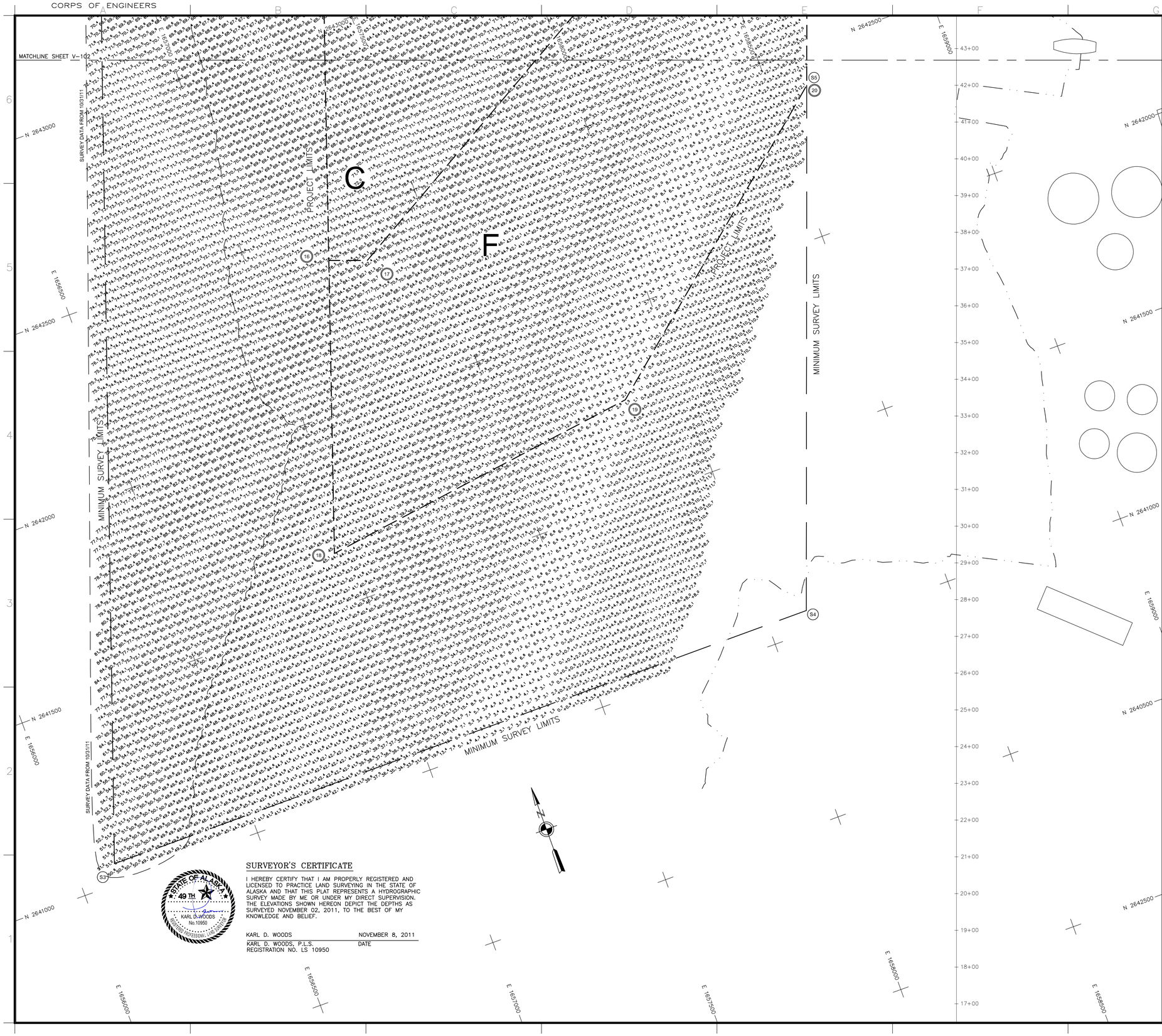
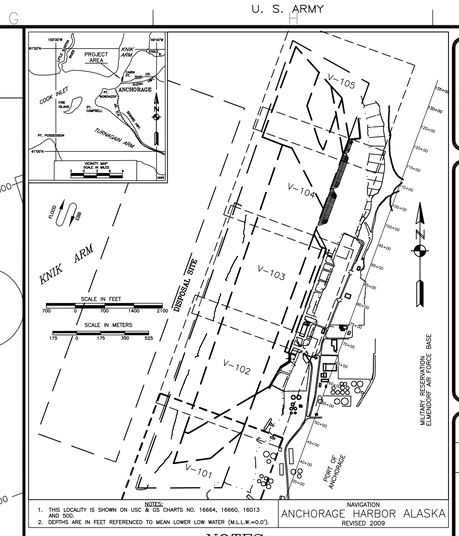
CORPS OF ENGINEERS

U. S. ARMY





NOTES:
1. THIS LOCALITY IS SHOWN ON USC & GS CHARTS NO. 16664, 16660, 16013 AND 500.
2. DEPTHS ARE IN FEET REFERENCED TO MEAN LOWER LOW WATER (M.L.L.W.=0.0').

NAVIGATION
ANCHORAGE HARBOR ALASKA
REVISED 2009

NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD 83, IN US SURVEY FEET, HOLDING USACE SBC "N END 1978" AS N 2,646,652.19', E 1,660,582.43' AND USACE SBC "S END 1978" AS N 2,644,298.25', E 1,659,725.47'. IT SHOULD BE NOTED THAT THE HISTORICAL COORDINATE VALUES REFLECTED HEREON WERE CONVERTED FROM NAD27 USING CORPSCON. TRUE NAD83 COORDINATES ARE WITHIN 1 METER OF THE POSITIONS INDICATED.
2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW=0.0), BASED ON NOAA/NOS 1983–2001 TIDAL EPOCH BENCH MARK LIST, "9455920 ANCHORAGE, KNIK ARM, COOK INLET, ALASKA" PUBLISHED 4/21/2003, HOLDING USCGS SBC "TIDAL 16 1966" AS 40.53', USCGS SBC "B 75 1964" AS 36.82'.
3. THIS SURVEY WAS PERFORMED BY TERRASOND, LTD. ON NOVEMBER 02, 2011. SOUNDINGS WERE COLLECTED USING A RESON SEABAT 7101 MULTIBEAM ECHOSOUNDER WITH A 240kHz, 150–DEGREE SWATH–WIDTH TRANSDUCER (511 BEAMS). BEAM STEERING WAS ACCOMPLISHED USING AN APPLIED MICROSYSTEMS LABORATORIES (AML) SMART–PROBE, SOUND VELOCITY PROFILER LOCATED AT THE SONAR HEAD. SOUND VELOCITY THROUGH THE WATER COLUMN WAS MEASURED AND APPLIED USING AN ODOM DIGI–BAR PRO SOUND VELOCITY PROFILER DEPLOYED DURING THE SURVEY. VESSEL ATTITUDE, HEADING, POSITIONING AND REAL–TIME TIDES WERE PROVIDED USING A CODA OCTOPUS F185 INERTIAL MOTION UNIT OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 5700 GPS RECEIVER SET AT CONTROL STATION, "TERRA–11 2011", LOCATED ATOP THE PORT OFFICE BUILDING. REAL–TIME–KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS SBC "TIDAL 16 1966", LOCATED AT NOAA/NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE. SURVEY NAVIGATION AND DATA COLLECTION WERE PERFORMED USING HYPACK "HYSWEEP 2010" INTEGRATED SOFTWARE (V2010). DATA PROCESSING WAS PERFORMED USING CARIS HIPS SOFTWARE (V7.0).
4. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
5. THIS SURVEY IS INDICATIVE OF GENERAL CONDITIONS ON THE DATES OF SURVEY.
6. TEMPORARY CONTROL STATION'S, "TERRA–11 2011" & "TERRA–12 2011" WERE ESTABLISHED ON 25 APRIL, 2011. THERE WERE NO NEW MONUMENTS ESTABLISHED DURING THIS SURVEY.

MINIMUM SURVEY LIMITS

CORNER	NORTHING	EASTING
S1	2,650,729.31	1,661,635.11
S2	2,651,749.08	1,659,812.02
S3	2,641,054.00	1,656,104.99
S4	2,641,057.43	1,658,111.18
S5	2,642,400.36	1,658,601.13
S6	2,643,288.85	1,658,924.78
S7	2,643,482.54	1,659,251.59
S8	2,643,954.35	1,659,521.88
S9	2,644,084.68	1,659,718.80
S10	2,644,273.77	1,659,727.13
S11	2,644,280.77	1,659,707.87
S12	2,646,775.08	1,660,615.96
S13	2,647,258.01	1,660,369.40
S14	2,647,729.45	1,660,542.36
S15	2,649,026.93	1,661,014.98
S15	2,649,402.83	1,661,151.92

NOTES:
1. SURVEY LIMIT ALONG THE DOOK IS 5 FT OFF THE FINISHED DOOK FACE.
2. THE SURVEY LIMIT IS THE MINIMUM AREA OF SURVEY COVERAGE.
3. SURVEY LIMIT WILL CHANGE AS PORT EXPANSION PROGRESSES FOR THE NORTH AND SOUTH REPLACEMENT ALONG THE NEW DOCK FACE.

DISPOSAL SITE LIMITS

CORNER	NORTHING	EASTING
DS1	2,642,356.04	1,653,697.24
DS2	2,650,812.98	1,656,776.26
DS3	2,650,128.76	1,658,655.55
DS4	2,641,671.82	1,655,576.56

PROJECT AREA LIMITS

CORNER	NORTHING	EASTING
1	2,649,026.93	1,661,014.98
2	2,649,402.83	1,661,151.92
3	2,650,348.22	1,660,985.44
4	2,650,385.07	1,660,978.99
5	2,650,667.03	1,660,726.23
6	2,649,972.42	1,660,848.54
7	2,649,141.83	1,660,545.98
8	2,649,310.50	1,660,447.78
9	2,650,188.92	1,660,157.43
10	2,650,980.93	1,660,444.85
11	2,651,607.70	1,659,883.00
12	2,649,433.17	1,659,083.75
13	2,649,259.10	1,659,564.36
14	2,649,177.10	1,659,789.46
15	2,647,729.45	1,660,542.36
16	2,642,397.53	1,657,215.05
17	2,642,361.64	1,657,313.58
18	2,641,642.88	1,656,956.67
19	2,641,765.14	1,657,844.43
20	2,642,400.36	1,658,601.13
21	2,643,288.85	1,658,924.78
22	2,643,482.54	1,659,251.59
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26	2,644,280.77	1,659,707.87
27	2,644,321.52	1,659,610.51
28	2,646,775.08	1,660,615.96
29	2,646,811.55	1,660,515.95
30	2,646,825.36	1,660,478.01
31	2,647,129.67	1,660,322.64
32	2,649,145.25	1,660,536.58

CONTROL DATA

STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
N. END 1978	2,646,652.19	1,660,582.43	41.39	USACE SBC 1978 (STA 88+73.09)
S. END 1978	2,644,298.25	1,659,725.47	40.47	USACE SBC 1978 (STA 63+67.98)
DJ–1	2,650,309.04	1,661,821.57	181.47	–
NEW	2,652,477.41	1,653,265.13	46.47	–
EQ–1	2,629,995.41	1,643,767.75	83.07	–
SP–1	2,632,165.12	1,650,395.14	36.47	–
SANDBAG	2,646,634.30	1,662,476.29	206.82	USC & GS SBC
CLIFF	2,648,978.03	1,662,106.44	250.99	–
C 1/4 COR	2,642,005.73	1,660,981.81	128.25	–
ZZ–1	2,644,301.39	1,660,846.61	38.70	–
TERRA–11 2011	2,644,971.98	1,660,156.80	80.34	ALL–TREAD ON ROOF POA BLDG.
TERRA–12 2011	2,644,992.77	1,660,164.10	80.39	ALL–TREAD ON ROOF POA BLDG.

100 0 100 200 300
SCALE IN FEET
HORIZONTAL SCALE: 1"=100'

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA AND THAT THIS PLAT REPRESENTS A HYDROGRAPHIC SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION. THE ELEVATIONS SHOWN HEREON DEPICT THE DEPTHS AS SURVEYED NOVEMBER 02, 2011, TO THE BEST OF MY KNOWLEDGE AND BELIEF.

STATE OF ALASKA 49TH KARL D. WOODS No.10950 PROFESSIONAL LAND SURVEYOR

KARL D. WOODS — NOVEMBER 8, 2011
KARL D. WOODS, P.L.S. REGISTRATION NO. LS 10950 — DATE

BATHYMETRY

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. W911KB–09–C–0022
CONTRACTOR MANSON CONSTRUCTION CO.
CITY SEATTLE STATE WASHINGTON
Recommended: Approved: Date:
TRIAL CONTRACTOR RESIDENT ENGINEER

Sym	Action	Description	Date	Approv

Designed: JEA/LEP/KNB/JGM
Drawn: KNB/LEP
Reviewed: KDW
Chief, A. CHURCHILL
Scale/Date: Date: 11/04/11
Dwg Scale: AS NOTED
Plot Scale:
Section File:
Branch Drawing #:
USACE Survey No. 2975-11

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

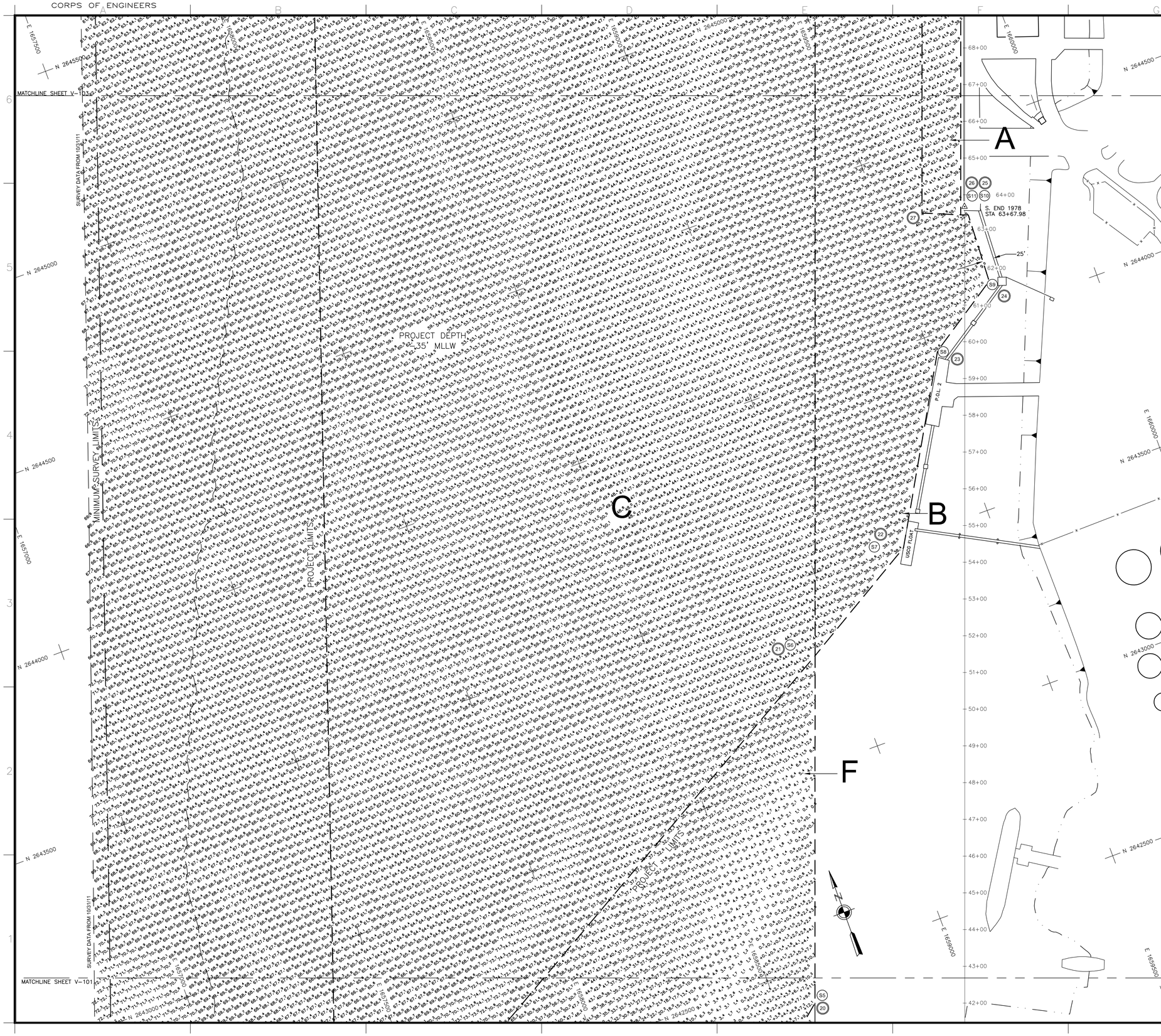
SURVEY 69

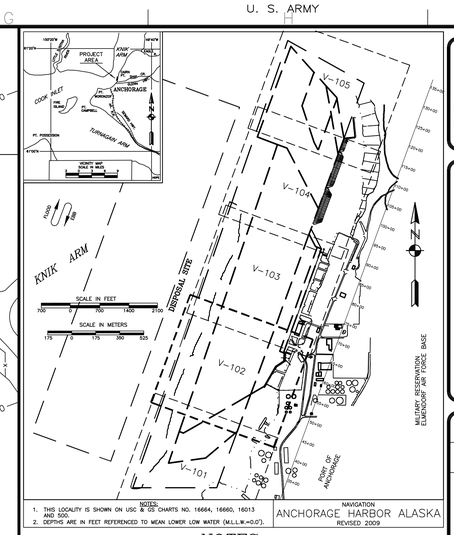
ANCHORAGE, ALASKA
PORT OF ANCHORAGE
2009–2011
TRANSITIONAL AND MAINTENANCE DREDGING
2011 POST DREDGE SURVEY
NOVEMBER 02, 2011

Reference number:
V-101
Sheet 1 of 6

CORPS OF ENGINEERS

U. S. ARMY





NOTES:
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NAVIGATION
ANCHORAGE HARBOR ALASKA
REVISED 2009

NOTES

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100 0 100 200 300
SCALE IN FEET
HORIZONTAL SCALE: 1"=100'

BATHYMETRY

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. W911KB–09–C–0022
CONTRACTOR MANSON CONSTRUCTION CO.
CITY SEATTLE STATE WASHINGTON
Recommended: Approved: Date:
PRIME CONTRACTOR RESIDENT ENGINEER

Sym	Action	Description	Date	Approv

Designed: JEA/LEP/KNB/JGM
Drawn: KNB/LEP
Reviewed: KDW
Chief A. CHURCHILL
Date: 11/04/11
Dwg Scale: AS NOTED
Plot Scale:
Plot Date:
File:
Section:
Drawing #:
Beach:
Contract:
Project:
USACE Survey No.: 2975-11

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

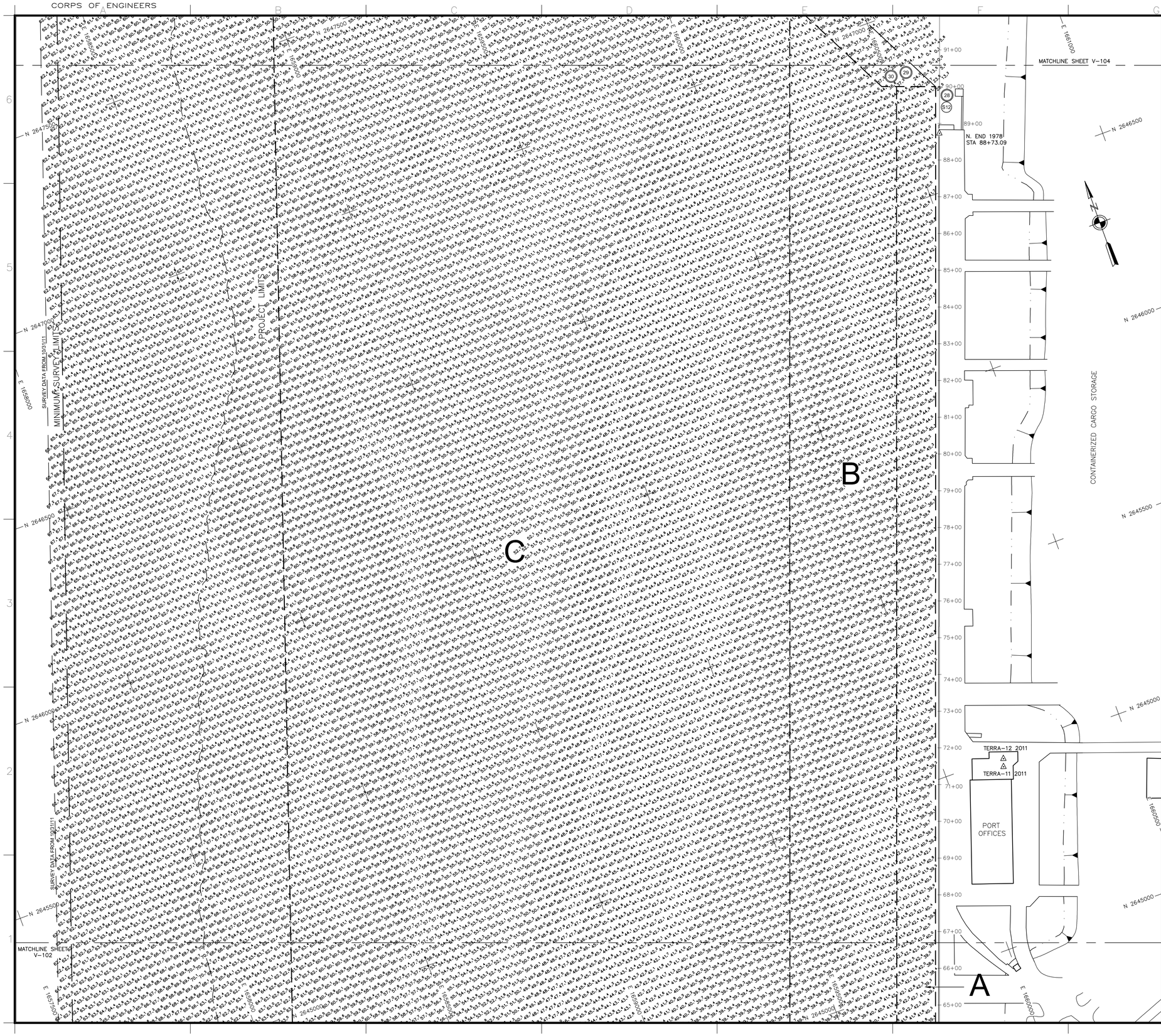
SURVEY 69

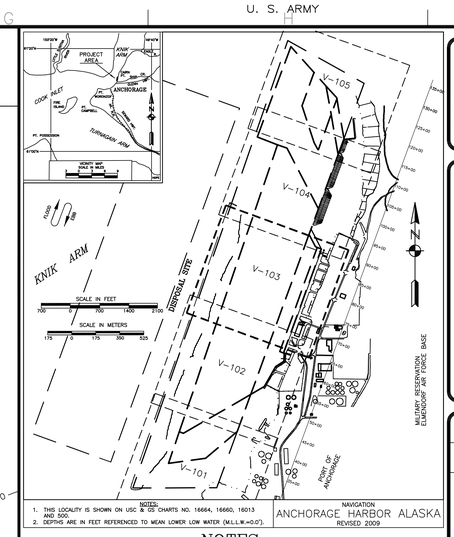
ANCHORAGE, ALASKA
PORT OF ANCHORAGE
2009–2011
TRANSITIONAL AND MAINTENANCE DREDGING
2011 POST DREDGE SURVEY
NOVEMBER 02, 2011

Reference number:
V-102
Sheet 2 of 6

CORPS OF ENGINEERS

U. S. ARMY





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DS3	2,650,128.76	1,658,655.55
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7	2,649,141.83	1,660,545.98
8	2,649,310.50	1,660,447.78
9	2,650,188.92	1,660,157.43
10	2,650,980.93	1,660,444.85
11	2,651,607.70	1,659,883.00
12	2,649,433.17	1,659,083.75
13	2,649,259.10	1,659,564.36
14	2,649,177.10	1,659,789.46
15	2,647,729.45	1,660,542.36
16	2,642,397.53	1,657,215.05
17	2,642,361.64	1,657,313.58
18	2,641,642.88	1,656,956.67
19	2,641,765.14	1,657,844.43
20	2,642,400.36	1,658,601.13
21	2,643,288.85	1,658,924.78
22	2,643,482.54	1,659,251.59
23	2,643,954.35	1,659,521.88
24	2,644,084.68	1,659,718.80
25	2,644,273.77	1,659,727.13
26	2,644,280.77	1,659,707.87
27	2,644,321.52	1,659,610.51
28	2,646,775.08	1,660,615.96
29	2,646,811.55	1,660,515.95
30	2,646,825.36	1,660,478.01
31	2,647,129.67	1,660,322.64
32	2,649,145.25	1,660,536.58

CONTROL DATA

STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
N. END 1978	2,646,652.19	1,660,582.43	41.39	USACE SBC 1978 (STA 88+73.09)
S. END 1978	2,644,298.25	1,659,725.47	40.47	USACE SBC 1978 (STA 63+67.98)
DJ–1	2,650,309.04	1,661,821.57	181.47	–
NEW	2,652,477.41	1,653,265.13	46.47	–
EQ–1	2,629,995.41	1,643,787.75	83.07	–
SP–1	2,632,165.12	1,650,395.14	36.47	–
SANDBAG	2,646,634.30	1,662,476.29	206.82	USC & GS SBC
CLIFF	2,648,978.03	1,662,106.44	250.99	–
C 1/4 COR	2,642,005.73	1,660,981.81	128.25	–
ZZ–1	2,644,301.39	1,660,846.61	38.70	–
TERRA–11 2011	2,644,971.98	1,660,156.80	80.34	ALL–TREAD ON ROOF POA BLDG.
TERRA–12 2011	2,644,992.77	1,660,164.10	80.39	ALL–TREAD ON ROOF POA BLDG.

100 0 100 200 300

SCALE IN FEET
HORIZONTAL SCALE: 1"=100'

BATHYMETRY

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. W911KB–09–C–0022
CONTRACTOR MANSON CONSTRUCTION CO.
CITY SEATTLE STATE WASHINGTON
Recommended: Approved: Date:
TRIAL CONTRACTOR RESIDENT ENGINEER

Sym	Action	Description	Date	Approv

Designed: JEA/LEP/KNB/JGM
Drawn: KNB/LEP
Reviewed: KDW
Scale: A. CHURCHILL
Date: 11/04/11
Dwg Scale: AS NOTED
Plot Scale:
File:
Section: Branch: Drawing #:
Project Title:
Sheet Title:
USACE Survey No.: 2975-11

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

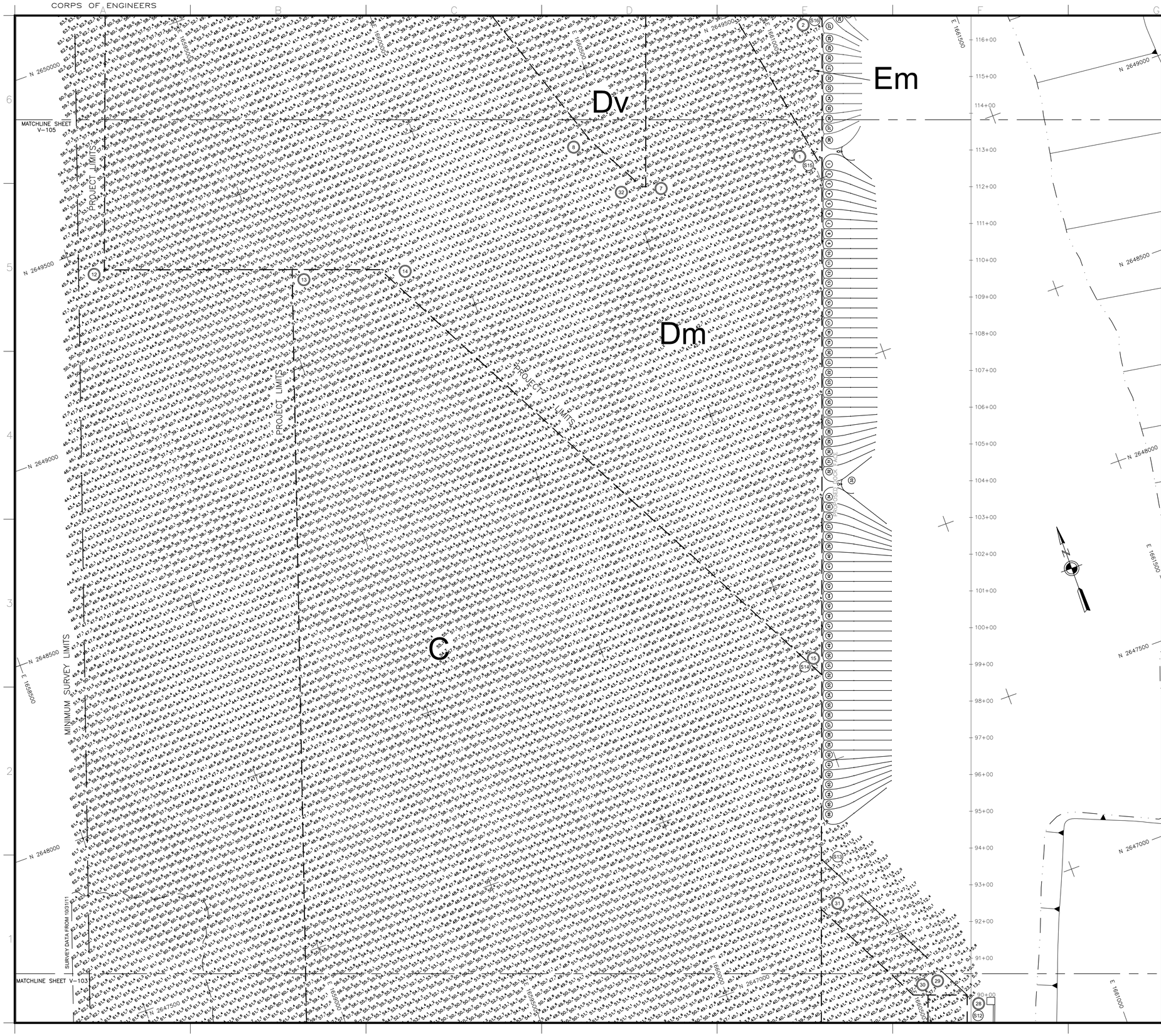
SURVEY 69

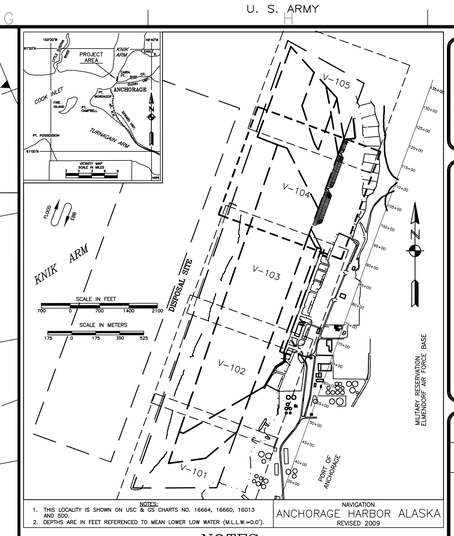
ANCHORAGE ALASKA
PORT OF ANCHORAGE
2009–2011
TRANSITIONAL AND MAINTENANCE DREDGING
2011 POST DREDGE SURVEY
NOVEMBER 02, 2011

Reference number:
V-103
Sheet 3 of 6

CORPS OF ENGINEERS

U. S. ARMY





NOTES:
1. THIS LOCALITY IS SHOWN ON USC & GS CHARTS NO. 16664, 16660, 16013 AND 500.
2. DEPTHS ARE IN FEET REFERENCED TO MEAN LOWER LOW WATER (M.L.L.W.=0.0').

NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD 83, IN US SURVEY FEET, HOLDING USACE SBC "N END 1978" AS N 2,646,652.19', E 1,660,582.43' AND USACE SBC "S END 1978" AS N 2,644,298.25', E 1,659,725.47'. IT SHOULD BE NOTED THAT THE HISTORICAL COORDINATE VALUES REFLECTED HEREON WERE CONVERTED FROM NAD27 USING CORPSCON. TRUE NAD83 COORDINATES ARE WITHIN 1 METER OF THE POSITIONS INDICATED.

2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW=0.0), BASED ON NOAA/NOS 1983–2001 TIDAL EPOCH BENCH MARK LIST, "9455920 ANCHORAGE, KNIK ARM, COOK INLET, ALASKA" PUBLISHED 4/21/2003, HOLDING USCGS SBC "TIDAL 16 1966" AS 40.53', USCGS SBC "B 75 1964" AS 36.82'.

3. THIS SURVEY WAS PERFORMED BY TERRASOND, LTD. ON NOVEMBER 02, 2011. SOUNDINGS WERE COLLECTED USING A RESON SEABAT 7101 MULTIBEAM ECHOSOUNDER WITH A 240kHz, 150–DEGREE SWATH–WIDTH TRANSDUCER (511 BEAMS). BEAM STEERING WAS ACCOMPLISHED USING AN APPLIED MICROSYSTEMS LABORATORIES (AML) SMART–PROBE, SOUND VELOCITY PROFILER LOCATED AT THE SONAR HEAD. SOUND VELOCITY THROUGH THE WATER COLUMN WAS MEASURED AND APPLIED USING AN ODOM DIGI–BAR PRO SOUND VELOCITY PROFILER DEPLOYED DURING THE SURVEY. VESSEL ATTITUDE, HEADING, POSITIONING AND REAL–TIME TIDES WERE PROVIDED USING A CODA OCTOPUS F185 INERTIAL MOTION UNIT OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 5700 GPS RECEIVER SET AT CONTROL STATION, "TERRA–11 2011", LOCATED ATOP THE PORT OFFICE BUILDING. REAL–TIME–KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS SBC "TIDAL 16 1966", LOCATED AT NOAA/NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE. SURVEY NAVIGATION AND DATA COLLECTION WERE PERFORMED USING HYPACK "HYSWEEP 2010" INTEGRATED SOFTWARE (V2010). DATA PROCESSING WAS PERFORMED USING CARIS HIPS SOFTWARE (V7.0).

4. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.

5. THIS SURVEY IS INDICATIVE OF GENERAL CONDITIONS ON THE DATES OF SURVEY.

6. TEMPORARY CONTROL STATION'S, "TERRA–11 2011" & "TERRA–12 2011" WERE ESTABLISHED ON 25 APRIL, 2011. THERE WERE NO NEW MONUMENTS ESTABLISHED DURING THIS SURVEY.

MINIMUM SURVEY LIMITS

CORNER	NORTHING	EASTING
S1	2,650,729.31	1,661,635.11
S2	2,651,749.08	1,659,812.02
S3	2,641,054.00	1,656,104.99
S4	2,641,057.43	1,658,111.18
S5	2,642,400.36	1,658,601.13
S6	2,643,288.85	1,658,924.78
S7	2,643,482.54	1,659,251.59
S8	2,643,954.35	1,659,521.88
S9	2,644,084.68	1,659,718.80
S10	2,644,273.77	1,659,727.13
S11	2,644,280.77	1,659,707.87
S12	2,646,775.08	1,660,615.96
S13	2,647,258.01	1,660,369.40
S14	2,647,729.45	1,660,542.36
S15	2,649,026.93	1,661,014.98
S15	2,649,402.83	1,661,151.92

NOTES:
1. SURVEY LIMIT ALONG THE DOCK IS 5 FT OFF THE FINISHED DOCK FACE.
2. THE SURVEY LIMIT IS THE MINIMUM AREA OF SURVEY COVERAGE.
3. SURVEY LIMIT WILL CHANGE AS PORT EXPANSION PROGRESSES FOR THE NORTH AND SOUTH REPLACEMENT ALONG THE NEW DOCK FACE.

DISPOSAL SITE LIMITS

CORNER	NORTHING	EASTING
DS1	2,642,356.04	1,653,697.24
DS2	2,650,812.98	1,656,776.26
DS3	2,650,128.76	1,658,655.55
DS4	2,641,671.82	1,655,576.56

PROJECT AREA LIMITS

CORNER	NORTHING	EASTING
1	2,649,026.93	1,661,014.98
2	2,649,402.83	1,661,151.92
3	2,650,348.22	1,660,985.44
4	2,650,385.07	1,660,978.99
5	2,650,667.03	1,660,726.23
6	2,649,972.42	1,660,848.54
7	2,649,141.83	1,660,545.98
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14	2,649,177.10	1,659,789.46
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16	2,642,397.53	1,657,215.05
17	2,642,361.64	1,657,313.58
18	2,641,642.88	1,656,956.67
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31	2,647,129.67	1,660,322.64
32	2,649,145.25	1,660,536.58

CONTROL DATA

STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
N. END 1978	2,646,652.19	1,660,582.43	41.39	USACE SBC 1978 (STA 88+73.09)
S. END 1978	2,644,298.25	1,659,725.47	40.47	USACE SBC 1978 (STA 63+67.98)
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NEW	2,652,477.41	1,653,265.13	46.47	–
EQ–1	2,629,995.41	1,643,787.75	83.07	–
SP–1	2,632,165.12	1,650,395.14	36.47	–
SANDBAG	2,646,634.30	1,662,476.29	206.82	USC & GS SBC
CLIFF	2,648,978.03	1,662,106.44	250.99	–
C 1/4 COR	2,642,005.73	1,660,981.81	128.25	–
ZZ–1	2,644,301.39	1,660,846.61	38.70	–
TERRA–11 2011	2,644,971.98	1,660,156.80	80.34	ALL–TREAD ON ROOF POA BLDG.
TERRA–12 2011	2,644,992.77	1,660,164.10	80.39	ALL–TREAD ON ROOF POA BLDG.

100 0 100 200 300
SCALE IN FEET
HORIZONTAL SCALE: 1"=100'

BATHYMETRY

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. W911KB–09–C–0022
CONTRACTOR MANSON CONSTRUCTION CO.
CITY SEATTLE STATE WASHINGTON
Recommended: Approved: Date:
TRIAL CONTRACTOR RESIDENT ENGINEER

Sym	Action	Description	Date	Approv

Designed: JEA/LEP/KNB/JGM
Drawn: KNB/LEP
Reviewed: KDW
Chief, A. CHURCHILL
Date: 11/04/11
Dwg Scale: AS NOTED
Plot Scale:
File:
Drawing #:
Section
Sheet(s)
Contractor
Project Engineer
USACE Survey No.: 2975-11

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

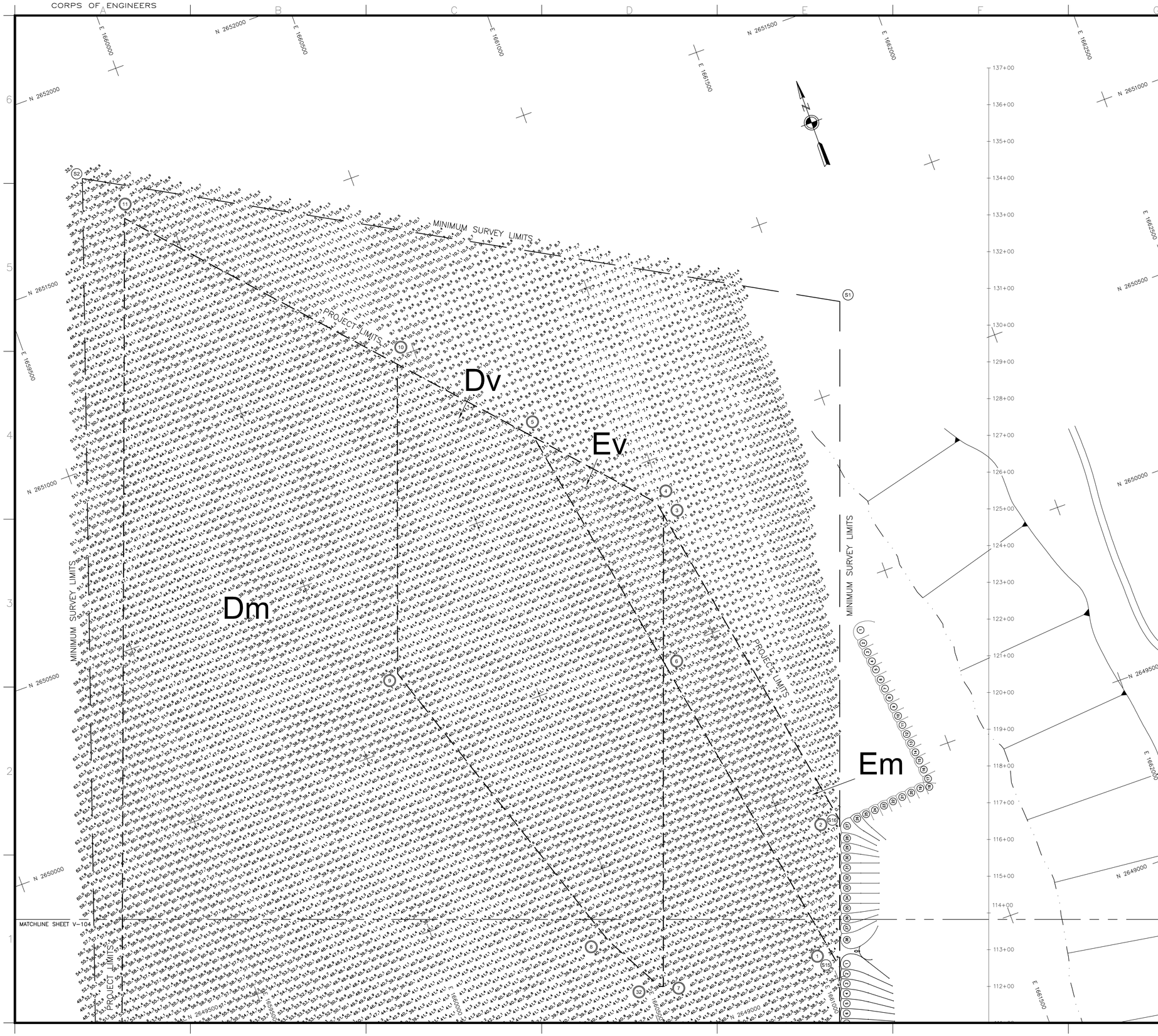
SURVEY 69

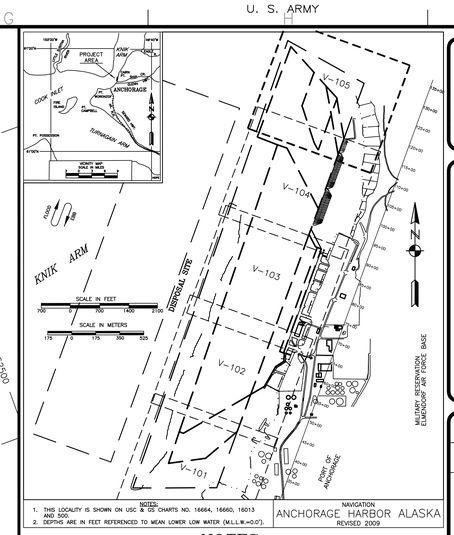
ANCHORAGE, ALASKA
PORT OF ANCHORAGE
2009–2011
TRANSITIONAL AND MAINTENANCE DREDGING
2011 POST DREDGE SURVEY
NOVEMBER 02, 2011

Reference number:
V-104
Sheet 4 of 6

CORPS OF ENGINEERS

U. S. ARMY





NOTES:
1. THIS LOCALITY IS SHOWN ON USC & GS CHARTS NO. 16664, 16660, 16013 AND 500.
2. DEPTHS ARE IN FEET REFERENCED TO MEAN LOWER LOW WATER (M.L.L.W.=0.0').

NAVIGATION
ANCHORAGE HARBOR ALASKA
REVISED 2009

NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD 83, IN US SURVEY FEET, HOLDING USACE SBC "N END 1978" AS N 2,646,652.19', E 1,660,582.43' AND USACE SBC "S END 1978" AS N 2,644,298.25', E 1,659,725.47'. IT SHOULD BE NOTED THAT THE HISTORICAL COORDINATE VALUES REFLECTED HEREON WERE CONVERTED FROM NAD27 USING CORPSCON. TRUE NAD83 COORDINATES ARE WITHIN 1 METER OF THE POSITIONS INDICATED.

2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW=0.0), BASED ON NOAA/NOS 1983–2001 TIDAL EPOCH BENCH MARK LIST, "9455920 ANCHORAGE, KNIK ARM, COOK INLET, ALASKA" PUBLISHED 4/21/2003, HOLDING USCGS SBC "TIDAL 16 1966" AS 40.53', USCGS SBC "B 75 1964" AS 36.82'.

3. THIS SURVEY WAS PERFORMED BY TERRASOND, LTD. ON NOVEMBER 02, 2011. SOUNDINGS WERE COLLECTED USING A RESON SEABAT 7101 MULTIBEAM ECHOSOUNDER WITH A 240kHz, 150–DEGREE SWATH–WIDTH TRANSDUCER (511 BEAMS). BEAM STEERING WAS ACCOMPLISHED USING AN APPLIED MICROSYSTEMS LABORATORIES (AML) SMART–PROBE, SOUND VELOCITY PROFILER LOCATED AT THE SONAR HEAD. SOUND VELOCITY THROUGH THE WATER COLUMN WAS MEASURED AND APPLIED USING AN ODOM DIGI–BAR PRO SOUND VELOCITY PROFILER DEPLOYED DURING THE SURVEY. VESSEL ATTITUDE, HEADING, POSITIONING AND REAL–TIME TIDES WERE PROVIDED USING A CODA OCTOPUS F185 INERTIAL MOTION UNIT OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 5700 GPS RECEIVER SET AT CONTROL STATION, "TERRA–11 2011", LOCATED ATOP THE PORT OFFICE BUILDING. REAL–TIME–KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS SBC "TIDAL 16 1966", LOCATED AT NOAA/NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE. SURVEY NAVIGATION AND DATA COLLECTION WERE PERFORMED USING HYPACK "HYSWEEP 2010" INTEGRATED SOFTWARE (V2010). DATA PROCESSING WAS PERFORMED USING CARIS HIPS SOFTWARE (V7.0).

4. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.

5. THIS SURVEY IS INDICATIVE OF GENERAL CONDITIONS ON THE DATES OF SURVEY.

6. TEMPORARY CONTROL STATION'S, "TERRA–11 2011" & "TERRA–12 2011" WERE ESTABLISHED ON 25 APRIL, 2011. THERE WERE NO NEW MONUMENTS ESTABLISHED DURING THIS SURVEY.

MINIMUM SURVEY LIMITS

CORNER	NORTHING	EASTING
S1	2,650,729.31	1,661,635.11
S2	2,651,749.08	1,659,812.02
S3	2,641,054.00	1,656,104.99
S4	2,641,057.43	1,658,111.18
S5	2,642,400.36	1,658,601.13
S6	2,643,288.85	1,658,924.78
S7	2,643,482.54	1,659,251.59
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S13	2,647,258.01	1,660,369.40
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S15	2,649,026.93	1,661,014.98
S15	2,649,402.83	1,661,151.92

NOTES:
1. SURVEY LIMIT ALONG THE DOCK IS 5 FT OFF THE FINISHED DOCK FACE.
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3. SURVEY LIMIT WILL CHANGE AS PORT EXPANSION PROGRESSES FOR THE NORTH AND SOUTH REPLACEMENT ALONG THE NEW DOCK FACE.

DISPOSAL SITE LIMITS

CORNER	NORTHING	EASTING
DS1	2,642,356.04	1,653,697.24
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DS3	2,650,128.76	1,658,655.55
DS4	2,641,671.82	1,655,576.56

PROJECT AREA LIMITS

CORNER	NORTHING	EASTING
1	2,649,026.93	1,661,014.98
2	2,649,402.83	1,661,151.92
3	2,650,348.22	1,660,985.44
4	2,650,385.07	1,660,978.99
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CLIFF	2,648,978.03	1,662,106.44	250.99	–
C 1/4 COR	2,642,005.73	1,660,981.81	128.25	–
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TERRA–11 2011	2,644,971.98	1,660,156.80	80.34	ALL–TREAD ON ROOF POA BLDG.
TERRA–12 2011	2,644,992.77	1,660,164.10	80.39	ALL–TREAD ON ROOF POA BLDG.

100 0 100 200 300
SCALE IN FEET
HORIZONTAL SCALE: 1"=100'

BATHYMETRY

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. W911KB–09–C–0022
CONTRACTOR MANSON CONSTRUCTION CO.
CITY SEATTLE STATE WASHINGTON
Recommended: Approved: Date:
TRIAL CONTRACTOR RESIDENT ENGINEER

Sym	Action	Description	Date	Appvd

Designed JEA/LEP/KNB/JGM
Drawn KNB/LEP
Reviewed KDW
Chief A. CHURCHILL
Date 11/04/11
Dwg Scale AS NOTED
Plot Scale
File
Drawing #
Section
Branch
Contract
USACE Survey No. 2975-11

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEY 69

ANCHORAGE, ALASKA
PORT OF ANCHORAGE
2009–2011
TRANSITIONAL AND MAINTENANCE DREDGING
2011 POST DREDGE SURVEY
NOVEMBER 02, 2011

Reference number:
V-105
Sheet 5 of 6

NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD 83, IN US SURVEY FEET, HOLDING USACE SBC "N END 1978" AS N 2,646,652.19', E 1,660,582.43' AND USACE SBC "S END 1978" AS N 2,644,298.25', E 1,659,725.47'. IT SHOULD BE NOTED THAT THE HISTORICAL COORDINATE VALUES REFLECTED HEREON WERE CONVERTED FROM NAD27 USING CORPSCON. TRUE NAD83 COORDINATES ARE WITHIN 1 METER OF THE POSITIONS INDICATED.
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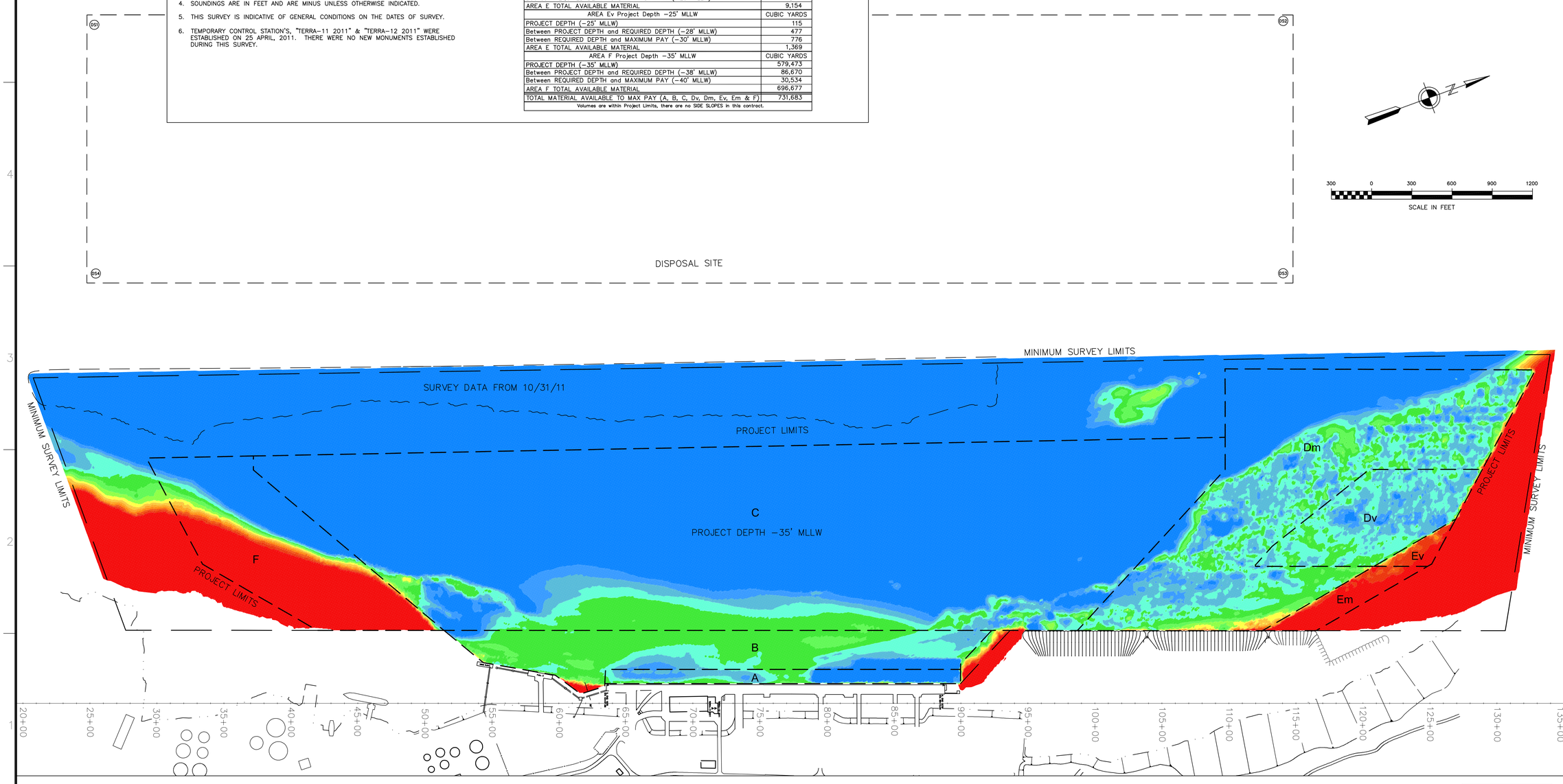
3. THIS SURVEY WAS PERFORMED BY TERRASOND, LTD. ON NOVEMBER 02, 2011. SOUNDINGS WERE COLLECTED USING A RESON SEABAT 7101 MULTIBEAM ECHOSOUNDER WITH A 240kHz, 150–DEGREE SWATH–WIDTH TRANSDUCER (511 BEAMS). BEAM STEERING WAS ACCOMPLISHED USING AN APPLIED MICROSYSTEMS LABORATORIES (AML) SMART–PROBE, SOUND VELOCITY PROFILER LOCATED AT THE SONAR HEAD. SOUND VELOCITY THROUGH THE WATER COLUMN WAS MEASURED AND APPLIED USING AN ODOM DIGI–BAR PRO SOUND VELOCITY PROFILER DEPLOYED DURING THE SURVEY. VESSEL ATTITUDE, HEADING, POSITIONING AND REAL–TIME TIDES WERE PROVIDED USING A CODA OCTOPUS F185 INERTIAL MOTION UNIT OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 5700 GPS RECEIVER SET AT CONTROL STATION, "TERRA–11 2011", LOCATED ATOP THE PORT OFFICE BUILDING. REAL–TIME–KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS SBC "TIDAL 16 1966", LOCATED AT NOAA/NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE. SURVEY NAVIGATION AND DATA COLLECTION WERE PERFORMED USING HYPACK "HYSWEEP 2010" INTEGRATED SOFTWARE (V2010). DATA PROCESSING WAS PERFORMED USING CARIS HIPS SOFTWARE (V7.0).
4. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
5. THIS SURVEY IS INDICATIVE OF GENERAL CONDITIONS ON THE DATES OF SURVEY.
6. TEMPORARY CONTROL STATION'S, "TERRA–11 2011" & "TERRA–12 2011" WERE ESTABLISHED ON 25 APRIL, 2011. THERE WERE NO NEW MONUMENTS ESTABLISHED DURING THIS SURVEY.

VOLUME COMPUTATIONS	
AREA A Project Depth –35' MLLW	CUBIC YARDS
PROJECT DEPTH (–35' MLLW)	4
Between PROJECT DEPTH and REQUIRED DEPTH (–37' MLLW)	38
Between REQUIRED DEPTH and MAXIMUM PAY (–38' MLLW)	68
AREA A TOTAL AVAILABLE MATERIAL	110
AREA B Project Depth –35' MLLW	CUBIC YARDS
PROJECT DEPTH (–35' MLLW)	5,083
Between PROJECT DEPTH and REQUIRED DEPTH (–38' MLLW)	1,887
Between REQUIRED DEPTH and MAXIMUM PAY (–39' MLLW)	1,492
AREA B TOTAL AVAILABLE MATERIAL	8,461
AREA C Project Depth –35' MLLW	CUBIC YARDS
PROJECT DEPTH (–35' MLLW)	21
Between PROJECT DEPTH and REQUIRED DEPTH (–38' MLLW)	582
Between REQUIRED DEPTH and MAXIMUM PAY (–39' MLLW)	899
AREA C TOTAL AVAILABLE MATERIAL	1,502
AREA Dm Project Depth –35' MLLW	CUBIC YARDS
PROJECT DEPTH (–35' MLLW)	860
Between PROJECT DEPTH and REQUIRED DEPTH (–38' MLLW)	4,835
Between REQUIRED DEPTH and MAXIMUM PAY (–39' MLLW)	5,317
AREA D TOTAL AVAILABLE MATERIAL	11,013
AREA Dv Project Depth –35' MLLW	CUBIC YARDS
PROJECT DEPTH (–35' MLLW)	215
Between PROJECT DEPTH and REQUIRED DEPTH (–38' MLLW)	422
Between REQUIRED DEPTH and MAXIMUM PAY (–40' MLLW)	2,760
AREA D TOTAL AVAILABLE MATERIAL	3,397
AREA Em Project Depth –25' MLLW	CUBIC YARDS
PROJECT DEPTH (–25' MLLW)	1,294
Between PROJECT DEPTH and REQUIRED DEPTH (–28' MLLW)	5,069
Between REQUIRED DEPTH and MAXIMUM PAY (–29' MLLW)	2,791
AREA E TOTAL AVAILABLE MATERIAL	9,154
AREA Ev Project Depth –25' MLLW	CUBIC YARDS
PROJECT DEPTH (–25' MLLW)	115
Between PROJECT DEPTH and REQUIRED DEPTH (–28' MLLW)	477
Between REQUIRED DEPTH and MAXIMUM PAY (–30' MLLW)	776
AREA E TOTAL AVAILABLE MATERIAL	1,369
AREA F Project Depth –35' MLLW	CUBIC YARDS
PROJECT DEPTH (–35' MLLW)	579,473
Between PROJECT DEPTH and REQUIRED DEPTH (–38' MLLW)	86,670
Between REQUIRED DEPTH and MAXIMUM PAY (–40' MLLW)	30,534
AREA F TOTAL AVAILABLE MATERIAL	696,677
TOTAL MATERIAL AVAILABLE TO MAX PAY (A, B, C, Dv, Dm, Ev, Em & F)	731,683
Volumes are within Project Limits, there are no SIDE SLOPES in this contract.	

VOLUME COMPUTATIONS	
AREA Amw	CUBIC YARDS
REQUIRED DEPTH (–44' MLLW)	543
Between REQUIRED DEPTH (–44') and MAXIMUM PAY (–45')	1,757
AREA Amw TOTAL AVAILABLE MATERIAL	2,300
AREA Bmw	CUBIC YARDS
REQUIRED DEPTH (–40' MLLW)	1,397
Between REQUIRED DEPTH (–40') and MAXIMUM PAY (–41')	2,759
AREA Bmw TOTAL AVAILABLE MATERIAL	4,157
AREA Cmw	CUBIC YARDS
AREA Cmw TOTAL AVAILABLE MATERIAL	22
AREA Dmw	CUBIC YARDS
AREA Dmw TOTAL AVAILABLE MATERIAL	41
AREA Emw	CUBIC YARDS
AREA Emw TOTAL AVAILABLE MATERIAL	125
AREA Fmw	CUBIC YARDS
AREA Fmw TOTAL AVAILABLE MATERIAL	249
AREA Gmw	CUBIC YARDS
AREA Gmw TOTAL AVAILABLE MATERIAL	339
TOTAL MATERIAL AVAILABLE	7,232
Volumes are within Project Limits, there are no SIDE SLOPES in this contract.	

ELEVATIONS TABLE				
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR NUMBER	COLOR
1	-44 & BELOW	-43	0,127,254	
2	-43	-42	46,150,255	
3	-42	-41	79,184,216	
4	-41	-40	92,255,214	
5	-40	-39	53,232,44	
6	-39	-38	89,249,78	
7	-38	-37	187,255,61	
8	-37	-36	255,255,61	
9	-36	-35	251,197,50	
10	-35	-34	253,161,23	
11	-34	-33	255,128,0	
12	-33	-32	242,74,2	
13	-32	-31	235,43,0	
14	-31	+10	244,0,0	



300 0 300 600 900 1200
SCALE IN FEET

CONDITION SURVEY

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. W911KB–09–C–0022
CONTRACTOR MANSON CONSTRUCTION CO.
CITY SEATTLE STATE WASHINGTON
Recommended: PRIME CONTRACTOR
Approved: RESIDENT ENGINEER
Date:

Sym	Action	Description	Date	Approd

Designed: JEA/LEP/KNB/JGM
Drawn: KNB/LEP
Reviewed: KDW
Chief: A. CHURCHILL
Submitted:
Chief
USACE Survey No.:
Date: 11/04/11
Dwg Scale: AS NOTED
Plot Scale:
File:
Drawing #:
2975-11
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA
SURVEY 69

ANCHORAGE, ALASKA
PORT OF ANCHORAGE
2009–2011
TRANSITIONAL AND MAINTENANCE DREDGING
2011 POST DREDGE SURVEY
NOVEMBER 02, 2011

Reference number:
V–106
Sheet 6 of 6