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G0.06	SURVEY	X	X	X
CIVIL				
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C2.00	TESC AND DEMO PLAN	X	X	X
C2.50	TREE PROTECTION PLAN	X	X	X
C3.00	GRADING PLAN	X	X	X
C4.00	PAVING AND UTILITY PLAN	X	X	X
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C5.00	CIVIL DETAILS	X	X	X
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A0.05	BUILDING PERFORMANCE STUDIES			
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A0.24	WINDOWS, DOOR, AND SHADE SCHEDULES	X	X	X
A0.30	ASSEMBLIES	X	X	X
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A0.51	ZONING - AREAS & LOT COVERAGE	X	X	X
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A2.20	MAIN LEVEL FLOOR PLAN	X	X	X
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A2.40	ROOF LEVEL FLOOR PLAN	X	X	X
A3.00	EXTERIOR ELEVATIONS NORTH AND EAST	X	X	X
A3.01	EXTERIOR ELEVATIONS SOUTH AND WEST	X	X	X
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A4.00	WALL SECTIONS	X	X	X
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A6.20	MAIN LEVEL REFLECTED CEILING PLAN			
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A8.02	EXTERIOR DETAILS WINDOWS			
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M0.01	ENERGY CODE NOTES, SCHEDULES	X	X	X
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M2.20	MAIN LEVEL FLOOR PLAN	X	X	X
M2.30	UPPER LEVEL FLOOR PLAN	X	X	X
M2.40	ROOF PLAN	X	X	X
M4.00	EQUIPMENT DATA SHEETS	X	X	X
M5.00	HVAC LOAD CALCULATIONS	X	X	X
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P0.01	CALCULATIONS, SCHEDULES	X	X	X
P1.00	SITE PLAN	X	X	X
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P2.10	LOWER LEVEL FLOOR PLAN	X	X	X

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P4.00	DETAILS & DIAGRAMS	X	X	X
ELECTRICAL				
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E2.00	ELECTRICAL FLOOR PLANS	X	X	X
E2.01	ELECTRICAL FLOOR PLANS	X	X	X
E2.02	ELECTRICAL FLOOR PLANS	X	X	X

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FUSED ELEMENTS

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MERCER ISLAND,WA 98040

PERMIT SET

04/09/2024

ABBREVIATIONS

@	AT
Ø	DIAMETER
#	POUND OR NUMBER
(E)	EXISTING
(N)	NEW
AB	ANCHOR BOLT
ABV	ABOVE
ACP	ASPHALT CONCRETE PAVING
ACT	ACOUSTIAL CEILING TILE
ACS PNL	ACCESS PANEL
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
AIB	AIR INFILTRATION BARRIER
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
APSH	ASPHALT
AUTO	AUTOMATIC
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BO	BOTTOM OF
BOT	BOTTOM
BRG	BEARING
BSMT	BASEMENT
BUR	BUILT UP ROOFING
CAB	CABINET
CB	CATCH BASIN
CEM	CEMENT
CER	CERAMIC
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CLG	CEILING
CLK	CAULKING
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORR	CORRIDOR
CPT	CARPET; CARPETED
CRS	COLD ROLLED STEEL
CSK	COUNTERSUNK
CTR	CENTER
CU FT	CUBIC FEET
CT	CERAMIC TILE
DBL	DOUBLE
DEMO	DEMOLITION
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DR	DOOR
DR OPNG	DOOR OPENING
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE
DW	DISHWASHER
DWG	DRAWING
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
ENCL	ENCLOSURE
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
EF	EXHAUST FAN
EXIST	EXISTING
EXP	EXPANDED; EXPANSION
EXP BT	EXPANSION BOLT
EXPO	EXPOSED
EXT	EXTERIOR
EW	EACH WAY
FA	FIRE ALARM
FB	FLAT BAR
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF EL	FINISH FLOOR ELEVATION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN FLR	FINISH FLOOR
FF	FINISH TO FINISH
FIN	FINISH
FLASH	FLASHING
FLR	FLOOR; FLOORING
FLUOR	FLUORESCENT
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOIC	FURNISHED BY OWNER-INSTALLED BY CONTRACTOR
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FP	FIREPROOF
FPL	FIREPLACE
FR	FRAME
FT	FOOT OR FEET
FTG	FOOTING
FURR	FURRING
FUT	FUTURE
FW	FULL WIDTH
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR

ABBREVIATIONS

GL	GLASS
GLAM	GLUE-LAMINATED
GR	GRADE
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HB	HOSE BIB
HC	HOLLOW CORE
HDO	HIGH DENSITY OVERLAY
HDR	HEADER
HDWD	HARDWOOD
HDW	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HR	HOUR
HT	HEIGHT
HVAC	HEATING/VENTILATING/AIR CONDITIONING
HW	HOT WATER
HWT	HOT WATER TANK
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDED
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
JB	JUNCTION BOX
JF	JOINT FILLER
JT	JOINT
KIT	KITCHEN
KO	KNOCKOUT
LAM	LAMINATE; LAMINATED
LAV	LAVATORY
LBS	POUNDS
LF	LINEAR FEET (FOOT)
LH	LEFT HAND
LL	LIVE LOAD
LOC	LOCATION
LP	LOW POINT
LT	LIGHT
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MEDICINE CABINET
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
MUL	MULLION
N	NORTH
N/A	NOT APPLICABLE
NO	NUMBER
NOM	NOMINAL
NR	NOISE REDUCTION
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER; OVERFLOW DRAIN
OFF	OFFICE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
PBD	PARTICLE BOARD
PCC	PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PERF	PERFORATED
PERP	PERPENDICULAR
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLWD	PLYWOOD
PNL	PANEL
PNT	POINT
PR	PAIR
PRCST	PRECAST
PSF	POUNDS PER CUBIC FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESERVATIVE TREATED
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
R	RISER
RA	RETURN AIR
RAD	RADIUS
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED
REM	REMAINDER
REQ	REQUIRED
RESIL	RESILIENT
REV	REVISION(S); REVISED
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
RWL	RAIN WATER LEADER
S	SOUTH
SAF	SELF-ADHERED FLASHING
SAM	SELF-ADHERED MEMBRANE

ABBREVIATIONS

SC	SOLID CORE
SCHED	SCHEDULE
SD	SMOKE DETECTOR
SECT	SECTION
SG	SAFETY GLAZING
SHV	SHELF; SHELVING
SHR	SHOWER
SHT	SHEET
SHT MTL	SHEET METAL
SHTG	SHEATHING
SIM	SIMILAR
SOG	SLAB ON GRADE
SPEC	SPECIFICATION
SQ FT	SQUARE FOOT (FEET)
SQ IN	SQUARE INCH(ES)
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SYM	SYMETRICAL
T	TREAD
T&G	TONGUE AND GROOVE
TEL	TELEPHONE
TER	TERRAZZO
TG	TEMPERED GLASS
THK	THICK
TO	TOP OF
TOB	TO OF BEAM
TOC	TOP OF CONCRETE; CURB
TOF	TOP OF FLOOR; FOOTING; FRAME
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET; PAVEMENT
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB; STEEL
TOW	TOP OF WALL
TS	TUBE STEEL
TSTAT	THERMOSTAT
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VB	VINYL BASE
VEN	VENEER
VERT	VERTICAL
VEST	VESTIBULE
VG	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WF	WIDE FLANGE
WF BM	WIDE FLANGE BEAM
WG	WIRED GLASS
WH	WATER HEATER
WL	WATER LINE
WLD	WELDED
WP	WATERPROOF
WPM	WATERPROOF MEMBRANE
WR	WATER RESISTANT
WSCT	WAINSCOT
WSG	WIRE SAFETY GLASS
WTR	WATER
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
WT	WEIGHT

GENERAL SYMBOLS LEGEND

1. GRID LINE REFERENCE
2. LEVEL / DATUM REFERENCE — NAME, ELEVATION
3. EXTERIOR ELEVATION REFERENCE — X / AX.XX — Drawing Number, Sheet Number
4. INTERIOR ELEVATION REFERENCE — # / AX.00 — Drawing Number, Sheet Number
5. BUILDING SECTION REFERENCE — X / AX.XX — Drawing Number, Sheet Number
6. WALL SECTION REFERENCE — X / AX.XX — Drawing Number, Sheet Number
7. DETAIL SECTION REFERENCE — X / AX.XX — Drawing Number, Sheet Number
8. CALLOUT/DETAIL REFERENCE — X / AX.XX — Drawing Number, Sheet Number
9. REVISION REFERENCE — #
10. ROOM REFERENCE — ROOM NAME, 100
11. ASSEMBLY REFERENCE — X#
12. WINDOW REFERENCE — W#
13. DOOR REFERENCE — D001
14. NORTH ARROW — N

MATERIALS LEGEND

- WOOD BLOCKING (SHIM)
- WOOD FRAMING (CONTINUOUS)
- FINISHED WOOD
- PLYWOOD
- BATT INSULATION
- RIGID INSULATION
- MINERAL WOOL INSULATION
- FOAM INSULATION
- GRAVEL
- EARTH
- ALUMINUM
- STEEL
- MASONRY (CMU)
- BRICK

BUILDING CODE / ZONING SUMMARY

PROJECT ADDRESS: 4525 FOREST AVE SE, MERCER ISLAND, WA 98040

ASSESOR'S PARCEL NUMBER: 770010-0205

LEGAL DESCRIPTION: THE SOUTH 30 FEET OF LOT 38, ALL OF LOTS 39 AND 40, SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 24 OF PLATS, PAGE 26, RECORDS OF KING COUNTY, WASHINGTON; TOGETHER WITH TIDELANDS OF THE SECOND CLASS ADJOINING.
TOGETHER WITH THAT PORTION OF LOT 37 AND LOT 38 LYING SOUTHERLY OF THE FOLLOWING DESCRIBED LINE:
BEGINNING AT A POINT OF THE EAST LINE OF THE SOUTH 30 FEET OF LOT 38 OF SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON; EXEPT THE EAST 136 FEET OF SAID PREMISSES MEASURED PARALLEL WITH THE WESTERLY LINE OF 80TH AVE SOUTH EAST, SAID POINT BEING N 15°45'37"W 18.32 FEET FROM THE SOUTHEAST CORNER THEREOF; THENCE N 88°30'13"W 127.43 FEET; THENCE N 49°02'28"W 38.89 FEET; THENCE S84°19'47"W 72.81 FEET TO SHORELINE AS ESTABLISHED BY THE LOT LINE REVISION AS RECORDED IN AUDITOR'S FILE NO. 2000051690002.
TOGETHER WITH SHORE LANDS OF THE SECOND CLASS ADJOINING; SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

PROJECT NARRATIVE: PARCEL 7700100205 IS A 1.38-ACRE SITE LOCATED ON LAKE WASHINGTON IN MERCER ISLAND, WASHINGTON. THE WESTERN PORTION OF THE PROPERTY HAS A SHORT SEGMENT ADJACENT TO THE LAKE WITH A WATERCOURSE RUNNING THROUGH THE PROPERTY. THE PROPOSAL CONSISTS OF THE DEMOLITION OF AN EXISTING RESIDENCE AND CONSTRUCTION OF A NEW SINGLE-FAMILY RESIDENCE (8678 SF) ON THE SITE (67673 SF). PROPOSAL INCLUDES LANDSCAPING, DRIVEWAY UPDATES, AND ASSOCIATED UTILITIES.

APPLICABLE CODES: 2018 INTERNATIONAL RESIDENTIAL CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL FUEL GAS CODE
2018 UNIFORM PLUMBING CODE
2018 INTERNATIONAL FIRE CODE
2018 INTERNATIONAL SWIMMING POOL AND SPA CODE
WASHINGTON STATE ENERGY CODE (WCEC)
LAND USE DEVELOPMENT CODE: MERCER ISLAND CITY CODE (MICC) - TITLE 19

AUTHORITY HAVING JURISDICTION: CITY OF MERCER ISLAND

PHYSICAL ADDRESS: 9611 SE 36TH ST, MERCER ISLAND, WA 98040

BUILDING: 206.275.7605

ELECTRONIC MAIL: epermit.tech@mercerisland.gov

LOT SIZE: 67,673 SQ FT, 1.55 ACRES

LAND USE DESIGNATION: SINGLE FAMILY

DENSITY: R-15

PROJECT DESCRIPTION: NEW CONSTRUCTION OF SINGLE FAMILY RESIDENCE

HEIGHT: ALLOWED: 30 FT
PROPOSED: TBD
NOT TO EXCEED 30 FT ABOVE THE AVERAGE BUILDING ELEVATION TO HIGHEST POINT OF THE ROOF

HEIGHT ON DOWNHILL BUILDING FACADE: 30 FT
MEASURED FROM EXISTING OR FINISHED GRADE, WHICHEVER IS LOWER AT FURTHEST DOWNHILL EXTENT OF EXTERIOR WALL SUPPORTING THE ROOF FRAMING

YARD SETBACKS: FROM ORDINARY HIGH WATER MARK (OHWM)
SHORELINE SETBACK, ALL STRUCTURES, FENCES AND PARKING: 25'

FRONT: 20 FT
REAR: 25 FT
SIDE: 30'-1" FT COMBINED, 8'-3" FT MIN SIDE SETBACK

MICC 19.02.020, LOTS WITH A WIDTH OF MORE THAN 90 FT, THE SIDE YARD SETBACKS MUST SUM TO 17% OF THE LOT WIDTH, PROVIDED THAT NO SIDE YARD SHALL BE LESS THAN 33% OF THE REQUIRED SIDE YARD WIDTH.
LOT WIDTH CIRCLE 177'-3"
17 % OF 177'-3" LOT WIDTH = 30'-1" COMBINED SIDE SETBACK (MICC 19.02.020).
MIN REQUIRED 5' OR 33% OF THE AGGREGATE SIDE YARD TOTAL, WHICHEVER IS GREATER.
30'-3" - 5' x 33% = 8'-3" FT MIN SIDE SETBACK.

WATERCOURSE SETBACK, PIPED: 45'
WATERCOURSE SETBACK, OPEN: 60'
WATERCOURSE BUFFER, AT OPEN: 15'

ENERGY CODE COMPLIANCE: VERTICAL GLAZING: 0.30 U-FACTOR
SKYLIGHT: 0.50 U-FACTOR

CEILING: R-49
FLOOR: R-30
WALL ABOVE GRADE: R-21
WALL BELOW GRADE: R-10 CONT ON EXT OF WALL
OR R-15 CONT ON INT SIDE OF WALL
OR R-21 CAVITY PLUS R-5 THERMAL BREAK BETWEEN SLAB AND BASEMENT WALL AT INT WALL
SLAB ON GRADE: R-10, 2 FT

ALLOWABLE SQUARE FOOTAGE: 12,000 SF
OR 40% OF LOT AREA WHICHEVER IS LESS
(67,673 SF LOT x 40% = 27,069 SF)

PROPOSED: SEE ZONING SHEETS A0.50

LOT COVERAGE: MAXIMUM LOT COVERAGE: 35%
(HOUSE, DRIVING SURFACES AND ACCESSORY BUILDINGS)
FOR LOT SLOT FROM 15% TO LESS THAN 30%
(SITE 27% SLOPE)

MAX 9% OF NET LOT AREA MAY CONSIST OF HARDSCAPE IMPROVEMENTS INCLUDING BUT NOT LIMITED TO WALKWAYS, DECKS, ETC.

REQUIRED LANDSCAPE COVERAGE: 65%

LOT COVERAGE PROPOSED: SEE SHEET A0.50

IMPERVIOUS AREA: MAX IMPERVIOUS AREA BETWEEN 25' AND 50' OHWM (MICC 19.13.050): 30%

MAX IMPERVIOUS AREA BETWEEN 0' AND 50' OHWM (MICC 19.13.050): 10%

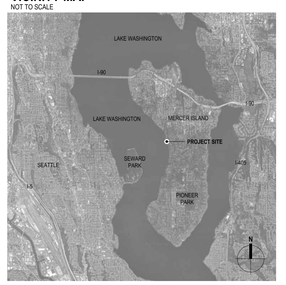
IMPERVIOUS AREA PROPOSED: SEE SHEET A0.50

FIRE CODE ALTERNATIVE PROTECTIONS:

1. NARROWEST PART OF THE EXISTING ACCESS ROAD (8.26 FT) IS REPLACED IWITH A NEW CONCRETE 14 FOOT DRIVE; THE NARROWEST PART OF THE REMAINING EXISTING DRIVE IS 10.5 FT.
2. UPGRADED SPRINKLER SYSTEM NFPA 13R - PLUS
3. INSTALLATION OF HOUSEHOLD FIRE ALARM SYSTEM PER NFPA 72 CHAPTER 29, MONITORED FIRE ALARM SYSTEM IN COMPLIANCE WITH NFPA 72 AND CoMI STANDARDS SHALL BE INSTALLED THROUGHOUT THE RESIDENCE. A SEPARATE FIRE PERMIT IS REQUIRED.
4. FIRE RETARDANT COATING TREATMENT IN THE CRAWLSPACE.
5. INSTALL 1-HR RATED GYPSUM IN ALL INTERIOR SPACES.
6. SOLID CORE DOORS AT ALL INTERIOR LOCATIONS.

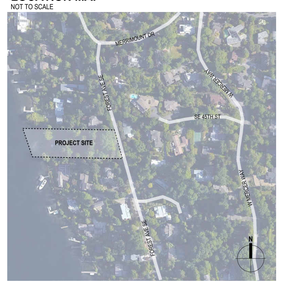
VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE



GENERAL NOTES

1. FEILD VERIFY ALL ROUGH OPENINGS BEFORE ORDERING DOORS
2. EXTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
3. EXTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
4. REFER TO DETAILS FOR JAMB AND HEAD INFORMAATION
5. ALL DOORS TO BE SOLID CORE
6. EXTERIOR SLIDING GLASS DOORS ARE SHOWN ON THE WINDOW SCHEDULE
7. ALL SAFETY GLASS SHOWER DOORS EXCLUDED FROM SCHEDULE SEE INTERIOR ELEVATIONS FOR SIZES

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SURVEYOR
PLOG ENGINEERING
PO BOX 412
RAVENSDALE, WA 98051
PHONE: 206.420.7130
CONTACT: MARK PLOG
EMAIL: mark@plogengineering.com

CIVIL
KPFF
1601 5TH AVENUE, SUITE 1600
SEATTLE, WA 98101
PHONE: 206.926.0417
CONTACT: THADDEUS EGGING
EMAIL: thaddeus.egging@kpff.com

LANDSCAPE
SPRING GREENWORKS
PHONE: 206.769.8392
CONTACT: ROBIN PARSONS
EMAIL: robin@springgreenworks.com

LIGHTING
NITEO
1932 1ST AVENUE, SUITE 605
SEATTLE, WA 98101
PHONE: 650.291.5437
CONTACT: JASON EDLING
EMAIL: jason@niteolighting.com

MEP
ROBISON ENGINEERING INC.
19401 40TH AVE W SUITE 302
LYNNWOOD, WA 98036
PHONE: 206.384.1976
CONTACT: JON ROBISON
EMAIL: jrobison@robisonengineering.com

ENVIRONMENTAL
WET.LAND
8201 164TH AVE NORTHEAST, SUITE 200,
PMB 141 REDMOND, WA
PHONE: 206.309.8100
CONTACT: JENNIFER MARRIOTT
EMAIL: jen@wet.land

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT tom kundig STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.: date: description:

PERMIT SET
04/09/2024

title:
GENERAL NOTES AND PROJECT INFORMATION

sheet:
G0.00

EASEMENTS FROM TITLE REPORT

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: INGRESS AND EGRESS
RECORDED: APRIL 15, 1959
RECORDING NO.: 5023392
AFFECTS: EXISTING ROADS IN PLACE AT THE TIME.

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTED TO:
RECORDED: FEBRUARY 10, 1961
RECORDING NO.: 5255910
AFFECTS: AS SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTED TO: MERCER ISLAND SEWER DISTRICT
PURPOSE: SEWER PIPE LINE OR LINES AND ALL NECESSARY APPURTENANCES
RECORDED: AUGUST 5, 1964
RECORDING NO.: 5770400
AFFECTS: A 10 FOOT STRIP OF LAND ACROSS SECOND CLASS SHORE LANDS, BEING 5 FEET ON EITHER SIDE OF PIPE LINE AS INSTALLED, NOT SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: ROAD
RECORDED: JUNE 18, 1965
RECORDING NO.: 5861793
AFFECTS: AS SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: EXTENSION OF ROAD EASEMENT
RECORDED: JULY 8, 2004
RECORDING NO.: 8105280367
AFFECTS: AS SHOWN ON SURVEY

MODIFICATION OF EASEMENT:
RECORDED: DECEMBER 29, 1986
RECORDING NO: 8612290139
AS SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: ROAD
RECORDED: AUGUST 13, 1981
RECORDING NO.: 8108120502
AS SHOWN ON SURVEY

AMENDMENT OF EASEMENT
RECORDED: JULY 8, 2004
RECORDING NO.: 20040708000905
AFFECTS: ADDRESSES AFFECTED BY THIS PARCEL; ADDRESSES; PORTION OF THE EASEMENT THAT CROSSES LOTS 41, 42, AND 43

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: NON-EXCLUSIVE EASEMENT FOR THE PURPOSE OF CONSTRUCTION AND MAINTENANCE OF A DRIVEWAY
RECORDED: MAY 1997
RECORDING NO.: 9705302152
AFFECTS: PORTION OF LOT 38

BOUNDARY SURVEY NOTES

1. INSTRUMENTATION FOR THIS SURVEY WAS A 3-SECOND LEICA VIVA TS15 SMART POLE TOTAL STATION/RTK GPS.
2. PROCEDURES USED IN THIS SURVEY MEET OR EXCEED STANDARDS SET BY WAC 332-130-090. SURVEY WAS COMPLETED BY A FIELD TRAVERSE.
3. ALL MONUMENTS WERE LOCATED DURING THIS SURVEY UNLESS OTHERWISE NOTED.
4. ENCROACHMENTS NOTED AS "IN" OR "OUT" ARE RELATIVE TO THE SUBJECT PROPERTY
5. FENCE DIMENSIONS ARE GENERALLY TO THE CENTERLINE OF THE FENCE UNLESS OTHERWISE NOTED.
6. STRUCTURE LOCATIONS ARE MEASURED TO THE FINISHED FASCIA UNLESS OTHERWISE NOTED.
7. TREE LOCATIONS ARE MEASURED TO THE ESTIMATED CENTER OF THE TREE.
8. ALL DIMENSIONS ARE IN DECIMAL FEET.

TOPOGRAPHIC SURVEY NOTES

1. UTILITIES SHOWN ON THIS SURVEY ARE BASED UPON ABOVE GROUND OBSERVATIONS, UTILITY LOCATES BY THIRD PARTIES, AND AS-BUILT DRAWINGS. ACTUAL LOCATIONS OF UNDERGROUND UTILITIES MAY VARY AND UTILITIES NOT SHOWN ON THIS SURVEY MAY EXIST ON THIS SITE.
2. CONTOURS SHOWN ARE BASED ON A FIELD SURVEY.
3. TREE IDENTIFICATION WAS PERFORMED BY SURVEY FIELD PERSONNEL AND SHOULD BE CONSIDERED A BEST GUESS. AN ARBORIST SHOULD BE RELIED UPON FOR MORE ACCURATE AND DETAILED IDENTIFICATION OF TREE SPECIES AND HEALTH.

PROJECT INFORMATION

SURVEYOR: PLOG ENGINEERING, PLLC
P.O. BOX 412
RAVENSDALE, WA 98051
PH.: (206) 420-7130

PROPERTY OWNER: BRAD & JUDY CHASE
4467 FOREST AVE SE
MERCER ISLAND, WA 98040

TAX PARCEL NUMBER: 770010-0185 & 770010-0205

PROJECT ADDRESS: 4467 & 4525 FOREST AVE SE
MERCER ISLAND, WA 98040

PARCEL AREA: XXX S.F. (X.XXX ACRES ±)
AS SURVEYED

REFERENCE SURVEYS

BLA1 – AF# 20000516900002 BLA# SUB-0001-001
R1 – AF# 8611289004
R2 – AF# 20220113900025
R3 – AF# 20170503900005

VERTICAL DATUM & CONTOUR INTERVAL

ELEVATIONS SHOWN ON THIS DRAWING ARE BASE ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AND WERE ESTABLISHED USING RTK GPS.

2.0' CONTOUR INTERVAL – THE EXPECTED VERTICAL ACCURACY IS EQUAL TO 1/2 THE CONTOUR INTERVAL OR ± 1.0' FOR THIS PROJECT.

HORIZONTAL DATUM & BASIS OF BEARINGS

BEARINGS AND COORDINATES USED FOR THIS SURVEY ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) WASHINGTON NORTH ZONE AND WERE ESTABLISHED USING RTK GPS WITH SMARTNET REFERENCE NETWORK.

LEGAL DESCRIPTION

PARCEL A

THE SOUTH 30 FEET OF LOT 38, ALL OF LOTS 39 AND 40, SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 24 OF PLATS, PAGE 26, RECORDS OF KING COUNTY, WASHINGTON;

TOGETHER WITH TIDELANDS OF THE SECOND CLASS ADJOINING.

SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

PARCEL B

LOTS 35 AND 36, SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON, TOGETHER WITH SECOND CLASS SHORE LANDS, AS CONVEYED BY THE STATE OF WASHINGTON, SITUATE IN FRONT OF, ADJACENT TO OR ABUTTING THEREON.

TOGETHER WITH LOT 38; EXCEPT THE SOUTH 30 FEET THEREOF, AND ALL OF LOT 37 OF SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON; EXCEPT THE EAST 136 FEET OF SAID PREMISES MEASURED PARALLEL WITH THE WESTERLY LINE OF BOTH AVE SOUTH EAST, TOGETHER WITH SHORE LANDS OF THE SECOND CLASS ADJOINING.

TOGETHER WITH AN EASEMENT FOR ROAD AS NOW IN EXISTENCE OVER AND ACROSS THE FOLLOWING:

THAT PORTION OF LOTS 38, 39 AND 40 OF SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON, LYING WITHIN 15 FEET OF A CENTERLINE OF A ROADWAY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY MARGIN OF FOREST AVENUE, SOUTHEAST FROM WHICH THE NORTHEAST CORNER OF LOT 41 OF SAID ADDITION BEARS SOUTH 18°54'25" EAST 81.60 FEET; THENCE SOUTH 71°05'35" WEST 31.40 FEET TO A POINT OF CURVE; THENCE ON A CURVE TO THE RIGHT THE CENTER OF THE CURVE BEARS NORTH 84°36'08" WEST, 41.26 FEET; THENCE ON A CURVE TO THE RIGHT WITH A RADIUS OF 41.50 FEET, AN ARC DISTANCE OF 17.86 FEET TO A POINT OF REVERSE CURVE; THENCE SOUTH 83°08'40" WEST, 17.86 FEET TO A POINT OF CURVE; THENCE ON A CURVE TO THE RIGHT WITH A RADIUS OF 98.75 FEET, AN ARC DISTANCE OF 56.77 FEET TO A POINT OF TANGENCY; THENCE NORTH 20°12'24" WEST, 50.61 FEET; THENCE NORTH 47° WEST, 72 FEET, MORE OR LESS, TO THE NORTH LINE OF LOT 38 AND THE TERMINUS OF SAID LINE AND SAID CENTERLINE. TOGETHER WITH THE RIGHT TO WAVE SUCH GRADING AND SURFACING TO EXTEND THE SAID ROAD TO THE NORTH 25 FEET OF THE SAID LOT 38.

SYMBOL LEGEND

- MONUMENT AS NOTED
- NW ⊡ NE — SECTION CORNER
- SW ⊡ SE
- ⊡ — QUARTER SECTION CORNER
- FOUND #4 REBAR W/ 2" I.D. YELLOW PLASTIC CAP, "PLOG" UNLESS OTHERWISE NOTED
- SET REBAR AND CAP LS 31976
- FOUND SURFACE MARKER/DISK
- SET SURFACE MARKER/DISK LS 31976
- SEWER MAINTENANCE HOLE
- SEPTIC MAINTENANCE HOLE
- SEWER CLEAN OUT
- SS — SEWER LINE
- STORM DRAIN MAINTENANCE HOLE
- CATCH BASIN (TYPE 2)
- CATCH BASIN (TYPE 1)
- STORM DRAIN CLEAN OUT
- ROUND YARD DRAIN
- SQUARE YARD DRAIN
- SD — STORM DRAIN LINE
- WATER MAINTENANCE HOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- BLOW OFF VALVE
- IRRIGATION VALVE/JUNCTION
- W — WATER LINE
- GAS VALVE
- GM GAS METER
- G — GAS LINE
- CABLE RISER
- CTV CABLE BOX
- CMH CABLE MAINTENANCE HOLE
- FOM FIBER OPTIC MAINTENANCE HOLE
- TMH TELEPHONE MAINTENANCE HOLE
- TSMH TRAFFIC SIGNAL MAINTENANCE HOLE
- PMT PAD MOUNTED TRANSFORMER
- HAND HOLE
- A/C COMPRESSOR
- YARD LIGHT
- POWER POLE
- GUY WIRE
- STREET LIGHT
- OHU — OVERHEAD UTILITIES (GENERAL/MIXED)
- OHE — OVERHEAD ELECTRICAL
- OHC — OVERHEAD CABLE
- OHT — OVERHEAD TELEPHONE
- UGU — UNDERGROUND UTILITIES (GENERAL/MIXED)
- UGE — UNDERGROUND ELECTRICAL
- UGC — UNDERGROUND CABLE
- UGT — UNDERGROUND TELEPHONE
- FO — UNDERGROUND FIBER OPTIC
- BOLLARD
- MAILBOX
- SIGN
- WETLAND FLAG
- SNAG
- DECIDUOUS MULTI-TRUNK
- DECIDUOUS
- CONIFER MULTI-TRUNK
- CONIFER

ABBREVIATION LEGEND

MON = MONUMENT
DN = DOWN
PLT = PLAT
BLA = BOUNDARY LINE ADJUSTMENT
DBH = DIAMETER AT BREAST HEIGHT (PT)
DLR = DRIP LINE RADIUS (PT)
APN = ASSESSORS PARCEL NUMBER
FFN = FIELD FILE NUMBER
WD = WOOD
CL = CHAIN LINK
(M) = AS MEASURED
(C) = AS CALCULATED
(P) = PER PLAT
(D) = PER DEED
(R#) = PER REFERENCE SURVEY
(V) = HELD

GRAPHIC SCALE
5 0 5 10 20
1 INCH = 10 FEET

POST–BLA LOT COVERAGE ANALYSIS

South Parcel	
Asphalt	8,780
Under Roof	2,963
Concrete	1,742
Decks	240
Gravel	647
Total	14,372
New Parcel Area	56611
New Coverage	**25.39%**

North Parcel	
Asphalt	4,127
Under Roof	5,671
Concrete	5,176
Decks	1,034
Gravel	179
Total	16,187
New Parcel Area	49297
New Coverage	**32.84%**

PLOG ENGINEERING
Surveyors & Civil Engineers
P.O. Box 412
Ravensdale, WA 98051
(206) 420-7130
www.PlogEngineering.com

NW & NE1/4, SE1/4, SEC 13, TWP 24N, RNG 4E, W.M.
BOUNDARY & TOPOGRAPHIC SURVEY
BRAD & JUDY CHASE
4467 & 4525 FOREST AVE SE
MERCER ISLAND, WA 98040

PROJECT NO.:	REVISION DATE	REVISION NO.:	SHEET
129-22	XX/XX/2022	0	1 OF 1

TOPOGRAPHIC & BOUNDARY SURVEY

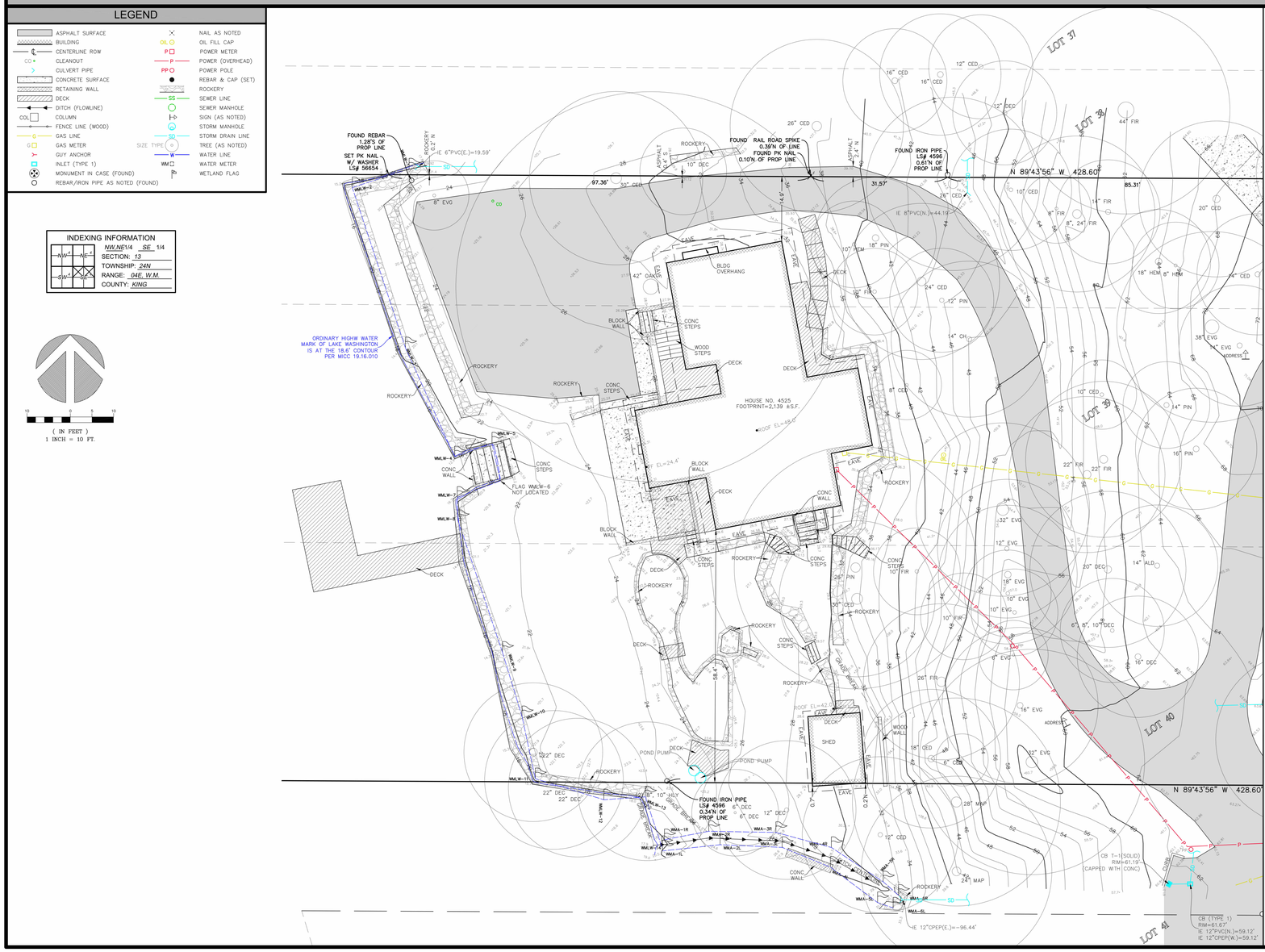
LEGEND

	ASPHALT SURFACE		NAIL AS NOTED
	BUILDING	OIL	OIL FILL CAP
	CENTERLINE ROW	P	POWER METER
CO	CLEANOUT	P	POWER (OVERHEAD)
	CULVERT PIPE	PP	POWER POLE
	CONCRETE SURFACE		REBAR & CAP (SET)
	RETAINING WALL		ROCKERY
	DECK	SS	SEWER LINE
	DITCH (FLOWLINE)		SEWER MANHOLE
COL	COLUMN		SIGN (AS NOTED)
	FENCE LINE (WOOD)	SD	STORM MANHOLE
G	GAS LINE	SD	STORM DRAIN LINE
G	GAS METER	SIZE TYPE( )	TREE (AS NOTED)
	GUY ANCHOR	W	WATER LINE
	INLET (TYPE 1)	WM	WATER METER
	MONUMENT IN CASE (FOUND)		WETLAND FLAG
	REBAR/IRON PIPE AS NOTED (FOUND)		

INDEXING INFORMATION

NW¼ NE¼ SE 1/4
SECTION: 13
TOWNSHIP: 24N
RANGE: 04E, W.M.
COUNTY: KING

(IN FEET)
1 INCH = 10 FT.



measure success

TOPOGRAPHIC & BOUNDARY SURVEY
PARCEL NO. 7700160205

HECKENDORN RESIDENCE
4525 FOREST AVE SE
MERCER ISLAND, WA 98040

GOODMAN MILLER — REGISTERED PROFESSIONAL LAND SURVEYOR — STATE OF WASHINGTON — 22304 — 07/07/21

Terrane
10801 Main Street, Suite 102, Bellevue, WA 98004
phone 425.458.4488 support@terrane.net
www.terrane.net

JOB NUMBER:	211063
DATE:	07/07/21
DRAFTED BY:	IDV/GKD
CHECKED BY:	DRT/JGM
SCALE:	1"= 10'

REVISION HISTORY

SHEET NUMBER
2 OF 2

FUSED ELEMENTS

4545 FOREST AVENUE SOUTHEAST

MERCER ISLAND, WA 98040

LEGEND / ABBREVIATIONS (EXISTING)

- MONUMENT AS NOTED
- SECTION CORNER
- QUARTER SECTION CORNER
- FOUND REBAR AS NOTED
- SET REBAR AND CAP LS 31976
- FOUND SURFACE MARKER/DISK
- SET SURFACE MARKER/DISK LS 31976
- SEWER MAINTENANCE HOLE
- SEPTIC MAINTENANCE HOLE
- SEWER CLEAN OUT
- SS SEWER LINE
- STORM DRAIN MAINTENANCE HOLE
- CATCH BASIN (TYPE 2)
- CATCH BASIN (TYPE 1)
- STORM DRAIN CLEAN OUT
- ROUND YARD DRAIN
- SQUARE YARD DRAIN
- SD STORM DRAIN LINE
- WATER MAINTENANCE HOLE
- WATER VALVE
- WM WATER METER
- FIRE HYDRANT
- BLOW OFF VALVE
- IRRIGATION VALVE/JUNCTION
- W WATER LINE
- GV GAS VALVE
- GM GAS METER
- G GAS LINE
- CABLE RISER
- CTV CABLE BOX
- CMH CABLE MAINTENANCE HOLE
- FOC FIBER OPTIC MAINTENANCE HOLE
- TMH TELEPHONE MAINTENANCE HOLE
- TSC TRAFFIC SIGNAL MAINTENANCE HOLE
- PMT PAD MOUNTED TRANSFORMER
- HAND HOLE
- A/C A/C COMPRESSOR
- YARD LIGHT
- POWER POLE
- GUY WIRE
- STREET LIGHT
- OHU OVERHEAD UTILITIES (GENERAL/MIXED)
- OHE OVERHEAD ELECTRICAL
- OHC OVERHEAD CABLE
- OHT OVERHEAD TELEPHONE
- UGU UNDERGROUND UTILITIES (GENERAL/MIXED)
- UGE UNDERGROUND ELECTRICAL
- UGC UNDERGROUND CABLE
- UGT UNDERGROUND TELEPHONE
- FO UNDERGROUND FIBER OPTIC
- BOLLARD
- MAILBOX
- SN SIGN
- WETLAND FLAG
- SNAG
- DECIDUOUS MULTI-TRUNK
- DECIDUOUS
- CONIFER MULTI-TRUNK
- CONIFER

ABBREVIATION LEGEND

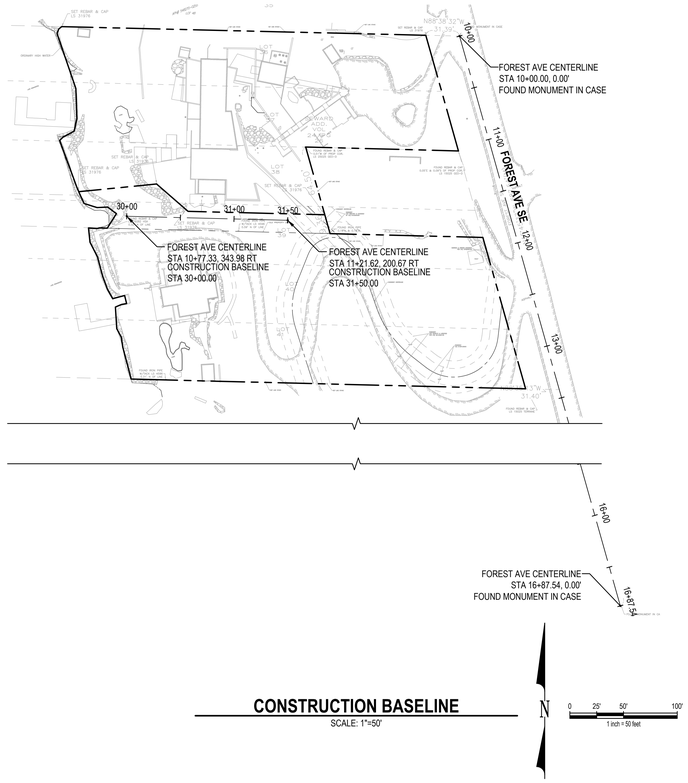
MON = MONUMENT
DN = DOWN
SP = SHORT PLAT
BLA = BOUNDARY LINE ADJUSTMENT
DBH = DIAMETER AT BREAST HEIGHT (FT)
DLR = DRIP LINE RADIUS (FT)
APN = ASSESSORS PARCEL NUMBER
AF# = AUDITOR'S FILE NUMBER
WD = WOOD
CL = CHAIN LINK
(M) = AS MEASURED
(C) = AS CALCULATED
(P) = PER PLAT
(D) = PER DEED
(R#) = PER REFERENCE SURVEY
(H) = HELD

LEGEND (PROPOSED)

- PROPERTY LINE
- EASEMENT CENTERLINE
- LIMITS OF WORK
- SAWCUT
- FILTER FENCE
- DEMOLISH SURFACE FEATURE
- WATTLE
- SD STORM DRAIN
- PERFORATED STORM DRAIN
- FD FOOTING DRAIN
- SS SANITARY SIDE SEWER
- W WATER LINE
- OHW ORDINARY HIGH WATER LINE
- E ELECTRICAL SERVICE
- 60 MAJOR CONTOUR
- 58 MINOR CONTOUR
- SHORING WALL
- CAST IN PLACE RETAINING WALL
- ROCKERY
- CAP
- SANITARY SEWER BACKFLOW VALVE CHAMBER
- STORM DRAIN CATCH BASIN
- AREA DRAIN
- CLEANOUT
- WATER METER
- RBPA
- CONCRETE PAVING
- ASPHALT PAVING
- ASPHALT GRIND & OVERLAY
- CONCRETE SIDEWALK
- GRAVEL FOOTPATH SEE LANDSCAPE

ABBREVIATIONS (PROPOSED)

ARCH	ARCHITECTURE
BMP	BEST MANAGEMENT PRACTICE
BW	BOTTOM OF WALL
CB	CATCH BASIN
CIP	CAST IN PLACE
CMI	CITY OF MERCER ISLAND
CO	CLEANOUT
CSBC	CRUSHED SURFACING BASE COURSE
DTL	DETAIL
DOE	DEPARTMENT OF ECOLOGY
EL	ELEVATION
EX	EXISTING
FDCO	FOOTING DRAIN CLEANOUT
FL	FLOW LINE
IE	INVERT ELEVATION
MAX	MAXIMUM
MIN	MINIMUM
NTS	NOT TO SCALE
PC	POINT OF CURVATURE
POC	POINT OF CONNECTION
PT	POINT OF TANGENCY
RT	RIGHT
SD	STORM DRAIN
SSS	SANITARY SIDE SEWER
STA	STATION
STD	STANDARD
SWMMWW	STORM WATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION



CONSTRUCTION BASELINE
SCALE: 1"=50'

N

0 25' 50' 100'
1 inch = 50 feet

CIVIL SHEET INDEX

Sheet Number	Sheet Title
C1.00	CIVIL COVER SHEET
C2.00	TESC & DEMOLITION PLAN
C2.50	TREE PROTECTION PLAN
C3.00	GRADING PLAN
C4.00	PAVING & UTILITY PLAN
C4.50	SUBSURFACE DRAINAGE PLAN
C5.00	CIVIL DETAILS
C5.01	CIVIL DETAILS

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:
LICENSED PROFESSIONAL ENGINEER
STATE OF WASHINGTON
TYLER J. EDDY
21676
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer: EAP
project manager: BCR
drawn by: EAP/JYL
checked by: TJE
job no.: 2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

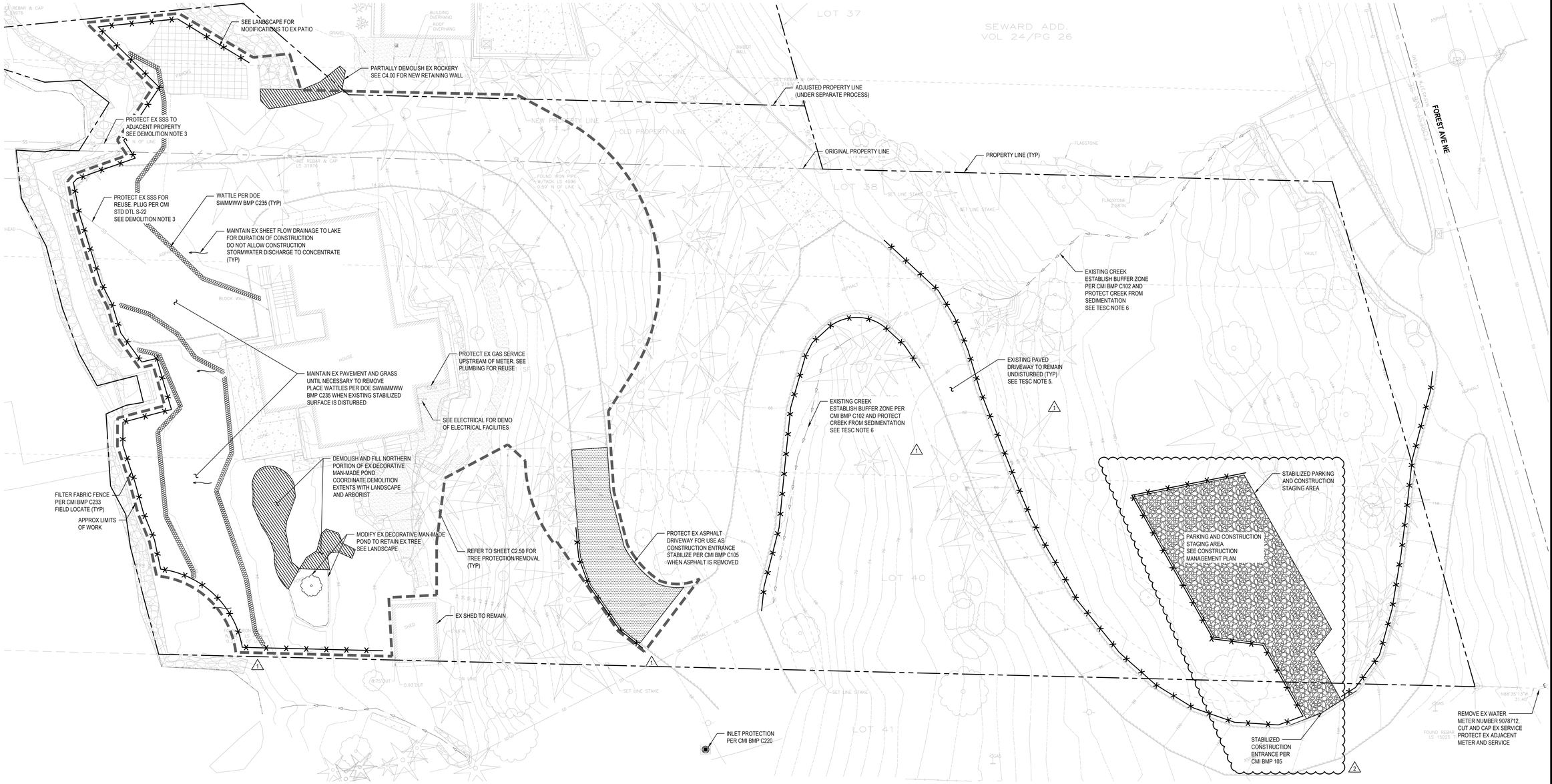
09.08.2023

title:
CIVIL COVER SHEET

sheet:
C1.00

811 Call 811 two business days before you dig

Apr 04, 2024 - 3:22pm EvaP \\vlpfl.com\Civil\220000 - 229999\2200707 Fused Elements\Design\CAD\Design\Permit\C1.00 - COVR.dwg



LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- FILTER FENCE (CMI BMP C233)
- INLET PROTECTION (CMI BMP C220)
- RUNOFF DIRECTION
- WATTLE (DOE SWMMWW BMP C235)
- PARTIALLY DEMOLISH EX FEATURE
- STABILIZED CONSTRUCTION ENTRANCE (CMI BMP BMP C105)

DEMOLITION NOTES

1. DEMOLISH EXISTING BUILDING, SURFACE IMPROVEMENTS AND UTILITIES WITHIN LIMITS OF WORK UNLESS NOTED OTHERWISE. ALL FEATURES OUTSIDE OF THE LIMIT OF WORK ARE INTENDED TO REMAIN UNDISTURBED UNLESS NOTED OTHERWISE.
2. IF AN UNKNOWN UTILITY SERVICE IS FOUND DURING CONSTRUCTION, NOTIFY THE OWNER AND PROTECT IN PLACE UNLESS DIRECTED OTHERWISE.
3. EX SIDE SEWER LOCATION SHOWN IS APPROXIMATE BASED ON CITY OF MERCER ISLAND GIS RECORDS. CONFIRM LOCATION PRIOR TO STARTING DEMOLITION.
4. DISPOSE OF EXCESS DEMOLITION MATERIAL OFF-SITE IN A SAFE AND LEGAL MANNER.

TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) NOTES

1. THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. UPGRADE THE TESC FACILITIES TO ACCOUNT FOR ALL STORM EVENTS.
2. THE TESC FACILITIES SHALL BE INSPECTED AND MAINTAINED AS NECESSARY OR AS DIRECTED BY THE CITY OF MERCER ISLAND INSPECTOR.
3. CATCH BASIN INSERTS SHALL BE PROVIDED FOR ALL STORM DRAIN INLETS AND CATCH BASINS DOWN SLOPE OF DISTURBED AREAS, WITHIN 500 FEET OF THE PROJECT SITE.
4. WATER LEAVING THE SITE DURING CONSTRUCTION, INCLUDING WATER CARRIED BY TRUCK TIRES, SHALL BE CLEAN. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL SEDIMENTATION CONTROL METHODS AS NEEDED OR AS DIRECTED BY THE CITY OF MERCER ISLAND INSPECTOR.
5. EXISTING PAVED DRIVEWAY UPHILL OF THE LIMITS OF DISTURBANCE SHALL REMAIN PAVED AND BE KEPT FREE OF SEDIMENT. SEDIMENT SHALL BE REMOVED FROM ALL TRUCKS AND EQUIPMENT PRIOR TO LEAVING DISTURBED PORTION OF THE PROJECT SITE.
6. EXISTING CREEK SHALL BE PROTECTED FROM SEDIMENTATION AND ALL DISTURBANCE BY CONSTRUCTION ACTIVITIES. UPGRADE OR IMPLEMENT ADDITIONAL SEDIMENTATION BMPS SUCH AS CMI BMP C203: WATER BARS, BMP C231: BRUSH BARRIER, BMP C232: GRAVEL FILTER BERM, AND BMP C235: WATTLES IF NECESSARY TO PROTECT CREEK.
7. ALL CONSTRUCTION STAGING, STORAGE, AND PARKING SHALL OCCUR ON PRIVATE PROPERTY. CONSTRUCTION STAGING, STORAGE, AND PARKING IN THE FOREST AVENUE RIGHT-OF-WAY OR CMI PARCEL TO THE SOUTH IS NOT ALLOWED.

0 5' 10' 20'
1 inch = 10 feet

Call 811 two business days before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
STATE OF WASHINGTON
6766
REGISTERED PROFESSIONAL ENGINEER
04/04/2024

project engineer: EAP
project manager: BCR
drawn by: EAP/JYL
checked by: TJE
job no.: 2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

09.08.2023

title:
TESC & DEMOLITION PLAN

sheet:
C2.00

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ADJUSTED PROPERTY LINE
(UNDER SEPARATE PROCESS)

ORIGINAL PROPERTY LINE

PROPERTY LINE (TYP)

TREE PROTECTION FENCING
SEE NOTE 4
(TYP)
8 C5.00

HYDRO-EXCAVATION AT LIMITS
OF EXCAVATION PER
ARBORIST RECOMMENDATION

SET TREE PROTECTION FENCING
AT EDGE OF PAVED ACCESS
SEE NOTE 4

TREE DRIP LINE (TYP)

APPROXIMATE
LIMIT OF WORK

PARKING AND CONSTRUCTION
STAGING AREA
SEE CONSTRUCTION
MANAGEMENT PLAN

WATER SERVICE TO BE DIRECTIONALLY DRILLED
NO TREE DISTURBANCE IS ANTICIPATED

LEGEND

- PROPERTY LINE
- TREE PROTECTION FENCING — 8 C5.00
- APPROXIMATE LIMIT OF WORK
- TREE TO BE REMOVED
- XXX XXX — REGULATED TREE
- XXX* XXX* — EXCEPTIONAL TREE WITH DIAMETER LESS THAN 24 INCHES
- XXX** XXX** — EXCEPTIONAL TREE WITH DIAMETER GREATER THAN 24 INCHES

NOTES

1. * DENOTES EXCEPTIONAL TREE WITH DIAMETER LESS THAN 24 INCHES
2. ** DENOTES EXCEPTIONAL TREE WITH DIAMETER GREATER THAN OR EQUAL TO 24 INCHES.
3. SEE ARBORIST REPORT PREPARED BY TREE SOLUTIONS, INC, AND DATED JUNE 22, 2023, FOR FURTHER TREE INFORMATION INCLUDING TREE SPECIES AND DIAMETER.
4. DIMENSIONS FOR TREE PROTECTION FENCING ARE INTENDED TO BE AT MINIMUM FROM CENTER OF TRUNK TO THE RECOMMENDED LIMIT OF DISTURBANCE (RLOD) DESCRIBED IN THE PROJECT ARBORIST REPORT, EXCEPT WHERE THE RLOD ENCROACHES ON EXISTING PAVED SITE ACCESS.

N

0 5' 10' 20'
1 inch = 10 feet

811 Call 811 two business days before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
STATE OF WASHINGTON
4276
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

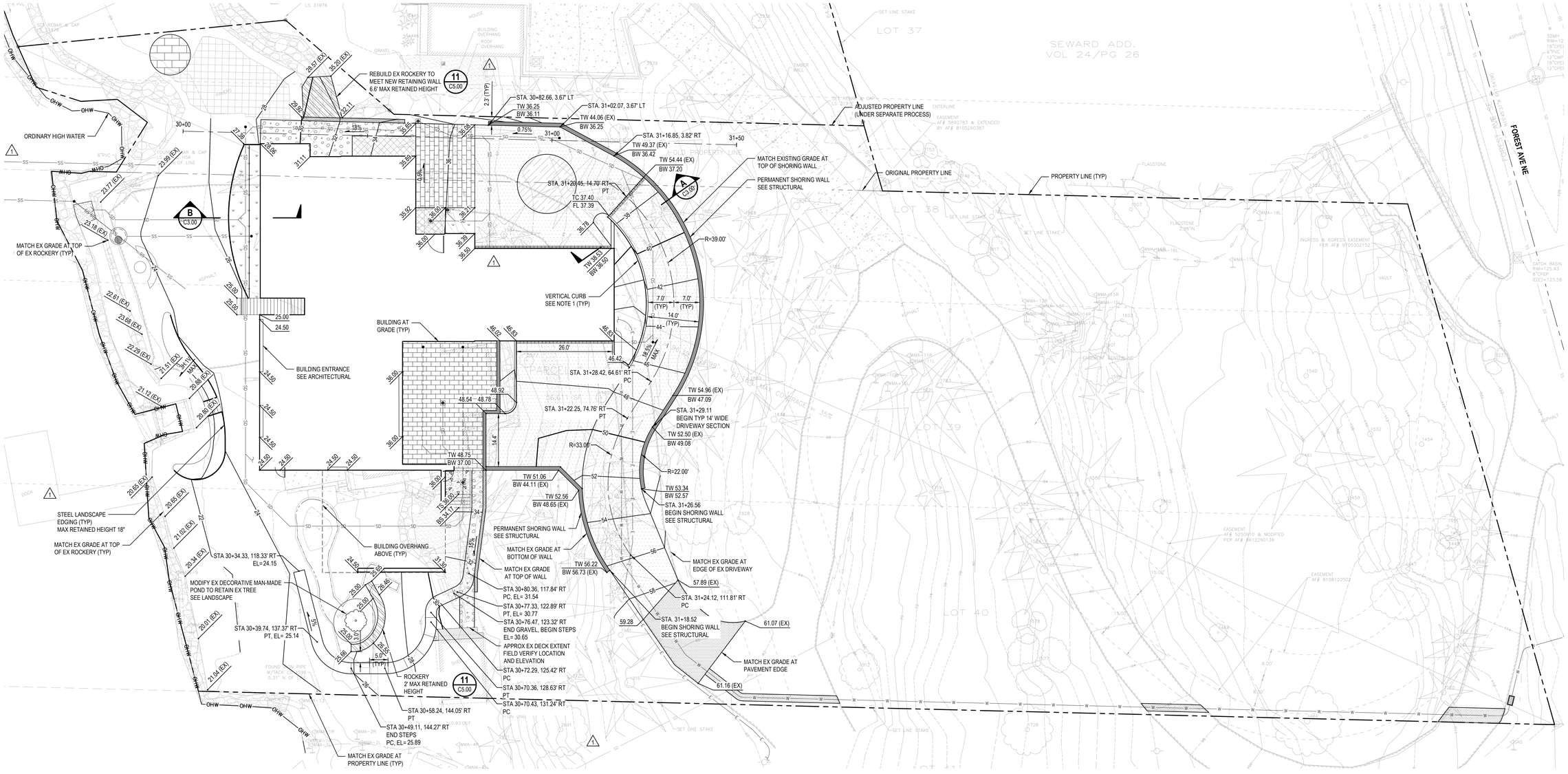
PERMIT SET

09.08.2023

title:
TREE PROTECTION PLAN

sheet:
C2.50

Apr 04, 2024 - 3:23pm EvaP \\Vastf.com\Civil\2200001 - 2209999\2200707 Fused Elements\Design\CADD\Design\Permit\C2.50 - TREE - PRTC.dwg

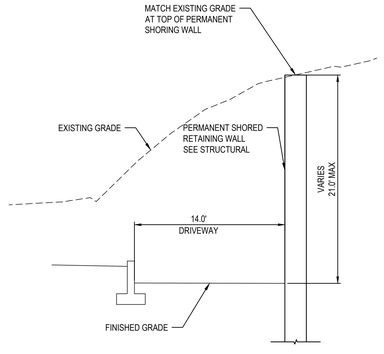


LEGEND

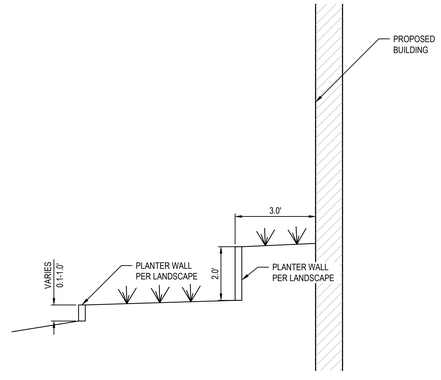
- PROPERTY LINE
- 60 — MAJOR CONTOUR
- 58 — MINOR CONTOUR
- GRADE BREAK
- SHORING WALL
- RETAINING WALL
- ROCKERY (11 / C5.00)
- VERTICAL CURB
- PAVEMENT OVER STRUCTURE OR BUILDING SLAB SEE ARCHITECTURAL
- GRAVEL FOOTPATH SEE LANDSCAPE

NOTES

1. CURB SPOTS PROVIDED REFER TO ELEVATION AT THE FLOW LINE. REFER TO VERTICAL CURB DETAIL FOR ELEVATION AT TOP OF CURB.
2. REFER TO ARCHITECTURAL FOR ALL GRADING OVER STRUCTURE.



TYPICAL DRIVEWAY WALL SECTION A C3.00
SCALE 1" = 5'



TYPICAL PLANTER SECTION B C3.00
SCALE 1" = 5'

N

0 5' 10' 20'
1 inch = 10 feet

811 Call 811 two business days before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
STATE OF WASHINGTON 22766 REGISTERED PROFESSIONAL ENGINEER
04/04/2024

project engineer: EAP
project manager: BCR
drawn by: EAP/JYL
checked by: TJE
job no.: 2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

09.08.2023

title:
GRADING PLAN

sheet:
C3.00

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Apr 04, 2024 - 3:23pm EvaP

PAVER PATIO
SEE LANDCAPE

APPROXIMATE LOCATION OF EX SSS
LOCATE, VIDEO INSPECT, AND REHAB
PIPE AS NECESSARY
SEE NOTES 1-2

ORDINARY HIGH
WATER LINE

INTERCEPT EX SSS
BEHIND EX ROCKERY
INSTALL CLEANOUT PER
CMI STD DTL S-23

6" STORM DRAIN
DISCHARGE
IE= 20.72

1 / C5.01 QUARRY SPALL SPLASH PAD

BACK WATER VALVE
ASSEMBLY PER CMI
STD DTL S-26

GRAVEL FOOTPATH
SEE LANDCAPE

STA 30+16.89, 1.60' LT
SD CO
RIM=27.49
6" IE=25.49

STA 30+63.61, 4.29' LT
PVC AREA DRAIN W/
TRAFFIC RATED GRATE
RIM=35.88
6" IE=30.29

STORM DRAIN POC TO
FOUNDATION DRAIN
SEE C4.50

STA 31+01.98, 0.67' LT
SDCO
RIM=36.30
6" IE=31.09

16' TURN TABLE
SEE ARCHITECTURAL

IE=33.87

STORM DRAIN POC
TO TRENCH DRAIN
IE=34.64

ADJUSTED PROPERTY LINE
(UNDER SEPARATE PROCESS)

ORIGINAL PROPERTY LINE

PROPERTY LINE (TYP)

FOREST AVE NE

TRENCH DRAIN
RIM VARIES, SEE C3.00
SEE NOTE 8

PERMANENT SHORING WALL
SEE STRUCTURAL

CONCRETE PAVEMENT

7 / C5.00

STORM DRAIN POC TO
FOUNDATION DRAIN
SEE C4.50

6" SANITARY SEWER POC
IE=20.0
SEE PLUMBING

BUILDING AT
GRADE (TYP)

PAVEMENT OVER
STRUCTURE
SEE ARCHITECTURAL
(TYP)

PVC AREA DRAIN
RIM=35.95
6"IE=34.45

STORM DRAIN POC
TO TRENCH DRAIN
6" IE= 34.00

EDGE OF BUILDING
FOUNDATION
SEE NOTE 5

TRENCH DRAIN
RIM=36.50
SEE NOTE 8

PVC AREA DRAIN
FIELD LOCATE TO ALIGN
WITH AWNING SCUPPER
6"IE=64.45

TRENCH DRAIN
RIM=46.83
SEE NOTE 8

ELECTRICAL POC
SEE ELECTRICAL

2" WATER SERVICE POC
SEE PLUMBING

STORM DRAIN POC
TO TRENCH DRAIN
6" IE=44.33

SHORING WALL
DRAIN SYSTEM
SEE C4.50

5 / C5.00 VERTICAL CURB (TYP)

FOOTING DRAIN
SYSTEM
SEE C4.50

10 / C5.00 SD CO
RIM=35.98
4" IE=34.31

SD CO
RIM=35.98
4" IE=34.31

PVC AREA DRAIN
RIM=35.81
4" IE=33.89

4 / C-500 PAVER
UNDERDRAIN

STA 31+28.67, 53.97' RT
SD CO
RIM=44.82
6" IE=42.32

EXISTING ASPHALT
PAVEMENT TO REMAIN

4" STORM DRAIN POC
IE=22.67
SEE PLUMBING

AREA DRAIN
RIM=35.96
IE IN=33.47
IE OUT=32.97

CIP CONCRETE
RETAINING WALL
SEE STRUCTURAL (TYP)

BUILDING OVERHANG
ABOVE (TYP)

PERMANENT SHORING WALL
SEE STRUCTURAL

STA 31+37.05, 118.20' RT
BEGIN CONCRETE PAVEMENT

GRAVEL FOOTPATH
SEE LANDSCAPE
(TYP)

ROCKERY (TYP) 11 / C5.00

6 / C5.00 ASPHALT PAVEMENT

PATCH ASPHALT DRIVEWAY AS NECESSARY
MATCH DEPTH OF EX ASPHALT PAVEMENT

2" WATER SERVICE

ELECTRICAL SERVICE
POC TO EX POLE
SEE NOTE 9

PROVIDE POST-CONSTRUCTION
SOIL QUALITY AND DEPTH FOR
PARKING AND CONSTRUCTION
STAGING AREA PER CMI BMP T5.13

2" RPBA IN
ABOVE-GROUND
HEATED ENCLOSURE

PATCH ASPHALT DRIVEWAY AS NECESSARY
MATCH DEPTH OF EX ASPHALT PAVEMENT

MATCHLINE: SEE BELOW

MATCHLINE: SEE ABOVE

ASPHALT GRIND &
OVERLAY (TYP)

ASPHALT PAVING (TYP)
TRENCHING AND
RESTORATION PER CMI
STD DTL W-3

2" TAPPING TEE PER CMI
STD DTL W-14A AND W-11

2" WATER SERVICE

1.5" WATER METER PER
CMI STD DTL W-14

N88°35'13"W
31.40'

LEGEND

- PROPERTY LINE
- STORM DRAIN
- PERFORATED STORM DRAIN
- SANITARY SIDE SEWER
- WATER LINE
- ELECTRICAL SERVICE
- SHORING WALL
- RETAINING WALL
- ROCKERY 11 / C5.00
- VERTICAL CURB 5 / C5.00
- SANITARY SEWER BACKFLOW VALVE CHAMBER
- STORM DRAIN CATCH BASIN
- WATER METER
- PVC AREA DRAIN
- CLEANOUT 3 / C5.00
- RPBA 10 / C5.00
- CONCRETE PAVING
- ASPHALT PAVING
- ASPHALT GRIND & OVERLAY
- GRAVEL FOOTPATH SEE LANDSCAPE
- PAVEMENT OVER STRUCTURE OR BUILDING SLAB SEE ARCHITECTURAL
- PAVERS SEE LANDSCAPE

NOTES

1. EX SIDE SEWER LOCATION SHOWN IS APPROXIMATE BASED ON CITY OF MERCER ISLAND GIS RECORDS. FIELD VERIFY LOCATION AND DEPTH.
2. SIDE SEWER DISCONNECTION AND RECONNECTION PER CITY OF MERCER ISLAND STANDARD DETAIL S-22.
3. COMMUNICATIONS, AND GAS SERVICES HAVE NOT YET BEEN COORDINATED. IT IS ASSUMED THAT THE SERVICES TO THE EXISTING BUILDING WILL BE REUSED FOR THE NEW DEVELOPMENT.
4. REFER TO LANDSCAPE FOR PLANTING DESIGN AND PEDESTRIAN PAVEMENTS, PAVERS, AND AMENITIES.
5. CONCRETE PAVEMENT TO BE DOWELED INTO BUILDING FOUNDATION AT FLUSH THRESHOLD TO MITIGATE GRADE CHANGE FROM DIFFERENTIAL SETTLEMENT.
6. CONCRETE PANELS SHALL BE JOINTED SO THAT NO PANEL EXCEEDS 14'X14' OR HAS A LENGTH TO WIDTH RATIO OF GREATER THAN 1.25.
7. THE CLOSEST EXISTING HYDRANT IS LOCATED ON THE EAST SIDE OF FOREST AVE SE, APPROXIMATELY 120 FEET NORTH OF THE PROJECT DRIVEWAY ENTRANCE. NO NEW HYDRANTS ARE PROPOSED WITH THIS PROJECT.
8. TRENCH DRAIN SHALL BE ACO KLASSIKDRAIN K200 OR AN APPROVED EQUAL, AND SHALL INCLUDE IN-LINE CATCH BASIN WITH SUMP AT THE DOWNSTREAM END. GRATE SHALL BE DUCTILE IRON, LOADING CLASS B, AND BE ADA COMPLIANT AND HEEL PROOF.
9. OBTAIN RIGHT-OF-WAY USE PERMIT FROM THE CITY OF MERCER ISLAND PRIOR TO CONSTRUCTING ANY UTILITIES IN THE RIGHT-OF-WAY.

1

N

0 5' 10' 20'
1 inch = 10 feet

811 Call 811 two business days before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
CERTIFICATE OF REGISTRATION 22766 REGISTERED PROFESSIONAL ENGINEER
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

09.08.2023

title:
PAVING &
UTILITY PLAN

sheet:
C4.00

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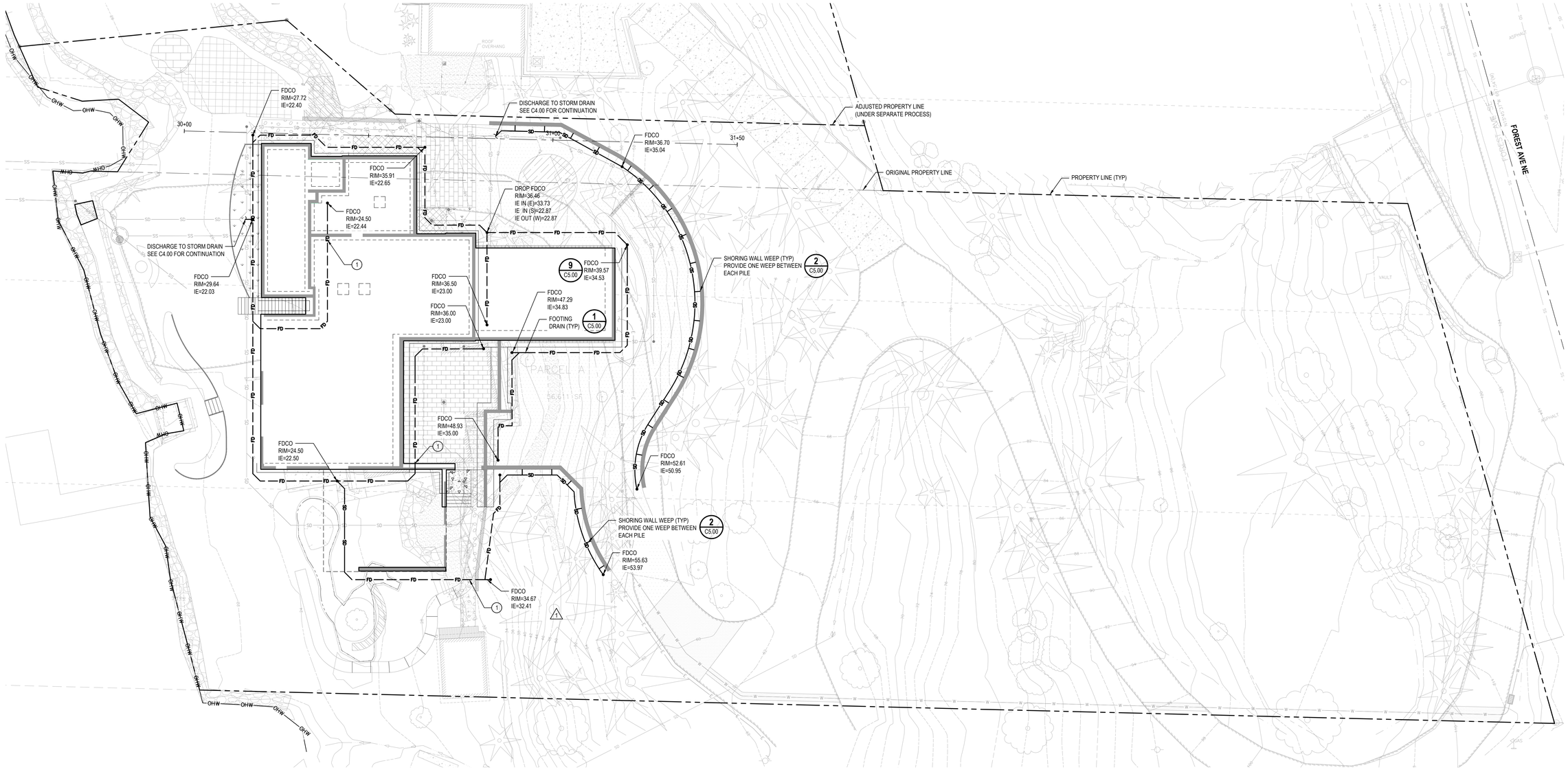

LEGEND

- PROPERTY LINE
- STORM DRAIN
- FOOTING DRAIN
- FOOTING DRAIN CLEANOUT (9 / C5.00)
- PVC AREA DRAIN

NOTES

1. SLEEVE PIPE THROUGH FOUNDATION ELEMENT PER STRUCTURAL.
2. ALL PIPE SHALL BE SLOPED AT 0.5% MINIMUM UNLESS NOTED OTHERWISE.

N

0 5' 10' 20'
1 inch = 10 feet

811 Call 811 two business days before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
LICENSED IN THE STATE OF WASHINGTON
BRIAN C. RAMSEY
21766
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer: EAP
project manager: BCR
drawn by: EAP/JYL
checked by: TJE
job no.: 2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

09.08.2023

title:
SUBSURFACE DRAINAGE PLAN

sheet:
C4.50

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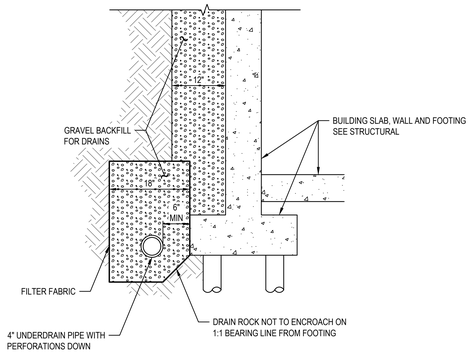
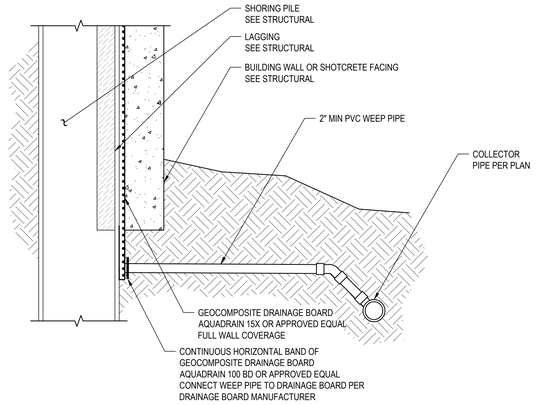
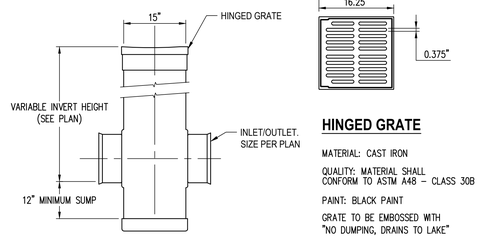


FOOTING DRAIN
NTS — 1 / C4.50



SHORING WALL DRAIN
NTS — 2 / C4.50



PVC AREA DRAIN
NTS — 3 / C4.00, C4.50

HINGED GRATE

MATERIAL: CAST IRON

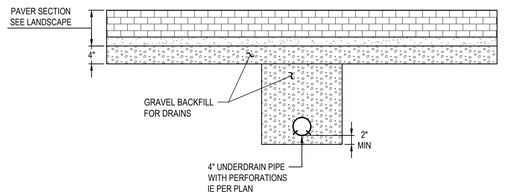
QUALITY: MATERIAL SHALL CONFORM TO ASTM A48 – CLASS 30B

PAINT: BLACK PAINT

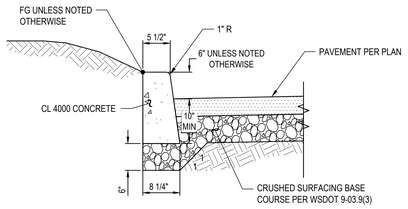
GRATE TO BE EMBOSSED WITH "NO DUMPING, DRAINS TO LAKE"

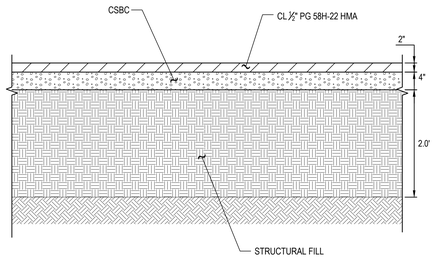
GRATE SHALL BE MANUFACTURED TO FIT AREA DRAIN

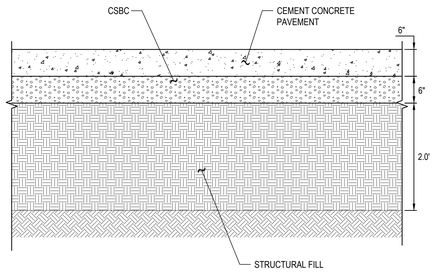
OPEN GRATE AREA = 79.3 SQ. INCH MIN



PAVER UNDERDRAINS
NTS — 4 / C4.00







TREE PROTECTION AREA (TPZ)
KEEP OUT!

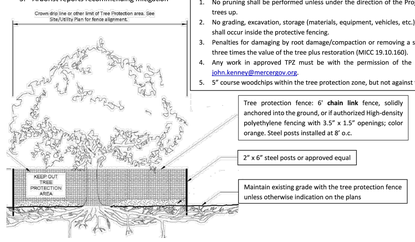
DO NOT REMOVE OR ADJUST THE APPROVED LOCATION OF THIS TREE PROTECTION AREA

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/financial penalties
3. Arborist reports recommending mitigation

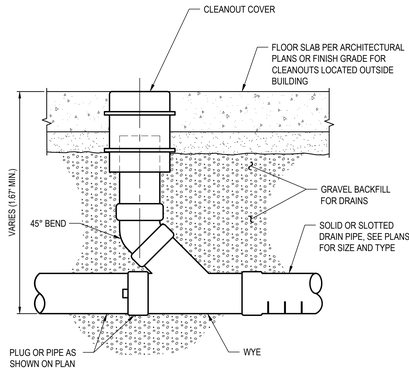
Notes

1. No pruning shall be performed unless under the direction of the Project Arborist. Including limbing trees up.
2. No grading, excavation, storage (materials, equipment, vehicles, etc.), or other unpermitted activity shall occur inside the protective fencing.
3. Penalties for damaging by root damage/compaction or removing a saved tree may be a fine up to three times the value of the tree plus restoration (MICC 19.10.160).
4. Any work in approved TPZ must be with the permission of the City Arborist (206) 275-7713, john.kenney@mercergov.org.
5. 5" course woodchips within the tree protection zone, but not against the tree trunk.

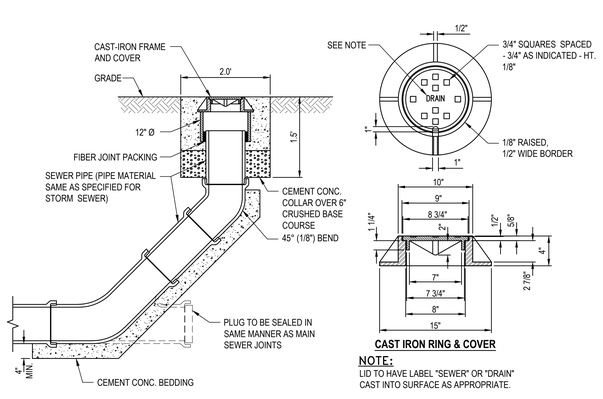


Any Work in the protected area must be with the permission of the City Arborist john.kenney@mercergov.org

TREE PROTECTION FENCING
NTS — 8 / C2.50



VERTICAL CURB
NTS — 5 / C4.00

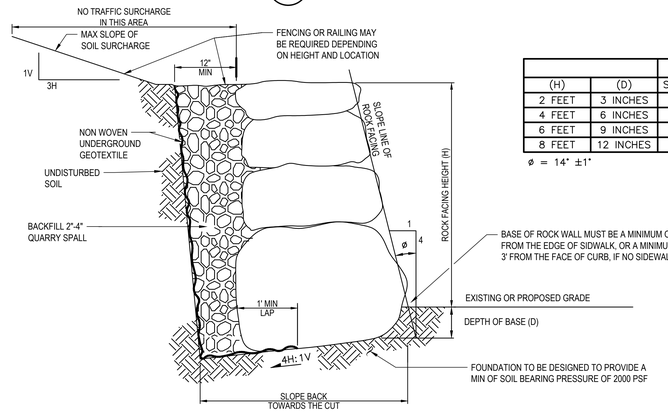


CAST IRON RING & COVER

NOTE:
LID TO HAVE LABEL "SEWER" OR "DRAIN" CAST INTO SURFACE AS APPROPRIATE.

ASPHALT PAVEMENT
NTS — 6 / C4.00

CONCRETE PAVEMENT
NTS — 7 / C4.00



		MINIMUM ROCK	
(H)	(D)	SIZE(BASE)	SIZE(TOP)
2 FEET	3 INCHES	2–MAN	1–MAN
4 FEET	6 INCHES	3–MAN	2–MAN
6 FEET	9 INCHES	4–MAN	2–MAN
8 FEET	12 INCHES	5–MAN	2–MAN

Ø = 14" ±1"

ROCKERY
NTS — 11 / C3.00, C4.00

FOOTING DRAIN CLEANOUT DETAIL
NTS — 9 / C4.50

STORM DRAIN CLEANOUT
NTS — 10 / C4.00,C4.50

Call 811
two business days
before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
STATE OF WASHINGTON
6276
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

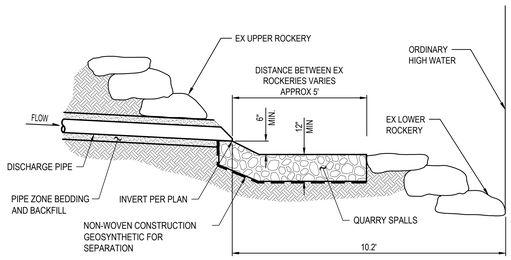
PERMIT SET

09.08.2023

title:
CIVIL DETAILS

sheet:
C5.00

Apr 04, 2024 - 3:24pm EvaP \\vsp1.com\Civil\2200001 - 2209999\2200707 Fused Elements\Design\C400\Design\Permit\C5.00-CIVIL-DETL.dwg



SPLASH PAD 1
NTS C4.00

1

Apr 04, 2024 - 3:24pm EvaP \\kelf.com\Civil\2200001 - 2209999\2200707 Fused Elements\Design\CAD\Design\Permit\C5.00--CIVIL--DETL.dwg

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

04/04/2024

project engineer:	EAP	
project manager:	BCR	
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job no.:	2200707	

revisions:

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PERMIT SET

09.08.2023

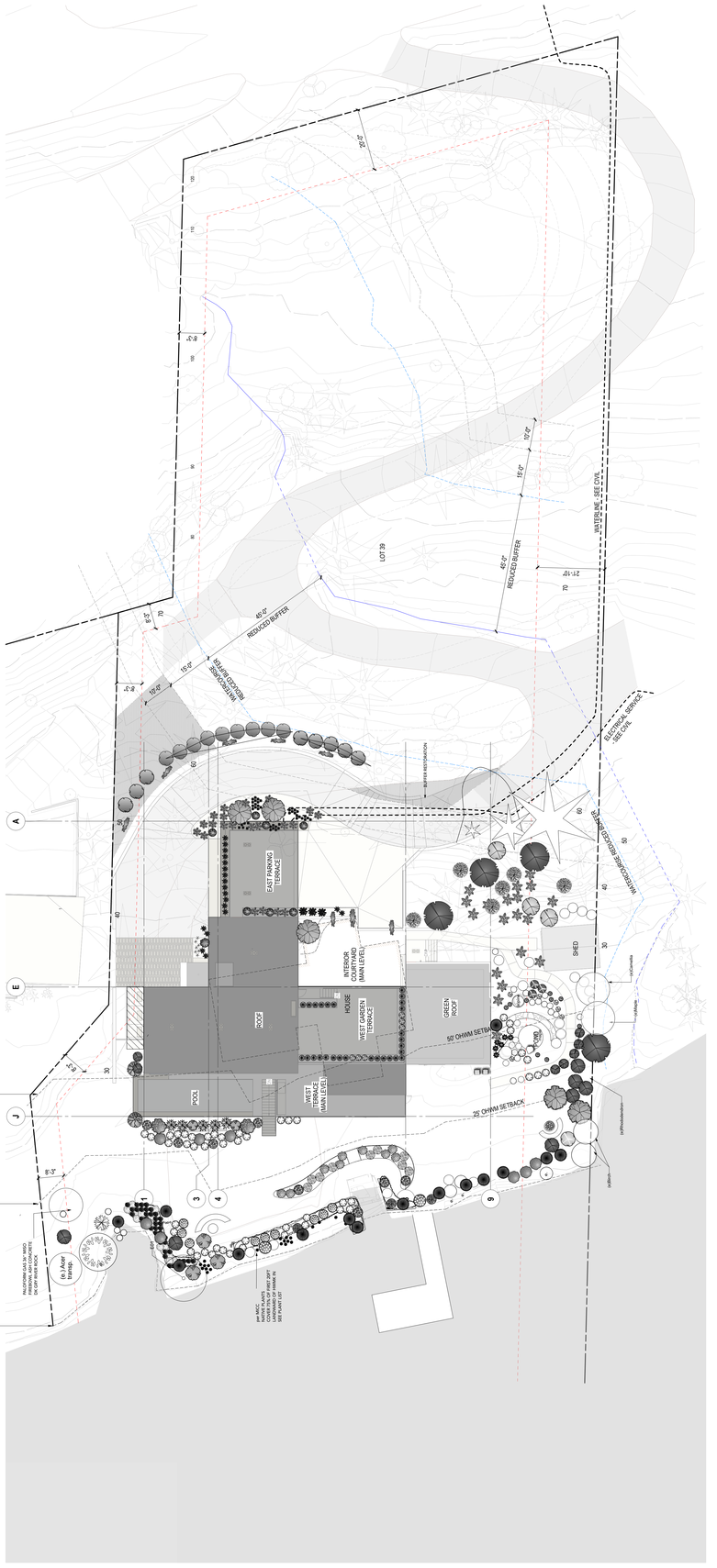
title:

CIVIL DETAILS

sheet:

C5.01

811 Call 811
Two business days
before you dig



1 LANDSCAPE PLAN
SCALE: 1/16" = 1'-0"

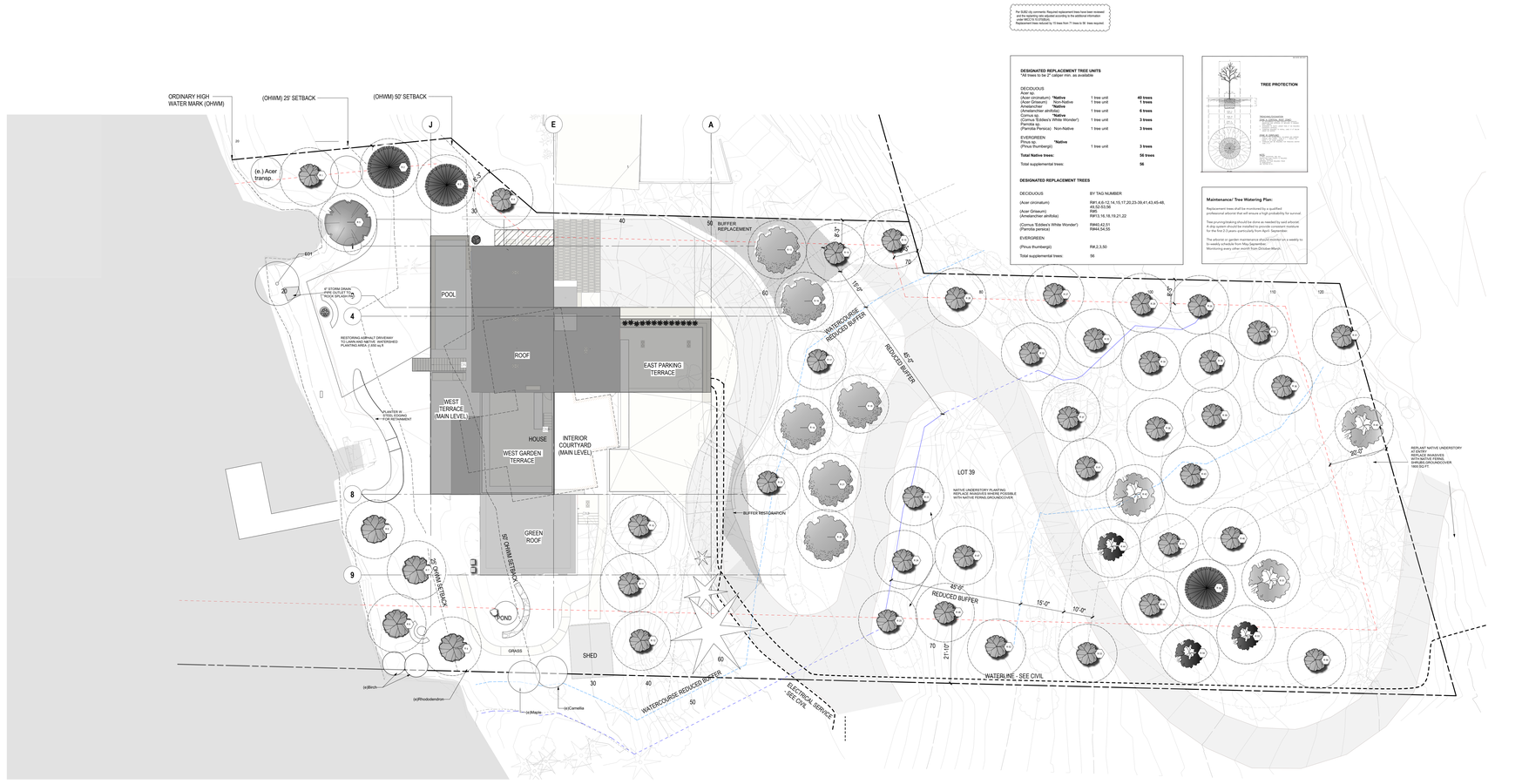
stamp/seal:	
spring greenworks	
project architect:	
project manager:	
drawn by:	
checked by:	
job no.:	
revisions:	
1 05/23/24 R1 PERMIT	
no.: date: description:	
PERMIT SET	
04/09/2024	
title:	LANDSCAPE PLAN
sheet:	L1.00

Olson Kundig
159 South Jackson St. Suite 600
Seattle, Washington 98104 USA
+1 206 624 5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

Plant List

Image	ID	Qty	Botanical Name	Common Name	Included S	Remarks
	Acer cir.all	41	Acer circinatum 'Pacific Fire'	Japanese Maple	4"	
	ACER CIR	4	Acer palmatum	Japanese Maple	18'	
	Acer	1	Acer palmatum	Japanese Maple	7'	
	Acer sp.	6	Amelanchier alnifolia	Pawnhark Maple	6"	
	Am.al.	7	Amelanchier alnifolia	Pacific Serviceberry	18'	
	C.Fe.	15	Cornus sericea 'Firefly'	Firefly Redtwig	18'	
	Cal S.L.	3	Calluna vulgaris 'Firefly'	Firefly heather	18"	
	Cal S.No.	3	Carpinus betulus 'Fastigiata'	Fastigiate European Hornbeam	6"	
	Car Bl d.	14	Carex flacca 'Blue Zinger'	Blue Zinger Carex	18'	
	Cis.m.sun.	9	Cistus hybrid 'Little Miss Sunshine'	Little Miss Sunshine Rockrose	18'	
	Clero.Tr.	1	Clerodendron trichotomoides	Harlequin Glorybower	24'	
	Cnid.	9	Cornus sanguinea 'Midwinter Fire'	Red-barked Dogwood	18'	
	Crocos.	9	Crocosmia x paniculata 'Morningstar'	Marie Bleu™ New Jersey Tea	18'	
	Cor Ed wie	3	Cornus kousa 'Edden White wonder'	Eddie's White wonder Dogwood	1-2"	
	Cor.	14	Carex 'Swallifire 'Toffee Twist'	Toffee Twist Hair Sedge	18'	
	deer. no. fe.	24	Deschampsia cespitosa 'northern lights'	Northern Lights Tufted Hair Grass	18'	
	Eul sud.	15	Eomecon x pendulinum 'Sulphurium'	Sulfurium Bareroot	18'	
	F.Fo.	20	Polystichum munitum	Polystichum Munitum	18'	
	G.H.	37	Hakonechloa 'aureola'	Japanese forest grass	18'	
	G.Hm.au.	47	Hakonechloa macra 'aureola'	Golden Japanese forest grass	18'	
	Hak.Bur.	3	Hakonechloa 'aureola'	Dwarf Bunched Hare	18'	
	Hand.	8	Hydrangea paniculata 'Jane' LIGHT LEVIS	Little Lime® Hardy Hydrangea	18'	
	Ilex	1	Ilex crenata 'Sentaway'	Japanese Holly	18'	
	Lirio.	94	Liriope muscari	Big Blue Lily Turf	18'	
	Mah.ap.	22	mahonia aqf.'Lemo	Soft Caress Mahonia	18'	
	Mat.	8	Matteuccia struthiopteris	European Ostrich Fern	18'	
	P. 11	14	Perennial 11	Carex	18'	
	P.Ad.	19	Rumex dolous	Rumex	18'	
	P.Arme.	21	Armeria maritima	Armeria	18'	
	P.Hen.db.	9	Hellebrus niger 'Dark and Handsome'	Dark and Handsome Niger Hellebore	18'	
	P.Hell.	7	Hellebrus orientalis 'Blue Lady'	Blue Lady Hellebore	18'	
	P.Lio.	13	Liriope muscari	Liriope Muscari	18'	
	Par.ser. 3	3	Parrotia persica 'Vanessa'	Vanessa Persian Parrotia	2"	
	pho. dist	9	Phormium 'Pink Stripe'	Pink Stripe New Zealand Flax	18'	
	P.Ker Gu	1	Picea koraiensis 'Gnutz Diamond'	Korean Pine	6'	
	Pin.mo.Cri	15	Pinus strobus 'Glauca Nana'	Dwarf Eastern White Pine	18"	
	Pol.	21	Polystichum polyblepharum	Tassel Fern	18'	
	Pot.	3	Picea schrenki	Schrenk Pine	18'	
	R.Hea.	9	Rosa 'Chewfire Time' LIGHT 15347	Oso Easy® Paprika Rose	18'	
	rg.sun.	3	Rosa 'rugosa'sal	sea ho rose	18'	
	S.Eupha.	6	Euphorbia x martinii	martin euoria	18'	
	S.Hm.	1	Hesperaloe nocturnicola	Green Sun Flower	1-15"	
	s.hol.da.	1	Holodiscus discolor	Oceanspray	18'	
	S.Hyfla.	1	Hydrangea quercifolia 'Snow queen'	Snow Queen Hydrangea	18'	
	S.Hyl.	3	Hamamelis x intermedia 'Jelena'	Jelena witchhazel	18'	
	S.Mo.al.	1	Myrica californica	Pacific Wax myrtle	18'	
	S.pal. Lea	1	Philadelphus 'lemoi'	Lemoi' Mock Orange	18'	
	S.Pin.	9	Pinus mugo	mugo pine	18'	
	s.RoKEn	7	Rosa serpuiifolium 'Kris Edward VI'	Kris Edward VI Flowering Currant	18'	
	S.Rub.	1	Rubus spectabilis 'Olympic Double'	salmon berry	18'	
	Sa. dou.	3	Spiraea douglasii	Douglasii Spirea	18'	
	Sa.NC.	3	Spiraea x bumalda 'Neon Flash'	Neon Flash Spirea	18'	
	Sa.wo.ac.	3	Spiraea nipponica 'snowmound'	snowmound wreathe japanese spir	18'	
	Sp.Sa.al.	7	Spiraea betulifolia 'Shirobana'	Shirobana Spirea	18'	
	Vac.o.	17	Vaccinium ovatum	Evergreen Huckleberry	18'	



Per SGEC-dg comments: Required replacement trees have been reviewed and updated to DBH measurements according to the additional information under WECHS ELEVENEN.
Replacement trees reduced by 15 trees from 71 trees to 56 trees required.

DESIGNATED REPLACEMENT TREE UNITS
*All trees to be 2" caliper min. as available

DECIDUOUS			
Acer sp.			
(Acer circinatum)	*Native	1 tree unit	**40 trees**
(Acer Griseum)	Non-Native	1 tree unit	**1 trees**
(Amelanchier alnifolia)	*Native		
Amelanchier	*Native	1 tree unit	**6 trees**
(Amelanchier alnifolia)			
Cornus sp.	*Native	1 tree unit	**3 trees**
(Cornus 'Edden's White Wonder')			
Parrotia sp.		1 tree unit	**3 trees**
(Parrotia Persica)	Non-Native		
EVERGREEN			
Pinus sp.	*Native	1 tree unit	**3 trees**
(Pinus thumbergii)			
Total Native trees:			**56 trees**
Total supplemental trees:			**56**

DESIGNATED REPLACEMENT TREES

	BY TAG NUMBER
DECIDUOUS	
(Acer circinatum)	R#1,4,6-12,14,15,17,20,23-39,41,43,45-48, 49,52-53,56
(Acer Griseum)	R#8
(Amelanchier alnifolia)	R#13,16,18,19,21,22
(Cornus 'Edden's White Wonder')	R#40,42,51
(Parrotia persica)	R#44,54,55
EVERGREEN	
(Pinus thumbergii)	R#2,3,50
Total supplemental trees:	56

TREE PROTECTION

Maintenance/ Tree Watering Plan:

Replacement trees shall be transmitted by a qualified professional arborist that will ensure a high probability for survival.

Tree pruning/staking should be done as needed by said arborist. Trees should be watered weekly during the summer months for the first 3 years particularly from April- September.

The arborist or garden maintenance should monitor/ark a weekly to bi-weekly schedule from May-September. Monitoring every other month from October-March.

1 TREE REPLACEMENT PLAN
SCALE: 1/16" = 1'-0"

0" 8" 16" 32"

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spring greenworks

project architect:
project manager:
drawn by:
checked by:
job no.:

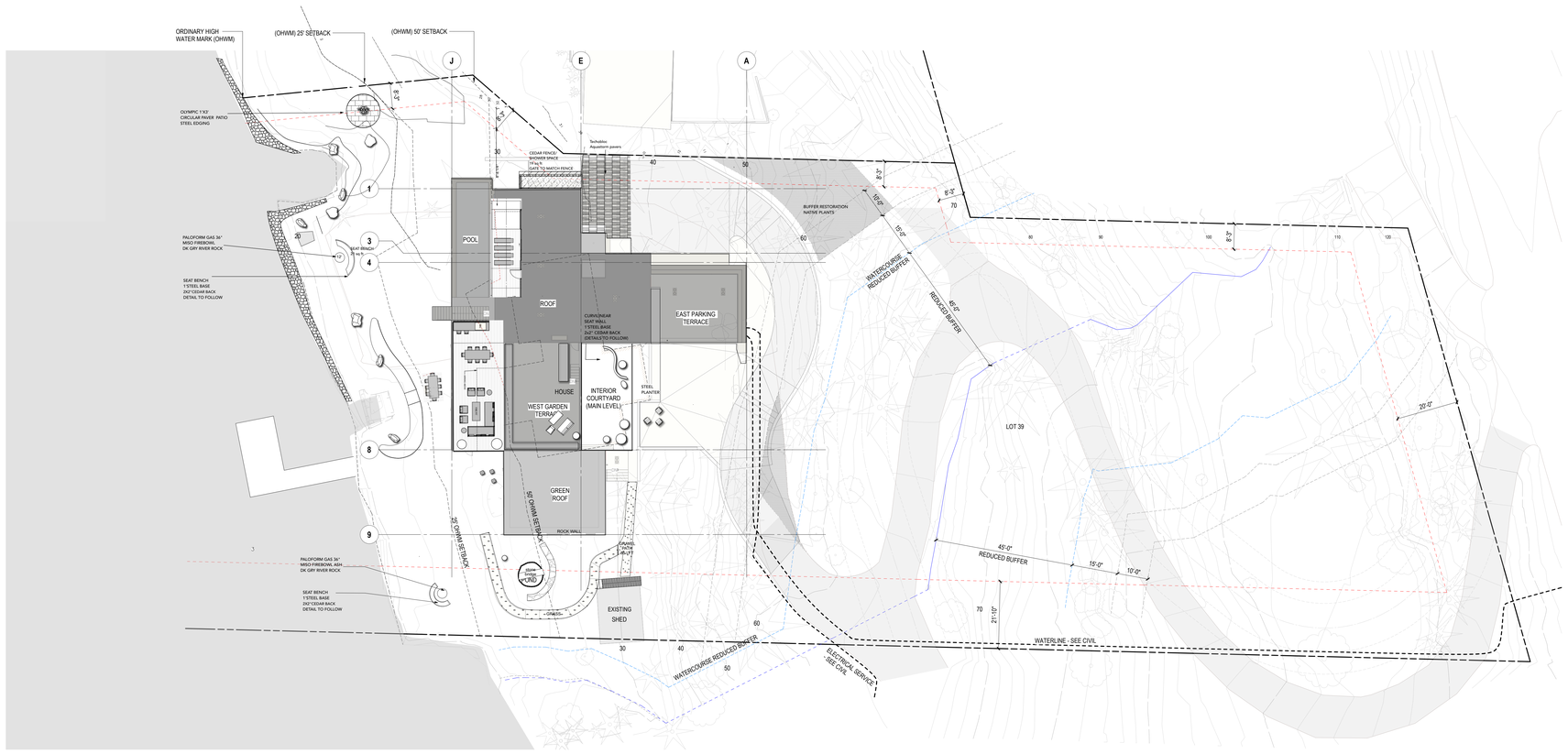
revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET
04/09/2024

title:
TREE REPLACEMENT PLAN

sheet:
L1.01



1.02 LANDSCAPE/ HARDSCAPE PLAN

SCALE: 1/16" = 1'-0"

N

0" 8" 16" 32"

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04/09/2024

title:
LANDSCAPE HARDSCAPES PLAN

sheet:
L1.02

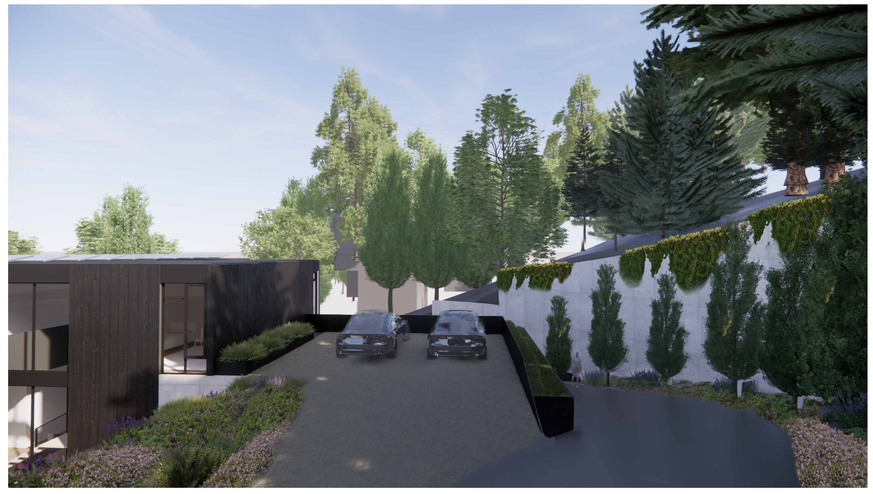
WEST ELEVATION

ENTRY LOOKING EAST

ENTRY LOOKING SOUTH

WEST ROOF TERRACE

COURTYARD LOOKING NORTH



EAST PARKING TERRACE

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revisions:

no.: date: description:

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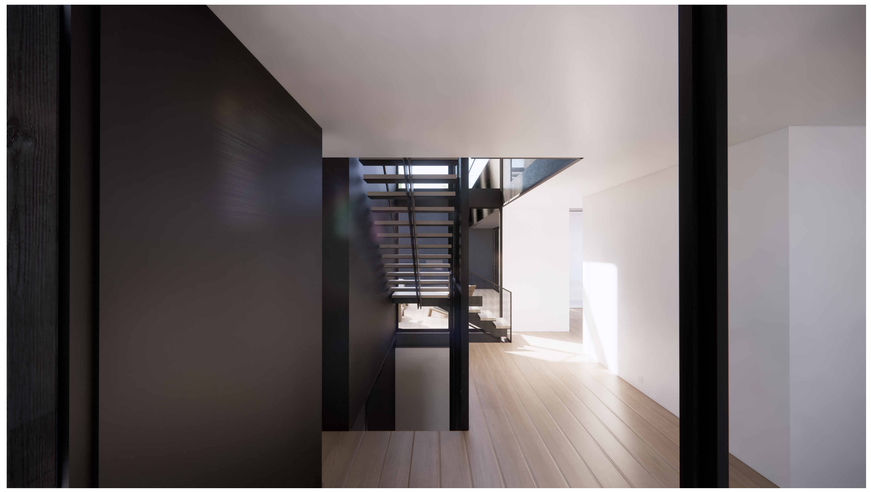
04/09/2024

title:
BUILDING PERSPECTIVES

sheet:
A0.02



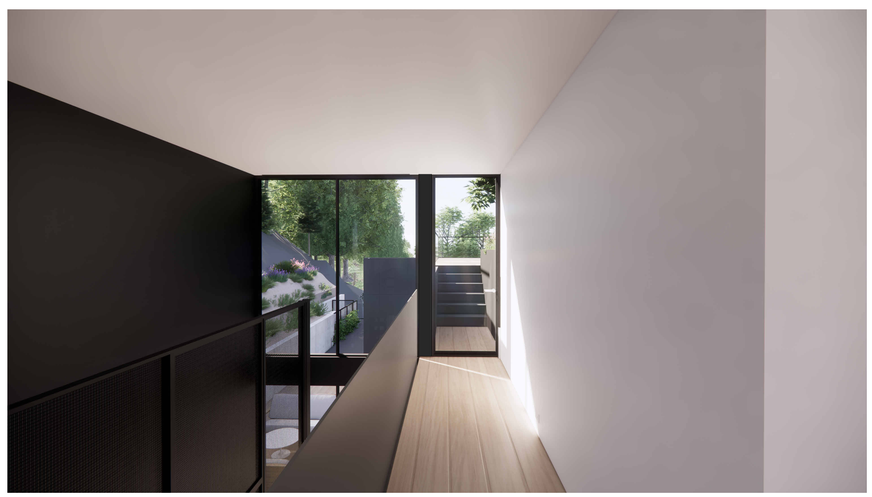
ENTRY LOOKING SOUTH

LIVING LOOKING SOUTH

WEST TERRACE

PRIMARY LOOKING WEST

LOOKING AT KITCHEN



STAIR TO WEST ROOF TERRACE

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checked by:
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04/09/2024

title:
BUILDING PERSPECTIVES

sheet:
A0.03

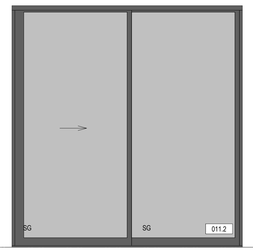
SHEET NOTES

1. SEE SHEET A0.24 FOR WINDOW AND DOOR SCHEDULES.

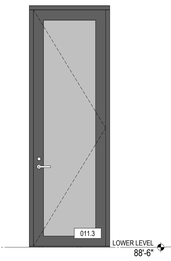
WINDOW LEGEND

E	EMERGENCY EGRESS LOCATION
SG	PROVIDE SAFETY GLAZING WHERE REQUIRED BY CODE

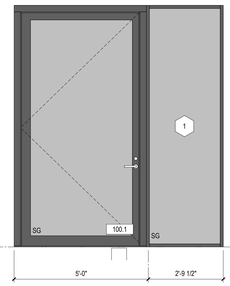
15 WEST - GYM
SCALE: 1/2" = 1'-0"



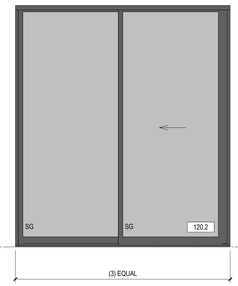
14 WEST - STUDIO
SCALE: 1/2" = 1'-0"



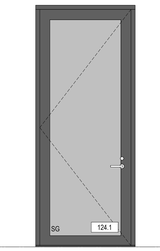
13 SOUTH - STUDIO
SCALE: 1/2" = 1'-0"



12 NORTH - ENTRY
SCALE: 1/2" = 1'-0"

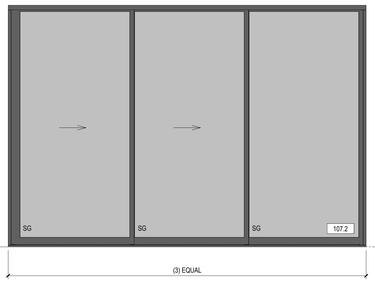


11 WEST - MEDIA
SCALE: 1/2" = 1'-0"



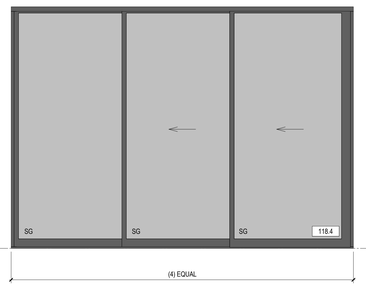
10 WEST - HALL
SCALE: 1/2" = 1'-0"

9 NORTH - KITCHEN
SCALE: 1/2" = 1'-0"

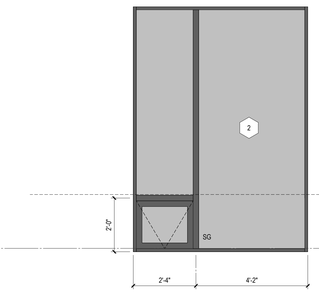


8 WEST - KITCHEN
SCALE: 1/2" = 1'-0"

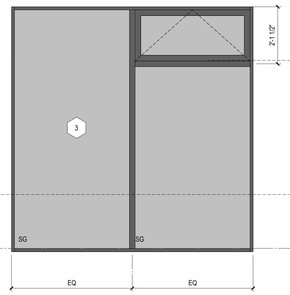
7 WEST -LIVING
SCALE: 1/2" = 1'-0"



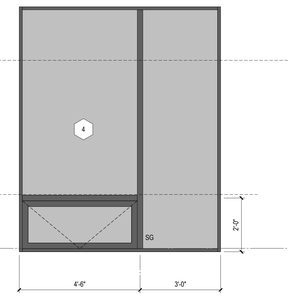
6 WEST E- PRIMARY SLIDING
SCALE: 1/2" = 1'-0"



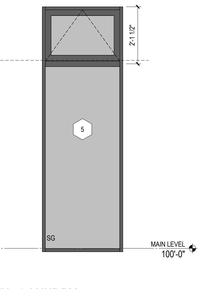
5 WEST - PRIMARY
SCALE: 1/2" = 1'-0"



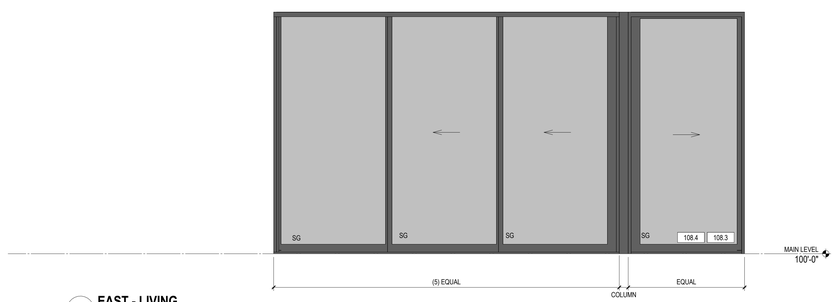
4 SOUTH - PRIMARY
SCALE: 1/2" = 1'-0"



3 SOUTH - PRIMARY BATH
SCALE: 1/2" = 1'-0"



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



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

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title:
WINDOW SCHEDULES

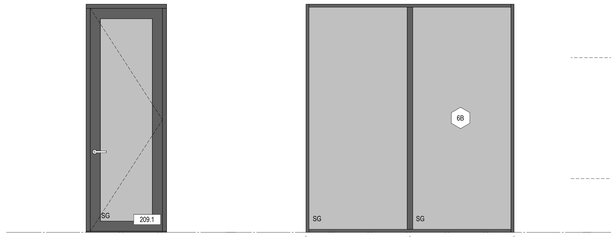
sheet:
A0.20

SHEET NOTES

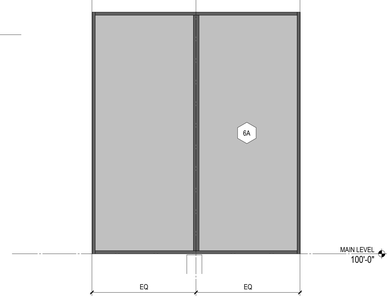
1. SEE SHEET A0.24 FOR WINDOW AND DOOR SCHEDULES.

WINDOW LEGEND

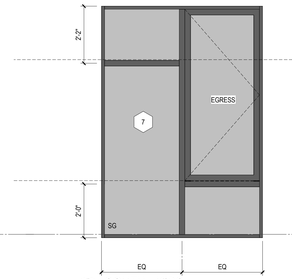
E	EMERGENCY EGRESS LOCATION
SG	PROVIDE SAFETY GLAZING WHERE REQUIRED BY CODE



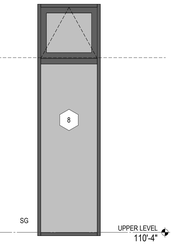
11 NORTH - TERRACE
SCALE: 1/2" = 1'-0"



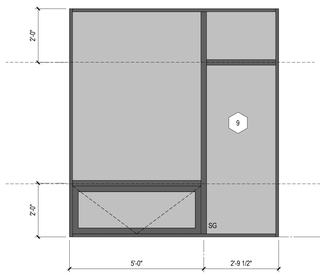
10 SOUTH - STAIR
SCALE: 1/2" = 1'-0"



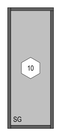
9 SOUTH - KIDS
SCALE: 1/2" = 1'-0"



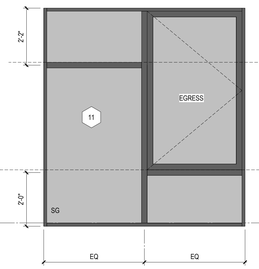
8 EAST - UPPER MUD
SCALE: 1/2" = 1'-0"



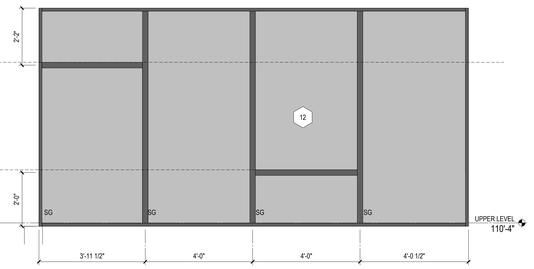
7 NORTH - BONUSROOM
SCALE: 1/2" = 1'-0"



6 EAST - BATH
SCALE: 1/2" = 1'-0"



5 NORTH - GUEST SUITE
SCALE: 1/2" = 1'-0"



4 WEST - GUEST SUITE
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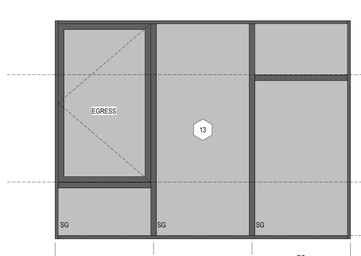
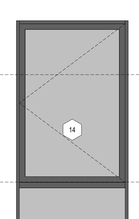


3 WEST - OFFICE
SCALE: 1/2" = 1'-0"



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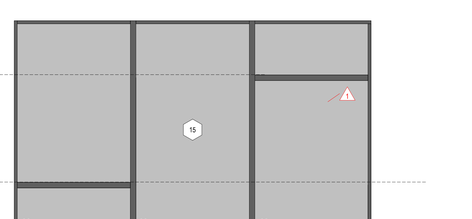

1 WEST - GUEST
SCALE: 1/2" = 1'-0"

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04/09/2024

title:
WINDOW SCHEDULES

sheet:
A0.21

INTERIOR DOOR SCHEDULE

REF.	LOCATION	ROOM NUMBER	OPERATION	TYPE	DIMENSIONS				FINISH		REMARKS
					WIDTH (PANEL 1)	HEIGHT	THICKNESS	UNDERCUT	PANEL	FRAME	
LOWER LEVEL											
001.1	PLAYROOM	004	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	
002.1	PLAYROOM	004	SWING	A	3'-0"	9'-0"	1 3/4"	1/2"	WOOD	WOOD	
003.1	POOL/SPA/ MECHANICAL	005	SWING	A	3'-0"	4'-0"	1 3/4"	1/2"	FIBERGLASS	HMF	
004.1	PLAYROOM	004	SWING	A	4'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
005.1	POOL/SPA/ MECHANICAL	005	SWING	A	4'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
006.1	GYM BATH	006	SWING	A	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
009.1	GYM	009	SWING	A	4'-0"	8'-11"	1 3/4"	1/2"	WOOD		
010.1	KILN	010	SWING	A	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
011.1	JUDY'S STUDIO	011	SWING	A	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
MAIN LEVEL											
101.1	MUD ROOM	103	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	
103.1	MUD ROOM	103	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	SELF-CLOSING SELF LATCHING
106.1	PANTRY	106	POCKET	B	3'-4"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
106.2	PANTRY	106	POCKET	B	3'-4"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
112.1	LAUNDRY	112	POCKET	B	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
113.1	MUD	113	SWING	A	3'-0"	9'-0"	1 3/4"	1/2"	WOOD	WOOD	
116.1	PRIMARY BATH	116	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
117.1	WC	117	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
118.1	PRIMARY BEDROOM	118	SWING	A	3'-0"	8'-11"	1 3/4"	0"	WOOD	WOOD	
118.2	PRIMARY BEDROOM	118	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
118.3	PRIMARY BEDROOM	118	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
120.1	MEDIA / FAMILY	120	SWING	A	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
121.1	POOL BATH	121	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
122.1	POOL BATH	121	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
UPPER LEVEL											
201.1	HALL	203	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	
204.1	KIDS BATH	204	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
205.1	KIDS ROOM	205	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
210.1	OFFICE	210	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
211.1	GUEST SUITE	211	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
212.1	GUEST SUITE BATH	212	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
213.1	GUEST	213	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
214.1	GUEST BATH	214	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	

DOOR SCHEDULE NOTES

1. FIELD VERIFY ALL ROUGH OPENINGS BEFORE ORDERING DOORS
2. EXTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
3. INTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
4. POCKET/SLIDER DOORS TO BE 2" LARGER THAN OPENING SIZE INDICATED TO ACCOMMADATE POCKET HEAD AND JAMB, U.N.O.
5. ALL DOORS TO BE SOLID CORE OR FIRE RATED
7. ALL SAFETY GLAZED SHOWER DOORS EXCLUDED FROM SCHEDULE SEE INTERIOR ELEVATIONS FOR SIZES
8. PROVIDE CLEARANCES AS NECESSARY AT HEAD AND FLOOR CONDITIONS
9. ALL EXTERIOR DOORS TO HEATED SPACES TO BE INSULATED PER MUNICIPLITY REQUIREMENTS

EXTERIOR DOOR SCHEDULE

REF.	LOCATION	ROOM NUMBER	OPERATION	TYPE	DIMENSIONS				FINISH		REMARKS
					WIDTH	HEIGHT	THICKNESS	UNDERCUT	PANEL	FRAME	
LOWER LEVEL											
007.1	OUTDOOR TOOL/FURNITURE STORAGE	007	SWING	C	4'-0"	8'-11"	1 3/4"	1/2"	FIBERGLASS	HMF	
MAIN LEVEL											
104.1	GARAGE	104	OVERHEAD	T	22'-0"	8'-0"	1 3/4"	0"	METAL	METAL	
104.2	GARAGE	104	SWING	C	3'-0"	8'-0"	1 3/4"	1/2"			
111.1	HALL	111	SWING	C	3'-0"	9'-0"	1 3/4"	0"	FIBERGLASS	HMF	
UPPER LEVEL											
206.1	HALL	203	SWING	C	3'-0"	8'-6"	5"	1/2"			

EXTERIOR GLAZED DOOR SCHEDULE

MARK	ORIENTATION	OPERATION	TYPE	DIMENSIONS (ROUGH OPENING)			U VALUE	UA VALUE	GLASS TYPE	MANUFACTURER	SYSTEM	MODEL	SHGC	CPD#	REMARKS
				WIDTH	HEIGHT	AREA									
LOWER LEVEL															
009.2	WEST	SLIDING	E	14'-2"	9'-0"	127.5 SF	0.3	38.25	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OXX	0.34	FLE-M-88-00259-0001	
011.2	WEST	SLIDING	QQ	8'-7"	9'-0"	77.25 SF	0.3	23.175	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OX	0.34	FLE-M-88-00259-0001	
011.3	SOUTH	SWING	C	3'-0"	9'-0"	27 SF	0.41	11.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	H	0.23	FLE-M-103-00308-0001	
MAIN LEVEL															
100.1	NORTH	SWING	W	4'-11 1/8"	9'-0"	44.34 SF	0.39	17.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	HX	0.25	FLE-M-103-00308-0001	
107.1	NORTH	POCKET	D	4'-5"	9'-0"	39.75 SF	0.29	11.5	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	PXV	0.34	FLE-M-88-00259-0001	
107.2	WEST	SLIDING	E	13'-4"	9'-0"	120 SF	0.29	34.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	XXO	0.34	FLE-M-88-00259-0001	
108.1	EAST	POCKET	D	4'-4"	9'-0"	39 SF	0.29	11.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	PXV	0.34	FLE-M-88-00259-0001	
108.2	WEST	SLIDING	E	21'-5 121/256"	9'-0"	193.86 SF	0.28	54	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	XXXXO	0.35	FLE-M-88-00259-0001	
108.3	EAST	POCKET	D	4'-4"	9'-0"	39 SF	0.29	11.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	PXV	0.34	FLE-M-88-00259-0001	
108.4	EAST	SLIDING	E	12'-10 31/64"	9'-0"	115.86 SF	0.28	51.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OXX	0.35	FLE-M-88-00259-0001	
118.4	WEST	SLIDING	E	12'-9"	9'-0"	114.75 SF	0.3	34.2	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OXX	0.34	FLE-M-88-00259-0001	
120.2	WEST	SLIDING	QQ	8'-0"	9'-0"	72 SF	0.31	22.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OX	0.33	FLE-M-88-00259-0001	
124.1	WEST	SWING	C	3'-8 1/2"	9'-0"	33.37 SF	0.41	13.7	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	H	0.23	FLE-M-103-00308-0001	
UPPER LEVEL															
209.1	SOUTH	SWING	C	3'-0"	8'-6"	25.5 SF	0.41	10.2	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	H	0.23	FLE-M-103-00308-0001	
Grand total						1,069.19 SF		344.225							

WINDOW SCHEDULE

MARK	ORIENTATION	OPERATION	DIMENSIONS (ROUGH OPENING)			U-VALUE	UA VALUE	GLASS TYPE	MANUFACTURER	SYSTEM	MODEL	SHGC	CPD#	REMARKS
			WIDTH	HEIGHT	AREA									
1	NORTH	FIXED, DOOR	7'-9 1/2"	9'-0"	70.13 SF	0.30	20.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O|O/O-GTF	0.39	FLE-M-89-00452-00001	
2	WEST	FIXED,HOPPER	6'-6"	9'-7 1/2"	59.31 SF	0.22	16.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/H|O/O-GTF	0.41	FLE-M-113-00044-00001	
3	SOUTH	FIXED, AWNING	9'-0"	9'-7 1/2"	82.13 SF	0.22	17.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|A-GTF	0.41	FLE-M-113-00044-00001	
4	SOUTH	FIXED,HOPPER	7'-6"	9'-1 1/2"	68.44 SF	0.22	14.9	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/H|O/O-GTF	0.41	FLE-M-113-00044-00001	
5	SOUTH	FIXED, AWNING	3'-0"	9'-1 1/2"	27.38 SF	0.24	6.5	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/A-GTF	0.39	FLE-M-113-00044-00001	
6A	SOUTH	FIXED	7'-9"	9'-0"	69.75 SF	0.26	18.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O-GTF	0.38	FLE-M-89-00452-00001	
6B	SOUTH	FIXED	7'-9"	8'-6"	65.88 SF	0.26	17.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O-GTF	0.38	FLE-M-89-00452-00001	
7	SOUTH	FIXED,CASEMENT EGRESS	6'-0"	8'-7 1/2"	51.75 SF	0.25	12.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|C/O	0.35	FLE-M-111-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
8	EAST	FIXED, AWNING	2'-4"	8'-7 1/2"	20.13 SF	0.24	4.7	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/A-GTF	0.39	FLE-M-113-00044-00001	
9	NORTH	FIXED,HOPPER	7'-9 1/2"	8'-6"	66.23 SF	0.22	14.6	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	H/O|O/O-GTF	0.41	FLE-M-113-00044-00001	
10	EAST	FIXED	1'-8 1/2"	4'-6"	7.69 SF	0.24	6.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O	0.39	FLE-M-113-00044-00001	
11	NORTH	FIXED,CASEMENT EGRESS	7'-6"	8'-1 1/2"	60.94 SF	0.24	14.4	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|C/O	0.35	FLE-M-111-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
12	WEST	FIXED	16'-0"	8'-1 1/2"	130 SF	0.26	41.6	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O|O/OO/O|O/O-GTF	0.38	FLE-M-89-00452-00001	
13	WEST	FIXED,CASEMENT EGRESS	11'-0"	8'-1 1/2"	89.38 SF	0.23	20.2	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|OC/O	0.36	FLE-M-111-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
14	NORTH	FIXED,CASEMENT EGRESS	4'-2"	8'-1 1/2"	33.85 SF	0.23	7.7	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	OC/O-GTF	0.40	FLE-M-113-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
15	WEST	FIXED	13'-3 1/2"	8'-1 1/2"	107.99 SF	0.22	23.5	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|O/O|O	0.41	FLE-M-113-00044-00001	
Grand total					1,010.95 SF		257.1							

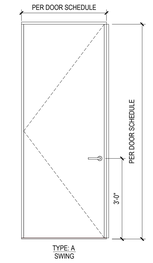
WINDOW SCHEDULE NOTES

1. ALL WINDOW DIMENSIONS REPRESENT PANEL SIZE. CONTRACTOR TO FIELD VERIFY
2. ALL ROUGH OPENING DIMENSIONS PRIOR TO ORDERING WINDOWS AND DOORS
3. PROVIDE EGRESS WINDOWS WHERE REQUIRED BY CODE
4. INSECT SCREENS AT ALL OPERABLE WINDOWS

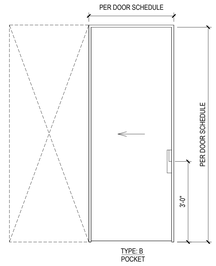
ENERGY CODE COMPLIANCE VIA PRESCRIPTIVE OPTION:
REFER TO ENEGRY CODE COMPLIANCE ON A0.00 FOR BUILDING REQUIRMENTS,
VERTICAL FENESTRATION U= 0.30
TOTAL UA = 344.225 + 257.1= 601.325
TOTAL AREA= 1,136 SF + 999.81 SF = 2,034.81 SF
TOTAL UA/AREA = 601.325 / 2024.81 = 0.29 AREA WEIGHTED U VALUE <0.30

WEIGHTED AVERAGE

	U-FACTOR	SHGC
GLAZED DOOR WEIGHT	0.30	0.337
GLAZED WINDOW WEIGHT	0.24	0.39
TOTAL AVERAGE WEIGHT	0.27	0.36



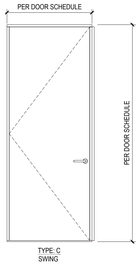
TYPE: A
SWING



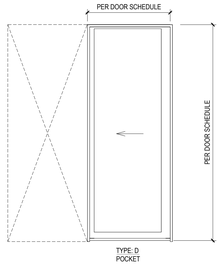
TYPE: B
POCKET

DOOR TYPES - INTERIOR

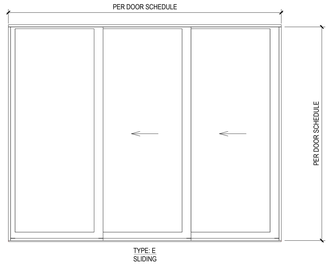
SCALE: 1/2" = 1'-0"



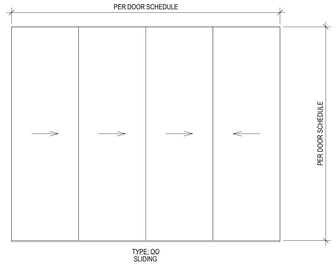
TYPE: C
SWING



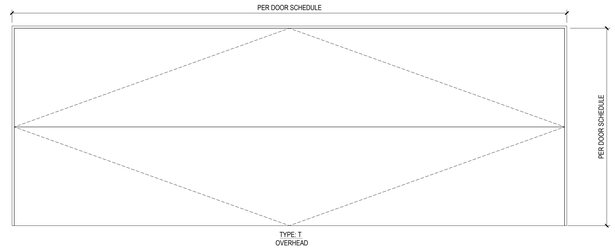
TYPE: D
POCKET



TYPE: E
SLIDING



TYPE: QQ
SLIDING



TYPE: T
OVERHEAD

DOOR TYPES - EXTERIOR

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

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT TOM KUNDIG STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.: date: description:

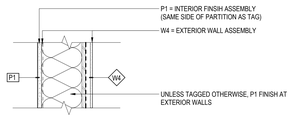
PERMIT SET
04/09/2024

title:
WINDOWS, DOOR, AND SHADE SCHEDULES

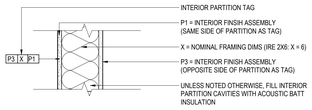
sheet:
A0.24

ASSEMBLY NOTES

1. ALL INTERIOR PARTITIONS TO INCLUDE ACCOUSTIC BATT INSULATION U.N.O.
2. REFER TO PLANS FOR INTERIOR PARTITONS STUD SIZE
3. INSTALL 1-HR RATED GYPSUM IN ALL INTERIOR SPACES TO MEET MERCER ISLAND APPROVED FIRE CODE ALTERNATIVE PROTECTIONS



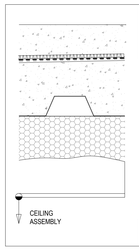
EXTERIOR WALL ASSEMBLIES



INTERIOR WALL ASSEMBLIES

ASSEMBLY - EXTERIOR / INTERIOR WALL LEGEND

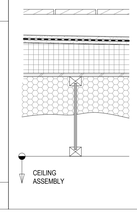
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: EXT PARKING DECK OVER FRAMING — MARK: R4 — FIRE RATING: HOUR

[03 3000] CONCRETE TOPPING SLAB
[07 1326] DRAINAGE PANEL
[07 1416] COLD FLUID APPLIED WATERPROOFING
[07 5419] SELF ACHERED AIR / VAPOR RETARDER
[03 3000] SLOPED CONCRETE DECK PER STRUCTRAL
[05 3100] METAL DECKING PER STRUCTRAL
[05 1200] STEEL BEAM PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

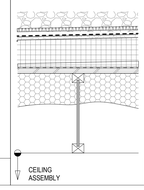
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: EXT WOOD DECKING OVER WOOD FRAMING — MARK: R3 — FIRE RATING: HOUR

[06 2000] EXTERIOR WOOD DECKING
[06 1000] PT WOOD SLEEPERS
[07 5419] COVER BOARD
[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[06 1000] RIGID INSULATION/FRAMING
SLOPED TO DRAIN
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

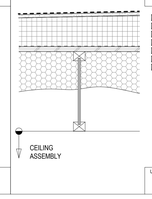
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: AGGREGATE ROOF — MARK: R2 — FIRE RATING: HOUR

[07 5200] AGGREGATE COVER
[07 3811] DRAINAGE COMPOSITE
[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[07 5419] RIGID INSULATION SLOPED TO DRAIN 1/4":12"
[07 5419] SELF ACHERED AIR / VAPOR RETARDER
[06 1600] PLYWOOD SHEATHING PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

UL RATING AND OTHER STANDARDS DESIGNATIONS:



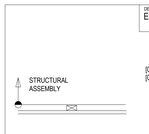
DESCRIPTION: PVC ROOF — MARK: R1 — FIRE RATING: HOUR

[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[07 5419] RIGID INSULATION SLOPED TO DRAIN 1/4":12"
[07 5419] SELF ACHERED AIR / VAPOR RETARDER
[06 1600] PLYWOOD SHEATHING PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

UL RATING AND OTHER STANDARDS DESIGNATIONS:

ROOF ASSEMBLIES

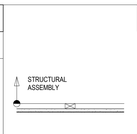
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: EXTERIOR CEMENT BOARD SOFFIT — MARK: S2 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[07 4647] FIBER CEMENT PANEL SIDING

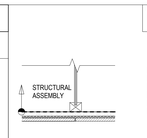
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: EXTERIOR STEEL SOFFIT — MARK: S1 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[09 2900] TYPE-X GYPSUM BOARD
[05 5810] STEEL SHEET SOFFIT

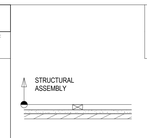
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: TILE CEILING — MARK: C3 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[09 3005] THINSET SHEET MEMBRANE WATERPROOFING
[09 3005] CEMENTITIOUS BACKER BOARD
[09 3005] THIN-SET MORTAR
[09 3014] STONE/TILE FLOORING
[07 1900] WATER/STAIN REPELLENT

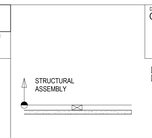
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: WOOD CEILING — MARK: C2 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[09 2900] TYPE-X GYPSUM BOARD
[06 2000] WOOD CEILING BOARDS

UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: GYPSUM BOARD CEILING — MARK: C1 — FIRE RATING: HOUR

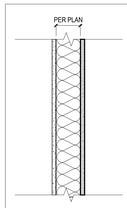
[06 1000] WOOD FRAMING AS REQ
[09 2900] TYPE-X GYPSUM BOARD

ASSEMBLY ALTERNATE:
C1-A
[07 8100] ADD FIRE RETARDANT COATING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

CEILING & SOFFIT ASSEMBLIES

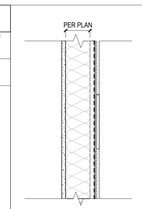
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: ACOUSTIC BOARD — MARK: P3 — FIRE RATING: HOUR — STC RATING:

[09 2900] FINISH PER SCHEDULE (ACOUSTIC)
[09 8116] ACOUSTIC BATT INSULATION

UL RATING AND OTHER STANDARDS DESIGNATIONS:



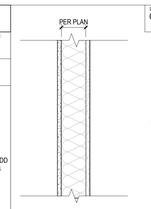
DESCRIPTION: TILE (WET LOCATIONS) — MARK: P2 — FIRE RATING: HOUR — STC RATING:

[09 3014] STONE/TILE FLOORING
[09 3005] THIN-SET MORTAR
[09 3005] LIQUID- APPLIED WATERPROOFING
[09 3005] CEMENTITIOUS BACKER BOARD
[09 8116] ACOUSTIC BATT INSULATON

*MOISTURE RESISTANT GWB AT DAMP AREAS

ASSEMBLY ALTERNATE:
P2A - (STEAM SHOWER LOCATIONS)
REMOVE [09 3005] LIQUID- APPLIED WATERPROOFING ADD
[09 3005] THINSET SHEET MEMBRANE WATERPROOFING

UL RATING AND OTHER STANDARDS DESIGNATIONS:
*FOR TILE COMPLY WITH TCNA W244C



DESCRIPTION: GYPSUM WALL BOARD — MARK: P1 — FIRE RATING: HOUR — STC RATING:

[09 2900] TYPE X GWB
[09 8116] ACOUSTIC BATT INSULATION

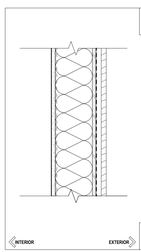
*MOISTURE RESISTANT GWB AT DAMP AREAS

ASSEMBLY ALTERNATE:
P1A
[06 1600] ADD PLYWOOD PER
STRUCTURAL ONE SIDE OF FRAMING
P1B
[06 1600] ADD PLYWOOD PER
STRUCTURAL TWO SIDE OF FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

INTERIOR WALL ASSEMBLIES

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

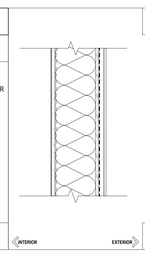


DESCRIPTION: EXTERIOR WOOD SIDING — MARK: W6 — FIRE RATING: HOUR

[06 2000] WOOD SIDING
[06 1000] FURRING STRIP PER MFR 'S REQUIREMENTS
[07 2717] SELF-ADHERED MEMBRANE AIR/WEATHER BARRIER
[06 1600] PLYWOOD SHEATHING PER STRUCTURAL
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W-6-8
[06 1000] USE 2X8 WOOD FRAMING
W-6-12
[06 1000] USE 2X12 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

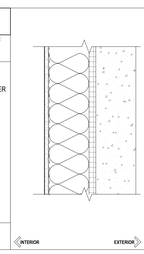


DESCRIPTION: EXTERIOR FIBER CEMENT SIDING — MARK: W5 — FIRE RATING: HOUR

[07 4647] FIBER CEMENT PANEL SIDING
[06 1000] FURRING STRIP PER MFR REQUIREMENTS
[07 2717] SELF-ADHERED MEMBRANE AIR/WEATHER BARRIER
[06 1600] PLYWOOD SHEATHING PER STRUCTURAL
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W-5-8
[06 1000] USE 2X8 WOOD FRAMING
W-5-12
[06 1000] USE 2X12 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

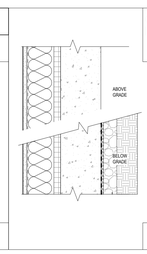


DESCRIPTION: CONCRETE WITH FRAMED WALL — MARK: W4 — FIRE RATING: HOUR

[03 3000] CAST-IN-PLACE CONCRETE [PER STRUCTRAL]
[03 0515] WATERPROOFING ADDITIVE
[07 2100] XPS CONTINUOUS RIGID INSULATION (1"), R-5
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W4-A
[07 8100]ADD FIRE RETARDANT COATING
W-4-8
[06 1000] USE 2X8 WOOD FRAMING
W-4-10
[06 1000] USE 2X10 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

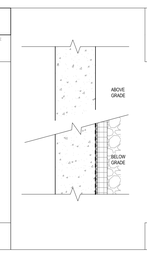


DESCRIPTION: CONCRETE WITH FRAMED WALL [BELOW GRADE] — MARK: W3 — FIRE RATING: HOUR

[31 2000] PREPARED SUBGRADE [PER CIVIL]
[31 2000] DRAINAGE COURSE [PER CIVIL]
[07 1326] DRAINAGE PANEL
[07 1326] SELF-ADHERING SHEET WATERPROOFING
[03 3000] CAST-IN-PLACE CONCRETE [PER STRUCTRAL]
[03 0515] WATERPROOFING ADDITIVE
[07 2100] CONTINUOUS XPS RIGID FOAM INSULATION, R-5
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W3-A [07 8100] ADD FIRE RETARDANT COATING
W-3-8 [06 1000] USE 2X8 WOOD FRAMING
W-3-10 [06 1000] USE 2X10 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

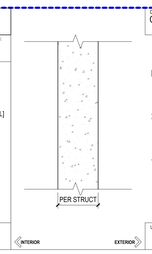


DESCRIPTION: CONCRETE WALL [BELOW GRADE] CRAWLSPACE — MARK: W2 — FIRE RATING: HOUR

[31 2000] PREPARED SUBGRADE [PER CIVIL]
[31 2000] DRAINAGE COURSE [PER CIVIL]
[07 2100] XPS RIGID FOAM INSULATION,R-10
[07 1326] DRAINAGE PANEL
[07 1326] SELF-ADHERING SHEET WATERPROOFING
[03 3000] CAST-IN-PLACE CONCRETE WALL [PER STRUCTRAL]

ASSEMBLY ALTERNATE:
W2-A
[07 2100] ADD CONTINUOUS XPS RIGID FOAM
INSULATION R-5
[07 8100] ADD FIRE RETARDANT COATING

UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: CONCRETE UNINSULATED — MARK: W1 — FIRE RATING: HOUR

[03 3000] CAST-IN-PLACE CONCRETE [PER STRUCTRAL]

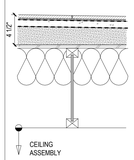
ASSEMBLY ALTERNATE:
W1-A
[07 2100] ADD CONTINUOUS XPS RIGID FOAM
INSULATION R-5
[07 8100] ADD FIRE RETARDANT COATING

W1-B
BELOW GRADE, BOTH SIDES OF CONCRETE WALL
[31 2000] PREPARED SUBGRADE [PER CIVIL]
[31 2000] DRAINAGE COURSE [PER CIVIL]
[07 1326] DRAINAGE PANEL

UL RATING AND OTHER STANDARDS DESIGNATIONS:

EXTERIOR WALL ASSEMBLIES

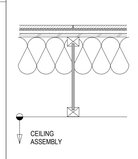
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: CERAMIC OR STONE TILE OVER WOOD FRAMING (WET) — MARK: F5 — FIRE RATING: HOUR

[07 1900] WATER/STAIN REPELLENT
[09 3014] STONE/TILE FLOORING
[09 3005] MORTAR BOND COAT
[09 3005] LIQUID MEMBRANE WATERPROOFING
[09 3005] REINFORCED THICKSET MORTAR
[09 3005] SHEET MEMBRANE WATERPROOFING
[09 3005] SLIP SHEET
[09 3005] SLOPED MORTAR BED, 1/4" PER FT
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[09 8116] ACOUSTIC BATT INSULATON

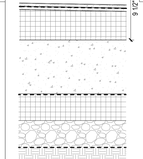
UL RATING AND OTHER STANDARDS DESIGNATIONS:
*FOR TILE COMPLY WITH TCNA B415,F141



DESCRIPTION: CERAMIC OR STONE TILE OVER WOOD FRAMING (DRY) — MARK: F4 — FIRE RATING: HOUR

[07 1900] WATER/STAIN REPELLENT
[09 3014] STONE/TILE FLOORING
[09 3005] THIN-SET MORTAR
[09 3005] CEMENTITIOUS BACKER BOARD
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[09 8116] ACOUSTIC BATT INSULATON

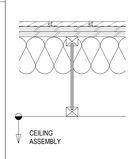
UL RATING AND OTHER STANDARDS DESIGNATIONS:
*FOR TILE COMPLY WITH TCNA F144



DESCRIPTION: EXT WOOD DECKING OVER SLAB ON GRADE — MARK: F3 — FIRE RATING: HOUR

[06 2000] EXTERIOR WOOD DECKING
[06 1000] PT WOOD SLEEPERS
[07 5419] COVER BOARD
[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[06 1000] RIGID INSULATION/FRAMING
SLOPED TO DRAIN
[03 3000] CONCRETE SLAB PER STRUCTRAL
[03 3000] VAPOR RETARDER
[07 2100] R-10 MIN XPS RIGID INSULATION

UL RATING AND OTHER STANDARDS DESIGNATIONS:

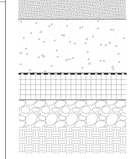


DESCRIPTION: WOOD FLOORING OVER WOOD FRAMING — MARK: F2 — FIRE RATING: HOUR

[09 6400] WOOD FLOORING (3/4")
[09 6400] SLIP SHEET
[09 6400] PLYWOOD UNDERLAYMENT
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[09 8116] ACOUSTIC BATT INSULATON

ASSEMBLY ALTERNATE:
F2A
[07 2100] REPLACE ACOUSTIC BATT
INSULATION WITH R-30 BATT INSULATION
F2-B
[07 8100]ADD FIRE RETARDANT COATING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

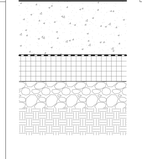


DESCRIPTION: CONCRETE TOPPING SLAB OVER SLAB ON GRADE — MARK: F1A — FIRE RATING: HOUR

[07 1900] CLEAR SEALER
[03 3000] CONCRETE TOPPING SLAB
[03 3000] CONCRETE SLAB PER STRUCTRAL
[03 3000] VAPOR RETARDER
[07 2100] R-10 MIN XPS RIGID INSULATION
[31 2000] DRAINAGE COURSE PER CIVIL
[31 2000] STRUCTURAL FILL PER GEO REPORT

ASSEMBLY ALTERNATE
F1B
[09 2000] RUBBER GYM MATS

UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: CONCRETE SLAB ON GRADE — MARK: F1 — FIRE RATING: HOUR

[07 1900] CLEAR SEALER
[03 3000] CONCRETE SLAB PER STRUCTRAL
[03 3000] VAPOR RETARDER
[07 2100] R-10 MIN XPS RIGID INSULATION
[31 2000] DRAINAGE COURSE PER CIVIL
[31 2000] STRUCTURAL FILL PER GEO REPORT

UL RATING AND OTHER STANDARDS DESIGNATIONS:

FLOOR ASSEMBLIES

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

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104-2654
+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

REGISTERED ARCHITECT
tom timmon
3904
STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

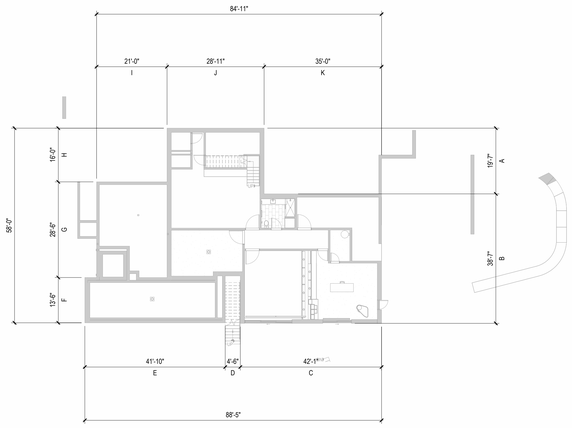
revisions:

no.: date: description:

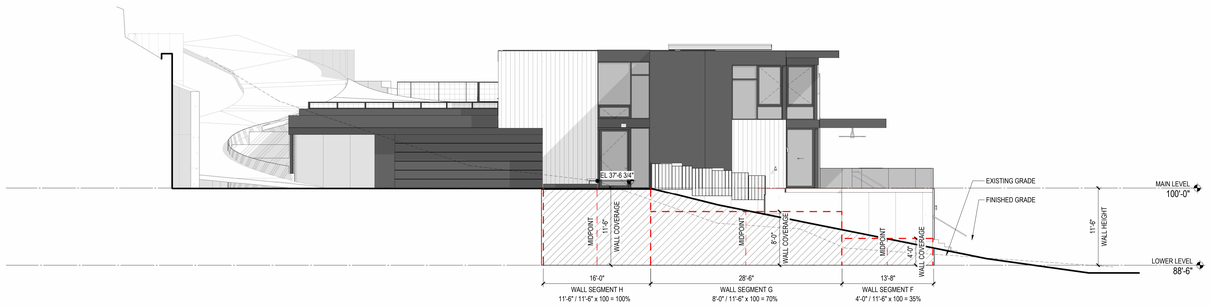
PERMIT SET
04/09/2024

title:
ASSEMBLIES

sheet:
A0.30

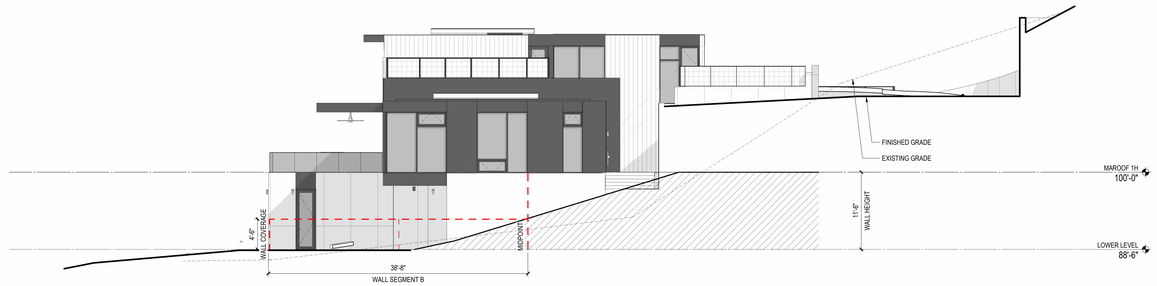


2A BASEMENT FLOOR AREA CALCULATION PER MICC
SCALE: 1/16" = 1'-0"



(WALL SEGMENT COVERAGE / WALL HEIGHT x 100% = % COVERAGE)

2B BASEMENT FLOOR AREA WALL SEGMENT COVERAGE-NORTH ELEVATION
SCALE: 1/8" = 1'-0"



(WALL SEGMENT COVERAGE / WALL HEIGHT x 100% = % COVERAGE)

2C BASEMENT FLOOR AREA WALL SEGMENT COVERAGE-SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

TABLE OF WALL LENGTHS AND COVERAGE			
WALL SEGMENT	LENGTH x	COVERAGE =	RESULT
A	19' 7"	100%	19' 7"
B	38' 5"	0	0
C	42' 11"	0	0
D	4' 6"	0	0
E	41' 10"	0	0
F	13' 6"	35%	4' 8"
G	28' 6"	70%	19' 11"
H	16' 0"	100%	16' 0"
I	21' 0"	100%	21' 0"
J	28' 11"	100%	28' 11"
K	35' 0"	100%	35'
TOTAL	**290' 2"**	N/A	**145' 1"**

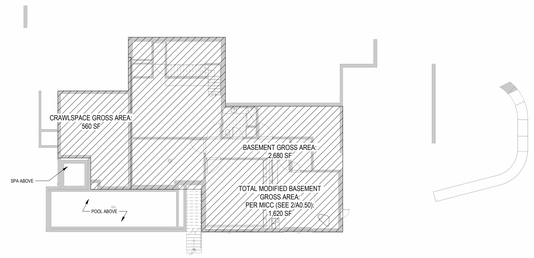
PORTION OF EXCLUDED FLOOR AREA: (145'-1" / 290'-2") X 100% = 50%
(SUM OF RESULTS) / (SUM OF LENGTHS) = %

TOTAL GROSS FLOOR AREA SUBTRACTED: 3,240 SF x 50% = 1,620 SF

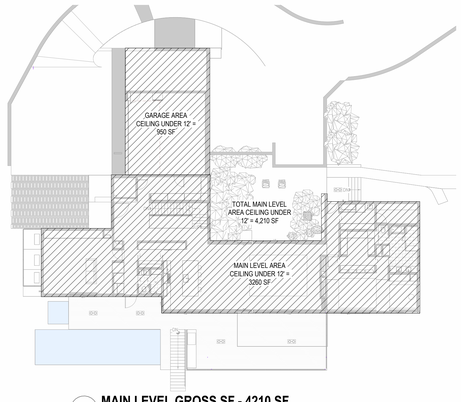
TOTAL BASEMENT GROSS FLOOR AREA PER MICC CALC: 3,240 SF - 1,620 SF = 1,620 SF

(REFERENCE MICC UNIFIED LAND DEVELOPMENT APPENDIX B)

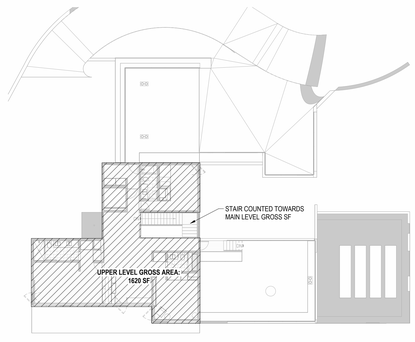
2D BASEMENT FLOOR AREA CALC PER MICC
SCALE: 1/2" = 1'-0"



1A BASEMENT LEVEL GROSS SF - 1,620 SF
SCALE: 1/16" = 1'-0"



1B MAIN LEVEL GROSS SF - 4210 SF
SCALE: 1/16" = 1'-0"



1C UPPER LEVEL GROSS SF - 1620 SF
SCALE: 1/16" = 1'-0"

BASEMENT TOTAL GROSS SF:	**3,240 SF**
BASEMENT AREA EXCLUDED PER MERCER ISLAND DEVELOPMENT CODE CALCULATION (SEE A0.50):	**-1,620 SF**
TOTAL GROSS AREA	
BASEMENT GROSS SF (MODIFIED):	**1,620 SF**
MAIN LEVEL:	
CEILING UNDER 12':	**4,205 SF**
UPPER LEVEL:	**1,620 SF**
TOTAL:	**7,445 SF**
ALLOWABLE:	**12,000 SF**

TOTAL GROSS SF CALCULATION

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4525 FOREST AVE SE MERCER ISLAND,WA 98040

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checked by:
job no.:

revisions:

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ZONING - GROSS SQ FT CALCS

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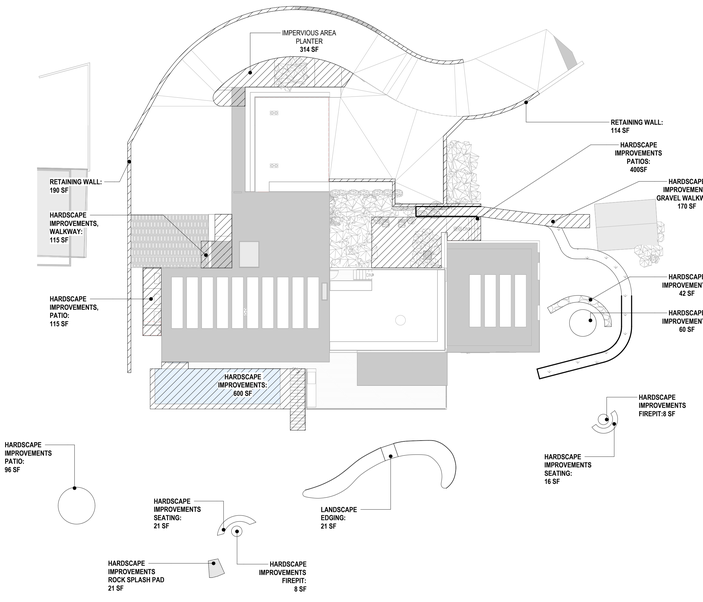


HARDSCAPE:
MAX 9% OF NET LOT AREA MAY CONSIST OF HARDSCAPE IMPROVEMENTS.
ALLOWED: 9% x 67673 SF = 6,090 SF
PROPOSED: 2,311 (3,779 UNDER)

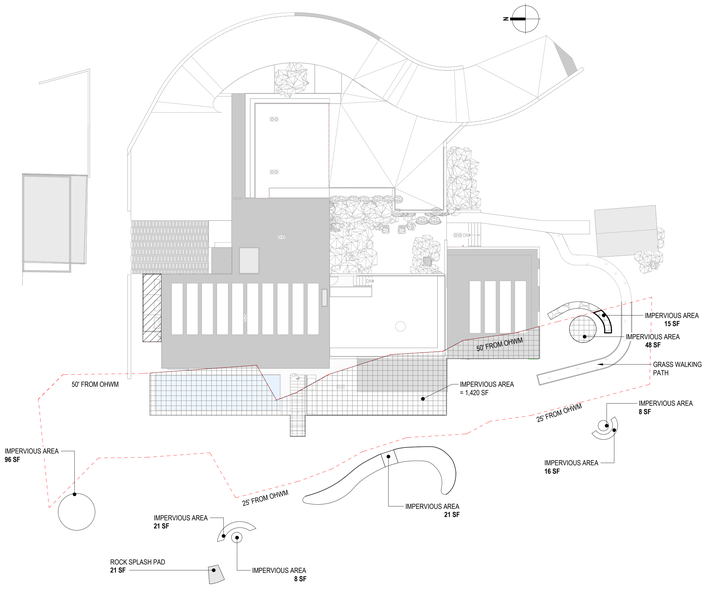
HARDSCAPE INCLUDES HARD ELEMENTS OR STRUCTURES INCORPORATED INTO LANDSCAPING INCLUDING PAVED SURFACES OTHER THAN DRIVING SURFACES OR ROOFS. STAIRS, WALKWAYS, DECKS, PATIOS, UNCOVERED STEPS, RETAINING WALLS, ROCKERIES, AND SWIMMING POOLS.

DRIVEWAYS ARE EXCLUDED FROM LANDSCAPED AREA AND HARDSCAPE; INCLUDED IN LOT COVERAGE CALCULATIONS.

LANDSCAPE:
REQUIRED LANDSCAPE COVERAGE: 65%
REQUIRED: 65% OF 67673 SF = 43,987 SF
PROPOSED: (2,401+12,246)- 67,673 = 53,026 SF (10,000 OVER)

3 HARDSCAPES

SCALE: 1/16" = 1'-0"



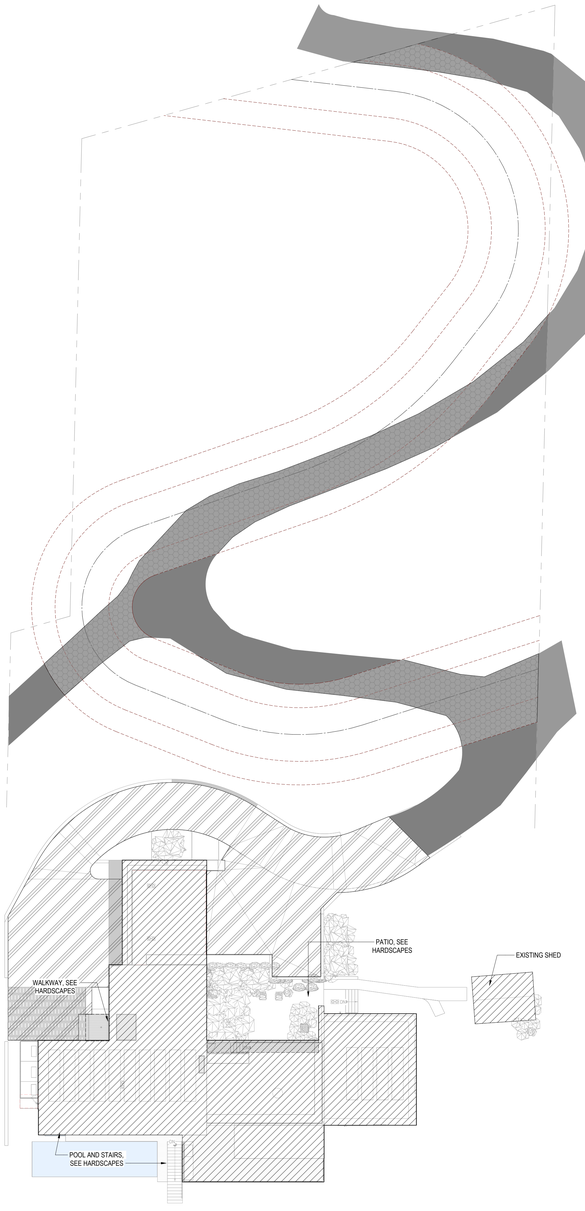
IMPERVIOUS AREA:
MAX IMPERVIOUS AREA ALLOWABLE BETWEEN
25' AND 50' OHWM (MICC 19.13.050): 30% OF TOTAL AREA BETWEEN

ALLOWABLE: (4,947 SF x 30%) = 1,484 SF
PROPOSED: 1484 SF (EVEN)

MAX IMPERVIOUS AREA ALLOWABLE BETWEEN
0' AND 25' OHWM (MICC 19.13.050): 10%
ALLOWABLE: (5,265 SF x 10%) = 527 SF
PROPOSED: 191 SF (336 SF UNDER)

2 IMPERVIOUS AREA

SCALE: 1/16" = 1'-0"



LOT COVERAGE:
MAXIMUM LOT COVERAGE: 35%
FOR LOT SLOPE FROM 15% TO LESS THAN 30% (SITE 26.5% SLOPE)

INCLUDES BUILDING STRUCTURE, ALL DRIVABLE SURFACES (DRIVEWAY, PARKING PAD, TURN-AROUNDS, EXCEPT THOSE PORTIONS IN ACCESS EASEMENTS THAT DO NOT SURE THE ENCUMBERED LOT), ROOF LINE (INCLUDING EAVES AND COVERED DECKS).

DRIVEWAYS ARE EXCLUDED FROM LANDSCAPED AREA AND HARDSCAPE.

TOTAL DRIVEWAY FROM STREET TO BUILDING TRANSITION = 7,186 SF
MINUS AREA OUTSIDE PROPERTY LINE = 1,799 SF
MINUS DRIVEWAY IN EASEMENT = 2,901 SF

BALANCE OF DRIVEWAY TO HOUSE = 4,152 SF
PROPOSED BUILDING: 5,350 SF
EXISTING SHED: 258 SF
PROPOSED COVERED PATIO AND DECKS: 188 SF
TOTAL PROPOSED LOT COVERAGE = 12,240 SF

ALLOWABLE: 35% OF 67,673 SF = 23,685 SF
PROPOSED: 12,246 SF

LOT COVERAGE LEGEND

- PROPOSED BUILDING
- DRIVEWAY TO HOUSE
- EXISTING DRIVEWAY
- EXISTING DRIVEWAY OUTSIDE PROPERTY LINES
- DRIVEWAY IN EASEMENTS
- COVERED PATIOS AND DECKS

1 LOT COVERAGE

SCALE: 1/16" = 1'-0"

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ZONING - AREAS & LOT COVERAGE

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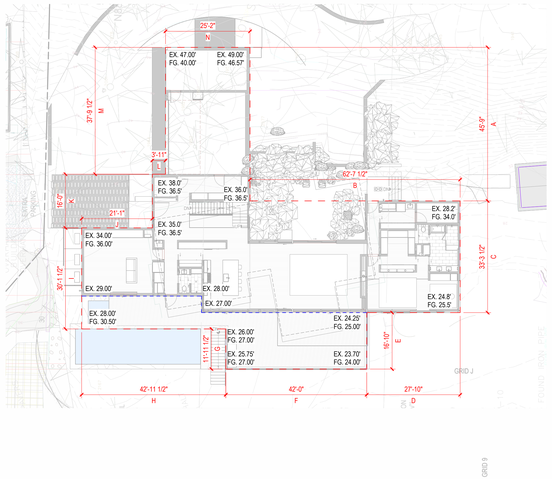


3A AVERAGE ELEVATION BUILDING ELEVATION -PLAN

SCALE: 1/16" = 1'-0"

AVERAGE BUILDING ELEVATION

INDIVIDUAL WALL SEGMENT	LOWEST ELEVATION (FT)		WALL MID-POINT ELEVATION (FT)	WALL SEGMENT LENGTH (FT)	**WEIGHTED SUM OF MID-POINT ELEV (FT)**
	POINT 1	POINT 2	(POINT 1 + POINT 2)/2		(MID POINT ELEV) x (LENGTH OF WALL SEGMENT)
A	46.57	36	41.29	45.75	1888.8
B	32.5	28.2	30.35	62.58	839.8
C	28.2	36	26.5	33.29	882.2
D	24.8	24.25	24.525	27.8	681.8
E	24.25	23.7	23.975	16.83	403.5
F	23.7	25.75	24.725	42	1038.5
G	25.75	26	25.875	11.96	309.5
H	26	28	27	42.95	1159.7
I	28	34	31	30.13	934.0
J	34	35	34.5	21.1	727.95
K	35	36.5	35.75	16.00	572.0
L	36.5	36	36.25	3.92	142.1
M	36.5	40	38.25	37.79	1445.5
N	40	46.57	43.29	25.17	1089.5
TOTAL				417.27	12114.9

29

AVERAGE BUILDING ELEVATION (FT) = (WEIGHTED SUM OF THE MIDPOINT ELEVATIONS) / (TOTAL LENGHT OF WALL SEGMENTS)

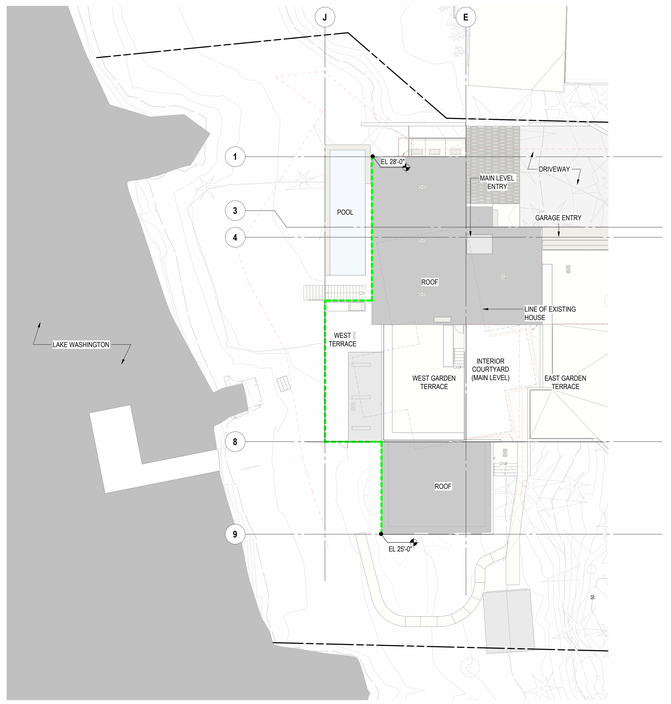
31.9' SURVEY ELEVATION = **92'-6" = AVERAGE BUILDING ELEVATION**
92'-6" + 30' HEIGHT LIMIT = **122'-6" = MAX AVERAGE BUILDING HEIGHT LIMIT**

3B AVERAGE BUILDING ELEVATION CALCS

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

2 WEST ELEVATION- DOWNHILL FACADE

SCALE: 1/8" = 1'-0"



1 SITE PLAN - DOWN HILL FACADE

SCALE: 1/16" = 1'-0"

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ZONING - BUILDING HEIGHT

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A0.52

DRAWING LEGEND

- 102 — TREE ID PER ARBORIST REPORT
- 101 — EXCEPTIONAL TREE / ID PER ARBORIST REPORT
- DRIPLINE OF EXCEPTION TREE
- BUILDABLE AREA AROUND EXCEPTIONAL TREES

RETENTION / REMOVAL OF EXCEPTIONAL TREES
(MICC 19.10.060(A)(3))

B. RENTENTION WILL LIMIT THE CONSTRUCTIBLE GROSS FLOOR AREA TO LESS THAN 85% OF THE MAXIMUM GROSS FLOOR AREA ALLOWED UNDER MICC 19.02

6,651 SF BUILDABLE AREA
AROUND EXCEPTIONAL TREES (EXCLUDING SE PART OF SITE)

12,000 SF MAX ALLOWABLE SF PER MICC
85% x 12,000 SF = 10,200 SF

10,200 SF ALLOWABLE
- 6,651 SF BUILDABLE AREA AROUND EXCEPTIONAL TREES
3,549 SF DEFICIT

ALTERNATE CALCULATION INCLUDING SE PART OF THE SITE

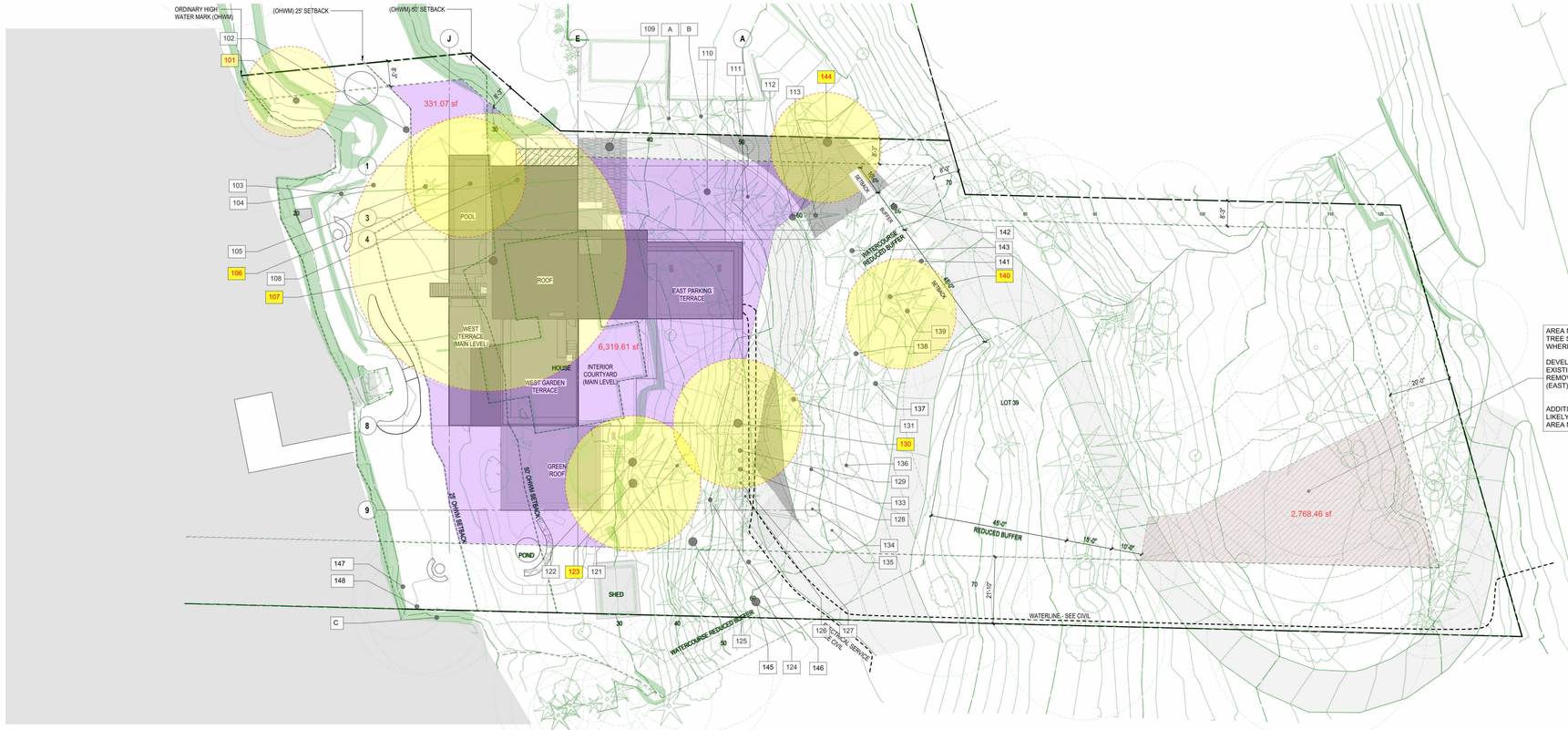
9,419 SF BUILDABLE AREA
AROUND EXCEPTIONAL TREES (INCLUDING SE PART OF SITE)

10,200 SF ALLOWABLE
- 9,419 SF BUILDABLE AREA AROUND EXCEPTIONAL TREES
781 SF DEFICIT

MICC 19.07.180 WATERCOURSES

19.07.180.B.1. DEVELOPMENT WITHIN WATERCOURSES AND/OR BUFFERS IS PROHIBITED UNLESS ONE OF THE FOLLOWING CONDITIONS APPLIES:
(*NOTE: NONE OF THESE APPLY TO THIS PROJECT, 4525 FOREST AVE SE*)
a. THE PROPOSED ACTIVITY IS SPECIFICALLY EXEMPT PURSUANT TO SECTION 19.07.130.
b. A CRITICAL AREA REVIEW 1 APPLICATION IS REVIEWED AND APPROVED FOR ONE OF THE MODIFICATIONS IN SECTION 19.07.130; OR
c. THE PROPOSED ACTIVITY IS PERMITTED UNDER SUBSECTION D OF THIS SECTION, DEVELOPMENT STANDARDS-ADDITIONAL CRITERIA FOR SPECIFIC ACTIVITIES.

19.07.180.C.7 BUILDINGS AND OTHER STRUCTURES SHALL BE SET BACK A MINIMUM OF TEN FEET FROM THE EDGES OF A WATERCOURSE BUFFER.



1 EXCEPTIONAL TREE - BUILDABLE AREA EXHIBIT
SCALE: 1/16" = 1'-0"

0" 8' 16' 32'

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EXCEPTIONAL TREE-BUILDABLE AREA EXHIBIT

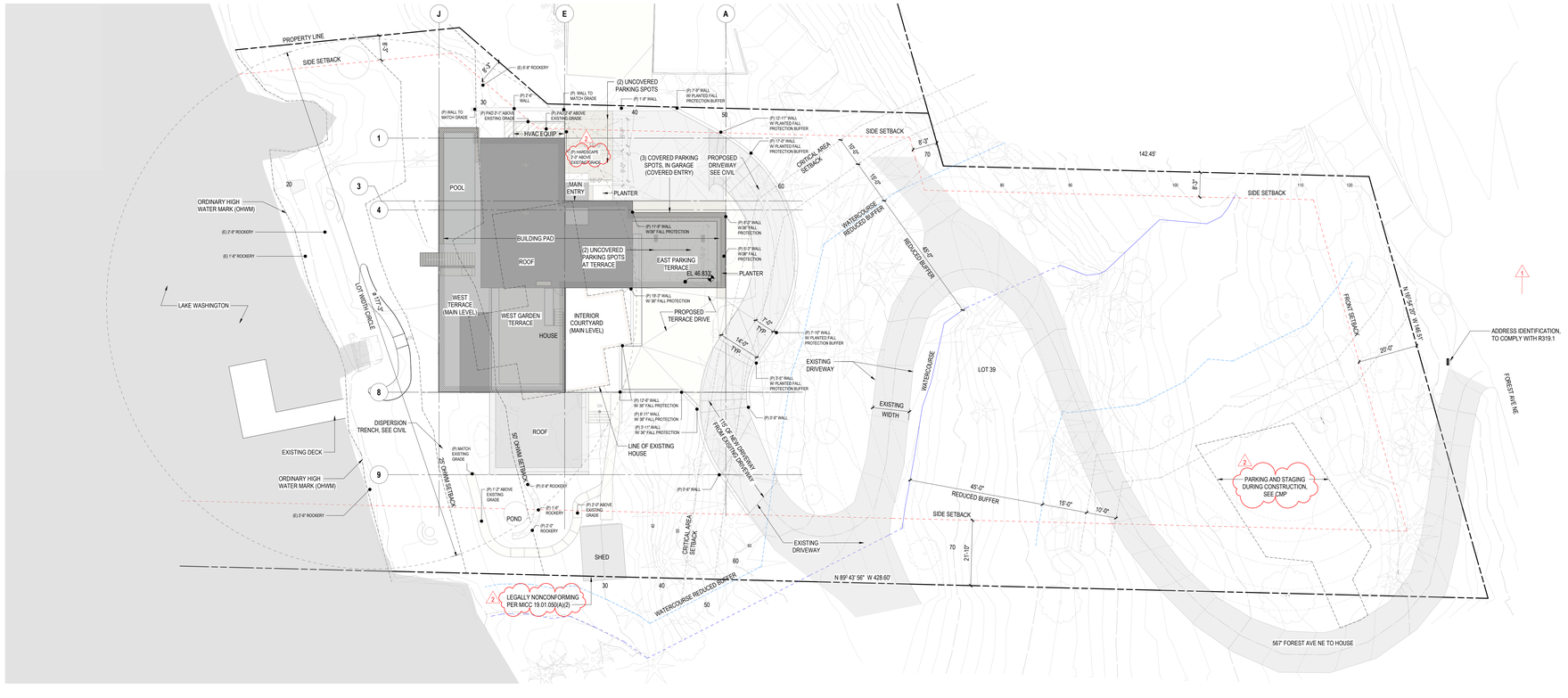
sheet:
A0.53

SITE PLAN NOTES

1. SITE SURVEY ELEVATION 36'-6" = MAIN LEVEL BUILDING ELEVATION 100'-0"
2. SEE CIVIL DRAWINGS FOR GRADING AND DRAINAGE PLANS
3. SEE ARBORIST REPORT FOR EXISTING TREE LOCATIONS
4. MICC 19.02.020 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.
5. SEE SURVEY FOR ALL EASEMENTS
6. SEE CIVIL FOR ALL PROPOSED (P) WALL HEIGHTS. SEE SURVEYS FOR ALL EXISTING (E) WALLS
7. ALL WALLS GREATER THAN 30" IN HEIGHT THAT ARE ADJACENT TO WALKING SURFACES SHALL COMPLY WITH FALL PROTECTION CIDE MINIMUMS
8. ASSOCIATED LAND USE APPLICATIONS INCLUDE CAR2 AND SHORELINE EXEMPTION PERMIT
9. ADDRESS IDENTIFICATION LOCATED AT FOREST AVE NE TO COMPLY WITH SECTION R319.1

SITE PLAN LEDGEND

- PROPERTY LINE
- SIDE SETBACK
- SETBACK/ EASEMENTS
- 10' EXISTING CONTOURS
- 2' EXISTING CONTOURS
- DRIVEWAY CENTERLINE
- BUILDING PAD



1 SITE PLAN

SCALE: 1/16" = 1'-0"

N

0' 8' 16' 32'

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SITE PLAN

sheet:
A1.00

FLOOR PLAN NOTES

1 BUILDING ELEVATION 100'0" = USGS 36.5 FT
2 ALL INTERIOR WALLS TO BE 2X6 U.N.O
3 ORIENTATION OF ELEVATIONS ARE GIVEN BY PROJECT NORTH
4 INTERIOR TO BE SPRINKLERED WITH AN UPGRADED "NFPA 13R-PLUS" SYSTEM
5 ALL INTERIOR WALLS TO INCLUDE ACOUSTIC BATT U.N.O
6 FLOOR DRAINS AT MECHANICAL TO BE DESIGN BUILD
7 FLOOR SLOPE TO BE BASED ON DRAIN POSITION
8 ALL SPECIALTY OUTLETS, SWITCHES, AND MISC CONTROLS TO BE VERIFIED BY CLIENT
9 FIRE BLOCKING SHALL BE PROVIDED PER R302.11

FLOOR PLAN LEGEND

SD SMOKE/CM COMBO DETECTOR

HD OUTDOOR HEAT DETECTOR PER R314.2.3

1 LOWER LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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LOWER LEVEL FLOOR PLAN

sheet:
A2.10

FLOOR PLAN NOTES

1 BUILDING ELEVATION 100'0" = USGS 36.5 FT
2 ALL INTERIOR WALLS TO BE 2X6 U.N.O
3 ORIENTATION OF ELEVATIONS ARE GIVEN BY PROJECT NORTH
4 INTERIOR TO BE SPRINKLERED WITH AN UPGRADED "NFPA 13R-PLUS" SYSTEM
5 ALL INTERIOR WALLS TO INCLUDE ACOUSTIC BATT U.N.O
6 FLOOR DRAINS AT MECHANICAL TO BE DESIGN BUILD
7 FLOOR SLOPE TO BE BASED ON DRAIN POSITION
8 ALL SPECIALTY OUTLETS, SWITCHES, AND MISC CONTROLS TO BE VERIFIED BY CLIENT
9 FIRE BLOCKING SHALL BE PROVIDED PER R302.11

FLOOR PLAN LEGEND

SD SMOKE/CM COMBO DETECTOR

HD OUTDOOR HEAT DETECTOR PER R314.2.3

1 MAIN LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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MAIN LEVEL FLOOR PLAN

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A2.20

FLOOR PLAN NOTES

1 BUILDING ELEVATION 100'0" = USGS 36.5 FT
2 ALL INTERIOR WALLS TO BE 2X6 U.N.O
3 ORIENTATION OF ELEVATIONS ARE GIVEN BY PROJECT NORTH
4 INTERIOR TO BE SPRINKLERED WITH AN UPGRADED "NFPA 13R-PLUS" SYSTEM
5 ALL INTERIOR WALLS TO INCLUDE ACOUSTIC BATT U.N.O.
6 FLOOR DRAINS AT MECHANICAL TO BE DESIGN BUILD
7 FLOOR SLOPE TO BE BASED ON DRAIN POSITION
8 ALL SPECIALTY OUTLETS, SWITCHES, AND MISC CONTROLS TO BE VERIFIED BY CLIENT
9 FIRE BLOCKING SHALL BE PROVIDED PER R302.11

FLOOR PLAN LEGEND

SD SMOKE/CM COMBO DETECTOR

HD OUTDOOR HEAT DETECTOR PER R314.2.3

1 UPPER LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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UPPER LEVEL FLOOR PLAN

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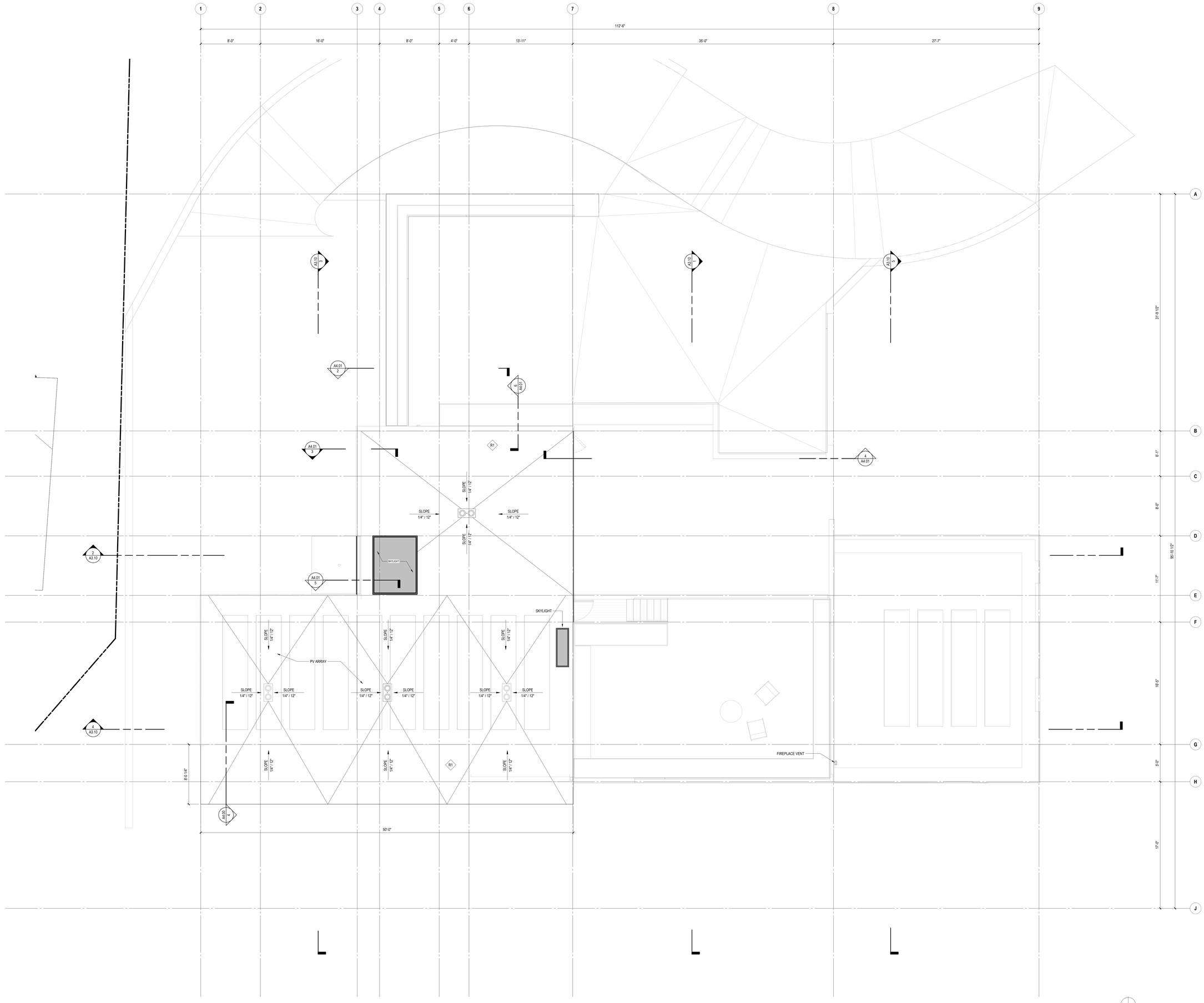

1 ROOF PLAN - MAIN ROOF
SCALE: 1/4" = 1'-0"

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ROOF LEVEL FLOOR PLAN

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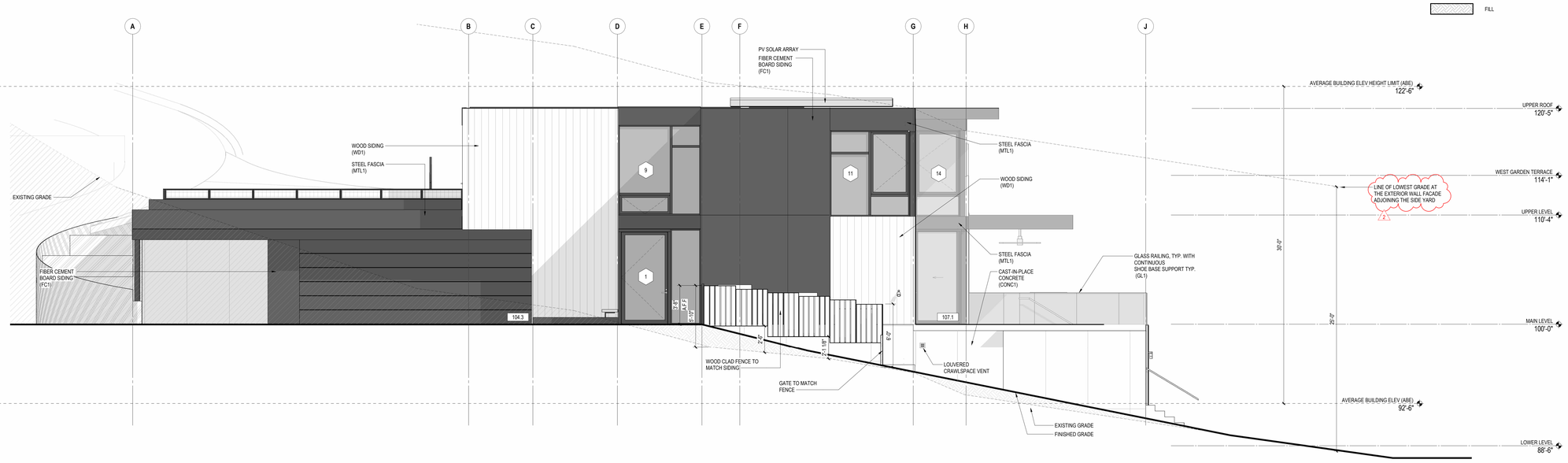
ELEVATION LEGEND

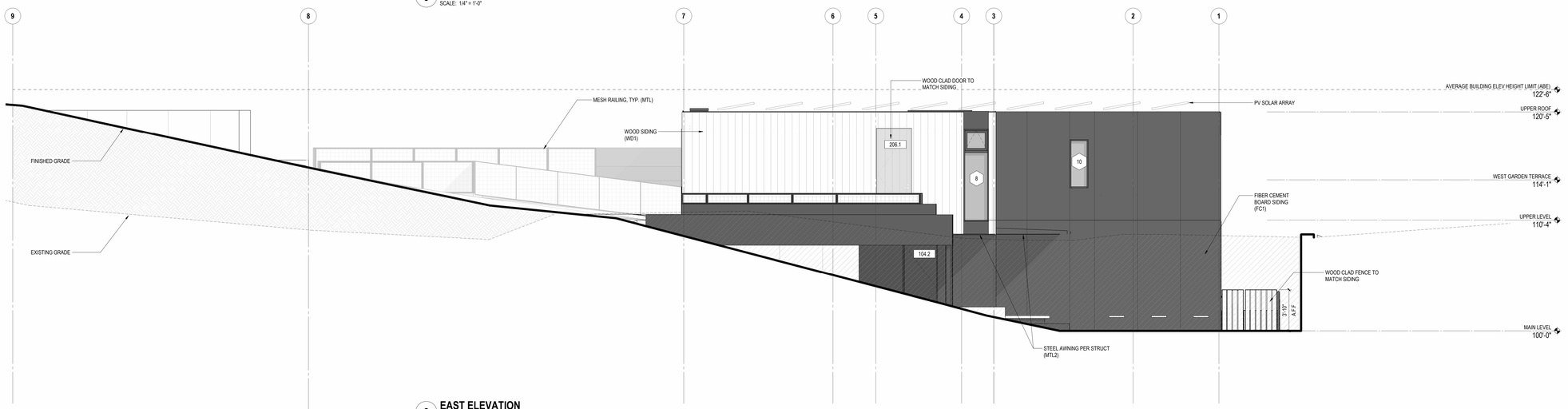
CUT

FILL



3 NORTH ELEVATION

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



2 EAST ELEVATION

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

1 PARTIAL ELEVATION - EAST

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

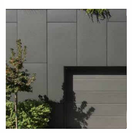
0' 2' 4' 8'

EXTERIOR MATERIAL KEY

CAST-IN-PLACE CONCRETE (CONC1)
SMOOTH PANEL-FORMED CONCRETE
WITH EXPOSED TIE HOLES

PAINTED STEEL, TO MATCH WINDOWS (MTL1, MTL2)
STEEL SOFFIT
STEEL FASCIAS
EXTERIOR COLUMNS

METAL WINDOWS
THERMALLY BROKEN METAL WINDOWS



VERTICAL FIBER CEMENT SIDING (FC1)
SWISS PEARL LARGO, BLACK OPAL 7025

VERTICAL WOOD SIDING (WD1)
CEDAR SIDING WITH PINE TAR FINISH

GLASS EXTERIOR GUARDRAILS WITH CONTINUOUS SHOE BASE SUPPORT TYP.(GL1)

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EXTERIOR ELEVATIONS NORTH AND EAST

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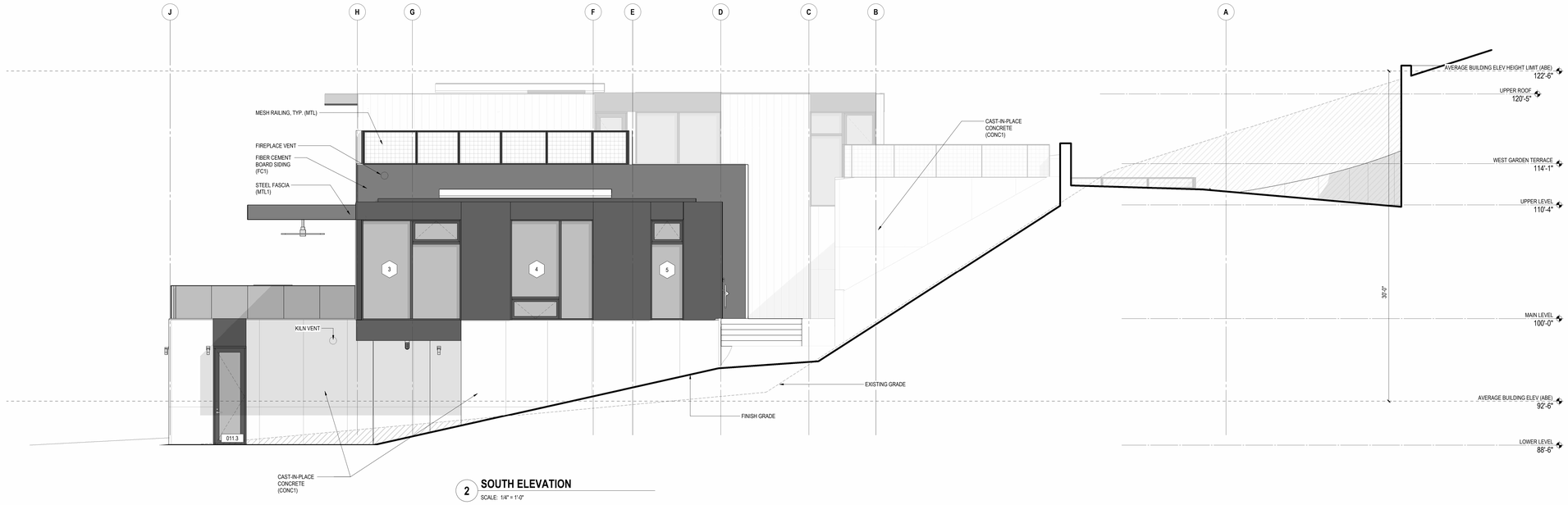
ELEVATION LEGEND

CUT

FILL

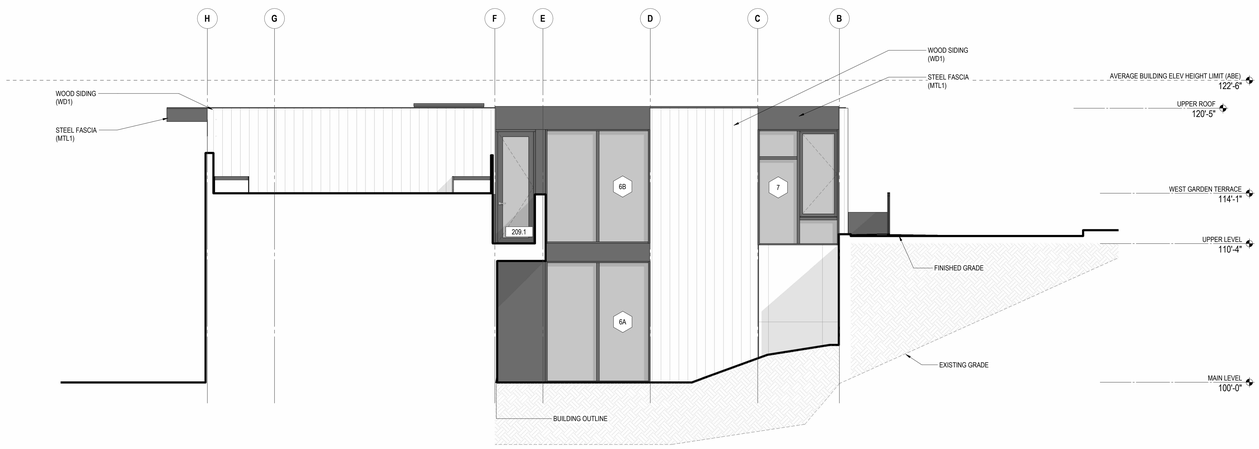
3 WEST ELEVATION

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



2 SOUTH ELEVATION

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



1 PARTIAL ELEVATION - SOUTH

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

EXTERIOR MATERIAL KEY

CAST-IN-PLACE CONCRETE (CONC1)
SMOOTH PANEL-FORMED CONCRETE
WITH EXPOSED TIE HOLES

PAINTED STEEL, TO MATCH WINDOWS (MTL1, MTL2)
STEEL SOFFIT
STEEL FASCIAS
EXTERIOR COLUMNS

METAL WINDOWS
THERMALLY BROKEN METAL WINDOWS

VERTICAL FIBER CEMENT SIDING (FC1)
SWISS PEARL, LARGO, BLACK OPAL 7025

VERTICAL WOOD SIDING (WD1)
CEDAR SIDING WITH PINE TAR FINISH

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EXTERIOR ELEVATIONS SOUTH AND WEST

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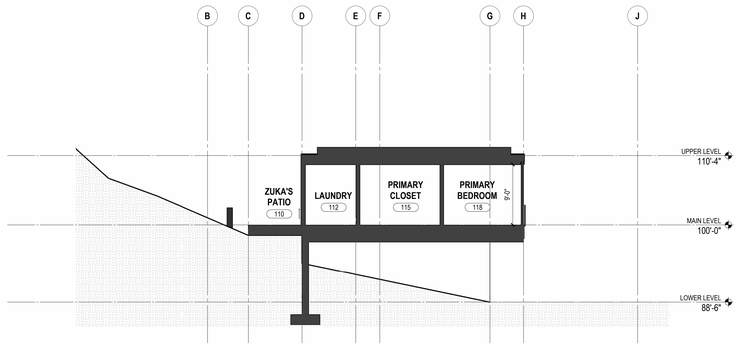
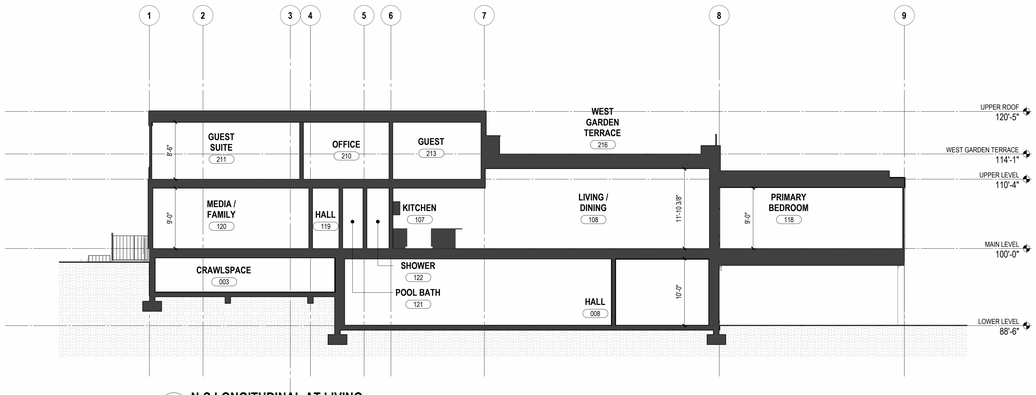
A3.01

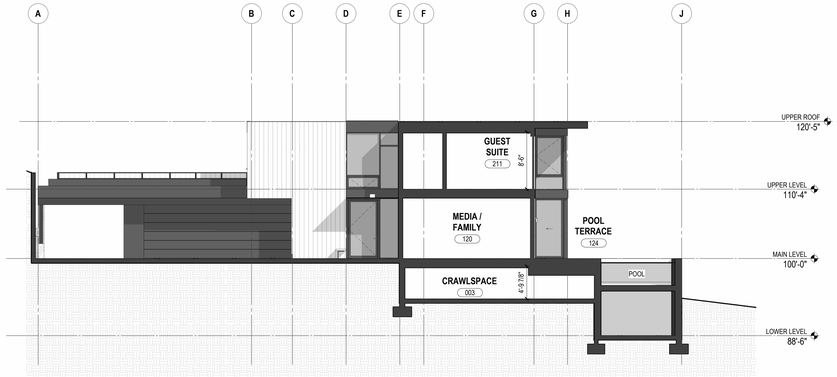
0' 4' 8' 16'



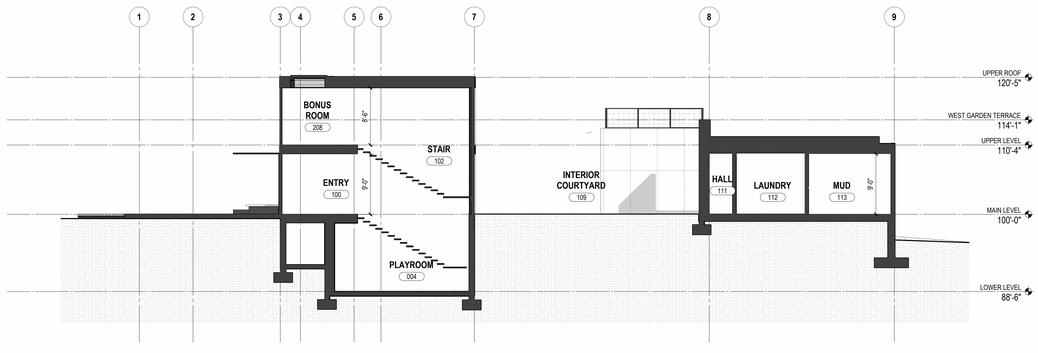
5 E-W SECTION AT PRIMARY SUITE
SCALE: 1/8" = 1'-0"



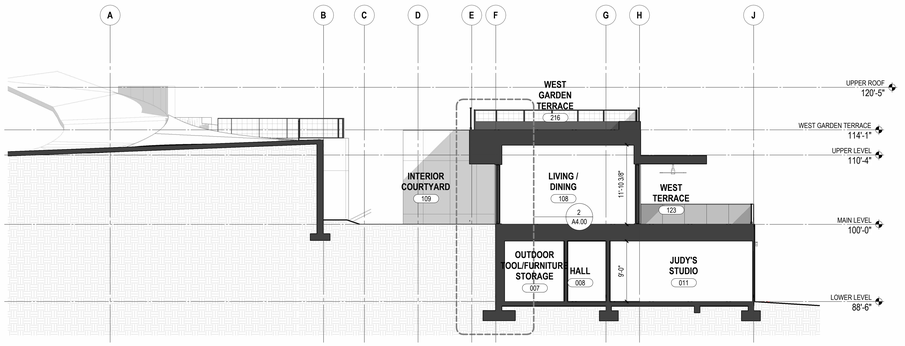
4 N-S LONGITUDINAL AT LIVING
SCALE: 1/8" = 1'-0"



3 E-W SECTION AT GUEST SUITE
SCALE: 1/8" = 1'-0"



2 N-S LONGITUDINAL AT EXT COURTYARD
SCALE: 1/8" = 1'-0"



1 E-W SECTION AT EXT COURTYARD
SCALE: 1/8" = 1'-0"

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stamp/seal:

3904 REGISTERED ARCHITECT tomtimon STATE OF WASHINGTON

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project manager:
drawn by:
checked by:
job no.:

revisions:

no.: date: description:

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04/09/2024

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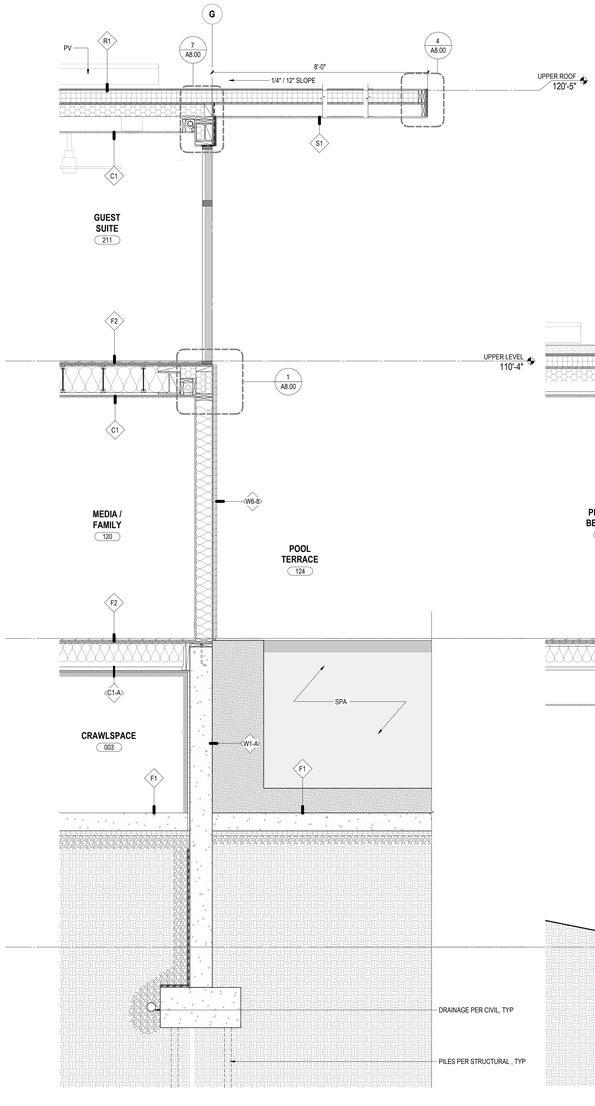
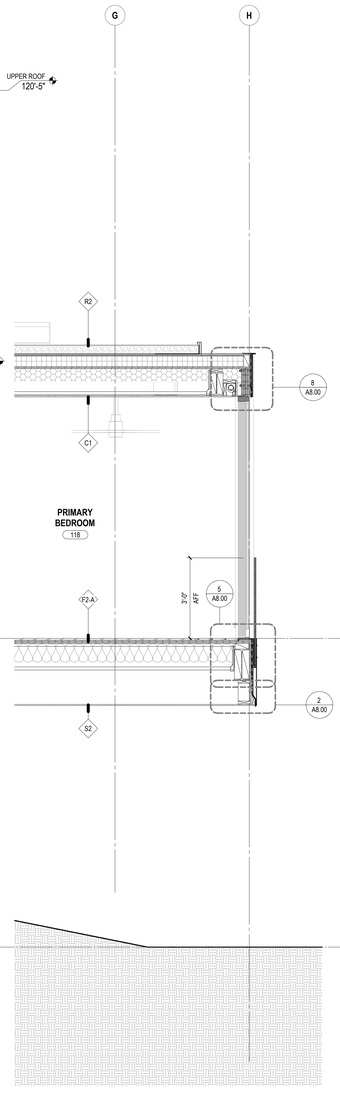
BUILDING SECTIONS

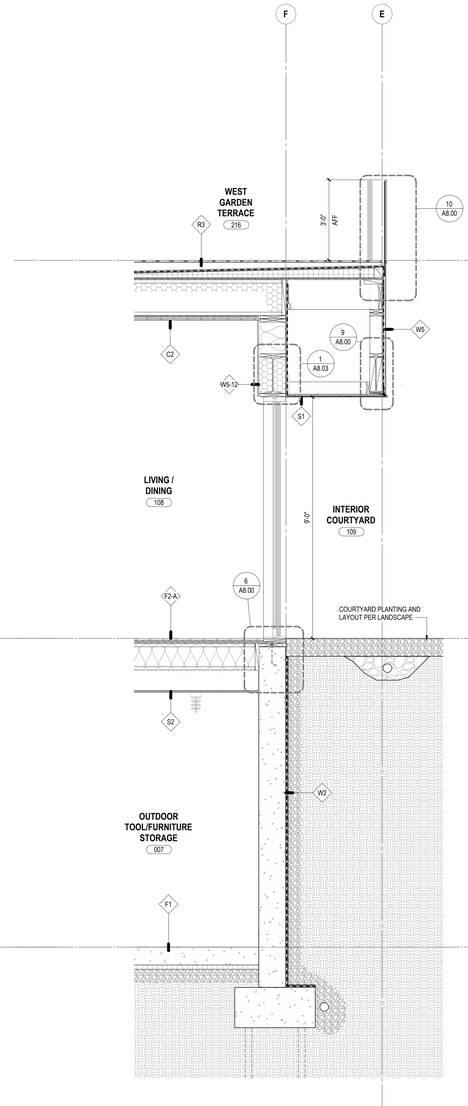
sheet:
A3.10



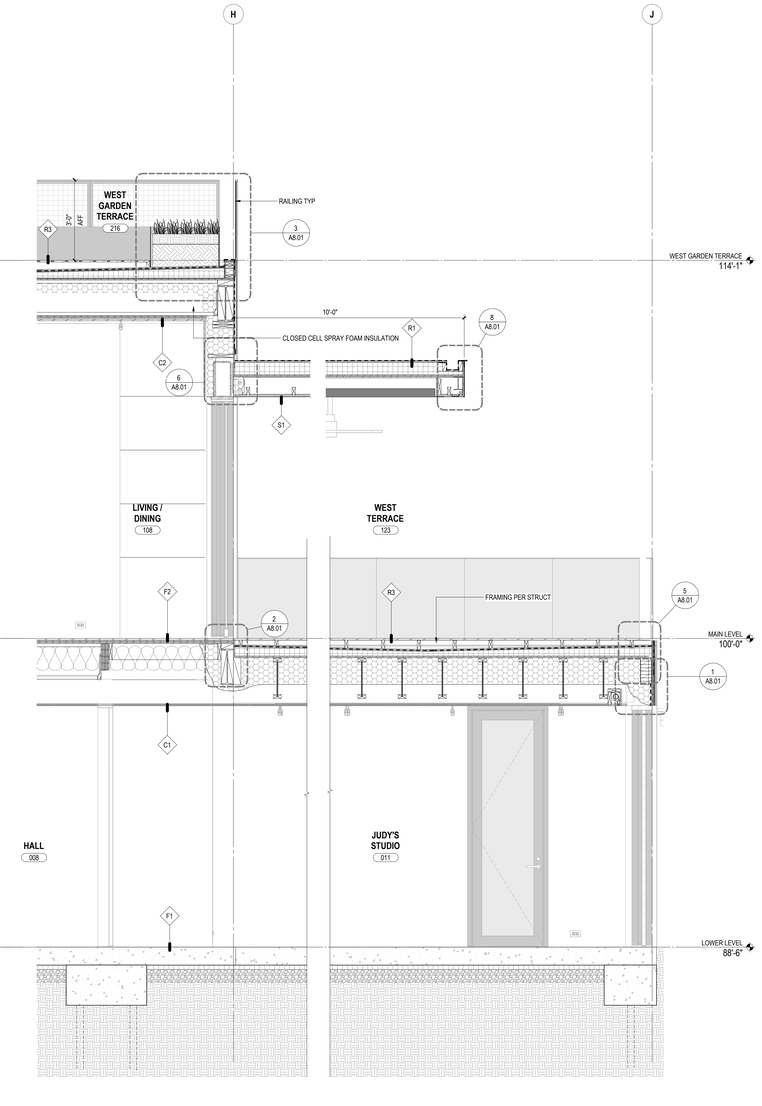
4 **WEST GUEST WALL AT OVERHANG / SPA**
SCALE: 1/2" = 1'-0"



3 **WEST AT PRIMARY SUITE/KAYAKE**
SCALE: 1/2" = 1'-0"



2 **WEST LIVING WALL AT COURTYARD**
SCALE: 1/2" = 1'-0"



1 **WEST LIVING WALL AT OVERHANG**
SCALE: 1/2" = 1'-0"

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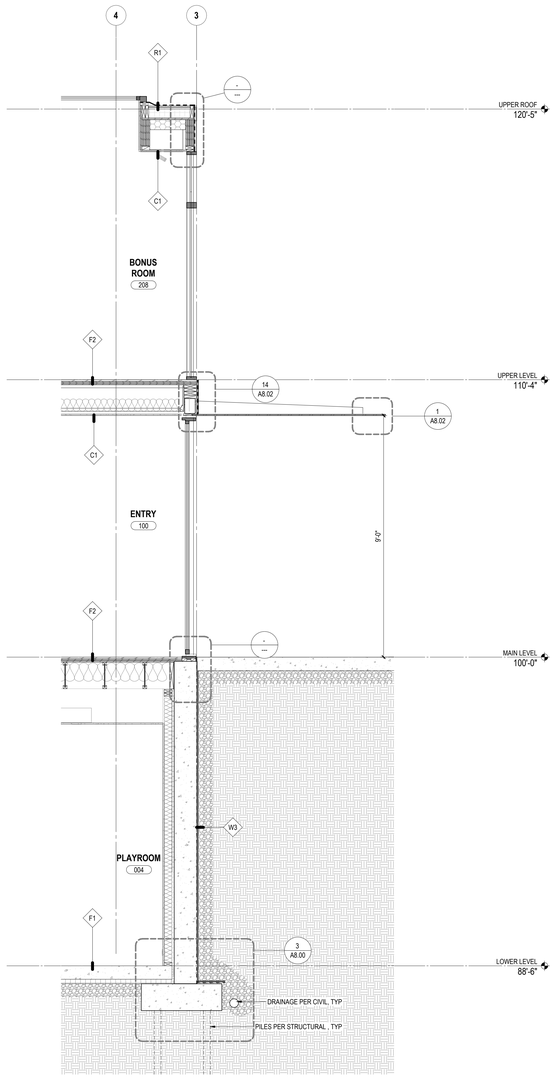
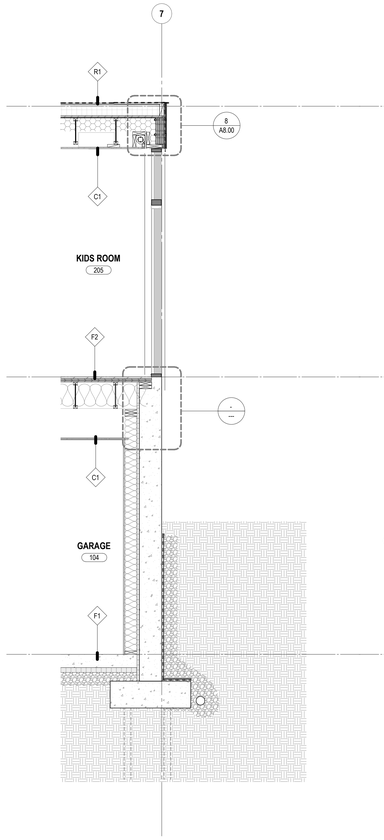
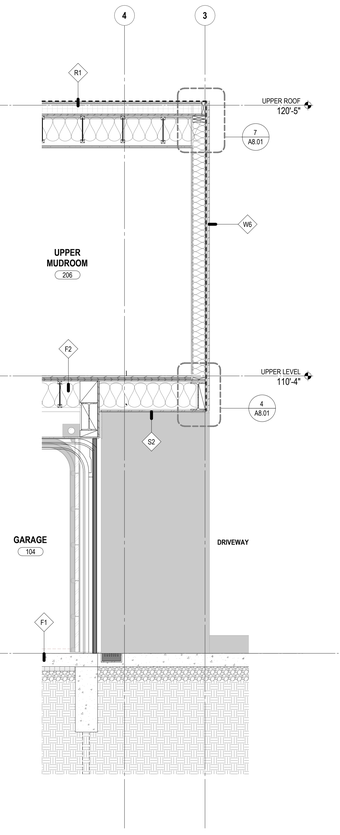


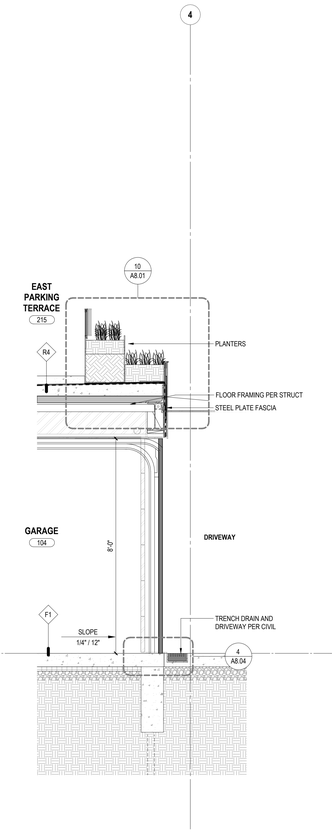
5 NORTH AT ENTRY / SKYLIGHT
SCALE: 1/2" = 1'-0"



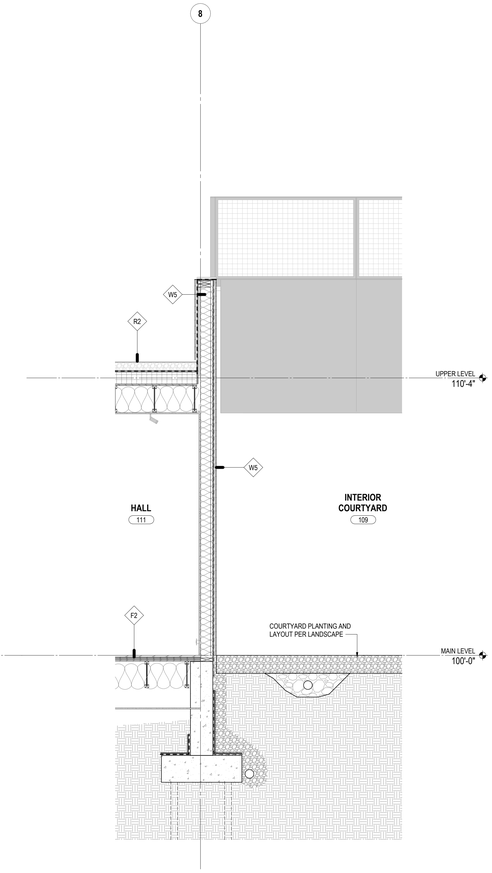
4 SOUTH AT GARAGE/KIDS
SCALE: 1/2" = 1'-0"



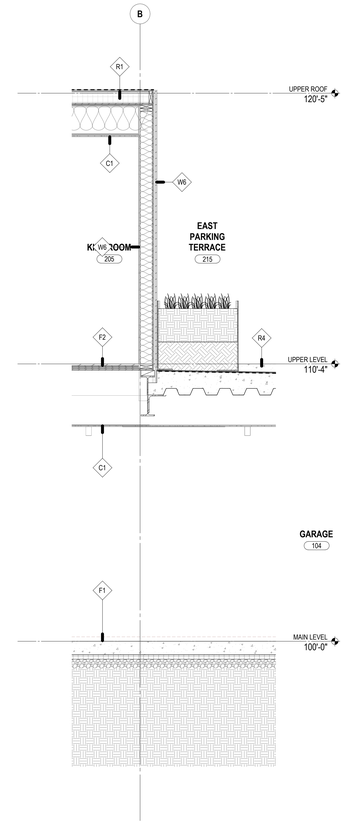
3 NORTH AT GARAGE CANTILEVER
SCALE: 1/2" = 1'-0"



2 NORTH AT GARAGE ROOF PARKING
SCALE: 1/2" = 1'-0"



1 SOUTH AT COURTYARD / LL HALL
SCALE: 1/2" = 1'-0"



6 EAST AT GARAGE/PARKING TERRACE
SCALE: 1/2" = 1'-0"

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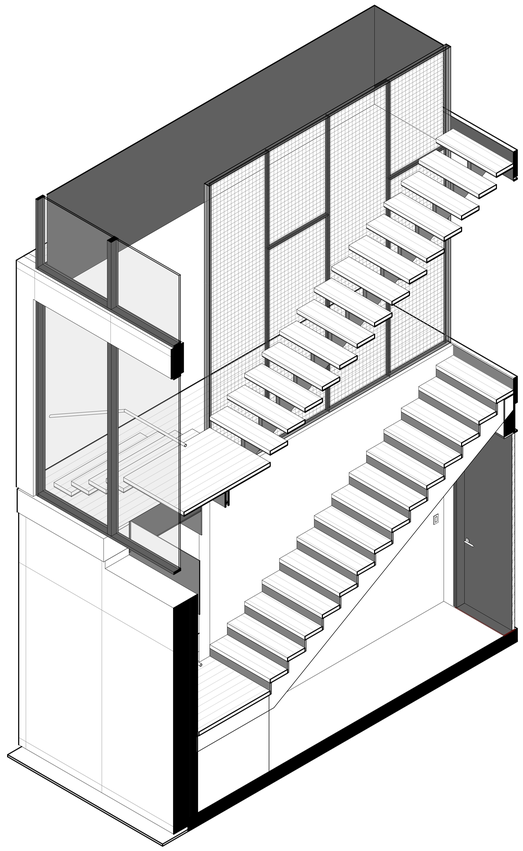
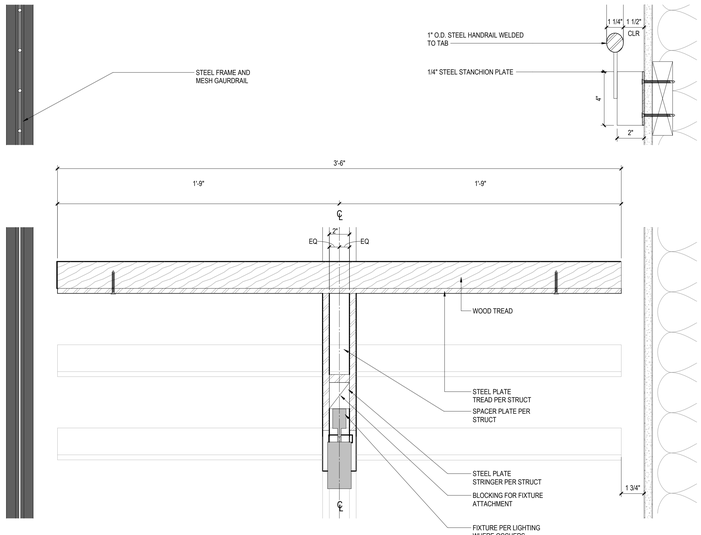
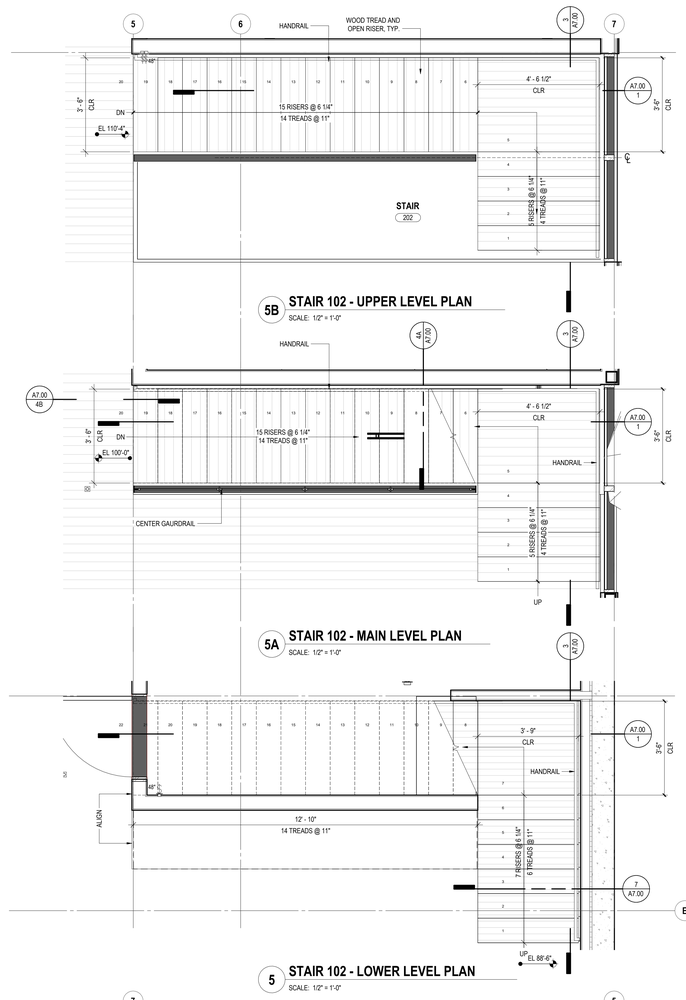


6 **STAIR 102 - AXON WEST**
SCALE:



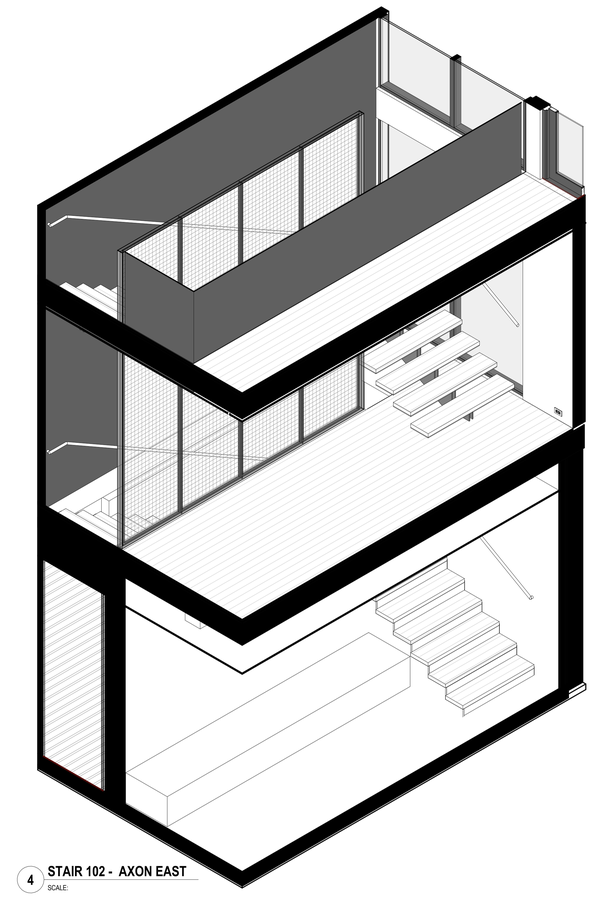
4A **STAIR 102 - SECTION**
SCALE: 3" = 1'-0"



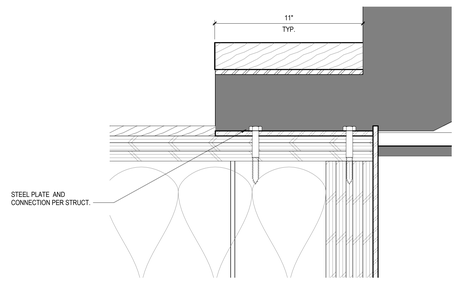
5B **STAIR 102 - UPPER LEVEL PLAN**
SCALE: 1/2" = 1'-0"

5A **STAIR 102 - MAIN LEVEL PLAN**
SCALE: 1/2" = 1'-0"

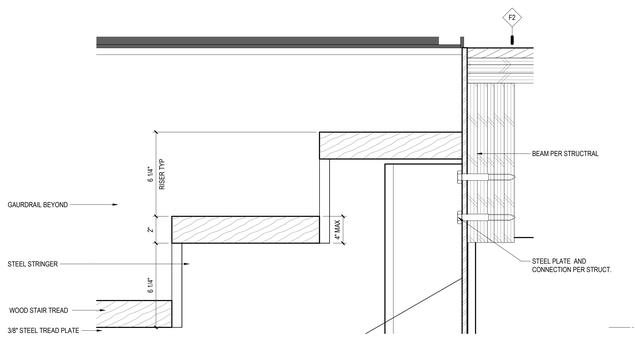
5 **STAIR 102 - LOWER LEVEL PLAN**
SCALE: 1/2" = 1'-0"



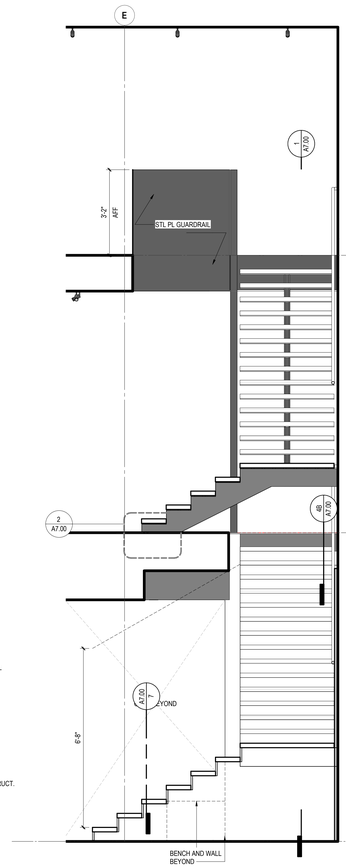
4 **STAIR 102 - AXON EAST**
SCALE:



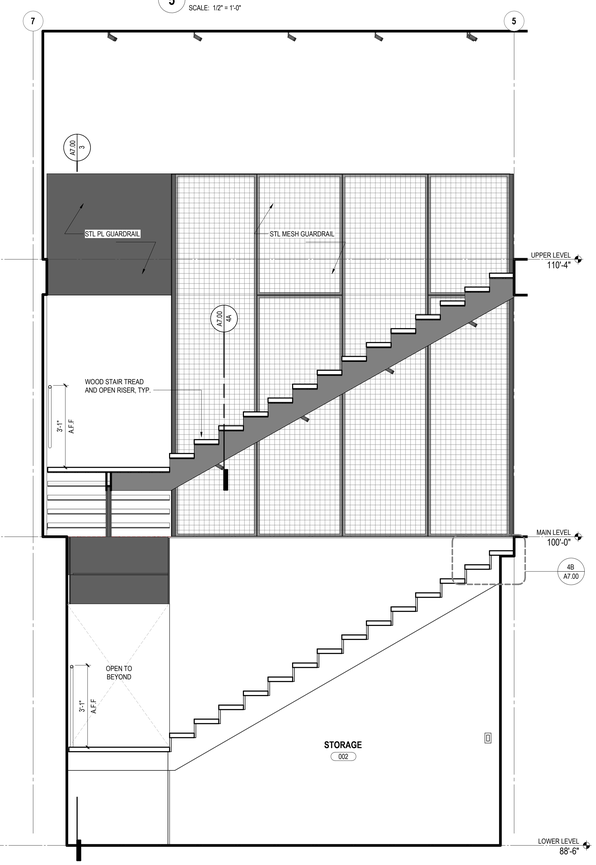
2 **TYP STAIR AT MAIN LEVEL FINISH FLOOR**
SCALE: 3" = 1'-0"



4B **TYP STAIR 102 - TREAD DETAIL**
SCALE: 3" = 1'-0"



3 **STAIR 102 - E-W SECTION**
SCALE: 1/2" = 1'-0"



1 **STAIR 102 - N-S SECTION**
SCALE: 1/2" = 1'-0"

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VERTICAL CIRCULATION

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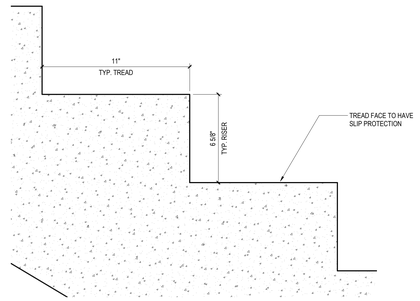
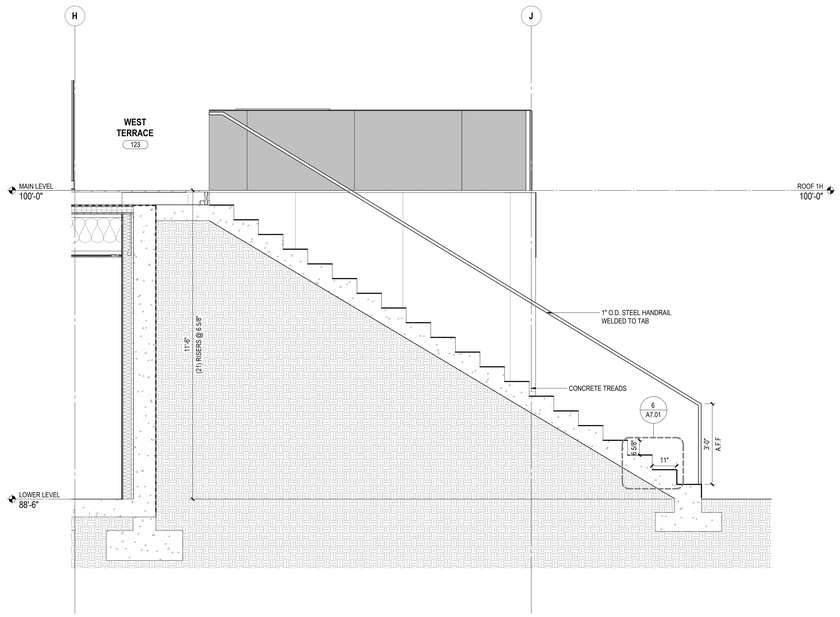


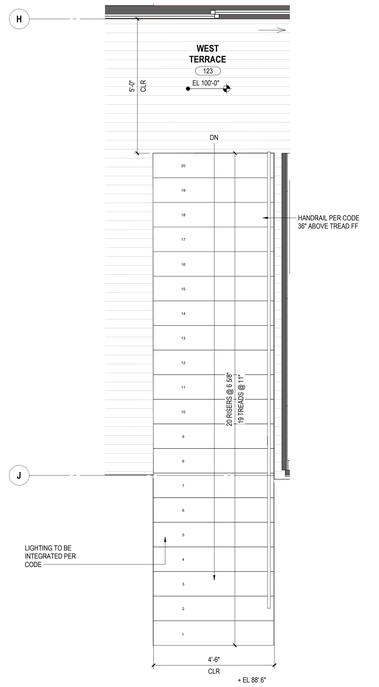
6 TYPICAL TREAD WEST TERRACE STAIR

SCALE: 3" = 1'-0"



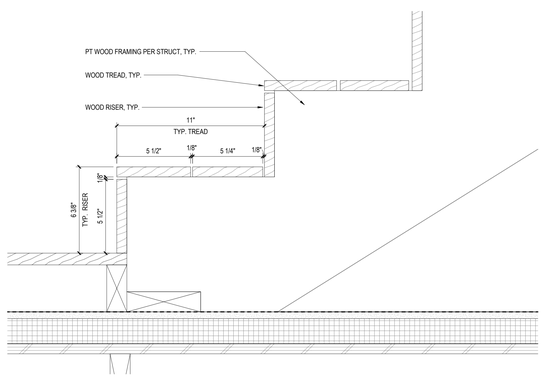
5 SECTION - WEST TERRACE STAIR

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



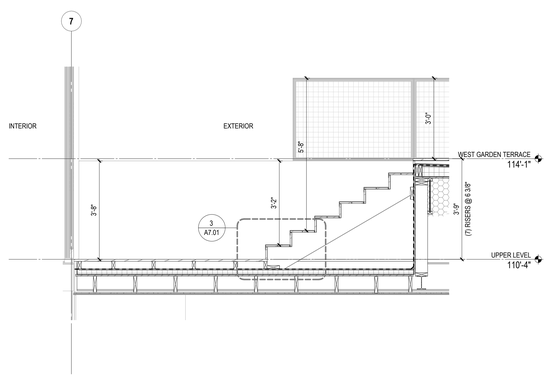
4 PLAN - WEST TERRACE STAIR

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



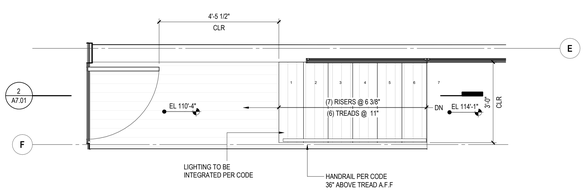
3 TYPICAL TREAD WEST GARDEN TERRACE STAIR

SCALE: 3" = 1'-0"



2 SECTION - WEST GARDEN TERRACE STAIR

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



1 PLAN - WEST GARDEN TERRACE STAIR

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

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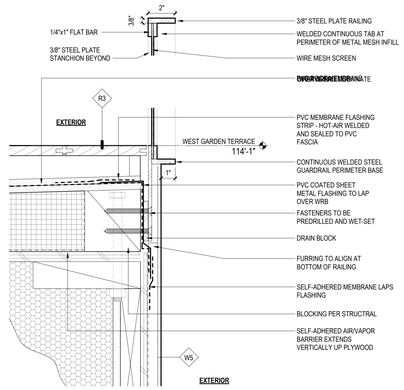
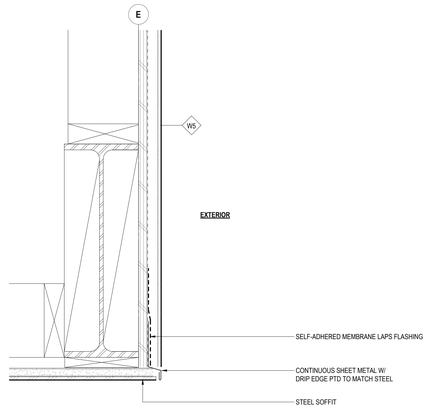


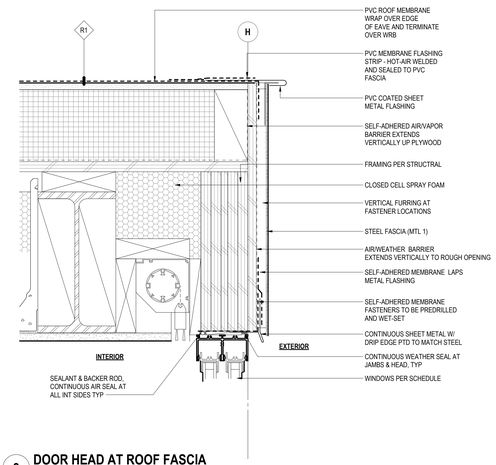
10 RAILING AT TERRACE DECK

SCALE: 3" = 1'-0"



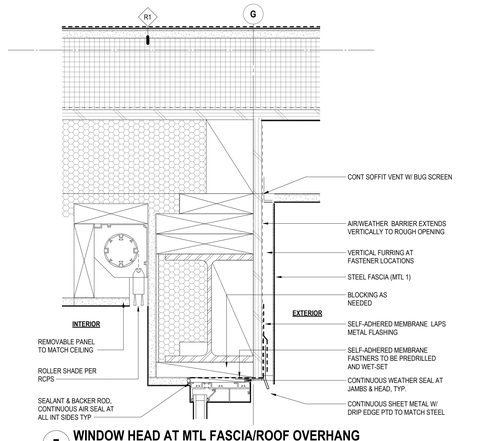
9 SOFFIT/SIDING AT OVERHANG

SCALE: 3" = 1'-0"



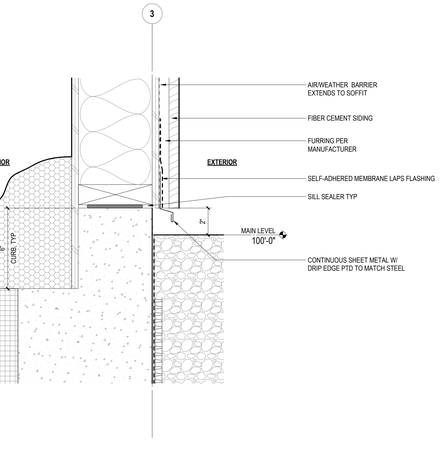
8 DOOR HEAD AT ROOF FASCIA

SCALE: 3" = 1'-0"



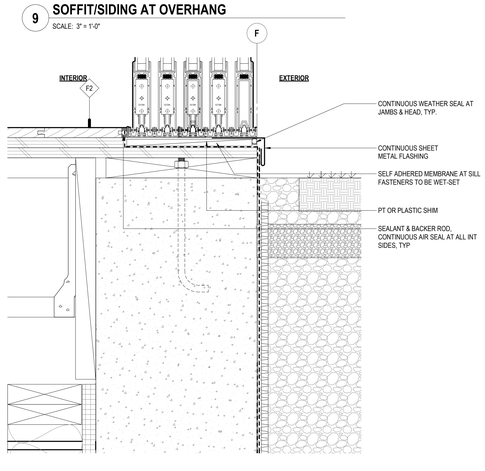
7 WINDOW HEAD AT MTL FASCIA/ROOF OVERHANG

SCALE: 3" = 1'-0"



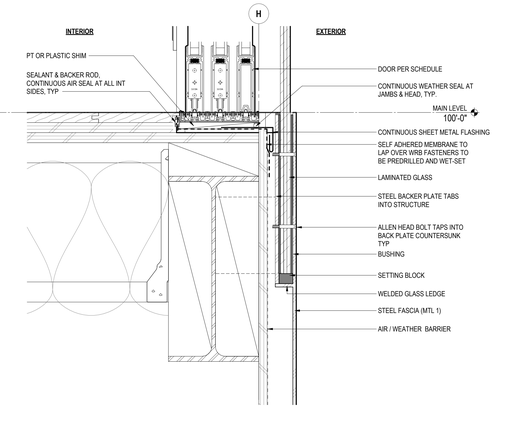
11 WOOD SIDING AT PLANTER

SCALE: 3" = 1'-0"



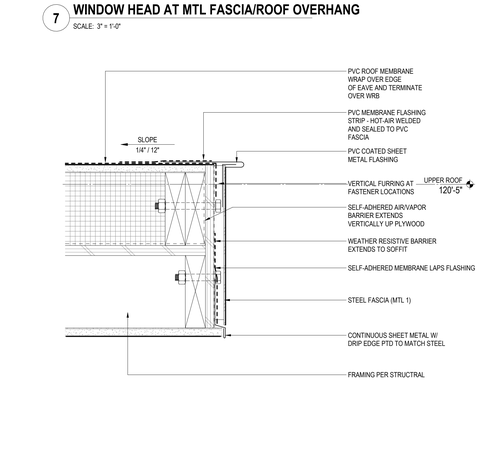
6 DOOR SILL AT INTERIOR COURTYARD

SCALE: 3" = 1'-0"



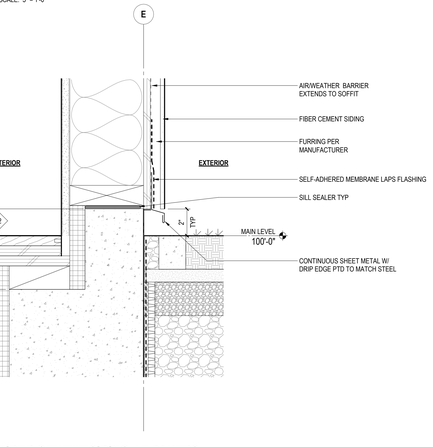
5 DOOR SILL AT GLASS RAILING

SCALE: 3" = 1'-0"



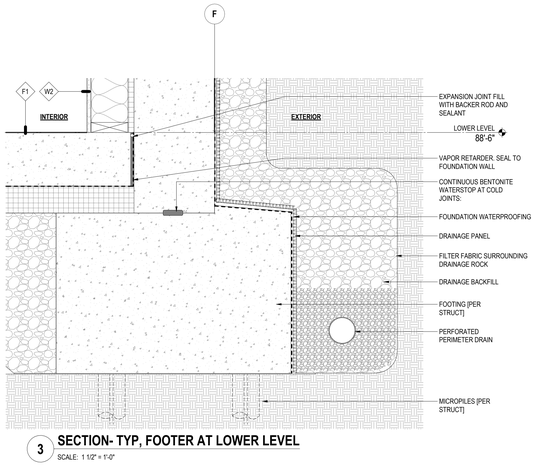
4 MTL FASCIA AT ROOF OVERHANG

SCALE: 3" = 1'-0"



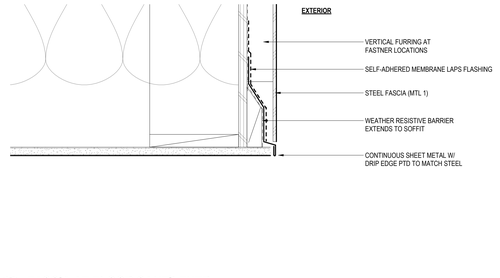
12 FIBER CEMENT SIDING AT PAVERS

SCALE: 3" = 1'-0"



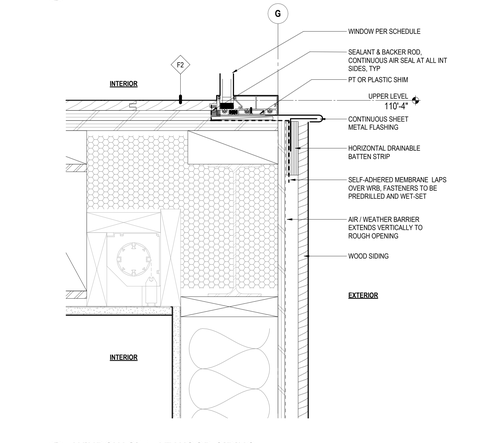
3 SECTION- TYP, FOOTER AT LOWER LEVEL

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



2 FASCIA AT FLOOR CANTILEVER

SCALE: 3" = 1'-0"



1 WINDOW SILL AT WOOD SIDING

SCALE: 3" = 1'-0"

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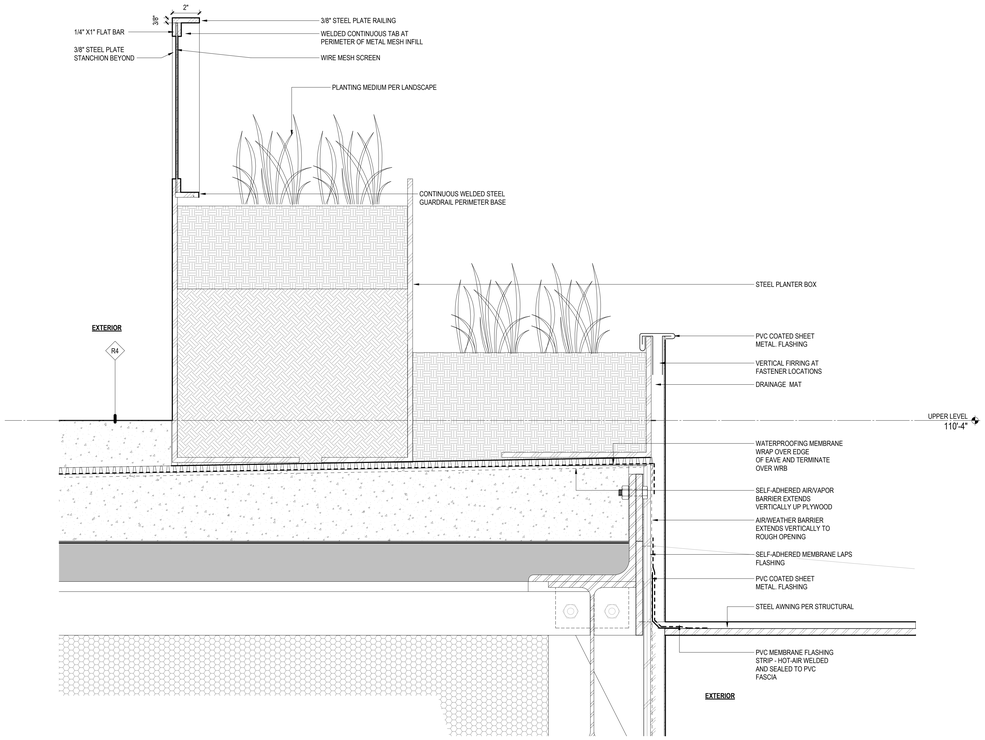
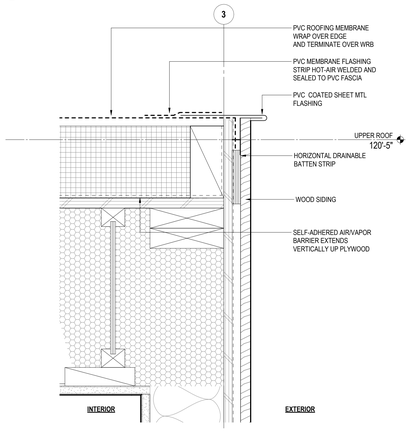


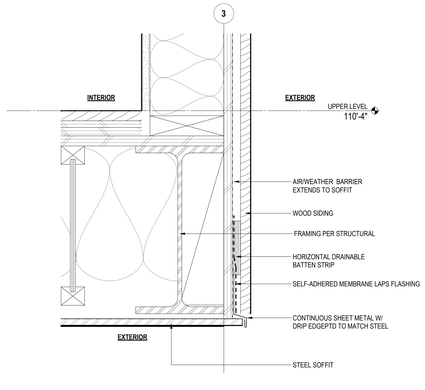
10 GARAGE ROOF AT PLANTER

SCALE: 3" = 1'-0"



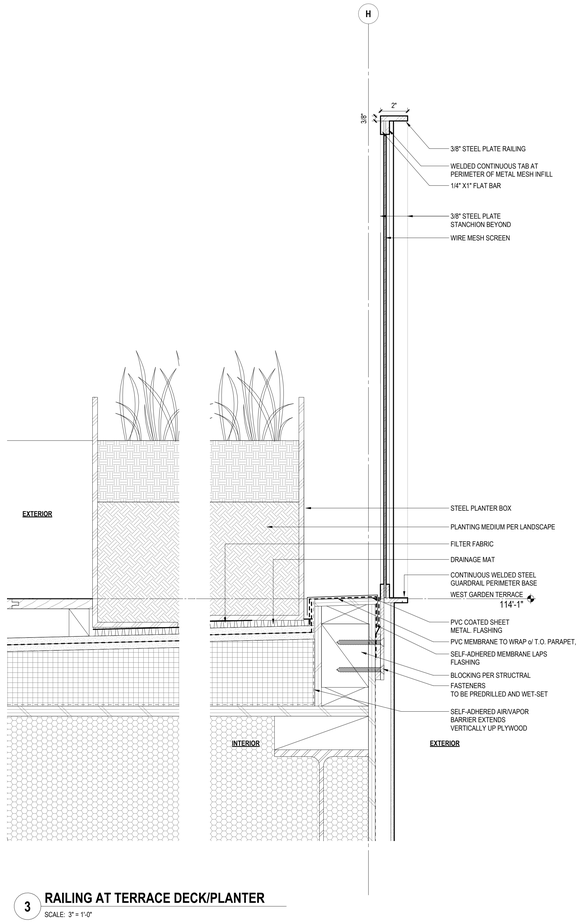
7 ROOF EDGE AT WOOD SIDING

SCALE: 3" = 1'-0"



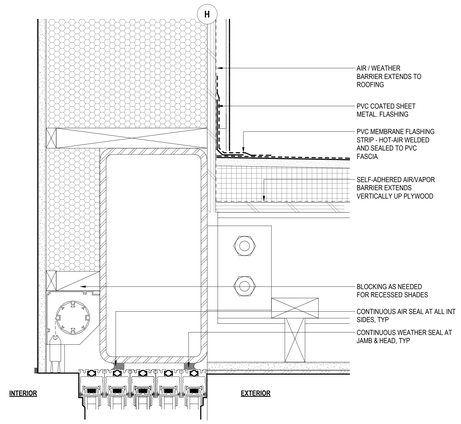
4 SOFFIT AT GARAGE OVERHNG

SCALE: 3" = 1'-0"



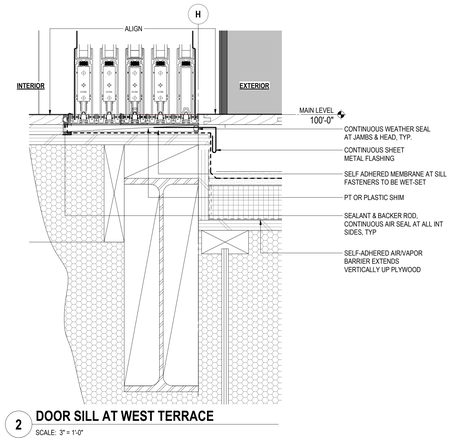
3 RAILING AT TERRACE DECK/PLANTER

SCALE: 3" = 1'-0"



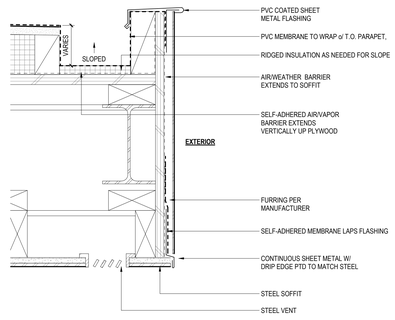
6 DOOR HEAD AT WEST OVERHANG

SCALE: 3" = 1'-0"



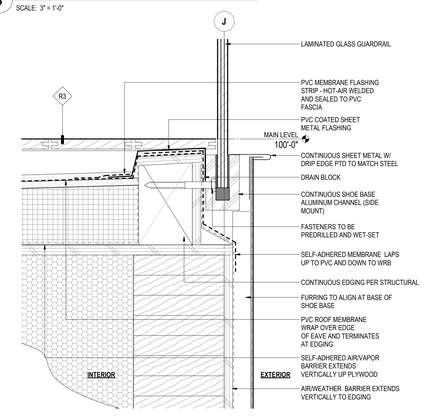
2 DOOR SILL AT WEST TERRACE

SCALE: 3" = 1'-0"



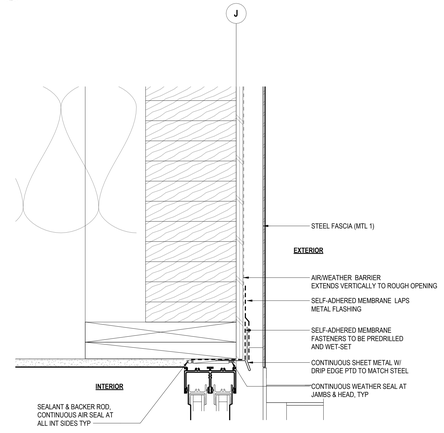
8 MTL FASCIA AT WEST OVERHANG

SCALE: 3" = 1'-0"



5 RAILING AT WEST TERRACE

SCALE: 3" = 1'-0"



1 DOOR HEAD AT STUDIO MTL FASCIA

SCALE: 3" = 1'-0"

Olson Kundig
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project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT tomtimon STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.: date: description:

PERMIT SET
04/09/2024

title:
EXTERIOR DETAILS TYPICAL

sheet:
A8.01

STRUCTURAL NOTES

DESIGN LOADS

ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION, AS AMENDED BY THE CITY OF MERCER ISLAND.

LIVE LOADS
IN ADDITION TO THE DEAD LOADS, THE FOLLOWING FLOOR LIVE LOADS WERE USED FOR DESIGN. LIVE LOAD REDUCTION IS PER IBC SECTION 1607.11.

		REDUCIBLE	UNREDUCIBLE
RESIDENTIAL FLOOR	40 PSF		X
EXTERIOR BALCONIES, DECKS	1.5 TIMES THE LIVE LOAD FOR THE AREA SERVED, NOT REQUIRED TO EXCEED 100 PSF		

REFER TO TABLE 1607.1 IN THE IBC FOR RELEVANT CONCENTRATED LIVE LOADS.

PHOTOVOLTAIC PANEL SYSTEM ROOF DEAD LOAD
ROOF SUPERIMPOSED DEAD LOAD INCLUDES AN ALLOWANCE OF 3 PSF TO ACCOMMODATE ROOFTOP-MOUNTED PHOTOVOLTAIC PANEL AND RACK SUPPORT SYSTEMS.

ROOF SNOW LOAD
THE ROOF SNOW LOAD IS DETERMINED USING CHAPTER 7 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1608 AND WITH THE FOLLOWING FACTORS:

MINIMUM DESIGN LOAD 25 PSF WITHOUT DRIFT
P_g = 15 PSF C_e = 0.9
I_s = 1.0 C_t = 1.0
P_f = 11.3 PSF

RAIN LOADS
RAIN LOADS ARE DETERMINED USING CHAPTER 8 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1611 WITH THE FOLLOWING FACTORS:

i = 1 IN/HOUR

SEISMIC LOADS
THE SEISMIC FORCE-RESISTING SYSTEM (SFRS) USED TO RESIST EARTHQUAKE AND WIND LOADS IS COMPRISED OF SHEATHED WOOD LIGHT FRAMED WALL DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF ANSI/AWC 2018 SPDWS. EARTHQUAKE DESIGN IS BASED ON THE WITH THE FOLLOWING FACTORS:

SITE CLASS D	h_n = 35 FT
RISK CATEGORY II	T = 0.3 SECONDS
SEISMIC DESIGN CATEGORY D	R = 6.5
I_e = 1.0	Ω = 3
S_s = 1.435 g	ρ = 1.3
S_1 = 0.499 g	C_s = 0.147
S_{DS} = 0.96 g	V = C_sW = 133 KIPS
S_{D1} = 0.9 g	
T_L = 6 SECONDS	

THE SEISMIC FORCE-RESISTING SYSTEM IS COMPRISED OF THE STRUCTURAL WOOD MEMBERS AND CONNECTIONS IDENTIFIED IN PLAN.

WIND LOADS
WIND LOAD IS DETERMINED USING CHAPTERS 26-31 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1609 WITH THE FOLLOWING FACTORS:

RISK CATEGORY II	K_{zt} = 1.0
EXPOSURE CATEGORY B	
V = 110 MPH	G_{cpi} = 0.18
V_{asd} = 85 MPH	

DESIGN WIND PRESSURES FOR DETERMINING FORCES ON COMPONENTS AND CLADDING SHALL BE DETERMINED USING CHAPTER 30 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1609 BY THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN OF SUCH ELEMENTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

SOIL LOADS

6"Ø PIPE PILE CAPACITY	15 TONS DOWNWARD
RETAINING WALLS	55 PCF (EQUIVALENT FLUID PRESSURE) UNRESTRAINED
	35 PCF (EQUIVALENT FLUID PRESSURE) RESTRAINED

GENERAL NOTES

SUBMITTALS
SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO ANY FABRICATION OR CONSTRUCTION FOR ALL STRUCTURAL ITEMS, INCLUDING THE FOLLOWING: CONCRETE OR MASONRY REINFORCEMENT, PRECAST OR PRESTRESSED CONCRETE ITEMS, EMBEDDED STEEL ITEMS, STRUCTURAL STEEL, STEEL JOISTS, STEEL DECK, SHEAR STUD LAYOUT, METAL GRATING, GLUED-LAMINATED MEMBERS, CLADDING PANELS AND STAIRS.

IF THE SHOP DRAWINGS DIFFER FROM OR ADD TO THE DESIGN OF THE STRUCTURAL DRAWINGS, THEY SHALL BEAR THE SEAL AND SIGNATURE OF THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN.

DEFERRED SUBMITTALS
PER IBC SECTION 107.3.4.1, DRAWINGS AND CALCULATIONS FOR THE DESIGN AND FABRICATION OF ITEMS THAT ARE DESIGNED BY OTHERS SHALL BEAR THE SEAL AND SIGNATURE OF THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN AND SHALL BE SUBMITTED TO THE ARCHITECT AND THE BUILDING DEPARTMENT FOR REVIEW PRIOR TO FABRICATION. DEFERRED SUBMITTALS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

EXTERIOR CLADDING SYSTEMS
SKYLIGHT FRAMING
EQUIPMENT ANCHORAGE
SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS
HELICAL FOUNDATION ANCHORS
ALTERNATE ANCHORS (WHEN ALTERNATE ANCHORS ARE PROPOSED)

NONSTRUCTURAL COMPONENTS
DESIGN, DETAILING AND ANCHORAGE OF ALL NONSTRUCTURAL COMPONENTS SHALL BE IN ACCORDANCE WITH IBC SECTION 1613, ASCE 7 CHAPTER 13, AND THE PROJECT SPECIFICATIONS. NONSTRUCTURAL COMPONENTS DESIGNED BY OTHERS SHALL NOT INDUCE TORSIONAL LOADING INTO SUPPORTING STRUCTURAL MEMBERS WITHOUT ADDITIONAL BRACING OF THOSE MEMBERS TO ELIMINATE TORSIONAL FORCES. TORSIONAL BRACING SHALL BE DESIGNED BY THE NONSTRUCTURAL COMPONENT DESIGNER AND APPROVED BY THE ENGINEER.

DESIGN, DETAILING AND CONSTRUCTION OF ALL NONSTRUCTURAL COMPONENTS WHICH ATTACH TO STRUCTURE SHALL ACCOMMODATE CONSTRUCTION TOLERANCES AS ESTABLISHED BY THE STRUCTURAL SPECIFICATIONS. ANY NONSTRUCTURAL COMPONENTS WHICH ATTACH TO MORE THAN ONE LEVEL OF THE STRUCTURE SHALL ALSO ACCOMMODATE THE FOLLOWING RELATIVE MOVEMENTS BETWEEN LEVELS WITHOUT DAMAGE TO THE NONSTRUCTURAL COMPONENTS:

VERTICAL DEFLECTION OF ±1/2 INCH DUE TO VARIABLE LIVE LOADS
ELASTIC STORY DRIFT PER "STORY DRIFT" SECTION ABOVE

IN ADDITION, NONSTRUCTURAL COMPONENTS ATTACHED TO MORE THAN ONE LEVEL SHALL ACCOMMODATE AN INELASTIC STORY DRIFT PER "STORY DRIFT" SECTION ABOVE WITHOUT CREATING A LIFE SAFETY HAZARD.

CLADDING
CLADDING DESIGNED BY OTHERS SHALL BE SUPPORTED AT EACH STORY TO BE CONSISTENT WITH THE DESIGN OF THE BUILDING STRUCTURE. CLADDING DESIGNED BY OTHERS SHALL NOT INDUCE TORSIONAL LOADING INTO SUPPORTING STRUCTURAL MEMBERS WITHOUT ADDITIONAL BRACING OF THOSE MEMBERS TO ELIMINATE TORSIONAL FORCES, UNLESS OTHERWISE APPROVED BY THE ARCHITECT. TORSIONAL BRACING SHALL BE DESIGNED BY THE CLADDING DESIGNER AND APPROVED BY THE ENGINEER.

INSPECTION
SPECIAL INSPECTION PER IBC CHAPTER 17 SHALL BE PERFORMED BY AN APPROVED TESTING AGENCY AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTIONS AND TESTING. ALL PREPARED SOIL-BEARING SURFACES SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL. SOIL COMPACTION SHALL BE SUPERVISED BY AN APPROVED TESTING AGENCY OR GEOTECHNICAL ENGINEER.

SPECIAL CONDITIONS
CONTRACTOR SHALL VERIFY ALL LEVELS, DIMENSIONS, AND EXISTING CONDITIONS IN THE FIELD BEFORE PROCEEDING. CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR FIELD CHANGES PRIOR TO INSTALLATION OR FABRICATION. IN CASE OF DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN DIRECTION FROM THE ARCHITECT BEFORE PROCEEDING. DIMENSIONS NOTED AS PLUS OR MINUS (±) INDICATE UNVERIFIED DIMENSIONS AND ARE APPROXIMATE. NOTIFY ARCHITECT IMMEDIATELY OF CONFLICTS OR EXCESSIVE VARIATIONS FROM INDICATED DIMENSIONS. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS--DO NOT SCALE DRAWINGS. DIMENSIONS OF EXISTING CONDITIONS.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.

SOILS
SEE THE GEOTECHNICAL REPORT BY ASSOCIATED EARTH SCIENCES INC, DATED AUGUST 16TH, 2022, FOR MORE COMPLETE INFORMATION. EARTHWORK MATERIAL, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. BACKFILL BEHIND WALLS SHALL NOT BE PLACED BEFORE THE WALLS AND SUPPORTING SLABS ACHIEVE 28 DAY CONCRETE STRENGTH OR THE WALLS ARE TEMPORARILY BRACED. ALL TOPSOIL ORGANICS AND LOOSE SURFACE SOIL SHALL BE REMOVED FROM BENEATH FILL SUPPORTING CONCRETE SLABS OR PAVING.

MEMBER SPACING
ALL FRAMING MEMBERS SHALL BE EQUALLY SPACED BETWEEN GRID LINES, COLUMNS, AND DIMENSIONED FRAMING UNLESS NOTED OTHERWISE.

PIPE PILES

BIDDER-DESIGNED
PIPE PILES SHALL BE A DEFERRED SUBMITTAL PER THE REQUIREMENTS OF THE GENERAL NOTES. PIPE PILES SHALL BE DESIGNED FOR THE LOADS INDICATED IN THESE DRAWINGS. PIPE PILES DESIGN CAPACITIES SHALL BE DETERMINED USING THE METHODS IN THE FHWA PIPE PILES DESIGN AND CONSTRUCTION REFERENCE MANUAL AND THE CONTRACTOR'S EXPERIENCE.

THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND TESTING OF PIPE PILES AND THE DESIGN AND INSTALLATION OF THE PIPE PILES TOP ATTACHMENT TO THE SUPPORTED STRUCTURE. THE CONTRACTOR SHALL SELECT THE PIPE PILES TYPE, SIZE, EMBEDMENT DEPTH, REINFORCEMENT, AND INSTALLATION MEANS AND METHODS TO MEET THE SPECIFIED PERFORMANCE REQUIREMENTS. THE MINIMUM PIPE PILES DIAMETER SHALL NOT BE LESS THAN AS INDICATED IN THESE DRAWINGS.

PIPE PILES LOAD CAPACITIES SHALL BE CONFIRMED BY PROOF TESTING, AND SHALL MEET THE TEST ACCEPTANCE CRITERIA IN THE PROJECT SPECIFICATIONS.

CONCRETE

CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 19.

CONCRETE MIXTURES
CONCRETE MIXTURES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

CONCRETE MIXTURES

f'c (PSI)	TEST AGE (DAYS)	EXPOSURE CLASS F	S	W	C	USE
4,000	28	F1	S0	W0	C0	FOUNDATIONS, CONCRETE WALLS, SLAB-AT-GRADE, GRADE BEAMS

CONCRETE MIXTURES SHALL CONFORM TO THE MOST STRINGENT REQUIREMENTS FOR EXPOSURE CLASSES SPECIFIED IN THE TABLE ABOVE AND ACI 318 TABLE 19.3.2.1.

WATER-REDUCING ADMIXTURES MAY BE INCORPORATED IN CONCRETE MIX DESIGNS, BUT SHALL CONFORM TO ASTM C 494, AND BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CaCl2 OR OTHER WATER-SOLUBLE CHLORIDE ADMIXTURES SHALL NOT BE USED.

WATER/CEMENTITIOUS MATERIALS RATIO SHALL BE MEASURED BY WEIGHT AND SHALL BE BASED ON THE TOTAL CEMENTITIOUS MATERIAL. WATER/CEMENTITIOUS MATERIALS RATIO AND WATER CONTENT SHALL BE DETERMINED BY THE SUPPLIER BASED ON STRENGTH REQUIREMENTS AND SHALL NOT EXCEED THE MAXIMUM WATER/CEMENTITIOUS MATERIAL RATIO AND/OR WATER CONTENT IF SHOWN ABOVE OR IN ACI 318 TABLE 19.3.2.1 FOR THE EXPOSURE CLASSES LISTED.

FIELD-MEASURED SLUMP SHALL CONFORM TO THE SUBMITTED CONCRETE MIX DESIGN. TOLERANCE OF SLUMP SHALL CONFORM TO ASTM C 94.

ALL CONCRETE SUBJECT TO EXPOSURE CLASSES F1, F2 OR F3 SHALL BE AIR ENTRAINED. AIR-ENTRAINING AGENTS SHALL CONFORM TO ASTM C 260. THE PERCENTAGE OF TOTAL AIR SHALL BE ACCORDING TO ACI 318 TABLE 19.3.3.1 WITH A FIELD TOLERANCE OF ±1.5 PERCENT BY VOLUME. THE PERCENTAGE OF TOTAL AIR SHALL BE MEASURED IN THE FIELD AT THE DISCHARGE FROM THE TRUCK.

THE CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR APPROVAL 2 WEEKS PRIOR TO PLACING ANY CONCRETE. THE MIX DESIGN SHALL BE IN CONFORMANCE WITH ACI 318, CHAPTER 19. THE SUBMITTAL SHALL INDICATE WHERE EACH CONCRETE MIX IS TO BE USED ON THE PROJECT, AS WELL AS THE MAXIMUM AGGREGATE SIZE OF EACH MIX. MAXIMUM AGGREGATE SIZE SHALL CONFORM TO THE PROJECT SPECIFICATIONS.

CURING
IF THE AIR TEMPERATURE WILL EXCEED 75 DEGREES F WITHIN 48 HOURS OF PLACING CONCRETE, A MOIST CURE SHALL BE APPLIED TO THE CONCRETE FOR A PERIOD OF 36 HOURS AFTER FINISHING CONCRETE SURFACES. REFER TO THE PROJECT SPECIFICATIONS FOR CURING REQUIREMENTS.

SHOTCRETE
SHOTCRETE SHALL CONFORM TO ACI 506R, ACI 506.2, IBC CHAPTER 19. SHOTCRETE MIX DESIGN, APPLICATION, NOZZLEMAN'S QUALIFICATIONS AND TEST PROCEDURE SHALL BE IN STRICT CONFORMANCE WITH THESE PUBLICATIONS.

REINFORCING STEEL

DEFORMED BARS	ASTM A 615, GRADE 60
HEADED DEFORMED BARS	ASTM A 970, HEAD TYPE HA

REINFORCING SHALL BE SUPPORTED AS SPECIFIED BY THE PROJECT SPECIFICATIONS AND THE CRSI MANUAL OF STANDARD PRACTICE. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI STANDARD OF PRACTICE AS OUTLINED IN ACI 315, "GUIDE TO PRESENTING REINFORCING STEEL DESIGN DETAILS".

LAP ALL REINFORCING BARS AS NOTED ON THE DRAWINGS. WHERE SPLICE LENGTH IS NOT SHOWN, USE TYPE Lb (Lbt FOR TOP BARS) SPLICE PER DEVELOPMENT AND SPLICE LENGTH SCHEDULE. MECHANICAL SPLICES CALLED OUT ON THE PLANS SHALL BE TYPE 1, UNLESS OTHERWISE NOTED. TYPE 1 SPLICES SHALL DEVELOP 125 PERCENT OF THE YIELD CAPACITY OF THE SPLICED BARS IN BOTH TENSION AND COMPRESSION. TYPE 2 SPLICES SHALL DEVELOP THE SPECIFIED TENSILE STRENGTH OF THE SPLICED BARS IN TENSION IN ADDITION TO MEETING TYPE 1 SPLICE REQUIREMENTS. SUBMIT ICC-ES OR IAPMO UES REPORT VALID FOR THE 2018 IBC DEMONSTRATING COMPLIANCE OF COUPLERS WITH THESE REQUIREMENTS.

AT THE CONTRACTOR'S OPTION AND WITH THE ARCHITECT'S APPROVAL, HEADED DEFORMED BARS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN WITH STANDARD 90 OR 180 DEGREE HOOKS AND MECHANICAL SPLICES MAY BE USED IN LIEU OF LAP SPLICES. USE OF HEADED DEFORMED BARS IS SUBJECT TO CONFORMANCE WITH ACI 318 SECTION 25.4.4. USE OF MECHANICAL SPLICES IS SUBJECT TO CONFORMANCE WITH ACI 318 SECTION 18.2.7 AND REQUIRES SUBMITTAL OF AN ICC-ES OR IAPMO UES REPORT VALID FOR THE 2018 IBC.

REINFORCING STEEL SHALL HAVE PROTECTION AS FOLLOWS, UNLESS NOTED OTHERWISE:

USE	COVER	
BEAM STIRRUPS AND COLUMN TIES	1 1/2"	
STRUCTURAL SLAB-AT-GRADE BOTTOM BARS	2"	
WALL BARS: INTERIOR FACES	3/4"	
EXPOSED TO EARTH OR WEATHER	1 1/2"	(#5 AND SMALLER)
	2"	(#6 AND LARGER)
FOOTING, PILE CAP, GRADE BEAM BOTTOM BARS	3"	(CAST AGAINST EARTH)
TOP BARS	1 1/2"	
	2"	(#6 AND LARGER WHERE EXPOSED TO EARTH OR WEATHER)
SIDE BARS	2"	

WELDING OF REINFORCING, WHERE APPROVED BY THE ARCHITECT, SHALL BE PERFORMED USING LOW HYDROGEN ELECTRODES AND PREHEATED IN ACCORDANCE WITH AWS D1.4, REINFORCING STEEL WELDING CODE. WELDERS AND WELDING PROCEDURES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS D1.4. MATERIALS SHALL CONFORM TO THE FOLLOWING:

REINFORCING BARS TO BE WELDED	ASTM A 706, GRADE 60, LOW ALLOY
WELDING ELECTRODES	E80XX

NONSHRINK GROUT
BASE PLATE GROUT SHALL BE NONSHRINK TYPE WITH MINIMUM f'c = 8,000 PSI. ALL OTHER NONSHRINK GROUT SHALL HAVE MINIMUM f'c = 5,000 PSI.

REINFORCING ALLOWANCE
THE CONTRACTOR SHALL PROVIDE 2,000 LINEAR FEET OF #4 REINFORCING STEEL FOR THE ENGINEER TO USE AT THEIR DISCRETION DURING CONSTRUCTION. THE CONTRACTOR SHALL REIMBURSE THE OWNER FOR THE UNUSED PORTION.

ANCHORS

POST-INSTALLED ANCHORS
PROVIDE POST-INSTALLED ANCHORS PER THE FOLLOWING SCHEDULE UNLESS NOTED OTHERWISE:

ANCHORS IN CONCRETE

ANCHOR TYPE	APPROVED ANCHOR(S)	EVALUATION REPORT
ADHESIVE	HILTI HIT-RE 500 SD	ICC-ES ESR-2322
MECHANICAL	HILTI KWIK BOLT TZ2	ICC-ES ESR-4266

ADHESIVE REINFORCING DOWEL MATERIALS

ADHESIVE REINFORCING DOWELS (ARD)	ASTM A 615, GRADE 60
THREADED ARD	ASTM F 1554, GRADE 36 (CARBON STEEL)
	ASTM A193 B8M CLASS 1 (STAINLESS)

ANCHOR EMBEDMENT DEPTHS LISTED SHALL BE CONSIDERED EFFECTIVE EMBEDMENT DEPTHS AS DEFINED IN THE ICC-ES OR IAPMO UES EVALUATION REPORTS. PROVIDE ANCHOR LENGTH AND HOLE PER EVALUATION REPORT TO ACCOMMODATE THE EFFECTIVE EMBEDMENT SPECIFIED IN THESE DRAWINGS. SEE DETAIL 11/S4.01

MECHANICAL AND ADHESIVE ANCHORS SHALL BE ZINC PLATED CARBON STEEL UNLESS NOTED OTHERWISE. MECHANICAL AND ADHESIVE ANCHORS EXPOSED TO WEATHER SHALL BE STAINLESS STEEL.

DO NOT DAMAGE EXISTING REINFORCEMENT. IF LOCATION OF REINFORCEMENT IS UNKNOWN, SCAN FOR EXISTING REINFORCING STEEL PRIOR TO DRILLING.

USE OF ALTERNATE PRODUCTS, OR OF POST-INSTALLED ANCHORS AT LOCATIONS NOT SHOWN IN THESE DRAWINGS, IS SUBJECT TO THE APPROVAL OF THE ARCHITECT. SUBMIT PROPOSED ANCHORS TO THE ARCHITECT WITH AN ICC-ES OR IAPMO UES REPORT VALID FOR THE 2018 IBC AND DOCUMENTATION SHOWING THAT THE ALTERNATE PRODUCTS PROVIDE EQUIVALENT CAPACITY FOR ALL CONDITIONS IN THIS PROJECT. SUBMITTED ICC-ES AND IAPMO UES REPORTS SHALL DEMONSTRATE THAT THE ANCHORS ARE SUITABLE FOR USE IN CRACKED CONCRETE. WHERE ANCHORS RESIST SEISMIC LOADS OR SUSTAINED TENSION, SUBMITTED ICC-ES AND IAPMO UES REPORTS SHALL DEMONSTRATE THAT THE ANCHORS ARE SUITABLE FOR THE RESISTANCE OF SEISMIC LOADS OR SUSTAINED TENSION (AS APPLICABLE). DOCUMENTATION OF CAPACITY FOR ALTERNATE PRODUCTS MUST BE INCLUDED AS A DEFERRED SUBMITTAL.

ADHESIVES SHALL NOT BE INSTALLED PRIOR TO THE CONCRETE REACHING AN AGE OF 21 DAYS AS REQUIRED BY ACI 318.

ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED TO SUPPORT SUSTAINED TENSION LOADS SHALL BE INSTALLED BY PERSONNEL CERTIFIED BY THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM, OR EQUIVALENT PROGRAM.

WELDED HEADED STUDS, WELDED THREADED STUDS, AND DEFORMED BAR ANCHORS
ALL STUDS AND DEFORMED BAR ANCHORS (DBA) SHALL BE AUTOMATICALLY END WELDED IN SHOP OR FIELD WITH EQUIPMENT RECOMMENDED BY MANUFACTURER WITH LENGTH AFTER WELD AS SHOWN ON THE STRUCTURAL DRAWINGS.

TYPE	MATERIAL	SIZE
WELDED HEADED STUDS	AWS D1.1 TYPE B	3/4"Ø UNLESS NOTED OTHERWISE
WELDED THREADED STUDS	AWS D1.1 TYPE A	PER DETAILS
DEFORMED BAR ANCHORS	ASTM A 1064	1/2"Ø UNLESS NOTED OTHERWISE

STRUCTURAL STEEL

REFERENCE SPECIFICATIONS

STRUCTURAL STEEL	AISC 360 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
HIGH STRENGTH BOLTS	RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS"
WELDING	AWS D1.1, TYPICAL AWS D1.3 FOR STEEL DECK AND COLD-FORMED FRAMING AWS D1.8 FOR SUPPLEMENTAL SEISMIC PROVISIONS AWS PREQUALIFIED JOINT DETAILS
WELDER CERTIFICATION	AMERICAN WELDING SOCIETY (AWS)
STEEL JOISTS AND BRIDGING	SJI STANDARD SPECIFICATIONS
STEEL DECKING	ANSI/SDI C "STANDARD FOR COMPOSITE STEEL FLOOR DECK-SLABS" ANSI/SDI RD "STANDARD FOR STEEL ROOF DECK" AISI S100 "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS"

STEEL MATERIALS

WIDE FLANGE SHAPES (W AND WT)	ASTM A 992
PLATES (PL), BARS	ASTM A 36 TYPICAL, ASTM A 572 GRADE 50 WHERE NOTED
ANGLES (L), CHANNELS (C AND MC)	ASTM A 36
STRUCTURAL TUBES (HSS)	ASTM A 500, GRADE C
STEEL PIPE	ASTM A 53, GRADE B
STEEL PIPE PILES	ASTM A 252, GRADE **3 (MOD)** FY = **60 KSI**
STRUCTURAL BOLTS	ASTM F 3125, GRADE A 325
ANCHOR RODS	ASTM F 1554, GRADE **36** UNLESS NOTED OTHERWISE
THREADED RODS	ASTM A 36, UNLESS NOTED OTHERWISE
WELDING ELECTRODES	70 KSI, LOW HYDROGEN, TYPICAL 60 KSI, MINIMUM, STEEL DECK

STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION SHALL CONFORM TO THE REQUIREMENTS OF IBC CHAPTER 22. ALL MEMBERS ARE TO BE ERECTED WITH NATURAL MILL CAMBER OR INDUCED CAMBER UP, UNLESS OTHERWISE NOTED ON THE PLANS. SUBSTITUTION OF MEMBER SIZES OR STEEL GRADE WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL BY THE ARCHITECT. A MINIMUM OF TWO BOLTS IS REQUIRED FOR ALL BEAM CONNECTIONS. ALTERNATIVE CONNECTIONS TO THOSE SHOWN ON THESE DRAWINGS WILL REQUIRE PRIOR APPROVAL BY THE ARCHITECT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE, BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES AND OTHER AIDS, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS VALUES, AND UNEQUAL PARTS.

PROTECTION OF STEEL
STRUCTURAL STEEL AND CONNECTIONS, INCLUDING PLATES AND OTHER STEEL ITEMS EMBEDDED IN CONCRETE, WHICH ARE EXPOSED TO WEATHER AND NOT TO BE PAINTED ACCORDING TO THE ARCHITECT, SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN COMPLIANCE WITH ASTM A 123. ALL FIELD WELDS ON GALVANIZED MATERIAL SHALL BE COATED WITH BRUSH APPLIED ZINC-RICH PAINT COMPLYING WITH THE SPECIFICATIONS.

STRUCTURAL STEEL AND CONNECTIONS SHALL BE FIREPROOFED WHERE REQUIRED BY THE ARCHITECT. PRIMARY AND SECONDARY STRUCTURE ARE TO BE AS DEFINED BY THE IBC. STRUCTURAL MEMBERS SHALL BE ASSUMED TO BE IN A THERMAL UNRESTRAINED CONDITION FOR THE PURPOSES OF DETERMINING FIREPROOFING THICKNESS. UL DESIGN SHALL BE IN ACCORDANCE WITH LRFD DESIGN METHODOLOGY.

WHERE SPRAY-APPLIED CEMENTITIOUS FIREPROOFING IS EXPOSED TO WEATHER, STRUCTURAL STEEL SHALL BE CONSIDERED EXPOSED TO WEATHER, AND SHALL BE PROTECTED ACCORDINGLY.

ALL COATINGS ARE TO FOLLOW THE SPECIFICATIONS AND PRODUCT MANUFACTURER'S INSTRUCTIONS.

WELDING
ALL WELDING SHALL BE IN CONFORMANCE WITH AISC AND AWS STANDARDS, AND SHALL BE PERFORMED BY **AWS-WABO**-CERTIFIED WELDERS. ONLY WELDS THAT ARE PREQUALIFIED, AS DEFINED BY AWS, OR QUALIFIED BY TESTING SHALL BE USED. SHOP DRAWINGS SHALL SHOW ALL WELDING WITH AWS A2.4 SYMBOLS. WELDS SHOWN ON THE DRAWINGS ARE MINIMUM SIZES. INCREASE WELD SIZE TO AWS MINIMUM SIZES BASED ON THICKNESS. MINIMUM WELD SIZE SHALL BE 3/16-INCH, UNLESS NOTED OTHERWISE. THE WELDS SHOWN ARE FOR THE FINAL CONNECTIONS. FIELD WELD SYMBOLS ARE SHOWN WHERE FIELD WELDS ARE REQUIRED BY THE STRUCTURAL DESIGN. WHERE FIELD WELD IS NOT INDICATED, THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING IF A WELD SHOULD BE SHOP OR FIELD-WELDED IN ORDER TO FACILITATE THE STRUCTURAL STEEL ERECTION.

WELDING OF THE SEISMIC FORCE-RESISTING SYSTEM SHALL BE EXECUTED IN ACCORDANCE WITH THE PROVISIONS OF AWS D1.8 "STRUCTURAL WELDING CODE - SEISMIC SUPPLEMENT". WELDS ASSOCIATED WITH THE SEISMIC FORCE-RESISTING SYSTEM ARE IDENTIFIED WITHIN THESE DRAWINGS AS FOLLOWS:

NOTE WITHIN WELD TAIL	
D1.8	INDICATES WELDS SUBJECT TO REQUIREMENTS OF D1.8
D1.8-DCW	INDICATES DEMAND CRITICAL WELDS SUBJECT TO ADDITIONAL SPECIFIC REQUIREMENTS WITHIN D1.8

THE LOWEST ANTICIPATED SERVICE TEMPERATURE IS 30 DEGREES FAHRENHEIT FOR DETERMINATION OF REQUIRED CHARPY V-NOTCH TOUGHNESS LEVEL.

STEEL DECK

STEEL DECK SHALL CONFORM TO ASTM A 653. WHERE THE DECK IS LEFT PERMANENTLY EXPOSED, GALVANIZED COATING SHALL CONFORM TO ASTM A 924, G90. IN OTHER AREAS, GALVANIZED COATING SHALL CONFORM TO ASTM A 924, G60. STEEL DECK SHALL CONFORM TO THE FOLLOWING:

f_y (PSI)	USE
40,000 MINIMUM	COMPOSITE FLOOR/ROOF SLAB DECK
33,000 MINIMUM	NONCOMPOSITE STEEL ROOF DECK

MINIMUM DECK GAUGES ARE SHOWN ON PLANS AND ARE BASED ON 3-SPAN, UNSHORED CONDITIONS. HEAVIER DECK GAUGES MAY BE REQUIRED FOR CONDITIONS OTHER THAN THESE, DEPENDING ON MANUFACTURER'S AND CONTRACTOR'S LAYOUT. DECK SUPPLIER SHALL VERIFY DECK GAUGES AND CAPACITIES BASED ON ACTUAL DECK LAYOUT AND SPAN CONDITIONS INCLUDING A 3 PSF SUPERIMPOSED DEAD LOAD ALLOWANCE FOR THE STEEL ROOF DECK. DEVIATIONS IN DECK GAUGES FROM THOSE SHOWN SHALL BE SUBMITTED TO THE ARCHITECT, ALONG WITH A VALID ICC REPORT FOR APPROVAL PRIOR TO SHOP DETAILING.

DECK WELDING SHALL BE IN ACCORDANCE WITH AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL." ARC SPOT WELD SIZES NOTED ARE BASED ON THE NOMINAL (VISIBLE) DIAMETER.

CONTRACTOR SHALL PROVIDE CLOSURE PLATES, FLASHING, AND ALL MISCELLANEOUS COLD-FORMED FRAMING NECESSARY TO COMPLETE THE WORK. THE MINIMUM BEARING SHALL BE 2 INCHES.

COMPOSITE FLOOR/ROOF STEEL DECK
STEEL FLOOR DECK SHALL BE A COMPOSITE TYPE DECK WITH RIBS AT 12 INCHES ON CENTER OF THE SIZE AND GAUGE SHOWN ON THE PLANS AND DETAILS, OR AN APPROVED EQUAL. ELECTRICAL CONDUIT SHALL NOT BE EMBEDDED IN COMPOSITE FLOORS.

FLOOR DECK FASTENING SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE, AND EXCEPT AS INDICATED IN TYPICAL COMPOSITE BEAM DETAILS.

MIN 5/8-INCH DIAMETER ARC-SPOT WELDS AT 12 INCHES ON CENTER AT TRANSVERSE AND PERIMETER SUPPORTS

MIN 5/8-INCH DIAMETER ARC-SPOT WELDS AT 18 INCHES ON CENTER AT LONGITUDINAL SUPPORTS

BUTTON PUNCH OR 1 1/2-INCH TOP OR SIDE SEAM WELD AT 18 INCHES ON CENTER AT SIDE LAP CONNECTIONS

WOOD

WOOD CONSTRUCTION SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 23.

SAWN LUMBER
SAWN LUMBER SHALL CONFORM TO THE LATEST EDITION OF "GRADING AND DRESSING RULES" BY WCLIB OR "WESTERN LUMBER GRADING RULES" BY WWPA. LUMBER SHALL BE SEASONED DRY WITH A MAXIMUM MOISTURE CONTENT OF 19% AND BE THE SPECIES AND GRADE SPECIFIED BELOW.

USE	GRADE	F_b (PSI) (SINGLE USE)
WALL STUDS		
2" TO 4" THICK, 2" AND WIDER	HEM-FIR STUD GRADE	675
	DOUGLAS FIR-LARCH STUD GRADE	700
	DOUGLAS FIR-LARCH NO. 2	900
PLANKING & PLATES		
2" TO 4" THICK, 2" AND WIDER	HEM-FIR NO. 2	850
	DOUGLAS FIR-LARCH NO. 2	900
JOISTS & RAFTERS		
2" TO 4" THICK, 2" AND WIDER	HEM-FIR NO. 2	850
	DOUGLAS FIR-LARCH NO. 2	900
BEAMS & STRINGERS		
5"x5" AND LARGER	DOUGLAS FIR-LARCH NO. 1	1,350
POSTS		
5"x5" AND LARGER	DOUGLAS FIR-LARCH NO. 1	1,200
4"X4"	DOUGLAS FIR-LARCH NO. 1	1,000

GLUED-LAMINATED TIMBER
GLUED-LAMINATED TIMBER SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI/AITC A190.1 "STRUCTURAL GLUED LAMINATED TIMBER". APPLY ONE COAT OF PENETRATING END SEALER IMMEDIATELY AFTER TRIMMING IN SHOP OR FIELD. MEMBERS SHALL BE VISUALLY GRADED WESTERN SPECIES MANUFACTURED WITH FRAMING APPEARANCE GRADE AND WITH LAYUP COMBINATION AS FOLLOWS.

TYPE	COMBINATION SYMBOL	SPECIES	USES
BEAMS	24F-V4	DF/DF	SIMPLE SPAN
	24F-V8	DF/DF	CONTINUOUS OR CANTILEVER SPAN
COLUMNS	COMBINATION 3	DF	ALL
TRUSSES	COMBINATION 3	DF	ALL
PITCHED AND CURVED BEAMS	24F-V8	DF/DF	ALL

STRUCTURAL COMPOSITE LUMBER
STRUCTURAL COMPOSITE LUMBER PRODUCTS SHALL BE OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS AND MANUFACTURED BY TRUS JOIST OR APPROVED EQUAL. MEMBERS SHALL HAVE THE FOLLOWING MINIMUM DESIGN PROPERTIES:

TYPE	MODULUS OF ELASTICITY (PSI)	ALLOWABLE FLEXURAL STRESS (PSI)
PSL (COL)	1,800,000	2,400
PSL (BEAM)	2,000,000	2,900
LVL	2,000,000	2,600
LSL	1,300,000	1,700
LSL	1,550,000	2,325

FLEXURAL STRESSES NOTED ABOVE ARE FOR A 12-INCH MEMBER. DEEPER MEMBERS SHALL BE DESIGNED FOR REDUCED STRESSES PER THE MANUFACTURER'S REQUIREMENTS.

PRODUCT SUBSTITUTION REQUESTS SHALL INCLUDE AN ICC-ES OR IAPMO-UES REPORT VALID FOR THE 2018 IBC. PRODUCT SUBSTITUTIONS SHALL BE DEMONSTRATED TO HAVE EQUIVALENT STRENGTH, STIFFNESS, AND ALLOWABLE SPACING OF FASTENERS WITHOUT ALTERING THE STRUCTURAL DESIGN. WHERE SUBSTITUTION REQUESTS INVOLVE ALTERING THE STRUCTURAL DESIGN, THE SUBSTITUTION REQUEST SHALL INCLUDE THE SEAL AND SIGNATURE OF THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN.

WOOD I-JOISTS
WOOD I-JOISTS SHALL BE MANUFACTURED BY TRUS JOIST OR APPROVED EQUAL. JOISTS SHALL BE OF THE SIZE AND PROFILE SHOWN ON THE DRAWINGS. JOISTS SHALL BE COMPATIBLE WITH THE LOAD, DIMENSIONAL, AND FIRE RATING REQUIREMENTS OF THE PROJECT.

PRODUCT SUBSTITUTION REQUESTS SHALL INCLUDE AN ICC-ES OR IAPMO-UES REPORT VALID FOR THE 2018 IBC. PRODUCT SUBSTITUTIONS SHALL BE DEMONSTRATED TO HAVE EQUIVALENT STRENGTH, STIFFNESS, AND ALLOWABLE SPACING OF FASTENERS WITHOUT ALTERING THE STRUCTURAL DESIGN. **PERCEIVED FLOOR PERFORMANCE SHALL BE DEMONSTRATED TO BE EQUIVALENT TO A TJ-PRO RATING OF 55.** WHERE SUBSTITUTION REQUESTS INVOLVE ALTERING THE STRUCTURAL DESIGN, THE SUBSTITUTION REQUEST SHALL INCLUDE THE SEAL AND SIGNATURE OF THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN.

JOISTS SHALL BE SUPPLIED WITH THE PROPER END CONNECTIONS, WEB STIFFENERS, BRIDGING, AND BRACING TO PROVIDE LATERAL STABILITY OF ALL JOISTS. HANGERS SHALL BE PROVIDED BY THE JOIST SUPPLIER WHERE SUPPORT CONDITIONS REQUIRE THEM. WELDABLE HANGERS SHALL BE PROVIDED WHERE HANGERS ATTACH TO STEEL MEMBERS.

WOOD STRUCTURAL PANELS
WOOD STRUCTURAL PANELS SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF DOC PS 1 OR DOC PS 2. SHEATHING SHALL BE AS FOLLOWS:

ROOF SHEATHING
15/32 CATEGORY APA RATED SHEATHING, 32/16, EXPOSURE 1
19/32 CATEGORY APA RATED SHEATHING, 40/20, EXPOSURE 1
23/32 CATEGORY APA RATED SHEATHING, 48/24, EXPOSURE 1
19/32 CATEGORY APA A-C, GROUP 1, EXTERIOR

SUBFLOORING SHEATHING (TONGUE AND GROOVE, UNLESS EDGES BLOCKED)
19/32 CATEGORY APA RATED SHEATHING, 40/20, EXPOSURE 1
23/32 CATEGORY APA RATED SHEATHING, 48/24, EXPOSURE 1
1-1/8 CATEGORY APA RATED STURD-I-FLOOR 24OC, EXPOSURE 1

SHEAR WALL SHEATHING
15/32 CATEGORY APA RATED SHEATHING, 32/16, EXPOSURE 1
19/32 CATEGORY APA STRUCTURAL 1 RATED SHEATHING, 40/20, EXPOSURE 1

ALL ROOF SHEATHING AND SUBFLOORING SHALL BE INSTALLED WITH THE LONG DIMENSION PERPENDICULAR TO SUPPORTS, UNLESS NOTED OTHERWISE, AND WITH THE PANELS CONTINUOUS OVER TWO OR MORE SUPPORTS. INSTALL WITH 1/8" GAP BETWEEN PANELS. FLOOR DIAPHRAGM AND SHEAR WALL NAILS SHALL BE DRIVEN FLUSH, BUT SHALL NOT FRACTURE THE SURFACE OF THE SHEATHING.

TIMBER FASTENERS AND CONNECTORS
WOOD CONNECTORS SHALL BE SIMPSON STRONG-TIE AS SPECIFIED IN CATALOG NO. C-C-2022, OR APPROVED EQUAL. INSTALL CONNECTORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS WITH NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY THE MANUFACTURER. WHERE CONNECTOR STRAPS CONNECT TWO MEMBERS, PLACE ONE-HALF OF THE FASTENERS IN EACH MEMBERS. ALL BOLTS IN WOOD MEMBERS SHALL CONFORM TO ASTM A 307. PROVIDE STANDARD WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD. ALL SHIMS SHALL BE SEASONED DRY AND BE THE SAME GRADE (MIN) AS THE MEMBERS CONNECTED. ALL JOISTS SHALL BE CONNECTED TO FLUSH BEAMS WITH LU SERIES JOIST HANGERS, UNLESS NOTED OTHERWISE. ALL DOUBLE AND TRIPLE-JOIST BEAMS SHALL BE CONNECTED TO FLUSH BEAMS WITH U SERIES HANGERS, UNLESS NOTED OTHERWISE.

ALL FRAMING NAILS SHALL HAVE THE SIZE AND MINIMUM LENGTH AS SPECIFIED IN THE FOLLOWING TABLE, UNLESS NOTED OTHERWISE. NAIL TYPE SHALL BE COMMON UNLESS NOTED OTHERWISE. POWER-DRIVEN NAILS AND STAPLES SHALL BE IN ACCORDANCE ICC-ES ESR-1539. NAILING NOT SHOWN SHALL BE AS INDICATED IN IBC TABLE 2304.10.1. SEE 7/S6.02 AND 11/S6.02FOR NAIL SIZES AT SHEAR WALL AND ROOF/FLOOR DIAPHRAGM SHEATHING, RESPECTIVELY.

FRAMING NAILS

TYPE MARK	TYPE	SHANK DIAMETER	MINIMUM LENGTH
8d	COMMON	0.131"	2 1/2"
10d	COMMON	0.148"	3"
16d	COMMON	0.162"	3 1/2"
16d-SHORT	SHORT	0.131"	3 1/4"

POWER-DRIVEN NAILS MAY BE SUBSTITUTED FOR COMMON NAILS AT SPACING AS FOLLOWS. SUBSTITUTIONS FOR NAIL SIZE, SPACING, OR QUANTITY NOT SHOWN REQUIRE APPROVAL.

ALTERNATE NAILING SCHEDULE

FASTENER TYPE	SHANK DIAMETER	LENGTH	SPACING						
8d COMMON	0.131"	2 1/2"	16"	12"	8"	6"	4"	3"	2"
16d SHORT	0.131"	3 1/4"	16"	12"	8"	6"	4"	3"	2"
10d COMMON	0.148"	3"	16"	12"	8"	6"	4"	3"	2"
16d SHORT	0.131"	3 1/4"	12"	10"	6"	4"	3"	2 1/2"	1 1/2"
16d COMMON	0.162"	3 1/2"	16"	12"	8"	6"	4"	3"	-
16d SHORT	0.131"	3 1/4"	10"	8"	5"	4"	2 1/2"	2"	-

ALL FASTENERS AND CONNECTORS IN CONTACT WITH PRESERVATIVE-TREATED LUMBER SHALL BE GALVANIZED WITH A MINIMUM COATING OF 1.85 OUNCES/SQUARE FOOT.

IDENTIFICATION
ALL SAWN LUMBER AND PREFABRICATED WOOD PRODUCTS SHALL BE IDENTIFIED BY A GRADE MARK OR CERTIFICATE OF INSPECTION ISSUED BY THE CERTIFYING AGENCY.

GLUED FLOOR AND ROOF SYSTEM
ALL HORIZONTAL SHEATHING SHALL BE GLUED TO FLOOR JOISTS, ROOF TRUSSES, ROOF JOISTS, RIM BOARDS, AND BLOCKING. THE FIELD-GLUED SYSTEM SHALL BE INSTALLED ACCORDING TO THE RECOMMENDATIONS OF THE APA. GLUE SHALL BE APPLIED TO THE SUPPORTING FRAMING AND TO THE GROOVE IN THE EDGE OF THE T&G PANELS. GLUE SHALL MEET THE REQUIREMENTS OF THE APA ADHESIVE SPECIFICATION AFG-01 AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

WOOD SHRINKAGE
THE ARCHITECTURAL, PLUMBING, ELECTRICAL, MECHANICAL, AND FIRE PROTECTION SYSTEMS SHALL BE DESIGNED TO ACCOUNT FOR THE CUMULATIVE VERTICAL SHRINKAGE DUE TO LUMBER DRYING AND CRUSHING DUE TO THE BUILDING SELF-WEIGHT. LUMBER DRYING SHRINKAGE IS BASED ON A MOISTURE CONTENT AT THE TIME OF PLACEMENT EQUAL TO 19% AND A FINAL MOISTURE CONTENT OF 9%.

PRESERVATIVE-TREATED WOOD
WOOD SHALL BE PROTECTED FROM DECAY AND TERMITES IN ACCORDANCE WITH IBC 2304.12. PRESERVATIVE-TREATMENTS SHALL CONFORM TO THE APPROPRIATE STANDARDS OF THE AWPA FOR SAWN LUMBER, GLUED-LAMINATED TIMBER, ROUND POLES, PILES, AND MARINE PILES AND SHALL BEAR A TREATMENT IDENTIFICATION MARK BY THE CERTIFYING AGENCY. THE SELECTED PRESERVATIVE-TREATMENT SHALL CONFORM TO THE "BEST MANAGEMENT PRACTICES" OF THE WWPI. ALL LUMBER IN CONTACT WITH CMU, CONCRETE, OR GROUND SURFACES SHALL BE PRESERVATIVE-TREATED. PRESERVATIVE TREATMENT SHALL NOT REDUCE ALLOWABLE DESIGN STRESSES.

DRAWING LIST

S0.01 STRUCTURAL NOTES, DRAWING LIST, SPECIAL INSPECTIONS
S0.02 STRUCTURAL ABBREVIATIONS AND SYMBOLS

S1.01 LOAD MAPS

S2.00 FOUNDATION PLAN
S2.01 MAIN LEVEL FRAMING PLAN
S2.02 UPPER LEVEL FRAMING PLAN
S2.03 UPPER ROOF FRAMING PLAN

S4.01 TYPICAL CONCRETE DETAILS
S4.02 TYPICAL CONCRETE DETAILS

S5.01 TYPICAL STEEL DETAILS

S6.01 TYPICAL WOOD DETAILS
S6.02 TYPICAL WOOD DETAILS
S6.03 TYPICAL WOOD DETAILS

SPECIAL INSPECTIONS AND TESTING SCHEDULE

ESTABLISHED PER IBC 2018 SECTION 110 AND CHAPTER 17

ITEM	IBC CODE	COMMENTS
SOILS		-
GRADING, EXCAVATION AND FILL	1705.6	BY GEOTECHNICAL ENGINEER
FINAL FOUNDATION PREPARATION		BY GEOTECHNICAL ENGINEER
DRIVEN DEEP FOUNDATION ELEMENTS	1705.7	BY GEOTECHNICAL ENGINEER
CAST-IN-PLACE DEEP FOUNDATION ELEMENTS	1705.8	BY GEOTECHNICAL ENGINEER
HELICAL PILE FOUNDATION ELEMENTS	1705.9	BY GEOTECHNICAL ENGINEER
MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS	1807.2	BY GEOTECHNICAL ENGINEER
TENSION ANCHORS	1705.1.1	BY GEOTECHNICAL ENGINEER
CONCRETE	1705.3	-
POST-INSTALLED ADHESIVE ANCHORS		-
POST-INSTALLED MECHANICAL ANCHORS		-
EMBEDDED PLATES		-
POST-TENSIONED CONCRETE		-
SHOTCRETE		-
STRUCTURAL STEEL	1705.2	-
FABRICATION AND ERECTION		-
HIGH STRENGTH BOLTING		-
WELDING		-
STEEL DECK	1705.2.2	-
WOOD	-	-
PREFABRICATED STRUCTURAL ELEMENTS	1704.2.5	-
HIGH-LOAD DIAPHRAGMS	1705.5.1	-
PREFABRICATED WOOD SHEAR PANELS	1703.4	-
SEISMIC RESISTANCE	1705.12	-
SEISMIC - CONCRETE	1705.12, 1705.13	-
SEISMIC - STEEL	1705.12.1, 1705.13.1	-
SEISMIC - WOOD	1705.12.2	-
WIND RESISTANCE	1705.11.3	-
WIND - WOOD	1705.11.1	-
PRE-ENGINEERED STRUCTURES	1705.1.1	-

SPECIAL INSPECTIONS AND TESTING NOTES:
1. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. INSPECTION REQUIREMENTS FOR SYSTEMS DESIGNED BY OTHERS SHALL BE DEFINED BY THE REGISTERED DESIGN PROFESSIONAL RESPONSIBLE FOR THEIR DESIGN. SPECIAL INSPECTION TESTING REQUIREMENTS APPLY TO ALL BIDDER-DESIGNED COMPONENTS.

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PERMIT
09/08/2023

title:
STRUCTURAL NOTES, DRAWING LIST, SPECIAL INSPECTIONS

sheet:
S0.01

STRUCTURAL ABBREVIATIONS

AB	ANCHOR BOLT
ADD'L	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
AFF	ABOVE FINISH FLOOR
AGG	AGGREGATE
ANCH	ANCHOR
ARCH	ARCHITECTURAL
ARD	ADHESIVE REINFORCING DOWEL
B/	BOTTOM OF
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BN	DIAPHRAGM BOUNDARY NAILING
BOT	BOTTOM
BRG	BEARING
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT-UP ROOF
C	CAMBER
CAP	CAPACITY
CC	CENTER TO CENTER
CDF	CONTROLLED DENSITY FILL
CFS	COLD-FORMED STEEL
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION OR CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CLT	CROSS-LAMINATED TIMBER
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CONTY	CONTINUITY
COORD	COORDINATE
CTR	CENTER
CY	CUBIC YARD
DB	DIVIDER BEAM
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DCW	DEMAND CRITICAL WELD
DEMO	DEMOLISH
DET	DETAIL
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DKG	DECKING
DN	DOWN
DO	DITTO
DWF	DEFORMED WIRE FABRIC
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EL	ELEVATION
ELECT	ELECTRICAL
ELEV	ELEVATOR
EN	PANEL EDGE NAILING
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EX	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	FAHRENHEIT
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISH FLOOR
FIN	FINISH
FLG	FLANGE
FLR	FLOOR
FOB	FACE OF BUILDING
FS	FAR SIDE
FT	FEET
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GEN	GENERAL
GL	GLUED LAMINATED TIMBER
GOVT	GOVERNMENT
GR	GRADE
GWB	GYPSUM WALL BOARD
HF	HEM-FIR
HGR	HANGER
HK	HOOK
HORIZ	HORIZONTAL
HP	HIGH POINT
HSS	HOLLOW STRUCTURAL SECTION
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IN	INCH
INFO	INFORMATION
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIP (1,000 LBS.)
KSF	KIPS PER SQUARE FOOT
LF	LINEAL FOOT
LFH	LONG FACE HORIZONTAL
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNGT	LONGITUDINAL
LP	LOW POINT
LSL	LAMINATED STRAND LUMBER
LVL	LAMINATED VENEER LUMBER
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOM	MOMENT
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NS	NONSHRINK
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
P	POST
PAF	POWER ACTUATED FASTENER
PC	PIECE
PC	PILE CAP
PEN	PENETRATION
PJP	PARTIAL JOINT PENETRATION
PL	PROPERTY LINE
PL	PLATE
PLWD	PLYWOOD
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POST-TENSIONED
PT	PRESERVATIVE-TREATED
PWT	PREFABRICATED WOOD TRUSS
R	RADIUS
RD	ROOF DRAIN
REINF	REINFORCING
REM	REMAIN(DER)
REQ'D	REQUIRED
RND	ROUND
RO	ROUGH OPENING
RTN	RETURN
SC	SLIP CRITICAL
SCHED	SCHEDULE
SDCI	SEATTLE DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
SDQ	SPECIAL DUCTILE QUALITY
SECT	SECTION
SFRS	SEISMIC FORCE-RESISTING SYSTEM
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SOG	SLAB-ON-GRADE
SP	SPACE
SPEC	SPECIFICATION
SQ	SQUARE
SST	STAINLESS STEEL
ST	SUSTAINED TENSION ANCHOR
STD	STANDARD
STIFF	STIFFENER
STIRR	STIRRUP
STL	STEEL
STRUCT	STRUCTURAL
SUPP	SUPPORT
SYM	SYMMETRICAL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T/	TOP OF
TB	TABLE
THK	THICK(NESS)
THRU	THROUGH
TRANS	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UT	ULTRASONIC TESTING
VERT	VERTICAL
VIF	VERIFY IN FIELD
W	W-SHAPE
W/	WITH
W/O	WITHOUT
WD	WOOD
WHS	WELDED HEADED STUD
WL	WATER LINE
WP	WORK POINT
WSBC	WASHINGTON STATE BUILDING CODE

STRUCTURAL DRAWING SYMBOLS

CONCRETE SYMBOLS

CONCRETE COLUMN ABOVE OR PASSING THROUGH THIS LEVEL

CONCRETE COLUMN BELOW

REINFORCING TYPE

STEPPED FOOTING (LOW SIDE)

CONCRETE WALL ABOVE OR PASSING THROUGH LEVEL

PARTIAL HEIGHT CONCRETE WALL

MASONRY WALLS

CONCRETE IN CROSS SECTION

EXISTING CONCRETE IN CROSS SECTION

STEEL SYMBOLS

STEEL COLUMN ABOVE OR PASSING THROUGH THIS LEVEL

STEEL COLUMN BELOW THIS LEVEL

COLUMN SPLICE PER FRAME ELEVATIONS

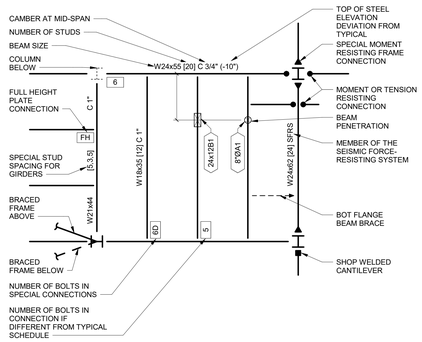
COLUMN SPLICE TYPE (A)

DOUBLER PLATE PER FRAME ELEVATIONS (D 1/2")

STIFFENER PLATES PER FRAME ELEVATIONS (S 3/4")

BOTH DOUBLER & STIFFENER PLATES (D 1/2", S 3/4")

STEEL IN CROSS SECTION



GENERAL SYMBOLS

GRID BUBBLE (10)

SURFACE - SLOPE UP

SURFACE - STEPPED

SURFACE - SLOPE DOWN

SURFACE - SLOPE TWO WAYS

UNDISTURBED SOIL, COMPACTED SOIL, BACKFILL, OR ANY PREPARED SUBGRADE. SEE SPECIFICATIONS FOR TYPE OF MATERIAL AND PREPARATION METHOD.

NORTH ARROW (PLAN NORTH)

STANDARD SECTION CUTS (1 / S3.1)

BUILDING SECTION CUTS (1 / S3.1, 1 / S3.1)

ELEVATION OF WALL OR FRAME (1 / S3.1)

SPOT ELEVATION: TOP OF PLYWOOD, TOP OF CONCRETE, TOP OF STEEL (100'-0")

TOP OF CONCRETE ELEVATION (100'-0")

TOP OF STEEL ELEVATION (100'-0")

REFERENCE ELEVATION, REFER TO PLAN UNLESS NOTED OTHERWISE. (T/SLAB)

ELEVATION OF LEVEL (LEVEL 01)

WORKPOINT (WP)

DIRECTION OF DOWNWARD SLOPE

DIRECTION OF SPAN

EXISTING FRAMING

WOOD SYMBOLS

HINGE CONNECTION

GLULAM SECTION

ENGINEERED LUMBER SECTION (PSL, LSL, LVL)

SOLID WOOD SECTION

SOLID WOOD BLOCKING SECTION

BUNDLED STUDS, WOOD POST

PLYWOOD SECTION

BEAM / GIRDER / JOIST

WALL ABOVE THIS LEVEL WITH HEADER BELOW

WALL BELOW THIS LEVEL WITH HEADER BELOW

WALL ABOVE THIS LEVEL

WALL BELOW THIS LEVEL

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revisions:

no.:	date:	description:

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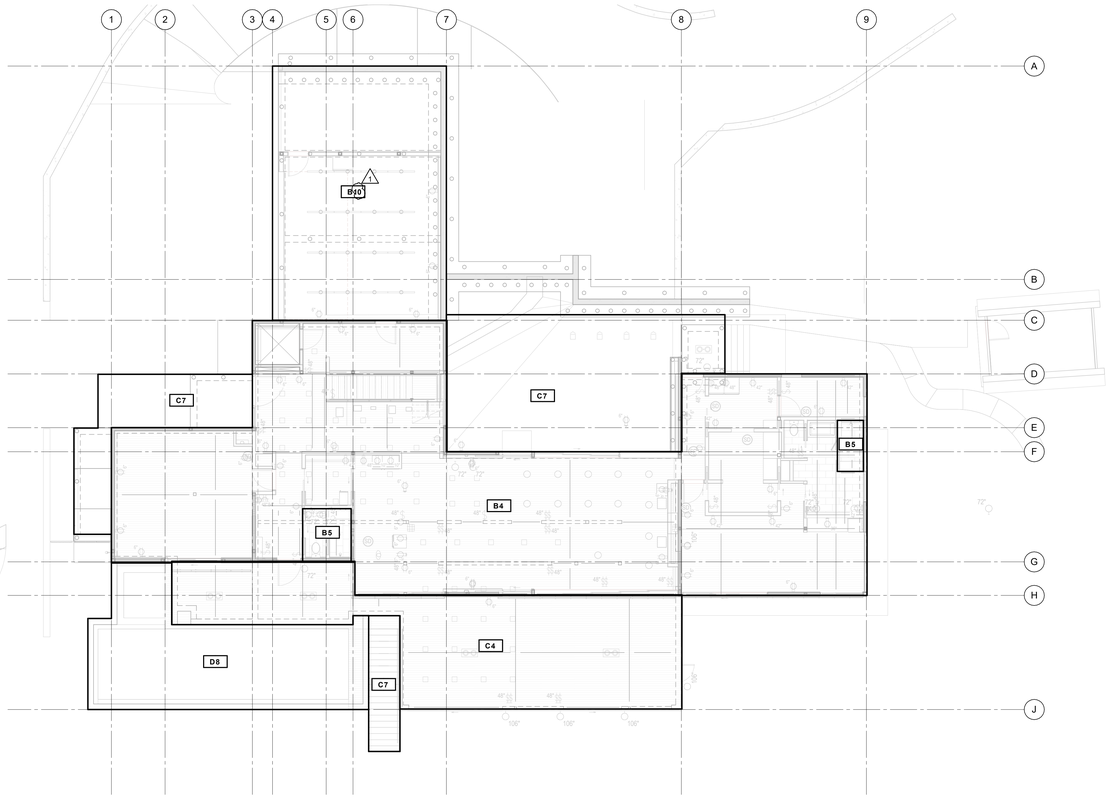
09/08/2023

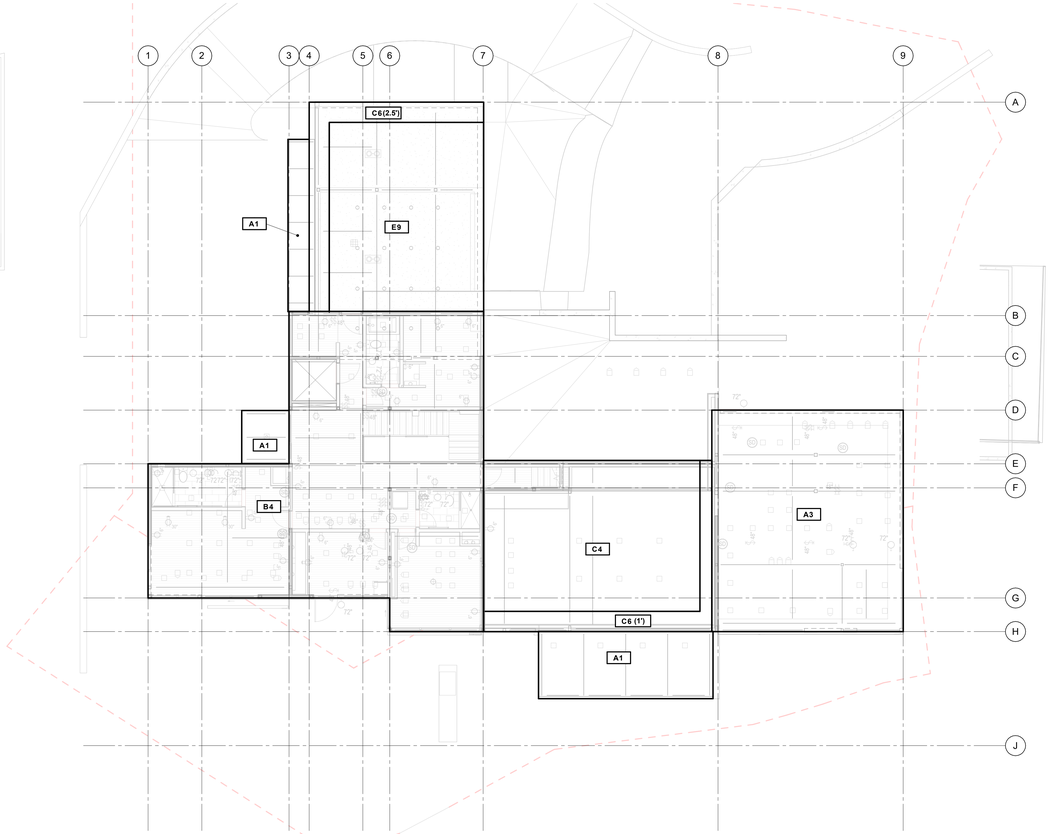
title:
STRUCTURAL ABBREVIATIONS AND SYMBOLS

sheet:
S0.02

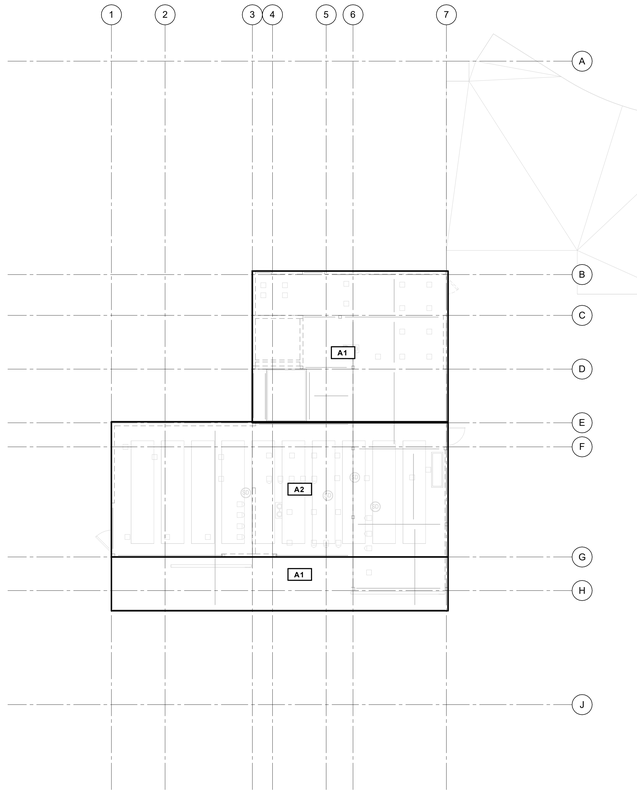
1 LOAD MAP - BASEMENT LEVEL
1/8" = 1'-0"



2 LOAD MAP - MAIN LEVEL
1/8" = 1'-0"



3 LOAD MAP - UPPER LEVEL
1/8" = 1'-0"



4 LOAD MAP - UPPER ROOF
1/8" = 1'-0"

LIVE LOAD SCHEDULE

TYPE MARK	DESCRIPTION	LOAD, PSF (R=REDUCIBLE)	TYPE COMMENTS
A	ROOF	20 (R) LIVE 25 SNOW	-
B	INTERIOR RESIDENTIAL	40 (R)	-
C	EXTERIOR TERRACE	60 (R) LIVE 25 SNOW	-
D	POOL	60 (R)	-
E	ELEVATED PARKING	250	-

SUPERIMPOSED DEAD LOAD SCHEDULE

TYPE MARK	DESCRIPTION	LOAD, PSF	TYPE COMMENTS
1	TYPICAL ROOF	14	-
2	ROOF WITH SOLAR PV ARRAY	16	NOTE 7
3	GREEN ROOF	44	-
4	WOOD FRAMED FLOOR	13	-
5	WOOD FRAMED FLOOR WITH TILE	24	-
6	PLANTER	133	-
7	FLOOR AT GRADE	5	-
8	POOL, 4'-0" WATER HEIGHT	270	-
9	4" TOPPING SLAB	55	-
10	5 1/2" AVERAGE TOPPING SLAB	74	-

LOAD SCHEDULE NOTES:

1. A1 (1') — INDICATES LIVE LOAD AND SUPERIMPOSED LOAD PER SCHEDULES. LOADING OCCURS WITHIN REGIONS BOUND BY BOLD LINES.
   - 1 — MAXIMUM DEPTH OF SOIL OR WATER, WHERE APPLICABLE
   - A1 — SUPERIMPOSED DEAD LOAD
   - 1 — LIVE LOAD
2. (R) INDICATES LIVE LOADS ARE REDUCED IN ACCORDANCE WITH BUILDING CODE PROVISIONS.
3. + 15 INDICATES 15 PSF NON REDUCIBLE PARTITION LOAD.
4. EXTERIOR BALCONIES AND DECKS ARE DESIGNED FOR 1.5 TIMES THE OCCUPANCY SERVED, 100 PSF MAXIMUM.
5. WHERE EQUIPMENT WEIGHTS EXCEED 150 PSF, FLOORS ARE DESIGNED FOR ACTUAL EQUIPMENT WEIGHT + 4" HOUSEKEEPING PAD + 40 PSF IN OPEN AREAS.
6. REFER TO IBC TABLE 1607.1 FOR RELEVANT CONCENTRATED LIVE LOADS.
7. SDL INCLUDES 2 PSF FOR PV PANELS.
8. TOTAL SDL IS THE SOIL OR WATER DEPTH TIMES THE LISTED DENSITY IN PCF, PLUS THE ADDITIONAL SDL LISTED IN THE SCHEDULE.

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1	04/09/24	R2 PERMIT

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LOAD MAPS

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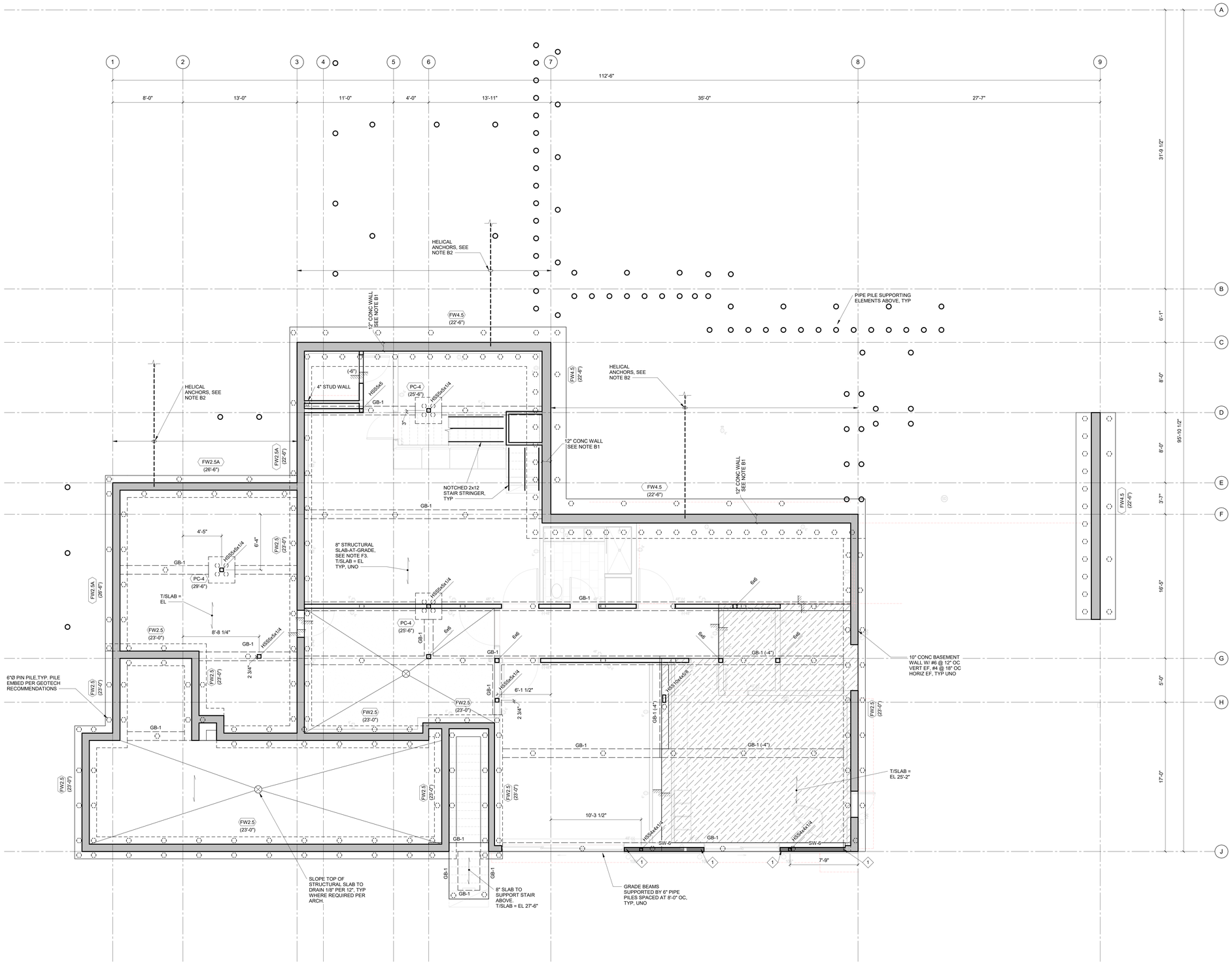
S1.01



1 FOUNDATION PLAN
1/4" = 1'-0"

GENERAL PLAN NOTES:

G1. REFERENCE DRAWINGS:
- S0.0X - STRUCTURAL NOTES, SPECIAL INSPECTION SCHEDULE, SYMBOLS AND ABBREVIATIONS
- S1.01- LOAD MAPS
- S4.0X - TYPICAL CONCRETE DETAILS
- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

FOUNDATION PLAN NOTES:

F1. SEE 6/S4.01 FOR BEAM SCHEDULE.
F2. SEE 1/S4.02 FOR CONTINUOUS FOOTING SCHEDULE.
F3. STRUCTURAL SLAB-AT-GRADE SHALL BE 6" THICK WITH #4's @ 10' OC T&B PRIMARY REINF, #4's @ 18" OC T&S REINFORCEMENT, UNO.
F4. (FW0 (99'-0")) INDICATES FOOTING TYPE AND BOTTOM OF FOOTING ELEVATION. SEE 1/S4.02 .
F5. (GB-X) INDICATES GRADE BEAM TYPE. SEE 6/S4.01.
F6. (PC-2) INDICATES PILE CAP PER 10/S4.02 .
F7. INDICATES AREA OF TOPPING SLAB OVER SLIP MEMBRANE.
F8. INDICATES AREA OF 4" SLAB OVER EPS GEOFOAM.

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER18/S6.01UNO.
W2. DIMENSIONS SHOWN ARE TO FACE OF STUD, UNO.
W3. (5) INDICATES HOLD-DOWN AND COMPRESSION STUDS PER 2/S6.02 .
W4. (3) INDICATES NUMBER OF BUNDLED STUDS LOCATED UNDER BEAM ABOVE PER 3/S6.02 .
W5. (SW-6) INDICATES WOOD SHEAR WALL ABOVE PER 9/S6.02. "SSW-X" DENOTES PREFABRICATED SIMPSON WOOD STRONG WALL SHEAR WALL.

BASEMENT WALL NOTES:

B1. 12" CONCRETE WALL WITH #7 @ 9" OC VERT OF, #7 @ 12" OC VERT IF, #4 @ 16" OC HORIZ EF.
B2. BIDDER-DESIGNED HELICAL ANCHORS TO RESIST 2.7 k/ft ALLOWABLE LATERAL LOAD WITHIN EXTENTS SHOWN. CONTRACTOR TO COORDINATE ANCHOR QUANTITY, PLACEMENT, AND ANCHORAGE INTO WALL FOUNDATIONS WITH GEOTECH AND SEOR.

PROVIDE 6" MIN CLEARANCE FROM HELICAL ANCHOR TO ANY STEEL PIPE PILE. CONTRACTOR TO COORDINATE EXACT ANCHOR LOCATION WITH BIDDER-DESIGNER. ANTICIPATED CONSTRUCTION SEQUENCE IS INSTALLATION OF HELICAL ANCHORS BEFORE MAIN LEVEL PIPE PILES.

△1

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FOUNDATION PLAN

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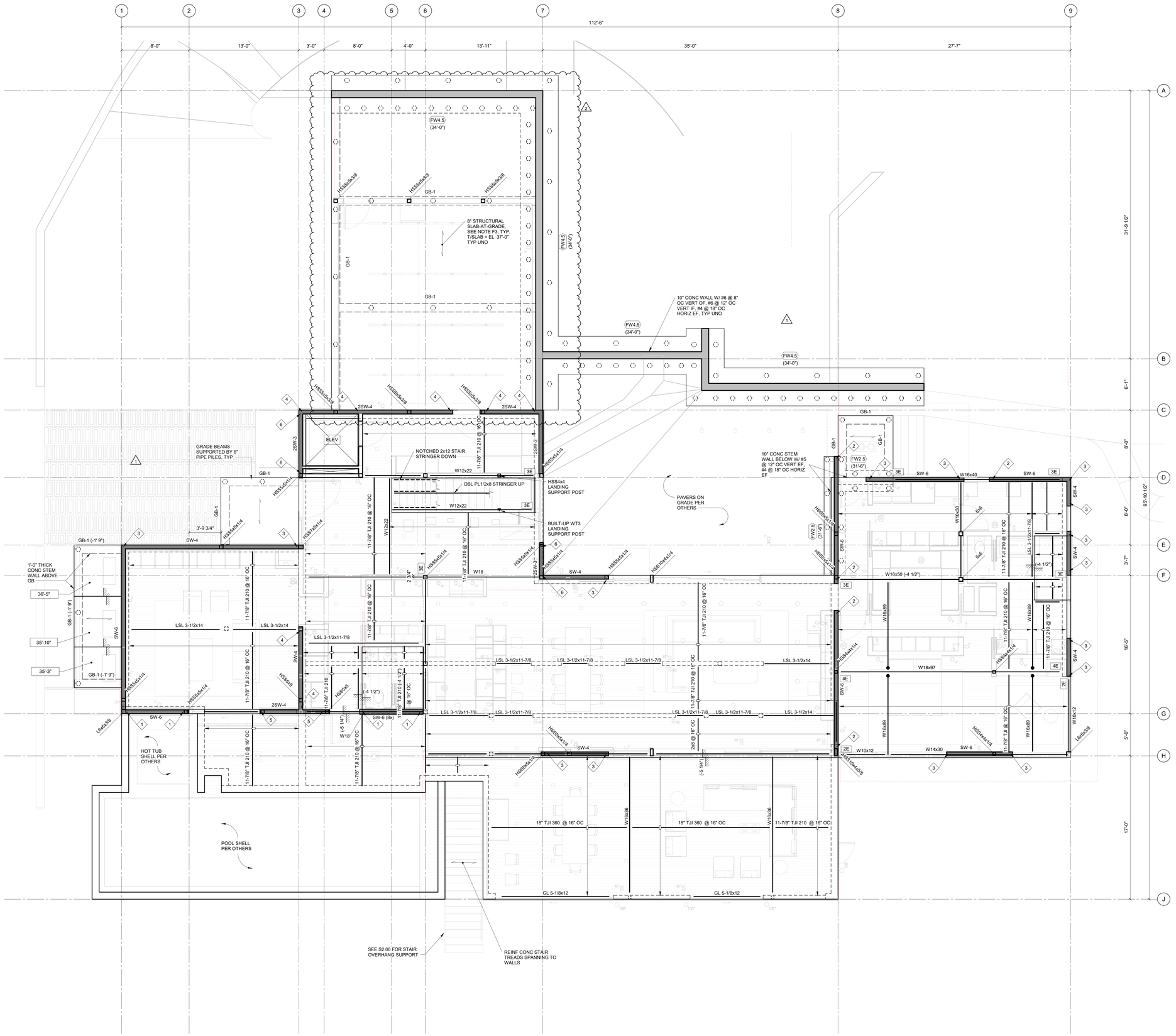
S2.00



1 MAIN LEVEL FRAMING AND FOUNDATION PLAN
1/4" = 1'-0"

GENERAL PLAN NOTES:

G1. REFERENCE DRAWINGS:
- S0.0X - STRUCTURAL NOTES, SPECIAL INSPECTION SCHEDULE, SYMBOLS AND ABBREVIATIONS
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- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

FOUNDATION PLAN NOTES:

F1. SEE 6/S4.01 FOR BEAM SCHEDULE.
F2. SEE 1/S4.02 FOR CONTINUOUS FOOTING SCHEDULE.
F3. STRUCTURAL SLAB-AT-GRADE SHALL BE 8" THICK WITH # 4's @ 10' OC T&B PRIMARY REINF, #4's @ 18" OC T&S REINFORCEMENT, UNO.
F4. (FW0 (99'-0")) INDICATES FOOTING TYPE AND BOTTOM OF FOOTING ELEVATION. SEE 1/S4.02 .
F5. GB-X INDICATES GRADE BEAM TYPE. SEE 6/S4.01.
F6. (PC-2) INDICATES PILE CAP PER 10/S4.02 .
F7. INDICATES AREA OF TOPPING SLAB OVER SLIP MEMBRANE.
F8. INDICATES AREA OF 4" SLAB OVER EPS GEOFOAM.

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER 18/S6.01UNO.
W2. TOP OF SHEATHING SHALL BE 36'-11 1/4" THIS LEVEL, UNO.
W3. FLOOR CONSTRUCTION SHALL BE 23/32 STRUCTURAL RATED SHEATHING. ROOF CONSTRUCTION SHALL BE 15/32 STRUCTURAL RATED SHEATHING. SEE DIAPHRAGM NAILING SCHEDULE PER 11/S6.02.
W4. DIMENSIONS SHOWN ARE TO FACE OF STUD, UNO.
W5. J-1 INDICATES JOIST PER 18/S6.01
W6. B-1 INDICATES FLUSH FRAMED BEAM PER 18/S6.01
W7. (5) INDICATES HOLD-DOWN AND COMPRESSION STUDS PER 2/S6.02.
W8. (3) INDICATES NUMBER OF BUNDLED STUDS LOCATED UNDER BEAM ABOVE PER 3/S6.02 .
W9. (A) INDICATES HARDWARE PER 1/S6.02.
W10. SW-6 INDICATES WOOD SHEAR WALL ABOVE PER 9/S6.02 . "SSW-X" DENOTES PREFABRICATED SIMPSON WOOD STRONG WALL SHEAR WALL.

STEEL FRAMING PLAN NOTES:

S1. TOP OF STEEL SHALL BE 36'-8 3/4" THIS LEVEL, UNO.
S2. (+X'-X") INDICATES VERTICAL OFFSET OF TOP OF STEEL RELATIVE TO ELEVATIONS SPECIFIED IN NOTE S1.

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1	02/23/24	R1 PERMIT

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title:
MAIN LEVEL FRAMING PLAN

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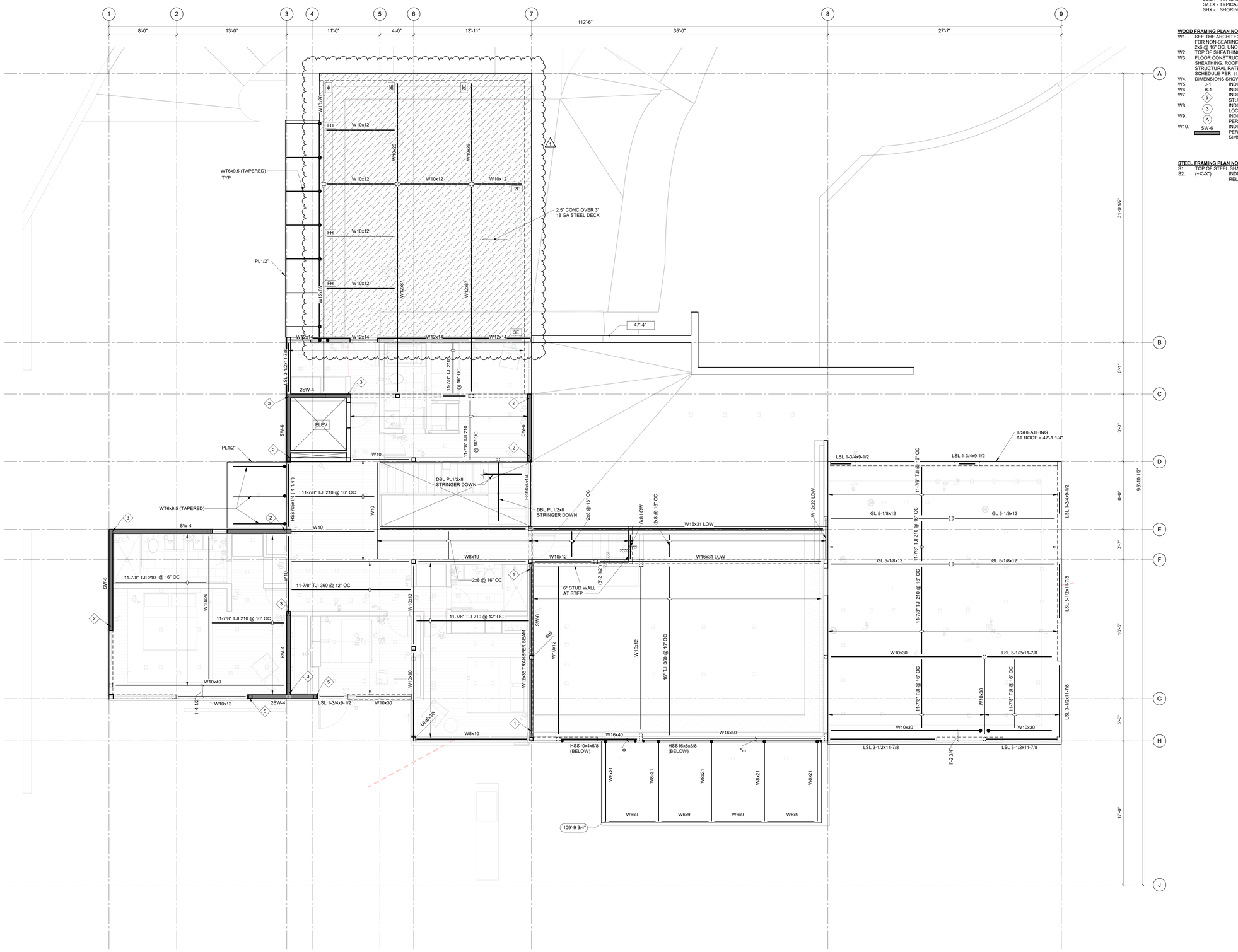
S2.01



1 UPPER LEVEL FRAMING PLAN
1/4" = 1'-0"

GENERAL PLAN NOTES:

G1. REFERENCE DRAWINGS:
- S0.0X - STRUCTURAL NOTES, SPECIAL INSPECTION SCHEDULE, SYMBOLS AND ABBREVIATIONS
- S1.01- LOAD MAPS
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- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER 18/S6.01UNO.
W2. TOP OF SHEATHING SHALL BE 47'-2 1/2" THIS LEVEL, UNO.
W3. FLOOR CONSTRUCTION SHALL BE 23/32 STRUCTURAL RATED SHEATHING. ROOF CONSTRUCTION SHALL BE 15/32 STRUCTURAL RATED SHEATHING. SEE DIAPHRAGM NAILING SCHEDULE PER 1/S6.02
W4. DIMENSIONS SHOWN ARE TO FACE OF STUD, UNO.
W5. J-1 INDICATES JOIST PER 18/S6.01
W6. B-1 INDICATES FLUSH FRAMED BEAM PER 18/S6.01
W7. 5 INDICATES HOLD-DOWN AND COMPRESSION STUDS PER 2/S6.02
W8. 3 INDICATES NUMBER OF BUNDLED STUDS LOCATED UNDER BEAM ABOVE PER 3/S6.02.
W9. A INDICATES HARDWARE PER 1/S6.02
W10. SW-6 INDICATES WOOD SHEAR WALL ABOVE PER 9/S6.02. "SSW-X" DENOTES PREFABRICATED SIMSPON WOOD STRONG WALL SHEAR WALL.

STEEL FRAMING PLAN NOTES:

S1. TOP OF STEEL SHALL BE 47'-0" THIS LEVEL, UNO.
S2. (+'X'-'X") INDICATES VERTICAL OFFSET OF TOP OF STEEL RELATIVE TO ELEVATIONS SPECIFIED IN NOTE S1.

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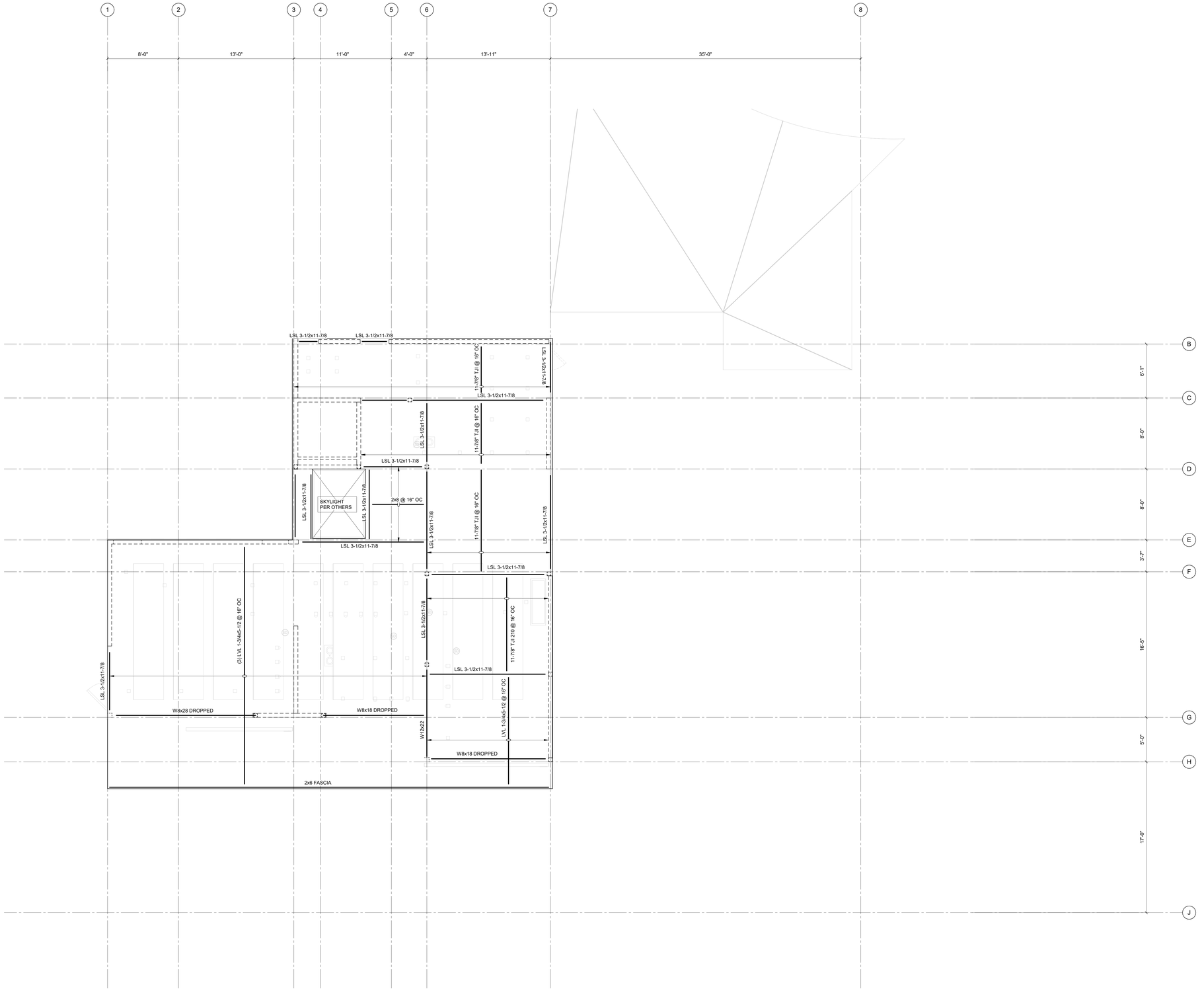
UPPER LEVEL FRAMING PLAN

sheet:
S2.02



1 UPPER ROOF FRAMING PLAN

1/4" = 1'-0"

GENERAL PLAN NOTES:

G1. REFERENCE DRAWINGS:
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- S1.01- LOAD MAPS
- S4.0X - TYPICAL CONCRETE DETAILS
- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER 18/S6.01UNO.

W2. TOP OF SHEATHING SHALL BE 57'-1" THIS LEVEL, UNO.

W3. FLOOR CONSTRUCTION SHALL BE 23/32 STRUCTURAL RATED SHEATHING, ROOF CONSTRUCTION SHALL BE 15/32 STRUCTURAL RATED SHEATHING. SEE DIAPHRAGM NAILING SCHEDULE PER 11/S6.02.

W4. J-1 INDICATES JOIST PER 18/S6.01.

W5. B-1 INDICATES FLUSH FRAMED BEAM PER 18/S6.01

W6. (A) INDICATES HARDWARE PER1/S6.02 .

STEEL FRAMING PLAN NOTES:

S1. TOP OF STEEL SHALL BE 56'-10 1/2" THIS LEVEL, UNO.

S2. (+X"-X") INDICATES VERTICAL OFFSET OF TOP OF STEEL RELATIVE TO ELEVATIONS SPECIFIED IN NOTE S1.

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title:

UPPER ROOF FRAMING PLAN

sheet:

S2.03

f'_c = 4,000 PSI
f_y = 60,000 PSI

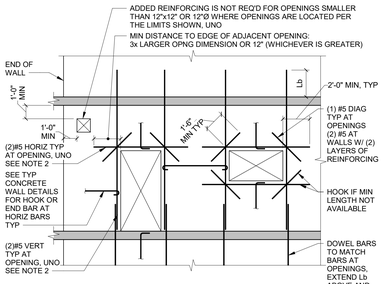
SIZE	Ld	Ldt	Lb	Lbt	Ldh
#4	19 (28)	25 (37)	25 (37)	32 (48)	9
#5	24 (36)	31 (46)	31 (46)	40 (60)	12
#6	28 (43)	37 (55)	37 (55)	48 (72)	14
#7	42 (62)	54 (81)	54 (81)	70 (105)	17
#8	47 (71)	62 (92)	62 (92)	80 (120)	19
#9	54 (80)	70 (104)	70 (104)	90 (136)	21
#10	60 (90)	78 (117)	78 (117)	102 (153)	24
#11	67 (100)	87 (130)	87 (130)	113 (170)	27
#14	80 (120)	104 (157)	N/A	N/A	32
#18	107 (161)	139 (209)	N/A	N/A	43

ABBREVIATIONS

db = BAR DIAMETER
Ld = TENSION DEVELOPMENT LENGTH
Ldt = TENSION DEVELOPMENT LENGTH FOR A TOP BAR
Lb = CLASS B LAP SPLICE LENGTH, 1.3 Ld
Lbt = CLASS B LAP SPLICE LENGTH FOR A TOP BAR, 1.3 Ldt
Ldh = TENSION DEVELOPMENT LENGTH FOR A STANDARD HOOK

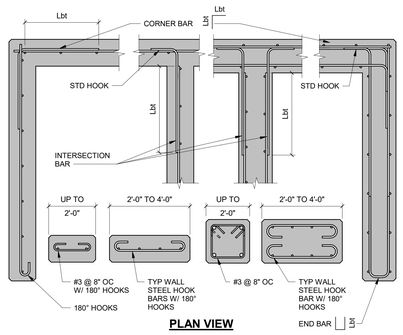
NOTES:
1. USE THE LENGTHS IN THIS SCHEDULE, UNLESS NOTED OTHERWISE.
2. USE LENGTH IN ( ) WHEN BAR COVER IS db OR LESS OR BAR CLEAR SPACING IS 2db OR LESS.
3. A TOP BAR IS A HORIZONTAL BAR WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW IT.
4. FOR GRADE 80 BARS, MULTIPLY ABOVE VALUES BY 1.33.

1 DEVELOPMENT AND SPLICE LENGTH SCHED
12" = 1'-0"



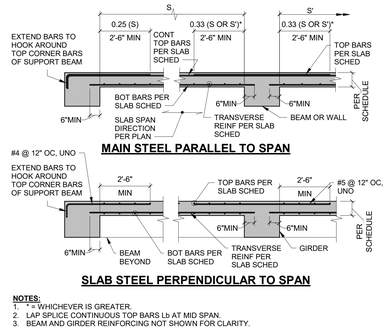
NOTES:
1. BARS SHOWN ARE IN ADDITION TO WALL REINFORCING NOTED ELSEWHERE
2. PROVIDE AN ADDITIONAL BAR FOR EACH HORIZONTAL OR VERTICAL BAR INTERRUPTED BY OPENING.
3. PROVIDE HOOKS AT ALL INTERRUPTED BARS AS SHOWN.

2 TYP CONCRETE WALL REINFORCING
NO SCALE



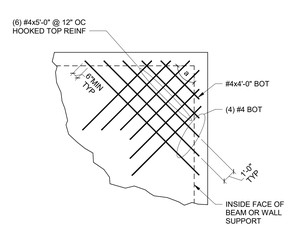
PLAN VIEW

3 TYP CONCRETE WALL DETAILS
NO SCALE



NOTES:
1. * = WHICHEVER IS GREATER.
2. LAP SPLICE CONTINUOUS TOP BARS Lb AT MID SPAN.
3. BEAM AND GIRDER REINFORCING NOT SHOWN FOR CLARITY.

4 TYP ONE-WAY LAB REINF PLACEMENT
NO SCALE



NOTES:
1. CORNER BARS ARE NOT REQUIRED WHERE ANGLE "a" > 135°.

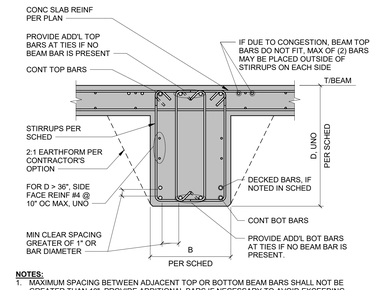
5 ADDED BARS AT RESTRAINED CORNERS
NO SCALE

CONCRETE GRADE BEAM SCHEDULE

TYPE MARK	SIZE (IN)		LONGITUDINAL REINFORCEMENT						STIRRUPS			TYPE COMMENTS
			TOP LEFT		TOP RIGHT		BOT					
	B	D	CONT	ADDED	CONT	ADDED	CONT	ADDED	SIZE	TYPE	SPACING	
GB-1	12	18	(3) #5	-	(3) #5	-	(3) #5	-	#4	T2	6" OC	PROVIDE PIN PILES @ 8'-0" OC UNO

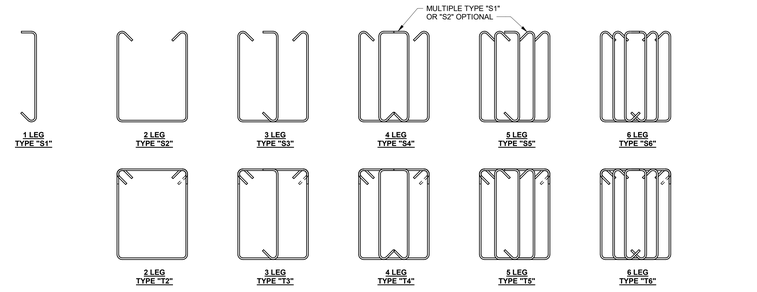
NOTES:
1. SEE S/S4.01 FOR TYPICAL BEAM SECTION.
2. SEE S/S4.01 FOR BEAM STIRRUP TYPES.
3. SEE 19/S4.01 FOR TYPICAL BEAM ELEVATIONS
4. FOR BEAMS PARALLEL TO NORTH-SOUTH, LEFT IS TO THE SOUTH AND RIGHT IS TO THE NORTH. FOR BEAMS PARALLEL TO EAST-WEST, LEFT IS TO THE WEST AND RIGHT IS TO THE EAST. FOR ALL OTHER BEAMS, LEFT IS CLOSER TO THE SOUTH AND RIGHT IS CLOSER TO THE NORTH. "OPP" INDICATES OPPOSITE BAR LAYOUT.
5. IF TOP BARS OF ADJACENT BEAMS ARE DIFFERENT AT THE SAME SUPPORT, PROVIDE QUANTITY OF BARS THAT EQUALS GREATER AREA OF REINFORCING ON EACH SIDE OF THE SUPPORT.

6 GRADE BEAM SCHEDULE
NO SCALE



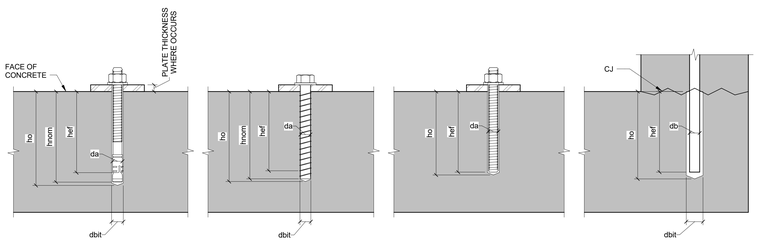
NOTES:
1. MAXIMUM SPACING BETWEEN ADJACENT TOP OR BOTTOM BEAM BARS SHALL NOT BE GREATER THAN 10". PROVIDE ADDITIONAL BARS IF NECESSARY TO AVOID EXCEEDING MAXIMUM SPACING. ADDITIONAL BARS SHOULD MATCH OTHER BAR SIZE PER SCHEDULE.

8 TYP GRADE BEAM SECTION
NO SCALE



NOTES:
1. FOR S'TIRRUP TYPES WITH CAP TIE, ALTERNATE SIDE OF CAP TIE WITH 135° HOOK. AT BEAMS WITH SLAB ON ONE SIDE, LOCATE ALL 135° HOOKS TO SIDE WITH NO SLAB. AT BEAMS WITHOUT SLAB ON EITHER SIDE, USE 135° HOOKS AT BOTH ENDS.

9 BEAM STIRRUPS AND TIES
NO SCALE



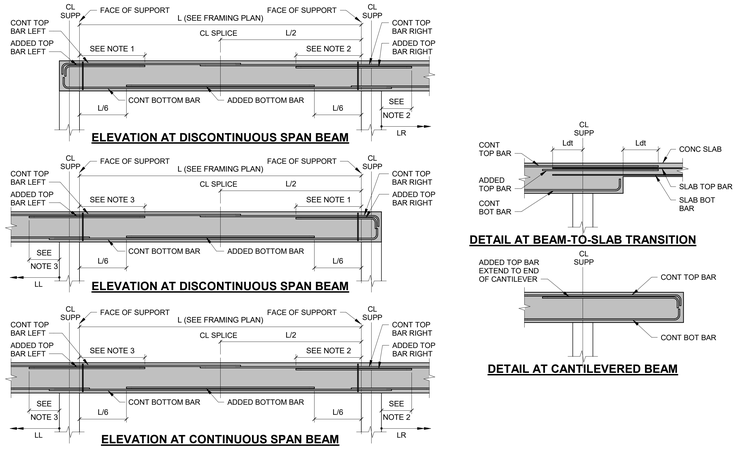
EXPANSION ANCHOR | **SCREW ANCHOR** | **THREADED ADHESIVE REINFORCING DOWEL** | **ADHESIVE REINFORCING DOWEL (ARD)**

NOTES:
1. REFER TO STRUCTURAL NOTES FOR APPROVED ANCHOR(S) AND EVALUATION REPORT(S).

ABBREVIATIONS

hef = EFFECTIVE EMBEDMENT PER DRAWINGS
hnom = NOMINAL EMBEDMENT REQUIRED TO ACHIEVE EFFECTIVE EMBEDMENT PER EVALUATION REPORT. FOR EXPANSION ANCHORS, THIS APPLIES TO THE CONDITION PRIOR TO APPLICATION OF TORQUE.
ho = MINIMUM HOLE DEPTH PER EVALUATION REPORT
da, db = DIAMETER OF ANCHOR/BAR PER DRAWINGS
dbit = DIAMETER OF DRILL BIT PER EVALUATION REPORT

11 TYPICAL POST-INSTALLED ANCHORS
NO SCALE



NOTES:
1. GREATER OF L/3 AND 2'-6".
2. GREATEST OF L/3, LR/3, AND 2'-6".
3. GREATEST OF L/3, LL/3, AND 2'-6".
4. SPLICE CONTINUOUS TOP BARS Lbt, AND CONTINUOUS BOTTOM BARS Lb, UNO.
5. CANT BEAMS ARE CANTILEVERED. EXTEND TOP AND BOT BARS TO END OF CANTILEVER.
6. SPLICE MAY BE OMITTED BY USING CONTINUOUS BAR IF LEFT AND RIGHT TOP BARS ARE SAME SIZE.
7. MINIMUM OF (2) TOP AND (2) BOTTOM LONGITUDINAL BARS SHALL BE PLACED THROUGH EACH COLUMN.

19 TYP BEAM ELEVATIONS
NO SCALE

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09/08/2023

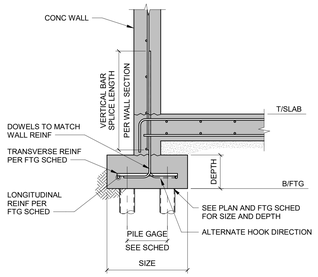
title:
TYPICAL CONCRETE DETAILS

sheet:
S4.01

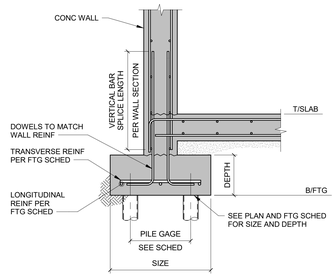
CONTINUOUS FOOTING SCHEDULE						
	DIMENSIONS		REINFORCING		PILE PIPE	
TYPE MARK	WIDTH	DEPTH	TRANSVERSE	LONGITUDINAL	SCH 40 PIPE Ø	GAGE	LONGITUDINAL SPACING
FW2.5	2'-6"	1'-6"	-	-	6"	1'-8"	4'-0"
FW2.5A	2'-6"	2'-0"	-	-	SEE RETAINING WALL SCHEDULE		
FW4.5	4'-6"	2'-0"	-	-	SEE RETAINING WALL SCHEDULE		

NOTES:
1. SEE 3/S4.02 FOR TYPICAL FOOTING DETAIL.

1 CONTINUOUS FOOTING SCHEDULE
NO SCALE

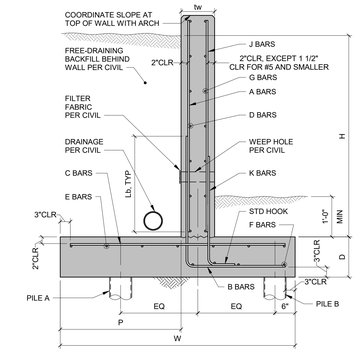


WALLS WITH SINGLE LAYER REINFORCING



WALLS WITH DOUBLE LAYER REINFORCING

3 TYP EXTERIOR CONCRETE WALL FOOTING
NO SCALE

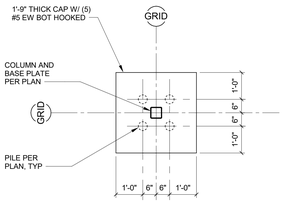


NOTES:
1. B BARS EXTEND TO TOP OF WALL WHERE A BARS ARE NOT INDICATED.
2. K BARS EXTEND TO TOP OF WALL WHERE J BARS ARE NOT INDICATED.
3. VERTICAL CONTROL JOINTS, WITH 1/2" PREMOLDED JOINT FILLER, SHALL BE SPACED AT 15'-0" MAXIMUM.

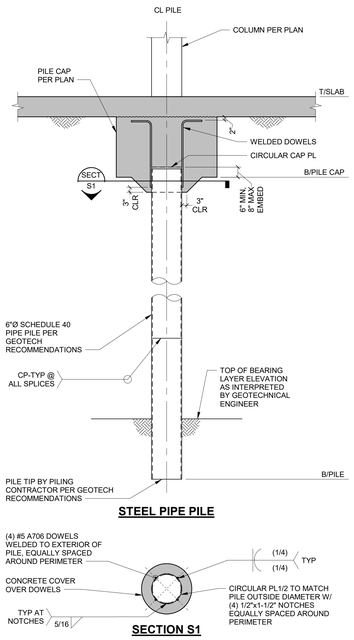
5 CANTILEVERED RETAINING WALL DETAIL
NO SCALE

CANTILEVERED RETAINING WALL SCHEDULE																
	DIMENSIONS				REINFORCING									PILE PIPE		
H	tw	W	D	P	A BARS	B BARS	C BARS	D BARS	E BARS	F BARS	G BARS	J BARS	K BARS	SCH 40 PIPE Ø	PILE PIPE A LONGITUDINAL SPACING	PILE PIPE B LONGITUDINAL SPACING
UP TO 8'-0"	10"	2'-6"	2'-0"	0'-10"	#6 @ 12" OC	#6 @ 12" OC		#4 @ 18" OC			#4 @ 18" OC	#6 @ 12" OC	#6 @ 12" OC	6"	8'-0"	4'-0"
8'-0" TO 13'-0"	12"	4'-6"	2'-0"	1'-9"	#7 @ 9" OC	#7 @ 9" OC		#4 @ 16" OC			#4 @ 16" OC	#7 @ 12" OC	#7 @ 12" OC	6"	6'-0"	2'-0"

6 CANTILEVERED RETAINING WALL SCHEDULE
NO SCALE



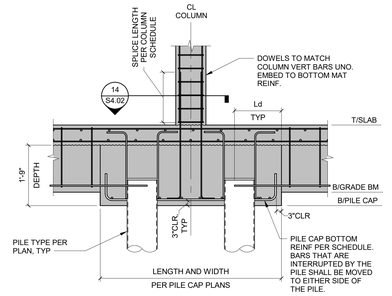
8 PILE CAP PC-4 PLAN
NO SCALE



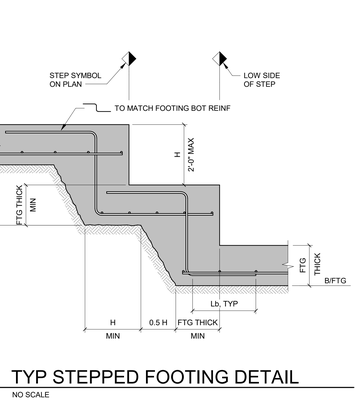
STEEL PIPE PILE

SECTION S1

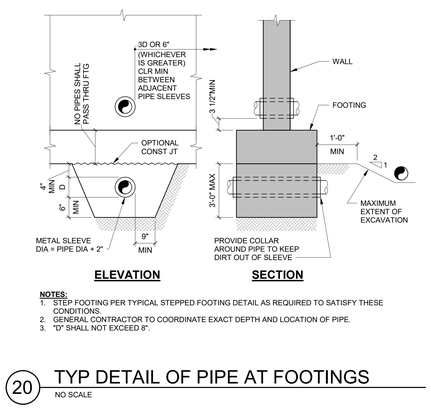
14 STEEL PIPE PILE DETAIL **TYPE S1**
NO SCALE



10 TYP PILE CAP SECTION
NO SCALE



19 TYP STEPPED FOOTING DETAIL
NO SCALE



ELEVATION **SECTION**

NOTES:
1. STEP FOOTING PER TYPICAL STEPPED FOOTING DETAIL AS REQUIRED TO SATISFY THESE CONDITIONS.
2. GENERAL CONTRACTOR TO COORDINATE EXACT DEPTH AND LOCATION OF PIPE.
3. "D" SHALL NOT EXCEED 8".

20 TYP DETAIL OF PIPE AT FOOTINGS
NO SCALE

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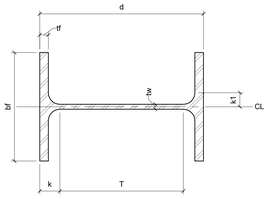
S4.02

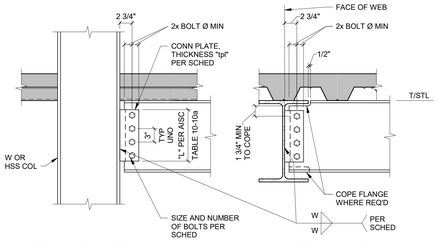
CONNECTION NOTES:

1. ALL BOLTED CONNECTIONS TO BE TYPE N WITH FULLY PRETENSIONED ASTM A325-N BOLTS PER AISC STANDARDS EXCEPT WHERE "SNUG TIGHT", "FINGER TIGHT" OR "SLIP CRITICAL" CONNECTIONS ARE INDICATED.
2. BOLTS IN BEAM TO BEAM CONNECTIONS MAY BE TIGHTENED TO AISC "SNUG TIGHT" CONDITION UPON APPROVAL OF ENGINEER AND OWNER.
3. CONNECTIONS TO HAVE AISC STANDARD ROUND HOLES EXCEPT AS NOTED OTHERWISE.
4. BEAM CONNECTIONS TO BE PER THE STANDARD BOLTED BEAM CONNECTION DETAIL UNLESS NOTED OTHERWISE.
5. [5] SHOWN ON PLANS INDICATES NUMBER OF BOLTS REQUIRED IF DIFFERENT FROM NUMBER OF BOLTS REQUIRED USING 3/S5.01
6. [5E] SHOWN ON PLANS INDICATES NUMBER OF BOLTS REQUIRED IN A DOUBLE ANGLE EMBEDDED PLATE CONNECTION. SEE 11/S5.01
7. [FH] SHOWN ON PLANS INDICATES FULL HEIGHT STIFFENER PLATE REQUIRED. SEE
8. ALTERNATE CONNECTION DETAILS MAY BE SUBMITTED TO THE ENGINEER FOR REVIEW AND SHALL BE ACCOMPANIED BY CALCULATIONS BEARING THE SEAL AND SIGNATURE OF THE WASHINGTON STATE STRUCTURAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN. ALTERNATE CONNECTIONS SHALL HAVE EQUAL OR GREATER CAPACITY THAN THE CONNECTIONS SHOWN ON THE DRAWINGS.
9. FOR MEMBERS DESIGNATED AS PART OF THE SFRS, WELD TABS SHALL BE REMOVED UPON COMPLETION AND COOLING OF THE WELD, AND THE ENDS OF THE WELD SHALL BE MADE SMOOTH AND FLUSH WITH THE EDGES OF ABUTTING PARTS.



1 TYP CONNECTION NOTES
NO SCALE

2 TYP ABBREVIATIONS
NO SCALE



BEAM TO COLUMN **BEAM TO BEAM**

NOTES:
1. SHORT SLOTTED HOLES MAY BE USED AT ALL COLUMN CONNECTIONS AS AN OPTION.

STANDARD BOLTED CONNECTION SCHEDULE

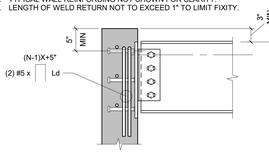
BEAM SIZE	NUMBER AND SIZE OF BOLTS REQUIRED	MIN PLATE THICKNESS "tPL"	WELD SIZE "W"
W6, C4, C6, C7	(2) 3/4"Ø @ 2" GA	1/4"	3/16"
W8, C8, C9	(2) 3/4"Ø	1/4"	3/16"
W10, C10	(2) 3/4"Ø	1/4"	3/16"
W12, C12	(3) 3/4"Ø	1/4"	3/16"
W14, C15	(3) 3/4"Ø	1/4"	3/16"
W16	(4) 3/4"Ø	1/4"	3/16"
W18	(4) 3/4"Ø	5/16"	1/4"
W21	(5) 3/4"Ø	5/16"	1/4"
W24	(6) 3/4"Ø	5/16"	1/4"
W27	(7) 3/4"Ø	5/16"	1/4"
W30	(8) 1"Ø	3/8"	1/4"
W33	(9) 1"Ø *	1/2"	5/16"
W36	(10) 1"Ø *	1/2"	5/16"
W40	(11) 1"Ø *	1/2"	5/16"
W44	(12) 1"Ø *	1/2"	5/16"

3 TYP STANDARD BOLTED BEAM CONN (3/4" AND 1" DIAMETER BOLTS)
NO SCALE

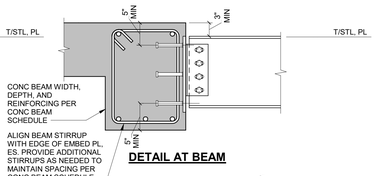
EMBEDDED PLATE CONNECTION SCHEDULE

TYPE MARK	NUMBER OF BOLTS REQUIRED	PLATE SIZE	NUMBER OF HORIZ ROWS OF STUDS	NUMBER OF STUDS PER ROW, N	STUD SPACING X	STUD SPACING Y	MIN STUD LENGTH	DOUBLE ANGLE SIZE	MIN CONC THICKNESS	MIN EDGE DISTANCE
2E	2	PL5/8x10x0'-11"	2	2	7"	7"	5"	L5x3-1/2x5/16	8"	0'-6"
3E	3	PL5/8x11x1'-2	3	2	8"	5"	5"	L5x3-1/2x5/16	8"	0'-10"
4E	4	PL5/8x14x1'-5"	3	2	11"	6 1/2"	6"	L5x3-1/2x5/16	9"	1'-6"
5E	5	PL3/4x15x1'-8 1/2"	4	2	12"	5 1/2"	6"	L5x3-1/2x5/16	9"	2'-0"
6E	6	PL3/4x15x2'-2"	5	2	12"	5 1/2"	6"	L5x3-1/2x5/16	9"	2'-4"
7E	7	PL1x18x2'-4"	5	3	7 1/2"	6"	8"	L5x5x5/16	11"	2'-10"
8E	8	PL1x21x2'-6"	5	3	9"	6 1/2"	8"	L5x5x5/16	11"	3'-2"
9E	9	PL1x24x3'-8"	6	3	10 1/2"	8"	8"	L5x5x5/16	11"	4'-8"
10E	10	PL1x24x4'-4"	7	3	10 1/2"	8"	8"	L5x5x5/16	11"	5'-2"

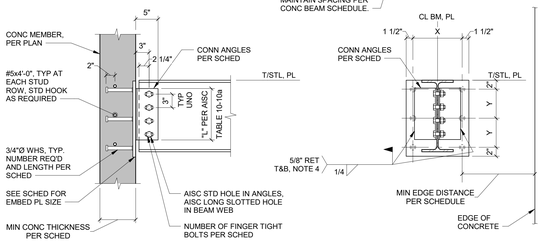
NOTES:
1. BOLTS TO BE FINGER TIGHT, JAMB NUT. DO NOT TIGHTEN FULLY.
2. BOLT DIAMETERS TO BE SAME AS SHOWN ON STANDARD BOLTED BEAM CONNECTION SCHEDULE.
3. TYPICAL WALL REINFORCING NOT SHOWN FOR CLARITY.
4. LENGTH OF WELD RETURN NOT TO EXCEED 1" TO LIMIT FIXITY.



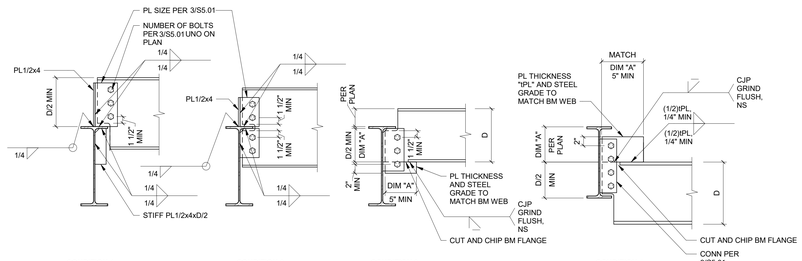
DETAIL AT TOP OF WALL



DETAIL AT BEAM

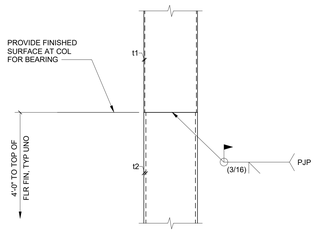


11 TYP EMBEDDED PLATE CONNECTION
NO SCALE



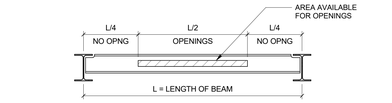
CONDITION 1 **CONDITION 2** **CONDITION 3** **CONDITION 4**

8 TYP CONNECTIONS FOR BEAMS AT DIFFERENT ELEVATION CONDITIONS
NO SCALE

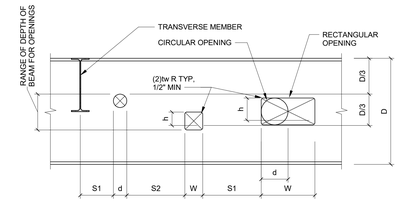


NOTES:
1. PROVIDE ERECTION AIDS AS REQUIRED.

18 TYPICAL HSS COLUMN SPLICE
NO SCALE



RANGE OF WEB OPENINGS ALONG LENGTH OF BEAM

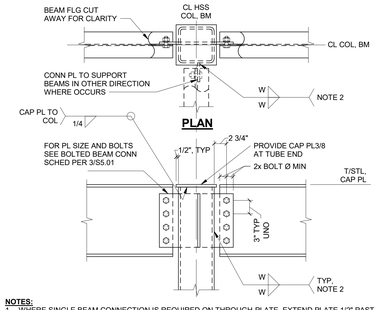


d = DIAMETER CIRCULAR OPENING ≤ D/3
h = HEIGHT RECTANGULAR OPENING ≤ D/4
W = WIDTH RECTANGULAR OPENING ≤ D/4
S1 = MIN DISTANCE TO CL TRANSVERSE MEMBER = D OR 12", WHICHEVER IS LARGER
S2 OR S3 = MIN DISTANCE BETWEEN OPENINGS BASED ON LARGER OPENING = (2)D FOR COMPOSITE BEAMS AND THE LARGER OF (3)d, (3)h, OR (3)W FOR NONCOMPOSITE BEAMS

OPENING SIZE AND SPACING

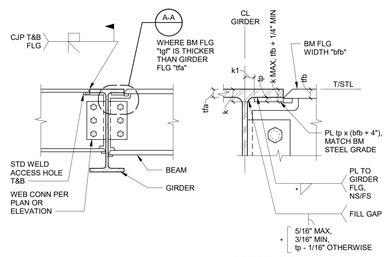
NOTES:
1. THIS DETAIL MAY BE USED FOR SHOP OR FIELD CUT OPENINGS WITHOUT CONSULTING THE STRUCTURAL ENGINEER. ANY OPENING OUTSIDE OF THESE CONSTRAINTS MUST BE APPROVED BY THE STRUCTURAL ENGINEER.
2. ALL OPENINGS MUST MEET THERMAL CUTTING REQUIREMENTS IN CHAPTER M OF AISC 360.

10 TYP BEAM PENETRATIONS
NO SCALE



NOTES:
1. WHERE SINGLE BEAM CONNECTION IS REQUIRED ON THROUGH-PLATE, EXTEND PLATE 1/2" PAST EXTERIOR FACE OF COLUMN FOR WELD ACCESS.
2. WELD SIZE "W" PER BOLTED BEAM SCHEDULE. SEE 3/S5.01

15 THROUGH-PLATE TO HSS COLUMN TOP
NO SCALE



DETAIL A-A

NOTES:
1. USE WHERE INDICATED BY ⊣⊢ ON PLAN.
2. PLATE THICKNESS "tp" DEFINED BY REQUIRED TOTAL BUILT-UP BEAM FLANGE THICKNESS DIMENSION TO THE NEAREST 1/16", BUT NOT LESS THAN 1/4".

20 TYP MOMENT DRAG STRUT CONN TO BEAM
NO SCALE

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TYPICAL STEEL DETAILS

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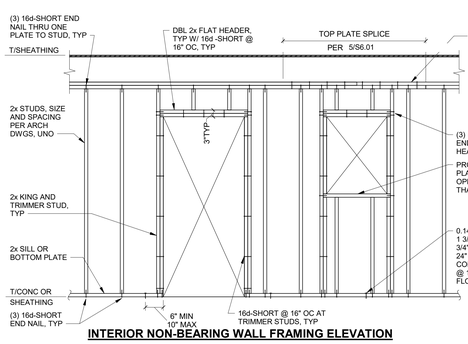
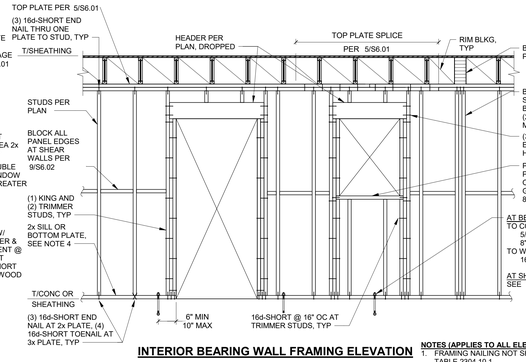
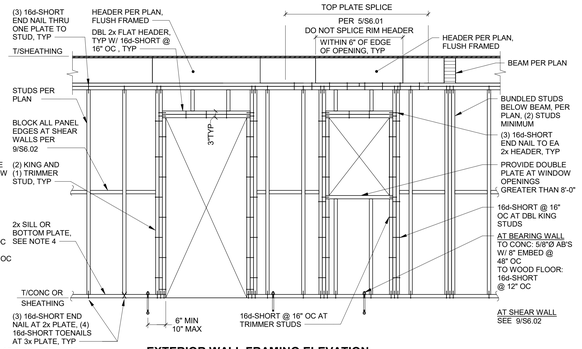


INTERIOR NON-BEARING WALL FRAMING ELEVATION



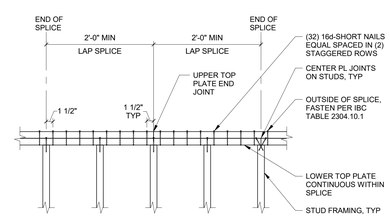
INTERIOR BEARING WALL FRAMING ELEVATION



EXTERIOR WALL FRAMING ELEVATION

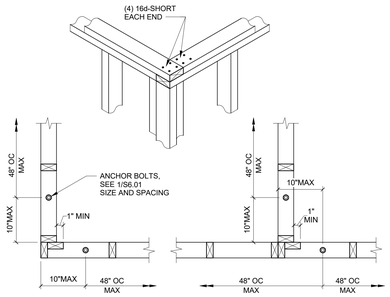
NOTES (APPLIES TO ALL ELEVATIONS):
1. FRAMING NAILING NOT SHOWN SHALL BE AS INDICATED IN IBC TABLE 2304.10.1
2. SILL PLATES TO BE PRESSURE-TREATED WHERE IN CONTACT WITH CONCRETE.
3. SEE 6/S6.02 FOR SILL BOLT CONSTRUCTION.
4. INCREASE SILL PLATE SIZE TO 3x WHERE REQUIRED BY SHEAR WALL SCHEDULE PER 9/S6.02 .

1 TYP STUD WALL FRAMING ELEVATION
NO SCALE

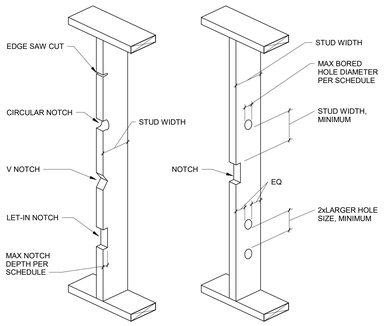


NOTES:
1. PROVIDE ONE-HALF OF FASTENERS WITHIN THE SPLICE ON EACH SIDE OF THE TOP PLATE END JOINT.
2. PROVIDE CONTINUOUS TOP PLATES WITHOUT JOINTS WHERE WALLS ARE 12'-0" OR LESS IN LENGTH.

5 TYP TOP PLATE SPLICE
NO SCALE



6 TYP STUD WALL CORNER
NO SCALE



NOTCHES IN STUDS

BORED HOLES IN STUDS

EXTERIOR/BEARING/SHEAR WALL STUD PENETRATION

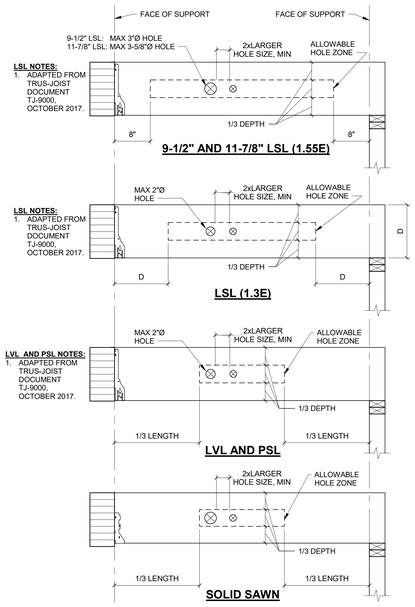
STUD SIZE	MAX NOTCH DEPTH	MAX BORED HOLE DIAMETER
2x4 & 3x4	7/8"	1-3/8"Ø
2x6 & 3x6	1-3/8"	2-1/8"Ø
2x8 & 3x8	1-3/4"	2-7/8"Ø

NON-BEARING WALL STUD PENETRATION

STUD SIZE	MAX NOTCH DEPTH	MAX BORED HOLE DIAMETER
2x4 & 3x4	1-3/8"	2"Ø
2x6 & 3x6	2-1/8"	3-1/4"Ø
2x8 & 3x8	2-7/8"	4-1/4"Ø

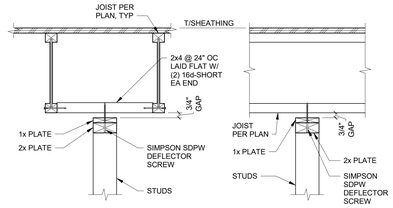
NOTES:
1. DO NOT NOTCH OR BORE HOLES IN MORE THAN TWO ADJACENT STUDS WITHOUT APPROVAL BY STRUCTURAL ENGINEER.
2. NOTCHES AND BORED HOLES ARE NOT PERMITTED IN SHEAR WALL COMPRESSION STUDS.

12 TYP WALL STUD PENETRATIONS
NO SCALE



NOTES (APPLIES TO ALL):
1. ROUND HOLES ONLY. RECTANGULAR HOLES ARE NOT ALLOWED.
2. NO HOLES IN CANTILEVERS.
3. NO HOLES IN HEADERS.
4. OTHER HOLES NOT DESCRIBED ABOVE SHALL BE SUBJECT TO APPROVAL OF THE STRUCTURAL ENGINEER PRIOR TO DRILLING.

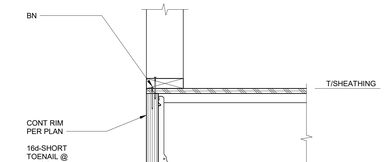
13 TYP HOLES IN WOOD JOISTS AND BEAMS
NO SCALE



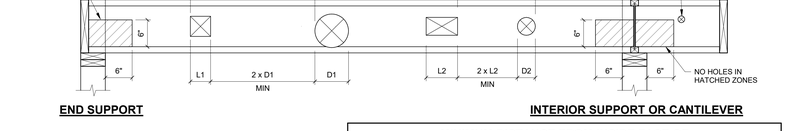
PARALLEL TO JOISTS **PERPENDICULAR TO JOISTS**

NOTES:
1. DO NOT INSTALL NON-BEARING PARTITIONS UNTIL DEAD LOAD IS IN PLACE. AT ROOF CONSTRUCTION AND WHERE A DEFLECTION SPACE HAS BEEN PROVIDED FOR, THIS REQUIREMENT MAY BE WAIVED.
2. DO NOT CONNECT CEILING GYP BOARD TO FRAMING WITHIN 24" OF NON-STRUCTURAL PARTITION WALL. OPTION FOR CONTRACTOR TO USE SIMPSON DS DRYWALL STOP TO SUPPORT CEILING SHEATHING.

9 TYP INTERIOR NON-BEARING WALL TOP PLATE ANCHORAGE
NO SCALE



10 TYP RIM JOIST HEADER
NO SCALE



END SUPPORT **INTERIOR SUPPORT OR CANTILEVER**

NOTES:
1. ADAPTED FROM TRUS-JOIST DOCUMENT TJ-4000, NOVEMBER 2017.
2. HOLE SIZES: THE SIZES GIVEN IN THE TABLE ARE HOLE SIZES, NOT DUCT SIZES.
3. MULTIPLE HOLES: WHERE MORE THAN ONE HOLE IS DESIRED, THE AMOUNT OF WOOD BETWEEN HOLES MUST EQUAL OR EXCEED TWICE THE DIAMETER OF THE LARGEST HOLE OR TWICE THE SIZE OF THE LARGEST SQUARE HOLE.
4. HOLES MAY BE LOCATED VERTICALLY ANYWHERE WITHIN THE WEB. LEAVE 1/8" OF WEB MINIMUM AT TOP AND BOTTOM OF HOLE.
5. ANY PENETRATIONS NOT MEETING THE REQUIREMENTS ABOVE MUST HAVE PRIOR APPROVAL BY THE STRUCTURAL ENGINEER.
6. THIS TABLE IS BASED ON UNIFORMLY LOADED JOISTS. PENETRATIONS SHALL NOT BE PERMITTED AT JOISTS RECEIVING HEADERS OR SUPPORTING BEARING WALLS ABOVE WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER.
7. DO NOT CUT HOLES LARGER THAN 1-1/2" IN CANTILEVERS.

MINIMUM DISTANCE FROM INSIDE FACE OF SUPPORT TO NEAREST EDGE OF HOLE

JOIST TYPE	HOLE SIZE / HOLE TYPE	AT END OF SUPPORT					AT INTERIOR SUPPORT OR CANTILEVER				
		2"	3"	4"	6 1/2"	8 7/8"	2"	3"	4"	6 1/2"	8 7/8"
11-7/8" TJI 230	ROUND	1'-0"	1'-6"	2'-0"	3'-0"	6'-6"	1'-0"	2'-0"	2'-6"	5'-6"	10'-0"
11-7/8" TJI 230	RECTANGULAR	1'-0"	2'-0"	2'-6"	5'-6"	7'-0"	1'-0"	2'-6"	3'-6"	8'-6"	10'-6"

14 TYP HOLE CHART FOR I-JOISTS
NO SCALE

JOIST SCHEDULE

TYPE MARK	TYPE AND SPACING
J-1	11-7/8" TJI 110 @ 16" OC
-	-
-	-

BEAM SCHEDULE

TYPE MARK	TYPE
B-1	LSL 3-1/2x11-7/8
-	-
-	-

HEADER SCHEDULE

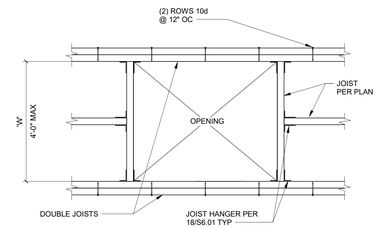
WALL TYPE	HEADER SIZE	MAX ROUGH OPENING WIDTH
INTERIOR BEARING OR SHEAR WALL	(2) LSL 1-3/4x7-1/4	6'-6"
EXTERIOR WALL	LSL 3-1/2x11-7/8 RIM	8'-6"

NOTES:
1. SEE 1/S6.01 FOR WALL TYPE AND HEADER ELEVATION.

HANGER SCHEDULE

MEMBER SIZE	FACE MOUNT	TOP FLANGE	TOP FLANGE SKEWED
11-7/8" TJI 110	IUS1.81/11.88	ITS1.81/11.88	LBV1.81/11.88
11-7/8" TJI 210	IUS2.06/11.88	ITS2.06/11.88	LBV2.06/11.88
11-7/8" TJI 230	IUS2.37/11.88	ITS2.37/11.88	LBV2.37/11.88
11-7/8" TJI 360	IUS2.37/11.88	ITS2.37/11.88	LBV2.37/11.88
11-7/8" TJI 560	IUS3.56/11.88	ITS3.56/11.88	LBV3.56/11.88
14" TJI 110	IUS1.81/14	ITS1.81/14 W/ WEB STIFFENER	LBV1.81/14 W/ WEB STIFFENER
2x6	LUS26	JB26	HU26TF
2x8	LUS26	JB28	HU28TF
LSL 1-3/4x11-7/8	HUS1.81/10	BA1.81/11.88 MAX NAILS	LBV1.81/11.88
LSL 3-1/2x11-7/8	HUS412	BA3.56/11.88 MAX NAILS	LBV3.56/11.88
PSL 3-1/2x11-7/8	HUS412	BA3.56/11.88 MAX NAILS	LBV3.56/11.88
PSL 5-1/4x11-7/8	HU612 MAX NAILS	HB5.50/11.88	HWU5.50/11.88

18 WOOD JOIST, HEADER, BEAM, AND HANGER SCHEDULES
NO SCALE



NOTES:
1. WHEN OPENING DIMENSION 'W' EXCEEDS 4'-0", REFER TO PLANS FOR FRAMING.
2. WHEN I-JOISTS ARE USED, PROVIDE WEB BLOCKING BETWEEN DOUBLE JOISTS.

20 TYP FLOOR OPENING PLAN
NO SCALE

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job no.:	2200638

revisions:

no.: date: description:

PERMIT
09/08/2023

title:

TYPICAL WOOD DETAILS

sheet:

S6.01

HARDWARE SCHEDULE

TYPE MARK	SIMPSON MODEL #	TYPE COMMENTS
A	CS16	(20) 10d AND 11" END LENGTHS
B	-	-
C	-	-
D	-	-
E	-	-
F	-	-
G	-	-
H	-	-

1 HARDWARE SCHEDULE
NO SCALE

HOLD-DOWN AND COMPRESSION STUD SCHEDULE

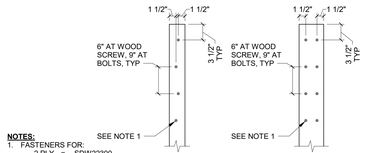
TYPE MARK	HOLD-DOWN	THREADED ROD SIZE	WASHER PL SIZE	MIN ROD EMBEDMENT	COMPRESSION STUDS, SEE NOTE 1
1	DTT2Z-SDS2.5	1/2"Ø	1/2x2 1/2x0'-2 1/2"	-	(2) 2x6
2	HDU4-SDS2.5	5/8"Ø	1/2x2 1/2x0'-2 1/2"	-	(2) 2x6
3	HDU8-SDS2.5	7/8"Ø	1/2x3x0'-3"	-	(2) 2x6
4	HDU11-SDS2.5	1"Ø	1/2x3x0'-3"	-	(2) 2x6
5	(2) HDU14-SDS2.5	1"Ø	1/2x3x0'-3"	-	(3) 2x6
6	(2) HDU14-SDS2.5	1"Ø	1/2x3x0'-3"	-	(4) 2x6

NOTES:
1. FASTEN COMPRESSION STUDS TOGETHER PER 3/S6.02 .

2 HOLD-DOWN AND COMPRESSION STUD SCHEDULE
NO SCALE

BUILT-UP COLUMN SCHEDULE

TYPE MARK	STUD SIZE AND QUANTITY
1	(2) 2x6
2	(3) 2x6
3	(4) 2x6



NOTES:
1. FASTENERS FOR:
   2 PLY = SDW22300
   3 PLY = SDW22438
   4 PLY = SDW22600
   5 PLY = 1/2"Ø BOLT

3 BUILT-UP COLUMN SCHEDULE
NO SCALE

WOOD SHEAR WALL SCHEDULE

ALL VALUES ARE BASED ON 2018 IBC AND SDPWS-15 FOR STRUCTURAL PANEL SHEAR WALL WITH FRAMING OF DOUGLAS FIR-LARCH

TYPE MARK	NUMBER OF SIDES OF SHEATHING	STUD OR BLOCKING SIZE AT ADJOINING PANEL EDGES, SEE NOTE 11	FASTENER SPACING		BOTTOM OF WALL CONNECTION			TOP OF WALL CONNECTION	SEISMIC ALLOWABLE SHEAR (LBS/FT)
			WALL BOUNDARIES AND PANEL EDGES, SEE NOTE 9	INTERMEDIATE STUDS, SEE NOTE 10	AT CONCRETE		AT WOOD FLOOR		
					FIELD OF SLAB, SEE NOTE 8	NEAR EDGE, SEE NOTE 8			
SW-6	1	2x	6" OC	12" OC	5/8"Ø AB @ 48" OC	5/8"Ø AB @ 24" OC	SDS25600 @ 16" OC	SDS25600 @ 16" OC	310
SW-4	1	3x	4" OC	12" OC	5/8"Ø AB @ 48" OC	5/8"Ø AB @ 16" OC	SDS25600 @ 12" OC	SDS25600 @ 12" OC	460
SW-3	1	3x	3" OC	12" OC	5/8"Ø AB @ 32" OC	5/8"Ø AB @ 12" OC	SDS25600 @ 8" OC	SDS25600 @ 8" OC	600
SW-2	1	3x	2" OC	12" OC	5/8"Ø AB @ 24" OC	5/8"Ø AB @ 8" OC	SDS25600 @ 8" OC	SDS25600 @ 8" OC	770
2SW-4	2	3x	4" OC	12" OC	5/8"Ø AB @ 24" OC	5/8"Ø AB @ 8" OC	SDS25600 @ 6" OC	SDS25600 @ 6" OC	920
2SW-3	2	3x	3" OC	12" OC	5/8"Ø AB @ 16" OC	-	SDS25600 @ 4" OC	SDS25600 @ 4" OC	1,200

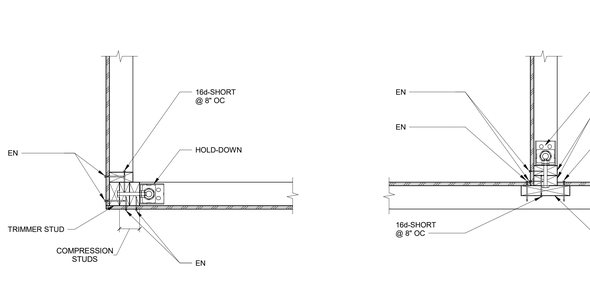
NOTES:
1. SHEATHING NAIL SIZE SHALL BE 0.148"Ø WITH 1-1/2" MINIMUM PENETRATION INTO FRAMING.
2. REFERENCE STRUCTURAL NOTES FOR SHEATHING TYPE AND THICKNESS.
3. INSTALL SHEATHING PANELS EITHER HORIZONTALLY OR VERTICALLY.
4. PLATE WASHERS FOR SILL BOLTS SHALL BE PER 6/S6.02.
5. WHERE NAIL SPACING IS LESS THAN 4" OC, STAGGER EDGE NAILING 1/2".
6. REFER TO 7/S6.02 FOR SHEAR WALL NAILING DETAIL.
7. PRESSURE TREATED SILL PLATE SHALL BE 3x FRAMING.
8. USE NEAR EDGE SPACING WHEN ANCHOR BOLTS ARE WITHIN 12" OF A SLAB EDGE OR SHAFT OPENING, OR ARE PLACED IN A STEM WALL.
9. WALL BOUNDARIES INCLUDE TOP PLATE, BOTTOM PLATE, SILL PLATE, AND COMPRESSION STUDS, UNO.
10. FASTENER SPACING AT INTERMEDIATE MEMBERS SHALL BE 6" OC WHERE STUD SPACING IS 24" OC.
11. AT CONTRACTOR'S OPTION, (2) 2x STUDS MAY BE USED IN LIEU OF 3x STUD FRAMING. SEE 20/S6.02 FOR DOUBLE STUD FASTENING.
12. WHERE SHEATHING IS APPLIED ON BOTH SIDES OF WALL, PANEL EDGE JOINTS SHALL BE STAGGERED SO THAT JOINTS ON THE OPPOSITE SIDES ARE NOT LOCATED ON THE SAME STUD.

SHEAR WALL LEGEND

9 WOOD SHEAR WALL SCHEDULE
NO SCALE

NOTES:
1. CENTER ANCHOR BOLTS ON THE SILL PLATE.

6 TYP ANCHOR BOLTS AT STEM WALL
NO SCALE



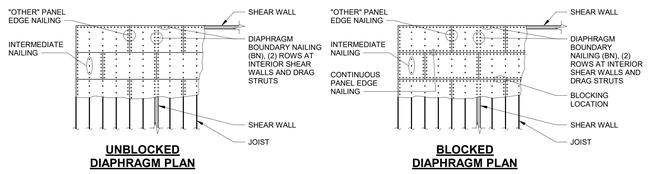
7 TYP SHEAR WALL NAILING
NO SCALE

ROOF/FLOOR DIAPHRAGM NAILING SCHEDULE

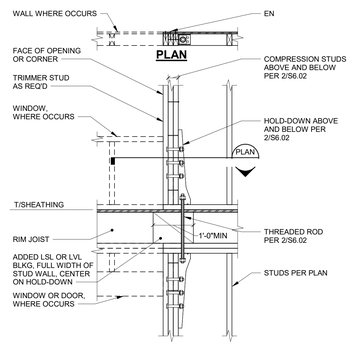
ALL VALUES ARE BASED ON 2018 IBC AND SDPWS-15 FOR STRUCTURAL PANEL DIAPHRAGMS WITH FRAMING OF DOUGLAS FIR-LARCH

LOCATION	SHEATHING CATEGORY	BLOCKING REQUIRED	MIN FRAMING AND BLKG WIDTH	NUMBER OF LINES OF FASTENERS	FASTENER SPACING				SEISMIC ALLOWABLE SHEAR (LBS/FT)
					DIAPHRAGM BOUNDARIES, SEE NOTE 3	CONTINUOUS PANEL EDGES	OTHER PANEL EDGES	INTERMEDIATE FRAMING MEMBERS	
FLOOR	23/32	NO	2x	1	6" OC	-	6" OC	12" OC	215
ROOF	19/32	YES	2x	1	4" OC	4" OC	6" OC	12" OC	480

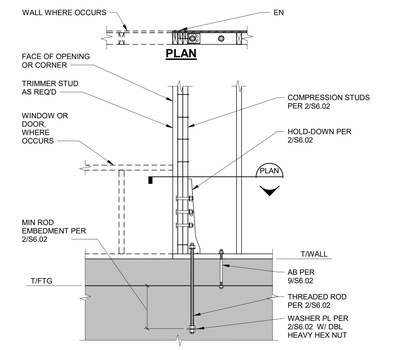
NOTES:
1. SHEATHING NAIL SIZE SHALL BE 0.148"Ø WITH 1-1/2" MINIMUM PENETRATION INTO FRAMING.
2. ORIENT SHEATHING PERPENDICULAR TO FLOOR/ROOF FRAMING. STAGGER SHEATHING.
3. DIAPHRAGM BOUNDARIES INCLUDE DIAPHRAGM PERIMETER, SHEAR WALLS, AND DRAG STRUTS INDICATED ON PLAN.



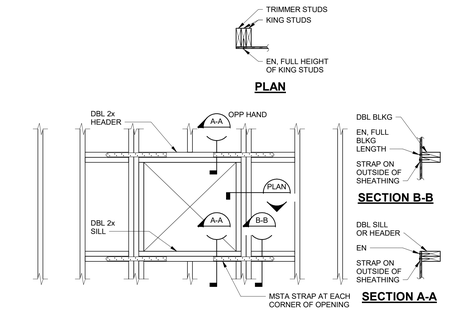
11 ROOF/FLOOR DIAPHRAGM NAILING SCHEDULE
NO SCALE



13 TYP HOLD-DOWN AT FLOOR
NO SCALE

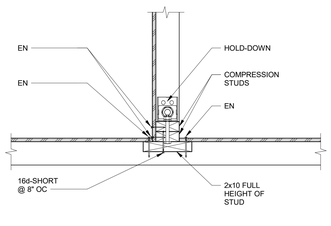


14 TYP HOLD-DOWN AT FOUNDATION
NO SCALE

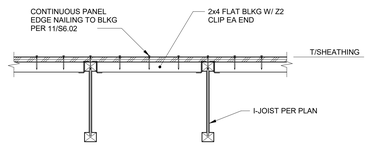


NOTES:
1. WALL SHEATHING NOT SHOWN FOR CLARITY.

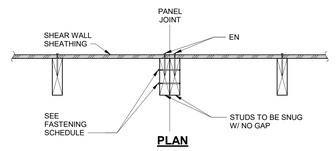
15 STRAPS AROUND SHEAR WALL OPENINGS
NO SCALE



17 TYP COMPRESSION STUD INTERSECTION
NO SCALE



19 TYP DIAPHRAGM BLOCKING AT PANEL EDGES
NO SCALE



STUD FASTENING SCHEDULE AT PANEL JOINTS

SHEAR WALL TYPE	STUD FASTENING
SW6	(2) 16d-SHORT @ 12" OC
SW4	(2) 16d-SHORT @ 8" OC
SW3	(2) 16d-SHORT @ 6" OC
SW2	(2) 16d-SHORT @ 4" OC
2SW4	(2) 16d-SHORT @ 4" OC
2SW3	(2) 16d-SHORT @ 3" OC

NOTES:
1. THIS DETAIL APPLIES WHERE DOUBLE 2x STUDS ARE USED AT SHEAR WALL PANEL JOINTS IN LIEU OF 3x FRAMING PER NOTE 11 ON 9/S6.02
2. WHERE NAIL SPACING IS LESS THAN 4" OC, STAGGER NAILING 1/2" IN EACH ROW.

20 STUD FASTENING AT SHEAR WALL PANEL JNTS
NO SCALE

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revisions:

no.:	date:	description:

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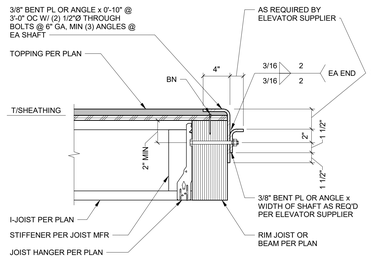
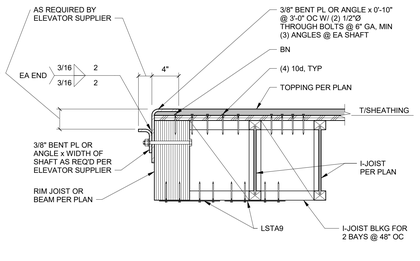
title:
TYPICAL WOOD DETAILS

sheet:
S6.02



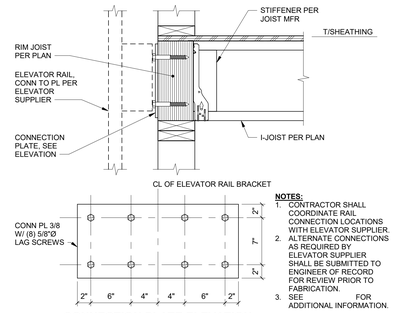
JOISTS PERPENDICULAR



JOISTS PARALLEL

4 TYP ELEVATOR DOOR SILL

NO SCALE

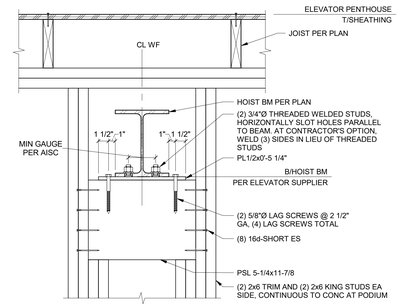


NOTES:
1. CONTRACTOR SHALL COORDINATE RAIL CONNECTION LOCATIONS WITH ELEVATOR SUPPLIER.
2. ALTERNATE CONNECTIONS AS REQUIRED BY ELEVATOR SUPPLIER SHALL BE SUBMITTED TO ENGINEER OF RECORD FOR REVIEW PRIOR TO FABRICATION.
3. SEE FOR ADDITIONAL INFORMATION.

CONNECTION PLATE ELEVATION

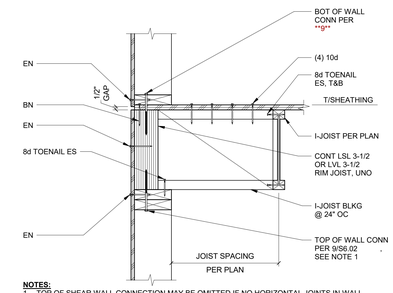
9 TYP ELEVATOR RAIL CONNECTION PLATE

NO SCALE



10 TYP ELEVATOR HOIST BEAM CONNECTION

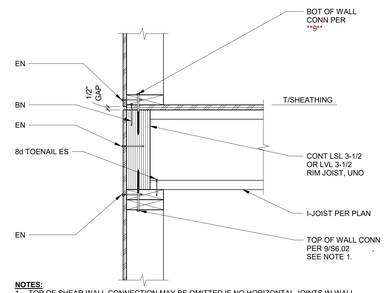
NO SCALE



NOTES:
1. TOP OF SHEAR WALL CONNECTION MAY BE OMITTED IF NO HORIZONTAL JOINTS IN WALL SHEATHING OCCUR AT TOP PLATE AND RIM.

13 TYP EXTERIOR SHEAR WALL - FRAMING PARALLEL (1-SIDED)

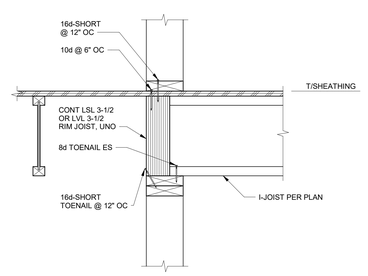
NO SCALE



NOTES:
1. TOP OF SHEAR WALL CONNECTION MAY BE OMITTED IF NO HORIZONTAL JOINTS IN WALL SHEATHING OCCUR AT TOP PLATE AND RIM.

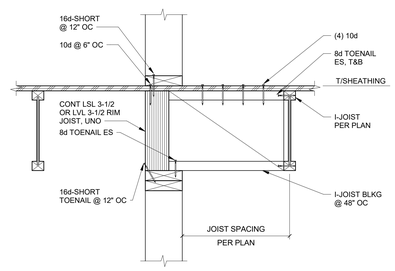
14 TYP EXTERIOR SHEAR WALL - FRAMING PERPENDICULAR (1-SIDED)

NO SCALE



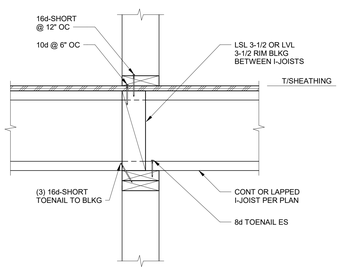
15 TYP INTERIOR BEARING WALL - FRAMING DIRECTION CHANGE

NO SCALE



19 TYP INTERIOR BEARING WALL - FRAMING PARALLEL

NO SCALE



20 TYP INTERIOR BEARING WALL - FRAMING PERPENDICULAR

NO SCALE

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no.:	date:	description:

PERMIT
09/08/2023

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TYPICAL WOOD DETAILS

sheet:
S6.03

SHORING NOTES

GENERAL SHORING NOTES

ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION, AS AMENDED BY THE CITY OF MERCER ISLAND.

REFERENCE DOCUMENTS
1. "RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS" BY THE POST-TENSIONING INSTITUTE, LATEST EDITION.
2. GEOTECHNICAL REPORT BY ASSOCIATED EARTH SCIENCES, INC, DATED AUGUST 16, 2022.

DESIGN LOADS
THE SOIL PRESSURES RECOMMENDED IN THE GEOTECHNICAL REPORT WERE USED FOR DESIGN.

SUBMITTALS
SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER PRIOR TO ANY FABRICATION OR CONSTRUCTION FOR ALL STRUCTURAL ITEMS.

INSPECTION
SPECIAL INSPECTION PER IBC CHAPTER 17 BY A QUALIFIED GEOTECHNICAL ENGINEER OR INDEPENDENT TESTING LAB WILL BE PROVIDED BY THE OWNER AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTIONS AND TESTING FOR EXCAVATION SHORING.

SPECIAL CONDITIONS
CONTRACTOR SHALL VERIFY ALL LEVELS, DIMENSIONS, AND EXISTING CONDITIONS IN THE FIELD BEFORE PROCEEDING. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR FIELD CHANGES PRIOR TO INSTALLATION OR FABRICATION. IN CASE OF DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN DIRECTION FROM THE ENGINEER BEFORE PROCEEDING. DIMENSIONS NOTED AS PLUS OR MINUS (±) INDICATE UNVERIFIED DIMENSIONS AND ARE APPROXIMATE. NOTIFY ENGINEER IMMEDIATELY OF CONFLICTS OR EXCESSIVE VARIATIONS FROM INDICATED DIMENSIONS. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS--DO NOT SCALE DRAWINGS.

UTILITY LOCATION
UTILIZE THE SERVICES OF THE "UTILITY LOCATOR SERVICE" (1-800-424-5555) TO VERIFY THE EXTENT AND LOCATIONS AND ALIGNMENTS OF SITE UTILITIES. IF THE ACTUAL FIELD VERIFIED LOCATIONS OF UTILITIES COULD RESULT IN A CONFLICT WITH THE SHORING, NOTIFY THE ENGINEER IMMEDIATELY. DO NOT DAMAGE EXISTING UTILITIES.

PRIOR TO CONSTRUCTION, VERIFY THAT OVERHEAD OBSTRUCTIONS, INCLUDING ELECTRICAL LINES, DO NOT INTERFERE WITH THE CONTRACTOR'S DRILLING EQUIPMENT.

CONCRETE
CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 19. CONCRETE MIXTURES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

f'c (PSI)	MINIMUM CEMENT PER CUBIC YARD	USE
3,000	4 SACKS	PILE STRUCTURAL CONCRETE
-	1 1/2 SACKS	LEAN MIX

CONCRETE STRENGTH TEST AGE SHALL BE 28 DAYS, UNLESS NOTED OTHERWISE.

ADMIXTURES SHALL CONFORM TO ASTM C 494. DO NOT USE ADMIXTURES THAT WEAKEN THE CONCRETE MIX.

WATER-REDUCING ADMIXTURES MAY BE INCORPORATED IN CONCRETE MIX DESIGNS, BUT SHALL CONFORM TO ASTM C 494, AND BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CaCl2 OR OTHER WATER-SOLUBLE CHLORIDE ADMIXTURES SHALL NOT BE USED.

SUBMIT CONCRETE MIX DESIGNS TO THE ENGINEER FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE. THE MIX DESIGN SHALL BE IN CONFORMANCE WITH ACI 318, CHAPTER 19.

CONTROLLED DENSITY FILL
CDF SHALL BE PER SECTION 2-09.3(1)E "BACKFILLING" OF THE 2016 EDITION WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION.

TIEBACK GROUT
NEAT CEMENT OR SAND/CEMENT MIXTURE WITH A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 1,500 PSI AND A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI, PER ASTM C 109.

PRESTRESSING STEEL
UNCOATED SEVEN WIRE STRESS RELIEVED STRAND GRADE 270 SHALL CONFORM TO ASTM A 416.

STEEL REFERENCE SPECIFICATIONS
DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

STRUCTURAL STEEL	AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, LATEST EDITION
WELDING	AWS D1.1 AWS PREQUALIFIED JOINT DETAILS
WELDER CERTIFICATION	AMERICAN WELDING SOCIETY (AWS) WASHINGTON ASSOCIATION OF BUILDING OFFICIALS (WABO)

STEEL MATERIALS

WIDE FLANGE SHAPES (W AND WT)	ASTM A 992
PLATES (PL), BARS	ASTM A 36 TYPICAL, ASTM A 572 GRADE 50 WHERE NOTED
ANGLES (L), CHANNELS (C AND MC)	ASTM A 36
STRUCTURAL TUBES (HSS)	ASTM A 500, GRADE C
STEEL PIPE	ASTM A 53, GRADE B
STEEL PIPE 12"Ø AND LARGER	ASTM A 252, GRADE 3
STRUCTURAL BOLTS	ASTM F 3125, GRADE A 325
THREADED RODS	ASTM A 36, UNLESS NOTED OTHERWISE
WELDING ELECTRODES	70 KSI, LOW HYDROGEN, TYPICAL

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE, BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES AND OTHER AIDS, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS VALUES, AND UNEQUAL PARTS.

WELDED HEADED STUDS
ALL STUDS SHALL BE AUTOMATICALLY END WELDED IN SHOP OR FIELD WITH EQUIPMENT RECOMMENDED BY MANUFACTURER WITH LENGTH AFTER WELD AS SHOW ON THE STRUCTURAL DRAWINGS. WELDED HEADED STUDS ARE 3/4"Ø UNLESS NOTED OTHERWISE AND SHALL CONFORM TO AWS D1.1 TYPE B.

WELDING
ALL WELDING SHALL BE IN CONFORMANCE WITH AISC AND AWS STANDARDS, AND SHALL BE PERFORMED BY WABO-CERTIFIED WELDERS. ONLY WELDS THAT ARE PREQUALIFIED, AS DEFINED BY AWS, OR QUALIFIED BY TESTING SHALL BE USED. SHOP DRAWINGS SHALL SHOW ALL WELDING WITH AWS A2.4 SYMBOLS. WELDS SHOWN ON THE DRAWINGS ARE MINIMUM SIZES. INCREASE WELD SIZE TO AWS MINIMUM SIZES BASED ON THICKNESS. MINIMUM WELD SIZE SHALL BE 3/16-INCH, UNLESS NOTED OTHERWISE. THE WELDS SHOWN ARE FOR THE FINAL CONNECTIONS. FIELD WELD SYMBOLS ARE SHOWN WHERE FIELD WELDS ARE REQUIRED BY THE STRUCTURAL DESIGN. WHERE FIELD WELD IS NOT INDICATED, THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING IF A WELD SHOULD BE SHOP OR FIELD-WELDED IN ORDER TO FACILITATE THE STRUCTURAL STEEL ERECTION.

SAWN LUMBER
SAWN LUMBER SHALL CONFORM TO "GRADING AND DRESSING RULES," WEST COAST LUMBER INSPECTION BUREAU (WCLIB), LATEST EDITION. LUMBER SHALL BE ROUGH CUT AND BE ONE OF THE TWO GRADES LISTED BELOW:

USE	GRADE	Fb (PSI) (BASE VALUES)
TIMBER LAGGING	DOUGLAS FIR-LARCH NO. 2	900
	HEM-FIR NO. 1	975

TIMBER LAGGING SHALL BE PRESERVATIVE TREATED WITH WATERBORNE PRESERVATIVES IN ACCORDANCE WITH AWPA UC4B.

SHORING PROCEDURE

SHAFT DRILLING
DRILL PILE AND ANCHOR SHAFTS WITHOUT LOSS OF GROUND AND WITHOUT ENDANGERING PREVIOUSLY INSTALLED PILES AND ANCHORS. SEE THE GEOTECHNICAL REPORT FOR POSSIBLE OBSTRUCTIONS.

SOLDIER PILE PLACEMENT TOLERANCES
SOLDIER PILES SHALL BE PLACED ACCORDING TO THE MOST STRINGENT OF THE FOLLOWING REQUIREMENTS:
1. THE CENTER OF THE PILE IS WITHIN 3 INCHES HORIZONTAL OF THE PLAN LOCATION ALONG THE ENTIRE LENGTH OF THE PILE.
2. NO PART EXTENDS MORE THAN 1 1/2 INCHES INTO THE EXCAVATION.
3. WITHIN 1% OF PLUMB.
4. WITHIN 3 INCHES VERTICAL OF SCHEDULED ELEVATION.

EXCAVATION BELOW TIEBACKS
COMPLETE TIEBACK INSTALLATION AND STRESSING PRIOR TO EXCAVATING MORE THAN 2 FOOT BELOW TIEBACK CENTERLINE LEVEL.

LAGGING
BACKFILL VOIDS BETWEEN LAGGING AND SOIL IMMEDIATELY AFTER LAGGING INSTALLATION USING A FREE DRAINING BACKFILL MATERIAL SELECTED BY THE SHORING CONTRACTOR. DRAINAGE BEHIND THE WALL MUST BE MAINTAINED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE AMOUNT OF EXPOSED SOIL WITHOUT LAGGING TO AVOID LOSS OF SOIL. LIMIT THE EXCAVATION TO 4 FEET BELOW PREVIOUSLY INSTALLED LAGGING.

TIEBACK STRESSING AND TESTING

PERFORMANCE TESTING
PRIOR TO INSTALLING PRODUCTION TIEBACKS, CONDUCT A MINIMUM OF TWO SUCCESSFUL PERFORMANCE TESTS ON TIEBACKS FOR EACH INSTALLATION METHOD AND SOIL TYPE ENCOUNTERED ON THE PROJECT. INSTALL THE TEST TIEBACKS BY THE SAME METHODS, PERSONNEL, MATERIALS, AND EQUIPMENT AS THE PRODUCTION ANCHORS. CHANGES IN METHODS, PERSONNEL, MATERIALS, OR EQUIPMENT MAY REQUIRE ADDITIONAL PERFORMANCE TESTING AS DETERMINED BY THE ENGINEER. PERFORM TESTING AFTER THE GROUT HAS CURED FOR AT LEAST 72 HOURS OR ATTAINED AT LEAST THE SPECIFIED 3-DAY COMPRESSIVE STRENGTH. AN INDEPENDENT TESTING LABORATORY SHALL RECORD ALL TEST DATA.

THE MAXIMUM STRESS IN THE PRESTRESSING STEEL SHALL NOT EXCEED 80 PERCENT OF THE GUARANTEED ULTIMATE TENSILE STRENGTH (GUTS) DURING TESTING. PILES AND TIEBACKS MAY REQUIRE EXTRA REINFORCEMENT TO PERMIT STRESSING TO 150 PERCENT OF THE DESIGN TIEBACK LOAD (DTL) AS REQUIRED BY THE PERFORMANCE TEST. TIEBACK DESIGN TEST LOADS SHALL BE THE DESIGN LOADS SHOWN ON THE DRAWINGS.

CONDUCT THE PERFORMANCE TESTS BY INCREMENTALLY LOADING THE TEST TIEBACKS TO A MAXIMUM TEST LOAD OF 150 PERCENT OF DTL IN ACCORDANCE WITH THE FOLLOWING SCHEDULE. RECORD THE TIEBACK MOVEMENTS AT EACH LOAD INCREMENT.

PERFORMANCE LOAD SCHEDULE

LOAD CYCLE	APPLIED LOAD	HOLD TIME	RECORD AND PLOT MOVEMENT δn = INCREMENT MOVEMENT δtn = TOTAL MOVEMENT TAKE READINGS AT 1, 2, 3, 4, 5, 6 AND 10 MINUTES	RECORD AND PLOT RESIDUAL MOVEMENT (δrn)	CALCULATE AND PLOT ELASTIC MOVEMENT (δen)
CYCLE 1	AL	< 1 MINUTE	-	-	δe1=δt1-δr1
CYCLE 1	0.25DTL	10 MINUTE	δt1	-	
CYCLE 2	AL	< 1 MINUTE	-	δr1	δe2=δt2-δr2
CYCLE 2	0.25DTL	< 1 MINUTE	δ2	-	
CYCLE 2	0.50DTL	10 MINUTE	δt2	-	
CYCLE 3	AL	< 1 MINUTE	-	δr2	δe3=δt3-δr3
CYCLE 3	0.25DTL	< 1 MINUTE	δ3	-	
CYCLE 3	0.50DTL	< 1 MINUTE	δ3	-	
CYCLE 3	0.75DTL	10 MINUTE	δt3	-	
CYCLE 4	AL	< 1 MINUTE	-	δr3	δe4=δt4-δr4
CYCLE 4	0.25DTL	< 1 MINUTE	δ4	-	
CYCLE 4	0.50DTL	< 1 MINUTE	δ4	-	
CYCLE 4	0.75DTL	< 1 MINUTE	δ4	-	
CYCLE 4	1.00DTL	10 MINUTE	δt4	-	
CYCLE 5	AL	< 1 MINUTE	-	δr4	δe5=δt5-δr5
CYCLE 5	0.25DTL	< 1 MINUTE	δ5	-	
CYCLE 5	0.50DTL	< 1 MINUTE	δ5	-	
CYCLE 5	0.75DTL	< 1 MINUTE	δ5	-	
CYCLE 5	1.00DTL	< 1 MINUTE	δ5	-	
CYCLE 5	1.33DTL	10 MINUTE	δt5	-	
CYCLE 6	AL	< 1 MINUTE	-	δr5	δe6=δt6-δr6
CYCLE 6	0.25DTL	< 1 MINUTE	δ6	-	
CYCLE 6	0.50DTL	< 1 MINUTE	δ6	-	
CYCLE 6	0.75DTL	< 1 MINUTE	δ6	-	
CYCLE 6	1.00DTL	< 1 MINUTE	δ6	-	
CYCLE 6	1.33DTL	< 1 MINUTE	δ6	-	
CYCLE 6	1.50DTL (CREEP TEST)	10 MINUTE	δt5, ZERO READING FOR CREEP TEST	-	
CYCLE 6	AL	< 1 MINUTE	-	δr6	
LOCK-OFF	ADJUST TO LOCK-OFF LOAD IF TEST RESULTS SATISFY ACCEPTANCE CRITERIA	-	-	-	-

APPLY THE MINIMUM ALIGNMENT LOAD (AL) REQUIRED TO ALIGN THE TESTING APPARATUS, NOT TO EXCEED 5 PERCENT OF DTL. SET THE DIAL GAUGES TO "ZERO" AFTER THE ALIGNMENT LOAD HAS BEEN APPLIED. FOLLOWING THE APPLICATION OF THE MAXIMUM LOAD (1.50 DTL), REDUCE THE LOAD TO THE ALIGNMENT LOAD (0.05 DTL MAXIMUM) AND RECORD THE PERMANENT SET.

START THE PERFORMANCE CREEP TEST PERIOD AS SOON AS THE MAXIMUM TEST LOAD (1.50 DTL) IS APPLIED. MEASURE AND RECORD TIEBACK MOVEMENTS DURING THE CREEP PORTION OF THE TEST IN INCREMENTS ON 1, 2, 3, 4, 5, 6, AND 10 MINUTES. MAINTAIN THE LOAD DURING THE CREEP TEST WITHIN 2 PERCENT OF THE INTENDED LOAD. WHERE THE TIEBACK MOVEMENT BETWEEN 1 MINUTE AND 10 MINUTES EXCEEDS 0.04 INCHES, MAINTAIN THE MAXIMUM TEST LOAD FOR AN ADDITIONAL 50 MINUTES AND RECORD TIEBACK MOVEMENTS AT 20, 30, 40, 50, AND 60 MINUTES. PERFORMANCE TESTED TIEBACKS MAY BE USED AS PRODUCTION TIEBACKS IF THEY FULFILL THE ACCEPTANCE CRITERIA NOTED BELOW AND UPON APPROVAL BY THE ENGINEER.

PROOF TESTING
COMPLETE PROOF TESTS ON ALL PRODUCTION TIEBACKS NOT SUBJECT TO A PERFORMANCE TEST. THE MAXIMUM STRESS IN THE PRESTRESSING STEEL SHALL NOT EXCEED 80 PERCENT OF GUTS DURING TESTING. USE THE DTL SHOWN ON THE DRAWINGS.

CONDUCT THE PROOF TESTS BY INCREMENTALLY LOADING THE TEST TIEBACKS TO A MAXIMUM TEST LOAD OF 130 PERCENT OF DTL IN ACCORDANCE WITH THE FOLLOWING SCHEDULE. RECORD THE TIEBACKS MOVEMENTS AT EACH LOAD INCREMENT.

PROOF TEST SCHEDULE

LOAD INCREMENT	APPLIED LOAD	HOLD TIME	RECORD AND PLOT MOVEMENT δn = INCREMENT MOVEMENT δtn = TOTAL MOVEMENT TAKE READINGS AT 1, 2, 3, 4, 5, 6 AND 10 MINUTES
INCREMENT 1	ALIGNMENT LOAD (AL)	< 1 MINUTE	-
INCREMENT 1	0.25 DESIGN LOAD (DTL)	< 1 MINUTE	δ1
INCREMENT 2	0.50DTL	< 1 MINUTE	δ2
INCREMENT 3	0.75DTL	< 1 MINUTE	δ3
INCREMENT 4	1.00DTL	< 1 MINUTE	δ4
INCREMENT 5	1.20DTL	< 1 MINUTE	δ5
INCREMENT 6	1.33DTL (CREEP TEST)	10 MINUTES	δ6
LOCK-OFF	ADJUST TO LOCK-OFF IF TEST RESULTS SATISFY ACCEPTANCE CRITERIA	-	-

APPLY THE MINIMUM ALIGNMENT LOAD (AL) REQUIRED TO ALIGN THE TESTING APPARATUS, NOT TO EXCEED 5 PERCENT OF DTL. SET THE DIAL GAUGES TO "ZERO" AFTER THE ALIGNMENT LOAD HAS BEEN APPLIED.

START THE PROOF CREEP TEST PERIOD AS SOON AS THE MAXIMUM TEST LOAD (1.33DTL) IS APPLIED. MEASURE AND RECORD TIEBACK MOVEMENTS DURING THE CREEP PORTION OF THE TEST IN INCREMENTS OF 1, 2, 3, 4, 5, 6, AND 10 MINUTES. MAINTAIN THE LOAD DURING THE CREEP TEST WITHIN 2 PERCENT OF THE INTENDED LOAD. WHERE THE TIEBACK MOVEMENT BETWEEN 1 MINUTE AND 10 MINUTES EXCEEDS 0.04 INCHES, MAINTAIN THE MAXIMUM TEST LOAD FOR AN ADDITIONAL 50 MINUTES AND RECORD TIEBACK MOVEMENTS AT 20, 30, 40, 50, AND 60 MINUTES.

TEST TIEBACK ACCEPTANCE CRITERIA
A TEST TIEBACK IS CONSIDERED ACCEPTABLE WHEN ALL OF THE FOLLOWING CRITERIA ARE MET:
1. FOR PERFORMANCE TESTS, THE TOTAL CREEP MOVEMENT IS LESS THAN 0.04 INCHES BETWEEN THE 1 AND 10 MINUTE READINGS OR THE TOTAL CREEP MOVEMENT IS LESS THAN 0.08 INCHES BETWEEN THE 6 AND 60 MINUTE READINGS, AND THE CREEP RATE IS LINEAR OR DECREASING THROUGHOUT THE CREEP TEST LOAD HOLD PERIOD.
2. FOR PROOF TESTS, THE TOTAL CREEP MOVEMENT IS LESS THAN 0.04 INCHES BETWEEN 1 AND 10 MINUTES, OR THE TOTAL CREEP MOVEMENT IS LESS THAN 0.08 INCHES BETWEEN 6 AND 60 MINUTES READINGS, AND THE CREEP RATE IS LINEAR OR DECREASING THROUGHOUT THE CREEP TEST LOAD HOLD PERIOD.
3. FOR PERFORMANCE AND PROOF TESTS, THE TOTAL MEASURED MOVEMENT AT THE MAXIMUM TEST LOAD EXCEEDS 80 PERCENT OF THE THEORETICAL ELASTIC ELONGATION OF THE UNBONDED LENGTH.
4. A PULLOUT FAILURE DOES NOT OCCUR. PULLOUT FAILURE IS DEFINED AS THE INABILITY TO FURTHER INCREASE THE TEST LOAD WHILE THERE IS CONTINUED PULLOUT MOVEMENT OF THE TEST TIEBACK OR THE NON-ELASTIC MOVEMENT EXCEEDS 2 INCHES. RECORD THE PULLOUT FAILURE LOAD AS PART OF THE TEST DATA.

MAINTAINING STABILITY OF THE TEMPORARY UNBONDED TEST LENGTH FOR SUBSEQUENT GROUTING IS THE CONTRACTOR'S RESPONSIBILITY. IF THE UNBONDED TEST LENGTH OF PRODUCTION PROOF TEST TIEBACKS CANNOT BE SATISFACTORILY GROUTED SUBSEQUENT TO TESTING, THE PROOF TEST TIEBACK SHALL BECOME SACRIFICIAL AND SHALL BE REPLACED.

TEST REJECTION
A TIEBACK MAY BE REJECTED IF IT DOES NOT MEET THE FOLLOWING CRITERION:
1. FOR PERFORMANCE TESTS, THE ENGINEER WILL EVALUATE THE RESULTS OF EACH PERFORMANCE TEST. INSTALLATION METHODS THAT DO NOT SATISFY THE TESTING REQUIREMENTS WILL BE REJECTED. THE CONTRACTOR SHALL PROPOSE ALTERNATIVE METHODS AND INSTALL REPLACEMENT VERIFICATION TEST TIEBACKS.
2. FOR PROOF TESTS, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO REPLACE SOME OR ALL OF THE INSTALLED PRODUCTION TIEBACKS BETWEEN A FAILED PROOF TEST AND THE ADJACENT PASSING PROOF TEST. ALTERNATIVELY, THE ENGINEER MAY REQUIRE THE INSTALLATION AND TESTING OF ADDITIONAL PROOF TEST TIEBACKS TO VERIFY THE ADJACENT PREVIOUSLY INSTALLED PRODUCTION TIEBACKS HAVE SUFFICIENT LOAD-CARRYING CAPACITY.

TIEBACK LOCK-OFF
FOLLOWING SUCCESSFUL PROOF LOADING, LOCK-OFF EACH TIEBACK ANCHOR AT THE LOADS NOTED ON THE PILE AND TIEBACK SCHEDULES. THE MAXIMUM STRESS IN PRESTRESSING STEEL SHALL NOT EXCEED 60 PERCENT OF THE GUTS AT THE DESIGN LOADS.

JACKING AND TEST EQUIPMENT
1. MEASURE THE LOAD ON THE TIEBACKS WITH A PRESSURE GAUGE CALIBRATED WITH THE JACK AND ACCURATE ENOUGH TO READ 100 PSI PRESSURE INCREMENTS. THE PUMP SHALL BE CAPABLE OF APPLYING EACH LOAD INCREMENT IN LESS THAN 60 SECONDS.
2. MEASURE THE TIEBACK HEAD MOVEMENT WITH A MINIMUM OF 2 DIAL GAUGES CAPABLE OF MEASURING TO 0.001 INCHES.
3. THE JACK SHALL BE POSITIONED SUCH THAT REPOSITIONING IS NOT REQUIRED DURING TESTING.

PILE BRACING FOR TIEBACK TESTING
STEEL BRACING MAY BE REQUIRED DURING TIEBACK STRESSING AND TESTING TO RESTRAIN THE SOLDIER PILES FROM TWISTING. THE LOCATIONS AND CONFIGURATION OF THE BRACING WILL BE DETERMINED IN THE FIELD AT THE TIME OF CONSTRUCTION. THE COST TO FURNISH AND INSTALL THE BRACING WILL BE CONSIDERED INCIDENTAL AND AT NO ADDITIONAL CHARGE TO THE OWNER.

SHORING MONITORING

PRECONSTRUCTION SURVEY
PRIOR TO CONSTRUCTION, COMPLETE A WRITTEN AND PHOTOGRAPHIC LOG OF EXISTING CONDITIONS OF THE ADJOINING CONSTRUCTION AND SITE IMPROVEMENTS THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY THE ABSENCE OF, THE INSTALLATION OF, OR THE PERFORMANCE OF EXCAVATION SUPPORT AND PROTECTION SYSTEMS. A LICENSED SURVEYOR SHALL DOCUMENT ALL EXISTING SUBSTANTIAL CRACKS IN ADJACENT STREETS, SIDEWALKS, AND EXISTING STRUCTURES. CRACK GAUGES MAY BE REQUIRED BY THE ENGINEER.

OPTICAL SURVEY
SURVEY THE VERTICAL AND HORIZONTAL DISPLACEMENT AT THE TOP OF EVERY OTHER SOLDIER PILE.

ESTABLISH SURVEY LINES NEAR THE TOP OF THE WALL AND AT DISTANCES UP TO THE WALL HEIGHT, H, BEHIND THE WALL FACE. SPACE THESE POINTS A MAXIMUM OF 50 FEET APART. FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER OF RECORD FOR ESTABLISHING THE SPACING AND LOCATION OF THE MONITORING POINTS.

ESTABLISH A BASELINE READING OF THE MONITORING POINTS ON THE GROUND SURFACE BEHIND THE SHORING WALLS BEFORE INSTALLING THE SHORING. ESTABLISH A BASELINE READING OF THE SURVEY POINTS ON THE SOLDIER PILES PRIOR TO BEGINNING EXCAVATION.

THE GEOTECHNICAL ENGINEER SHALL REVIEW SURVEY DATA AND PROVIDE AN EVALUATION OF WALL PERFORMANCE ALONG WITH SURVEY DATA TO THE AUTHORITY HAVING JURISDICTION (AHJ) ON AT LEAST A WEEKLY BASIS. IMMEDIATELY AND DIRECTLY NOTIFY THE AHJ IF ANY UNUSUAL OR SIGNIFICANTLY INCREASED MOVEMENT OCCURS.

MONITORING OF THE SURVEY POINTS SHALL INCLUDE VERTICAL AND HORIZONTAL MEASUREMENTS ACCURATE TO AT LEAST 0.01 FEET. THE FREQUENCY OF THE READINGS IS DEPENDENT ON THE CONSTRUCTION STAGE, AS NOTED BELOW:

OPTICAL SURVEY SCHEDULE

CONSTRUCTION STAGE	MONITORING FREQUENCY
DURING EXCAVATION AND UNTIL WALL MOVEMENTS HAVE STABILIZED.	TWICE WEEKLY
DURING EXCAVATION IF LATERAL WALL MOVEMENTS EXCEED 1/2 INCH, OR AT THE DISCRETION OF THE ENGINEER.	GEOTECHNICAL AND SHORING ENGINEER TO EVALUATE
AFTER EXCAVATION IS COMPLETE AND WALL MOVEMENTS HAVE STABILIZED, IF THE DATA INDICATES LITTLE OR NO MOVEMENT.	TWICE MONTHLY

SUBMIT SURVEY DATA TO THE GEOTECHNICAL ENGINEER, SHORING ENGINEER, AND THE AHJ EACH WEEK. NOTIFY THE AHJ IMMEDIATELY IF ANY UNUSUAL OR SIGNIFICANTLY INCREASED MOVEMENTS OCCUR.

SURVEYING MUST CONTINUE UNTIL THE PERMANENT STRUCTURE IS COMPLETE UP TO FINAL STREET GRADES. TERMINATION OF SURVEY MONITORING WILL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AFTER REVIEW AND APPROVAL BY THE AHJ*.

INCLINOMETERS
PROVIDE AND INSTALL INCLINOMETER CASING ON SOLDIER PILES SELECTED BY THE GEOTECHNICAL ENGINEER TO FACILITATE MEASUREMENT OF WALL DEFLECTIONS AS THE EXCAVATION AND SHORING INSTALLATION PROCEEDS.

PROVIDE INCLINOMETER CASINGS CONSISTING OF 2.75 INCH OD ABS PLASTIC PIPE WITH INTERNAL LONGITUDINAL GROOVES, AS SUPPLIED BY SLOPE INDICATOR COMPANY (SINCO) OR APPROVED EQUAL. PROVIDE SELF-ALIGNING COUPLINGS, CAPS AND FITTINGS AND ALL NECESSARY INSTALLATION TOOLS AND ACCESSORIES.

FIRMLY ATTACH INCLINOMETER CASINGS TO THE BACK FACE OF THE STEEL SOLDIER PILE PER DETAIL 13/SH4.01 . AFFIX THE BOTTOM OF THE CASING APPROXIMATELY 2 FEET ABOVE THE BOTTOM OF THE SOLDIER PILE. THE TOP OF THE CASING SHALL EXTEND AT LEAST 1 FOOT ABOVE THE TOP OF THE SOLDIER PILE.

SECURE THE CASING TO THE STEEL SOLDIER PILE ON MAXIMUM 5 FOOT CENTERS USING C-CLAMPS OR STEEL STRAPS TACK-WELDED TO THE FLANGE. PROTECT CASING FROM DAMAGE DURING THE WELDING OPERATIONS. INSTALL THE CASINGS WITH NOT MORE THAN 3° OF TWIST OR AXIAL ROTATION BETWEEN TOP AND BOTTOM. GROOVES ON THE INSIDE OF THE CASING MUST BE ORIENTED SO THAT THE ORTHOGONAL GROOVES ARE POSITIONED PARALLEL AND PERPENDICULAR AT THE EXCAVATION. TIGHTLY CAP CASINGS AT EACH END PRIOR TO ATTACHMENT TO THE STEEL BEAM. TAPE ALL JOINTS TO PREVENT INTRUSION OF GROUT. FILL CASINGS WITH CLEAN WATER PRIOR TO INSERTION INTO PILE HOLE. INSTALL ALL INCLINOMETER CASING IN THE PRESENCE OF AND WITH APPROVAL OF THE GEOTECHNICAL ENGINEER.

SHORING WALL DEFLECTION LIMITS AND MITIGATION MEASURES

IF LATERAL MOVEMENTS OF THE SHORING WALL ARE OBSERVED TO EXCEED 0.5 INCH WHERE ABUTTING CITY RIGHT-OF-WAYS OR PRIVATE PROPERTIES, STOP CONSTRUCTION OF THE SHORING WALL IN THE VICINITY OF THE AFFECTED PORTION OF THE SHORING WALL. IMMEDIATELY AND DIRECTLY NOTIFY THE GEOTECHNICAL AND STRUCTURAL ENGINEERS, WALL DESIGNER, SDCI, AND SDOT IF 0.5 INCH OF MOVEMENT OCCURS BETWEEN TWO CONSECUTIVE READINGS AND WHEN TOTAL MOVEMENTS REACH 0.5 INCH. AT THAT AMOUNT OF MOVEMENT, THE CONTRACTOR, ENGINEER, AND GEOTECHNICAL ENGINEER SHALL DETERMINE THE CAUSE OF DISPLACEMENT AND DEVELOP REMEDIAL MEASURES SUFFICIENT TO LIMIT TOTAL WALL MOVEMENTS TO 1 INCH. THESE MEASURES MAY CONSIST OF INTERNAL BRACING (I.E. WALES AND RAKERS), ADDITIONAL TIEBACKS AND/OR SOIL BERMING. IMPLEMENTATION OF THE MITIGATION MEASURES WILL BE CONSIDERED AT THAT TIME

THE FREQUENCY OF THE SHORING SURVEY MONITORING PROGRAM WILL BE ALTERED DEPENDING ON HOW MUCH MOVEMENT IS OBSERVED. AT MINIMUM, THE MONITORING WILL BE INCREASED TO ONCE PER DAY UNTIL DIRECTED OTHERWISE BY THE GEOTECHNICAL ENGINEER.

IMPLEMENT THE MITIGATION MEASURES DEVELOPED ABOVE IF 1 INCH LATERAL DEFLECTION IS EXCEEDED FOR SHORING SYSTEMS RETAINING CITY RIGHT-OF-WAYS. BERM SOIL AGAINST THE SUBJECT WALL TO ARREST THE WALL MOVEMENT UNTIL THE MITIGATION MEASURES ARE IMPLEMENTED. NOTIFY SDCI AND SDOT IMMEDIATELY OF THE OCCURRENCE OF THESE EVENTS.

PRECONSTRUCTION MEETING

A PRE-CONSTRUCTION MEETING WITH SDOT SHORING REVIEW AND INSPECTION, SEPARATE FROM ANY SDCI PRE-CONSTRUCTION MEETING, WILL BE REQUIRED PRIOR TO THE START OF EXCAVATIONS ADJACENT TO THE PUBLIC ROW. ATTENDEES SHALL INCLUDE REPRESENTATIVES OF THE OWNER, ARCHITECT, GENERAL CONTRACTOR, EXCAVATION AND SHORING CONTRACTORS, THE PROJECT GEOTECHNICAL ENGINEER, PROJECT SURVEYORS, AND SDOT SHORING REVIEW AND INSPECTION PERSONNEL.

PAINTING

STEEL PAINTING
PAINT PERMANENT SOLDIER PILES WITH THE FOLLOWING PAINTING SYSTEM WHERE EXPOSED TO WEATHER.

SURFACE PREPARATION:	STEEL STRUCTURES PAINTING COUNCIL (SSPC) SSPC-SP6
PRIMER:	SSPC PAINT SPECIFICATION NO. 1
INTERMEDIATE:	PER ARCHITECT
FINISH:	PER ARCHITECT

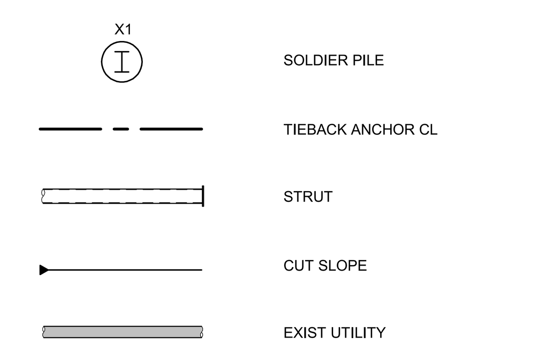
SHORING ABBREVIATIONS

ARCH, B/, BLDG, CDF, CL, CLR, COL, CONC, CP, DIA, EL, EQ, EXC, EXIST, FDN, FT, FTG, GS, IN, K, KSF

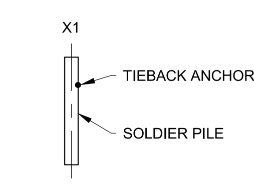
KSI, LB, LLH, LLV, MAX, MIN, NS, OC, OD, OF, PL, PP, PSF, PSI, R, ROW, SHT, SOG, STRUCT, T/, TYP

SHORING DRAWING SYMBOLS

PLAN

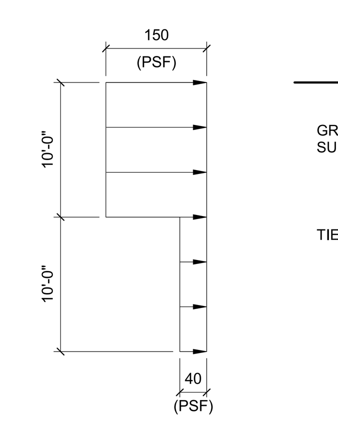


ELEVATION

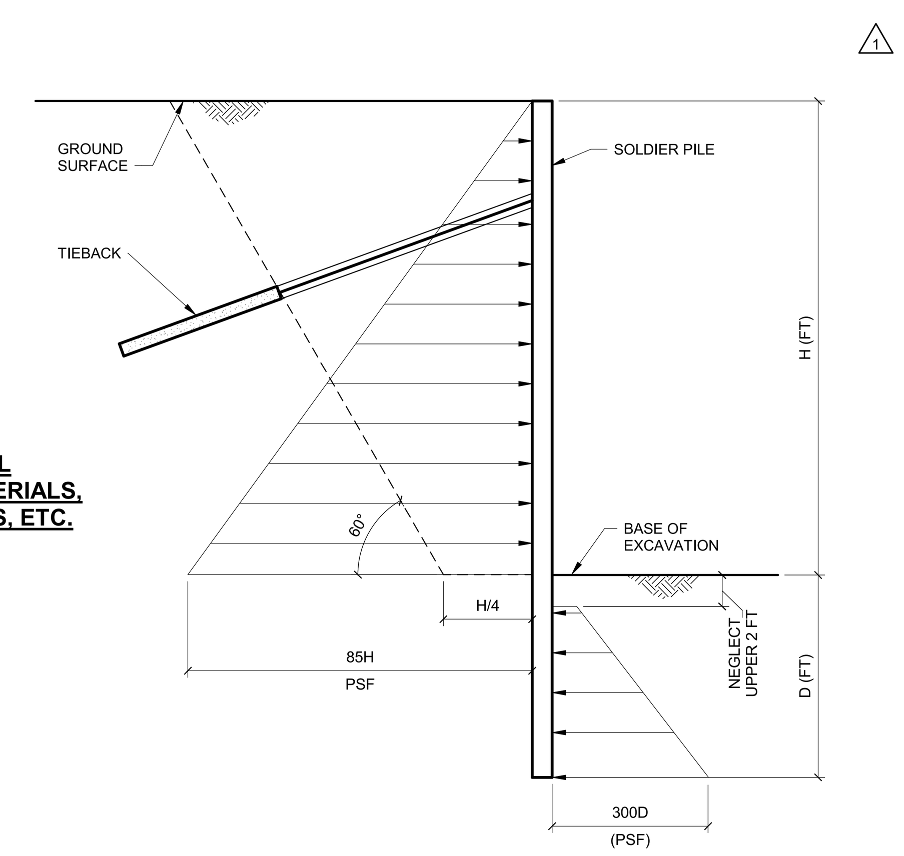


DESIGN PRESSURES

1. ALL DESIGN PRESSURES ARE PER THE GEOTECHNICAL ENGINEER.
2. ACTIVE PRESSURE ACTS OVER PILE SPACING ABOVE BASE OF EXCAVATION AND ONE PILE DIAMETER BELOW BASE OF EXCAVATION.
3. PASSIVE PRESSURE ACTS OVER TWICE THE GROUTED SOLDIER PILE DIAMETER, OR THE PILE SPACING, WHICHEVER IS LESS.
4. ALL UNITS IN FEET AND POUNDS.
5. ALLOWABLE SOIL FRICTION BETWEEN CONCRETE AND SOIL FOR SHAFT = 2.0 KSF IN DENSE NATIVE SOIL.
6. ALLOWABLE SHAFT END BEARING = 15 KSF.
7. ANCHOR LENGTHS ARE DERIVED BASED ON 4.0 KLF BOND STRENGTH IN ANCHOR ZONE. THE CONTRACTOR SHALL SELECT DRILLING METHODS AND ANCHOR SIZE TO ACHIEVE THIS CAPACITY.
8. DEPTH OF DEWATERING TO BE AT BOTTOM OF EXCAVATION.
9. DESIGN DOES NOT INCLUDE HYDROSTATIC PRESSURES ABOVE THE GROUNDWATER TABLE.
10. LATERAL SURCHARGE PRESSURE IS BASED ON A TRAFFIC SURFACE SURCHARGE OF 250 PSF ACTING OVER A 10 FOOT WIDE INFLUENCE AREA, PER THE GEOTECHNICAL REPORT.



EQUIVALENT SOIL SURCHARGE FOR MATERIALS, EQUIPMENT, VEHICLES, ETC.



DESIGN LATERAL SOIL PRESSURES

DRAWING LIST

SH0.01	SHORING NOTES, DRAWING LIST, ABBREVIATIONS AND SYMBOLS
SH2.01	SHORING SITE PLAN
SH4.01	TYPICAL SHORING DETAILS

SHORING SPECIAL INSPECTIONS AND TESTING SCHEDULE

ESTABLISHED PER IBC 2018 SECTION 109 AND CHAPTER 17

ITEM	IBC CODE	COMMENTS
SOLDIER PILES	1705.8	BY GEOTECHNICAL ENGINEER
TIEBACK ANCHORS	1705.1.1	BY GEOTECHNICAL ENGINEER
INSPECTION IN FABRICATION SHOP	1704.2.5	-
PILE STRUCTURAL CONCRETE AND TIEBACK GROUT	1705.3	-
STRUCTURAL STEEL	1705.2	-
FABRICATION AND ERECTION		-
HIGH STRENGTH BOLTING		-
WELDING		-

SHORING SPECIAL INSPECTIONS AND TESTING NOTES:
1. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. INSPECTION REQUIREMENTS FOR SYSTEMS DESIGNED BY OTHERS SHALL BE DEFINED BY THE REGISTERED DESIGN PROFESSIONAL RESPONSIBLE FOR THEIR DESIGN. SPECIAL INSPECTION TESTING REQUIREMENTS APPLY TO ALL BIDDER-DESIGNED COMPONENTS.

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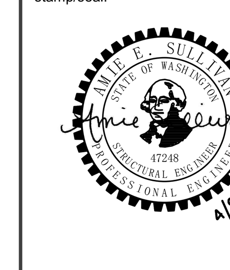

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revisions:

no.:	date:	description:
1	02/23/24	R1 PERMIT

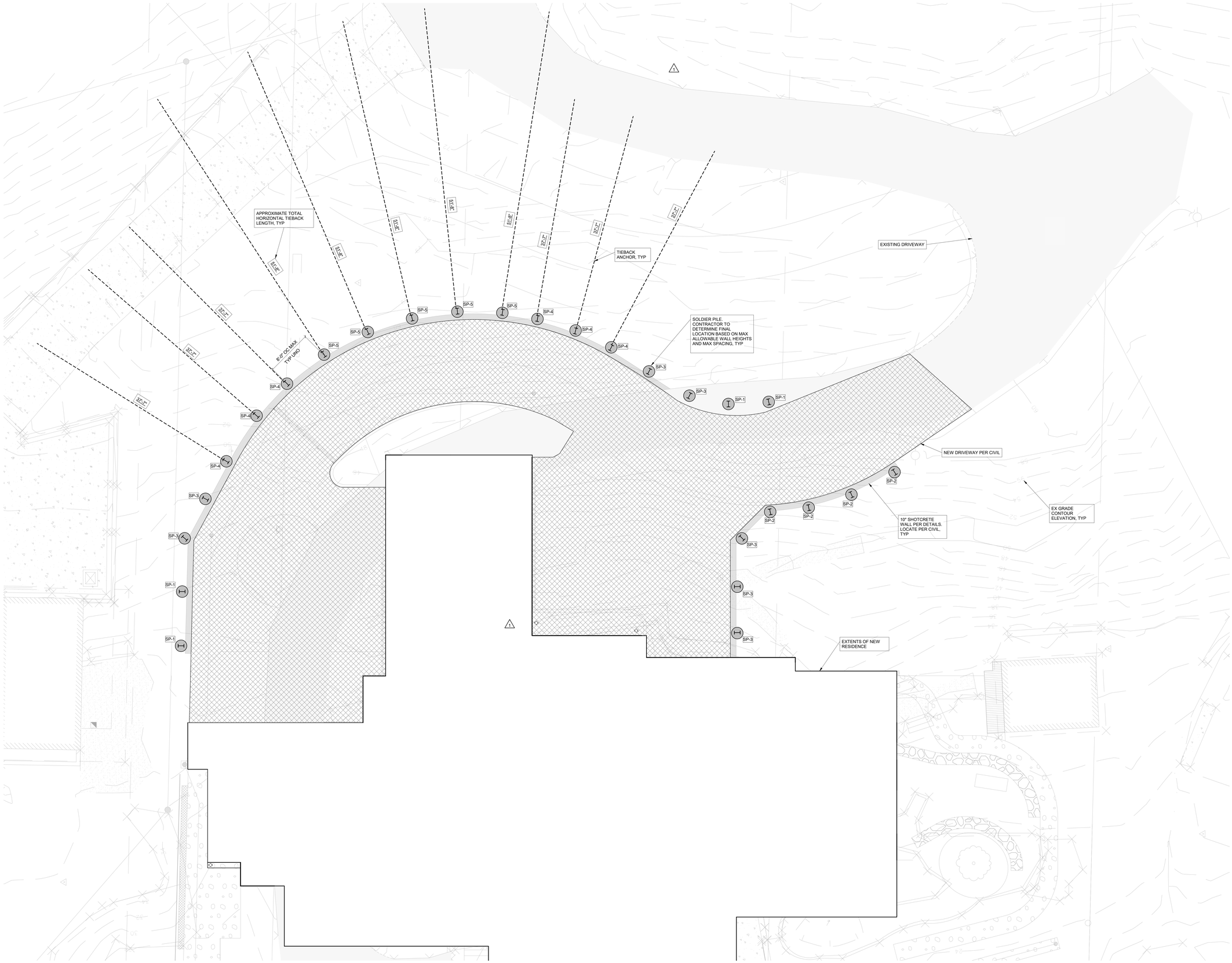
PERMIT
09/08/2023

title: SHORING NOTES, DRAWING LIST, ABBREVIATIONS AND SYMBOLS

sheet: SH0.01

SHORING PLAN NOTES:

1. DIMENSIONS OF BUILDING STRUCTURE ARE FOR REFERENCE ONLY. COORDINATE ALL WORK WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
2. PILES ARE ASSUMED TO BE INSTALLED FROM EXISTING GRADE (±).
3. TRAFFIC AND CONSTRUCTION LOADING IS INDICATED ON THE SHORING NOTES.
4. SP-X INDICATES SOLDIER PILE TYPE PER 19/SH4.01



1 SHORING SITE PLAN
3/16" = 1'-0"

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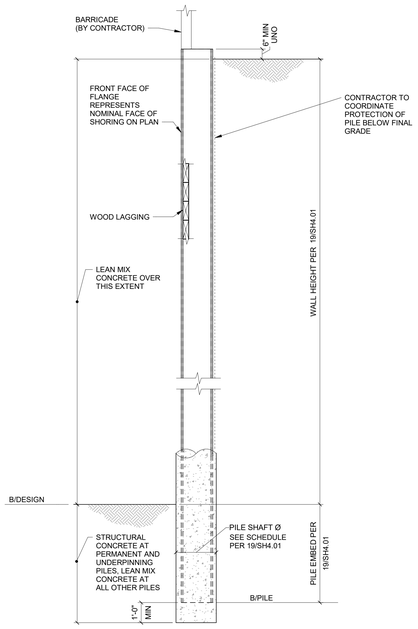
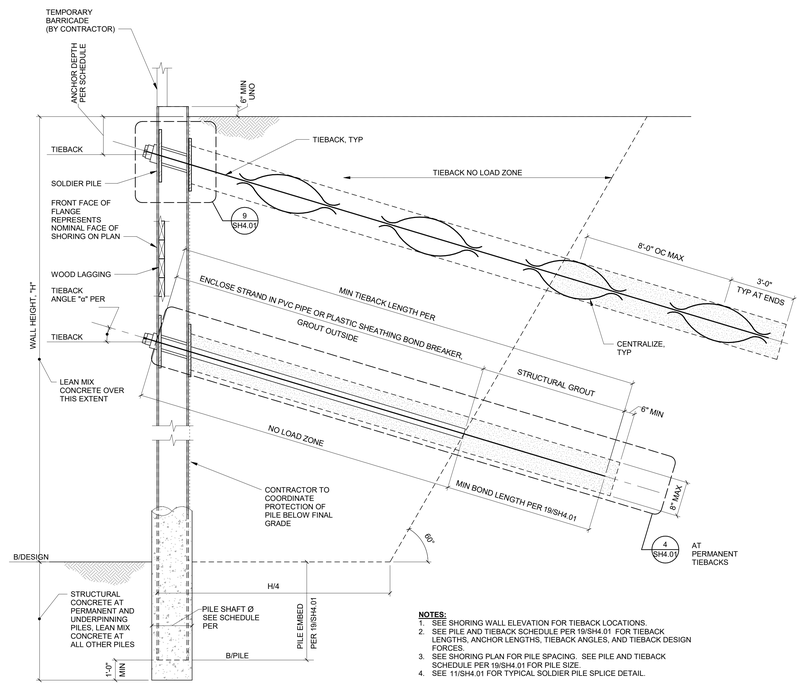
title:
SHORING SITE PLAN

sheet:
SH2.01



6 TYP CANTILEVERED SOLDIER PILE SECTION

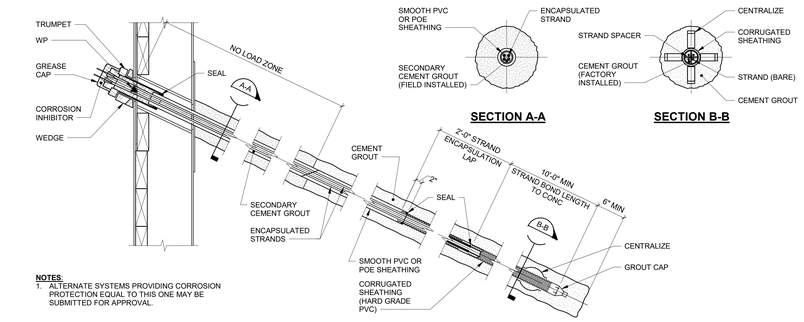
NO SCALE



NOTES:
1. SEE SHORING WALL ELEVATION FOR TIEBACK LOCATIONS.
2. SEE PILE AND TIEBACK SCHEDULE PER 19/SH4.01 FOR TIEBACK LENGTHS, ANCHOR LENGTHS, TIEBACK ANGLES, AND TIEBACK DESIGN FORCES.
3. SEE SHORING PLAN FOR PILE SPACING. SEE PILE AND TIEBACK SCHEDULE PER 19/SH4.01 FOR PILE SIZE.
4. SEE 11/SH4.01 FOR TYPICAL SOLDIER PILE SPLICE DETAIL.

7 TYP SOLDIER PILE AND TIEBACK SECTION

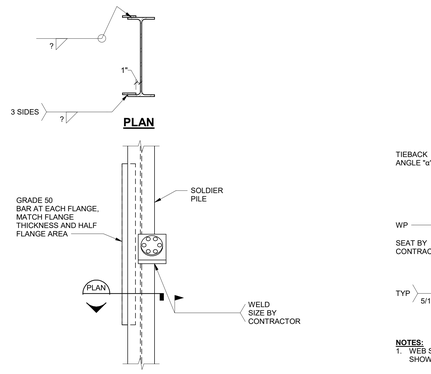
NO SCALE



NOTES:
1. ALTERNATE SYSTEMS PROVIDING CORROSION PROTECTION EQUAL TO THIS ONE MAY BE SUBMITTED FOR APPROVAL

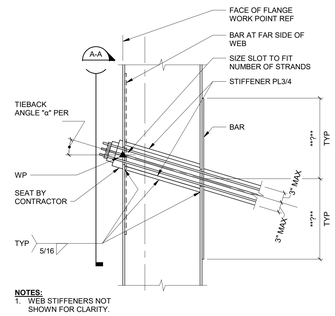
4 TYP PERMANENT TIEBACK SECTION

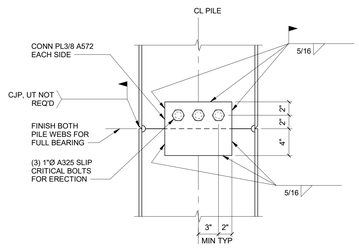
NO SCALE



9 TYP TIEBACK ANCHORAGE

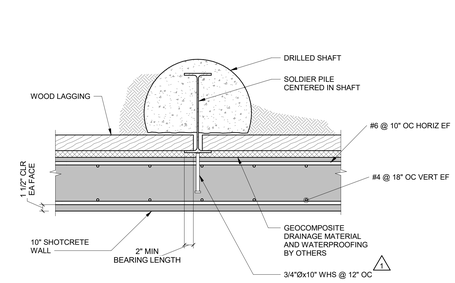
NO SCALE





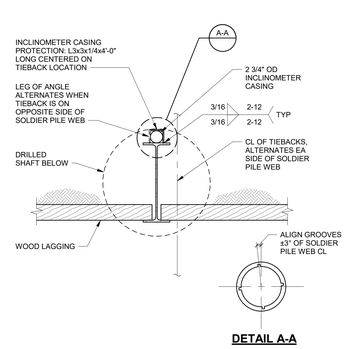
11 TYP SOLDIER PILE SPLICE

NO SCALE



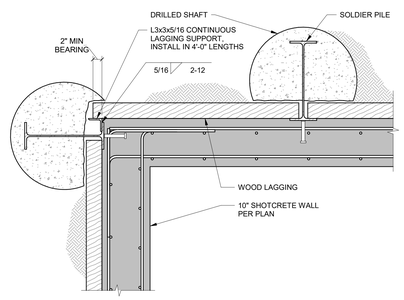
12 TYP SOLDIER PILE DETAIL

NO SCALE



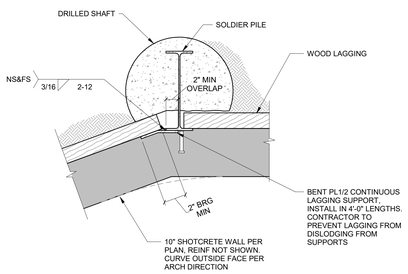
13 TYP DETAIL AT INCLINOMETER

NO SCALE



16 LAGGING DETAIL (INSIDE CORNER)

NO SCALE



17 SHORING WALL BEND DETAIL

NO SCALE

SHORING WALL PILE AND TIEBACK SCHEDULE

	PILE NUMBER	SP-1	SP-2	SP-3	SP-4	SP-5
SOLDIER PILE	W SECTION	W12x30	W12x30	W12x106	W12x53	W12x87
	MAX WALL HEIGHT (FT)	6	6	10	17	21
	EMBED DEPTH (FT)	12.5	14.5	19.5	10	10
	PILE LENGTH (FT)	18.5	20.5	29.5	27	31
	DRILLED SHAFT DIA (IN)	24	24	24	24	24
TIEBACK INFO	ANCHOR DEPTH (FT)	-	-	-	7	9
	α (DEG)	-	-	-	20	20
	TIEBACK LENGTH (FT)	-	-	-	40	55
	BOND LENGTH (FT)	-	-	-	27	41
	# 0.6-IN DIA STRANDS	-	-	-	3	4
	DESIGN LOAD (K)	-	-	-	84	128
	KICKOFF LOAD (K)	-	-	-	84	128

1 2

NOTES:
1. PROVIDE (2) ADDITIONAL STRANDS FOR TIEBACKS RECEIVING 200% DESIGN STRESS VERIFICATION TEST LOADS.

19 SHORING WALL PILE AND TIEBACK SCHEDULE

NO SCALE

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2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

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09/08/2023

title:
TYPICAL SHORING DETAILS

sheet:
SH4.01

LEGEND

ACU	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT PER HOUR
C	COMMON
CAP	CAPACITY
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CLG	CEILING, COOLING
CO	CLEANOUT
COMB	COMBUSTION
CONT	CONTINUE, CONTROL
CONTR	CONTRACTOR
COP	COEFFICIENT OF PERFORMANCE
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
D	DIAMETER
DB	DRY BULB, DECIBEL
DEG	DEGREE
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE, ENGINE GENERATOR
ELEC	ELECTRIC
EQUIV	EQUIVALENT
ESP	EXTERNAL STATIC PRESSURE
EXH	EXHAUST
EXT	EXTERIOR, EXTERNAL
F	FAHRENHEIT
FD	FIRE DAMPER
FCU	FAN COIL UNIT
FLR	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FSD	FIRE/SMOKE DAMPER
G	GAS
GRD	GRILLES, REGISTERS, AND DIFFUSERS
GWB	GYPSUM WALLBOARD
HORIZ	HORIZONTAL
HP	HORSEPOWER, HEAT PUMP
HRU	HEAT RECOVERY UNIT
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HVU	HEATING AND VENTILATION UNIT
HWR	HIGH WALL RETURN, HOT WATER RETURN
HWS	HIGH WALL SUPPLY, HOT WATER SUPPLY
HX	HEAT EXCHANGER
ID	INDIRECT DRAIN, INSIDE DIAMETER
IN	INCH
KW	KILOWATT
L	LONG, LENGTH
LB	POUND
LWR	LOW WALL RETURN
LWS	LOW WALL SUPPLY
MBH	THOUSAND BTU PER HOUR
MECH	MECHANICAL
MCA	MINIMUM CIRCUIT AMPACITY
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
OA	OUTDOOR AIR
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIMENSION OR DIAMETER
OPNG	OPENING
P	PUMP
PD	PRESSURE DROP
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
REF	REFERENCE
RF	RELIEF FAN
RG	RETURN GRILLE
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SCH	SCHEDULE
SF	SUPPLY FAN, SQUARE FOOT
SENS	SENSIBLE
SG	SUPPLY GRILLE
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SO	SCREENED OPENING
SP	STATIC PRESSURE
SS	STAINLESS STEEL, SANITARY SEWER
SQ	SQUARE
TG	TRANSFER GRILLE
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VENT
VENT	VENTILATION, VENTILATOR
VTR	VENT THRU ROOF
W	WASTE, WATT, WIDE
WB	WET BULB (TEMPERATURE)

EQUIPMENT

EF-1 — TYPICAL EQUIPMENT DESIGNATION (EXHAUST FAN SHOWN)

DSD — DUCT SMOKE DETECTOR

T — ROOM THERMOSTAT OR TEMPERATURE TRANSMITTER

H — ROOM HUMIDISTAT OR HUMIDITY TRANSMITTER

CO — CARBON MONOXIDE SENSOR

SD — SMOKE DETECTOR

TERMINALS

CD-12x12 400 OR CD-1 400 — DIFFUSER/GRILLE TYPE, AND NUMBER OR SIZE; DESIGN CFM (WHERE APPLICABLE); CEILING DIFFUSER (FLOW ARROWS SHOWN FOR NON SYMMETRICAL AIRFLOW)

CEILING RETURN/EXHAUST GRILLE

LINEAR DIFFUSER, CEILING OR WALL MOUNTED (FLOW ARROWS SHOWN FOR NON SYMMETRICAL AIRFLOW)

WALL SUPPLY GRILLE (SG)

WALL RETURN/EXHAUST GRILLE (RG, EG)

TRANSFER GRILLE (TG), DUCT CONNECTED, WALL MOUNTED W/ OPTIONAL CFM SHOWN

TRANSFER GRILLE, CEILING MOUNTED WITH FULL-SIZED LINED DUCT CONNECTION

GENERAL

ARCHITECTURAL BACKGROUND (THIN LINE)

NEW MECHANICAL WORK (HEAVY LINE)

MATCHLINE OR PROPERTY LINE

SECTION INDENTIFICATION (DETAIL SIMILAR)

INDICATES DIRECTION OF CUTTING PLANE
LETTER INDICATES SECTION (NO. INDICATES DETAIL)
SHEET # WHERE SECTION IS DRAWN
SHEET # WHERE SECTION IS TAKEN

DUCTWORK

18x12 — DUCT (1ST FIGURE = SIDE SHOWN, 2ND FIGURE = SIDE NOT SHOWN)

UP DOWN — DUCT SECTION, POSITIVE PRESSURE

UP DOWN — DUCT SECTION, NEGATIVE PRESSURE

UP DOWN — ROUND DUCT SECTION

UP UP UP — DUCT PENETRATION THRU FLOOR OR ROOF

FSD FSD — FIRE/SMOKE DAMPER (—◀ = HORIZ DUCT, –◆ = VERT DUCT), 2-HR RATED, UON

VOLUME DAMPER

FD FD — FIRE DAMPER (—◀ = HORIZ DUCT, –◆ = VERT DUCT), 2-HR RATED, UON

90° ELBOW, R/D OR R/W=1.5

SQUARE CORNER ELBOW WITH TURNING VANES

90° TAKE-OFF OR TEE

90° CONICAL TAKE-OFF

45° LATERAL TAKE-OFF

TRANSITION OR REDUCER (FOT = FLAT ON TOP, FOB = FLAT ON BOTTOM)

WYE FITTING

90° RECTANGULAR TAKE-OFF WITH 45° TAPER

90° DIVERGING RECTANGULAR TEE, EITHER RADIUS OR TURNING VANES

FLEXIBLE DUCT

ROUND DUCT INDICATOR

GENERAL NOTES

GENERAL NOTES – MECHANICAL

1. REFERENCE TO RELATED WORK: "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, LANDSCAPE, OR KITCHEN), OR ITEM BASED ON A SPECIFIC MANUFACTURER'S DIMENSIONS (VERIFY).

2. ELECTRICAL CHARACTERISTICS: REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS (VOLTAGES, ETC.) OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED.

3. CODES: COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE APPLICABLE BUILDING, MECHANICAL, ENERGY, PLUMBING, FIRE, AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL AHJ.

4. PREPARE AND SUBMIT FOR REVIEW A SHOP DRAWING BASED ON FINAL STRUCTURAL SHOP DRAWINGS FOR LOCATING AND ROUTING ALL DUCTWORK, DAMPERS, EQUIPMENT, PIPING, ETC.
   A. COORDINATE FLOOR AND BEAM PENETRATIONS WITH STRUCTURAL.
   B. COORDINATE FINAL LOCATION AND ROUTING WITH CEILING, LIGHTS, WALLS, FIRE SPRINKLER PIPING, AND OTHER TRADES WORK.
   C. INCLUDE ADDITIONAL OFFSETS, ELBOWS, ROUTING, EQUIVALENT DUCT SIZING EXCHANGE, RELOCATING, ETC. AS REQUIRED FOR A COMPLETE OPERATING MECHANICAL SYSTEM.
   D. PROVIDE SHOP DRAWINGS AT NO ADDITIONAL COST TO THE OWNER.

5. MECHANICAL CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITHIN THE STRUCTURE.

6. ACCESS DOORS: COORDINATE WITH ARCHITECT AND LOCATE ALL ACCESS DOORS ON SHOP DRAWINGS PRIOR TO BEGINNING OF CONSTRUCTION. ACCESS DOORS IN FIRE RATED STRUCTURE SHALL BE FIRE RATED. VERIFY ACCESS DOOR LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

7. RATED PENETRATION: DUCT PENETRATIONS THROUGH RATED ENCLOSURES SHALL BE FIRE/SMOKE DAMPERED PER THE LATEST EDITION OF THE UNDERWRITERS LABORATORIES(UL) FIRE RESISTANCE WITH HOURLY RATINGS FOR THROUGH-PENETRATION FIRE STOPS SYSTEM VOLUME #2, OR SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S UL LISTINGS (3M OR EQUIVALENT). DETERMINE REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO BID.

8. EXHAUST OUTLETS/DRYER VENTS: SOURCE-SPECIFIC FANS SHALL BE VENTED TO OUTDOORS WITH A MINIMUM 3' CLEARANCE BETWEEN VENT OUTLETS AND BUILDING OPENINGS, AND 10' MINIMUM BETWEEN VENT OUTLETS AND MECHANICAL AIR INTAKES.

9. SHAFT AND PLENUM CONNECTIONS: SEAL CONNECTIONS TO AIR SHAFTS AIRTIGHT. PROVIDE AIRTIGHT SEAL AROUND PENETRATIONS IN AIR PLENUMS.

10. LIGHT FIXTURE CLEARANCE: COORDINATE LOCATIONS OF MECHANICAL WORK TO PROVIDE CLEARANCES OVER LIGHTING FIXTURES FOR REMOVAL AND REPLACEMENT.

11. MOTORS: COMPLY WITH ENERGY CODE ENFORCED BY AHJ FOR MINIMUM EFFICIENCIES UNDER FULL LOAD.

12. ACCESS CLEARANCES FOR MAINTENANCE AND REPLACEMENT: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET. COORDINATE LOCATIONS OF MECHANICAL WORK AND WORK OF OTHER TRADES TO PROVIDE ACCESS CLEARANCES FOR SERVICE AND MAINTENANCE.

COORDINATION REQUIREMENTS

1. DUCTWORK: LOCATE AND COORDINATE THE EXACT LOCATION OF DUCTWORK WITH STRUCTURAL PLANS AND WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION OF ANY STRUCTURE OR EQUIPMENT. COORDINATE WITH FRAMING CONTRACTOR TO ASSURE JOIST SPACES LINE UP WHEN DUCTWORK MUST PASS THROUGH DIFFERENT JOIST SPACES.

2. ADJUSTMENTS: ALL EQUIPMENT, MOTORS, FANS GAS BURNERS, IGNITION DEVICES, DRIVES, ETC. SHALL BE ADJUSTED AND BALANCED TO OPERATE AT SPECIFIED RATINGS AS REQUIRED FOR THIS PROJECT SITE AND ACCOUNTING FOR ELEVATION ABOVE SEA LEVEL.

3. APPROVALS: MECHANICAL AND PLUMBING EQUIPMENT SHALL BE APPROVED FOR INSTALLATION IN THE PROJECT LOCATION AND SHALL HAVE ALL CERTIFICATIONS AND RATINGS TO MEET ALL ENERGY, POLLUTION, ENVIRONMENTAL, SEISMIC, ETC. CODES AND REGULATIONS. THE CONTRACTOR SHALL COORDINATE WITH HIS MANUFACTURE SUPPLIERS AND SHALL INCLUDE ALL COSTS REQUIRED TO MEET THESE REQUIREMENTS IN HIS BID.

HVAC NOTES

1. ATTACHMENTS: AIR DISTRIBUTION OUTLETS AND LOUVERS SHALL HAVE ALL REQUIRED ACCESSORIES AND ATTACHMENTS FOR A COMPLETE CONNECTION TO THE SPECIFIC TYPE OF STRUCTURE THAT THEY ARE BEING ATTACHED TO. THIS INCLUDES, BUT IS NOT LIMITED TO, EXTERIOR BRICKS, GWB WALLS, GWB CEILING, ETC.

2. FIRE RATINGS: RATED FLOOR/CEILING JOINT SPACES HAVING DUCTWORK INSIDE THEM SHALL BE FIRE/SMOKE PROTECTED TO MAINTAIN THE 1-HOUR FLOOR/CEILING RATING PER LOCAL JURISDICTIONS. EXHAUST DUCTWORK PENETRATING THE 1-HOUR ROOF/CEILING OR FLOOR/CEILING ASSEMBLY SHALL HAVE ACCESSIBLE CEILING FIRE DAMPERS. ALTERNATIVELY, THE EXHAUST DUCTWORK SHALL BE ROUTED INSIDE A RATED SHAFT TO PROTECT THE CEILING/ROOF RATING PER THE LOCAL JURISDICTIONS.

3. FIRESTOP: PIPE, DUCT, AND CONDUIT PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRE AND SMOKE STOPPED PER CODE.

4. DUCTWORK: DUCTWORK SHALL BE SMOOTH SHEET METAL (CLASS-1). DUCTWORK THROUGH FIRE RATED STRUCTURE AND FLOOR SHALL BE MIN. 26 GA. STEEL. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE 5'-0", UNLESS OTHERWISE NOTED ON DRAWINGS. DUCTWORK SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.

5. DUCTWORK AND PIPING OUTSIDE OF MECHANICAL ROOMS SHALL BE CONCEALED. COORDINATE WITH THE GENERAL CONTRACTOR TO FUR-OUT AS REQUIRED.

6. VOLUME DAMPERS: PROVIDE AN ACCESSIBLE MANUAL VOLUME DAMPER FOR EACH SUPPLY, RETURN, OSA, AND EXHAUST OPENING, LOCATED AS FAR UPSTREAM AS POSSIBLE FROM THE OPENING. PROVIDE A MANUAL VOLUME DAMPER FOR BRANCH MAINS SERVING MORE THAN ONE OPENING. VOLUME DAMPERS IN NON-ACCESSIBLE CEILINGS SHALL HAVE A CONTROL ARM EXTENDED TO AN ACCESSIBLE LOCATION. PROVIDE "YOUNG" REGULATOR OR EQUAL. EXACT LOCATION OF CONTROL DEVICES VISIBLE IN FINISHED SPACES SHALL BE COORDINATED WITH THE ARCHITECT.

7. SEISMIC: PROVIDE SEISMIC RESTRAINTS FOR MECHANICAL EQUIPMENT, PIPING, AND DUCTWORK PER SMACNA AND LOCAL REGULATIONS.

8. FILTER CLEARANCE: PROVIDE ADEQUATE CLEARANCE FOR CHANGING AIR FILTERS

SHEET METAL NOTES

1. REFERENCE: SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, CURRENT EDITION.

2. CLEARANCE: COORDINATE DUCTWORK WITH MISCELLANEOUS OBSTRUCTIONS IN CEILING SPACE.

3. ROUND ELBOWS AND OFFSETS: FULL RADIUS (R/D = 1.5), 5-PIECE SEGMENTED OR STAMPED. REFER TO SMACNA HVACDCS FIG 2-7, 3-3. DO NOT USE ANGLED OFFSET (TYPE 1). MITERED OFFSET (TYPE 2) MAY BE USED UP TO 30 DEGREE OFFSET ANGLE.

4. ROUND TEES AND LATERALS: CONICAL TEE PER SMACNA HVACDCS FIG 3-5; DO NOT USE STRAIGHT TEE; DO NOT USE CONICAL SADDLE TAP FOR EXPOSED DUCTWORK IN FINISHED SPACES. 90-DEGREE TEE WITH OVAL TO ROUND TAP, LATERAL, AND 45-DEGREE RECTANGULAR LEAD-IN PER SMACNA HVACDCS FIG 3-4.

5. RECTANGULAR ELBOWS AND OFFSETS: FULL RADIUS WHERE SPACE PERMITS, R/W = 1.5; OTHERWISE USE SQUARE CORNER ELBOW WITH TURNING VANES.

6. RECTANGULAR DIVIDED FLOW FITTINGS: USE GENERALLY, EXCEPT BRANCHES TO TERMINALS; SMACNA HVACDCS FIG 2-5, TYPES 1, 2, 4A, AND 4B. DO NOT USE TYPE 3.

7. TURNING VANES: H.E.P. MANUFACTURER OR APPROVED HIGH EFFICIENCY PROFILE AIRFOIL TYPE FOR RECTANGULAR SQUARE THROAT ELBOWS. ACOUSTICAL TYPE FOR RETURN AIR MITERED ELBOWS.

8. TAKEOFFS TO OPENINGS: CONICAL TYPE WITH VOLUME DAMPER FOR ROUND DUCT BRANCHES PER SMACNA HVACDCS FIG 2-6, MINIMUM INLET DIAMETER 2 INCHES LARGER THAN DUCT SIZE. 45 DEGREE ENTRY FITTING FOR RECTANGULAR DUCT BRANCHES PER SMACNA HVACDCS FIG 2-6.

9. FLEXIBLE CONNECTIONS: PROVIDE AT EACH DUCT CONNECTION TO FANS, PACKAGED HVAC EQUIPMENT, EXTERNALLY ISOLATED AIR HANDLING UNITS, FAN COIL UNITS, AND SIMILAR EQUIPMENT. EXCEPTION: EQUIPMENT IN CORRIDOR CEILING SPACES WHERE FIRE RATING IS REQUIRED.

10. ALL DUCT WORK SHALL BE CLASSIFIED FOR LOW PRESSURE SYSTEMS PER IMC SECTION 603.

11. ALL DUCTS AND JOINTS SHALL BE SEALED PER IMC SECTION 603.

INSULATION/LINING NOTES

1. ENERGY CODE: AS A MINIMUM, COMPLY WITH THICKNESSES AND TYPES LISTED IN ENERGY CODE ENFORCED BY AHJ.

2. EXTENT OF INTERNAL DUCT LINING:
   A. GRILLE AND DIFFUSER BOXES AND BOOTS.
   B. TRANSFER DUCTS.

3. EXTENT OF EXTERNAL DUCT INSULATION:
   A. SUPPLY AND RETURN AIR IN UNCONDITIONED SPACES, MECHANICAL ROOMS, ELECTRICAL ROOMS, AND EQUIPMENT ROOMS NOT SPECIFIED TO BE INTERNALLY LINED.
   B. SUPPLY AIR ABOVE CEILINGS OR EXPOSED NOT SPECIFIED TO BE INTERNALLY LINED.
   C. OUTDOOR AIR INTAKE.

4. MISCELLANEOUS DUCT FITTINGS (CONICAL TAKEOFFS, ETC.): WRAP WITH INSULATION FOR CONDENSATION CONTROL.

PIPING NOTES

1. DISASSEMBLY PROVISIONS: PROVIDE UNIONS OR FLANGES AT PIPING CONNECTIONS TO EQUIPMENT, COILS, TRAPS, CONTROL VALVES, AND OTHER COMPONENTS TO ALLOW DISASSEMBLY FOR MAINTENANCE.

2. REDUCERS: PROVIDE AS REQUIRED FROM LINE PIPE SIZE TO EQUIPMENT, TRAP, COIL, AND CONTROL VALVE CONNECTION SIZES.

3. OFFSETS: PROVIDE FOR BRANCH LINES TO EQUIPMENT.

4. DIELECTRIC UNIONS: PROVIDE AT CONNECTIONS OF DISSIMILAR PIPE.

DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

PRE-CON MEETING

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WILL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS, AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THOUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	2 HOURS
PLUMBING/PIPING	2 HOURS
ELECTRICAL	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

APPLICABLE CODES

THESE DRAWINGS ARE BASED ON THE FOLLOWING CODES:

-2018 INTERNATIONAL RESIDENTIAL CODE (WITH STATE OF WASHINGTON AMENDMENTS)

-2018 UNIFORM PLUMBING CODE (WITH STATE OF WASHINGTON AMENDMENTS)

-2018 WASHINGTON STATE ENERGY CODE - RESIDENTIAL PROVISIONS

DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET: PERMIT SET 1/8/23	INCLUDED IN SET: PERMIT REVISION SET 2/23/24	SHEETS WITH REVISIONS: 1 PERMIT REVISION SET 2/23/24
M0.00	LEGEND, GENERAL NOTES, DRAWING INDEX	●	●	
M0.01	ENERGY CODE NOTES, SCHEDULES	●	●	●
M2.10	LOWER LEVEL FLOOR PLAN	●	●	●
M2.20	MAIN LEVEL FLOOR PLAN	●	●	●
M2.30	UPPER LEVEL FLOOR PLAN	●	●	●
M2.40	ROOF PLAN	●	●	●
M4.00	EQUIPMENT DATA SHEETS	●	●	
M5.00	HVAC LOAD CALCULATIONS	●	●	

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SCHEDULES

SPLIT SYSTEM HEAT PUMP SCHEDULE – INDOOR UNIT

EQUIP NO.	SERVICE	MOUNTING/ DISCHARGE	FAN			AUX. HEAT, KW (240V)	AUX. HEAT ELECTRICAL			FAN COIL ELECTRICAL			BASIS OF DESIGN	CONNECTED OUTDOOR UNIT
			AIRFLOW, CFM	ESP, IN WG	MIN. OSA, CFM		VOLTAGE	MCA	MOCP	VOLTAGE	MCA	MOCP		
FCU-1	JUDY'S STUDIO	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-2	GYM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-3	PLAYROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-4	KITCHEN/LIVING/DINING ROOMS	VERTICAL	900	0.50	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT36A112A (3)	HP-1
FCU-5	PRIMARY BEDROOM	HORIZONTAL	570	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXDKS18A112A	HP-1
FCU-6	MEDIA/FAMILY ROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-7	ENTRY	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-8	GUEST SUITE	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-9	BONUS/PLAYROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-10	OFFICE	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-11	GUEST BEDROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-12	KIDS BEDROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3

NOTES: (1) OUTDOOR AIR PROVIDED VIA WHOLE HOUSE VENTILATION SYSTEM.
(2) INDOOR UNIT POWERED FROM OUTDOOR UNIT.
(3) PROVIDE MANUFACTURER'S OPTIONAL CONDENSATE PUMP.

SPLIT SYSTEM HEAT PUMP SCHEDULE – OUTDOOR UNIT

EQUIP NO.	SERVICE	CAPACITY, TONS	TOTAL COOLING CAPACITY, BTUH	SEER	TOTAL HEATING CAPACITY, BTUH	HSPF	ELECTRICAL			WEIGHT, LBS	BASIS OF DESIGN (1)(2)(3)(4)	CONNECTED BRANCH BOX
							VOLTAGE	MCA	MOCP			
HP-1	PER PLANS	5.0	60,000	17.8	66,000	10.7	230V/1P	46.0	60	310	MITSUBISHI NTXMSM60A182AA	BC-1
HP-2	PER PLANS	5.0	60,000	17.8	66,000	10.7	230V/1P	46.0	60	310	MITSUBISHI NTXMSM60A182AA	BC-2
HP-3	PER PLANS	5.0	60,000	17.8	66,000	10.7	230V/1P	46.0	60	310	MITSUBISHI NTXMSM60A182AA	BC-3

NOTES: (1) ARI LISTED WITH ALL STANDARD FEATURES, INSTALLATION ACCESSORIES AND COMPRESSOR SHORT CYCLING PROTECTION. FILTER DRIVER, REFRIGERANT LINE FILTER, LIQUID SOLENOID VALVE AND SAFETY PRESSURE SWITCHES. INSTALL REFRIGERANT TUBING AND LENGTH IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
(2) PROVIDE ALL REQUIRED ACCESSORIES FOR LOW-AMBIENT AND LONG-LINE APPLICATIONS.
(3) ROUTING OF REFRIGERANT LINES FROM INDOOR UNITS TO OUTDOOR UNITS NOT SHOWN ON PLANS. CONTRACTOR TO FIELD COORDINATE ROUTING.
(4) REFRIGERANT SHALL BE R-410A.

BRANCH BOX CONTROLLER SCHEDULE

EQUIP NO.	SERVICE	NUMBER OF PORTS	ELECTRICAL			WEIGHT, LBS.	BASIS OF DESIGN (1)(2)	NUMBER OF CONNECTED INDOOR UNITS	CONNECTED INDOOR FAN COIL UNITS	CONNECTED OUTDOOR HEAT PUMP UNIT
			VOLTAGE	MCA	MOCP					
BC-1	PER PLANS	2	(3)	(3)	(3)	22	TAC-MKA31BC	2	FCU-4,5	HP-1
BC-2	PER PLANS	5	(3)	(3)	(3)	25	TAC-MKA51BC	5	FCU-1,2,3,6,7	HP-2
BC-3	PER PLANS	5	(3)	(3)	(3)	25	TAC-MKA51BC	5	FCU-8,9,10,11,12	HP-3

NOTES:(1) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.
(2) CONTRACTOR TO FIELD COORDINATE ROUTING OF REFRIGERANT PIPING. REFRIGERANT PIPE ROUTING NOT SHOWN ON PLANS.
(3) BRANCH BOX CONTROLLER POWERED FROM OUTDOOR HEAT PUMP UNIT.

FAN SCHEDULE

EQUIP NO.	SERVICE	TYPE	AIRFLOW, CFM	ESP, IN WG	ELECTRICAL		OPERATION	BASIS OF DESIGN (1)
					VOLTAGE	HP		
EF-1	BATHROOM/POWDER ROOM	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-2	KILN ROOM	CEILING MOUNTED	100	0.25	120V/1P	FHP	(6)	PANASONIC FV-0511VK2 (4)
EF-3	STORAGE ROOM	CEILING MOUNTED	250	0.25	120V/1P	FHP	(7)	PANASONIC FV-30VQ3
EF-4	POOL/SPA MECH ROOM	CEILING MOUNTED	200	0.25	120V/1P	FHP	CONTINUOUS	PANASONIC FV-30VQ3
EF-5	GYM	CEILING MOUNTED	100	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-6	LAUNDRY ROOM	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-7	MUD ROOM 103	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-8	MUD ROOM 113	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-9	MUD ROOM 206	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-10	CRAWL SPACE	CEILING MOUNTED	50	0.25	120V/1P	FHP	CONTINUOUS	PANASONIC FV-0511VK2 ⚠

NOTES: (1) PROVIDE BACKDRAFT DAMPERS ON EXHAUST FANS.
(2) FAN SHALL RUN VIA MOTION SENSOR.
(3) 1.0 SONES MAXIMUM.
(4) FAN SHALL BE ENERGY STAR RATED.
(5) PROVIDE MANUFACTURER'S OPTIONAL MOTION SENSOR.
(6) FAN SHALL BE INTERLOCKED WITH WALL THERMOSTAT. FAN SHALL TURN ON WHEN ROOM TEMPERATURE REACHES 70° F.
(7) FAN SHALL BE INTERLOCKED WITH WALL THERMOSTAT. FAN SHALL TURN ON WHEN ROOM TEMPERATURE REACHES 90° F.

ENERGY RECOVERY VENTILATOR

EQUIP NO.	SERVICE	MOUNTING/ DISCHARGE	FAN		ELECTRICAL			SENSIBLE HEAT RECOVERY EFFICIENCY	BASIS OF DESIGN (1)(2)(3)
			AIRFLOW, CFM	ESP, IN WG	VOLTAGE	WATTS	MOCP		
DOAS-1	PER PLANS	VERTICAL	120	0.4	120V/1P	45	15	0.77	PANASONIC FV-20VEC1

NOTES: (1) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.
(2) UNIT SHALL RUN CONTINUOUSLY.
(3) UNIT SHALL HAVE A MINIMUM MERV 8 FILTER.

FAN EFFICACY TABLE

EQUIP NO.	BASIS OF DESIGN	AIRFLOW, CFM	ELECTRICAL, WATTS	MINIMUM FAN EFFICACY (1)	FAN EFFICACY
EF-1	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-2	PANASONIC FV-0511VK2	100	13.1	1.4 CFM/WATT	7.7 CFM/WATT
EF-3	PANASONIC FV-30VQ3	250	66.8	2.8 CFM/WATT	4.1 CFM/WATT
EF-4	PANASONIC FV-30VQ3	200	60.0	2.8 CFM/WATT	3.3 CFM/WATT
EF-5	PANASONIC FV-0511VK2	100	13.1	1.4 CFM/WATT	7.7 CFM/WATT
EF-6	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-7	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-8	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-9	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-10	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT ⚠
DOAS-1	PANASONIC FV-20VEC1	120	45	1.2 CFM/WATT	2.6 CFM/WATT

NOTES: (1) PER 2018 WSEC TABLE R403.6.1.

DIFFUSER SCHEDULE

CALLOUT	DESCRIPTION	AIRFLOW RANGE, CFM	FACE SIZE, IN	BASIS OF DESIGN
CD-1	CEILING DIFFUSER	0-100	8x8	SHOEMAKER 100 O SERIES
CD-2	CEILING DIFFUSER	0-200	12x12	SHOEMAKER 100 O SERIES
CD-3	CEILING DIFFUSER	0-50	6x6	SHOEMAKER 100 O SERIES
CG-1	CEILING GRILLE	0-125	8ø	SHOEMAKER 90 SERIES
CG-2	CEILING GRILLE	0-250	12ø	SHOEMAKER 90 SERIES
CG-3	CEILING GRILLE	0-325	14ø	SHOEMAKER 90 SERIES
EG-1	EXHAUST GRILLE	0-100	8x8	SHOEMAKER 1050 SERIES
FG-1	FLOOR GRILLE	0-100	10x4	SHOEMAKER 375 SERIES
FG-2	FLOOR GRILLE	0-150	10x6	SHOEMAKER 375 SERIES
FG-3	FLOOR GRILLE	0-200	14x6	SHOEMAKER 375 SERIES
FG-4	FLOOR GRILLE	0-250	16x6	SHOEMAKER 375 SERIES
RG-1	RETURN GRILLE	0-100	8x8	SHOEMAKER 1050 SERIES
RG-2	RETURN GRILLE	0-2000	20x20	SHOEMAKER 1050 SERIES
RG-3	RETURN GRILLE	0-750	14x14	SHOEMAKER 1050 SERIES
RG-4	RETURN GRILLE	0-200	10x10	SHOEMAKER 1050 SERIES
RG-5	RETURN GRILLE	0-650	18x12	SHOEMAKER 1050 SERIES
RG-6	RETURN GRILLE	0-325	14x8	SHOEMAKER 1050 SERIES
RG-7	RETURN GRILLE	0-425	18x8	SHOEMAKER 1050 SERIES
RG-8	RETURN GRILLE	0-570	14x14	SHOEMAKER 1050 SERIES
RG-9	RETURN GRILLE	0-600	14ø	SHOEMAKER 90 SERIES
SG-1	SUPPLY GRILLE	0-250	16x6	SHOEMAKER 950 SERIES
SG-2	SUPPLY GRILLE	0-425	20x8	SHOEMAKER 950 SERIES
SG-3	SUPPLY GRILLE	0-175	12x6	SHOEMAKER 950 SERIES
SG-4	SUPPLY GRILLE	0-375	18x8	SHOEMAKER 950 SERIES
SG-5	SUPPLY GRILLE	0-570	14x14	SHOEMAKER 950 SERIES

DUCT INSULATION SCHEDULE

DUCT TYPE	INSULATION MATERIAL	R-VALUE	VAPOR RETARDER REQUIRED?
DUCTS LOCATED OUTSIDE THE BUILDING THERMAL ENVELOPE	MINERAL-WOOL BLANKET	8.0	Y

NOTES

WHOLE HOUSE VENTILATION REQUIREMENTS
EACH DWELLING UNIT OR SLEEPING UNIT SHALL BE EQUIPPED WITH A WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM THAT COMPLIES WITH SECTIONS M1505.4.1 THROUGH M1505.4.4.

BATHROOMS, TOILET ROOMS, AND KITCHENS SHALL INCLUDE A LOCAL EXHAUST SYSTEM. SUCH LOCAL EXHAUST SYSTEMS SHALL HAVE THE CAPACITY TO EXHAUST THE MINIMUM AIRFLOW RATE IN ACCORDANCE WITH TABLE M1505.4.4(1). FANS REQUIRED BY THIS SECTION SHALL BE PROVIDED WITH CONTROLS THAT ENABLE MANUAL OVERRIDE OR AUTOMATIC OCCUPANCY SENSOR, HUMIDITY SENSOR OR POLLUTANT SENSOR CONTROLS. AN "ON/OFF" SWITCH SHALL MEET THIS REQUIREMENT FOR MANUAL CONTROLS. MANUAL FAN CONTROLS SHALL BE READILY ACCESSIBLE IN THE ROOM SERVED BY THE FAN.

2018 IRC TABLE M1505.4.4(1)

AREA TO BE EXHAUSTED	INTERMITTENT	CONTINUOUS
KITCHENS	100 CFM	30 CFM
BATHROOMS-TOILET ROOMS	50 CFM	20 CFM

THE WHOLE HOUSE VENTILATION SYSTEM SHALL CONSIST OF AN ERV/HRV WITH INTEGRAL FANS; AND THE ASSOCIATED DUCTS AND CONTROLS. THE SYSTEM SHALL BE DESIGNED AND INSTALLED TO SUPPLY AND EXHAUST THE MINIMUM OUTDOOR AIRFLOW RATES PER SECTION M1505.4.3 AS CORRECTED BY THE BALANCED AND/OR DISTRIBUTED WHOLE-HOUSE VENTILATION SYSTEM COEFFICIENTS IN ACCORDANCE WITH SECTION M1505.4.3.1.

BUILDING 1 RESIDENTIAL VENTILATION CALCULATIONS

UNIT TYPE	TOTAL SQUARE FOOTAGE	NUMBER OF BEDROOMS	2018 IRC CRITERIA (1)(2)					TOTAL CFM PROVIDED BY ERV/HRV
			NUMBER OF BEDROOMS	FLOOR AREA (SQUARE FEET)	REQUIRED CFM	VENTILATION QUALITY ADJUSTMENT COEFFICIENT (3)	MINIMUM VENTILATION RATE REQUIRED	
HOUSE	6,440	4	4	6,440	94	1.0	102	120

NOTE:(1) VENTILATION CRITERIA IS PER THE 2018 IRC, CHAPTER 15, EQUATION 15-1.
(2) MINIMUM CFM FOR CONTINUOUSLY OPERATING FAN(S).
(3) ADJUSTMENT COEFFICIENT IS PER 2018 IRC, TABLE M1505.4.3(2) FOR A BALANCED AND DISTRIBUTED WHOLE HOUSE VENTILATION SYSTEM.

2018 IRC TABLE M1505.4.3(2)

SYSTEM TYPE	DISTRIBUTED	NOT DISTRIBUTED
BALANCED	1.0	1.25
NOT BALANCED	1.25	1.5

THE BALANCED WHOLE HOUSE VENTILATION SYSTEM SHALL INCLUDE BOTH SUPPLY AND EXHAUST FANS. THE SUPPLY AND EXHAUST FANS SHALL HAVE AIRFLOW THAT IS WITHIN 10 PERCENT OF EACH OTHER. THE TESTED AND BALANCED TOTAL MECHANICAL EXHAUST AIRFLOW RATE IS WITHIN 10 PERCENT OR 5 CFM, WHICHEVER IS GREATER, OF THE TOTAL MECHANICAL SUPPLY AIRFLOW RATE. THE FLOW RATE TEST RESULTS SHALL BE SUBMITTED AND POSTED IN ACCORDANCE WITH SECTION M1505.4.1.7. THE EXHAUST FAN SHALL MEET THE REQUIREMENTS OF SECTION M1505.4.1.2. THE SUPPLY FAN SHALL MEET THE REQUIREMENTS OF SECTION M1505.4.1.3. BALANCED VENTILATION SYSTEMS WITH BOTH SUPPLY AND EXHAUST FANS IN A PACKAGED PRODUCT, SUCH AS AN ERV/HRV SHALL MEET THE REQUIREMENTS OF HVI 920, AS APPLICABLE. INTERMITTENT DRYER EXHAUST, INTERMITTENT RANGE HOOD EXHAUST, AND INTERMITTENT TOILET ROOM EXHAUST AIRFLOW RATES ABOVE THE RESIDENTIAL DWELLING OR SLEEPING UNIT MINIMUM VENTILATION RATE ARE EXEMPT FROM THE BALANCED AIRFLOW CALCULATIONS.

WHOLE HOUSE MECHANICAL VENTILATION SYSTEMS SHALL BE TESTED, BALANCED AND VERIFIED TO PROVIDE A FLOW RATE NOT LESS THAN THE MINIMUM REQUIRED BY SECTIONS M1505.4.3 AND M1505.4.4. TESTING SHALL BE PERFORMED ACCORDING TO THE VENTILATION EQUIPMENT MANUFACTURER'S INSTRUCTIONS, OR BY USING A FLOW HOOD, FLOW GRID, OR OTHER AIRFLOW MEASURING DEVICE AT THE MECHANICAL VENTILATION FAN'S INLET TERMINALS, OUTLET TERMINALS OR GRILLES OR IN THE CONNECTED VENTILATION DUCTS. WHERE REQUIRED BY THE BUILDING OFFICIAL, TESTING SHALL BE CONDUCTED BY AN APPROVED THIRD PARTY. A WRITTEN REPORT OF THE RESULTS OF THE TEST SHALL BE SIGNED BY THE PARTY CONDCUTING THE TEST AND PROVIDED TO THE BUILDING OFFICIAL AND BE POSTED IN THE DWELLING UNIT PER SECTION M1505.4.1.7.

WHOLE HOUSE VENTILATION SUPPLY AND EXHAUST FANS SPECIFIED IN THIS SECTION SHALL HAVE A MINIMUM EFFICACY AS PRESCRIBED IN THE WASHINGTON STATE ENERGY CODE. DESIGN AND INSTALLATION OF THE SYSTEM OR EQUIPMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHOLE HOUSE VENTILATION FANS SHALL BE RATED FOR SOUND AT NO LESS THAN THE MINIMUM AIRFLOW RATE REQUIRED BY SECTION M1505.4.3.1. VENTILATION FANS SHALL BE RATED FOR SOUND AT A MINIMUM OF 1.0 SONE. THIS SOUND RATING SHALL BE AT A MINIMUM OF 0.1 IN. W.C. (25 PA) STATIC PRESSURE IN ACCORDANCE WITH HVI PROCEDURES SPECIFIED IN SECTION M1505.4.1.2 AND M1505.4.1.3. EXCEPTION: HVAC AIR HANDLERS, ERV/HRV UNITS, AND REMOTE MOUNTED FANS NEED NOT MEET THE SOUND REQUIREMENTS. TO BE CONSIDERED FOR THIS EXCEPTION, A REMOTE MOUNTED FAN MUST BE MOUNTED OUTSIDE THE HABITABLE SPACES, BATHROOMS, TOILETS, AND HALLWAYS, AND THERE MUST BE AT LEAST 4 FEET OF DUCTWORK BETWEEN THE FAN AND THE INTAKE GRILLE.

CONTROLS FOR THE WHOLE-HOUSE VENTILATION SYSTEM SHALL COMPLY WITH THE FOLLOWING:
1. THE WHOLE-HOUSE VENTILATION SYSTEM SHALL BE CONTROLLED WITH MANUAL SWITCHES, TIMERS OR OTHER MEANS THAT PROVIDE FOR AUTOMATIC OPERATION OF THE VENTILATION SYSTEM THAT HAVE READY ACCESS FOR THE OCCUPANT.
2. THE WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM SHALL BE PROVIDED WITH CONTROLS THAT ENABLE MANUAL OVERRIDE OFF OF THE SYSTEM BY THE OCCUPANT DURING PERIODS OF POOR OUTDOOR AIR QUALITY. CONTROLS SHALL INCLUDE PERMANENT TEXT OR A SYMBOL INDICATING THEIR FUNCTION. RECOMMENDED CONTROL PERMANENT LABELING TO INCLUDE TEXT SIMILAR TO THE FOLLOWING; "LEAVE ON UNLESS OUTDOOR AIR QUALITY IS VERY POOR." MANUAL CONTROLS SHALL HAVE READY ACCESS FOR THE OCCUPANT.
3. WHOLE-HOUSE VENTILATION SYSTEMS SHALL BE CONFIGURED TO OPERATE CONTINUOUSLY EXCEPT WHERE INTERMITTENT OFF CONTROLS ARE PROVIDED IN ACCORDANCE WITH SECTION M1505.4.3.2.

FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATIONS
PER 2018 IMC 401.4.3, ITEM 3, EXCEPTION, SEPARATION IS NOT REQUIRED BETWEEN INTAKE AIR OPENINGS AND LIVING SPACE RELIEF AIR EXHAUST AIR OPENINGS OF AN INDIVIDUAL DWELLING UNIT OR SLEEPING UNIT, NOT TO INCLUDE COMMON AREAS OUTSIDE OF THE DWELLING UNIT OR SLEEPING UNIT, WHERE A FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATION FITTING, LISTED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, IS USED TO SEPARATE THE AIR STREAMS. A MINIMUM OF 5 FEET HORIZONTAL SEPARATION BETWEEN OTHER ENVIRONMENTAL AIR EXHAUST OUTLETS AND OTHER DWELLING OR SLEEPING UNIT FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATION FITTINGS SHALL BE MAINTAINED.

ENERGY CODE NOTES

WSEC SECTION R406: ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS

EACH DWELLING UNIT IN A RESIDENTIAL BUILDING SHALL COMPLY WITH SUFFICIENT CREDIT OPTIONS FROM SECTION R406.
CREDIT FROM BOTH SCTIONS R406.2 AND R406.3 ARE REQUIRED:

☐ #1. SMALL DWELLING UNIT: 3.0 CREDITS
DWELLING UNITS LESS THAN 1500 SQUARE FEET IN CONDITIONED FLOOR AREA WITH LESS THAN 300 SQUARE FEET OF FENESTRATION AREA. ADDITIONS TO EXISTING BUILDING THAT ARE GREATER THAN 500 SQUARE FEET OF HEATED FLOOR AREA BUT LESS THAN 1500 SQUARE FEET.

☐ #2. MEDIUM DWELLING UNIT: 6.0 CREDITS
ALL DWELLING UNITS THAT ARE NOT INCLUDED IN #1, #3 OR #4.

☒ #3. LARGE DWELLING UNIT: 7.0 CREDITS
DWELLING UNITS EXCEEDING 5000 SQUARE FEET OF CONDITIONED FLOOR AREA.

☐ #4. DWELLING UNITS SERVING R-2 OCCUPANCIES: 4.5 CREDITS

☐ #5. ADDITIONS LESS THAN 500 SQUARE FEET: 1.5 CREDITS

TABLE R406.2 FUEL NORMALIZATION CREDITS

SYSTEM TYPE	DESCRIPTION	CREDITS	CREDIT TAKEN
1	COMBUSTION HEATING EQUIPMENT MEETING MINIMUM FEDERAL EFFICIENCY STANDARDS FOR THE EQUIPMENT LISTED IN TABLE C403.3.2(4) OR C403.3.2(5)	0.0	–
2	FOR AN INITIAL HEATING SYSTEM USING A HEAT PUMP THAT MEETS FEDERAL STANDARDS FOR EQUIPMENT LISTED IN TABLE C403.3.2(2)C OR C403.3.2(2) OR AIR TO WATER HEAT PUMP UNITS THAT ARE CONFIGURED TO PROVIDE BOTH HEATING AND COOLING AND ARE RATED IN ACCORDANCE WITH AHRI 550 / 590	1.0	1.0
3	FOR HEATING SYSTEM BASED ON ELECTRIC RESISTANCE ONLY (EITHER FORCED AIR OR ZONAL)	-1.0	–
4	FOR HEATING SYSTEM BASED ON ELECTRIC RESISTANCE WITH A DUCTLESS MINI-SPLIT HEAT PUMP SYSTEM IN ACCORDANCE WITH SECTION R403.7.1 INCLUDING THE EXCEPTION	0.5	–
5	ALL OTHER HEATING SYSTEMS	-1.0	–
	TOTAL CREDITS		1.0

TABLE R406.3 ENERGY CREDITS

OPTION	DESCRIPTION	CREDITS	CREDIT TAKEN
1	EFFICIENT BUILDING ENVELOPE OPTIONS		
	OPTION 1.1	0.5	–
	OPTION 1.2	1.0	–
	OPTION 1.3	0.5	–
	OPTION 1.4	1.0	–
	OPTION 1.5	2.0	–
	OPTION 1.6	3.0	–
	OPTION 1.7	0.5	–
2	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION OPTIONS		
	OPTION 2.1	0.5	0.5
	OPTION 2.2	1.0	–
	OPTION 2.3	1.5	–
	OPTION 2.4	2.0	–
3	HIGH EFFICIENCY HVAC EQUIPMENT OPTIONS		
	OPTION 3.1	1.0	–
	OPTION 3.2	1.0	–
	OPTION 3.3	1.5	–
	OPTION 3.4	1.5	–
	OPTION 3.5	1.5	–
	OPTION 3.6	2.0	–
4	HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM OPTIONS		
	OPTION 4.1	0.5	–
	OPTION 4.2	1.0	1.0
5	EFFICIENT WATER HEATING OPTIONS		
	OPTION 5.1	0.5	–
	OPTION 5.2	0.5	–
	OPTION 5.3	1.0	–
	OPTION 5.4	1.5	–
	OPTION 5.5	2.0	2.0
	OPTION 5.6	2.5	–
6	RENEWABLE ELECTRIC ENERGY OPTION		
	OPTION 6.1	1.0	2.0
7	APPLIANCE PACKAGE OPTION		
	OPTION 7.1	0.5	0.5
	TOTAL CREDITS FROM TABLE R406.3		6.0
	TOTAL CREDITS FROM TABLE R406.2		1.0
	TOTAL CREDITS		7.0

HVAC INTERLOCK TO SLIDING/FOLDING DOORS NOTES

HVAC INTERLOCK TO SLIDING/FOLDING DOORS NOTES:

1. PROVIDE CONTROL DEVICES AND ASSOCIATED WIRING TO DISABLE FCU-3, FCU-4, FCU-7, & FCU-9 OPERATION WHEN EITHER SLIDING/FOLDING DOOR IN THE LIVING/DINING ROOM IS OPENED.
2. PROVIDE A LOW-VOLTAGE MAGNETIC SWITCH WIRED TO ENERGIZE A MULTI-POLE CONTROL RELAY WHEN THE DOOR(S) IS OPENED. MOUNT THE MAGNETIC SWITCH AT THE EDGE OF EACH DOOR WITHIN 24" AFF.
3. WIRE THE ENABLE/DISABLE CIRCUIT FROM EACH FAN COIL UNIT LISTED VIA A SEPARATE CONTACT IN THE CONTROL RELAY.
4. PROVIDE A 120VAC – 24VAC TRANSFORMER AND ASSOCIATED WIRING.
5. COORDINATE WITH THE ELECTRICAL CONTRACTOR TO PROVIDE WIRING AND POWER SOURCE.
6. PROVIDE A BLACK ENGRAVED PHENOLIC LABEL AT +60" AFF BY THE FOLDING DOOR WITH 3/16" LETTERS: "HVAC SYSTEM(S) ARE TURNED OFF WHEN THIS DOOR IS OPENED".

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checked by:	PR
job no.:	1216-001

revisions:

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ENERGY CODE NOTES, SCHEDULES

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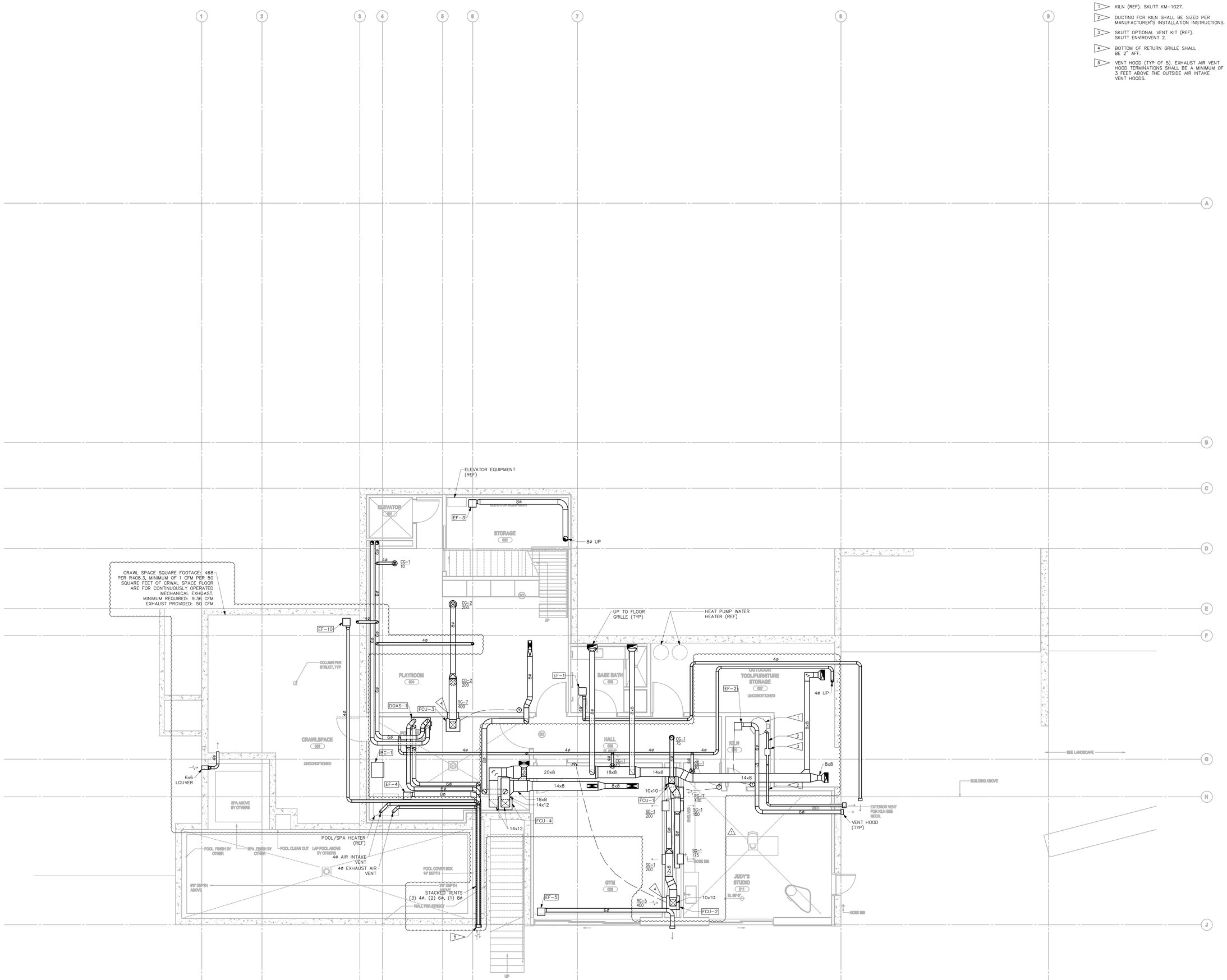
FLAG NOTES:

1. KILN (REF). SKUTT KM-1027.
2. DUCTING FOR KILN SHALL BE SIZED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. SKUTT OPTIONAL VENT KIT (REF). SKUTT ENVIROVENT 2.
4. BOTTOM OF RETURN GRILLE SHALL BE 2" AFF.
5. VENT HOOD (TYP OF 5). EXHAUST AIR VENT HOOD TERMINATIONS SHALL BE A MINIMUM OF 3 FEET ABOVE THE OUTSIDE AIR INTAKE VENT HOODS.



LOWER LEVEL FLOOR PLAN

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

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LOWER LEVEL FLOOR PLAN

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FLAG NOTES:

1. POC RANGE HOOD.
2. FIREPLACE VENT. CONFIRM SIZE WITH MFR.
3. VENTLESS HEAT PUMP DRYER.
4. ACCESS PANEL.
5. BOTTOM OF RETURN GRILLE SHALL BE 2" AFF.

WORKBENCH
GARAGE DOOR OVERHEAD
TRENCH DRAIN
GARAGE 101
14'X12' SLOPE
3 COVERED PARKING SPOTS
PAINTED STEEL AWNING ABOVE BEE STRUCT.
BUILDING ABOVE
2 UNCOVERED PARKING SPOTS
FLOOR
ELEVATOR 151
BAVARIA INFINITY HD-4F-X100 TYP. 1/R COMPLIANCE ALTERNATE
PLANTER
BENCH
BC-2
MUD ROOM 109
EF-8
4ø
6ø UP
SITE DRAINAGE REFER TO CIVIL DRAWINGS
LANDSCAPE PAVERS, LAYOUT TBD
ZUKA'S PATIO 110
DN
FOOT WASH
HOSE BIB
PULL OUT DRYING RACK
PATH PER LANDSCAPE
RG-4 WD
RG-6
EF-6
EF-7
LAUNDRY 116
MUD 115
WC 117
SC-4 100
EL 100'-0"
FOLD OUT IRONING BOARD
HALL 111
FCU-5
EF-1
PRIMARY SHOWER 114A
STEAM SHOWER
BENCH
PRIMARY BATH 114
RG-6 145
RG-7 425
PRIMARY BEDROOM 118
SC-4 235
FCU-5
FC-4 250
SC-3 10
MONTIGO FIREPLACE DRB0-36DELRAY SQUARE
4ø DN
WOOD CLAD FENCE TO MATCH SIDING
1/2" PAINTED STEEL PLATE W/ HEMMED EDGE AND STIFFENER PLATES ABOVE
ENTRY 100
EL 100'-0"
STAIR 102
INTERIOR COURTYARD 103
UP
HP-3
HP-2
HP-1
EQUIPMENT PER MECH
MECH SCR 135
GATE TO MATCH FENCE
OUTDOOR SHOWER 139
FCU-6
ACCESS PANEL
SC-1 200
SC-2 400
SC-3 10
RG-5 400
PROJECTION SCREEN
MEDIA / FAMILY 106
F3-8
FCU-7
EF-1
MEDIA CABINET
POOL CABINETS
HALL 119
BC-3
PANTRY 108
WINE
FRZR
REF
FC-3 150
6ø UP
VENT HOOD (REF)
KITCHEN 107
DW
MICRO
FC-4 250
FCU-4
LIVING / DINING 105
POOL BATH 121
SHOWER 122
HOSE BIB
SPA SAFETY COVER, CONFORMING TO ASTM F1346
SPA
POOL TERRACE 124
EL 100'-0"
DN
BBQ
WEST TERRACE 125
AWNING ABOVE
GLASS RAILING, TYP. WITH CONTINUOUS SHOE BASE SUPPORT TYP.
EGRESS
POOL FINISH
LAP POOL
POOL SAFETY COVER CONFORMING TO ASTM F1346
WALL PER STRUCT
6'0" DEPTH
3'0" DEPTH

MAIN LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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MAIN LEVEL FLOOR PLAN

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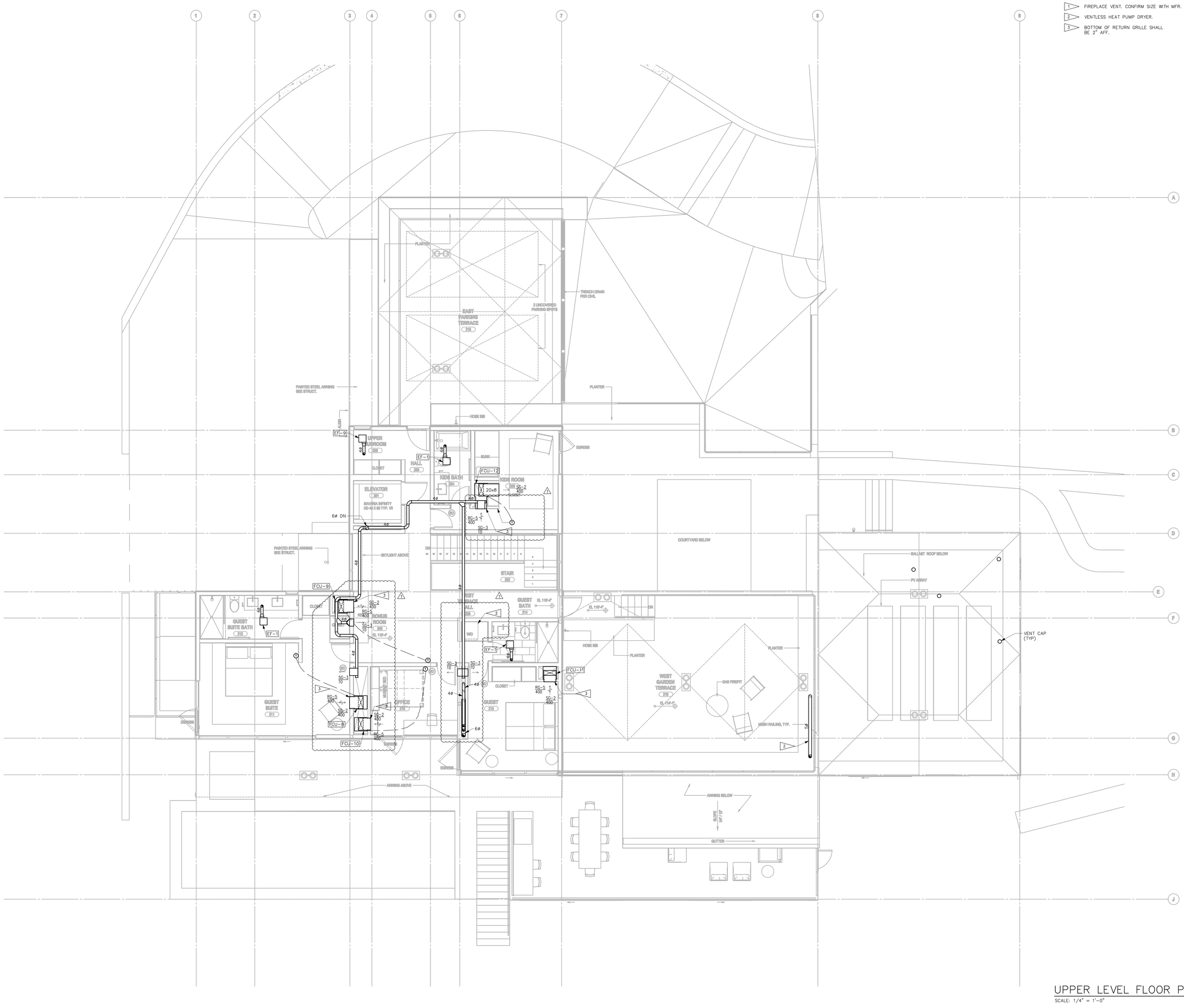
FLAG NOTES:

1. FIREPLACE VENT. CONFIRM SIZE WITH MFR.
2. VENTLESS HEAT PUMP DRYER.
3. BOTTOM OF RETURN GRILLE SHALL BE 2" AFF.



UPPER LEVEL FLOOR PLAN

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

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UPPER LEVEL FLOOR PLAN

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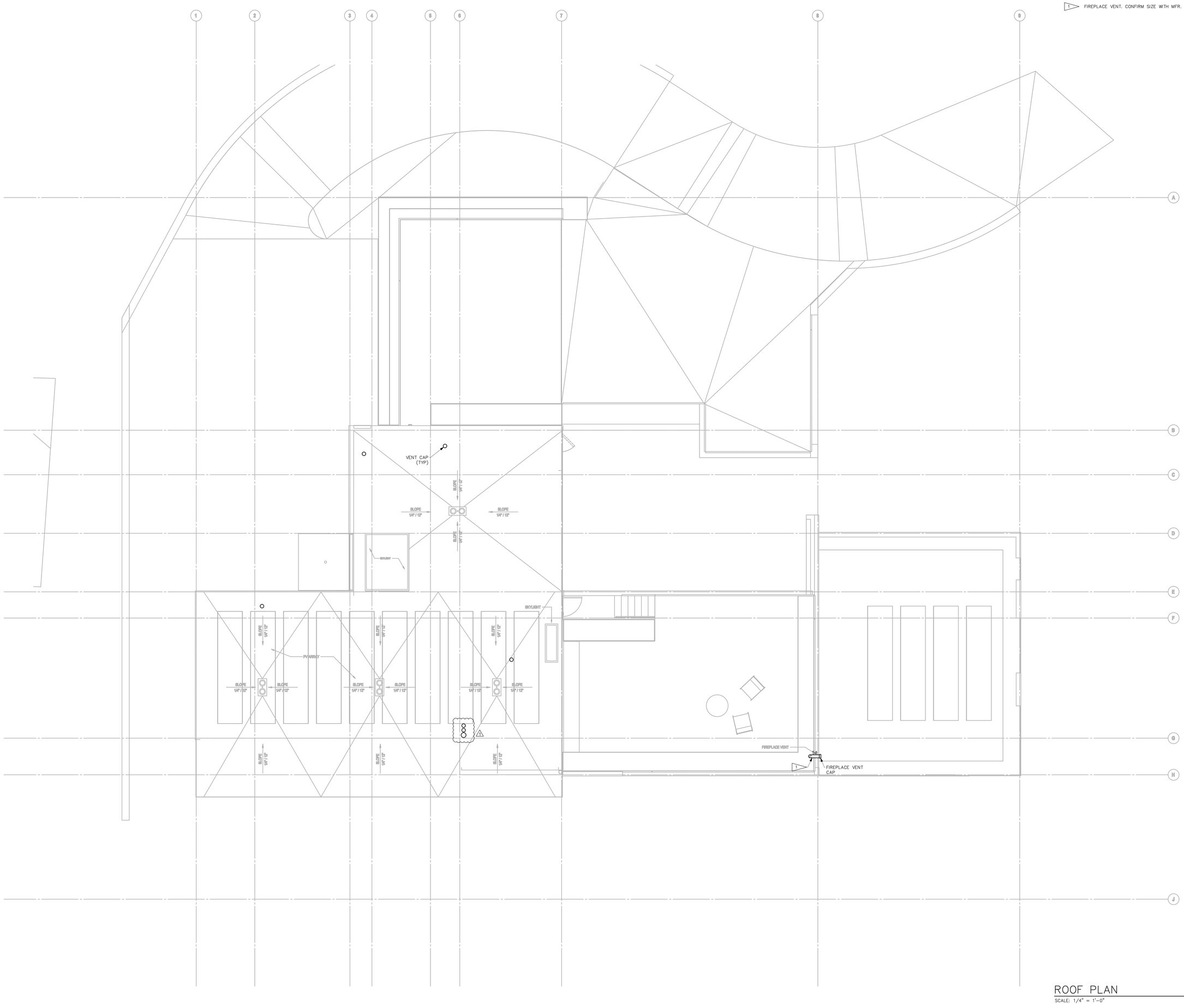
FLAG NOTES:

1 FIREPLACE VENT. CONFIRM SIZE WITH MFR.



ROOF PLAN

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

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ROOF PLAN

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EQUIPMENT DATA SHEETS

HEAT PUMP WATER HEATER NEEA RATING

Residential & Unitary Heat Pump Water Heater Qualified Products List

Last Updated: 2/16/23

Integrated Water Heaters

Product Tier	Product Brand	Model[a]	Volume (gallons)	Maximum Recommended Household Size	Cool Climate Efficiency (CCE)[b]	Uniform Energy Factor (UEF)	CTA-2045 Compliant Communication Port[c]	2023 Tax Credit Eligible[d]	Qualified Date
Tier 4									
	A.O. Smith	HPTS-50 2**	50	2-3	3.4	3.80	x	x	6/16/22
	A.O. Smith	HPS10-50H45DV 2**	50	2-3	3.4	3.80	x	x	6/16/22
	A.O. Smith	HPTS-66 2**	66	3	3.5	4.02	x	x	6/16/22
	A.O. Smith	HPS10-66H45DV 2**	66	3	3.5	4.02	x	x	6/16/22
	A.O. Smith	HPTS-80 2**	80	4+	3.4	3.88	x	x	6/16/22
	A.O. Smith	HPS10-80H45DV 2**	80	4+	3.4	3.88	x	x	6/16/22
	American	HPS10250H045DV 2**	50	2-3	3.4	3.80	x	x	6/16/22
	American	HPS10266H045DV 2**	66	3	3.5	4.02	x	x	6/16/22
	American	HPS10280H045DV 2**	80	4+	3.4	3.88	x	x	6/16/22
	American Standard	ASHPWH-50	50	2	3.2	3.75	x	x	1/1/23
	American Standard	ASHPWH-50-JA13	50	2	3.2	3.75	x	x	1/1/23
	American Standard	ASHPWH-80	80	4	3.1	4.01	x	x	1/1/23
	American Standard	ASHPWH-80-JA13	80	4	3.1	4.01	x	x	1/1/23
	Bradford White	RE2H50S10-1NCTT-CON	50	2-3	3.0	3.44	x	x	1/13/23
	Bradford White	RE2H65T10-1NCTT-CON	65	3	3.2	3.64	x	x	1/13/23
	Bradford White	RE2H80T10-1NCTT-CON	80	4+	3.2	3.59	x	x	1/13/23
	Direct Energy	ECEPH40 T2 RH375-15	40	2	3.1	3.45	x	x	10/23/20
	Direct Energy	ECEPH50 T2 RH375-15	50	2-3	3.2	3.75	x	x	10/23/20
	Direct Energy	ECEPH65 T2 RH375-15	65	2-3	3.2	3.55	x	x	10/23/20
	Direct Energy	ECEPH80 T2 RH375-15	80	4	3.2	3.70	x	x	10/23/20
	Direct Energy	ECEPH40 T2 RH375-30	40	2	3.1	3.75	x	x	10/23/20
	Direct Energy	ECEPH50 T2 RH375-30	50	2-3	3.2	3.75	x	x	10/23/20
	Direct Energy	ECEPH65 T2 RH375-30	65	2-3	3.2	3.85	x	x	10/23/20
	Direct Energy	ECEPH80 T2 RH375-30	80	4	3.2	4.00	x	x	10/23/20
	Direct Energy	ECEPH40 T2 RH375-SO	40	2	3.1	3.75	x	x	10/23/20
	Direct Energy	ECEPH50 T2 RH375-SO	50	2-3	3.2	3.75	x	x	10/23/20
	Direct Energy	ECEPH65 T2 RH375-SO	65	2-3	3.2	3.85	x	x	10/23/20
	Direct Energy	ECEPH80 T2 RH375-SO	80	4	3.2	4.00	x	x	10/23/20
	Lochinvar	HPSA050KD 2**	50	2-3	3.4	3.80	x	x	6/16/22
	Lochinvar	HPSA065KD 2**	66	3	3.5	4.02	x	x	6/16/22
	Lochinvar	HPSA080KD 2**	80	4+	3.4	3.88	x	x	6/16/22
	Reliance	10-50-DHPTS 2**	50	2-3	3.4	3.80	x	x	6/16/22
	Reliance	10-66-DHPTS 2**	66	3	3.5	4.02	x	x	6/16/22
	Reliance	10-80-DHPTS 2**	80	4+	3.4	3.88	x	x	6/16/22
	Rheem	HPLD40-1RH	40	2	3.1	3.75	x	x	10/23/20
	Rheem	HPLD50-1RH	50	2-3	3.2	3.75	x	x	10/23/20
	Rheem	HPLD65-1RH	65	2-3	3.2	3.85	x	x	10/23/20
	Rheem	HPLD80-1RH	80	4	3.2	4.00	x	x	10/23/20
	Rheem	PROPH40 T2 RH375-15	40	2	3.1	3.45	x	x	4/23/20
	Rheem	PROPH50 T2 RH375-15	50	2-3	3.2	3.75	x	x	4/23/20
	Rheem	PROPH65 T2 RH375-15	65	3	3.2	3.55	x	x	4/23/20
	Rheem	PROPH80 T2 RH375-15	80	4+	3.2	3.70	x	x	4/23/20
	Rheem	PROPH40 T2 RH375-30	40	2	3.1	3.75	x	x	4/23/20
	Rheem	PROPH50 T2 RH375-30	50	2-3	3.2	3.75	x	x	4/23/20
	Rheem	PROPH65 T2 RH375-30	65	3	3.2	3.85	x	x	4/23/20
	Rheem	PROPH80 T2 RH375-30	80	4+	3.2	4.00	x	x	4/23/20
	Rheem	PROPH40 T2 RH375-SO	40	2	3.1	3.75	x	x	4/23/20
	Rheem	PROPH50 T2 RH375-SO	50	2-3	3.2	3.75	x	x	4/23/20
	Rheem	PROPH65 T2 RH375-SO	65	3	3.2	3.85	x	x	4/23/20
	Rheem	PROPH80 T2 RH375-SO	80	4+	3.2	4.00	x	x	4/23/20
	Rheem	XE40T10H22U0	40	2	3.1	3.45	x	x	4/23/20
	Rheem	XE50T10H22U0	50	2-3	3.2	3.75	x	x	4/23/20
	Rheem	XE65T10H22U0	65	3	3.2	3.55	x	x	4/23/20
	Rheem	XE80T10H22U0	80	4+	3.2	3.70	x	x	4/23/20
	Rheem	XE40T10H45U0	40	2	3.1	3.75	x	x	4/23/20
	Rheem	XE50T10H45U0	50	2-3	3.2	3.75	x	x	4/23/20

Product Tier	Product Brand	Model[a]	Volume (gallons)	Maximum Recommended Household Size	Cool Climate Efficiency (CCE)[b]	Uniform Energy Factor (UEF)	CTA-2045 Compliant Communication Port[c]	2023 Tax Credit Eligible[d]	Qualified Date
Tier 3 continued	Rheem	HPLD50	50	2-3	3.2	3.55	--	x	12/6/17
	Rheem	HPLD65	65	2-3	3.4	3.70	--	x	12/6/17
	Rheem	HPLD80	80	4	3.4	3.70	--	x	12/6/17
	Rheem	PRO H40 T2 RH310BM	40	2	2.9	3.50	--	x	4/23/20
	Rheem	PRO H40 T2 RH310UM	40	2	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RH310BM	50	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H50 T2 RH310UM	50	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RH350BM	50	2-3	3.2	3.50	--	x	8/20/18
	Rheem	PRO H65 T2 RH310BM	65	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H65 T2 RH310UM	65	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H65 T2 RH350BM	65	2-3	3.4	3.70	--	x	8/20/18
	Rheem	PRO H80 T2 RH310BM	80	4	2.9	3.50	--	x	4/23/20
	Rheem	PRO H80 T2 RH310UM	80	4	2.9	3.50	x	x	11/23/20
	Rheem	PRO H80 T2 RH350BM	80	4	3.4	3.70	--	x	8/20/18
	Rheem	PROPH50 T2 RH350 DC	50	2-3	3.2	3.55	--	x	12/6/17
	Rheem	PROPH65 T2 RH350 DC	65	2-3	3.4	3.70	--	x	12/6/17
	Rheem	PROPH80 T2 RH350 D	80	4	3.4	3.70	--	x	10/24/16

	A. O. Smith	HPTU 50N ***	50	2-3	2.9	3.45	--	x	6/24/16
	A. O. Smith	HPTU 66 120	66	3	3.1	3.00	--	--	6/24/16
	A. O. Smith	HPTU 66N ***	66	3	3.1	3.45	--	x	6/24/16
	A. O. Smith	HPTU 80 120	80	4+	2.9	2.73	--	--	6/24/16
	A. O. Smith	HPTU 80N ***	80	4+	2.9	3.45	--	x	6/24/16
	A. O. Smith	HPTU-50CTA 130	50	2-3	2.9	3.45	x	x	1/18/21
	A. O. Smith	HPTU-50DR 130	50	2-3	2.9	3.45	x	x	10/14/20
	A. O. Smith	HPTU-66CTA 130	66	3	3.1	3.45	x	x	1/18/21
	A. O. Smith	HPTU-66DR 130	66	3	3.1	3.45	x	x	10/14/20
	A. O. Smith	HPTU-80CTA 130	80	4+	2.9	3.45	x	x	1/18/21
	A. O. Smith	HPTU-80DR 130	80	4+	2.9	3.45	x	x	10/14/20
	American	HPHE10250H045DV 120	50	2-3	2.9	3.42	--	x	6/24/16
	American	HPHE10250H045DVCTA 130	50	2-3	2.9	3.45	x	x	1/18/21
	American	HPHE10250H045DVDR 130	50	2-3	2.9	3.45	x	x	10/14/20
	American	HPHE10250H045DVN ***	50	2-3	2.9	3.45	--	x	6/24/16
	American	HPHE10266H045DV 120	66	3	3.1	3.52	--	x	6/24/16
	American	HPHE10266H045DVCTA 130	66	3	3.1	3.45	x	x	1/18/21
	American	HPHE10266H045DVDR 130	66	3	3.1	3.45	x	x	10/14/20
	American	HPHE10266H045DVN ***	66	3	3.1	3.45	--	x	6/24/16
	American	HPHE10280H045DV 120	80	4+	2.9	2.73	--	--	6/24/16
	American	HPHE10280H045DVCTA 130	80	4+	2.9	3.45	x	x	1/18/21
	American	HPHE10280H045DVDR 130	80	4+	2.9	3.45	x	x	10/14/20
	American	HPHE10280H045DVN ***	80	4+	2.9	3.45	--	x	6/24/16
	Bradford White	RE2H50S10-*****	50	2-3	2.8	3.46	--	x	2/8/18
	Bradford White	RE2H65T10-*****	65	3	3.0	3.39	--	x	3/26/20
	Bradford White	RE2H80T10-*****	80	4+	3.1	3.48	--	x	2/8/18
	Direct Energy	ECE H40 T2 RH310BM	40	2	2.9	3.50	--	x	10/23/20
	Direct Energy	ECE H50 T2 RH310BM	50	2-3	2.9	3.50	--	x	10/23/20
	Direct Energy	ECE H65 T2 RH310BM	65	2-3	2.9	3.50	--	x	10/23/20
	Direct Energy	ECE H80 T2 RH310BM	80	4	2.9	3.50	--	x	10/23/20
	Kenmore	153.5925	50	2-3	2.9	2.9	--	--	6/24/16
	Kenmore	153.5926	66	3	3.1	3.1	--	--	6/24/16
	Kenmore	153.5928	80	4+	2.9	2.9	--	--	6/24/16
	Lochinvar	HPA051KD 120	50	2-3	2.9	3.42	--	x	6/24/16
	Lochinvar	HPA052KD ***	50	2-3	2.9	3.45	--	x	6/24/16
	Lochinvar	HPA067KD 120	66	3	3.1	3.00	--	--	6/24/16
	Lochinvar	HPA068KD ***	66	3	3.1	3.45	--	x	6/24/16
	Lochinvar	HPA081KD 120	80	4+	2.9	2.73	--	--	6/24/16
	Lochinvar	HPA082KD ***	80	4+	2.9	3.45	--	x	6/24/16
	Reliance	10 50 DHPHT 120	50	2-3	2.9	3.42	--	x	6/24/16
	Reliance	10 50 DHPHTNE ***	50	2-3	2.9	3.45	--	x	6/24/16
	Reliance	10 66 DHPHT 120	66	3	3.1	3.00	--	--	6/24/16
	Reliance	10 66 DHPHTNE ***	66	3	3.1	3.45	--	x	6/24/16
	Reliance	10 80 DHPHT 120	80	4+	2.9	2.73	--	--	6/24/16
	Reliance	10 80 DHPHTNE ***	80	4+	2.9	3.45	--	x	6/24/16
	Reliance	10-50-DHPHTCTA 130	50	2-3	2.9	3.45	x	x	1/18/21
	Reliance	10-50-DHPHTDR 130	50	2-3	2.9	3.45	x	x	10/14/20
	Reliance	10-66-DHPHTCTA 130	66	3	3.1	3.45	x	x	1/18/21
	Reliance	10-66-DHPHTDR 130	66	3	3.1	3.45	x	x	10/14/20
	Reliance	10-80-DHPHTCTA 130	80	4+	2.9	3.45	x	x	1/18/21
	Reliance	10-80-DHPHTDR 130	80	4+	2.9	3.45	x	x	10/14/20

Product Tier	Product Brand	Model[a]	Volume (gallons)	Maximum Recommended Household Size	Cool Climate Efficiency (CCE)[b]	Uniform Energy Factor (UEF)	CTA-2045 Compliant Communication Port[c]	2023 Tax Credit Eligible[d]	Qualified Date
Tier 3 continued	Rheem	HPLD50	50	2-3	3.2	3.55	--	x	12/6/17
	Rheem	HPLD65	65	2-3	3.4	3.70	--	x	12/6/17
	Rheem	HPLD80	80	4	3.4	3.70	--	x	12/6/17
	Rheem	PRO H40 T2 RH310BM	40	2	2.9	3.50	--	x	4/23/20
	Rheem	PRO H40 T2 RH310UM	40	2	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RH310BM	50	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H50 T2 RH310UM	50	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RH350BM	50	2-3	3.2	3.50	--	x	8/20/18
	Rheem	PRO H65 T2 RH310BM	65	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H65 T2 RH310UM	65	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H65 T2 RH350BM	65	2-3	3.4	3.70	--	x	8/20/18
	Rheem	PRO H80 T2 RH310BM	80	4	2.9	3.50	--	x	4/23/20
	Rheem	PRO H80 T2 RH310UM	80	4	2.9	3.50	x	x	11/23/20
	Rheem	PRO H80 T2 RH350BM	80	4	3.4	3.70	--	x	8/20/18
	Rheem	PROPH50 T2 RH350 DC	50	2-3	3.2	3.55	--	x	12/6/17
	Rheem	PROPH65 T2 RH350 DC	65	2-3	3.4	3.70	--	x	12/6/17
	Rheem	PROPH80 T2 RH350 D	80	4	3.4	3.70	--	x	10/24/16

HEAT PUMP WATER HEATER

A.O. Smith — COMMERCIAL-GRADE RESIDENTIAL ELECTRIC WATER HEATERS

VOLTEX® HYBRID ELECTRIC HEAT PUMP WATER HEATER

The Voltex Hybrid Electric heat pump water heater from A. O. Smith is the most cost effective energy-efficient option available for consumers who want to save money on their utility bills. Voltex can reduce water heating costs up to 73% and provide payback in 2-3 years. With annual savings of $306 or more, there is no better way to go green than Voltex.

HOW DO THEY WORK?

Absorb ambient heat from the surrounding air to heat water using a compressor and "Environmentally-Friendly" R134a refrigerant

- Self-contained heat pump unit is integrated into the top of the tank
- Multiple operating modes to maximize efficiency and performance

QUALIFIES FOR MANY STATE AND LOCAL UTILITY REBATES - CHECK WWW.DSIREUSA.ORG

INCREASED ENERGY EFFICIENCY

- Improved efficiency designed in, to ensure available hot water at the lowest possible cost. Up to a 3.45 Uniform Energy Factor (UEF) Rating conserves energy and meets ENERGY STAR® qualifications

CHOICE OF OPERATING MODES

- Select from Efficiency, Hybrid, or Electric modes to match heating requirements to environmental conditions.
- Hybrid mode automatically adjusts between compressor and element, depending upon heat requirements.
- Vacation mode reduces operating costs and provides freeze protection during extended absence

BACKUP ELECTRIC ELEMENTS

- Long-lasting backup heating elements help heat water according to environmental conditions, demand, and the chosen operating mode

COREGARD™ ANODE ROD

- Our anode rods have a stainless steel core that extends the life of the anode rod allowing superior tank protection far longer than standard anode rods
- 66 and 80 gallon models have dual anodes for added protection.

DRY FIRE PROTECTION

- Control system checks to ensure the tank is full of water during start up to prevent dry firing the heating elements

ELECTRONIC USER INTERFACE

- User-friendly electronic interface allows easy control of temperature setting, operating mode, and communicates diagnostics
- Easy to read temperature display (see back) shows temperature in °F or °C
- Advanced diagnostics convey error messages for service purposes. The last four error messages are saved in the control system memory.

OTHER FEATURES

- Ideal for basements or garage installations; the compressor transfers heat to the water while dehumidifying and cooling the ambient air
- Washable air filter is easily removed for routine cleaning

OPTIONAL AIR DUCT ADAPTER KIT

- Permits installation in confined spaces

TEN YEAR LIMITED WARRANTY

- For complete information, consult written warranty or go to hotwater.com

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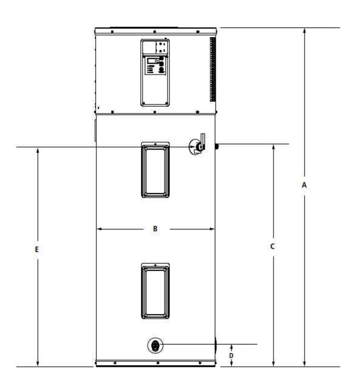
www.hotwater.com | 800-527-1953 Toll-Free USA | A. O. Smith Corporation | 500 Tennessee Waltz Parkway | Ashland City, TN 37015

A.O. Smith — COMMERCIAL-GRADE RESIDENTIAL ELECTRIC WATER HEATERS

Model Number	Nominal Capacity	Rated Storage Volume	UEF	First Hour Rating (Gallons)	Dimensions in Inches A	B	C	D	E	Approx. Shipping Weight (lbs)	Warranty Term
HPTU-50N	50	46	3.45	66	63	22	40-5/8	3-3/4	40-1/2	196	10
HPTU-66N	66	67	3.45	79	61	27	38	4	38	289	10
HPTU-80N	80	82	3.45	86	69	27	46	4	46	307	10

Requires 30 amp breaker.
Top T&P option not available.



ELECTRONIC USER INTERFACE

- User friendly, easy to read display.
- LEDs clearly indicate the current operating mode.
- Easily select operating mode:
  - Efficiency
  - Hybrid
  - Electric
  - Vacation
- Display communicates current status, mode and set point, and displays error messages when applicable.

EFFICIENCY MODE

- Utilizes the heat pump for all water heating.
- Automatically reverts to heating element if ambient air or water temperatures are outside optimal operating range for heat pump.

HYBRID MODE

- Utilizes the heat pump or heating element, depending on demand.

ELECTRIC MODE

- Standard electric water heater operation.

VACATION MODE

- One touch operation maintains tank temperature of 60°F (15.6°C) during vacation or extended absence to reduce operating costs and provide freeze protection.
- Programmable up to 99 days.

OTHER FEATURES:

- Sacrificial anode to protect against tank corrosion.
- Environmentally-friendly non-CFC foam insulation.
- Durable, enhanced-flow brass drain valve.
- CSA certified and ASME rated temperature & pressure relief valve.

OPERATING REQUIREMENTS:

- Requires provision for condensate draining; if a suitable drain is not available, a condensate pump is required.
- 208/240 VAC 60Hz single phase 30 amp power supply.

For Technical Information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

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EXHAUST FAN

WhisperCeiling — FV-30VQ3

Specification Submittal Data / Panasonic Ventilation Fan

Description
Ventilating fan shall be Low Noise ceiling mount type rated for continuous run. Fan shall be ENERGY STAR® rated and certified by the Home Ventilating Institute (HVI). Evaluated by Underwriters Laboratories and conform to both UL and cUL safety standards.

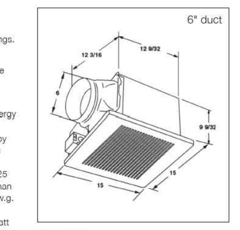
Motor/Blower:
- Four-pole totally enclosed condenser motor rated for continuous run.
- Power Rating shall be 120 volts and 60 Hz.
- Fan shall be UL listed for tub/shower enclosure when used with a GFCI branch circuit wiring.
- Motor equipped with thermal-cutoff fuse.
- Removable with permanently lubricated plug-in motor.

Housing:
- Rust proof paint, galvanized steel body.
- 6" diameter duct adaptor.
- Built in backdraft damper.
- Expandable extension bracket up to 26".

Grille:
- Attractive design using PP material.
- Attaches directly to housing with torsion springs.

Warranty:
- ALL Parts: For period of 3 years from the date of the original purchase.

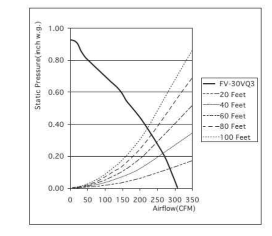
Architectural Specifications:
Ventilating fan shall be of the ceiling mount, Energy conserving vent type, with no less than 280 CFM and no more than 2.0 sones as certified by the Home Ventilating Institute (HVI) at 0.1 static pressure in inches water gauge (w.g.) and with no less than 243 CFM as certified by HVI at 0.25 w.g. Power Consumption shall be no greater than 67.1 watts at 0.1 w.g. and 65.8 watts at 0.25 w.g. ENERGY STAR rated with efficiency of no less than 4.6 CFM/watt at 0.1 w.g. and 4.1 CFM/watt at 0.25 w.g. The motor shall be totally enclosed, four pole condenser type engineered to operate continuously. Power rating shall be120v/60Hz. Duct diameter shall be no less than 6". Fan shall be UL and cUL listed for tub/shower enclosure when used with GFCI branch circuit wiring. Fan shall be ASHRAE 62.2, LEED, ENERGY STAR IAP, EarthCraft, California Title-24, and WA Ventilation Code compliant.



FV-30VQ3

Specifications: **WhisperCeiling** FV-30VQ3	6" Duct	
Static Pressure in inches w.g.	0.1	0.25
Air Volume (CFM)	280	243
Noise (sones)	2.0	2.5
Power Consumption (watts)	67.1	65.8
Energy Efficiency (CFM/Watt)	4.6	4.1
Speed (RPM)	877	990
Current (amps)	0.53	0.52
ENERGY STAR rated	YES	
Washington State VIAQ Code	YES	

As of date 4/11



For complete Installation Instructions visit **us.panasonic.com/ventfans**

Model	Quantity	Comments	Project:
			Location:
			Architect:
			Engineer:
			Contractor:
			Submitted by:
			Date:

Panasonic Life Solutions Company of America
IAQ Division
Two Riverfront Plaza
Newark, NJ 07102
us.panasonic.com/ventfans

Panasonic

IAQ21130ST

EXHAUST FAN

WhisperGreen Select — FV-0511VK2

Built-In Self Adjusting Airflow Capability

Specification Submittal Data / Panasonic Ventilation Fan

Description
Customizable ceiling mount ventilating fan, low sone and rated for continuous operation. ENERGY STAR® rated and certified by the Home Ventilating Institute (HVI). Evaluated by the Underwriters Laboratories and conforms to both UL and cUL standards.

Motor/Blower:
- Enclosed brushless ECM smart motor technology rated for continuous operation
- Adjustable ventilation rates at 50 – 80 – 110 CFM
- Power rating of 120 volts and 60 Hz
- UL and cUL listed for tub/shower enclosure when GFCI protected
- Motor equipped with thermal cutoff fuse
- Removable permanently lubricated plug-in motor

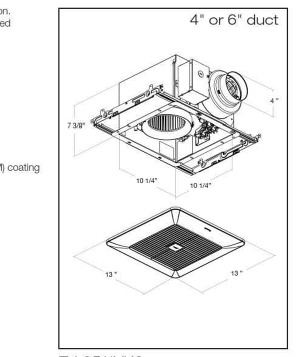
Housing:
- Environmentally friendly 26 gauge housing using Zinc-Aluminum-Magnesium (ZAM) coating
- Integrated dual 4" or 6" diameter duct adapter
- Built-in damper reduces back draft and helps with blower door testing
- Built-in metal flange provides blocking for penetrations through drywall as an Air Barrier, and assists with the decrease in leakage in the Building Envelope during blower door testing
- Suitable for installation in ceilings insulated up to R60
- Articulating and expandable installation bracket up to 24"

Grille:
- Attractive design using Poly Pro material
- Attaches directly to housing with torsion springs
- Includes a motion sensor cap for use as a cover when motion sensor Plug 'n Play™ module has not been selected

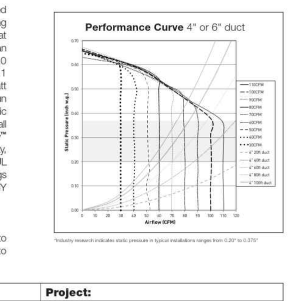
Warranty:
- ECM Motor: 6 Years from original purchase date
- ALL Parts: 3 Years from original purchase date

Architectural Specifications:
Customizable ceiling mount ventilation fan, ENERGY STAR® rated with built-in speed selector. Select from 50/80/110 CFM with <0.3 sone as certified by the Home Ventilating Institute (HVI) at 0.1 w.g. with 51/80/110 CFM and no more than 0.4/0.5/0.8 sones at 0.25 w.g. and 51/79/108 CFM at 0.375 w.g. Power Consumption shall be no greater than 9.9/7.9/6.5 watts at 0.1 w.g. and 15.4/13.1/11.2 watts at 0.25 w.g. and 9.6/13.4/20.0 watts at 0.375 w.g. ENERGY STAR® rated with efficiency of no less than 16.2/15.7/11.1 CFM/watt at 0.1 w.g. and 8.3/8.3/7.1 CFM/watt at 0.25 w.g. and 5.3/5.9/5.4 CFM/watt at 0.375 w.g. The motor shall be enclosed with brushless ECM motor engineered to run continuously. ECM motor speed shall automatically increase when the fan senses static pressure to maintain selected CFM. Power rating shall be 120v/60Hz. Duct diameter shall be no less than 4", inclusive of an integrated dual 4" or 6" duct adapter. **Plug 'N Play™ modules** provide up to three additional features. Select from Multi-Speed with Time Delay, Condensation Sensor, and Motion Sensor. Fan shall be RoHS Compliant and UL and cUL listed for tub/shower enclosure when GFCI protected. Also suitable for installation in ceilings insulated up to R60. Fan can be used to comply with ASHRAE 62.2, LEED, ENERGY STAR® IAP, EarthCraft, California Title-24 and WA Ventilation Code.

ECM Motor Technology:
When fan senses static pressure, its speed is automatically increased to ensure that the desired CFM is not compromised, which allows the fan to perform as rated.



FV-0511VK2



Model	Quantity	Comments	Project:
			Location:
			Architect:
			Engineer:
			Contractor:
			Submitted by:
			Date:

For complete Installation Instructions visit **us.panasonic.com/ventfans**

Ceiling Radiation Damper: WhisperGreen Select™ is UL listed for use with the Panasonic Ceiling Radiation Damper (Model #: PC-RD05C5, sold separately).

WhisperGreen Select — FV-0511VK2

Built-In Self Adjusting Airflow Capability

Plug 'N Play™ Modules

Plug 'N Play™ modules provide up to three additional features. Select from Multi-Speed with Time Delay, Motion Sensor, and Condensation Sensor.

FV-VS15VK1: Multi-Speed with Time Delay

Allows you to select the proper CFM settings to satisfy ASHRAE 62.2 continuous ventilation requirements. The fan runs continuously at a pre-set lower level (0, 30-100 CFM, in 10 CFM increments), then elevates to a maximum level of operation (50-80-110 CFM) when the wall switch is turned on, or when the motion sensor or Condensation Sensor module is activated. A High/Low delay timer returns the fan to the pre-set CFM level after a period of time set by the user.

FV-MSVK1: Motion Sensor

Automatically activates when someone enters the room. Once the settings have been applied, the fan becomes truly automatic. This module also activates a 20 minute delay off timer for the fan.

FV-CSVK1: Condensation Sensor

Helps control bathroom condensation to prevent mold and mildew. Sensor technology detects relative humidity and temperature to anticipate dew point, automatically turning the fan on to control humidity. Built-in Relative Humidity (RH) sensitivity adjustment enables fine tuning for moist conditions and for satisfying CalGreen requirements. When the condensation sensor is used in conjunction with multi-speed functionality, the fan will kick up to high speed when the condensation sensor detects moisture in the room. This module also activates a 20 minute delay off timer for the fan.

Fan Specifications	WhisperGreen Select™ FV-0511VK2								
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	80	80	79	50	51	51
Noise (sones)	<0.3	0.8	-	<0.3	0.5	-	<0.3	0.4	-
Power Consumption (watts)	9.9	15.4	20.0	5.1	9.6	13.4	3.1	6.2	9.6
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	15.7	8.3	5.9	16.2	8.3	5.3
Speed (RPM)	920	1182	1356	795	1113	1315	722	1054	1266
Current (amps)	0.10	0.16	0.20	0.06	0.10	0.14	0.04	0.07	0.10
MAX. Current(amps)	0.20								
Power Rating (V/Hz)	120/60								
ENERGY STAR rated	Yes								

*Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375"

Fan Specifications	WhisperGreen Select™: FV-0511VK2 + FV-VS15VK1 (Multi Speed Plug 'N Play™ Module)																										
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	100	101	101	90	90	90	80	80	79	70	71	70	60	60	60	50	51	51	40	41	40	30	30	30
Noise (sones)	<0.3	0.8	-	<0.3	0.7	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.3	-	<0.3	0.3	-
Power Consumption (watts)	9.9	15.4	20.0	7.9	13.1	17.8	6.5	11.2	16.0	5.1	9.6	13.4	4.3	8.5	12.1	3.7	6.9	10.5	3.1	6.2	9.6	2.7	5.5	7.8	2.4	4.6	6.8
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	12.7	7.7	5.7	13.9	8.0	5.6	15.7	8.3	5.9	16.7	8.5	5.9	16.3	8.7	5.7	16.2	8.3	5.3	14.8	7.4	5.1	12.6	6.6	4.4
Speed (RPM)	920	1182	1356	889	1164	1356	839	1135	1351	795	1113	1315	760	1112	1309	751	1061	1287	722	1054	1266	707	1057	1251	711	1039	1259
Current (amps)	0.10	0.16	0.20	0.09	0.14	0.18	0.07	0.12	0.16	0.06	0.10	0.14	0.05	0.09	0.13	0.05	0.08	0.11	0.04	0.07	0.10	0.04	0.07	0.09	0.04	0.06	0.08
MAX. Current(amps)	0.20																										
Power Rating (V/Hz)	120/60																										
ENERGY STAR rated	Yes																										

*Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375"

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Most Efficient 2020 — ENERGY STAR www.energystar.gov

Panasonic

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ENERGY RECOVERY VENTILATOR

Intelli-Balance™ 200 *Energy Recovery Ventilator* — FV-20VEC1

Specification Submittal Data / Panasonic ERV

Description
Ceiling, wall or or floor mount Energy Recovery Ventilator (ERV) provides a tempered air supply, humidity control, and a balanced amount of exhaust to help maintain balanced, positive or negative pressure throughout the home. The Panasonic Intelli-Balance ERV is engineered for use in any North America climate zone. Incorporates an Occupant Controlled Boost Capability. Built-in ASHRAE 62.2 Timing function helps ensure code compliance.

Motor/Blower:
- Occupant Controlled Boost Capability
- Two (2) enclosed ECM brushless motors rated for continuous run.
- ERV Supply and Exhaust ventilation rates shall be manually adjustable for 60-80-100-120-140-160-180-200 CFM.
- Power rating shall be 120 volts and 60 Hz.
- Motor equipped with thermal cut-off fuse control.
- Removable, permanently lubricated, plug-in motor.

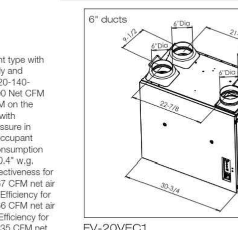
Housing:
- 22 gauge powder coated steel body.
- Four 6" intake and exhaust ducts.
- Adjustable supply and return air adapters provide greater installation flexibility
- Built in dampers on outside exhaust air and supply ducts for defrost and recirculation cycling.
- Filters on supply and exhaust air extend the life of the ERV core.
- (4) Pressure ports allow for easy airflow documentation.
- Pre-drilled mounting bracket can accommodate 16", 19", or 24" stud bays.

Maintenance:
- MERV 13 filter included; MERV 13 (FV-FL1320VE1), MERV 8 (FV-FL0820VE1) and HEPA (FV-FLHP20VE1) filter replacements available.
- Unobtrusive alarm notifies owner for filter check and maintenance.

Warranty:
- ECM Motors: 6 years from original purchase date
- All Parts: 3 Years from original purchase date.

Architectural Specifications:
ERV shall be ceiling, wall or floor mount type with built-in speed selectors for both Supply and Exhaust air. Select from 60-80-100-120-140-160-180-200 CFM. ERV shall have 200 Net CFM on the exhaust ports and 200 Net CFM on the supply ports as tested in accordance with CSA-C439 standards at 0.4 static pressure in inches water gauge. ERV shall have Occupant Controlled Boost Capability. Power consumption shall be no greater than 129 watts at 0.4" w.g. static pressure. Apparent Sensible Effectiveness for heating shall be no less than 86% at 67 CFM net air flow at 32°F (0°C). Sensible Recovery Efficiency for heating shall be no less than 67% at 66 CFM net air flow at -13°F (-25°C). Total Recovery Efficiency for cooling shall be no less than 61% at 135 CFM net air flow at 95°F (35°C). The defrost cycle function shall activate when outdoor temperatures drop to 14°F (-10°C). The (2) motors shall be totally enclosed ECM brushless motors rated for continuous run. ECM motor speed shall automatically increase when the fan senses static pressure to maintain selected CFM. ERV shall incorporate an ASHRAE 62.2 intermittent and continuous timing function for code compliance. Power rating shall be 120v/60Hz. Duct diameters shall be no less than 6". ERV must include adjustable vertical to horizontal supply and return air adapters. Can be used to comply with ASHRAE 62.2, Ontario, ENERGY STAR® and Novoclimat requirements; LEED, IAP, California Title-24, and WA Energy Code Credits.

ERV Core Technology:
- Indoor and outdoor air passes through Panasonic's capillary core technology. This process tempers supply air while transferring moisture and energy.
- Built in Frost Prevention Mode prevents the core from freezing. Frost Prevention Mode is intuitive and operates without homeowner intervention.
- Core material permeated with anti-mold treatment.



FV-20VEC1

ECM Motor Technology
When the ERV senses static pressure, its speed is automatically increased to ensure that the desired CFM is not compromised.

For complete Installation Instructions visit **us.panasonic.com/ventfans**

Model	Quantity	Comments	Project:
			Location:
			Architect:
			Engineer:
			Contractor:
			Submitted by:
			Date:

Panasonic Life Solutions Company of America
IAQ Division
Two Riverfront Plaza
Newark, NJ 07102
us.panasonic.com/ventfans

*This product meets strict energy efficiency guidelines set by Natural Resources Canada and is ENERGY STAR® certified for the Canadian market only.

Panasonic

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Intelli-Balance™ 200 *Energy Recovery Ventilator* — FV-20VEC1

Specification Submittal Data / Panasonic ERV
(Continued)

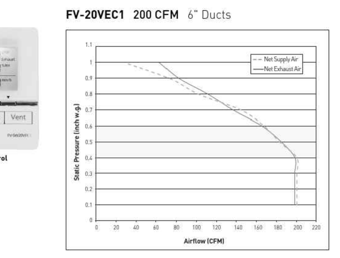
ERV Wall Control Panel
The all-new LCD Wall Control puts total control and monitoring of Intelli-Balance 200 at your fingertips. Easy operation from nine push buttons and an LCD display gives homeowners instant access to custom ventilation control settings and real-time air flow and temperature monitoring.

LCD Wall Control

Functions & Settings
- Power on/off
- Air volume for supply and exhaust
- ASHRAE intermittent timer and air volume
- BOOST mode control
  - Sets supply and exhaust air to constant 200 CFM
  - Timer for BOOST activation adjustable from 10-60 minutes
- Reset filter maintenance reminder

Display Information
- Indoor/outdoor temperature and humidity
- Filter maintenance reminder
- ASHRAE air volume and boost timer
- Defrost mode indicator
- Supply and exhaust air volume
- System fault codes

FV-20VEC1 200 CFM 6" Ducts



Intelli-Balance™ 200	FV-20VEC1
Characteristics	COLD/TEMPERATE CLIMATE
Static pressure in inches w.g.	0.4
Net Exhaust Air Volume (CFM)	200
Net Supply Air Volume (CFM)	200
Power Consumption (Watts)	129
Power Rating (V/Hz)	120/60
ENERGY STAR® Certified	Yes*

Energy Performance								
MODE	Supply Temperature °F	Supply Temperature °C	Net Air Flow L/S	Net Air Flow CFM	Power Consumed (Watts)	Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Net Moisture Transfer
Heating	32	0	32	67	22	83%	86%	81%
	32	0	59	124	46	77%	79%	73%
	32	0	80	170	92	73%	77%	78%
	-13	-25	31	66	46	67%	69%	70%
	-13	-25	50	107	104	61%	64%	64%
Cooling						Total Recovery Efficiency		
	95	35	34	71	25	70%		
	95	35	64	135	56	61%		

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Panasonic

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HEAT PUMP

NTXMSM60A182AA
5-TON MULTI-ZONE INVERTER HEAT-PUMP SYSTEM

TRANE — MITSUBISHI ELECTRIC

Job Name:
System Reference: Date:

FEATURES
- Compatible with NV- and P-Series and CITY MULTI® indoor units. Branch box required for connection with NV- and P-Series
- Variable speed INVERTER-driven compressor
- Seacoast protection on heat exchanger and base panel (rated for 2,000 hrs in accordance with ASTM B117 testing)
- Thermal Differential 1°F (with TAC-MKA32/52BC only)
- Optional base pan heater
- Quiet outdoor unit operation, rated sound pressure as low as 58 dB(A)
- High pressure protection
- Compressor thermal protection
- Compressor overcurrent detection
- Fan motor overheating/voltage protection

ENERGY STAR products are third-party certified by an EPA-recognized Certification Body.

Specifications are subject to change without notice.

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SPECIFICATIONS: NTXMSM60A182AA

Cooling[1] (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	60,000 // 60,000 // 60,000
	Rated Capacity	BTU/H	60,000 // 60,000 // 60,000
	Minimum Capacity	BTU/H	30,000 // 30,000 // 30,000
	Maximum Power Input	W	4,510 // 4,920 // 5,405
	Rated Power Input	W	4,510 // 4,920 // 5,405
	Power Factor (208V, 230V)	%	98.9, 98.9 // 98.9, 98.9 // 98.9, 98.9
Heating at 47°F[2] (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	66,000 // 66,000 // 66,000
	Rated Capacity	BTU/H	66,000 // 66,000 // 66,000
	Minimum Capacity	BTU/H	31,000 // 31,000 // 31,000
	Maximum Power Input	W	4,720 // 4,960 // 5,230
	Rated Power Input	W	4,720 // 4,960 // 5,230
	Power Factor (208V, 230V)	%	98.9, 98.9 // 98.9, 98.9 // 98.9, 98.9
Heating at 17°F[3] (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	66,000 // 66,000 // 66,000
	Rated Capacity	BTU/H	41,500 // 41,500 // 41,500
	Maximum Power Input	W	8,280 // 9,300 // 9,800
	Rated Power Input	W	4,190 // 4,380 // 4,570
Heating at 5°F[4] (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	57,000 // 57,000 // 57,000
	Maximum Power Input	W	8,355 // 8,570 // 8,795
Efficiency (Non-Ducted // Mix // Ducted)	SEER		20.0 // 18.9 // 17.8
	EER[1]		13.3 // 12.2 // 11.1
	HSPF (IV)		12.0 // 11.3 // 10.7
	COP at 47°F[2]		4.1 // 3.9 // 3.7
	COP at 17°F at Maximum Capacity[3]		2.3 // 2.0 // 1.9
	COP at 5°F at Maximum Capacity[4]		2.0 // 1.95 // 1.9
	ENERGY STAR® Certified		Yes // No // No
Electrical	Electrical Power Requirements	Voltage, Phase, Frequency	208/230, 1, 60
	Guaranteed Voltage Range	V AC	187-253
	Voltage: Indoor - Outdoor, S1-S2	V AC	208/230
	Voltage: Indoor - Outdoor, S2-S3	V DC	24
	Short-circuit Current Rating (SCCR)	kA	5
	Recommended Fuse/Breaker Size if Branch Box Powered by Outdoor Unit	A	40 (50)
	Recommended Fuse/Breaker Size without Branch Box or Branch Box Powered Separate	A	40
	Recommended Wire Size	AWG	6
	MCA if Branch Box Powered by Outdoor Unit	A	46.0
	MOCP if Branch Box Powered by Outdoor Unit	A	55
	MCA without Branch Box or Branch Box Powered Separate	A	36
	MOCP without Branch Box or Branch Box Powered Separate	A	50
	Fan Motor Full Load Amperage	A	0.8+0.8
Outdoor unit	Airflow Rate (Cooling / Heating)	CFM	4,875 / 4,555
	Refrigerant Control		LEV
	Defrost Method		Reverse Cycle
	Heat Exchanger Type		Plate fin coil
	Heat Exchanger Coating		Blue Fin Coating
	Sound Pressure Level, Cooling[1]	dB(A)	58
	Sound Pressure Level, Heating[2]	dB(A)	59
	Compressor Type		Hermetic
	Compressor Model		ANB52FYDMT
	Compressor Motor Output	kW	3.9
	Compressor Rated Load Amps	A	19
	Compressor Locked Rotor Amps	A	22.0
	Compressor Oil Type // Charge	oz.	FVC68D // 78
	Base Pan Heater		Optional (PAC-SJ20BH-E)
	Unit Dimensions	W: In. [mm]	41-11/32 [1,050]
		D: In. [mm]	13 [330]
		H: In. [mm]	52-11/16 [1,338]
	Package Dimensions	W: In. [mm]	43 [1,090]
		D: In. [mm]	18 [450]
		H: In. [mm]	57 [1,430]
	Unit Weight	Lbs.[kg]	302 [137]
	Package Weight	Lbs.[kg]	326 [148]

NOTES:
AHRI Rated Conditions (Rated data is determined at a fixed compressor speed) — [1]Cooling (Indoor // Outdoor) °F 80 DB, 67 WB // 95 DB, 75 WB; [2]Heating at 47°F (Indoor // Outdoor) °F 70 DB, 60 WB // 47 DB, 43 WB; [3]Heating at 17°F (Indoor // Outdoor) °F 70 DB, 60 WB // 17 DB, 15 WB

Conditions — [4]Heating at 5°F (Indoor // Outdoor) °F 70 DB, 60 WB // 5 DB, 4 WB

[1]Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.
[*] when 1 or more PLA-A-EA7 connected
[*] Branch box should be placed within the level between the outdoor unit and indoor units
[*] 5°F DB - 115°F DB when optional wind baffles are installed
For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to MXZ Operational Performance.
Although the maximum connectable capacity is 130%, the outdoor unit cannot provide more than 100% of the rated capacity. Please utilize this over capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.

Specifications are subject to change without notice.

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VENTLESS DRYER

HOME APPLIANCES — LG Life's Good

LG LAUNDRY

WKHC202HBA
Single Unit LG WashTower™ with Center Control™ 4.5 cu. ft. Smart Washer and 7.2 cu. ft. Electric Ventless Heat Pump Dryer

KEY FEATURES
- Ultra Large Capacity 4.5 cu. ft. Washer and 7.2 cu. ft. Dryer
- Single Unit WashTower™ Design
- Full Touch Electronic Center Control™ Panel with LED Display
- Smart Pairing
- Advanced AI DD™ Washing - TurboWash® 360 and Steam Technology
- AAFA Certified Washer with Allergiene™ Cycle
- Ventless Heat Pump Dryer with Sensor Dry
- ENERGY STAR® Certified
- Tempered Glass Door
- ThinQ® Technology with ThinQ Care

AVAILABLE COLORS
BLACK STEEL

SMART APPLIANCE — ThinQ Care

Proactive Smart Alerts to Keep Your Appliances Running Smoothly
- Preventative Alerts help you stay a step ahead of potential issues to find proactive solutions before problems arise.
- Avoid preventable repairs and service calls with real-time diagnostics for a hassle-free experience.
- Integrated within LG's ThinQ app—a smart home hub for managing your smart devices and appliances.

PRODUCT FEATURES

SUMMARY	Washer	Dryer
Type	Front Load Washer	Front Load Dryer
Capacity (cu.ft.)	4.5 cu. ft.	7.2 cu. ft.
Color	Black Steel (B)	
APPEARANCE	**Washer**	**Dryer**
Touch Buttons	Yes	
Full Touch Electronic Control Panel with LED Display	Yes	
Center Control™	Yes	
ENERGY	**Washer**	**Dryer**
ENERGY STAR® Certified	Yes	
CEE Tier	Tier 2	-
IMEF	2.92	-
IWF	2.9	-
CEF	-	8.0
PROGRAMS	**Washer**	**Dryer**
No. of Programs	6	6
	Normal, Bedding, Delicates, Heavy Duty, Speed Wash®, Downloaded	Normal, Bedding, Delicates, Heavy Duty, Small Load, Downloaded
OPTIONS	**Washer**	**Dryer**
No. of Options	10	8
	TurboWash®, Steam, Extra Rinse, Pre-wash, Sanitary*, Tub Clean*, Drum Light*, Control Lock*, Signal*, Wi-Fi* / Remote Start*	Wrinkle Care, More Time, Less Time, Condenser Care, Drum Light*, Control Lock*, Signal*, Wi-Fi* / Remote Start*
DETAILS	**Washer**	**Dryer**
No. of Wash/Rinse Temps	5	-
Wash/Rinse Temps	Hot, Very Warm, Warm, Cool, Cold	-
No. of Spin Speeds	5	-
Spin Speeds	High, Medium/High, Medium, Low, No Spin	-
Max RPM	1300	-
Water Levels	Load Sensing	-
No. of Soil Levels	5	-
Drying Levels	-	Very, More, Normal, Less, Damp
Dry Mode	-	Energy Saver, Normal, Speed
Manual Dry Times	-	70 min., 60 min., 50 min., 40 min., 30 min.

FABRIC CARE FEATURES	Washer	Dryer
AI DD™	Yes	-
TurboWash® 360 Technology	Yes	-
Steam Technology	Yes	-
Allergiene™ Cycle	Yes	-
Sanitary Cycle	Yes	-
Sensor Dry	-	Yes
Precise Temperature Control with Variable Compressor	-	Yes
CONVENIENCE FEATURES	**Washer**	**Dryer**
Vibration Sensing (Cabinet Vibration Sensor)	Yes	-
True Balance® Anti-Vibration System	Yes	-
4 Tray Dispenser	Prewash, Main Wash (with liquid detergent cup), Bleach, Fabric Softener	-
End of Cycle Signal	Yes	
LoadSense	Yes	-
Control Lock	Yes	
Auto Suds Removal	Yes	-
Leveling Legs	4 Adjustable Legs	
Drum Light	Yes	
Remaining Time Display/ Status Indicator(s)	Yes	
Wrinkle Care Option	-	Yes
ThinQ® TECHNOLOGY	**Washer**	**Dryer**
SmartDiagnosis™ (v3.0)	Yes	
Wi-Fi	Yes	
Remote Start and Cycle Monitor	Yes	
Energy Monitoring	Yes	
Tub Clean Coach	Yes	-
MOTOR AND AGITATOR	**Washer**	**Dryer**
Motor Type	Inverter Direct Drive Motor	-
Axis	Horizontal	-

MATERIALS AND FINISHES	Washer	Dryer
NeveRust® Stainless Steel Drum	Yes	
Cabinet	Painted Steel	
Control Panel	Plastic	
Top Plate	Steel	
Door / Rim	Large Circle Chrome	
Door Cover	Tinted Round Tempered Glass	
All Available Colors	Black Steel (B)	
CERTIFICATION	**Washer**	**Dryer**
AAFA	Yes	-
POWER SOURCE	**Washer**	**Dryer**
Ratings	CSA Listed	
Electrical Requirements	120V, 10 Amps	240V, 5 Amps
Type	Electric	Heat Pump
DIMENSIONS	**Washer**	**Dryer**
Product (WxHxD)	27" x 74 3/8" x 30 3/8"	
Depth with Door Open	55" D with door open	
Carton (WxHxD)	30 1/16" x 79 11/32" x 32"	
Weight (Product/Carton)	340 lbs. / 369 lbs.	
LIMITED WARRANTY	**Washer**	**Dryer**
Parts and Labor	1 Year	
Direct Drive Motor	10 Years	-
Drum	3 Years	
Compressor & Motor	-	10 Years
UPC CODES		
WKHC202HBA (Black Steel)	195174022887	

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project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

ROBISON ENGINEERING, INC
19401 40TH AVE W., SUITE 302
LYNNWOOD, WA 98036
206-364-3343 TEL
REI PROJECT NO.: 1005-002
CONTACT: M. NELSON

REED JACKSON — STATE OF WASHINGTON — 57105 — REGISTERED PROFESSIONAL ENGINEER
2/23/24

project architect:	JMN
project manager:	JMN
drawn by:	JMN
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:
1	2/23/24	PERMIT REVISION SET

NOT FOR CONSTRUCTION

PERMIT SET

2/23/2024

title:
EQUIPMENT DATA SHEETS

sheet:
M4.00

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HVAC LOAD CALCULATIONS

Supply Air Requirements

Location	Current Supply CFM	Required Supply CFM	Cooling					Heating				
			Peak	Supply Temperature	Sensible Load (btuh)	Supply CFM	OSA CFM	OSA %	Heating Temperature Difference	Load (btuh)	Supply CFM	OSA CFM	OSA %
Zone Fused Elements Residence	0	7,190	CV - Sum of Peaks	55° F	156,000	7,190	120	2%	20° F dT	75,700	3,560	120	3%
Room Lower Floor	0	1,310	July 5:00 p.m.		28,300	1,310	30	2%		14,100	662	30	5%
Room Main Floor	0	3,650	July 4:00 p.m.		79,100	3,650	40	1%		39,000	1,830	40	2%
Room Upper Floor	0	2,230	July 4:00 p.m.		48,300	2,230	50	2%		22,700	1,070	50	5%

Ventilation Schedule

Location	Room Type	Ventilation Requirements	Area (ft²)	People	Ventilation CFM	Supply CFM	Ventilation %
Zone Fused Elements Residence			6,440	9	120	7,190	2%
Room Lower Floor	General		Direct	1,830	3	30	1,310	2%
Room Main Floor	General		Direct	2,990	5	40	3,650	1%
Room Upper Floor	General		Direct	1,620	5	50	2,230	2%

Cooling Load Details - System

(Btu/h / % Total)

(See "Cooling Load Details - Room" for lighting, equipment, and people loads)

Location	Peak	Roof	Wall	Glass	Vertical Partitions	Horizontal Partitions	Ventilation		Infiltration	
							Sensible	Latent	Sensible	Latent
Zone Fused Elements Residence	July 3:00 p.m.	5,400 3%	5,080 3%	112,000 70%	538 0%	345 0%	17,600 11%	11,000 7%	0 0%	2,250 1%	1,800 1%	1,880 1%	1,600 1%
Room Lower Floor	July 5:00 p.m.	953 3%	693 2%	16,800 57%	538 2%	0 0%	4,990 17%	3,120 11%	0 0%	750 3%	600 2%	507 2%	494 2%
Room Main Floor	July 4:00 p.m.	2,200 3%	2,720 3%	59,000 73%	0 0%	345 0%	8,150 10%	5,090 6%	0 0%	750 1%	600 1%	888 1%	718 1%
Room Upper Floor	July 4:00 p.m.	2,240 5%	1,670 3%	35,900 73%	0 0%	0 0%	4,430 9%	2,770 6%	0 0%	750 2%	600 1%	484 1%	391 1%

Cooling Load Details - Room

(Btu/h / % of Total)

Location	Peak	Roof	Wall	Glass	Vertical Partitions	Horizontal Partitions	Lighting	Equipment		People		Infiltration	
								Sensible	Latent	Sensible	Latent	Sensible	Latent
Zone Fused Elements Residence	CV - Sum of Peaks	5,400 3%	5,080 3%	112,000 70%	538 0%	345 0%	17,600 11%	11,000 7%	0 0%	2,250 1%	1,800 1%	1,880 1%	1,600 1%
Room Lower Floor	July 5:00 p.m.	953 3%	693 2%	16,800 57%	538 2%	0 0%	4,990 17%	3,120 11%	0 0%	750 3%	600 2%	507 2%	494 2%
Room Main Floor	July 4:00 p.m.	2,200 3%	2,720 3%	59,000 73%	0 0%	345 0%	8,150 10%	5,090 6%	0 0%	750 1%	600 1%	888 1%	718 1%
Room Upper Floor	July 4:00 p.m.	2,240 5%	1,670 3%	35,900 73%	0 0%	0 0%	4,430 9%	2,770 6%	0 0%	750 2%	600 1%	484 1%	391 1%

Heating Load Details - System and Room

(Btu/h / % of System Total)

Location	Roof	Wall	Glass	Slab	Vertical Partitions	Horizontal Partitions	Ventilation	Infiltration
Zone Fused Elements Residence	4,470 5%	12,100 15%	26,500 32%	14,300 17%	3,990 5%	2,130 3%	5,870 7%	12,200 15%
Room Lower Floor	756 5%	1,510 10%	2,650 17%	1,400 9%	3,990 26%	0 0%	1,470 9%	3,760 24%
Room Main Floor	1,840 5%	6,810 17%	14,000 36%	8,130 20%	0 0%	2,130 5%	1,960 5%	5,480 13%
Room Upper Floor	1,670 7%	3,820 15%	9,290 37%	4,740 19%	0 0%	0 0%	2,440 10%	2,980 12%

Load Total Summary - System

(Includes Ventilation and Plenum Loads)

Location	Area	CFM	Peak	Cooling							Heating			
				btuh			Tons			ft²/ton	CFM/ft²	CFM	btuh	kW	CFM/ft²
				Total	Sensible	Latent	Total	Sensible	Latent						
Zone Fused Elements Residence	6,440 ft²	7,190	July 3:00 p.m.	161,000	157,000	4,170	13.4	13.1	0.3	480	536	1.12	7,190	81,600	23.9	1.12
Room Lower Floor	1,830 ft²	1,310	July 5:00 p.m.	29,800	28,500	1,290	2.5	2.4	0.1	736	527	0.72	662	15,500	4.6	0.36
Room Main Floor	2,990 ft²	3,650	July 4:00 p.m.	81,000	79,400	1,570	6.8	6.6	0.1	442	541	1.22	1,830	40,900	12	0.61
Room Upper Floor	1,620 ft²	2,230	July 4:00 p.m.	50,000	48,700	1,310	4.2	4.1	0.1	390	535	1.37	1,070	25,100	7.4	0.66

Load Total Summary - Room

(Excludes Ventilation and Plenum Loads)

Location	Area	CFM	Peak	Cooling							Heating			
				btuh			Tons			ft²/ton	CFM/ft²	CFM	btuh	kW	CFM/ft²
				Total	Sensible	Latent	Total	Sensible	Latent						
Zone Fused Elements Residence	6,440 ft²	7,190	CV - Sum of Peaks	159,000	156,000	3,400	13.3	13	0.3	485	542	1.12	3,560	75,700	22.2	0.55
Room Lower Floor	1,830 ft²	1,310	July 5:00 p.m.	29,400	28,300	1,090	2.5	2.4	0.1	746	534	0.72	662	14,100	4.1	0.36
Room Main Floor	2,990 ft²	3,650	July 4:00 p.m.	80,400	79,100	1,320	6.7	6.6	0.1	445	545	1.22	1,830	39,000	11.4	0.61
Room Upper Floor	1,620 ft²	2,230	July 4:00 p.m.	49,500	48,300	991	4.1	4	0.1	395	543	1.37	1,070	22,700	6.7	0.66

Project Information

Project Name:	FUSED ELEMENTS RESIDENCE		
Project Location:	BELLEVUE, WA		
Default Heating Temperature:	70° F	**Heating Safety Factor (Room):**	0%
		Heating Safety Factor (Ventilation):	0%
Default Cooling Temperature:	75° F	**Cooling Safety Factor (Room):**	0%
		Cooling Safety Factor (Ventilation):	0%
Default Relative Humidity:	50%	**Floor Slab Heat Loss Coefficient:**	0.54
Calculation Date:	September 8, 2023, 8:39 a.m.		

Design Conditions

OSA Low:	24° F	**Latitude:**	48° N
OSA Daily Range:	18° F	**Elevation:**	446'
	OSA High Dry Bulb	**OSA High Wet Bulb**	
July	83° F		67° F

Roof Types

Roof Type	U-Value	ASHRAE Type	Color	Description
ROOF	0.026		5 Dark	

Roofs

Location	Type	Area
Room Lower Floor	ROOF	632 ft² (34.0% of Room)
Room Main Floor	ROOF	1,540 ft² (51.6% of Room)
Floor Upper Floor	ROOF	1,570 ft²

Wall Types

Wall Type	U-Value	ASHRAE Type	Color	Description
BELOW GRADE WALL	0.056		9 Dark	
WALL	0.056		9 Dark	

Walls

Room Number	Length	Height	Area (Minus Doors and Glass)	Type	Facing Direction	On Perimeter
Lower Floor	39'-7"	12'	269 ft²	WALL	W	
Lower Floor	16'-9"	12'	174 ft²	WALL	S	
Main Floor	3"	10'	2 ft²	WALL	N	
Main Floor	12'-1"	10'	121 ft²	WALL	N	
Main Floor	4'-9"	10'	9 ft²	WALL	N	
Main Floor	13'-9"	10'	93 ft²	WALL	N	
Main Floor	48'-8"	10'	133 ft²	WALL	W	
Main Floor	27'	10'	98 ft²	WALL	W	
Main Floor	35'-10"	10'	254 ft²	WALL	W	
Main Floor	20'-1"	10'	134 ft²	WALL	S	
Main Floor	32'-1"	10'	145 ft²	WALL	S	
Main Floor	7'	10'	70 ft²	WALL	E	
Main Floor	27'	10'	242 ft²	WALL	E	

Walls

Room Number	Length	Height	Area (Minus Doors and Glass)	Type	Facing Direction	On Perimeter
Main Floor	20'-10"	10'	185 ft²	WALL	E	
Main Floor	35'-7"	10'	133 ft²	WALL	E	
Main Floor	21'	10'	210 ft²	WALL	E	
Main Floor	7'	10'	5 ft²	WALL	N	
Main Floor	18'-10"	10'	188 ft²	WALL	N	
Upper Floor	19'	10'	130 ft²	WALL	N	
Upper Floor	4'-11"	10'	14 ft²	WALL	N	
Upper Floor	13'-3"	10'	27 ft²	WALL	W	
Upper Floor	35'-8"	10'	140 ft²	WALL	W	
Upper Floor	46'-5"	10'	333 ft²	WALL	S	
Upper Floor	27'-11"	10'	237 ft²	WALL	E	
Upper Floor	21'	10'	197 ft²	WALL	E	
Upper Floor	22'-6"	10'	163 ft²	WALL	N	

Partitions

Location	Type	Area	Low Temperature	High Temperature	U-Value
Room Lower Floor	Wall	156 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	202 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	119 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	112 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	98 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	165 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Door	32 ft²	OSA Low	OSA High	0.3
Room Lower Floor	Wall	155 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	139 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Door	32 ft²	OSA Low	OSA High	0.3
Room Main Floor	Horizontal	1,780 ft² (60% of Room)	OSA Low	OSA High	0.026

Door Types

Door Type	U-Value	ASHRAE Type	Color	Description
DOOR	0.3		9 Dark	

Doors

Room Number	Area	Type	Facing Direction
Lower Floor	27 ft²	DOOR	S
Main Floor	31 ft²	DOOR	N
Main Floor	32 ft²	DOOR	W
Main Floor	28 ft²	DOOR	E
Main Floor	24 ft²	DOOR	E
Upper Floor	21 ft²	DOOR	S
Upper Floor	24 ft²	DOOR	E

Glass Types

Glass Type	UValue	SHGC	Description
GLASS	0.28	0.4	
SKYLIGHT	0.5	0.4	

Glass

Room Number	Area	Type	Facing Direction	Shaded
Lower Floor	266 ft²	GLASS	W	
Main Floor	31 ft²	GLASS	N	
Main Floor	31 ft²	GLASS	N	
Main Floor	352 ft²	GLASS	W	
Main Floor	172 ft²	GLASS	W	
Main Floor	72 ft²	GLASS	W	
Main Floor	67 ft²	GLASS	S	
Main Floor	176 ft²	GLASS	S	
Main Floor	223 ft²	GLASS	E	
Upper Floor	56 ft²	SKYLIGHT	Up	
Upper Floor	60 ft²	GLASS	N	
Upper Floor	36 ft²	GLASS	N	
Upper Floor	106 ft²	GLASS	W	
Upper Floor	216 ft²	GLASS	W	
Upper Floor	110 ft²	GLASS	S	
Upper Floor	18 ft²	GLASS	E	
Upper Floor	13 ft²	GLASS	E	
Upper Floor	62 ft²	GLASS	N	

Room Information, Part 1

Values in italics have been changed from the default

Number	Name	Area	Ceiling Height	Ventilation		Infiltration		Cooling Temperature	Heating Temperature	Relative Humidity
				Cooling	Heating	Cooling	Heating			
Lower Floor	General	1,830 ft²	*10'*	*Direct / CFM*	Same as cooling	30 0.25 ACH / CFM	75 Same as cooling CFM	75° F	70° F	50%
Main Floor	General	2,990 ft²	*9'*	*Direct / CFM*	Same as cooling	40 0.25 ACH / CFM	112 Same as cooling CFM	75° F	70° F	50%
Upper Floor	General	1,620 ft²	*10'*	*Direct / CFM*	Same as cooling	50 0.25 ACH / CFM	61 Same as cooling CFM	75° F	70° F	50%

Room Information, Part 2

Values in italics have been changed from the default

Number	Lighting Load	Equipment Load		People			Glass Zone Type
		Sensible	Latent		Sensible btuh / Person	Latent btuh / Person	
Lower Floor	0.8 watts / ft² 4,990	0.5 watts / ft² 3,120	0	3 people	250	200	B
Main Floor	0.8 watts / ft² 8,150	0.5 watts / ft² 5,090	0	3 people	250	200	B
Upper Floor	0.8 watts / ft² 4,430	0.5 watts / ft² 2,770	0	3 people	250	200	B

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REGISTERED JACKSON STATE OF WASHINGTON PROFESSIONAL ENGINEER

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project manager: JMN
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HVAC LOAD CALCULATIONS

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LEGEND

ACU	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT PER HOUR
C	COMMON
CAP	CAPACITY
CC	COOLING COIL
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CLG	CEILING, COOLING
CO	CLEANOUT
COMB	COMBUSTION
CONT	CONTINUE, CONTROL
CONTR	CONTRACTOR
COP	COEFFICIENT OF PERFORMANCE
COTG	CLEAN OUT TO GRADE
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
D	DIAMETER
DB	DRY BULB, DECIBEL
DEG	DEGREE
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
EAT	ENTERING AIR TEMPERATURE
EFF	EFFICIENCY
EG	ENGINE GENERATOR
ELEC	ELECTRIC
EQUIV	EQUIVALENT
EXH	EXHAUST
EXT	EXTERIOR, EXTERNAL
F	FAHRENHEIT
FCU	FAN COIL UNIT
FLR	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
G	GAS
GAL	GALLONS
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALLBOARD
HD	HEAD
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPU	HEAT PUMP UNIT
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
ID	INDIRECT DRAIN, INSIDE DIAMETER
IN	INCH
KW	KILOWATT
L	LONG, LENGTH
LB	POUND
MBH	THOUSAND BTU PER HOUR
MECH	MECHANICAL
MCA	MINIMUM CIRCUIT AMPACITY
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
OD	OUTSIDE DIMENSION OR DIAMETER, OVERFLOW DRAIN
OPNG	OPENING
P	PUMP
PD	PRESSURE DROP, PUMPED DRAIN
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSIG	POUNDS PER SQUARE INCH GAUGE
RD	ROOF DRAIN
REF	REFERENCE
RPM	REVOLUTIONS PER MINUTE
SCH	SCHEDULE
SF	SQUARE FOOT
SR	SUDS RELIEF
SS	STAINLESS STEEL, SANITARY SEWER
SQ	SQUARE
TYP	TYPICAL
TP	TRAP PRIMER
UON	UNLESS OTHERWISE NOTED
V	VENT
VTR	VENT THRU ROOF
W	WASTE, WATT, WIDE

EQUIPMENT

EF-1 — TYPICAL EQUIPMENT DESIGNATION (EXHAUST FAN SHOWN)

GENERAL

ARCHITECTURAL BACKGROUND (THIN LINE)

NEW MECHANICAL WORK (HEAVY LINE)

MATCHLINE OR PROPERTY LINE

SECTION INDENTIFICATION (DETAIL SIMILAR)

A / M-3 / M-3 — INDICATES DIRECTION OF CUTTING PLANE; LETTER INDICATES SECTION (NO. INDICATES DETAIL); SHEET # WHERE SECTION IS DRAWN; SHEET # WHERE SECTION IS TAKEN

PIPING

CD — CONDENSATE DRAINAGE

G — NATURAL GAS – STANDARD PRESSURE

MPG — NATURAL GAS – MEDIUM PRESSURE

WASTE (W)

PW — PUMPED WASTE (PW)

RL — RAIN LEADER (RL)

OL — OVERFLOW RAIN LEADER (OL)

PRL — PUMPED RAIN LEADER (PRL)

VENT (V)

COLD WATER (CW)

HOT WATER, POTABLE, 120°F

HOT WATER CIRCULATING (HWC), POTABLE, 120°F

140F — HOT WATER, POTABLE, TEMPERATURE OTHER THAN 120°F

140F — HOT WATER CIRCULATING (HWC), POTABLE, TEMPERATURE OTHER THAN 120°F

IRR — IRRIGATION

PIPE CAP

PIPE PLUG

UNION

FLANGE

GATE VALVE OR BALL VALVE

BALL VALVE

PRV — PRESSURE REDUCING VALVE (PRV)

BREAK IN PIPING OR DUCTWORK

CHECK VALVE

BALANCING OR PLUG VALVE

BALANCING/MEASUING VALVE

ID — INDIRECT DRAIN, PIPE TO DRAIN

GLOBE VALVE

BUTTERFLY VALVE

WYE STRAINER

WYE STRAINER WITH CAPPED HOSE END BLOWDOWN VALVE

AUTOMATIC CONTROL VALVE, 2-WAY

AUTOMATIC CONTROL VALVE, 3-WAY

RELIEF VALVE

RPBP — REDUCED PRESSURE BACKFLOW PREVENTER

DCVA — DOUBLE CHECK VALVE ASSEMBLY

FLOOR DRAIN

HOSE BIBB

PIPE ALIGNMENT GUIDE

FLEXIBLE CONNECTION IN PIPING

PS — PIPE SUPPORT

A — PIPE ANCHOR

PRESSURE GAGE

THERMOMETER

P/T — PRESSURE / TEMPERATURE TEST PORT

VALVE STATION OR ASSEMBLY

PUMP

— WASTE/VENT RISER CALLOUT

CW/HW RISER CALLOUT

GENERAL NOTES

GENERAL NOTES – MECHANICAL

1. REFERENCE TO RELATED WORK: "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, LANDSCAPE, OR KITCHEN), OR ITEM BASED ON A SPECIFIC MANUFACTURER'S DIMENSIONS (VERIFY).

2. ELECTRICAL CHARACTERISTICS: REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS (VOLTAGES, ETC.) OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED.

3. CODES: COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE APPLICABLE BUILDING, MECHANICAL, ENERGY, PLUMBING, FIRE, AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL AHJ.

4. PREPARE AND SUBMIT FOR REVIEW A SHOP DRAWING BASED ON FINAL STRUCTURAL SHOP DRAWINGS FOR LOCATING AND ROUTING ALL DUCTWORK, DAMPERS, EQUIPMENT, PIPING, ETC.
   A. COORDINATE FLOOR AND BEAM PENETRATIONS WITH STRUCTURAL.
   B. COORDINATE FINAL LOCATION AND ROUTING WITH CEILING, LIGHTS, WALLS, FIRE SPRINKLER PIPING, AND OTHER TRADES WORK.
   C. INCLUDE ADDITIONAL OFFSETS, ELBOWS, ROUTING, EQUIVALENT DUCT SIZING EXCHANGE, RELOCATING, ETC. AS REQUIRED FOR A COMPLETE OPERATING MECHANICAL SYSTEM.
   D. PROVIDE SHOP DRAWINGS AT NO ADDITIONAL COST TO THE OWNER.

5. MECHANICAL CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITHIN THE STRUCTURE.

6. ACCESS DOORS: COORDINATE WITH ARCHITECT AND LOCATE ALL ACCESS DOORS ON SHOP DRAWINGS PRIOR TO BEGINNING OF CONSTRUCTION. ACCESS DOORS IN FIRE RATED STRUCTURE SHALL BE FIRE RATED. VERIFY ACCESS DOOR LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

7. ROOF PENETRATIONS: SEE ARCHITECTURAL DRAWINGS FOR ROOF CAP, ROOF CURB, ROOF DRAIN, AND VTR DETAILS.

8. EXPOSED PIPING: PROVIDE CHROME PLATING FOR EXPOSED PIPING IN FINISHED ROOMS.

9. PENETRATIONS: PROVIDE ESCUTCHEON PLATES FOR EXPOSED PIPING PENETRATIONS AND SHEET METAL FLASHING FOR EXPOSED DUCTWORK PENETRATIONS.

10. SHAFT AND PLENUM CONNECTIONS: SEAL CONNECTIONS TO AIR SHAFTS AIRTIGHT. PROVIDE AIRTIGHT SEAL AROUND PENETRATIONS IN AIR PLENUMS.

11. LIGHT FIXTURE CLEARANCE: COORDINATE LOCATIONS OF MECHANICAL WORK TO PROVIDE CLEARANCES OVER LIGHTING FIXTURES FOR REMOVAL AND REPLACEMENT.

12. CABLE TRAYS: DUCTWORK AND PIPING INSTALLED ADJACENT TO ELECTRICAL CABLE TRAYS SHALL ALLOW MINIMUM ACCESS OF 6" ABOVE AND TO THE SIDE OF CABLE TRAYS.

13. ACCESS CLEARANCES FOR MAINTENANCE AND REPLACEMENT: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET. COORDINATE LOCATIONS OF MECHANICAL WORK AND WORK OF OTHER TRADES TO PROVIDE ACCESS CLEARANCES FOR SERVICE AND MAINTENANCE.

COORDINATION REQUIREMENTS

1. IRRIGATION: COORDINATE WITH IRRIGATION CONTRACTOR FOR THEIR WATER SUPPLY REQUIREMENTS AND LOCATIONS.

2. UTILITIES: COORDINATE WITH SITE UTILITY CONTRACTOR AND CIVIL DRAWINGS FOR UTILITY CONNECTIONS AND EXTENSIONS.

3. ROOF DRAINAGE: COORDINATE WITH GENERAL CONTRACTOR FOR ROOF DRAIN AND OVERFLOWS, SCUPPER DRAINS, AND CONDENSATE DRAINS.

4. STORM DRAINAGE: VERIFY WITH GENERAL CONTRACTOR FOR STORM DRAINAGE PRIOR TO BIDDING.

5. PLUMBING FIXTURES: COORDINATE WITH ARCHITECTURAL AND OTHER TRADES EXACT LOCATION OF ALL PLUMBING FIXTURES.

6. PIPING: COORDINATE WITH STRUCTURAL FOR EXACT LOCATION OF ALL STRUCTURAL FRAMING AND FOOTINGS AND FINALIZE THE EXACT ROUTING OF ALL PIPES WITH STRUCTURAL AND AT THE SITE PRIOR AND DURING THE CONSTRUCTION.

7. ADJUSTMENTS: ALL EQUIPMENT, MOTORS, FANS GAS BURNERS, IGNITION DEVICES, DRIVES, ETC. SHALL BE ADJUSTED AND BALANCED TO OPERATE AT SPECIFIED RATINGS AS REQUIRED FOR THIS PROJECT SITE AND ACCOUNTING FOR ELEVATION ABOVE SEA LEVEL.

8. APPROVALS: MECHANICAL AND PLUMBING EQUIPMENT SHALL BE APPROVED FOR INSTALLATION IN THE PROJECT LOCATION AND SHALL HAVE ALL CERTIFICATIONS AND RATINGS TO MEET ALL ENERGY, POLLUTION, ENVIRONMENTAL, SEISMIC, ETC. CODES AND REGULATIONS. THE CONTRACTOR SHALL COORDINATE WITH HIS MANUFACTURE SUPPLIERS AND SHALL INCLUDE ALL COSTS REQUIRED TO MEET THESE REQUIREMENTS IN HIS BID.

DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

PIPING NOTES

1. DISASSEMBLY PROVISIONS: PROVIDE UNIONS OR FLANGES AT PIPING CONNECTIONS TO EQUIPMENT, COILS, TRAPS, CONTROL VALVES, AND OTHER COMPONENTS TO ALLOW DISASSEMBLY FOR MAINTENANCE.

2. REDUCERS: PROVIDE AS REQUIRED FROM LINE PIPE SIZE TO EQUIPMENT, TRAP, COIL, AND CONTROL VALVE CONNECTION SIZES.

3. OFFSETS: PROVIDE FOR BRANCH LINES TO EQUIPMENT.

4. DIELECTRIC UNIONS: PROVIDE AT CONNECTIONS OF DISSIMILAR PIPE.

5. REFRIGERANT PIPING: PROVIDE SIZING & INSTALLATION IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

6. CONDENSATE DRAIN: PROVIDE A P-TRAP FOR EACH HVAC UNIT CONDENSATE PAN WITH PLUG TEES FOR CLEANING. CONDENSATE DRAINS SHALL BE DISCHARGED TO AN INDIRECT WASTE OR OUTSIDE.

PLUMBING NOTES

1. CONNECTIONS: PROVIDE PLUMBING FIXTURE CONNECTIONS TO BUILDING WASTE, VENT, COLD WATER, AND HOT WATER SYSTEM IN ACCORDANCE WITH DRAWINGS, MANUFACTURER'S RECOMMENDATIONS, AND LOCAL CODES. CONNECT TO EACH FIXTURE, EQUIPMENT, ETC. WITH ALL ACCESSORIES, VALVES, VACUUM BREAKERS, REGULATORS, UNIONS, ETC. AS REQUIRED AND AS RECOMMENDED BY THE MANUFACTURERS. REFER TO PLUMBING FIXTURE CONNECTION SCHEDULE ON PLANS.

2. HOT AND COLD: WATER PIPING CONNECTION TO EACH FIXTURE THE LEFT HAND SIDE.

3. VENT STACKS: COORDINATE VENT STACK WITH HVAC EQUIPMENT TO MAINTAIN MINIMUM 10' CLEARANCE FROM OUTSIDE AIR INTAKES.

4. CLEANOUTS: PROVIDE CLEANOUTS PER CURRENT UPC AND AS REQUIRED BY LOCAL JURISDICTIONS. CLEANOUTS SHALL BE LOCATED IN WALLS/FLOORS WHERE THEY ARE NOT HIGHLY VISIBLE. FLOOR CLEANOUTS IN CARPETED AREAS TO BE FITTED WITH CARPET INSERTS. LOCATIONS SHALL BE SUBMITTED TO ARCHITECT FOR DRAWINGS.

5. SUDS RELIEF: PROVIDE SUDS RELIEF IN ACCORDANCE WITH CURRENT UPC.

6. SHUT-OFFS: PROVIDE SHUT-OFF VALVES/STOPS AT HOT AND COLD WATER SUPPLY TO EACH FIXTURE. EXCEPTION: PROVIDE SCREWDRIVER STOPS AT BATH/SHOWERS.

7. TRAP ARMS: PROVIDE TRAP ARMS SUCH THAT THE MAXIMUM LENGTH WILL NOT EXCEED CODE REQUIREMENTS.

8. ADA INSULATION: AT PLUMBING PIPING EXPOSED UNDER LAVATORIES, INSULATE THE EXPOSED PIPING AND TRAPS WITH PRODUCT SPECIFICALLY DESIGNED FOR THIS APPLICATION MEETING ADA REQUIREMENTS. PROVIDE HANDI-LAV GUARD OR EQUIVALENT. OFFSET P-TRAPS TO CLEAR WHEELCHAIR ACCESS.

9. FREEZE PROTECTION: WATER PIPING SHALL BE INSTALLED ON THE WARM SIDE OF INSULATION. ROUTE NO WATER PIPING IN ATTIC SPACE. HEAT TAPING IS NOT ACCEPTABLE.

10. WATER HAMMER ARRESTERS: PROVIDE AT THE END OF HOT AND COLD WATER LINES SERVING TWO OR MORE FIXTURES; SIZE IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE (PDI) REQUIREMENTS. WATER HAMMER ARRESTORS ARE REQUIRED FOR QUICK CLOSING VALVES, SUCH AS LAUNDRY WASHERS, FLUSH VALVES (PUBLIC TOILETS), ETC. MODEL PPP MIL-D-82036 OR EQUAL. VERIFY SIZE BEFORE ORDERING.

11. TRAP PRIMERS: PROVIDE TRAP PRIMERS AND PIPING FOR DRAINS AND FLOOR SINKS. ARRANGE PIPING TO ACHIEVE EQUAL FLOW TO EACH DRAIN AND FLOOR SINK FOR TRAP PRIMERS SERVING MULTIPLE DRAINS AND FLOOR SINKS.

PRE-CON MEETING

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WLL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS, AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THOUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	2 HOURS
PLUMBING/PIPING	2 HOURS
ELECTRICAL	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

APPLICABLE CODES

THESE DRAWINGS ARE BASED ON THE FOLLOWING CODES:

- 2018 INTERNATIONAL RESIDENTIAL CODE
- 2018 UNIFORM PLUMBING CODE
- 2018 WASHINGTON STATE ENERGY CODE – RESIDENTIAL PROVISIONS

DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET: PERMIT SET 9/8/23	INCLUDED IN SET: PERMIT REVISION SET 2/23/24	SHEETS WITH REVISIONS: 1 PERMIT REVISION SET 2/23/24
P0.00	LEGEND, GENERAL NOTES, DRAWING INDEX	●	●	
P0.01	CALCULATIONS, SCHEDULES	●	●	
P1.00	SITE PLAN	●	●	●
P2.00	UNDERSLAB PLAN	●	●	●
P2.10	LOWER LEVEL FLOOR PLAN	●	●	●
P2.20	MAIN LEVEL FLOOR PLAN	●	●	●
P2.30	UPPER LEVEL FLOOR PLAN	●	●	●
P2.40	ROOF PLAN	●	●	
P4.00	DETAILS & DIAGRAMS	●	●	

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project manager:	JMN
drawn by:	JMN
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:
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2/23/2024

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LEGEND, GENERAL NOTES, DRAWING INDEX

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CALCULATIONS

Robison Engineering, Inc.
19401 40th Ave W, Suite 302
Lynnwood, WA 98036

Project Name: Fused Elements
Project Number: 1216-001
Edited By: JMN
Edit Date: 6/14/2023

SIZING IS PER UPC

WATER SUPPLY PIPE SIZING CALCULATION FORM

WATER PRESSURE AT STREET:		70	PSI STATIC PRESSURE
WATER METER LOSS: *TYPICALLY 3-8 PSI.*		5	PSI
BACKFLOW PREVENTER LOSS: *TYPICALLY 5-10 PSI.*		7	PSI
FRICTION LOSS: *LOSS FROM STREET TO BUILDING.*		5	PSI
AVAILABLE PRESSURE AFTER BACKFLOW:		53	PSI
STATIC LIFT TO HIGHEST FIXTURE:	25 FEET =	10.8	PSI
REQUIRED MINIMUM PRESSURE AT FURTHEST PLUMBING MANIFOLD:		25	PSI
PRESSURE AVAILABLE TO OFFSET FRICTION LOSSES:		17.2	PSI
PIPING SYSTEM LENGTH FROM SERVICE TO FURTHEST MANIFOLD:		225	FEET
FITTING ALLOWANCE:		100	FEET
MAXIMUM FRICTION LOSS FACTOR:		5.3	PSI/100 FT
SELECTED FRICTION LOSS FACTOR: *MAX HW & CW VELOCITY 8 FPS (SDR-11)* *MAX HW & CW VELOCITY 5 FPS (SCH 80)*		5.3	PSI/100 FT

SUPPLY PIPE SIZING SCHEDULE

PIPE SIZE	FLOW, GPM	VELOCITY FPS	FIXTURE UNITS	PIPE MATERIAL
1/2"	2.0	3.60	2.0	CPVC SDR 11
3/4"	5.0	4.60	5.5	CPVC SDR 11
1"	10.0	5.50	13.0	CPVC SDR 11
1-1/4"	16.0	6.30	21.0	CPVC SDR 11
1-1/2"	25.0	7.00	40.0	CPVC SDR 11
2"	52.0	8.00	130.0	CPVC SDR 11

SCHEDULES

PIPE MATERIALS SCHEDULE

SERVICE	MATERIAL	JOINT	NOTES
WATER DISTRIBUTION PIPING 4" & LARGER	COPPER TYPE L	SOLDER	(1)(2)(3)
WATER DISTRIBUTION PIPING, 3" & SMALLER	PEX	COLD EXPANSION FITTINGS	(1)(2)(3)
WATER DISTRIBUTION PIPING WITHIN RESIDENTIAL UNITS	PEX	COLD EXPANSION FITTINGS	(1)(2)
SANITARY SEWER & VENT PIPING, BELOW GRADE	PVC SCH 40	SOLVENT CEMENT	(1)(2)(3)(5)(6)
SANITARY SEWER & VENT PIPING, ABOVE GRADE	ABS SCH 40	SOLVENT CEMENT	(1)(2)(4)(5)(6)(7)(8)
STORM DRAIN PIPING, BELOW GRADE	PVC SCH 40	SOLVENT CEMENT	(1)(2)(3)
STORM DRAIN PIPING, ABOVE GRADE	ABS SCH 40	SOLVENT CEMENT	(1)(2)(4)(7)(8)
CONDENSATE DRAIN PIPING	CPVC SCH 40	SOLVENT CEMENT	(1)(2)

NOTES: (1) PIPE MATERIALS SHALL BE LISTED BY AN APPROVED LISTING AGENCY.
(2) CONTRACTOR SHALL INDICATE THE TYPE OF PIPE MATERIALS INCLUDED IN THEIR BID. ALTERNATE PIPE MATERIALS SHALL BE SUBMITTED TO THE OWNER AND THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
(3) PLASTIC WRAP UNDERGROUND SUPPLY PIPING TO PREVENT CORROSION.
(4) HORIZONTAL OFFSETS IN DWELLING UNIT CEILINGS OR NOISE-SENSITIVE AREAS SHALL BE CAST IRON OR ACOUSTICALLY INSULATED.
(5) PROVIDE THERMAL EXPANSION COMPENSATION FOR ALL PLASTIC PIPING PER MANUFACTURER REQUIREMENTS.
(6) PVC PIPING SHALL NOT BE USED FOR RECEPTOR AND TRAP ARM WHERE WASTE TEMPERATURE CAN EXCEED 110°F. THIS INCLUDES PIPING AND RECEPTORS FOR 3 COMPARTMENT SINK, COMMERCIAL DISHWASHER, COMMERCIAL LAUNDRY SINK, AND CONDENSATE DRAIN FOR GAS FIRED EQUIPMENT.
(7) TRAP ARM FOR WASTE RECEPTOR OF SODA DISPENSERS SHALL BE PVC. CAST IRON PIPING IS PROHIBITED FOR HIGH ACIDITY DRAINS (PH<3).
(8) ABS/PVC SHALL NOT BE USED IN PLENUM SPACES. PROVIDE SLIDE FITTINGS ON VERTICAL ABS/PVC RISERS EVERY TWO FLOORS, OR PROVIDE SUFFICIENT OFFSETS TO ACCOMMODATE THERMAL EXPANSION.

PIPE INSULATION SCHEDULE

SERVICE	MATERIAL	PIPE INSULATION					VAPOR RETARDER REQUIRED	NOTES
DOMESTIC HOT WATER AND RECIRCULATED HOT WATER	MINERAL-FIBER WITH JACKET	NOMINAL PIPE SIZE (IN.)	1/2 – 1	1-1/4	1-1/2	2 AND LARGER	NO	(1)(2)(3)(4)(5)
		INSULATION THICKNESS (IN.)	1	1-1/4	1-1/2	2		
EXPOSED SANITARY DRAINS AND DOMESTIC WATER SUPPLIES AND STOPS FOR ADA FIXTURES	TRUEBRO LAV-GUARD	N/A					NO	P-TRAP AND SUPPLY COVERS

NOTES:(1) FOR APPLICABLE CODES, REFER TO DWG P0.0.
(2) PIPING INSULATION EXPOSED TO WEATHER SHALL BE PROTECTED FROM DAMAGE. CONTRACTOR SHALL PROVIDE SHIELDING FROM SOLAR RADIATION THAT CAN CAUSE DEGRADATION OF THE MATERIAL. ADHESIVE TAPE SHALL NOT BE PERMITTED.
(3) HOT WATER AND HOT WATER CIRCULATION PIPING SHALL BE INSULATED PER 2015 UPC AND 2015 WSEC.
(4) PER 2015 UPC SECTION 312.6, NO WATER, SOIL OR WASTE PIPE SHALL BE INSTALLED OR PERMITTED OUTSIDE OF THE BUILDING, IN THE ATTIC, OR IN AN EXTERIOR WALL UNLESS ADEQUATE PROVISION IS MADE TO PROTECT SUCH PIPE FROM FREEZING. ALL HOT AND COLD WATER PIPES OUTSIDE THE CONDITIONED SPACE SHALL BE INSULATED TO A MINIMUM OF R-3.
(5) HEAT TRACING SHALL BE PROVIDED FOR COLD WATER AND IRRIGATION WATER IN UNCONDITIONED SPACES. HEAT TRACING OF OUTDOOR PIPING SHALL INCLUDE AUTOMATIC CONTROLS CONFIGURED TO SHUT OFF THE SYSTEM WHEN OUTDOOR AIR TEMPERATURES ARE ABOVE 40°F.

PLUMBING FIXTURE SCHEDULE (NOTE 1)

EQUIP NO.	FIXTURE TYPE	SERVICE SIZE (INCHES) CW	HW	W	V		MANUFACTURER	MODEL	FINISH	COMMENTS
WC-1	WATER CLOSET	1/2	–	3	2	WATER CLOSET			WHITE	
						SEAT			WHITE	
LAV-1	LAVATORY	1/2	1/2	2	1-1/2	LAVATORY			WHITE	
						FAUCET			CHROME	
BATH-1	BATH/SHOWER	1/2	1/2	2	1-1/2	BATHTUB			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
BATH-2	BATH/SHOWER	1/2	1/2	2	1-1/2	BATHTUB			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
SH-1	SHOWER	1/2	1/2	2	1-1/2	SHOWER ENCLOSURE			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
SH-2	STEAM SHOWER	1/2	1/2	2	1-1/2	SHOWER ENCLOSURE			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
SH-3	OUTDOOR SHOWER	1/2	1/2	2	1-1/2	TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
SH-4	SHOWER	1/2	1/2	2	1-1/2	SHOWER ENCLOSURE			TILE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
KS-1	KITCHEN SINK	1/2	1/2	2	1-1/2	SINK			STAINLESS STEEL	
						FAUCET			CHROME	
LS-1	LAUNDRY SINK	1/2	1/2	2	1-1/2	SINK			STAINLESS STEEL	
						FAUCET			CHROME	
SK-1	SINK	1/2	1/2	2	1-1/2	SINK			STAINLESS STEEL	
						FAUCET			CHROME	
WB-1	CLOTHES WASHER BOX	1/2	1/2	3	1-1/2				WHITE	
IMB-1	ICE MAKER BOX	1/2	–	–	–				WHITE	
HB-1	WALL HYDRANT	3/4	–	–	–		J.R. SMITH	5509QT	N/A	OR JOSAM, WADE, ZURN
HB-2	ROOF HYDRANT	3/4	–	–	–		J.R. SMITH	5960	N/A	OR JOSAM, WADE, ZURN
HB-3	YARD HYDRANT	3/4	–	–	–		J.R. SMITH	5903	N/A	OR JOSAM, WADE, ZURN
SI-1	SOLIDS INTERCEPTOR	–	–	2	–		ZURN	Z1180	N/A	OR JOSAM, WADE, J.R. SMITH
TD-1	TRENCH DRAIN	–	–	(NOTE 2)			J.R. SMITH	2900	NICKEL	OR JOSAM, WADE, ZURN
FD-1	FLOOR DRAIN	–	–	(NOTE 2)			J.R. SMITH	2005	NICKEL	OR JOSAM, WADE, ZURN
FS-1	FLOOR SINK	–	–	(NOTE 2)			J.R. SMITH	3001	STAINLESS STEEL	OR JOSAM, WADE, ZURN
RD & OD	ROOF/ROOF OVERFLOW DRAIN	–	–	(NOTE 2)			J.R. SMITH	1800	N/A	OR JOSAM, WADE, ZURN
WCO	WALL CLEANOUT	–	–	–	–		J.R. SMITH	4420	N/A	OR JOSAM, WADE, ZURN
FCO	FLOOR CLEANOUT	–	–	–	–		J.R. SMITH	4020	N/A	OR JOSAM, WADE, ZURN

NOTES: (1) CONTRACTOR SHALL CONFIRM MAKE, MODEL, AND FINISH WITH OWNER PRIOR TO ORDERING.
(2) SIZE PER PLANS.

WATER HEATER SCHEDULE – HYBRID

EQUIP NO.	SERVICE	STORAGE, GAL	ELECTRICAL VOLTAGE	ELECTRICAL MOCP	UNIFORM ENERGY FACTOR (UEF)	BASIS OF DESIGN
WH-1	HOT WATER	80	230V/1P	30	3.45	A.O. SMITH HPTU-80N
WH-2	HOT WATER	80	230V/1P	30	3.45	A.O. SMITH HPTU-80N

NOTES:(1) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.

EXPANSION TANK SCHEDULE

EQUIP NO.	SERVICE	CAPACITY, GAL	TANK SIZE DIA	TANK SIZE HEIGHT	BASIS OF DESIGN
ET-1	WH-1 & WH-2	4.4	11	15	AMTROL ST-12C-DD

PUMP SCHEDULE

EQUIP NO.	SERVICE	TYPE	FLOW, GPM	HEAD, FT	PRESSURE RATING, PSIG	ELECTRICAL VOLTAGE	ELECTRICAL HP	BASIS OF DESIGN
HWCP-1	HW LOOP	INLINE	3	15	145	115V/1P	FHP	BELL & GOSSETT ECOCIRC 20-18 (1)

NOTES: (1) PROVIDE STAINLESS STEEL PUMP, SUITABLE FOR DOMESTIC WATER APPLICATION.

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job no.: 1216-001

revisions:

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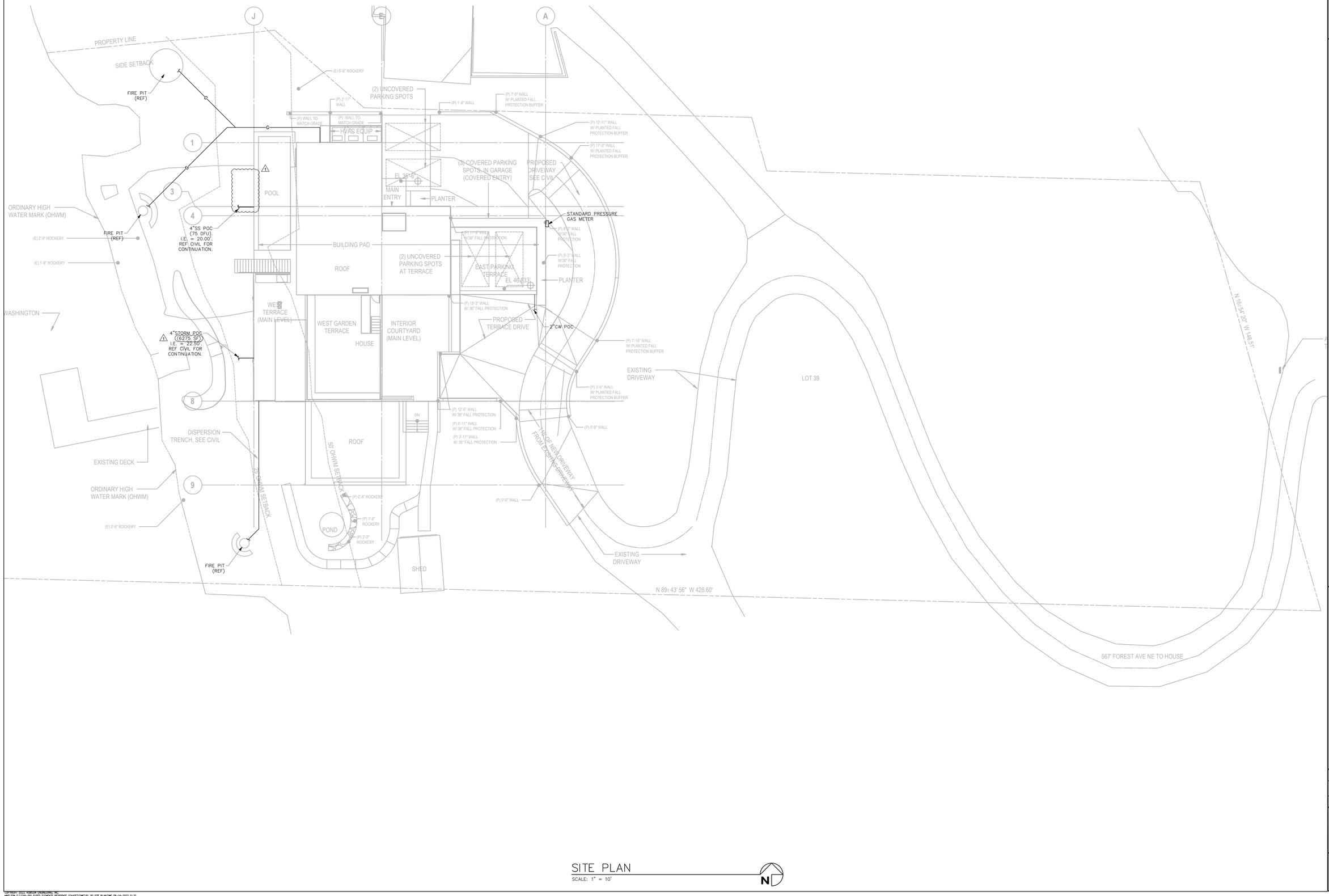

SITE PLAN

SCALE: 1" = 10'

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STORM DRAIN SIZING:

STORM DRAIN PIPING SIZED PER 2018 UPC, CHAPTER 11, TABLES 1103.1 & 1103.2 FOR 1" PER HOUR RAINFALL RATE. HORIZONTAL PIPING SHALL BE SLOPED ⅛" PER LINEAR FOOT.

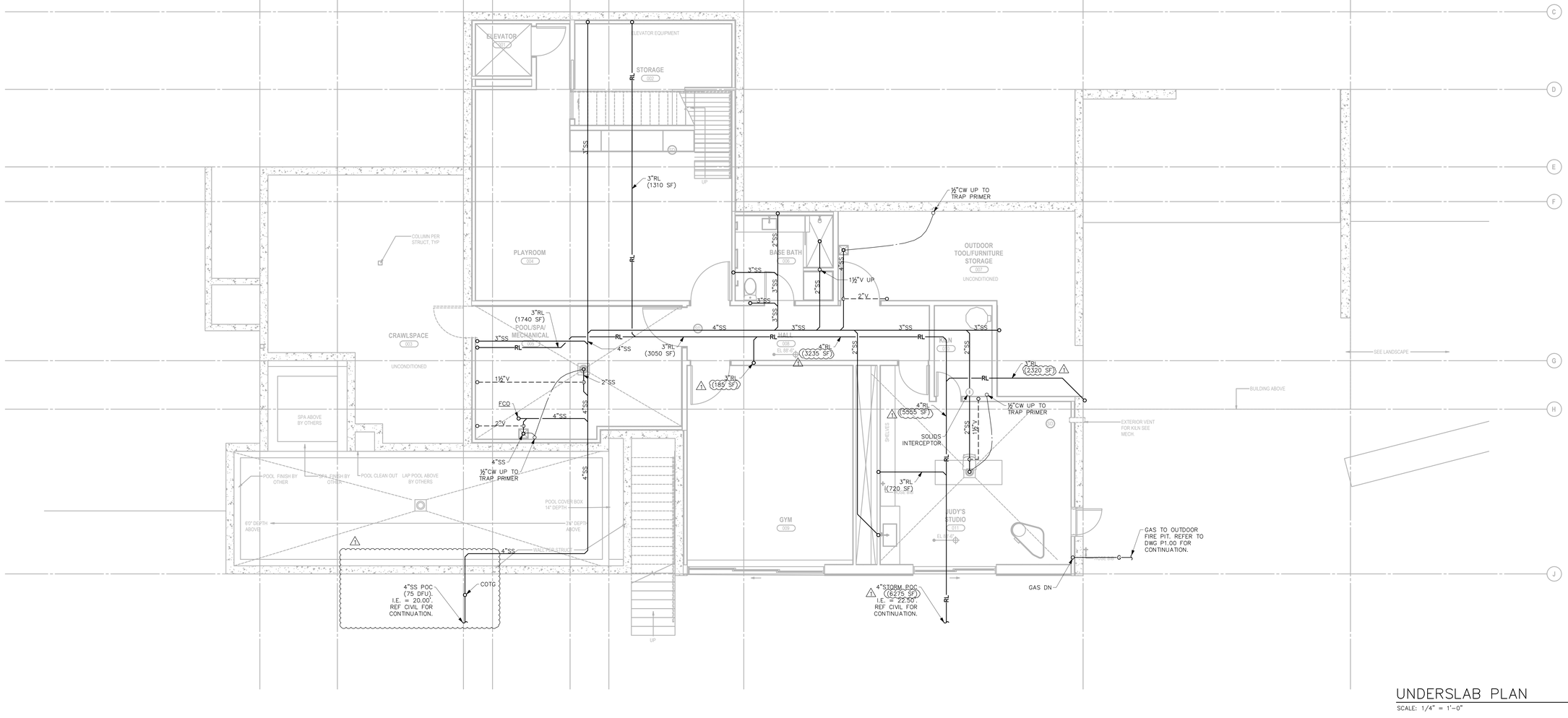
SIZE OF PIPE	MAXIMUM ALLOWABLE ROOF AREA (HORIZONTAL PIPING)	MAXIMUM ALLOWABLE ROOF AREA (VERTICAL PIPING)
3"	3,288 SF	8,800 SF
4"	7,520 SF	18,400 SF

WASTE PIPING SIZING:

HORIZONTAL WASTE PIPING SHALL BE SLOPED AT ¼" PER LINEAR FOOT. PROVIDE CLEANOUTS PER CURRENT UPC AND AS REQUIRED BY LOCAL JURISDICTIONS. CLEANOUTS SHALL BE LOCATED IN WALLS/FLOORS WHERE THEY ARE NOT HIGHLY VISIBLE. FLOOR CLEANOUTS IN CARPETED AREAS SHALL BE FITTED WITH CARPET INSERTS. LOCATIONS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
NOTE: NOT ALL CLEANOUTS ARE SHOWN ON THE PLUMBING PLANS.

FLAG NOTES:

1. 4"SS STUB FOR POOL EQUIPMENT. 24 FIXTURE UNITS ALLOCATED.



UNDERSLAB PLAN

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

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UNDERSLAB PLAN

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STORM DRAIN SIZING:

STORM DRAIN PIPING SIZED PER 2018 UPC, CHAPTER 11, TABLES 1103.1 & 1103.2 FOR 1" PER HOUR RAINFALL RATE. HORIZONTAL PIPING SHALL BE SLOPED ⅛" PER LINEAR FOOT.

SIZE OF PIPE	MAXIMUM ALLOWABLE ROOF AREA (HORIZONTAL PIPING)	MAXIMUM ALLOWABLE ROOF AREA (VERTICAL PIPING)
3"	3,288 SF	8,800 SF
4"	7,520 SF	18,400 SF

FLAG NOTES:

1. HVAC EQUIPMENT (REF).
2. 1"CW STUB FOR POOL/SPA EQUIPMENT.
3. DAYLIGHT OVERFLOW RAIN LEADER 6" ABOVE GRADE WITH A BRONZE OVERFLOW NOZZLE.
4. CONDENSATE PUMP (REF). CONDENSATE PUMP PROVIDED BY MECHANICAL CONTRACTOR, PIPING BY PLUMBING CONTRACTOR.
5. DISCHARGE ¾" SECONDARY CONDENSATE DRAIN TO FLOOR.
6. DISCHARGE ¾" CONDENSATE DRAIN TO FLOOR SINK WITH A MINIMUM 1" AIR GAP.

GAS PIPING NOTES:

FOR GAS PIPE SIZES, REFER TO DWG 4.00, DETAIL 11.

WASTE PIPING SIZING:

HORIZONTAL WASTE PIPING SHALL BE SLOPED AT ¼" PER LINEAR FOOT. PROVIDE CLEANOUTS PER CURRENT UPC AND AS REQUIRED BY LOCAL JURISDICTIONS. CLEANOUTS SHALL BE LOCATED IN WALLS/FLOORS WHERE THEY ARE NOT HIGHLY VISIBLE. FLOOR CLEANOUTS IN CARPETED AREAS SHALL BE FITTED WITH CARPET INSERTS. LOCATIONS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
NOTE: NOT ALL CLEANOUTS ARE SHOWN ON THE PLUMBING PLANS.

LOWER LEVEL FLOOR PLAN

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

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4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

ROBISON ENGINEERING, INC
13601 40TH AVE W., SUITE 302
LYNNWOOD, WA 98036
(206) 543-5370
REI PROJECT NO.: 1005-002
CONTACT: M. NELSON

REID JACKSON
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
2/23/24

project architect:	JMN
project manager:	JMN
drawn by:	JMN
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:
1	2/23/24	PERMIT REVISION SET

NOT FOR CONSTRUCTION
PERMIT SET
2/23/24

title:
LOWER LEVEL FLOOR PLAN

sheet:
P2.10

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WNELSON P:\1216-001 FUSED ELEMENTS RESIDENCE (CHASE)\DWG\P2_00 FLOOR PLANS.DWG 06-08-2023 14:37

STORM DRAIN SIZING:

STORM DRAIN PIPING SIZED PER 2018 UPC, CHAPTER 11, TABLES 1103.1 & 1103.2 FOR 1" PER HOUR RAINFALL RATE. HORIZONTAL PIPING SHALL BE SLOPED ⅛" PER LINEAR FOOT.

SIZE OF PIPE	MAXIMUM ALLOWABLE ROOF AREA (HORIZONTAL PIPING)	MAXIMUM ALLOWABLE ROOF AREA (VERTICAL PIPING)
3"	3,288 SF	8,800 SF
4"	7,520 SF	18,400 SF

FLAG NOTES:

1. HVAC EQUIPMENT (REF).
2. CONDENSATE PUMP (REF). CONDENSATE PUMP PROVIDED BY MECHANICAL CONTRACTOR, PIPING BY PLUMBING CONTRACTOR.
3. DISCHARGE ¾" SECONDARY CONDENSATE DRAIN TO FLOOR.
4. CONNECT ¾" CONDENSATE DRAIN TO TAILPIECE OF LAVATORY. REFER TO DWG 4.00, DETAIL 8.
5. DAYLIGHT OVERFLOW RAIN LEADER 6" ABOVE GRADE WITH A BRONZE OVERFLOW NOZZLE.
6. CONNECT 1¼" CONDENSATE DRAIN TO TAILPIECE OF LAVATORY. REFER TO DWG 4.00, DETAIL 8.

GAS PIPING NOTES:

FOR GAS PIPE SIZES, REFER TO DWG 4.00, DETAIL 11.

MAIN LEVEL FLOOR PLAN

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

Olson Kundig
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+1 206 624 5670 olsonkundig.com

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MAIN LEVEL FLOOR PLAN

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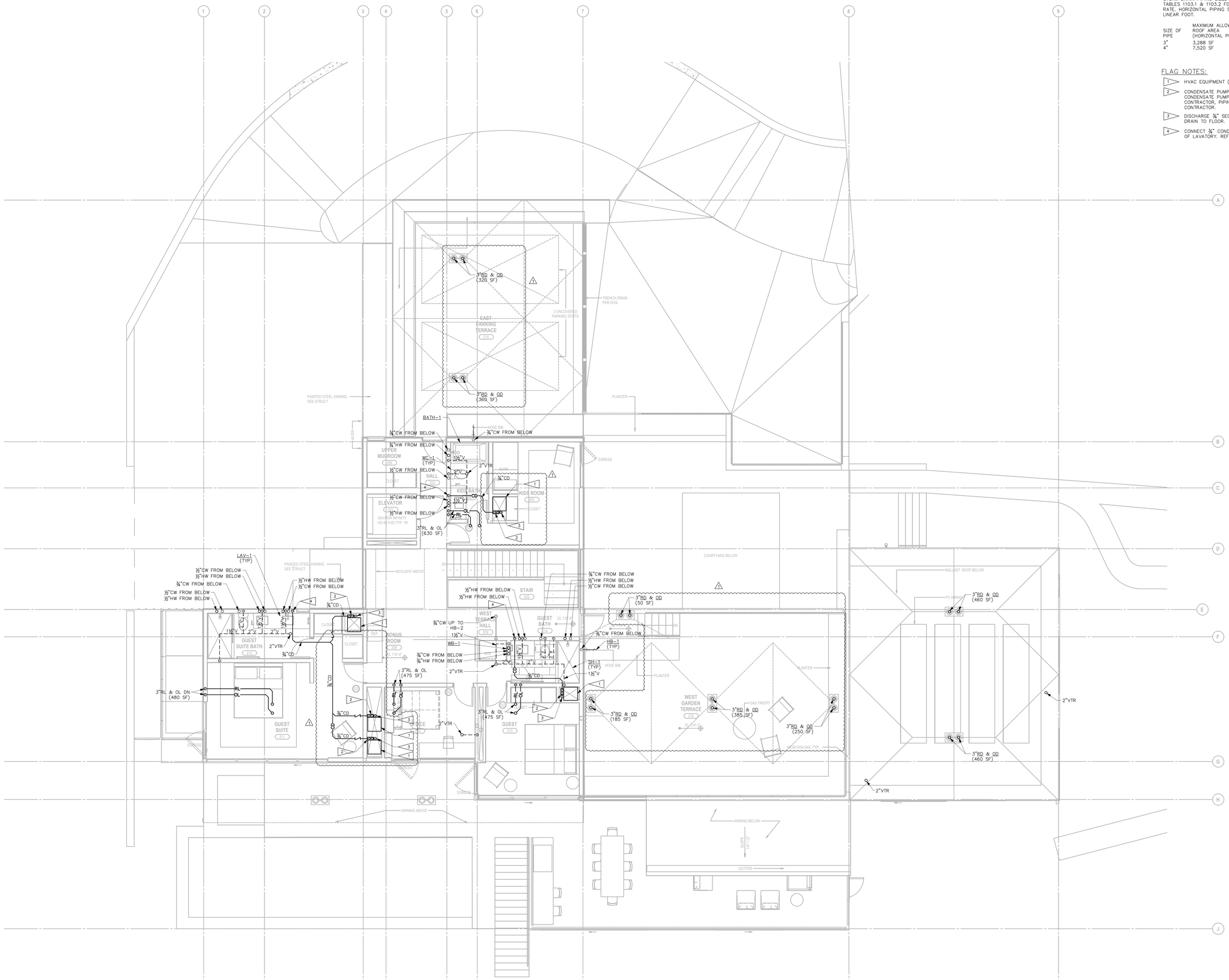

UPPER LEVEL FLOOR PLAN

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

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2/23/24

title:

UPPER LEVEL FLOOR PLAN

sheet:

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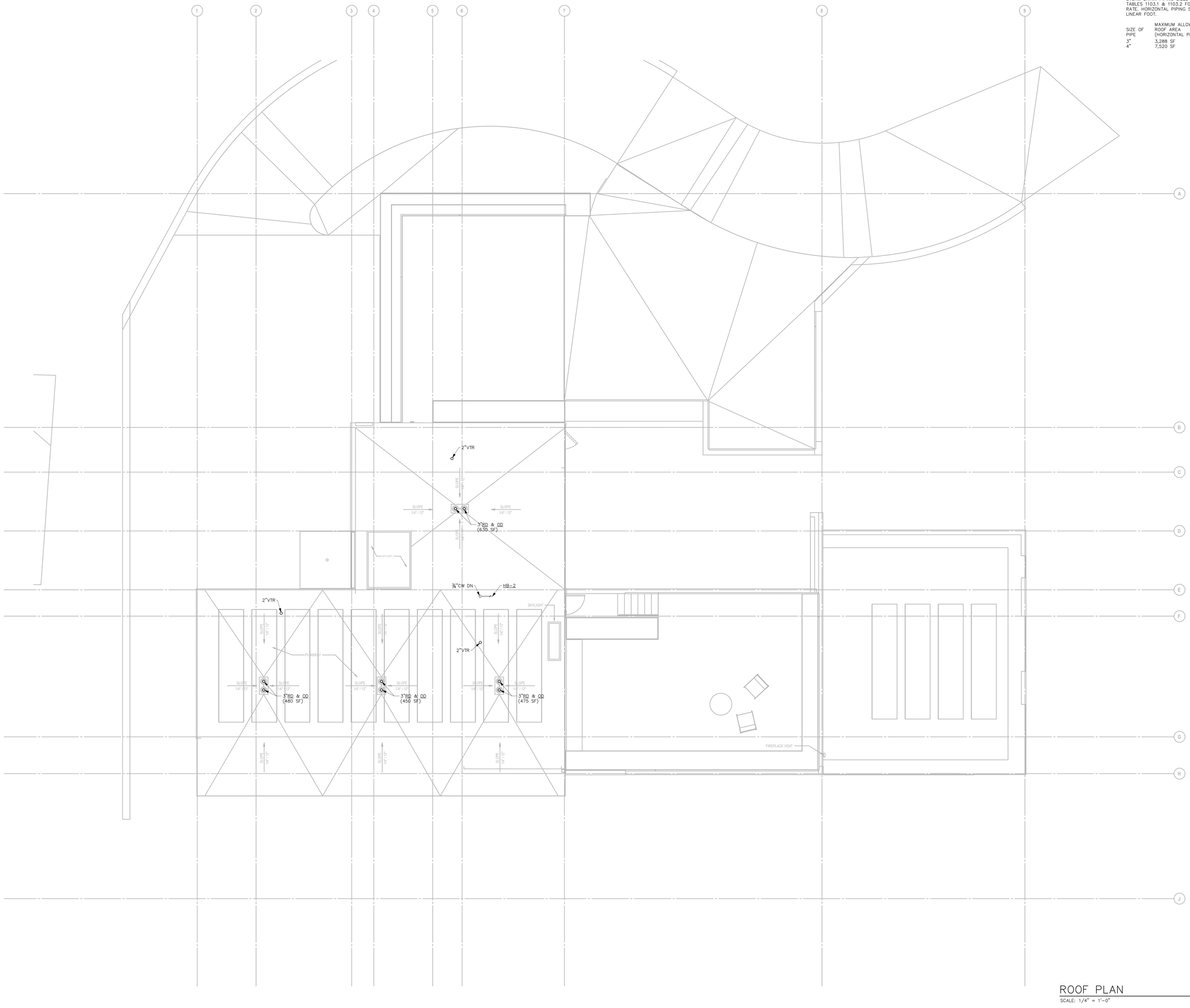

ROOF PLAN

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

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2/23/24

title:

ROOF PLAN

sheet:

P2.40

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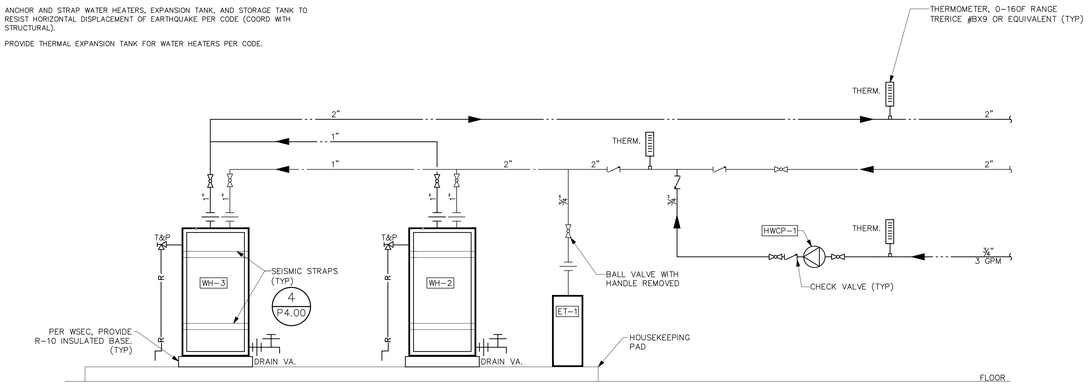
NOTES

1. PIPE LENGTH & NUMBER OF FITTINGS TO INDIVIDUAL HEATERS SHALL BE EQUAL FOR A COMPLETE MANIFOLDED SELF-BALANCED PIPING.
2. RELIEF DRAIN PIPING SHALL BE UNDIMINISHED IN SIZE (SAME AS OUTLET) AND SHALL TERMINATE AT 6" ABOVE FLOOR SINK AND SHALL BE IN COMPLIANCE WITH UPC.
3. ANCHOR AND STRAP WATER HEATERS, EXPANSION TANK, AND STORAGE TANK TO RESIST HORIZONTAL DISPLACEMENT OF EARTHQUAKE PER CODE (COORD WITH STRUCTURAL).
4. PROVIDE THERMAL EXPANSION TANK FOR WATER HEATERS PER CODE.



HEAT PUMP WATER HEATER PIPING

DIAGRAM

SCALE: NONE

10 P4.00

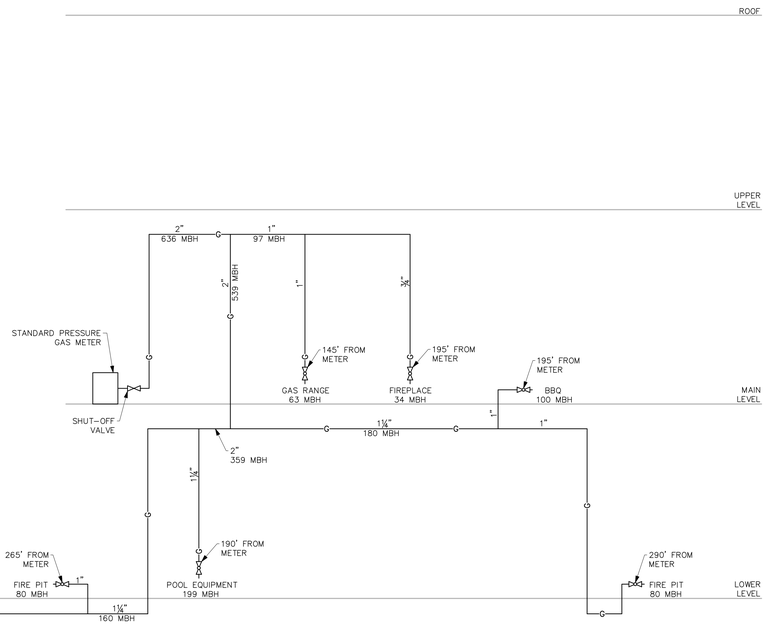
NOTES:

1. LENGTH FROM METER TO FURTHEST APPLIANCE IS 275 FEET. GAS PIPING IS SIZED PER 2018 IFGC TABLE 402.4(2).
2. PROVIDE CONNECTION TO EACH PIECE OF EQUIPMENT WITH DIRT LEG, UNION, AND GAS COCK(TYP).

NATURAL GAS PIPE SIZING TABLE 402.4(2)

LOW PRESSURE GAS (INLET PRESSURE < 2 PSI)

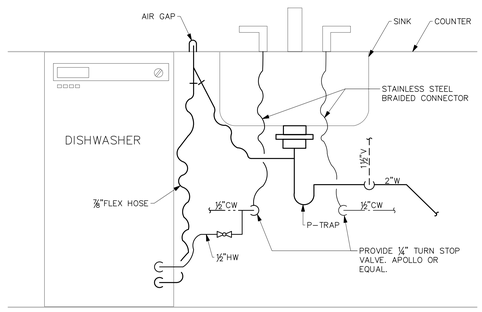
LENGTH (FT)	SCHEDULE 40 METALLIC PIPE PIPE SIZE (IN.)							
	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
10	172	360	678	1,390	2,090	4,020	6,400	11,300
20	118	247	466	957	1,430	2,760	4,400	7,780
30	95	199	374	768	1,150	2,220	3,530	6,250
40	81	170	320	657	985	1,900	3,020	5,350
50	72	151	284	583	873	1,680	2,680	4,740
60	65	137	257	528	791	1,520	2,430	4,290
70	60	126	237	486	728	1,400	2,230	3,950
80	56	117	220	452	677	1,300	2,080	3,670
90	52	110	207	424	635	1,220	1,950	3,450
100	50	104	195	400	600	1,160	1,840	3,260
125	44	92	173	355	532	1,020	1,630	2,890
150	40	83	157	322	482	928	1,480	2,610
175	37	77	144	296	443	854	1,360	2,410
200	34	71	134	275	412	794	1,270	2,240
300	27	57	108	221	331	638	1,020	1,800



GAS PIPING RISER DIAGRAM

SCALE: NONE

11 P4.00

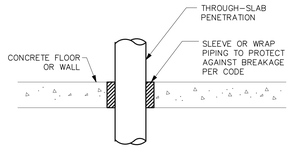


DISHWASHER CONNECTION

DETAIL

SCALE: NONE

5 P4.00

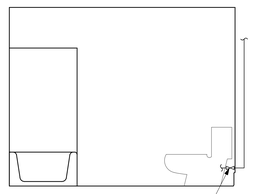


PIPE SLAB PENETRATION

DETAIL

SCALE: NONE

6 P4.00



WATER CLOSET CW SUPPLY

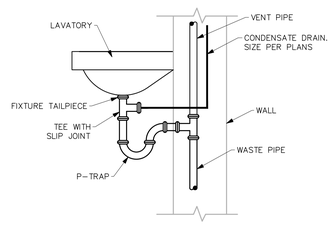
DETAIL

SCALE: NONE

7 P4.00

TABLE 814.3 MINIMUM CONDENSATE PIPE SIZE	
EQUIPMENT CAPACITY IN TONS OF REFRIGERATION	MINIMUM CONDENSATE PIPE DIAMETER (INCHES)
UP TO 20	3/4
21 – 40	1
41 – 90	1-1/4
91 – 125	1-1/2
126 – 250	2

NOTE: CONDENSATE PIPING SHALL NOT BE SMALLER THAN THE EQUIPMENT CONNECTION PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

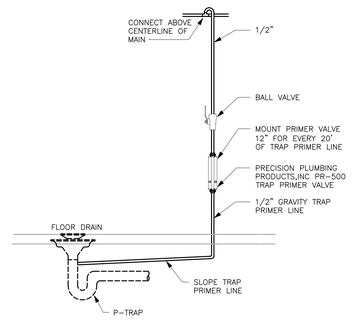


CONDENSATE TERMINATION

DETAIL

SCALE: NONE

8 P4.00

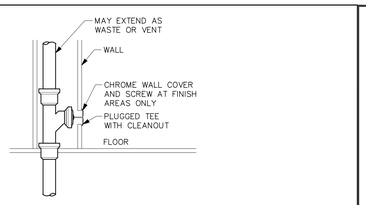


TRAP PRIMER

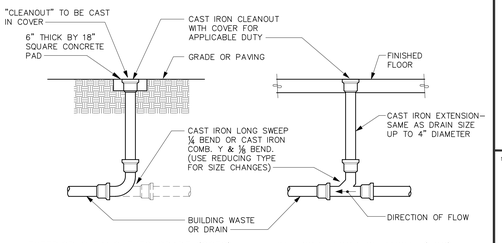
DETAIL

SCALE: NONE

9 P4.00



INTERIOR WALL CLEANOUT (WCO)



EXTERIOR CLEANOUT TO GRADE (COTG) (LIGHT TRAFFIC AREA)

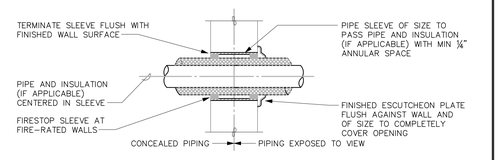
INTERIOR FLOOR CLEANOUT (FCO)

CLEANOUT

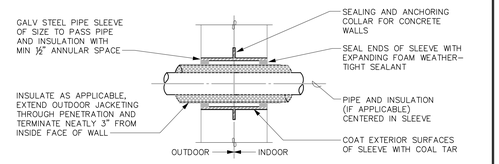
DETAIL

SCALE: NONE

1 P4.00



INTERIOR WALLS



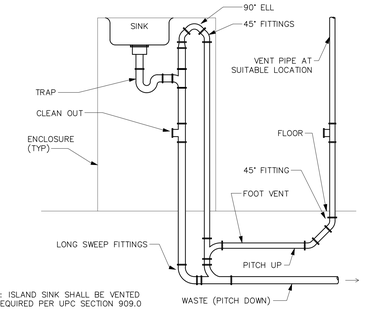
EXTERIOR WALLS ABOVE GRADE

PIPE SLEEVES THROUGH WALLS

DETAIL

SCALE: NONE

2 P4.00



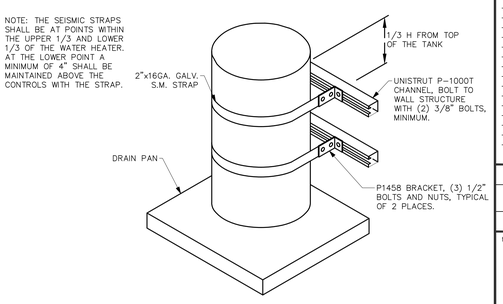
NOTE: ISLAND SINK SHALL BE VENTED AS REQUIRED PER UPC SECTION 909.0

ISLAND SINK

DETAIL

SCALE: NONE

3 P4.00



WATER HEATER SEISMIC STRAPPING

DETAIL

SCALE: NONE

4 P4.00

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DETAILS & DIAGRAMS

sheet:

P4.00

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SYMBOLS

GENERAL

LIGHT LINE INDICATES NON-ELECTRICAL OR BACKGROUND (THIS IS NOT CONTRACTUAL DEFINITION OF WORK)

HEAVY LINE INDICATES NEW WORK (THIS IS NOT CONTRACTUAL DEFINITION OF WORK)

DETAIL IDENTIFICATION

SYMBOL	NAME
1	FLAG NOTE
△	REVISION NOTE
	REVISION DEFINITION, AREA ENCIRCLED CONTAINS DRAWING CHANGES MADE SUBSEQUENT TO PREVIOUS ISSUE

LIGHTING

L10 , A 2-32 — FIXTURE IDENTIFICATION SYMBOL (TYPE A, (2) 32 WATT LAMPS SHOWN) SEE SCHEDULE SEE LUMINAIRE SCHEDULE FOR FIXTURE SYMBOLS

SWITCHES

S_a	SWITCH, SINGLE POLE; WITH SWITCHING SUBSCRIPT
S_{OS}	OCCUPANCY SENSOR SWITCH, PROXIMITY INFRARED
S_D	SWITCH, SINGLE POLE; WITH SWITCHING SUBSCRIPT "D" INDICATES WALLBOX DIMMER
S_{OS}	CEILING MOUNTED OCCUPANCY SENSOR
S_{AL}	CEILING MOUNTED AMBIENT LIGHT SENSOR
S_{DT}	WALL MOUNTED DUAL TECHNOLOGY OCCUPANT SENSOR
S_T	SWITCH, TIMER.
S_2	SWITCH, TWO POLE.

RECEPTACLES

	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE: WALL MOUNTED, +18" AFF
a	CONTROLLED AND NON CONTROLLED DUPLEX RECEPTACLE (SPLIT WIRED RECEPTACLE)
	DUPLEX RECEPTACLE – ABOVE COUNTER
GFCI	DUPLEX GFCI ABOVE COUNTER
GFCI	DUPLEX GFCI
GFCI WP	DUPLEX GFCI WITH WEATHERPROOF COVER
+42"	DUPLEX RECEPTACLE, WITH HEIGHT ABOVE FINISHED FLOOR INDICATED
	CEILING MOUNTED DUPLEX RECEPTACLE
	QUAD RECEPTACLE: WALL MOUNTED, +18" AFF
	FLOOR BOX ONE DUPLEX RECEPTACLE
	FLOOR BOX ONE DUPLEX RECEPTACLE + ONE DATA
	FLOOR BOX ONE DUPLEX RECEPTACLE + ONE DATA + ONE VOICE
	SPECIAL PURPOSE RECEPTACLE, AS NOTED

MISCELLANEOUS

	JUNCTION BOX: 4SQ MOUNTED JUNCTION BOX: 4SQ WALL MOUNTED JUNCTION BOX: 4SQ TRACK
	CONNECTION FOR LIGHTED MIRROR COORDINATE LOCATION AND ELEVATION WITH ARCHITECT PRIOR TO ROUGH-IN
T	THERMOSTAT

SIGNAL/COMMUNICATION

▽	DATA OUTLET: WALL MOUNTED @ +18" AFF U.O.N.
▼	TELEPHONE/DATA OUTLET: WALL MOUNTED @ +18" AFF U.O.N.
TV	TELEVISION OUTLET: WALL MOUNTED @ +18" AFF U.O.N.

POWER

	PANELBOARD
WP	NON-FUSED DISCONNECT SWITCH (WP = NEMA 3R WHERE APPROPRIATE)
	FUSED DISCONNECT SWITCH
MAU-1,5HP,480,3	MOTOR CONNECTION (EQUIPMENT NAME, HORSEPOWER, VOLTAGE, AND PHASE INDICATED)
EF-1,12KVA,208,1	EQUIPMENT CONNECTION (EQUIPMENT NAME, LOAD, VOLTAGE, AND PHASE INDICATED)
T	TRANSFORMER, DRY TYPE, SHOWN TO SCALE
M	KW METER AND BASE

PART OF THE DESIGN/BUILD FIRE ALARM SYSTEM

FACP	FIRE ALARM SYSTEM CONTROL PANEL
P	FIRE ALARM SYSTEM PULL STATION
	FIRE ALARM SYSTEM STROBE/SPEAKER
SD	FIRE ALARM PHOTOELECTRIC SMOKE DETECTOR AND SPEAKER.
	FIRE ALARM COMBINATION PHOTOELECTRIC SMOKE DETECTOR, CARBON MONOXIDE DETECTOR, AND SPEAKER, GUESTROOM.
H	FIXED HEAT DETECTOR
CO	CARBON MONOXIDE DETECTOR.
	ELECTRO-MAGNETIC DOOR HOLDER
DSD	DUCT SMOKE DETECTOR

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT, ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AL	ALUMINUM
AMP	AMPERE
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
C	COIL or CONDUIT
CKT	CIRCUIT
CO	CONDUIT/RACEWAY ONLY
CT	CURRENT TRANSFORMER
Cu	COPPER
CW	COOL WHITE
D	DIMMER
DED	DEDICATED
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
EXIST	EXISTING
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FLUOR	FLUORESCENT
GC	GENERAL CONRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
IG	ISOLATED GROUND
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERES
KW	KILOWATT
LTG	LIGHTING
LV	LOW VOLTAGE
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE (NFPA-70)
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NTS	NOT TO SCALE
PNL	PANEL
POC	POINT OF CONNECTION
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CLORIDE
PWR	POWER
QTY	QUANTITY
RECEPT	RECEPTACLE
REF	REFERENCE
RI	ROUGH-IN
RM	ROOM
RO	RACEWAY ONLY
SHT	SHEET
SPEC	SPECIFICATIONS
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WATTS
WW	WARM WHITE
WP	WEATHERPROOF
W/	WITH
W/O	WITHOUT
XFMR	TRANSFORMER
XFR	TRANSFER
Z	IMPEDANCE OR ZONE

GENERAL NOTES

GENERAL

1. PROVIDE ELECTRICAL INSTALLATION IN ACCORDANCE WITH THE GOVERNING ELECTRICAL CODE, LOCAL CODES, ORDINANCES AND REQUIREMENTS OF UTILITY COMPANIES FURNISHING SERVICES TO INSTALLATION.
2. PROVIDE ALL WORK AND ITEMS NECESSARY FOR COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEMS. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY CONDUIT, BOX, CONDUCTOR OR SIMILAR ITEMS FOR A COMPLETE INSTALLATION.
3. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID AND DETERMINE CONDITIONS WHICH MAY AFFECT BID. ANY ITEMS NOT FULLY UNDERSTOOD SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO BIDDING.
4. "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, OR MECHANICAL).
5. REFERENCE ARCHITECTURAL DRAWING FOR EXACT LOCATION OF DEVICES. QUESTIONS CONCERNING THE LOCATION OF DEVICES AND EQUIPMENT SHALL BE DIRECTED TO THE ARCHITECT. FAILURE TO COORDINATE REQUIREMENTS SHALL IN NO WAY RESULT IN ADDITIONAL COMPENSATION BEING PROVIDED TO THE CONTRACTOR.
6. WHEREVER THE WORD "PROVIDE" IS USED, IT MEANS, "FURNISH AND INSTALL COMPLETE AND READY FOR USE."
7. COORDINATE LOCATION OF ELECTRICAL WITH OTHER TRADES.
8. REFER TO EQUIPMENT DRAWINGS FOR MECHANICAL CHARACTERISTICS (SIZE, LOCATION, ETC.) OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED. COORDINATE INSTALLATION AND LOCATION OF ALL EQUIPMENT WITH MECHANICAL CONTRACTOR. VERIFY ALL FUSE RATINGS, WIRE SIZES AND DISCONNECT SIZES PRIOR TO INSTALLATION.

MATERIALS AND METHODS

1. PROVIDE RACEWAY AND WIRING ROUTED CONCEALED WITHIN BUILDING STRUCTURE WHERE POSSIBLE. WHERE RACEWAY CANNOT BE CONCEALED, IT SHALL BE INSTALLED PER PROJECT MANAGER'S DIRECTION. ALL CONDUIT SHALL BE INSTALLED IN NEAT SYMMETRICAL LINES HORIZONTAL OR PERPENDICULAR TO BUILDING COLUMNS AND ROOF LINES. CONDUITS SHALL BE GROUPED ON COMMON SUPPORTS WHEREVER POSSIBLE.
2. EXPOSED CONDUIT ROUTING: CONDUITS MAY BE ROUTED EXPOSED IN MECHANICAL AND ELECTRICAL ROOMS ONLY. EXPOSED CONDUITS SHALL BE SECURED A MINIMUM OF 6" ABOVE FLOOR.
3. OUTDOOR EXPOSED CONDUIT ROUTING: CONDUITS ROUTED ON ROOF OR EXPOSED TO WEATHER SHALL BE GRC, PVC OR LIQUID-TIGHT FLEX. PROVIDE WATER-TIGHT CONNECTIONS AND FITTINGS.
4. CLEARANCES: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET.
5. CONNECTIONS: PROVIDE GRS, METALLIC FLEX, OR LIQUIDTITE FLEX CONDUITS FOR CONNECTIONS TO MOTORS OR MOTORIZED EQUIPMENT.
6. WIRING: PROVIDE MINIMUM #12 AWG WIRE SIZE. IF CONDUIT IS TO BE USED MINIMUM IS TO BE 1/2". FLEXIBLE CONDUIT AND FLEXIBLE CABLE IS PERMISSIBLE THROUGHOUT THE BUILDING.
7. WIRING: PROVIDE MINIMUM #10 AWG COPPER CONDUCTOR SIZE IN 120V BRANCH CIRCUIT RUNS OVER 75' IN LENGTH.

SITE ELECTRICAL

1. TRENCHING: COORDINATE ALL TRENCHING WORK WITH OTHER UTILITY LOCATIONS AND DRAINAGE TRENCHES.
2. UNDERGROUND CONDUITS: PROVIDE PVC, SCHEDULE 40, 3/4" MINIMUM. PROVIDE GRC CONDUIT TRANSITION ELBOW WHEN TURNING UP TO ABOVE GRADE.
3. DIRECT-BURIED CONDUITS: CONDUIT FOR BRANCH CIRCUITS OUTSIDE BUILDINGS NOT BENEATH DRIVEWAYS OR PARKING AREAS SHALL BE DIRECTLY BURIED WITHOUT CONCRETE ENCASEMENT. THE DEPTH TO THE TOP OF BURIED CONDUITS SHALL BE 36". PROVIDE MARKER TAPE 12" BELOW GRADE.
4. BELOW SLAB: CONDUIT ROUTED BELOW ON-GRADE FLOOR SLABS SHALL BE INSTALLED PRIOR TO FLOOR SLAB POUR. ROUTE CONDUITS BELOW SLAB AS STRAIGHT AS POSSIBLE TO MINIMIZE BENDS.
5. ALL CONDUITS PENETRATING THE BUILDING ENVELOPE BELOW GRADE SHALL FOLLOW WATERPROOFING REQUIREMENTS IN THE ARCHITECTURAL DRAWINGS.

NEUTRALS

1. AT CONTRACTORS OPTION, NEUTRALS MAY BE SHARED ON COMBINED HOMERUNS UNLESS THE CIRCUIT HAS A GFCI BREAKER, AN ISOLATED GROUND, OR IS FROM A PANEL WITH TVSS PROTECTION. ANY NEUTRAL DOWNSTREAM FROM A DIMMER SHALL BE DEDICATED TO THE DIMMED LOAD.
2. NEUTRAL WIRES SHOWN FOR TWO AND THREE POLE MECHANICAL AND KITCHEN EQUIPMENT MAY BE OMITTED UPON VERIFICATION THAT THEY ARE NOT REQUIRED EITHER FOR OPERATION OR CONTROL CIRCUITS PER MANUFACTURER'S SPECIFICATIONS.

LIGHTING

1. PROVIDE LIGHT FIXTURES WITH PROPER FITTING FLANGES, MOUNTING SUPPORTS, AND ACCESSORY ITEMS, UL LISTED FOR CONDITIONS OF USE.

LOW VOLTAGE LIGHTING

1. PROVIDE LOW VOLTAGE TRANSFORMERS IN NEARBY ACCESSIBLE CEILING SPACE.
2. PROVIDE LOW VOLTAGE CONDUCTORS SIZED PER MANUFACTURER'S GUIDELINES TO MINIMIZE VOLTAGE DROP.

LIGHTING CONTROL

1. THE MAXIMUM LIGHTING POWER THAT MAY BE CONTROLLED FROM A SINGLE SWITCH OR AUTOMATIC CONTROL SHALL NOT EXCEED THAT WHICH IS PROVIDED BY A TWENTY AMPERE CIRCUIT LOADED TO NOT MORE THAN EIGHTY PERCENT. A MASTER CONTROL MAY BE INSTALLED PROVIDED THE INDIVIDUAL SWITCHES RETAIN THEIR CAPABILITY TO FUNCTION INDEPENDENTLY.
2. EMERGENCY FIXTURES: EMERGENCY BATTERY/CHARGER SHALL BE CONNECTED TO AN UNSWITCHED LEG OF THE DESIGNATED CIRCUIT.

APPLICABLE CODES

CODES:

- NATIONAL ELECTRICAL CODE 2020
- COMPLY WITH LOCAL JURISDICTION REQUIREMENTS

GENERAL REQUIREMENTS

1. DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED.
2. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT.
3. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
4. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS.
5. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

CONTRACTOR SUBSTITUTIONS & REVISIONS

1. PLEASE SUBMIT PROPOSALS FOR SUBSTITUTIONS OR REVISIONS FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL OR DOING WORK.
2. FOR EQUIPMENT THAT IS SCHEDULED BY MANUFACTURER'S NAME AND CATALOG DESIGNATIONS, THE MANUFACTURER'S PUBLISHED DATA AND/OR SPECIFICATION FOR THAT ITEM ARE CONSIDERED PART OF SPECIFICATION.
3. ENGINEERING COSTS FOR REVISING MEP PLANS SHALL BE ADDRESSED IN THE COST ANALYSIS OF THE SUBSTITUTION PROPOSAL.
4. CONTRACTOR TO COORDINATE WITH ENGINEER AND DETERMINE ASSOCIATED DESIGN AND PERMITTING COSTS. CONTRACTOR SHALL BE RESPONSIBLE FOR OTHER COSTS ASSOCIATED WITH UNFORESEEN ISSUES RESULTING FROM SUBSTITUTIONS OR REVISIONS.

PRE-CON MEETING NOTES

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WILL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS,AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THOUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	4 HOURS
PLUMBING/PIPING	4 HOURS
ELECTRICAL	4 HOURS
SPRINKLER	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET: PERMIT SET 9/8/23	INCLUDED IN SET: PERMIT REVISION SET 2/23/24	SHEETS WITH REVISIONS: △1 PERMIT REVISION SET 2/23/24
E0.00	COVER SHEET, LEGEND AND NOTES	○	○	
		○	○	
E1.00	ELECTRICAL SITE PLAN			
		○	○	
E2.00	ELECTRICAL FLOOR PLANS			○
E2.01	ELECTRICAL FLOOR PLANS	○	○	○
E2.02	ELECTRICAL FLOOR PLANS	○	○	
		○	○	
E3.00	ONE-LINE DIAGRAM AND SCHEDULES	○	○	

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02/23/24

project architect: JMN
project manager: JMN
drawn by: HDA
checked by: PR
job no.: 1216-001

revisions:

no.:	date:	description:

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PERMIT SET

09/08/2023

title: ELECTRICAL LEGEND AND COVER SHEET

sheet: E0.00

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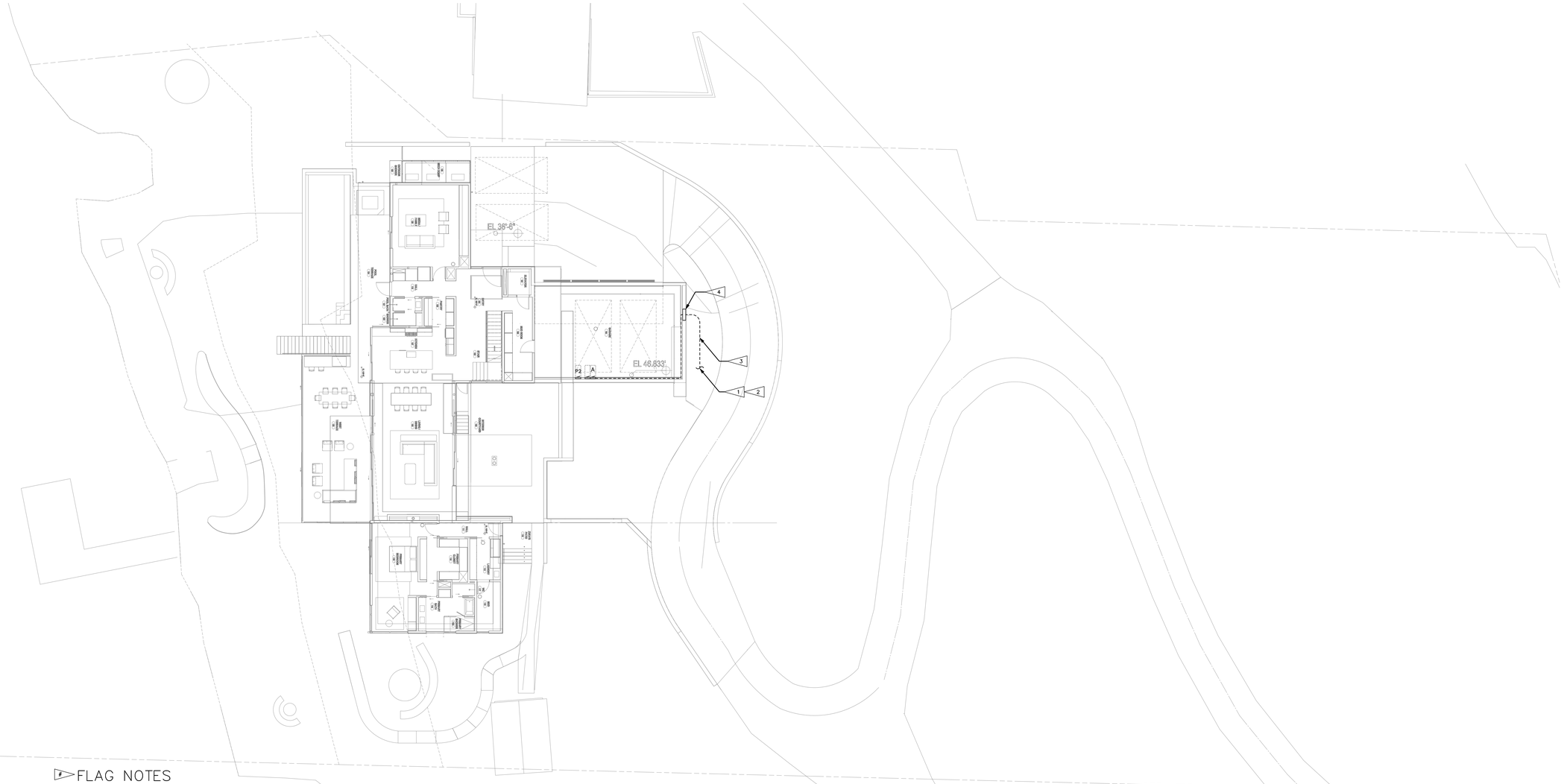

FLAG NOTES

1. TO PROPOSED UTILITY (PUGET SOUND ENERGY) VAULT AND POLE MOUNTED TRANSFORMER. EC TO SUBMIT DESIGN TO UTILITY COMPANY FOR APPROVAL AND CONTACT ENGINEER IMMEDIATELY FOR ANY DISCREPANCIES OR DESIGN CHANGE BY UTILITY COMPANY PRIOR TO BID & INSTALLATION.
2. UTILITY COMPANY TO ADVISE FOR FINAL PRIMARY SERVICE, UTILITY TRANSFORMER, SECONDARY SERVICE, FINAL SERVICE(S) CONDUIT ROUTING, AND SERVICE CONDUCTOR SIZES PRIOR TO BID & INSTALLATION.
3. SERVICE ROUTING FROM UTILITY VAULT AND/OR UTILITY TRANSFORMER TO CT-MAIN IS PROPOSED UNDERGROUND.
4. 600A 240/120V 1ø 3W NEMA 3R CT-MAIN SERVICE BOX.

ELECTRICAL SITE PLAN

SCALE: 1" = 10'

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project manager:	JMN
drawn by:	HDA
checked by:	PR
job no.:	1215-001

revisions:

no.:	date:	description:

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09/08/2023

title:
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FLAG NOTES:

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10. PROVIDE TAMPER RESISTANT RECEPTACLE.
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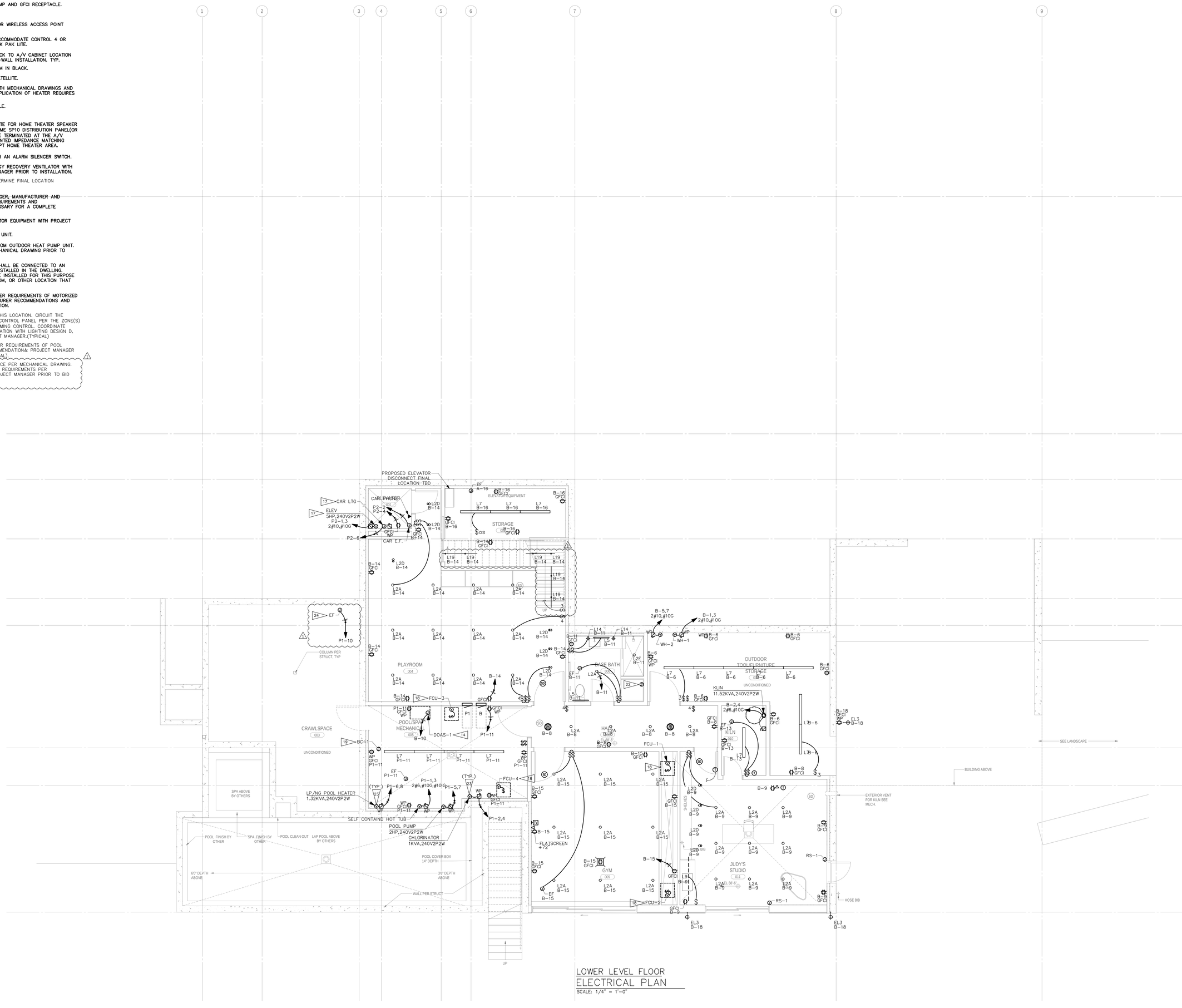

LOWER LEVEL FLOOR ELECTRICAL PLAN

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

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MARK STEINKE — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

02/23/24

project architect:	JMN
project manager:	JMN
drawn by:	HDA
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:

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title:
ELECTRICAL FLOOR PLANS

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FLAG NOTES:

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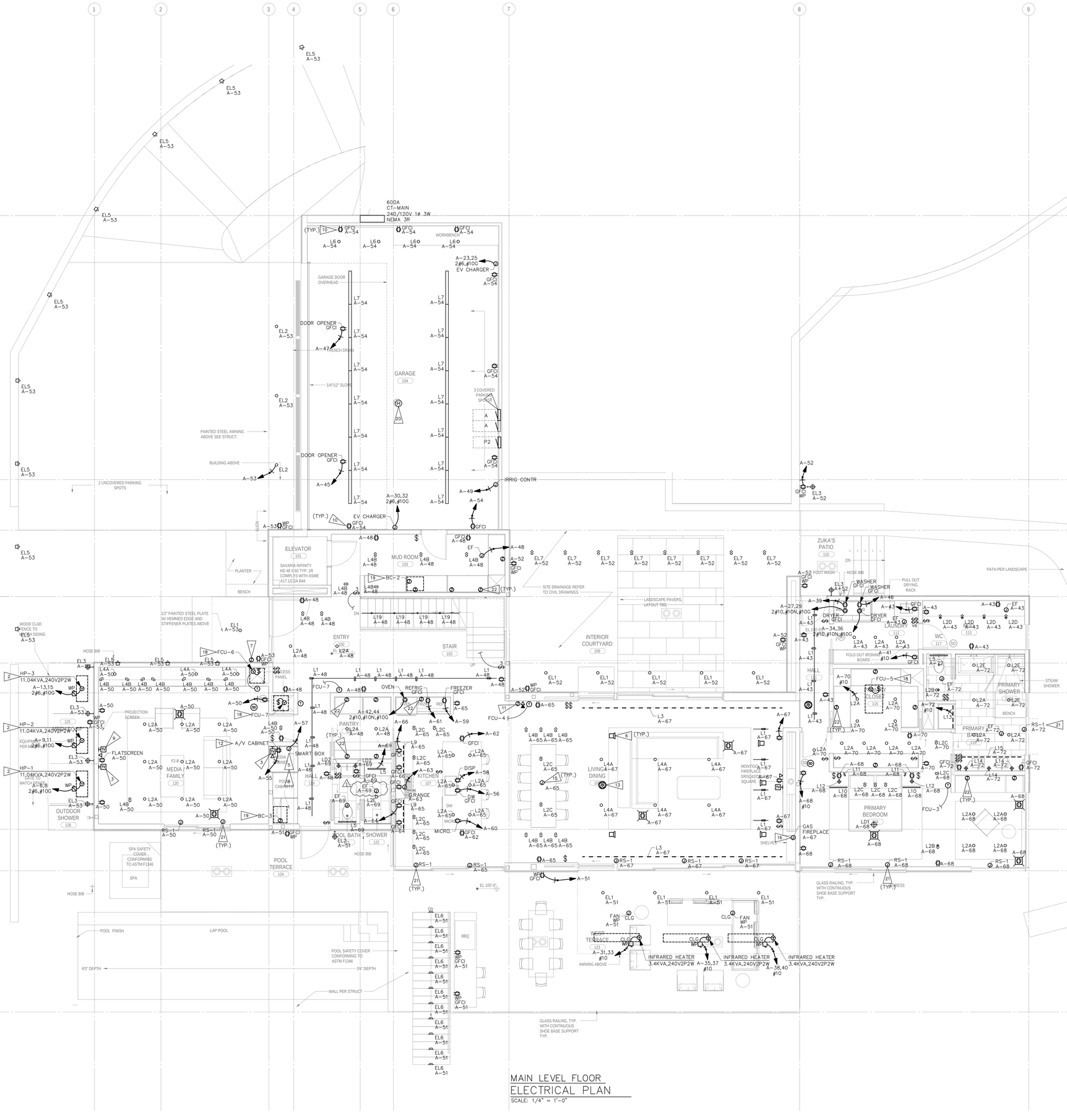

MAIN LEVEL FLOOR ELECTRICAL PLAN

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

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CONTACT: D. AZZAB

MARK STEINKE — STATE OF WASHINGTON — 24000 — REGISTERED PROFESSIONAL ENGINEER — CIVIL

02/23/24

project architect:	JMN
project manager:	JMN
drawn by:	HDA
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:

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09/08/2023

title:
ELECTRICAL FLOOR PLANS

sheet:
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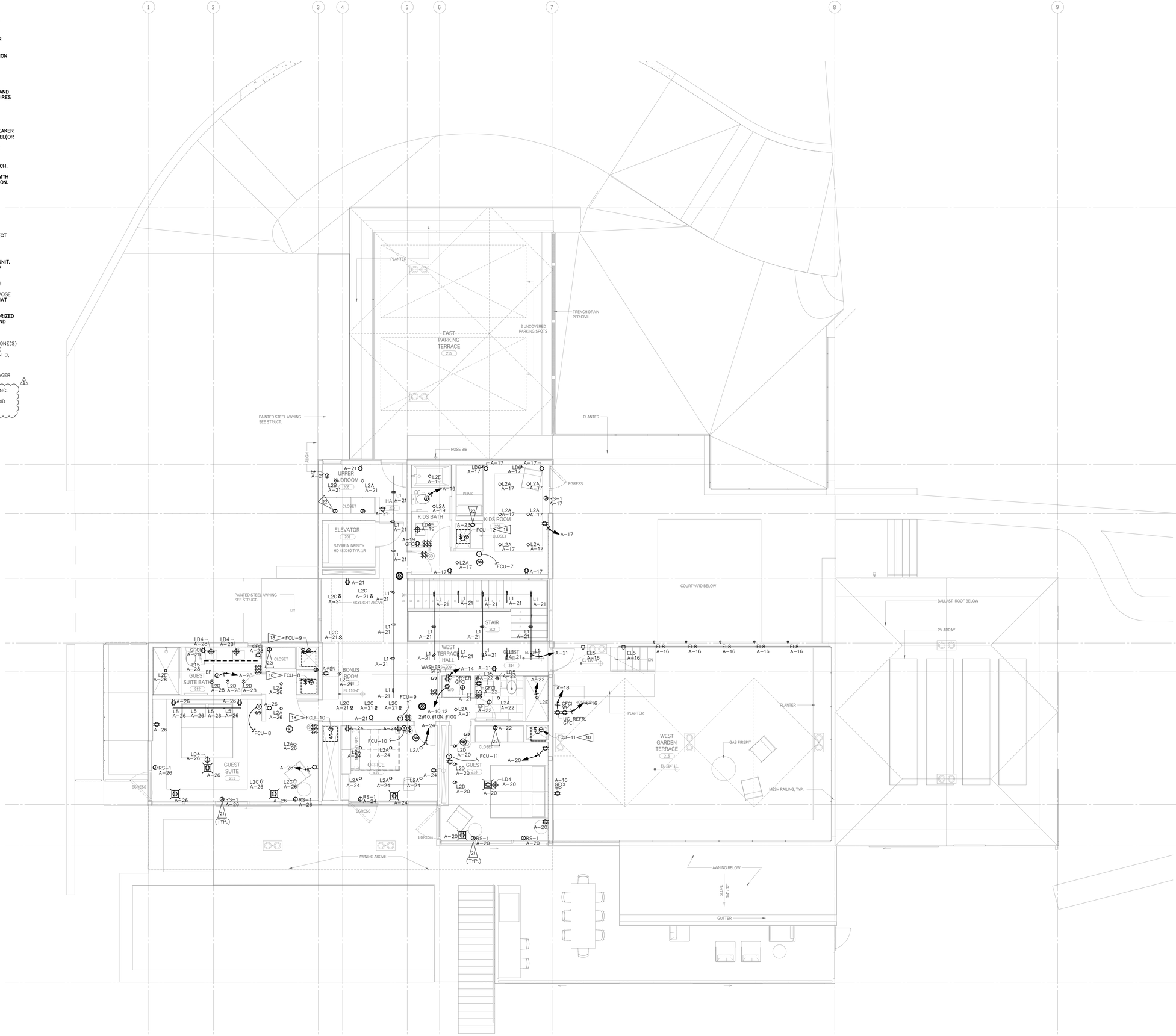

UPPER LEVEL FLOOR ELECTRICAL PLAN

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

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MARK STEINKE — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

02/23/24

project architect:	JMN
project manager:	JMN
drawn by:	HDA
checked by:	PR
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ELECTRICAL FLOOR PLANS

sheet:
E2.02

(TWO SECTIONAL PANEL)

Panel **A** — ROOM — MOUNTING **SURFACE** — FED FROM **CT–MAIN** — NOTE **INTEGRAL SURGE PROTECTION** — VOLTS **240/120V 2P 3W** — BUS AMPS **600** — NEUTRAL **100%** — AIC **42,000** — MAIN BKR **MLO** — LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	200/2	29.4	PANEL B	a	2	100/2	7.55	PANEL P2
3	|			b	4	|		
5	100/2	17.1	PANEL P1	a	6	60/2	11	L2 HP–1
7	|			b	8	|		
9	60/2	11	L2 HP–2	a	10	30/2	4.95	L2 DRYER
11	|			b	12	|		
13	60/2	11	L2 HP–3	a	14	20/1	1.5	L2 WASHER
15	|			b	16	20/1	0.558	L2 WEST TERRACE EX FAN, LIGHTING, RECEPT
17	20/1	1.08	L2 KIDS RM LIGHTING, RECEPT, RS–1	a	18	20/1	0.6	L2 WEST TERRACE UC REFRIG
19	20/1	0.322	L2 KIDS BATHRM EX FAN, LIGHTING, RECEPT	b	20	20/1	0.876	L2 GUEST RM LIGHTING, RECEPT, RS–1
21	20/1	1.7	L2 MUDRM/HALL/BONUSRM EX FAN, LIGHTING, RECEPT	a	22	20/1	0.348	L2 GUEST BATHRM EX FAN, LIGHTING, RECEPT
23	50/2	7.7	L1 GARAGE EV CHARGER	b	24	20/1	0.854	L2 OFFICE LIGHTING, RECEPT, RS–1
25	|			a	26	20/1	1.73	L2 GUEST SUITE LIGHTING, RECEPT, RS–1
27	30/2	4.95	L1 LAUNDRY DRYER	b	28	20/1	0.564	L2 GUEST SUITE BATH EX FAN, LIGHTING, RECEPT
29	|			a	30	50/2	7.7	L1 GARAGE EV CHARGER
31	20/2	3.4	L1 WEST TERRACE INFRARED HEATER	b	32	|		
33	|			a	34	30/2	4.95	L1 LAUNDRY DRYER
35	20/2	3.4	L1 WEST TERRACE INFRARED HEATER	b	36	|		
37	|			a	38	20/2	3.4	L1 WEST TERRACE INFRARED HEATER
39	20/1	1.5	L1 LAUNDRY WASHER	b	40	|		
41	20/1	1.5	L1 LAUNDRY SMALL APPLIANCE	a	42	30/2	4.5	L1 KITCH STEAM OVEN
43	20/1	1.43	L1 HALL/LAUNDRY/MUD EX FAN, LIGHTING, RECEPT	b	44	|		
45	20/1	1.5	L1 GARAGE DOOR OPENER	a	46	20/1	1.5	L1 LAUNDRY WASHER
47	20/1	1.5	L1 GARAGE DOOR OPENER	b	48	20/1	1.68	L1 MUD/ENTRY/HALL EX FAN, LIGHTING, RECEPT
49	20/1	0.36	L1 GARAGE IRRIG CONTR	a	50	20/1	1.77	L1 MEDIA RM FLATSCREEN, LIGHTING, RECEPT, RS–1
51	20/1	1.25	L1 WEST TERRACE FAN, LIGHTING, RECEPT	b	52	20/1	1.12	L1 ZUKA PATIO/INERIOR CRTYARD LIGHTING, RECEPT
53	20/1	0.844	L1 EXTERIOR LIGHTING, RECEPT	a	54	20/1	1.78	L1 GARAGE LIGHTING, RECEPT
55	20/1	0.5	L1 MEDIA RM A/V CABINET	b	56	20/1	1.5	L1 KITCH DISHWASHER
57	20/1	0.36	L1 MEDIA RM SMART BOX	a	58	20/1	0.8	L1 KITCH DISPOSAL
59	20/1	1.8	L1 KITCH FREEZER	b	60	20/1	1.5	L1 KITCH MICROWAVE
61	20/1	1.8	L1 KITCH REFRIG	a	62	20/1	1.5	L1 KITCH SMALL APPLIANCE
63	20/1	0.58	L1 KITCH GAS RANGE, HOOD	b	64	20/1	1.5	L1 KITCH SMALL APPLIANCE
65	20/1	1.11	L1 KITCH LIGHT, LIGHTING, RECEPT, RS–1	a	66	20/1	1.5	L1 KITCH SMALL APPLIANCE
67	20/1	1.53	L1 LIVING FIREPLACE, FLATSCREEN, LIGHTING, RECEPT, RS–1	b	68	20/1	1.83	L1 PRIMARY BEDRM LIGHTING, RECEPT, RS–1
69	20/1	0.462	L1 POOL BATH/SHOWER EX FAN, LIGHTING, RECEPT	a	70	20/1	0.5	L1 PRIMARY WC LIGHTING, RECEPT
71	20/2	2.9	EX POND PUMP	b	72	20/1	0.816	L1 PRIMARY BATH EX FAN, LIGHTING, RECEPT, RS–1
73	|			a	74	20/1	0.4	EX LANDSCAPE2 LTG
75	20/1	1.5	EX DOCK POWERWASH	b	76	20/1	0.4	EX LANDSCAPE1 LTG
77	20/1	0.5	EX DOCK LTG	a	78	–/1	0	SPARE
79	–/1	0	SPARE	b	80	–/1	0	SPARE
81	–/1	0	SPARE	a	82	–/2	0	FUTURE PV
83	–/1	0	SPARE	b	84	|		

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
DWELLING UNIT LIGHTING	42.1	16.7	(35%>3, 25%>120)	DWELLING UNIT COOKING	4.5	3.6	
DWELLING UNIT	31.6	10,522 SF	(3 VA/SF)	RANGES	1		
SMALL–APPLIANCE	6			ELECTRIC DRYER	14.9	14.9	(100%)
LAUNDRY	4.5			LARGEST MOTOR	11	2.76	(25%)
LIGHTING	0.155	0.194	(125%)	MOTORS	6.72	6.72	(100%)
APPLIANCE	68.9	51.7	(75%)	RECEPTACLES	0.9	0.9	(50%>10)
				NONCONTINUOUS	0.5	0.5	(100%)
				HEATING	43.3	43.3	(100%)
				COOLING	33.1	0	(0%)
				TOTAL LOAD		141	
				BALANCED LOAD		588 A	
				PHASE A		99.3%	
				PHASE B		101%	

(LOWER LEVEL PANEL)

Panel **B** — ROOM — MOUNTING **SURFACE** — FED FROM **A** — NOTE **INTEGRAL SURGE PROTECTION** — VOLTS **240/120V 2P 3W** — BUS AMPS **200** — NEUTRAL **100%** — AIC **42,000** — MAIN BKR **MLO** — LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	30/2	5	B1 WH–1	a	2	50/2	11.5	B1 KLIN
3	|			b	4	|		
5	30/2	5	B1 WH–2	a	6	20/1	1.22	B1 MECH STORAGE LIGHTING, RECEPT
7	|			b	8	20/1	0.646	B1 MECH STORAGE/HALL CO/SD, LIGHTING, RECEPT
9	20/1	1.1	B1 JUDY'S STUDIO LIGHTING, RECEPT, RECEPTACLE	a	10	15/1	0.1	B1 DOAS–1
11	20/1	0.376	B1 BASE BATH EX FAN, LIGHTING, RECEPT	b	12	20/1	1.51	B1 PLAY ROOM LIGHTING, RECEPT
13	20/1	0.3	B1 KLIN RM EX FAN, LIGHTING, RECEPT	a	14	20/1	0.815	B1 STORAGE LIGHTING, RECEPT
15	20/1	1.61	B1 GYM EX FAN, FLATSCREEN, LIGHTING, RECEPT	b	16	20/1	0.24	B1 EXT LIGHTING, RECEPT
17	–/1	0	SPARE	a	18	–/1	0	SPARE
19	–/1	0	SPARE	b	20	–/1	0	SPARE
21	–/1	0	SPARE	a	22	–/1	0	SPARE
23	–/1	0	SPARE	b	24	–/1	0	SPARE

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
DWELLING UNIT LIGHTING	15.8	7.47	(35%>3, 25%>120)	APPLIANCE	21.6	16.2	(75%)
DWELLING UNIT	15.8	5,261 SF	(3 VA/SF)	LARGEST MOTOR	0.1	0.025	(25%)
LIGHTING	0.155	0.194	(125%)	RECEPTACLES	0.9	0.9	(50%>10)
				TOTAL LOAD		24.8	
				BALANCED LOAD		103 A	
				PHASE A		97.1%	
				PHASE B		103%	

(POOL)

Panel **P1** — ROOM — MOUNTING **SURFACE** — FED FROM **A** — NOTE **INTEGRAL SURGE PROTECTION** — VOLTS **240/120V 2P 3W** — BUS AMPS **100** — NEUTRAL **100%** — AIC **42,000** — MAIN BKR **MLO** — LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	50/2	10.4	SELF CONTAINED HOT TUB	a	2	20/2	1	CHLORINATOR
3	|			b	4	|		
5	20/2	2.88	POOL PUMP	a	6	20/2	1.32	LP/NG POOL HEATER
7	|			b	8	|		
9	20/1	0.1	POOL LTG	a	10	20/1	0.18	CRAWL SPACE EX FAN
11	20/1	1.26	POOL/SPA MECH,RM EX FAN, LIGHTING, RECEPT	b	12	–/1	0	SPARE
13	–/1	0	SPARE	a	14	–/1	0	SPARE
15	–/1	0	SPARE	b	16	–/1	0	SPARE
17	–/1	0	SPARE	a	18	–/1	0	SPARE
19	–/1	0	SPARE	b	20	–/1	0	SPARE
21	–/1	0	SPARE	a	22	–/1	0	SPARE
23	–/1	0	SPARE	b	24	–/1	0	SPARE

	CONN KVA	CALC KVA			CALC KVA
APPLIANCE	15.8	11.8	(75%)	TOTAL LOAD	12.5
LARGEST MOTOR	2.88	0.72	(25%)	BALANCED LOAD	52.3 A
				PHASE A	94.3%
				PHASE B	106%

(ELEVATOR)

Panel **P2** — ROOM — MOUNTING **SURFACE** — FED FROM **A** — NOTE **INTEGRAL SURGE PROTECTION** — VOLTS **240/120V 2P 3W** — BUS AMPS **100** — NEUTRAL **100%** — AIC **42,000** — MAIN BKR **MLO** — LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	30/2	6.72	ELEV	a	2	20/1	0.25	CAR EX FAN
3	|			b	4	20/1	0.18	ELEV RECEPT
5	–/1	0	SPARE	a	6	20/1	0.4	CAR LTG
7	–/1	0	SPARE	b	8	–/1	0	SPARE
9	–/1	0	SPARE	a	10	–/1	0	SPARE
11	–/1	0	SPARE	b	12	–/1	0	SPARE

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LARGEST MOTOR	6.72	1.68	(25%)	MOTORS	6.72	6.72	(100%)
				TOTAL LOAD		8.4	
				BALANCED LOAD		35 A	
				PHASE A		100%	
				PHASE B		93.8%	

FUSED LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	DESCRIPTION	TOTAL VA	VOLTS	NOTE 1
EL1	○	EXTERIOR WET LISTED CANOPY LIGHT	14	120V 1P 2W	
EL2	○	EXTERIOR RECESSED DOWNLIGHT	14	120V 1P 2W	
EL3	⊥	EXTERIOR SCONCE	20	120V 1P 2W	
EL5	⊽	EXTERIOR WALL RECESSED STEP LIGHT	14	120V 1P 2W	
EL6	⌓	EXTRIOR STEP LIGHT	14	120V 1P 2W	
EL7	⇳	IN–GRADE COURTYARD LIGHT	14	120V 1P 2W	
EL8	⇕	HANDRAIL STANCHION LIGHT	14	120V 1P 2W	
L1	⇨	LV TRACK MOUNTED MONOPOINT (W/VARIABLE OPTICS)	14	120V 1P 2W	
L2A	○	FIXED DOWNLIGHT	14	120V 1P 2W	
L2B	⇳	ADJUSTABLE DOWNLIGHT NARROW DISTRIBUTION	14	120V 1P 2W	
L2C	⇳	ADJUSTABLE DOWNLIGHT WIDE DISTRIBUTION	14	120V 1P 2W	
L2D	⇳	WALL WASH	14	120V 1P 2W	
L2E	○	WET LOCATION LISTED	14	120V 1P 2W	
L3	– – – –	UPLIGHT ON CANOPY	20	120V 1P 2W	
L4A	○	DOWNLIGHT+ADJUSTABLE MONOPOINT NARROW DIST	14	120V 1P 2W	
L4B	⇳	DOWNLIGHT+ADJUSTABLE MONOPOINT WIDE DIST.	14	120V 1P 2W	
L5	▬	HIGH EFFICIENCY STRIP LIGHT IN COVE/NICHE	14	120V 1P 2W	
L6	○	FIXED DOWNLIGHT	14	120V 1P 2W	
L7	▭	BACK OF HOUSE STRIPLIGHT	20	120V 1P 2W	
L8	◦	LV TRACK MOUNTED SMALL MONOPOINT (W/VARIABLE OPTICS)	14	120V 1P 2W	
L9	– – – –	UNDERCOUNTER LIGHT IN KITCHEN	20	120V 1P 2W	
L10	▬	LINEAR LED NIGHT LIGHT	14	120V 1P 2W	
L11	⇲	BEDSIDE READING LIGHT	14	120V 1P 2W	
L12	⊕	BEDSIDE SCONCE	20	120V 1P 2W	
L13	– – – –	CASEWORK LIGHT	14	120V 1P 2W	
L14	⊕	MASTER BATH VANITY LIGHT	20	120V 1P 2W	
L15	– – – –	BATH NIGHT LIGHT AT CASEWORK	20	120V 1P 2W	
L16	----------	LINEAR LED CLOSED LIGHT	20	120V 1P 2W	
L17	✧	FLUSH MOUNT JELLY JAR LIGHT	14	120V 1P 2W	
L19	—•—	LOW VOLTAGE TRACK (BUSWAY) MOUNTED	5.8	120V 1P 2W	TBD
LD1	⊕	DECORATIVE FLUSH MOUNT IN MASTER BEDROOM	14	120V 1P 2W	
LD2	⊕	SCONCE POWDER ROOM	20	120V 1P 2W	
LD3	⊕	DECORATIVE PENDANT FLUSH MOUNT IN BEDROOM	20	120V 1P 2W	
LD4	⊕	BATHROOM VANITY PENDANT	14	120V 1P 2W	
LD5	⊕	SCONCE SHARED BATHROOM	20	120V 1P 2W	
LD6	⇲	KIDS NIGHT/READING LIGHT	14	120V 1P 2W	

NOT ALL USED
CONFIRM FINAL MODEL/MAKE & QUANTITY PRIOR TO ORDERING

CT–MAIN

ROOM — MOUNTING **SURFACE** — FED FROM **UTILITY** — NOTE — VOLTS **240/120V 2P 3W** — BUS AMPS **600** — NEUTRAL **100%** — AIC **42,000** — MAIN BKR **600** — LUGS **STANDARD**

CKT #	BREAKER TRIP/POLES	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	FEEDER RACEWAY AND CONDUCTORS
1	600/2	PANEL A	92	93.3	(2)3"C,2#350kcmil,#350kcmil N,#1G
		TOTAL CONNECTED KVA BY PHASE	92	93.3	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
DWELLING UNIT LIGHTING	42.1	16.7	(35%>3, 25%>120)	DWELLING UNIT COOKING	4.5	3.6	
DWELLING UNIT	31.6	10,522 SF	(3 VA/SF)	RANGES	1		
SMALL–APPLIANCE	6			ELECTRIC DRYER	14.9	14.9	(100%)
LAUNDRY	4.5			LARGEST MOTOR	11	2.76	(25%)
LIGHTING	0.155	0.194	(125%)	MOTORS	6.72	6.72	(100%)
APPLIANCE	68.9	51.7	(75%)	RECEPTACLES	0.9	0.9	(50%>10)
				NONCONTINUOUS	0.5	0.5	(100%)
				HEATING	43.3	43.3	(100%)
				COOLING	33.1	0	(0%)
				TOTAL LOAD		141	
				BALANCED LOAD		588 A	

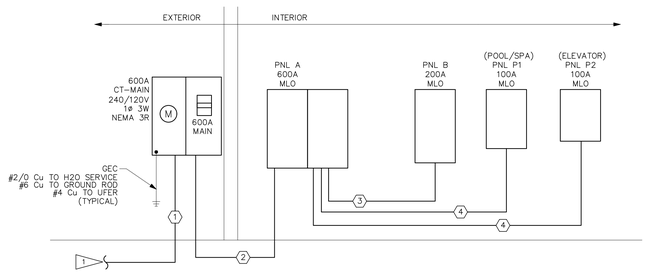
FEEDER SCHEDULE

ID	FEEDER AMPS	CONDUIT AND FEEDER	FEEDING THESE DEVICES
1	600	(2)3"C,2#350kcmil,#350kcmil N	CT–MAIN
2	600	(2)3"C,2#350kcmil,#350kcmil N,#1G	A
3	200	2"C,2#3/0,#3/0N,#6G	B
4	100	2"C,2#1,#1N,#8G	P1, P2

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C 1/0 AND ABOVE

FLAG NOTES

1. TO PROPOSED UTILITY (PUGET SOUND ENERGY) VAULT AND PAD MOUNTED TRANSFORMER. EC TO SUBMIT DESIGN TO UTILITY COMPANY FOR APPROVAL AND CONTACT ENGINEER IMMEDIATELY FOR ANY DISCREPANCIES OR DESIGN CHANGE BY UTILITY COMPANY PRIOR TO BID & INSTALLATION FOR UPDATED PLANS.



ONE–LINE DIAGRAM

SCALE: NTS

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MARK STEINKE — STATE OF WASHINGTON — 22000 — REGISTERED PROFESSIONAL ENGINEER

02/23/24

project architect:	JMN
project manager:	JMN
drawn by:	HDA
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:

NOT FOR CONSTRUCTION

PERMIT SET

09/08/2023

title: ONE–LINE DIAGRAM & SCHEDULES

sheet: E3.00

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