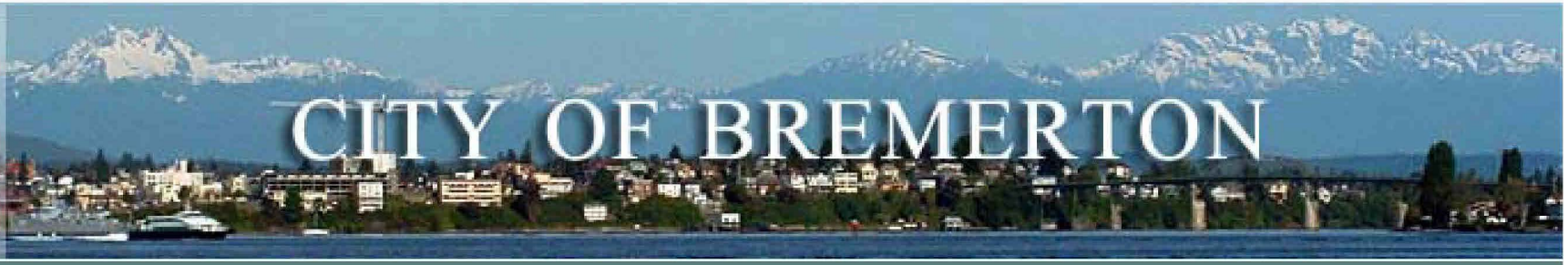


Beach Pipelines and Narrows Crossing

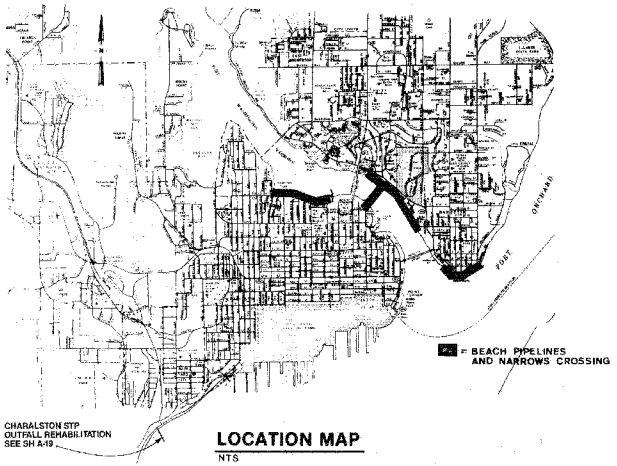
Project Number:

BREMERTON-008498

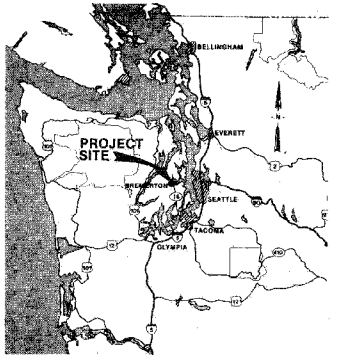
CITY OF BREMERTON, WASHINGTON

BEACH PIPELINES AND NARROWS CROSSING

CONTRACT C6



LOCATION MAP
NTS



VICINITY MAP
0 5 10 20 30 40 50
SCALE (MILES)

INDEX TO DRAWINGS

A-1 LOCATION MAP, VICINITY MAP, INDEX TO DRAWINGS

A-2 SHEET INDEX MAP, PLAN AND PROFILE LEGEND, GENERAL NOTES

A-3 SCHEDULE A
PLAN & PROFILE
WEST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 0+00 TO STA. 8+50

A-4 SCHEDULE A
PLAN & PROFILE
WEST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 9+50 TO STA. 19+63

A-5 SCHEDULE A
PLAN AND PROFILE
WEST BREMERTON PRESSURE PIPELINE
STA.0+00 TO STA. 8+93

A-6 SCHEDULE B
PLAN & PROFILE
PORT WASHINGTON NARROWS CROSSING
STA. 0+00 TO STA. 13+20

A-7 SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 0+00 TO STA. 12+50

A-8 SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 12+50 TO STA. 25+50

A-9 SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 25+50 TO STA. 30+33
FORCE MAIN CONNECTION
STA. 0+00 TO STA. 1+37

A-10 SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PIPELINE
STA. 0+00 TO STA. 2+00

A-11 SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PIPELINE
STA. 2+00 TO STA. 13+30

A-12 SCHEDULES A AND C
BEACH PIPELINES
MISCELLANEOUS DETAILS

A-13 SCHEDULES A AND C
BEACH PIPELINES
MISCELLANEOUS DETAILS

A-14 SCHEDULES A AND C
BEACH PIPELINES
MISCELLANEOUS DETAILS

A-15 SCHEDULES A AND C
BEACH PIPELINES
CATHODIC PROTECTION DETAILS

A-16 SCHEDULES B AND C
PORT WASHINGTON NARROWS CROSSING
EAST BREMERTON MARINE SECTION
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A-17 SCHEDULE B
PORT WASHINGTON NARROWS CROSSING
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A-18 SCHEDULE A
PLAN AND PROFILE
OHIO AVENUE EAST NARROWS SEWER

A-19 CHARLESTON SEWAGE TREATMENT PLANT OUTFALL REHABILITATION
LOCATION MAP, OUTFALL PLAN AND PROFILE, REMOVABLE END PLUG DETAIL

B-1 TEST HOLE LOCATION MAP, LEGENDS AND SOILS LOGS

B-2 SOIL LOGS

B-3 SOIL LOGS

B-4 SOIL LOGS

1/1 LOCATION MAP/OUTFALL PLAN & PROFILE (MAR. 1984)

RECORD DRAWINGS

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3794

CH2M HILL

DSGN
DR
CHK
APVD

NO.	DATE	REVISION	BY	APVD
1	4-1-83	ISSUED FOR BIDDING		

MUSTAFA, HONG & ASSOCIATES INC.
Consulting Engineers
1932 First Ave. Room 505, Seattle, Wa. 98101
Tel. (206) 622-5822

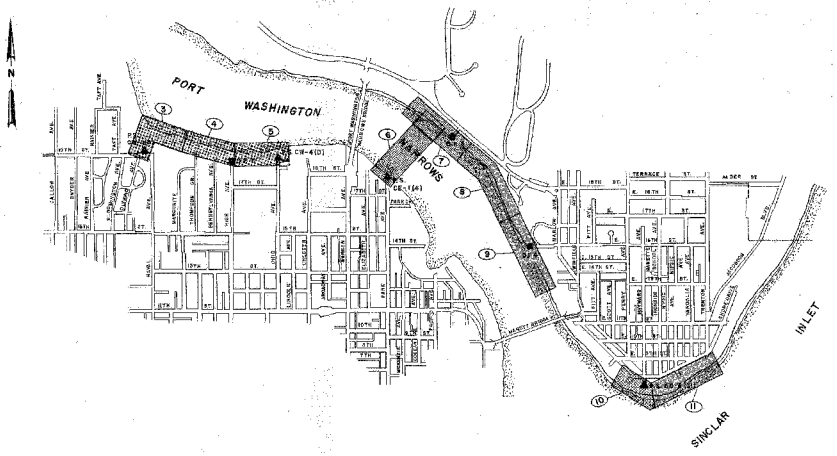
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

LOCATION MAP, VICINITY MAP, INDEX TO DRAWINGS

DWG NO. A-1
SH 1 OF 23
DATE SEPT. 1982
FILE NO. S12400-L1

BREMERTON-008499



SHEET INDEX MAP

NOT TO SCALE

ABBREVIATIONS

@	AT	I.D.	INSIDE DIAMETER
A.C.	ASBESTOS CEMENT	INV.	INVERT (ELEVATION)
ASTM	AMERICAN ASSOCIATION FOR TESTING AND MATERIALS	MAX.	MAXIMUM
		MIN.	MINIMUM
AVE.	AVENUE	M.H.	MANHOLE
AWG	AMERICAN WIRE GAUGE	NO.	NUMBER
AWWA	AMERICAN WATER WORKS ASSOCIATION	N.T.S.	NOT TO SCALE
C.L.	CEMENT LINED	O.D.	OUTSIDE DIAMETER
CONC.	CONCRETE	P.C.	POINT OF CURVATURE
CONN.	CONNECT	P.I.	POINT OF INTERSECTION
CONT.	CONTINUE	PS	PRESSURE SEWER
D.C.	DIRECT CURRENT	P.T.	POINT OF TANGENCY
D.I.	DUCTILE IRON	R	RADIUS
DIA.	DIAMETER	S	SANITARY SEWER
DWG.	DRAWING	SQ.	SQUARE
EA.	EACH	STA.	STATION
EL.	ELEVATION	THK.	THICK
FLEX.	FLEXIBLE	TYP.	TYPICAL
GND.	GROUND	VERT.	VERTICAL
HORIZ.	HORIZONTAL	W/O	WITHOUT

GENERAL NOTES:

1. ALL ELEVATIONS SHOWN ARE TO CITY OF BREMERTON DATUM. TO OBTAIN THE NATIONAL GEODETIC VERTICAL DATUM ELEVATIONS, SUBTRACT 115.90 FEET.
2. ALL HORIZONTAL DIMENSIONS ARE TO THE PIPE CENTERLINE UNLESS OTHERWISE SHOW.
3. EXISTING UNDERGROUND UTILITIES SHOWN ARE TAKEN FROM EXISTING RECORDS AND ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. BOTH LOCATION AND DEPTH ARE APPROXIMATE. NOTE THAT NO SIDE SEWERS ARE SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO USE THE "ONE CALL" TELEPHONE NUMBER (479-4700) TO CONTACT ALL UTILITY COMPANIES 48 HOURS BEFORE CONSTRUCTION IS STARTED TO CONFIRM LOCATIONS. SEE SPECIFICATIONS SECTION "GENERAL REQUIREMENT."
4. ALL PIPELINE BENDS, PLUGS AND OTHER LOCATIONS WHERE UNBALANCED FORCES EXIST SHALL BE ANCHORED BY THRUST RESTRAINT AS SHOWN AND AS SPECIFIED.
5. STATIONING IS GIVEN ONLY TO THE NEAREST FOOT AND IS ONLY APPROXIMATE.
6. BOND ALL DUCTILE IRON PIPE AND FITTING JOINTS AS SHOWN AND SPECIFIED.
7. ALL DUCTILE IRON PIPE AND CAST IRON FITTINGS SHALL BE COAL-TAR EPOXY COATED AS SPECIFIED.
8. AERIAL PHOTO SCALE IS APPROXIMATE ONLY. DISTORTION DOES NOT PERMIT ACCURATE SCALING.
9. EXISTING CONTOURS SHOWN ON THE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD.
10. P.S. CW-1 (3), PS. CW-4(D), P.S. CE-1(4), O.F. 3, O.F. 4 AND O.F. 11 ARE NOT PART OF THIS CONTRACT.
11. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL LOCATE AND DETERMINE SIZE AND ELEVATIONS OF EXISTING UTILITIES AT THE POINT CONNECTING TO OR INTERFERING WITH THE NEW PIPELINES.
12. CONTRACTOR SHALL USE EXTREME CAUTION AND CARE WHEN EXCAVATING BELOW AND AROUND EXISTING WATER AND SEWER PIPELINES, AND SHALL BE RESPONSIBLE FOR ALL DAMAGE DONE TO EXISTING PIPLINES AND COATINGS. AT LEAST 5 WORKING DAYS PRIOR TO BEGINNING WORK IN THE VICINITY OF ANY EXISTING PIPELINE WHERE THE NEW PIPELINE WILL BE INSTALLED UNDER THE EXISTING PIPELINE, THE CONTRACTOR SHALL SUBMIT DETAILED PLANS TO THE ENGINEER FOR REVIEW, SHOWING THE PROPOSED METHOD(S) OF SUPPORT FOR EXISTING PIPELINES. CONTRACTOR'S PROPOSED METHOD(S) OF SUPPORT SHALL BE SUBJECT TO CHANGE AS REQUIRED AS THE EXCAVATION, PIPE INSTALLATION AND BACKFILL WORK PROCEED. CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER 48 HOURS IN ADVANCE OF WORK IN THE VICINITY OF SUCH PIPELINES. THE INFORMATION SUBMITTED FOR REVIEW SHALL INCLUDE, BUT NOT BE LIMITED TO SHEET PILING OR OTHER PROCEDURES FOR LIMITING TRENCH WIDTH, STEEL BEAM STRONGBACK, STRAPPING OF MAIN TO STRONGBACK, BACKFILL MATERIALS, COMPACTION PROCEDURES AND PIPELINE CLEARANCES. WOOD SUPPORT MEMBERS AND CHAINS FOR STRAPPING SHALL NOT BE USED. THE REVIEW WILL CONSIDER POSSIBLE FUTURE DAMAGE TO THE EXISTING PIPELINE DUE TO EXESSIVE RIGIDITY OR SETTLEMENT.
13. PIPELINES TO BE ABANDONED SHALL REMAIN IN SERVICE UNTIL THE PIPELINES ARE CONSTRUCTED. THE CONTRACTOR SHALL PROVIDE TEMPORARY BYPASS CONNECTIONS AS REQUIRED.
14. PLUG WITH CONCRETE ENDS OF PIPES TO BE ABANDONED.
15. ALL PIPES AND FITTINGS SHALL BE HYDROSTATICALLY TESTED AS SPECIFIED. TEST PRESSURES SHALL BE :

WEST BREMERTON GRAVITY PRESSURE PIPELINE	50 PSI
WEST BREMERTON PRESSURE PIPELINE	50 PSI
PORT WASHINGTON NARROWS CROSSING	70 PSI
EAST BREMERTON GRAVITY PRESSURE PIPELINE	50 PSI
FORCE MAIN CONNECTION	50 PSI

16. CONSTURCTION EASEMENTS WILL INCLUDE ALL LANDS BETWEEN MEAN HIGHER HIGH WATER (MHHW), ELEVATION 121.55 AND MEAN LOWER LOW WATER (MLLW), ELEVATION 109.55

PLAN AND PROFILE LEGEND

—O—8"S—	EXISTING SANITARY SEWER AND MANHOLE
—8"SS—	EXISTING STORM SEWER
110	EXISTING GROUND CONTOUR AND ELEVATION INDICATED
—24"PS—	EXISTING PRESSURE SEWER
—℄—	CENTERLINE
	RIGHT OF WAY AND/OR PROPERTY LINE
	PIPELINE TO BE REMOVED
	PIPELINE TO BE ABANDONED
—EL—	EASEMENT LINE
10'P	WIDTH OF PERMANENT EASEMENT
	PROPOSED PIPELINE AND MANHOLE
	PROPOSED PIPELINE SHOWN ON OTHER SHEET
D-1 CP-5 CJ-6	TEST BORING AND NUMBER ON PLAN
	CATHODIC PROTECTION TEST STATION
	DRAWING NO. A-
	TRENCH BACKFILL CLASSIFICATION
	SURFACE RESTORATION
	A ASPHALT CONCRETE PAVEMENT
	G GRASS

SECTION AND DETAIL REFERENCE:

SEE DETAIL A-3 — NUMBER INDICATES DESIGNATION OF DETAIL; INDICATES DWG. NUMBER WHERE DETAIL IS SHOWN

A A-5 — LETTER INDICATES DESIGNATION OF SECTION; INDICATES DWG. NUMBER WHERE SECTION IS SHOWN

DETAIL OR SECTION A-3,A-4 — NUMBER OR LETTER INDICATES DESIGNATION OF DETAIL OR SECTION; INDICATES DRAWING(S) NUMBER WHERE DETAIL OR SECTION IS TAKEN.

RECORD DRAWINGS

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3788

STATE OF WASHINGTON — MUSTAFA MOHG — REGISTERED PROFESSIONAL ENGINEER

CH2M HILL

DSGN — DR — CHK — APVD

NO.	DATE	REVISION	BY	APVD
2	5-1-85	RECORD DRAWING	LAT	JPT
1	4-1-83	ISSUED FOR BIDDING		

MUSTAFA, MOHG & ASSOCIATES INC.
Consulting Engineers
1833 First Ave. Room 505, Seattle, Wa. 98101.
Tel. (206) 622-6002

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BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
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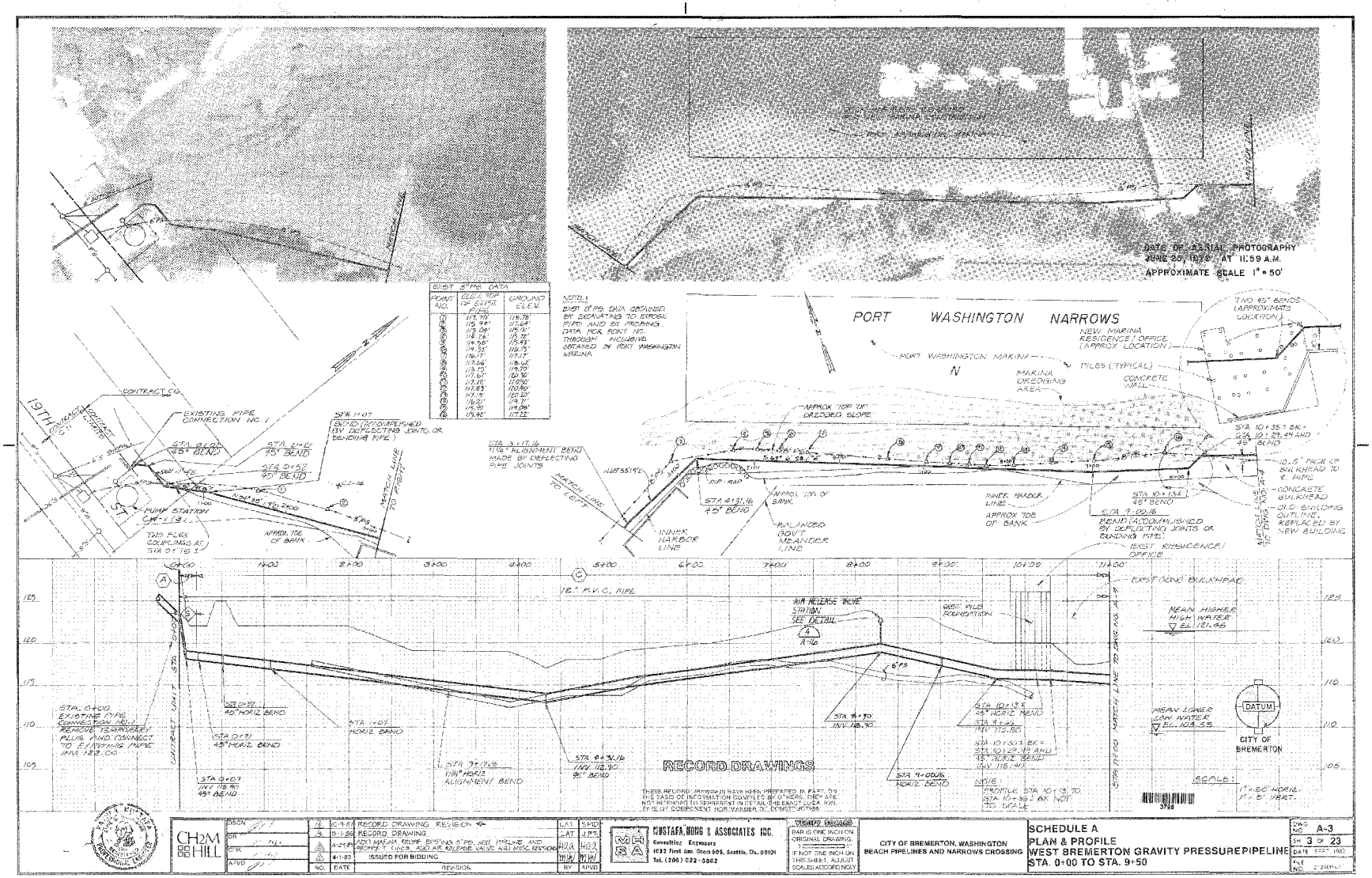
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

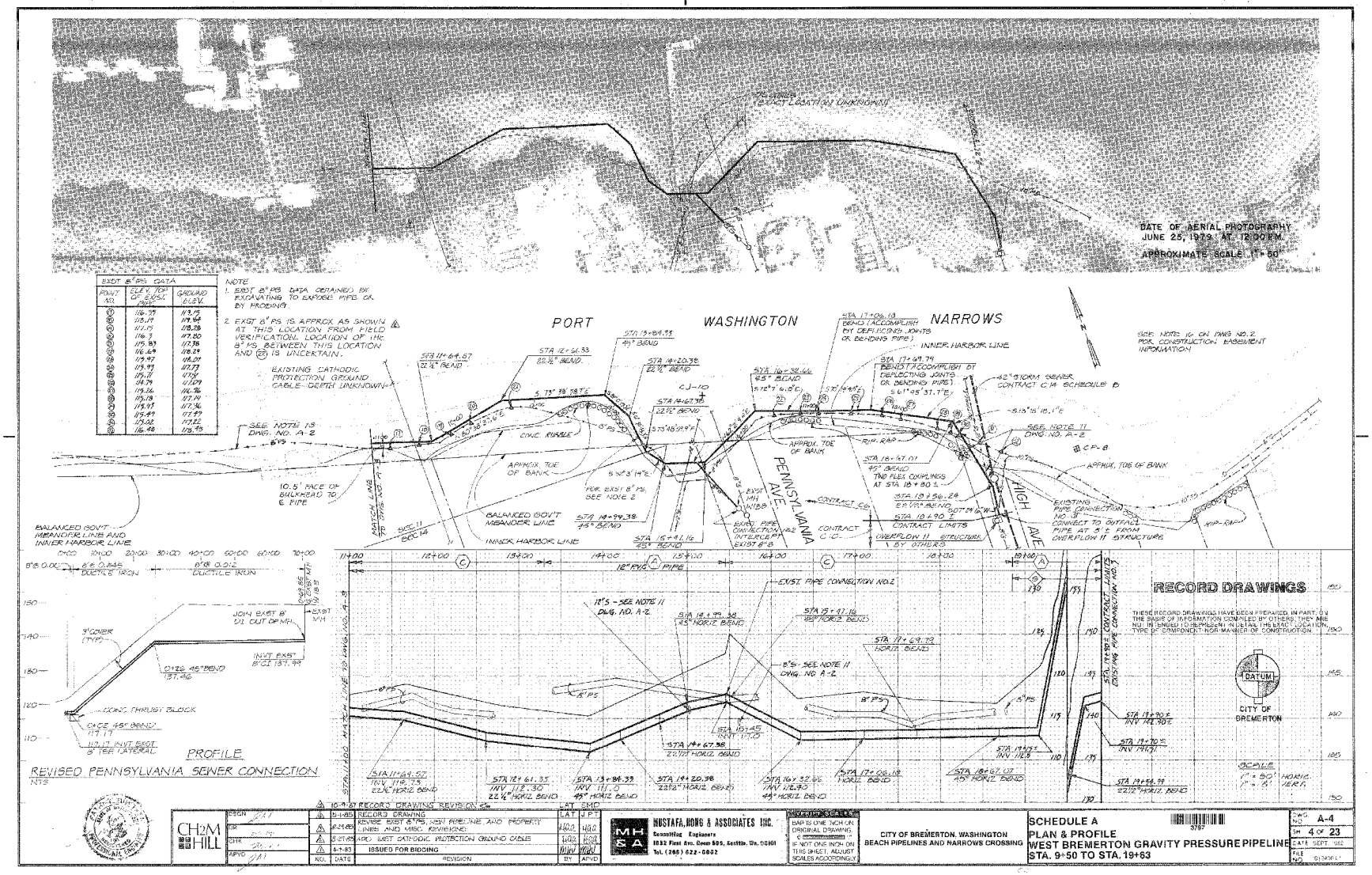
SHEET INDEX MAP, PLAN AND PROFILE LEGEND, GENERAL NOTES

DWG NO. A-2
SH 2 OF 23
DATE SEPT. 1982
FILE NO. 812400.L1

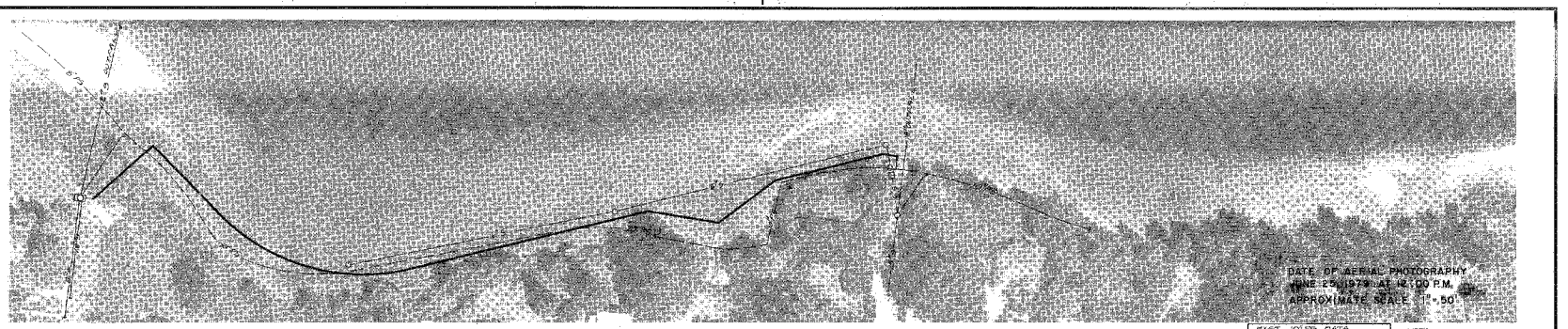
BREMERTON-008500



BREMERTON-008501

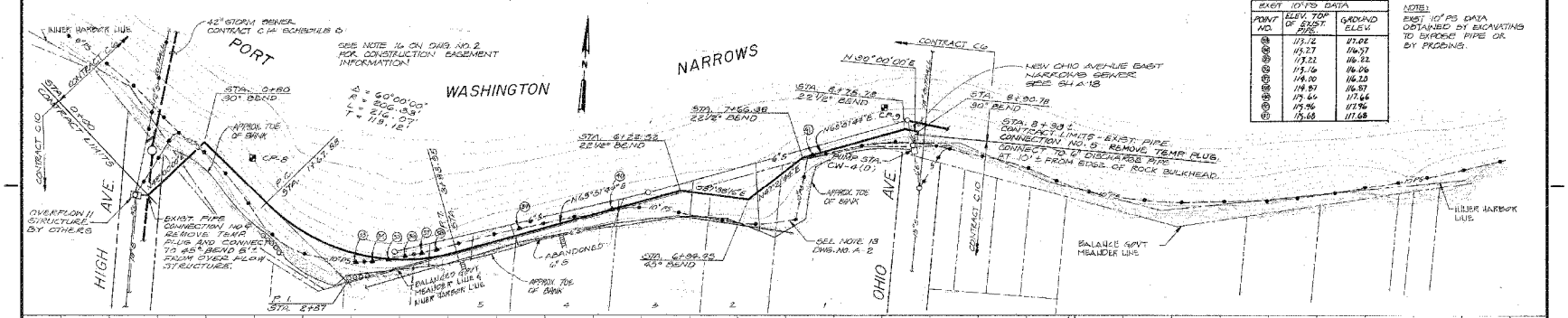


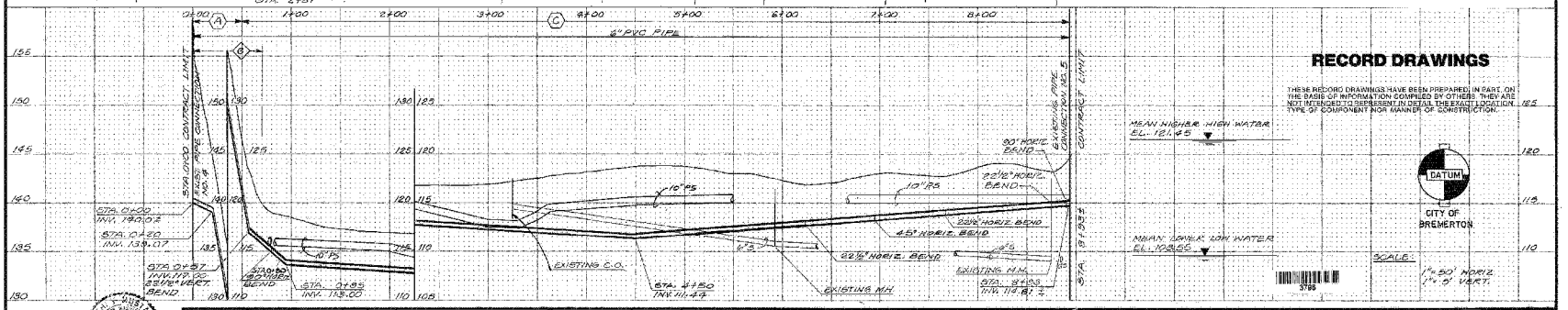
BREMERTON-008502



EXIST 10" PS DATA		
POINT NO.	ELEV. TOP OF EXIST PIPE	GROUND ELEV.
8	113.12	117.02
9	115.27	116.77
10	113.22	116.22
11	113.16	116.06
12	114.10	116.20
13	114.57	116.97
14	115.66	117.66
15	115.96	117.96
16	115.68	117.68

NOTE:
EXIST 10" PS DATA OBTAINED BY EXCAVATING TO EXPOSE PIPE OR BY PROBING.





RECORD DRAWINGS

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REGISTERED PROFESSIONAL ENGINEER

CH2M HILL

DESIGN
DR. W.M.
CHK.
APVD.

NO.	DATE	REVISION	BY	APVD
3	5-1-85	RECORD DRAWING	LAT	JPT
2	8-29-83	REVISE EXIST 10" PS, NEW PIPELINES, AND PROPERTY LINES, AND MISC. REVISIONS	W.A.	HOG
1	4-1-83	ISSUED FOR BIDDING	MJH	MJH

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Tel. (206) 622-6062

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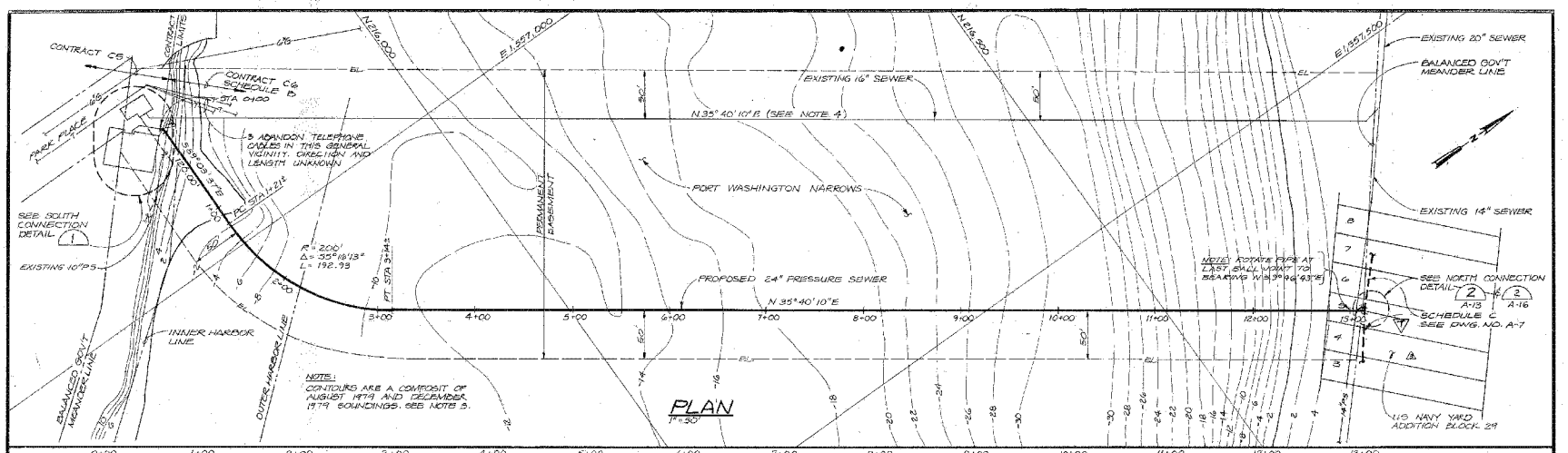
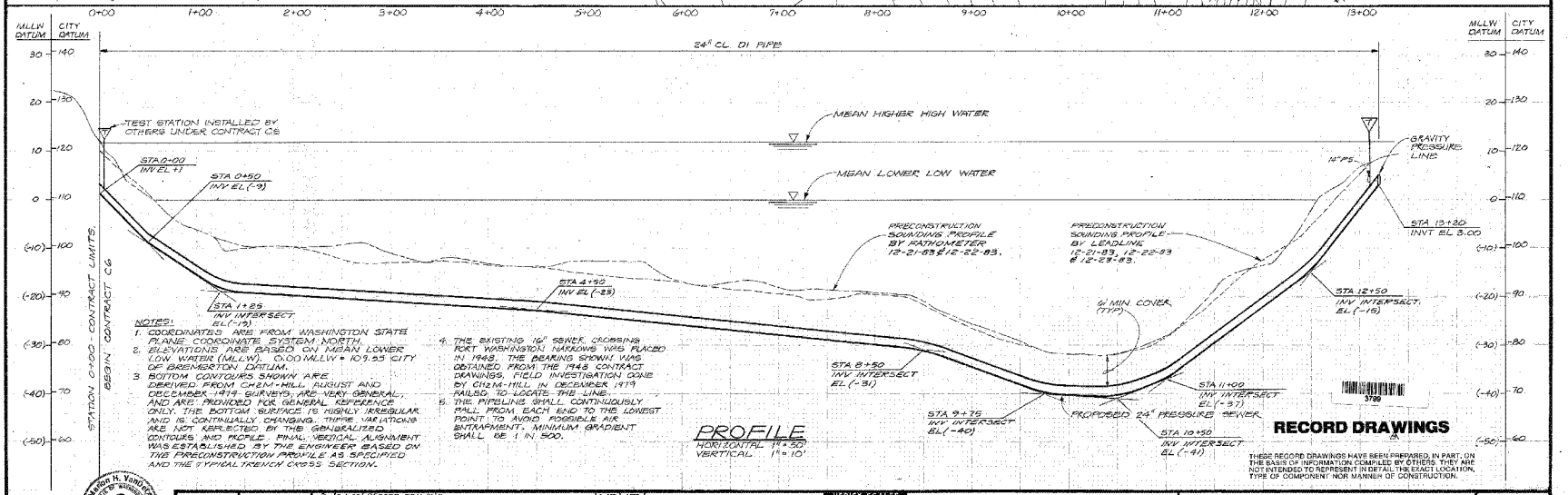
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULE A
PLAN AND PROFILE
WEST BREMERTON PRESSURE PIPELINE
STA. 0+00 TO STA. 8+93

DWG. NO. A-5
SH. 5 OF 23
DATE SEPT. 1982
FILE NO. S12460.L1

BREMERTON-008503





Milton H. Vandenberg — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

CH2M HILL

DES. JAD	3	6-1-85	RECORD DRAWING	LAT	JPT
DR. MTW	2	11-05-84	ADDED PRECONSTRUCTION PROFILE AND REVISED PIPE PROFILE TO SUIT.	KRW	JPT
CHK. MHV	1	9-27-83	ADD (3) UNDERGROUND GAS LINE, ABANDONED UNDERGROUND TELEPHONE CABLES (3).	HAQ	HAQ
APPD. MHV	NO.	DATE	REVISION	BY	APPD.
	0	4-1-83	ISSUED FOR BIDDING	MHV	MHV

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

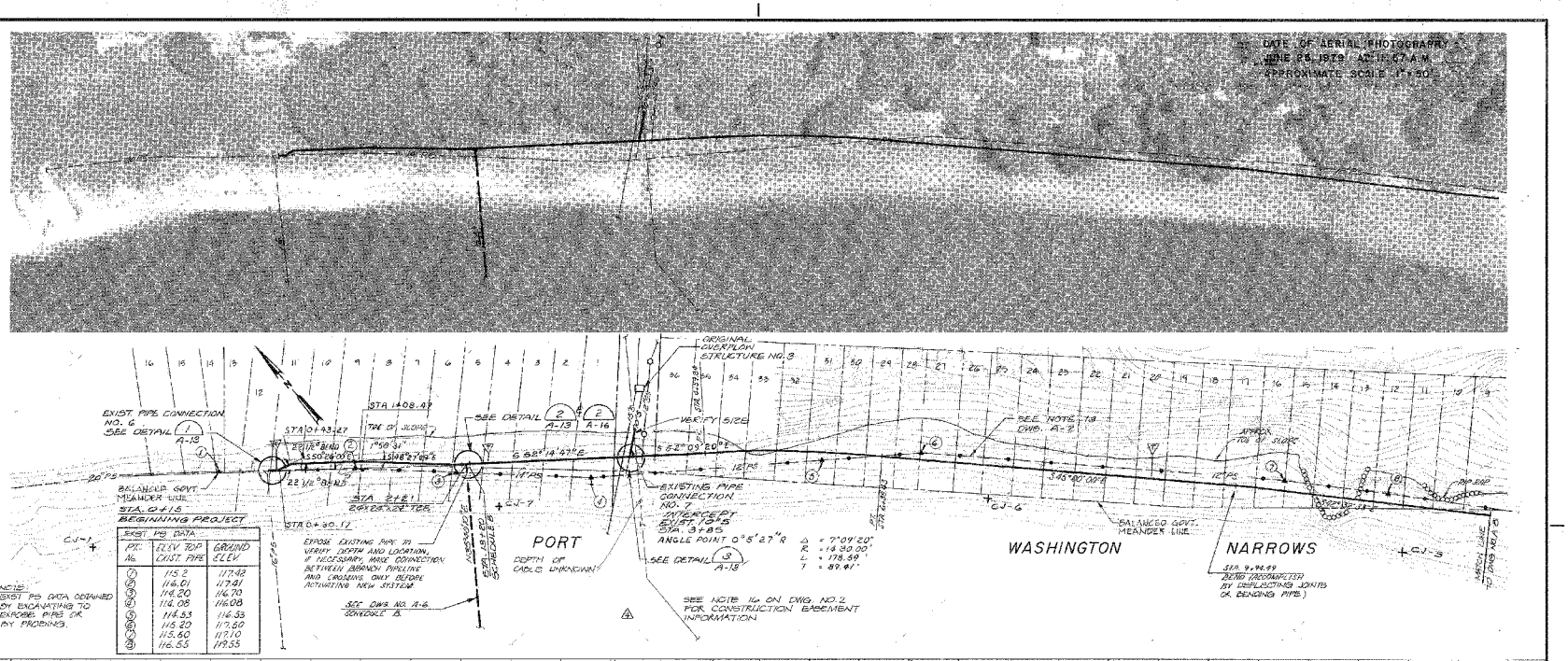
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULE B
PLAN & PROFILE
PORT WASHINGTON NARROWS CROSSING
STA. 0+00 TO STA. 13+20

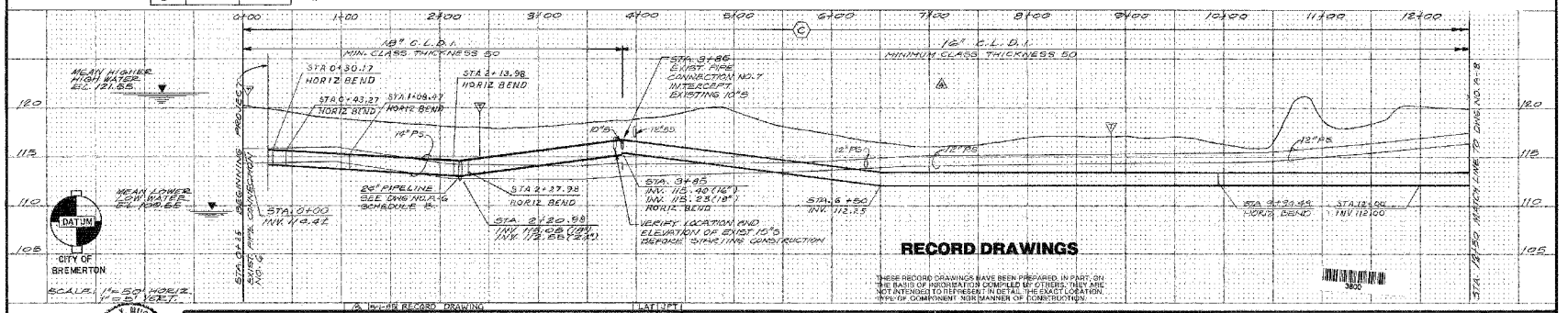
DWG NO. A-6
SH 6 OF 23
DATE SEPT. 1982
FILE NO. 0:2400 L1

C6

BREMERTON-008504



PT. No.	ELEV TOP EXIST. PIPE	GROUND ELEV.
7	115.2	117.42
6	116.61	117.41
5	114.20	116.70
4	114.08	116.08
3	114.53	116.53
2	115.20	117.50
1	115.60	117.10
8	116.53	119.53



RECORD DRAWINGS

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CH2M HILL

NO.	DATE	REVISION	BY	APVD
3	5-23-83	RECORD DRAWING	LAT	JPT
2	9-29-82	REVISE HORIZONTAL/VERTICAL PS ALIGNMENT	HAG	HAG
1	8-19-82	SHOW EXIST. AND PROPOSED HORIZONTAL/VERTICAL PS ALIGNMENT	HAG	HAG
0	4-7-82	ADD EXIST. UNDERGROUND TELEPHONE CABLE	HAG	HAG
	4-1-82	ISSUED FOR BIDDING	MWM	MWM

DSGN JPT
DR W.H.
CHK
APVD JPT

MUSTAFA, HONG & ASSOCIATES INC.
Consulting Engineers
1632 First Ave. Room 505, Seattle, Wa. 98101
Tel. (206) 622-6062

VERIFY SCALES
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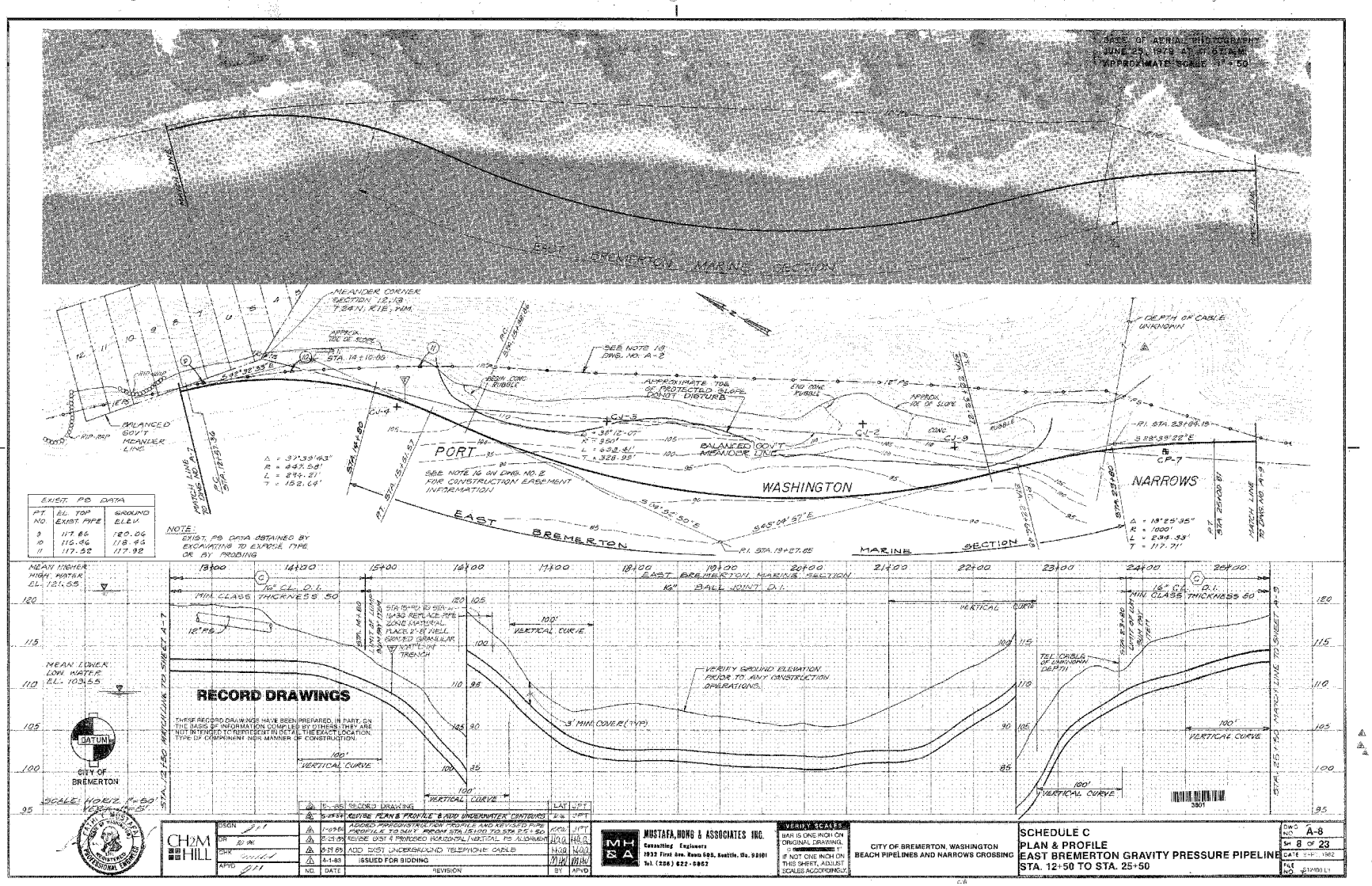
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 0+00 TO STA. 12+50

DWG NO. A-7
SH 7 OF 23
DATE SEPT. 1982
FILE NO. S12400.L1

BREMERTON-008505



NO.	DATE	REVISION	BY	APVD
6	10-85	RECORD DRAWING	LAT	JPT
5	3-85	REVISE PLAN & PROFILE & ADD UNDERWATER CONTOURS	KPA	JPT
4	1-09-84	ADDED PRECONSTRUCTION PROFILE AND REVISED PIPE PROFILE TO SUIT FROM STA 15+00 TO STA 25+50	KPA	JPT
3	2-21-83	REVISE DIST & PROCEED HORIZONTAL/VERTICAL PS ALIGNMENT	HGA	HGA
2	8-19-83	ADD EAST UNDERGROUND TELEPHONE CABLE	HGA	NAD
1	4-1-83	ISSUED FOR BIDDING	MHH	MHH

CH2M HILL

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Consulting Engineers
1933 First Ave. Room 505, Seattle, Wa. 98101
Tel. (206) 622-5862

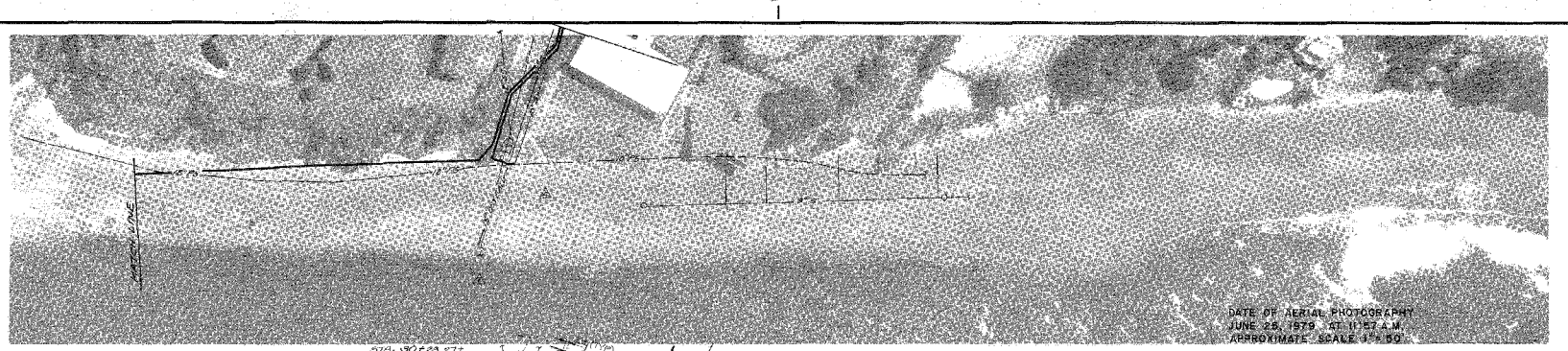
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

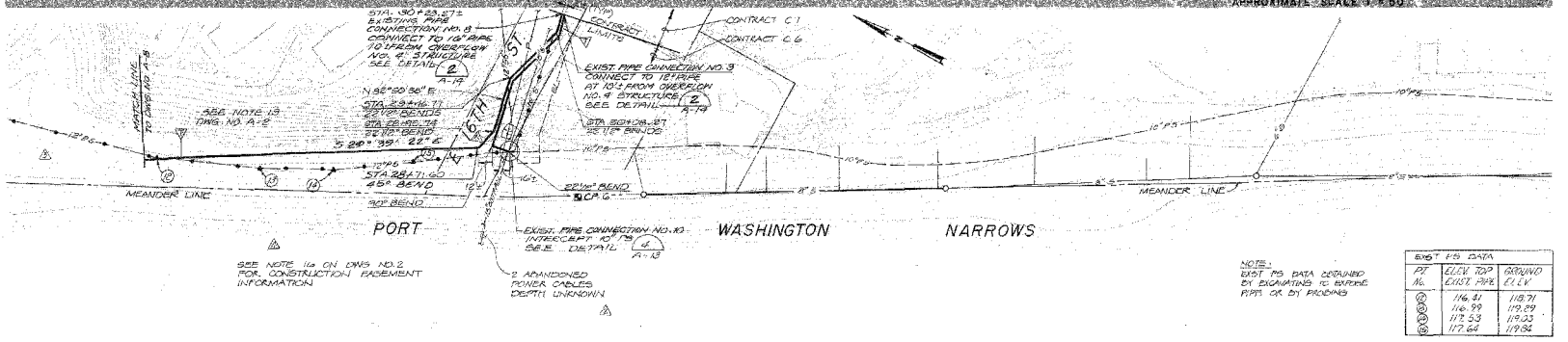
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 12+50 TO STA. 25+50

DWG NO. A-8
SH 8 OF 23
DATE 12-14-1982
FILE NO. 5314100 L1

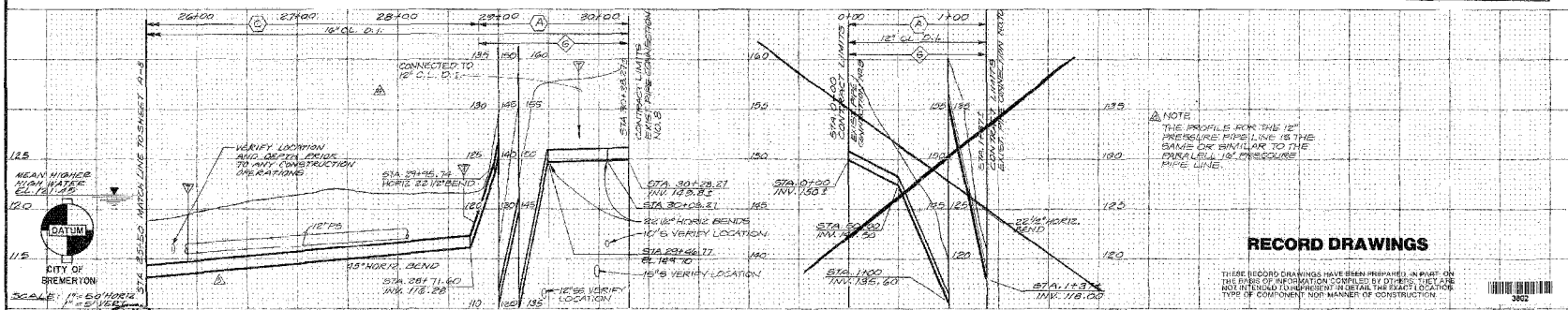
BREMERTON-008506





NOTE:
EXIST PS DATA OBTAINED BY EXCAVATING TO EXPOSE PIPE OR BY PROBING

EXIST PS DATA		
PT No.	ELEV. TOP EXIST. PIPE	GROUND ELEV
1	116.41	118.71
2	116.99	119.29
3	117.53	119.03
4	117.64	119.82



RECORD DRAWINGS

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3802

CH2M HILL

DSGN
DR
CHK
APVD

NO	DATE	REVISION	BY	APVD
3	5-1-86	RECORD DRAWING	LAT	JPT
2	5-29-81	REVISE HORIZ./VERT. ALIGN. OF NEW PIPELINES	LAT	JPT
1	8-28-80	REVISE HORIZ./VERT. ALIGNMENT OF EAST PS	HWG	HWG
0	6-11-80	ADD UNDERGROUND POWER CABLE	HWG	HWG
1	6-1-80	ISSUED FOR BIDDING	MHV	MHV

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Consulting Engineers
1932 First Ave. Room 505, Seattle, Wa. 98101
Tel. (206) 622-6962

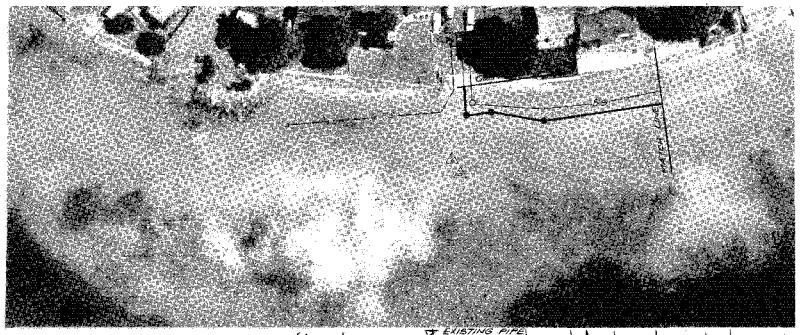
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

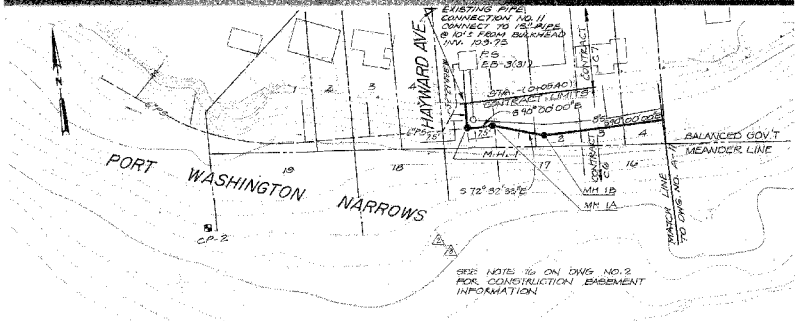
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

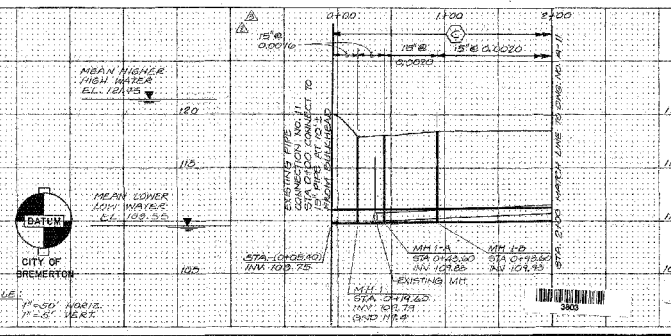
SCHEDULE C PLAN & PROFILE
EAST BREMERTON GRAVITY PRESSURE PIPELINE
STA. 25+50 TO STA. 30+33
FORCE MAIN CONNECTION
STA. 0+00 TO STA. 1+37

DWG NO. A-9
SH 9 OF 23
DATE SEPT 1982
FILE NO. 5124D0.L1

BREMERTON-008507







RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION.

CH2M HILL	DSGN	5-1-86	RECORD DRAWING	LAT	JPT
	DR W.M.	11-21-85	REVISE EXIST SEWER & MH 2 LOCATION; ADD MH'S 1-A & 1-B; RAISE SEWER FROM MH 2 TO MH 6	JPT	JPT
	CHK	5-21-85	REVISE LOCATION OF EXIST & PROPOSED SANITARY SEWERS	WDG	WDG
	APVD	4-1-85	ISSUED FOR BIDDING	MJW	MJW
		NO. DATE	REVISION	BY	APVD

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Consulting Engineers
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Tel. (206) 622-8062

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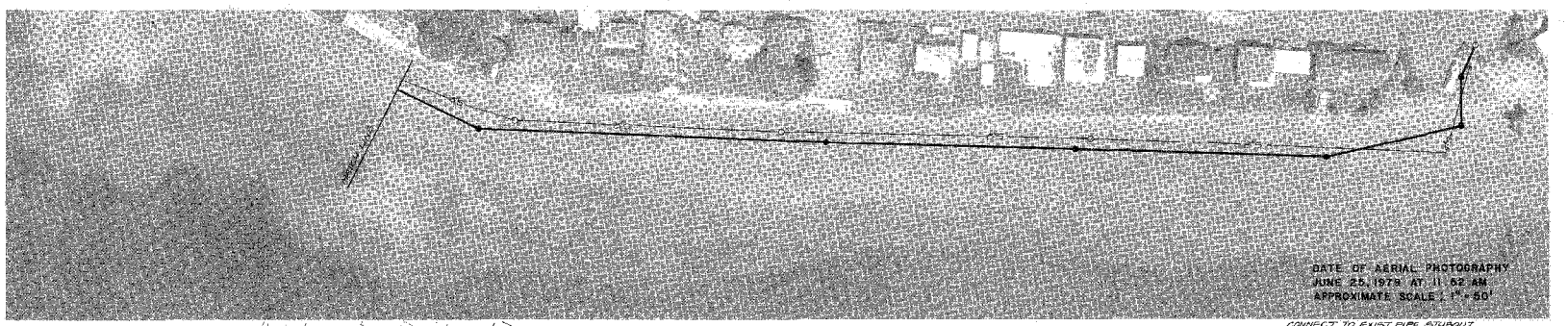
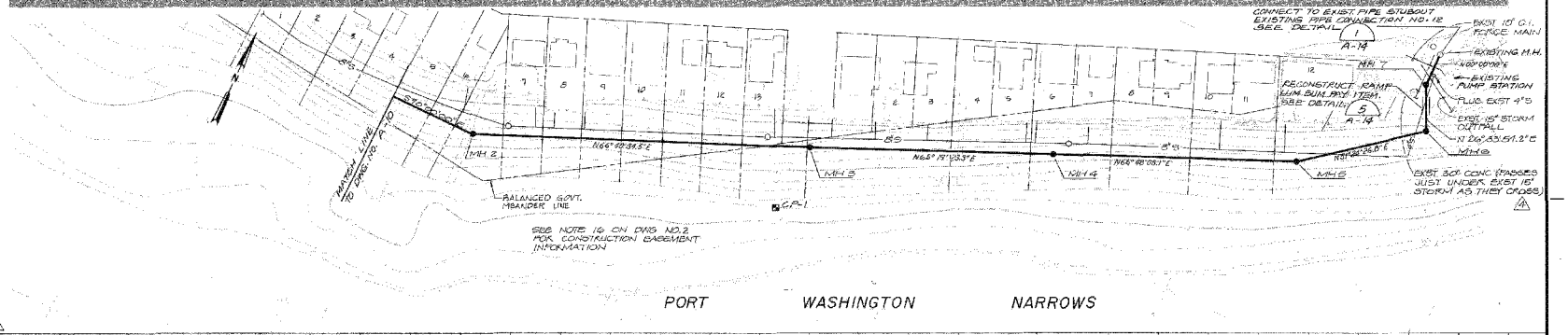
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

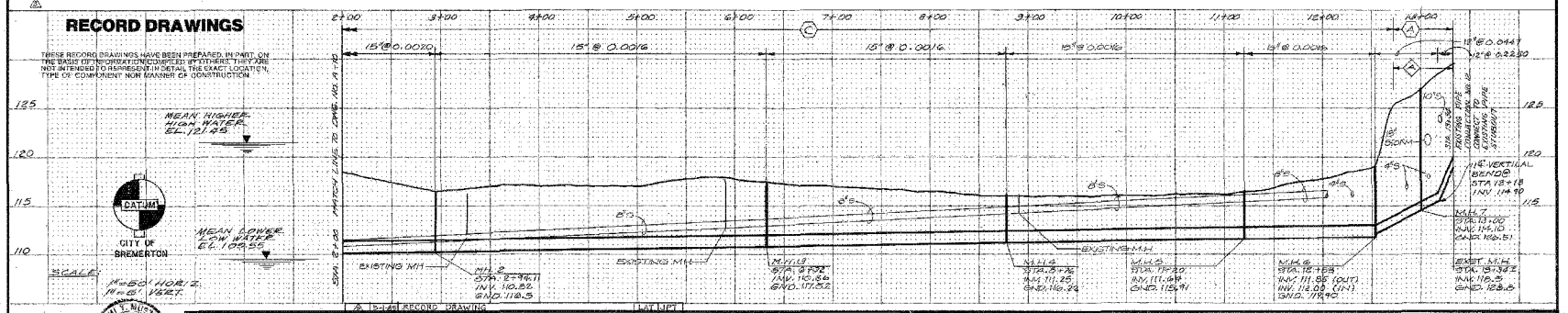
SCHEDULE C
PLAN & PROFILE
EAST BREMERTON GRAVITY PIPELINE
STA. 0+00 TO STA. 2+00

DWG NO A-10
SH 10 OF 23
DATE SEPT. '86
FILE NO S12400.L1

BREMERTON-008508







NO.	DATE	REVISION	BY	APVD
0	5-1-85	RECORD DRAWING	LAT	JPT
1	12-7-86	REVISED ALIGN FR. MH 6 TO EXIST MH & ADDED UTILITIES	JPT	JPT
2	11-24-88	REVISED EXIST SEWER & MH 2 LOCATION - ADD MH 8 H.A.K. 1-85, RAISE SEWER FROM MH 2 TO MH 6	GPT	JPT
3	8-24-89	REVISE LOCATION OF EXIST & PROPOSED SANITARY SEWERS	HAQ	HAQ
4	4-1-93	ISSUED FOR BIDDING	MW	MW

CH2M HILL
DSGN JPT
DR W.T.
CHK
APVD

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Consulting Engineers
2932 First Ave. Room 503, Seattle, Wa. 98121
Tel. (206) 622-6082

VERIFY SCALES
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0 1"
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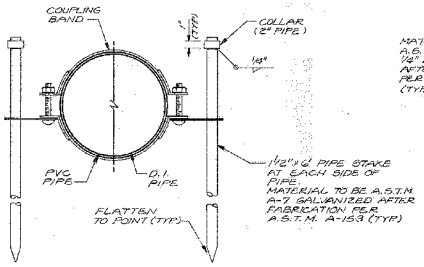
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULE C
3504
PLAN & PROFILE
EAST BREMERTON GRAVITY PIPELINE
STA. 2+00 TO STA. 13+30

DWG NO. A-11
SH 11 OF 23
DATE SEPT. 1982
FILE NO. 5T603L1

BREMERTON-008509



ANCHOR ASSEMBLY

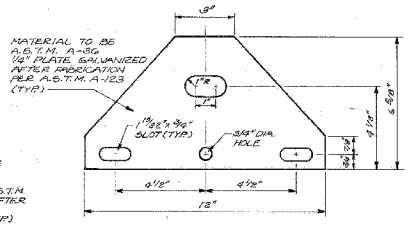
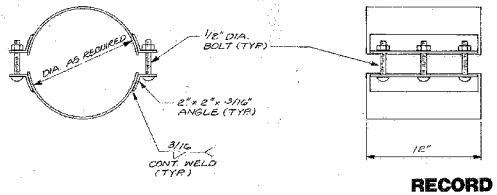


PLATE DETAILS



COUPLING BAND

RECORD DRAWINGS

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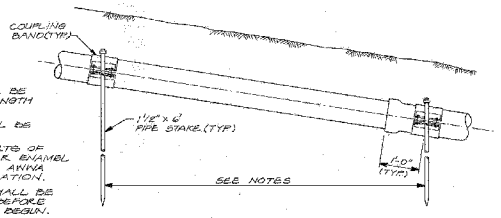


TYPICAL INSTALLATION

NOTES:

1. ONE PIPE ANCHOR SHALL BE INSTALLED ON EACH LENGTH OF PIPE.
2. MAXIMUM SPACING SHALL BE 20 FEET.
3. PAINT ALL EXPOSED PARTS OF ANCHOR WITH COAL TAR ENAMEL IN ACCORDANCE WITH AWWA C 203 AFTER INSTALLATION.
4. ALL PIPE ANCHORS SHALL BE SECURELY INSTALLED BEFORE BACKFILLING OF PIPE IS BEGUN.
5. PIPE ANCHORS SHALL BE INSTALLED ON ALL PIPES WHERE THE PIPE SLOPE EXCEEDS 20% OR WHERE DIRECTED BY THE ENGINEER.

PIPE SLOPE ANCHOR ASSEMBLY DETAILS (1)

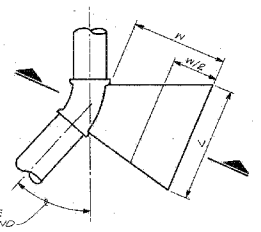
N.T.S.

NOTES:

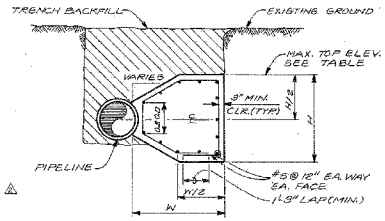
1. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH OR AGAINST SHEETING AS APPROVED BY THE ENGINEER.
2. KEEP CONCRETE BLOCK CLEAR OF JOINTS AND ACCESSORIES.
3. THE ELEVATIONS SHOWN IN THE TABLE FOR TOP OF BLOCKS ARE INTENDED TO PROVIDE A MINIMUM COVER OVER THE THRUST BLOCKS. WHERE ACTUAL GROUND ELEVATIONS VARY FROM THOSE SHOWN ON DRAWINGS AND RESULT IN ENOUGH COVER, THE CONTRACTOR SHALL REVIEW THE BLOCK DESIGN WITH THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
4. ALL PIPES AND FITTINGS SHALL BE HYDROSTATICALLY TESTED AS SPECIFIED AT 50 PSI. PRESSURE.

THRUST BLOCK DATA

DWG. NO	STATION	FITTING	DIMENSIONS H, W, L (FT)	MAX. EL. @ TOP OF BLOCK
A-3	0+07	12" - 45° BEND	2.5	120.7
	0+21	12" - 45° BEND	2.5	120.5
	0+52	12" - 45° BEND	2.5	120.1
	3+17.16	12" - 11¼° BEND	1.75	115.9
	4+31.16	12" - 45° BEND	2.5	116.7
A-4	11+37.89	12" - 22½° BEND	2.0	117.0
	12+53.33	12" - 22½° BEND	2.0	113.1
	13+89.33	12" - 45° BEND	2.5	113.3
	14+20.38	12" - 22½° BEND	2.0	114.2
	14+67.38	12" - 22½° BEND	2.0	115.8
	14+99.38	12" - 45° BEND	2.5	117.1
	15+67.38	12" - 45° BEND	2.5	118.8
	16+31.38	12" - 45° BEND	2.5	118.2
	18+66.94	12" - 45° BEND	2.5	116.5
	19+54.94	12" - 22½° BEND	2.0	134.6
A-5	0+80	6" - 90° BEND	2.0	116.5
	6+22.52	6" - 22½° BEND	2.0	114.0
	6+94.65	6" - 45° BEND	2.0	114.5
	7+66.38	6" - 22½° BEND	2.0	115.0
	8+75.78	6" - 22½° BEND	2.0	116.0
	8+90.78	6" - 90° BEND	2.0	116.5
A-7	0+30.17	18" - 22 1/2° BEND	2.5	116.0
	0+93.27	18" - 22 1/2° BEND	2.5	116.0
	2+20	24"x24"x24" TEE	4.0	115.5
	3+85	18"x18"x10" TEE	2.5	114.0
A-8	24+37.92	16" - 22½° BEND	2.5	115.5
A-9	28+71.00	16" - 45° BEND	2.5	
	28+95.74	16" - 22½° BEND	2.5	
	CONN NO. 10	18" - 22½° BEND	2.5	
	CONN NO. 10	18" - 90° BEND	3.5	



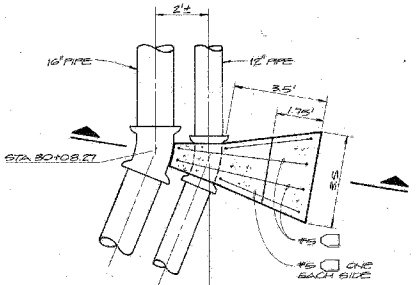
PLAN



HORIZONTAL SECTION

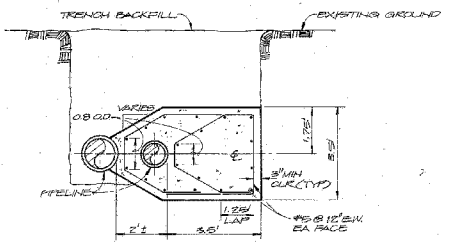
THRUST BLOCK DETAIL (2)

N.T.S.



NOTE
THRUST BLOCK INSTALLATION SIMILAR AT STA. 24+39.66 AND STA. 28+95.74

PLAN



SECTION

DOUBLE PIPE HORIZONTAL THRUST BLOCK DETAIL

N.T.S.

NO.	DATE	REVISION	BY	APVD
3	5-1-85	RECORD DRAWING	LAT	JPT
2	5-25-84	REVISE DETAIL 2 & DELETE NEW STAIR CONSTRUCTION, DETAIL 3	LAT WAD	JPT
1	8-17-83	REVISED THRUST BLOCK DATA	HGA	HGA
0	4-1-83	ISSUED FOR BIDDING	MM	MM

CH2M HILL — DSGN JAT, DR, CHK, APVD

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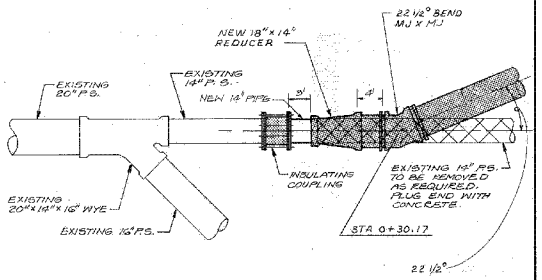
VERIFY SCALES: BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1". IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULES A AND C
BEACH PIPELINES
MISCELLANEOUS DETAILS

DWG. NO. A-12
SH. 12 OF 23
DATE SEPT. 1982
FILE NO. 312160.L1

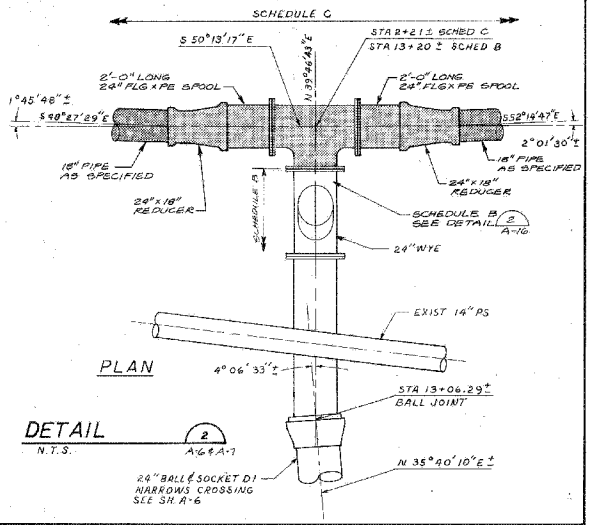
BREMERTON-008510



PLAN

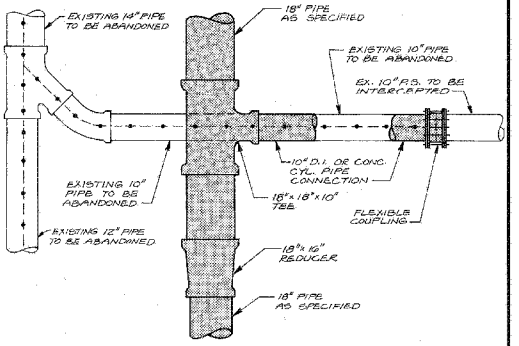
NOTE:
ALL DI JOINTS BONDED COATED THRUST TIED & BAGGED PRIOR TO BACKFILLING.

DETAIL 1 / A-7
N.T.S.

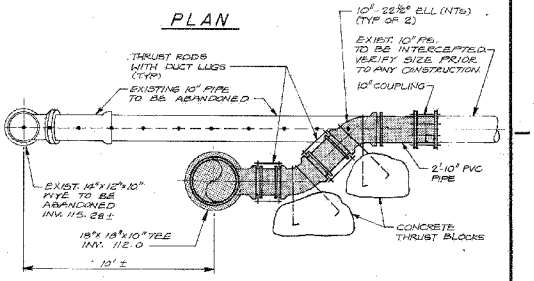


PLAN

DETAIL 2 / A-6 & A-7
N.T.S.



PLAN



NOTE:
ALL DI JOINTS BONDED, COATED & THRUST TIED, THEN ENTIRE ASSEMBLY POLY-BAGGED PRIOR TO BACKFILLING.

SECTION

CONNECTION OF OVERFLOW STRUCTURE NO. 3 / 3 / A-7
N.T.S.

NOTE:
VERIFY THE SIZE OF EXISTING PIPE TO BE INTERCEPTED PRIOR TO ANY OBSTRUCTION OPERATIONS. IF THE SIZE IS DIFFERENT FROM WHAT IS SHOWN, PROVIDE THE NECESSARY FITTINGS AND PIPES ACCORDINGLY.

RECORD DRAWINGS

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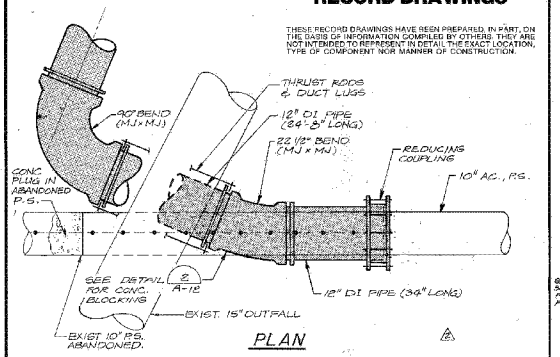
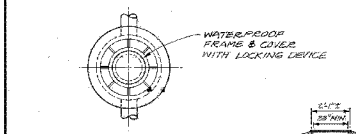


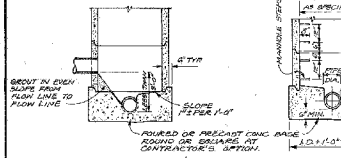
PLAN

DETAIL 4 / A-9
N.T.S.

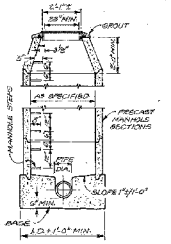


PLAN

NOTE:
ON ALL BEACH MANHOLES PROVIDE 1/8" NEOPRENE GASKET FULL FLANGE BETWEEN MH FRAME AND CONC. SECURED W/4-3/4" SST EXPANSION ANCHORS. ALSO PROVIDE TWO 1/4" x 2" x 12" SST STRAPS W/2-3/4" SST EXPANSION ANCHORS FOR EACH MH SECTION JOINT.



SECTION
TYPICAL MANHOLE
HAVING FALL LESS THAN 3'-0"



SECTION
TYPICAL MANHOLE

MANHOLE DETAILS / 5
N.T.S.

CH2M HILL						
DSGN		3	5-1-85	RECORD DRAWING	LAT	JPT
DR		2	5-23-84	REVISED DETAIL 1, 2 & 4	LAT	JPT
CHK		1	4-1-83	ISSUED FOR BIDDING	MJH	MJH
APVD		NO.	DATE	REVISION	BY	APVD

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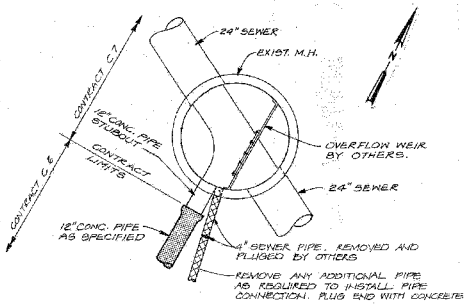
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULES A AND C
BEACH PIPELINES
MISCELLANEOUS DETAILS

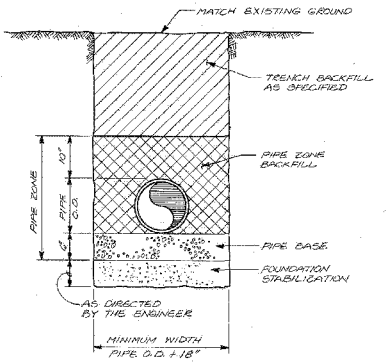
DWG NO. A-13
SH 13 OF 23
DATE SEPT. 1982
FILE NO. 8124GL13

BREMERTON-008511



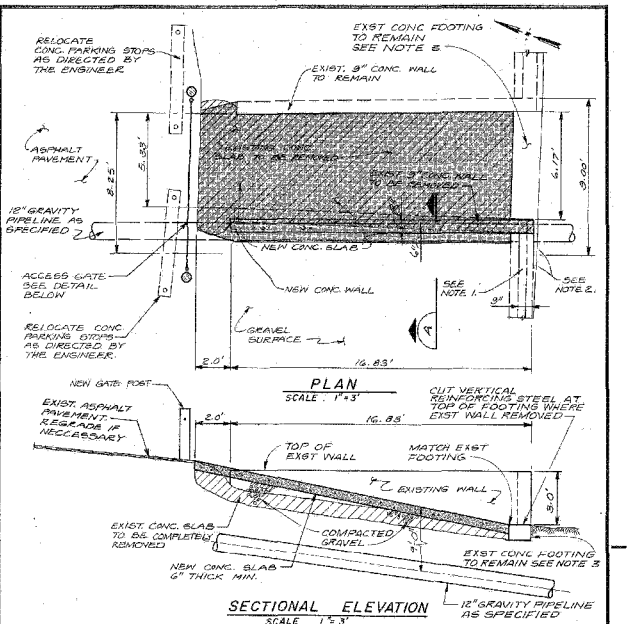
EXISTING PIPE CONNECTION NO. 12 (1)

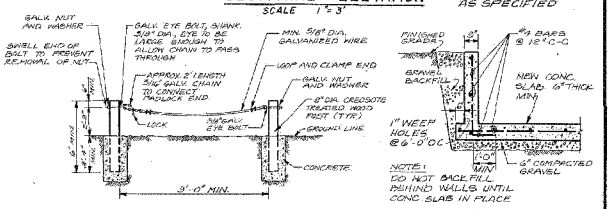
N.T.S. A-11



TYPICAL BEACH TRENCH SECTION (3)

N.T.S.





ACCESS GATE

N.T.S

NEW CONC WALL TYP SECTION (A)

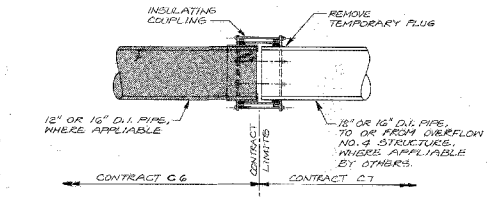
N.T.S.

RAMP RECONSTRUCTION (5)

SCALE AS SHOWN A-11

NOTES:

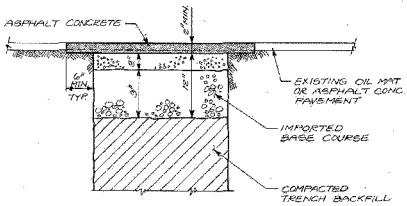
1. BREAK EXISTING CONC. WALL BY SAW CUTTING.
2. BEND LONGITUDINAL REINFORCEMENT STEEL FROM BROKEN OUT WALL INTO NEW WALL.
3. INSTALL PIPE UNDER EXST FOOTING BY TUNNELING



CONNECTION TO 12" AND 16" D.I. PIPE 10'± FROM OVERFLOW NO. 4 STRUCTURE (2)

N.T.S. A-9

NOTE: INSULATING COUPLING IS PART OF THIS CONTRACT



ASPHALT SURFACE RESTORATION (4)

N.T.S.

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3937

NO.	DATE	REVISION	BY	APVD
3	5-1-85	RECORD DRAWING	LKT	JPT
2	1-24-83	REVISING RAMP CONSTRUCTION DETAIL 5	JPT	JPT
1	4-1-83	ISSUED FOR BIDDING	[illegible]	[illegible]

CH2M HILL — DSGN / DR / CHK / APVD

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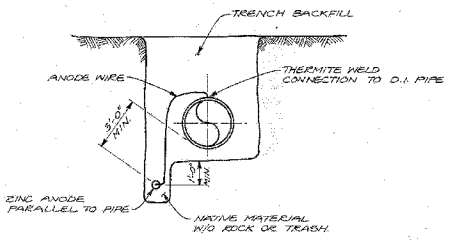
CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULES A AND C
BEACH PIPELINES
MISCELLANEOUS DETAILS

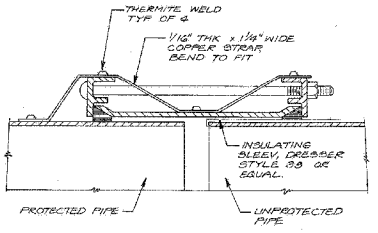
DWG NO. A-14
SH 14 OF 23
DATE SEPT. 1982
FILE NO. S12400.L1

BREMERTON-008512



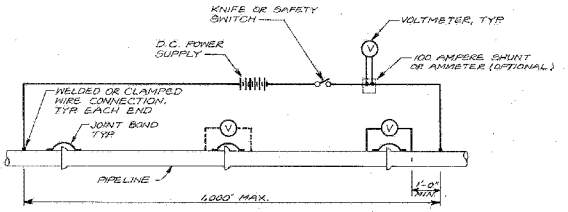
NOTE:
PROVIDE ONE ZINC ANODE PER FITTING.

BURRIED ZINC ANODE INSTALLATION
N.T.S.



NOTES:
1. CLEAN METAL SURFACE TO BRIGHT METAL BEFORE WELDING STRAP BOND.
2. COAT STRAP AND THERMITE WELDS WITH UNDERWATER CURING EPOXY AFTER WELDING IS COMPLETED.

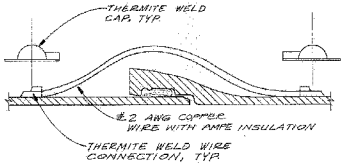
INSULATED FLEXIBLE COUPLING
N.T.S.



JOINT BOND CONTINUITY TEST SCHEMATIC
N.T.S.

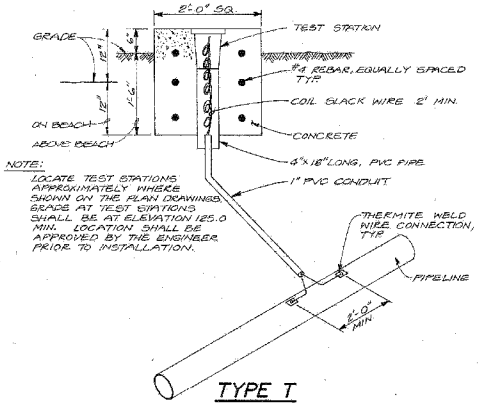
RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION.



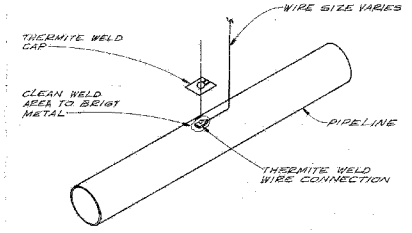
DUCTILE IRON PIPE JOINT BOND
N.T.S.

NOTE: PUSH-ON JOINT IS SHOWN. HERE BOND IS SIMILAR FOR FLANGED AND MECHANICAL JOINTS. SEE DETAIL 2/A-17 FOR BALL JOINT PIPE.



NOTE:
LOCATE TEST STATIONS APPROXIMATELY WHERE SHOWN ON THE PLAN DRAWINGS. BEARS AT TEST STATIONS SHALL BE AT ELEVATION 125.0 MIN. LOCATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

TYPE T
FLUSH MOUNTED TEST STATION
N.T.S.



NOTES:
1. COAT WELD AREA & FILL RECESS ON THERMITE WELD CAP WITH UNDERWATER CURING EPOXY AND APPLY CAP TO WELD.
2. COPPER SLEEVE REQUIRED FOR THERMITE WELDING OF #12 AWG.
3. USE COPPER SLEEVE ON #2 AWG JOINT BONDING WIRES.

THERMITE WELD WIRE CONNECTION
N.T.S.

CH2M HILL	DSGN					
	DR	W.M.				
	CHK		5	5-1-85	RECORD DRAWING	LAT / JPT
	APVD		4	4-1-83	ISSUED FOR BIDDING	MJW / MJW
			NO.	DATE	REVISION	BY / APVD

MUSTAFA, HONG & ASSOCIATES INC.
Consulting Engineers
1932 First Ave. Room 506, Seattle, Wa. 98101
Tel. (206) 622-5862

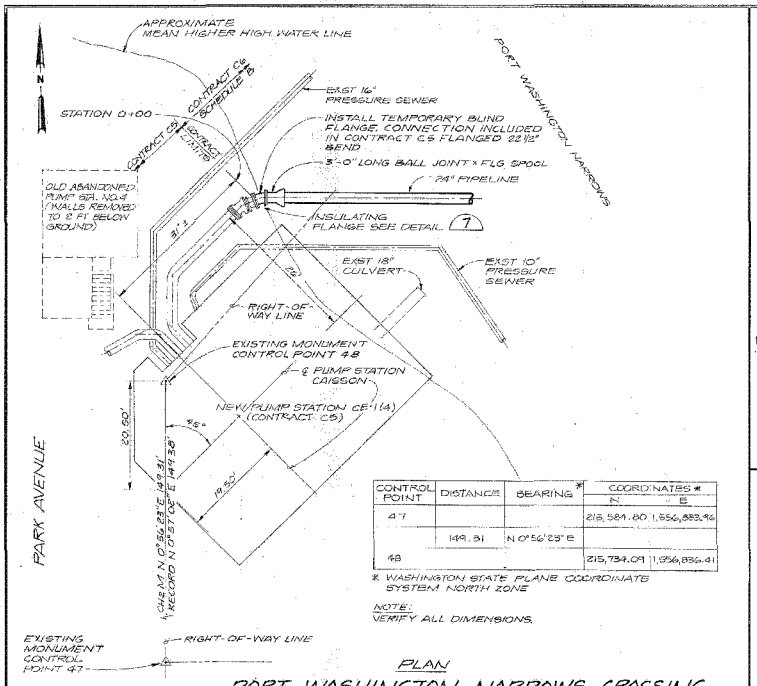
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULES A AND C
BEACH PIPELINES
CATHODIC PROTECTION DETAILS

DWG. NO. A-15
SHEET 15 OF 23
DATE SEPT. 1982
FILE NO. S12420.LF

BREMERTON-008513



CONTROL POINT	DISTANCE	BEARING *	COORDINATES * N	E
47			215,584.60	1,956,883.96
	149.31	N 0°56'23" E		
48			215,734.09	1,956,886.41

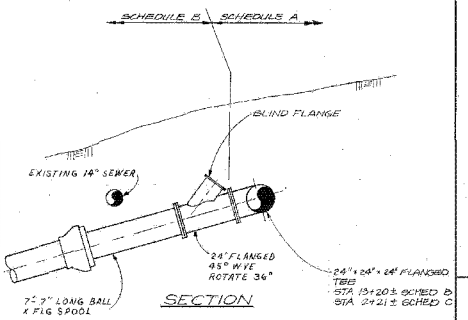
* WASHINGTON STATE PLANE COORDINATE SYSTEM NORTH ZONE

NOTE: VERIFY ALL DIMENSIONS.

PLAN

PORT WASHINGTON NARROWS CROSSING SOUTH CONNECTION DETAIL (1)

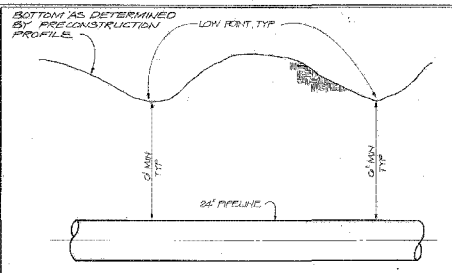
1" = 10'



PORT WASHINGTON NARROWS CROSSING NORTH END DETAIL (2)

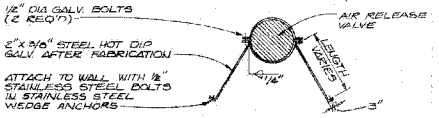
1/4" = 1'-0"

A-6 & A-7



PORT WASHINGTON NARROWS CROSSING PIPE COVER DETAIL (3)

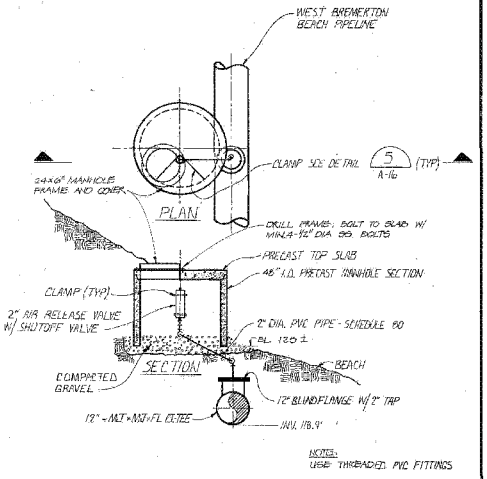
3/8" = 1'-0"



CLAMP DETAIL (5)

NTS

A-16

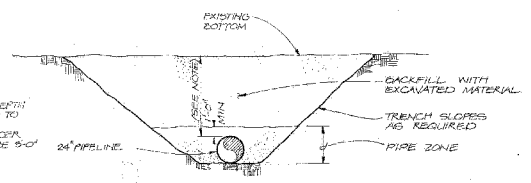


NOTES:
USE THREADED PVC FITTINGS

AIR RELEASE VALVE STATION DETAIL (4)

NTS

A-3



NOTE: SEE DETAIL 3 FOR DEPTH OF COVER FOR STA. 2+00 TO STA. 12+00. THE MINIMUM COVER FOR THE REMAINDER OF THE PIPELINE SHALL BE 5'-0"

PORT WASHINGTON NARROWS CROSSING AND EAST BREMERTON MARINE SECTION TYPICAL TRENCH CROSS SECTION

NTS

RECORD DRAWINGS

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NO.	DATE	REVISION	BY	APPD.
1	9-1-85	RECORD DRAWING	LAT	JPT
2	9-25-86	REVISED DETAIL 2	WAB	JPT
3	9-27-89	ADD AIR RELEASE VALVE STATION DETAILS & CLAMP DETAILS	HGR	HGR
4	4-1-93	ISSUED FOR BIDDING	MBW	MBW

DES. JAD
DR. REP
CHK. [illegible]
APPD. [illegible]

CH2M HILL

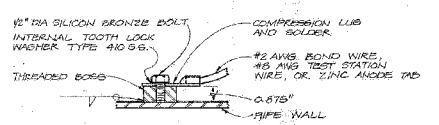
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SCHEDULES B AND C
PORT WASHINGTON NARROWS CROSSING
EAST BREMERTON MARINE SECTION
MISCELLANEOUS DETAILS

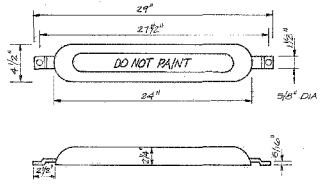
DWG NO. A-16
SH. 16 OF 23
DATE SEPT. 1992
FILE NO. 512400 L1

BREMERTON-008514

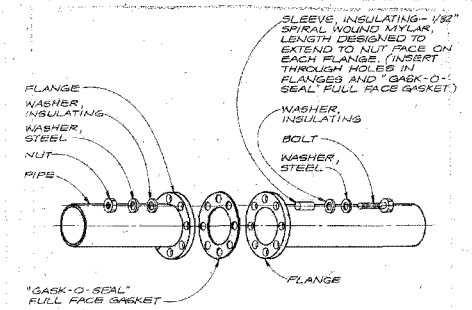


NOTES:
1. COAT PIPE AFTER WELDING BOSS (PIPE COATING NOT SHOWN)
2. FILE TOP OF BOSS TO BRIGHT METAL BEFORE INSTALLING LUG AND BOLT.
3. TIGHTEN BOLT TO 60 FOOT POUNDS TORQUE WITH ACCURATE TORQUE WRENCH.
4. COAT ALL EXPOSED METAL AFTER CONNECTIONS ARE COMPLETED. USE UNDERWATER CURING EPOXY.

BOLTED WIRE CONNECTION (1)
NTS

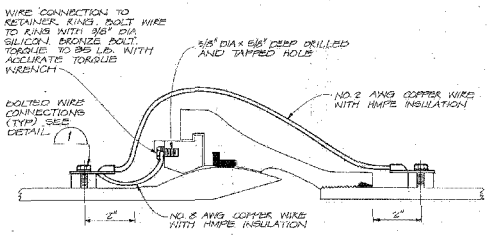


PIPE MOUNTED ZINC ANODE DETAIL (4)
NTS

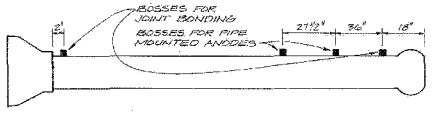


NOTES:
1. COAT AND WRAP ASSEMBLY (AFTER INSTALLATION OF INSULATING MATERIALS) WITH COLD APPLIED COAL TAR MASTIC PER SPECIFICATIONS
2. GASK-O-SEAL IS A TRADEMARK OF PSI PRODUCTS INC.

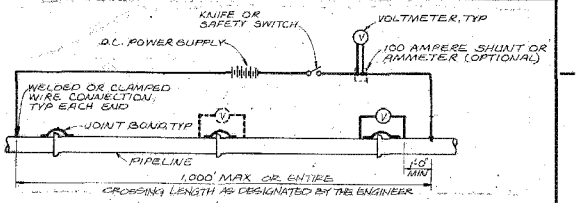
INSULATING FLANGE DETAIL (7)
NTS



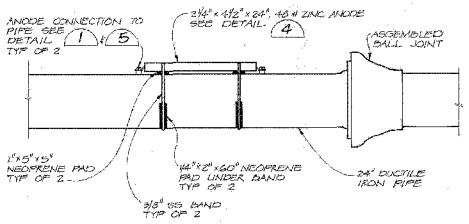
BALL-JOINT BOND DETAIL (2)
NTS



BOSS CONNECTION POINTS FOR BALL JOINT DUCTILE IRON PIPE (5)
NTS

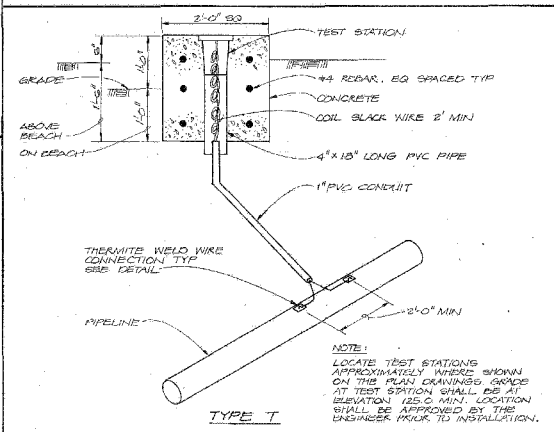


JOINT BOND CONTINUITY TEST SCHEMATIC (8)
NTS



NOTE:
JOINT BOND NOT SHOWN

PIPE MOUNTED ZINC ANODE INSTALLATION (3)
NTS



NOTE:
LOCATE TEST STATIONS APPROXIMATELY WHERE SHOWN ON THE PLAN DRAWINGS. GRADE AT TEST STATION SHALL BE AT ELEVATION 125.0 MIN. LOCATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

FLUSH MOUNTED TEST STATION (6)
NTS

RECORD DRAWINGS

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3810

MARION H. VANDERWALL — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

CH2M HILL

DSGN J.P. Dingfelder
DR M.A. Lindsle
CHK J.P. Dingfelder
APVD M.H. Vanderwall

NO.	DATE	REVISION	BY	APVD
2	5-1-85	RECORD DRAWING	LAT	JPT
1	4-1-83	ISSUED FOR BIDDING	DEJM	PAM

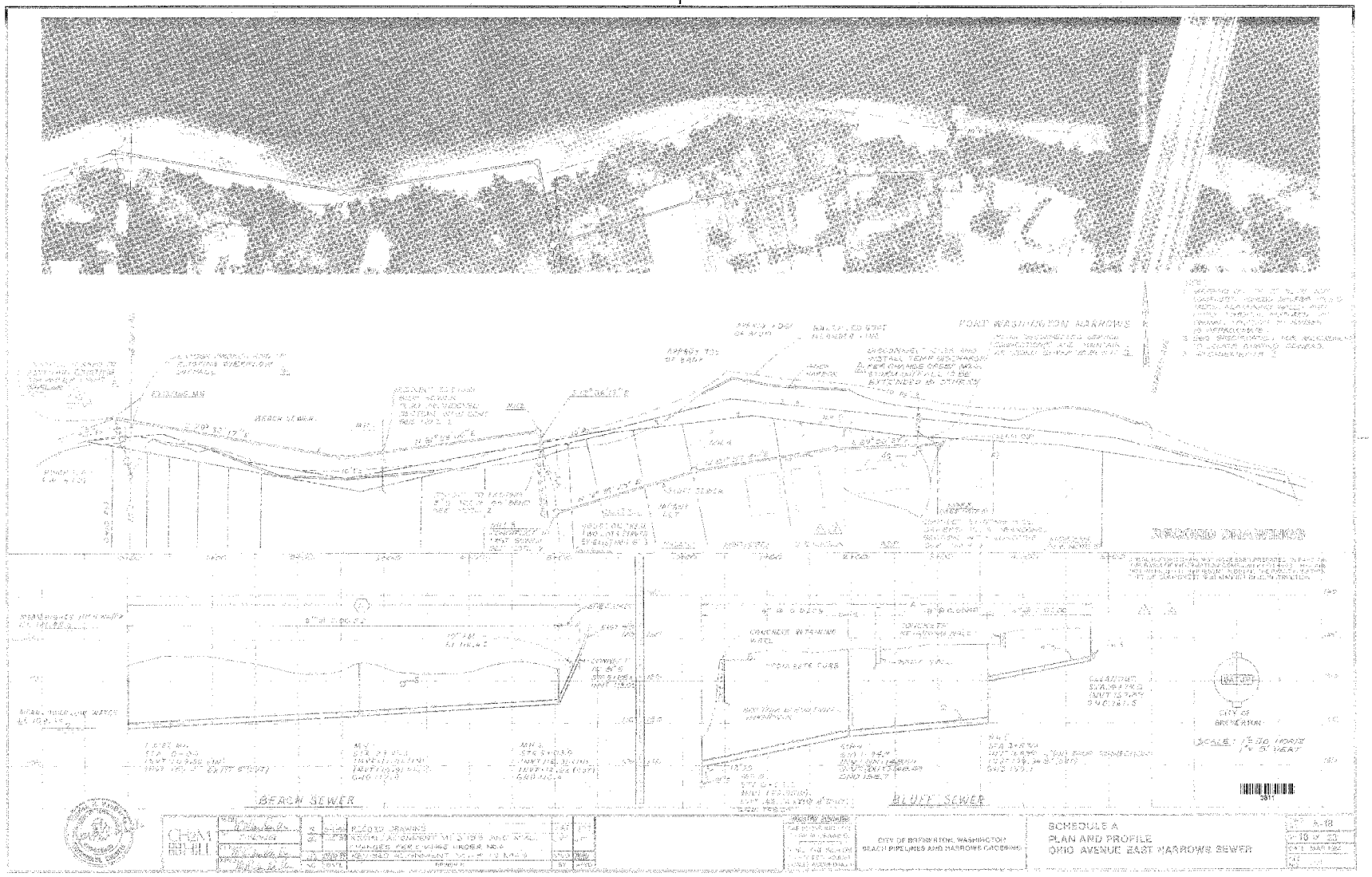
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

SCHEDULES B AND C
PORT WASHINGTON NARROWS CROSSING
EAST BREMERTON MARINE SECTION
CATHODIC PROTECTION DETAILS

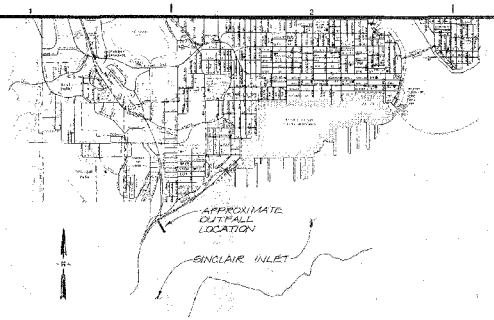
DWG NO A-17
SH 17 OF 23
DATE SEPT. 1982
F&I NO 512400.L1

CONTRACT 8CP4EN

BREMERTON-008515

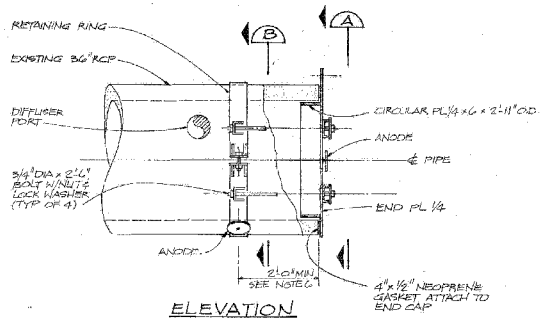


BREMERTON-008516

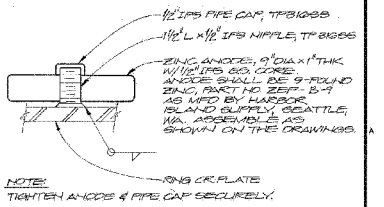


LOCATION MAP

NTS



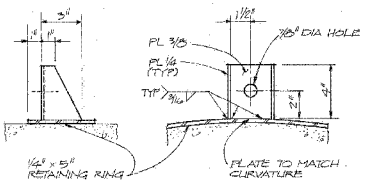
ELEVATION



NOTE:
TIGHTEN ANODES & PIPE CAP SECURELY.

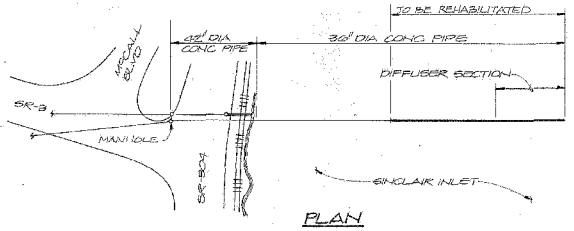
ANODE DETAIL

NTS

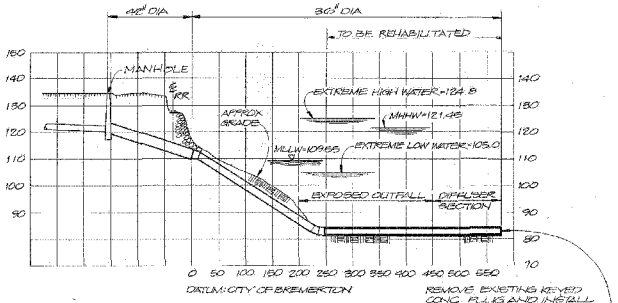


DETAIL 1

3" = 1'-0"



PLAN

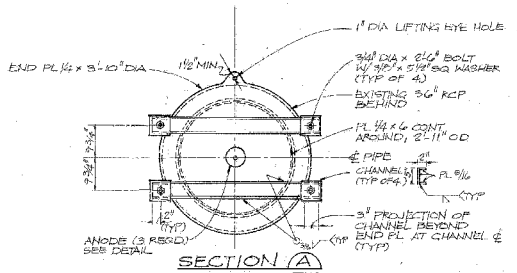


PROFILE

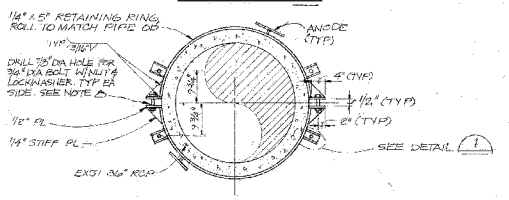
REMOVE EXISTING KEYED CONC PLUG AND INSTALL REMOVABLE END PLUG. REF REMOVABLE END PLUG DETAIL THIS SHEET.

OUTFALL PLAN AND PROFILE

APPROX SCALES:
HORZ 1" = 100'
VERT 1" = 20'



SECTION A



SECTION B

REMOVABLE END PLUG DETAIL

3/4" = 1'-0"

RECORD DRAWINGS

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NOTES:

1. DIMENSIONS AND OTHER INFORMATION SHOWN ON OUTFALL PLAN AND PROFILE IS BASED ON RECORD DRAWINGS OF THE OUTFALL AND ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY OR OBTAIN ANY INFORMATION ABOUT THE EXISTING FACILITY NEEDED TO PERFORM THE REHABILITATION WORK.
2. OUTFALL RECORD DRAWINGS ARE 1924K, OUTFALL AND DIFFUSER DETAILS PLANT NO. 2, CITY OF BREMERTON SEWER TREATMENT PLANT MODIFICATIONS FEBRUARY 1971.
3. SEE REPORT BY D.C. CLARK CORP. DATED JANUARY 1984 FOR INFORMATION ON CONDITION OF OUTFALL AND DEPTH OF MATERIAL INSIDE AND OUTSIDE OF IT.
4. CHANNELS AND PLATES SHALL BE ASTM A167, TYPE 316L STAINLESS STEEL.
5. CONNECTION BOLTS, NUTS, & WASHERS SHALL BE ASTM A193 & A194.
6. LOCATE RETAINING RING FARTHER AWAY FROM PLUG IF NECESSARY TO AVOID INTERFERENCE WITH DIFFUSER PORT.
7. VERIFY ALL DIMENSIONS OF EXISTING PIPE BEFORE BEGINNING FABRICATION OF END PLUG.
8. TIGHTEN 3/4" BOLTS SO THAT ENOUGH FRICTION IS DEVELOPED BETWEEN THE STRAP AND THE PIPE TO RESIST A 3000# THRUST ACTING ON THE PLUG FROM THE INSIDE OF THE PIPE. DISCUSS PROCEDURE WITH ENGINEER PRIOR TO STARTING WORK. WIRE BRUSH OR SANDBLAST UNDER RETAINING RING TO IMPROVE FRICTION.

3812

CH2M HILL	DSGN / DR / CHK / APVD	NO.	DATE	REVISION	BY	APVD
		1	5-1-85	RECORD DRAWING	LAT	JFT

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VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

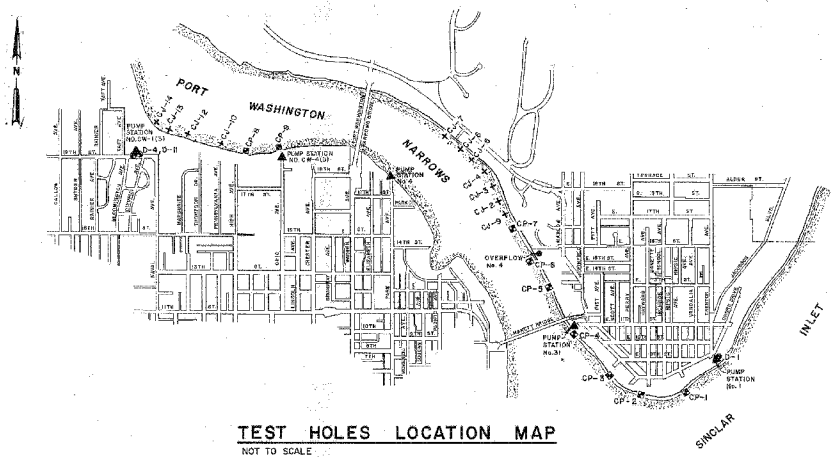
CITY OF BREMERTON, WASHINGTON
CHARLESTON SEWAGE TREATMENT PLANT OUTFALL REHABILITATION

LOCATION MAP, OUTFALL PLAN AND PROFILE, REMOVABLE END PLUG DETAIL

DWG NO. A-19
SH 19 OF 23
DATE SEPT. 1982
PROJ NO. 312400.L1

CONTRACT NUMBER

BREMERTON-008517



TEST HOLES LOCATION MAP

NOT TO SCALE

- D-1 LOCATION AND NUMBER OF TEST BORING
- CP-2 LOCATION AND NUMBER OF TEST PIT
- CJ-2 LOCATION AND NUMBER OF JET HOLE
- ▲ PUMP STATION

FIELD SAMPLING LEGEND

METHOD OF TEST HOLE ADVANCEMENT

- HOLLOW-STEM AUGERING
- MACHINE EXCAVATED PIT
- WATER JET PROBING
- MUD ROTARY DRILLING

TEST HOLE SAMPLING METHODS

- JAR SAMPLE
- 40 SPLIT BARREL SAMPLER. NUMBER IS STANDARD PENETRATION TEST BLOW COUNT
- 9-5-79 GROUND WATER TABLE AND DATE OF READING
- PIEZOMETER SYMBOL

TESTING LEGEND

SYMBOL	TEST	PARAMETER &/OR UNIT REPORTED	REFERENCE
W	MOISTURE CONTENT OF SOIL	MOISTURE CONTENT IN %	ASTM D2216
S	SIEVE ANALYSIS	% GRAVEL (G), % SAND (S), %FINES (F)	ASTM D422

TEST HOLE NO. D-1

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 128

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0	26	MEDIUM DENSE, MOIST TO WET, GRAY, FINE TO COARSE SANDY GRAVEL (GP)	W=6% S=51%, 45%, 4%
	1/12	VERY LOOSE, WET, GRAY, FINE TO COARSE SANDY GRAVEL (GP)	
5	50/6	VERY DENSE, WET, GRAY, FINE TO COARSE SILTY SAND (SM); WITH SOME GRAVEL	
	50/6	VERY DENSE, MOIST, GRAY, SANDY SILT (ML)	W=20% S=0%, 10%, 90%
10	50/6	VERY DENSE, MOIST, GRAY, SANDY SILT (ML)	W=14%
	50/3	VERY DENSE, WET, GRAY, FINE TO COARSE GRAVELLY SAND (SP/SM) WITH SOME SILT	W=6% S=41%, 50%, 9%
	50/3	VERY DENSE, WET, GRAY, FINE TO MEDIUM SILTY SAND (SM); WITH SOME GRAVEL	

BORING TERMINATED AT 58.5 FEET

TEST HOLE NO. CP-1

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 111 (Approx.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		LOOSE, WET, GRAY, SANDY GRAVEL (GP)	
		MEDIUM DENSE TO DENSE, WET, BROWN, FINE TO COARSE GRAVELLY SAND (SP)	S=45%, 61%, 6%
		VERY DENSE TO DENSE, WET, GRAVELLY SAND (SP)	

BOTTOM OF TEST PIT AT 8 FEET

NOTES:

1. MAJOR CAVING 0-4'
2. MINOR SLOUGHING 4-8'
3. SEEPAGE 4'
4. % GRAVEL DECREASES BELOW 4'

TEST HOLE NO. CP-2

LOCATION: BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 112 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		LOOSE TO MEDIUM DENSE, WET, FINE TO COARSE SANDY GRAVEL (GP)	
		DENSE TO VERY DENSE, WET, GRAY, FINE TO COARSE GRAVELLY SAND (SP)	

BOTTOM OF TEST PIT AT 8 FEET

NOTES:

1. MODERATE CAVING 0-2'
2. SEEPAGE 18" NO SEEPAGE BELOW 2 FEET

TEST HOLE NO. CP-3

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 112 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		LOOSE TO DENSE, WET, GRAY, FINE TO COARSE GRAVELLY SAND (SP)	
		INCREASE IN DENSITY AND % GRAVEL BELOW 2 FEET	

BOTTOM OF PIT AT 8 FEET

NOTES:

1. SEEPAGE 0-2'
2. MAJOR CAVING 0-2'
3. MINOR SLOUGHING BELOW 2'

RECORD DRAWINGS

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CH2M HILL

DES.				
DR.				
CHK.	5-1-83	RECORD DRAWING	LAT	JPT
APPD.	4-1-83	ISSUED FOR BIDDING		
NO.	DATE	REVISION	BY	APPD.

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CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

TEST HOLE LOCATION MAP, LEGENDS AND SOILS LOGS

DWG. NO. B-1
SH. 20 OF 23
DATE SEPT. 1982
FILE NO. 31240.01

BREMERTON-008518

TEST HOLE NO. CP-4

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 117 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		LOOSE TO MEDIUM DENSE, WET, GRAY SANDY GRAVEL (GP) WITH FINE TO COARSE SAND	
		MEDIUM DENSE, WET, GRAY, FINE TO MEDIUM GRAVELLY SAND (SP)	
		BOTTOM OF TEST PIT AT 7 FEET	

NOTES:
1. EXTENSIVE CAVING 3-7'
2. SEEPAGE 4-7'

TEST HOLE NO. CP-5

LOCATION :
GROUND ELEVATION : 116 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		LOOSE TO MEDIUM DENSE, WET, GRAY SANDY GRAVEL (GP)	
		MEDIUM DENSE TO VERY DENSE, WET, BROWN, GRAVELLY SAND (SP)	
		BOTTOM OF TEST PIT AT 9.5 FEET	

NOTE:
INCREASE IN DIGGING RESISTANCE BELOW 2'

TEST HOLE NO. CP-6

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 115.5 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		LOOSE TO MEDIUM DENSE, WET, GRAY, SANDY GRAVEL (GP)	
		GRADING TO	
		MEDIUM DENSE TO DENSE, WET, BROWN, FINE TO COARSE GRAVELLY SAND (SP) GRADING TO (SW) WITH DEPTH	
		BOTTOM OF TEST PIT AT 8 FEET	

NOTES:
1. MINOR REVELLING 0-5'
2. NO CAVING BELOW 3'
3. WATER NOT ENCOUNTERED

TEST HOLE NO. CP-7

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 115 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		LOOSE TO MEDIUM DENSE, MOIST, GRAY SANDY GRAVEL (GP)	
		MEDIUM TO VERY DENSE, WET, BROWN GRAVELLY SAND (SP/GP)	S = 27%, 68%, 5%
		BOTTOM OF TEST PIT AT 8 FEET	

NOTES:
1. MINOR SLOUGHING 0-8'
2. SEEPAGE 4-8'
3. INCREASE DIGGING RESISTANCE BELOW 4'

TEST HOLE NO. CJ-9

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 112.0

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		0-9' FINE TO MEDIUM SANDS AND GRAVELS	
		BOTTOM OF HOLE AT 9 FEET	

NOTES:
1. 3 HOLES ADVANCED AT THIS LOCATION
2. JETTING STOPPED AT 9 FEET IN EACH HOLE DUE TO GRAVELS

TEST HOLE NO. CJ-2

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 109.5

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		0-8' FINE TO MEDIUM SANDS	
		8-12' DENSE TO VERY DENSE SANDS	
		BOTTOM OF HOLE AT 12 FEET	

NOTES:
1. 3 HOLES PROBED AT THIS LOCATION
2. COULD NOT PROBE DEEPER THAN 12 FEET

TEST HOLE NO. CJ-11

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 155.6

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		0-15' FILL SANDS AND GRAVEL	(NO WATER RETURN AT SURFACE)
		BOTTOM OF HOLE AT 15 FEET	

TEST HOLE NO. CJ-3

LOCATION : BEACH PIPELINE-EAST BREMERTON SYSTEM
GROUND ELEVATION : 109.8

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0		0-36' FINE TO COARSE SANDS WITH INTERMITTENT GRAVELS	
		BOTTOM OF HOLE AT 36 FEET	

NOTE:
MODERATE JETTING REQUIRED TO ADVANCE HOLE

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CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SOIL LOGS

DWG NO. B-2
SH 21 OF 23
DATE SEPT. 1982
FILE NO. S12400.L1

BREMERTON-008519

TEST HOLE NO. CJ-4
LOCATION : BEACH PIPELINE - EAST BREMERTON SYSTEM
GROUND ELEVATION : 110.1

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
		0-26' FINE TO MEDIUM SANDS WITH INTERMITTENT GRAVELS	
		BOTTOM OF HOLE AT 26 FEET	

TEST HOLE NO. CJ-5
LOCATION : BEACH PIPELINE - EAST BREMERTON SYSTEM
GROUND ELEVATION : 110.1

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
		0-16' FINE TO MEDIUM WITH SOME COARSE SANDS	
		BOTTOM OF HOLE AT 16 FEET	

TEST HOLE NO. CJ-6
LOCATION : BEACH PIPELINE - EAST BREMERTON SYSTEM
GROUND ELEVATION : 110.5

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
		0-4' FINE TO MEDIUM SANDS	EASY JETTING
		4-6' DENSE SANDS	HARD JETTING
		BOTTOM OF HOLE AT 6 FEET	

TEST HOLE NO. CJ-7
LOCATION : BEACH PIPELINE - EAST BREMERTON SYSTEM
GROUND ELEVATION : 110.9

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
		0-7.5' FINE TO COARSE SANDS AND GRAVELS	
		BOTTOM OF HOLE AT 7.5 FEET	

NOTES:
1. 3 HOLES ADVANCED AT THIS LOCATION
2. JETTING STOPPED AT 7.5 FEET IN EACH HOLE DUE TO GRAVEL

TEST HOLE NO. D-12
LOCATION : PUMP STATION D
GROUND ELEVATION : 128 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
	36	DENSE, HUMID, GRAY-BROWN, FINE TO COARSE SILTY SAND (SP/SC) WITH SOME GRAVEL	
	50/5	VERY DENSE, WET, BROWN, FINE TO COARSE SILTY SAND (SP/SM) WITH SOME GRAVEL	W = 7%
	50/3	VERY DENSE, WET TO SATURATED, BROWN, FINE TO COARSE SILTY SAND (SP/SC) WITH SOME GRAVEL	
	49	DENSE, SATURATED, BROWN, FINE TO COARSE SILTY SAND (SP/SC) WITH SOME GRAVEL	W = 13%
	50/6	VERY DENSE, SATURATED, BROWN, FINE TO COARSE SANDY GRAVEL (GW)	
	60	SAME AS ABOVE	W = 8% S - 59%, 37%, 4%
	50/6	SAME AS ABOVE	
		BORING TERMINATED AT 33.5 FEET	

TEST HOLE NO. CP-9
LOCATION : BEACH PIPELINE - WEST BREMERTON SYSTEM
GROUND ELEVATION : 115.5 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
		MEDIUM TO DENSE, WET, BROWN GRAVELLY SAND (SP)	S = 0%, 4%, 96%
		VERY STIFF TO HARD, MOIST, BROWN SILT (ML) AND SANDY SILT (ML)	
		BOTTOM OF TEST PIT AT 8 FEET	

NOTES:
1. NO CAVING
2. SEEPAGE AT 8'

TEST HOLE NO. CP-8
LOCATION : BEACH PIPELINE - WEST BREMERTON SYSTEM
GROUND ELEVATION : 115 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
		LOOSE TO MEDIUM DENSE, WET, BROWN, FINE TO COARSE GRAVELLY SAND (SP)	
		LOOSE TO MEDIUM DENSE, WET GRAY-BLACK, FINE TO MEDIUM SILTY SAND (SM) WITH SOME GRAVEL	
		STIFF, MOIST, GRAY SILT (ML)	
		BOTTOM OF TEST PIT AT 9.5 FEET	

NOTES:
1. MAJOR CAVING AND SLOUGHING 0-8'
2. WATER NOT ENCOUNTERED

TEST HOLE NO. CJ-10
LOCATION : BEACH PIPELINE - WEST BREMERTON SYSTEM
GROUND ELEVATION : 112.5

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
		0-16' FINE TO COARSE SANDS AND SILTS	EASY JETTING
		BOTTOM OF HOLE AT 16 FEET	

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RALPH Y. MUSTAFA, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER

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CITY OF BREMERTON, WASHINGTON
BEACH PIPELINES AND NARROWS CROSSING

SOIL LOGS

DWG. NO. B-3
SH 22 OF 23
DATE SEPT. 1982
FILE NO. S1243E L1

BREMERTON-008520

TEST HOLE NO. CJ-12
LOCATION : BEACH PIPELINE-WEST BREMERTON SYSEM
GROUND ELEVATION : 115.5

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0 (METERS / FEET)		0-13 FEET, SANDS AND GRAVELS.	
5		BOTTOM OF HOLE AT 13 FEET	
10, 20, 30			

TEST HOLE NO. CJ-13
LOCATION : BEACH PIPELINE-WEST BREMERTON SYSEM
GROUND ELEVATION : 115.3

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0 (METERS / FEET)		0-14 FEET, FINE SANDS AND SILTS.	EASY JETTING
5		BOTTOM OF HOLE AT 14 FEET	
10, 20, 30			

TEST HOLE NO. CJ-14
LOCATION : BEACH PIPELINE-WEST BREMERTON SYSEM
GROUND ELEVATION : 115.2

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0 (METERS / FEET)		0-2 FEET, LOOSE SILT	
		2-6 FEET, FINE SANDS	
		6-10 FEET, FINE SANDS AND SILTS	
5		BOTTOM OF HOLE AT 10 FEET	
10, 20, 30			

TEST HOLE NO. D-11
LOCATION : PUMP STATION 3
GROUND ELEVATION : 131 (APPROX.)

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0 (METERS / FEET)	13	MEDIUM DENSE, WET, GRAY, MEDIUM COARSE CLAYEY SAND (SC) WITH SOME GRAVEL-POSSIBLY FILL	
10	8	LOOSE, SATURATED, GRAY, FINE TO COARSE CLAYEY SAND (SC) WITH SOME GRAVEL AND ORGANICS-POSSIBLY FILL	
	14	MEDIUM DENSE, SATURATED, GRAY, COARSE SILTY SAND (SM) WITH ORGANICS-POSSIBLY FILL	
5	70	VERY DENSE, WET, GRAY, MEDIUM TO COARSE SILTY CLAYEY SAND (SM) WITH SOME GRAVEL	W=9%
20	50/5	VERY DENSE, WET, GRAY, FINE TO COARSE CLAYEY SAND (SC)	W=15%
30	50/5	VERY DENSE, SATURATED, FINE TO COARSE CLAYEY SAND (SC) WITH SOME GRAVEL	W=12%, S=9%, 77%, 14%
10	50/6	VERY DENSE, WET, GRAY, FINE TO COARSE CLAYEY SAND (SC) WITH SOME GRAVEL	W=10%
40	50/6	VERY DENSE, SATURATED, GRAY, FINE TO COARSE CLAYEY SAND (SC) WITH SOME GRAVEL	
	50/3	VERY DENSE, SATURATED, GRAY, MEDIUM TO COARSE SILTY SAND (SM) TO BROWN CLAYEY SAND (SC) WITH SOME GRAVEL	W=16%
15-50	50/6	VERY DENSE, SATURATED, GRAY, MEDIUM TO COARSE SILTY SAND (SP/SM) WITH SOME GRAVEL	W=15%, S=11%, 80%, 9%
	50/3	VERY DENSE, SATURATED, BROWN, MEDIUM TO COARSE SILTY SAND (SP/SM)	W=23%
60		BORING TERMINATED AT 53½ FEET	

TEST HOLE NO. D-4
LOCATION : PUMP STATION 3
GROUND ELEVATION : 132

DEPTH	ADVANCEMENT AND SAMPLING METHODS	DESCRIPTION OF MATERIAL	REMARKS IN SITU TESTS LABORATORY TESTS
0 (METERS / FEET)	6	LOOSE, WET, BROWN, FINE TO COARSE GRAVELLY CLAYEY SAND (SC)-POSSIBLE FILL	
10	8	LOOSE, WET, GRAY-BROWN, FINE TO MEDIUM CLAYEY SAND (SC), WITH SOME GRAVEL-POSSIBLE FILL.	
WATER LEVEL	5	LOOSE, WET, BLACK, FINE TO MEDIUM SILTY SAND (SM/SC), WITH TRACE OF GRAVEL-POSSIBL FILL	
5	15	MEDIUM DENSE, GRAY, FINE TO COARSE SILTY SAND (SM), WITH SOME GRAVEL-POSSIBLE FILL	
20	83	VERY DENSE, WET, GRAY, FINE TO MEDIUM SAND (SP) AND SILTY SAND (SM), WITH SOME GRAVEL	
30		BORING TERMINATED AT 24.6 FEET	

TEST HOLE NO. D-4
WATER LEVEL DEPTH MEASUREMENTS

DATE	TIME	DEPTH BELOW GROUND SURFACE (FEET)
SEPTEMBER 5, 1979	11:05 A.M.	11.6
SEPTEMBER 6, 1979	11:00 A.M.	11.7
	12:27 P.M.	11.6
	5:10 P.M.	10.8
	6:15 P.M.	10.0
OCTOBER 22, 1979	11:45 A.M.	11.6
OCTOBER 29, 1979	11:33 A.M.	9.7
	12:15 P.M.	9.2
	5:25 P.M.	10.4
	6:15 P.M.	10.4
JANUARY 16, 1980	10:30 A.M.	9.2
JANUARY 21, 1980	11:05 A.M.	8.7
	11:55 A.M.	9.2
	1:00 P.M.	9.8
	1:50 P.M.	10.0
	2:20 P.M.	10.0
	4:05 P.M.	10.1
	5:00 P.M.	10.2
JANUARY 22, 1980	8:35 A.M.	8.6
	10:35 A.M.	8.1
	2:30 P.M.	9.9

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SOIL LOGS

DWG. NO. B-4
SH 23 OF 23
DATE SEPT. 1979
FILE NO. 81240G L1

BREMERTON-008521