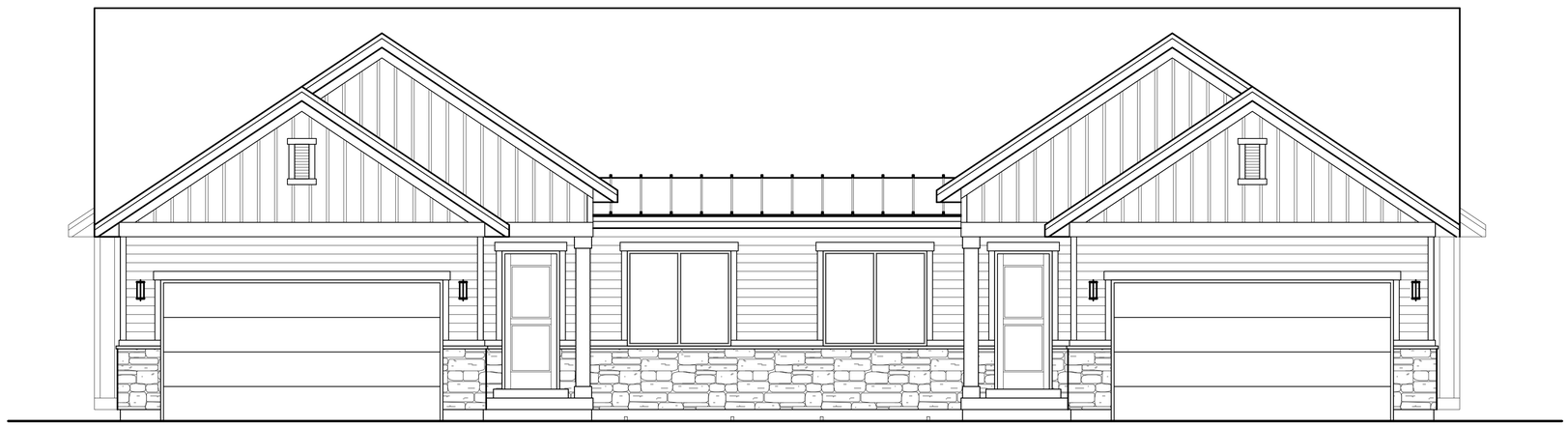

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BRINKERHOFF DUPLEX
387 NORTH 300 EAST
PAYSON, UTAH

ARCHITECTURAL DESIGN

A0.1	SITE PLAN – LANDSCAPE PLAN	A7.1	ROOF PLAN
A1.0	BASEMENT LEVEL FLOOR PLAN	A8.1	GENERAL NOTES
A1.1	MAIN LEVEL FLOOR PLAN		
A2.1	EXTERIOR ELEVATIONS		
A2.2	EXTERIOR ELEVATIONS		
A3.1	CROSS SECTIONS	E1.0	BASEMENT LEVEL ELECTRICAL PLAN
A3.2	CROSS SECTIONS	E1.1	MAIN LEVEL ELECTRICAL PLAN
A3.3	SECTION DETAILS		
A3.3	DETAILS		

STRUCTURAL ENGINEERING

SN1	GENERAL STRUCTURAL NOTES	SD.1	STRUCTURAL DETAILS
S0.0	FOOTING & FOUNDATION PLAN	SD.2	STRUCTURAL DETAILS
S1.0	MAIN FLOOR FRAMING PLAN		
S1.1	MAIN FLOOR SHEAR WALL PLAN		
S3.0	ROOF FRAMING PLAN		

BRINKERHOFF DUPLEX

387 NORTH 300 EAST PAYSON, UTAH

ARCHITECTURAL DESIGN	CONTRACTOR	STRUCTURAL ENGINEER
URBAN INDUSTRIAL OREM,UTAH	UPDATE	ACUTE ENGINEERING OREM,UTAH

URBAN INDUSTRIAL

REVISIONS

PLAN DATE
JULY 2021

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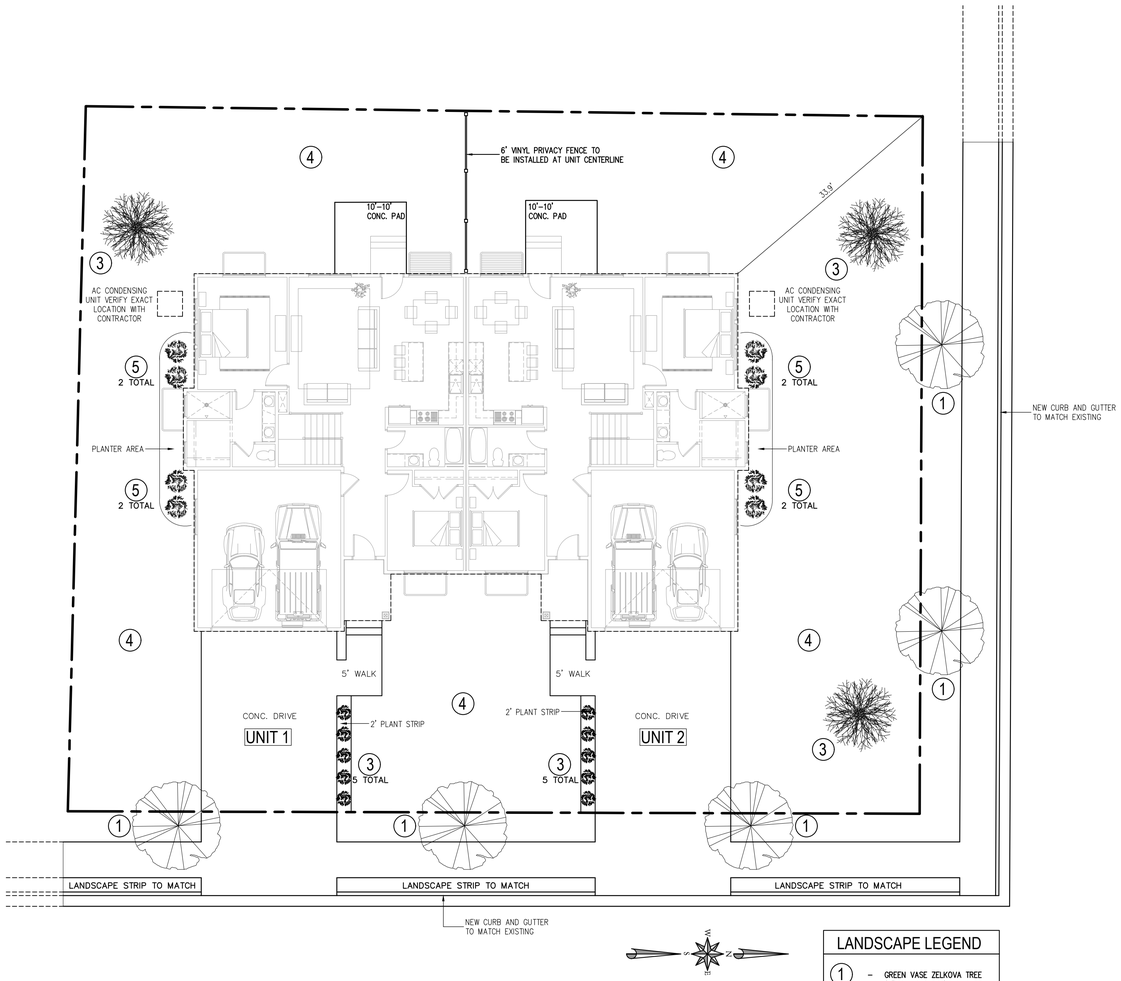
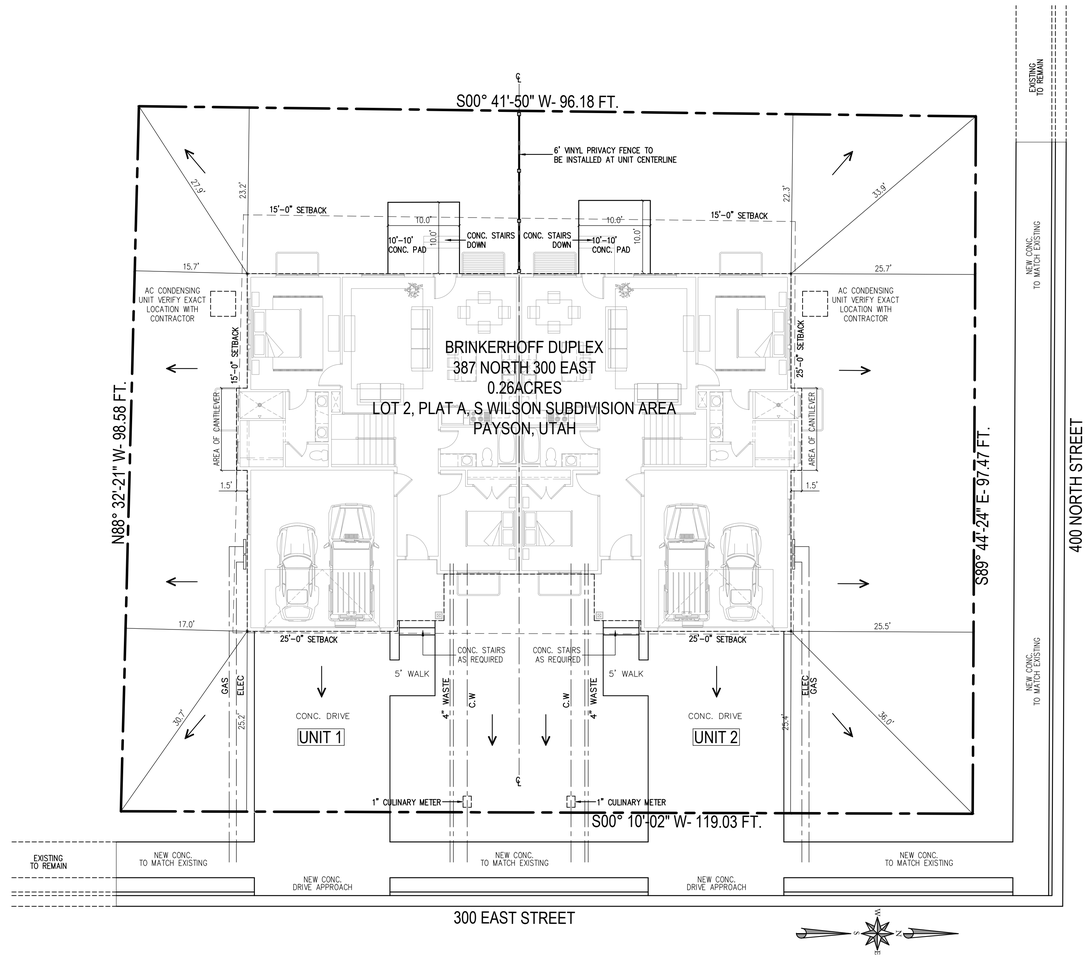


LANDSCAPE LEGEND

1. GREEN VASE ZELKOVA TREE (2" CALIPER MIN.)
2. WINTER GEM BOXWOOD (5 GALLON MIN.)
3. PRAIRIFIRE CRABAPPLE TREE (2" CALIPER MIN.)
4. PLANTED GRASS AREA
5. ROSE GLOW BARBERRY SHRUB (5 GALLON MIN.)

1 LANDSCAPE PLAN

SCALE:1" = 10'-0"



= SLOPE GRADE AWAY FROM RESIDENCE 5% FOR A MIN. OF 10 FT.

NOTE: UTILITIES ARE SCHEMATIC ONLY. VERIFY EXACT LOCATION ON SITE AND WITH CITY APPROVED CIVIL PLANS.

NOTE: VERIFY ALL BUILDING SETBACKS WITH CITY APPROVED CIVIL PLANS.

REQUIRED SETBACKS:

FRONT: 19'-0" FROM BACK OF CURB – HOUSE
20'-0" FROM BACK OF SIDEWALK – GARAGE

SIDES: 7'-6" FROM PROPERTY LINE

REAR: 10'-0" FROM PROPERTY LINE

NOTE: PI LATERALS AND METERS TO BE INSTALLED FOR LANDSCAPING

1 SITE PLAN

SCALE:1" = 10'-0"

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SITE PLAN

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PLAN DATE
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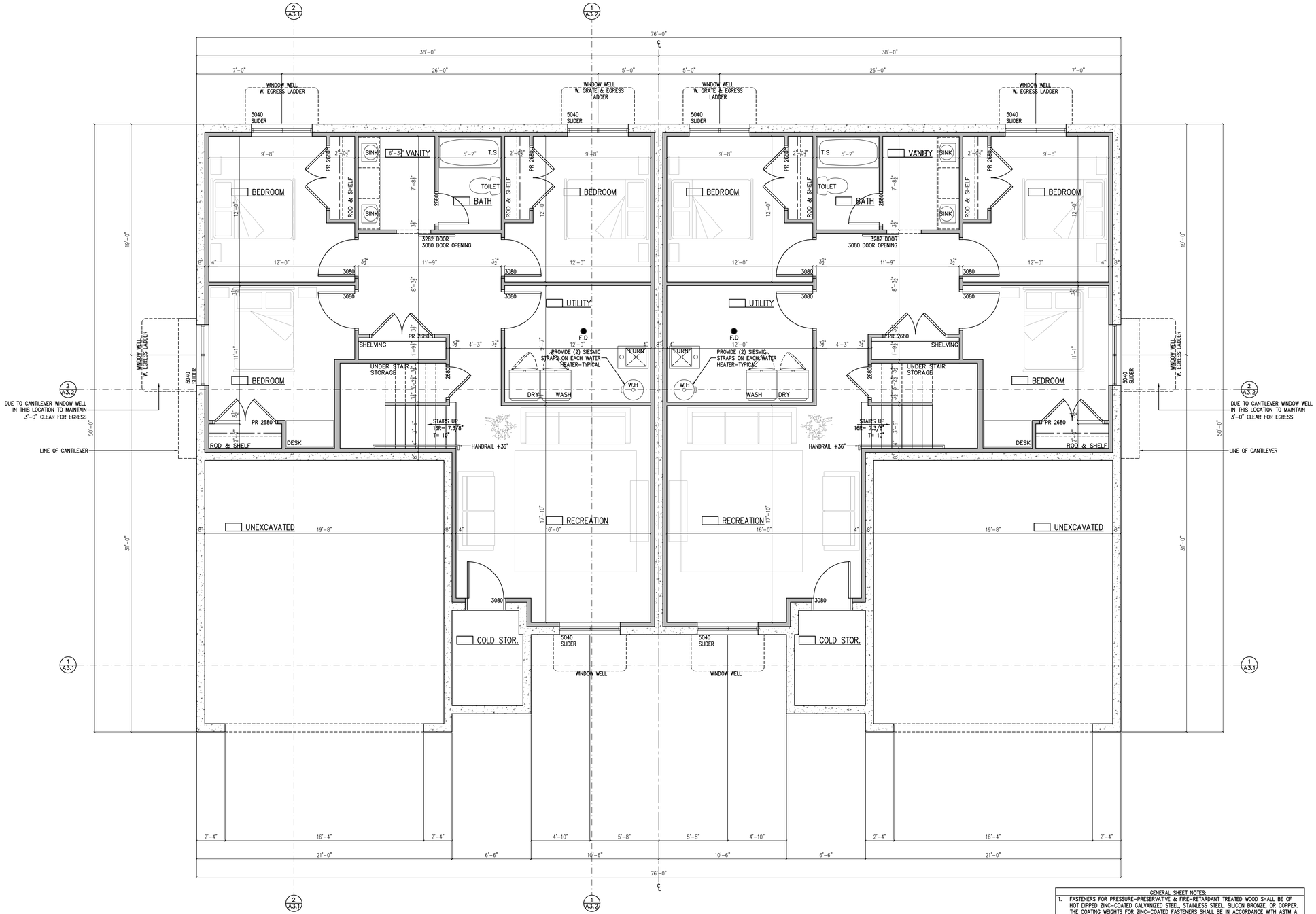
SHEET NUMBER
A0.1



GENERAL SHEET NOTES:

1. FASTENERS FOR PRESSURE-PRESERVATIVE & FIRE-RETARDANT TREATED WOOD SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE, OR COPPER. THE COATING WEIGHTS FOR ZINC-COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A 153.
2. A 6 MIL. POLYETHYLENE OR APPROVED VAPOR RETARDER WITH JOINTS LAPPED NOT LESS THAT 6 INCHES SHALL BE PLACED BETWEEN THE CONCRETE FLOOR SLAB & THE BASE COURSE OR THE PREPARED SUB GRADE WHERE NO BASE COURSE EXISTS. – IRC R506.2.3

1 UNIT 1 BASEMENT LEVEL FLOOR PLAN

BASEMENT LEVEL: 1,292 SQ.FT.
COLD STORAGE: 59 SQ.FT.
SCALE:1/4" = 1'-0"

2 UNIT 2 BASEMENT LEVEL FLOOR PLAN

BASEMENT LEVEL: 1,292 SQ.FT.
COLD STORAGE: 59 SQ.FT.
SCALE:1/4" = 1'-0"

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BASEMENT LEVEL FLOOR PLAN

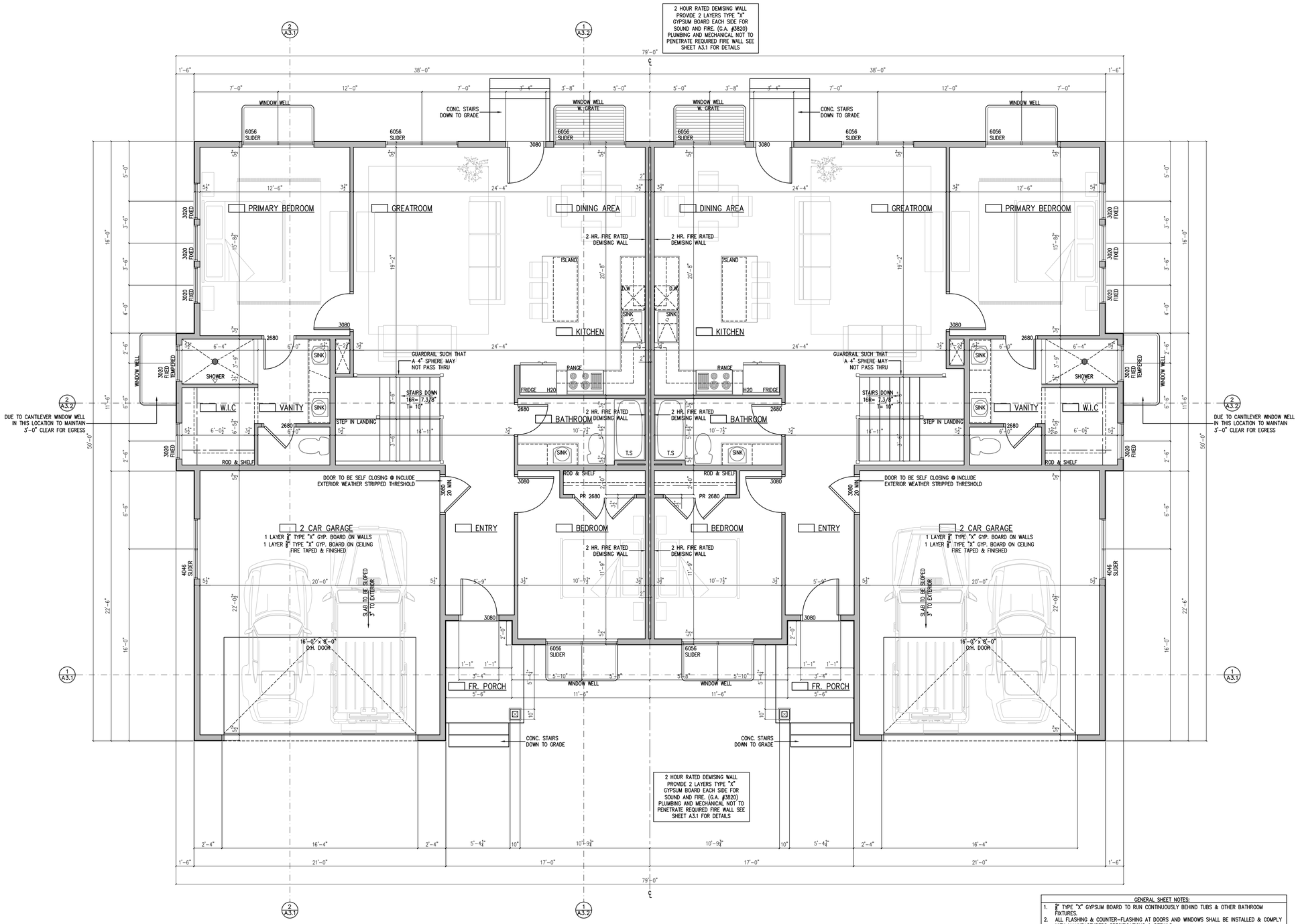
BRINKERHOFF DUPLEX

387 NORTH 300 EAST
PAYSON, UTAH

REVISIONS

PLAN DATE
JULY 2021

SHEET NUMBER
A1.0



GENERAL SHEET NOTES:

1. 5/8" TYPE "X" GYPSUM BOARD TO RUN CONTINUOUSLY BEHIND TUBS & OTHER BATHROOM FIXTURES.
2. ALL FLASHING & COUNTER-FLASHING AT DOORS AND WINDOWS SHALL BE INSTALLED & COMPLY WITH MANUFACTURERS SPECIFICATIONS & DETAILS.
3. AUTOMATIC GARAGE DOOR OPENERS IF PROVIDED SHALL COMPLY WITH U.L. 325-R309.6
4. PENETRATIONS ARE NOT ALLOWED IN ROOF WITHIN 4'-0" OF FIRE RATED DEMISING WALL.
5. FOR ALL COLUMN LOCATIONS PLEASE SEE STRUCTURAL DRAWINGS.
6. DRYER IF PROVIDED SHALL BE CAPABLE OF PROVIDING PROPER C.F.M OR BE PROVIDED WITH AN INLINE BOOSTER FAN.
7. DRYER IF PROVIDED SHALL BE ACCESSIBLE AND MEET U.L. 705 REQUIREMENTS.
8. EXTERIOR WOOD FRAMING SHALL NOT BE CLOSER THAN 8" FROM GRADE UNLESS SEPARATED BY CONC. AT LEAST 3" IN THICKNESS WITH AN IMPERVIOUS MEMBRANE INSTALLED BETWEEN GRADE AND CONCRETE.

1 UNIT 1 MAIN LEVEL FLOOR PLAN

MAIN LEVEL: 1,303 SQ.FT.
GARAGE: 467 SQ.FT.
SCALE:1/4" = 1'-0"

2 UNIT 2 MAIN LEVEL FLOOR PLAN

MAIN LEVEL: 1,303 SQ.FT.
GARAGE: 467 SQ.FT.
SCALE:1/4" = 1'-0"

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MAIN LEVEL FLOOR PLAN

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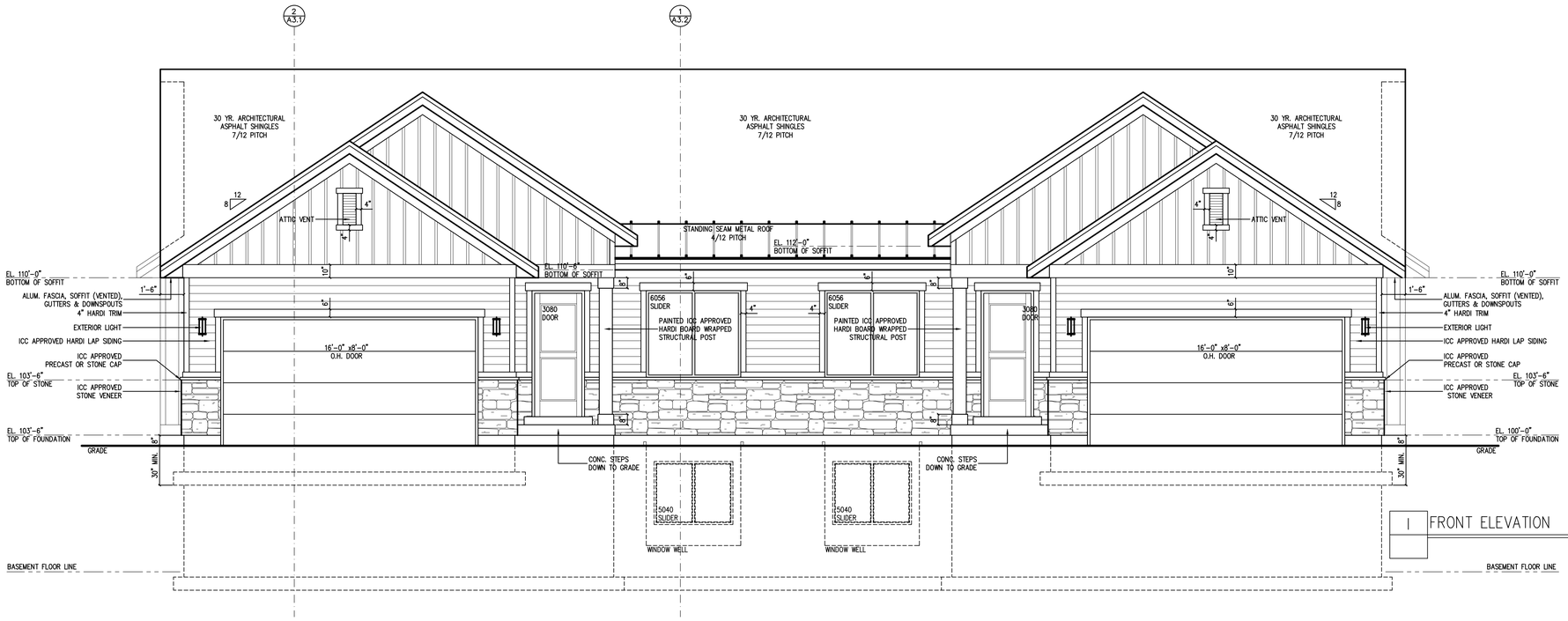
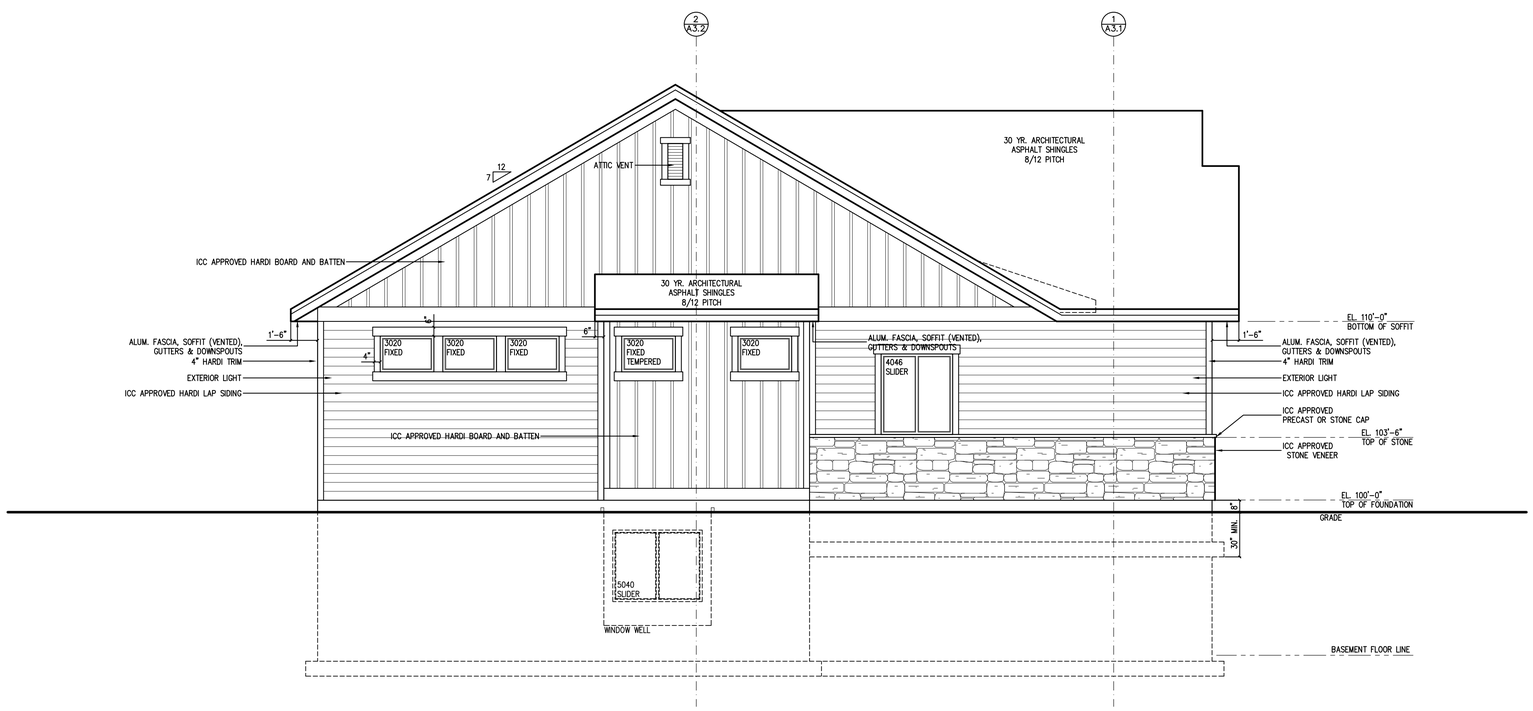
A1.1



1 FRONT ELEVATION

SCALE:1/4" = 1'-0"



2 LEFT SIDE ELEVATION

SCALE:1/4" = 1'-0"

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EXTERIOR ELEVATIONS

BRINKERHOFF DUPLEX

387 NORTH 300 EAST
PAYSON, UTAH

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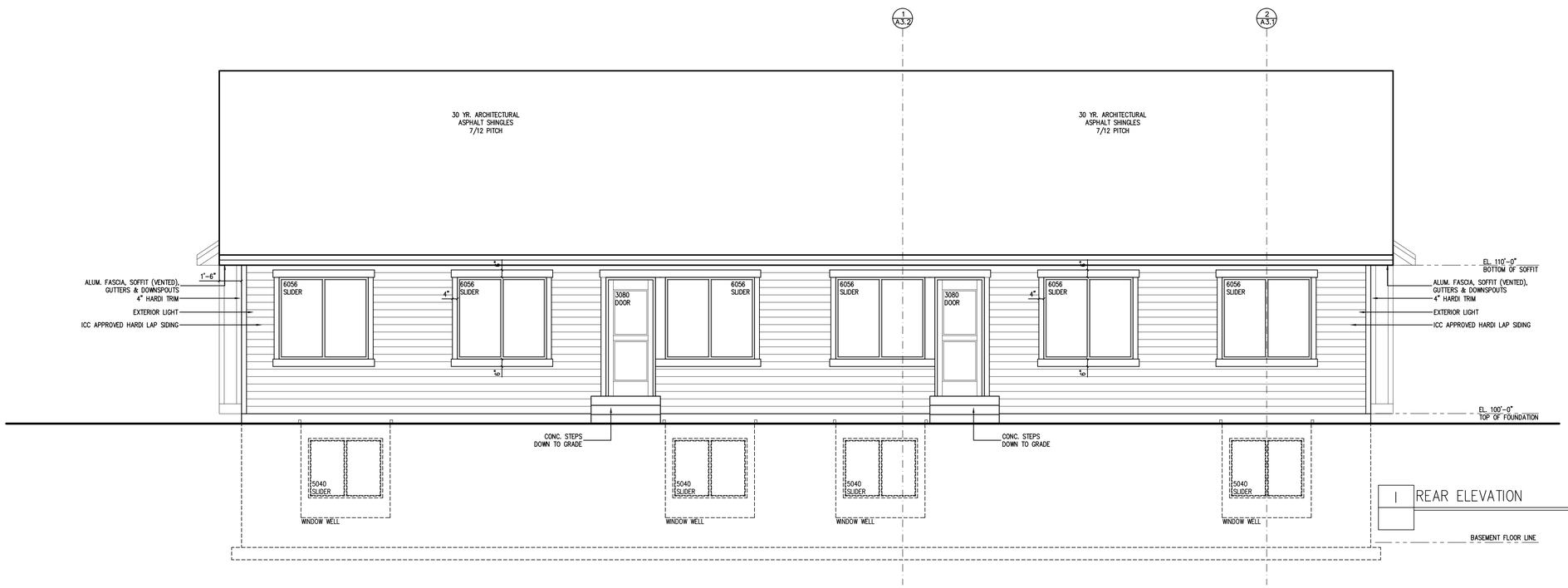
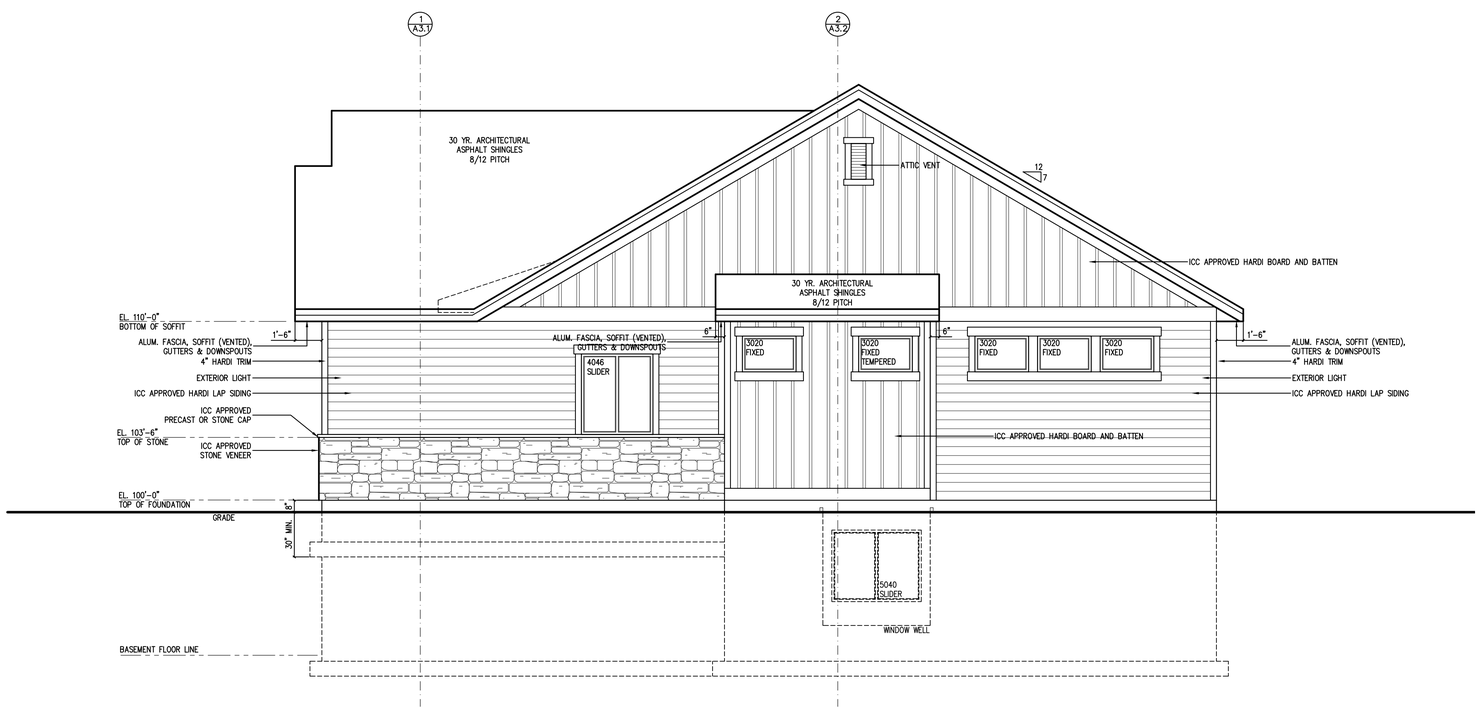
SHEET NUMBER
A2.1



1 REAR ELEVATION

SCALE:1/4" = 1'-0"



2 RIGHT SIDE ELEVATION

SCALE:1/4" = 1'-0"

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EXTERIOR ELEVATIONS

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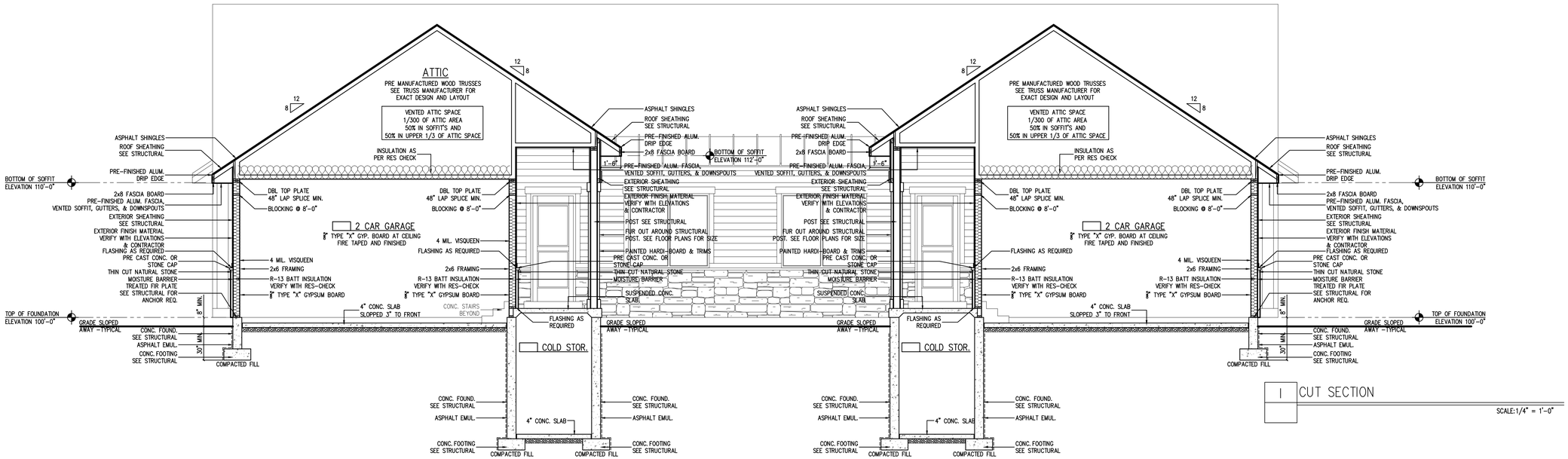
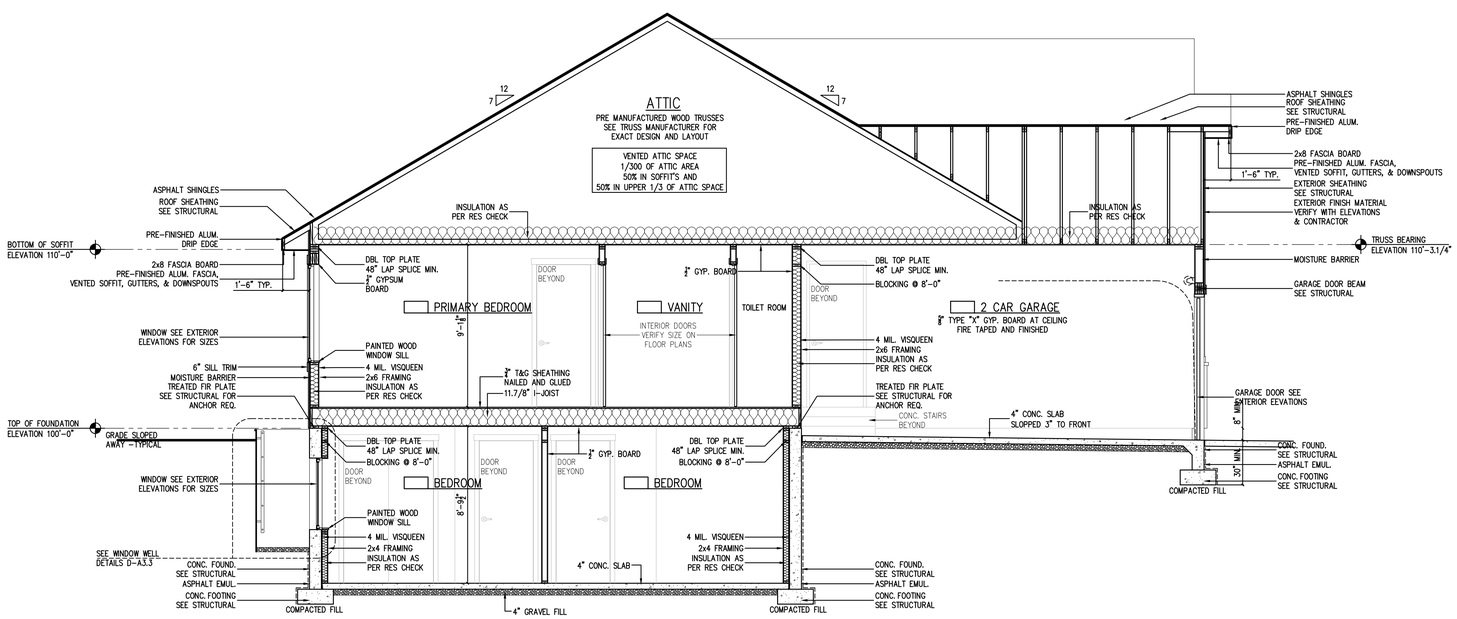
A2.2



1 CUT SECTION

SCALE:1/4" = 1'-0"



2 CUT SECTION

SCALE:1/4" = 1'-0"

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CUT SECTIONS

BRINKERHOFF DUPLEX

387 NORTH 300 EAST
PAYSON, UTAH

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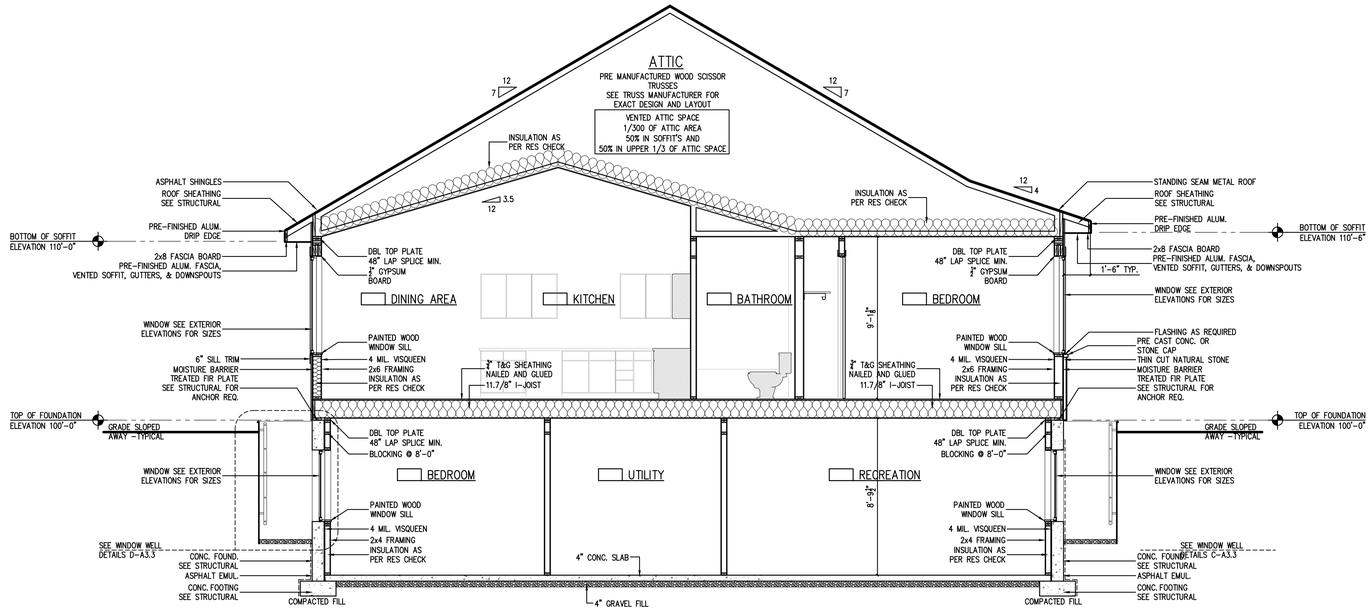
A3.1



1 CUT SECTION

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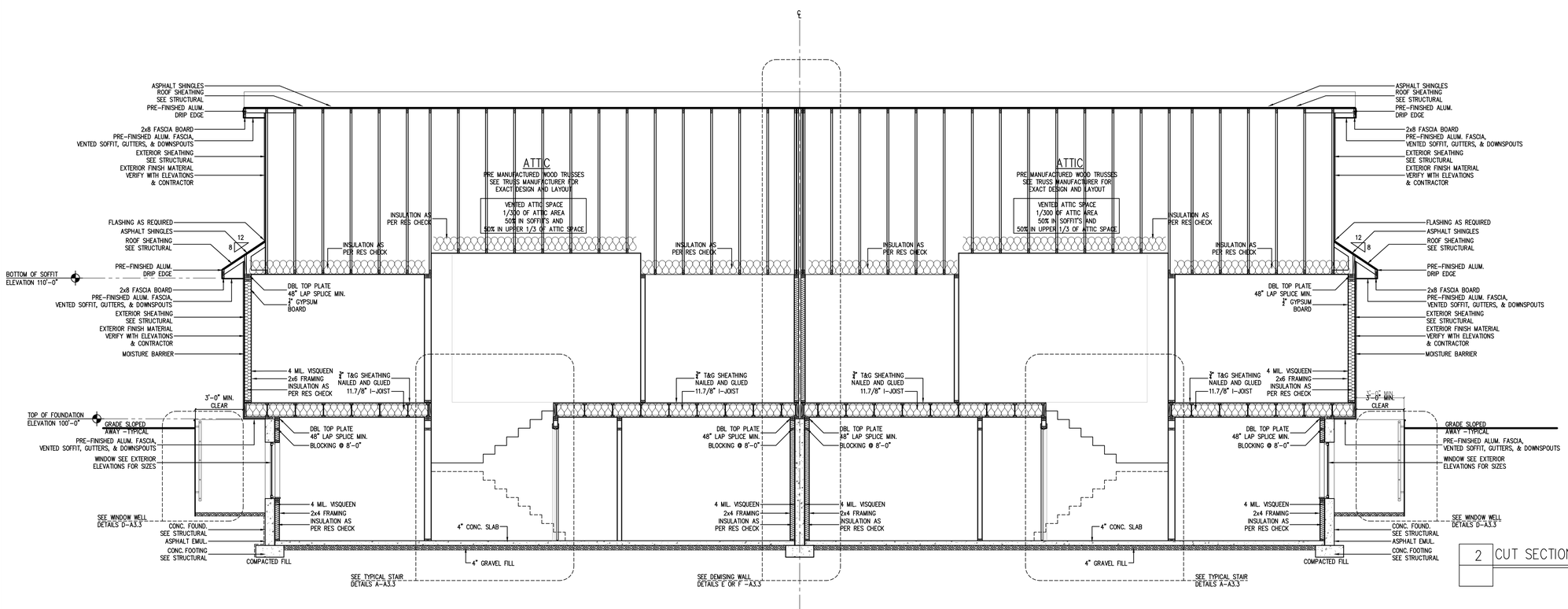

2 CUT SECTION

SCALE:1/4" = 1'-0"

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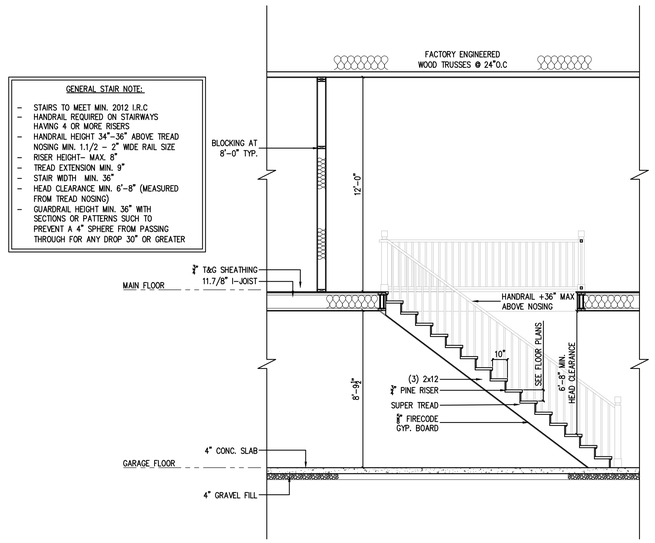
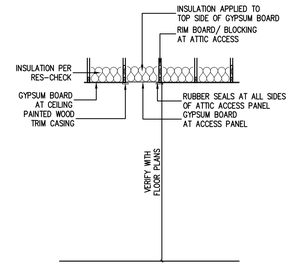


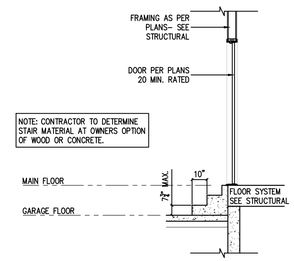
A TYPICAL STAIR DETAILS

SCALE:1/4" = 1'-0"



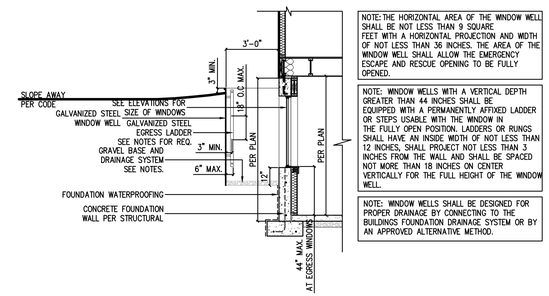
B TYPICAL ATTIC ACCESS DETAILS

SCALE:1/4" = 1'-0"



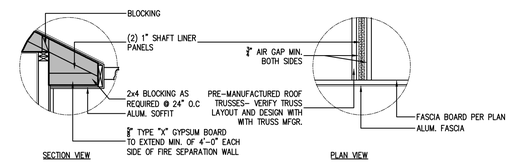
C TYPICAL CONC. STAIR DETAILS

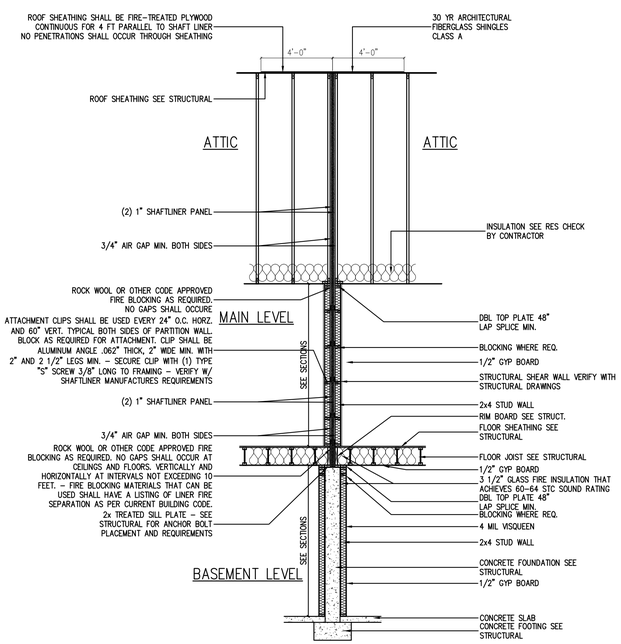
SCALE:1/4" = 1'-0"



D TYPICAL WINDOW WELL DETAILS

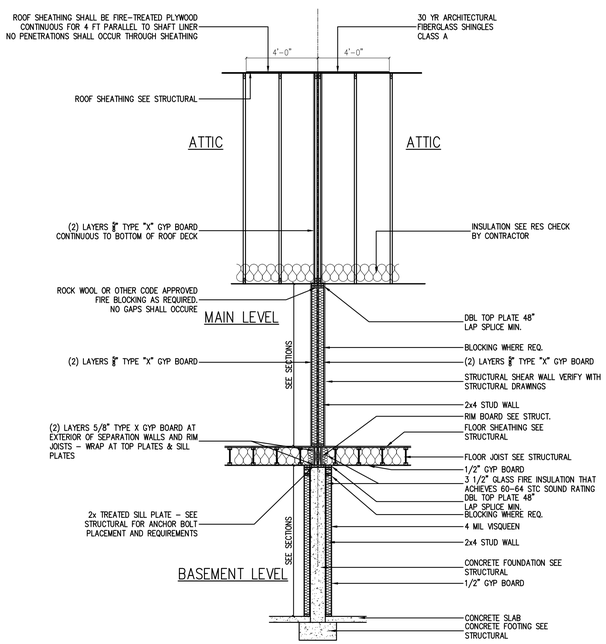
SCALE:1/4" = 1'-0"





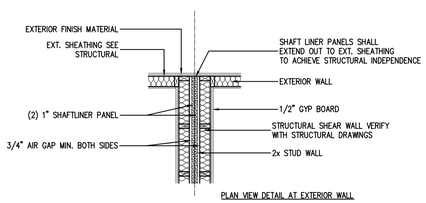
E SHAFT LINER DEMISING WALL

OPTION A — SCALE:1/4" = 1'-0"



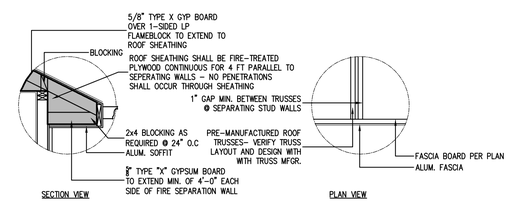
F SHAFT LINER DEMISING WALL

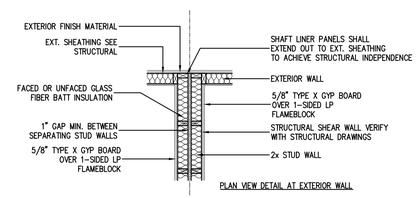
OPTION B — SCALE:1/4" = 1'-0"



G SHAFT LINER ENLARGED DETAILS

SCALE:1/2" = 1'-0"





H 2 HR. RATED WALL ENLARGED DETAILS

SCALE:1/2" = 1'-0"

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CUT SECTIONS

BRINKERHOFF DUPLEX
387 NORTH 300 EAST
PAYSON, UTAH

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A3.3

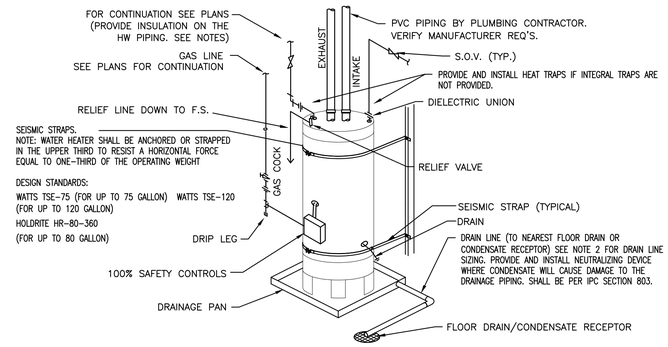

TABLE C403.2.10 PIPING INSULATION IECC 2015

FLUID OPERATING TEMPERATURE RANGE AND USAGE (F°)	INSULATION CONDUCTIVITY		NOMINAL PIPE SIZE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTUxIN./(HxFT2xF°)	MEAN RATING TEMPERATURE, F°	<1	1 TO <1 ½	1 ½ TO < 4	4 TO < 8	> 8
>350	0.32 – 0.34	250	4.5	5.0	5.0	5.0	5.0
251 – 350	0.29 – 0.32	200	3.0	4.0	4.5	4.5	4.5
201 – 250	0.27 – 0.30	150	2.5	2.5	2.5	2.5	2.5
141 – 200	0.25 – 0.29	125	1.5	1.5	2.0	2.0	2.0
105 – 140	0.21 – 0.28	100	1.0	1.0	1.5	1.5	1.5
40–60	0.21 – 0.27	75	0.5	0.5	1.0	1.0	1.0
<40	0.20 – 0.26	50	0.5	1.0	1.0	1.0	1.5

NOTES:

1. PROVIDE AND INSTALL 2 SEISMIC STRAPS WITH TENSIONING BUCKLES ANCHORED TO STRUCTURE. INSTALL PER MANUFACTURERS REQUIREMENTS.
2. PROVIDE AND INSTALL PAN W/DRAIN WHERE REQUIRED, OR WHERE LEAK DAMAGE MAY OCCUR. DRAIN LINE SHALL BE 1 1/2" DIAMETER FOR PROJECTS LOCATED IN UTAH, 3/4" DIAMETER FOR OTHER PROJECT LOCATIONS.
3. PROVIDE HEAT TRAPS ON SUPPLY AND DISCHARGE PIPES.
4. THE FIRST 8 FEET OF PIPING IN NONCIRCULATING SYSTEMS SERVED BY EQUIPMENT WITHOUT INTEGRAL HEAT TRAPS SHALL BE INSULATED AS PER TABLE 403.2.10. IECC 2015.
5. FOR AUTOMATIC CIRCULATING HOT WATER SYSTEMS, PIPING SHALL BE INSULATED AS PER TABLE 403.2.10. IECC 2015.
6. WATER HEATER SHALL MEET UTAH NITROGEN OXIDE EMISSION LIMITS (HB0037): 10 NANOGRAMS PER JOULE OF HEAT OUTPUT OR 15 PPM, CORRECTED TO 3% OXYGEN FOR INPUTS LESS THAN OR EQUAL TO 75,000 BTU. 14 NANOGRAMS PER JOULE OF HEAT OUTPUT OR 20 PPM, CORRECTED TO 3% OXYGEN FOR INPUTS GREATER THAN 75,000 BTU AND LESS THAN 2,000,000 BTU.

1 TYPICAL DIRECT POWER VENT GAS WATER HEATER DETAIL

SCALE: N.T.S

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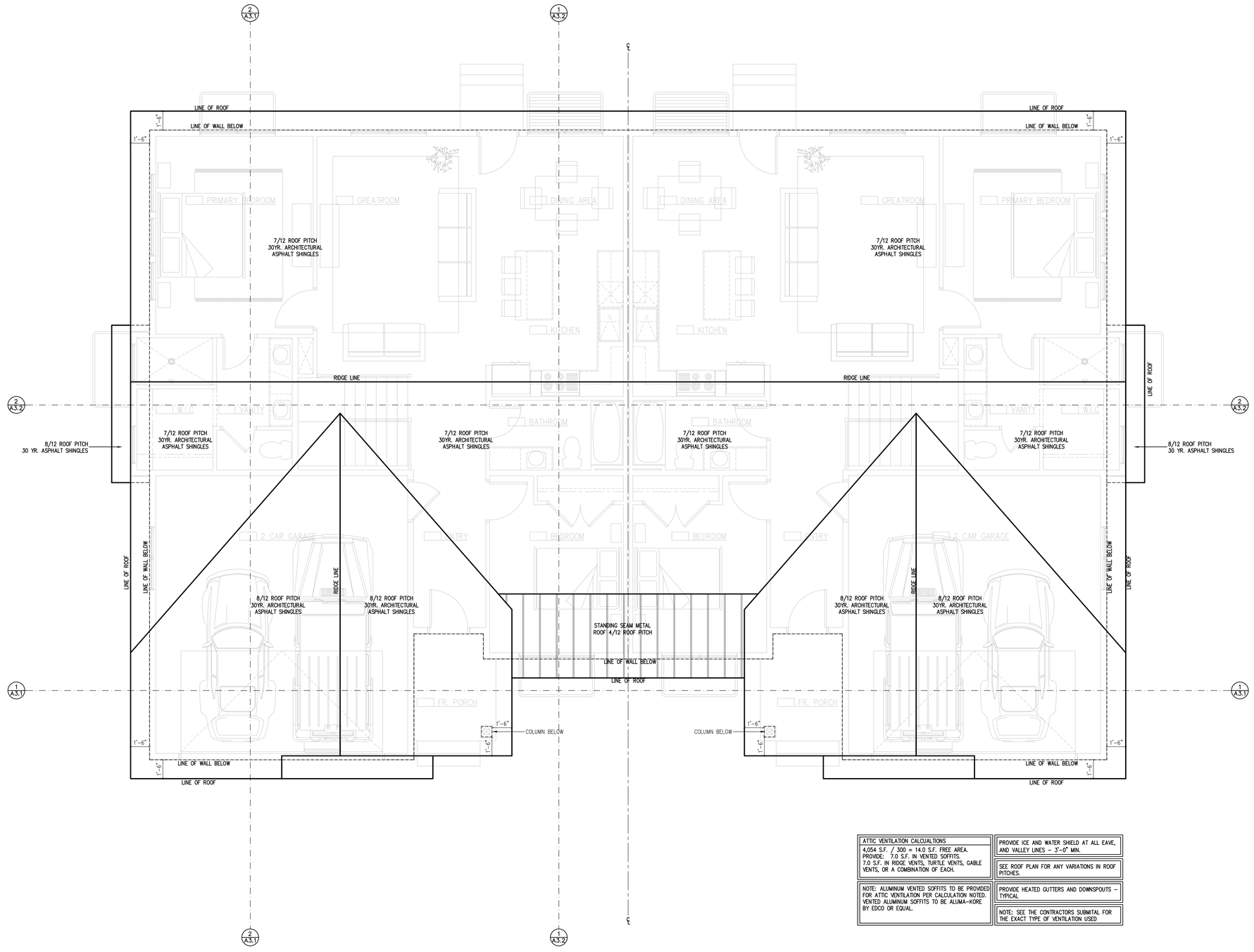
SHEET NUMBER
A3.4



ATTIC VENTILATION CALCUALTIONS
4,054 S.F. / 300 = 14.0 S.F. FREE AREA. PROVIDE: 7.0 S.F. IN VENTED SOFFITS. 7.0 S.F. IN RIDGE VENTS, TURTLE VENTS, GABLE VENTS, OR A COMBINATION OF EACH.
NOTE: ALUMINUM VENTED SOFFITS TO BE PROVIDED FOR ATTIC VENTILATION PER CALCULATION NOTED. VENTED ALUMINUM SOFFITS TO BE ALUMA-KORE BY EDCO OR EQUAL.

PROVIDE ICE AND WATER SHIELD AT ALL EAVE, AND VALLEY LINES – 3'-0" MIN.
SEE ROOF PLAN FOR ANY VARIATIONS IN ROOF PITCHES.
PROVIDE HEATED GUTTERS AND DOWNSPOUTS – TYPICAL.
NOTE: SEE THE CONTRACTORS SUBMITAL FOR THE EXACT TYPE OF VENTILATION USED

1 ROOF PLAN

SCALE: 1/4" = 1'-0"

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ROOF PLAN

BRINKERHOFF DUPLEX

387 NORTH 300 EAST
PAYSON, UTAH

REVISIONS

PLAN DATE
JULY 2021

SHEET NUMBER
A7.1

SITE PLAN

1. Building location must comply with all city zoning regulations.
2. "Height of Building" means the vertical distance between a reference datum and the highest part of the building excluding roof structures such as chimneys, penthouses. towers and steeples. The reference datum shall be selected by one of the following:
3. Building walls closer than 5 feet to property line shall be of one-hour fire resistive construction without doors or windows. IRC 2015 Section 302
4. Eaves, overhangs and projections shall conform to IRC 2015 Section 302
5. Parapets or special roof construction is required on common walls for townhouses. See R302 for requirements.
6. Building cannot be located on any easement or right of way.
7. Ground slopes may not exceed 2 horizontal to 1 vertical unless retained in an approved manner. IBC Appendix J
8. Footings of structures located adjacent to slopes steeper than 3 horizontal to 1 vertical must be set back from the slope at least 1/3 the height of the slope if at the top, and the height of the slope at the bottom. R403.1.7
9. Site shall be graded such that the ground slopes away from the foundation dropping at least 6 inches within 10 feet of the foundation. R401.3
10. Any retaining walls over 4 feet in height from the bottom of the footing to the top of the wall shall be of an approved design with engineer's details provided.
11. Cuts or fills are not permitted within 2 feet of the property line. IBC Appendix J.
12. Drainage from the property may not exceed that which existed prior to development. Paved areas and roof drains may need to be supplied with appropriate sumps or other means of mitigating their flow. IBC Appendix J.
13. The owner/contractor shall verify with the city as to the need of a Soils observation report from a licsensed soils engineer. A recommendation to proceed may be needed from the engineer prior to approval of a footing inspection. Foundation drains will be required, if indicated in the soils report.
14. Water meter cannot be located in the driveway, sidewalk or similar area. Meter must be placed in landscaping area. Sewer line cannot be located under the driveway.
15. Homes located in potential flood hazard areas will be required to have elevation certificates prior to construction and after completion. R106.1.4
16. Addresses shall be provided which are plainly visible and legible from the street. R319.1

FLOOR PLANS

1. Fire separation between house and garage: The garage shall be separated from the residence and its attic area by not less than 1/2" gypsum board applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable spaces above by not less than 5/8" type 'X' gypsum board. Where the separation is a floor/ceiling assembly, the structture supporting the separation shall also be protected by not less than 1/2" gypsum board. IRC R302.6
2. Any door between the house and garage shall be a tight fitting, solid wood or hollow metal door, 1-3/8" thick or a 20 minute labeled with closer - see the 2015 IRC R302.5.1
3. Duct penetrations shall be by minimum 26 gauge sheet metal, no openings into the garage are permitted. IRC 302.5.2
4. Under no circumstances shall a garage have any openings into a room used for sleeping purposes.

STAIRWAYS

1. Stair treads shall have a maximum RISE of 7.75" and a minimum rise of 4". The minimum RUN shall be 10". Length of tread is measured from nose to nose. The largest tread run or riser within any flight of stairs shall not exceed the smallest by more than 3/8". Stairs shall meet all other requirements of the R311.7.5.1
2. Winder treads shall have a minimum tread depth of 10 inches measured as above at a point 12 inches from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches at any point. Within any flight of stairs, the greatest winder tread depth at the 12 inch walk line shall not exceed the smallest by more than 3/8 inch. R311.7.5.2.1
3. Stairways shall not be less than 36" in width.
4. Every stairway and ramp shall have a landing with a dimension of at least exceed 36" measured in the direction of travel.
5. Stairways with 4 or more risers shall have at least one handrail. See IRC 2015 Section 311.7.8
6. Stairs shall have a headroom clearance of not less than 6'-8". Clearance is measured vertically from a line along the tread nosing to the soffit above at all points. R311.7.2
7. Enclosed space under stairs shall have the walls and soffit protected on the enclosed side with 1/2" sheetrock. R302.7
8. 36" high guards shall be provided on porches, balconies and raised floor surfaces located more than 30" above the floor or grade below. Open sides of stairs with a total rise of 30" above the floor or grade below shall have guards at least 34" high.
9. Guards will have an ornamental pattern such that a sphere 4" in diameter cannot pass through. The triangular space created by the stair and a bottom rail may be constructed so a 6" sphere will not pass through.
10. Ramps slope not to exceed 1 unit vertical in 12 units horizontal. IRC 2015 section 311.8
11. Guardrail connection details shall be adequate to support 200 lbs. Of horizontal force per lineal foot acting at a right angle to the top rail.
12. Handrails shall comply with IRC 311.7.8

ARCHITECTURE & PLANS

1. These drawings or any parts thereof, as instruments of service, remain the Property of Urban Industrial and may not be reproduced or used on other work without written consent.
2. Square footages and dimensions are subject to change to comply with city ordinances, site and/or craftmanship.
3. Verify all dimensions, conditions, and measurements on site prior to construction.

ROOM DIMENSIONS & MISC.

1. Ceiling heights of all habitable rooms (hallways, bathrooms, toilet rooms, laundry rooms, and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet. IRC 305.1 - see same section for exceptions.
2. Habitable rooms shall have a floor area of not less than 70 sq.ft. No portion of a room may be used to compute minimum area where the ceiling is less than 5'. R304
3. Habitable rooms other than kitchens shall be not less than 7' in any dimension. R304.3
4. There shall be a clear passageway of not less than 3' between counter fronts and appliances or walls.

EXITING FACILITIES

1. Houses shall have at least one 3'-0" x 6'-8" swinging type exit door to the exterior. Any lock shall be openable from the inside without a key. R311.2
2. Landings are required on both sides of exterir doors. Door may open at a landing that is not more than 7 3/4" lower than the floor level, provided the door does not swing over the landing. Landing shall be at least 36" deep. R311.3
3. Hallways shall be not less than 36" wide. R311.6
4. Hallways shall have a clear ceiling height of not less than 7' measured to the lowest projection. R305.1
5. Every sleeping room and basement shall have at least one operable, exterior window or door for emergency escape or rescue. The units shall be operable from the inside to provide a full clear opening without the use of tools. ALL of the following apply. R310
   - 5.1. Minimum net clear opening of 5.7 sq. ft. (opening at grade level floor may be 5.0 sq. ft.)
   - 5.2. Minimum net clear opening height dimension of 24"
   - 5.3. Minimum net clear opening width dimension of 20"
   - 5.4. Maximum finished sill height of 44" above the floor. All doors or windows provided for emergency escape or rescue shall open directly to a street, alley, yard, or court.
   - 5.5. Window wells for emergency escape and rescue windows shall have a net clear opening of 9 sq. ft. with a minimum dimension of 36". Window wells deeper than 44" shall have a permanent ladder accessible from the window when fully open. Ladders shall be at least 12" wide and 3" from the well with rungs no more than 18" apart.
   - 5.6. Emergency escape windows are allowed to be installed under decks and porches provided the location of the deck allows the emergency escape window to be fully opened and provides a path not less than 36 inches in height to a court or yard. R310.2.4
   - 5.7. In dwelling units where the opening of an operable window is located more than 72 inches above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches above the finished floor of the room in which the window is located. Glazing between the floor and 24" shall be fixed or have openings through which a 4 inch diameter sphere cannot pass. R312.2.1 Exceptions
     - 5.7.1. Windows whose openings will not allow a 4 inch diameter sphere to pass through the opening when the opening is in its largest opened position.
     - 5.7.2. Openings that are provided with window guards that comply with ASTM F2006 or F2090

LIGHT VENTILATION & SANITATION

1. All habitable rooms (bedrooms, living rooms, dining rooms, family rooms, etc.) shall be provided with natural light from windows with an area of not less than 8% or artificial light producing 6 ft candles throughout. R303.1
2. All habitable rooms shall be provided with natural ventilation by means of exterior openings with an area of not less than 4% of the floor area of each room. In lieu of natural ventilation, habitable rooms may be provided with mechanical ventilation capable of 0.35 air changes per hour with 15 cfm of outside air per occupant. R303.1
3. For the purpose of light and ventilation, a room may be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open, unobstructed and provides an opening of not less than 1/1Oth of the floor area of the interior room or 25 sq.ft. which ever is greater. R303.2
4. The operable window area in bathrooms, water closet compartments, and other similar rooms shall not be less than 1-1/2 sq ft unless a mechanical ventilation system capable of producing 50 cfm for intermittent operation or 20 cfm for continuous operation is provided. Ventilation air shall be exhausted directly to the outside. R303.3 (garage level)
5. The house shall have at least one water closet, lavatory, bathtub or shower and kitchen sink equipped with hot and cold running water necessary for normal operation. R306
6. Enclosed attics and enclosed rafter spaces shall have ventilation for each separate space by ventilating openings protected against rain or snow. Openings shall be covered with a 1/8" to 1/4" mesh. The net free ventilating area shall be not less than 1/150 of the area of the space ventilated, or 1/300 if 50% to 80% is located in the upper 3' of the attic and the remainder is provided by soffit vents. Where soffit vents are used, an insulation dam must be provided between every truss and/or rafter. Attic ventilation may also be 1/300 when a vapor barrier is used at the warm side of the ceiling. R806
7. An attic access 22"x 30" shall be provided at roof/ceiling areas and shall be located in a corridor, hallway, of other readily accessible location. There shall be 30" of headroom over the opening. If there is less than 30" maximum height in the attic, access need not be provided. R807

GLAZING

1. Glass in doors shall be safety glazed. R308.4
2. Glazing adjacent to a door within a 24" arc of either door edge when closed, must be safety glazed if the bottom edge is within 60" of the floor or walking surface. R308.4.2
3. Glazing panels larger than 9 sq. ft. located less than 18" above & within 36" horizontally of a floor or walking surface shall be safety glazed. In lieu of safety glazing, glass may be protected by a horizontal member 1-1/2" in width, capable of resisting 50 lbs. per lineal foot, located between 34" and 38" above walking surface. R308.4.3
4. Glazing in shower and bathtub rooms within 60" above the walking surface, including any walls, windows in walls and doors shall be safety glazed. R308.4.5
5. Glazing within 5' horizontally and 60" vertically of an indoor or outdoor pool or spa deck area shall be safety glazed. R308.4.5
6. Glazing at walls enclosing stairs and landings (and for 5' beyond the top or bottom of the stair) shall be safety glazed if less than 60" above the walking surface. R308.4.7
7. Glass in railings shall be tempered or laminated. R308.4.4
8. Safety glazing material shall be permanently labeled. R308.1
9. All Exterior doors and windows shall comply with R609.
10. In dwelling units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4 inch (102 mm) diameter sphere where such openings are located within 24 inches (610 mm) of the finished floor. R312.2.1 (Window Sills) Exceptions:
    - 10.1. Windows whose openings will not allow a 4 inch diameter sphere to pass through the opening when the opening is in its largest opened position.
    - 10.2. Openings that are provided with window fall prevention devices that comply with Section R312.2.1 & 312.2.2.
    - 10.3. Openings that are provided with fall prevention devices that comply with ASTM F2090.
    - 10.4. Windows that are provided with opening limiting devices that comply with Section R312.2.2.

MASONRY

1. See IRC Section R606 for general masonry construction.
2. Wood members shall not be used to permanently support the load of any masonry or concrete except nonstructural floor or roof surfacing not more than 4" thick.
3. Brick and stone veneer are only permitted on the first floor above grade unless all provisions of the state amendment for additional bracing are met. Veneer shall be attached with corrosion resistant sheet metal ties 22 gao x 718" or 9 gao wire. Stud spacing shall be a maximum of 16" on center. Tie spacing shall be such that no more than 2 sq.ft. of wall is supported (16" on center both ways). A #9 ga. wire shall be provided as horizontal bed joint reinforcement to ties. Brick ties shall engage the #9 wire. R703
4. Stone units, 5" maximum thickness, may be applied with a 1" minimum grouted backing space which is reinforced by not less than 2"x 2" 16 gao galvanized wire mesh placed over waterproof paper backing and anchored directly to studs spaced no more than 16" on center. Mesh must be furred out from sheathing for embedment in grout. R703
5. Fireplace and Chimney:
   - 5.1. Masonry and concrete fireplaces: see R1001 & R1003
   - 5.2. Factory-built chimneys and fireplaces:
     - 5.2.1. Factory-built chimneys and fireplaces shall be listed by an approved testing agency and have an ICC ES approval number. They shall be installed in exact accordance with the terms of their listings and the manufacturer's instructions. Specific approval numbers and installation standards must be made available to the building inspector. R1004
     - 5.2.2. Fire blocking with non-combustible material is required at spaces between floors and ceilings through which chimneys pass. R1001.12
     - 5.2.3. Hearth extensions of listed factory built fireplaces shall conform to the conditions of listing and manufacturers installation instructions. R1003.19
   - 5.3. Fireplace chimneys shall extend at least 24" above the roof, any opening, or any part of the building within 10'. IRC 1001.1 (Table R1001.1)

ROOFING

1. Roofing materials must have an approval by an approved testing agency. Roof slope will determine the types of roofing that can be used. Roofing materials must be installed exactly as intended by the approval. Asphalt shingles on roofs less than 4/12 pitch must be over an approved water shield. Asphalt shingles cannot be used for slopes less than 2/12. R905.2.2
2. Ice and water shield shall be used at roof eaves form eave edge to 24" inside the exterior wall. R905.2.7
3. Step flashing shall be used where the roof meets a vertical surface. Counter flashing shall be installed at roof and wall junctures. R905.2.8

ENERGY ANALYSIS (MECH-CHECK)

1. An energy analysis should be attached to / or included with the plan when turned into the city.Harris Architecture does not provide this service, it must be provided by the Mechanical or Insulation Contractor.
2. A permanent certificate shall be posted on or in the electrical distribution panel listing the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation, (slab, basement wall, crawlspace wall and/or floor) and ducts outside the conditioned spaces; U-factors of windows, and solar heat gain coefficient of windows. The type and efficiency of heating, cooling and service water heating equipment shall also be listed. IRC N1101

CONSTRUCTION DETAILS

1. Any trusses to be used must have details provided for the specific house. R802.10. A truss layout indicating locations and orientation of all types of trusses must be provided from the truss manufacturer before a review can be completed. This information is necessary to accurately determine loading of structural members. Details are required for ALL types of trusses used (scissor, mono, girder, etc). Truss details must be provided from an approved fabricator. Homemade trusses are not acceptable unless designed, stamped, and inspected by a structural engineer. All details must indicate correct design snow loads for the area. Specific engineered design for connections of trusses to each other and other framing members which are supported by trusses must accompany the details. Details must be stamped by a Utah registered structural engineer.
2. Joist spans shall be in accordance with Table R502.3.1 or designed under IBC criteria.
3. Any product used shall be approved as an alternate by an approved Evaluation Report.
4. Stud wall construction shall be in accordance with R602.3.5
5. Subfloor and roof sheathing should be in accordance with R503 and R803
6. All weather exposed surfaces shall have a weather-resistive barrier to protect the walls under finish material. The most common type is a waterproof building paper or felt applied weatherboard fashion, lapped at least 2" at horizontal joints and at least 6" at vertical joints. "One coat" stuccos require 2 layers. R703.2
7. Stucco system shall be installed in accordance with R703.7 - All "systems" must be applied in strict compliance with the manufacturers' recommendations including requirements for self furring lath, flashing, corner treatment, expansion control joints, and drainage system.
8. Any component of a house which does not fall under the provisions for IRC conventional construction may require structural engineering. R301.1.3

MISCELLANEOUS

1. Laundry chute, 26ga sheet metal with locklapped joints. All openings to the enclosure shall be protected by not less than a self closing wood door 1.3/8" thick or equivalent.
2. A double wrap of rebar is required around all windows and over the tops of all doors in foundations.
3. Waterproofing is required for all foundations enclosing basements below finish grade. Wet Dry Mastic at cold joints or cracks.
4. Beam pockets in concrete or masonry walls shall be sized to allow a minimum 1/2" air space on the top, sides, and ends of the beam.
5. Provide a 1/2" minimum clearance between top plate of interior partitions and bottom chord of trusses (to ensure that loading will be as designed)
6. Provide a double top plate with a minimum 48" lap splice.
7. Design and details of factory built trusses must be signed by Utah licensed engineer, and are to be on job site for rough inspection.
8. Columns and posts located on concrete or masonry floors or decks exposed to the weather or to water splash or in basements, and which support permanent structures, shall be supported by concrete piers or metal pedestals projecting above floors unless approved wood of natural resistance to decay or related wood is used. the pedestals shall project at least 6" above exposed earth and at least 1" above such floors.
9. Use 9" flashing and caulk for windows, and to have windows installed as per manufactures specs.
10. Individual concrete or masonry piers shall project at least 6" above exposed ground unless the columns or posts which they support are of approved wood with natural resistance to decay or of treated wood.
11. Ridgeboards, hips and valley rafters shall be the same depth as the cut end of the supported rafters.
12. Platforms, catwalks, light, and GFI outlets are required for attic appliances, insulation shall be kept away from attic appliances.

PLUMBING & MECHANICAL

1. Each water closet shall be located in a clear space not less than 30" in width (15" from the center to any obstruction) and have a clear space in front of not less than 21". Figure 307.1
2. A shower compartment shall be 30" square min. with 24" clear space in front. R307.1
3. Cement, fiber-cement or glass mat gypsum backers installed in accordance with manufactures recommendations shall be used as backers for wall tile in tub and shower areas and wall panels in shower areas. 702.4.2
4. All appliances (water heater, boiler, etc.) which require pressure relief valves shall be provided with a full sized drain which shall extend from the valve to an indirect waste, such as a floor drain. All floor drains shall have trap primers or deep seal design. P2803 & P3201.2
5. Gas fired furnaces and water heaters shall not be located in a bedroom, bathroom, storage closet, toilet room or in any enclosed space with access only through such a room or space. G2406
6. Water heaters and heating appliances located in garages which generate a glow, spark or flame shall be installed with the pilots, burners or heating elements and switches at least 18" above the floor level. G2408.2
7. The water heater space and furnace room shall have an opening or door with a continuous passageway at least 2' in width and large enough to permit removal of the largest equipment in the room. M1305.1.2
8. It shall be possible to remove water heaters without first removing any permanent part of the structure. M1305.1
9. An unobstructed working space at least 30" deep and the height of the furnace or water heater (30" minimum) shall be provided along the entire front or firebox side of the furnace. M1305
10. The building shall comply with Chapter 17 of the IRC Section M1701.
11. A furnace shall not be installed in a closet or alcove less than 12" wider than the furnace and shall provide a minimum working space of 3" along the sides, back, and top. M1305.1.1
12. A furnace shall not be installed with a clearance of less than 6" along the combustion chamber opening side. M1305.1.1
13. The air removed by every mechanical exhaust system shall be discharged to the outdoors. Air shall not be exhausted into an attic, soffit, ridge vent or crawl space. IRC M1501.1
14. All dryer exhaust systems shall be compliant with M1502
15. Cooking appliances shall be tested, listed and labeled as household type for domestic use and installed per the manufacturer's instructions. G2447
16. A evaporative cooler must be located a minimum of 10' from all vents, flues and exhaust terminations. Flues may be extended 3' above intake opening of evaporative cooler in lieu of 10' horizontal separation.
17. Water closets shall have a maximum flow rate of 1.6 gallons per flush. Shower heads shall have a maximum flow rate of 2.5 gpm. P2903.2
18. Water hammer arresters are required with quick-closing valves (dish clothes washers). P2903.5
19. The hot water supplied to bathtubs and whirlpool tubs shall be limited to a maximum temperature of 120 F by a water temperature limiting device that conforms to ASSE 1016,except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section P2708.4
20. Fixtures that have flood level rims located below the elevation of the next upstream manhole cover of the public sewer serving such fixtures shall be protected from backflow or sewage by installing an approved backwater valve. P 3008
21. Provide access to motors and pumps on all jetted tubs.
22. Provide non-freeze type backflow prevention hose bibs IRC p2902.3.3 & p2603.5
23. Provide an expansion tank on the culinary water system. Locate in mechanical room. p2903.4
24. In seismic design categories C, D0, D1, and D2, water heater shall be anchored or strapped in the upper third and lower one-third of the appliance to resist a horizontal force equal to one-third of the operation weight. IRC P2801.8
25. Floor drains shall be provided near all water heaters.
26. Floor drains shall be fully visible and accessible.
27. Plumbing and conduit penetrations of the separation wall between the garage and the residence shall be of copper of ferrous.
28. All fuel burning appliances shall be provided with combustion air in accordance with the appliance manufactures installation instructions. Oil-fired appliances shall be provided with combustion air in accordance with NFPA 31. IRC M1701.1
29. Provide gas logs and each gas appliance with a shutoff valve within 6 feet of the appliance. IRC G2420 (G2420.5)
30. Hydromassage motors shall be provided with adequate ventilation, be accessible by way of removable panel or door and be on a dedicated GFCI circuit.
31. Any jetted tubs to have an access door to motor of 12"x12" if distance to motor from access panel is equal to or less than 24", or 18"x18" greater than 24".
32. Heating and cooling system shall be designed to ACCA manual J&D or other approved calculation.
33. Shower door must have a 22" clear opening & tile around tubs must have a fiber cement backer board.
34. Shower pans must have an approved liner ending 3" above the finished threshold, solid blocking is required behind the liner. Note that the slope must be built up under the liner.
35. All bathtubs and showers shall have an anti-scald valve limiting water temperature to 120 degrees.
36. Hot water heaters must have an expansion tank, 2 seismic straps, and a T&P valve. A pan is required if a leak will damage the property.
37. Provide backflow preventors or vacuum breakers for protection of potable water on hose bibs, irrigation or sprinkler systems, boilers, etc.
38. Provide backwater valves for dwv that are lower than the nearest manhole cover. This will require that basement waste systems will be plumbed independently.
39. A permanent certificate shall be posted on or in the electrical distribution panel listing the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation, (slab, basement wall, crawlspace wall and/or floor) and ducts outside the conditioned spaces; U-factors of windows, and solar heat gain coefficient of windows. The type and efficiency of heating, cooling and service water heating equipment shall also be listed. IRC N1101.14 (R401.3)
40. Ductwork in unconditioned spaces will have R-8 value insulation.
41. Contractor to verify all rough opening sizes with equipment, fixture, windows, doors, and other items were different manufactures with have different rough opening sizes. Contractor to verify all tub dimensions with tubs to be used.
42. Insulate heating trunk and branch supply ducts in unfinished areas, crawl spaces, attics, unheated garages, etc. IRC M1601
43. Vent the dryer to the outside. In accordance to IRC M1502.2
44. Combustion air for all fuel-burning appliances must be shown at a minimum rate of 1 sq inch per 3000 Btu/hour input. Opening must be in the top 12 inches of the room. Minimum of 1 inch clearance must be shown around equipment at sides and rear of the appliance. Show minimum 6 inches of clearance in front of appliances. IRC G2407.6.2
45. Floor drains to have trap primers or deep seal traps.

NOTE:
RESIDENCE TO BE BUILT IN ACCORDANCE TO THE 2015 IRC BUILDING CODE.

NOTE:
REFER TO THE 2015 IRC & 2015 IECC FOR SECTIONS & TABLES.

NOTE:
IT IS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH THE LOCAL JURISDICTIONS CURRENT ADOPTED CODES.

ELECTRICAL

1. Lighting Outlets
   - 1.1. At least one wall switch controlled lighting outlet shall be installed in every habitable room; in bathrooms, hallways, stairways, attached garages and detached garages with electric power; and at outdoor entrances (not including garage overhead or vehicle doors). In habitable rooms, other than kitchens and bathrooms, receptacles controlled by a wall switch is permitted in lieu of lighting outlets. IRC E3903.2 & .3
   - 1.2. At least one switch controlled, lighting outlet is required at the entry of attic, crawl space, utility room or basement with storage or equipment. The lighting outlet shall be provided at or near any equipment requiring servicing. IRC E3903.4
   - 1.3. Lighting is required for all interior and exterior stairways. Lighting outlets at stairs shall be switched at each floor level where the difference between floor levels is six steps or more. IRC E3903.2 & .3
   - 1.4. Incandescent fixtures in closets shall be a minimum of 12" from any shelf edge, measured horizontally (6" for fluorescent fixtures). The dimension for shelves less than 12" wide will be 24" from the wall. IRC E4003.12
   - 1.5. All light fixtures and switches in bathroom / shower areas or in damp or wet locations shall comply with the IRC E4003.9 - E4003.11
2. Receptacle Outlets
   - 2.1. Receptacles shall be installed so that no point measured horizontally along the floor line in any wall space is more than 6 feet from a receptacle outlet. IRC E3901.2.1 & E3901.2.2
   - 2.2. Kitchen and dining area counter tops shall have receptacle outlets at each counter space wider than 12". Receptacles shall be installed so that no point along the wall line is more than 24" from an outlet. One outlet is required for island and peninsular counter tops which shall be installed above or within 12" below the counter top. (receptacle outlets shall not be installed in a face up position on countertop) IRC E3901.4.1 - E3901.4.5
   - 2.3. 125V single phase, 15 or 20 ampere rated receptacle outlet shall be installed at an accessible location for the servicing of heating, air-conditioning and refrigeration equipment. Outlet shall be installed at the same level and within 25 feet of the equipment. IRC E3901.12
   - 2.4. Outlets shall be installed in bathrooms within 36"of the outside edge of the basin on the wall adjacent to the basin. IRC E3901.6
   - 2.5. At least two outlets that are accessible at ground level shall be installed outdoors. There shall be a minimum of one outlet at the front and one outlet at the back of dwelling within 6'-6" of grade. IRC E3901.7
   - 2.6. At least one outlet shall be installed for the laundry. IRC E3901.8
   - 2.7. At least one outlet, in addition to any provided for laundry, shall be installed in each basement and each attached garage, and in each detached garage with electric power. IRC E3901.9
   - 2.8. For hallways 10' or more long, one outlet shall be provided. IRC E3901.10
   - 2.9. All electrical circuits providing power to bedrooms, bathrooms, kitchens and laundry shall be provided by an arc-fault circuit interrupter as required by IRC E3902.1 (as ammended by the State of Utah)
3. Permanent access must be provided to all hot tub and whirlpool tub equipment requiring service. IRC E4209.3
4. Smoke and multiple station smoke alarms in new construction, the required alarms shall receive their primary power from the building wiring and be equipped with a battery back-up. Single and multiple station alarms shall be mounted on the ceiling of wall at a point centrally located in the hall or area giving access to each separate sleeping area and in every bedroom. IRC 314-315
5. When a house has more than one story and/or has a basement, a detector shall be installed on each story and in the basement. Where a story or basement is split into two or more levels, the smoke detector shall be installed on the upper level of each story. However, when the lower level contains a sleeping area, a detector shall be installed on each level of the story or basement.
6. Detectors shall be wired in series so that an audible alarm sounds in all sleeping areas at the same time.
7. The electrical panel shall have a clear working space 30" wide, 36" deep and 6'-6" high in front. NEC 110.26
8. All receptacles serving kitchen countertops, in garages, baths, unfinished basements and outside receptacles shall be GFCI protected. IRC Section E3902
9. GFCI protection is required at:
   - 9.1. All Exterior outlets (must be waterproof and a minimum of one).
   - 9.2. All unfinished basement outlets (minimum of one).
   - 9.3. Attached garage outlets (except dedicated) (minimum of one).
10. Outlet to be shown within 25' of HVAC equipment.
11. A carbon monoxide detector is req'd on each level of the house.
12. All light fixtures in bathrooms will be rated for damp locations.
13. U-FER ground shall be installed as per E3608 and NEC 250.50.
14. Electrical panels must comply with IRC E3405 for 30" by 36" working space and 6'-6" headroom.
15. All 125-volt, single phase, 15- or 20-ampere receptacles installed in garages shall have ground-fault circuit-interrupter protection for personnel. E3902.2
16. A minimum of 75 percentof the lamps in permanently installed lighting fixtures shall be high-efficiency lamps. N1104.1
17. Provide U-FER ground. Per code.
18. Smoke detectors shall comply with NFPA 72.
19. GFCI outlets required within 6'-0" of sink rims per IRC E 3902.7

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GENERAL NOTES

BRINKERHOFF DUPLEX
387 NORTH 300 EAST
PAYSON, UTAH

REVISIONS

PLAN DATE
JULY 2021

SHEET NUMBER
A8.1

GENERAL STRUCTURAL NOTES

DESIGN CRITERIA Urban Industrial Brinkerhoff Duplex (Payson) 550721
1. Building code: Utah Code, Title 15A
   1.1 Model building code: 2015 IRC
   1.2 Use and occupancy classification: R (Residential - 2-unit dwelling)
   1.3 Risk Category: II (Not occupancy categories I, III, IV)
2. Dead loads
   2.1 Roof = 15 psf (10 psf top chord, 5 psf bottom chord)
   2.2 Floor = 12 psf
   2.3 Walls = 10 psf (interior walls), 12 psf (exterior walls)
3. Live loads
   -- Roofs (ordinary construction) = 20 psf (or 300 lb point load)
   -- Residential (1-2 unit dwelling) = 40 psf
   -- Stairs and exits (residential 1-2 unit dwelling) = 40 psf (or 300 lb point load)
   -- Decks = 60 psf
4. Rain load
   4.1 Median 15-minute duration rainfall intensity = 3.98 in/hr
   4.2 Median 60-minute duration rainfall intensity = 1.66 in/hr
5. Snow load
   5.1 Ground snow load, Pg = 34 psf (elevation 4635 ft)
   5.2 Exposure factor, Ce = 1
   5.3 Thermal factor, Ct = 1
   5.4 Snow importance factor, Is = 1
   5.5 Flat roof snow load, Pf = 24 psf
   5.6 Roof slope factor, Cs = 0.91
6. Earthquake design data
   6.1 Mapped acceleration parameters
      6.1.1 Latitude, Longitude: 40.048, -111.729
      6.1.2 MCE short period Ss = 1.7 SDS = 1.36
      6.1.3 MCE 1.0 sec. period S1 = 0.63 SD1 = 0.71
   6.2 Seismic design category: E
   6.3 Seismic importance factor, Ie = 1
   6.4 Basic structural system: Bearing wall systems
   6.5 Seismic force-resisting system: Light-frame wood walls (wood sheathing)
      6.5.1 Response modification factor R = 6.5
      6.5.2 System overstrength factor Omega = 3
      6.5.3 Deflection amplification factor Cd = 4
   6.6 Equivalent Lateral Force Procedure
      6.6.1 Seismic response coefficient Cs = 0.21
      6.6.2 Seismic base shear (LRFD) V = 16090 lb
7. Wind design data
   7.1 Exposure category: C
   7.2 Basic design wind speed, V = 105 mph
   7.3 Components and cladding pressure = 26 psf (end), 21 psf (interior)
   7.4 Internal pressure coeff., Gcpi = 0.18
8. Geotechnical design basis:
   - Presumptive values, 2018 IBC Table 1806.2
   8.2 Site class = D-Default
   8.3 Soil notes: None
   8.4 Lateral earth pressure
      8.4.1 Active = 30 psf/ft
      8.4.2 At-rest = 60 psf/ft
   8.5 Allowable foundation parameters
      8.5.1 Allowable soil bearing, Qa = 1500 psf
      8.5.2 Allowable lateral bearing = 150 psf/ft
      8.5.3 Coefficient of friction = 0.25
   8.6 Minimum frost cover = 30 in.

DEFERRED SUBMITTALS
1. The following items are to submitted subsequent to the time of application (deferred submittals):
   -- Prefabricated metal plate wood trusses - roof (truss manufacturer)
2. Deferred submittals shall have the prior approval of the building official (2018 IBC 107.3.4.1).
3. Deferred submittal documents shall be submitted to the registered design professional in responsible charge who shall review and forward them to the building official with a notation indicating that the documents have been reviewed and found to be in general conformance to the design of the building (2018 IBC 107.3.4.1).
4. Deferred submittal items shall not be installed until the design and submittal documents have been approved by the building official (2018 IBC 107.3.4.1).

GENERAL
1. Construction documents are valid for a single use at the project location and shall not be reused, copied, or reproduced without written approval of the registered design professional in responsible charge.
2. General notes and typical details are provided as a supplement to the construction documents and apply where specific notes and details are not available. Specific notes and structural details shall take precedence over general notes and typical details. Structural requirements shown in the framing plans and in structural details shall take precedence over structural notes indicated in architectural sections.
3. Printed dimensions shall take precedence over scales shown on construction documents. The registered design professional in responsible charge does not warrant the accuracy of scaled dimensions.
4. Approval by the inspector does not imply approval by the registered design professional in responsible charge. Structural specifications that are unclear or ambiguous shall be referred to the registered design professional in responsible charge for interpretation or clarification.
5. The registered design professional in responsible charge assumes no liability for the accuracy, completeness, or code compliance of architectural, electrical, mechanical, drainage, or other non-structural specifications.
6. Omissions in and conflicts between the various elements of the construction documents shall be brought to the immediate attention of the registered design professional in responsible charge and shall be resolved by the same before proceeding with any work involved.
7. Requests for substitutions shall be submitted in writing to the registered design professional in responsible charge and shall include the reasons for the request and any cost differentials. Substitutions are not allowed unless approved in writing by the registered design professional in responsible charge.
8. The contractor shall become familiar with all portions of the construction documents and shall ensure that all subcontractors are familiar with those portions pertaining to their area of work. The contractor shall verify all site conditions, dimensions, elevations, coordinate all doors, windows, non-bearing interior and exterior walls, elevations, slopes, stairs, curbs, drains, recesses, depressions, railings, waterproofing, finishes, chamfer, kerfs, and so forth, and immediately notify the registered design professional in responsible charge regarding actual conditions which are not in agreement with the construction documents.
9. The contractor is responsible for the method, means, and sequence of all structural erection except when specifically noted otherwise in the construction documents. The contractor shall provide temporary shoring and bracing, providing adequate vertical and lateral support during erection. Shoring and bracing shall remain in place until all permanent members are placed and all final connections are completed.
10. The contractor is responsible for standard connections, unless noted otherwise. The contractor shall obtain additional assistance from the registered design professional in responsible charge for non-standard connections.

SOIL AND FOUNDATIONS
1. Geotechnical investigations shall conform to 2018 IBC 1803. Excavation, grading and fill shall conform to 2018 IBC 1804. Footings and foundations shall be constructed in accordance with 2018 IBC 1807 through 1810.
2. Where required, the owner shall submit a geotechnical investigation report to the building official in accordance with 2018 IBC 1803. The contractor shall inform the registered design professional in responsible charge if the soil conditions are not consistent with the investigation report and the foundation design data.
3. Excavations for any purpose shall not remove lateral support from any footing or foundation without first underpinning or protecting the footing or foundation against settlement or lateral translation (2018 IBC 1804.1).
4. Excavation outside the foundation shall be backfilled with soil that is free of organic material, construction debris, cobbles and boulders or with a controlled low-strength material (CLSM). The backfill shall be placed in lifts and compacted, in a manner that does not damage the foundation or the waterproofing or dampproofing material (2018 IBC 1804.3).
5. The ground immediately adjacent to the foundation shall have a 5-percent slope away from the building for a minimum distance of 10 feet measured perpendicular to the face of the foundation wall. If physical obstructions or lot lines prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation. Impervious surfaces within 10 feet of the building foundation shall have a minimum 2-percent slope (2018 IBC 1804.4).
6. Footings and foundations shall be built on undisturbed soil, compacted fill material or CLSM. Compacted fill material and CLSM shall conform to 2018 IBC 1804.6 and 2018 IBC 1804.7, respectively (2018 IBC 1809.2).
7. The top surface of the footings shall be level. The bottom surface of footings is permitted to have a maximum 10-percent slope. Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the surface of the ground has more than a 10-percent slope (2018 IBC 1809.3).
8. The minimum depth of footings below the undisturbed ground surface shall be 12 inches (2018 IBC 1809.4). Foundation walls, piers and other permanent supports shall be extended below the frost line, except where otherwise protected from frost (2018 IBC 1809.5).
9. The placement of footings on or adjacent to 33-percent slopes and steeper shall conform to 2018 IBC 1808.7.
10. Floors of basements shall be placed over base course not less than 4 inches in thickness and a drain shall be installed around the foundation perimeter that consists of gravel or crushed stone containing not more than 10-percent material that passes through a No. 4 sieve (2018 IBC 1805.4.1, 1805.4.2).
11. Backfill shall not be placed against a foundation wall until the wall has sufficient strength and is anchored to the floor above, or is sufficiently braced to prevent damage by the backfill, except bracing is not required for walls supporting less than 4 feet of unbalanced backfill (R404.1.7).

CONCRETE
1. Concrete materials, quality control, and construction shall comply with 2018 IBC Chapter 19 and ACI 318-14.
2. Compressive strength (minimum specified at 28 days)
   2.1. Footings: 3,000 psi (2018 IBC 1808.8.1) (2,500 psi used in design)
   2.2. Interior floor slabs on grade: 4,000 psi
   2.3. Exterior floor slabs on grade: 4,000 psi
   2.4. Suspended slabs: 4,000 psi
   2.5. Walls: 3,000 psi (2018 IBC 1904.1) for R-2, R-3 occupancies and appurtenances
      4,000 psi for other occupancies
3. Materials
   3.1. Cements (ASTM C 150). Concrete exposed to freezing and thawing or deicing chemicals shall conform to the maximum water-cementitious material ratios and minimum compressive strength requirements of ACI 318-14 table 19.3.1.1 & 19.3.2.1
   3.2. Aggregates (ASTM C 33): nominal maximum size of coarse aggregate shall not be larger than 1/5 the narrowest dimension between forms, nor 1/3 the depth of slabs, nor 3/4 the minimum clear spacing between reinforcing bars or wires, tendons, or ducts (ACI 318-14 26.4.2.1).
   3.3. Water used in mixing concrete shall be potable, clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete or reinforcement (ACI 318-14 26.4.1.3.1.b).
   3.4. Admixtures shall be subject to prior approval by the registered design professional in responsible charge (ACI 318-14 26.4.1.4.1.b).
   3.5. Concrete exposed to freezing and thawing or deicing chemicals shall be air-entrained with air content indicated in ACI 318-14 Table 19.3.3.1. Tolerance on air content as delivered shall be plus/minus 1.5 percent (ACI 318-14 R26.4.2.1(a)(5)).
4. Steel Reinforcement
   4.1. Deformed bars: fy = 60 ksi (ASTM A615)
   4.2. Welded plain wire: fy = 60 ksi (ASTM A1064)
   4.3. Deformed Bar Anchors (DBA) (ASTM A1064)
   4.4. Headed Stud Anchors (HSA) (ASTM A108)
   4.5. At the time concrete is placed, reinforcement shall be free from ice, mud, oil, or other nonmetallic coatings that decrease bond (ACI 318-14 26.6.1.2).
   4.6. Reinforcement shall be accurately placed and adequately supported before concrete is placed, and shall be secured against displacement (ACI 318-14 26.6.2.2).
   4.7. Details of reinforcement shall conform to ACI 318-14 Chapter 25.
5. Minimum concrete cover (ACI 318-14 Table 20.6.1.3.1)
   5.1. Concrete cast against and exposed to earth: 3 inches
   5.2. Concrete exposed to earth or weather:
      5.2.1. No. 6 through No. 18 bars: 2 inches
      5.2.2. No. 5 bar, W31 wire, and smaller: 1.5 inches
   5.3. Concrete not exposed to earth or weather:
      5.3.1. Slabs, walls, joists No. 11 bar and smaller: 0.75 inches
      5.3.2. Beams, columns primary reinf., ties, stirrups: 1.5 inches
6. Formwork shall conform to ACI 318-14 Sections 26.11 and 26.12 and ACI 347. Forms shall be removed in a manner as not to impair safety and serviceability of the structure. Concrete exposed by form removal shall have sufficient strength not to be damaged by removal operation (ACI 318-14 26.11.2).
7. Conduits, pipes, and sleeves of any material not harmful to concrete and within the limitations of ACI 318-14 20.7 shall be approved by the registered design professional in responsible charge (ACI 318-14 20.7).
8. Construction joints shall be so made and located as not to impair the strength of the structure (ACI 318-14 18.10.9).
9. The thickness of concrete floor slabs on grade shall not be less than 3.5 inches. A 6-mil polyethylene vapor retarder with joints lapped not less than 6 inches (or an equivalent material) shall be placed between the base course or subgrade and the concrete floor slab, except a vapor retarder is not required in detached utility buildings or other unheated facilities (2018 IBC 1907).

MASONRY
1. Masonry materials, construction, and quality shall conform to 2018 IBC 2103-2105, TMS 402/602-16
   1.1. Compressive strength: f'c = 2,000 psi (TMS 602-16 1.4B.2 TABLE 2)
2. Concrete masonry units (CMU) (ASTM C 90)
   2.1. Grade N
   2.2. Compressive strength: f'm = 2,000 psi (TMS 602-16 1.4B.2 TABLE 2)
3. Mortar (ASTM C 270)
   3.1. Type S Portland cement (TMS 402-16 7.4.4.2.2)
   3.2. Compressive strength: f'c = 2,000 psi (TMS 602-16 1.4B.2 TABLE 2)
4. Grout (ASTM C 476)
   4.1. Type: fine or coarse (2018 IBC 2103.3)
   4.2. Compressive strength (minimum specified at 28 days): f'c = 2,000 psi (ASTM C 1019)
5. Steel reinforcement
   5.1. Deformed bars: fy = 60 ksi (ASTM A 615 Gr. 60)
   5.2. Deformed Bar Anchors (DBA) (ASTM A1064)
   5.3. Headed Stud Anchors (HSA) (ASTM A108)
6. Bed joint thickness shall be 5/8 inch maximum (TMS 602-16 1.4B.2)
7. Grout shall have an 8"-11" slump using a 3/8" maximum aggregate. Grout lifts shall not exceed 5 feet in height unless noted otherwise. Consolidate by mechanical vibration pours that exceed 12 inches in height.
8. The clear distance between parallel bars shall not be less than the nominal diameter of the bars, nor less than 1 inch (TMS 402-16 6.1.3). Joint reinforcement shall have cover not less than 5/8", (TMS 402-16 6.1.4.2)
9. The diameter of bend measured on the inside of reinforcing bars, other than for stirrups and ties, shall not be less than specified in table 6.1.8 (TMS 402-16 6.1.8.2)
10. All masonry below grade shall be solid grouted.
11. Control joint spacing not to exceed 30'-0". See Architectural for locations.

MASONRY AND STONE VENEER
1. Masonry veneer materials, construction, and quality shall conform to 2018 IBC 2103-2105 and TMS 402-16 Chap. 6.
2. Lintels
   2.1. Veneer shall not support any vertical load other than the dead load of the veneer above. Veneer above openings shall be supported on lintels of noncombustible materials. Lintels shall have 1 inch of bearing for each 1 foot of span, but not less than 4 inches of bearing.
3. Anchorage
   3.1. Veneer shall be anchored to the supporting wall framing with hot-dipped galvanized metal ties. (Strand wire or corrugated sheet metal)
   3.2. Engage all anchor ties with a No. 9 gage wire in the center of the veneer and embedded in the mortar joint. (R703.8.4.1)
   3.3. Each tie shall be spaced not more than 16 inches on center horizontally and vertically and shall support not more than 2 square feet of wall area. Additional metal ties shall be provided around all wall openings greater than 16 inches in either dimension. (R703.8.4.1)

WOOD
1. Wood materials, quality, and construction shall conform to 2018 IBC Chapter 23 and Table 2304.10.
2. Structural lumber (2018 IBC 2303.1.1-9, 2018 NDS)
   2.1. Bearing walls: Douglas-Fir Larch (DF) Stud (ASTM D 1990, DOC PS 20)
   2.2. Posts: Douglas-Fir Larch (DF) Stud (ASTM D 1990, DOC PS 20)
   2.3. Beams and headers: Douglas-Fir Larch (DF) No. 2 (ASTM D 1990, DOC PS 20)
   2.4. Heavy timber: Douglas-Fir Larch (DF) No. 1 (ASTM D 1990, DOC PS 20)
   2.5. Sill plates: Preservative-treated wood, redwood (AWPA U1 M4)
   2.6. Naturally durable or preservative-treated wood shall be used where structural lumber is 18 inches or closer to exposed ground; where structural lumber is in contact with exterior masonry or concrete walls below grade; where sleepers, sills, posts, and columns are on a concrete or masonry slab or footing that is in direct contact with earth; and where structural lumber is attached directly to exterior masonry or concrete walls, unless a 0.5 inch air space on top, sides, and end is provided (2018 IBC 2304.12).
3. Structural logs (ASTM D 3957) - ICC - 400 standard for the design and construction of log structures
4. Structural glued-laminated timber (2018 IBC 2303.1.3, 2018 NDS 5.1.1)
   4.1. Single span: 24F-1.8E (24F-V4) (ASTM D 3737, ANSI/AITC A190.1)
   4.2. Multiple span: 24F-1.8E Balanced layup (24F-V8) (ASTM D 3737, ANSI/AITC A190.1)
   4.3. Cantilever span: 24F-1.8E Balanced layup (24F-V8) (ASTM D 3737, ANSI/AITC A190.1)
5. Structural composite lumber and engineered wood (2018 IBC 2303.1.10, 2018 NDS 8.1.1)
   5.1. Laminated strand lumber (LSL)
      5.1.1. Ex = 1.3E (ASTM D 5456)
      5.1.2. Ex = 1.5E (ASTM D 5456)
      5.1.3. Ex = 1.55E (ASTM D 5456)
      5.1.4. 1.125 inch APA Performance-Rated (or equivalent) rim board - (2018 IBC 2303.1.13, ASTM 7672, ANSI/APA PRR410)
   5.2. Laminated veneer lumber (LVL)
      5.2.1. Ex = 2.0E (ASTM D 5456)
   5.3. Parallel strand lumber (PSL)
      5.3.1. Ex = 2.0E (beams) (ASTM D 5456)
      5.3.2. Ex = 1.8E (columns) (ASTM D 5456)
   5.4. Prefabricated wood I-joist (2018 IBC 2303.1.2, 2018 NDS 7.1.1) (ASTM D 5055)
6. Wood structural panels (2018 IBC 2304.8, 2018 NDS 9.1.3)
   6.1. Roof, floor, and wall sheathing: oriented strand board (OSB) (DOC PS 1,2).
   6.2. Sheathing shall be manufactured with exterior glue and not less than 4X8 feet, except at boundaries and at changes in framing (2018 IBC 2305.1, AWC SDPWS-2015).
   6.3. Wall sheathing
      6.3.1. Oriented strand board (OSB) (DOC PS 1,2)
      6.3.2. All panel joints in walls shall occur over studs or blocking using a minimum of 8d common nails spaced a maximum of 6 inches at panel edges and 12 inches at intermediate framing (2018 IBC 2306.3).
   6.4. Roof and floor sheathing shall be placed perpendicular to supporting framing. Stagger sheathing joints.
7. Fasteners
   7.1. Nails (2018 IBC 2303.6, 2018 NDS Table L4) (ASTM F 1667)

Pennyweight	Common	Box	Sinker
7.1.1. 8d =	0.131" X 2.5"	0.113" X 2.5"	0.113" X 2.375"
7.1.2. 10d =	0.148" X 3.0"	0.128" X 3.0"	0.120" X 2.875"
7.1.3. 16d =	0.162" X 3.5"	0.135" X 3.5"	0.148" X 3.250"
7.1.4. 20d =	0.192" X 4.0"	0.148" X 4.0"	0.177" X 3.750"
7.1.5. 30d =	0.207" X 4.5"	0.148" X 4.5"	0.192" X 4.250"

   7.2. Staples (2018 IBC 2303.6)
      7.2.1. 16 gage = 1.5X0.4375 inch crown (ASTM F 1667)
   7.3. Bolts (2018 NDS 12.1.3, Table L1)
      7.3.1. Connector bolts (A307)
      7.3.2. Anchor bolts (A307) with a 3X3X0.229 inch washer (2018 IBC 2308.3.1) and 7" min embedment.
      7.3.3. Bolt holes shall be drilled with a bit 1/32 inch to 1/16 inch larger than the nominal bolt diameter.
   7.4. Lag Screws (2018 NDS 12.1.4, Table L2) (A307)
      7.4.1. Lag screws shall be inserted in a drilled pilot hole that is 60%-75% of the shank diameter by turning with a wrench. Do not drive screws with a hammer. Lag screws shall be provided with an oversized washer .
   7.5. Fasteners in preservative-treated and fire-retardant-treated wood shall be of hot dipped zinc-coated galvanized steel, silicon bronze or copper (2018 IBC 2304.10.5).
   7.6. Sheathing fasteners shall be driven so the head or crown is flush with the sheathing surface (2018 IBC 2304.10.2).
8. Joist hangers and connectors (2018 IBC 2303.5)
   8.1. Hanger hardware and other wood connections shall be designed to carry the capacity of the supporting members.
9. Floor framing (2018 IBC 2308.4.2)
   9.1. Joists shall not have less than 1.5 inches of bearing on wood or metal, or less than 3 inches on masonry (2018 IBC 2308.4.2.2). Pre-fabricated wood I-joists shall have minimum bearing according to the manufacturer's recommendations and specifications.
   9.2. Joists shall be supported laterally at the ends and at each support by full-depth solid blocking, except where nailed to a header or band or rim joist. Solid blocking shall not be less than 2 inches thick (2018 IBC 2308.4.2.3).
   9.3. Where the nominal depth-to-thickness ratio of the framing member exceeds 6:1, there shall be one line of bridging for each 8 feet of span. Bridging shall consist of not less than 1X3 inch lumber, metal bracing, or full-depth solid blocking (2018 IBC 2308.4.6).
   9.4. Notches on the ends of joists shall not exceed one-fourth the joist depth. Holes bored in joists shall not be within 2 inches of the top or bottom of the joist. Notches in the top or bottom of joists shall not exceed one-sixth the depth and shall not be located in the middle third of the span (2018 IBC 2308.4.2.4).
   9.5. The diameter of holes bored or cut into structural floor members shall not exceed one-third the depth of the member. Holes shall not be closer than 2 inches to the top or bottom of the member, or to any other hole located in the member. Where the member is also notched, the hole shall not be closer than 2 inches to the notch (R502.8.1).
10. Wall construction (2018 IBC 2308.5)
   10.1. Studs shall be placed with their wide dimension perpendicular to the wall. Not less than three studs shall be installed at each corner of an exterior wall (2018 IBC 2308.5.2).
   10.2. Bearing and exterior wall studs shall be capped with 2-inch thick nominal double top plates, have a width at least equal to the width of the studs, and shall be installed to provide overlapping at corners and intersections with other partitions. End joints in partitions shall be offset at least 48 inches, and shall be nailed with not less than eight 16d common face nails on each side of the joint. (2018 IBC 2308.5.3.2).
   10.3. In nonbearing walls and partitions studs shall be capped with no less than a single top plate installed to provide overlapping at corners and at intersections with other walls and partitions. The plate shall be continuously tied at joints by solid blocking at least 16 inches in length and equal in size to the plate or metal ties with spliced sections fastened on each side of the joint (2018 IBC 2308.5.4).
   10.4. Studs shall have full bearing on a 2-inch thick nominal (or larger) bottom plate or sill having a width at least equal to the width of the stud (2018 IBC 2308.5.3.1).
   10.5. Bearing partitions parallel to joists shall be supported on beams, girders, doubled joists, walls or other bearing partitions. Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls or partitions more than the joist depth unless noted otherwise (2018 IBC 2308.4.5).
   10.6. In exterior walls and bearing partitions, any wood stud is permitted to be cut or notched to a depth not exceeding 25 percent of its width. In nonbearing partitions, cutting or notching of studs to a depth of not greater than 40 percent of the width is permitted (2018 IBC 2308.5.9).
   10.7. A hole with a diameter not greater than 40 percent of the stud width is permitted to be bored in any wood stud. In no case shall the edge of the bored hole be nearer than 0.625 inches to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch (2018 IBC 2308.5.10).
   10.8. Bearing walls without wood sheathing or gypsum wall board on either side shall have blocking between wall studs at mid-height.
   10.9. Studs shall be spaced at 16 inches on center for exterior walls, interior bearing walls, and shear walls, unless noted otherwise on the plans.
11. Posts and columns
   11.1. Columns shall be as wide as the member they support, laterally supported at all floor levels, and extend down through the structure to the foundation. Provide squash blocking at rim joist below all columns, trimmers, and posts.
   11.2. Wood columns and posts shall be framed to provide full end bearing (2018 IBC 2304.10.7).
   11.3. Posts and columns shall be supported by concrete piers or metal pedestals projecting above concrete or masonry floors or decks exposed to weather or water splash, or in basements, and which support permanent structures, unless naturally durable or preservative-treated wood is used. The pedestal shall project at least 6 inches above exposed earth and at least 1 inch above floors.
12. Roof and ceiling framing (2018 IBC 2308.7).
   12.1. Roof rafters and ceiling joists shall be supported laterally to prevent rotation and lateral displacement in accordance with 2018 IBC 2308.7.8.
   12.2. Rafters and joists over three feet long shall be supported using hanger hardware if not supported by bearing.

PREFABRICATED METAL PLATE WOOD TRUSSES
1. Prefabricated metal plate wood trusses shall be designed in accordance with 2018 IBC 2303.4 and shall conform to the structural specifications and design criteria.
2. The truss designer shall provide a truss package that includes the following items:
   2.1. Design drawings of each individual truss (2018 IBC 2303.4.3).
   2.2. Truss placement diagram for the project (2018 IBC 2303.4.2).
   2.3. Truss member permanent bracing specification (2018 IBC 2303.4.1.2).
3. Transfer of loads and anchorage of each truss to the supporting structure shall be approved by the registered design professional in responsible charge (2018 IBC 2303.4.4).
4. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of the registered design professional in responsible charge. Alterations resulting in the addition of loads to any member (e.g. HVAC equipment) shall not be permitted without verification that the truss is capable of supporting such additional loading (2018 IBC 2303.4.5).

STEEL
1. Structural steel work shall conform to 2018 IBC 2205, AISC 341-16, AISC 358-16, and AISC 360-16.
2. Structural shapes
   2.1. W: fy = 50 ksi (ASTM A992)
   2.2. M,S,C,MC, and L: fy = 36 ksi (ASTM A36)
   2.3. HP: fy = 50 ksi (ASTM A572 Gr. 50)
   2.4. HSS Rectangular: fy = 46 ksi (ASTM A500 Gr.B)
   2.5. HSS Round: fy = 42 ksi (ASTM A500 Gr.B)
   2.6. Pipe: fy = 35 ksi (ASTM A53 Gr.B)
   2.7. All structural steel shall be properly primed and painted.
3. Plates and bars: fy = 36 ksi (ASTM A36)
4. Structural fasteners
   4.1. High-strength bolts: fu = 120-150 ksi (ASTM F3125)
   4.2. Common bolts: fu = 60 ksi (ASTM A307 Gr. A)
      4.2.1. Nuts (ASTM A563)
      4.2.2. Washers (ASTM F436)
      4.2.3. Steel to steel bolted connections shall be made with high strength-bolts, unless noted otherwise. Bolts shall carry the identifying mark of three radial lines. All other bolted connections shall be made with bolts and nuts conforming to ASTM A307 unless note otherwise. Bolted connections shall be tightened and shall have washers as required by AISC unless noted otherwise. Enlarging holes shall be accomplished by means of reaming. Do not use a torch on any bolt holes.
   4.3. Shear studs: fu = 65 ksi (ASTM A108)
   4.4. Threaded rods: fy = 36 ksi (ASTM A36)
   4.5. Anchor rods: fy = 36 ksi (ASTM F1554 Gr. 36)
5. Steel deck fy = 36 ksi (ASTM A1008)
6. Welding fu = 70 ksi.
   6.1. Welding work shall comply with the American Welding Society (AWS) "Structural Welding Code," excluding items conflicting with AISC requirements.

POST-INSTALLED ANCHORS
1. Epoxy adhesive anchoring systems:
   1.1. Concrete: Hilti HIT-RE 500 V3 (ICC ES ESR-3814) or Simpson SET-XP (ICC ES ESR-2508) or USP/Mitek CIA-GEL 7000-C (IAMPO ER-473)
   1.2. Masonry (grouted): Hilti HIT RE100 (ICC ES ESR-3829) or Simpson SET (ICC ES ESR-1772) or USP/Mitek CIA-GEL 7000 (ICC ES ESR-1702)
   1.3. The calculated strength of anchorage assumes the following conditions for installation: 21 day minimum age of concrete, maximum short term concrete temperature= 150° F, maximum long term concrete temperature= 110° F, dry concrete surface, and normal weight concrete. See adhesive manufacturer notes for minimum temperature requirements. If conditions are otherwise, contact engineer for anchor specifications.
   1.4. Steel reinforcement and rods shall be embedded 10 bar diameters unless noted otherwise in the structural drawings and details. Where 10 bar diameters exceeds the member thickness minus minimum cover, steel reinforcement shall be embedded the member thickness minus minimum cover with a standard hook.
   1.5. Embedded portions of steel reinforcement and rods shall be clean, straight, and free of mill scale, rust and other coatings that impair the bond with the adhesive. Reinforcement must not be bent after installation (ICC ES ESR-3829).
   1.6. Installation of adhesive anchors shall be performed by personnel trained to install adhesive anchors.
2. Mechanical expansion anchors:
   2.1. Concrete: Hilti KWIK BOLT TZ (ICC ES ESR-1917)
   2.2. Masonry: Hilti KWIK BOLT 3 (ICC ES ESR-1385)
   2.3. Expansion anchors shall not be used in tensile load applications (e.g. hold-downs, moment frames).
3. Post-installed anchoring systems shall be installed according to the Manufacturer's Printed Installation Instructions (MPII). Hole cleaning method shall be based on drilling method and borehole conditions and shall conform to the manufacturer's instructions.

STRUCTURAL OBSERVATIONS
1. Where required by the Provisions of Section 1704.6.1 or 1704.6.2, the owner shall employ a registered design professional to perform structural observations as defined in 2018 IBC 202. Prior to the commencement of observations, the structural observer shall submit to the building official a written statement identifying the frequency and extent of the structural observations. At the conclusion of the work, the structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies which have not been resolved (2018 IBC 1704.6).

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ORIGINAL PROJECT #
550721
DRAWN BY:
MBN
CHECKED BY:
MCW
SCALE:
NTS
DATE:
12 JUL 2021

URBAN INDUSTRIAL BRINKERHOFF DUPLEX (PAYSON)

GENERAL STRUCTURAL NOTES

ISSUES / REVISIONS

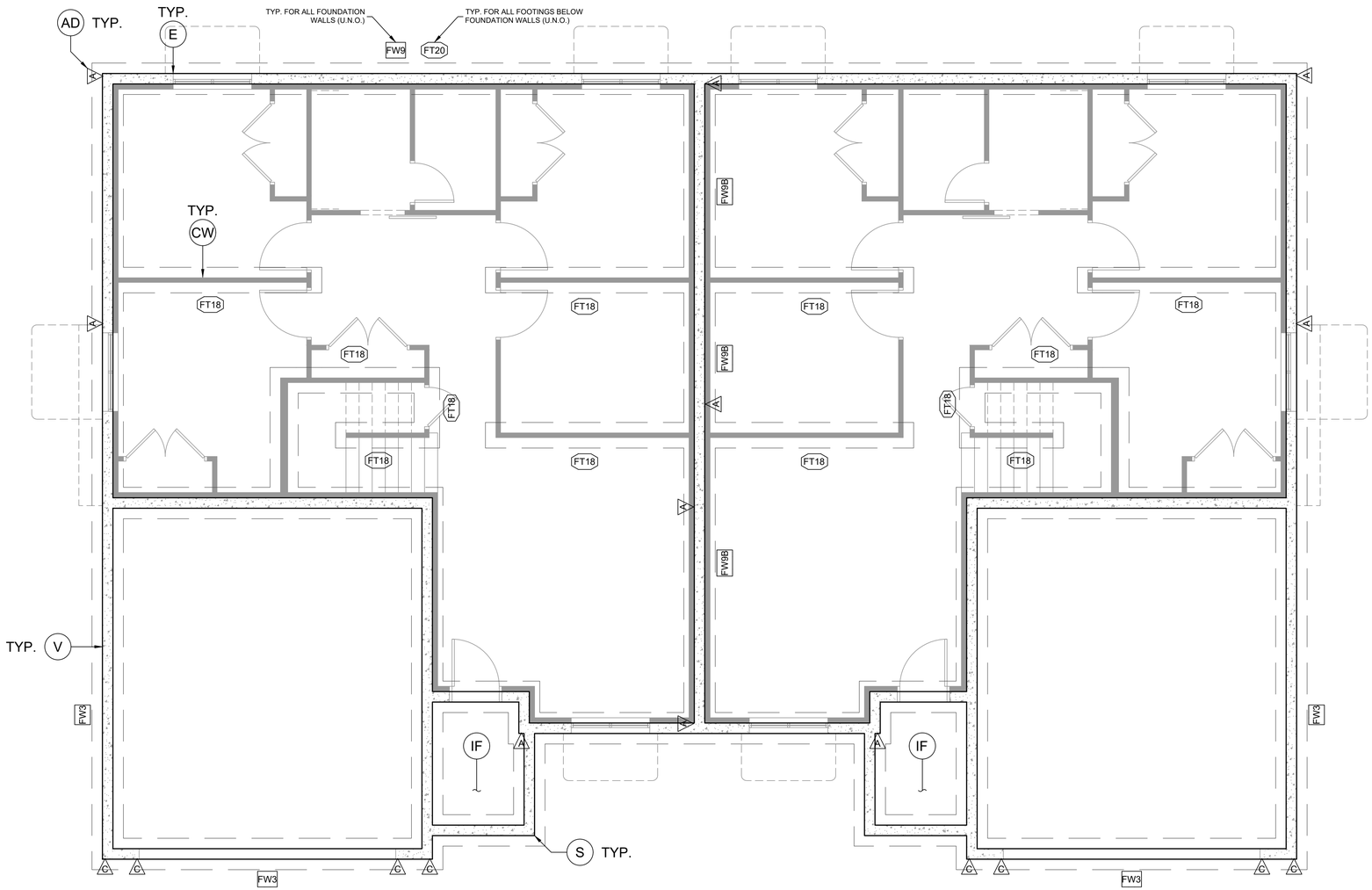
PROFESSIONAL ENGINEER
No. 8695107
CHRISTOPHER
MICHAEL WATTS
07/15/2021
STATE OF UTAH

SN1

HOLD-DOWN SCHEDULE				
MARK	HOLD-DOWN	MINIMUM FASTENERS	ANCHOR	POST
A	LSTHD8	10d X 2-1/2" (.148 X 2-1/2")	STRAP 8" EMBED.	(2) 2X POST
C	STHD14	10d X 2-1/2" (.148 X 2-1/2")	STRAP 14" EMBED.	(2) 2X POST
1. HOLD-DOWNS SHALL BE SIMPSON STRONG-TIE OR EQUIVALENT.				
2. SHEAR WALL EDGE NAILING SHALL BE TO HOLD-DOWN POST.				
3. STHD STRAPS SHALL BE "RJ" TYPE AT RIM JOIST LOCATIONS.				

FOOTING SCHEDULE					
				REINFORCEMENT	
MARK	WIDTH	LENGTH	THICKNESS	TRANSVERSE	LENGTHWISE
FT18	18 "	CONT.	10 "	-	(2) #4
FT20	20 "	CONT.	10 "	-	(2) #4
1. CONTINUOUS FOOTINGS SHALL BE CENTERED UNDER WALLS AND SPOT FOOTINGS SHALL BE CENTERED UNDER COLUMNS UNLESS NOTED OTHERWISE.					
2. FOOTINGS AND FOUNDATIONS, EXCAVATIONS, GRADING, AND FILL SHALL COMPLY WITH THE PROVISIONS OF THE GEOTECHNICAL REPORT (SEE GSN)					

FOUNDATION WALL SCHEDULE					
			REINFORCEMENT		
MARK	HEIGHT	WIDTH	VERTICAL	HORIZONTAL	PLACEMENT
FW3	3'	8"	#4 @ 24"	(3) #4	CENTER
FW9	9'	8"	#4 @ 16"	(7) #4	CENTER
FW9B	9'	10"	#4 @ 12"	(11) #4	CENTER
1. DOWEL VERTICAL BARS INTO FOOTING.					
2. PLACE TOP AND BOTTOM BARS WITHIN 4" OF TOP AND BOTTOM OF WALL.					
3. PLACE REINFORCEMENT IN CENTER OF WALL OR NEAR EACH FACE, AS NOTED.					



FOOTING AND FOUNDATION PLAN

1/4" = 1'-0"

ACUTE ENGINEERING, INC.
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12 JUL 2021

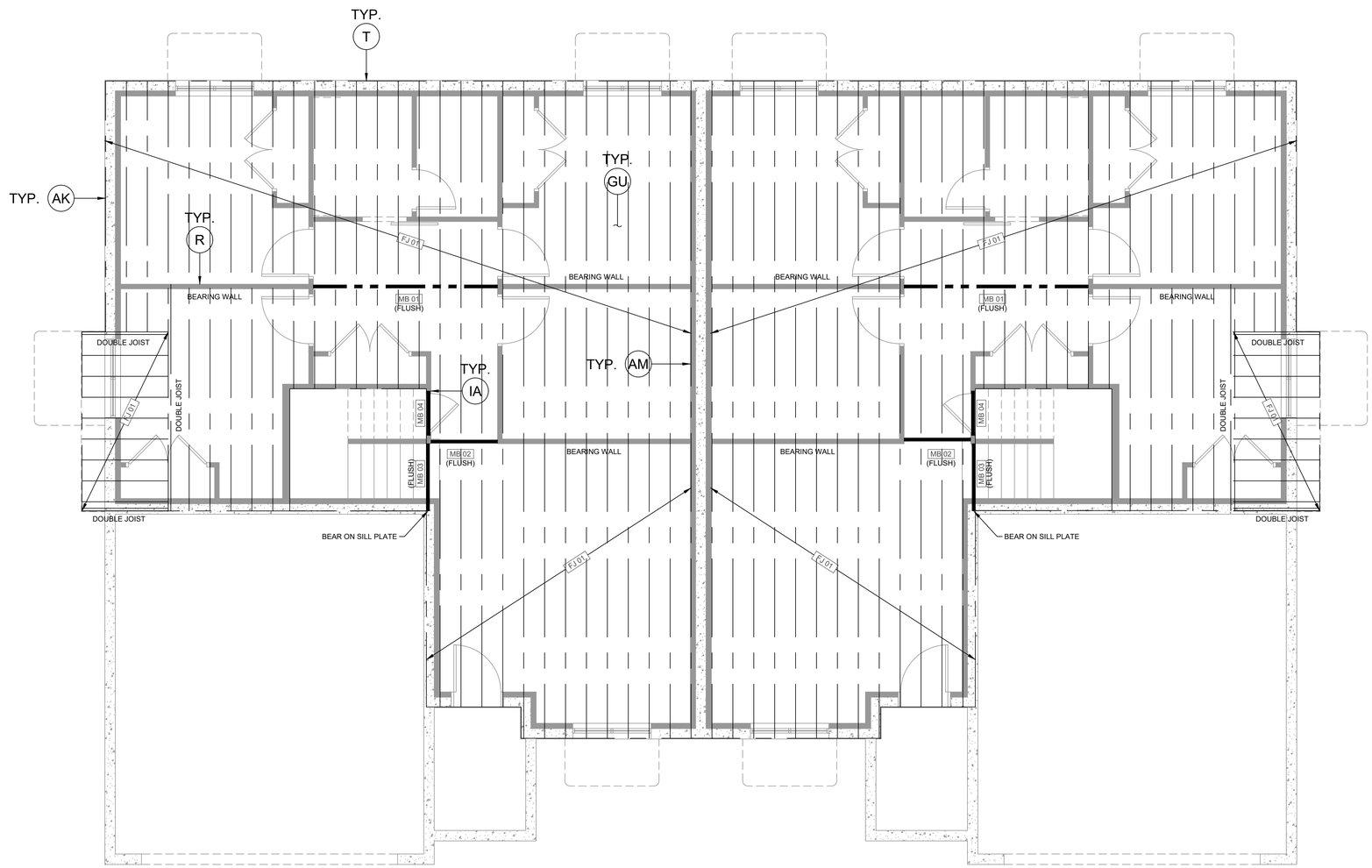
URBAN INDUSTRIAL BRINKERHOFF DUPLEX (PAYSON)

FOOTING AND FOUNDATION PLAN

ISSUES / REVISIONS

PROFESSIONAL ENGINEER
No. 6685191
CHRISTOPHER WRONSKI BATES
07/15/2021
STATE OF UTAH

S0-0



BEAM SCHEDULE	
MARK	TYPE
MB 01	(2) 1-3/4 X 11-7/8 LVL
MB 02	(2) 1-3/4 X 11-7/8 LVL
MB 03	1-3/4 X 11-7/8 LVL
MB 04	(2) 2 X 6
1. DIMENSIONAL LUMBER DF #2 U.N.O.	
2. LAMINATED VENEER LUMBER (LVL) 2.0E	
3. GLUED-LAMINATED TIMBER (GLB) 24F-1.8E	
4. STEEL W-SHAPES A992-50	
5. SUFFIXES (A, B, ETC.) DENOTE ALTERNATIVES FOR THE SPECIFIED BEAM	
6. ALL HEADERS IN BEARING WALLS TO HAVE MIN. (1) TRIMMER & (1) KING STUD U.N.O. ALL OTHER BEAMS AND GIRDER TRUSSES TO HAVE MIN. (2) 2X SUPPORTS U.N.O.	

POST SCHEDULE	
MARK	TYPE
P 05	4 X 4 POST
T 02	(2) TRIM
1. PARALLEL STRAND LUMBER (PSL) 1.8E	
2. STEEL PIPE (PIPE STD) A53	
3. STEEL HOLLOW SECTION (HSS) A500	
4. STEEL COLUMNS REQUIRE BEARING PLATES	
5. CONTINUE POSTS TO FDN / STRUCT MEMBER	

SHEATHING SCHEDULE	
TYPE	THICKNESS
FLOOR	3/4" OSB (48/24 SPAN RATING)
ROOF	7/16" OSB (24/16 SPAN RATING)
1. SHEATHING PERPENDICULAR TO SUPPORTS.	
2. FLOOR SHEATHING NAILED & GLUED TO SUPPORT	
3. 8d COMMON NAILS 6" O.C. (EDGES) 12" O.C. (FIELD)	
4. NAILING NO CLOSER THAN 3/8" FROM PANEL EDGE	

FLOOR JOIST SCHEDULE	
MARK	TYPE
FJ 01	11-7/8" TJI 210 @ 16" O.C.
1. DIMENSIONAL LUMBER DF #2 U.N.O.	
2. SUFFIXES (A, B, ETC.) DENOTE ALTERNATIVES FOR THE SPECIFIED JOIST	

MAIN FLOOR FRAMING PLAN

1/4" = 1'-0"

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URBAN INDUSTRIAL BRINKERHOFF DUPLEX (PAYSON)

MAIN FLOOR FRAMING PLAN

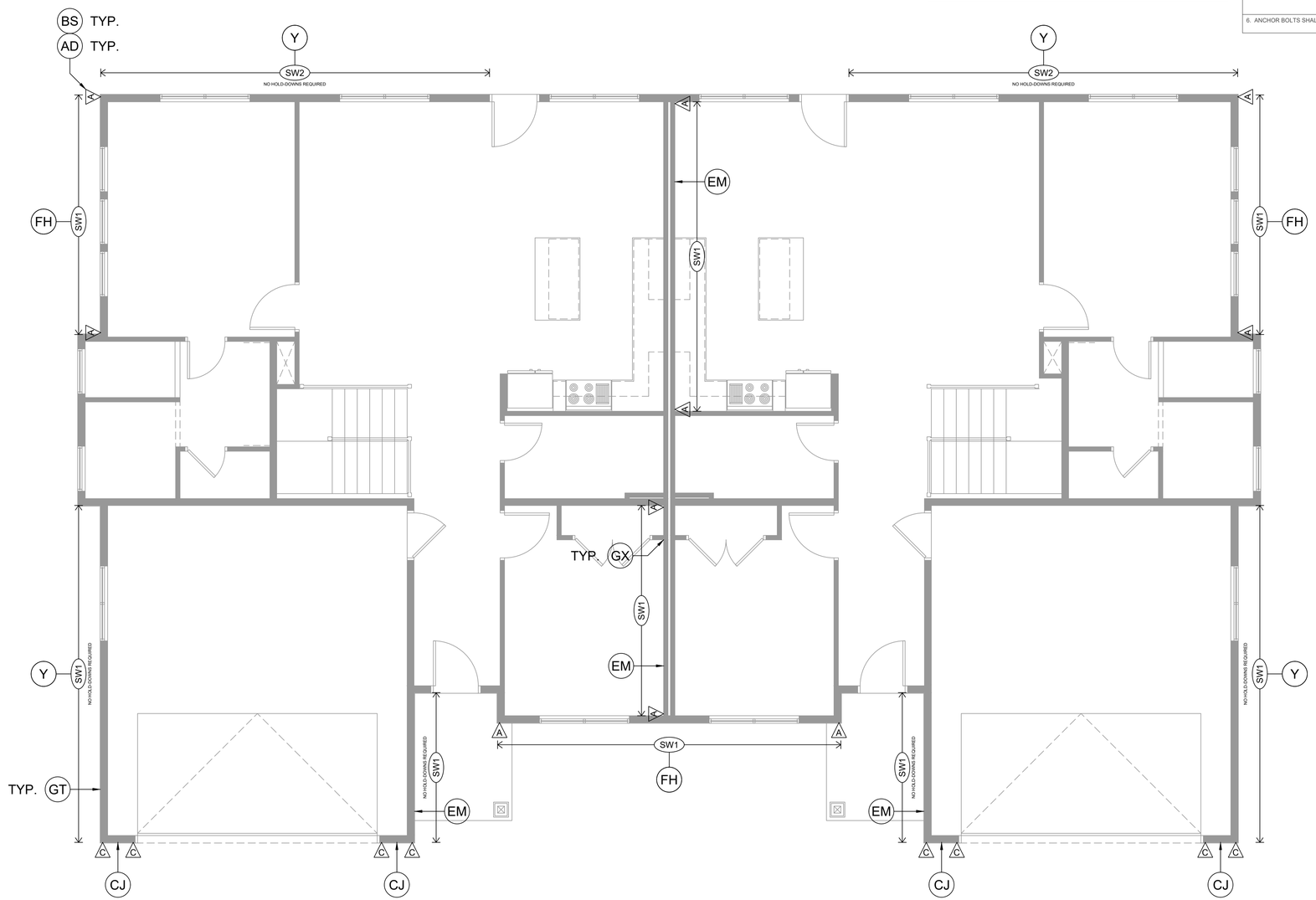
ISSUES / REVISIONS

PROFESSIONAL ENGINEER
No. 5685158
CHRISTOPHER WESLEY WATTS
07/15/2021
STATE OF UTAH

S1-0

HOLD-DOWN SCHEDULE				
MARK	HOLD-DOWN	MINIMUM FASTENERS	ANCHOR	POST
A	LSTHD8	10d X 2-1/2" (.148 X 2-1/2")	STRAP 8" EMBED.	(2) 2X POST
C	STHD14	10d X 2-1/2" (.148 X 2-1/2")	STRAP 14" EMBED.	(2) 2X POST
1. HOLD-DOWNS SHALL BE SIMPSON STRONG-TIE OR EQUIVALENT.				
2. SHEAR WALL EDGE NAILING SHALL BE TO HOLD-DOWN POST.				
3. STHD STRAPS SHALL BE "RJ" TYPE AT RIM JOIST LOCATIONS.				

SHEAR WALL SCHEDULE					
MARK	SHEATHING	EDGE NAILING	ABUTTING PANEL EDGE FRAMING	ANCHORAGE	
				SOLE PLATE	SILL PLATE
SW1	7/16"	8d @ 6"	2X	10d @ 12"	5/8" A.B. @ 32"
SW2	7/16"	8d @ 4"	2X	10d @ 12"	5/8" A.B. @ 32"
1. SHEATHING SHALL CONSIST OF WOOD STRUCTURAL PANELS (SEE GSN).					
2. UNLESS NOTED ON DRAWINGS, EXTERIOR STUDS SHALL BE SPACED AT 16" O.C.					
3. SHEATHING NAILS SHALL BE COMMON OR GALVANIZED BOX NAILS. - FIELD NAIL SPACING SHALL BE 12" FOR STUDS SPACED 16" O.C. OR LESS AND 6" O.C. FOR STUDS SPACED AT 24" O.C.					
4. FOR SW1 ONLY, EDGE NAILS MAY BE SUBSTITUTED WITH 1-1/2" 16 GAGE STAPLES SPACED AT 3" O.C. AND FIELD NAILS MAY BE SUBSTITUTED WITH 16 GAGE STAPLES AT 12" O.C.					
5. ANCHORAGE NAILS SHALL BE COMMON NAILS.					
6. ANCHOR BOLTS SHALL HAVE A 3X3X0.229" WASHER AND 7" MIN EMBEDMENT. THE WASHER SHALL EXTEND TO WITHIN 1/2" FROM THE SHEATHING.					



MAIN FLOOR SHEAR WALL PLAN

1/4" = 1'-0"

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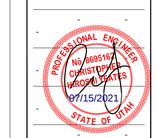
URBAN INDUSTRIAL BRINKERHOFF DUPLEX (PAYSON)

MAIN FLOOR SHEAR WALL PLAN

ISSUES / REVISIONS



S1-1

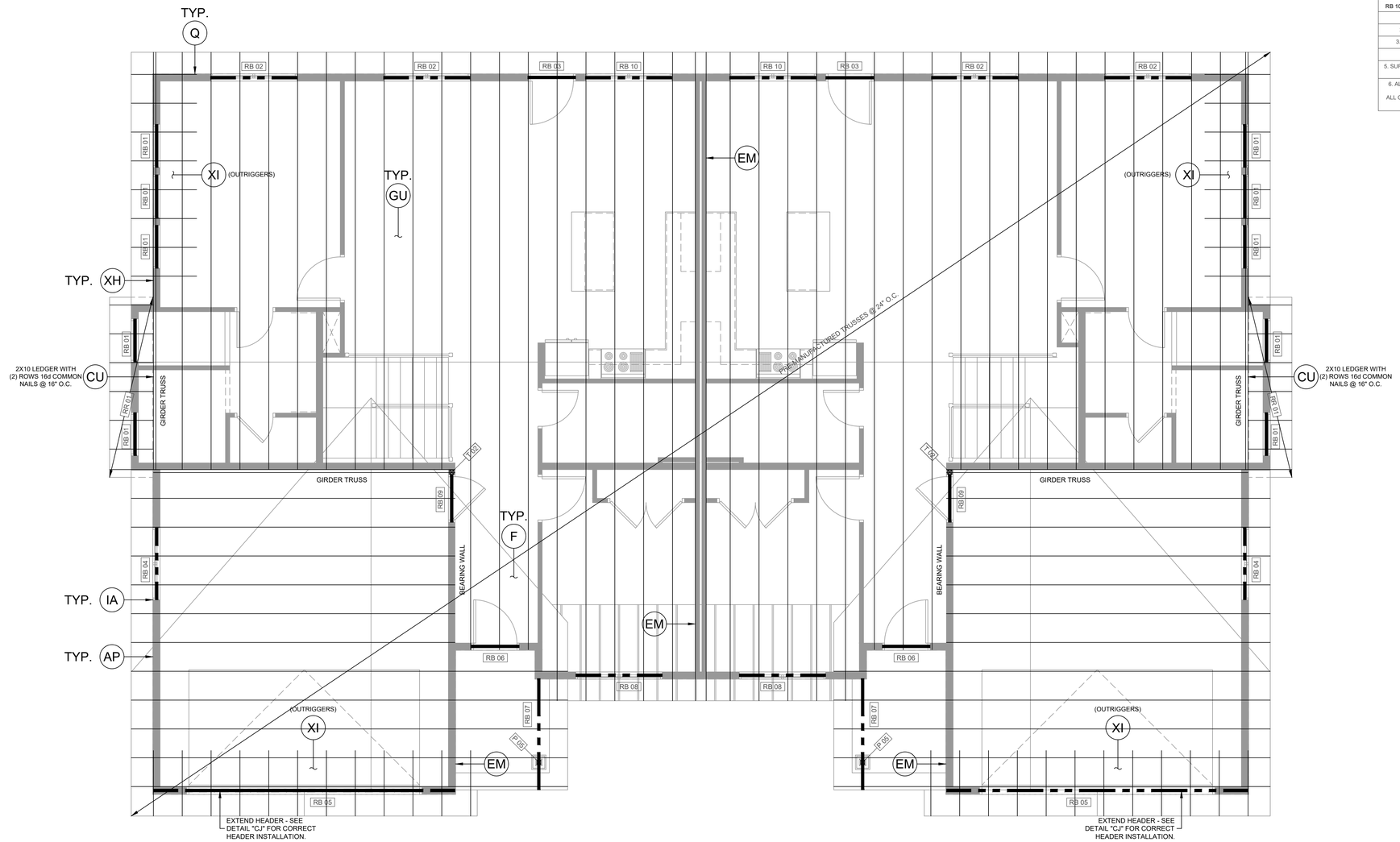
WOOD TRUSS LOADS
GROUND SNOW LOAD, Pg = 34 PSF
FLAT ROOF SNOW LOAD = 24 PSF
TOP CHORD DEAD LOAD = 10 PSF
BOTTOM CHORD DEAD LOAD = 5 PSF
1. DESIGN SNOW LOADS SHALL BE IN ACCORDANCE WITH ASCE 7-16 CHAP.7 (2018 IBC 1608.1)

SHEATHING SCHEDULE	
TYPE	THICKNESS
FLOOR	3/4" OSB (48/24 SPAN RATING)
ROOF	7/16" OSB (24/16 SPAN RATING)
1. SHEATHING PERPENDICULAR TO SUPPORTS.	
2. FLOOR SHEATHING NAILED & GLUED TO SUPPORT	
3. 8d COMMON NAILS 6" O.C. (EDGES) 12" O.C. (FIELD)	
4. NAILING NO CLOSER THAN 3/8" FROM PANEL EDGE	

ROOF RAFTER SCHEDULE	
MARK	TYPE
RR 01	2 X 10 @ 24" O.C.
1. DIMENSIONAL LUMBER DF #2 U.N.O.	
2. SUFFIXES (A, B, ETC.) DENOTE ALTERNATIVES FOR THE SPECIFIED RAFTER	

POST SCHEDULE	
MARK	TYPE
P 05	4 X 4 POST
T 02	(2) TRIM
1. PARALLEL STRAND LUMBER (PSL) 1.8E	
2. STEEL PIPE (PIPE STD) A53	
3. STEEL HOLLOW SECTION (HSS) A500	
4. STEEL COLUMNS REQUIRE BEARING PLATES	
5. CONTINUE POSTS TO FDN / STRUCT MEMBER	

BEAM SCHEDULE	
MARK	TYPE
RB 01	(2) 2 X 6
RB 02	(3) 2 X 8
RB 03	(3) 2 X 6
RB 04	(3) 2 X 6
RB 05	(2) 1-3/4 X 11-7/8 LVL
RB 06	(2) 2 X 6
RB 07	(2) 2 X 8
RB 08	(3) 2 X 10
RB 09	(2) 2 X 6
RB 10	(3) 2 X 10
1. DIMENSIONAL LUMBER DF #2 U.N.O.	
2. LAMINATED VENEER LUMBER (LVL) 2.0E	
3. GLUED-LAMINATED TIMBER (GLB) 24F-1.8E	
4. STEEL W-SHAPES A992-50	
5. SUFFIXES (A, B, ETC.) DENOTE ALTERNATIVES FOR THE SPECIFIED BEAM	
6. ALL HEADERS IN BEARING WALLS TO HAVE MIN. (1) TRIMMER & (1) KING STUD U.N.O. ALL OTHER BEAMS AND GIRDER TRUSSES TO HAVE MIN. (2) 2X SUPPORTS U.N.O.	



ROOF FRAMING PLAN

1/4" = 1'-0"

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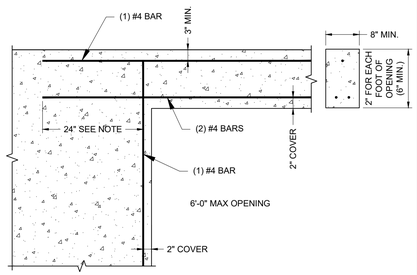
URBAN INDUSTRIAL BRINKERHOFF DUPLEX (PAYSON)

ROOF FRAMING PLAN

ISSUES / REVISIONS

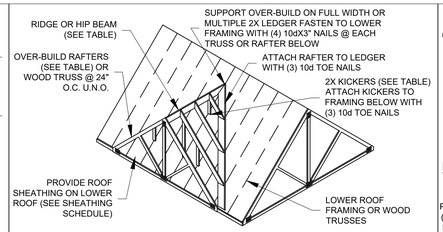
PROFESSIONAL ENGINEER
No. 6695162
CHRISTOPHER HARDY
07/15/2021
STATE OF UTAH

S3-0



NOTE: EXTEND REINFORCEMENT 24" BEYOND OPENING ON EACH SIDE. WHERE SPACE IS LIMITED, EXTEND 12" BEYOND OPENING WITH 90° HOOK.

E FOUNDATION WALL - CONCRETE LINTEL
NO SCALE

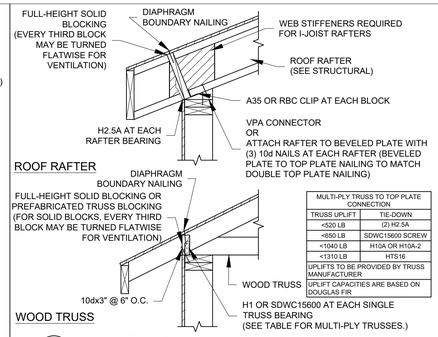


FLAT ROOF SNOW LOAD	KICKER SIZE	RAFTER SIZE	RIDGE BEAM SIZE
0-40 PSF	2X4	2X4	2X6
40-80 PSF	2X6	2X4	2X6
80-120 PSF*	(2) 2X4	2X6	2X8

1.SUPPORT ALL RAFTERS AND RIDGE BEAMS WITH KICKERS SPACED AT 48" O.C. MAX. SUPPORT KICKERS ON FRAMING BELOW.

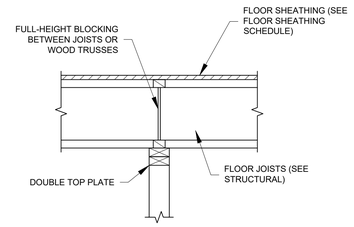
*2. FOR SNOW LOADS OF 80-120PSF, ATTACH EACH KICKER TO FRAMING BELOW WITH (1) A35 CLIP.

F ROOF FRAMING - OVER BUILD FRAMING
NO SCALE

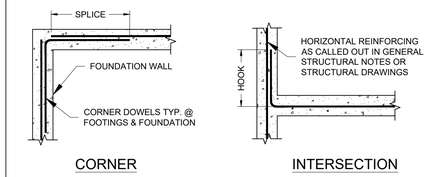


MULTI-PLY TRUSS TO TOP PLATE CONNECTION	
TRUSS UPLIFT	TIE-DOWN
<520 LB	(2) H2.5A
<650 LB	SDWC15600 SCREW
<1040 LB	H10A OR H10A-2
<1310 LB	HTS16
UPLIFTS TO BE PROVIDED BY TRUSS MANUFACTURER.	
UPLIFT CAPACITIES ARE BASED ON DOUGLAS FIR	

Q ROOF FRAMING - BLOCKING (150 PLF UNIT SHEAR)
NO SCALE

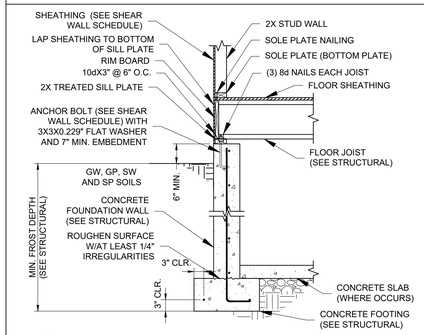


R BEARING WALL - INTERIOR TO FLOOR
NO SCALE

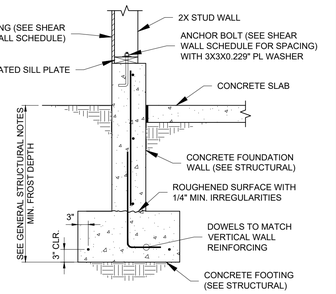


REQUIRED LAP LENGTH			
TYPE	CONCRETE	MASONRY	MIN.
SPLICE	40 BAR DIA.	48 BAR DIA.	24"
HOOK	12 BAR DIA.	20 BAR DIA.	12"

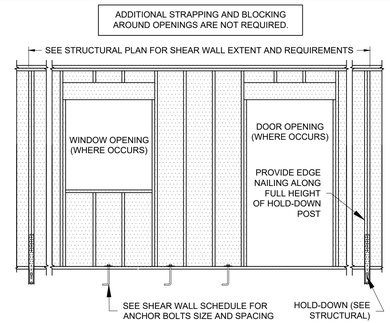
S FOUNDATION WALL - CORNER & INTERSECTION REINFORCING
NO SCALE



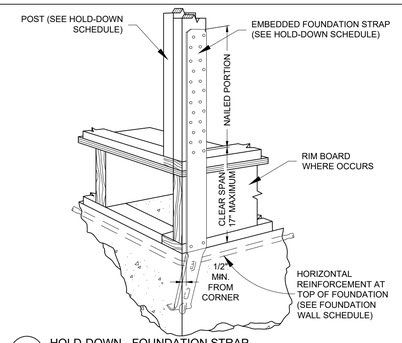
T FOUNDATION WALL - FLOOR JOIST (PERPENDICULAR)
NO SCALE



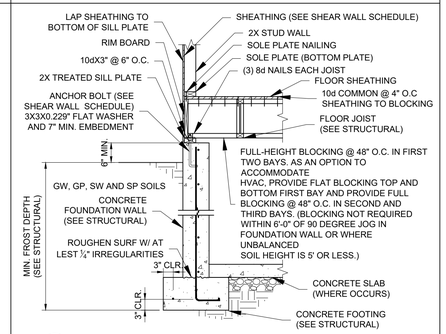
V FOUNDATION WALL - SLAB ON GRADE
NO SCALE



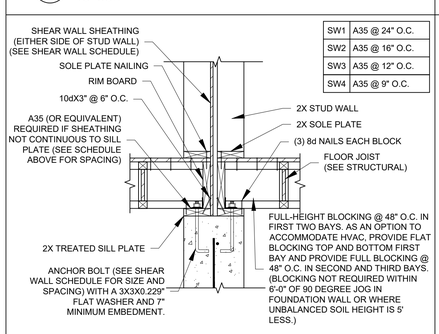
Y SHEAR WALL - PERFORATED
NO SCALE



AD HOLD-DOWN - FOUNDATION STRAP
NO SCALE

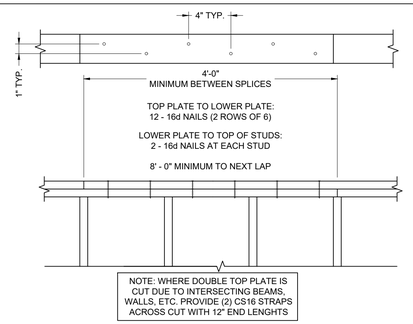


AK FOUNDATION WALL - FLOOR JOIST (PARALLEL)
NO SCALE

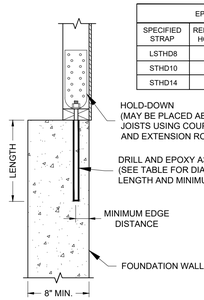


SW1	A35 @ 24" O.C.
SW2	A35 @ 16" O.C.
SW3	A35 @ 12" O.C.
SW4	A35 @ 9" O.C.

AM SHEAR AT PARTY WALL - JOISTS PARALLEL TO FOUNDATION
NO SCALE



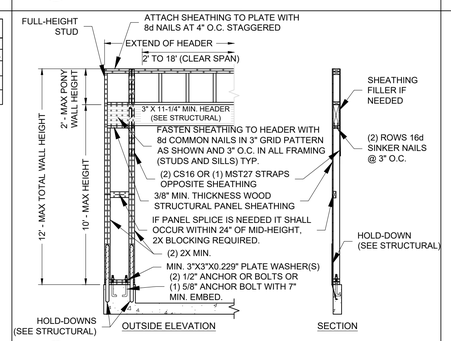
AP DIAPHRAGM - TOP PLATE SPLICE
NO SCALE



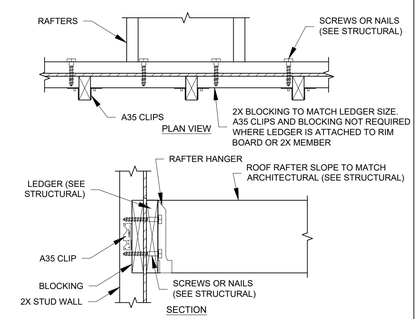
EPOXY RETROFIT FOR MISPLACED STHD				
SPECIFIED STRAP	REPLACEMENT HOLD-DOWN	REPLACEMENT EPOXY ANCHOR		
		DIA.	LENGTH	MIN. EDGE DIST.
LSTHD8	HDU2	5/8"	8"	1-3/4"
STHD10	HDU4	5/8"	12"	1-3/4"
STHD14	HDU5	5/8"	16"	1-3/4"

NOTES:
1. EPOXY SHALL BE SIMPSON SET-XP OR EQUIVALENT. SEE MANUFACTURER FOR INSTALLATION REQUIREMENTS.
2. ALL PRODUCTS ARE SIMPSON DESIGNATIONS, EQUIVALENT ANCHORS AND HOLD-DOWNS ARE PERMITTED.

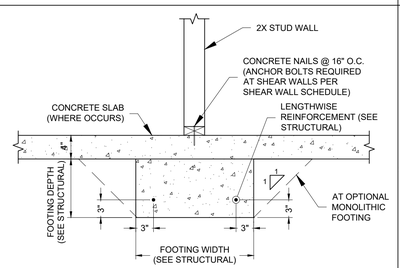
BS RETROFIT EPOXY ANCHOR IN FOUNDATION WALL
NO SCALE



CJ APA PORTAL FRAME - CONCRETE FOUNDATION
NO SCALE

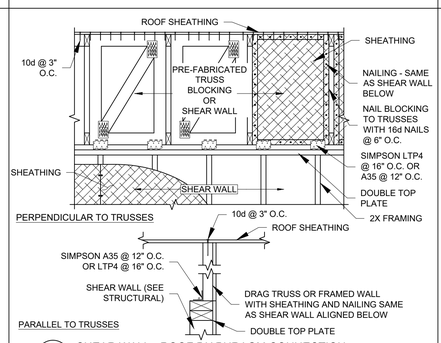


CU LEDGER - RAFTER TO FRAMED WALL
NO SCALE

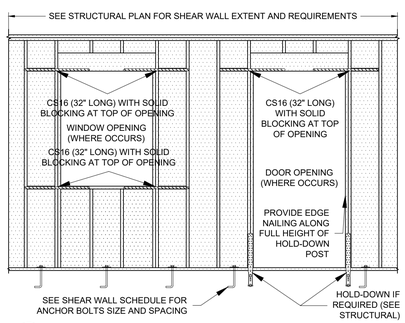


NOTE: FASTENERS IN PRESERVATIVE-TREATED AND FIRE-RETARDANT-TREATED WOOD SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE, OR COPPER.

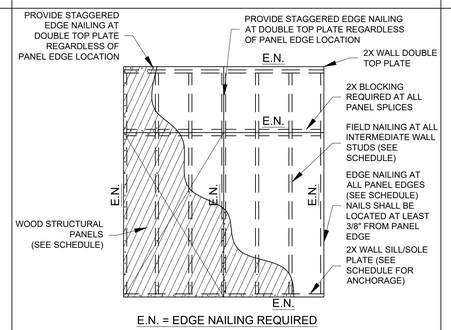
CW BEARING WALL - INTERIOR FOOTING
NO SCALE



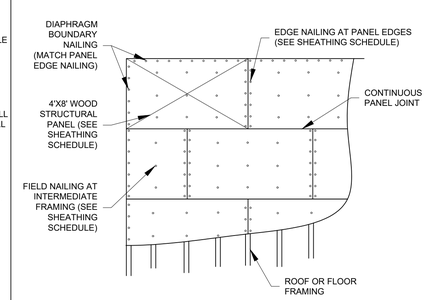
EM SHEAR WALL - ROOF DIAPHRAGM CONNECTION
NO SCALE



FH SHEAR WALL - FORCE TRANSFER AROUND OPENINGS
NO SCALE



GT SHEAR WALL - ROOF DIAPHRAGM CONNECTION
NO SCALE



GU WOOD STRUCTURAL PANEL DIAPHRAGM - UNBLOCKED
NO SCALE

ACUTE ENGINEERING, INC.
744 S 400 E
Orem, UT 84097
Phone 801.229.9020
Fax 801.224.0050
info@acuteengineering.com

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DIMENSIONS AND ELEVATIONS ARE SUPPLIED BY THE ARCHITECT. THEY MAY BE PROVIDED ON THE STRUCTURAL PLANS AND DETAILS FOR THE CONVENIENCE OF THE CONTRACTOR. VERIFY DIMENSIONS AND ELEVATIONS WITH ARCHITECTURAL DRAWINGS.

ORIGINAL PROJECT #
550721
DRAWN BY:
MBN
CHECKED BY:
MCW
SCALE:
NTS
DATE:
12 JUL 2021

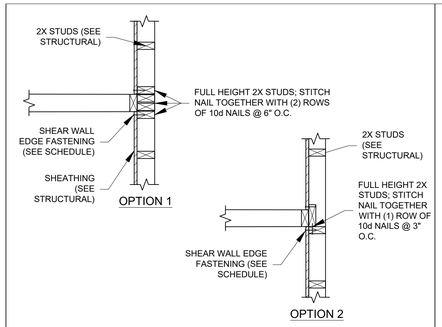
URBAN INDUSTRIAL BRINKERHOFF DUPLEX (PAYSON)

STRUCTURAL DETAILS

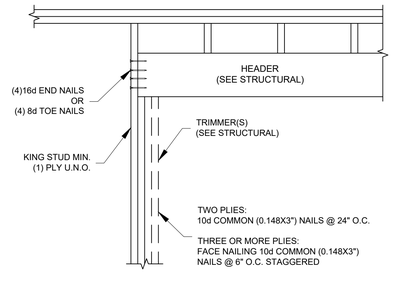
ISSUES / REVISIONS

PROFESSIONAL ENGINEER
No. 6695157
CHRISTOPHER M. WESTON STATES
07/15/2021
STATE OF UTAH

SD1



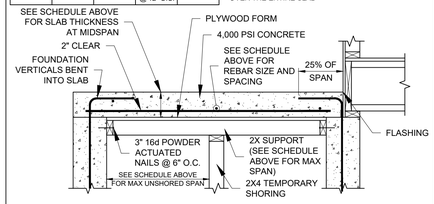
GX SHEAR WALL TRANSFER - WALL INTERSECTION
NO SCALE



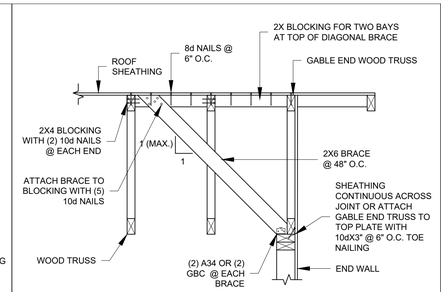
IA WOOD BEAM - WALL HEADER FRAMING
NO SCALE

SLAB THICKNESS AT MID-SPAN	MAX SLAB SPAN	REBAR SPACING	2X SUPPORT	MAX UNSHORED SPAN
6"	10'	#4 @ 18" O.C. EACH WAY	2X4 DF #2 @ 16" O.C.	4'-10"
			2X6 DF #2 @ 16" O.C.	7'-0"
8"	13'	#4 @ 12" O.C. EACH WAY	2X4 DF #2 @ 12" O.C.	4'-10"
			2X6 DF #2 @ 12" O.C.	7'-0"

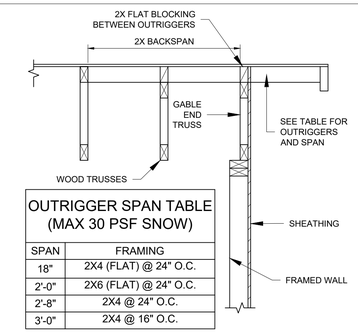
NOTE: CONCRETE SLABS CAN HAVE A MAXIMUM SLOPE OF 2" OVER THE ENTIRE SLAB



IF SUSPENDED SLAB
NO SCALE



XH WOOD TRUSS - WOOD WALL GABLE END BRACING
NO SCALE



OUTRIGGER SPAN TABLE (MAX 30 PSF SNOW)

SPAN	FRAMING
18"	2X4 (FLAT) @ 24" O.C.
2'-0"	2X6 (FLAT) @ 24" O.C.
2'-8"	2X4 @ 24" O.C.
3'-0"	2X4 @ 16" O.C.

XI WOOD TRUSS - WOOD WALL OUTRIGGER (30 PSF SNOW)
NO SCALE

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744 S 400 E
Orem, UT 84097
Phone 801.229.9020
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URBAN INDUSTRIAL BRINKERHOFF DUPLEX (PAYSON)

STRUCTURAL DETAILS

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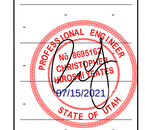
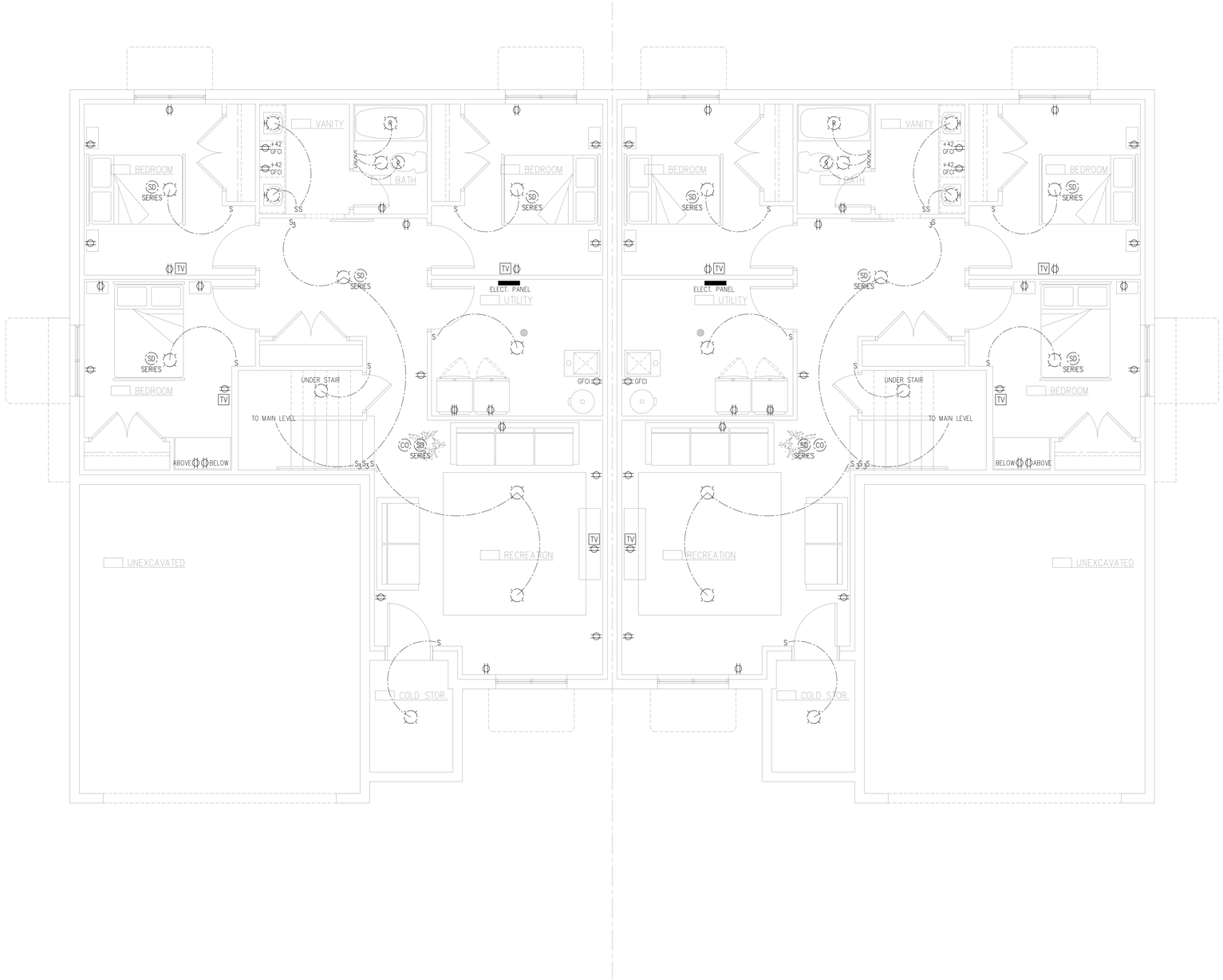


SD2



SYMBOL	DESCRIPTION
S	SINGLE POLE SWITCH
S_R	RECESS CAN SWITCH
S_3	THREE WAY SWITCH
S_4	FOUR WAY SWITCH
TV	TELEVISION
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER
	4x OUTLET
	110 OUTLET
	220 OUTLET
P	PENDANT LIGHT FIXTURE
R	RECESSED CAN LIGHT FIXTURE
	SURFACE MOUNT LIGHT FIXTURE
	WALL MOUNT LIGHT FIXTURE
TH	THEATER WALL SCONCE LIGHT FIXTURE
SD SERIES	SMOKE DETECTOR
CO	CO DETECTOR
	EXHAUST FAN
	CEILING FAN & LIGHT
ELECT. PANEL	ELECTRICAL PANEL
	WIRING (SCHEMATIC ONLY)
	UTILITY LIGHT FIXTURE

GENERAL SHEET NOTES

1. ALL RECEPTACLES SERVING COUNTERTOPS IN THE KITCHEN, GARAGE, BATHS, OUTSIDE GRADE LEVEL, & UNFINISHED BASEMENTS NEED TO BE GFCI PROTECTED.
2. WIRING WITHIN 6' OF ATTIC ACCESS MUST HAVE LUMBER-GUARD STRIP.
3. ELECTRICAL IS SCHEMATIC ONLY VERIFY WITH CONTRACTOR AND OWNER
4. PROVIDE DIMMERS MASTER BEDROOM, TV ROOM & SITTING ROOM LIGHTS
5. COMBINATION ARC FAULTS PROTECTION REQUIRED AT ALL BEDROOM LIGHTS, SWITCHES, SMOKE DETECTORS, & RECEPTACLES.
6. CAN LIGHTS ABOVE TUBS OR SHOWERS TO HAVE A GASKETED LENS (TYPICAL).
7. ALL EXTERIOR OUTLETS TO HAVE APPROVED BUBBLE COVERS.
8. ALL ELECTRICAL OUTLETS TO BE TAMPERPROOF

1 BASEMENT LEVEL ELECTRICAL PLAN

SCALE: 1/4" = 1'-0"

URBAN INDUSTRIAL
E: JPARKINDESIGN@GMAIL.COM
P: 801.866.5014

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BASEMENT LEVEL ELECTRICAL PLAN

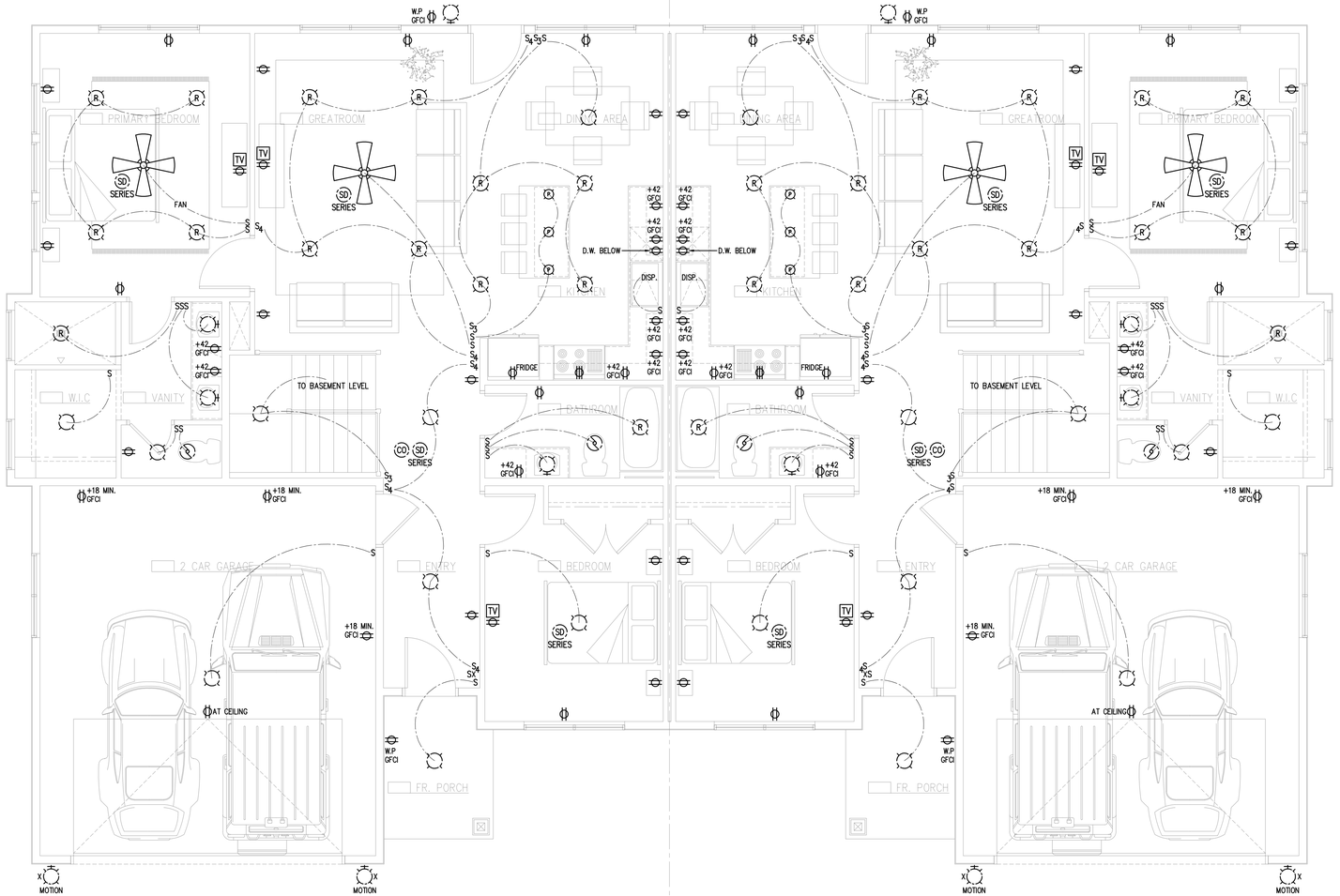
BRINKERHOFF DUPLEX

387 NORTH 300 EAST
PAYSON, UTAH

REVISIONS

PLAN DATE
JULY 2021

SHEET NUMBER
E1.0



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1 MAIN LEVEL ELECTRICAL PLAN

SCALE: 1/4" = 1'-0"

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MAIN LEVEL ELECTRICAL PLAN

BRINKERHOFF DUPLEX

387 NORTH 300 EAST
PAYSON, UTAH

REVISIONS

PLAN DATE
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SHEET NUMBER
E1.1