

URBAN DESIGN GROUP  
 HEREBY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE 3D RENDERINGS. ANY REPRODUCTION, COPIING, DISTRIBUTION, OR PUBLIC DISPLAY OF THESE 3D RENDERINGS WITHOUT THE WRITTEN PERMISSION OF URBAN DESIGN GROUP IS PROHIBITED. ANY REPRODUCTION, COPIING, DISTRIBUTION, OR PUBLIC DISPLAY OF THESE 3D RENDERINGS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO URBAN DESIGN GROUP. URBAN DESIGN GROUP SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE TO PROPERTY OR PERSONS ARISING FROM THE USE OF THESE 3D RENDERINGS. URBAN DESIGN GROUP SHALL NOT BE RESPONSIBLE FOR ANY VARIATION FROM THE DIMENSIONS, CONDITIONS AND SPECIFICATIONS SHOWN BY THESE DRAWINGS.

COPYRIGHT © 2022 URBAN DESIGN, INC.

FRONT ELEVATION:



PREPARED FOR:

8456 SE 40TH RESIDENCE

PROJECT DATA:

PARCEL NO.: 502190-0790  
 PROPERTY TYPE: R, RESIDENTIAL  
 LAND AREA: 11,930 S.F.  
 ACRES: 0.27  
 Q.S.T.R.: SW-7 -24-5  
 ADDRESS: 8456 SE 40TH MERCER ISLAND, WA 98040

ZONE: R-8.4  
 SETBACKS: FRONT: 20 FEET  
 REAR: 25 FEET  
 SIDE: 5 FT. MIN.  
 30 FEET

MAX HEIGHT: 30 FEET

WATER: WATER DISTRICT  
 SEWER/SEPTIC: PUBLIC  
 ROAD ACCESS: PUBLIC  
 STREET SURFACE: PAVED

DESIGN TEAM: URBAN DESIGN GROUP  
 15445 53rd AVE. S. STE. 110  
 TUKWILA, WA 98188  
 (206) 838-8250  
 urbandesigncenter@yahoo.com  
 CONTACT: PAVEL MELNIK

STRUCTURAL ENGINEER: NN ENGINEERING  
 P.O. BOX 34681 LAKEWOOD, WA 98499  
 (253) 250-6651  
 NNENGINEERING@COMCAST.NET  
 CONTACT: NORM P. NAVARRO

OWNER: PHILIP SUDO Q LLC  
 mackuntu@gmail.com  
 laurleyang92@gmail.com  
 CONTACT: KUN QIAN & LAURIE QIAN

| SHEET # |                                    |
|---------|------------------------------------|
| A0      | COVER                              |
| 1 OF 1  | BOUNDARY/TOPOGRAPHIC SURVEY        |
| SITE    | ARCHITECTURAL SITE PLAN            |
| T1      | TREE PROTECTION PLAN               |
|         | CIVIL ENGINEERING                  |
| C1      | TESC/DEMO/CS/WPPP                  |
| C2      | DRAINAGE SITE PLAN                 |
| C3      | DRAINAGE SITE PLAN                 |
| C4      | DETENTION DETAIL                   |
|         | ARCHITECTURAL PLAN                 |
| A1.1    | GENERAL NOTES AND PLAN PREVIEW     |
| A1.2    | ENERGY CREDITS OPTIONS             |
| A2.1    | GROSS FLOOR AREA (GFA)             |
| A2.2    | PARKING                            |
| A3      | MAIN FLOOR PLAN                    |
| A4      | UPPER FLOOR PLAN                   |
| A5      | FRONT AND REAR ELEVATIONS          |
| A6      | LEFT AND RIGHT ELEVATIONS          |
| A7      | PERSPECTIVE VIEWS                  |
| A8      | BUILDING CROSS-SECTION AND DETAILS |
| A9      | ROOF LAYOUT                        |
| A10     | SCHEDULES AND NOTES                |
| A11     | DETAILS                            |
| A12     | PROJECT DETAILS                    |
| A13     | HARDIE PANEL SIDING DETAILS        |
| A14     | ARTISAN LAP SIDING DETAILS         |
|         | STRUCTURAL PLAN                    |
| S1.1    | GENERAL NOTES                      |
| S1.2    | GENERAL NOTES                      |
| S2      | FOUNDATION DETAILS                 |
| S3      | FRAMING DETAILS                    |
| S4      | FOUNDATION/ FLOOR FRAMING          |
| S5      | UPPER FLOOR FRAMING                |
| S6      | ROOF FRAMING                       |

3D RENDERING NOTES:

3D ELEVATIONS ARE FOR REFERENCE ONLY. THESE SHOULD NOT BE USED TO DETERMINE ANY PORTION OF THE CONSTRUCTION OTHER THAN GENERAL MATERIAL AND APPEARANCE. REFER TO ELEVATION SHEETS FOR DETAILS.

PROJECT DESCRIPTION:

SINGLE FAMILY RESIDENCE (4 016 S.F.) AND ATTACHED 2-CAR GARAGE (500 S.F.).

BUILDING DEPARTMENT NOTES:

THE INSTALLATION OF A NFPA 13D FIRE SPRINKLER SYSTEM. THIS WILL REQUIRE A SEPARATE PERMIT, BUT MAY BE DEFERRED BY CITY AFTER FULL REVIEW.



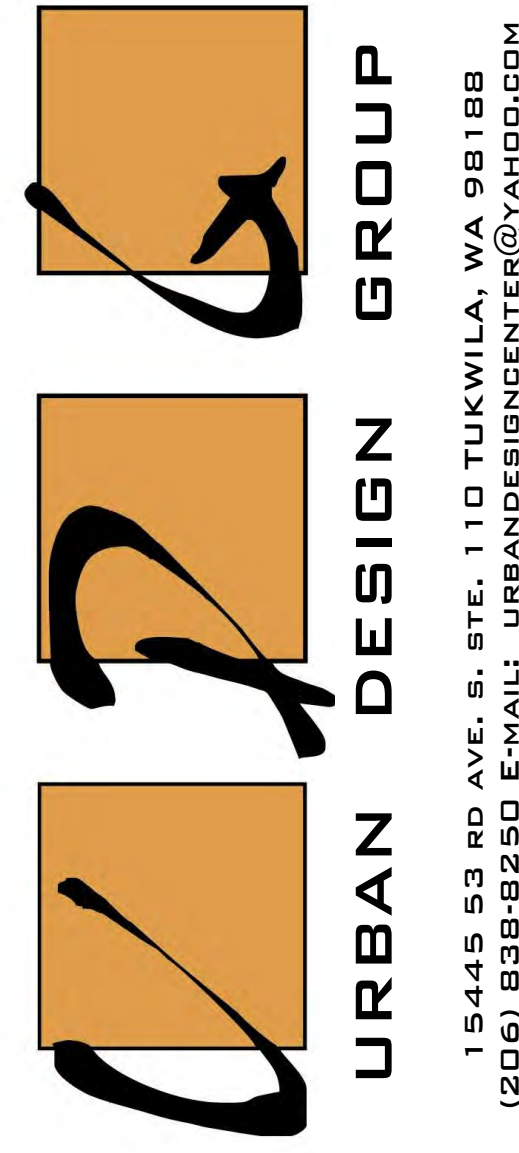
FRONT/RIGHT ELEVATION:



REAR/LEFT ELEVATION:



REAR ELEVATION:



URBAN DESIGN GROUP

15445 53RD AVE. S. STE. 110, TUKWILA, WA 98188  
 (206) 838-8250 E-MAIL: URBANDESIGNCENTER@YAHOO.COM

PROJECT NAME:  
 SINGLE-FAMILY RESIDENCE  
 8456 SE 40TH  
 MERCER ISLAND, WA 98040  
 PARCEL #: 502190-0790

PREPARED FOR:  
 PHILIP SUDO Q LLC  
 KUN QIAN &  
 LAURIE QIAN

SUBMITTAL/REVISION: DATE:  
 SUBMITTED -/-/2022  
 REVISED -/-/2022

DESIGN BY: PAVEL MELNIK  
 DRAFTED BY: ANNA KONYAKINA

SHEET TITLE:

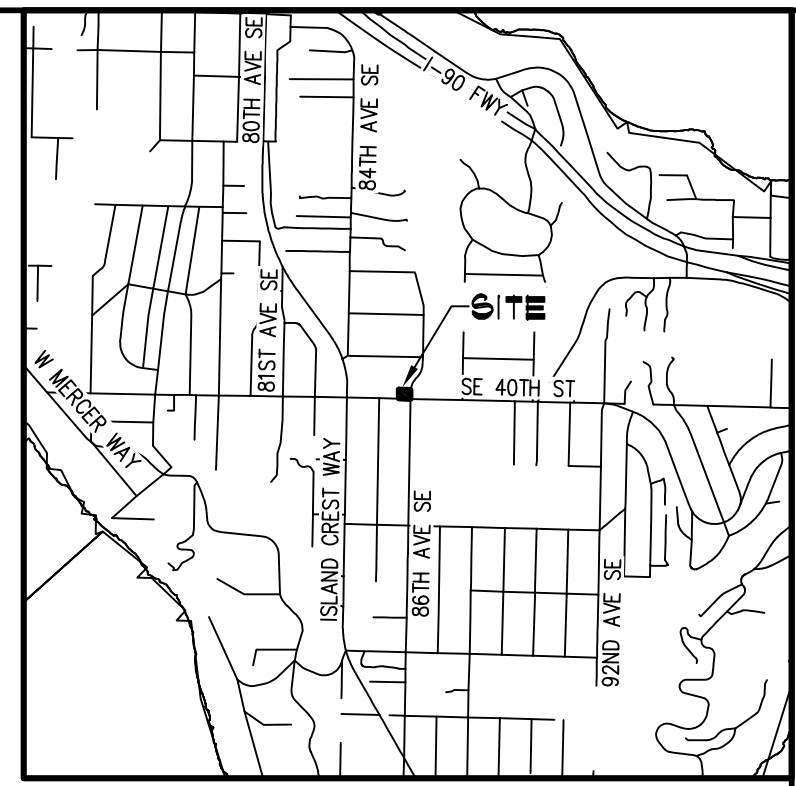
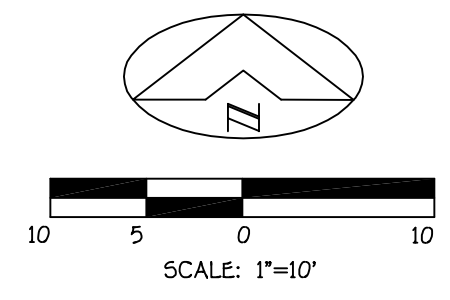
COVER SHEET

PROJECT NUMBER:  
 21257

SHEET NUMBER:  
 A0



A PORTION OF THE SW 1/4, SW 1/4 OF SECTION 7, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.



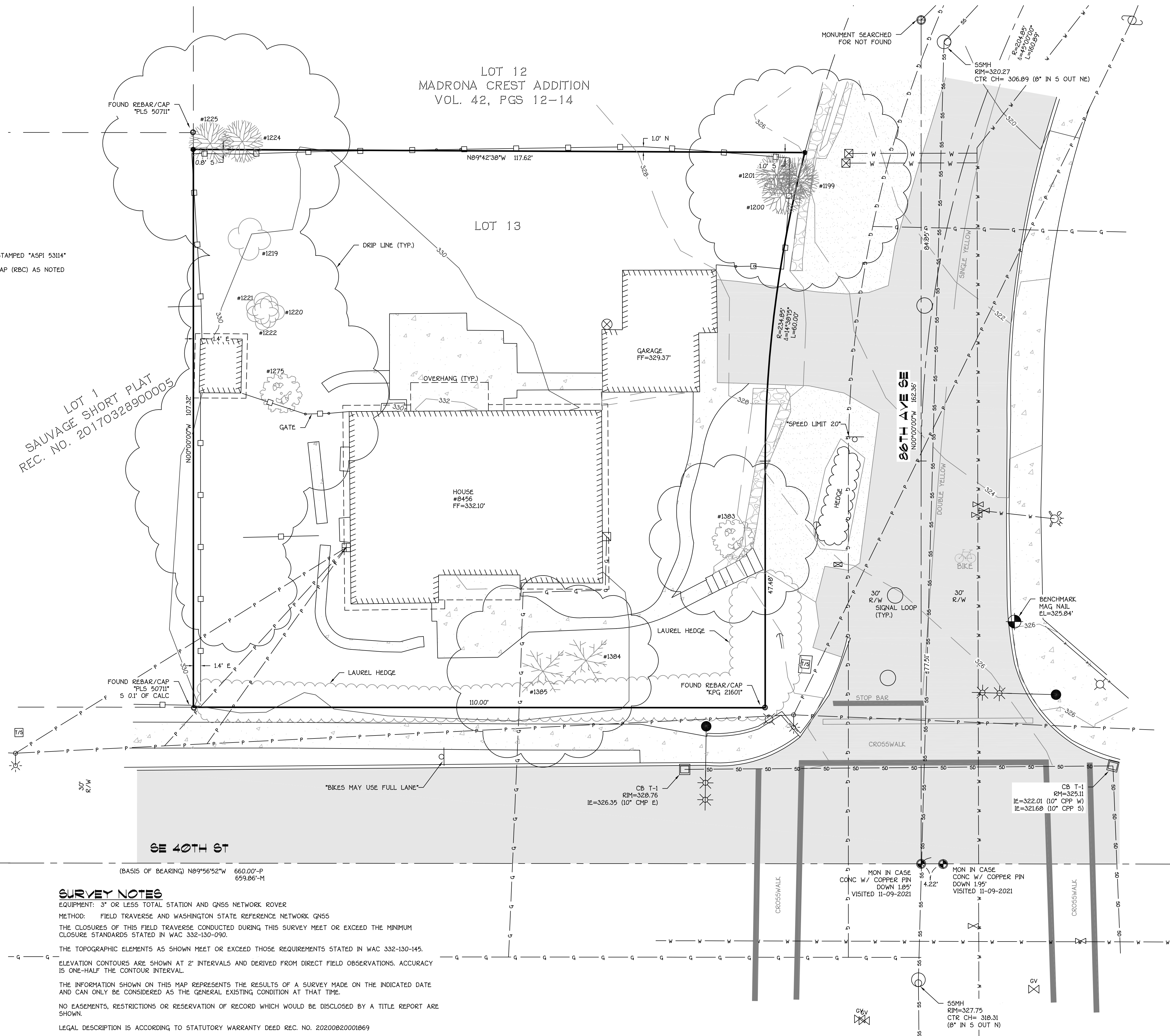
**TREE TABLE**

| POINT | DESCRIPTION   |
|-------|---------------|
| 1199  | 28" REDWOOD   |
| 1200  | 12" REDWOOD   |
| 1201  | 50" REDWOOD   |
| 1219  | 8" DECIDUOUS  |
| 1220  | 8" DECIDUOUS  |
| 1221  | 10" DECIDUOUS |
| 1222  | 8" DECIDUOUS  |
| 1224  | 28" FIR       |
| 1225  | 22" FIR       |
| 1275  | 10" MAPLE     |
| 1383  | 18" MAPLE     |
| 1384  | 10" BIRCH     |
| 1385  | 16" BIRCH     |

**LEGEND**

- SET 24" X 1/2" REBAR WITH CAP STAMPED "ASPI 53114"
- FOUND IRON PIPE OR REBAR AND CAP (RBC) AS NOTED
- ⊗ WATER METER
- ⊕ WATER VALVE
- ⊙ FIRE HYDRANT
- ⊖ HOSE BIB
- ⊞ POWER METER
- ⊠ TRAFFIC SIGNAL BOX
- ⊡ PEDESTRIAN POLE PUSH BUTTON
- ⊛ TRAFFIC SIGNAL
- ⊜ UTILITY POLE
- ⊝ UTILITY POLE WITH LIGHT
- ⊞ GUY ANCHOR
- ⊟ MAILBOX
- ⊠ SIGN
- ⊡ GATE POST
- ⊞ TYPE 1 CATCH BASIN
- ⊠ SANITARY SEWER MANHOLE
- ⊞ GAS METER
- ⊠ GAS VALVE
- ⊞ WOOD FENCE
- ⊠ GAS
- ⊞ STORM DRAIN
- ⊠ OVERHEAD UTILITIES
- ⊞ SANITARY SEWER
- ⊠ DECIDUOUS
- ⊞ MAPLE
- ⊠ COTTONWOOD
- ⊞ FIR
- ⊠ ASPHALT
- ⊞ CONCRETE
- ⊠ GRAVEL
- ⊞ ROCKERY

LOT 1  
SAUVAGE SHORT PLAT  
REC. NO. 20170328900005



**LEGAL DESCRIPTION**  
LOT 13, BLOCK 7, MADRONA CREST ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 42 OF PLATS, PAGE 12 THROUGH 14, IN KING COUNTY, WASHINGTON.  
SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

**BASIS OF BEARING**  
58°56'52"E BETWEEN FOUND MONUMENTS ALONG CENTERLINE OF SE 40TH ST ACCORDING TO THE PLAT OF MADRONA CREST REFERENCED HEREON.

**DATUM** NAVD 88  
**BENCHMARK**  
MAG NAIL LOCATED ON EAST SIDE OF 86TH AVE SE, 0.5' EAST OF BACK OF CURB AND 5.5' WEST OF ANGLE POINT IN BACK OF SIDEWALK.  
ELEV. = 325.84'  
ELEVATION ESTABLISHED BY GPS OBSERVATIONS UTILIZING THE WASHINGTON STATE REFERENCE NETWORK.

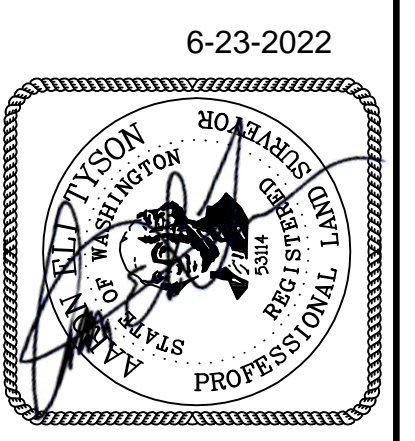
**SURVEY REFERENCES**  
P- MADRONA CREST ADDITION, RECORDED IN VOLUME 42, PG. 12 OF PLATS SHORT PLAT AF# 20170328900005  
R- RECORD OF SURVEY AF# 20140213900001

**UTILITY NOTES**  
BASIS FOR UTILITY LINES SHOWN:  
FIELD OBSERVATIONS & AS-BUILT MAPS  
IN PROVIDING THIS SURVEY, NO ATTEMPT HAS BEEN MADE TO OBTAIN OR SHOW DATA CONCERNING CONDITION OR CAPACITY OF ANY UTILITY EXISTING ON THIS SITE, WHETHER PRIVATE, MUNICIPAL OR PUBLIC OWNED.

UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THE SITE. UNDERGROUND UTILITY LOCATIONS SHOWN HEREON ARE TAKEN FROM A COMPILATION OF PUBLIC RECORDS AND VISIBLE FIELD EVIDENCE. WE ASSUME NO LIABILITY FOR THE ACCURACY OF THE PUBLIC RECORDS. UNDERGROUND UTILITY LOCATIONS ARE ONLY APPROXIMATE. UNDERGROUND CONNECTIONS ARE SHOWN AS STRAIGHT LINES BETWEEN VISIBLE SURFACE LOCATIONS BUT MAY CONTAIN BENDS OR CURVES NOT SHOWN. FIELD VERIFICATION IS NECESSARY PRIOR TO OR DURING ANY CONSTRUCTION.  
SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT SURVEYED OR EXAMINED OR CONSIDERED AS PART OF THIS SURVEY. NO EVIDENCE OR STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONDITIONS, CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS PROPERTY.

**SURVEY NOTES**  
EQUIPMENT: 3" OR LESS TOTAL STATION AND GNSS NETWORK ROVER  
METHOD: FIELD TRAVERSE AND WASHINGTON STATE REFERENCE NETWORK GNSS  
THE CLOSURES OF THIS FIELD TRAVERSE CONDUCTED DURING THIS SURVEY MEET OR EXCEED THE MINIMUM CLOSURE STANDARDS STATED IN WAC 332-130-090.  
THE TOPOGRAPHIC ELEMENTS AS SHOWN MEET OR EXCEED THOSE REQUIREMENTS STATED IN WAC 332-130-145.  
ELEVATION CONTOURS ARE SHOWN AT 2' INTERVALS AND DERIVED FROM DIRECT FIELD OBSERVATIONS. ACCURACY IS ONE-HALF THE CONTOUR INTERVAL.  
THE INFORMATION SHOWN ON THIS MAP REPRESENTS THE RESULTS OF A SURVEY MADE ON THE INDICATED DATE AND CAN ONLY BE CONSIDERED AS THE GENERAL EXISTING CONDITION AT THAT TIME.  
NO EASEMENTS, RESTRICTIONS OR RESERVATION OF RECORD WHICH WOULD BE DISCLOSED BY A TITLE REPORT ARE SHOWN.  
LEGAL DESCRIPTION IS ACCORDING TO STATUTORY WARRANTY DEED REC. NO. 20200820001869

**SITE DATA**  
SITE ADDRESS: 8456 SE 40TH ST, MERCER ISLAND, WA 98040  
TAX PARCEL NUMBER: 502190-0790  
GROSS SITE AREA: 11,930 SF (0.27 ACRES)



ASPI, LLC  
LAND SURVEYING  
AND  
PLANNING  
5208 S 2ND AVE, SUITE 4  
EVERETT, WA 98203  
(425) 252-1884

BOUNDARY/TOPOGRAPHIC  
SURVEY  
FOR  
LAURIE YANG  
PORTION OF SW 1/4, SW 1/4 OF SECTION 7, TOWNSHIP 24 NORTH,  
RANGE 05 EAST, W.M.  
CITY OF MERCER ISLAND  
KING COUNTY, WASHINGTON

DRAWN BY: NJT  
DATE: 10/09/2021  
PROJECT NO.: 21-514  
SHEET NO.: 1 OF 1





1 VICINITY MAP

ZONING INFORMATION:

PARCEL NO.: 502190-0790  
 PROPERTY TYPE: R RESIDENTIAL  
 LAND AREA: 11,930 sq. ft.  
 ACRES: 0.27  
 Q.S.T.R.: SW-1 -24.5  
 ADDRESS: 8456 SE 40TH ST  
 MERCER ISLAND, WA 98040

ZONING: R-8.4  
 SETBACKS: FRONT: 20 FEET  
 REAR: 25 FEET  
 SIDE: 17% OF THE LOT WIDTH OR 18.24'  
 (107.32 X 17% = 18.24)

MAX. HEIGHT: 30 FEET

MAX. LOT COVERAGE: 40% (PERCENT)

WATER: WATER DISTRICT  
 SEWER/SEPTIC: PUBLIC  
 ROAD ACCESS: PUBLIC  
 STREET SURFACE: PAVED

LOT COVERAGE CALCULATION

11,930 SF. TOTAL LOT AREA  
 3,243 SF. BUILDING STRUCTURE W/ COVERED PORCH, PATIO, CANTILEVERS AND ROOF OVERHANGS  
 813 SF. CONCRETE DRIVEWAY  
 4,056 SF/33.99% TOTAL LOT COVERAGE (MAX 40%)

HARDSCAPE CALCULATION

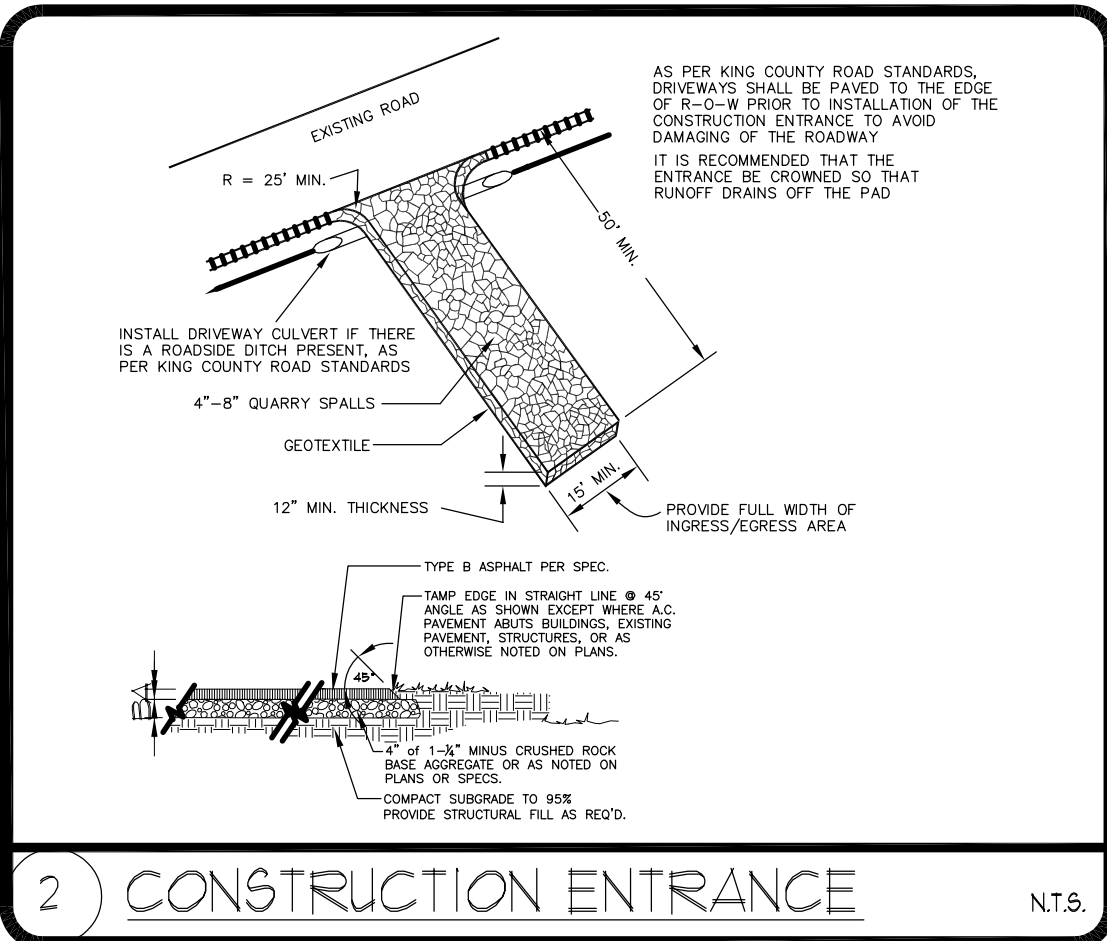
11,930 SF. TOTAL LOT AREA  
 9 SF/0.075% CONCRETE STOOP (MAX 9%)

GROSS FLOOR AREA:

LOT AREA: 11,930 s.f.  
 ALLOWED GFA: 4,772 s.f.  
 GFA W/ALLOWANCE (40%): 4,772 s.f.

MAIN FLOOR: 2,025 SF.  
 GARAGE: 500 SF.  
 UPPER FLOOR: 2,244 SF.  
 STAIRCASE: EXCLUDED

TOTAL GROSS FLOOR AREA (GFA): 4,769 SF. / 39.96%



2 CONSTRUCTION ENTRANCE

HEIGHT CALCULATION:

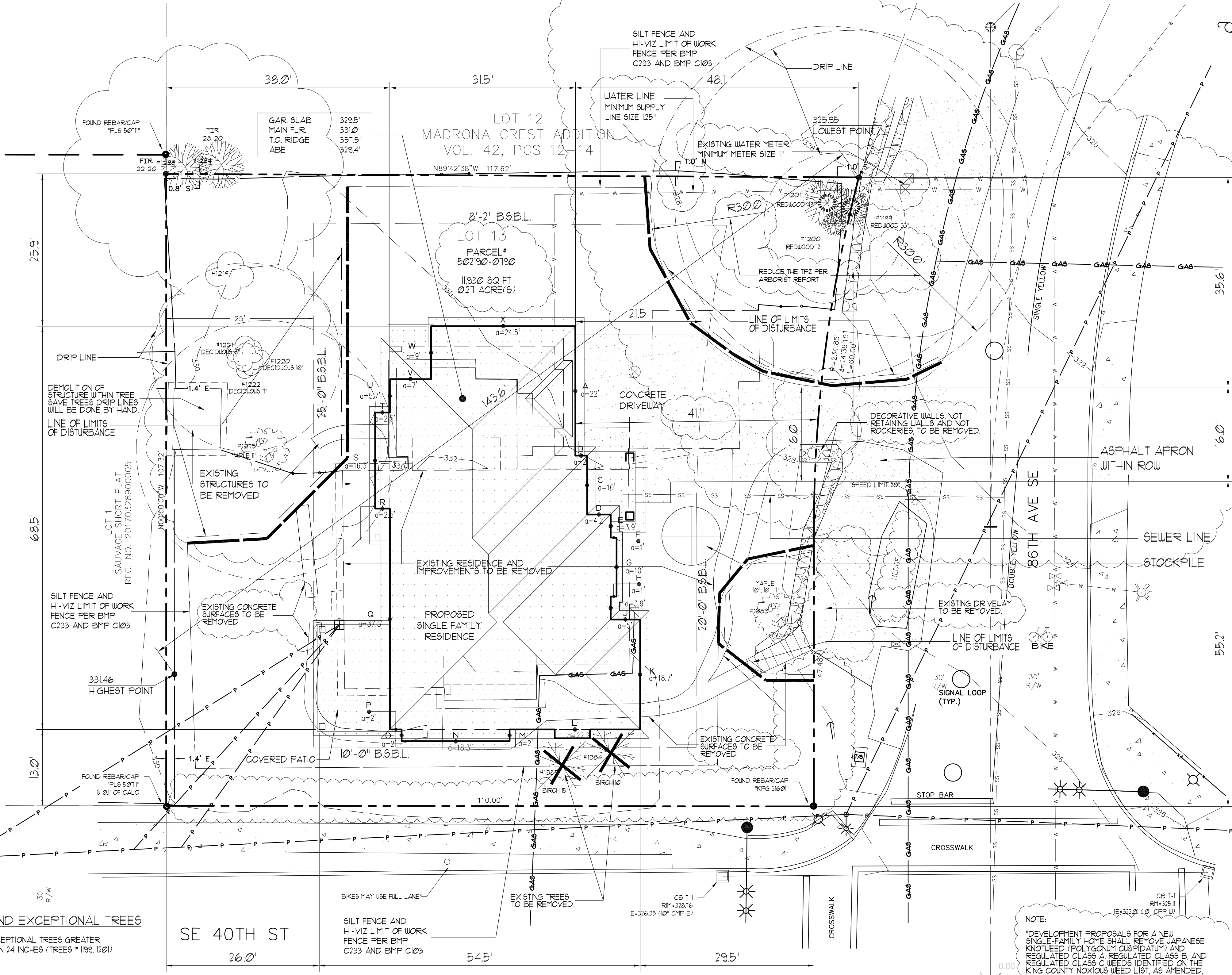
| PT.   | MID. PT. HT | Wall SEGMENT LENGTH | RESULT  |
|-------|-------------|---------------------|---------|
| A     | 329.3       | 22                  | 7244.6  |
| B     | 329.3       | 2                   | 658.6   |
| C     | 329.3       | 10                  | 3293    |
| D     | 329.3       | 4.2                 | 1383.06 |
| E     | 329.3       | 3.9                 | 1284.27 |
| F     | 329         | 1                   | 329     |
| G     | 329         | 10                  | 3290    |
| H     | 329         | 1                   | 329     |
| I     | 329         | 3.9                 | 1283.1  |
| J     | 329         | 5                   | 1645    |
| K     | 329         | 18.7                | 6152.3  |
| L     | 329.5       | 22.2                | 7314.9  |
| M     | 329.5       | 2                   | 659     |
| N     | 329.5       | 18.3                | 6029.85 |
| O     | 329.5       | 2                   | 659     |
| P     | 329.5       | 2                   | 659     |
| Q     | 329.5       | 37.5                | 12356.3 |
| R     | 329.5       | 2.5                 | 823.75  |
| S     | 329.5       | 16.3                | 5370.85 |
| T     | 329.5       | 2.5                 | 823.75  |
| U     | 329.5       | 5.7                 | 1878.15 |
| V     | 329.5       | 7                   | 2306.5  |
| W     | 329.5       | 9                   | 2965.5  |
| X     | 329.5       | 24.5                | 8072.75 |
| TOTAL | 233.2       | 76811.2             |         |
| ABE   |             | 329.379             |         |

TREE TABLE (ON SITE TREES)

| POINT | DESCRIPTION       | REMAIN? |
|-------|-------------------|---------|
| 1200  | REDWOOD 12" 14'   | YES     |
| 1201  | REDWOOD 50" 16'   | YES     |
| 1219  | DECIDUOUS 8" 10'  | YES     |
| 1220  | DECIDUOUS 8" 10'  | YES     |
| 1221  | DECIDUOUS 10" 16' | YES     |
| 1222  | DECIDUOUS 8" 12'  | YES     |
| 1275  | MAPLE 10" 20'     | YES     |
| 1383  | MAPLE 18" 16'     | YES     |
| 1384  | BIRCH 10" 14'     | NO      |
| 1385  | BIRCH 16" 18'     | NO      |

TREE TABLE (NEIGHBORING TREES)

| POINT | DESCRIPTION     | REMAIN? |
|-------|-----------------|---------|
| 1199  | REDWOOD 28" 22' | YES     |
| 1224  | FIR 28" 20'     | YES     |
| 1225  | FIR 22" 20'     | YES     |



LEGEND EXCEPTIONAL TREES

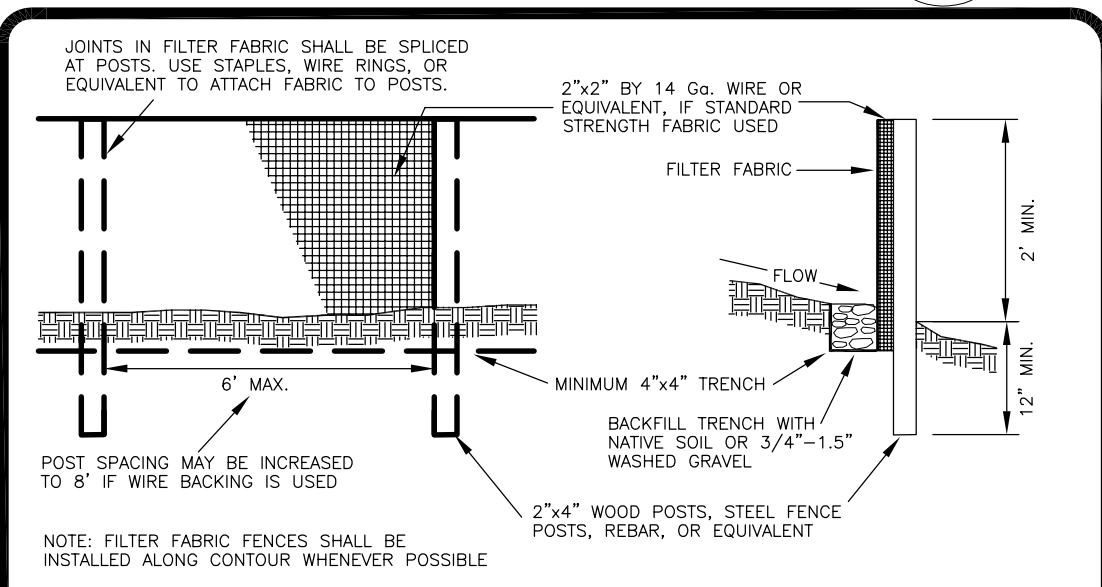
EXCEPTIONAL TREES GREATER THAN 24 INCHES (TREES #199, 1201)

TREE PROTECTION INFORMATION SEE SHEET T1

LOT SLOPE CALCULATIONS

|  |        |      |
|--|--------|------|
| Highest Elevation Point of Lot:                  | 331.46 | Feet |
| Lowest Elevation Point of Lot:                   | 325.95 | Feet |
| Elevation Difference:                            | 5.51   | Feet |
| Horizontal Distance Between High and Low Points: | 143.9  | Feet |
| Lot Slope:                                       | 3.83   | %    |

\*Lot slope is the elevation difference divided by horizontal distance multiplied by 100.



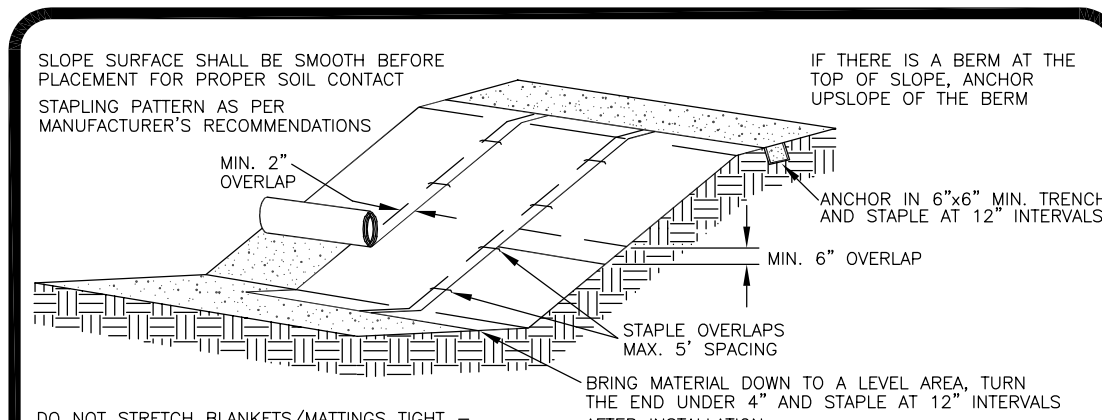
3 SILT FENCE

REDUCE THE TPZ PER ARBORIST'S TREE PROTECTION PLAN

THE SIGNIFICANT ON-SITE TREES WERE TAGGED WITH NUMBERS CORRESPONDING TO THE NUMBERS LISTED IN THIS REPORT. REFER TO ATTACHMENT I, SITE IMAGES, FOR AN ORIENTATION TO THE SITE AND THE APPROXIMATE LOCATION OF THE TREES. THERE WERE A TOTAL OF 8 REGULATED TREES AND 5 UNREGULATED TREES ON THE PROPERTY, ACCORDING TO THE DPD DIRECTOR'S RULE 6-2008 THERE WERE TWO EXCEPTIONAL TREES ON THE PROPERTY. TREES LABELED 199 AND 1201 EXCEPTIONAL TREES WILL BE MARKED WITH AN 'X' FOLLOWING THEIR CORRESPONDING NUMBER. TWO TREES LABELED 1384 AND 1385 WOULD CONFLICT WITH THE PROPOSED WORK AND ARE PROPOSED FOR REMOVAL. THE TWO TREES TO BE REMOVED ARE BOTH IN POOR HEALTH DUE TO BRONZE BIRCH BORER DAMAGE AND SEVERE PRUNING. NO ADJACENT TREES WILL BE AFFECTED BY THE REMOVAL OF THESE TREES.

- TREE 1201 HAS A TPZ THAT WILL LIKELY INTERFERE WITH CONSTRUCTION ACTIVITIES TO THE SOUTH OF THE TREE. THE TPZ WILL BE REDUCED BY 30%. THIS WOULD REDUCE THE TPZ FROM 43' TO 30'. ANY EXCAVATION DONE WITHIN THE TPZ ZONES SHALL BE DONE WITH HAND TOOLS AND A CONSULTING ARBORIST ON SITE.
- TREE 1199 HAS A TPZ THAT WILL LIKELY INTERFERE WITH THE CONSTRUCTION OF THE DRIVEWAY. TO THE SOUTH OF THE TREE, THE TPZ WILL BE REDUCED BY 10% TO MATCH TREE 1201'S TPZ. THIS WOULD REDUCE THE TPZ ON THE SOUTH SIDE OF THE TREE FROM 33' TO 30'. ANY EXCAVATION DONE WITHIN THE TPZ ZONES SHALL BE DONE WITH HAND TOOLS AND A CONSULTING ARBORIST ON SITE.

TO AVOID ANY CONFLICTS OF INTEREST, EASTSIDE TREE WORKS WILL NOT BE PERFORMING ANY TREE REMOVALS ASSOCIATED WITH THIS CONSTRUCTION PROJECT.



4 GROUND COVER

DRAINAGE DESIGN PROVIDED BY INTERLAKEN ENGINEERING AND DESIGN, PLLC SEATTLE, WA  
 TEL: (206) 410-9572  
 CONTACT: MATTHEW HARRINGA  
 www.interlakenengineering.com

LEGAL DESCRIPTION:

MADRONA CREST ADD  
 Plat Block: 1  
 Plat Lot: 13



Project  
**SINGLE-FAMILY RESIDENCE**  
 PARCEL #: 502190-0790  
 8456 SE 40TH  
 MERCER ISLAND, WA 98040

Prepared for  
**KUN QIAN & LAURIE QIAN**

URBAN DESIGN GROUP  
 15445 53rd AVE S, STE 100 SEATTLE, WA 98148  
 (206) 838-8250 E-mail: urbandesign@urbandesign.com  
 PO BOX 589206 Tukwila, WA 98138

| ENGINEER: | DESIGN BY:  | COMMENTS: |
|-----------|-------------|-----------|
|           | IVAN SHVETS |           |
|           | 06/22/2022  |           |
|           | REV. DATE:  |           |

Project # :  
**21257**  
 Sheet  
**SITE**

PLAT DATE: 06-27-2022



| Tree #   | Species        | Latin Name                      | DBH              | Appr Ht | Health    | DripLine Radius | TPZ Radius [ft] | CRZ Radius [ft] | Exception al | Regulated | Retain |
|--|----------------|---------------------------------|------------------|---------|-----------|-----------------|-----------------|-----------------|--------------|-----------|--------|
| 1199*  | Redwood        | ( <i>Sequoia sempervirens</i> ) | 35"              | 95'     | Very Good | 20'             | 33              | 16.5            | Yes          | Yes       | Yes    |
| The tree is perched on top of a small stone retaining wall at the northeast corner of the property. There is a small fence that is growing against the trunk at the root flare. This tree is part of a cluster of 3 Redwood trees. |                |                                 |                  |         |           |                 |                 |                 |              |           |        |
| 1200   | Redwood        | ( <i>Sequoia sempervirens</i> ) | 12"              | 35'     | Good      | 17'             | 12              | 6               | No           | Yes       | Yes    |
| This tree is located at the northeast corner of the property. This tree is growing subdominantly under 2 larger Redwood trees.   |                |                                 |                  |         |           |                 |                 |                 |              |           |        |
| 1201*  | Redwood        | ( <i>Sequoia sempervirens</i> ) | 43"              | 100'    | Very Good | 19'             | 43              | 26.5            | Yes          | Yes       | Yes    |
| This tree is located at the northeast corner of the property amongst a cluster of 3 Redwood trees.   |                |                                 |                  |         |           |                 |                 |                 |              |           |        |
| 1220, 1221 and 1222  | Mountain ash   | ( <i>Sorbus americana</i> )     | 10", 9", and 7"  | 40'     | Fair      | 16'             | 10              | 5               | No           | Yes       | Yes    |
| The tree is located approximately 30' south of the northwestern corner of the property and approximately 12' from the west wall  |                |                                 |                  |         |           |                 |                 |                 |              |           |        |
| 1275   | Japanese maple | ( <i>Acer palmatum</i> )        | 11"              | 30'     | Good      | 22'             | 11              | 5.5             | No           | Yes       | Yes    |
| This tree is located approximately 15' west of the northwest corner of the house.  |                |                                 |                  |         |           |                 |                 |                 |              |           |        |
| 1383   | Japanese maple | ( <i>Acer palmatum</i> )        | 10", 10", and 7" | 20'     | Very Good | 19'             | 10              | 5               | No           | Yes       | Yes    |
| This tree is located approximately 25' east of the southeast corner of the house.  |                |                                 |                  |         |           |                 |                 |                 |              |           |        |
| 1384   | Paper birch    | ( <i>Betula papyrifera</i> )    | 10"              | 20'     | Poor      | 8'              | 10              | 5               | No           | Yes       | No     |
| This tree is located approximately 15' south of the southeast corner of the house.   |                |                                 |                  |         |           |                 |                 |                 |              |           |        |
| 1385   | Paper birch    | ( <i>Betula papyrifera</i> )    | 15"              | 20'     | Poor      | 15'             | 15              | 7.5             | No           | Yes       | No     |

**TREE INVENTORY SUMMARY**  
(PER ARBORIST REPORT)

**LEGEND EXCEPTIONAL TREES**

EXCEPTIONAL TREES GREATER THAN 24 INCHES (TREES # 1199, 1201)

**TREE PROTECTION AREA (TPZ)**

**KEEP OUT!**

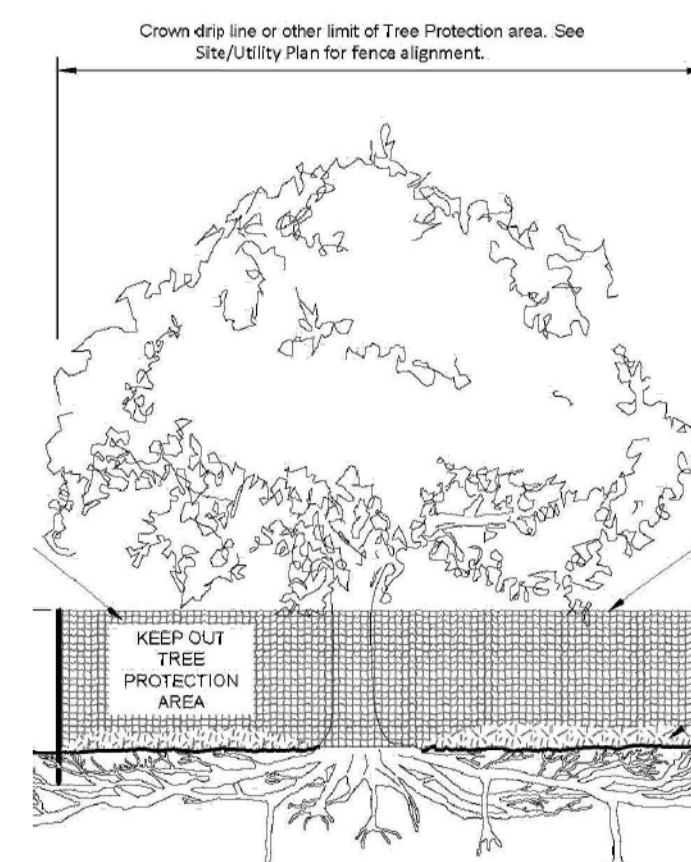
**DO NOT REMOVE OR ADJUST THE APPROVED LOCATION OF THIS TREE PROTECTION AREA**

Trees enclosed by this fence are protected and are subject to the conditions of the tree permit. Violation of tree conditions may lead to:

1. Correction Notices or Stop Work Orders until compliance is achieved
2. RE Inspection Fees
3. Arborist reports recommending mitigation

**Notes**

1. No pruning shall be performed unless under the direction of an arborist
2. No equipment shall be stored or operated inside the protective fencing including during fence installation and removal
3. No storage of materials shall occur inside the protective fencing
4. Refer to Site/Utility Plan for allowable modifications to the tree protection area.
5. Unauthorized activities in tree protection area may require evaluation by private arborist to identify impacts and mitigation required
6. Exposed roots: For roots > 1" damaged during construction, make a clean straight cut to remove damaged portion and inform City Arborist



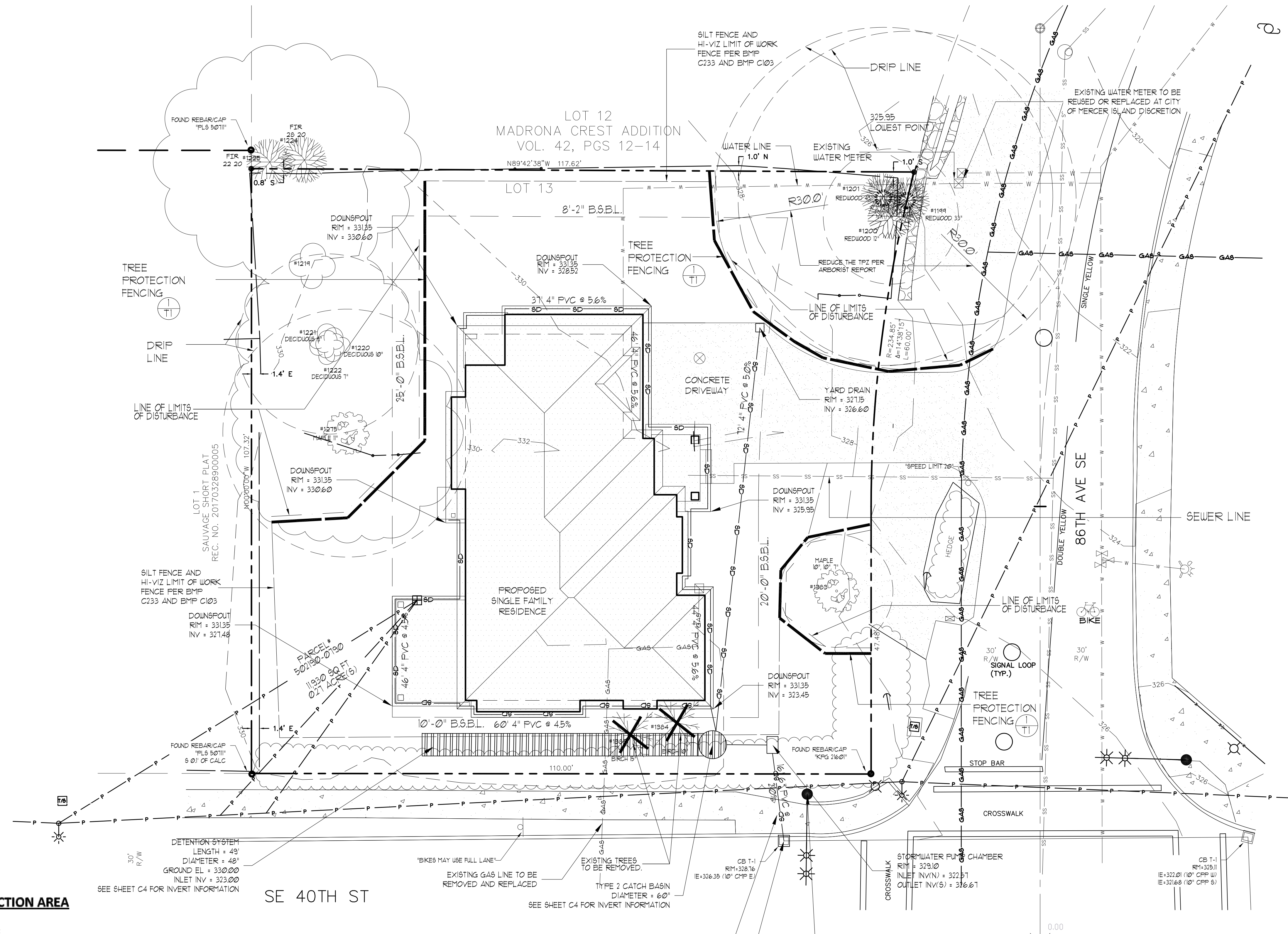
Tree protection fence: 4-6" chain link fence, solidly anchored into the ground, or if authorized High-density polyethylene fencing with 3.5" x 1.5" openings; color orange. Steel posts installed at 8' o.c.

2" x 6" steel posts or approved equal

Maintain existing grade with the tree protection fence unless otherwise indication on the plans

Any Work in the protected area must be with the permission of the City Arborist [john.kenney@mercer.gov](mailto:john.kenney@mercer.gov)

1 TREE PROTECTION ZONE (TPZ)



**REDUCE THE TPZ PER ARBORIST'S TREE PROTECTION PLAN**

THE SIGNIFICANT ON-SITE TREES WERE TAGGED WITH NUMBERS CORRESPONDING TO THE NUMBERS LISTED IN THIS REPORT. REFER TO ATTACHMENT 1 SITE IMAGES FOR AN ORIENTATION TO THE SITE AND THE APPROXIMATE LOCATION OF THE TREES. THERE WERE A TOTAL OF 8 REGULATED TREES AND 5 UNREGULATED TREES ON THE PROPERTY. ACCORDING TO THE DPD DIRECTOR'S RULE 16-2009 THERE WERE TWO EXCEPTIONAL TREES ON THE PROPERTY. TREES LABELED 1199 AND 1201 EXCEPTIONAL TREES WILL BE MARKED WITH AN 'X' FOLLOWING THEIR CORRESPONDING NUMBER. TWO TREES LABELED 1384 AND 1385 WOULD CONFLICT WITH THE PROPOSED WORK AND ARE PROPOSED FOR REMOVAL. THE TWO TREES TO BE REMOVED ARE BOTH IN POOR HEALTH DUE TO BRONZE BIRCH BORER DAMAGE AND SEVERE PRUNING. NO ADJACENT TREES WILL BE AFFECTED BY THE REMOVAL OF THESE TREES.

- TREE #1201 HAS A TPZ THAT WILL LIKELY INTERFERE WITH CONSTRUCTION ACTIVITIES. TO THE SOUTH OF THE TREE, THE TPZ WILL BE REDUCED BY 30%. THIS WOULD REDUCE THE TPZ FROM 43 TO 30'. ANY EXCAVATION DONE WITHIN THE TPZ ZONES SHALL BE DONE WITH HAND TOOLS AND A CONSULTING ARBORIST ON SITE.
- TREE #1199 HAS A TPZ THAT WILL LIKELY INTERFERE WITH THE CONSTRUCTION OF THE DRIVEWAY. TO THE SOUTH OF THE TREE, THE TPZ WILL BE REDUCED BY 10% TO MATCH TREE #1201'S TPZ. THIS WOULD REDUCE THE TPZ ON THE SOUTH SIDE OF THE DRIVEWAY FROM 33 TO 30'. ANY EXCAVATION DONE WITHIN THE TPZ ZONES SHALL BE DONE WITH HAND TOOLS AND A CONSULTING ARBORIST ON SITE.

TO AVOID ANY CONFLICTS OF INTEREST, EASTSIDE TREE WORKS WILL NOT BE PERFORMING ANY TREE REMOVALS ASSOCIATED WITH THIS CONSTRUCTION PROJECT.

**TREE PROTECTION PLAN**  
SCALE: 1" = 10'-0"

Project  
**SINGLE-FAMILY RESIDENCE**  
PARCEL#: 502190-0790  
8456 SE 40TH  
MERCER ISLAND, WA 98040

Prepared for  
**KUN QIAN & LAURIE QIAN**

**URBAN DESIGN GROUP**  
18445 53rd AVE S, STE 110 SEATTLE, WA 98148  
(206) 838-8250 E-mail: [urban@designergroup.com](mailto:urban@designergroup.com)  
PO BOX 88906 Tukwila WA 98148

|            |             |          |
|------------|-------------|----------|
| PLAN 156/E | DESIGN BY   | ENGINEER |
| 03/20/2023 | IVAN SHVETS |          |
| REV. DATE  | COMMENTS    |          |
|            |             |          |

Project # :  
**21257**  
Sheet  
**T1**

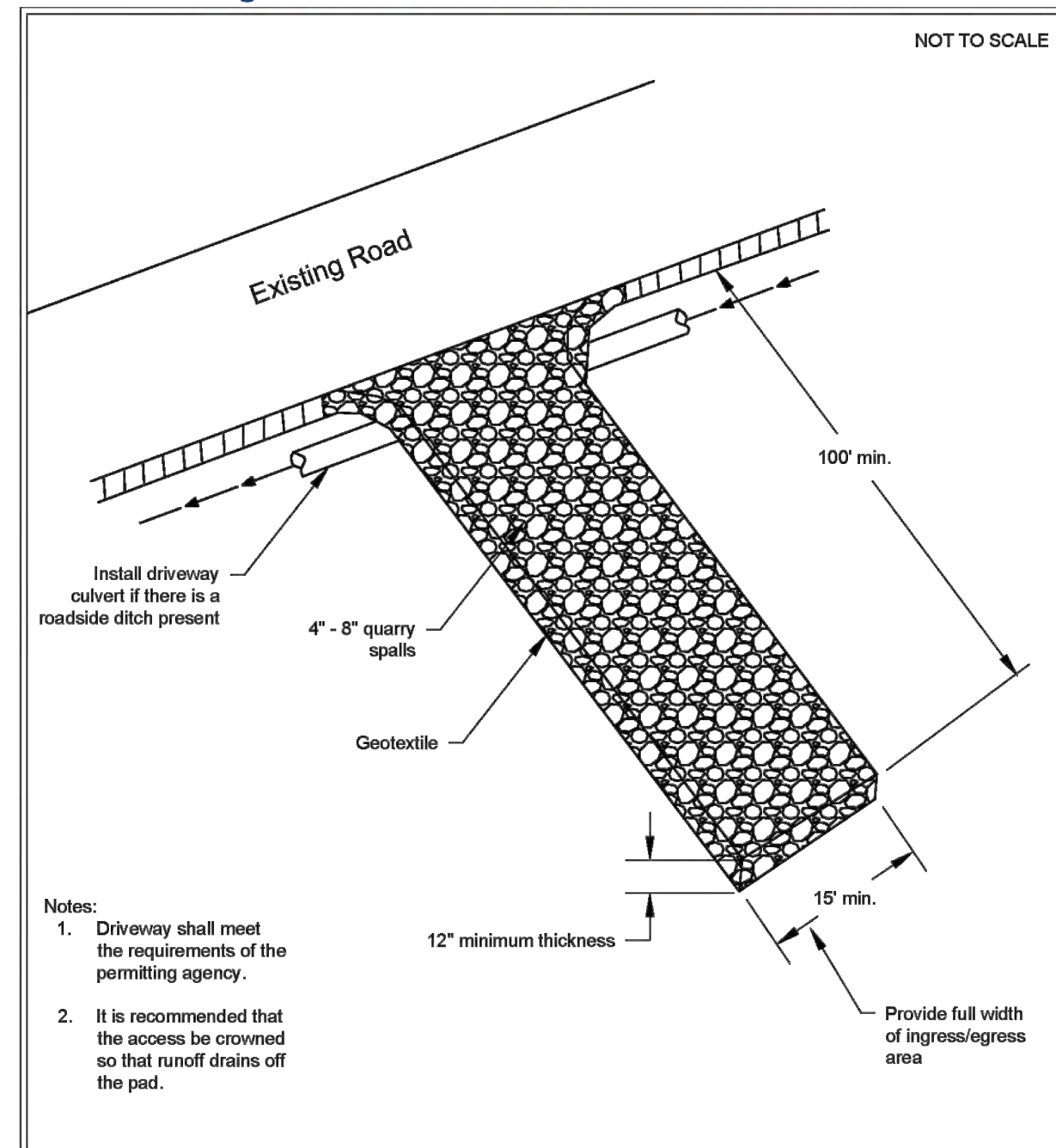
FL01 DATE: 03-20-2023



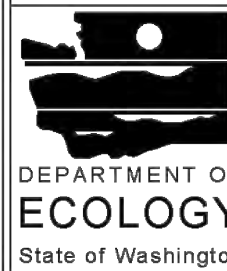




**Figure II-3.1: Stabilized Construction Access**



- Notes:
1. Driveway shall meet the requirements of the permitting agency.
  2. It is recommended that the access be crowned so that runoff drains off the pad.

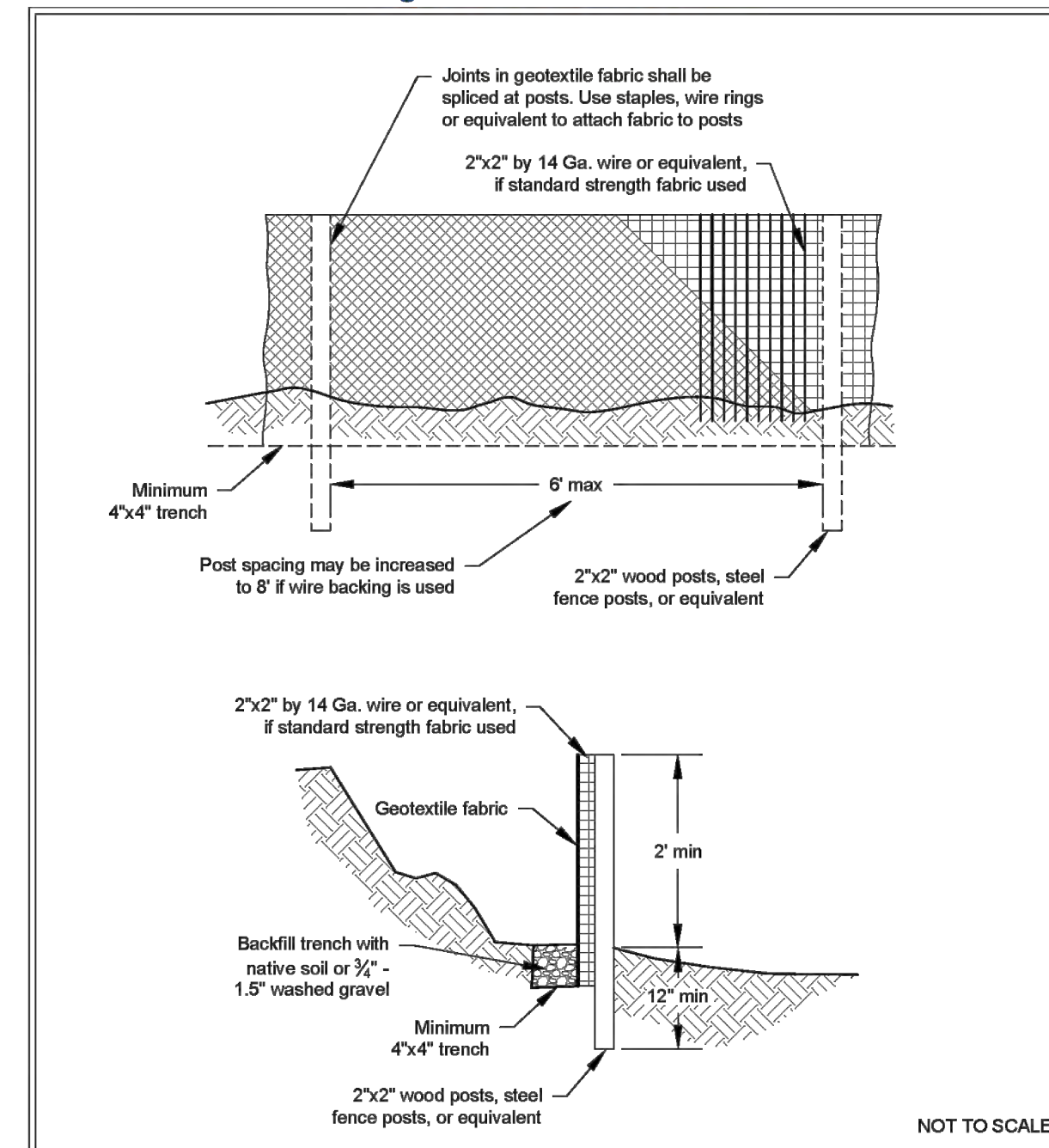


**Stabilized Construction Access**

Revised June 2018

Please see <http://www.ecy.wa.gov/copyright.html> for copyright notice including permissions, limitation of liability, and disclaimer.

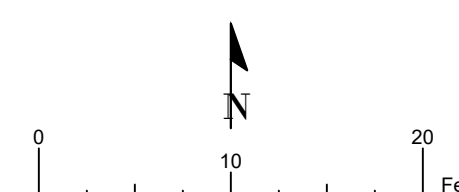
**Figure II-3.22: Silt Fence**



**Silt Fence**

Revised July 2017

Please see <http://www.ecy.wa.gov/copyright.html> for copyright notice including permissions, limitation of liability, and disclaimer.



**SEE C1 FOR TESC/ DEMO/ CSWPPP**

**Qian Yang Residence**  
Site Address: 8456 SE 40th St  
Jurisdiction: Mercer Island  
Parcel No.: 502190-0790  
Applicant: Qian Yang  
Permit No.: 2206-271  
Interlaken Project No.: SEA-22-041

**Interlaken Engineering and Design, PLLC**  
Seattle, WA | (206) 470-9572  
[www.interlakenengineering.com](http://www.interlakenengineering.com)

Revisions:

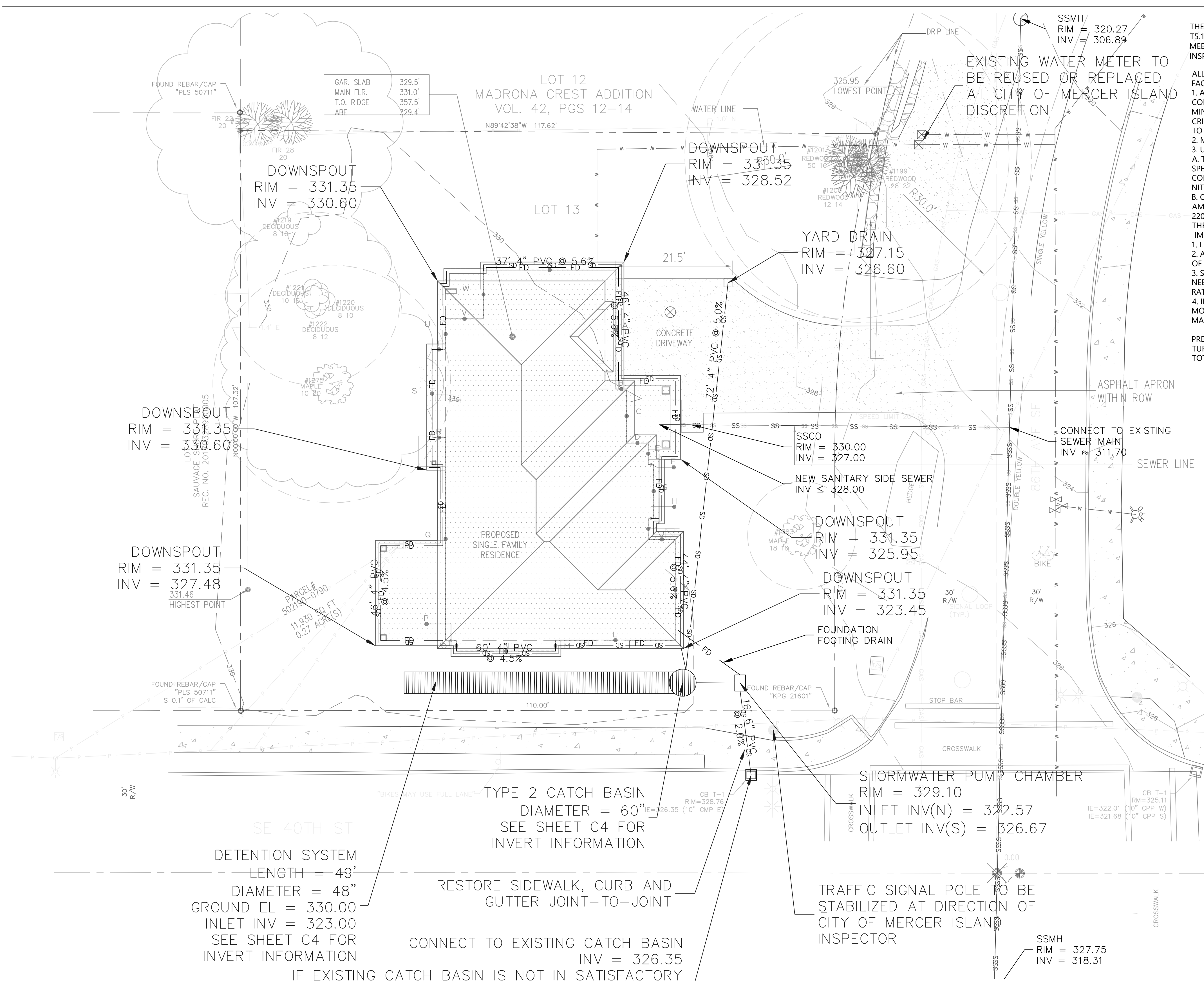
2023-03-28: Updated for new house location and driveway layout  
2023-02-15: Updated for City of Mercer Island comments

**C2**

TESC/ CSWPPP Details

Scale: As Noted





THE LAWN AND LANDSCAPE AREAS ARE REQUIRED TO PROVIDE POST-CONSTRUCTION SOIL QUALITY AND DEPTH IN ACCORDANCE WITH BMP T5.13. THE PROJECT CIVIL ENGINEER MUST PROVIDE A LETTER OF CERTIFICATION TO ENSURE THAT THE LAWN AND LANDSCAPE AREAS ARE MEETING THE POST-CONSTRUCTION SOIL QUALITY AND DEPTH REQUIREMENTS SPECIFIED ON THE APPROVED PLAN SET PRIOR TO FINAL INSPECTION ON THE PROJECT.

ALL AREAS SUBJECT TO CLEARING AND GRADING THAT HAVE NOT BEEN COVERED BY IMPERVIOUS SURFACE, INCORPORATED INTO A DRAINAGE FACILITY OR ENGINEERED AS STRUCTURAL FILL OR SLOPE SHALL, AT PROJECT COMPLETION, DEMONSTRATE THE FOLLOWING:

1. A TOPSOIL LAYER WITH A MINIMUM ORGANIC MATTER CONTENT OF 10% DRY WEIGHT IN PLANTING BEDS, AND 5% ORGANIC MATTER CONTENT IN TURF AREAS, AND A PH FROM 6.0 TO 8.0 OR MATCHING THE PH OF THE UNDISTURBED SOIL. THE TOPSOIL LAYER SHALL HAVE A MINIMUM DEPTH OF EIGHT INCHES EXCEPT WHERE TREE ROOTS LIMIT THE DEPTH OF INCORPORATION OF AMENDMENTS NEEDED TO MEET THE CRITERIA. SUBSOILS BELOW THE TOPSOIL LAYER SHOULD BE SCARIFIED AT LEAST 4 INCHES WITH SOME INCORPORATION OF THE UPPER MATERIAL TO AVOID STRATIFIED LAYERS, WHERE FEASIBLE.
2. MULCH PLANTING BEDS WITH 2 INCHES OF ORGANIC MATERIAL.
3. USE COMPOST AND OTHER MATERIALS THAT MEET THESE ORGANIC CONTENT REQUIREMENTS:
  - A. THE ORGANIC CONTENT FOR "PRE-APPROVED" AMENDMENT RATES CAN BE MET ONLY USING COMPOST MEETING THE COMPOST SPECIFICATION FOR BIORETENTION (BMP T7.30), WITH THE EXCEPTION THAT THE COMPOST MAY HAVE UP TO 35% BIOSOLIDS OR MANURE. THE COMPOST MUST ALSO HAVE AN ORGANIC MATTER CONTENT OF 40% TO 65%, AND A CARBON TO NITROGEN RATIO BELOW 25:1. THE CARBON TO NITROGEN RATIO MAY BE AS HIGH AS 35:1 FOR PLANTINGS COMPOSED ENTIRELY OF PLANTS NATIVE TO THE PUGET SOUND LOWLANDS REGION.
  - B. CALCULATED AMENDMENT RATES MAY BE MET THROUGH USE OF COMPOSTED MATERIAL MEETING (A) ABOVE, OR OTHER ORGANIC MATERIALS AMENDED TO MEET THE CARBON TO NITROGEN RATIO REQUIREMENTS, AND NOT EXCEEDING THE CONTAMINANT LIMITS IDENTIFIED IN TABLE 220-B, TESTING PARAMETERS, IN WAC 173-350-220.

THE RESULTING SOIL SHOULD BE CONDUCTIVE TO THE TYPE OF VEGETATION TO BE ESTABLISHED.

IMPLEMENTATION OPTIONS: THE SOIL QUALITY DESIGN GUIDELINES LISTED ABOVE CAN BE MET BY USING ONE OF THE METHODS LISTED BELOW:

1. LEAVE UNDISTURBED NATIVE VEGETATION AND SOIL, AND PROTECT FROM COMPACTION DURING CONSTRUCTION.
2. AMEND EXISTING SITE TOPSOIL OR SUBSOIL EITHER AT DEFAULT "PRE-APPROVED" RATES, OR AT CUSTOM CALCULATED RATES BASED ON TESTS OF THE SOIL AND AMENDMENT.
3. STOCKPILE EXISTING TOPSOIL DURING GRADING, AND REPLACE IT PRIOR TO PLANTING. STOCKPILED TOPSOIL MUST ALSO BE AMENDED IF NEEDED TO MEET THE ORGANIC MATTER OR DEPTH REQUIREMENTS, EITHER AT A DEFAULT "PRE-APPROVED" RATE OR AT A CUSTOM CALCULATED RATE.
4. IMPORT TOPSOIL MIX OF SUFFICIENT ORGANIC CONTENT AND DEPTH TO MEET THE REQUIREMENTS. MORE THAN ONE METHOD MAY BE USED ON DIFFERENT PORTIONS OF THE SAME SITE. SOIL THAT ALREADY MEETS THE DEPTH AND ORGANIC MATTER QUALITY STANDARDS, AND IS NOT COMPACTED, DOES NOT NEED TO BE AMENDED.

PRE-APPROVED AMENDMENT METHOD:  
 TURF: 7860 SF x 5.4 CY / 1,000 SF = 42.44 CY  
 TOTAL QUANTITY = 42.44 CY

**CITY OF MERCER ISLAND PUMP NOTES**

- 1) AN EMERGENCY ON-SITE, BACK-UP POWER SUPPLY AND AN EXTERNAL ALARM SYSTEM FOR SYSTEM FAILURE AND HIGH WATER LEVEL INDICATOR ARE REQUIRED FOR THE PUMP SYSTEM.
- 2) PRIVATE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR ANY AND ALL CLAIMS FOR INJURIES AND DAMAGE DUE TO THE OPERATION OR NON-OPERATION OF THE PUMP SYSTEM.

**SEWER NOTES**

THE TV INSPECTION OF THE EXISTING SIDE SEWER TO THE CITY SEWER MAIN ON 86TH AVE SE IS REQUIRED PRIOR TO ANY WORK RELATED TO THE SIDE SEWER. IF THE RESULT OF THE TV INSPECTION IS NOT IN SATISFACTORY CONDITION, AS DETERMINED BY THE CITY OF MERCER ISLAND INSPECTOR, THE REPLACEMENT OF THE EXISTING SIDE SEWER IS REQUIRED.

| Hard Surface Data           |           |
|-----------------------------|-----------|
| Lot Size                    | 11,930 sf |
| New Roof                    | 3,255 sf  |
| New Driveway+Walkway        | 815 sf    |
| Total Proposed Hard Surface | 4,070 sf  |
| Proposed Vegetation         | 7,860 sf  |

**SEE C1 FOR TESC/ DEMO CSWPPP  
SEE C4 FOR DETENTION DETAILS**

**LEGAL DESCRIPTION**  
 LOT 13, BLOCK 7, MADRONA CREST ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 42 OF PLATS, PAGE 12 THROUGH 14, IN KING COUNTY, WASHINGTON.  
 SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

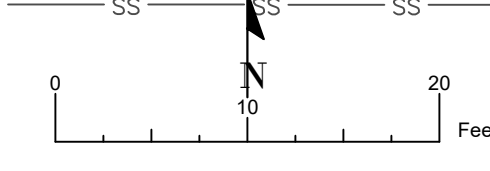
**Qian Yang Residence**  
 Site Address: 8456 SE 40th St  
 Jurisdiction: Mercer Island  
 Parcel No.: 502190-0790  
 Applicant: Qian Yang  
 Permit No.: 2206-271  
 Interlaken Project No.: SEA-22-041

**Interlaken Engineering and Design, PLLC**  
 Seattle, WA | (206) 470-9572  
 www.interlakenengineering.com

Revisions:

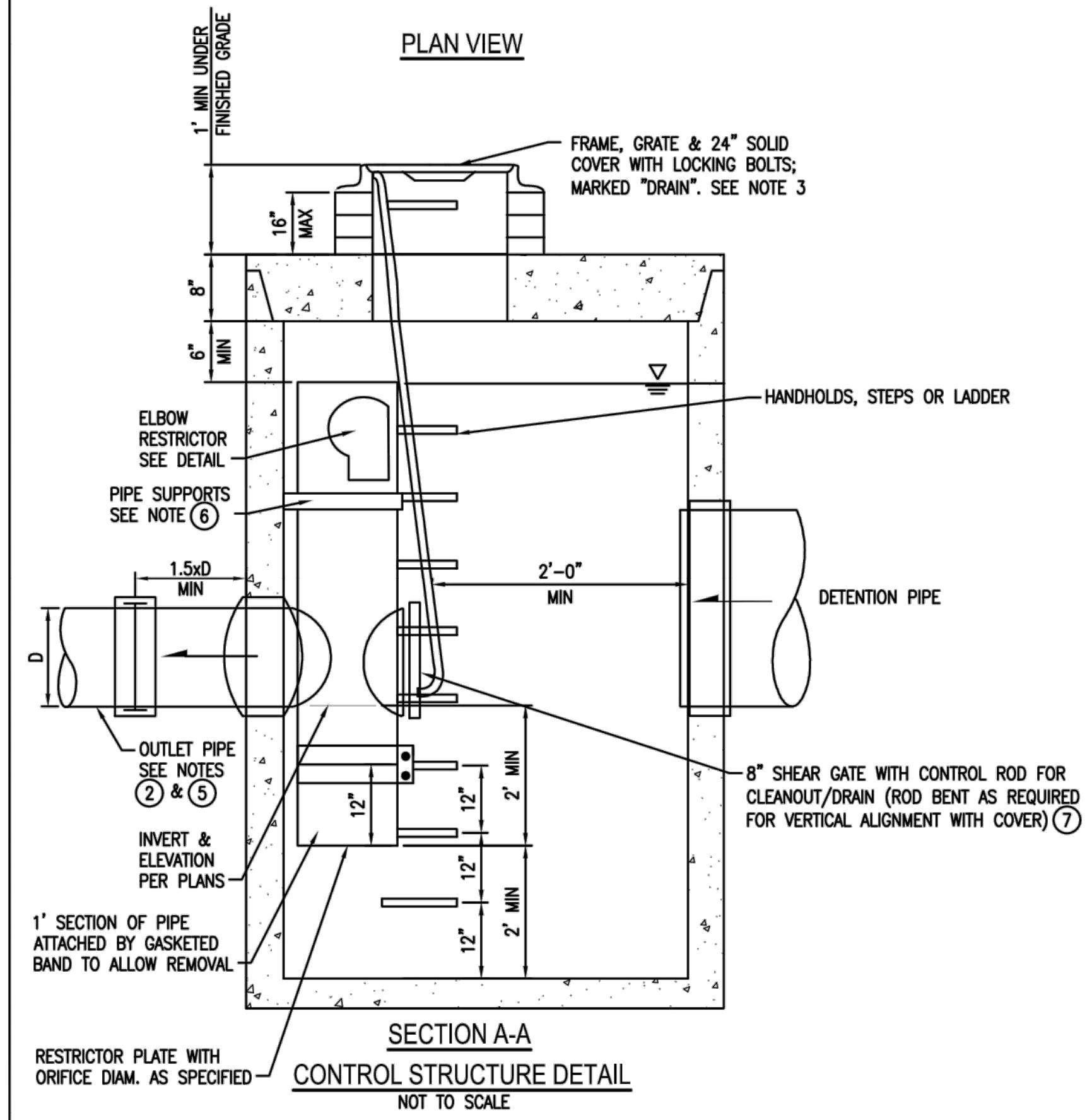
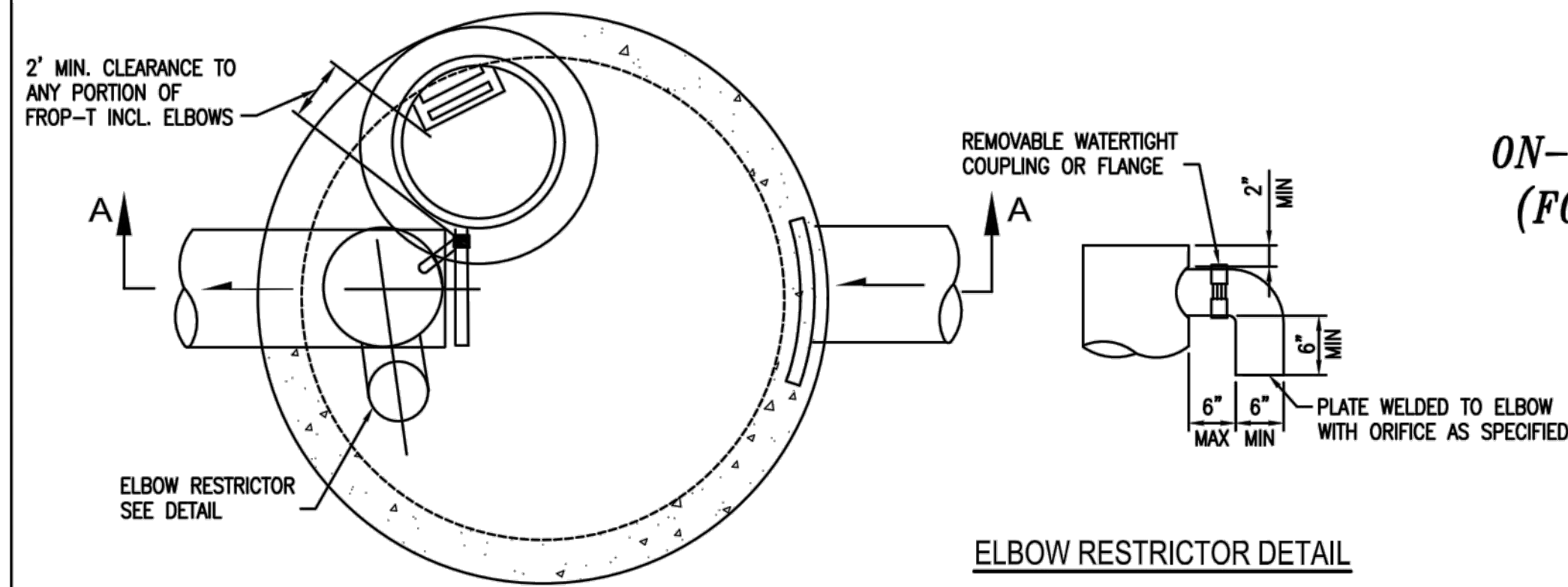
|  |           |
|--|-----------|
|  | <b>C3</b> |
| 2023-03-28: Updated for new house location and driveway layout |           |
| 2023-02-15: Updated for City of Mercer Island comments         |           |

Drainage Site Plan  
 Scale: 1" = 10'

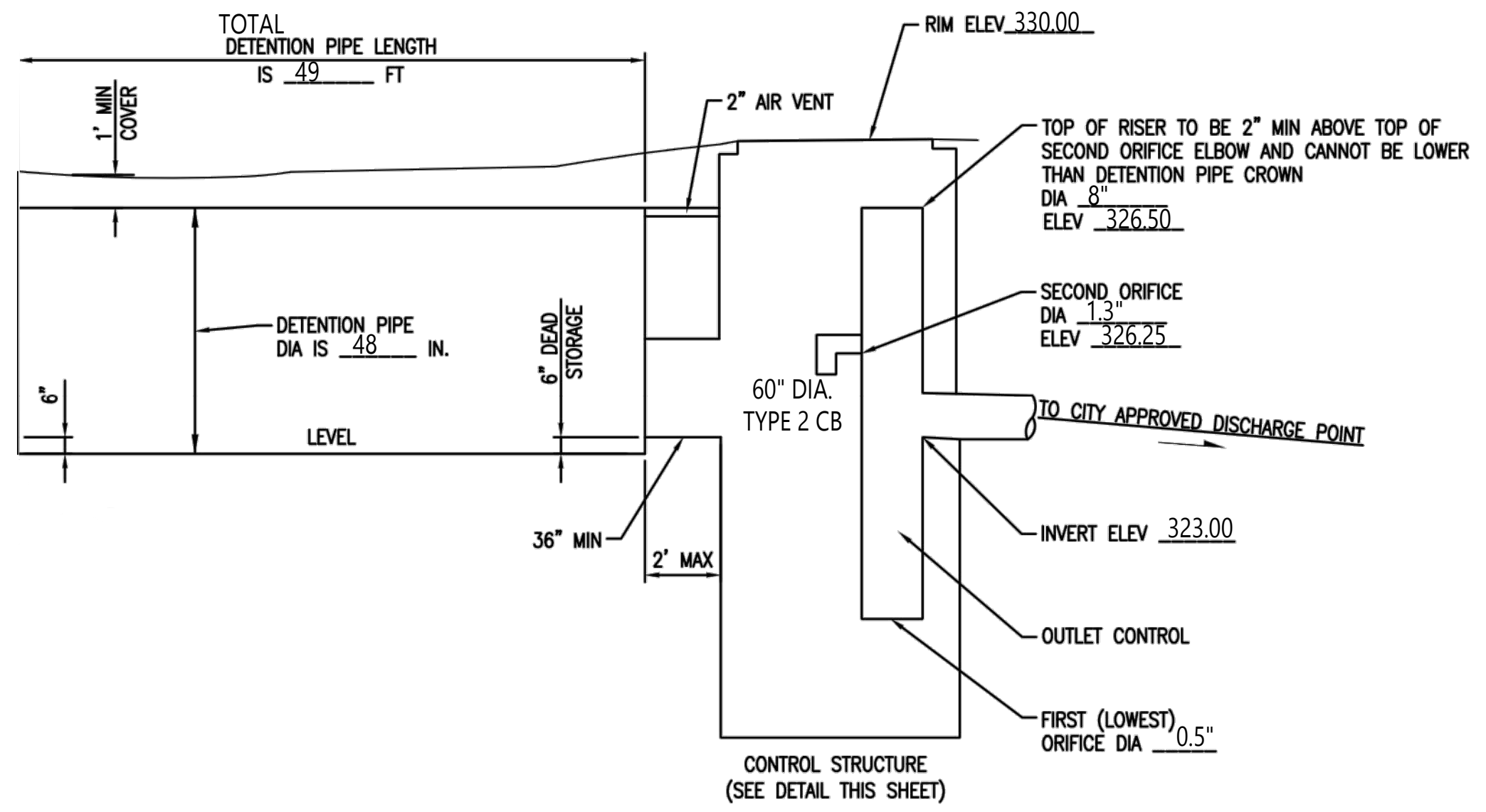




**ATTACHMENT 1**  
**CITY OF MERCER ISLAND**  
**ON-SITE DETENTION SYSTEM WORKSHEET**  
**(FOR NEW PLUS REPLACED IMPERVIOUS**  
**AREA OF 9,500 SF OR LESS)**



|   |                                      |   |
|---|--------------------------------------|---|
| OWNER: _____  | ADDRESS: <u>80XX SE 20th St</u>      | PREPARED BY: <u>Interlaken Engineering and Design, PLLC</u> |
| PERMIT #: <u>2206-271</u>   | PHONE: <u>(206) 470-9572</u>         | DATE: <u>December 14, 2022</u>                              |
| NEW PLUS REPLACED IMPERVIOUS SURFACE AREA (SF): <u>4,070 sf (roof+driveway)</u> | DETENTION PIPE DIA (INCH): <u>48</u> | DETENTION PIPE LENGTH (FT): <u>49</u>                       |
| SOIL TYPE: <u>C</u> to be detained  | PIPE MATERIAL: <u>ADS</u>            | ORIFICE #1 DIA <u>0.5</u> INCH, ELEV <u>321.00</u>          |
|   |                                      | ORIFICE #2 DIA <u>1.3</u> INCH, ELEV <u>326.25</u>          |



NO UPPER CATCH BASIN REQUIRED -  
 DETENTION PIPE LENGTH IS LESS THAN 50 FT.

**ON-SITE DETENTION SYSTEM**  
 NOT TO SCALE (ENGINEER TO FILL IN BLANKS)

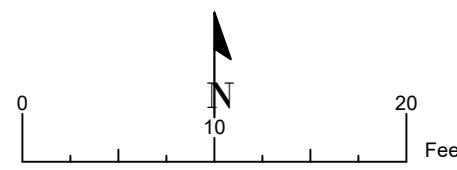
**CONTROL STRUCTURE NOTES:**

- |  |   |
|--|---|
| <p>① USE A MINIMUM OF A 54 IN. DIAM. TYPE 2 CATCH BASIN. THE ACTUAL SIZE IS DEPENDENT ON CONNECTING PIPE MATERIAL AND DIAMETER.</p> <p>② OUTLET PIPE: MIN. 6 INCH.</p> <p>③ METAL PARTS: CORROSION RESISTANT. NON-GALVANIZED PARTS PREFERRED. GALVANIZED PIPE PARTS TO HAVE ASPHALT TREATMENT 1.</p> <p>④ FRAME AND LADDER OR STEPS OFFSET SO:<br/>                 A. CLEANOUT GATE IS VISIBLE FROM TOP;<br/>                 B. CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE;<br/>                 C. FRAME IS CLEAR OF CURB.</p> <p>⑤ IF METAL OUTLET PIPE CONNECTS TO CEMENT CONCRETE PIPE, OUTLET PIPE TO HAVE SMOOTH O.D. EQUAL TO CONCRETE PIPE I.D. LESS 1/4 IN.</p> | <p>⑥ PROVIDE AT LEAST ONE 3 X 0.090 GAUGE SUPPORT BRACKET ANCHORED TO CONCRETE WALL WITH 5/8 IN. STAINLESS STEEL EXPANSION BOLTS OR EMBEDDED SUPPORTS 2 IN. INTO CATCH BASIN WALL (MAXIMUM 3'-0" VERTICAL SPACING).</p> <p>⑦ THE SHEAR GATE SHALL BE MADE OF ALUMINUM ALLOY IN ACCORDANCE WITH ASTM B 26M AND ASTM B 275, DESIGNATION ZG32A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B. THE LIFT HANDLE SHALL BE MADE OF A SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION), IT MAY BE OF SOLID ROD OR HOLLOW TUBING, WITH ADJUSTABLE HOOK AS REQUIRED. A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE RISER MOUNTING FLANGE AND THE GATE FLANGE. INSTALL THE GATE SO THAT THE LEVEL-LINE MARK IS LEVEL WHEN THE GATE IS CLOSED. THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED FOR PROPER FIT. ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL.</p> <p>⑧ THE UPPER CATCH BASIN IS REQUIRED IF THE LENGTH OF THE DETENTION PIPE IS GREATER THAN 50 FT.</p> |
|--|---|

**ON-SITE DETENTION SYSTEM NOTES:**

- CALL DEVELOPMENT SERVICES (206-275-7605) 24 HOURS IN ADVANCE FOR A DETENTION SYSTEM INSPECTION BEFORE BACKFILLING AND FOR FINAL INSPECTIONS.
- RESPONSIBILITY FOR OPERATION AND MAINTANANCE OF DRAINAGE SYSTEMS ON PRIVATE PROPERTY IS RESPONSIBILITY OF THE PROPERTY OWNER. MATERIAL ACCUMULATED IN THE STORAGE PIPE MUST BE REMOVED FROM CATCH BASINS TO ALLOW PROPER OPERATION. THE OUTLET CONTROL ORIFICE MUST BE KEPT OPEN AT ALL TIMES.
- PIPE MATERIAL, JOINT, AND PROTECTIVE TREATMENT SHALL BE IN ACCORDANCE WITH SECTION 7.04 AND 9.05 OF THE WSDOT STANDARD SPECIFICATION FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, LATEST VERSION. SUCH MATERIALS INCLUDE THE FOLLOWING: LINED CORRUGATED POLYETHYLENE PIPE (LCPE), ALUMINIZED TYPE 2 CORRUGATED STEEL PIPE AND PIPE ARCH (MEETS AASHTO DESIGNATIONS M274 AND M36), CORRUGATED OR SPIRAL RIB ALUMINUM PIPE, OR REINFORCED CONCRETE PIPE. CORRUGATED STEEL PIPE IS NOT ALLOWED.
- FOOTING DRAINS SHALL NOT BE CONNECTED TO THE DETENTION SYSTEM.

**SEE C3 FOR DRAINAGE SITE PLAN**



**Qian Yang Residence**  
 Site Address: 8456 SE 40th St  
 Jurisdiction: Mercer Island  
 Parcel No.: 502190-0790  
 Applicant: Qian Yang  
 Permit No.: 2206-271 2206-271  
 Interlaken Project No.: SEA-22-041

**Interlaken Engineering and Design, PLLC**  
 Seattle, WA | (206) 470-9572  
 www.interlakenengineering.com

|  |
|--|
| Revisions:   |
|  |
|  |
|  |
| 2023-03-28: Updated for new house location and driveway layout |
| 2023-02-15: Updated for City of Mercer Island comments         |

**C4**  
 Detention Detail  
 Scale: As Noted



## GENERAL NOTES

- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL RESIDENTIAL CODE
- 2018 UNIFORM PLUMBING CODE
- 2018 WASHINGTON STATE ENERGY CODE
- 2018 WASHINGTON STATE AMENDMENTS

CONTRACTOR SHALL VERIFY ALL NOTES, DIMENSIONS & CONDITIONS PRIOR TO CONSTRUCTION & PROVIDE TEMPORARY BRACING AS REQUIRED UNTIL ALL PERMANENT CONNECTIONS HAVE BEEN INSTALLED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY

REPETITIVE FEATURES NOT NOTED ON THE DRAWINGS SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL

CONTRACTOR SHALL VERIFY ALL ROUGH-IN DIMENSIONS FOR ALL EQUIPMENT TO BE INSTALLED

## SITE WORK

GENERAL  
UNLESS A SOILS INVESTIGATION BY A QUALIFIED SOILS ENGINEER IS PROVIDED, FOUNDATION DESIGN IS BASED ON AN ASSUMED AVERAGE SOIL BEARING OF 1500 PSF.  
EXTERIOR FOOTINGS SHALL BEAR 16" (MINIMUM) BELOW FINISHED GRADE. ALL FOOTINGS TO BEAR ON FIRM UNDISTURBED EARTH BELOW ORGANIC SURFACE SOILS. BACK FILL TO BE THOROUGHLY COMPACTED.  
FOUNDATION VENTS SHALL NOT INTERFERE WITH DIRECT LOAD PATH OF COLUMNS.

### CONCRETE

MIX AND 28 DAY STRENGTH OF CONCRETE  
- BASEMENT WALLS & FOUNDATIONS  
& OTHER CONCRETE NOT EXPOSED TO WEATHER:

PER STRUCTURAL S-SHEETS

- BASEMENT SLABS & INTERIOR SLABS  
& INTERIOR SLABS ON GRADE,  
EXCEPT GARAGE DOOR SLABS

PER STRUCTURAL S-SHEETS

- BASEMENT WALLS & FOUNDATION WALLS, EXTERIOR WALLS & OTHER VERTICAL CONCRETE WORK EXPOSED TO THE WEATHER:

PER STRUCTURAL S-SHEETS

- PORCHES, CARPORT SLABS & STEPS EXPOSED TO WEATHER, & GARAGE

PER STRUCTURAL S-SHEETS

### FLOOR SLABS:

GARAGE FLOORS TO SLOPE 1/8"/FT. MIN. TOWARDS OPENING AS REQUIRED FOR DRAINAGE. CONCRETE SLABS TO HAVE CONTROL JOINTS AT 25' FT. (MAX) INTERVALS EA. WAY. SLABS ARE TO BE 5-AIR ENTRAINED CONCRETE SIDEWALKS TO HAVE 3/4" IN. TOOLED JOINTS AT 5' FT. (MIN.) O.C.

### CONCRETE COVER OF REINFORCING

3" CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.  
1 1/2" CONCRETE EXPOSED TO EARTH OR WEATHER.  
1 1/2" BEAMS AND COLUMNS NOT EXPOSED TO EARTH OR WEATHER.  
3/4" SLABS AND WALLS NOT EXPOSED TO EARTH OR WEATHER.  
LAP COLUMN VERTICALS. CLASS "A" CONCRETE AND MASONRY COLUMN AND WALL VERTICALS 52 DIAMETERS. LAP ALL OTHER REINFORCING 24 DIAMETERS. SPLICES AT TENSION REGIONS SHALL NOT BE PERMITTED.

## CARPENTRY

GENERAL  
ALL FRAMING TO COMPLY WITH ENGINEERING S-SHEETS FOR NAT'L SIZES AND SPACING.

ALL WOOD IN CONTACT WITH CONCRETE TO BE PRESSURE TREATED.

6" MIN. CLEARANCE BETWEEN WOOD AND EARTH.  
18" MIN. CLEARANCE BETWEEN FLOOR JOIST AND EARTH.  
12" MIN. CLEARANCE BETWEEN FLOOR BEAMS AND EARTH.

FASTENERS FOR PRESSURE PRESERVATIVE AND FIRE-RETARDANT-TREATED WOOD SHALL BE OF HOT-DIPPED GALVANIZED STEEL.

REFERENCE SHEET-S1 FOR SPECIES AND GRADE (BASE DESIGN VALUES)

BOLT HEADS AND NUTS BEARING AGAINST WOOD TO BE PROVIDED WITH 3"x3"x.224" PLATE WASHERS. WOOD BEARING ON OR INSTALLED WITHIN 1" OF MASONRY OR CONCRETE TO BE TREATED WITH AN APPROVED PRESERVATIVE. SOLID BLOCKING OF NOT LESS THAN 2 X THICKNESS SHALL BE PROVIDED AT ENDS AND AT ALL SUPPORT OF JOISTS AND RAFTERS. BETWEEN SUPPORTS PROVIDED AT ENDS AND AT ALL SUPPORT OF JOISTS AND RAFTERS, JOISTS, 10'-0" FOR ROOF JOISTS. TYPICAL SILL BOLTS TO BE 5/8" DIAMETER AT 6'-0" O.C. MINIMUM T' EMBED. ALL METAL FRAMING ANCHORS AND HANGERS SHOWN ON DRAWINGS SHALL BE STRONG TIE CONNECTORS AS MANUFACTURED BY SIMPSON COMPANY.

PLYWOOD  
PLYWOOD WALL AND ROOF SHEATHING SHALL BE 3/4" CDX, UNLESS OTHERWISE SPECIFIED. PLYWOOD FLOOR SHEATHING SHALL BE 3/4" CDX T&G, UNLESS OTHERWISE SPECIFIED. STAGGER END LAPS AT ROOF AND FLOOR SHEATHING. OSB SHEATHING PRODUCTS OF EQUIVALENT SPAN RATINGS SHALL BE ALLOWED.

WOOD TRUSSES  
ALL ROOF TRUSSES SHALL BE FRAMED AND TIED INTO THE FRAME WORK AND SUPPORTING WALLS SO AS TO FROM AN INTEGRAL PART OF THE WHOLE BUILDING. ROOF TRUSSES SHALL HAVE JOINTS WELL FITTED AND SHALL HAVE ALL TENSION MEMBERS WELL TIGHTENED BEFORE ANY LOAD IS PLACED UPON THE TRUSS. DIAGONAL AND SWAY BRACING SHALL BE USED TO BRACE ALL TRUSSES.

SEE SHEET-S1 FOR DESIGN CRITERIA

## INSULATION AND MOISTURE PROTECTION

GENERAL  
INSULATION BAFFLES TO MAINTAIN 1" ABOVE BATT INSULATION  
INSULATION BAFFLES TO EXTEND 6" ABOVE BATT INSULATION  
BAFFLES TO EXTEND 12" ABOVE LOOSE FILL INSULATION  
INSULATE BEHIND TUBS/SHOWERS, PARTITIONS AND CORNERS FACE STAPLE BATTS  
FRICTION FIT FACED BATTS  
USE 4 MIL POLY VAPOR RETARDER AT WALLS  
R-10 RIGID FOAM INSULATION ON 4X EVADERS AT EXTERIOR WALLS.

### INFILTRATION CONTROL

1. EXTERIOR JOINTS AROUND WINDOWS AND DOOR FRAMES, OPENINGS BETWEEN WALLS AND FOUNDATIONS, BETWEEN WALLS AND ROOF AND BETWEEN WALL PANELS, OPENINGS AT PENETRATIONS OF UTILITY SERVICES THROUGH WALLS, FLOOR AND ROOFS, AND ALL OTHER SUCH OPENINGS IN THE BUILDING ENVELOPE, INCLUDING ACCESS PANELS INTO UNHEATED SPACES, SHALL BE SEALED, CAULKED, GASKETED OR WEATHER-STRIPPED TO LIMIT AIR LEAKAGE. ALL OPENINGS SHALL BE FLASHED, APPROVED CORROSION-RESISTIVE FLASHING SHALL BE PROVIDED IN THE EXTERIOR WALL ENVELOPE IN SUCH A MANNER AS TO PREVENT ENTRY OF WATER INTO THE WALL CAVITY OR PENETRATION OF WATER TO THE BUILDING STRUCTURAL FRAMING COMPONENTS. THE FLASHING SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL FINISH AND SHALL BE INSTALLED TO PREVENT WATER FROM REENTERING THE EXTERIOR WALL ENVELOPE. APPROVED CORROSION-RESISTANT FLASHING SHALL BE INSTALLED AT ALL OF THE FOLLOWING LOCATIONS:
  1. AT TOP OF ALL EXTERIOR WINDOW AND DOOR OPENINGS IN SUCH A MANNER AS TO BE LEAKPROOF, EXCEPT THAT SELF-FLASHING WINDOWS HAVING A CONTINUOUS LAP OF NOT LESS THAN 1-1/8" OVER THE SHEATHING MATERIAL AROUND THE PERIMETER OF THE OPENING, INCLUDING CORNERS, DO NOT REQUIRE ADDITIONAL FLASHING. JAMB FLASHING MAY ALSO BE OMITTED WHEN SPECIFICALLY APPROVED BY THE BUILDING OFFICIALS.
  2. AT THE INTERSECTION OF CHIMNEYS OR OTHER MASONRY CONSTRUCTION WITH FRAME OR WALLS, WITH PROJECTING LIPS ON BOTH SIDES UNDER STUCCO COPINGS.
  3. UNDER AND AT THE ENDS OF MASONRY, WOOD OR METAL COPINGS AND SILLS.
  4. CONTINUOUSLY ABOVE ALL PROJECTING WOOD TRIM.
  5. WHERE EXTERIOR PORCHES, DECKS OR STAIRS ATTACH TO A WALL OR FLOOR ASSEMBLY OF WOOD-FRAME CONSTRUCTION.
  6. AT WALL AND ROOF INTERSECTIONS.
  7. AT BUILT-IN GUTTERS.

- ALL EXTERIOR DOORS, OTHER THAN FIRE-RATED DOORS, SHALL BE DESIGNED TO LIMIT AIR LEAKAGE AROUND THEIR PERIMETER WHEN IN A CLOSED POSITION. DOORS BETWEEN RESIDENCE AND GARAGE ARE NOT CONSIDERED FIRE-RATED AND MUST MEET THE ABOVE REQUIREMENT.

- ALL EXTERIOR WINDOWS SHALL BE DESIGNED TO ADMIT INFILTRATION INTO OR FROM THE BUILDING ENVELOPE.

- RECESSED LIGHTING FIXTURES: WHEN INSTALLED IN THE BUILDING ENVELOPE, RECESSED LIGHTING FIXTURES SHALL BE TYPE IC RATED AND CERTIFIED TO HAVE NO MORE THAN 2.0 CFM AIR MOVEMENT FROM THE CONDITIONED SPACE TO THE CEILING CAVITY. THE LIGHTING FIXTURE SHALL BE TESTED AT 75 PASCALS OR 1.57 LBS/FT<sup>2</sup> PRESSURE DIFFERENCE AND HAVE A LABEL ATTACHED, SHOWING COMPLIANCE WITH THIS TEST METHOD. RECESSED LIGHTING FIXTURES SHALL BE INSTALLED WITH A GASKET OR CAULK BETWEEN THE FIXTURE AND CEILING TO PREVENT AIR LEAKAGE.

### VAPOR BARRIERS/ GROUND COVERS

AN APPROVED VAPOR BARRIER SHALL BE PROPERLY INSTALLED IN ROOF DECKS. IN ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS, AND AT EXTERIOR WALLS, INSET STAPLED BATTS WITH A PERM RATING LESS THAN ONE MAY BE INSTALLED IF THE VAPOR BARRIER IS TO THE WARM SIDE. STAPLES ARE PLACED NOT MORE THAN 8 INCHES ON CENTER AND GAPS BETWEEN THE FACING AND THE FRAMING DO NOT EXCEED 1/16 INCH.

A GROUND COVER OF 6 MIL (0.006") BLACK POLYETHYLENE OR EQUIVALENT, SHALL BE LAID OVER THE GROUND IN ALL CRAWL SPACES. THE GROUND COVER SHALL BE OVERLAPPED ONE FOOT AT EACH JOINT AND SHALL EXTEND TO THE FOUNDATION WALL.

### WINDOWS, DOORS, HVAC, & ELECT. EQUIP.

GLAZING MAXIMUM:  
ALL CLIMATE ZONES:  
GLAZING "U" VALUE: VERTICAL (MAX): .28  
OVERHEAD (MAX): .30  
DOOR "U" VALUE (MAX): .20  
(DOORS 1/4" MORE THAN 50 CONSIDERED A WINDOW)  
HVAC PERFORMANCE: "MED" OR AFUE = .97  
RECESSED LIGHT FIXTURES: IC RATED

### DOORS, WINDOWS AND SKYLIGHTS

GENERAL  
DOORS TO THE EXTERIOR SHALL HAVE MAX. 3" STEP TO MIN. 36" DEEP LANDING. .

BEDROOM EMERGENCY EGRESS WINDOWS MINIMUM NET CLEAR OPENING OF 5.7 SQ. FT. MIN. NET CLEAR OPENABLE WIDTH OF 20" AND MINIMUM NET CLEAR OPENING HEIGHT OF 24". MAXIMUM FINISHED SILL HEIGHT OF 44" ABOVE FLOOR.

FACTORY BUILT WINDOWS TO BE CONSTRUCTED TO PERMIT MAXIMUM INFILTRATION OF 0.5 CFM PER LINEAL FOOT OF OPERABLE SASH PERIMETER AS TESTED BY ASTM STANDARDS. SITE BUILT AND MILL WORK SHOP BUILT WOODEN SASH ARE EXEMPT FROM INFILTRATION CRITERIA ABOVE, BUT MUST BE MADE TIGHTLY FITTING AND WEATHER STRIPPED OR CAULKED. SLIDING GLASS DOORS TO PERMIT MAXIMUM INFILTRATION OF 0.5 CFM INFILTRATION PER SQUARE FOOT OF DOOR AREA.

SAFETY GLAZING SHALL BE LOCATED WITHIN

1. INGRESS AND EGRESS DOORS
2. SLIDING GLASS DOORS, SWINGING GLASS DOORS
3. SHOWER AND BATH TUB ENCLOSURES
4. GLAZING 1/4" THE EXPOSED EDGE WITHIN A 24" ARC OF EITHER VERTICAL EDGE OF A DOOR IN THE CLOSED POSITION & BOTTOM EDGE IS LESS THAN 60" ABOVE THE WALKING SURFACE
- GLAZING GREATER THAN 4 S.F. LESS THAN 15" ABOVE FINISHED FLOOR.
- WINDOW SILLS: 612.2, 24" MINIMUM SILL HEIGHT EXCEPTIONS ALLOW FOR OPENING LIMITING DEVICE FOR 4" DIAMETER SPHERE AND WINDOW FALL PREVENTION DEVICE THAT COMPLIES WITH 612.3.

## STRUCTURAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CONTRACT DRAWINGS.
2. DURING THE CONSTRUCTION PERIOD THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE BUILDING.
3. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION PROCEDURES INCLUDING LAGGING, SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY ORDINANCES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF ENGINEER.
5. ALL DETAILS DESIGNATED AS STANDARD OR TYPICAL SHALL OCCUR IN ADDITION TO ANY OTHER SPECIFIC DETAIL CALLED OUT
6. COORDINATE WITH MECHANICAL, PLUMBING, AND ELECTRICAL REQUIREMENTS FOR SIZE AND LOCATION OF ALL OPENINGS REQUIRED FOR DUCTS, PIPES, AND PIPE SLEEVES, ELECTRICAL CONDUITS, AND OTHER ITEMS TO BE EMBEDDED IN CONCRETE OR OTHERWISE INCORPORATED IN STRUCTURAL WORK.
7. PROVIDE OPENINGS AND SUPPORTS, AS REQUIRED PER STANDARD DETAILS FOR HEATERS, MECHANICAL EQUIPMENT, VENTS, DUCTS, PIPING, ETC. ALL SUSPENDED MECHANICAL EQUIPMENT SHALL BE SWAY OR LATERALLY BRACED.

## TYPE OF CONSTRUCTION

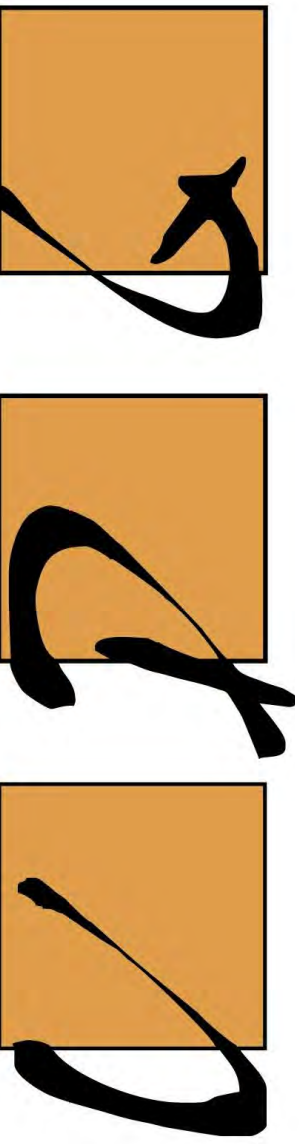
V-B

UNPROTECTED WOOD FRAME (EXAMPLES OF CONSTRUCTION ARE SINGLE FAMILY HOMES AND GARAGES. THEY OFTEN HAVE EXPOSED WOOD SO THERE IS NO FIRE RESISTANCE.)



## PLAN PREVIEW

NOT TO SCALE



URBAN DESIGN GROUP

15445 53 RD AVE, S, STE. 110, TUKWILA, WA 98188  
(206) 838-8250 E-MAIL: URBANDESIGNCENTER@YAHOO.COM

PROJECT NAME:  
SINGLE-FAMILY RESIDENCE  
8456 SE 40TH  
MERCER ISLAND, WA 98040  
PARCEL #: 502190-0790

PREPARED FOR:

PHILIP SUDO & LLC  
KUN QIAN &  
LAURIE QIAN

SUBMITTAL/REVISION: DATE:

SUBMITTED -/-/2022  
REVISED -/-/2022

DESIGN BY: PAVEL MELNİK  
DRAFTED BY: ANNA KONYAKINA

SHEET TITLE:

GENERAL  
NOTES AND  
PLAN  
PREVIEW

PROJECT NUMBER:

21257

SHEET NUMBER:

A1.1



VERTICAL FENESTRATION  
U=0.28

FLOOR R-30

PERSPECTIVE ENERGY CREDITS

2018 Washington State Energy Code – Residential  
Prescriptive Energy Code Compliance for All Climate Zones in Washington  
Single Family – New & Additions (effective February 1, 2021) Version 1.0

These requirements apply to all IRC building types, including detached one- and two-family dwellings and multiple single-family dwellings (townhouses).

Instructions: This single-family project will use the requirements of the Prescriptive Path below and incorporate the minimum values listed. Based on the size of the structure, the appropriate number of additional credits are checked as chosen by the permit applicant.

Provide all information from the following tables as building permit drawings: Table R402.1 - Insulation and Fenestration Requirements by Component, Table R406.2 - Fuel Normalization Credits and 406.3 - Energy Credits.

Authorized Representative: \_\_\_\_\_ Date: \_\_\_\_\_

| All Climate Zones (Table R402.1.1)      |                   |            |
|---|-------------------|------------|
|   | R-Value *         | U-Factor * |
| Fenestration U-Factor <sup>b</sup>      | n/a               | 0.30       |
| Skylight U-Factor <sup>b</sup>          | n/a               | 0.50       |
| Glazed Fenestration SHGC <sup>b,c</sup> | n/a               | n/a        |
| Ceiling <sup>e</sup>                    | 49                | 0.026      |
| Wood Frame Wall <sup>d,2</sup>          | 21 int            | 0.056      |
| Floor                                   | 30                | 0.029      |
| Below Grade Wall <sup>2,3</sup>         | 10/15/21 int + TB | 0.042      |
| Slab <sup>2,3</sup> R-Value & Depth     | 10, 2 ft          | n/a        |

R-values are minimums. U-factors and SHGC are maximums. When insulation is installed in a cavity that is less than the label or design thickness of the insulation, the compressed R-value of the insulation from Appendix Table A101.4 shall not be less than the R-value specified in the table.

The fenestration U-factor column excludes skylights.

"10/15/21 +5TB" means R-10 continuous insulation on the exterior of the wall, or R-15 continuous insulation on the interior of the wall, or R-21 cavity insulation plus a thermal break between the slab and the basement wall at the interior of the basement wall. "10/15/21 +5TB" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the wall. "5TB" means R-5 thermal break between floor slab and basement wall.

R-10 continuous insulation is required under heated slab on grade floors. See Section R402.2.9.1.

For single rafter- or joist-vaulted ceilings, the insulation may be reduced to R-38 if the full insulation depth extends over the top plate of the exterior wall.

R-7.5 continuous insulation installed over an existing slab is deemed to be equivalent to the required perimeter slab insulation when applied to existing slabs complying with Section R503.1.1. If foam plastic is used, it shall meet the requirements for thermal barriers protecting foam plastics.

For log structures developed in compliance with Standard ICC 400, log walls shall meet the requirements for climate zone 5 of ICC 400.

Int. (intermediate framing) denotes framing and insulation as described in Section A103.2.2 including standard framing 16 inches on center, 78% of the wall cavity insulated and headers insulated with a minimum of R-10 insulation.

2018 Washington State Energy Code – Residential  
Prescriptive Energy Code Compliance for All Climate Zones in Washington  
Single Family – New & Additions (effective February 1, 2021)

Each dwelling unit in a residential building shall comply with sufficient options from Table R406.2 (fuel normalization credits) and Table 406.3 (energy credits) to achieve the following minimum number of credits. To claim this credit, the building permit drawings shall specify the option selected and the maximum tested building air leakage, and show the qualifying ventilation system and its control sequence of operation.

- Small Dwelling Unit: 3 credits**  
Dwelling units less than 1,500 sf in conditioned floor area with less than 300 sf of fenestration area.  
Additions to existing building that are greater than 500 sf of heated floor area but less than 1,500 sf.
- Medium Dwelling Unit: 6 credits**  
All dwelling units that are not included in #1 or #3
- Large Dwelling Unit: 7 credits**  
Dwelling units exceeding 5,000 sf of conditioned floor area
- Additions less than 500 square feet: 1.5 credits**  
All other additions shall meet 1-3 above

Before selecting your credits on this Summary table, review the details in Table 406.3 (Single Family), on page 4.

| Summary of Table R406.2 |   |  |                                     |
|-------------------------|---|--|-------------------------------------|
| Heating Options         | Fuel Normalization Descriptions                   | Credits - select ONE heating option                                | User Notes                          |
| 1                       | Combustion heating minimum NAECA <sup>5</sup>     | 0.0  | <input type="checkbox"/>            |
| 2                       | Heat pump <sup>6</sup>                            | 1.0  | <input checked="" type="checkbox"/> |
| 3                       | Electric resistance heat only - furnace or zonal  | -1.0   | <input type="checkbox"/>            |
| 4                       | DHP with zonal electric resistance per option 3.4 | 0.5  | <input type="checkbox"/>            |
| 5                       | All other heating systems                         | -1.0   | <input type="checkbox"/>            |
| Energy Options          | Energy Credit Option Descriptions                 | Credits - select ONE energy option from each category <sup>7</sup> | User Notes                          |
| 1.1                     | Efficient Building Envelope                       | 0.5  | <input type="checkbox"/>            |
| 1.2                     | Efficient Building Envelope                       | 1.0  | <input type="checkbox"/>            |
| 1.3                     | Efficient Building Envelope                       | 0.5  | <input checked="" type="checkbox"/> |
| 1.4                     | Efficient Building Envelope                       | 1.0  | <input type="checkbox"/>            |
| 1.5                     | Efficient Building Envelope                       | 2.0  | <input type="checkbox"/>            |
| 1.6                     | Efficient Building Envelope                       | 3.0  | <input type="checkbox"/>            |
| 1.7                     | Efficient Building Envelope                       | 0.5  | <input type="checkbox"/>            |
| 2.1                     | Air Leakage Control and Efficient Ventilation     | 0.5  | <input type="checkbox"/>            |
| 2.2                     | Air Leakage Control and Efficient Ventilation     | 1.0  | <input type="checkbox"/>            |
| 2.3                     | Air Leakage Control and Efficient Ventilation     | 1.5  | <input type="checkbox"/>            |
| 2.4                     | Air Leakage Control and Efficient Ventilation     | 2.0  | <input type="checkbox"/>            |
| 3.1 <sup>8</sup>        | High Efficiency HVAC                              | 1.0  | <input type="checkbox"/>            |
| 3.2                     | High Efficiency HVAC                              | 1.0  | <input type="checkbox"/>            |
| 3.3 <sup>9</sup>        | High Efficiency HVAC                              | 1.5  | <input type="checkbox"/>            |
| 3.4                     | High Efficiency HVAC                              | 1.5  | <input type="checkbox"/>            |
| 3.5                     | High Efficiency HVAC                              | 1.5  | <input checked="" type="checkbox"/> |
| 3.6 <sup>8</sup>        | High Efficiency HVAC                              | 2.0  | <input type="checkbox"/>            |
| 4.1                     | High Efficiency HVAC Distribution System          | 0.5  | <input type="checkbox"/>            |
| 4.2                     | High Efficiency HVAC Distribution System          | 1.0  | <input type="checkbox"/>            |

2018 Washington State Energy Code – Residential  
Prescriptive Energy Code Compliance for All Climate Zones in Washington  
Single Family – New & Additions (effective February 1, 2021)

| Summary of Table R406.2 (cont.) |   |  |   |
|---------------------------------|---|--|---|
| Energy Options                  | Energy Credit Option Descriptions (cont.) | Credits - select ONE energy option from each category <sup>7</sup> | User Notes  |
| 5.1 <sup>10</sup>               | Efficient Water Heating                   | 0.5  | <input type="checkbox"/>  |
| 5.2                             | Efficient Water Heating                   | 0.5  | <input type="checkbox"/>  |
| 5.3                             | Efficient Water Heating                   | 1.0  | <input type="checkbox"/>  |
| 5.4                             | Efficient Water Heating                   | 1.5  | <input type="checkbox"/>  |
| 5.5                             | Efficient Water Heating                   | 2.0  | <input type="checkbox"/>  |
| 5.6                             | Efficient Water Heating                   | 2.5  | <input type="checkbox"/>  |
| 6.1 <sup>11</sup>               | Renewable Electric Energy (3 credits max) | 1.0  | <input type="checkbox"/>  |
| 7.1                             | Appliance Package                         | 0.5  | <input type="checkbox"/>  |
| <b>Total Credits</b>            |   | <b>6.0</b>   | <input checked="" type="checkbox"/> <b>Exceeds Total</b> <input type="checkbox"/> <b>Clear Form</b> |

a. An alternative heating source sized at a maximum of 0.5 W/sf (equivalent) of heated floor area or 500 W, whichever is bigger, may be installed in the dwelling unit.  
b. Equipment listed in Table C403.3.2(4) or C403.3.2(5)  
c. Equipment listed in Table C403.3.2(1) or C403.3.2(2)  
d. You cannot select more than one option from any category EXCEPT in category 5. Option 5.1 may be combined with options 5.2 through 5.6. See Table 406.3.  
e. 1.0 credit for each 1,200 kWh of electrical generation provided annually, up to 3 credits max. See the complete Table R406.2 for all requirements and option descriptions.  
f. Use the single radiobutton in the upper right of the second column to deselect radiobuttons in that group.

ENERGY CREDITS DESCRIPTION

| Table 406.3 – Energy Credits (Single Family)  |  |             |
|---|--|-------------|
| Option  | Description  | Credits: SF |
| <b>1. EFFICIENT BUILDING ENVELOPE OPTIONS</b>   |  |             |
| Only one option from items 1.1 through 1.7 may be selected in this category. Compliance with the conductive UA targets is demonstrated using Section R402.1.4, Total UA alternative, where (1-Proposed UA/Target UA) > the required SLA reduction.  |  |             |
| 1.1   | Prescriptive compliance is based on Table R402.1.1 with the following modifications:<br><b>Vertical fenestration U = 0.24</b>  | 0.5         |
| 1.2   | Prescriptive compliance is based on Table R402.1.1 with the following modifications:<br><b>Vertical fenestration U = 0.20</b>  | 1.0         |
| 1.3   | Prescriptive compliance is based on Table R402.1.1 with the following modifications:<br><b>Vertical fenestration U = 0.28</b><br>Floor R-38<br>Slab on grade R-10 perimeter and under entire slab below grade slab R-10 perimeter and under entire slab or<br>Compliance based on Section R402.1.4: Reduce the Total conductive UA by 5%<br>Prescriptive compliance is based on Table R402.1.1 with the following modifications:<br><b>Vertical fenestration U = 0.25</b><br>Wall R-21 plus R-4 c<br>Floor R-38  | 0.5         |
| 1.4   | Basement wall R-21 int plus R-5 c<br>Slab on grade R-10 perimeter and under entire slab below grade slab R-10 perimeter and under entire slab or<br>Compliance based on Section R402.1.4: Reduce the Total conductive UA by 15%<br>Prescriptive compliance is based on Table R402.1.1 with the following modifications:<br><b>Vertical fenestration U = 0.22</b><br>Ceiling and single-rafter or joist-vaulted R-49 advanced<br>Wood frame wall R-21 int plus R-12 of Floor R-38   | 1.0         |
| 1.5   | Basement wall R-21 int plus R-12 c<br>Slab on grade R-10 perimeter and under entire slab below grade slab R-10 perimeter and under entire slab or<br>Compliance based on Section R402.1.4: Reduce the Total conductive UA by 30%<br>Prescriptive compliance is based on Table R402.1.1 with the following modifications:<br><b>Vertical fenestration U = 0.18</b><br>Ceiling and single-rafter or joist-vaulted R-60 advanced<br>Wood frame wall R-21 int plus R-16 c<br>Floor R-48  | 2.0         |
| 1.6   | Basement wall R-21 int plus R-16 c<br>Slab on grade R-20 perimeter and under entire slab below grade slab R-20 perimeter and under entire slab or<br>Compliance based on Section R402.1.4: Reduce the Total conductive UA by 40%.<br>Advanced framing and raised heel trusses or rafters<br>Vertical Glazing U-0.28  | 3.0         |
| 1.7   | R-49 vaulted ceilings with full height of uncompressed insulation extending over the wall top plate at the eaves.  | 0.5         |
| <b>Table 406.3 – Energy Credits (Single Family)</b>   |  |             |
| <b>2. AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION OPTIONS</b>   |  |             |
| Only one option from items 2.1 through 2.4 may be selected in this category.  |  |             |
| 2.1   | Compliance based on R402.4.1.2: Reduce the tested air leakage to <b>3.0 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.3 cfm/ft maximum at 50 Pascals</b> and<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a high efficiency fan(s) (maximum 0.35 watts/cfm), not interlocked with the furnace fan (if present). Ventilation systems using a furnace including an ECM motor are allowed, provided that they are controlled to operate at low speed in ventilation only mode.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and the maximum tested building air leakage, and shall show the qualifying ventilation system and its control sequence of operation.<br>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>2.0 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.25 cfm/ft maximum at 50 Pascals</b> and<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.65. <sup>1</sup><br>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>1.5 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.25 cfm/ft maximum at 50 Pascals</b> or<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.75. <sup>1</sup><br>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.6 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.15 cfm/ft maximum at 50 Pascals</b> and<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.80. Duct installation shall comply with Section R403.3.7. <sup>1</sup> | 0.5         |
| 2.2   | Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>2.0 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.25 cfm/ft maximum at 50 Pascals</b> and<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.65. <sup>1</sup><br>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>1.5 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.25 cfm/ft maximum at 50 Pascals</b> or<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.75. <sup>1</sup><br>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.6 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.15 cfm/ft maximum at 50 Pascals</b> and<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.80. Duct installation shall comply with Section R403.3.7. <sup>1</sup>   | 1.0         |
| 2.3   | Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>1.5 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.25 cfm/ft maximum at 50 Pascals</b> or<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.75. <sup>1</sup><br>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.6 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.15 cfm/ft maximum at 50 Pascals</b> and<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.80. Duct installation shall comply with Section R403.3.7. <sup>1</sup>  | 1.5         |
| 2.4   | Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>1.5 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.25 cfm/ft maximum at 50 Pascals</b> or<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.75. <sup>1</sup><br>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.6 air changes per hour maximum at 50 Pascals</b> or<br>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.15 cfm/ft maximum at 50 Pascals</b> and<br>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.80. Duct installation shall comply with Section R403.3.7. <sup>1</sup>  | 2.0         |
| To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.  |  |             |
| <b>Table 406.3 – Energy Credits (Single Family)</b>   |  |             |
| <b>3. HIGH EFFICIENCY HVAC EQUIPMENT OPTIONS</b>  |  |             |
| Only one option from items 3.1 through 3.6 may be selected in this category.  |  |             |
| 3.1 <sup>2</sup>  | Energy Star rated (U.S. North) Gas or propane furnace with minimum AFUE of 95% or Energy Star rated (U.S. North) Gas or propane boiler with minimum AFUE of 90%. <sup>2</sup>  | 1.0         |
| 3.2 <sup>2</sup>  | Air-source centrally ducted heat pump with minimum HSPF of 9.5. <sup>3</sup>   | 1.0         |
| 3.3 <sup>2</sup>  | Closed-loop ground source heat pump; with a minimum COP of 3.3 or<br>Open loop water source heat pump with a maximum pumping hydraulic head of 150 feet and minimum COP of 3.6. <sup>3</sup><br>Ductless mini-split heat pump system, zonal control; In homes where the primary space heating system is zonal electric heating, a ductless mini-split heat pump system with a minimum HSPF of 10.0 shall be installed and provide heating to the largest zone of the housing unit. <sup>4</sup>  | 1.5         |
| 3.4   | Air-source, centrally ducted heat pump with minimum HSPF of 11.0. <sup>4</sup>   | 1.5         |
| 3.5 <sup>2</sup>  | Air-source, centrally ducted heat pump with no electric resistance heating in the primary living areas. A ductless heat pump system with a minimum HSPF of 10 shall be sized and installed to provide heat to entire dwelling unit at the design outdoor air temperature.  | 2.0         |
| 3.6 <sup>2</sup>  | To qualify to claim this credit, the building permit drawings shall specify the option being selected, the heated floor area calculation, the heating equipment type(s), the minimum equipment efficiency, and total installed heat capacity (by equipment type).<br><sup>2</sup> An alternative heating source sized at a maximum of 0.5 W/sf (equivalent) of heated floor area or 500 W, whichever is bigger, may be installed in the dwelling unit.<br><sup>3</sup> To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.<br><sup>4</sup> To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.   | 2.0         |
| <b>4. HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM OPTIONS</b>  |  |             |
| All supply and return ducts located in an unconditioned attic shall be deeply buried in ceiling insulation in accordance with Section R403.3.7.<br>For mechanical equipment located outside the conditioned space, a maximum of 10 linear feet of return duct and 5 linear feet of supply duct connections to the equipment may be outside the deeply buried insulation. All metallic ducts located outside the conditioned space must have both transverse and longitudinal joints sealed with mastic. If flex ducts are used, they cannot contain splines.<br>Duct leakage shall be limited to 3 cfm per 100 square feet of conditioned floor area.<br>Air handler(s) shall be located within the conditioned space.<br>HVAC equipment and associated duct system(s) installation shall comply with the requirements of Section R403.3.7. |  |             |
| 4.1   | Locating system components in conditioned crawl spaces not permitted under this option.<br>Electric resistance heat and ductless heat pumps are not permitted under this option.<br>Direct combustion heating equipment with AFUE less than 80% is not permitted under this option.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and shall show the location of the heating and cooling equipment and all the ductwork.   | 0.5         |
| 4.2   | Locating system components in conditioned crawl spaces not permitted under this option.<br>Electric resistance heat and ductless heat pumps are not permitted under this option.<br>Direct combustion heating equipment with AFUE less than 80% is not permitted under this option.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and shall show the location of the heating and cooling equipment and all the ductwork.   | 1.0         |

| Table 406.3 – Energy Credits (Single Family)  |   |             |
|---|---|-------------|
| Option  | Description   | Credits: SF |
| <b>5. EFFICIENT WATER HEATING OPTIONS</b>   |   |             |
| Only one option from items 5.2 through 5.6 may be selected in this category. Item 5.1 may be combined with any option.<br><sup>1</sup> A drain water heat recovery unit(s) shall be installed, which captures waste water heat from all and only the showers, and has a minimum efficiency of 40% if installed for equal flow or a minimum efficiency of 54% if installed for unequal flow. Such units shall be rated in accordance with CSA B55.1 or IAPMO IGC 346-2017 and be so labeled.<br>To qualify to claim this credit, the building permit drawings shall include a plumbing diagram that specifies the drain water heat recovery units and the plumbing layout needed to install it. Labels or other documentation shall be provided that demonstrates that the unit complies with the standard.<br>Water heating system shall include one of the following:<br>Energy Star rated gas or propane water heater with a minimum UEF of 0.80. <sup>5</sup><br>Water heating system shall include one of the following:<br>Energy Star rated gas or propane water heater with a minimum UEF of 0.91 or<br>Solar water heating supplementing a minimum standard water heater. Solar water heating will provide a rated minimum savings of 85 therms or 2000 kWh based on the Solar Rating and Certification Corporation (SRCC) Annual Performance of OG-300 Certified Solar Water Heating Systems or<br>Water heater heated by ground source heat pump meeting requirements of Option 3.3.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and, for solar water heating systems, the calculation of minimum energy savings.<br>Water heating system shall include one of the following:<br>Electric heat pump water heater meeting the standards for Tier I of NEEA's advanced water heating specification or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier I of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup><br>Water heating system shall include one of the following: Electric heat pump water heater meeting the standards for Tier III of NEEA's advanced water heating specification or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup> |   |             |
| 5.1   | To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency.   | 0.5         |
| 5.2   | Water heating system shall include one of the following:<br>Energy Star rated gas or propane water heater with a minimum UEF of 0.80. <sup>5</sup><br>Water heating system shall include one of the following:<br>Energy Star rated gas or propane water heater with a minimum UEF of 0.91 or<br>Solar water heating supplementing a minimum standard water heater. Solar water heating will provide a rated minimum savings of 85 therms or 2000 kWh based on the Solar Rating and Certification Corporation (SRCC) Annual Performance of OG-300 Certified Solar Water Heating Systems or<br>Water heater heated by ground source heat pump meeting requirements of Option 3.3.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and, for solar water heating systems, the calculation of minimum energy savings.<br>Water heating system shall include one of the following:<br>Electric heat pump water heater meeting the standards for Tier I of NEEA's advanced water heating specification or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier I of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup><br>Water heating system shall include one of the following: Electric heat pump water heater meeting the standards for Tier III of NEEA's advanced water heating specification or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup> | 0.5         |
| 5.3   | Water heater heated by ground source heat pump meeting requirements of Option 3.3.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and, for solar water heating systems, the calculation of minimum energy savings.<br>Water heating system shall include one of the following:<br>Electric heat pump water heater meeting the standards for Tier I of NEEA's advanced water heating specification or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier I of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup><br>Water heating system shall include one of the following: Electric heat pump water heater meeting the standards for Tier III of NEEA's advanced water heating specification or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup>   | 1.0         |
| 5.4   | For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier I of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup><br>Water heating system shall include one of the following: Electric heat pump water heater meeting the standards for Tier III of NEEA's advanced water heating specification or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup>   | 1.5         |
| 5.5   | For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup><br>Water heating system shall include one of the following:<br>Electric heat pump water heater with a minimum UEF of 2.9 and utilizing a split system configuration with the air-to-refrigerant heat exchanger located outdoors. Equipment shall meet Section 4, requirements for all units, of the NEEA standard Advanced Water Heating Specification with the UEF noted above or<br>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification and utilizing a split system configuration with the air-to-refrigerant heat exchanger located outdoors, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup>  | 2.0         |
| 5.6   | To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency.   | 2.5         |
| <b>Table 406.3 – Energy Credits (Single Family)</b>   |   |             |
| <b>6. RENEWABLE ELECTRIC ENERGY OPTION</b>  |   |             |
| For each 1,200 kWh of electrical generation per housing unit provided annually by on-site wind or solar equipment a 1.0 credit shall be allowed, up to 3 credits. Generation shall be calculated as follows:<br>For solar electric systems, the design shall be demonstrated to meet this requirement using the National Renewable Energy Laboratory calculator PVWATTS or approved alternate by the code official.<br>Documentation noting solar access shall be included on the plans. For wind generation projects designs shall document annual power generation based on the following factors: the wind turbine power curve, average annual wind speed at the site; frequency distribution of the wind speed at the site and height of the tower.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall show the photovoltaic or wind turbine equipment type, provide documentation of solar and wind access, and include a calculation of the minimum annual energy power production.   |   |             |
| 6.1   | Documentation noting solar access shall be included on the plans. For wind generation projects designs shall document annual power generation based on the following factors: the wind turbine power curve, average annual wind speed at the site; frequency distribution of the wind speed at the site and height of the tower.<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall show the appliance type and provide documentation of the option being selected and shall show the appliance type and provide documentation of the option being selected. At the time of inspection, all appliances shall be installed and connected to utilities. Dryer ducts and exterior dryer vent caps are not permitted to be installed in the dwelling unit.  | 1.0         |
| <b>7. APPLIANCE PACKAGE OPTION</b>  |   |             |
| All of the following appliances shall be new and installed in the dwelling unit and shall meet the following standards:<br>Dishwasher – Energy Star rated<br>Refrigerator (if provided) – Energy Star rated<br>Washing machine – Energy Star rated<br>Dryer – Energy Star rated, ventless dryer with minimum CEF rating of 5.2<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall show the appliance type and provide documentation of the option being selected. At the time of inspection, all appliances shall be installed and connected to utilities. Dryer ducts and exterior dryer vent caps are not permitted to be installed in the dwelling unit.   |   |             |
| 7.1   | All of the following appliances shall be new and installed in the dwelling unit and shall meet the following standards:<br>Dishwasher – Energy Star rated<br>Refrigerator (if provided) – Energy Star rated<br>Washing machine – Energy Star rated<br>Dryer – Energy Star rated, ventless dryer with minimum CEF rating of 5.2<br>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall show the appliance type and provide documentation of the option being selected. At the time of inspection, all appliances shall be installed and connected to utilities. Dryer ducts and exterior dryer vent caps are not permitted to be installed in the dwelling unit.   | 0.5         |

URBAN DESIGN GROUP  
15445 53 RD AVE, S, STE. 110, TUKWILA, WA 98188  
(206) 838-8250 E-MAIL: URBANDESIGNENTER@YAHOO.COM

PROJECT NAME:  
SINGLE-FAMILY RESIDENCE  
8456 SE 40TH  
MERCER ISLAND, WA 98040  
PARCEL #: 502190-0790

PREPARED FOR:  
PHILIP SUDO & LLC  
KUN QIAN &  
LAURIE QIAN

SUBMITTAL/REVISION: DATE:  
SUBMITTED -/-/2022  
REVISED -/-/2022

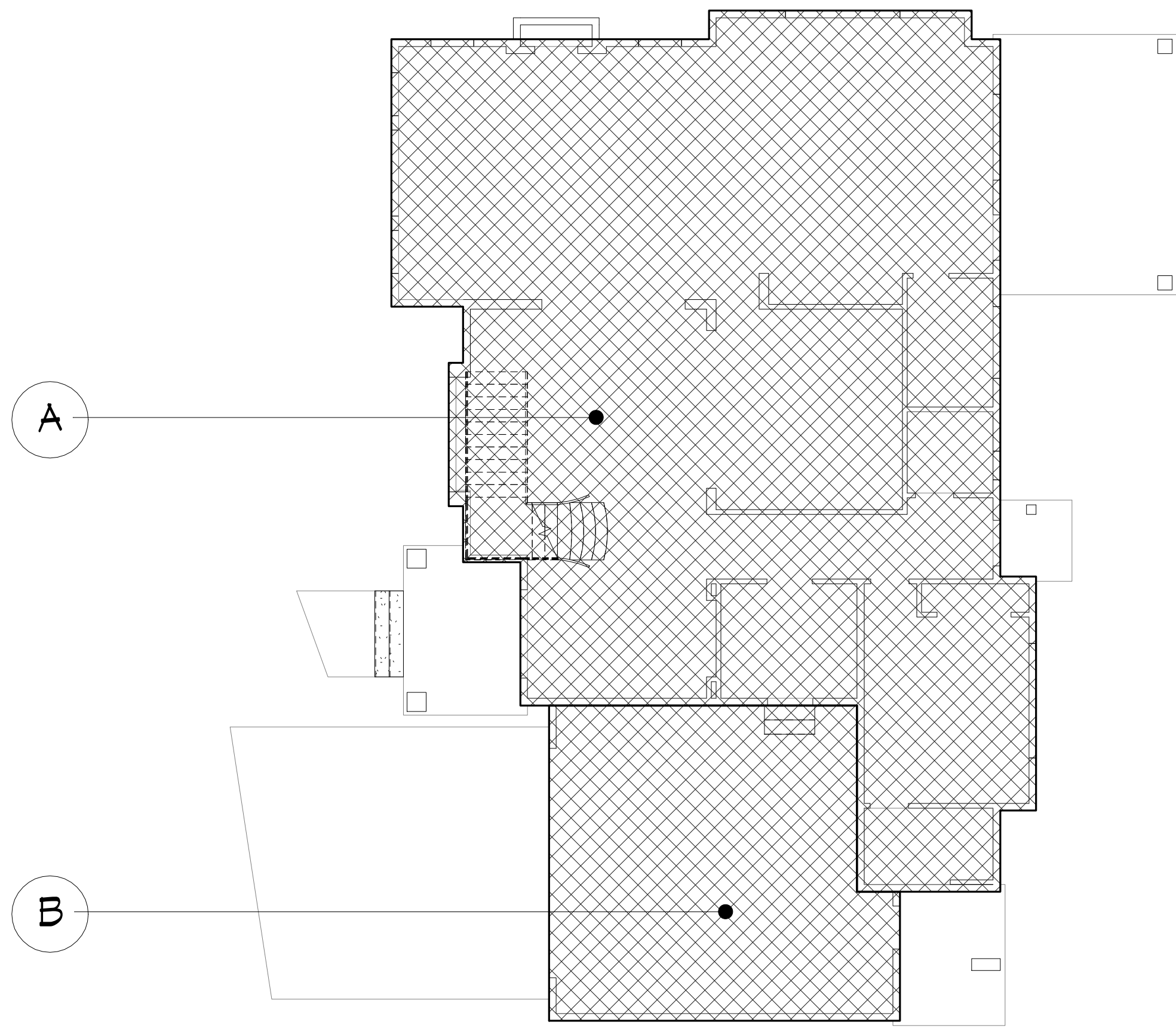
DESIGN BY: PAVEL MELNIK  
DRAFTED BY: ANNA KONYAKINA

SHEET TITLE:  
ENERGY CREDITS OPTIONS

PROJECT NUMBER:  
21257

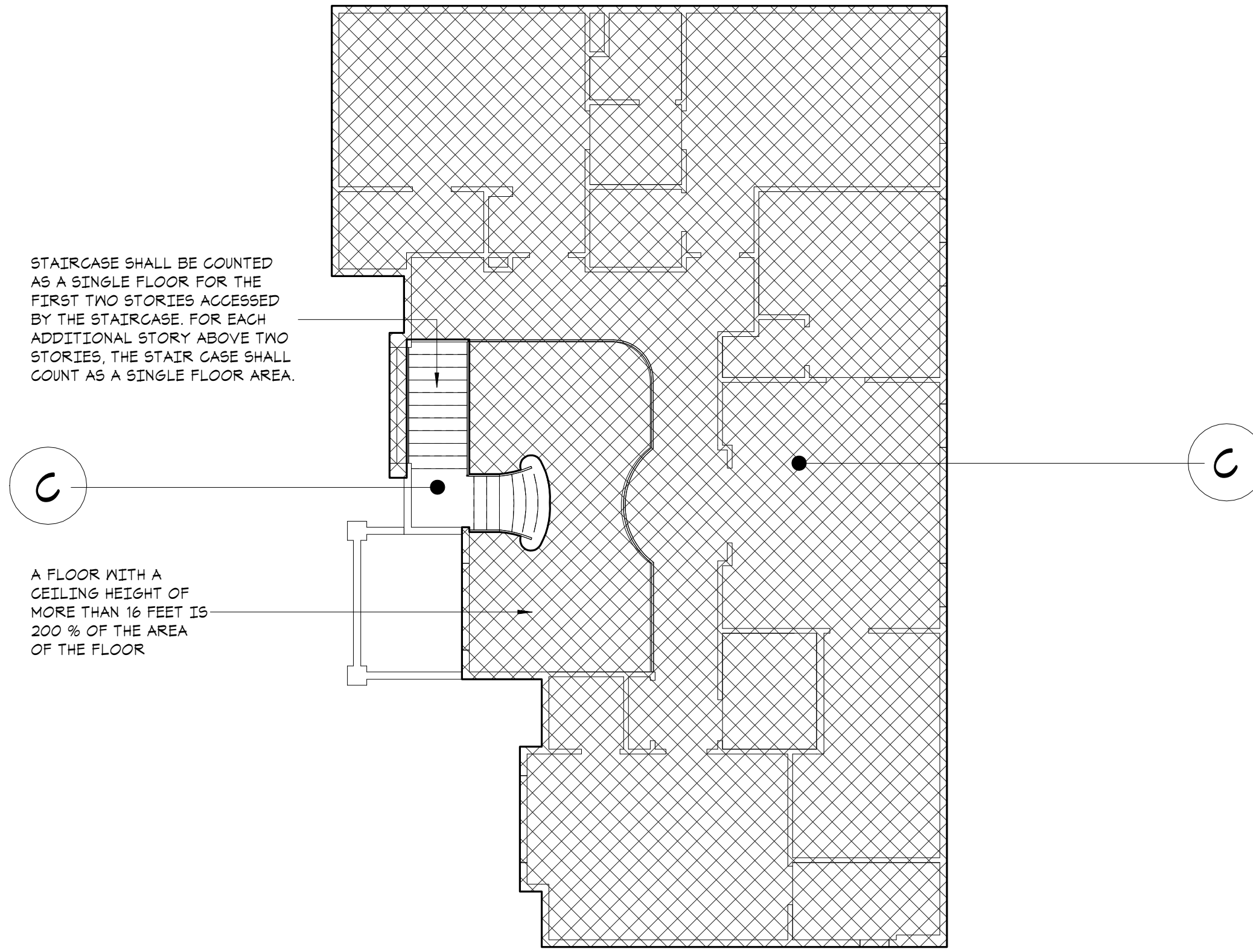
SHEET NUMBER:  
A1.2





**MAIN FLOOR PLAN - GFR**

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



**UPPER FLOOR PLAN - GFR**

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

STAIRCASE SHALL BE COUNTED AS A SINGLE FLOOR FOR THE FIRST TWO STORIES ACCESSED BY THE STAIRCASE. FOR EACH ADDITIONAL STORY ABOVE TWO STORIES THE STAIR CASE SHALL COUNT AS A SINGLE FLOOR AREA.

A FLOOR WITH A CEILING HEIGHT OF MORE THAN 16 FEET IS 200% OF THE AREA OF THE FLOOR

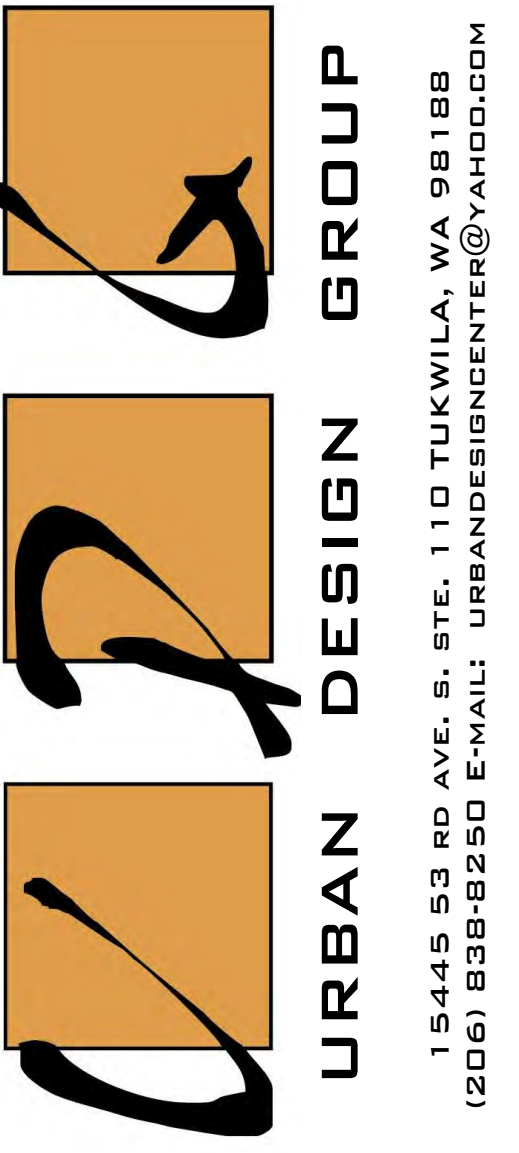
| GROSS FLOOR AREA:             |              |            |
|-------------------------------|--------------|------------|
| (A)                           | MAIN FLOOR:  | 2 015 S.F. |
| (B)                           | GARAGE:      | 500 S.F.   |
| (C)                           | UPPER FLOOR: | 2 255 S.F. |
| (D)                           | STAIRCASE:   | EXCLUDED   |
| TOTAL GROSS FLOOR AREA (GFA): |              | 4 770 S.F. |

| GROSS FLOOR AREA:      |                     |
|------------------------|---------------------|
| LOT AREA:              | 11 930 S.F.         |
| ALLOWED GFA *:         | 40%                 |
| GFA W/ALLOWANCE (40%): | 4 772 S.F.          |
| TOTAL PROPOSED GFA:    | 4,770 S.F. / 99.93% |

\* ZONING R-2.4: 5,000 SQUARE FEET OR 40% OF THE LOT AREA, WHICHEVER IS LESS.

\*\* IF AN ACCESSORY DWELLING UNIT IS PROPOSED, THE 40% ALLOWED GFA MAY BE INCREASED BY THE LESSER OF 5 PERCENTILE POINTS, OR THE FLOOR AREA OF THE ACCESSORY DWELLING UNIT. PROVIDED, THIS ALLOWANCE SHALL NOT RESULT IN A GFA OF MORE THAN 4,500 SQUARE FEET OR 45% OF THE LOT AREA, WHICHEVER IS LESS.

NOTE:  
THE GFA INCLUDES THE FLOOR AREA OF THE MAIN BUILDING, ACCESSORY BUILDINGS, GARAGES, ATTACHED ROOFED DECKS ON THE SECOND OR THIRD STORY OF A SINGLE FAMILY HOME, STAIR CASES, ETC. THE GFA DOES NOT INCLUDE SECOND- OR THIRD UNCOVERED DECKS OR UNCOVERED ROOFTOP DECKS.



PROJECT NAME:  
**SINGLE-FAMILY RESIDENCE**  
**8456 SE 40TH**  
**MERCER ISLAND, WA 98040**  
**PARCEL #: 502190-0790**

PREPARED FOR:  
**PHILIP SUDO & LLC**  
**KUN QIAN &**  
**LAURIE QIAN**

SUBMITTAL/REVISION: DATE:  
 SUBMITTED: -/-/2022  
 REVISED: -/-/2022  
 DESIGN BY: PAVEL MELNIK  
 DRAFTED BY: ANNA KONYAKINA

**GROSS FLOOR AREA (GFA)**

PROJECT NUMBER:  
**21257**

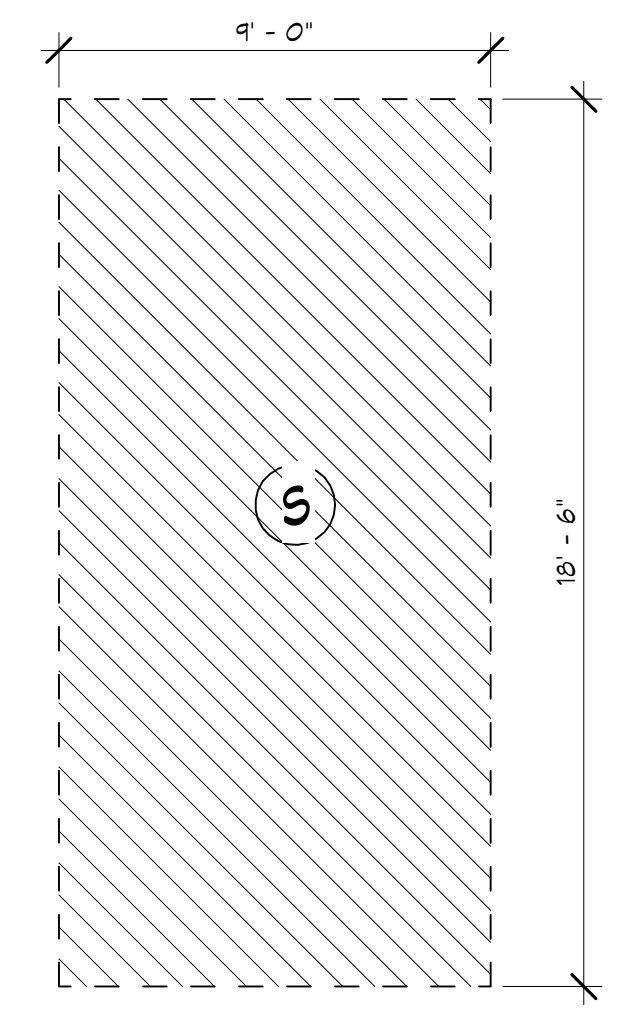
SHEET NUMBER:

**A2.1**



**PARKING REQUIRED (MCC 19.02.020(6)(2)(A)):**  
 A. EACH SINGLE-FAMILY DWELLING WITH A GROSS FLOOR AREA OF 3,000 SQUARE FEET OR MORE SHALL HAVE AT LEAST THREE PARKING SPACES SUFFICIENT IN SIZE TO PARK A PASSENGER AUTOMOBILE; PROVIDED, AT LEAST TWO OF THE STALLS SHALL BE COVERED STALLS.

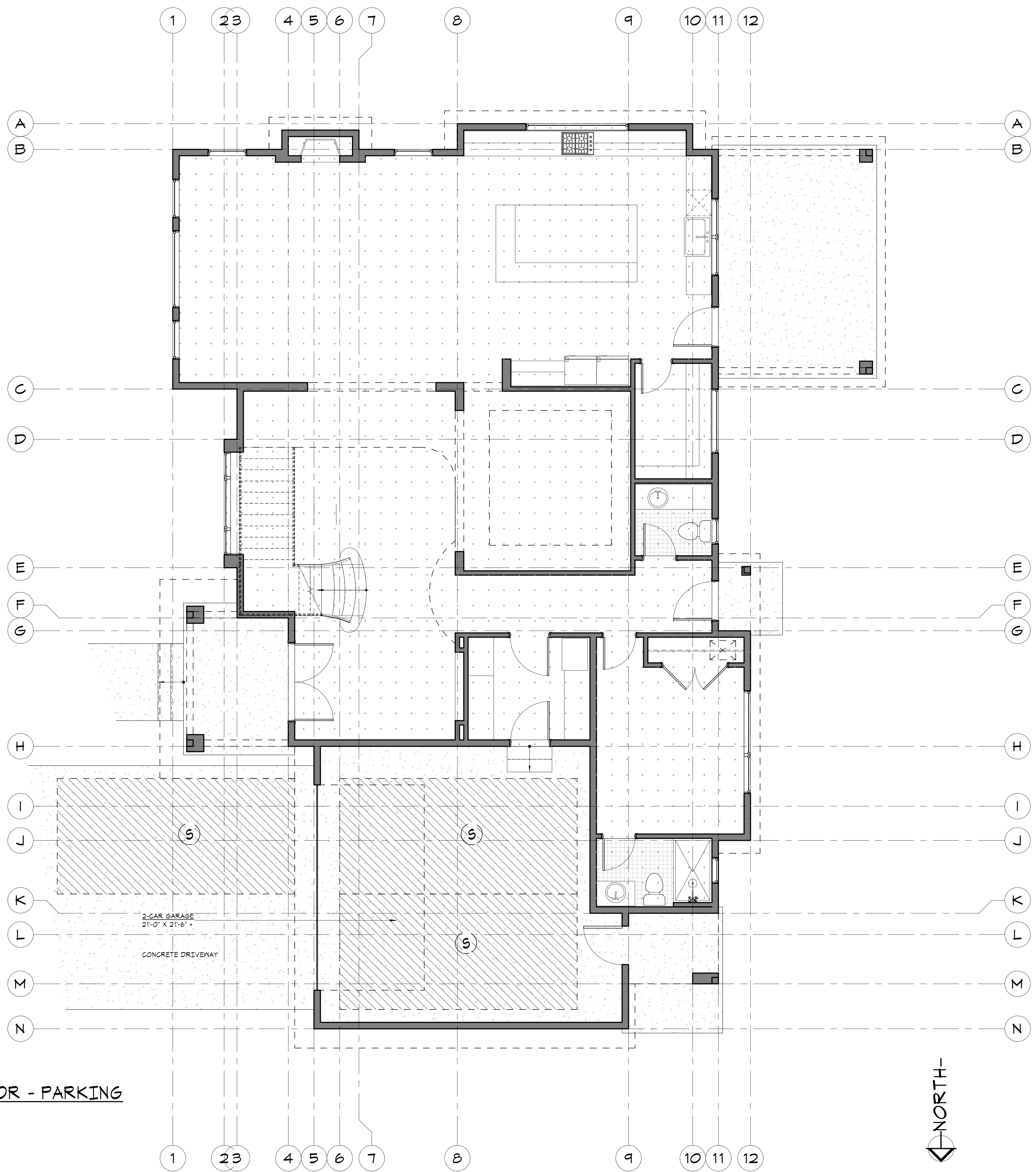
**STANDARD PARKING STALL (9' X 18.5'):**



**PROVIDED PARKING:**  
 TWO (2) STANDARD SIZE COVERED PARKING SPACES IN THE GARAGE.  
 DRIVEWAY CONTAINS A MINIMUM OF ONE (1) STANDARD PARKING STALL.

**PARKING STALLS**

**MAIN FLOOR - PARKING**  
 SCALE: 1/4" = 1'-0"





**TYPICAL FLOOR NOTES:**

- INSTALL SMOKE DETECTORS IN ALL SLEEPING ROOMS AND AT AREAS ADJACENT TO SLEEPING ROOMS, AND AT CEILING HEIGHT CHANGES GREATER THAN 24". SMOKE DETECTORS TO BE HARD-WIRED AND INTERCONNECTED, WITH BATTERY BACK-UP PER CODE.
- INSTALL CARBON MONOXIDE SENSORS ADJACENT TO SLEEPING AREAS.
- ALL INTERIOR WALLS TO BE 2x4 @ 16" O.C. (U.N.O.)
- ALL EXTERIOR WALLS TO BE 2x6 @ 16" O.C. (U.N.O.)
- MAIN FLOOR HEADERS PER STRUCTURAL @ 9'-0" A.F.F. (U.N.O.)
- WINDOW SIZES ARE NOMINAL ROUGH OPENING, WIDTH AND HEIGHT.
- DOOR SIZES NOTED ARE SLABS NOT ROUGH OPENINGS.
- PROVIDE FIREBLOCKING AT ALL PLUMBING OPENINGS.
- PROVIDE SOLID BLOCKING OVER SUPPORTS.
- WHEN THERE IS USABLE SPACE BOTH ABOVE AND BELOW THE CONCEALED SPACE OF A FLOOR-CEILING ASSEMBLY, DRAFTSTOPS SHALL BE INSTALLED SO THAT THE AREA OF CONCEALED SPACE DOES NOT EXCEED 1000 SF. DRAFTSTOPS SHALL DIVIDE THE CONCEALED SPACE INTO APPROXIMATELY EQUAL AREAS AND SHALL BE OF 1/2" GYP BOARD OR OTHER APPROVED MATERIALS INSTALLED PARALLEL TO THE FLOOR FRAMING MEMBERS PER CODE.
- PROVIDE FIREBLOCKING TO CUT OFF ALL CONCEALED HORIZONTAL AND VERTICAL DRAFT OPENINGS AND TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND THE ROOF SPACE. FIREBLOCKING SHALL CONSIST OF NOT LESS THAN 2" NOMINAL LUMBER OR OTHER APPROVED MATERIAL.
- ASPHALT-SATURATED FELT FREE FROM HOLES OR BREAKS, WEIGHING NOT LESS THAN 14 POUNDS PER 100 SQUARE FEET AND COMPLYING WITH ASTM D 226 OR OTHER APPROVED WEATHER RESISTANT MATERIAL SHALL BE APPLIED OVER SHEATHING OF ALL EXTERIOR WALLS. APPROVED ALTERNATIVE WEATHERPROOF MEMBRANES SHALL BE USED FOR OPEN JOINT RAIN SCREEN SIDING. WEATHER RESISTANT MATERIALS SHALL BE APPLIED HORIZONTALLY PER MANUFACTURERS RECOMMENDATIONS, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES AND NOT LESS THAN 6 INCHES WHERE JOINTS OCCUR PER CODE.
- APPROVED CORROSION RESISTIVE FLASHING SHALL BE PROVIDED IN THE EXTERIOR WALL ENVELOPE IN SUCH A MANNER AS TO PREVENT ENTRY OF WATER INTO THE WALL CAVITY OR PENETRATION OF WATER TO THE BUILDING'S STRUCTURAL FRAMING COMPONENTS. THE FLASHING SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL SURFACE AND SHALL BE INSTALLED TO PREVENT WATER FROM REENTERING THE EXTERIOR WALL ENVELOPE. FLASHING SHALL BE INSTALLED AT, BUT NOT LIMITED TO THE FOLLOWING LOCATIONS:  
 -THE TOP OF ALL EXTERIOR WINDOW & DOOR OPENINGS  
 -INTERSECTIONS OF FRAMING WALLS AND MASONRY OR STUCCO  
 -UNDER MASONRY, WOOD OR METAL COPINGS AND SILLS  
 -CONTINUOUSLY ABOVE ALL PROJECTING WOOD TRIM  
 -WHERE EXTERIOR PORCHES, DECKS OR STAIRS ATTACH TO A WALL  
 -AT WALL AND ROOF OR SOFFIT INTERSECTIONS  
 -AT BUILT-IN GUTTERS
- EXTERIOR LOCATIONS FOR ENVIRONMENTAL AIR DUCT EXHAUST & INTAKE OPENINGS TO BE A MINIMUM OF 3'-0" FROM PROPERTY LINE & MINIMUM 3'-0" FROM BUILDING OPENINGS. EQUIP ALL DUCTS W/ BACK-DRAFT DAMPERS.
- AIR EXHAUST & INTAKE OPENINGS THAT TERMINATE OUTDOORS SHALL BE PROTECTED W/ CORROSION RESISTANT SCREENS, LOUVERS, OR GRILLS W/ 1/4" MINIMUM 1/2" MAX OPENINGS IN ANY DIMENSION. OPENINGS SHALL BE PROTECTED AGAINST LOCAL WEATHER CONDITIONS PER 2019 IRC.
- DUCTS FOR KITCHEN RANGES SHALL BE OF METAL AND BE EQUIPPED W/ BACK-DRAFT DAMPERS PER CODE.
- ALL INTERIOR FINISHES TO MEET MINIMUM FLAME SPREAD INDEX AND SMOKE DEVELOPMENT INDEX AS REQUIRED BY 2019 IRC.
- UNDER FLOOR CLEANOUT NOT MORE THAN 20" FROM ACCESS DOOR WITH AN UNOBSTRUCTED 30" WIDE X 18" HIGH PATH PATHWAY. CLEANOUTS ARE ACCESSIBLE. 12" CLEARANCE REQUIRED AT LINES LESS THAN OR EQUAL TO 2", 18" CLEARANCE AT LINES GREATER THAN 2". (UPC 707.4)
- GLAZING IN ALL FIXED AND OPERABLE PANELS OF SWINGS, SLIDING AND BIFOLD DOORS SHALL BE CONSIDERED A HAZARDOUS LOCATION. SAFETY GLAZING.

**GARAGE NOTES:**

- GARAGES SHALL BE SEPARATED FROM THE RESIDENCE AND ITS ATTIC AREA BY NOT LESS THAN 5/8" TYPE X GNB APPLIED TO THE GARAGE SIDE, WHERE THE SEPARATION IS A FLOOR-CEILING ASSEMBLY, THE STRUCTURE SUPPORTING THE SEPARATION SHALL ALSO BE PROTECTED BY NOT LESS THAN 5/8" TYPE X GYPSUM BOARD OR EQUIVALENT.
- OPENINGS BETWEEN THE GARAGE AND RESIDENCE SHALL BE EQUIPPED WITH SOLID WOOD DOORS NOT LESS THAN 1 3/8" IN THICKNESS, SOLID OR HONEYCOMB CORE STEEL DOORS NOT LESS THAN 1 3/8" THICK, OR 20-MINUTE FIRE-RATED DOORS.
- DUCTS IN THE GARAGE AND DUCTS PENETRATING THE WALLS OR CEILING SEPARATING THE DWELLING FROM THE GARAGE SHALL BE CONSTRUCTED OF A MINIMUM NO. 26 GAGE SHEET STEEL OR OTHER APPROVED MATERIALS AND SHALL HAVE NO OPENINGS INTO THE GARAGE. IRC R304.1.1
- IN SEISMIC ZONES 3 & 4, WATER HEATERS SHALL BE ANCHORED TO RESIST HORIZ. DISPLACEMENT DUE TO EARTHQUAKE MOTION. STRAPPING SHALL BE @ POINTS WITHIN THE UPPER ONE THIRD AND LOWER ONE THIRD PER UPC SEC. 510.5
- PROVIDE OUTDOOR COMBUSTION AIR FOR WATER HEATER
- GARAGE FLOOR SURFACES SHALL BE OF APPROVED NONCOMBUSTIBLE MATERIAL AND THE AREA USED FOR THE PARKING OF AUTOMOBILES OR OTHER VEHICLES SHALL BE SLOPED TO FACILITATE THE MOVEMENT OF LIQUIDS TO A DRAIN OR TOWARD THE MAIN VEHICLE ENTRY DOORWAY.

**AREA SUMMARY:**

|                      |          |
|----------------------|----------|
| MAIN FLOOR:          | 2 025 SF |
| UPPER FLOOR:         | 1 491 SF |
| LIVING/HEATED SPACE: | 4 016 SF |
| GARAGE:              | 500 SF   |
| FRONT PORCH:         | 92 SF    |
| CONCRETE LANDING:    | 63 SF    |
| COVERED PATIO:       | 210 SF   |

**NOTE:**  
REFER TO STRUCTURAL SHEETS FOR SHEAR WALL SCHEDULE AND ENGINEERING PLAN WHICH CONTAIN REFERENCES AND/OR INSTRUCTIONS PERTAINING TO EACH SHEAR WALL INDICATED IN THIS PLAN

**NOTE:**  
EACH DOOR TO BE UNDERCUT A MINIMUM OF 1/2-INCH TO ASSURE FREE FLOW OF FRESH AIR THROUGHOUT HABITABLE ROOMS

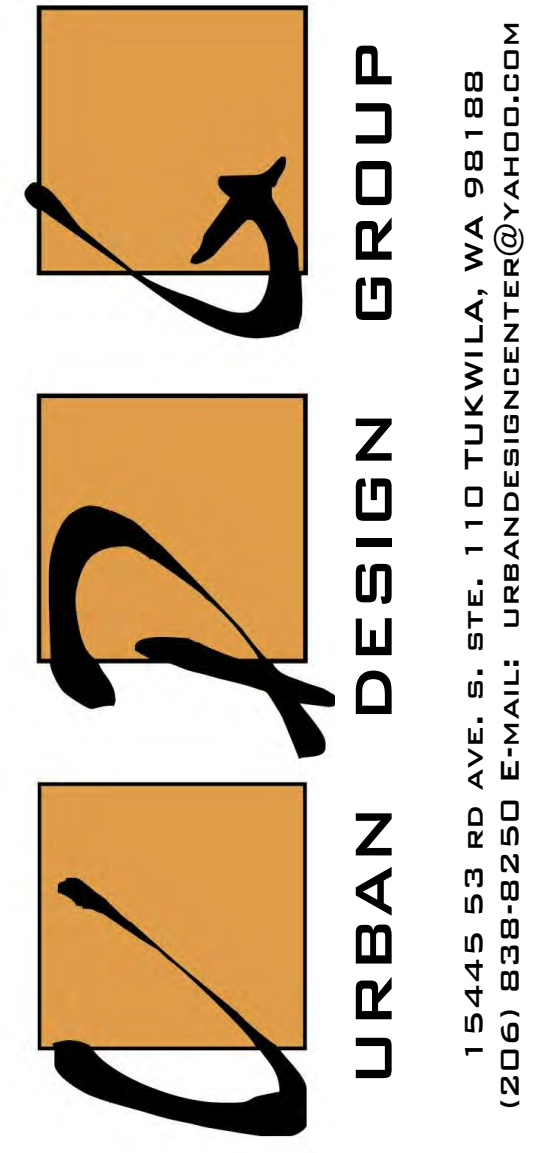
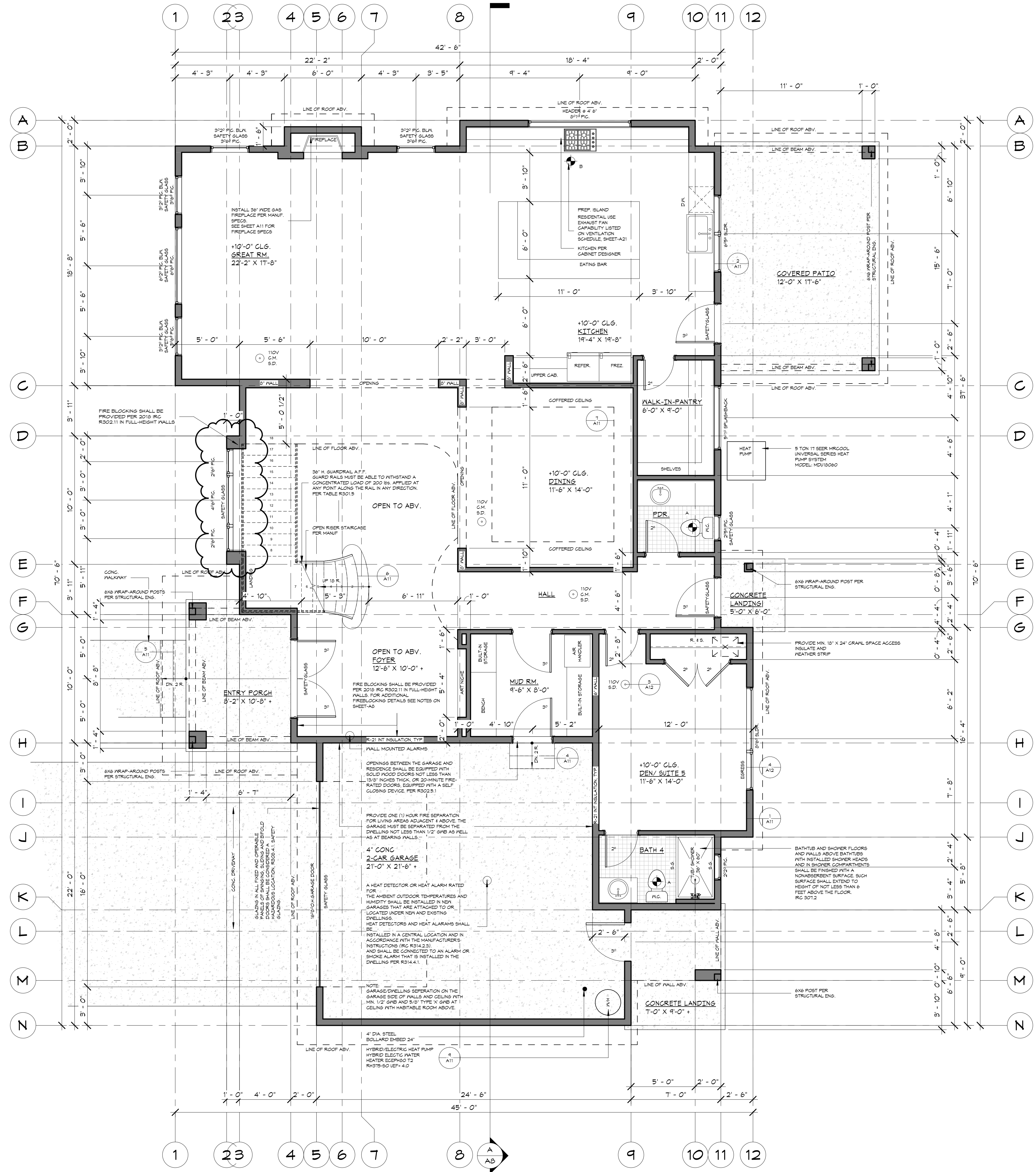
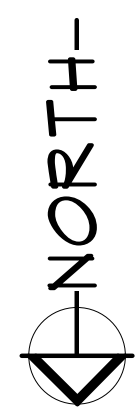
**NOTE:**  
CONTRACTOR TO VERIFY ALL DIMENSIONS AND CONDITIONS OF PROJECT AND REPORT ANY OMISSIONS / DISCREPANCIES TO DESIGNER PRIOR TO COMMENCING WORK. DESIGNER SHALL NOT BE RESPONSIBLE FOR DISCREPANT CONDITIONS RESULTING FROM UNAUTHORIZED WORK PERFORMED BY THE CONTRACTOR.

**NOTE:**  
THE DOOR IN THE DWELLING/GARAGE SEPARATION MUST BE EQUIPPED WITH A SELF-CLOSING OR AUTOMATED CLOSING DEVICE. PER IRC 302.5.1

FOR SMOKE & CARBON MONOXIDE ALARMS NOTES SEE SHEET A5.

**MAIN FLOOR PLAN**

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



**PROJECT NAME:**  
SINGLE-FAMILY RESIDENCE  
8456 SE 40TH  
MERCER ISLAND, WA 98040  
PARCEL #: 502190-0790

**PREPARED FOR:**  
PHILIP SUDO & LLC  
KUN QIAN &  
LAURIE GIAN

**SUBMITTAL/REVISION:** DATE:  
SUBMITTED: --/~/2022  
REVISED: --/~/2022

**DESIGN BY:** PAVEL MELNIK  
**DRAFTED BY:** ANNA KONYAKINA

**MAIN FLOOR PLAN**

**PROJECT NUMBER:**  
21257

**SHEET NUMBER:**



**TYPICAL FLOOR NOTES:**

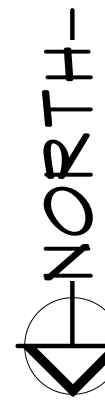
- INSTALL SMOKE DETECTORS IN ALL SLEEPING ROOMS AND AT AREAS ADJACENT TO SLEEPING ROOMS, AND AT CEILING HEIGHT CHANGES GREATER THAN 24". SMOKE DETECTORS TO BE HARD-WIRED AND INTERCONNECTED, WITH BATTERY BACK-UP PER CODE.
- INSTALL CARBON MONOXIDE SENSORS ADJACENT TO SLEEPING AREAS.
- ALL INTERIOR WALLS TO BE 2x4 @ 16" O.C. (U.N.O.)
- ALL EXTERIOR WALLS TO BE 2x6 @ 16" O.C. (U.N.O.)
- UPPER FLOOR HEADERS PER STRUCTURAL @ 8'-0" A.F.F. (U.N.O.)
- WINDOW SIZES ARE NOMINAL ROUGH OPENING, WIDTH AND HEIGHT.
- DOOR SIZES NOTED ARE SLABS NOT ROUGH OPENINGS.
- PROVIDE FIREBLOCKING AT ALL PLUMBING OPENINGS.
- PROVIDE SOLID BLOCKING OVER SUPPORTS.
- WHEN THERE IS USABLE SPACE BOTH ABOVE AND BELOW THE CONCEALED SPACE OF A FLOOR-CEILING ASSEMBLY, DRAFTSTOPS SHALL BE INSTALLED SO THAT THE AREA OF CONCEALED SPACE DOES NOT EXCEED 1000 SF. DRAFTSTOPPING SHALL DIVIDE THE CONCEALED SPACE INTO APPROXIMATELY EQUAL AREAS AND SHALL BE OF 1/2" GYP BOARD OR OTHER APPROVED MATERIALS INSTALLED PARALLEL TO THE FLOOR FRAMING MEMBERS PER CODE.
- PROVIDE FIREBLOCKING TO CUT OFF ALL CONCEALED HORIZONTAL AND VERTICAL DRAFT OPENINGS AND TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND THE ROOF SPACE. FIREBLOCKING SHALL CONSIST OF NOT LESS THAN 2" NOMINAL LUMBER OR OTHER APPROVED MATERIAL.
- ASPHALT-SATURATED FELT FREE FROM HOLES OR BREAKS, WEIGHING NOT LESS THAN 14 POUNDS PER 100 SQUARE FEET AND COMPLYING WITH ASTM D 226 OR OTHER APPROVED WEATHER RESISTANT MATERIAL SHALL BE APPLIED OVER SHEATHING OF ALL EXTERIOR WALLS. APPROVED ALTERNATIVE WEATHERPROOF MEMBRANES SHALL BE USED FOR OPEN JOINT RAIN SCREEN SINGING. WEATHER RESISTANT MATERIALS SHALL BE APPLIED HORIZONTALLY PER MANUFACTURERS RECOMMENDATIONS, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES AND NOT LESS THAN 6 INCHES WHERE JOINTS OCCUR PER CODE.
- APPROVED CORROSION-RESISTIVE FLASHING SHALL BE PROVIDED IN THE EXTERIOR WALL ENVELOPE IN SUCH A MANNER AS TO PREVENT ENTRY OF WATER INTO THE WALL CAVITY OR PENETRATION OF WATER TO THE BUILDING'S STRUCTURAL FRAMING COMPONENTS. THE FLASHING SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL SURFACE AND SHALL BE INSTALLED TO PREVENT WATER FROM REENTERING THE EXTERIOR WALL ENVELOPE. FLASHING SHALL BE INSTALLED AT, BUT NOT LIMITED TO THE FOLLOWING LOCATIONS:
  - THE TOP OF ALL EXTERIOR WINDOW & DOOR OPENINGS
  - INTERSECTIONS OF FRAME WALLS AND MASONRY OR STUCCO
  - UNDER MASONRY, WOOD OR METAL COPINGS AND SILLS
  - CONTINUOUSLY ABOVE ALL PROJECTING WOOD TRIM
  - WHERE EXTERIOR PORCHES, DECKS OR STAIRS ATTACH TO A WALL
  - AT WALL AND ROOF OR SOFFIT INTERSECTIONS
  - AT BUILT-IN GUTTERS
- EXTERIOR LOCATIONS FOR ENVIRONMENTAL AIR DUCT EXHAUST & INTAKE OPENINGS TO BE A MINIMUM OF 3'-0" FROM PROPERTY LINE & MINIMUM 3'-0" FROM BUILDING OPENINGS. EQUIP ALL DUCTS W/ BACK-DRAFT DAMPERS.
- AIR EXHAUST & INTAKE OPENINGS THAT TERMINATE OUTDOORS SHALL BE PROTECTED W/ CORROSION RESISTANT SCREENS, LOUVERS, OR GRILLS W/ 1/4" MINIMUM & 1/2" MAX OPENINGS IN ANY DIMENSION. OPENINGS SHALL BE PROTECTED AGAINST LOCAL WEATHER CONDITIONS PER 2015 IRC.
- DUCTS FOR KITCHEN RANGES SHALL BE OF METAL AND BE EQUIPPED W/ BACK-DRAFT DAMPERS PER CODE.
- ALL INTERIOR FINISHES TO MEET MINIMUM FLAME SPREAD INDEX AND SMOKE DEVELOPMENT INDEX AS REQUIRED BY 2015 IRC.
- UNDER FLOOR CLEANOUT NOT MORE THAN 20' FROM ACCESS DOOR WITH AN UNOBSTRUCTED 30" WIDE X 18" HIGH PATH PATHWAY. CLEANOUTS ARE ACCESSIBLE. 12" CLEARANCE REQUIRED AT LINES LESS THAN OR EQUAL TO 2", 18" CLEARANCE AT LINES GREATER THAN 2". (UPC 107.9)
- GLAZING IN ALL FIXED AND OPERABLE PANELS OF SWINGING, SLIDING AND BIFOLD DOORS SHALL BE CONSIDERED A HAZARDOUS LOCATION, SAFETY GLAZING.

**AREA SUMMARY:**

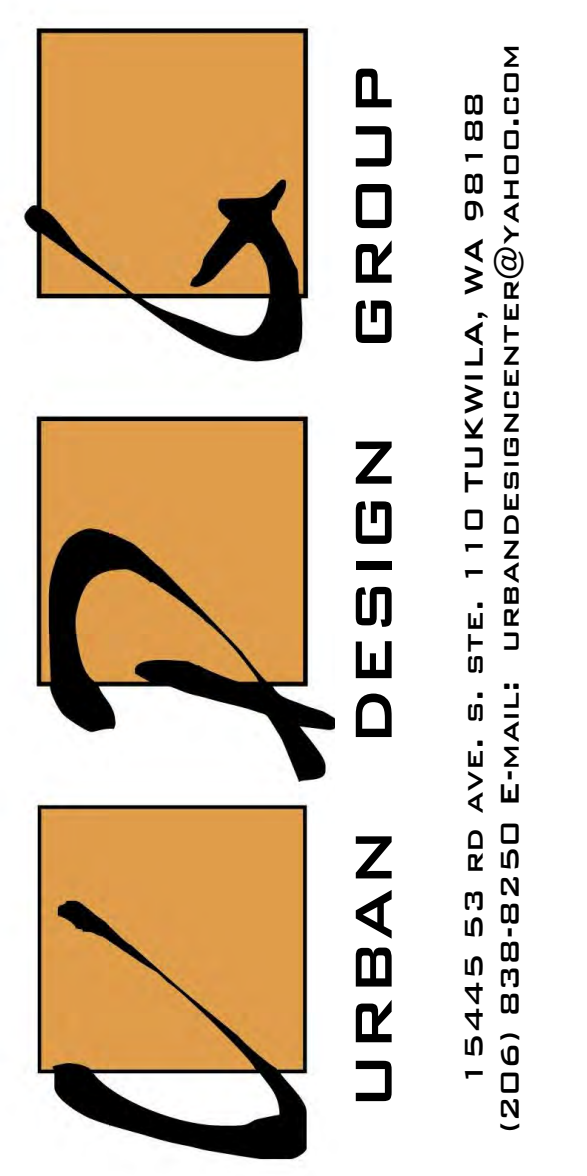
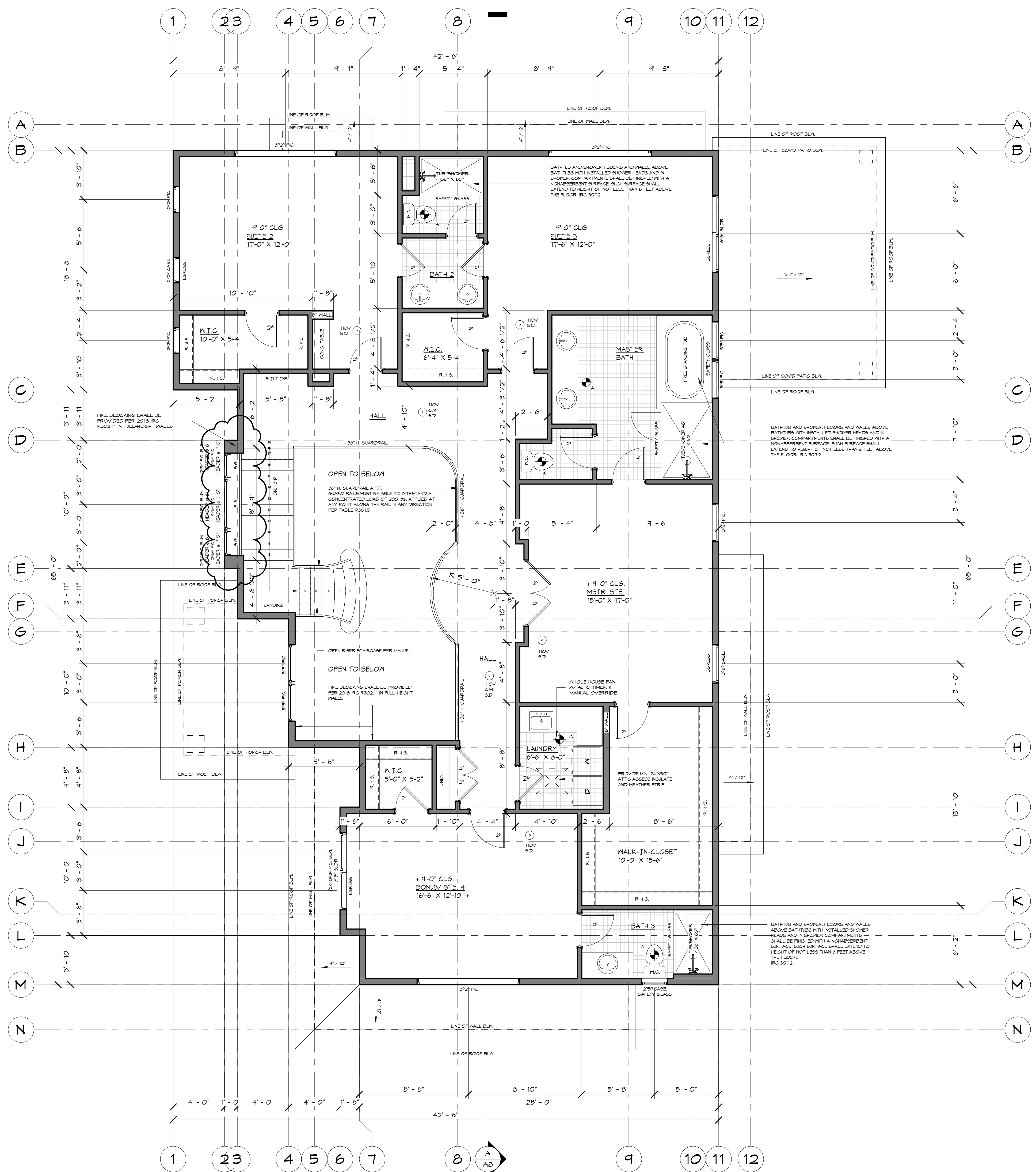
|                      |       |    |
|----------------------|-------|----|
| MAIN FLOOR:          | 2,025 | SF |
| UPPER FLOOR:         | 1,991 | SF |
| LIVING/HEATED SPACE: | 4,016 | SF |
| GARAGE:              | 500   | SF |
| FRONT PORCH:         | 63    | SF |
| CONCRETE LANDING:    | 63    | SF |
| COVERED PATIO:       | 210   | SF |

**UPPER FLOOR PLAN**

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



- NOTE:**  
REFER TO STRUCTURAL SHEETS FOR SHEAR WALL SCHEDULE AND ENGINEERING PLAN WHICH CONTAIN REFERENCES AND/OR INSTRUCTIONS PERTAINING TO EACH SHEAR WALL INDICATED IN THIS PLAN.
- NOTE:**  
EACH DOOR TO BE UNDERCUT A MINIMUM OF 1/2-INCH TO ASSURE FREE FLOW OF FRESH AIR THROUGHOUT HABITABLE ROOMS.
- NOTE:**  
CONTRACTOR TO VERIFY ALL DIMENSIONS AND CONDITIONS OF PROJECT AND REPORT ANY OMISSIONS / DISCREPANCIES TO DESIGNER PRIOR TO COMMENCING WORK. DESIGNER SHALL NOT BE RESPONSIBLE FOR DISCREPANT CONDITIONS RESULTING FROM UNAUTHORIZED WORK PERFORMED BY THE CONTRACTOR.
- NOTE:**  
THE DOOR IN THE DWELLIN/GARAGE SEPARATION MUST BE EQUIPPED WITH A SELF-CLOSING OR AUTOMATED CLOSING DEVICE, PER IRC 302.5.1.
- FOR SMOKE & CARBON MONOXIDE ALARMS NOTES SEE SHEET A5.**
- NOTE:**  
DUCT TO EXTERIOR, FOR INTERMITTENT DISTRIBUTED



**PROJECT NAME:**  
SINGLE-FAMILY RESIDENCE  
8456 SE 40TH  
MERCER ISLAND, WA 98040  
PARCEL #: 502190-0790

**PREPARED FOR:**  
PHILIP SUDO & LLC  
KUN QIAN &  
LAURIE QIAN

**SUBMITTAL/REVISION:** DATE:  
SUBMITTED: --/--/2022  
REVISED: --/--/2022

**DESIGN BY:** FAVEL MELNIK  
**DRAFTED BY:** ANNA KONYAKINA

**SHEET TITLE:**

**UPPER FLOOR PLAN**

**PROJECT NUMBER:**  
21257

**SHEET NUMBER:**



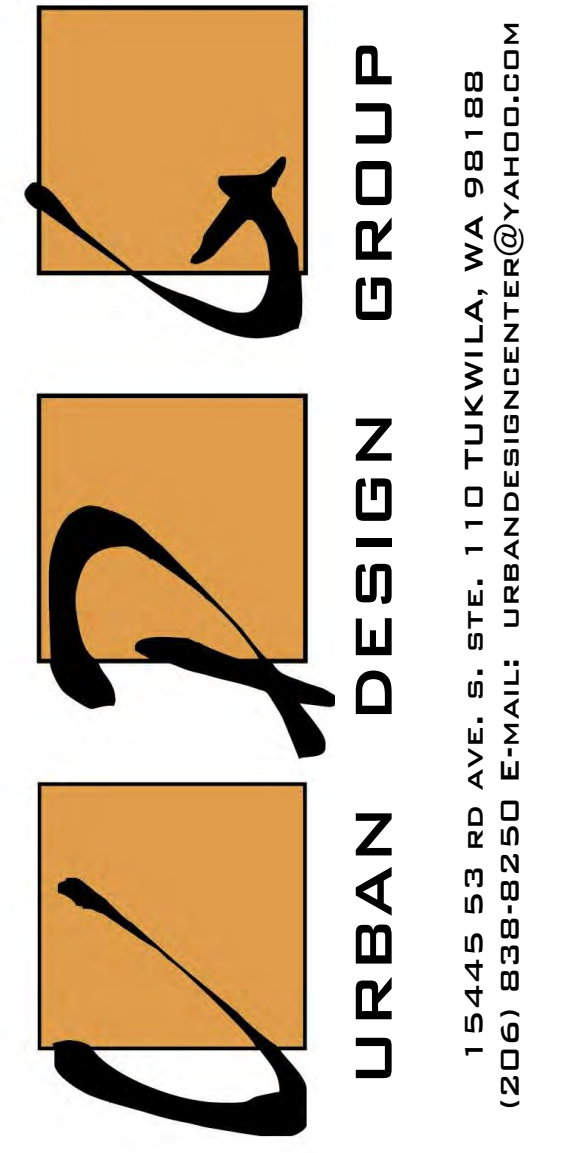
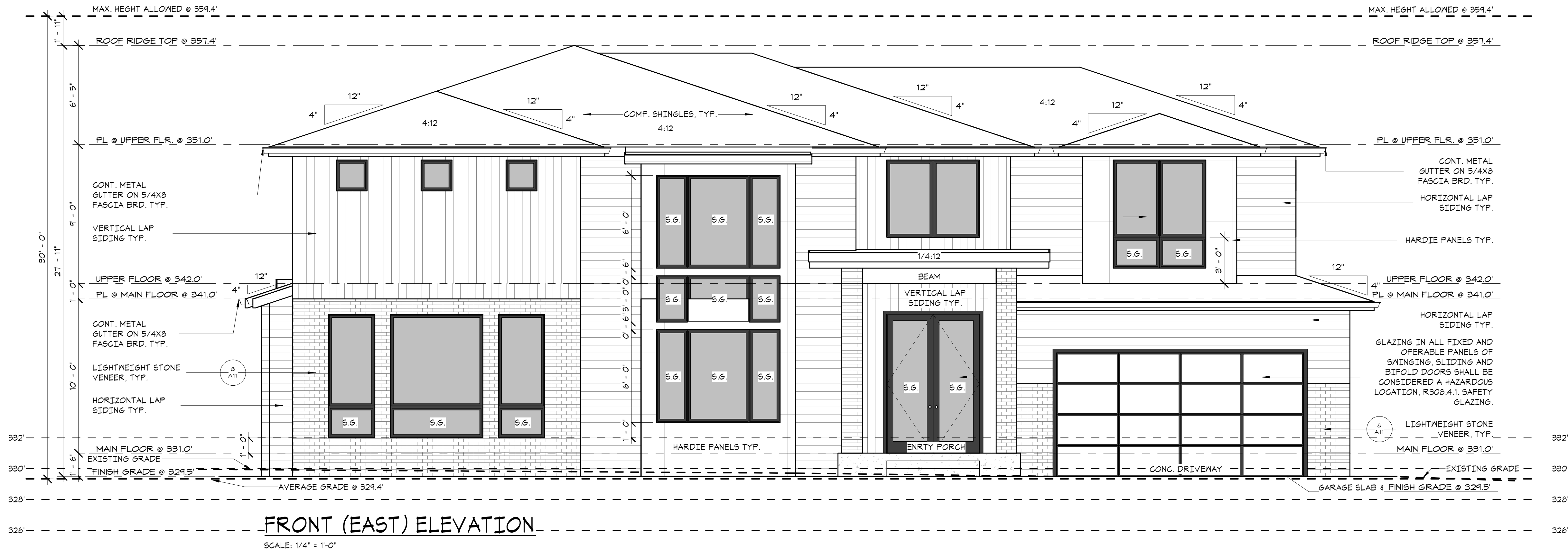
- ELEVATION NOTES:
1. VERIFY SHEAR WALL NAILING & HOLDDOWNS PER PLAN PRIOR TO INSTALLING SIDING.
  2. CAULK ALL EXTERIOR JOINTS & PENETRATIONS.
  3. PROVIDE APPROVED CORROSION RESISTANT FLASHING AT EXTERIOR WALL ENVELOPE PER I.R.C. R703.8
  4. PROVIDE FLASHING AT ROOF PENETRATIONS PER I.R.C. R405.2.8
  5. PROVIDE WEATHER STRIPPING AT ALL EXTERIOR & GARAGE-INTERIOR DOORS.
  6. PROVIDE CONTINUOUS GUTTERS & DOWNSPOUTS @ ALL EAVES, TYP.
  7. ADDRESS OR HOUSE NUMBER TO BE POSTED AND PLAINLY VISIBLE FROM THE STREET FRONTAGE. MIN. 4' HEIGHT, 1/2" STROKE WIDTH AND CONTRASTING BACKGROUND.
  8. PROVIDE STAIRWAY ILLUMINATION PER I.R.C. R303.6
  9. SEE SHEET A1 FOR ADDITIONAL NOTES.
  10. PROVIDE SURFACE DRAINAGE 6" x 10" MIN. AWAY FROM HOUSE FOOTPRINT I.R.C. R401.3

NOTE:  
NO OPERABLE WINDOW SHALL BE INSTALLED LESS THAN 24 INCHES ABOVE FINISHED FLOOR THAT IS GREATER THAN 12 INCHES ABOVE THE FINISH GRADE OR OTHER SURFACE BELOW ON THE EXTERIOR OF THE BUILDING.

NOTE:  
CONTRACTOR TO VERIFY ALL DIMENSIONS AND CONDITIONS OF PROJECT AND REPORT ANY OMISSIONS / DISCREPANCIES TO DESIGNER PRIOR TO COMMENCING WORK. DESIGNER SHALL NOT BE RESPONSIBLE FOR DISCREPANT CONDITIONS RESULTING FROM UNAUTHORIZED WORK PERFORMED BY THE CONTRACTOR.

NOTE:  
FOR HARDIE PANEL DETAILS SEE SHEET A13  
FOR ARTISAN LAP SIDING DETAILS SEE SHEET A14

SMOKE & CARBON MONOXIDE ALARMS:  
SMOKE AND CARBON MONOXIDE ALARMS MUST BE PROVIDED IN ALL REQUIRED LOCATIONS AND MUST BE:  
\* AUDIBLE IN ALL PARTS OF THE HOUSE  
\* INSTALLED PER MANUFACTURER'S INSTRUCTIONS  
NEW HOUSES (IRC R314 & R315)  
SMOKE ALARMS AND CARBON MONOXIDE ALARMS ARE REQUIRED AND MUST BE CONNECTED TO THE MAIN ELECTRICAL SYSTEM WITH BATTERY BACKUP.  
CARBON MONOXIDE ALARMS ARE REQUIRED IN ALL NEW AND EXISTING HOMES, APARTMENTS, CONDOMINIUMS, AND OTHER MULTI-FAMILY UNITS.  
REQUIRED LOCATIONS  
\* SMOKE ALARMS SHALL BE LOCATED IN EACH SLEEPING ROOM AND IN NAPPING AREAS IN A FAMILY HOME CHILD CARE.  
\* SMOKE ALARMS AND CARBON MONOXIDE ALARMS SHALL BE LOCATED OUTSIDE EACH SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.  
\* SMOKE ALARMS AND CARBON MONOXIDE ALARMS SHALL BE LOCATED ON EVERY FLOOR LEVEL, INCLUDING BASEMENTS (DOES NOT INCLUDE CRAWLSPACE AND UNINHABITABLE ATTICS).  
\* IN SPLIT LEVEL FLOOR PLANS, AT THE UPPER LEVEL, PROVIDED THERE IS NO INTERVENING DOOR BETWEEN ADJACENT LEVELS AND THE LOWER LEVEL IS LESS THAN A FULL STORY BELOW THE UPPER LEVEL.  
\* A CARBON MONOXIDE ALARM IS REQUIRED IN A BEDROOM WHEN A FUEL-BURNING APPLIANCE IS INSTALLED IN THE BEDROOM OR ITS ATTACHED BATHROOM.  
\* A COMBINATION ALARM (COMBINED SMOKE AND CARBON MONOXIDE ALARM) IS ACCEPTABLE IN ANY REQUIRED LOCATION.  
\* WALL MOUNTED ALARMS MUST BE NOT MORE THAN 12 INCHES FROM THE ADJUTING CEILING SURFACE.  
\* AVOID PLACING ALARMS LESS THAN 3 FEET FROM SUPPLY REGISTERS OF A FORCED AIR HEATING OR COOLING SYSTEM AND DO NOT PLACE ALARMS IN THE DIRECT AIRFLOW OF THE REGISTERS.  
\* AVOID PLACING ALARMS WITHIN 3 FEET HORIZONTALLY FROM DOORS TO BATHROOMS CONTAINING A BATHTUB OR SHOWER.  
\* DO NOT PLACE ALARMS IN SPACES WHERE TEMPERATURES MAY BE ABOVE OR BELOW THE ALARMS OPERATING TEMPERATURE RANGE.  
\* DO NOT PLACE ALARMS WITHIN 3 FEET OF THE BLADES OF A CEILING FAN.  
\* ALARMS IN PEAKED OR SLOPED CEILINGS MUST BE WITHIN 3 FEET OF THE PEAK, MEASURED HORIZONTALLY, BUT NOT IN THE HIGHEST 4 INCHES OF THE CEILING, MEASURED VERTICALLY.  
A. PHOTOELECTRIC SMOKE ALARMS MUST NOT BE LESS THAN 6 FEET FROM A PERMANENT COOKING APPLIANCE.  
B. IONIZATION SMOKE ALARMS WITH AN ALARM-SILENCING SWITCH MUST NOT BE LESS THAN 10 FEET FROM A PERMANENT COOKING APPLIANCE.  
C. IONIZATION SMOKE ALARMS WITHOUT AN ALARM-SILENCING SWITCH MUST NOT BE LESS THAN 20 FEET FROM A PERMANENT COOKING APPLIANCE.  
CARBON MONOXIDE ALARM LOCATION LIMITATIONS  
\* DO NOT PLACE ALARMS DIRECTLY ABOVE OR BESIDE FUEL-BURNING APPLIANCES.  
\* DO NOT PLACE ALARMS IN DIRECT SUNLIGHT.  
\* DO NOT PLACE ALARMS IN LOW AREAS WHERE CHILDREN CAN REACH. DO NOT PLACE ALARMS BEHIND CURTAINS OR ANY STRUCTURE THAT MIGHT PREVENT CARBON MONOXIDE FROM REACHING THE SENSOR.



PROJECT NAME:  
**SINGLE-FAMILY RESIDENCE**  
**8456 SE 40TH**  
**MERCER ISLAND, WA 98040**  
**PARCEL #: 502190-0790**

PREPARED FOR:  
**PHILIP SUDO & LLC**  
**KUN QIAN &**  
**LAURIE QIAN**

SUBMITTAL/REVISION: DATE:  
SUBMITTED -/-/2022  
REVISED -/-/2022  
DESIGN BY: PAVEL MELNIK  
DRAFTED BY: ANNA KONYAKINA  
SHEET TITLE:

**FRONT AND REAR ELEVATIONS**

PROJECT NUMBER:  
**21257**  
SHEET NUMBER:

**A5**

15445 53 RD AVE, S, STE. 110, TUKWILA, WA 98188  
(206) 838-8250 E-MAIL: URBANDESIGNCENTER@YAHOO.COM

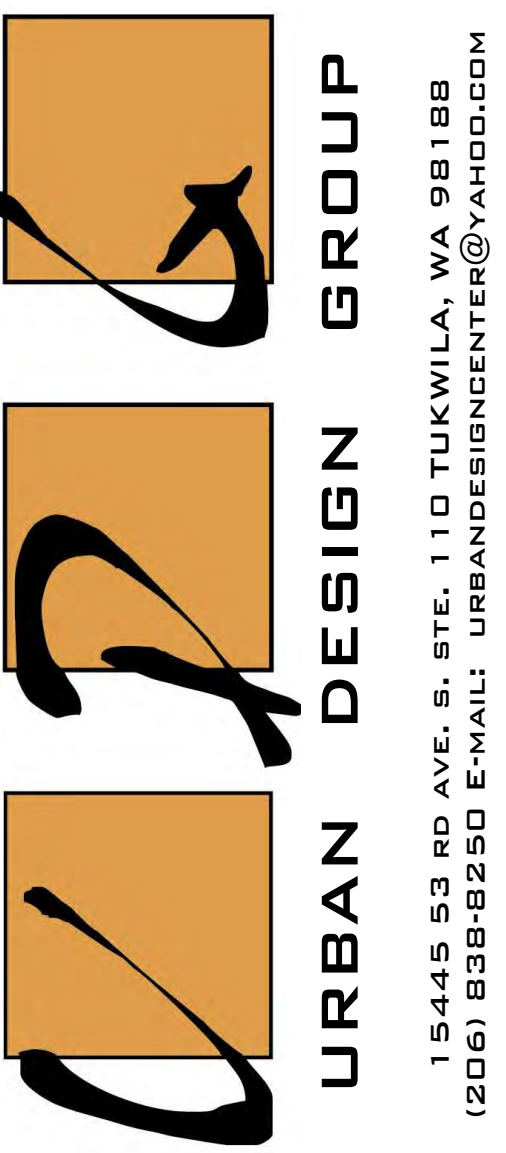
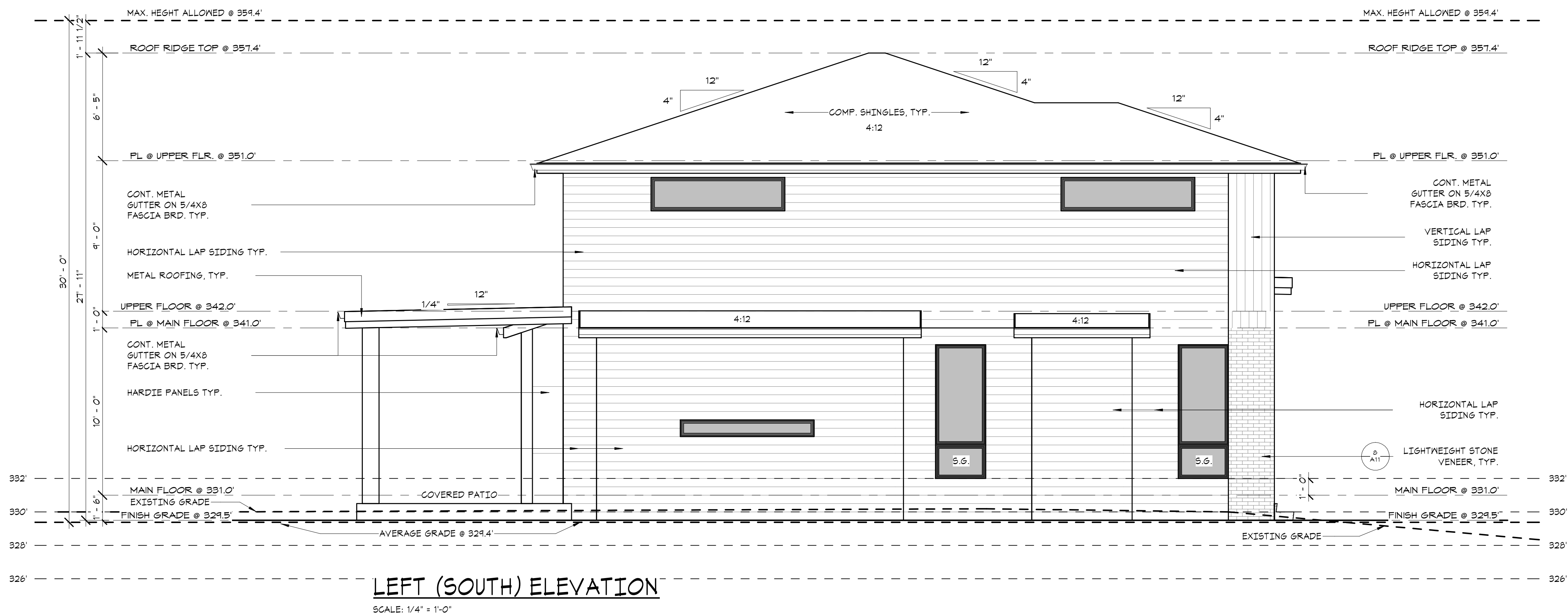
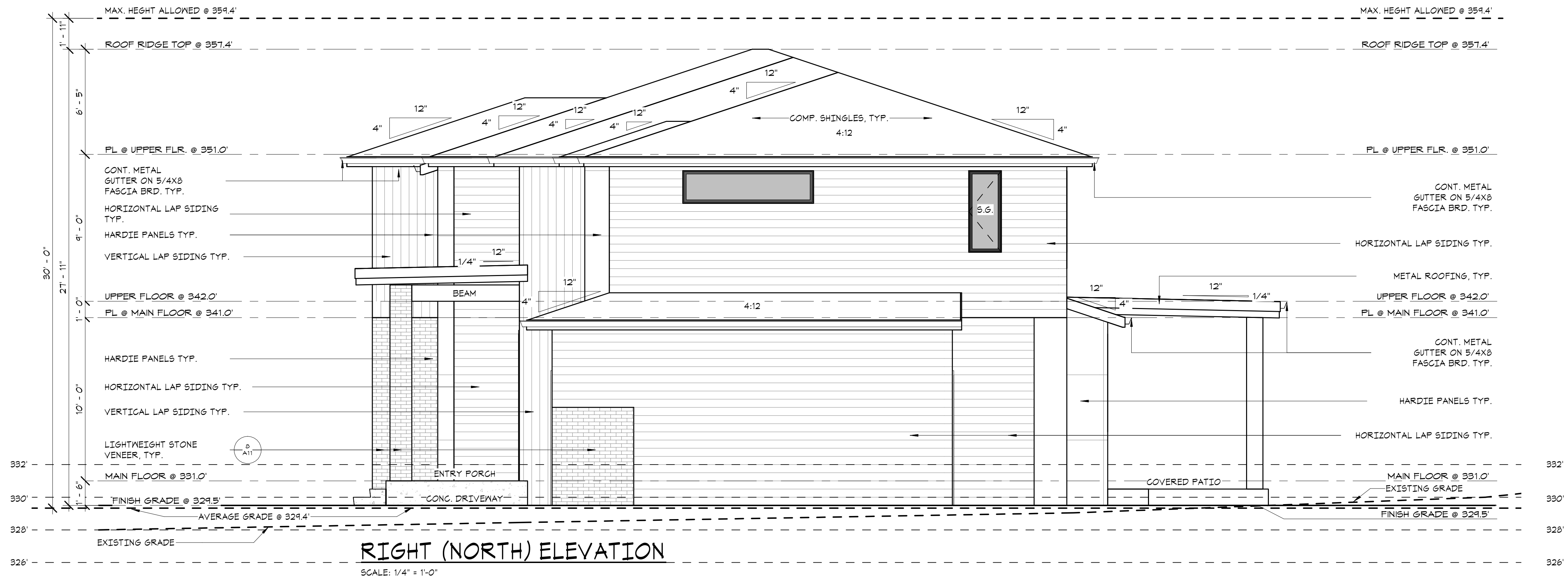


- ELEVATION NOTES:
1. VERIFY SHEAR WALL NAILING & HOLDDOWNS PER PLAN PRIOR TO INSTALLING SIDING.
  2. CAULK ALL EXTERIOR JOINTS & PENETRATIONS.
  3. PROVIDE APPROVED CORROSION RESISTANT FLASHING AT EXTERIOR WALL ENVELOPE PER I.R.C. R103.8
  4. PROVIDE FLASHING AT ROOF PENETRATIONS PER I.R.C. R405.2.8
  5. PROVIDE WEATHER STRIPPING AT ALL EXTERIOR & GARAGE-INTERIOR DOORS.
  6. PROVIDE CONTINUOUS GUTTERS & DOWNSPOUTS @ ALL EAVES, TYP.
  7. ADDRESS OR HOUSE NUMBER TO BE POSTED AND PLAINLY VISIBLE FROM THE STREET FRONTAGE. MIN. 4" HEIGHT, 1/2" STROKE WIDTH AND CONTRASTING BACKGROUND.
  8. PROVIDE STAIRWAY ILLUMINATION PER I.R.C. R303.6
  9. SEE SHEET A1 FOR ADDITIONAL NOTES.
  10. PROVIDE SURFACE DRAINAGE 6" x 10" MIN. AWAY FROM HOUSE FOOTPRINT IRC R401.3

NOTE:  
NO OPERABLE WINDOW SHALL BE INSTALLED LESS THAN 24 INCHES ABOVE FINISHED FLOOR THAT IS GREATER THAN 12 INCHES ABOVE THE FINISH GRADE OR OTHER SURFACE BELOW ON THE EXTERIOR OF THE BUILDING.

NOTE:  
CONTRACTOR TO VERIFY ALL DIMENSIONS AND CONDITIONS OF PROJECT AND REPORT ANY OMISSIONS / DISCREPANCIES TO DESIGNER PRIOR TO COMMENCING WORK. DESIGNER SHALL NOT BE RESPONSIBLE FOR DISCREPANT CONDITIONS RESULTING FROM UNAUTHORIZED WORK PERFORMED BY THE CONTRACTOR.

NOTE:  
FOR HARDIE PANEL DETAILS SEE SHEET A13  
FOR ARTISAN LAP SIDING DETAILS SEE SHEET A14



PROJECT NAME:  
**SINGLE-FAMILY RESIDENCE  
8456 SE 40TH  
MERCER ISLAND, WA 98040  
PARCEL #: 502190-0790**

PREPARED FOR:  
**PHILIP SUDO & LLC  
KUN QIAN &  
LAURIE QIAN**

SUBMITTAL/REVISION: DATE:  
SUBMITTED -/-/2022  
REVISED -/-/2022  
DESIGN BY: PAVEL MELNIK  
DRAFTED BY: ANNA KONYAKINA

SHEET TITLE:  
**LEFT AND  
RIGHT  
ELEVATIONS**

PROJECT NUMBER:  
**21257**

SHEET NUMBER:

**A6**

15445 53 RD AVE, S, STE. 110, TUKWILA, WA 98188  
(206) 838-8250 E-MAIL: URBANDESIGNCENTER@YAHOO.COM





PERSPECTIVE VIEW: FRONT VIEW



PERSPECTIVE VIEW: BIRD EYE VIEW

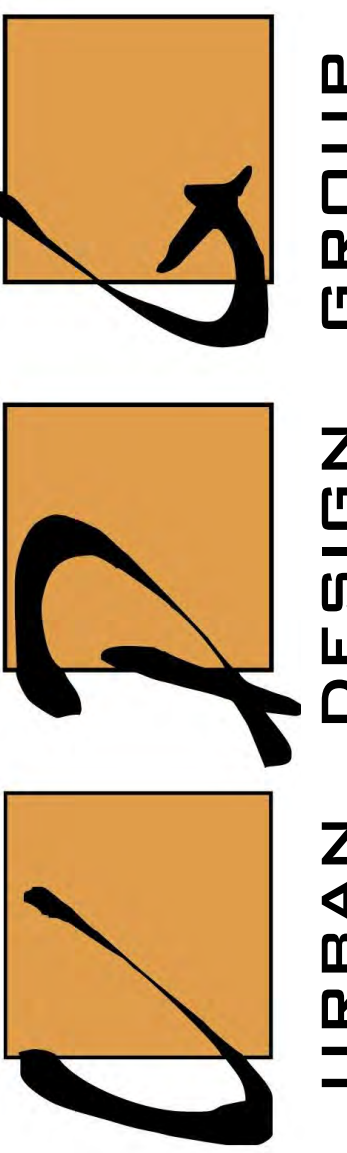


PERSPECTIVE VIEW: REAR ELEVATION



PERSPECTIVE VIEW: REAR/ LEFT ELEVATION

PERSPECTIVE VIEW:  
 PERSPECTIVE VIEWS ARE FOR REFERENCE ONLY.  
 THEY SHOULD NOT BE USED TO DETERMINE ANY PORTION OF THE  
 CONSTRUCTION OTHER THAN GENERAL MATERIAL APPEARANCE. REFER TO  
 ELEVATION SHEETS FOR DETAILS.



URBAN DESIGN GROUP  
 15445 53 RD AVE, S, STE. 110, TUKWILA, WA 98188  
 (206) 838-8250 E-MAIL: URBANDESIGNCENTER@YAHOO.COM

PROJECT NAME:  
 SINGLE-FAMILY RESIDENCE  
 8456 SE 40TH  
 MERCER ISLAND, WA 98040  
 PARCEL #: 502190-0790

PREPARED FOR:  
 PHILIP SUDO & LLC  
 KUN QIAN &  
 LAURIE QIAN

SUBMITTAL/REVISION: DATE:  
 SUBMITTED -/-/2022  
 REVISED -/-/2022  
 DESIGN BY: PAVEL MELNIK  
 DRAFTED BY: ANNA KONYAKINA  
 SHEET TITLE:

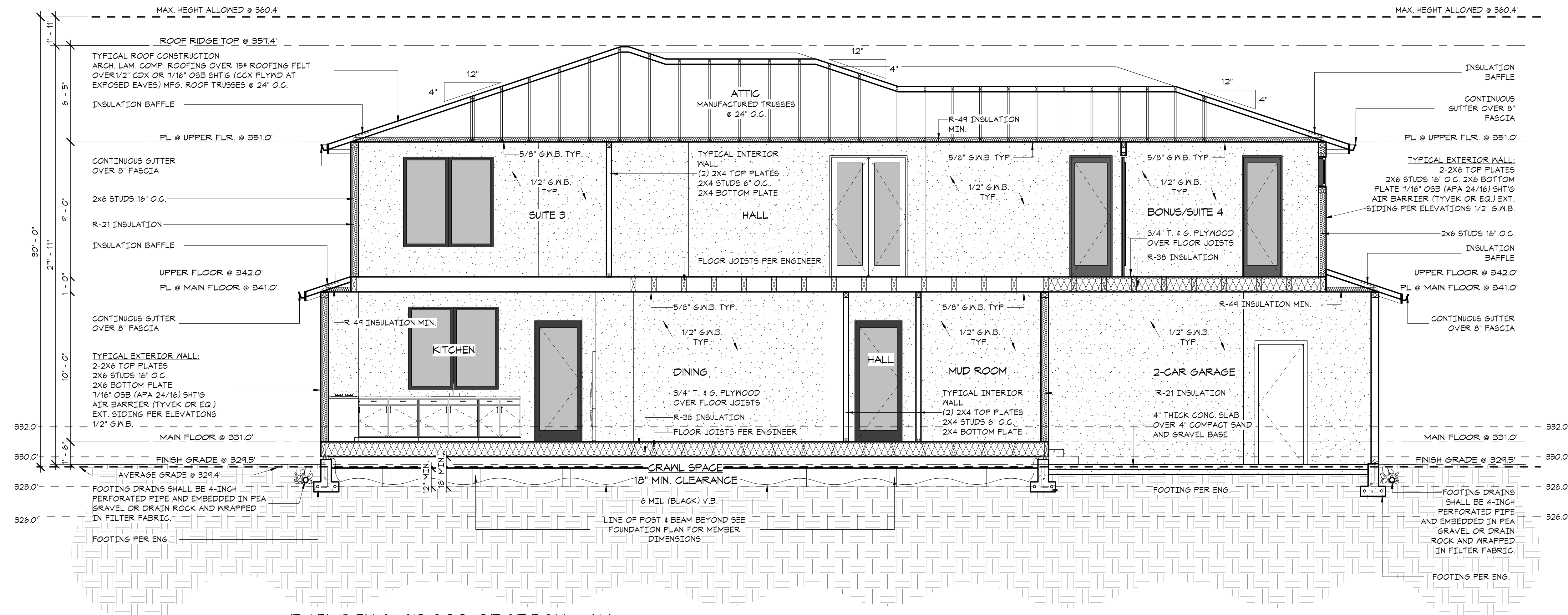
PERSPECTIVE VIEWS

PROJECT NUMBER:  
 21257

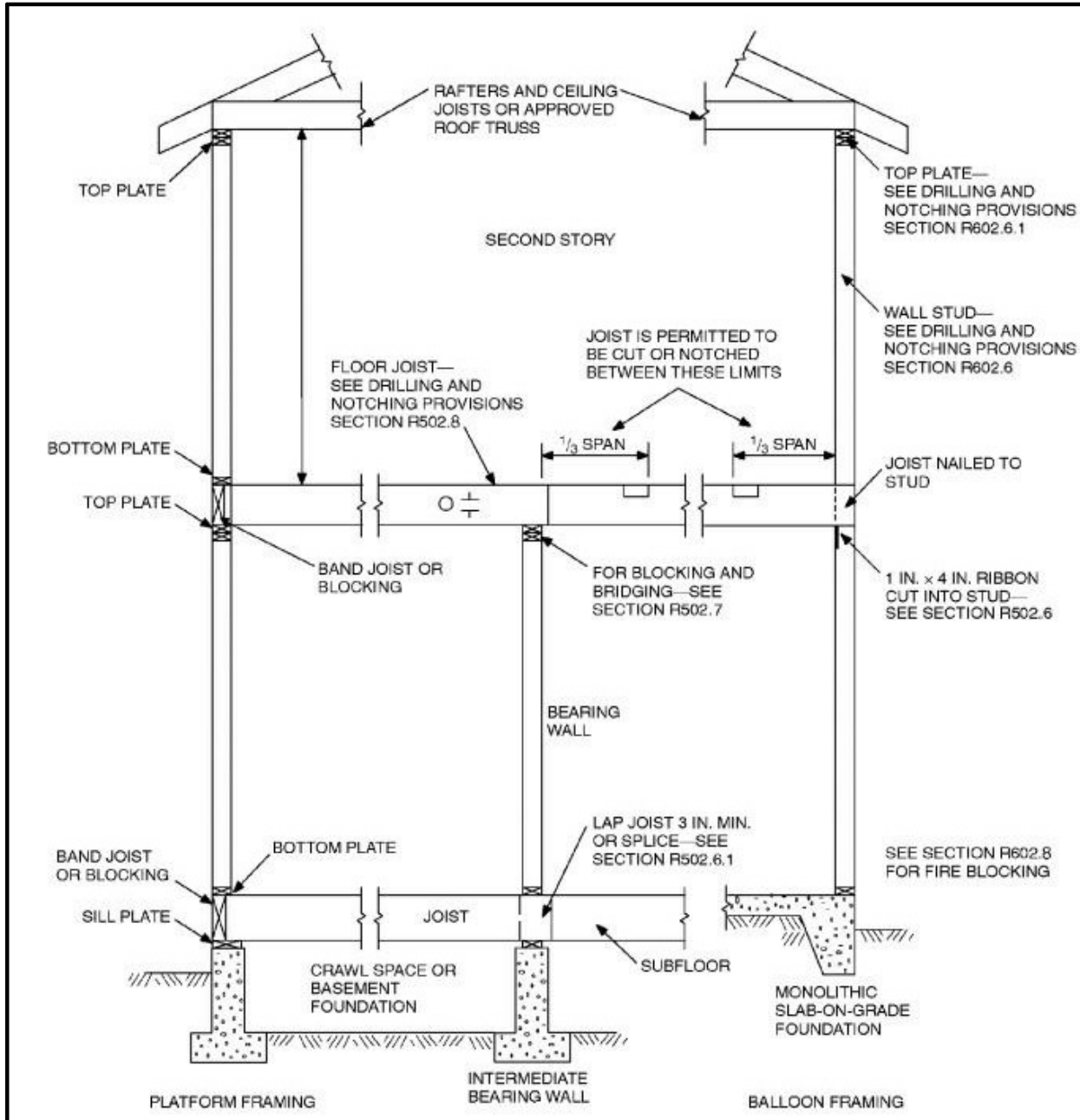
SHEET NUMBER:

A7





**BUILDING CROSS-SECTION - 'A'**  
SCALE: 1/4" = 1'-0"



**2018 IRC SECTION R302.11 FIREBLOCKING.**  
IN COMBUSTIBLE CONSTRUCTION, FIREBLOCKING SHALL BE PROVIDED TO CUT OFF ALL CONCEALED DRAFT OPENINGS (BOTH VERTICAL AND HORIZONTAL) AND TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND THE ROOF SPACE. FIREBLOCKING SHALL BE PROVIDED IN WOOD-FRAME CONSTRUCTION IN THE FOLLOWING LOCATIONS:

- 1) IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES AND PARALLEL ROWS OF STUDS OR STAGGERED STUDS AS FOLLOWS:
  - A) VERTICALLY AT THE CEILING AND FLOOR LEVELS.
  - B) HORIZONTALLY AT INTERVALS NOT EXCEEDING 10 FEET.
- 2) AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILING AND COVE CEILINGS.
- 3) IN CONCEALED SPACES AT STAIR STRINGERS AT THE TOP AND BOTTOM OF THE RUN. ENCLOSED SPACES UNDER STAIRS SHALL COMPLY WITH SECTION R302.7.
- 4) AT OPENINGS AROUND VENTS, PIPES, DUCTS, CABLES AND WIRES AT CEILING AND FLOOR LEVEL, WITH AN APPROVED MATERIAL TO RESIST THE FREE PASSAGE OF FLAME AND PRODUCTS OF COMBUSTION. THE MATERIAL FILLING THIS ANNULAR SPACE SHALL NOT BE REQUIRED TO MEET THE ASTM E 136 REQUIREMENTS.
- 5) FOR THE FIREBLOCKING OF CHIMNEYS AND FIREPLACES, SEE SECTION R1003.19.
- 6) FIREBLOCKING OF CORNICES OF A TWO-FAMILY DWELLING IS REQUIRED AT THE LINE OF DWELLING UNIT SEPARATION. FIRE BLOCKING MATERIALS SHALL CONSIST OF MATERIAL LISTED IN SECTION R302.11.1. LOOSE-FILL INSULATION MATERIAL SHALL NOT BE USED AS A FIREBLOCK UNLESS SPECIFICALLY TESTED IN THE FORM AND MANNER INTENDED. THE INTEGRITY OF ALL FIREBLOCKS SHALL BE MAINTAINED. DRAFTSTOPPING: WHEN THERE IS USABLE SPACE BOTH ABOVE AND BELOW A CONCEALED SPACE OF A FLOOR/CEILING ASSEMBLY, DRAFTSTOPS SHALL BE INSTALLED SO THAT THE AREA OF THE CONCEALED SPACE DOES NOT EXCEED 1000 SQUARE FEET. DRAFTSTOPS SHALL DIVIDE THE CONCEALED SPACE INTO APPROXIMATELY EQUAL AREAS. DRAFTSTOPPING MATERIALS SHALL CONSIST OF MATERIALS LISTED IN SECTION R302.12.1. DRAFTSTOPPING MATERIALS SHALL NOT BE LESS THAN 5 INCH GYPSUM, 3/8 INCH WOOD STRUCTURAL PANELS OR OTHER APPROVED MATERIALS ADEQUATELY SUPPORTED. THE INTEGRITY OF THE DRAFTSTOPS SHALL BE MAINTAINED.

**CERTIFICATE (WSEC R401.3):**  
A PERMANENT CERTIFICATE SHALL BE COMPLETED AND POSTED ON OR WITHIN THREE FEET OF ELECTRICAL DISTRIBUTION PANEL. THE CERTIFICATE MUST LIST THE ENERGY FEATURES OF THE STRUCTURE.

**DUCTS (WSEC R403.2.2):**  
DUCTS MUST BE LEAK TESTED IN ACCORDANCE WITH ASU R5-33 USING THE MAXIMUM DUCT LEAKAGE RATES SPECIFIED. DUCT TIGHTNESS MUST BE VERIFIED BY EITHER THE POSTCONSTRUCTION TEST OR ROUGH-IN TEST PER WSEC R403.2.2. TOTAL LEAKAGE MUST BE LESS THAN OR EQUAL TO 4 CFM PER 100 S.F. OF CONDITIONED FLOOR AREA WHEN TESTED AT A PRESSURE DIFFERENTIAL OF 0.1" W.G. (25 Pa) ACROSS THE ENTIRE SYSTEM. PROVIDE GENERAL NOTES TO ADDRESS THIS REQUIREMENT.

PER WSEC R402.4, THE BUILDING THERMAL ENVELOPE SHALL BE CONSTRUCTED TO LIMIT AIR LEAKAGE(3). THE RESULTS OF THE TEST SHALL BE SIGNED BY THE PARTY CONDUCTING THE TEST AND PROVIDED TO THE CODE OFFICIAL (R402.4.1.2).

PER WSEC R403.1.1, AT LEAST ONE THERMOSTAT PER DWELLING UNIT SHALL BE CAPABLE OF CONTROLLING THE HEATING AND COOLING SYSTEM ON A DAILY SCHEDULE.

PER WSEC R404.1, A MINIMUM OF 90 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE HIGH-EFFICACY LAMPS.

**DUCTS (503.10.1)**

- \* INSTALLATION OF DUCTS IN EXTERIOR WALLS, FLOOR OR CEILING CANNOT DISPLACE REQUIRED INSULATION.
- \* BUILDING CAVITIES CANNOT BE USED AS DUCTS DUCT TESTING (503.10.2)
- \* DUCTS LOCATED OUTSIDE THE CONDITIONED SPACE MUST BE TESTED.

**NOTE:**  
REFER TO STRUCTURAL ENGINEERING SHEETS FOR FOUNDATION/CRAWL SPACE VENTILATION.

**SECTION 312.12: RODENT PROOFING:**  
STRAINER PLATES ON DRAIN INLETS SHALL BE DESIGNED AND INSTALLED SO THAT NO OPENING EXCEEDS 1/2 OF AN INCH IN THE LEAST DIMENSION.

**312.12.1:**  
METER BOXES SHALL BE CONSTRUCTED IN SUCH A MANNER THAT RATS CANNOT ENTER A BUILDING BY FOLLOWING THE SERVICE PIPES FROM THE BOX INTO THE BUILDING.

**312.12.2: METAL COLLARS.**  
IN OR ON BUILDINGS WHERE OPENINGS HAVE BEEN MADE IN WALLS, FLOORS, OR CEILING FOR THE PASSAGE OF PIPES, SUCH OPENINGS SHALL BE CLOSED AND PROTECTED BY THE INSTALLATION OF APPROVED METAL COLLARS SECURELY FASTENED TO THE ADJOINING STRUCTURE.

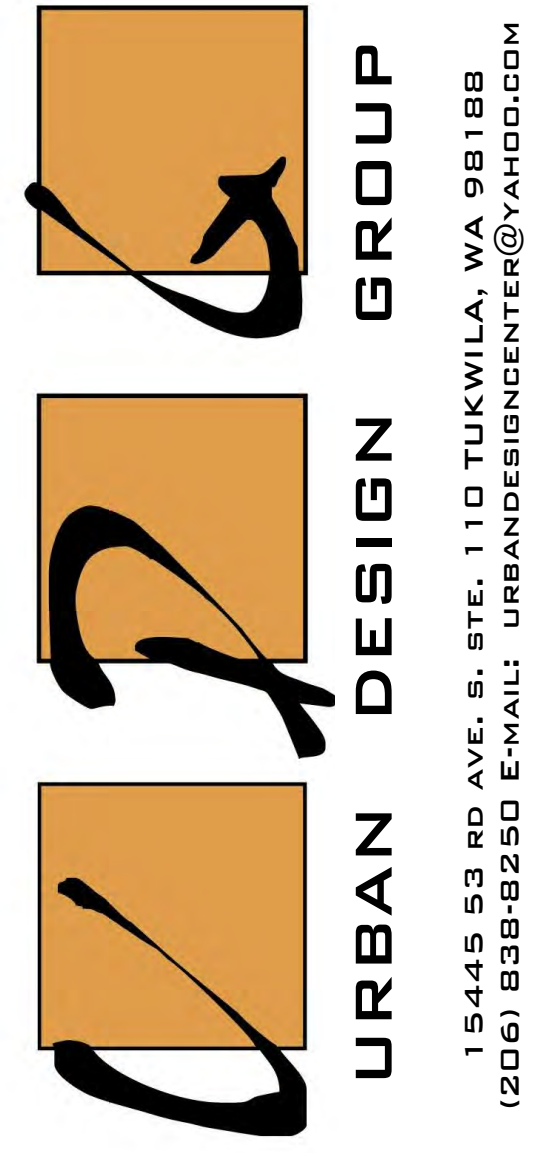
**312.12.3: TUB WASTE OPENINGS.**  
TUB WASTE OPENINGS IN FRAMED CONSTRUCTION TO CRAWL SPACES AT OR BELOW THE FIRST FLOOR SHALL BE PROTECTED BY THE INSTALLATION OF APPROVED METAL COLLARS OR METAL SCREEN SECURELY FASTENED TO THE ADJOINING STRUCTURE WITH NO OPENING GREATER THAN 1/2 OF AN INCH IN THE LEAST DIMENSION.

\* 2018 UNIFORM PLUMBING CODE WITH WASHINGTON STATE AMENDMENTS (UPC)

**NOTE:**  
CONTRACTOR TO VERIFY ALL DIMENSIONS AND CONDITIONS OF PROJECT AND REPORT ANY OMISSIONS / DISCREPANCIES TO DESIGNER PRIOR TO COMMENCING WORK. DESIGNER SHALL NOT BE RESPONSIBLE FOR DISCREPANT CONDITIONS RESULTING FROM UNAUTHORIZED WORK PERFORMED BY THE CONTRACTOR.

**NOTE:**  
FOR MORE DETAILS SEE STRUCTURAL ENGINEERING PLAN.

**NOTE:**  
REFER TO STRUCTURAL SHEETS FOR SHEAR WALL SCHEDULE AND ENGINEERING PLAN WHICH CONTAIN REFERENCES AND/OR INSTRUCTIONS PERTAINING TO EACH SHEAR WALL INDICATED IN THIS PLAN



PROJECT NAME:  
**SINGLE-FAMILY RESIDENCE  
8456 SE 40TH  
MERCER ISLAND, WA 98040  
PARCEL #: 502190-0790**

PREPARED FOR:  
**PHILIP SUDO & LLC  
KUN QIAN &  
LAURIE QIAN**

SUBMITTAL/REVISION: DATE:  
SUBMITTED -/-/2022  
REVISED -/-/2022

DESIGN BY: PAVEL MELNIK  
DRAFTED BY: ANNA KONYAKINA

SHEET TITLE:

**BUILDING  
CROSS-SECTION  
AND DETAILS**

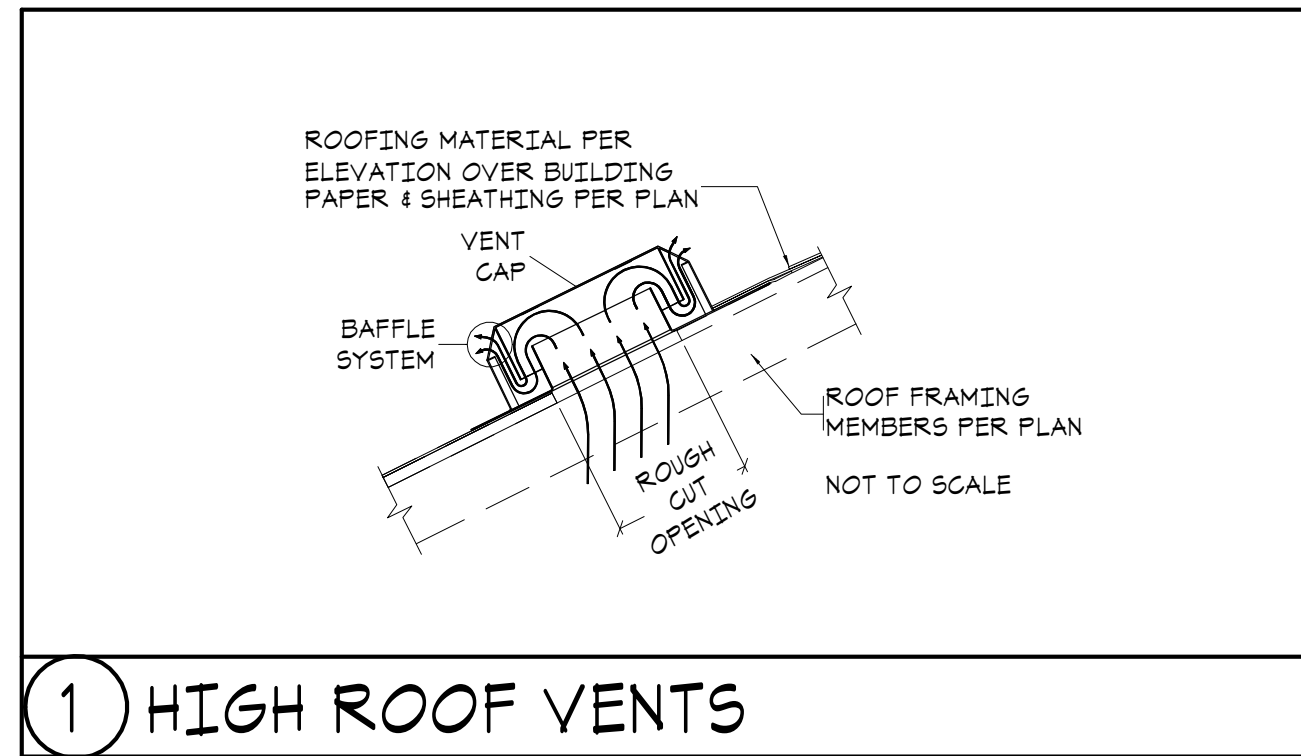
PROJECT NUMBER:  
**21257**

SHEET NUMBER:

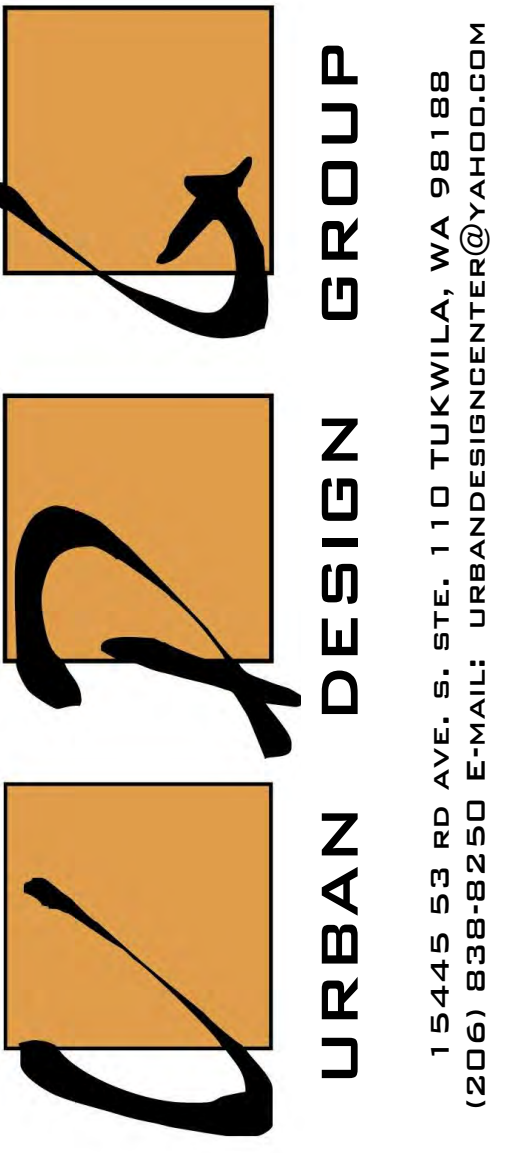
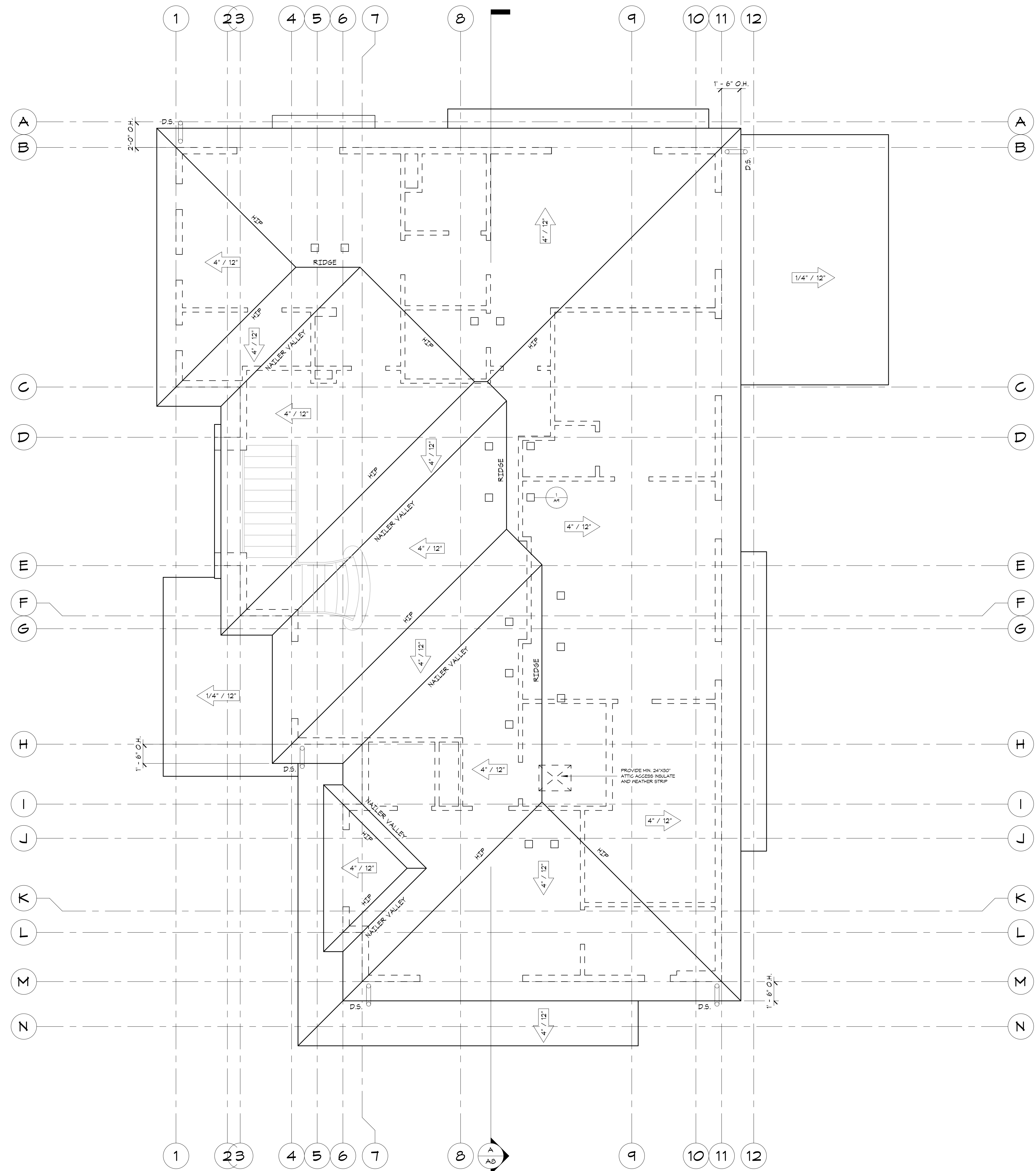


**ROOF LAYOUT**

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



**1 HIGH ROOF VENTS**



PROJECT NAME:  
**SINGLE-FAMILY RESIDENCE**  
**8456 SE 40TH**  
**MERCER ISLAND, WA 98040**  
**PARCEL #: 502190-0790**

PREPARED FOR:  
**PHILIP SUDO & LLC**  
**KUN QIAN &**  
**LAURIE QIAN**

SUBMITTAL/REVISION: DATE:  
 SUBMITTED -/-/2022  
 REVISED -/-/2022

DESIGN BY: PAVEL MELNIK  
 DRAFTED BY: ANNA KONYAKINA

**ROOF LAYOUT**

PROJECT NUMBER:  
**21257**

SHEET NUMBER:

**A9**



### GLAZING SCHEDULE

| ROOM  | # OF WINDS | WIND W. | WIND H. | MANUF.  | FRAME TYPE | WDW. TYPE | MODEL NO. | AIR GAP | GAS | LO-E (U-VAL) | AREA          | N.A.           |       |
|---|------------|---------|---------|---------|------------|-----------|-----------|---------|-----|--------------|---------------|----------------|-------|
| <b>MAIN FLOOR</b>                                     |            |         |         |         |            |           |           |         |     |              |               |                |       |
| STAIRCASE   | 2          | 2.00    | 6.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 6.72  |
| STAIRCASE   | 1          | 4.00    | 6.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 6.72  |
| GREAT RM.   | 4          | 3.00    | 6.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 20.16 |
| GREAT RM.   | 4          | 3.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 6.72  |
| GREAT RM.   | 1          | 6.00    | 6.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 36.00          | 10.08 |
| GREAT RM.   | 1          | 6.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 12.00          | 3.36  |
| KITCHEN   | 1          | 8.00    | 1.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 8.00           | 2.24  |
| KITCHEN   | 1          | 6.00    | 5.50    | MILGARD | VINYL      | SLIDER    | 5120      | 1/2"    | AIR | YES          | 0.28          | 33.00          | 9.24  |
| KITCHEN   | 1          | 3.00    | 8.00    | MILGARD | VINYL      | S.G.D.    | 5621      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 6.72  |
| WALK-IN-PANTRY  | 1          | 5.00    | 1.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 5.00           | 1.40  |
| PDR.  | 1          | 2.00    | 5.50    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 11.00          | 3.08  |
| HALL  | 1          | 3.00    | 8.00    | MILGARD | VINYL      | S.G.D.    | 5621      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 6.72  |
| DEN/SUITE 5   | 1          | 8.00    | 6.00    | MILGARD | VINYL      | SLIDER    | 5120      | 1/2"    | AIR | YES          | 0.28          | 48.00          | 13.44 |
| BATH 4  | 1          | 2.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 4.00           | 1.12  |
| <b>UPPER FLOOR</b>                                    |            |         |         |         |            |           |           |         |     |              |               |                |       |
| BONUS/SUITE 4   | 1          | 6.00    | 5.00    | MILGARD | VINYL      | SLIDER    | 5120      | 1/2"    | AIR | YES          | 0.28          | 30.00          | 8.40  |
| BONUS/SUITE 4   | 2          | 3.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 12.00          | 3.36  |
| OPEN TO BELOW   | 2          | 3.00    | 5.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 30.00          | 8.40  |
| STAIRCASE   | 2          | 2.00    | 6.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 6.72  |
| STAIRCASE   | 2          | 2.00    | 3.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 12.00          | 3.36  |
| STAIRCASE   | 1          | 4.00    | 6.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 24.00          | 6.72  |
| STAIRCASE   | 1          | 4.00    | 3.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 12.00          | 3.36  |
| W.I.C.  | 1          | 2.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 4.00           | 1.12  |
| SUITE 2   | 1          | 2.00    | 2.00    | MILGARD | VINYL      | CASE      | 5521      | 1/2"    | AIR | YES          | 0.28          | 4.00           | 1.12  |
| SUITE 2   | 1          | 2.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 4.00           | 1.12  |
| SUITE 2   | 1          | 8.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 16.00          | 4.48  |
| SUITE 3   | 1          | 8.00    | 2.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 16.00          | 4.48  |
| SUITE 3   | 1          | 6.00    | 6.00    | MILGARD | VINYL      | SLIDER    | 5120      | 1/2"    | AIR | YES          | 0.28          | 36.00          | 10.08 |
| MASTER BATH   | 2          | 3.00    | 5.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 30.00          | 8.40  |
| MSTR. STE.  | 1          | 3.00    | 8.00    | MILGARD | VINYL      | PICTURE   | 5320      | 1/2"    | AIR | YES          | 0.28          | 18.00          | 5.04  |
| MSTR. STE.  | 1          | 3.00    | 6.00    | MILGARD | VINYL      | CASE      | 5521      | 1/2"    | AIR | YES          | 0.28          | 18.00          | 5.04  |
| BATH 3  | 1          | 2.00    | 5.00    | MILGARD | VINYL      | CASE      | 5521      | 1/2"    | AIR | YES          | 0.28          | 10.00          | 2.80  |
|   |            |         |         |         |            |           |           |         |     |              | <b>699.00</b> | <b>181.72</b>  |       |
| <b>DOORS WITH MORE THAN 50% GLASS</b>                 |            |         |         |         |            |           |           |         |     |              |               |                |       |
| FOYER   | 2          | 3.00    | 8.00    | MILGARD | VINYL      | S.G.D.    | 5621      | 1/2"    | AIR | YES          | 0.28          | 48.00          | 13.44 |
|   |            |         |         |         |            |           |           |         |     |              | <b>48.00</b>  | <b>13.44</b>   |       |
| <b>DOORS WITH MORE THAN 50% GLASS-TOTAL:</b>          |            |         |         |         |            |           |           |         |     |              |               |                |       |
|   |            |         |         |         |            |           |           |         |     |              | <b>48.00</b>  | <b>13.44</b>   |       |
| <b>SKYLIGHTS AND SKYWALLS</b>                         |            |         |         |         |            |           |           |         |     |              |               |                |       |
|   |            |         |         |         |            |           |           |         |     |              | <b>697.00</b> | <b>195.16</b>  |       |
|   |            |         |         |         |            |           |           |         |     |              | <b>697.00</b> | <b>195.16</b>  |       |
|   |            |         |         |         |            |           |           |         |     |              | <b>0.28</b>   | <b>U-VALUE</b> |       |
| <b>GLAZING % =</b> $\frac{697.00}{4016.00} = 17.36\%$ |            |         |         |         |            |           |           |         |     |              |               |                |       |
| <b>AVG. U-VALUE =</b> $\frac{195.16}{697.00} = 0.28$  |            |         |         |         |            |           |           |         |     |              |               |                |       |
| <b>NON-LIVING SPACE WINDOWS:</b>                      |            |         |         |         |            |           |           |         |     |              |               |                |       |

### VENTILATION SCHEDULE

| 2018 WASHINGTON STATE ENERGY CODE M1505.4.3(1) & (4) |                       |   |              |
|--|-----------------------|---|--------------|
| SYMBOL   | LOCATION              | MINIMUM FAN REQUIREMENTS  |              |
| A  | Bath, Powder, Laundry | Min. 50 cfm @ 0.25" WG  |              |
| B  | Kitchen               | Min. 100 cfm @ 0.25" WG<br>(Range hood or down draft exhaust fan rated at min.100 cfm at 0.10" WG may be used for exhaust fan requirement.) |              |
| C  | Whole House Fan       | CFM = $\frac{128}{5} = 25.6$<br>(based on 4,016 s.f. floor area & 5 bedrooms)   | M1505.4.3(1) |

SEE EQ. 15-1

### 2018 Residential Ventilation Compliance Summary

Applicant: 40TH MERCER ISLAND Parcel: Permit Number: DWEL21-0295

#### VENTILATION AND INDOOR AIR QUALITY REQUIREMENTS

Whole House Ventilation fan(s) shall be sized according to International Residential Code M1505.4.1. Ventilation rate CFM =  $(0.01 \times \text{total sq.ft.}) + [7.5 \times (\# \text{ of bedrooms} + 1)]$  but not less than 30 cfm.  $\frac{85}{5} = 17$  cfm (Eq. 15-1)

Ventilation systems shall provide minimum flows per Table M1505.4.3(1) and adjusted per M1505.4.3.1 by coefficients of Tables M1505.4.3(2) and M1505.4.3(3) according to the formula  $Q = Q_r \times C_q \times C_f$

#### WHOLE HOUSE VENTILATION SYSTEM

- Exhaust fan with 24-hr timer and fresh air inlets in each habitable room per IRC M1505.4.1.2
  - Integrated with forced air system per IRC M1505.4.1.5
  - Supply fan per IRC M1505.4.1.3
  - Balanced and NOT Distributed
  - Balanced Supply and Exhaust fans per IRC M1505.4.1.4
  - NOT balanced and Distributed
  - Engineered design complying with IMC section 403.8.10
  - NOT balanced and NOT distributed
- Specify location of Whole House Fan: LAUNDRY Size: 128 cfm CONTIN./hrs./day

2018 Table M1505.4.3(1) WHOLE-HOUSE SYSTEM MINIMUM VENTILATION RATES, Q<sub>v</sub>

| Floor Area (sq. ft.) | Number of Bedrooms |    |    |    |     |    |
|----------------------|--------------------|----|----|----|-----|----|
|                      | 0                  | 1  | 2  | 3  | 4   | >4 |
| 0 to 500             | 30                 | 30 | 30 | 35 | 450 | 50 |
| 501 to 1000          | 30                 | 30 | 35 | 40 | 50  | 55 |
| 1001 to 1500         | 30                 | 30 | 40 | 45 | 55  | 60 |
| 1501 to 2000         | 35                 | 35 | 45 | 50 | 60  | 65 |
| 2001 to 2500         | 40                 | 40 | 50 | 55 | 65  | 70 |
| 2501 to 3000         | 45                 | 45 | 55 | 60 | 70  | 75 |
| 3001 to 3500         | 50                 | 50 | 60 | 65 | 75  | 80 |
| 3501 to 4000         | 55                 | 55 | 65 | 70 | 80  | 85 |
| 4001 to 4500         | 60                 | 60 | 70 | 75 | 85  | 90 |
| 4501 to 5000         | 65                 | 65 | 75 | 80 | 90  | 95 |

Greater than 5000 Use equation 15-1 for minimum flow rate

2018 Table M1505.4.3(2) WHOLE-HOUSE VENTILATION QUALITY ADJUSTMENT (C<sub>q</sub>)

| SYSTEM TYPE  | DISTRIBUTED | NOT DISTRIBUTED | Min. adjusted fan size (cfm) |
|--------------|-------------|-----------------|------------------------------|
| BALANCED     | 1.0         | 1.25            |                              |
| NOT BALANCED | 1.25        | 1.5             |                              |

2018 Table M1505.4.3(3) INTERMITTENT WHOLE-HOUSE VENTILATION RATE FACTORS (C<sub>f</sub>)

| Run-time % in each 4-hour segment           | Rate Multiplier | Min. adjusted Fan Size (cfm) | Specified Fan Size (cfm) |
|---|-----------------|------------------------------|--------------------------|
| 50% (2 hrs every 4 hrs, 12 hrs./day)        | 2               |                              |                          |
| 66% (2 hrs 40 min every 4 hrs, 16 hrs./day) | 1.5             |                              |                          |
| 75% (3 hrs every 4 hrs, 18 hrs./day)        | 1.3             |                              |                          |
| 100% (continuously operating)               | 1.0             | 1.5                          | 128                      |

### ROOF VENTILATION

| Standard Truss / Scissor Truss Roof Framing Assembly:                              |  | LOWER ROOF              |
|--|--|-------------------------|
| Roof Area:   | 235 s.f.   |                         |
| Ventilation Required:  | $235 \text{ s.f.} \times 144 \text{ s.i.} / \text{s.f.} / 300 =$ | 112.8 s.i. Req'd        |
| Provide 1/2 ventilation at eaves, 1/2 above midpoint & min. 3 ft. above eave vents |  |                         |
| <b>Eave Ventilation:</b>   |  |                         |
| Birdblocking =   | $4.71 \text{ s.i.} / \text{ft.} \cdot 25\% \text{ reduction} =$  | 3.53 s.i. / ft.         |
| Eave Ventilation Req'd =   | $112.8 \text{ s.i.} / 2 / \text{s.i. per ft.} =$                 | 15.97 l.f.              |
| Provide =  | 16 l.f. birdblocking. Ventilation =                              | 56.52 s.i. Req'd        |
| Min. Ventilation Provided =  | 56.52 s.i. is greater than                                       | 56.4 s.i. Req'd         |
| <b>Upper Roof Ventilation:</b>   |  |                         |
| 7'x7' Attic Roof Jack =  | 49 s.i. each - 25% screen reduction =                            | 36.75 s.i. each.        |
| Upper Ventilation Req'd =  | $112.8 \text{ s.i.} / 2 / \text{s.i. of each vent} =$            | 1.53 vents              |
| Provide =  | 2 -7'x7' roof jacks. Ventilation =                               | 73.50 s.i.              |
| Ventilation Provided =   | 73.50 s.i. is greater than                                       | 56.4 s.i. Req'd         |
| <b>Use : (minimum)</b>   | <b>16 l.f. birdblocking. Ventilation =</b>                       | <b>56.52 s.i.</b>       |
| <b>Use : (minimum)</b>   | <b>2 -7'x7' roof jacks. Ventilation =</b>                        | <b>73.50 s.i.</b>       |
| <b>Total Min. Ventilation Provided =</b>   | <b>130.02 s.i. IS GREATER THAN :</b>                             | <b>112.8 s.i. Req'd</b> |

### ROOF VENTILATION

| Standard Truss / Scissor Truss Roof Framing Assembly:                              |   | MAIN ROOF              |
|--|---|------------------------|
| Roof Area:   | 2350 s.f.   |                        |
| Ventilation Required:  | $2350 \text{ s.f.} \times 144 \text{ s.i.} / \text{s.f.} / 300 =$ | 1128 s.i. Req'd        |
| Provide 1/2 ventilation at eaves, 1/2 above midpoint & min. 3 ft. above eave vents |   |                        |
| <b>Eave Ventilation:</b>   |   |                        |
| Birdblocking =   | $4.71 \text{ s.i.} / \text{ft.} \cdot 25\% \text{ reduction} =$   | 3.53 s.i. / ft.        |
| Eave Ventilation Req'd =   | $1128 \text{ s.i.} / 2 / \text{s.i. per ft.} =$                   | 159.66 l.f.            |
| Provide =  | 160 l.f. birdblocking. Ventilation =                              | 565.20 s.i.            |
| Min. Ventilation Provided =  | 565.2 s.i. is greater than  | 564 s.i. Req'd         |
| <b>Upper Roof Ventilation:</b>   |   |                        |
| 7'x7' Attic Roof Jack =  | 49 s.i. each - 25% screen reduction =                             | 36.75 s.i. each.       |
| Upper Ventilation Req'd =  | $1128 \text{ s.i.} / 2 / \text{s.i. of each vent} =$              | 15.35 vents            |
| Provide =  | 16 -7'x7' roof jacks. Ventilation =                               | 588.00 s.i.            |
| Ventilation Provided =   | 588.00 s.i. is greater than                                       | 564 s.i. Req'd         |
| <b>Use : (minimum)</b>   | <b>160 l.f. birdblocking. Ventilation =</b>                       | <b>565.20 s.i.</b>     |
| <b>Use : (minimum)</b>   | <b>16 -7'x7' roof jacks. Ventilation =</b>                        | <b>588.00 s.i.</b>     |
| <b>Total Min. Ventilation Provided =</b>   | <b>1152.00 s.i. IS GREATER THAN :</b>                             | <b>1128 s.i. Req'd</b> |

**Project Information**  
Mercer Island RESIDENCE

**Heating System Type:**  All Other Systems  Heat Pump

**Design Temperature**  
Instructions: Mercer Island Design Temperature Difference (ΔT) 4°F-Indoor (20 degrees) - Outdoor Design Temp.

**Area of Building**  
Conditioned Floor Area (sq ft) **4,016**

**Average Ceiling Height**  
Average Ceiling Height (ft) **9.5**

**Glazing and Doors**  
U-0.28 U-Factor X Area = UA  
0.280 X 697 = 195.16

**Skylights**  
U-0.50 U-Factor X Area = UA  
0.50 X 0 = 0

**Insulation**  
**Attic**  
R-49 U-Factor X Area = UA  
0.026 X 2380 = 61.10

**Single Rafter or Joist Advanced Ceilings**  
R-49 Advanced U-Factor X Area = UA  
0.020 X 0 = 0

**Above Grade Walls**  
R-21 Intermediate U-Factor X Area = UA  
0.056 X 3471 = 194.38

**Floors**  
R-18 U-Factor X Area = UA  
0.025 X 2373 = 59.33

**Below Grade Walls**  
R-21 Interior U-Factor X Area = UA  
0.042 X 0 = 0

**Slab Below Grade**  
No Slab Below Grade in this project F-Factor X Length = UA  
0.303 X 0 = 0

**Slab on Grade**  
R-10 Fully Insulated U-Factor X Length = UA  
0.360 X 0 = 0

**Location of Ducts**  
Conditioned Space Duct Leakage Coefficient 1.00

**Contact Information**

**Sum of UA** 509.96

**Envelope Heat Load** 0 Btu / Hour

**Air Leakage Heat Load** 0 Btu / Hour

**Building Design Heat Load** 0 Btu / Hour

**Building and Duct Heat Load** 0 Btu / Hour

**Maximum Heat Equipment Output** 0 Btu / Hour

#### ENERGY NOTES:

- A RESIDENTIAL ENERGY COMPLIANCE CERTIFICATE COMPLYING WITH SEC R401.3 IS REQUIRED TO BE COMPLETED BY THE DESIGN PROFESSIONAL OR BUILDING AND PERMANENTLY POSTED WITHIN 3' OF THE ELECTRICAL PANEL PRIOR TO FINAL INSPECTION.
- DUCT LEAKAGE TEST RESULTS SHALL BE PROVIDED TO THE BUILDING INSPECTOR AND HOMEOWNER PRIOR TO AN APPROVED FINAL INSPECTION PER SEC R403.2.2.
- EACH DWELLING UNIT IS REQUIRED TO BE PROVIDED WITH AT LEAST ONE PROGRAMMABLE THERMOSTAT FOR THE REGULATION OF TEMPERATURE PER SEC R403.1. 4. BUILDING AIR LEAKAGE TESTING, DEMONSTRATING THAT LEAKAGE RATE NOT EXCEED 5 AIR CHANGES PER HOUR AND CONFORM TO SEC R402.4.1 THROUGH R402.4.4.
- MINIMUM 90% OF ALL INTERIOR LUMINAIRES SHALL BE HIGH EFFICACY LUMINAIRES. ALL EXTERIOR LIGHTING SHALL BE HIGH EFFICACY LUMINAIRES PER SEC R404.1.
- BUILDING ENVELOPE MEETS REQUIREMENTS OF TABLE R402.1.1, CLIMATE ZONE 4 OF 2018 SEC.

TABLE R302.6

#### DWELLING-GARAGE SEPARATION

| SEPARATION  | MATERIAL   |
|---|--|
| From the residence and attics   | Not less than 1/2-inch gypsum board or equivalent applied to the garage side   |
| From habitable rooms above the garage   | Not less than 5/8-inch Type X gypsum board or equivalent   |
| Structure(s) supporting floor/ceiling assemblies used for separation required by this section | Not less than 1/2-inch gypsum board or equivalent  |
| Garages located less than 3 feet from a dwelling unit on the same lot                         | Not less than 1/2-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area |

For Sl: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

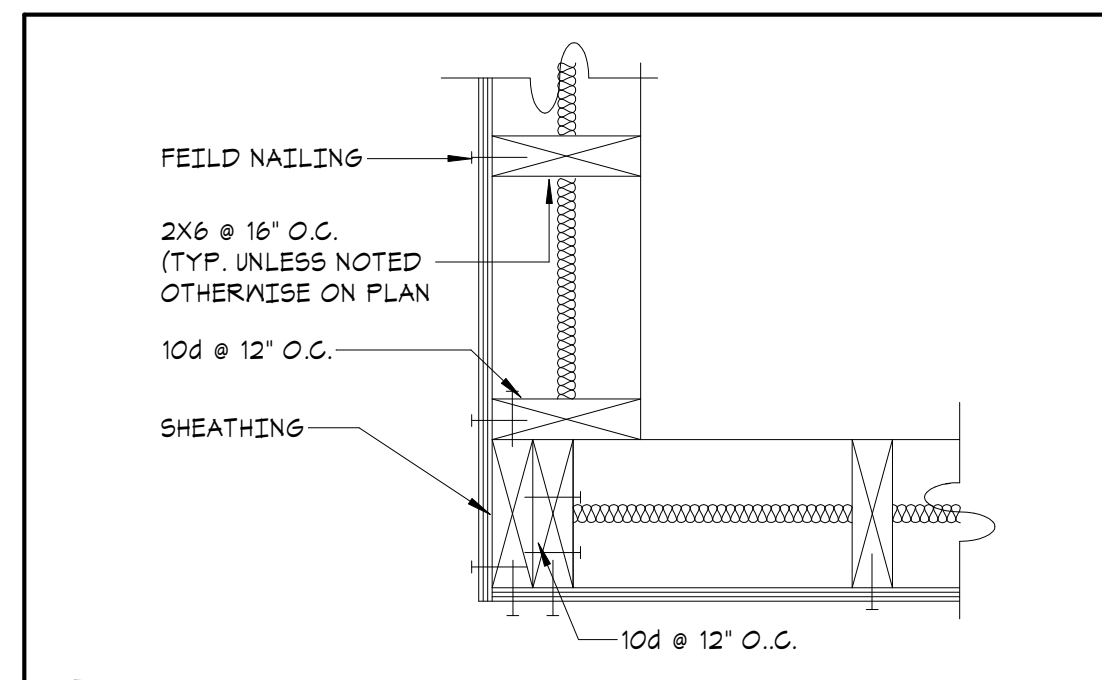
#### R314.2.3

A HEAT DETECTOR OR HEAT ALARM RATED FOR THE AMBIENT OUTDOOR TEMPERATURES AND HUMIDITY SHALL BE INSTALLED IN NEW GARAGES THAT ARE ATTACHED TO OR LOCATED UNDER NEW AND EXISTING DWELLINGS. HEAT DETECTORS AND HEAT ALARMS SHALL BE INSTALLED IN A CENTRAL LOCATION AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. EXCEPTION: HEAT DETECTORS AND HEAT ALARMS SHALL NOT BE REQUIRED IN DWELLINGS WITHOUT COMMERCIAL POWER.

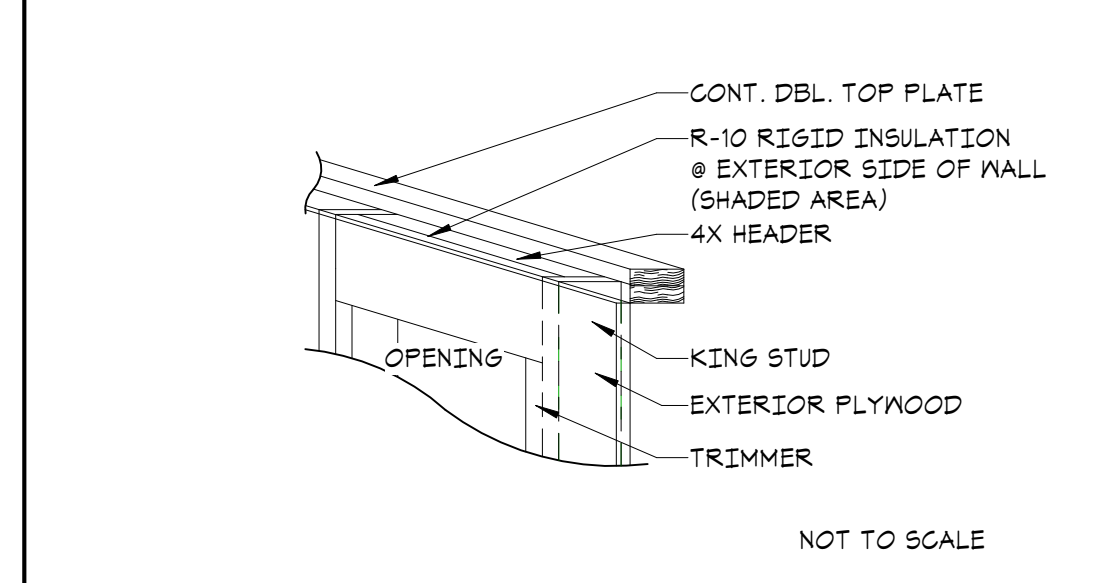
#### REQUIRED SAFETY GLAZING LOCATIONS:

- GLAZING IN SWINGING DOORS EXCEPT LOUVERED WINDOWS AND JALOUSIES COMPLYING WITH IRC R308.2.
- GLAZING IN FIXED AND SLIDING PANELS OF SLIDING DOOR ASSEMBLIES AND PANELS IN SLIDING AND BIFOLD CLOSET DOOR ASSEMBLIES.
- GLAZING IN STORM DOORS.
- GLAZING IN ALL UNFRAMED SWINGING DOORS
- GLAZING IN DOORS, WALLS, FENCES AND ENCLOSURES FOR HOT TUBS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHROOMS, AND SHOWERS. GLAZING IN ANY PORTION OF A BUILDING WALL ENCLOSING THESE COMPARTMENTS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE ANY STANDING OR WALKING SURFACE. EXCEPTION: OPENINGS THROUGH WHICH A 3" SPHERE IS UNABLE TO PASS.
- GLAZING IN FIXED OR OPERABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL IS WITHIN A 24" ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE THE WALKING SURFACE. EXCEPTION: WHERE THERE IS AN INTERVENING WALL OR PARTITION BETWEEN DOOR AND GLAZING OR WHERE THE DOOR ACCESSES A CLOSET 3' OR LESS IN DEPTH.
- GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL, WHEN ALL OF THE FOLLOWING APPLY:
  - EXPOSED AREA OF AN INDIVIDUAL PANE GREATER THAN 9 S.F.
  - BOTTOM EDGE LESS THAN 18" ABOVE THE FLOOR.
  - TOP EDGE GREATER THAN 36" ABOVE THE FLOOR.
  - ONE OR MORE WALKING SURFACES WITHIN 36" HORIZONTALLY OF THE GLAZING.
 EXCEPTION: WHERE A PROTECTIVE 1-1/2"-WIDE BAR IS INSTALLED ON THE ACCESSIBLE SIDE OF THE GLAZING 34" - 38" ABOVE THE FLOOR AND IS CAPABLE OF WITHSTANDING A LOAD OF 50 LBS PER LINEAL FOOT OR WHERE THE BOTTOM EDGE OF THE GLASS IS 28" OR MORE ABOVE GRADE, A ROOF, WALKING SURFACE, OR OTHER HORIZONTAL SURFACE.
- GLAZING IN RAILINGS REGARDLESS OF AREA OR HEIGHT ABOVE A WALKING SURFACE. INCLUDES STRUCTURAL BALUSTER PANELS AND NONSTRUCTURAL IN-FILL PANELS.
- GLAZING IN WALLS AND FENCES ENCLOSING INDOOR AND OUTDOOR SWIMMING POOLS, HOT TUBS, AND SPAS WHERE THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60" ABOVE A WALKING SURFACE AND WITHIN 60" HORIZONTALLY OF THE WATER'S EDGE. THIS WILL APPLY TO ALL SINGLE

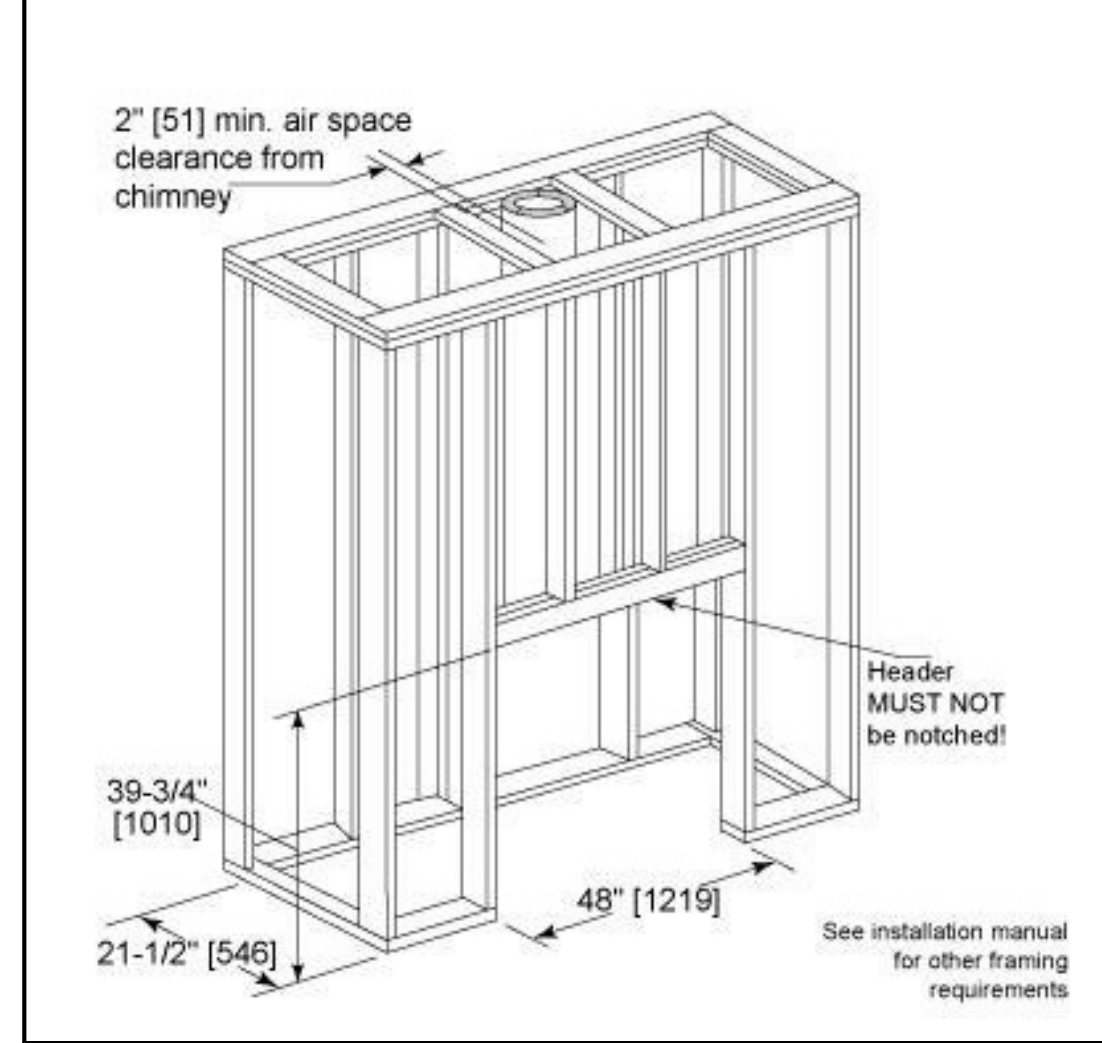




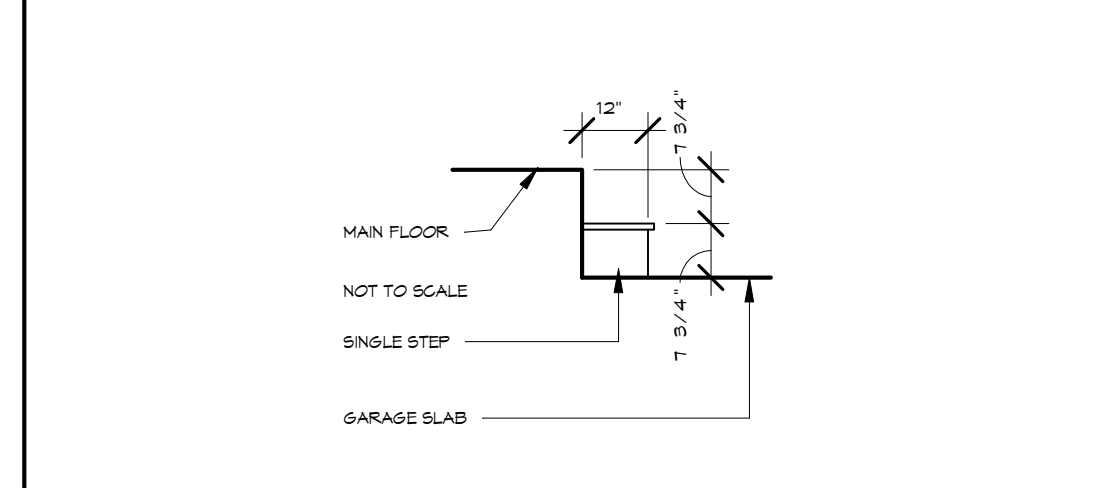
1 CORNER FRAMING



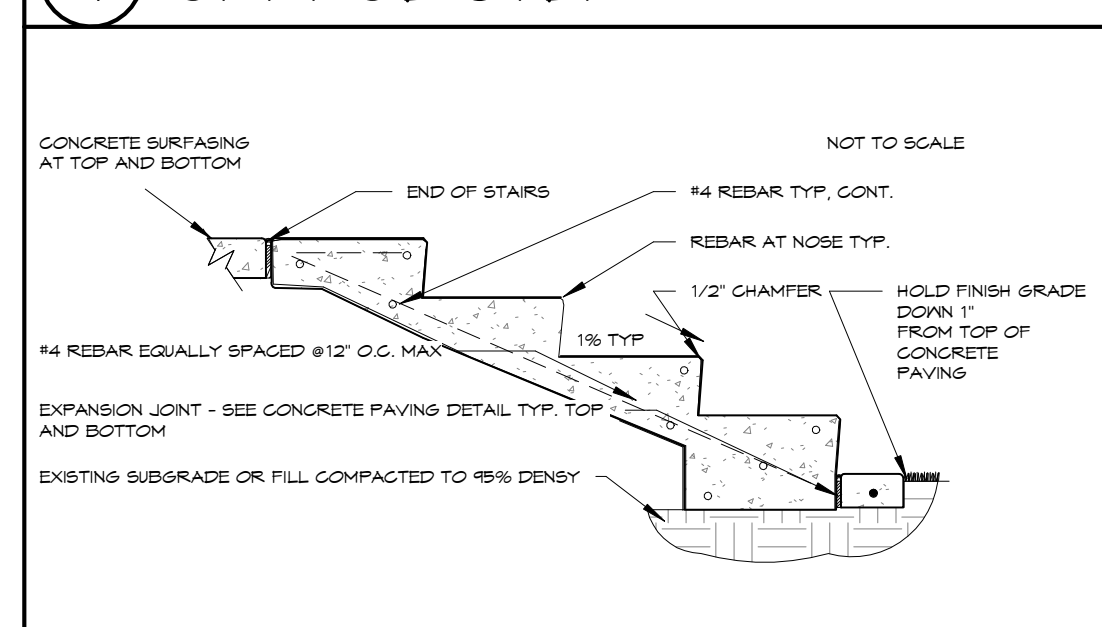
2 HEADER/ INSULATION



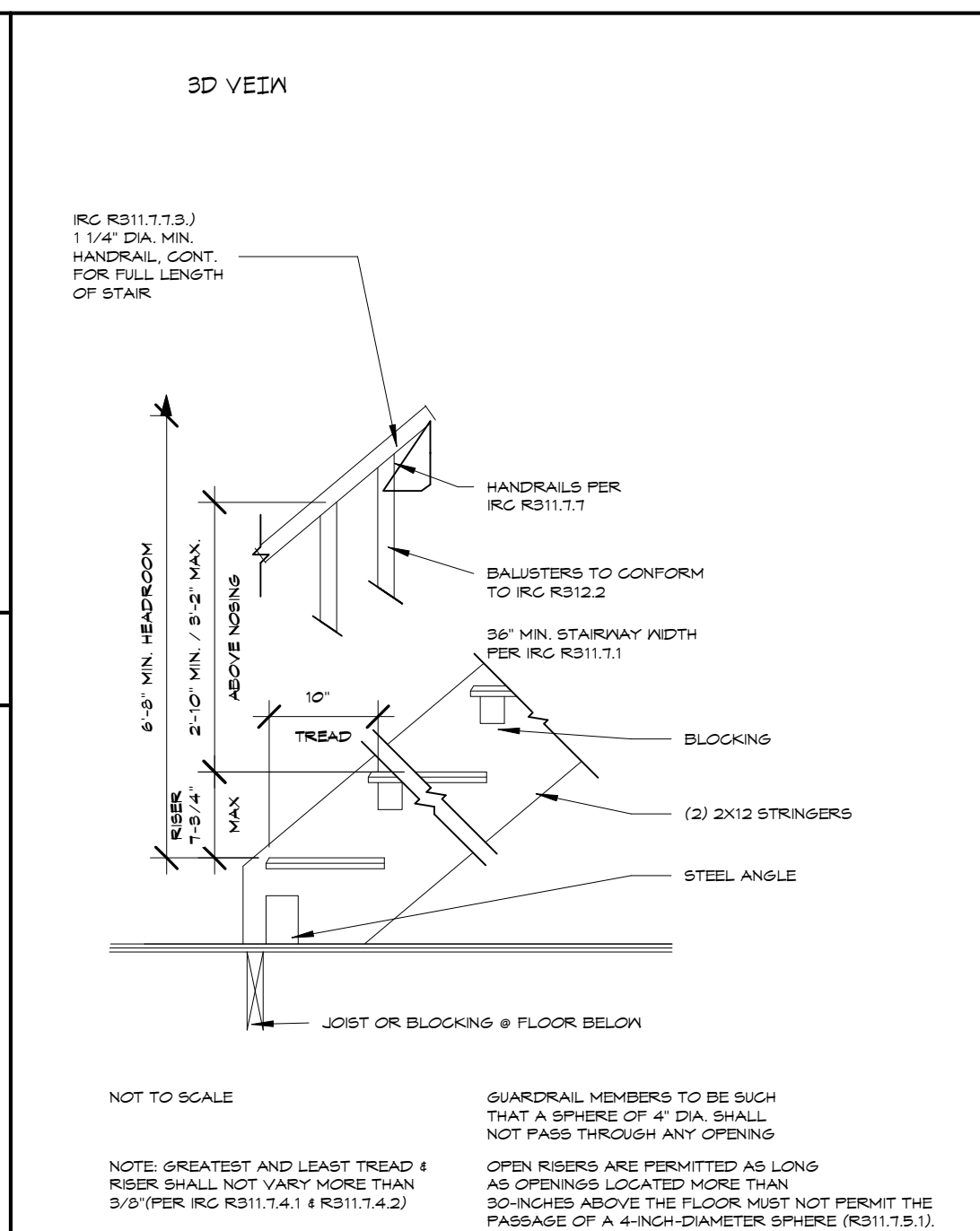
3 FIREPLACE FRAMING



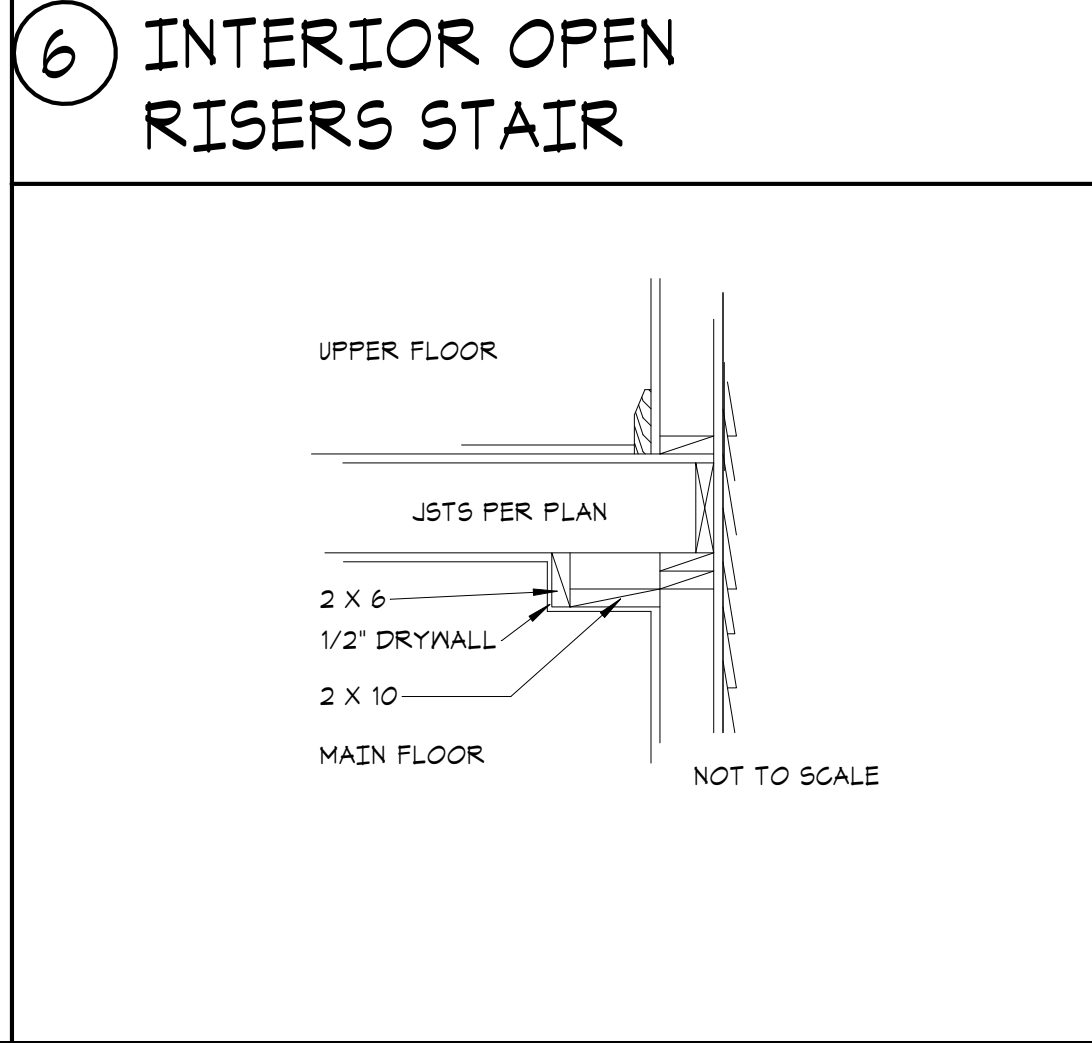
4 GARAGE STEP



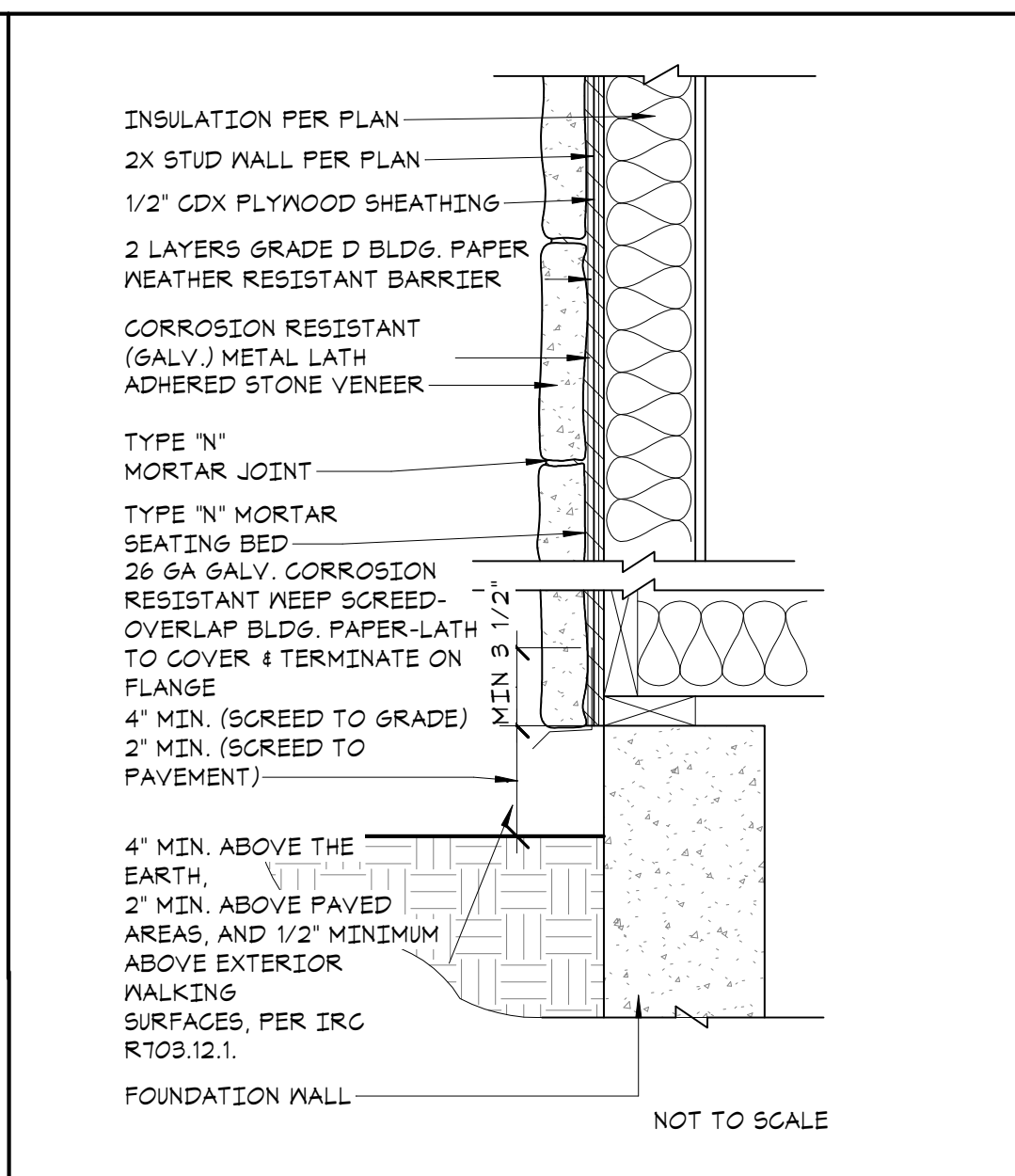
5 EXTERIOR STAIR



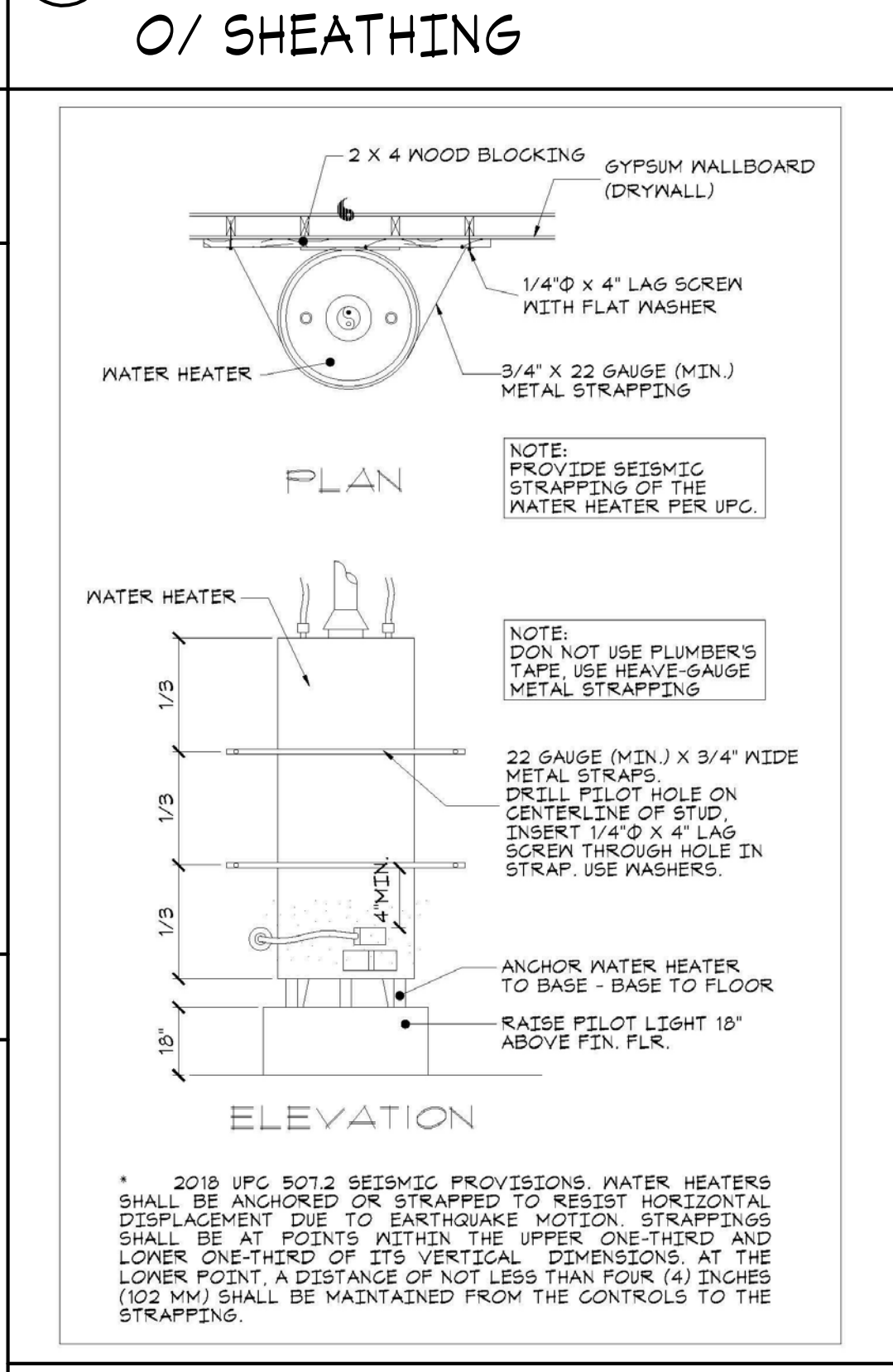
6 INTERIOR OPEN RISERS STAIR



7 COFFERED CEILING



8 ADHERED VENEER O/ SHEATHING



9 WATER HEATER ANCHORAGE

**ALTAIR™-C & ALTAIRDLX™-C SERIES**

**DIRECT-VENT FIREPLACES**

Appliance Specifications

| Model     | A           | B         | C           | D         | E           | F         |
|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| Altair-C  | AltairDLX-C | Altair-C  | AltairDLX-C | Altair-C  | AltairDLX-C | Altair-C  |
| 18" x 24" | 24" x 24"   | 30" x 24" | 36" x 24"   | 42" x 24" | 48" x 24"   | 54" x 24" |
| 18" x 36" | 24" x 36"   | 30" x 36" | 36" x 36"   | 42" x 36" | 48" x 36"   | 54" x 36" |

ASTRIA FIREPLACES

**ALTAIR™-C & ALTAIRDLX™-C SERIES**

Product Reference Information

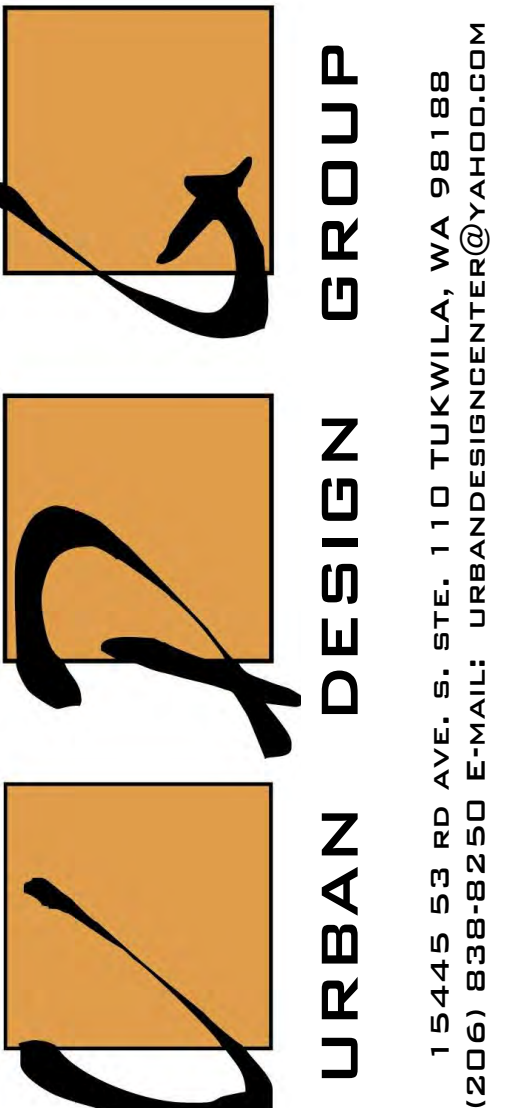
Clearances

Shelf Height

Typical Installation

ASTRIA FIREPLACES

FIREPLACE SPECS



PROJECT NAME:  
**SINGLE-FAMILY RESIDENCE**  
**8456 SE 40TH**  
**MERCER ISLAND, WA 98040**  
**PARCEL #: 502190-0790**

PREPARED FOR:  
**PHILIP SUDO & LLC**  
**KUN QIAN &**  
**LAURIE QIAN**

SUBMITTAL/REVISION: DATE:  
 SUBMITTED --/--/2022  
 REVISED --/--/2022

DESIGN BY: PAVEL MELNIK  
 DRAFTED BY: ANNA KONYAKINA

SHEET TITLE:

DETAILS

PROJECT NUMBER:  
**21257**

SHEET NUMBER:

**A11**

15445 53 RD. AVE. S., STE. 110, TUKWILA, WA 98188  
 (206) 838-8250 E-MAIL: URBANDESIGNCENTER@YAHOO.COM



**Basic Stairs**  
This tip sheet reflects code requirements of the 2018 International Residential Code (IRC) with Washington State Amendments.

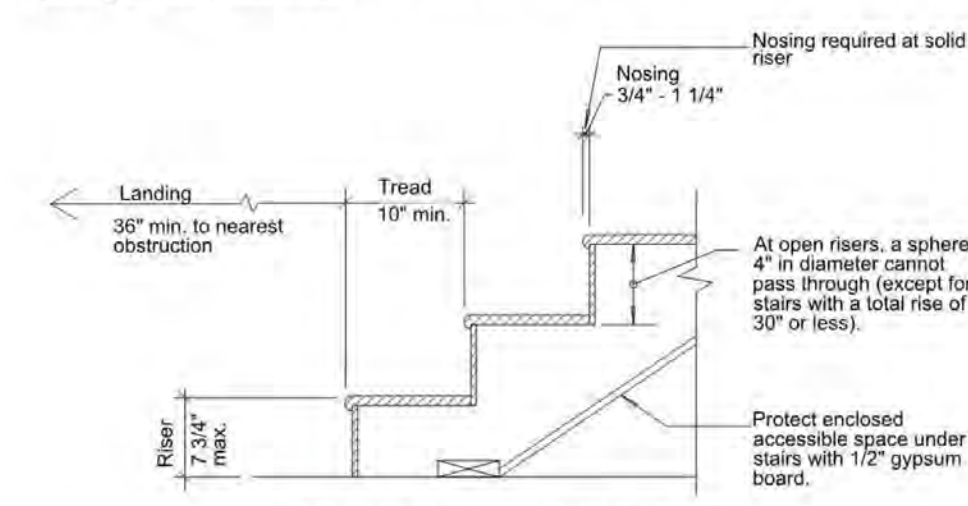


Figure 1: Typical Stair Treads and Risers

**Stair Treads and Risers**

The largest tread or riser within any flight of stairs is not to exceed the smallest by more than 3/8 inches. (R311.7.5)

**Illumination**

Interior stairways shall be provided with an artificial light source to illuminate landings and treads. There shall be a wall switch at each floor level to control the light source where the stairway has 6 or more risers. (R303.7)

Exterior stairways shall be provided with an artificial light source located at the top landing of the stairway and located at the bottom landing where accessing a basement. (R303.8)

**Handrails**

Handrails are required on at least one side for stairways with four or more risers. See Tip Sheet 2 for additional information regarding handrails. (R311.7.8)

**Landings**

Landings are required at the top and the bottom of stairways. A floor landing is not required at the top of an interior flight of stairs, provided a door does not swing over the stairs. (R311.7.6)

A landing extending the width of the stair and measuring a minimum of 36 inches in the direction of travel is required at the top and bottom of every stairway. (R311.7.6)

**Circular, Winding, or Spiral Stairways**

For exceptions related to the construction of circular, winding, or spiral stairways, see IRC R311.7.5.2.1 and R311.7.10.

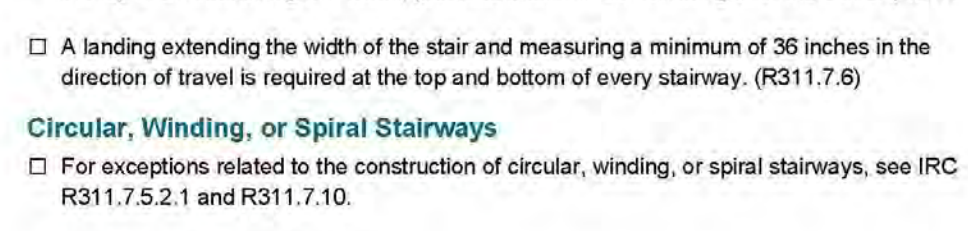


Figure 2: Typical Stair Elevation

**Headroom Clearance Requirements**

The minimum headroom of a stair is 6'-8" (measured vertically from the sloped plane adjoining the tread nosing). (R311.7.2)

No more than 12"-7" inches between floor levels or landings. (R311.7.3)



Figure 3: Headroom Clearance Requirements

1 BASIC STAIRS DETAIL

**Residential Guards (Guardrails)**  
This tip sheet reflects code requirements of the 2018 International Residential Code (IRC) with Washington State Amendments.

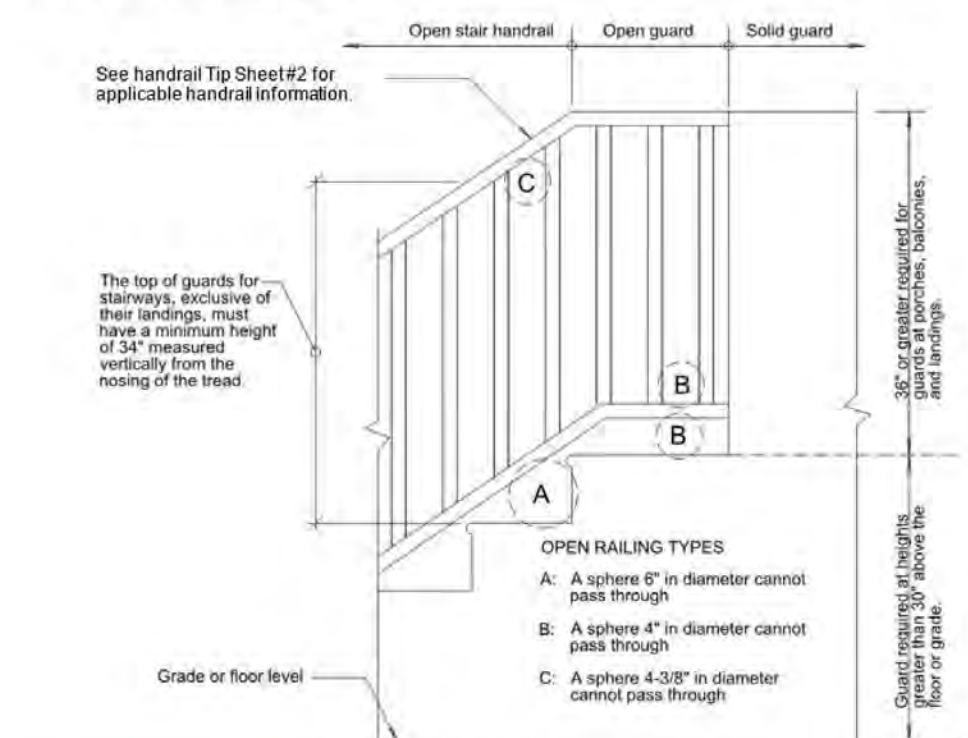


Figure 1: Guard Elevation (IRC R312)

**Requirements**

Guards shall comply with IRC R312.1; refer to Figure 1 for major requirements.

Guards shall be structurally designed to comply with IRC Table R301.5 (i.e., designed for a 200-pound load in any direction along the top and a 50-pound point load elsewhere).

For glass guards or guards with glazing, see IRC R308.4.4.

2 GUARDRAILS DETAIL

**Smoke, Heat, and Carbon Monoxide Alarms**  
This tip sheet reflects code requirements of the 2018 International Residential Code (IRC) with Washington State Amendments and the 2016 edition of NFPA 72.

**Definitions**

**Smoke alarm:** A device designed to respond when it senses smoke, typically as an indicator of fire.

**Heat alarm:** A device designed to respond when it senses a rise in temperature, typically as an indicator of fire.

**Carbon monoxide alarm:** A device designed to respond when it senses carbon monoxide, a poisonous gas.

All alarms shall be UL listed and installed per manufacturer instructions. (R314.1.1, R315.1.1)

**New Construction**

Smoke alarms and carbon monoxide alarms shall be installed throughout each dwelling unit in all required locations. (R314.2.1, R315.2.1)

A heat detector shall be provided in each new attached garage. (R314.2.3)

Smoke alarms, heat alarms, and carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. (R314.6, R315.6)

Where more than one smoke alarm is required to be installed within an individual dwelling unit, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual dwelling unit. (R314.4, R315.5)

Heat alarms shall be connected to a heat alarm or smoke alarm that is installed in the dwelling unit. Alarms that are installed for this purpose shall be located in a hallway, room, or other location that will provide occupant notification. (R314.4.1)

Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. (R314.4, R315.5)

**Alterations, Repairs, and Additions**

In a dwelling unit where alterations, repairs or additions occur, smoke alarms and carbon monoxide alarms shall be installed throughout each dwelling unit, in all required locations, where not already present. (R314.2.2, R315.2.2)

Smoke and carbon monoxide alarms can be powered by the building wiring or batteries. (R314.6, R315.6)

Smoke alarms shall be interconnected within an individual dwelling except where such existing smoke alarms are not interconnected or where such new smoke alarm or alarm is not capable of being interconnected to the existing smoke alarms. (R314.4)

Carbon monoxide alarms shall be interconnected except where the permit related work does not provide access to the building wiring (such as removing interior walls or ceiling finishes) and there is no attic, crawlspace, or basement available. (R315.5)

**Required Locations**

A smoke alarm shall be located in each sleeping room or sleeping loft. (R314.3)

A smoke alarm shall be located in each hatching area of a family home childcare. (R314.3)

A smoke alarm and a carbon monoxide alarm (or combination smoke and carbon monoxide alarm) shall be located outside each sleeping area in the immediate vicinity of the bedroom(s). (R314.3, R315.3)

At least one smoke alarm and one carbon monoxide alarm shall be located on each floor level, including basements and habitable attics. (R314.3, R315.3)

In split level floor plans, at the upper level, provided there is no intervening door between adjacent levels and the lower level is less than a full story below the upper level. (R314.3)

A carbon monoxide alarm is required in a bedroom when a fuel-burning appliance is installed in the bedroom or its attached bathroom. (R315.3)

A combination alarm (combined smoke and carbon monoxide alarm) is acceptable in any required location. (R314.5, R315.4)

A heat alarm is required in each new attached garage. (R314.2.3)

**Alarms and Detectors on Walls and Sloped/Peaked/Coffered Ceilings per NFPA 72**

Wall mounted alarms must be not more than 12 inches from the adjoining ceiling surface. (NFPA 72 29.8.3.3)

Alarms in peaked or sloped ceilings must be within 3 feet horizontally and no closer than 4 inches vertically to the peak. Avoid placing alarms in dead air spaces; refer to Figure 1. (NFPA 72 29.8.3.1, 29.8.3.2, 29.8.3.4 (9), (10))

For coffered ceilings, alarms shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 inches vertically down from the highest point. (NFPA 72 29.8.3.4 (11))

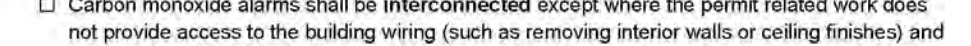


Figure 1: Smoke Alarms and Smoke Detectors in Sloped/Peaked Ceilings

**Specific Location Requirements per NFPA 72**

Do not place alarms in spaces where temperatures may be above or below the alarm's operating temperature range. (NFPA 72 29.8.3.4 (1), (2), (3))

Avoid placing alarms within 3 feet horizontally from doors or openings to bathrooms containing a bathtub or shower. (NFPA 72 29.8.3.4 (8))

Do not place alarms within 3 feet from a supply register of a forced air heating or cooling system and it shall be installed outside of the direct airflow from those registers. (NFPA 72 29.8.3.4 (7))

Do not place alarms within 3 feet of the blades of a ceiling fan. (NFPA 72 29.8.3.4 (6))

**Alarms and Detectors Near Cooking Appliances per NFPA 72**

Refer to Figure 2.

Photoelectric smoke alarms shall not be installed less than 6 feet horizontally from a permanently installed cooking appliance. (NFPA 72 29.8.3.4 (4))

Ionization smoke alarms with an alarm-silencing switch must not be less than 10 feet from a permanent cooking appliance. (NFPA 72 29.8.3.4 (4))

Ionization smoke alarms without an alarm-silencing switch must not be less than 20 feet from a permanent cooking appliance. (NFPA 72 29.8.3.4 (4))

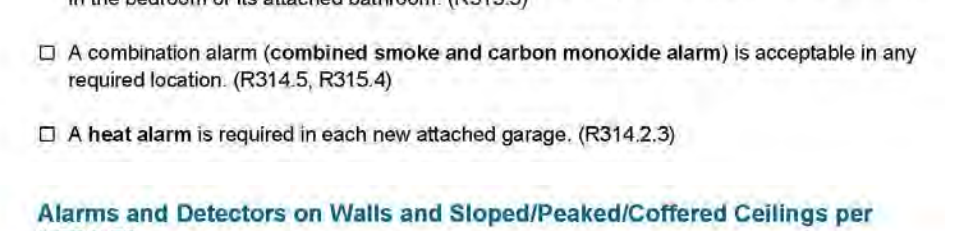


Figure 2: Smoke Alarms and Smoke Detectors Near Cooking Appliances

**Carbon Monoxide Alarm Location Limitations**

Do not place alarms directly above or beside fuel-burning appliances.

Do not place alarms in direct sunlight.

Do not place alarms in low areas where children can reach. Do not place alarms behind curtains or any structure that might prevent carbon monoxide from reaching the sensor.

**Residential Emergency Egress Openings**  
This Tip Sheet reflects code requirements of the 2018 International Residential Code (IRC) with Washington State Amendments.

**Emergency Escape and Rescue Opening**

Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall be operational from the inside without the use of keys, tools, or special knowledge, and open directly into a public way, or to a yard or court that opens to a public way. (R310.1)

Where bars, grilles, covers, screens, or opening control devices are placed on emergency escape and rescue openings, area or window wells, the minimum net clear opening sizes shall comply and such devices shall be releasable or removable from the inside without the use of key, tool, special knowledge, or force greater than that required for normal operation of the escape and rescue opening. (R310.4)

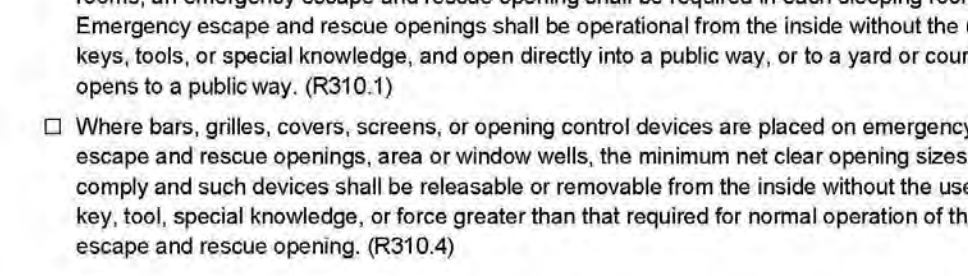


Figure 1: Window Well Dimensions

**Window Wells in Conjunction with Emergency Escape and Rescue Openings**

The horizontal area of the window well shall be not less than 9 square feet, with a horizontal projection and width not less than 36 inches. The area of the window well shall allow the emergency escape and rescue opening to be fully opened. (R310.3.2)

Window wells with a vertical depth greater than 44 inches shall be equipped with a permanently affixed ladder or steps useable with the emergency escape and rescue opening in the fully opened position and shall not encroach into the required dimensions of the window well. (R310.3.2.2)

Ladder rungs or steps shall have an inside width of not less than 12 inches, shall project not less than 3 inches from the wall, and be spaced not more than 18 inches on center vertically for the full height of the window well. (R310.3.2.2)

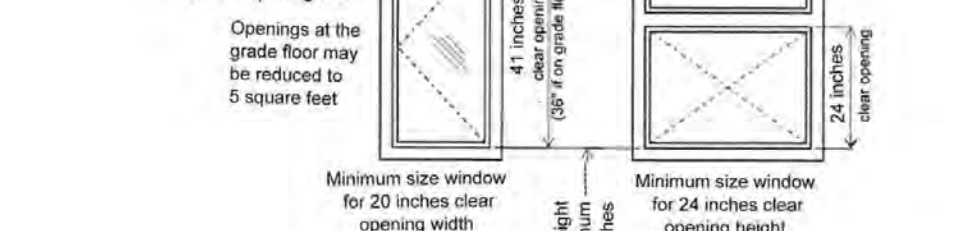


Figure 2: Window Well with Ladder

**Glazing in Windows**

Glazing in windows is required if the individual panel meets all of the following requirements (R308.4.3):

a. Exposed area of the individual panel is greater than 9 square feet.

b. The bottom edge of the glazing is less than 18 inches from the floor.

c. The top edge of the glazing is more than 36 inches above the floor.

d. There is a walking surface within 36 inches, measured horizontally, from the glazing.

Exceptions:

i. Decorative glazing.

ii. Where a horizontal rail capable of resisting 50 pounds per linear foot of force without making contact with the glass is installed on the accessible side of the glazing 34 to 38 inches above the walking surface.

Glazing in Railings and Guards: All glazing in railings and guards, including structural baluster panels and nonstructural in-fill panels, is required to be safety glazing. (R308.4.4)

Glazing and Wet Surfaces: Glazing in walls, enclosures, or fences around showers, bathtubs, pools, hot tubs, spas, saunas, and steam rooms where the bottom edge of the glazing is less than 60 inches from the standing or walking surface is required to be safety glazing. Safety glazing is not required where the glazing is more than 60 inches, horizontally, from the edge of the water. (R308.4.5)

Glazing Adjacent to Bottom Stair Landings: Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches above the landing and within a 60-inch horizontal arc from the bottom tread must be safety glazing. (R308.4.7)

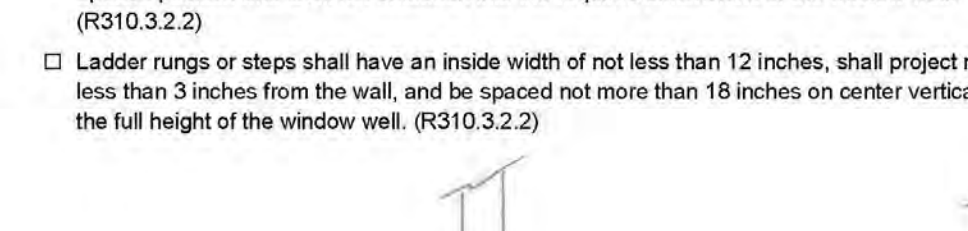


Figure 3: Glazing Near Stairs

**Glazing Adjacent to Bottom Stair Landings**

Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches above the landing and within a 60-inch horizontal arc from the bottom tread must be safety glazing. (R308.4.7)

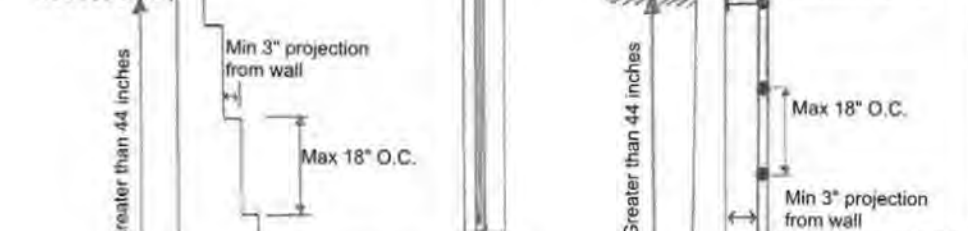


Figure 4: Glazing Adjacent to Bottom Stair Landings

**Glazing in Railings and Guards**

All glazing in railings and guards, including structural baluster panels and nonstructural in-fill panels, is required to be safety glazing. (R308.4.4)

Glazing and Wet Surfaces: Glazing in walls, enclosures, or fences around showers, bathtubs, pools, hot tubs, spas, saunas, and steam rooms where the bottom edge of the glazing is less than 60 inches from the standing or walking surface is required to be safety glazing. Safety glazing is not required where the glazing is more than 60 inches, horizontally, from the edge of the water. (R308.4.5)



Figure 5: Glazing in Railings and Guards

**Glazing Adjacent to Bottom Stair Landings**

Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches above the landing and within a 60-inch horizontal arc from the bottom tread must be safety glazing. (R308.4.7)



Figure 6: Glazing Adjacent to Bottom Stair Landings

**Glazing in Railings and Guards**

All glazing in railings and guards, including structural baluster panels and nonstructural in-fill panels, is required to be safety glazing. (R308.4.4)

Glazing and Wet Surfaces: Glazing in walls, enclosures, or fences around showers, bathtubs, pools, hot tubs, spas, saunas, and steam rooms where the bottom edge of the glazing is less than 60 inches from the standing or walking surface is required to be safety glazing. Safety glazing is not required where the glazing is more than 60 inches, horizontally, from the edge of the water. (R308.4.5)



Figure 7: Glazing in Railings and Guards

**Glazing Adjacent to Bottom Stair Landings**

Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches above the landing and within a 60-inch horizontal arc from the bottom tread must be safety glazing. (R308.4.7)



Figure 8: Glazing Adjacent to Bottom Stair Landings

**Glazing in Railings and Guards**

All glazing in railings and guards, including structural baluster panels and nonstructural in-fill panels, is required to be safety glazing. (R308.4.4)

Glazing and Wet Surfaces: Glazing in walls, enclosures, or fences around showers, bathtubs, pools, hot tubs, spas, saunas, and steam rooms where the bottom edge of the glazing is less than 60 inches from the standing or walking surface is required to be safety glazing. Safety glazing is not required where the glazing is more than 60 inches, horizontally, from the edge of the water. (R308.4.5)



Figure 9: Glazing in Railings and Guards

4 EMERGENCY EGRESS DETAIL

**Safety Glazing**  
This Tip Sheet reflects code requirements of the 2018 International Residential Code (IRC) with Washington State Amendments.

**What is Safety Glazing?**

Safety glazing is glass that is less dangerous when it breaks, such as tempered or laminated glass.

Per R308.1, where safety glazing is required, each pane must be provided with a manufacturer's label defining the type of glass and safety glazing standard to which it complies. For tempered glazing the label must be permanently etched, fired, or embossed, on the glass or be a type that once applied cannot be removed without being destroyed. For other types of safety glazing, a certificate, affidavit or other evidence confirming compliance with the code shall be provided at time of inspection.

**Required Safety Glazing in Hazardous Locations**

Glazing in Doors: Safety glazing is required in fixed and operable panels of swinging, sliding and bifold doors. Safety glazing is not required in a door if the glazed openings do not allow the passage of a 3-inch sphere, or if the glazing in the door is decorative. (R308.4.1)

Glazing Adjacent to Doors: Glazing adjacent to doors is required in the following locations if the bottom edge of the glazing is less than 60 inches above the walking surface: Within 24 inches of either side of the door in the plane of the door in a closed position, or if glazing is in a wall less than 180 degrees from the plane of the door in a closed position and within 24 inches of the hinge side of an in-swinging door. Safety glazing is not required if there is an intervening wall or permanent barrier between the door and the glazing. (R308.4.2)

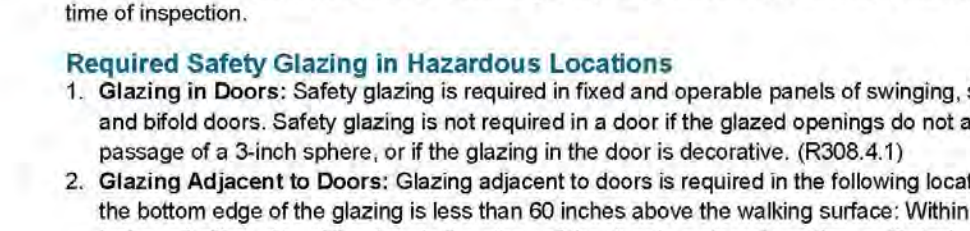


Figure 1: Safety Glazing in Doors

**Glazing in Railings and Guards**

All glazing in railings and guards, including structural baluster panels and nonstructural in-fill panels, is required to be safety glazing. (R308.4.4)

Glazing and Wet Surfaces: Glazing in walls, enclosures, or fences around showers, bathtubs, pools, hot tubs, spas, saunas, and steam rooms where the bottom edge of the glazing is less than 60 inches from the standing or walking surface is required to be safety glazing. Safety glazing is not required where the glazing is more than 60 inches, horizontally, from the edge of the water. (R308.4.5)



Figure 2: Safety Glazing in Railings and Guards

**Glazing in Windows**

Glazing in windows is required if the individual panel meets all of the following requirements (R308.4.3):

a. Exposed area of the individual panel is greater than 9 square feet.

b. The bottom edge of the glazing is less than 18 inches from the floor.

c. The top edge of the glazing is more than 36 inches above the floor.

d. There is a walking surface within 36 inches, measured horizontally, from the glazing.

Exceptions:

i. Decorative glazing.

ii. Where a horizontal rail capable of resisting 50 pounds per linear foot of force without making contact with the glass is installed on the accessible side of the glazing 34 to 38 inches above the walking surface.

Glazing in Railings and Guards: All glazing in railings and guards, including structural baluster panels and nonstructural in-fill panels, is required to be safety glazing. (R308.4.4)

Glazing and Wet Surfaces: Glazing in walls, enclosures, or fences around showers, bathtubs, pools, hot tubs, spas, saunas, and steam rooms where the bottom edge of the glazing is less than 60 inches from the standing or walking surface is required to be safety glazing. Safety glazing is not required where the glazing is more than 60 inches, horizontally, from the edge of the water. (R308.4.5)

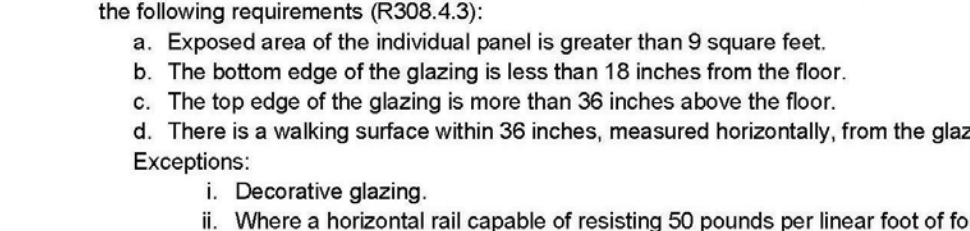


Figure 3: Safety Glazing in Windows

**Glazing Adjacent to Bottom Stair Landings**

Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches above the landing and within a 60-inch horizontal arc from the bottom tread must be safety glazing. (R308.4.7)

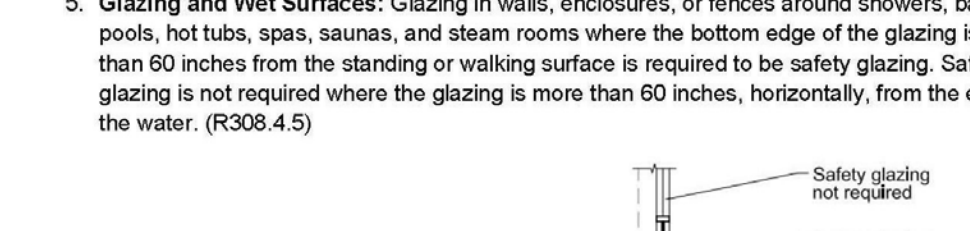


Figure 4: Safety Glazing Adjacent to Bottom Stair Landings

**Glazing in Railings and Guards**

All glazing in railings and guards, including structural baluster panels and nonstructural in-fill panels, is required to be safety glazing. (R308.4.4)

Glazing and Wet Surfaces: Glazing in walls, enclosures, or fences around showers, bathtubs, pools, hot tubs, spas, saunas, and steam rooms where the bottom edge of the glazing is less than 60 inches from the standing or walking surface is required to be safety glazing. Safety glazing is not required where the glazing is more than 60 inches, horizontally, from the edge of the water. (R308.4.5)

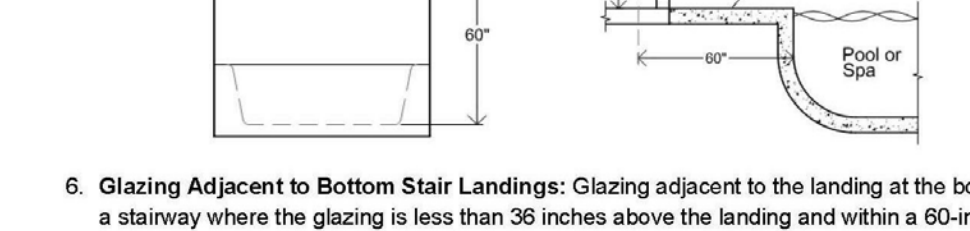


Figure 5: Safety Glazing in Railings and Guards

**Glazing Adjacent to Bottom Stair Landings**

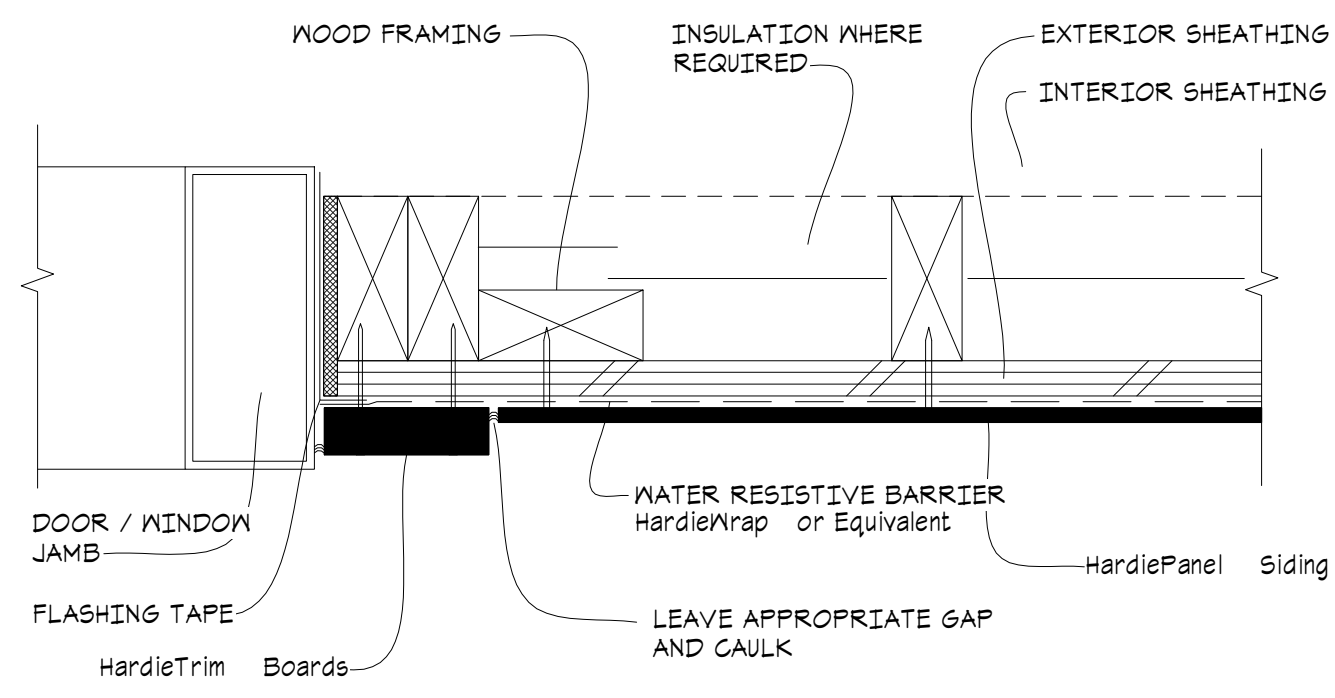
Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches above the landing and within a 60-inch horizontal arc from the bottom tread must be safety glazing. (R308.4.7)



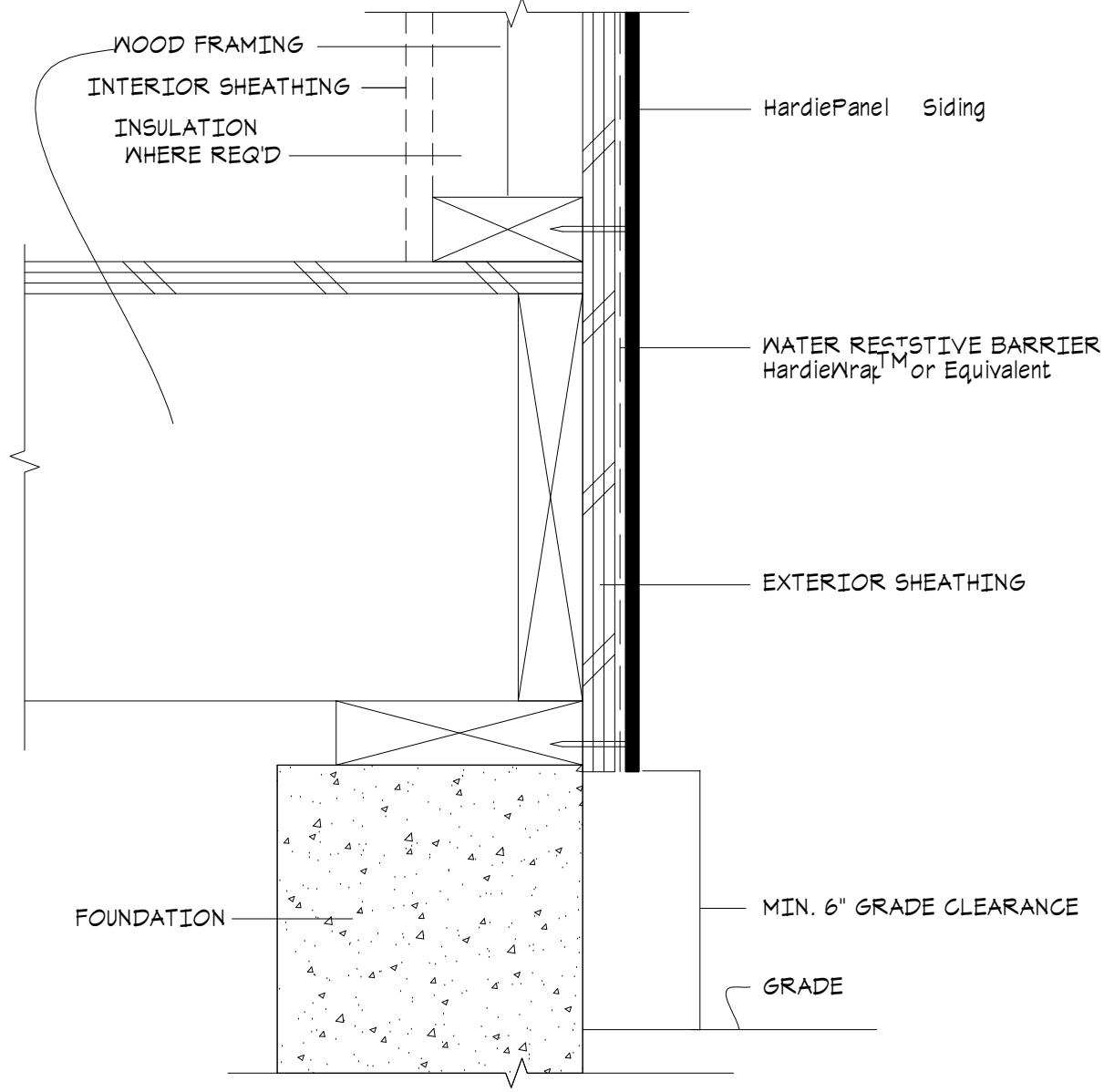
Figure 6: Safety Glazing Adjacent to Bottom Stair Landings

**Glazing in Railings and Guards**

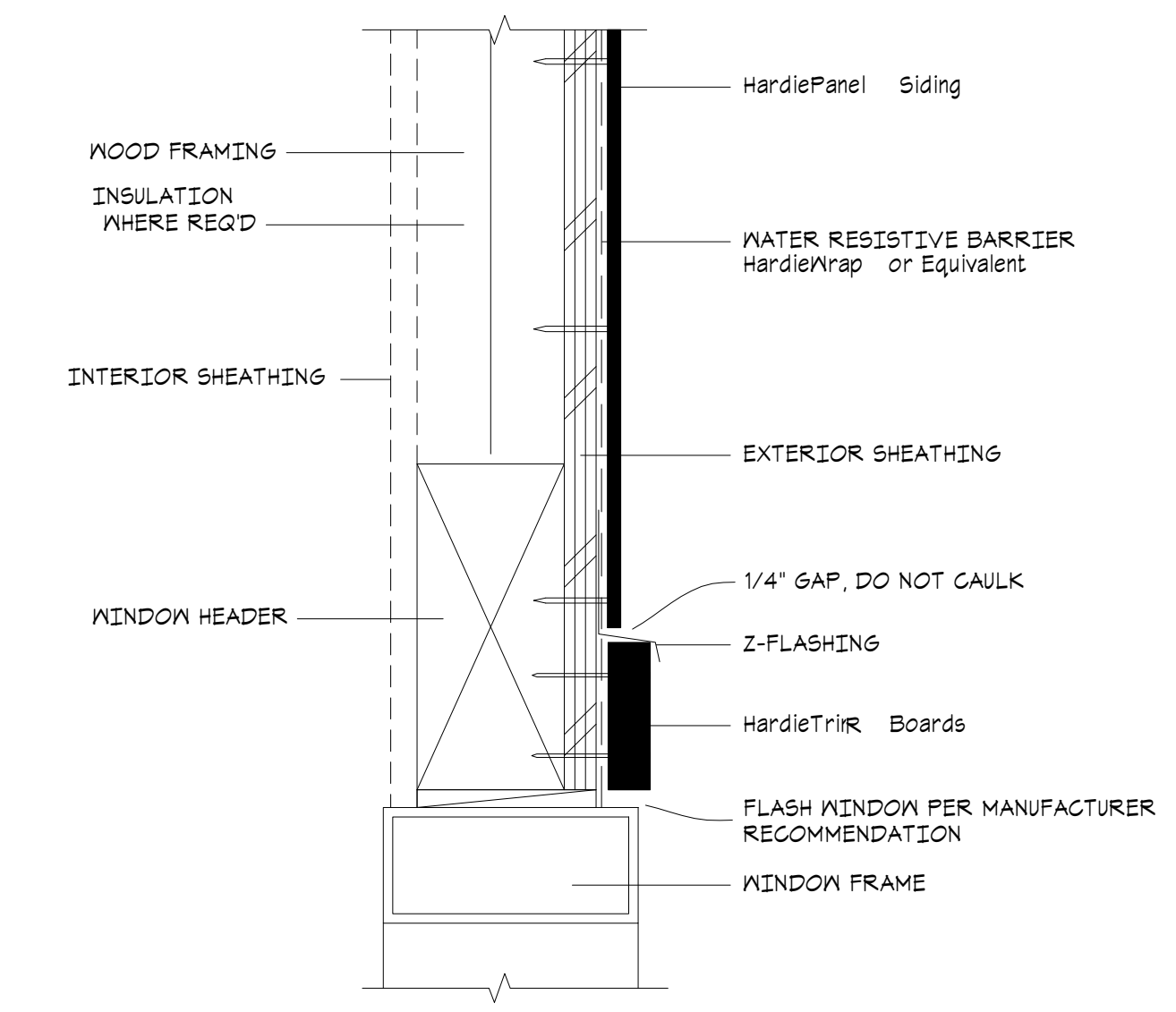




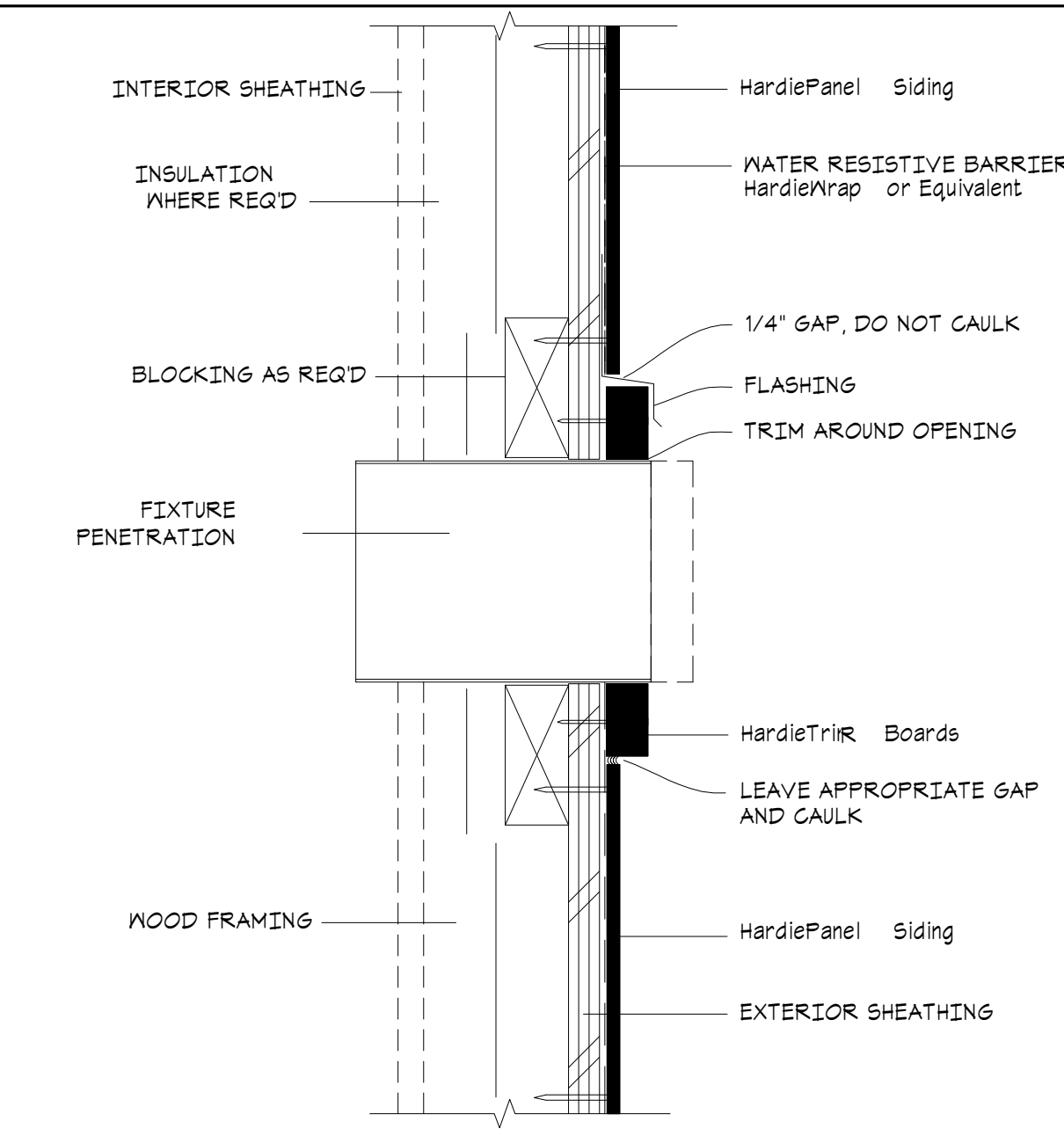
① DOOR / WINDOW JAMB



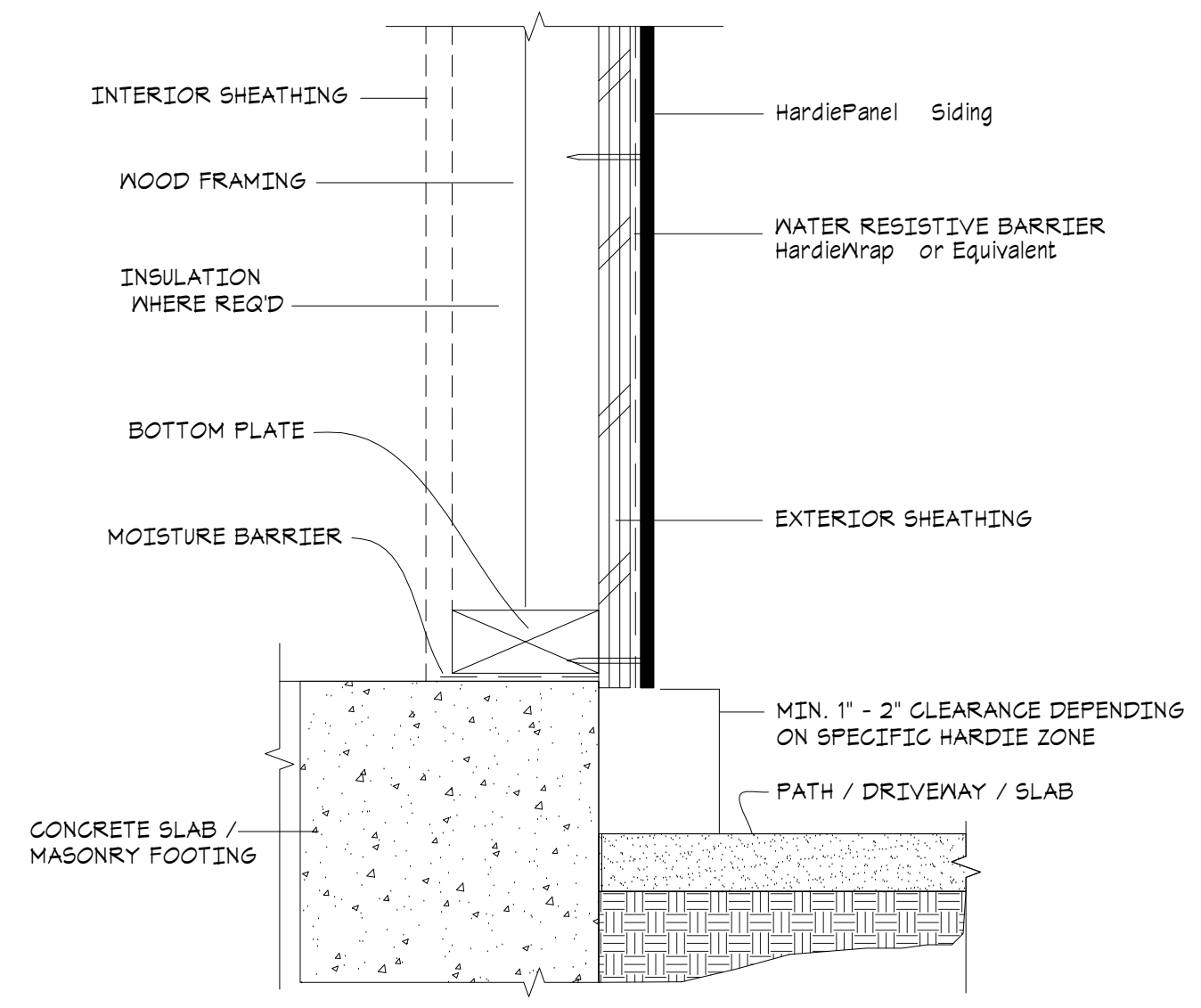
② GRADE CLEARANCE



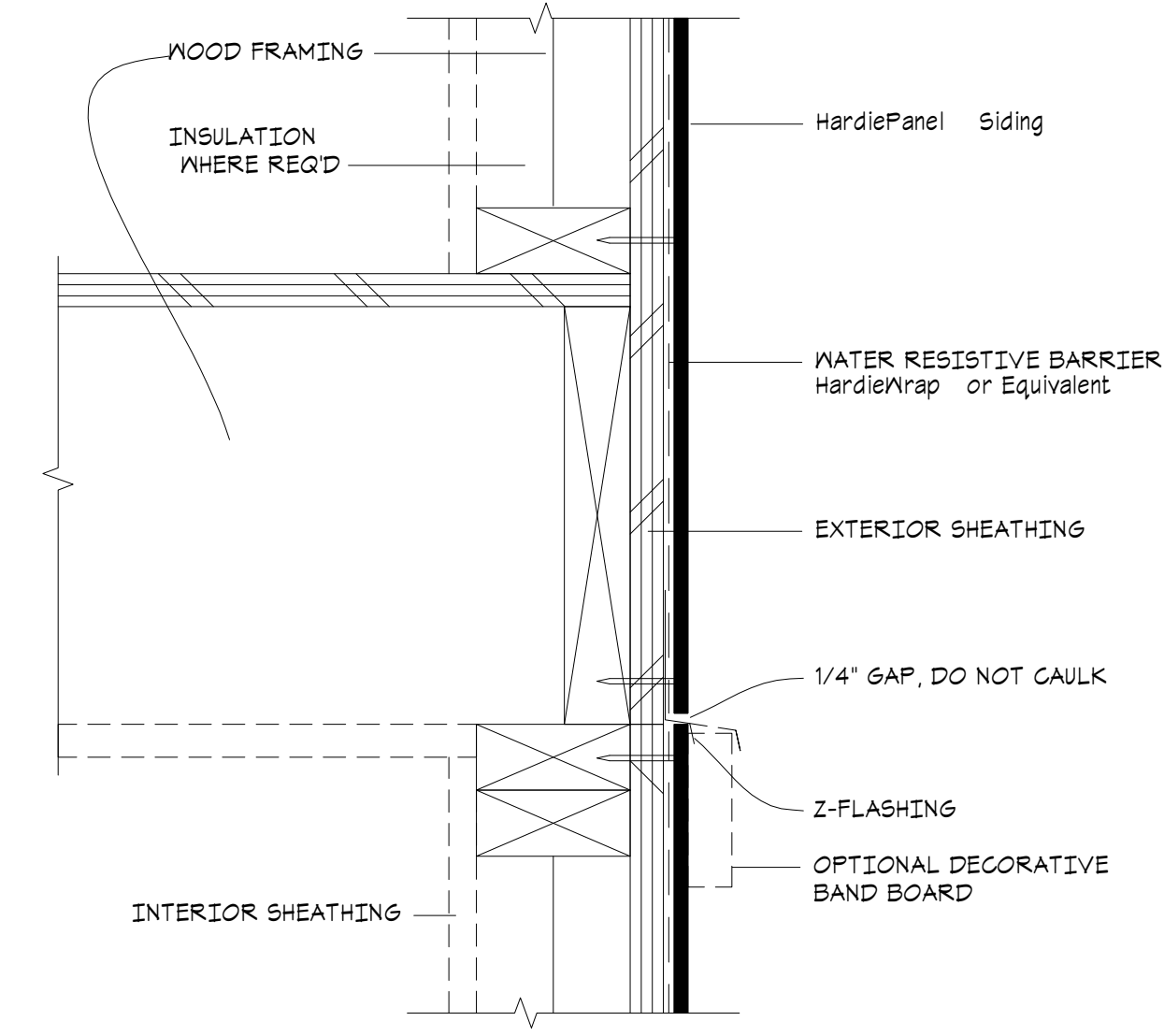
③ WINDOW/DOOR HEAD



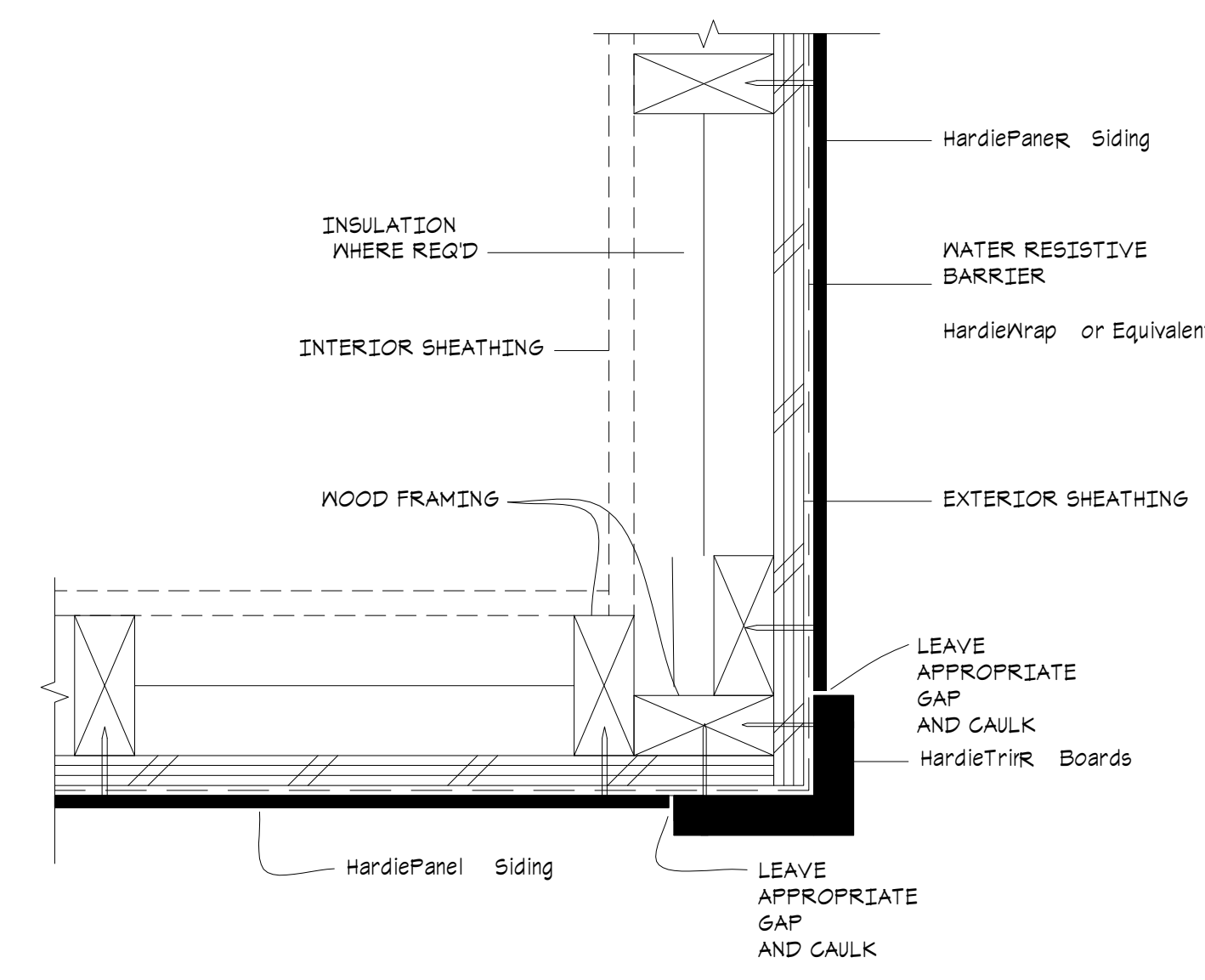
④ FIXTURE PENETRATION



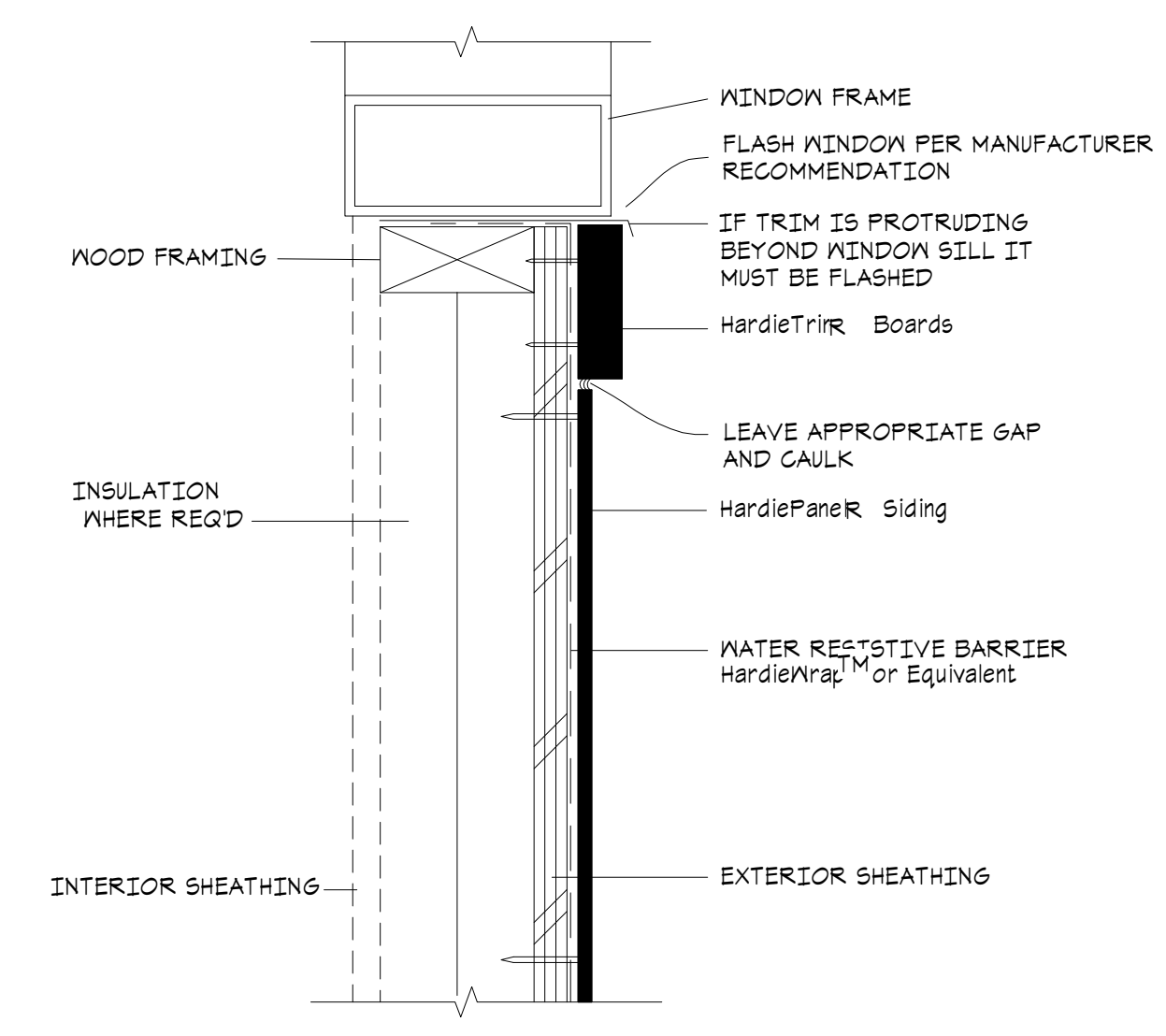
⑤ HARDSCAPE CLEARANCES, DECKS, PORCHES, PATIOS, WALKWAYS, ROOFS, ETC.



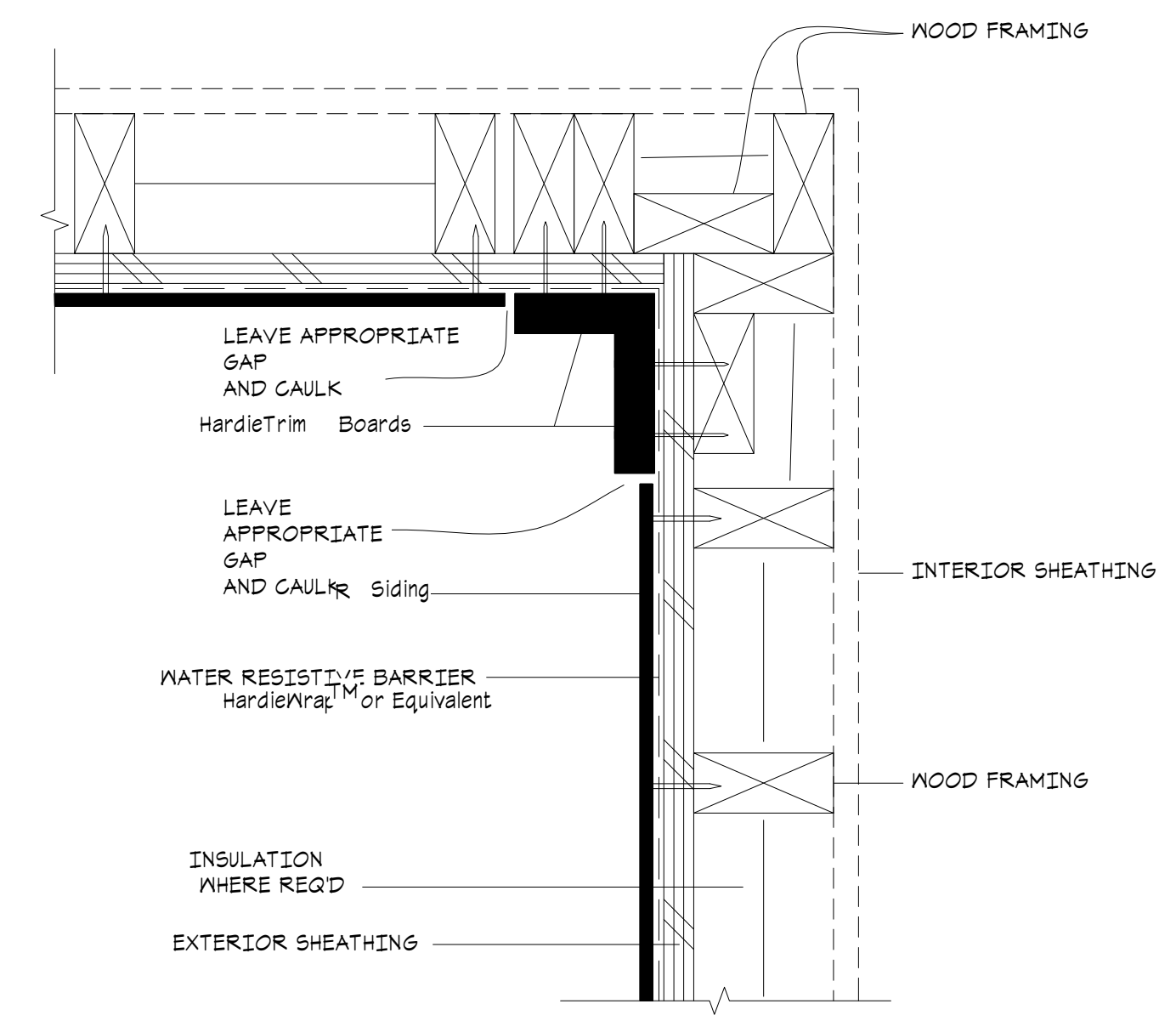
⑥ HORIZONTAL VIEW



⑦ OUTSIDE CORNER



⑧ WINDOW SILL

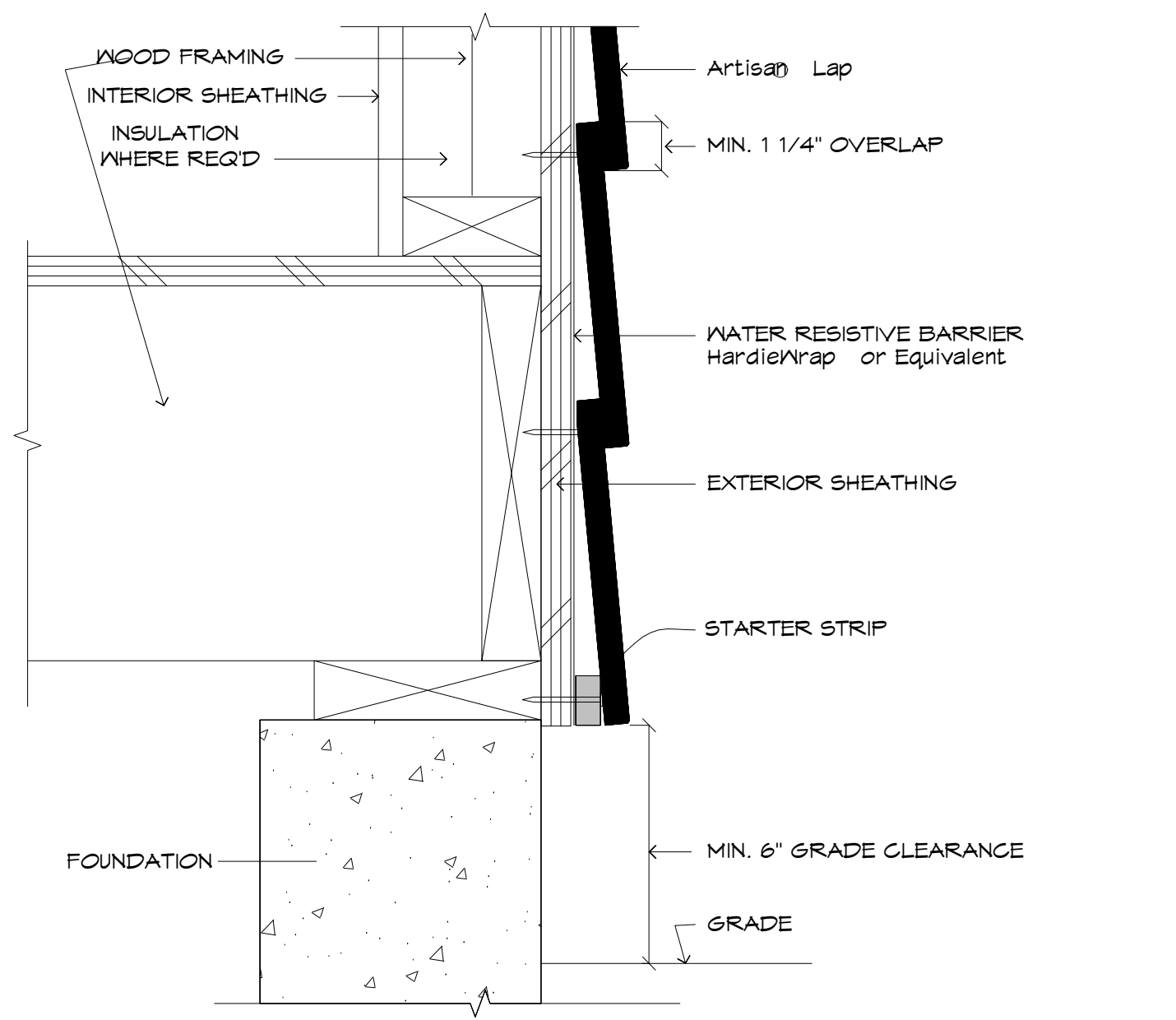


⑨ INSIDE CORNER

# HARDIE PANEL SIDING DETAILS

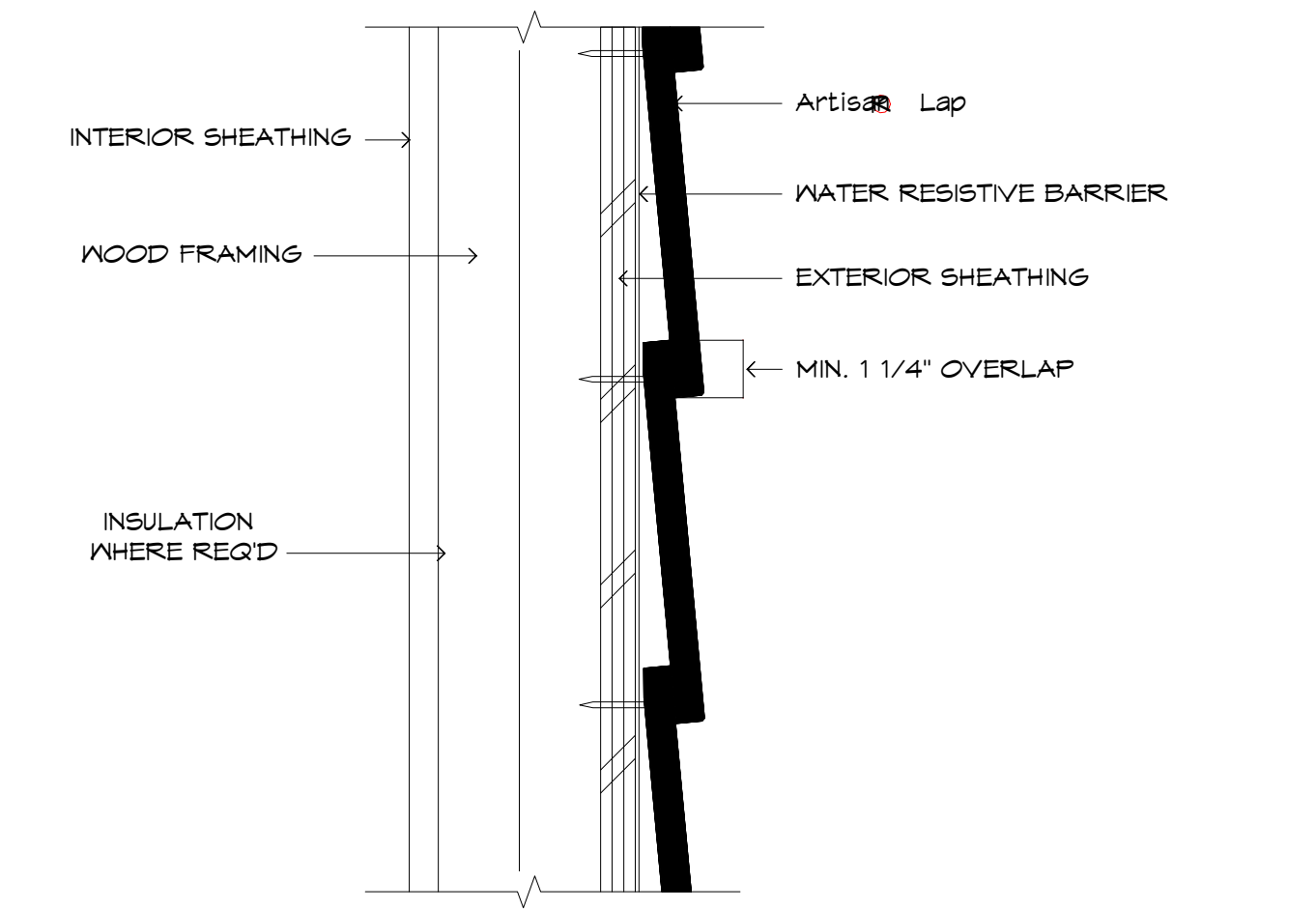
SCALE: NOT TO SCALE (N.T.S.)





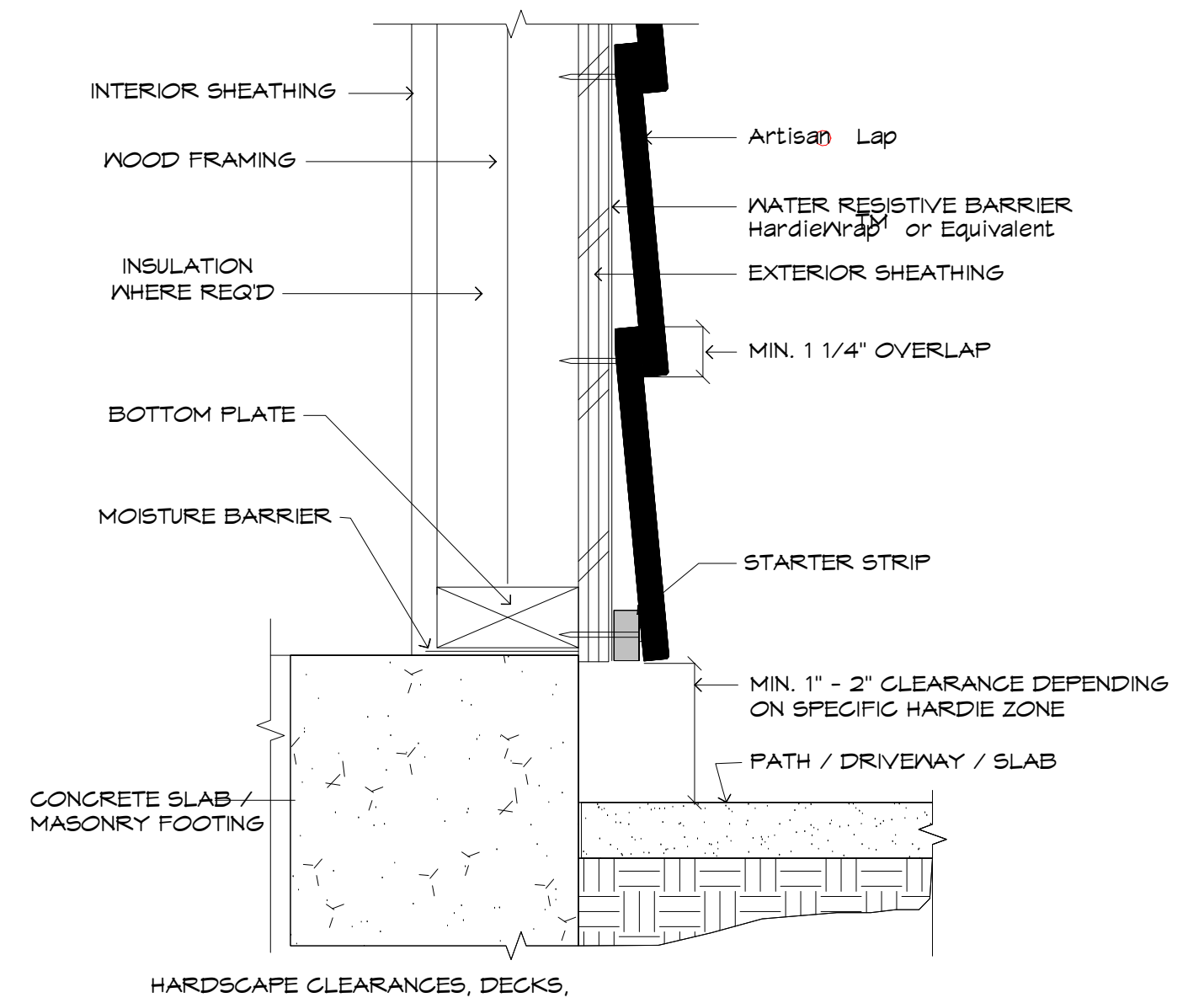
① GRADE CLEARANCE

SCALE: N.T.S.



② HORIZONTAL LAP VIEW

SCALE: N.T.S.

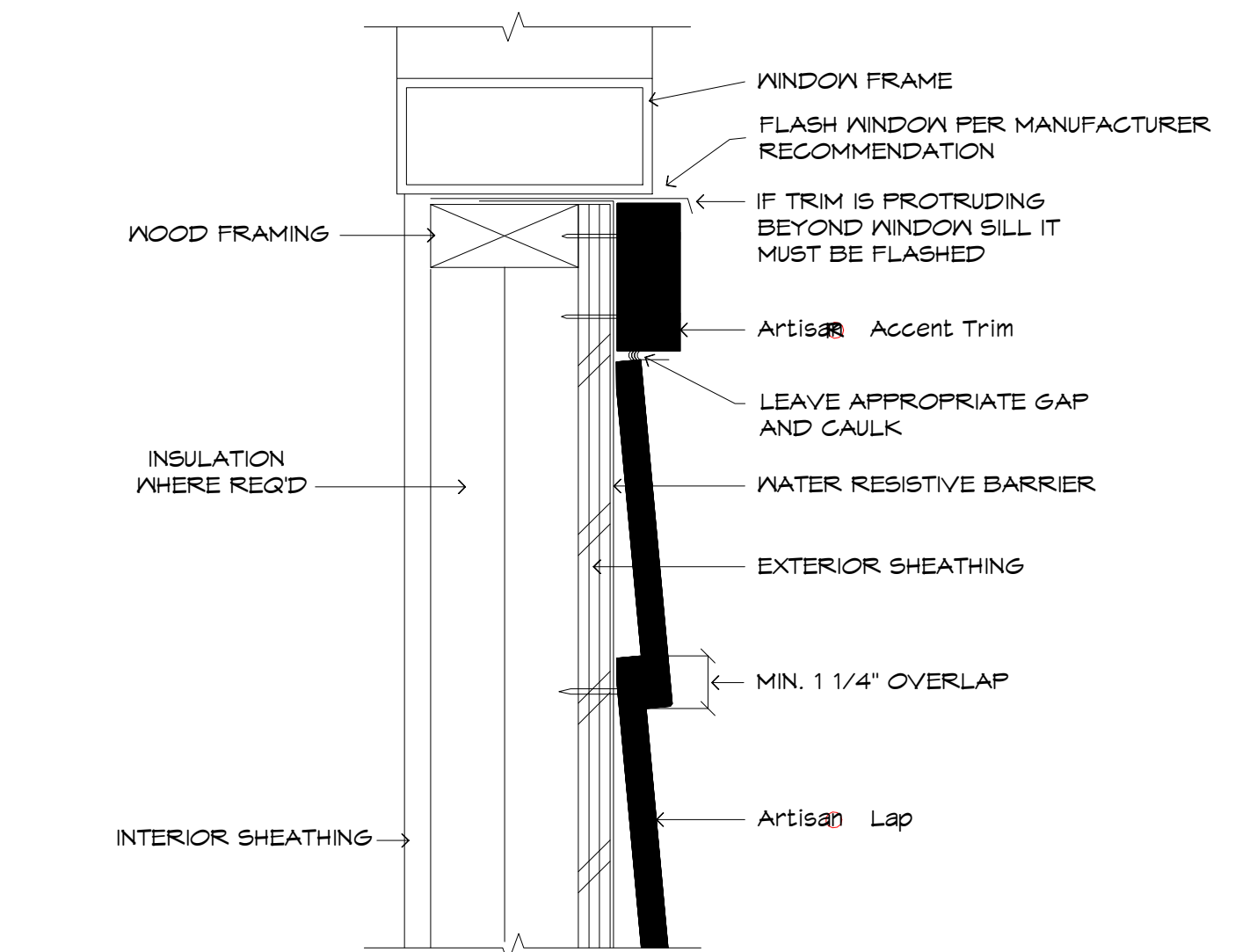


③ PORCHES, PATIOS, WALKWAYS, ROOFS, ETC.

SCALE: N.T.S.

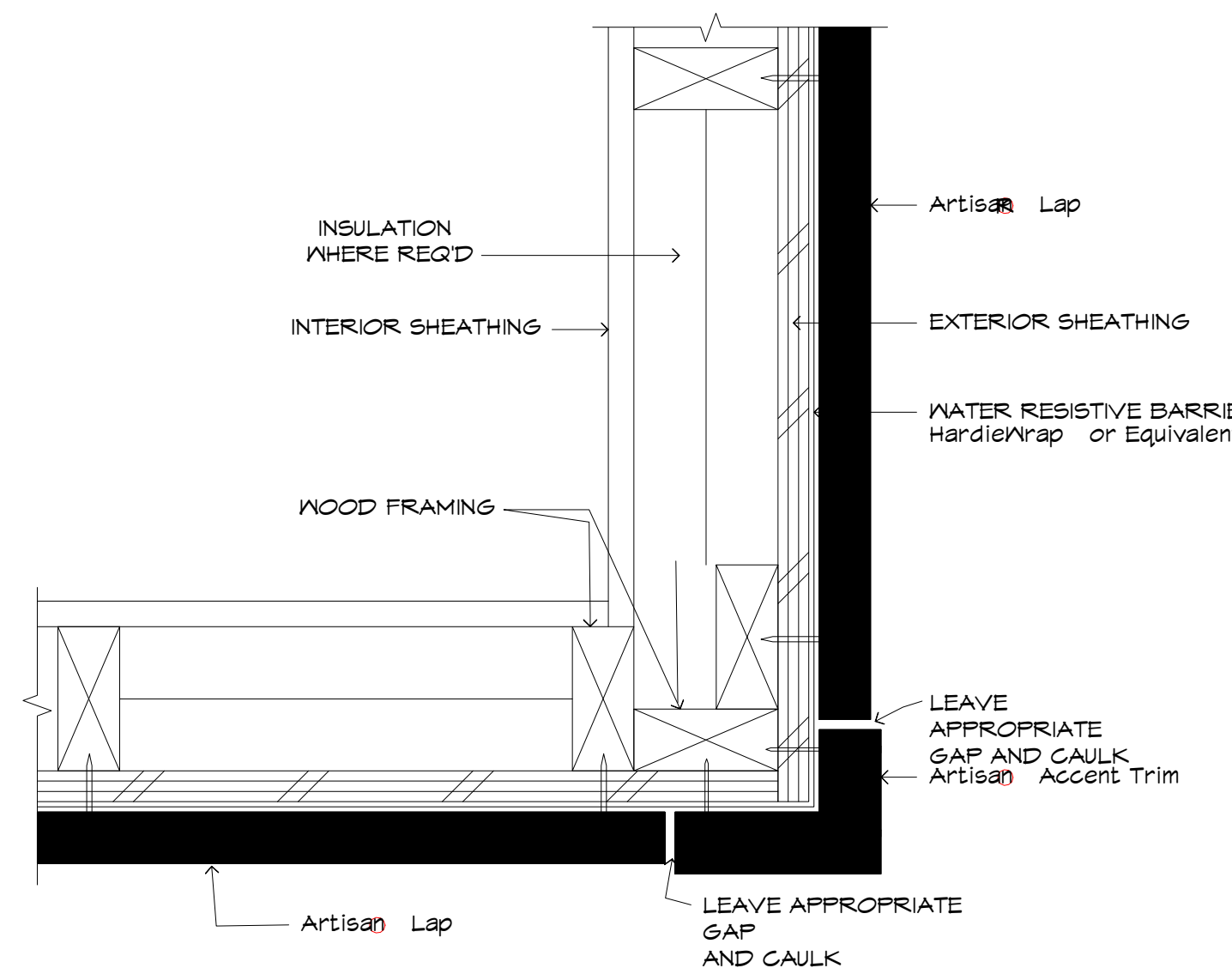
LAP SIDING DETAILS

SCALE: NOT TO SCALE (N.T.S.)



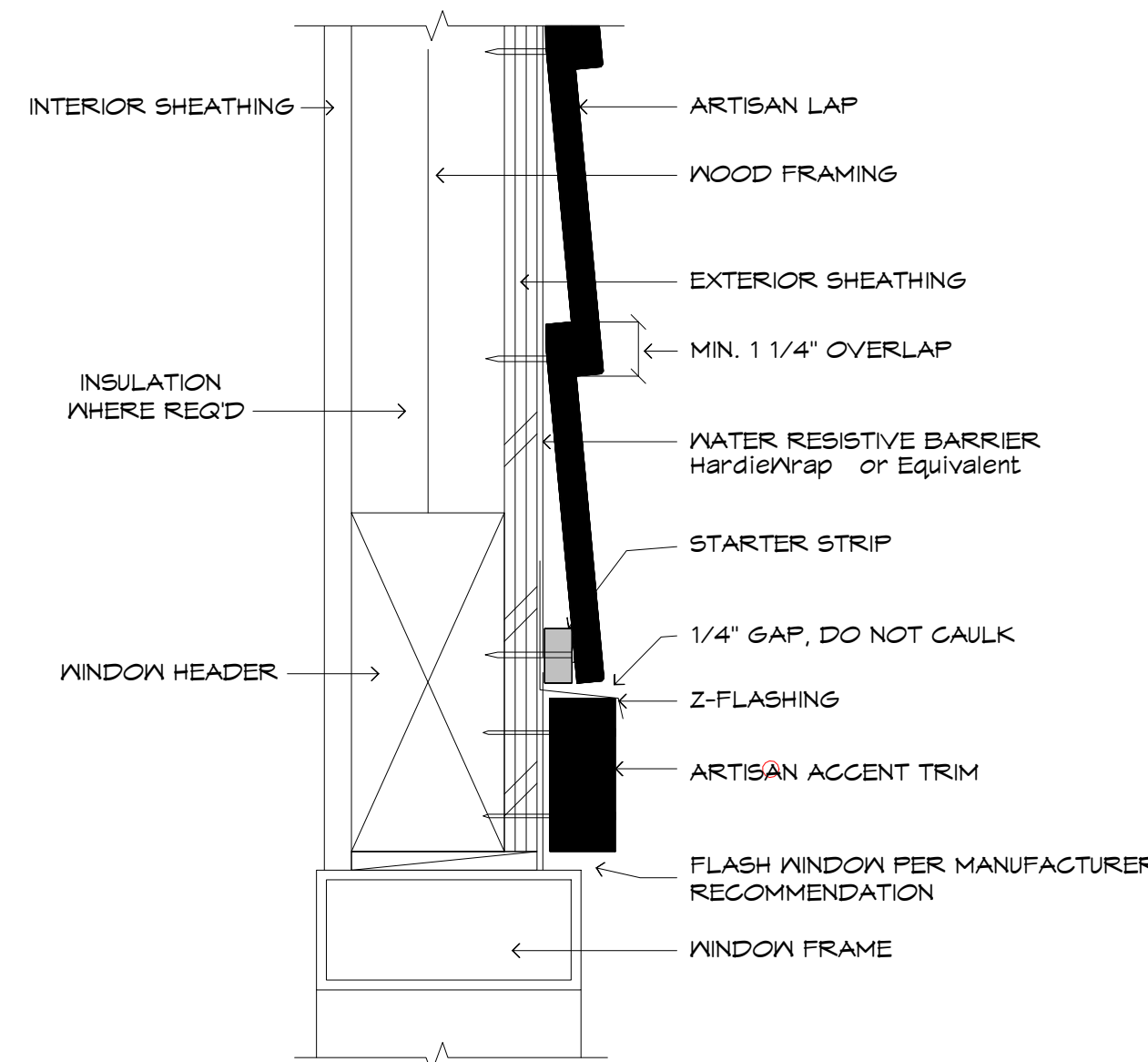
④ WINDOW SILL

SCALE: N.T.S.



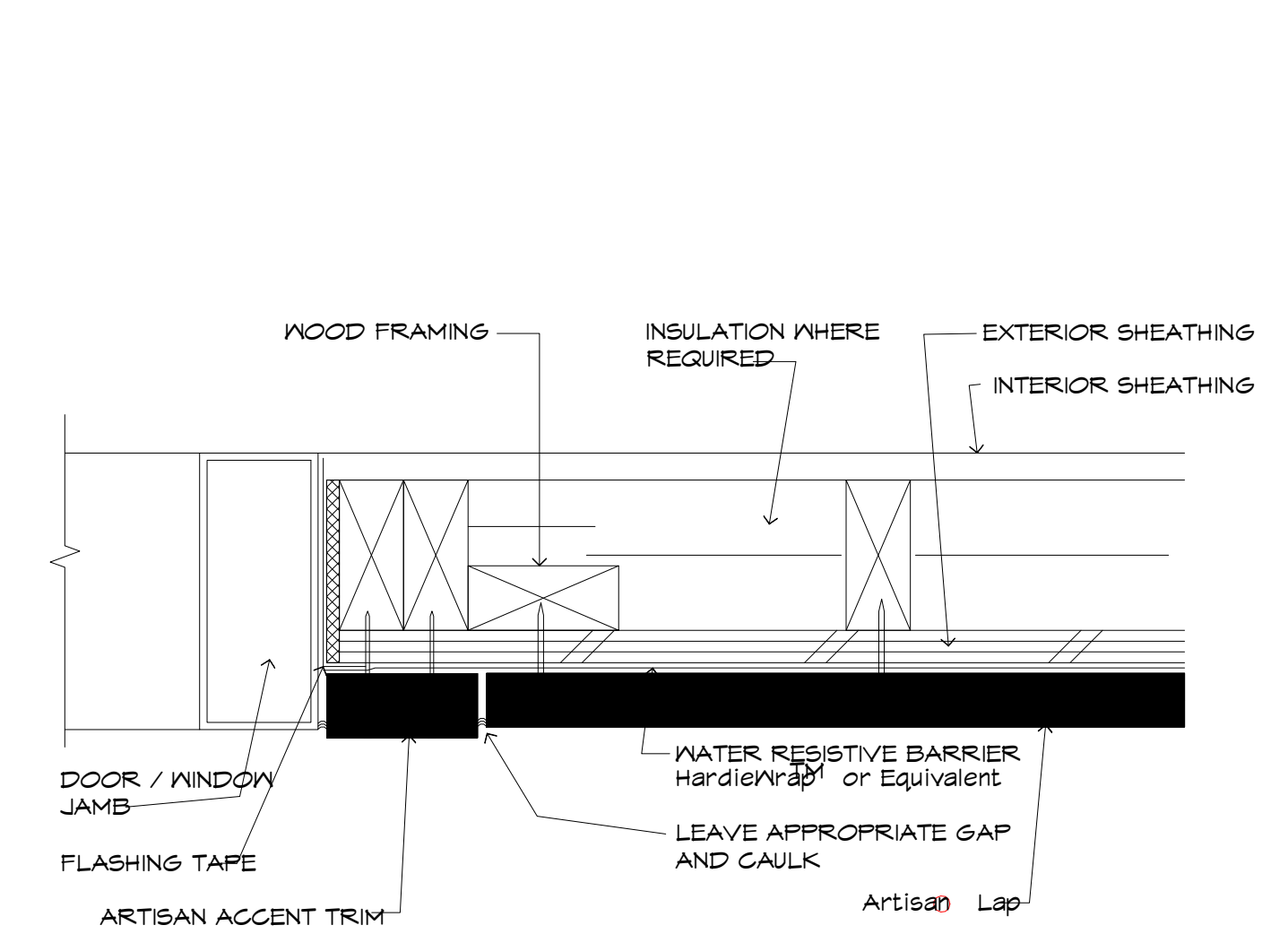
⑤ OUTSIDE CORNER

SCALE: N.T.S.



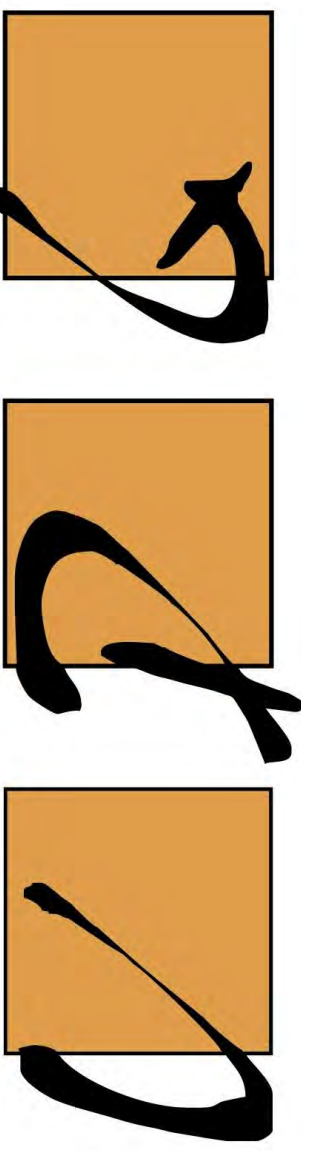
⑥ WINDOW/DOOR HEAD

SCALE: N.T.S.



⑦ DOOR / WINDOW JAMB

SCALE: N.T.S.



URBAN DESIGN GROUP

15445 53 RD. AVE. S. STE. 110, TUKWILA, WA 98188  
(206) 838-8250 E-MAIL: URBANDESIGNCENTER@YAHOO.COM

PROJECT NAME:  
SINGLE-FAMILY RESIDENCE  
8456 SE 40TH  
MERCER ISLAND, WA 98040  
PARCEL #: 502190-0790

PREPARED FOR:  
PHILIP SUDO & LLC  
KUN QIAN &  
LAURIE QIAN

SUBMITTAL/REVISION: DATE:  
SUBMITTED -/-/2022  
REVISED -/-/2022  
DESIGN BY: PAVEL MELNIK  
DRAFTED BY: ANNA KONYAKINA  
SHEET TITLE:

ARTISAN LAP  
SIDING  
DETAILS

PROJECT NUMBER:  
21257

SHEET NUMBER:

A14



**GENERAL NOTES**

THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE PRESCRIBED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOBSITE SAFETY, AND SEQUENCES, TEMPORARY SHORING, FORMWORK, AND BRACING. USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES.

**STANDARDS**

ALL METHODS, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE (IBC) AND SEI/ASCE 1-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES AS APPLIED BY LOCAL JURISDICTION.

**PROJECT LOCATION:**

GPS LOCATION: 41.5816405 LAT., -122.1725031 LONGIT.  
SITE ADDRESS: 12445 SE 25TH PL., BELLEVUE, WA 98005

**STRUCTURAL DESIGN CRITERIA (CH. 16)**

**LATERAL FORCES:**

| I. WIND (IBC 1609 & ASCE 28.5.3)  | II. SEISMIC (IBC 1613 & ASCE 17.4-12)   |
|---|---|
| 100 MPH WIND SPEED (ult.)<br>85 MPH WIND SPEED (asd)<br>EXPOSURE - B<br>IMPORTANCE FACTOR $I_w = 1.0$<br>WIND SPEED UP, $K_z = 1.60$<br>ANALYSIS: ENCLOSED SIMPLE DIAPHRAGM<br>$p_s = 1.4 \cdot K_z \cdot p_{se}$ | SEISMIC DESIGN CATEGORY - D2<br>OCCUPANCY RISK - II<br>2x FE IN 50 YR (2006 LAT-LON) U5G5-CD:<br>02 SEC. (S <sub>s</sub> ) 1.36g<br>10 SEC. (S <sub>1</sub> ) 0.474g<br>BASIC SEISMIC FORCE-RESISTING SYSTEM<br>LIGHT-FRAME (WOOD) SHEATHED<br>DESIGN BASE SHEAR: 14.66K<br>$R = 6.5$ $F = 1$ (2 STORY)<br>ANALYSIS: SIMPLIFIED DESIGN PROCEDURE<br>$V = FSDS \cdot W$<br>$R$ |

**VERTICAL FORCES - GRAVITY (IBC 1601 & TABLE 16.01.1)**

| VERTICAL LOADS: | DEAD LOAD | LIVE LOAD                               |
|-----------------|-----------|---|
| ROOF            | ACTUAL    | 25 PSF SNOW (OR PER LOCAL JURISDICTION) |
| FLOOR           | ACTUAL    | 40 PSF                                  |
| GARAGE          | ACTUAL    | 50 PSF (or 3000# WHEEL LOAD)            |
| DECK            | ACTUAL    | 60 PSF                                  |

**SOILS AND FOUNDATION DESIGN CRITERIA (IBC CH. 18)**

SUBSURFACE INVESTIGATION SHALL BE REQUIRED PER 18032; FOUNDATION DESIGN SHALL BE BASED IN THE ABSENCE OF A SOILS REPORT, THE PRESUMPTIVE LOAD BEARING VALUES DETERMINED BY LOCAL JURISDICTION OR PER IBC TABLE 1806.2 SHALL BE USED.

|                                   |          |
|-----------------------------------|----------|
| 1. SOIL BEARING CAPACITY          | 1500 PSF |
| 2. ACTIVE PRESSURE - RESTRAINED   | 50 PCF   |
| 3. ACTIVE PRESSURE - UNRESTRAINED | 35 PCF   |
| 4. PASSIVE RESISTANCE             | 300 PCF  |
| 5. COEFFICIENT OF FRICTION        | 0.40     |
| 6. LOCAL FROST DEPTH              | 12 INCH  |
| 7. TRAFFIC SURCHARGE              | 10 PSF   |
| 8. SEISMIC SURCHARGE              | 64 PSF   |

ALL FOOTINGS SHALL BEAR ON FIRM UNDISTURBED EARTH OR COMPACTED STRUCTURAL BACKFILL. AREAS OVER EXCAVATED SHALL BE BACKFILLED WITH LEAN CONCRETE ( $f_c = 2000$  PSI) OR STRUCTURAL BACK FILL.

**CONCRETE (IBC CH. 19 & ACI 318-14)**

CONCRETE SHALL BE MADE WITH PORTLAND CEMENT ASTM C-150 TYPE II OR TYPE I AND SHALL BE READY-MIXED PER ASTM C-94 MAXIMUM SLUMP 5". MINIMUM CEMENT CONTENT 5% SHACKS PER YARD PROVIDE 5%-1% AIR-ENTRAINED CONCRETE FOR CONCRETE ( $f_c = 3000$  PSI) EXPOSED TO WEATHER.

| MINIMUM SPECIFIED COMPRESSIVE STRENGTH ( $f_c$ AT 28 DAYS) ACI 318-14 | $f_c$ (PSI) | SPECIAL INSPECTION & TESTING REQUIRED |
|---|-------------|---------------------------------------|
| FOOTING PADS & FOUNDATIONS NOT EXPOSED TO WEATHER                     | 3,000       | NOT REQUIRED                          |
| PORCHES, PATIOS, DRIVEWAYS, AND GARAGE SLAB                           | 3,000       | NOT REQUIRED                          |
| FOUNDATION STEM WALLS AND INTERIOR SLABS ON GRADE                     | 3,000       | NOT REQUIRED                          |

CONTRACTOR SHALL HAVE AVAILABLE ON SITE A CONCRETE BATCH TICKET OR RECEIPT OF DELIVERY FOR MIX OF 3000 PSI OR GREATER FOR BUILDING INSPECTOR VERIFICATION IF REQUESTED.

**REINFORCING STEEL:** REINFORCEMENT SHALL CONFORM TO ASTM A-615, DEFORMED AND PLAIN BILLET STEEL BARS FOR REINFORCING STEEL. BARS SHALL BE GRADE 60 EXCEPT THAT NO. 3 AND 4 MAY BE GRADE 40. BARS SHALL BE DEFORMED. SPLICE SHALL BE 24 BAR DIAMETERS OR 18" MINIMUM. PROVIDE CORNER BARS FOR ALL HORIZONTAL BARS IN WALLS AND FOOTINGS AT INTERSECTIONS. MILL TICKET FOR REINFORCING BARS SHALL BE MADE AVAILABLE TO THE BUILDING INSPECTOR AND ENGINEER OF RECORD FOR VERIFICATION IF REQUESTED.

WIRE FABRIC SHALL CONFORM TO ANSI/ASTM A-185, STEEL WELDED WIRE FABRIC PLAIN FOR CONCRETE PLACEMENT.

**CONCRETE ACCESSORIES:**

ANCHOR BOLTS, BARS AND RODS SHALL CONFORM TO ASTM A-307, LOW CARBON STEEL EXTERNALLY AND INTERNALLY THREADED FASTENERS.

**CAST-IN-PLACE COLD-FORM STEEL CONNECTORS IN CONCRETE FOR LIGHT FRAME CONSTRUCTION** SHALL BE MANUFACTURED BY SIMPSON STRONG-TIE AS SPECIFIED IN THE CURRENT SIMPSON STRONG-TIE ICC E5 OR IAPMO E5 REPORT. ALTERNATE PRODUCTS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND WRITTEN APPROVAL. REQUEST FOR SUBSTITUTION WILL ONLY BE APPROVED WITH CURRENT ICC E5 OR IAPMO E5 REPORT AND A LIST STATING THE PROPOSED ITEM, SUBSTITUTION WITH EQUIVALENT OR GREATER LOAD CAPACITY. IN ADDITION, SUBSTITUTIONS WILL BE REQUIRED TO COMPLY WITH THE CURRENT ICC ACCEPTANCE CRITERIA, AC308 (CAST-IN-PLACE COLD-FORMED STEEL CONNECTORS IN CONCRETE FOR LIGHT FRAME CONSTRUCTION).

**PROPRIETARY CAST-IN-PLACE ANCHOR BOLTS** SHALL BE '98' AND '98T' ANCHOR BOLTS MANUFACTURED BY SIMPSON STRONG-TIE AS SPECIFIED IN THE CURRENT SIMPSON STRONG-TIE ICC E5 REPORT. SUBSTITUTION PROPOSED BY THE CONTRACTOR SHALL BE SUBMITTED WITH A CURRENT ICC E5 REPORT TO THE STRUCTURAL ENGINEER FOR REVIEW AND WRITTEN APPROVAL. IN ADDITION, SUBSTITUTIONS WILL BE REQUIRED TO COMPLY WITH THE CURRENT ICC ACCEPTANCE CRITERIA, AC309 (CAST-IN-PLACE PROPRIETARY BOLTS IN CONCRETE).

EXPANSION ANCHORS (WEDGE ANCHORS) SHALL BE AS NOTED ON PLANS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. WHEN NOTED ON CONSTRUCTION DOCUMENTS, INSTALLATION SHALL BE SPECIAL INSPECTED.

**NON-SHRINK GROUT:** MASTER BUILDERS MASTERFLOW 928 OR PRE-APPROVED EQUAL GROUT MAY BE PLACED FROM A 25 SECOND FLOW TO A STIFF PACKING CONSISTENCY. FILL OR PACK ENTIRE SPACE UNDER PLATES OR SHAPES. NO GROUTING SHALL BE DONE BELOW 40 DEGREES F.

**EPOXY GROUT:** SIMPSON STRONG-TIE 'SET', COVERT OPERATIONS 'CIA' GEL, OR PRE-APPROVED EQUAL TWO PART LOW VISCOSITY EPOXY. USE EQUIPMENT WHICH SHALL ACCURATELY MIX AND DISPENSE THE COMPONENTS. HOLES SHALL BE DRILLED AT THE DIAMETER AS SPECIFIED BY THE MANUFACTURER BASED ON THE DOVEL BAR OR THREADED ROD DIAMETER. HOLES SHALL BE DRY AND CLEANED WITH PRESSURIZED AIR JUST PRIOR TO INSTALLING GROUT. THE REBAR DOVEL OR THREADED ROD SHALL BE CLEAN AND INSTALLED SLOWLY, AND SHALL BE ROTATED AS IT IS PUSHED INTO THE HOLE. COLD WEATHER GROUTING SHALL BE DONE WITH PROPER GROUT FORMULA. EMBED (3) DIAMETERS MINIMUM UNLESS NOTED OTHERWISE IN PLANS AND DETAILS. GROUTING OPERATION SHALL BE INSPECTED BY AN AGENT AS RECOMMENDED BY THE OWNER.

**WOOD CONSTRUCTION (IBC CH. 23 & NDS)**

GENERAL REQUIREMENTS: PROVIDE MINIMUM NAILING PER 2018 IBC TABLE 2304.10) OR MORE, AS OTHERWISE SHOWN. PRESSURE TREAT ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY. PROVIDE CUT WASHERS WHERE BOLT HEADS, NUTS AND LAG SCREW HEADS BEAR ON WOOD. DO NOT NOTCH OR DRILL STRUCTURAL MEMBERS, EXCEPT AS ALLOWED BY IBC SECTIONS 2308.4.2.4 AND 2308.14 OR AS APPROVED PRIOR TO INSTALLATION.

**WOOD SHEATHING:** SHALL BE STRUCTURAL PLYWOOD OR ORIENTED STRAND BOARD. PLYWOOD SHALL BE GROUP 1 OR GROUP 2 SPECIES, C-D GRADE EXPOSURE 1 CONFORMING TO PS 1-83. EACH PANEL SHALL BEAR THE GRADE TRADEMARK OF THE AMERICAN PLYWOOD ASSOCIATION. ORIENTED STRAND BOARD (OSB) SHALL BE APA RATED STRUCT-I FOR ROOF AND WALLS AND APA RATED STURDY-I FLOOR FOR FLOORS. EACH PANEL SHALL BE CLASSIFIED AS EXPOSURE 1 AND SHALL BEAR THE GRADE TRADEMARK OF THE AMERICAN PLYWOOD ASSOCIATION (APA).

**FRAMING LUMBERS**

STANDARDS: CONFORM TO WEST COAST LUMBER INSPECTION BUREAU (WCLIB) OR WESTERN WOOD PRODUCTS ASSOCIATION (WWPA). EACH PIECE SHALL BEAR THE WCLIB OR WWPA GRADE TRADE-MARK.

| SPECIES AND GRADE - BASE DESIGN VALUES (PSI) per NDS |                  |          |          |       |      |          |
|--|------------------|----------|----------|-------|------|----------|
| STRUCTURAL ELEMENT                                   | SPECIES/GRADE    | $f_{bx}$ | $f_{vx}$ | $E_c$ | $E$  |          |
| 1. 6x BEAMS AND HEADERS                              | DF NO. 2         | 875      | 170      | 625   | 6000 | 13000000 |
| 2. 4x BEAMS AND HEADERS                              | DF NO. 2         | 900      | 180      | 625   | 1350 | 525      |
| 3. 2x JOIST  | HF NO. 2         | 850      | 150      | 405   | 1300 | 525      |
| 4. 6x POST   | DF NO. 1         | 1200     | 170      | 625   | 1000 | 625      |
| 5. 4x POST   | DF NO. 2         | 850      | 180      | 625   | 1400 | 500      |
| 6. 5 1/2x GLU-LAM POST                               | 24F-V4, 24F-V8   | 2400     | 265      | 650   | 1650 | 11000000 |
| 7. GLU-LAM BEAM                                      | 24F-V4, 24F-V8   | 2400     | 265      | 650   | 1650 | 11000000 |
| 8. 3 1/2x OR 5 1/4x PSL BEAM                         | PARALLAM PSL     | 2300     | 230      | 750   | 2300 | -        |
| 9. 3 1/2x OR 5 1/4x LVL BEAM                         | MICROLLAM LVL    | 2600     | 285      | 750   | 2510 | -        |
| 10. 3 1/2x OR 5 1/4x LSL BEAM                        | TIMBERSTRAND LSL | 1700     | 400      | 600   | 1400 | -        |
| 11. 2x WALL FRAMING, 18FT                            | HF NO. 2         | 850      | 150      | 405   | 1300 | 525      |
| 12. 2x WALL FRAMING, 18FT                            | DF NO. 1         | 1000     | 180      | 625   | 1500 | 675      |

**GLUE-LAMINATED MEMBERS:** CONFORM TO ANSI/AITC A190.1. MEMBERS SHALL BE COMBINATION 24F-V4 DOUGLAS FIR FOR SIMPLE SPANS, 24F-V8 DOUGLAS FIR FOR CANTILEVERED SPANS WITH EXTERIOR GLUE.

**JOISTS:** SHALL BE TRUS JOIST MACHILLAN OR APPROVED EQUAL, AS INDICATED ON THE STRUCTURAL DRAWINGS. JOISTS SHALL BE MANUFACTURED IN ACCORDANCE WITH A CURRENT ICC REPORT AND APPROVED SHOP AND INSTALLATION DRAWINGS.

**WOOD CONNECTIONS:** SHALL BE MANUFACTURED BY SIMPSON STRONG-TIE AS SPECIFIED IN THEIR LATEST CATALOG. PROVIDE MAXIMUM SIZE AND QUANTITY OF NAILS, BOLTS, OR SCREWS SPECIFIED ON CONNECTOR HARDWARE. CONTRACTOR'S PROPOSED SUBSTITUTION OF OTHER MANUFACTURER'S CONNECTORS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND WRITTEN APPROVAL PRIOR TO ORDERING. REQUESTS FOR SUBSTITUTION SHALL INCLUDE CURRENT ICC AND/OR IAPMO E5 REPORTS AND A LIST STATING THE PROPOSED ITEM-FOR-ITEM SUBSTITUTION HAS AN EQUIVALENT OR GREATER LOAD CAPACITY. IN ADDITION, SUBSTITUTIONS SHALL COMPLY WITH CURRENT ICC ACCEPTANCE CRITERIA AC3 AND/OR IAPMO EVALUATION CRITERIA 002-2007 FOR JOIST HANGERS AND SIMILAR DEVICES AND ICC AC 155 FOR HOLD-DOWNS AND TENSION TIES. BOLTS IN WOOD CONNECTIONS SHALL CONFORM TO ASTM A-307, GRADE A.

**STRUCTURAL WOOD SCREWS:** WHERE SPECIFIED OR REQUIRED BY SPECIFIC HARDWARE, SCREWS SHALL BE '90' STRONG-DRIVE SCREWS MANUFACTURED BY SIMPSON STRONG-TIE AS SPECIFIED IN THEIR LATEST CATALOG AND ICC ESR-2236. SUBSTITUTION PROPOSED BY THE CONTRACTOR SHALL BE SUBMITTED WITH A CURRENT ICC E5 REPORT TO THE STRUCTURAL ENGINEER FOR REVIEW AND WRITTEN APPROVAL. IN ADDITION, SUBSTITUTIONS SHALL COMPLY WITH CURRENT ICC ACCEPTANCE CRITERIA AC233 (ALTERNATE DOVEL TYPE THREADED FASTENERS).

**REQUIREMENTS FOR FASTENERS IN TREATED MATERIAL:** ALL HARDWARE AND FASTENERS IN PRESSURE TREATED MATERIAL SHALL BE SIMPSON G05 HDG (HOT DIPPED GALVANIZED) OR S07300 STAINLESS STEEL CONNECTORS OR EQUIVALENT.

HOT DIPPED GALVANIZED FASTENERS SHALL BE USED WITH G05 Z-MAX AND HDG CONNECTORS AND STAINLESS STEEL FASTENERS SHALL BE USED WITH S07300 CONNECTORS. DO NOT USE STAINLESS STEEL FASTENERS WITH G05 Z-MAX OR HDG CONNECTORS.

ALL ANCHOR BOLTS, WASHERS, AND NUTS SHALL BE HOT DIPPED GALVANIZED.

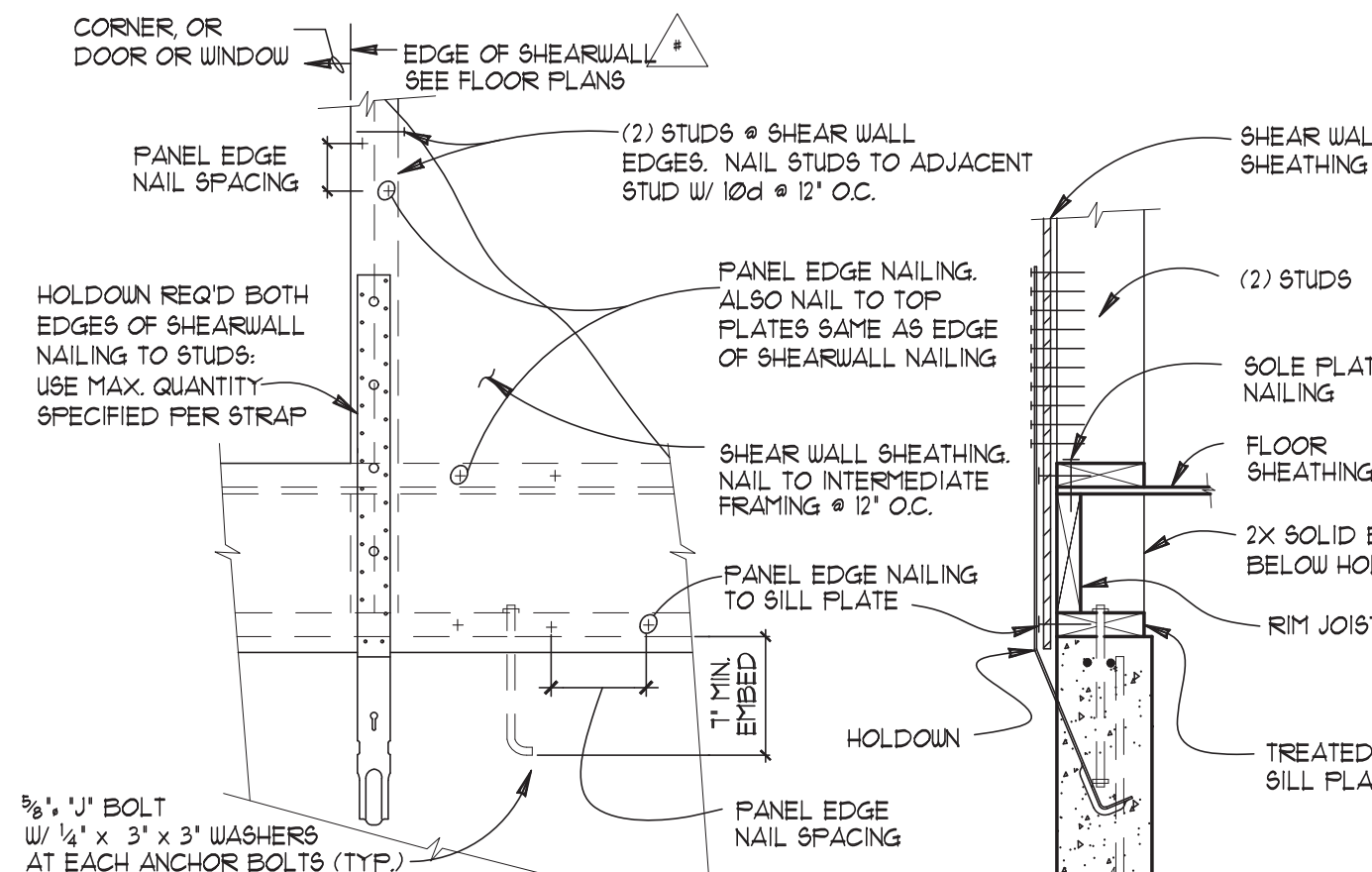
HOT DIPPED OR STAINLESS STEEL NAILS MUST BE USED WHEN FASTENING SHEATHING, STUDS, AND JOIST INTO TREATED MIDSILL. HOT DIPPED GALVANIZED OR STAINLESS STEEL FASTENERS SHALL BE USED WHEN FASTENING DECKING TO TREATED MEMBERS.

**WOOD TRUSSES (IBC 2303.4) SHALL BE:**

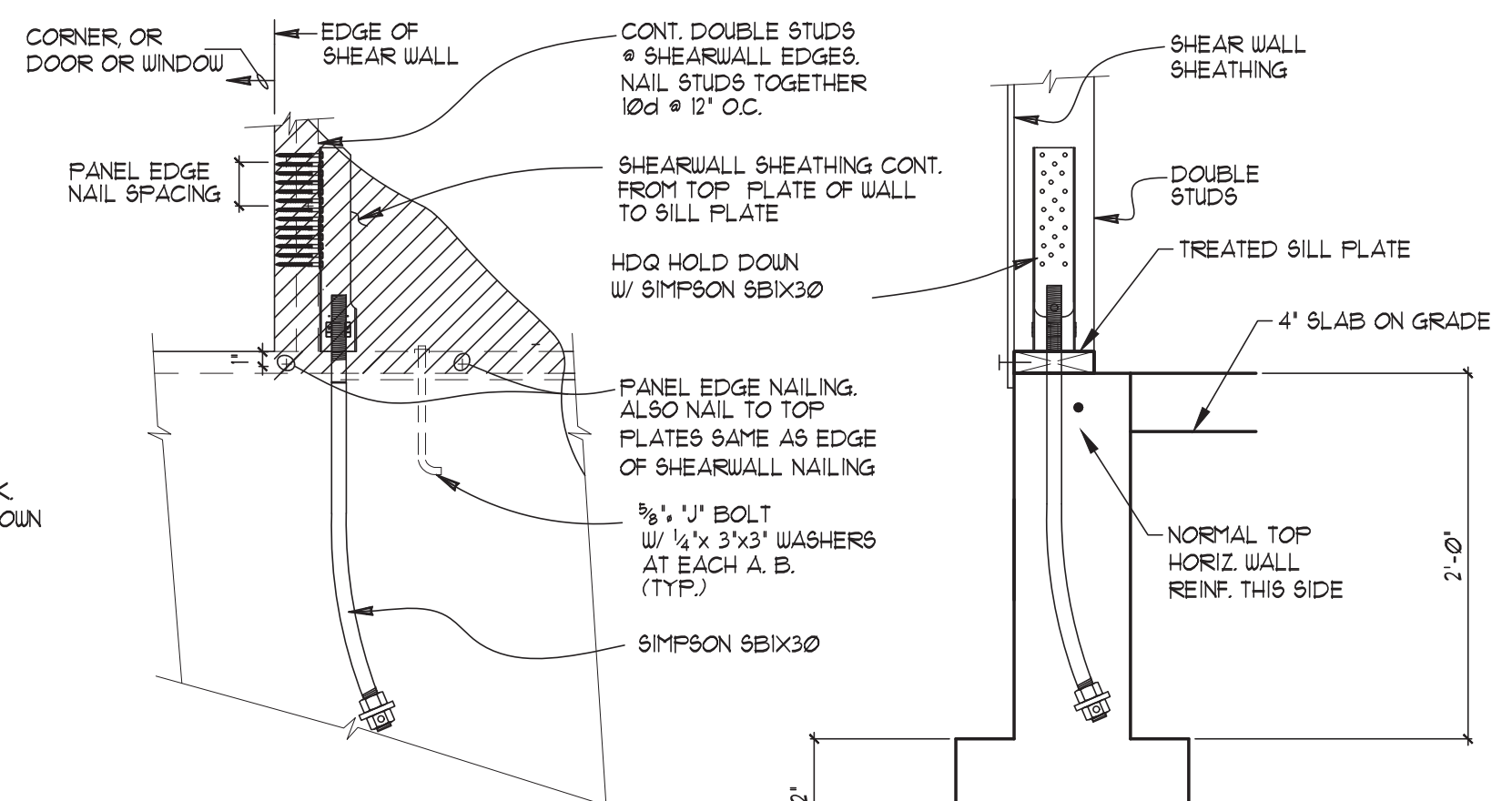
- DESIGNED PER IBC 2303.4.1) TO CARRY LOADS LISTED IN THE DESIGN CRITERION AND ANY ADDITIONAL POINT LOADS, UNIFORM LOADS, OR DRAG STRUT FORCES NOTED ON FRAMING PLANS.
- NON-ATTIC STORAGE TRUSSES SHALL BE DESIGNED WITH A LIVE LOAD OF 20 PSF LOCATED IN THE PLANE OF THE TRUSS. THE MAXIMUM STORAGE SPACE ABOVE THE BOTTOM CHORD SHALL BE LESS THAN 42" HIGH AND 24" WIDE.
- TRUSS DESIGN DRAWINGS AND DOCUMENT SUBMITTAL (2303.4.1) SHALL INCLUDE STRESS ANALYSIS AND PICTORIAL DEPICTION OF EACH TRUSS TYPE FOR THE PROJECT AND INCLUDING A TRUSS PLACEMENT DIAGRAM (2303.4.2). TRUSS INSTALLATION DRAWINGS SHALL BEAR THE SEAL AND SIGNATURE OF A LICENSED ENGINEER IN THE STATE OF WASHINGTON. APPROVED TRUSS DOCUMENTS SHALL REMAIN ON THE JOB SITE FOR INSPECTION.
- ALTERATIONS (2303.4.5) TRUSS MEMBERS SHALL NOT BE NOTCHED, DRILLED, SPLICED, OR OTHERWISE ALTERED IN ANY WAY WITHOUT WRITTEN APPROVAL OF THE TRUSS DESIGNER. ALTERATIONS RESULTING IN THE ADDITION OF LOADS TO ANY MEMBER (E.G. HVAC EQUIPMENT, PIPING, ETC.) SHALL NOT BE PERMITTED WITHOUT APPROVAL OF TRUSS DESIGNER.
- TPI 1 SPECIFICATIONS: THE DESIGN, MANUFACTURE, FABRICATION, AND QUALITY ASSURANCE OF METAL-PLATE-CONNECTED WOOD TRUSSES SHALL BE IN ACCORDANCE WITH TPI 1.
- THE TRUSS TEMPORARY AND PERMANENT BRACING SHALL BE PER IBC SECTIONS 502.12 AND 802.103 AS WELL AS TRUSS PLATE INSTITUTES' BUILDING COMPONENT SAFETY INFORMATION.
- UNLESS NOTED OTHERWISE ON PLANS, ALL TRUSSES SHALL HAVE SIMPSON H-1 CLIPS AT EXTERIOR BEARING WALLS. AT GABLE END TRUSSES, PROVIDE SIMPSON A35 AT 24" OC.
- PROVIDE 5TC CLIPS AT ALL TRUSSES OVER NON-BEARING WALLS.
- MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION FOR INSPECTOR'S USE AND REFERENCE.

MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION FOR THE INSPECTOR'S USE AND REFERENCE.

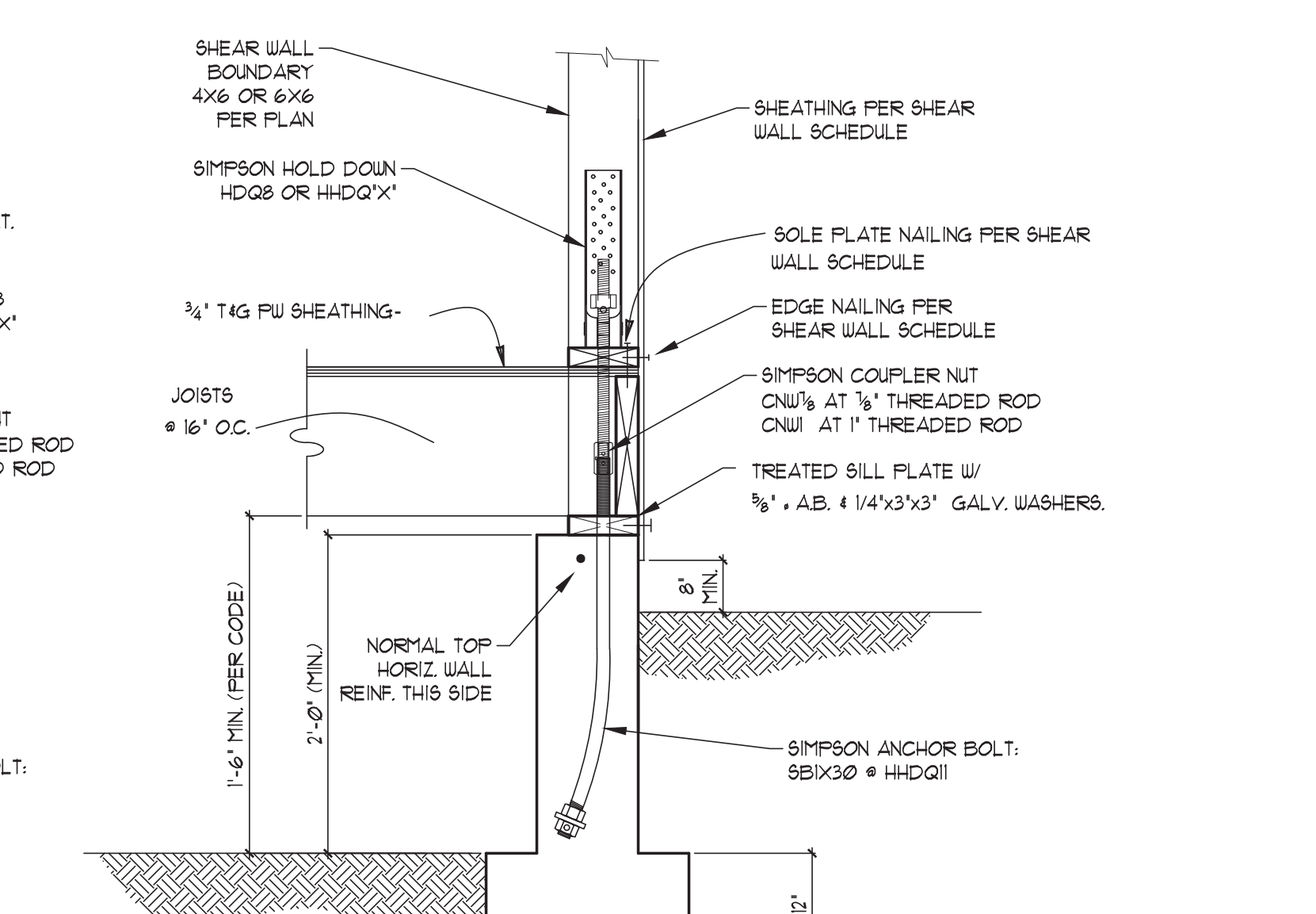
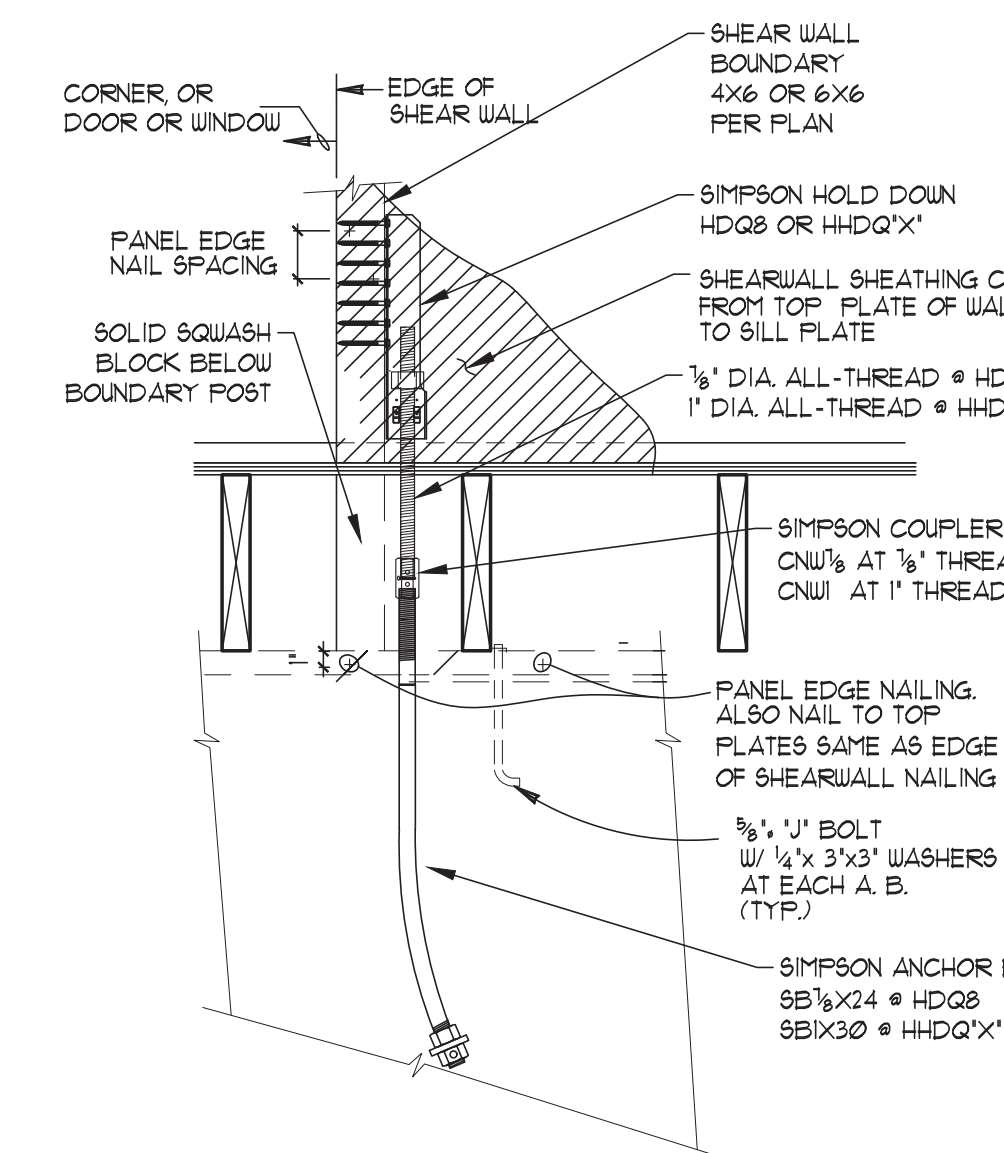
**INSPECTION (IBC CH. 1 SECT. 10)**  
CONSTRUCTION SHALL BE SUBJECT TO INSPECTION BY THE BUILDING OFFICIAL AND SUCH CONSTRUCTION OR WORK SHALL REMAIN ACCESSIBLE AND EXPOSED FOR CONTINUING INSPECTION UNTIL APPROVED. THE OWNER OR CONTRACTOR SHALL NOTIFY THE BUILDING OFFICIAL TO MAKE THE INSPECTIONS SET FORTH IN SECTIONS 10.3.1 THROUGH 10.3.10. INSPECTION REQUESTS SHALL BE THE RESPONSIBILITY OF THE BUILDING PERMIT HOLDER. WORK SHALL NOT PROCEED BEYOND THE POINT INDICATED IN EACH SUCCESSIVE INSPECTION WITHOUT OBTAINING THE APPROVAL OF THE BUILDING OFFICIAL. THE BUILDING OFFICIAL SHALL INDICATE ANY OF CONSTRUCTION THAT IS SATISFACTORY AS COMPLETED, OR NOTIFY THE CONTRACTOR ANY PORTIONS THAT ARE NOT IN COMPLIANCE TO THIS CODE. ANY PORTIONS THAT DO NOT COMPLY SHALL BE CORRECTED BY THE CONTRACTOR AND SUCH PORTION(S) SHALL NOT BE COVERED OR CONCEALED UNTIL AUTHORIZED OR SIGNED OFF BY THE BUILDING OFFICIAL.



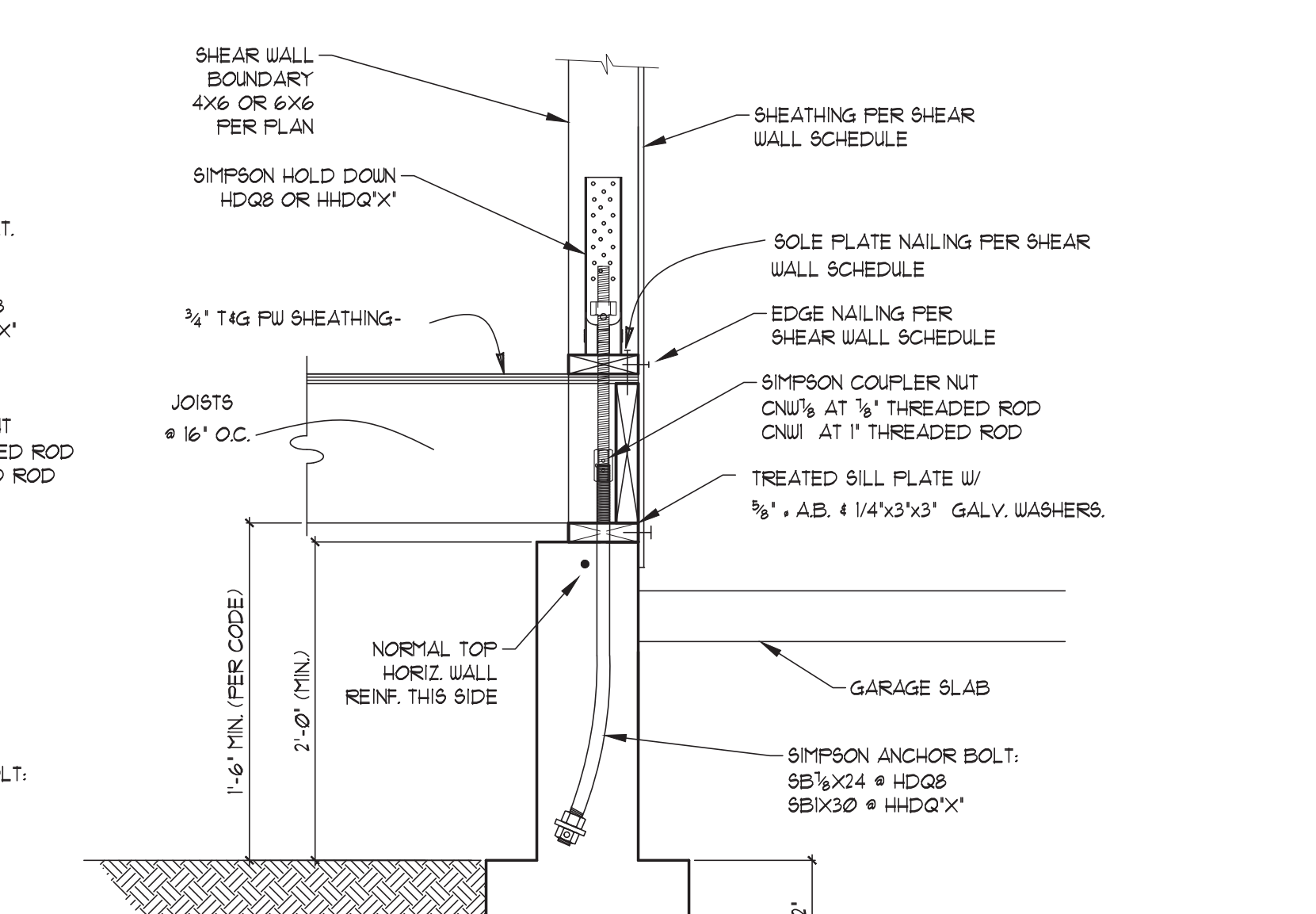
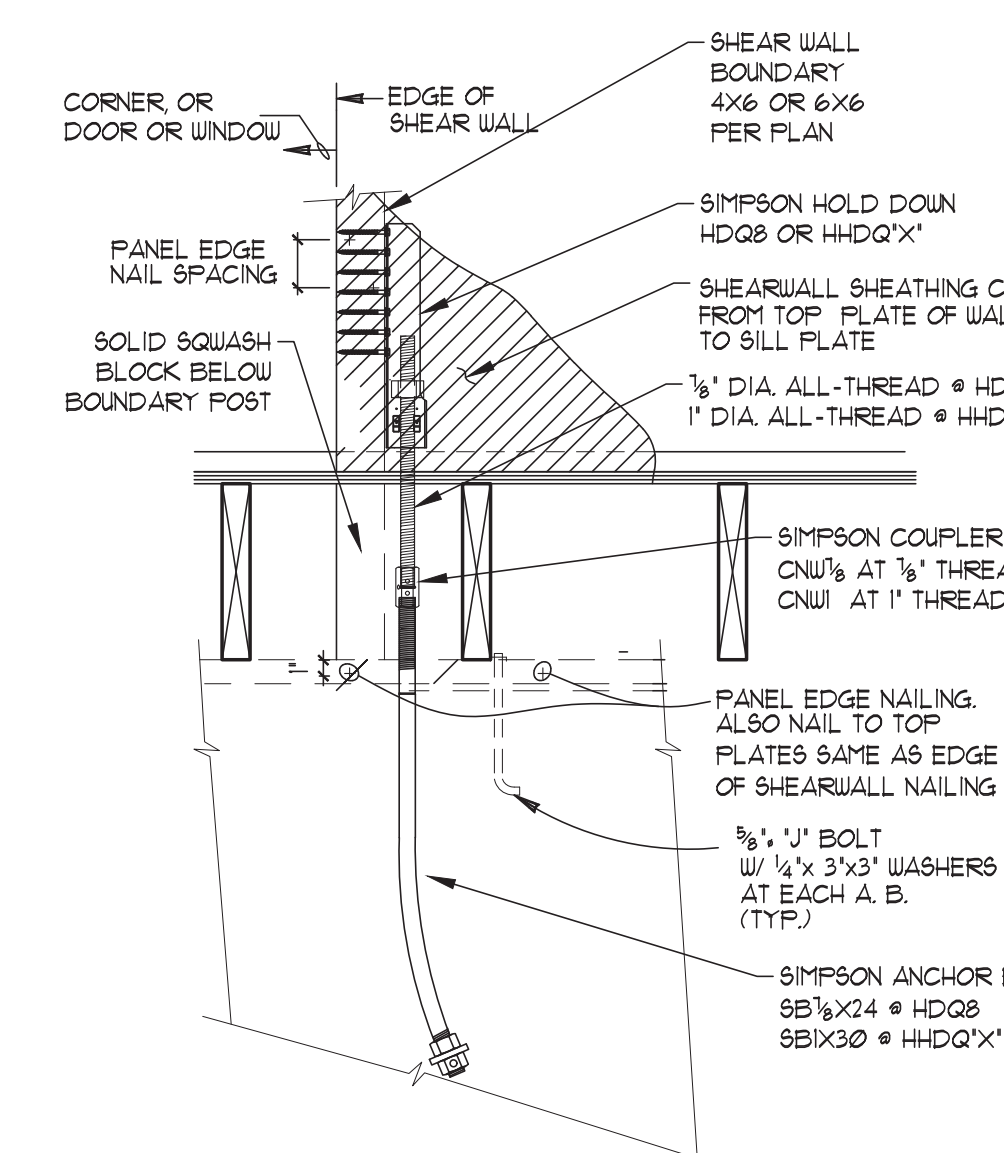
**B** DETAIL - STRAP HOLDOWN  
1'-1'-0"



**N2** DETAIL - SIMPSON "HDQ" @ SILL PLATE  
1'-1'-0"



**N4** DETAIL - SIMPSON "HDQ" @ SILL PLATE  
1'-1'-0"



**N5** DETAIL - SIMPSON "HDQ" @ SILL PLATE  
1'-1'-0"

Project  
**MARTIN QIAN AND LAURIE YANG**  
8456 SE 40TH ST  
PC: MERCER ISLAND, WA

Prepared for  
**Urbanside**  
URBAN DESIGN GROUP  
Contents  
**GENERAL NOTES**

**Professional Engineer**  
D. M. VAVRO  
12500 1st Ave. S. Suite 100  
Burien, WA 98148  
Phone: (206) 835-1100  
Fax: (206) 835-1101  
www.dmvavro.com  
January 21, 2024

**MW ENGINEERING**  
PO BOX 39681 - LAKEWOOD, WA 98499  
Cell: (253) 250-6651 Email: mrc@mwengr.com

| REV. NO. | DATE       | DESCRIPTION      |
|----------|------------|------------------|
| 01       | 06/15/2023 | ISSUE FOR PERMIT |
|          |            |                  |
|          |            |                  |

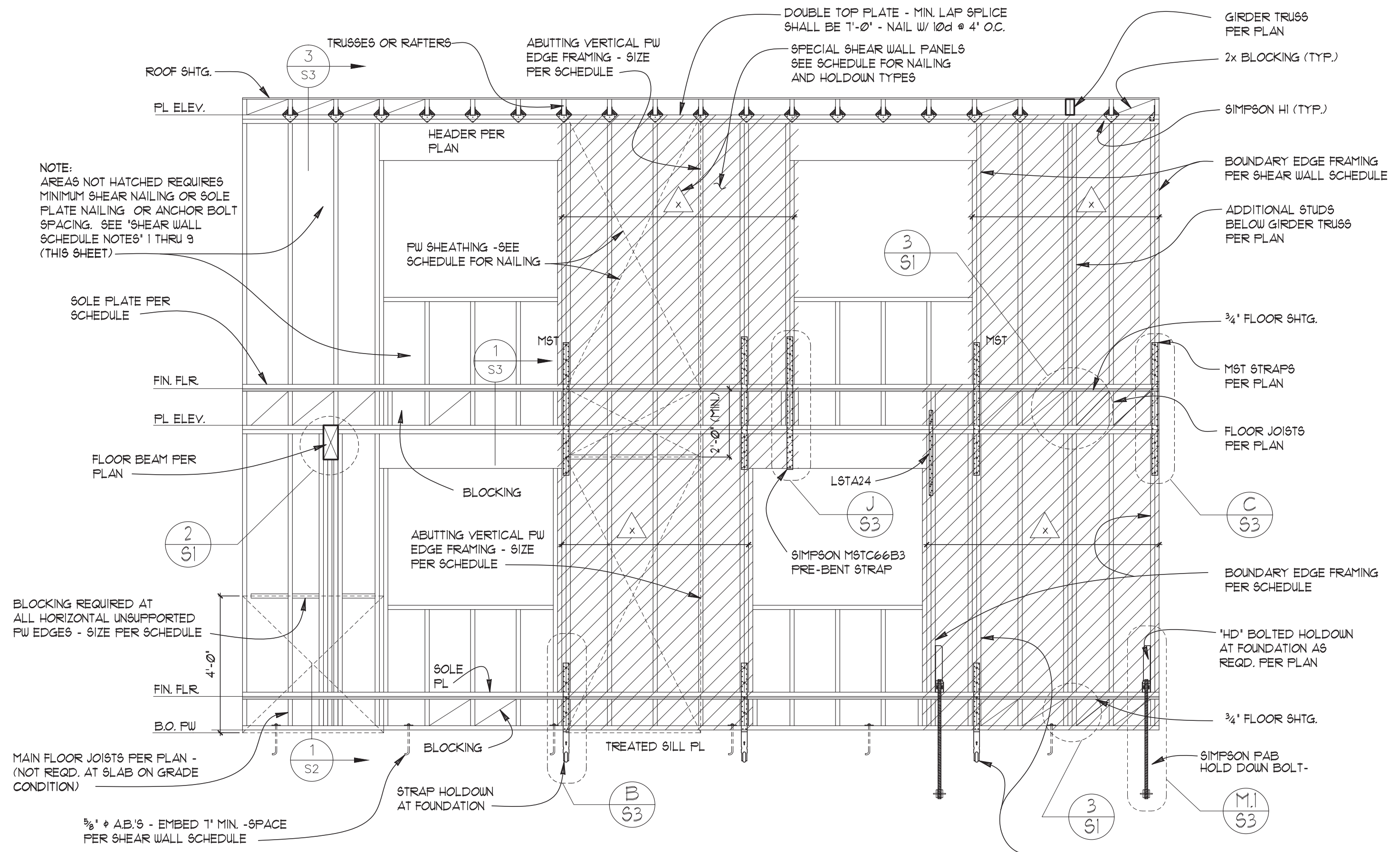
Project # :  
**12022**  
Sheet  
**S1.1**

DATE: 06/15/2023



| SHEARWALL SCHEDULE |            |                                |                                 |  |                         |                          |              |          |                          |               |               |                   |             |              |
|--------------------|------------|--------------------------------|---------------------------------|--|-------------------------|--------------------------|--------------|----------|--------------------------|---------------|---------------|-------------------|-------------|--------------|
| (1) (2) (4)        |            |                                |                                 |  |                         |                          |              |          |                          |               |               |                   |             |              |
| WALL TYPE          | (5) SHTG.  | (3) EDGE NAILING LENGTH X GAGE | (6) FIELD NAILING LENGTH X GAGE | 3/8" DIA. AB. SPACING SOLE PLATE NAILING (GA)        | ABUTTING VERT. FW EDGES | ABUTTING HORIZ. FW EDGES | (9) SOLE PL. | MUD SILL | BOUNDARY FRAMING (VERT.) | HOLDOWN TYPES | HOLDOWN BOLTS | REMARKS / DETAILS | SHEAR (PLF) | UPLIFT FORCE |
| 1                  | 15/32" FW  | 8d @ 3' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 36" O.C. 16d @ 8" O.C. (3-1/2" X 0.135")  | 2x6                     | 2x6                      | 2x6          | 2x6      | 4x6                      | HDQB          | 5B17/8X24     | (N5) S11          | 287 plf     | 4.1 k        |
| 2                  | 15/32" FW  | 8d @ 3' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 24" O.C. 16d @ 8" O.C. (3-1/2" X 0.135")  | 2x6                     | 2x6                      | 2x6          | 2x6      | 2-2x6                    | STHD14RJ      |               | (B) S11           | 219 plf     | 2.4 k        |
| 3                  | 15/32" O8B | 8d @ 4' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 36" O.C. 16d @ 8" O.C. (3-1/2" X 0.135")  | 2x6                     | 2x6                      | 2x6          | 2x6      | 2-2x6                    | STHD14RJ      |               | (B) S11           | 214 plf     | 3.5 k        |
| 4                  | 15/32" O8B | 8d @ 6' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 24" O.C. 16d @ 4" O.C. (3-1/2" X 0.135")  | 3x6                     | 3x6                      | 3x6          | 3x6      | 4x6                      | HHQII         | 5B1X30        | (N4) S11          | 487 plf     | 5.6 k        |
| 5                  | 15/32" O8B | 8d @ 6' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 48" O.C. 16d @ 16" O.C. (3-1/2" X 0.135") | 2x6                     | 2x6                      | 2x6          | 2x6      | NONE                     |               |               |                   | 223 plf     | 0.0 k        |
| 6                  | 15/32" FW  | 10d @ 3' O.C. (3" X 0.131")    | 10d @ 12" O.C. (3" X 0.131")    | 16d @ 4" O.C. (3-1/2" X 0.135")                      | 2x6                     | 2x6                      | 2x6          | 2x6      | 2-2x6                    |               |               | (C) S3 (J) S3     | 401 plf     | 4.1 k        |
| 7                  | 15/32" FW  | 8d @ 3' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 36" O.C. 16d @ 8" O.C. (3-1/2" X 0.135")  | 2x6                     | 2x6                      | 2x6          | 2x6      | 2-2x6                    |               |               | (C) S3 (J) S3     | 343 plf     | 3.4 k        |
| 8                  | 15/32" FW  | 8d @ 4' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 36" O.C. 16d @ 8" O.C. (3-1/2" X 0.135")  | 2x6                     | 2x6                      | 2x6          | 2x6      | 2-2x6                    |               |               | (C) S3 (J) S3     | 243 plf     | 3.9 k        |
| 9                  | 15/32" FW  | 8d @ 4' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 3/8" AB. @ 36" O.C. 16d @ 8" O.C. (3-1/2" X 0.135")  | 2x6                     | 2x6                      | 2x6          | 2x6      | 2-2x6                    |               |               | (C) S3 (J) S3     | 150 plf     | 0.5 k        |
| 10                 | 15/32" FW  | 8d @ 4' O.C. (2-1/2" X 0.131") | 8d @ 12" O.C. (2-1/2" X 0.131") | 16d @ 3" O.C. (3-1/2" X 0.135")                      | 3x6                     | 3x6                      | 3x6          | 3x6      | 2-2x6                    | NONE          |               |                   | 223 plf     | 0.0 k        |

NOTE: FOR ALL OTHER EXTERIOR WALLS NOT SPECIFIED IN SCHEDULE ABOVE, SEE NOTE 2. IN 'SHEAR WALL SCHEDULE NOTES'.



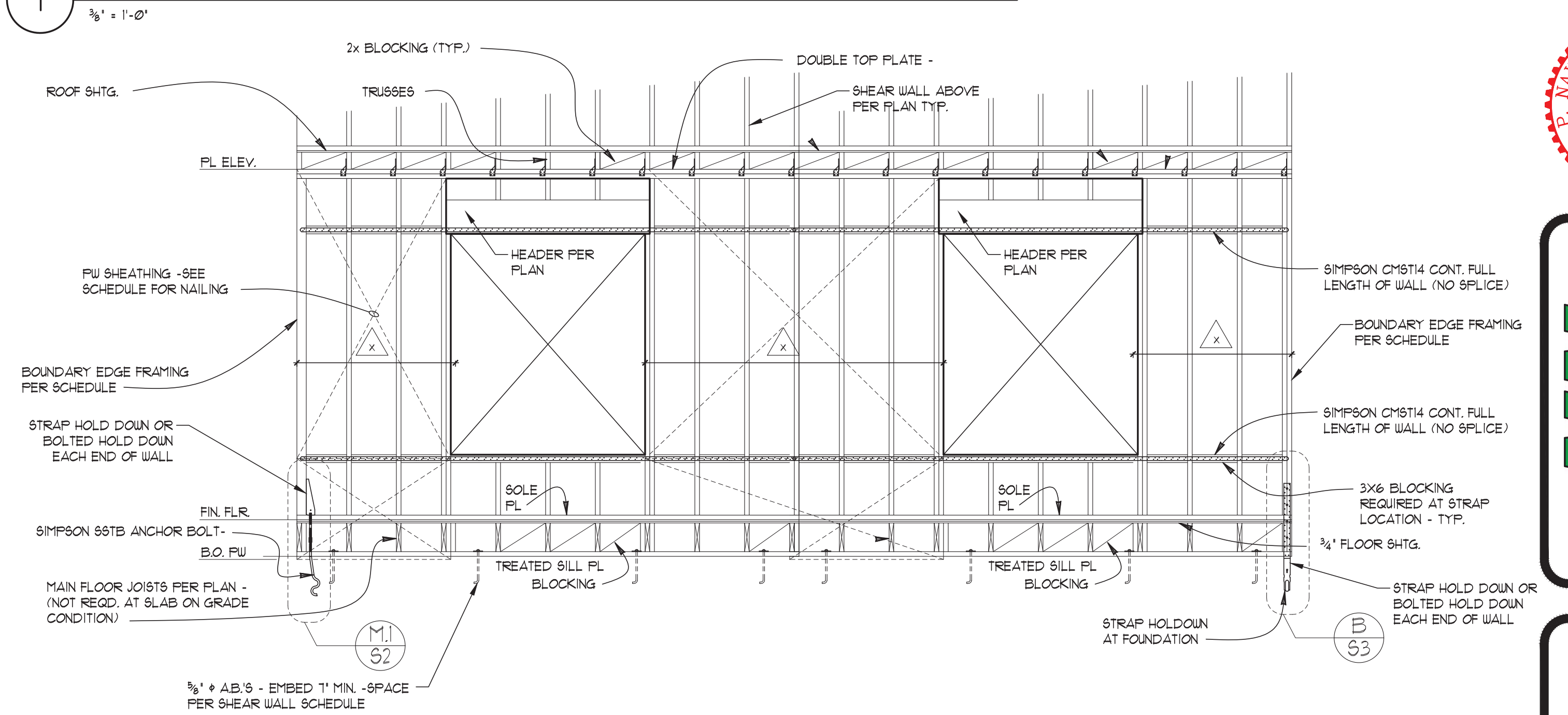
### SHEAR WALL SCHEDULE NOTES (MAIN FLOOR):

- SHEAR WALLS NOTED IN SCHEDULE ARE WALLS WITH ADDITIONAL EDGE NAILING, ABUTTING HORIZONTAL AND VERTICAL EDGE FRAMING, AND ANCHOR BOLT SPACING. FIELD NAIL SIZE SHALL MATCH THE EDGE FRAMING SPECIFIED AND BE SPACED AT 12" O.C. SHEAR NAILING APPLIES TO ALL VERTICAL AND HORIZONTAL ABUTTING SHTG. EDGES, DOUBLE TOP PLATES, AND SOLE PLATES.
- ALL EXTERIOR WALLS NOT SPECIFIED IN SHEAR WALL SCHEDULE, SHALL BE DESIGNATED AS MINIMUM SHEAR PANELS WITH EDGE NAIL SIZE MATCHING SPECIFIED NAILS IN SCHEDULE AND SPACED AT 6" O.C. FIELD NAIL SPACING SHALL BE 12" O.C.
- SHEATHING SHALL BE 1/6" O8B UNLESS SPECIFIED 15/32" STRUCTURAL #1 IN SCHEDULE.
- EXTERIOR SHEAR WALL FRAMING SHALL BE 2X6 HEM FIR #2 UNLESS NOTED 'DF' (DOUG FIR) IN SCHEDULE. FRAMING SHALL BE SPACED AT 16" O.C.
- INTERIOR SHEAR WALL FRAMING SHALL BE 2X4 (OR 2X6 PER SCHEDULE) HEM FIR #2 SPACED AT 16" O.C.
- EDGE FRAMING OR END OF SHEAR WALLS SHALL BE FRAMED WITH: (2) MINIMUM 2X6 (2X6 WALLS), (2) 2X4 (2X4 WALLS), OR SOLID SAIN POSTS AS NOTED IN THE SCHEDULE.
- BLOCK ALL UNSUPPORTED HORIZONTAL SHEATHING EDGES WITH 2X6 OR 3X6 AS NOTED IN SCHEDULE. ALL VERTICAL ABUTTING SHEATHING EDGES SHALL BE 2X6 FOR EXTERIOR WALLS OR 2X4 FOR INTERIOR WALLS OR AS NOTED IN SCHEDULE.
- SOLE PLATE SHALL BE 2X6 FOR EXTERIOR WALLS. SOLE PLATE SHALL BE 2X4 OR 2X6 FOR INTERIOR WALLS. SOLE PLATE NAILING SHALL BE 16d SPACED 12" O.C. (MAX. OR LESS AS SPECIFIED IN SCHEDULE).
- MUD SILLS SHALL BE 2X6 HF #2 F.T. CONTINUOUS AROUND PERIMETER OF FOUNDATION WALL.
- FOUNDATION ANCHOR SHALL BE 3/8" DIA. X 10" AB. FOR 2X6 MUD SILL OR 3/8" DIA. X 12" AB. FOR 3X6 MUD SILLS. IF NOT SPECIFIED BY THE SHEAR WALL SCHEDULE, ANCHOR BOLTS SHALL BE SPACED NO MORE THAN 48" O.C. ALL ANCHOR BOLTS SHALL BE EMBEDDED IN CONCRETE 1" MIN. PROVIDE (2) MINIMUM AB.'S FOR EACH MUD SILL SECTION.
- PROVIDE 3"X3"X1/4" GALV. WASHERS FOR EACH ANCHOR BOLT. THE CONTRACTOR MAY USE 3"X3"X1/4" GALV. WASHERS WITH DIAGONAL SLOTTED HOLES IF STANDARD CUT WASHERS ARE USED AND PLACED ABOVE THE SLOTTED PLATE WASHERS.

### SHEAR WALL SCHEDULE NOTES (UPPER FLOOR):

- SHEAR WALLS NOTED IN SCHEDULE ARE WALLS WITH ADDITIONAL EDGE NAILING, ABUTTING HORIZONTAL AND VERTICAL EDGE FRAMING, AND ANCHOR BOLT SPACING. FIELD NAIL SIZE SHALL MATCH THE EDGE FRAMING SPECIFIED AND BE SPACED AT 12" O.C. SHEAR NAILING APPLIES TO ALL VERTICAL AND HORIZONTAL ABUTTING SHTG. EDGES, DOUBLE TOP PLATES, AND SOLE PLATES.
- ALL EXTERIOR WALLS NOT SPECIFIED IN SHEAR WALL SCHEDULE, SHALL BE DESIGNATED AS MINIMUM SHEAR PANELS WITH EDGE NAIL SIZE MATCHING SPECIFIED NAILS IN SCHEDULE AND SPACED AT 6" O.C. FIELD NAIL SPACING SHALL BE 12" O.C.
- SHEATHING SHALL BE 1/6" O8B UNLESS SPECIFIED 15/32" STRUCTURAL #1 IN SCHEDULE.
- EXTERIOR SHEAR WALL FRAMING SHALL BE 2X6 HEM FIR #2 UNLESS NOTED 'DF' (DOUG FIR) IN SCHEDULE. FRAMING SHALL BE SPACED AT 16" O.C.
- INTERIOR SHEAR WALL FRAMING SHALL BE 2X4 (OR 2X6 PER SCHEDULE) HEM FIR #2 SPACED AT 16" O.C.
- EDGE FRAMING OR END OF SHEAR WALLS SHALL BE FRAMED WITH: (2) MINIMUM 2X6 (2X6 WALLS), (2) 2X4 (2X4 WALLS), OR SOLID SAIN POSTS AS NOTED IN THE SCHEDULE.
- BLOCK ALL UNSUPPORTED HORIZONTAL SHEATHING EDGES WITH 2X6 OR 3X6 AS NOTED IN SCHEDULE. ALL VERTICAL ABUTTING SHEATHING EDGES SHALL BE 2X6 FOR EXTERIOR WALLS OR 2X4 FOR INTERIOR WALLS OR AS NOTED IN SCHEDULE.
- SOLE PLATE SHALL BE 2X6 FOR EXTERIOR WALLS. SOLE PLATE SHALL BE 2X4 OR 2X6 FOR INTERIOR WALLS. SOLE PLATE NAILING SHALL BE 16d SPACED 12" O.C. (MAX. OR LESS AS SPECIFIED IN SCHEDULE).

### 1 ELEVATION - TWO STORY FRAMING OR SHEAR WALL (HATCHED)



### B ELEVATION - SHEAR TRANSFER SHEAR WALL - MULTIPLE WINDOWS



### C ELEVATION - SHEAR TRANSFER SHEAR WALL



Project  
MARTIN QIAN AND  
LAURIE YANG  
8456 SE 40TH ST  
PC:  
MERCER ISLAND, WA

Prepared for  
URBAN DESIGN GROUP  
Contents  
GENERAL NOTES

Professional Engineer  
MARTIN QIAN  
LAURIE YANG  
10000 1st Ave. N  
Seattle, WA 98148  
PH: 206.261.1111  
FAX: 206.261.1112  
WWW.URBANDSIGN.COM

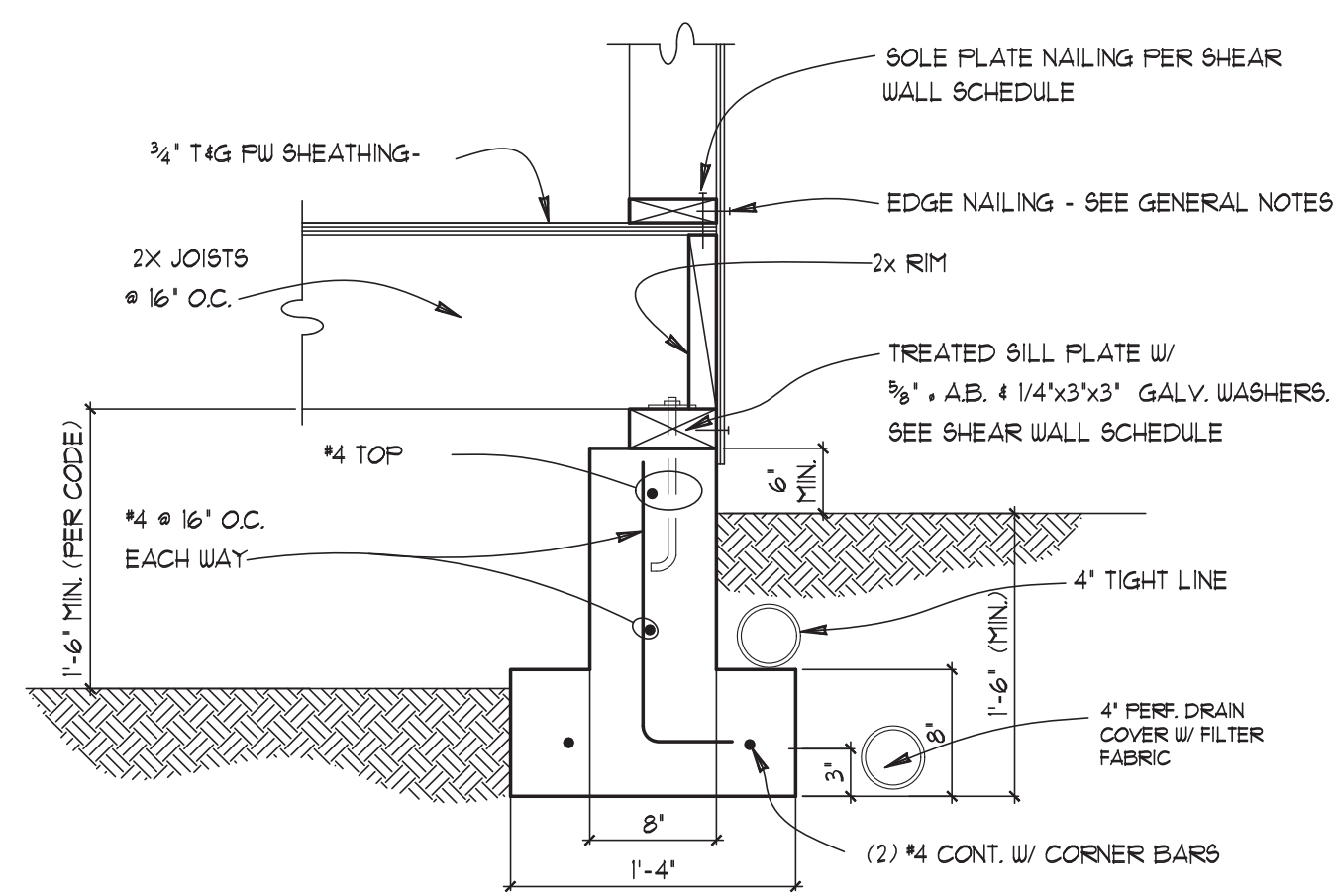
ENGINEERING  
PO BOX 39681 - LAKEWOOD, WA 98499  
Cell: (253) 250-6651 Email: mng@engineering1.com

|                   |            |
|-------------------|------------|
| DESIGN BY:<br>NFN | REVISIONS: |
| DATE: 06/15/2022  | DATE:      |
| REV. DATE:        | DATE:      |
| COMMENTS:         | DATE:      |

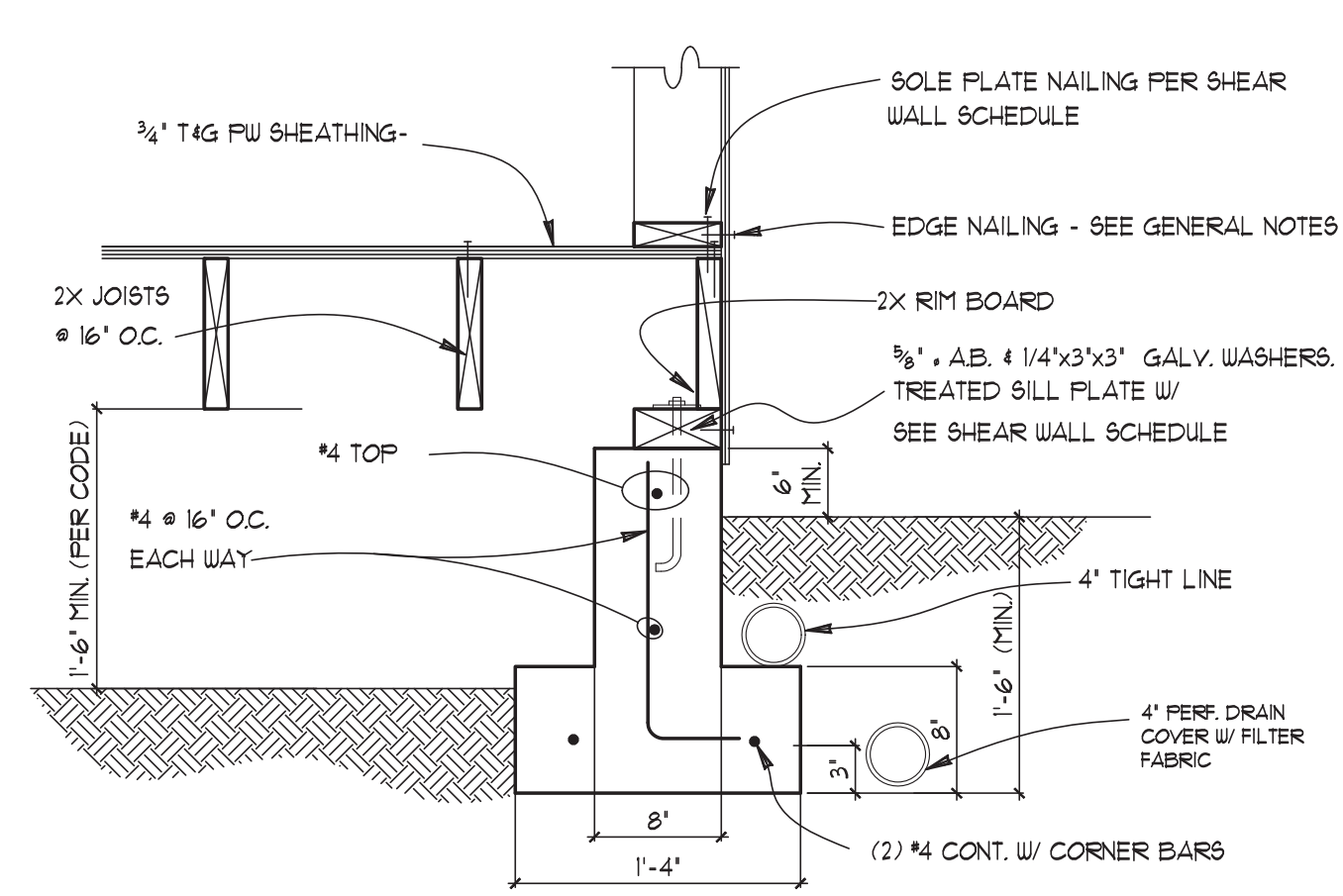
Project # :  
12022  
Sheet  
S1.2

Plot Date: 06/15/2022

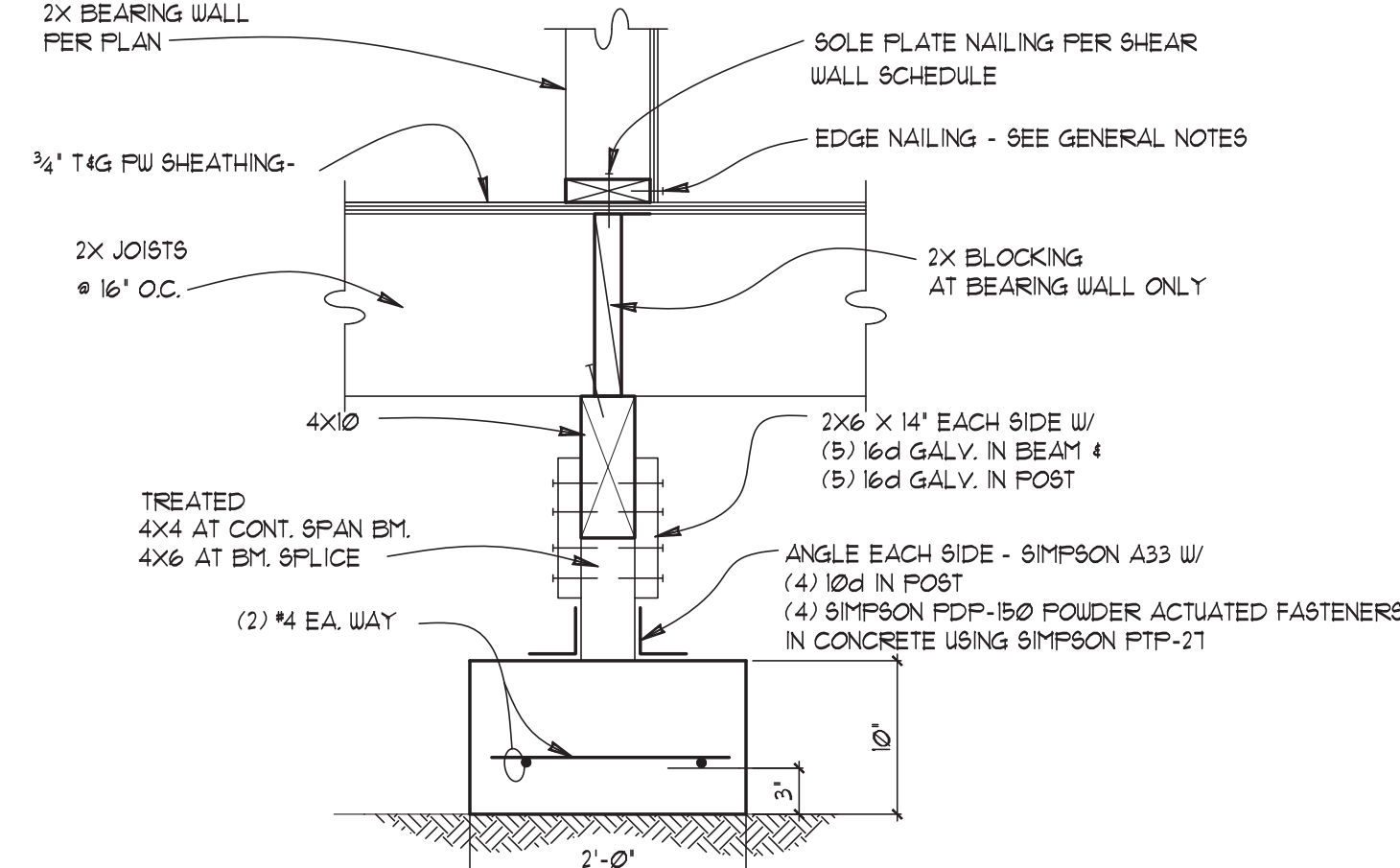




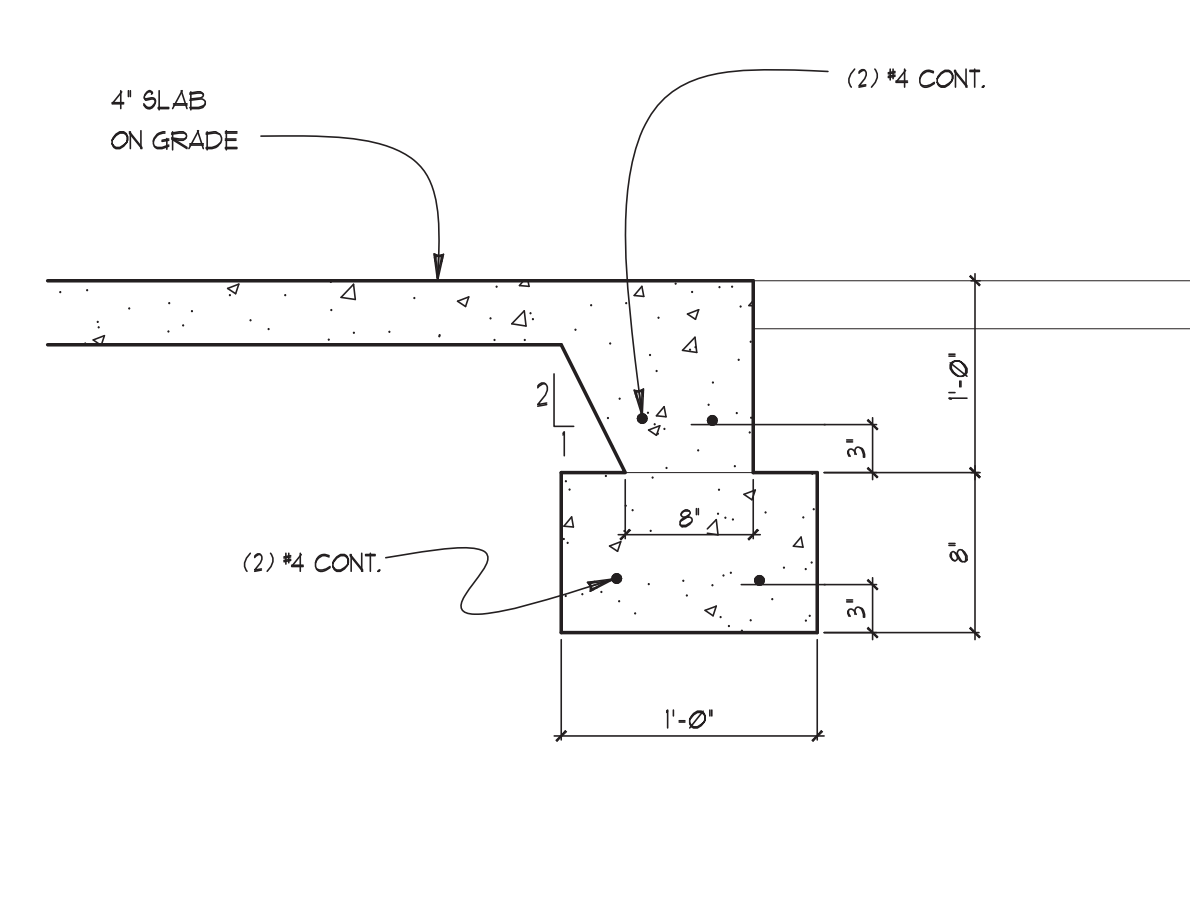
1 SECTION  
1" = 1'-0"



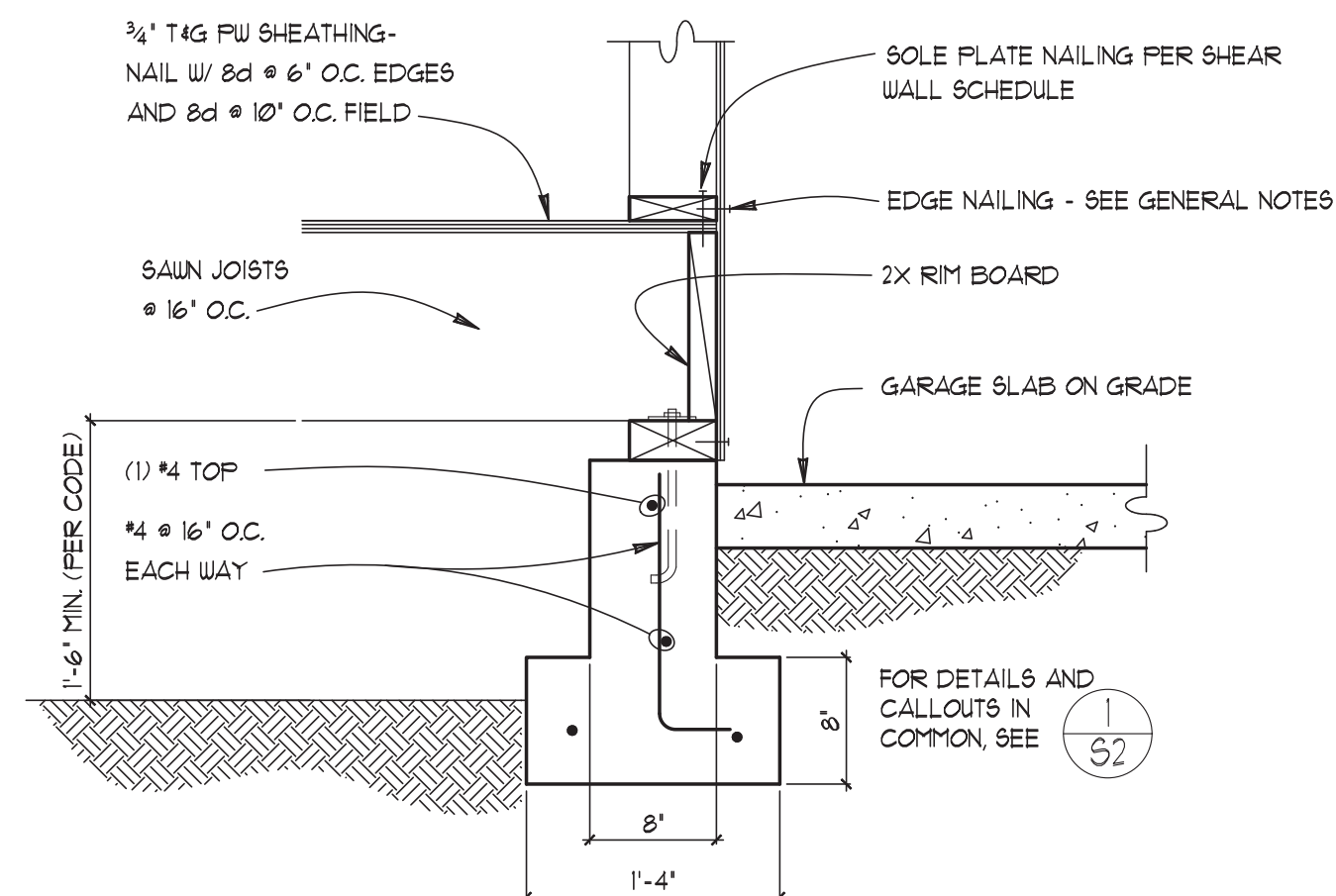
2 SECTION  
1" = 1'-0"



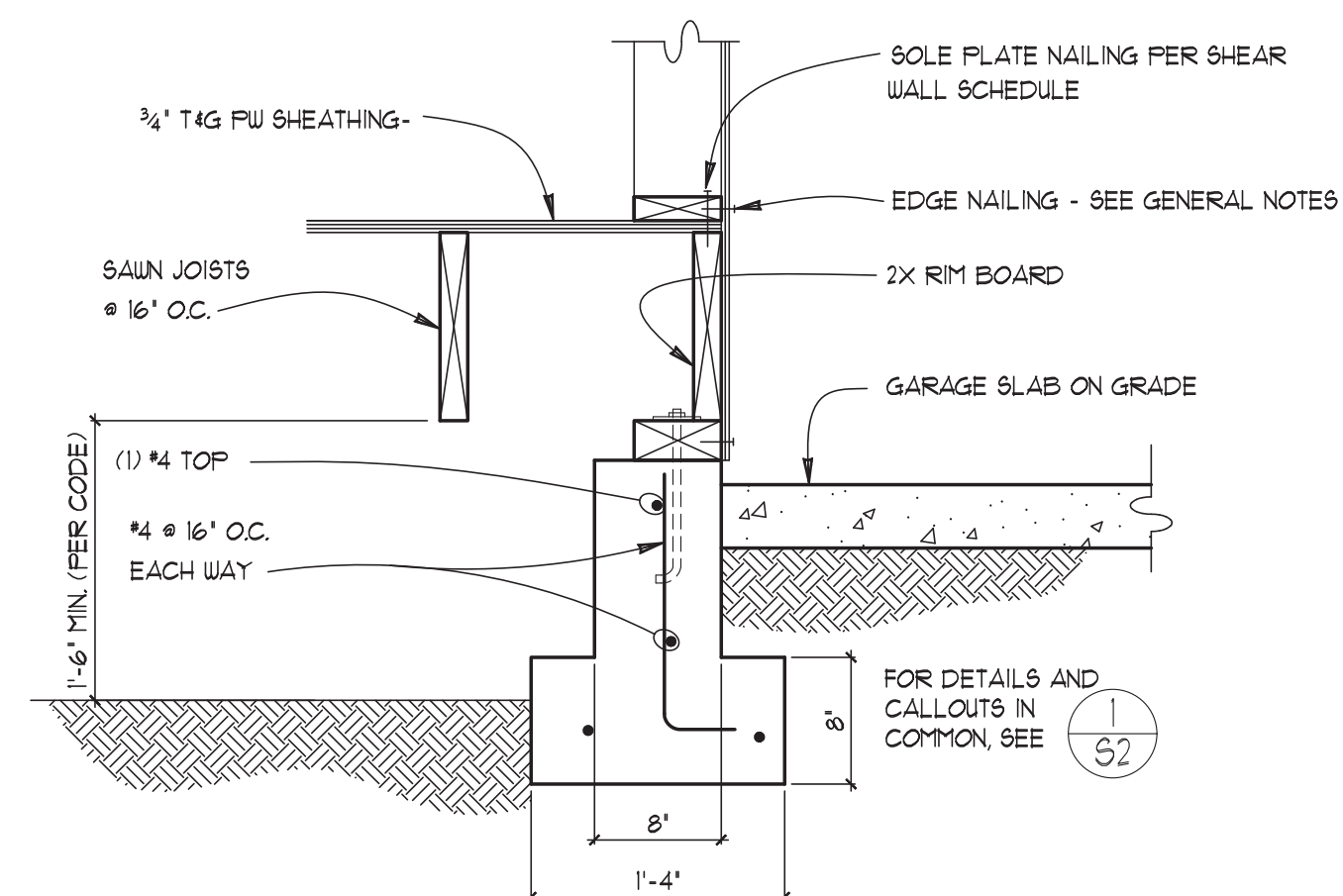
3 SECTION  
1" = 1'-0"



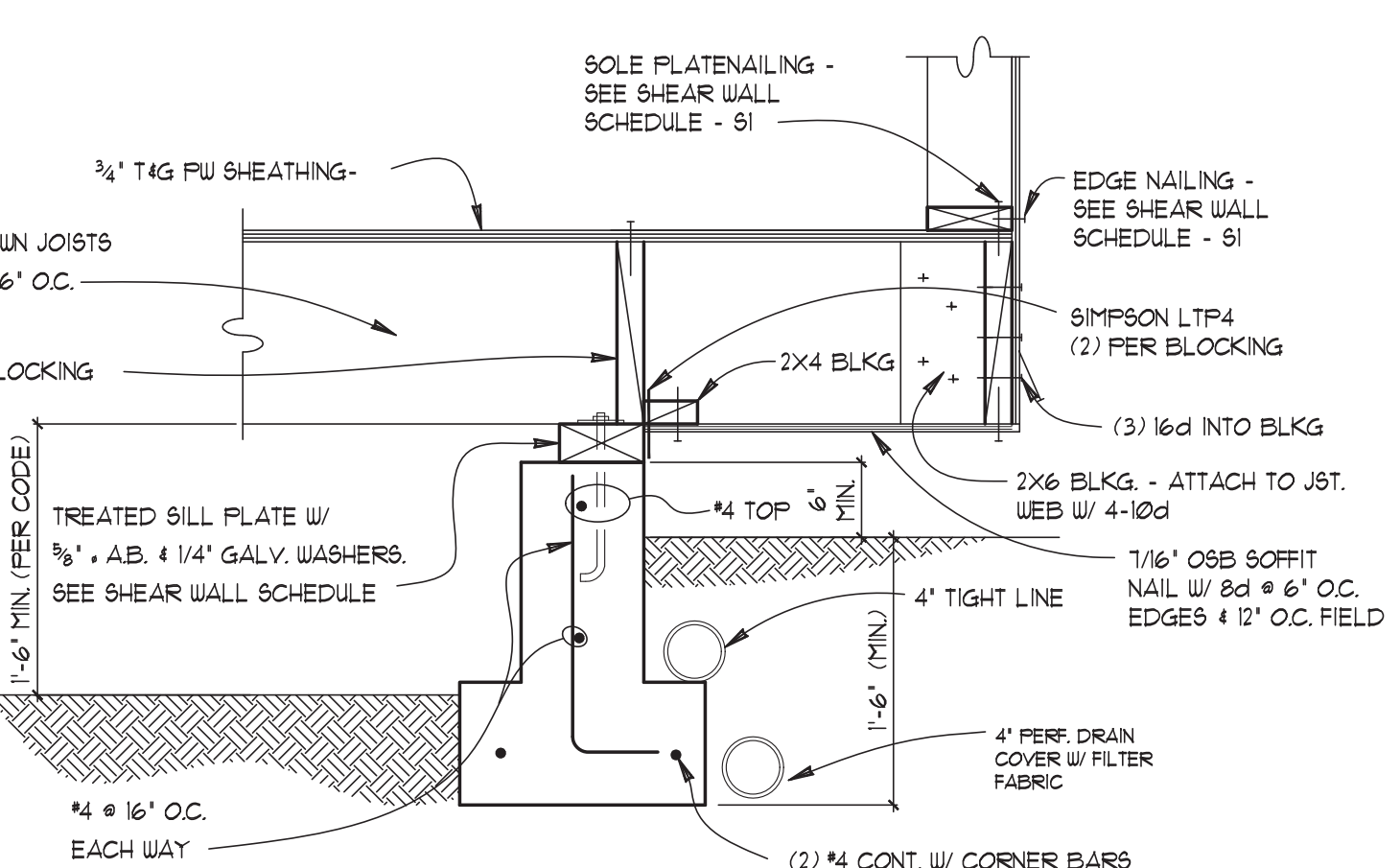
4 SECTION  
1" = 1'-0"



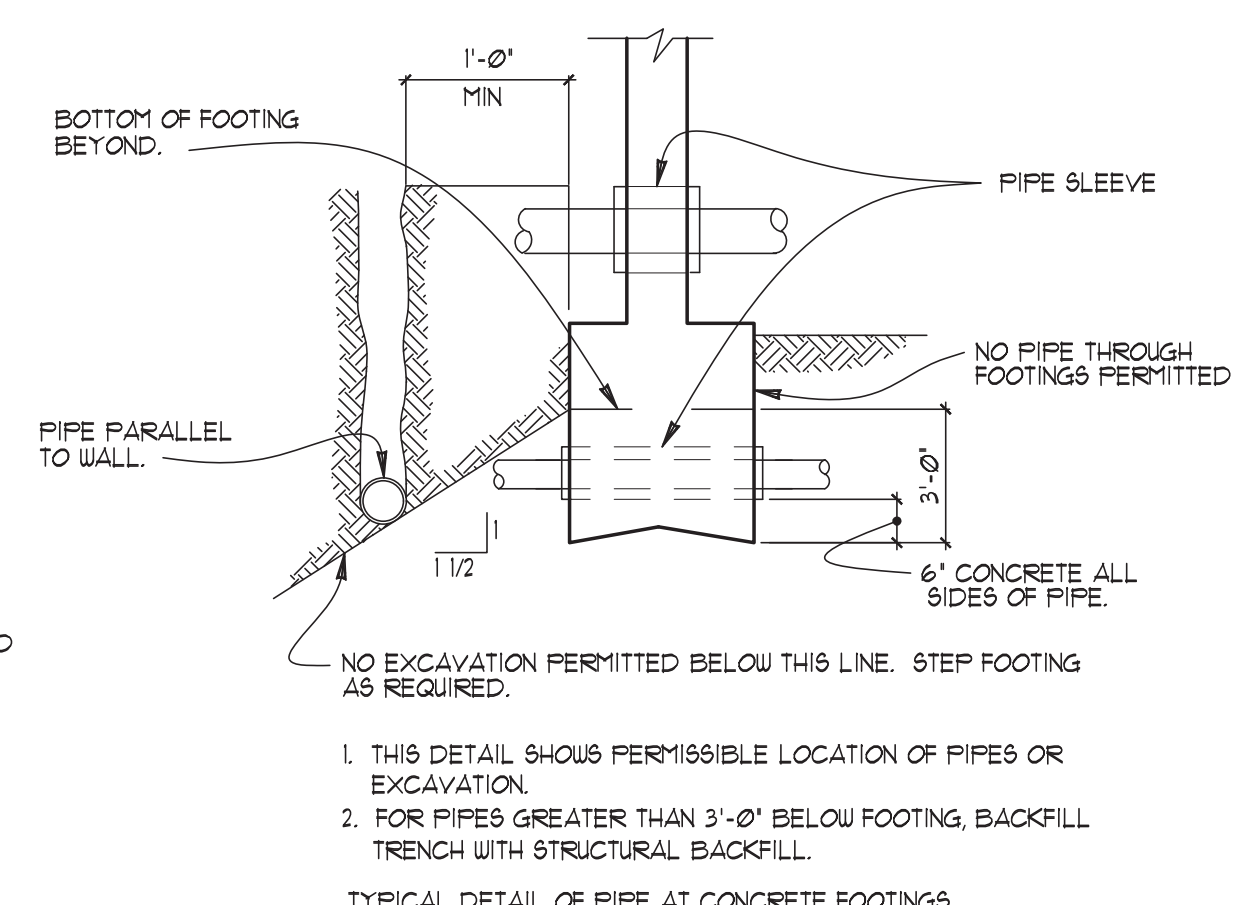
5 SECTION  
1" = 1'-0"



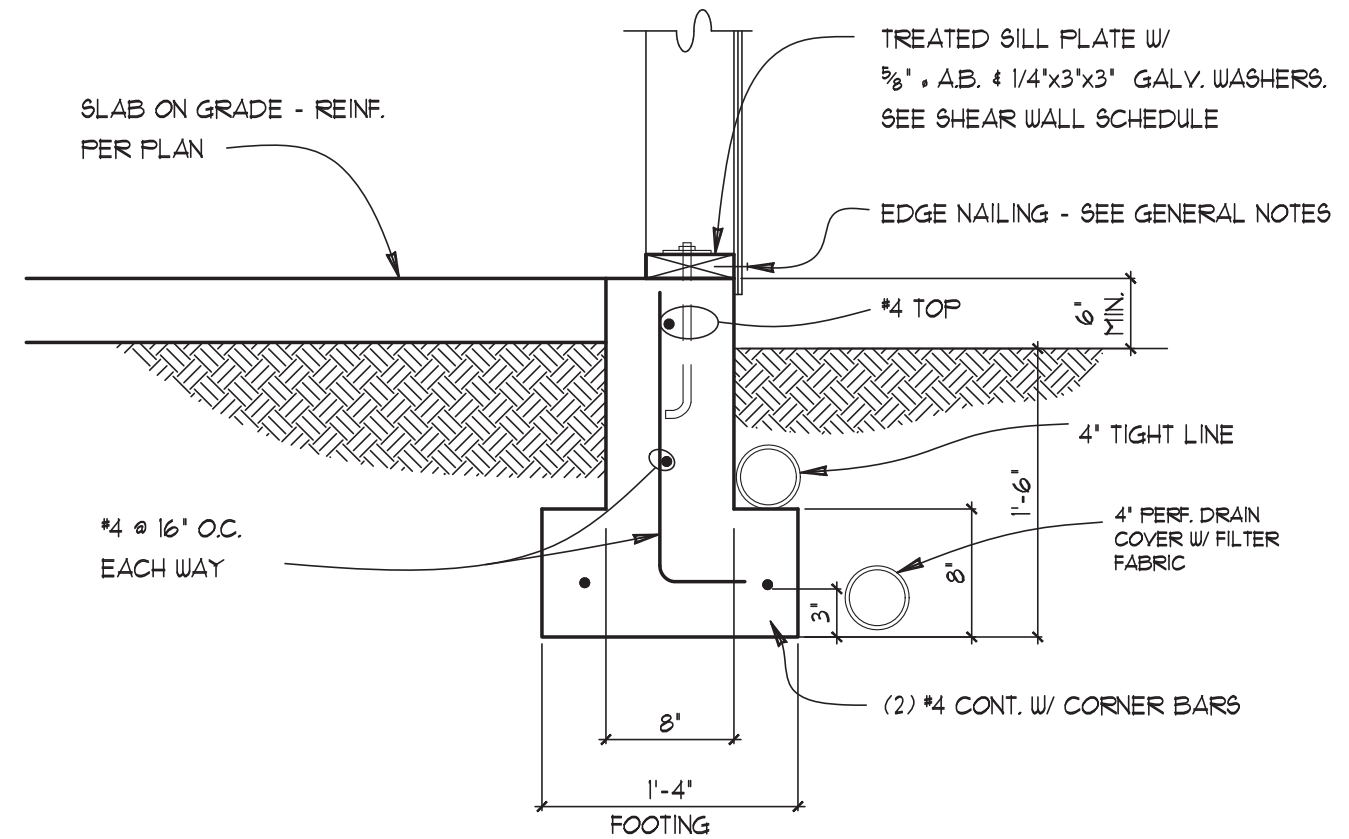
6 SECTION  
1" = 1'-0"



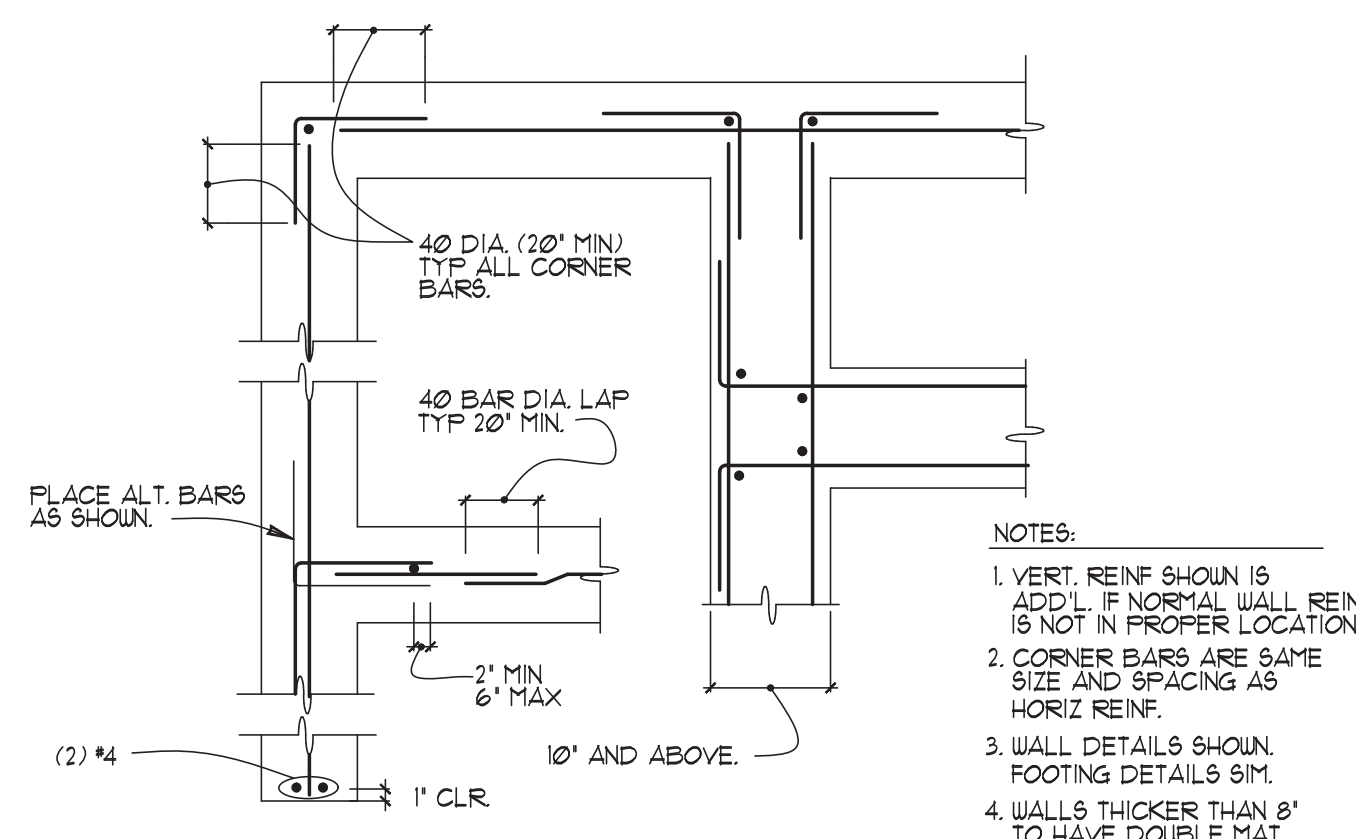
7 SECTION  
1" = 1'-0"



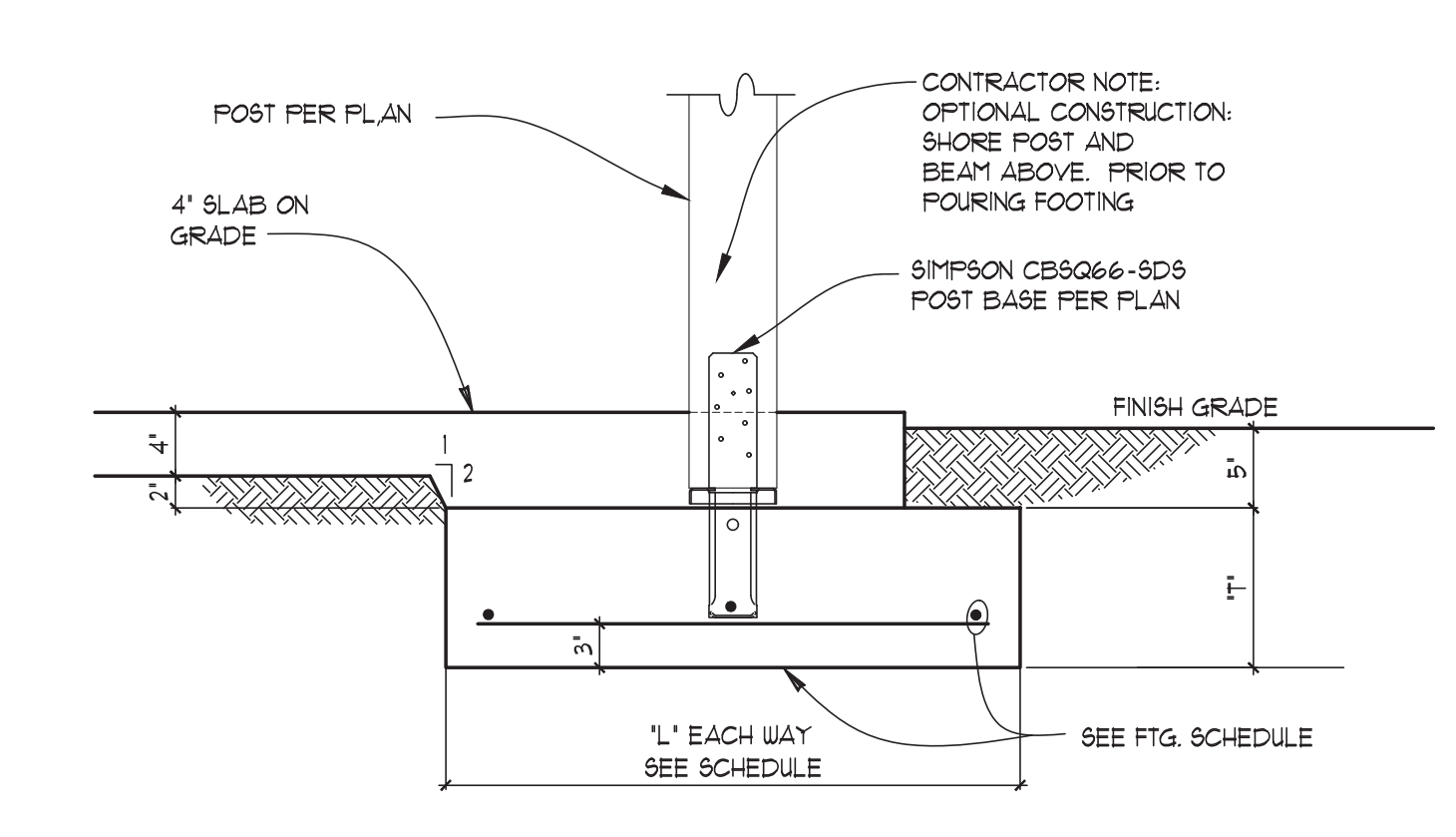
8 SECTION  
1" = 1'-0"



9 SECTION  
1" = 1'-0"



10 SECTION  
1" = 1'-0"



11 SECTION  
1" = 1'-0"

NOTES:  
1. VERT. REINF. SHOWN IS ADD'L. IF NORMAL WALL REINF. IS NOT IN PROPER LOCATION.  
2. CORNER BARS ARE SAME SIZE AND SPACING AS HORIZ. REINF.  
3. WALL DETAILS SHOWN. FOOTING DETAILS SIM.  
4. WALLS THICKER THAN 8" TO HAVE DOUBLE MAT. OF REINF. 4" AND SMALLER USE SINGLE MAT.

NO EXCAVATION PERMITTED BELOW THIS LINE. STEP FOOTING AS REQUIRED.  
1. THIS DETAIL SHOWS PERMISSIBLE LOCATION OF PIPES OR EXCAVATION.  
2. FOR PIPES GREATER THAN 3'-0" BELOW FOOTING, BACKFILL TRENCH WITH STRUCTURAL BACKFILL.  
TYPICAL DETAIL OF PIPE AT CONCRETE FOOTINGS

Project  
**MARTIN QIAN AND LAURIE YANG**  
8456 SE 40TH ST  
PC: MERCER ISLAND, WA

Prepared for  
**URBAN DESIGN GROUP**  
Contents  
**FOUNDATION DETAILS**

Professional Engineer  
D. M. FARRO  
10000 1st Ave. S.E.  
Burien, WA 98148  
PROFESSIONAL REGISTERED  
NOV 2008  
EXPIRES JANUARY 31, 2024

**MW ENGINEERING**  
PO BOX 39681 - LAKEWOOD, WA 98493  
Cell: (253) 250-6651 Email: mweengineering@gmail.com

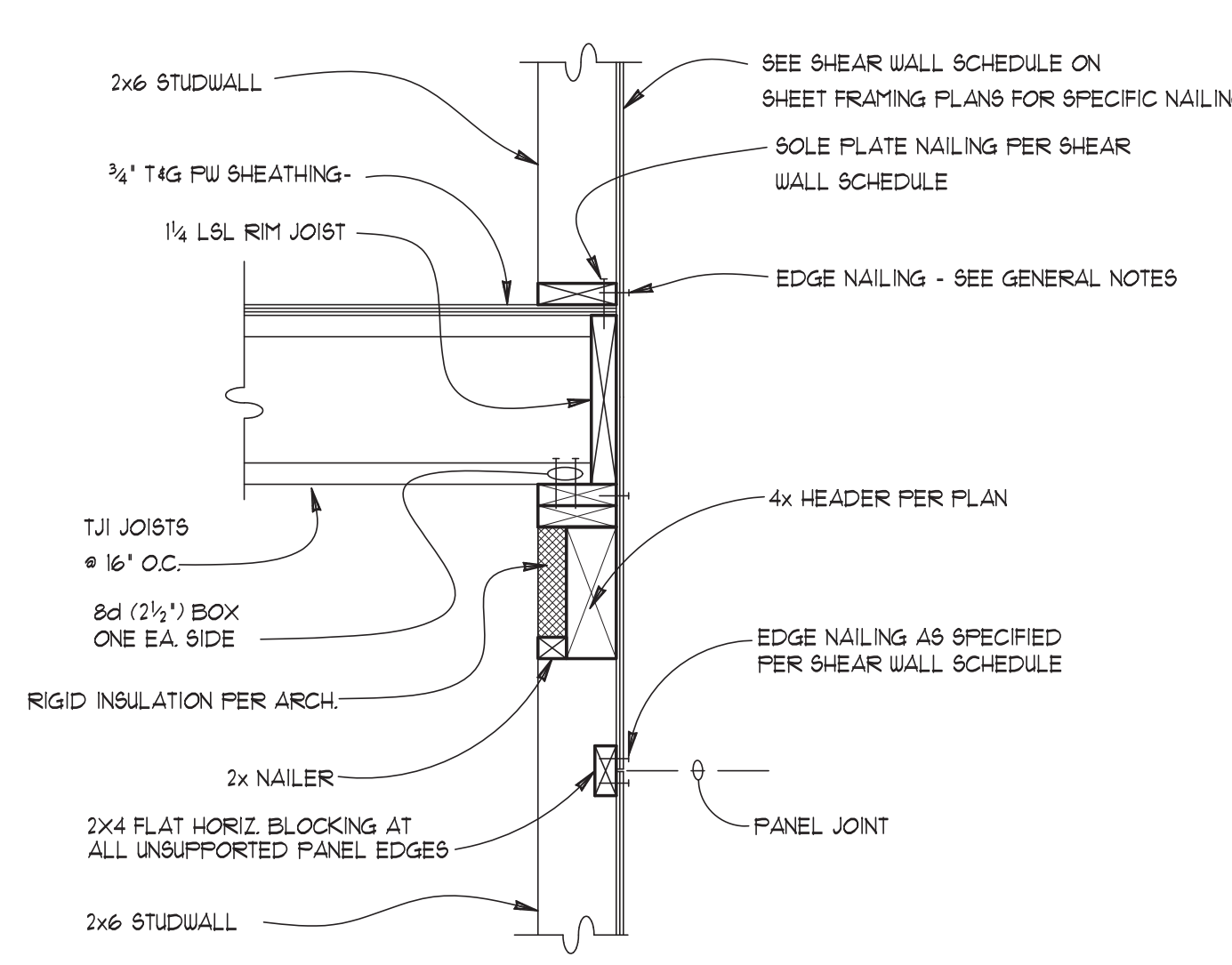
|               |            |  |
|---------------|------------|--|
| PERMIT ISSUE: | DESIGN BY: |  |
| 06/15/2023    | NFN        |  |
| REV. DATE:    | COMMENTS:  |  |
|               |            |  |

Project # :  
**12022**  
Sheet  
**S2**

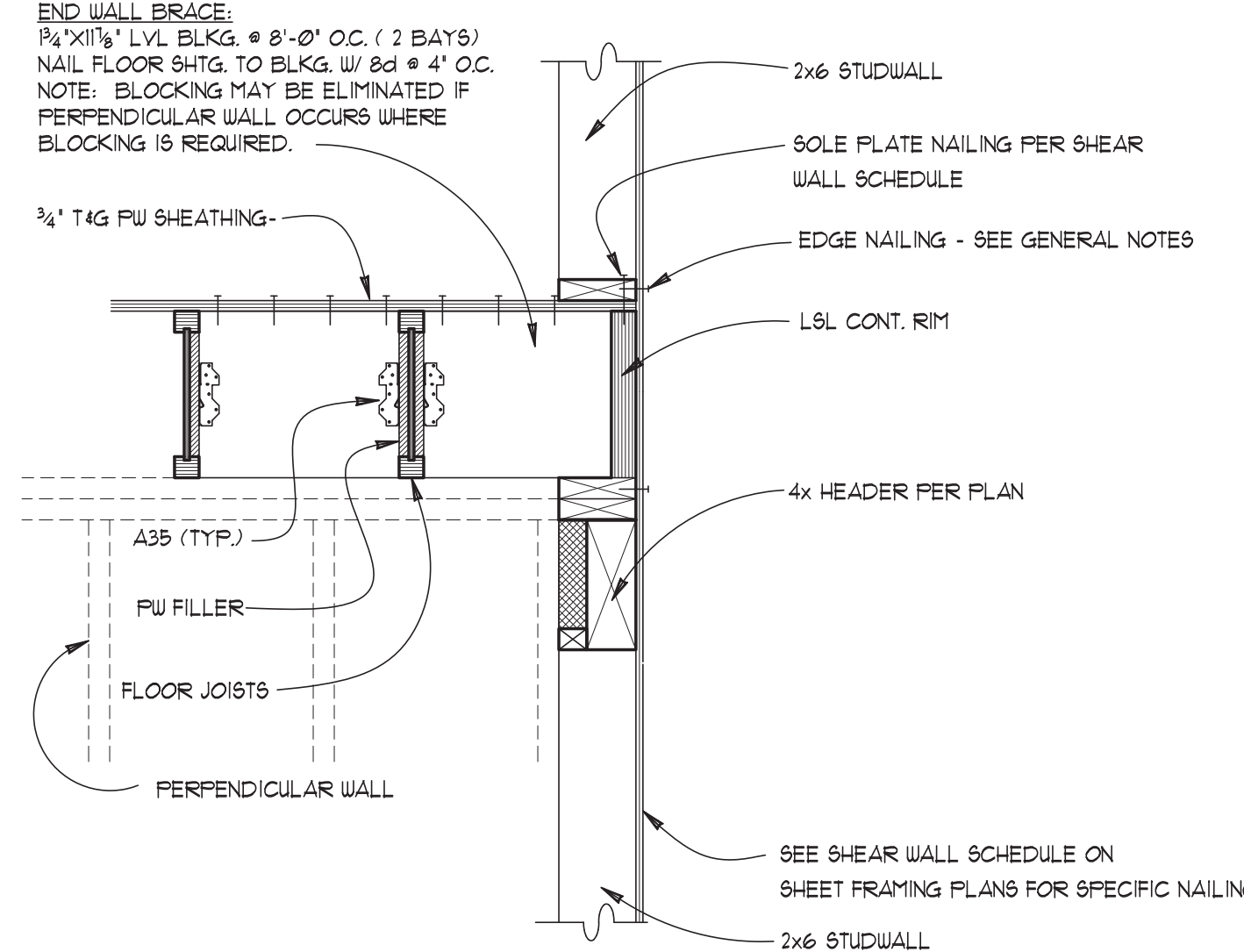
PLOT DATE: 06/15/2023

C:\Users\neng\Documents\2023\Projects\2022\Residential\Projects\12022\_Lauri\_Qian\1 Structural Drawings\12022 [3].dwg, 6/22/2023, 11:53 AM

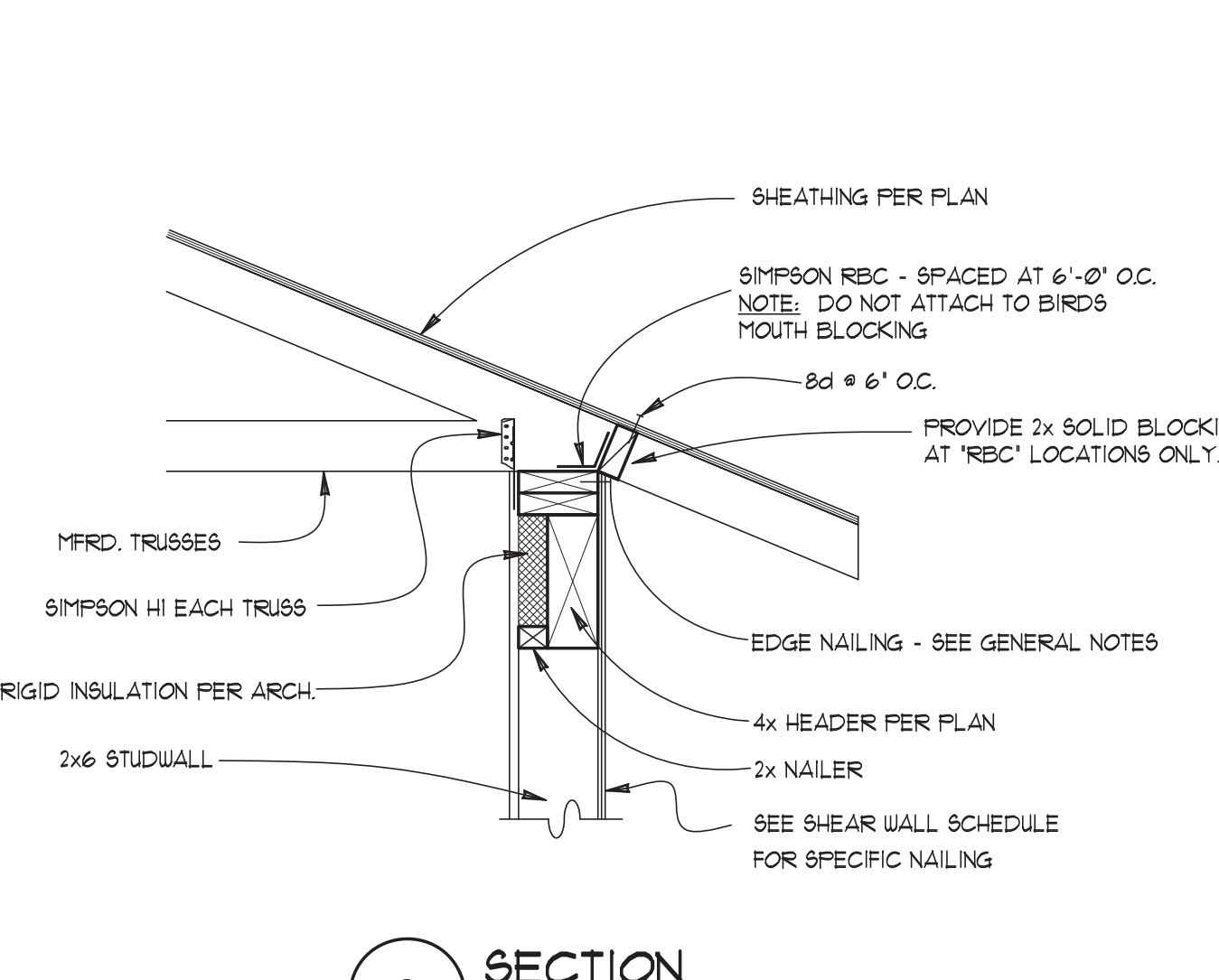




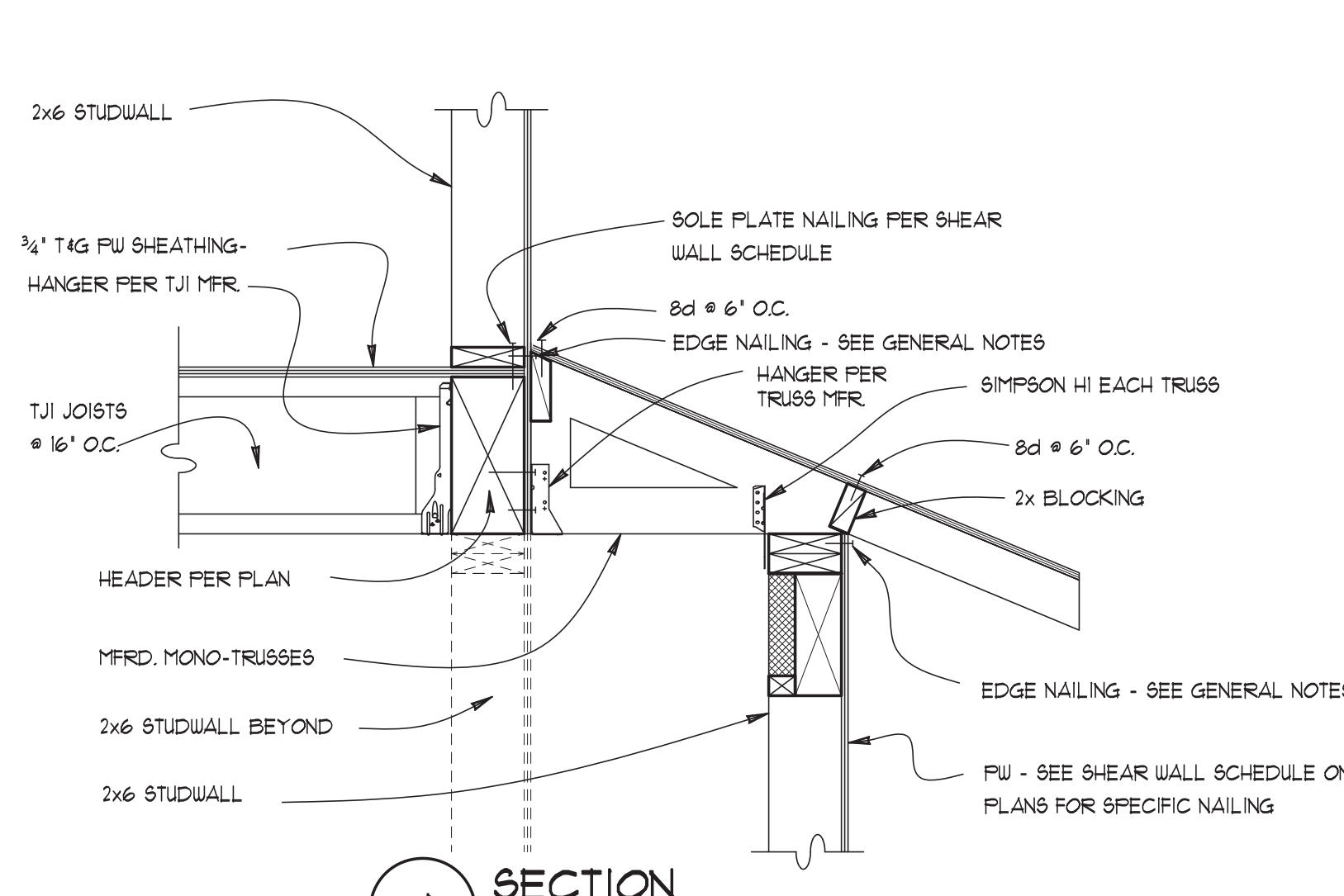
**1 SECTION**  
1" = 1'-0"



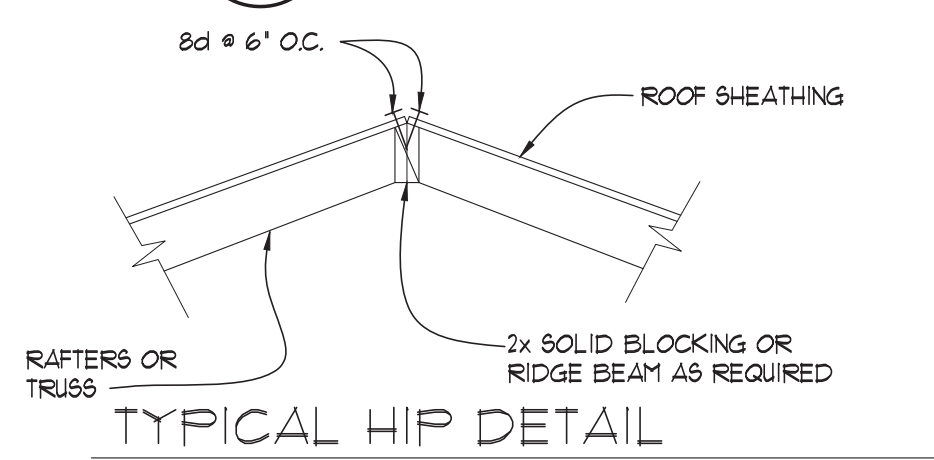
**2 SECTION**  
1" = 1'-0"



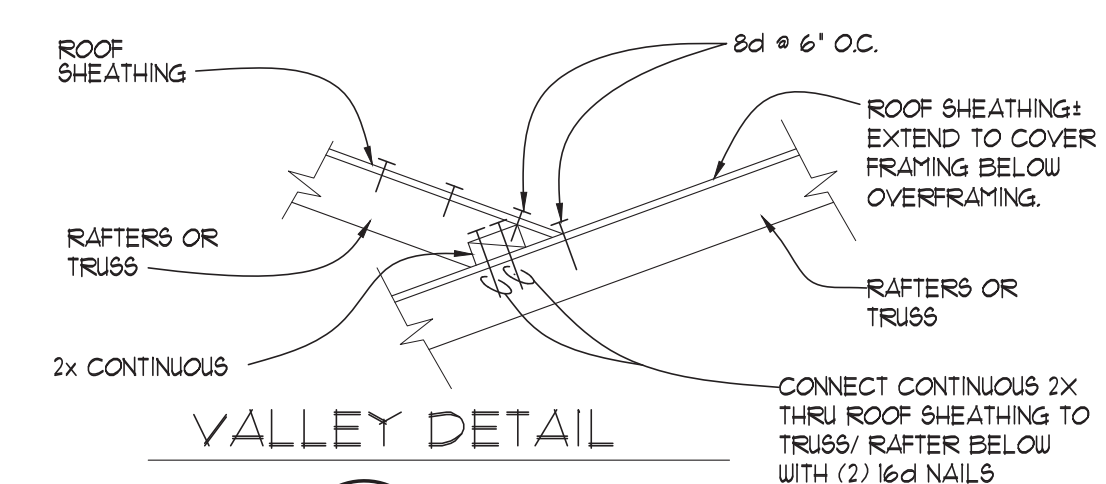
**3 SECTION**  
1" = 1'-0"



**4 SECTION**  
1" = 1'-0"

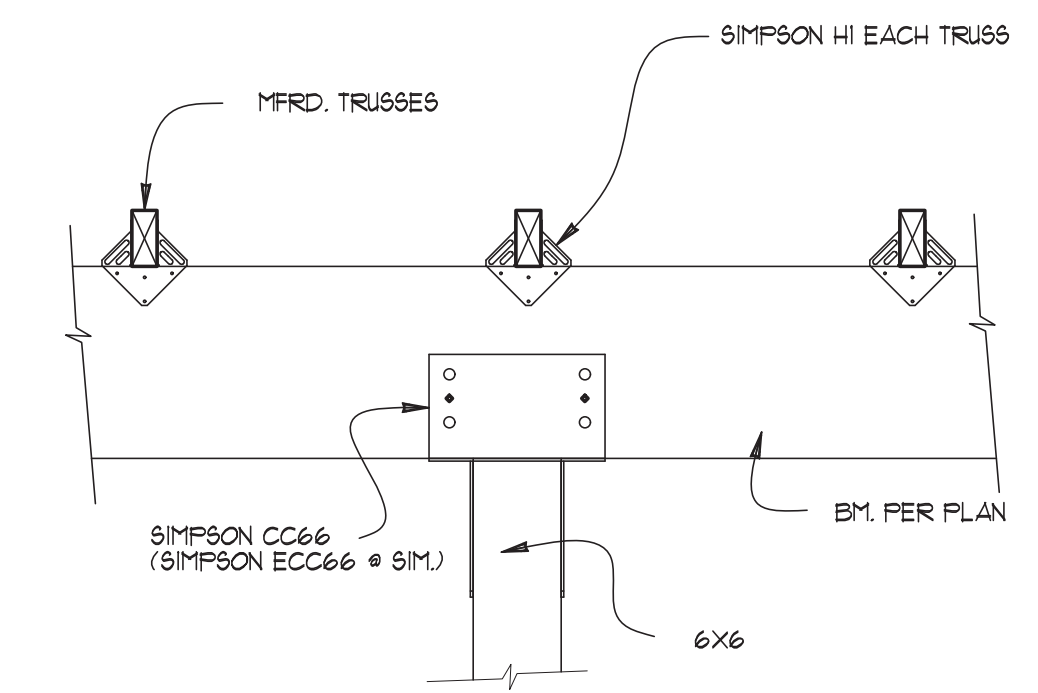


**TYPICAL HIP DETAIL**

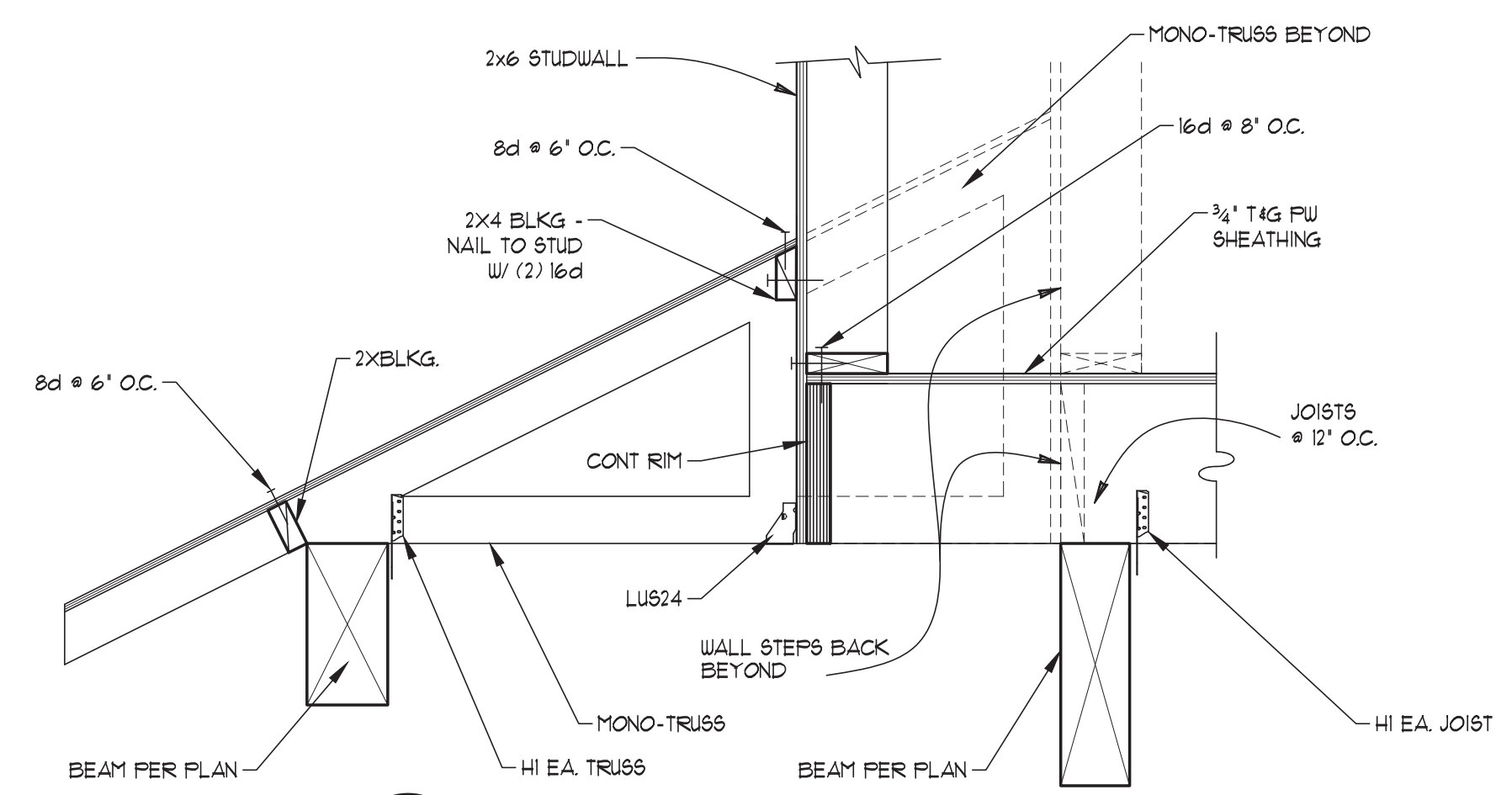


**VALLEY DETAIL**

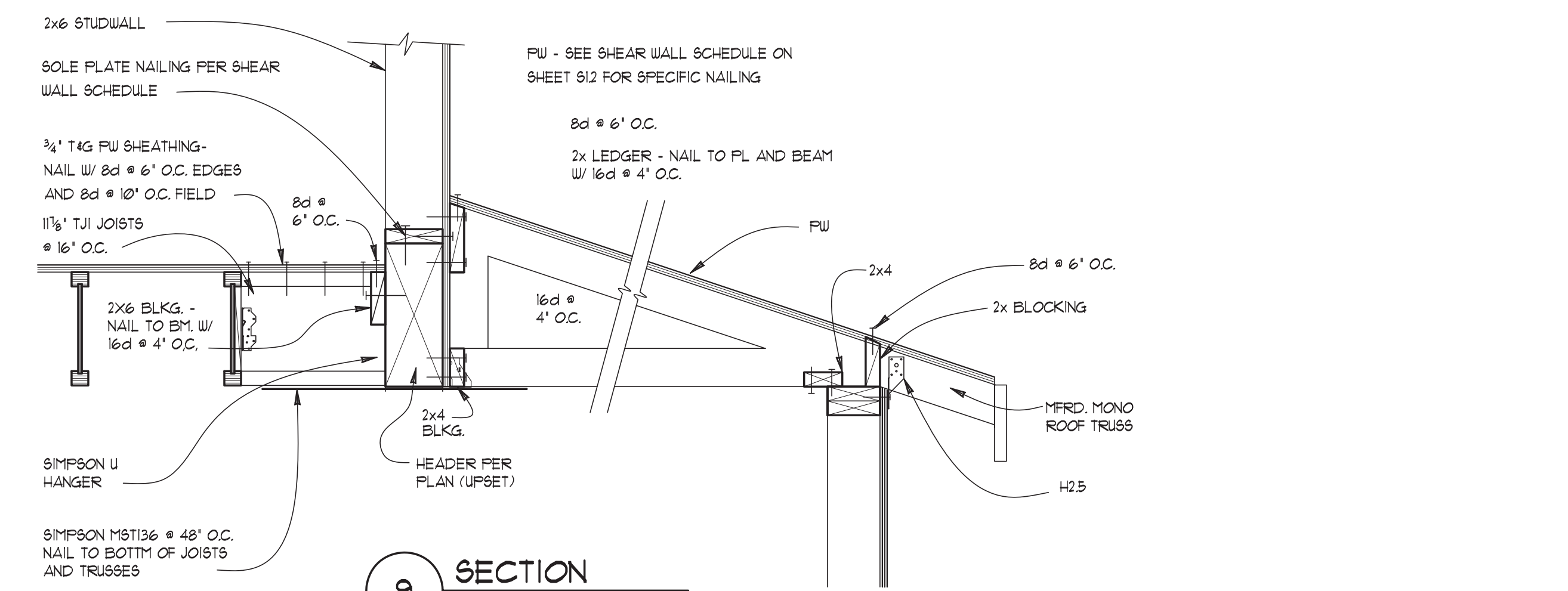
**5 SECTION**  
1" = 1'-0"



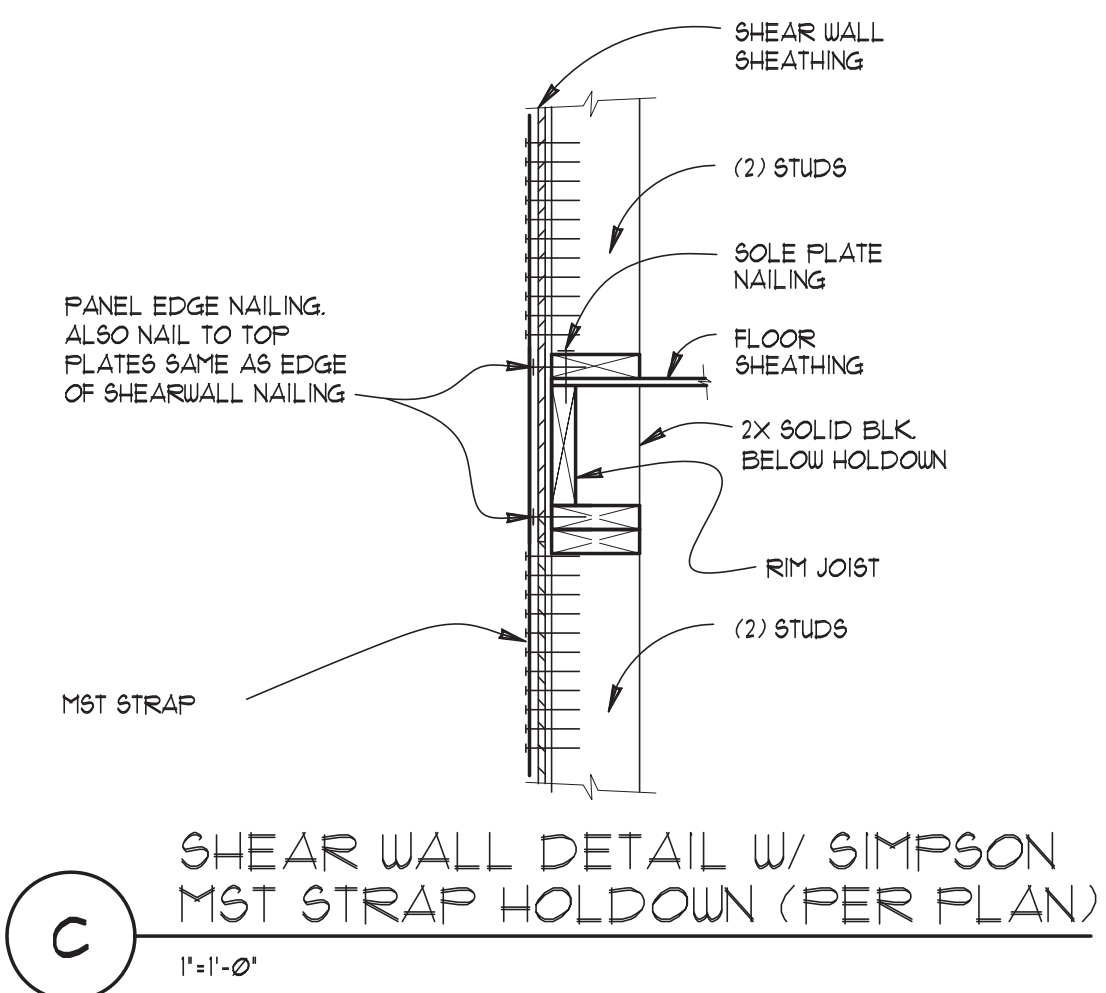
**6 SECTION**  
1" = 1'-0"



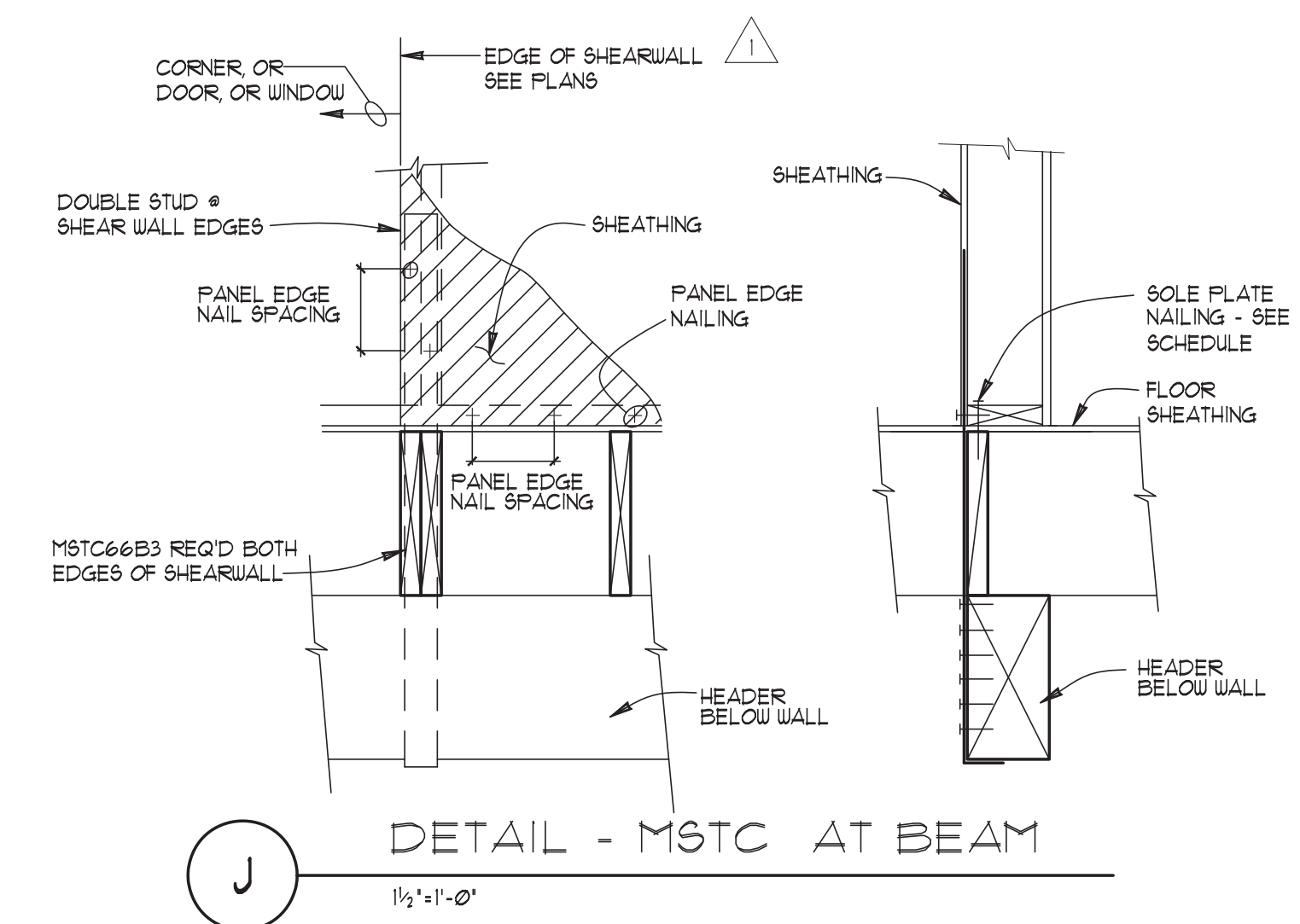
**7 SECTION**  
1" = 1'-0"



**9 SECTION**  
1" = 1'-0"



**C SECTION**  
1" = 1'-0"



**J SECTION**  
1 1/2" = 1'-0"

Project  
**MARTIN QIAN AND LAURIE YANG**  
8456 SE 40TH ST  
PC: MERCER ISLAND, WA

Prepared for  
**URBAN DESIGN GROUP**  
Contents  
**FRAMING DETAILS**

Professional Engineer  
**D. M. FARRO**  
Professional Engineer  
No. 1000000000  
State of Washington  
Exp. 12/31/2024

**NW ENGINEERING**  
PO BOX 39681 - LAKEWOOD, WA 98499  
Cell: (253) 250-6651 Email: nreng@nweng.com

|                   |                     |            |           |
|-------------------|---------------------|------------|-----------|
| DESIGN BY:<br>NFN | DATE:<br>06/15/2023 | REVISIONS: | COMMENTS: |
|                   |                     |            |           |

Project # :  
**12022**  
Sheet  
**S3**

PLOT DATE: 06/15/2023

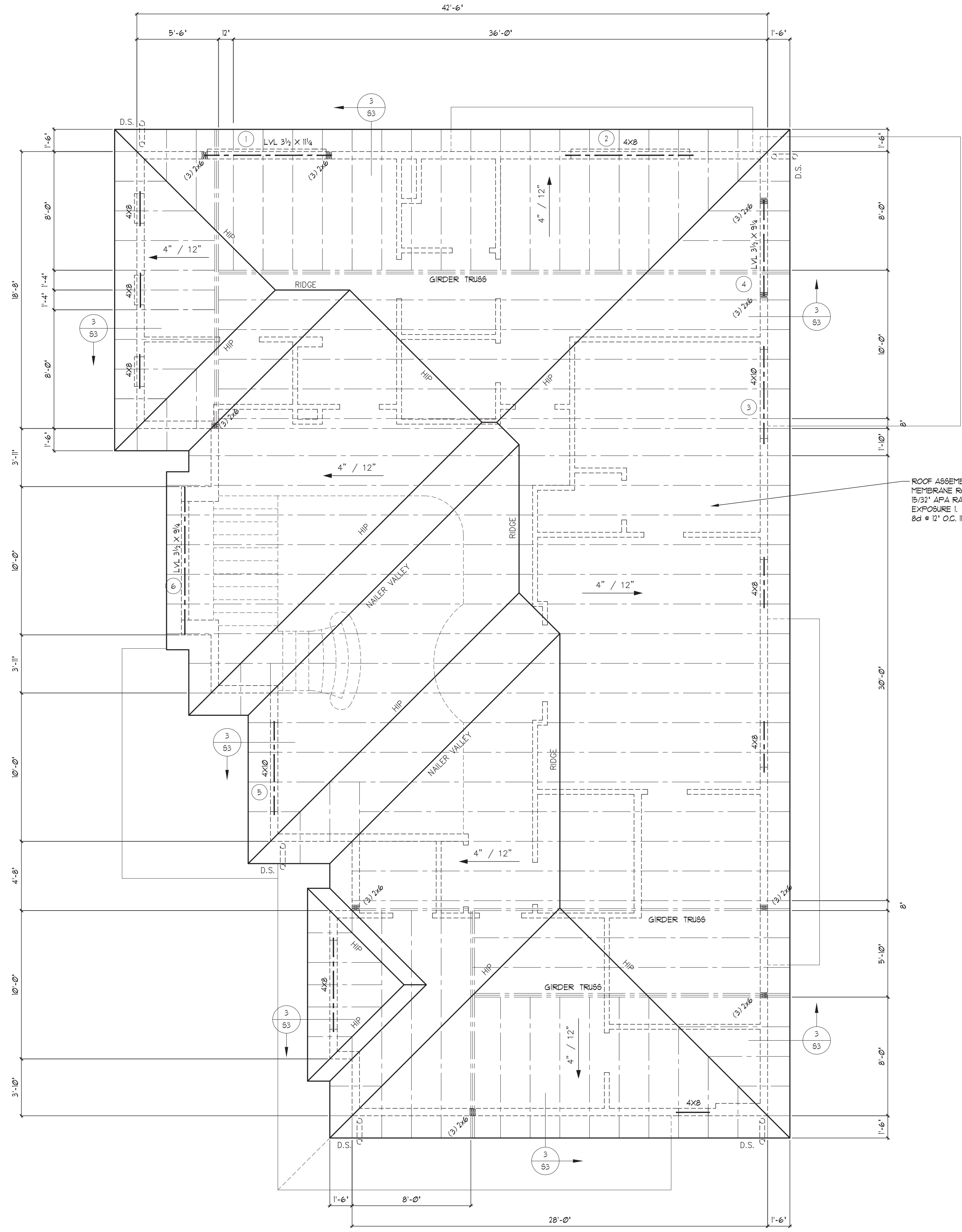












### ROOF FRAMING PLAN

1/4" = 1'-0" DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.

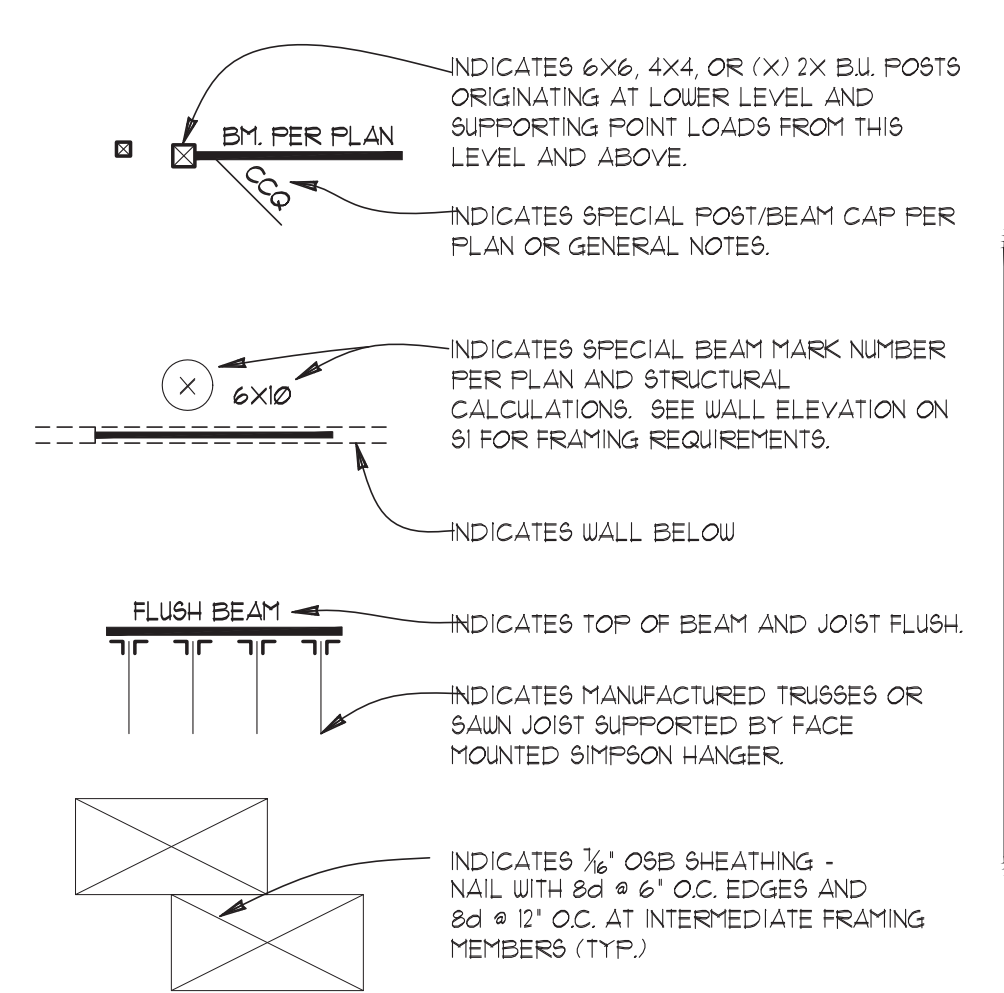
#### ROOF FRAMING NOTES:

- ALL EXTERIOR HEADERS SHALL BE 6x8 DFP, UNLESS NOTED OTHERWISE ON PLAN. ALL INTERIOR HEADERS SHALL BE 4x10 DFP, UNLESS NOTED OTHERWISE ON PLAN.
- SEE GENERAL NOTES AND TRUSS NOTES BELOW FOR TRUSS DESIGN SPECIFICATIONS.
- ALL SAUN ROOF JOISTS SHALL BE HP#2 OR BETTER AND SPACED AT 24" O.C. UNLESS NOTED OTHERWISE.
- PRE-FRDR. TJ JOISTS SHALL BE OF THE SIZE AND SERIES SPECIFIED ON THE PLAN. VERIFY MFRD. PLACEMENT PLAN WITH STRUCTURAL. NOTIFY THIS OFFICE OF ANY CONFLICTS IN LAYOUT BEFORE INSTALLATION.
- PROVIDE ROOF VENTILATION PER CURRENT IRC OR IBC. SEE ARCHITECTURAL PLANS FOR SPECIFIC REQUIREMENTS.
- PROVIDE ATTIC ACCESS PANEL PER CURRENT IRC, IBC, AND ARCHITECTURAL PLANS FOR SPECIFIC REQUIREMENTS.

#### WOOD TRUSSES (IBC 2303.4) SHALL BE:

- DESIGNED PER IBC 2303.4.1 TO CARRY LOADS LISTED IN THE DESIGN CRITERION AND ANY ADDITIONAL POINT LOADS, UNIFORM LOADS, OR DRAG STRUT FORCES NOTED ON FRAMING PLANS.
- NON-ATTIC STORAGE TRUSSES SHALL BE DESIGNED WITH A LIVE LOAD OF 20 PBF LOCATED IN THE PLANE OF THE TRUSS. THE MAXIMUM STORAGE SPACE ABOVE THE BOTTOM CHORD SHALL BE LESS THAN 42" HIGH AND 24" WIDE.
- ATTIC TRUSSES SHALL BE DESIGNED FOR FLOOR LOADS LISTED IN THE DESIGN CRITERION AND LOCATED IN AREAS NOTED ON THE FRAMING PLANS.
- TRUSS DESIGN DRAWINGS AND DOCUMENT SUBMITTAL (2303.4.1) SHALL INCLUDE STRESS ANALYSIS AND PICTORIAL DEPICTION OF EACH TRUSS TYPE FOR THE PROJECT AND INCLUDING A TRUSS PLACEMENT DIAGRAM (2303.4.2). TRUSS INSTALLATION DRAWINGS SHALL BEAR THE SEAL AND SIGNATURE OF A LICENSED ENGINEER IN THE STATE OF WASHINGTON. APPROVED TRUSS DOCUMENTS SHALL REMAIN ON THE JOB SITE FOR INSPECTION.
- ALTERATIONS (2303.4.5) TRUSS MEMBERS SHALL NOT BE NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT WRITTEN APPROVAL OF THE TRUSS DESIGNER. ALTERATIONS RESULTING IN THE ADDITION OF LOADS TO ANY MEMBER (E.G. HVAC EQUIPMENT, PIPING, ETC.) SHALL NOT BE PERMITTED WITHOUT APPROVAL OF TRUSS DESIGNER.
- TELL SPECIFICATIONS: THE DESIGN, MANUFACTURE, FABRICATION, AND QUALITY ASSURANCE OF METAL-PLATE-CONNECTED WOOD TRUSSES SHALL BE IN ACCORDANCE WITH TPI 1.
- TRUSSES SHALL BE BRACED TO MANUFACTURE'S SPECIFICATIONS.
- UNLESS NOTED OTHERWISE ON PLANS, ALL TRUSSES SHALL HAVE SIMPSON H-1 CLIPS AT EXTERIOR BEARING WALLS. AT GABLE END TRUSSES, PROVIDE SIMPSON A35 AT 24" O.C.
- PROVIDE 6TC CLIPS AT ALL TRUSSES OVER NON-BEARING WALLS.

#### LEGEND



COORDINATION OF CONSTRUCTION, INCLUDING VERIFICATION OF DIMENSIONS & FIELD CONDITIONS, IS THE RESPONSIBILITY OF THE CONTRACTOR. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN TEAM PRIOR TO CONSTRUCTION.

**CONTRACTOR NOTE:**  
REFER TO TRUSS MANUFACTURER DWG. FOR TRUSS LAYOUT AND TYPES. USE THIS DRAWING FOR LOCATION OF SPECIAL BEAM SIZES, GIRDER TRUSS AND BUILT-UP POST LOCATIONS.

Project  
**MARTIN QIAN AND LAURIE YANG**  
8456 SE 40TH ST  
PC:  
MERCER ISLAND, WA

Prepared for  
**URBAN DESIGN GROUP**  
Contents  
**ROOF FRAMING**

**D. M. FARRO**  
REGISTERED PROFESSIONAL ENGINEER  
NO. 35450  
EXPIRES JANUARY 31, 2024

**NW ENGINEERING**  
PO BOX 39681 - LAKEWOOD, WA 98499  
Cell: (252) 250-6651 Email: nreng@nweng.com

|               |            |  |
|---------------|------------|--|
| PERMIT ISSUE: | DESIGN BY: |  |
| 06/15/2023    | NFN        |  |
| REV. DATE:    | COMMENTS:  |  |
|               |            |  |

Project # :  
**12022**  
Sheet  
**S6**