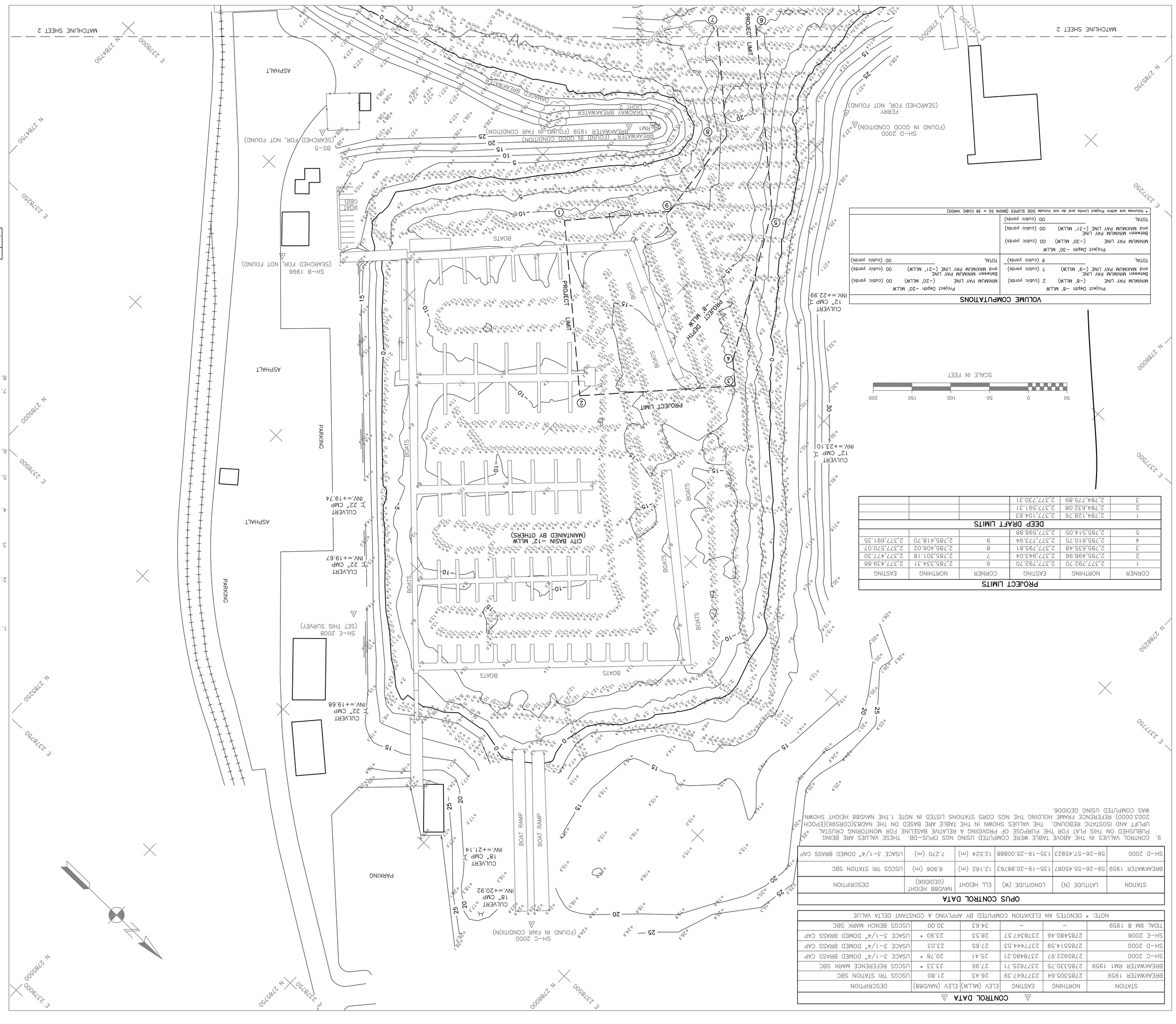


VOLUME COMPUTATIONS

Project Depth -8' MLLW	
MINIMUM PAY LINE (-8' MLLW)	2 (cubic yards)
Between MINIMUM PAY LINE and MAXIMUM PAY LINE (-9' MLLW)	7 (cubic yards)
TOTAL	9 (cubic yards)

Project Depth -20' MLLW	
MINIMUM PAY LINE (-20' MLLW)	00 (cubic yards)
Between MINIMUM PAY LINE and MAXIMUM PAY LINE (-21' MLLW)	00 (cubic yards)
TOTAL	00 (cubic yards)

Project Depth -30' MLLW	
MINIMUM PAY LINE (-30' MLLW)	00 (cubic yards)
Between MINIMUM PAY LINE and MAXIMUM PAY LINE (-31' MLLW)	00 (cubic yards)
TOTAL	00 (cubic yards)

* Volumes are within Project Limits and do not include SIDE SLOPES (BASIN SS = 3# CUBIC YARDS)

PROJECT LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	2,377,792.70	2,377,792.70	6	2,785,334.31	2,377,439.86
2	2,785,499.96	2,377,943.04	7	2,785,301.18	2,377,477.30
3	2,785,546.48	2,377,795.81	8	2,785,406.02	2,377,570.07
4	2,785,610.75	2,377,773.94	9	2,785,418.70	2,377,691.35
5	2,785,514.05	2,377,598.88			

DEEP DRAFT LIMITS

5	2,785,514.05	2,377,598.88			
4	2,785,610.75	2,377,773.94			
3	2,784,546.08	2,377,795.81			
2	2,784,499.96	2,377,943.04			
1	2,784,128.76	2,377,104.83			
3	2,784,775.89	2,377,730.31			
2	2,784,632.08	2,377,591.31			
1	2,784,128.76	2,377,104.83			

CONTROL DATA △

STATION	NORTHING	EASTING	ELEV (MLLW)	ELEV (NAVD88)	DESCRIPTION
BREAKWATER 1959	2,785,364.64	2,377,647.39	26.43	21.80	USCGS TRI STATION SBC
BREAKWATER RM1 1959	2,785,330.75	2,377,625.71	27.96	23.33 *	USCGS REFERENCE MARK SBC
SH-C 2000	2,785,922.97	2,378,480.21	25.41	20.78 *	USACE 3-1/4" DOMED BRASS CAP
SH-D 2000	2,785,514.59	2,377,444.53	27.65	23.03	USACE 3-1/4" DOMED BRASS CAP
SH-E 2008	2,785,480.46	2,378,347.57	28.53	23.90 *	USACE 3-1/4" DOMED BRASS CAP
TIDAL BM 8 1959	—	—	34.63	30.00	USCGS BENCH MARK SBC

NOTE: * DENOTES AN ELEVATION COMPUTED BY APPLYING A CONSTANT DELTA VALUE

OPUS CONTROL DATA

STATION	LATITUDE (N)	LONGITUDE (W)	ELL HEIGHT	NAVD88 HEIGHT (GEOID06)	DESCRIPTION
BREAKWATER 1959	59-26-55.45087	135-19-20.98763	12.162 (m)	6.906 (m)	USCGS TRI STATION SBC
SH-D 2000	59-26-57.45923	135-19-25.00888	12.524 (m)	7.270 (m)	USACE 3-1/4" DOMED BRASS CAP

9. CONTROL VALUES IN THE ABOVE TABLE WERE COMPUTED USING NGS OPUS-DB. THESE VALUES ARE BEING PUBLISHED ON THIS PLAT FOR THE PURPOSE OF PROVIDING A RELATIVE BASELINE FOR MONITORING CRUSTAL UPLIFT AND ISOSTATIC REBOUND. THE VALUES SHOWN IN THE TABLE ARE BASED ON THE NAD83(CORS96)(EPOCH 2003.0000) REFERENCE FRAME HOLDING THE NGS CORS STATIONS LISTED IN NOTE 1.THE NAVD88 HEIGHT SHOWN WAS COMPUTED USING GEOID06.

NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83(CORS) IN U.S. SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE EPOCH 2003 (CURRENT) VALUES OF NGS CORS STATIONS. "BIORKA ISLAND 1 CORS ARP" (BIS1 – PID AI5022) AS N1,838,783.13, E 2,311,186.49, "JUNEAU WAAS 1 CORS ARP" (JNU1 – PID DF4367) AS N2,385,816.86, E 2,509,443.56 AND "GUSTAVUS 2 CORS ARP" (GUS2 – PID AF9622) AS N2,410,602.97, E 2,296,696.67.
2. VERTICAL CONTROL IS IN U.S. SURVEY FEET AND REFERS TO MEAN-LOWER-LOW-WATER DATUM (MLLW=0.0'). THE MLLW VALUES SHOWN ON THIS PLAT ARE BASED ON NOAA/NOS TIDE STATION "9452400, SKAGWAY, TAYIA INLET" HOLDING USCGS BENCH MARK "8 1959" AS 34.63 FEET. THIS VALUE IS FROM TIDAL EPOCH 1983-2001, PUBLISHED 9/17/2007 FOR THIS STATION.
3. VERTICAL CONTROL WAS ALSO TIED INTO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) HOLDING THE NGS PUBLISHED VALUE OF USCGS BENCH MARK "945 2400 TIDAL 2 RESET" (PID TT0047) AS 29.29 FEET. THE PUBLISHED VALUE OF THIS MONUMENT WAS RETRIEVED FROM THE NGS WEBSITE ON MAY 29, 2008.
4. THE HORIZONTAL CONTROL SURVEY WAS CONDUCTED JUNE 8 AND 9, 2008 USING THREE (3) TRIMBLE R8 GPS RECEIVERS AND A COMBINATION OF STATIC GPS AND REAL-TIME-KINEMATIC GPS SURVEY PROCEDURES AND TECHNIQUES. GPS DATA PROCESSING WAS ACCOMPLISHED USING TRIMBLE GEOMATICS OFFICE V1.6.
5. THE TOPOGRAPHIC AND BATHYMETRIC SURVEYS WERE CONDUCTED JUNE 8 AND 9, 2008 USING TRIMBLE R8 GPS RECEIVERS AND REAL-TIME-KINEMATIC PROCEDURES. FIXED AIDS-TO-NAVIGATION WERE TIED AT THE LIGHT GLOBE.
6. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED JUNE 8-10, 2008 USING AN ODOM HYDROTRAC PRECISION DEPTH SOUNDER WITH A 200KHZ, 4 DEGREE BEAM-WIDTH, SINGLE-BEAM TRANSDUCER. VESSEL POSITIONING AND TIDES WERE PROVIDED IN REAL-TIME USING A TRIMBLE R8 GPS RECEIVER (CO-LOCATED ABOVE SINGLE-BEAM TRANSDUCER) OPERATING ON KINEMATIC CORRECTORS BROADCAST FROM A TRIMBLE R8 GPS BASE RECEIVER SET AT USCGS TRI-STATION SBC "BREAKWATER 1959". SOUND VELOCITY WAS DETERMINED USING STANDARD "BAR CHECK" METHODS TO REFLECT SITE CONDITIONS. NAVIGATION, DATA COLLECTION AND DATA PROCESSING WERE PERFORMED USING HYPACK V6.2A INTEGRATED SOFTWARE.
7. SOUNDINGS ARE SHOWN IN U.S. SURVEY FEET AND ARE MINUS UNLESS NOTED OTHERWISE.
8. THIS SURVEY IS INDICATIVE OF CONDITIONS ON THE DATES OF SURVEY.

NAVIGATION AIDS

DESCRIPTION	USCG NO.	NORTHING	EASTING
SKAGWAY BREAKWATER LIGHT 2	2395	2,785,331.0	2,377,622.7

REV.	DATE	DESCRIPTION	BY	APP'D.

CONTRACTOR: TERRASOND, LTD
CONTRACT NO. W913KB-08-D-0002-0004
CITY: PALMER STATE: ALASKA

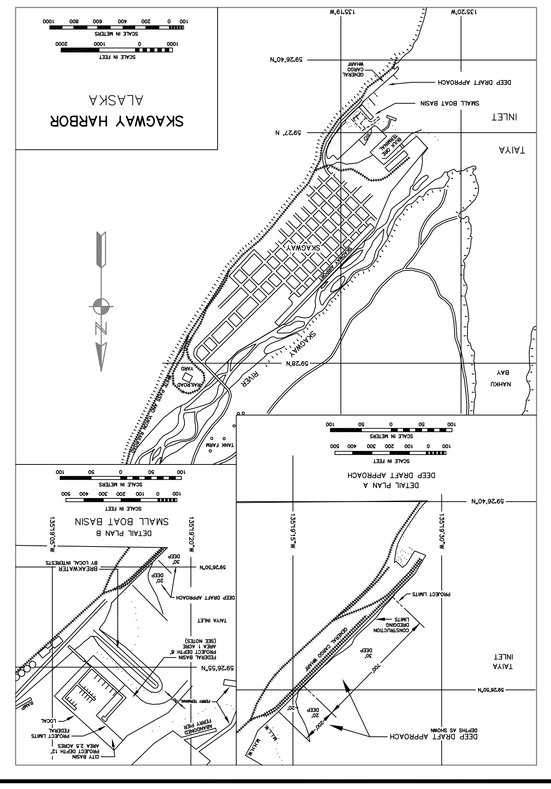
ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: MRA/KLW
DRAWN: SJL/KNB
CHECKED: KDW
SUBMITTED:

SKAGWAY, ALASKA
SKAGWAY HARBOR
PROJECT CONDITION SURVEY
JUNE 06-10, 2008

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-REAL ESTATE BRANCH
DATE:

SURVEY NO. 2510-08
SCALE: 1" = 50'
SHEET 1 OF 2

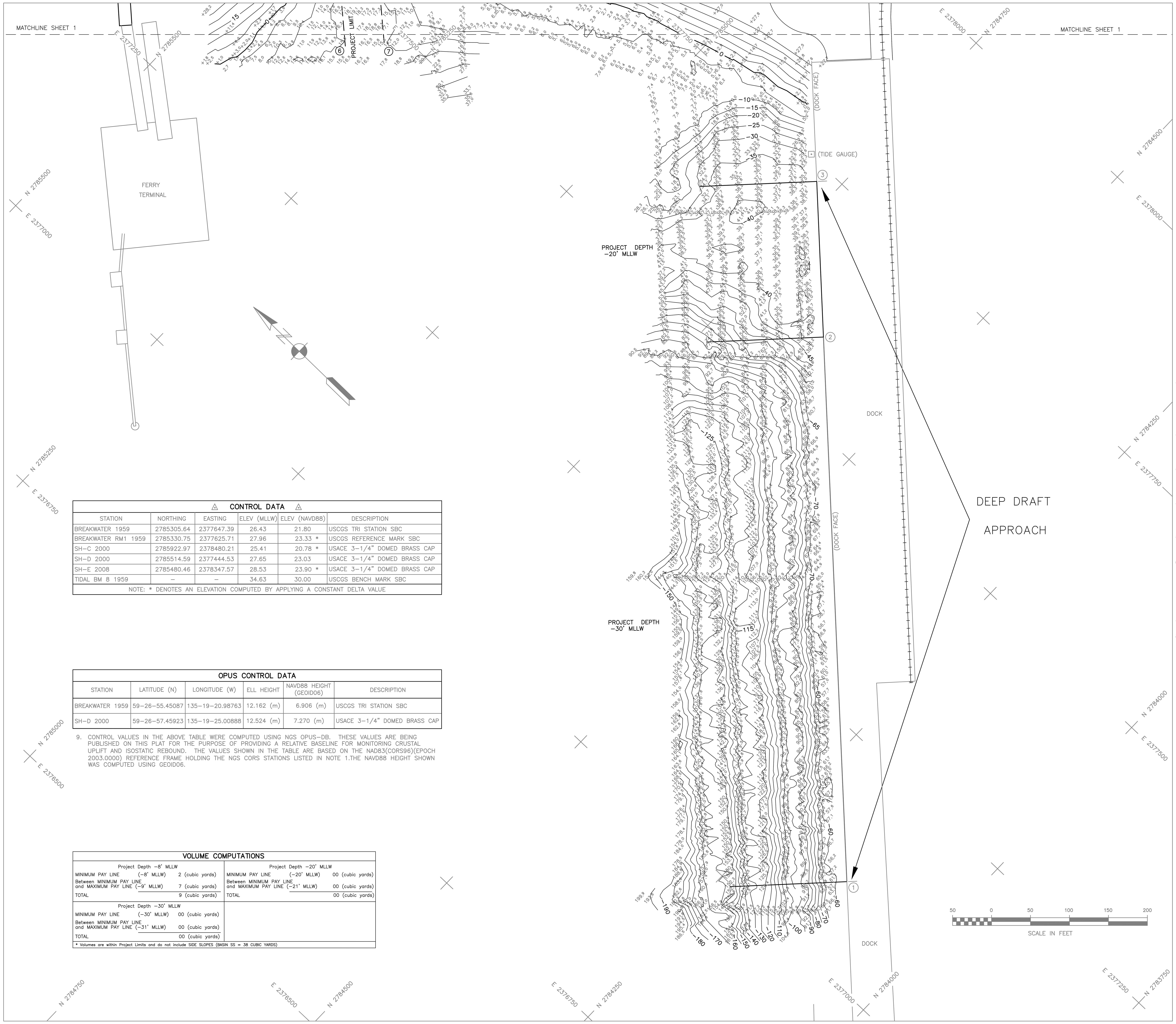


CORPS OF ENGINEERS

U. S. ARMY

CORPS OF ENGINEERS

U. S. ARMY



⚠ CONTROL DATA ⚠					
STATION	NORTHING	EASTING	ELEV (MLLW)	ELEV (NAVD88)	DESCRIPTION
BREAKWATER 1959	2785305.64	2377647.39	26.43	21.80	USCGS TRI STATION SBC
BREAKWATER RM1 1959	2785330.75	2377625.71	27.96	23.33 *	USCGS REFERENCE MARK SBC
SH-C 2000	2785922.97	2378480.21	25.41	20.78 *	USACE 3-1/4" DOMED BRASS CAP
SH-D 2000	2785514.59	2377444.53	27.65	23.03	USACE 3-1/4" DOMED BRASS CAP
SH-E 2008	2785480.46	2378347.57	28.53	23.90 *	USACE 3-1/4" DOMED BRASS CAP
TIDAL BM 8 1959	–	–	34.63	30.00	USCGS BENCH MARK SBC

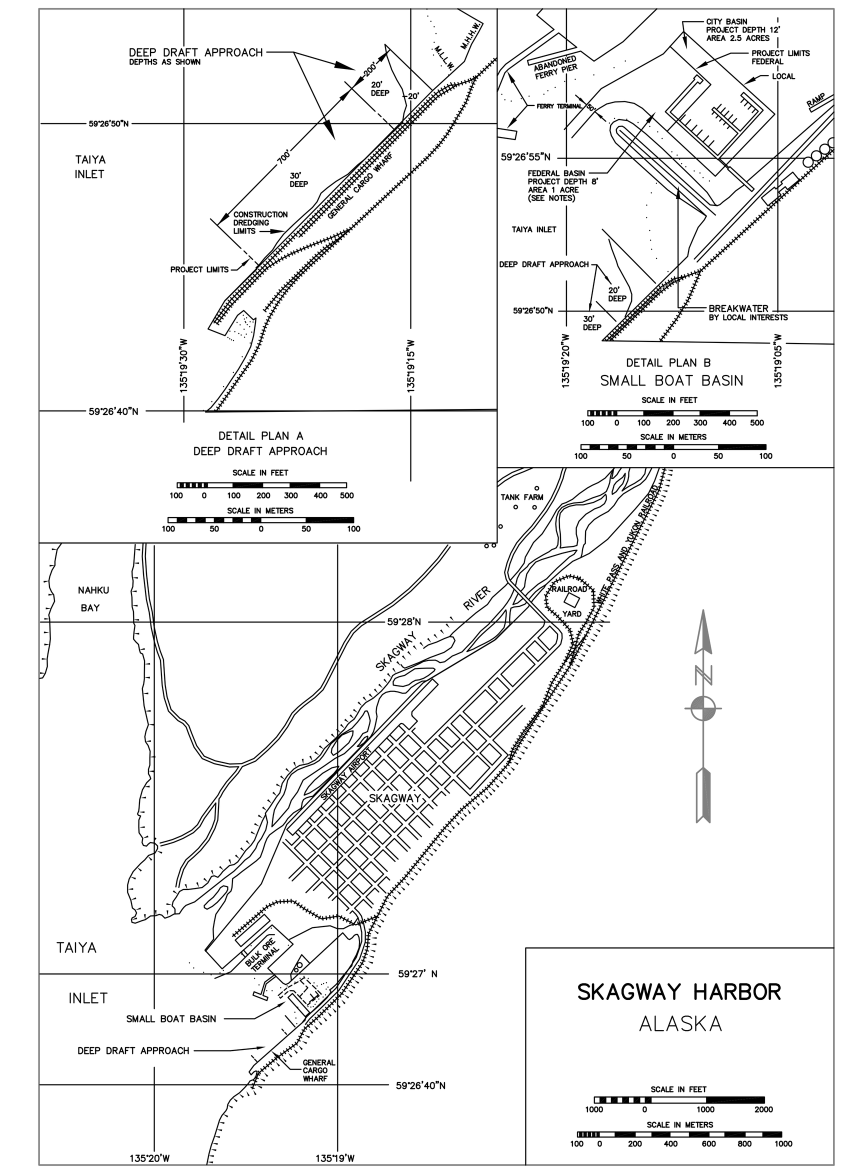
NOTE: * DENOTES AN ELEVATION COMPUTED BY APPLYING A CONSTANT DELTA VALUE

OPUS CONTROL DATA					
STATION	LATITUDE (N)	LONGITUDE (W)	ELL HEIGHT	NAVD88 HEIGHT (GEOID06)	DESCRIPTION
BREAKWATER 1959	59-26-55.45087	135-19-20.98763	12.162 (m)	6.906 (m)	USCGS TRI STATION SBC
SH-D 2000	59-26-57.45923	135-19-25.00888	12.524 (m)	7.270 (m)	USACE 3-1/4" DOMED BRASS CAP

9. CONTROL VALUES IN THE ABOVE TABLE WERE COMPUTED USING NGS OPUS-DB. THESE VALUES ARE BEING PUBLISHED ON THIS PLAT FOR THE PURPOSE OF PROVIDING A RELATIVE BASELINE FOR MONITORING CRUSTAL UPLIFT AND ISOSTATIC REBOUND. THE VALUES SHOWN IN THE TABLE ARE BASED ON THE NAD83(CORS96)(EPOCH 2003.0000) REFERENCE FRAME HOLDING THE NGS CORS STATIONS LISTED IN NOTE 1.THE NAVD88 HEIGHT SHOWN WAS COMPUTED USING GEOID06.

VOLUME COMPUTATIONS			
Project Depth -8' MLLW		Project Depth -20' MLLW	
MINIMUM PAY LINE (-8' MLLW)	2 (cubic yards)	MINIMUM PAY LINE (-20' MLLW)	00 (cubic yards)
Between MINIMUM PAY LINE and MAXIMUM PAY LINE (-9' MLLW)	7 (cubic yards)	Between MINIMUM PAY LINE and MAXIMUM PAY LINE (-21' MLLW)	00 (cubic yards)
TOTAL	9 (cubic yards)	TOTAL	00 (cubic yards)
Project Depth -30' MLLW			
MINIMUM PAY LINE (-30' MLLW)	00 (cubic yards)		
Between MINIMUM PAY LINE and MAXIMUM PAY LINE (-31' MLLW)	00 (cubic yards)		
TOTAL	00 (cubic yards)		

* Volumes are within Project Limits and do not include SIDE SLOPES (BASIN SS = 38 CUBIC YARDS)



NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83(CORS) IN U.S. SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE EPOCH 2003 (CURRENT) VALUES OF NGS CORS STATIONS: "BIORKA ISLAND 1 CORS ARP" (BIS1 – PID AI5022) AS N1,838,783.13, E 2,311,186.49; "JUNEAU WAAS 1 CORS ARP" (JNU1 – PID DF4367) AS N2,385,816.86, E 2,509,443.56 AND "GUSTAVUS 2 CORS ARP" (GUS2 – PID AF9622) AS N2,410,602.97, E 2,296,696.67.
2. VERTICAL CONTROL IS IN U.S. SURVEY FEET AND REFERS TO MEAN-LOWER-LOW-WATER DATUM (MLLW=0.0'). THE MLLW VALUES SHOWN ON THIS PLAT ARE BASED ON NOAA/NOS TIDE STATION, "9452400, SKAGWAY, TAIYA INLET" HOLDING USCGS BENCH MARK SBC "8 1959" AS 34.63 FEET. THIS VALUE IS FROM TIDAL EPOCH 1983-2001, PUBLISHED 9/17/2007 FOR THIS STATION.
3. VERTICAL CONTROL WAS ALSO TIED INTO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) HOLDING THE NGS PUBLISHED VALUE OF USCGS BENCH MARK SBC "945 2400 TIDAL 2 RESET" (PID TT0047) AS 29.29 FEET. THE PUBLISHED VALUE OF THIS MONUMENT WAS RETRIEVED FROM THE NGS WEBSITE ON MAY 29, 2008.
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5. THE TOPOGRAPHIC AND PLANIMETRIC SURVEYS WERE CONDUCTED JUNE 8 AND 9, 2008 USING TRIMBLE R8 GPS RECEIVERS AND REAL-TIME-KINEMATIC PROCEDURES. FIXED AIDS-TO-NAVIGATION WERE TIED AT THE LIGHT GLOBE.
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7. SOUNDINGS ARE SHOWN IN U.S. SURVEY FEET AND ARE MINUS UNLESS NOTED OTHERWISE.
8. THIS SURVEY IS INDICATIVE OF CONDITIONS ON THE DATES OF SURVEY.

PROJECT LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	2,377,792.70	2,377,792.70	6	2,785,334.31	2,377,439.86
2	2,785,498.96	2,377,943.04	7	2,785,301.18	2,377,477.30
3	2,785,635.48	2,377,795.81	8	2,785,406.02	2,377,570.07
4	2,785,610.75	2,377,773.94	9	2,785,418.70	2,377,691.35
5	2,785,514.05	2,377,598.88			
DEEP DRAFT LIMITS					
1	2,784,128.76	2,377,104.83			
2	2,784,632.08	2,377,591.31			
3	2,784,775.89	2,377,730.31			

☆ NAVIGATION AIDS ☆			
DESCRIPTION	USCG No.	NORTHING	EASTING
SKAGWAY BREAKWATER LIGHT 2	23935	2,785,331.0	2,377,622.7

REV.	DATE	DESCRIPTION	BY	APP'D.

CONTRACT NO. W911KB-08-D-0002-0004
CONTRACTOR TERRASOND, LTD
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: MRA/KLW
DRAWN: SJL/KNB
CHECKED: KDW
SUBMITTED:

SKAGWAY, ALASKA
SKAGWAY HARBOR
PROJECT CONDITION SURVEY
JUNE 06-10, 2008

RECOMMENDED: APPROVED: DATE:
PROJECT MANAGER CHIEF OPERATIONS-READINESS BRANCH

SURVEY NO. 2510-08
SCALE: 1" = 50'
SHEET 2 OF 2