65% DESIGN REVIEW SUBMITTAL
APRIL 2014

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1. EARLIEST FIELD START
2. COMPLETE SOFT GROUND MODIFICATIONS
3. END OF SOFT GROUND MOISTURE DISCHARGE PERIOD
4. SUBSTANTIAL COMPLETION
5. FINAL COMPLETION OF ALL WORK UNDER THIS CONTRACT.

NOTE:
ADDITIONAL SCHEDULE PROVISIONS APPLY, SEE SPECIFICATIONS.

CITY & BOROUGH OF JUNEAU, ALASKA
STATTER HARBOR IMPROVEMENTS
CONTRACT NO. DH14-014

DRAWING INDEX

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<td>UTILITY PLAN</td>
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PROJECT SCHEDULE

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<tr>
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<tr>
<td>SEPTEMBER 2, 2014</td>
</tr>
<tr>
<td>NOVEMBER 14, 2014</td>
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<td>NOVEMBER 30, 2015</td>
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<td>DECEMBER 13, 2015</td>
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CITY & BOROUGH OF JUNEAU, ALASKA
STATTER HARBOR IMPROVEMENTS
CONTRACT NO. DH14-014

REVISIONS

<table>
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<th>DATE</th>
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<td>1</td>
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<td>TBX</td>
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</table>

B N D
ENGINEERS, INC.

1966 Glacier Highway, Suite 100
Juneau, Alaska 99801
Phone: 907-586-2031
Fax: 907-198-2030
www.bndengineers.com

DATE: 6/18/14

COVER SHEET, VICINITY MAPS AND DRAWING INDEX
IMPROVEMENTS SITE PLAN

PARKING SUMMARY

<table>
<thead>
<tr>
<th>STALL TYPE</th>
<th>QUANTITY</th>
<th>REMARKS</th>
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</thead>
<tbody>
<tr>
<td>TRAILER</td>
<td>82</td>
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</tr>
<tr>
<td>TOYO TRAILER</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>ACCESSIBLE TRAILER</td>
<td>4</td>
<td>1.5&quot; D, 3.4&quot;</td>
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<tr>
<td>10/18 STD PARKING</td>
<td>20</td>
<td></td>
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<tr>
<td>ACCESSIBLE STD</td>
<td>5</td>
<td>4 VAN ACCESSIBLE</td>
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</table>

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CITY & BOROUGH OF JUNEAU, ALASKA
STATTER HARBOR IMPROVEMENTS
CONTRACT NO. DH16494

GENERAL IMPROVEMENTS OVERVIEW

REV. DATE: 5/18/14

Scale: 1" = 50'
SOILS CLASSIFICATION, CONSISTENCY AND SYMBOLS

CLASSIFICATION
Identification and classification of the soil is accomplished in general accordance with the ASTM version of the Unified Soil Classification System (USCS) as preserved in ASTM Standard D2487. The standard is a qualitative method of classifying soil into the following major divisions: (1) course grained, (2) fine grained, and (3) highly organic soils. Classification is performed on the soil passing the 75 mm (3 inch) sieve and the amount of over-size material (> 75 mm particles) is noted on the soil log. This is not always possible for drilled test holes because the over-size particles are typically too large to be captured in the sampling equipment. Over-size materials greater than 300 mm (2 inches) are termed boulders, while materials between 75 mm and 300 mm are termed cobbles. Course grained soils are those having 35% or more of the non-over-size soil retained on the No. 200 sieve (0.075 mm); if a greater percentage of the coarse grains is retained on the No. 4 (4.76 mm) sieve the course grained soil is classified as gravel, otherwise it is classified as sand. Fine grained soils are those having more than 50% of the non-over-size material passing the No. 200 sieve; these may be classified as silt or clay depending on their Atterberg liquid and plastic limits or observations of field consistency. Refer to the most recent version of ASTM D2487 for a complete discussion of the classification method.

SOIL CONSISTENCY - CRITERIA
Soil consistency as defined below and determined by normal field soil laboratory methods applies only to non-frozen material. For these materials, the influence of such factors as soil structure, ice lenses, shrinkage cracks, stiffness, etc., must be taken into consideration in making any correlation with the consistency values listed below. In permafrost zones, the consistency and strength of frozen soils may vary significantly and unpredictably with ice content, thermal regime and soil type.

Standard Penetration Test (Blows/ft)
Relative to Density/Consistency

<table>
<thead>
<tr>
<th>N60 Density</th>
<th>Relative Density (N60)</th>
<th>Consistency</th>
<th>Shear Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 Very Loose</td>
<td>0-15%</td>
<td>0</td>
<td>Very Soft</td>
</tr>
<tr>
<td>1-10 Loose</td>
<td>15-35%</td>
<td>2</td>
<td>Soft</td>
</tr>
<tr>
<td>10-30 Medium</td>
<td>35-65%</td>
<td>4-8</td>
<td>Medium</td>
</tr>
<tr>
<td>30-50 Dense</td>
<td>65-85%</td>
<td>8-15</td>
<td>Stiff</td>
</tr>
<tr>
<td>&gt; 50 Very Dense</td>
<td>&gt;85%</td>
<td>&gt;15-30</td>
<td>Very Stiff</td>
</tr>
</tbody>
</table>

Undrained Shear Strength

Coring

POORLY-GRADED GRAVEL
W/ SILT AND SAND (GSP-GM)
Grey, Moist, Dense, Subangular

Silty Argillite
grayish-brown, fine grained, flat bedded, medium hard, B1-U, sample splitting

Coring Depth, Drilling Rate, Fluid Loss, Drill Pressure, Tmax, Instrumentation: Additional Information

Coring Depth 10/24/03 7:45 a.m.
2' to 7' Hand, hand coring (gobblers/bookles encountered)

COLUMN DESCRIPTIONS
1 Depth
Depth (in feet) below the ground surface.

2 Water Level
Groundwater level recorded while drilling. Depths and times are recorded in committee column.

3 Grapher Log
Grapher description of materials encountered.

4 Soil Description
Description of materials encountered, including USCS soil descriptions.

5 Sample Number
Sample identification number.

6 Sample Type
Type of soil or rock sample collected at depth interval depicted; symbols explained on Fig. B-1.

7 Sample Location
Location soil sample taken.

8 Sample Recovery
Rock: Percentage of sample recovered. Rock: Percentage of sample recovered and RQD value.

9 Sample Blow
Rock Quality Number of blows to advance driven sampler each 6-inch interval using sampler type specified with a 30-inch drop. Blown per foot given in parentheses. Rock: Rock quality as defined from RQD value.

10 Grapher Log
Grapher log depicting blow counts per foot with a specified split spoon, Pocket Penetration and Vane shear tests depicted where taken on fine grained soils.

11 Comments
Comments or observations on drilling/sampling or driller or PND personnel.

12 Elevations
Elevation (in feet) with respect to Mean Lower Low Water (MLLW) or other datum where specified.

GENERAL NOTES
1. Field descriptions may have been modified to reflect laboratory test results.
2. Descriptions on these boring logs apply only at the specific locations at the time the bores were drilled. They are not warranted to be representative of subsurface conditions at other locations or times.
3. Split spoon blow counts shown are uncontested raw data. Various hammer sizes and split spoon sizes were used and have not been corrected to a Standard Penetration Test (SPT). Blow counts may vary substantially between SPT and these methods.

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ROCK DESCRIPTIVE INDEX

STANDARD SYMBOLS AND NOMENCLATURE

The Standard Graphic Symbols used in this report are consistent with those used by the U.S. Geological Survey. Other nomenclature and categorical descriptions follow those presented by the American Society of Civil Engineers, the International Society of Rock Mechanics and others.

DESCRIPTION OF RELATIVE WEATHERING

Modified from the Geological Society Engineering Group, Great Britain:

BX-U - Fresh, no visible signs of weathering;
FW - Fairly weathered; weathering limited to the surface of major discontinuities;
SW - Slightly weathered; penetrative weathering developed on open discontinuity surfaces, but only slight weathering of rock material;
MW - Moderately weathered; weathering extends throughout the rock mass, but the rock material is not flaky;
LYR - Highly weathered; rock is wholly decomposed and in a friable condition, but the rock texture and structure are preserved;
BX-R - Residual soil; a soil material with the original texture, structure and mineralogy of the rock completely destroyed.

DESCRIPTION OF HARDNESS

ASCE Field Measurements, unrelated to Moh's scale for minerals.

Material must be uniform for this determination.

very hard - Can not be scratched with knife or sharp pick.
hard - Can be scratched with knife or pick only with difficulty.
moderately hard - Can be scratched readily with knife or pick.
medium - Can be grooved or gouged by firm pressure on knife or pick point.
soft - Can be gouged or grooved readily with knife or pick point.
very soft - Can be chipped with knife. Can be excavated readily with point of pick.

COMPARISON CHART FOR ESTIMATING COMPOSITION


Measurement Parameters

Discontinuity Spacing (fractures, cleavage, laminations)

Banding Plane Spacing

>75.7 mm (>2000 mm)

1.5 mm

1.0 mm

0.8 mm

0.6 mm

0.4 mm

0.2 mm

0.1 mm

30% 50%

20%

10%

2%

5%

Discontinuity filling material and surface roughness should also be noted whenever possible.

REVISIONS

ENGINES, INC.

03/11/14

REV.

D. CER

REV.

DATE

DESCRIPTION

OWN.

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APP.

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CHECK.

SUB.

PAGE

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CITY & BOROUGH OF JUNEAU, ALASKA
STATTER HARBOR IMPROVEMENTS

CONTRACT NO. DH14-014

DATE: APRIL 2014

ENGINEERS, INC.

PHOTO: 7939386

PHONE: 907-824-3838
# Borehole Summary Table

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<thead>
<tr>
<th>Borehole</th>
<th>Mudline Elevation (ft)</th>
<th>Total Hole Depth Below Mudline (ft)</th>
<th>Borehole/Refusal Elevation (ft, MLLW)</th>
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<td>-14.8</td>
<td>65.0</td>
<td>-79.8</td>
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<td>62.0</td>
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<tr>
<td>PND-09</td>
<td>-10.0</td>
<td>42.0</td>
<td>-32.0</td>
</tr>
<tr>
<td>PND-10</td>
<td>-8.0</td>
<td>45.0</td>
<td>-32.0</td>
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<tr>
<td>PND-11</td>
<td>-4.0</td>
<td>6.0</td>
<td>-16.0</td>
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<tr>
<td>PND-12</td>
<td>+10.0</td>
<td>42.0</td>
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<tr>
<td>PND-13</td>
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<td>-16.0</td>
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<tr>
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# Wick Drain Limit Layout Table

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<th>Elevation (ft)</th>
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<td>4846534.0</td>
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# Legend

- **PND, Inc.** = 2011, 2012 and 2013 (boreholes drilled as part of this investigation)
- **PND, Inc.** = 1999 (Statter Harbor Parking Improvements)
- **Shannon & Wilson, Inc.** = 1999 (Statter Harbor Parking Improvements)
- Triangular/Stage Pattern Area for Wick Drain Installation

# 65% Design Review Submittal

**City & Borough of Juneau, Alaska**

**Statter Harbor Improvements**

**Contract No. DH14-414**

**Soft Ground Modifications—Wick Drain Limits & Borehole Summary**

**Sheet 3.01**

**20 of 29**
A SURCHARGE AND WICK DRAIN

TYPICAL SECTION

NOTE:
THIS SECTION IS A DIAGRAMATIC REFERENCE FOR INFORMATIONAL PURPOSES ONLY. SOIL AND BEDROCK CONDITIONS SHOWN ARE INFERRED FROM BOREHOLES AND ARE SUBJECT TO VARIATION THROUGHOUT THE PROJECT AREA.

NOTE:
HORIZONTAL SCALE EQUALS VERTICAL SCALE
NOTE:
THIS SECTION IS A DIAGRAMMATIC REFERENCE FOR INFORMATIONAL PURPOSES ONLY. SOIL AND BEDROCK CONDITIONS SHOWN ARE INFERRED FROM BOREHOLE DATA AND ARE SUBJECT TO VARIATION THROUGHOUT THE PROJECT AREA.

SURCHARGE AND WICK DRAIN
TYPICAL SECTION

NOTE:
HORIZONTAL SCALE EQUALS VERTICAL SCALE

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STATTER HARBOR IMPROVEMENTS
CONTRACT NO. DXH4-014

P & N D
ENGINEERS, INC.

REV. DATE DESCRIPTION DRL. CRL. APP.

REVISIONS

GEO. PL. CHECKED SEWN.

DATE: 6/18/14

SOFT GROUND MODIFICATIONS-
SURCHARGE STAGE 2
AND WICK DRAIN SECTION

PREP PROJECT NO.: 082015

3.03
SHEET 27 OF 53
NOTE:
THIS SECTION IS A DIAGRAMATIC REFERENCE FOR INFORMATIONAL PURPOSES ONLY. SOIL AND BEDROCK CONDITIONS SHOWN ARE INFERRED FROM BOREHOLDS AND ARE SUBJECT TO VARIATION THROUGHOUT THE PROJECT AREA.
Typical Section

Schedule of Materials

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>MATERIAL</th>
<th>THICKNESS (IN)</th>
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<tbody>
<tr>
<td>A</td>
<td>GP</td>
<td>4 MAX</td>
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<tr>
<td>B</td>
<td>BASECOURSE GRADE D-1</td>
<td>6 MIN.</td>
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<tr>
<td>C</td>
<td>CLASS A SAND ROCK BORROW</td>
<td>24 MAX.</td>
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<tr>
<td>D</td>
<td>CLASS B SAND ROCK BORROW</td>
<td>AS REQUIRED</td>
</tr>
<tr>
<td>E</td>
<td>PLANTING SOIL</td>
<td>24 MIN.</td>
</tr>
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</table>

Existing Ground

NOTE: SEE RETAINING WALL AND SEAWALK PLANS AND SECTIONS FOR ADDITIONAL DETAILS.
MSE WALL PLAN

MSE WALL PROFILE

Scale: 1" = 1' - 0"

NOTE: HORIZONTAL SCALE EQUALS VERTICAL SCALE

EXCEPTION LIMITS
EXISTING GROUND
SHOWN APPROXIMATELY

12.4K M.B. BECK RIPRAP BENCH

12.3K CASTLE/GROVE CONCRETE SIDEWALK, TYP.

FILL 100% CONCRETE, TYP.

T-10" x 6" x 6" x 2-1/2"
CONCRETE BLOCK, TYP.

NOTE: COMMERICAL & COVERED SHELTER
NOT SHOWN FOR CLARITY.

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ENGINEERS, INC.

CITY & BOROUGH OF JUNEAU, ALASKA
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CONTRACT NO. DH14-14

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REV.

DATE

DESCRIPTION

DRL.

QTS.

APP.

0.01

08/14/14

08/2015

5.01

30 OF 35

PAGE 1 OF 1
GENERAL NOTES:

1. ATTACH 2X SUB-DECK W/ 30G GALV. NAILS AS SHOWN ON FLOAT FRAMING PLAN.

2. 1/2" TREATED PLYWOOD TO BE ATTACHED W/ 3" LONG 12 GA. STAINLESS STEEL FLATHEAD, WOOD SCREWS AS SHOWN ON FLOAT FRAMING PLAN AND AS REQUIRED TO ASSURE PLYWOOD LAYS FLAT. ALL PLYWOOD EDGES SHALL BE FULLY SUPPORTED. PROVIDE 2X BLOCKING AS REQUIRED. Secure blocking similar to SUB-DECKING. ALL PLYWOOD EDGES SHALL BE TRIMMED WITH 2 COATS OF EPOXY.

3. TRACTION PLATE TO BE ATTACHED W/ 3" LONG 12 GA. STAINLESS STEEL FLATHEAD, WOOD SCREW AS SHOWN ON FLOAT FRAMING PLAN. SCREW HEADS TO BE HIDDEN FLUSH W/ TOP OF PLATE. LOCATE SCREWS TO MISS PLYWOOD ATTACHMENT SCREWS. REPAIR CUT/AGLE W/ TRACTION PLATE PER MANU. RECOMMENDATIONS.

4. ATTACHMENT SCREWS SHALL HAVE Pilot HOLES PER INDUSTRY STANDARDS.
## LUMINAIRE SCHEDULE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DESCRIPTION</th>
<th>MANUFACTURER</th>
<th>LAMPS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Pole Mount LED Site Light, Die-Cast Low-Copper Aluminum Housing, Clear Glass Lense, T45, 24Watt LED, Fixture with LED Driver, Black Finish</td>
<td>WM LEADING</td>
<td>3000K CR BD</td>
<td>Mount at 20'-07&quot; APL, UCN</td>
</tr>
<tr>
<td>A2</td>
<td>Pole Mount LED Site Light, Die-Cast Low-Copper Aluminum Housing, Clear Glass Lense, T45, 24Watt LED, Fixture with LED Driver, Black Finish</td>
<td>WM LEADING</td>
<td>3000K CR BD</td>
<td>Mount at 20'-07&quot; APL, UCN</td>
</tr>
<tr>
<td>B1</td>
<td>Pole Mount MR16 40W LED, Aluminum Housing, Black Finish</td>
<td>DOWNS</td>
<td>3000K CR BD</td>
<td>Mount at 12'-06&quot; APL, UCN</td>
</tr>
<tr>
<td>B2</td>
<td>Pole Mount MR16 40W LED, Aluminum Housing, Black Finish</td>
<td>DOWNS</td>
<td>3000K CR BD</td>
<td>Mount at 12'-06&quot; APL, UCN</td>
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<tr>
<td>C</td>
<td>Pole Mount LED Site Light, Aluminum Housing, Marine Grade LED, 80W Watt LED, Fixture with LED Driver, Black Finish</td>
<td>ELDON CIRCLE-HEX5</td>
<td>3000K CR BD</td>
<td>Mount at 15'-06&quot; APL, UCN</td>
</tr>
<tr>
<td>D</td>
<td>Pole Mount LED Site Light, Aluminum Housing, Marine Grade LED, 80W Watt LED, Fixture with LED Driver, Black Finish</td>
<td>ELDON CIRCLE-HEX5</td>
<td>3000K CR BD</td>
<td>Mount at 15'-06&quot; APL, UCN</td>
</tr>
</tbody>
</table>

Note: All luminaire design heights are at the bottom of the luminaire, unless otherwise specified and/or approved.

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## SITE PLAN - LIGHTING

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CITY & BOROUGH OF JUNEAU, ALASKA

STATTER HARBOR IMPROVEMENTS

CONTRACT NO. 0108-681

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05% DESIGN REVIEW SUBMITTAL

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