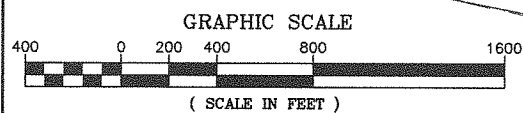
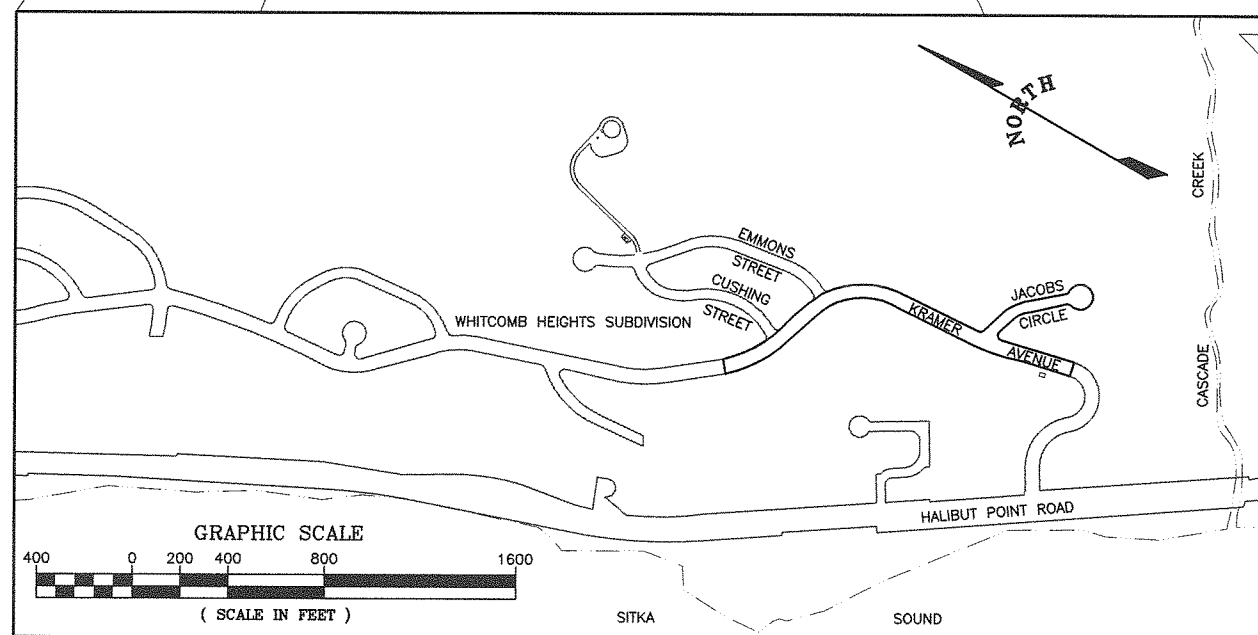
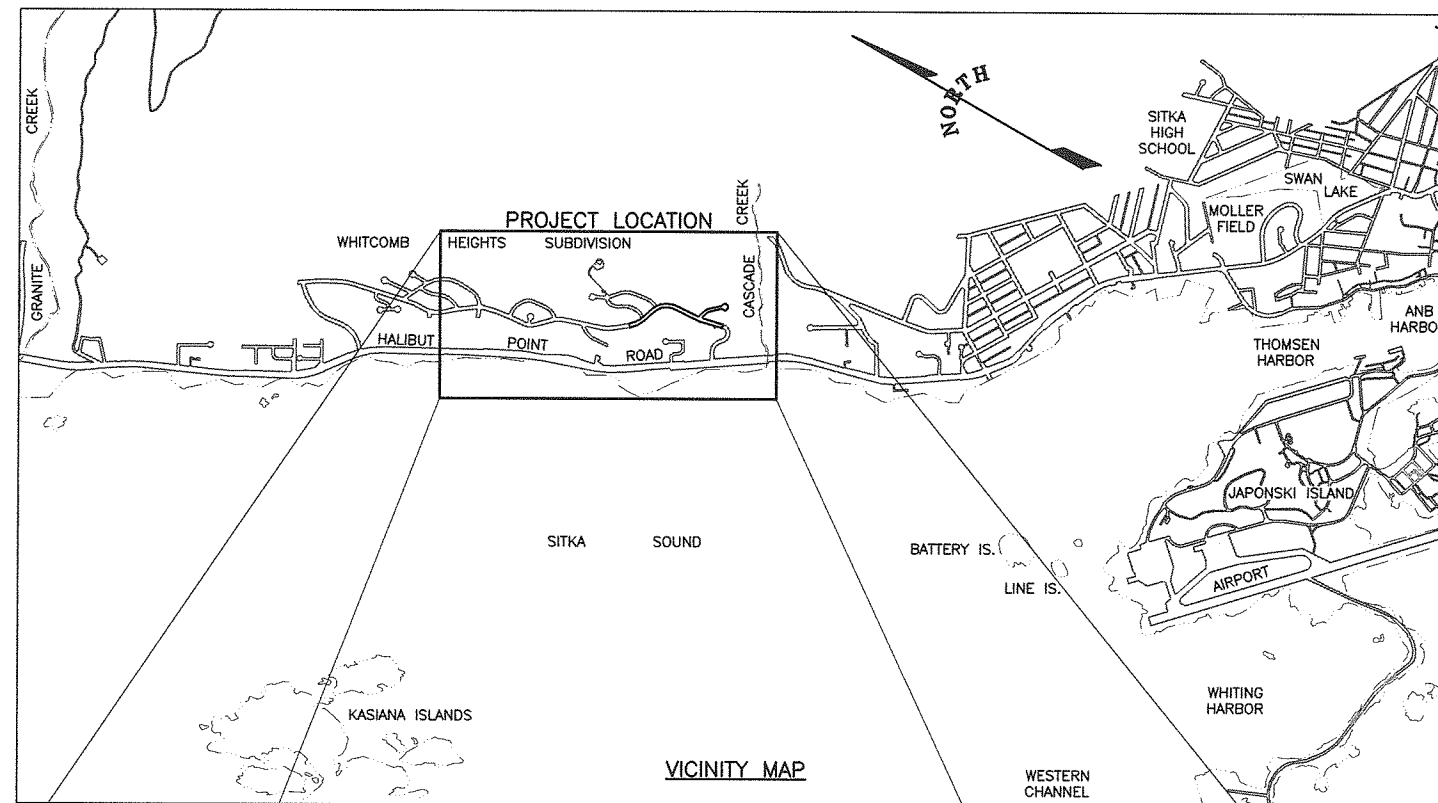
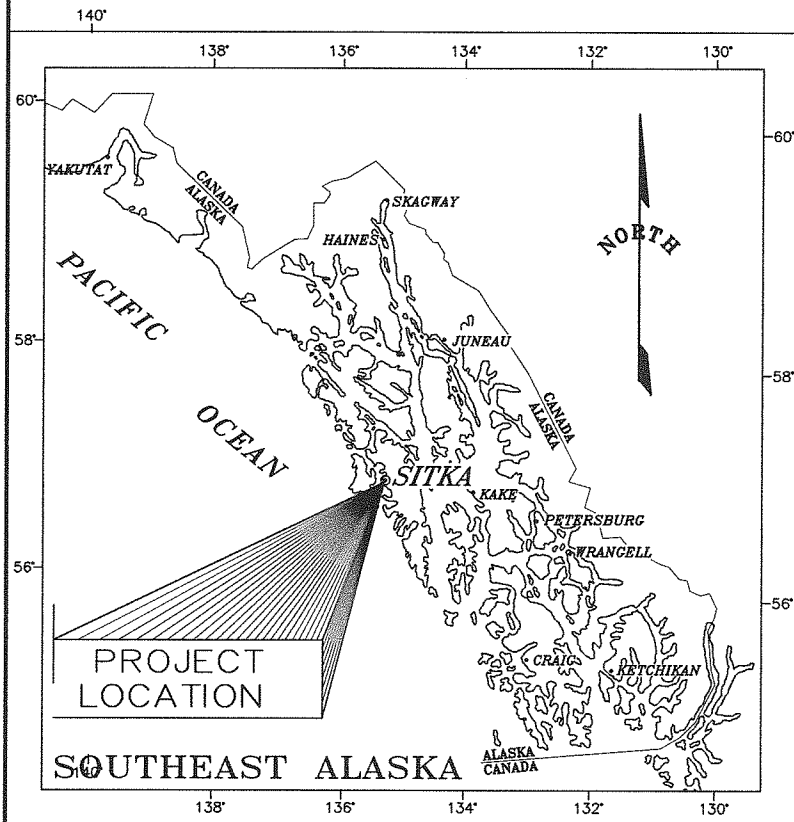


# CITY AND BOROUGH OF SITKA

## KRAMER AVENUE / JACOBS CIRCLE WATER AND SEWER PROJECT

STA KA 155+70 TO STA KA 167+00 / STA JC 100+00 TO STA JC 105+50

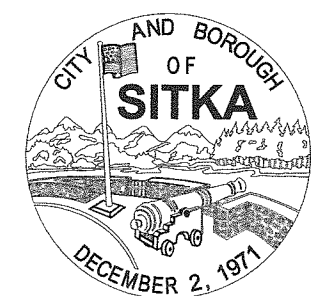
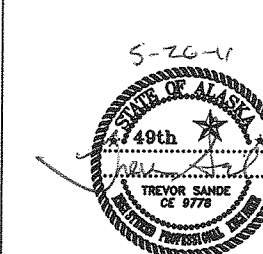


### INDEX

SHEET NO.	DESCRIPTION
T1.0	TITLE SHEET
C1.1	GENERAL NOTES
C1.2	SHEET LAYOUT PLAN
C1.3	SURVEY CONTROL & CENTERLINE ALIGNMENT
C2.1	TYPICAL SECTIONS
C3.1 - C3.2	PLAN & PROFILE
C4.1 - C4.4	DETAILS
C7.1 - 7.2	EROSION & SEDIMENT CONTROL PLAN

TOTAL NUMBER OF SHEETS: 13

PATH:  
PLOT DATE:



DIRECTOR OF PUBLIC WORKS

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

CITY & BOROUGH ENGINEER

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

**R&M**  
R&M ENGINEERING-KETCHIKAN, INC.  
355 CARLANNA LAKE ROAD  
KETCHIKAN, ALASKA 99901

COASTAL EXCAVATION  
304 ELIASON LOOP  
SITKA, AK 99835

SHEET NO.  
**T1.0**

# PLAN VIEW SYMBOLS

## SURVEY MARKINGS

	EXISTING	NEW
SPIKE OR MAGNETIC NAIL		
ALUMINUM CAP ON REBAR		
TEMPORARY BENCH MARK		
SURVEY MONUMENTS		
BLM OR GLO MONUMENTS		
REBAR		
POINT NUMBER IDENTIFIER (SURVEY CONTROL)		

	EXISTING	NEW
ROW & PROPERTY LINES		
PROJECT CENTERLINE		
EASEMENT		

## GENERAL

	EXISTING	NEW
SIGN		
BUILDING		
CHAIN LINK FENCE		
CONCRETE PAD		
MAILBOX		
CURB, GUTTER & SIDEWALK		
INTERMITTENT DRAINAGE OR STREAM		
DITCH		
DITCH REGRADING FLOW DIRECTION		
EDGE OF WATER		
CURB CUT		
CONTOUR MINOR		
CONTOUR MAJOR		
SURFACE GRADE		
GUARDRAIL		
EDGE OF PAVEMENT		
EDGE OF GRAVEL/SHOULDER		
EDGE OF CONCRETE		
PAVEMENT CUT		
TOE OF FILL		
TOP OF CUT		
VEGETATION		
TREES		
WETLANDS		

## STORM DRAIN

	EXISTING	NEW
STORM DRAIN		
STORM SERVICE W/ CLEAN OUT		
STORM DRAIN MANHOLE W/ MANHOLE COVER		
STORM DRAIN MANHOLE W/ AREA DRAIN		
STORM DRAIN MANHOLE W/ CURB INLET		
CATCH BASIN W/ MANHOLE COVER		
CATCH BASIN W/ AREA DRAIN		
CATCH BASIN W/ CURB INLET		
STORM CULVERT		
CULVERT W/ END SECTION		

## WATER

	EXISTING	NEW
WATER		
FIRE HYDRANT		
GATE VALVE		
WATER SERVICE		
PLUG OR CAP		
PRESSURE RELIEF VALVE		
REDUCTION FITTING		
BEND		

## SANITARY SEWER

	EXISTING	NEW
SANITARY SEWER		
SANITARY SEWER SERVICE		
SANITARY SEWER MANHOLE		

## PRIVATE UTILITIES

	EXISTING	NEW
UNDERGROUND ELECTRICAL WIRES		
UNDERGROUND TELEPHONE WIRES		
UNDERGROUND TELEVISION WIRES		
POWER POLE		
POWER POLE WITH DOWN CONNECTION		
LUMINAIRE ON POWER POLE		
UTILITY PEDESTALS		
LOAD CENTER		
UNDERGROUND VAULT		

## LABELS

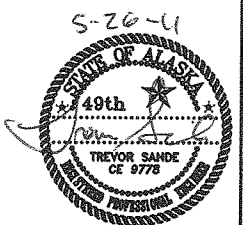
	EXISTING	NEW
HOUSE NUMBER		
SPOT ELEVATION		
STORM DRAIN STRUCTURE		
STORM DRAIN PIPE NUMBER		
DRIVEWAY NUMBER		
SANITARY SEWER STRUCTURE		
SANITARY SEWER PIPE NUMBER		
TEST PIT LOCATION / NUMBER		

## ABBREVIATIONS

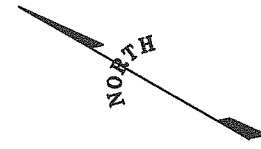
AC	ASBESTOS CEMENT PIPE OR ASPHALT PAVING	GPM	GALLONS PER MINUTE	OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
CB	CATCH BASIN	HDPE	HIGH-DENSITY POLYETHYLENE	PL	PLATE
CL	CENTERLINE	ID	INSIDE DIAMETER	PVC	POLYVINYL CHLORIDE PIPE
CLR	CLEAR	IE	INVERT ELEVATION	R	RADIUS
CMP	CORRUGATED METAL PIPE	INV	INVERT	RT	RIGHT
CONC	CONCRETE	LIDAR	LASER IMAGING DETECTION AND RANGING	SCH	SCHEDULE
CPP	CORRUGATED POLYETHYLENE PIPE	LT	LEFT	SD	STORM DRAIN
CTE	CONNECT TO EXISTING	MAX	MAXIMUM	STA	STATION
DIP	DUCTILE IRON PIPE	MFGR	MANUFACTURER	STD	STANDARD
DIA OR Ø	DIAMETER	MIN	MINIMUM	TBC	TOP BACK OF CURB
EC	EDGE OF CONCRETE	MH	MANHOLE	TBM	TEMPORARY BENCH MARK
EP	EDGE OF PAVEMENT	MPH	MILES PER HOUR	TC	TOP OF CONCRETE
FF	FINISH FLOOR	NO	NUMBER	TW	TOP OF WALL
FG	FINISHED GRADE	NTS	NOT TO SCALE	TYP	TYPICAL
FH	FIRE HYDRANT	OC	ON CENTER	UD	UNDERDRAIN
FL	FLOW LINE	OD	OUTSIDE DIAMETER	W/	WITH
GB	GRADE BREAK	OG	EXISTING GROUND	W/S	WATER/SEWER
		N.I.C.	NOT IN CONTRACT		

## GENERAL NOTES:

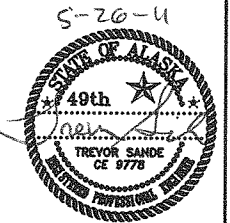
- CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 2002 CITY AND BOROUGH OF SITKA STANDARD SPECIFICATIONS, DETAILS AND SPECIAL PROVISIONS, AS MODIFIED BY THE CONTRACT DOCUMENTS.
- TOPOGRAPHICAL INFORMATION IS TAKEN FROM A COMBINATION OF A LASER IMAGING DETECTION AND RANGING (LIDAR) SURVEY PERFORMED BY AERO-METRIC (FORMERLY AEROMAP) IN 2003 AND A ROAD CENTERLINE CONTROL SURVEY PERFORMED BY USKH IN 2007. THE ACCURACY OF THE LIDAR SURVEY VARIES FROM 0.2' TO SEVERAL FEET DEPENDING ON DRAMATIC CHANGES IN TERRAIN AND THICKNESS OF VEGETATION. THE LOCATION OF MANY ITEMS WILL CHANGE DEPENDING ON ACTUAL FIELD CONDITIONS, INCLUDING; CULVERTS, DITCH LINES, CLEARING AND GRUBBING LIMITS AND CUT - FILL SLOPES. LIDAR SURVEY WILL NOT BE USED IN CALCULATING QUANTITIES. THE CONTRACTOR SHALL PERFORM A SURVEY BEFORE CONSTRUCTION FOR MEASUREMENT OF EARTHWORK QUANTITIES AND TO LOCATE EXISTING UTILITIES.
- SOILS INFORMATION IS TAKEN FROM A GEOTECHNICAL INVESTIGATION PERFORMED BY GOLDER ASSOCIATES INC. COPIES OF THIS REPORT ARE AVAILABLE UPON REQUEST.
- CAUTION!** LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY EXACT LOCATION BY OBTAINING UTILITY LOCATES PRIOR TO START OF CONSTRUCTION, FIELD LOCATING EACH UTILITY AND EXERCISING CAUTION DURING EXCAVATION. (PH. W/S 907-966-2256, ELEC. 907-747-1884, COMM. ACS & GCI 811)
- ELECTRICAL AND COMMUNICATIONS, OVERHEAD LINES ARE NOT SHOWN ON THE PLANS FOR CLARITY.
- VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION. RECORD LOCATIONS AND CHANGES TO UTILITIES IN SURVEY NOTES AND ON AS-BUILT PLANS.
- THE CONTRACTOR SHALL COORDINATE ACTIVITIES WITH EACH UTILITY COMPANY AND PROVIDE ACCESS AS NECESSARY FOR UTILITY COMPANIES TO CONDUCT THEIR WORK.
- LOCATION OF SANITARY SEWER MANHOLES, PIPING AND PIPE LENGTHS ARE SUBJECT TO MINOR REVISIONS BY THE ENGINEER.
- THE CONTRACTOR SHALL REFERENCE ALL EXISTING SURVEY MONUMENTS PRIOR TO CONSTRUCTION AND REPLACE ANY MONUMENTS THAT ARE DISTURBED. WORK SHALL BE DONE BY OR UNDER THE DIRECT SUPERVISION OF AN ALASKA REGISTERED LAND SURVEYOR.
- RESTORE ALL DISTURBED PROPERTY TO MATCH EXISTING CONDITIONS, EXCEPT AS SHOWN ON THE PLANS.
- DIMENSIONS ARE TO CENTER OF PIPE, CENTER OF MANHOLE, EDGE OF GRAVEL ROAD, UNLESS NOTED OTHERWISE.
- HYDROSTATIC PRESSURE LEAK TESTS OF PE PRESSURE PIPING SYSTEMS SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM F 2164(B). THE PREFERRED HYDROSTATIC TESTING LIQUID IS CLEAN WATER.



Designed: TSS	Approved: TSS	 R&M ENGINEERING-KETCHIKAN, INC. 355 CARLANNA LAKE ROAD KETCHIKAN, ALASKA 99901	Client: CITY AND BOROUGH OF SITKA	Project: KRAMER / JACOBS WATER AND SEWER	Sheet Description: GENERAL NOTES	Sheet No. C1.1
Drawn: TSS	Scale: AS NOTED Date: 5/18/11					
Checked: TSS	Project No. 112311					



SITKA SOUND



Designed: TSS		Approved: TSS		 <b>R&amp;M ENGINEERING-KETCHIKAN, INC.</b> 355 CARLANNA LAKE ROAD KETCHIKAN, ALASKA 99901	<b>COASTAL EXCAVATION</b> 304 ELIASON LOOP SITKA, AK 99835	Client: <b>CITY AND BOROUGH OF SITKA</b>	Project: <b>KRAMER / JACOBS</b> <b>WATER AND SEWER</b>	Sheet Description: <b>SHEET LAYOUT PLAN</b>	Sheet No. <b>C1.2</b>
Date	No.	Description	By						
		REVISION							

Drawn: TSS  
 Scale: AS NOTED  
 Date: 5/18/11  
 Checked: TSS  
 Project No. 112311

LINE TABLE			CURVE TABLE					
LINE	LENGTH	BEARING	CURVE	RADIUS	LENGTH	DELTA	PC	PT
KA-L11	136.44	S72°52'12"E	KA-C12	517.68	318.89	35°17'37"	KA 152+88.95	KA 156+07.84
KA-L12	349.99	S02°36'00"E	KA-C13	318.00	390.01	70°16'12"	KA 157+44.27	KA 161+34.28
KA-L13	316.18	S14°26'15"E	KA-C14	607.00	125.41	11°50'15"	KA 164+84.28	KA 166+09.68
KA-L14	8.48	S59°57'48"W	KA-C15	90.00	116.87	74°24'03"	KA 169+25.87	KA 170+42.74
KA-L15	52.36	N52°00'06"W	KA-C16	118.00	140.12	68°02'06"	KA 170+51.22	KA 171+91.34
KA-L16	165.40	S59°41'19"W	KA-C17	192.00	228.91	68°18'34"	KA 172+43.69	KA 174+72.60
EM-L1	177.98	S25°13'37"E	EM-C1	487.88	197.27	23°10'00"	EM 90+44.60	EM 92+41.87
EM-L2	127.44	S48°23'37"E	EM-C2	271.06	191.60	40°30'00"	EM 93+69.31	EM 95+60.91
EM-L3	238.92	S07°53'37"E	EM-C3	216.28	146.18	38°43'33"	EM 97+99.83	EM 99+46.01
JC-L1	60.64	S30°49'56"W						
JC-L1	29.22	N81°27'17"E	JC-C1	218.00	225.13	59°10'13"	JC 100+29.22	JC 102+54.35
JC-L2	292.96	S39°22'30"E						

SURVEY CONTROL				
POINT	NORTHING	EASTING	ELEV.	DESCRIPTION
3	20282.55	46317.21	21.87'	Red Plastic Cap on #5 Rebar
8	20496.29	46196.31	26.93'	MAGNETIC NAIL
50	21552.14	46431.40	171.76'	SPIKE
51	21481.02	46665.61	173.58'	SPIKE
62	20829.13	46831.24	119.40'	SPIKE
63	20763.44	47037.59	126.86'	SPIKE
64	20453.79	46941.07	87.38'	SPIKE
65	20331.83	46890.92	74.88'	SPIKE
66	20325.12	46747.37	60.17'	SPIKE
67	20428.72	46610.38	44.27'	SPIKE
542	21672.18	46738.02	--	2" ALUMINUM CAP
543	21244.62	46778.86	--	#5 REBAR
549	20784.07	46928.40	--	1-1/2" ALUMINUM CAP
550	20571.35	47153.21	--	#4 REBAR
560	20233.54	46945.76	--	2-1/2" BRASS CAP

**PROJECT COORDINATE SYSTEM**  
 A GROUND COORDINATE SYSTEM IN U.S. SURVEY FEET WAS DEVELOPED BY USKH FOR CAPITAL PROJECT NO. 90570. THIS SYSTEM IS RELATED TO NAD27 ALASKA STATE PLANE ZONE 1 USING CONVERSION PARAMETERS PROVIDED HEREIN AND WAS USED AS THE BASIS OF COORDINATES FOR THE WHITCOMB HEIGHTS SUBDIVISION.

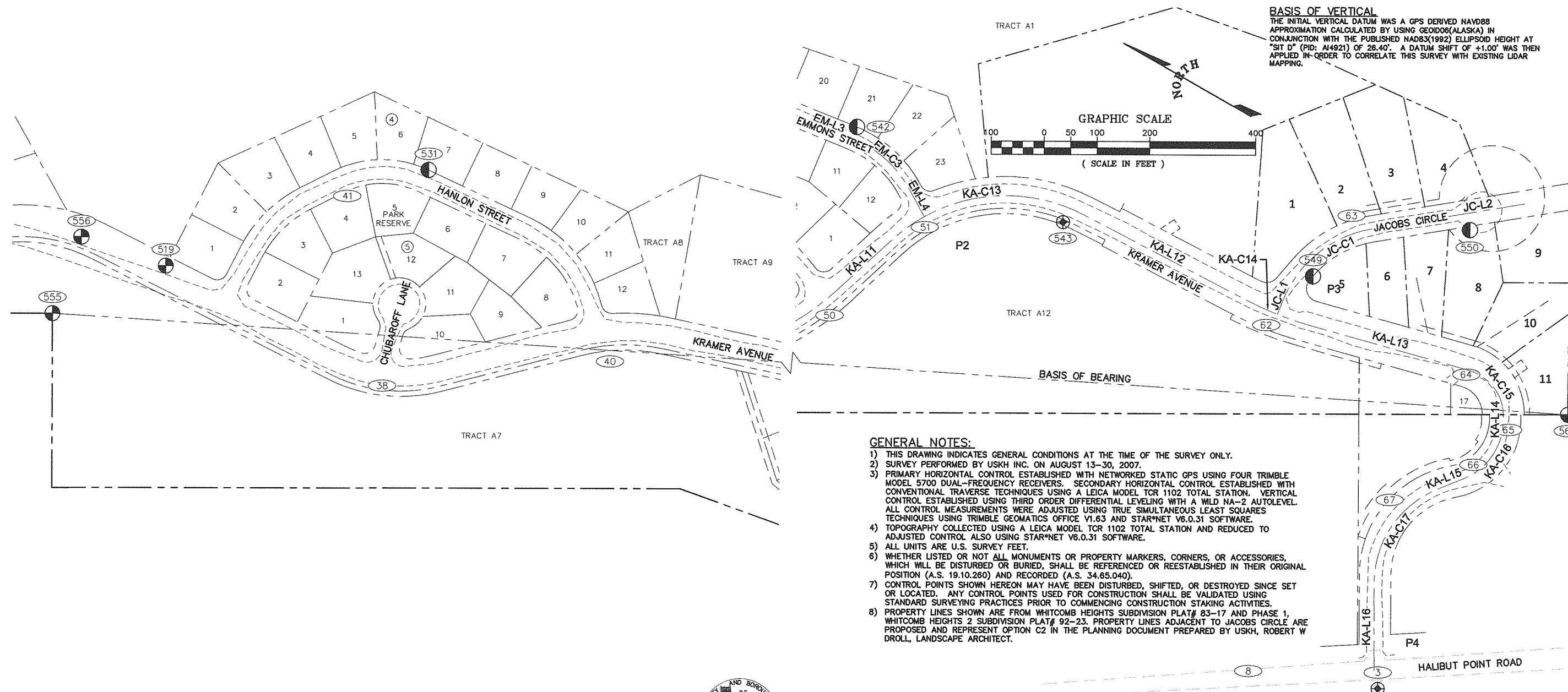
**BASIS OF BEARING**  
 A BEARING OF S 26°19'56" E WAS HELD BETWEEN CORNER 555 AND CORNER 560 AS CALCULATED FROM PLAT 83-17, SITKA RECORDING DISTRICT (S.R.D.) AND SHOWN ON THE WHITCOMB HEIGHTS SUBDIVISION PHASE 1 PLAT 92-23 S.R.D. PREPARED BY USKH.

**CONVERSION PARAMETERS**  
 TO CONVERT FROM THE GROUND COORDINATE SYSTEM TO NAD27 ALASKA STATE PLANE ZONE 1 PERFORM THE FOLLOWING:  
 1. ROTATE +1°27'12" (RIGHT) AT BASE POINT 0,0.  
 2. TRANSLATE BY +1,900,000N +2,300,000E.  
 3. SCALE COORDINATES BY 0.99997 AT 0,0.

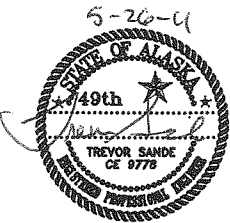
TO CONVERT FROM NAD27 ALASKA STATE PLANE ZONE 1 TO THE GROUND COORDINATE SYSTEM PERFORM THE FOLLOWING:  
 1. SCALE COORDINATES BY 1/0.99997 AT 0,0.  
 2. TRANSLATE BY -1,900,000N -2,300,000E.  
 3. ROTATE -1°27'12" (LEFT) AT BASE POINT 0,0.

**BASIS OF GEODETIC COORDINATES**  
 THE NAD27 POSITION OF PRIMARY AIRPORT CONTROL STATION (PACS) "SIT D" (PID: A14921) WAS HELD FIXED AS 57°03'17.07257"N, 135°22'12.12464"W. THE NAD27 POSITION WAS CALCULATED BY CONVERTING THE PUBLISHED NAD83(1992) POSITION OF 57°03'15.77022"N, 135°22'18.47982"W USING NADCON PARAMETERS.

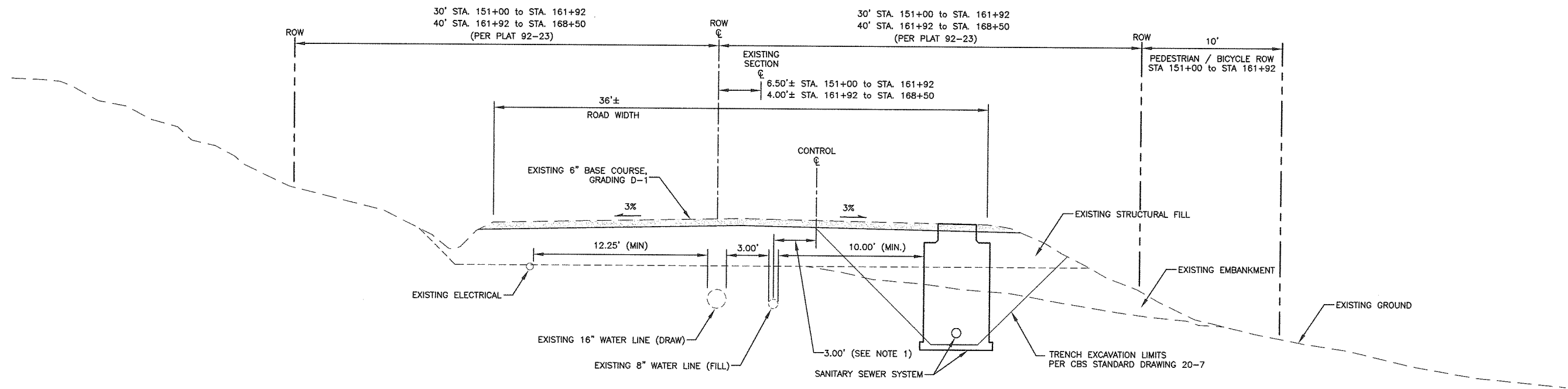
**BASIS OF VERTICAL**  
 THE INITIAL VERTICAL DATUM WAS A GPS DERIVED NAVD88 APPROXIMATION CALCULATED BY USING GEOD06(ALASKA) IN CONJUNCTION WITH THE PUBLISHED NAD83(1992) ELLIPSOID HEIGHT AT "SIT D" (PID: A14921) OF 28.40'. A DATUM SHIFT OF +1.00' WAS THEN APPLIED IN ORDER TO CORRELATE THIS SURVEY WITH EXISTING LIDAR MAPPING.



- GENERAL NOTES:**
- 1) THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY ONLY.
  - 2) SURVEY PERFORMED BY USKH INC. ON AUGUST 13-30, 2007.
  - 3) PRIMARY HORIZONTAL CONTROL ESTABLISHED WITH NETWORKED STATIC GPS USING FOUR TRIMBLE MODEL 5700 DUAL-FREQUENCY RECEIVERS. SECONDARY HORIZONTAL CONTROL ESTABLISHED WITH CONVENTIONAL TRAVERSE TECHNIQUES USING A LEICA MODEL TCR 1102 TOTAL STATION. VERTICAL CONTROL ESTABLISHED USING THIRD ORDER DIFFERENTIAL LEVELING WITH A WILD NA-2 AUTOLEVEL. ALL CONTROL MEASUREMENTS WERE ADJUSTED USING TRUE SIMULTANEOUS LEAST SQUARES TECHNIQUES USING TRIMBLE GEOMATICS OFFICE V1.63 AND STAR\*NET V6.0.31 SOFTWARE.
  - 4) TOPOGRAPHY COLLECTED USING A LEICA MODEL TCR 1102 TOTAL STATION AND REDUCED TO ADJUSTED CONTROL ALSO USING STAR\*NET V6.0.31 SOFTWARE.
  - 5) ALL UNITS ARE U.S. SURVEY FEET.
  - 6) WHETHER LISTED OR NOT ALL MONUMENTS OR PROPERTY MARKERS, CORNERS, OR ACCESSORIES, WHICH WILL BE DISTURBED OR BURIED, SHALL BE REFERENCED OR REESTABLISHED IN THEIR ORIGINAL POSITION (A.S. 19.10.260) AND RECORDED (A.S. 34.65.040).
  - 7) CONTROL POINTS SHOWN HEREON MAY HAVE BEEN DISTURBED, SHIFTED, OR DESTROYED SINCE SET OR LOCATED. ANY CONTROL POINTS USED FOR CONSTRUCTION SHALL BE VALIDATED USING STANDARD SURVEYING PRACTICES PRIOR TO COMMENCING CONSTRUCTION STAKING ACTIVITIES.
  - 8) PROPERTY LINES SHOWN ARE FROM WHITCOMB HEIGHTS SUBDIVISION PLAT# 83-17 AND PHASE 1, WHITCOMB HEIGHTS 2 SUBDIVISION PLAT# 92-23. PROPERTY LINES ADJACENT TO JACOBS CIRCLE ARE PROPOSED AND REPRESENT OPTION C2 IN THE PLANNING DOCUMENT PREPARED BY USKH, ROBERT W DROLL, LANDSCAPE ARCHITECT.



Designed: TSS	Approved: TSS		COASTAL EXCAVATION 304 ELIASON LOOP SITKA, AK 99835	Client: CITY AND BOROUGH OF SITKA	Project: KRAMER / JACOBS WATER AND SEWER	Sheet Description: SURVEY CONTROL	Sheet No. C1.3
Drawn: TSS	Scale: AS NOTED						
Date	No.	Description	By				
		REVISION					
Checked: TSS	Project No. 112311						



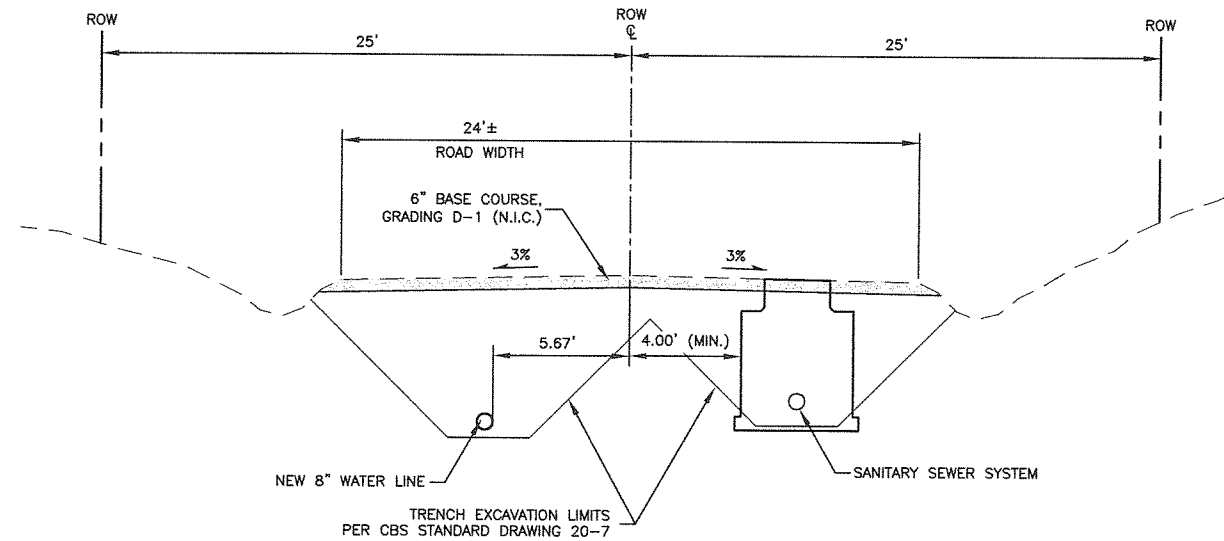
1  
C2.1

KRAMER AVENUE TYPICAL SECTION - N.T.S.

CUSHING STREET PAST JACOBS CIRCLE  
(STA. KA 151+00 to STA. KA 168+50)

NOTES:

- 1) TRANSITION FROM 3' LEFT TO 7' LEFT  
AT CONNECTION TO EXISTING 16" WATER LINE (DRAW) AT K.A. STA.  
165+37 SEE KRAMER AVENUE PLAN & PROFILE, SHEET C3.1
- 2) ROAD SURFACE SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION.
- 3) REFER TO SHEET 3.2 FOR UTILITY NOTES.



2  
C2.1

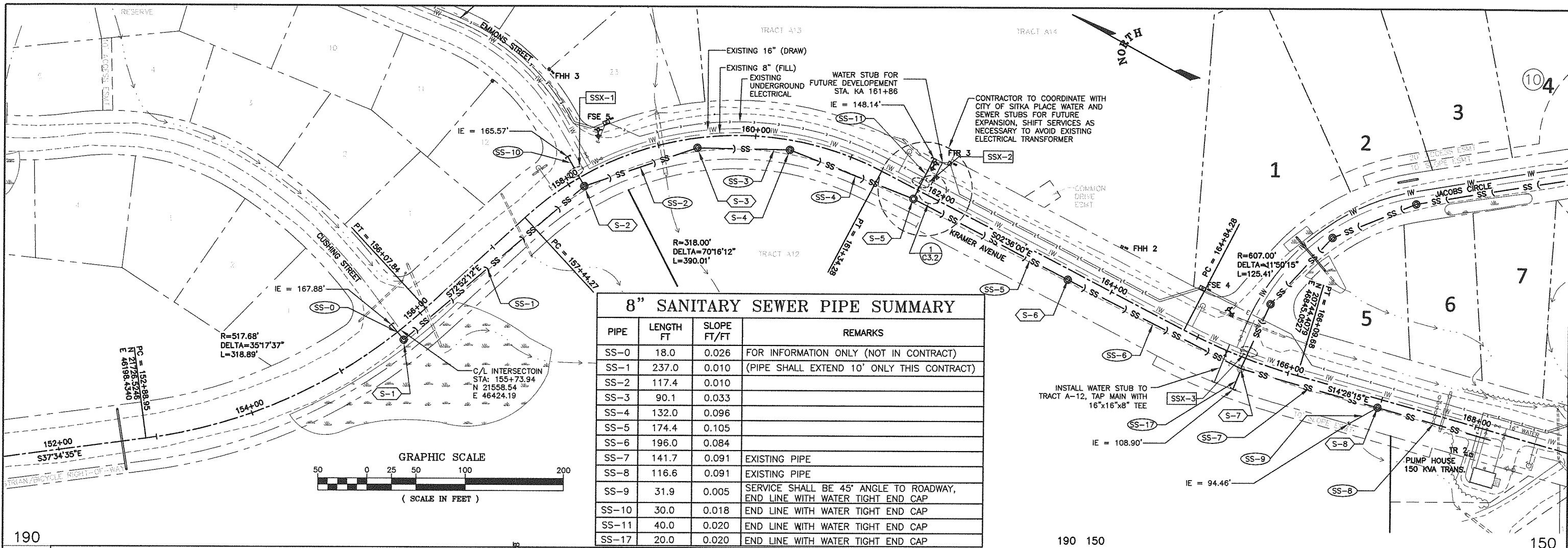
JACOBS CIRCLE TYPICAL SECTION - N.T.S.

JACOBS CIRCLE  
(STA. JC 100+00 to STA. JC 105+00)



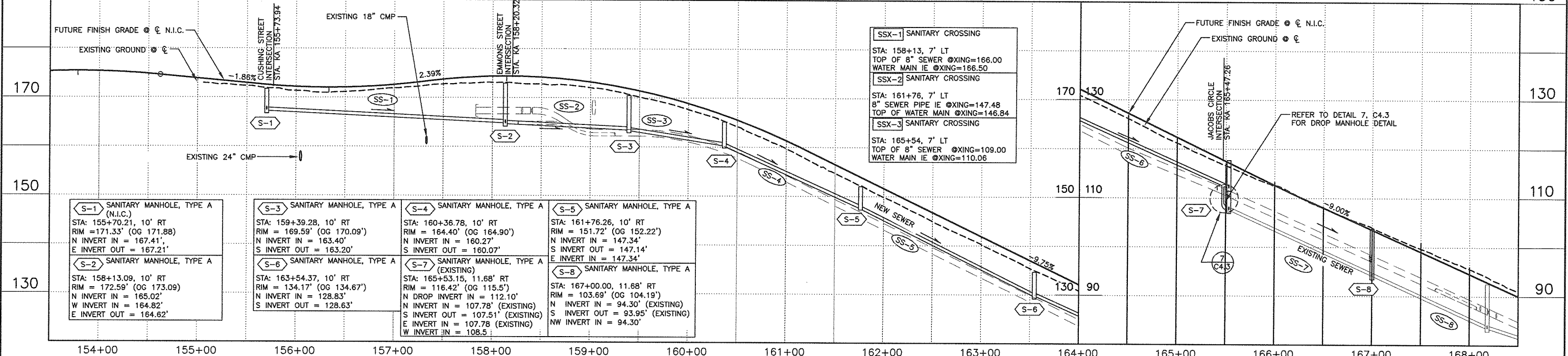
Designed: TSS		Approved: TSS			<b>COASTAL EXCAVATION</b> 304 ELIASON LOOP SITKA, AK 99835	Client: CITY AND BOROUGH OF SITKA	Project: <b>KRAMER / JACOBS</b> <b>WATER AND SEWER</b>	Sheet Description: <b>TYPICAL SECTIONS</b>	Sheet No. <b>C2.1</b>
Date	No.	Description	By						

5-26-11



### 8" SANITARY SEWER PIPE SUMMARY

PIPE	LENGTH FT	SLOPE FT/FT	REMARKS
SS-0	18.0	0.026	FOR INFORMATION ONLY (NOT IN CONTRACT)
SS-1	237.0	0.010	(PIPE SHALL EXTEND 10' ONLY THIS CONTRACT)
SS-2	117.4	0.010	
SS-3	90.1	0.033	
SS-4	132.0	0.096	
SS-5	174.4	0.105	
SS-6	196.0	0.084	
SS-7	141.7	0.091	EXISTING PIPE
SS-8	116.6	0.091	EXISTING PIPE
SS-9	31.9	0.005	SERVICE SHALL BE 45° ANGLE TO ROADWAY, END LINE WITH WATER TIGHT END CAP
SS-10	30.0	0.018	END LINE WITH WATER TIGHT END CAP
SS-11	40.0	0.020	END LINE WITH WATER TIGHT END CAP
SS-17	20.0	0.020	END LINE WITH WATER TIGHT END CAP



City and Borough of SITKA  
 DECEMBER 2, 1971

Client: CITY AND BOROUGH OF SITKA

Project: KRAMER / JACOBS  
 WATER AND SEWER

Sheet Description: PLAN & PROFILE  
 Sheet No. C3.1

Designed: TSS  
 Drawn: TSS  
 Checked: TSS

Approved: TSS  
 Scale: AS NOTED  
 Date: 5/18/11  
 Project No. 112311

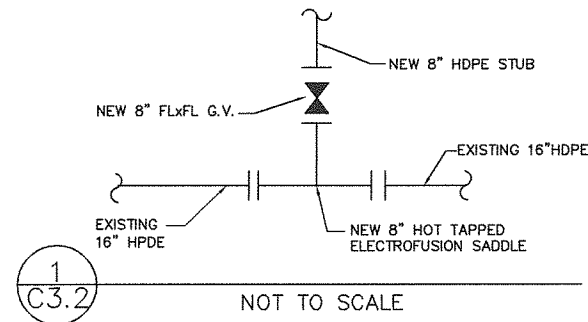
R&M ENGINEERING-KETCHIKAN, INC.  
 335 CARLINA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

COASTAL EXCAVATION  
 304 ELIASON LOOP  
 SITKA, AK 99835

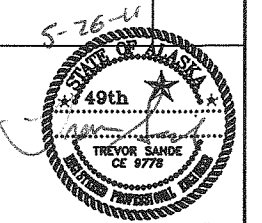
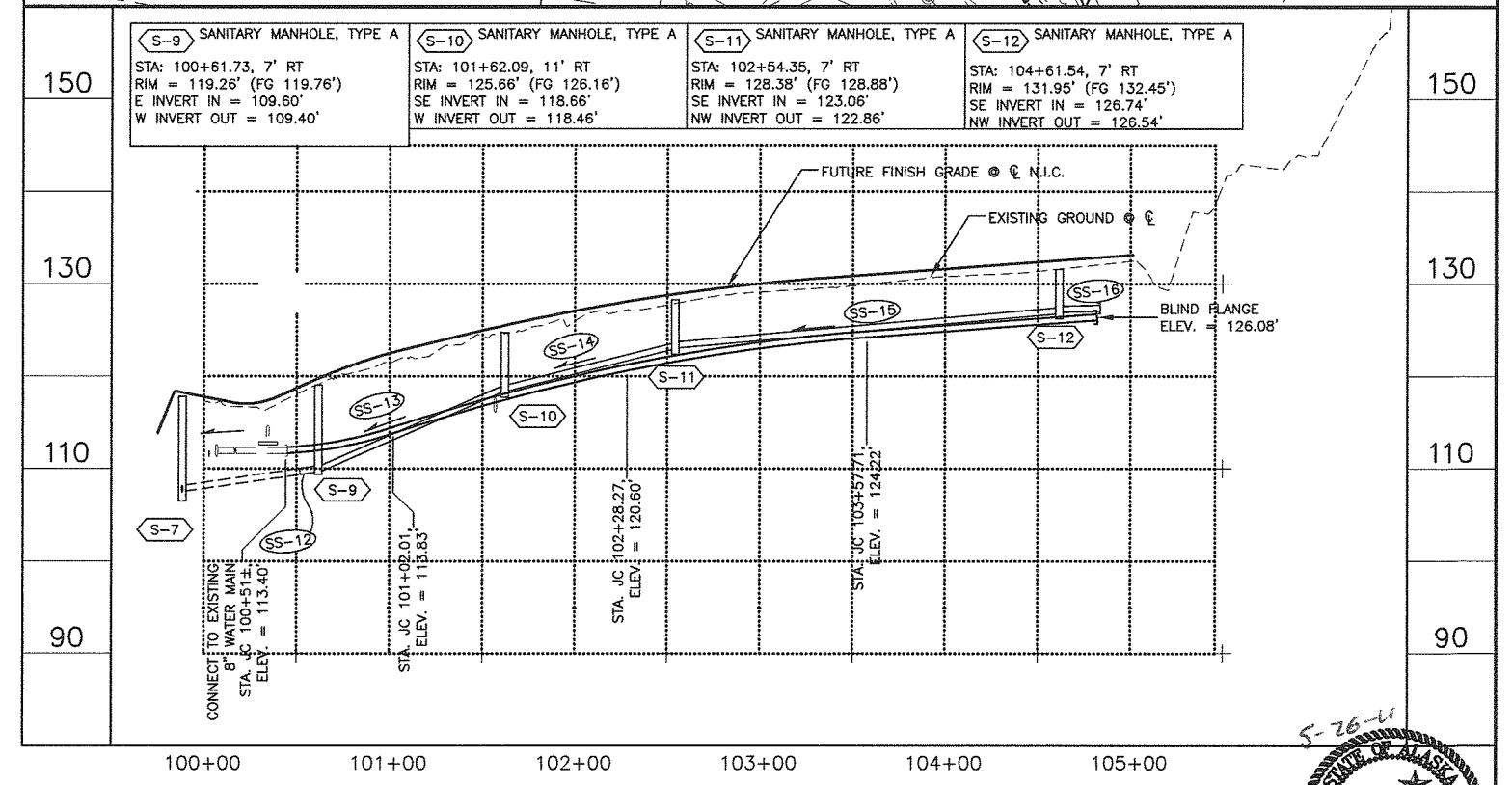
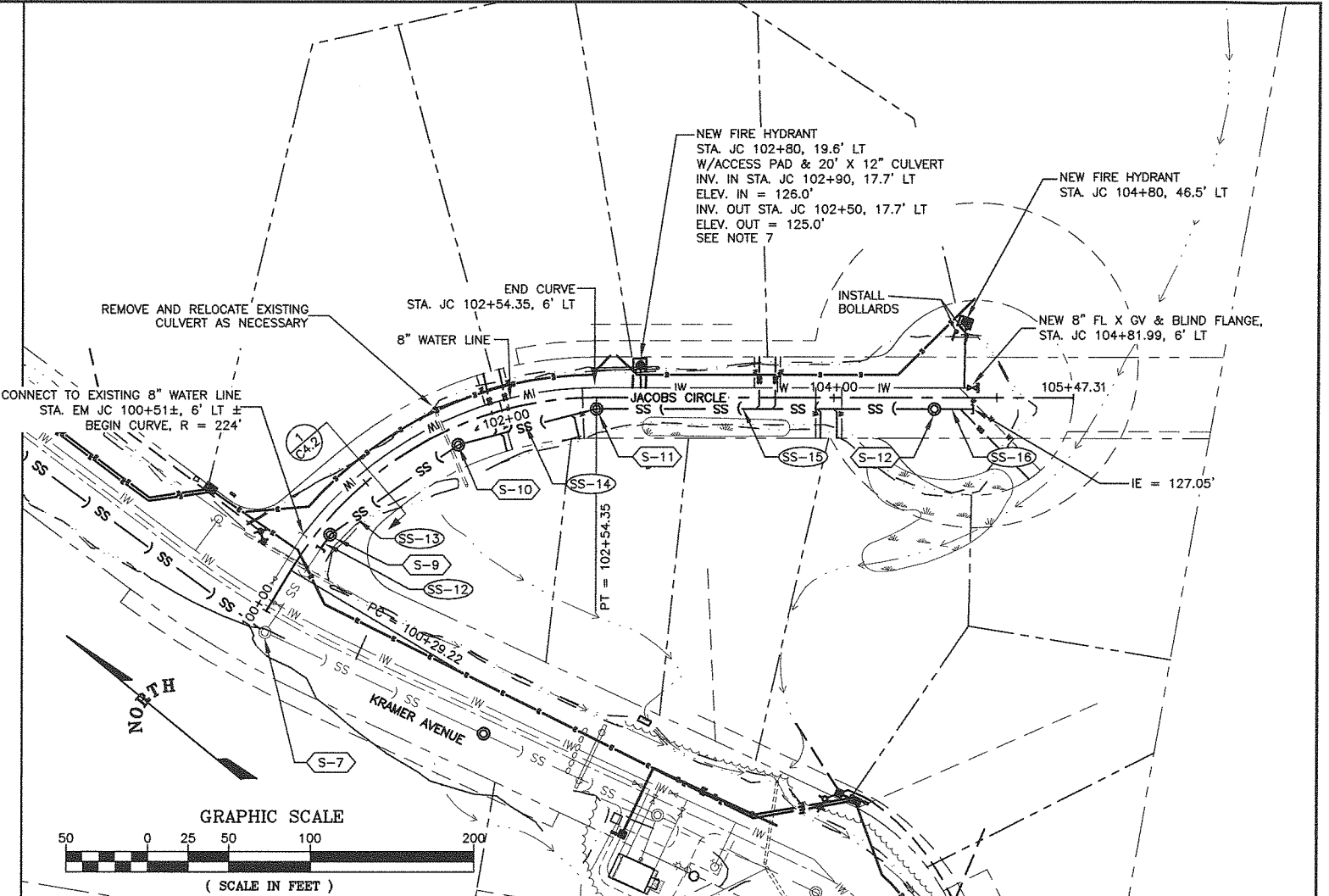
5-26-11

**UTILITY NOTES:**

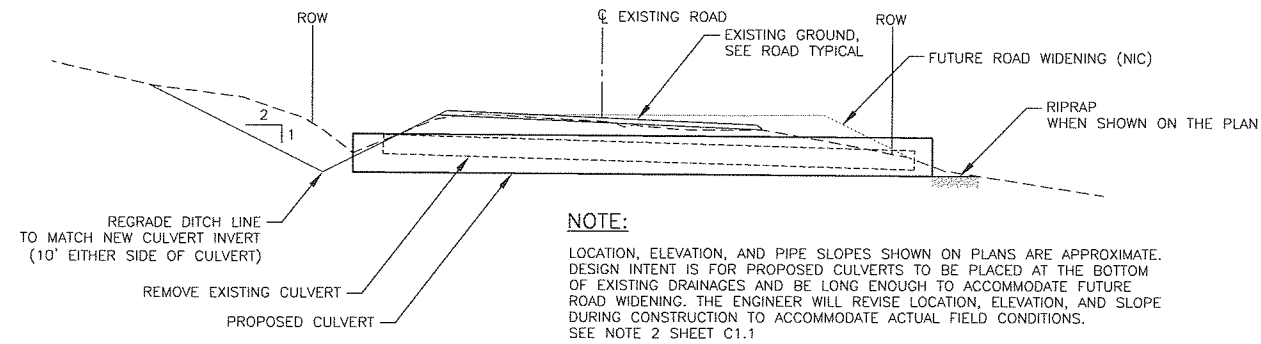
1. WATER DISTRIBUTION SYSTEM CONSTRUCTION SHALL BE ACCORDANCE WITH THESE PLANS, THE CITY AND BOROUGH OF SITKA STANDARD SPECIFICATIONS, AND ADEC REGULATIONS AS CONTAINED IN 18-ACC-80, DRINKING WATER.
2. WASTEWATER SYSTEM CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS, THE CITY AND BOROUGH OF SITKA STANDARD SPECIFICATIONS, AND ADEC REGULATIONS AS CONTAINED IN 18-AAC-72, WASTEWATER DISPOSAL.
3. MAINTAIN MINIMUM 10 FOOT HORIZONTAL, AND 18 INCH VERTICAL SEPARATION BETWEEN SEWER AND WATER MAIN LINES AT ANY POINT UNLESS OTHERWISE NOTED IN PLANS.
4. WATER MAINS SHALL CROSS OVER THE TOP OF SEWER MAINS WITH 18 INCHES OF SEPARATION BETWEEN OUTSIDE EDGES OF THE PIPES. THE WATER LINE JOINTS SHALL BE AT LEAST 9 FEET FROM THE SEWER JOINTS.
5. WATER PIPE SHALL BE HDPE PIPE.
6. SEWER PIPE SHALL BE HDPE PIPE.
7. STORM DRAIN CULVERTS SHALL BE CPP - TYPE S.
8. UTILITIES HAVE BEEN DESIGNED TO ACCOMMODATE FUTURE SUBDIVISION IMPROVEMENTS. DO NOT CHANGE UTILITY DESIGN, LINE, GRADE, SIZE, MATERIALS, ETC. WITHOUT APPROVAL FROM THE DESIGN ENGINEER.
9. WATER LINE DESIGN IS BASED ON HDPE PIPE WITH AN ALLOWABLE BENDING RADIUS = 10-D. THE CONTRACTOR SHALL SUBMIT ALIGNMENT SHOP DRAWINGS IF SELECTED HDPE PIPE MANUFACTURER'S ALLOWABLE BENDING RADIUS IS GREATER.
10. THE 100-YEAR FEMA FLOOD LEVEL IS OUTSIDE THE PROJECT LIMITS.
11. MAINTAIN 5' MINIMUM COVER ON WATER MAINS AND 4' MINIMUM COVER ON SEWER MAINS.
12. WATER PIPE ELEVATIONS ARE TO BOTTOM OF PIPE.
13. SEWER PIPE SLOPES ARE CALCULATED FROM FACE OF MANHOLE.
14. LOCATIONS OF WATER AND WASTEWATER SERVICES TO INDIVIDUAL LOTS WILL BE DETERMINED IN THE FIELD BY CITY AND BOROUGH OF SITKA PUBLIC WORKS.
15. SEWER SERVICES SHALL BE ELECTROFUSION TYPE WYES PER THE SEWER SERVICE DETAIL.
16. THE WATER MAIN FOR JACOBS CIRCLE SHALL HAVE A TRACING WIRE INSTALLED THAT CONNECTS TO THE EXISTING TRACING WIRE IN KRAMER AVENUE. TRACING WIRE SHALL ALSO RUN THE FULL LENGTH OF EACH NEW WATER SERVICE AND TERMINATE AT EACH CURB VALVE IN THE VALVE BOX.
17. LOCATOR BALLS SHALL BE PLACED ON THE ENDS OF EACH SERVICE FOR WATER AND SEWER. SEWER LOCATOR BALLS SHALL BE USA BLUEBOOK #75027-1N-06-0A OR APPROVED EQUAL. WATER LOCATOR BALLS SHALL BE USA BLUEBOOK #75025-1T-01-0A OR APPROVED EQUAL.



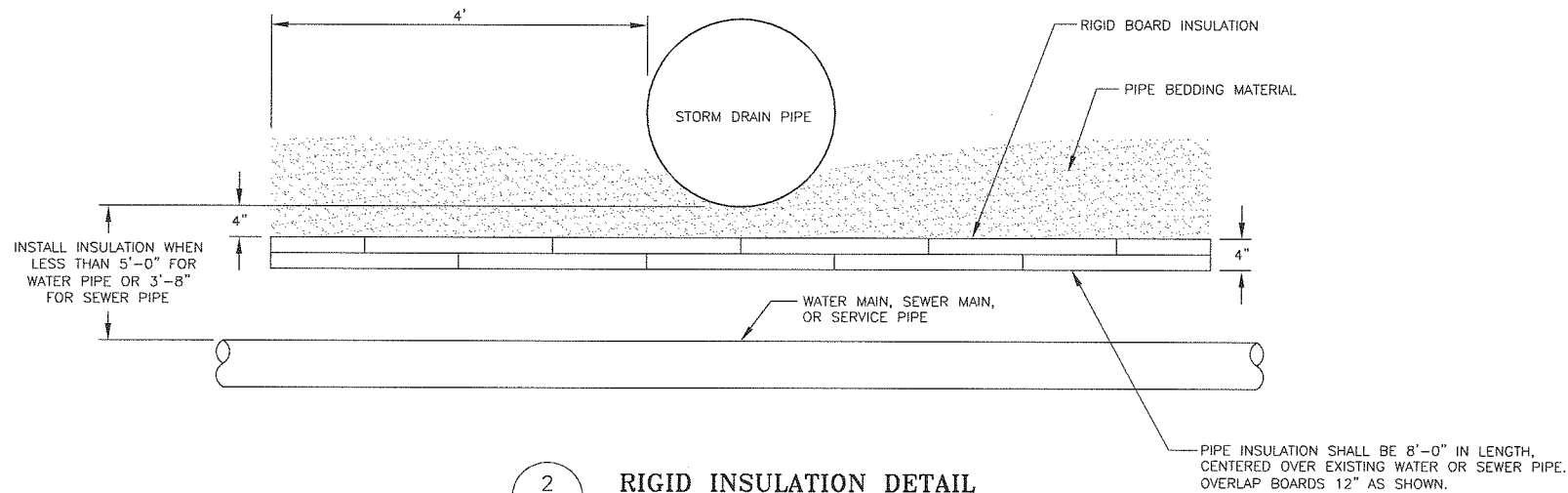
PIPE	LENGTH FT	SLOPE FT / FT	REMARKS
SS-12	8' ±	0.022	CONNECT @ STA 100+52±, EL 109.23
SS-13	91.7	0.097	
SS-14	84.0	0.050	
SS-15	203.2	0.017	
SS-16	18.3	0.017	SEWER STUB WITH WATER TIGHT END CAP



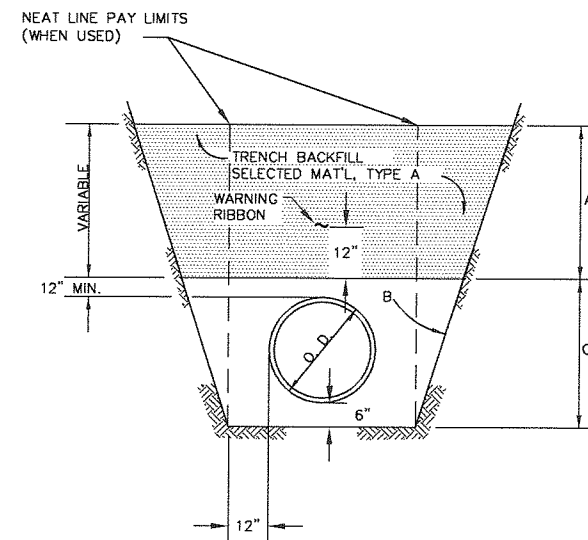
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Drawn: TSS	Scale: AS NOTED							Date: 5/18/11
Checked: TSS	Project No. 112311							



1  
 C4.1 TYPICAL CULVERT REPLACEMENT / INSTALLATION SECTION  
 NTS



2  
 C4.1 RIGID INSULATION DETAIL  
 NTS

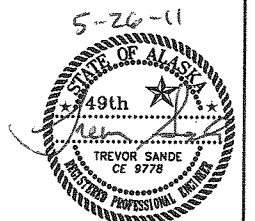


- NOTES:
- (A) TRENCH BACKFILL MATERIAL PLACED AND COMPACTED TO DEPTHS AS DETERMINED BY THE ENGINEER.
  - (B) TRENCH WALL SLOPES WILL VARY WITH SOIL STRENGTH AND CHARACTER. SLOPES TO CONFORM TO OSHA STANDARDS.
  - (C) BEDDING: D-1 FOR WATER AND SEWER MAINS AND SERVICES; C-1 FOR STORM DRAIN PIPING.

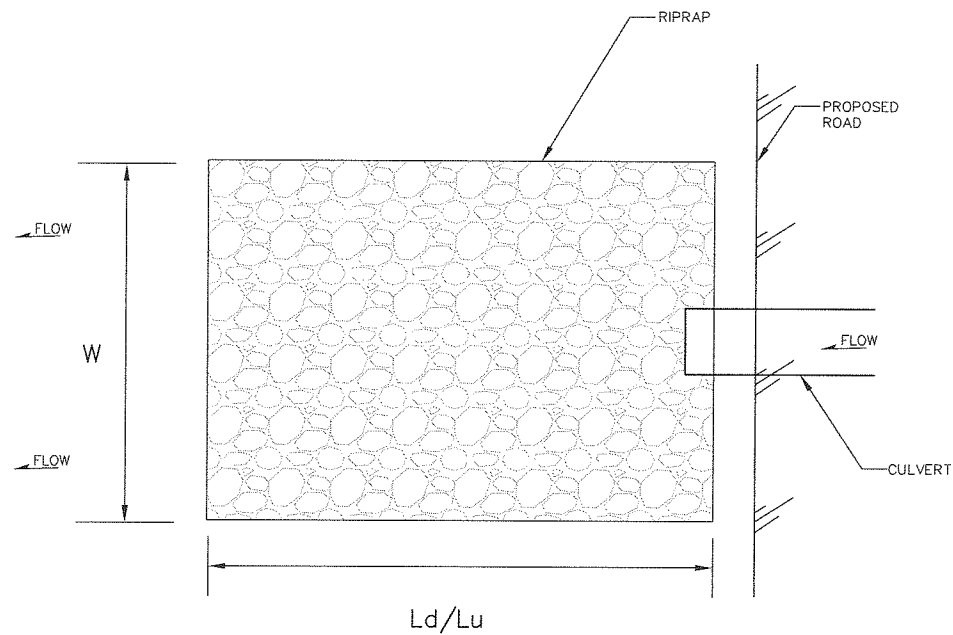
3  
 C4.1 TYPICAL TRENCH SECTION  
 NTS - CBSSS 20-7



Designed: TSS		Approved: TSS			COASTAL EXCAVATION 304 ELIASON LOOP SITKA, AK 99835	Client: CITY AND BOROUGH OF SITKA	Project: KRAMER / JACOBS WATER AND SEWER	Sheet Description: DETAILS	Sheet No. C4.1	
Drawn: TSS		Scale: AS NOTED	Date: 5/18/11							R&M ENGINEERING-KETCHIKAN, INC. 355 CARLANNA LAKE ROAD KETCHIKAN, ALASKA 99901
Date	No.	Description	By							



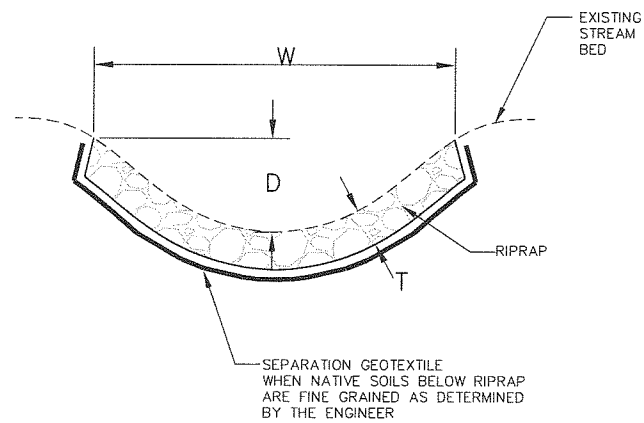




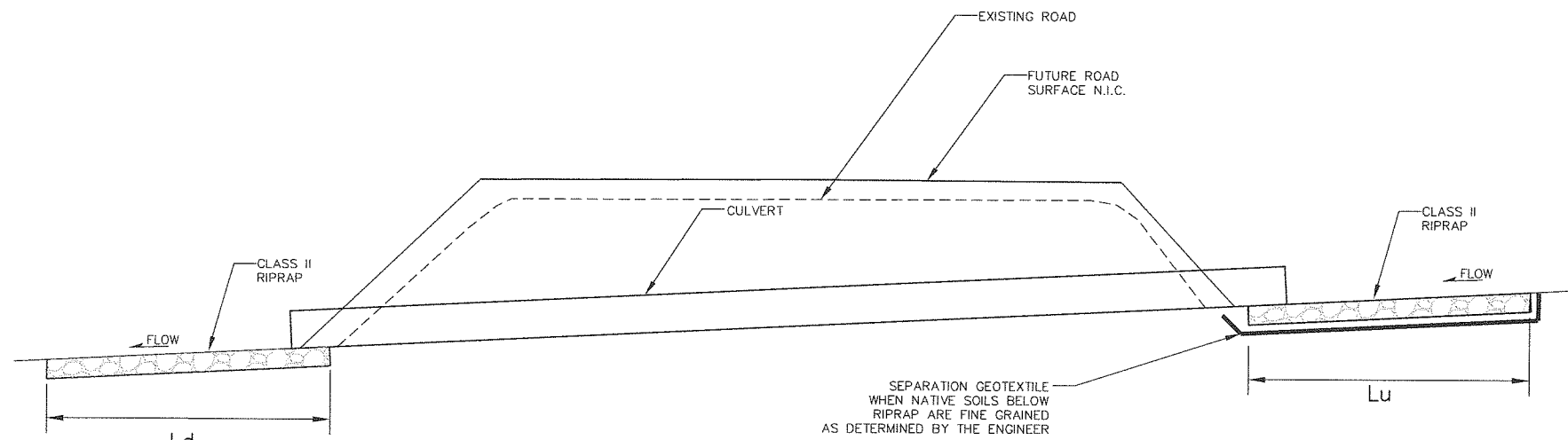
PLAN

CULVERT INLET/OUTLET CONTROL SCHEDULE									
PIPE DIA	STATION	OFFSET	W	T	Lu	Ld	D	NOTES	RIPRAP CLASS
18"	101+30 JA	R & L	6'	2'	6'	9'	1'		II

NOTE:  
ENGINEER MAY MODIFY DIMENSIONS TO FIT EXISTING CONDITIONS



SECTION



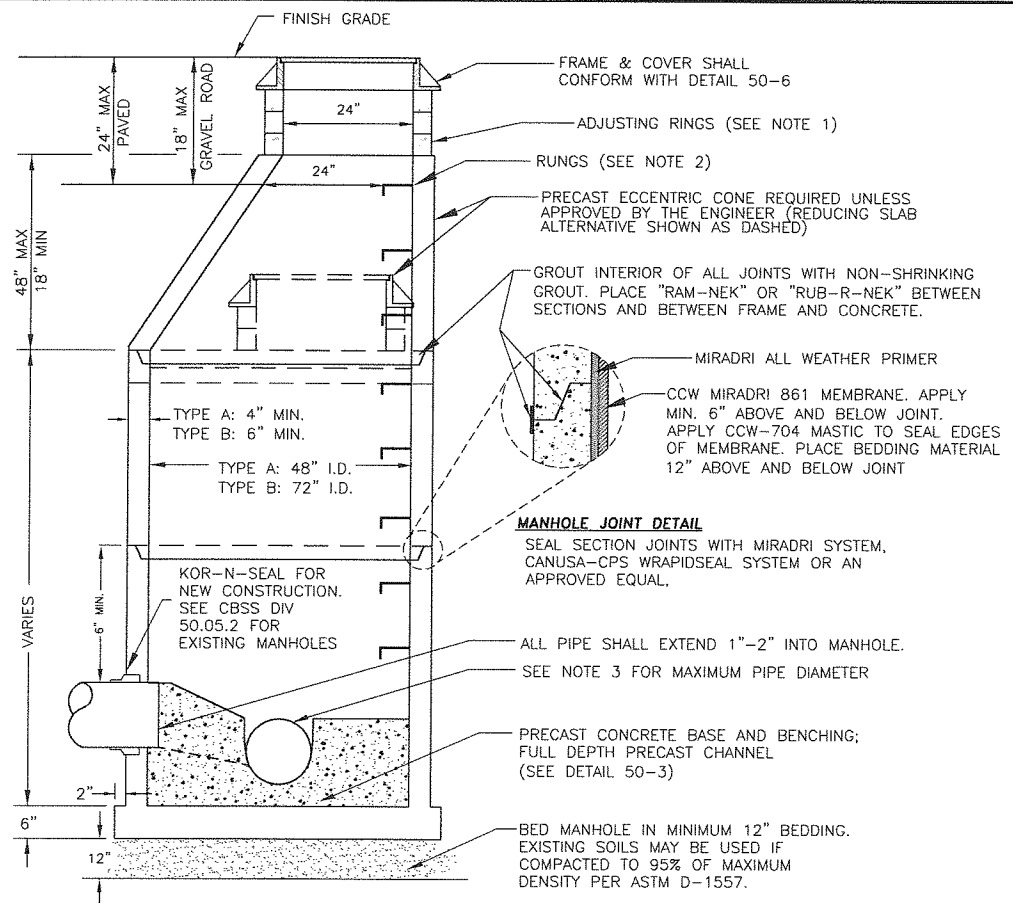
PROFILE

1 CULVERT INLET / OUTLET CONTROL DETAILS  
C4.2 NTS



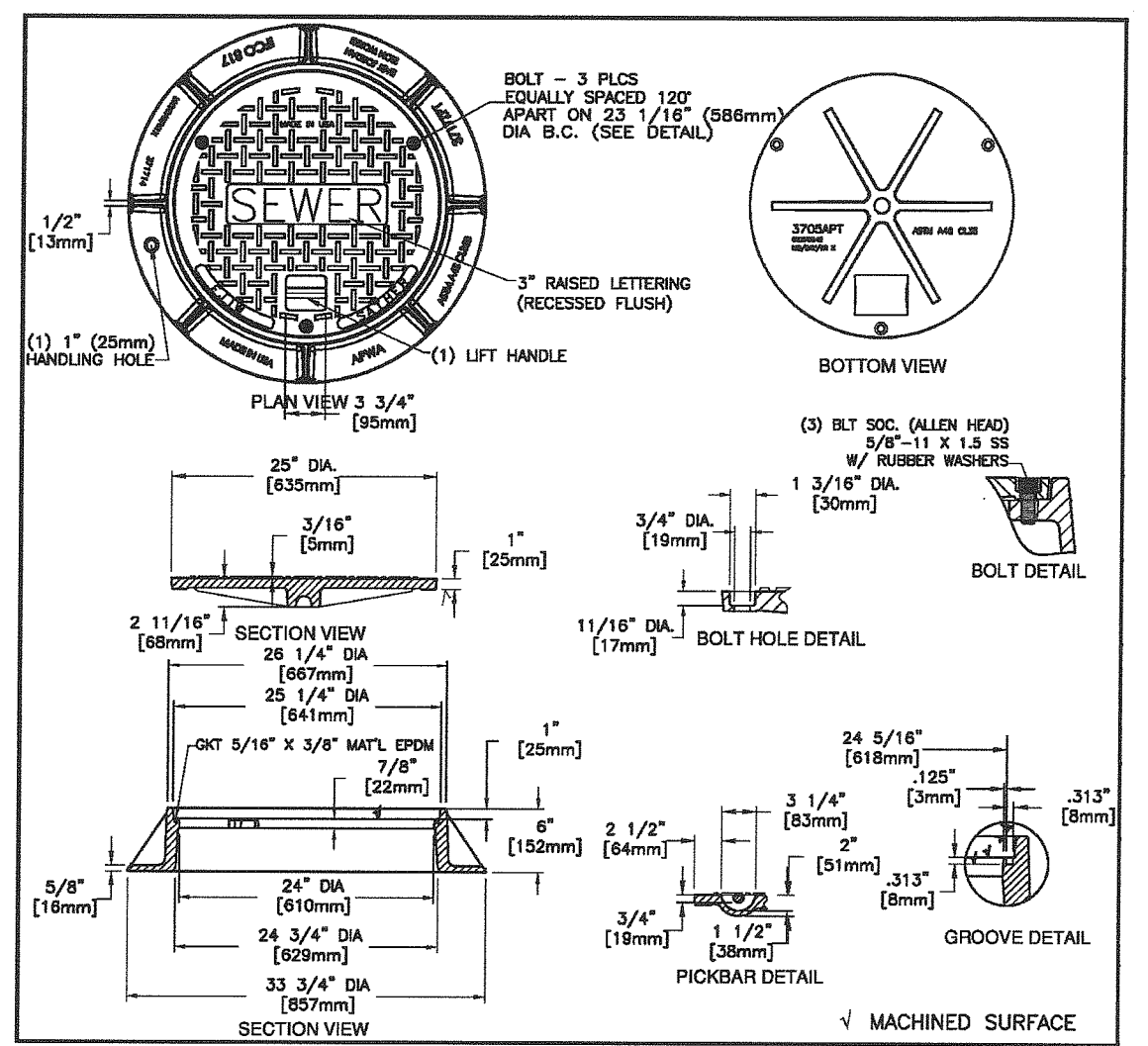
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Date	No.	Description	By						





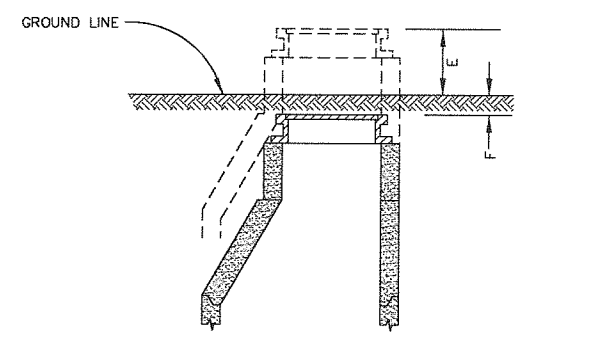
- NOTES:
- A LAYER OF MORTAR SHALL BE APPLIED BETWEEN EACH RING, BETWEEN LOWEST RING AND CONE AND BETWEEN TOP RING AND FRAME. RINGS OF MANHOLES IN PAVED ROADS SHALL BE TILTED SO THAT THE FRAME IS FLUSH WITH ASPHALT. WATERPROOF MASTIC AND MEMBRANE SHALL BE APPLIED AROUND RINGS WHEN GROUND WATER LEVEL IS ABOVE THE TOP OF THE CONE. THE TOTAL HEIGHT OF ADJUSTMENT RINGS FOR MANHOLES IN GRAVEL ROADS SHALL BE NO MORE THAN 4".
  - RUNGS TO BE PLACED 12" O.C. ON UNOBSTRUCTED SIDE OF MANHOLE. LAST RUNG SHALL BE 18" MAX FROM BOTTOM OF MANHOLE, AND TOP RUNG SHALL BE 6" MAXIMUM FROM TOP OF CONE. IF UNOBSTRUCTED SIDE NOT AVAILABLE, LAST RUNG SHALL BE PLACED 6" OVER SMALLEST PIPE. SEE CBSS SEC 50.03..
  - TYPE A MANHOLES SHALL BE USED FOR PIPES UP TO 24". FOR LARGER PIPES, USE TYPE B MANHOLE.
  - REFER TO A.S.T.M. C-478 FOR DESIGN REQUIREMENTS AND C-478-69 FOR MINIMUM STEEL FOR BARREL. FIRST BARREL SECTION SHALL BE IMBEDDED IN BASE. BLOCKOUTS SHALL BE FORMED.
  - DENSITY OF BACKFILL SHALL BE 95% OF MAXIMUM PROCTOR DENSITY.
  - TYPE B MANHOLES WILL TYPICALLY HAVE A 72" TO 48" REDUCING SLAB NOT SHOWN. THERE MAY BE 48" BARREL SECTIONS BETWEEN THIS SLAB AND THE ECCENTRIC CONE.

2 not used  
C4.3

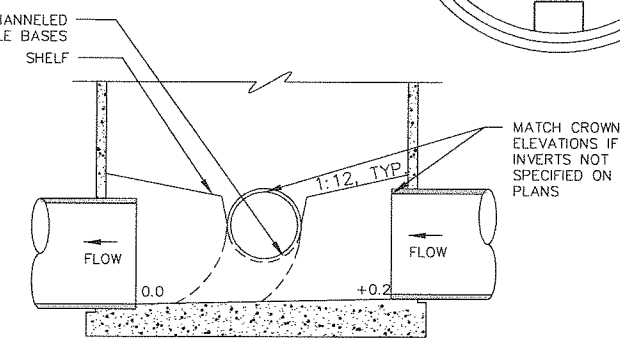
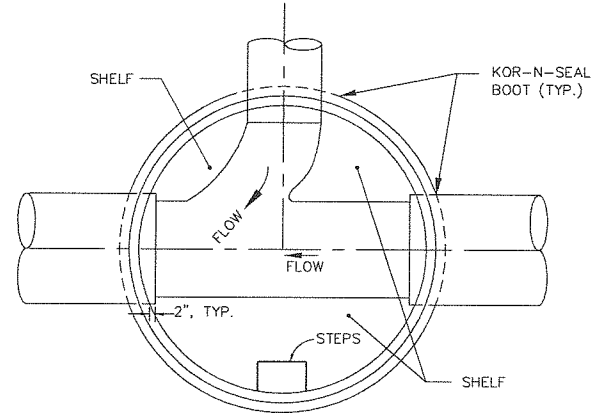


3 EAST JORDAN IRON WORKS, INC MANHOLE FRAME & COVER #00370586  
C4.3 NTS - CBSS 50-6 (MODIFIED)

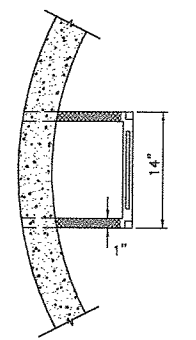
1 SANITARY MANHOLE TYPE A  
C4.3 NTS - CBSS 50-2 (MODIFIED)



LOCATION	E	F
BACKYARDS, GRAVEL STREETS, AND ALLEY AREAS WHERE TRAVELED.		4" MIN-6" MAX (NO GRADE RINGS)
UNDEVELOPED AND SWAMPY AREAS.	24" MIN	
HIGHWAY R.O.W.S OUTSIDE TRAFFIC AREAS.	6"	
PAVED STREETS.		1/4"

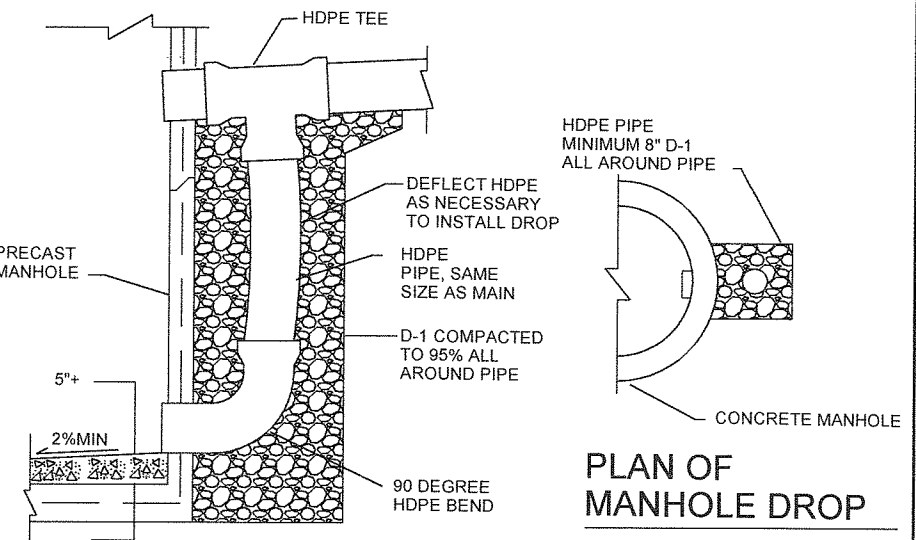


5 TYPE A MANHOLE BASE  
C4.3 NTS - CBSS 50-3 (MODIFIED)



NOTE: STEPS SHALL BE LANE INTERNATIONAL CORPORATION P-14938 OR APPROVED EQUAL. STEPS SHALL BE AT LEAST 13" WIDE AND EXTEND AT LEAST 6" FROM THE MANHOLE WALL. STEPS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

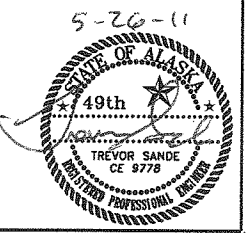
6 MANHOLE RUNG DETAIL  
C4.3 NTS - CBSS 50-5



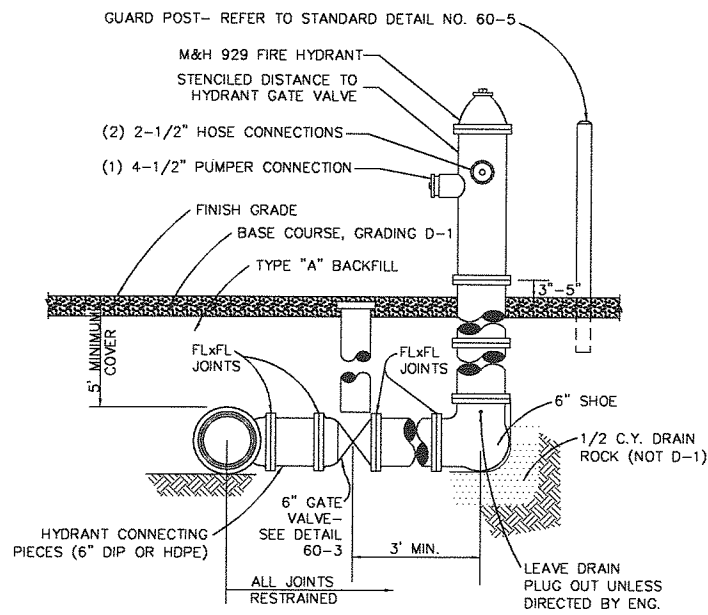
SECTION OF MANHOLE DROP

7 MANHOLE DROP SECTION  
C4.3 NTS

PLAN OF MANHOLE DROP



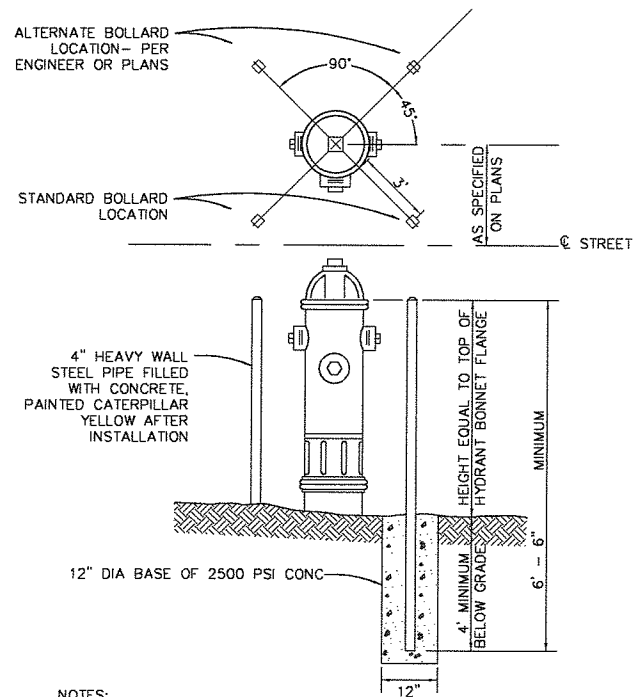
Designed: TSS	Approved: TSS	R&M ENGINEERING-KETCHIKAN, INC. 355 CARLANNA LAKE ROAD KETCHIKAN, ALASKA 99901	COASTAL EXCAVATION 304 ELIASON LOOP SITKA, AK 99835	Client: CITY AND BOROUGH OF SITKA	Project: KRAMER / JACOBS WATER AND SEWER	Sheet Description: DETAILS	Sheet No. C4.3
Drawn: TSS	Scale: AS NOTED						



**HYDRANT INSTALLATION NOTES**

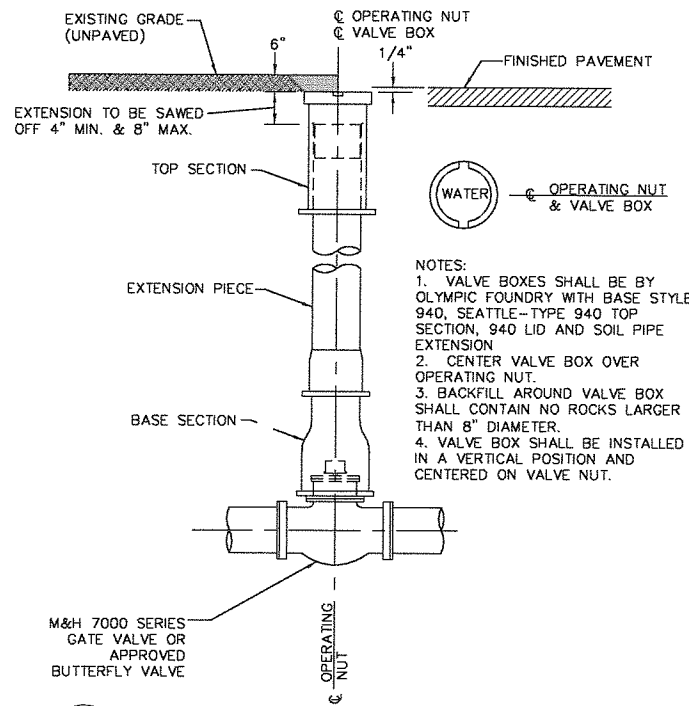
1. HYDRANT BARREL MUST BE INSTALLED PLUMB AND THE LEG MUST BE INSTALLED LEVEL.
2. DRAIN PLUG SHALL BE LEFT OUT UNLESS DIRECTED BY ENGINEER.
3. ALL HYDRANTS SHALL BE PAINTED CATERPILLAR YELLOW AFTER INSTALLATION.
4. AUXILIARY GATE VALVE BOX TO BE INSTALLED ACCORDING TO DETAIL 60-3 FOR TYPICAL VALVE BOX.
5. VALVES SHALL BE RESTRAINED TO THE MAIN LINE AND HYDRANTS SHALL BE RESTRAINED TO THE VALVE.

**1 HYDRANT ASSEMBLY**  
C4.4 NTS - CBSSS 60-4 (MODIFIED)



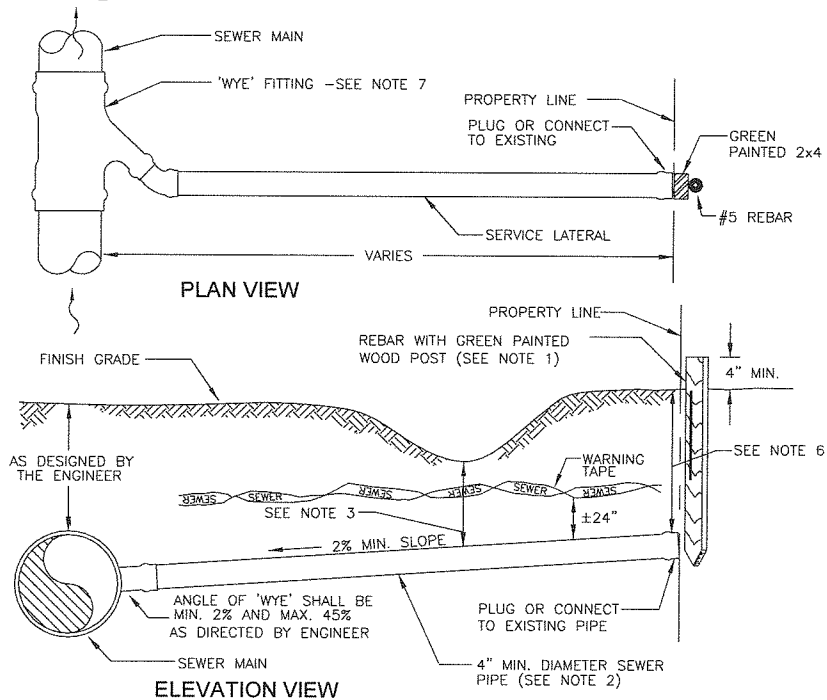
- NOTES:
1. GUARD POSTS ARE NOT REQUIRED WHEN THE HYDRANT IS LOCATED ON A ROAD THAT WILL BE MAINTAINED BY STATE DOT OR WHEN HYDRANT IS PROTECTED BY A BARRIER CURB.
  2. POSTS SHALL BE LOCATED TO ALLOW UNRESTRICTED ACCESS TO PUMPER AND HOSE CONNECTIONS.

**3 HYDRANT BOLLARD DETAIL**  
C4.4 NTS - CBSSS 60-5 (MODIFIED)



- NOTES:
1. VALVE BOXES SHALL BE BY OLYMPIC FOUNDRY WITH BASE STYLE 940, SEATTLE-TYPE 940 TOP SECTION, 940 LID AND SOIL PIPE EXTENSION
  2. CENTER VALVE BOX OVER OPERATING NUT.
  3. BACKFILL AROUND VALVE BOX SHALL CONTAIN NO ROCKS LARGER THAN 8" DIAMETER.
  4. VALVE BOX SHALL BE INSTALLED IN A VERTICAL POSITION AND CENTERED ON VALVE NUT.

**2 TYPICAL VALVE BOX**  
C4.4 NTS - CBSSS 60-3 (MODIFIED)



- NOTES:
1. MARK SERVICE WITH GREEN PAINTED 2x4 POST OR STAMP "S" IN TOP OF CURB. POST SHALL EXTEND TO DEPTH OF SERVICE LATERAL. REBAR SHALL BE DRIVEN TO GROUND LEVEL.
  2. ACCEPTABLE PIPE FOR USE WITHIN R.O.W. INCLUDES C900 PVC, SDR 35 PVC AND CLASS 50 DUCTILE IRON.
  3. MINIMUM CLEARANCE OF 18" REQUIRED BENEATH DITCH LINE. PIPE WITH LESS THAN 3' OF COVER SHALL BE COVERED WITH 2" OF FOAM INSULATION AS PER STANDARD DETAIL 70-8.
  4. DISTANCE FROM WYE TO CENTER OF LID OF NEAREST UPSTREAM OR DOWNSTREAM MANHOLE AND THREE MEASURED DISTANCES FROM END OF SERVICE PIPE TO PERMANENT OBJECTS SHALL BE NOTED ON AS-BUILT PLANS.
  5. SERVICE LATERAL SHALL BE PLUGGED IN A MANNER THAT WILL WITHSTAND TEST PRESSURES.
  6. LATERAL DEPTH AT PROPERTY LINE SHALL ACCOMMODATE EXISTING BUILDING SEWER OR FUTURE BUILDING SITE(S).
  7. WYE FITTING ON MAIN SHALL BE USED FOR NEW CONSTRUCTION. FOR EXISTING MAINS USE SADDLE PER STANDARD DETAIL 50-10.
  8. LOCATOR BALLS SHALL BE PLACED ON THE ENDS OF EACH SEWER SERVICE. SEWER LOCATOR BALLS SHALL BE USA BLUEBOOK #75027-1N-06-0A OR APPROVED EQUAL.

**5 GRAVITY SEWER SERVICE**  
C4.4 NTS - CBSSS 50-11



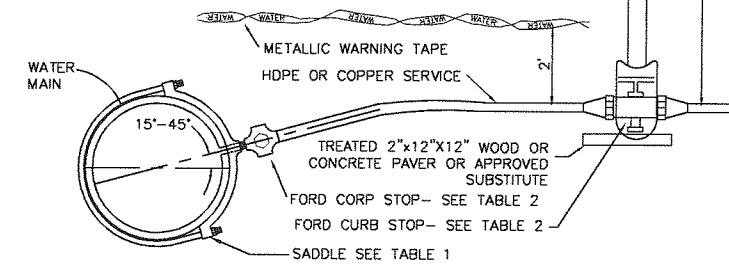
**TABLE 1- TAPPING SADDLE**

MAIN LINE MATERIAL	SADDLE
HDPE	ELECTROFUSION SADDLE WITH CC THREADS
OTHER- INCLUDING DIP	ROMAC 202N SERVICE SADDLE WITH SS STRAPS AND CC THREADS

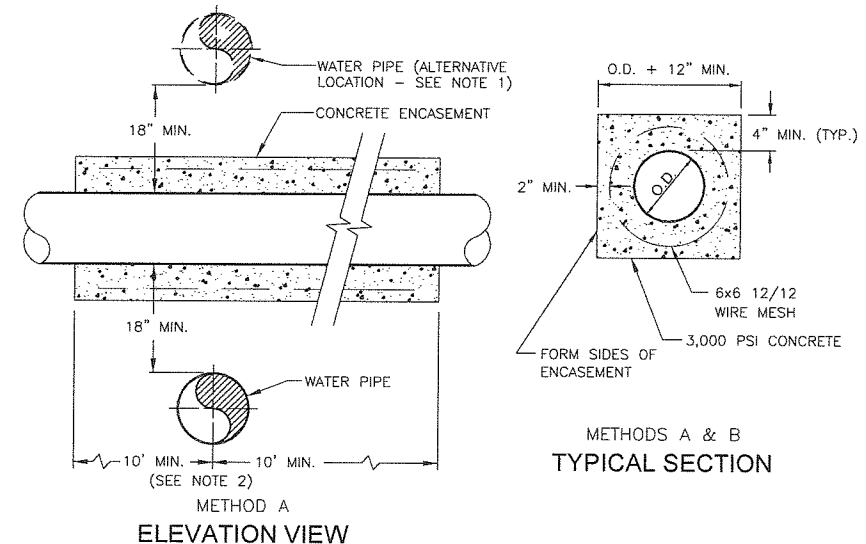
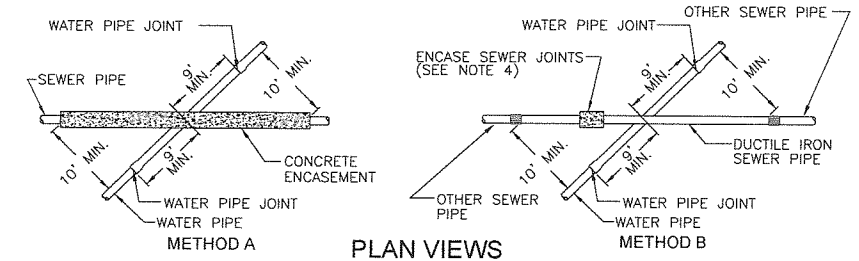
TOP PROTRUDING UP TO 6" IN NEW CONSTRUCTION; FLUSH WITH GROUND IN YARDS; BURIED 6" IN DRIVEWAYS

**TABLE 2- CORP STOPS, CURB STOPS AND BOXES**

SIZE	BALL TYPE	FORD CURB STOP	FORD CURB BOX
1"	FB-1000-4 CC x PACKJOINT	B41-444	EA2-55-50-48R
2"	FB-1000-7 CC x PACKJOINT	B41-777	OLYMPIC 940 TYPE MAINLINE VALVE BOX



**4 WATER SERVICE CONNECTION**  
C4.4 NTS - CBSSS 60-7.5 (MODIFIED)



- NOTES:
1. IF SEWER MAIN IS ABOVE WATER MAIN, ENCASE SEWER MAIN AS DIRECTED BY THE ENGINEER.
  2. A FULL LENGTH OF WATER PIPE SHALL BE CENTERED UNDER THE SANITARY SEWER CROSSING.
  3. ON OBLIQUE CROSSINGS, THE TEN FOOT MEASUREMENT SHALL BE TAKEN PERPENDICULAR TO THE WATER PIPE.
  4. FOR METHOD B, SEWER PIPE SHALL BE DUCTILE IRON PIPE FOR THE LENGTH SHOWN, AND ANY JOINTS SHALL BE ENCASED FOR A MINIMUM OF 18" ON EITHER SIDE OF THE JOINT.
  5. ALTERNATIVE ENCASEMENT METHODS MAY BE USED SUCH AS HEAT SHRINK SEAL IF APPROVED BY THE ENGINEER.

**6 SANITARY SEWER ENCASEMENT**  
C4.4 NTS - CBSSS 70-5

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355 CARLANNA LAKE ROAD  
KETCHIKAN, ALASKA 99901

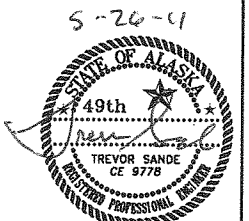
COASTAL EXCAVATION  
304 ELIASON LOOP  
SITKA, AK 99835

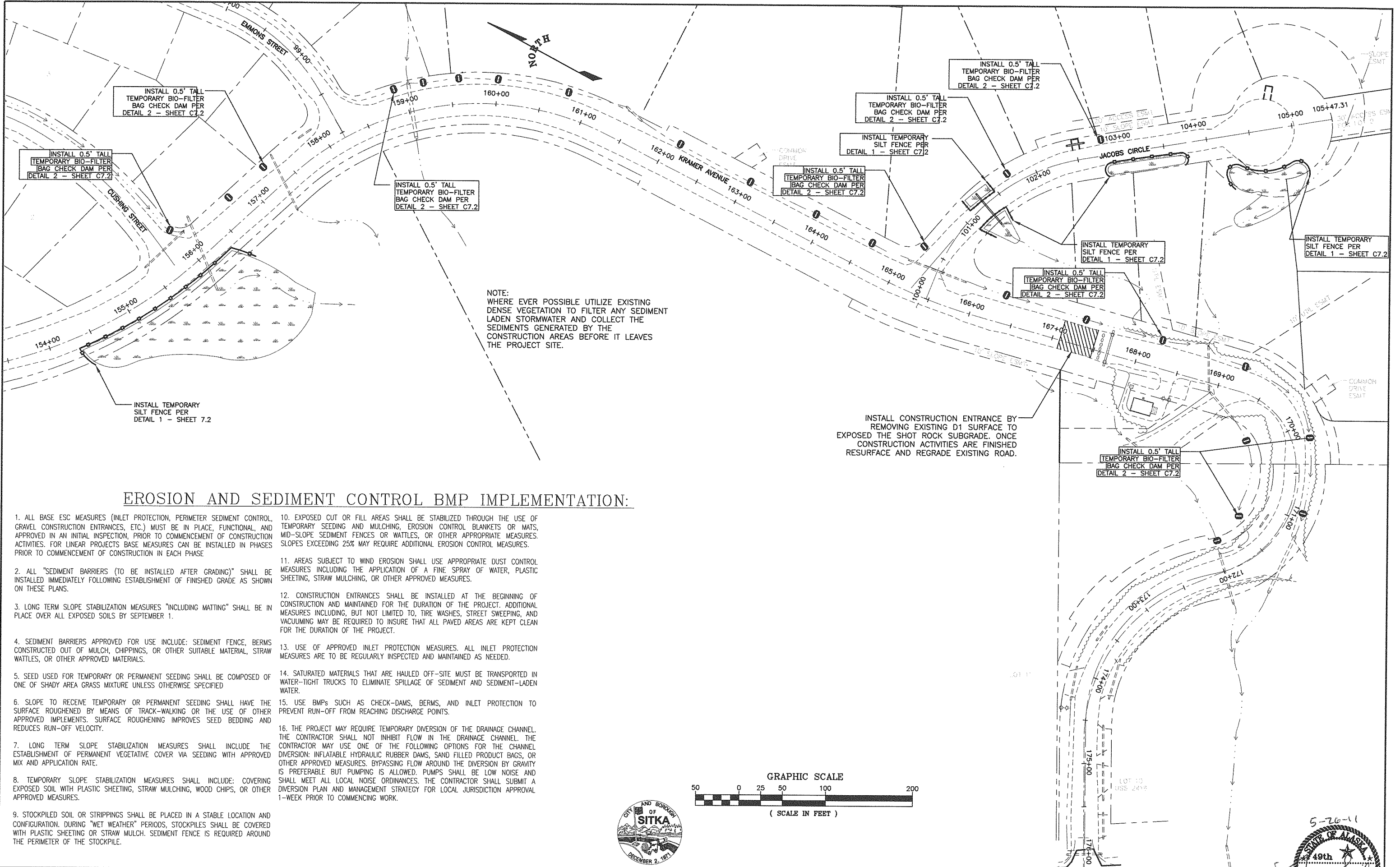
Client: CITY AND BOROUGH OF SITKA

Project: KRAMER / JACOBS  
WATER AND SEWER

Sheet Description: DETAILS

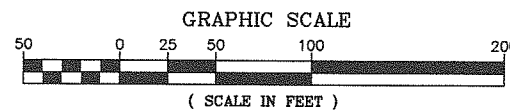
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**EROSION AND SEDIMENT CONTROL BMP IMPLEMENTATION:**

1. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. FOR LINEAR PROJECTS BASE MEASURES CAN BE INSTALLED IN PHASES PRIOR TO COMMENCEMENT OF CONSTRUCTION IN EACH PHASE
2. ALL "SEDIMENT BARRIERS (TO BE INSTALLED AFTER GRADING)" SHALL BE INSTALLED IMMEDIATELY FOLLOWING ESTABLISHMENT OF FINISHED GRADE AS SHOWN ON THESE PLANS.
3. LONG TERM SLOPE STABILIZATION MEASURES "INCLUDING MATTING" SHALL BE IN PLACE OVER ALL EXPOSED SOILS BY SEPTEMBER 1.
4. SEDIMENT BARRIERS APPROVED FOR USE INCLUDE: SEDIMENT FENCE, BERMS CONSTRUCTED OUT OF MULCH, CHIPPINGS, OR OTHER SUITABLE MATERIAL, STRAW WATTLES, OR OTHER APPROVED MATERIALS.
5. SEED USED FOR TEMPORARY OR PERMANENT SEEDING SHALL BE COMPOSED OF ONE OF SHADY AREA GRASS MIXTURE UNLESS OTHERWISE SPECIFIED
6. SLOPE TO RECEIVE TEMPORARY OR PERMANENT SEEDING SHALL HAVE THE SURFACE ROUGHENED BY MEANS OF TRACK-WALKING OR THE USE OF OTHER APPROVED IMPLEMENTS. SURFACE ROUGHENING IMPROVES SEED BEDDING AND REDUCES RUN-OFF VELOCITY.
7. LONG TERM SLOPE STABILIZATION MEASURES SHALL INCLUDE THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER VIA SEEDING WITH APPROVED MIX AND APPLICATION RATE.
8. TEMPORARY SLOPE STABILIZATION MEASURES SHALL INCLUDE: COVERING EXPOSED SOIL WITH PLASTIC SHEETING, STRAW MULCHING, WOOD CHIPS, OR OTHER APPROVED MEASURES.
9. STOCKPILED SOIL OR STRIPPINGS SHALL BE PLACED IN A STABLE LOCATION AND CONFIGURATION. DURING "WET WEATHER" PERIODS, STOCKPILES SHALL BE COVERED WITH PLASTIC SHEETING OR STRAW MULCH. SEDIMENT FENCE IS REQUIRED AROUND THE PERIMETER OF THE STOCKPILE.
10. EXPOSED CUT OR FILL AREAS SHALL BE STABILIZED THROUGH THE USE OF TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS OR MATS, MID-SLOPE SEDIMENT FENCES OR WATTLES, OR OTHER APPROPRIATE MEASURES. SLOPES EXCEEDING 25% MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES.
11. AREAS SUBJECT TO WIND EROSION SHALL USE APPROPRIATE DUST CONTROL MEASURES INCLUDING THE APPLICATION OF A FINE SPRAY OF WATER, PLASTIC SHEETING, STRAW MULCHING, OR OTHER APPROVED MEASURES.
12. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, TIRE WASHES, STREET SWEEPING, AND VACUUMING MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
13. USE OF APPROVED INLET PROTECTION MEASURES. ALL INLET PROTECTION MEASURES ARE TO BE REGULARLY INSPECTED AND MAINTAINED AS NEEDED.
14. SATURATED MATERIALS THAT ARE HAULED OFF-SITE MUST BE TRANSPORTED IN WATER-TIGHT TRUCKS TO ELIMINATE SPILLAGE OF SEDIMENT AND SEDIMENT-LADEN WATER.
15. USE BMPs SUCH AS CHECK-DAMS, BERMS, AND INLET PROTECTION TO PREVENT RUN-OFF FROM REACHING DISCHARGE POINTS.
16. THE PROJECT MAY REQUIRE TEMPORARY DIVERSION OF THE DRAINAGE CHANNEL. THE CONTRACTOR SHALL NOT INHIBIT FLOW IN THE DRAINAGE CHANNEL. THE CONTRACTOR MAY USE ONE OF THE FOLLOWING OPTIONS FOR THE CHANNEL DIVERSION: INFLATABLE HYDRAULIC RUBBER DAMS, SAND FILLED PRODUCT BAGS, OR OTHER APPROVED MEASURES. BYPASSING FLOW AROUND THE DIVERSION BY GRAVITY IS PREFERABLE BUT PUMPING IS ALLOWED. PUMPS SHALL BE LOW NOISE AND SHALL MEET ALL LOCAL NOISE ORDINANCES. THE CONTRACTOR SHALL SUBMIT A DIVERSION PLAN AND MANAGEMENT STRATEGY FOR LOCAL JURISDICTION APPROVAL 1-WEEK PRIOR TO COMMENCING WORK.



Date	No.	Description	By
REVISION			

Designed: TSS	Approved: TSS
Drawn: TSS	Scale: AS NOTED Date: 5/18/11
Checked: TSS	Project No. 112311

**R&M ENGINEERING-KETCHIKAN, INC.**  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

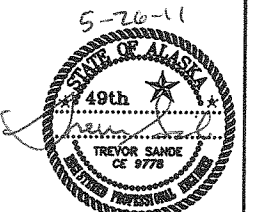
**COASTAL EXCAVATION**  
 304 ELIASON LOOP  
 SITKA, AK 99835

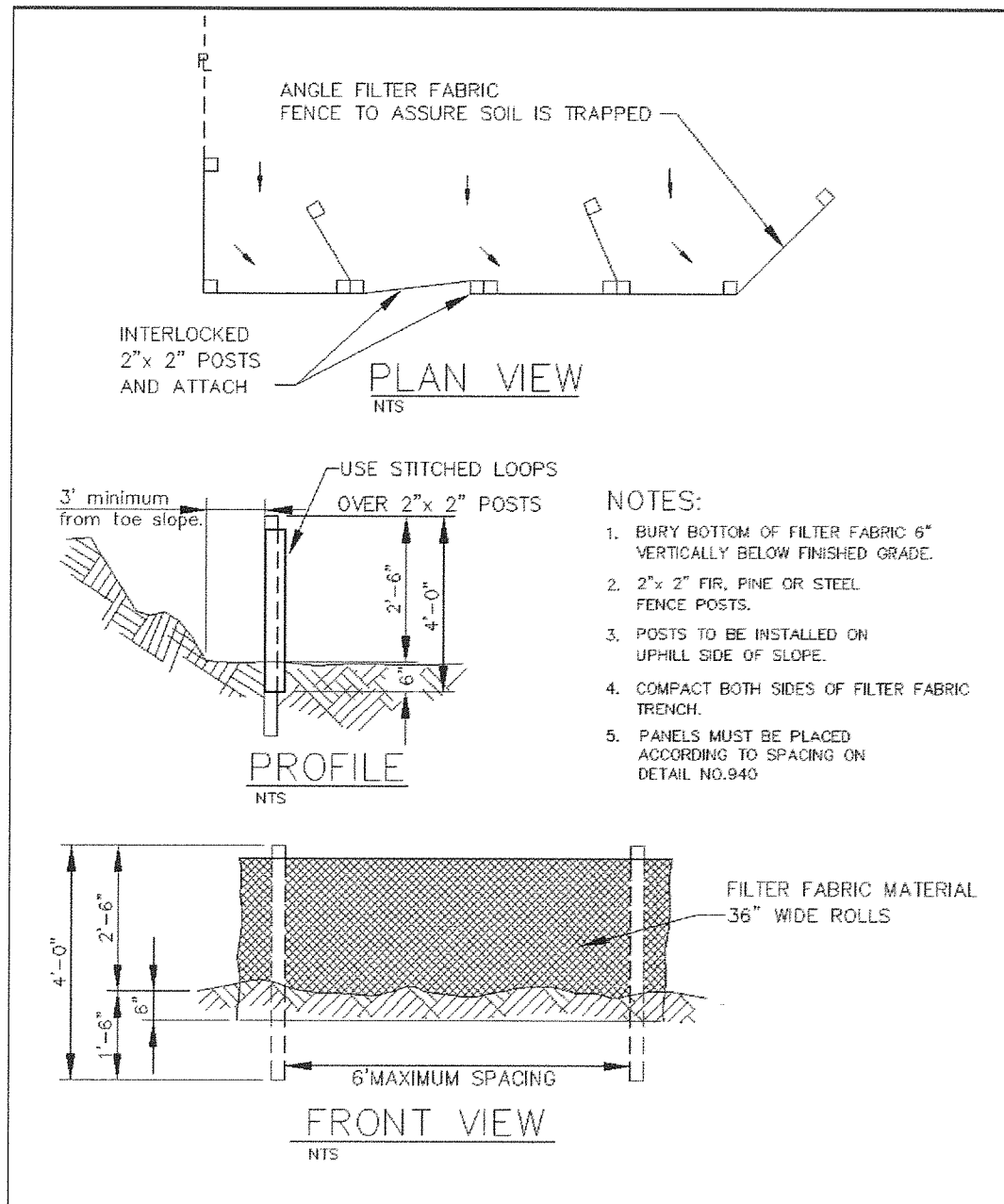
Client: CITY AND BOROUGH OF SITKA

Project: KRAMER / JACOBS WATER AND SEWER

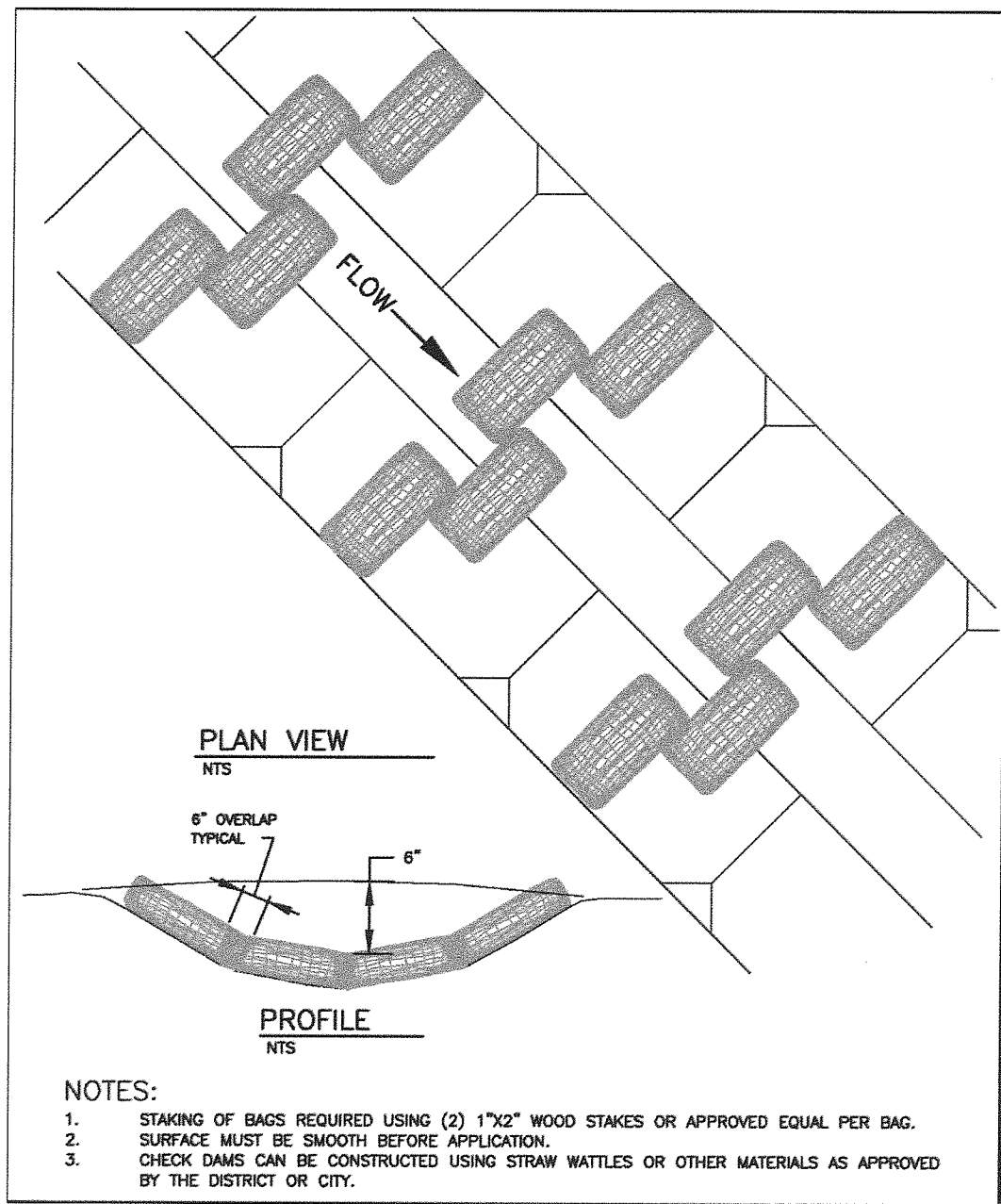
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Sheet No. C7.1

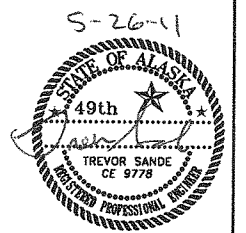




1 SEDIMENT FENCE  
C7.2 NTS



2 BIO-FILTER BAG CHECK DAM DETAIL  
C7.2 NTS



Designed: TSS		Approved: TSS			COASTAL EXCAVATION 304 ELIASON LOOP SITKA, AK 99835	Client: CITY AND BOROUGH OF SITKA	Project: KRAMER / JACOBS WATER AND SEWER	Sheet Description: EROSION DETAILS	Sheet No. C7.2				
Date	No.	Description	By										
Checked: TSS										Project No. 112311		R&M ENGINEERING-KETCHIKAN, INC. 355 CARLIANNA LAKE ROAD KETCHIKAN, ALASKA 99901	
Scale: AS NOTED										Date: 5/18/11			