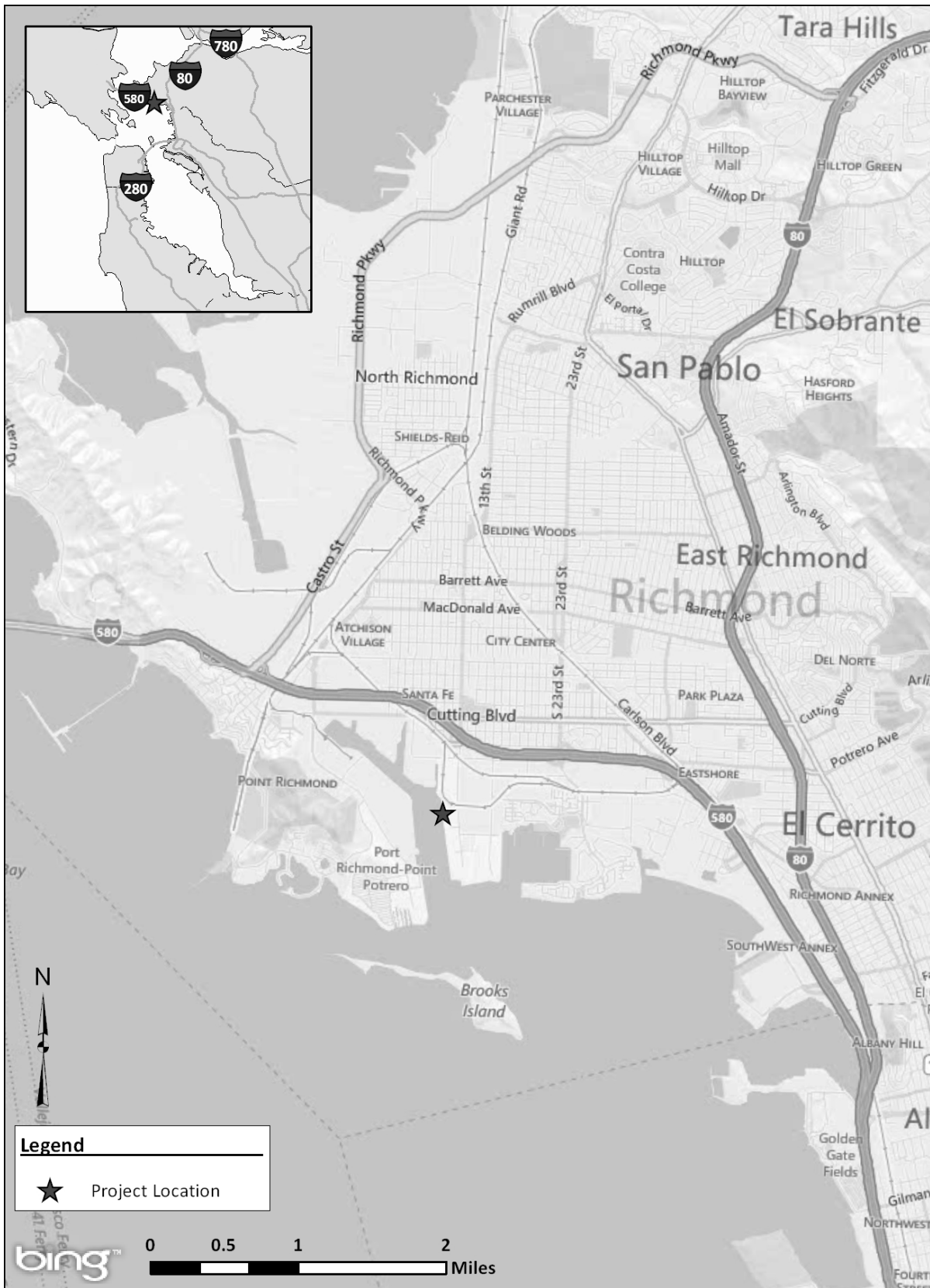


<p>Applicant: Port of Richmond Project: Terminals 2, 3, 7, and 8 Maintenance Dredging USACE File No. : 2016-00302S</p>	<p>Project Location Map Location: Richmond, Contra Costa County, CA Date: March 2, 2017 (Sheet 1 of 11)</p>
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<p>Applicant: Port of Richmond Project: Terminals 2, 3, 7, and 8 Maintenance Dredging USACE File No.: 2016-00302S</p>	<p>Project Vicinity Map Location: Richmond, Contra Costa County, CA Date: March 2, 2017 (Sheet 2 of 11)</p>
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Port of Richmond

Berth 7&8 Terminal 2&3

GENERAL NOTES:

1. SURVEY DATA COLLECTED BY ETRAC ENGINEERING INC, ON August 30, 2016.
2. HORIZONTAL DATUM/PROJECTION: NAD83/SPCS CA ZONE 3 - US SURVEY FEET.
3. VERTICAL DATUM: NAVD88 (FEET)
4. VERTICAL CONTROL: USACE TIDAL BENCHMARK "POOR-1"
5. POSITION AND MOTION DATA WERE COLLECTED USING AN APPLANIX POS WAVEMASTER V5.
6. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2024 MULTIBEAM SONAR.
7. BATHYMETRIC INFORMATION IS ONLY VALID FOR THE TIME IN WHICH THE SURVEY WAS CONDUCTED.

SHEET INDEX:

- SHEET 1 - PROJECT INFORMATION
- SHEET 2 - BERTH 7 & 8 BATHYMETRIC SOUNDINGS
- SHEET 3 - BERTH 7 & 8 BATHYMETRIC IMAGERY/CONTOURS
- SHEET 4 - TERMINAL 2 & 3 BATHYMETRIC SOUNDINGS
- SHEET 5 - TERMINAL 2 & 3 BATHYMETRIC IMAGERY/CONTOURS

Applicant: Port of Richmond
Project: Terminals 2, 3, 7, and 8 Maintenance
Dredging
USACE File No.: 2016-00302S
March 2, 2017

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Overview



not to scale



PORT OF RICHMOND
1411 HARBOUR WAY SOUTH
RICHMOND, CA 94804



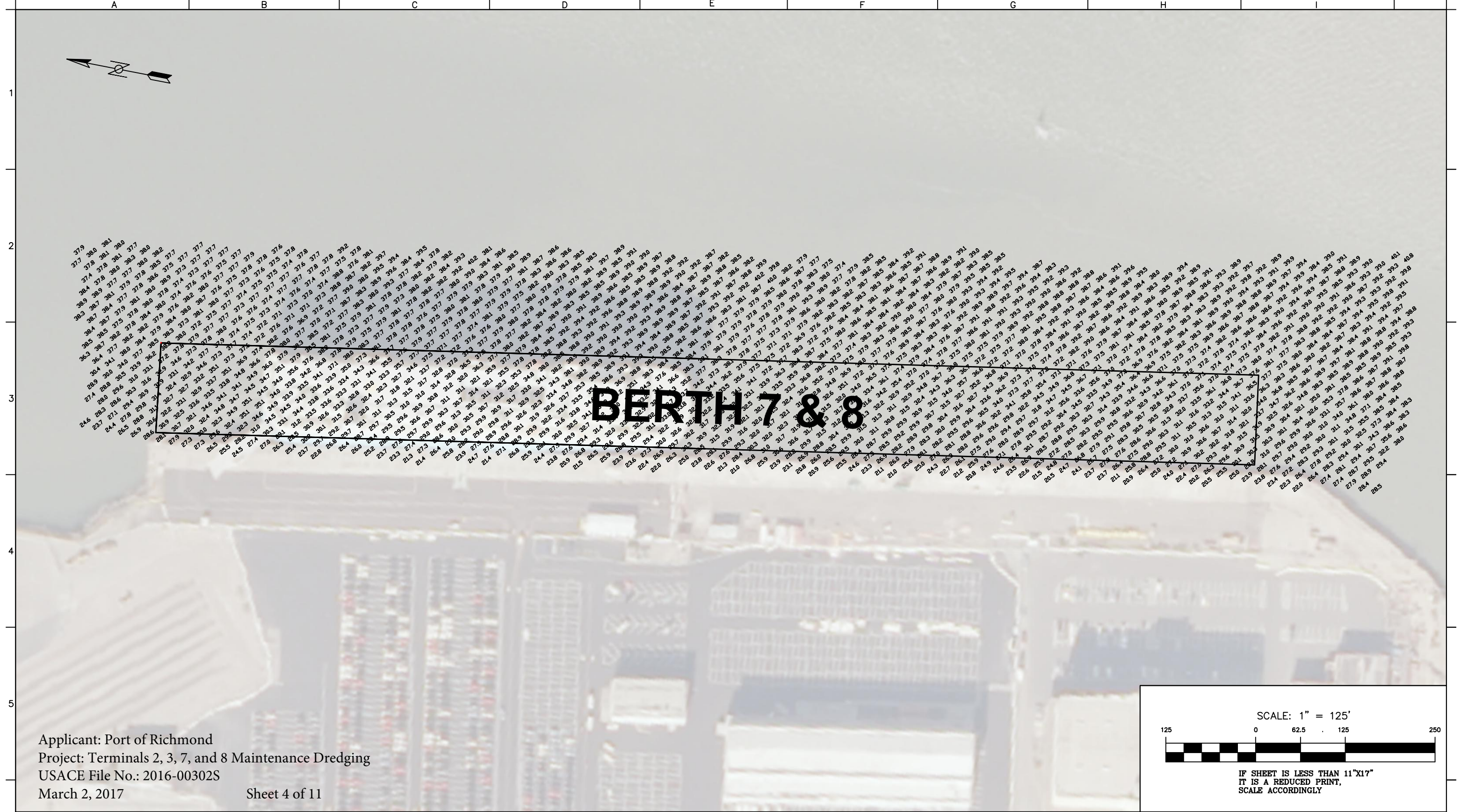
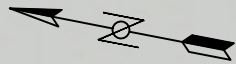
637 LINDARO STREET
SUITE 100
SAN RAFAEL, CA 94901
415.462.0421
eTracEngineering.com

DATE: August 30, 2016
DESIGNED BY: JDM | CHECKED BY: DRN
CONTRACT #:
PERMIT #: EPISODE #:
PROJECT NAME:
PORI_2012_Port of Richmond

Port of Richmond
Berth 7 & 8
Terminal 2 & 3
Multibeam Predredge Survey

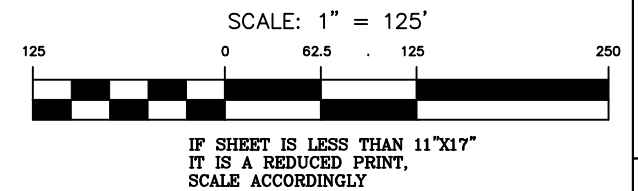
Reference
Number:

S1



Applicant: Port of Richmond
 Project: Terminals 2, 3, 7, and 8 Maintenance Dredging
 USACE File No.: 2016-00302S
 March 2, 2017

Sheet 4 of 11



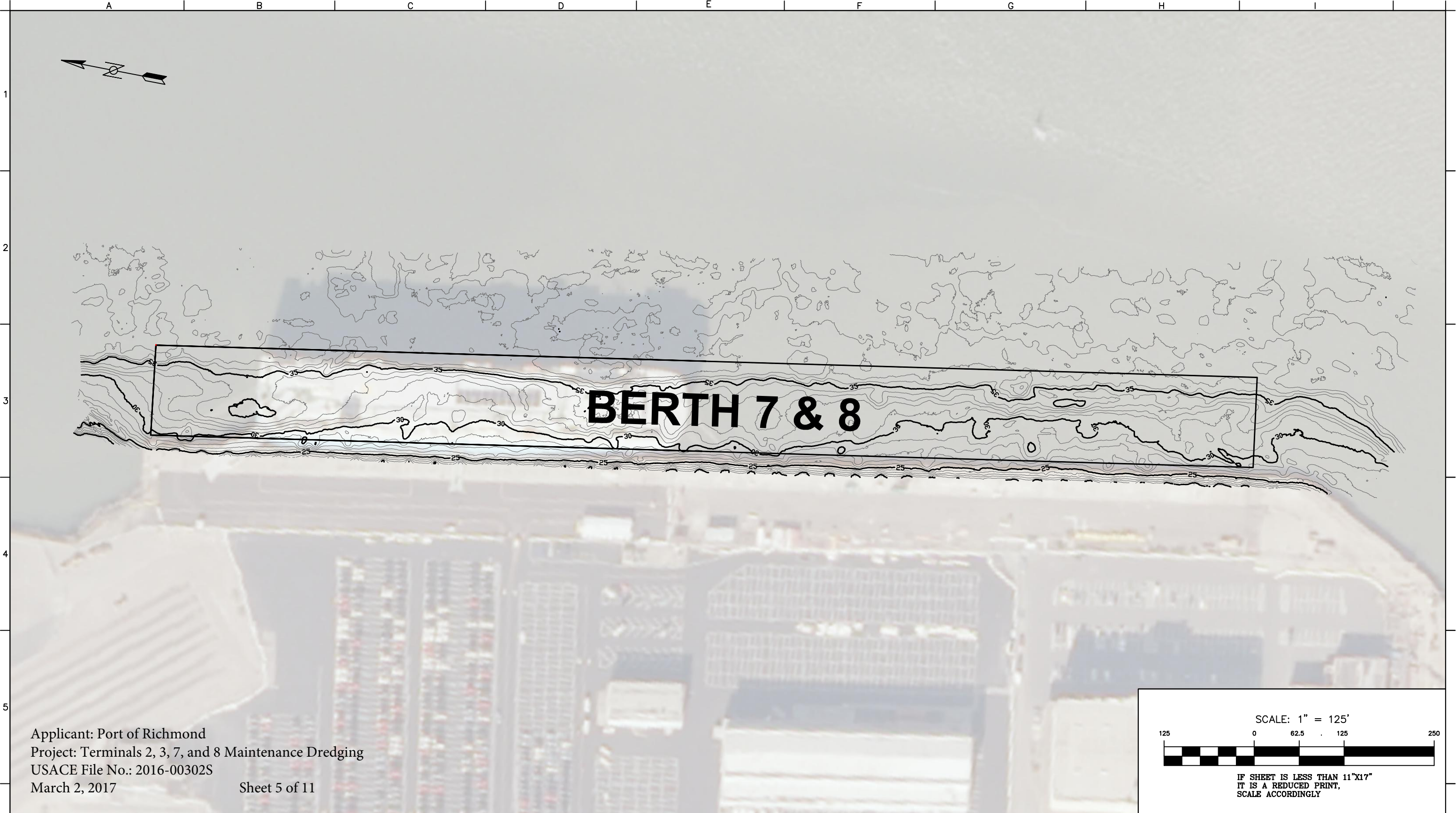
PORT OF RICHMOND
 1411 HARBOUR WAY SOUTH
 RICHMOND, CA 94804

637 LINDARO STREET
 SUITE 100
 SAN RAFAEL, CA 94901
 415.462.0421
 eTracEngineering.com

DATE: August 30, 2016
 DESIGNED BY: JDM, CHECKED BY: DRN
 CONTRACT #:
 PERMIT #: EPISODE #:
 PROJECT NAME:
 PORI_2012_Port of Richmond

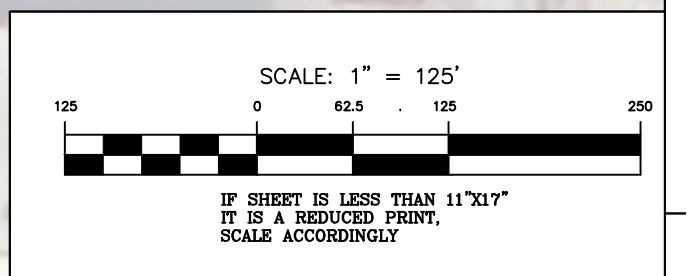
Port of Richmond
 Berth 7 & 8
 BATHY IMAGERY/SOUNDINGS
 Multibeam Predredge Survey

Reference
 Number:
 S2



Applicant: Port of Richmond
 Project: Terminals 2, 3, 7, and 8 Maintenance Dredging
 USACE File No.: 2016-00302S
 March 2, 2017

Sheet 5 of 11




PORT OF RICHMOND
 1411 HARBOUR WAY SOUTH
 RICHMOND, CA 94804

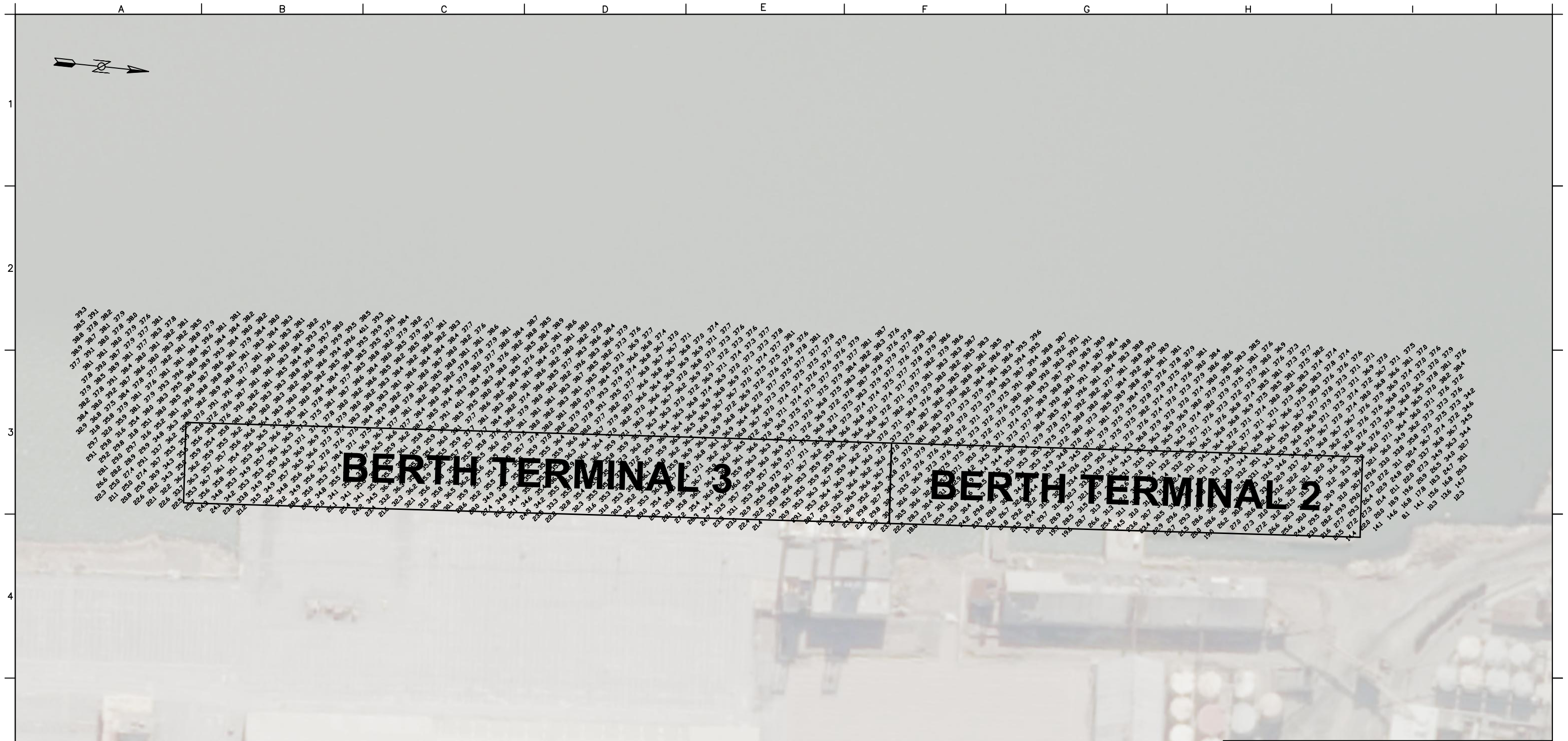
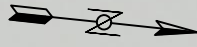


637 LINDARO STREET
 SUITE 100
 SAN RAFAEL, CA 94901
 415.462.0421
 eTracEngineering.com

DATE: August 30, 2016
 DESIGNED BY: JDM, CHECKED BY: DRN
 CONTRACT #:
 PERMIT #: EPISODE #:
 PROJECT NAME:
 PORI_2012_Port of Richmond

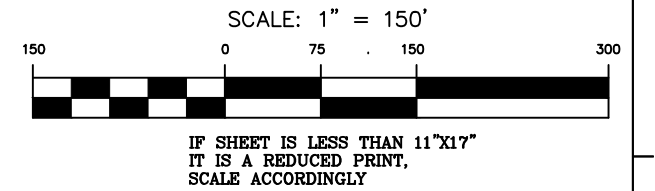
Port of Richmond
 Berth 7 & 8
 BATHY IMAGERY/CONTOURS
 Multibeam Predredge Survey

Reference
 Number:
 S3



Applicant: Port of Richmond
 Project: Terminals 2, 3, 7, and 8 Maintenance Dredging
 USACE File No.: 2016-00302S
 March 2, 2017

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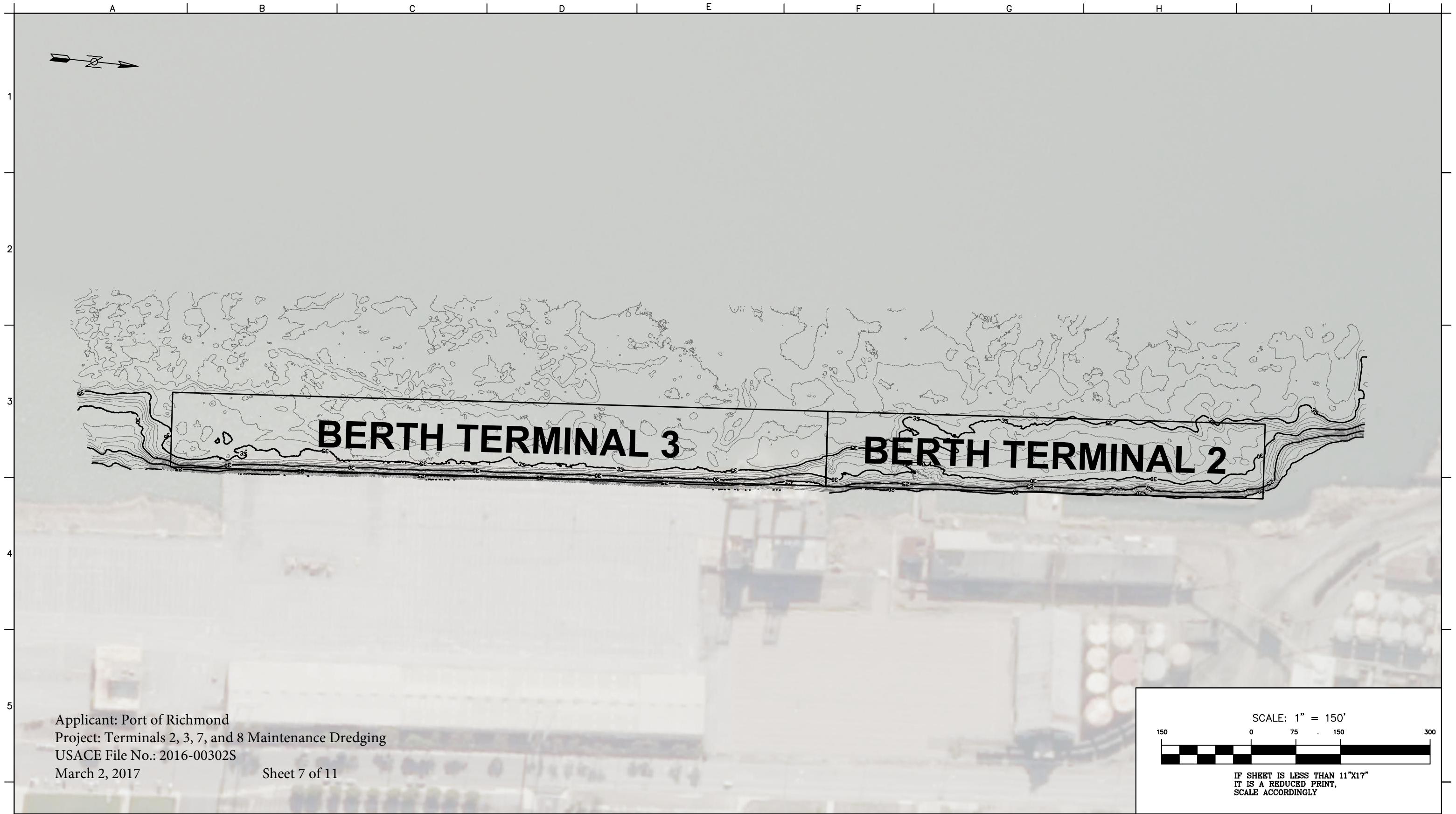
PORT OF RICHMOND
 1411 HARBOUR WAY SOUTH
 RICHMOND, CA 94804

637 LINDARO STREET
 SUITE 100
 SAN RAFAEL, CA 94901
 415.462.0421
 eTracEngineering.com

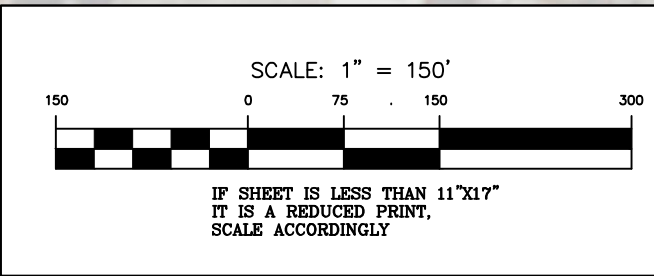
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 CONTRACT #:
 PERMIT #: EPISODE #:
 PROJECT NAME:
 PORI_2012_Port of Richmond

Port of Richmond
 Terminal 2 & 3
 BATHY IMAGERY/SOUNDINGS
 Multibeam Predredge Survey

Reference
 Number:
 S4



Applicant: Port of Richmond
 Project: Terminals 2, 3, 7, and 8 Maintenance Dredging
 USACE File No.: 2016-00302S
 March 2, 2017 Sheet 7 of 11




PORT OF RICHMOND
 1411 HARBOUR WAY SOUTH
 RICHMOND, CA 94804

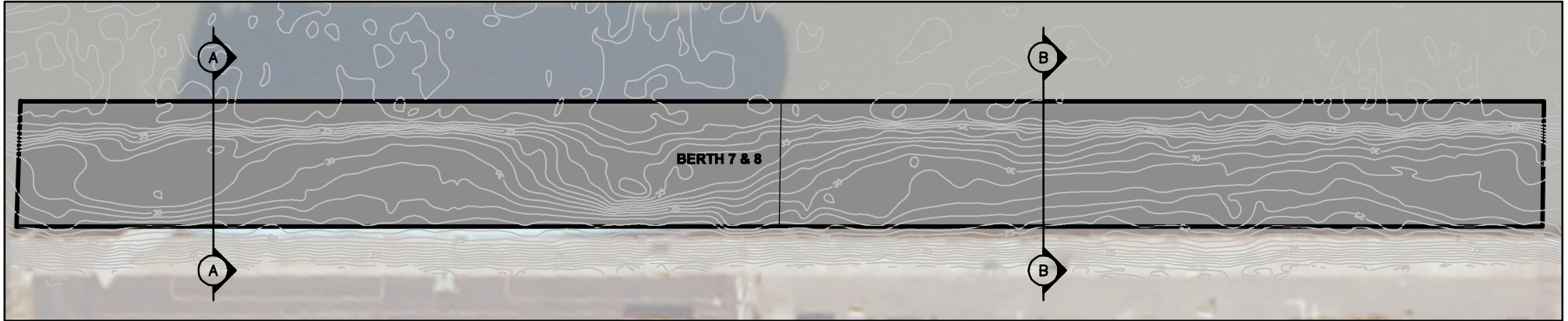


637 LINDARO STREET
 SUITE 100
 SAN RAFAEL, CA 94901
 415.462.0421
 eTracEngineering.com

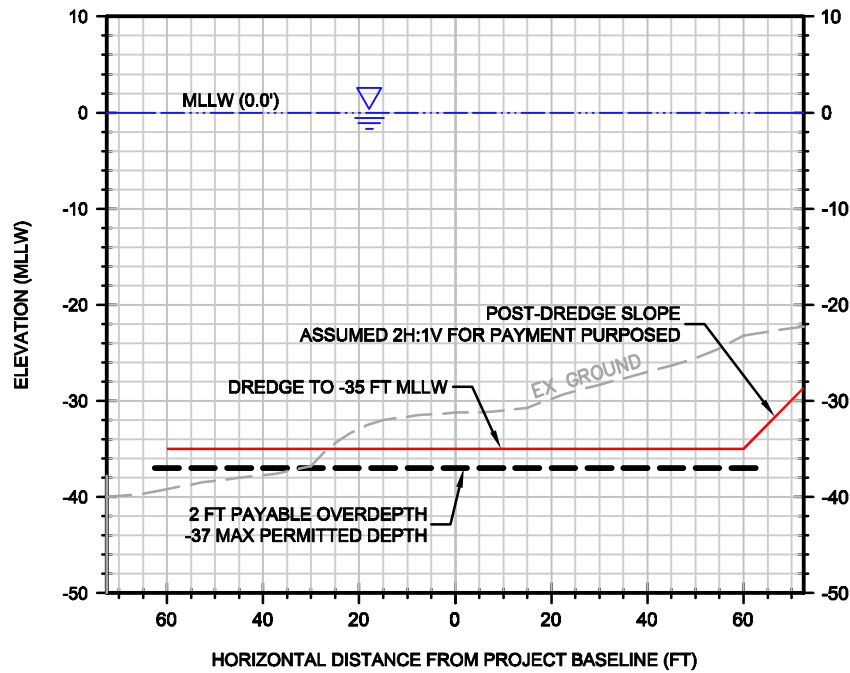
DATE: August 30, 2016
 DESIGNED BY: JDM, CHECKED BY: DRN
 CONTRACT #:
 PERMIT #: EPISODE #:
 PROJECT NAME:
 PORI_2012_Port of Richmond

Port of Richmond
 Terminal 2 & 3
 BATHY IMAGERY/CONTOURS
 Multibeam Predredge Survey

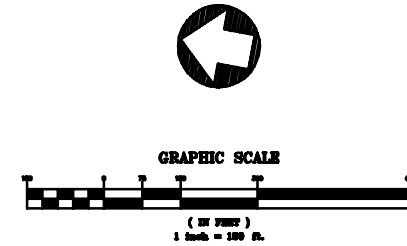
Reference
 Number:
 S5



BERTH TERMINAL 7 & 8
SCALE: 1" = 150'

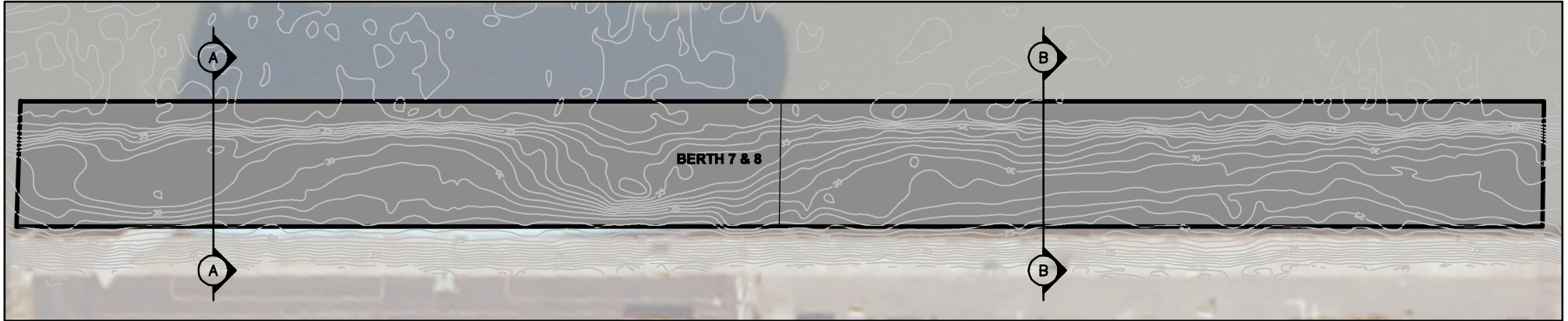


TERMINAL 7 & 8 TYPICAL SECTION A-A
1"=40' (HORZ)
1"=20' (VERT)

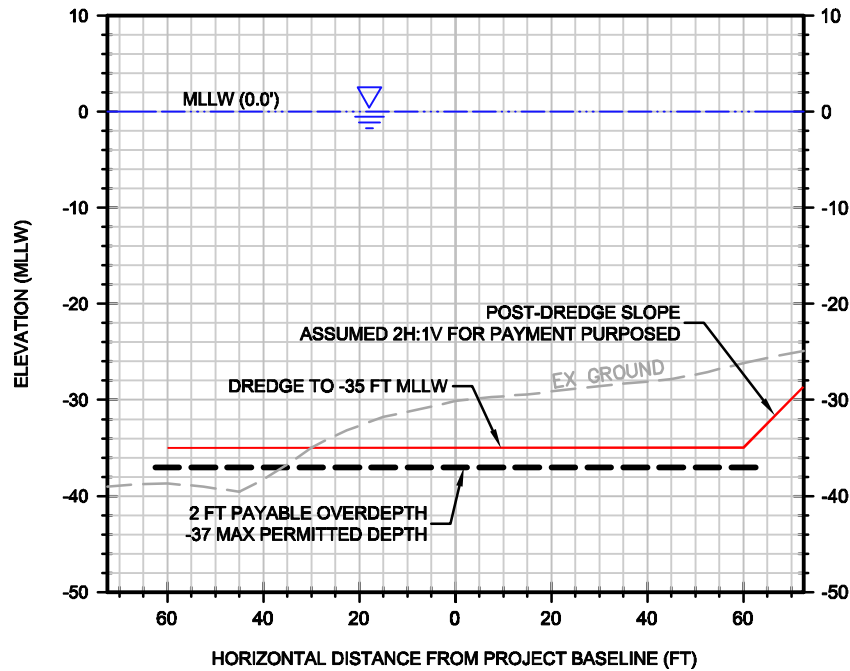


NOTES:

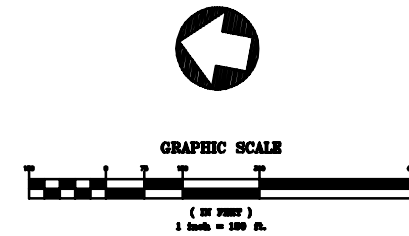
1. SURVEY DATA COLLECTED BY ETRAC INC ON MAY 10, 2016.
2. HORIZONTAL DATUM/PROJECTION: NAD83/SPCS CA ZONE 3 - US SURVEY FEET
3. VERTICAL DATUM: MLLW (FEET)
4. VERTICAL CONTROL: USACE TIDAL BENCHMARK "POOR-1".
5. POSITION AND MOTION DATA WERE COLLECTED USING AN R2SONIC I2NS.
6. SOUNDINGS WERE COLLECTED USING A R2SONIC 2020 MULTIBEAM SONAR.
7. BATHYMETRIC INFORMATION IS ONLY VALID FOR THE TIME IN WHICH THE SURVEY WAS CONDUCTED.



BERTH TERMINAL 7 & 8
SCALE: 1" = 150'



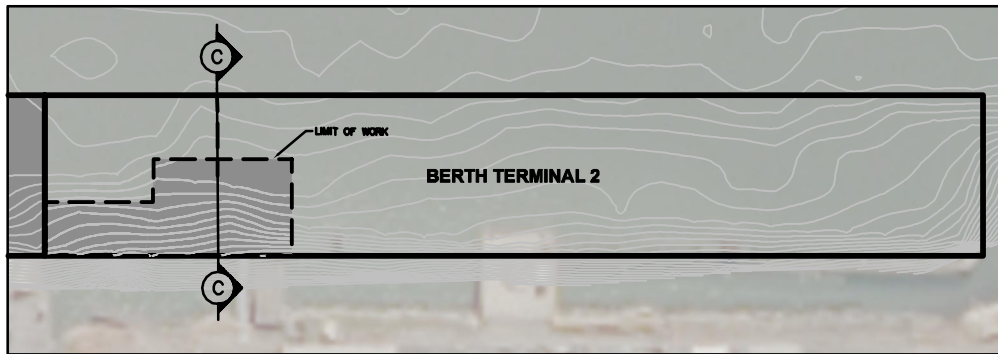
TERMINAL 7 & 8 TYPICAL SECTION B-B
1"=40' (HORZ)
1"=20' (VERT)



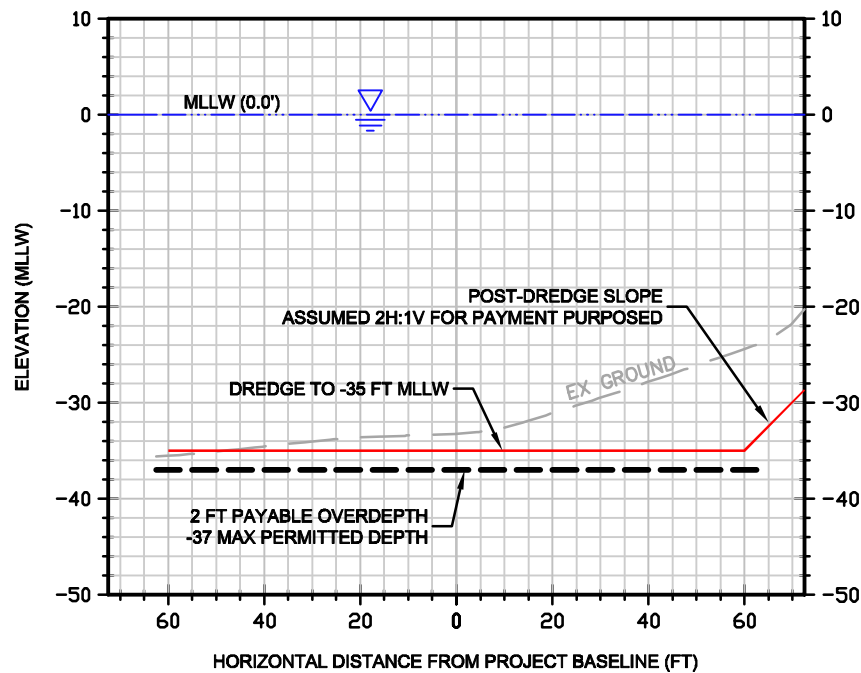
NOTES:

1. SURVEY DATA COLLECTED BY ETRAC INC ON MAY 10, 2016.
2. HORIZONTAL DATUM/PROJECTION: NAD83/SPCS CA ZONE 3 - US SURVEY FEET
3. VERTICAL DATUM: MLLW (FEET)
4. VERTICAL CONTROL: USACE TIDAL BENCHMARK "POOR-1".
5. POSITION AND MOTION DATA WERE COLLECTED USING AN R2SONIC I2NS.
6. SOUNDINGS WERE COLLECTED USING A R2SONIC 2020 MULTIBEAM SONAR.
7. BATHYMETRIC INFORMATION IS ONLY VALID FOR THE TIME IN WHICH THE SURVEY WAS CONDUCTED.

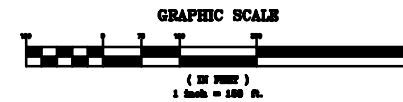
Applicant: Port of Richmond
 Project: Terminals 2, 3, 7, and 8 Maintenance
 Dredging
 USACE File No.: 2016-00302S
 March 2, 2017



BERTH TERMINAL 2
SCALE: 1" = 150'



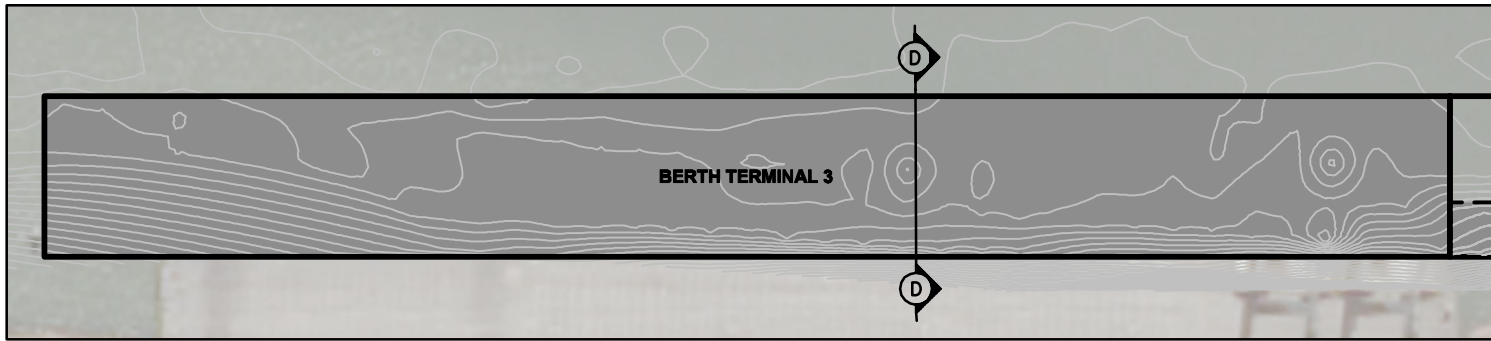
TERMINAL 2 TYPICAL SECTION C-C
1"=40' (HORZ)
1"=20' (VERT)



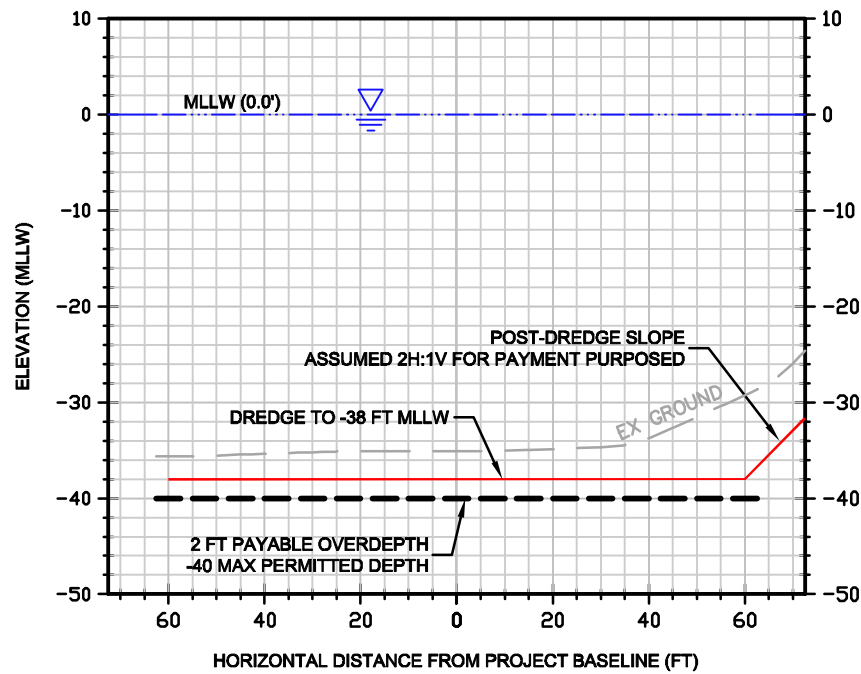
NOTES:

1. SURVEY DATA COLLECTED BY ETRAC INC ON NOVEMBER 20, 2015.
2. HORIZONTAL DATUM/PROJECTION: NAD83/SPCS CA ZONE 3 - US SURVEY FEET.
3. VERTICAL DATUM: MLLW (FEET)
4. VERTICAL CONTROL: USACE TIDAL BENCHMARK "POOR-1".
5. POSITION AND MOTION DATA WERE COLLECTED USING AN APPLANIX POSMV 320 V4.
6. SOUNDINGS WERE COLLECTED USING A R2SONIC 2024 MULTIBEAM SONAR.
7. BATHYMETRIC INFORMATION IS ONLY VALID FOR THE TIME IN WHICH THE SURVEY WAS CONDUCTED.

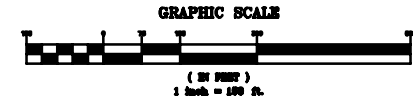
Applicant: Port of Richmond
 Project: Terminal 2, 3, 7, and 8 Maintenance
 Dredging
 USACE File No.: 2016-00302S
 March 2, 2017 Sheet 10 of 11



BERTH TERMINAL 3
SCALE: 1" = 150'



TERMINAL 3 TYPICAL SECTION D-D
1"=40' (HORZ)
1"=20' (VERT)



NOTES:

1. SURVEY DATA COLLECTED BY ETRAC INC ON DECEMBER 14, 2016.
2. HORIZONTAL DATUM/PROJECTION: NAD83/SPCS CA ZONE 3 - US SURVEY FEET.
3. VERTICAL DATUM: MLLW (FEET)
4. VERTICAL CONTROL: USACE TIDAL BENCHMARK "POOR-1".
5. POSITION AND MOTION DATA WERE COLLECTED USING AN APPLANIX POS MV VS.
6. SOUNDINGS WERE COLLECTED USING A R2SONIC 2022 AT 200 KHZ.
7. BATHYMETRIC INFORMATION IS ONLY VALID FOR THE TIME IN WHICH THE SURVEY WAS CONDUCTED.

Applicant: Port of Richmond
 Project: Terminal 2, 3, 7, and 8 Maintenance
 Dredging
 USACE File No.: 2016-00302S
 March 2, 2017