P N D
ENGINEERS, INC.

December 17, 2014 PND 102029.10

Phil Benner
Harbormaster
Haines Borough
P.O. Box 1209
Haines, Alaska 99827

Re: South Portage Cove Harbor Expansion
35% Design review Submittal

Dear Mr. Benner:

PND has prepared the 35% design review submittal for the South Portage Cove Harbor Expansion project. Enclosed please find 10 sets of review documents for distribution to HB staff and the Port and Harbor Advisory Committee (PHAC). The submittal contains plans, project schedule and an updated cost estimate for the project at approximately 35% design completion.

Scope of Improvements

The scope of improvements under this phase of the project generally includes the following:

- 700 Ft Permeable Wave Barrier
- Entrance and basin dredging including inner harbor dredging along A & B Floats
- Rough graded parking area to allow upland disposal of a portion of the dredge spoils
- Relocation of existing sewer outfall line to allow dredging and wave barrier construction

Scope Issues

1. Dredging Limits: Please review the limits of dredging for the existing inner harbor basin carefully. We believe adjustments are necessary near the existing boat grid and boat launch ramp so those facilities are not undermined by the dredge slopes. We have adjusted the dredge limits near Float B to provide a minimum of 60' clear distance to the toe of slope along the shore in the vicinity of the future sheet pile bulkhead. We cannot plan for dredging to the face of the future bulkhead at this time due to potential undermining of the slopes leading to the parking lot. Dredging below the existing transient float off the fuel dock will be difficult unless the float is removed; therefore we will prepare plans to dredge up to the edge of the float unless directed otherwise.

2. Wave Barrier: The wave barrier design now follows a curved alignment rather than a tangent dogleg alignment. This is to reduce wave load to the structure, improve disbursement of reflected wave energy, and improve general aesthetics. The wave barrier also now ties into the existing rubble mound breakwater to close an opening in the protection system that otherwise would have allowed some wave energy to be transmitted into the expanded basin area from the north. We have not included a walkway on top of the wave barrier since there is no connection to shore and the costs would increase.

3. Upland Development: The uplands staging and parking area will be constructed by embanking approximately 30,000 cubic yards of sandy dredge materials from the harbor basin. We will designate which areas of the dredge basin contain the best material for beneficial reuse as fill embankment. This technique saves approximately $400K in borrow material costs that otherwise would need to be hauled to the site to build the parking area. The plans contain two layouts for operational use. The summer use plan provides parking for 48 vehicles with boat trailers along with 40 car stalls. The winter use plan provides parking for 15 vehicles with boat trailers, 40 car stalls along with 22 each boat storage spaces measuring 20'x50'. The surface of the new parking area under this first project phase will be crushed gravel and it will be fairly easy to adjust the layout for summer and winter parking and boat storage needs.

   Please also note that the current plan does not envision any changes to the existing Memorial Park features although the new uplands created for the harbor will surround the park on the water side. Future parking area finishes are anticipated to include sidewalks, curb and gutter, landscaping, restrooms, pavement and other amenities when funding allows. Further, it is wise to wait until the new fill has fully dewatered and settled before proceeding with the finish courses.

4. Sewer Line Relocation: The existing sewer outfall pipe is buried in a shallow trench below the harbor basin. Dredging activity will develop cuts nearly 25' deep in some locations there interfering with this line. We plan to dredge a portion of the basin while keeping the exiting line intact. Once the initial dredging is completed we will install a new sewer outfall line and connect into it near shore. Dredging will then resume for the remainder of the basin and the old line will be removed. The new line will be routed below the new wave barrier wall within a buried trench located between wave barrier vertical piles. We request the Borough's review of this general sequencing plan before proceeding to final design.

Geotechnical Investigation

PND has satisfactorily completed all remaining geotechnical investigations. The recent geotechnical data revealed that rock anchoring of the primary wave barrier bearing piles is not necessary. Competent granular soils were discovered to adequate depth well below the overlying clay to allow deep foundation piles to resist anticipated service loads within the dense soil. Bedrock was not contacted during the investigation.

Environmental Investigation and Dredge Material Characterization

PND and our subconsultants have satisfactorily completed the environmental sampling investigation and dredge material characterization reports. Lab results indicate that while some chemical "hits" were encountered, they were not at levels considered to be of concern to the regulatory agencies. We are optimistic that offshore disposal will be authorized by state and federal regulators who are currently reviewing the data.

Project Budget

The cost estimate has been updated for the current scope of improvements developed to a 35% design completion level and based on the results of the various site investigations. The total project budget including 10% contingency and indirect costs is estimated at $19.96 million. Our current estimate is down approximately $1.69 million since our February 2014 planning level budget, which was prepared prior to final design commencement and the second round of geotechnical investigations. The most significant cost reductions are due to increased certainty of the subsurface conditions and design adaptation to the conditions encountered during the investigations. This has reduced cost for pile foundations, embankment placement and project contingency.

State and Federal Permit Applications & Compensatory Mitigation Plan

Following HB review of this 35% design submittal, PND will make any necessary scope adjustments then submit state and federal permit applications. The application review process can take several months so it is recommended to submit the documentation as soon as possible. The agencies require that the applications include not only the proposed scope of improvements under the current design scope but also all foreseeable future inner harbor facilities. To that end, we encourage one final review of the proposed float layout plan so we can include the community's latest preferences.

PND has engaged environmental scientists at Hart Crowser (HC) to perform regulatory due diligence studies for the project. HC is in process of conducting the required Biological Assessment (BA) and an Ecological Functional Assessment (EFA). Due to the magnitude of overwater structures and new intertidal fill placed for the parking area, it is anticipated that conservation and mitigation measures will be required. HC will assist PND and the Borough to develop an appropriate Compensatory Mitigation Plan to offset the project impacts. We request the Borough's suggestions for any locally supported mitigation measures at your earliest possible convenience.

Project Schedule

An updated project schedule is enclosed. It demonstrates design completion and permit authorizations in May 2015 followed by construction bid solicitation in June and construction beginning in July 2015. Substantial completion is scheduled for November 2016. The design phase remains on schedule with the 65% design review package due on February 25. To meet that schedule we request your review comments to this 35% design submittal by December 31, 2014.

Public Meeting

PND is prepared to conduct a public meeting for the project if desired by the HB. Perhaps a presentation at a Port and Harbor Committee meeting in January would be appropriate. Please advise your preferences on this.

PND looks forward to receiving your comments to this 35% design review submittal and would like to schedule a review work session at your earliest convenience. Please feel free to contact us if you have any immediate questions or concerns regarding the project. We look forward to proceeding with the 65% final design review submittal.

Sincerely,
PND Engineers, Inc. | Juneau Office

Dick Somerville, P.E.
Vice President

Enclosures

HAINES BOROUGH
SOUTH PORTAGE COVE HARBOR EXPANSION
WAVE BARRIER, DREDGING, GRAVEL PARKING AREA & SEWER LINE RELOCATION

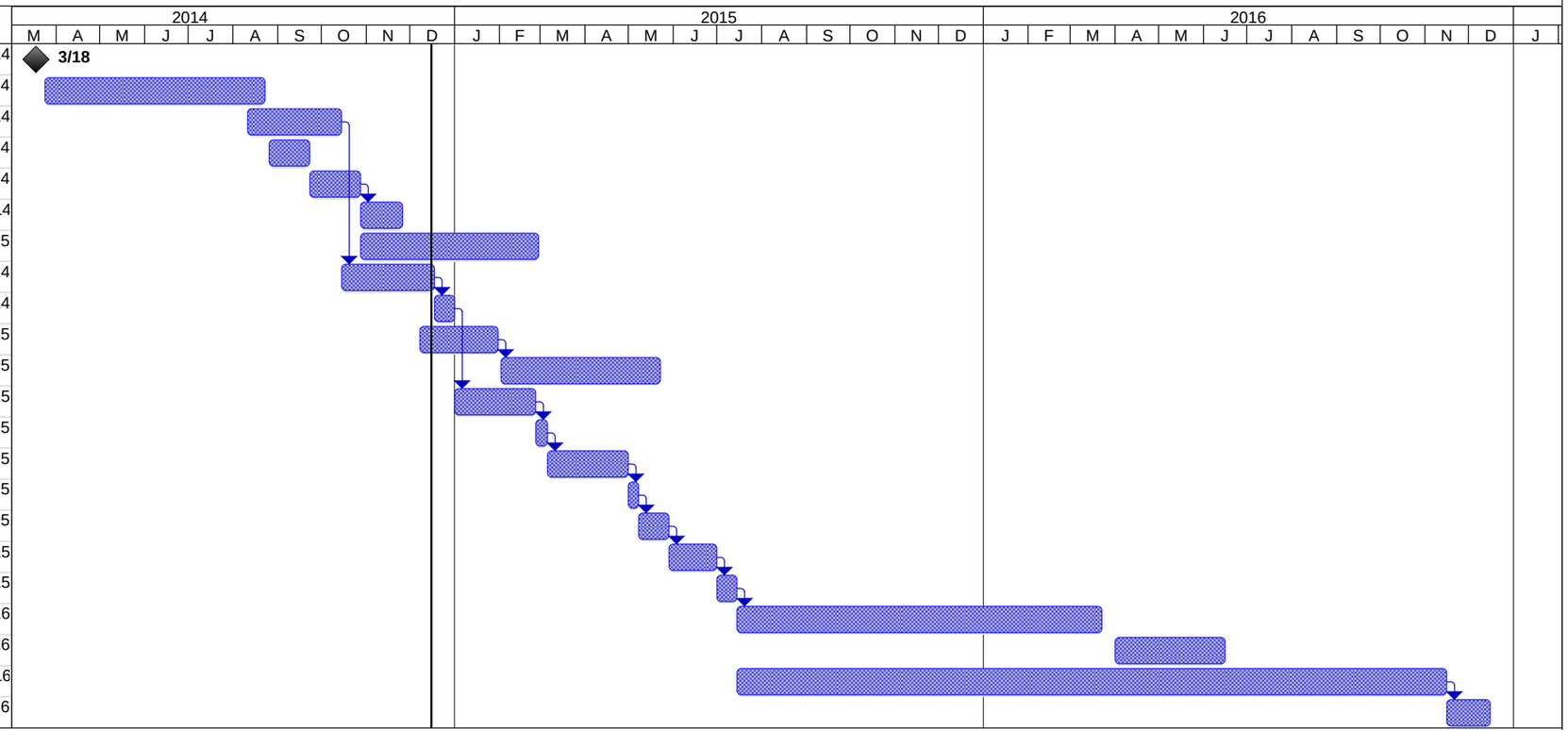
35% DESIGN COMPLETION - COST ESTIMATE
DECEMBER 17, 2014

Item	Item Description	Units	Quantity	Unit Cost	Amount
1505.1	Mobilization	LS	All Reqd	10%	$1,333,850
2201.1	Clearing & Grubbing	AC	1.5	$10,000	$15,000
2202.1	Useable Excavation	CY	2,500	$15	$37,500
2202.2	Class A Shot Rock Borrow	CY	8,000	$30	$240,000
2202.3	Class B Shot Rock Borrow	CY	9,000	$25	$225,000
2204.1	Base Course, Grading C-1	CY	2,000	$45	$90,000
2205.1	Class II Armor Rock	CY	4,000	$60	$240,000
2205.2	Class III Armor Rock	CY	2,500	$70	$175,000
2501.1	Storm Drains	LS	All Reqd	$75,000	$75,000
2702.1	Construction Surveying	LS	All Reqd	$150,000	$150,000
2714.1	Geotextile Fabric	SY	15,000	$5	$75,000
2801.1	Relocate Sewer Outfall Line	LS	All Reqd	$500,000	$500,000
2881.1	Dredging and Offshore Disposal	CY	100,000	$25	$2,500,000
2881.2	Dredging and Onshore Placement at Parking Area	CY	30,000	$35	$1,050,000
2896.1	Furnish & Install Barrier Piles	EA	131	$30,000	$3,930,000
2896.2	Furnish & Install Bearing Piles	EA	44	$65,000	$2,860,000
2901.1	Furnish & Install Barrier Waler	LF	700	$600	$420,000
2901.2	Furnish & Install Bearing Caps & Connections	EA	22	$23,000	$506,000
2901.3	Wave Barrier Amenities - Fenders, Light, Armor Excavation, Misc.	LS	All Reqd	$250,000	$250,000
	ESTIMATED CONSTRUCTION BID PRICE				**$14,672,350**
	CONTINGENCY & COMPENSATORY MITIGATION (10%)				**$1,467,235**
	PLANNING, ALTERNATIVES ANALYSIS & PUBLIC INVOLVEMENT				**$260,777**
	ENVIRONMENTAL INVESTIGATIONS, HABITAT STUDIES & PERMITTING				**$417,740**
	GEOTECHNICAL INVESTIGATIONS				**$878,946**
	SITE TOPOGRAPHIC & BATHYMETRIC SURVEYS				**$96,893**
	FINAL ENGINEERING DESIGN & BID READY CONTRACT DOCUMENTS				**$1,139,841**
	CONTRACT ADMIN & CONSTRUCTION INSPECTION				**$1,027,065**
	TOTAL RECOMMENDED PROJECT BUDGET				**$19,960,847**

NOTE: Costs for the parking area assume a gravel surface. Future paving, sidewalks, curbs, utilities, landscaping, restrooms and lighting improvements are not included in this estimate. Pile anodes are not included in this estimate.

SOUTH PORTAGE COVE HARBOR EXPANSION
PROJECT SCHEDULE
WAVE BARRIER, DREDGING & PARKING AREA ROUGH GRADE

ID	Task Name	Start	Finish
1	HB NTP for Site Investigations & Final Design	Tue 3/18/14	Tue 3/18/14
2	Prepare SAP & Agency Review	Mon 3/24/14	Fri 8/22/14
3	Optimize Wave Barrier Configuration - 15% Design	Mon 8/11/14	Tue 10/14/14
4	Conduct Geotechnical & Environmental Investigations	Tue 8/26/14	Mon 9/22/14
5	Geotechnical & Environmental Sample Analysis	Tue 9/23/14	Mon 10/27/14
6	Prepare Environmental Soil Characterization Report	Tue 10/28/14	Tue 11/25/14
7	Prepare Final Geotechnical Report	Tue 10/28/14	Fri 2/27/15
8	Prepare 35% Preliminary Design Dwgs	Wed 10/15/14	Wed 12/17/14
9	HB Review 35% Design Submittal	Thu 12/18/14	Wed 12/31/14
10	Prepare Permit Applications & Compensatory Mitigation Plan	Mon 12/8/14	Fri 1/30/15
11	Agency Reviews and Permit Authorizations	Mon 2/2/15	Fri 5/22/15
12	Prepare 65% Design Development Submittal	Thu 1/1/15	Wed 2/25/15
13	HB Review 65% Documents	Thu 2/26/15	Thu 3/5/15
14	Prepare 95% Final Design Submittal	Fri 3/6/15	Thu 4/30/15
15	HB Review 95% Documents	Fri 5/1/15	Thu 5/7/15
16	Stamped Bid Ready Contract Docs	Fri 5/8/15	Thu 5/28/15
17	Reproduce Plan Sets, Advertise & Open Construction Bids	Fri 5/29/15	Tue 6/30/15
18	Assembly Award, Contract, NTP for Construction Contract	Wed 7/1/15	Tue 7/14/15
19	Submittals, Steel Fabrication & Delivery	Wed 7/15/15	Tue 3/22/16
20	Potential In Water Work Restrictions	Fri 4/1/16	Wed 6/15/16
21	On Site Construction to Substantial Completion	Wed 7/15/15	Tue 11/15/16
22	Punch List and Final Completion	Wed 11/16/16	Thu 12/15/16



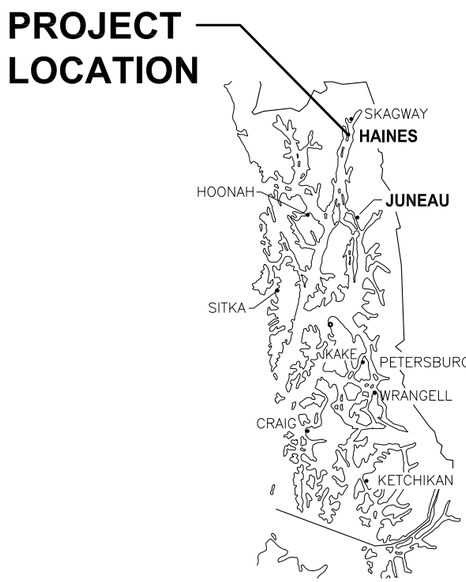
PND No. 102029
December 17, 2014

Task	Rolled Up Split	External Milestone	Duration-only	Progress
Split	Rolled Up Milestone	Inactive Task	Manual Summary Rollup	Deadline
Milestone	Rolled Up Progress	Inactive Milestone	Manual Summary	
Summary	External Tasks	Inactive Summary	Start-only	
Rolled Up Task	Project Summary	Manual Task	Finish-only	

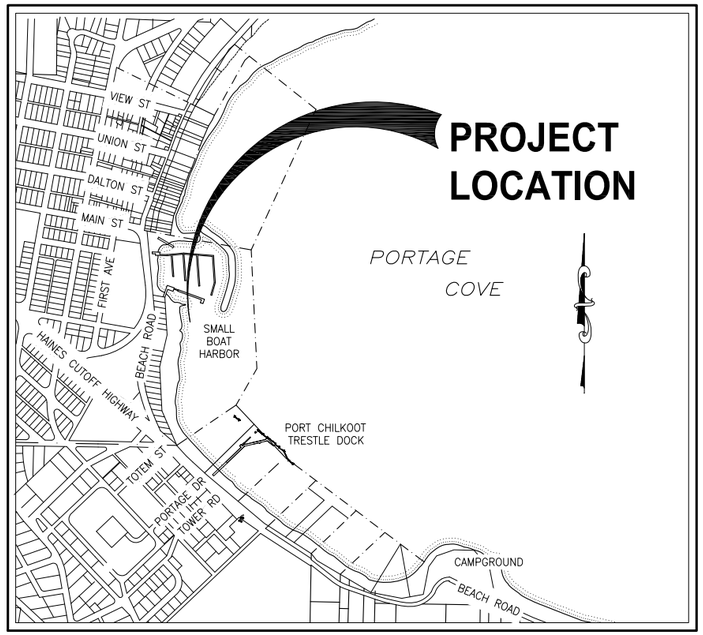
HAINES BOROUGH

SOUTH PORTAGE COVE HARBOR EXPANSION

LOCATION MAP



SOUTHEAST ALASKA



VICINITY MAP

SCALE (FEET)
0 750 1500

SHEET NO.	DWG. NO.	TITLE
		GENERAL
1 OF 19	1.01	COVER SHEET, VICINITY MAPS AND DRAWING INDEX
2 OF 19	1.02	GENERAL NOTES, LEGEND AND ABBREVIATIONS
3 OF 19	1.03	EXISTING CONDITIONS
4 OF 19	1.04	GENERAL SITE PLAN
5 OF 19	1.05	SITE DEVELOPMENT PLAN
6 OF 19	1.06	UPLANDS DEVELOPMENT PLAN SUMMER USE
7 OF 19	1.07	UPLANDS DEVELOPMENT PLAN WINTER USE
		DREDGING, UPLANDS, AND SEWER LINE RELOCATION
8 OF 19	2.01	DREDGING PLAN
9 OF 19	2.02	DREDGING SECTIONS
10 OF 19	2.03	DREDGING OFFSHORE DISPOSAL PLAN
11 OF 19	2.04	UPLAND SITE PLAN AND PROFILE
		STRUCTURAL
12 OF 19	3.01	WAVE BARRIER SITE PLAN
13 OF 19	3.02	WAVE BARRIER PARTIAL PLAN
14 OF 19	3.03	ELEVATION AND TYPICAL SECTION
15 OF 19	3.04	PILE SCHEDULE
16 OF 19	3.05	PILE SCHEDULE
17 OF 19	3.06	BARRIER PILES AND WALERS
18 OF 19	3.07	BEARING PILES AND BOX CAPS
19 OF 19	3.08	FENDER AND MARINE SIGNAL LIGHT

TIDAL DATA
HIGHEST OBSERVED WATER LEVEL (APPROX.) = 26.1 FEET
EXTREME HIGH WATER = 22.5 FEET
HIGH TIDE LINE = 21.2 FEET
MEAN HIGH WATER = 15.8 FEET
MEAN LOWER WATER = 1.6 FEET
MEAN LOWER LOW WATER = 0 FEET
MEAN LOWER LOW WATER (MLLW)
LOWEST OBSERVED WATER LEVEL (APPROX.) = −6.7 FEET

FROM: NOAA NOS/CO-OPS STATION ID:9452400 SKAGWAY, ALASKA

PROJECT SCHEDULE	
DESCRIPTION	SCHEDULE
1. SUBSTANTIAL COMPLETION	11/15/16
2. FINAL COMPLETION OF ALL WORK UNDER THIS CONTRACT.	12/15/16

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

PND ENGINEERS, INC.
9360 Glacier Highway, Ste. 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

DESIGN: TCB CHECKED: CRS
DRAWN: PJD APPROVED:
SCALE: AS SHOWN
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE:
COVER SHEET, VICINITY MAPS
AND DRAWING INDEX

PND PROJECT NO.: 102029

1.01
SHEET 1 OF 19

GENERAL NOTES

1. **EROSION AND POLLUTION CONTROL PLANS**

   THE CONTRACTOR SHALL DEVELOP AND SUBMIT FOR ENGINEER AND AGENCY REVIEW AND APPROVAL A STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THIS PLAN SHALL INCLUDE AN EROSION AND SEDIMENT CONTROL PLAN BASED UPON THE CONTRACTOR'S SCHEDULING, EQUIPMENT AND WORK. TO THE GREATEST EXTENT POSSIBLE FOLLOW THE ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES (ADOT/PF) ALASKA STORM WATER POLLUTION PREVENTION PLAN GUIDE (ASWPPPG). THE PLAN SHALL CONSIDER FIRST PREVENTING EROSION, THEN MINIMIZING AND TRAPPING SEDIMENT PRIOR TO ITS ENTERING THE WATERWAYS. THE PLAN MUST ADDRESS THE SITE-SPECIFIC CONTROLS AND MANAGEMENT FOR THE CONSTRUCTION SITE AS WELL AS ALL MATERIAL SITES, WASTE DISPOSAL SITES AND AFFECTED AREAS. THE PLAN MUST INCORPORATE ALL THE REQUIREMENTS OF THE PROJECT PERMITS. BEST MANAGEMENT PRACTICES AS LISTED IN THE ASWPPPG SHALL BE USED.

   THE CONTRACTOR SHALL PREPARE A HAZARDOUS MATERIAL CONTROL PLAN (HMCP) FOR THE HANDLING, STORAGE, CLEAN-UP AND DISPOSAL OF PETROLEUM AND OTHER HAZARDOUS SUBSTANCES. THE CONTRACTOR SHALL LIST AND GIVE LOCATIONS OF ALL HAZARDOUS MATERIALS, INCLUDING FIELD OFFICE MATERIALS, TO BE USED AND STORED ON-SITE AND THEIR ESTIMATED QUANTITIES. THE PLAN SHALL PROVIDE DETAILS FOR STORING THESE MATERIALS AS WELL AS DISPOSING WASTE PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS GENERATED BY THE PROJECT.

   IDENTIFY THE LOCATIONS WHERE HAZARDOUS MATERIAL STORAGE, FUELING AND MAINTENANCE ACTIVITIES WILL TAKE PLACE. IF ON-SITE, DESCRIBE THE MAINTENANCE ACTIVITIES AND LIST ALL CONTROLS TO PREVENT THE ACCIDENTAL SPILLAGE OF OIL, PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS. DETAIL PROCEDURES FOR CONTAINMENT AND CLEANUP OF HAZARDOUS SUBSTANCES INCLUDING A LIST OF THE TYPES AND QUANTITIES OF EQUIPMENT AND MATERIALS AVAILABLE ON-SITE TO BE USED.

   THE PLAN SHALL PROVIDE DETAILS FOR PREVENTION, CONTAINMENT, CLEAN-UP AND DISPOSAL OF SOIL AND WATER CONTAMINATED BY ACCIDENTAL SPILLS AND FOR UNEXPECTED CONTAMINATED SOIL AND WATER ENCOUNTERED DURING CONSTRUCTION.

2. MATCH EXISTING GRADES AT PROJECT LIMITS AND WHERE REQUIRED TO MATCH ELEVATIONS AT EXISTING ROADS.

3. THE LOCATIONS OF EXISTING FEATURES AND UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE. ADDITIONAL UTILITIES MAY BE PRESENT HOWEVER ARE NOT SHOWN. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS IN THE FIELD AS NECESSARY, PRIOR TO BEGINNING WORK. THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED IN THE FIELD SHALL BE RECORDED ON THE CONTRACTOR'S RECORD DRAWINGS. CONTACT LOCAL UTILITY COMPANIES PRIOR TO ANY/ ALL EXCAVATIONS AT THE FOLLOWING TELEPHONE NUMBERS:

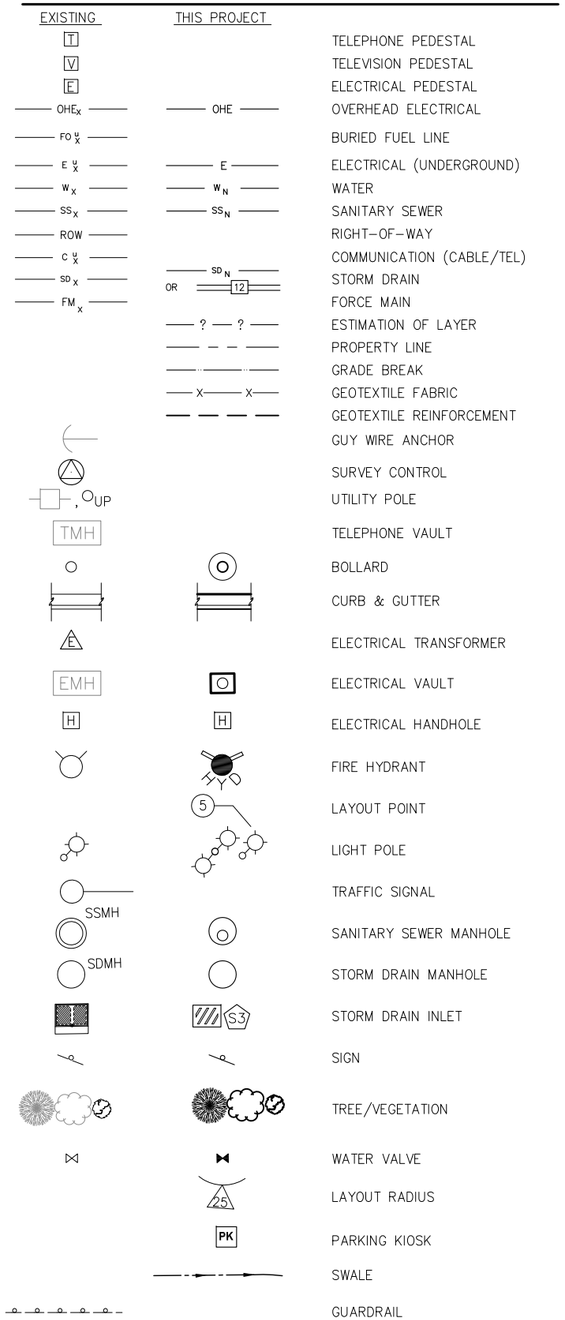
WATER AND WASTE MATERIAL	(907) 766-2237 OR 766-2200
POWER AND LIGHT (AP&T)	(907) 766-2331
CATV	(907) 766-2137
TELEPHONE (GTE)	(907) 766-2311

4. PROPERTY DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ITS PRE-CONSTRUCTION CONDITION OR BETTER AT NO ADDITIONAL COST.

5. GRADING AND ALIGNMENT OF PIPE, STRUCTURES & FINAL SURFACING ARE SUBJECT TO MINOR REVISIONS BY THE ENGINEER TO FIT SITE CONDITIONS. GRADE ALL IMPROVEMENTS WITH POSITIVE DRAINAGE AWAY FROM STRUCTURES.

6. PROPERTY LINE LOCATIONS USED IN THESE PLANS ARE DERIVED FROM RECORD PLATS AND DO NOT REPRESENT A BOUNDARY SURVEY.

LEGEND



ABBREVIATIONS

A	
@	AT
AC	ASBESTOS CEMENT PIPE
ACP	ASPHALT CONCRETE PAVEMENT
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
APF	ASSOCIATED PILE AND FITTING CORP.
APPROX. or APPX.	APPROXIMATE
ATS	ALASKA TIDELANDS SURVEY
AV	AIR RELEASE VALVE
B	
BCC	BEGINNING OF CURB CUT
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BOP	BEGINNING OF PROJECT
BTM, BOT	BOTTOM
C	
C&G	CURB & GUTTER
CB	CATCH BASIN
CBJ	CITY & BOROUGH OF JUNEAU
CI	CAST IRON
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
℄	CENTER LINE
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
C.O.E.	CORPS OF ENGINEERS
COMM	COMMUNICATION
CONC.	CONCRETE
CP	COMPLETE PENETRATION
CPEP/CPP	CORRUGATED POLYETHYLENE PIPE
COR	CORNER
CSC	COUNTERSINK
CTR	CENTER
CY	CUBIC YARD
D	
DCP	DISSIMILAR PIPE COUPLING
D/DIA	DIAMETER
DBL	DOUBLE
DEMO	DEMOLITION
DL	DEAD LOAD
DIP	DUCTILE IRON PIPE
DIM	DIMENSION
DN	DOWN
DTL	DETAIL
E	
E	EAST
EA.	EACH
EC	EDGE OF CONCRETE
ECC	END OF CURB CUT
EG	EXISTING GRADE
EJ	EXPANSION JOINT
EL/ELEV	ELEVATION
ELEL	ELECTRICAL
EOP	END OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
EW	EACH WAY
EXC	EXCAVATE
EXIST	EXISTING
F	
FC	FACE OF CURB
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT, FLAT HEAD
FIN	FINISH (ED)
FM	FORCE MAIN SEWER
FND	FOUNDATION
FOC	FACE OF CURB
FT	FOOT
FTG	FOOTING
FL	FLOWLINE OR FLANGE
G	
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GPM	GALLONS PER MINUTE
GRD	GROUND
GV	GATE VALVE
H	
H&T	HUB & TACK
HD	HEAVY DUTY
HDG	HOT-DIPPED GALVANIZED
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HSE	HOUSE
HT	HEIGHT
HWY.	HIGHWAY
I	
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH
IP	IRON PIPE
INCL	INCLUDE (D) (ING)
INSUL	INSULATE (D) (ION)
INV	INVERT
J	
JB	JUNCTION BOX
L	
LBS	POUNDS
LF	LINEAR FEET
LL	LIVE LOAD
LOC	LOCATION
LS	LUMP SUM
M	
MAX	MAXIMUM
M.E.	MATCH EXISTING
MECH	MECHANICAL
MFR	MANUFACTURE (R)
MH	MANHOLE
MJ	MECHANICAL JOINT
MI	MALLEABLE IRON
MIN	MINIMUM
MLLW	MEAN LOWER LOW WATER
MSF	1000 SQUARE FEET
MSE	MECHANICALLY STABILIZED EARTH
MTL	MATERIAL (S)
N	
N	NORTH
NFS	NON FROST SUSCEPTIBLE
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
O	
OBD	OVERBURDEN
OC	ON CENTER
OD	OUTSIDE DIAMETER
OG	ORIGINAL GOUND
OHE	OVERHEAD ELECTRICAL
OWS	OIL-WATER SEPARATOR
OPP	OPPSITE
P	
P	PIPE
PC	POINT OF CURVATURE, PIECE
PCC	PRECAST CONCRATE
	POINT OF COMPOUND CURVATURE
PE	POLYETHYLENE
PED	PEDESTAL
PER	PERIMETER
PERF	PERFORATE (D)
PI	POINT OF INTERSECTION
PLWD	PLYWOOD
PL	PROPERTY LINE, PLATE
POC	POINT OF CURVE
PP	POLYPROPYLENE
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PRKG	PARKING
PRV	PRESSURE REDUCING VALVE
PSI	POUND PER SQUARE INCH
PT	POINT, PRESSURE TREATED, POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE, POLY-VINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
Q	
QTY	QUANTITY
R	
RAD	RADIUS
RE	RIM ELEVATION
REF	REFERENCE
REINF	REINFORCEMENT
REQD	REQUIRED
RET	RETAINING
RO	ROUGH OPENING
ROW	RIGHT OF WAY
S	
S	SOUTH
SCHED/SCH	SCHEDULE
SD	STORM DRAIN
SDI	STORM DRAIN INLET STRUCTURE
SDO	STORM DRAIN OUTLET STRUCTURE
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FOOT
SHLDR	SHOULDER
SI	STREET INTERSECTION
SPEC	SPECIFICATION (S)
SQ	SQUARE
SRB	SHOT ROCK BORROW
SSC	SANITARY SEWER CONNECTION
SS	STAINLESS STEEL, SANITARY SEWER
SDMH	STORM DRAIN MANHOLE
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
STL	STEEL
STRG	STRONG
SW	SIDEWALK
SWR	SEWER
SY	SQUARE YARD
SYM	SYMMETRICAL
T	
t	THICK
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TBC	TOP BACK OF CURB
TBD	TO BE DETERMINED
TBM	TEMPORARY BENCH MARK
TD	TRENCH DRAIN
TEL	TELEPHONE
TEMP	TEMPERATURE, TEMPORARY
TH	TEST HOLE
THK	THICK
TRANS	TRANSVERSE
TV	TELEVISION
TYP	TYPICAL
U	
UBC	UNIFORM BUILDING CODE
UE	UNDERGROUND ELECTRIC
UMC	UNIFORM MECHANICAL CODE
UHMW	ULTRA HIGH MOLECULAR WEIGHT
UON/UNO	UNLESS OTHERWISE NOTED
UPC	UNIFORM PLUMBING CODE
V	
VB	VALVE BOX
VERT	VERTICAL
VG	VALLEY GUTTER
W	
W	WEST
W/	WITH
WD	WOOD
WELDMT	WELDMENT
WL	WATERLINE
WQU	WATER QUALITY UNIT
WV	WATER VALVE
WW	WATER WATER
WWTP	WASTE WATER TREATMENT PLANT
W/O	WITHOUT
X	
XFMR	TRANSFORMER
<PT	ANGLE POINT

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

PND ENGINEERS, INC.
9360 Glacier Highway, Ste. 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

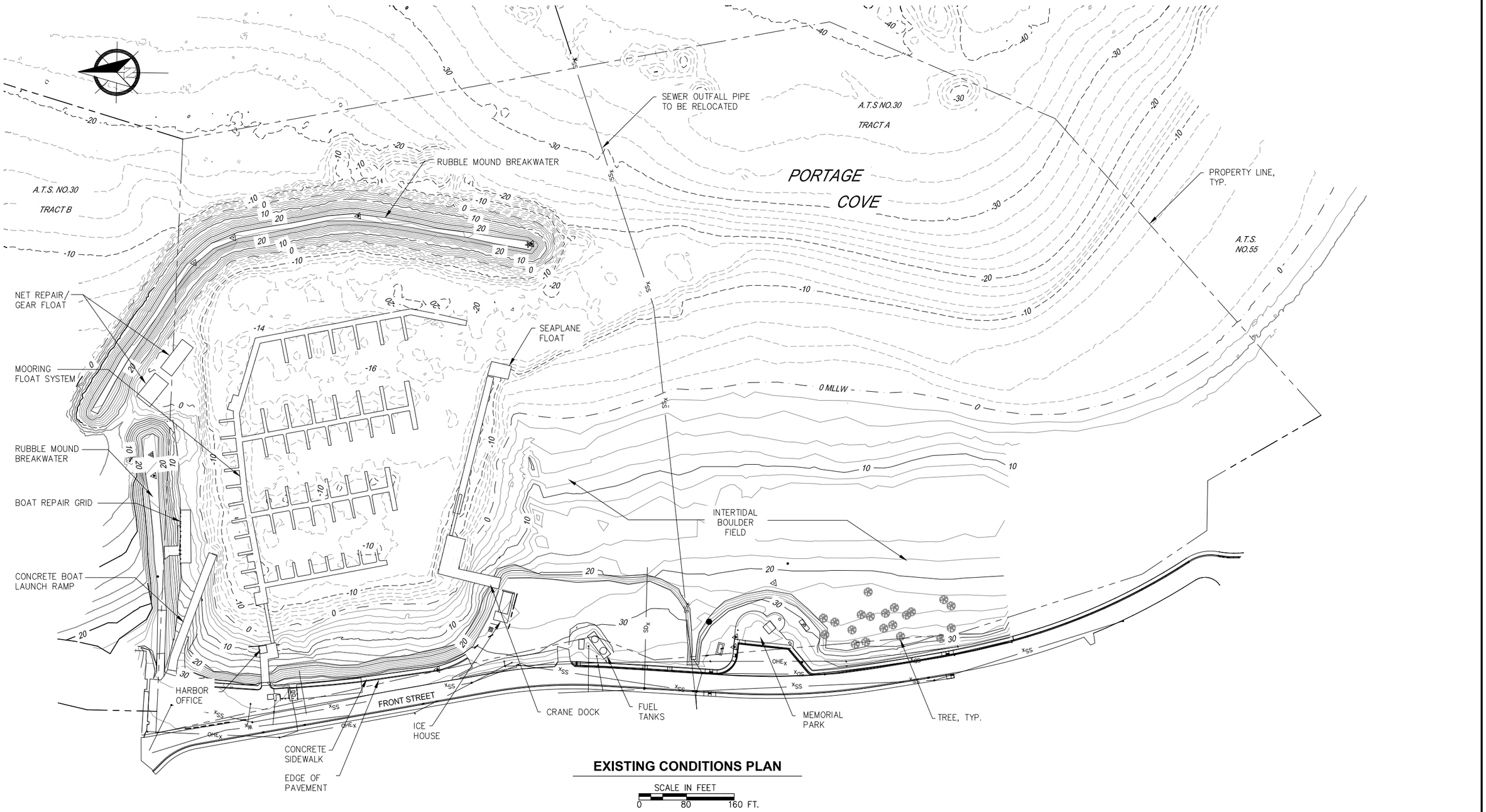
DESIGN: TCB CHECKED: CRS
DRAWN: KLL APPROVED:
SCALE: NTS
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE:
GENERAL NOTES, LEGEND AND ABBREVIATIONS

PND PROJECT NO.: 102029

1.02
SHEET 2 OF 19



EXISTING CONDITIONS PLAN

SCALE IN FEET

0 80 160 FT.

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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9360 Glacier Highway, Ste. 100
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Fax: 907-586-2099
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DESIGN: ____ CHECKED: CRS
DRAWN: PJD APPROVED: ____
SCALE: AS SHOWN
DATE: DEC. 2014

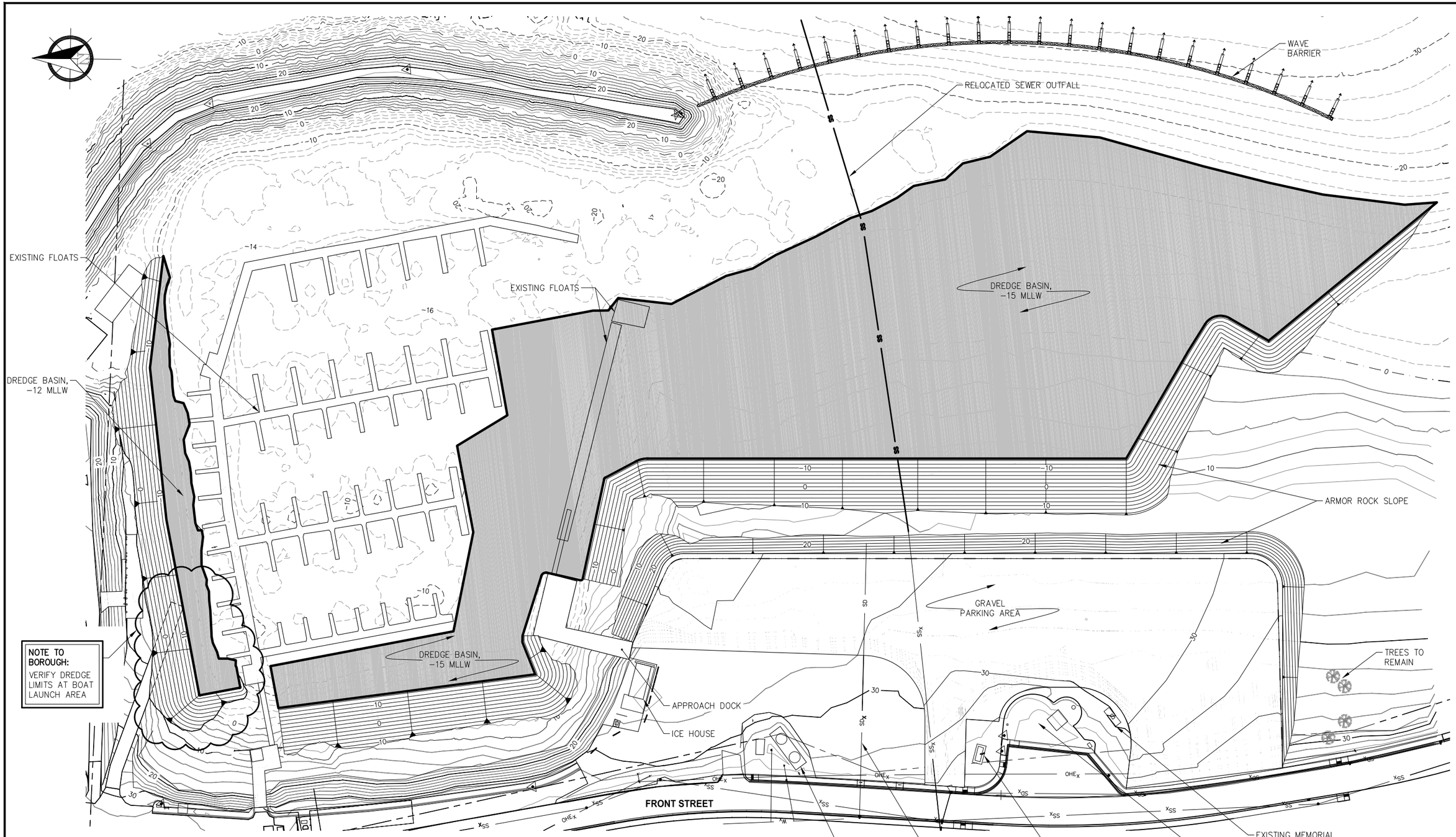
HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE: **EXISTING CONDITIONS**

PND PROJECT NO.: 102029

1.03

SHEET 3 OF 19



NOTE TO BOROUGH:
VERIFY DREDGE LIMITS AT BOAT LAUNCH AREA

GENERAL SITE PLAN

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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Fax: 907-586-2099
www.pndengineers.com

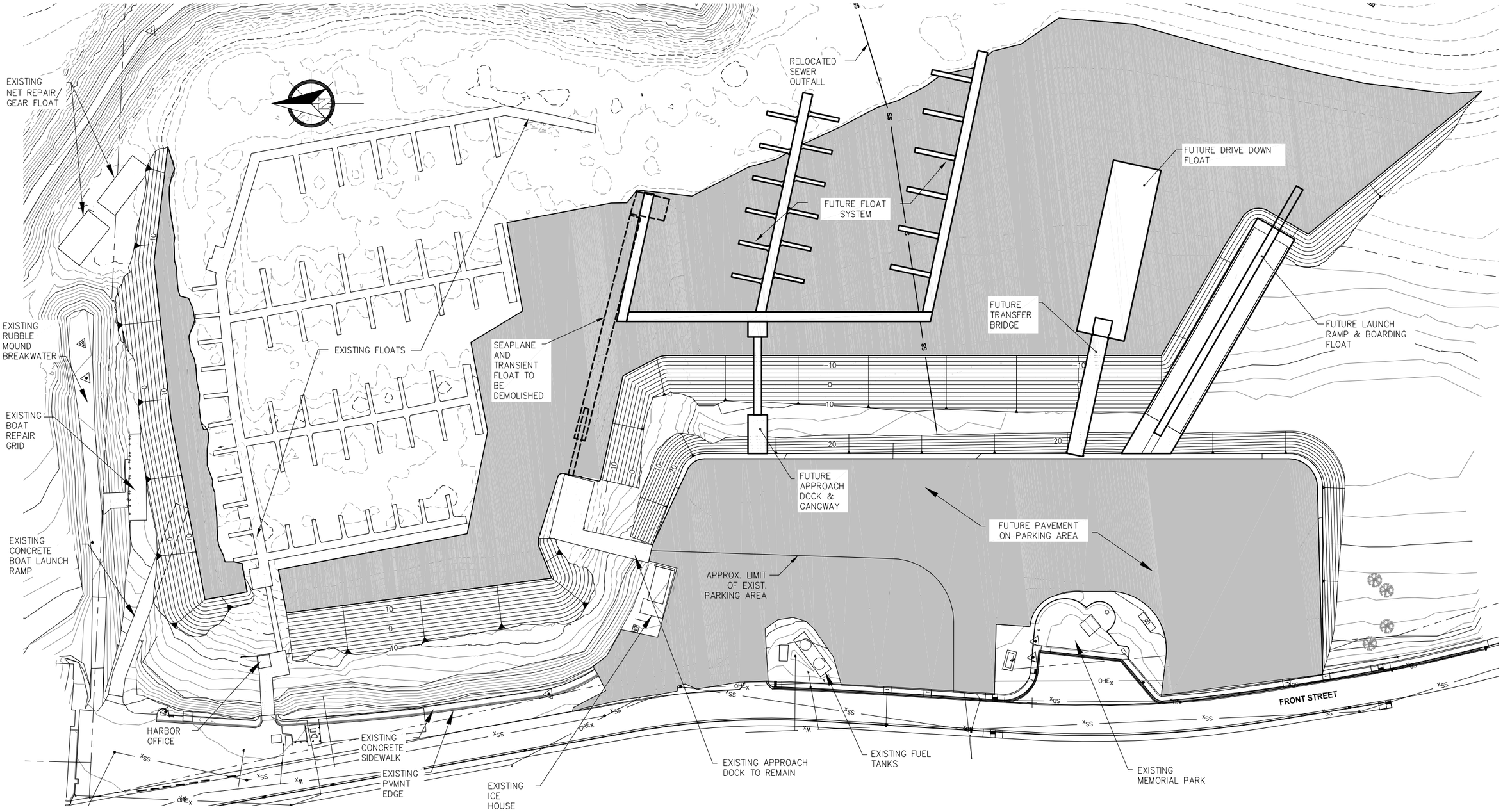
DESIGN: TCB CHECKED: CRS
DRAWN: PJD APPROVED: ____
SCALE: SCALE IN FEET 0 50 100 FT.
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE: **GENERAL SITE PLAN**

PND PROJECT NO.: 102029

1.04
SHEET 4 OF 19



SITE DEVELOPMENT PLAN

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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Fax: 907-586-2099
www.pndengineers.com

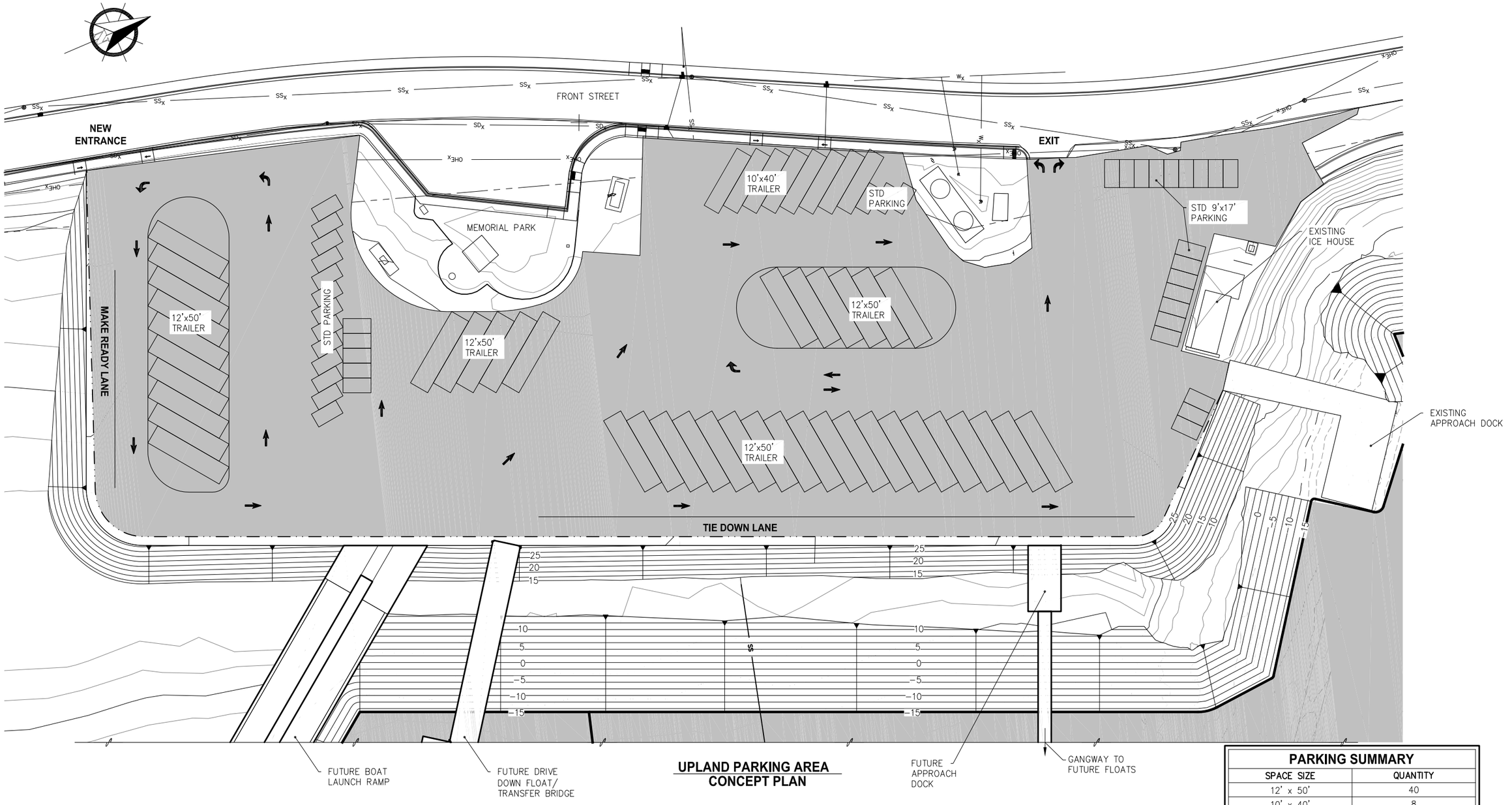
DESIGN: TCB CHECKED: CRS
DRAWN: PJD APPROVED:
SCALE: SCALE IN FEET 0 50 100 FT.
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE: **SITE DEVELOPMENT PLAN**

PND PROJECT NO.: 102029

1.05
SHEET 5 OF 19



UPLAND PARKING AREA
CONCEPT PLAN

PARKING SUMMARY	
SPACE SIZE	QUANTITY
12' x 50'	40
10' x 40'	8
9' x 17'	40

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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Fax: 907-586-2099
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DESIGN: TCB CHECKED: CRS
DRAWN: PJD APPROVED:
SCALE: SCALE IN FEET 0 30 60 FT.
DATE: DEC. 2014

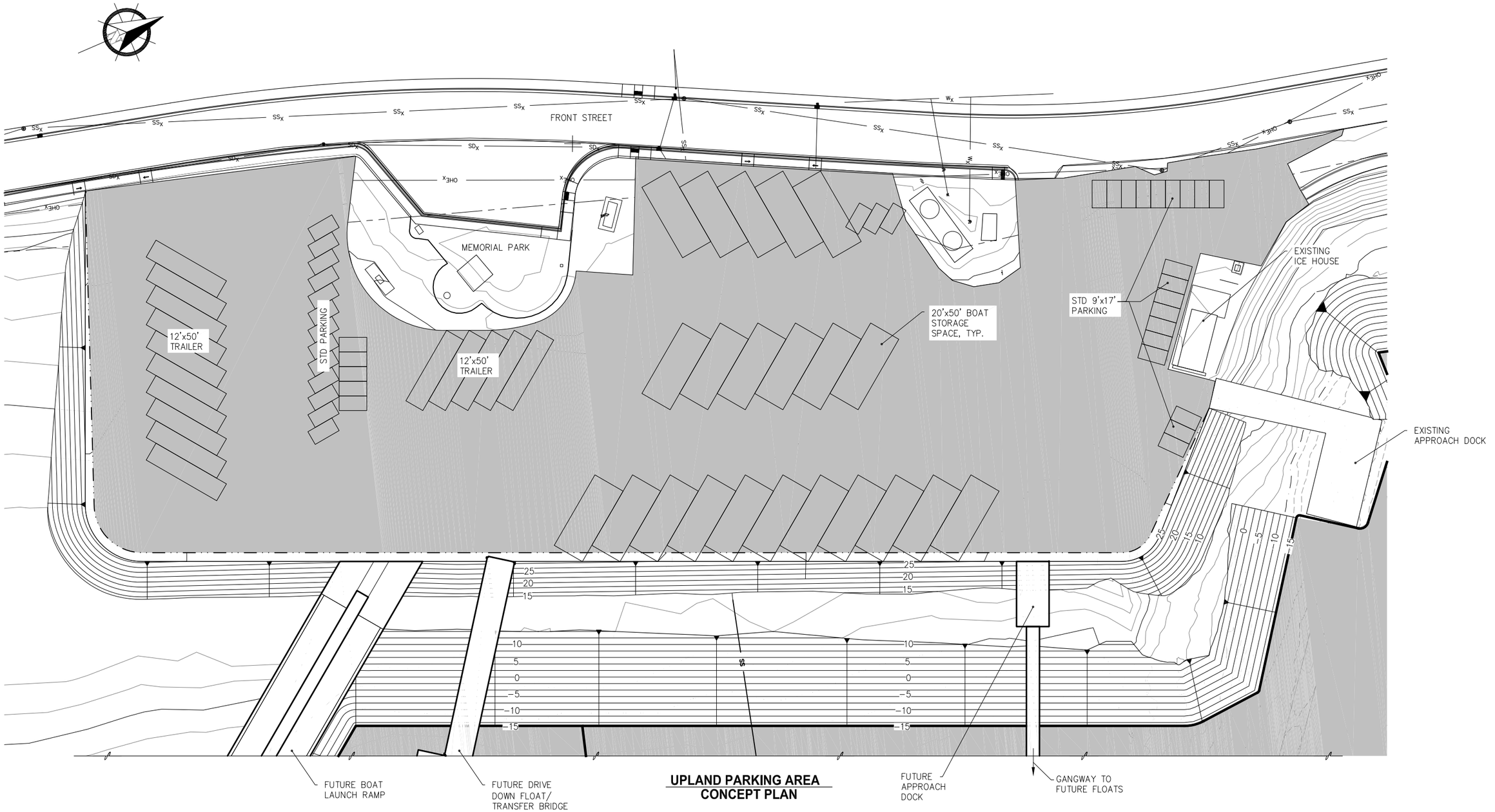
HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE:
UPLANDS DEVELOPMENT PLAN
SUMMER USE

PND PROJECT NO.: 102029

1.06
SHEET 6 OF 19

Stalls - 20x50



UPLAND PARKING AREA
CONCEPT PLAN

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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Fax: 907-586-2099
www.pndengineers.com

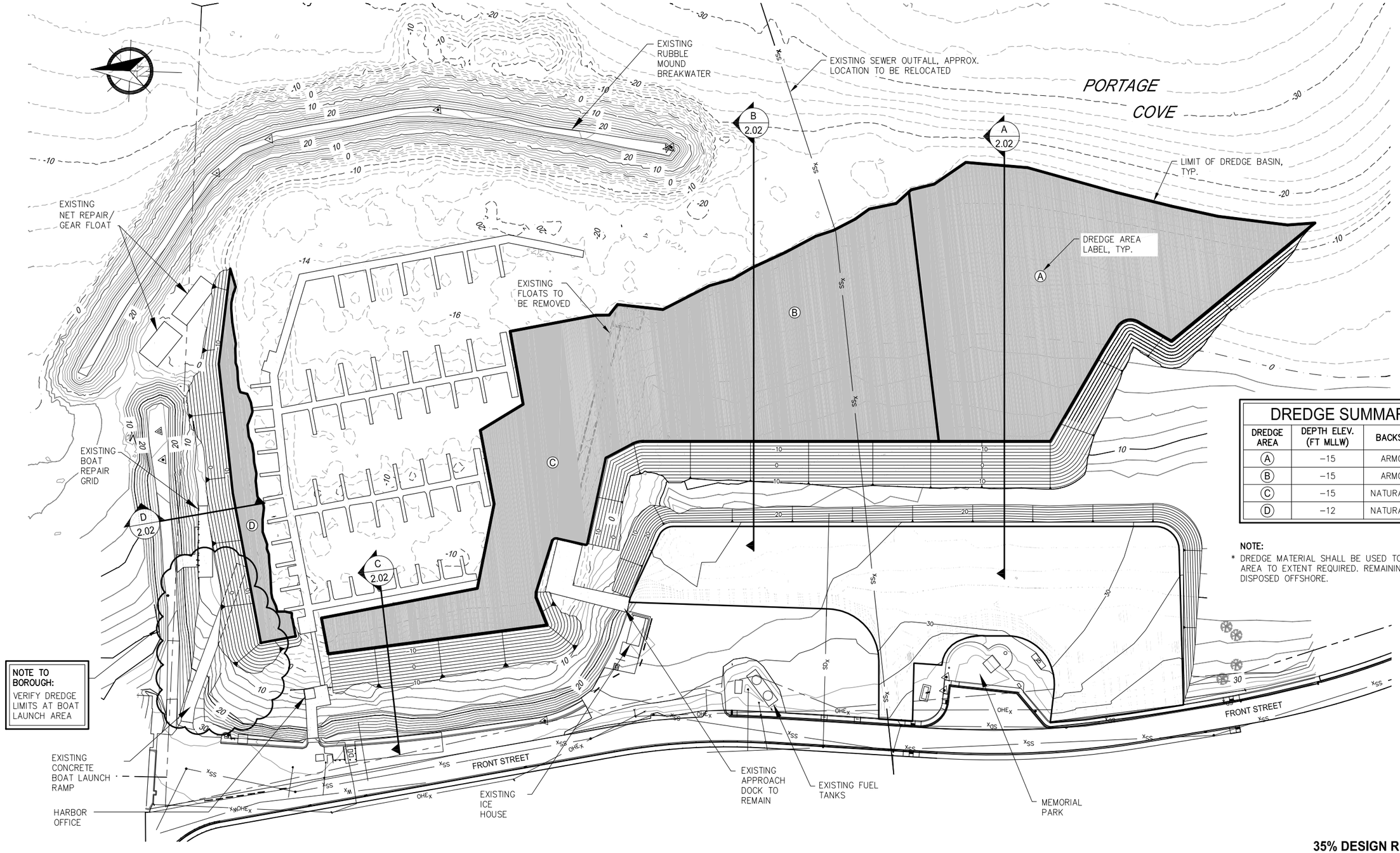
DESIGN: TCB CHECKED: CRS
DRAWN: APPROVED:
SCALE: SCALE IN FEET 0 30 60 FT.
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE:
UPLANDS DEVELOPMENT PLAN
WINTER USE

PND PROJECT NO.: 102029

1.07
SHEET 7 OF 19



DREDGE SUMMARY TABLE

DREDGE AREA	DEPTH ELEV. (FT MLLW)	BACKSLOPE	DISPOSAL
(A)	−15	ARMORED	UPLAND *
(B)	−15	ARMORED	OFFSHORE
(C)	−15	NATURAL CUT	OFFSHORE
(D)	−12	NATURAL CUT	OFFSHORE

NOTE:

* DREDGE MATERIAL SHALL BE USED TO FILL UPLAND PARKING AREA TO EXTENT REQUIRED. REMAINING MATERIAL SHALL BE DISPOSED OFFSHORE.

35% DESIGN REVIEW SUBMITTAL

HAINES BOROUGH ALASKA

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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Fax: 907-586-2099
www.pndengineers.com

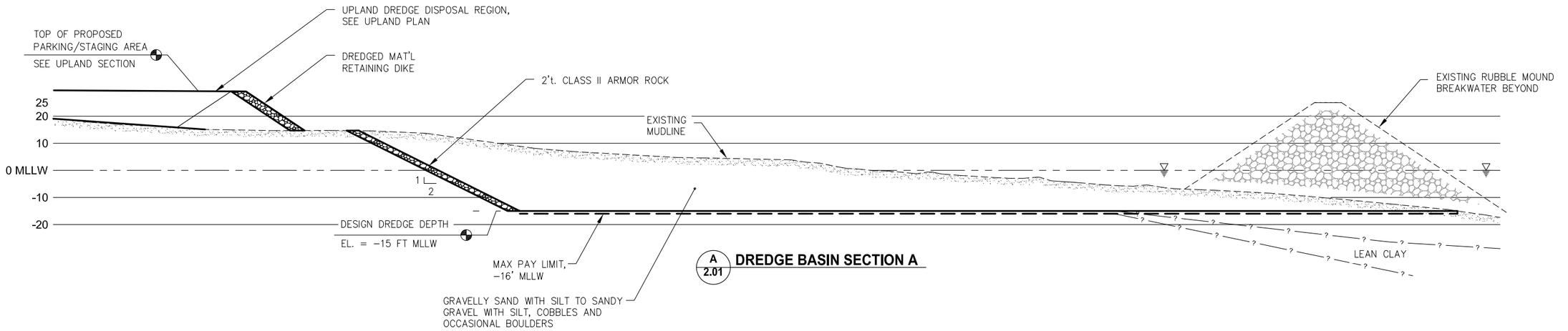
DESIGN: ____ CHECKED: CRS
DRAWN: PJD APPROVED: ____
SCALE: SCALE IN FEET 0 60 120 FT.
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

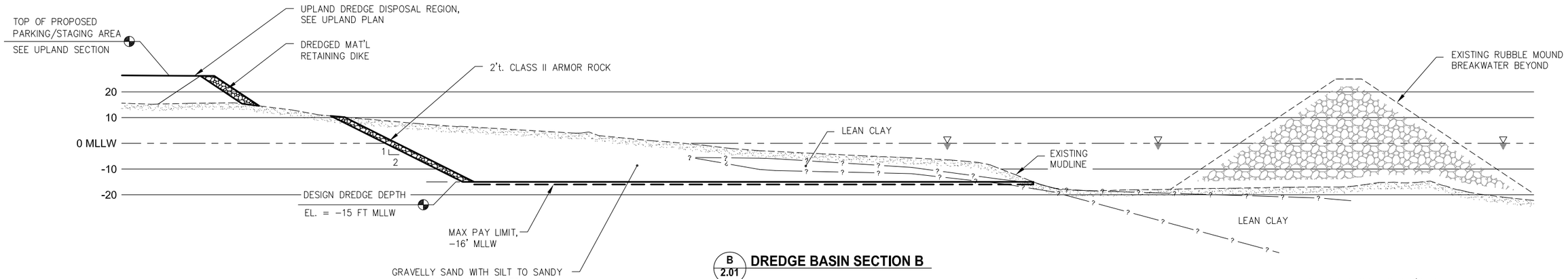
SHEET TITLE: **DREDGING PLAN**

PND PROJECT NO.: 102029

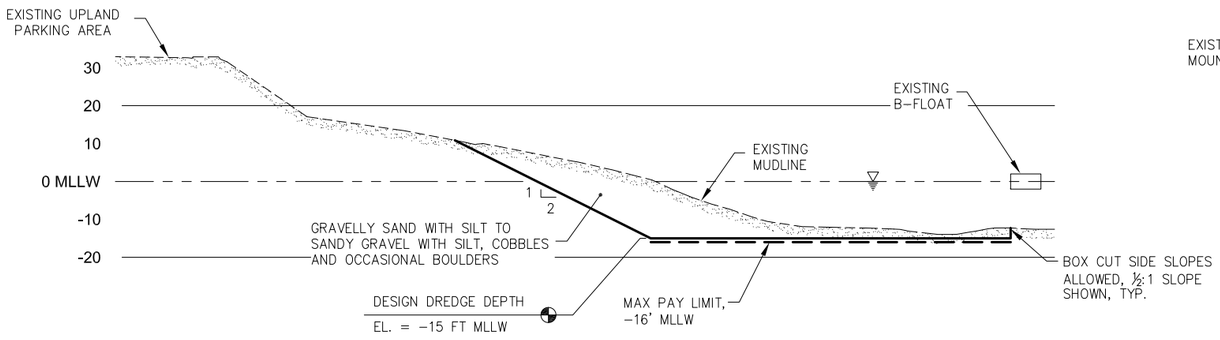
2.01
SHEET 8 OF 19



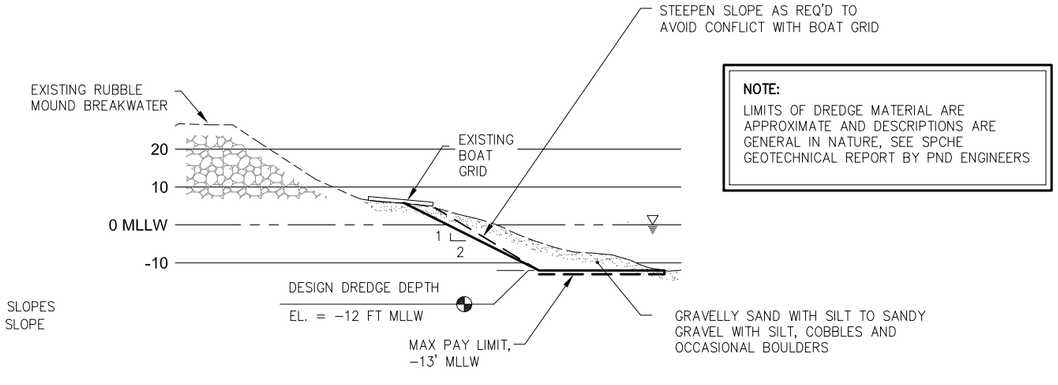
A 2.01 **DREDGE BASIN SECTION A**



B 2.01 **DREDGE BASIN SECTION B**



C 2.01 **DREDGE BASIN SECTION C**



NOTE:
LIMITS OF DREDGE MATERIAL ARE APPROXIMATE AND DESCRIPTIONS ARE GENERAL IN NATURE, SEE SPCHE GEOTECHNICAL REPORT BY PND ENGINEERS

D 2.01 **DREDGE BASIN SECTION D**

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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Fax: 907-586-2099
www.pndengineers.com

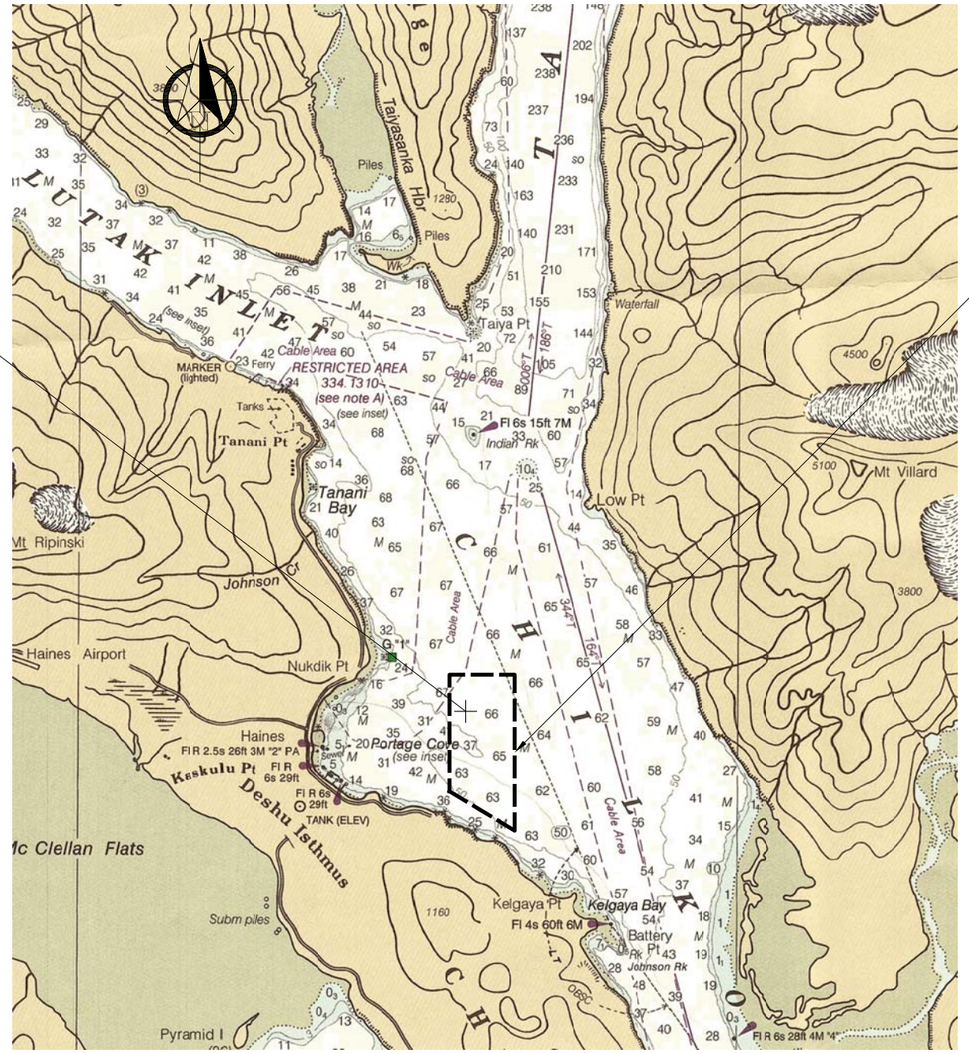
DESIGN: TCB CHECKED: CRS
DRAWN: PJD APPROVED:
SCALE: SCALE IN FEET 0 20 40 FT.
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE: **DREDGING SECTIONS**

PND PROJECT NO.: 102029

2.02
SHEET 9 OF 19



OFFSHORE DISPOSAL SITE CENTER:

LAT: N 59°14'18"

LONG: W 135°24'12"

NOTE:
CENTER LOCATION APPROXIMATE

BATHYMETRY FROM: NOAA 17317
LYNN CANAL – SHERMAN POINT TO SKAGWAY

DISPOSAL SITE PLAN

SCALE IN MILES
0 ¼ ½

35% DESIGN REVIEW SUBMITTAL

HAINES BOROUGH ALASKA

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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Fax: 907-586-2099
www.pndengineers.com

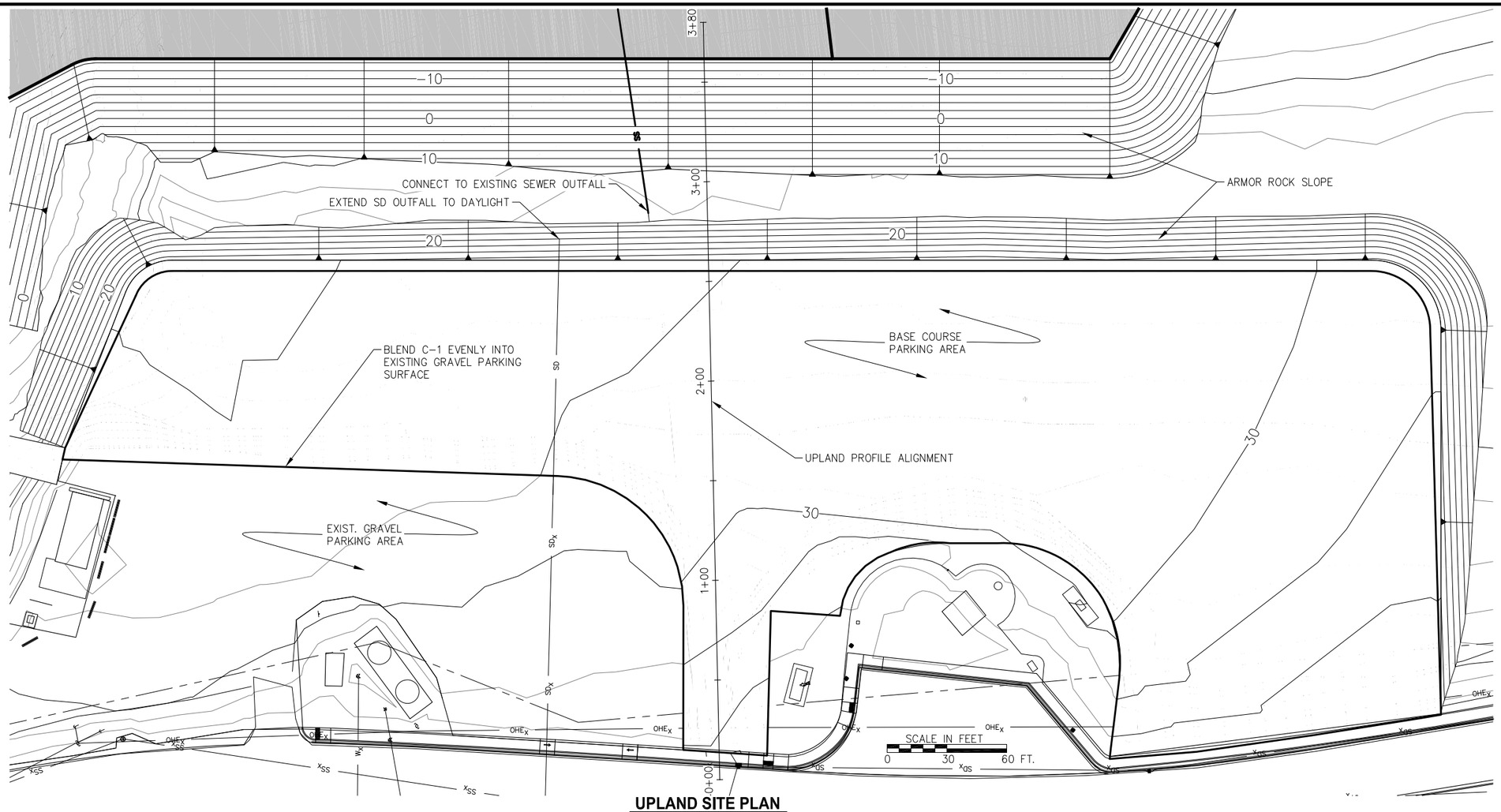
DESIGN: NJS CHECKED: CRS
DRAWN: PJD APPROVED:
SCALE: AS SHOWN
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

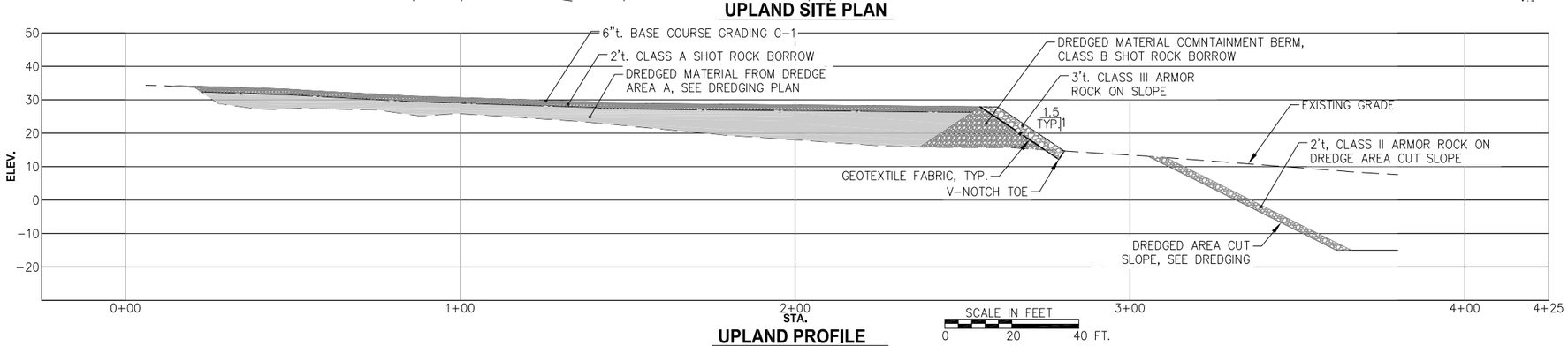
SHEET TITLE: **DREDGING OFFSHORE DISPOSAL SITE PLAN**

PND PROJECT NO.: 102029

2.03
SHEET 10 OF 19



UPLAND SITE PLAN



UPLAND PROFILE

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

PND ENGINEERS, INC.
9360 Glacier Highway, Ste. 100
Juneau, Alaska 99801
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www.pndengineers.com

DESIGN: TCB CHECKED: CRS
DRAWN: TCB APPROVED:
SCALE: AS SHOWN
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

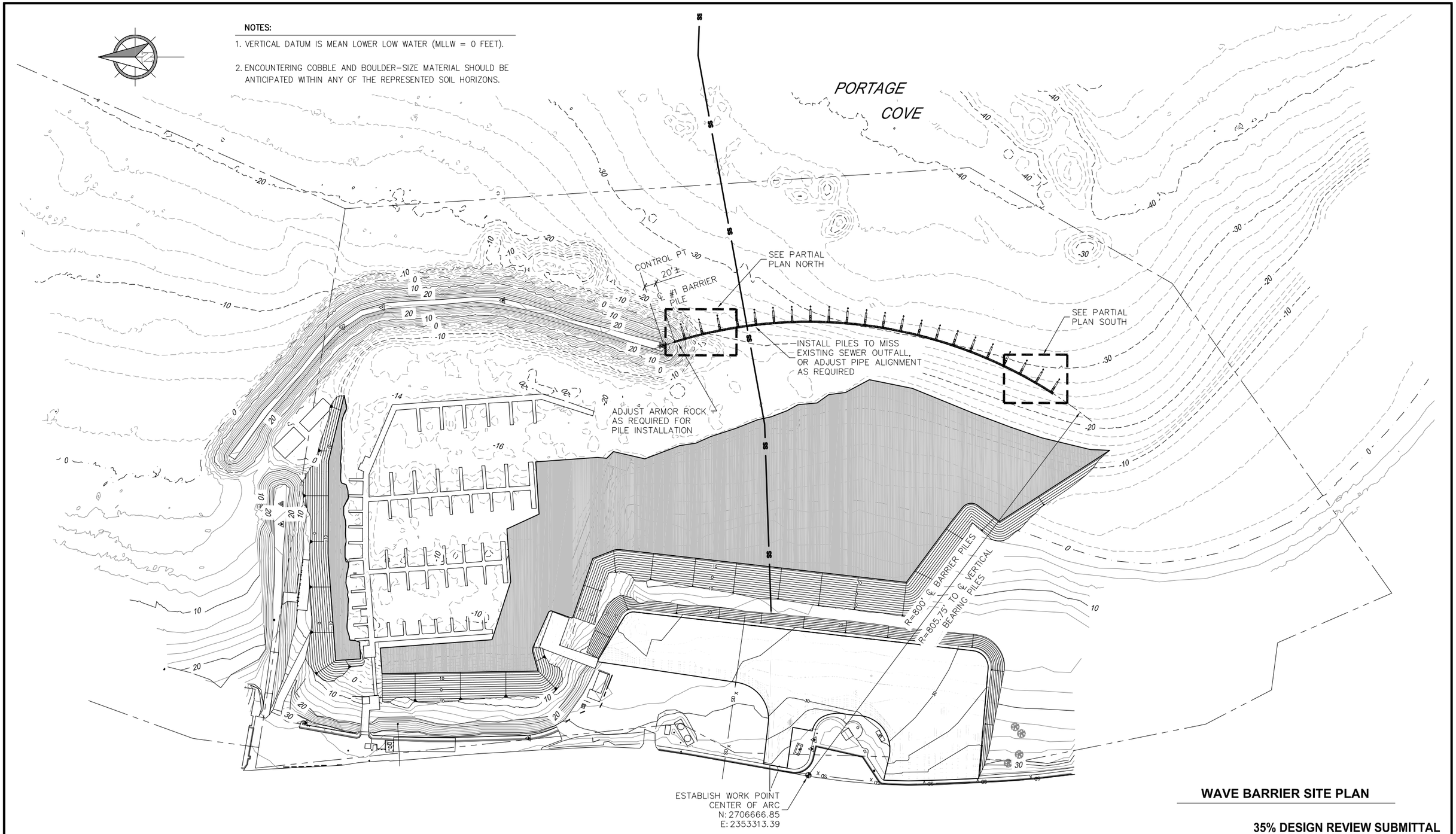
SHEET TITLE:
UPLAND SITE PLAN AND PROFILE

PND PROJECT NO.: 102029

2.04
SHEET 11 OF 19

NOTES:

1. VERTICAL DATUM IS MEAN LOWER LOW WATER (MLLW = 0 FEET).
2. ENCOUNTERING COBBLE AND BOULDER-SIZE MATERIAL SHOULD BE ANTICIPATED WITHIN ANY OF THE REPRESENTED SOIL HORIZONS.



WAVE BARRIER SITE PLAN

35% DESIGN REVIEW SUBMITTAL

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

PND ENGINEERS, INC.
9360 Glacier Highway, Ste. 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

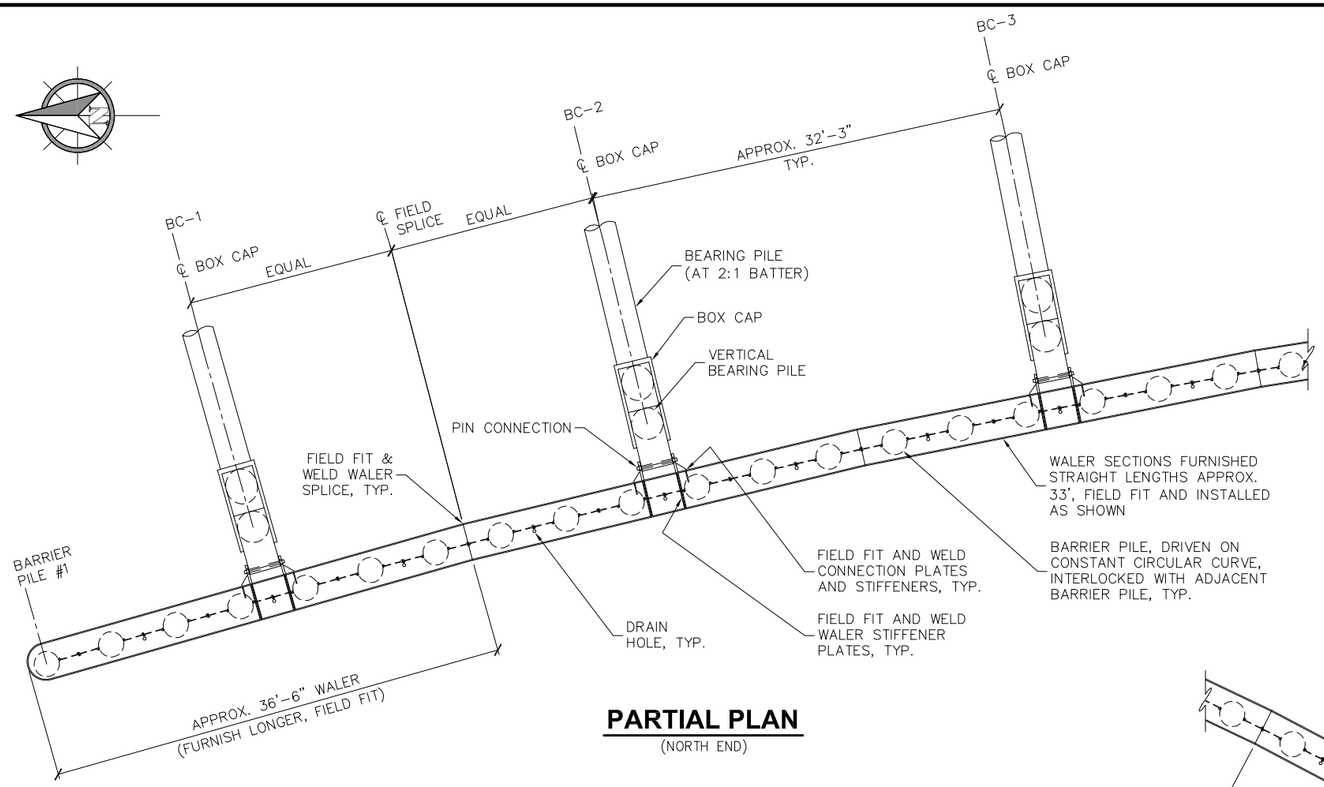
DESIGN: JO CHECKED: CRS
DRAWN: DRH APPROVED: ____
SCALE: SCALE IN FEET 0 40 80 160 FT.
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

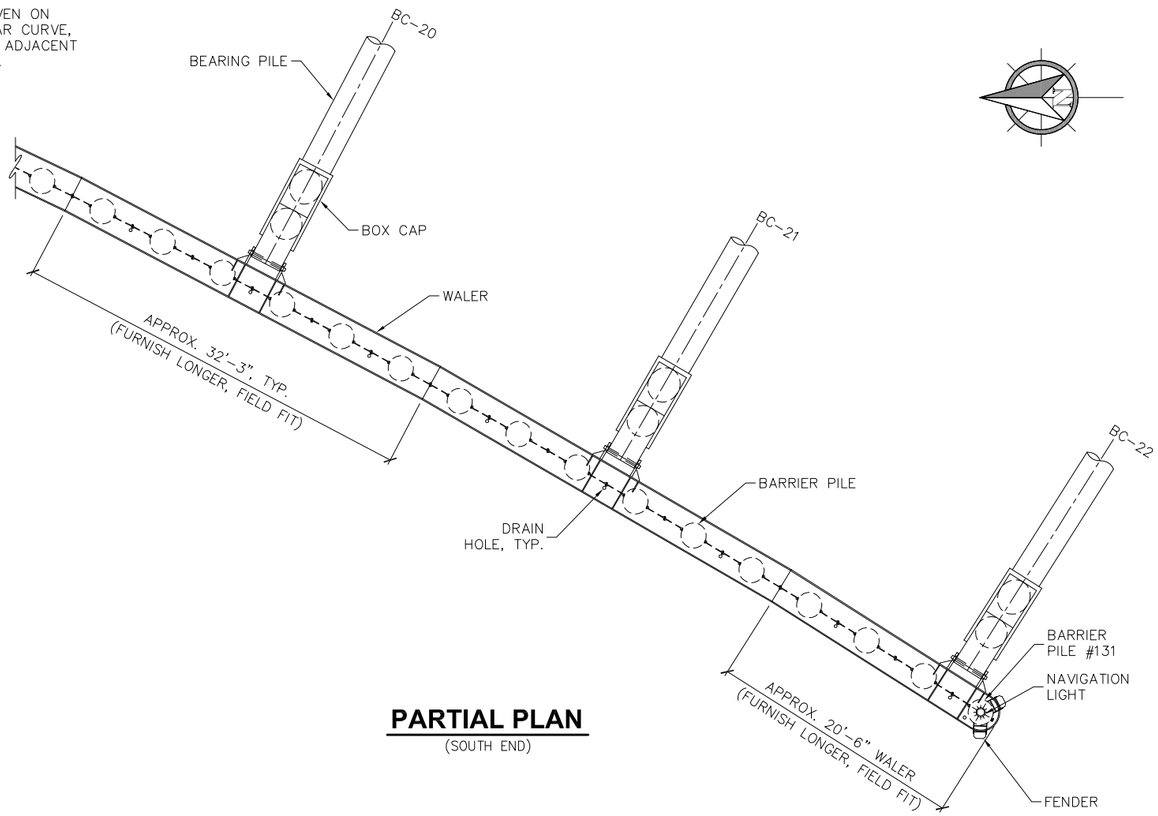
SHEET TITLE: **WAVE BARRIER SITE PLAN**

PND PROJECT NO.: 102029

3.01
SHEET 12 OF 19



PARTIAL PLAN
(NORTH END)



PARTIAL PLAN
(SOUTH END)

35% DESIGN REVIEW SUBMITTAL

HAINES BOROUGH ALASKA

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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9360 Glacier Highway, Ste. 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

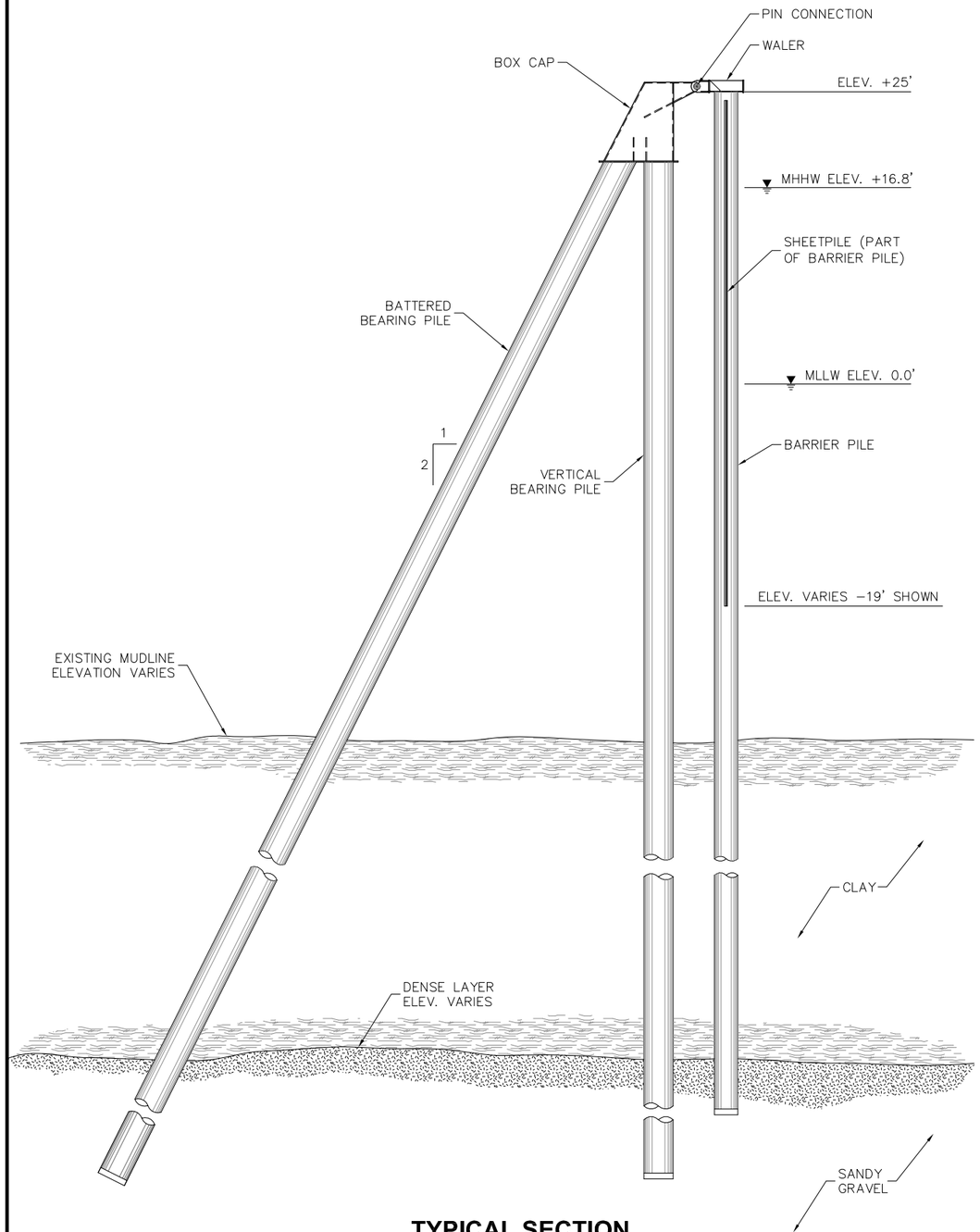
DESIGN: JO CHECKED: CRS
DRAWN: DRH APPROVED: ____
SCALE: SCALE IN FEET 0 6 12 FT.
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE HARBOR EXPANSION

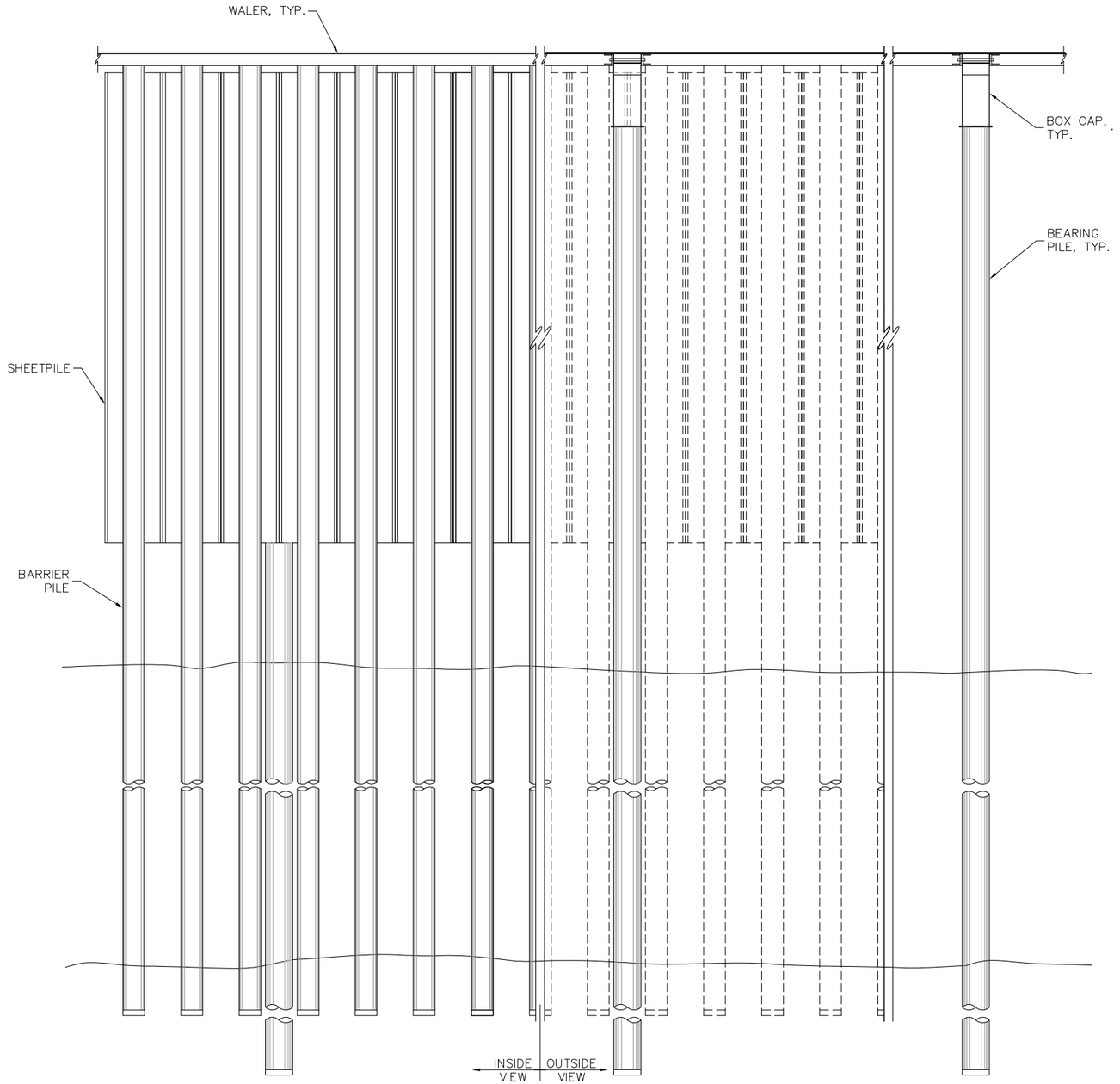
SHEET TITLE:
WAVE BARRIER PARTIAL PLAN

PN&D PROJECT NO.: 102029.10

3.02
SHEET 13 OF 19



TYPICAL SECTION



PARTIAL ELEVATION

35% DESIGN REVIEW SUBMITTAL

HAINES BOROUGH ALASKA

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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9360 Glacier Highway, Ste. 100
Juneau, Alaska 99801

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Fax: 907-586-2099
www.pndengineers.com

DESIGN: JO CHECKED: CRS
DRAWN: DRH APPROVED: ____

SCALE: SCALE IN FEET
0 6 12 FT.

DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE HARBOR EXPANSION

SHEET TITLE: ELEVATION AND TYPICAL SECTION

3.03

SHEET 14 OF 19

PN&D PROJECT NO.: 102029.10

WAVE BARRIER PILE SCHEDULE

Pile Location	Pile Size Diameter x Wall	Approx. Length (ft)	Approx. Length of Bare Pile (ft)	Approx. Length of Sheetpile (ft)	Tip Type	Approx. Tip Elevation (ft)	Design Compression Capacity (Allowable/ Ultimate) (kips)	Comments
1	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 one side of pile only*
2	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
3	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
4	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
5	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
6	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
7	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
8	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
9	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
10	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
11	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
12	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
13	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
14	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
15	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
16	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
17	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
18	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
19	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
20	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
21	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
22	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
23	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
24	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
25	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
26	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
27	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
28	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
29	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
30	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
31	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
32	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
33	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
34	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
35	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
36	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
37	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
38	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
39	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
40	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
41	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
42	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
43	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
44	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
45	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
46	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
47	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
48	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
49	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
50	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides

* PAY PARTICULAR ATTENTION TO INTERLOCK ORIENTATION

WAVE BARRIER PILE SCHEDULE (Cont.)

Pile Location	Pile Size Diameter x Wall	Approx. Length (ft)	Approx. Length of Bare Pile (ft)	Approx. Length of Sheetpile (ft)	Tip Type	Approx. Tip Elevation (ft)	Design Compression Capacity (Allowable/ Ultimate) (kips)	Comments
51	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
52	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
53	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
54	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
55	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
56	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
57	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
58	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
59	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
60	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
61	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
62	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
63	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
64	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
65	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
66	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
67	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
68	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
69	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
70	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
71	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
72	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
73	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
74	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
75	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
76	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
77	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
78	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
79	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
80	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
81	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
82	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
83	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
84	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
85	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
86	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
87	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
88	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
89	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
90	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
91	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
92	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
93	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
94	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
95	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
96	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
97	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
98	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
99	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
100	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides

35% DESIGN REVIEW SUBMITTAL

HAINES BOROUGH ALASKA

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

P N D ENGINEERS, INC.
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DESIGN: JO CHECKED: CRS
DRAWN: DRH APPROVED:
SCALE:
DATE: DEC. 2014

HAINES BOROUGH
SOUTH PORTAGE COVE HARBOR EXPANSION

SHEET TITLE: PILE SCHEDULE

PN&D PROJECT NO.: 102029.10

3.04
SHEET 15 OF 19

WAVE BARRIER PILE SCHEDULE (Cont.)

Pile Location	Pile Size Diameter x Wall	Approx. Length (ft)	Approx. Length of Bare Pile (ft)	Approx. Length of Sheetpile (ft)	Tip Type	Approx. Tip Elevation (ft)	Design Compression Capacity (Allowable/ Ultimate) (kips)	Comments
101	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
102	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
103	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
104	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
105	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
106	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
107	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
108	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
109	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
110	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
111	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
112	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
113	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
114	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
115	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
116	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
117	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
118	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
119	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
120	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
121	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
122	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
123	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
124	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
125	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
126	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
127	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
128	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
129	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
130	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 both sides
131	24"dia x 0.5"t	100	40		Open Shoe	−75	25/75	PS31 one side of pile only*

* PAY PARTICULAR ATTENTION TO INTERLOCK ORIENTATION

BEARING PILE SCHEDULE

Pile Location	Pile Batter	Pile Size Diameter x Wall **	Approx. Length (ft) **	Approx. Length of Bare Pile (ft) **	Tip Type	Capacity (Allowable/Ultimate) (kips) **	
						Compression	Tension
BC−1	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−2	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−3	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−4	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−5	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−6	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−7	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−8	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−9	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−10	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−11	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−12	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−13	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−14	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−15	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−16	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−17	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−18	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−19	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−20	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−21	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		
BC−22	Vertical	30"dia x "t			Cutting Shoe		
	2:1	30"dia x "t			Cutting Shoe		

** PRELIMINARY BEARING PILE ASSUMPTIONS:
- ASSUME 3/4"t WALL PILES
- ASSUME 160' TO 200' LONG PILES
- ASSUME BOTTOM 100' BARE (NO GALV.)
- COMPRESSION AND TENSION CAPACITIES REQUIRED STILL IN DEVELOPMENT. DATA IN TABLE WILL BE COMPLETED AS DESIGN DEVELOPS.

35% DESIGN REVIEW SUBMITTAL

HAINES BOROUGH ALASKA

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SCALE:
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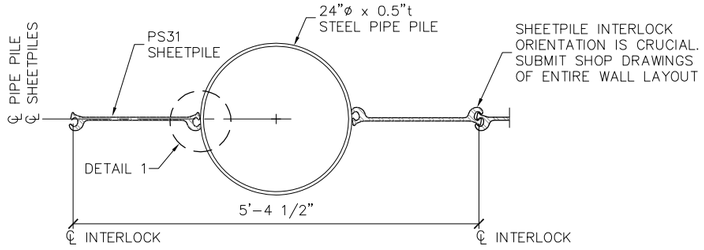
HAINES BOROUGH
SOUTH PORTAGE COVE HARBOR EXPANSION

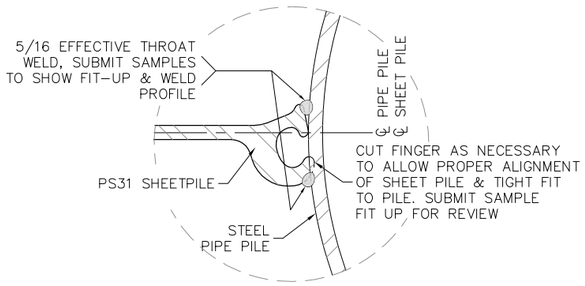
SHEET TITLE: PILE SCHEDULE

PN&D PROJECT NO.: 102029.10

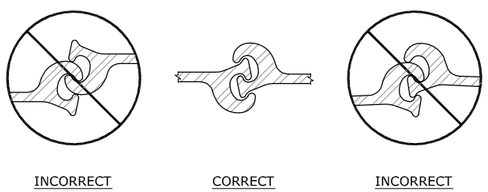
3.05
SHEET 16 OF 19



TYPICAL BARRIER PILE

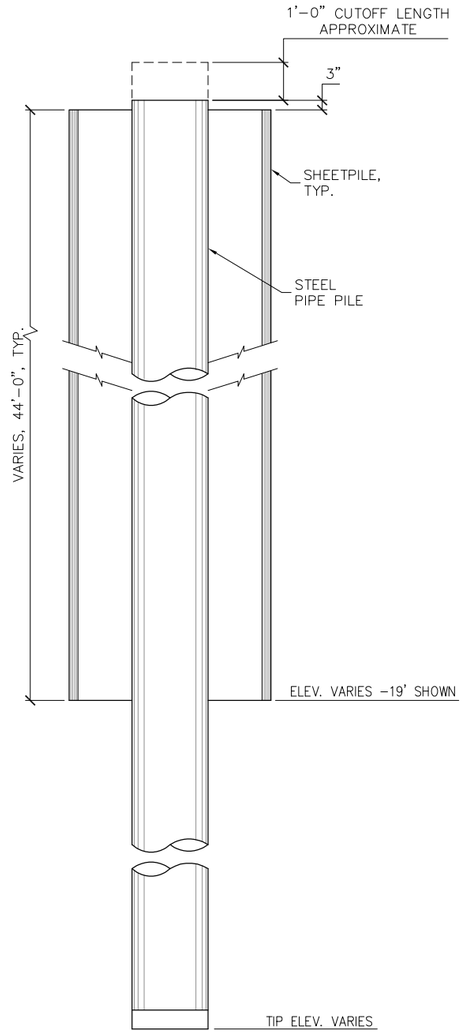


DETAIL 1

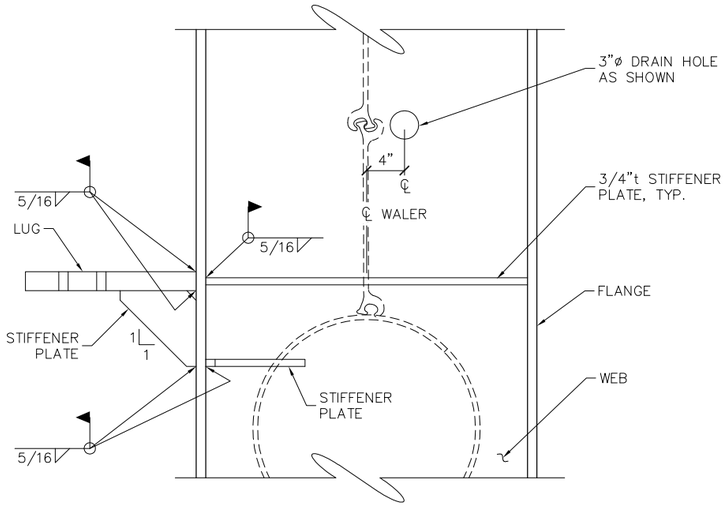


SHEETPILE INTERLOCK DETAILS

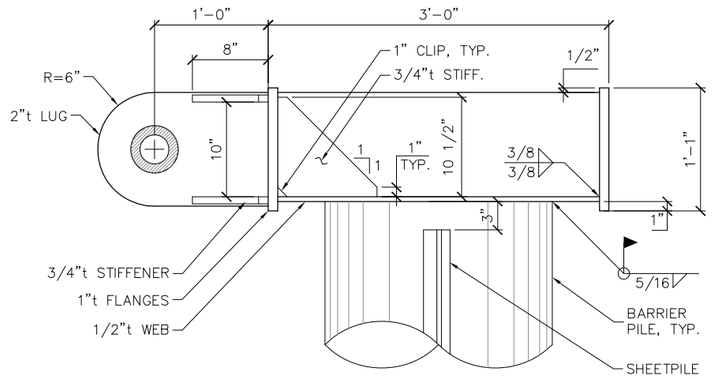
NOTE: ORIENTATION OF INTERLOCKS IS CRITICAL, VIEW SHOWN FROM TOP.



TYPICAL WAVE BARRIER PILE



PLAN



ELEVATION

WALER DETAILS

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DRAWN: DRH APPROVED: ____
DATE: DEC. 2014

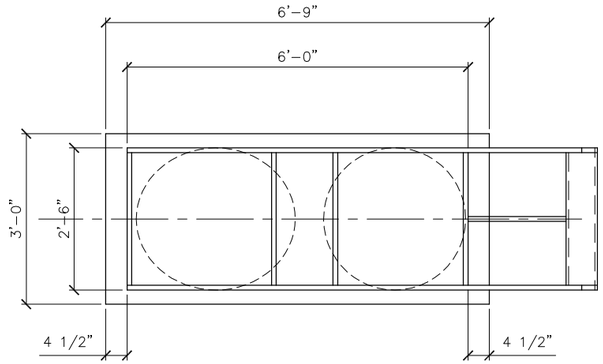
HAINES BOROUGH
SOUTH PORTAGE COVE
HARBOR EXPANSION

SHEET TITLE: BARRIER PILES AND WALERS

PN&D PROJECT NO.: 102029.10

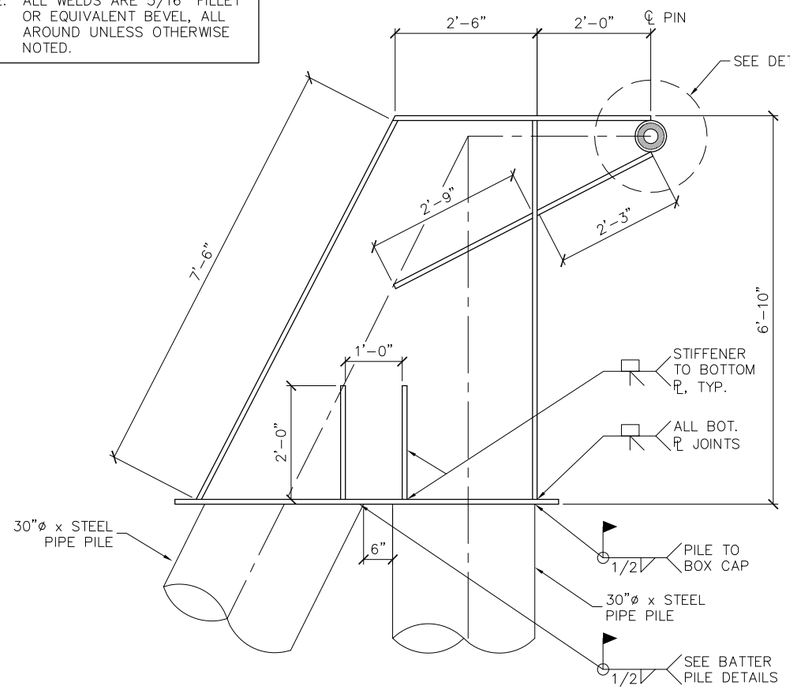
3.06

SHEET 17 OF 19



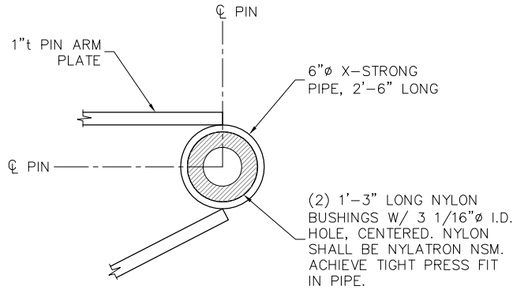
PLAN

NOTE:
1. ALL PLATE IS 1"t UNLESS OTHERWISE NOTED.
2. ALL WELDS ARE 5/16" FILLET OR EQUIVALENT BEVEL, ALL AROUND UNLESS OTHERWISE NOTED.

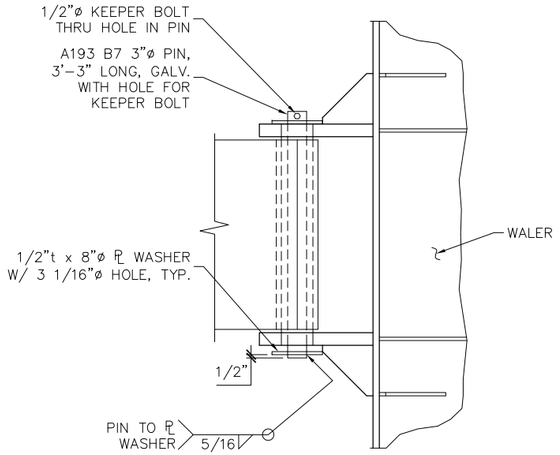


ELEVATION

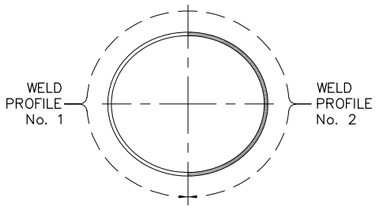
BOX CAP



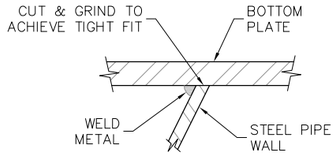
DETAIL



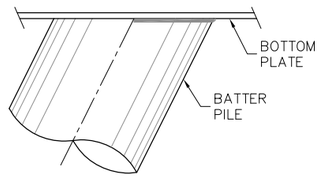
PIN CONNECTION PLAN



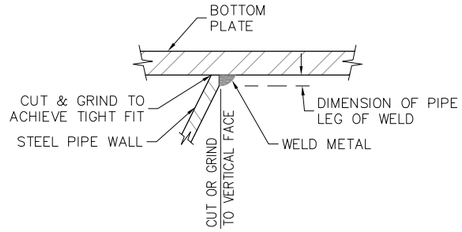
PLAN



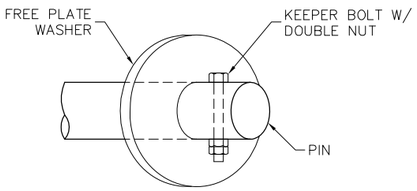
No. 1 WELD PROFILE

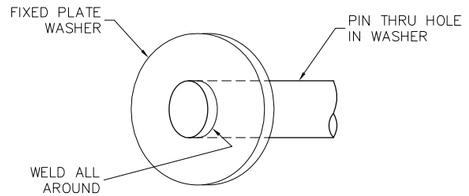


SIDE VIEW



No. 2 WELD PROFILE





PIN CONNECTION DETAILS

BATTER PILE WELD

(ALL BATTER PILES)

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REVISIONS

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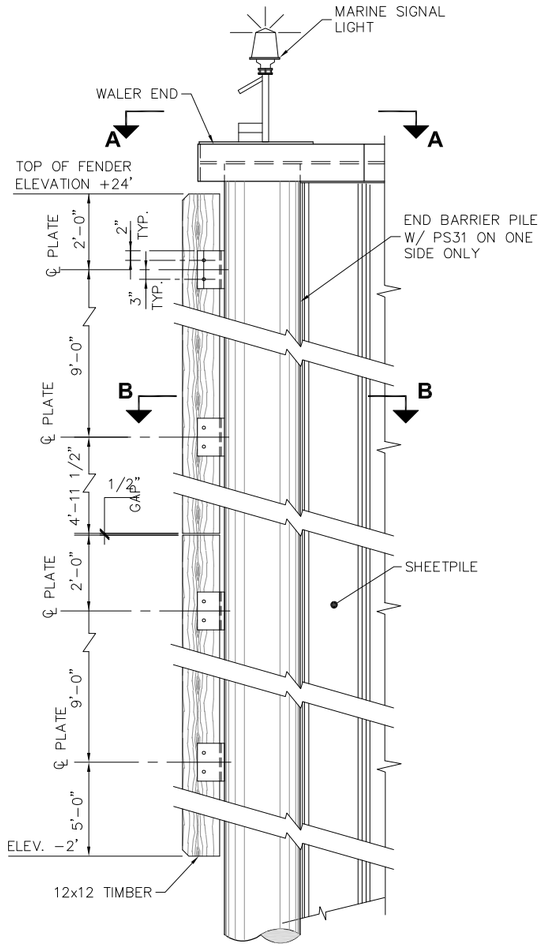
HAINES BOROUGH
SOUTH PORTAGE COVE HARBOR EXPANSION

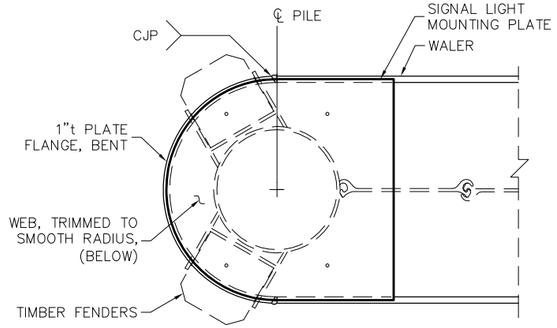
SHEET TITLE: BEARING PILES AND BOX CAPS

PN&D PROJECT NO.: 102029.10

3.07
SHEET 18 OF 19

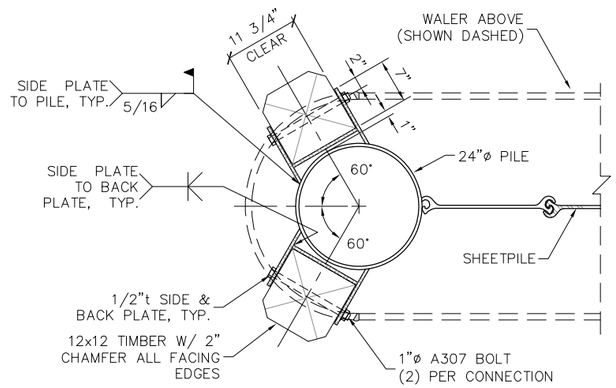


PARTIAL ELEVATION



VIEW A-A

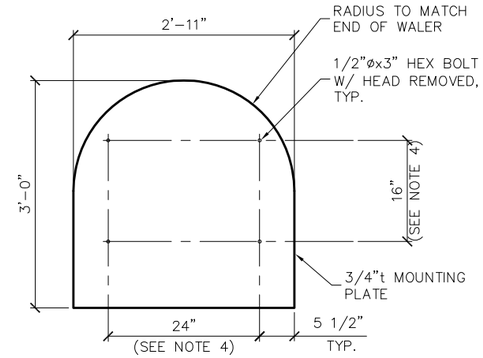
END CAP AT SOUTH
END OF WAVE BARRIER



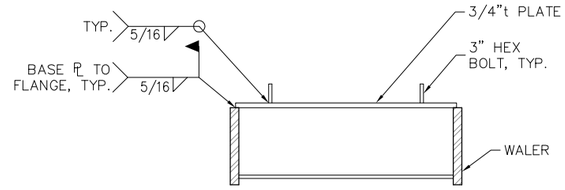
VIEW B-B

END CAP AT SOUTH
END OF WAVE BARRIER

FENDER



PLAN



SECTION

NAVIGATION LIGHT BASE PLATE

MARINE SIGNAL LIGHT

NAVIGATION LIGHT NOTES:

1) ALL METALS AND HARDWARE SHALL BE HOT DIP GALVANIZED PER ASTM A123 OR A153 AS APPROPRIATE.
2) BOLTS SHALL BE ASTM A325. STEEL PLATE SHALL BE A MINIMUM ASTM A36.
3) TIDELAND SIGNAL CORP. SOLA-CHAN MARINE SIGNAL LIGHT. ML-155 ON 4' PEDESTAL WITH 10W SOLAR MODULE OR APPROVED EQUAL , INCLUDING ON 12V SECONDARY ENERGY CELL AND MAXIFALO-60 LED FLASHER SET AT 0.4 SEC. "ON" AND 3.6 SEC. "OFF" (15 FLASHES/MINUTE) VISIBLE FOR MIN. 2 NM. COLOR AND FLASH PATTERN PER US COAST GUARD PERMIT REQUIREMENTS.
4) CENTER MARINE SIGNAL LIGHT ON BASE PLATE. CONTRACTOR TO VERIFY BOLT PATTERN AND SPACING ON LIGHT BASE.
5) ORIENT SOLAR PANEL FACING SOUTH.

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HAINES BOROUGH
SOUTH PORTAGE COVE HARBOR EXPANSION

SHEET TITLE: FENDER AND MARINE SIGNAL LIGHT

PN&D PROJECT NO.: 102029.10

3.08
SHEET 19 OF 19