

US Army Corps
of Engineers®
Seattle District

EXHIBIT B



US Army Corps
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Seattle District

FY18 P2-471149 SAND LEVEE REHABILITATION NOOKSACK RIVER SANDE WILLIAMS LEVEE NSK-04-18 WHATCOM COUNTY, WASHINGTON

Date: 28 DEC 2018
Solicitation No.: -
File No.: E-6-7-42

Recommended by:
GUY L. GREEN, P.E.
Chief, Design Branch
Date: 04/27/18
Approved by:
JOANN T. WALLS, P.E.
Chief, Engineering Div.
Date: 04/27/18

Submitted by:
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Project Manager
Date: 04/27/18
Reviewed by:
CHARLES IFFT, P.E.
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Date: 04/27/18

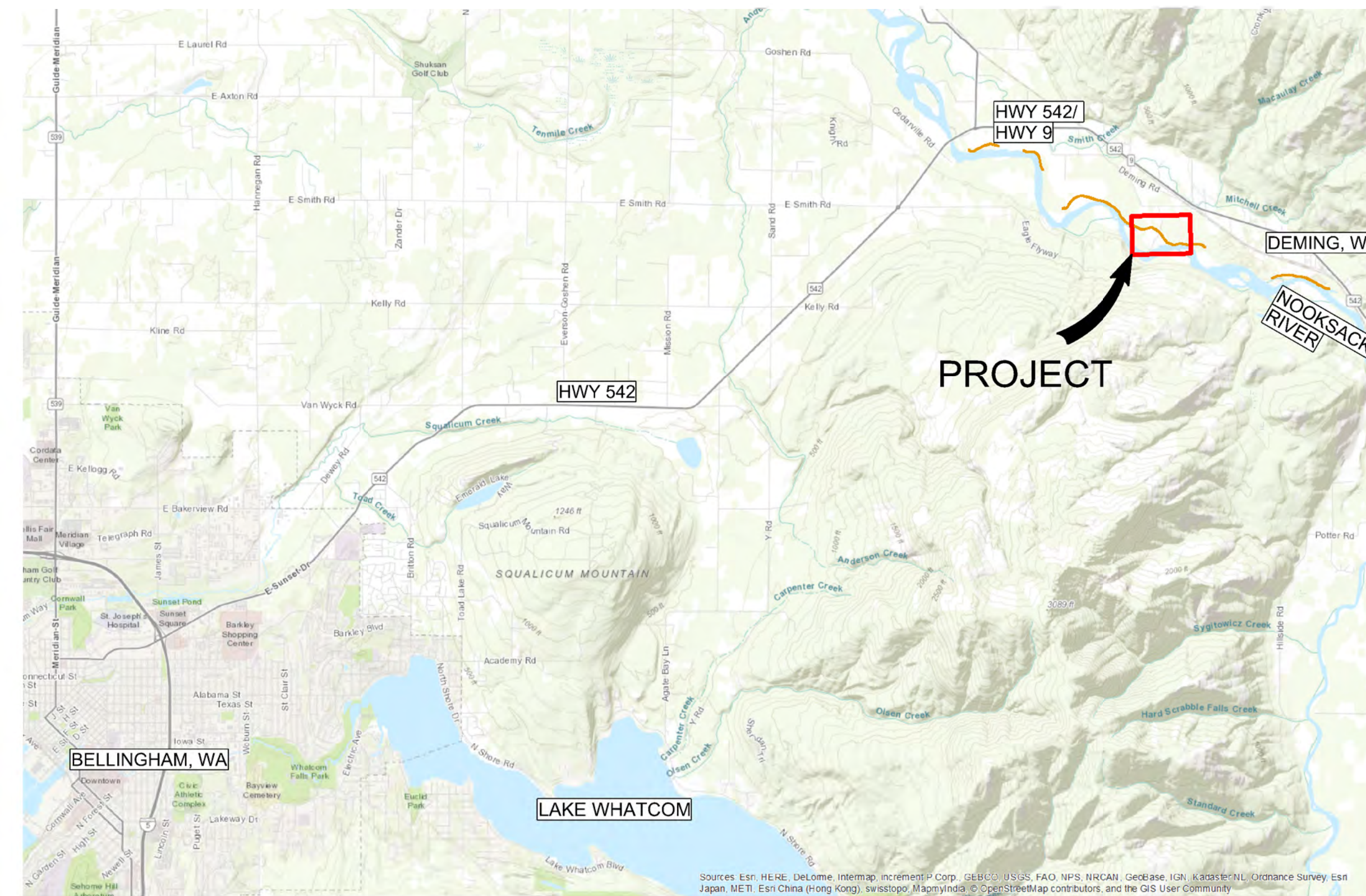
U.S. ARMY CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE, WASHINGTON
Prepared by:
KIMBALL L. OHSIEK
Chief, Soils Section
Date: 04/27/18

FY18 P2-471149 SAND
LEVEE REHABILITATION NOOKSACK RIVER SANDE WILLIAMS LEVEE
NSK-04-18
WHATCOM COUNTY, WASHINGTON
TITLE, LOCATION AND VICINITY MAPS

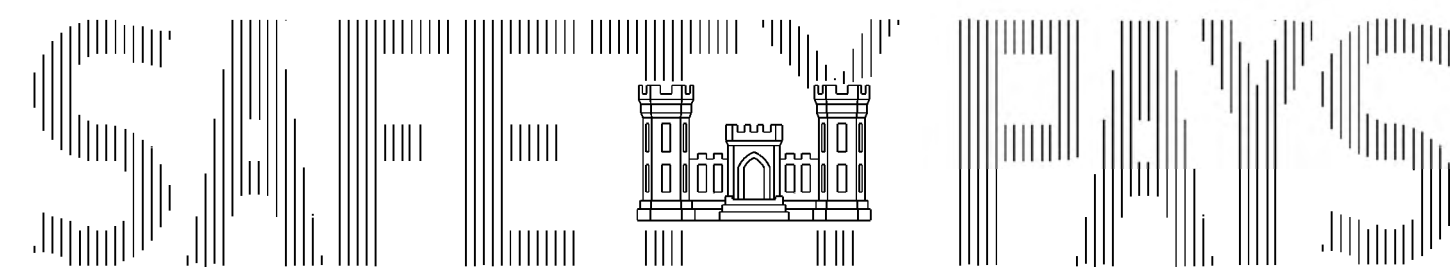
SHEET
IDENTIFICATION
G-001



PROJECT VICINITY MAP
NTS



PROJECT LOCATION MAP
NTS



IF SHEET MEASURES LESS THAN 22" X 34" IT IS
A REDUCED PRINT. REDUCE SCALE ACCORDINGLY.



US Army Corps of Engineers



MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: S. KLEIN	DATE: 20 DEC 2018
DRAWN BY: K. OHSIEK	SOLICITATION NO.:
CHECKED BY: DARYL S. DOWNING	CONTRACT NO.:
SUBMITTED BY: DARYL S. DOWNING	FILE NUMBER: E-6-7-42
SIZE: ANSI D	PLOT DATE / TIME: 12/28/2018 12:38:19 PM

U.S. ARMY CORPS OF ENGINEERS
SEATTLE DISTRICT
4735 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98134

FY18 P2-471149 SAND
LEVEE REHABILITATION NOOKSACK RIVER SANDE WILLIAMS LEVEE
NSK-04-18
WHATCOM COUNTY, WASHINGTON

SITE ACCESS PLAN

SHEET IDENTIFICATION
C-100

NOTES:
1. ACCESS ROADS THROUGH TREADED AREAS ARE APPROXIMATE. FOLLOW EXISTING ROADS FROM PREVIOUS REPAIR PROJECTS. DO NOT REMOVE TREES ALONG ACCESS ROADS. IMPROVE/ RESTORE WITH CSBC AS NEEDED. REFER TO THE QUANTITY TABLES ON THE FOLLOWING SHEETS FOR MATERIAL QUANTITIES BROKEN DOWN BY SITE.

1 SANDE WILLIAMS SITE ACCESS
SCALE: 1" = 155'

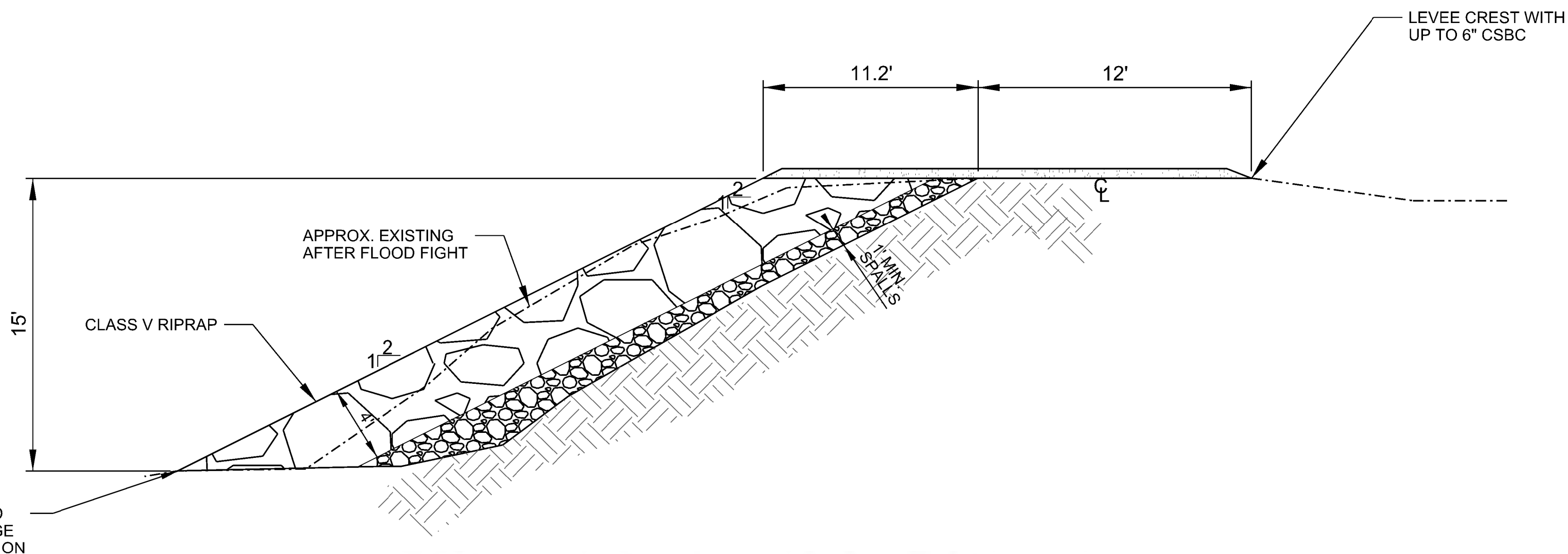
1

2

3

4

5



A SANDE-WILLIAMS SITE 2 TYPICAL SECTION (100 LF)
 SCALE: 1" = 10'

NOTES:

1. CONSTRUCTION TEAM SHALL BE RESPONSIBLE FOR LOCATING UNDERGROUND AND OVERHEAD UTILITIES AS APPLICABLE BEFORE BEGINNING WORK.
2. QUARRY SPALLS SHALL CONFORM TO GRADATION IN TABLE 1 AND SHALL CONSIST OF CLEAN, ANGULAR, SCREENED, CRUSHED ROCK.
3. CLASS V RIPRAP ROCK SHALL CONFORM TO TABLE 2 AND BE HARD, SOUND, AND DURABLE MATERIAL FREE FROM SEAMS, CRACKS, AND OTHER DEFECTS TENDING TO LEAD TO PREMATURE WEATHERING. SPECIFIC GRAVITY IS ASSUMED TO BE 2.65.
4. CRUSHED SURFACING BASE COURSE (CSBC) WILL BE USED FOR REPAIRING DISTURBED PORTIONS OF THE CROWN AND ACCESS ROADS AND SHALL CONFORM TO TABLE 3. CSBC SHALL BE 100% ANGULAR WITH ALL SIDES FRACTURED.
5. CSBC QUANTITIES INCLUDE REPAIR SITE (55 CY), STAGING (125 CY) & ACCESS ROAD REPAIR (400 CY).
6. EXISTING RIPRAP MAY BE SALVAGED FOR REUSE IN THIS REPAIR. SALVAGED ROCK SHALL BE COMPETENT AND FREE OF CRACKING AND WEATHERING PER THE CMP. QUANTITIES IN TABLE 4 DO NOT REFLECT REUSE OF RIPRAP.
7. LIMIT CONSTRUCTION ACTIVITIES TO WORK AREA SHOWN EXCEPT WHEN REPAIRING LEVEE CROWN AND ACCESS ROADS.
8. REFER TO THE CMP FOR BEST MANAGEMENT PRACTICES AND ENVIRONMENTAL CONSIDERATIONS TO USE BEFORE, DURING, AND AFTER CONSTRUCTION.
9. REPAIR OR RESTORE ACCESS ROADS AND STAGING AREA WITH UP TO A 6" LAYER OF CSBC AS NEEDED. ACCESS ROADS ARE PREEXISTING AND ARE TYPICALLY 12' WIDE.
10. STATIONS ARE TAKEN FROM THE NATIONAL LEVEE DATABASE (NLD).
11. HORIZONTAL COORDINATES ARE LATITUDE AND LONGITUDE FROM WGS84.
12. SEE SHEET C-100 FOR A SITE ACCESS MAP.

TABLE 1. QUARRY SPALL GRADATION

SIEVE SIZE	PERCENT PASSING
8"	100
4"	0

TABLE 3. CSBC GRADATION

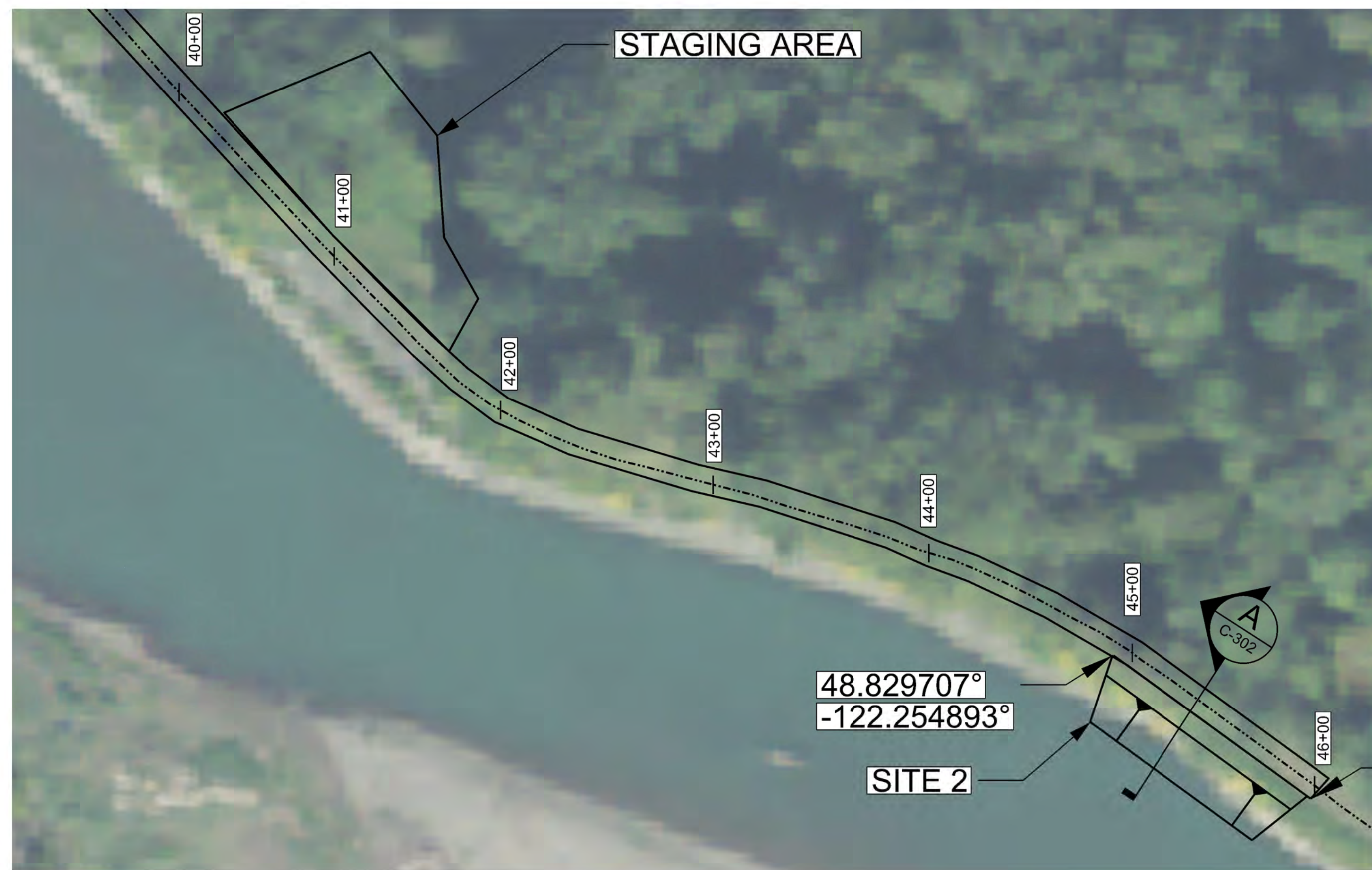
SIEVE SIZE	% PASSING BY WEIGHT
1.25"	100
1"	80-100
5/8"	50-80
NO. 4	25-45
NO. 40	3-18
NO. 200	7.5 MAX

TABLE 2. CLASS V RIPRAP GRADATION

100% SMALLER THAN	36"
85% SMALLER THAN	23.5" - 27.5"
50% SIZE	17" - 20.5"
15% SMALLER THAN	11" - 15.5"

TABLE 4. SITE 2 EARTHWORK QUANTITIES

MATERIAL	VOLUME (CY)
CLASS V RIPRAP	530
QUARRY SPALLS	175
CSBC	580



- STAGING AREA
- ACCESS & PROJECT LIMITS
- LEVEE CENTERLINE
- LEVEE STATIONS

B SANDE-WILLIAMS SITE 2 PLAN VIEW (100 LF)
 SCALE: 1" = 40'

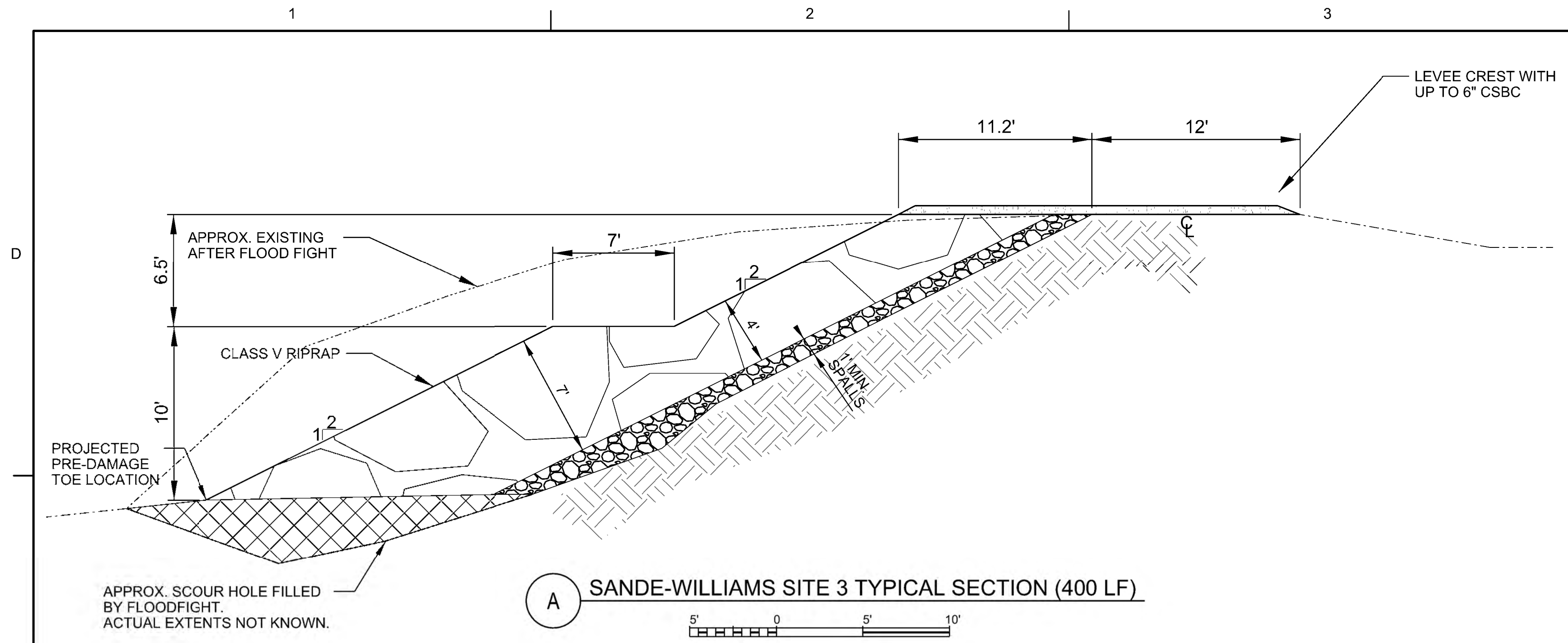


DATE	DESCRIPTION	MARK

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CHECKED BY: K. OHSIEK	CONTRACT NO.:		
U.S. ARMY CORPS OF ENGINEERS SEATTLE DISTRICT 4735 EAST MARGINAL WAY SOUTH SEATTLE, WASHINGTON 98134			

FY18 P2-471149 SAND
 LEVEE REHABILITATION NOOKSACK RIVER SANDE WILLIAMS LEVEE
 NSK-04-18
 WHATCOM COUNTY, WASHINGTON
**SITE 2 TYPICAL SECTION
 & PLAN VIEW**

SHEET IDENTIFICATION
C-302



A SANDE-WILLIAMS SITE 3 TYPICAL SECTION (400 LF)
SCALE: 1" = 10'

- NOTES:
1. CONSTRUCTION TEAM SHALL BE RESPONSIBLE FOR LOCATING UNDERGROUND AND OVERHEAD UTILITIES AS APPLICABLE BEFORE BEGINNING WORK.
 2. QUARRY SPALLS SHALL CONFORM TO GRADATION IN TABLE 1 AND SHALL CONSIST OF CLEAN, ANGULAR, SCREENED, CRUSHED ROCK.
 3. CLASS V RIPRAP ROCK SHALL CONFORM TO TABLE 2 AND BE HARD, SOUND, AND DURABLE MATERIAL FREE FROM SEAMS, CRACKS, AND OTHER DEFECTS TENDING TO LEAD TO PREMATURE WEATHERING. SPECIFIC GRAVITY IS ASSUMED TO BE 2.65.
 4. CRUSHED SURFACING BASE COURSE (CSBC) WILL BE USED FOR REPAIRING DISTURBED PORTIONS OF THE CROWN AND ACCESS ROADS AND SHALL CONFORM TO TABLE 3. CSBC SHALL BE 100% ANGULAR WITH ALL SIDES FRACTURED.
 5. CSBC QUANTITIES INCLUDE REPAIR SITE (215 CY) & ACCESS ROAD REPAIR (190 CY).
 6. EXISTING RIPRAP MAY BE SALVAGED FOR REUSE IN THIS REPAIR. SALVAGED ROCK SHALL BE COMPETENT AND FREE OF CRACKING AND WEATHERING PER THE CMP. QUANTITIES IN TABLE 4 DO NOT REFLECT REUSE OF RIPRAP.
 7. LIMIT CONSTRUCTION ACTIVITIES TO WORK AREA SHOWN EXCEPT WHEN REPAIRING LEVEE CROWN AND ACCESS ROADS.
 8. REFER TO THE CMP FOR BEST MANAGEMENT PRACTICES AND ENVIRONMENTAL CONSIDERATIONS TO USE BEFORE, DURING, AND AFTER CONSTRUCTION.
 9. REPAIR OR RESTORE ACCESS ROADS AND STAGING AREAS WITH UP TO A 6" LAYER OF CSBC AS NEEDED. ACCESS ROADS ARE PREEXISTING AND ARE TYPICALLY 12' WIDE. HYDROSEED ALL DISTURBED AREAS ABOVE OHW.
 10. REMOVE GRAVEL FROM TURNAROUND AREA AFTER CONSTRUCTION AND HYDROSEED.
 11. FINAL GRADE SHALL BE AS SHOWN. ROCK PLACED DURING FLOODFIGHT THAT IS OUT OF REPAIR FOOTPRINT SHALL BE REMOVED TO THE EXTENT PRACTICABLE TO MAINTAIN A STABLE SLOPE WITH SMOOTH TRANSITIONS. DO NOT DISTURB NATIVE MATERIAL.
 12. STATIONS ARE TAKEN FROM THE NATIONAL LEVEE DATABASE (NLD).
 13. HORIZONTAL COORDINATES ARE LATITUDE AND LONGITUDE FROM WGS84.
 14. SEE SHEET C-100 FOR A SITE ACCESS MAP.

TABLE 1. QUARRY SPALL GRADATION

SIEVE SIZE	PERCENT PASSING
8"	100
4"	0

TABLE 2. CLASS V RIPRAP GRADATION

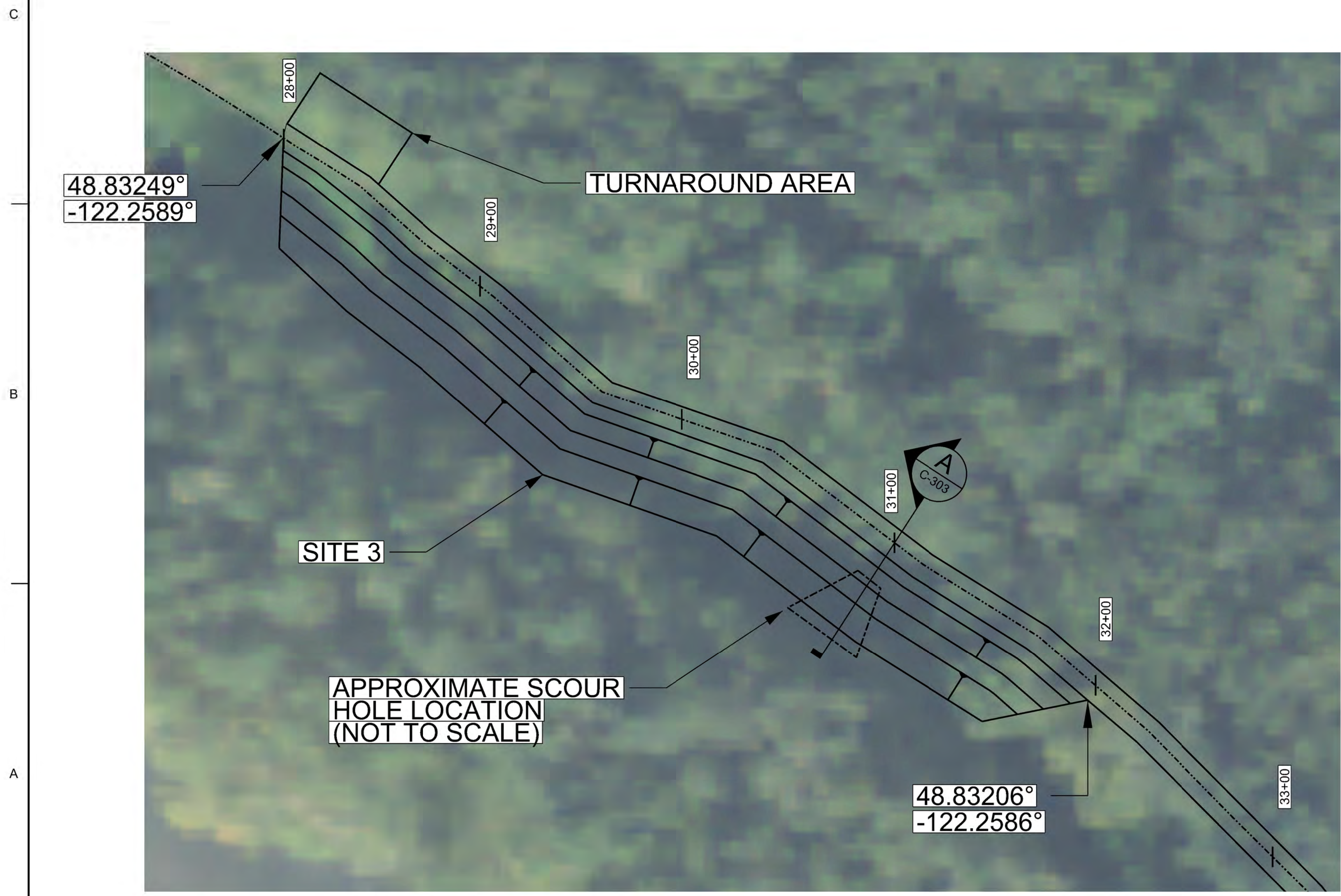
100% SMALLER THAN	36"
85% SMALLER THAN	23.5" - 27.5"
50% SIZE	17" - 20.5"
15% SMALLER THAN	11" - 15.5"

TABLE 3. CSBC GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
1.25"	100
1"	80-100
5/8"	50-80
NO. 4	25-45
NO. 40	3-18
NO. 200	7.5 MAX

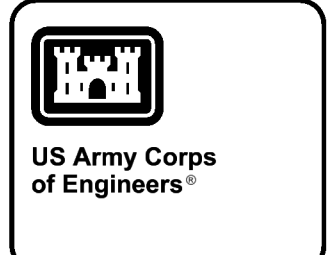
TABLE 4. EARTHWORK QUANTITIES

MATERIAL	VOLUME (CY)
CLASS V RIPRAP	2960
QUARRY SPALLS	670
CSBC	405



B SANDE-WILLIAMS SITE 3 PLAN VIEW (400 LF)
SCALE: 1" = 35'

- ACCESS & PROJECT LIMITS
- - - LEVEE CENTERLINE
- |— LEVEE STATIONS



DATE	DESCRIPTION	APPR.	MARK

DESIGNED BY: S. KLEIN	DATE: 20 DEC 2018
DRAWN BY: K. OHSIEK	SOLICITATION NO.:
CHECKED BY: K. OHSIEK	CONTRACT NO.:
SUBMITTED BY: DARYL S. DOWNING	FILE NUMBER: E-67-42
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FY18 P2-471149 SAND
LEVEE REHABILITATION NOOKSACK RIVER SANDE WILLIAMS LEVEE
NSK-04-18
WHATCOM COUNTY, WASHINGTON
**SITE 3 TYPICAL SECTION
& PLAN VIEW**

SHEET IDENTIFICATION
C-303