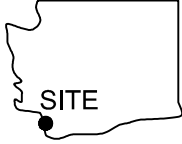


8/23/2016 4:41 PM \\ecoserver2\company\EL\SIWA\Cowlitz\Kalama\2367.pnd engineers\2367.02-port of kalama marina renovation\2367.02-figures\2367.02_BE.dwg Jennifer

WASHINGTON



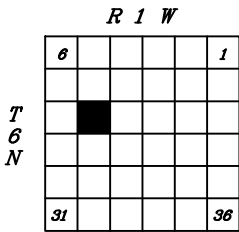
46.0077° Latitude
-122.8479° Longitude

LOCATION MAP

WATER LEVEL INFORMATION

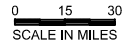
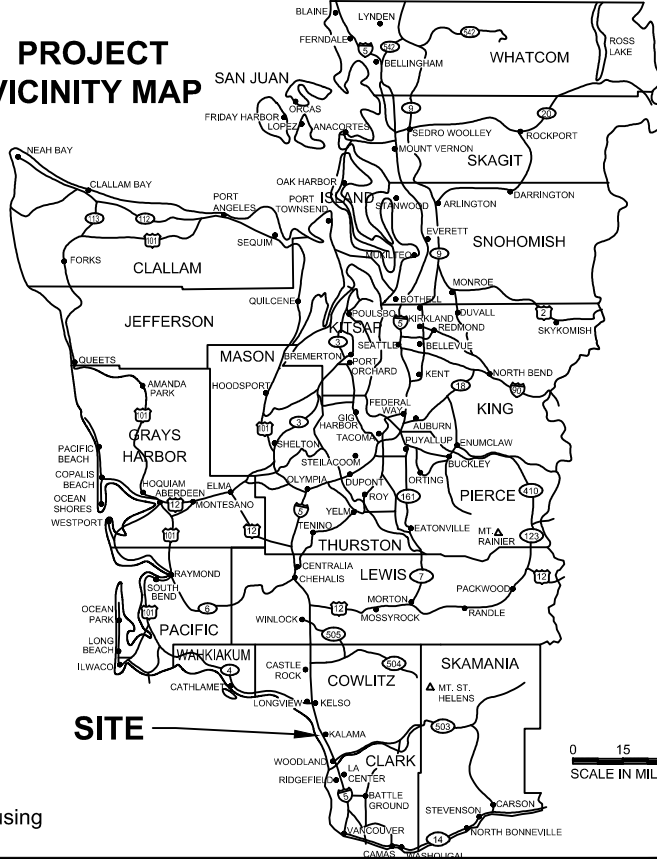
MHHW	+4.0'
OHW	+3.5'
MHW	+3.5'
MLW	+0.3'
MLLW	+0.0'

LAT: 46° 00' 26.90"N
LONG: 122° 50' 52.58"W



NOTE:
USGS topographic quadrangle map reproduced using MAPTECH Inc., Terrain Navigator Pro software.

PROJECT VICINITY MAP



PROPOSED: Overwater Area Increase
IN Columbia River
NEAR:
COUNTY: Cowlitz **STATE:** WA
SHEET 1 OF 17
DATE: 8/23/16

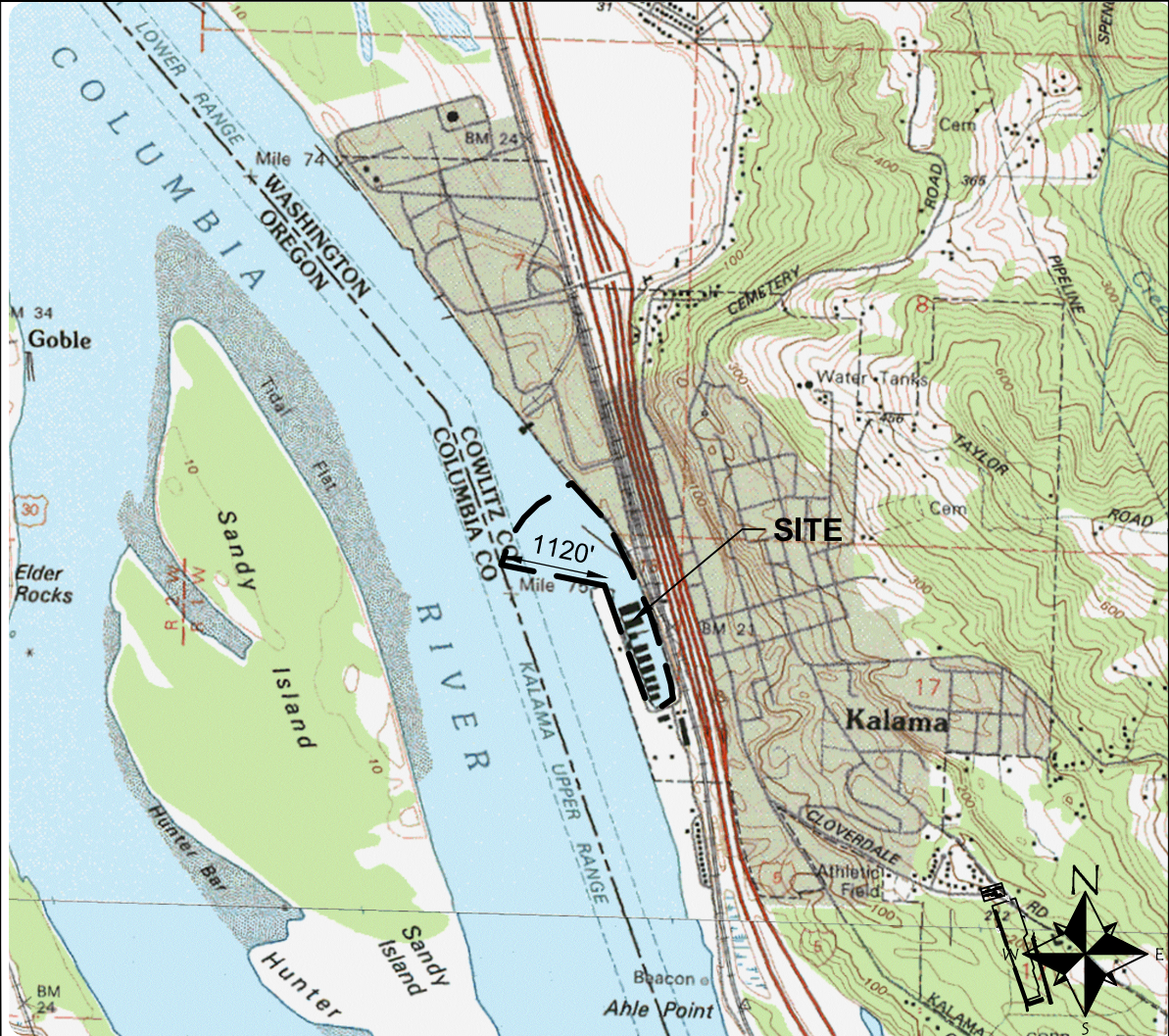
Vicinity Map & Action Area
APPLICANT: PND Engineers
PROJECT NAME: Port of Kalama Marina Renovation
REFERENCE #:
SITE LOCATION ADDRESS:
110 West Marine Drive
Kalama, WA 98625

PURPOSE:
Marina Restoration
DATUM: NGVD29
ADJACENT PROPERTY OWNERS:

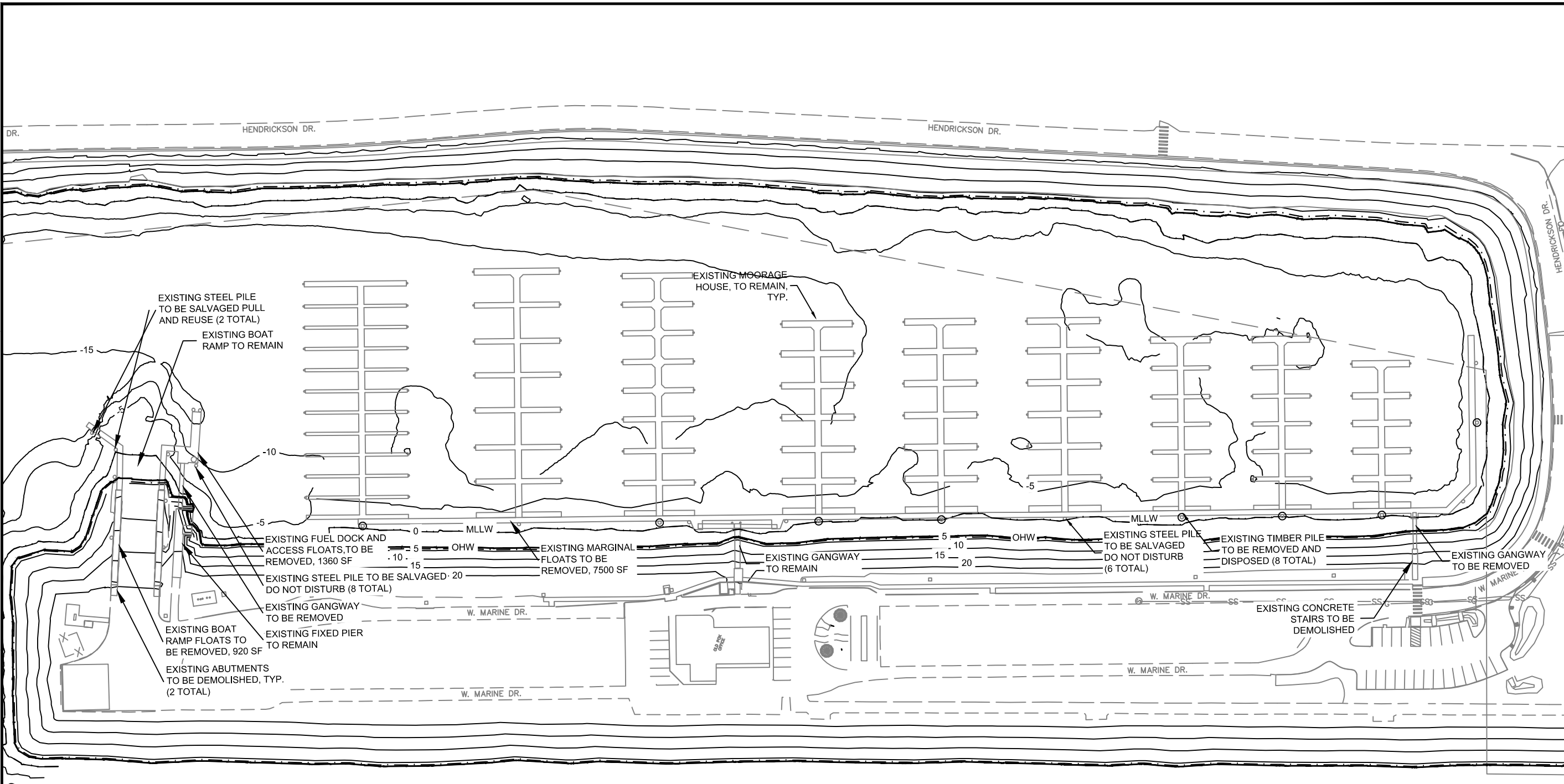
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Longview, WA 98632
Phone: (360) 578-1371

SCALE IN FEET

Ecological Land Services



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PROPOSED: Overwater Area Increase
 IN Comlumbia River
NEAR:
COUNTY: Cowlitz **STATE:** WA
SHEET 2 OF 17
DATE: 8/23/16

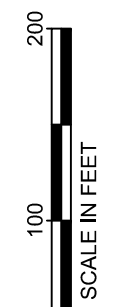
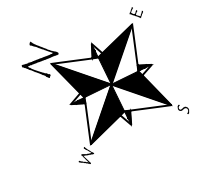
Existing Conditions & Demolition Plan
APPLICANT: PND Engineers
PROJECT NAME: Port of Kalama Marina Renovation
REFERENCE #:
SITE LOCATION ADDRESS:
 110 West Marine Drive
 Kalama, WA 98625

PURPOSE:
 Marina Restoration
DATUM: NAVD 29-47
ADJACENT PROPERTY OWNERS:

LEGEND

⊙	TIMBER PILE
○	STEEL PILE

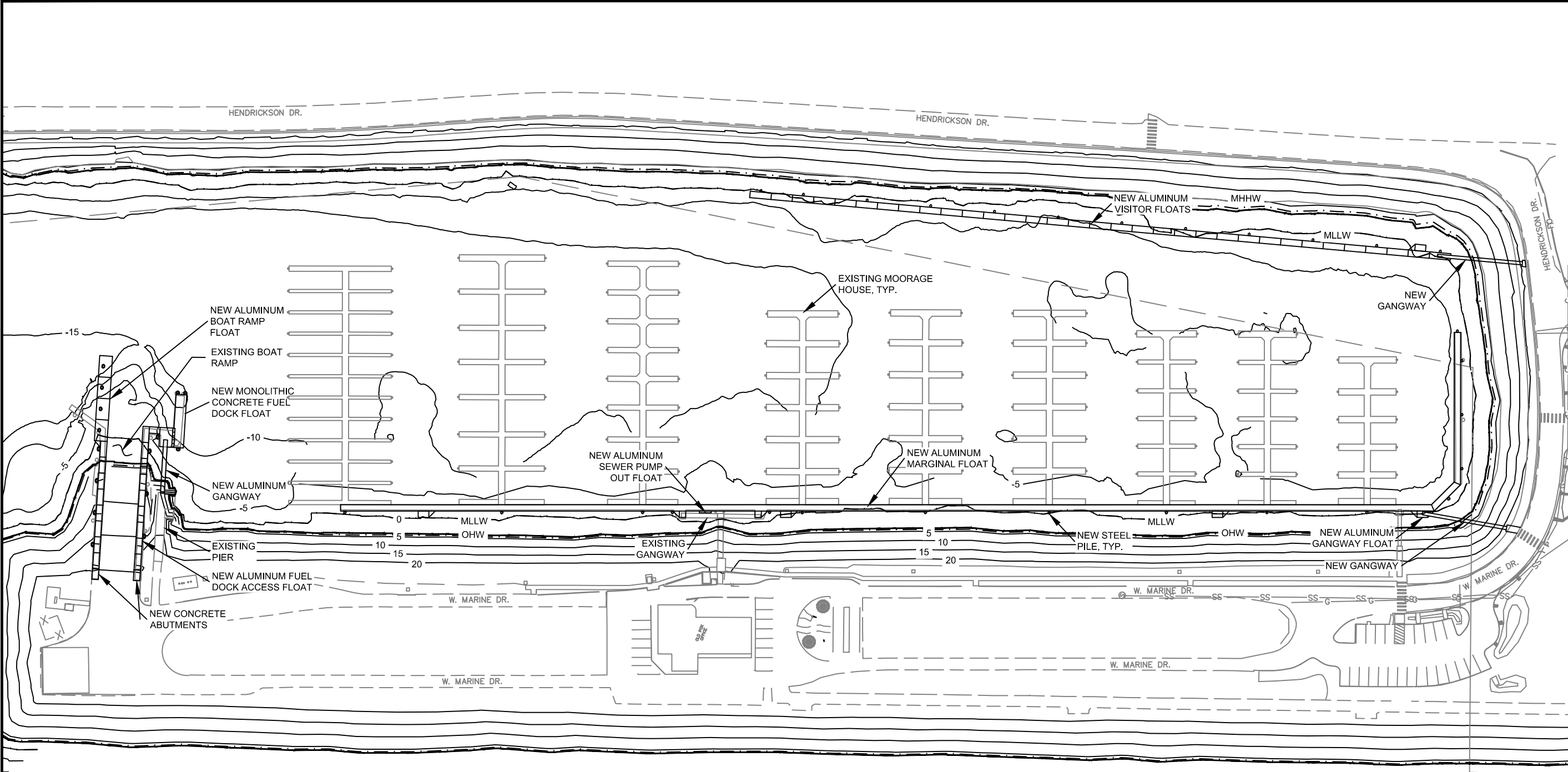
NOTE(S):
 1. Base map from PND Engineers, Inc.



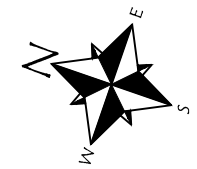
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NOTE(S):
 1. Base map from PND Engineers, Inc.



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PURPOSE:
Marina Restoration

APPLICANT: PND Engineers

PROJECT NAME: Port of Kalama Marina Renovation

REFERENCE #:

DATE: NAVD 29-47

ADJACENT PROPERTY OWNERS:

PROPOSED: Overwater Area Increase
 IN Comlumbia River

NEAR:

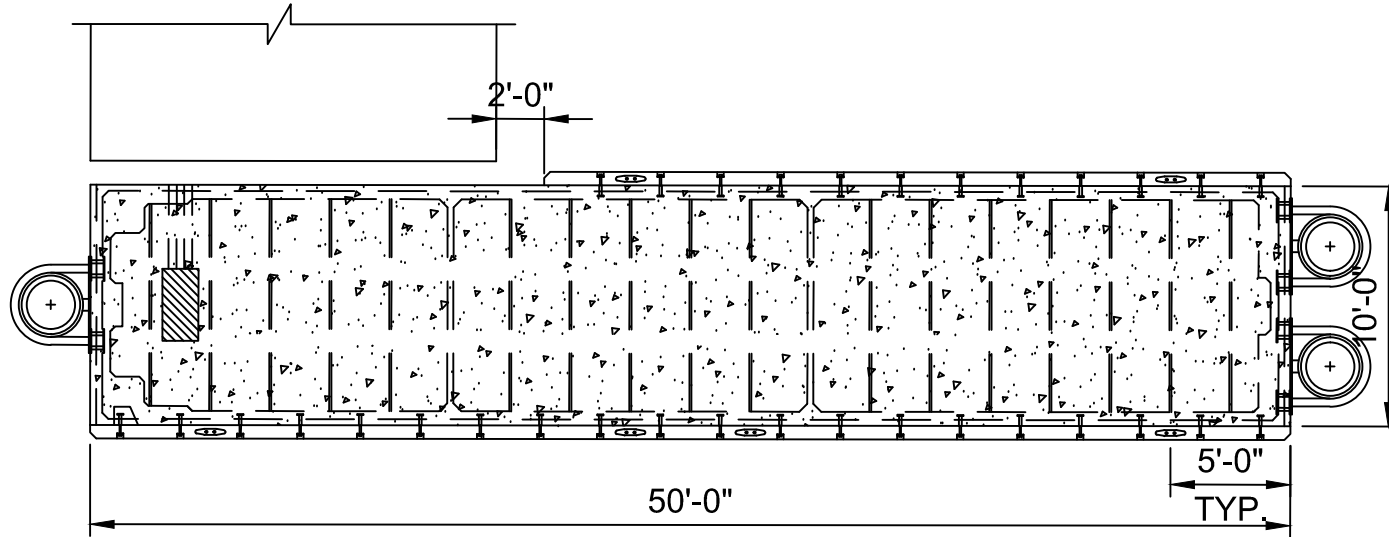
COUNTY: Cowlitz **STATE:** WA

SHEET 3 OF 17

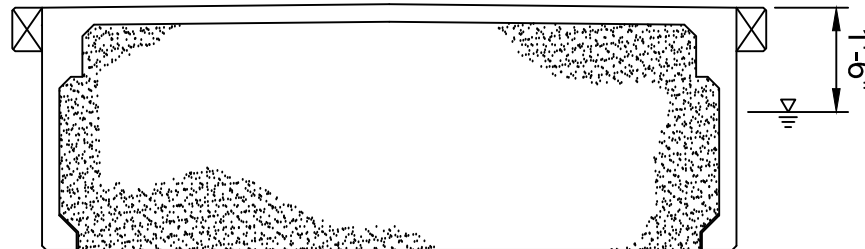
DATE: 8/23/16

Overall Site Plan

SITE LOCATION ADDRESS:
 110 West Marine Drive
 Kalama, WA 98625



FLOAT PLAN



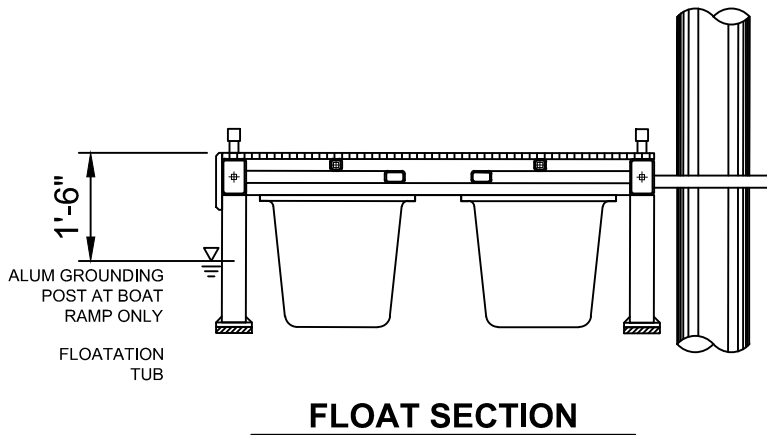
FLOAT SECTION

NOT TO SCALE

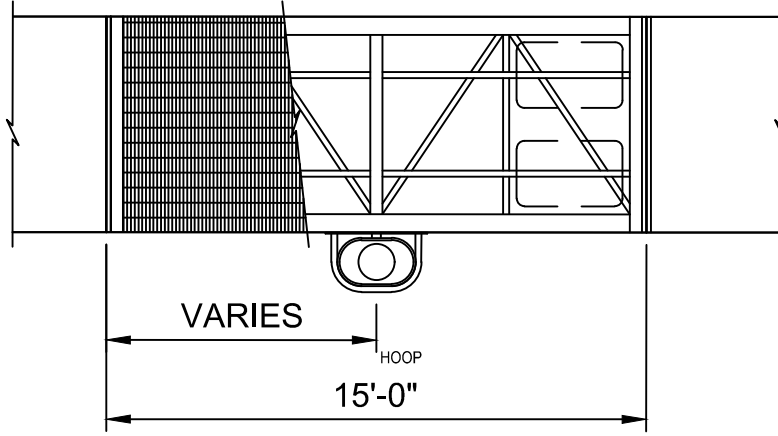


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<p>PURPOSE: Marina Restoration</p>	<p>Proposed Monolithic Concrete Float Detail APPLICANT: PND Engineers</p>	<p>PROPOSED:Overwater Area Increase</p>
<p>DATUM: N/A</p>	<p>PROJECT NAME: Port of Kalama Marina Renovation</p>	<p>IN Comlumbia River</p>
<p>ADJACENT PROPERTY OWNERS:</p>	<p>REFERENCE #: SITE LOCATION ADDRESS: 110 West Marine Drive Kalama, WA 98625</p>	<p>NEAR: COUNTY: Cowlitz STATE: WA SHEET 4 OF 17 DATE: 8/23/16</p>



FLOAT SECTION



FLOAT PLAN

NOTE(S):

1. Base map from PND Engineers, Inc.

NOT TO SCALE

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 Phone: (360) 578-1371



PURPOSE:
 Marina Restoration

DATUM: N/A

ADJACENT PROPERTY OWNERS:

Aluminum Float With External Pile Hoop
APPLICANT: PND Engineers
PROJECT NAME: Port of Kalama Marina Renovation
REFERENCE #:

SITE LOCATION ADDRESS:
 110 West Marine Drive
 Kalama, WA 98625

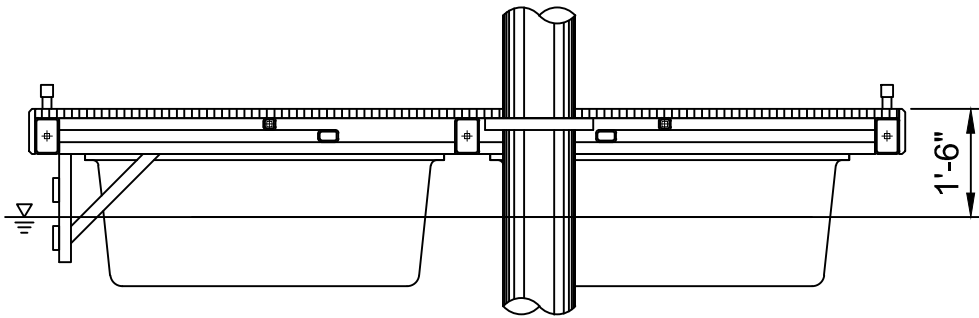
PROPOSED: Overwater Area Increase

IN Comlumbia River

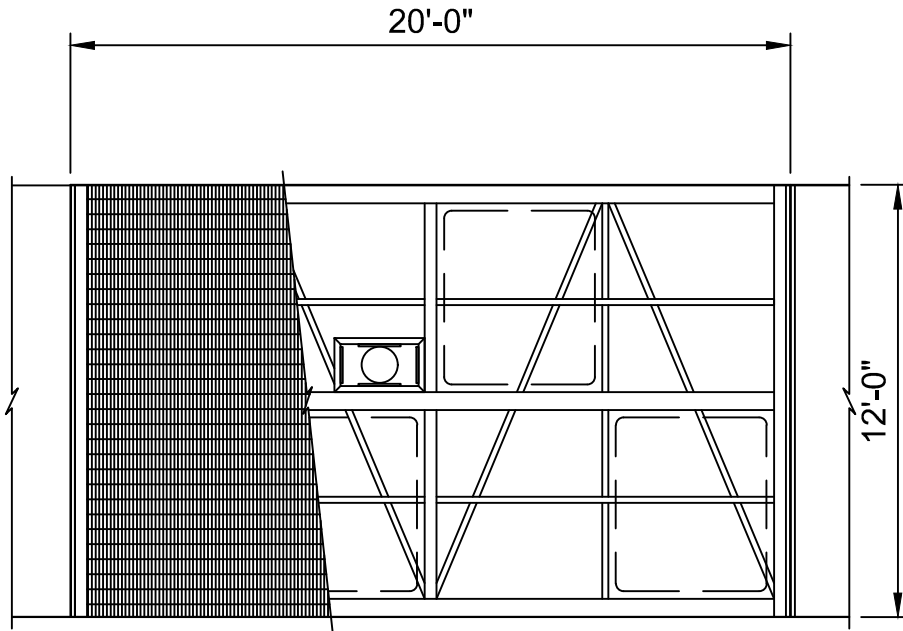
NEAR:
COUNTY: Cowlitz **STATE:** WA

SHEET 5 **OF** 17

DATE: 8/23/16



FLOAT SECTION



FLOAT PLAN

NOTE(S):

1. Base map from PND Engineers, Inc.

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 Phone: (360) 578-1371



PURPOSE:
 Marina Restoration

DATUM: N/A

ADJACENT PROPERTY OWNERS:

PURPOSE: Aluminum Float With Internal Pile Hoop
APPLICANT: PND Engineers
PROJECT NAME: Port of Kalama Marina Renovation
REFERENCE #:

SITE LOCATION ADDRESS:
 110 West Marine Drive
 Kalama, WA 98625

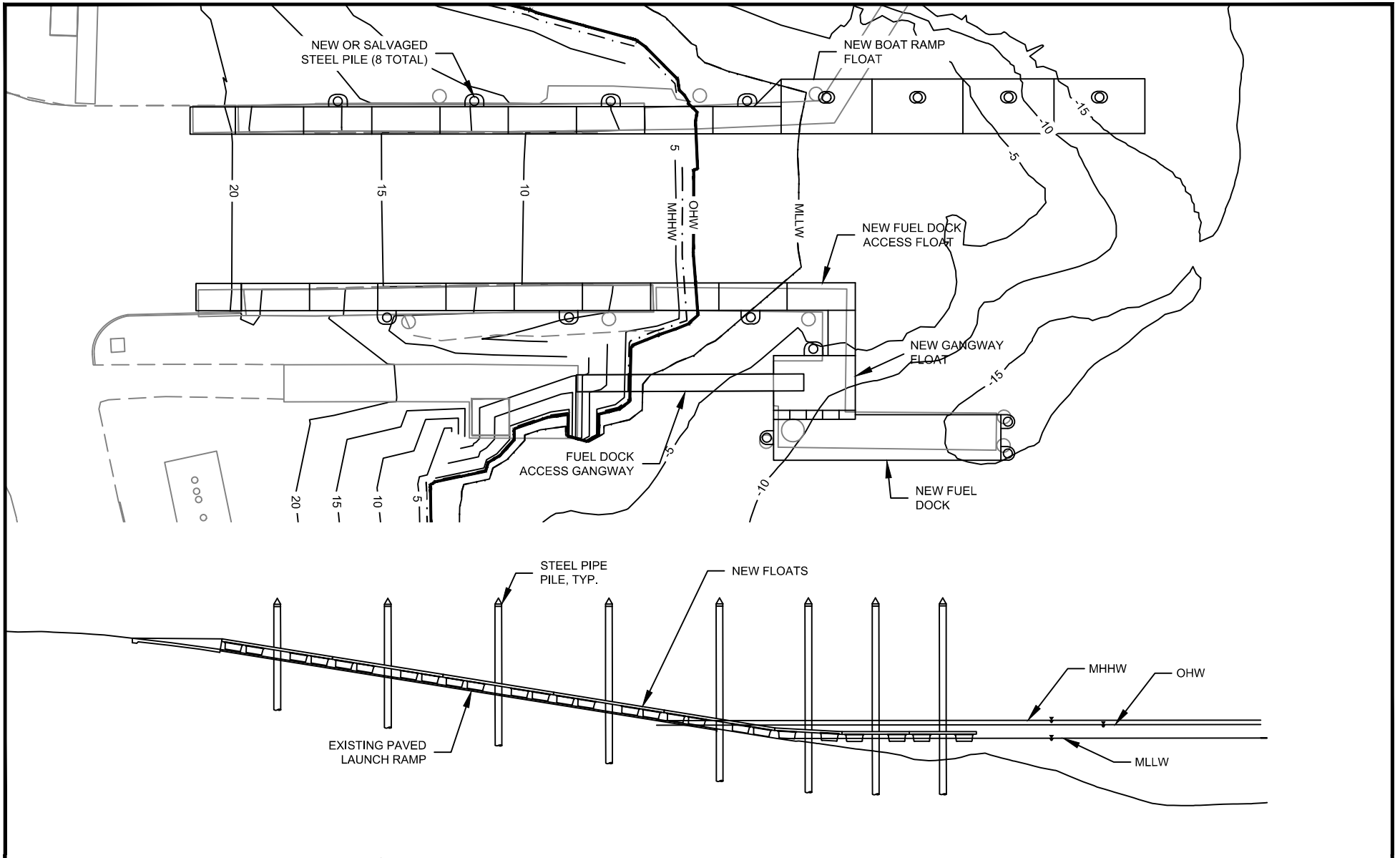
PROPOSED: Overwater Area Increase

IN: Comlumbia River

NEAR:
COUNTY: Cowlitz **STATE:** WA

SHEET 6 OF 17

DATE: 8/23/16



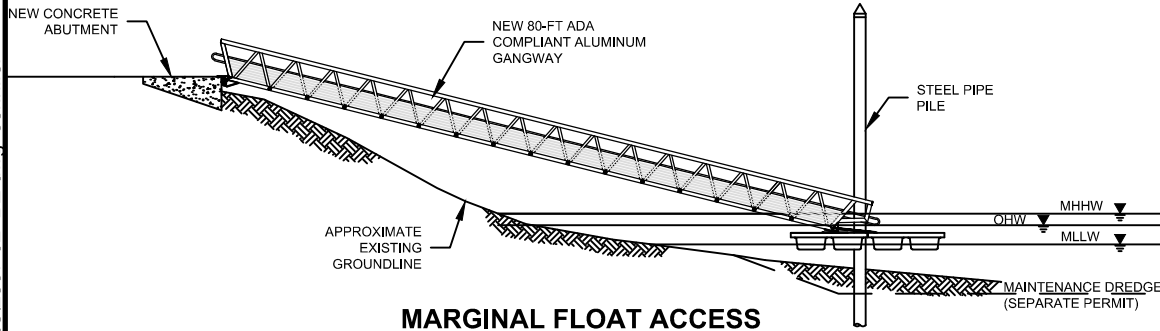
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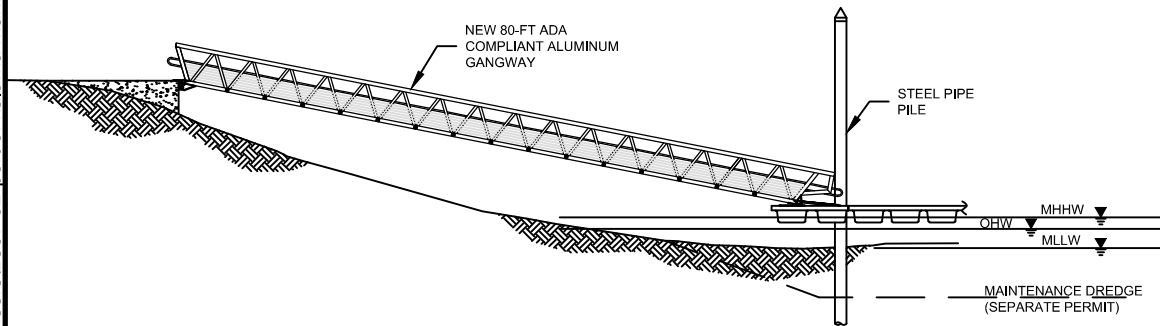
1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371

<p>PURPOSE: Marina Restoration</p>	<p>Boat Ramp Float Plan & Elevation APPLICANT: PND Engineers</p>	<p>PROPOSED:Overwater Area Increase</p>
<p>DATUM: NAVD 29-47</p>	<p>PROJECT NAME: Port of Kalama Marina Renovation</p>	<p>IN Comlumbia River</p>
<p>ADJACENT PROPERTY OWNERS:</p>	<p>REFERENCE #: SITE LOCATION ADDRESS: 110 West Marine Drive Kalama, WA 98625</p>	<p>NEAR: COUNTY: Cowlitz STATE: WA SHEET 7 OF 17 DATE: 8/23/16</p>

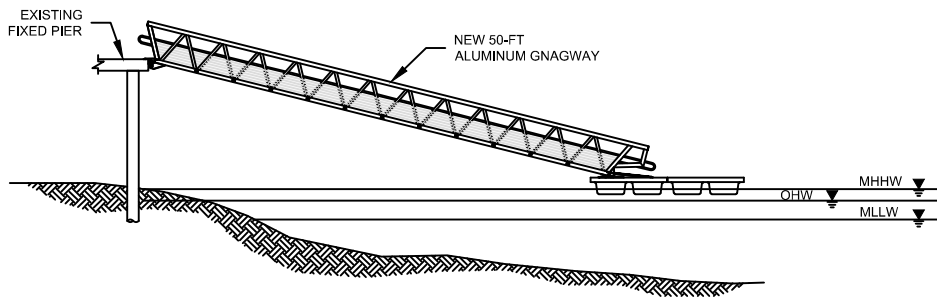
8/23/2016 4:41 PM \\ECOSERVER2\Company\ELSWA\Cowlitz\Kalama\2367-pnd engineers\2367.02-figures\2367.02_BE.dwg Jennifer



MARGINAL FLOAT ACCESS GANGWAY ELEVATION



VISITOR FLOAT ACCESS GANGWAY ELEVATION



FUEL DOCK ACCESS GANGWAY ELEVATION

NOTE(S):

1. Base map from PND Engineers, Inc.

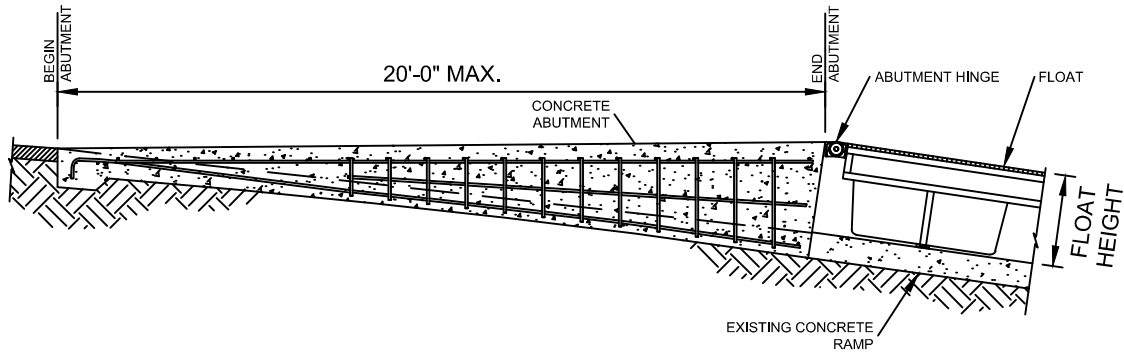
PROPOSED: Overwater Area Increase
 IN Comlumbia River
NEAR:
COUNTY: Cowlitz **STATE:** WA
SHEET 8 OF 17
DATE: 8/23/16

Proposed Gangway Elevations
APPLICANT: PND Engineers
PROJECT NAME: Port of Kalama Marina Renovation
REFERENCE #:
SITE LOCATION ADDRESS:
 110 West Marine Drive
 Kalama, WA 98625

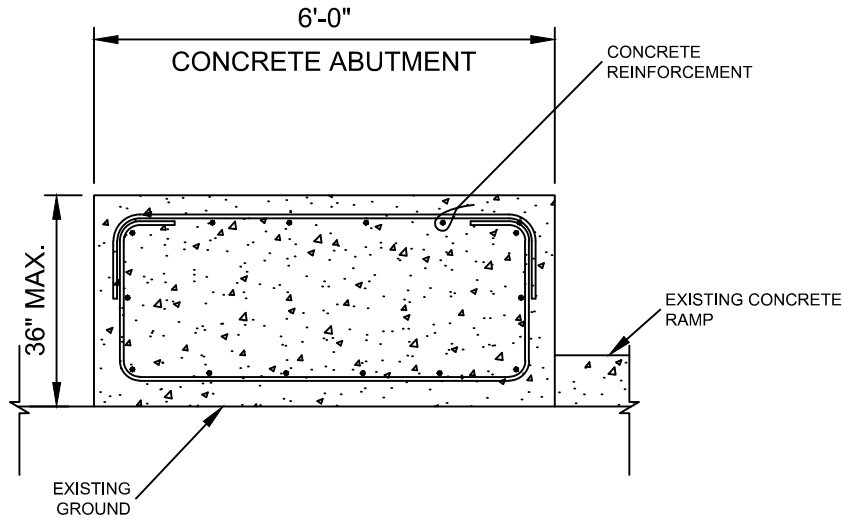
PURPOSE:
 Marina Restoration
DATUM: N/A
ADJACENT PROPERTY OWNERS:

NOT TO SCALE
 1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371





ABUTMENT PROFILE



ABUTMENT SECTION

NOTE(S):

1. Base map from PND Engineers, Inc.

PROPOSED: Overwater Area Increase
 IN Comlumbia River
NEAR:
COUNTY: Cowlitz **STATE:** WA
SHEET 9 OF 17
DATE: 8/23/16

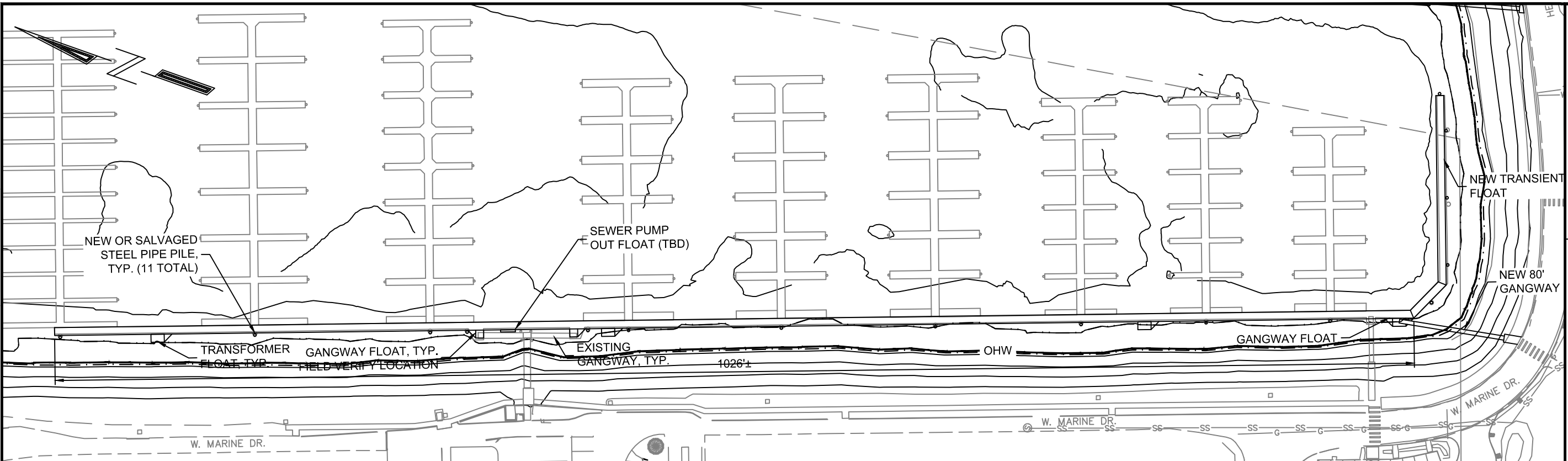
Typical Float Abutment Profile & Section
APPLICANT: PND Engineers
PROJECT NAME: Port of Kalama Marina Renovation
REFERENCE #:
SITE LOCATION ADDRESS:
 110 West Marine Drive
 Kalama, WA 98625

PURPOSE:
 Marina Restoration
DATUM: N/A
ADJACENT PROPERTY OWNERS:

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 Phone: (360) 578-1371

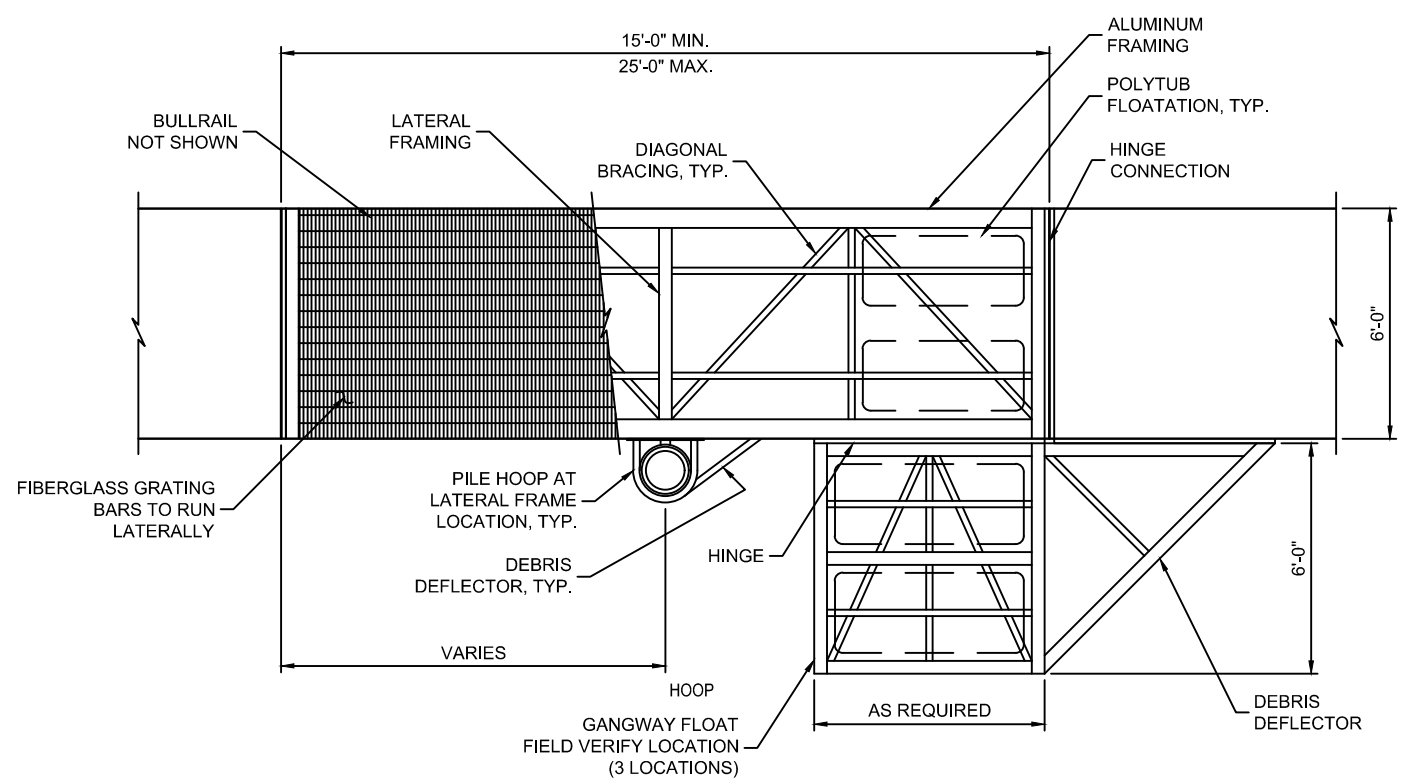


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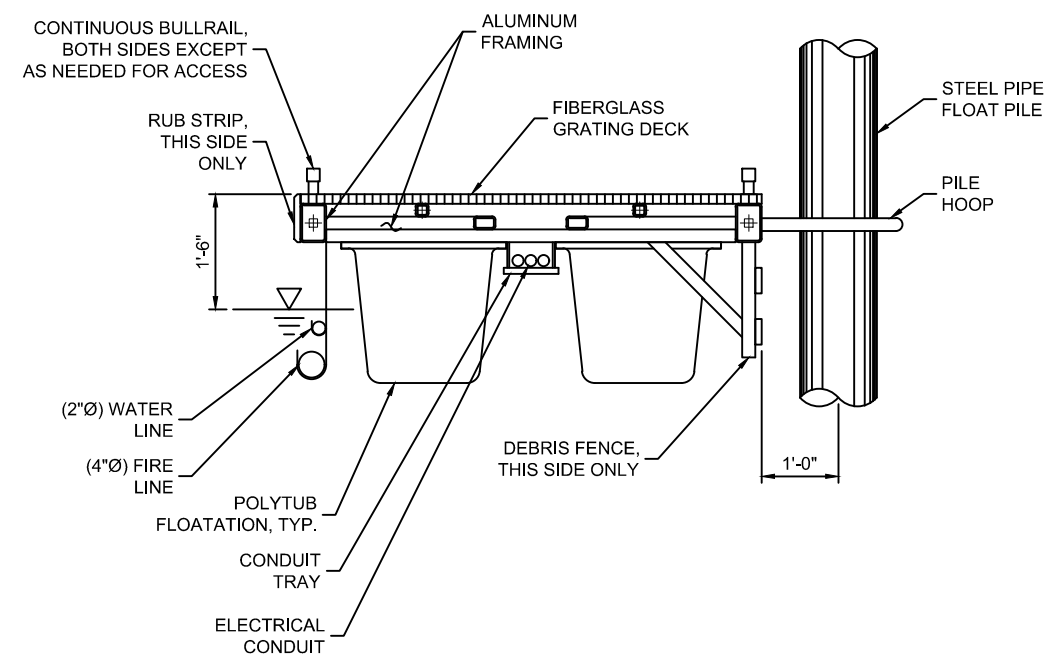


PLAN - 1"=80'

NOTE(S):
1. Base Plan from PND Engineers, INC.



FLOAT PLAN - 1"=60'



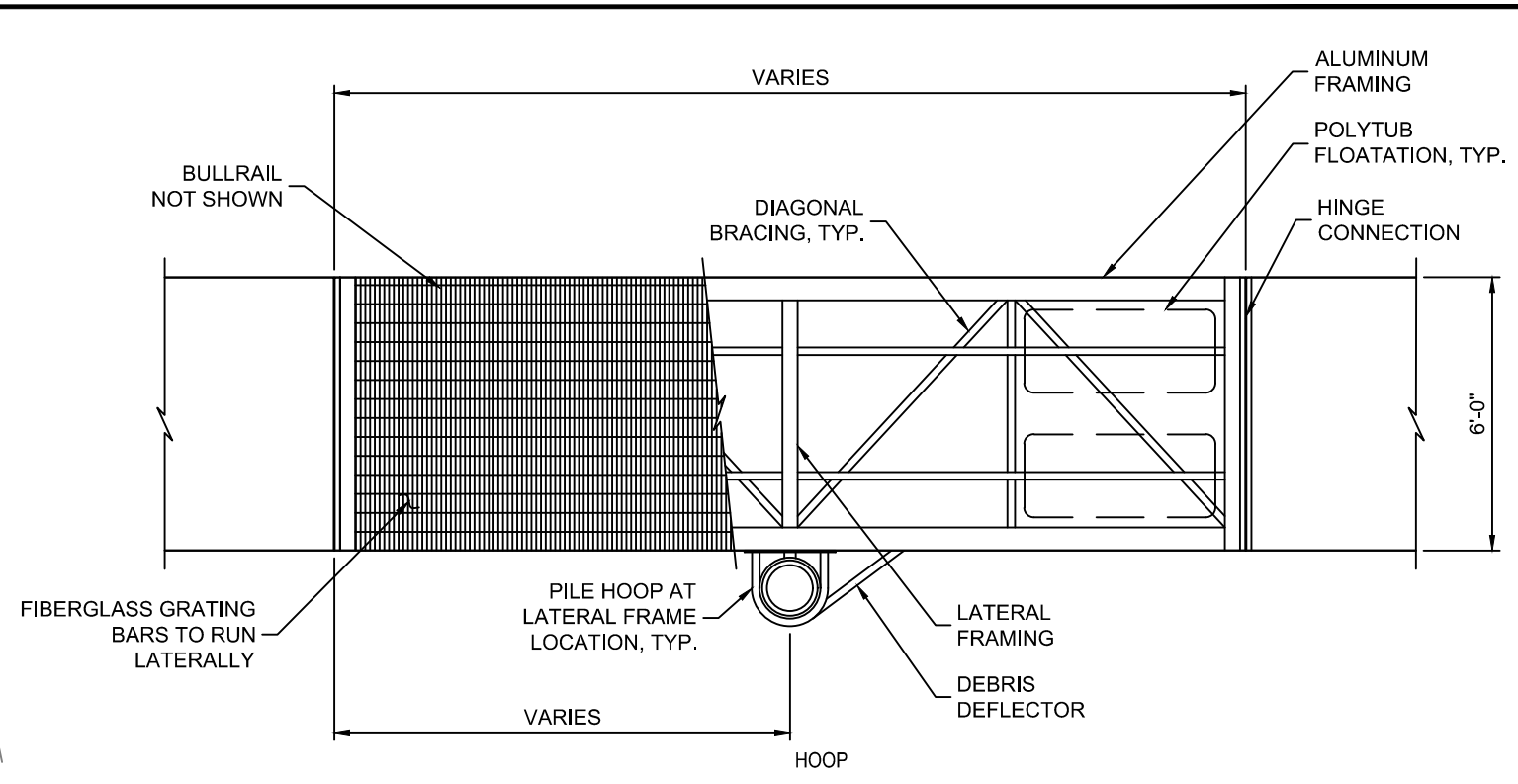
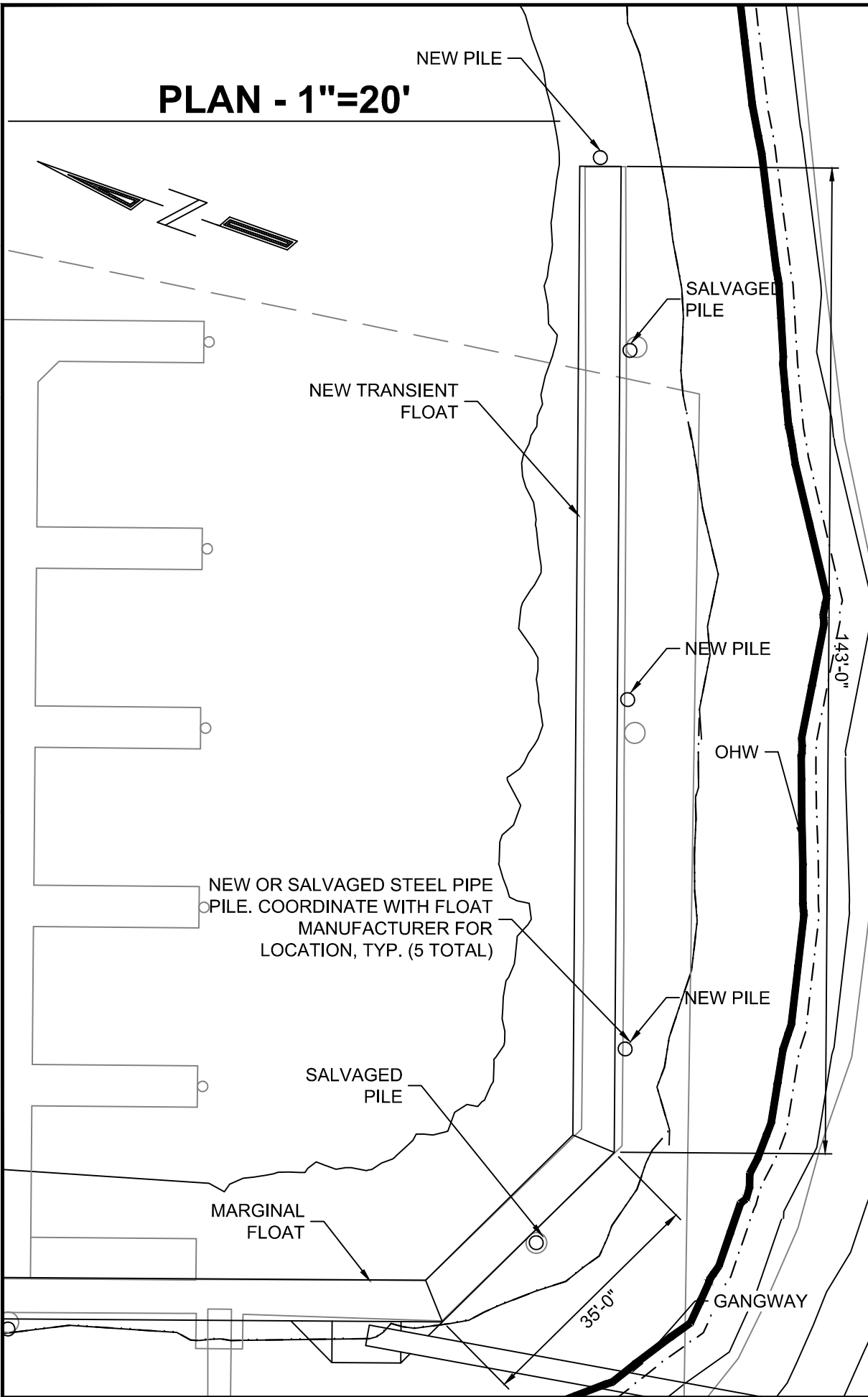
FLOAT SECTION - 1"=30'

PURPOSE: Marina Restoration	APPLICANT: PND Engineers PROJECT NAME: Port of Kalama Marina Renovation REFERENCE #: SITE LOCATION ADDRESS: 110 West Marine Drive Kalama, WA 98625	PROPOSED: Overwater Area Increase IN Columbia River NEAR: COUNTY: Cowlitz STATE: WA SHEET 10 OF 17 DATE: 8/23/16
	DATUM: NAVD 29-47 ADJACENT PROPERTY OWNERS:	

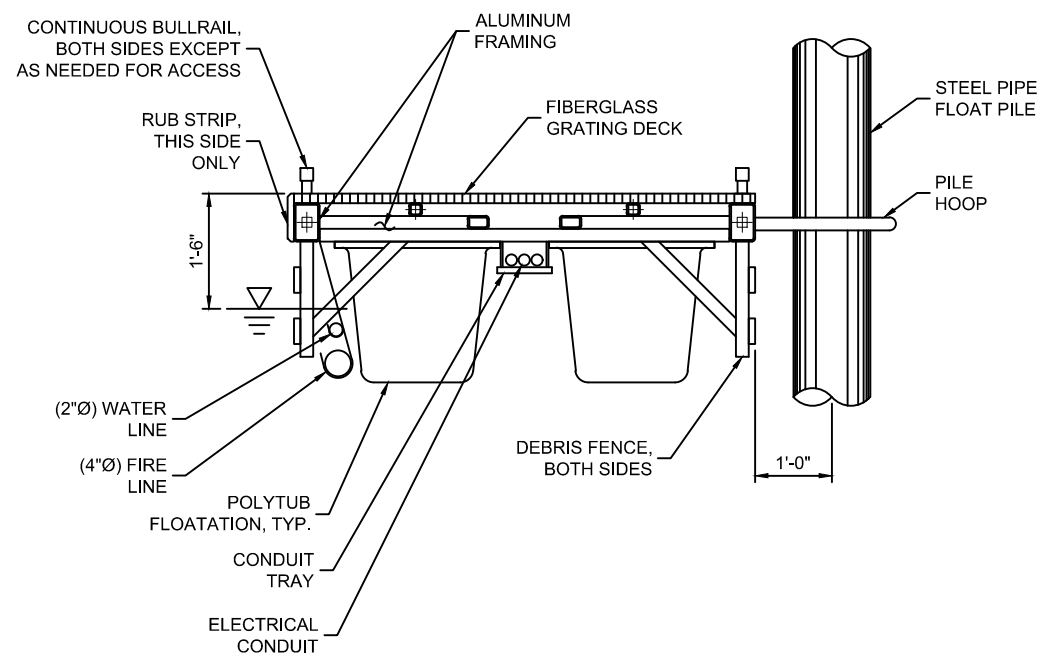
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 Longview, WA 98632
 Phone: (360) 578-1371



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NOTE(S):
 1. Base Plan from PND Engineers, INC.

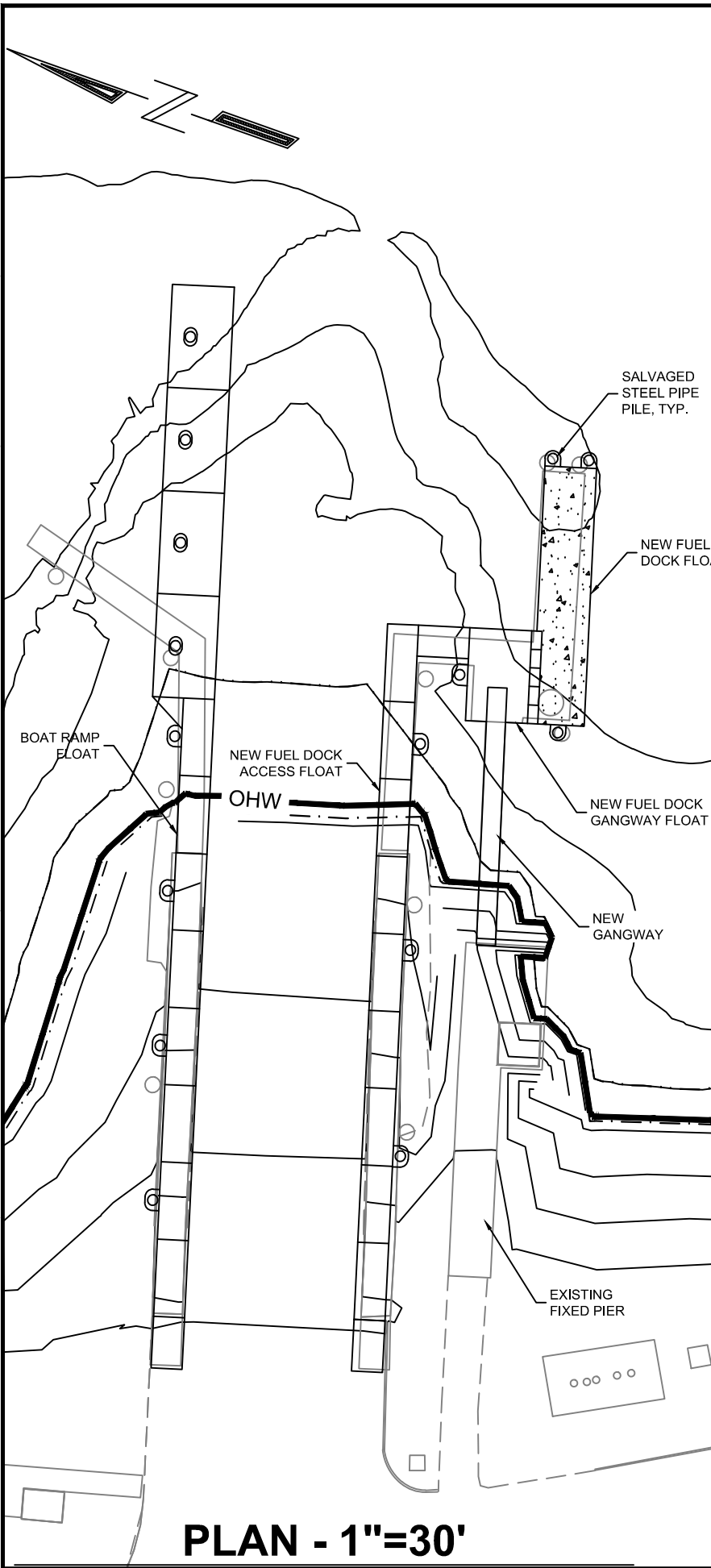


<p>PROPOSED: Overwater Area Increase IN Comlumbia River NEAR: COUNTY: Cowlitz STATE: WA SHEET 11 OF 17 DATE: 8/23/16</p>	<p>Transient Moorage APPLICANT: PND Engineers PROJECT NAME: Port of Kalama Marina Renovation REFERENCE #: SITE LOCATION ADDRESS: 110 West Marine Drive Kalama, WA 98625</p>	<p>PURPOSE: Marina Restoration</p> <p>DATUM: NAVD 29-47</p> <p>ADJACENT PROPERTY OWNERS:</p>
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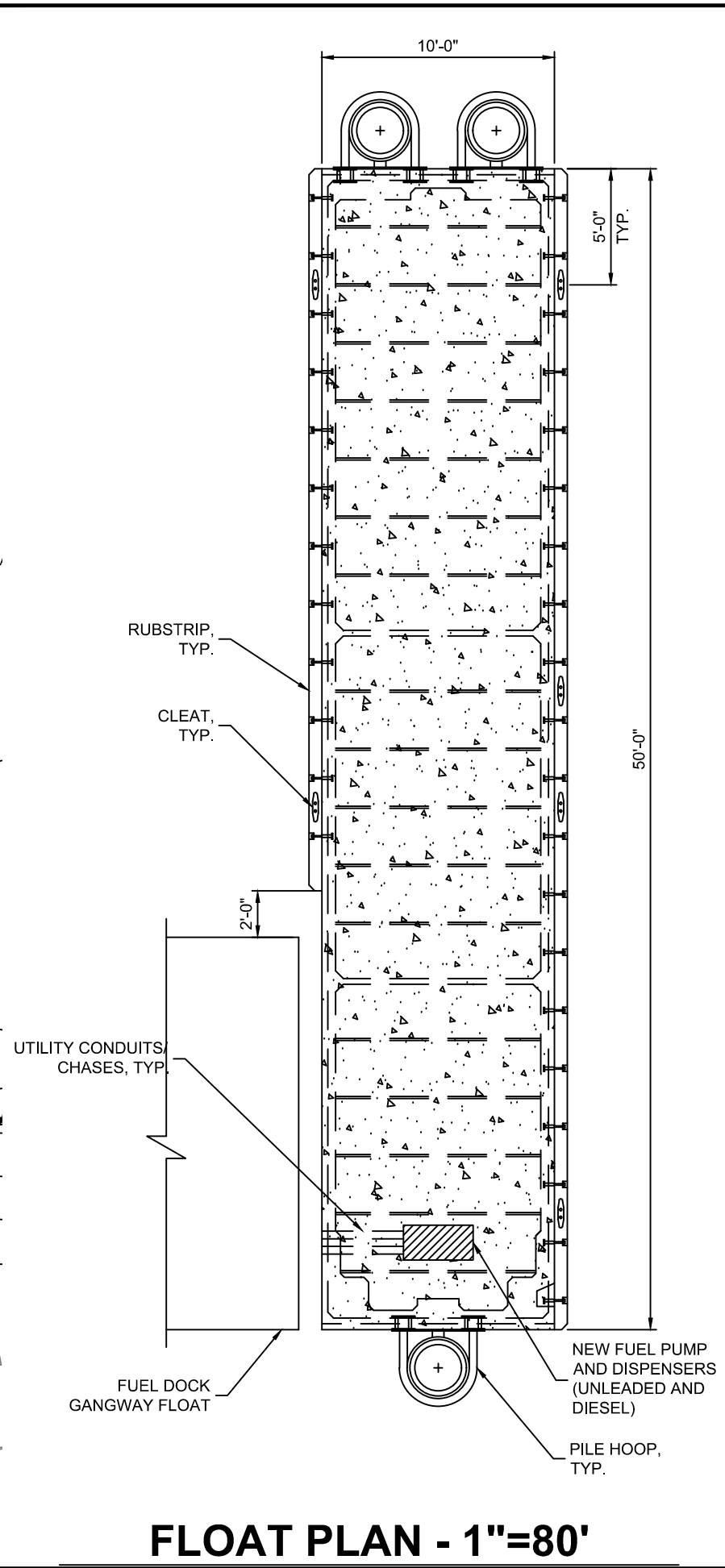
1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371



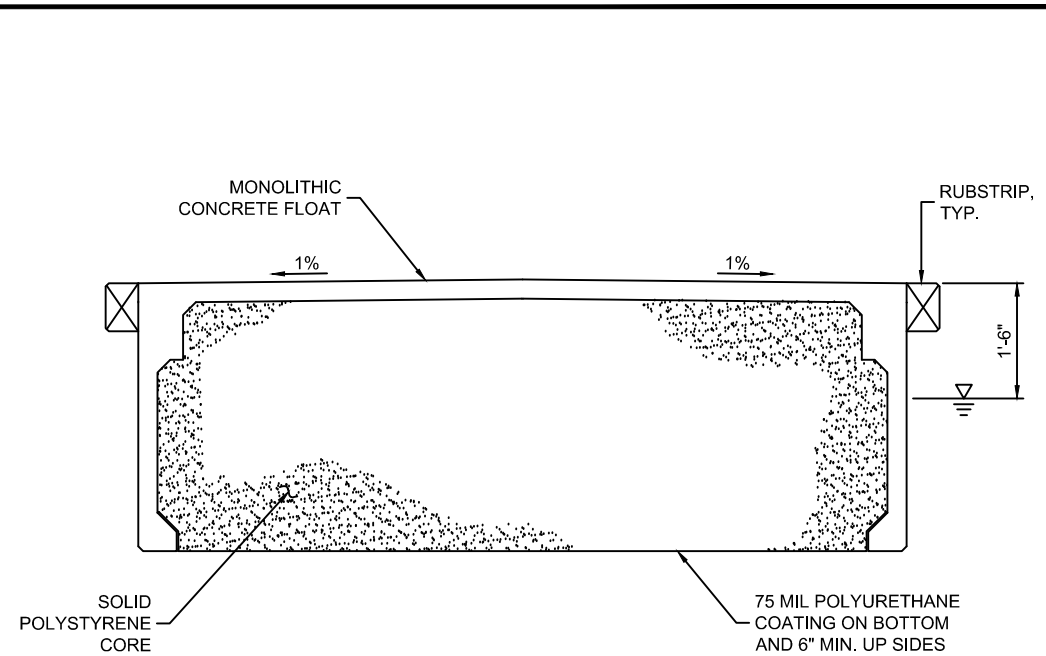
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PLAN - 1"=30'



FLOAT PLAN - 1"=80'



FLOAT SECTION - 1"=30'

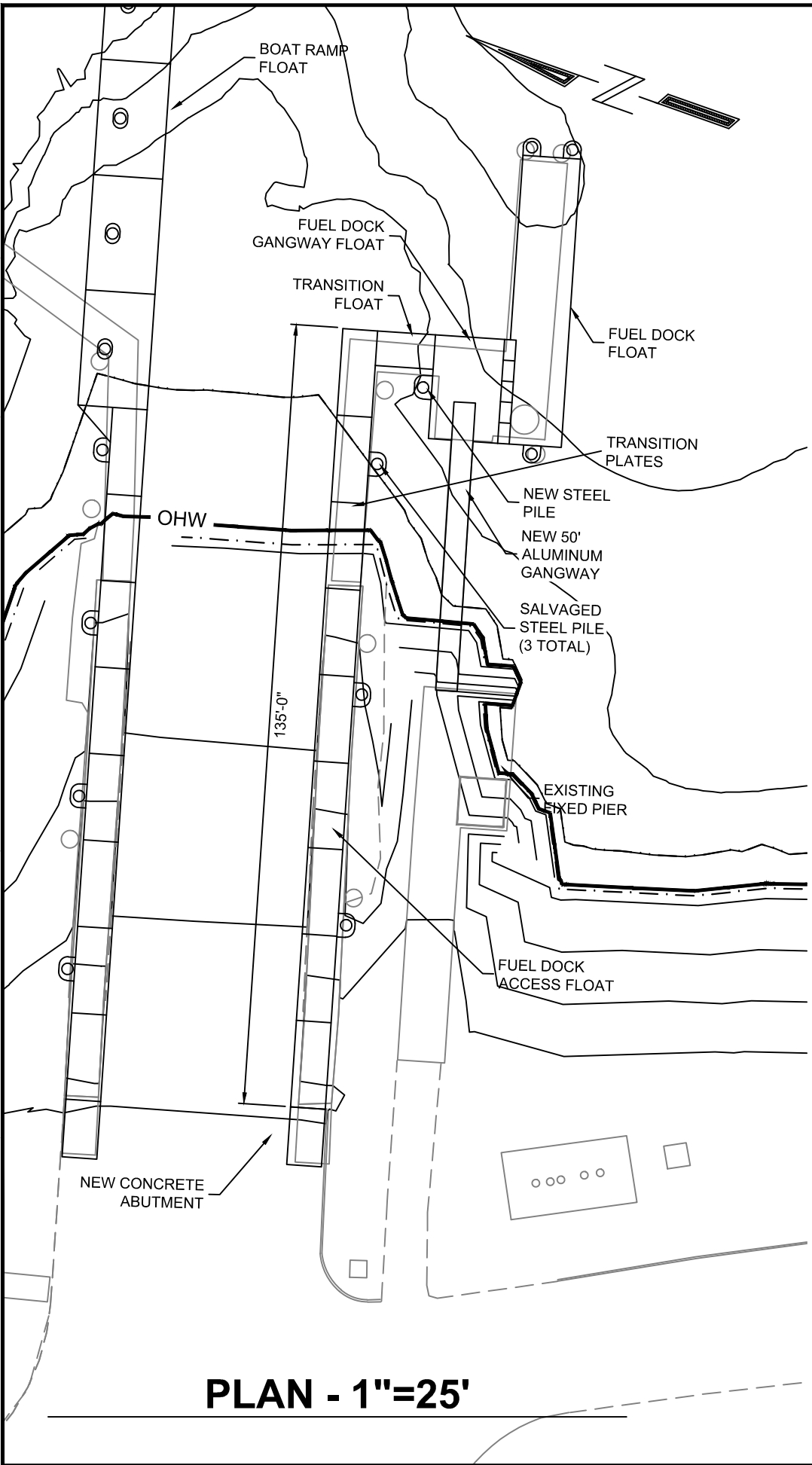
NOTE(S):
1. Base Plan from PND Engineers, INC.

<p>PURPOSE: Marina Restoration</p> <p>DATUM: NAVD 29-47</p> <p>ADJACENT PROPERTY OWNERS:</p>	<p>Fuel Dock Float</p> <p>APPLICANT: PND Engineers</p> <p>PROJECT NAME: Port of Kalama Marina Renovation</p> <p>REFERENCE #:</p> <p>SITE LOCATION ADDRESS: 110 West Marine Drive Kalama, WA 98625</p>	<p>PROPOSED: Overwater Area Increase</p> <p>IN: Columbia River</p> <p>NEAR:</p> <p>COUNTY: Cowlitz</p> <p>STATE: WA</p> <p>SHEET 12 OF 17</p> <p>DATE: 8/23/16</p>
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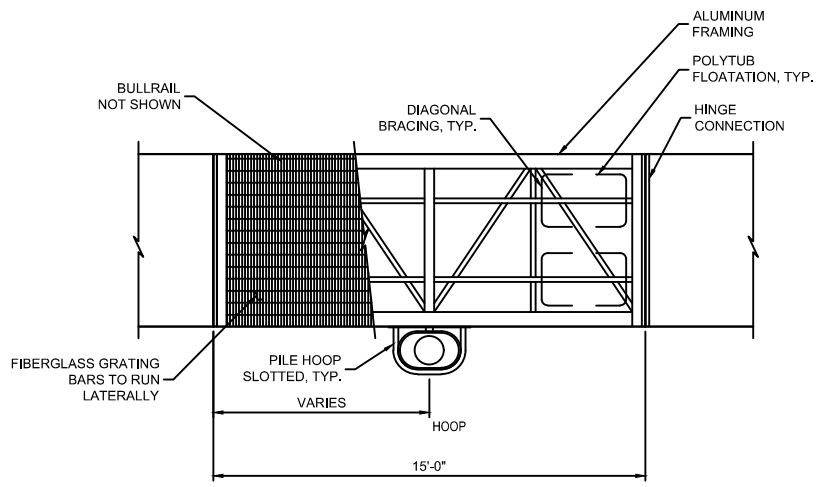


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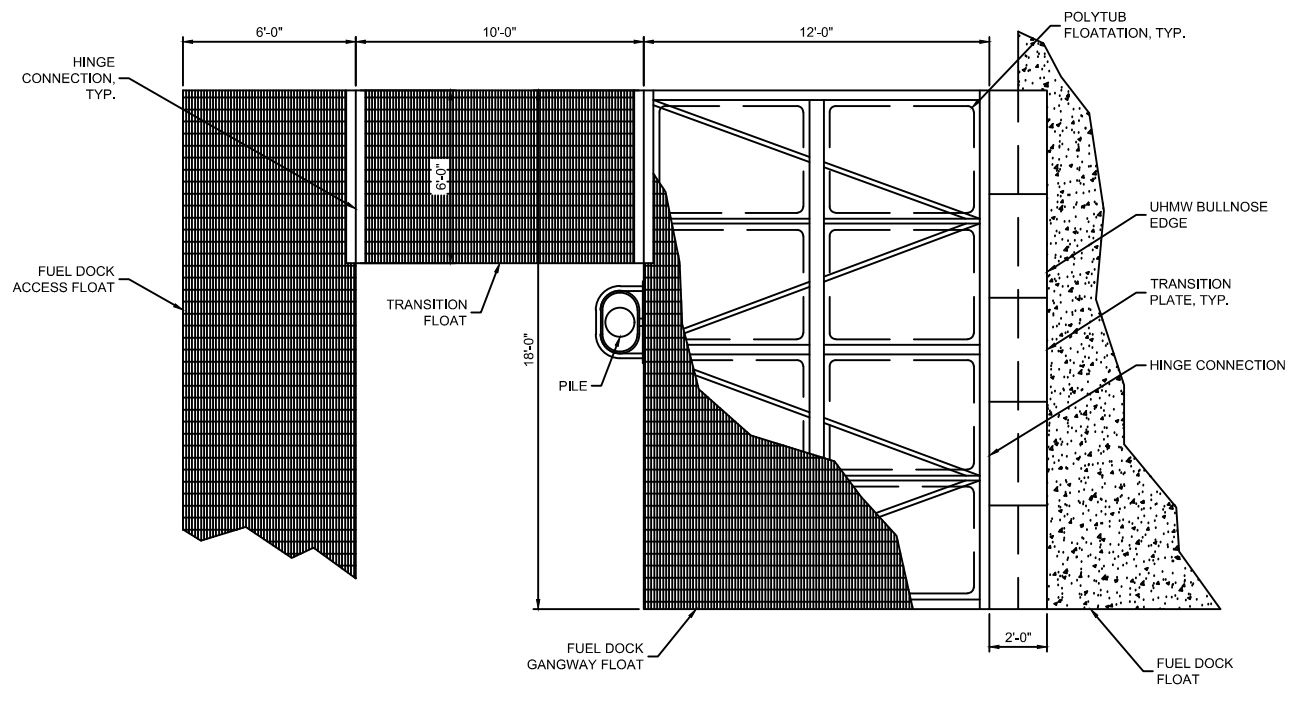


PLAN - 1"=25'

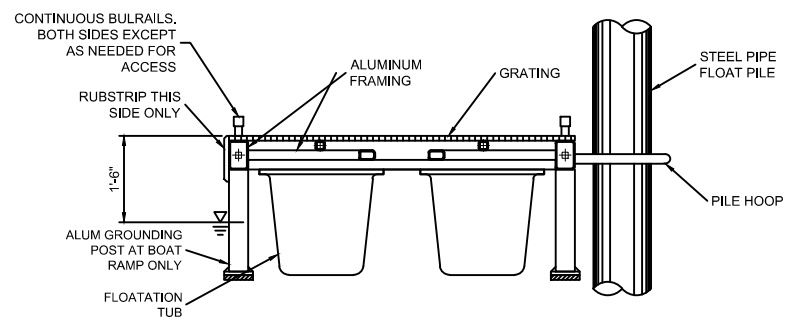
NOTE(S):
 1. Base Plan from PND Engineers, INC.



**FUEL DOCK ACCESS
 FLOAT PLAN - 1"=80'**
 TRANSITION FLOAT SIMILAR



PLAN - 1"=80'



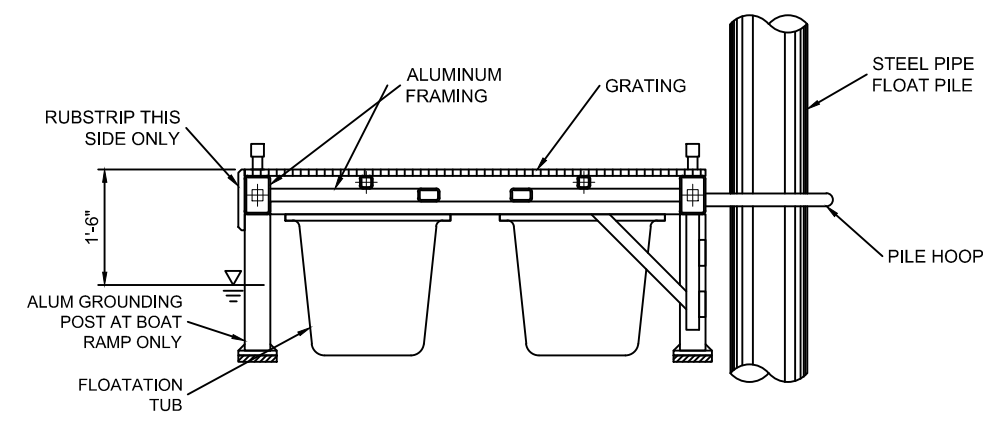
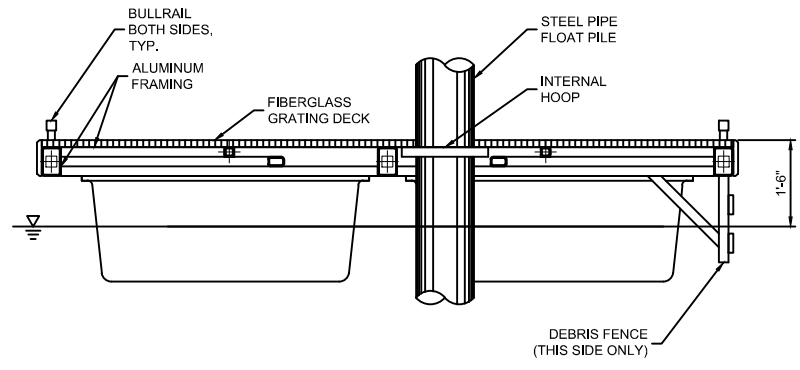
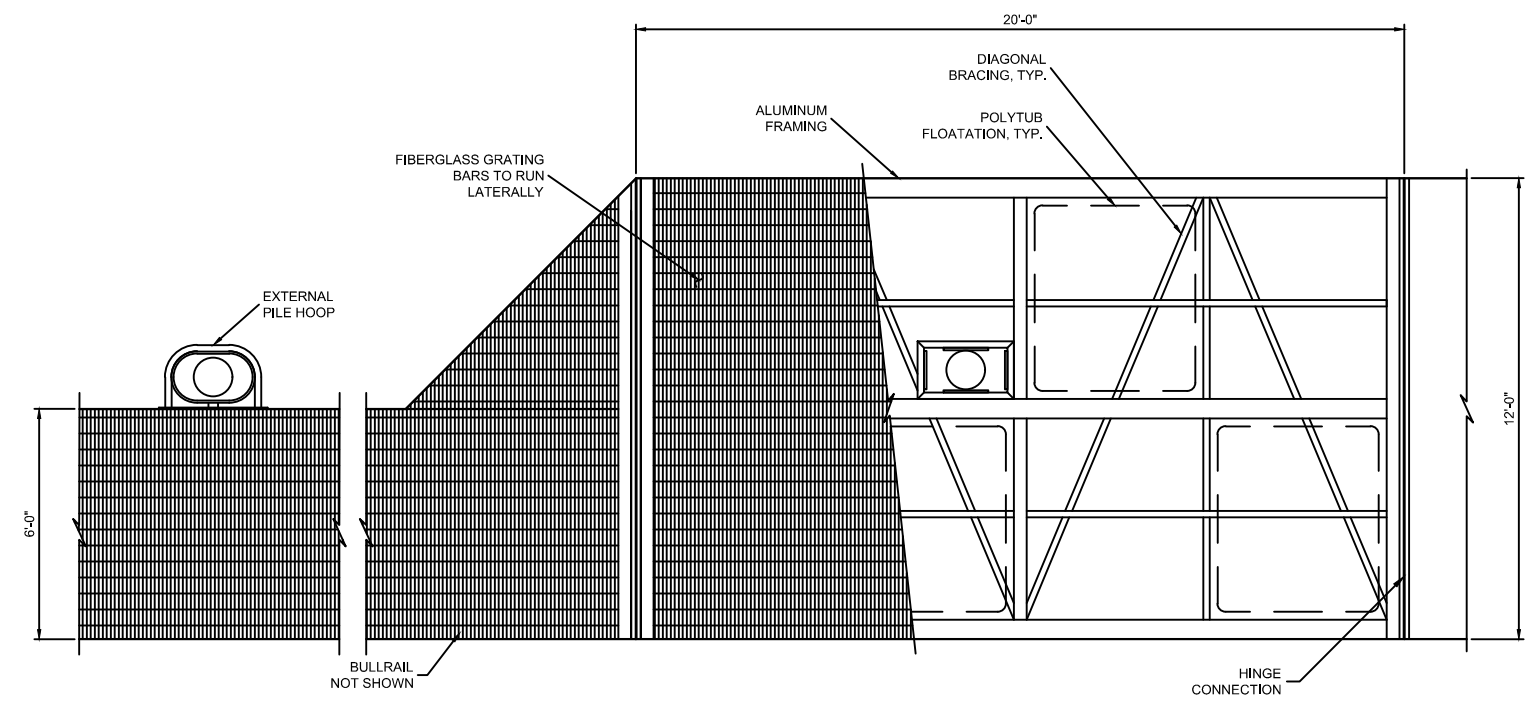
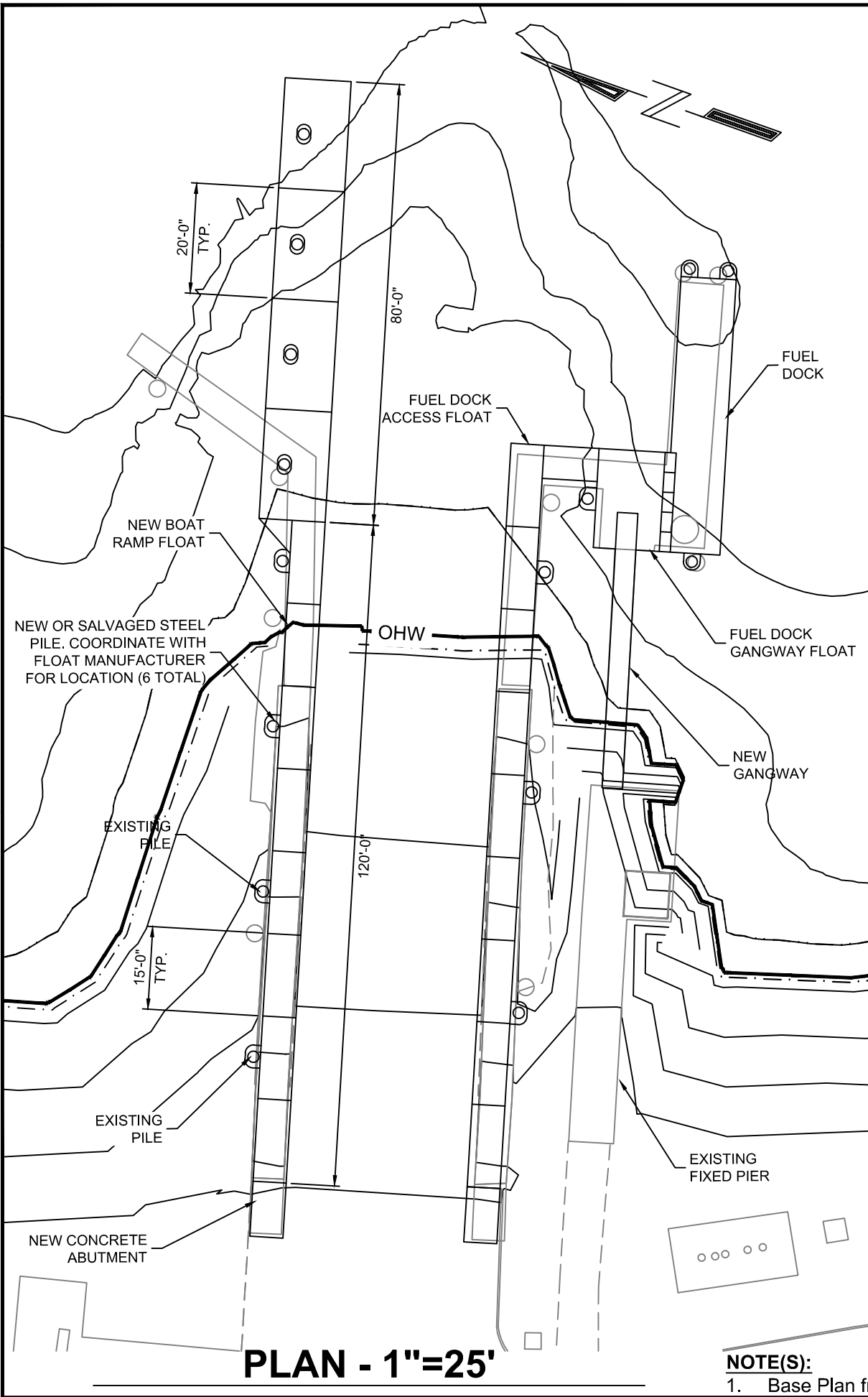
**FUEL DOCK ACCESS
 FLOAT SECTION - 1"=40'**
 TRANSITION FLOAT SIMILAR

PURPOSE: Marina Restoration	PROPOSED: Overwater Area Increase IN Comlumbia River NEAR: COUNTY: Cowlitz STATE: WA SHEET 13 OF 17 DATE: 8/23/16
	Fuel Dock Access Float and Gangway Float APPLICANT: PND Engineers PROJECT NAME: Port of Kalama Marina Renovation REFERENCE #: SITE LOCATION ADDRESS: 110 West Marine Drive Kalama, WA 98625
DATUM: NAVD 29-47 ADJACENT PROPERTY OWNERS:	



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NOTE(S):
1. Base Plan from PND Engineers, INC.

PURPOSE: Marina Restoration

APPLICANT: PND Engineers

PROJECT NAME: Port of Kalama Marina Renovation

REFERENCE #:

ADJACENT PROPERTY OWNERS:

DATUM: NAVD 29-47

PROPOSED: Overwater Area Increase

IN Comlumbia River

NEAR:

COUNTY: Cowlitz

STATE: WA

SHEET 14 OF 17

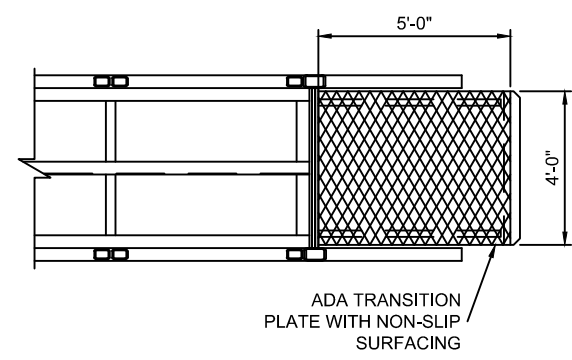
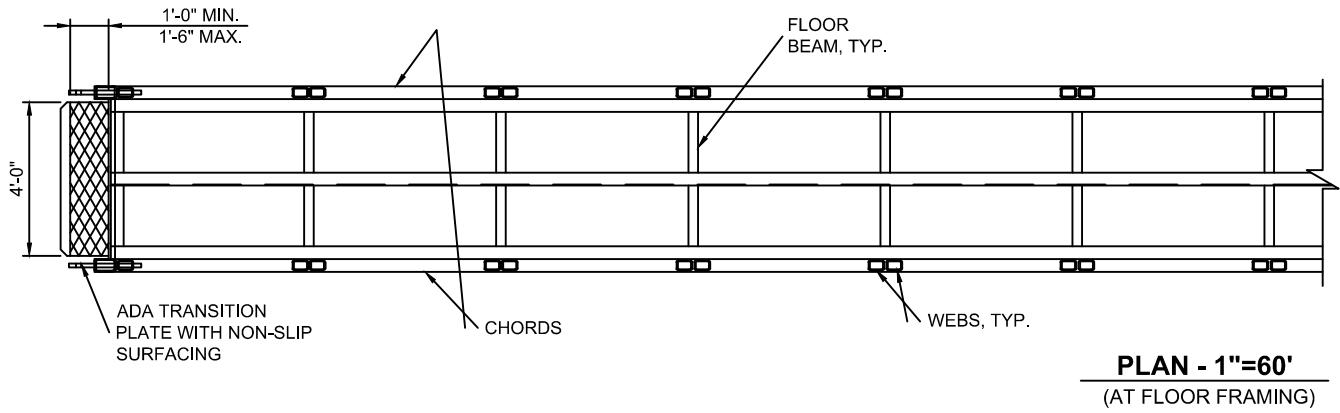
DATE: 8/23/16

SITE LOCATION ADDRESS: 110 West Marine Drive, Kalama, WA 98625

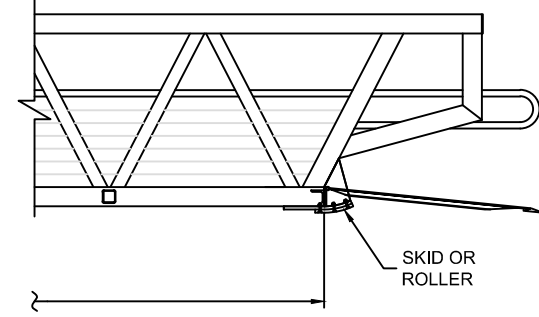
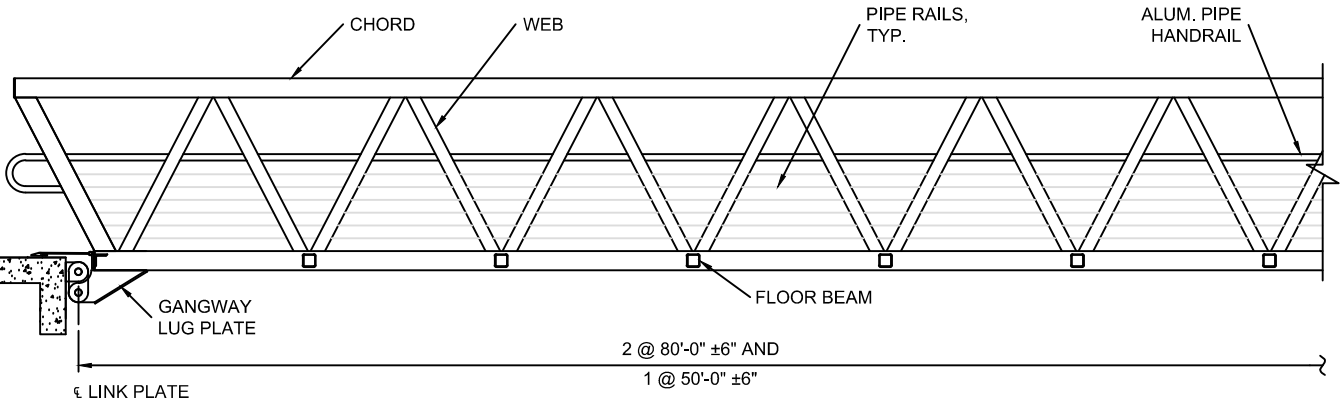
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371



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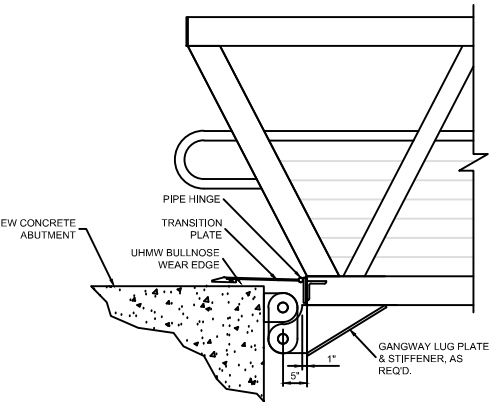
PLAN - 1"=60'
(AT FLOOR FRAMING)



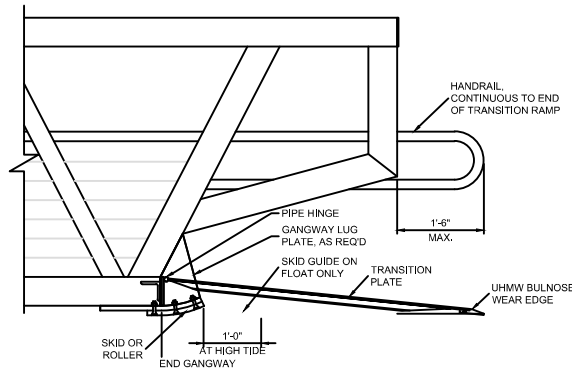
ELEVATION
ALUMINUM GANGWAY - 1"=60'

BOARDWALK END

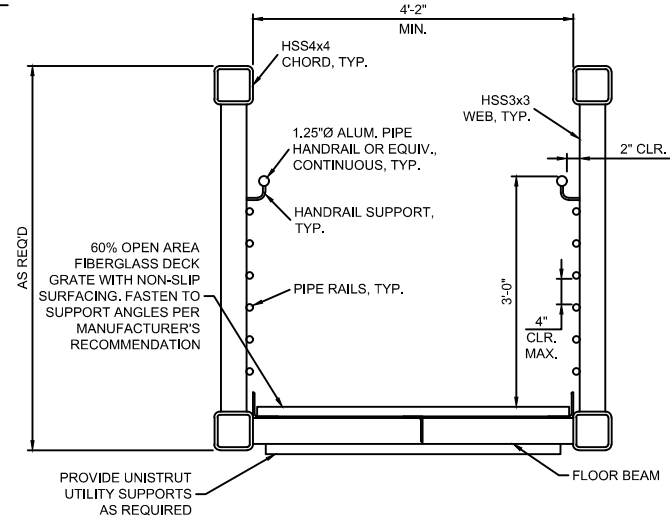
FLOAT END



BOARDWALK END - 1"=40'



FLOAT END - 1"=40'



TYPICAL SECTION - 1"=30'

GANGWAY PERFORMANCE CRITERIA

Gangway is design build by vendor to meet performance criteria requirements. Submit shop drawings and calculations for approval.

SUPPLIED DETAILS

Details shown are for reference only. Gangway manufacturer may submit different details for attaching gangway at hanger end, bearing end (skid shoe or roller), transition plates, etc. Submit alternative details with calculations for approval.

APPLICABLE CODES

All local codes plus the Applicable Codes and Standards.

DESIGN CRITERIA

Dead Loads - 80' Gangway (8,000 lb max. self weight)
50' Gangway (5,000 lb max. self weight)
Live Load - Uniform 100 psf
Wind Load - 85 mph

MATERIALS AND CONSTRUCTION

All material and construction shall conform to the following:

STRUCTURAL STEEL

ASTM A36 galvanized

ALUMINUM

Aluminum for gangway shall conform to 6061-T6 unless otherwise noted. Aluminum pipe for rails shall be 6063-T6. Modification to the gangway as detailed shall conform to the latest revisions of the Aluminum Design Manual and all applicable standards as set forth by the Aluminum Association. Edges shall be cut true, smooth and free of burrs. Flame cutting is not permitted. Holes for bolts shall be drilled or punched. Corner edges shall be ground smooth. Weld spatter and flash marks shall be removed and ground smooth. Mill stamps and markings shall be removed from all exposed surfaces. No finish is required on aluminum surfaces.

ALUMINUM WELDING

Per AWS D1.2. All welders shall be qualified per AWS for the type of welding anticipated.

BOLTS

All bolts shall be ASTM A325, hot-dip galvanized unless otherwise noted. Washers shall be used under both head and nut of all bolts.

GALVANIZING

All steel and hardware shall be hot-dipped galvanized per ASTM A123 or A153 after fabrication unless otherwise noted.

DISSIMILAR ISOLATION

Isolation washers & bushings shall be used between dissimilar metals.

DECK

Deck grating shall be light transmitting fiberglass deck grating. Attach to floor supports using Manufacturer supplied hold-downs and connectors per Manufacturer's recommendations.

NON-SLIP SURFACING

All walking surfaces shall have a non-slip surface meeting ADA requirements. Submit sample for approval.

PROPOSED: Overwater Area Increase
IN: Comlumbia River
NEAR:
COUNTY: Cowlitz
SHEET 15 OF 17
STATE: WA
DATE: 8/23/16

APPLICANT: PND Engineers
PROJECT NAME: Port of Kalamal Marina Renovation
REFERENCE #:
SITE LOCATION ADDRESS:
110 West Marine Drive
Kalama, WA 98625

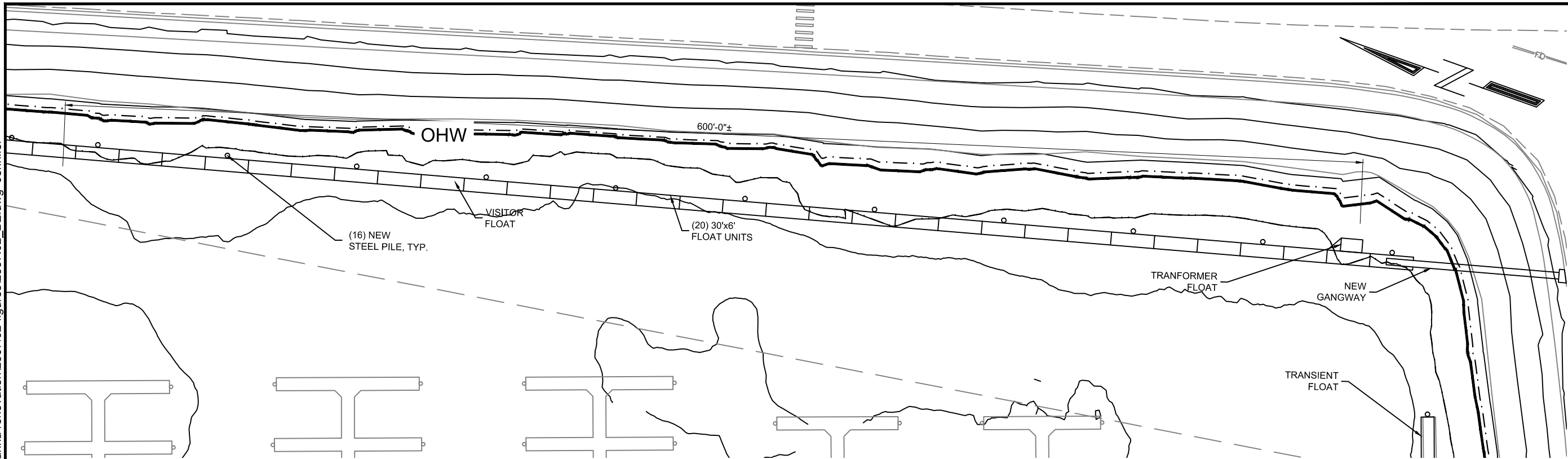
PURPOSE: Marina Restoration
DATUM: N/A
ADJACENT PROPERTY OWNERS:

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371



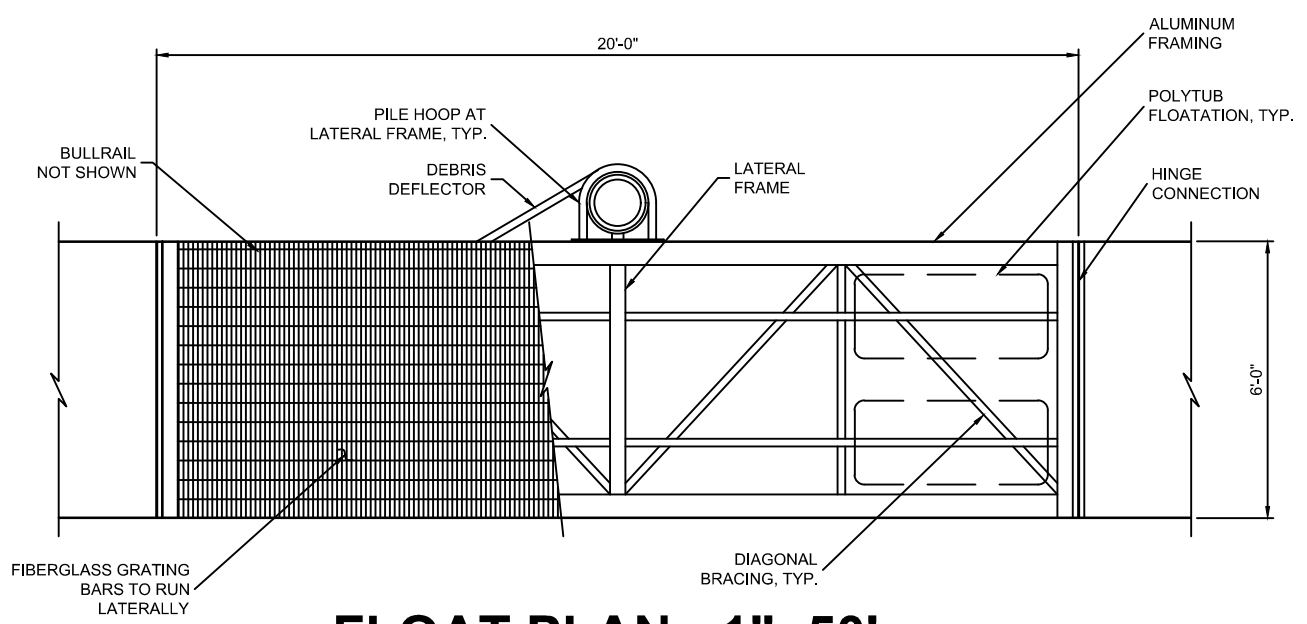
NOTE:
Base Plan from PND Engineers, INC.
WELD ALL JOINTS WITH MINIMUM 5/16" FILLET
WELD ALL AROUND OR EQUIVALENT BEVEL WELD.

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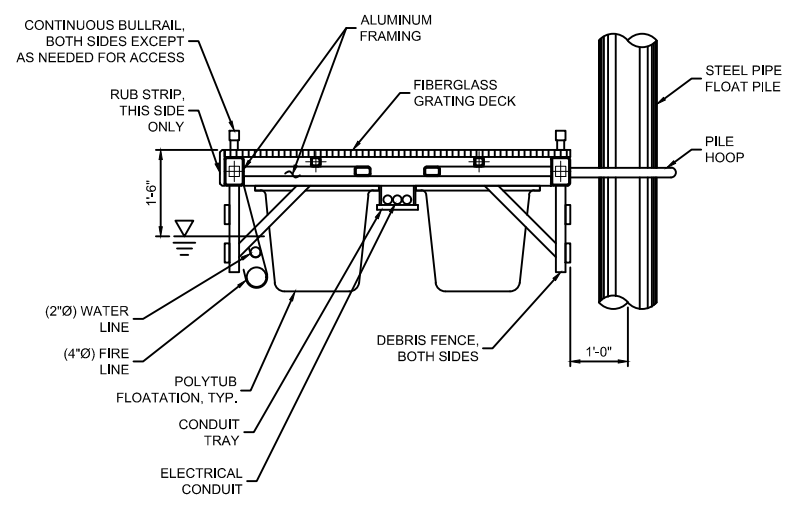


PLAN - 1"=50'

NOTE(S):
 1. Base Plan from PND Engineers, INC.



FLOAT PLAN - 1"=50'



FLOAT SECTION - 1"=40'

PURPOSE: Marina Restoration

APPLICANT: PND Engineers

PROJECT NAME: Port of Kalama Marina Renovation

REFERENCE #: Visitor Float

SITE LOCATION ADDRESS: 110 West Marine Drive
Kalama, WA 98625

PROPOSED: Overwater Area Increase

IN: Comlumbia River

NEAR:

COUNTY: Cowlitz

STATE: WA

SHEET 16 OF 17

DATE: 8/23/16

DATUM: NAVD 29-47

ADJACENT PROPERTY OWNERS:

1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371



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PILE SCHEDULE					
LOCATION	PILE ID	DIA (IN)	T (IN)	TOP EL	TIP EL
MARGINAL FLOATS	MF 1	12.75	0.50	+30'	TBD
	MF 2	12.75	0.50	+30'	TBD
	MF 3	12.75	0.50	+30'	TBD
	MF 4	12.75	0.50	+30'	TBD
	MF 5	12.75	0.50	+30'	TBD
	MF 6	12.75	0.50	+30'	TBD
	MF 7	12.75	0.50	+30'	TBD
	MF 8	12.75	0.50	+30'	TBD
	MF 9	12.75	0.50	+30'	TBD
	MF 10	12.75	0.50	+30'	TBD
	MF 11	12.75	0.50	+30'	TBD
TRANSIENT FLOATS	TF 1	12.75	0.50	+30'	TBD
	TF 2	12.75	0.50	+30'	TBD
	TF 3	12.75	0.50	+30'	TBD
	TF 4	12.75	0.50	+30'	TBD
	TF 5	12.75	0.50	+30'	TBD
BOAT RAMP FLOATS	BR 1	12.75	0.50	+30'	TBD
	BR 2	12.75	0.50	+30'	TBD
	BR 3	12.75	0.50	+30'	TBD
	BR 4	12.75	0.50	+30'	TBD
	BR 5	12.75	0.50	+30'	TBD
	BR 6	12.75	0.50	+30'	TBD
	BR 7	12.75	0.50	+30'	TBD
	BR 8	12.75	0.50	+30'	TBD
FUEL DOCK FLOAT	FD 1	12.75	0.50	+30'	TBD
	FD 2	12.75	0.50	+30'	TBD
	FD 3	12.75	0.50	+30'	TBD
ACCESS FLOAT	FDA 1	12.75	0.50	+30'	TBD
	FDA 2	12.75	0.50	+30'	TBD
	FDA 3	12.75	0.50	+30'	TBD
	FDA 4	12.75	0.50	+30'	TBD
VISITOR FLOATS	VF 1	12.75	0.50	+30'	TBD
	VF 2	12.75	0.50	+30'	TBD
	VF 3	12.75	0.50	+30'	TBD
	VF 4	12.75	0.50	+30'	TBD
	VF 5	12.75	0.50	+30'	TBD
	VF 6	12.75	0.50	+30'	TBD
	VF 7	12.75	0.50	+30'	TBD
	VF 8	12.75	0.50	+30'	TBD
	VF 9	12.75	0.50	+30'	TBD
	VF 10	12.75	0.50	+30'	TBD
	VF 11	12.75	0.50	+30'	TBD
	VF 12	12.75	0.50	+30'	TBD

TO BE DEVELOPED

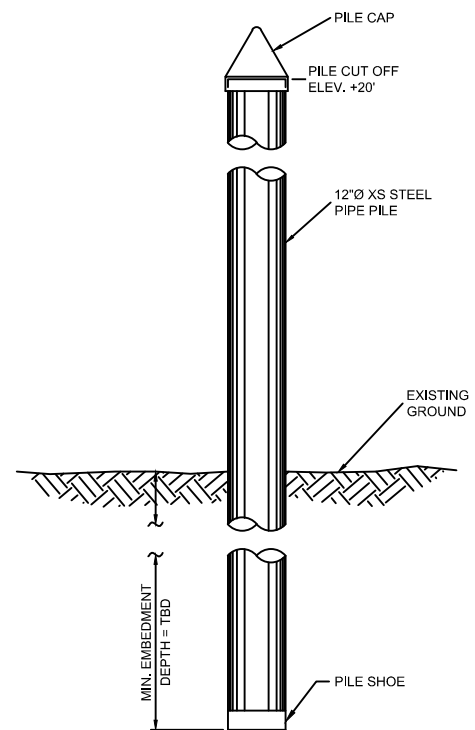
SECTION

TO BE DEVELOPED

PILE SPLICE

TO BE DEVELOPED

PROFILE



PILE SECTION - 1"=60'

NOTE(S):
1. Base Plan from PND Engineers, INC.

<p>PURPOSE: Marina Restoration</p> <p>APPLICANT: PND Engineers</p> <p>PROJECT NAME: Port of Kalama Marina Renovation</p> <p>REFERENCE #:</p> <p>ADJACENT PROPERTY OWNERS:</p> <p>DATUM: NAVD 29-47</p>	<p>PROPOSED: Overwater Area Increase</p> <p>IN: Comlumbia River</p> <p>NEAR:</p> <p>COUNTY: Cowlitz</p> <p>STATE: WA</p> <p>SHEET 17 OF 17</p> <p>DATE: 8/23/16</p>
<p>Site Schedule and Details</p> <p>SITE LOCATION ADDRESS: 110 West Marine Drive Kalama, WA 98625</p>	

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