GENERAL NOTES:

1. The contractor shall verify all dimensions, elevations and site conditions before starting work and the engineer shall be notified in writing immediately of any discrepancies or inconsistencies. In no case shall dimensions be scaled from plans, sections or details on these drawings. these notes shall be considered as part of the written specifications.

2. Any dimensions and/or conflicts between the various elements of the working drawings and/or specifications shall be brought to the attention of the engineer before proceeding with any work so involved.

3. Notes and details on drawings shall take precedence over "General Notes" and typical details.

4. Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including the safety and protection of all persons and property. This requirement shall apply continuously and not be limited to normal working hours. The contractor shall defend, indemnify and hold the owner and the engineer harmless from any or all of the liability in connection with the performance of work on this project, except for liability arising from the sole negligence of the owner, the tenant or the engineer.

5. Existing utilities, whether shown hereon or not are to be protected from damage. The contractor shall be responsible for relocating, as necessary, any and all utilities that may intertere with the installations of the details as shown and the cost of any and all such relocations shall be included in the fixed price cost to perform this work.

6. The contractors shall notify the engineer if conditions encountered are different than indicated.

7. The contractor shall supply and erect all temporary scaffolding, ladders, man-lifts, etc., as required to access all work areas shown on the plans. All scaffolding requirements are to be determined by the contractor during the pre-bid walk-through.

8. Constructions materials shall be spread out if placed on framed floor. Load shall not exceed the design live load per square foot, provide adequate shoring and/or bracing where structure has not attained the design strength or where overload is anticipated.

9. Lobana Engineering shall not have control or change of and shall not be responsible in any way for construction means, methods, techniques, sequences, or procedures, or for safety or safety precautions and programs in connection with any construction responsibility under the contract for construction.

10. Lobana Engineering shall not be responsible for the contractors schedule or failures to carry out any construction activities in accordance with the contract documents. Lobana Engineering shall not have control over or change of omissions of the contractor, subcontractors or any agents, or employers or any other persons performing portions of any construction activities.

11. The contractor shall allow sufficient time for delivery of special order items in order to complete the installations in a timely manner.

12. Contractor shall coordinate with the building owners requirements for construction schedule, access to the site, contractors field office and utility hookups, use of utility services during construction, location of temporary storage of construction materials and removed items, hours of allowable construction, restrictions on construction activities, etc. prior to beginning construction.

13. Contractor shall protect existing finishes, equipment, and adjacent work which is to remain in place, as well as items which are to be removed and reinstalled, from damage. the contractor shall bear all expenses of repair or replacement of existing structural and nonstructural items damaged in connection with this work.

14. Number and sizes of existing items, (e.g. conduits, pipes, light fixtures, etc.), which may be shown on the drawings are for identification purposes only. Existing items noted may not represent all items intertering with new work nor all items which may need to be removed to access work areas. Contractor shall field verify interfering items and sizes.

15. The contractor shall provide temporary support for items such as electrical panels, suspended ceilings, pipes, etc., which are detached from existing structure but remain in place during installation of retrofits. The contractor shall bear all expense for repair or replacement of these items if they are damaged during retrofit installation.

16. Contractor shall perform periodic and final cleaning of work areas. Occupied areas shall be kept in a condition suitable for use by the owner, unoccupied areas shall be cleaned during the construction to keep work areas free from accumulations of waste material and rubbish. Contractor shall clean spillage, over-spray, heavy collection of dust in occupied areas and those items which may present a hazard, immediately. Final cleaning shall be performed at the completion of the work to return areas to a condition suitable for use by the building owner. Contractor shall comply with all federal state and local codes, ordinances, regulations and antipollution laws.

17. Contractor shall maintain record documents (e.g. drawings, addendum, change orders, reviewed shop drawings, field test records, etc.) at the site as directed by the owners. The contractor shall maintain an accurate record of changes in the documents, and shall transfer the recorded changes to a set of reproducible documents upon completion of the work.

18. Construction shall be carried out in a well organized fashion that does not adversely affect normal operations in the building without prior written authorization from the building owner.

19. The contractor shall develop a construction schedule indicating the order and interdependence of all activities necessary to complete the work and the sequence in which each activity is to be accomplished.

20. The contractor shall not disconnect any fire alarm, fire alarm pull box emergency light, electrical panel, electrical conduit, pipe HVAC duct, etc. Without first notifying the owner in writing and obtaining approval. Contractor shall transfer services to new electrical panels, transformers, etc., prior to disconnection from existing panels, transformers, etc., if required by new owner to maintain continuous operation.
Notify Fire Department of any disconnection to fire alarm.

21. Dust control shall be performed on a continuing basis as the work proceeds and whenever a dust nuisance or hazard occurs. Contractor shall provide dust barriers constructed of materials acceptable to the building owner and dust control measures (e.g. sprinkling).

22. Contractor shall maintain noise levels within the limits and times directed by the building owner.

23. Contractor shall take all precautions necessary to prevent fires caused by welding. These precautions shall include but not be limited to containing spark in the immediate area surrounding the welding, etc. And other requirements imposed by the owner, contractor shall construct barriers as required to protect existing adjacent items from damage (and to screen welding operations from view, if directed by owner). Contractor shall adequately ventilate areas where welding is taking place as required.

24. Contractor shall see that all his vehicle and stationery piston engine powered equipment are equipped with well maintained emission control systems in conformance with federal, state, and local regulations. Transfer and storage systems shall be constructed and operated to minimize escape of vapor and particular and shall comply in this regard with the regulations of the state of California. The contractor shall operate engine powered equipment inside the building only with written approval of the building owner and shall ventilate the building as required by the owner.

25. Contractor shall store construction materials, removed items, etc., in areas designated by the owner, materials shall be stored in such a manner as to prevent damage, soiling, weathering, etc.

WOOD

1. All lumber shall be Douglas Fir-Larch visually graded per WBLIB/WNPA grading rules and shall be fabricated and installed per AITC, TPI and 2018 NDS for wood construction.
   A. 2x joist and rafter No.2 or better
   B. 4x and larger beams No.1 or better
   C. Plates, blocking and studs Construction or Better
2. Roof/floor joists having depth/thickness ratio of 6 or more shall be supported laterally by bridging installed at 8' OC. Bridging may be omitted at ends of rafters/joists which are nailed or fastened to framing members. The distance between lines of bridging or from bridging to end bearing shall not exceed 8'0". Rafters 6" in depth or greater shall be supported laterally at ends and at each support by 2" min. Solid blocking, full depth, in a continuous line unless nailed to header, rim joist, or adjoining stud.
3. Bolt holes in wood shall be drilled 1/32" to 1/16" larger in diameter than nominal bolt size.
4. All bolts bearing on wood shall have washers under head or nut.
5. Members requiring lag bolts shall be predrilled with holes equal to approximately 10% of the bolt shank diameter.
6. Cut washers shall be used under the heads of all bolts and washers bearing on wood.
7. Horizontal framing members shall not be notched or dipped in any manner unless specifically detailed, or as approved by the architect/engineer.
8. Pre-bore holes for nails where members tend to split.
9. Retighten sill bolt nuts before closing in stud walls.
10. Wherever bolts are specified, there shall be a minimum of two (2) bolts each piece with one (1) bolt located within 12" of end of each piece.
11. Provide full depth fire blocking in all stud walls and partitions (including furred spaces) at all floor/ceiling interfaces, soffits, and mid-height of walls over 8'0" height.
12. All studs and headers shall be graded marked.
13. All exposed bolts, protruding through the nut over 1/4" shall be cut back to face of nut and ground or filed smooth.
14. Exposed wood screws shall be flat head and countersunk.
15. Place solid blocking between joists or rafters at all supports. Blocking to be in one piece and same size as joist or rafters, unless noted otherwise on these drawings.
16. All partition walls parallel to joists below shall be supported by double floor joists. Bathroom tubs shall be supported by double floor joists. All partition wall perpendicular to floor joists shall be supported over 4x4 blocking with A35 clip each end.
17. All studs shall be spaced at 16" OC, UNO
18. Provide fire blocking in concealed spaces of stud walls and partitions, (at 10? intervals both vertical and horizontal). And in openings around vents, pipes, ducts, chimneys, between attic and chimney chase.
19. All existing framing shall be verified on field. Any and all discrepancies from plans and actual site conditions shall be the contractors responsibility to notify the engineer of record in a timely manner.
20. All weather-exposed surfaces shall have a weather-resistant barrier to protect the interior wall covering that exterior openings shall be flashed in such a manner as to make them weather proof.
21. Wood members exposed to weather shall be pressure treated per
22. Rake walls adjacent to sloped ceilings shall be balloon framed.
    Double top plates of balloon-framed walls shall be directly connected to horizontal diaphragms.
23. Metal bracing shall be installed at approximately 45° every stud walls not sheathed. Braces to run continuous from top plate to sill/sole plate.
24. Double top plate shall be lapped min. 48" at all splices and shall overlap at corners.
25. Bolts and lag screws bearing on wood shall have standard size steel or malleable iron washer. Lag screws shall be turned into position and not driven.
26. Boring and notching of wall studs shall be as follows:
    A. Notching max: 25% of width of bearing walls
       40% of width at non-bearing walls
    B. Boring max: 40% of width on bearing walls
       60% of width of non-bearing walls
    (boring: a minimum 5/8" clearance from boring edge to edge of stud)
27. Interior non-bearing walls may be anchored with power driven steel studs, in lieu of anchor bolts providing it is not a braced wall, as follows:

A. Max. Spacing	24"
B. Max. Distance from end of wall	12"
C. Min. Head diameter	3/8"
D. Min. Shank diameter	7/32"
E. Min. Dist. From edge of concrete	12"
F. Washer size	16 ga

WOOD CONNECTORS

1. All wood framing connectors shall be @Strong-Tie® series as manufactured by the Simpson Co. Or equal. Manufacturers' brochures or catalogs, indicating each type of connector and its allowable working load value shall be submitted to the architect/engineer for review prior to installation. Each type of connector and its load value shall have an approval by the International Code Council and Los Angeles Research Report (LARR) (if required). If LARR are required full report documentation shall be provided on plans.
2. Hold-down connector bolts into wood framing require approved plate washers; and hold-downs shall be finger tight and 1/2 wrench turn just prior to covering the wall framing. Connector bolts into wood framing require steel plate washers on the post on the opposite side of the anchorage device. Plate size shall be a minimum of 0.299 inch by 3"x3".

FOUNDATION NOTES

1. Not Used
2. Foundation design is based on a soil report with a soil bearing value of 1500 psf for footings and 1500 psf for isolated pads.
3. Footings shall be constructed per plans and shall be placed on undisturbed soil or tested compacted soil
4. Slabs shall be 4" thick (nominal) with monolithic finish. Reinforce slab w/ #4 bars @ 18" OC both ways. Reinforcement to be placed at mid-height of slab. Place slab 10 mil Visqueen vapor retarder over 4"-1/2" gravel or larger.
   Install vapor barrier with 12" minimum laps. Do not puncture with stakes or screed pins. Use blocking to support and level screeds and remove all such blocking after screeding. Slab shall be square, level and smooth, no water to be added during finish work.
5. Bottom of all foundation footings supporting exterior walls, bearing walls and or shear walls shall be a minimum of 12" below natural grade for single story structures and 18" below natural grade to two story structures UNO on plans. Footings may bear upon compacted soil per the geotechnical report requirements. Refer to the geotechnical report for scarification requirements.
6. Tamps rocks below surface and steel trowel within 1/8" above or below grade to a smooth finish. All exterior walkways to have non-skid finish
7. Provide 1/2" thick by 4" wide bituminous expansion joint material at all surfaces where slabs abut stem wall foundations. Provide 1-1/2" deep saw-cut expansion joints every 15'-20' each way, cut within 4 hours of pour
8. Provide steel trowel finish for all interior slab areas and garage. Provide lite broom finish texture for all exterior slabs
9. Provide concrete slab for air conditioner compressor as required by equipment manufacturer. Coordinate placement with finish grading and onsite conditions
10. Slope grade per grading plans if Precise Grading Plans required
11. Pipes or ducts that exceed 1/3 the slab of concrete wall thickness shall not be placed in structural concrete unless specifically noted in plans
12. All reinforcing steel, anchor bolts and other inserts shall be secured in place prior to placing of concrete or grouting of masonry
13. Dowels protruding from existing footings shall be sized and spaced per plan. Said dowels shall also protrude beyond existing concrete a length equal to or greater than the minimum lap splice requirement
14. Provide 5/8" diameter x 12" long anchor bolts (ASTM A307) at 48" OC and 12" from corners and breaks in sill plate. Anchor bolts to be installed with 3"x3"x0.229" square steel plate washers UNO on plans. Anchor bolt requirements as indicated on Structural Plans and supporting Anchor Bolt Schedule shall govern. Provide minimum 9" embedment into concrete.
15. Corners of beams, walls, columns and pedestal slabs shall be formed with a 3/4" chamfer unless noted otherwise on plans.
16. New concrete slabs shall butt-joint existing slabs and be flush with existing slabs unless noted otherwise. Clearances for concrete shall be 5" where exposed to soil and 2" where exposed to weather.
17. Use "Dobys" to obtain proper placement of all reinforcement, typical where
18. No pipes or ducts shall be placed in structural concrete unless specifically detailed.
19. All reinforcing steel dowels, anchor bolts, and other inserts shall be secured in position prior to pouring concrete.
20. Formwork shall be of sufficient stability to withstand pressure of placed concrete
21. Do not place concrete until all reinforcement, conduit, outlet boxes, anchors, hangers, sleeves, bolts or other embedded materials and items are securely and properly fastened in their proper places and position. Sub-Contractor shall verify installation of hold-down and anchor bolts, "PA" straps and other anchorage material and items prior to placement of concrete holdowns to be installed in accordance with ICC Report #1211.
22. Refer to Architectural drawings and details for reveals, areas of textured concrete or special finishes, items required to be cast into the concrete, curbs and slab depressions.
23. Finish of slabs shall be trowelled smooth and level around all plumbing pipes, electrical conduit, and miscellaneous iron straps protruding therefrom.
24. For residential construction: The concrete sub-contractor shall install a minimum of (1) 3/4" plastic pipe under the driveway, located at the street side of the entry walk, for future sprinkler system (verify with landscape subcontractor). Concrete subcontractor shall also install plastic conduits in garage stem wall for power, telephone, CATV and irrigation controller. Plastic pipe shall be provided by the plumbing contractor and the conduits by the electrical contractor.
25. Repairs shall be made promptly by the Concrete Sub-Contractor to remove any anchor bolts or other steel inadvertently misplaced in or at openings and shall patch any surface damaged by the removal thereof.
26. Cleanup shall occur after completion of pouring each slab concrete subcontractor shall remove all form lumber miscellaneous lumber and cement debris, leaving the jobsite clean and graded smooth for other workmen.
27. Dry-pack shall be composed of one part Portland cement to not more than three parts sand & shall be non-shrink.
28. Top of concrete slabs to be a minimum of 8" above finish grade.
29. Sill Fastening: Embed 5/8" diameter x 12" anchor bolts 9" into concrete, 4'-0" o/c maximum, 12" from corners and splices at all exterior all continuous exterior footings walls unless otherwise noted on plans or structural engineer's calculations.
30. Monolithic Pour System: Embed anchor bolts 9" into concrete
31. Two-Pour System: Embed anchor bolts 4" past cold joint into footing. Use 5/8" diameter x 14" long anchor bolts at all 3x sill plate locations
32. Interior non-bearing walls: Secure with approved shot pins per Manufacturer's recommendations. Recommend "Hilti" pins (0.145" diameter x 1.125" penetration into concrete) at maximum 32" O/C ICC ESR 1663.
33. Position, support and secure reinforcement against displacement with metal chairs, runners, bolsters, spacers and hangers, as required. Direct wire ties into concrete, not toward exposed concrete surfaces. Maintain minimum clear distance between soil and reinforcing of 3" at bottom and 2" at sides of excavation.
34. Provide construction, isolation, and contraction joints as required Locate joints so as to not impair strength and appearance of structure. Place isolation and control joints in slab-on-grade to minimize random cracking.
    35. Use 2022 CBC Code approved shot pins with cadmium washers, 36" OC maximum, 6" from corners and splices in interior bearing walls unless otherwise noted. Use same at 48" max. for interior non-bearing walls. Slab to be thickened to 3 times pin penetration for 8 min. width where shot pins are to be used
    Verify required thickness prior to placing concrete.
36. Trenches for footings shall be cleaned before concrete is poured. An imaginary line from the bottom corner of any footing, extending downward at 45 degrees from the horizontal shall not intersect any excavation for gas, sewer or drainage purposes.
38. Prior to placing concrete remove all water, mud, loose earth, and debris from excavations.
39. Continuous Special Inspections by a registered deputy inspector are required for the following:
    a. Field welding
    b. Concrete Strength of grade beams f'c=2500 psi
40. Periodic Special Inspections by a registered deputy inspector are required for the following:
    a. Concrete Strength (other than grade beams) f'c=2500 psi
41. No impact tools shall be permitted when removing existing footing. Saw cutting the existing footing only is allowed.

STRUCTURAL & MISC STEEL

1. Structural steel shall be detailed, fabricated and erected in accordance with the AISC Specification For The Design, Fabrication and Erection of Structural Steel for Buildings (Latest Edition and Supplements)
2. All structural steel shall conform to the ASTM designation A36 unless otherwise noted.
3. Wide Flange "W" sections shall conform to ASTM A992.
4. Pipe columns shall conform to ASTM A53, Grade B.
5. Steel fabricator shall be approved by the building department of the city jurisdiction. Offsite welding shall be performed within a licensed welding shop.
6. Bolt holes shall be 1/16" in diameter larger than the nominal size of bolt used, unless noted otherwise.
10. Gauge metal shall conform to ASTM A245.
11. All substitutions are subject to approval of Authority Having Jurisdiction (AHJ).
12. All structural steel surfaces that are encased in concrete or masonry or are enclosed by building finish shall be primed only.
13. All field welding and all multi-pass and groove welds shall have continuous inspection. Welding shall conform to latest edition of AWS D1.1. Welding electrodes shall have a minimum Charpy Vee notch toughness of 20 ft.-lbs. Welding shall be performed with arc-welding electrodes E70XXX in accordance with AWS 5.1.
14. Weld lengths called for on plans are the net effective length required.
15. Fillet welds noted are for design loads. For welds to heavier sections use or increase weld size per AISC specifications.
16. Special inspections are required for all field welding per 2022 CBC.

ANCHORS

1. The sill plate of all exterior, bearing and shear walls shall be secured to the foundation with anchor bolts.
2. Bolts to be embedded into single pour foundations shall be 5/8" x 12" long unless noted otherwise. Bolts to be embedded into two pour foundations shall be 5/8" unless noted otherwise and sufficient length for bolts to be embedded a minimum of 9" into first pour.
3. Anchor bolts shall not be @stabbed@ into place after the concrete has been poured.
4. Space bolts at 4'0" oc maximum unless noted otherwise. Provide one bolt no more than 12" and no less than 7 bolt diameters of each plate end and corners of walls. Provide two bolts minimum per plate.
5. The maximum slope of cuts and fills is 2:1 for buildings, structures, foundations and retaining walls.
6. Plate washers shall used with all anchor bolts.
   5/8" ab 3" sq. x 0.22" plate washer
   3/4" ab 3" sq. x 0.313" plate washer
   7/8" ab 3" sq. x 0.375 plate washer

PLYWOOD

1. Plywood sheathing shall conform to the requirement of the latest edition of US Product Standard PS 1 and shall be marked in accordance with the APA.
2. Plywood may be substituted with Oriented Strand Board (OSB) of same or greater grade.
3. Individual plywood sheets shall not be less than 2'0" in the least dimension nor less than 8 square feet in area. Use full sheets wherever possible.
4. Roof sheathing shall have surface grain perpendicular to rafters/ trusses and joints shall be staggered. Surface grain of vertical sheathing shall be parallel to wall studs and joints shall be staggered.
5. All shear wall and floor/roof sheathing nailing shall be inspected and approved by building inspector prior to being covered.
6. Plywood shall be Douglas Fir-Larch or Southern Pine conforming to Commercial Standards PS 1-09.

REINFORCED STEEL

1. Reinforcing steel shall conform to the ASTM A615 deformed type new billet steel conforming to ACI 301, ACI 315, ACI 318, latest editions, graded as follows:
   up to #4 bars: Grade 40
   #5 and larger: Grade 60
2. All reinforcing shall be supported in conformance with the @Manual of Standard Practice for Reinforced Concrete Construction@. The latest edition.
3. Reinforcing Steel: All reinforcing shall be ASTM A-615-40 for #4 bars and smaller. All reinforcing shall be ASTM A-615-60 for #5 bars and larger. Welded wire fabric to be ASTM A-185, lap 1-1/2 spaces, 4" min. for structural slabs. All reinforcing #5 and larger to be ASTM A-615-60. Unless otherwise noted or shown on plans, the minimum clear distance of reinforcement to face of concrete shall be:
   A. Slab on grade 2" (center of slab)
   B. Concrete against earth: 3"
   C. Concrete exposed to weather 1 1/2"
4. All bars shall be deformed as per ASTM A305.
5. Welding of reinforcing steel shall conform to AWS D1.4 using low hydrogen electrodes & A706 rebar.
6. Reinforcing steel shall be intermediate grade conforming to ASTM A615-60.
7. Reinforcing steel shall have a minimum lap splice as follows:
   in concrete: 40db or 24" (whichever is greater)
   in masonry: 50db or 24" (whichever is greater)
8. Minimum concrete cover shall be as follows:
   surface cast against earth 3"
   exposed to earth or weather 2"
   not exposed to earth or weather 1"
   beam and column 1.5"
   slab on grade mid-depth
9. All bars shall be clean of loose flaky rust, grease or other materials likely to impair bond.
10. Reinforcing bars #5 or greater shall not be re-bent
11. All bends shall be made cold for # 8 and smaller.
12. All reinforcing bars shall be accurately and securely placed before pouring concrete.
13. Splices of horizontal rebar in walls and footings shall be staggered 48" minimum.
14. Dowels for walls and columns shall be the same size and spacing as the wall column reinforcing unless noted otherwise.

NAILING

1. All nailing shall conform to the 2022 CBC.
2. The Engineer of Record (EOR) must approve the specifications of pneumatic nails should they be used in lieu of common nails.
3. All wood framing nails shall be common wire nails. Galvanized nails may be used for diaphragm or shear wall nailing. Box and sinker nails are not acceptable unless noted otherwise on plans.
   A. 16d common wire nail: 3 1/2" x 0.162"
   B. 8d common wire nail: 2 1/2" x 0.131"

CONCRETE

1. All concrete work shall be in accordance with the "Building C Requirements for Reinforced Concrete" ACI 318, latest addition "Specifications for Structural Concrete for Buildings," ACI 301.
2. Cement shall be Portland Cement conforming to ASTM C-150, Typ or II, low alkali. Use Type V cement for soil containing a sulfate concentra of 0.2% or more.
3. All concrete shall be aggregate concrete conforming to ASTM C except light weight concrete shall conform to ASTM C330, where indicate plan.
4. Concrete shall have a minimum compressive strength of 2500 ps 28 days unless noted otherwise.
5. Concrete grade beams and piles/piers shall have a minim compressive strength of 3000 psi at 28 days.
6. Mix designs: may be adjusted when material characteristics, conditions, weather, test results or other circumstances warrant. Do not revised concrete mixes until submitted to and accepted by architect.
7. Minimum design mix parameters: Use design mix that will provid stable durable concrete surface free of pocks, spalls and other def resulting from chemical incompatibility of constituent materials or adja conditions. Maximum 7-1/2 gallons of water per sack of cement. Maxim slump 4".
8. Aggregates shall be natural sand and rock conforming to ASTM C except local aggregates of proven suitability may be used when acceptab architect. *
9. Water shall be drinkable
10. Air-entraining admixture, when required, shall be ASTM C-260
11. Consolidate placed concrete using mechanical vibrating equipm with hand rodding and tamping, so that concrete is worked aro reinforcement and other embedded items and into forms.
12. Protect concrete from physical damage or reduced strength due weather extremes during mixing, placement and curing. Comply with ACI

STRUCTURAL OBSERVATION REQUIRED

SPECIAL NOTES (STRUCTURAL OBSERVATION PROGRAM)

1. THE OWNER SHALL EMPLOY THE ENGINEER IN STATE OF CALIFORNIA WHO IS RESPONSIBILE FOR THE STRUCTURAL DESIGN TO DO STRUCTURAL OBSERVATION.
2. RESPONSIBLE FOR STRUCTURAL DESIGN IS MANINDER PAL LOBANA "C050989"
3. STRUCTURAL OBSERVATION BY MANINDER PAL LOBANA LIC. "C050989"
4. THE ENGINEER RESPONSIBLE FOR STRUCTURAL OBSERVATION, THE CONTRACTOR & APPROPIRATE SUBCONTRACTOR SHALL HOLD A PRECONSTRUCTION MEETING TO REVIEW THE DETAILS OF THE STRUCTURAL SYSTEM TO BE STRUCTURALLY OBSERVED.
5. ENGINEER OF RECORD OF THE DESINATED ENGINEER SHALL SUBMIT REPORTS ON THIS OFFICE PRESCRIBED FORM.

FOUNDATION OBSERVATION

1. HOLD DOWN ANCHORS & ANCHOR BOLTS
2. HARDY FRAME ANCHORS

FRAMING OBSERVATION

1. ROOF & FLOOR NAILING
2. SHEAR WALLS, NAILING, A35 & DRAG CONNECTION

ROOF NAILING

1. ROOF NAILING
2. ROOF NAILING ALONG SHEAR WALLS & DRAG BEAMS

EXTERIOR FRAMING PRIOR TO PREWRAP

1. EXTERIOR SHEAR WALLS, NILING INCLUDING MST.

SHEAR WALL SCHEDULE

MARK	MATERIAL	PANEL NAILING PERIM.	PANEL NAILING FIELD	BLK'G TO DBL. PLATE CONN.	SHEAR CAPAC.	PLATE THK.	SILL NAILING	A. BOLTS
A	15/32" STRUC-I PLY.	10d @ 6"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 16"o.c.	250 #/FT.	2x	16d @ 6" o.c.	5/8" @ 32"o.c.
B*	15/32" STRUC-I PLY. SP. DEPUTY INSP. IS REQD.	10d @ 4"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 16"o.c.	480 #/FT.	3x	1/2"x5" SDS WD. SCREWS @ 6" o.c.	5/8" @ 16"o.c.
C*	15/32" STRUC-I PLY. SP. DEPUTY INSP. IS REQD.	10d @ 2"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 8"o.c.	650 #/FT.	3x	1/2"x5" SDS WD. SCREWS @ 4" o.c.	5/8" @ 12"o.c.
CC*	15/32" STRUC-I PLY. BOTH SIDES SP. DEPUTY INSP.	10d @ 2"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 6"o.c.	1300 #/FT.	3x	1/2"x5" SDS WD. SCREWS @ 3" o.c.	5/8" @ 8"o.c.
D	HARDY FRAME HFX 12x9 ESR- 2970			(6)//4x SDS WD. SCREWS	1310#			(2) I 1/8" DIA. STD. STRENGTH de = 15"
E	HARDY FRAME HFX 24x9 ESR- 2970			(14)//4x SDS WD. SCREWS	5230#			(2) I 1/8" DIA. HIGH ST. BOLTS de = 15"

1. THIS NAILING SCHEDULE IS IN ADDITION TO MIN. NAILING REQUIRED BY CBC. USE COMMON NAILS ONLY.
*2. FRAMING AT BOARDARY AND PANEL EDGES SHALL BE 3" NOMINAL OR WIDER AND NAILS SHALL BE STAGGERED FOR ALL PLYWOOD.
   SHEAR WALLS WITH SHEAR VALUES EXCEEDING 350#/FT. NAILING EDGE DISTANCE FOR 3x BOUNDARY AND PANEL EDGE MEMBERS SHALL BE 1/2" MIN.
3. ANCHOR BOLTS SHALL HAVE MINIMUM EMBEDMENT OF 9" AND BEARING PLATE 3x3x1/4".
4. ALL INTERIOR WALLS SHALL HAVE HILTI X-ZF WITH MINIMUM PENETRATION OF 1 1/2" INTO CONCRETE SLAB @ 32" OC UNO, ICC ESR 1663.
5. THE MAX. ALLOWABLE SHEAR FOR 5-PLY PLYWOOD, LESS THAN 5/8" THICKNESS SHALL NOT EXCEED 200#/FT.
6. FRAMING AT ADJOINING PANEL EDGES SHALL BE 3" NOMINAL OR WIDER AND NAILS SHALL BE STAGGERED WHERE 10d NAILS HAVING PENETRATION INTO FRAMING OF MORE THAN 1-5/8" ARE SPACED 3" OR LESS ON CENTER.
7. OSB PLYWOOD CAN BE SUBSTITUTE IN LIEU OF REGULAR PLYWOOD FOR SHEAR WALLS & ROOF & FLOOR SHTG PROVIDED ALL THE PROPERTIES EXCEEDS WITH PLYWOOD.

ADDITIONAL NOTES:
CONSTRUCTION- TYPE-V-B, TWO STORY ADDITION
ROOF D.L.= 15.0 PSF #/s.f., LL.= 5.0#/s.f.
FLOOR D.L.= 18.0 PSF #/s.f., LL.= 40.0 PSF
SEISMIC COEFICIENTS- Sds=1.568, I= 1.0, SI=.147
R= 6.5 FOR PLY SHEAR WALLS,
SEISMIC DESIGN CATG. D, LATITUDE= 34.445, LONGITUDE= -119.069
TOTAL BASE SHEAR V= CsW, V= .24 W (SD) , Cs = .24 REDUNDANCY= 1.3
EQUIVALENT LATERAL-FORCE ASCE-7-22 12.8
qh=.00256HKzKztKdV(2)= 24.49 psf, Kh= .93, Kzt=.85
p=qh((GCpf)-(GCpi))= 23.27 PSF, GCpf= .18 GCpi= .18
BASIC WIND SPEED=85 MPH, Ult WIND SPEED= 110mph EXPOSURE CATEGORY= C
w/ SOIL BEARING CAPACITY 1500 PSF, SITE CLASSIFICATION "D-default"

DIAPHRAGM (2 / 53)
1
ROOF SHEATHING : 19/32" CDX PLYWOOD unblocked W/ 8D NAILS @ 6", 12" OC @ BOUNDARY, EDGE & FIELD. PANEL SPAN RATING 32/16.
2
FLOOR SHEATHING : 3/4" T&G PLYWOOD W/ 10D NAILS @ 6", 6", 12" OC @ BOUNDARY, EDGE & FIELD. PANEL SPAN RATING 32/16.

NAILS & SDS SCREWS PROPERTIES

8d COMMON NAILS, DIA.=.131", LENGTH=2 1/2"
10d COMMON NAILS, DIA.=.148", LENGTH=3"
16d COMMON NAILS, DIA.=.162", LENGTH=3 1/2"
1/4" SDS WOOD SCREWS DIA=.25", VARIOUS LENGTH

- Field welding to be done by the welders certified by city of Santa Paula for structural steel.
- Shop welds must be performed in a city of Santa Paula licensed fabricator's shop.
- Santa Paula licensed fabricator is required for structural steel

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

1. 2022 CALIFORNIA ADMINISTRATIVE CODE.
2. 2022 CALIFORNIA BUILDING CODE (CBC).
3. 2022 CALIFORNIA ELECTRICAL CODE (CEC).
4. 2022 CALIFORNIA ENERGY CODE.
5. 2022 CALIFORNIA MECHANICAL CODE (CMC).
6. 2022 CALIFORNIA PLUMBING CODE (CPC).
7. ANSI/TIA-222-G LIFE SAFETY CODE NFPA-101
8. LOCAL BUILDING CODE

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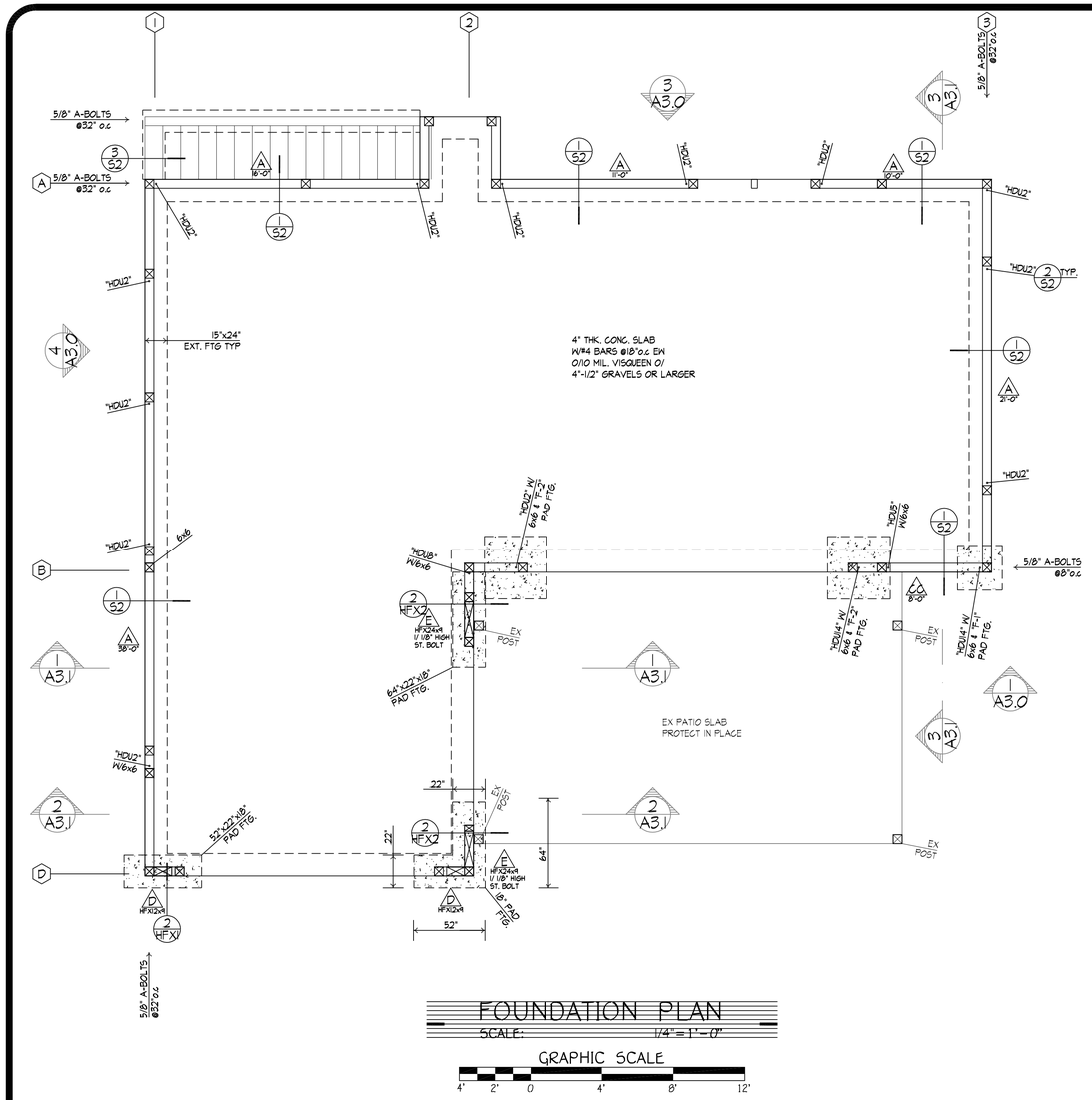
REGISTERED PROFESSIONAL ENGINEER MANINDER P. S. LOBANA 09/30/2023 C050989 CIVIL STATE OF CALIFORNIA

REVIEWED FOR CODE COMPLIANCE
Jun 03, 2024
INTERWEST CONSULTING GROUP

STRUCTURAL NOTES

TWO STORY ADDITION FOR:
BIRD RESIDENCE
510 SANTA PAULA RD, SANTA PAULA, CA 93060

DRAWN	MARCOS N.
CHECKED	LOBANA
DATE	01-JUNE-2023
SCALE	NONE
JOB	BIRD
FILENAME	510 SANTA PAULA
SHEET	S-1



FOUNDATION PLAN

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

GRAPHIC SCALE

4' 2' 0 4' 8' 12'

FOUNDATION NOTES:

1. FOR DIMENSIONS SEE ARCH. DRAWINGS
2. FOUNDATION DESIGN IS BASED ON SOIL BEARING CAPACITY OF 1500 PSF.
3. USE 2500 PSI CONCRETE FOR FOUNDATION & SLAB & 3000 PSI FOR GRADE BEAMS.
4. SLAB ON GRADE SHALL BE 4" THICK W/ #4 BARS @ 18"O.C. EACH WAY OVER 10 MIL VISQUEEN OVER 4"-1/2" OR LARGER GRAVEL AGGREGATES.
5. A HOLD DOWN CONNECTOR BOLTS INTO WOOD FRAMING REQUIRES APPROVED PLATE WASHERS. & HD SHALL BE FINGER TIGHT & 1/2 WRENCH TURN JUST PRIOR TO COVERING THE WALL FRAMING.
6. ALL ANCHOR BOLTS & H.DOWN BOLTS AT SHEAR PANELS SHALL BE PLACED WITH TEMPLATE PRIOR TO CALLING FOR FOUNDATION INSPECTION
7. 21" OF SOIL BENEATH BOTTOM OF FOOTING & SLAB SUB BASE TO BE SATURATED W/ 120% MOISTURE PRIOR TO CITY INSPECTION.
8. SOIL OVER THE VAPOR BARRIER SHOULD BE MOIST JUST PRIOR TO PLACING CONCRETE.
9. REINFORCING STEEL SHOULD BE SUPPORTED 2" ABOVE THE SAND ON CONCRETE BLOCKS SPACED AT 48" o.c.
10. IN LIEU OF CUT WASHERS, PROVIDE SQUARE WASHERS.

MINIMUM SIZE FOR SQUARE PLATE WASHERS

BOLT SIZE	PLATE SIZE
5/8"	1/4"x3"x3"
3/4"	5/16"x3"x3"
7/8"	5/16"x3"x3"
1"	3/8"x3 1/2"x3 1/2"

11. FASTENERS FOR PRESERVATIVE TREATED & 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 A153. FASTENERS OTHER THAN NAILS, TIMBER RIVETS WOOD SCREWS & LAG SCREWS SHALL BE PERMITTED TO BE OF MECHANICALLY DEPOSITED ZINC COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B695, CLASS 55 MIN.
12. "F-1" REPRESENTS 30"x30"x24" THK. CONC. PAD W/ #4 BARS @ 12"o.c. EACH WAY. "F-2" REPRESENTS 42"x42"x24" THK. CONC. PAD W/ #4 BARS @ 12"o.c. EACH WAY.
13. ALL STRUCTURAL WELDING SHALL BE DONE IN A FABRICATING SHOP APPROVED BY THE CITY OF SANTA PAULA. IN ABSENCE OF AN APPROVED FABRICATING SHOP, STRUCTURAL WELDING SHALL BE DONE UNDER THE SUPERVISION OF A CERTIFIED SPECIAL INSPECTION. CONT. DEPUTY INSPECTION IS REQD.
14. FABRICATION & SHOP WELDING TO BE DONE BY WELDERS CERTIFIED BY THE CITY OF SANTA PAULA OR LICENSED FABICATOR'S SHOP. CONTINUOUS INSPECTION BY A DEPUTY INSPECTOR IS REQUIRED FOR ALL FIELD WELDING.
15. PROVIDE LEAD HOLE 40%-70% OF THREADED SHANK DIA. & FULL DIA. FOR SMOOTH SHANK PORTION.
16. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR WOOD SHEAR WALLS & DIAPHRAGMS, INCLUDING NAILING, BOLTING, ANCHORING & OTHER FASTENING TO COMPONENTS OF THE SEISMIC FORCE RESISTING SYSTEM.
17. HOLD DOWN CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE APPROVED PLATE WASHERS & HOLD DOWN SHALL BE FINGER TIGHT & 1/2 WRENCH TURN JUST PRIOR TO COVERING THE WALL FRAMING. CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE STEEL PLATE WASHERS.
18. FOUNDATION SILL SHALL BE NATURALLY DURABLE OR PRESERVATIVE- TREATED WOOD. FIELD CUT ENDS, NOTCHES & DRILLED HOLES OF PRESERVATIVE TREATED WOOD SHALL BE FIELD TREATED PER AWPA M4.

ANCHOR BOLTS:

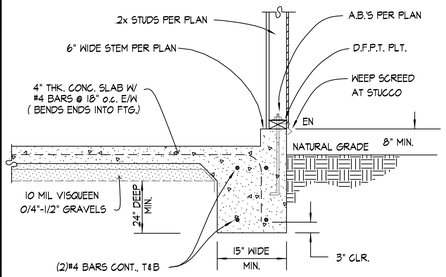
ANCHOR BOLTS SHALL BE MIN. 5/8"Øx12"L. "L"-BOLTS W/ 1/4"x3"x3" PLATE WASHERS @ 48"o.c. (U.N.O.) & WITHIN 12" OF PLT. CUTS AND EMBEDDED 9" INTO CONC. (U.N.O.) (SEE SHEARWALL SCHEDULE WHERE APPLIES)

THE HOLE IN THE PLATE WASHER SHALL BE PERMITTED TO BE DIAGONALLY SLOTTED W/ WIDTH OF UP TO 3/16" LARGER THAN BOLT DIAMETER & SLOT LENGTH NOT TO EXCEED 1 3/4". THE PLATE WASHER SHALL EXTEND TO WITHIN 1 /2" OF THE EDGE OF THE BOTTOM PLATE ON THE SIDE

STATEMENT OF SPECIAL INSPECTIONS

IN ADDITION TO REGULAR INSPECTIONS, THE FOLLOWING CHECKED ITEMS WILL ALSO REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH CBC

ITEM	REQUIRED	REMARKS
1. FIELD WELDING FOR FIELD WELDING, SINGLE PASS FILLET WELD < 5/16"	YES	PERIODIC INSPECTION
2. CONCRETE W/ F'c > 2500PSI VERIFYING USE OF REQUIRED DESIGN MIX	YES	CONT. INSPECTION
3. SIMPSON SET-XP EPOXY EPOXY WORK INSPECTION PER MANUFACTURER REQUIRED	YES	CONT. INSPECTION
4. SHEAR WALL & DIAPH. NAILING 4" OR LESS	YES	PERIODIC INSPECTION

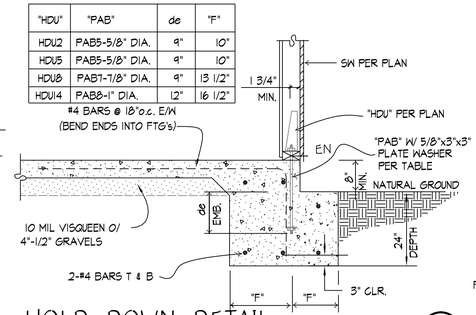


GARAGE FTG. W/ STEM

NOT TO SCALE

1

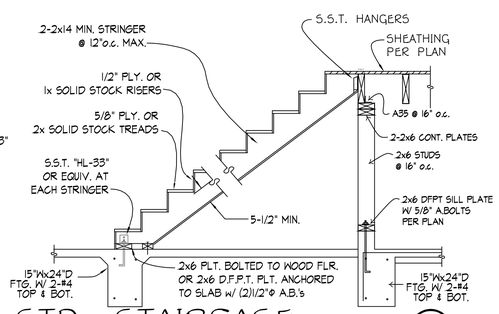
"HDU"	"PAB"	de	"F"
HDU2	PAB5-5/8" DIA.	9"	10"
HDU5	PAB5-5/8" DIA.	9"	10"
HDU8	PAB7-7/8" DIA.	9"	13 1/2"
HDU14	PAB8-1" DIA.	12"	16 1/2"



HOLD DOWN DETAIL

NOT TO SCALE

2



STD. STAIRCASE

NOT TO SCALE

3

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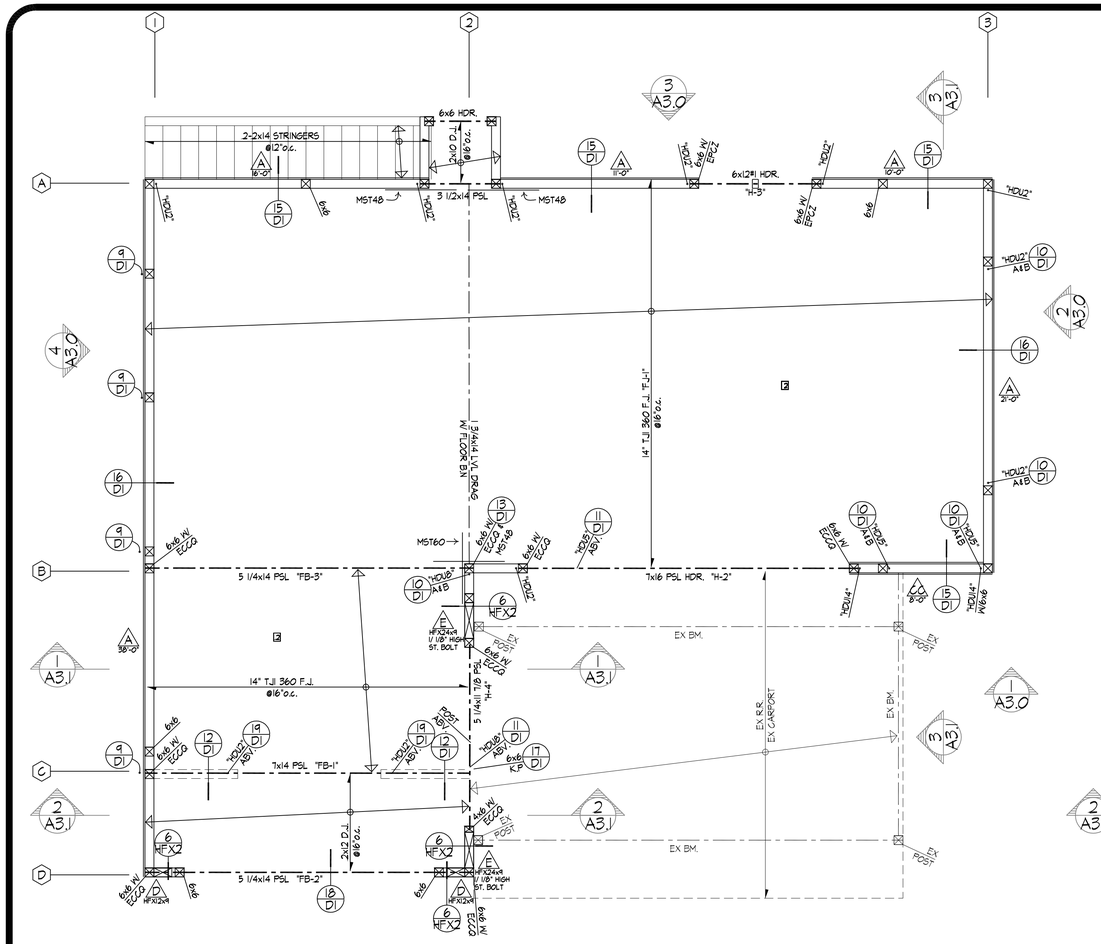
FOUNDATION PLAN

TWO STORY ADDITION FOR:
BIRD RESIDENCE
510 SANTA PAULA RD, SANTA PAULA, CA 93060

DRAWN	MARCOS N.
CHECKED	LOBANA
DATE	01-JUNE-2023
SCALE	1/4"=1'0"
JOB	BIRD
FILENAME	510 SANTA PAULA
SHEET	S-2

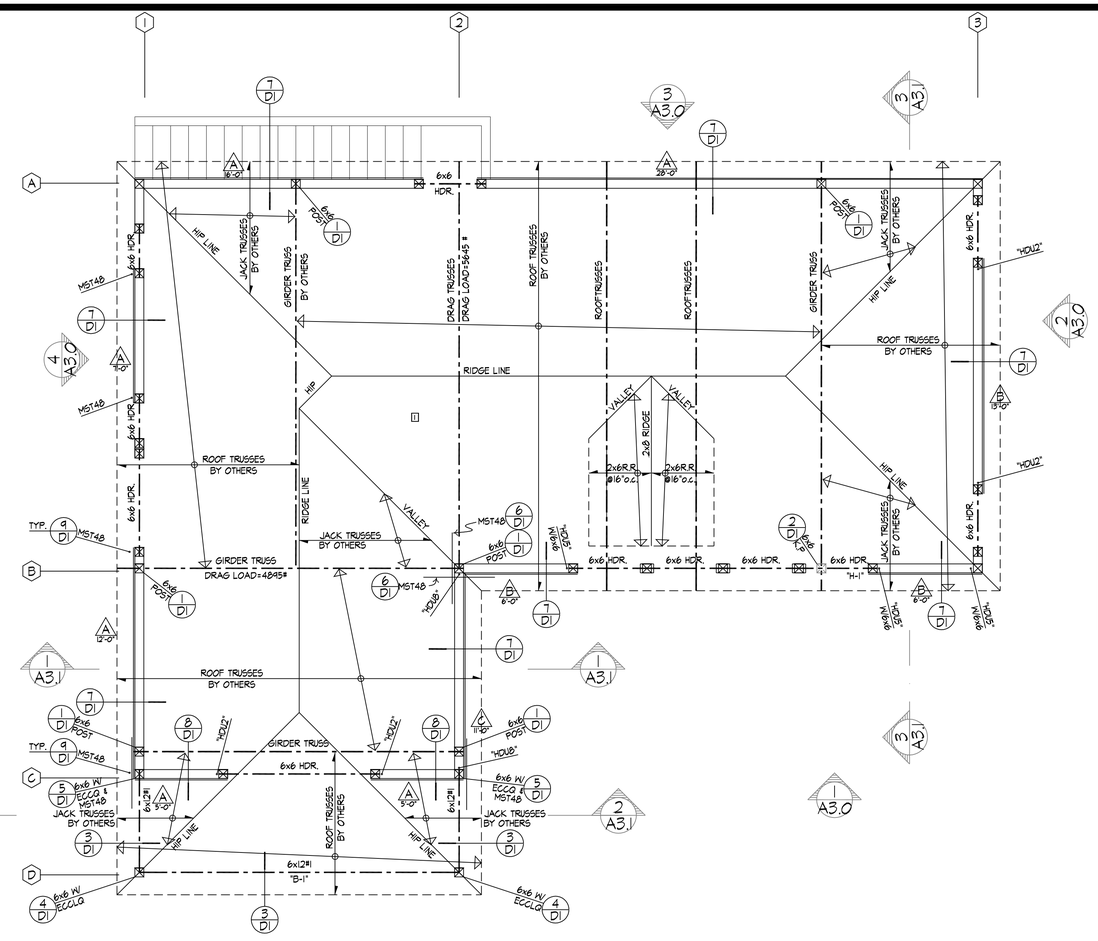


FLOOR FRAMING PLAN

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

GRAPHIC SCALE

4' 2' 0 4' 8' 12'



ROOF FRAMING PLAN

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

GRAPHIC SCALE

4' 2' 0 4' 8' 12'

GENERAL FRAMING NOTES:

1. SEE DIMENSIONS SEE ARCH. DRAWINGS.
2. ALL SHEAR WALLS SHALL BE EXTENDED TO ROOF SHEATHING AND BOUNDARY NAILING SHALL BE PROVIDED.
3. ALL FRAMING MEMBERS SHALL BE DF#2 UNO EXCEPT 6x MEMBERS SHALL BE DF#1.
4. ⊠ REPRESENTS DOUBLE STUDS UNO PER DETAIL 1 SHEET S3.
5. —— REPRESENTS HORIZONTAL DRAG MST STRAP.
6. "HU" HANGER SHALL BE USED IF HANGER SIZE IS NOT CALLED OUT IN DRAWINGS.
7. DOUBLE STUD FRAMING SHALL BE DONE AFTER APPROVAL OF DOUBLE SIDED SHEAR WALL IF EXISTS.
8. FURRING IF REQUIRED SHALL BE CONTRACTOR'S RESPONSIBILITY (NOT SHOWN IN DRAWINGS)
9. FIRE STOPS SHALL BE PROVIDED AT FOLLOWING LOCATIONS:
   a) IN CONCEALED SPACES OF STUD WALLS AND PARTIONS, INCLUDING FURRED SPACES, AT THE CEILING & FLOOR LEVELS & AT 10' INTERVAL & HORIZONTAL.
   b) AT ALL INTERSECTIONS BETWEEN CONCEALED VERTICAL & HORIZ. SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
   c) IN CONCEALED SPACES BETWEEN STAIRS STRINGERS AT THE TOP & BOT. OF THE RUN & BETWEEN STUDS ALONG AND INLINE WITH THE RUN OF STAIRS IF THE WALLS UNDER STAIRS ARE UNFINISHED.
   d) IN OPENINGS AROUND VENTS, PIPES, DUCTS, CHIMNEYS, FIREPLACES & SIMILAR OPENINGS WHICH AFFORD A PASSAGE FOR FIRE AT CEILING & FLOOR LEVELS, WITH NONCOMBUSTIBLE MATERIALS.
   e) AT OPENINGS BETWEEN ATTIC SPACES & CHIMNEY CHASES FOR FACTORY- BUILT CHIMNEYS.
10. STEEL FABRICATORS SHALL BE CERTIFIED BY THE CITY OF SANTA PAULA. ALL SPECIAL INSPECTORS SHALL BE CERTIFIED BY THE CITY OF SANTA PAULA.
11. WOOD FRAMING MEMBERS: GRADE & SPECIES OF ALL LUMBER SHALL BE DF#2 UNO. SILL PLATE IN CONTACT W/ CONCRETE SHALL BE PRESSURE TREATED DF#2 UNO.
12. THE CONTRACTOR SHALL HAVE ON THE JOB DURING CONSTRUCTION A COPY OF THE SIMPSON CO. "CONNECTORS FOR WOOD CONSTRUCTION" CATALOG NO. C-2023".
13. CONTRACTORS RESPONSIBLE FOR THE CONSTRUCTION OF A WIND OR SEISMIC FORCE RESISTING SYSTEM/COMPONENT LISTED IN THE "STATEMENT OF SPECIAL INSPECTION" SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING INSPECTORS & OWNER PRIOR TO THE COMMENCEMENT OF WORK ON SUCH SYSTEM OR COMPONENT PER SECTION 1705.1
14. ROOF DIAPH NAILING TO BE INSPECTED BEFORE COVERING. STRENGTH AXIS OF WOOD STRUCTURAL PANEL SHALL BE PERPENDICULAR TO SUPPORTS. FLOOR DIAPH. SHALL BE TONGUE & GROOVE OR HAVE BLOCKED PANEL EDGES. WOOD STRUCTURAL PANEL SPANS SHALL CONFORM TO CBC TABLE 2304.7.
15. ALL DIAPHRAGM & SHEAR WALL NAILING SHALL UTILIZE COMMON NAILS W/ FULL HEADS UNLESS OTHERVISE APPROVED.
16. FASTENERS IN PRESERVATIVE TREATED WOOD SHALL BE HOT DIPPED, GALVANIZED STEEL OR STAINLESS STEEL.
17. THE QUALITY MARK SHALL BE ON THE STAMP OR LABEL AFFIXED TO PRESERVATIVE TREATED WOOD & SHALL INCLUDE THE WIDTH IN EXTERIOR & BEARING WALLS AND NOT TO EXCEED 40% OF THE STUD/ PLATE WIDTH IN RETENTION (pcf), END USE FOR WHICH THE PRODUCT IS TREATED, AWPA STANDARD TO WHICH THE PRODUCT WAS TREATED & IDENTITY OF THE ACCREDITED INSPECTION AGENCY.
18. MAXIMUM MOISTURE CONTENT OF WOOD SHALL BE 19% OR LESS BEFORE BEING COVERED WITH INSULATION, INTERIOR WALL FINISH AND FLOOR COVERING OF OTHER MATERIALS. TEST MOISTURE USING METER PER CALGREEN4.505.3.
19. CUTTING OR NOTCHING OF WOOD STUDS OR PLATES SHALL NOT EXCEED 25% OF THE STUD/ PLATE FOLLOWING INFORMATION: IDENTIFICATION OF TREATING MANUFACTRER, TYPE OF PRESERVATIVE USED, MIN. PRESERVATIVE NONBEARING PARTITIONS. BORED HOLES DIA. IS LIMITED TO 40% OF THE STUD/ PLATE WIDTH IN ANY STUD AND MAY BE 60% IN NONBEARING PARTITIONS OR WHEN THE BORED STUD IS DOUBLED.
20. A COPY OF THE LOS ANGELES RESEACH REPORT AND/OR CONDITION OF LISTING SHALL BE MADE AVAILABLE AT THE JOB SITE.
21. ALL BOLTS SHALL BE DRILLED 1/32" TO 1/16" OVERSIZED.
22. FULL LENGTH STUDS (BALLOON FRAMING) SHALL BE USED ON ALL EXTERIOR WALLS OF ROOMS WITH VAULTED CEILINGS.

ADDITIONAL NOTES:

CONSTRUCTION- TYPE-V-B, TWO STORY ADDITION
ROOF D.L.= 15.0 PSF #/s.f., L.L.= 5.0#/s.f.
FLOOR D.L.= 18.0 PSF #/s.f., L.L.= 40.0 PSF
SEISMIC COEFICIENTS- Sds=1.568, I= 1.0, SI=.747
R= 6.5 FOR PLY SHEAR WALLS,
SEISMIC DESIGN CATG. D, LATITUDE= 34.445, LONGITUDE= -119.069
TOTAL BASE SHEAR V= CsW, V= .24 W (SD) , Cs = .24 REDUNDANCY= 1.3
EQUIVALENT LATERAL-FORCE ASCE-7-22 12.8
qh=.00256HKzKdV2I= 24.49 psf, Kh= .93, Kd=.85
p=qh((GCpf)-(GCPi))= 23.27 PSF, GCpf= .78 GCpi= .18
BASIC WIND SPEED=85 MPH, Ult WIND SPEED= 110mph EXPOSURE CATEGORY= C
w/ SOIL BEARING CAPACITY 1500 PSF, SITE CLASSIFICATION "D-default"

NOTE:
FASTENERS FOR PRESERVATIVE TREATED AND 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". FASTENERS OTHER THAN NAILS, TIMBER RIVETS, WOOD SCREWS, AND LAG SCREWS SHALL BE PERMITTED TO BE OF MECHANICALLY DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH "ASTM B 695, CLASS 55" MINIMUM.

NOTE:
CONTRACTOR SHALL PROVIDE CONTINUOUS SHORING OF OVERHEAD LOADS WHERE EXISTING LOAD BEARING MEMBERS ARE TO BE REMOVED OR RELOCATED UNTIL NEW STRUCTURAL MEMBERS ARE SECURELY IN PLACE.

DIAPHRAGM (2/S3)

ROOF SHEATHING : 19/32" CDX PLYWOOD unblocked W/ 8D NAILS @ 6", 12" OC @ BOUNDARY, EDGE & FIELD. PANEL SPAN RATING 32/16.

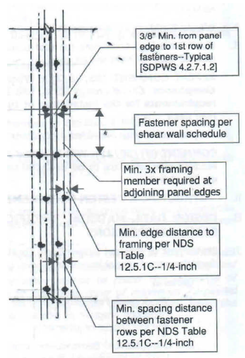
FLOOR SHEATHING : 3/4" T&G PLYWOOD W/ 10D NAILS @ 6", 6", 12" OC @ BOUNDARY, EDGE & FIELD. PANEL SPAN RATING 32/16.

NOTE:
THIS PROJECT SHALL COMPLY WITH THE 2022 EDITION OF THE CALIFORNIA BUILDING, MECH. & PLUMBING CODES, THE 2022 CALIFORNIA ELECTRICAL CODE AND THE 2022 CALIFORNIA ENERGY CODE (TITLE-24).

SHEAR WALL SCHEDULE

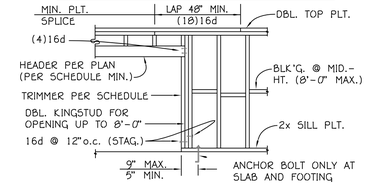
MARK	MATERIAL	PANEL NAILING PERIM.	PANEL NAILING FIELD	BLK'G TO DBL. PLATE CONN.	SHEAR CAPAC.	PLATE THK.	SILL NAILING	A. BOLTS
A	15/32" STRUC-I PLY.	10d @ 6"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 16"o.c.	1250 #/FT.	2x	16d @ 6" o.c.	5/8" @ 32"o.c.
B*	15/32" STRUC-I PLY. SP. DEPUTY INSP. IS REQD.	10d @ 4"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 16"o.c.	480 #/FT.	3x	1/2"x5" SDS WD. SCREWS @ 6" o.c.	5/8" @ 16"o.c.
C*	15/32" STRUC-I PLY. SP. DEPUTY INSP. IS REQD.	10d @ 2"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 8"o.c.	650 #/FT.	3x	1/2"x5" SDS WD. SCREWS @ 4" o.c.	5/8" @ 12"o.c.
CC*	15/32" STRUC-I PLY. BOTH SIDES SP. DEPUTY INSP.	10d @ 2"o.c.	10d @ 12"o.c.	S.S.T. "A35" @ 6"o.c.	1300 #/FT.	3x	1/2"x5" SDS WD. SCREWS @ 3" o.c.	5/8" @ 8"o.c.
D	HARDY FRAME HFX 12x9 ESR- 2970			(6)1/4x SDS WD. SCREWS	1310#			(2) 1 1/8" DIA. STD. STRENGTH de = 15"
E	HARDY FRAME HFX 24x9 ESR- 2970			(14)1/4x SDS WD. SCREWS	5230#			(2) 1 1/8" DIA. HIGH ST. BOLTS de = 15"

1. THIS NAILING SCHEDULE IS IN ADDITION TO MIN. NAILING REQUIRED BY CBC. USE COMMON NAILS ONLY.
2. FRAMING AT BOARDARY AND PANEL EDGES SHALL BE 3" NOMINAL OR WIDER AND NAILS SHALL BE STAGGERED FOR ALL PLYWOOD. SHEAR WALLS WITH SHEAR VALUES EXCEEDING 350#/FT. NAILING EDGE DISTANCE FOR 3x BOUNDARY AND PANEL EDGE MEMBERS SHALL BE 1/2" MIN.
3. ANCHOR BOLTS SHALL HAVE MINIMUM EMBEDMENT OF 9" AND BEARING PLATE 3x3x1/4".
4. ALL INTERIOR WALLS SHALL HAVE HILTI X-ZF WITH MINIMUM PENETRATION OF 1 1/2" INTO CONCRETE SLAB @ 32" OC UNO, ICC ESR 1663.
5. THE MAX. ALLOWABLE SHEAR FOR 5-PLY PLYWOOD, LESS THAN 5/8" THICKNESS SHALL NOT EXCEED 200#/FT.
6. FRAMING AT ADJOINING PANEL EDGES SHALL BE 3" NOMINAL OR WIDER AND NAILS SHALL BE STAGGERED WHERE 10d NAILS HAVING PENETRATION INTO FRAMING OF MORE THAN 1-5/8" ARE SPACED 3" OR LESS ON CENTER.



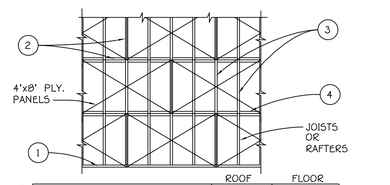
HEADER SCHEDULE

OPENING	ROOF HEADER	ROOF TRIMMER	2nd FLR. HEADER	2nd FLR. TRIMMER
UP TO 4'-0"	4x4	(1)2x4	4x6	(1)2x4
4'-0"- 6'-0"	4x6	(1)2x4	4x8	(2)2x4
6'-0"- 8'-0"	4x8	(2)2x4	4x10	(2)2x4
8'-0"- 10'-0"	4x10	(2)2x4	4x12	(2)2x4



STUD WALL FRAMING (1)

NOT TO SCALE



		ROOF	FLOOR
①	BOUNDARY NAILING	8d @ 6"	10d @ 4"
②	EDGE NAILING	8d @ 6"	10d @ 6"
③	INTERMEDIATE NAILING	8d @ 12"	10d @ 10"
④	2x4 FLAT BLOCK THROUGHOUT	NO	NO

ROOF SHEATHING SHALL BE 1/2" PLY. (UNLESS NOTED OTHERWISE)
FLOOR SHEATHING SHALL BE 3/4" T&G PLY. (U.N.O.)

TYP. PLY. LAYOUT & NAILING (2)

NOT TO SCALE

REVISIONS	BY

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REVIEWED
FOR
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INTERWEST CONSULTING GROUP

FRAMING PLAN

TWO STORY ADDITION FOR:
BIRD RESIDENCE
510 SANTA PAULA RD, SANTA PAULA, CA 93060

DRAWN	MARCOS N.
CHECKED	LOBANA
DATE	01-JUNE-2023
SCALE	1/4"=1'0"
JOB	BIRD
FILENAME	510 SANTA PAULA
SHEET	S-3

TABLE 2304.10.2

FASTENING SCHEDULE

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[g]	SPACING AND LOCATION
Roof		
1. Blocking between ceiling joists, rafters or trusses to top plate or other framing below	4-8d box ($2^1/_2$" × 0.113"); or 3-8d common ($2^1/_2$" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3"14 gage staples, $^7/_{16}$" crown	Each end, toenail
Blocking between rafters or truss not at the wall top plate, to rafter or truss	2-8d common ($2^1/_2$" × 0.131") 2-3" × 0.131" nails 2-3" 14 gage staples	Each end, toenail
	2-16 d common ($3^1/_2$" × 0.162") 3-3" × 0.131" nails 3-3" 14 gage staples	End nail
Flat blocking to truss and web filler	16d common ($3^1/_2$" × 0.162") @ 6" o.c. 3" × 0.131" nails @ 6" o.c. 3" × 14 gage staples @ 6" o.c	Face nail
2. Ceiling joists to top plate	4-8d box ($2^1/_2$" x 0.113"); or 3-8d common ($2^1/_2$" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	Each joist, toenail
3. Ceiling joist not attached to parallel rafter, laps over partitions (no thrust) (see Section 2308.7.3.1, Table 2308.7.3.1)	3-16d common ($3^1/_2$" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, $^7/_{16}$" crown	Face nail
4. Ceiling joist attached to parallel rafter (heel joint) (see Section 2308.7.3.1, Table 2308.7.3.1)	Per Table 2308.7.3.1	Face nail
5. Collar tie to rafter	3-10d common (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, $^7/_{16}$" crown	Face nail
6. Rafter or roof truss to top plate (See Section 2308.7.5, Table 2308.7.5)	3-10 common (3" × 0.148"); or 3-16d box ($3^1/_2$" × 0.135"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131 nails; or 4-3" 14 gage staples, $^7/_{16}$" crown	2 toenails on one side and 1 toenail on opposite side of rafter or truss[c]
7. Roof rafters to ridge valley or hip rafters; or roof rafter to 2-inch ridge beam	2-16d common ($3^1/_2$" × 0.162"); or 3-16d box ($3^1/_2$" × 0.135"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	End nail
	3-10d common ($3^1/_2$" × 0.148"); or 4-16d box ($3^1/_2$" × 0.135"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, $^7/_{16}$" crown	Toenail
Wall		
8. Stud to stud (not at braced wall panels)	16d common ($3^1/_2$" × 0.162");	24" o.c. face nail
	10d box (3" × 0.128"); or 3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	16" o.c. face nail
9. Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d common ($3^1/_2$" × 0.162")	16" o.c. face nail
	16d box ($3^1/_2$" × 0.135"); or 3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	12" o.c. face nail
10. Built-up header (2" to 2" header)	16d common ($3^1/_2$" × 0.162")	16" o.c. each edge, face nail
	16d box ($3^1/_2$" × 0.135")	12" o.c. each edge, face nail
11. Continuous header to stud	4-8d common ($2^1/_2$" × 0.131"); or 4-10d box (3" × 0.128"); or 5-8d box ($2^1/_2$" x 0.113")	Toenail
12. Top plate to top plate	16d common ($3^1/_2$" × 0.162")	16" o.c. face nail
	10d box (3" × 0.128"); or 3" × 0.131" nails; or 3" 14 gage staples, $^7/_{16}$" crown	12" o.c. face nail
13. Top plate to top plate, at end joints	8-16d common ($3^1/_2$" × 0.162"); or 12-16d box ($3^1/_2$" x 0.135"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails; or 12-3" 14 gage staples, $^7/_{16}$" crown	Each side of end joint, face nail (minimum 24" lap splice length each side of end joint)
14. Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common ($3^1/_2$" × 0.162")	16" o.c. face nail
	16d box ($3^1/_2$" × 0.135"); or 3" × 0.131" nails; or 3" 14 gage staples, $^7/_{16}$" crown	12" o.c. face nail
15. Bottom plate to joist, rim joist, band joist or blocking at braced wall panels	2-16d common ($3^1/_2$" × 0.162"); or 3-16d box ($3^1/_2$" × 0.135"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, $^7/_{16}$" crown	16" o.c. face nail
16. Stud to top or bottom plate	3-16d box ($3^1/_2$" x 0.135"); or 4-8d common ($2^1/_2$" × 0.131"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-8d box ($2^1/_2$" x 0.113"); or 4-3" 14 gage staples, $^7/_{16}$" crown	Toenail
	2-16d common ($3^1/_2$" × 0.162"); or 3-16d box ($3^1/_2$" x 0.135"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	End nail
17. Top plates, laps at corners and intersections	2-16d common ($3^1/_2$" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	Face nail
18. 1" brace to each stud and plate	3-8d box ($2^1/_2$" x 0.113"); or 2-8d common ($2^1/_2$" × 0.131"); or 2-10d box (3" × 0.128"); or 2-3" × 0.131" nails; or 2-3" 14 gage staples, $^7/_{16}$" crown	Face nail
19. 1" × 6" sheathing to each bearing	3-8d box ($2^1/_2$" x 0.113"); or 2-8d common ($2^1/_2$" × 0.131"); or 2-10d box (3" × 0.128"); or 2-1$^3/_4$" 16 gage staples, 1" crown	Face nail
20. 1" × 8" and wider sheathing to each bearing	3-8d common ($2^1/_2$" × 0.131"); or 3-8d box ($2^1/_2$" x 0.113"); or 3-10d box (3" × 0.128"); or 3-1$^3/_4$" 16 gage staples, 1" crown	Face nail
	Wider than 1" × 8" 3-8d common ($2^1/_2$" x 0.131"); or 4-8d box ($2^1/_2$" x 0.113"); or 3-10d box (3" × 0.128"); or 4-1$^3/_4$" 16 gage staples, 1" crown	
Floor		
21. Joist to sill, top plate, or girder	4-8d box ($2^1/_2$" x 0.113"); or 3-8d common ($2^1/_2$" × 0.131"); or floor 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	Toenail
22. Rim joist, band joist, or blocking to top plate, sill or other framing below	8d box ($2^1/_2$" x 0.113")	4" o.c., toenail
	8d common ($2^1/_2$" × 0.131"); or 10d box (3" × 0.128"); or 3" × 0.131" nails; or 3" 14 gage staples, $^7/_{16}$" crown	6" o.c., toenail
23. 1" × 6" subfloor or less to each joist	3-8d box ($2^1/_2$" x 0.113"); or 2-8d common ($2^1/_2$" × 0.131"); or 3-10d box (3" × 0.128"); or 2-1$^3/_4$" 16 gage staples, 1" crown	Face nail
24. 2 subfloor to joist or girder	3-16d box ($3^1/_2$" x 0.135"); or 2-16d common ($3^1/_2$" × 0.162")	Blind and face nail
25. 2" planks (plank & beam — floor & roof)	3-16d box ($3^1/_2$" x 0.135"); or 2-16d common ($3^1/_2$" × 0.162")	Each bearing, face nail
26. Built-up girders and beams, 2" lumber layers	20d common (4" × 0.192")	32" o.c., face nail at top and bottom staggered on opposite sides
	10d box (3" × 0.128"); or 3" × 0.131" nails; or 3" 14 gage staples, $^7/_{16}$" crown	24" o.c. face nail at top and bottom staggered on opposite sides
	And: 2-20d common (4" × 0.192"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, $^7/_{16}$" crown	Ends and at each splice, face nail
27. Ledger strip supporting joists or rafters	3-16d common ($3^1/_2$" × 0.162"); or 4-16d box ($3^1/_2$" × 0.135"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, $^7/_{16}$" crown	Each joist or rafter, face nail
28. Joist to band joist or rim joist	3-16d common ($3^1/_2$" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, $^7/_{16}$" crown	End nail
29. Bridging or blocking to joist, rafter or truss	2-8d common ($2^1/_2$" × 0.131"); or 2-10d box (3" × 0.128"); or 2-3" × 0.131" nails; or 2-3" 14 gage staples, $^7/_{16}$" crown	Each end, toenail

Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing[a]

		Edges (inches)	Intermediate supports (inches)
30. $^3/_8$" — $^1/_2$"	6d common or deformed (2" × 0.113"); or $2^3/_8$" × 0.113" nail (subfloor and wall)	6	12
	8d common or deformed ($2^1/_2$" × 0.131"× 0.281" head) (roof) or RSRS-01 ($2^3/_8$" × 0.113") nail (roof)[d]	6[e]	6[e]
	1$^3/_4$" 16 gage staple, $^7/_{16}$" crown (subfloor and wall)	4	8
	$2^3/_8$" × 0.113"× 0.266" head nail (roof)	3[f]	3[f]
	1$^3/_4$" 16 gage staple, $^7/_{16}$" crown (roof)	3[f]	3[f]
31. $^{19}/_{32}$" — $^3/_4$"	8d common ($2^1/_2$" × 0.131"); or deformed (2" × 0.113") (subfloor and wall)	6	12
	8d common or deformed ($2^1/_2$" × 0.131" × 0.281" head) (roof) or RSRS-01 ($2^3/_8$" × 0.113") nail (roof)[d]	6[e]	6[e]
	$2^3/_8$" × 0.113"× 0.266" head nail; or 2" 16 gage staple, $^7/_{16}$" crown	4	8
32. $^7/_8$" — $1^1/_4$"	10d common (3" × 0.148"); or deformed ($2^1/_2$" × 0.131" × 0.281" head)	6	12
Other exterior wall sheathing			
33. $^1/_2$" fiberboard sheathing[b]	$1^1/_2$" × 0.120", galvanized roofing nail ($^7/_{16}$" head diameter); or $1^1/_4$" 16 gage staple with $^7/_{16}$" or 1" crown	3	6
34. $^{25}/_{32}$" fiberboard sheathing[b]	1$^3/_4$" × 0.120" galvanized roofing nail ($^7/_{16}$" diameter head); or $1^1/_2$" 16 gage staple with $^7/_{16}$" or 1" crown	3	6

Wood structural panels, combination subfloor underlayment to framing

		Edges (inches)	Intermediate supports (inches)
35. $^3/_4$" and less	8d common ($2^1/_2$" × 0.131"); or deformed (2" × 0.113"); or deformed (2" × 0.120")	6	12
36. $^7/_8$" — 1"	8d common ($2^1/_2$" × 0.131"); or deformed ($2^1/_2$" × 0.131"); or deformed ($2^1/_2$" × 0.120")	6	12
37. $1^1/_8$" — $1^1/_4$"	10d common (3" × 0.148"); or deformed ($2^1/_2$" × 0.131"); or deformed ($2^1/_2$" × 0.120")	6	12
Panel siding to framing			
38. $^1/_2$" or less	6d corrosion-resistant siding ($1^7/_8$" × 0.106"); or 6d corrosion-resistant casing (2" × 0.099")	6	12
39. $^5/_8$"	8d corrosion-resistant siding ($2^3/_8$" × 0.128"); or 8d corrosion-resistant casing ($2^1/_2$" × 0.113")	6	12

Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing[a]

	Edges (inches)	Intermediate supports (inches)
Interior paneling		
40. $^1/_4$"	4d casing ($1^1/_2$" × 0.080"); or 4d finish ($1^1/_2$" × 0.072")	6	12
41. $^3/_8$"	6d casing (2" × 0.099"); or 6d finish (2" × 0.092") (Panel supports at 24 inches)	6	12

For SI: 1 inch = 25.4 mm.

a. Nails spaced at 6 inches at intermediate supports where spans are 48 inches or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Section 2305. Nails for wall sheathing are permitted to be common, box or casing.

b. Spacing shall be 6 inches on center on the edges and 12 inches on center at intermediate supports for nonstructural applications. Panel supports at 16 inches (20 inches if strength axis in the long direction of the panel, unless otherwise marked).

c. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule and the ceiling joist is fastened to the top plate in accordance with this schedule, the number of toenails in the rafter shall be permitted to be reduced by one nail.

d. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.

e. Tabulated fastener requirements apply where the ultimate design wind speed is less than 140 mph. For wood structural panel roof sheathing attached to gable-end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 4 inches on center where the ultimate design wind speed is greater than 130 mph in Exposure B or greater than 110 mph in Exposure C. Spacing exceeding 6 inches on center at intermediate supports shall be permitted where the fastening is designed per the AWC NDS.

f. Fastening is only permitted where the ultimate design wind speed is less than or equal to 110 mph.

g. Nails and staples are carbon steel meeting the specifications of ASTM F1667. Connections using nails and staples of other materials, such as stainless steel, shall be designed by acceptable engineering practice or approved under Section 104.11.

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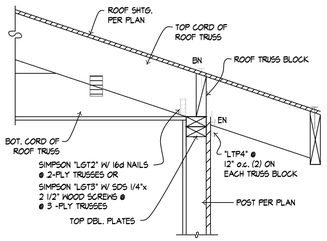
REGISTERED PROFESSIONAL ENGINEER
MANJINDER P. S. LOBANA
09/30/2024
C050983
CIVIL
STATE OF CALIFORNIA

REVIEWED
FOR
CODE COMPLIANCE
Jun 03, 2024
INTERWEST CONSULTING GROUP

NAILING

TWO STORY ADDITION FOR:
BIRD RESIDENCE
510 SANTA PAULA RD, SANTA PAULA, CA 93060

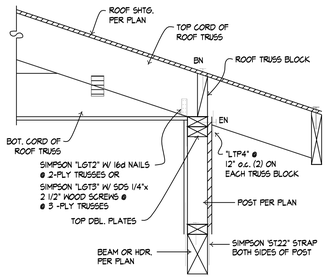
DRAWN	MARCOS N.
CHECKED	LOBANA
DATE	01-JUNE-2023
SCALE	NONE
JOB	BIRD
FILENAME	510 SANTA PAULA
SHEET	S-4



GIRDER TRUSS @ POST

NOT TO SCALE

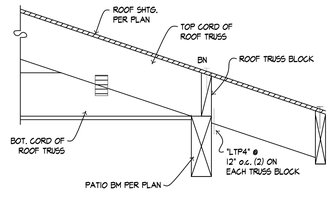
1



GIRDER TRUSS @ POST @ HDR.

NOT TO SCALE

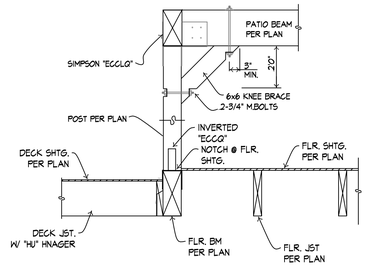
2



ROOF FRMG. @ BEAM

NOT TO SCALE

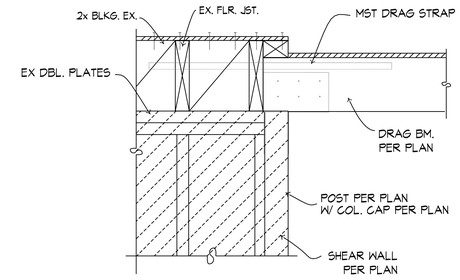
3



PATIO POST W/ KNEE BRACE

NOT TO SCALE

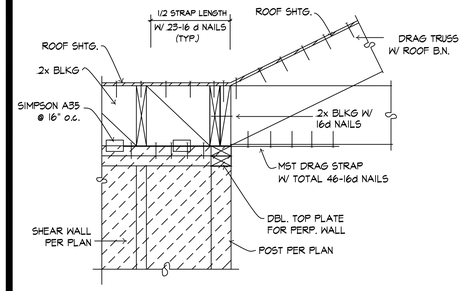
4



MST DRAG STRAP w/ DRAG BM.

NOT TO SCALE

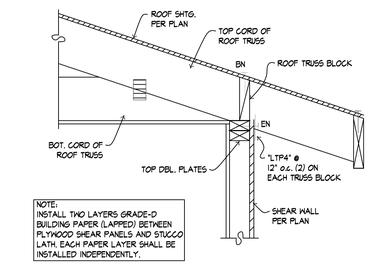
5



MST STRAP W/ DRAG TRUSS

NOT TO SCALE

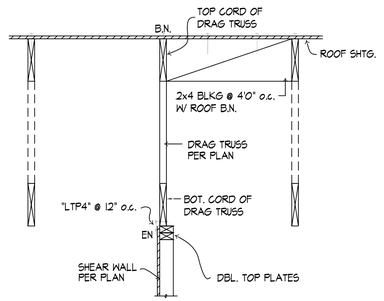
6



ROOF FRMG. W/ SHEAR TRANS.

NOT TO SCALE

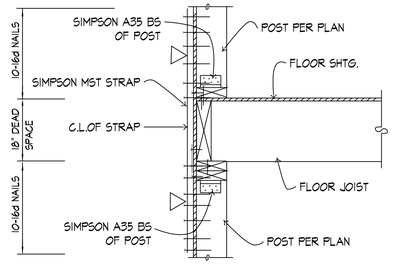
7



ROOF FRMG. @ INT. SHEAR WALL

NOT TO SCALE

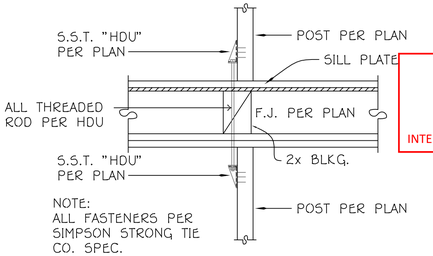
8



VERTICAL MST STRAP

NOT TO SCALE

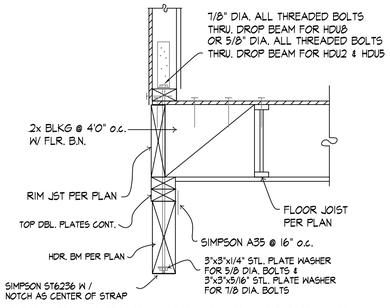
9



FLR. TO FLR. HOLD DOWN CONN.

NOT TO SCALE

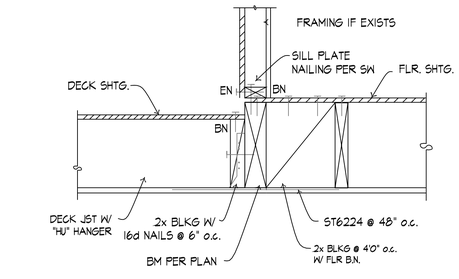
10



HOLD DOWN ABV @ HDR. BM.

NOT TO SCALE

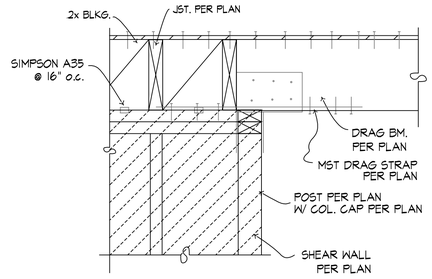
11



DECK FRMG/FLR FRMAG CONN.

NOT TO SCALE

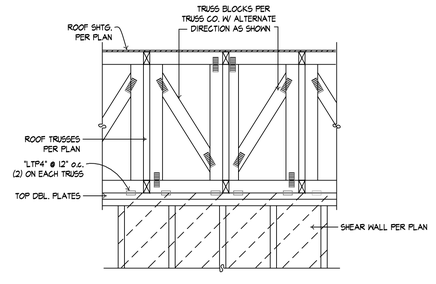
12



MST DRAG STRAP w/ DRAG BM.

NOT TO SCALE

13



TYP. TRUSS BLOCK DETAIL

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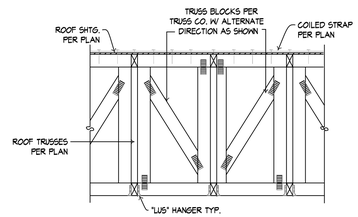
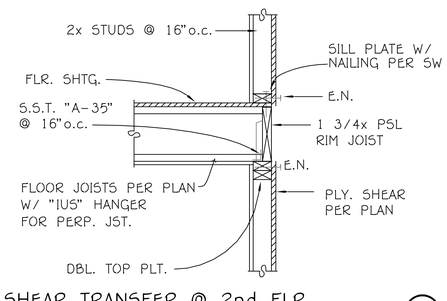
14

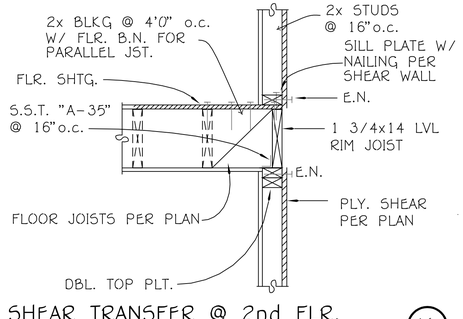




SHEAR TRANSFER @ 2nd FLR.

NOT TO SCALE

15



SHEAR TRANSFER @ 2nd FLR.

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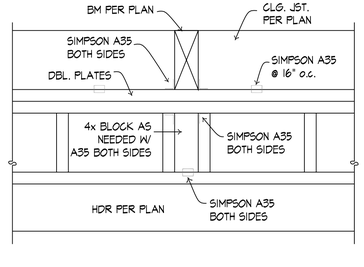
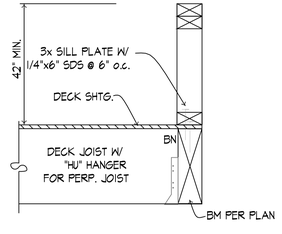


CLG. BM TO HDR. CONN.

NOT TO SCALE

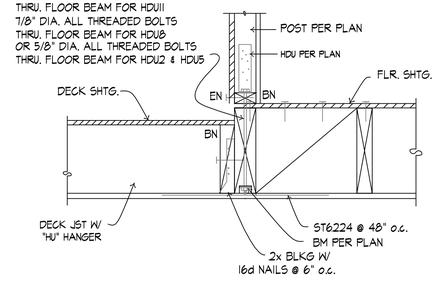
17



DECK FRMG. @ BEAM

NOT TO SCALE

18



HDU ABOVE FLR BM.

NOT TO SCALE

19

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REGISTERED PROFESSIONAL ENGINEER
MANINDER P. S. LOBANA
09/30/2023
C050983
CIVIL
STATE OF CALIFORNIA

REVIEWED
FOR
CODE COMPLIANCE
Jun 03, 2024
INTERWEST CONSULTING GROUP

DETAILS

TWO STORY ADDITION FOR:
BIRD RESIDENCE
510 SANTA PAULA RD, SANTA PAULA, CA 93060

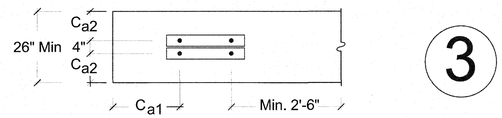
DRAWN	MARCOS N.
CHECKED	LOBANA
DATE	01-JUNE-2023
SCALE	NONE
JOB	BIRD
FILENAME	510 SANTA PAULA
SHEET	D-1

BACK TO BACK REINFORCED ANCHORAGE (BB-RA)

Model	Panel Width (in)	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	BB-RA le[4] (in)	BB-RA C_{a1}[5] (in)	BB-RA C_{a2}[6] (in)	Stirrups[9] (in)	Shear[7] Ties
HFX-9x	9	1-1/8-STD-BB-RA	1-1/8	STD	15	19-3/4	11	8 - # 4	# 3 (min) @ 3-3/4" OC
HFX-12x	12	1-1/8-STD-BB-RA		STD	23			13 - # 4	# 3 (min) @ 4" OC
		1-1/8-HS-BB-RA		HS					
HFX-15x	15	1-1/8-STD-BB-RA		STD		20-5/8		14 - # 4	# 4 (min) @ 4" OC
		1-1/8-HS-BB-RA		HS					
HFX-18x	18	1-1/8-STD-BB-RA		STD				15 - # 4	
		1-1/8-HS-BB-RA		HS					
HFX-21x	21	1-1/8-STD-BB-RA		STD				16 - # 4	
		1-1/8-HS-BB-RA		HS					
HFX-24x	24	1-1/8-STD-BB-RA		STD				18 - # 4	
		1-1/8-HS-BB-RA		HS					

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

1-1/8 - STD - BB - RA
- REINFORCED ANCHORAGE
- "BACK TO BACK" INSTALLATION
- ROD GRADE
- ROD DIAMETER



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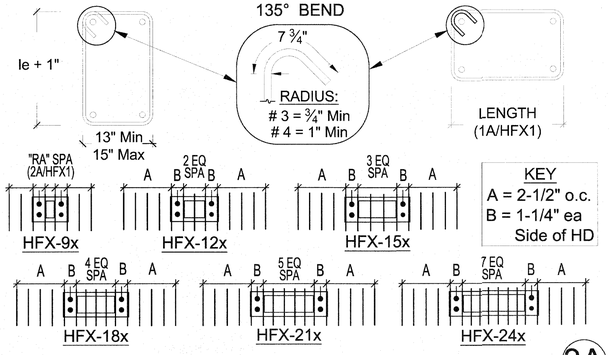
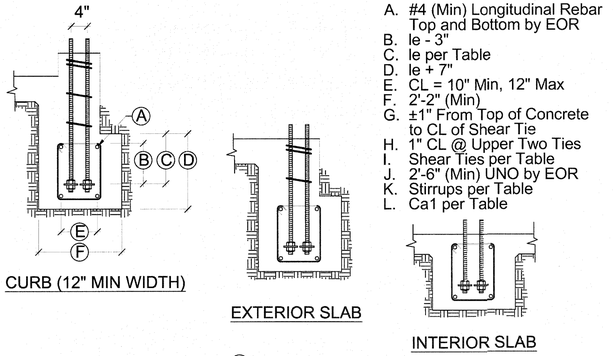
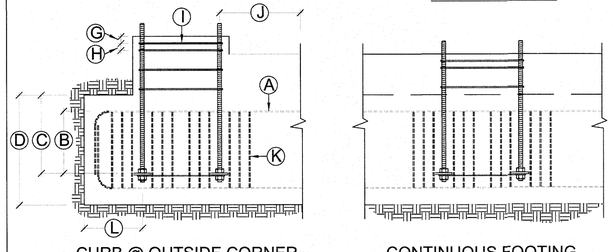


BB-RA SHEAR TIES & STIRRUPS

3A





BB-RA SECTIONS & ELEVATIONS

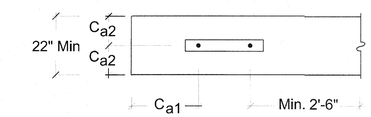
3B

REINFORCED ANCHORAGE (RA)

Model	Panel Width (in)	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	RA le[4] (in)	RA C_{a1}[5] (in)	RA C_{a2}[6] (in)	Stirrups[9] (in)	Shear[7] Ties
HFX-9x	9	1-1/8-STD-RA	1-1/8	STD	15	19-3/4	11	8 - # 4	# 3 (min) @ 3-3/4" OC
HFX-12x	12	1-1/8-STD-RA		STD				9 - # 4	# 3 (min) @ 4" OC
		1-1/8-HS-RA		HS					
HFX-15x	15	1-1/8-STD-RA		STD		20-5/8		10 - # 4	
		1-1/8-HS-RA		HS					
HFX-18x	18	1-1/8-STD-RA		STD				11 - # 4	# 4 (min) @ 4" OC
		1-1/8-HS-RA		HS					
HFX-21x	21	1-1/8-STD-RA		STD				12 - # 4	
		1-1/8-HS-RA		HS					
HFX-24x	24	1-1/8-STD-RA		STD					
		1-1/8-HS-RA		HS					

REINFORCED ANCHORAGE NOMENCLATURE

1-1/8 - STD - RA
- REINFORCED ANCHORAGE
- ROD GRADE
- ROD DIAMETER



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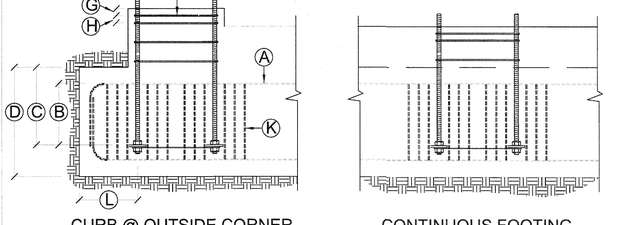
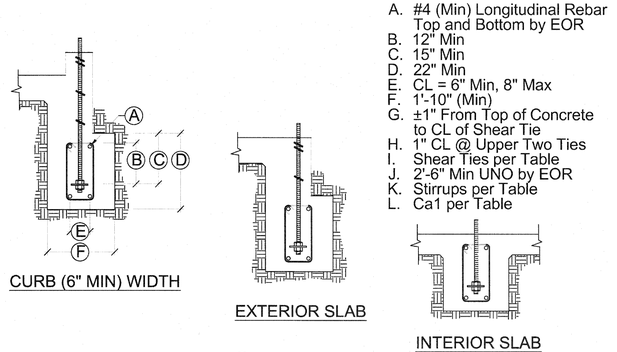


RA SHEAR TIES & STIRRUPS

2A



RA SECTIONS & ELEVATIONS

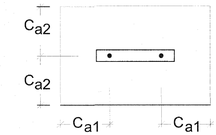
2B

UNREINFORCED ANCHORAGE (UA)

Model	Panel Height	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	UA le[4] (in)	UA C_{a1}[5] & C_{a2}[6] (in)	Shear[7,8] Ties
HFX-9x	79.5" - 8'	1-1/8-STD-13-19	1-1/8	STD	13	19	1 - # 3
HFX-12x	78" - 10'	1-1/8-HS-20-30		HS	20	30	
HFX-15x, 18x	78" - 13'	1-1/8-STD-14-20		STD	14	20	
HFX-15x, 18x Balloon	14' - 20'	1-1/8-HS-20-30		HS	20	30	
HFX-21x, 24x	78" - 13'	1-1/8-STD-14-20		STD	14	20	
		1-1/8-HS-23-34			23	34	2 - # 3
HFX-21x, 24x Balloon	14' - 20'	1-1/8-HS-20-30		HS	20	30	

UNREINFORCED ANCHORAGE NOMENCLATURE

1-1/8 - STD - 14 - 20
- END & EDGE DISTANCE (C_{a1} & C_{a2})
- EMBEDMENT DEPTH (l_e)
- ROD GRADE
- ROD DIAMETER



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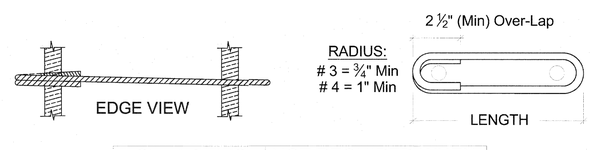
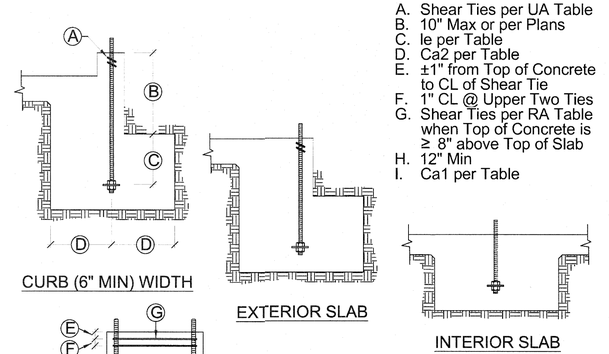
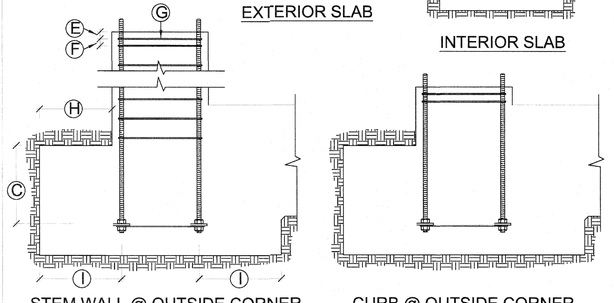


SHEAR TIES NOT REQUIRED WHEN			
Model	Length	End Distance ≥	Edge Distance ≥
HFX-9x	7-1/2"	2-3/8"	2-3/8"
HFX-12x	10-1/2"	6-1/4"	3-1/2"
HFX-15x	12"	7-3/8"	4-1/4"
HFX-18x	15"	8-3/8"	5"
HFX-21x	18"	9-3/8"	5-1/2"
HFX-24x	21"	10-3/8"	6"

UA SHEAR TIES

1A

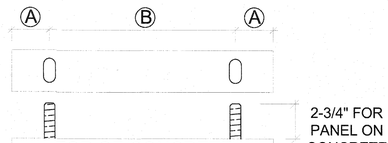




UA SECTIONS & ELEVATIONS

1B

1. DESIGNS ARE TO RESIST LOADING PER ACI 318-14, SEC 17.2.3.4.3.
2. STD INDICATES ANCHORS COMPLYING WITH ASTM F1554 GRADE 36 WITH A HARDY FRAME BOLT BRACE (HFXBB) INSTALLED WITH STD OR GRADE 8 DOUBLE NUTS ON THE EMBED END.
3. HS INDICATES ANCHORS COMPLYING WITH ASTM A193 GRADE B7 WITH A 1/2"x3"x3"(MIN) HFPW PLATE WASHER INSTALLED WITH DOUBLE NUTS ON THE EMBED END (HFXBB NOT REQUIRED).
4. LE = LENGTH OF EMBEDMENT FROM THE TOP OF FOOTING OR GRADE BEAM TO THE TOP OF THE HFXBB BOLT BRACE (TOP OF THE EMBEDDED HFPW PLATE WASHER @ HS ANCHORS)
5. CA1 = DISTANCE FROM HD CENTERLINE TO THE END OF THE FOOTING OR GRADE BEAM.
6. CA2 = DISTANCE FROM HD CENTERLINE TO BOTH THE FRONT AND THE BACK FACE OF THE FOOTING OR GRADE BEAM.
7. SHEAR TIES ARE GRADE 60 (MIN) REBAR AND REQUIRED FOR NEAR EDGE DISTANCE CONDITIONS PER ACI-318-14, F'C = 2,500 PSI. CURBS AND STEM WALLS MUST BE 6 INCH (MIN) WIDTH FOR UA AND RA, 12 INCH (MIN) WIDTH FOR BB-RA.
8. FOR UA APPLICATIONS, ADDITIONAL TIES MAY BE REQUIRED AT STEM WALLS. SHEAR TIES ARE NOT REQUIRED FOR INSTALLATION AWAY FROM EDGE (SEE DETAIL 1A), INSTALLATION ON WOOD FRAMING, OR FOR IRC BRACED WALL PANEL APPLICATIONS.
9. STIRRUPS ARE GRADE 60 (MIN) REBAR. SEE TABLE FOR SIZE AND SPACING. SEE "STIRRUP LAYOUT" DIAGRAMS AND "KEY" FOR LAYOUT PATTERNS.
10. CONCRETE EDGE DISTANCES MUST COMPLY WITH ACI 318-14, SECTION 17.7.2. COATED REINFORCEMENT MAY BE SPECIFIED BY THE EOR TO LIMIT EXPOSURE AND THEREFORE REDUCE MINIMUM CONCRETE COVER. COATED REINFORCEMENT MUST COMPLY WITH ACI 318-14, SECTION 20.6.2.



Model	Width	Ⓐ	Ⓑ
HFX-9x	9"	1-3/4"	5-1/2"
HFX-12x	12"		8-1/2"
HFX-15x	15"	2-5/8"	9-3/4"
HFX-18x	18"		12-3/4"
HFX-21x	21"		15-3/4"
HFX-24x	24"		18-3/4"

HFX ANCHOR CENTERLINES

A

IMPORTANT!

1. ANCHORAGE IS DESIGNED FOR TENSION AND SHEAR TRANSFER ONLY, FOUNDATION DESIGN PER EOR.
2. REINFORCEMENT SHOWN IS THE MINIMUM REQUIREMENT AND IS NOT INTENDED TO REPLACE REINFORCEMENT DESIGNED BY THE EOR.
3. FOR RA AND BB-RA INSTALLATIONS, THE HFXBB BOLT BRACE MAY BE PLACED ON TOP OF THE STIRRUPS WITH DOUBLE-NUTS INSTALLED AT EMBED END OF STANDARD GRADE ANCHOR RODS. (NOTE: ½" x 3" x 3" MIN. HFPW PLATE WASHERS ARE REQUIRED TO BE DOUBLE-NUTTED AT EMBED END OF HIGH STRENGTH ANCHOR RODS.)
4. HIGH STRENGTH ALL-THREAD RODS PROVIDED BY HARDY FRAMES ARE STAMPED ON BOTH ENDS. HF B7

IMPORTANT NOTES

B

REVISIONS | DATE

ANCHORAGE DETAILS - HFX PANELS

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH *HARDY FRAME* PRODUCTS

REVIEWED FOR CODE COMPLIANCE
Jun 03, 2020
INTERWEST CONSULTING GROUP

REGISTERED PROFESSIONAL ENGINEER — ALEXANDER P. S. LAU — C050989 — CIVIL — STATE OF CALIFORNIA — Exp 09/30/21

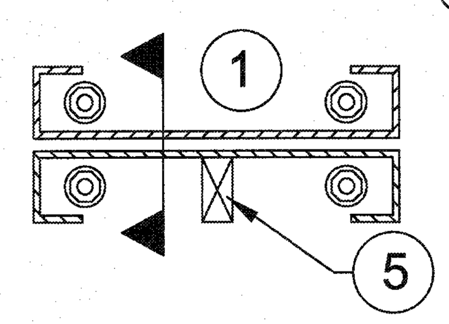
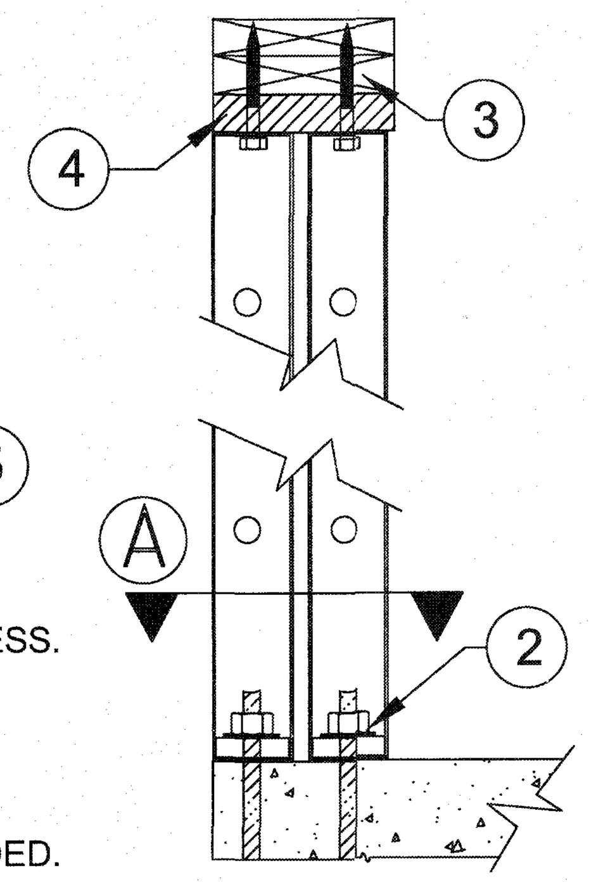
HARDY FRAME® SHEAR WALL SYSTEM
1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800 754-3030 / www.hardyframe.com

MiTek®

DATE: 1-1-2020

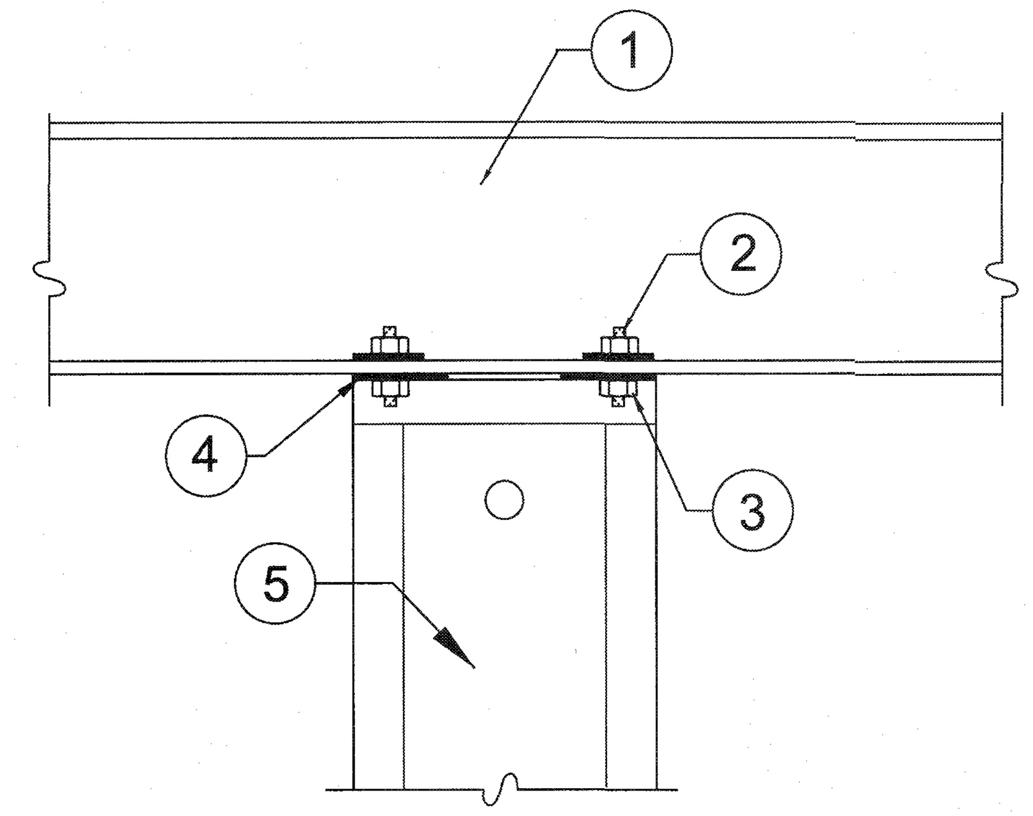
HFX1

SECTION A

1. CAVITY ORIENTED FOR CONNECTION ACCESS.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. NOMINAL 8 INCH FRAMING ABOVE (MIN).
4. A 2x FILLER WITH 1/4" x 4-1/2" MINIMUM WS SCREWS IS PERMITTED.
5. FIELD INSTALLED WOOD BACKING AS NEEDED.

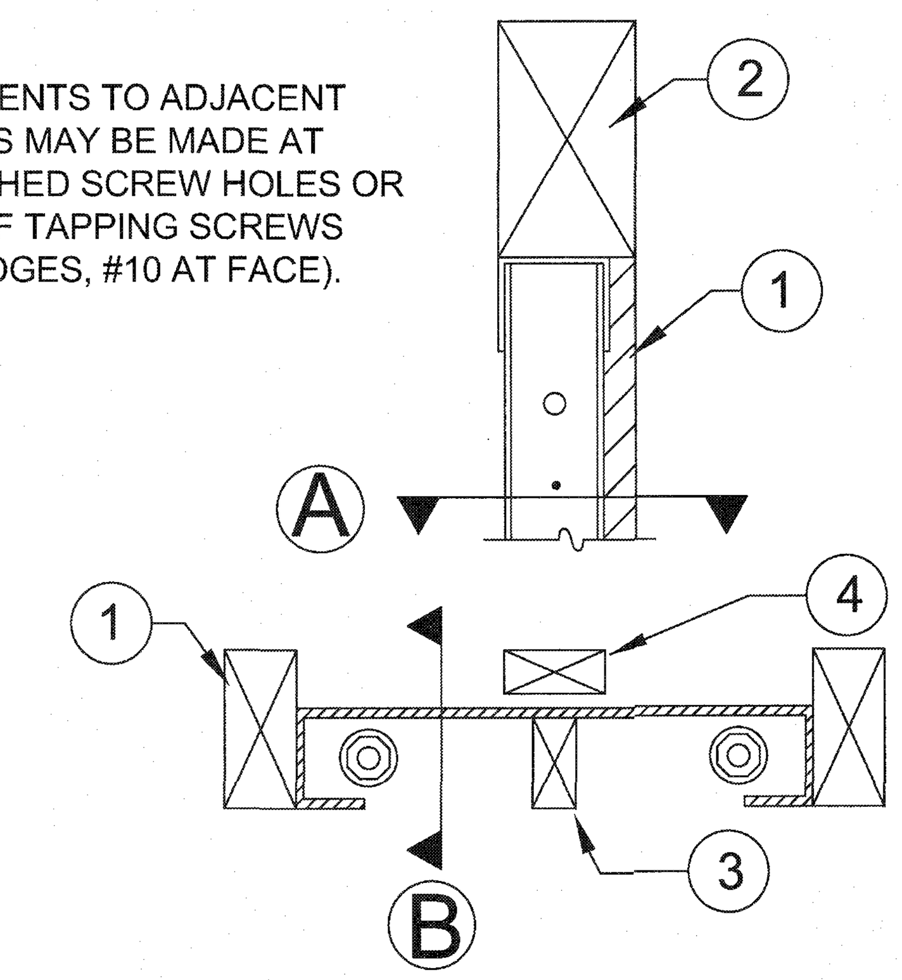
BACK TO BACK INSTALLATION (3)



1. STEEL BEAM PER PLANS
2. ALL THREAD RODS THRU-BOLTED TO STEEL BEAM BY BUILDING DESIGN PROFESSIONAL.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. *HARDY FRAME*® STACKING WASHERS (HFSW) REQUIRED TO BE WELDED INSIDE TOP CHANNEL OF LOWER PANEL.
5. *HARDY FRAME*® "STK" PANEL WITH STACKING WASHERS WELDED INSIDE THE TOP CHANNEL BY MANUFACTURER.

STEEL BEAM ABOVE THRU-BOLT (2)

NOTE:
ATTACHMENTS TO ADJACENT TRIMMERS MAY BE MADE AT PREPUNCHED SCREW HOLES OR WITH SELF TAPPING SCREWS (#12 AT EDGES, #10 AT FACE).



1. TRIMMERS PROVIDE FULL BEARING FOR HEADER ABOVE, DESIGN AND CONNECTIONS BY BUILDING DESIGN PROFESSIONAL.
2. 6x HEADER.
3. WOOD MEMBERS FOR BACKING MAY BE INSERTED VERTICALLY OR HORIZONTALLY IN THE PANEL CAVITY AS NEEDED.
4. WOOD MEMBER FLUSH TO FACE OF WALL FOR BACKING AS NEEDED.

6x HEADER ABOVE-SECTIONS (1)

HFX PANELS 78 IN. THROUGH NOMINAL 13 FEET

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter[1] (in)	Top Screw Qty[2] (ea)	Screw Qty Available at Edges (ea)[3]
HFX-12,15,18,21 & 24x78	78	3-1/2	1-1/8	9" Width = 5	4
HFX-9x79.5	79-1/2				
HFX-12,15,18,21 & 24x8	92-1/4			12" Width = 6	
HFX-9x8	93-3/4				
HFX-12,15,18,21 & 24x9	104-1/4			15" Width = 8	
HFX-12,15,18,21 & 24x10	116-1/4			18" Width = 10	5
HFX-15,18,21 & 24x11	128-1/4			21" Width = 12	
HFX-15,18,21 & 24x12	140-1/4				6
HFX-15,18,21 & 24x13	152-1/4			24" Width = 14	

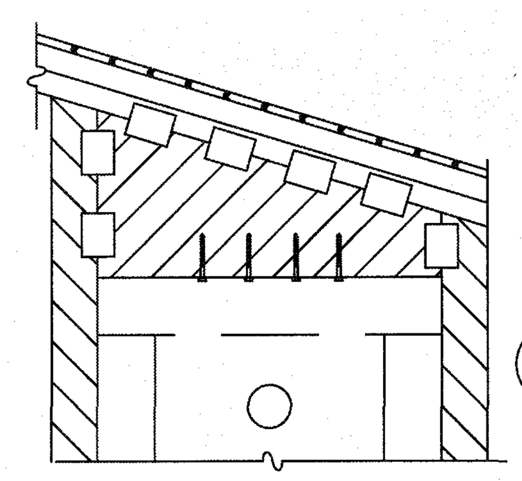
BALLOON PANELS 14 FEET THROUGH 20 FEET

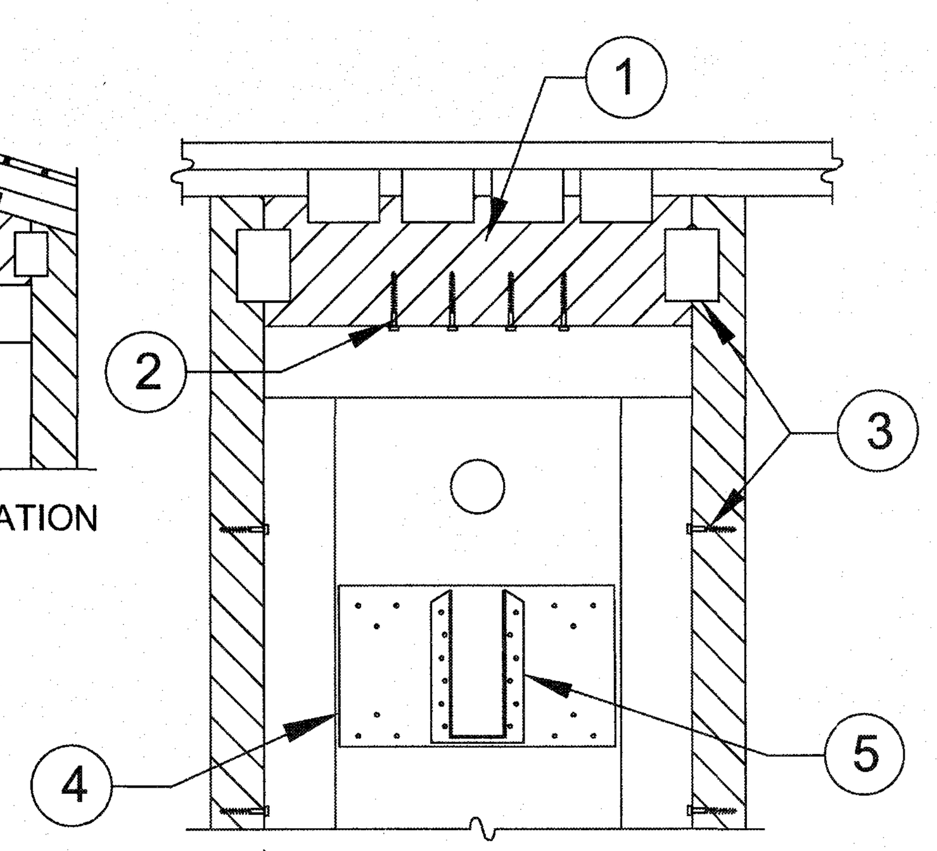
Model Number	Net Height (in)	Depth (in)	Hold Down Diameter[1] (in)	Top Screw Qty[2] (ea)	Screw Qty Available at Edges (ea)[3]
HFX-15,18,21 & 24x14	164-1/4	3-1/2	1-1/8	15" Width = 8	6
HFX-15,18,21 & 24x15	176-1/4				
HFX-15,18,21 & 24x16	188-1/4			18" Width = 10	
HFX-15,18,21 & 24x17	200-1/4				7
HFX-15,18,21 & 24x18	212-1/4			21" Width = 12	
HFX-15,18,21 & 24x19	224-1/4				8
HFX-15,18,21 & 24x20	236-1/4			24" Width = 14	

TABLE NOTES
1. FOR STD OR HS GRADE HOLD DOWN ANCHOR BOLTS CONNECT TO THE PANEL BASE WITH HARDENED ROUND WASHERS BELOW GRADE 8 NUTS. ALTERNATE WASHERS ARE (2 EA) ROUND-FLAT OR (2 EA) SAE WASHERS ON EACH BOLT. ALTERNATE NUTS ARE 2H HEAVY HEX.
2. 1/4" DIAMETER MITEK®PRO SERIES™ WS SCREWS. LENGTH IS 3" (MINIMUM) WHEN ATTACHED DIRECTLY TO THE COLLECTOR AND 4-1/2" (MINIMUM) WHEN INSTALLING A 2x FILLER ABOVE THE PANEL.
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS IS REQUIRED AT THE PANEL EDGES WHEN INSTALLING A FILLER ABOVE THE TOP CHANNEL THAT IS GREATER THAN 1-1/2" OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.

(A)

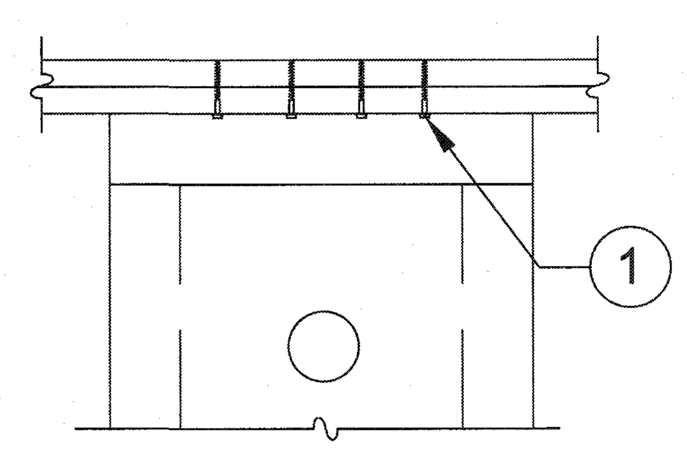
REVIEWED FOR CODE COMPLIANCE Jun 03, 2024 INTERWEST CONSULTING GROUP





1. WOOD FILLER WITH USP MP4F CONNECTORS BOTH SIDES, QUANTITY BY BUILDING DESIGN PROFESSIONAL.
2. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS INSTALLED THROUGH PRE-PUNCHED HOLES IN PANEL EDGES REQUIRED WHEN INSTALLING A FILLER GREATER THAN 1-1/2" ABOVE TO BRACE OUT-OF-PLANE HINGE OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.
4. PRE-DRILL 3/16" DIA. HOLES, EVENLY SPACED IN FACE OF PANEL NO LESS THAN 2-1/4" OC AND INSTALL 1/4" DIA. WOOD SCREWS INTO 2x (MIN.) WOOD "LEDGER" IN PANEL CAVITY.
5. CONNECTOR AND ATTACHMENT BY BUILDING DESIGN PROFESSIONAL.

FILLER GREATER THAN 1-1/2 IN. (6)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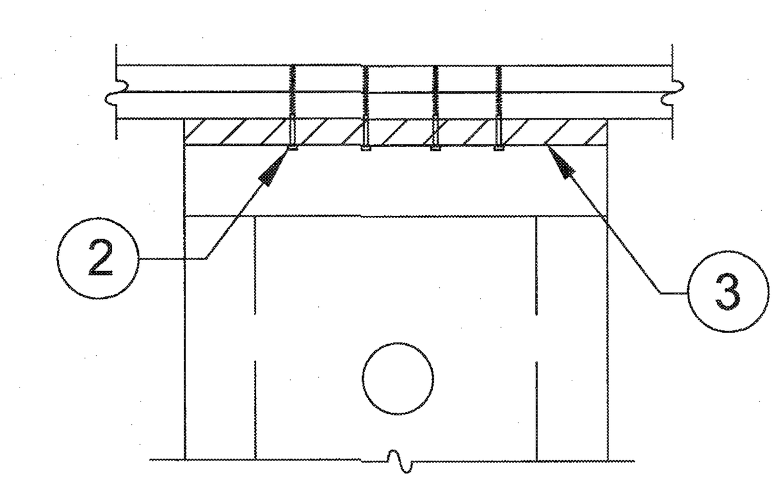
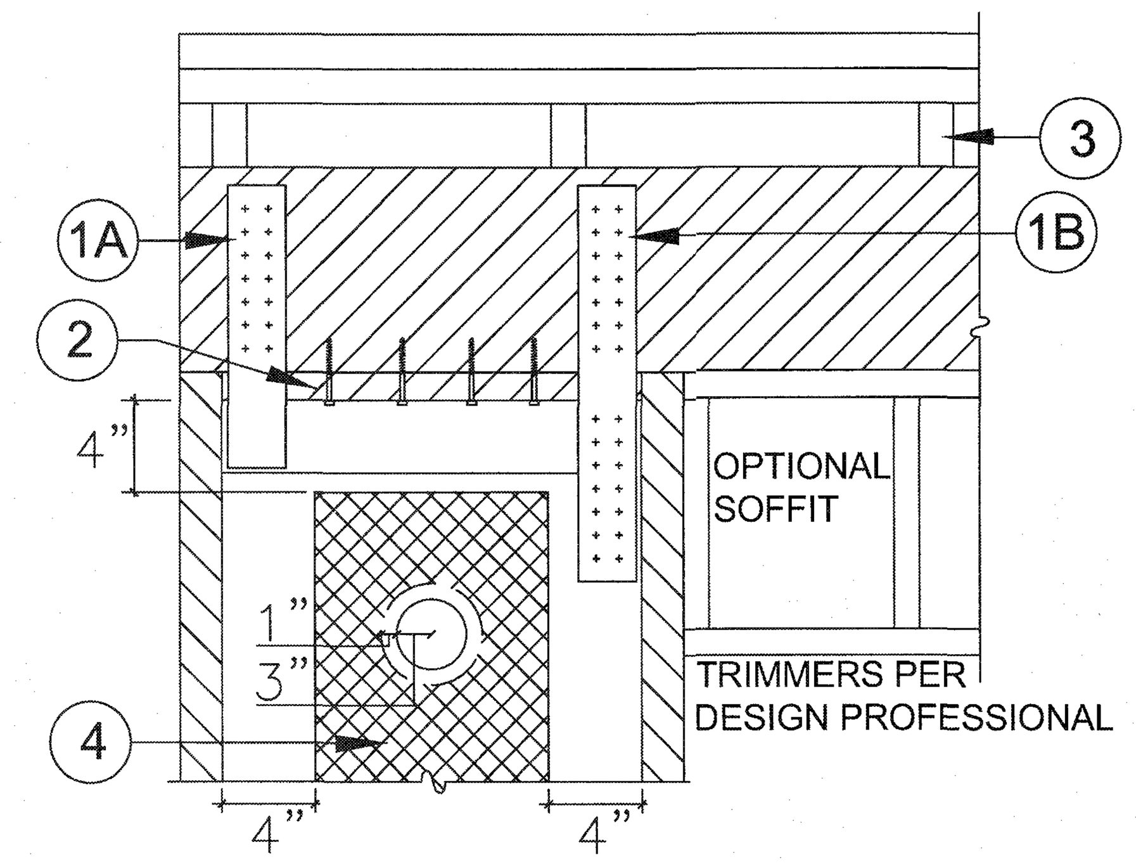

5b

1. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
2. 1/4" x 4-1/2" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. 2x WOOD FILLER.

TOP PLATE CONNECTIONS (5)

NOTE:
TO PREVENT DRILLING ADDITIONAL HOLES ORIENT THE PANEL CAVITY TOWARD THE FIXTURE BEING INSTALLED.

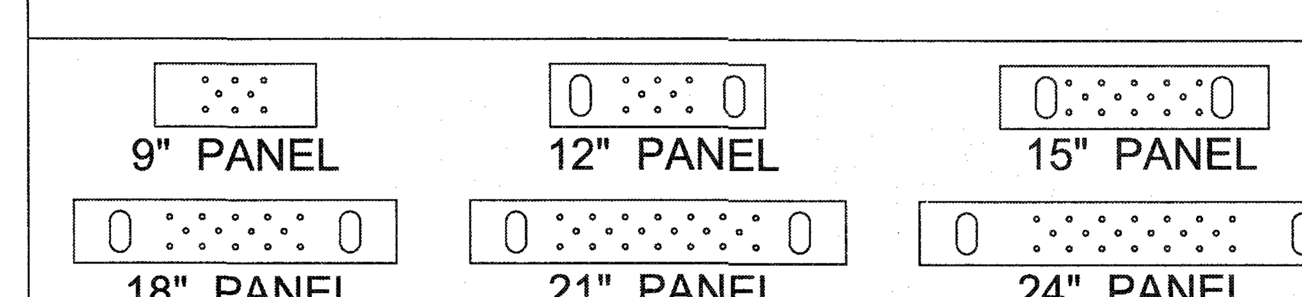


1. (A) PRE-WELDED STRAPS ARE PROVIDED ON 78" AND 79-1/2" PANEL HEIGHTS. THEY ARE AVAILABLE FOR OTHER HEIGHTS UPON REQUEST.
(B) FIELD INSTALLED STRAPS WITH SELF TAPPING SCREWS ARE PERMITTED. THE DESIGN AND CONNECTION IS BY THE DESIGN PROFESSIONAL.
2. A 2x WOOD FILLER WITH 1/4"x4-1/2" (MIN.) WS SCREWS IS PERMITTED.
3. WHEN CRIPPLE STUDS OCCUR, SHEAR TRANSFER DESIGN TO BE PER THE BUILDING DESIGN PROFESSIONAL.
4. A 1" DIA. HOLE MAY BE ADDED IN THE PANEL FACE WHEN IT IS LOCATED IN THE UPPER HALF OF THE PANEL HEIGHT AND IS 4" MINIMUM FROM ANY EDGE. FOR PANELS MORE THAN 12" WIDE, ADDITIONAL HOLES MUST BE OFFSET 1" MINIMUM FROM THE 3" DIA. PREPUNCHED HOLE. FOR HOLES LARGER THAN 1" DIAMETER OR TO ADD MORE THAN ONE HOLE CONTACT MITEK HARDY FRAME TECHNICAL SUPPORT AT (800) 754-3030.

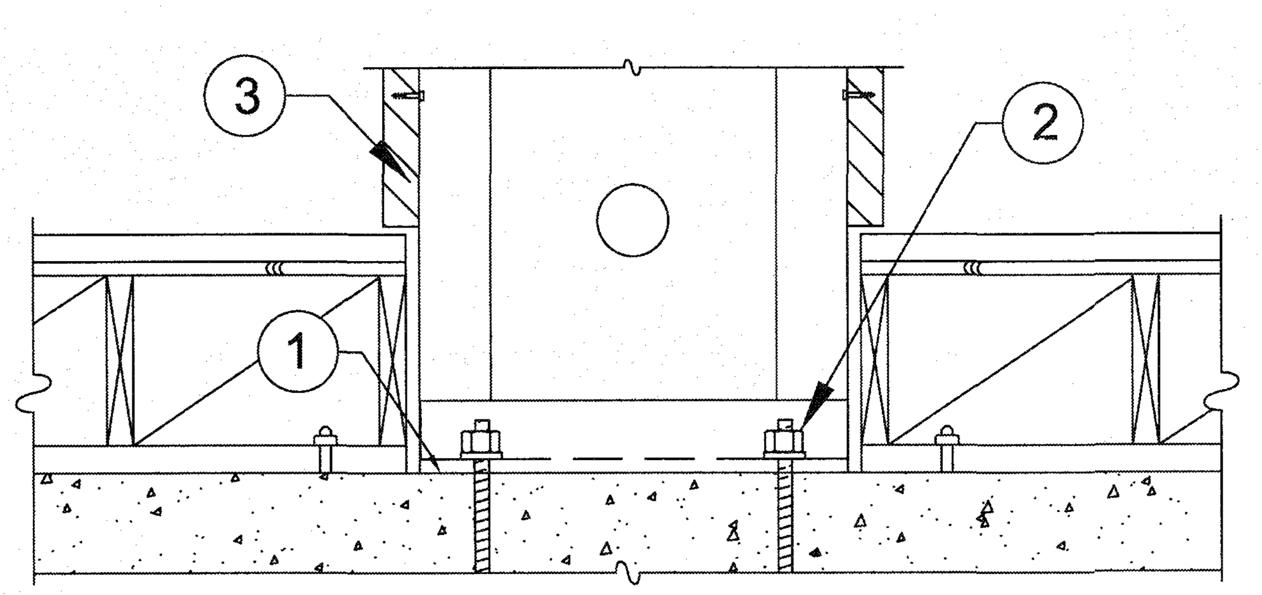
TOP CONNECTION TO HEADER (4)

INSTALLATION INSTRUCTIONS
1. WHEN INSTALLING ON CONCRETE CONNECT WITH (1 EA) HARDENED ROUND WASHER BELOW (1 EA) GRADE 8 NUT, SECURE WITH A DEEP SOCKET (RECOMMENDED) UNTIL SNUG TIGHT. ALTERNATE WASHERS AND NUTS ARE PROVIDED IN TABLE NOTE 1.
2. INSTALLATION ON CONCRETE PROVIDES THE HIGHEST ALLOWABLE VALUES. CONFIRM WITH THE DESIGN PROFESSIONAL BEFORE INSTALLING ON OTHER SUPPORTING SURFACES.
3. USE 1/4"X4-1/2" MITEK PRO SERIES WS SCREWS AT TOP CONNECTIONS WITH A 2x FILLER. IF THE TOP OF PANEL IS IN DIRECT CONTACT WITH THE COLLECTOR ABOVE (TOP PLATES, HEADER, BEAM, ETC.) USE1/4 x 3" (MIN)
4. FOR INSTALLATIONS WITH A FILLER GREATER THAN 1-1/2" ABOVE, OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL, ADJACENT KING POSTS TO BRACE THE OUT-OF-PLANE HINGE CAN BE CONNECTED WITH 1/4" DIA. SCREWS THROUGH PRE-PUNCHED HOLES AT THE PANEL EDGES.

(B)

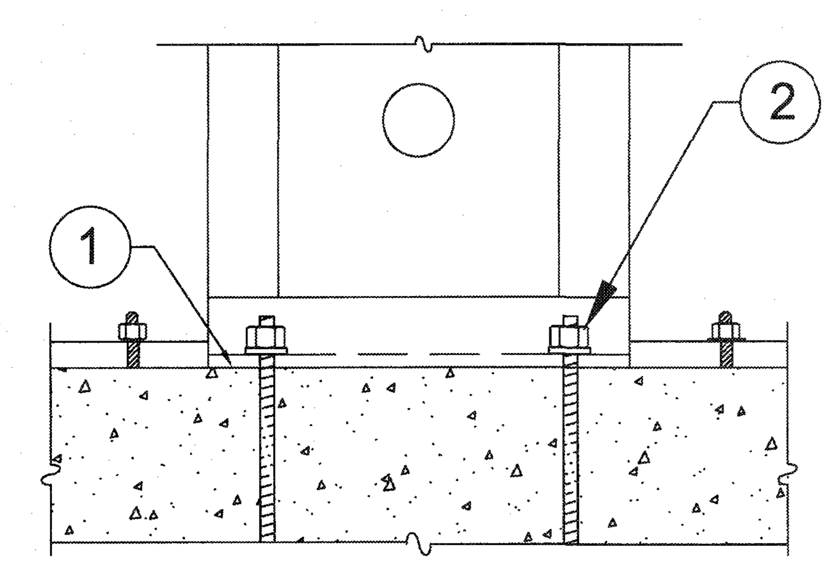


(C)



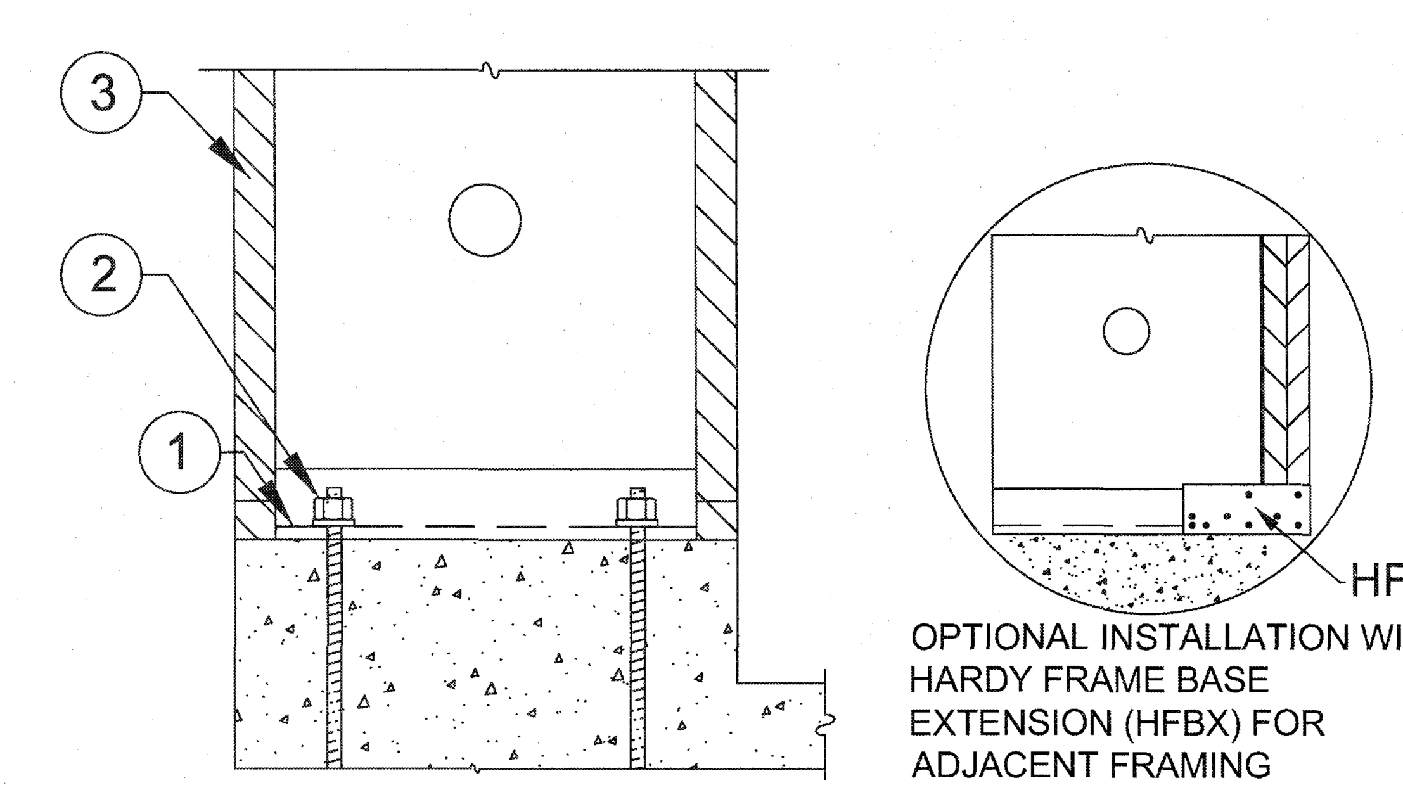
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS INSTALLED AT THE PANEL EDGES WHEN INSTALLING A FILLER GREATER THAN 1-1/2" ABOVE OR WHEN SPECIFIED BY DESIGN PROFESSIONAL.

RAISED FLOOR HEAD-OUT (8)



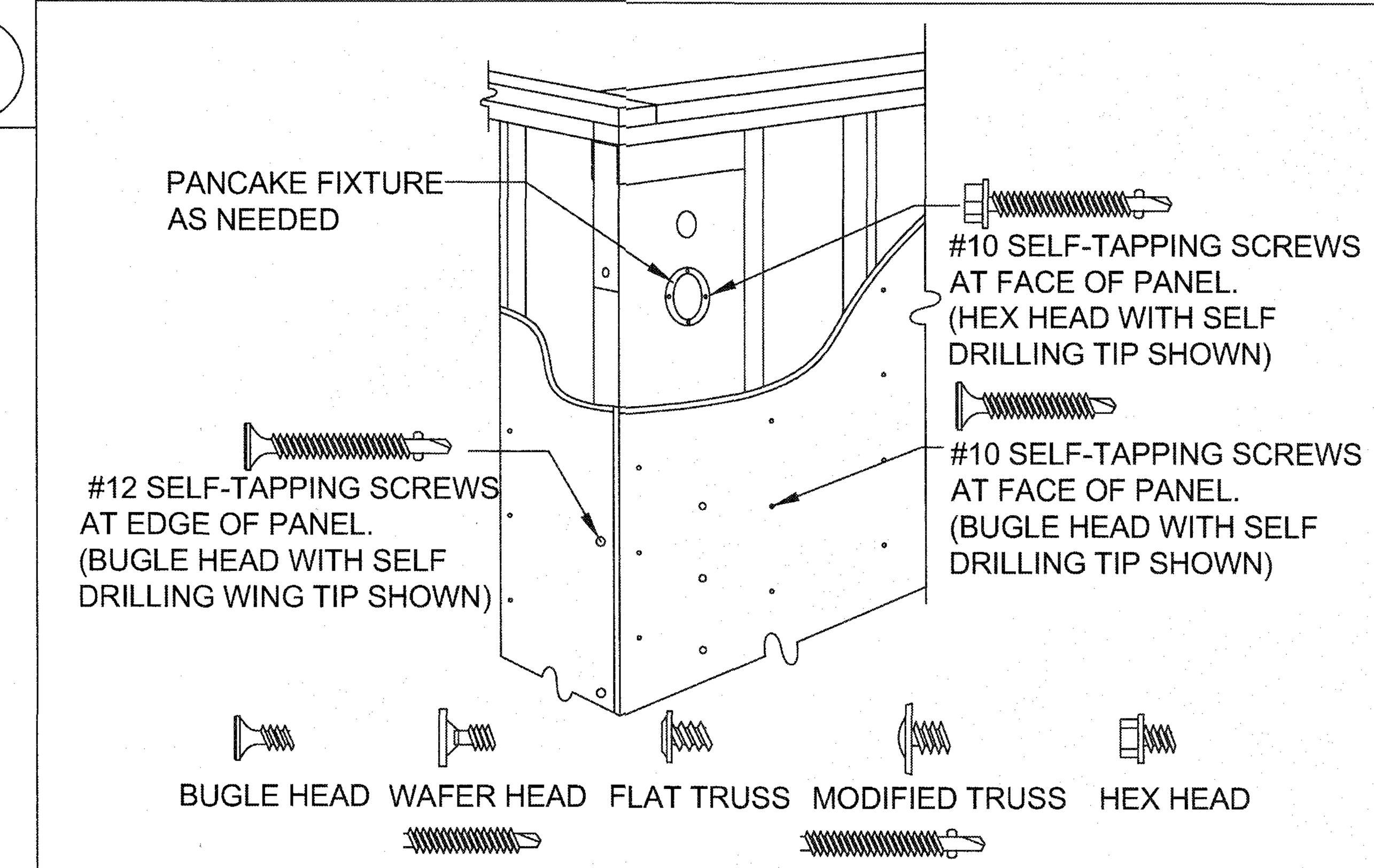
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

INSTALLATION ON CONCRETE (7)



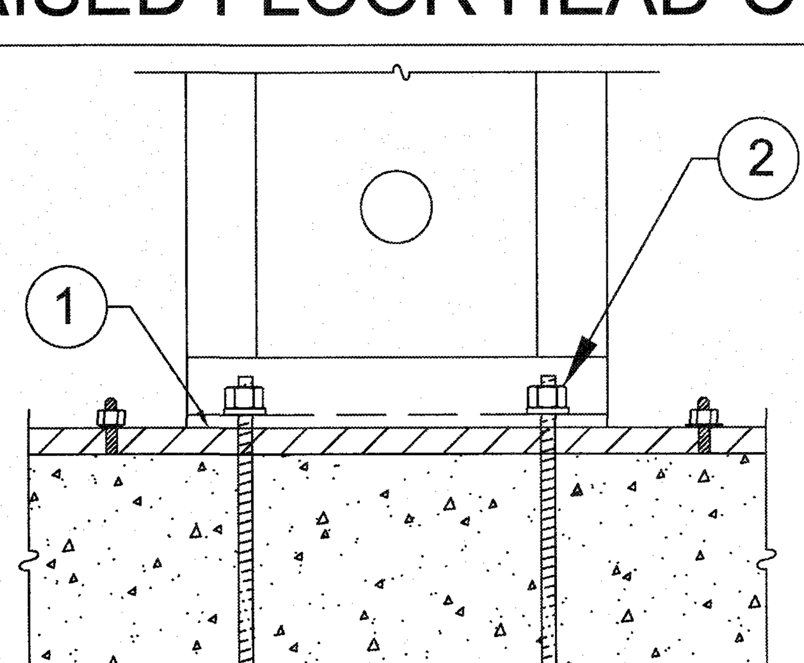
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. ADJACENT FRAMING OPTIONAL U.N.O. BY BUILDING DESIGN PROFESSIONAL.

INSTALLATION ON CURB (9)



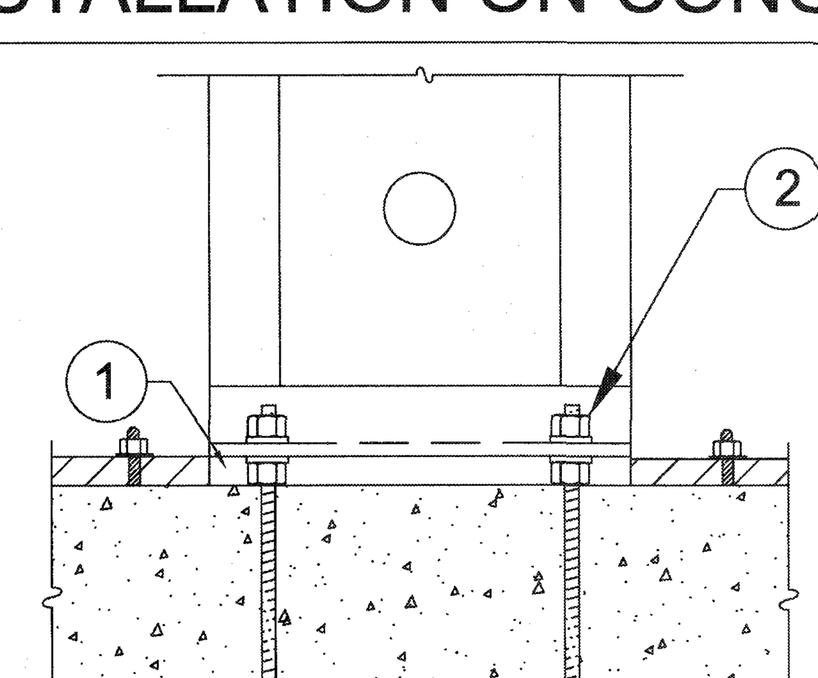
NOTES:
A. SURFACE FINISHES, CONNECTORS AND FIXTURES ARE ATTACHED TO THE PANEL FACE WITH # 10 SELF-TAPPING SCREWS SPACED NO LESS THAN 2-1/4" OC.
B. ATTACHMENTS TO THE PANEL EDGES ARE MADE WITH # 12 SELF-TAPPING SCREWS.
C. STRUCTURAL CONNECTIONS ARE TO BE DESIGNED BY THE DESIGN PROFESSIONAL.
D. STRUCTURAL HARDWARE USED TO TRANSFER LOADS SHOULD NOT EXCEED 12 GAUGE.

(D)



ALLOWABLE VALUES ON 2x PLATE ARE LESS THAN INSTALLATION ON CONCRETE
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND TREATED PLATE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

INSTALLATION ON 2x PLATE (11)



ALLOWABLE VALUES ON N&W ARE LESS THAN INSTALLATION ON CONCRETE
1. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH 5,000 PSI NON-SHRINK GROUT (MINIMUM).
2. NUT AND WASHER GRADES PER TABLE NOTE 1.

INSTALLATION ON NUTS & WASHERS (10)

REVISIONS	DATE

FRAMING DETAILS - HFX PANELS

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH MITEK® *HARDY FRAME*® PRODUCTS

HARDY FRAME® SHEAR WALL SYSTEM
1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
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DATE:
1-1-2020

HFX2