October 6, 2021

Astoria Marine Construction Company
9134 Front Road
Astoria, OR 97103

Attention: Tim Fastabend

Final Summary Report
Geotechnical Construction Observation Services
AMCCO Remediation
92134 Front Road
Astoria, Oregon
Project: MFAInc-25-03

This letter summarizes NV5's (formerly GeoDesign, Inc.) geotechnical construction observations made during construction of the dike extension for the Astoria Marine Construction Company (AMCCO) remediation project located at 92134 Front Street in Astoria, Oregon. We prepared a July 18, 2018 geotechnical engineering report that provided geotechnical engineering recommendations for use in design and construction of the proposed project as well as two addenda responding to review comments by the U.S. Army Corps of Engineers and additional analyses.[1,2,3]

The project included construction of a dike extension that runs from an existing dike in the northwestern portion of the AMMCO property to the southern portion of the site. Between August 2020 and September 2020, we observed and evaluated compaction of the dike extension fill material consisting of clay and preparation of the underlying subgrade. At the end of our observation in September 2020, wet weather had begun, and filling operation could not continue due to the high moisture content of the fill embankment material. The embankment was winterized with crushed rock above the wet material to an elevation of approximately 14.2 feet.

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[1] GeoDesign, Inc., 2018. *Report of Geotechnical Engineering Services; AMCCO Remediation; 92134 Front Road; Astoria, Oregon,* dated July 18, 2018. GeoDesign Project: MFAInc-25-01

[2] GeoDesign, Inc., 2018. *Addendum 1; Response to U.S. Army Corps of Engineers Comments; AMCCO Remediation; 92134 Front Road; Astoria, Oregon*, dated November 28, 2018. GeoDesign Project: MFAInc-25-01

[3] GeoDesign, Inc., 2019. *Revised Addendum 2; Revised Stability and Settlement Analyses; AMCCO Remediation; 92134 Front Road; Astoria, Oregon*, dated April 12, 2019. GeoDesign Project: MFAInc-25-01

Recently, work on the dike extension was resumed and construction of the extension was completed. The crushed rock used for winterization was removed and fill material previously observed to be wet was moisture conditioned and re-compacted. Between August 30, 2021 and September 2, 2021, we observed and evaluated the relative compaction and moisture contents of the dike extension fill material from the material previously observed to have been prepared in accordance with our geotechnical recommendations up to an elevation of 15 feet (North American Vertical Datum 1988 [NAVD88]). The dike extension fill material consisted of clay material from the same source used for the fill placed the prior year. The moisture and density of the fill were tested with a densometer in general accordance with ASTM D6938.

We understand the top elevation of the original dike in the northwestern portion of the site was between elevations of 13.1 and 13.8 feet (NAVD88) before two additional lifts of clay material were placed and an overlying section of crushed rock constructed. The 100-year and 500-year flood elevations are at 12.0 feet and 13.08 feet (NAVD88), respectively. Based on our analysis, the fill to bring the original dike elevation to an elevation of 15 feet (NAVD88) could result in additional settlement of up to 8 inches at the dike extension connection. We did not observe the additional fill placed over the existing dike; however, based on the information provided by the contractor, we understand the subgrade for the additional clay embankment was stripped and prepared in the same manner and that the lifts of clay were compacted with the same compactive effort as the fill recently observed for the dike extension. Since the added fill is expected to be above the 100-year flood elevation after settlement is complete and the portion of added fill that may settle below the 500-year flood elevation will be subjected to minimal head pressure, it is our opinion the information provided by the contractor and the observable final grade and surface crushed rock section are acceptable documentation for the free board section of fill.

The results of our site visits are summarized in daily field reports, which were provided to AMCCO and Maul Foster & Alongi and are attached to this letter. To the extent observed and based on the information provided by Astoria Marine and Custom Excavation, it is our opinion that the aforementioned geotechnical aspects of the project are in general conformance with the intents of the project plans, the specifications, the geotechnical report, and our field recommendations.

♦ ♦ ♦

We appreciate the opportunity to be of continued service to you on this project. Please call if you have questions concerning the information provided.

Sincerely,

NV5

Jordan L. Melby, P.E.
Senior Project Engineer

Shawn M. Dimke, P.E., G.E.
Principal Engineer

cc: Cem Gokcora, Maul Foster & Alongi (via email only)

JLM:SMD:sn
Attachment
One copy submitted (via email only)
Document ID: MFAInc-25-03-100621-geol-summary-rev.docx

ATTACHMENT

GEODESIGN INC AN NV5 COMPANY

FIELD REPORT

GDI Project:	MFAinc-25-02	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	8/31/20
Location:	92134 Front Rd, Astoria, OR	Report #:	01
Arrival:	1130	Departure:	1245
Weather:	Partly Sunny, 60's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim
Purpose:	Evaluate Subgrade		
Outstanding Issues:			

Upon arrival, I met with earthwork crew and Tim Fastabend (Astoria Marine). I was directed to the location of the proposed dike resolution. I observed that dike location had been excavated to planned subgrade elevation and that approx. half of the subgrade was covered with a layer of sand for erosion control purposes. I requested potholing through the sand layer to observe the underlaying soil. I observed the soil to consist generally of silt with sand. I observed wood debris and wooden beams within the potholed location. Subgrade was wet and ground water was observed seeping into the potholed location. Based on conversations with Shawn Dimke (GeoDesign Principle Engineer). We believe the subgrade to be adequate for dike construction, following being sacrificed as stated in our geotechnical report. We recommend that wooden beams, along with large diameter wood debris encountered during the scarification process be fully removed from the subgrade. Conversation was had onsite with earthwork contractor about the placement of embankment material. We recommend that a thicken, approx. 16in to 18in lift of soil be placed initially to create a solid working surface and prevent disturbing the wet/ soft subgrade soil.

Based on our observation and conversation with contractor, it is our opinion that dike subgrade observed today, contingent on following recommendation noted above, is being prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1); Picture (2)

Reviewed by:

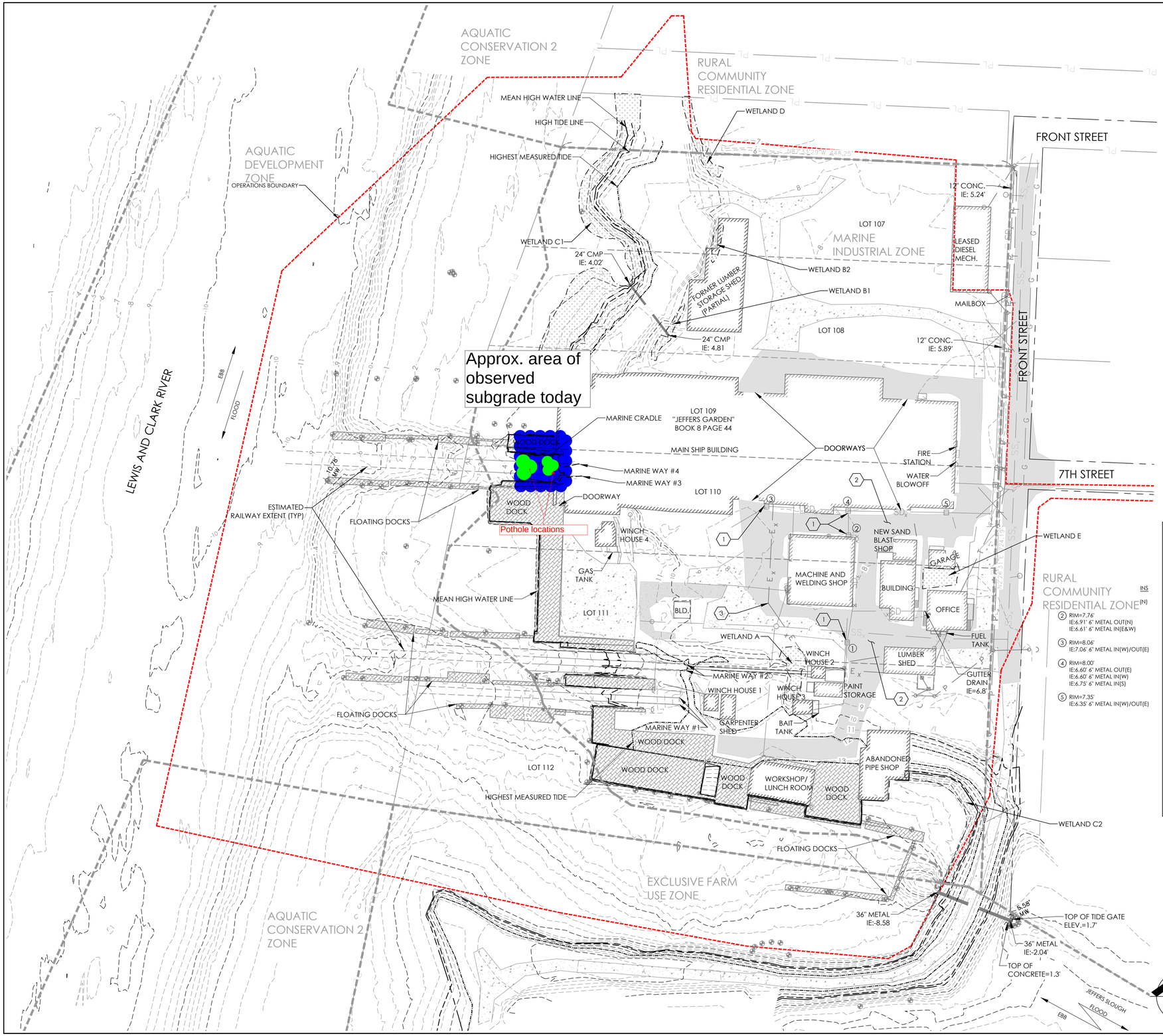
Signature: Bret Moskal

PHOTOGRAPHS

Project Name: AMCCO Remediation
Location: Astoria, Oregon

Example of Pothole Location

Example of Subgrade Observed Today (Facing West)



EXISTING CONDITIONS LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- WETLAND
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' (NAVD 88)
- HIGH TIDE LINE - 8.63' (NAVD 88)
- HIGHEST MEASURED TIDE - 11.9' (NAVD 88)

EXISTING CONDITIONS NOTES

CONSTRUCTION NOTES

1. APPROXIMATE LOCATIONS OF KNOWN OR LOCATED BURIED UTILITIES AND SUBSURFACE FEATURES, AS WELL AS OVERHEAD POWER LINES WITHIN THE SITE ARE PRESENTED ON THE DRAWINGS. HOWEVER, THE CONTRACTOR SHALL ASSUME OTHER BURIED UTILITIES AND SUBSURFACE FEATURES COULD EXIST.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDANCE AND PROTECTION OF ALL UTILITIES AND OTHER SUBSURFACE FEATURES. CALL THE OREGON UTILITY NOTIFICATION CENTER AT 1-800-332-2344 AT LEAST SEVEN (7) BUSINESS DAYS BEFORE PERFORMING ANY SUBSURFACE WORK.
3. THE CONTRACTOR SHALL MAINTAIN A RECORD DRAWING SHOWING THE APPROXIMATE LOCATION OF ALL UTILITIES MARKED BY THE UTILITY LOCATING SERVICES FOR REFERENCE DURING THE COMPLETION OF WORK.
4. THE CONTRACTOR SHALL MAINTAIN MARKERS SHOWING THE GROUND LOCATION OF UTILITIES DURING THE EXECUTION OF WORK.
5. THE CONTRACTOR SHALL MARK THE LOCATION OF IN-WATER UTILITIES BY PLASTIC BUOYS.
6. THE CONTRACTOR SHALL NOTIFY ALL UTILITY PROVIDERS TWO WEEKS IN ADVANCE OF PERFORMING WORK NEAR UTILITIES OR WITHIN A UTILITY EASEMENT (IN PARTICULAR, THE HIGH PRESSURE WATER AND GAS LINES), AS IT IS ANTICIPATED THAT REPRESENTATIVES FROM UTILITY PROVIDERS MAY REQUEST TO BE PRESENT DURING THE WORK.
7. THE EXTENTS OF IN-WATER UTILITIES/FEATURES (I.E. RAILWAYS) ARE SHOWN APPROXIMATELY ON THIS PLAN, AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF WORK.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ACCURATELY FIELD LOCATE AND PREVENT DAMAGE TO ALL UTILITIES AND SUBSURFACE FEATURES. IF ANY UTILITY OR SUBSURFACE FEATURES ARE DAMAGED, THEY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

KEYED NOTES

1. EXISTING STORMWATER SYSTEM CLOGGED AND NOT FUNCTIONING.
2. EXISTING FAILING PAVEMENT AREA
3. APPROXIMATE LOCATION OF 440V UNDERGROUND POWER.

PERMIT DOCUMENT

MAUL FOSTER ALONGI
2001 NW 19TH AVE, SUITE 200
PORTLAND, OR 97209
PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER 72200PE OREGON JAN. 14, 1983 ERIK IVER BAKKOM
EXPIRES: 12/31/2021
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN
ASTORIA MARINE CONSTRUCTION CO.
ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM
SCALE
0 50' 100
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
EXISTING CONDITIONS PLAN

SHEET
C1.2

PLOTTED BY: Gorkcs Kolmeto FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\1653\01.04\3-AMCCO\PLANS\dgn Design\C1.2 EXISTING CONDITIONS PLAN.dwg
PLOTTED ON: 2020-05-08 9:45 AM

GEODESIGN INC AN NV5 COMPANY

FIELD REPORT

GDI Project:	MFAinc-25-02	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	9/8/20
Location:	92134 Front Rd, Astoria, OR	Report #:	02
Arrival:	0730	Departure:	1845
Weather:	Partly Sunny, 60's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim
Purpose:	Evaluate Subgrade		
Outstanding Issues:			

Upon arrival, I observed Custom Excavation crew in the process of removing existing concrete walls within planned dike construction location. I observed that Custom Excavation had removed wooden beams for within the subgrade, as noted in field report 1. Subgrade appeared to be free of organic soil and poorly graded gravel fill. I observed earthwork crew scarifying the subgrade before placing fill. Fill was placed in approx. 8in lifts, excluding the first lift which was approx. 12in to create a solid working surface. Compaction efforts were completed utilizing a smooth drum roller. The surface of each lift was scarified with the tracts/ bucket of an excavator during installation of the sequential lift. Using a Troxler 3430 nuclear density gauge, I evaluated the compaction of the fill and compared the results against a lab produced proctor value (ASTM D698) of 86.0pcf at 30.0% optimum moisture content. Per our Geotechnical Report, we require fill to be compacted to a minimum of 92% of the maximum dry density value and at a moisture content that is between -1% and +3% from optimum. Areas tested met or exceed our recommendation today.

During the day, we recommend moisture conditioning onsite stockpiles of fill material.

Based on our observation and testing, it is our opinion that dike subgrade and fill observed today, in areas observed today and noted on attached site plan, has been prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1); Picture (3)

Reviewed by:

Signature: Bret Moskal

PHOTOGRAPHS

Project Name: AMCCO Remediation
Location: Astoria, Oregon

Concrete Wall being Removed (Facing South)

Subgrade being Scarified (Facing North)

Fill being Placed Today (Facing North)

GEODESIGN INC

NUCLEAR DENSITY GAUGE DATA

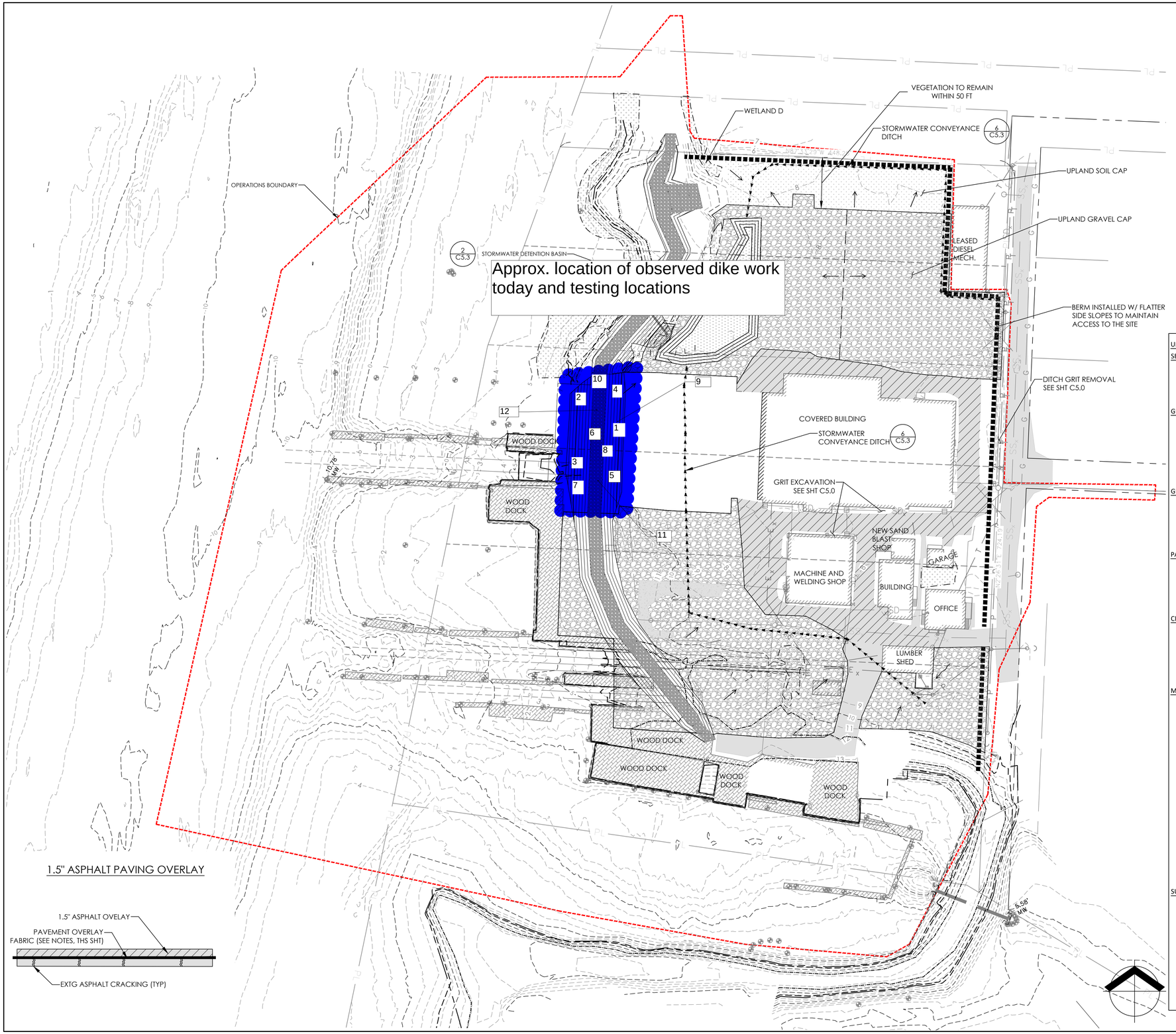
GDI Project: MFAinc-25-02 Project Name: AMCCO Remediation Project Date: 9/8/2020

Sampled By: BTM Project Location: 92134 Front Rd, Astoira OR Page: 1 of 1

	Material Source	Maximum Density:pcf (required)		Optimum Moisture
A	Brown Clay	A	86.0 pcf (D689)	A 30.0%
B		B		B
C		C		C
D		D		D
E		E		E

*approx. elevation to existing grade (feet)

Test No.	Date	Location	Elevation*	Fill Type	Compactor	Density	% Moisture	% Maximum	% Required
1	9/8	Dike Fill - See Site Plan	8'	A	Smooth Drum	81.4	31.8	95%	92%
2	9/8	Dike Fill - See Site Plan	8'	A	Smooth Drum	82.2	30.3	96%	92%
3	9/8	Dike Fill - See Site Plan	7.5'	A	Smooth Drum	81.2	31.0	94%	92%
4	9/8	Dike Fill - See Site Plan	7.5'	A	Smooth Drum	82.3	30.4	96%	92%
5	9/8	Dike Fill - See Site Plan	7'	A	Smooth Drum	81.3	30.9	95%	92%
6	9/8	Dike Fill - See Site Plan	7'	A	Smooth Drum	81.4	31.7	95%	92%
7	9/8	Dike Fill - See Site Plan	6.5'	A	Smooth Drum	83.6	32.5	97%	92%
8	9/8	Dike Fill - See Site Plan	6.5'	A	Smooth Drum	87.9	31.1	100+%	92%
9	9/8	Dike Fill - See Site Plan	6'	A	Smooth Drum	82.7	30.1	96%	92%
10	9/8	Dike Fill - See Site Plan	6'	A	Smooth Drum	84.2	33.1	98%	92%
11	9/8	Dike Fill - See Site Plan	5.5'	A	Smooth Drum	82.4	32.6	96%	92%
12	9/8	Dike Fill - See Site Plan	5.5'	A	Smooth Drum	84.5	32.7	98%	92%



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- 1.5" ASPHALT OVERLAY
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

1.5" ASPHALT PAVING OVERLAY

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

GENERAL CAPPING NOTES

1. A DEMARCATION LAYER SHALL BE INSTALLED OVER THE ENTIRE AREA OF THE SITE EAST OF THE DIKE.
2. DEMARCATION FABRIC INSTALLATION SHALL EXCLUDE HOT SPOT EXCAVATION AREAS WHERE DEMARCATION MATERIALS HAVE ALREADY BEEN INSTALLED.
3. DEMARCATION FABRIC SHALL BE PLASTIC MESH FENCE WITHIN THE LANDSCAPE BUFFER AND STORMWATER SWALE TO PROVIDE DELINEATION BETWEEN THE CLEAN MATERIAL AND POTENTIALLY CONTAMINATED MATERIALS UNDERNEATH.

GRAVEL CAP NOTES

1. CAP MATERIAL SHALL BE PLACED AND COMPACTED IN A SINGLE 12-INCH LIFT.
2. GRAVEL CAP MATERIAL SHALL BE ROLLED OR PLATE COMPACTED UNTIL A FIRM UNYIELDING SURFACE HAS BEEN ESTABLISHED.
3. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND BY TEST PITTING AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.

PAVING CAP NOTES

1. SAWCUT OR GRIND TRANSITION BETWEEN EXISTING ASPHALT AND OVERLAY
2. ASPHALT, TACK COAT AND PAVEMENT OVERLAY GEOTEXTILE PER 2018 ODOT STANDARD SPECIFICATIONS.
3. PREPARE SURFACE, APPLY SEALANT, PLACE GEOTEXTILE AND PLACE OVERLAY PAVEMENT AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS SECTIONS 00350.41 (F), AND 00748.

CLEAN SOIL CAP AT LANDSCAPE BUFFER

1. SOIL CAP MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 8-INCH THICKNESS AND LOOSELY TRACKED INTO PLACE USING TRACKED EQUIPMENT. HAND PLACEMENT AROUND ESTABLISHED VEGETATION IS REQUIRED.
2. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.
3. THE CAPPED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

MATERIALS (AND EQUIPMENT)

1. GRAVEL CAP DEMARCATION FABRIC - BELTECH 1696, 3 OZ/SY WOVEN POLYPROPYLENE, ORANGE OR APPROVED EQUAL
2. VEGETATIVE BUFFER DEMARCATION FABRIC - MESH PLASTIC FENCING, ORANGE OR GREEN
3. GRAVEL CAPPING MATERIAL - 3/4" TO 1-1/2" MINUS CRUSHED ROCK (OR EQUIVALENT TO SUPPORT STORAGE AND PERIODIC TRUCK DELIVERY)
4. CLEAN SOIL CAPPING MATERIAL -
   a. IMPORTED CAP MATERIAL SHALL CONSIST OF SANDY-LOAM FROM APPROVED SOURCES, AND SHALL BE FREE OF PARTICLES GREATER THAN 1-INCH IN DIAMETER, ADMIXTURES OF SUBSOIL, CLAY, NOXIOUS WEEDS AND GRASSES (SUCH AS HORSETAIL, QUACKGRASS, JOHNSON GRASS, AND THEIR ROOTS), AND OTHER MATERIAL DELETERIOUS TO PLANT GROWTH OR THAT HINDER GRADING, PLANTING, OR MAINTENANCE OPERATIONS. IMPORTED TOPSOIL SHALL NOT BE DELIVERED IN A FROZEN OR MUDDY CONDITION. PROTECT FROM EROSION AT ALL TIMES DURING TRANSPORT, STOCKPILING, AND PLACEMENT.
   b. CONTRACTOR SHALL PROVIDE AN ANALYSIS OF ORGANIC CONTENT FROM EACH BORROW SITE. ACCEPTABLE ORGANIC CONTENT RANGE: 2 TO 10% (AS DETERMINED BY ASTM D 2974)
   c. CLEAN FILL SOILS FOR THE VEGETATED SOIL BUFFER MUST HAVE NO MORE THAN 15% CLAY AND OTHER POORLY DRAINING SOIL MATERIALS.
5. PAVEMENT OVERLAY GEOTEXTILE - GEOTEXTILE MEETING PROPERTY VALUES FOR PAVEMENT OVERLAY GEOTEXTILE AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS TABLE 02320-6.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
   a. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   b. TESTING REPORTS FOR FINAL CAP MATERIAL. REPORTS SHALL HAVE GRAIN SIZE DISTRIBUTION (SIEVE ANALYSIS) PER ASTM C 136. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS. MATERIAL TO BE USED AS TOPSOIL SHOULD ALSO INCLUDE SOIL ANALYSIS RESULTS FROM AN APPROVED SOIL TESTING LABORATORY INDICATING THAT IMPORT TOPSOIL MEETS ORGANIC CONTENT REQUIREMENTS.
   c. LIST OF PROPOSED PLACEMENT EQUIPMENT.

PERMIT DOCUMENT

MAUL FOSTER ALONGI
2001 NW 19TH AVE, SUITE 200
PORTLAND, OR 97209
PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER
72200PE
OREGON
JAN. 14, 2005
SPIKE IVER BAKKOM
EXPIRES: 12/31/2021
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM

SCALE

0 50' 100'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

UPLAND CAPPING PLAN

SHEET

C5.2

PLOTTED BY: Gorick Kolmetz FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\1403-AMCCO\PLANS\60% Design\C5.2 UPLAND CAPPING PLAN.dwg
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GEODESIGN INC AN NV5 COMPANY

FIELD REPORT

GDI Project:	MFAinc-25-02	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	9/9/20
Location:	92134 Front Rd, Astoria, OR	Report #:	03
Arrival:	0745/1400	Departure:	1045/1515
Weather:	Partly Sunny, 90's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim
Purpose:	Evaluate Fill		
Outstanding Issues:			

Upon arrival, I observed Custom Excavation crew in the process of placing fill for dike within location noted on attached site plan. Fill was placed in approx. 8in lifts. Compaction efforts were completed utilizing a smooth drum roller. The surface of each lift was scarified with the tracts/ bucket of an excavator during installation of the sequential lift. Using a Troxler 3430 nuclear density gauge, I evaluated the compaction of the fill and compared the results against a lab produced proctor value (ASTM D698) of 86.0pcf at 30.0% optimum moisture content. Per our Geotechnical Report, we require fill to be compacted to a minimum of 92% of the maximum dry density value and at a moisture content that is between -1% and +3% from optimum. Areas tested met or exceed our recommendation today.

Based on our observation and testing, it is our opinion that dike fill observed today, in areas observed today and noted on attached site plan, has been prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1); Picture (3)

Reviewed by:

Signature: Bret Moskal

GEODESIGN INC

NUCLEAR DENSITY GAUGE DATA

GDI Project: MFAinc-25-02 Project Name: AMCCO Remediation Project Date: 9/9/2020

Sampled By: BTM Project Location: 92134 Front Rd, Astoira OR Page: 1 of 1

	Material Source	Maximum Density:pcf (required)		Optimum Moisture
A	Brown Clay	A	86.0 pcf (D689)	A 30.0%
B		B		B
C		C		C
D		D		D
E		E		E

*approx. elevation to existing grade (feet)

Test No.	Date	Location	Elevation*	Fill Type	Compactor	Density	% Moisture	% Maximum	% Required
1	9/9	Dike Fill - See Site Plan	5'	A	Smooth Drum	85.7	30.9	100%	92%
2	9/9	Dike Fill - See Site Plan	5'	A	Smooth Drum	85.4	31.1	99%	92%
3	9/9	Dike Fill - See Site Plan	4.5'	A	Smooth Drum	84.9	31.6	99%	92%
4	9/9	Dike Fill - See Site Plan	4.5'	A	Smooth Drum	81.7	32.7	95%	92%
5	9/9	Dike Fill - See Site Plan	3.5'	A	Smooth Drum	84.0	31.6	98%	92%
6	9/9	Dike Fill - See Site Plan	3.5'	A	Smooth Drum	82.7	33.0	96%	92%

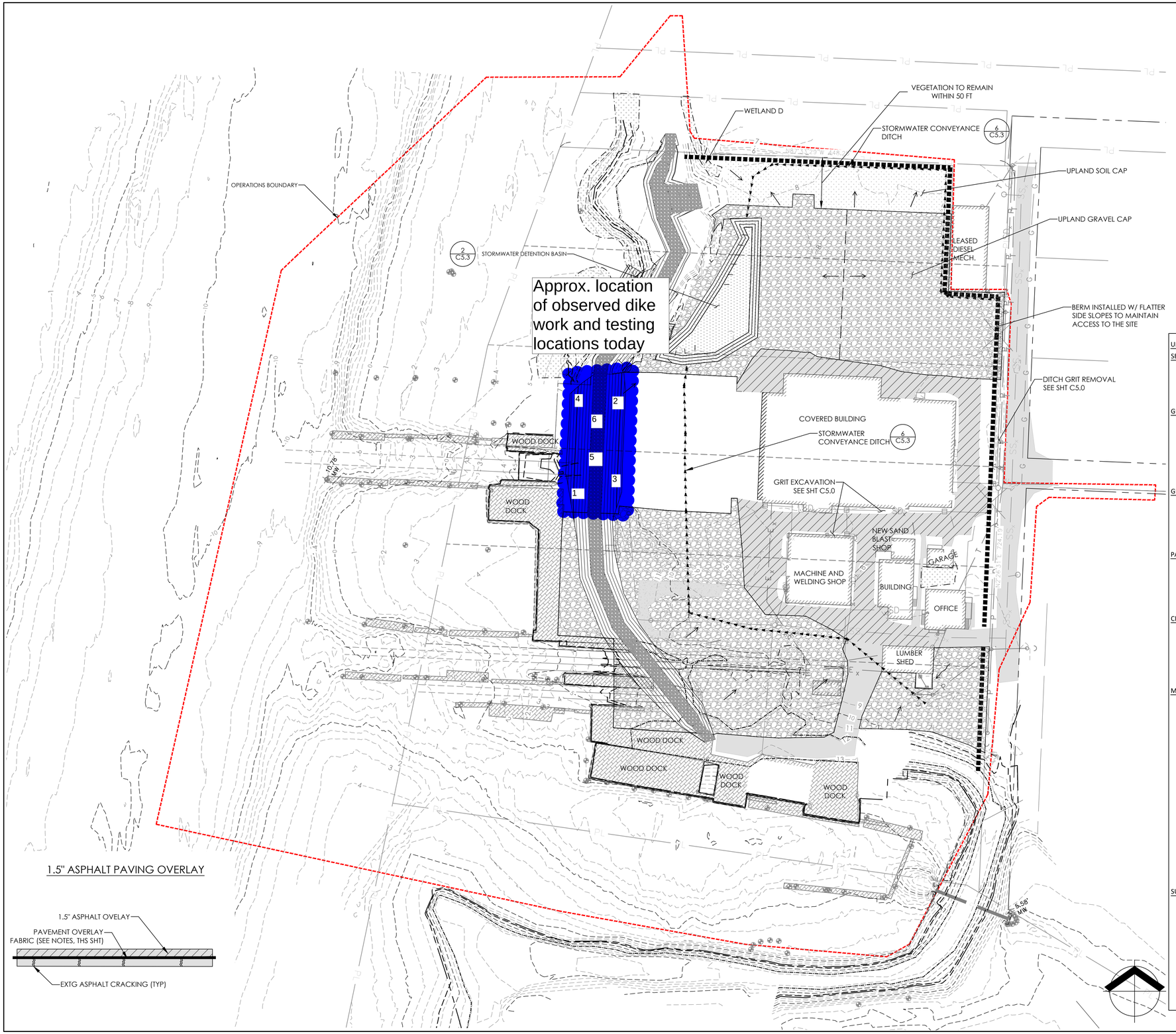
PHOTOGRAPHS

Project Name: AMCCO Remediation
Location: Astoria, Oregon

Fill Process Today (Facing North)

Fill being Keyed into Existing Dike (Facing North)

Fill Process Today (Facing North)



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- 1.5" ASPHALT OVERLAY
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

GENERAL CAPPING NOTES

1. A DEMARCATION LAYER SHALL BE INSTALLED OVER THE ENTIRE AREA OF THE SITE EAST OF THE DIKE.
2. DEMARCATION FABRIC INSTALLATION SHALL EXCLUDE HOT SPOT EXCAVATION AREAS WHERE DEMARCATION MATERIALS HAVE ALREADY BEEN INSTALLED.
3. DEMARCATION FABRIC SHALL BE PLASTIC MESH FENCE WITHIN THE LANDSCAPE BUFFER AND STORMWATER SWALE TO PROVIDE DELINEATION BETWEEN THE CLEAN MATERIAL AND POTENTIALLY CONTAMINATED MATERIALS UNDERNEATH.

GRAVEL CAP NOTES

1. CAP MATERIAL SHALL BE PLACED AND COMPACTED IN A SINGLE 12-INCH LIFT.
2. GRAVEL CAP MATERIAL SHALL BE ROLLED OR PLATE COMPACTED UNTIL A FIRM UNYIELDING SURFACE HAS BEEN ESTABLISHED.
3. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND BY TEST PITTING AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.

PAVING CAP NOTES

1. SAWCUT OR GRIND TRANSITION BETWEEN EXISTING ASPHALT AND OVERLAY
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3. PREPARE SURFACE, APPLY SEALANT, PLACE GEOTEXTILE AND PLACE OVERLAY PAVEMENT AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS SECTIONS 00350.41 (F), AND 00748.

CLEAN SOIL CAP AT LANDSCAPE BUFFER

1. SOIL CAP MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 8-INCH THICKNESS AND LOOSELY TRACKED INTO PLACE USING TRACKED EQUIPMENT. HAND PLACEMENT AROUND ESTABLISHED VEGETATION IS REQUIRED.
2. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.
3. THE CAPPED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

MATERIALS (AND EQUIPMENT)

1. GRAVEL CAP DEMARCATION FABRIC - BELTECH 1696, 3 OZ/SY WOVEN POLYPROPYLENE, ORANGE OR APPROVED EQUAL
2. VEGETATIVE BUFFER DEMARCATION FABRIC - MESH PLASTIC FENCING, ORANGE OR GREEN
3. GRAVEL CAPPING MATERIAL - 3/4" TO 1-1/2" MINUS CRUSHED ROCK (OR EQUIVALENT TO SUPPORT STORAGE AND PERIODIC TRUCK DELIVERY)
4. CLEAN SOIL CAPPING MATERIAL -
   a. IMPORTED CAP MATERIAL SHALL CONSIST OF SANDY-LOAM FROM APPROVED SOURCES, AND SHALL BE FREE OF PARTICLES GREATER THAN 1-INCH IN DIAMETER, ADMIXTURES OF SUBSOIL, CLAY, NOXIOUS WEEDS AND GRASSES (SUCH AS HORSETAIL, QUACKGRASS, JOHNSON GRASS, AND THEIR ROOTS), AND OTHER MATERIAL DELETERIOUS TO PLANT GROWTH OR THAT HINDER GRADING, PLANTING, OR MAINTENANCE OPERATIONS. IMPORTED TOPSOIL SHALL NOT BE DELIVERED IN A FROZEN OR MUDDY CONDITION. PROTECT FROM EROSION AT ALL TIMES DURING TRANSPORT, STOCKPILING, AND PLACEMENT.
   b. CONTRACTOR SHALL PROVIDE AN ANALYSIS OF ORGANIC CONTENT FROM EACH BORROW SITE. ACCEPTABLE ORGANIC CONTENT RANGE: 2 TO 10% (AS DETERMINED BY ASTM D 2974)
   c. CLEAN FILL SOILS FOR THE VEGETATED SOIL BUFFER MUST HAVE NO MORE THAN 15% CLAY AND OTHER POORLY DRAINING SOIL MATERIALS.
5. PAVEMENT OVERLAY GEOTEXTILE - GEOTEXTILE MEETING PROPERTY VALUES FOR PAVEMENT OVERLAY GEOTEXTILE AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS TABLE 02320-6.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
   a. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   b. TESTING REPORTS FOR FINAL CAP MATERIAL. REPORTS SHALL HAVE GRAIN SIZE DISTRIBUTION (SIEVE ANALYSIS) PER ASTM C 136. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS. MATERIAL TO BE USED AS TOPSOIL SHOULD ALSO INCLUDE SOIL ANALYSIS RESULTS FROM AN APPROVED SOIL TESTING LABORATORY INDICATING THAT IMPORT TOPSOIL MEETS ORGANIC CONTENT REQUIREMENTS.
   c. LIST OF PROPOSED PLACEMENT EQUIPMENT.

1.5" ASPHALT PAVING OVERLAY

PERMIT DOCUMENT

MAUL FOSTER ALONGI
2001 NW 19TH AVE, SUITE 200
PORTLAND, OR 97209
PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER
72200PE
OREGON
JAN. 14, 2005
ERIK IVER BAKKOM
EXPIRES: 12/31/2021
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM

SCALE

0 50' 100'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

UPLAND CAPPING PLAN

SHEET

C5.2

PLOTTED BY: Gzenick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\1403-AMCCO\PLANS\60% Design\C5.2 UPLAND CAPPING PLAN.dwg
PLOTTED ON: 2020-06-08 10:31 AM

GEODESIGN INC AN NV5 COMPANY

FIELD REPORT

GDI Project:	MFAinc-25-02	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	9/10/20
Location:	92134 Front Rd, Astoria, OR	Report #:	04
Arrival:	0745	Departure:	1300
Weather:	Overcast, 60's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim, Custom Excavation
Purpose:	Evaluate Fill		
Outstanding Issues:			

Upon arrival, I observed Custom Excavation crew in the process of stripping dike subgrade of vegetation and debris. During stripping efforts, Custom Excavation crew encountered asphalt with an underlying section of crushed rock. After conversations with Shawn Dimke (GeoDesign Principal Engineer) were recommend that existing asphalt section be fully removed. Crushed rock layer can be fully removed or be evenly mixed into embankment soil. I observed Custom Excavation removing asphalt section today and mixing crushed rock into embankment soil.

Based on our observation and testing, it is our opinion that dike subgrade observed today, in areas observed today and noted on attached site plan, has been prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1); Picture (1)

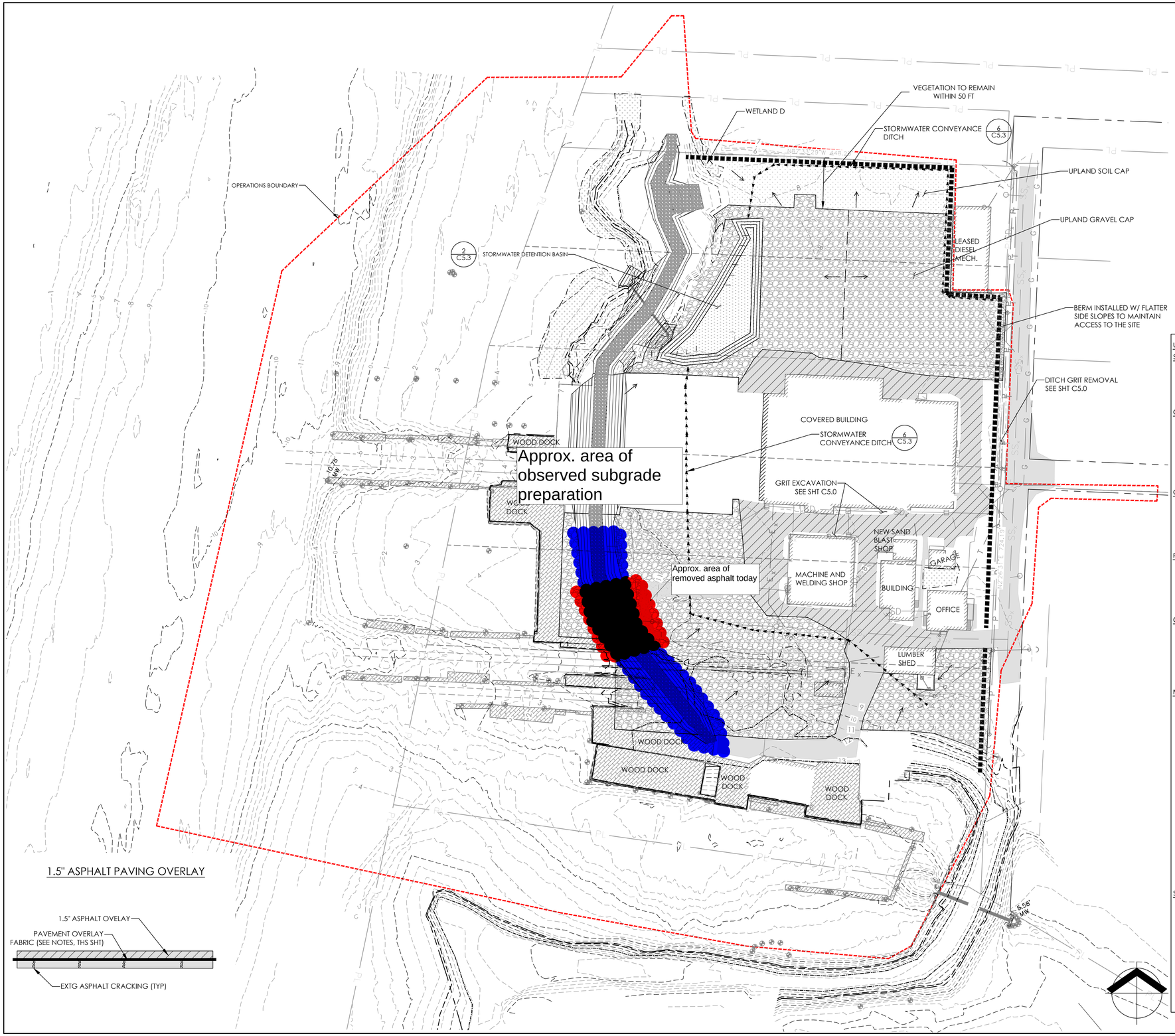
Reviewed by:

Signature: Bret Moskal

PHOTOGRAPHS

Project Name: AMCCO Remediation
Location: Astoria, Oregon

Example of Asphalt and Crushed Rock in Dike Subgrade



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- 1.5" ASPHALT OVERLAY
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

1.5" ASPHALT PAVING OVERLAY

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

GENERAL CAPPING NOTES

1. A DEMARCATION LAYER SHALL BE INSTALLED OVER THE ENTIRE AREA OF THE SITE EAST OF THE DIKE.
2. DEMARCATION FABRIC INSTALLATION SHALL EXCLUDE HOT SPOT EXCAVATION AREAS WHERE DEMARCATION MATERIALS HAVE ALREADY BEEN INSTALLED.
3. DEMARCATION FABRIC SHALL BE PLASTIC MESH FENCE WITHIN THE LANDSCAPE BUFFER AND STORMWATER SWALE TO PROVIDE DELINEATION BETWEEN THE CLEAN MATERIAL AND POTENTIALLY CONTAMINATED MATERIALS UNDERNEATH.

GRAVEL CAP NOTES

1. CAP MATERIAL SHALL BE PLACED AND COMPACTED IN A SINGLE 12-INCH LIFT.
2. GRAVEL CAP MATERIAL SHALL BE ROLLED OR PLATE COMPACTED UNTIL A FIRM UNYIELDING SURFACE HAS BEEN ESTABLISHED.
3. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND BY TEST PITTING AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.

PAVING CAP NOTES

1. SAWCUT OR GRIND TRANSITION BETWEEN EXISTING ASPHALT AND OVERLAY
2. ASPHALT, TACK COAT AND PAVEMENT OVERLAY GEOTEXTILE PER 2018 ODOT STANDARD SPECIFICATIONS.
3. PREPARE SURFACE, APPLY SEALANT, PLACE GEOTEXTILE AND PLACE OVERLAY PAVEMENT AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS SECTIONS 00350.41 (F), AND 00748.

CLEAN SOIL CAP AT LANDSCAPE BUFFER

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MATERIALS (AND EQUIPMENT)

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   b. CONTRACTOR SHALL PROVIDE AN ANALYSIS OF ORGANIC CONTENT FROM EACH BORROW SITE. ACCEPTABLE ORGANIC CONTENT RANGE: 2 TO 10% (AS DETERMINED BY ASTM D 2974)
   c. CLEAN FILL SOILS FOR THE VEGETATED SOIL BUFFER MUST HAVE NO MORE THAN 15% CLAY AND OTHER POORLY DRAINING SOIL MATERIALS.
5. PAVEMENT OVERLAY GEOTEXTILE - GEOTEXTILE MEETING PROPERTY VALUES FOR PAVEMENT OVERLAY GEOTEXTILE AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS TABLE 02320-6.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
   a. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   b. TESTING REPORTS FOR FINAL CAP MATERIAL. REPORTS SHALL HAVE GRAIN SIZE DISTRIBUTION (SIEVE ANALYSIS) PER ASTM C 136. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS. MATERIAL TO BE USED AS TOPSOIL SHOULD ALSO INCLUDE SOIL ANALYSIS RESULTS FROM AN APPROVED SOIL TESTING LABORATORY INDICATING THAT IMPORT TOPSOIL MEETS ORGANIC CONTENT REQUIREMENTS.
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PERMIT DOCUMENT

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REGISTERED PROFESSIONAL ENGINEER
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JAN. 14, 2005
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This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM
SCALE: 0 50' 100
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
UPLAND CAPPING PLAN

SHEET
C5.2

PLOTTED BY: Gorkcs Kolmeto FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\0298.04.03-AMCCO\PLANS\d05 Design\C5.2 UPLAND CAPPING PLAN.dwg
PLOTTED ON: 2020-05-08 10:31 AM

GEODESIGN INC AN NV5 COMPANY

FIELD REPORT

GDI Project:	MFAinc-25-02	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	9/11/20
Location:	92134 Front Rd, Astoria, OR	Report #:	05
Arrival:	0745	Departure:	1500
Weather:	Overcast, 60's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim, Custom Excavation
Purpose:	Evaluate Fill		
Outstanding Issues:			

Upon arrival, I observed Custom Excavation crew in the process of scarfing subgrade and placing fill for dike within location noted on attached site plan. Fill was placed in approx. 8in lifts. Compaction efforts were completed utilizing a smooth drum roller. The surface of each lift was scarified with the tracts/ bucket of an excavator during installation of the sequential lift. Using a Troxler 3430 nuclear density gauge, I evaluated the compaction of the fill and compared the results against a lab produced proctor value (ASTM D698) of 86.0pcf at 30.0% optimum moisture content. Per our Geotechnical Report, we require fill to be compacted to a minimum of 92% of the maximum dry density value and at a moisture content that is between -1% and +3% from optimum. Areas tested, except test marked in yellow on attached nuclear density gauge and red on attached site plan, met or exceed our recommendation today.

Based on our observation and testing, it is our opinion that dike fill and subgrade observed today, excluding high mos in areas observed today and noted on attached site plan, has been prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1); Picture (3)

Reviewed by:

Signature: Bret Moskal

GEODESIGN INC

NUCLEAR DENSITY GAUGE DATA

GDI Project: MFAinc-25-02 Project Name: AMCCO Remediation Project Date: 9/11/2020

Sampled By: BTM Project Location: 92134 Front Rd, Astoira OR Page: 1 of 1

	Material Source	Maximum Density:pcf (required)	Optimum Moisture
A	Brown Clay	86.0 pcf (D689)	30.0%
B			
C			
D			
E			

*approx. elevation to existing grade (feet)

Test No.	Date	Location	Elevation*	Fill Type	Compactor	Density	% Moisture	% Maximum	% Required
1	9/11	Dike Fill - See Site Plan	3'	A	Smooth Drum	87.9	32.0	100+%	92%
2	9/11	Dike Fill - See Site Plan	3'	A	Smooth Drum	82.7	32.8	96%	92%
3	9/11	Dike Fill - See Site Plan	3'	A	Smooth Drum	82.4	33.3	96%	92%
4	9/11	Dike Fill - See Site Plan	2.5'	A	Smooth Drum	82.5	32.1	96%	92%
5	9/11	Dike Fill - See Site Plan	2.5'	A	Smooth Drum	83.1	32.9	97%	92%
6	9/11	Dike Fill - See Site Plan	2'	A	Smooth Drum	84.8	33.1	99%	92%
7	9/11	Dike Fill - See Site Plan	2'	A	Smooth Drum	84.3	33.0	98%	92%
8	9/11	Dike Fill - See Site Plan	2'	A	Smooth Drum	80.2	36.5	93%	92%

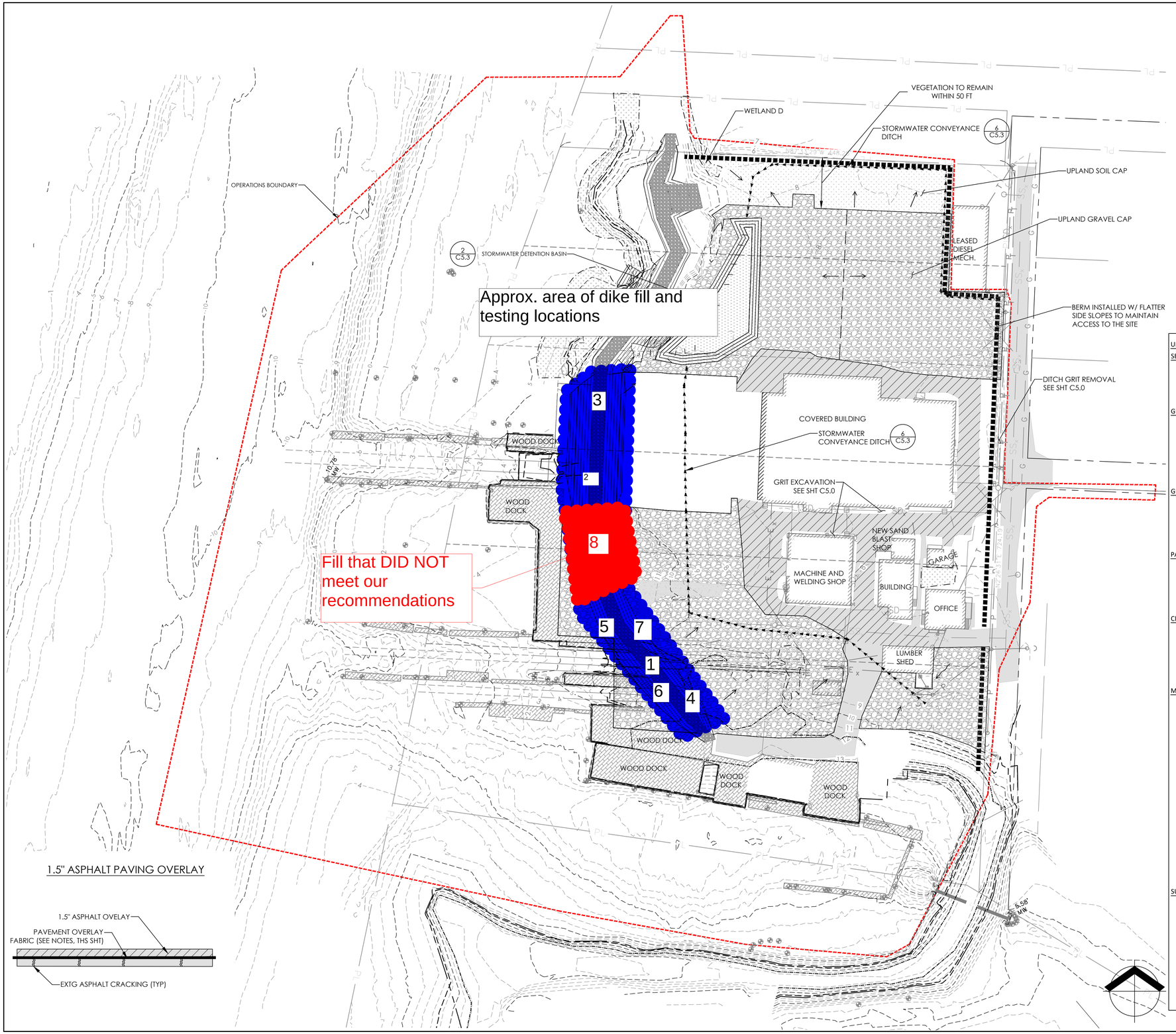
PHOTOGRAPHS

Project Name: AMCCO Remediation
Location: Astoria, Oregon

Southern Dike Fill (Facing North)

Northern Dike Fill (facing South)

Southern Dike Fill (Facing South)



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- 1.5" ASPHALT OVERLAY
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

1.5" ASPHALT PAVING OVERLAY

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

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SUBMITTALS

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PERMIT DOCUMENT

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AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A.	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM
SCALE

0 50' 100'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

UPLAND CAPPING PLAN

SHEET

C5.2

PLOTTED BY: Gorick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\1403-AMCCO\PLANS\60% Design\C5.2 UPLAND CAPPING PLAN.dwg
PLOTTED ON: 2020-06-08 10:31 AM

GEODESIGN INC AN NV5 COMPANY

FIELD REPORT

GDI Project:	MFAinc-25-02	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	9/30/20
Location:	92134 Front Rd, Astoria, OR	Report #:	06
Arrival:	0745	Departure:	1045
Weather:	Overcast, 60's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim, Custom Excavation
Purpose:	Evaluate Fill		
Outstanding Issues:	~~FR-05 (9/11) – High Moisture Fill~~ *Resolved 9/30/20* FR-06 (9/30) – Approx. 18in of unsuitable file installed to winterize the site		

Upon arrival, I observed Custom Excavation crew have moisture conditioned and recompacted high moisture location noted in field report 5 (see site plan and field report 5 for details). Compaction efforts were completed utilizing a smooth drum roller. Using a Troxler 3430 nuclear density gauge, I evaluated the compaction of the fill and compared the results against a lab produced proctor value (ASTM D698) of 89.0pcf at 29.9% optimum moisture content. Per our Geotechnical Report, we require fill to be compacted to a minimum of 92% of the maximum dry density value and at a moisture content that is between -1% and +3% from optimum. Areas tested met or exceed our recommendation today.

While onsite, I observed the stockpile of embankment soil to be visible wet. I was informed by Tim (Astoria Marine) and by the Custom Excavation crew that stockpile had been moisture conditioned. Using a Troxler 3430 nuclear density gauge, I evaluated the moisture content of the pile. I observed the moisture content to range from 40% to 45%. Conversation was had with Tim about the moisture content of the soil and our recommendation was reiterated that embankment soil must be installed at a moisture content that is between -1% and +3% from optimum. Tim elected to winterize the site. Tim informed me that, Custom crew will cover the existing dike fill with an approx. 18in layer of currently unsuitable fill. Fill will be installed in lifts via a smooth drum roller. Tim informed me, that unsuitable embankment soil will be removed when site operations begin again. Soil will be hydroseeded for erosion control measures. After conversation with Jordan Mebly (GeoDesign Project Manager), we have no objection to these means and methods. Current dike surface elevation is approx. 11ft on the northern portion and 12ft on the southern portion.

Based on our observation and testing, it is our opinion that dike observed today, areas observed today and noted on attached site plan, has been prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1); Picture (3)

Reviewed by:

Signature: Bret Moskal

GEODESIGN INC

NUCLEAR DENSITY GAUGE DATA

GDI Project: MFAinc-25-02 Project Name: AMCCO Remediation Project Date: 9/30/2020

Sampled By: BTM Project Location: 92134 Front Rd, Astoira OR Page: 1 of 1

	Material Source	Maximum Density:pcf (required)		Optimum Moisture
A	Brown Clay	A	89.0 pcf (D689)	A 29.9%
B		B		B
C		C		C
D		D		D
E		E		E

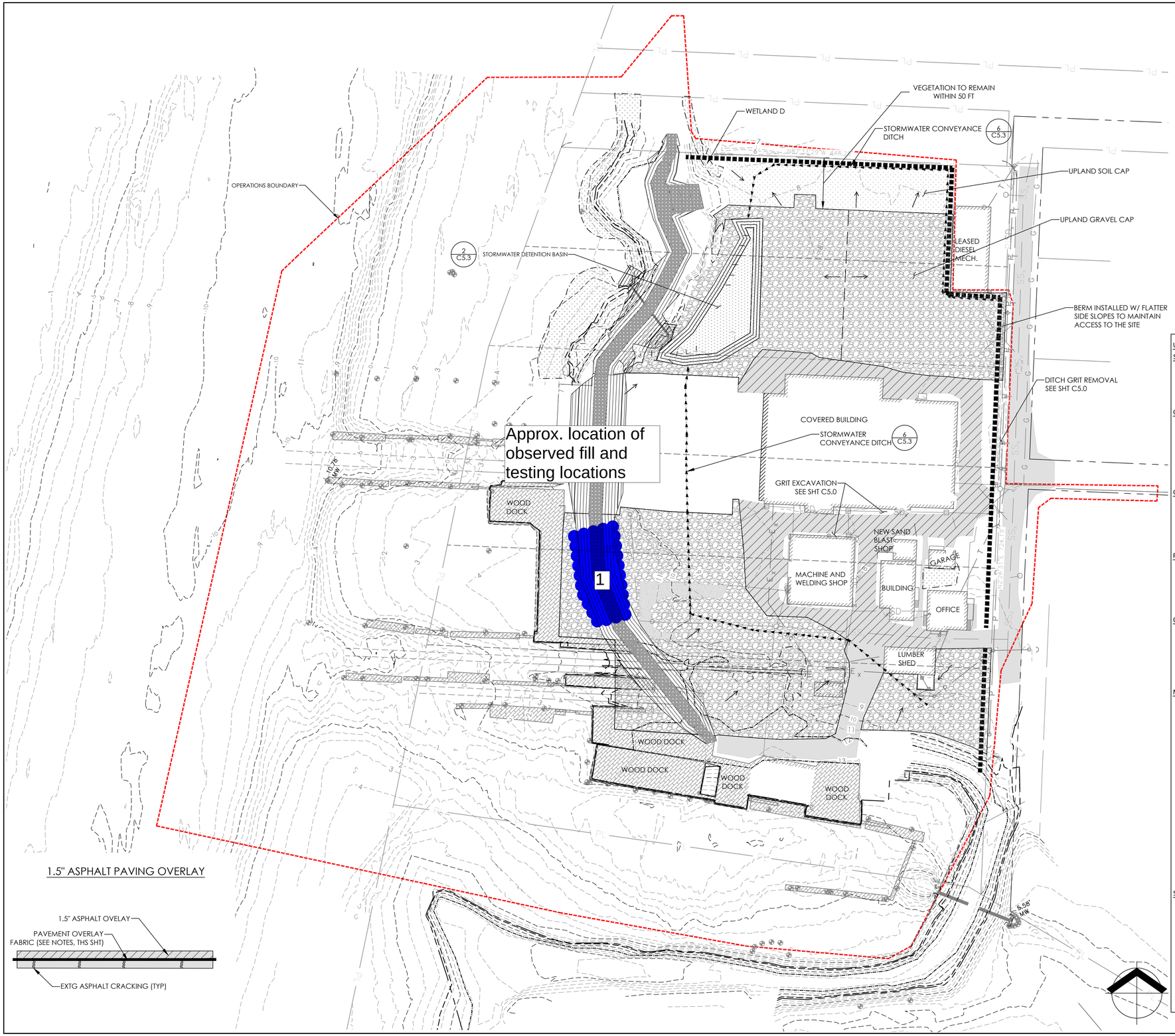
*approx. elevation to existing grade (feet)

Test No.	Date	Location	Elevation*	Fill Type	Compactor	Density	% Moisture	% Maximum	% Required
1	9/30	Dike Fill - See Site Plan	2'	A	Smooth Drum	83.6	29.8	94%	92%

PHOTOGRAPHS

Project Name: AMCCO Remediation
Location: Astoria, Oregon

Fill Observed Today (All Facing North)



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- 1.5" ASPHALT OVERLAY
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

1.5" ASPHALT PAVING OVERLAY

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

GENERAL CAPPING NOTES

1. A DEMARCATION LAYER SHALL BE INSTALLED OVER THE ENTIRE AREA OF THE SITE EAST OF THE DIKE.
2. DEMARCATION FABRIC INSTALLATION SHALL EXCLUDE HOT SPOT EXCAVATION AREAS WHERE DEMARCATION MATERIALS HAVE ALREADY BEEN INSTALLED.
3. DEMARCATION FABRIC SHALL BE PLASTIC MESH FENCE WITHIN THE LANDSCAPE BUFFER AND STORMWATER SWALE TO PROVIDE DELINEATION BETWEEN THE CLEAN MATERIAL AND POTENTIALLY CONTAMINATED MATERIALS UNDERNEATH.

GRAVEL CAP NOTES

1. CAP MATERIAL SHALL BE PLACED AND COMPACTED IN A SINGLE 12-INCH LIFT.
2. GRAVEL CAP MATERIAL SHALL BE ROLLED OR PLATE COMPACTED UNTIL A FIRM UNYIELDING SURFACE HAS BEEN ESTABLISHED.
3. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND BY TEST PITTING AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.

PAVING CAP NOTES

1. SAWCUT OR GRIND TRANSITION BETWEEN EXISTING ASPHALT AND OVERLAY
2. ASPHALT, TACK COAT AND PAVEMENT OVERLAY GEOTEXTILE PER 2018 ODOT STANDARD SPECIFICATIONS.
3. PREPARE SURFACE, APPLY SEALANT, PLACE GEOTEXTILE AND PLACE OVERLAY PAVEMENT AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS SECTIONS 00350.41 (F), AND 00748.

CLEAN SOIL CAP AT LANDSCAPE BUFFER

1. SOIL CAP MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 8-INCH THICKNESS AND LOOSELY TRACKED INTO PLACE USING TRACKED EQUIPMENT. HAND PLACEMENT AROUND ESTABLISHED VEGETATION IS REQUIRED.
2. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.
3. THE CAPPED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

MATERIALS (AND EQUIPMENT)

1. GRAVEL CAP DEMARCATION FABRIC - BELTECH 1696, 3 OZ/SY WOVEN POLYPROPYLENE, ORANGE OR APPROVED EQUAL
2. VEGETATIVE BUFFER DEMARCATION FABRIC - MESH PLASTIC FENCING, ORANGE OR GREEN
3. GRAVEL CAPPING MATERIAL - 3/4" TO 1-1/2" MINUS CRUSHED ROCK (OR EQUIVALENT TO SUPPORT STORAGE AND PERIODIC TRUCK DELIVERY)
4. CLEAN SOIL CAPPING MATERIAL -
   a. IMPORTED CAP MATERIAL SHALL CONSIST OF SANDY-LOAM FROM APPROVED SOURCES, AND SHALL BE FREE OF PARTICLES GREATER THAN 1-INCH IN DIAMETER, ADMIXTURES OF SUBSOIL, CLAY, NOXIOUS WEEDS AND GRASSES (SUCH AS HORSETAIL, QUACKGRASS, JOHNSON GRASS, AND THEIR ROOTS), AND OTHER MATERIAL DELETERIOUS TO PLANT GROWTH OR THAT HINDER GRADING, PLANTING, OR MAINTENANCE OPERATIONS. IMPORTED TOPSOIL SHALL NOT BE DELIVERED IN A FROZEN OR MUDDY CONDITION. PROTECT FROM EROSION AT ALL TIMES DURING TRANSPORT, STOCKPILING, AND PLACEMENT.
   b. CONTRACTOR SHALL PROVIDE AN ANALYSIS OF ORGANIC CONTENT FROM EACH BORROW SITE. ACCEPTABLE ORGANIC CONTENT RANGE: 2 TO 10% (AS DETERMINED BY ASTM D 2974)
   c. CLEAN FILL SOILS FOR THE VEGETATED SOIL BUFFER MUST HAVE NO MORE THAN 15% CLAY AND OTHER POORLY DRAINING SOIL MATERIALS.
5. PAVEMENT OVERLAY GEOTEXTILE - GEOTEXTILE MEETING PROPERTY VALUES FOR PAVEMENT OVERLAY GEOTEXTILE AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS TABLE 02320-6.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
   a. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   b. TESTING REPORTS FOR FINAL CAP MATERIAL. REPORTS SHALL HAVE GRAIN SIZE DISTRIBUTION (SIEVE ANALYSIS) PER ASTM C 136. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS. MATERIAL TO BE USED AS TOPSOIL SHOULD ALSO INCLUDE SOIL ANALYSIS RESULTS FROM AN APPROVED SOIL TESTING LABORATORY INDICATING THAT IMPORT TOPSOIL MEETS ORGANIC CONTENT REQUIREMENTS.
   c. LIST OF PROPOSED PLACEMENT EQUIPMENT.

PERMIT DOCUMENT

MAUL FOSTER ALONGI
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PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER
72200PE
OREGON
JAN. 14, 2005
ERIK IVER BAKKOM
EXPIRES: 12/31/2021
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM
SCALE: 0 50' 100
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
UPLAND CAPPING PLAN

SHEET
C5.2

PLOTTED BY: Gorkcs Kolmeto FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\0298.04.03-AMCCO\PLANS\d05 Design\C5.2 UPLAND CAPPING PLAN.dwg
PLOTTED ON: 2020-05-08 10:31 AM

NV5

FIELD REPORT

Project:	MFAinc-25-03	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	08/30/21
Location:	92134 Front Rd, Astoria OR	Report #:	07
Arrival:	0745	Departure:	1630
Weather:	Sunny, 70's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim, Custom Excavation crew
Purpose:	Evaluate Dike Fill		
Outstanding Issues:	~~FR-06 (9/30) - Approx. 18in of unsuitable fill installed to winterize the site~~ *Resolved 8/30/21* FR 07 (8/30/21) High moisture dike fill		

Upon arrival I was informed by Tim (Astoria Marine), that Custom Excavation crew had removed the unsuitable fill that was installed last year to winterize the site and placed an additional approx. 12in of material. Compaction efforts were completed utilizing a smooth drum roller. Using a Troxler 3430 nuclear density gauge, I evaluated the compaction of the fill and compared the results against a lab produced proctor value (ASTM D698) of 89.0pcf at 29.9% optimum moisture content. Per our Geotechnical Report, we recommend that fill to be compacted to a minimum of 92% of the maximum dry density value and installed at a moisture content that is between -1% and +3% from optimum. Initial testing results indicated a moisture content below our recommendations. We recommended scarifying the soil, adding water to the material, and evening mixing the soil. After moisture conditioning and additional compaction, areas tested met or exceed our recommendation today.

I observed Custom Excavation crew scarifying the surface of the evaluated lift prior to placement of the sequential 8in to 10in lift. I observed the material within this lift to be visually wet. I was informed that fill was at or near planned elevation. Using a nuclear density gauge, I observed the moisture content of the soil to range from 35% to 38%. We recommended moisture conditioning this material. I was informed by Tim that crew will be scarify, work, and leave the soil open for as long as possible. The smooth drum roller will be run over the fill to seal the soil from any unanticipated wet weather.

Based on our observations and density testing, it is our opinion that dike fill observed today, excluding high moisture material noted above, in areas observed today and noted on attached site plan, has been prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1), NDGD Sheet (1), Pictures (3)

Reviewed by: JLM

Signature: Bret Moskal

Soil being moisture conditioned

Example of soil being scarified prior to placement of additional lift

GEODESIGN INC

NUCLEAR DENSITY GAUGE DATA

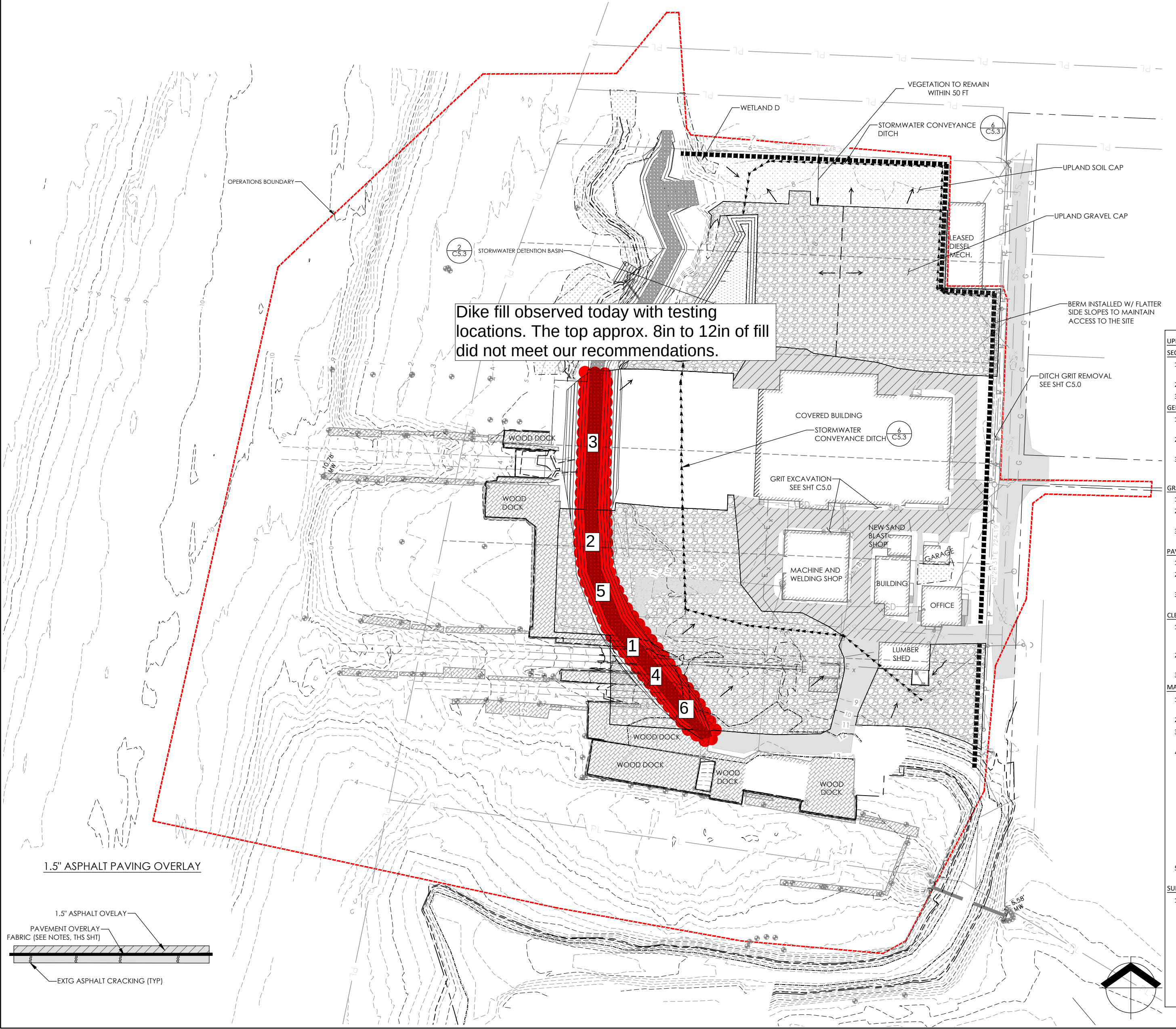
GDI Project: MFAinc-25-02 Project Name: AMCCO Remediation Project Date: 8/30/2021

Sampled By: BTM Project Location: 92134 Front Rd, Astoira OR Page: 1 of 1

	Material Source	Maximum Density:pcf (required)		Optimum Moisture
A	Brown Clay	A	89.0 pcf (D689)	A 29.9%
B		B		B
C		C		C
D		D		D
E		E		E

*approx. elevation to existing grade (feet)

Test No.	Date	Location	Elevation*	Fill Type	Compactor	Density	% Moisture	% Maximum	% Required
1	8/30	Dike Fill - See Site Plan	1'	A	Smooth Drum	83.1	24.4	93%	92%
2	8/30	Dike Fill - See Site Plan	1'	A	Smooth Drum	86.0	26.6	97%	92%
3	8/30	Dike Fill - See Site Plan	1'	A	Smooth Drum	85.3	29.6	96%	92%
4	8/30	Dike Fill (Retest #1)- See Site Plan	1'	A	Smooth Drum	85.7	31.7	96%	92%
5	8/30	Dike Fill (Retest #2) - See Site Plan	1'	A	Smooth Drum	83.5	28.9	94%	92%
6	8/30	Dike Fill - See Site Plan	1'	A	Smooth Drum	82.8	29.0	93%	92%



UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

GENERAL CAPPING NOTES

1. A DEMARCATION LAYER SHALL BE INSTALLED OVER THE ENTIRE AREA OF THE SITE EAST OF THE DIKE.
2. DEMARCATION FABRIC INSTALLATION SHALL EXCLUDE HOT SPOT EXCAVATION AREAS WHERE DEMARCATION MATERIALS HAVE ALREADY BEEN INSTALLED.
3. DEMARCATION FABRIC SHALL BE PLASTIC MESH FENCE WITHIN THE LANDSCAPE BUFFER AND STORMWATER SWALE TO PROVIDE DELINEATION BETWEEN THE CLEAN MATERIAL AND POTENTIALLY CONTAMINATED MATERIALS UNDERNEATH.

GRAVEL CAP NOTES

1. CAP MATERIAL SHALL BE PLACED AND COMPACTED IN A SINGLE 12-INCH LIFT.
2. GRAVEL CAP MATERIAL SHALL BE ROLLED OR PLATE COMPACTED UNTIL A FIRM UNYIELDING SURFACE HAS BEEN ESTABLISHED.
3. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND BY TEST PITTING AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.

PAVING CAP NOTES

1. SAWCUT OR GRIND TRANSITION BETWEEN EXISTING ASPHALT AND OVERLAY
2. ASPHALT, TACK COAT AND PAVEMENT OVERLAY GEOTEXTILE PER 2018 ODOT STANDARD SPECIFICATIONS.
3. PREPARE SURFACE, APPLY SEALANT, PLACE GEOTEXTILE AND PLACE OVERLAY PAVEMENT AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS SECTIONS 00350.41 (F), AND 00748.

CLEAN SOIL CAP AT LANDSCAPE BUFFER

1. SOIL CAP MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 8-INCH THICKNESS AND LOOSELY TRACKED INTO PLACE USING TRACKED EQUIPMENT. HAND PLACEMENT AROUND ESTABLISHED VEGETATION IS REQUIRED.
2. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.
3. THE CAPPED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

MATERIALS (AND EQUIPMENT)

1. GRAVEL CAP DEMARCATION FABRIC - BELTECH 1696, 3 OZ/SY WOVEN POLYPROPYLENE, ORANGE OR APPROVED EQUAL
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4. CLEAN SOIL CAPPING MATERIAL -
   a. IMPORTED CAP MATERIAL SHALL CONSIST OF SANDY-LOAM FROM APPROVED SOURCES, AND SHALL BE FREE OF PARTICLES GREATER THAN 1-INCH IN DIAMETER, ADMIXTURES OF SUBSOIL, CLAY, NOXIOUS WEEDS AND GRASSES (SUCH AS HORSETAIL, QUACKGRASS, JOHNSON GRASS, AND THEIR ROOTS), AND OTHER MATERIAL DELETERIOUS TO PLANT GROWTH OR THAT HINDER GRADING, PLANTING, OR MAINTENANCE OPERATIONS. IMPORTED TOPSOIL SHALL NOT BE DELIVERED IN A FROZEN OR MUDDY CONDITION. PROTECT FROM EROSION AT ALL TIMES DURING TRANSPORT, STOCKPILING, AND PLACEMENT.
   b. CONTRACTOR SHALL PROVIDE AN ANALYSIS OF ORGANIC CONTENT FROM EACH BORROW SITE. ACCEPTABLE ORGANIC CONTENT RANGE: 2 TO 10% (AS DETERMINED BY ASTM D 2974)
   c. CLEAN FILL SOILS FOR THE VEGETATED SOIL BUFFER MUST HAVE NO MORE THAN 15% CLAY AND OTHER POORLY DRAINING SOIL MATERIALS.
5. PAVEMENT OVERLAY GEOTEXTILE - GEOTEXTILE MEETING PROPERTY VALUES FOR PAVEMENT OVERLAY GEOTEXTILE AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS TABLE 02320-6.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
   a. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   b. TESTING REPORTS FOR FINAL CAP MATERIAL. REPORTS SHALL HAVE GRAIN SIZE DISTRIBUTION (SIEVE ANALYSIS) PER ASTM C 136. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS. MATERIAL TO BE USED AS TOPSOIL SHOULD ALSO INCLUDE SOIL ANALYSIS RESULTS FROM AN APPROVED SOIL TESTING LABORATORY INDICATING THAT IMPORT TOPSOIL MEETS ORGANIC CONTENT REQUIREMENTS.
   c. LIST OF PROPOSED PLACEMENT EQUIPMENT.

PERMIT DOCUMENT

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REGISTERED PROFESSIONAL ENGINEER
OREGON
ERIK IVER BAKKOM
EXPIRES: 12/31/2021

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM
SCALE
0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
UPLAND CAPPING PLAN

SHEET
C5.2

NV5

FIELD REPORT

Project:	MFAinc-25-03	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	08/31/21
Location:	92134 Front Rd, Astoria OR	Report #:	08
Arrival:	0730	Departure:	1015
Weather:	Overcast, 60's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim, Custom Excavation crew
Purpose:	Evaluate Dike Fill		
Outstanding Issues:	~~FR 07 (8/30/21) High moisture dike fill~~ FR-08 (8/31/21) Wet Dike Fill		

Upon arrival, I was informed by Tim (Astoria Marine) that Custom Excavation crew had moisture conditioned the high moisture fill noted in field report 7 (see site plan and field report 7 for details). Using a Troxler 3430 nuclear density gauge, I evaluated the moisture content of the soil to range from 29% to 36%. After conversations with Tim, it was elected to compact the material. Fill was evaluated utilizing a nuclear density gauge (see attached nuclear density gauge data sheet for details). Per our Geotechnical Report, we recommend that fill to be compacted to a minimum of 92% of the maximum dry density value and installed at a moisture content that is between -1% and +3% from optimum. Areas tested, excluding one, did not meet our recommendations. We recommend moisture conditioning this material. I was informed by Tim, that Custom Excavation crew will continue to moisture condition this layer during the day and prepare it to be evaluated tomorrow.

Based on our observations and density testing, it is our opinion that dike fill observed today, excluding area noted above, in areas observed today and noted on attached site plan, were not prepared in general accordance with our geotechnical recommendations. We recommend moisture conditioning wet dike fill material.

Distribution:

Attachments: Site Plan (1), NDGD Sheet (1)

Reviewed by: JLM

Signature: Bret Moskal

GEODESIGN INC

NUCLEAR DENSITY GAUGE DATA

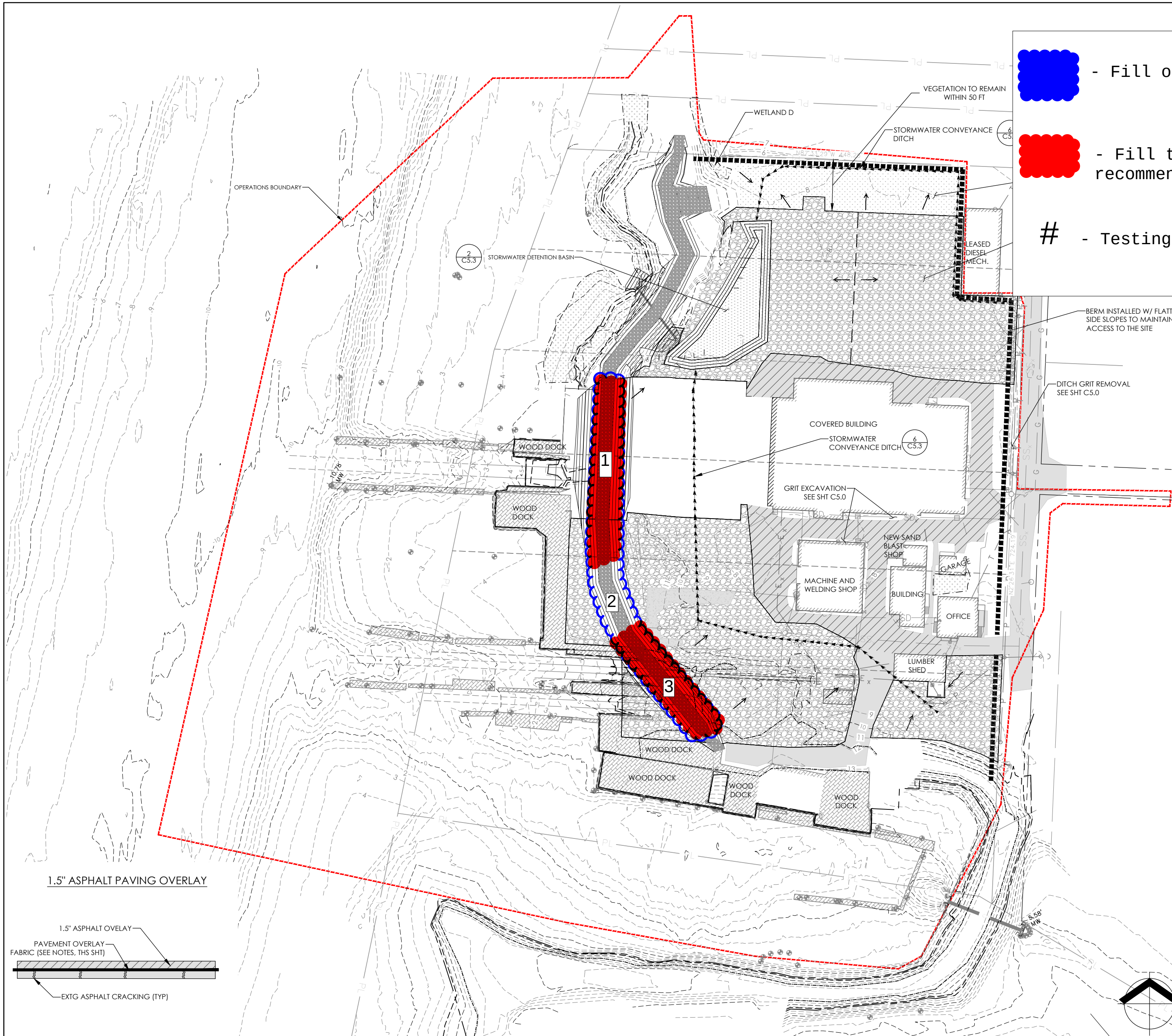
GDI Project: MFAinc-25-02 Project Name: AMCCO Remediation Project Date: 8/31/2021

Sampled By: BTM Project Location: 92134 Front Rd, Astoira OR Page: 1 of 1

	Material Source	Maximum Density:pcf (required)		Optimum Moisture
A	Brown Clay	A 89.0	pcf (D689)	A 29.9%
B		B		B
C		C		C
D		D		D
E		E		E

*approx. elevation to existing grade (feet)

Test No.	Date	Location	Elevation*	Fill Type	Compactor	Density	% Moisture	% Maximum	% Required
1	8/31	Dike Fill - See Site Plan	0'	A	Smooth Drum	80.1	34.5	90%	92%
2	8/31	Dike Fill - See Site Plan	0'	A	Smooth Drum	83.8	26.6	94%	92%
3	8/31	Dike Fill - See Site Plan	0'	A	Smooth Drum	80.3	35.9	90%	92%



UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

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PERMIT DOCUMENT

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REGISTERED PROFESSIONAL ENGINEER 72200PE OREGON JAN. 14, 2003 ERIK IVER BAKKOM
EXPIRES: 12/31/2021
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM

SCALE
0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
UPLAND CAPPING PLAN

SHEET
C5.2

NV5

FIELD REPORT

Project:	MFAinc-25-03	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	09/01/21
Location:	92134 Front Rd, Astoria OR	Report #:	09
Arrival:	0745	Departure:	1230
Weather:	Sunny, 40-70's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim, Custom Excavation crew
Purpose:	Evaluate Dike Fill		
Outstanding Issues:	FR-08 (8/31/21) Wet Dike Fill		

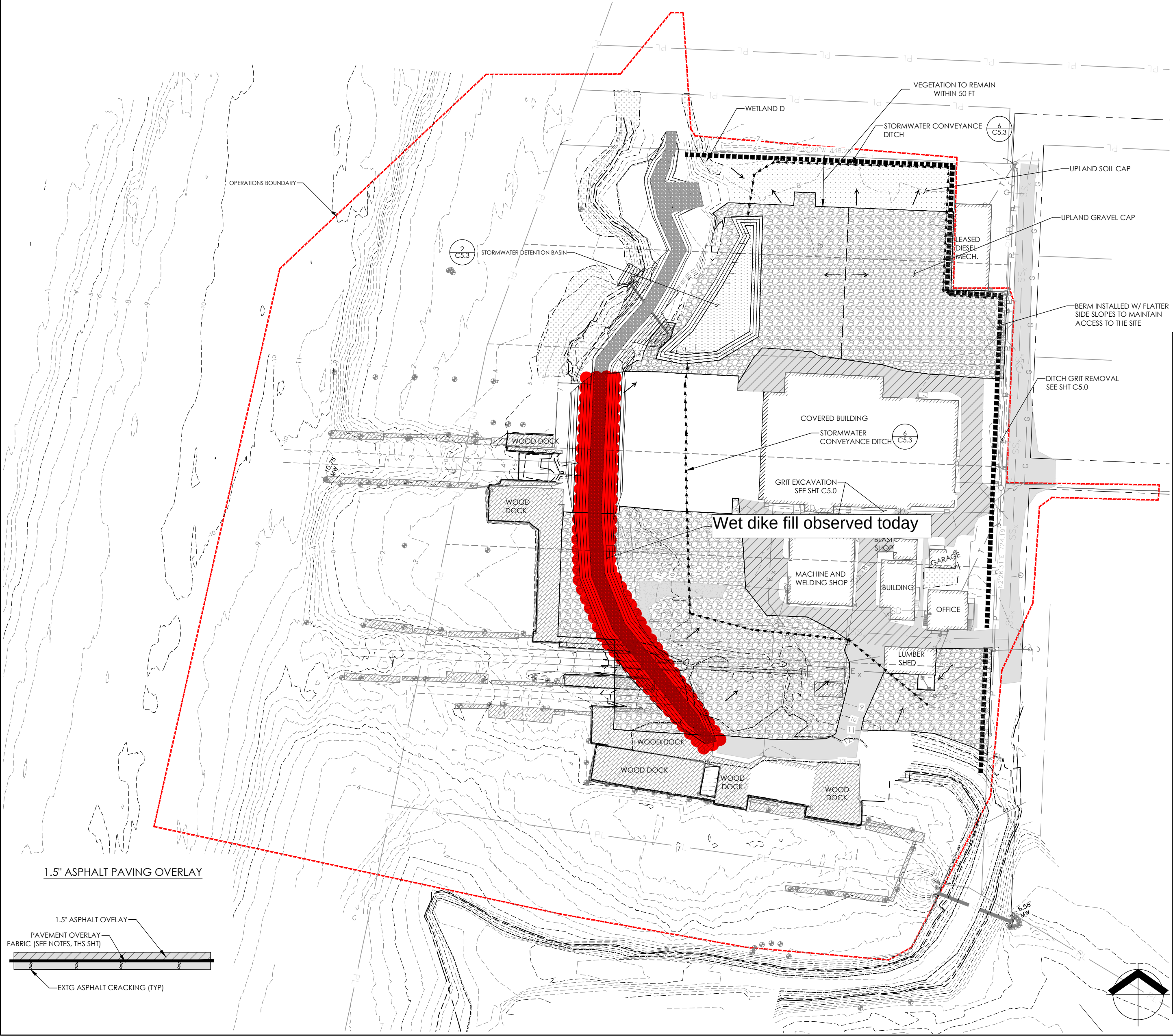
Upon arrival, I was informed by Tim (Astoria Marine) that Custom Excavation had moisture conditioned wet dike fill noted in field report 8 (see site plan and field report 8 for details). I was informed that crew had sealed the surface of fill utilizing a static smooth drum roller, to protect the fill from any unanticipated wet weather during the night. Using a Troxler 3430 nuclear density gauge, I evaluated the moisture content of the soil to range from 34% to 40%. We recommend that fill be installed at a moisture content that is between -1% and +3% from optimum. The optimum moisture for this material is 29.9%. I observed Custom Excavation continuously moisture conditioning this material during the day and negligible to no decrease in the moisture content was observed. After conversations with Tim, based on the forecasted weather, it was elected to focus on moisture conditioning efforts for the rest of the day. I left site.

Distribution:

Attachments: Site Plan (1),

Reviewed by: JLM

Signature: Bret Moskal



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- 1.5" ASPHALT OVERLAY
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

GENERAL CAPPING NOTES

1. A DEMARCATION LAYER SHALL BE INSTALLED OVER THE ENTIRE AREA OF THE SITE EAST OF THE DIKE.
2. DEMARCATION FABRIC INSTALLATION SHALL EXCLUDE HOT SPOT EXCAVATION AREAS WHERE DEMARCATION MATERIALS HAVE ALREADY BEEN INSTALLED.
3. DEMARCATION FABRIC SHALL BE PLASTIC MESH FENCE WITHIN THE LANDSCAPE BUFFER AND STORMWATER SWALE TO PROVIDE DELINEATION BETWEEN THE CLEAN MATERIAL AND POTENTIALLY CONTAMINATED MATERIALS UNDERNEATH.

GRAVEL CAP NOTES

1. CAP MATERIAL SHALL BE PLACED AND COMPACTED IN A SINGLE 12-INCH LIFT.
2. GRAVEL CAP MATERIAL SHALL BE ROLLED OR PLATE COMPACTED UNTIL A FIRM UNYIELDING SURFACE HAS BEEN ESTABLISHED.
3. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND BY TEST PITTING AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.

PAVING CAP NOTES

1. SAWCUT OR GRIND TRANSITION BETWEEN EXISTING ASPHALT AND OVERLAY
2. ASPHALT, TACK COAT AND PAVEMENT OVERLAY GEOTEXTILE PER 2018 ODOT STANDARD SPECIFICATIONS.
3. PREPARE SURFACE, APPLY SEALANT, PLACE GEOTEXTILE AND PLACE OVERLAY PAVEMENT AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS SECTIONS 00350.41 (F), AND 00748.

CLEAN SOIL CAP AT LANDSCAPE BUFFER

1. SOIL CAP MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 8-INCH THICKNESS AND LOOSELY TRACKED INTO PLACE USING TRACKED EQUIPMENT. HAND PLACEMENT AROUND ESTABLISHED VEGETATION IS REQUIRED.
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3. THE CAPPED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

MATERIALS (AND EQUIPMENT)

1. GRAVEL CAP DEMARCATION FABRIC - BELTECH 1696, 3 OZ/SY WOVEN POLYPROPYLENE, ORANGE OR APPROVED EQUAL
2. VEGETATIVE BUFFER DEMARCATION FABRIC - MESH PLASTIC FENCING, ORANGE OR GREEN
3. GRAVEL CAPPING MATERIAL - 3/4" TO 1-1/2" MINUS CRUSHED ROCK (OR EQUIVALENT TO SUPPORT STORAGE AND PERIODIC TRUCK DELIVERY)
4. CLEAN SOIL CAPPING MATERIAL -
   a. IMPORTED CAP MATERIAL SHALL CONSIST OF SANDY-LOAM FROM APPROVED SOURCES, AND SHALL BE FREE OF PARTICLES GREATER THAN 1-INCH IN DIAMETER, ADMIXTURES OF SUBSOIL, CLAY, NOXIOUS WEEDS AND GRASSES (SUCH AS HORSETAIL, QUACKGRASS, JOHNSON GRASS, AND THEIR ROOTS), AND OTHER MATERIAL DELETERIOUS TO PLANT GROWTH OR THAT HINDER GRADING, PLANTING, OR MAINTENANCE OPERATIONS. IMPORTED TOPSOIL SHALL NOT BE DELIVERED IN A FROZEN OR MUDDY CONDITION. PROTECT FROM EROSION AT ALL TIMES DURING TRANSPORT, STOCKPILING, AND PLACEMENT.
   b. CONTRACTOR SHALL PROVIDE AN ANALYSIS OF ORGANIC CONTENT FROM EACH BORROW SITE. ACCEPTABLE ORGANIC CONTENT RANGE: 2 TO 10% (AS DETERMINED BY ASTM D 2974)
   c. CLEAN FILL SOILS FOR THE VEGETATED SOIL BUFFER MUST HAVE NO MORE THAN 15% CLAY AND OTHER POORLY DRAINING SOIL MATERIALS.
5. PAVEMENT OVERLAY GEOTEXTILE - GEOTEXTILE MEETING PROPERTY VALUES FOR PAVEMENT OVERLAY GEOTEXTILE AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS TABLE 02320-6.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
   a. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   b. TESTING REPORTS FOR FINAL CAP MATERIAL. REPORTS SHALL HAVE GRAIN SIZE DISTRIBUTION (SIEVE ANALYSIS) PER ASTM C 136. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS. MATERIAL TO BE USED AS TOPSOIL SHOULD ALSO INCLUDE SOIL ANALYSIS RESULTS FROM AN APPROVED SOIL TESTING LABORATORY INDICATING THAT IMPORT TOPSOIL MEETS ORGANIC CONTENT REQUIREMENTS.
   c. LIST OF PROPOSED PLACEMENT EQUIPMENT.

PERMIT DOCUMENT

MAUL FOSTER ALONGI
2001 NW 19TH AVE, SUITE 200
PORTLAND, OR 97209
PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER 72200PE OREGON ERIK IVER BAKKOM
EXPIRES: 12/31/2021

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.
ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.01
DESIGNED: C. GOKCORA
DRAWN: Z. PYLE
CHECKED: E. BAKKOM
SCALE: 0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
UPLAND CAPPING PLAN

SHEET
C5.2

NV5

FIELD REPORT

Project:	MFAinc-25-03	Prepared By:	Bret Moskal
Project Name:	AMCCO Remediation Project	Date:	09/02/21
Location:	92134 Front Rd, Astoria OR	Report #:	10
Arrival:	1030	Departure:	1200
Weather:	Sunny, 70's	Permit #:	-
Site Visit Requested By:	Tim (Astoria Marine)	Met With (on site):	Tim, Custom Excavation crew
Purpose:	Evaluate Dike Fill		
Outstanding Issues:	~~FR-08 (8/31/21) Wet Dike Fill~~ *Resolved 9/2/21*		

Upon arrival, I was informed that Custom Excavation had moisture conditioned the wet dike fill, noted in field report 8 (see site plan and field report 8 for details). I was informed that this lift is approx. 8in to 10in and is currently at or near planned elevation. I observed Custom Excavation crew compacting the soil utilizing a smooth drum roller. No to negligible deflection was observed during compaction efforts. Using a Troxler 3430 nuclear density gauge, I evaluated the compaction of the fill and compared the results against a lab produced proctor value (ASTM D698) of 89.0pcf at 29.9% optimum moisture content. Per our Geotechnical Report, we recommend that fill to be compacted to a minimum of 92% of the maximum dry density value and installed at a moisture content that is between -1% and +3% from optimum. Areas tested met or exceed our recommendations.

I was informed that crew will place the required gravel cap demarcation fabric over the fill, with a 12in cap of crushed rock.

Based on our observations and density testing, it is our opinion that dike fill observed today, in areas observed today and noted attached site plan, have been prepared in general accordance with our geotechnical recommendations.

Distribution:

Attachments: Site Plan (1), NDGD Sheet (1)

Reviewed by: JLM

Signature: Bret Moskal

GEODESIGN INC

NUCLEAR DENSITY GAUGE DATA

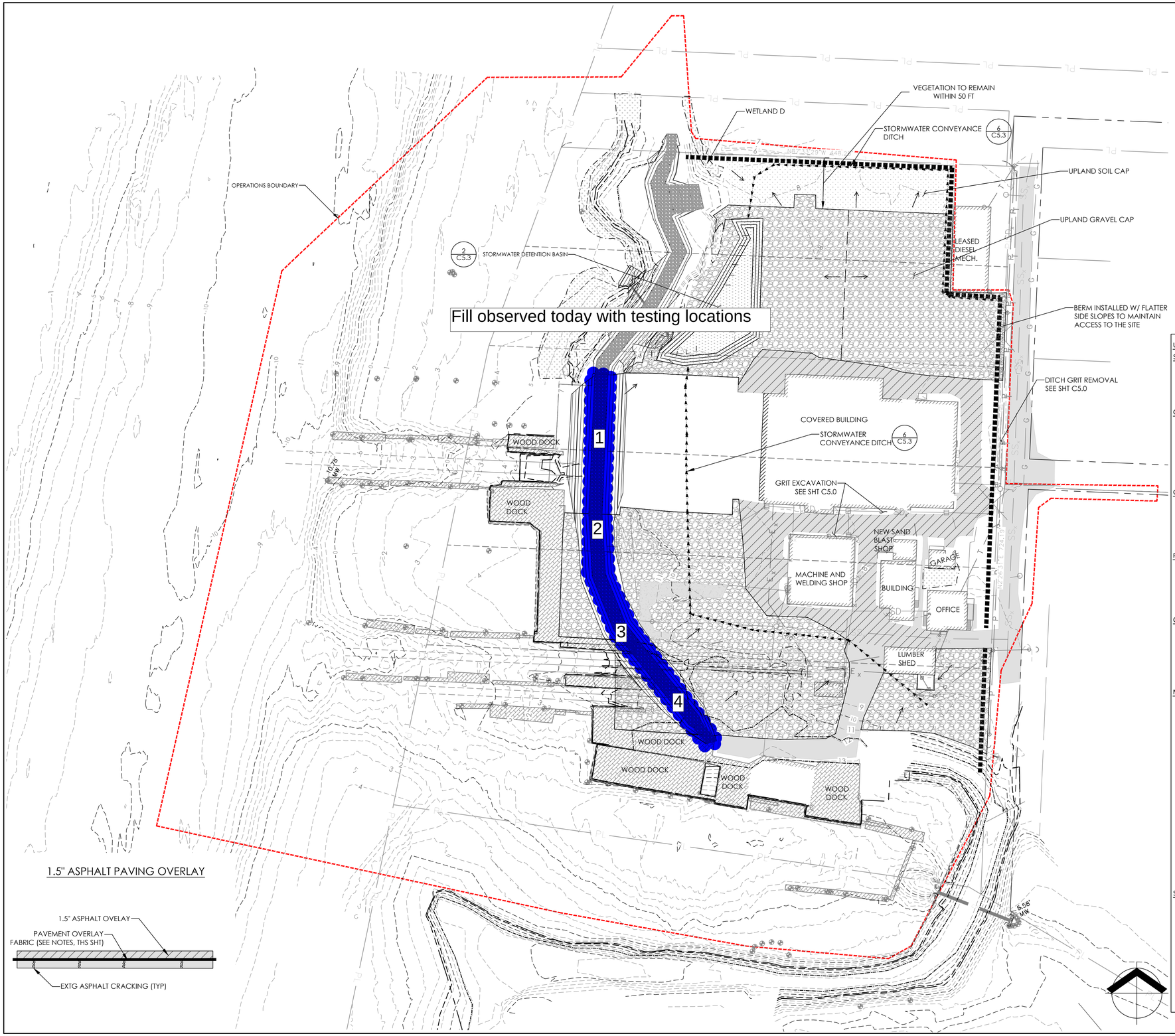
GDI Project: MFAinc-25-02 Project Name: AMCCO Remediation Project Date: 9/2/2021

Sampled By: BTM Project Location: 92134 Front Rd, Astoira OR Page: 1 of 1

	Material Source	Maximum Density:pcf (required)		Optimum Moisture
A	Brown Clay	A	89.0 pcf (D689)	A 29.9%
B		B		B
C		C		C
D		D		D
E		E		E

*approx. elevation to existing grade (feet)

Test No.	Date	Location	Elevation*	Fill Type	Compactor	Density	% Moisture	% Maximum	% Required
1	9/2	Dike Fill - See Site Plan	0'	A	Smooth Drum	84.2	32.3	95%	92%
2	9/2	Dike Fill - See Site Plan	0'	A	Smooth Drum	89.9	29.9	100+%	92%
3	9/2	Dike Fill - See Site Plan	0'	A	Smooth Drum	81.9	32.2	92%	92%
4	9/2	Dike Fill - See Site Plan	0'	A	Smooth Drum	82.1	32.8	92%	92%



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- 1.5" ASPHALT OVERLAY
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
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REGISTERED PROFESSIONAL ENGINEER
72200PE
OREGON
JAN. 14, 1983
ERIK IVER BAKKOM
EXPIRES: 12/31/2021
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

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PLOTTED BY: Gorick Kolmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\1403-AMCCO\PLANS\60% Design\C5.2 UPLAND CAPPING PLAN.dwg
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