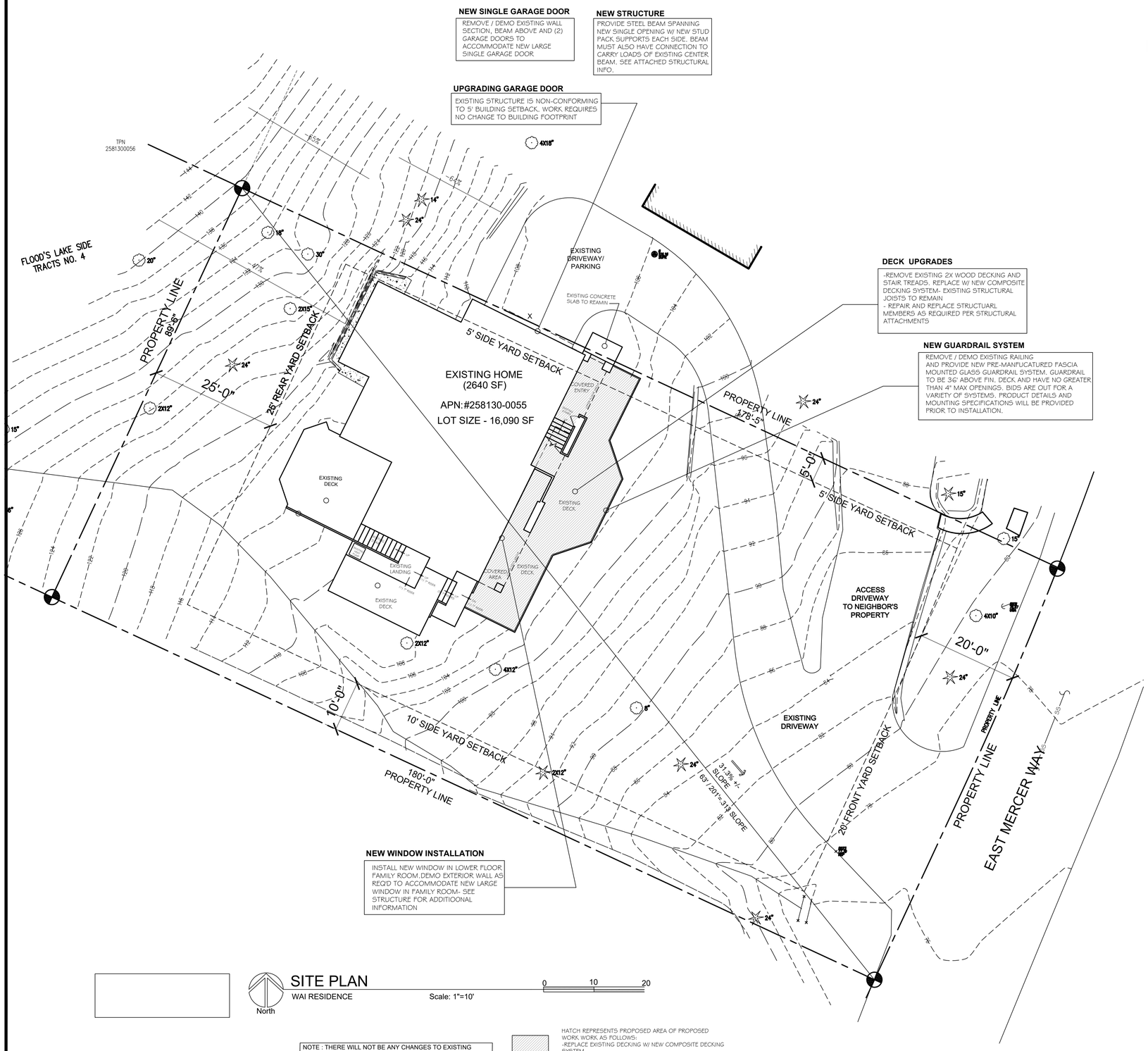
WAI RESIDENCE

PROPOSED DECK REPAIR / GARAGE DOOR REPLACEMENT
MINOR ALTERATIONS
7235 EAST MERCER WAY
MERCER ISLAND, WA 98040

APN: #258130-0055

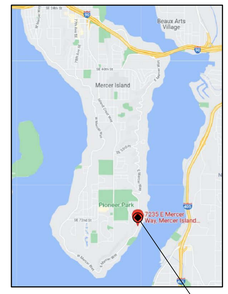


SITE PLAN
WAI RESIDENCE
Scale: 1"=10'
0 10 20
North

NOTE : THERE WILL NOT BE ANY CHANGES TO EXISTING GRADES. GRADES / CONTOURS ARE TAKEN FROM SURVEY.

HATCH REPRESENTS PROPOSED AREA OF PROPOSED WORK WORK AS FOLLOWS:
-REPLACE EXISTING DECKING W/ NEW COMPOSITE DECKING SYSTEM
-REPLACE EXISTING GUARDRAIL W/ NEW METAL / GLASS RAILING SYSTEM
-REPLACE AND REPAIR ANY STRUCTURAL MEMBERS AS REQUIRED PER STRUCTURAL ATTACHMENTS

VICINITY MAP



PROJECT SITE:

PROJECT DATA

JURISDICTION	MERCER ISLAND KING COUNTY,WA
PROJECT ADDRESS	7235 EAST MERCER WAY, MERCER ISLAND,WA 98040
TAX ACCOUNT NOs	#258130-0055
ZONING	R9.6
PROPERTY TYPE	R (2 STORY)
LOT SIZE	16,090 SF (.37 ACRES)
CONSTRUCTION TYPE	TYPE V-NR
YEAR BUILT	1976
GRADE	8 GOOD
ENVIROMENTAL	YES (STEEP SLOPE HAZZARD)

PROJECT DESCRIPTION

1) MODIFY EXISTING (2) GARAGE DOORS TO (1) LARGE SINGLE DOOR. SEE STRUCTURAL DRAWINGS

2) ADD NEW WINDOW IN LOWER FLOOR FAMILY ROOM- ADD NEW HEADER PER STRUCTURAL

3) REPLACE EXISTING WOOD DECKING AT ALL EXTERIOR DECKS W/ NEW COMPOSITION DECKING

4) REPLACE EXISTING WOOD GUARDRAILS AT ALL EXTERIOR DECKS W/ NEW GLASS AND METAL SYSTEM

PROJECT PARTICIPANTS

OWNER	BRANDON WAI PH: 858-204-5440
CONTRACTOR:	WEAVER CONSTRUCTION WILLIAM WEAVER PH: (408) 348-3095
ENGINEERING:	EVAN APOLIS CSES 6311 17TH. AVE NE SEATTLE, WA 98115 PH: 206-527-1288
DESIGNER / DRAFTSMAN:	SHAWN SULLIVAN 4402 242ND PLACE SW MOUNTLAKE TERRACE, WA 98043 PH: (425) 870-0383

EXISTING SQUARE FOOTAGE

EXISTING LOWER FLOOR	776 FT
EXISTING UPPER FLOOR	1864 FT
TOTAL	2640 FT
EXISTING GARAGE	583 FT
EXISTING LOWER DECK	1029 FT
EXISTING UPPER DECK (FRONT)	93 FT
EXISTING UPPER DECK (REAR)	303 FT

PROPOSED PROJECT SQUARE FOOTAGE

LOWER DECK- PROPOSED NEW GUARDRAILS AND DECKING	721 SF
UPPER ENTRY STEPS / LANDING- PROPOSED NEW GUARDRAILS AND DECKING	60 FT
UPPER LIVING ROOM DECK- PROPOSED NEW GUARDRAILS AND DECKING	93 FT
TOTAL	874 SF

LOT COVERAGE (NO IMPACT)

LOT AREA - 16,090 SF

ALLOWABLE LOT COVERAGE - 30% (GREATER THAN 30% SLOPE)
EXISTING SLOPE AT HOME SITE LOCATION AVERAGES AT 31.3%

16,090 X .30= 4827 SF

EXISTING LOT COVERAGE -

EXISTING HOME (W/ ROOF EXPOSED OVERHANG)-	2011 SF
EXISTING DRIVEWAY / PAVED ACCESS	2484 SF
EXISTING LOWER FLOOR COVERED ENTRY AREA	80 SF
EXISTING LOWER FLOOR COVERED DECK AREA	103 SF
TOTAL LOT COVERAGE-	4678 SF

TOTAL LOT COVERAGE:
4678 / 16090 = 29.0 % < ALLOWABLE (4827 SF) 30%

LOT SLOPE

HIGHEST POINT- 138.5
LOWEST POINT- 75.5

LENGTH OF SLOPE MEASURED= 201'
CHANGE IN GRADE = 63'-0"

63'/ 201' = .313 OR 31.3% SLOPE

LEGAL DESCRIPTION

FLOODS LAKE SIDE TRS DIV #4 POR OF SWLY 89.5 FT LY OF A LN RNNG N 23-43-00 E FR A PT ON SWLY LN SD LOT WHICH IS N 66-17-00 W 180 FT MOST SLY COR
PLAT BLOCK: B
PLAT LOT: 8

Misc. Info:
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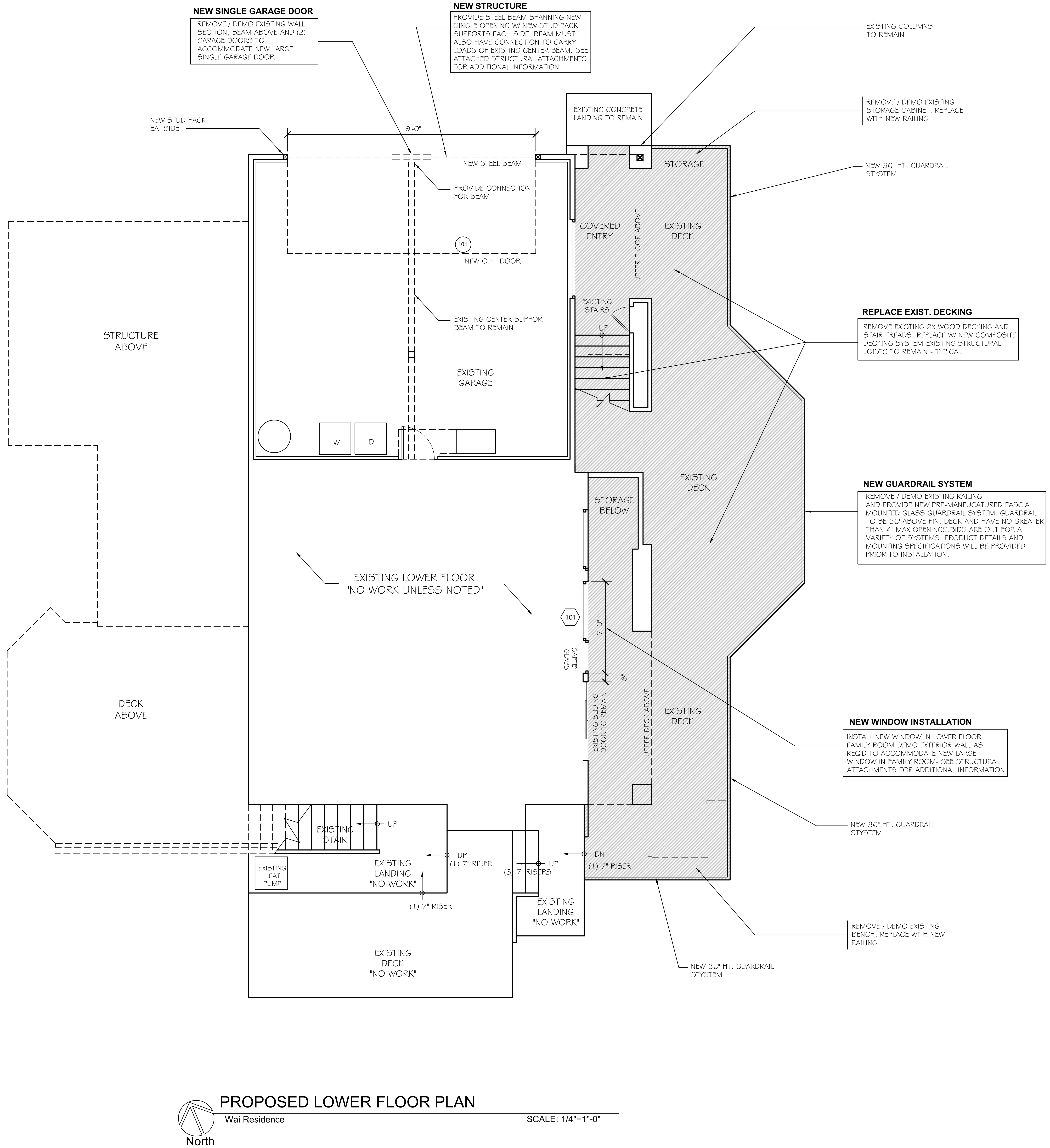
PERMIT SET

lure. DESIGN SOLUTIONS
Designer
Shawn Sullivan
4402 242ND PLACE SW
MOUNTLAKE TERRACE, WA 98043
425-870-0383

Wai Residence
DECK UPGRADES / MINOR ALTERATIONS
7235 EAST MERCER WAY
MERCER ISLAND, WA 98040

SITE PLAN

DATE: 02- 2023
DESIGNED: SLS
DRAWN: SLS
JOB NO: 2021- 17
SHEET: A1.0



PROPOSED LOWER FLOOR PLAN

Wai Residence

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

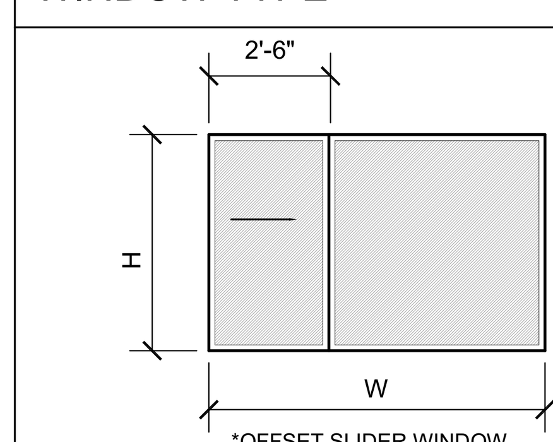
WINDOW SCHEDULE (APPROX. R.0.SIZES)

LOWER FLOOR

WNDW NO.	ROOM NAME	R.O. SIZE W X H	MATERIAL	TYPE	OPERATION	NOTES	U-FACTOR
101	FAMILY ROOM	7^{0} X 4^{6}	VINYL	A	OFFSET SLIDER	SAFETY GLAZING	.30 MIN.

*WINDOW SIZES ABOVE REFLECT APPROXIMATE R.O. (ROUGH OPENINGS). WINDOWS TO BE SIZED ACCORDINGLY
*VERIFY ALL R.O. (NEW /REPLACED) FOR WINDOWS SIZE PRIOR TO ORDERING / MANUFACTURING
* SEE PLANS AND ELEVATIONS FOR WINDOW TAG LOCATION (XXX)
* SAFTEY GLAZING TO BE PROVIDE PER LOCAL CODE REQUIREMENTS

WINDOW TYPE



*OFFSET SLIDER WINDOW
*VINYL
*SAFETY GLASS

TYPE A

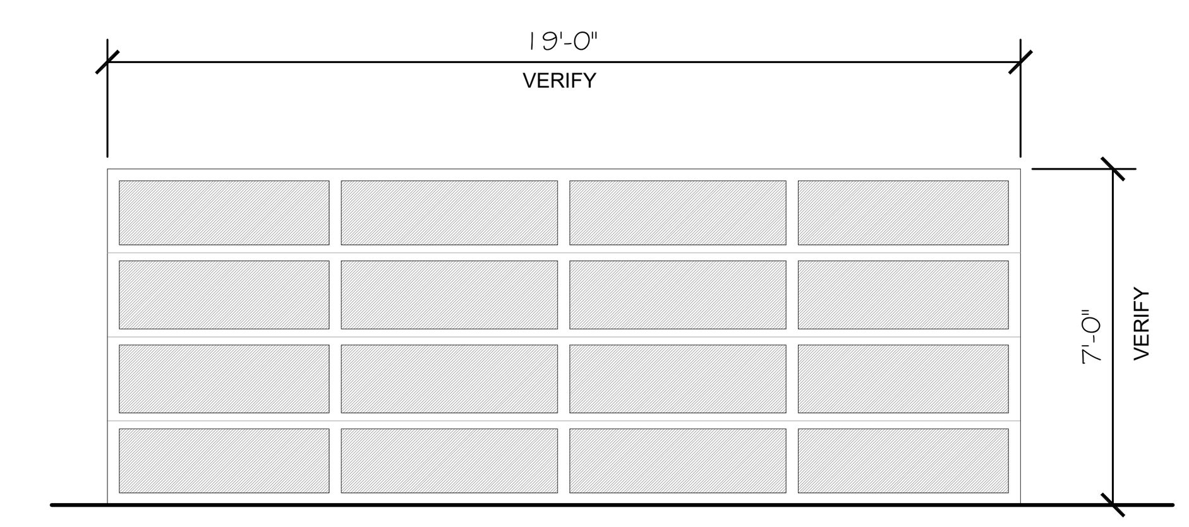
DOOR SCHEDULE (APPROX. R.0.SIZES)

LOWER FLOOR

DOOR NO.	ROOM NAME	R.O. SIZE W X H	MATERIAL	TYPE	OPERATION	NOTES	U-FACTOR
101	GARAGE	19^{0} X 7^{0}	ANODIZED ALUMINUM /GLASS	A	OVERHEAD DOOR	SAFETY GLAZING	.30 MIN.

*DOOR SIZES ABOVE REFLECT APPROXIMATE R.O. (ROUGH OPENINGS). WINDOWS TO BE SIZED ACCORDINGLY
*VERIFY ALL R.O. (NEW /REPLACED) FOR DOOR SIZE PRIOR TO ORDERING / MANUFACTURING
* SEE PLANS AND ELEVATIONS FOR DOOR TAG LOCATION (XXX)
* SAFTEY GLAZING TO BE PROVIDE PER LOCAL CODE REQUIREMENTS

DOOR TYPE



* ANODIZED ALUMINUM
* RELITES (16)
* RELITES FROSTED GLASS

TYPE A

PROPOSED WORK (NEW GUARDRAIL / DECKING)

LOWER DECK- PROPOSED NEW GUARDRAILS AND DECKING	721 SF
UPPER ENTRY STEPS / LANDING- PROPOSED NEW GUARDRAILS AND DECKING	60 FT
UPPER LIVING ROOM DECK- PROPOSED NEW GUARDRAILS AND DECKING	93 FT
TOTAL	874 SF

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lure. DESIGN SOLUTIONS
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MOUNTLAKE TERRACE, WA 98043
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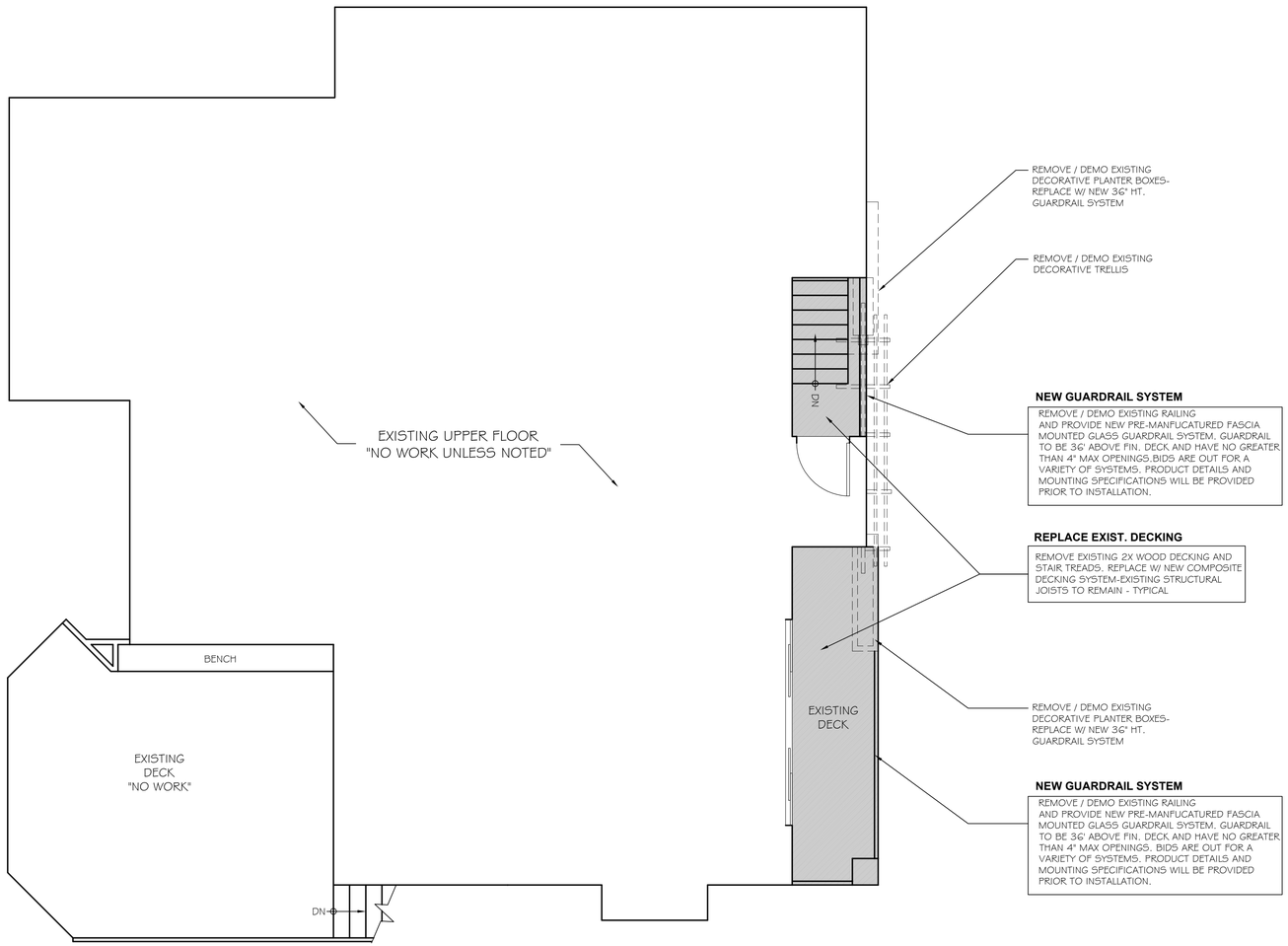
Wai Residence

DECK UPGRADES / MINOR ALTERATIONS
7235 EAST MERCER WAY
MERCER ISLAND, WA 98040

PROPOSED LOWER AND UPPER FLOOR PLANS

DATE:	02- 2023
DESIGNED:	SLS
DRAWN:	SLS
JOB NO:	2021- 17
SHEET:	A2.1



PROPOSED UPPER FLOOR PLAN

Wai Residence — SCALE: 1/4"=1'-0"

North

PROPOSED WORK (NEW GUARDRAIL / DECKING)

LOWER DECK- PROPOSED NEW GUARDRAILS AND DECKING	721 SF
UPPER ENTRY STEPS / LANDING- PROPOSED NEW GUARDRAILS AND DECKING	60 FT
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TOTAL	874 SF

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Designer
Shawn Sullivan
DESIGN SOLUTIONS
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MOUNTLAKE TERRACE, WA 98043

Wai Residence

DECK UPGRADES / MINOR ALTERATIONS
7235 EAST MERCER WAY
MERCER ISLAND, WA 98040

PROPOSED
LOWER AND UPPER
FLOOR PLANS

DATE:	02- 2023
DESIGNED:	SLS
DRAWN:	SLS
JOB NO:	2021- 17
SHEET:	A2.2

Structural Notes:

Applicable Codes and Standards:

2018 International Building Code (IBC) and other applicable local building codes.
ASCE/SEI 7-16 - "Minimum Design Loads for Buildings and Other Structures"
2018 NDS for wood structures.
American Wood Preservers Bureau - AWPB Standards for Pressure Treated Material.
American Concrete Institute - ACI 315, ACI 318, ACI 301, ACI 307.

Structural design shall be in accordance with the latest edition of above codes and standards. Contractor shall comply with the latest edition of all applicable codes and standards.

Special Inspections:

Special Inspections are required for:
Epoxy Grouted Anchor Bolt Installation

Design Loads:

Live load:	roof	25 psf (snow)
	floors	40 psf (60 psf decks)
Dead load:	solar panels	4 psf

Wind load: Basic wind speed 110 mph, exposure C, KzT=1.0
Building Category: Enclosed, Wind Important Factor Iw = 1.0
Refer to calculation page L1 for design wind forces.
Internal pressure 5 psf, Components and cladding design per 1609.6.4.4.1

Seismic loading per IBC Section 1613, Site Class D.
The basic structural type is a bearing wall system with light framed walls with shear panels. Rw = 6.5 (wood structural panels), soil type D.
Seismic importance factor 1.0, Seismic Use Group I
Design and Analysis by Simplified Design Procedure
Peak Ground Accelerations (PGA) based on USGS Hazards Program, by lat/long.
PGA 1 sec = .502 PGA .2 sec = 1.453
Seismic base shear = 0.149 * Dead Load

Foundations:

Soil parameters (assumed): Vertical allowable soil pressure: 1,500 psf
All soil conditions are to be field verified during construction. Footings shall bear on firm natural soils or on structural fill placed over firm natural soils, and inspected in place. Footings shall extend 18 inches minimum below adjacent exterior finished grade and shall extend 12 inches minimum below existing interior grade unless otherwise noted on plans. Structural fill shall be placed in 12-inch maximum horizontal lifts (loose thickness) and compacted to 90 percent of maximum dry density in accordance with ASTM D-1557. Imported structural fill shall be granular material containing no more than 5 percent fines, passing no. 200 sieve. Structural fill in place shall be tested by a licensed soil engineer or approved by the building inspector.

Drainage behind the concrete walls shall be provided conforming to the construction details.

Cast in Place Concrete:

footing horizontal bars with 2'-0" x 2'-0" corner bars of the same size at all corners and wall intersections.
Minimum lap splice 48 bar diameters.

Concrete protection for reinforcement shall be:

Concrete exposed to earth or weather	1.5" (#5 & smaller) 2" (#6 & larger)
Concrete cast against earth	3"
Slabs	0.75"

Bolts:

Anchor bolts shall conform to F1554. All other bolts shall conform to ASTM A307.
Minimum anchor bolt size and spacing shall be ½" diameter bolts @ 6' o.c. Shear wall anchor bolts per the shear wall schedule.
For cast-in-place anchors, provide 7" minimum embedment into the new concrete foundation.
For retrofitted anchors, provide 5" minimum embedment into the existing concrete foundation. Epoxy grout with Simpson SET epoxy.
Provide 3"x3" square x 0.229" thick bolt washers where anchor bolts connect the sill plate to the concrete foundation.

Wood Framing Specifications:

All sill plates and other wood framing which is in contact with concrete or masonry must be preservative-treated in accordance with AWPA U1 and M4 standards. For anchor bolts connecting wood sill plates to concrete or masonry, provide galvanized steel washers and nuts on top of the sill, minimum washer size 3" x 3" x 1/4" thick.

Where toenails are used for stud wall construction, a minimum of (2) toenails at top and bottom of each stud shall be provided. Toenails shall be 16d nails driven at approximately a 45 degree angle, with a minimum of 1-1/2" of the nail shank shall be embedded in both the stud and the plate. End nails driven through the plate and into the stud end grain are not permitted. Simpson A34 clips at top and bottom of each stud are permitted where correct toenailing is not provided.

Wherever joists bear on a wall or beam, either a continuous rim joist or solid wood blocking must be provided. Blocking shall be connected to the joists with A35 angles at each end. Individual blocks may be omitted to allow for ducting or other openings. Consult with the engineer of record if more than 25% of the blocking is omitted.

Where a post aligns with a header on the floor below, provide full depth blocking through the floor framing and a full sized post above the header in the wall below

Unless noted otherwise, the following grades and species shall be used for structural lumber:

2x joists	Hem-Fir #2
2x, 3x, and 4x studs	DF/L standard for plywood or WSP shear walls Hem-Fir standard for other walls
4x and 6x beams	DF-L #2
Microllam LVL lumber	LVL 1.9E, Fb = 2600 psi, Fv = 285 psi (minimums)
Parallam lumber	2.2 WS, Fb = 2900 psi, Fv = 290 psi (minimums)
Glu-lam lumber	24F-V4 for simple span beams, 24F-V8 for cantilever beams

All framing connections shall be per Table 2304.10.1 of the IBC, unless otherwise noted.

Structural steel:

Shapes, ASTM A992, Fy=50 ksi.

Welding:

Use E70xx electrodes for welding. All fillet welds shall be 3/16" or equal to minimum thickness of member being welded, whichever is greater, unless otherwise shown. All welding shall conform to the provisions of AWS and shall be performed by welders certified in accordance with AWS and WABO.

Unless noted with a field weld flag, all welds are to be completed in a WABO certified shop.

Preservative-Treated Wood and Fasteners:

All wood in contact with concrete or masonry shall be preservative-treated, in accordance with AWPA U1 and M4 standards.

All fasteners installed in preservative-treated wood shall be hotdipped zinc-coated galvanized with a minimum coating weight complying with ASTM A 153.

Fasteners other than nails and timber rivets are permitted to be mechanically deposited zinc-coated with coating weights complying with ASTM B 695, Class 55 minimum. Plain carbon steel fasteners in wood preservated-treated with SBX/DOT or zinc borate are not required to be galvanized.

Plywood Thickness, Grade, and Nailing:

Install plywood sheets with face grain perpendicular to framing. Stagger joints in adjacent sheets. If not otherwise noted, use nailing schedule, Table 2304.6.1 of the IBC.

Metal Framing Connectors:

Unless otherwise noted: Metal framing connectors shall be manufactured by the Simpson company, or approved equal. Unless noted otherwise, use U-series joist hangers to match joist size (e.g., U210 for 2x10 joist). Provide H1 or H2.5 hurricane ties, or other connectors with similar capacity, at every roof joist or truss, and H6 or H7 at ends of roof beams and girder trusses. Where supported by wood posts, wood beams shall be connected to the tops of the posts using Simpson AC, PCZ or EPCZ post caps, and to the bottoms of the posts bearing on wood framing using Simpson AC connectors or A35 clips. Where supported by perpendicular beams, wood beams shall be connected by HU-series face mount beam hangers. Provide Simpson AB_ or PB post bases to connect posts to concrete foundations. Unless otherwise specified, the maximum number of nails or screws should always be installed on any connector.

Hold Down Notes:

Convention for showing shear walls and hold downs: Shear walls are shown on the framing plan for the floor above. (For example, first floor shear walls will be shown on the second floor framing plan, and the shear walls for the topmost floor will be shown on the roof framing plan.) Hold downs are located at the bottom of that shear wall, and connect the end of the shear wall to wall framing or a structural beam located in the floor below the shear wall. Contact the engineer of record for clarification if needed.

Hold downs for each floor must be continuously connected to hold downs on the floor below (or to other intermediate wood framing where so indicated), until they are finally connected to the concrete foundation.

Hold downs shall be installed so as to be as far apart as is reasonable. Hold downs may be located on either the near side or the far side of the post or double stud to which they are attached. In no case shall a hold down bolt be located farther than 6" from the end of the shear wall, except with prior written approval of the engineer. Refer to the latest edition of the Simpson Catalog for details.

Where multiple studs are called out at a hold down, nail studs together with (2) 16d nails at 8" o.c. or 1/4" x 3" Simpson SDS Screws at 12" o.c.

Where a hold down post lands on a rim joist, provide full depth vertically oriented blocking under the post.

Rod Hold Downs:

HDUx denotes a Simpson HDU(2,4,5,8,or 11)-SDS2.5 hold down. For hold down bolts at existing concrete foundations, use the following bolts:

For HDU2,4,5: 5/8" diameter A307 threaded steel rod may be used, which shall be epoxy grouted into a 3/4" diameter hole with a minimum embedment of 10".
See Retrofit HDU Typical Detail.

Special Note:

All holes for hold down bolts which are installed into existing foundations must be inspected during the installation of the hold down. Either the building inspector, the structural engineer of record, or the special inspection agency must perform the inspection and approve it before the bolts may be epoxy grouted into the holes. The epoxy grout used must be Simpson SET-XP unless otherwise noted by the engineer of record.

For drilled holes into existing concrete, no less than 2" must be provided between the edge of the hole and the face of concrete. The Engineer of Record or Special Inspector must witness the installation of hold down bolts, including cleaning the holes with compressed air and a wire brush before the anchor is installed. The hole shall be filled with enough epoxy that when the anchor is inserted, the epoxy rises to the top of the concrete. Care shall be taken that no air bubbles persist in the epoxy.

The contractor must verify that the existing foundation stem wall is uncracked and continuous, and is sound and in good condition, within 5 feet of any retrofitted shear wall or hold down, in any direction, except with prior written approval of the engineer. The existing concrete foundation stem wall shall be at least 6" thick and 2'-6" in height. The concrete shall be of good quality, hard and uniform, with appropriate aggregate type, size and distribution, and with no visible rock pockets or other similar deficiencies.

Any existing cracks located within 10' of any hold down must be completely filled with an appropriate epoxy based concrete repair product. The product to be used shall be approved in writing by the engineer prior to filling the cracks.

Contact the engineer of record prior to proceeding if any of these requirements are not met, or if the installation of the hold downs results in any visible damage to the existing foundation.

SHEAR WALL SCHEDULE

(Lumber for shear walls is HF#2 or better, unless otherwise noted.)

Type	Material	Edge Nailing	Field Nailing	A.B. Size/Spacing	Plate Nailing	Plates	A35 Spacing	Shear Capacity
SW1	15/32" WSP one side	8d @ 6"	8d @ 12"	1/2"Ø @ 48"	(2) 16d @ 9"	2x_	24"	230 plf

For shear wall callouts on the Structural Framing Plans: SW x (y') denotes a shear wall type "x" with a minimum length of "y" feet. See Exterior Shear Wall Typical Detail.

- "WSP" refers to "Wood Structural Panel", either plywood or other wood materials.
- Provide double stud minimum at both ends of all shear walls.
- At the roof or top level of any shear wall, "A35 spacing", and all other relevant connector specifications, apply to assemblies at both the top and bottom of the shear wall. At lower levels, apply to the bottom of the wall only.
- Provide floor diaphragm edge nailing per diaphragm schedule through floor plywood into blocking, parallel joist framing, or top plates (whichever applies) of all shear walls.
- Provide 3x_ plates, and 4x_ rim joists, minimum, where lag screws are specified for plate nailing.
- Provide 4x_ or double 2x_ framing where A35 angles are used on both sides of one piece of wood.
- Where a shear wall terminates above the foundation level (no shear wall below), provide minimum 4x_ blocking or double joist framing (as applicable) below the shear wall."&" Plate nailing per this schedule shall be nailed into this blocking at the bottom of the shear wall.
- Shear wall nails shall be placed no closer than 3/8" from a panel edge or perpendicular face of stud.
- Maximum spacing between nails shall not exceed 12".
- Shear wall nailing shall be common or galvanized box nails, unless lag screws are noted. Galvanized nails shall be hot dipped or tumbled.
- Lag screw plate connectors shall penetrate 3.5" minimum, and plates or beams receiving lag screws shall have a minimum width of 3.5".
- Where hold downs are specified, the shear wall bolt shall be located within 6 inches of the end of the shear wall, unless otherwise approved by the engineer of record. Minimum end studs shall be as specified in the most recent Simpson catalog.
- Shear wall edge nailing through shear wall sheathing shall be provided into all studs attached to a hold down.
- Retrofit anchor bolts shall have a minimum embedment of 5" into the concrete foundation.
- Cast in place anchor bolts shall have a minimum embedment of 7" into the concrete foundation.
- Plate nails shall be nailed into a solid wood rim joist.
- Where Roof ventilation is required over a shear wall, see roof ventilation detail.

Diaphragm Schedule

(Lumber for diaphragm construction is HF#2 or better, unless otherwise noted.)

Type	Material	Edge Nailing	Field Nailing	Edge Blocking	Remarks
Roof	15/32" CDX 24/0	8d @ 6" o.c.	8d @ 12" o.c.	no	Minimum Standard
Floor	23/32" CDX 48/24	8d @ 6" o.c.	8d @ 12" o.c.	no	Minimum Standard

- "WSP" refers to "Wood Structural Panel", either plywood or other wood materials.
- Rim joists at exterior walls shall be continuous for tension. At rim joist splice locations, provide (2) CS16 horizontal straps, minimum 24"
- Where roof or floor framing is cantilevered over an exterior wall below, provide solid blocking with Diaphragm edge nailing between joists.
- This is the minimum required diaphragm construction. Where otherwise noted on the plans, additional blocking or nailing may be required.

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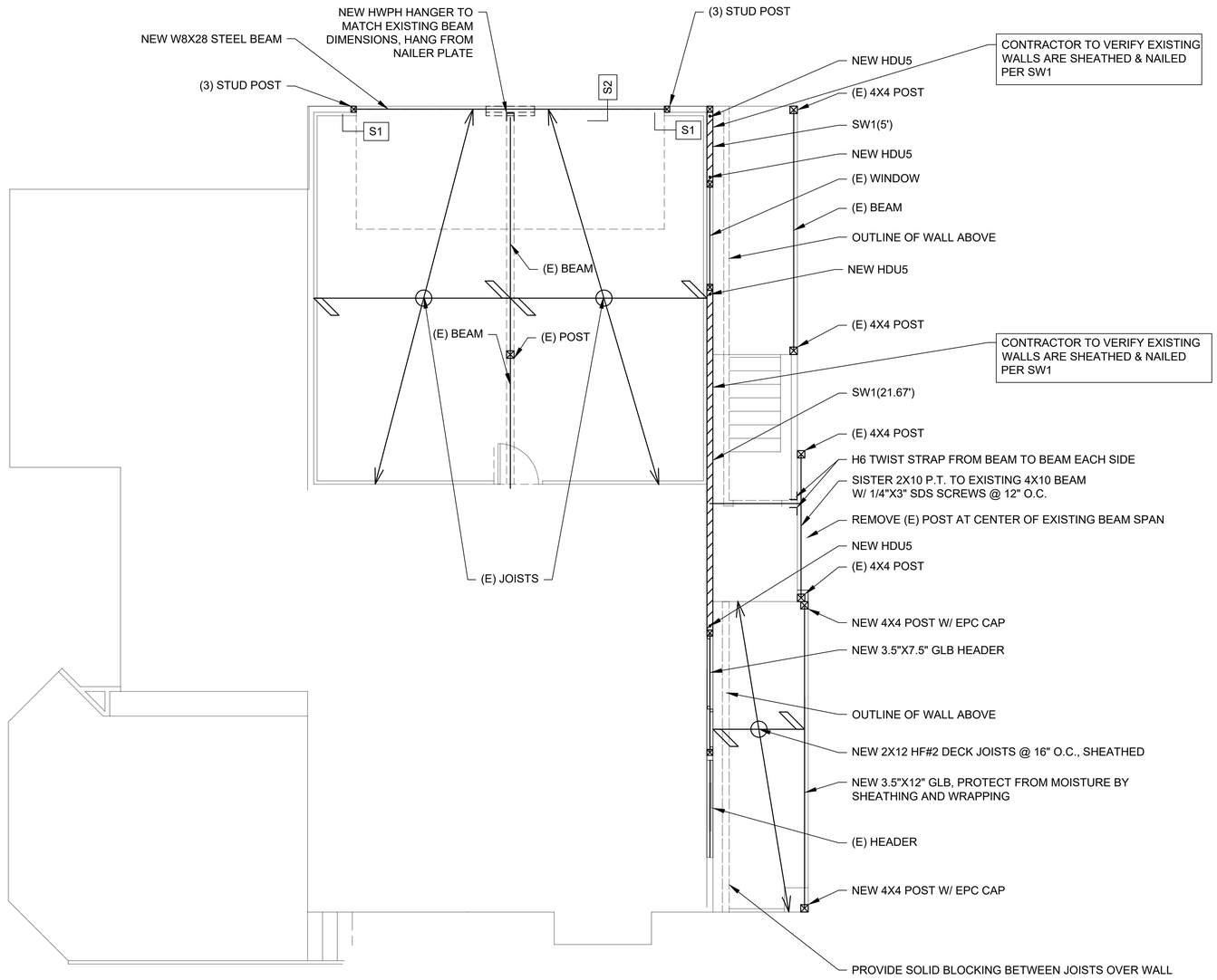
Phone: 206-527-1288
Email: john@cses-engineering.com

Wai Residence
7235 East Mercer Way
Mercer Island, WA 98040

Revisions:

Date:
07-28-23

Sheet:
S-0



⊠ INDICATES (2) STUD POST MINIMUM

Upper Floor Framing & Lower Floor Wall Plan

N

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

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6311 17th Ave NE, Seattle, WA 98115
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Email: john@cses-engineering.com

Wai Residence

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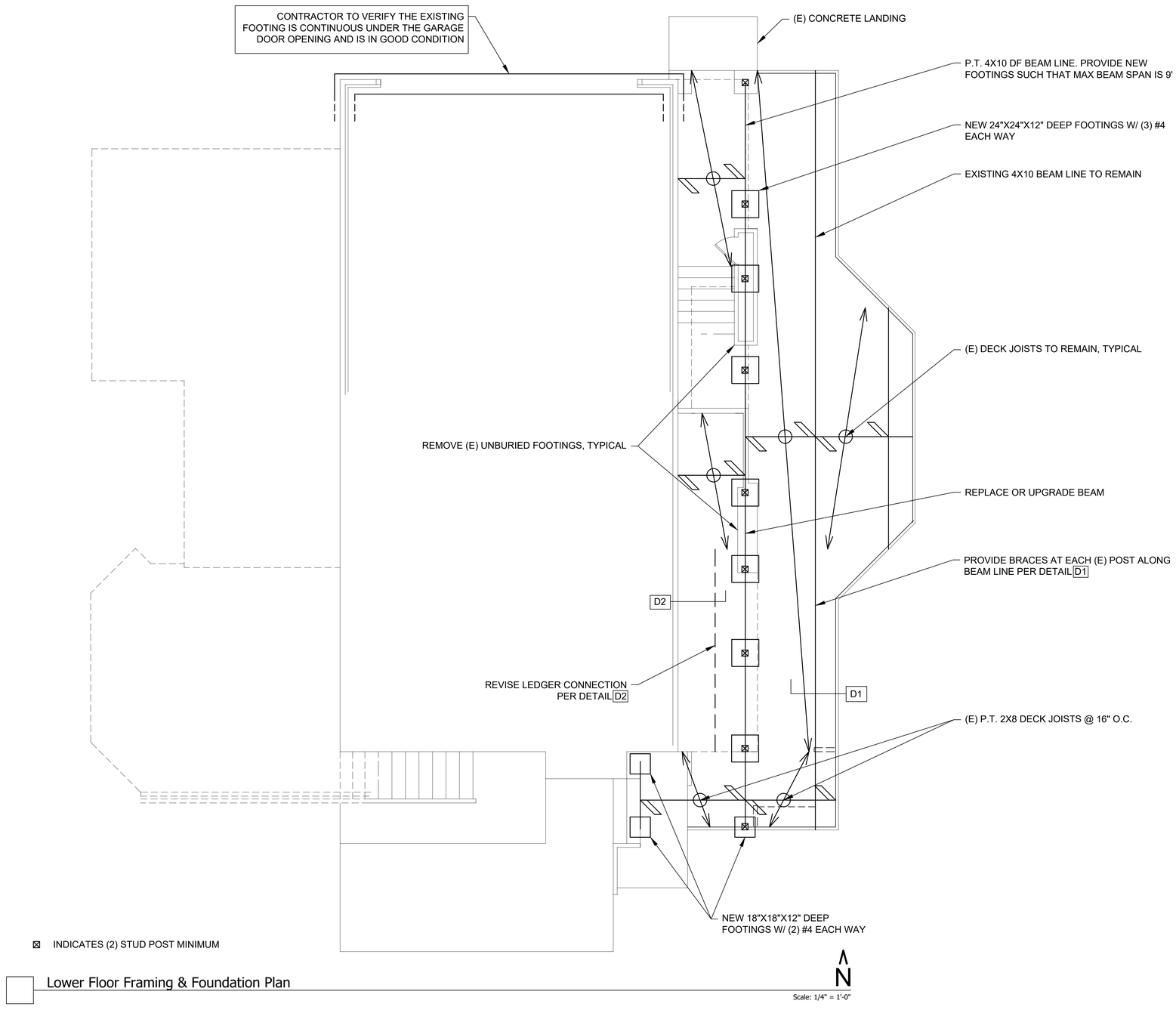
Mercer Island, WA 98040

Revisions:

Date:
07-28-23

Sheet:
S-1



Lower Floor Framing & Foundation Plan

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

JOHN S. APOLIS
STATE OF WASHINGTON
STRUCTURAL ENGINEER
22434
PROFESSIONAL ENGINEER

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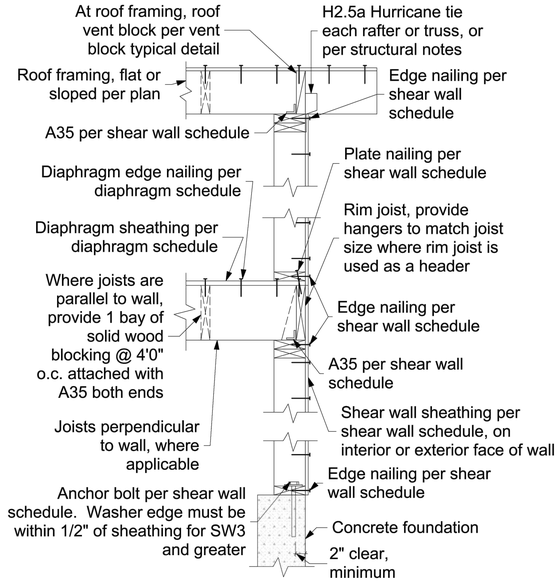
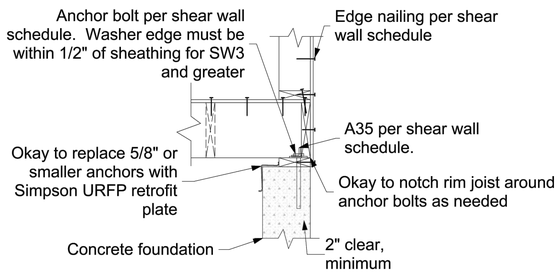
Revisions:

Date:
07-28-23

Sheet:
S-2

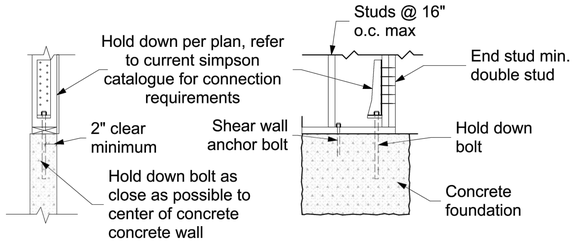




Alternate Condition

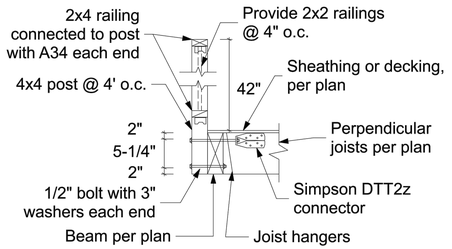
Exterior Shear Wall Typical Detail

1" = 1'-0"

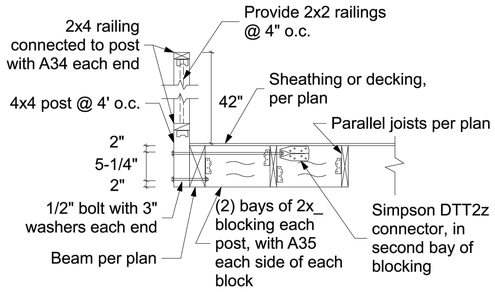


Retrofit HDU Typical Detail

3/4" = 1'-0"



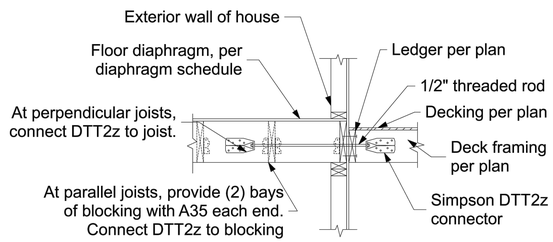
Railing at Perpendicular Joists



Railing at Parallel Joists

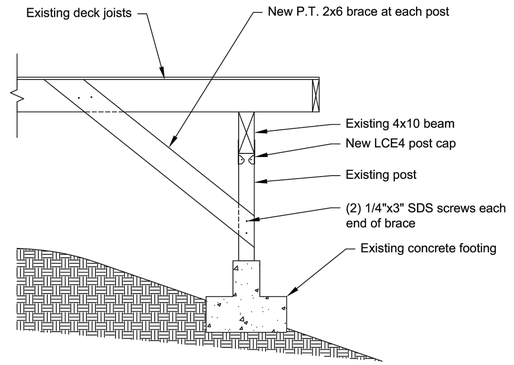
Deck Railing Typical Detail

3/4" = 1'-0"



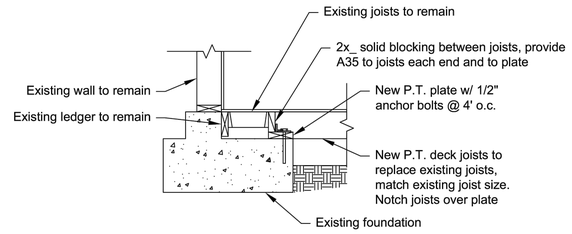
Deck End Connection Detail

3/4" = 1'-0"



D1 Deck Brace Detail

3/4" = 1'-0"



D2 Deck Ledger Revision Detail

3/4" = 1'-0"

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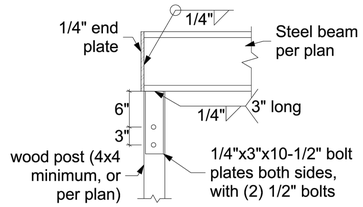
Revisions:

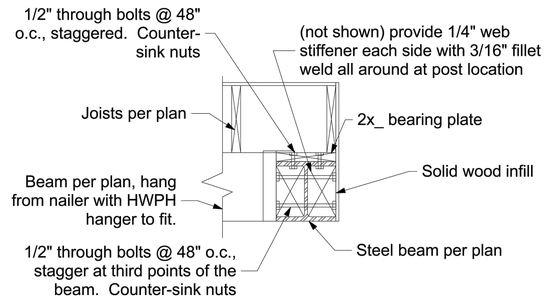
Date: 07-28-23

Sheet: S-3



S1 Steel Beam to Wood Post Detail

1" = 1'-0"



S2 Steel Beam Detail

1" = 1'-0"

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Sheet:
S-4