

VICINITY MAP/NO SCALE

**REVISED**  
11/23/2021

PER WCI STRUCTURAL ANALYSIS OF EXISTING PIER & PILING.

**LEGAL DESCRIPTION**

SECTION: NE-11-24-4  
 TAXLOT #: 217450-0100  
 LAT: 47.583370 (47° 35' 0.132" N)  
 LONG: -122.252240 (122° 15' 8.064" W)  
 EAST SEATTLE ADD LOT 1 & SH LDS ADJ MERCER ISLAND  
 SHORT PLAT NO 83-09-32 REC NO 8403019001 SD  
 SHORT PLAT DAF - LOTS 19-20-21 & 22 BLK 1 SD  
 ADD & VAC ST ADJ

APPLICANT: DOUGLAS ROSEN  
 SITE ADD. 5995 SE 30TH STREET  
 MERCER ISLAND, WA 98040  
 MAIL ADD. 5995 SE 30TH STREET  
 MERCER ISLAND, WA 98040

PAGE: 1 OF: 7 DATE: 2-7-2020

PROPOSED: PIER REPAIR

PURPOSE: RESTORE PIER INTEGRITY

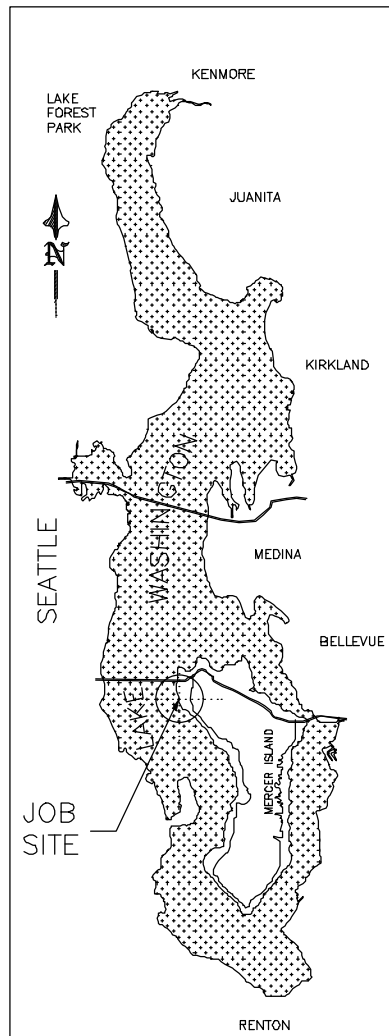
DATUM: C.O.E. MLLW=0.0'

DWG#: 19-31042-B6-1

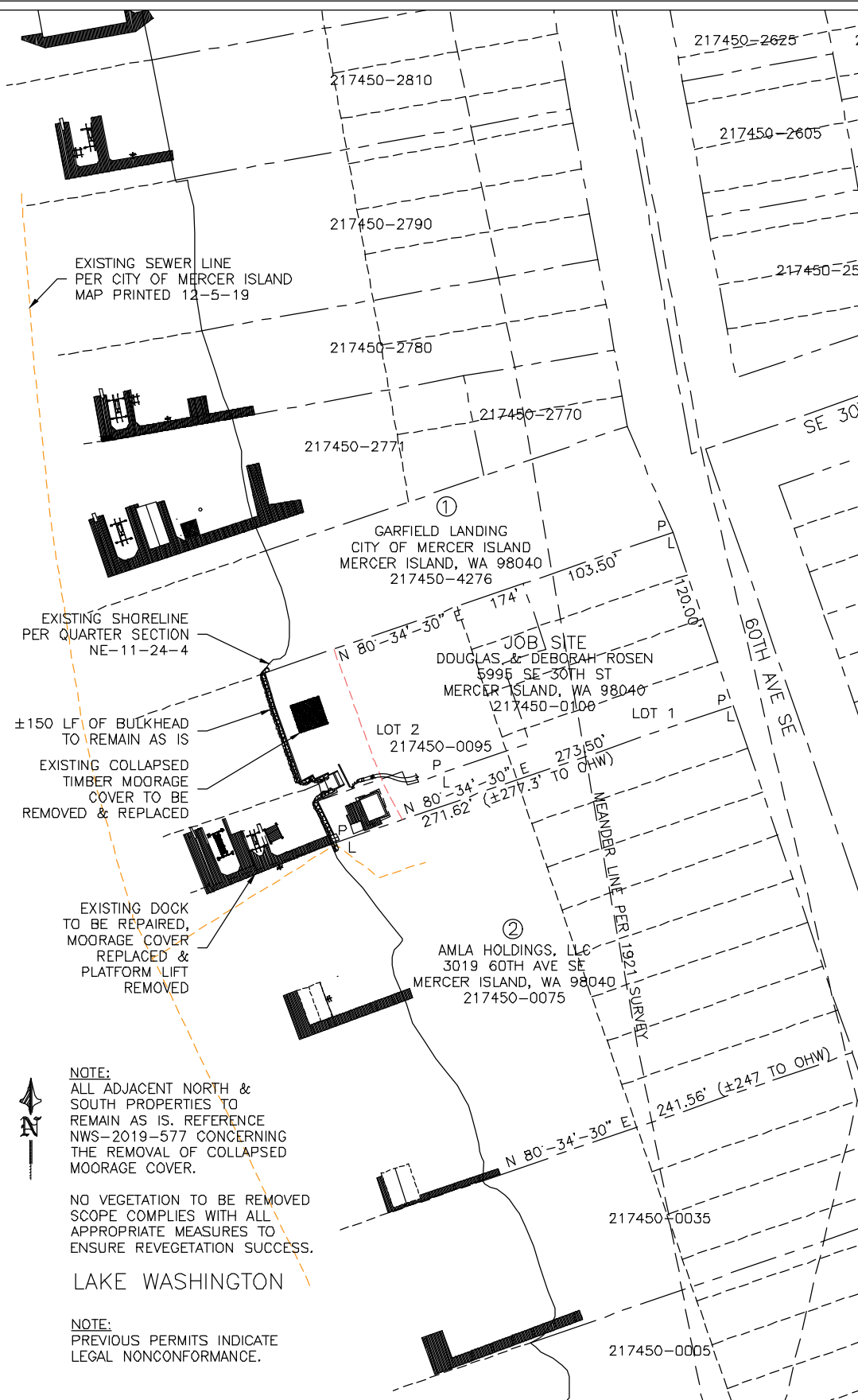
ADJACENT OWNERS:  
 ① GARFIELD LANDING  
 CITY OF MERCER ISLAND  
 MERCER ISLAND, WA 98040  
 ② ALMA HOLDINGS, LLC  
 3019 60TH AVE SE  
 MERCER ISLAND, WA 98040

APPLICATION#:

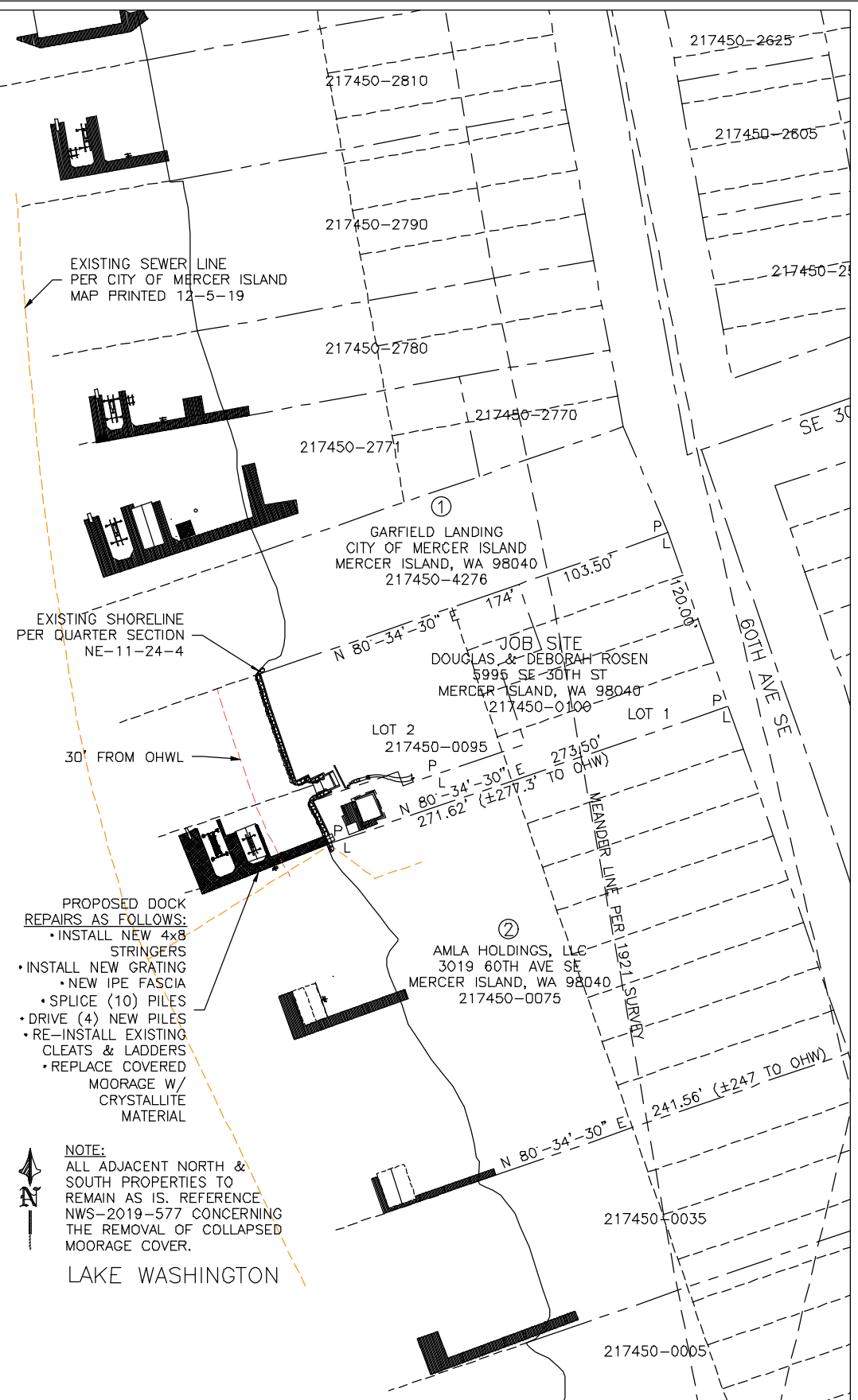
PROJECT DESIGNED BY:  
*Waterfront Conservation Inc.*  
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AREA MAP/NO SCALE

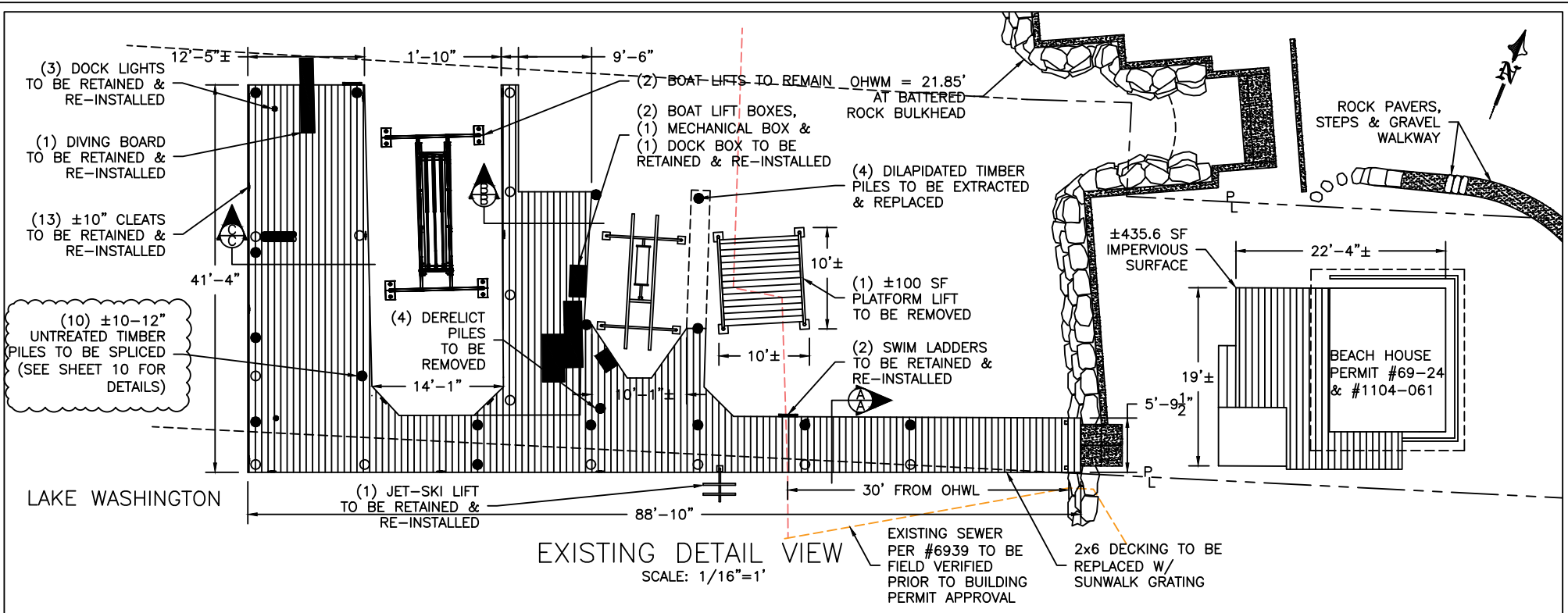


SCALE: 1"=100'

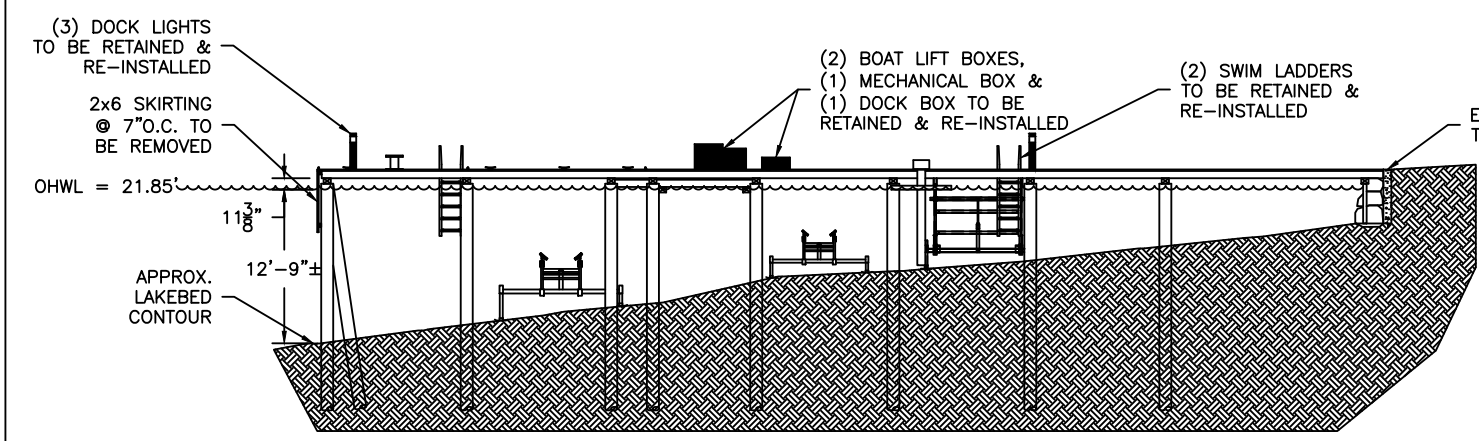


SCALE: 1"=100'

SEWER LAKE LINE TO BE FIELD VERIFIED.



EXISTING DETAIL VIEW  
SCALE: 1/16"=1'

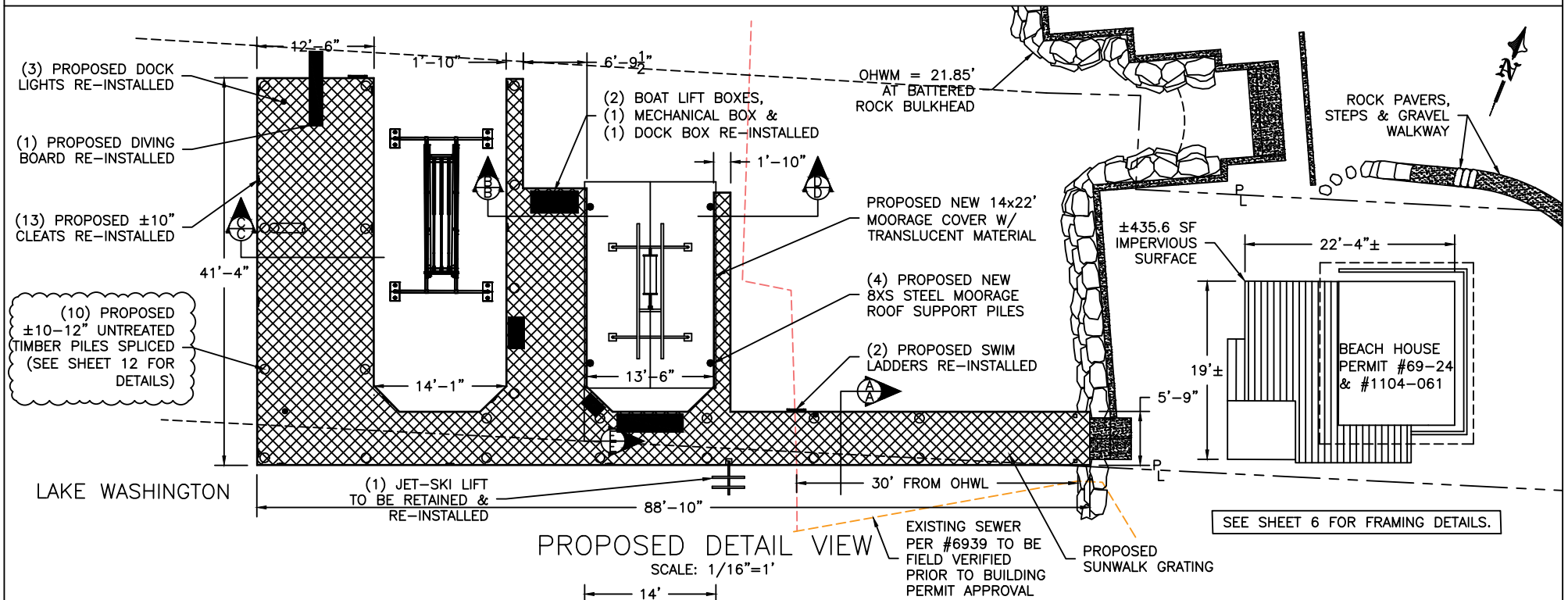


EXISTING ELEVATION VIEW  
SCALE: 1/16"=1'

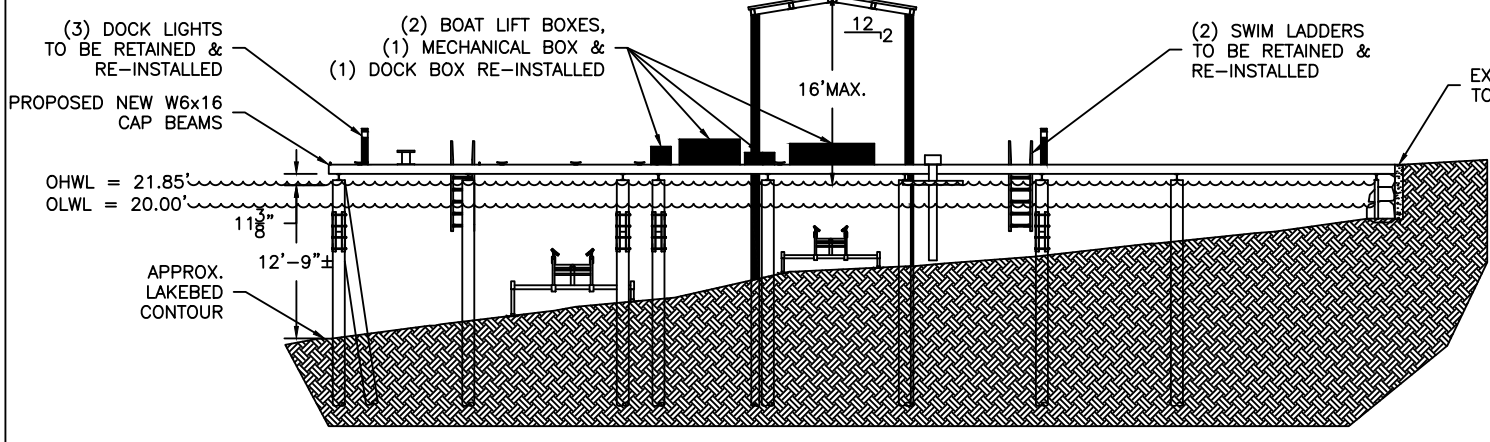
JOB SITE  
DOUGLAS & DEBORAH ROSEN  
5995 SE 30TH ST  
MERCER ISLAND, WA 98040  
217450-0100

EXISTING SQUARE FOOTAGE = 1349.7 SF

NOTE:  
(33) TOTAL EXISTING PILES  
(10) PILES REPAIRED  
(4) PILES REPLACED  
(4) PILES REMOVED  
(29) TOTAL PROPOSED PILES



PROPOSED DETAIL VIEW  
SCALE: 1/16"=1'



PROPOSED ELEVATION VIEW  
SCALE: 1/16"=1'

JOB SITE  
DOUGLAS & DEBORAH ROSEN  
5995 SE 30TH ST  
MERCER ISLAND, WA 98040  
217450-0100

PROPOSED SQUARE FOOTAGE = 1240.3 SF

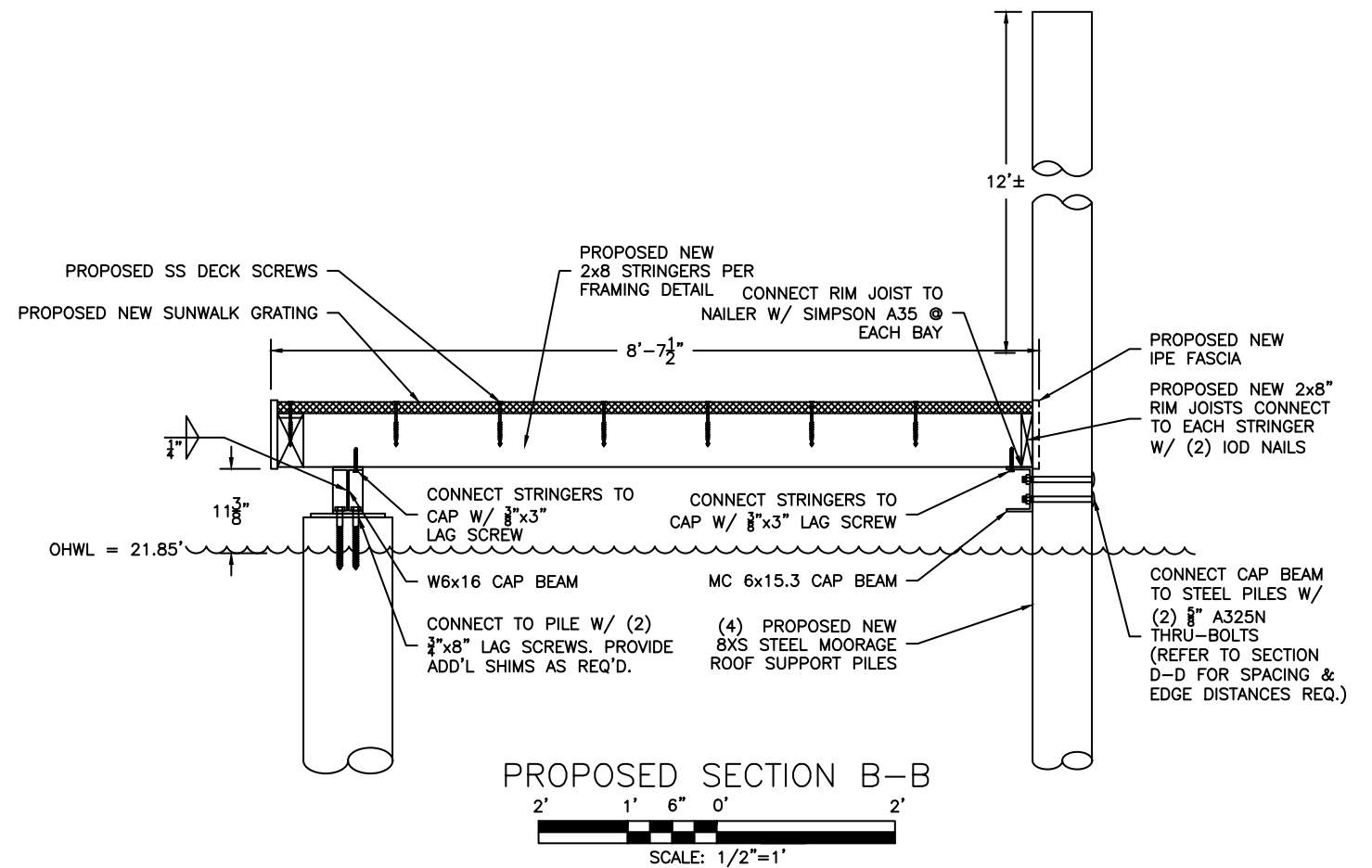
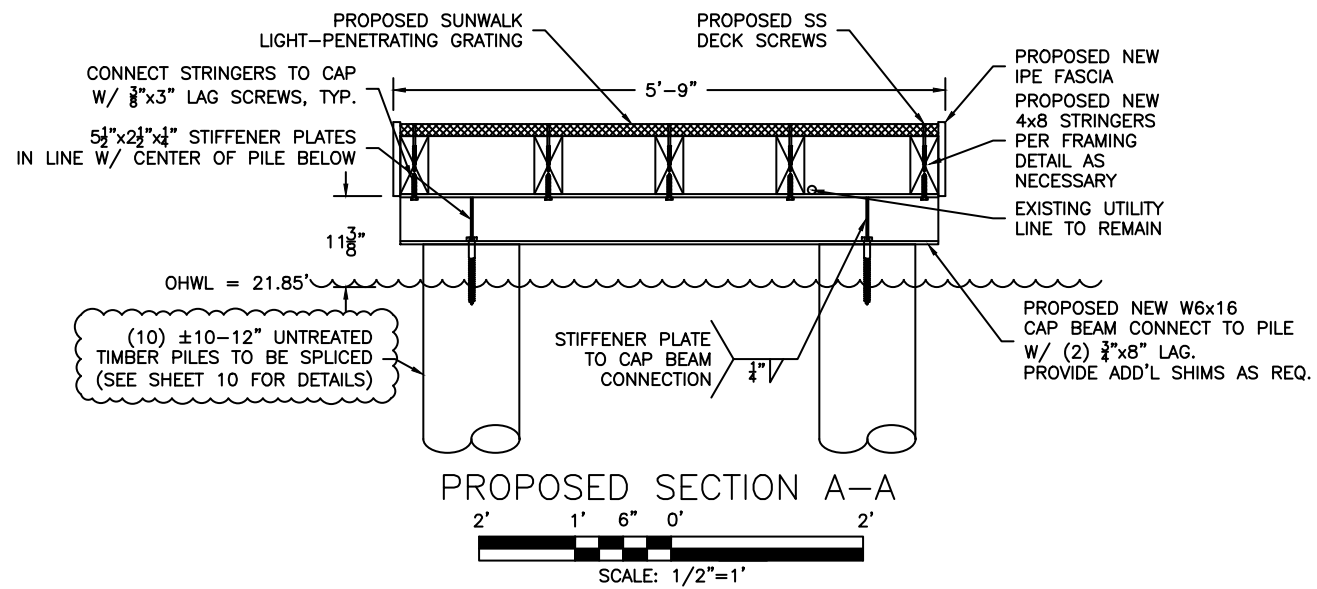
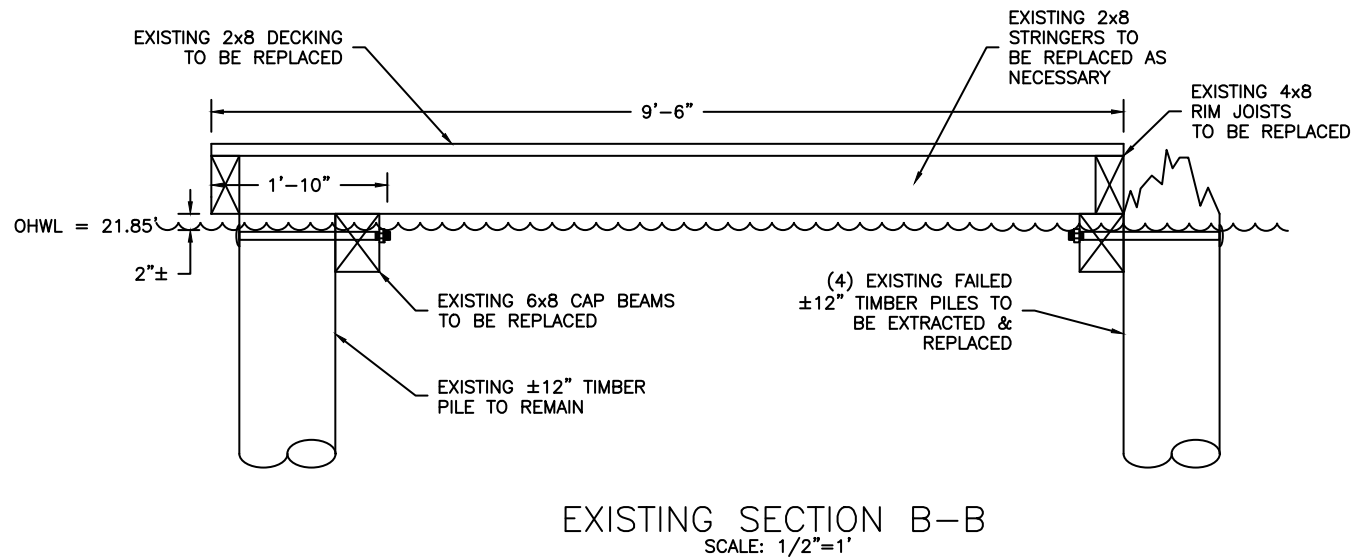
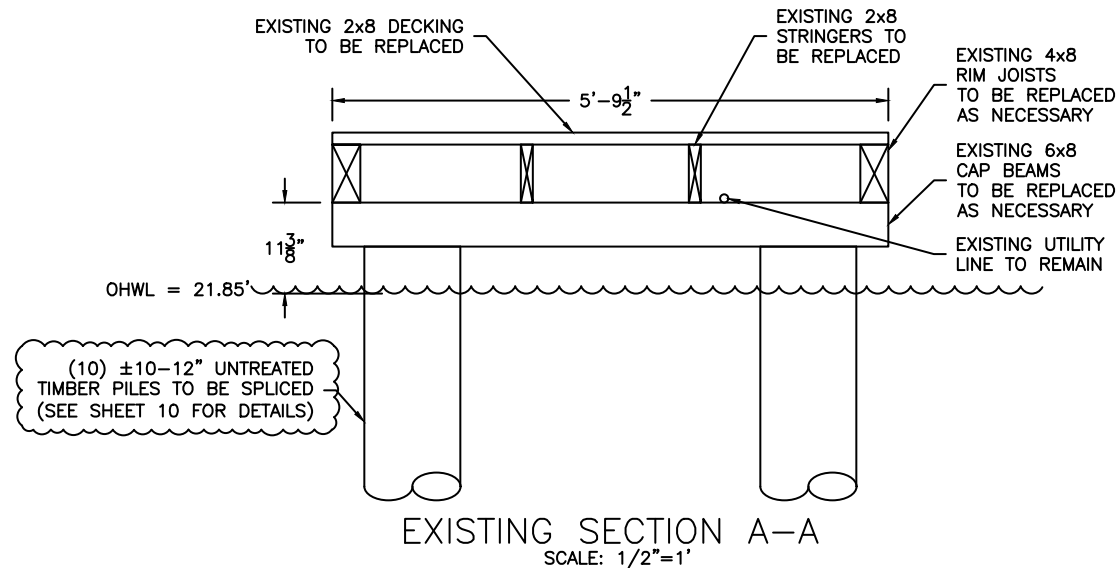
REFERENCE SHEET 5 ON B-SIZE PLAN SET.

REVISED  
11/23/2021

PER WCI STRUCTURAL  
ANALYSIS OF EXISTING  
PIER & PILING.

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REFERENCE #:		
APPLICANT: DOUGLAS ROSEN		
PROPOSED: PIER REPAIR		
SHEET: 2	OF: 7	NEAR/AT: LAKE WASHINGTON
DATE: 2-7-2020	DWG#: 19-31042-B6-2	



REFERENCE SHEET 5 ON B-SIZE PLAN SET.

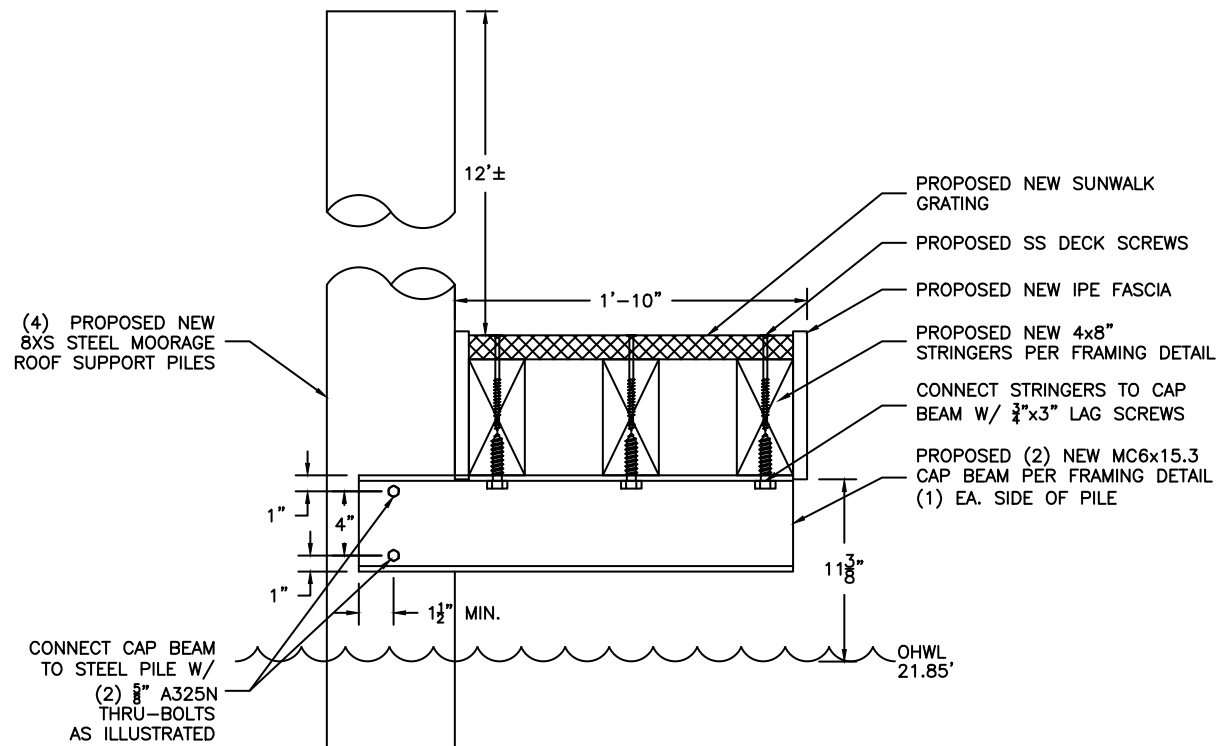
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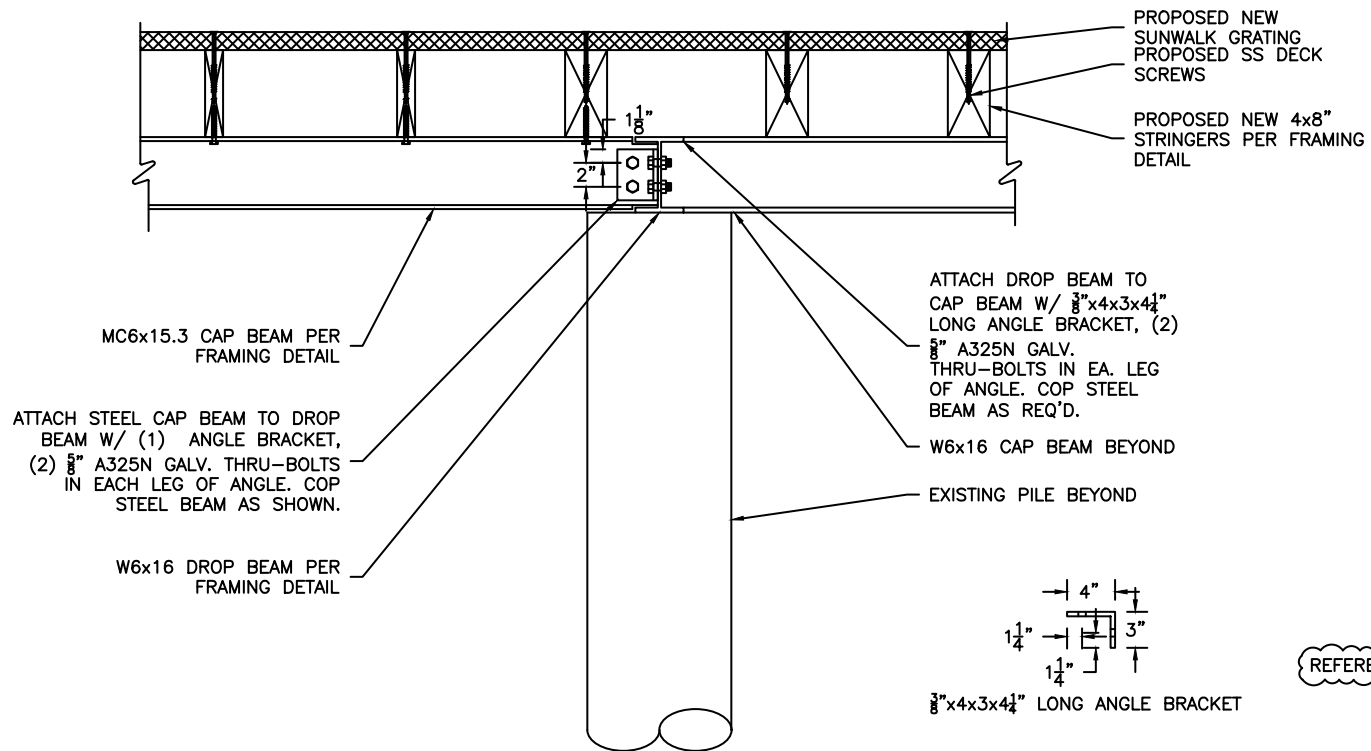
REFERENCE #:  
APPLICANT: DOUGLAS ROSEN  
PROPOSED: PIER REPAIR

SHEET: 3 OF: 7 NEAR/AT: LAKE WASHINGTON  
DATE: 2-7-2020 DWG#: 19-31042-B6-3



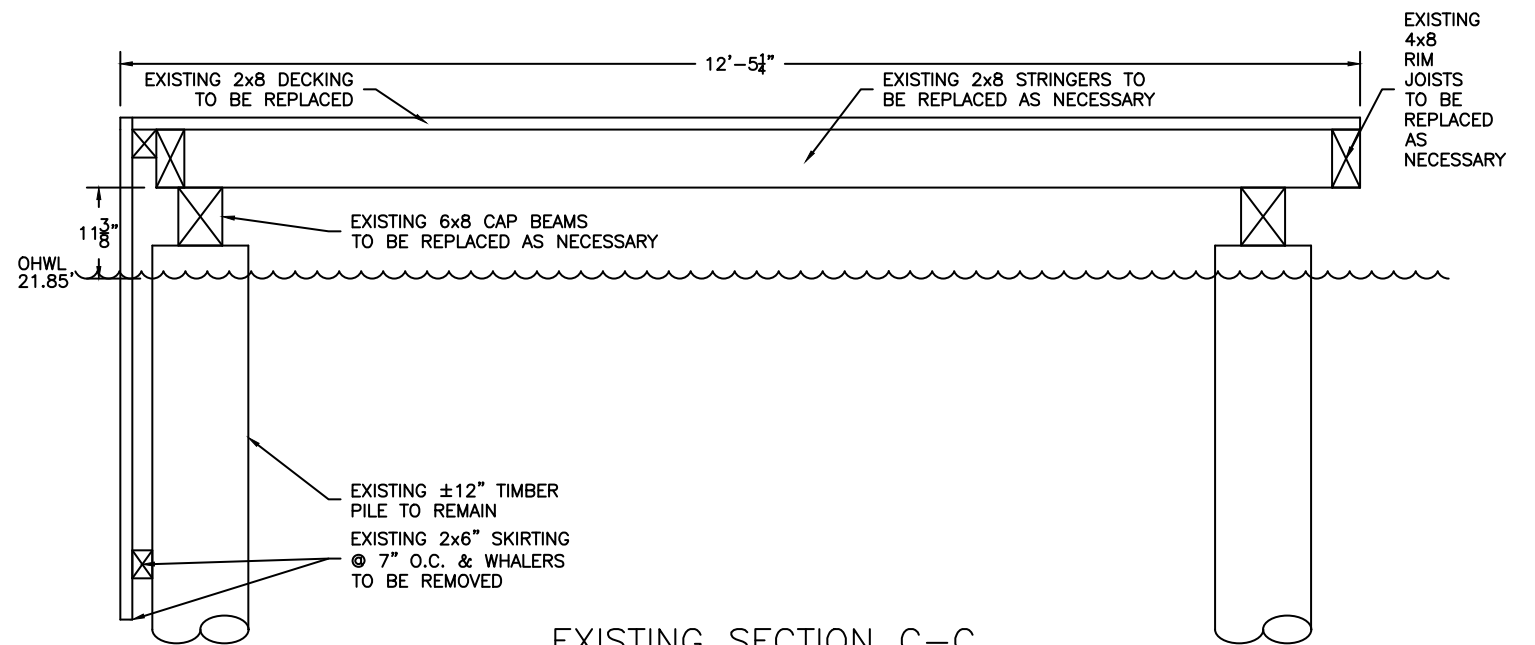
PROPOSED SECTION D-D

SCALE: 1"=1'



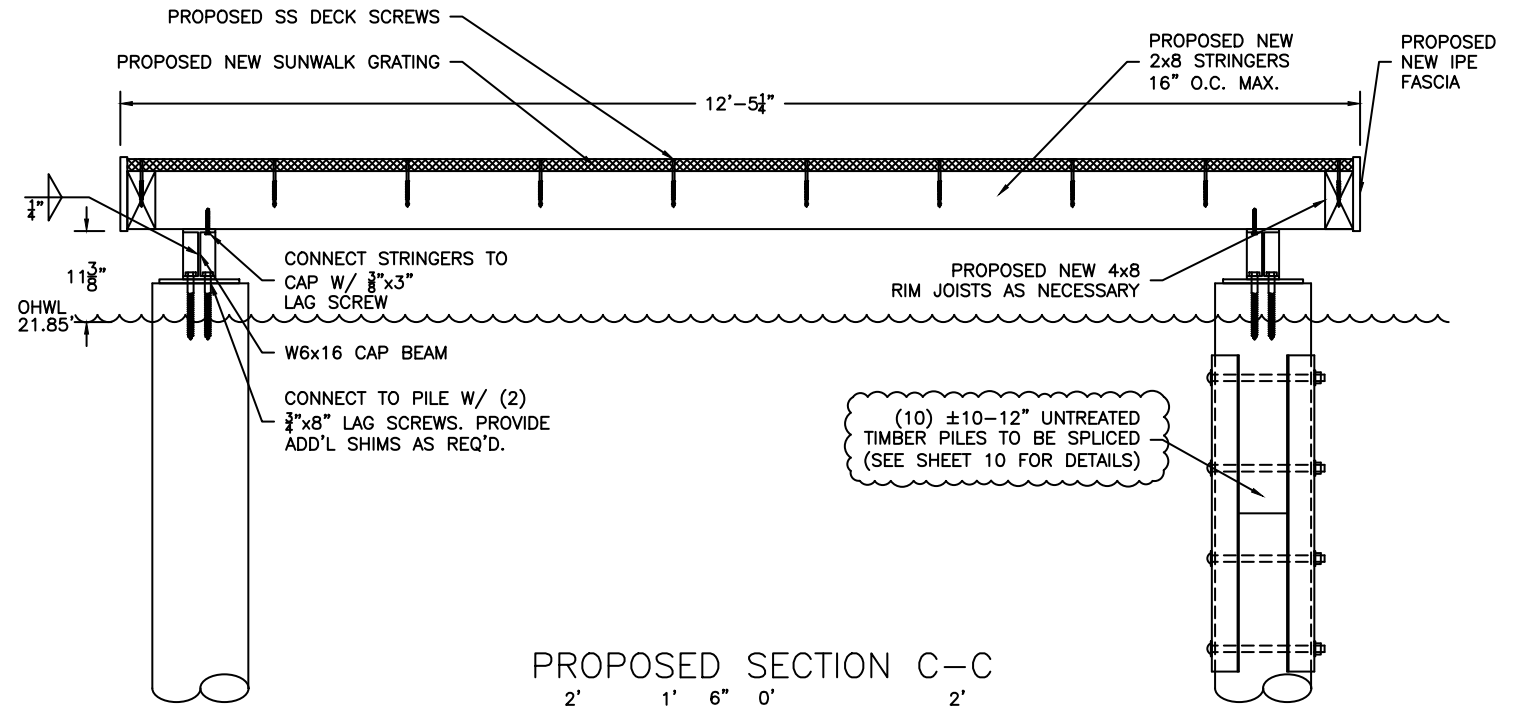
PROPOSED SECTION E-E

SCALE: 3/4"=1'



EXISTING SECTION C-C

SCALE: 1/2"=1'



PROPOSED SECTION C-C

SCALE: 1/2"=1'

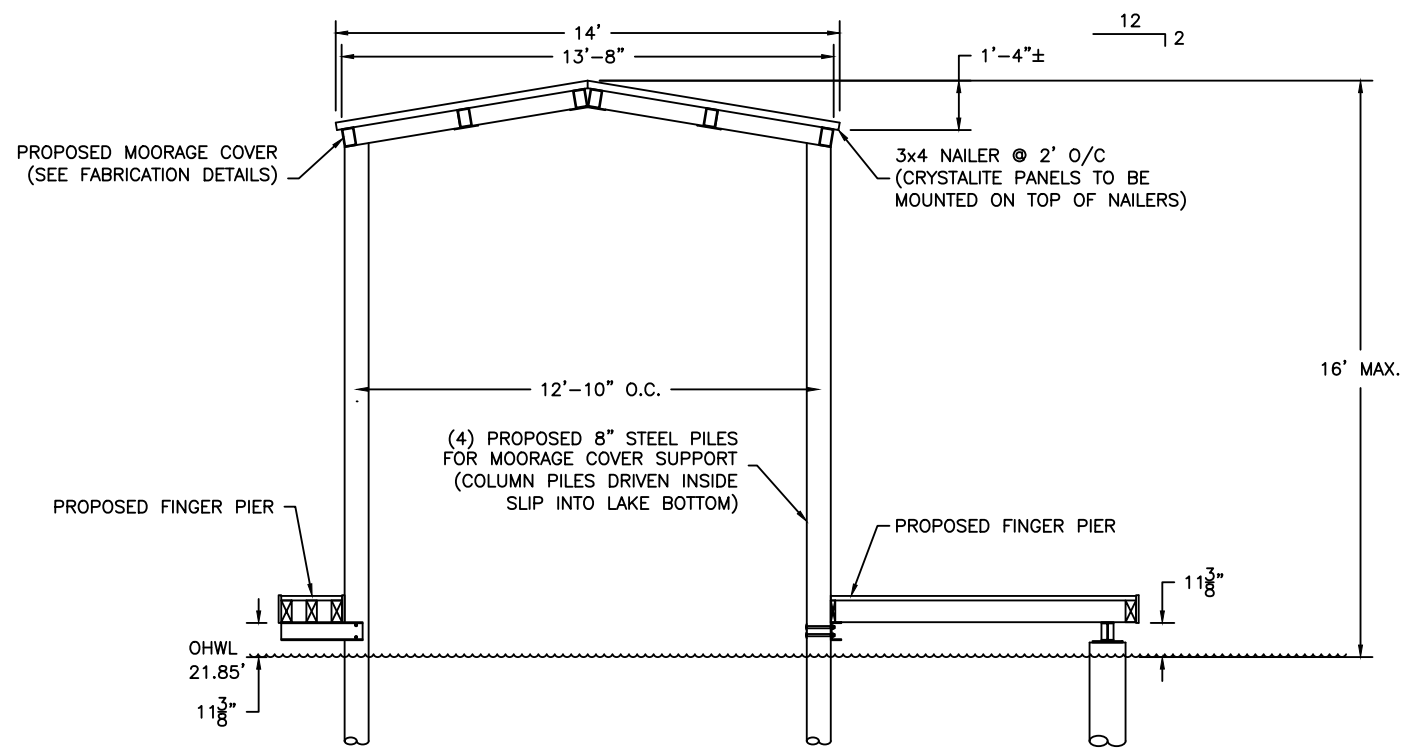
REFERENCE SHEET 5 ON B-SIZE PLAN SET.

**REVISED**  
11/23/2021  
PER WCI STRUCTURAL ANALYSIS OF EXISTING PIER & PILING.

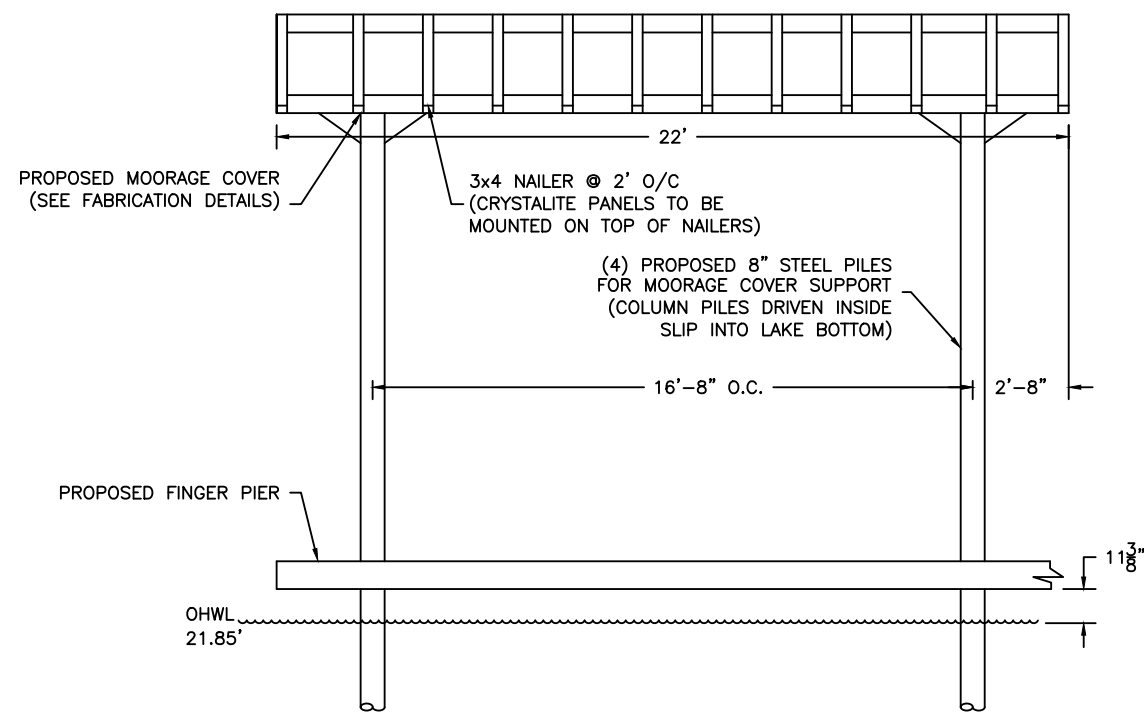
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PROPOSED: PIER REPAIR		
SHEET: 4	OF: 7	NEAR/AT: LAKE WASHINGTON
DATE: 2-7-2020	DWG#: 19-31042-B6-4	

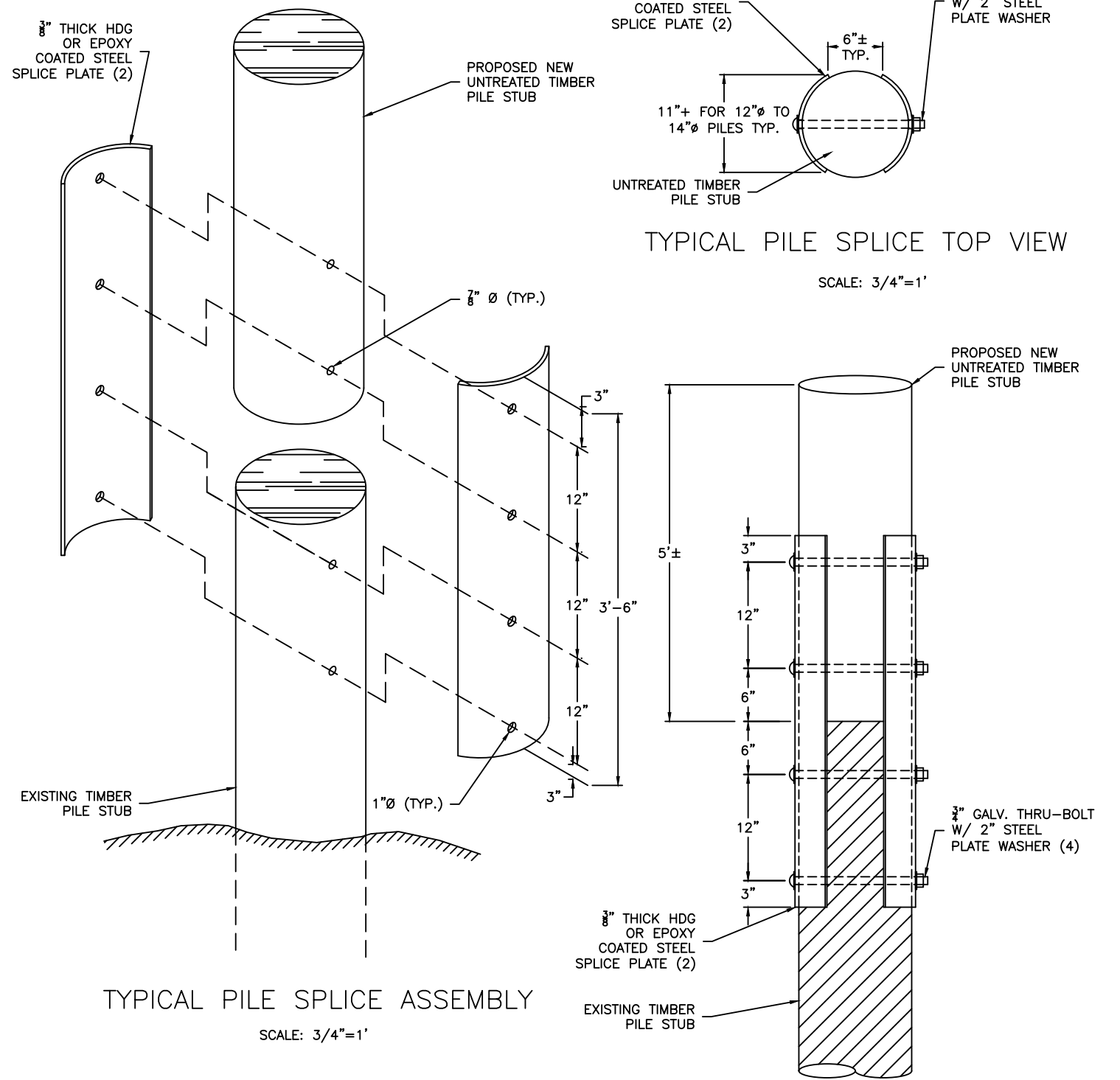




PROPOSED MOORAGE COVER SECTION  
SCALE: 3/16"=1'



PROPOSED MOORAGE COVER SIDE VIEW  
SCALE: 3/16"=1'



TYPICAL PILE SPLICE ASSEMBLY  
SCALE: 3/4"=1'

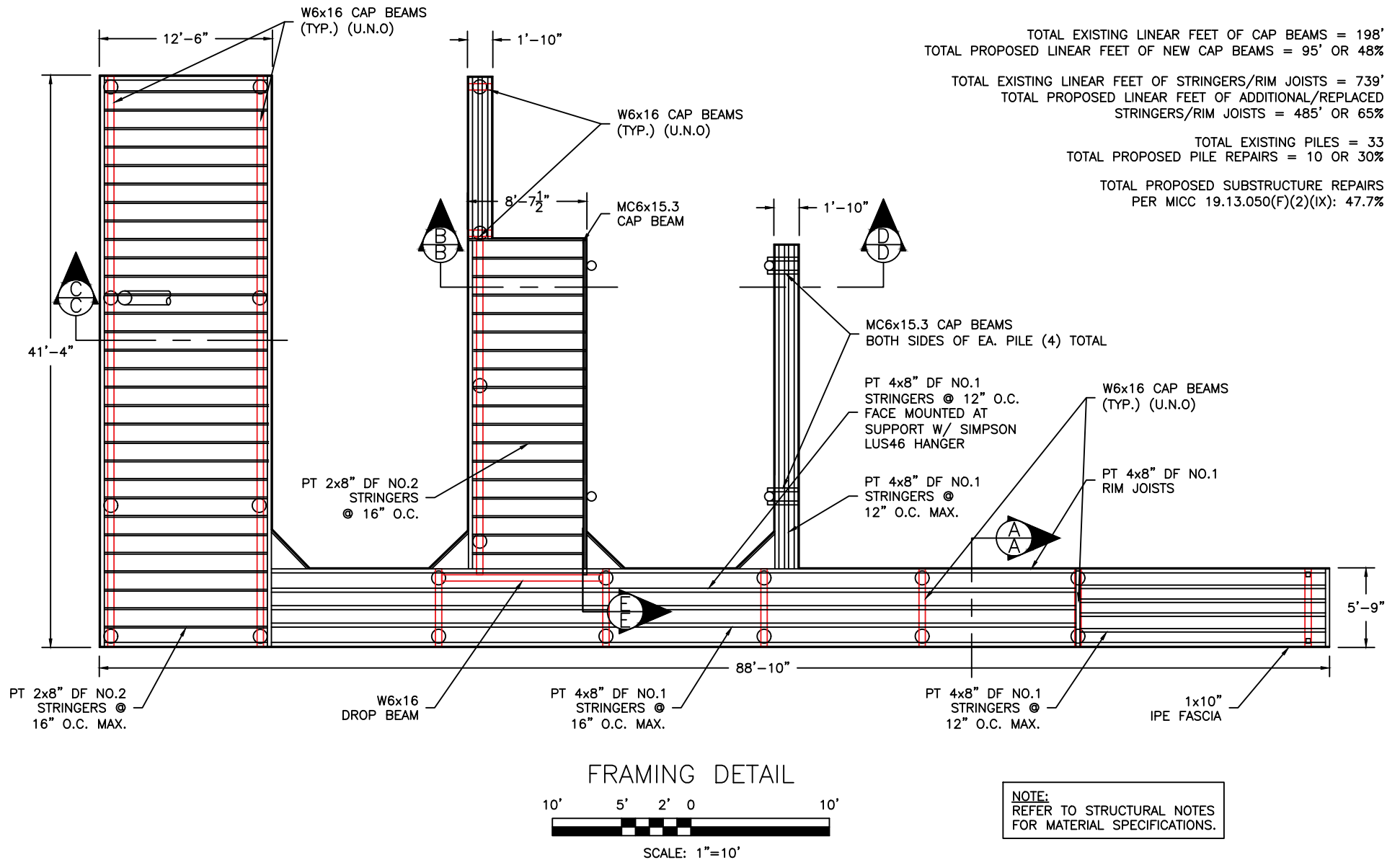
TYPICAL PILE SPLICE TOP VIEW  
SCALE: 3/4"=1'

TYPICAL PILE SPLICE SIDE VIEW  
SCALE: 3/4"=1'

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11/23/2021  
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APPLICANT: DOUGLAS ROSEN	
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SHEET: 5	OF: 7
DATE: 2-7-2020	NEAR/AT: LAKE WASHINGTON
	DWG#: 19-31042-B6-5



TOTAL EXISTING LINEAR FEET OF CAP BEAMS = 198'  
 TOTAL PROPOSED LINEAR FEET OF NEW CAP BEAMS = 95' OR 48%

TOTAL EXISTING LINEAR FEET OF STRINGERS/RIM JOISTS = 739'  
 TOTAL PROPOSED LINEAR FEET OF ADDITIONAL/REPLACED STRINGERS/RIM JOISTS = 485' OR 65%

TOTAL EXISTING PILES = 33  
 TOTAL PROPOSED PILE REPAIRS = 10 OR 30%

TOTAL PROPOSED SUBSTRUCTURE REPAIRS PER MICC 19.13.050(F)(2)(X): 47.7%

**OVERWATER SOLID COVERAGE CALCULATIONS:**  
 LIGHTS = .5889 SF  
 DIVING BOARD = 11.1875 SF  
 BOATLIFT BOXES = 8.5 SF  
 MECHANICAL BOX = 11.8125 SF  
 DOCK BOX = 13.1875 SF  
 TOTAL = 45.3 SF

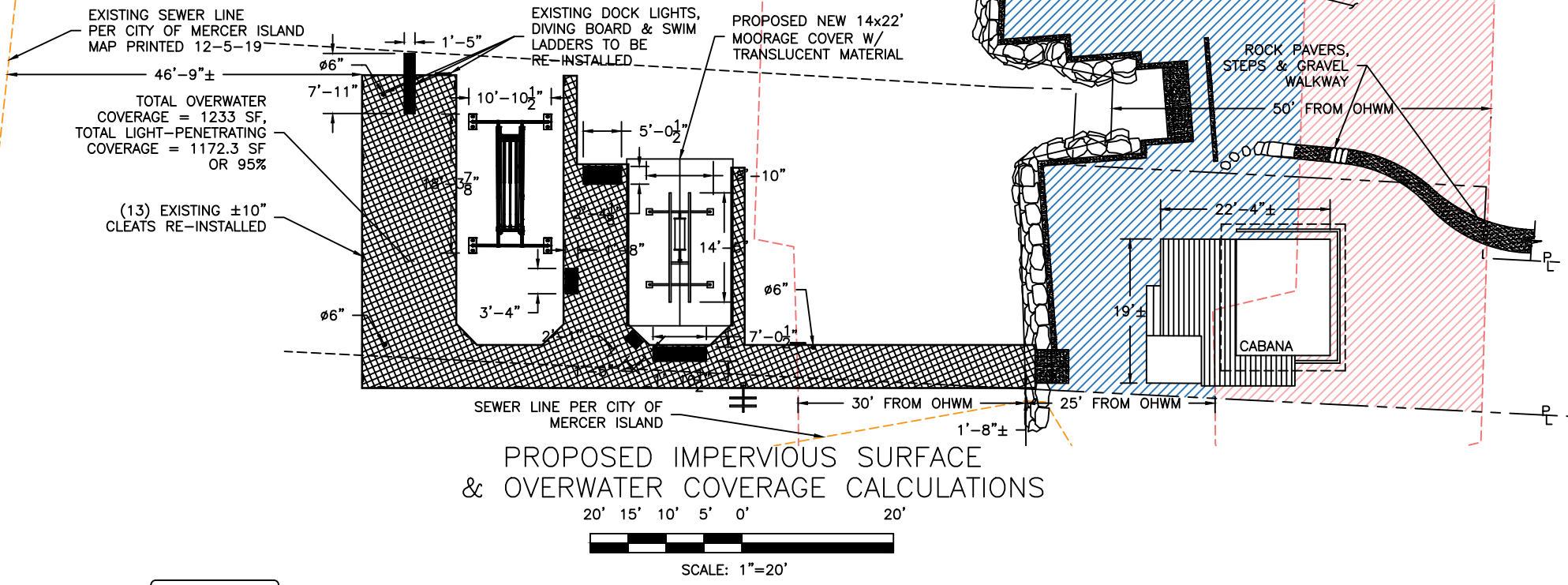
**OVERWATER LIGHT-PENETRATING COVERAGE CALCULATIONS:**  
 GRATING = 1172.3 SF

OHWM = 21.85' AT BATTERED ROCK BULKHEAD

0-25' SHOREWARD OF OHWM = 3787 SF  
 TOTAL IMPERVIOUS SURFACE = 678 SF OR 18%

25-50' SHOREWARD OF OHWM = 3706 SF  
 TOTAL IMPERVIOUS SURFACE = 188 SF OR 5%

**JOB SITE**  
 DOUGLAS & DEBORAH ROSEN  
 5995 SE 30TH ST  
 MERCER ISLAND, WA 98040  
 217450-0100



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PER WCI STRUCTURAL ANALYSIS OF EXISTING PIER & PILING.

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SHEET: 6	OF: 7	NEAR/AT: LAKE WASHINGTON
DATE: 2-7-2020	DWG#: 19-31042-B6-6	

**STRUCTURAL NOTES**

**CODE:**  
THE INTERNATIONAL BUILDING CODE (IBC) 2015 EDITION AND THE 2015 INTERNATIONAL EXISTING BUILDING CODE (IEBC), WITH THE STATE OF WASHINGTON AMENDMENTS.

**LIVE LOADS:**  
RESIDENTIAL PIER (FULL DECK REPLACEMENT) 60 PSF

**LATERAL LOADS (BASED ON ASCE 7):**  
WIND DESIGN DATA:  
WIND SPEED 110 MPH  
RISK CATEGORY I  
EXPOSURE C  
TOPOGRAPHICAL FACTOR 1.0

**EARTHQUAKE DESIGN DATA (USING USGS SEISMIC HAZARD MAPS):**  
LATITUDE 47.5837898 DEGREES (°N)  
LONGITUDE -122.2519332 DEGREES (°W)  
Ss 1.407  
S1 0.490  
SITE CLASS D  
SDS 0.938  
SD1 0.490  
IMPORTANCE FACTOR 1.0  
SEISMIC DESIGN CATEGORY D

**BASIC SEISMIC-FORCE-RESISTING SYSTEM:**  
STEEL ORDINARY CANTILEVER COLUMN SYSTEMS  
R 1.25  
Cs 0.75

**STEEL PILING:**  
8" PILING SHALL BE X-STRONG ASTM A252, GRADE "3" Fy = 45,000 PSI.

PILES SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR ALL SCRAPES, DINGS, WELDS, ETC. IN ACCORDANCE WITH ASTM A780.

**PILE INSTALLATION:**  
THE PILES SHALL BE DRIVEN TO REFUSAL USING A VIBRATOR OR DIESEL HAMMER. OUR DESIGN ASSUMES THAT THERE IS A LAYER OF SOFT SOIL BELOW THE MUDLINE THAT IS UP TO 20 FEET DEEP THAT IS UNDERLAIN BY DENSE SOIL THAT IS SUFFICIENT FOR BEARING. THE DEPTH OF THIS SOFT SOIL LAYER SHOULD BE MONITORED AND RECORDED TO CONFIRM THAT IT IS NOT MORE THAN 20 FEET THICK. NOTIFY ENGINEER IF THE SOFT SOIL LAYER IS MORE THAN 20 FEET THICK. THE PILES SHALL BE DRIVEN A MINIMUM OF 5 FEET INTO THE DENSE BEARING SOIL. THE DEPTH OF EMBEDMENT INTO THE DENSE BEARING SOIL SHOULD BE MONITORED AND RECORDED TO CONFIRM THAT THE MINIMUM EMBEDMENT IS ACHIEVED. IF THE MINIMUM EMBEDMENT INTO THE DENSE BEARING SOIL IS NOT REACHED, THEN OVERDRIVING OF THE PILES WILL BE NECESSARY.

**STRUCTURAL & MISCELLANEOUS STEEL:**  
WIDE-FLANGE BEAMS ASTM A992 Fy = 50,000 PSI. CHANNELS, PLATES AND ANGLES ASTM A36 Fy = 36,000 PSI. ALL FABRICATION & ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AISC "STEEL CONSTRUCTION MANUAL."

ALL STEEL SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR ALL SCRAPES, DINGS, WELDS, ETC., IN ACCORDANCE WITH ASTM A780.

**STEEL BOLTS:**  
ALL BOLTS AND THREADED RODS SHALL BE HIGH STRENGTH HOT-DIPPED GALVANIZED UNLESS NOTED. HIGH STRENGTH BOLTS SHALL BE A325-N HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153-CLASS C UNLESS NOTED OTHERWISE. GALVANIZED BOLTS SHOULD BE INSTALLED IN STANDARD SIZE HOLES UNLESS NOTED OTHERWISE.

**SCREWS:**  
SCREWS SHALL CONFORM TO ANSI/ASME STANDARD B18.6.1. SCREW DIAMETERS SHALL BE AS FOLLOWS:  
No. 8 0.164" DIAMETER  
REFERENCE DRAWINGS FOR MINIMUM SCREW LENGTHS. ALL SCREWS EXPOSED TO WEATHER OR IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153-CLASS D.

**LAG SCREWS:**  
LAG SCREWS SHALL CONFORM TO ANSI/ASME STANDARD B18.2.1. REFERENCE DRAWINGS FOR MINIMUM SCREW DIAMETER AND LENGTHS. ALL LAG SCREWS EXPOSED TO WEATHER OR IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153-CLASS C.

**NAILS:**  
NAILING SHALL BE IN ACCORDANCE W/ FASTENING SCHEDULE TABLES 11-13 IN ICC-ES EVALUATION REPORT ESR-1539 PREPARED FOR THE INTERNATIONAL STAPLE, NAIL AND TOOL ASSOCIATION (ISANTA). ALL NAILS SHALL HAVE STANDARD SIZE ROUND HEADS UNLESS NOTED OTHERWISE ON THE DRAWINGS. NAIL LENGTHS AND DIAMETERS SHALL BE AS FOLLOWS:  
10d 3" x 0.131" DIA.  
10d COMMON 3" x 0.148" DIA.  
16d COMMON 3 1/2" x .162" DIA

ALL NAILS EXPOSED TO WEATHER OR IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153-CLASS D.

**LIGHT GAUGE FRAMING CONNECTORS:**  
NOTATIONS ON DRAWINGS RELATING TO FRAMING CLIPS, JOIST HANGERS AND OTHER CONNECTING DEVICES REFER TO CATALOG NUMBERS OF CONNECTORS MANUFACTURED BY THE SIMPSON STRONG-TIE COMPANY, DUBLIN, CALIFORNIA. EQUIVALENT DEVICES BY OTHER MANUFACTURERS MAY BE SUBSTITUTED PROVIDED THEY HAVE ICC-ES APPROVAL FOR EQUAL LOAD CAPACITIES. CONNECTORS SHALL BE FASTENED TO THE FRAMING MEMBERS USING THE NUMBER AND TYPE OF FASTENERS CALLED FOR BY MANUFACTURER.

HANGERS AND CLIPS IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE ZMAX/HDG GALVANIZED CONNECTORS. ALL HANGER FASTENERS USED WITH ZMAX/HDG GALVANIZED CONNECTORS SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153-CLASS D OR SDS SCREWS WITH PROPRIETARY COATING.

**STRUCTURAL LUMBER GRADES AND SHEATHING RATINGS:**  
ALL LUMBER SHALL BE GRADED IN ACCORDANCE WITH CURRENT WPA STANDARD GRADING RULES FOR WESTERN LUMBER. USE THE FOLLOWING SPECIES AND MINIMUM GRADE:

2x STRINGERS D.F.-L #2 Fb=900 PSI  
4x STRINGERS D.F.-L #1 Fb=1,000 PSI

**WOOD FOR OVER-WATER AND IN-WATER:**  
ALL WOOD PARTIALLY OR FULLY SUBMERGED IN WATER SHALL BE TREATED WITH AMMONIACAL COPPER ZINC ARSENATE (ACZA), EXCEPT WHEN WOOD IS IN STATE-OWNED AQUATIC LANDS (SOAL) MANAGED BY THE DEPARTMENT OF NATURAL RESOURCES (DNR) WHERE TREATMENT TO WOOD IN WATER/IN SPLASH ZONE IS PROHIBITED. ALL WOOD INSTALLED ABOVE WATER (WHERE CLEARLY OUT OF THE SPLASH ZONE) SHALL BE TREATED WITH AMMONIACAL COPPER ZINC ARSENATE (ACZA). WOOD TREATED WITH PENTACHLOROPHENOL, CREOSOTE, CHROMATE COPPER ARSENATE (CCA), OR COMPARABLY TOXIC COMPOUNDS IS PROHIBITED FOR PIERS, DOCKS, AND PILING.

WOOD SHALL BE TREATED IN ACCORDANCE WITH AWP STANDARD U1. USE THE FOLLOWING MINIMUM AWP USE CATEGORIES:  
WOOD OVER WATER: UC4B  
WOOD IN WATER: UC4C

TREAT CUT ENDS OF AND HOLES IN TREATED WOOD WITH SAFECOAT'S DYNOSEAL OR SEAL-IT-GREEN XTREME PLANT BASED STAIN.

**JET SKI LIFT PIER FRAMING REQUIREMENTS**  
JET SKI LIFTS MANUFACTURED BY 'BOAT LIFT INTERNATIONALS' WILL BE USED. ACCORDING TO THE STRUCTURAL CALCULATIONS, THE P.T. 4X8 EDGE STRINGER IS SUFFICIENT TO SUPPORT THE UPPER MOUNTING BRACKET OF JET SKI LIFT AT THE LOCATION SHOWN ON THE 'PROPOSED DETAIL VIEW' ON SHEET 5 (DATE 2-7-2020). IF MORE THAN ONE JET SKI LIFT IS INSTALLED, IT SHOULD BE LOCATED AT LEAST ONE BENT AWAY FROM THE FIRST LIFT ON THE SOUTH SIDE SO THAT IT IS SUPPORTED BY A SEPARATE STRINGER. LATERAL SUPPORT FOR THE BASE OF THE JET SKI LIFT WILL BE DESIGNED BY THE MANUFACTURER. THE ATTACHMENTS OF THE JET SKI LIFT TO THE PIER WILL BE DESIGNED BY THE MANUFACTURER. NOTIFY ENGINEER IF A DIFFERENT MANUFACTURER IS USED OR IF MORE THAN TWO JET SKI LIFTS ARE TO BE INSTALLED.



The engineering seal on these drawings represents the following limited scope of structural engineering design:

- Design of pier framing members: cap beams and joists.
- Analysis of the proposed pile splice and timber riser connections.
- Design of the Jet Ski lift attachments.
- Design of the steel piles supporting the moorage roof.

Design is in accordance with the 2015 International Building Code and 2015 International Existing Building Code. Our scope of work does not include analysis and design of the grating, bulkhead, connection to grade, moorage cover roof and/or as associated connections.

The site information, dimensions and plan layout, has been provided to us by Waterfront Construction, Inc.

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11/23/2021  
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