

APPENDIX I
BATHYMETRY SURVEYS

D:\POOL00000012\0600REC\0630Deliverables\PortOfOlympia\20090209\CAD\PortOfOlympia_Bathy.dwg Feb 09, 2009 - 9:48am

SURVEY CONTROL USED

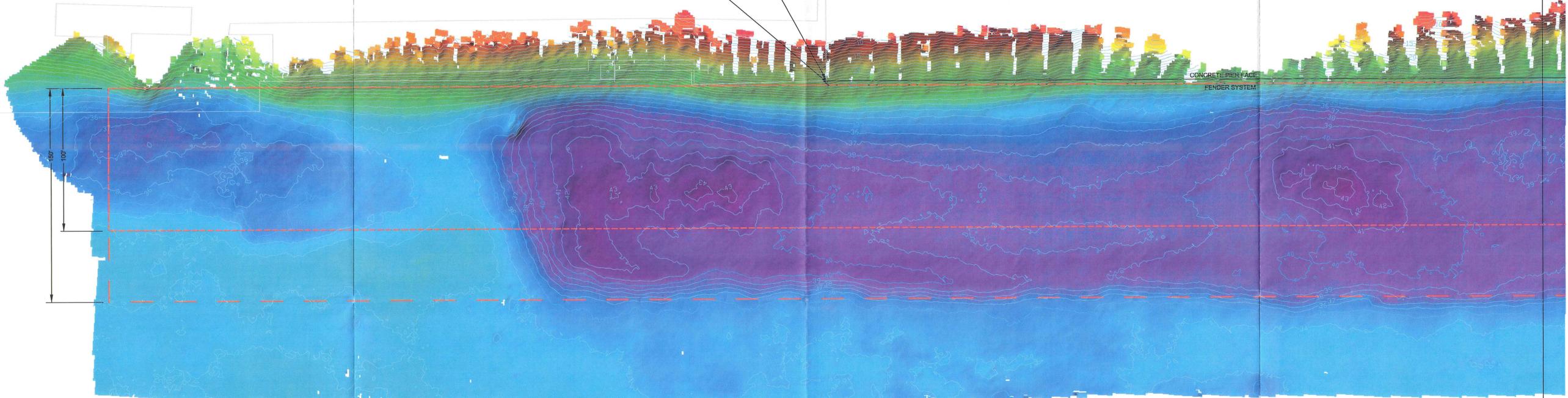
RTK-GPS BASE SET UP

"KGY"
 3" Brass cap stamped:
 "Skillings-Connolly Consulting Engineers and Land Surveyors; KGY; 27192; 2006"
 N 638126.398'
 E 1041246.313'
 Elevation: MLLW = 19.43'
 Elevation: NGVD-29(47) = 11.70'

CHECK IN MONUMENT

"LAUNCH"
 3" Brass cap stamped:
 "Skillings-Connolly Consulting Engineers and Land Surveyors; LAUNCH; 27192; 2006"
 N 637828.846'
 E 1042432.027'
 Elevation: MLLW = 20.14'
 Elevation: NGVD-29(47) = 12.40'

Corner of dock and fender system tied with RTK GPS.
 NORTH CORNER OF CONCRETE DOCK
 N 637321.371'
 E 1040764.315'
 EL 20.2'
 OUTSIDE NORTH CORNER OF FENDER SYSTEM
 N 637320.223'
 E 1040761.389'
 EL 20.1'



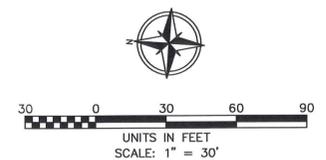
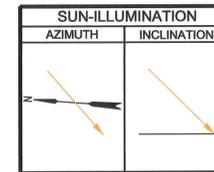
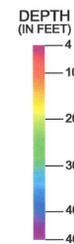
- NOTES:**
- This drawing presents the results of a multibeam bathymetric survey conducted by David Evans and Associates, Inc. (DEA).
 - Date of Survey: March 27, 2008.
 - Horizontal Datum: North American Datum of 1983 (NAD83(91)), State Plane Coordinate System (SPCS), Washington South Zone.
 - Vertical Datum: Mean Lower Low Water (MLLW) epoch 1960-1978.
 - Units: U.S. Feet
 - Contour Interval: 1 Foot.
 - Contours were generated from data gridded to an interval of a 1.5 ft spaced grid.
 - Depths were acquired with a Reson Seabat 8101 multibeam bathymetric sonar integrated with an Applanix POS/MV positioning and motion reference system.
 - The sun-illuminated image was generated from a Digital Terrain Model (DTM) based on a 0.5 meter grid of multibeam data in Caris HIPS software. Illumination angles and color scale are shown in the legend.
 - The horizontal coordinates for the survey control were provided by the Port of Olympia. The elevations for this survey are based on survey monument "KGY". The elevation of "KGY" was determined by "Coates Surveying Services" as stated in a letter dated April 6, 2008. This resulted in a correction of -0.06 feet of the MLLW epoch 1960-1978 vertical datum and -0.05 feet of the NGVD29(47) vertical datum from the elevations originally provided by the Port of Olympia at the time of survey. These corrections were also applied to the survey monument "LAUNCH" by DEA.

LEGEND:

- = 1 Foot contour interval
- = 5 Foot contour interval
- = 100 foot volume limit
- = 150 foot volume limit

This hydrographic survey was completed under the direction of an American Congress on Surveying and Mapping, Certified Hydrographer.

Gregory P. Baird,
 ACSM Certified Hydrographer (201)



THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.

MULTIBEAM BATHYMETRIC MAPPING
BERTHING PIER
 PORT OF OLYMPIA
 OLYMPIA, WASHINGTON

DAVID EVANS AND ASSOCIATES, INC.
 2801 Southeast Columbia Way Suite 130
 Vancouver, WA 98601
 Phone: 360.314.8200

REVISIONS: APPD.

DATE: 02/09/2009
 DESIGN: MJCH
 DRAWN: MJCH
 CHECKED:
 REVISION NUMBER: 1

SCALE: 1" = 30'

PROJECT NUMBER:
 POOL0000-0012

DRAWING FILE:
 PortOfOlympia_Bathy.dwg

SHEET NO.

1
 OF 3

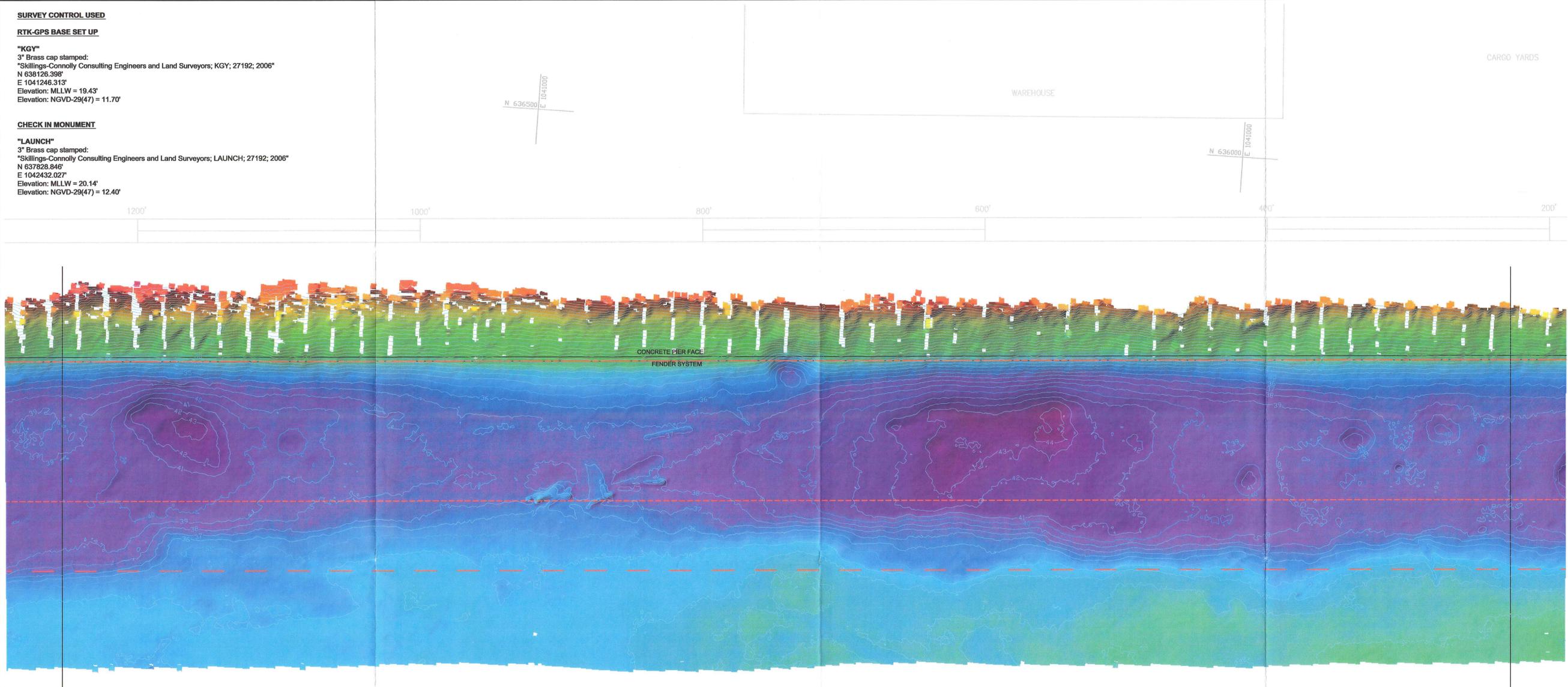
SURVEY CONTROL USED

RTK-GPS BASE SET UP

"KGY"
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CHECK IN MONUMENT

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 E 1042432.027'
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BERTHING PIER
 PORT OF OLYMPIA
 OLYMPIA, WASHINGTON

DAVID EVANS AND ASSOCIATES, INC.
 2801 Southeast Columbia Way, Suite 150
 Vancouver, WA 98681
 Phone: 360.314.3200

REVISIONS: APPD.

DATE: 02/09/09
 DESIGN: MJCH
 DRAWN: MJCH
 CHECKED:
 REVISION NUMBER: 1

SCALE: 1" = 30'

PROJECT NUMBER:
 POOL0000-0012

DRAWING FILE:
 PortOfOlympia_Bathy.dwg

SHEET NO.

2
 OF 3

D:\POOL00000012\0809REC\08300deliverables\PortOfOlympia\20090209\CAD\PortOfOlympia_Bathy.dwg Feb 09, 2009 - 9:59am

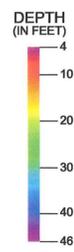
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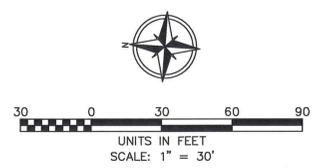
- LEGEND:**
- = 1 Foot contour interval
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 - = 100 foot volume limit
 - = 150 foot volume limit

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Gregory P. Baird,
 ACSM Certified Hydrographer (201)



SUN-ILLUMINATION	
AZIMUTH	INCLINATION



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SURVEY CONTROL USED

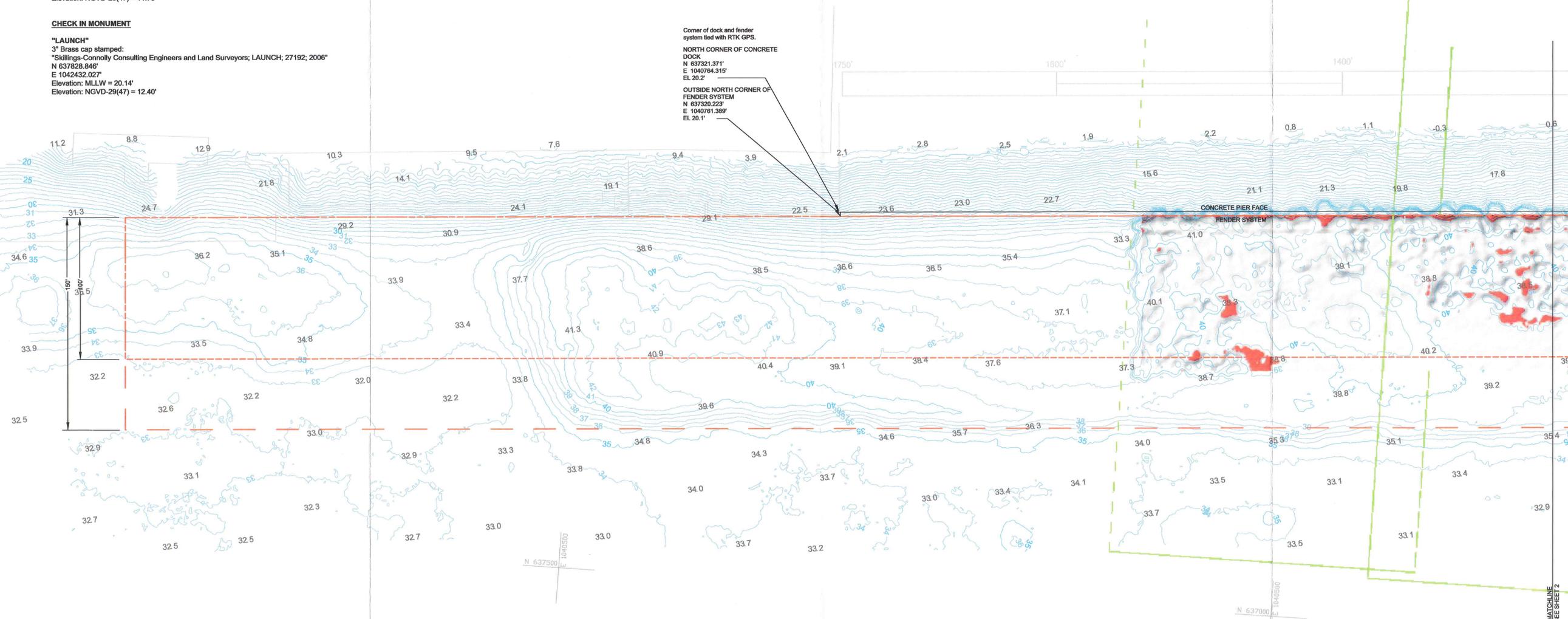
RTK-GPS BASE SET UP

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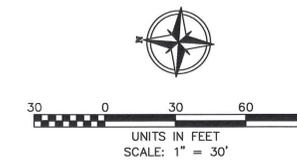
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Gregory P. Baird,
 ACSM Certified Hydrographer (201)



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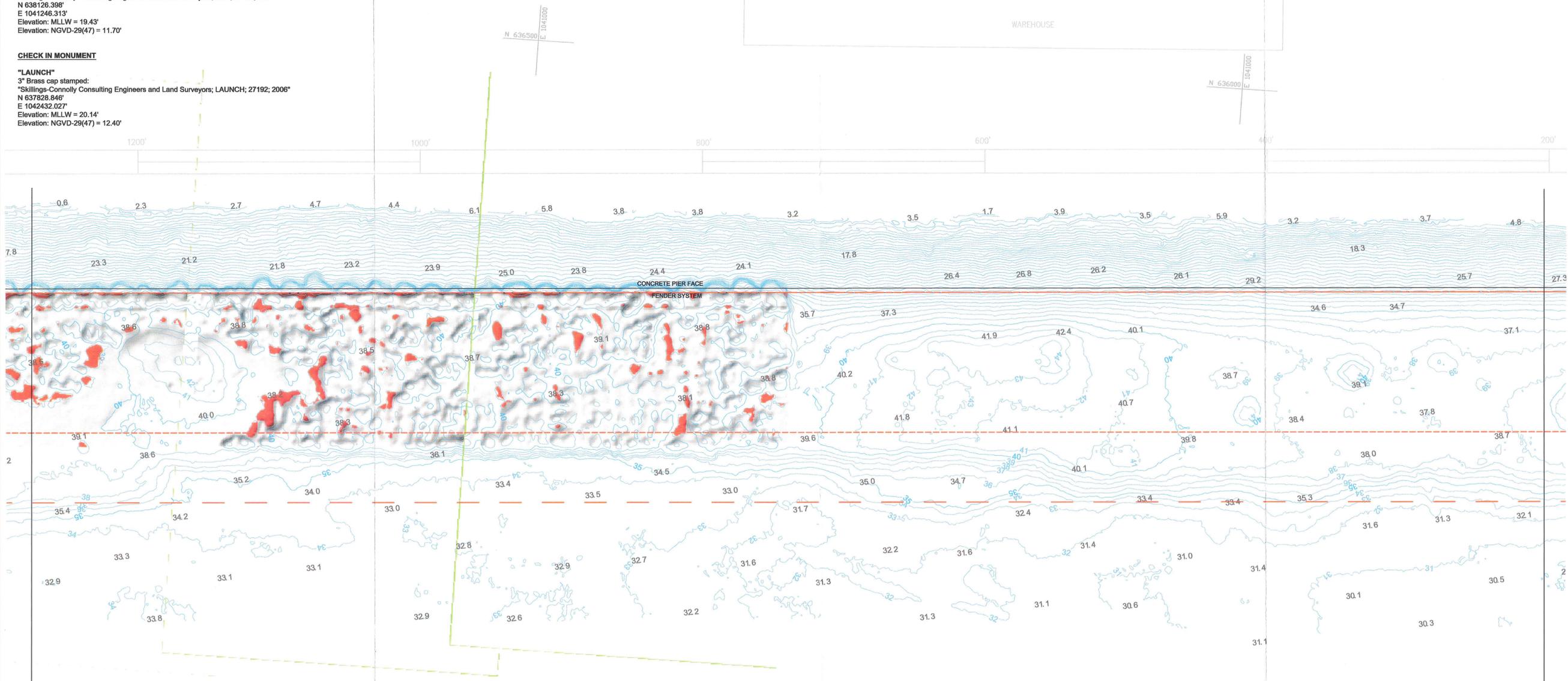
SURVEY CONTROL USED

RTK-GPS BASE SET UP

"KGY"
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E 1042432.027'
Elevation: MLLW = 20.14'
Elevation: NGVD-29(47) = 12.40'



DRAFT

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Gregory P. Baird,
ACSM Certified Hydrographer (201)

UNITS IN FEET
SCALE: 1" = 30'

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MULTIBEAM BATHYMETRIC MAPPING
POST-DREDGE
BERTHING PIER
PORT OF OLYMPIA
OLYMPIA, WASHINGTON

DAVID EVANS AND ASSOCIATES, INC.
2601 Southeast Columbia Way, Suite 150
Vancouver, WA 98681
Phone: 360.314.8200

REVISIONS: APPD.

DATE: 02/23/09
DESIGN: MJCH
DRAWN: MJCH
CHECKED:
REVISION NUMBER:

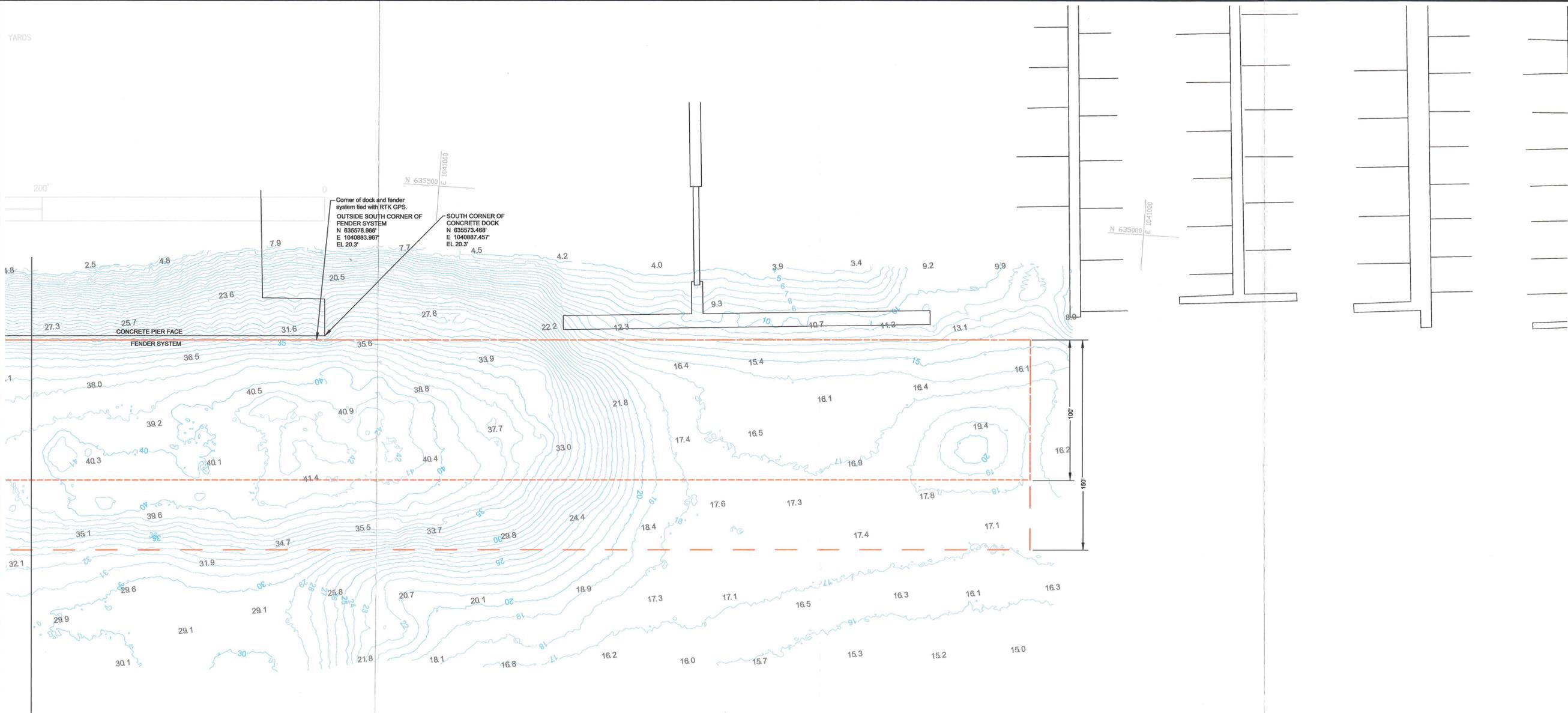
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PROJECT NUMBER:
POOL0000-0013

DRAWING FILE:
MSVLXPOL0013.dwg

SHEET NO.
2
OF 3

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N:\Projects\Active\POOL0000013\0400CAD\042D00\MSV\POOL0013.dwg Feb 23, 2009 - 12:03pm



DRAFT

- NOTES:**
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 - Units: U.S. Feet
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ACSM Certified Hydrographer (201)

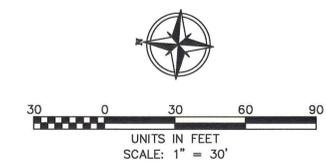
SURVEY CONTROL USED

RTK-GPS BASE SET UP

"KGY"
 3" Brass cap stamped:
 "Skillings-Connolly Consulting Engineers and Land Surveyors; KGY; 27192; 2006"
 N 638126.398'
 E 1041246.313'
 Elevation: MLLW = 19.43'
 Elevation: NGVD-29(47) = 11.70'

CHECK IN MONUMENT

"LAUNCH"
 3" Brass cap stamped:
 "Skillings-Connolly Consulting Engineers and Land Surveyors; LAUNCH; 27192; 2006"
 N 637828.846'
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 Elevation: MLLW = 20.14'
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MULTIBEAM BATHYMETRIC MAPPING
**POST-DREDGE
 BERTHING PIER**
 PORT OF OLYMPIA
 OLYMPIA, WASHINGTON

**DAVID EVANS
 AND ASSOCIATES, INC.**
 2807 Southeast Columbia Way, Suite 130
 Vancouver, WA 98601
 Phone: 360.314.3200

REVISIONS: APPD.

DATE: 02/23/09
 DESIGN: M/JCH
 DRAWN: M/JCH
 CHECKED:
 REVISION NUMBER:

SCALE: 1" = 30'

PROJECT NUMBER:
POOL0000-0013

DRAWING FILE:
MSV\POOL0013.dwg

SHEET NO.

3
OF 3

REVISIONS: APPD.

DATE: 03/12/2009
 DESIGN: MJCH
 DRAWN: MDHA
 CHECKED:
 REVISION NUMBER:

SCALE: 1" = 30'

PROJECT NUMBER:
ANCE0000-0004

DRAWING FILE:
 MSLVXANCE0004.dwg

SHEET NO.

1
 OF 6

SURVEY CONTROL USED

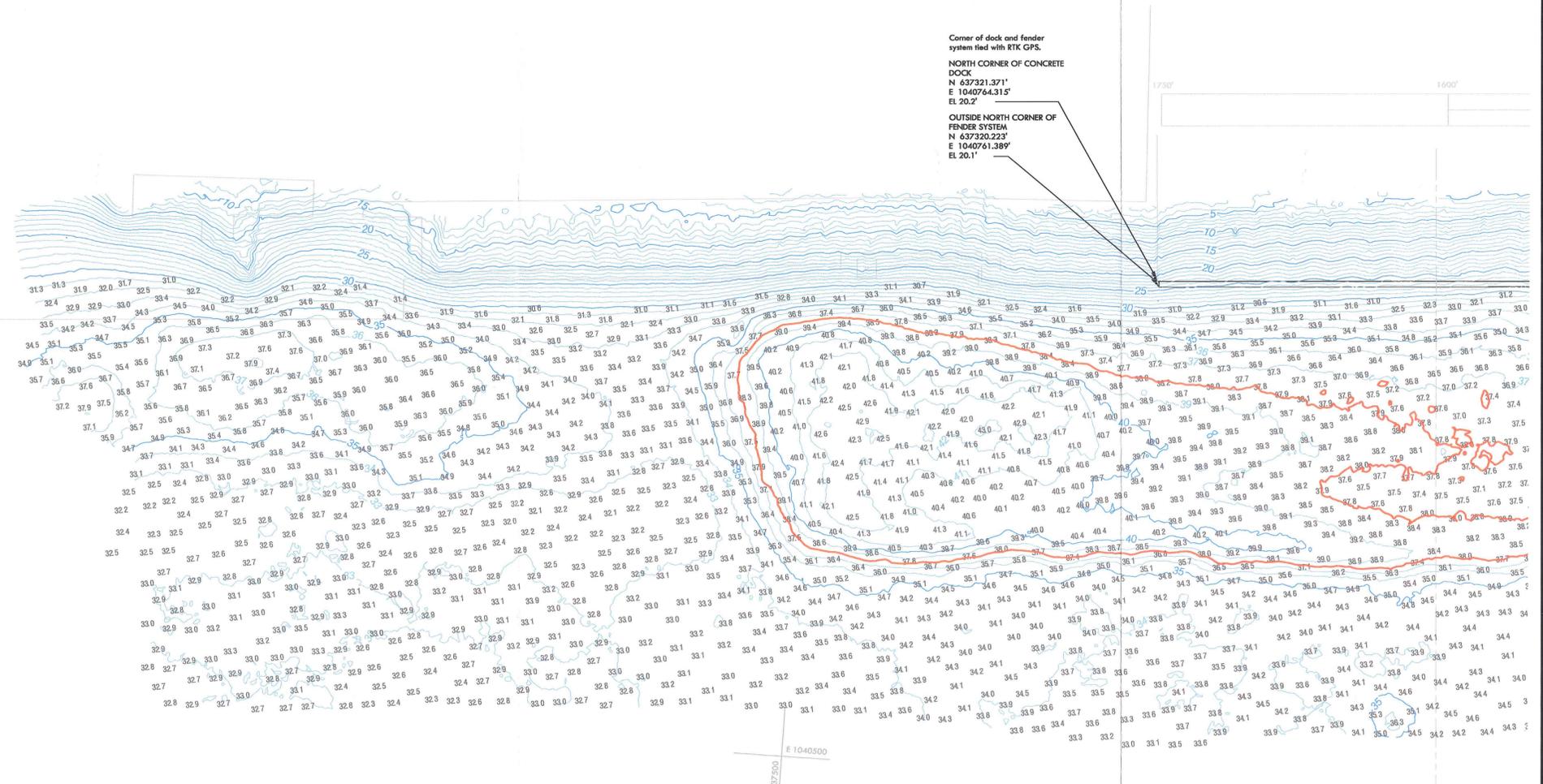
RTK-GPS BASE SET UP

"KGY"
 3" Brass cap stamped:
 Stilling-Cornally Consulting Engineers and Land Surveyors, KGY, 27192, 2006
 N 638126.398'
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 Elevation: NGVD-29(47) = 11.70'

CHECK IN MONUMENT

"LAUNCH"

3" Brass cap stamped:
 Stilling-Cornally Consulting Engineers and Land Surveyors, LAUNCH, 27192, 2006
 N 637828.846'
 E 1042432.022'
 Elevation: MLLW = 20.14'
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Corner of dock and fender system tied with RTK GPS.
NORTH CORNER OF CONCRETE DOCK
 N 637321.371'
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 EL 20.2'
OUTSIDE NORTH CORNER OF FENDER SYSTEM
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 EL 20.1'

N 6380500
 E 10403000

N 6375000
 E 10405000

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 - Spot elevations are selected from the 1.6 foot gridded data, using a shoal bias method with a radius of approximately 10 feet.
 - Depths were acquired with a Reson Seabat 8101 multibeam bathymetric sonar integrated with an Applanix POS/MV positioning and motion reference system. Water surface elevations were acquired using a Trimble MS-750 and Real Time Kinematic (RTK-GPS) methods.
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LEGEND:

- = 1 Foot contour interval
- = 5 Foot contour interval
- = 38 foot contour
- = Spot depth in feet positioned at decimal

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Gregory P. Baird,
 ACSM Certified Hydrographer (201)



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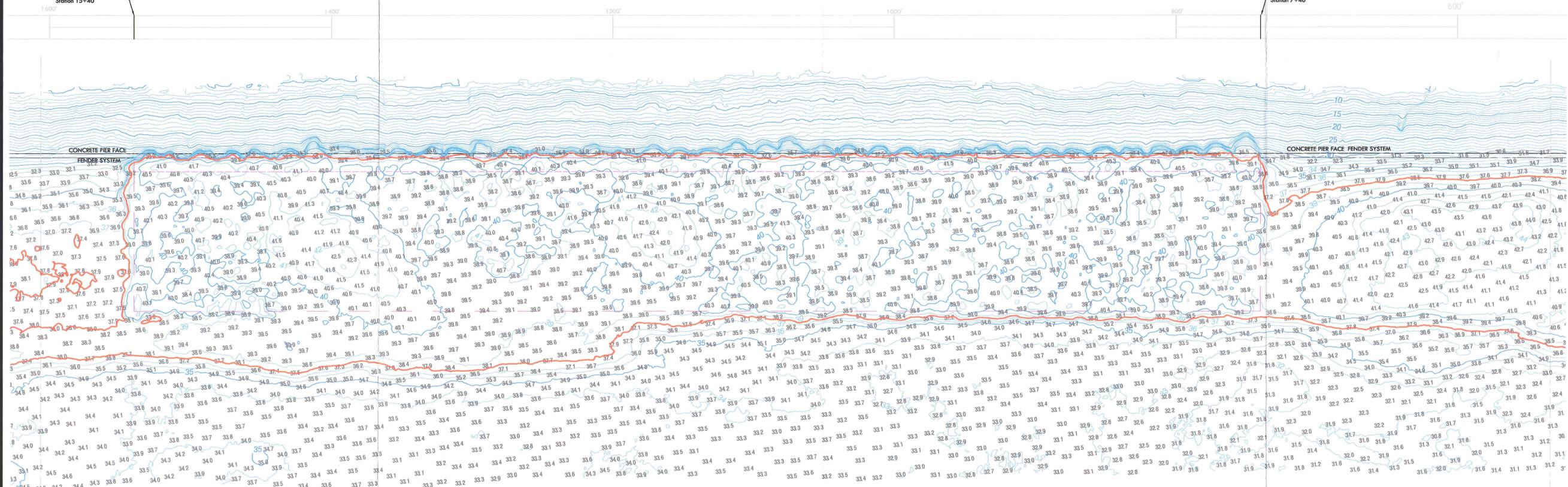
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North end of dredge limits
Station 15+40

South end of dredge limits
Station 7+40



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- = 38 foot contour
- = Spot depth in feet positioned at decimal
- = Dredge limit at toe of slope
- = Boundary line between dredge units 1 & 2.

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30 0 30 60 90
UNITS IN FEET
SCALE: 1" = 30'

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REVISIONS: APPD.

DATE: 03/12/2009
DESIGN: MJCH
DRAWN: MDHA
CHECKED:
REVISION NUMBER:

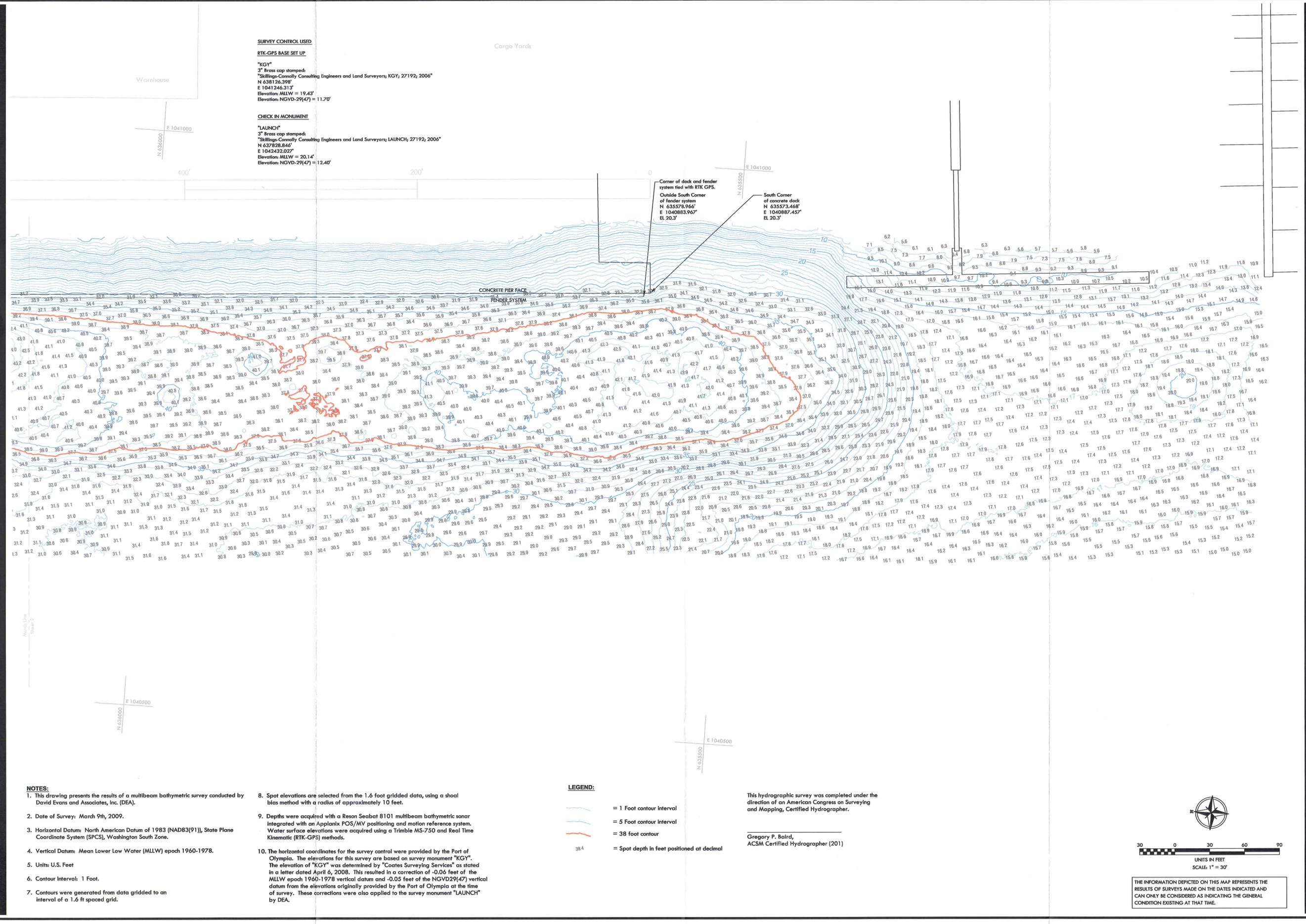
SCALE: 1" = 30'

PROJECT NUMBER:
ANCE0000-0004

DRAWING FILE:
MSVLXANCE0004.dwg

SHEET NO.

N:\Projects\ANCE00000004\040004\0420DWG\MSVLXANCE0004.dwg Mar 12, 2009 11:30pm



SURVEY CONTROL USED

RTK-GPS BASE SET UP

"KGY"
 3" Brass cap stamped
 "Stilling-Covey Consulting Engineers and Land Surveyors, KGY, 27192, 2006"
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Corner of dock and fender system tied with RTK GPS.
 Outside South Corner of fender system
 N 635378.966'
 E 1040883.967'
 El. 20.3'

South Corner of concrete dock
 N 635573.468'
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 El. 20.3'

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 - Horizontal Datum: North American Datum of 1983 (NAD83(91)), State Plane Coordinate System (SPCS), Washington South Zone.
 - Vertical Datum: Mean Lower Low Water (MLLW) epoch 1960-1978.
 - Units: U.S. Feet
 - Contour Interval: 1 Foot.
 - Contours were generated from data gridded to an interval of a 1.6 foot spaced grid.
 - Spot elevations are selected from the 1.6 foot gridded data, using a shoal bias method with a radius of approximately 10 feet.
 - Depths were acquired with a Reson Seabat 8101 multibeam bathymetric sonar integrated with an Applanix POS/MV positioning and motion reference system. Water surface elevations were acquired using a Trimble MS-750 and Real Time Kinematic (RTK-GPS) methods.
 - The horizontal coordinates for the survey control were provided by the Port of Olympia. The elevations for this survey are based on survey monument "KGY". The elevation of "KGY" was determined by "Coates Surveying Services" as stated in a letter dated April 6, 2008. This resulted in a correction of -0.06 feet of the MLLW epoch 1960-1978 vertical datum and -0.05 feet of the NGVD29(47) vertical datum from the elevations originally provided by the Port of Olympia at the time of survey. These corrections were also applied to the survey monument "LAUNCH" by DEA.

- LEGEND:**
- = 1 Foot contour interval
 - = 5 Foot contour interval
 - = 38 foot contour
 - 38.4 = Spot depth in feet positioned at decimal

This hydrographic survey was completed under the direction of an American Congress on Surveying and Mapping, Certified Hydrographer.

Gregory P. Baird,
 ACSM Certified Hydrographer (201)

30 0 30 60 90
 UNITS IN FEET
 SCALE 1" = 30'

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.

MULTIBEAM BATHYMETRIC MAPPING
CAPPING SURVEY
 PORT OF OLYMPIA
 OLYMPIA, WASHINGTON

DAVID EVANS AND ASSOCIATES, INC.
 2801 Southeast Columbia Way Suite 150
 Vancouver, Washington 98681
 Phone: 360.314.5200

REVISIONS: APPD.

DATE: 03/12/2009
 DESIGN: MJCH
 DRAWN: MDHA
 CHECKED:
 REVISION NUMBER:

SCALE: 1" = 30'
 PROJECT NUMBER:
ANCE0000-0004

DRAWING FILE:
 MSVLXANCE0004.dwg
 SHEET NO.

REVISIONS: APPD.

DATE: 03/12/2009
 DESIGN: MJCH
 DRAWN: MDHA
 CHECKED:
 REVISION NUMBER:

SCALE: 1" = 30'

PROJECT NUMBER:
ANCE0000-0004

DRAWING FILE:
 MSVLXANCE0004.dwg

SHEET NO.

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 OF 6

SURVEY CONTROL USED

RTK-GPS BASE SET UP

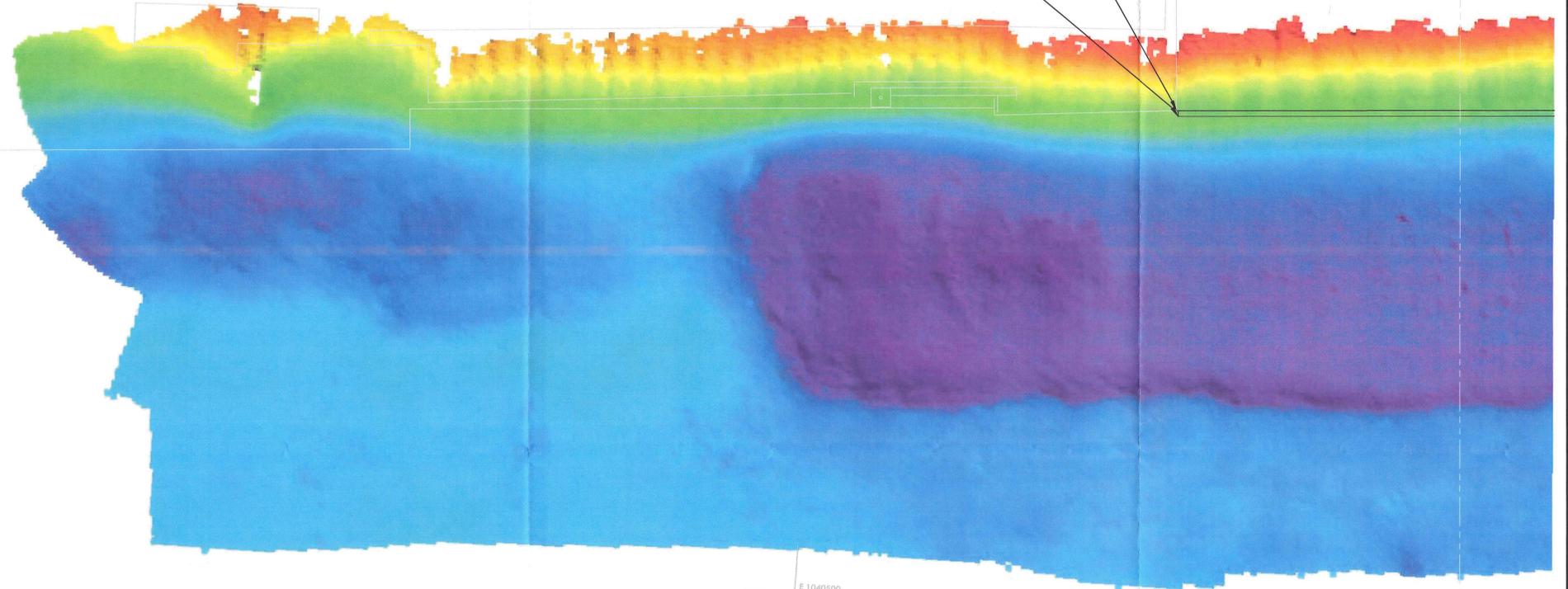
"KGY"
 3" Brass cap stamped:
 Stilling-Crowley Consulting Engineers and Land Surveyors, KGY; 27192; 2006
 N 638126.398'
 E 1041246.313'
 Elevation, MLLW = 19.43'
 Elevation, NGVD-29(47) = 11.70'

CHECK IN MONUMENT

"LAUNCH"

3" Brass cap stamped:
 Stilling-Crowley Consulting Engineers and Land Surveyors, LAUNCH; 27192; 2006
 N 637828.846'
 E 1042432.027'
 Elevation, MLLW = 20.14'
 Elevation, NGVD-29(47) = 12.40'

Corner of dock and fender system tied with RTK GPS.
 NORTH CORNER OF CONCRETE DOCK
 N 637321.371'
 E 1040764.315'
 EL 20.2'
 OUTSIDE NORTH CORNER OF FENDER SYSTEM
 N 637220.223'
 E 1040761.389'
 EL 20.1'



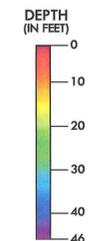
Water Line Sheet 2

- NOTES:**
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 - Vertical Datum: Mean Lower Low Water (MLLW) epoch 1960-1978.
 - Units: U.S. Feet
 - The sun-illuminated image was generated from a Digital Terrain Model (DTM) based on a 0.5 meter grid of multibeam data in Caris HIPS software. Illumination angles and color scale are shown in the legend.

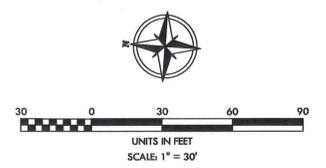
- Depths were acquired with a Reson Seabat 8101 multibeam bathymetric sonar integrated with an Applanix POS/MV positioning and motion reference system. Water surface elevations were acquired using a Trimble MS-750 and Real Time Kinematic (RTK-GPS) methods.
- The horizontal coordinates for the survey control were provided by the Port of Olympia. The elevations for this survey are based on survey monument "KGY". The elevation of "KGY" was determined by "Coates Surveying Services" as stated in a letter dated April 6, 2008. This resulted in a correction of -0.06 feet of the MLLW epoch 1960-1978 vertical datum and -0.05 feet of the NGVD29(47) vertical datum from the elevations originally provided by the Port of Olympia at the time of survey. These corrections were also applied to the survey monument "LAUNCH" by DEA.

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Gregory P. Baird,
 ACSM Certified Hydrographer (201)



SUN-ILLUMINATION	
AZIMUTH	INCLINATION
315°	45°



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SURVEY CONTROL USED

RTK-GPS BASE SET UP

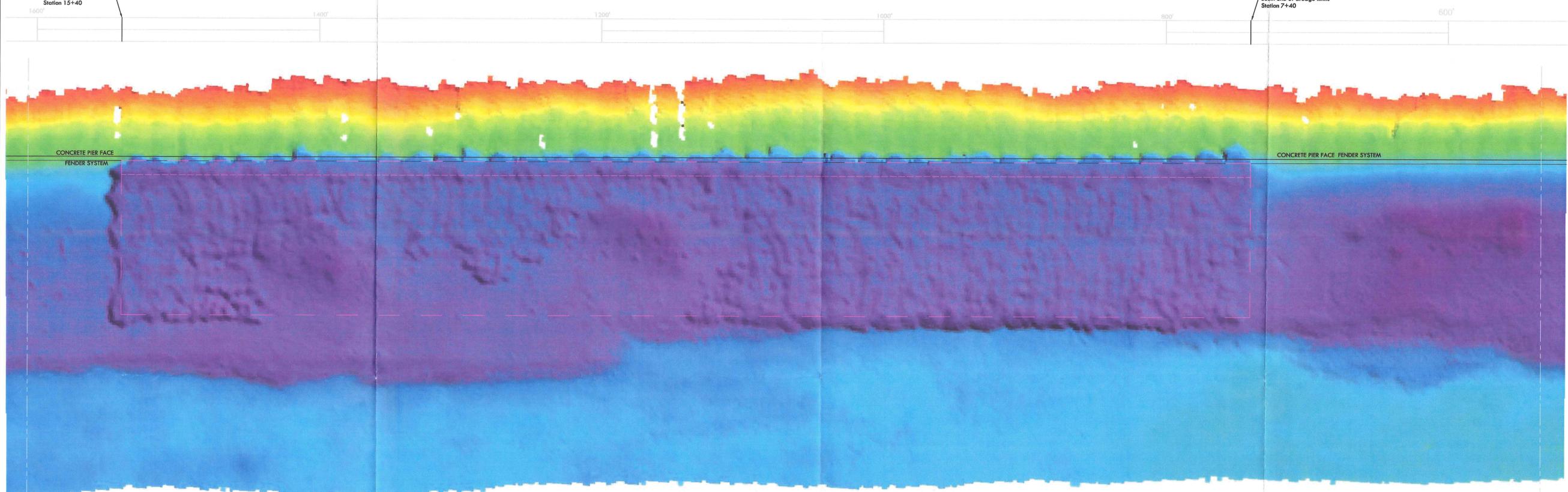
"KGY"
 3" Brass cap stamped:
 "Skilling-Connolly Consulting Engineers and Land Surveyors; KGY; 27192; 2006"
 N 638126.398'
 E 1041246.313'
 Elevations MLLW = 19.43'
 Elevations NGVD-29(47) = 11.70'

CHECK IN MONUMENT

"LAUNCH"
 3" Brass cap stamped:
 "Skilling-Connolly Consulting Engineers and Land Surveyors; LAUNCH; 27192; 2006"
 N 637828.846'
 E 1042432.027'
 Elevations MLLW = 20.14'
 Elevations NGVD-29(47) = 12.40'

North end of dredge limits
 Station 15+40

South end of dredge limits
 Station 7+40



- NOTES:**
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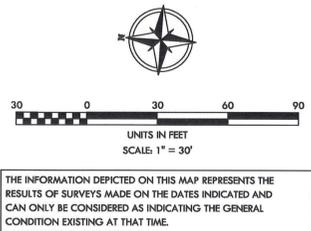
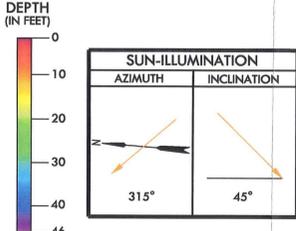
LEGEND:

--- = Dredge limit at toe of slope

--- = Boundary line between dredge units 1 & 2.

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 ACSM Certified Hydrographer (201)



MULTIBEAM BATHYMETRIC MAPPING
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 PORT OF OLYMPIA
 OLYMPIA, WASHINGTON

DAVID EVANS AND ASSOCIATES INC.
 2801 Southeast Columbia Way, Suite 150
 Vancouver, Washington 98681
 Phone: 360.314.3200

REVISIONS: APPD.

DATE: 03/12/2009
 DESIGN: MJCH
 DRAWN: MDHA
 CHECKED:
 REVISION NUMBER:

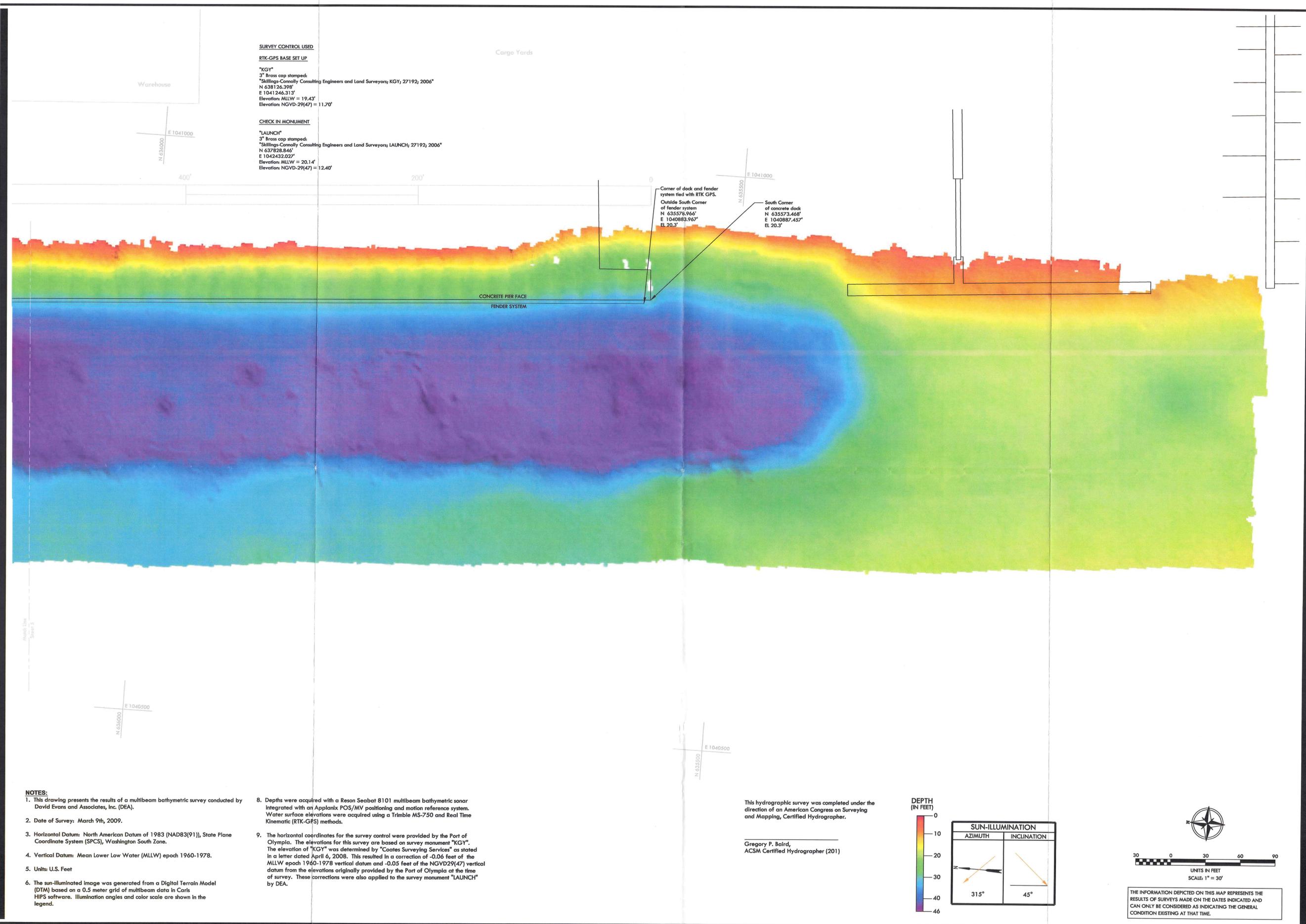
SCALE: 1" = 30'

PROJECT NUMBER:
ANCE0000-0004

DRAWING FILE:
 MSVLXANCE0004.dwg

SHEET NO.
5
 OF 6

N:\Projects\Active\ANCE00000004\0400CAD\042DDWG\MSVLXANCE0004.dwg Mar 12, 2009 - 1:24pm



SURVEY CONTROL USED
RTK-GPS BASE SET UP
 "KGY"
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 E 1041246.313'
 Elevation: MLLW = 19.43'
 Elevation: NGVD-29(47) = 11.70'

CHECK IN MONUMENT
 "LAUNCH"
 3" Brass cap stamped:
 "Skilling-Connolly Consulting Engineers and Land Surveyors; LAUNCH; 27192; 2006"
 N 637928.846'
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 Elevation: MLLW = 20.14'
 Elevation: NGVD-29(47) = 12.40'

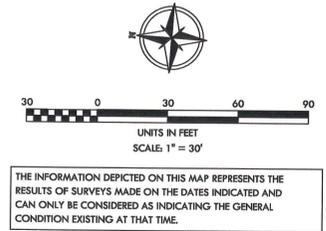
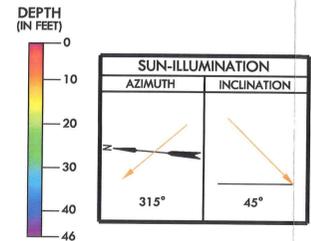
Corner of dock and fender system tied with RTK GPS.
 Outside South Corner of fender system
 N 635578.945'
 E 1040883.967'
 EL 20.3'

South Corner of concrete dock
 N 635573.468'
 E 1040887.452'
 EL 20.3'

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6
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