

- NOTES**
- HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 9, NAD83, IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 (CORS) 2003.00 EPOCH VALUES OF NGS CORS STATIONS: "BETHEL WAAS CORS ARP" (BET1 - PID DK4091) AS N 2,570,534.05, E 3,095,568.82 (ALASKA STATE PLANE, ZONE 9, NAD 83) AND "PLATINUM AK2007 CORS PLAT ARP" (AS12 - PID DL6672) AS N 1,904,718.84, E 3,196,332.08 (ALASKA STATE PLANE, ZONE 9, NAD 83) AND "SANDPOINT AK2004 CORS ARP" (AB07 - PID DL7635) N 628,509.99, E 3,619,003.59 (ALASKA STATE PLANE, ZONE 9, NAD 83).
 - LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 9, NAD83, IN US SURVEY FEET HOLDING USACE SBC "SP-3" AS N 1,141,172.88, E 1,584,526.18.
 - VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=O.O'), BASED ON THE NOAA'S TIDAL BENCH MARK LIST: "VILLAGE COVE, ST. PAUL ISLAND, ALASKA", PUBLISHED 12/12/2011. THIS TIDAL DATUM IS BASED ON A 4 YEAR OBSERVATION PERIOD FROM MARCH 2007 - FEB. 2010 AND OCT. 2010 - SEPT 2011. THE TIDAL DATUM IS REFERENCED BY HOLDING USACE'S TIDAL BENCHMARK "SP-3 2001" AS 15.393' AND NOS TIDAL BENCHMARK "4212 P 2002" AS 12.451'.
 - VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD83 ELEVATIONS HOLDING NOAA'S TIDAL BENCHMARK "4212 P 2002" (PID BBH46/VM#16793) AS 13.05' AND TERRA CONTROL POINT "SP-3 2001" (PID BBK02/VM#16794) AS 15.93'.
 - SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
 - BATHYMETRY FOR THE PRECONSTRUCTION/PREDREGE WAS COLLECTED 28-29 APRIL AND 24 MAY 2016 TO VERIFY CONSISTENCY WITH THE PRECONSTRUCTION/PREDREGE SURVEY ADDITIONAL BATHYMETRY WAS COLLECTED USING THE SAME SYSTEM, BETWEEN 27 MAY 2016 AND 06 JUNE 2016 FOR ALL SITES PRIOR TO WORK. POST CONSTRUCTION BATHYMETRY WAS COLLECTED 17 - 18 AUGUST 2016. SOUNDINGS WERE COLLECTED USING A NOBIT-1000S MULTIBEAM ECHOSOUNDER WITH A 360 TO 400HZ, 140-DEGREE SWATH-WIDTH TRANSDUCER (256 BEAMS). SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED USING AN AML MINOS-X SOUND VELOCITY PROFILER DEPLOYED DURING THE SURVEY. POSITIONING AND VESSEL ATTITUDE WERE MEASURED USING AN APPLANIX MV. WAVEMASTER INERTIAL MOTION UNIT. RTK CORRECTIONS WERE BROADCAST FROM A LEICA GS14 SERIES GPS RECEIVER SET AT CONTROL STATION, "SP-3 2001". DATA WAS COLLECTED USING HYPACK "HYSWEEP 2016" SOFTWARE AND PROCESSED IN CARIS 9.1 HIPS AND SIPS. TIDE ELEVATIONS WERE MEASURED USING A "RTK GNSS" SYSTEM AND VERIFIED THROUGH CONVENTIONAL DIFFERENTIAL LEVELING TECHNIQUES.
 - THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
 - MAP SOUNDING ARE BINNED AT 24 FEET AND ARE SHOAL. VOLUME SOUNDINGS ARE BINNED AT 3 FEET MEAN FOR AREAS OF DREDGING AND AT 0.5 FEET SHOAL FOR AREAS OF ROCK PLACEMENT.

SURVEY CONTROL DATA

STATION	NORTHING	EASTING	MLLW	DESCRIPTION
DUMP 1995	1,141,545.24	1,583,907.14	11.52	2 INCH AL-CAP (DAMAGED)
FOXY	1,142,611.23	1,583,160.44	28.07	USACE SBC
RBD1 1994	1,141,043.70	1,583,846.28	28.51	USACE SBC
RBD3 1994	1,141,658.26	1,583,526.92	36.91	USACE SBC
RBD4 1994	1,142,082.16	1,583,364.40	35.36	USACE SBC
SP-2 1979	1,142,158.06	1,585,194.13	12.84	USACE SBC
SP-3 2001	1,141,172.88	1,584,526.18	15.39	TERRA SURVEYS SBC
SP-4 2001 DESTROYED	1,142,580.64	1,583,816.62	21.06	TERRA SURVEYS SBC (DESTROYED)
ST-1 1992	1,141,370.57	1,583,680.59	33.34	USACE SBC
ST-3 1992	1,142,616.08	1,583,159.92	28.18	USACE SBC
ST-4 1992	1,142,668.99	1,584,684.10	16.92	USACE SBC
VILLAGE HILL	1,140,727.24	1,584,338.92	94.83	USCGS TRI-STA SBC

NAVIGATION AIDS

USCG NO.	NORTHING	EASTING	DESCRIPTION
27830	1,142,590	1,583,172	ST. PAUL HARBOR JETTY LIGHT 4
27831 RELOCATED	1,142,582	1,583,804	ST. PAUL HARBOR JETTY LIGHT 3 - NEW
27832	1,141,596	1,584,862	ST. PAUL HARBOR LIGHT 6
27833	1,141,931	1,584,774	ST. PAUL HARBOR DAYBEACON A
27834	1,141,815	1,585,065	ST. PAUL HARBOR DAYBEACON B

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA AND I AM AN ACSM, CERTIFIED INSURE HYDROGRAPHER. THIS PLAT REPRESENTS A HYDROGRAPHIC SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION. THE ELEVATIONS SHOWN HEREON ACCURATELY DEPICT THE DEPTHS AS SURVEYED 16-21 AUGUST, 2016.

THOMAS S. NEWMAN, P.L.S.
REGISTRATION NO. LS 8034
ACSM CERTIFICATION NO. 173

06 OCTOBER 2016
DATE

Sheet 1 of 29

US Army Corps of Engineers
ALASKA DISTRICT

CONTRACT NO. W66901-16-2-0001
CONTRACTOR: KEMIT INFRASTRUCTURE WEST CO.
CITY: VANCOUVER
STATE: WA
DATE: 10/06/2016
APPROVED: THOMAS S. NEWMAN
DESIGNED: THOMAS S. NEWMAN
CHECKED: THOMAS S. NEWMAN
DATE: 10/06/2016

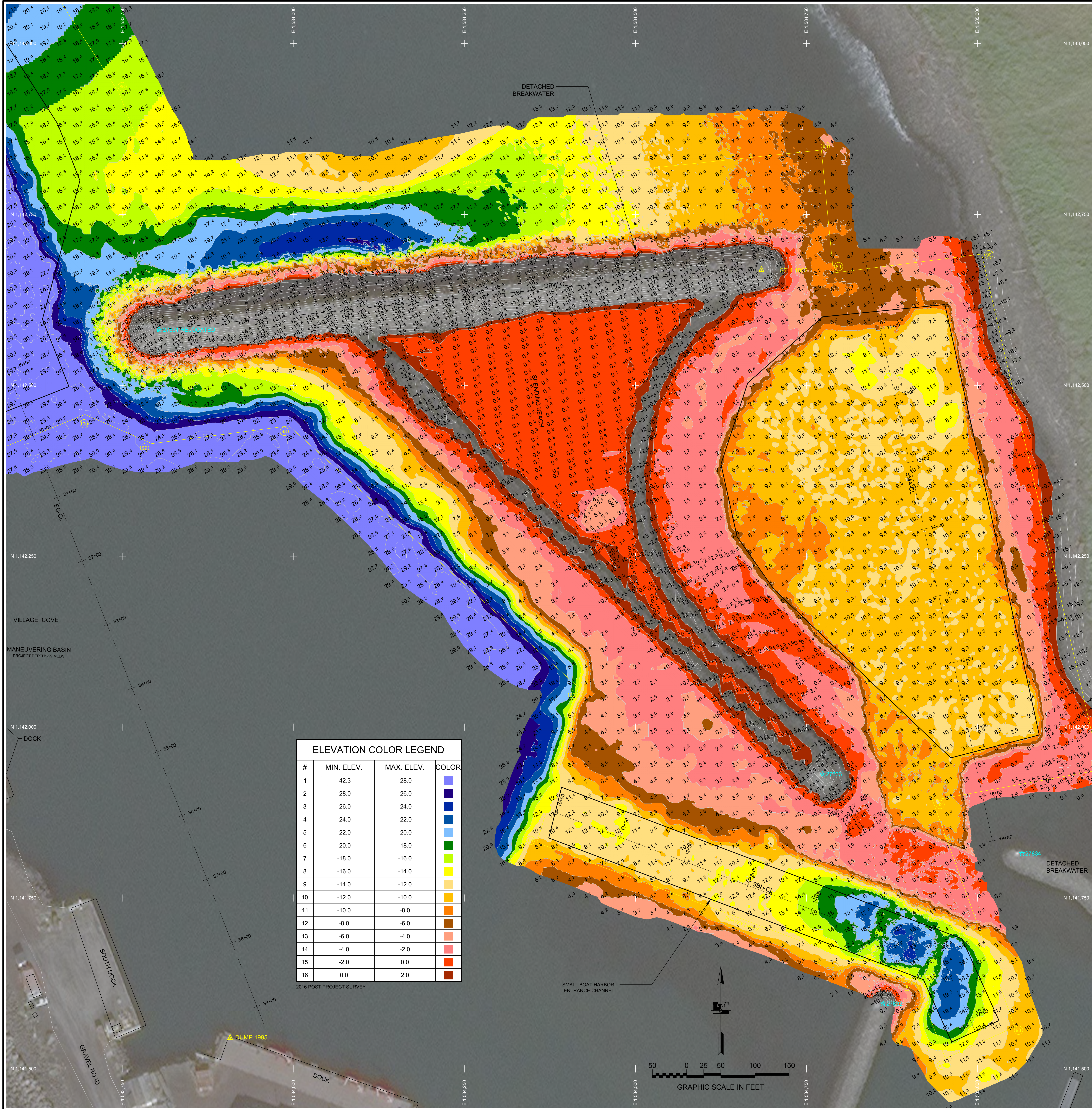
DATE: 10/06/2016
DRAWN BY: THOMAS S. NEWMAN
CHECKED BY: THOMAS S. NEWMAN
DATE: 10/06/2016

U.S. ARMY CORPS OF ENGINEERS
ALASKA DISTRICT
JBER, ALASKA 99506-0988

TERRASOUND LIMITED
1817 SOUTH 2ND AVE. SUITE 3
PALMER, AK 99645

ST. PAUL, ALASKA
POST-CONSTRUCTION DREDGING
16 - 21 AUGUST 2016

SHEET IDENTIFICATION
V-101



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US Army Corps of Engineers
ALASKA DISTRICT

CONTRACT NO. W66909-00-0001
CONTRACTOR KEMIT INFRASTRUCTURE WEST CO.
CITY VANCOUVER
STATE WA
DATE: 10/08/2016
APPROVED: THOMAS A. BLANK
DESIGNED: JAMES A. BLANK
CHECKED: JAMES A. BLANK
BY: JAMES A. BLANK

DATE: 10/08/2016
DRAWN BY: JAMES A. BLANK
CHECKED BY: JAMES A. BLANK
SCALE: 1"=1000'
FILE NAME: 1817_SOUTH_PACIFIC_CONSTRUCTION_DRAWING.dwg
PROJECT: ST. PAUL HARBOR BREAKWATER REPAIR & MAINTENANCE SURVEY
SHEET: 2 OF 29

ST. PAUL, ALASKA
ST. PAUL HARBOR BREAKWATER REPAIR & MAINTENANCE SURVEY
POST-DREDGE / POST-CONSTRUCTION SURVEY
16 - 21 AUGUST 2016
SHEET IDENTIFICATION
V-102