GENERAL SHORING NOTES

(The following apply unless shown otherwise on the plans)

CRITERIA

1. ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION: SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, THE 2015 EDITION OF THE INTERNATIONAL BUILDING CODE (IBC).

2. REFERENCE DOCUMENTS:

   A. TOPOGRAPHICAL AND BOUNDARY ALTA/ACSM LAND TITLE SURVEY BY HANSEN SURVEYING & CONSULTING, DATED AUGUST 29, 2018.
   B. GEOTECHNICAL ENGINEERING INVESTIGATION REPORT #18-282 BY PanGEO, INC., DATED OCTOBER 12, 2018.

3. DESIGN LOADS: THE SOIL PRESSURE DIAGRAMS SHOWN ON THIS SHEET WERE USED FOR DESIGN.

4. SUBMITTALS: SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO ANY FABRICATION OR CONSTRUCTION FOR ALL STRUCTURAL ITEMS INCLUDING THE FOLLOWING: STRUCTURAL STEEL, MISCELLANEOUS METAL, TENDONS, AND ANCHORS. PROPOSEDDEMOLITION AND SHORING SEQUENCE SHALL ALSO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.

5. INSPECTION: INSPECTION BY THE GEOTECHNICAL ENGINEER SHALL BE PERFORMED FORPILE PLACEMENT AND TIEBACK PLACING AND STRESSING. ALL PREPARED SOIL BEARING SURFACES SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF PILE. SOIL COMPACTION SHALL BE SUPERVISED BY AN APPROVED TESTING LAB. INSPECTION BY A QUALIFIED TESTING LAB SHALL BE PERFORMED FOR STEEL FABRICATION, ERECTION AND WELDING.

6. UTILITY LOCATION THE SHORING CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL ADJACENT UNDERGROUND UTILITIES PRIOR TO DRILLING PILE HOLES, OR CUTTING OR DIGGING IN STREETS OR ALLEYS. THE UTILITIES INFORMATION SHOWN ON THE SURVEY MAY BE NOT COMPLETE.

7. VERIFICATION: CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LOCATIONS OF EXISTING STRUCTURES PRIOR TO FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBER. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL DISCREPANCIES IN DIMENSIONS AND ALL FIELD CHANGES PRIOR TO FABRICATION AND INSTALLATION.

8. SOILS: SEE GEOTECHNICAL REPORT FOR MORE COMPLETE INFORMATION (NOTE 2 ABOVE). FOLLOW THE RECOMMENDATIONS OF THE REPORT INCLUDING THE FOLLOWING ITEMS:

   A. SHORING - SEE DETAILS ON THIS SHEET FOR THE SOIL PRESSURE DIAGRAM. ALL PILES SHALL BE EMBEDDED PER THESE DRAWINGS, A MINIMUM OF 10 FEET BELOW THE EXCAVATION BASE AND 5 FEET BELOW ANY EXCAVATIONS LOCATED WITHIN 10 FEET HORIZONTALLY OF THE PILE.

   B. TIEBACKS - PER THE GEOTECHNICAL REPORT, TIEBACK ANCHORS SHALL BE TESTED. SEE THE SEPARATE SECTION AT THE END OF THESE NOTES.

   C. SHORING MONITORING - PER THE GEOTECHNICAL REPORT, THE GEOTECHNICAL ENGINEER SHALL CONTINUOUSLY MONITOR THE INSTALLATION OF THE PILES. PER SECTION 7.0 OF THE REPORT, THE GEOTECHNICAL ENGINEER SHALL ALSO REVIEW THE SHORING WALL DEFLECTION DATA COLLECTED BY THE PROJECT SURVEYOR. AT A MINIMUM THE SHORING SHALL BE SURVEYED BEFORE EXCAVATION BEGINS, DURING EXCAVATION, ONCE THE EXCAVATION IS COMPLETE, AND AFTER THE EXCAVATION IS COMPLETE. SURVEYING MUST CONTINUE UNTIL THE PERMANENT STRUCTURE (INCLUDING FLOOR SLABS AS BRACES) IS COMPLETE UP TO STREET GRADES. THE FREQUENCY AND DURATION OF MONITORING SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER BASED ON SHORING PERFORMANCE.

   D. EXCAVATION - PER THE GEOTECHNICAL REPORT, EXPECT BOTH STRUCTURAL FILL AND GLACIAL TILL SOIL TYPES TO BE ENCOUNTERED. SEE REPORT FOR RECOMMENDATIONS.

   E. LAGGING - PER THE GEOTECHNICAL REPORT, LAGGING SHALL BE INSTALLED BETWEEN ALL SHORING PILES.

   F. BACKFILL - PER THE GEOTECHNICAL REPORT, PEA GRAVEL, SAND AND SUITABLE EXCAVATION SPOILS MAY BE USED AS SHORING WALL BACKFILL, WHEREAS CONCRETE, CDF OR OTHER IMPERMEABLE MATERIALS MAY NOT BE USED.

   G. DRAINAGE - PER THE GEOTECHNICAL REPORT, BACKFILL BEHIND THE WALL SHOULD CONNECT TO A CONTINUOUS HORIZONTAL DRAIN LOCATED IN FRONT OF THE WALL THROUGH THE USE OF PREFABRICATED VERTICAL DRAINAGE STRIPS.

9. PRE-CONSTRUCTION MEETING: A PRE-CONSTRUCTION MEETING WITH THE BUILDING DEPARTMENT, IS REQUIRED BEFORE THE START OF SHORING INSTALLATION. ATTENDEES SHALL INCLUDE REPRESENTATIVES OF THE OWNER, GENERAL CONTRACTOR, EXCAVATION AND SHORING SUBCONTRACTORS, THE GEOTECHNICAL ENGINEER, SURVEYOR, STRUCTURAL ENGINEER AND BUILDING DEPARTMENT PERSONNEL.

CONCRETE GROUT

10. CONCRETE SHALL CONFORM TO ALL REQUIREMENTS OF CHAPTER 19 OF THE IBC. CONCRETE GROUT STRENGTHS OVER 1,000 PSI SHALL BE VERIFIED BY STANDARD CYLINDER TESTS, UNLESS APPROVED OTHERWISE. REQUIRED ULTIMATE COMPRESSIVE STRENGTHS OF CONCRETE GROUT SHALL BE REACHED BY 7 DAYS FOR TIEBACKS AND 28 DAYS FOR PILES.

F'C (PSI)	MINIMUM CEMENT PER CUBIC YARD	MAXIMUM WATER PER 94 LB OF CEMENT	USE
500	1-1/2 SACKS	-	PILE & TIEBACK (ZONE "B") LEAN CONCRETE GROUT
2,500	5 SACKS	-	PILE STRUCTURAL CONCRETE GROUT
3,000	6 SACKS	6 GALLONS	UNDERPINNING STRUCTURAL GROUT
3,000	6 SACKS	6 GALLONS	TIEBACK STRUCTURAL GROUT (ZONE "A")

THE CONTRACTOR SHALL SUBMIT A CONCRETE GROUT MIX DESIGN FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE. THE MIX DESIGNS WILL BE REVIEWED FOR CONFORMANCE TO IBC CH. 19.

STEEL

11. STRUCTURAL STEEL DESIGN, FABRICATION, AND ERECTION SHALL BE BASED ON THE A.I.S.C. "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS," LATEST EDITION, PLUS ALL REFERENCED CODES.

12. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TYPE OF MEMBER	ASTM SPECIFICATION	Fy
A. PLATES, SHAPES, ANGLES, AND RODS	A36	36 KSI
B. SOLDIER PILES	A992 OR A572, GRADE 50	50 KSI
C. HEADED SHEAR STUDS	A108	44 KSI
D. PIPE SECTIONS	A53 (TYPE E OR S, GRADE B)	35 KSI
E. PIPE SECTIONS	A500 (GRADE B)	42 KSI
F. STRUCTURAL TUBING	A500 (GRADE B)	46 KSI

13. ALL WELDING SHALL BE IN CONFORMANCE WITH A.I.S.C. AND A.W.S. STANDARDS AND SHALL BE PERFORMED BY W.A.B.O. CERTIFIED WELDERS USING E70xx ELECTRODES OR 70 KSI WELD METAL. ONLY PREQUALIFIED WELDS (AS DEFINED BY A.W.S.) SHALL BE USED.

14. PRE-STRESSING STEEL:

   A. HIGH STRENGTH RODS (STRESSED AND NON-STRESSED) SHALL BE DYWIDAG THREAD BARS WITH APPROPRIATE ANCHORAGE PLATES, NUTS AND COUPLERS, IN CONFORMANCE WITH ASTM A722 (Fpu = 150,000 PSI).

   B. STRAND SHALL BE 1/2" DIAMETER, 7-WIRE STRESS-RELIEVED (OR LOW RELAXATION), CLEAN AND FREE FROM CORROSION, HAVING A GUARANTEED MINIMUM ULTIMATE STRENGTH OF 41,300 POUNDS AND MANUFACTURED IN ACCORDANCE WITH ASTM A416, GRADE 270. ONE MILL TEST SHALL BE SUBMITTED FOR REVIEW FOR EACH REEL USED.

WOOD LAGGING

15. SAWN LUMBER:SAWN LUMBER SHALL CONFORM TO "GRADING AND DRESSING RULES," WEST COAST LUMBER INSPECTION BUREAU (WCLIB), LATEST EDITION. LUMBER SHALL BE THE SPECIES AND GRADE NOTED BELOW:

USE	GRADE	MAX. SPAN	SIZE	DEPTH BELOW GRADE
TIMBER LAGGING	HEM-FIR OR DF-L NO. 2	7'-8"	6x12	0'-0" TO 20'-0" (EAST/SOUTH WALL)
TIMBER LAGGING	HEM-FIR OR DF-L NO. 2	8'-0"	4x12	0'-0" TO 12'-0"

TIMBER LAGGING SHALL BE PRESSURE TREATED WITH WATERBORNE PRESERVATIVES IN ACCORDANCE WITH AWPA STANDARD U1 TO A MINIMUM RETENTION OF 0.4 LBS/CU.FT.

SHORING INSTALLATION

16. DEMOLITION: SHORING AND SOIL EXCAVATION SHALL BE DONE SIMULTANEOUSLY.

17. HOLE DIGGING: PILE AND ANCHOR HOLES SHALL BE DRILLED WITHOUT LOSS OF GROUND AND WITHOUT ENDANGERING PREVIOUSLY INSTALLED PILES AND ANCHORS. THIS MAY INVOLVE CASING THE HOLES OR OTHER METHODS OF PROTECTION FROM CAVING. SEE GEOTECHNICAL REPORT FOR RECOMMENDED HOLE DIGGING PROCEDURE. THE BOTTOM OF THE BORED HOLES SHALL BE CLEANED OUT USING A BUCKET AUGER.

18. PILE PLACEMENT: FOR ALL PILES SPACED CLOSER THAN 7' O.C., ALTERNATE PILES SHALL BE PLACED SO THAT A MINIMUM OF 24 HOURS IS ALLOWED FOR THE CONCRETE GROUT TO CURE BEFORE DRILLING THE DIRECTLY ADJACENT PILES.

19. STEEL PILE TOLERANCES:
    1" INSIDE PERPENDICULAR TO SHORING WALL.
    1" OUTSIDE PERPENDICULAR TO SHORING WALL.
    3" LATERALLY.

20. EXCAVATION BELOW TIEBACKS: TIEBACK INSTALLATION AND PRE-STRESSING SHALL BE COMPLETED BEFORE EXCAVATING MORE THAN 2 FEET BELOW THE TIEBACK LEVEL.

21. LAGGING: TIMBER LAGGING SHALL BE INSTALLED IN ALL AREAS. VOIDS BETWEEN LAGGING AND SOIL SHALL BE BACKFILLEDRAINAGE BEHIND THE WALL MUST BE MAINTAINED (SEE ITEM 8F ABOVE). IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE AMOUNT OF EXPOSED SOIL WITHOUT LAGGING TO AVOID LOSS OF SOIL. IN NO CASE SHALL THE EXPOSED SOIL HEIGHT EXCEED 4'-0". SPECIAL CARE SHOULD BE TAKEN TO AVOID GROUND LOSS DURING EXCAVATION. NO EXCAVATION FOR THE IMMEDIATE LOWER LIFT IS ALLOWED UNTIL VOIDS BEHIND THE LAGGING OF THE PRECEDING LIFT ARE FILLED WITH APPROVED MATERIALS.

22. SHORING MONITORING: SYSTEMATIC PROGRAM OF OBSERVATION SHALL BE CONDUCTED DURING THE PROJECT EXECUTION TO DETERMINE THE EFFECT OF CONSTRUCTION ON ADJACENT FACILITIES AND STRUCTURES IN ORDER TO PROTECT THEM FROM SERIOUS DAMAGE. SEE GEOTECHNICAL REPORT FOR RECOMMENDATIONS. A LICENSED SURVEYOR (NOT THE CONTRACTOR) MUST DO THE SURVEYING AT LEAST ONCE A WEEK. FIELD DATA AND MEASUREMENTS ARE TO BE SUBMITTED TO STRUCTURAL AND GEOTECHNICAL ENGINEER FOR REVIEW (SEE ITEM 8B ABOVE).

23. SLOPES: ALL SLOPES SHALL BE PROTECTED PER THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.

24. REMOVAL: ALL PILES, ANCHORS, GROUT AND LAGGING LOCATED WITHIN THE CITY R.O.W. SHALL BE REMOVED TO A DEPTH OF 4'-0" BELOW FINAL GRADE ONCE THEY ARE NO LONGER NEEDED FOR CONSTRUCTION.

TIEBACK TESTING AND STRESSING

25. VERIFICATION TESTS (200% TESTS):
    * PRIOR TO INSTALLING PRODUCTION ANCHORS, PERFORM A MINIMUM OF TWO TESTS EACH ON EACH ANCHOR TYPE, INSTALLATION METHOD AND SOIL TYPE WITH THE TESTED ANCHORS CONSTRUCTED TO THE SAME DIMENSIONS AS PRODUCTION ANCHORS.
    * TEST LOCATIONS TO BE DETERMINED IN CONJUNCTION WITH AND APPROVED BY THE GEOTECHNICAL ENGINEER.
    * TEST ANCHORS, WHICH WILL BE LOADED TO 200% OF THE DESIGN LOAD, MAY REQUIRE ADDITIONAL PRESTRESSING STEEL (STEEL LOAD NOT TO EXCEED 80% OF THE ULTIMATE TENSILE STRENGTH) OR REINFORCING OF THE SOLDIER PILE.
    * LOAD TEST ANCHORS TO 150% LOAD IN 25% LOAD INCREMENTS, HOLDING EACH INCREMENTAL LOAD FOR AT LEAST 5 MINUTES AND RECORDING DEFLECTION OF THE ANCHOR HEAD AT VARIOUS TIMES WITHIN EACH HOLD TO THE NEAREST 0.01 INCH.
    * AT THE 150% LOAD, THE HOLDING PERIOR SHALL BE AT LEAST 60 MINUTES.
    * AFTER COMPLETION OF THE 150% HOLD, LOAD THE ANCHOR IN 25% INCREMENTS TO THE 200% LOAD, WHICH WILL BE HELD FOR 10 MINUTES.
    * A SUCCESSFUL TEST SHALL PROVIDE A MEASURED CREEP RATE OF 0.04 INCHES OR LESS AT THE 150% LOAD BETWEEN 1 AND 10 MINUTES, AND 0.08 INCHES OR LESS BETWEEN 6 AND 60 MINUTES, AND ALL TIME INCREMENTS SHALL HAVE A CREEP RATE THAT IS LINEAR OR DECREASING WITH TIME. THE APPLIED LOAD MUST REMAIN CONSTANT DURING ALL HOLDING PERIODS (I.E., NO MORE THAN 5% VARIATION FROM THE SPECIFIED LOAD).

26. PROOF TESTS (130% TESTS ON ALL LOAD ANCHORS):
    * LOAD TEST ALL PRODUCTION ANCHORS TO 130% OF THE DESIGN LOAD IN 25% LOAD INCREMENTS, HOLDING EACH INCREMENTAL LOAD UNTIL A STABLE DEFLECTION IS ACHIEVED (RECORD DEFLECTION OF THE ANCHOR HEAD AT VARIOUS TIMES WITHIN EACH HOLD TO THE NEAREST 0.01 INCH).
    * AT THE 130% LOAD, THE HOLDING PERIOD SHALL BE AT LEAST 10 MINUTES.
    * A SUCCESSFUL TEST SHALL PROVIDE A MEASURED CREEP RATE OF 0.04 INCHES OR LESS AT THE 130% LOAD BETWEEN 1 AND 10 MINUTES WITH A CREEP RATE THAT IS LINEAR OR DECREASING WITH TIME. THE APPLIED LOAD MUST REMAIN CONSTANT DURING THE HOLDING PERIOD (I.E., NO MORE THAN 5% VARIATION FROM THE 130% LOAD). ANCHORS FAILING THIS PROOF TESTING CREEP ACCEPTANCE CRITERIA MAY BE HELD AN ADDITIONAL 50 MINUTES FOR CREEP MEASUREMENT. ACCEPTABLE PERFORMANCE WOULD EQUATE TO A CREEP OF 0.08 INCHES OR LESS BETWEEN 5 AND 50 MINUTES WITH A LINEAR OR DECREASING CREEP RATE.

    FOLLOWING PROOF LOADING, EACH ANCHOR SHALL BE LOCKED OFF AT 100% OF DESIGN LOADING.

    VERIFICATION TESTED ANCHORS OR EXTENDED CREEP PROOF TESTED ANCHORS NOT MEETING THE ACCEPTANCE CRITERIA WILL REQUIRE A REDESIGN BY THE CONTRACTOR TO ACHIEVE THE ACCEPTANCE CRITERIA.

27. TIEBACK NOTES: ALL TIEBACKS ARE TO BE REMAIN STRESSED.

    A BOND BREAKER (SUCH AS A SLIP SHEATH) SHALL BE CONSTRUCTED IN THE NO LOAD ZONE WHEN THE INSTALLATION PROCEDURES USE SINGLE STAGE GROUTING.

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PROJECT NO. 18689.01

TYPICAL SHORING NOTES

SH1.0

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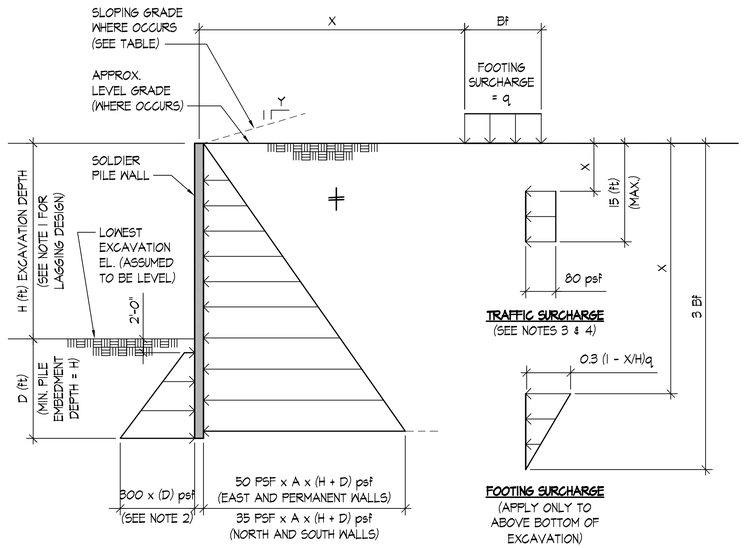


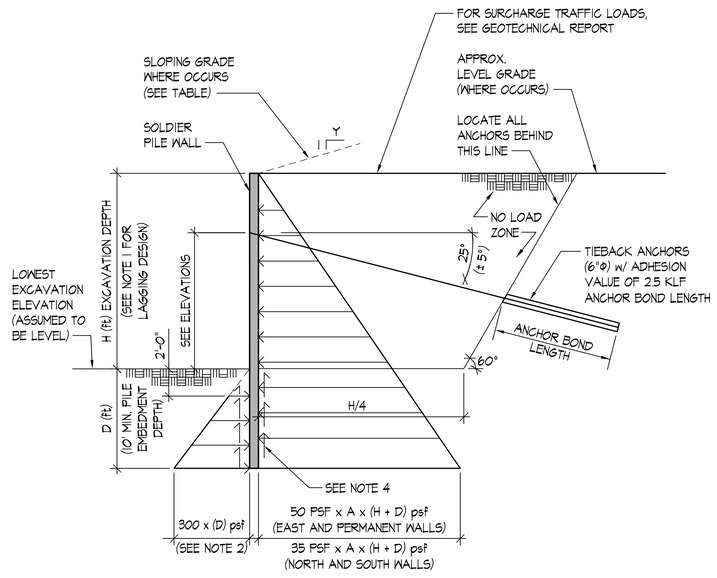
PASSIVE PRESSURE ACTIVE PRESSURE

NOTES:

1. 50% OF THE LATERAL EARTH PRESSURE USED TO DESIGN TIMBER LAGGING.
2. PASSIVE PRESSURE ACTS OVER 2.0 TIMES THE GROUTED SOLDIER PILE DIAMETER.
3. ACTIVE AND AT-REST SOIL PRESSURES ACT OVER THE PILE SPACING ABOVE AND PILE DIAMETER BELOW BOTTOM OF EXCAVATION. IT IS ASSUMED THAT NO HYDROSTATIC PRESSURES ACT ON THE BACK OF SHORING.
4. 80 PSF UNIFORM SURCHARGE NOT APPLIED AT SLOPED BACKSLOPE CONDITION.

EARTH PRESSURE FACTOR FOR BACKSLOPE	
BACKSLOPE Y:1	EARTH PRESSURE FACTOR, A
FLAT	1.00
2 : 1	1.35
1.5 : 1	1.50

SOIL PRESSURE DIAGRAM FOR CANTILEVERED SOLDIER PILE SHORING WALLS — SCALE: NONE — 6



PASSIVE PRESSURE ACTIVE PRESSURE

NOTES:

1. 50% OF THE LATERAL EARTH PRESSURE USED TO DESIGN TIMBER LAGGING. EXCAVATION PER GEOTECHNICAL REPORT.
2. PASSIVE PRESSURE ACT OVER 2.0 TIMES THE GROUTED SOLDIER PILE DIAMETER.
3. ACTIVE AND AT-REST PRESSURES ACT OVER THE PILE SPACING ABOVE AND PILE DIAMETER BELOW BOTTOM OF EXCAVATION. IT IS ASSUMED THAT NO HYDROSTATIC PRESSURES ACT ON THE BACK OF SHORING WALLS.

EARTH PRESSURE FACTOR FOR BACKSLOPE	
BACKSLOPE Y:1	EARTH PRESSURE FACTOR, A
FLAT	1.00
2 : 1	1.35
1.5 : 1	1.50

SOIL PRESSURE DIAGRAM FOR SINGLE TIED-BACK SHORING WALLS — SCALE: NONE — 8

DETAIL — SCALE: 3/4"=1'-0" — 9

DETAIL — SCALE: 3/4"=1'-0" — 10

DETAIL — SCALE: 3/4"=1'-0" — 11

DETAIL — SCALE: 3/4"=1'-0" — 12

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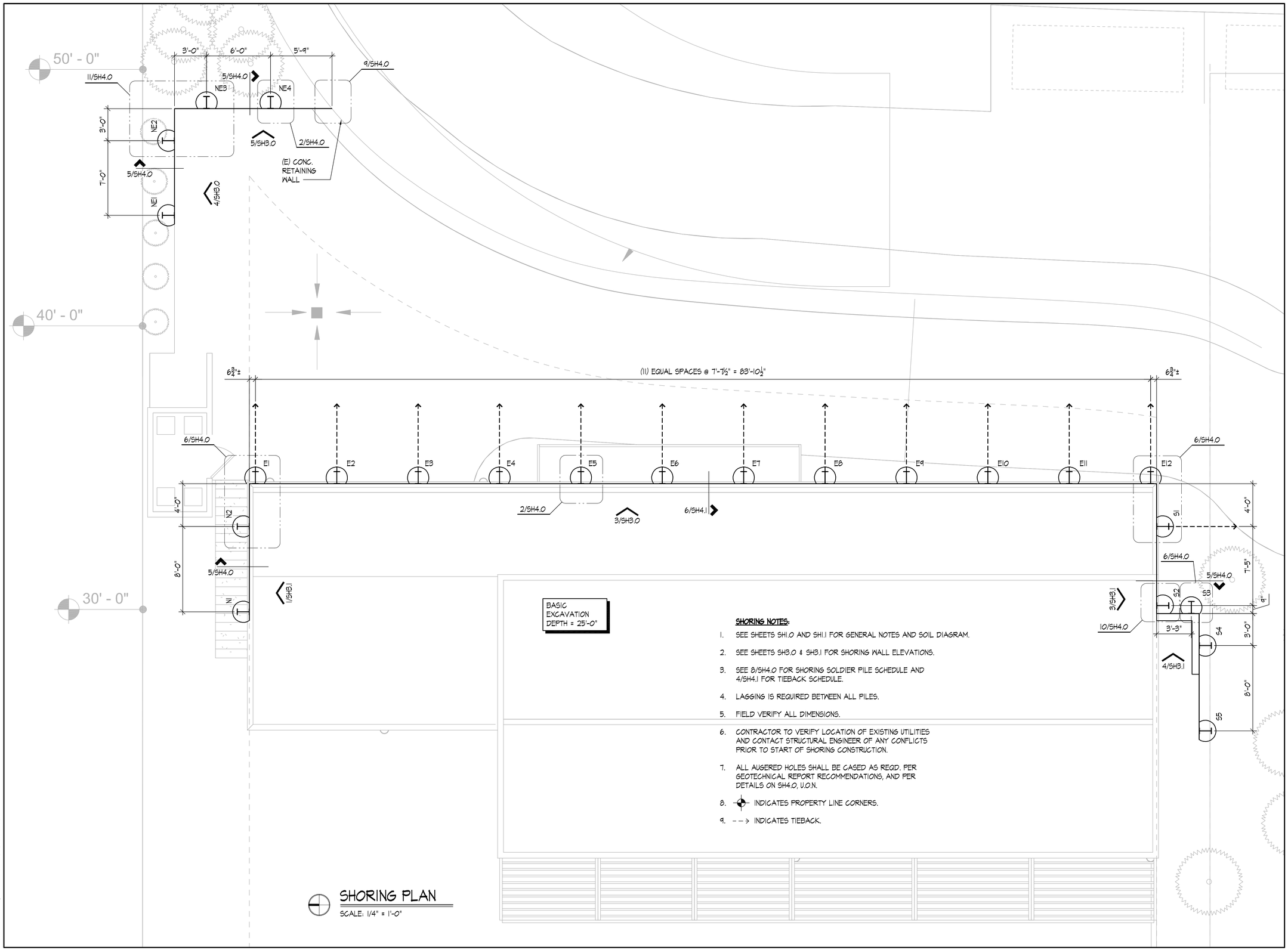
TYPICAL SHORING DIAGRAM

SH1.1



SHORING NOTES:

1. SEE SHEETS SH1.0 AND SH1.1 FOR GENERAL NOTES AND SOIL DIAGRAM.
2. SEE SHEETS SH3.0 & SH3.1 FOR SHORING WALL ELEVATIONS.
3. SEE 8/SH4.0 FOR SHORING SOLDIER PILE SCHEDULE AND 4/SH4.1 FOR TIEBACK SCHEDULE.
4. LAGGING IS REQUIRED BETWEEN ALL PILES.
5. FIELD VERIFY ALL DIMENSIONS.
6. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES AND CONTACT STRUCTURAL ENGINEER OF ANY CONFLICTS PRIOR TO START OF SHORING CONSTRUCTION.
7. ALL AUGERED HOLES SHALL BE CASED AS REQD. PER GEOTECHNICAL REPORT RECOMMENDATIONS, AND PER DETAILS ON SH4.0, U.O.N.
8. ⊕ INDICATES PROPERTY LINE CORNERS.
9. - - → INDICATES TIEBACK.

SHORING PLAN

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

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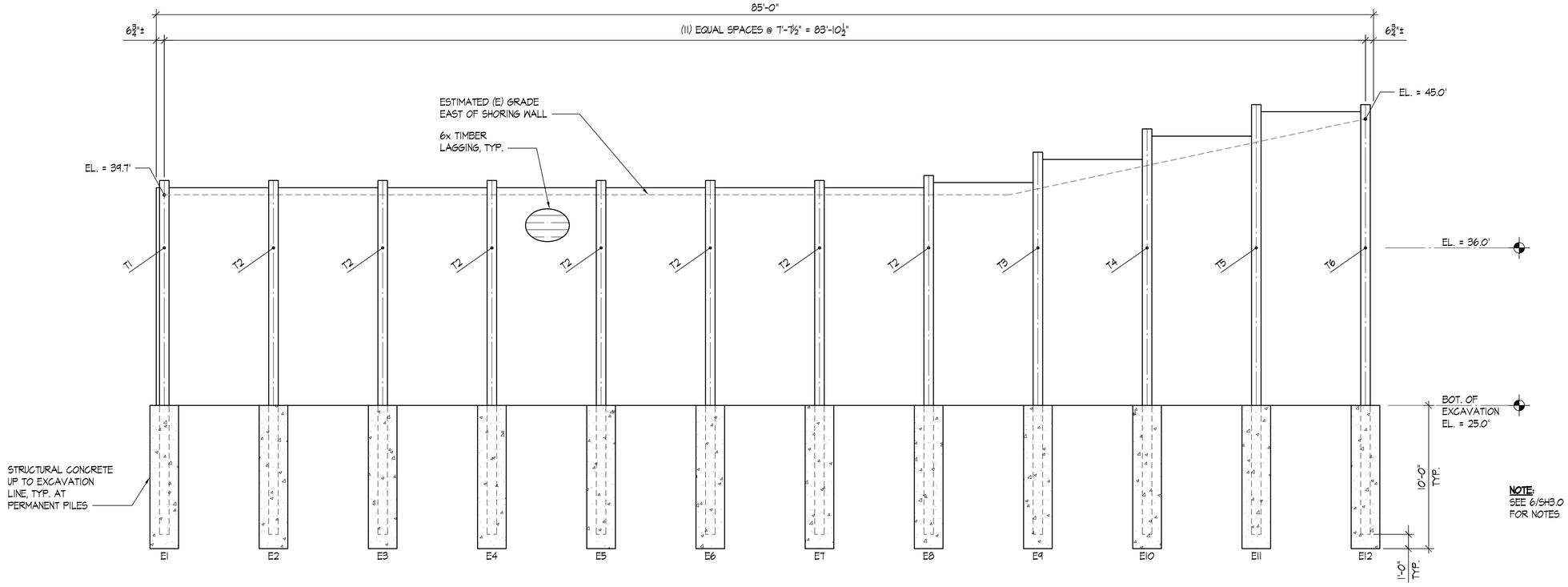
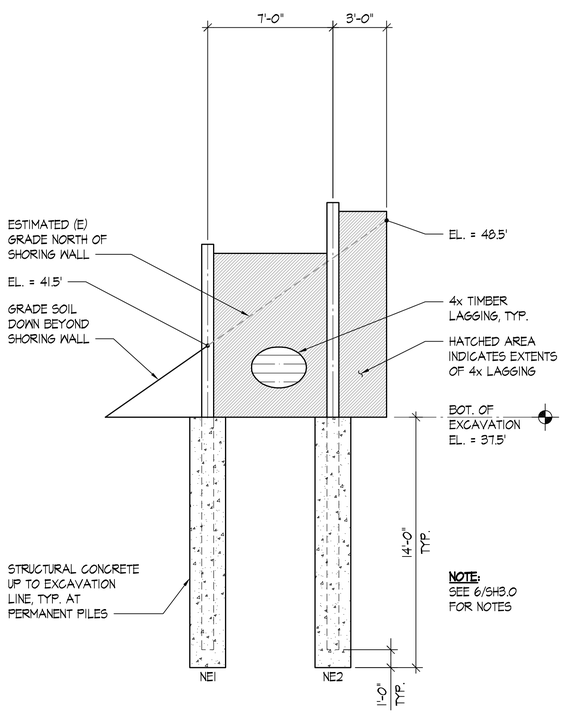
SHORING PLAN

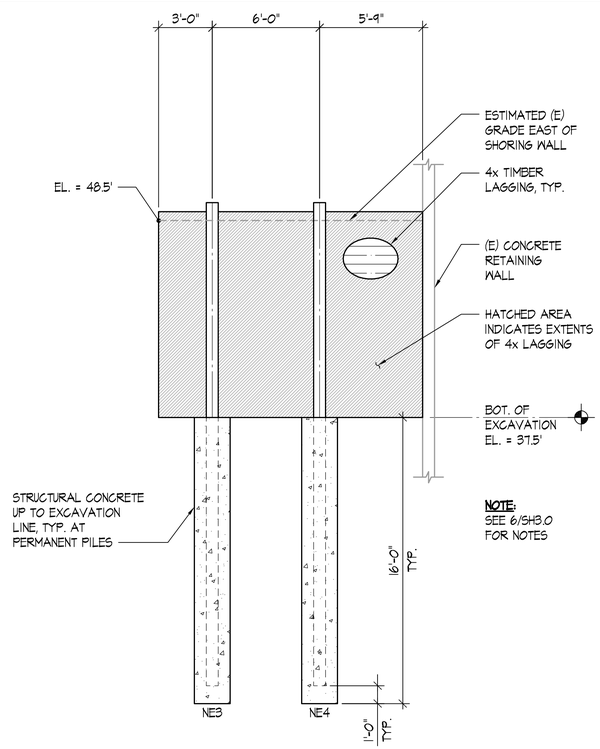
SH2.0



EAST SHORING WALL ELEVATION — SCALE: 1/4"=1'-0" — 3



NORTHEAST SHORING WALL ELEVATION — SCALE: 1/4"=1'-0" — 4



NORTHEAST SHORING WALL ELEVATION — SCALE: 1/4"=1'-0" — 5

NOTES:

1. W1 INDICATES SOLDIER PILE PER SCHEDULE ON 8/SH4.0.
2. T1 = XX' INDICATES TIE BACK PER SCHEDULE ON 4/SH4.1.
3. SPOT GRADE ELEVATIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.
4. CONTRACTOR TO VERIFY AND COORDINATE ELEVATIONS & PILE HEIGHT/DEPTH WITH FIELD CONDITIONS.

SHORING NOTES — SCALE: 1/4"=1'-0" — 6

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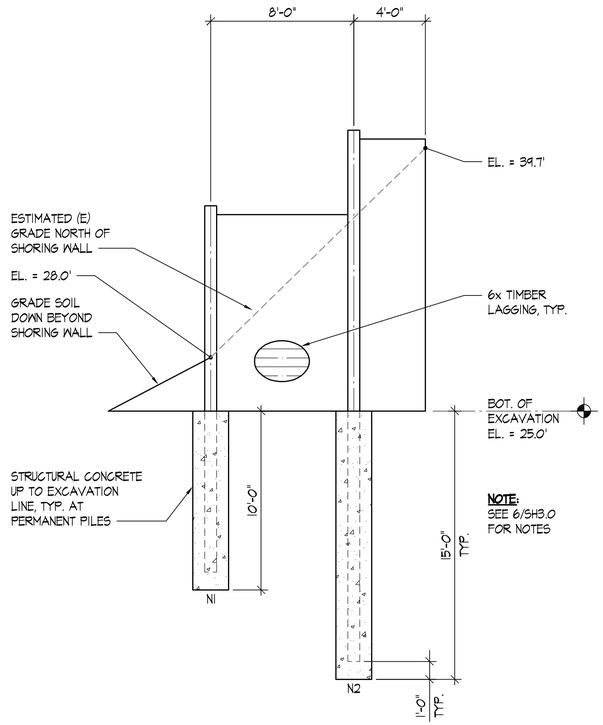
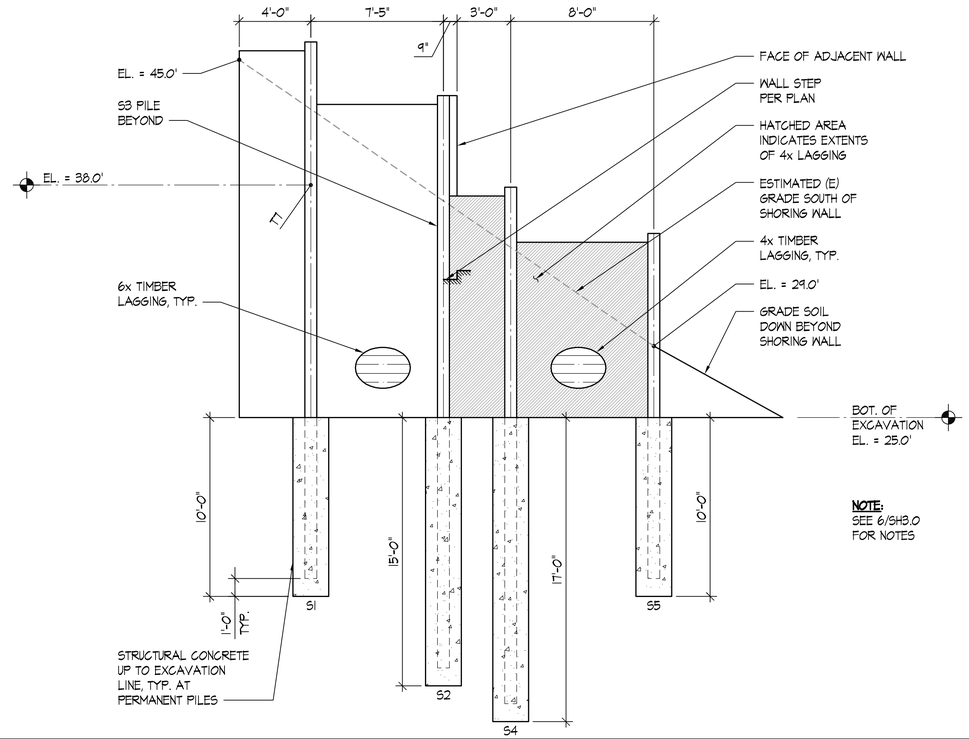
SHORING ELEVATIONS

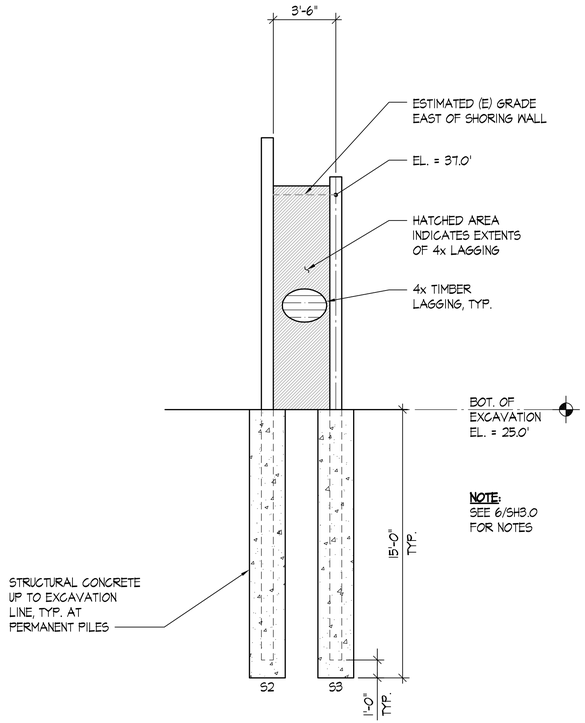
SH3.0



NORTH SHORING WALL ELEVATION — SCALE: 1/4"=1'-0" | 1



SOUTH SHORING WALL ELEVATION — SCALE: 1/4"=1'-0" | 3



SOUTH SHORING WALL ELEVATION — SCALE: 1/4"=1'-0" | 4

DETAIL — SCALE: 1/4"=1'-0" | 5

DETAIL — SCALE: 1/4"=1'-0" | 6

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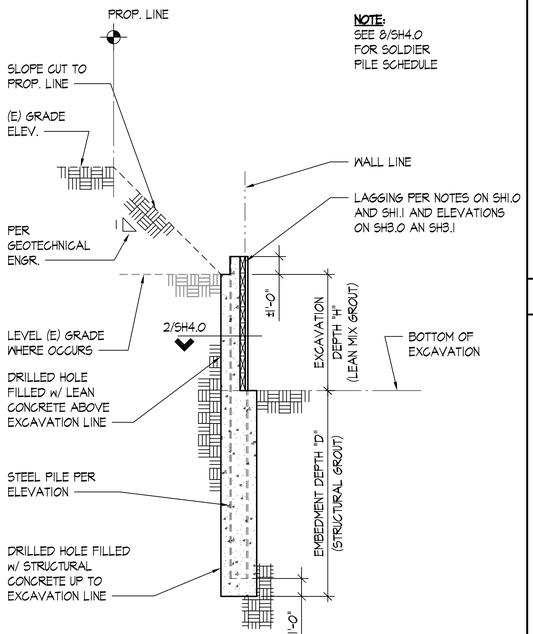
LUNDIN RESIDENCE

4041 WEST MERCER WAY
MERCER ISLAND, WA 98040

PROJECT NO. 18689.01

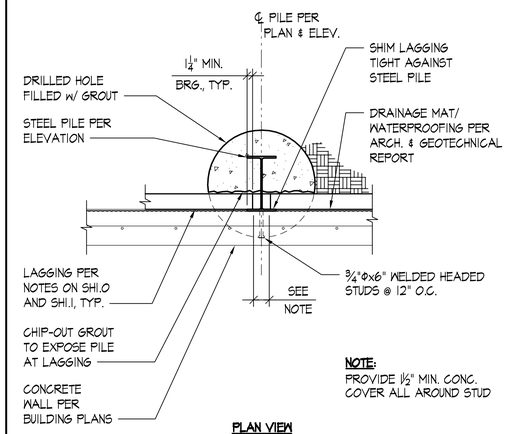
SHORING ELEVATIONS

SH3.1



NOTE:
SEE 8/SH4.0
FOR SOLDIER
PILE SCHEDULE

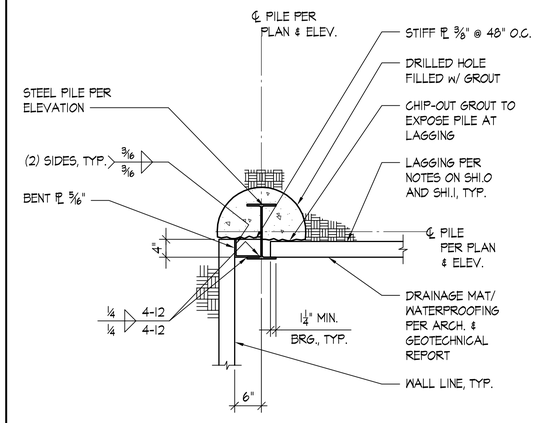
TYPICAL SOLDIER PILE SHORING SECTION — SCALE: NONE — 5



NOTE:
PROVIDE ½" MIN. CONC.
COVER ALL AROUND STUD

PLAN VIEW

TYPICAL PERMANENT SOLDIER PILE — SCALE: NONE — 2



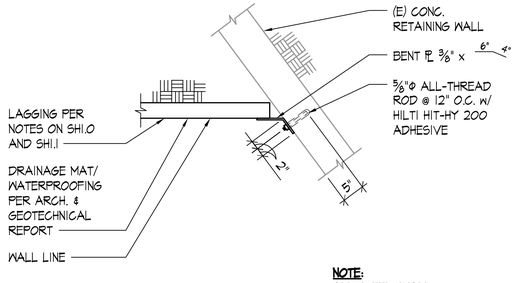
OUTSIDE CORNER DETAIL — SCALE: NONE — 6

SOLDIER PILE SCHEDULE

PILE MARK	PILE DIAMETER	SOLDIER PILE STEEL SECTION	BOTTOM EL. OF EXCAVATION	EMBEDMENT DEPTH 'D'	MAX. APPROX. HT. 'H'	STEEL SECTION LENGTH (ESTIMATED)	REMARKS
E1	24"	WI4x26	25.0'	10'-0"	14'-8"	24'-8"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
E2 - E8	24"	WI4x38	25.0'	10'-0"	14'-8"	24'-8"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
E9	24"	WI4x43	25.0'	10'-0"	15'-6"	27'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
E10	24"	WI4x43	25.0'	10'-0"	17'-0"	29'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
E11	24"	WI4x48	25.0'	10'-0"	18'-6"	30'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
E12	24"	WI4x26	25.0'	10'-0"	20'-0"	30'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
N1	24"	WI2x14	25.0'	10'-0"	4'-0"	21'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
N2	24"	WI4x74	25.0'	15'-0"	12'-0"	30'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
NE1	24"	WI2x26	37.5'	14'-0"	6'-0"	23'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
NE2	24"	WI2x26	37.5'	14'-0"	9'-0"	24'-8"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
NE3	24"	WI4x68	37.5'	16'-0"	11'-0"	27'-3"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
NE4	24"	WI4x74	37.5'	16'-0"	11'-0"	27'-3"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
S1	24"	WI4x43	25.0'	10'-0"	18'-0"	30'-0"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
S2	24"	WI4x74	25.0'	15'-0"	12'-0"	31'-8"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
S3	24"	WI4x68	25.0'	15'-0"	12'-0"	27'-3"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
S4	24"	WI4x48	25.0'	17'-0"	10'-0"	28'-4"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE
S5	24"	WI2x14	25.0'	10'-0"	6'-0"	19'-6"	PILE AND LAGGING EXTEND ABOVE FINISHED GRADE

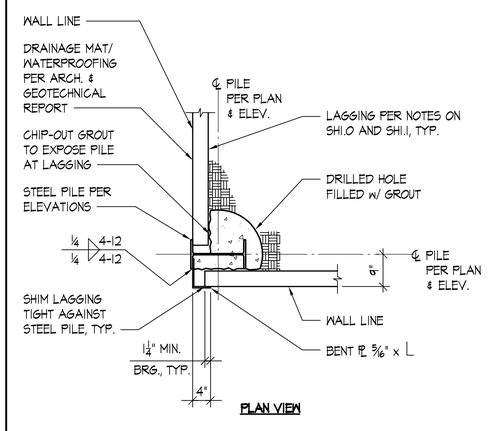
NOTE:
CONTRACTOR TO COORDINATE
FINISH GRADE ELEVATION
AND PILE HEIGHT w/ FIELD
CONDITIONS

SOLDIER PILE SCHEDULE — SCALE: NONE — 8



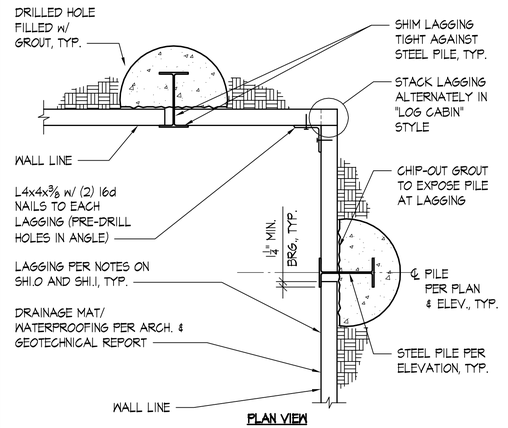
NOTE:
ALL STEEL SHALL
BE TOT DIP GALV.

DETAIL — SCALE: NONE — 9



PLAN VIEW

TYPICAL INSIDE CORNER — SCALE: NONE — 10



PLAN VIEW

TYPICAL OUTSIDE CORNER — SCALE: NONE — 11

DETAIL — SCALE: NONE — 12

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DESIGN	SKK
DRAWN	SC
CHECKED	SKK
DATE	1/8/2019

REVISIONS

PERMIT SET	1/8/2019

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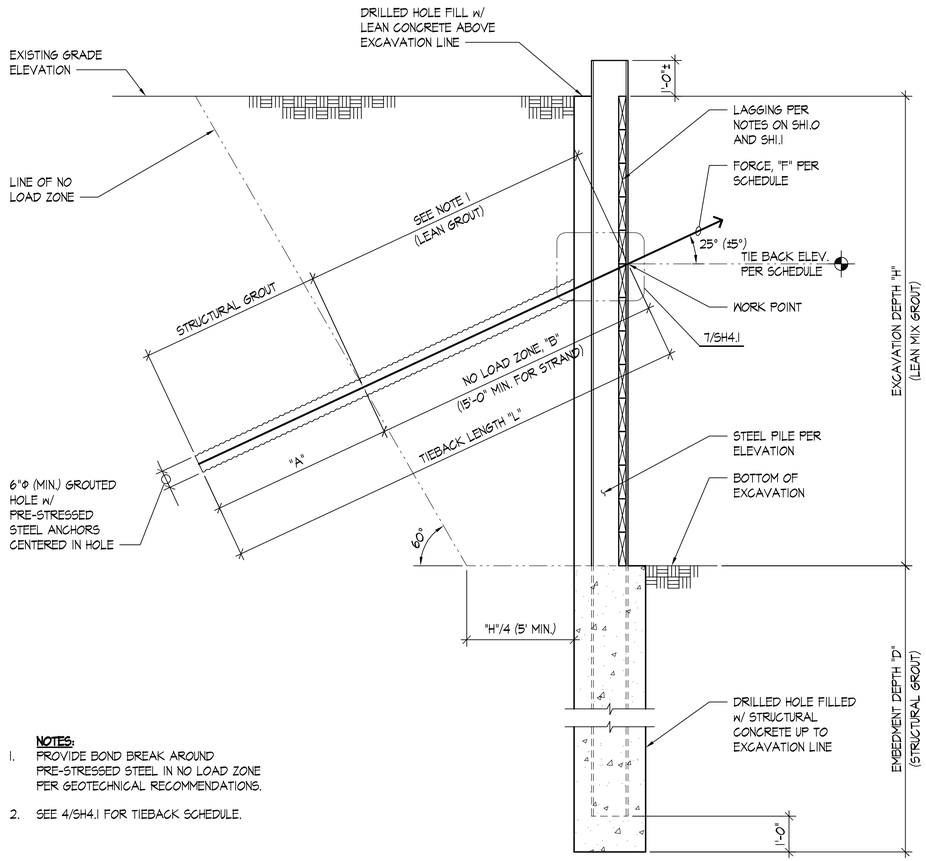
PROJECT NO. 18689.01

TYPICAL SHORING SCHEDULE AND DETAILS

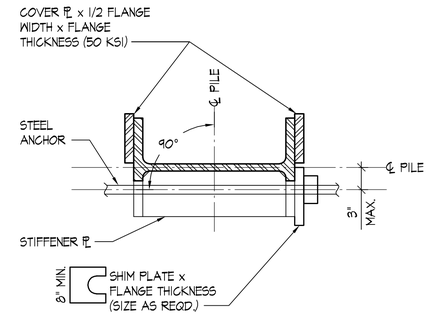
SH4.0



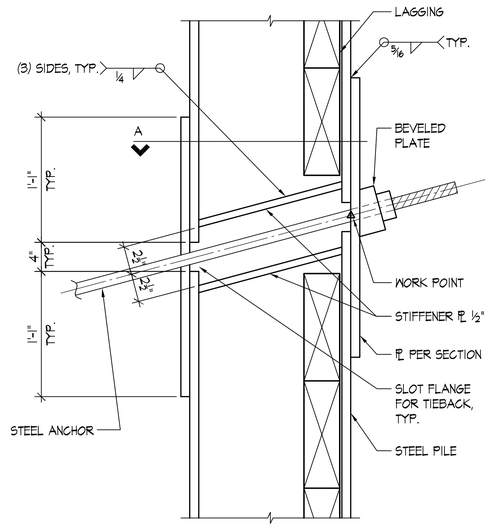
NOTES:

1. PROVIDE BOND BREAK AROUND PRE-STRESSED STEEL IN NO LOAD ZONE PER GEOTECHNICAL RECOMMENDATIONS.
2. SEE 4/SH4.1 FOR TIEBACK SCHEDULE.

TYPICAL SOLDIER PILE SHORING SECTION - WITH TIEBACKS — SCALE: NONE — 6



PLAN SECTION A



TYPICAL TIEBACK CONNECTION AT PILE — SCALE: NONE — 7

TIEBACK SCHEDULE

TIEBACK MARK	ELEV.	F (k)	B (ft)	A (ft)	L (ft)	NOTES
T1	36.0'	23.0k	8.6'	9.2'	17.8'	PILE E1
T2	36.0'	45.8k	9.8'	18.3'	28.1'	PILE E2 - E8
T3	36.0'	51.3k	9.8'	20.5'	30.3'	PILE E9
T4	36.0'	63.8k	9.8'	25.5'	35.3'	PILE E10
T5	36.0'	79.4k	9.8'	31.8'	41.6'	PILE E11
T6	36.0'	48.2k	9.8'	19.3'	29.1'	PILE E12
T7	38.0'	39.5k	10.4'	15.8'	26.2'	PILE S1

NOTES:

1. TIEBACK LENGTHS ARE BASED ON 6"Φ GROUTED HOLES WITH PRE-STRESSED STEEL ANCHORS. LENGTHS MAY BE REVISED BASED ON RECOMMENDATION OF GEOTECHNICAL ENGINEER.
2. LENGTHS PROVIDED IN SCHEDULE ARE MINIMUMS.
3. SEE ELEVATIONS FOR EXCAVATION AND PILE EMBEDMENT DEPTHS.

TIEBACK SCHEDULE — SCALE: NONE — 4

DETAIL — SCALE: NONE — 8

DETAIL — SCALE: NONE — 9

DETAIL — SCALE: NONE — 10

DETAIL — SCALE: NONE — 11

DETAIL — SCALE: NONE — 12

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TYPICAL SHORING SCHEDULE AND DETAILS

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