ENVIRONMENTAL CAP INSPECTION REPORT

FORMER WASSER & WINTERS LOG SORT YARD

ATTORNEY WORK PRODUCT

Consent Decree No. 93-2-08684-4 (August 27, 1993)
Washington State Department of Ecology Facility ID # 1218
Inspection Dates: February 21 and March 1, 2017

April 14, 2017

Prepared by:

Windward environmental LLC

200 West Mercer Street, Suite 401
Seattle, Washington ♦ 98119

LANDAU ASSOCIATES

Table of Contents

Tables

Figures

Acronyms

Calbag	Calbag Metals Company
CD	Consent Decree
Ecology	Washington State Department of Ecology
FS	feasibility study
ID	identification
MOU	Memorandum of Understanding
Port	Port of Tacoma
Wasser & Winters	former Wasser & Winters log sort yard
Windward	Windward Environmental LLC

Certification

I hereby certify that I am familiar with the facilities addressed in this report and that the inspection was conducted in accordance with acceptable engineering practices.

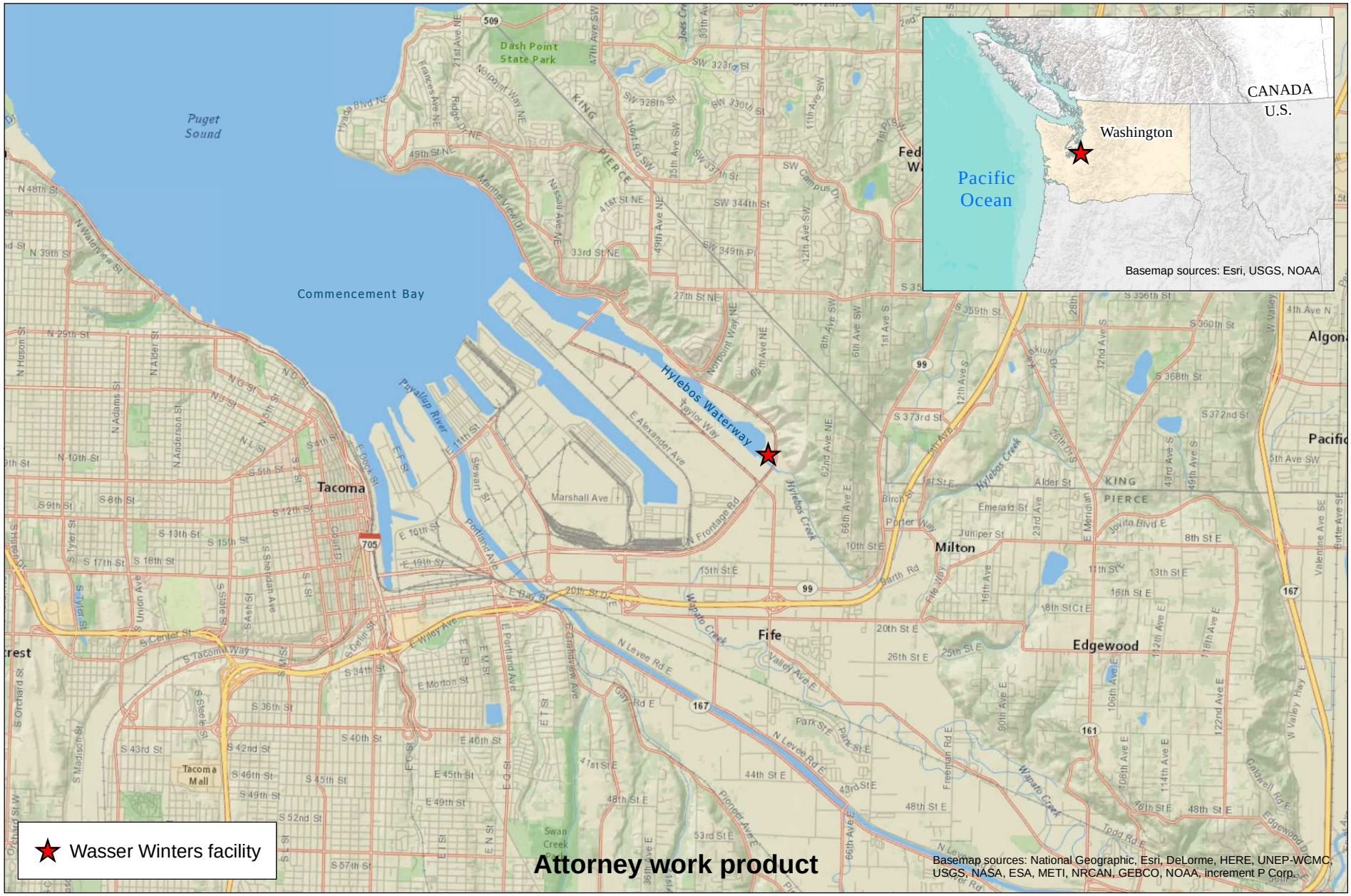
Warren G. Hansen, PE

Expires 4-22-2019

1 Introduction

This report summarizes the field activities and results for the cap inspection conducted on behalf of the Port of Tacoma (Port) for the former Wasser & Winters log sort yard (Wasser & Winters), located at 1602 Marine View Drive in Tacoma, Washington. Wasser & Winters is situated near the head of the Hylebos Waterway (Figure 1). The facility is owned by the Port of Tacoma (Port). The northeastern portion (north area, 5.1 ac.) of the facility is operated by Calbag Metals Company (Calbag) as a scrap metal recycling facility. The southwestern portion (south area, 3.7 ac.) of the facility is currently unoccupied. The ground surface at Wasser & Winters is covered by a large building surrounded by an environmental pavement cap and has several stormwater drainage features, further described herein.

Cap inspection activities were conducted in accordance with the requirements identified in the Consent Decree (CD) (No. 93-2-08684-4) issued by the Washington State Department of Ecology (Ecology) to the Port (Washington Superior Court 1993), and the Operations and Maintenance Plan contained in the final engineering and design report (Kennedy/Jenks 1993). A memorandum of understanding (MOU) between Ecology and the Port, updating the cap inspection frequency to 30 months starting with an inspection in February 2012, was issued on September 12, 2011 (Ecology and Port of Tacoma 2011).



Windward environmental LLC

N

0 1 2 Miles

0 1 2 Kilometers

Figure 1. Wasser Winters vicinity map

Prepared by mikey, 4/14/2017, W:\Projects\Landau-Port of Tacoma on-call\Data\GIS\Maps and Analyses\Cap. Inspections_2017\Wasser Winters\6594_Vicinity map.mxd

1.1 PURPOSE AND SCOPE

The purpose of this report is to present the findings of the 2017 environmental cap and stormwater drainage system inspection at Wasser & Winters. The inspection was performed by Windward Environmental LLC (Windward) on February 21 and March 1, 2017, in accordance with the scope of work provided by the Port (Port of Tacoma 2016); which included the following tasks.

- Inspection of the asphalt/concrete pavement for presence of cracks or other failures in the pavement that allow surface water runoff to infiltrate the bark/slag surficial fill (e.g., cracks greater than 1/8 in. wide, sub-base material exposed, pavement edge deterioration, and general appearance)
- Evaluation of the structural and functional condition of the cap and drainage systems (including catch basins, manholes, and oil/water separators)
- Evaluation of debris/sediment accumulation in the stormwater structures

The purpose of the environmental cap is to prevent water infiltration, exposure of humans to underlying materials, and erosion. The stormwater drainage system is used to ensure that stormwater is efficiently conveyed off the cap surfaces to prevent infiltration and erosion.

1.2 FACILITY BACKGROUND

Wasser & Winters Company operated the property as a log yard from 1972 to 1984 (Ecology 2014). In order to stabilize the facility for heavy loads associated with log yard operations, ASARCO slag was placed on the property in the 1970s and early 1980s.

In 1991, Ecology issued an Agreed Order (No. DE 91-S248) for a remedial investigation/FS that included soil, groundwater, and surface water runoff sampling.

In 1993, a cleanup action plan was completed for Wasser & Winters and included in the Consent Decree (Ecology 2014). Construction of a low-permeability asphalt cap and stormwater drainage system was completed in 1995. The northern area of the site is currently leased to WJR Tacoma, LLC and operated as Calbag metals, a metals recycling company. Previously, Calbag also operated on the south area of Wasser & Winters, from 2007 through Spring 2016. When Calbag vacated the south area, portions of the pavement previously under scrap metal piles and equipment were exposed, and portions of the pavement were observed to be in need of maintenance and repair. The Port is currently working on a plan to address necessary repairs to the cap.

The Port is required to conduct cap inspections every 30 months (Ecology and Port of Tacoma 2011). The last cap inspection was performed in August 2014 (Hart Crowser 2014).

Groundwater quality is also monitored on a 30-month schedule. The groundwater monitoring results are documented in a separate report (Anchor QEA 2017).

2 Field Observations

Windward performed the 2017 environmental cap and stormwater drainage system inspection at Wasser & Winters on February 21 and March 1, 2017.

2.1 ENVIRONMENTAL CAP

As described in Section 1, Wasser & Winters is currently divided into two areas: the north area, which is operated by Calbag as a metals recycling facility (Figure 2); and the south area, which is unoccupied (Figure 3).

Prior to inspection, Windward was provided with the cap inspection survey conducted by KPFF in 2016, after the tenant vacated the southern acreage (KPFF 2016). KPFF has been contracted by the Port to design the pavement repair. During the inspection, staff made use of the cap inspection survey and the 60% design version of the pavement repair drawings provided by the Port and included in Appendix A.

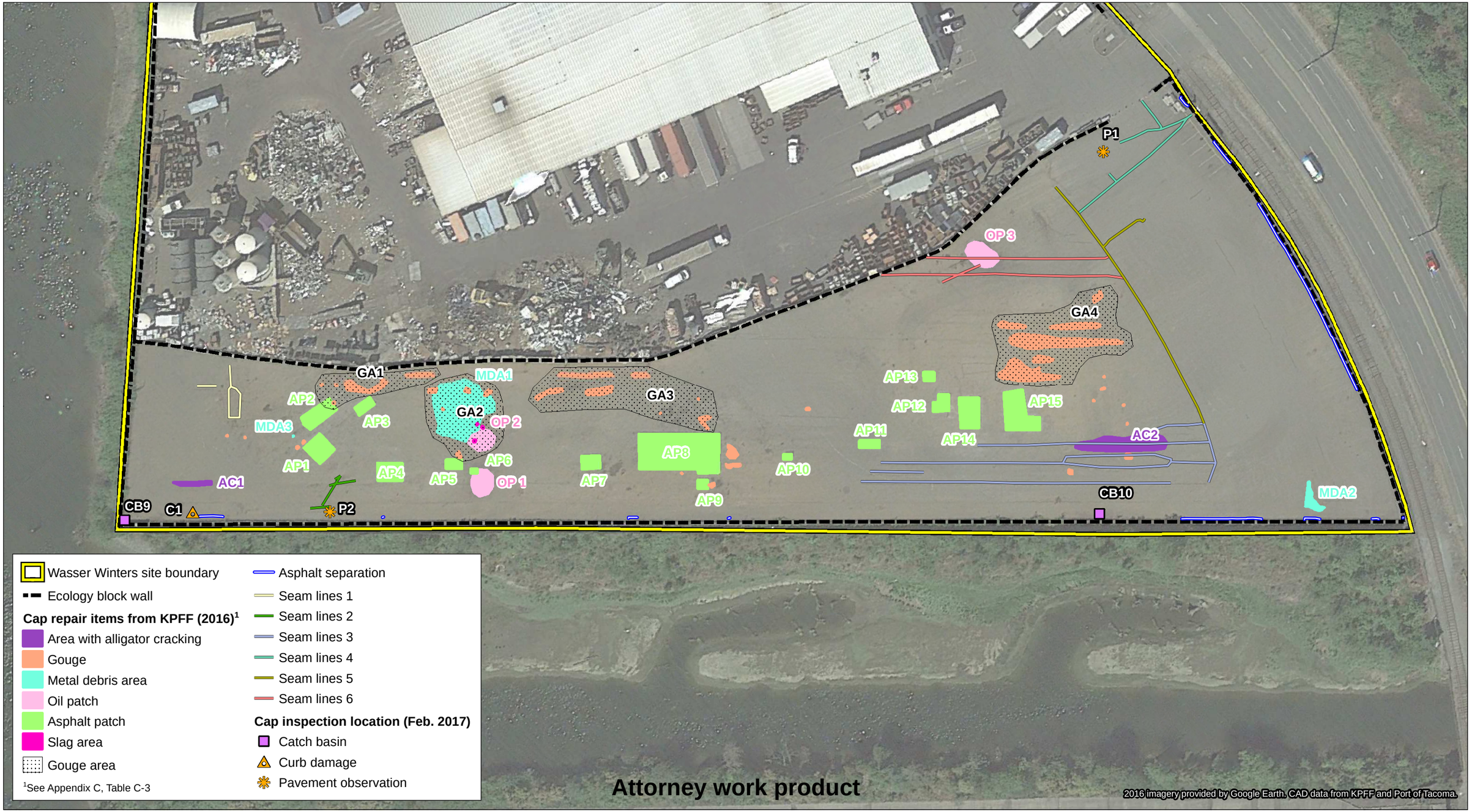
Windward environmental LLC

N

0 0.025 0.05 Miles

0 100 200 Feet

Figure 2. Wasser & Winters field observations — north area



Windward environmental LLC

0 0.025 0.05 Miles

0 100 200 Feet

Figure 3. Wasser & Winters field observations — south area

A large portion of the pavement on the north area was covered by scrap metal and equipment during Windward's inspection. The visible portions of the environmental cap showed signs of wear, likely from heavy equipment and scrap metal storage. The majority of the visible pavement surface was covered with shallow gouges; however, these were less than 1 in. deep and did not extend deeply into the cap cross section. Figures 4 through 7 show representative areas of the north area environmental cap. Figures 4 and 5 show typical gouges and debris on the cap. Figure 6 shows a divot (i.e., small depression) in the pavement surface. Figure 7 shows loose gravel and debris, which may be present as the result of raveling (i.e., dislodging aggregate from pavement) on the cap (USACE 2009). This gravel is not sub-base material; the raveling is limited to the cap surface.

Figure 4. Gouges and debris on north area cap pavement surface

Figure 5. Gouges and debris on north area cap pavement surface

Figure 6. Example of divot in north area cap pavement surface

Figure 7. Loose gravel and debris resulting from surface raveling on north area cap pavement surface

The east and southeast portions of the north area (near the employee parking and site entrance) showed signs of narrow cracks, many of which have been sealed using hot-applied surface crack sealant. The seals appeared to be in good condition.

Table 1 provides a summary of the cap condition on the north area of the site observed during the inspection.

Table 1. Environmental cap condition on north area

Required Inspection Elements	Observed Condition	Required Actions
Presence of cracks wider than 1/8 in.	cracks and pavement separation wider than 1/8 in. observed	see Figure 2 and Appendix B for the locations of cracks and recommended repairs
Sub-base material exposed	no sub-base material exposed in areas available for observation	none
Pavement edge deterioration	pavement edge in good condition	none
Degradation, subsidence, general appearance	majority of visible pavement surface covered with shallow gouges; excessive subsidence not observed	none; pavement appearance is poor

The environmental cap on the south area of the site was also observed to be showing signs of wear, likely from heavy equipment and scrap metal storage. Divots and gouges did not penetrate the pavement surface but were present throughout the area.

The pavement surface was rough, and was observed to be in worse condition than pavement in the north area. Some repairs, including asphalt patching and seam line sealing, have been performed. However, a number of the items shown in the 2016 repair design provided by the Port (KPFF 2016) (Appendix A) are still present and have not been addressed, including alligator cracking, gouges, metal debris, oil patches, and asphalt separation along the curb. Appendix B provides details on those repair items that have been addressed.

Table 2 provides a summary of the cap condition on the south area of the site observed during the inspection. All portions of the south area cap were uncovered and visible for inspection.

Table 2. Environmental cap condition on south area

Required Inspection Elements	Observed Condition	Required Actions
Presence of cracks wider than 1/8 in.	cracks wider than 1/8 in. observed at various locations; alligator cracking observed in several areas; gouges present throughout the cap	see Figure 3 and Appendix B for locations of cracks and gouges recommended for repair
Sub-base material exposed	no sub-base material exposed	none
Pavement edge deterioration	asphalt separation observed at numerous locations around the cap	none (asphalt curb performing as needed despite separation from concrete block wall)
Degradation, subsidence, general appearance	cap shows signs of wear from heavy equipment and scrap metal storage; gouges present throughout the cap; excessive subsidence not observed	repair cracking and monitor gouges (see Figure 3 and Appendix B for specific items recommended for repair)

Details regarding cracking and other issues observed on the cap are presented on Figures 2 and 3 and in Appendix B.

2.2 STORMWATER DRAINAGE SYSTEM

The stormwater drainage system at Wasser & Winters consists of ten catch basins, five manholes, one spill containment vessel, and one oil/water separator. Except for two catch basins, all these structures are located on the north area. Each drainage structure was inspected for structural and functional condition and debris and sediment accumulation.

Eight catch basins, five manholes, one spill containment vessel, and one oil/water separator are located on the north area. Table C1 in Appendix C summarizes the observations made at the north area structures. Two catch basins are located on the south area. Table C2 in Appendix C summarizes the observations made at these catch basins.

3 Status and Recommendations

3.1 Maintenance and Repair Performed Since Previous Inspection

3.1.1 Environmental cap

Several recommendations for repairs were made as a result of the previous inspection (Hart Crowser 2014). Recommendations included sealing cracks in "multiple areas of the cap." The locations recommended for repair by Hart Crowser were large, and were located around scrap metal piles on both the north and south areas of the property.

It did not appear, during the 2017 inspection, that most of the areas in the north area recommended for repair by Hart Crowser had been addressed (Hart Crowser 2014). As described above, some cracks in the southern and southeastern portions of the north area have been sealed, and the seals appeared to be in good condition during the most recent inspection. The majority of the remaining visible cap surface was covered with divots and gouges.

Some pavement patching repairs have been made on the southern area of the property (noted on KPFF drawings as "Asphalt Patch"). However, the majority of the cap on the south area remains in poor condition (e.g., numerous gouges). Areas of pavement patching, noted in Appendix B, appear to be in good condition, however our inspection did not include an assessment of the asphaltic concrete mix, sub-base, and placement methods (e.g. compaction) used to construct the patches.

3.1.2 Stormwater drainage system

Several recommendations for repairs were included in the previous inspection (Hart Crowser 2014), including resealing the joints at catch basins CB3 and CB4 and replacing the insert in catch basin CB7. The previous inspection report also recommended that the cause for the welded grate at catch basin CB2 be investigated.

As recommended, the insert at catch basin CB7 was replaced. The inserts at catch basins CB3, CB4, CB5, CB6, and CB8 were also replaced by Calbag during the 2017 inspection reported herein.

Pavement separation and cracking was observed around catch basins CB3 and CB4 during the inspection, indicating that the joints have not been resealed. The cracks and pavement separation should be repaired.

The inlet to catch basin CB2 was observed to be covered with a welded plate. Calbag mentioned that this was done because CB2 is located at a higher elevation than the surrounding pavement and therefore did not receive any drainage, and is located near scrap metal storage. The interior of CB2 was not inspected.

3.2 RECOMMENDATIONS

3.2.1 Environmental cap

It is recommended that the pavement cracking and separation around catch basins CB3 and CB4 on the north area be repaired (Figure 2; Appendix B).

The divots, gouges, and cracks on the north area should be monitored. These conditions should be repaired if they begin to impact the integrity of the environmental cap

The observed cracks and gouges on the south area should be repaired, as they are sufficiently extensive to be potentially impacting the integrity of the cap. These cracks and gouges were observed to be retaining stormwater during the inspection, and are likely interfering with stormwater drainage from the cap surface (Figure 3; Appendix B). Metal debris and oil should be removed from the pavement; any damage to the pavement resulting from removal of metal debris and oil should be repaired (Figure 3; Appendix B).

3.2.2 Stormwater drainage system

Accumulated sediment in the structures of catch basins CB3, CB4, CB5, CB6, and CB7 on the north area should be removed, because additional sediment accumulation could interfere with effective drainage. It is also recommended that the accumulated debris and sediment on the pavement surface near catch basins CB6, CB7, and CB8 on the north area be removed to prevent additional sediment accumulation in the catch basin structures (Figure 2; Appendix C, Table C1).

It is recommended that accumulated debris and sediment on and near catch basins CB9 and CB10 on the south area be removed (Figure 3; Appendix C, Table C2).

3.3 LIMITATIONS

Observations contained in this report are limited to environmental cap areas that were visible to the field team. In some instances, portions of the cap surface may have been covered and not readily available for inspection. Inspection of stormwater structures was limited to observations made from the surface and by means of direct observation, probes (extendible poles to check for sediment), and photography. No confined space entry was performed. Observation of some stormwater structures was also be limited by storm flow and/or the presence of damaged or sediment-laden catch basin inserts that could not be safely removed. No guarantee is made that all cap or stormwater deficiencies that could impact cap/drainage system performance were identified.

4 References

Anchor QEA. 2017. Groundwater monitoring report, former Wasser & Winters log sort yard. Anchor QEA, LLC, Tacoma, WA.

Ecology, Port of Tacoma. 2011. Memorandum of understanding. Former log yard groundwater monitoring and cap inspection. Washington State Department of Ecology and Port of Tacoma.

Ecology. 2014. Periodic review report final. Wasser Winters Facility Site ID#: 1218. Washington State Department of Ecology.

Hart Crowser. 2014. Cap inspection report. Former Wasser & Winters log sort yard, Port of Tacoma, Tacoma, Washington. Hart Crowser, Inc.

Kennedy/Jenks. 1993. Final engineering and design report. Wasser & Winters site log sort yard site (revised). Kennedy/Jenks Consultants, Federal Way, WA.

KPFF. 2016. Port of Tacoma Parcel 47 pavement repair. kpff Consulting Engineers, Tacoma, WA.

Port of Tacoma. 2016. Long-term monitoring events - scope of work February 2017. Port of Tacoma, Tacoma, WA.

USACE. 2009. Asphalt surfaced roads & parking lots. Paver™ distress identification manual. US Army Corps of Engineers.

Washington Superior Court. 1993. Order Entering Consent Decree. No. 93 2 08684 4. Superior Court of the State of Washington for Pierce County.

APPENDIX A. SOUTH AREA REPAIR DESIGN DRAWINGS PROVIDED BY THE PORT (KPFF 2016)

BINDING EDGE

PORT OF TACOMA

PARCEL 47 PAVEMENT REPAIR

PROJECT NO. 101072.01
CONTRACT NO. 070440

PORT COMMISSIONERS:

CONSTANCE T. BACON
DON MEYER
DONALD C. JOHNSON
RICHARD P. MARZANO
CLARE PETRICH

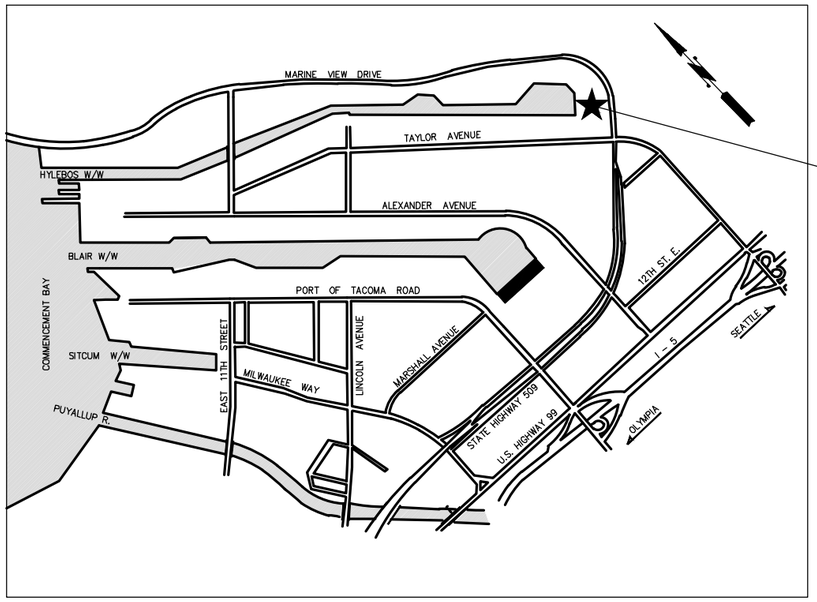
PORT STAFF:

JOHN WOLFE
Chief Executive Officer

DAKOTA CHAMBERLAIN, PE
Chief Facilities
Development Officer

THAIS HOWARD, PE
Director of Engineering

DAVID MEYERS
Project Manager



SHEET INDEX

SHEET NO.	DWG NO.	DRAWING TITLE
GENERAL		
G1.0	1	COVER SHEET
G2.0	2	GENERAL NOTES AND ABBREVIATIONS
G3.0	3	SURVEY
G3.1	4	SURVEY
CIVIL		
C1.0	5	DEMO & TESC PLAN
C1.1	6	DEMO & TESC PLAN
C1.2	7	TESC DETAILS & CONSTRUCTION SEQUENCE
C2.0	8	SITE PLAN
C2.1	9	SITE PLAN
C2.2	10	SITE DETAILS
C2.3	11	SITE DETAILS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

Port of Tacoma
P.O. BOX 1837, TACOMA, WA 98401 (253)383-5841

PRELIMINARY

SWK 12/23/16
CHECKED BY DATE
JLE 12/23/16
PROJ. ENGR DATE
rchandler Dec 21, 2016
PRINTED BY:
PORT ADDRESS: ONE SITCUM PLAZA
TACOMA, WA 98401-1837

APPROVED:
DIRECTOR, ENG. DATE

PARCEL 47 PAVEMENT REPAIR
COVER SHEET

TOWNSHIP: 21	RANGE: 03	SECTION: 36	
DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA		
PARCEL: 5000350470	DRAWING SCALE: AS SHOWN		

6562
G1.0
SHEET 1 OF 11

CONT/CONS: 070440
M. ID:
PHASE: 60% DESIGN

PORT OF TACOMA FILE: C:\Users\rchandler\appdata\local\temp\AcPublish_5956\101072 - G1.0

BINDING EDGE

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THESE PLANS AND SPECIFICATIONS. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE PROJECT PERMITS AND ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS PERTAINING TO DEMOLITION AND DISPOSAL.

2. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A DETAILED WORK PLAN, INCLUDING, DEMOLITION PRIOR TO COMMENCING WORK, SEE SPECIFICATIONS.

3. THE CONTRACT DOCUMENTS AND SPECIFICATIONS REPRESENT THE SCOPE OF WORK. UNLESS OTHERWISE SHOWN THEY DO NOT INDICATE THE METHOD OF WORK. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND HE SHALL BE SOLELY RESPONSIBLE FOR ALL MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES.

4. THE CONTRACTOR SHALL KEEP ALL STREETS, TERMINAL AREAS, AND VEHICULAR TRAFFIC AREAS CLEAN.

5. CONTRACTOR IS RESPONSIBLE FOR ANY TRAFFIC CONTROLS REQUIRED DURING THE DURATION OF THIS PROJECT, SEE SPECIFICATIONS.

6. THE CONTRACTOR SHALL INSTALL AND MAINTAIN PERIMETER FENCING AS REQUIRED TO MAINTAIN SECURITY OF SITES.

7. CONTRACTOR SHALL PROTECT-IN-PLACE ALL STRUCTURES, UTILITIES AND OBJECTS NOT CALLED OUT AS BEING DEMOLISHED ON THE PLANS. ANY DAMAGE TO ITEMS NOT BEING DEMOLISHED SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.

8. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO STRICTLY CONTAIN THE WORK WITHIN THE LIMITS SHOWN ON THE DRAWINGS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ANY DAMAGE TO UTILITIES, OTHER FACILITIES, OR EQUIPMENT DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE PROMPTLY REPAIRED AT HIS EXPENSE. THIS INCLUDES ITEMS OUTSIDE THE WORK AREA THAT ARE DAMAGED BY CONSTRUCTION ACTIVITIES DURING EXECUTION OF THIS CONTRACT.

9. ALL LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN HEREIN HAVE BEEN ESTABLISHED BY FIELD OBSERVATIONS OR OBTAINED FROM REVIEW OF AVAILABLE RECORDS AND SHOULD, THEREFORE, BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN AND TO FURTHER DISCOVER AND AVOID OTHER UTILITIES NOT SHOWN HEREIN WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN. THE CONTRACTOR SHALL BRING ANY CONFLICTS BETWEEN EXISTING UTILITIES AND NEW WORK TO THE ENGINEERS ATTENTION. UTILITY LOCATE PHONE NUMBER 1-800-424-5555.

10. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO COMMENCING WORK IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.

11. EXTENT OF DEBRIS REMOVAL IS APPROXIMATE AND IS TO BE VERIFIED BY THE ENGINEER PRIOR TO COMPLETION OF WORK. WOOD DEBRIS LARGER THAN 12"ø WITHIN WORK CLEARING LIMITS MUST REMAIN IN PLACE. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

12. PRIOR TO COMMENCING DEMOLITION ACTIVITIES CONTRACTOR SHALL IMPLEMENT TEMPORARY EROSION AND SEDIMENTATION CONTROLS. NO DEMOLITION MATERIALS OR DEBRIS SHALL BE ALLOWED TO ENTER THE WATERWAY, SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

ABBREVIATIONS

#	NUMBER
ø	DIAMETER
@	AT
AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
ACI	ASPHALT CONCRETE INSTITUTE
ADDL	ADDITIONAL
ADJ	ADJACENT
ADMIN	ADMINISTRATION
AGGR	AGGREGATE
ALT	ALTERNATE
ALUM	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APP or APPRD	APPROVED
APPROX	APPROXIMATE
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATB	ASPHALT TREATED BASE
AUTO	AUTOMATIC, AUTOMOBILE
AVE	AVENUE
AVG	AVERAGE
AWS	AMERICAN WELDING SOCIETY
AWWA	AMERICAN WATER WORKS ASSOCIATION
BFO	BURIED FIBER OPTIC
BLDG	BUILDING
BM	BENCH MARK or BEAM
BMP or BMP'S	BEST MANAGEMENT PRACTICES
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BRG	BEARING
BRZ	BRONZE
BTW or BTWN	BETWEEN
CY	CUBIC YARD
C/L	CENTERLINE
CAB	CRUSHED AGGREGATE BASE
CB	CATCH BASIN
CC	CENTER TO CENTER
CFS	CUBIC FEET PER SECOND
CIP	CAST IRON PIPE
CL, ℄	CENTER LINE or CLASS
CLF	CHAIN LINK FENCE
CLR	CLEAR or CLEARANCE
CMB	CRUSHED MISCELLANEOUS BASE
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
COMPR	COMPRESSOR
CONC	CONCRETE
CONST	CONSTRUCT
CONT	CONTINUE or CONTINUOUS
CONT'D	CONTINUED
CONTR	CONTRACTOR
COORD	COORDINATE
COUP	COUPLING
CSBC	CRUSHED SURFACING BASE COURSE
CSG	CASING
CSP	CORRUGATED STEEL PIPE
CTR	CENTER
Dc	DEGREE OF CURVATURE
DEMO	DEMOLITION
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DTL	DETAIL
DOE	DEPARTMENT OF ECOLOGY
DWG	DRAWING
DWY	DRIVEWAY
E	EAST or EASTING
EA	EACH
EG	EXISTING GRADE
EL or ELEV	ELEVATION
ELEC or ELECT	ELECTRICAL
ENGR	ENGINEER
EP	EDGE OF PAVEMENT
ETC	ET CETERA

ABBREVIATIONS

EX or EXIST	EXISTING
EXP. JT	EXPANSION JOINT
EW	EACH WAY
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FIN	FINISH
FM	FORCE MAIN
FS	FINISHED SURFACE
FSM	FIRE SERVICE METER
FT'	FOOT, FEET
FTZ	FOREIGN TRADE ZONE
G	GAS
GALV	GALVANIZED
GIS	GEOGRAPHIC INFORMATION SYSTEM
GPS	GLOBAL POSITIONING SYSTEM
GV	GATE VALVE
H or HORIZ	HORIZONTAL
HAZMAT	HAZARDOUS MATERIALS
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HORZ	HORIZONTAL
HOWL	HIGHEST OBSERVED WATER LEVEL
HP	HIGH PRESSURE or HIGH POINT
HSSD	HIGH STRENGTH STORM DRAIN
HT	HEIGHT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN, "	INCH
INFO	INFORMATION
INV	INVERT
JB	JUNCTION BOX
JS	JUNCTION STRUCTURE
JT	JOINT
KIP(S)	KILOPOUND(S)
KSI	KIPS PER SQUARE INCH
L	LENGTH
LAT	LATERAL
LB	POUND
LF	LINEAL FOOT
LH	LEFT HAND
LIN	LINEAL or LINEAR
LOL	LAYOUT LINE
LP	LOW POINT
LT	LEFT
LTP	LIGHT POLE
M&R	MAINTENANCE AND REPAIR
MAX	MAXIMUM
MH	MANHOLE
MIL	MILLIMETER
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MNSB	MINIMUM SET BACK
MWS	MODULAR WETLAND SYSTEM
N	NORTH or NORTHING
NE	NORTH-EAST
NGAS	NATURAL GAS
NIC	NOT IN CONTRACT
No., NO	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
NW	NORTH-WEST
OC	ON CENTER
OD	OUTSIDE DIAMETER
OVH	OVERHEAD
P/L or PL	PROPERTY LINE
PB	PULL BOX
PCC	PORTLAND CEMENT CONCRETE
PERF	PERFORATED
PERP	PERPENDICULAR
PG	PERFORMANCE GRADE
PL	PLATE
POT	PORT OF TACOMA
PP	POWER POLE
PR	PRESSURE RATING
PRESS	PRESSURE
PRESS RED	PRESSURE REDUCER

ABBREVIATIONS

PROP	PROPOSED
PRV	PRESSURE REDUCING VALVE
PRVS	PRESSURE RELIEF VALVE
PSF	POUNDS PER SQUARE FOOT
PS	POINT OF SWITCH
PSI	POUNDS PER SQUARE INCH
PT	POINT or POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R	RIDGE OR RADIUS
R/W OR ROW	RIGHT OF WAY
RCC	ROLLER COMPACTED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RED	REDUCER
REF	REFERENCE
REINF	REINFORCE OR REINFORCING
REQ'D	REQUIRED
RH	RIGHT HAND
RP	RADIUS POINT
RR	RAILROAD
RT	RIGHT
S	SLOPE
S	SOUTH
SCH or SCHED	SCHEDULE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SE	SOUTH-EAST
SECT	SECTION
SERV	SERVICE
SHT	SHEET
SIM	SIMILAR
SPECS	SPECIFICATIONS
SQ	SQUARE
SQFT	SQUARE FEET
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
STL	STEEL
SW	SOUTH-WEST
SYM	SYMMETRIC or SYMBOL
TB	THRUST BLOCK
TBM	TEMPORARY BENCH MARK
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
T&B	TOP AND BOTTOM
TG	TOP OF GRATE
TOB	TOP OF BANK
TOS	TOE OF SLOPE
TOP	TOP OF PIPE or TOP OF SLOPE
TPU	TACOMA PUBLIC UTILITIES
TR	TRACK
TS	TRANSITION STRUCTURE
TW	TOP OF WALL
TYP	TYPICAL
UB	UPLAND BORING
UNO	UNLESS NOTED OTHERWISE
UV	ULTRA-VIOLET
V	VERTICAL
VAR	VARIABLE or VARIES
VC	VERTICAL CURVE
VERT	VERTICAL
W	WATER, WEST, WIDTH
W/	WITH
W/O	WITHOUT
WELD	WELDING
WHS	WELDED HEADED STUD
WM	WATER METER
WP	WATER CAP/PLUG
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WT	WATER TEE
WWAY	WALKWAY

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

MARK:	REVISION:	BY:	APPR:	DATE:

SWK 12/23/16 CHECKED BY DATE

JLE 12/23/16 PROJ. ENGR DATE

DIRECTOR ENG. DATE

APPROVED:

PRINTED BY: rchandler Dec 21, 2016

PORT ADDRESS:ONE DRESSONE SITCUM PLAZA TACOMA, WA 98401-1837

PARCEL 47 PAVEMENT REPAIR

GENERAL NOTES & ABBREVIATIONS

6562

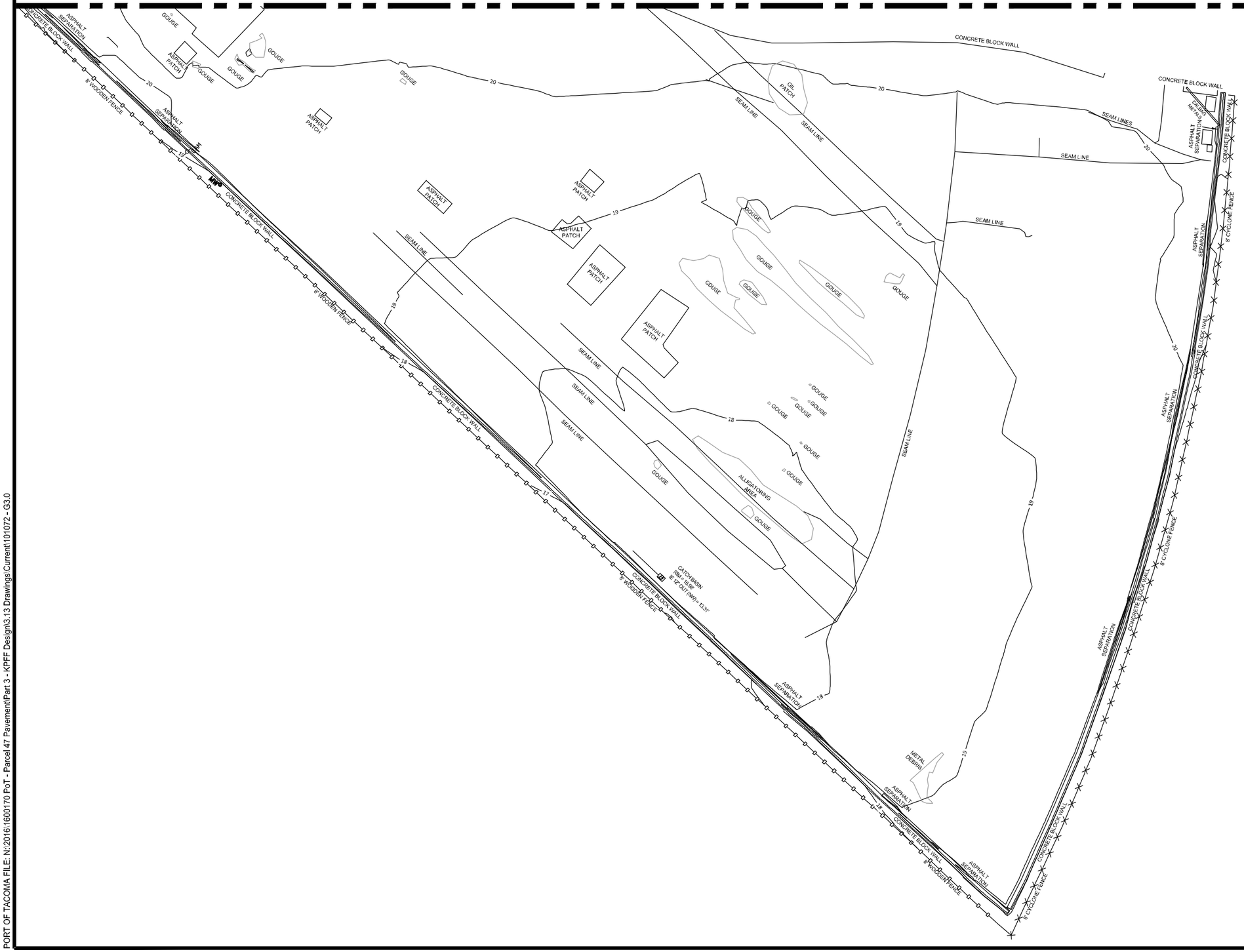
G2.0

SHEET 2 OF 11

CONT/CONS: 070440	TOWNSHIP: 21	RANGE: 03	SECTION: 36
M. ID:	DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA	
PHASE: 60% DESIGN	PARCEL: 5000350470	DRAWING SCALE: AS SHOWN	

BINDING EDGE

MATCH LINE - SEE SHEET G3.1



NOTES:

1. VERTICAL DATUM: PORT OF TACOMA BENCHMARK: 2-1/2 INCH BRASS DISK ON THE SOUTHEAST CORNER OF MILWAULKEE WAY AND N FRONTAGE RD.
   BENCHMARK NO. 848
   ELEVATION=15.28'
2. BASIS OF BEARINGS FOR THIS SURVEY IS THE PORT OF TACOMA BLAIR-HYLEBOS PENINSULA SURVEY CONTROL MAP.
3. UTILITY LOCATIONS SHOWN ARE PER FIELD LOCATED PAINT MARKS & REFERENCE MAPS MADE AVAILABLE BY THE VARIOUS UTILITY PROVIDERS. UNLESS INDICATED, DEPTHS OF UTILITY LINES ARE NOT AVAILABLE. ALL UTILITY LOCATIONS SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
4. THIS MAP DOES NOT REPRESENT A BOUNDARY SURVEY.
5. A TITLE REPORT WAS NOT PROVIDED FOR THIS SURVEY. EASEMENTS MAY EXIST AFFECTING SUBJECT PROPERTY.

LEGEND:

- WALL
- EDGE OF ASPHALT
- ASPHALT SEAM LINE
- GOUGE BORDER
- METAL DEBRIS
- ALLIGATORING AREA
- SLAG AREA
- OIL SPILL AREA
- WOODEN FENCE
- CYCLONE FENCE
- CAM — CAMERA POLE
- CATCH BASIN/AREA DRAIN
- MONITORING WELL

0 10' 20' 30' 40'

SCALE: 1"=20'

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

SWK 12/23/16 CHECKED BY DATE

JLE 12/23/16 PROJ. ENGR DATE

rchandler Dec 21, 2016 DIRECTOR ENG. DATE

APPROVED:

PRINTED BY: rchandler Dec 21, 2016

PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837

DRAWING SCALE: AS SHOWN

PARCEL 47 PAVEMENT REPAIR

SURVEY
AREA 1

6562
G3.0
SHEET 3 OF 11

CONT/CONS: 070440	TOWNSHIP: 21	RANGE: 03	SECTION: 36
M. ID:	DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA	
PHASE: 60% DESIGN	PARCEL: 5000350470		

PORT OF TACOMA FILE: N:\2016\1600170 PoT - Parcel 47 Pavement\Part 3 - KPFF Design\3.13 Drawings\Current\101072 - G3.0

MATCH LINE - SEE SHEET G3.0

NOTES:

1. VERTICAL DATUM: PORT OF TACOMA BENCHMARK: 2-1/2 INCH BRASS DISK ON THE SOUTHEAST CORNER OF MILWAUKEE WAY AND N FRONTAGE RD.
   BENCHMARK NO. 848
   ELEVATION=15.28'
2. BASIS OF BEARINGS FOR THIS SURVEY IS THE PORT OF TACOMA BLAIR-HYLEBOS PENINSULA SURVEY CONTROL MAP.
3. UTILITY LOCATIONS SHOWN ARE PER FIELD LOCATED PAINT MARKS & REFERENCE MAPS MADE AVAILABLE BY THE VARIOUS UTILITY PROVIDERS. UNLESS INDICATED, DEPTHS OF UTILITY LINES ARE NOT AVAILABLE. ALL UTILITY LOCATIONS SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
4. THIS MAP DOES NOT REPRESENT A BOUNDARY SURVEY.
5. A TITLE REPORT WAS NOT PROVIDED FOR THIS SURVEY. EASEMENTS MAY EXIST AFFECTING SUBJECT PROPERTY.

LEGEND:

- WALL
- EDGE OF ASPHALT
- ASPHALT SEAM LINE
- GOUGE BORDER
- METAL DEBRIS
- ALLIGATORING AREA
- SLAG AREA
- OIL SPILL AREA
- WOODEN FENCE
- CYCLONE FENCE
- CAM — CAMERA POLE
- CATCH BASIN/AREA DRAIN
- MONITORING WELL

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

DIRECTOR ENG.	DATE		
PRINTED BY:	rchandler Dec 21, 2016		
PORT ADDRESS:	ONE SITCUM PLAZA		
	TACOMA, WA 98401-1837		
DRAWING SCALE:	AS SHOWN		

SWK	12/23/16		
CHECKED BY	DATE		
JLE	12/23/16		
PROJ. ENGR	DATE		

PARCEL 47 PAVEMENT REPAIR

SURVEY AREA 2

TOWNSHIP: 21	RANGE: 03	SECTION: 36	
DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA		
PARCEL: 5000350470			

6562

G3.1

SHEET 4 OF 11

CONT/CONS:	070440
M. ID:	
PHASE:	60% DESIGN

BINDING EDGE

MATCH LINE - SEE SHEET C1.1

KEY NOTES:

1. INLET PROTECTION
2. PROTECT EXISTING UTILITY
3. USE SANDBAGS TO SECURE STRAW WATTLE TO EXISTING SURFACE
4. REMOVE METAL DEBRIS EMBEDDED IN ASPHALT PAVEMENT, SEE SPECIFICATIONS
5. PROTECT-IN-PLACE EXISTING MONITORING WELL

NOTES:

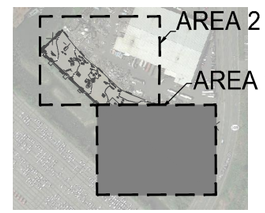
1. CONTRACTOR SHALL USE EXISTING SITE ENTRANCE AS CONSTRUCTION ENTRANCE.
2. LARGE METAL DEBRIS SHALL BE REMOVED FROM PAVEMENT SURFACE WITHIN LIMITS OF WORK.
3. CONTRACTOR SHALL USE STRAW WATTLES TO CONTAIN DISTURBED MATERIAL AROUND METAL DEBRIS REMOVAL AREAS.

LEGEND:

- 20 — EXISTING GRADE
- STRAW WATTLE
- LIMITS OF WORK
- INLET PROTECTION
- 3/4" ASPHALT PAVEMENT GRIND

20' 0 20' 40'
10' 30'

SCALE: 1"=20'



KEY PLAN
NTS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

Port of Tacoma
P.O.BOX 1837 TACOMA, WA 98401 (253)383-5841

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

DIRECTOR ENG. DATE

SWK 12/23/16
CHECKED BY DATE

JLE 12/23/16
PROJ. ENGR DATE

PRINTED BY: jenyeart Dec 22, 2016
PORT ADDRESS: ONE SITCUM PLAZA
TACOMA, WA 98401-1837

DRAWING SCALE: AS SHOWN

THIS DRAWING IS THE PROPERTY OF THE PORT OF TACOMA AND SHALL NOT BE USED ON OTHER WORK, DISCLOSED, COPIED, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION

PARCEL 47 PAVEMENT REPAIR

DEMO AND TESC PLAN
AREA 1

6562
C1.0
SHEET 5 OF 11

CONT/CONS: 070440	TOWNSHIP: 21	RANGE: 03	SECTION: 36
M. ID:	DAT-HRZ: AS SHOWN	VERT: ##	
PHASE: 60% DESIGN	PARCEL: 5000350470		

PORT OF TACOMA FILE: N:\2016\1600170 PoT - Parcel 47 Pavement\Part 3 - KPFF Design\3.13 Drawings\Current\101072 - C1.0

BINDING EDGE

KEY NOTES:

1. INLET PROTECTION
2. PROTECT EXISTING UTILITY
3. USE SANDBAGS TO SECURE STRAW WATTLE TO EXISTING SURFACE
4. REMOVE METAL DEBRIS EMBEDDED IN ASPHALT PAVEMENT, SEE SPECIFICATIONS

NOTES:

1. CONTRACTOR SHALL USE EXISTING SITE ENTRANCE CONSTRUCTION ENTRANCE.
2. LARGE METAL DEBRIS SHALL BE REMOVED FROM PAVEMENT SURFACE WITHIN LIMITS OF WORK.
3. CONTRACTOR SHALL USE STRAW WATTLES TO CONTAIN DISTURBED MATERIAL AROUND METAL DEBRIS REMOVAL AREAS.

LEGEND:

- 20 — EXISTING GRADE
- STRAW WATTLE
- LIMITS OF WORK
- INLET PROTECTION
- 3/4" ASPHALT PAVEMENT GRIND

N

20' 0 20' 40'
10' 30'

SCALE: 1"=20'

KEY PLAN
NTS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

SWK 12/23/16 CHECKED BY DATE
JLE 12/23/16 PROJ. ENGR DATE
Jenyeart Dec 22, 2016 PRINTED BY:
PORT ADDRESS: ONE SITCUM PLAZA
TACOMA, WA 98401-1837

APPROVED:
DIRECTOR, ENG. DATE

PARCEL 47 PAVEMENT REPAIR

DEMO AND TESC PLAN
AREA 2

TOWNSHIP: 21	RANGE: 03	SECTION: 36	
DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA		
PARCEL: 5000350470	DRAWING SCALE: AS SHOWN		

6562
C1.1
SHEET 6 OF 11

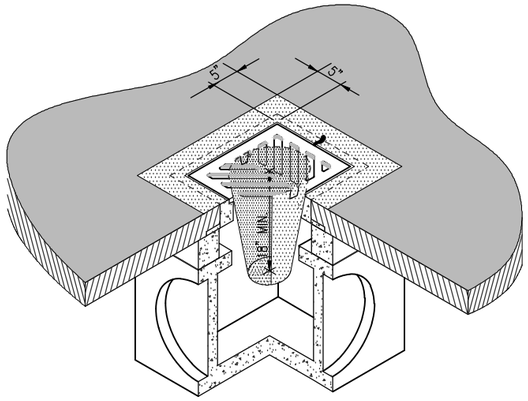
CONT/CONS: 070440
M. ID:
PHASE: 60% DESIGN

PORT OF TACOMA FILE: N:\2016\1600170 PoT - Parcel 47 Pavement\Part 3 - KPFF Design\3.13 Drawings\Current\101072 - C1.1

BINDING EDGE

NOTES:

1. INSERT SHALL BE INSTALLED IN ALL OPERATIONAL CATCH BASINS WITHIN 100 FEET OF WORK LIMITS PRIOR TO CLEARING AND GRADING ACTIVITY, OR UPON PLACEMENT OF A NEW CATCH BASIN.
2. FILTERS SHALL BE INSPECTED AFTER EACH STORM EVENT AND CLEANED OR REPLACED WHEN IT IS 1/3 FULL.
3. SEDIMENT REMOVAL SHALL BE ACCOMPLISHED BY REMOVING THE INSERT, EMPTYING INTO APPROPRIATE DISPOSAL LOCATION, AND REINSERTING IT INTO THE CATCH BASIN.



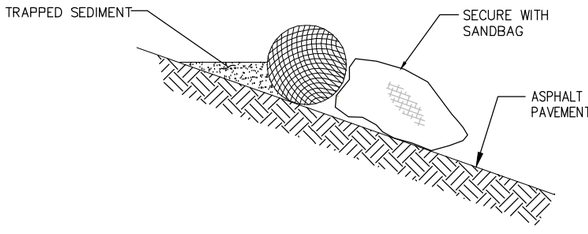
1 C1.0–C1.1 **INLET PROTECTION DETAIL**
SCALE: NTS

TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) NOTES:

1. THE IMPLEMENTATION OF THESE PLANS AND THE CONSTRUCTION, REGULAR REVIEW, MAINTENANCE, REPLACEMENT, AND CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP), AND UPGRADING THESE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND PLANS UNTIL ALL CONSTRUCTION IS APPROVED AND ACCEPTED BY THE ENGINEER.
2. THE TESC FACILITIES SHOWN ON THIS PLAN SHALL BE CONSTRUCTED PRIOR TO ALL CLEARING AND DEMOLITION SO AS TO ENSURE THAT TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED. THE TYPICAL WET SEASON RUNS FROM OCTOBER 1 THROUGH APRIL 30, AND THE DRY SEASON FROM MAY 1 THROUGH SEPTEMBER 30.
3. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE TESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING IN ACCORDANCE WITH THE SPECIFICATIONS.
4. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES AT ALL TIMES TO THE REQUIREMENTS OF THE PERMITS, SPECIFICATIONS AND MINIMUM REQUIREMENTS SHOWN IN PLANS.
5. THE TESC MEASURES SHOWN ON THESE PLANS ARE MINIMUM REQUIREMENTS. SHOULD TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, AS SHOWN ON THE PLANS BECOME INADEQUATE, THE CONTRACTOR SHALL INSTALL BMPS AND/OR FACILITIES AS NECESSARY TO PROTECT ADJACENT PROPERTIES, WATERBODIES, CITY OF TACOMA DRAINAGE SYSTEM, AND EXISTING PORT DRAINAGE SYSTEMS MEETING THE APPROVAL OF THE ENGINEER.
6. AS A GENERAL RULE, ANY AREAS OF EXPOSED SOILS, INCLUDING EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED TESC BMP METHODS.
7. INLET PROTECTION SHALL BE INSPECTED AFTER EACH STORM EVENT AND CLEANED OR REPLACED WHEN ⅓ FULL.
8. THE CONTRACTOR SHALL PROTECT STOCKPILE AND EXCAVATION AREAS FROM THE RELEASE OF SEDIMENT. STOCKPILES SHALL BE COVERED AT ALL ITEMS WHILE NOT IN USE TO KEEP THE STORED MATERIAL DRY, AS SHOWN IN DETAIL.
9. ALL NON–SALVAGED MATERIAL REMOVED FROM THE SITE SHALL BE PLACED OR DISPOSED OF AT A PERMITTED SITE. CONTRACTOR SHALL OBTAIN CHARACTERIZATION DOCUMENTATION FROM THE ENGINEER FOR ALL MATERIAL PRIOR TO HAUL AND DISPOSAL.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULL COMPLIANCE WITH THE WASHINGTON STATE DROPPING LOAD OR OTHER MATERIALS COVERING LAWS (RCW 46.51.655.3/4).
11. PAVED AREAS SHALL BE SWEPT AS NECESSARY TO PREVENT SEDIMENT AND DUST TRACKING ONTO THE PAVED AREAS.
12. PREVENTATIVE MEASURES TO MINIMIZE THE WIND TRANSPORT OF SOIL SHALL BE TAKEN WHEN SEDIMENT TRANSPORTED BY THE WIND IS LIKELY TO BE DEPOSITED IN DRAINAGE WAYS, WATER RESOURCES, OR NON–PORT PROPERTY.
13. ALL TESC MEASURES SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED SITE UPON PROJECT COMPLETION.

CONSTRUCTION SEQUENCE

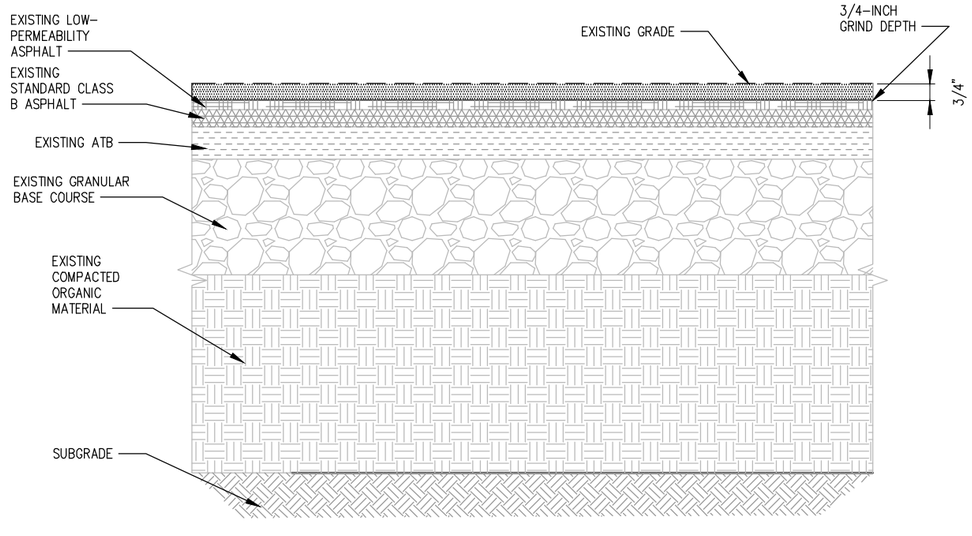
1. MARK LIMITS OF WORK.
2. MARK SUBGRADE STABILIZATION AREAS.
3. INSTALL ESC MEASURES.
4. CONTACT ENGINEER TO INSPECT LIMITS OF WORK, SUBGRADE STABILIZATION AREAS, AND ESC MEASURES.
5. BEGIN CLEARING AND GRUBBING.
6. REMOVE VISIBLE METAL DEBRIS THROUGHOUT SITE LARGER THAN A 3/4–INCH DIAMETER AND 5–INCH LENGTH.
7. GRIND PROJECT AREA 3/4–INCH. DISPOSE DEBRIS AT APPROVED FACILITY.
10. AFTER 3 DAYS, CONTACT ENGINEER TO INSPECT OIL–PATCH AREAS.
11. GRIND METAL DEBRIS AREAS UNTIL DEBRIS IS REMOVED. DISPOSE DEBRIS AT APPROVED FACILITY.
12. GRIND SUBGRADE STABILIZATION AREAS TO REMOVE 2 INCHES OF GRAVEL BASE. DISPOSE DEBRIS AT APPROVED FACILITY.
13. REPAIR SUBGRADE STABILIZATION AREAS (VIBRATE IN 2 INCHES OF GRAVEL BASE AND LAY 4 INCHES OF ATB).
14. FILL GOUGE AND METAL DEBRIS AREAS.
15. CONTINUE IMPLEMENTING AND MAINTAINING TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.
16. INSTALL PERMANENT EROSION PROTECTION (IMPERVIOUS SURFACING).
17. REPAIR PAVEMENT EDGING.
18. INSTALL EXTRUDED CURB ON BORDER ADJACENT TO CALBAG METALS PROPERTY.
19. CONTACT ENGINEER FOR APPROVAL OF PERMANENT EROSION PROTECTION AND SITE GRADES.
20. REMOVE ESC MEASURES AS PERMITTED BY ENGINEER AND REPAIR PERMANENT EROSION PROTECTION AS NECESSARY.



NOTES

1. LAY WATTLES PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE CONTOUR.
2. SANDBAGS OF EITHER BURLAP OR WOVEN GEOTEXTILE FABRIC ARE FILLED WITH GRAVEL AND SAND.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT.

2 C1.0–C1.1 **STRAW WATTLE DETAIL**
SCALE: NTS



3 C1.0–C1.1 **3/4" ASPHALT GRIND DETAIL**
SCALE: NTS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

APPROVED:

DIRECTOR ENG. DATE

PARCEL 47 PAVEMENT REPAIR

DEMO AND TESC DETAILS & NOTES

SWK	12/23/16		
CHECKED BY	DATE		
JLE	12/23/16		
PROJ. ENGR	DATE		
Dec 22, 2016			
PRINTED BY: Jenyeart			
PORT ADDRESS:ONE SITCUM PLAZA			
TACOMA, WA 98401–1837			

6562
C1.2
SHEET 7 OF 11

CONT/CONS: 070440	TOWNSHIP: 21	RANGE: 03	SECTION: 36
M. ID:	DAT–HRZ: AS SHOWN	VERT: PORT OF TACOMA	
PHASE: 60% DESIGN	PARCEL: 5000350470	DRAWING SCALE: AS SHOWN	

PORT OF TACOMA FILE: N:\2016\1600170 PoT - Parcel 47 Pavement\Part 3 - KPFF Design\3.13 Drawings\Current\101072 - C1.2

BINDING EDGE

MATCH LINE - SEE SHEET C2.1

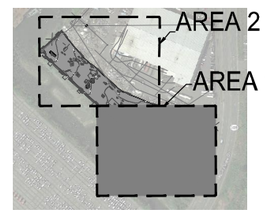
KEY NOTES:

1. GRIND OIL PATCH AREAS AS SHOWN ON C1.0. LEAVE AREAS EXPOSED FOR UP TO 5 DAYS FOR INSPECTION BY ENGINEER. (1 / C2.2)
2. AFTER INITIAL GRIND, REMOVE AND GRIND VISIBLE METAL DEBRIS AREAS (2 / C2.2)
3. PLACE LEVELING LIFT OF ACP IF PAVEMENT SURFACE WITHIN GOUGE AREA IS LOWER THAN SURROUNDING PAVEMENT SURFACE AFTER 3/4" GRIND. (3 / C2.2)
4. GRIND SUBBASE STABILIZATION AREAS TO REMOVE TOP 2-INCHES OF EXISTING BASE COURSE AND REPAIR SUBBASE PER DETAL
5. EXTRUDED CURB (4 / C2.2)
6. PAVEMENT EDGE (3 / C2.3)
7. RAISE CATCH BASIN RIM TO FINISHED GRADE
8. PROTECT-IN-PLACE EXISTING MONITORING WELL

LEGEND:

- EXISTING GRADE
- LIMITS OF WORK
- EXTRUDED CURB (4 / C2.3)
- SUBBASE REPAIR AREA
- OIL PATCH AREA
- 2" ASPHALT OVERLAY
- PAVEMENT EDGE FILL (3 / C2.3)

20' 0 20' 40'
10' 30'
SCALE: 1"=20'



KEY PLAN
NTS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841
kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

SWK	12/23/16		
CHECKED BY	DATE		
JLE	12/23/16		
DIRECTOR ENG.	DATE	PROJ. ENGR	DATE

APPROVED:

PRINTED BY: jenyeart Dec 22, 2016

PORT ADDRESS:ONE SITCUM PLAZA

TACOMA, WA 98401-1837

DRAWING SCALE: AS SHOWN

PARCEL 47 PAVEMENT REPAIR

SITE PLAN
AREA 1

TOWNSHIP: 21	RANGE: 03	SECTION: 36	
DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA		
PARCEL: 5000350470			

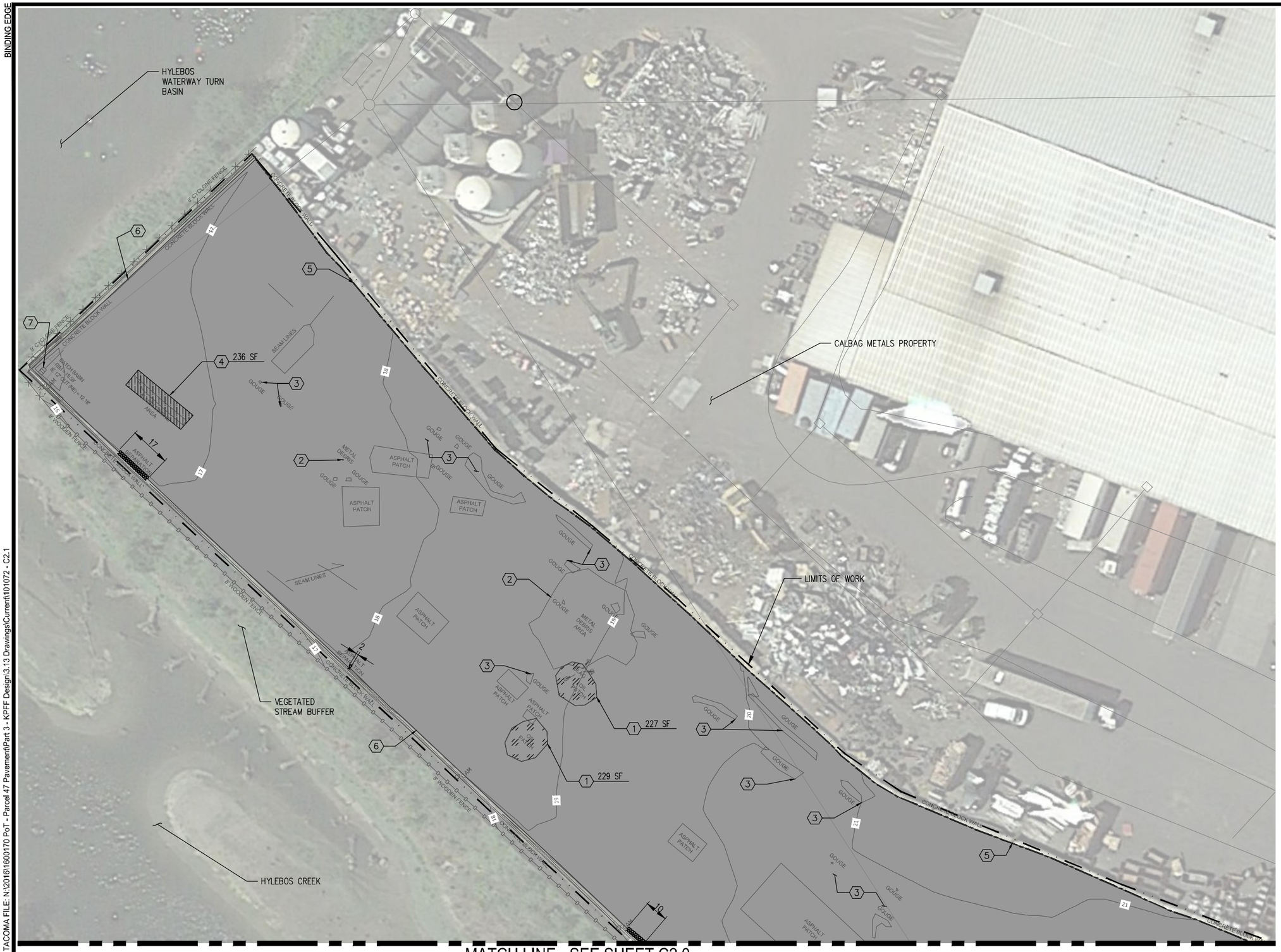
6562

C2.0

SHEET 8 OF 11

CONT/CONS:	070440
M. ID:	
PHASE:	60% DESIGN

PORT OF TACOMA FILE: N:\2016\1600170 PoT - Parcel 47 Pavement\Part 3 - KPFF Design\3.13 Drawings\Current\101072 - C2.0



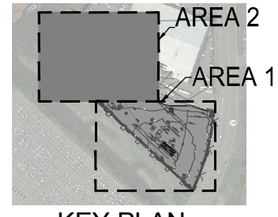
KEY NOTES:

1. GRIND OIL PATCH AREAS AS SHOWN ON C1.1. LEAVE AREAS EXPOSED FOR UP TO 5 DAYS FOR INSPECTION BY ENGINEER. (1 / C2.2)
2. AFTER INITIAL GRIND, REMOVE AND GRIND VISIBLE METAL DEBRIS AREAS (2 / C2.2)
3. PLACE LEVELING LIFT OF ACP IF PAVEMENT SURFACE WITHIN GOUGE AREA IS LOWER THAN SURROUNDING PAVEMENT SURFACE AFTER 3/4" GRIND. (3 / C2.2)
4. GRIND SUBBASE STABILIZATION AREAS TO REMOVE TOP 2-INCHES OF EXISTING BASE COURSE AND REPAIR SUBBASE PER DETAL
5. EXTRUDED CURB (4 / C2.2)
6. PAVEMENT EDGE (3 / C2.3)
7. RAISE CATCH BASIN RIM TO FINISHED GRADE
8. PROTECT-IN-PLACE EXISTING MONITORING WELL

LEGEND:

- EXISTING GRADE
- LIMITS OF WORK
- EXTRUDED CURB (4 / C2.3)
- SUBBASE REPAIR AREA
- OIL PATCH AREA
- 2" ASPHALT OVERLAY
- PAVEMENT EDGE FILL (3 / C2.3)

20' 0 20' 40'
10' 30'
SCALE: 1"=20'



KEY PLAN
NTS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

Port of Tacoma
P.O. BOX 1837, TACOMA, WA 98401 (253)383-5841

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

SWK	12/23/16	
CHECKED BY	DATE	
JLE	12/23/16	
PROJ. ENGR	DATE	
DIRECTOR ENG.	DATE	
PRINTED BY:	jenyeart Dec 22, 2016	
PORT ADDRESS:	ONE SITCUM PLAZA	
	TACOMA, WA 98401-1837	

PARCEL 47 PAVEMENT REPAIR

SITE PLAN
AREA 2

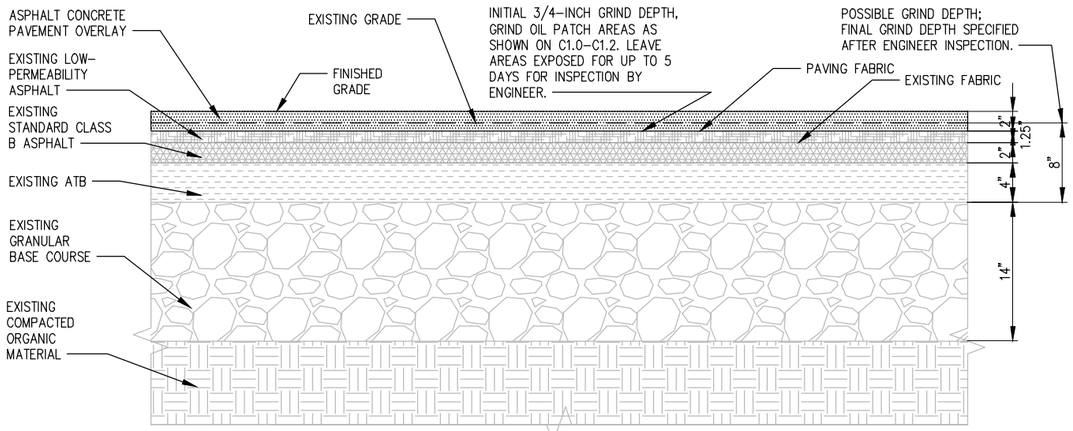
TOWNSHIP: 21	RANGE: 03	SECTION: 36	
DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA		
PARCEL: 500035047O	DRAWING SCALE: AS SHOWN		

6562
C2.1
SHEET 9 OF 11

CONT/CONS:	070440
M. ID:	
PHASE:	60% DESIGN

BINDING EDGE

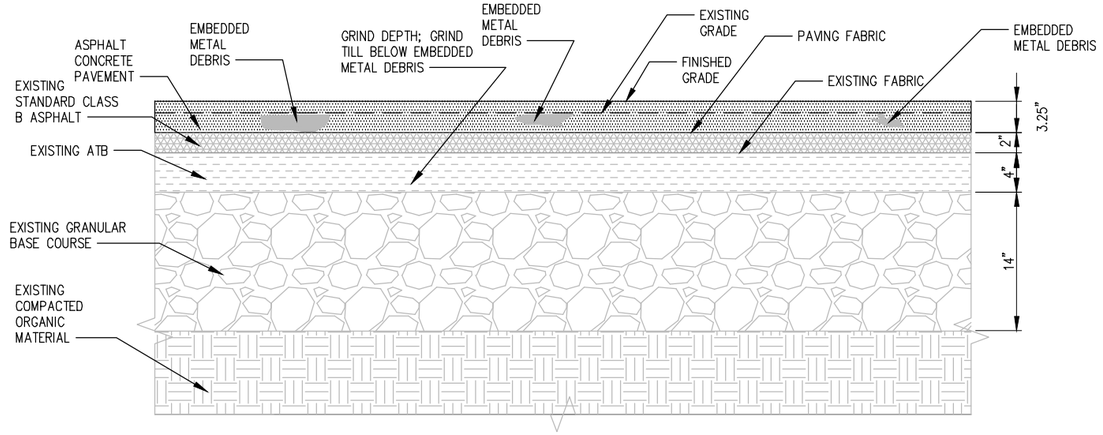
PORT OF TACOMA FILE: N:\2016\1600170 PoT - Parcel 47 Pavement\Part 3 - KPFF Design\3.13 Drawings\Current\1101072 - C2.1



1 C2.0–C2.1

TYPICAL OIL-PATCH AREA DETAIL

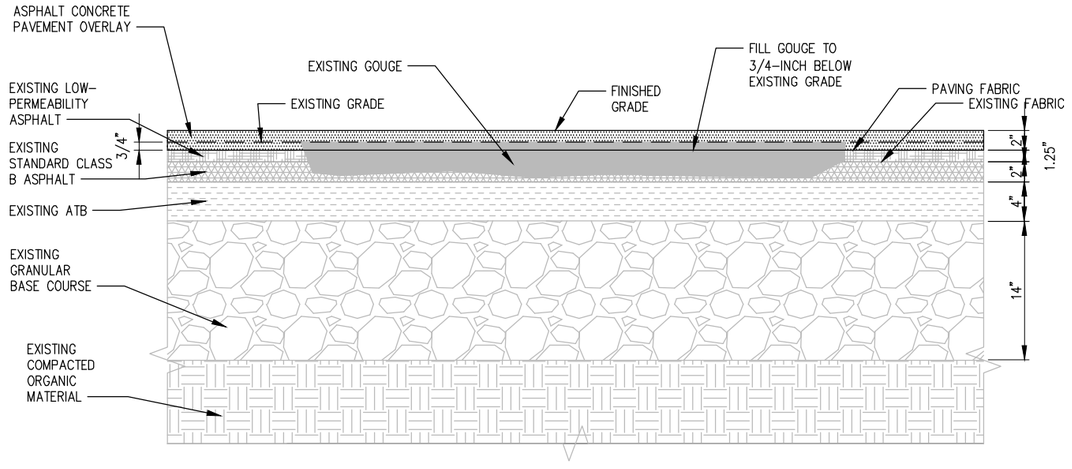
SCALE: NTS



2 C2.0–C2.1

TYPICAL METAL DEBRIS AREA DETAIL

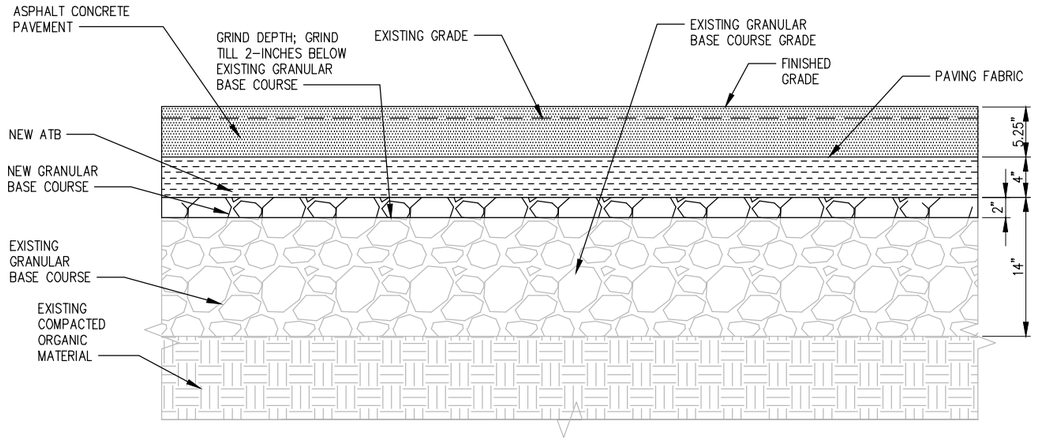
SCALE: NTS



3 C2.0–C2.1

TYPICAL GOUGE AREA DETAIL

SCALE: NTS



4 C2.0–C2.1

TYPICAL SUBGRADE STABILIZATION AREA DETAIL

SCALE: NTS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

Port of Tacoma
P.O. BOX 1837, TACOMA, WA 98401 (253)383-5841

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

DIRECTOR ENG. DATE

SWK 12/23/16
CHECKED BY DATE

JLE 12/23/16
PROJ. ENGR DATE

Dec 22, 2016
PRINTED BY: jenyeart
PORT ADDRESS: ONE SITCUM PLAZA
TACOMA, WA 98401-1837

PARCEL 47 PAVEMENT REPAIR

SITE DETAILS

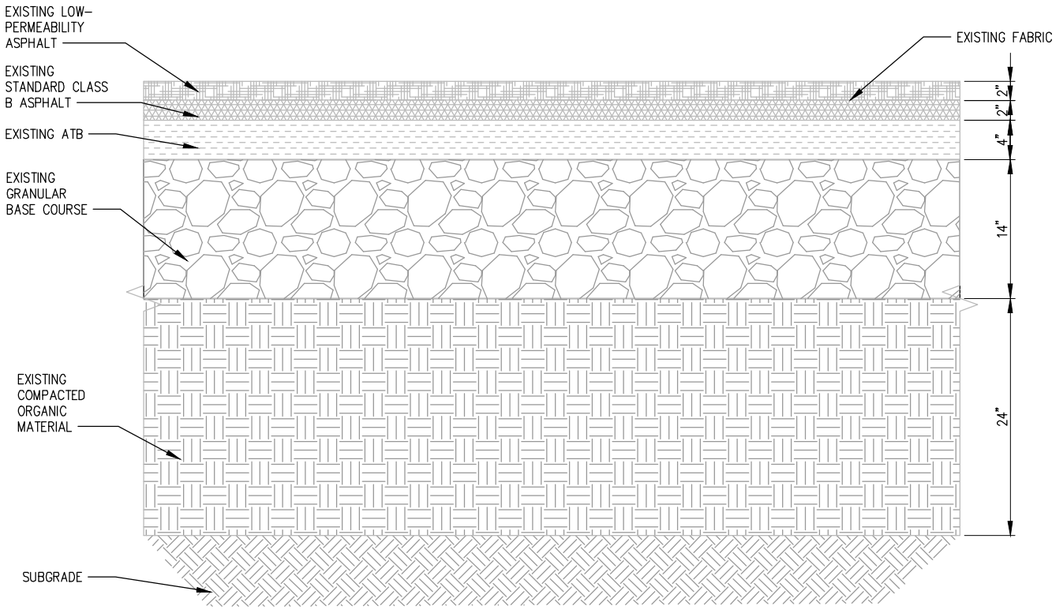
6562
C2.2
SHEET 10 OF 11

CONT/CONS: 070440	TOWNSHIP: 21	RANGE: 03	SECTION: 36
M. ID:	DAT-HRZ: AS SHOWN	VERT: PORT OF TACOMA	
PHASE: 60% DESIGN	PARCEL: 5000350470	DRAWING SCALE: AS SHOWN	

BINDING EDGE

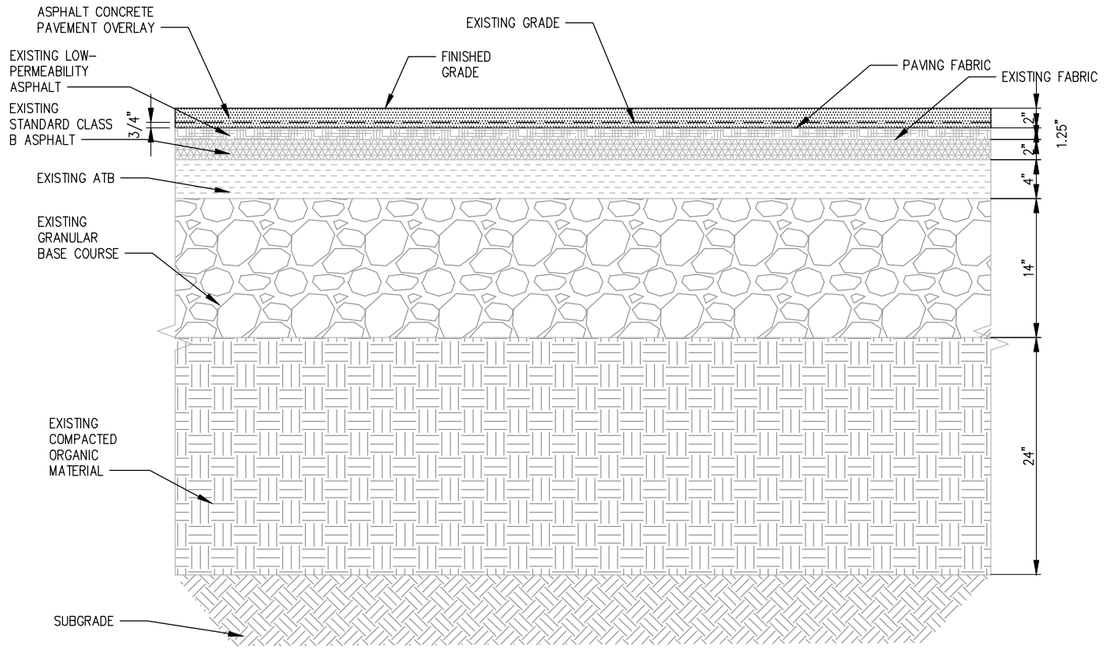
PORT OF TACOMA FILE: N:\2016\1600170 PoT - Parcel 47 Pavement\Part 3 - KPFF Design\3.13 Drawings\Current\101072 - C2.2

BINDING EDGE



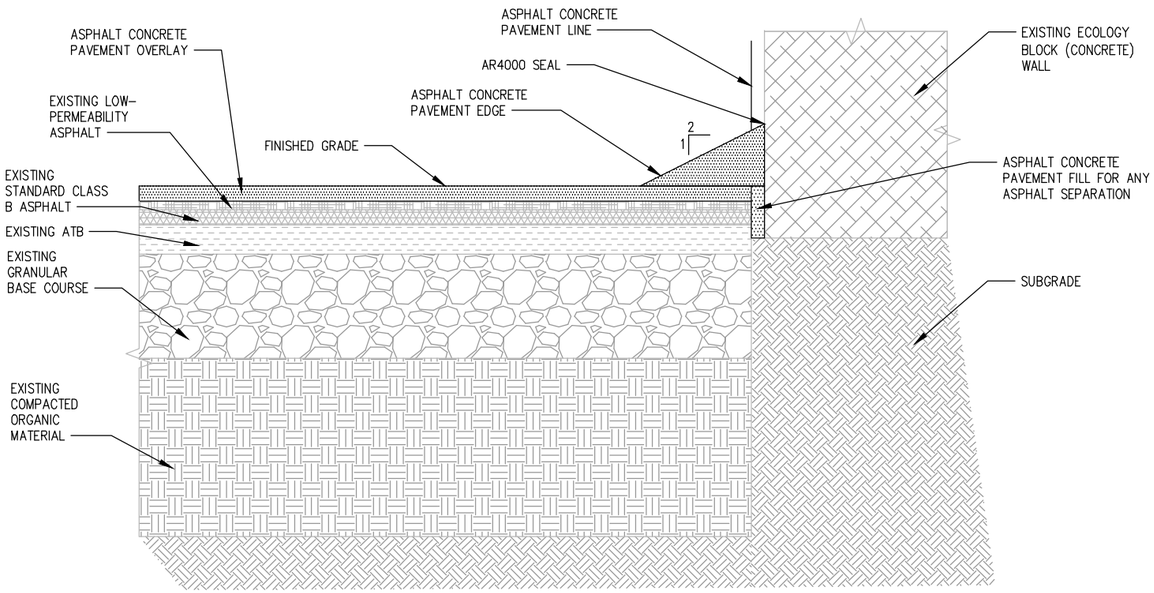
1 EXISTING ASPHALT PAVEMENT DETAIL

C2.4 SCALE: NTS



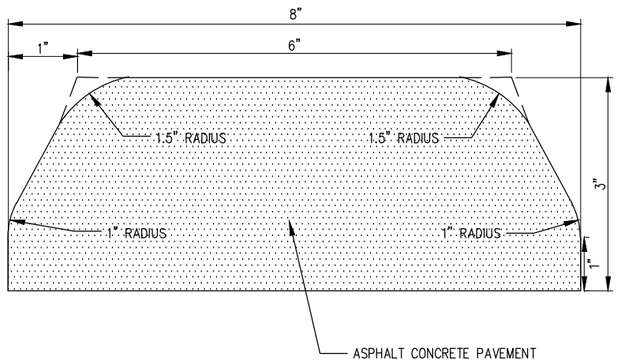
2 ASPHALT CONCRETE PAVEMENT OVERLAY DETAIL

C2.4 SCALE: NTS



3 PAVEMENT EDGE DETAIL

C2.0–C2.1 SCALE: NTS



4 EXTRUDED CURB DETAIL

C2.0–C2.1 SCALE: NTS

60% DESIGN - NOT ISSUED FOR CONSTRUCTION

PRELIMINARY

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

DIRECTOR ENG. DATE

SWK 12/23/16
CHECKED BY DATE

JLE 12/23/16
PROJ. ENGR DATE

PRINTED BY: jenyeart Dec 22, 2016

PORT ADDRESS: ONE SITCUM PLAZA
TACOMA, WA 98401–1837

PARCEL 47 PAVEMENT REPAIR

SITE DETAILS

CONT/CONS: 070440	TOWNSHIP: 21	RANGE: 03	SECTION: 36
M. ID:	DAT–HRZ: AS SHOWN	VERT: PORT OF TACOMA	
PHASE: 60% DESIGN	PARCEL: 5000350470	DRAWING SCALE: AS SHOWN	

6562
C2.3
SHEET 11 OF 11

APPENDIX B. ENVIRONMENTAL CAP FIELD OBSERVATIONS

ENVIRONMENTAL CAP FIELD OBSERVATIONS

Contents:

- Table B1. Environmental cap observations on north area
- Table B2. Environmental cap observations on south area
- Table B3. Environmental cap observations of repair items from KPFF (2016) on south area

Table B1 lists cracks on the environmental cap wider than 1/8 in. and other problems observed during the inspection on the north area of the Wasser & Winters log sort yard (Wasser & Winters). Table B2 provides a similar listing for the south area. Table B3 lists observed repairs on the south area.

Table B1. Environmental cap observations on north area

Location ID[a]	Observations	Recommended Actions	Photos
CB3	cracking and separation wider than 1/8 in. around catch basin	repair pavement	
CB4	cracking wider than 1/8 in. around catch basin	repair pavement	

[a] See Figure 2 of main document.

CB – catch basin

ID – identification

Table B2 lists cracks on the environmental cap wider than 1/8 in. and other problems observed during the inspection on the south area of Wasser & Winters.

Table B2. Environmental cap observations on south area

Location ID[a]	Observations	Recommended Actions	Photos
C1	pavement curb sloughing; pavement section approximately 15 ft long and located in front of concrete block wall	repair pavement curb	
P1	cracks in pavement wider than 1/8 in.	repair or seal cracks	
P2	hole in pavement approximately 8 by 4 in.; dirt in hole	remove accumulated dirt; repair pavement	

[a] See Figure 3 of main document.

C – curb

ID – identification

P – pavement

Table B3 lists observations made of the items listed for repair in KPFF's drawing set (KPFF 2016) (Appendix A).

Table B3. Environmental cap observations of repair items from KPFF on south area

Location ID[a]	Observations	Recommended Actions	Photos
AC1	area not located during inspection; general vicinity characterized by numerous gouges in pavement surface	none	[no picture]
AC2	not repaired	monitor; repair pavement if damage beings to affect cap integrity or cracks become wider than 1/8 in.	
AP1	patch in good condition;[b] sealant around patch perimeter	none	
AP2	patch in good condition;[b] sealant around patch perimeter	none	

Location ID[a]	Observations	Recommended Actions	Photos
AP3	patch in good condition;[b] sealant around patch perimeter	none	
AP4	patch in good condition;[b] sealant around patch perimeter	none	
AP5	patch in good condition;[b] sealant around patch perimeter	none	
AP6	patch in good condition;[b] sealant around patch perimeter	none	

Location ID[a]	Observations	Recommended Actions	Photos
AP7	patch in good condition;[b] sealant around patch perimeter	none	
AP8	patch in good condition;[b] sealant around patch perimeter	none	
AP9	patch in good condition;[b] sealant around patch perimeter	none	
AP10	patch in good condition;[b] sealant around patch perimeter	none	

Location ID[a]	Observations	Recommended Actions	Photos
AP11	patch in good condition;[b] sealant around patch perimeter	none	
AP12	patch in good condition;[b] sealant around patch perimeter	none	
AP13	not repaired	repair pavement	
AP14	patch in good condition;[b] sealant around patch perimeter	none	

Location ID[a]	Observations	Recommended Actions	Photos
AP15	patch in good condition;[b] sealant around patch perimeter	none	
Asphalt separation	none of the areas marked as asphalt separation by KPFF have been repaired; vegetation in some areas of asphalt separation	monitor; repair if condition worsens	
GA1	not repaired	repair pavement	
GA2	still present	repair pavement	

Location ID[a]	Observations	Recommended Actions	Photos
GA3	still present	repair pavement	
GA4	still present	repair pavement	
MDA1	still present	remove metal debris and repair pavement	
MDA2	still present; metal debris breaking into pieces	remove metal debris and repair pavement	

Location ID[a]	Observations	Recommended Actions	Photos
MDA3	still present	remove metal debris and repair pavement	
OP1	still present	remove oil and repair pavement	
OP2	still present	remove oil and repair pavement	
Seam line 1	sealed; seals in good condition	none	

Location ID[a]	Observations	Recommended Actions	Photos
Seam lines 2	sealed; seals in good condition	none	
Seam lines 3	sealed; seals in good condition	none	
Seam lines 4	sealed; seals in good condition	none	
Seam line 5	sealed; seal in good condition	none	

Location ID[a]	Observations	Recommended Actions	Photos
Seam lines 6	sealed; seals in good condition	none	

Source: KPFF (2016)

[a] See Figure 3 of main document.

[b] The inspection did not include an assessment of the asphaltic concrete mix, sub-base, and placement methods (e.g., compaction) used to construct the patches.

AC – alligator cracking

AP – asphalt patch

GA – gouges area

MDA – metal debris area

OP – oil patch

REFERENCES

KPFF. 2016. Port of Tacoma Parcel 47 pavement repair. kpff Consulting Engineers, Tacoma, WA.

APPENDIX C. STORMWATER DRAINAGE SYSTEM FIELD OBSERVATIONS

STORMWATER DRAINAGE SYSTEM FIELD OBSERVATIONS

Contents:

Tables C1 and C2 provide details regarding the field observations and recommended actions for each stormwater drainage structure visited during the field inspections in the north and south areas, respectively.

Table C1. Stormwater structure observations on north area

Location ID[a]	Type of Structure	Observed Condition	Sediment Accumulation (in.)	Additional Observations	Recommended Actions	Photos
CB1	catch basin	functioning normally	0	insert in catch basin; hay bales, straw wattles, and boom around grate	none	
CB2	catch basin	structurally sound at surface; did not view interior	nm	catch basin sealed closed with a metal plate/does not receive stormwater	none	

Location ID[a]	Type of Structure	Observed Condition	Sediment Accumulation (in.)	Additional Observations	Recommended Actions	Photos
CB3	catch basin	functioning normally	4–6	insert in catch basin; cracking and separation wider than 1/8 in. in pavement surrounding inlet	repair cracking and separation; remove accumulated sediment in accordance with stormwater maintenance requirements	
CB4	catch basin	functioning normally	2–3	insert in catch basin; cracking and separation wider than 1/8 in. in pavement surrounding inlet	repair cracking and separation; remove accumulated sediment in accordance with stormwater maintenance requirements	
CB5	catch basin	functioning normally	4–5	insert in catch basin; no debris on grate or in vicinity of catch basin	remove accumulated sediment in accordance with stormwater maintenance requirements	

Location ID[a]	Type of Structure	Observed Condition	Sediment Accumulation (in.)	Additional Observations	Recommended Actions	Photos
CB6	catch basin	functioning normally	4–6	insert in catch basin; debris accumulation on grate	remove accumulated sediment in accordance with stormwater maintenance requirements	
CB7	catch basin	functioning normally	3	insert in catch basin; debris and sediment accumulation in vicinity	remove accumulated sediment from interior of structure in accordance with stormwater maintenance requirements; remove accumulated sediment and debris from vicinity of structure	
CB8	catch basin	functioning normally	0	insert in catch basin; boom around catch basin; some debris and sediment accumulation around grate	remove accumulated debris and sediment from vicinity of structure	

Location ID[a]	Type of Structure	Observed Condition	Sediment Accumulation (in.)	Additional Observations	Recommended Actions	Photos
MH1	manhole	not observed	nm	unable to observe structure because it was located under steel plates (see photo)	observe during next inspection	
MH2	manhole	interior not observed	nm	large cover; did not open as it was tightly wedged into the opening by heavy machinery; structure does not appear to collect stormwater	observe during next inspection	
MH3	manhole	functioning normally	0	discharging normally	none	

Location ID[a]	Type of Structure	Observed Condition	Sediment Accumulation (in.)	Additional Observations	Recommended Actions	Photos
MH4	manhole	not observed	nm	large cover; did not open as it was tightly wedged into the opening	observe during next inspection	
MH5	manhole	functioning normally	0	none	none	
OWS	oil/water separator	functioning normally	nm	concrete structure	none	

[a] See Figure 2.
ID – identification
nm – not measured

Table C2. Stormwater structure observations on south area

Location ID[a]	Type of Structure	Observed Condition	Sediment Accumulation (in.)	Additional Observations	Recommended Actions	Photos
CB9	catch basin	functioning normally	0	insert in catch basin; organic debris accumulated on grate; sediment accumulated around grate approximately 1 in. deep; did not pull insert due to recent rain, ongoing stormwater flow, and accumulated sediment in vicinity of grate	remove organic debris and accumulated sediment from vicinity of structure	
CB10	catch basin	functioning normally	0	insert in catch basin; organic debris accumulated on grate; sediment accumulated around grate less than 1 in. deep; did not pull insert due to recent rain, ongoing stormwater flow, and accumulated sediment in vicinity of grate	remove organic debris and accumulated sediment from vicinity of structure	

[a] See Figure 3.

ID - identification