MERCER ISLAND RESIDENCE

5236 W MERCER WAY MERCER ISLAND, WA 98125

PROJECT INFORMATION

CLIENT

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STRUCTURAL ENGINEER
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CODES

ENGINEERED PER: 2015 (IRC) INTERNATIONAL RESIDENTIAL CODE
2015 (IBC) INTERNATIONAL BUILDING CODE

ABBREVIATIONS

AB	ANCHOR BOLT
ABV	ABOVE
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
AYC	ALASKAN YELLOW CEDAR
BB	BOX BEAM
BF	BOTTOM FLUSH
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BP	BOTTOM PLATE
BRG	BEARING
BTWN	BETWEEN
BSMT	BASEMENT
B/W	BOTTOM OF WALL
CANT	CANTILEVER
CJ	CONTROL JOINT
CLG.	CEILING
CLJ	CEILING JOIST
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CTR	CENTER
DET	DETAIL
DF	DOUGLAS FIR (SOUTH)
DFL	DOUGLAS FIR LARCH
DIM	DIMENSION
DJ	DOUBLE JOIST
DIA	DIAMETER
DN	DOWN
DS	DOWN SPOUT
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
ELEV	ELEVATION
EN	EDGE NAILING (PANEL)
EQ	EQUAL
ES	EACH SIDE
EW	EACH WAY
FB	FLUSH BEAM
FIN	FINISH
FL	FLOOR
FLSHG	FLASHING
FND	FOUNDATION
FP	FIREPLACE
FT	FOOT
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GLB	GLULAM BEAM
GR	GRADE
GYP	GYPSUM WALL BOARD
HDG	HOT-DIPPED GALVANIZED
HDR	HEADER
HF	HEM FIR
HGT	HEIGHT
HT	HEIGHT
IN	INCH
JT	JOINT
MAX	MAXIMUM
MIN	MINIMUM
MISC	MISCELLANEOUS
NB	NON-BEARING
NO	NUMBER
OC	ON CENTER
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
RAF	RAFTER
REF	REFERENCE
REINF	REINFORCEMENT
REQD	REQUIRED
SF	SQUARE FOOT
SIM	SIMILAR
SPF	SPRUCE PINE FIR
STD	STANDARD
SYP	SOUTHERN YELLOW PINE
T/	TOP OF
T/C	TOP OF CONCRETE
T/P	TOP OF PLATE
T/S	TOP OF STEEL
T/W	TOP OF WALL
TF	TOP FLUSH
TJ	TRIPLE JOIST
T/BM	TOP OF BEAM
T/SLAB	TOP OF SLAB
TP	TOP PLATE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UPA	UNDER POST ABOVE
UWA	UNDER WALL ABOVE
VERT	VERTICAL
VIF	VERIFY IN FIELD
W/	WITH
WC	WESTERN CEDAR
WP	WATERPROOF
WWF	WELDED WIRE FABRIC

SHEET INDEX

MANS R. THURFJELL
STATE OF WASHINGTON
PROFESSIONAL ENGINEER

LONGITUDE ONE TWENTY°
ENGINEERING & DESIGN

REVISIONS

	DESCRIPTION	DATE	BY
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-			
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SHEET DATE - 04/20/18

SCALE
24X36 SHEET

DESCRIPTION
COVER SHEET

SHEET
S-0

GENERAL STRUCTURAL NOTES

DESIGN CRITERIA

1. CODE: 2015 IBC/IRC & AMENDMENTS AS ADOPTED BY THE REVIEWING AGENCY/COUNTY.
2. GEOTECHNICAL REPORT PROVIDED BY PanGEO INC. DATED OCT. 5, 2017.
3. DESIGN EARTH PRESSURE:

   ACTIVE PRESSURE: 40 PCF EQUIVALENT FLUID DENSITY
   PASSIVE PRESSURE: 350 PCF ACTING ON 2x DRILLED SHAFT DIAMETER

GENERAL CONDITIONS

1. THE CONTRACTOR SHALL EXAMINE THE STRUCTURAL DRAWINGS AND SHALL NOTIFY THE STRUCTURAL ENGINEER OF ANY DISCREPANCIES HE MAY FIND BEFORE PROCEEDING WITH THE WORK.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE ARCHITECT/ENGINEER SHALL IMMEDIATELY BE NOTIFIED IN WRITING OF ANY DISCREPANCIES.
3. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND THE STRUCTURAL ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
4. IN CASE OF CONFLICT, NOTES AND DETAILS OF THESE STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE "GENERAL NOTES" AND/OR "STANDARD DETAILS".
5. IF A SPECIFIC DETAIL IS NOT SHOWN FOR ANY PART OF THE WORK, THE CONSTRUCTION SHALL BE THE SAME AS FOR SIMILAR WORK.
6. WORKING DIMENSIONS SHALL NOT BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THESE DRAWINGS.
7. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT AND THE STRUCTURAL ENGINEER OF ANY CONDITION WHICH IN HIS OPINION MIGHT ENDANGER THE STABILITY OF THE STRUCTURE OR CAUSE DISTRESS TO THE STRUCTURE.
8. THE CONTRACTOR SHALL SUPERVISE AND DIRECT HIS WORK AND HE SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. PROVIDE ADEQUATE SHORING AND BRACING OF ALL STRUCTURAL MEMBERS DURING CONSTRUCTION.
9. ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE, AND ALL OTHER REGULATING AGENCIES EXERCISING AUTHORITY OVER ANY PORTION OF THE WORK.
10. SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE THE NOTES, DRAWINGS, AND/OR SPECIFICATIONS DIFFER, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
11. REFER TO THE ARCHITECTURAL DRAWINGS FOR INFORMATION NOT COVERED BY THESE GENERAL NOTES OR THE STRUCTURAL DRAWINGS.
12. NOTIFY ENGINEER OF ALL FIELD CHANGES PRIOR TO INSTALLATION.
13. DISCREPANCIES FOUND BETWEEN STRUCTURAL DRAWINGS AND OTHER DOCUMENTS ARE TO BE NOTED IN WRITING TO THE ENGINEER PRIOR TO CONSTRUCTION.
14. ALL CONSTRUCTION SHALL BE DONE WITH MATERIALS, METHODS, AND WORKMANSHIP ACCEPTED AS GOOD PRACTICE BY THE CONSTRUCTION INDUSTRY IN CONFORMANCE TO THE PROVISIONS OF THE "INTERNATIONAL BUILDING CODE" (IBC), AND STANDARDS REFERENCED THEREIN.

CONCRETE

1. REFERENCE STANDARDS: ACI-301, ACI-318, IBC.
   MINIMUM STRUCTURAL CONCRETE STRENGTH (28 DAYS).....2,500 PSI
   LEAN CONCRETE STRENGTH .....300 PSI
2. MIXING: COMPLY WITH ACI-301. DO NOT EXCEED THE AMOUNT OF WATER SPECIFIED IN THE APPROVED MIX. PROPORTIONS OF AGGREGATE TO CEMENT SHALL BE SUCH AS TO PRODUCE A DENSE WORKABLE MIX WHICH CAN BE PLACED WITHOUT SEGREGATION OR EXCESS FREE SURFACE WATER
3. PLACING: COMPLY WITH ACI-301. PROVIDE A 3/4 INCH CHAMFER ALL EXPOSED CONCRETE EDGES, UNLESS INDICATED OTHERWISE ON ARCHITECTURAL DRAWINGS.
4. SLUMP: 4" PLUS OR MINUS ONE INCH. DO NOT ADD WATER TO MIX TO INCREASE SLUMP. GREATER SLUMP, ACCELERATED SET, OR HIGH EARLY STRENGTH MAY BE ACHIEVED BY USING APPROVED ADMIXTURES.
5. CURING: COMPLY WITH ACI-301. KEEP CONCRETE MOIST FOR SEVEN DAYS MINIMUM.
6. JOINTING: PROVIDE ADEQUATE JOINTING TO MINIMIZE EFFECTS OF VOLUME CHANGE. JOINTS SHOWN MAY BE ADJUSTED AT CONTRACTOR'S OPTION, WITH PRIOR APPROVAL FROM ENGINEER.
7. WEATHER EXTREMES: COMPLY WITH ACI 305R FOR HOT WEATHER. COMPLY WITH ACI 306R FOR COLD WEATHER.
8. WATER/CEMENT RATIO SHALL NOT EXCEED 0.50 (BY WEIGHT), TYPICAL.

STRUCTURAL AND MISC. STEEL

1. REFERENCE STANDARDS: DESIGN, FABRICATION AND ERECTION ARE TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
2. MATERIALS:
   WF BEAMS - ASTM A572-50 (Fy = 50,000 PSI)
   ALL OTHER STEEL - ASTM A36 (Fy = 36,000 PSI)
   ALL STEEL SHALL BE PRIME AND PAINT FOR CORROSION PROTECTION.

STRUCTURAL STEEL WELDING

1. CONFORM TO THE AWS CODES D1.1 AND D1.3., AND USE ONLY CERTIFIED WELDERS. WELDS NOT SPECIFIED ARE TO BE 1/4" CONTINUOUS FILLET MINIMUM. USE DRY E70 ELECTRODES.

DIMENSIONAL LUMBER

1. MEET REQUIREMENTS OF PS 20-70 AND NATIONAL GRADING RULES FOR SOFTWOOD DIMENSIONAL LUMBER. BEAR STAMP OF WWPA.
2. MINIMUM DIMENSIONAL LUMBER GRADES TO BE:
   LAGGING: 4x - PRESSURE TREATED, #1 HEM-FIR OR BETTER
3. PRESSURE TREATED WOOD: WOOD MATERIALS ARE REQUIRED TO BE "TREATED WOOD" IN ACCORDANCE WITH IBC SECTION 2304.11. "DECAY AND TERMITE PROTECTION" SHALL CONFORM TO THE APPROPRIATE STANDARDS OF THE AMERICAN WOOD-PRESERVERS ASSOCIATION (AWPA) FOR SAWN LUMBER. FOLLOW AMERICAN LUMBER STANDARDS COMMITTEE (ALSC) QUALITY ASSURANCE PROCEDURES. PRODUCTS SHALL BEAR THE APPROPRIATE MARK. ALL NAILS INTO PT WOOD SHALL BE HOT DIPPED GALVANIZED PER ASTM A153 OR STAINLESS STEEL.

SHORING WALL DRAINAGE

1. WALL DRAINAGE MATERIAL SHALL BE IN ACCORDANCE WITH GEOTECHNICAL REPORT. DRAINAGE MAT SHALL BE INSTALLED ON THE FACE OF WOOD LAGGING. PROVIDE FULL COVERAGE OF DRAINAGE MAT. LAP DRAINAGE MAT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PROVIDE CONNECTION AT THE BASE OF SHORING WALLS TO THE UNDERSLAB DRAINAGE SYSTEM USING DRAINAGE GRATE CONNECTORS THAT ARE COMPATIBLE WITH THE DRAINAGE MAT. EACH DRAINAGE MAT SHOULD BE CONNECTED TO A SUBDRAIN USING A DRAINAGE GRATE CONNECTOR.

SHORING MONITORING

1. A SYSTEMATIC PROGRAM OF OBSERVATION SHALL BE CONDUCTED DURING THE PROJECT EXECUTION TO DETERMINE MOVEMENT OF THE SHORING WALLS. INITIAL SURVEY POINTS SHOULD BE PLACED AT STRATEGIC LOCATION ALONG ADJACENT RETAINING WALL, RIGHT OF WAY ALIGNMENTS THAT WILL ALLOW FOR PERIOD MEASUREMENT DURING AND AFTER THE SHORING INSTALLATION. MONITORING POINTS ARE TO BE ESTABLISHED AT THE TOPS OF AT LEAST TWO SOLDIER PILES PRIOR TO PROCEEDING WITH EXCAVATION. PRIOR TO THE START OF CONSTRUCTION, THE GEOTECHNICAL ENGINEER, THE PROJECT OWNER, AND THE CONSTRUCTION CONTRACTOR SHOULD REVIEW RELEVANT PROJECT PLANS AND DEVELOP A MONITORING PROGRAM FOR THE SITE.
2. A LICENSED SURVEYOR (NOT THE CONTRACTOR) MUST DO THE SURVEYING AT LEAST ONCE A WEEK.
3. SURVEY FREQUENCY CAN BE DECREASED AFTER THE SHORING SYSTEM HAS BEEN INSTALLED AND EXCAVATION IS COMPLETE IF THE DATA INDICATES LITTLE OR NO ADDITIONAL MOVEMENT. SURVEYING MUST CONTINUE UNTIL THE PERMANENT STRUCTURE (INCLUDING FLOOR SLABS AS BRACES) IS COMPLETE UP TO FINAL AND STREET GRADES. THE SURVEY FREQUENCY WILL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AFTER REVIEW AND APPROVAL BY SDCI.
4. THE GEOTECHNICAL ENGINEER SHALL REVIEW SURVEY DATA AND PROVIDE AN EVALUATION OF WALL PERFORMANCE ALONG WITH SURVEY DATA TO SDCI ON AT LEAST A WEEKLY BASIS. IMMEDIATELY AND DIRECTLY, NOTIFY SDCI IF ANY UNUSUAL OR SIGNIFICANTLY INCREASED MOVEMENT OCCURS.
5. IMMEDIATELY AND DIRECTLY NOTIFY THE GEOTECHNICAL AND STRUCTURAL ENGINEERS, WALL DESIGNER, AND SDCI IF 1 INCH OF MOVEMENT OCCURS BETWEEN TWO CONSECUTIVE READINGS AND WHEN TOTAL MOVEMENT REACH 1 INCH. AT THAT AMOUNT OF MOVEMENT, THE ENGINEERS AND DESIGNERS SHALL DETERMINE THE CAUSE OF DISPLACEMENT AND DEVELOP REMEDIAL MEASURES SUFFICIENT TO LIMIT TOTAL WALL MOVEMENTS TO 1 INCH, TYP., EXCEPT NORTH WALL LIMIT TO 1 3/4".. ALL EARTHWORK AND CONSTRUCTION ACTIVITIES MUST BE DIRECTED TOWARDS IMMEDIATE IMPLEMENTATION OF REMEDIAL MEASURES NECESSARY TO LIMIT TOTAL WALL MOVEMENTS TO WHAT HAS BEEN DEFINED AS ACCEPTABLE BY THE DESIGN TEAM.

PERMANENT SHORING CONSTRUCTION NOTES

1. CLEAR THE SITE AND SET UP A SAFE AREA FOR DRILLER.
2. DRILL VERTICAL SHAFTS SUCH THAT THE TOP OF SHAFT IS WITHIN 3"+/- OF PLAN LOCATION. PILE SHAFTS SHALL BE DRILLED TO WITHIN 1% OF PLUMB, WITHOUT LOSS OF GROUND AND WITHOUT ENDANGERING PREVIOUSLY INSTALLED PILES.
3. POUR CONCRETE MIX INTO THE DRILLED HOLES AND INSTALL SOLDIER PILES. STEEL PILES ARE TO BE PLACED SO THAT THE CENTERLINE IS WITHIN 1" +/- OF PLAN LOCATION AND SHALL BE WITHIN 1% OF PLUMB.
4. NO EXCAVATION ALLOWED UNTIL CONCRETE HAS CURED AND REACHED ITS DESIGN STRENGTH.
5. EXCAVATE 4'-0" MAX LIFTS AND INSTALL LAGGING RIGHT AWAY. IT IS THE RESPONSIBILITY OF THE SHORING CONTRACTOR TO PLACE THE LAGGING IN SUCH A MANNER THAT PREVENTS SOIL FAILURE, SLOUGHING, OR LOSS OF GROUND. VOIDS BEHIND THE LAGGING SHALL BE BACKFILLED PER RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
6. CONTINUE STEP 5 UNTIL THE BOTTOM OF THE EXCAVATION IS REACHED.

SHOP DRAWINGS AND SUBMITTALS

1. SUBMIT 2 SETS OF PRINTS AND 1 SET OF REPRODUCIBLES FOR REVIEW FOR:
   A) REINFORCING STEEL
   B) MISCELLANEOUS STEEL
   C) GLU-LAMINATED BEAMS
   D) PRE-MANUFACTURED WOOD TRUSSES
2. SUBMIT 3 COPIES FOR REVIEW PRIOR TO FABRICATION FOR:
   A) CONCRETE DESIGN MIX
   B) CONCRETE INSERTS
   C) EPOXY ADHESIVES

INSPECTIONS

1. REFERENCE STANDARDS: IBC 110.
   INSPECTIONS ARE TO BE PERFORMED BY THE BUILDING OFFICIAL. INSPECTIONS REQUIRED ARE AS FOLLOWS:
2. SOIL: VERIFY SUBGRADE IS DRY DENSE AND DOES NOT HAVE STANDING WATER PRIOR TO POURING FOOTINGS.
3. CONCRETE: INSPECTIONS REQUIRED ONLY FOR DESIGN MIXES SPECIFIED GREATER THAN 2500 PSI. TAKE CONCRETE CYLINDERS AS REQUIRED. VERIFY SLUMP AND STRENGTH.

ALTERNATES:

1. ALTERNATE ASSEMBLIES AND MATERIALS WILL BE CONSIDERED FOR REVIEW. ENGINEER MAY REQUEST PAYMENT FOR REVIEW; CONTRACTOR WILL BEAR BURDEN FOR ADDITIONAL PAYMENT AT NO ADDITIONAL COST TO OWNER.

JOBSITE SAFETY:

1. THE ENGINEER AND/OR ARCHITECT HAVE NOT BEEN RETAINED OR COMPENSATED TO PROVIDE DESIGN AND/OR CONSTRUCTION REVIEW SERVICES RELATED TO THE CONTRACTOR'S SAFETY PRECAUTIONS OR TO MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES FOR THE CONTRACTOR TO PERFORM HIS WORK. THE UNDERTAKING OF PERIODIC SITE VISITS BY THE ENGINEER AND/OR ARCHITECT SHALL NOT BE CONSTRUED AS SUPERVISION OF ACTUAL CONSTRUCTION NOR MAKE HIM RESPONSIBLE FOR PROVIDING A SAFE PLACE FOR THE PERFORMANCE OF WORK BY THE CONTRACTOR, SUBCONTRACTORS, SUPPLIERS OR THEIR EMPLOYEES, OR FOR ACCESS, VISITS, USE, WORK, TRAVEL, OR OCCUPANCY BY ANY PERSON.

MARK R. THURELL
STATE OF WASHINGTON
PROFESSIONAL ENGINEER

LONGITUDE ONE TWENTY°
ENGINEERING & DESIGN

REVISIONS

△	DESCRIPTION	DATE	BY
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MERCER ISLAND RESIDENCE

PROJECT NUMBER
S180115

DRAWN BY - MR

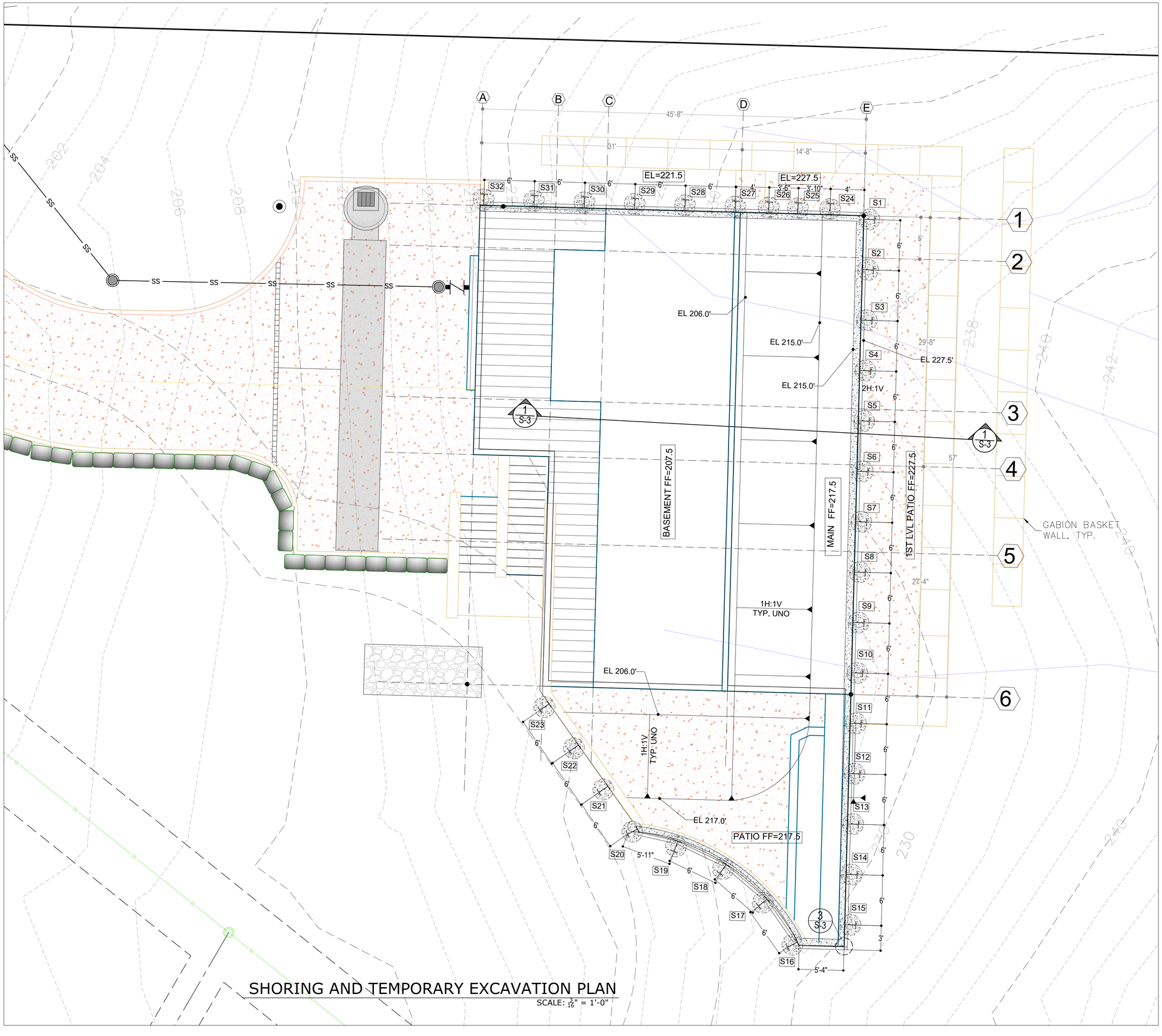
CHECKED BY - MT

SHEET DATE - 04/20/18

SCALE
24X36 SHEET

DESCRIPTION
STRUCTURAL GENERAL NOTES

SHEET
S-1



SHORING AND TEMPORARY EXCAVATION PLAN

SCALE: 3/16" = 1'-0"

MARK R. THURELL
LICENSED WASHINGTON
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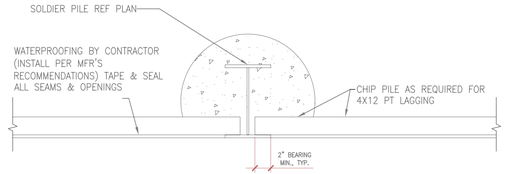
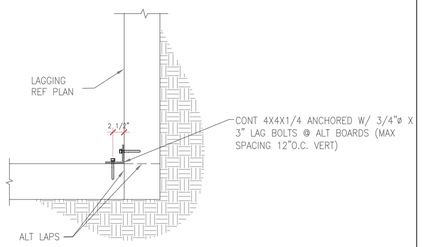


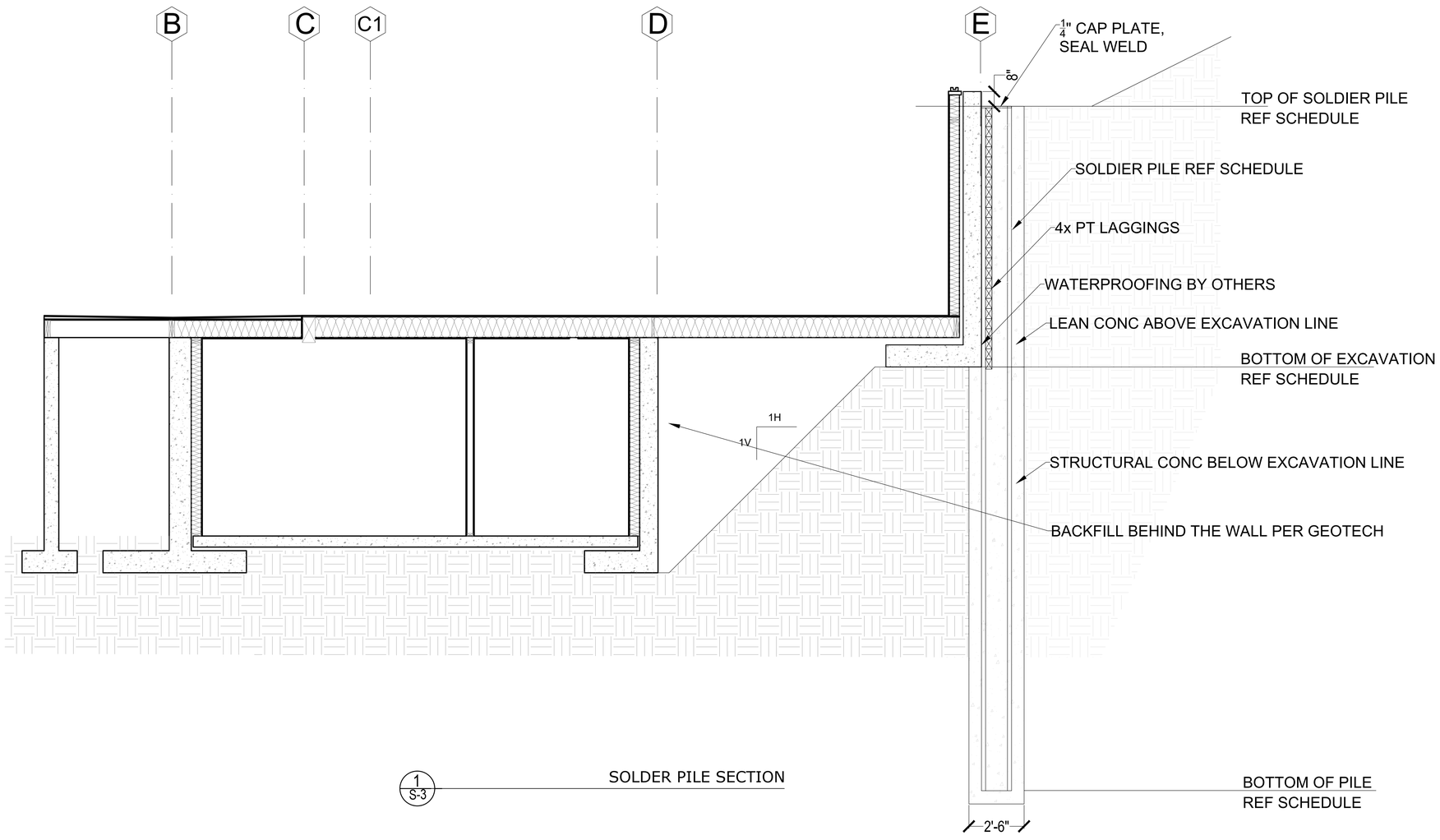
2 SOLDIER PILE SHORING DETAIL



3 CORNER LAGGING DETAIL

SOLDIER PILE SCHEDULE

MARK	PILE SIZE	TOP OF PILE ELEVATION	BOTTOM OF EXCAVATION	BOT OF PILE ELEVATION	PILE LENGTH (ft)
S1	W16X67	227.5'	215.0'	198.5'	29
S2	W16X67	227.5'	215.0'	198.5'	29
S3	W16X67	227.5'	215.0'	198.5'	29
S4	W16X67	227.5'	215.0'	198.5'	29
S5	W16X67	227.5'	215.0'	198.5'	29
S6	W16X67	227.5'	215.0'	198.5'	29
S7	W16X67	227.5'	215.0'	198.5'	29
S8	W16X67	227.5'	215.0'	198.5'	29
S9	W16X67	227.5'	215.0'	198.5'	29
S10	W16X67	227.5'	215.0'	198.5'	29
S11	W16X67	227.5'	215.0'	198.5'	29
S12	W16X67	228.0'	217.0'	199.0'	29
S13	W16X67	229.0'	217.0'	200.0'	29
S14	W16X67	230.0'	217.0'	203.0'	27
S15	W16X67	230.0'	217.0'	203.0'	27
S16	W16X67	228.0'	217.0'	201.0'	27
S17	W16X67	227.0'	217.0'	200.0'	27
S18	W16X67	225.0'	217.0'	198.0'	27
S19	W16X67	224.0'	217.0'	197.0'	27
S20	W16X67	222.0'	217.0'	195.0'	27
S21	W16X67	221.0'	209.0'	194.0'	27
S22	W16X67	220.0'	207.0'	193.0'	27
S23	W16X67	218.0'	206.0'	192.0'	26
S24	W21X211	227.5'	215.0'	183.5'	44
S25	W21X211	227.5'	212.0'	183.5'	44
S26	W21X211	227.5'	209.0'	183.5'	44
S27	W16X89	221.5'	206.0'	188.5'	33
S28	W16X89	221.5'	206.0'	188.5'	33
S29	W16X89	221.5'	206.0'	188.5'	33
S30	W16X89	221.5'	206.0'	188.5'	33
S31	W16X89	221.5'	206.0'	188.5'	33
S32	W16X89	221.5'	206.0'	188.5'	33



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