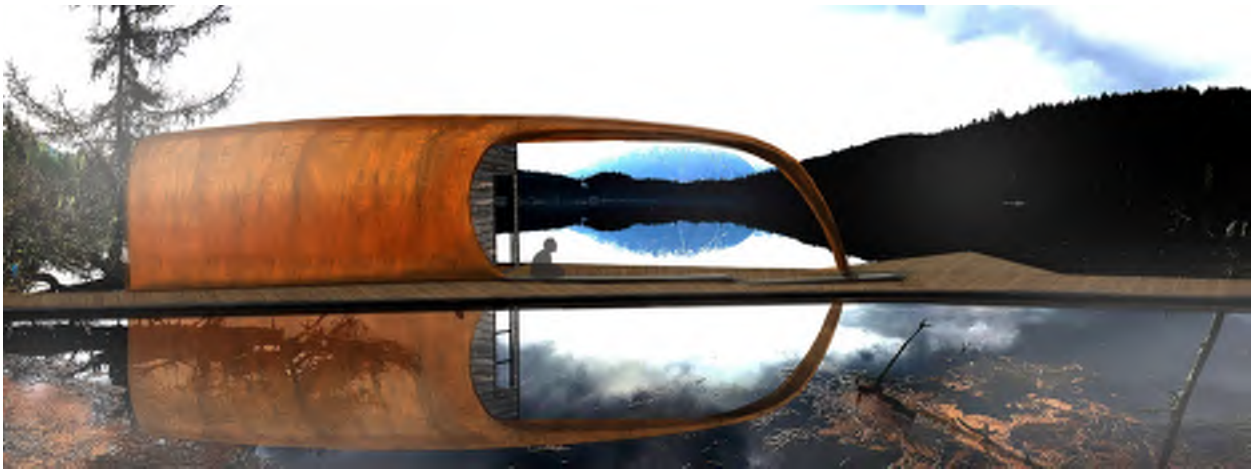
UAS AAK'W SHORELINE IMPROVEMENT PROJECT
CONCEPT/SCHEMATIC DESIGN SUBMITTAL

24 May 2019



NorthWind Architects, LLC

UNIVERSITY of ALASKA SOUTHEAST

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Appendices

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A/E Scope Summary

May 24, 2019

To: Pua Maunu
Project Manager
UAS Facilities Planning and Construction

Sam Kito III, PE
Project Manager
UAS Facilities Planning and Construction

Project: UAS Aak'w Shoreline Improvement Project
UAS Contract/Project #2015-08

Introduction

The intent of this project is to develop to a schematic design level the components shown in the February 2016 UAS Auke Lake Shoreline Master Plan, prepared by Dowl Engineers - primarily the indicated shelter, described as an outdoor classroom, and supporting trail and floating trail system. Northwind Architects was awarded the project, the work scope of which included the following deliverables:

- Wetlands Delineation
- Topographic Survey
- Geotechnical Investigation
- Permitting Timeline
- Preliminary Mitigation plan
- Schematic Design Drawings including landscape and civil site plans and shelter floor plan and details necessary for Wetlands permitting
- Schematic Design Narrative discussing materials, phasing, construction constraints, as well as structural, mechanical and electrical systems not addressed in the drawings.
- Five renderings
- Cost Estimate
- Wetlands permit application

Work commenced in April of 2016 with the preparation of precedent material for use during the project kick-off meeting with the project's steering committee held that same month. During that first meeting a question was raised by Kolene James, UAS's Rural and Native Student Coordinator. The question was: Has anyone on the steering committee or previous or current design team consulted with the Tlingit, and particularly the Aak'w Kw'aan Elders regarding the cultural significance of the lake and shore, and appropriate ways to develop it? The answer was no. In response, Nathan Leigh, PE, then the project manager for this project, reestablished the initial project scope to include a series of conversations with Elders, which effectively redefined some of the scope of deliverables of the project. This is because emphasis shifted in-part from technical development of the Master Plan's key components to conceptual/cultural development of them with a strong emphasis on the design's appropriateness in representing and celebrating Aak'w's importance to the Aak'w Kw'aan. Discussions with Elders spanned over a period of

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approximately one and a half years during which design efforts were put on hold. Following these discussions, work scope items necessary to translate what we learned during those conversations into a schematic design package that would be accepted as culturally appropriate by the Elders were added, and other work scope items seemed non-critical to achieving this end were deleted. Key among additions was an architectural concept design phase. Work to date addressed the project from a planning and civil design standpoint. The shelter, to which significant importance was attached with respect to the conceptual purpose of the overall project, had not been considered, beyond consideration of function, from an architectural standpoint at all. It would have been impossible to launch into a technical, schematic level design exercise to develop the shelter without first understanding what its spatial, formal and aesthetic characteristics should be.

The adjusted scope of deliverables is as follows, with deleted items struck-through and added items italicized:

- Wetlands Delineation
- Topographic Survey
- ~~Geotechnical Investigation~~
- ~~Permitting Timeline~~
- ~~Preliminary Mitigation Plan~~
- Schematic Design Drawings including landscape and civil site plans and shelter floor plan and details necessary for Wetlands permitting
- Schematic Design Narrative discussing materials, phasing, construction constraints, as well as structural, mechanical and electrical systems not addressed in the drawings.
- Five renderings
- Cost Estimate
- ~~Wetlands permit application~~
- *Bathymetric Survey*
- *Initial Discussions with Elders*
- *UAS Woo.cheen Student Design Workshop*
- *Shelter Concept Design*
- *Follow-Up Discussions with Elders*
- *Composed PowerPoint Presentation Package*
- *Presentations to Chancellor, Elders and Woo.cheen*
- *Video Documentation of Presentation (for use in fundraising)*

The original contract fee for A/E services for this project is $156,276. In developing a fee reconciliation to account for the scope modifications, we determined that this sum could be reduced, albeit moderately. Recent discussions with UAS Facilities on the 10th and the 16th of May to address scope acknowledged and tentatively accepted the modifications, pending this summary report. The discussion on the 16th also acknowledged that there will be a minor fee reduction, however determined that a fee amendment would not be issued.

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Conclusion

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We of course appreciate the opportunity to help UAS develop this project and believe that the project's change in direction is essential to its success. We look forward to assisting UAS further as needed to bring this important project to fruition.

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Design/Construction Narrative

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Introduction

The intent of this project is to develop to a schematic design level the components shown in the February 2016 UAS Auke Lake Shoreline Master Plan, prepared by Dowl Engineers - primarily the indicated shelter and supporting land path and floating path systems. The shelter is intended to be a formal and informal gathering place and intended to be able to function as a special indoor/outdoor classroom. The path systems and associated landscape improvements are intended provide access to the shelter. Together, all are intended to act together to conceptually connect and provide access between the main campus (currently perched above and separated from the lake) and the lake which, being iconic of "place" is synonymous with the identity of UAS.

Early discussions with the Aak'w Connection Committee and following, discussions with Aak'w Kw'aan Elders who represent the historical, native inhabitants of the Aak'w added a critical design imperative to the project: Cultural Appropriateness. This consideration refocused the design emphasis as follows:

- The shelter's space, form and materiality are to be representative and celebratory of Tlingit culture as it existed and exists in the Aak'w region.
- The materiality and placement of the shelter and paths together are to be as respectful and celebratory of the land and lake as possible.

These objectives together have resulted in a shelter spatially and formally designed utilizing traditional Formline design principles, and a shelter/trail system designed to minimize impacts on the land and lake and their flora and fauna. Of equal importance, these key elements have been designed to meet the functional criteria set forth for them in the Auke Lake Shoreline Master Plan as well as to meet additional functional criteria which emerged through discussions with Elders.

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Shelter

The shelter is proposed to bear on a floating deck on the lake itself rather than on a concrete foundation in the designated wetlands. This will minimize impacts to the wetlands by allowing work to occur offshore and even remotely, and emphasize the

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purpose of the project which is to enhance the University's connection to the lake. The shelter is proposed to be approximately 800 gross square feet, with an accessible restroom and a mechanical room. The main room is semi-conditioned and lined with glass on the lake facing side to maximize sweeping views of Aak'w, the glacier and the mountains beyond. It contains built-in seating to accommodate formal and informal gatherings, events and classes, and a propane-fueled fireplace, operable only by UAS staff. Immediately outside the entrance to the main room through an over-sized rolling door, a semi-covered deck of roughly the same size as the shelter, also with built-in seating is intended to provide an expansion space for the shelter, effectively doubling its capacity. The shelter's key materials are:

Shelter Structural:

- Foundation (floating) – closed-cell polystyrene foam filled polyethylene flotation bladders supporting a pressure treated, solid sawn timber floor framing utilizing grade 316 stainless steel connection devices and fasteners, cross anchored at multiple points with galvanized steel chain to submerged concrete anchors
- Foundation, Alternate – steel piles
- Deck, Interior – solid-sawn, treated 2x6 tongue and groove
- Deck, Exterior - pultruded, granulated surface, fiberglass grating
- Wall Framing – solid sawn wood, stick framed
- Roof Framing – custom formed, treated, glue-laminated timber
- Sheathing – solid sawn 1 X 4 wood skip-sheathing, with ¼" max gap

Shelter Architectural:

- Weather Barrier – mechanically anchored vapor permeable sheet with sealed edges and laps
- Insulation – mineral fiber blanket
- Roofing/Cladding – 20g weathering sheet steel modules, shingled over pressure treated wood furring
- Glazing Framing – custom, bronze anodized extruded aluminum storefront system with hot-dipped galvanized embedded tube steel columns at roof edge beam bearing points, locations to be determined
- Glazing – single pane, clear, 1/2" overall, laminated, tempered glass
- Interior wall and ceiling finish – wood T&G
- Interior floor finish – exposed structural decking
- Built-in seating – site-shaped solid-sawn heavy timber
- Fireplace bowl and flue shroud – 16g weathering steel

Shelter Mechanical, Electrical and Plumbing:

- See attached PDC and Begenyi Engineer narratives.

Path System

The path system is intended to connect the main campus with the lake and shelter, but also to be aligned in such a way to allow the shelter to exist as a node along its length rather than as a destination at a terminal end. This will increase usership of the shelter significantly. The path system is also intended to act as a new link in the overall lake path system with the ultimate objective of creating a loop that fully circumnavigates the lake without directing users through the main campus.

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Land Path System

The land path system consists of the longer, primary path connecting the upper campus and the shelter. The head of this section of path which begins at the lower level between the Mourant and Novatney buildings is accessed by a new, exterior concrete stair located between them, or by using the elevator in the Novatney Building. The slope of this path is limited to 5% +/- for accessibility purposes. It also consists of an alternate path providing a direct connection between the Egan Library plaza and the shelter. This section of path is not accessible. Both sections of path are 8' in width, and are provided with weathering steel handrails and down-lights on one side as well as periodic widened resting/observation areas with heavy timber wood benches facing the lake. The down-lights are intended to illuminate the path without contributing to light pollution.

Original designs for the paths assumed use of asphalt over compacted base rock, however much of the landscape the path will traverse is a designated wetland and nearly all of it is relatively undisturbed, rich with flora and fauna of significant natural and cultural value. For two key reasons directly related to this, the trail is proposed to be surfaced with crushed rock rather than with asphalt, nearly identical in construct to the Auke Lake Trail along the lake's eastern shore. First, albeit in the absence of a formal geotechnical investigation, PDC's visual observations and past experience with this area indicate that its soils are highly organic and generally saturated. The longevity and maintainability of an asphalt surface relies in large part on its supporting fill bearing on a suitable (largely non-organic and relatively dry) undisturbed sub-surface. Any cut and fill operation significant enough to yield a suitable, undisturbed sub-surface will significantly damage the site. An asphalt surface installed in the absence of such a cut and fill operation would have a very limited life span, experiencing significant settling and requiring frequent patching and repaving. This will cause further damage to the native landscape and cause the University to bear high, unnecessary maintenance costs. Second, installation of an impervious, petroleum-based product which will leach petro-chemicals into the wetlands and lake is not an environmentally sensitive approach, considered undesirable by representatives of NOAA and ADFG who attended this project's Army Corps of Engineers permit pre-application conference and by the Aak'w Elders who we consulted with. The land path's key materials are:

Site Civil

- Sub-base – 6" minus, angular, compacted rock
- Base-course – ¾" minus, angular, compacted rock
- Surface – ¼" minus, angular, compacted rock
- Culverts – 6" corrugated HDPE pipe (at multiple surface water crossings)

Site Architectural

- Handrail – weathering steel pipe set in site-cast, buried sono-tube footings
- Benches – site-shaped heavy timber

Site Electrical

- See attached Begenyi Engineer narrative

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Floating Path System

The floating path consists of the liner connection between the shelter and existing dock below the Hendrickson Building, the recreational dock adjacent to the shelter, and the

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sloped floating path section connecting the shelter to the foot of the gangway directly below the Egan Library.
The design of the floating path components is identical to the shelter's floating deck, with the exception that the decking is a pultruded, granulated surface fiberglass grating. All exposed path materials are intended to be natural or have a natural appearance to, in as much as is possible, blend with surroundings. Additionally, the floatation buoyancy of floating path system will be designed to allow the path walking surface to have minimal freeboard, laying as low relative to the waterline as possible, further allowing the path to blend with its surroundings. The floating path will be provided with a weathering steel handrail and down-lights on its shore-side. The down-lights are intended to illuminate the path without contributing to light pollution. The key materials of the floating path system are:

Site Civil

- Foundation (floating) – closed-cell polystyrene foam filled polyethylene flotation bladders supporting a pressure treated, solid sawn timber floor framing utilizing grade 316 stainless steel connection devices and fasteners, cross anchored at multiple points with galvanized steel chain to submerged concrete anchors
- Gangway – prefabricated weathering steel stringers and guard rail
- Deck - pultruded, granulated surface, fiberglass grating

Site Architectural

- Handrail – weathering steel pipe set anchored to floating path rim framing
- Benches – site-shaped heavy timber

Site Electrical

- See attached Begenyi Engineer narrative

Next Steps – Design Considerations

Key design considerations to be addressed in detail during a future design development phase will largely revolve around the project's impact on the wetlands and lake, and the wetland and lake's impact on the project, particularly in light of our approach of floating two of its three main components. These considerations are:

- Cultural Appropriateness – the design of the shelter and to a great extent the path system were arrived at through a methodical process involving a significant contribution from Tlingit and Aak'w Kw'aan Elders. It is with their input and ultimate support of the design outcome that we are privileged to consider opportunities to progress the project towards construction. It is understood that other forces will act on the process going forward which will affect the design, however in order to honor the contribution of the Tlingit community and the cultural significance of the site, it will be important to maintain the key design elements of the project.
- Floatation (shelter and path) – impacts of seasonal lake ice.
- Flotation (shelter) – distribution of buoyancy with respect to shelter's dead load distribution.
- Materiality (shelter and path) – use of inert materials with no pollutant impact

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- Construction (shelter and floating path) – construction approach limiting site impacts – floating structures offer the advantage of off-site construction, eliminating construction related site impacts.
- Utilities – there have been questions raised about the possibility of waste from the shelter's proposed restroom polluting the lake and wetlands. This is a real concern, however one to which there is a common and time-tested solution utilized by waterfront developments in sensitive areas universally which will be employed on this project.
- Construction Site Impacts (land path) – construction approach limiting site impacts – set firm boundaries paralleling path alignment, effectively requiring all personnel and equipment to develop the path in a linear progression with construction activities occurring staged from the path footprint itself, and requiring general staging to occur on existing hard surfaces in the upper campus.

-END-

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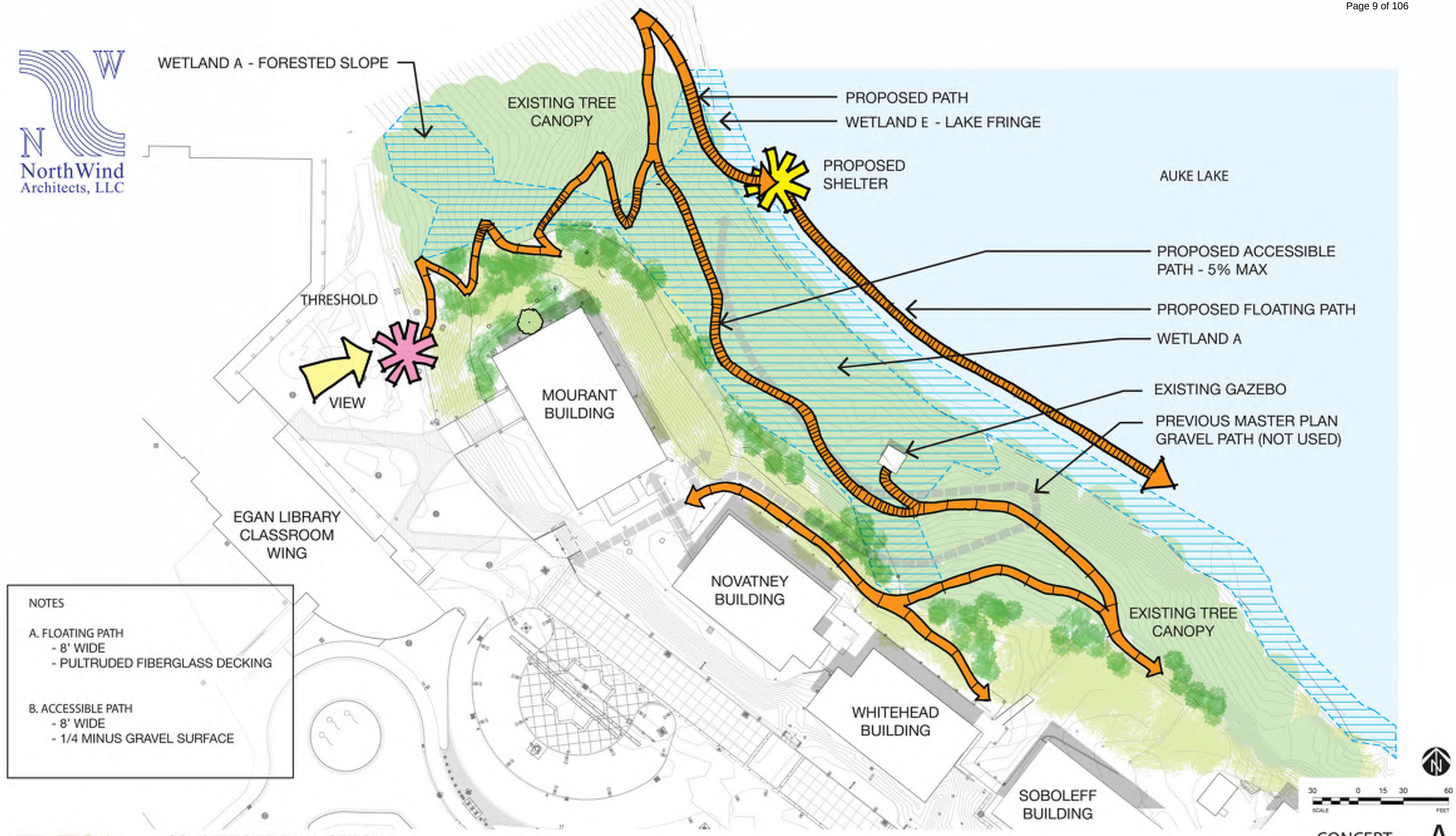

NOTES

A. FLOATING PATH
- 8' WIDE
- PULTRUDED FIBERGLASS DECKING

B. ACCESSIBLE PATH
- 8' WIDE
- 1/4 MINUS GRAVEL SURFACE

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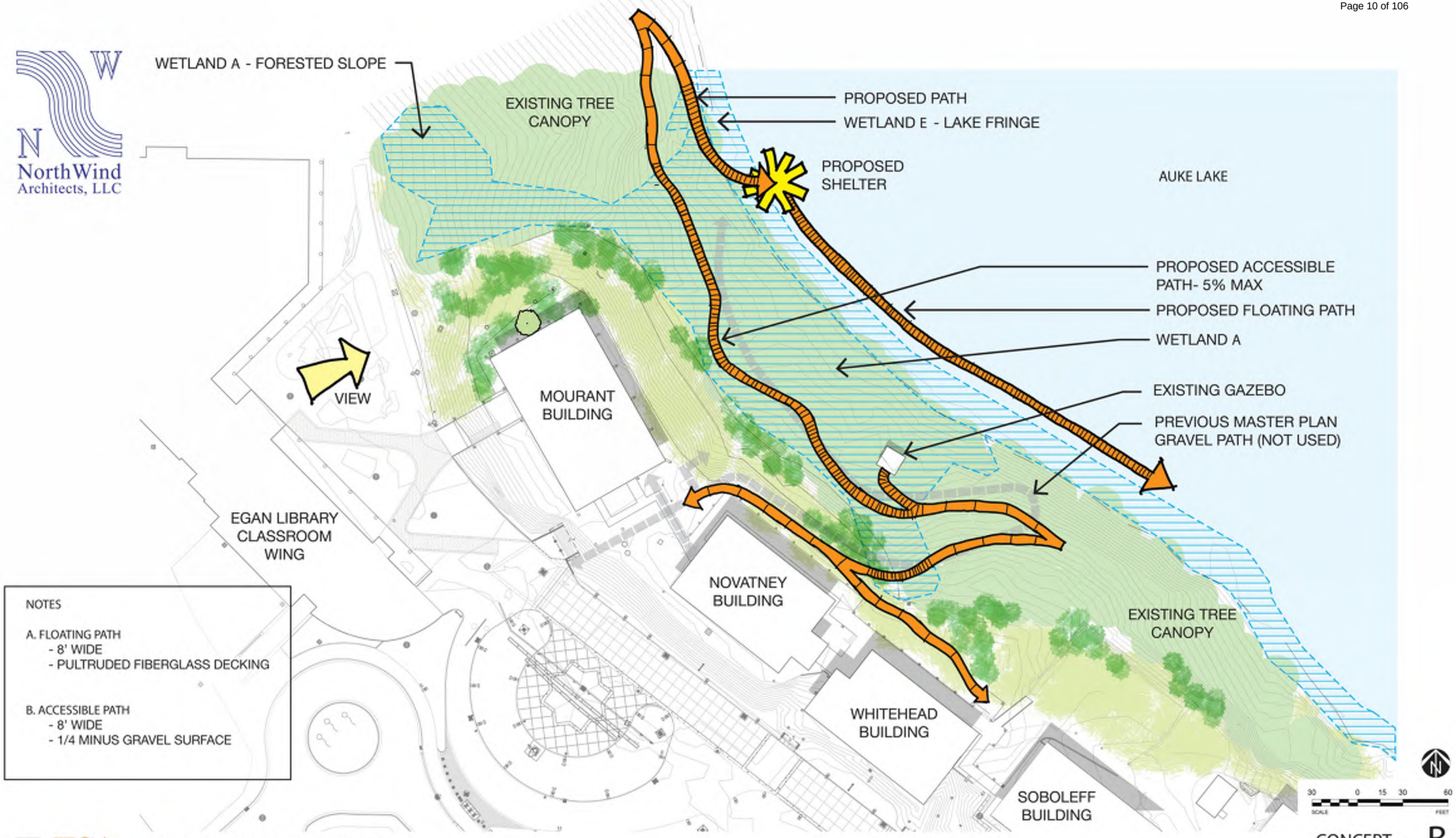
CONCEPT SITE PLAN- OPTION A

CONCEPT - A

UNIVERSITY OF ALASKA-AUKE LAKE | JUNEAU, AK

2/26/2018



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CONCEPT SITE PLAN- OPTION B

CONCEPT - B

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2/26/2018

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE ENGINEER SHALL IMMEDIATELY BE NOTIFIED IN WRITING OF ANY DISCREPANCIES.
2. ALL OMISSIONS AND/OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF, AND A SOLUTION GIVEN BY, THE ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
3. IF A SPECIFIC DETAIL IS NOT SHOWN FOR ANY PART OF THE WORK, THE CONSTRUCTION SHALL BE THE SAME AS FOR FOR SIMILAR WORK.
4. WORKING DIMENSIONS SHALL NOT BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THESE DRAWINGS.
5. LARGE BOULDERS, HARDPAN, STUMPS, LOGS, ORGANICS AND GROUNDWATER MAY BE ENCOUNTERED AT VARIOUS DEPTHS DURING TRENCHING, AND EXCAVATION OPERATIONS.
6. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
7. GRADES AND ALIGNMENTS SHOWN ON THESE PLANS ARE SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER AND OWNER.
8. LOCATIONS OF EXISTING UNDERGROUND SEWER, WATER, TELEPHONE AND POWER UTILITIES SHOWN ON THESE PLANS WERE DERIVED FROM A COMBINATION OF UAS AS-BUILTS AND/OR FIELD LOCATES. ACTUAL LOCATIONS MAY VARY FROM THOSE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING, PROTECTING AND MAINTAINING THE EXISTING UTILITIES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. ANY DAMAGE RESULTING TO THESE UTILITIES DURING CONSTRUCTION SHALL BE PAID FOR BY THE CONTRACTOR AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. CALL "DIAL BEFORE YOU DIG" @ 586-1333 PRIOR TO ANY EXCAVATION ACTIVITIES.
9. ALL ITEMS DESIGNATED TO BE REMOVED SHALL BE DISPOSED OF AT AN APPROVED DISPOSAL SITE.
10. THE CONTRACTOR SHALL REFERENCE ALL EXISTING PROPERTY CORNER MONUMENTS THAT WILL BE DISTURBED PRIOR TO ANY CONSTRUCTION ACTIVITIES. ALL MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE REMONUMENTED AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE. ALL SURVEY WORK SHALL BE DONE BY, OR UNDER THE DIRECTION OF, AN ALASKA REGISTERED LAND SURVEYOR. NOT ALL EXISTING PROPERTY CORNERS ARE NECESSARILY SHOWN ON THE PLANS.
11. THE PLAN SHEETS DO NOT NECESSARILY SHOW ALL TREES AND BRUSH THAT WILL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL TREES AND BRUSH AS NECESSARY FOR CONSTRUCTION AS DIRECTED BY THE ENGINEER.
12. THE CONTRACTOR'S HOURS OF OPERATION SHALL BE IN COMPLIANCE WITH THE CBJ NOISE ORDINANCE.

SURVEY NOTES

1. THE BASIS OF HORIZONTAL CONTROL UTILIZED TO CONDUCT THIS SURVEY WAS THE LINE OF SITE BETWEEN R&M CONTROL POINTS ESTABLISHED FOR THE UAS STUDENT RESIDENCE HALL; PROJECT CONTROL POINT No. 1 (N: 10,933.00, E:10,828.96) AND CONTROL POINT No. 550 (N: 11,069.98, E: 10,669.87), LOCATED IN THE UAS CAMPUS PARKING LOT.
2. THE BASIS OF VERTICAL CONTROL FOR THIS SURVEY WAS CONTROL POINT No. 1, 1" DIAMETER SURVEY SPIKE, HAVING AN ELEVATION OF 131.69'.
3. THE DATES OF THE UPLANDS FIELD SURVEY WERE APRIL 26-28, 2016. THE SURVEY INSTRUMENT USED WAS A TRIMBLE S-7 ROBOTIC TOTAL STATION WITH PRISM RANGE POLE METHODS.

TABLE OF HORIZONTAL CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	10,933.00	10,828.96	–	1"ø SURVEY SPIKE
550	11,069.98	10,669.87	–	1"ø SURVEY SPIKE
1007	11,454.41	10,956.39	–	2-1/2" ALUM. CAP ON 5/8" ALUM. ROD, STAMPED NW-CNTRL
1008	11,242.25	11,156.18	–	2-1/2" ALUM. CAP ON 5/8" ALUM. ROD, STAMPED NW-CNTRL

TABLE OF VERTICAL CONTROL

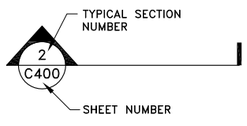
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1005	–	–	112.89'	CHISELED 1"x1" 'X' IN NORTHERLY SIDE OF CONCRETE LIGHT POLE BASE
2068	–	–	96.87'	CHISELED 1"x1" 'X' IN EASTERLY SIDE OF CONCRETE COLUMN FOOTING
2428	–	–	96.23'	CHISELED 2"x2" 'X' IN NORTHERLY SIDE OF CONCRETE COLUMN FOOTING
FH-1	–	–	111.12'	NORTH BOLT TOP FLANGE FIRE HYDRANT

ABBREVIATIONS

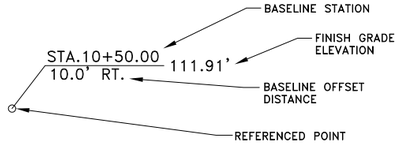
AEL&P	ALASKA ELECTRIC LIGHT & POWER
AP	ANGLE POINT
APPROX.	APPROXIMATE
BLDG.	BUILDING
BOE	BOTTOM OF EXCAVATION
BOF	BOTTOM OF FOOTING
BOP	BEGINNING OF PROJECT
CB	CATCH BASIN
CBJ	CITY & BOROUGH OF JUNEAU
CL	CENTERLINE
CLR	CLEAR DISTANCE
CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE
CP	CONTROL POINT
CPP	CORRUGATED POLYETHYLENE PIPE
CTE	CONNECT TO EXISTING
DBH	DIAMETER BREAST HEIGHT
DIP	DUCTILE IRON PIPE
DIA.	DIAMETER
DOT/PF	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
E–	EASTING
EL.	ELEVATION
EOP	END OF PROJECT
EQ.	EQUATION
ESA	ENVIRONMENTAL SCIENCE ASSOCIATES
ESCP	EROSION AND SEDIMENT CONTROL PLAN
EXP.	EXPANSION
EXIST.	EXISTING
FD	FOUNDATION DRAIN
FG	FINISH GRADE
FL	FLOW LINE
GALV.	GALVANIZED
GP	GRADE POINT
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
LT.	LEFT
MAX.	MAXIMUM
MIN.	MINIMUM
MTE	MATCH TO EXISTING
N–	NORTHING
NFS	NON-FROST SUSCEPTIBLE
NTS	NOT TO SCALE
NVC	NO VERTICAL CURVE
NWA	NORTHWIND ARCHITECTS
OC	ON CENTER
PC	POINT OF CURVATURE
POC	POINT ON CURVE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
RT.	RIGHT
ROW	RIGHT-OF-WAY
SCHD.	SCHEDULE
SDMH	STORM DRAIN MANHOLE
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
STA.	STATION
STD.	STANDARD
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCH MARK
TOB	TOP OF BANK
TOP	TOP OF PIPE
TYP.	TYPICAL
UAS	UNIVERSITY OF ALASKA SOUTHEAST
UD	UNDERDRAIN
UE	UNDERGROUND ELECTRICAL
VERT.	VERTICAL
W/	WITH

SYMBOLS

EXISTING	PROPOSED	
		TEMPORARY BENCHMARK
		HORIZONTAL CONTROL POINT
		PROPERTY / BOUNDARY LINE
		ORIGINAL HIGH WATER MARK
		WETLANDS BOUNDARY PER ESA CONSULTANTS
SP-3		WETLANDS SOIL SAMPLE PIT PER ESA CONSULTANTS
		DRAINAGE CULVERT PIPE
		STORM DRAIN STRUCTURE
		TREE LINE
		TOP OF BANK
		TOE OF SLOPE
		LIGHT POLE
		CONCRETE SLAB / SIDEWALK
		SANITARY SEWER MANHOLE
		SANITARY SEWER LINE / SERVICE
FM		SEWER FORCE MAIN
		ELECTRIC TRANSFORMER
		LANDSCAPE OR ALDER TREE (A)
		HEMLOCK TREE (H)
		SPRUCE TREE (S)
		UNDERGROUND ELECTRIC LINE
COM		UNDERGROUND COMMUNICATION LINE
WD		WALL DRAIN
		ELECTRIC TRANSFORMER
		WATER VALVE
		WATER LINE



REFERENCE BUBBLE EXPLANATION
N.T.S.



FINISH GRADE EXPLANATION
N.T.S.

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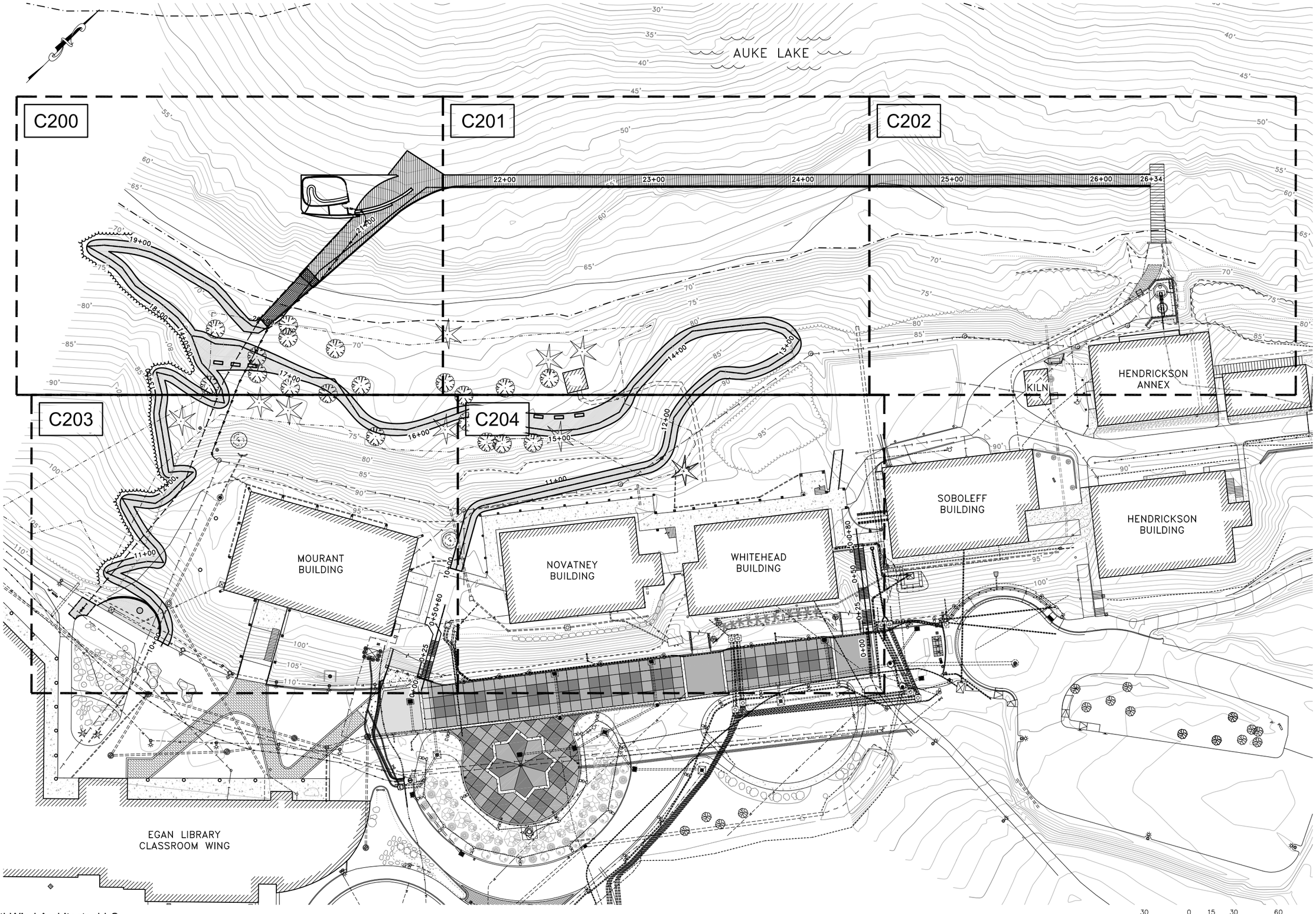
If the above dimension does not equal exactly 1", this drawing has been enlarged or reduced, affecting all labeled scales

AAK'W SHORELINE IMPROVEMENT
NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
GENERAL NOTES, SYMBOLS & ABBREVIATIONS

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C100



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AAK'W SHORELINE IMPROVEMENT

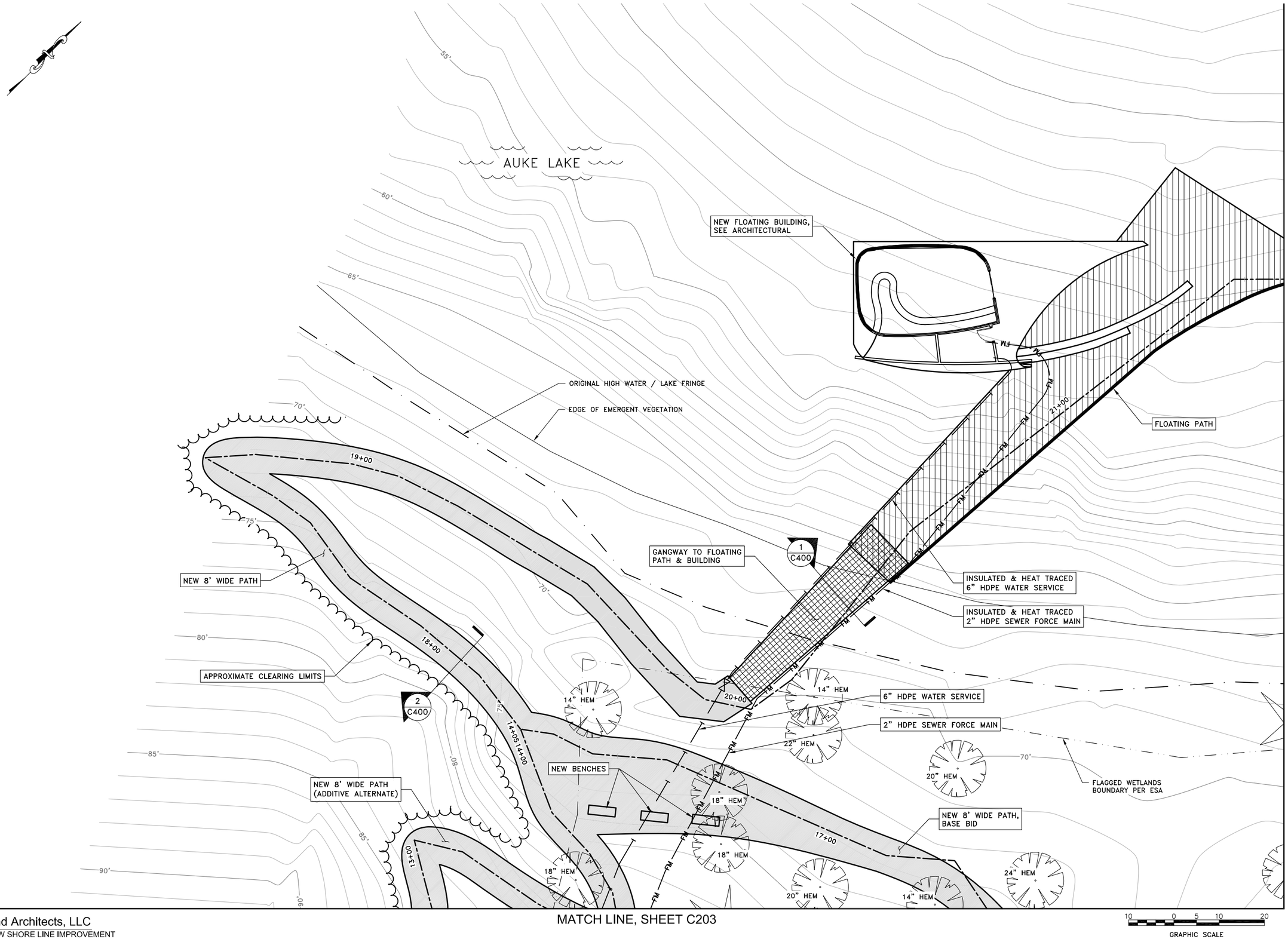
NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
SHEET KEY MAP

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C200A

GRAPHIC SCALE 30 0 15 30 60



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1"

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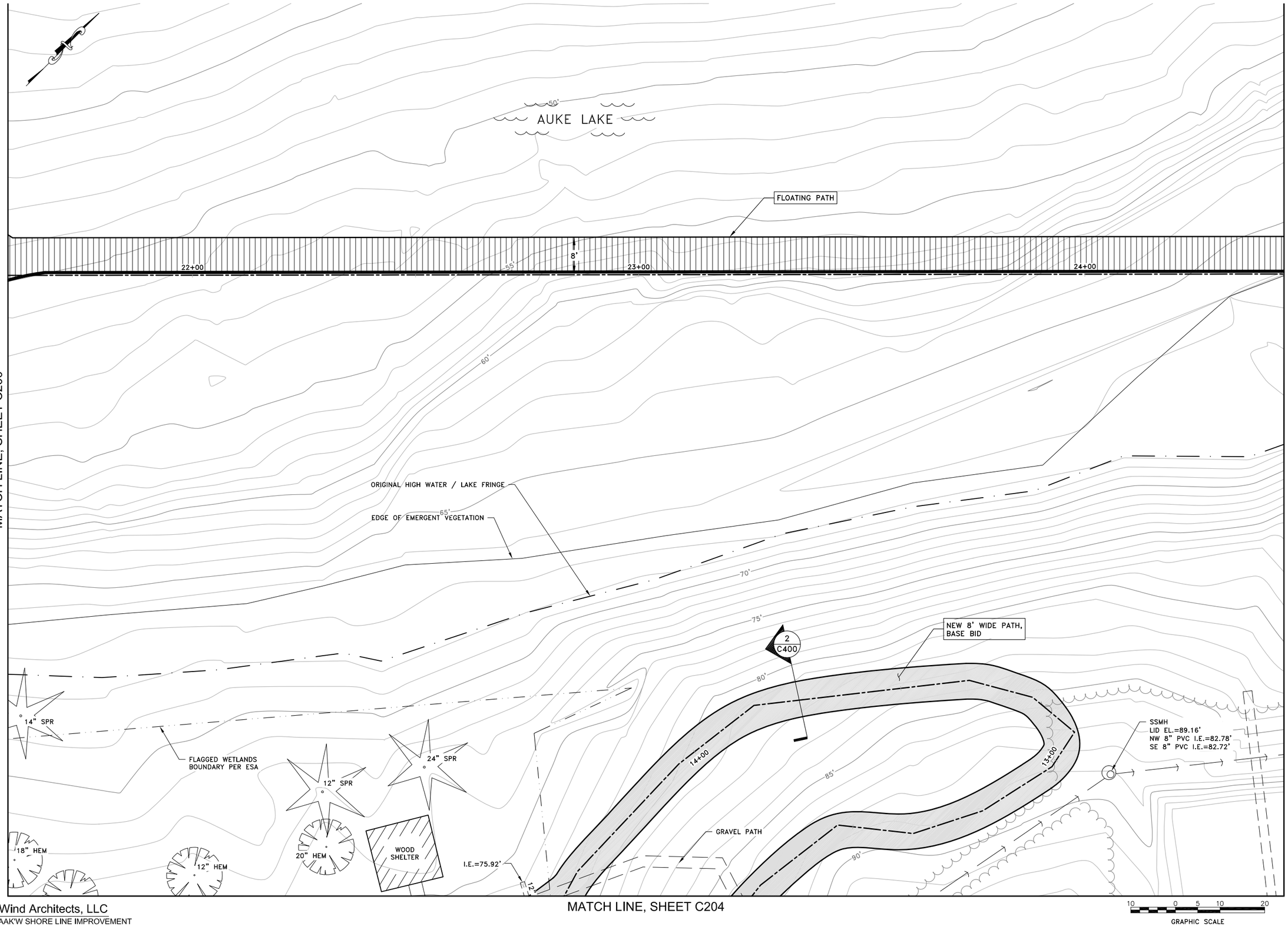
AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
PLAN VIEW

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C200



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1"

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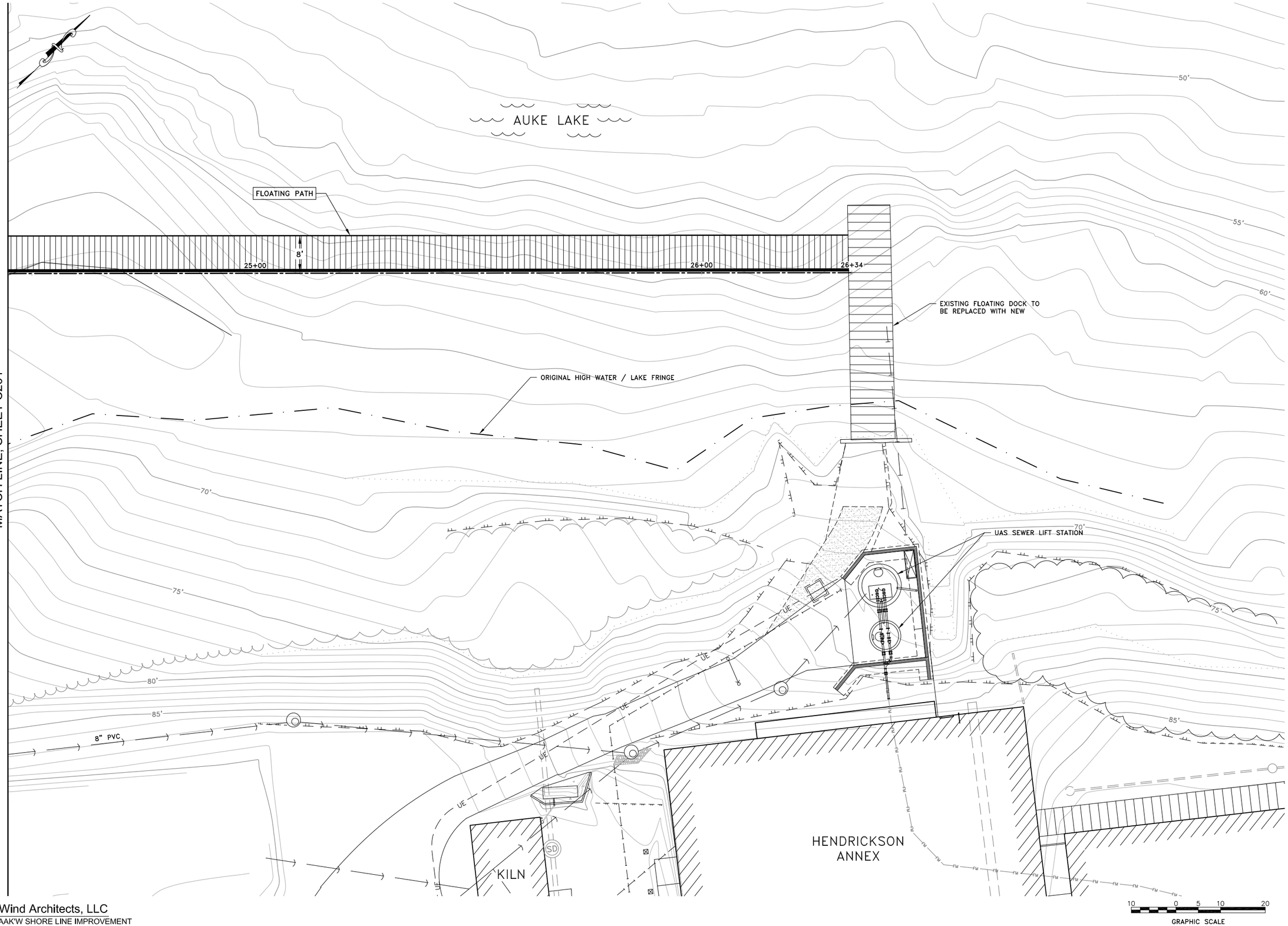
AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
PLAN VIEW

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C201



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1"

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AAK'W SHORELINE IMPROVEMENT

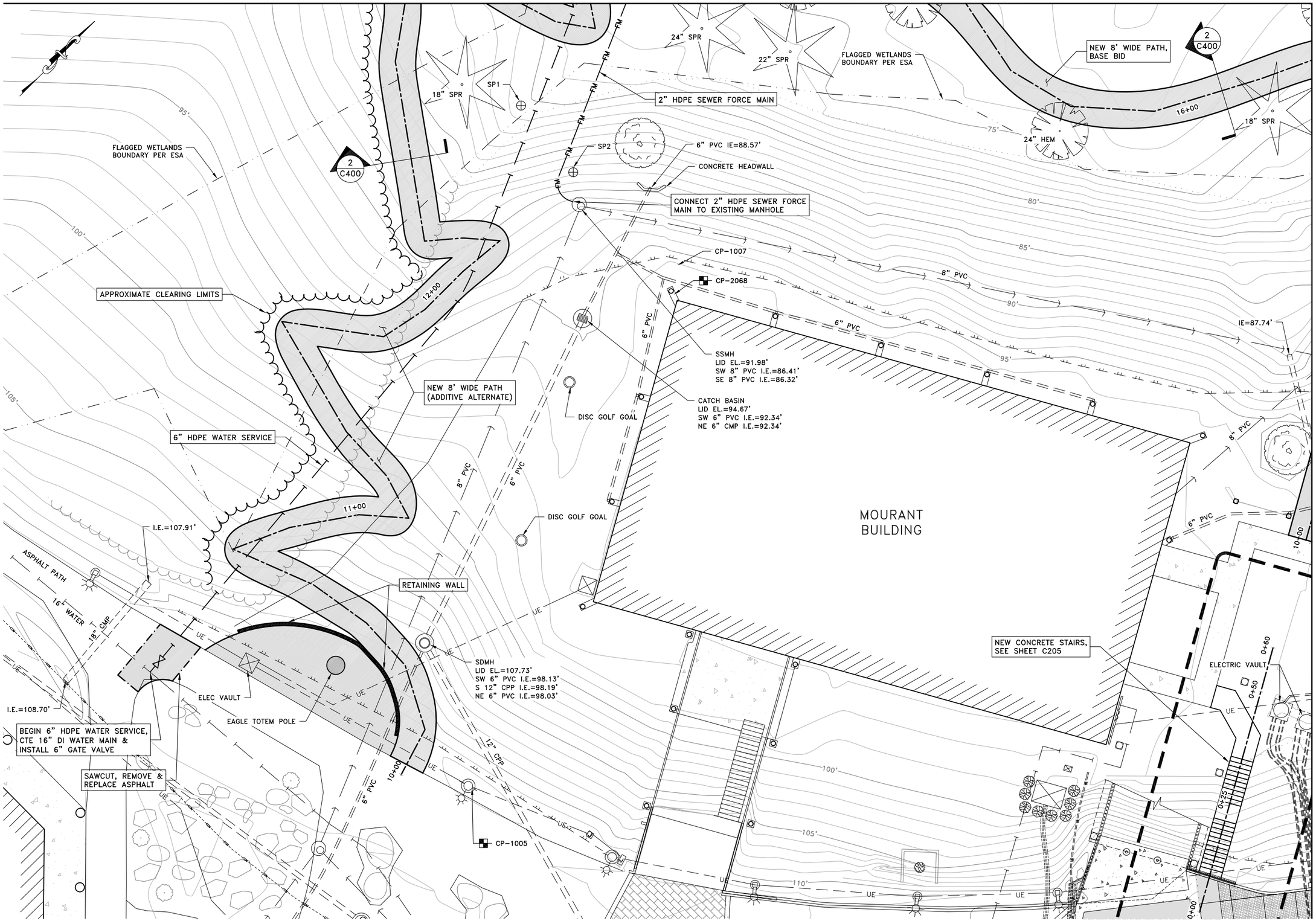
NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
PLAN VIEW

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C202

MATCH LINE, SHEET C200



MATCH LINE, SHEET C204

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
PLAN VIEW

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C203

MATCH LINE, SHEET C201

MATCH LINE, SHEET C203

20" HEM
14" HEM
16" HEM
20" HEM
20" HEM
NEW BENCHES
15+00
20" SPR
CMP
I.E.=76.37'
12+00
8" PVC
95'
SP3
2
C400
NEW 8' WIDE PATH
20" SPR
24" SPR
SP4
I.E.=90.13'
CP-2428
SSMH
LID EL.=92.31'
NW 8" PVC I.E.=84.64'
W 8" PVC I.E.=83.91'
SE 8" PVC I.E.=83.78'
SW 8" PVC I.E.=83.98'
11+00
I.E.=93.17'
CP-1008
8" PVC
12" CMP
6" PVC
SSMH
LID EL.=92.22'
NW 8" PVC I.E.=83.57'
SE 8" PVC I.E.=83.44'
0+75
0+80
PROTECT & MAINTAIN
BUILDING COLUMNS, TYP
NOVATNEY
BUILDING
WHITEHEAD
BUILDING
NEW CONCRETE STAIRS,
SEE SHEET C206
0+50
0+25
0+00
CMP
UE
10 0 5 10 20
GRAPHIC SCALE

NWA-1616 AAK'W SHORE LINE IMPROVEMENT

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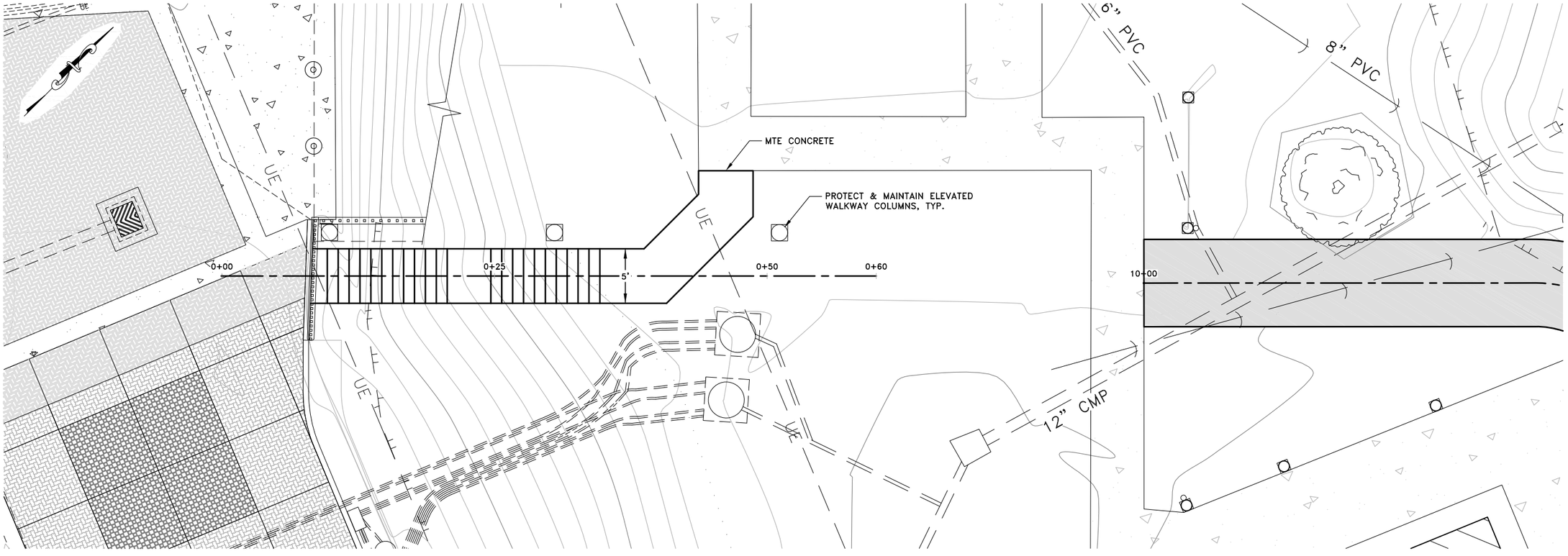
AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

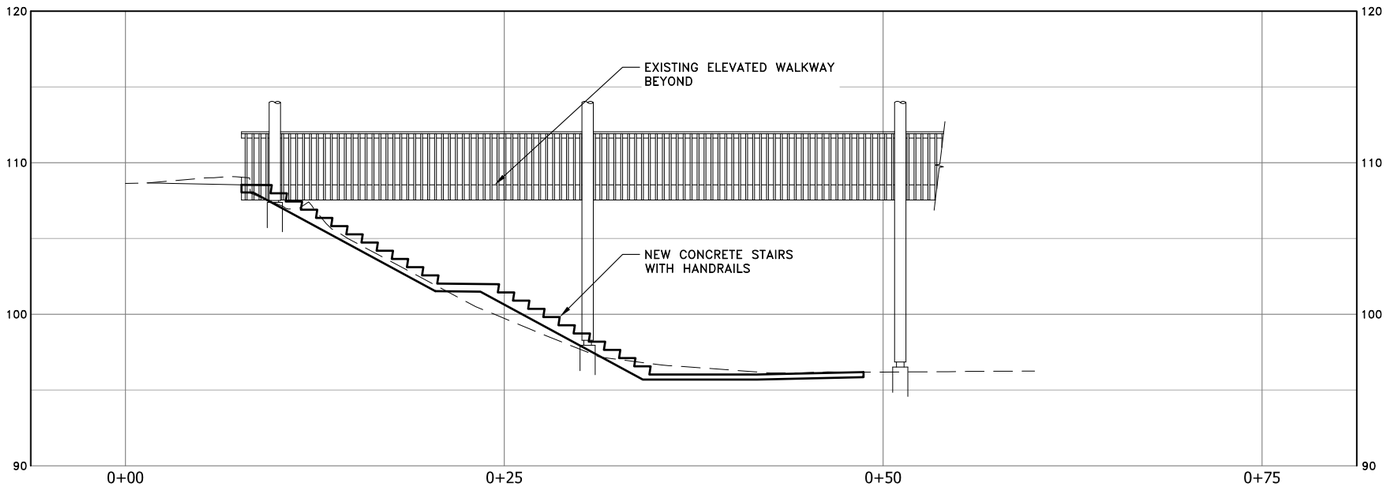
SHEET TITLE:
PLAN VIEW

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C204



MOURANT BUILDING STAIRS - PLAN VIEW



MOURANT BUILDING STAIRS - ELEVATION VIEW

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AAK'W SHORELINE IMPROVEMENT

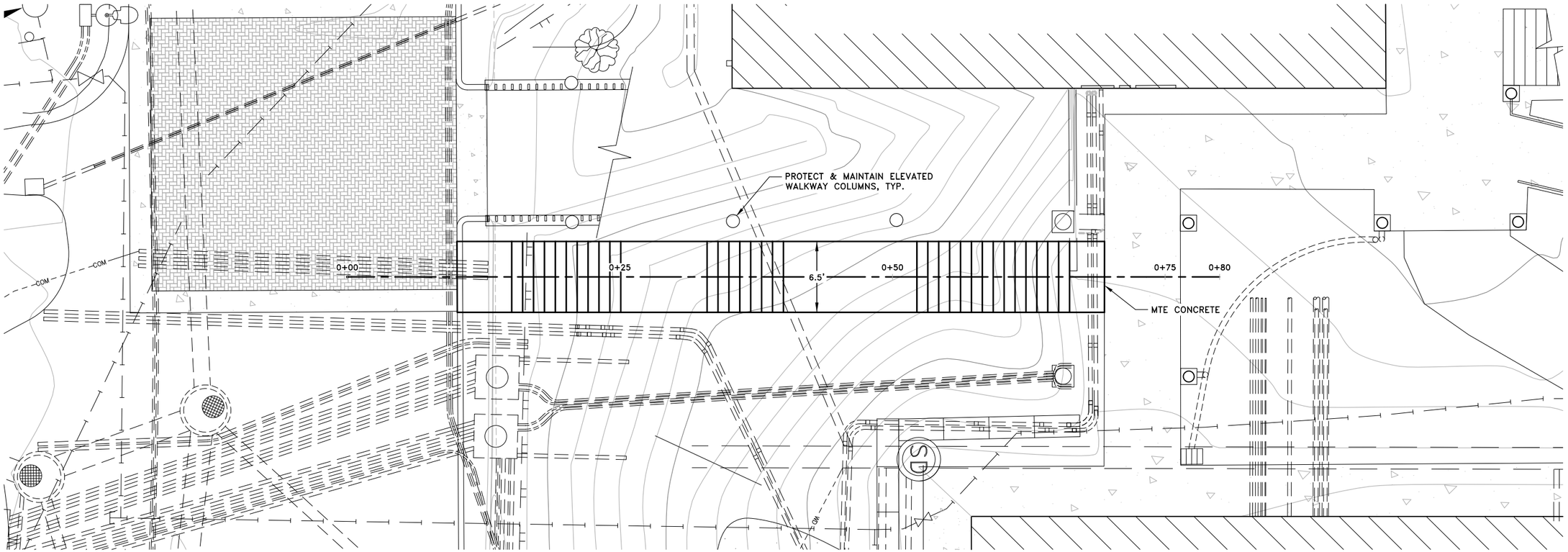
NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
MOURANT BUILDING STAIRS

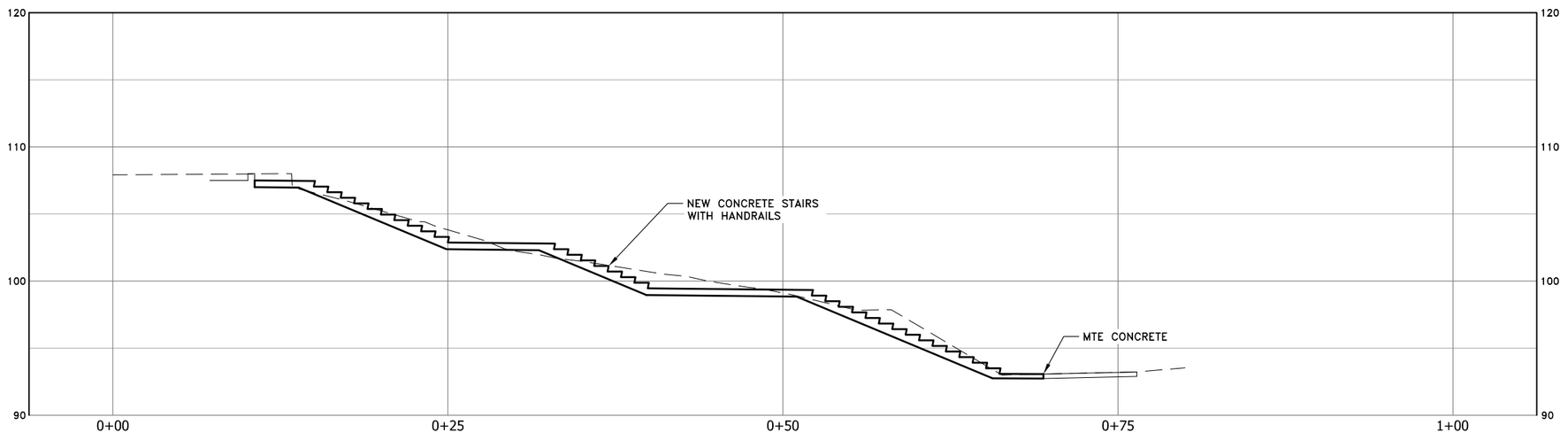
DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C205

5 0 2.5 5 10
GRAPHIC SCALE



WHITEHEAD BUILDING STAIRS - PLAN VIEW



WHITEHEAD BUILDING STAIRS - ELEVATION VIEW

W
N
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AAK'W SHORELINE IMPROVEMENT

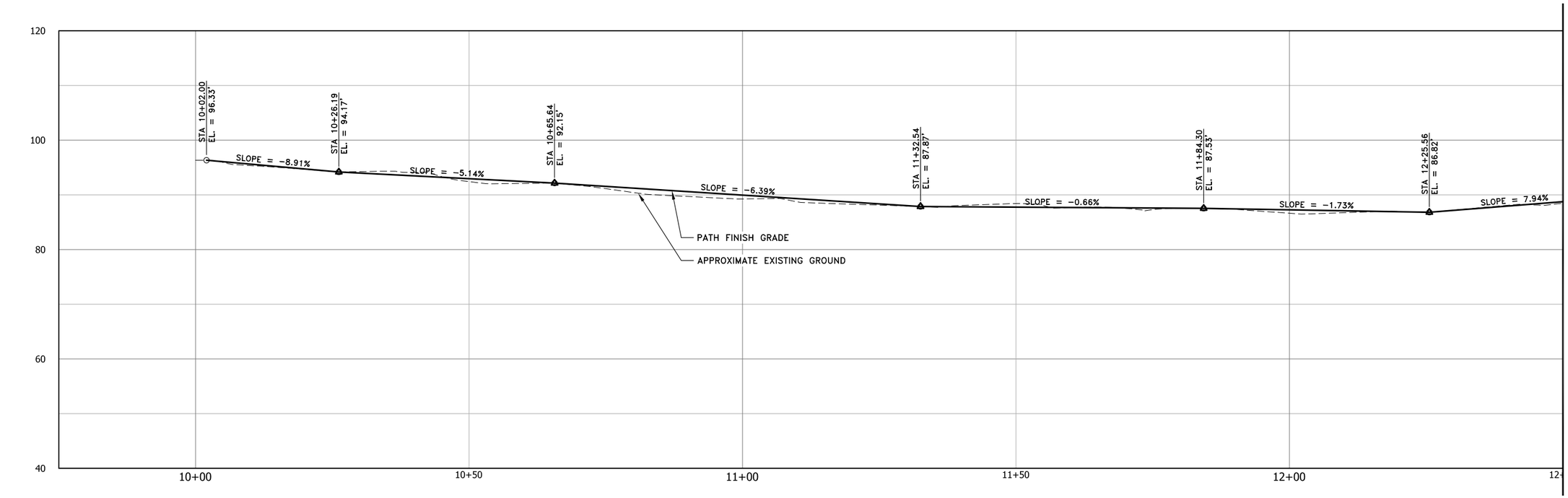
NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
WHITEHEAD BUILDING STAIRS

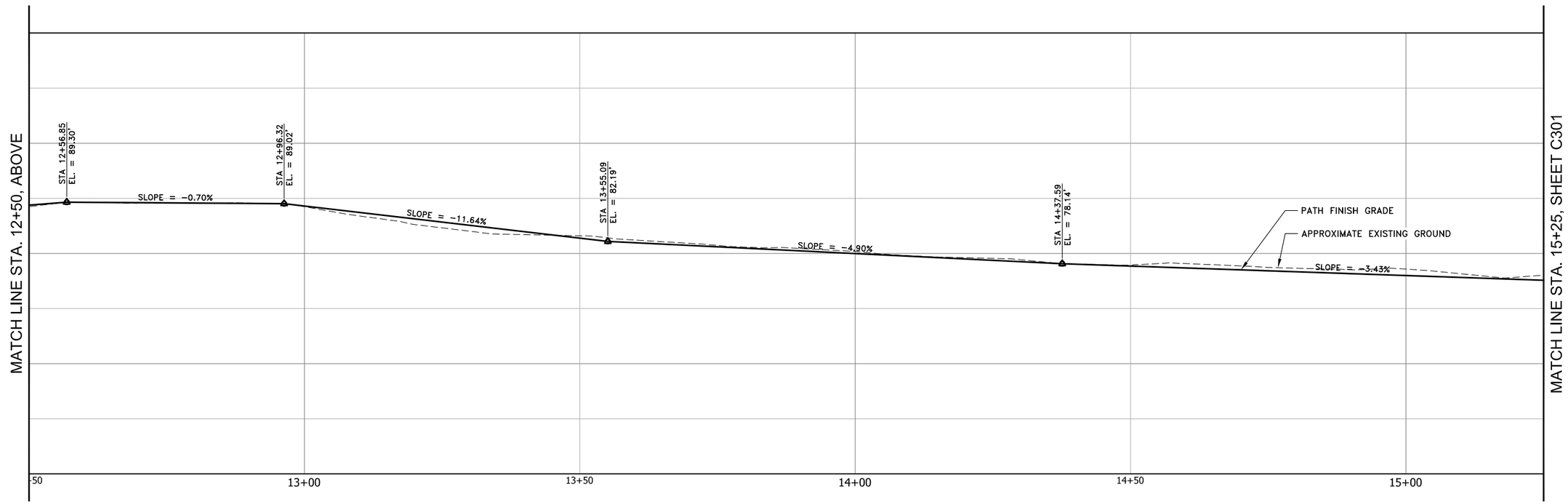
DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C206

5 0 2.5 5 10
GRAPHIC SCALE



MATCH LINE STA. 12+50, BELOW



BASE BID PATH PROFILE

10 0 5 10 20
GRAPHIC SCALE

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1"

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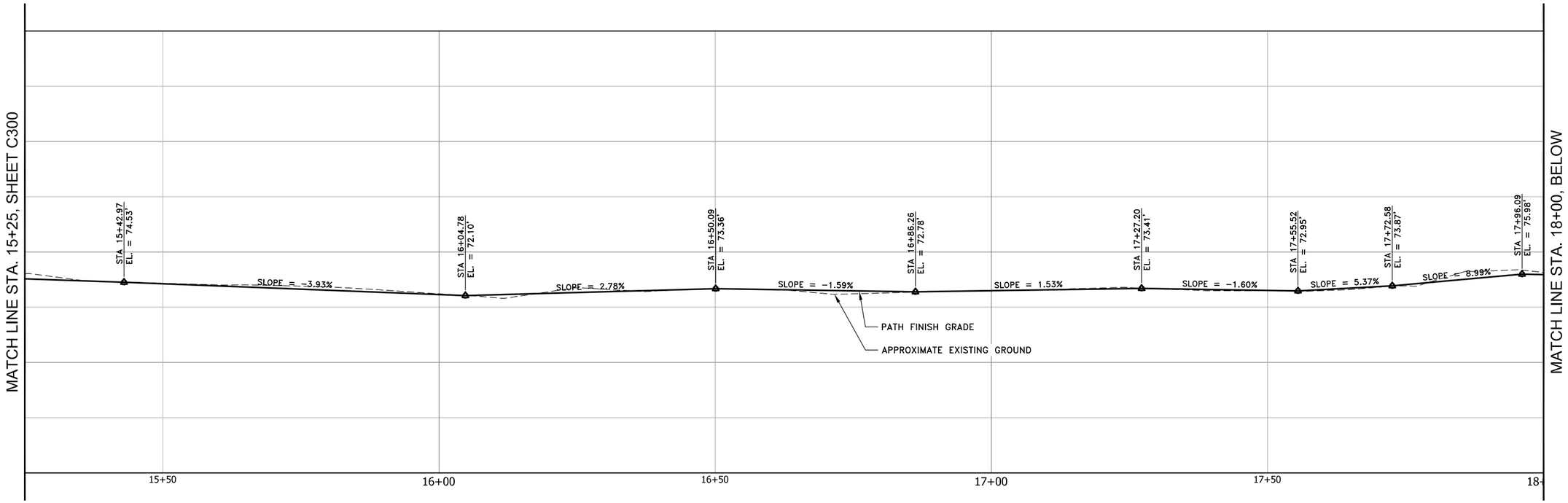
AAK'W SHORELINE IMPROVEMENT

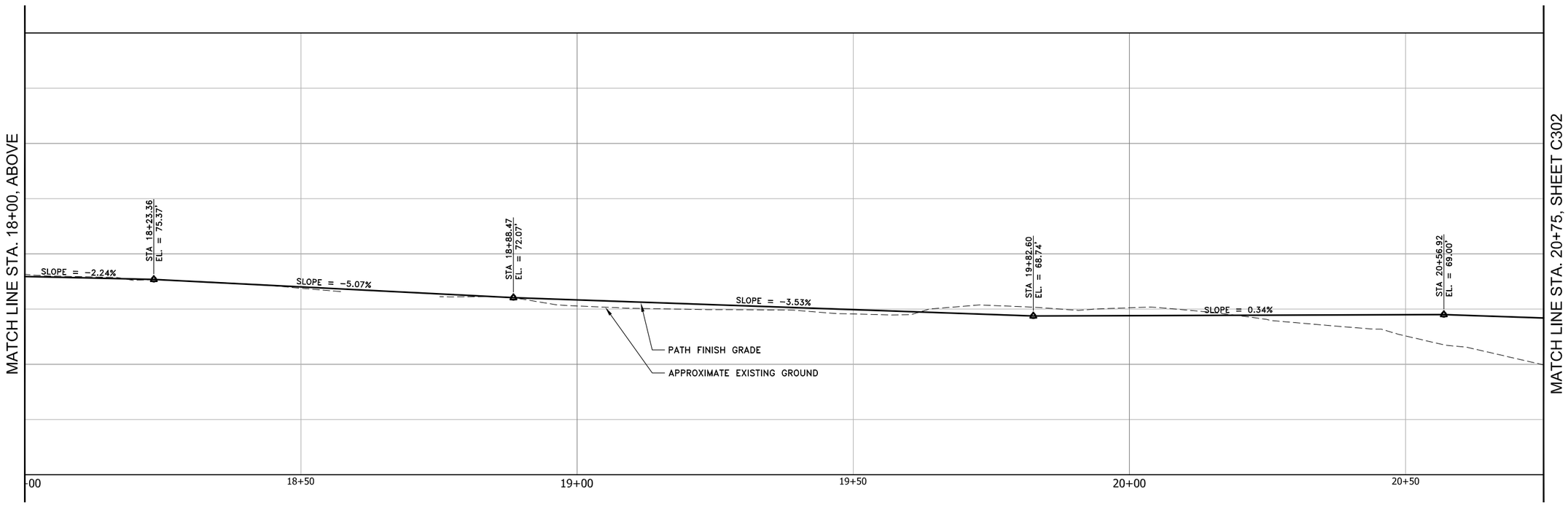
NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
BASE BID
PATH PROFILE

DATE: 5/24/2019
REVISION: ....
CHECKED BY: JMP
DRAWN: KAP

SHEET #
C300





BASE BID PATH PROFILE

GRAPHIC SCALE 10 0 5 10 20

NWA-1616 AAK'W SHORE LINE IMPROVEMENT

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
BASE BID
PATH PROFILE

DATE: 5/24/2019
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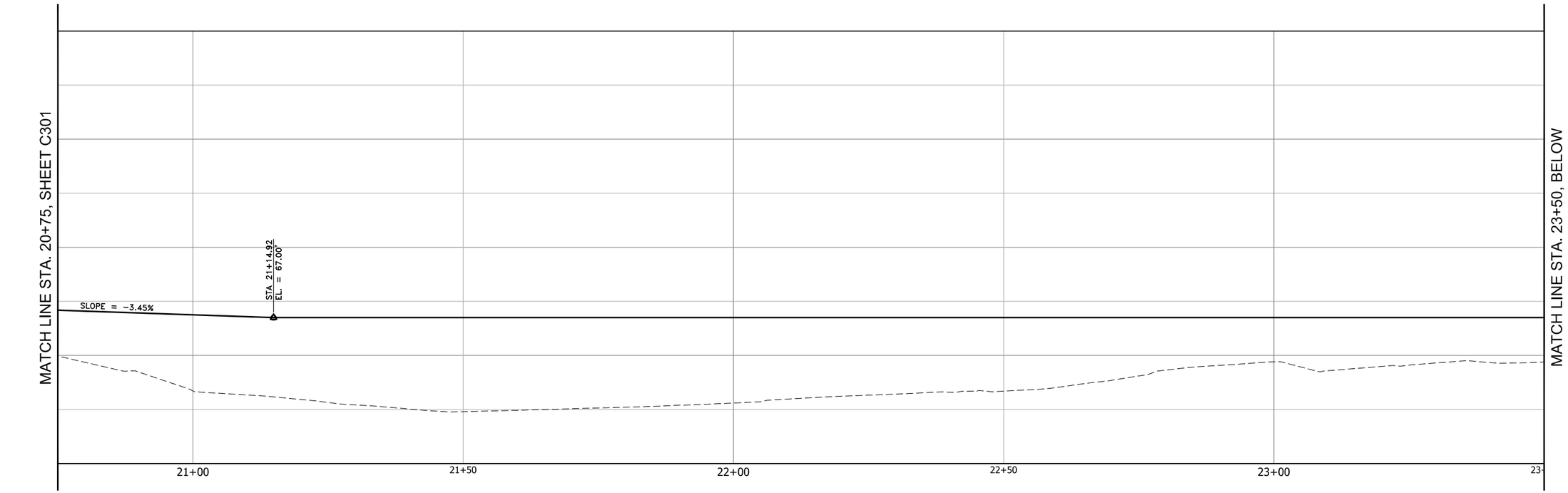
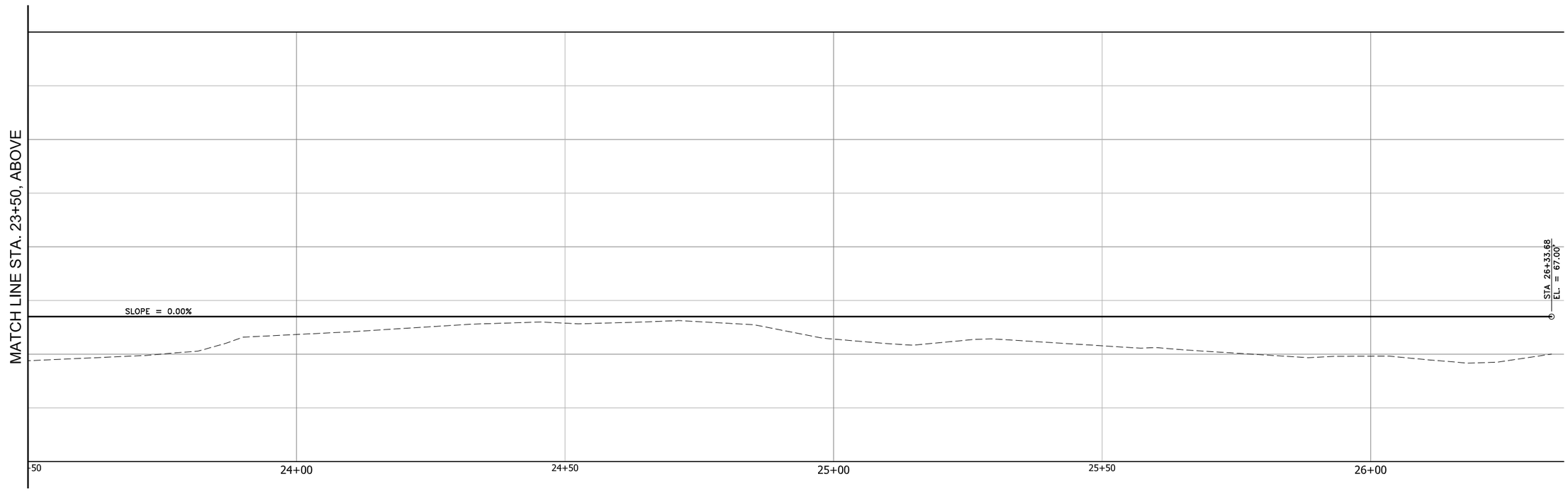
SHEET #
C301





BASE BID PATH PROFILE

GRAPHIC SCALE 10 0 5 10 20

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NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
BASE BID
PATH PROFILE

DATE: 5/24/2019
REVISION: ....
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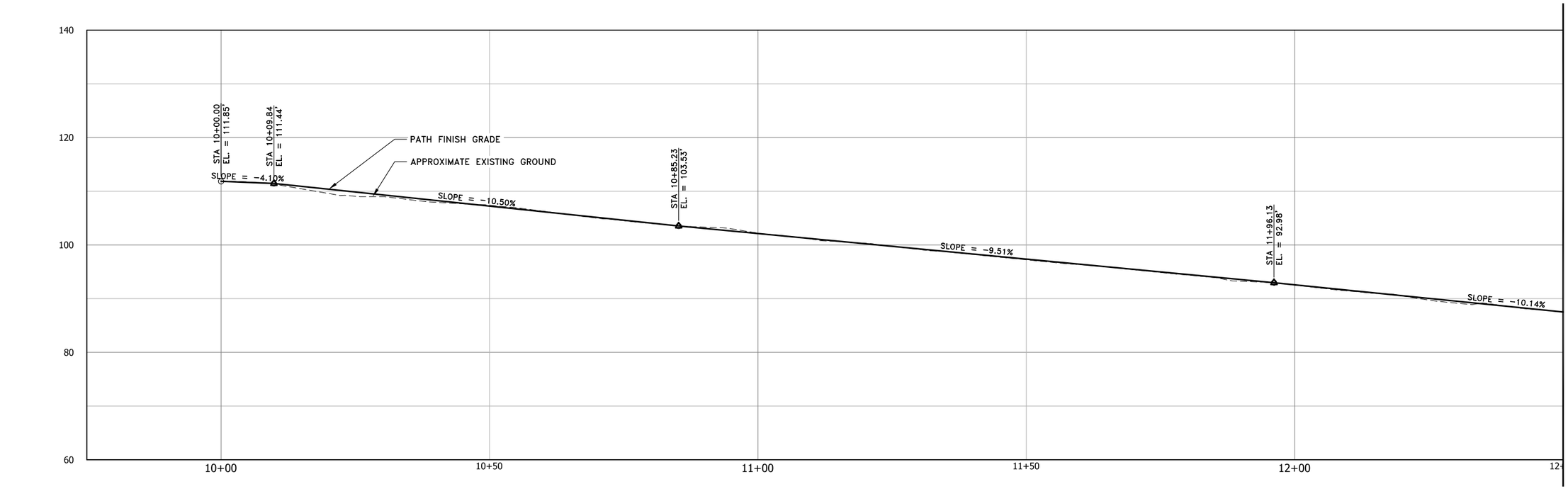
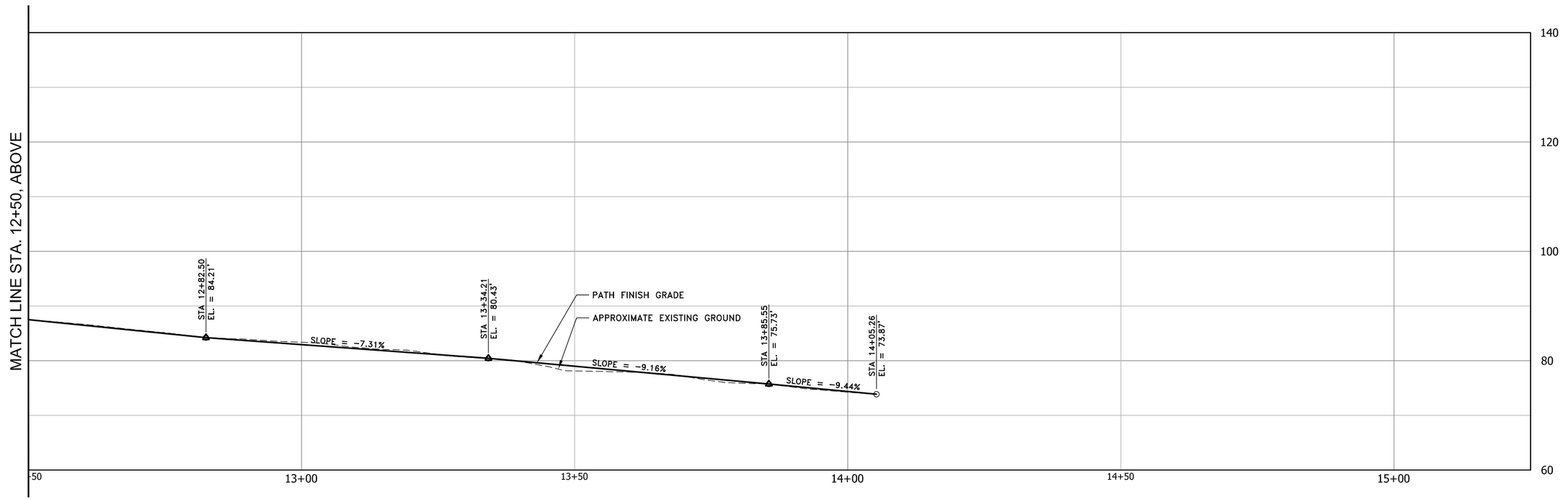
SHEET #
C302



MATCH LINE STA. 12+50, BELOW



ADDITIVE ALTERNATE PATH PROFILE

10 0 5 10 20
GRAPHIC SCALE

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
ADDITIVE ALTERNATE PATH PROFILE

DATE: 5/24/2019
REVISION: ....
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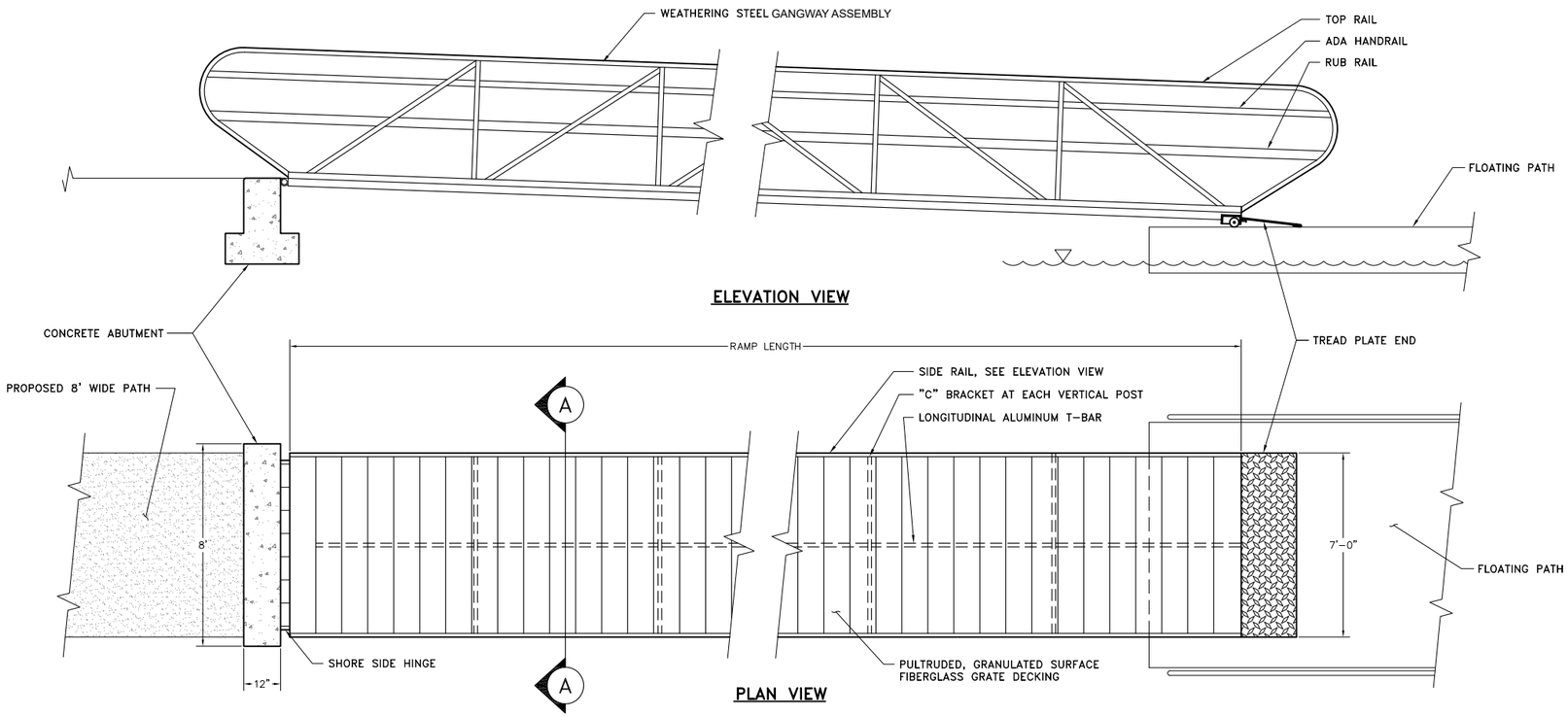
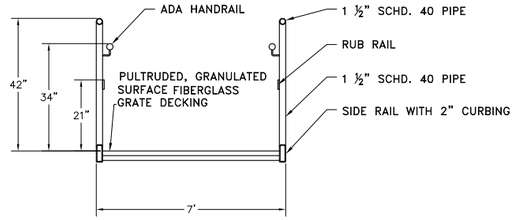
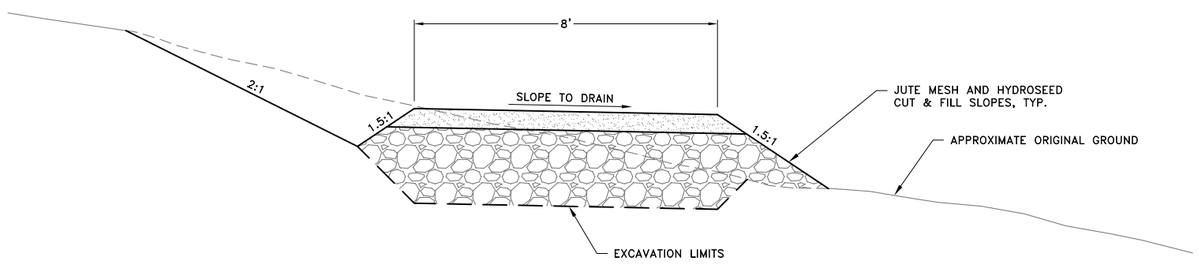
SHEET #
C303



1 FLOATING PATH GANGWAY
N.T.S.



SECTION A–A



2 NEW 8' WIDE PATH
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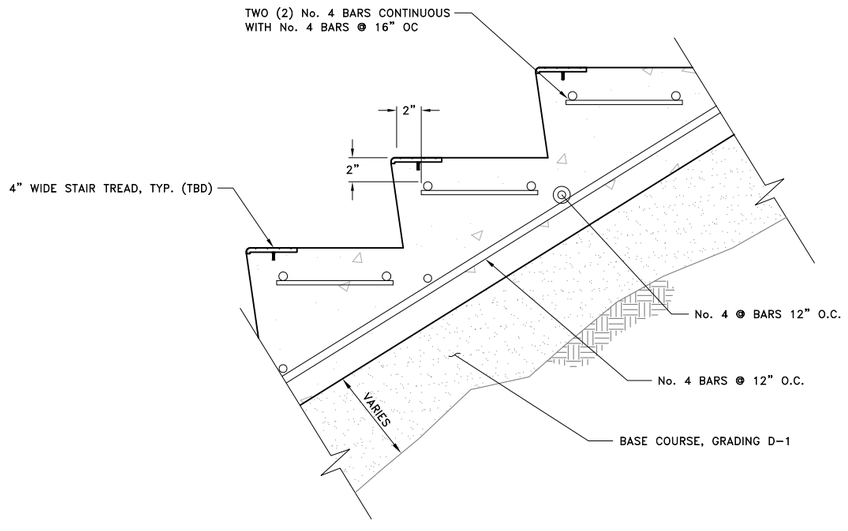

3 CONCRETE STAIR DETAIL
N.T.S.

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
CONSTRUCTION DETAILS

DATE: 5/24/2019
REVISION: ....
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DRAWN: KAP

SHEET #
C400

UAS AAK'W SHORELINE IMPROVEMENT PROJECT

UNIVERSITY OF ALASKA SOUTHEAST

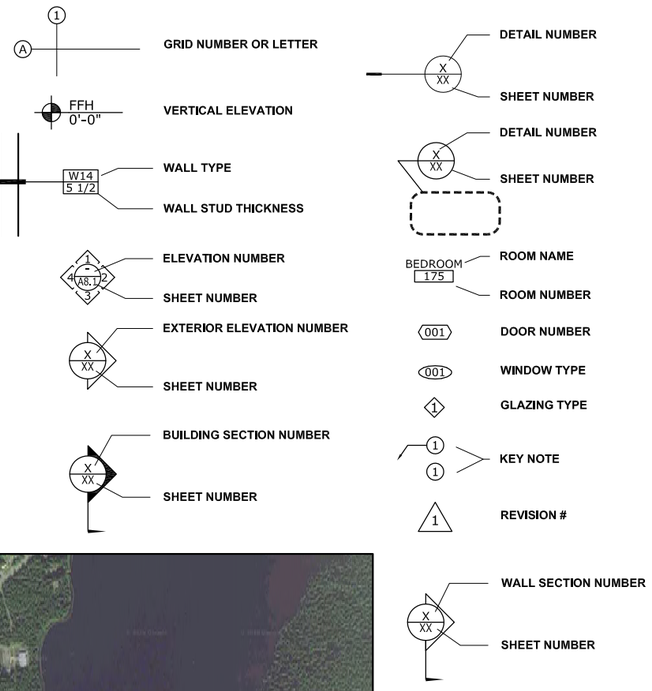
11066 Auke Lake Way
Juneau, Alaska
May 2019

Architectural	Civil	Mechanical	Electrical	Environmental
NORTHWIND ARCHITECTS, LLC 126 SEWARD ST JUNEAU, ALASKA, 99801 (907) 586-6150	PDC ENGINEERS 6205 GLACIER HWY JUNEAU, ALASKA, 99801 (907) 780-6060	PDC ENGINEERS 6205 GLACIER HWY JUNEAU, ALASKA, 99801 (907) 780-6060	BEGENYI ENGINEERING, LLC 217 2ND ST #208 JUNEAU, ALASKA 99801 (907)586-5900	ENVIRONMENTAL SCIENCE ASSOCIATES 819 SE MORRISON ST. #310 PORTLAND, OR 97214 (503) 274-2010

SHEET INDEX

LOCATION MAP

DRAWING SYMBOLS LEGEND



ABBREVIATIONS

&	and
@	at
≈	approximately
=	equal
-	minus
d	penny
+	plus
#	pound or number
ACT	acoustical ceiling tile
ADJ	adjacent
ADJST	adjustable
AFF	above finished floor
AG	acoustical glass
AGG	aggregate
ALT	alternate
ALUM	aluminum
APPROX	approximate
ARCH	architectural
BD	board
BLDG	building
BLK	block
BM	beam
B.O.	bottom of
B.O.D.	bottom of decking
BOF	bottom of footing
BOT	bottom
BSBD	baseboard
BSMT	basement
BTWN	between
BUR	built-up roof
CEM	cement
CF	cubic foot
CFCI	contractor furnish/ contractor install
CG	corner guard
CUH	cabinet unit heater
CI	cast iron
CLG	ceiling
CLO	closet
CLR	clear
CO	clean out
COL	column
COMP	comp
CONC	concrete
CONST	construction
CONT	continuous
CORR	corridor
CPT	carpet
CT	ceramic tile
CTR	center
CY	cublc yard
D	deep, depth
DBL	double
DEMO	demolish, demolition
DEPT	department
DET	detail
DF	drinking fountain
DIA	diameter
DIM	dimension
DISP	disposal
DN	down
DP	dampproof(lng)
DR	door
DW	dishwasher
DWG	drawing
DWR	downspout
E	east
EA	each
EF	exhaust fan
EG	entry grate
EIFS	exterior insulation and finish system
EJ	expansion joint
EL	elevation
ELEC	electrical
EM	entry mat
EMER	emergency
EPS	exterior paint system
EQ	equal
EXIST	existing
EXP	exposed
EXT	exterior
F	factory
FA	fire alarm
FAB	fabricate
FD	floor drain
FDN	foundation
FE	fire extinguisher
FEC	flre extlngulsher cablnet
FIN	finish
FLASH	flashing
FLR	floor
F.O.	face of
FOC	face of concrete
FOF	face of finish
FOS	face of studs
FP	fireproof
FRMG	framing
FS	full size
FT	foot, feet
FTG	footing
FURR	furring
FUT	future
GA	gauge
GALV	galvanized
GB	grab bar
GEN	general
GALV	galvanized steel
GL	glass
GMMU	glass mesh mortar unit
GMU	glazed masonry unit
GND	ground
GRD	grade
GWB	gypsum wall board
GYP	gypsum
HB	hose bibb
HDR	header
HDWD	hardwood
HDWE	hardware
HM	hollow metal
HMT	hollow metal thermal break
HORIZ	horizontal
HR	hour
HT	height
HTG	heating
HTR	heater
HVC	heating/ventilation/ cooling
HWH	hot water heater
ID	inside diameter
IG	insulated glass
IHM	insulated hollow metal
INCL	include
INSUL	insulation
INT	interior
IPS	interior paint system
JAN	janitor
JST	joist
JT	joint
L	length, long
LAV	lavatory
LAB	laboratory
LAM	laminate
LCB	liquid chalkboard
LH	left hand
LKR	locker
LT	light
M&E	mechanical and electrical
MAX	maximum
MB	mop bracket
MECH	mechanical
MEMB	membrane
MFR	manufacturer
MIL	millimeter
MIN	minimum
MIR	mirror
MR	moisture resistant
MTD	mounted
MTL	metal
MUL	mullion
N	north
N/A	not applicable
NIC	not in contract
NO or #	number
NTS	not to scale
OC	on center
OD	outside diameter
OFCI	owner furnish/ contractor install
OFOI	owner furnish/ owner install
OH	overhead
OPNG	opening
OPP	opposite
P	paint
PCT	porcelain tile
PERF	perforated
PL	property line
PLAM	plastic laminate
PLAS	plaster
PLUM	plumb, plumbing
PLYWD	plywood
PR	pair
PREFAB	prefabricated
PREFIN	prefinish(ed)
PSF	pounds per square foot
PSI	pounds per square inch
PT	preservative/ pressure tread
PTD	paper towel dispenser
PTDR	paper towel dispenser & receptacle
PTN	partition
PTR	paper towel receptacle
R	riser
RB	resilient/rubber base
RCP	reflected ceiling plan
RD	roof drain
REBAR	reinforcing bar
REF	reference
REFL	reflected
REINF	reinforc(ed)(ing)
REQD	required
RESIL	resilient
RFEC	recessed fired extinguisher cabinet
RH	robe hook, right hand
RM	room
RO	rough opening
RP	radiant ceiling panel
S	south
SC	solid core
SCHED	schedule
SECT	section
SHT	sheet
SHTG	sheeting
SHWR	shower
SIG	solar insulating glass
SIM	similar
SLR	sealer
ST	stain
SPEC	specificationg
SQ	square
SR	slip resistant
SS	stainless steel
STD	standard
STL	steel
STOR	storage
STRUCT	structural
SUSP	suspended
SYM	symmetrlcal
SV	sheet vinyl
T	tread
TEL	telephone
TEMP	temporary
TG	tempered glass
T&G	tongue and groove
THK	thick
THRU	through
T.O.	top of
TOB	top of beam
TOC	top of concrete, top of curb
TOP	top of pavement, top of plate
TOS	top of steel
TOW	top of wall
TRTD	preservative treated
TS	tube steel
TSPN	transparent
TV	television
TYP	typical
UL	Underwriters Laboratories, Inc.
UNFIN	unfinished
UNO	unless noted otherwise
VB	vapor barrier
VCT	vinyl composition tile
VERT	vertical
VEST	vestibule
VTR	vent through roof
VR	vapor retarder
W	west, wide, width
W/	with
WC	water closet
WCV	wall covering
W/D	washer/dryer
WD	wood
WDG	wood grille
WDW	window
WG	wire glass
WH	wall hung
W/O	without
WP	waterproof
WR	water resistant
WSCT	wainscot
WT	weight
WWF	welded wire fabric

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1" ACTUAL
IF THE ABOVE DIMENSION DOES NOT MEASURE ONE INCH (1") EXACTLY, THIS DRAWING WILL HAVE BEEN ENLARGED OR REDUCED, AFFECTING ALL LABELED SCALES.

AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
TITLE SHEET

CHECKED	DH
DRAWN	SC

Issue	mark	date	description

SHEET # G0.0
PLOT DATE 05/24/2019
ISSUE DATE ** ISSUE DATE **

GENERAL NOTES

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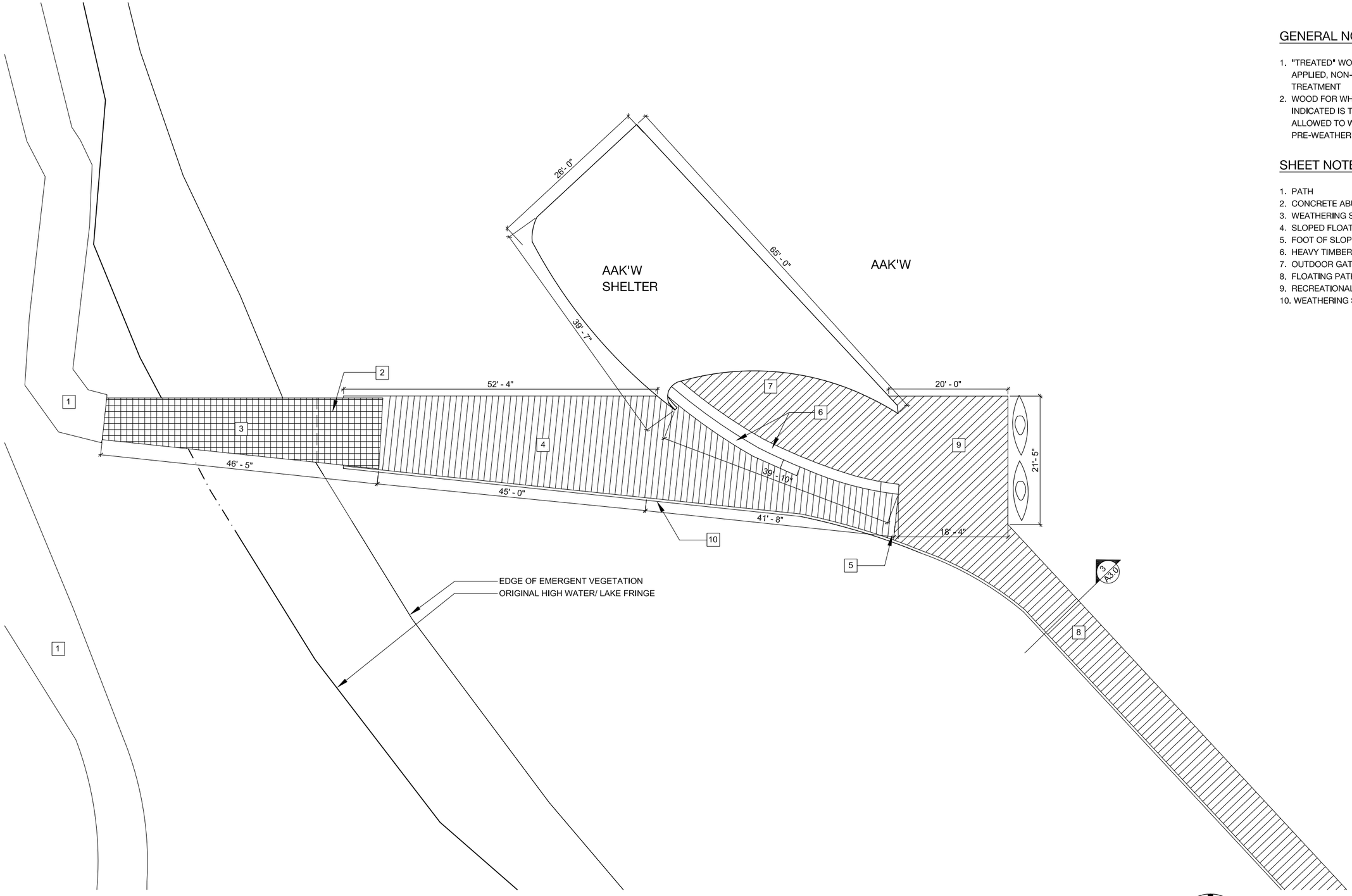
2. WOOD FOR WHICH TREATMENT IS NOT INDICATED IS TO BE UNTREATED AND ALLOWED TO WEATHER OR PRE-WEATHERED AS INDICATED

SHEET NOTES

1. PATH
2. CONCRETE ABUTMENT
3. WEATHERING STEEL GANGWAY
4. SLOPED FLOATING PATH
5. FOOT OF SLOPED FLOATING PATH
6. HEAVY TIMBER WOOD BENCH
7. OUTDOOR GATHERING SPACE
8. FLOATING PATH
9. RECREATIONAL DOCK
10. WEATHERING STEEL HAND RAIL



1 SITE PLAN
1/16" = 1'-0"

NorthWind Architects LLC
126 Seward St
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Ph #907.586.6150
www.northwindarch.com

1" ACTUAL

IF THE ABOVE DIMENSION DOES NOT MEASURE ONE INCH (1") EXACTLY, THIS DRAWING WILL HAVE BEEN ENLARGED OR REDUCED, AFFECTING ALL LABELED SCALES.

AAK'W SHORELINE IMPROVEMENT

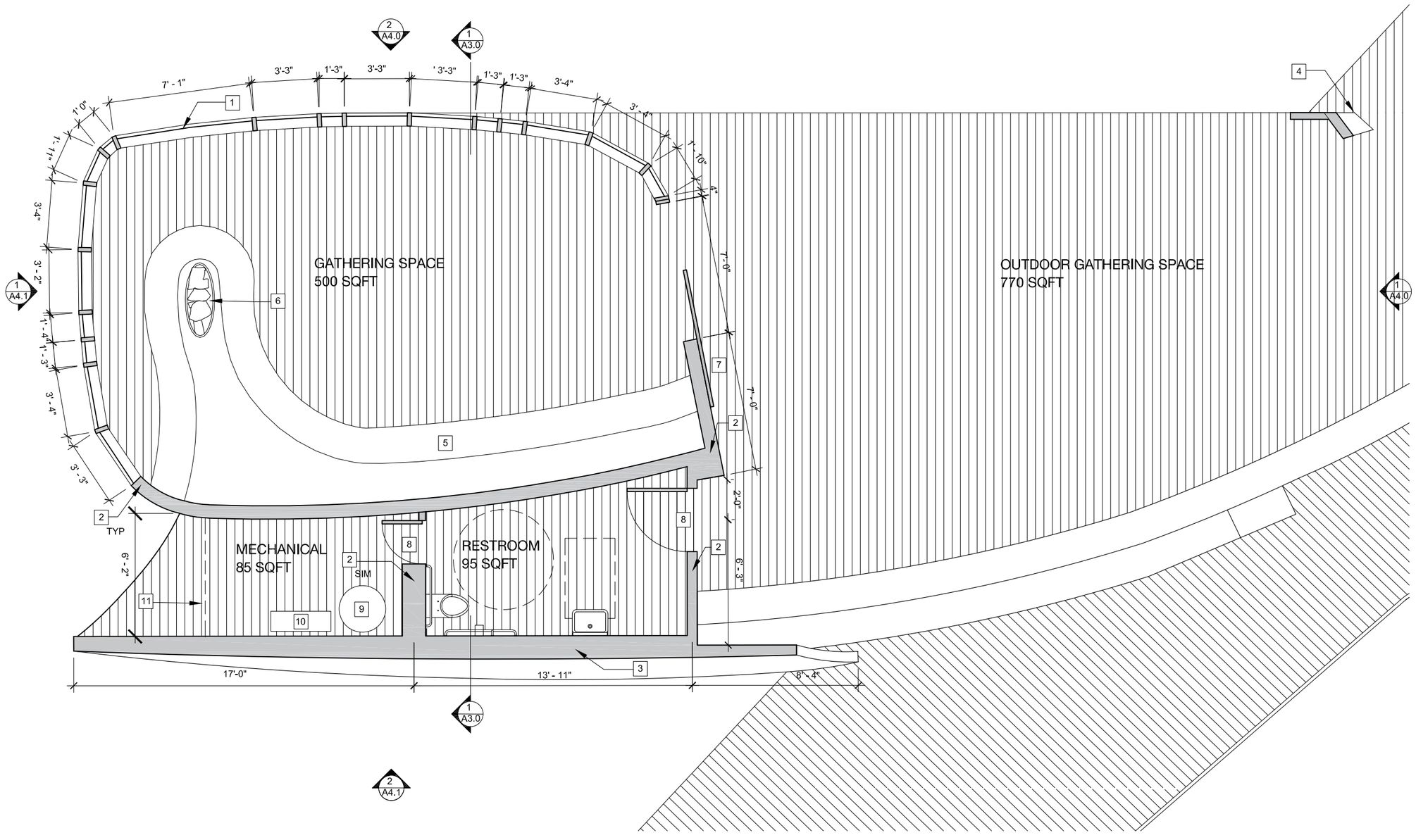
NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
SITE PLAN

CHECKED	DH
DRAWN	SC

issue	mark	date	description

SHEET # A1.0
PLOT DATE 05/24/2019
ISSUE DATE ** ISSUE DATE **



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SHEET NOTES

1. STEEL REINFORCED ALUM GLASS STORE FRONT SYSTEM
2. WOOD FRAMING , WOOD T&G FIN ON INTERIOR FACES, WOOD SKIP SHEATHING, WEATHER BARRIER, FURRING, MINERAL FIBER INSULATION AND WOOD T&G FINISH ON EXTERIOR FACE
3. WOOD FRAMING, WOOD T&G FIN ON INTERIOR FACES, WOOD SKIP SHEATHING, WEATHER BARRIER, FURRING, MINERAL FIBER INSULATION AND 20G WEATHERING STEEL FINISH ON EXTERIOR FACE
4. STRUCTURAL BEARING POINT
5. HEAVY TIMBER WOOD BENCH
6. PROPANE FIREPLACE VENTED THROUGH ROOF. FUEL VALVE AND IGNITION IN MECHANICAL RM. NO STUDENT ACCESS
7. ROLLING TRACK DOOR W/ T&G WOOD FINISH EA SIDE
8. MAN DOOR W/ T&G FINISH EA SIDE
9. PROPANE TANK
10. AIR SOURCES HEAT PUMP
11. REMOVABLE WEATHERING STEEL MESH SECURITY SCREEN

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
FLOOR PLAN

CHECKED	DH
DRAWN	SC

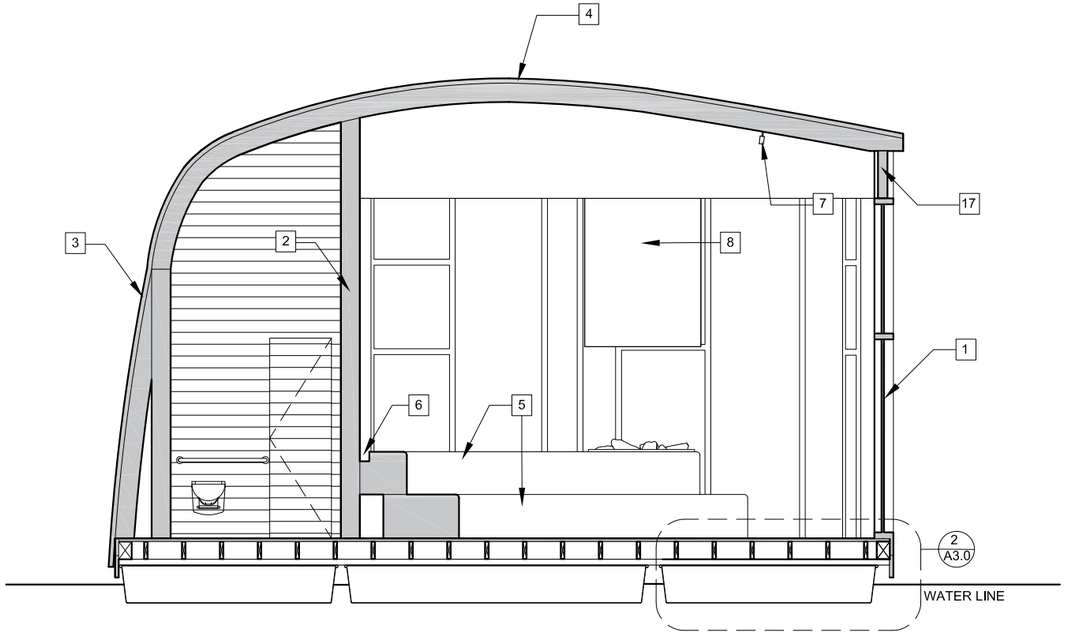
issue	mark	date	description

SHEET #	A2.0
PLOT DATE	05/24/2019
ISSUE DATE	** ISSUE DATE **

1 SITE PLAN
3/16" = 1'-0"

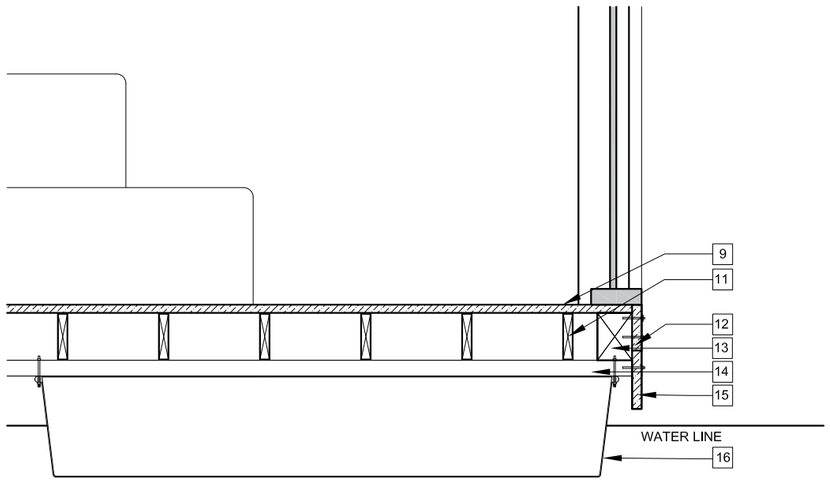
18" 3' 5' 10'

NORTH



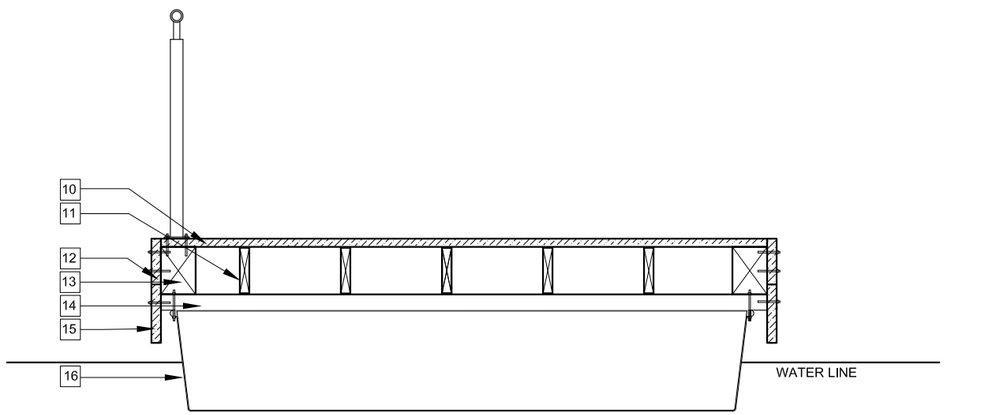
1 SECTION
3/16" = 1'-0"

18" 3' 5' 10'



2 SHELTER DETAIL
1/2" = 1'-0"

1' 2' 4'



3 FLOATING PATH DETAIL
1/2" = 1'-0"

1' 2' 4'

GENERAL NOTES

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SHEET NOTES

1. STEEL REINFORCED ALUM GLASS STORE FRONT SYSTEM
2. WOOD FRAMING , WOOD T&G FIN ON INTERIOR FACES, WOOD SKIP SHEATHING, WEATHER BARRIER, FURRING, MINERAL FIBER INSULATION AND WOOD T&G FINISH ON EXTERIOR FACE
3. WOOD FRAMING, WOOD T&G FIN ON INTERIOR FACES, WOOD SKIP SHEATHING, WEATHER BARRIER, FURRING, MINERAL FIBER INSULATION AND 20G WEATHERING STEEL FINISH ON EXTERIOR FACE
4. GLUE LAMINATED WOOD FRAMING, WOOD T&G FIN ON INTERIOR FACES, WOOD SKIP SHEATHING, WEATHER BARRIER, FURRING, MINERAL FIBER INSULATION AND 20G WEATHERING STEEL FINISH ON EXTERIOR FACE
5. HEAVY TIMBER WOOD BENCH
6. RECESSED, LINEAR LED LIGHT
7. MONO-POINT, ADJUSTABLE DIRECTION SPOT LIGHTS
8. 16G WEATHERING STEEL FLUE SHROUD
9. DECKING: 2X6, SOLID SAWN T&G, TREATED
10. DECKING: PULTRUDED, GRANULATED SURFACE FIBERGLASS GRATE
11. JOISTS: 2X8 @ 16" O.C. SOLID SAWN, PT
12. FASCIA: 2X8 SOLID SAWN, TREATED
13. RIM: 6X8 SOLID SAWN, PT
14. STRINGER: 3X6 @ 4'-0" O.C. SOLID SAWN, PT
15. FASCIA: 2X10 SOLID SAWN, TREATED
16. 48" x 48" x 24" POLYETHYLENE FLOATS FILLED WITH EXPANDED POLYSTYRENE FOAM
17. 4X20 TREATED GLU-LAMINATED MEMBER

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
SECTION

CHECKED	DH
DRAWN	SC

Issue	mark	date	description

SHEET # A3.0

PLOT DATE 05/24/2019

ISSUE DATE ** ISSUE DATE **

GENERAL NOTES

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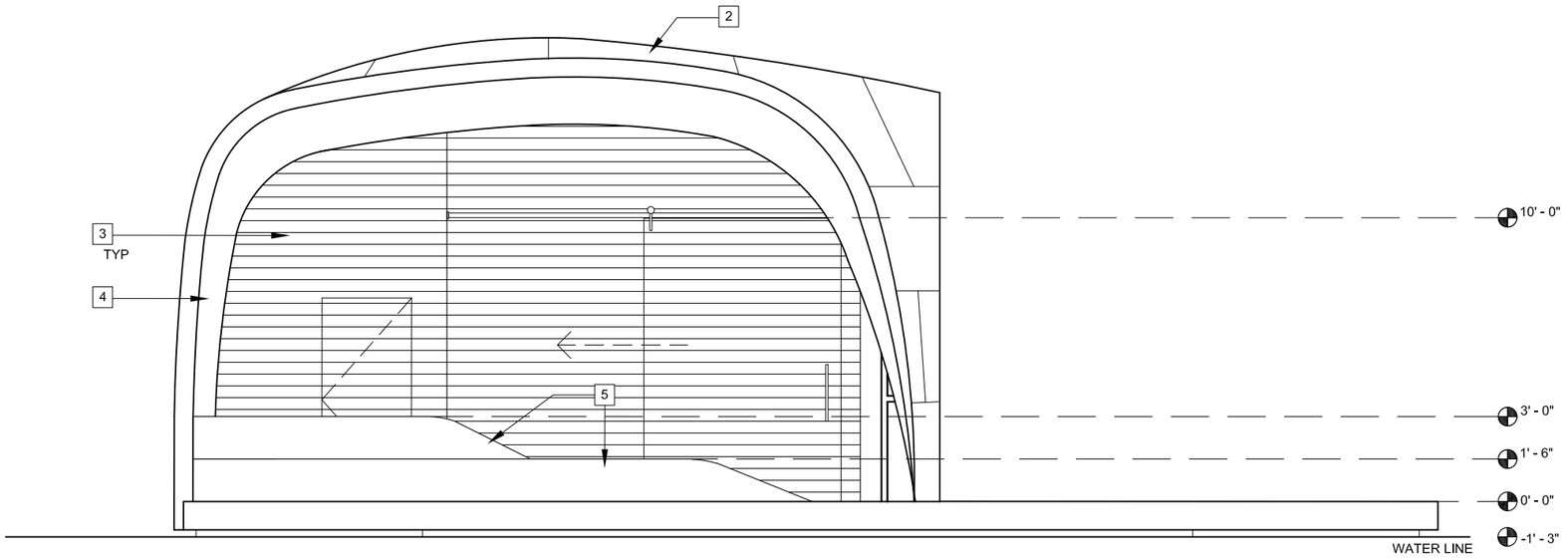
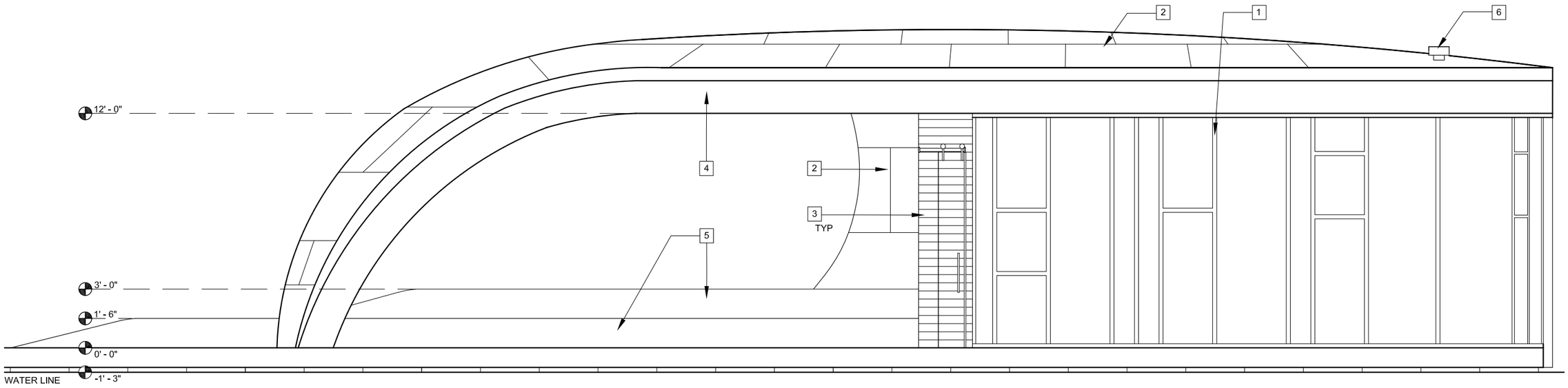
SHEET NOTES

1. STEEL REINFORCED ALUM GLASS STORE FRONT SYSTEM
2. 20G WEATHERING STEEL
3. PRE-WEATHERED T&G RED CEDAR
4. EXPOSED, TREATED GLUE-LAMINATED BEAM
5. HEAVY TIMBER WOOD BENCH
6. LOW-PROFILE 20G WEATHERING STEEL FLUE CAP



1 EAST ELEVATION
3/16" = 1'-0"

18" 3' 5' 10'



2 NORTH ELEVATION
3/16" = 1'-0"

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

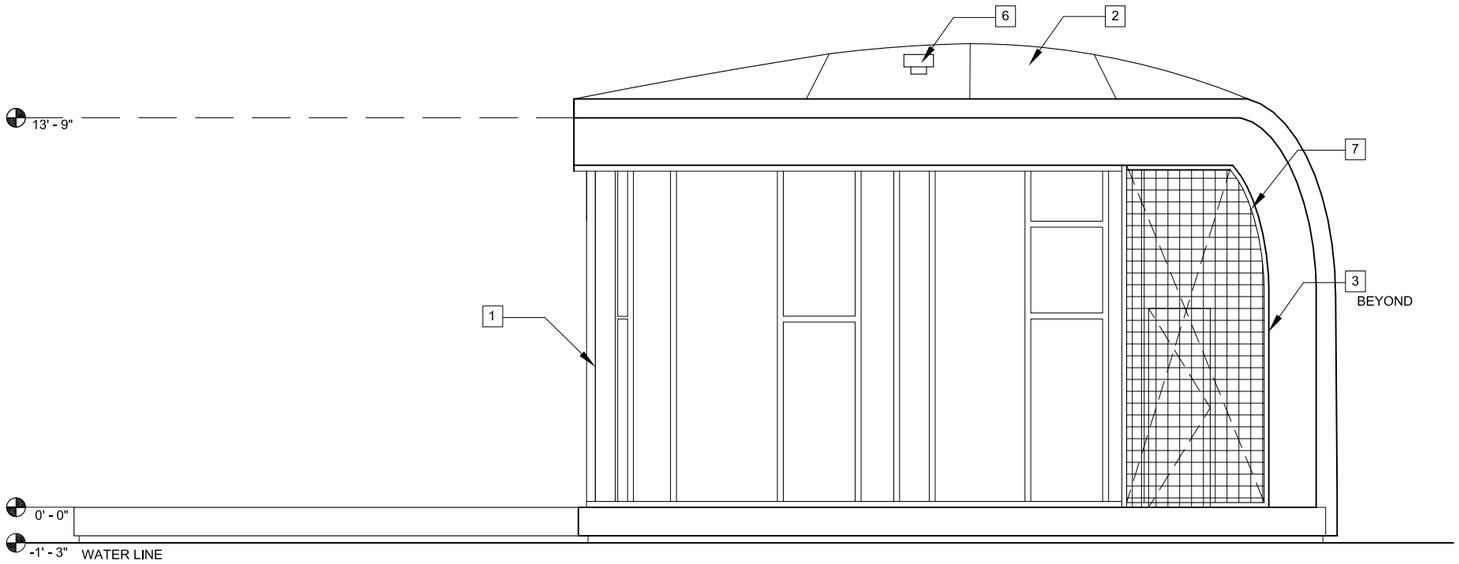
SHEET TITLE:
ELEVATIONS

CHECKED	DH
DRAWN	SC

issue	mark	date	description

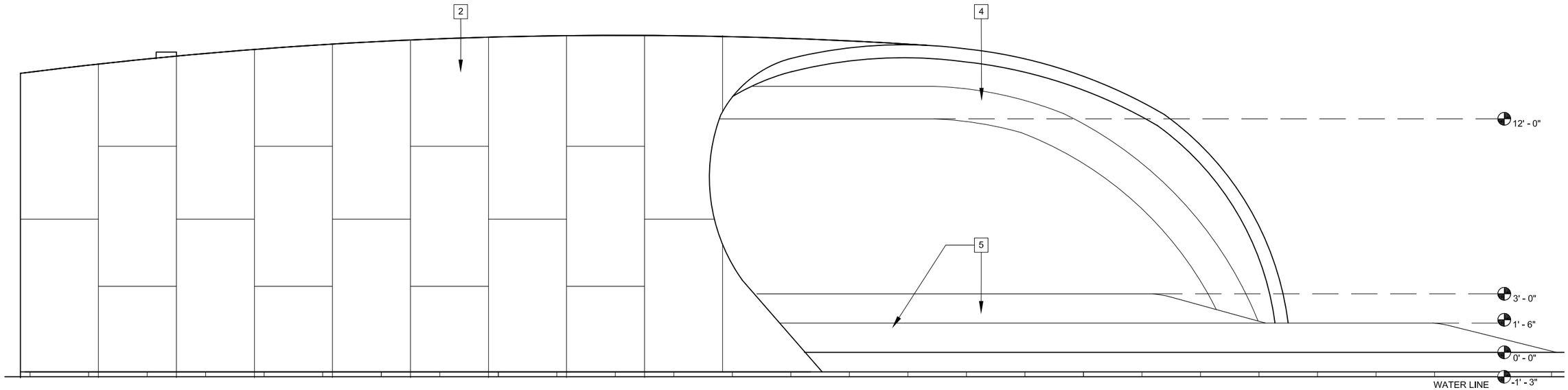
SHEET # A4.0

PLOT DATE	05/24/2019
ISSUE DATE	** ISSUE DATE **



1 WEST ELEVATION
3/16" = 1'-0"

18" 3' 5' 10'



2 SOUTH ELEVATION
3/16" = 1'-0"

18" 3' 5' 10'

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SHEET NOTES

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2. 20G WEATHERING STEEL
3. PRE-WEATHERED T&G RED CEDAR
4. EXPOSED, TREATED GLUE-LAMINATED BEAM
5. HEAVY TIMBER WOOD BENCH
6. LOW-PROFILE 20G WEATHERING STEEL FLUE & CAP
7. REMOVABLE WEATHERED STEEL MESH SECURITY SCREEN

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
ELEVATIONS

CHECKED	DH
DRAWN	SC

issue	mark	date	description

SHEET # A4.1
PLOT DATE 05/24/2019
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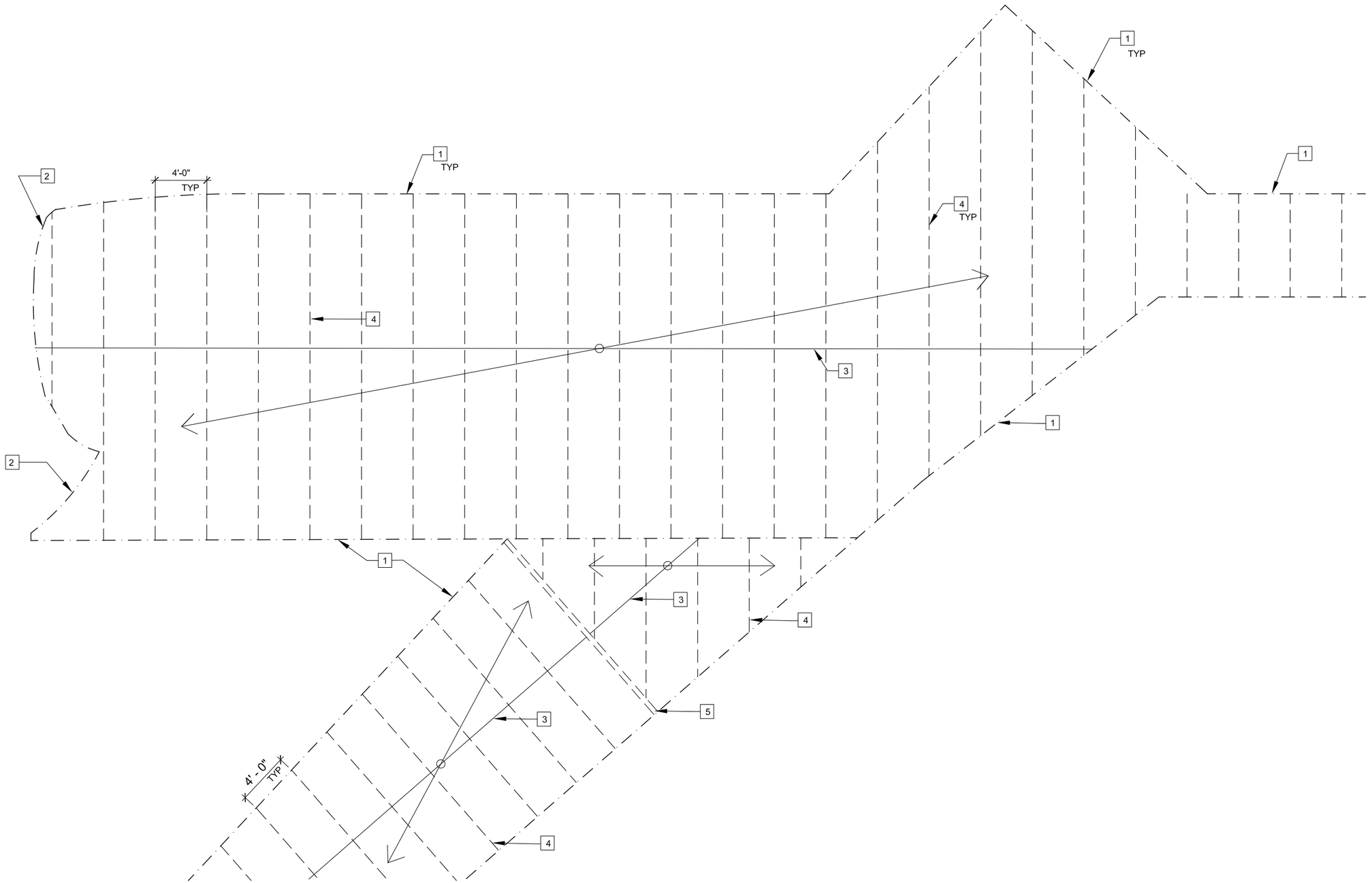

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SHEET NOTES

1. RIM: 6X8 SOLID SAWN, PT
2. RIM: 6X8 BENT GLU-LAMINATED MEMBER, PT
3. JOIST: 2X8 @ 16" O.C. SOLID SAWN, PT
4. STRINGER: 3X6 @ 4' O.C. SOLID SAWN, PT
5. HINGE LINE

1 DECK FRAMING PLAN

1/8" = 1'-0"

2' 4' 8' 16'

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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
DECK FRAMING PLAN

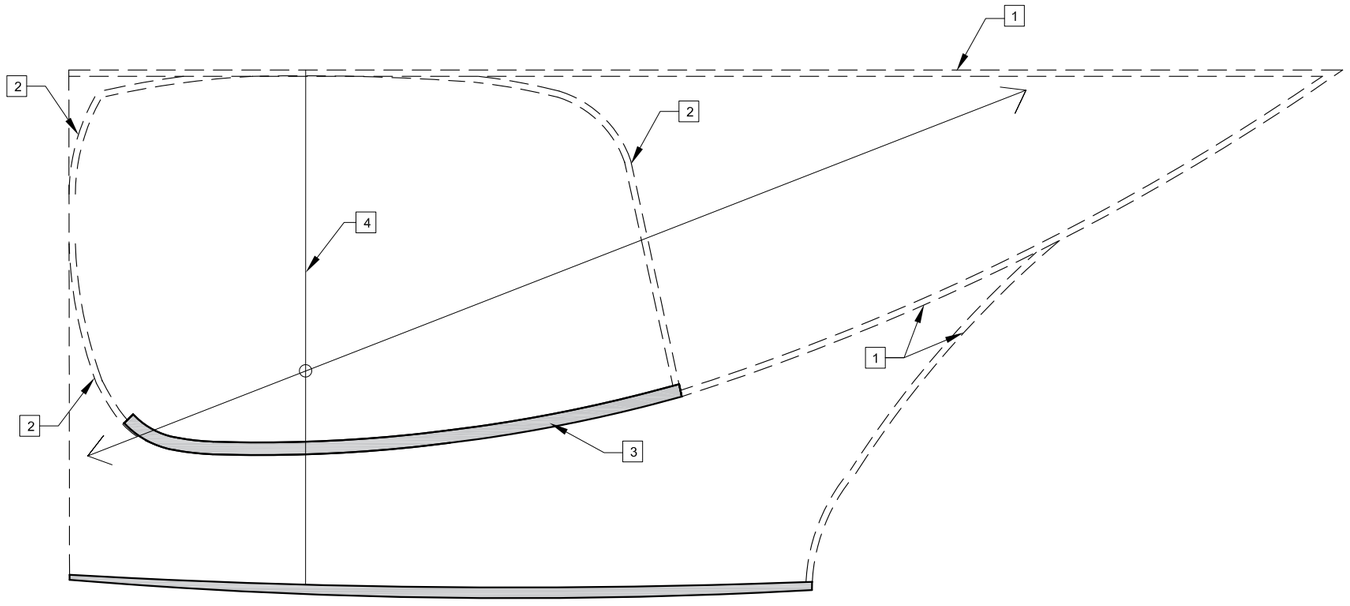
CHECKED	DH
DRAWN	SC

issue	mark	date	description

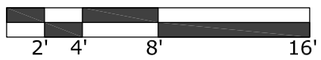
SHEET # A5.0

PLOT DATE 05/24/2019

ISSUE DATE ** ISSUE DATE **



1 ROOF FRAMING PLAN
1/8" = 1'-0"



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SHEET NOTES

1. BEAM: 4X20 BENT GLU-LAMINATED MEMBER, TREATED
2. HEADER: 4X20 BENT GLU-LAMINATED MEMBER, TREATED
3. BEARING WALL
4. RAFTER: 4X14 BENT GLU-LAMINATED MEMBERS AT 24" O.C., TREATED

NW
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AAK'W SHORELINE IMPROVEMENT

NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
ROOF FRAMING PLAN

CHECKED	DH
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Issue	mark	date	description

SHEET # A5.1

PLOT DATE	05/24/2019
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NWA-1616
JUNEAU, ALASKA

SHEET TITLE:
RENDERINGS

CHECKED	DH
DRAWN	SC

issue	mark	date	description

SHEET # A6.0

PLOT DATE	05/24/2019
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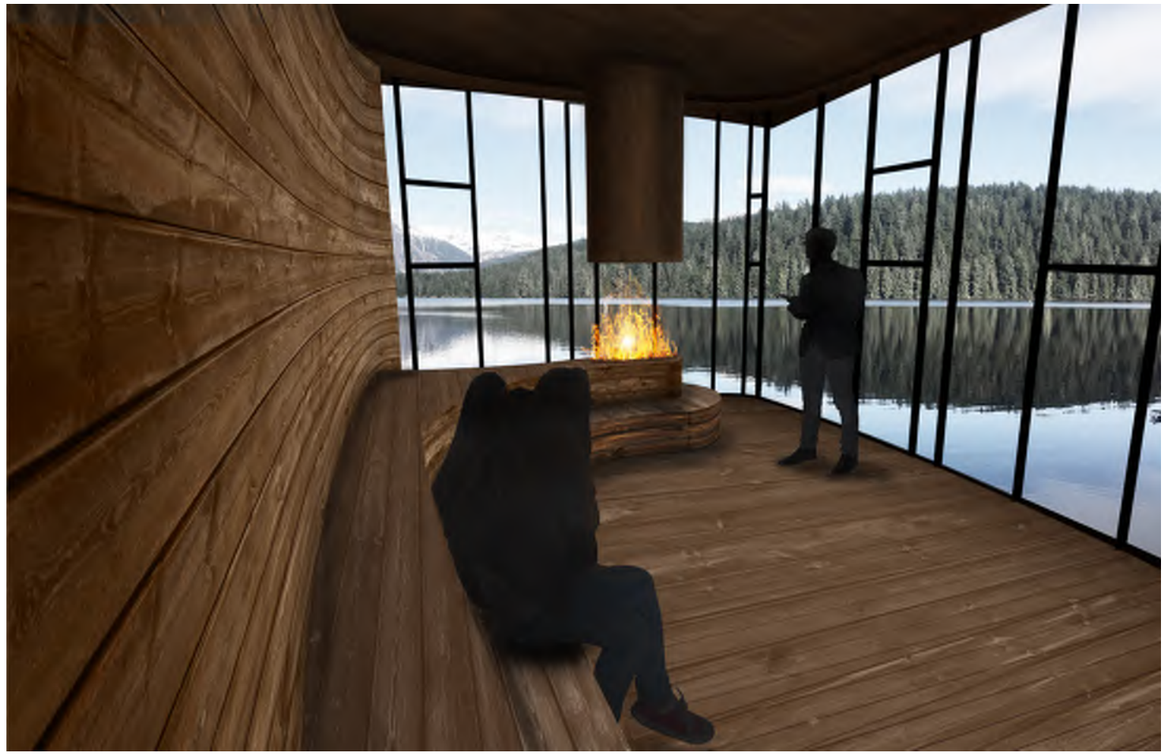

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DRAWN	SC

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SHEET # A6.1
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ISSUE DATE ** ISSUE DATE **

PDC ENGINEERS
PLAN • DESIGN • CONSTRUCT

MEMORANDUM

To	David Hurley	**From**	Aaron Morrison
Firm	Northwind Architects	**Date**	11/14/2018
		PDC #	16358JM
		Project Name	UAS Auke Lake
RE	Mechanical Narrative -35% Design		

Below is a narrative outlining the initial evaluation of mechanical systems and equipment proposed for the UAS Auke Lake Dock Building. This narrative is split into the heating/cooling and plumbing systems for the space.

Heating /Cooling Systems

Main Space: Heating and cooling of the main space will consist of the combination of a Fan Coil / Heat Pump split system. The heat pump will be located in the mechanical room that is partially open to outside elements and will allow for a transfer of heat to/from the environment. The indoor fan coil will be wall mounted on the south wall of the Gathering Space in a location that can be concealed by wood lattice. The split unit will be controlled by a thermostat located in the main occupancy space.

In addition to the fan coil there will be a propane fed fire pit present in the space. This will work in conjunction with an automated vent. This pit will be supplied by from a propane tank located in the mechanical space.

Restroom: Heating of this space will be accomplished with an electrically powered hydronic fintube unit that will be controlled by a local wall mounted thermostat. Ventilation of the room would be provided by a ceiling/wall mounted exhaust fan.

HVAC Equipment	Make Model	Mechanical Characteristics	Electrical Characteristics
Outdoor Heat Pump	Daikin RXL12QMVJU	Cooling – 10,900 Btu/h Heating- 13,600 Btu/h	230V/60Hz/1Ph System MCA – 13.0 System MFA – 15
Indoor Fan Coil	Daikin FTX12NMVJU	See Above	See Above
Restroom Fintube	QMark HBB1004	3413 Btu/h	240V/60Hz/1Ph,
Propane Fire Feature	TBD	TBD	TBD
Fire Pit Air Vent	TBD	TBD	TBD
Toilet Exhaust Fan	TBD	TBD	TBD

Plumbing System

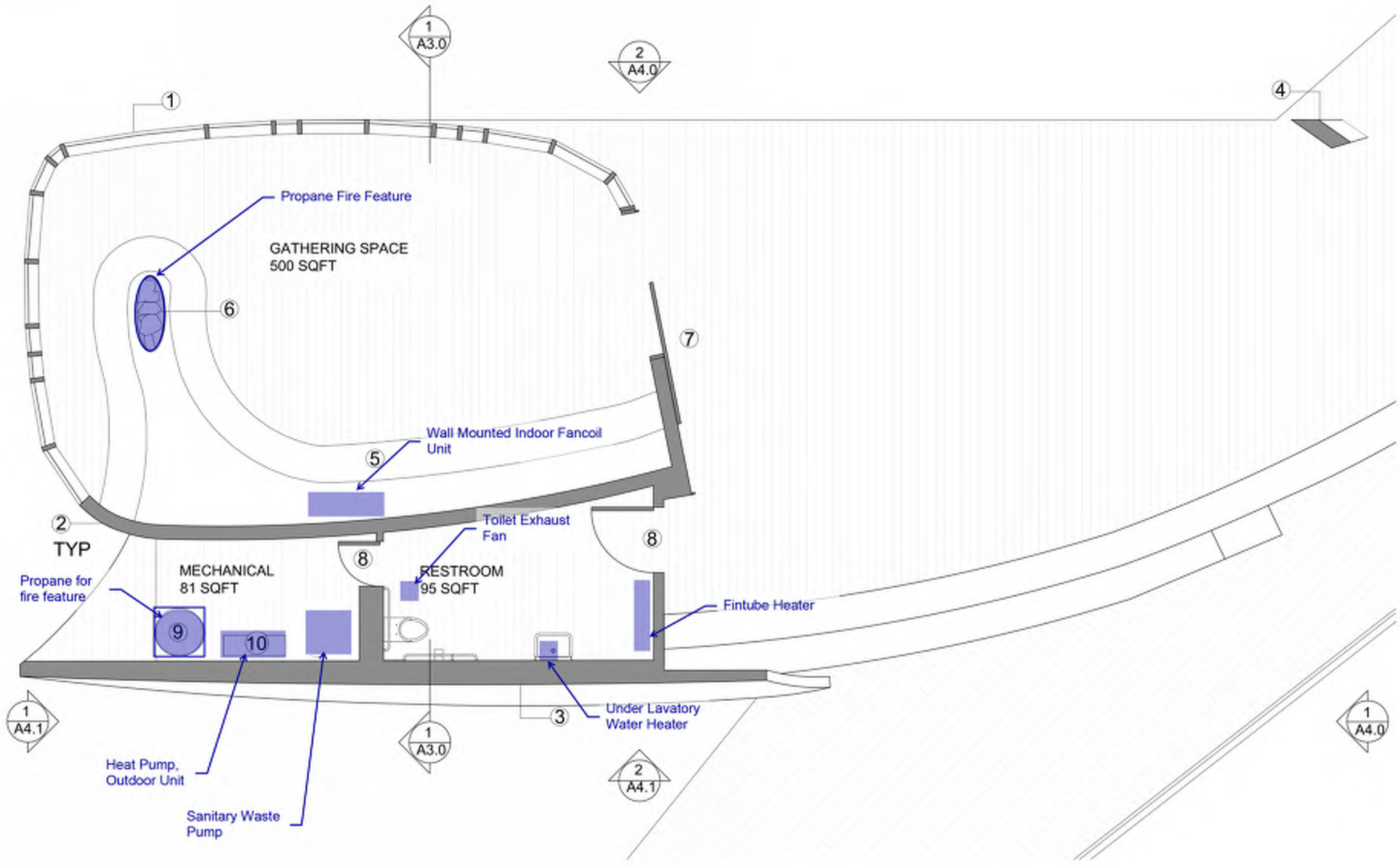
Plumbing for this space will consist of a lavatory and toilet located in the restroom as well as a hose bib located on the exterior of the structure. As noted in the civil plans, it will be necessary to route both a 1" water line to the building as well as a 2" pressurized waste line. The pressurized waste line will be routed to an existing sanitary sewer manhole located on the northwest corner of the Mourant Building. The plumbing that will be exposed in the connection between the shoreline and the structure will be routed adjacent to the deck and will require both heat trace, insulation and protective covering to prevent freezing during winter months and damage to the pipes. A 2" vent will also be required to penetrate the structure dock building and will be routed from the Sump Pump that will be located in the mechanical room.

The plumbing fixtures will be vitreous china and will be approved by the architect and owner in order to match the overall design of the facility. The toilet will need to be wall mounted, or floor mounted with a rear discharge in order to properly slope to the floor supported sump pump. The sump pump will be a duplex pump system that will be powerful enough to pump the waste to the existing manhole and will have redundant pumps in case of failure in the primary pump. The sump will also be equipped with a control/alarm panel, located in the mechanical room, that will audibly notify users of any faults to the system.

A tankless water heater will be installed in a location below the lavatory to provide warm tempered water to the fixture.

The exterior hose bib will be installed with a vacuum break to prevent freezing of the water line.

Plumbing Equipment	Make Model	Mechanical Characteristics	Electrical Characteristics
Sump Pump (Duplex)	Sanicube 2	12 gallon tank, 36 ft lift 90 gal/min max flow.	230V/60Hz/1Ph/13A
Sump Pump Controller	Sanicube Remote Control Box	See Above	120v/60Hz/1Ph
Toilet	TBD, Vitreous China, Wall Mounted	TBD	N/A
Lavatory	TBD, Vitreous China, Wall Mounted	TBD	N/A
Hose Bib	Vacuum Break	TBD	TBD
Tankless Water Heater	Titan N-75	60 degrees F at 1 GPM	220V/60Hx/1Ph/29A



1 A2.0 **FLOOR PLAN**

3/16" = 1'-0"

N

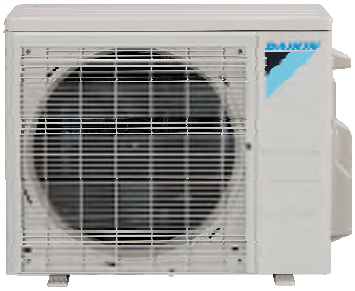
FLOOR PLAN WITH ADDITIONAL MECHANCIAL NOTES.

Job Name:	
Tag#	

Submittal Data Sheet

FTX12NMVJU / RXL12QMVJU

1-Ton Wall Mounted Heat Pump System



Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec. *If product is installed in a commercial application, limited warranty period is 5 years.*

Indoor Specifications

	Cooling		Heating	
Airflow Rate (cfm)	H	M	H	M
	434	311	413	321
	L	SL	L	SL
	247	145	258	219
Sound (dBA) H / M / L / SL	45 / 37 / 30 / 19		45 / 37 / 30 / 26	
Dimensions (H × W × D) (in)	11-1/4 × 30-5/16 × 8-3/4			
Weight (Lbs)	18			

Outdoor Specifications

Compressor	Hermetically Sealed Swing Type			
Refrigerant	R-410A			
Factory Charge	2.09			
Refrigerant Oil	PVE (FVC50K)			
Airflow Rate (cfm)	Cooling		Heating	
	H	1,144	H	1,006
	L	865	L	777
Sound Pressure Level (dBA)	50			
Dimensions (H × W × D) (in)	21-5/8 × 26-9/16 × 11-3/16			
Weight (Lbs)	70			

Efficiency

Cooling		Heating	
SEER	20.0	HSPF	12.0
EER	12.5	COP	3.90

Performance

Cooling (Btu/hr)	
Rated (Min/Max)	10,900 (4,400 / 13,300)
Sensible @ AHRI	9,100
Moisture Removal gal/h	.45
Standard Operating Range	50°F – 115°F
Extended Operating Range*	-4°F – 115°F

Rated Cooling Conditions: Indoor: 80°F DB/67°F WB
Outdoor: 95°F DB/75°F WB

***With field settings and wind baffle**

Heating (Btu/hr)	
1:@ 47° Rated (Min/Max)	13,600 (4,400 / 18,800)
2: @ 17° Rated	8,800
3: @ 5° Max	14,330
Operating Range	-13°F – 60°F

1: Rated Heating Conditions: Indoor: 70°F DB/60°F WB
Outdoor: 47°F DB/43°F WB

2: Rated Heating Conditions: Indoor: 70°F DB/60°F WB
Outdoor: 17°F DB/15°F WB

3: Heating Conditions: Indoor: 70°F DB/60°F WB
Outdoor: 5°F DB/5°F WB

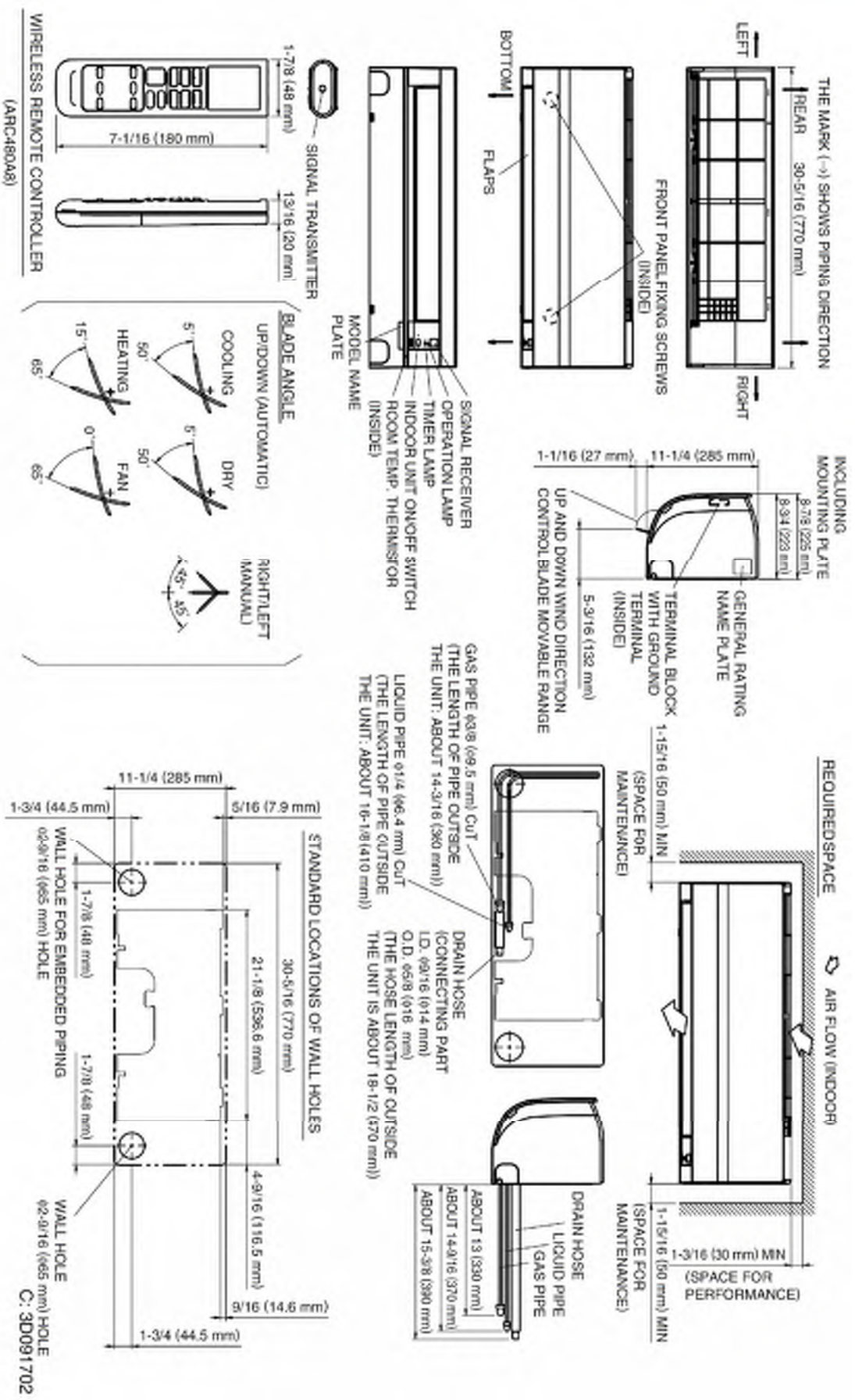
Electrical

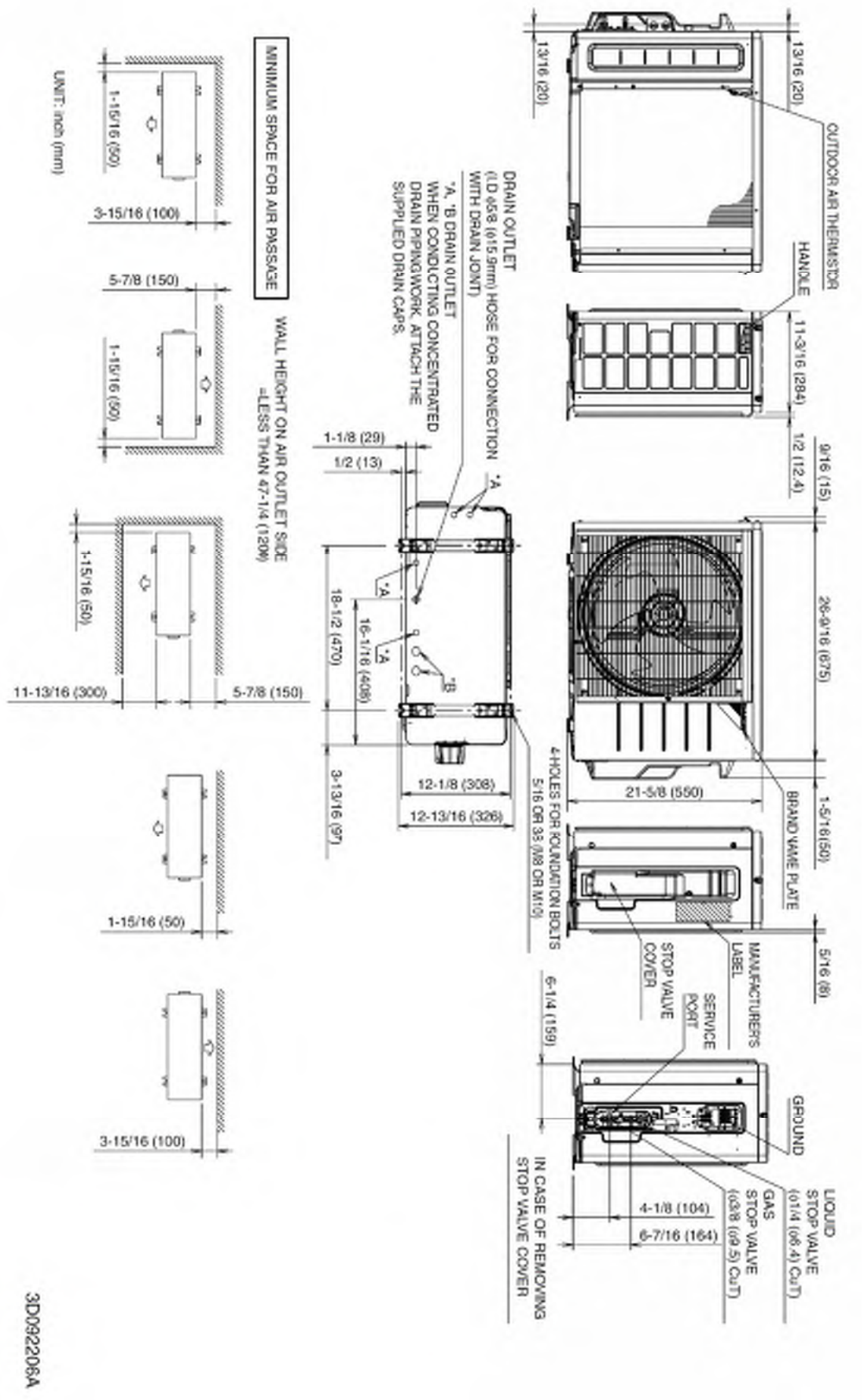
	208/60/1	230/60/1
System MCA	13.0	13.0
System MFA	15	15
Compressor RLA	12.0	12.0
Outdoor fan motor FLA	.17	.17
Outdoor fan motor W	20	20
Indoor fan motor FLA	.23	.23
Indoor fan motor W	28	28

MFA: Max. fuse amps **MCA**: Min. circuit amps (A) **FLA**: Full load amps (A)
RLA: Rated load amps (A) **W**: Fan motor rated output (W)

Piping

Liquid (in)	1/4
Gas (in)	3/8
Drain (in)	5/8
Max. Interunit Piping Length (ft)	65.625
Max. Interunit Height Difference (ft)	49.25
Chargeless (ft)	32.8
Additional Charge of Refrigerant (oz/ft)	.21


THE MARK (→) SHOWS PIPING DIRECTION
LEFT
REAR
30-5/16 (770 mm)
RIGHT
FRONT PANEL FIXING SCREWS (INSIDE)
BOTTOM
FLAPS
INCLUDING MOUNTING PLATE
8-7/8 (225 mm)
8-3/4 (223 mm)
1-1/16 (27 mm)
11-1/4 (285 mm)
UP AND DOWN WIND DIRECTION CONTROL BLADE MOVABLE RANGE
5-3/16 (132 mm)
TERMINAL BLOCK WITH GROUND TERMINAL (INSIDE)
GENERAL RATING NAME PLATE
SIGNAL RECEIVER
OPERATION LAMP
TIMER LAMP
INDOOR UNIT ON/OFF SWITCH
ROOM TEMP. THERMISTOR (INSIDE)
MODEL NAME PLATE
1-7/8 (48 mm)
7-1/16 (180 mm)
13/16 (20 mm)
SIGNAL TRANSMITTER
WIRELESS REMOTE CONTROLLER (ARC480A8)
BLADE ANGLE
UP/DOWN (AUTOMATIC)
COOLING
HEATING
DRY
FAN
RIGHT/LEFT (MANUAL)
GAS PIPE ø3/8 (ø9.5 mm) CUT (THE LENGTH OF PIPE OUTSIDE THE UNIT: ABOUT 14-3/16 (360 mm))
LIQUID PIPE ø1/4 (ø6.4 mm) CUT (THE LENGTH OF PIPE OUTSIDE THE UNIT: ABOUT 16-1/8 (410 mm))
DRAIN HOSE (CONNECTING PART I.D. ø9/16 (ø14 mm) O.D. ø5/8 (ø16 mm) (THE HOSE LENGTH OF OUTSIDE THE UNIT IS ABOUT 18-1/2 (470 mm))
REQUIREDSPACE
AIR FLOW (INDOOR)
1-15/16 (50 mm) MIN (SPACE FOR MAINTENANCE)
1-3/16 (30 mm) MIN (SPACE FOR PERFORMANCE)
DRAIN HOSE
LIQUID PIPE
GAS PIPE
ABOUT 13 (330 mm)
ABOUT 14-9/16 (370 mm)
ABOUT 15-3/8 (390 mm)
STANDARD LOCATIONS OF WALL HOLES
11-1/4 (285 mm)
1-3/4 (44.5 mm)
5/16 (7.9 mm)
WALL HOLE FOR EMBEDDED PIPING ø2-9/16 (ø65 mm) HOLE
1-7/8 (48 mm)
30-5/16 (770 mm)
21-1/8 (536.6 mm)
4-9/16 (116.5 mm)
9/16 (14.6 mm)
1-3/4 (44.5 mm)
WALL HOLE ø2-9/16 (ø65 mm) HOLE
C: 3D091702


UNIT: inch (mm)
MINIMUM SPACE FOR AIR PASSAGE
WALL HEIGHT ON AIR OUTLET SIDE
=LESS THAN 47-1/4 (1200)
1-15/16 (50)
3-15/16 (100)
5-7/8 (150)
11-13/16 (300)
DRAIN OUTLET
(I.D ø58 (ø15.9mm) HOSE FOR CONNECTION WITH DRAIN JOINT)
*A, *B DRAIN OUTLET
WHEN CONDUCTING CONCENTRATED DRAIN PIPINGWORK, ATTACH THE SUPPLIED DRAIN CAPS.
1-1/8 (29)
1/2 (13)
18-1/2 (470)
16-1/16 (408)
12-1/8 (308)
12-13/16 (326)
3-13/16 (97)
13/16 (20)
OUTDOOR AIR THERMISTOR
HANDLE
11-3/16 (284)
1/2 (12.4)
9/16 (15)
26-9/16 (675)
21-5/8 (550)
BRAND NAME PLATE
1-5/16(50)
4-HOLES FOR FOUNDATION BOLTS
5/16 OR 33 (M8 OR M10)
5/16 (8)
6-1/4 (159)
MANUFACTURERS LABEL
SERVICE PORT
STOP VALVE COVER
GROUND
LIQUID STOP VALVE (ø1/4 (ø6.4) CuT)
GAS STOP VALVE (ø3/8 (ø9.5) CuT)
4-1/8 (104)
6-7/16 (164)
IN CASE OF REMOVING STOP VALVE COVER
3D092206A

Optional Accessories

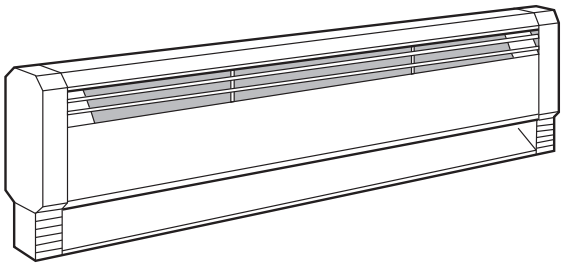
Indoor Unit		
Included	**Part Number**	**Description**
	BRP072A43	Wireless Interface Adapter (S21 Adapter Included)
	BRC944B2-A08	Wired Remote Controller kit (Adaptor Required)
	BRCW901A08	Wired Remote Controller Cable – 25ft (Included in above kit)
	BRCW901A03	Wired Remote Controller Cable – 10ft
	KRP067A41	Adaptor for wired remote controller (09 & 12)
	KAF970A45	Titanium apatite photocatalytic air-purifying filter WITH frame
	KAF970A46	Titanium apatite photocatalytic air-purifying filter WITHOUT frame
	DACA-CP1-1	Inline Condensate Pump (Fits inside all Daikin wall & floor mount units)
	DACA-CP4-1	External Condensate Pump
	KRP928BB2S + KRP067A41	Interface Adaptor for DIII-NET

Outdoor Unit		
Included	**Part Number**	**Description**
	DACA-WB-1	Powder-Coated Wall-Mounted Bracket
	KPW937E4	Air direction adjustment grille (09 & 12)
	KEH067A41E	Daikin BMS Drain Pan Heater Small (09 & 12)
	KKG067A41	Back protection wire net (09 & 12)
	KPS067A41	Snow hood (intake side plate) (09 & 12)
	KPS067A42	Snow hood (intake rear plate) (09 & 12)
	KPS067A44	Snow hood (outlet) (09 & 12)
	KKP937A4	Drain Plug for OD Unit

A Marley Engineered Products Brand

470 Beauty Spot Rd. E, Bennettsville, SC 29512

SUBMITTAL SHEET
HBB SERIES
LIQUID FILLED ELECTRIC HYDRONIC HEATERS



c UL us

CAPACITIES
500 TO 2000 W
145, 188 or 250 Watts/ft.
28", 34", 46", 58", 70" or 94" lengths
1 phase only

JOB NAME: _____

LOCATION: _____

ARCHITECT: _____

ENGINEER: _____

CONTRACTOR: _____

SUBMITTED BY: _____

DATE: _____

ITEM	QTY.	CATALOG NUMBER	TAG	WATTS	VOLTS	PHASE Ø	AMPS	AVAILABLE CONTROLS

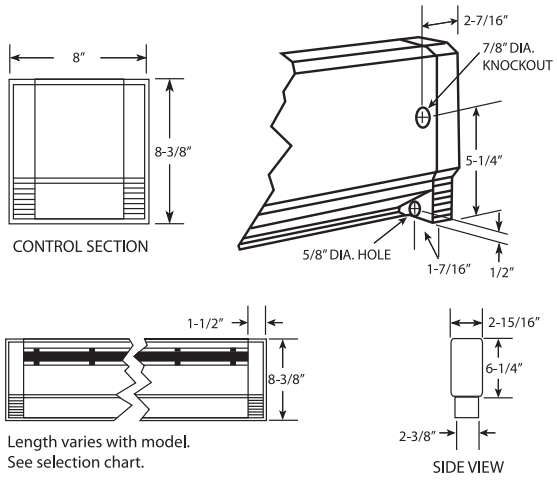
ACCESSORIES AND CONTROLS

ITEM	QTY.	CAT. NO.	TAG	DESCRIPTION

HBB SERIES

QMARK®
A Marley Engineered Products Brand
470 Beauty Spot Rd. E, Bennettsville, SC 29512

WIRING COMPARTMENTS
DIMENSIONS
Unit length varies
with model.
See Selection Chart.



ARCHITECT'S & ENGINEER'S SPECIFICATIONS*

Furnish and install where indicated on plans, electric hydronic baseboard heaters, suitable for continuous operation as manufactured by QMark, A Marley Engineered Products Brand, Bennettsville, SC. Heaters shall be cULus listed.

ENCLOSURE: The heaters shall be fabricated of minimum .032 inch pre-painted steel with minimum .040 inch electro-galvanized steel control boxes. Support brackets shall be 18 ga.

FRONT COVER: The front cover shall be fabricated of minimum .032 pre-painted steel.

HEATING ELEMENT: The heating element wire shall consist of 80% nickel, 20% chromium, and shall be immersed in a heat-transfer liquid and sealed in a heater length copper tube.. Aluminum fins shall be so designed as to block sheath radiation to front and back of heater body and pressure bonded to steel sheath.

INSTALLATION: Heaters shall be designed to permit use of supply conductors with 60°C insulation.

GENERAL: Heater has a durable textured polyester powder coat finish or corrosion resistance. Linear thermal cut-out shall be factory installed to automatically shut off heater in event of overheating and reactivate heater when temperatures return to normal. The complete heater shall have a height of 8-3/8 inches and a depth of 2-15/16 inches. Heaters shall have cULus approval for mounting on any floor surface including carpeting.

* *QMark reserves the right to change specifications without prior notice.*

SELECTION CHART

CATALOG NUMBER	VOLTS	WATTS	BTU/HR	AMPS	APPROX. HTG. AREA	LENGTH (IN.)	SHIP WT. (LBS.)
HBB500	120	500	1706	4.2			
HBB508	208	500	1706	2.4	60S.F.	28	10
HBB504	240/208	500/375	1706/1280	2.1/1.8			
HBB750	120	750	2560	6.3			
HBB758	208	750	2560	3.6	95 S.F.	34	12
HBB754	240/208	750/563	2560/1921	3.1/2.7			
HBB1000	120	1000	3413	8.3			
HBB1008	208	1000	3413	4.8	125 S.F.	46	15
HBB1004	240/208	1000/750	3413/2560	4.2/3.6			
HBB1250	120	1250	4265	10.4			
HBB1258	208	1250	4265	6.0	155 S.F.	58	19
HBB1254	240/208	1250/938	4265/3200	5.2/4.5			
HBB1500	120	1500	5120	12.5			
HBB1508	208	1500	5120	7.2	185 S.F.	70	22
HBB1504	240/208	1500/1125	5120/3839	6.3/5.4			
HBB2008	208	2000	6826	9.6			
HBB2004	240/208	2000/1500	6826/5120	8.3/7.2	250 S.F.	94	30

CATALOG NO.	DESCRIPTION
HBBT1*	22Amp @ 120-240VAC 18Amp @ 277VAC Single Pole Thermostat Snap Action Type. Field Installed in Junction Box.
HBBT2*	22Amp @ 120-240VAC 18Amp @ 277VAC Double Pole Thermostat Snap Action Type. Field Installed in Junction Box.
HBBT1TP*	Same As Model HBBT1 Except Tamperproof.
HBBT2TP*	Same As Model HBBT2 Except Tamperproof.
HBBAC	Air Conditioner Outlet Section. 20Amp @ 208-240VAC.
HBBDR	Duplex Receptacle Section. 15Amp@ 120VAC.
HBBWS	8" Blank Wiring Section.
HBBDSDR120	2 Pole disconnect switch and 120V receptacle.

* Installs in junction box.

CATALOG NO.	DESCRIPTION
HBBLVRO	Low Voltage Relay Control Section 25A @ 120VAC.
HBBLVR8	Low Voltage Relay Control Section 25A @ 208VAC.
HBBLVR4	Low Voltage Relay Control Section 25A @ 240VAC.
HBBCDS2	Two Pole Disconnect Switch Section.

Control Section 8" in length.

CATALOG NO.	DESCRIPTION
CBDCIC	Inside Corner Section
CBDCOC	Outside Corner Section
CBDBS2	2 Ft. Blank Section
CBDBS3	3 Ft. Blank Section
CBDBS4	4 Ft. Blank Section
CBDBS5	5 Ft. Blank Section
CBDBS6	6 Ft. Blank Section
CBDBS8	8 Ft. Blank Section

CUBIC 2
275 | 04.18

SFA

The user should retain these instructions for future reference
À lire attentivement et à conserver à titre d'information
El usuario debe mantener estas instrucciones para futura referencia

SANICUBIC® 2

IMPORTANT/ IMPORTANTE

DO NOT RETURN ANY MERCHANDISE TO THE VENDOR
NE PAS RETOURNER DE MARCHANDISE AU VENDEUR
NO REGRESE NINGUNA MERCANCÍA AL VENDEDOR

For customer Service, Returns or Technical Questions, please call Saniflo's Technical support toll-free at 800-571-8191 (USA) or 800-363-5874 (CDN).

Pour le service client, les retours ou toute question technique, merci d'appeller le service technique de Saniflo au numéro suivant : CDN 800-363-5874 (CDN).

Para servicio al cliente, devoluciones o preguntas técnicas, por favor llame al soporte técnico de Saniflo sin cargo al 800-571-8191 (USA).

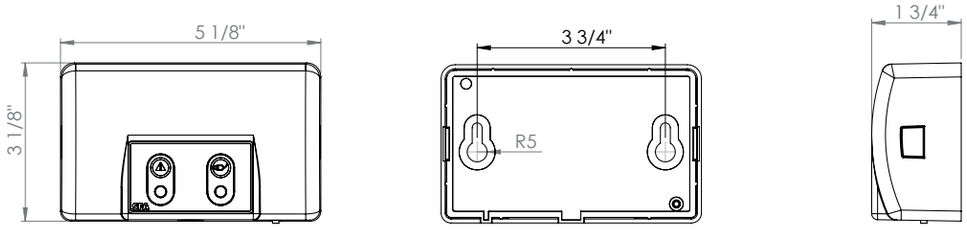
This product must be installed in strict accordance with local plumbing codes.
Product should be installed by a licensed plumber.

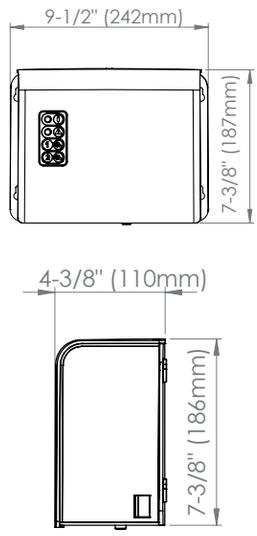
Le produit doit être installé dans le respect des règlements sanitaires locaux.
Le produit doit être installé par un plombier qualifié.

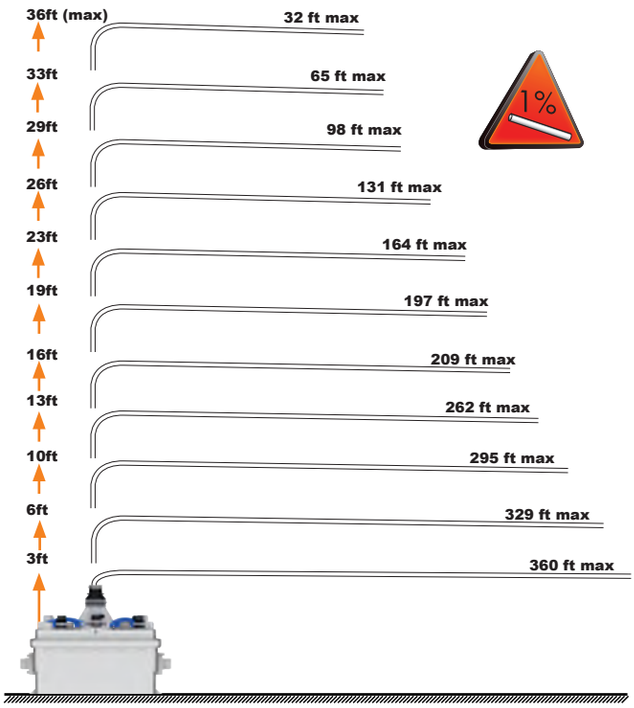
El producto debe ser instalado en estricto acuerdo con los códigos locales de plomería.
El producto debe ser instalado por un plomero con licencia.

CDN USA

SANICUBIC 2 IP68
220V-240 / 60 Hz / 2 x 1 HP

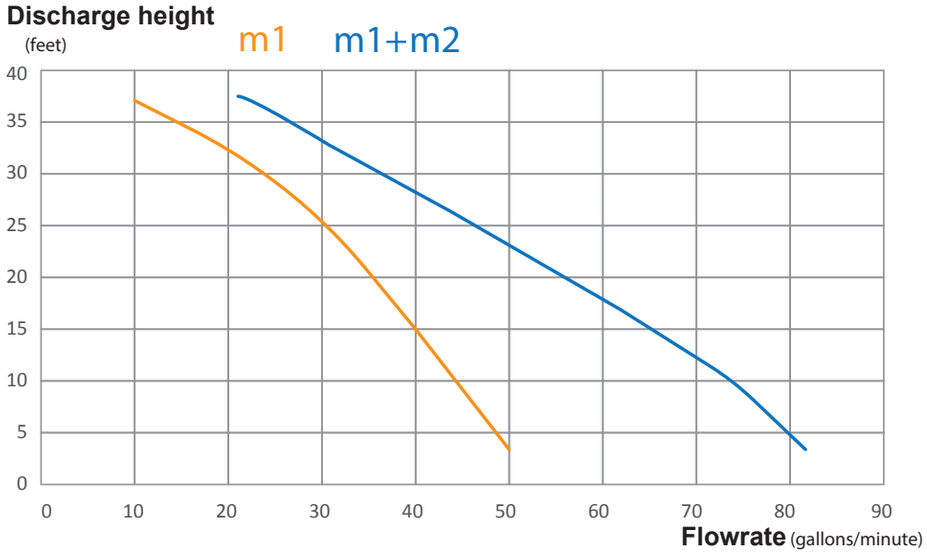






SANICUBIC 2 IP68

220-240 V - 60 Hz - 13A
2 x 1 HP - CLASS 1 - ⏚
IP68 - 67 Lbs
Max temperature 158°F (70 C°)
(Max 5 mins)
Tank volume: 12 Gallons



1 SAFETY

ATTENTION

This device may be used by children who are at least 8 years old, by people with reduced physical, sensory or mental capacities or those without knowledge or experience, if they are properly supervised and if the instructions relating to using the device completely safely have been given to them and the associated risks have been understood. Children must not play with the device. Cleaning and maintenance undertaken by the user must not be carried out by unsupervised children.

1.1 Identification of warnings

Symbol	Meaning
DANGER	**DANGER** This term defines a high risk of danger, which can lead to death or serious injury, if not avoided.
WARNING	**WARNING** This term defines a hazard which could cause a risk to the machine and its operation, if it is not taken into account
	**Dangerous area** This symbol, in combination with a keyword, characterizes hazards that could lead to death or injury.
	**Dangerous voltage** This symbol, in combination with a keyword, characterizes dangers associated with the voltage and provides information on voltage protection.
WARNING 	**Property damage** This symbol, in combination with the keyword **WARNING**, characterizes dangers to the machine and its proper operation.

1.2 General points

This operating and installation manual contains important instructions to follow for the fitting, operation and maintenance of the SANICUBIC® pumping station. Following these instructions guarantees safe operation and prevents injury and property damage.

Please follow the safety instructions in every section.

Before fitting and commissioning the pumping station, the qualified installer/user concerned must read and understand all these instructions.

1.3 Intended use

Only use the pumping station in the fields of application described in this documentation.

- The pumping station must only be operated in technically perfect conditions.
- Do not use a partially assembled pumping station.
- The pumping station must only pump the fluids described in this documentation.
- The pumping station must never operate without fluid.
- Contact us for operating modes not described in this documentation.
- Never exceed the usage limits defined in the documentation.
- The safe use of the pumping station is only guaranteed if used as intended (=> section 5.2).

1.4 Safety instructions for maintenance, inspection and installation

- Any alteration or modification of the pumping station will void the warranty.
- Only use original parts or parts recognized by the manufacturer. The use of other parts may void the manufacturer's liability for any resulting damage.
- The operator must ensure that all maintenance, inspection and installation work is carried out by qualified plumber having previously studied this operating and installation manual.
- Before working on the pumping station, switch it off and unplug the pumping station's power plug.
- You must follow the procedure for shutting down the pumping station described in this operating manual.
- Pumping stations discharging fluids that may be harmful to health must be decontaminated. Before restarting the pumping station, follow the commissioning instructions. (⇨ section 5.1)
- Keep unauthorized people (children, for example) away from the pumping station.
- Never exceed the usage limits defined in the documentation.
- Follow all the safety precautions and instructions in this operating and installation manual.

This operating manual must always be available on site so it can be accessed by qualified staff and the operator.

1.5 Risks and consequences of non-compliance with the operating manual

Failure to comply with this operating and installation manual will result in the loss of warranty rights.

2 TRANSPORT / TEMPORARY STORAGE / RETURNS / DISPOSAL

2.1 Receiving inspection

- When receiving goods, check the condition of the pumping station's packaging.
- In case of damage, note the exact damage and immediately notify the dealer in writing.

2.2 Transport

DANGER

Dropping the pumping station

Risk of injury if the pumping station is dropped!

▷ Keep the pumping station horizontal when moving it.

▷ Observe the indicated weight.

▷ Never suspend the pumping station by the power cord.

▷ Use suitable means of transport.

✓ The pumping station has been inspected to make sure there is no damage due to transport.

Choose suitable means of transport according to the weight table

Table 1: Weight of the pumping station

Model	Gross Weight (including packaging and accessories) [lbs]
SANICUBIC® 1	44 lbs
SANICUBIC® 2	78 lbs

2.3 Temporary storage / Packaging

In the case of commissioning after an extended storage period, take the following precautions to ensure storage of the pumping station:

WARNING

Wet, dirty or damaged openings and junction points. Leaks or damage to the pumping station!

▷ Clear the pumping station's blocked openings at the time of installation.

2.4 Returns

- Properly drain the pumping station.
- Rinse and decontaminate the pumping station.

2.5 Disposal

The device must not be disposed of as household waste and must be disposed of at a recycling point for electrical equipment. The device's materials and components are reusable. The disposal of electrical and electronic waste, recycling and recovery of any form of used appliances contribute to the preservation of our environment.

3 DESCRIPTION

3.1 General description

This device is a compact pumping station. SANICUBIC® 1 is a pumping station specially developed for individual use (detached house or small commercial premises). SANICUBIC® 2 is a pumping station specially developed for individual, commercial and small community use (small buildings, shops, public places).

3.2 Scope of supply

Depending on the model, the following components are provided:

- Sump tank with 1 or 2 pumps and 3 level sensors
- Wired remote control box
- Wired alarm unit
- Check valves
- Mounting kit (screws, pegs)
- Connecting sleeves for inlet, discharge and ventilation piping
- Clamps for the connecting sleeves

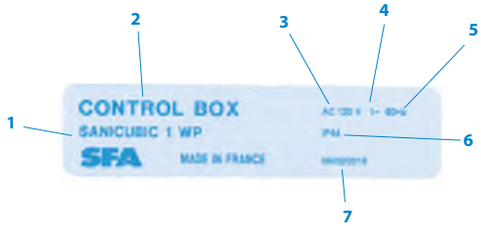
3.3 Rating plate

Examples:

Pumping station

1	Name of the lifting station
2	Power supply
3	Frequency
4	Protection index
5	Date of production
6	Identification number
7	Type of certification

Control box



1	Name of the pumping station
2	Name of the control box
3	Power supply
4	Phase type
5	Frequency
6	Protection index
7	Date of production

3.4 Design and operating mode

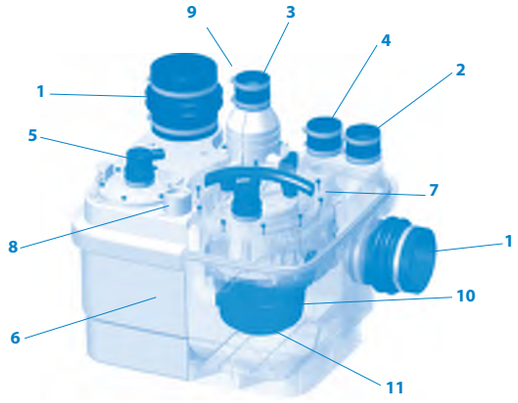


Table 2: SANICUBIC® 1

1	Inlet	Ø 1 1/2" or 4"
2	Inlet	Ø 1 1/2"
3	Waste pipe	Ø 1 1/2"
4	Ventilation opening	Ø 1 1/2"
5	Level sensor (dip tube)	
6	Tank	
7	Access panel	
8	Control opening	
9	Built-in check valve	
10	Engine-pump assembly	
11	Shredding system	

The pumping station is equipped with several horizontal and vertical inlet openings for 1 1/2" or 4" outside diameter piping (1) and 1 1/2" outside diameter piping (2). The engine-pump assembly (10) carries the pumped fluid in the vertical discharge piping with an outside diameter of 1 1/2" (3). The ventilation duct (4) allows the tank to always remain at atmospheric pressure.

Operating mode:

Effluents enter the pumping station through the horizontal and vertical inlet openings (1) (2). They accumulate in a gas-tight, smell-proof and watertight plastic tank (6). Controlled by a level sensor (5) and a control box, effluents are shredded by the shredding system (11) and automatically pumped, when they reach a certain level in the tank, by one or two pumps, depending on the model, (10) above the back-flow level to flow into the discharge line.

- SANICUBIC® 1 contain one pump equipped with a high-performance shredding system.
- SANICUBIC® 2 contain two independent pumps. Each of these pumps is equipped with a high-performance shredding system. Both pumps operate each in turn, alternately. In case of abnormal operation, both engines run simultaneously (or if one pump fails, the other takes over).

Level sensor / Dip tube:

• 2 Long dip tubes

During normal operation, as soon as the effluents reach the long tube's actuation level in the tank, the pumping system switches on.

• Short dip tube

During abnormal operation, if the effluents reach the highest level in the tank (short tube), an audible and visual alarm system is activated and the pumping system switches on (if it is not faulty).

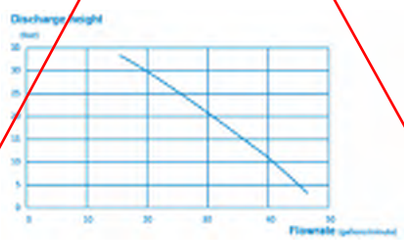
3.5 Technical data

Submersible pumping stations for blackwater

SANICUBIC® 1

Type of current	Single-phase
Power/Electrical information	120V/60Hz/10A/1300W or 220-240V/60Hz/6A/1500W
Motor - Pump	Thermal overload protection Class F insulation
Type of pump	Shredding by blade-plate
Cable station – control box	13 feet - H07RN-F-4 G 1.5
Control box cable – socket	8 feet - H05VV-F-3 G 1.5
Protection Station: SANICUBIC® 1:	IP68
Control box:	IPX4
Max. recommended height	36 feet
Max. flow	50 Gal/Min
Max. temperature of incoming wastewater	158 °F (Max. 5 min.)
Tank volume	8.5 gallons
Usefull volume	2.6 gallons
Height of low inlets (from the ground)	5 1/2"
Gross Weight [lbs]	44 lbs
Waste pipe	Ø 1 1/2"
Inlet	Ø 1 1/2" or 4"
Ventilation	Ø 1 1/2"

Flow curve

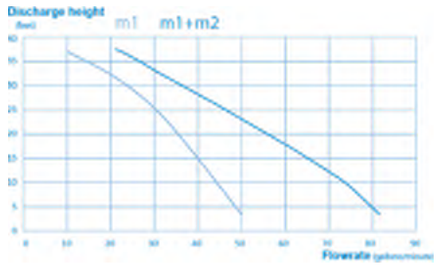


SANICUBIC® 2

Type of current	Single-phase
Power/Electrical information	220-240V/60Hz/13A/ 2 x 1 HP
Motor - Pump	Oil bath cooled Thermal overload protection Class F insulation
Type of pump	Shredding by blade-plate
Cable station – control box	13 feet - H07RN-F-4 G 1.5
Control box cable – socket	8 feet - H05VV-F-3 G 1.5
Protection Station: Control box:	IP68 IPX4
Max. recommended height	36 feet
Max. flow *Both motors in operation	90 Gal/min
Max. temperature of incoming wastewater	158 °F (Max. 5 min.)
Tank volume	12 gallons
Usefull volume	4.6 gallons
Height of low inlets (from the ground)	5 1/2"
Gross Weight [lbs] (including packaging and accessories) SANICUBIC® 2:	78 lbs
Waste pipe	Ø 1 1/2"
Inlet	Ø 1 1/2" or 4"
Ventilation	Ø 1 1/2"

Volume units of measurement : Gal (US)/min

Flow curve



3.6 Control box

DANGER

Submersion of the control device
Risk of death by electric shock
▷ Only use the control device in rooms safe from floods

SANICUBIC® remote control box

- Pump control and monitoring cabinet integrated into a compact plastic housing
- For 1 or 2 pumps
- Option of forced mode

3.6.1 Electrical characteristics

Table 3: Electrical characteristics of the control box

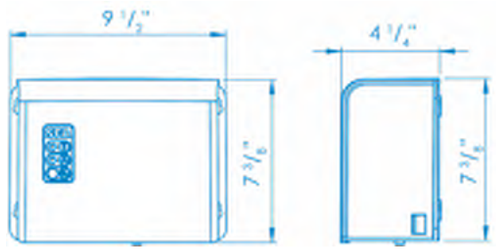
Parameter	Value
Nominal power supply	120V or 220-240V
Network frequency	60 Hz
Protection index	IPX4
Nominal current per engine	SANICUBIC 1 : 6A (220-240V version) or 10A (120V version) SANICUBIC 2 : 13A

3.6.2 Technical characteristics of the detection device

Analog level sensor:
- Input voltage 0 - 5 V

Process outputs:
- One potential-free signalling output (250 V, 16 A) NO Contact
- One signalling output for the wired alarm unit that comes with the device (except SANICUBIC® 2): 5V, 50mA

3.6.3 Dimensions of the remote control box

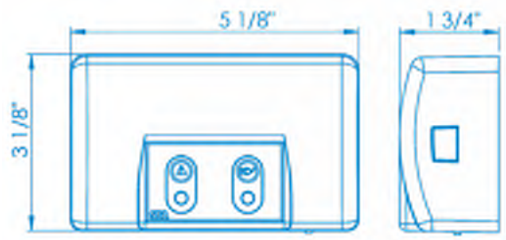


3.7 Alarm unit

3.7.1 Technical characteristics of the alarm device

SANICUBIC® alarm unit:
Wired alarm unit
16' cable
Audio and visual information
Protection index: IP20

3.7.2 Dimensions of the remote alarm unit



Titan®-SCR2 Electronic Digital Tankless Water Heater

In Keeping with the reliability and performance of our classic Titan-ATC Electronic Tankless Water Heater, we have developed the newer and more advanced TITAN®-SCR2. The new TITAN®-SCR2 Digital Tankless Water Heater incorporates new space age technology and features a faster and more accurate temperature sampling system, a manual resetable thermostat and a new air/water deferential analyzing system to prevent dry starts, (which is a key problem for other tankless systems.)

By heating water only as it is needed the TITAN®-SCR2 Digital Electronic Tankless Water Heater eliminates the need for bulky water heaters that heat water continuously. This can reduce hot water costs up to 60% over conventional electric water heaters. The TITAN®-SCR2's high efficiency is in part due to its dedicated digital microprocessor that samples input and output temperatures 21 times per second.

This power control system analyzes the data and manages power usage for maximum efficiency and temperature stability. At rest, the TITAN®-SCR2 uses no power at all.

Available in seven models, the TITAN®-SCR2 is ideal for a wide range of application. One TITAN®-SCR2 unit can supply the hot water needs of home and apartments, and in some applications, energy saving can pay back unit cost in less than one year.

Due to its shielded heating elements and copper & brass casing, the TITAN®-SCR2 is ideal in any application where mineral deposits shorten the life of a conventional water heater.

The TITAN®-SCR2 Tankless Water Heater comes with a 10 year warranty on all water-carrying components and all other parts are warrantied for one year. Installation is quick and easy, requiring no venting and the TITAN®-SCR2 compact size allows installation almost anywhere. The TITAN®-SCR2 is without a doubt the Tankless Water Heater for the 21st century.


TITAN
SCR 2
L--M--M--H
ELECTRONIC
TEMP
CONTROL
MODEL N-120 VOLTS 220 VAC
AMPS 54 HZ 50/60 KW 11.8
MIAMI DADE COUNTY
PRODUCT CONTROL APPROVED
COMPLIANCE UL-499
WARNING
DISCONNECT FROM POWER
SUPPLY BEFORE SERVICING

Specifications

Compliance	UL-#499
Listing	E212386
Tested	MET Laboratories
Dade Approval	# 97-0627.16
NSF/ANSI-372 Certified	ETL Laboratories
Dimensions	7" W x 10" H x 2-3/4 D
Weight	8 Pounds
Materials	Brass and Copper Casing
Pipe Fitting	1/2" Standard Pipe
Pressure Requirements	5 PSI-Min./150 PSI-Max
Voltage	220 VAC Std.(208/277 Avail.)
Elements	Dual Copper/Nichrome
Energy Efficiency	99.5%
Activation	0.4 GPM-on/).3 GPM-off
Indicators	Red-on/Green-stand by
Warranty	10 years on casing leakage, 1 year on components
Protection	Digital Temperature Control - Manual Resetable Thermostat

U.S. Patent.# 8,150,246 & 8,297,525

Note that the KW and Amps are controlled by the setting on the Power Mode.

Check specifications on unit used. Voltage, amperage, breaker and wire may vary depending on local electrical standards. Consult a professional plumber and electrician for guidance.

The electrical specifications are based on 220 volts. It should be noted that higher voltage will increase power, just as lower voltage will have the reverse effect. The (POWER MODE CONTROL) can be adjusted to compensate allowing the user to increase or decrease water temperature. For best performance adjust temperature at MEDIUM FLOW (approximately 1 GPM) this is the average water flow at any faucet with an aerator.

Remember, that any adjustments made on your unit will take seconds to reach point of use. DO NOT OVER HEAT WATER. Water temperature from 105F to 120F is adequate for all practical purposes

MODELS

Model	Max KW at 220V	Volts	Max Amps at 220V
N-120	11.8KW	220V	54
N-100	10.8KW	220V	49
N-85	8.5KW	220V	38
N-75	7.5KW	220V	34
N-64	6.4KW	220V	29
N-42	4.2KW	220V	19
N-10	3.2KW	110V	29*

***N-10 uses 110 volts and will supply only warm water.**

	MODEL No.						
FLOW RATE (GPM)	N-120	N-100	N-85	N-75	N-64	N-42	N-10
1 GPM	95°	87°	69°	60°	51°	33°	24°
1.5 GPM	64°	58°	46°	40°	35°	22°	16°
2 GPM	48°	44°	34°	30°	26°	17°	
2.5 GPM	38°	35°	28°	24°	21°		
3 GPM	32°	29°	23°				
3.5 GPM	28°	25°					
4 GPM	24°						

UAS Shoreline Improvements
Electrical Narrative

General

This project includes construction of a floating shelter and walkway. The shelter is accessed from campus by an uplands trail system with a gangway transition to the floating structure. The walkway routes along the shoreline and connects to the existing floating dock near the Hendrickson Annex. The uplands trail system includes approximately 300-feet of additive alternate work.

The following Codes and Standards apply to all electrical work.
The International Building Code
The National Electrical Code
NFPA 101: Life Safety
Americans with Disabilities Act
Illuminating Engineering Society (IES) Recommendations

Upland Utilities

Power to the shelter shall be provided by the existing main distribution panel (MDP), located in Mechanical 100U1 in the southeast corner of the Mourant Building. A 277/480 volt, 3-phase, 4-wire feeder shall route from the MDP to the transformer in the shelter mechanical room. Single conductors in PVC conduit shall be utilized to the gangway abutment. The branch circuit shall transition to Type W cable in a junction box mounted to, or near the abutment. Cable loops shall be provided at each end of the gangway to allow for varying water levels.

Data service shall be provided to the shelter for wireless connectivity. A 4-strand optical fiber cable shall route from the shelter to the existing network equipment rack mounted in Utility 100U2 in the southeast corner of the Mourant Building. The data service will follow the same route as the power service. The data cable shall terminate at a wall mounted patch panel in the shelter mechanical room.

Pre-cast concrete handholes shall be provided as required along the power branch circuit route. The optical fiber raceway will follow customer owned outside plant guidelines with no more than two 90-degree bends between handholes.

Power Distribution

The shelter mechanical room will house a 30kVA, 480:120/208 volt, 3-phase transformer that feeds a 100 ampere 120/280 volt, 3-phase, 42 pole panelboard. All of the distribution equipment shall be surface mounted. The primary transformer feeder shall be 1" conduit with 3#6, 1#10 ground, while the secondary feeder shall be 1-1/2" conduit, 4#2, 1#8 ground.

Branch Circuits

Single conductors in PVC conduit, or C-L-X Type MC-HL cable will be allowable for uplands branch circuits. C-L-X Type MC cable is rated for direct bury. Electrical trenches shall be 24-inches deep with clean, sand bedding, and warning tape. Backfill shall be clean, existing material, or imported.

Type W, multi-conductor, portable power cable shall be utilized over the water to allow for movement in the floating structures. Type W cable is a heavy-duty service rated cable that is oil and sunlight resistant. The Type W cable will route in the sub-structure of the floating path, and be supported and protected as required to avoid chafing of the cable jacket.

Lighting

Exterior illumination will be provided along the upland pathways and on the floating structures. Small LED light fixtures will be integrated with vertical handrail supports to provide low level illumination.

The uplands pathway lighting will be sourced from existing panelboard LVP-1A, located in Mechanical 100U1 in the southeast corner of the Mourant Building. The lighting circuits will be controlled with a photocell integrated with a hand-off-auto switch. The upland lighting load will be approximately 1300 watts, with the pathway alternate. Number 10 AWG conductors will be utilized for all circuits.

Lighting along the floating structures shall be sourced from a panelboard located in the shelter mechanical space. The lighting circuit will be controlled with a photocell integrated with a hand-off-auto switch. The floating path lighting load will be approximately 300 watts. Number 8 AWG is the smallest Type W cable available, and will be utilized for all branch circuits.

Minimal lighting will be provided inside the shelter. In the gathering space, linear strips concealed in the back of the bench will provide low level, ambient illumination. Small, directional, recessed, downlights will be located along the north window wall for presentations. All light fixtures in the gathering space will be dimmable LED. The mechanical room shall be illuminated with a lensed strip light. A recessed downlight will provide ambient illumination in the restroom, along with a wall mounted vanity light fixture at the mirror. The mechanical room and restroom will be provided with wall mounted occupancy sensors.

Wiring Devices

Combination floor boxes with power and data shall be provided along the north window wall for presentations. The floor boxes shall be trimmed with brass finish plates. Wall mounted convenience outlets will be provided in each space as required.

Mechanical Connections

Connections shall be provided for all mechanical equipment. Equipment branch circuits shall be single conductors in electrical metallic tubing. Raceways shall be surface mounted in the mechanical room. Refer to the mechanical narrative for a list of equipment.

End of Electrical Narrative

AAK'W SHORELINE IMPROVEMENT

24-May-19

ROM Estimate

	Description	Quantity	Unit	Unit Cost	Total
Building	Pathway	2,037	LF		
	Clearing	1	LS	$25,000.00	$25,000
	Excavation	330	CY	$18.00	$5,940
	Fill	1,910	SF	$35.00	$66,850
	Topping	320	CY	$45.00	$14,400
	Benches	6	EA	$2,500.00	$15,000
	Seeding & Seed	20,369	SF	$2.13	$43,285
	Slope Protection	12,222	SF	$4.00	$48,887
	Stair at Mourant Bldg	220	SF	$48.00	$10,560
	Handrails at Stair	92	LF	$333.60	$30,691
	Gangway				
	Abutment	2	EA	$7,500.00	$15,000
	Gangway	50	LF	$1,625.00	$81,250
	Floating Path	6,200	SF		
	Floats	6,200	SF	$75.00	$465,000
	Piling for Horz Stability	60	EA	$6,500.00	$390,000
	Railings	600	LF	$350.00	$210,000
	Heavy Timber Bench	42	LF	$450.00	$18,900
	Shelter				
	Floating Substructure	3,500	SF	$85.00	$297,500
	Enclosure - Surface area	3,074	SF	$110.00	$338,140
	Lighting	500	SF	$20.00	$10,000
	Power	1	LS	15,000.00	$15,000
	Subtotal				**$2,101,403**

Overhead & Fee	General Requirements	14.0%	$294,196
	Bond	0.6%	$14,374
	Insurance	1.0%	$24,100
	Fee	15.0%	$365,111
	Subtotal		**$697,781**

Subtotals		**$2,799,184**
Risk (Contingency)	20%	$559,837
Escalation	5%	$167,951
Total		**$3,526,971**

APPENDICES

SURVEY NOTES

1. THE BASIS OF HORIZONTAL CONTROL UTILIZED TO CONDUCT THIS SURVEY WAS THE LINE OF SITE BETWEEN R&M CONTROL POINTS ESTABLISHED FOR THE UAS STUDENT RESIDENCE HALL; PROJECT CONTROL POINT No. 1 (N: 10,933.00, E:10,828.96) AND CONTROL POINT No. 550 (N: 11,069.98, E: 10,669.87), LOCATED IN THE UAS CAMPUS PARKING LOT.
2. THE BASIS OF VERTICAL CONTROL FOR THIS SURVEY WAS CONTROL POINT No. 1, 1" DIAMETER SURVEY SPIKE, HAVING AN ELEVATION OF 131.69'.
3. THE DATES OF THE UPLANDS FIELD SURVEY WERE APRIL 26-28, 2016. THE SURVEY INSTRUMENT USED WAS A TRIMBLE S-7 ROBOTIC TOTAL STATION WITH PRISM RANGE POLE METHODS.

ABBREVIATIONS

AEL&P	ALASKA ELECTRIC LIGHT & POWER
AP	ANGLE POINT
APPROX.	APPROXIMATE
BLDG.	BUILDING
BOE	BOTTOM OF EXCAVATION
BOF	BOTTOM OF FOOTING
BOP	BEGINNING OF PROJECT
CB	CATCH BASIN
CBJ	CITY & BOROUGH OF JUNEAU
CL	CENTERLINE
CLR	CLEAR DISTANCE
CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE
CP	CONTROL POINT
CPP	CORRUGATED POLYETHYLENE PIPE
CTE	CONNECT TO EXISTING
DBH	DIAMETER BREAST HEIGHT
DIP	DUCTILE IRON PIPE
DIA.	DIAMETER
DOT/PF	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
E-	EASTING
EL.	ELEVATION
EOP	END OF PROJECT
EQ.	EQUATION
ESA	ENVIRONMENTAL SCIENCE ASSOCIATES
ESCP	EROSION AND SEDIMENT CONTROL PLAN
EXP.	EXPANSION
EXIST.	EXISTING
FD	FOUNDATION DRAIN
FG	FINISH GRADE
FL	FLOW LINE
GALV.	GALVANIZED
GP	GRADE POINT
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
LT.	LEFT
MAX.	MAXIMUM
MIN.	MINIMUM
MTE	MATCH TO EXISTING
N-	NORTHING
NFS	NON-FROST SUSCEPTIBLE
NTS	NOT TO SCALE
NVC	NO VERTICAL CURVE
NWA	NORTHWIND ARCHITECTS
OC	ON CENTER
PC	POINT OF CURVATURE
POC	POINT ON CURVE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
RT.	RIGHT
ROW	RIGHT-OF-WAY
SCHD.	SCHEDULE
SDMH	STORM DRAIN MANHOLE
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
STA.	STATION
STD.	STANDARD
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCH MARK
TOB	TOP OF BANK
TOP	TOP OF PIPE
TYP.	TYPICAL
UAS	UNIVERSITY OF ALASKA SOUTHEAST
UD	UNDERDRAIN
UE	UNDERGROUND ELECTRICAL
VERT.	VERTICAL
W/	WITH

SYMBOLS

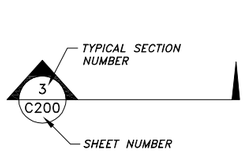
EXISTING	PROPOSED	
		TEMPORARY BENCHMARK
		HORIZONTAL CONTROL POINT
		PROPERTY / BOUNDARY LINE
		ORIGINAL HIGH WATER MARK
		WETLANDS BOUNDARY PER ESA CONSULTANTS
SP-3		WETLANDS SOIL SAMPLE PIT PER ESA CONSULTANTS
		DRAINAGE CULVERT PIPE
		STORM DRAIN STRUCTURE
		TREE LINE
		TOP OF BANK
		TOE OF SLOPE
		LIGHT POLE
		CONCRETE SLAB / SIDEWALK
		SANITARY SEWER MANHOLE
		SANITARY SEWER LINE / SERVICE
FM		SEWER FORCE MAIN
		ELECTRIC TRANSFORMER
		LANDSCAPE OR ALDER TREE (A)
		HEMLOCK TREE (H)
		SPRUCE TREE (S)
UE		UNDERGROUND ELECTRIC LINE
COM		UNDERGROUND COMMUNICATION LINE
WD		WALL DRAIN
		ELECTRIC TRANSFORMER
		WATER VALVE
		WATER LINE

TABLE OF HORIZONTAL CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	10,933.00	10,828.96	-	1"ø SURVEY SPIKE
550	11,069.98	10,669.87	-	1"ø SURVEY SPIKE
1007	11,454.41	10,956.39	-	2-1/2" ALUM. CAP ON 5/8" ALUM. ROD, STAMPED NW-CNTRL
1008	11,242.25	11,156.18	-	2-1/2" ALUM. CAP ON 5/8" ALUM. ROD, STAMPED NW-CNTRL

TABLE OF VERTICAL CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1005	-	-	112.89'	CHISELED 1"x1" 'X' IN NORTHERLY SIDE OF CONCRETE LIGHT POLE BASE
2068	-	-	96.87'	CHISELED 1"x1" 'X' IN EASTERLY SIDE OF CONCRETE COLUMN FOOTING
2428	-	-	96.23'	CHISELED 2"x2" 'X' IN NORTHERLY SIDE OF CONCRETE COLUMN FOOTING
FH-1	-	-	111.12'	NORTH BOLT TOP FLANGE FIRE HYDRANT



REFERENCE BUBBLE EXPLANATION
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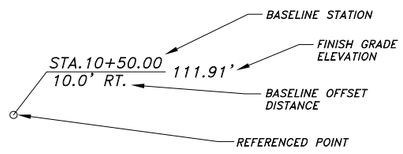

FINISH GRADE EXPLANATION
N.T.S.

DESIGN JMP
DRAWN JAG
CHECK JMP
APPROVED JMP

No.	DATE	REVISION

PDC ENGINEERS
PLAN • DESIGN • CONSTRUCT
6205 Glacier Highway, Juneau, Alaska 99801
907.780.6060 | AECC605

STATE OF ALASKA 49TH
Joseph M. Pusich
CE 8152
REGISTERED PROFESSIONAL ENGINEER

UNIVERSITY OF ALASKA SOUTHEAST
AUKE LAKE SHORELINE IMPROVEMENTS
U.A.S. PROJECT No. 2016-XX

CITY & BOROUGH OF JUNEAU, ALASKA

GENERAL NOTES, ABBREVIATIONS & SYMBOLS

DATE: August 27, 2018
PDC No. 16167JN

SHEET C100

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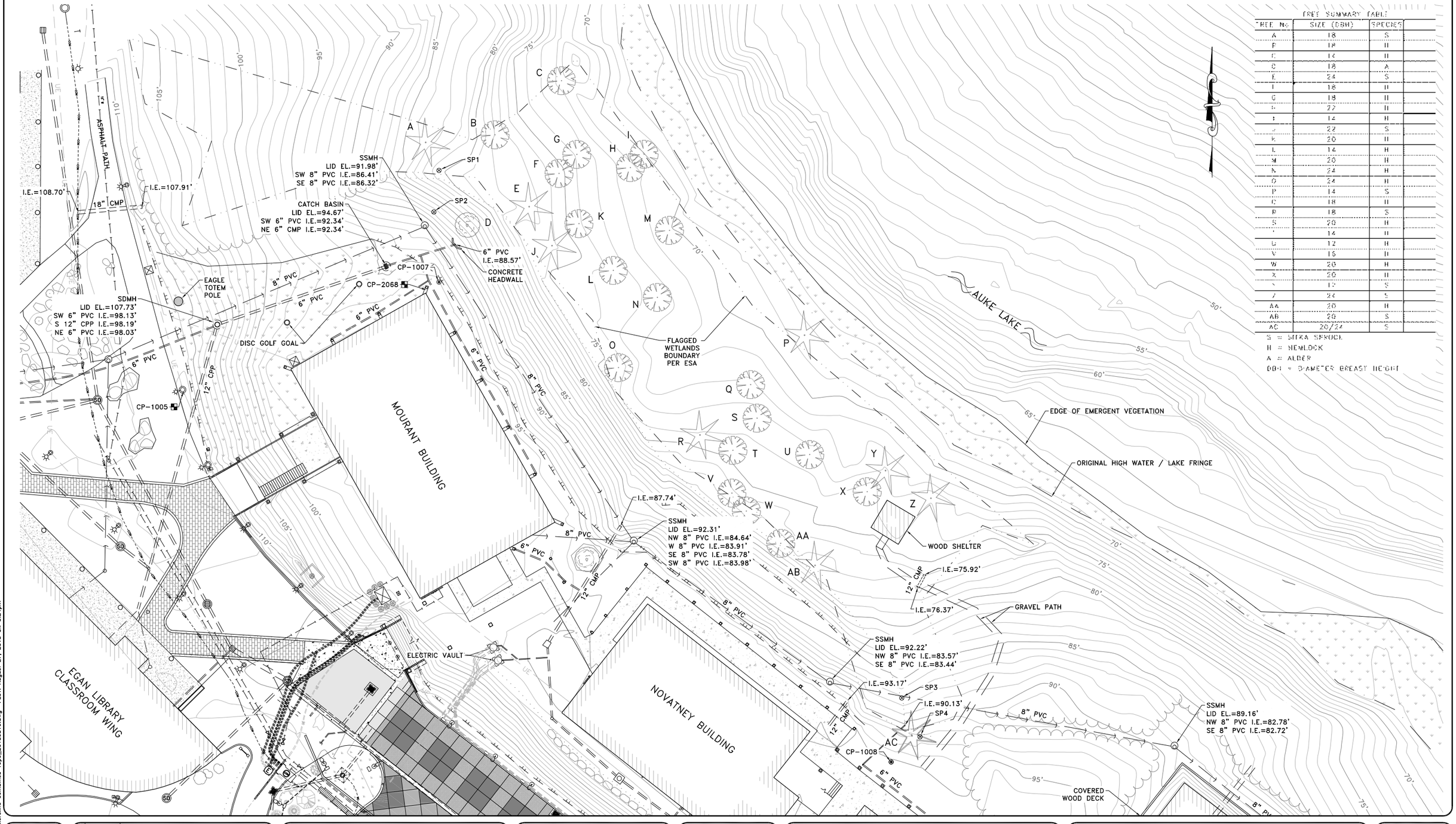

TREE SUMMARY TABLE

TREE No.	SIZE (DBH)	SPECIES	
A	18	S	
B	18	H	
C	14	H	
D	18	A	
E	24	S	
F	18	H	
G	18	H	
H	22	H	
I	12	H	
J	22	S	
K	20	H	
L	14	H	
M	28	H	
N	24	H	
O	24	H	
P	14	S	
Q	18	H	
R	18	S	
S	20	H	
T	14	H	
U	12	H	
V	15	H	
W	20	H	
X	50	H	
Y	12	S	
Z	24	S	
AA	20	H	
AB	28	S	
AC	20/24	S	

S = SITKA SPRUCE
H = HEMLOCK
A = ALDER
DBH = DIAMETER BREAST HEIGHT

DESIGN JMP
DRAWN JAG
CHECK JMP
APPROVED JMP

No.	DATE	REVISION

PDC ENGINEERS
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AUKE LAKE SHORELINE IMPROVEMENTS
U.A.S. PROJECT No. 2016-XX

CITY & BOROUGH OF JUNEAU, ALASKA

EXISTING CONDITIONS

GRAPHIC SCALE
0' 10' 20' 40' 80'
CONTOUR INTERVAL = 1-FOOT

DATE: August 27, 2018
PDC No. 16167JN

SHEET C101

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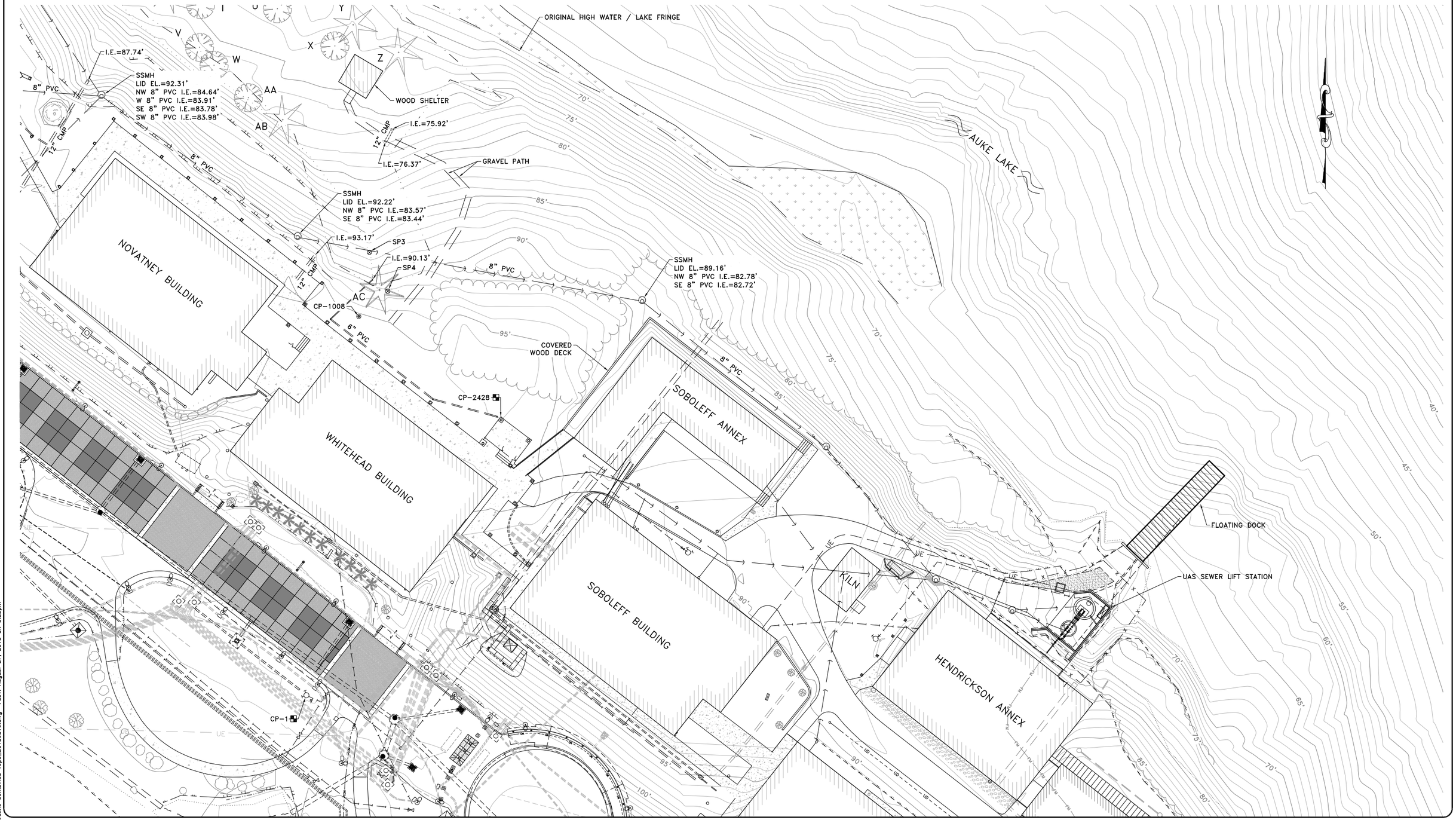

DESIGN	JMP
DRAWN	JAG
CHECK	JMP
APPROVED	JMP

No.	DATE	REVISION

PDC ENGINEERS
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U.A.S. PROJECT No. 2016-XX

CITY & BOROUGH OF JUNEAU, ALASKA

EXISTING CONDITIONS

GRAPHIC SCALE
0' 10' 20' 40' 80'
CONTOUR INTERVAL = 1-FOOT

DATE: August 27, 2018
PDC No. 16167JN

SHEET C102

UNIVERSITY OF ALASKA SOUTHEAST – AUKE LAKE

DRAFT Wetland Delineation Report

Prepared for

University of Alaska Southeast
11120 Glacier Highway
Juneau, AK 99801

Northwind Architects, LLC
126 Seward Street
Juneau, AK 99801

June 2016

CONTENTS:

LIST OF MAPS IN APPENDIX A:

A. LANDSCAPE SETTING AND LAND USE

ESA was contracted by Northwind Architects, LLC to delineate wetlands in support of planning and permitting for proposed Auke Lake shoreline development on the campus of the University of Alaska Southeast (UAS). The UAS Juneau campus is located within the city and borough of Juneau, approximately 10 miles northwest of downtown Juneau. The campus is situated between Auke Bay to the west and Auke Lake to the east, accessible by Glacier Highway and Auke Lake Way. UAS and the study area are within Section 23, Township 40 South, Range 65 East, Copper River Meridian (Figure 1, Appendix A). The study area is located within tax lots 4B2301030040 and 4B2301030050 as shown on Figure 2 (Appendix A).

UAS has recently completed the UAS Auke Lake Shoreline Master Plan, which identified several shoreline improvements including, but not limited to, floating trails, a lakeside shelter, north dock, and expansion of an existing dock. These shoreline improvements would allow UAS greater access to educational and recreational opportunities of Auke Lake, and provide for unhindered views of surrounding natural areas. The study area encompasses the limits of disturbance expected for proposed campus improvements, and contains forested wetlands, Auke Lake, as well as upland forest.

The study area ranges in elevation from approximately 60 to 120 feet above sea level, with slopes ranging from 0 to greater than 50 percent. The western edge of the study area is a steep hillslope consisting of upland fill, on which several campus buildings were built upon. The study area slopes down along this hill eastward towards Auke Lake.

Land use in the vicinity consists primarily of the UAS campus and associated residences, local residential areas, and commercial and recreational boating activity in Auke Bay. Structures were built in the study area in the late 1970s and early 1980s, and use of the site as a campus began in 1987. Auke Lake, submerged lands, and the lake shoreline up to the high water lined are owned by the State of Alaska.

Figures are located in Appendix A. Photo points are shown on Figure 5 (Appendix A). Ground-level color photographs of the wetland and upland areas were taken to characterize typical conditions and are located in Appendix B. All photos were taken during field investigations. Wetland determination data forms are located in Appendix C.

B. SITE ALTERATIONS

Site alterations that have affected the presence, location, or geographic boundaries of wetlands or waters in the study area include: (1) Historic placement of fill material along the majority of the study area's western edge to develop campus buildings; (2) Development of a waterfront dock within the study area; and (3) Construction of a gazebo near the shoreline.

C. PRECIPITATION DATA AND ANALYSIS

Precipitation data for the periods immediately preceding field work for the study area are from the Juneau weather station (U.S. Climate Data 2016). Precipitation for the days of the field visits is also provided below.

Table 1: Precipitation Data for Field Days and the Previous Two Weeks

Date (2016)	Precipitation (inches)
Previous 2 Weeks (Apr. 6 to Apr. 19)	1.93
April 20-22	0.08
Total	2.01

Source: U.S. Climate Data (Juneau, AK)
Note: Field day is shown in **BOLD.**

A comparison of actual rainfall (U.S. Climate Data 2016) versus the NRCS WETS average and normal range (NRCS 2016a) is presented in Table 2. Actual rainfall for January – March (three months prior to completion of field work), and the precipitation in the month of April that occurred prior to the field days are presented in Table 2. The rainfall that occurred in January is *above* average and *above* the WETS normal precipitation range. The rainfall that occurred in February is *below* average but within the WETS normal precipitation range. The rainfall that occurred in March is *below* average and *below* the WETS normal precipitation range. The rainfall that occurred in April is *above* average and *above* the WETS normal precipitation range. The rainfall for January, February, March, and April is 131 percent, 85 percent, 64 percent, and 144 percent of average rainfall, respectively.

Table 2: Precipitation* for Three Months Preceding Fieldwork

		January	February	March	April**	Total
A.	Actual rainfall** *(inches)	6.53	3.26	2.17	2.73	14.69
B.	WETS average rainfall *** (inches)	4.99	3.83	3.41	1.9	14.13
C.	Percent (%) of average rainfall (Line A/Line B)	131%	85%	64%	144%	104%
D.	WETS normal precipitation range **** (inches)	3.53-5.91	2.12-4.67	2.51-4.01	1.53-2.54	9.69-17.13

*Does not include snowfall **Adjusted for a portion of April ***U.S. Climate Data **** WETS Auke Bay Station

The average water year precipitation from October 1, 2015 to April 22, 2016 is 34.56 inches, while the actual accumulated water year precipitation for the Auke Bay WETS weather station is 36.52 inches, or 106 percent of average.

D. METHODS

Two levels of investigation were conducted for the analysis of wetlands in the UAS study area: a review of existing information and a formal on-site delineation.

a. Review of Existing Information

A review of existing literature, maps, and other materials was conducted to identify wetlands or site characteristics indicative of wetlands in the study area, including but not limited to:

- Topographic Map 1:24,000, Juneau Quadrangle (U.S. Geological Survey, 2013);
- National Wetland Inventory, (US Fish Wildlife Service, 2015);
- Soils of the Juneau Area, Alaska, (Natural Resource Conservation Service, 1974);
- Aerial imagery (Google Earth Pro, 2005-2016); and
- Auke Lake Watershed Assessment (Juneau Watershed Partnership, 2009).

Mapped soil units for the study area include Maybeso mucky peat on the terrace where campus buildings exist and Wadleigh gravelly silt loam on the hillslope adjacent to Auke Lake (Table 3 below and Figure 4). The mucky peat soils have been filled since the 1974 soil survey was completed, but seepage and drainage was evident on the hillslope between the campus and the lake shore. Updated soil survey data for the study area is not available (WebSoil Survey, 2016).

Table 3: Mapped Soil Units within the Study Area

Soil map symbol	Map unit name	Drainage	Landform
MaB	Maybeso mucky peat, 3 to 7% slopes	Very poorly drained	Nearly level to strongly sloping seepage areas, drainage ways and benches
MaC	Maybeso mucky peat, 7 to 12% slopes	Very poorly drained	Same as above
WaD	Wadleigh gravelly silt loam, 12 to 20% slopes	Somewhat poorly drained	Lower slopes of hills and mountains

Source: NRCS, 1974

b. On-site Wetland Delineations

ESA staff conducted a formal delineation on April 25-26, 2016, following routine methods defined in the U.S. Army Corps of Engineers (Corps) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region, Version 2.0* (U.S. Army Corps of Engineers, 2007). ESA marked wetland boundaries with sequentially numbered flags and recorded the boundaries of wetlands and sample plots using a Trimble GeoXT unit capable of sub-meter accuracy. R & M Engineering professionally land surveyed the western boundary of Wetland A in April, 2016 as well as topographic contours and selected features of the study area. Several trees, but not all, in Wetland A were surveyed.

The study area was traversed to observe surface indicators of wetlands such as hydrophytic vegetation and changes in surface topography. Nine sample plots (SP-1 to 9) were established on site to confirm the presence of a wetland or upland area.

E. DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

Five wetlands and the southern/western boundary of Auke Lake were delineated and are described below.

a. Wetland A

Wetland A is a forested wetland situated at the base of the hillslope between campus buildings and Auke Lake (Figures 5 and 5.1). Slopes in the wetland are generally east-facing and range from 5 to 20 percent. Structures within the wetland include a wooden gazebo constructed on fill and a gravel path connecting the gazebo with the campus. The dominant Cowardin class is PFO, but the wetland also has a relatively dense shrub layer and emergent groundcover. The hydro-geomorphic class is Slope.

The wetland sample plots met the Dominance Test for hydrophytic vegetation indicators (see SP–1 and 3, Appendix C). Dominant trees and shrubs include western hemlock (*Tsuga heterophylla* – FAC), Sitka alder (*Alnus viridus* – FAC), oval-leaf blueberry (*Vaccinium ovalifolium* – FAC) and salmonberry (*Rubus spectabilis* – FACU). Sitka spruce (*Picea sitchensis* – FACU) trees occurred in a few areas throughout the wetland and were most abundant in the northwest extension of the wetland which consisted of a mosaic of wetland/ upland hummocks. Dominant emergent vegetation throughout the wetland consists of skunk cabbage (*Lysichiton americanus* – OBL) and Western lady fern (*Athyrium cyclosorum* – FAC). Dominant weedy grasses and forbs observed along the Western wetland boundary include field horsetail *Equisetum arvense* – FAC), reed canarygrass (*Phalaris arundinacea* – OBL), Kentucky bluegrass (*Poa pratensis* – FACU), and creeping buttercup (*Ranunculus repens* – FAC).

The main sources of hydrology are seepage and subsurface lateral groundwater flow that originate upslope of the wetland. Three outfalls also discharge runoff to the wetland. Primary hydrology indicators observed during fieldwork include surface water, high water table, and soil saturation to the surface.

Soils in Wetland A met the Histic Epipedon hydric soil indicator (SP – 1) and the Alaska Redox hydric soil indicator (SP – 3). The Histic Epipedon was 8 inches thick and underlain with dark grayish brown (10 YR3/2) sandy silt with gravels and cobbles. The Alaska redox soils consisted of a 9-inch layer of clay loam over clay.

With the exception of two hillslope extensions, the majority of the western wetland boundary was flagged along a topographic break at the base of a steep slope (Figure 5.1, Appendix A). The steep slope consists of fill placed on-site many years ago to develop campus buildings. Texture of the fill was sandy silty gravel, and sandy loam (upland plots SP-2 and 4). The north and south boundaries of the wetland were flagged along a transition from western hemlock/blueberry forest to Sitka spruce/snowberry and huckleberry upland forest. The eastern extent of the wetland is defined by the ordinary high water line (OHWL) of Auke Lake. Adjacent uplands contained a mix of hydrophytic and non-hydrophytic vegetation and lacked wetland hydrology as well as hydric soils.

b. Wetlands B, C, and D

Similar to Wetland A, Wetlands B, C, and D are forested hillslope wetlands located between campus buildings and the ordinary high water line of Auke Lake (Figures 5 and 5.2, Appendix A). These wetlands are represented by SP-5 with SP – 6 as the corresponding upland plot. Dominant vegetation includes western hemlock trees over Rocky Mountain maple (*Acer glabrum* – FACU), oval-leaf blueberry, skunk cabbage, false Solomon's seal (*Maianthemum dilatatum* – FAC), western lady fern, and field horsetail.

Wetland hydrology originates upslope of the wetlands and consists primarily of subsurface groundwater. Two outfalls discharge runoff into Wetland B, but the wetland would likely persist without stormwater input. The southern boundary of Wetlands D is defined by a stormwater channel. Primary wetland hydrology indicators observed in the field include saturated soils and a high water table.

Soils did not meet any of the hydric soil indicators, but are assumed to be hydric based on the problematic soils procedure as follows:

1. One or more indicators of hydrophytic vegetation are present;
2. Two primary indicators of wetland hydrology are present;
3. Landscape position is appropriate for wetland hydrology – slight concave surface at the toe of slope; area receives seepage/groundwater discharge; and
4. Soils are anticipated to have low weatherable – iron content and/or be recently formed.

The boundaries of Wetlands B, C and D were flagged based on similar factors: the western boundary is defined by a topographic break on the hillslope; the north and south boundaries are generally based on a transition from a hydrophytic plant community dominated by western hemlock to a non-hydrophytic community dominated by Sitka spruce; and the eastern boundary is defined by the OHWL of Auke Lake. Adjacent uplands lacked wetland hydrology indicators and hydric soils.

c. Wetland E and Auke Lake

Wetland E is a lacustrine fringe wetland that occurs along the lake edge for the entire length of the study area and extends off-site to the north and south (Figures 5, 5.1 and 5.2). The Cowardin classification of Wetland E is PEM, with leafy tussock sedge (*Carex aquatilis* – OBL) and yellow marsh marigold (*Caltha palustris* – OBL) as the dominant emergent vegetation (see SP-7, Appendix C). A few large down logs and wood were present along the lake shore.

Wetland hydrology is maintained by the water elevation in Auke Lake. Primary indicators of wetland hydrology observed in the field were surface water, high water table and saturation. Soils were saturated to the surface and water table was also present at the surface. Soils met the Hydrogen Sulfide hydric soil indicator. The wetland boundary is defined by the OHWL of Auke Lake along the wetland's western edge and open water to the east.

Auke Lake is a 177-acre freshwater lake (non-glacial) that drains to Auke Bay via a perennial stream, Auke Creek, located south of the UAS campus. A fish weir is located on Auke Creek which allows biologists to count out-migrating salmon and fish returns (Juneau Watershed Partnership, 2009). Water in the lake is moderately clear and the dominant substrate is mud, although patches of gravel occur along the lake perimeter, at the mouth of streams and in front of the UAS campus as well as near the campus dock (Juneau Watershed Partnership, 2009).

The Auke Lake watershed covers approximately 2,558 acres and consists primarily of government-owned forest land. About 50 percent of the lake perimeter is developed (Juneau Watershed Partnership, 2009). Major tributaries include Lake Creek and Lake Two Creek; several smaller unnamed streams are also present in the watershed. The Auke Lake system supports several anadromous fish populations: pink, chum, Sockeye and Coho as well as Dolly Varden char, cutthroat and rainbow trout (Juneau Watershed Partnership, 2009). Weir counts indicate a decline in salmon and trout populations in the lake, with the exception of chum (Juneau Watershed Partnership, 2009). Possible reasons include increasing temperatures in Auke Creek and a change in the geomorphology of streams that provide spawning habitat.

Auke Lake within the study area is expected to provide rearing habitat for salmon and trout, and may provide some spawning habitat where gravels are located. Inferences have been made from a radio-tagging study that Sockeye may use the subsurface gravel patches in front of the UAS campus, the gravel mouth of Lake Creek and the gravel/rock along glacier Highway as spawning habitat (Juneau Watershed Partnership, 2009). The OHWL of Auke Lake was mapped along a topographic break at the base of the hillslope that coincided with a change in plant community from forested/wooded to emergent vegetation.

F. DEVIATION FROM LWI OR NWI

Field results deviate substantially from the NWI which does not indicate the presence of wetlands within the study area. Forested wetlands are difficult to interpret from aerial imagery and are often not represented on NWI maps. The NWI identifies Auke Lake but does not show the lake fringe wetland (Wetland E).

G. MAPPING METHOD

ESA marked wetland boundaries with sequentially numbered flags and recorded the boundaries of wetlands and sample plots using a Trimble GeoXT unit capable of sub-meter accuracy. R & M Engineering professionally land surveyed the western boundary of Wetland A in April, 2016 as well as topographic contours and selected features of the study area.

H. CONCLUSIONS AND POTENTIAL JURISDICTION

Five wetlands and the OHWL of Auke Lake were identified within the footprint of the proposed project. Refer to Table 4 for a summary of the aquatic resources found in the study area.

Table 4: Summary of Wetlands / Waterways within the Study Area

Wetland/Water	Size (ac) in study area	Cowardin	NWI	HGM
A	0.83	PFO	--	Slope
B	0.13	PFO	--	Slope
C	0.01	PFO	--	Slope
D	0.01	PFO	--	Slope
E	0.44	PEM	Lake	Lacustrine fringe
Auke Lake	0.85	Open Water	Lake	Lacustrine

We anticipate Wetlands A - E and Auke Lake would be considered Waters of the U.S. and regulated by the Corps under Section 404 of the Clean Water Act. The Corps regulates fill and discharge of dredged materials into wetlands, streams and lakes and requires compensatory mitigation for lost water quality and habitat functions. According to guidance from the EPA following the two landmark court cases, the Corps will assert jurisdiction over non-navigable tributaries of traditional navigable waters that are relatively permanent (perennial or at least three months of continuous flow), and wetlands that directly abut such territories (EPA, 2007). Auke Bay is considered a traditional navigable water and Auke Lake/Auke Creek would likely be considered jurisdictional based on a perennial connection with Auke Bay. Wetlands A- E directly abut Auke Lake/Creek and therefore would also likely be considered jurisdictional.

The next steps include coordinating with the project team and the Corps to determine potential project impacts and conducting a functional assessment for the affected wetlands. The functional assessment will help guide mitigation that may be required for the project.

I. DISCLAIMER

This report documents the investigation, best professional judgement, and conclusions of the investigators. This should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and is not official until confirmed and approved by the appropriate regulatory agencies.

APPENDIX A:
MAPS

Figure 1	Location Map
Figure 2	Tax Lot Map
Figure 3	National Wetlands Inventory Map
Figure 4	Soils Map
Figures 5, 5.1 & 5.2	Wetland Delineation Overview and Detail Maps

U:\GIS\GIS\Projects\16xxxx\160142_UAS_Juneau\03_MXDs_Projects\Fig1_Location.mxd (lxe, 6/23/2016)

SOURCE: ESA 2016, USGS 2013

USGS Quadrangle: 58134-A1 Juneau
STR, Meridian: Section 23, Township 40S, Range 65E, Copper River Meridian
Lat/Long (NAD83): 58.3852, -134.6379

UAS Auke Lake . 160142

Figure 1
Location Map

SOURCE: ESA 2016, NAIP 2013, City of Juneau 2013

UAS Auke Lake . 160142

Figure 2
Taxlot Map

U:\GIS\GIS\Projects\16xxxx\160142_UAS_Juneau\03_MXDs_Projects\Fig3_NWI.mxd (lxe, 6/23/2016)

SOURCE: NAIP, 2011; ESA, 2016; NWI, 2012

UAS Auke Lake . 160142

Figure 3

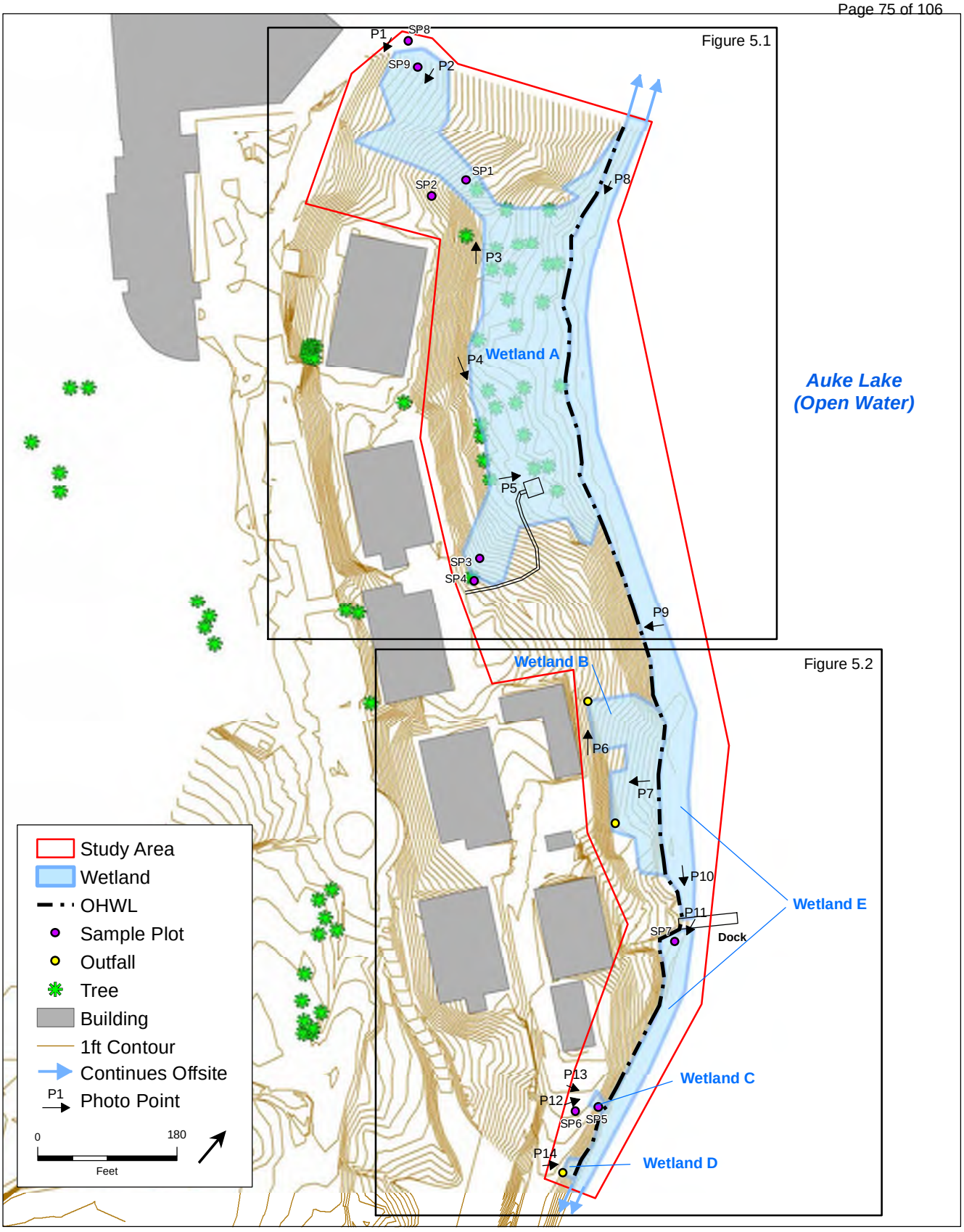
NWI Map

U:\GIS\GIS\Projects\16xxxx\160142_UAS_Juneau\03_MXDs_Projects\Fig4_Soils.mxd (lxe, 6/23/2016)

SOURCE: ESA 2016; NRCS 1974

UAS Auke Lake. D160142

Figure 4
Soils Map

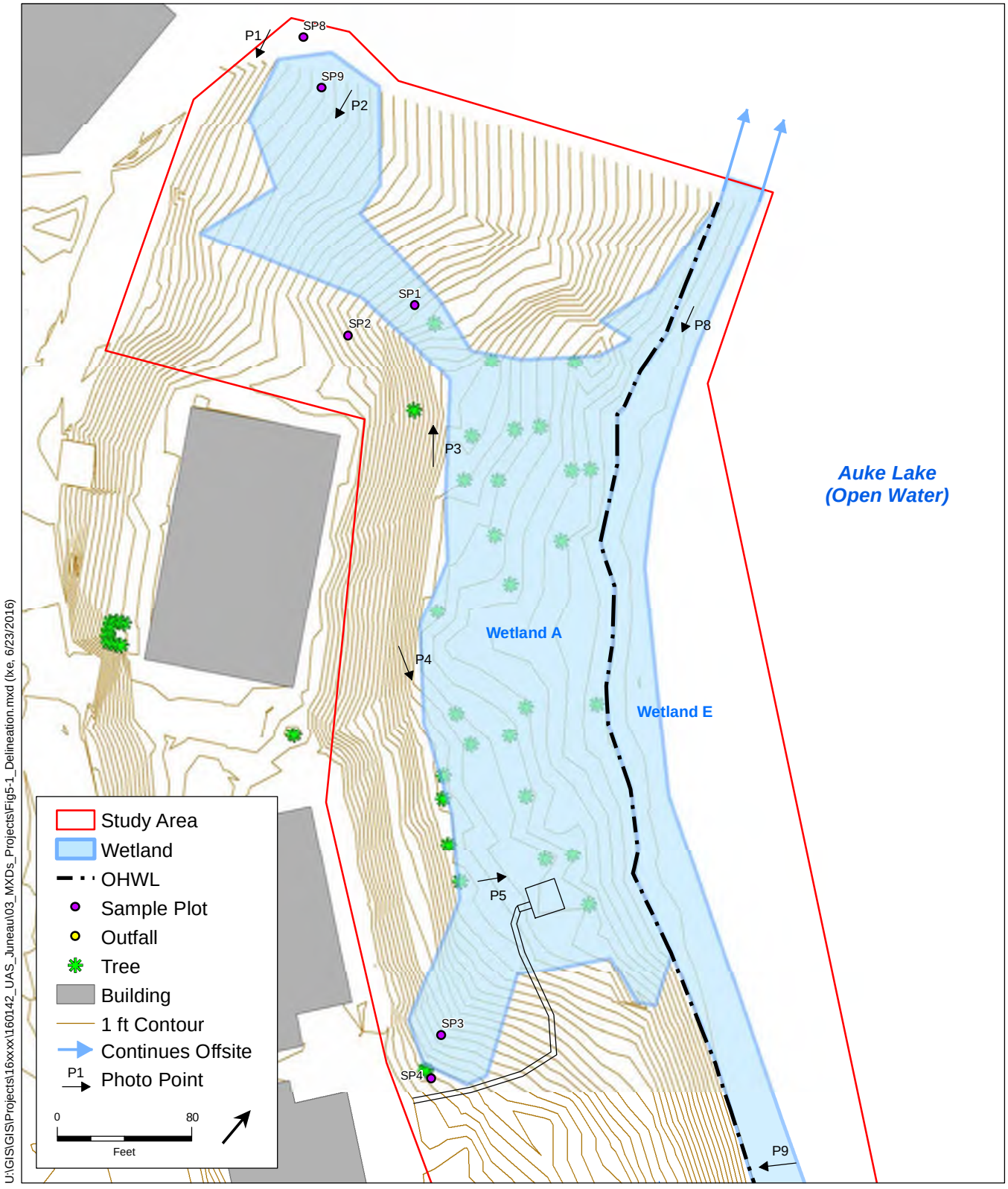


SOURCE: ESA 2016, R&M Engineering 2016

USGS Quadrangle: 58134-A1 Juneau
STR, Meridian: Section 23, Township 40S, Range 65E, Copper River Meridian
Lat/Long (NAD83): 58.3852, -134.6379

UAS Auke Lake . 160142

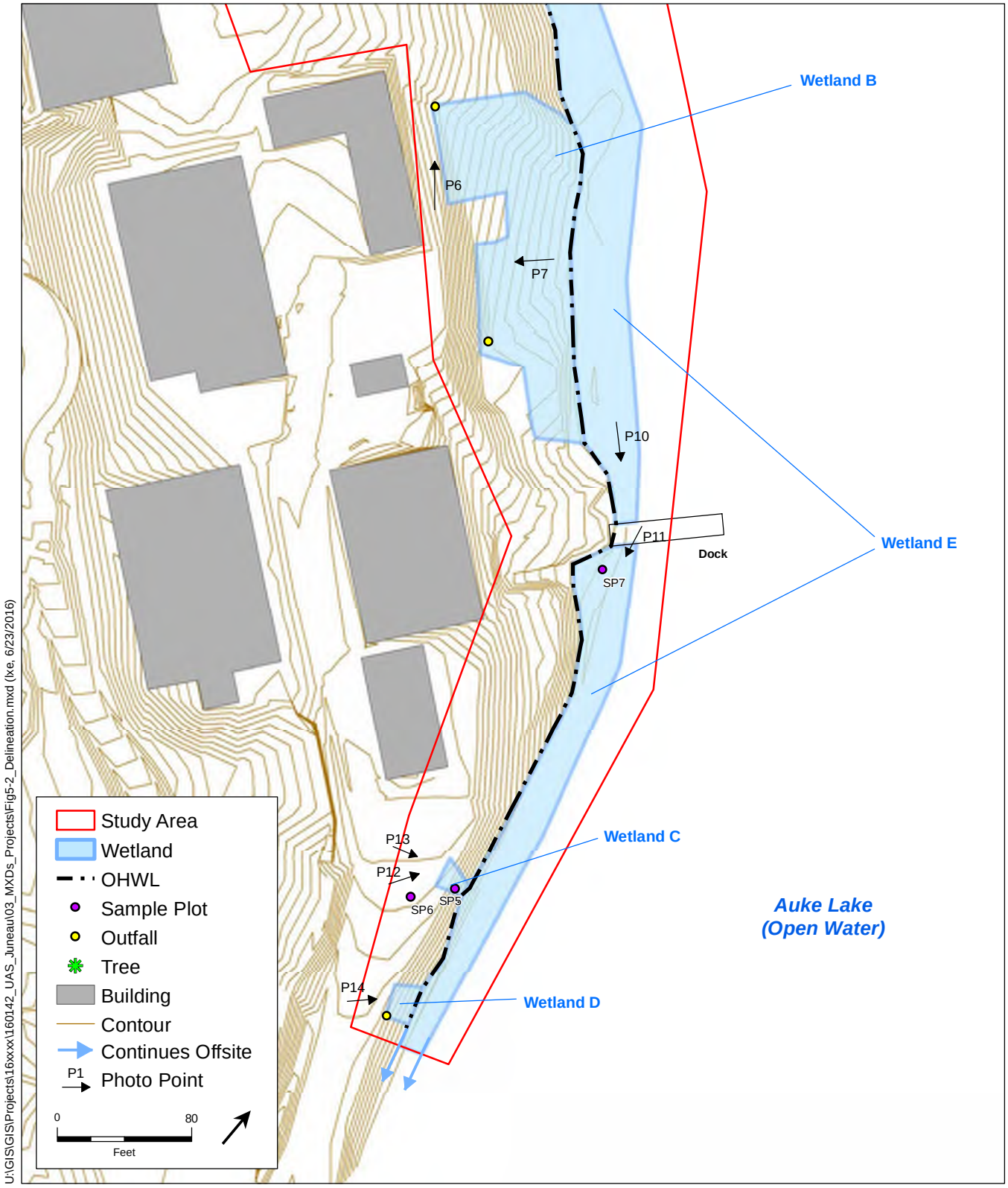
Figure 5
Wetland Delineation Overview



SOURCE: ESA 2016, R&M Engineering 2016

USGS Quadrangle: 58134-A1 Juneau
STR, Meridian: Section 23, Township 40S, Range 65E, Copper River Meridian
Lat/Long (NAD83): 58.3852, -134.6379

Figure 5.1
Wetland Delineation Detail



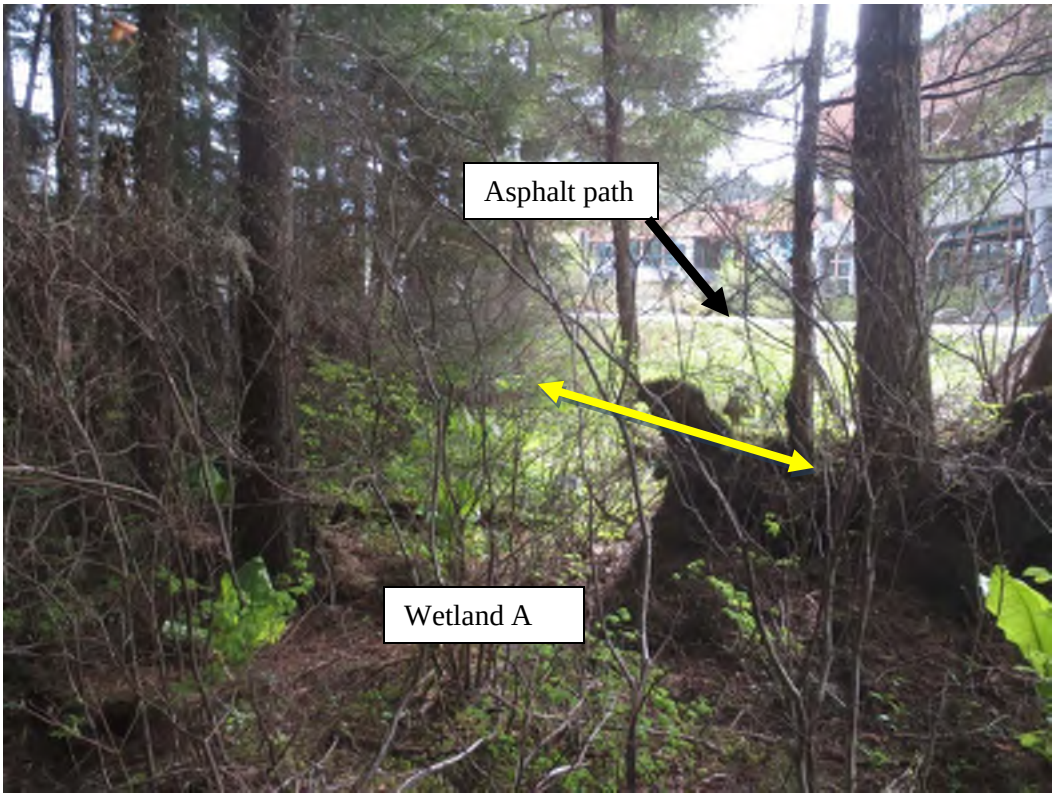
SOURCE: ESA 2016, R&M Engineering 2016

USGS Quadrangle: 58134-A1 Juneau
STR, Meridian: Section 23, Township 40S, Range 65E, Copper River Meridian
Lat/Long (NAD83): 58.3852, -134.6379

UAS Auke Lake . 160142

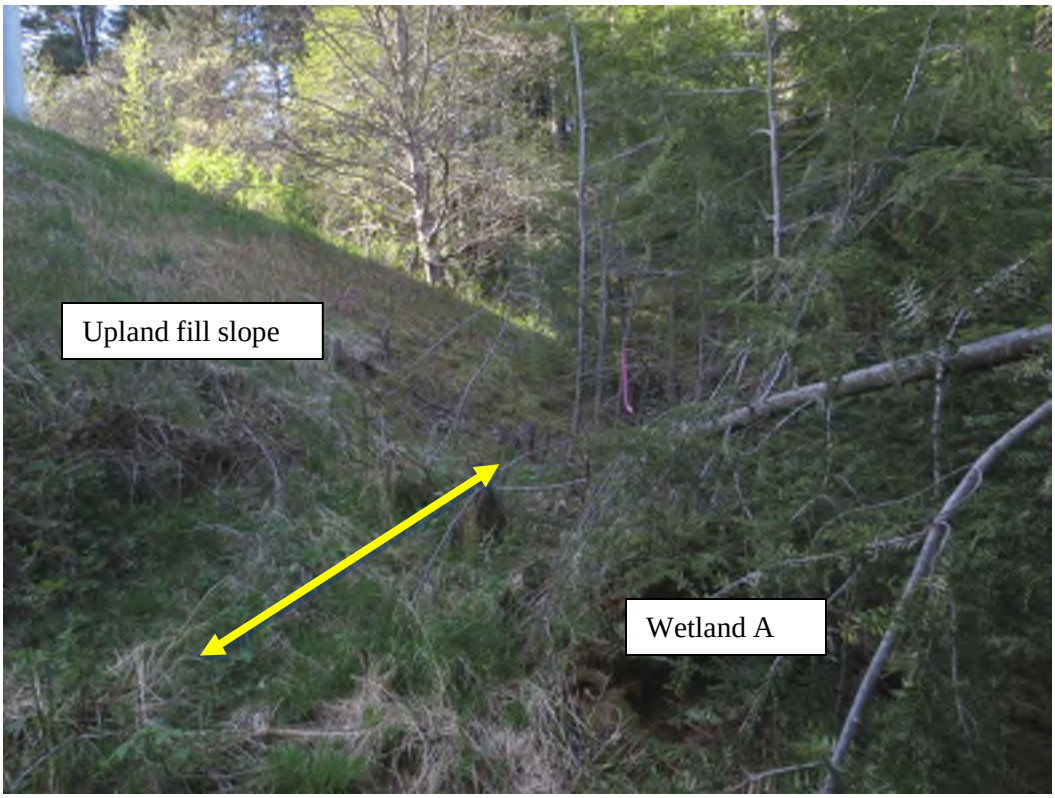
Figure 5.2
Wetland Delineation Detail

APPENDIX B:
GROUND LEVEL COLOR PHOTOGRAPHS

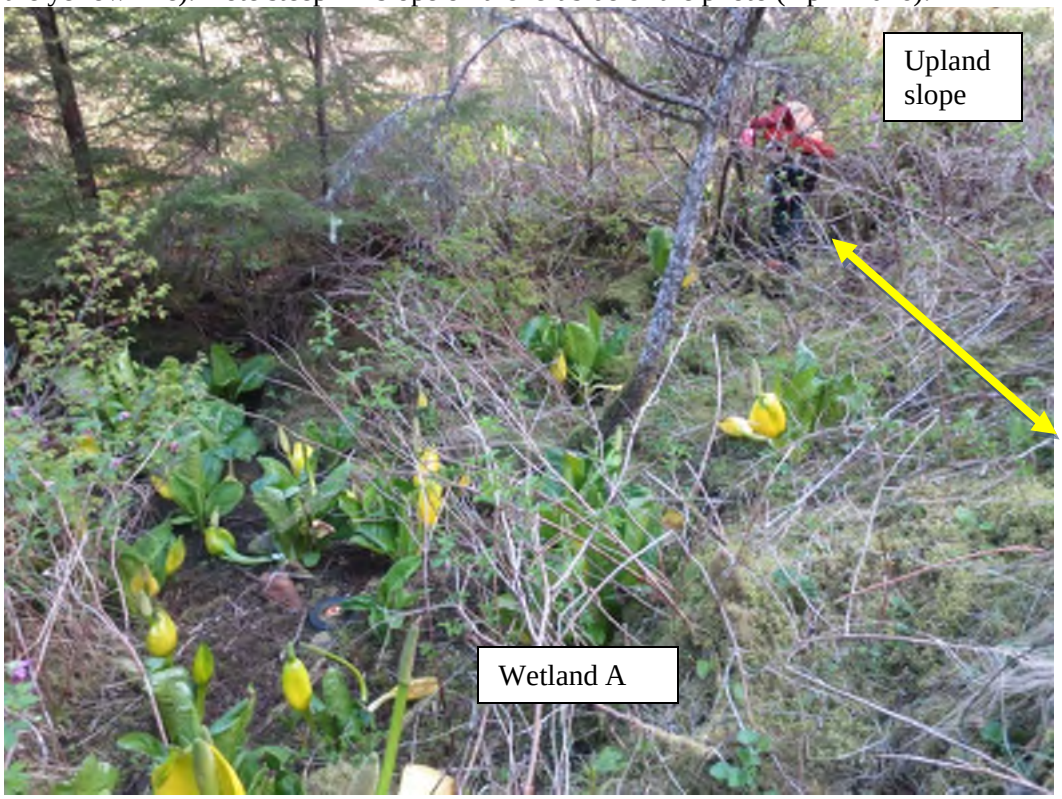


Photograph 1. Looking south at the northwest boundary of Wetland A (yellow line), at the base of an asphalt path embankment seen in the upper right part of the photo (April 2016).

Photograph 2. Wetland/Upland mosaic in the northwest portion of Wetland A (April 2016).

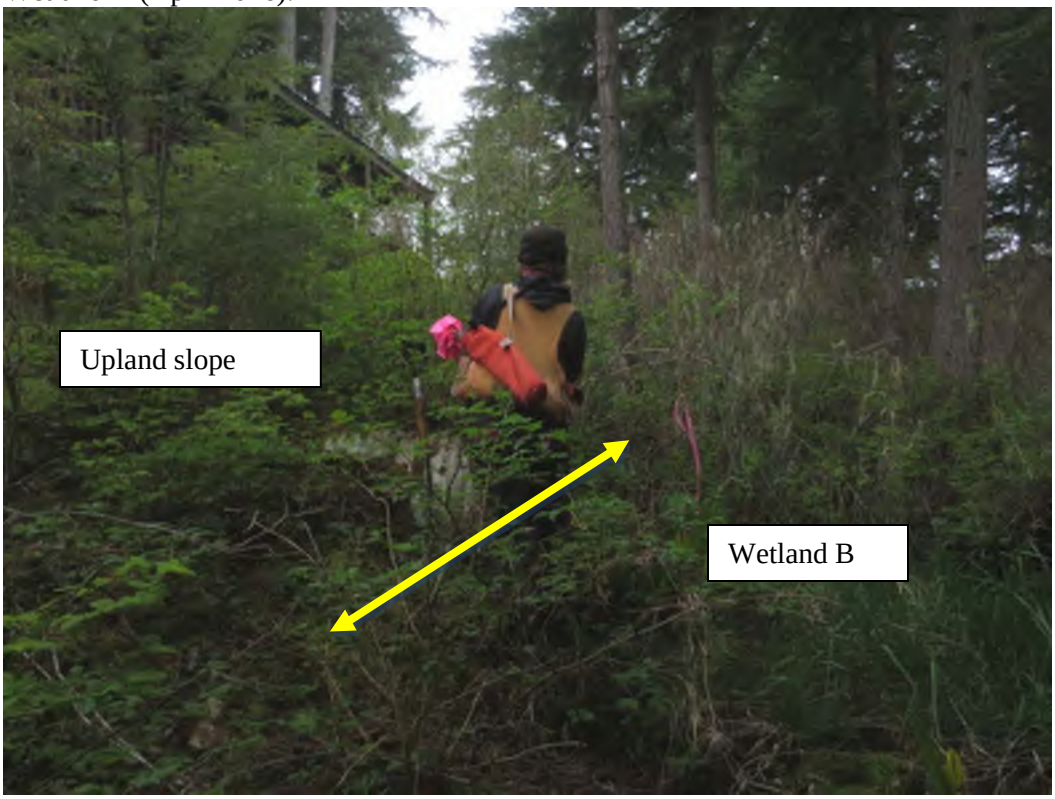


Photograph 3. Looking northwest at the western boundary of Wetland A (approximated by the yellow line). Note steep fill slope on the left side of the photo (April 2016).



Photograph 4. Looking southeast at the western boundary of Wetland A (approximated by the yellow line) (April 2016).

Photograph 5. Looking east towards Auke Lake and the wooden gazebo constructed within Wetland A (April 2016).



Photograph 6. The western boundary of Wetland B approximated by the yellow line (April 2016).

Photograph 7. Looking upslope at Wetland B (April 2016).

Photograph 8. Looking south at Wetland E (April 2016).

Photograph 9. The OHWL of Auke Lake (approximated by the yellow line) and Wetland E in the foreground; upland forest in the background (April 2016).

Photograph 10. Emergent vegetation of Wetland E along Auke Lake (April 2016).

Photograph 11. Sample plot 7 (SP–7) and characteristic vegetation of Wetlands E (April 2016).

Photograph 12. Looking towards Auke Lake from Wetland C (April 2016).

Photograph 13. Looking at Wetland C from a steep road embankment (April 2016).

Photograph 14. Wetland E and Auke Lake in the background (April 2016).

APPENDIX C:
WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-20-2016
Applicant/Owner: UAS-SE Sampling Point: SP1
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): Near base of hill adjacent to lake
Local relief (concave, convex, none): Slight concave Slope (%): 3-5
Subregion: SE Lat: 58.385816 Long: -134.639231 Datum: NAVD88
Soil Map Unit Name: Wadleigh gravelly silt loam, 12-20% NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus viridus	15	*	FAC
2. Tsuga heterophylla	50	*	FAC
3. Picea sitchensis	10		FACU
4.			
Total Cover: 75			
50% of total cover: 37.5	20% of total cover: 15		
Sapling/Shrub Stratum			
1. Vaccinium ovalifolium	60	*	FAC
2.			
3.			
4.			
5.			
6.			
Total Cover: 60			
50% of total cover: 30	20% of total cover: 12		
Herb Stratum			
1. Athyrium cyclosorum	20	*	FAC
2. Lysichiton americanus	20	*	OBL
3. Osmorhiza sp.	5		FACU
4. Equisetum sylvense	20	*	FAC
5.			
6.			
7.			
8.			
9.			
10.			
Total Cover: 65			
50% of total cover: 32.5	20% of total cover: 13		

Plot size (radius, or length x width) ____ % Bare Ground 35
% Cover of Wetland Bryophytes (Where applicable) ____ Total Cover of Bryophytes ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					organic	organic material slippery peat w/5% sand, grit
8-16	10YR 3/2	100					Sasi	with gravels, cobbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2)
- ___ Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: Rock refusal (small gravels, cobbles)

Depth (inches): 16

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0

Water Table Present? Yes X No ___ Depth (inches): 9

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- saturated to surface
- water ~½" deep in rivulets
- water table at 9 inches, likely higher to surface given more time

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-20-2016
Applicant/Owner: UAS-SE Sampling Point: SP2
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): hillside
Local relief (concave, convex, none): slight convex Slope (%): 80
Subregion: SE Lat: 58.385742 Long: -134.639319 Datum: NAVD88
Soil Map Unit Name: Wadleigh grsilo, 12-20% NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus viridus	60	*	FAC
2.			
3.			
4.			
Total Cover:	60		
50% of total cover: 30	20% of total cover: 12		
Sapling/Shrub Stratum			
1. Sambucus racemosa	8	*	FACU
2. Rubus spectabilis	15	*	FACU
3. Crataegus douglasii	3		FAC
4. Sorbus sp.	3		FACU
5.			
6.			
Total Cover:	29		
50% of total cover: 14.5	20% of total cover: 5.8		
Herb Stratum			
1. Geum macrophyllum	10		FAC
2. Taraxacum officinale	10		FACU
3. Maianthemum sp.	20	*	FAC
4. Equisetum arvense	15	*	FAC
5.			
6.			
7.			
8.			
9.			
10.			
Total Cover:	55		
50% of total cover: 27.5	20% of total cover: 11		

Plot size (radius, or length x width) ____ % Bare Ground 45
% Cover of Wetland Bryophytes ____ (Where applicable) Total Cover of Bryophytes ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 3/2	100					SaGr	sandy gravel w/a little bit of silt

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- ___ Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain In Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: Rock refusal

Depth (inches): 16

Hydric Soil Present? Yes ____ No X

Remarks: moist but not saturated

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain In Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-20-2016
Applicant/Owner: UAS-SE Sampling Point: SP3
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): hillside
Local relief (concave, convex, none): slight depression on hillslope Slope (%): 40
Subregion: SE Lat: 58.385188 Long: -134.638401 Datum: NAVD88
Soil Map Unit Name: Wadleigh gr silo, 12-20% NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Tsuga heterophylla	10	*	FAC
2.			
3.			
4.			
Total Cover:	10		
50% of total cover: 5	20% of total cover: 2		
Sapling/Shrub Stratum			
1. Rubus spectabilis	50	*	FACU
2.			
3.			
4.			
5.			
6.			
Total Cover:	50		
50% of total cover: 25	20% of total cover: 10		
Herb Stratum			
1. Ranunculus repens	20	*	FAC
2. Athyrium	20	*	FAC
3. Lysichiton americanus	20	*	OBL
4. Phalaris arundinacea	20	*	OBL
5. Poa pratensis	20	*	FACU
6.			
7.			
8.			
9.			
10.			
Total Cover:	100		
50% of total cover: 50	20% of total cover: 20		

Plot size (radius, or length x width) ____ % Bare Ground 0
% Cover of Wetland Bryophytes ____ Total Cover of Bryophytes ____ (Where applicable)

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 71 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	2.5Y 4/1	90	10YR 4/4	10	C	M	CL LM	w/grit, sand
9-20	CH 2,4/5 PB	75	10YR 4/6	25	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- ___ Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- X Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 9

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- standing water at 9"
- saturated to surface

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-20-2016
Applicant/Owner: UAS-SE Sampling Point: SP4
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): hillside
Local relief (concave, convex, none): none Slope (%): 30
Subregion: SE Lat: 58.385112 Long: -134.638433 Datum: NAVD88
Soil Map Unit Name: Maybeso mucky peat (1974 survey)/fill NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Just below top of slope

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Picea sitchensis	35	*	FACU
2.			
3.			
4.			
Total Cover: 35			
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
Total Cover: ____			
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum			
1. Taraxacum officinale	5		FACU
2. Gymnocarpium	5		FAC
3. Equisetum arvense	20	*	FAC
4. Tiarella trifoliata	10	*	FAC
5. Dactylis glomerata	5		FACU
6.			
7.			
8.			
9.			
10.			
Total Cover: 45			
50% of total cover: 22.5 20% of total cover: 9			

Plot size (radius, or length x width) ____ % Bare Ground 55
% Cover of Wetland Bryophytes (Where applicable) ____ Total Cover of Bryophytes ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					salm	
4-20	10YR 3/2	97	10YR 3/3	3	C	M	sasilm	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- ___ Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:
faint redox

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
moist in top 4" but not saturated (recent rain)

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-21-2016
Applicant/Owner: UAS-SE Sampling Point: SP5
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): hillside
Local relief (concave, convex, none): Concave Slope (%): 10
Subregion: SE Lat: 58.384207 Long: -134.636144 Datum: NAD88
Soil Map Unit Name: Wadleigh gravelly silt loam, 12-20% NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Tsuga heterophylla	40	*	FAC
2.			
3.			
4.			
Total Cover:			

50% of total cover: ____ 20% of total cover: ____

Sapling/Shrub Stratum			
1. Acer glabrum	40	*	FACU
2.			
3.			
4.			
5.			
6.			
Total Cover:			

50% of total cover: ____ 20% of total cover: ____

Herb Stratum			
1. Lysichiton americanus	10	*	OBL
2. Streptopus streptopoides	5	*	FAC
3. Maianthemum sp.	5	*	FAC
4. Athyrium cyclosorum	5	*	FAC
5. Equisetum arvense	5	*	FAC
6.			
7.			
8.			
9.			
10.			
Total Cover:	30		

50% of total cover: 15 20% of total cover: 6

Plot size (radius, or length x width) ____ % Bare Ground ____
% Cover of Wetland Bryophytes ____ (Where applicable) Total Cover of Bryophytes ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 85 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
- include 5% as dominant because so close to 6%

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Si Lm	
5-20	10YR 2/1	85	10YR 3/4	15	C	M	Si Lm	w/ Organic mat (40%)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- ___ Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- X Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

1. One or more indicators of hydrophytic vegetation is present
2. Two primary indicators of wetland hydrology are present
3. Landscape position is appropriate for wetland hydrology – slight concave surface at the toe of slope; area receives seepage/groundwater discharge
4. Soils anticipated to have low weatherable – iron content and/or be recently formed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes X No ____ Depth (inches): 7

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 5"

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- water seeping at 7"
- Saturated to 5"

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-21-2016
Applicant/Owner: UAS-SE Sampling Point: SP6
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): hillside
Local relief (concave, convex, none): _____ Slope (%): 40-60
Subregion: SE Lat: 58.384114 Long: -134.636192 Datum: NAD88
Soil Map Unit Name: Wadleigh gravelly silt loam, 12-20% NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Road embankment

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Tsuga heterophylla	40	*	FAC
2.			
3.			
4.			
Total Cover: 40			
50% of total cover: 20	20% of total cover: 8		
Sapling/Shrub Stratum			
1. Rubus spectabilis	50	*	FACU
2.			
3.			
4.			
5.			
6.			
Total Cover: 50			
50% of total cover: 25	20% of total cover: 10		
Herb Stratum			
1. Maianthemum sp.	35	*	FAC
2. Equisetum arvense	20	*	FAC
3. Streptopus streptopoides	10		FAC
4. moss	(35)		—
5.			
6.			
7.			
8.			
9.			
10.			
Total Cover: 65			
50% of total cover: 32.5	20% of total cover: 13		

Plot size (radius, or length x width) _____ % Bare Ground 35 moss
% Cover of Wetland Bryophytes (Where applicable) _____ Total Cover of Bryophytes _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: SP6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					SiLm	w/ duff
2-20	10YR 3/2	100					Sa Lm	w/ gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- ___ Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

- similar to SP2, upland fill slope

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-21-2016
Applicant/Dwner: UAS-SE Sampling Point: SP7
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): Lakeside
Local relief (concave, convex, none): Slope (%): 0
Subregion: SE Lat: 58.384701 Long: -134.636497 Datum: —
Soil Map Unit Name: Water NWI classification: Lake
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain In Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Characteristic plot for lakeside

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
Total Cover:			
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum			
1. Caltha palustris	30	*	OBL
2. Carex aquatilis	50	*	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
Total Cover: 80			
50% of total cover: 40 20% of total cover: 16			

Plot size (radius, or length x width) ____ % Bare Ground Mud 20
% Cover of Wetland Bryophytes ____ (Where applicable) Total Cover of Bryophytes ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					Fibrous w/ organic mat	
5-20	10YR 2/1	100					Fibrous w/ sand 40/60	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- X Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- A1 ~10' away from edge of wetland fringe

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-21-2016
Applicant/Owner: UAS-SE Sampling Point: SP 8
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): hillside
Local relief (concave, convex, none): slight concave Slope (%):
Subregion: SE Lat: 58.386064 Long: -134.640152 Datum: NAD88
Soil Map Unit Name: Wadleigh gr si 10, 12-20% NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Tsuga heterophylla	50	*	FAC
2. Picea sitchensis	10		FACW
3.			
4.			
Total Cover:	60		
50% of total cover: 30	20% of total cover: 12		
Sapling/Shrub Stratum			
1. Rubus spectabilis	30	*	FACU
2. Vaccinium ovalifolium	30	*	FAC
3. Acer glabrum	10		FACU
4. Tsuga heterophylla	15		FAC
5.			
6.			
Total Cover:	85		
50% of total cover: 42.5	20% of total cover: 17		
Herb Stratum			
1. Osmorhiza Sp.	5	*	FACU
2. Equisetum	5	*	FAC
3. Cornus canadensis	2		FACU
4. Unknown herb	2		FAC
5. streptopus streptopoides	2		FAC
6.			
7.			
8.			
9.			
10.			
Total Cover:	16		
50% of total cover: 8	20% of total cover: 3.2		

Plot size (radius, or length x width) ____ % Bare Ground ____
% Cover of Wetland Bryophytes (Where applicable) ____ Total Cover of Bryophytes ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: SP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2						SiLm	20% duff mixed
3-18	10YR 4/1						SaLm	w/ gravel fill, angular rock, & Cobbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- ___ Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: Refusal: rocks, roots

Depth (inches): 18"

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): X

Water Table Present? Yes X No ___ Depth (inches): 15"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 13"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- 0-3" moist, not saturated

WETLAND DETERMINATION DATA FORM – Alaska Region

Project/Site: UAS/Auke Lake-Juneau Borough/City: Juneau/Juneau Sampling Date: 4-21-2016
Applicant/Owner: UAS-SE Sampling Point: SP 9
Investigator(s): Sarah Hartung, Ava Laszlo Landform (hillside, terrace, hummocks, etc.): near top of hill
Local relief (concave, convex, none): none Slope (%): 3-5
Subregion: SE Lat: 58.385994 Long: -134.639965 Datum: NAD88
Soil Map Unit Name: Wadleigh grsilo, 12-20% NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Tsuga heterophylla	50	X	FAC
2.			
3.			
4.			
Total Cover: 50			
50% of total cover: 25	20% of total cover: 10		
Sapling/Shrub Stratum			
1. Vaccinium ovalifolium	50	X	FAC
2. Rubus spectabilis	2		FACU
3. Acer glabrum	10		FACU
4.			
5.			
6.			
Total Cover: 62			
50% of total cover: 31	20% of total cover: 12.4		
Herb Stratum			
1. Cornus canadensis	5		FACU
2. Streptopus streptopoides	5		FAC
3. Athyrium cyclosorum	5		FAC
4. Equisetum arvense	5		FAC
5. Lysichiton americanus	20	X	OBL
6.			
7.			
8.			
9.			
10.			
Total Cover: 40			
50% of total cover: 20	20% of total cover: 8		

Plot size (radius, or length x width) ____ % Bare Ground ____
% Cover of Wetland Bryophytes (Where applicable) ____ Total Cover of Bryophytes ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
- moist
- mosses and duff

SOIL

Sampling Point: SP9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					Organic matter w/ very decomposed fibers, very smooth	
2-4	10YR 3/3	100					very fibrous	
4-16	10YR 2/1	100					Organic PB w/ gravels and cobble (20% rock/grit)	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2)
- X Hydrogen Sulfide (A4)
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change (TA4)[4]
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox With 2.5Y Hue
- ___ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ___ Other (Explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

[4]Give details of color change in Remarks.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- Standing water at 10" but oozing at 5", 6", several depths along profile
- Saturated to surface

APPENDIX D:
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