THE POINT OF SEGREGATION. CONCRETE SHALL BE CHLORIDE FREE.
- PROVIDE AND INSTALL SLEEVES FOR UTILITY OPENINGS PRIOR TO PLACING CONCRETE. CONCRETE FOOTINGS MAY BE POURED AGAINST NEAT EXCAVATIONS PROVIDED THE REQUIRED CONCRETE COVERAGE IS MAINTAINED.
- CURE EXPOSED CONCRETE FOR 7 DAYS (MIN.) IN ACCORDANCE WITH ACI 301 PROCEDURES IN ORDER TO PREVENT CRACKING. CURE BY WATERING DAILY OR WITH CURING AND SEALING COMPOUND (SCOFIELD 'CURESEAL' OR EQ.) OR COMBINATIONS THEREOF. IF CURING COMPOUND IS USED, APPLY AT A RATE SPECIFIED BY THE MANUFACTURER.
- REINFORCING STEEL SHALL CONFORM TO THE ASTM A615, GRADE 40 (F_y=40 ksi) DEFORMED BARS FOR ALL BARS.
- CONTRACTING JOINTS IN SLABS SHALL BE NOT LESS THAN 1/4 OF THE SLAB THICKNESS. CONSTRUCTION JOINT GRID TO BE AS SQUARE AS POSSIBLE AND NOT EXCEED 100 SQUARE FEET IN AREA.
- ALL REINFORCING STEEL SHALL BE DETAILED AND PLACED IN CONFORMANCE WITH THE LATEST EDITIONS OF THE ACI 318 AND THE CRSI "MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION", AND AS MODIFIED BY THE DRAWINGS. ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
- ALL REINFORCING STEEL IN SLAB ON GRADE SHALL BE ACCURATELY PLACED AND SUPPORTED BY GALVANIZED METAL OR PLASTIC CHAIRS, SPACERS OR HANGERS 1 1/2" - 2" BELOW TOP OF SLAB. PROVIDE THE FOLLOWING MINIMUM COVERAGE:
- CAST AGAINST EARTH AND PERMANENTLY EXPOSED TO EARTH- 3"
- EXPOSED TO EARTH OR WEATHER:
- #6 AND LARGER--2"
- #5 AND SMALLER--1 1/2"
- ALL OTHERS PER THE LATEST EDITION OF THE ACI 318
- UNLESS NOTED OTHERWISE, REINFORCING STEEL LAP SPLICES IN CONCRETE SHALL BE CLASS 'B' TENSION LAP SPLICES (2'-0" MIN.) PER THE LATEST EDITION OF THE ACI 318. STAGGER ALTERNATE SPLICES A MIN. OF ONE LAP LENGTH.
- SPLICED BARS SHALL BE PLACED AT THE SAME EFFECTIVE DEPTH UNLESS NOTED OTHERWISE. MINIMUM BAR SPLICES SHALL BE 30 BAR DIAMETERS. NO SPLICING OF VERTICAL BARS IS ALLOWED.

NOTES

- Foundation structure must be specified and approved by local structural engineer of a location where this house is built. Structural engineer together with client and contractor must decide what variance of the foundation will be chosen.
- A. Soil tests. In areas likely to have expansive, compressible, shifting or other unknown soil characteristics, KHC may require a soil test to determine the soil's characteristics at a particular location. This test shall be made by an approved agency using an approved method. (Table R401.4.1 IRC)
- B. Compressible or shifting soil. When top or subsoils are compressible or shifting, such soils shall be removed to a depth and width sufficient to assure stable moisture content in each active zone and shall not be used as fill or stabilized within each active zone by chemical, dewatering or presaturation. (Section R401.4.2 IRC)
- C. Site should be excavated and the foundation designed to allow a minimum of 18" crawlspace headroom and a minimum of 6" clearance between the bottom of the exterior vinyl siding and the finished exterior grade. All below grade block foundation is to be coated with foundation coating/damp proofing. (Section R406.1 IRC)
- D. Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection so as to not create a hazard. Lots shall be graded so as to drain surface water away from foundation walls. The grade away from foundation walls shall fall a minimum of 6" within the first 10'.



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Company Title

TRUOBA

UAB Truoba
Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Truoba Mini 217

Drawing Name

Slab Foundation Plan

Drawing Scale

1/4" = 1'-0"

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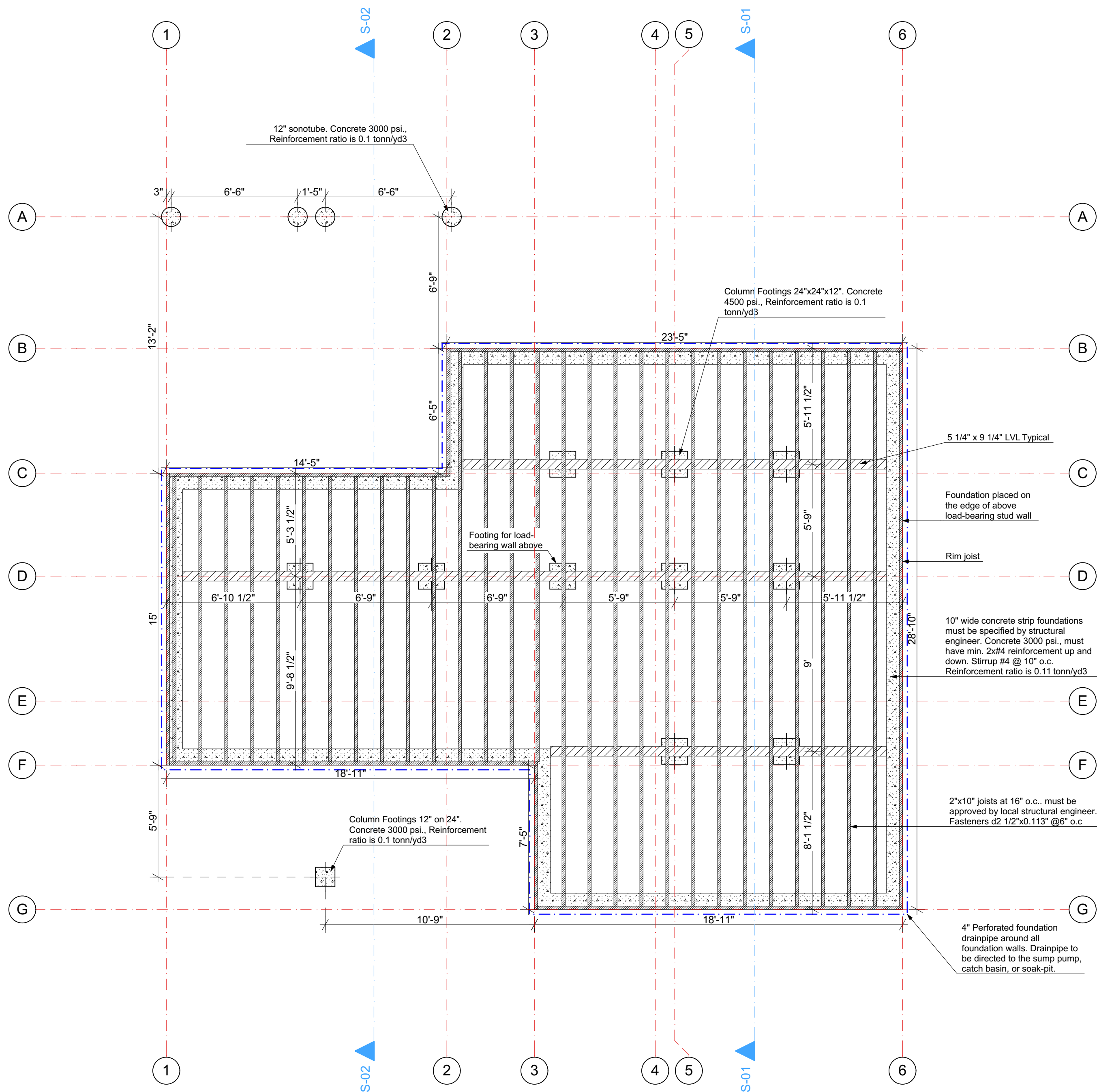
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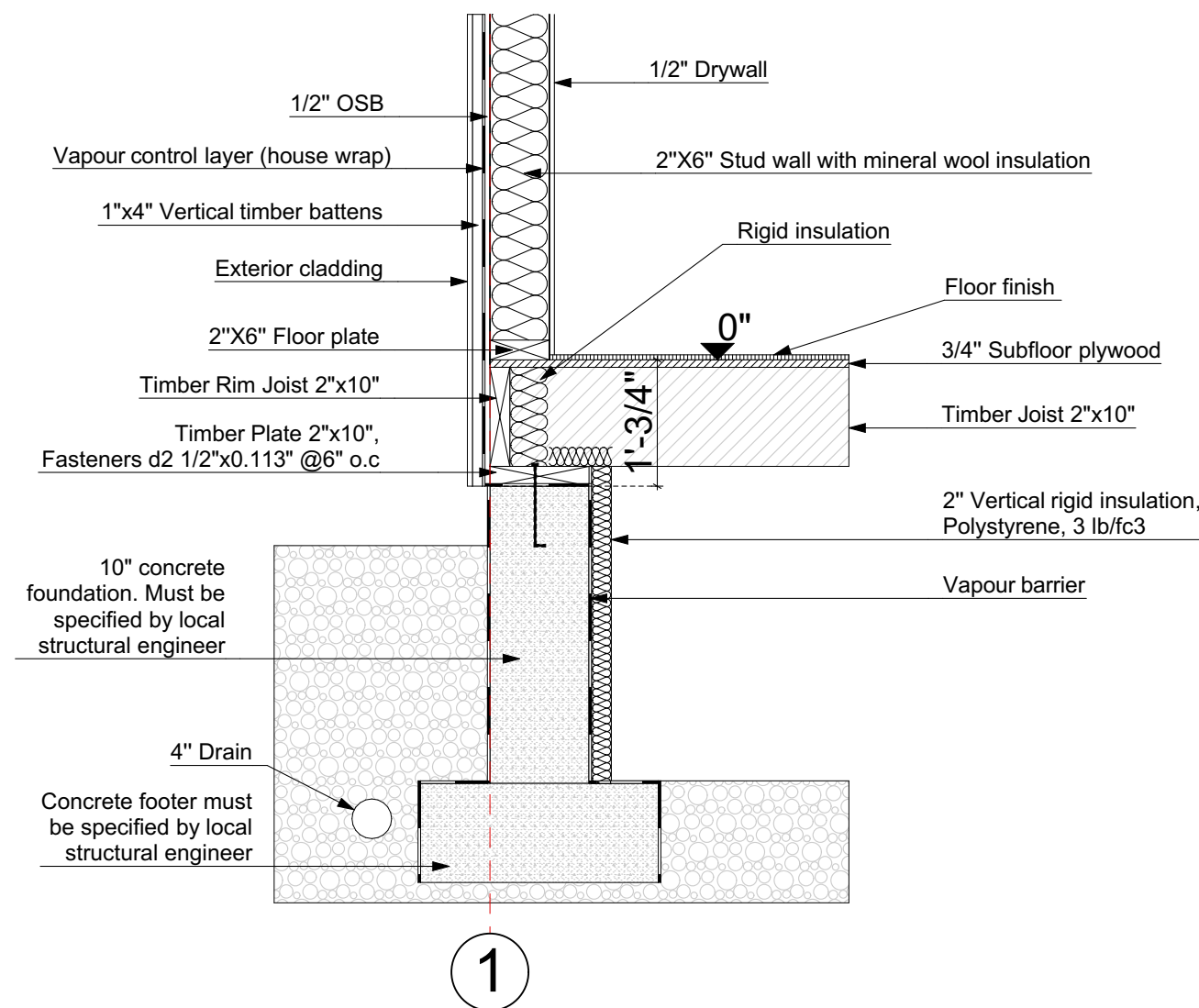
Date

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Revision



01 Crawl Foundation Plan
1/4" = 1'-0"



02 Crawl foundation construction detail

FOUNDATION NOTES

- DIMENSIONS ARE TO OUTSIDE EDGE OF CONCRETE STEM WALL.
- SLOPE ALL EXTERIOR FINISHED GRADES AWAY FROM THE BUILDING 6" IN FALL IN FIRST 10'.
- CONTRACTOR IS RESPONSIBLE FOR ALL SHORING, CRIBBING, SHEET PILING, ETC. AS REQUIRED TO SAFELY RETAIN EXCAVATIONS DURING CONSTRUCTION.
- FOUNDATION PLATES SHALL BE REDWOOD CONSTRUCTION COMMON OR PRESSURE TREATED DOUG-FIR AND ANCHORED TO FOUNDATION W/ 1/2" DIA. ANCHOR BOLTS W/ 7" MIN. EMBEDMENT MAX. SPACING 8" O.C. UNLESS NOTED OTHERWISE. MINIMUM 2 ANCHOR BOLTS PER PLATE SECTION. MAX. 12" AND MIN 7 BOLT DIAMETER FROM END OF SILL. MIDDLE 1/3 OF WIDTH.
- ALL CAST IN PLACE CONCRETE SHALL CONFORM TO REQUIREMENTS OF THE AC 1301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE."
- CONCRETE SHALL BE READY MIXED CONCRETE IN ACCORDANCE WITH ASTM 94. USE TYPE 'A' CEMENT. AIR ENTRAINMENT SHALL BE 4-6% U.N.O. ALL CONCRETE TO ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS. CEMENT SHALL CONFORM TO ASTM 150, TYPE A.
- AGGREGATE TO BE 3/4" NOMINAL COURSE. MAXIMUM 4" SLUMP FOR SLABS ON GRADE, AND A MAXIMUM 7" FOR WALLS AND FOOTERS.
- DO NOT TAMP SLABS. FOR ALL CONCRETE USE ROLLER BUD, VIBRATING SCREED OR BULL FLOAT AS NECESSARY TO PREVENT HONEYCOMBING BUT NOT TO THE POINT OF SEGREGATION. CONCRETE SHALL BE CHLORIDE FREE.
- PROVIDE AND INSTALL SLEEVES FOR UTILITY OPENINGS PRIOR TO PLACING CONCRETE. CONCRETE FOOTINGS MAY BE POURED AGAINST NEAT EXCAVATIONS PROVIDED THE REQUIRED CONCRETE COVERAGE IS MAINTAINED.
- CURE EXPOSED CONCRETE FOR 7 DAYS (MIN.) IN ACCORDANCE WITH ACI 301 PROCEDURES IN ORDER TO PREVENT CRACKING. CURE BY WATERING DAILY OR WITH CURING AND SEALING COMPOUND (SCOFIELD 'CURESEAL' OR EQ.) OR COMBINATIONS THEREOF. IF CURING COMPOUND IS USED, APPLY AT A RATE SPECIFIED BY THE MANUFACTURER.
- REINFORCING STEEL SHALL CONFORM TO THE ASTM A615, GRADE 40 (F_y=40 ksi) DEFORMED BARS FOR ALL BARS.
- CONTRACTING JOINTS IN SLABS SHALL BE NOT LESS THAN 1/4 OF THE SLAB THICKNESS. CONSTRUCTION JOINT GRID TO BE AS SQUARE AS POSSIBLE AND NOT EXCEED 100 SQUARE FEET IN AREA.
- ALL REINFORCING STEEL SHALL BE DETAILED AND PLACED IN CONFORMANCE WITH THE LATEST EDITIONS OF THE ACI 318 AND THE CRSI "MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION", AND AS MODIFIED BY THE DRAWINGS. ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
- ALL REINFORCING STEEL IN SLAB ON GRADE SHALL BE ACCURATELY PLACED AND SUPPORTED BY GALVANIZED METAL OR PLASTIC CHAIRS, SPACERS OR HANGERS 1 1/2" - 2" BELOW TOP OF SLAB. PROVIDE THE FOLLOWING MINIMUM COVERAGE:
- CAST AGAINST EARTH AND PERMANENTLY EXPOSED TO EARTH- 3"
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- SPLICED BARS SHALL BE PLACED AT THE SAME EFFECTIVE DEPTH UNLESS NOTED OTHERWISE. MINIMUM BAR SPLICES SHALL BE 30 BAR DIAMETERS. NO SPLICING OF VERTICAL BARS IS ALLOWED.

NOTES

- Foundation structure must be specified and approved by local structural engineer of a location where this house is built. Structural engineer together with client and contractor must decide what variance of the foundation will be chosen.
- Crawl Space Ventilation. The under-floor space needs to have ventilation openings through foundation walls or exterior walls. 1 sq.ft. of screened vent space penetrating the perimeter foundation for every 150 sq.ft. of space in the crawl space, unless the ground surface is covered by Class 1 vapor retarder material. Where a Class 1 vapor retarder material is used, ventilation openings should not be less than 1 sq.ft. for each 1,500 sq.ft. of crawl space area. 1 vent opening required within 3' of each corner. (Section R408.1 IRC)
- A. Soil tests. In areas likely to have expansive, compressible, shifting or other unknown soil characteristics, KHC may require a soil test to determine the soil's characteristics at a particular location. This test shall be made by an approved agency using an approved method. (Table R401.4.1 IRC)
- B. Compressible or shifting soil. When top or subsoils are compressible or shifting, such soils shall be removed to a depth and width sufficient to assure stable moisture content in each active zone and shall not be used as fill or stabilized within each active zone by chemical, dewatering or presaturation. (Section R401.4.2 IRC)
- C. Site should be excavated and the foundation designed to allow a minimum of 18" crawlspace headroom and a minimum of 6" clearance between the bottom of the exterior vinyl siding and the finished exterior grade. All below grade block foundation is to be coated with foundation coating/damp proofing. (Section R406.1 IRC)
- D. Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection so as to not create a hazard. Lots shall be graded so as to drain surface water away from foundation walls. The grade away from foundation walls shall fall a minimum of 6" within the first 10'.



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Adam R. Taddone
Date: 2021.04.03
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Company Title

TRUOBA

UAB Truoba
Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Truoba Mini 217

Drawing Name

Crawl Foundation Plan

Drawing Scale

1/4" = 1'-0"

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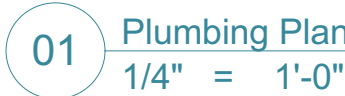
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03

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4/1/2021

Revision



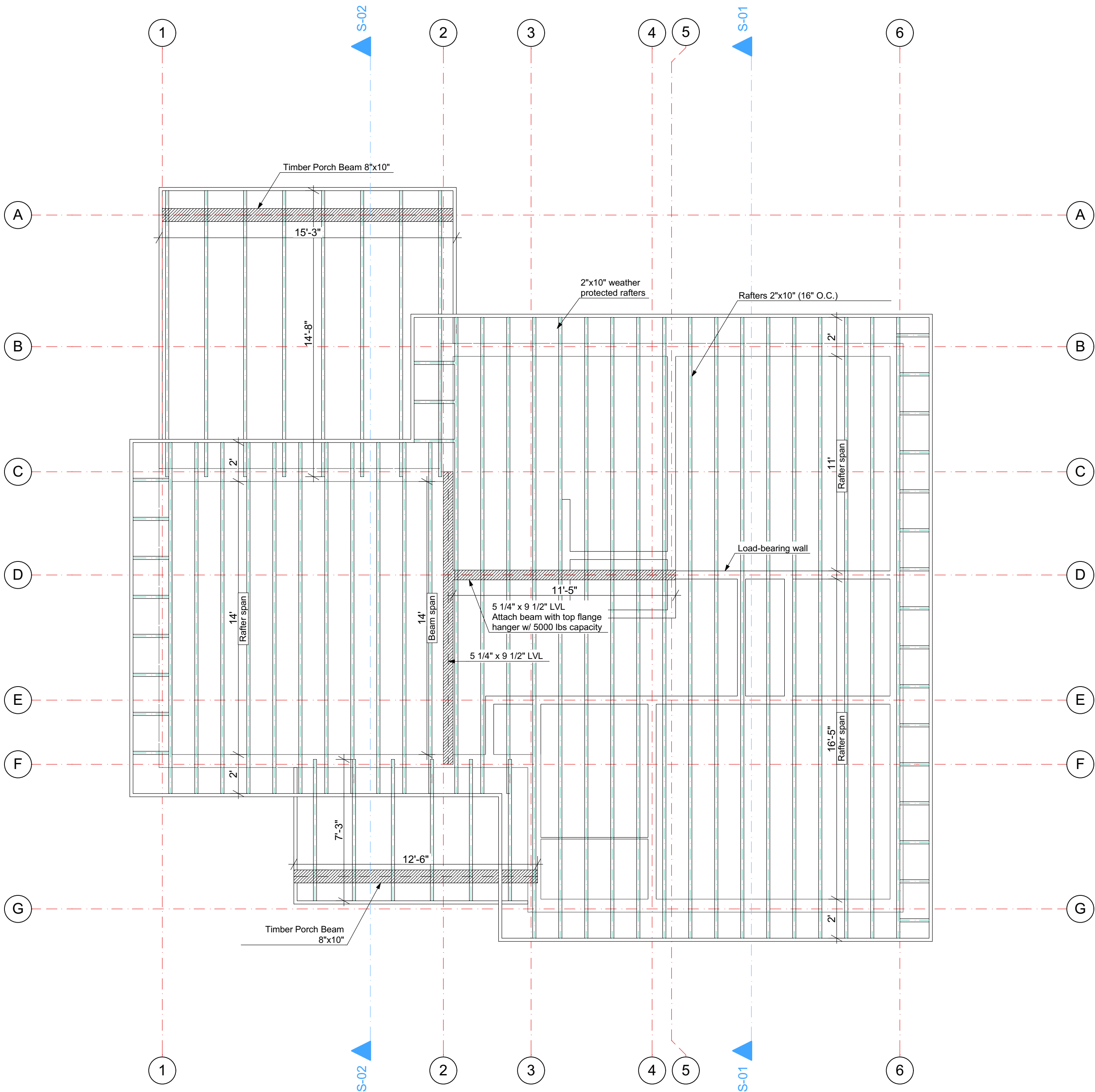
MARK	MANUFACTURER/MODEL	QUANTITY	AREA SERVED	ELECTRICAL	GALLONS	RECOVERY RATE
EWH-1&2	RHEEM: 82SV50-2	1	KITCHEN/RESTROOM	40AMP 240V,1P	30 GAL	21 GPH

MARK	MANUFACTURER/MODEL	QUANTITY	AREA SERVED	ELECTRICAL	GALLONS	RECOVERY RATE
EWH-1&2	RHEEM: 82SV50-2	1	KITCHEN/RESTROOM	40AMP 240V,1P	30 GAL	21 GPH

Revision



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Adam R. Taddonio
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01 Roof Construction Plan
1/4" = 1'-0"

SNOW LOAD ANALYSIS

Nort East & North West USA

Pg = 25psf - ground snow load for East USA
Pg = 11 psf - ground snow load for west USA

Min snow load: **16psf - governs**
In accordance with the ANSI/AF&PA NDS-2015
using the LRFD method

Rafter Design 16" O.C. - 2"x10"

Dead load: 8.8 pound/ft2
Load combinations: 1.2Dead + 1.6Snow

Member details
Length of span = 18.5 ft

Roof Beam Design - 6"x12"

Dead load: 11.3 pound/ft2
Load combinations: 1.2Dead + 1.6Snow
Tributary area width: 10ft

Member details
Length of span Ls1 = 16 ft

Wood Column Design - 8"x8"

Dead load: 11.3 pound/ft2
Load combinations: 1.2Dead + 1.6Snow

Roof beam self-weight: **17.325 pound**
Total point load acting on column: **2487.87 pounds**

Member details
Unbraced length in x-axis Lx = 7.5 ft
Unbraced length in y-axis Ly = 8 ft

Roof Joist Design

Total load 36.16pound/ft2
Dead load=10.56psf
Live load=25.6psf

Midwest USA

Pg = 35 psf - ground snow load for central USA

Min snow load: **19.6psf - governs**
In accordance with the ANSI/AF&PA NDS-2015
using the LRFD method

Rafter Design 16" O.C. - 2"x10"

Dead load: 8.8 pound/ft2
Load combinations: 1.2Dead + 1.6Snow

Member details
Length of span = 18.5 ft

Roof Beam Design - 6"x12"

Dead load: 11.3 pound/ft2
Load combinations: 1.2Dead + 1.6Snow
Tributary area width: 10ft

Member details
Length of span Ls1 = 16 ft

Wood Column Design - 8"x8"

Dead load: 11.3 pound/ft2
Load combinations: 1.2Dead + 1.6Snow

Roof beam self-weight: **17.325 pound**
Total point load acting on column: **2850.75 pounds**

Member details
Unbraced length in x-axis Lx = 7.5 ft
Unbraced length in y-axis Ly = 8 ft

Roof Joist Design

Total load 41.92pound/ft2
Dead load=10.56psf
Live load=31.36psf

L/480 Live Load Deflection

Depth	TJI®	40 PSF Live Load / 10 PSF Dead Load				40 PSF Live Load / 20 PSF Dead Load			
		12" o.c.	16" o.c.	18" o.c.	24" o.c.	12" o.c.	16" o.c.	18" o.c.	24" o.c.
9 1/2"	110	16'-11"	15'-6"	14'-7"	13'-3"	16'-11"	15'-6"	14'-3"	12'-9"
	210	17'-9"	16'-3"	15'-4"	14'-3"	17'-9"	16'-3"	15'-4"	14'-0"
	230	18'-3"	16'-8"	15'-9"	14'-8"	18'-3"	16'-8"	15'-9"	14'-4"
	360	20'-2"	18'-5"	17'-4"	15'-9 1/2"	20'-2"	17'-8"	16'-3 1/2"	14'-4 1/2"
11 1/4"	110	21'-1"	19'-3"	18'-2"	16'-11"	21'-1"	19'-3"	17'-8"	15'-9 1/2"
	210	21'-8"	19'-10"	18'-8"	17'-5"	21'-8"	19'-10"	18'-3"	16'-7 1/2"
	230	22'-11"	20'-11"	19'-8"	18'-4"	22'-11"	20'-11"	19'-8"	17'-10 1/2"
	360	26'-1"	23'-8"	22'-4"	20'-9"	26'-1"	23'-8"	22'-4"	20'-9 1/2"
14"	110	22'-10"	20'-11"	19'-2"	17'-2 1/2"	22'-2"	19'-2"	17'-6 1/2"	15'-0 1/2"
	210	23'-11"	21'-10"	20'-8"	18'-10 1/2"	23'-11"	21'-1"	18'-6 1/2"	16'-2 1/2"
	230	24'-8"	22'-6"	21'-2"	19'-9 1/2"	24'-8"	22'-2"	20'-3 1/2"	17'-6 1/2"
	360	26'-0"	23'-8"	22'-4"	20'-9 1/2"	26'-0"	23'-8"	22'-4 1/2"	17'-10 1/2"
16"	110	25'-4"	23'-10"	21'-4"	19'-4"	25'-4"	23'-10"	21'-11"	19'-1 1/2"
	210	26'-6"	24'-3"	22'-6 1/2"	19'-11 1/2"	26'-0"	22'-6 1/2"	20'-7 1/2"	18'-7 1/2"
	230	27'-3"	24'-10"	23'-6"	21'-1 1/2"	27'-3"	23'-9"	21'-4 1/2"	17'-6 1/2"
	360	28'-9"	26'-3"	24'-8"	21'-9 1/2"	28'-9"	26'-3"	22'-4 1/2"	17'-10 1/2"

Model	Flange	Lengths	Top Mount	Hangers		L/480* Span @ 16" O.C.
				Face Mount		
9-1/2" TJI 110	1-3/4"	12' - 48'	ITS1.81/9.5	IUS1.81/9		15'-6"
11-7/8" TJI 110	1-3/4"	12' - 48'	ITS1.81/11.88	IUS1.81/9		18'-5"
11-7/8" TJI 210	2-1/16"	12' - 48'	ITS2.06/11.88	IUS2.06		19'-3"
11-7/8" TJI 360	2-5/16"	12' - 48'	ITS2.37/11.88	IUS2.37		19'-8"
11-7/8" TJI 560	3-1/2"	12' - 48'	ITS3.56/11.88	HHUS410		23'-8"
14" TJI 360	2-5/16"	12' - 48'	ITS2.37/14	IUS2.37/14		23'-8"
14" TJI 560	3-1/2"	12' - 48'	MIT414	-		26'-10"
16" TJI 360	2-5/16"	12' - 48'	MIT3516	IUS2.37/14		26'-3"
16" TJI 560	3-1/2"	12' - 48'	MIT416	-		29'-3"

*40 PSF Live Load / 10 PSF Dead Load

NOTES

Roof structural element sizes will vary by the location and requirements of local building codes. Entire roof structure including Rafters and Beams must be specified by local structural engineer of a location where this house is built.



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Company Title

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UAB Truoba
Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Truoba Mini 217

Drawing Name

Roof Construction Plan

Drawing Scale

1/4" = 1'-0"

Sheet Size

ARCH-D

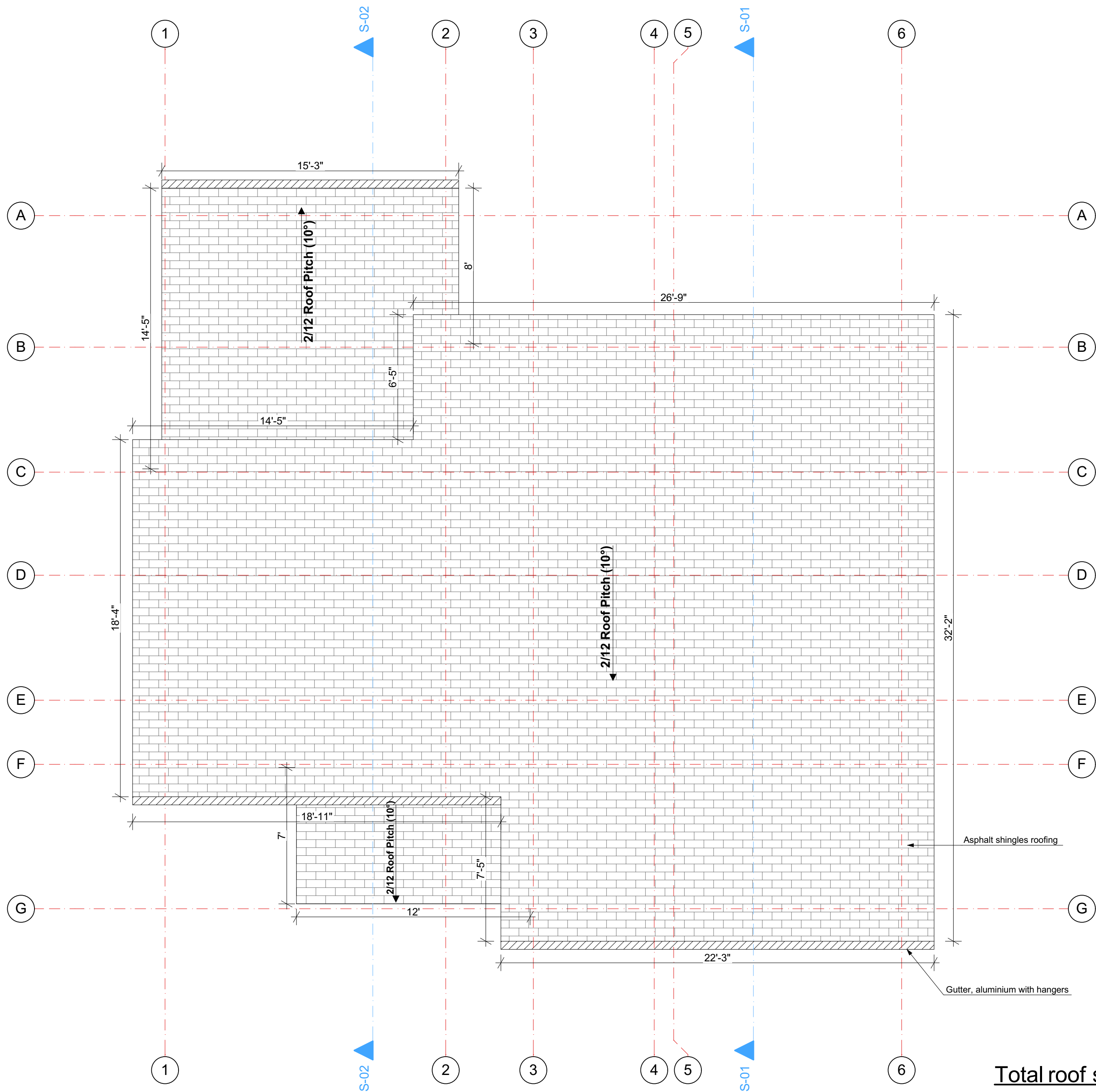
Layout ID

06

Date

4/1/2021

Revision



01 Roof Plan
1/4" = 1'-0"



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NOTES

All roof materials shall be installed per the manufacturer's specifications.

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Truoba Mini 217

Drawing Name

Roof Plan

Drawing Scale

1/4" = 1'-0"

Sheet Size

ARCH-D

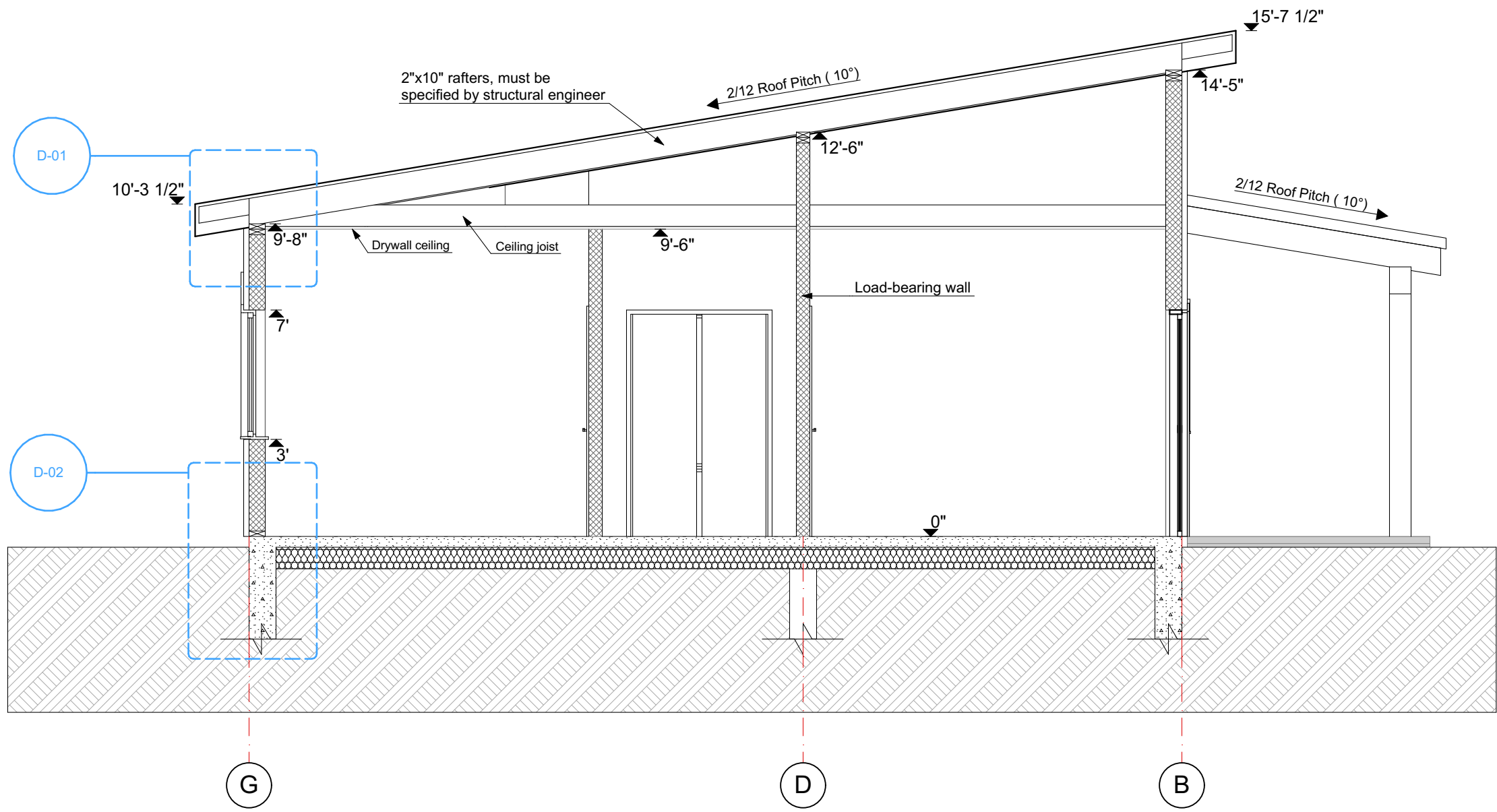
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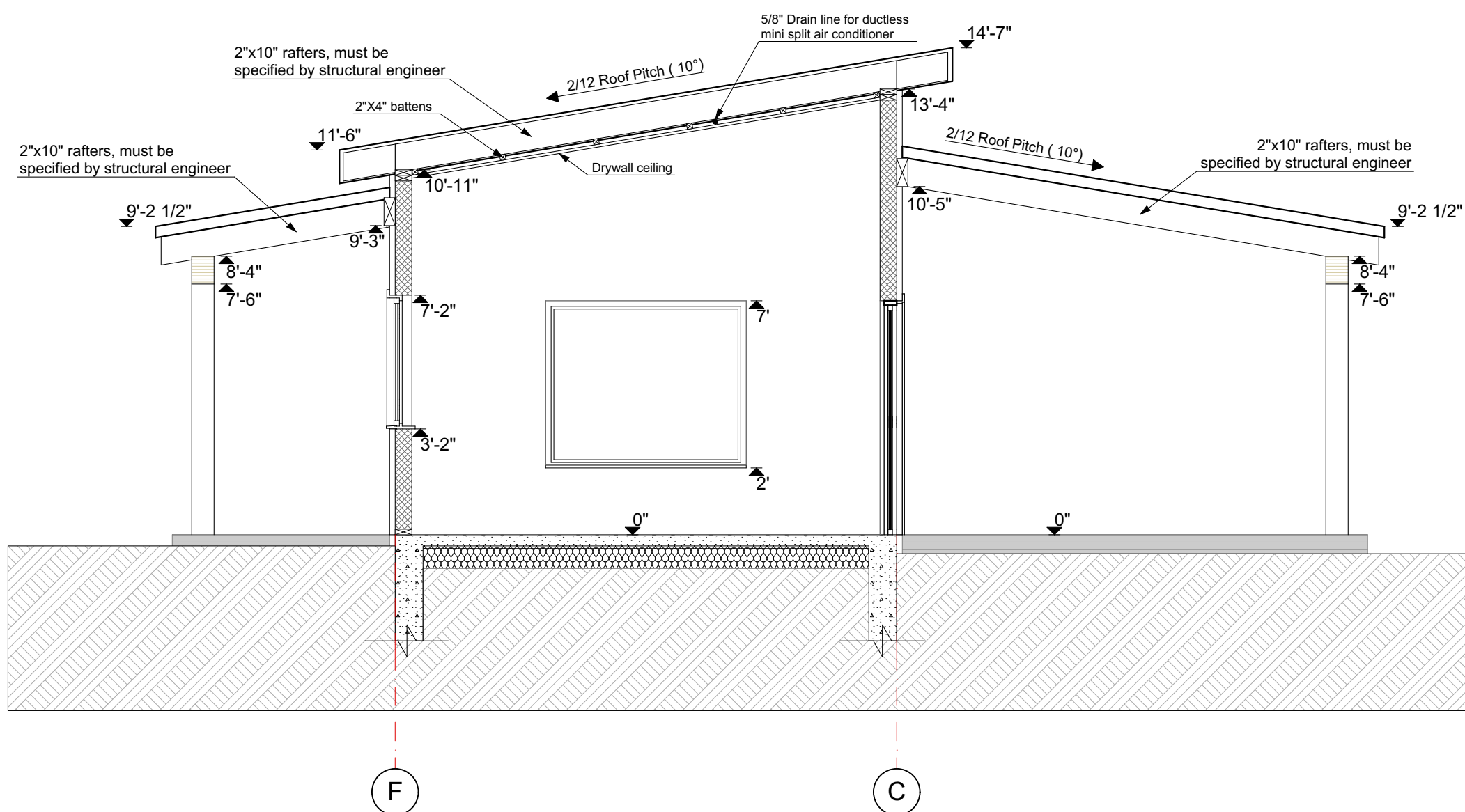
Date

4/1/2021

Revision



01 House Section - 01
1/4" = 1'-0"



02 House Section - 02
1/4" = 1'-0"

CONNECTIONS

- ALL HANGER CALL OUTS CORRESPOND TO PRODUCTS MANUFACTURED BY SIMPSON STRONG-TIE CORPORATION. OTHER MANUFACTURER PRODUCTS ARE ALLOWED AS LONG AS THEY ARE AN APPROVED EQUAL.
- HANGERS FOR "I" JOISTS TO BE SIZED PER JOIST MANUFACTURER RECOMMENDATIONS.
- PROVIDE MIN. OF H2.5T TRUSS CLIPS AT ALL TRUSS BEARING POINTS. PROVIDE DOUBLE CLIPS AT MULTIPLE PLY TRUSSES. OTHER ATTACHMENT MAY BE REQUIRED BY THE TRUSS DESIGNER.
- SILL PLATES SHALL BE ATTACHED W/ $\frac{1}{2}$ " ANCHOR BOLTS AT FOUR FEET MAXIMUM ON CENTER, 12" FROM ALL CORNERS. MINIMUM 2 BOLTS PER PLATE.
- TO PROVIDE LATERAL SUPPORT, TIE ALL WOOD PLATES, WHICH REST ON STEEL BEAMS, TO THE STEEL BEAM WITH X-ZF 47 P8S23 POWDER ACTUATED PINS AT 32" O.C., OR $\frac{3}{8}$ " THRU BOLTS @ 48" O.C. INTO THE TOP FLANGE OF THE BEAMS.

MINIMUM MEMBER SIZES

- ALL LOAD BEARING HEADERS ARE TO BE (2) 2x10'S UNLESS NOTED OTHERWISE.
- FOR 2x4 WALLS ALL HEADERS ARE TO BE SUPPORTED BY A MINIMUM OF (1) 2x4 TRIMMER AND (1) 2x4 KING STUD AT EACH JAMB, U.N.O. PROVIDE MINIMUM (2) 2x4 TRIMMERS AND (2) 2x4 KING STUDS AT EACH JAMB FOR OPENINGS 6'-0" TO 10'-0".
- FOR 2x6 WALLS ALL HEADERS ARE TO BE SUPPORTED BY A MINIMUM OF (1) 2x6 TRIMMER AND (1) 2x6 KING STUD AT EACH JAMB, U.N.O. PROVIDE MINIMUM (2) 2x6 TRIMMERS AND (2) 2x6 KING STUDS AT EACH JAMB FOR OPENINGS 6'-0" TO 10'-0".
- ALL WALLS SHALL BE FRAMED IN ACCORDANCE WITH TABLE R602.3.1.
- ALL RAKE WALLS SHALL BE FRAMED FULL HEIGHT TO THE BOTTOM OF EITHER LOOKOUT RAFTERS OR VAULTED GABLE END TRUSS WITH 1 PIECE STUDS. BLOCKING MAY BE REQUIRED ON WALLS TALLER THAN 10'-0".
- ALL POINT LOADS SHALL BE CARRIED DOWN AND BEAR DIRECTLY ON THE FOUNDATION WALL OR BEAM. EACH POST MUST INCREASE BY ONE PLY FOR EACH LEVEL CARRYING THE POINT LOAD. SQUASH BLOCKS ARE REQUIRED BETWEEN FLOORS.
- ALL BEARING LENGTHS FOR WOOD BEAMS SHALL NEVER BE LESS THAN $\frac{1}{2}$ " AT THE ENDS OF BEAMS. BEARING ACROSS THE FULL WIDTH OF THE BEAM IS REQUIRED.
- TYPICAL ROOF OVER FRAMING SHALL BE 2x6 AT 24" ON CENTER AND BE POSTED DIRECTLY TO TRUSSES OR RAFTERS BELOW. MAX. SPAN FOR THE 2x6 MEMBERS IS 6'.
- ALL MULTIPLE MEMBER LVL'S SHALL BE ASSEMBLED ACCORDING TO THE SUPPLIERS RECOMMENDATIONS.
- 2-PLY STUDS SHALL BE NAILED TOGETHER W/ TWO ROWS OF 16d NAILS @ 16" O.C. ADJACENT NAILS SHALL BE DRIVEN FROM OPPOSITE SIDES OF THE COLUMN.
- 3-PLY STUDS SHALL BE NAILED THE SAME AS THE 2-PLY W/ THE THIRD PLY NAILED TO THE 2-PLY W/ (2) 16d NAILS @ 16" O.C.
- 4 & 5-PLY STUDS SHALL BE NAILED THE SAME AS THE 3-PLY W/ CS16 STRAPS TOP & BOTTOM.
- 6 & 7-PLY STUDS SHALL BE NAILED THE SAME AS THE 3-PLY W/ CS16 STRAPS TOP, CENTER, & BOTTOM.
- EXTERIOR WALL SHEATHING SHALL BE $\frac{7}{16}$ " OSB NAILED WITH 8d NAILS AT 12" O.C. IN FIELD AND 6" O.C. AT EDGE OR 15ga. x $1\frac{3}{4}$ " LONG x $\frac{1}{16}$ " WIDE STAPLES AT 8" O.C. IN FIELD AND 4" O.C. AT EDGE, OR 16ga. x $1\frac{3}{4}$ " LONG x $\frac{1}{16}$ " WIDE AT 6" O.C. IN FIELD AND 3" O.C. AT EDGE.
- ROOF SHEATHING SHALL BE $1\frac{5}{32}$ " OSB W/ 8d NAILS AT 6" O.C. EDGE AND 10" O.C. FIELD NAILING.
- FLOOR SHEATHING SHALL BE MINIMUM $\frac{3}{4}$ " OSB W/ 8d NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD NAILING.
- INTERIOR WALL SHEATHING SHALL BE $\frac{1}{2}$ " DRYWALL W/ $1\frac{1}{4}$ "x#6 DRYWALL SCREWS AT 8" O.C.
- ALL NAILING SHALL BE IN CONFORMANCE WITH IRC TABLE R602.3

WALL BRACING

- ALL EXTERIOR WALL BRACING SHALL COMPLY WITH IRC R602.10.4 (CONTINUOUS SHEATHING), METHOD CS-WSP.
- STRUCTURAL PANEL SHEATHING ($\frac{7}{16}$ " OSB) MUST BE USED ON ALL SHEATHABLE SURFACES ON ONE SIDE OF BRACED WALL LINE, INCLUDING AREAS ABOVE AND BELOW OPENINGS AND GABLE END WALLS.
- 30" MINIMUM LENGTH, MAXIMUM 76" TALL OPENING HEIGHT ADJACENT TO FULL HEIGHT PANEL.
- FULL HEIGHT PANELS SHALL BE LOCATED AT THE END OF A BRACED WALL LINE AND AT LEAST 25' ON CENTER.
- PROVIDE MINIMUM 24" WIDE PANEL CORNER RETURN AT ENDS OF A BRACED WALL LINE.
- SHEATHING APPLIED TO ONE SIDE ONLY, WITH 8d COMMON (2"x0.113") NAILS AT 6" EDGE SPACING AND 12" ON CENTER IN FIELD (ALTERNATE: 16ga x $1\frac{1}{4}$ " STAPLES, 3" EDGE AND 6" FIELD SPACING).
- SOLE PLATES OF BRACED WALL LINE SHALL BE NAILED TO CONTINUOUS RIM BELOW WITH (3) 16d NAILS AT 16" O.C.

GENERAL

- FRAMING CONTRACTOR IS RESPONSIBLE FOR COORDINATING LOCATION OF PLUMBING IN REFERENCE TO FLOOR FRAMING.
- AT FIRST FLOOR AND STRUCTURAL FLOOR, WHERE JOISTS RUN PARALLEL TO THE FOUNDATION WALLS, PROVIDE PERPENDICULAR SOLID BLOCKING AT 4'-0" ON CENTER FOR THE FIRST 3 BAYS.
- PROVIDE SOLID BLOCKING AT SUPPORTS BETWEEN TRUSSES TO PREVENT ROTATION.
- PROVIDE SOLID BLOCKING AT ALL TRUSS RIDGES, HIPS AND VALLEYS.
- PROVIDE SOLID BLOCKING AT INTERMEDIATE BEARING FOR FLOOR JOISTS WHERE WALL ABOVE IS A BEARING WALL. SOLID BLOCKING IS ALSO REQUIRED WHEN JOIST SPLICES OCCUR OVER A BEAM. SOLID BLOCKING IS NOT REQUIRED WHEN THERE IS NO SPLICE OR BEARING WALL ABOVE.

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UAB Truoba
Email: info@truoba.com
Tel: +1 844-337-1434
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Truoba Mini 217

Drawing Name

Sections

Drawing Scale

1/4" = 1'-0"

Sheet Size

ARCH-D

Layout ID

08

Date

4/1/2021

Revision



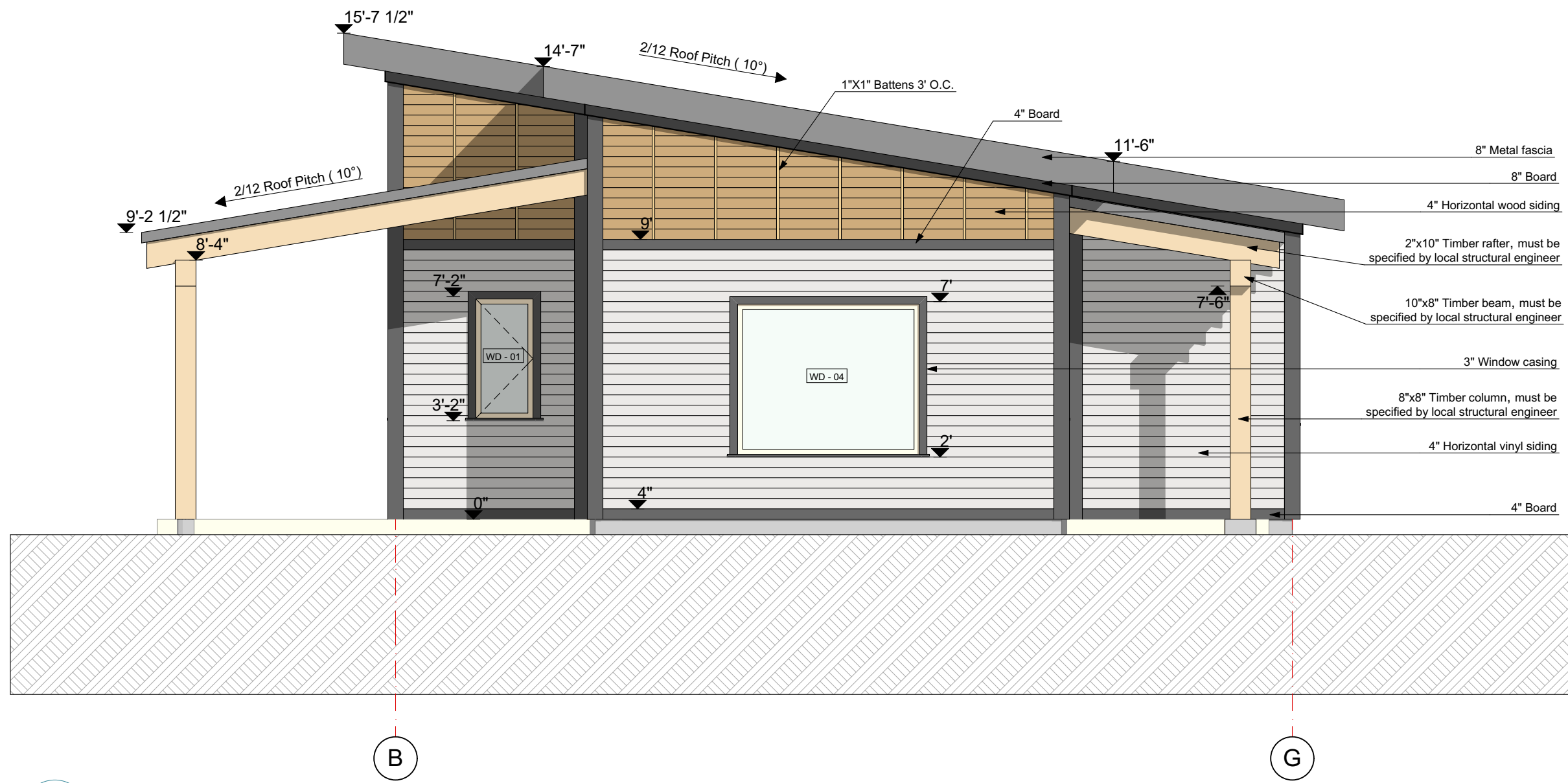
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NOTES

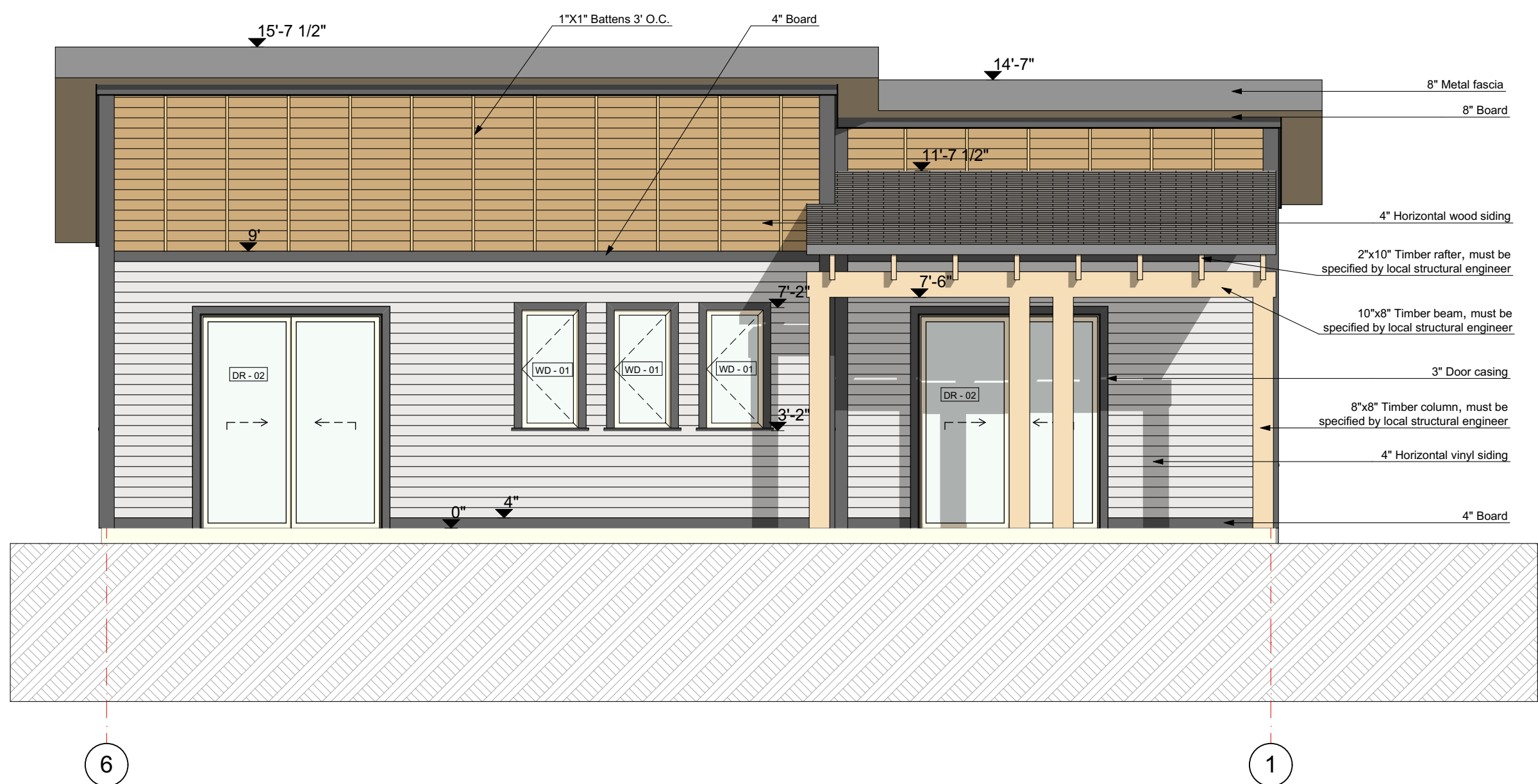
All house structure must be specified and approved by local structural engineer of a location where this house is built.



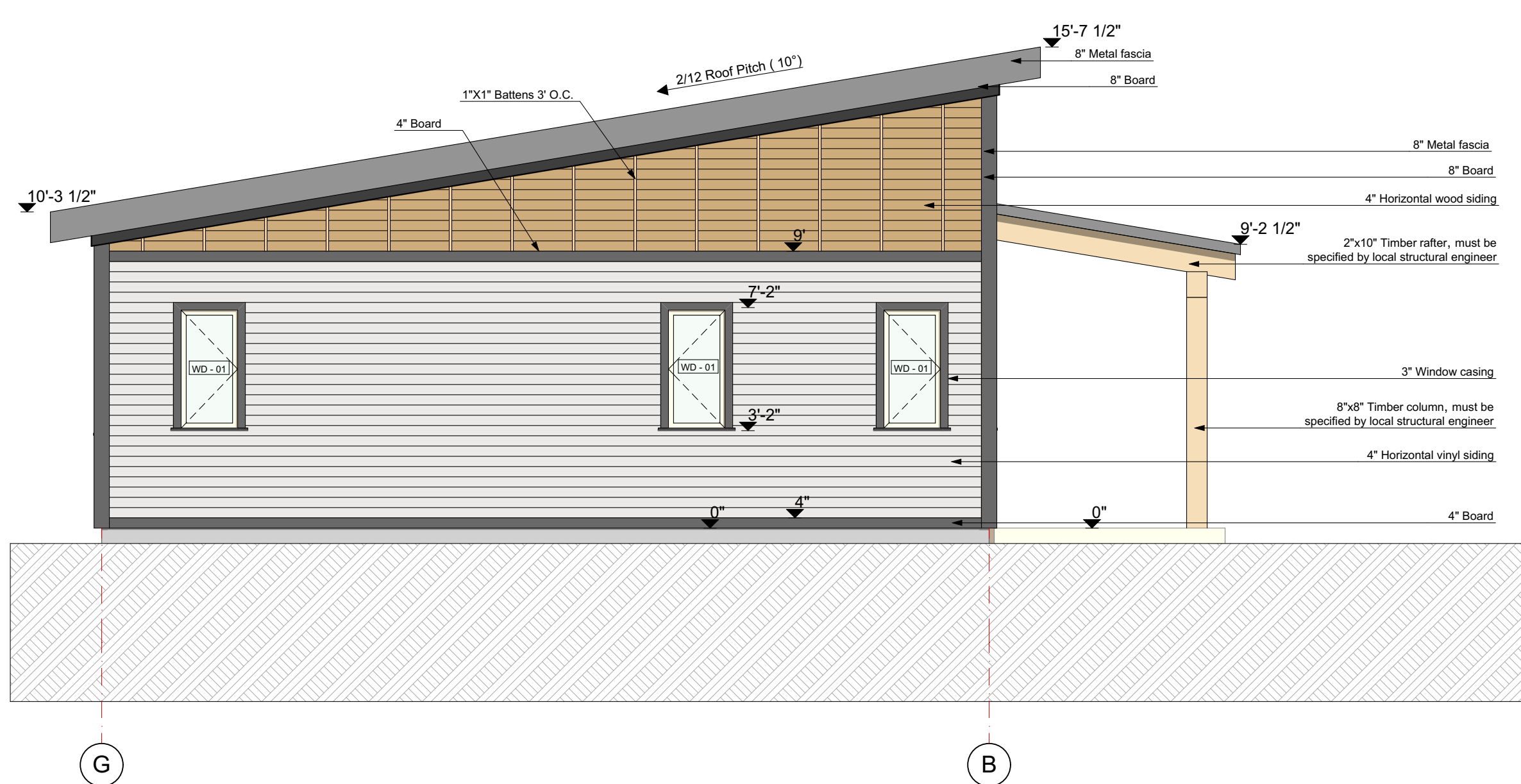
01 House Elevation - 01
1/4" = 1'-0"



02 House Elevation - 02
1/4" = 1'-0"



03 House Elevation - 03
1/4" = 1'-0"



04 House Elevation - 04
1/4" = 1'-0"

NOTES

All house structural elements must be specified and approved by local structural engineer of a location where this house is built.

Windows. Double glazed aluminium frame windows with argon or krypton filled gas. Finish in color selected from manufacturer's standard selection as follows: black or dark grey window finish.

Exterior doors. Double glazed aluminium frame doors with argon or krypton filled gas. Finish in color selected from manufacturer's standard selection as follows: black or dark grey doors finish.

Exterior cladding -Western Red Cedar and vinyl siding. Exterior finish should be clad using treated and impregnated natural wood.



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Truoba Mini 217

Drawing Name

Elevations

Drawing Scale

1/4" = 1'-0"

Sheet Size

ARCH-D

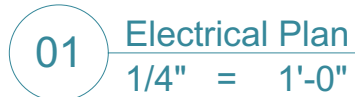
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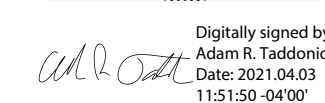
4/1/2021

Revision

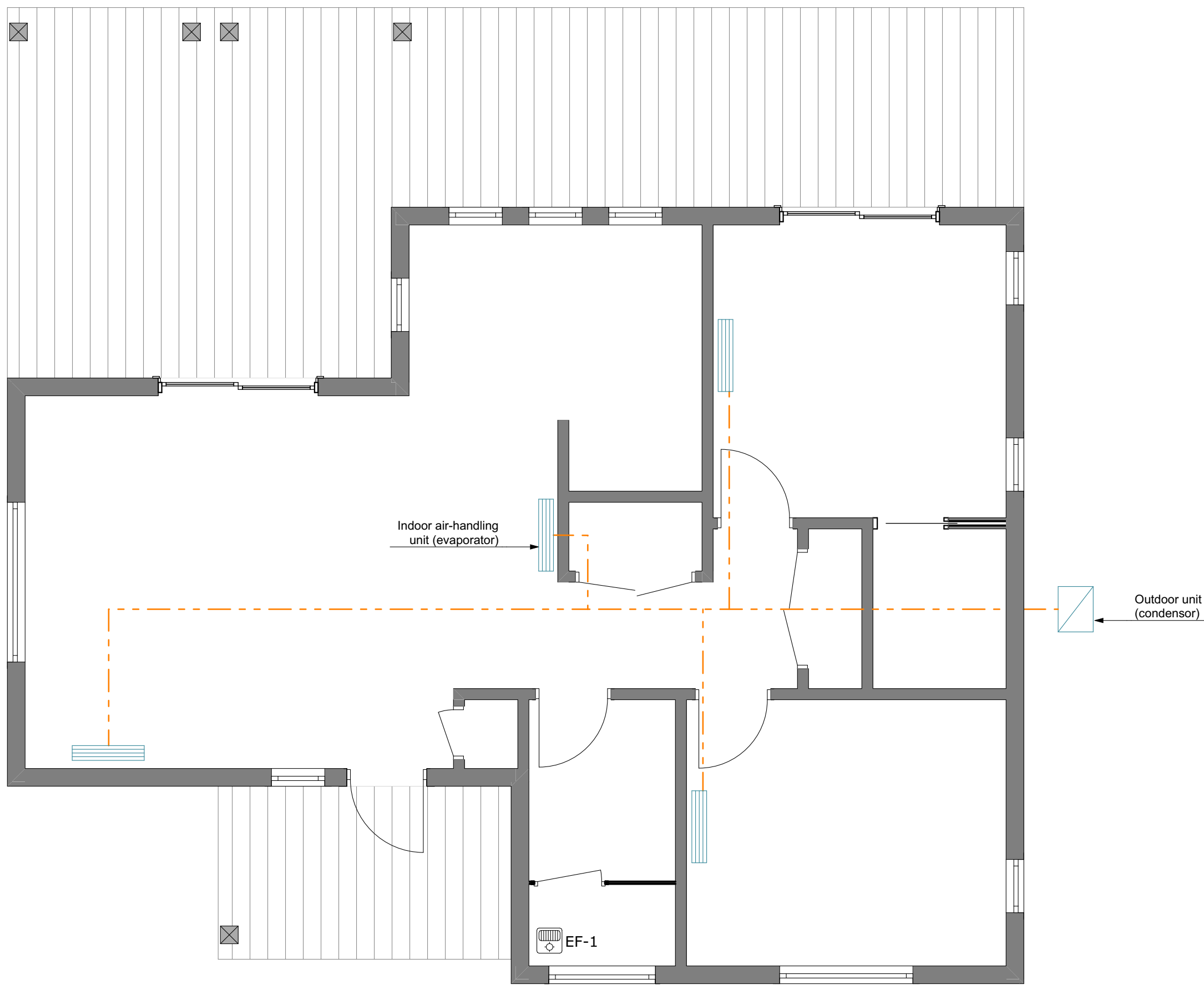


ELECTRICAL LINE	
APPLIANCE SCHEDULE	
SYMBOL	FIXTURE
	CLOTHES WASHER
	CLOTHES DRYER
	DISHWASHER
	REFRIGERATOR
	STOVE
	OVEN
	MICROWAVE
	DISPOSAL
	FURNACE
	GARAGE DOOR OPENER
	GAS FIREPLACE INSERT
	HOT WATER HEATER

B) At least one 20 ampere circuit supplying only bathroom receptacle outlets.



Mini-split system



01 HVAC Plan
1/4" = 1'-0"



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NOTES

Power, switchboards and conduits must be specified by electrical and mechanical engineers

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Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Truoba Mini 217

Drawing Name

HVAC Plan

Drawing Scale

1/4" = 1'-0"

Sheet Size

ARCH-D

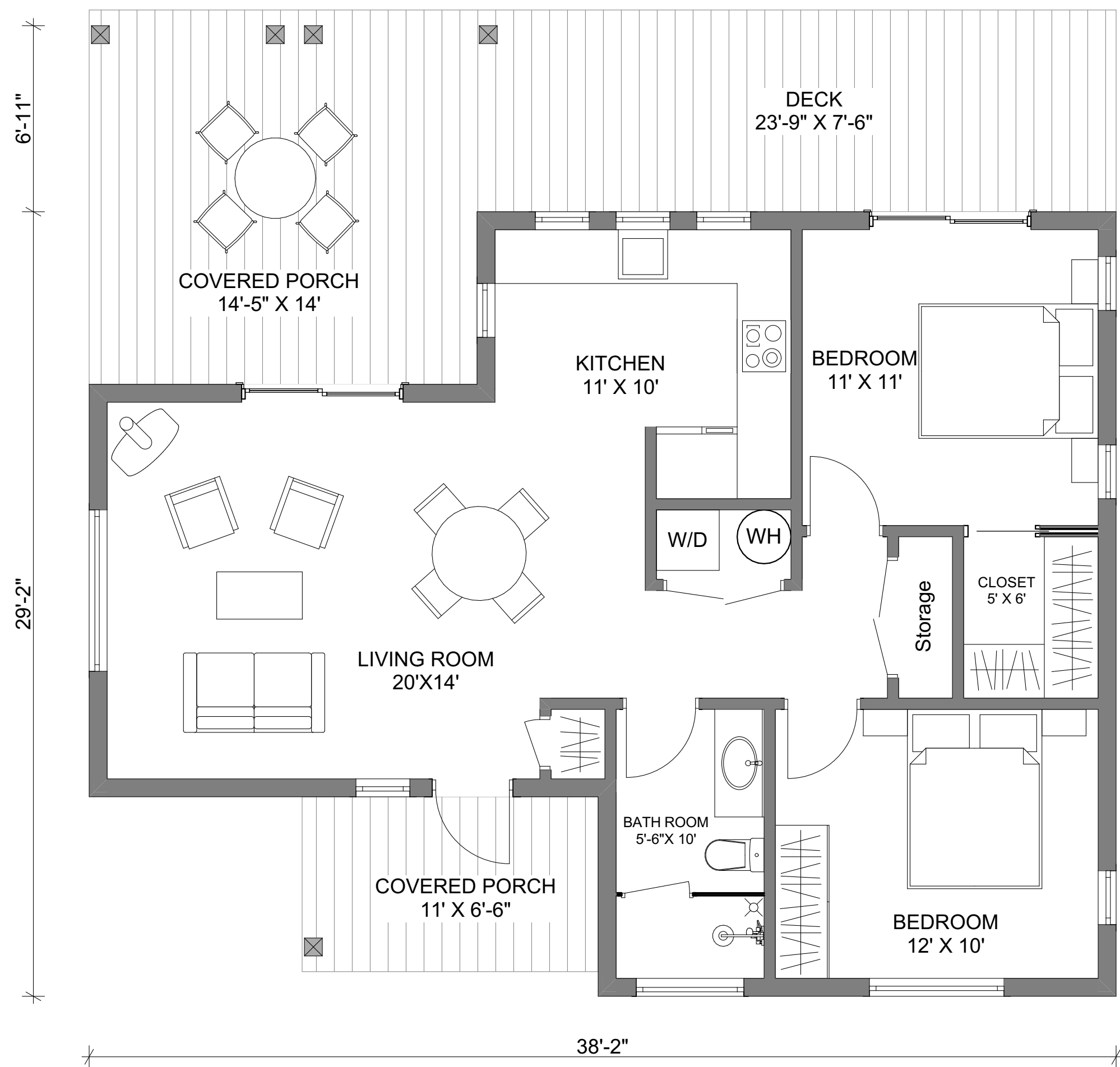
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11

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01 Furniture Plan
1/4" = 1'-0"

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Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Tuoba Mini 217

Drawing Name

Furniture Plan

Drawing Scale

1/4" = 1'-0"

Sheet Size

ARCH-D

Layout ID

12

Date

4/1/2021

Revision



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Window List				
Window name	WD - 01	WD - 02	WD - 03	WD - 04
W x H Size	2'x4'	5'x4'	4'x2'	6'x5'
Quantity	8	1	1	1
2D Symbol				
View from Side Opposite to Opening Side				

Door List							
Door name	DR - 01	DR - 02	DR - 03	DR - 04	DR - 05	DR - 06	DR - 07
W x H Size	3'x7'	6'x7'	2'-10"x7'	2'-10"x7'	2'-10"x7'	2'x7'	4'-6"x7'
Quantity	1	2	2	1	1	1	2
Position	Exterior	Exterior	Interior	Interior	Interior	Interior	Interior
Orientation (L-left swing, R-right swing)	L		R	L	R	L	
2D Symbol							
View from Side Opposite to Opening Side							

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Truoba Mini 217

Drawing Name

Door & Window Schedule

Drawing Scale

Sheet Size

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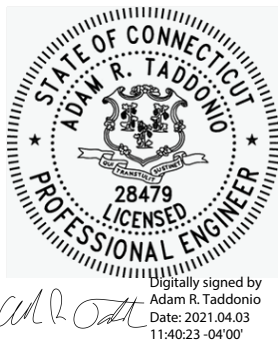
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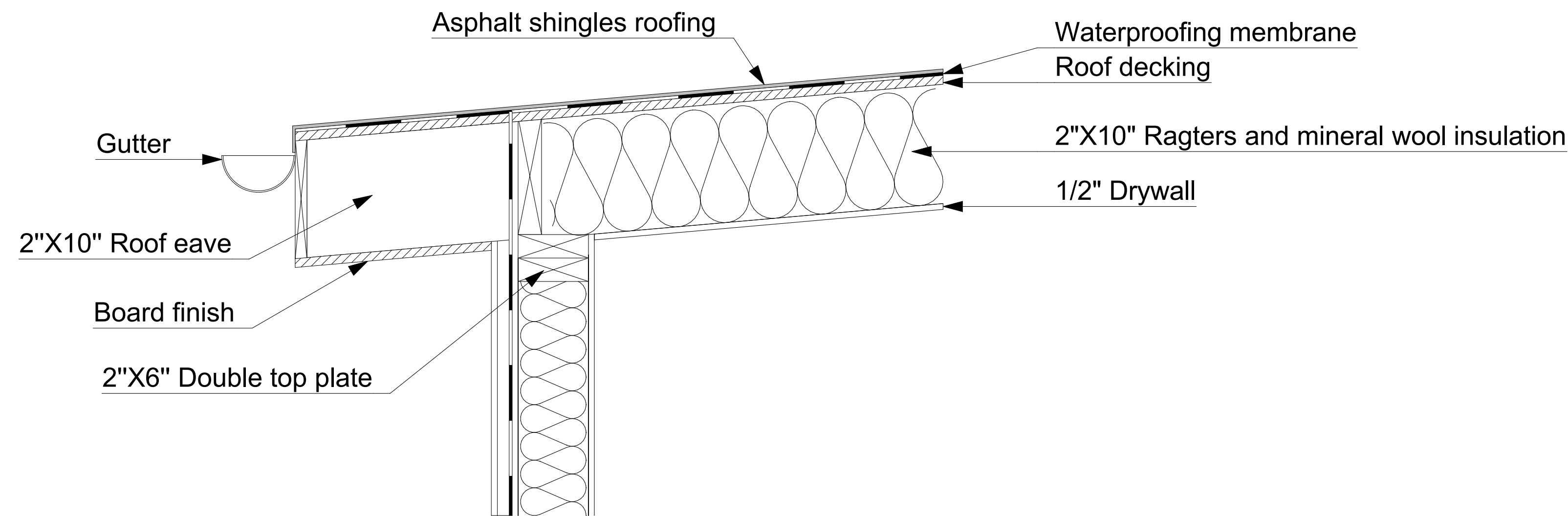
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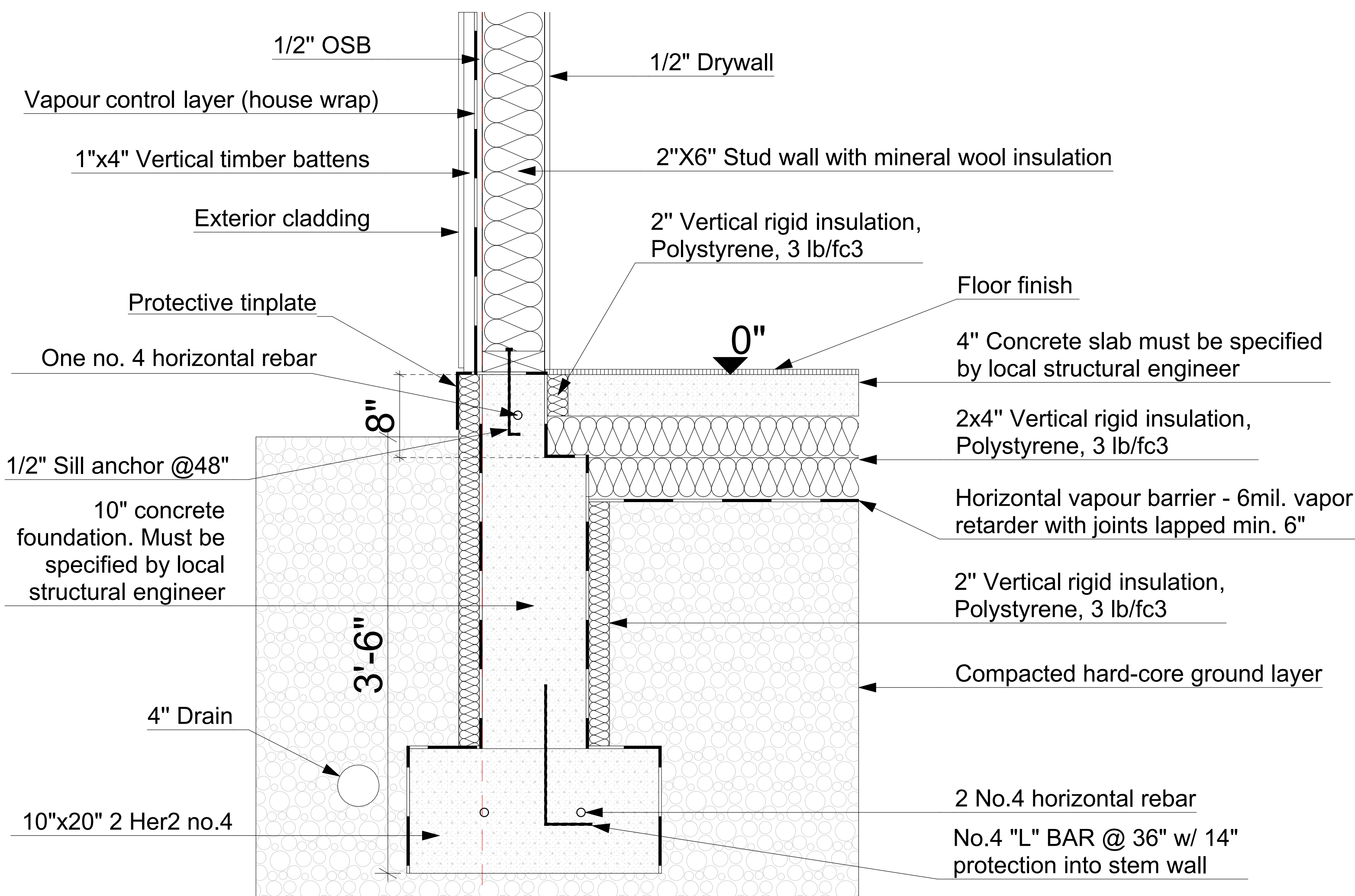
4/1/2021

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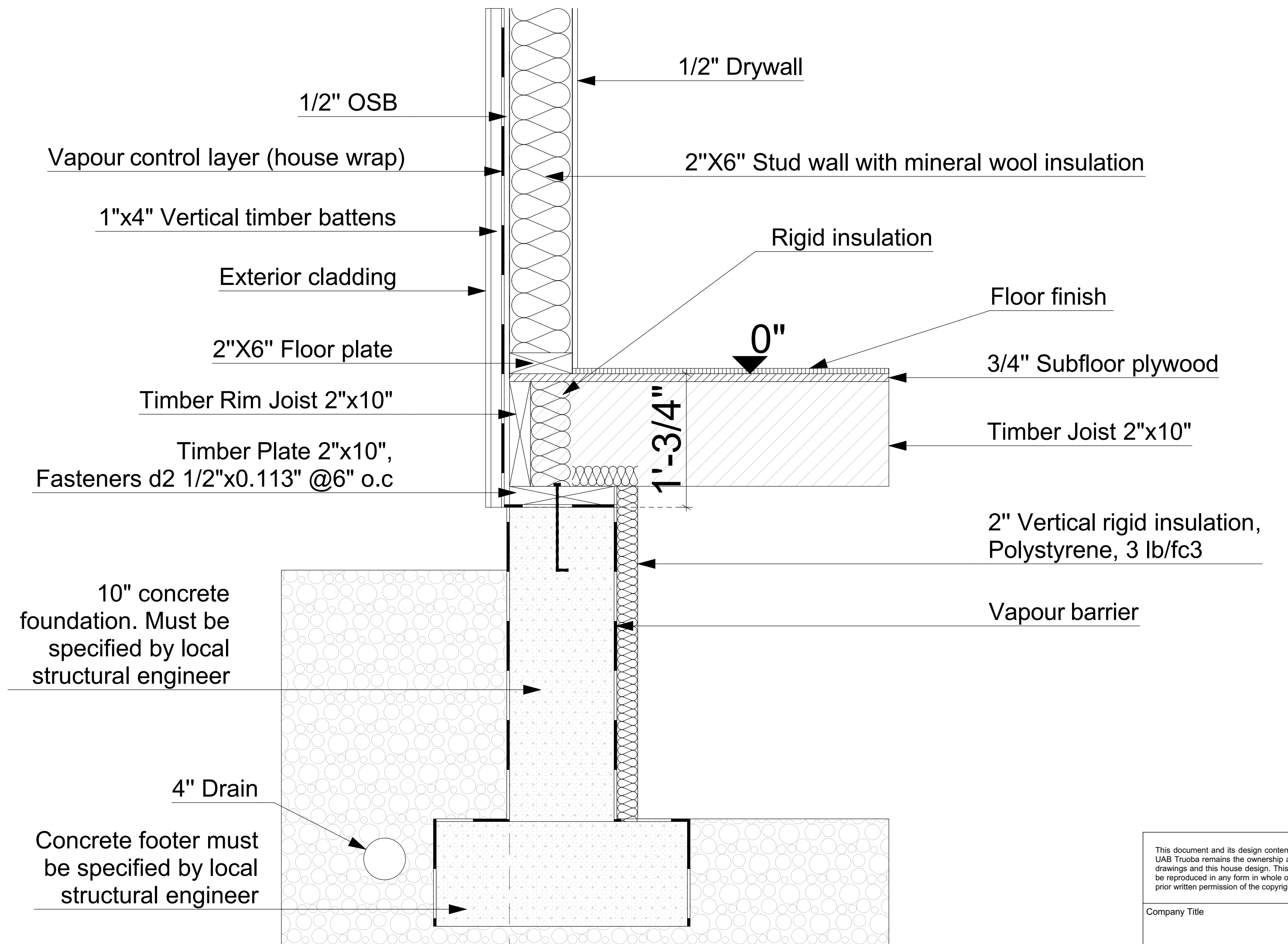




D-01 Wall - roof detail
1 1/2"= 1'-0"



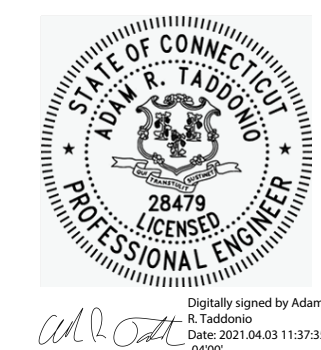
D-02 Slab foundation detail
1 1/2"= 1'-0"



D-03 Crawl foundation detail
1 1/2"= 1'-0"

Reinforcement ratio:
Footings: (6'20'12"0.668*0.00045+13.08'2"0.668*0.00045)/(1.67'20'12"0.037=(0.003+0.008)/0.103=0.11 ton/cub
Stem Wall: (7'20'12"0.668*0.00045+3.48'2"0.668*0.00045)/(2.28'20'12"0.037=(0.004+0.002)/0.141=0.04 ton/cub

NOTES
All house structural elements must be specified and approved by local structural engineer of a location where this house is built.



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Project Title	Truoba Mini 217
Drawing Name	Construction Details
Drawing Scale	1 1/2"= 1'-0"
Sheet Size	ARCH-D
Layout ID	14
Date	4/1/2021
Revision	

Plumbing Specifications

PLUMBING SPECIFICATIONS

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. THE WORK ALSO INCLUDES ROUGH-IN AND FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT AND BEVERAGE DISPENSING EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION. HOOK-UP CHARGES, PERMITS AND ALL OTHER EXPENSES RELATED TO A COMPLETE AND FUNCTIONING PLUMBING SYSTEM ARE INCLUDED AS A PART OF THIS SECTION. WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE INSTALLATION REQUIREMENTS. COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS. COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

PIPING SYSTEMS - GENERAL: ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTALL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF OTHER WORK SUCH AS DUCTS AND ELECTRICAL CONDUIT. AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN ISOLATING DIALECTIC UNION. ALL HANGERS SHALL BE COMPATIBLE WITH PIPING MATERIAL TO PREVENT CORROSION.

PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

FIXTURES/EQUIPMENT FURNISHED BY OTHERS: PLUMBING CONTRACTOR SHALL PROVIDE UTILITY CONNECTIONS REQUIRED SUCH AS WATER, GAS, AIR, SUPPLIES, WASTE OUTLET, TRAPS, ETC. AT ALL PLUMBING TYPE FIXTURES OR EQUIPMENT FURNISHED BY OWNER, GENERAL CONTRACTOR, FOOD SERVICE CONTRACTOR, EQUIPMENT SUPPLIER, ETC. INCLUDED ARE STOP VALVES, ESCUTCHEONS, AND CHROME PLATED BRASS TUBING WITH COMPRESSION FITTINGS.

SEWER AND WASTE PIPING: PROVIDE ALL DRAINS AND SEWERS WITHIN THE SPACE WITH CONNECTION TO THE EXISTING DRAINAGE SYSTEMS ON-SITE. SANITARY DRAINAGE PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. SANITARY DRAINAGE PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS MAY BE USED (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES). ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS.

VENTS: PROVIDE A COMPLETE SYSTEM OF STANDARD WEIGHT CAST IRON NO-HUB VENT RISERS WHERE THE CEILING SPACE IS USED AS A RETURN AIR PLENUM OR USE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WHERE PERMITTED BY CODE/LOCAL AUTHORITIES) WHERE THERE IS A DUCTED RETURN AIR SYSTEM. DO NOT USE PVC PIPE IN RETURN AIR PLENUM SPACES. THE VENT SYSTEM SHALL BE CARRIED THROUGH THE ROOF WITH APPROPRIATE FLASHING.

CONDENSATE AND INDIRECT DRAIN PIPING: PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS.

CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSOURE FROM VIEW.

WATER DISTRIBUTION PIPING: LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. HOT AND COLD WATER PIPING SHALL BE 1/2" MIN. CPVC PIPE WITH SOLVENT FITTING. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS).

PIPE INSULATION: INSULATE (AS ALLOWED BY CODE) ALL LISTED SERVICE PIPING AS FOLLOWS. DOMESTIC COLD/HOT WATER, HOT WATER RETURN, STORM WATER PIPING: PROVIDE 1" PRE-FORMED FIBERGLASS, AS/JSJ-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547. FOR CONDENSATE PIPING PROVIDE 1/2" THICK INSULATION OF SAME CHARACTERISTICS AS LISTED FOR 1" ABOVE. WHERE PERMITTED BY LOCAL CODES, PROVIDE 1/2" SELF-ADHESIVE UNICELLULAR FOAM PIPE INSULATION WITH PRE-FORMED PVC FITTING COVERS - EQUAL TO SELF-ADHESIVE ARMSTRONG 2000 WITH K FACTOR OF 0.27 AT 75 DEGREES MEAN TEMPERATURE. INSULATE ANY EXPOSED CONDENSATE PIPING WITH WASTE TEMPERATURE BELOW 60 DEGREES F. SHUTOFF VALVES, WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE, FOOD SERVICE EQUIPMENT ITEM OR OTHER EQUIPMENT ITEM, TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. VALVES SHALL BE EQUAL TO JENKINS #902-T BALL VALVE, CHROME-FINISHED BRONZE, TEFLON SEATS AND PACKING, 400 LB. W.O.G. SOLDER END.

ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS, WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILINGS, ACCESS PANELS ARE NOT REQUIRED.

PIPING SYSTEM- PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPE WITH SOLVENT FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES.

INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS.

REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS. TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

GENERAL NOTES

- THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE, WORKABLE PLUMBING INSTALLATION AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EDUCATION AND COMPLETION OF THE INTENT THEREOF.
- THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.
- COORDINATE ENTIRE INSTALLATION OF THE PLUMBING SYSTEM WITH THE WORK OF OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS. REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS.
- PROVIDE ONE YEAR WARRANTY ON ALL PARTS AND LABOR.
- THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF ALL DUCT, PIPE, CONDUIT, ETC.
- ALL CUTTING AND PATCHING OF THE EXISTING STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.
- ALL HOT WATER PIPING AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE APPLICABLE CODE.
- CONDENSATE DRAINS SHALL BE PROVIDED FOR EACH AIR CONDITIONING UNIT. HORIZONTAL CONDENSATE DRAINS ABOVE ANY CEILING SHALL BE INSULATED WITH MIN. 3/8" THICK CLOSED CELL INSULATION.
- PIPING:
 - WASTE, VENT, AND STORM DRAIN PIPING SHALL BE CO-EXTRUDED PVC SCHEDULE 40) PIPE
 - WATER PIPE SHALL BE CPVC PIPE
 - CONDENSATE PIPING SHALL BE CO-EXTRUDED PVC (SCHEDULE 40) PIPE
 - INSIDE GAS PIPING SHALL BE BLACK IRON SCHEDULE 40 WITH MALLEABLE IRON FITTINGS. OUTSIDE SHALL BE GALVANIZED IRON SCHEDULE 40 WITH GALVANIZED FITTINGS. GAS LINE TO BE PAINTED GRAY IN COLOR. A 24 HOUR METEERED GAS TEST SHALL BE REQUIRED.
 - ALL PIPING NOT ENCLOSED IN CONDITION SPACE OR AT EXTERIOR WALLS SHALL BE INSULATED.
 - PIPING: PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPING WITH SOLVENT WELD FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES

- ALL VENTS OR EXHAUSTS SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. ABOVE ANY WINDOW, DOOR, OPENING, OR AIR INTAKE.
- CLEANOUTS SHALL BE INSTALLED PER THE APPLICABLE CODE.
- PROVIDE WATER TIGHT FLASHINGS WHEREVER PIPES PASS THROUGH EXTERIOR WALLS, ROOFS, OR FLOORS.
- PROVIDE ISOLATION FOR ALL PIPES THAT COME IN CONTACT WITH THE STRUCTURE.
- LOCATION OF EXISTING UTILITIES AND POINTS OF CONNECTION ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICES PRIOR TO STARTING WORK OF THIS SECTION. IF INDICATED POINTS OF CONNECTION CANNOT BE MADE TO EXISTING UTILITIES AS FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.
- VALVES SHALL BE NIBCO, JENKINS, HAMMOND, RED & WHITE OR APPROVED EQUAL. SERVICE PRESSURE SHALL BE SUITABLE FOR SERVICE INTENDED. THE MAIN WATER SHUT OFF VALVE SHALL BE A FULL PORT BALL TYPE AND APPROVED FOR SERVICE INTENDED.
- CONTRACTOR SHALL PROVIDE ALL SHUT OFF VALVES AS NECESSARY TO ISOLATE ANY EQUIPMENT, PLUMBING ITEMS, OR FIXTURES, THAT MAY NEED SERVICING OR ARE SUBJECT TO FAILURE WHETHER OR NOT SUCH VALVES ARE SHOWN ON THE DRAWINGS.
- PROVIDE HANGERS AND SUPPORTS AS REQUIRED. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.
- CONTRACTOR IS RESPONSIBLE FOR HIS OWN TRENCHING, BACKFILL, AND COMPACTION OF TRENCHES NECESSARY TO COMPLETE HIS SCOPE OF WORK. BACKFILLED TRENCHES SHALL BE RETURNED TO THEIR ORIGINAL GRADE UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE MAINTENANCE AND OPERATIONAL MANUALS IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL EQUIPMENT THAT REQUIRES KEYS OR SPECIAL TOOLS TO OPERATE SHALL SUPPLY THE OWNER WITH TWO OF ANY SUCH KEYS OR TOOLS FOR EACH PIECE OF EQUIPMENT THAT REQUIRE THE SAME.
- ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE APPROVAL, IN WRITING, OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.
- ALL PLUMBING, ELECTRICAL, AND GAS LINES SHALL BE CONCEALED WITHIN THE BUILDING STRUCTURE TO AS GREAT EXTENT AS POSSIBLE. ALL LINES NOT CONCEALED SHALL BE SECURED 6" OFF THE FLOOR AND 34" FROM THE WALLS USING STANDOFF BRACKETS.
- AN APPROVED BACKFLOW PREVENTOR SHALL BE PROPERLY INSTALLED UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF CONTAMINATION.
- WATER SUPPLY CARBONATORS SHALL BE PROTECTED BY AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR. THE RELIEF VALVE SHALL DRAIN INDIRECTLY TO A FLOOR SINK WITH A 1" MIN. AIR GAP.

PIPE MATERIAL SCHEDULE

SERVICE		COPPER	COPPER	CAST	BLACK	GALV.	VTRI.	ABS	SCH.40 PVC	SCH.80 CPVC
		TYPE "M"	TYPE "L"	IRON	STEEL	STEEL	CLAY			
WATER PIPING	INSIDE									X
	OUTSIDE								X	
SANITARY DRAIN	INSIDE								X	
	OUTSIDE								X	
SANITARY VENT	INSIDE								X	
	OUTSIDE								X	
GAS PIPING	INSIDE				X				X	
	OUTSIDE					X			X	
STORM DRAIN	INSIDE								X	
	OUTSIDE								X	
INDIRECT DRAINAGE	INSIDE								X	
	OUTSIDE								X	
CONDENSATE	INSIDE								X	
	OUTSIDE								X	
COMPRESSED AIR	INSIDE				X					
	OUTSIDE					X				

NOTES:

WATER HEATER SCHEDULE

MARK	MANUFACTURER/MODEL	QUANTITY	AREA SERVED	ELECTRICAL	GALLONS	RECOVERY RATE
EW-H-1&2	RHEEM: 62SV50-2	1	KITCHEN/RESTROOM	40AMP 240V, 1P	30 GAL	21 GPH

RESPONSIBILITY NOTES

- ROOF OPENINGS FOR PLUMBING AND RELATED WORK SHALL BE THE RESPONSIBILITY OF THE PLUMBING SUBCONTRACTOR. HE SHALL EMPLOY THE OWNER'S ROOFER FOR THIS WORK TO MAINTAIN THE ROOF BOND.
- EXISTING SANITARY SEWER AND EXISTING DOMESTIC WATER CONNECTIONS REFER TO SHEET P3.0 FOR LOCATIONS. CONTRACTOR TO FIELD VERIFY LOCATIONS AND TIE-INS.
- UNDER FLOOR PLUMBING ROUGH-IN FOR REST ROOMS SHALL BE THE RESPONSIBILITY OF THE SUBCONTRACTOR AND SLAB DEPRESSIONS.
- THE SPRINKLER CONTRACTOR SHALL SURVEY THE EXISTING SPRINKLER SYSTEM, ANY REQUIRED MODIFICATIONS SHALL BE BROUGHT UP TO CODE.
- IF DRAWINGS CALL FOR THE REUSE OF EXISTING EQUIPMENT, THE OWNER'S GENERAL CONTRACTOR SHALL VERIFY THAT ALL SUCH EQUIPMENT IS IN PROPER WORKING ORDER, OR TAKE THE NECESSARY STEPS TO ACCOMPLISH SUCH. IF REPLACEMENT IS REQUIRED, USE THE EQUIPMENT AND HARDWARE AS SPECIFIED ON THESE SCHEDULES OR AS CALLED OUT IN THE SPECIFICATIONS ON THIS SHEET. ALL SUCH ITEMS MUST MEET ALL GOVERNING CODES AND STANDARDS OF PRACTICE.

CODES AND STANDARDS

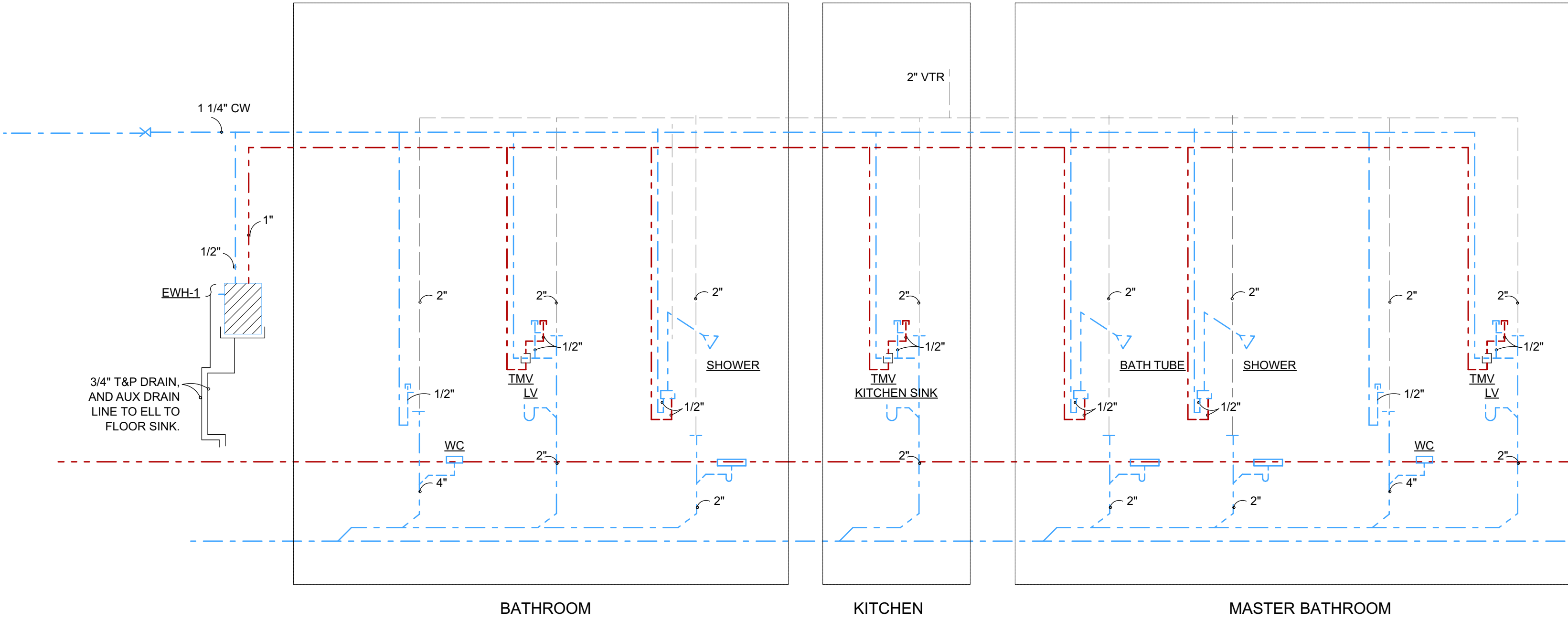
INTERNATIONAL BUILDING CODE	2018 EDITION
INTERNATIONAL ENERGY CONSERVATION CODE	2018 EDITION
INTERNATIONAL EXISTING BUILDING CODE	2018 EDITION
INTERNATIONAL FIRE CODE	2018 EDITION
INTERNATIONAL FUEL AND GAS CODE	2018 EDITION
INTERNATIONAL MECHANICAL CODE	2018 EDITION
INTERNATIONAL PLUMBING CODE	2018 EDITION
INTERNATIONAL PROPERTY MAINTENANCE CODE	2018 EDITION
INTERNATIONAL RESIDENTIAL CODE	2018 EDITION
INTERNATIONAL SWIMMING POOL & SPA CODE	2018 EDITION
NFPA 101 LIFE SAFETY CODE	2018 EDITION
NATIONAL ELECTRICAL CODE	2017 EDITION

SPECIAL NOTICE TO CONTRACTORS

- ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.
- CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.
- ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

PLUMBING LEGEND

SYMBOL	ABBREV	DESCRIPTION
	SS or W	NEW SEWER OR WASTE
	W (E)	EXIST. SEWER OR WASTE
	V	NEW VENT
	V (E)	EXIST. VENT
	CW	NEW COLD WATER
	CW (E)	EXISTING COLD WATER
	HW	NEW HOT WATER
	HW (E)	EXIST. HOT WATER
	G	NEW GAS
	G (E)	EXISTING GAS
	CD	NEW CONDENSATE DRAIN
	CD (E)	EXIST. CONDENSATE DRAIN
	CA	COMPRESSED AIR
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	TP	TRAP PRIMER & TRAP PRIMER PIPING
	SOV	SHUT-OFF VALVE
	CV	CHECK VALVE
	PRV	BACKFLOW PREVENTER W/ SOV'S
	T & P	T & P
	DN	PIPE DOWN
	UP	PIPE UP
	POC	POINT OF CONNECTION
	-	PLUMBING NOTE CALL-OUT
	ABV	ABOVE
	AFF	ABOVE FINISH FLOOR
	AP	ACCESS PANEL
	BEL	BELOW
	BLDG	BUILDING
	CLG	CEILING
	CONT	CONTINUATION
	EL	ELEVATION
	FIN	FINISH
	FL	FLOOR
	GR	GRADE
	NTS	NOT TO SCALE
	OC	ON CENTER
	S= %	SLOPE AT A PERCENTAGE
	SHT	SHEET
	TYP	TYPICAL
	VTR	VENT THRU ROOF



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Company Title

TRUOBA

UAB Truoba
Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Truoba Mini 217

Drawing Name

Plumbing Specifications

Drawing Scale

ARCH-D

Layout ID

15

Date

4/1/2021

Revision

Electrical Specifications

ENTIRE INSTALLATION TO COMPLY WITH THE NEC 2017 (NFPA 70), NFPA STANDARDS AS APPLICABLE, IN ADDITION TO SPECIFICATIONS ABOVE GENERAL: 1. ALL ELECTRICAL WORK FOR THE ENTIRE PROJECT SHALL BE PERFORMED IN A NEAT AND CRAFTSMANLIKE MANNER BY PERSONS SKILLED IN THE TRADE, AND SHALL BE DONE UNDER THE SUPERVISION OF A MASTER ELECTRICIAN LICENSED TO DO WORK IN THE AREA WHERE THE PROJECT IS TO BE CONSTRUCTED. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE LATEST COPY OF THE NATIONAL ELECTRIC CODE PRESENTLY ENFORCED. SCOPE: 1. THE PROJECT INCLUDES ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION INCLUDING, BUT NOT LIMITED TO, POWER SERVICES (TEMPORARY, NORMAL, AND STAND-BY OR EMERGENCY), SWITCHBOARDS, AUTOMATIC TRANSFER SWITCHES, SERVICE ENTRANCES, DISCONNECTS, DISTRIBUTION PANELS, CONDUIT, WIRING, JUNCTION AND OUTLET BOXES, WIRING DEVICES AND COVER PLATES, LIGHTING FIXTURES, CONNECTION CHORDS, SPECIAL CONNECTIONS AND OUTLETS, ALL AS ILLUSTRATED ON THE PLANS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES, UTILITY COMPANIES, AND GOVERNING AUTHORITIES. 2. THE ELECTRICAL CONTRACTOR TO FURNISH A MINIMUM 100 AMP SINGLE PHASE TEMPORARY SERVICE, POWER COMPANY FEES AND MONTHLY ELECTRIC BILL TO BE PAID BY THIS CONTRACTOR. CODES: 1. ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH ANSI, NFPA70, CITY LAWS, AND ALL LOCAL RULES AND REGULATIONS, INCLUDING THE 2017 NATIONAL ELECTRIC CODE AND THE CITY ENERGY CODE 2015. PERMITS: 1. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAYING ALL FEES ASSOCIATED THEREWITH. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING INSPECTIONS, INCLUDING ALL FEES ASSOCIATED WITH RE-INSPECTIONS. DRAWINGS: 1. THE DRAWINGS ARE DIAGRAMMATIC, AND DO NOT SHOW ALL CHANGES IN HEIGHT, STRUCTURAL MEMBERS, DUCTWORK, PIPING, BRACKETS AND ANY OTHER NUMBER OF ITEMS WHICH MIGHT CAUSE A CONFLICT. THIS CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH OTHER TRADES AS TO THE LOCATION OF HIS DEVICES AND NECESSARY AREAS FOR PANELS AND CONDUIT/WIRING RUNS. VERIFY AND COORDINATE ALL ELECTRICAL WORK WITH ALL TRADES TO PROVIDE A TIMELY INSTALLATION. ADDITIONAL CHARGES DUE TO LACK OF COORDINATION WILL NOT BE APPROVED. MATERIAL: 1. ALL MATERIALS SHALL BE NEW, FREE FROM DEFECTS, AND SHALL BE LISTED BY AND BEAR THE "UL" LABEL WHERE SUBJECT TO APPROVAL. MATERIALS SHALL BE OF THE SAME MANUFACTURER OR BRAND FOR EACH TYPE OF MATERIAL, UNLESS DESIGNATED OTHERWISE. FIXTURES: 1. ALL FIXTURES SHALL BE AS LISTED IN THE LIGHTING FIXTURE SCHEDULE'S RECOMMENDATIONS. 2. LIGHTING FIXTURES ARE TO BE FURNISHED, INSTALLED, AND LAMPED UNDER THIS CONTRACT. PANELS: 1. ALL PANELS TO BE FURNISHED AS PER PANEL SCHEDULE. SQUARE D, OUTLET HAMMER AND ITE ARE ACCEPTABLE MANUFACTURERS. 2. ALL SWITCHBOARD AND OVERCURRENT DEVICES SHALL BE SERIES-RATED TO WITHSTAND THE AVAILABLE FAULT CURRENT. VERIFY WITH LOCAL UTILITY COMPANY. SEE PANEL SCHEDULE. DEVICES: 1. EXTERIOR DISCONNECT SWITCHES SHALL BE NEMA 3R ENCLOSURES AND ELECTRICALLY PROTECTED AS PER MANUFACTURER'S SPECIFICATIONS. (SEE MECHANICAL). 2. INTERIOR DISCONNECT SWITCHES SHALL BE NEMA 1 ENCLOSURES AND ELECTRICALLY PROTECTED AS PER MANUFACTURER'S SPECIFICATIONS. (SEE MECHANICAL). 3. SWITCHES SHALL BE 20 AMP, SPECIFICATION GRADE TOGGLE SWITCHES, SIDE WIRED WITH GROUNDING TERMINAL, COLOR SHALL BE WHITE (UNLESS NOTED OTHERWISE) WITH MATCHING COVERPLATE. MOUNTING HEIGHT SHALL BE 48" AFF TO BOTTOM. 4. RECEPTACLES SHALL BE 15 AMP (MINIMUM), SPECIFICATION GRADE, SIDE WIRED WITH GROUNDING TERMINAL. COLOR SHALL BE WHITE (UNLESS NOTED OTHERWISE) WITH MATCHING COVERPLATE. MOUNTING HEIGHT NOTED IN SYMBOL, LEGEND OR ON DRAWING. 5. ALL RECEPTACLES INSTALLED IN KITCHENS, OR WITHIN 6 FEET (6') OF A WATER SUPPLY (i.e., SINK), SHALL BE GROUND FAULT CIRCUIT INTERRUPTER (G.F.C.I.) DEVICES WITH DOWNSTREAM DEVICES IDENTIFIED. 6. ALL 120-VOLT, SINGLE PHASE, 15- AND 20-AMPERE BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN BATHROOMS SHALL HAVE GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL. BRANCH CIRCUIT WIRING: 1. ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE SPECIFIED ON PLANS. 2. MINIMUM BRANCH CIRCUIT WIRING SHALL BE #12 AWG THINW. COPPER. TYPICAL NOTES 1. EQUIPMENT FURNISHED AND PHYSICALLY INSTALLED BY "OTHERS". ALL ELECTRICAL CONNECTIONS EXTERNAL TO THE EQUIPMENT SHALL BE MADE BY THE ELECTRICAL CONTRACTOR. WIRE, CONDUIT, LUGS, RECEPTACLES, PIGTAILS, DISCONNECTS, ETC. AS MAY BE REQUIRED SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR. NOTE: INCLUDE WORSE CONDITION IN PRICING. VERIFY ROUGH-IN LOCATIONS, TYPE OF CONNECTION AND AMPACITY REQUIRED FROM APPLICABLE EQUIPMENT DRAWINGS PRIOR TO INSTALLING ANY CONDUIT, CONDUCTORS OR BOXES. 3. WALL TELEPHONE/DATA/OUTLET. INSTALL 2-GANG BOX WITH MODULAR TELEPHONE DEVICE IN COVER PLATE. INSTALL (2) 3/4" EMT CONDUITS TO ACCESSIBLE CEILING SPACE OR HOMERUN TO TELEPHONE/COMPUTER TERMINAL EQUIPMENT. HEIGHT, UNLESS NOTED, IS 18" ABOVE FINISH FLOOR. 4. RESIDENTIAL TYPE, 120 VOLT AC/DC, SINGLE STATION SMOKE DETECTOR, PHOTOCELL TYPE. LOCATE PER N.F.P.A. #74. MULTIPLE DETECTORS IN SAME UNIT TO HAVE SIGNAL DEVICES INTERCONNECTED. 5. PROVIDE LIGHT FIXTURE AND RECEPTACLE AT LOCATIONS INDICATED FOR HVAC MAINTENANCE LIGHTING. USE COMBINATION SWITCH AND RECEPTACLE FOR LIGHT CONTROL. FIELD DETERMINES EXACT LOCATION AND HEIGHT. 6. SWITCHED JUNCTION BOX IN CEILING FOR CEILING FAN OR LIGHT. NOTE: BOX MUST BE IDENTIFIED FOR FAN SUPPORT USE). ANCHOR TO STRUCTURE TO SUPPORT 75 LBS. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL FAN AND/OR LIGHT, AND ALL WIRING, INCLUDING SWITCH AND POWER LESS. VERIFY AND COORDINATE FAN TYPE WITH OWNER. 7. IF THE CEILING SPACE OR HVAC CLOSETS IN THIS PROJECT WILL BE USED AS A RETURN AIR PLENUM THEN ALL MATERIALS AND COMPONENTS LOCATED ABOVE CEILING SPACE OR CLOSET (WITHIN RETURN AIR PLENUM) SHALL BE APPROVED FOR PLENUM USE (OR) SHALL BE WRAPPED WITH A UL LISTED AND APPROVED PLENUM WRAP AND INSTALLED PER MANUFACTURER'S INSTRUCTIONS. MATERIALS AND WRAPS SHALL MEET THE FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 223. THIS NOTE SHALL APPLY TO ALL ITEMS LOCATED WITHIN THE RETURN AIR PLENUM SPACE WHETHER THEY ARE NEW OR EXISTING. ENTIRE PLENUM SPACE SHALL COMPLY WITH THE CITY BUILDING CODE, 6TH EDITION (2017) THE CITY MECHANICAL CODE (SECTION 602 IN ITS ENTIRETY), THE CITY PLUMBING CODE, AND THE NATIONAL ELECTRIC CODE 2014 IN ADDITION TO ANY APPLICABLE NFPA STANDARDS OR LOCALLY ADOPTED CODES, AMENDMENTS OR ORDINANCES. THIS NOTE SHALL SUPERSEDE ALL OTHER NOTES LOCATED ON THESE DRAWINGS OR OTHER DRAWINGS INCLUDED FOR THIS PERMIT.	INSTALLATION GENERAL: 1. ROUGH-IN LOCATIONS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS, AS WELL AS EQUIPMENT SIZE, TO AVOID CONFLICT WITH OTHER TRADES. 2. PRIOR TO ROUGH-IN, THE ELECTRICAL CONTRACTOR SHALL RELOCATE, AS DIRECTED BY THE OWNER/ARCHITECT, ANY PIECE OF EQUIPMENT IN THE VERTICAL AND/OR HORIZONTAL DIRECTION UP TO 15'-0" FROM THE LOCATION SHOWN ON THE DRAWINGS AT NO ADDITIONAL COSTS TO THE OWNER. WIRING METHODS: 1. BELOW GRADE, SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED NONMETALLIC CONDUIT. CONDUIT MAY BE RUN IN OR BELOW CONCRETE, AND CONCEALED IN WALLS TO FIRST BOXES. ALL P.W.C. COMPONENTS (PIPING, FITTINGS, CEMENT, ETC.) SHALL BE FROM THE SAME MANUFACTURER. 2. EXTERIOR ABOVE GRADE, SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED LOCATION OF FLEXIBLE METALLIC OR NONMETALLIC CONDUIT. ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER. NOTE: MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL BE SIX FEET (6'). 3. EXTERIOR EQUIPMENT, SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED LOCATION OF FLEXIBLE METALLIC OR NONMETALLIC CONDUIT (MINIMUM 3/4"). ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER. NOTE: MAXIMUM LENGTH OF FLEXIBLE CONDUIT BETWEEN MEANS OF DISCONNECT (OR JUNCTION BOX) AND EQUIPMENT SHALL BE THREE FEET (3'). 4. INTERIOR, SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED METALLIC EMT CONDUIT. ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER. CONDUITS SHALL BE CONCEALED IN OR BEHIND CEILINGS, WALLS, OR FLOORS, EXCEPT WHERE EXPOSED RACEWAYS ARE SPECIFICALLY PERMITTED. NOTE: EMT SHALL NOT BE INSTALLED IN LOCATIONS (1) SUBJECT TO SEVERE DAMAGE, (2) IN CONTACT WITH EARTH, (3) IN CONCRETE SLABS ON GRADE, (4) OTHER LOCATIONS AS LISTED IN N.E.C. 2014, ARTICLE 358.12. EXCEPTION: NON-METALLIC SHEATHED CABLE (NM, NMC, NMS) MAY BE USED WITHIN DWELLING UNITS, IN COMPLIANCE WITH N.E.C. 2014, ARTICLE 334. 5. ELECTRICAL SYSTEM EXPANSION: ANY PANELBOARD MOUNTED SO THAT ITS FRONT FACE IS FLUSH WITH THE FINISHED WALL SHALL HAVE ONE (1) 3/4" EMT CONDUIT INSTALLED FROM PANELBOARD TO ACCESSIBLE CEILING SPACE FOR EVERY FOUR (4) OR MAJOR FRACTION THEREOF. POLES INDICATED AS "SPACE" OR "SPARE" IN THE PANELBOARD SCHEDULE PER THESE DOCUMENTS. EXCEPTION NO. 1: PANELBOARDS INSTALLED ON A WALL SURFACE, WHERE AT LEAST THREE (3) SIDES, NOT INCLUDING THE FRONT, REMAIN ACCESSIBLE AFTER CERTIFICATE OF OCCUPANCY SHALL NOT BE REQUIRED TO MEET #1520.5. EXCEPTION NO. 2: DWELLING UNITS SHALL NOT BE REQUIRED TO MEET #1520.5. 6. ELECTRICAL BOXES, ALL OUTLET, DEVICE, AND JUNCTION BOXES SHALL BE STANDARD 4" SQUARE GALVANIZED STEEL OR APPROVED PLASTIC, 1-1/2" DEEP, WITH DEVICE RINGS OF THE SAME MATERIAL, UNLESS OTHERWISE NOTED. GALVANIZED BOXES SHALL BE MANUFACTURED BY APPLON, NATIONAL, STEEL CITY, INACO OR APPROVED EQUAL. PLASTIC BOXES SHALL BE ALIED, NELCO, CARLON, OR EQUAL. ALL ELECTRICAL BOXES MUST BE ACCESSIBLE AFTER CERTIFICATE OF OCCUPANCY. 7. THRU-FEEDS: MAINTAIN THRU-FEEDS ON ALL ELECTRICAL DEVICES AT 0 . . . EQUIPMENT: 1. WIRE TO, AND MAKE CONNECTIONS TO, ALL PIECES OF EQUIPMENT FURNISHED BY OTHERS FOR COMPLETE AND SATISFACTORY OPERATION BY OTHERS. 2. THIS CONTRACT TO INCLUDE CONNECTION OF LINE VOLTAGE ONLY. CONTROL WIRING TO BE BY THE HVAC CONTRACTOR. GROUNDING: 1. THE ENTIRE ELECTRICAL GROUNDING SYSTEM SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF SECTION 250.66 AND 250.122 OF THE NATIONAL ELECTRIC CODE, INCLUDING BUT NOT LIMITED TO, THE ELECTRICAL SERVICE, ITS EQUIPMENT AND ENCLOSURE, CONDUITS AND OTHER CONDUCTIVE ENCLOSURES, NEUTRAL OR IDENTIFIED CONDUCTOR OF INTERIOR WIRING SYSTEM, MAIN PANELBOARD, POWER AND LIGHTING PANELBOARDS, NON-CURRENT-CARRYING METAL PARTS OF FIXED EQUIPMENT SUCH AS MOTORS, STARTERS AND CONTROLLER CABINETS, INSTRUMENT CASES AND LIGHTING FIXTURES. 2. PROVIDE A SERVICE GROUND ACCORDING TO N.E.C. ARTICLE 250. THE MINIMUM INSTALLATION TO INCLUDE: BUILDING FOOTING/FOUNDATION REINFORCING STEEL, TURNED UP OR OTHERWISE EXPOSED AT THE SERVICE LOCATION WITH APPROVED CONNECTOR TO BOND A GROUNDING CONDUCTOR SIZED PER TABLE 250 TO THE STEEL AND A DRIVEN ROD GROUND (MINIMUM 5/8" BY 6" DEEP) WITH #6 COPPER GROUNDING CONDUCTOR, IF AVAILABLE ON THE PREMISES, ALSO BOND METAL COLD WATER PIPING, METAL BUILDING FRAME AND GROUND RING WITH JUMPERS SIZED FROM 250-94. 3. ALL TELEPHONE, DATA, TELEVISION, AND OTHER TERMINAL EQUIPMENT SHALL BE BONDED TO THE GROUNDING ELECTRODE WITH MINIMUM #6 AWG CU. WARRANTY NOTE 1. ELECTRICAL CONTRACTOR TO PROVIDE FULL WARRANTY (PARTS AND LABOR) ON ALL EQUIPMENT AND MATERIALS FURNISHED UNDER THE SCOPE OF WORK FOR A PERIOD OF ONE YEAR FROM THE CERTIFICATE OF OCCUPANCY. 2. E.C. SHALL PROVIDE OWNER AND ENGINEER WITH REPRODUCIBLE "AS-BUILT" DRAWINGS SHOWING ALL REQUIRED MODIFICATIONS THAT HAVE OCCURRED IN THE FIELD. SITE VERIFICATION NOTES ALL ITEMS ON THESE DRAWINGS MARKED AS "EXISTING" OR "EXIST" SHALL BE VERIFIED IN FIELD ANY DIFFERENCES BETWEEN ITEMS OR EQUIPMENT INDICATED AS EXISTING SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OR ARCHITECT. PRIOR TO CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL VERIFY THAT THE PHASE TO PHASE VOLTAGE AVAILABLE IS EQUAL TO EACH OTHER, AND EQUAL TO VOLTAGE SHOWN ON THESE DRAWINGS. A DIFFERENCE IN PHASE TO PHASE VOLTAGE MAY INDICATE THE PRESENCE OF A "HIGH LEG" DELTA SYSTEM. ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR REQUIRED REVISIONS. SPLIT PHASE CIRCUIT BREAKERS ARE NOT PERMITTED TO BE INSTALLED ON HIGH LEG DELTA SYSTEMS. HIGH LEG DELTA SYSTEMS SHALL BE LABELED PER 408.3 AND THE HIGH LEG CONDUCTOR TO BE MARKED PER 110.15. GENERAL NOTES, ELECTRICAL THE ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE ALL ELECTRICAL SERVICE ROUGH-IN AND INSTALLATION DETAILS, FEES, WITH THE LOCAL POWER COMPANY/UTILITY FIELD ENGINEER PRIOR TO AND INCLUDING IN BID! THE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH ALL STATE/LOCAL BUILDING CODES/ORDINANCES/REGULATIONS PRESENTLY IN EFFECT. IN ADDITION, COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE (N.E.C.) 2017. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE IN ORDER TO FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS, FAILURE TO DO SO WILL NOT WARRANT ANY ADDITIONAL CHARGES TO THE OWNER. THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BID, ANY CUTTING OR PATCHING OF CONCRETE/ASPHALT PAVEMENTS, ETC. TO RUN ELECTRICAL. ALL EQUIPMENT, FIXTURES, ETC. SHALL BE STARTED, TESTED, ADJUSTED AND PLACED IN SATISFACTORY OPERATING CONDITION. THIS CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP, MATERIALS AND EQUIPMENT TO BE FREE OF DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF CERTIFICATE OF OCCUPANCY (C.O.), AND SHALL REPAIR ANY SUCH DEFECTS WITHOUT COST TO THE OWNER. ALL EQUIPMENT SHALL BE COVERED FOR THE DURATION OF THE MANUFACTURER'S GUARANTEE OR WARRANTY. THIS CONTRACTOR SHALL FURNISH THE OWNER WITH ALL MANUFACTURER'S GUARANTEE AND WARRANTIES. HVAC AIR HANDLER AND CONDENSING UNIT CIRCUIT BREAKERS MUST BE UL LISTED AS "HACR" RATED. IN ORDER TO USE NON-AUTO DISCONNECTS AT HVAC EQUIPMENT, IF NOT LISTED, THEN A FUSED DISCONNECT IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S NAMEPLATE REQUIREMENTS MUST BE INSTALLED AT THE EQUIPMENT. THE ELECTRICAL, GENERAL, HVAC, AND PLUMBING CONTRACTOR(S) SHALL STRICTLY ADHERE TO THE FOLLOWING ITEMS WHEN DEALING WITH ELECTRICAL EQUIPMENT CLEARANCES. A.) NO PIPING OR DUCTWORK OF ANY KIND SHALL BE INSTALLED ABOVE ANY SWITCHBOARD OR PANELBOARD. THIS AREA TO REMAIN CLEAN FROM THE EQUIPMENT TO 25 ABOVE OR TO THE BOTTOM OF THE STRUCTURAL SLAB. B.) CLEARANCE OF 36" MINIMUM SHALL BE MAINTAINED IN FRONT OF ELECTRICAL EQUIPMENT FOR THE ENTIRE WIDTH OF THE EQUIPMENT, PLUS A MINIMUM OF 30" TOTAL LEFT/RIGHT CLEARANCE.	GENERAL NOTES, ELECTRICAL (CONTINUED) ALL "WEATHERPROOF" ("WP") DEVICES ARE TO BE INSTALLED WITH A WEATHER- SHIELDING COVER. ALL ELECTRICAL CONDUITS NOT CONTAINING SPECIFIED CONDUCTORS SHALL HAVE A PULL WIRE INSTALLED. DO NOT SCALE THE ELECTRICAL DRAWINGS; REFER TO THE ARCHITECTURAL PLANS FOR EQUIPMENT LOCATIONS, CABINETS, CEILING GRID, DRAIN SWINGS, ETC. THE INTENT OF THESE DRAWINGS IS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL ELECTRICAL INSTALLATION. IT IS NOT THE INTENT OF THESE PLANS TO SHOW ALL DETAILS OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS SUCH AS HARDWARE, J-BOXES, CONDUIT FITTINGS, ETC., AS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM INSTALLATION. TECHNICIANS SKILLED IN THEIR TRADE SHALL PERFORM ALL ELECTRICAL INSTALLATIONS IN A PROFESSIONAL MANNER. WIRE TO, AND MAKE CONNECTIONS AS NECESSARY, TO ALL PIECES OF EQUIPMENT (FURNISHED BY OTHERS), FOR COMPLETE AND SATISFACTORY OPERATION BY THE OWNER. ALL ELECTRICAL PANELS SHALL BE LABELED WITH THEIR RESPECTIVE SOURCES PER NEC 408.40(B). ALL SERVICE AND FEEDER CONDUITS SHALL HAVE EXPANSION FITTINGS WHEN PENETRATING SLABS, ETC. TO ALLOW FOR STRUCTURAL SETTLEMENT. PROVIDE "PVC" CONDUITS STUBBED OUT, BELOW GRADE FOR ADDITIONAL SERVICES, IN ORDER TO PROVIDE CONCEALED TELEPHONE AND/OR DATA SERVICE ENTRANCE. PROVIDE TIME CLOCKS WITH BATTERY BACK-UP TO CONTROL ALL SIGNAGE AND EXTERIOR LIGHTING CIRCUITS. SEE POWER RISER DIAGRAM FOR ADDITIONAL DETAILS. ALL CONDUCTORS SHALL BE TYPE THHN/THWN, COPPER (CU) UNLESS OTHERWISE CALLED FOR ON THESE DOCUMENTS. SEE PANEL SCHEDULE. ALL LIGHTING FIXTURES (INCLUDING THOSE PROVIDED BY OTHERS) ARE TO BE INSTALLED UNDER THIS CONTRACT. SEE SCHEDULE FOR FUTURE RECOMMENDATIONS, LAMPS, ETC. NOTICE TO CONTRACTOR: REVISIONS TO THESE DRAWINGS AND CERTIFICATION THEREOF WHICH MAY BE REQUIRED BECAUSE OF CONTRACTOR-ORIGINATED REVISIONS, SHALL BE COMPLETED TO THE ENGINEER(S) BY THE REQUESTING CONTRACTOR. PAYMENT SHALL BE REQUIRED AT THE TIME OF CERTIFICATION DELIVERY. VERIFY ALL RECEPTACLE MOUNTING HEIGHTS WITH OWNER. LOW VOLTAGE INDICATED ON THESE DRAWINGS IS FOR ROUGH-IN BOX LOCATIONS ONLY AND DOES NOT INCLUDE ANY WIRING OR CABLING REQUIRED. ALL LOW VOLTAGE WILL BE PERMITTED SEPARATELY BY THE CONTRACTOR. THIS INCLUDES BUT IS NOT LIMITED TO DATA WIRING, SPEAKER WIRING, TV COAX WIRING ETC.	ELECTRICAL LEGEND NOTES VERIFY ALL RECEPTACLE MOUNTING HEIGHTS WITH OWNER LOW VOLTAGE INDICATED ON THESE DRAWINGS IS FOR ROUGH-IN BOX LOCATIONS ONLY AND DOES NOT INCLUDE ANY WIRING OR CABLING REQUIRED. ALL LOW VOLTAGE WILL BE PERMITTED SEPARATELY BY THE CONTRACTOR. THIS INCLUDES BUT IS NOT LIMITED TO DATA WIRING, SPEAKER WIRING, TV COAX WIRING ETC.	ELECTRICAL PLAN NOTES 120V RECEPTACLES LOCATED IN AREAS SIMILAR TO KITCHEN OR PREP AREAS SHALL BE GFCI PROTECTED. GFCI PROTECTION NOT INDICATED ON PLANS. (NEC 210.8) EMERGENCY & EXIT LIGHTING SHALL BE FED FROM THE NEAREST LIGHTING CIRCUIT. PROVIDE ADDITIONAL CONDUCTOR TO FEED EMERGENCY LIGHTING IN AREAS, INDEPENDENT OF ANY LIGHTING CONTROL. SOME DATA LOCATIONS HAVE BEEN INDICATED ON THESE DRAWINGS HOWEVER NOT ALL LOW VOLTAGE INFORMATION HAS BEEN PROVIDED. CONTRACTOR TO COORDINATE WITH OWNER FOR INFORMATION TO ENSURE ALL LOCATIONS AND QUANTITY OF WIRES IS PROVIDED TO PROVIDE A COMPLETE OPERATIONAL LOW VOLTAGE SYSTEM SUITABLE FOR OWNER. CONTRACTOR TO PROVIDE SEPARATE LOW VOLTAGE PERMIT. COORDINATE WITH OWNER & GC PRIOR TO CONSTRUCTION.	MOUNTING HEIGHT OVER OBSTRUCTIONS DETAIL NO SCALE 15" MIN (FRONT APPROACH) 9" MIN (SIDE APPROACH) TOP OF CONTROL DEVICE 24" MAX. FINISHED FLOOR 34" MAX. 48" MAX. SIDE APPROACH 44" MAX. FRONT APPROACH REGULAR MOUNTING HEIGHT OVER OBSTRUCTIONS NOTE WHERE LIGHT SWITCHES, RECEPTACLES, TELEPHONE/DATA OUTLETS, DIMMING CONTROL STATIONS, FIRE ALARM PULL STATIONS OR OTHER OPERABLE OUTLET DEVICES OCCUR OVER FIXED OBSTRUCTIONS (SUCH AS CASEWORK, ETC) RESPECTIVE DEVICE MOUNTING HEIGHT LIMITS AFF SHALL BE AS TYPICALLY DEPICTED ABOVE. INTERNATIONAL BUILDING CODE 2018 EDITION INTERNATIONAL ENERGY CONSERVATION CODE 2018 EDITION INTERNATIONAL EXISTING BUILDING CODE 2018 EDITION INTERNATIONAL FIRE CODE 2018 EDITION INTERNATIONAL FUEL AND GAS CODE 2018 EDITION INTERNATIONAL MECHANICAL CODE 2018 EDITION INTERNATIONAL PLUMBING CODE 2018 EDITION INTERNATIONAL PROPERTY MAINTENANCE CODE 2018 EDITION INTERNATIONAL RESIDENTIAL CODE 2018 EDITION INTERNATIONAL SWIMMING POOL & SPA CODE 2018 EDITION NFPA 101 LIFE SAFETY CODE 2018 EDITION NATIONAL ELECTRICAL CODE 2017 EDITION CODES AND STANDARDS	SERVICE EQUIPMENT ENCLOSURE SERVICE CONDUCTOR 1 SETS #4/0 & 1#6 - 2" C (THHN/THWN, CU, 600V, INS) EQUIPMENT GROUNDING BUS BAR GROUNDING ELECTRODE CONDUCTOR (BONDING JUMPER *250.66, *250.52(A)(2), *250.102(C) (1#2/0 AWG, CU) METAL FRAME OF BUILDING OR STRUCTURAL STEEL CONNECTION (*250.70) ACCESSIBILITY (*250.68)(A) CONNECTIONS MADE WITHIN 5' OF POINT OF ENTRANCE OF PIPE IN THE BUILDING 1#6 AWG, CU GROUND CLAMPS SUITABLE FOR DIRECT BURIAL OR EXOTHERMIC WELD CONNECTIONS [*250.66(A)] ROD & PIPE ELECTRODES COPPER CLAD DRIVEN GROUND ROD (*1"X1/2" GROUNDING ELECTRODE UPPER END OF ROD MUST BE FLUSH WITH OR BELOW GRADE DRIVEN IN GROUND AT LEAST 8 FT. DEEP AND DEFERRABLE BEYOND THE ROOF OVER HANG. NOTE: SOME AREAS REQUIRE TO GROUNDING ELECTRODES SPACED AT LEAST 6 FT APART [*250.52(A)(5), *250.53(2), *250.56] CONNECTION [250.55(B)] CONNECTION [250.55(C)] FOUNDATION IN DIRECT CONTACT WITH EARTH METAL UNDERGROUND WATER PIPE [*250.104(A), *250.50 TABLE-*250.66 250.52(A)(1)] SERVICE EQUIPMENT ENCLOSURE NEUTRAL BUS BAR MAIN BONDING JUMPER (MBJ) [*250.90/92, *250.28(A), (*250.28(D) (TABLE *250.66)] (1#2/0 AWG, CU) GROUNDING ELECTRODE CONDUCTOR (1#4 AWG, CU) NEUTRAL (*200-6, *200-7) EQUIPMENT GROUNDING CONDUCTOR (EGC) (*210.5)(B), (250.118, 119, 120, 122) GROUNDING ELECTRODE CONDUCTOR (GEC) (TABLE *250.66) (1#2/0 AWG, CU) GROUNDING ELECTRODE CONDUCTOR BONDING JUMPER NOT LESS THAN GROUND RING CONDUCTOR SIZE (1#2 AWG CU (MIN.)) CONCRETE ENCASED ELECTRODE *250.66(B) 1#4 AWG CU OR LARGER BARE COPPER CONDUCTOR OR STEEL REINFORCING BAR OR ROD NOT LESS THAN 1/2" DIAMETER AT LEAST 20' LONG [*250.52(A)(3)] BUILDING GROUND RING AROUND FACILITY 1#2 AWG CU (MIN.) (AT LEAST 20' BARE COPPER CONDUCTOR. THE GROUND RING SHALL BE BURIED AT DEPTH 30" (MIN) BELOW THE EARTH SURFACE. [*250.52(A)(4)] DETAIL "G" OF GROUNDING ELECTRODE SYSTEM (*250.50) & GROUNDING ELECTRODES (*250.52) AS SERVICE SCALE: NTS	USER GROUND NOTE : ALL STEEL REBARS MEASURING 1/2" OR MORE IN DIAMETER AND 20' OR LONGER IN LENGTH THAT IS ENCASED IN NOT LESS THAN 2 INCHES OF CONCRETE SHALL BE BONDED TO THE BUILDING'S GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH CEC 250 (ELECTRICAL SUB CODE) SECTION 250.52(A)(3). THE "USER" GROUND CAN BE 20 L.F. OF #2 OR #4 COPPER WIRING LAID INSIDE THE FOOTING AND THE SAME WIRE IS LONG ENOUGH TO REACH TO THE LOCATION OF THE MAIN ELECTRICAL PANEL OF THE HOUSE. USER GROUND CAN BE (1) L-SHAPED PIECE OF #4 STEEL REBAR CONNECTED TO THE OTHER STEEL REBAR IN THE FOOTING AND STICKING OUT IN SUFFICIENT LENGTH FOR CONNECTION AT THE LOCATION OF THE MAIN ELECTRICAL PANEL OF THE HOUSE	This document and its design content is © UAB Truoba. UAB Truoba remains the ownership and copyright of the drawings and this house design. This document may not be reproduced in any form in whole or in part without the prior written permission of the copyright owner. Company Title TRUOBA UAB Truoba Email: info@truoba.com Tel: +1 844-337-1434 Web: www.truoba.com Project Title Truoba Mini 217 Drawing Name Electrical Specifications Drawing Scale Sheet Size ARCH-D Layout ID 16 Date 4/1/2021 Revision Digitally signed by Adam T. Truoba Date: 2021.04.03 11:36:20 -0400
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Mechanical Specifications

MECHANICAL SPECIFICATIONS

BASIC MECHANICAL REQUIREMENTS:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE FOLLOWING:
- A. LATEST EDITION AND AMENDMENTS OF THE APPLICABLE STATE AND LOCAL CODES.
- B. LATEST (OR APPLICABLE) EDITION OF INTERNATIONAL MECHANICAL CODE.
- C. LATEST (OR APPLICABLE) EDITION OF NFPA CODE 90A.
2. FURNISH AND INSTALL ALL LABOR, MATERIAL, AND EQUIPMENT AND SERVICES NECESSARY FOR COMPLETE AND SAFE INSTALLATION OF THE MECHANICAL SYSTEM INDICATED ON THE DRAWINGS AND NOTED IN THE SPECIFICATIONS HEREINAFTER. MECHANICAL DRAWINGS ARE CONSIDERED DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND SYSTEMS. REFER TO ARCHITECTURAL DRAWINGS TO VERIFY LOCATION OF DEVICES, EQUIPMENT, ETC. CHECK DRAWINGS OF OTHER TRADES TO VERIFY EXACT SPACE CONDITIONS OF DUCTWORK AND EQUIPMENT. MATERIALS SHALL BE NEW, FREE FROM DEFECTS AND LISTED BY ARI OR UL WHERE APPLICABLE. CONTRACTOR SHALL COORDINATE ALL NEW WORK WITH EXISTING CONDITIONS. CONTRACTOR SHALL VISIT SITE AND EXAMINE EXISTING CONDITIONS PRIOR TO BID.
3. SUBMIT SIX (6) COPIES OF SHOP DRAWINGS TO OWNER OR ARCHITECT FOR EACH PIECE OF EQUIPMENT TO INCLUDE RTU'S, ASSOCIATED PIPING, HEATERS, EQUIPMENT, DIFFUSERS, INSULATION, FANS, CONTROLS AND DUCTWORK. OBTAIN APPROVAL BEFORE EQUIPMENT IS ORDERED, BUILT, OR INSTALLED.

INSULATION:

1. INSULATE ALL CONCEALED SUPPLY DUCTWORK WITH 2" THICK FIBERGLASS DUCT WRAP WITH VAPOR BARRIER FACING. ALL INSULATION, FASTENERS AND ADHESIVES SHALL MEET NFPA 90A REQUIREMENTS AND UL FLAME SPREAD AND SMOKE DEVELOPED CRITERIA AND SHALL BEAR UL STAMP.

GAS FIRED HEATING AND A/C UNIT:

1. INSTALL WHERE INDICATED AND AS SCHEDULED A PACKAGED AIR COOLED SELF CONTAINED ROOF TOP GAS FIRED HEATING AND DIRECT EXPANSION AIR CONDITIONING UNIT MANUFACTURED BY TRANE. UNIT SHALL BE PROVIDED AND INSTALLED BY LANDLORD.
2. UNIT CABINET: CONSTRUCT OF OF GALVANIZED STEEL, BONDERIZED AND COATED WITH A BAKED ENAMEL FINISH. CABINET INTERIOR SHALL BE INSULATED WITH ONE-INCH THICK NOEPRENE COATED FIBERGLASS. A CONDENSATE DRAIN FOR THE INDOOR COIL SHALL BE PROVIDED. PROVIDE 2" THICK FIBERGLASS THROW AWAY FILTERS WITH MAXIMUM FACE VELOCITY OF 300 FPM.
3. UNIT COMPRESSORS: SHALL BE SERVICEABLE, HERMETICALLY SEALED SUCTION PROVIDE MINIMUM ONE YEAR MANUFACTURERS WARRANTY ON COMPRESSOR(S). INDOOR AND OUTDOOR COILS SHALL BE CONSTRUCTED OF ALUMINUM PLATE FINS MECHANICALLY BONDED TO SEAMLESS COPPER TUBES WITH ALL JOINTS BRAZED. INDOOR FANS SHALL BE BELT DRIVEN AND PROVIDED WITH ADJUSTABLE PITCH MOTOR PULLY. OUTDOOR FANS SHALL BE DIRECT DRIVEN PROPELLOR TYPE WITH PERMANENTLY LUBRICATED MOTOR.
4. UNIT CONTROLS: PROVIDE PROGRAMMABLE THERMOSTAT WITH REMOTE SPACE SENSOR TO MAINTAIN HEATING AND COOLING SET POINTS. CONTROL UNIT FAN TO RUN CONTINUOUSLY OR ON AUTO-CYCLE. CYCLE BURNER AND COMPRESSORS IN SEQUENCE MAINTAIN SETPOINT. PROVIDE ECONOMIZER CONTROL TO INCLUDE RETURN AIR AND OUTSIDE AIR DAMPERS AND FULLY MODULATING ELECTRIC CONTROL SYSTEM WITH ENTHALPHY CHANGE OVER CONTROL AND ADJUSTABLE MIXED AIR THERMOSTAT. ECONOMIZER CONTROL SHALL BE CAPABLE OF INTRODUCING UP TO 100% OUTSIDE AIR. HEATING CONTROLS SHALL CONSIST OF A REDUNDANT GAS VALVE, ELECTRONIC INTERMITTENT PILOT IGNITION, REMOTE PILOT FLAME SENSOR, TIME-DELAY RELAY, LIMIT SWITCHES AND CENTRIFUGAL SWITCH. LOCATE REMOTE SPACE SENSOR WHERE INDICATED ON DRAWING.
5. HEAT EXCHANGER: SHALL BE TUBULAR IN DESIGN AND CONSTRUCTED OF CORROSION RESISTANT ALUMINIZED STEEL. HEAT EXCHANGER SHALL CARRY A 5 YEAR WARRANTY. BURNERS SHALL BE CONSTRUCTED OF ALUMINUM PAINTED COLD ROLLED STEEL AND BE OF THE IN-SHOT TYPE.
6. ELECTRICAL CONNECTION: PROVIDE A DISCONNECT SWITCH READY FOR A SINGLE POINT POWER CONNECTION.

EXHAUST FANS:

1. ROOF EXHAUST FANS SHALL BE CAPABLE OF HANDLING AIR QUANTITY ON DRAWINGS. FAN TO BE PROVIDED WITH BIRDSCREEN, SHOCK MOUNTS, NEMA 1 DISCONNECT TYPE ELECTRICAL CONNECTION. MANUFACTURER'S ROOF CURB AND SHALL BE CONTROLLED BY INTERLOCK TO HVAC UNIT. TOILET EF SHALL BE GREENHECK MODEL G-70-D OR APPROVED EQUAL. FANS TO BE PROVIDED BY LANDLORD.

DUCTWORK:

1. LOW PRESSURE DUCTWORK: ALL DUCTWORK UNLESS OTHERWISE NOTED SHALL BE FABRICATED OF GALVANIZED SHEET STEEL IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA DUCT CONSTRUCTION STANDARDS FOR 2" PRESSURE CLASS. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. FLEXIBLE DUCT CONNECTORS SHALL BE PREINSULATED WHERE INSULATION IS REQUIRED AND SHALL BE CLASSIFIED AS CLASS I OR CLASS O FLEXIBLE CONNECTORS IN ACCORDANCE WITH UL 181. FLEXIBLE CONNECTORS SHALL NOT EXTEND MORE THAN 10 FEET IN LENGTH.
3. PROVIDE 1" THICK ACOUSTICAL DUCT LINING WITH AN AVERAGE DENSITY OF 1 1/2 LBS./CF. IN FIRST TEN FEET OF RETURN DUCT AND WHERE INDICATED. DUCT LINER SHALL HAVE FIRE RESISTANT INNER COATING TO PREVENT DELAMINATION OF FIBERS AND SHALL MEET NFPA AND UL REQUIREMENTS.

ACCESSORIES:

1. PROVIDE DUCTWORK ACCESSORIES IN ACCORDANCE WITH SMACNA STANDARDS. PROVIDE TURNING VANES IN ALL RECTANGULAR ELBOWS. WHERE SPACE PERMITS CONTRACTOR MAY PROVIDE RADIUS ELBOWS WITH A STANDARD CENTERLINE RADIUS EQUAL TO 1 1/2 TIMES THEIR WIDTH IN LIEU OF RECTANGULAR ELBOWS SHOWN ON PLANS. ALL RECTANGULAR DUCT TAPS SHALL BE MADE WITH 45 DEGREE ENTRY. ALL ROUND TAPS OVER 6" SHALL BE MADE WITH CONICAL TEES.
2. PROVIDE MANUAL VOLUME DAMPERS WHERE INDICATED AND AT ALL TAPS TO INDIVIDUAL DIFFUSERS.

AIR OUTLETS AND INLETS:

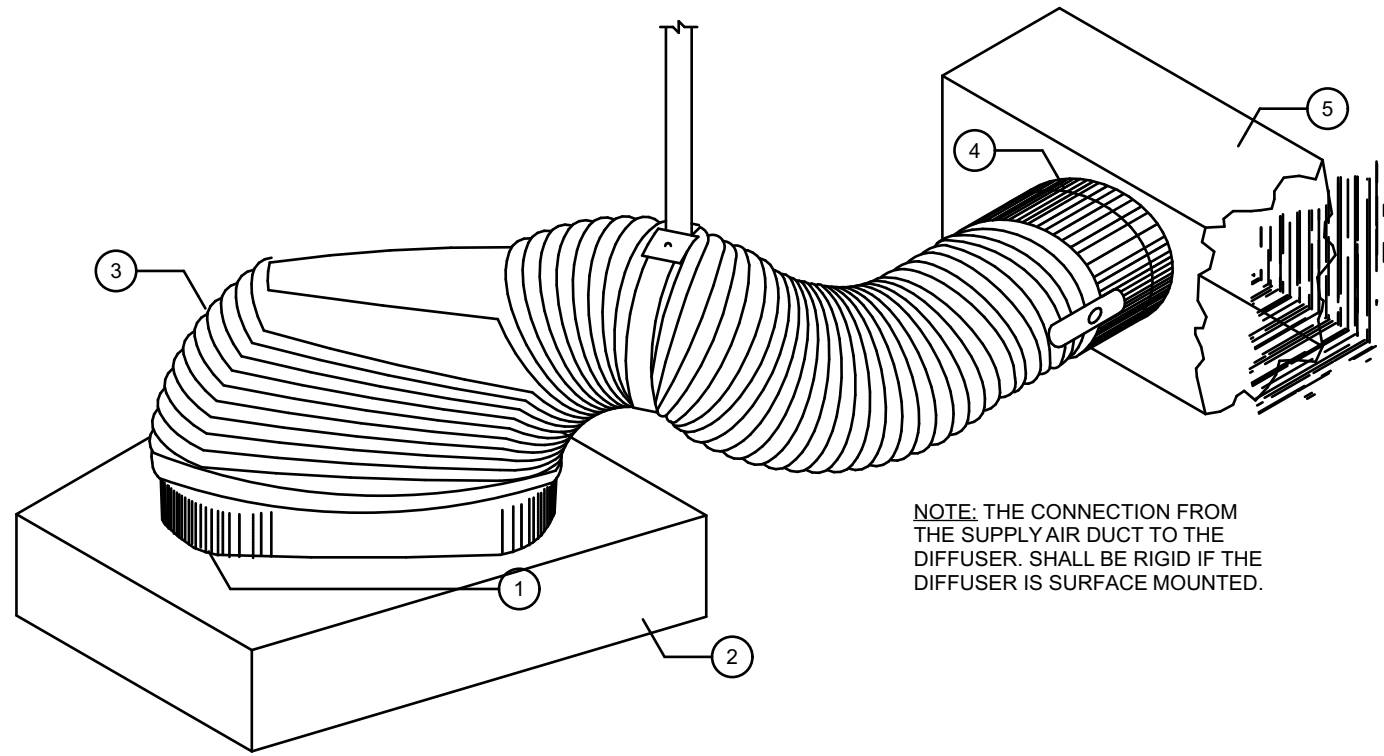
1. DIFFUSERS SHALL HAVE AN NC RATING OF NOT MORE THAN 35 FOR ANY OCCUPIED SPACE. THROW AND DROP SHALL MEET MANUFACTURERS PUBLISHED RECOMMENDATIONS. PRIME DIFFUSERS FOR FIELD PAINTING AS INDICATED ON ARCHITECTURAL DRAWINGS.
2. LOUVERED FACE SUPPLY DIFFUSERS SHALL BE TITUS MODEL TDC OR APPROVED EQUAL. PROVIDE SQUARE OR ROUND NECK AS INDICATED AND FRAME TYPE TO MATCH CEILING CONSTRUCTION.
3. EXHAUST AND RETURN AIR GRILLES SHALL BE TITUS MODEL 350RL STEEL LOUVERED GRILLES WITH 3/4 INCH SPACING.

CONTROLS

1. PROVIDE PROGRAMMABLE WALL MOUNTED SPACE THERMOSTAT WITH SPACE MOUNTED REMOTE SENSOR TO CONTROL ALL STAGES OF ROOFTOP UNIT HEATING AND COOLING.
2. CONTROL ROOF MOUNTED TOILET EXHAUST FANS TO START AND STOP FROM INTERLOCK TO RTU'S OCCUPIED CYCLE.
3. PROVIDE DUCT MOUNTED IONIZATION TYPE SMOKE DETECTOR IN RETURN AIR DUCT OF EACH RTU 2000 CFM AND ABOVE. DETECTOR SHALL SHUT DOWN UNIT UPON DETECTION OF PRODUCTS OF COMBUSTION AND ACTIVATE VISIBLE AND AUDIBLE ALARM AND TROUBLE SIGNAL IN AN APPROVED LOCATION.

TESTING ADJUSTING AND BALANCING:

1. AFTER COMPLETION OF THE INSTALLATION OF THE AIR CONDITIONING AND HEATING SYSTEMS AND PRIOR TO ACCEPTANCE BY THE OWNER, AIR HANDLING SYSTEM AND APPURTENANCES APPLICABLE TO THE ABOVE SYSTEM SHALL BE ADJUSTED AND BALANCED TO DELIVER THE AIR QUANTITIES AS SPECIFIED, INDICATED ON THE DRAWINGS, OR AS DIRECTED. BALANCING WORK SHALL BE DONE IN ACCORDANCE WITH AABC OR NEBB PUBLISHED METHODS AND PRACTICES. THE CONTRACTOR SHALL SUBMIT TO THE OWNER OR ENGINEER FOR THEIR EVALUATION AND APPROVAL, SIX (6) COPIES OF THE COMPLETE AIR BALANCE REPORT.



SUPPLY AIR DIFFUSER CONNECTION

SYMBOLS LIST

- 1 ADAPTER FITTING AS REQUIRED ; SCREWED TO GRILLE
- 2 SUPPLY AIR DIFFUSER TYPE & SIZE AS SCHEDULED ; DIFFUSER TO HAVE OPPOSED BLADE DAMPER WHERE MOUNTED ON PLASTER CEILING .
- 3 PRE-INSULATED FLEX DUCT - SECURED AT BOTH ENDS WITH 1 inch WIDE DRAW BANDS, SUPPORTED FROM STRUCTURE, MAXIMUM LENGTH 5FT
- 4 SPIN-IN FITTING W/DAMPER , VAPOR SEAL PRE-INSULATED FLEX DUCT TO SUPPLY AIR DUCT . OMIT DAMPER WHERE DIFFUSER IS MOUNTED ON PLASTER CEILING .
- 5 SUPPLY AIR DUCT-SIZE AS INDICATED ON PLANS .

FIELD DUCT SIZING CHART

Flexible Duct		
Duct Size	Design	Airflow
5"		50
6"		75
7"		110
8"		160
9"		225
10"		300
12"		480
14"		700
16"		1000
18"		1300
20"		1700

ROUND DUCT SIZE ESTIMATE

Round Metal Pipe		
Duct Size	Design	Airflow
5"		50
6"		85
7"		125
8"		180
9"		240
10"		325
12"		525
14"		750
16"		1200
18"		1500
20"		2000

MECHANICAL LEGEND

	NEW DUCTWORK
	EXISTING DUCTWORK
	SOUNDLINED DUCTWORK
	DUCT RISING
	DUCT DROPPING
	DUCT SIZE, FIRST FIGURE IS VISIBLE SIDE
	CHANGE IN DUCT ELEVATION: RISE (R) OR DROP (D)
	DUCT WITH FLEXIBLE CONNECTION
	RECTANGULAR TO ROUND DUCT CONNECTION
	DUCT WITH CAPPED END
	TRANSITION
	DUCT SECTION, POSITIVE PRESSURE
	DUCT SECTION, NEGATIVE PRESSURE
	TURNING VANES (SQUARE ELBOW SHOWN)
	CONNECT NEW TAP TO EXISTING DUCTWORK
	MANUAL VOLUME DAMPER
	FLEXIBLE DUCT
	POINT OF CONNECTION - NEW TO EXISTING
	RETURN
	SUPPLY DIFFUSER
	THERMOSTAT
	REMOTE SPACE SENSOR
	GAS METER
	ABOVE FINISHED FLOOR
	CUBIC FEET PER MINUTE
	CEILING
	CEILING DIFFUSER
	CEILING REGISTER
	DOWN
	EXISTING, RELOCATE AS REQUIRED
	EXHAUST FAN
	FLEXIBLE CONNECTION
	FLOOR
	NEW
	TRANSFER AIR DUCT
	UNLESS OTHERWISE NOTED
	VOLUME DAMPER
	NATURAL GAS
	WATER HEATER

RECTANGULAR DUCT SIZE ESTIMATE												
Design	Duct Height - Net inside dimension in inches											
	4"	CFM	6"	CFM	8"	CFM	10"	CFM	12"	CFM	14"	CFM
60	6x4	60	4x6	90	4x8	120	4x10	150	4x12			
90	8x4	110	6x6	160	6x8	215	6x10	270	6x12			
120	10x4	160	8x6	230	8x8	310	8x10	400	8x12			
150	12x4	215	10x6	310	10x8	430	10x10	550	10x12			
180	14x4	270	12x6	400	12x8	550	12x10	680	12x12			
210	16x4	320	14x6	490	14x8	670	14x10	800	14x12			
240	18x4	375	16x6	580	16x8	800	16x10	950	16x12			
270	20x4	430	18x6	670	18x8	930	18x10	1100	18x12			
300	22x4	490	20x6	750	20x8	1060	20x10	1250	20x12			
330	24x4	540	22x6	840	22x8	1200	22x10	1400	22x12			
		600	24x6	930	24x8	1320	24x10	1600	24x12			
		650	26x6	1020	26x8	1430	26x10	1750	26x12			
		710	28x6	1100	28x8	1550	28x10	1950	28x12			
		775	30x6	1200	30x8	1670	30x10	2150	30x12			
40	2 1/2 x10			1300	32x8	1800	32x10	2300	32x12			
70	2 1/2 x14			1400	34x8	1930	34x10	2450	34x12			
150	2 1/2 x30			1500	36x8	2060	36x10	2600	36x12			
		100	3 1/2 x14			2200	38x10	2750	38x12			
		220	3 1/2 x30			2350	40x10	2900	40x12			
Rectangular sheet metal duct = .07"on most metal duct calculators												

INSTRUCTIONS FOR USE

- Step One - Identify the volume of air that will be passing through the duct
- Step Two - Select the duct size from the table that can carry that volume of air
- Step Three - If desired airflow exceeds the CFM rating, increase to the next duct size
- Step Four - Listed CFM is based on typical field results and may vary, install dampers
- Step Five - If duct run exceeds 25', or has excessive transitions, increase to the next size
- Step Six - Design alone is inadequate, always prove design by test and balance.

MECHANICAL CODES AND STANDARD

INTERNATIONAL BUILDING CODE	2018 EDITION
INTERNATIONAL ENERGY CONSERVATION CODE	2018 EDITION
INTERNATIONAL EXISTING BUILDING CODE	2018 EDITION
INTERNATIONAL FIRE CODE	2018 EDITION
INTERNATIONAL FUEL AND GAS CODE	2018 EDITION
INTERNATIONAL MECHANICAL CODE	2018 EDITION
INTERNATIONAL PLUMBING CODE	2018 EDITION
INTERNATIONAL PROPERTY MAINTENANCE CODE	2018 EDITION
INTERNATIONAL RESIDENTIAL CODE	2018 EDITION
INTERNATIONAL SWIMMING POOL & SPA CODE	2018 EDITION
NFPA 101 LIFE SAFETY CODE	2018 EDITION
NATIONAL ELECTRICAL CODE	2017 EDITION

CODES AND STANDARDS

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Company Title

TRUOBA

UAB Truoba
Email: info@truoba.com
Tel: +1 844-337-1434
Web: www.truoba.com

Project Title

Truoba Mini 217

Drawing Name

Mechanical Specifications

Drawing Scale

Sheet Size

ARCH-D

Layout ID

17

Date

4/1/2021

Revision

