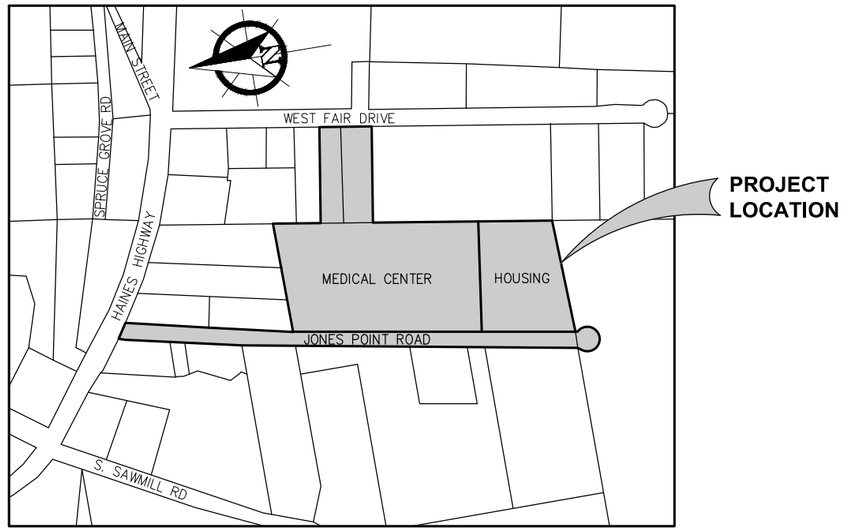
LEGEND

EXISTING	THIS PROJECT	
OHE_x		OVERHEAD ELECTRICAL
UGE_x		BURIED ELECTRICAL
UGT_x		UNDERGROUND TELEPHONE
UGC_x		UNDERGROUND FIBER OPTIC
W_x	W	WATER
SS_x	SS	SANITARY SEWER
SD_x	SD	STORM DRAIN (SIZE, TYPE AS NOTED)
	GB GB	GRADE BREAK
		BUILDING SETBACK LINE
X		FENCE
		PROPERTY LINE / RIGHT-OF-WAY
		CENTERLINE
		EASEMENT
E		ELECTRIC PEDESTAL
T		TELEPHONE PEDESTAL
SSMH	SS	SANITARY SEWER MANHOLE
		SANITARY SEWER CLEANOUT
		FIRE HYDRANT
		WATER VALVE
		AREA DRAIN w/ CATCH BASIN
SDMH		STORM DRAIN MANHOLE
		BOLLARD
		SIGN (TYP)
		POWER POLE
		LIGHT POLE
		CONCRETE
		PAVEMENT
		BUILDING
		DRAINAGE SWALE
		LANDSCAPED
##		RADIUS CALLOUT
41		LAYOUT POINT NUMBER
1		CURB TYPE

ABBREVIATIONS

A	
@	AT
ACP	ASPHALT CONCRETE PAVEMENT/ ASBESTOS CEMENT PIPE
ADA	AMERICANS WITH DISABILITIES ACT
ADI	AREA DRAIN INLET STRUCTURE
<PT	ANGLE POINT
APPROX. or APPX.	APPROXIMATE
B	
BLDG	BUILDING
BOL	BOLLARD
BTM	BOTTOM
C	
CB	CATCH BASIN
℄	CENTER LINE
CLR	CLEAR
CONC.	CONCRETE
COR	CORNER
CPP	CORRUGATED PLASTIC PIPE
CPEP	CORRUGATED POLYETHYLENE PIPE
CTE	CONNECT TO EXISTING
CY	CUBIC YARD
D	
ø/DIA	DIAMETER
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DR	DRIVE
DTL	DETAIL
E	
E	EAST
EA.	EACH
EC	EDGE OF CONCRETE
EF	ELECTRO-FUSION
EJIW	EAST JORDAN IRON WORKS
EL/ELEV	ELEVATION
ELEC.	ELECTRICAL
EP	EDGE OF PAVEMENT
EW	EACH WAY
F	
FC	FACE OF CURB
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOWLINE
G	
GALV	GALVANIZED
GB	GRADE BREAK
GINT	GRIDLINE INTERSECTION
GR	GRATE
H	
HDG	HOT-DIPPED GALVANIZED
HDPE	HIGH DENSITY POLYETHYLENE
HDWL	HEADWALL
I	
IAW	IN ACCORDANCE WITH
IE	INVERT ELEVATION
INV	INVERT
L	
L	LENGTH
LF	LINEAR FEET
LOW	EP LOW POINT
LP	LIGHT POLE
M	
MAX	MAXIMUM
ME	MATCH EXISTING
MFR	MANUFACTURE (R)
MH	MANHOLE
MJ	MECHANICAL JOINT
MIN	MINIMUM
MTE/ME	MATCH TO EXISTING
N	
N	NORTH
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O	
OC	ON CENTER
OHE	OVERHEAD ELECTRICAL
P	
PC	POINT OF CURVATURE
POC	POINT ON CURVE
POL	POINT ON LINE
PCC	POINT OF COMPOUND CURVATURE
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
PVC	POLY-VINYL CHLORIDE
R	
R	RADIUS
RE	RIM ELEVATION
S	
S	SOUTH, SMOOTH
SD	STORM DRAIN
SF	SQUARE FEET
SS	SANITARY SEWER
SDCB	STORM DRAIN CATCH BASIN
SDMH	STORM DRAIN MANHOLE
SSMH	SANITARY SEWER MANHOLE
ST	STREET
STA	STATION
STD	STANDARD
SW	SIDEWALK
SY	SQUARE YARD
T	
t.	THICK
TYP	TYPICAL
U	
UNO	UNLESS NOTED OTHERWISE
V	
VB	VALVE BOX
VERT	VERTICAL
VG	VALLEY GUTTER
W	
W	WEST
w/	WITH
WL	WATERLINE
WV	WATER VALVE



VICINITY MAP

1"=300'

WORK SEQUENCING

1. WORK PRIORITIZATION SHALL BE IN THE FOLLOWING ORDER, FROM GREATEST IMPORTANCE TO LEAST IMPORTANCE:
   a. WORKFORCE HOUSING
      i. BUILDING PADS SHALL BE FOUNDATION-READY BY JULY 1, 2026.
   b. MEDICAL CENTER SITE PREPARATION – LOT 10
      i. BUILDING PAD SHALL BE FOUNDATION-READY BY JULY 15, 2026.
   c. JONES POINT ROAD
      i. WORK SHALL NOT COMMENCE FROM BOP TO STATION 2+00, INCLUDING UTILITY STRUCTURE MATERIAL PROCUREMENT, UNTIL AUTHORIZED BY THE OWNER. THIS AREA IS UNDER DESIGN IN COORDINATION WITH AKDOT&PF.
   d. MEDICAL CENTER SITE PREPARATION – LOTS 5 AND 6
      i. EARTH-DISTURBING ACTIVITIES IN THIS AREA SHALL NOT COMMENCE UNTIL THE WORK DESCRIBED IN A AND B HAS BEEN COMPLETED. ADDITIONALLY, THIS AREA HAS NOT YET BEEN COMPLETELY DESIGNED AND ADDITIONAL GUIDANCE WILL BE ISSUED.

STRIPING AND SIGNAGE NOTES

1. JONES POINT ROAD SHALL BE STRIPED ITS ENTIRE LENGTH WITH A DOUBLE YELLOW CENTERLINE AND SINGLE WHITE FOG LINE ON THE NORTHBOUND LANE TO CREATE THE FOLLOWING, FROM WEST TO EAST: 12.5' LANE, 12.5' LANE, 3' BIKE LANE. LANE STRIPING SHALL BE 4 INCHES WIDE.
2. THE NORTHBOUND LANE OF JONES POINT ROAD AT THE HAINES HIGHWAY INTERSECTION SHALL RECEIVE A WHITE STOP BAR THE FULL WIDTH OF THE LANE. STOP BAR SHALL BE 2 FEET WIDE.
3. THE WORKFORCE HOUSING ACCESS ROAD SHALL RECEIVE A WHITE STOP BAR ON THE ACCESS ROAD LANE ENTERING JONES POINT ROAD. STOP BAR SHALL BE THE FULL WIDTH OF THE ENTERING LANE AND 2 FEET WIDE.
4. ALL LOCATIONS DESIGNATED TO RECEIVE STOP BARS SHALL ALSO RECEIVE STOP SIGNS IN ACCORDANCE WITH AKDOT&PF STANDARD SPECIFICATIONS AND DETAILS.

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04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
HAINES MEDICAL CAMPUS

STATE OF ALASKA 49TH
Sean C. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

SHEET INDEX, LEGEND AND ABBREVIATIONS

C1.01

GENERAL NOTES

1. DETAILS SHOWN HEREIN SHALL TAKE PRECEDENCE.
2. PROPERTY DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ITS PRE-CONSTRUCTION CONDITION OR BETTER AT NO ADDITIONAL COST.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO ALL APPLICABLE, LOCAL, STATE AND FEDERAL CODES, PERMITS AND SAFETY REQUIREMENTS.
4. THE LOCATIONS AND ELEVATIONS OF EXISTING FEATURES AND UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE. UTILITIES SHOWN ARE TAKEN FROM EXISTING RECORDS AND OTHER SOURCES. ADDITIONAL UTILITIES MAY BE PRESENT HOWEVER ARE NOT SHOWN. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS IN THE FIELD AS NECESSARY PRIOR TO BEGINNING WORK. THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED IN THE FIELD SHALL BE RECORDED ON THE CONTRACTOR'S RECORD DRAWINGS. CONTACT LOCAL UTILITIES AT THE FOLLOWING NUMBERS FOR LOCATE SERVICE A MINIMUM OF THREE BUSINESS DAYS PRIOR TO ANY EXCAVATION:

DIAL BEFORE YOU DIG!

UNDERGROUND POWER, TELEPHONE	**907-766-6500**
HAINES CABLE T.V.	**907-766-2337**
WATER	**907-766-2200**
WASTEWATER	**907-766-6452**

UTILITIES SHOWN HERE DO NOT SUBSTITUTE FOR FIELD LOCATES.

DIAL BEFORE YOU DIG!
811
UNDERGROUND POWER, TELEPHONE, T.V., COMMUNICATIONS, WATER AND WASTEWATER LINES ARE IN THE AREA. UTILITIES SHOWN HERE DO NOT SUBSTITUTE FOR FIELD LOCATES.

5. CONTRACTOR SHALL COORDINATE WITH ALL AFFECTED BOROUGH DEPARTMENTS AND LOCAL UTILITY COMPANIES DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT DISRUPT UTILITY SERVICES EXCEPT AS REQUIRED TO COMPLETE THE RECONFIGURATION OF THOSE SERVICES AS SHOWN IN THE PLANS. COORDINATE ANY DISRUPTIONS WITH HAINES BOROUGH AND NOTIFY AFFECTED RESIDENTS IN ACCORDANCE WITH HAINES BOROUGH REQUIREMENTS AND A MINIMUM OF 48 HOURS IN ADVANCE.
7. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION. NO ASSURANCE IS GIVEN THAT THE INDICATED POSITION OF ANY EXISTING UTILITY IS CORRECT OR THAT THE INFORMATION IS COMPLETE. ALL LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE CORRECT AND TRUE LOCATION AS TO AVOID DAMAGE OR DISTURBANCE. DAMAGE TO EXISTING SITE FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
8. OVERHEAD UTILITIES INCLUDING ELECTRICAL POWER, TELEPHONE, CABLE TV, AND OTHER OVERHEAD LINES ARE GENERALLY NOT SHOWN, THE LINES THAT ARE SHOWN ARE LOCATED BY POINT-TO-POINT, POLE-TO-POLE. DETERMINE THE EXTENT OF HAZARDS OR IMPACTS ON CONSTRUCTION ACTIVITIES CREATED BY OVERHEAD OR UNDERGROUND LINES IN ALL AREAS AND FOLLOW PROCEDURES DURING CONSTRUCTION AS REQUIRED BY LAW. PRIOR TO CONSTRUCTION, MEET WITH UTILITY OWNERS TO DETERMINE THE EXTENT OF HAZARDS AND TAKE PRECAUTIONS AS REQUIRED TO PROTECT PERSONS AND PROPERTY AND TO AVOID DISRUPTION OF SERVICE.
9. GRADING AND ALIGNMENT OF PIPE, STRUCTURES & FINAL SURFACING ARE SUBJECT TO MINOR REVISIONS BY THE ENGINEER TO FIT SITE CONDITIONS. GRADE ALL IMPROVEMENTS WITH POSITIVE DRAINAGE AWAY FROM BUILDINGS TO DITCHES, SWALES OR STORM DRAIN INLETS.
10. ALL ITEMS DESIGNATED TO BE REMOVED SHALL BE DISPOSED OF AT CONTRACTOR-PROVIDED DISPOSAL SITE.
11. CONTRACTOR SHALL REFERENCE ALL EXISTING PROPERTY CORNER MONUMENTS, RIGHT OF WAY MONUMENTS, AND CENTERLINE MONUMENTS PRIOR TO CONSTRUCTION. UNLESS NOTED OTHERWISE, DISTURBED MONUMENTS SHALL BE RESET OR REPLACED EXCEPT WHERE MONUMENT WOULD BE A HAZARD AS DETERMINED BY THE ENGINEER. EXISTING SURVEY MONUMENTS MAY NOT BE SHOWN ON THE DRAWINGS. ALL WORK SHALL BE DONE BY, OR UNDER THE DIRECTION OF, AN ALASKA REGISTERED LAND SURVEYOR.
12. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES TO PRIVATE AND PUBLIC PROPERTY ASSOCIATED WITH THE CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO DAMAGES CAUSED BY COMPACTION EFFORTS.
13. EXCEPT WHERE STAGING AND WORK AREAS ARE DESIGNATED ON THE PLANS, THE CONTRACTOR SHALL NOT STORE MATERIALS OR EQUIPMENT, OR OPERATE EQUIPMENT WITH ITS TRACKS OR WHEELS PLACED ON PRIVATE PROPERTY, WITHOUT THE WRITTEN APPROVAL OF THE PROPERTY OWNER.
14. MINOR FITTINGS AND VARIOUS SYSTEM APPURTENANCES NOT SHOWN IN UTILITY SHEETS MAY BE REQUIRED TO CONSTRUCT UTILITY SYSTEMS. CONTRACTOR SHALL USE INDUSTRY STANDARD PRACTICES TO ACHIEVE ALL CONNECTIONS NOT DETAILED IN ACCORDANCE WITH THE SPECIFICATIONS AND CONSISTENT WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS PER ENGINEER DIRECTION (INCIDENTAL).
15. MATCH EXISTING GRADES AT PROJECT LIMITS AND WHERE REQUIRED TO MATCH ELEVATIONS AT EXISTING ROADS OR PATHS.

DRAWING INDEX

DRAWING INDEX

DRAWING INDEX

DRAWING INDEX

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SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
HAINES MEDICAL CAMPUS

STATE OF ALASKA 49TH
Seward Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

GENERAL NOTES AND DRAWING INDEX

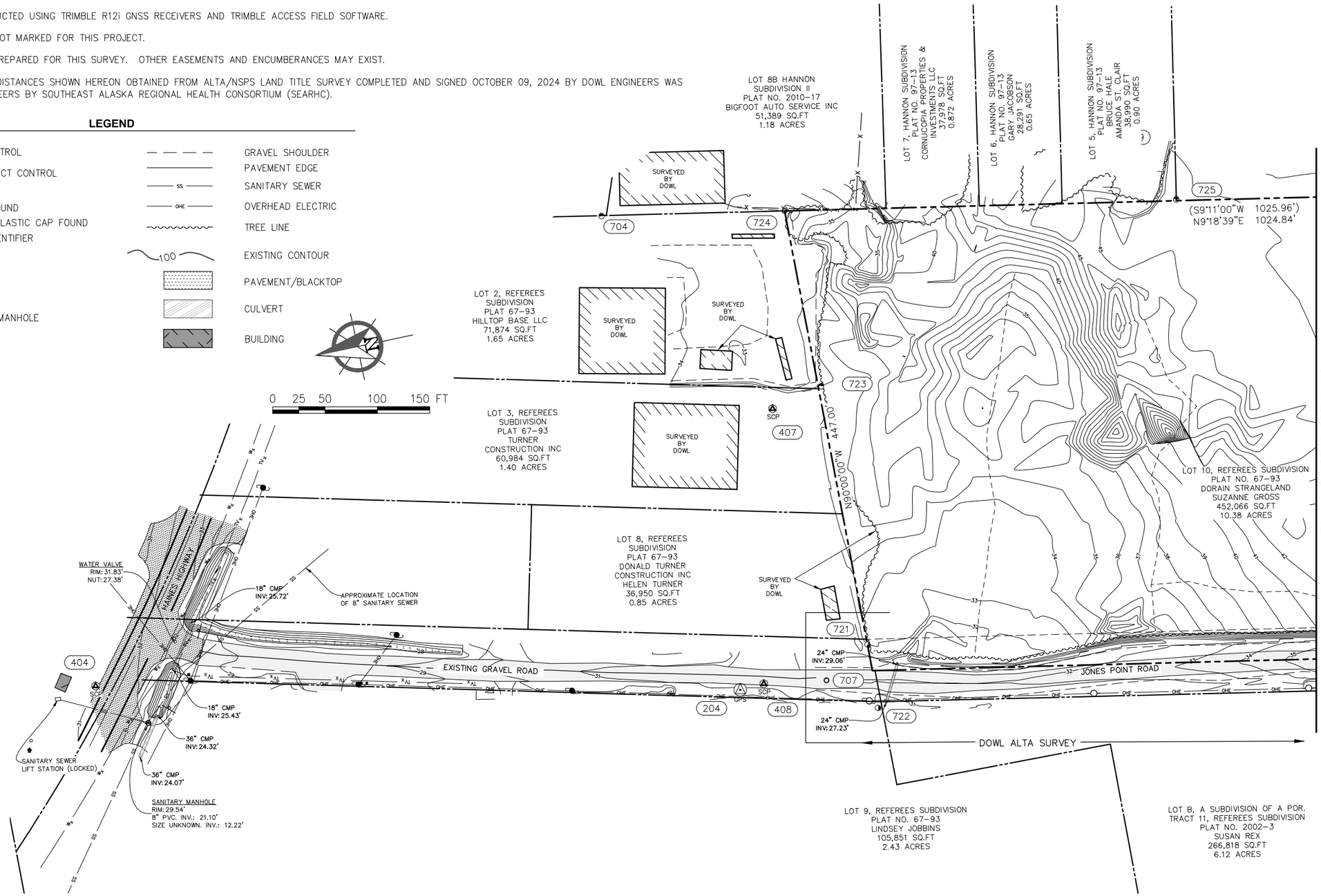
C1.02

NOTES

1. THE HORIZONTAL DATUM FOR THIS PROJECT IS AN ARBITRARY LOCAL PLANE COORDINATE SYSTEM; DERIVED FROM AND MATCHING THE ORIGINAL SITE PLAN SURVEY CONTROL FOR THE SUBJECT PROPERTY COMPLETED BY DOWL ENGINEERING OCTOBER 09, 2024.
2. THE BASIS OF COORDINATES FOR THIS PROJECT IS A FOUND 60D NAIL (#480) ON THE EDGE OF JONES POINT ROAD SET BY DOWL ENGINEERING OCTOBER 09, 2024, HAVING LOCAL COORDINATES OF N: 2707789.375, E: 2348175.322.
3. THE BASIS OF VERTICAL CONTROL FOR THIS PROJECT IS A FOUND 60D NAIL (#480) ON THE EDGE OF JONES POINT ROAD SET BY DOWL ENGINEERING OCTOBER 09, 2024, HAVING AN ELEVATION OF 31.22 U.S. FEET.
4. THE INFORMATION SHOWN HEREON IS BASED ON FIELD SURVEYS CONDUCTED BY PND ENGINEERS NOVEMBER 18–20, 2024 AND DOWL ENGINEERING OCTOBER 09, 2024.
5. ALL DISTANCES ARE GROUND DISTANCES REDUCED TO HORIZONTAL IN U.S. SURVEY FEET; UNLESS OTHERWISE INDICATED.
6. THIS SURVEY WAS CONDUCTED USING TRIMBLE R12i GNSS RECEIVERS AND TRIMBLE ACCESS FIELD SOFTWARE.
7. UTILITY LOCATES WERE NOT MARKED FOR THIS PROJECT.
8. NO TITLE REPORT WAS PREPARED FOR THIS SURVEY. OTHER EASEMENTS AND ENCUMBERANCES MAY EXIST.
9. RECORD BEARINGS AND DISTANCES SHOWN HEREON OBTAINED FROM ALTA/NSPS LAND TITLE SURVEY COMPLETED AND SIGNED OCTOBER 09, 2024 BY DOWL ENGINEERS WAS PROVIDED TO PND ENGINEERS BY SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM (SEARHC).

LEGEND

- PRIMARY GPS CONTROL
- SECONDARY PROJECT CONTROL
- STONE MONUMENT
- ALUMINUM CAP FOUND
- 5/8" REBAR OR PLASTIC CAP FOUND
- ### POINT NUMBER IDENTIFIER
- POWER POLE
- GUY ANCHOR
- FIRE HYDRANT
- WATER VALVE
- SANITARY SEWER MANHOLE
- GRAVEL SHOULDER
- PAVEMENT EDGE
- SANITARY SEWER
- OVERHEAD ELECTRIC
- TREE LINE
- EXISTING CONTOUR
- PAVEMENT/BLACKTOP
- CULVERT
- BUILDING



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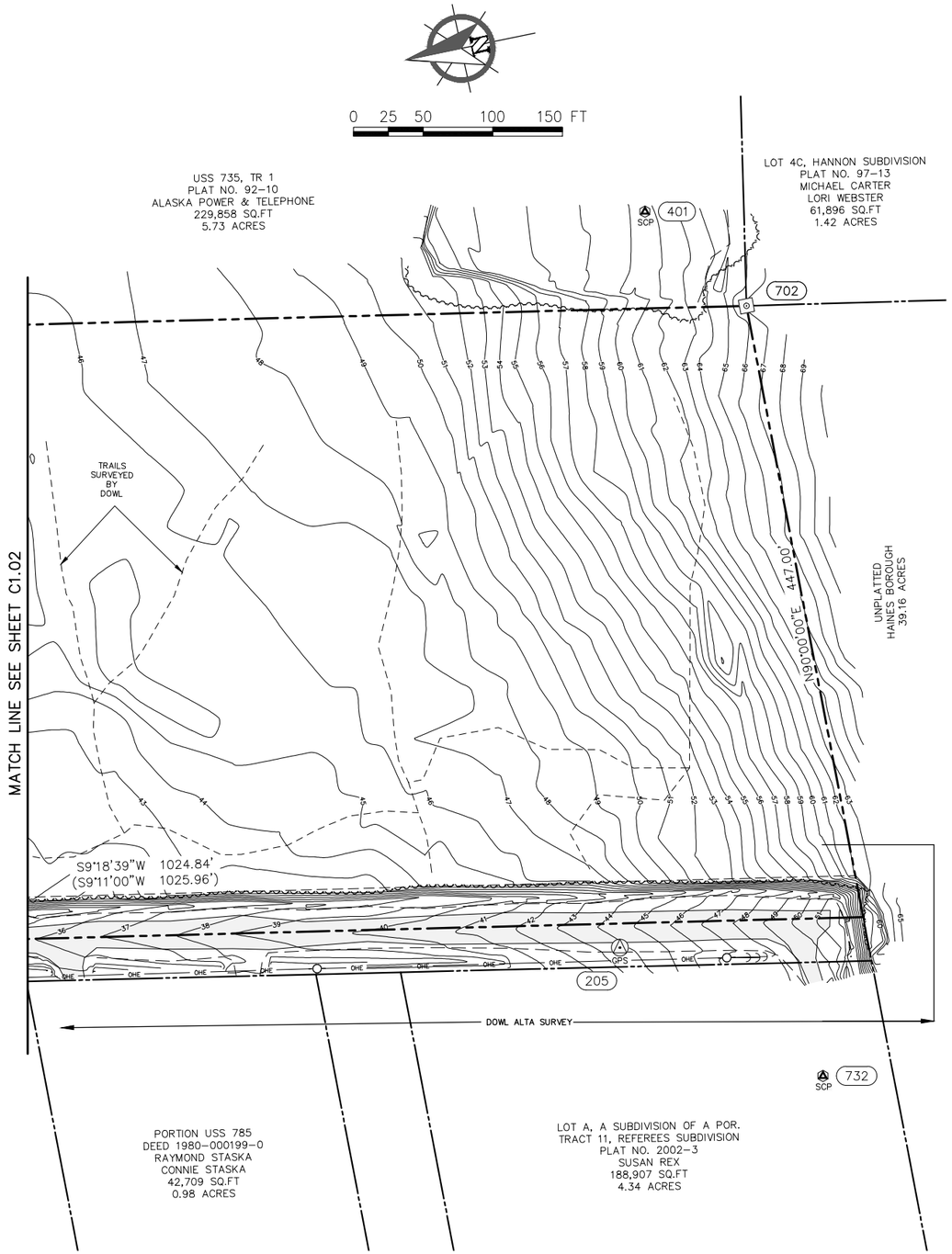
HAINES MEDICAL CAMPUS

STATE OF ALASKA 49 TH
Steven C. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

PARTIAL EXISTING CONDITIONS AND SURVEY CONTROL

C1.03



PND SURVEY CONTROL

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
* 201	2707723.865	2353637.880	22.25	FAC 2" DOWL HKM
* 202	2708441.885	2347805.563	23.31	FBC NGS B 141 B 141
* 203	2709112.534	2347743.994	29.22	FAC 3.25" ADOT PI ROW 78+95.55 43.5R 8904-S 1998
204	2707812.539	2348173.814	30.93	RBR SET 5/8" PND CONTROL
205	2706849.513	2348013.644	43.90	RBR SET 5/8" PND CONTROL

* NOT SHOWN HEREON

DOWL SURVEY CONTROL

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
401	2706732.724	2348529.572	61.48	CTRL/SETN.GPSR.SPIKE
402	2706670.806	2348842.108	70.04	CTRL/SETN.GPSR.SPIKE
403	2708461.073	2348680.698	27.79	CTRL/SETN.GPSR.SPIKE
404	2708416.722	2348292.914	31.00	CTRL/SETN.GPSR.SPIKE
405	2708148.501	2348642.257	34.06	CTRL/SETN.GPSR.SPIKE
406	2708113.256	2348676.640	32.70	CTRL/SETN.GPSR.SPIKE
407	2707731.885	2348431.801	35.92	CTRL/SETN.GPSR.SPIKE
408	2707789.375	2348175.322	31.22	CTRL/SETN.GPSR.SPIKE
409	2707366.712	2348625.948	47.33	CTRL/SETN.GPSR.SPIKE
410	2707281.723	2348919.380	48.38	CTRL/SETN.GPSR.SPIKE
731	2706728.139	2347515.637	57.27	CTRL/SETN.GPSR.60D
732	2706723.579	2347895.776	47.98	CTRL/SETN.GPSR.60D
733	2706976.358	2347660.324	25.70	CTRL/SETN.TRAV.GPSR.60D

DOWL RECOVERED MONUMENTATION

POINT #	NORTHING	EASTING	DESCRIPTION
702	2706673.81	2348449.41	CTRL/FOUN.TRAV.STONE.USS785-C3 [,]
703	2708123.65	2348645.55	CTRL/FOUN.GPSR.ALPRM.DOT-PI [,]
704	2707857.88	2348642.95	CTRL/FOUN.GPSR.5RBR [,]
707	2707730.02	2348167.26	CTRL/FOUN.GPSR.IP.2INCH [,]
721	2707685.18	2348193.55	CTRL/FOUN.TRAV.JWBEAN.1.5INCH.ALCAP [,]
722	2707686.81	2348132.31	CTRL/FOUN.TRAV.JWBEAN.2INCH.ALCAP [,]
723	2707682.41	2348443.98	CTRL/FOUN.TRAV.TPC.JWBEAN [,]
724	2707685.15	2348615.22	CTRL/FOUN.TRAV.IP [,]
725	2707315.78	2348555.53	CTRL/FOUN.TRAV.YPC.WILD [,]
726	2708213.48	2348703.32	CTRL/FOUN.TRAV.3.25.ALCAP.AK.SURV [,]
727	2708520.80	2348752.80	CTRL/FOUN.TRAV.IP [,]
728	2708520.54	2348753.20	CTRL/FOUN.TRAV.SPIN [,]
740	2706673.81	2347430.12	CTRL/FOUN.TRAV.STONE.USS785.C3 [,]

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HAINES MEDICAL CAMPUS

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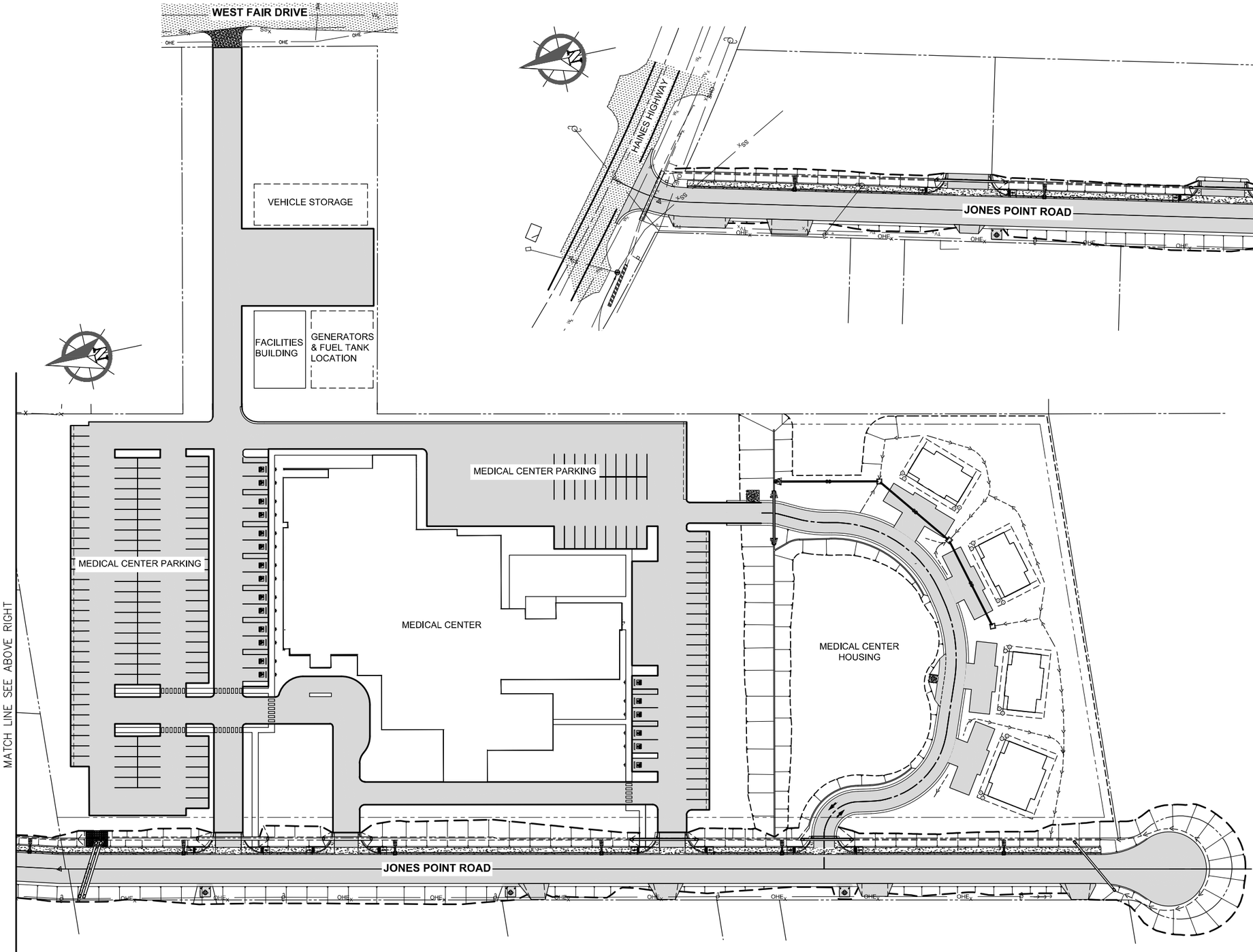
04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

PARTIAL EXISTING CONDITIONS AND SURVEY CONTROL

C1.04



OVERALL SITE PLAN

SCALE IN FEET
0 50 100 FT.

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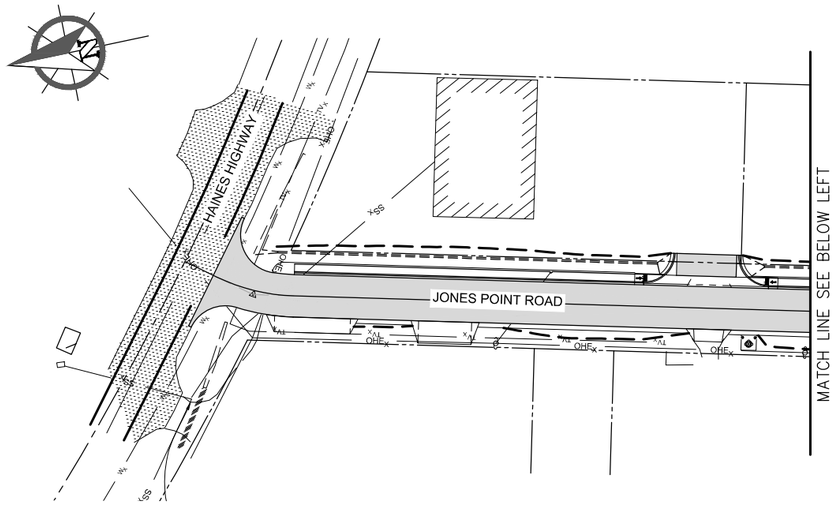
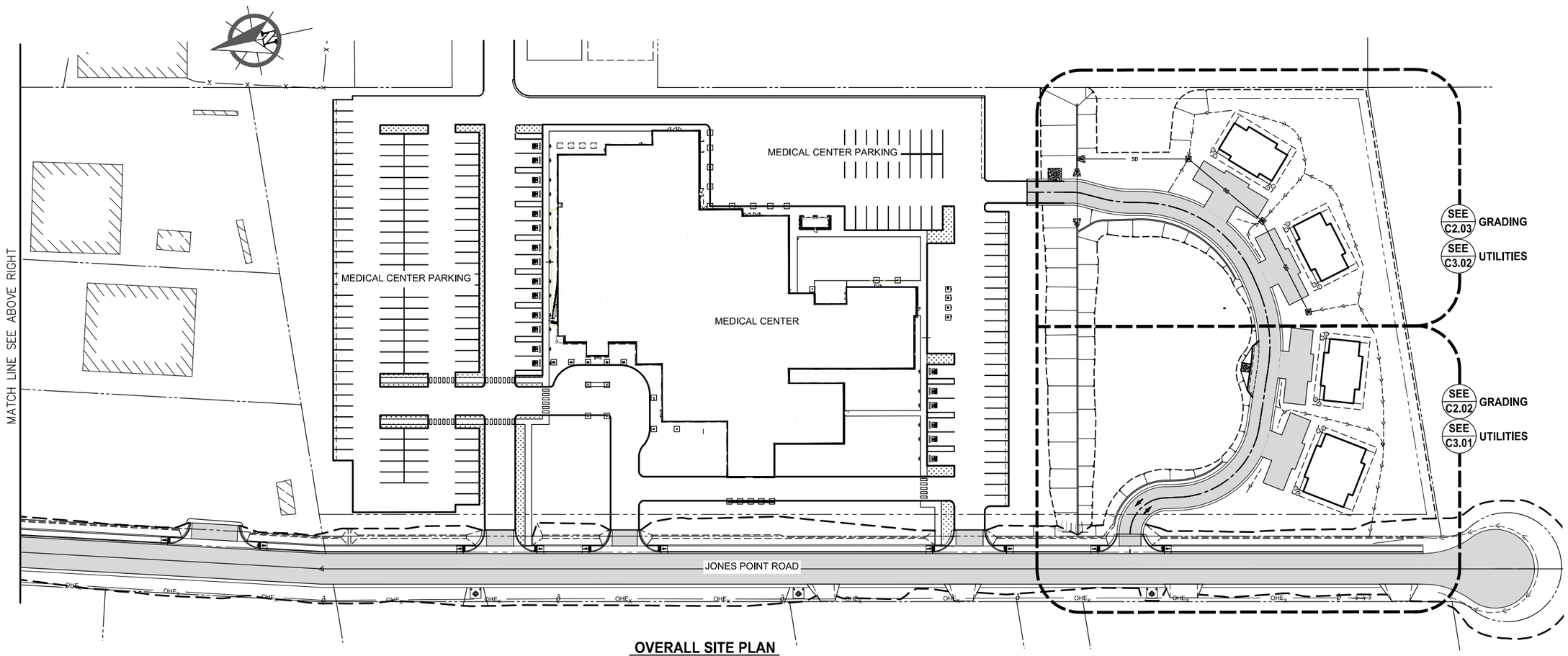
OVERALL SITE PLAN

C1.05





OVERALL SITE PLAN

SCALE IN FEET
0 50 100 FT.

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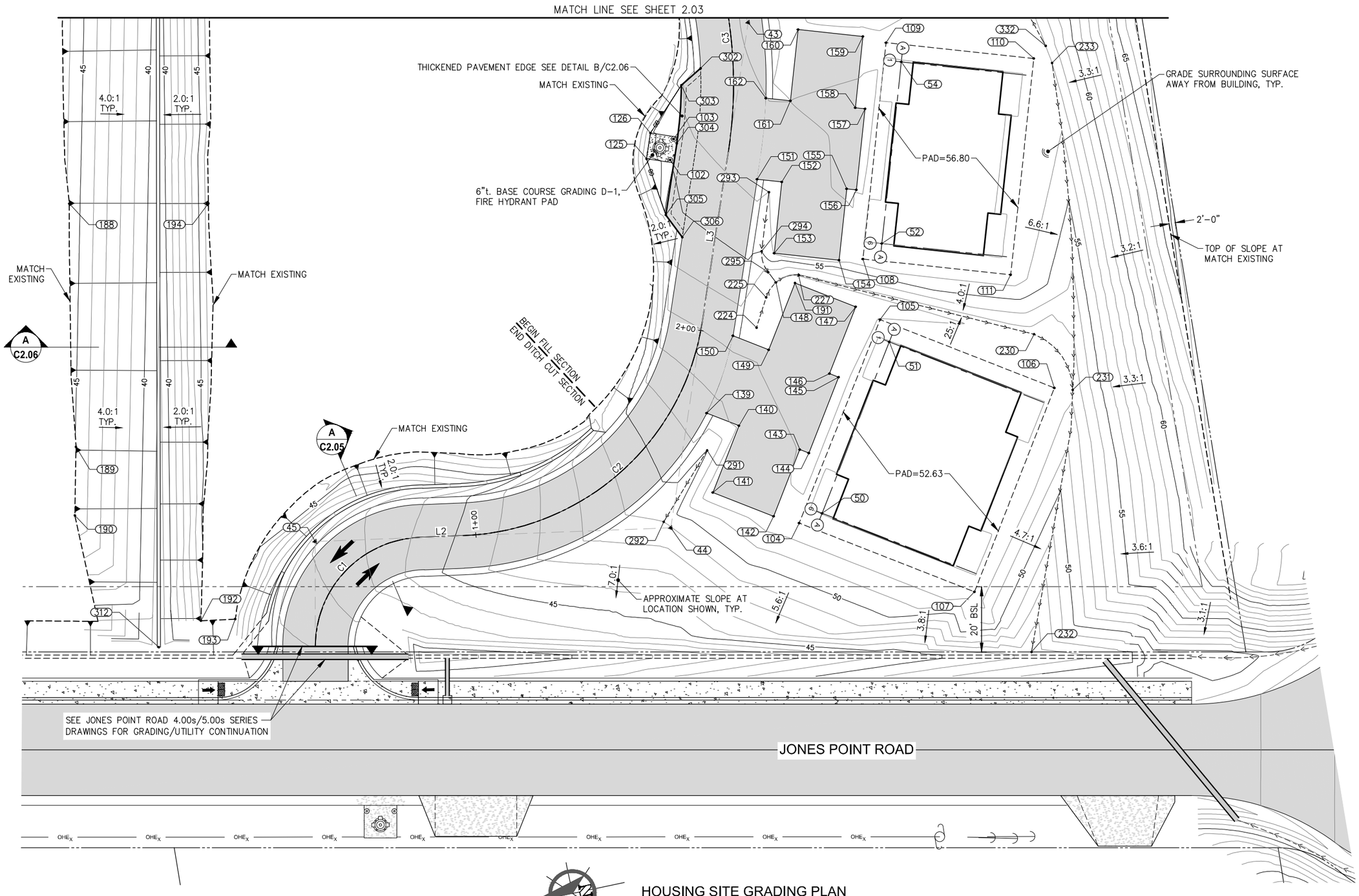
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

OVERALL SITE PLAN AND SHEET KEY MAP

C2.01



HOUSING SITE GRADING PLAN

SCALE IN FEET

0 15 30 FT.

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DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
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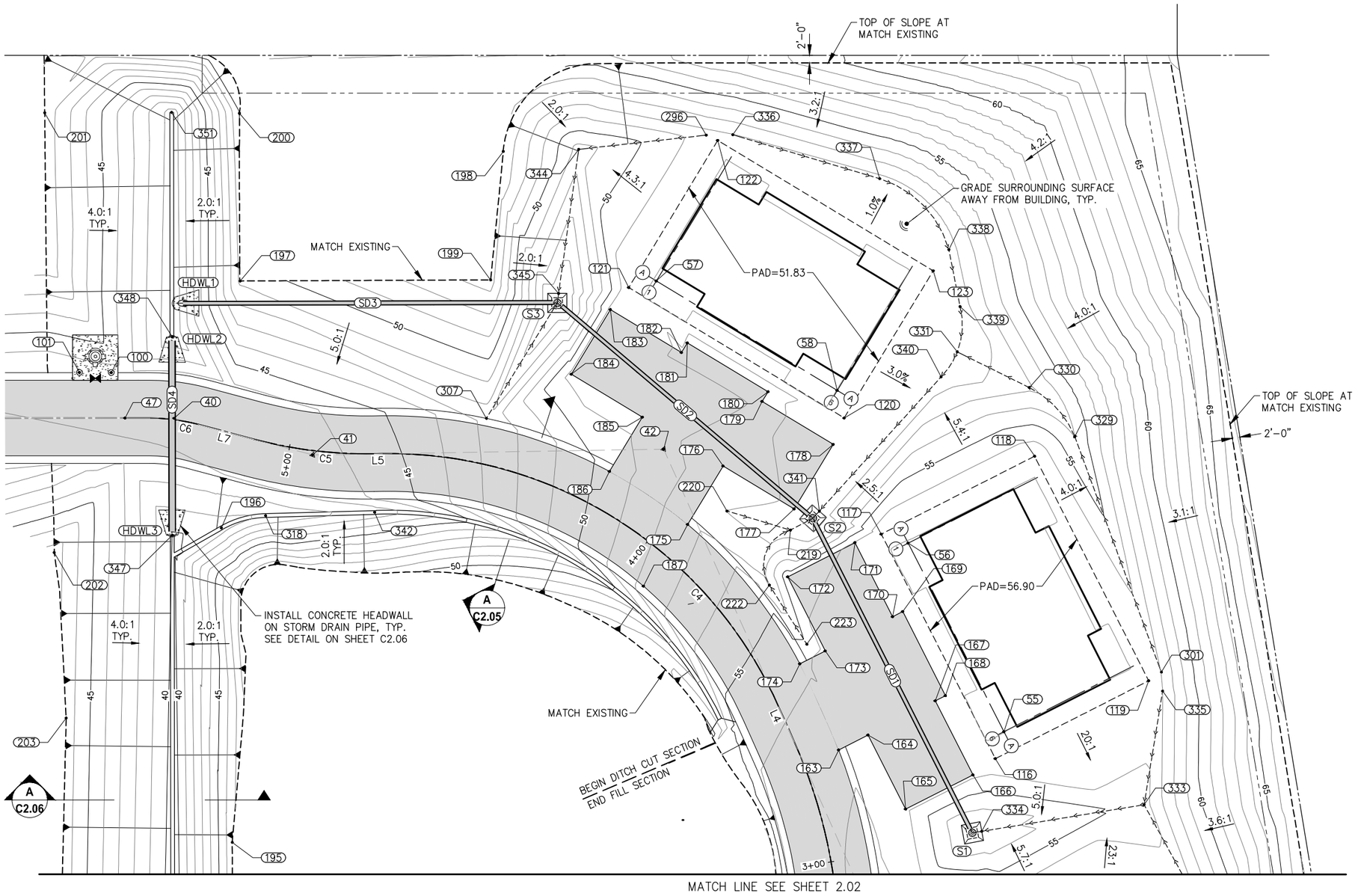
PARTIAL HOUSING SITE PLAN WITH GRADING

C2.02



HOUSING SITE GRADING PLAN

SCALE IN FEET

0 15 30 FT.

STORM DRAIN PIPE						
PIPE	TYPE	LENGTH	FROM	INVERT	TO	INVERT
SD1	12" CPP	93.40'	S1	50.50	S2	48.50
SD2	12" CPP	88.43'	S2	48.50	S3	42.50
SD3	12" CPP	100.58'	S3	42.50	HDWL1	40.23
SD4	18" CPP	50.33'	HDWL2	40.12	HDWL3	39.87

STORM DRAIN STRUCTURES				
STRUCTURE	NORTHING	EASTING	RIM ELEV.	TYPE
S1	2706760.65	2348255.06	53.00	AREA DRAIN
S2	2706788.88	2348344.09	50.75	AREA DRAIN
S3	2706846.25	2348411.40	45.00	AREA DRAIN
HDWL1	2706945.54	2348427.44	–	HDWL @ PIPE END
HDWL2	2706948.69	2348417.81	–	HDWL @ PIPE END
HDWL3	2706956.76	2348368.13	–	HDWL @ PIPE END

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Phone: 907-586-2093
AK. LIC# AECC250

04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM

HAINES WORKFORCE HOUSING

STATE OF ALASKA 49TH
Sean P. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

PARTIAL HOUSING SITE PLAN WITH GRADING

C2.03

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
40	2706951.41	2348397.60	—	ROADWAY PI
41	2706916.79	2348382.07	—	ROADWAY PI
42	2706824.84	2348368.55	—	ROADWAY PI
43	2706793.09	2348247.85	—	ROADWAY PI
44	2706841.53	2348098.87	—	ROADWAY PI
45	2706949.73	2348112.34	—	ROADWAY PI
47	2706964.25	2348399.75	—	ROADWAY PC
50	2706795.08	2348095.76	—	GRIDLINE INT A–6
51	2706766.25	2348144.26	—	GRIDLINE INT A–1
52	2706763.62	2348174.38	—	GRIDLINE INT A–6
54	2706748.75	2348228.35	—	GRIDLINE INT A–1
55	2706748.04	2348280.19	—	GRIDLINE INT A–6
56	2706765.00	2348333.54	—	GRIDLINE INT A–1
57	2706819.56	2348412.80	—	GRIDLINE INT A–1
58	2706776.98	2348376.46	—	GRIDLINE INT A–6
100	2706965.91	2348412.20	—	HYDRANT POST
101	2706974.20	2348413.60	—	HYDRANT POST
102	2706823.48	2348210.14	—	HYDRANT POST
103	2706821.40	2348216.29	—	HYDRANT POST
104	2706802.48	2348093.95	52.63	PAD FG <PT
105	2706767.92	2348151.45	52.63	PAD FG <PT
106	2706718.61	2348122.16	52.63	PAD FG <PT
107	2706752.89	2348064.47	52.63	PAD FG <PT
108	2706770.12	2348170.64	56.80	PAD FG <PT
109	2706752.41	2348234.90	56.80	PAD FG <PT
110	2706708.51	2348222.82	56.80	PAD FG <PT
111	2706726.23	2348158.54	56.80	PAD FG <PT
116	2706751.45	2348273.51	56.90	PAD FG <PT
117	2706771.64	2348337.04	56.90	PAD FG <PT
118	2706728.22	2348350.83	56.90	PAD FG <PT
119	2706708.05	2348287.30	56.90	PAD FG <PT
120	2706776.36	2348368.97	51.83	PAD FG <PT
121	2706827.05	2348412.27	51.83	PAD FG <PT
122	2706797.49	2348446.88	51.83	PAD FG <PT
123	2706746.79	2348403.60	51.83	PAD FG <PT
125	2706830.58	2348211.68	54.89	FG <PT PAD
126	2706828.11	2348219.29	54.88	FG <PT PAD
139	2706824.96	2348131.76	51.62	EP <PT FG
140	2706815.86	2348126.37	52.17	EP <PT FG
141	2706827.06	2348107.47	52.74	EP <PT FG
142	2706809.87	2348097.27	52.90	EP <PT FG
143	2706798.64	2348116.12	53.05	EP <PT FG
144	2706796.08	2348114.63	53.10	EP <PT FG
145	2706783.31	2348136.11	53.30	EP <PT FG
146	2706785.89	2348137.64	53.24	EP <PT FG
147	2706774.67	2348156.54	53.90	EP <PT FG
148	2706797.57	2348167.87	53.00	SWALE FL, FG, INT
149	2706803.09	2348147.86	53.33	EP <PT FG

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
150	2706813.18	2348153.86	53.29	EP <PT FG
151	2706798.14	2348200.00	56.27	EP <PT FG
152	2706790.81	2348197.97	56.64	EP <PT FG
153	2706796.65	2348176.78	56.40	EP <PT FG
154	2706777.39	2348171.47	56.90	EP <PT FG
155	2706771.55	2348192.66	57.11	EP <PT FG
156	2706768.66	2348191.86	57.18	EP <PT FG
157	2706762.02	2348215.94	57.29	EP <PT FG
158	2706764.91	2348216.74	57.21	EP <PT FG
159	2706759.07	2348237.93	56.69	EP <PT FG
160	2706778.33	2348243.24	56.69	EP <PT FG
161	2706784.17	2348222.05	57.00	EP <PT FG
162	2706791.47	2348224.05	56.99	EP <PT FG
163	2706792.00	2348282.50	56.72	EP <PT FG
164	2706783.70	2348285.14	56.42	EP <PT FG
165	2706777.04	2348264.19	56.20	EP <PT FG
166	2706757.99	2348270.24	56.20	EP <PT FG
167	2706764.65	2348291.19	56.70	EP <PT FG
168	2706761.79	2348292.10	56.76	EP <PT FG
169	2706769.36	2348315.91	56.76	EP <PT FG
170	2706772.22	2348315.00	56.70	EP <PT FG
171	2706778.87	2348335.95	56.09	EP <PT FG
172	2706797.92	2348329.89	55.58	EP <PT FG
173	2706791.26	2348308.94	56.30	EP <PT FG
174	2706798.46	2348306.66	55.76	EP <PT FG
175	2706821.78	2348347.87	52.68	EP <PT FG
176	2706810.05	2348361.62	52.75	EP <PT FG
177	2706793.33	2348347.35	51.80	EP <PT FG
178	2706780.35	2348362.55	51.80	EP <PT FG
179	2706797.07	2348376.82	52.10	EP <PT FG
180	2706795.13	2348379.10	52.18	EP <PT FG
181	2706814.13	2348395.31	52.17	EP <PT FG
182	2706816.07	2348393.03	52.10	EP <PT FG
183	2706832.79	2348407.31	51.28	EP <PT FG
184	2706845.77	2348392.11	51.28	EP <PT FG
185	2706829.05	2348377.83	51.30	EP <PT FG
186	2706839.94	2348365.07	50.43	EP <PT FG
187	2706835.98	2348333.65	52.22	EP POC FG
188	2707007.33	2348226.72	45.80	FG MATCH EXISTING
189	2707017.38	2348152.82	44.92	FG MATCH EXISTING
190	2707021.10	2348132.14	44.92	FG MATCH EXISTING
191	2706791.85	2348166.74	53.90	EP <PT FG
192	2706988.17	2348094.06	44.04	FG MATCH EXISTING
193	2706977.75	2348092.87	44.47	FG MATCH EXISTING
194	2706965.25	2348219.87	46.50	FG MATCH EXISTING
195	2706954.41	2348284.35	46.71	FG MATCH EXISTING
196	2706943.78	2348366.91	40.58	FG, PT, CL DITCH
197	2706928.30	2348430.62	49.20	FG MATCH EXISTING

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
198	2706854.01	2348453.19	53.89	FG MATCH EXISTING
199	2706862.82	2348420.19	53.50	FG MATCH EXISTING
200	2706921.32	2348474.47	50.06	FG MATCH EXISTING
201	2706972.16	2348482.92	48.75	FG MATCH EXISTING
202	2706988.50	2348367.65	47.53	FG MATCH EXISTING
203	2706992.47	2348323.94	46.53	FG MATCH EXISTING
219	2706795.19	2348342.00	51.33	SWALE FL, FG
220	2706810.97	2348349.69	52.00	SWALE FL, FG
222	2706803.07	2348328.51	52.96	SWALE FL, FG
223	2706795.80	2348311.47	55.20	SWALE FL, FG
224	2706805.66	2348155.14	53.10	SWALE FL, FG
225	2706801.28	2348163.82	53.03	SWALE FL, FG
227	2706790.34	2348168.98	52.95	SWALE FL, FG
230	2706722.10	2348139.40	52.43	SWALE FL, FG
231	2706713.17	2348120.65	52.27	SWALE FL, FG
232	2706738.63	2348043.44	46.30	SWALE FL, FG
233	2706703.22	2348220.53	58.00	SWALE FL, FG
291	2706826.70	2348120.47	50.01	SWALE FL, FG
292	2706843.37	2348101.04	49.00	SWALE FL, FG
293	2706795.23	2348195.50	56.01	SWALE FL, FG
294	2706800.39	2348177.97	55.00	SWALE FL, FG
295	2706799.39	2348171.30	53.67	SWALE FL, FG
296	2706800.29	2348448.76	51.52	SWALE FL, FG
301	2706704.36	2348289.02	57.05	SWALE FL, FG
302	2706809.75	2348236.33	56.53	EP FG, <PT
303	2706816.42	2348232.18	55.92	EP FG, <PT
304	2706820.67	2348214.81	55.74	EP FG, PC
305	2706827.52	2348193.73	54.47	EP FG, <PT
306	2706823.67	2348186.17	54.60	EP FG, <PT
307	2706869.83	2348384.19	47.12	FG GB FL
312	2707002.24	2348088.14	38.41	FG CL SWALE
318	2706931.70	2348368.26	41.18	FG, PC, CL DITCH
329	2706716.91	2348354.22	54.00	SWALE FL, FG
330	2706726.70	2348368.99	52.81	SWALE FL, FG
331	2706743.98	2348381.39	51.34	SWALE FL, FG
332	2706704.30	2348226.02	57.21	SWALE FL, FG
333	2706714.56	2348255.11	55.55	SWALE FL, FG
334	2706758.13	2348255.12	53.25	EC @ SWALE FL
335	2706704.86	2348284.01	57.00	SWALE FL, FG
336	2706793.34	2348447.71	51.94	SWALE FL, FG
337	2706756.84	2348429.97	51.69	SWALE FL, FG
338	2706741.80	2348408.46	51.52	SWALE FL, FG
339	2706741.32	2348393.12	51.42	SWALE FL, FG
340	2706749.30	2348375.54	51.29	SWALE FL, FG
341	2706786.84	2348345.70	51.00	EC @ SWALE FL
342	2706903.08	2348364.46	42.50	FG, PT, CL DITCH
344	2706834.22	2348450.50	48.58	SWALE FL, FG
345	2706845.65	2348413.73	45.25	EC @ SWALE FL

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
347	2706956.93	2348367.13	39.87	FG CL SWALE
348	2706948.43	2348418.90	40.12	FG CL SWALE
351	2706938.99	2348477.58	40.55	FG CL SWALE END

TABLE ABBREVIATIONS:

BCG=	BASE COURSE GRADING
CL=	CENTERLINE
EC=	EDGE OF CONCRETE
EP=	EDGE OF PAVEMENT
FG=	FINISHED GRADE
FL=	FLOWLINE
INT=	INTERSECTION
GB=	GRADE BREAK
ME=	MATCH EXISTING
PI=	POINT OF INTERSECTION
POC=	POINT ON CURVE
PT=	POINT OF TANGENCY
<PT=	ANGLE POINT

LINE TABLE - ROADWAY CENTERLINE

LINE	LENGTH	DIRECTION	START	END
L1	31.72	S80° 46' 09.05"E	STA: 0+00.00 N: 2706959.98 E: 2348049.33	STA: 0+31.72 N: 2706954.89 E: 2348080.64
L2	13.20	S7° 05' 56.90"W	STA: 0+82.85 N: 2706917.86 E: 2348108.37	STA: 0+96.05 N: 2706904.76 E: 2348106.74
L3	52.94	S71° 59' 15.96"E	STA: 2+02.58 N: 2706821.83 E: 2348159.46	STA: 2+55.52 N: 2706805.46 E: 2348209.81
L4	10.31	N75° 15' 50.30"E	STA: 3+33.33 N: 2706803.26 E: 2348286.53	STA: 3+43.64 N: 2706805.89 E: 2348296.50
L5	2.34	N8° 22' 01.29"E	STA: 4+75.31 N: 2706898.54 E: 2348379.39	STA: 4+77.65 N: 2706900.86 E: 2348379.73
L6	97.22	N9° 24' 11.56"E	STA: 5+37.89 N: 2706957.79 E: 2348398.65	STA: 6+35.11 N: 2707053.71 E: 2348414.54
L7	15.37	N24° 08' 46.23"E	STA: 5+09.65 N: 2706931.48 E: 2348388.66	STA: 5+25.03 N: 2706945.51 E: 2348394.95

CURVE TABLE - ROADWAY CENTERLINE

CURVE	RADIUS	LENGTH	START	END
C1	33.34	51.13	STA: 0+31.72 N: 2706954.89 E: 2348080.64	STA: 0+82.85 N: 2706917.86 E: 2348108.37
C2	77.17	106.52	STA: 0+96.05 N: 2706904.76 E: 2348106.74	STA: 2+02.58 N: 2706821.83 E: 2348159.46
C3	136.13	77.81	STA: 2+55.52 N: 2706805.46 E: 2348209.81	STA: 3+33.33 N: 2706803.26 E: 2348286.53
C4	112.77	131.67	STA: 3+43.64 N: 2706805.89 E: 2348296.50	STA: 4+75.31 N: 2706898.54 E: 2348379.39
C5	116.20	32.00	STA: 4+77.65 N: 2706900.86 E: 2348379.73	STA: 5+09.65 N: 2706931.48 E: 2348388.66
C6	50.00	12.87	STA: 5+25.03 N: 2706945.51 E: 2348394.95	STA: 5+37.89 N: 2706957.79 E: 2348398.65

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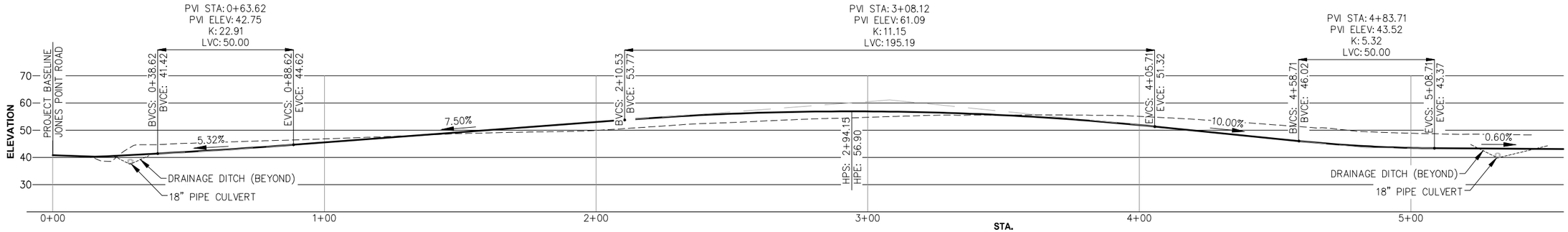
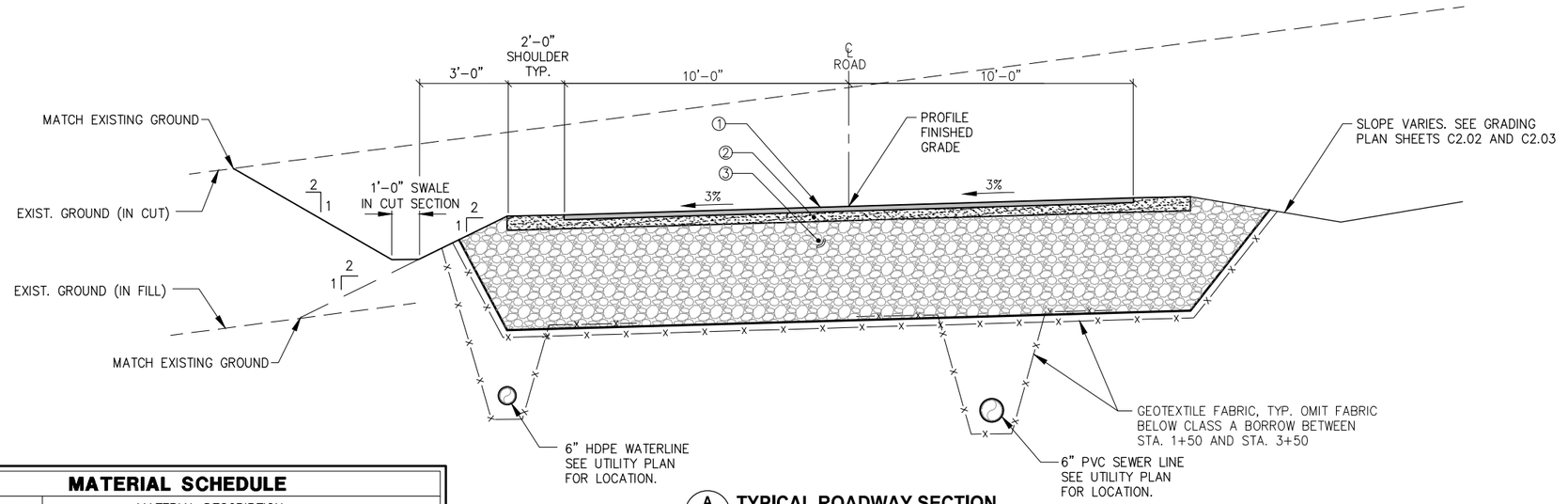
04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

POINT LAYOUT AND SUMMARY TABLES

C2.04



HOUSING DRIVE ROAD PROFILE

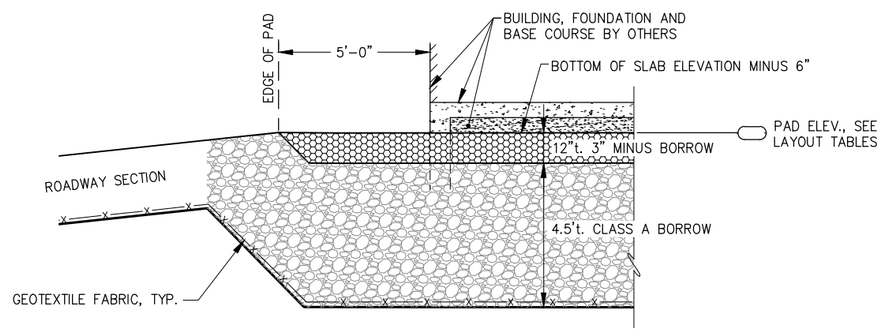


A - **TYPICAL ROADWAY SECTION**

MATERIAL SCHEDULE	
SYMBOL	MATERIAL DESCRIPTION
①	3" ACP, TYPE II, CLASS B
②	4" AGGREGATE BASE COURSE, GRADING D-1
③	CLASS A BORROW, t. PER NOTE BELOW

MATERIAL SCHEDULE NOTE, ITEM #3
1. BOP TO STA. 1+50 AND STA. 3+50 TO EOP, AS SHOWN.
2. STA. 1+50 TO STA. 3+50 REDUCE #3, CLASS A BORROW TO 12"t.

NOTES:
1. SEE PLAN VIEW FOR TYPICAL SECTION APPROXIMATE STATION RANGES.
2. INSTALL MINIMUM 4" LIFT BASE COURSE.
3. SUB-EXCAVATE ALL AREAS DEEMED UNSUITABLE AND BACKFILL WITH SUBBASE AS SHOWN. COMPACT SUBBASE IN LIFTS PRIOR TO INSTALLING BASE COURSE.
4. SEE UTILITY DETAILS FOR PIPE TRENCH DETAILS.
5. DO NOT DISTURB EXISTING FENCES, UTILITIES, CONCRETE DRIVEWAYS, OR HARDSCAPES.



B - **TYPICAL BUILDING SECTION**

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04.08.2026
PROJ# | 242078
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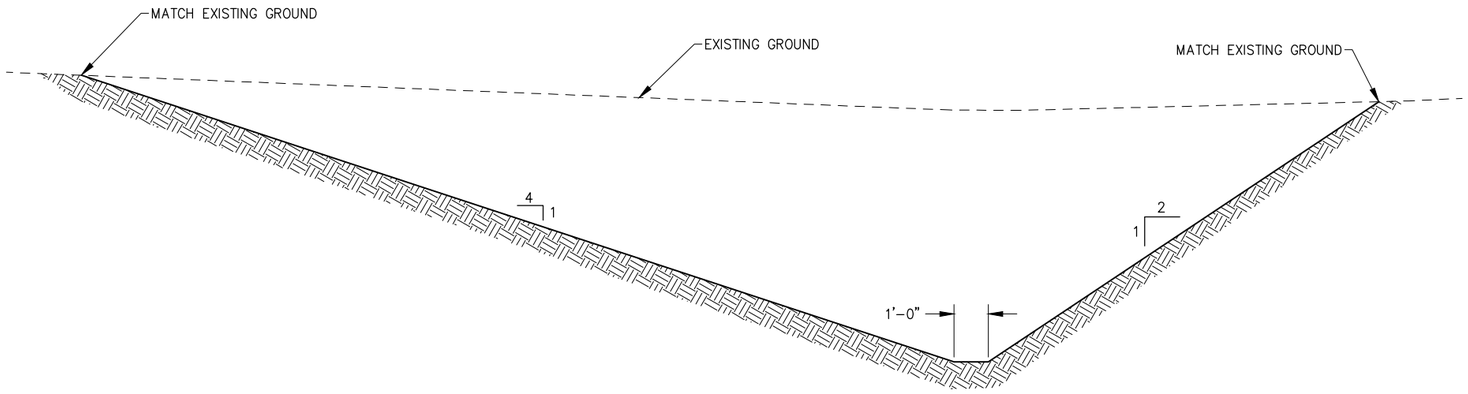
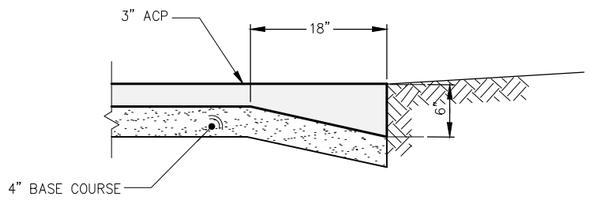
REVIEWED BY | SSJOSTEDT
REVISIONS:

ROADWAY PROFILE AND SECTION

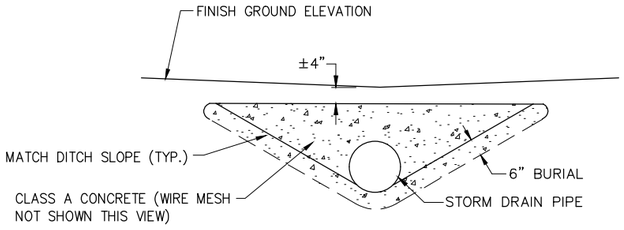
C2.05

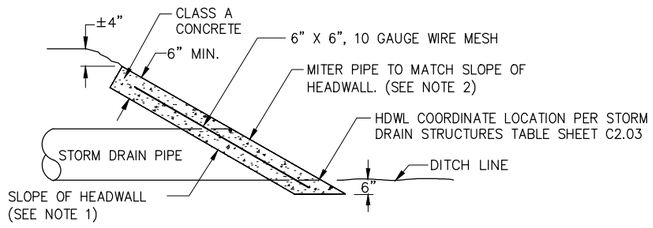


A - **DITCH BETWEEN HOUSING AND MEDICAL CENTER SECTION**



B - **THICKENED ASPHALT PAVEMENT EDGE**





NOTES:

1. SLOPE OF HEADWALL SHALL BE 2:1 OR FLATTER AND SHALL BE DETERMINED BY THE ENGINEER.
2. EMPTY WATER FROM CORRUGATIONS ON MITERED ENDS AND THEN COMPLETELY FILL VOIDS WITH CONCRETE GROUT.

C - **SLOPED CULVERT HEADWALL**

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PROJ# | 242078
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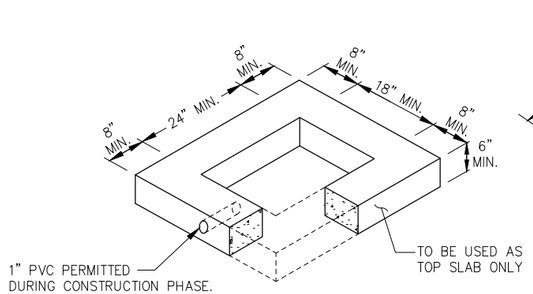
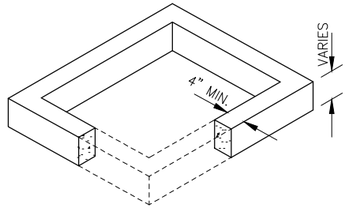
REVIEWED BY | SSJOSTEDT
REVISIONS:

SITE DETAILS

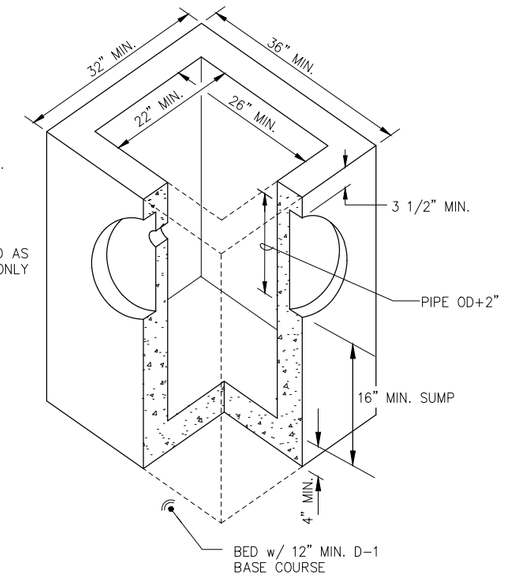
C2.06



TOP SLAB



ADJUSTING RING

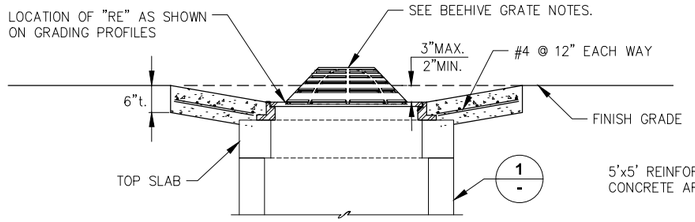


CATCH BASIN

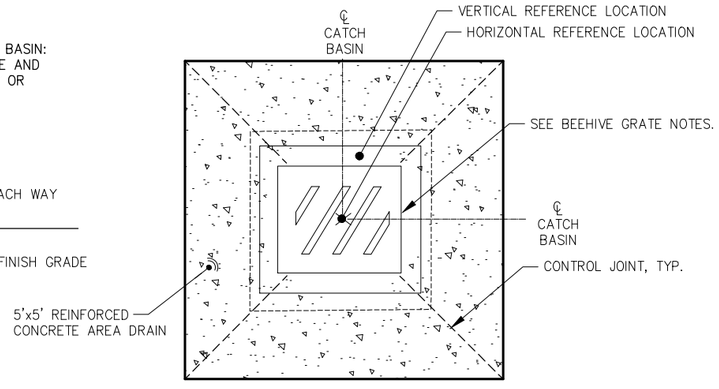
1 - CATCH BASIN DETAIL (AT AREA DRAIN)

BEEHIVE GRATE NOTES:

1. NEW FRAME AND GRATE ON NEW CATCH BASIN: EAST JORDAN IRON WORKS 7770Z FRAME AND 7750 TYPE O BEEHIVE GRATE ASSEMBLY OR APPROVED EQUAL.



AREA DRAIN SECTION



AREA DRAIN PLAN

2 - CONCRETE AREA DRAIN DETAILS

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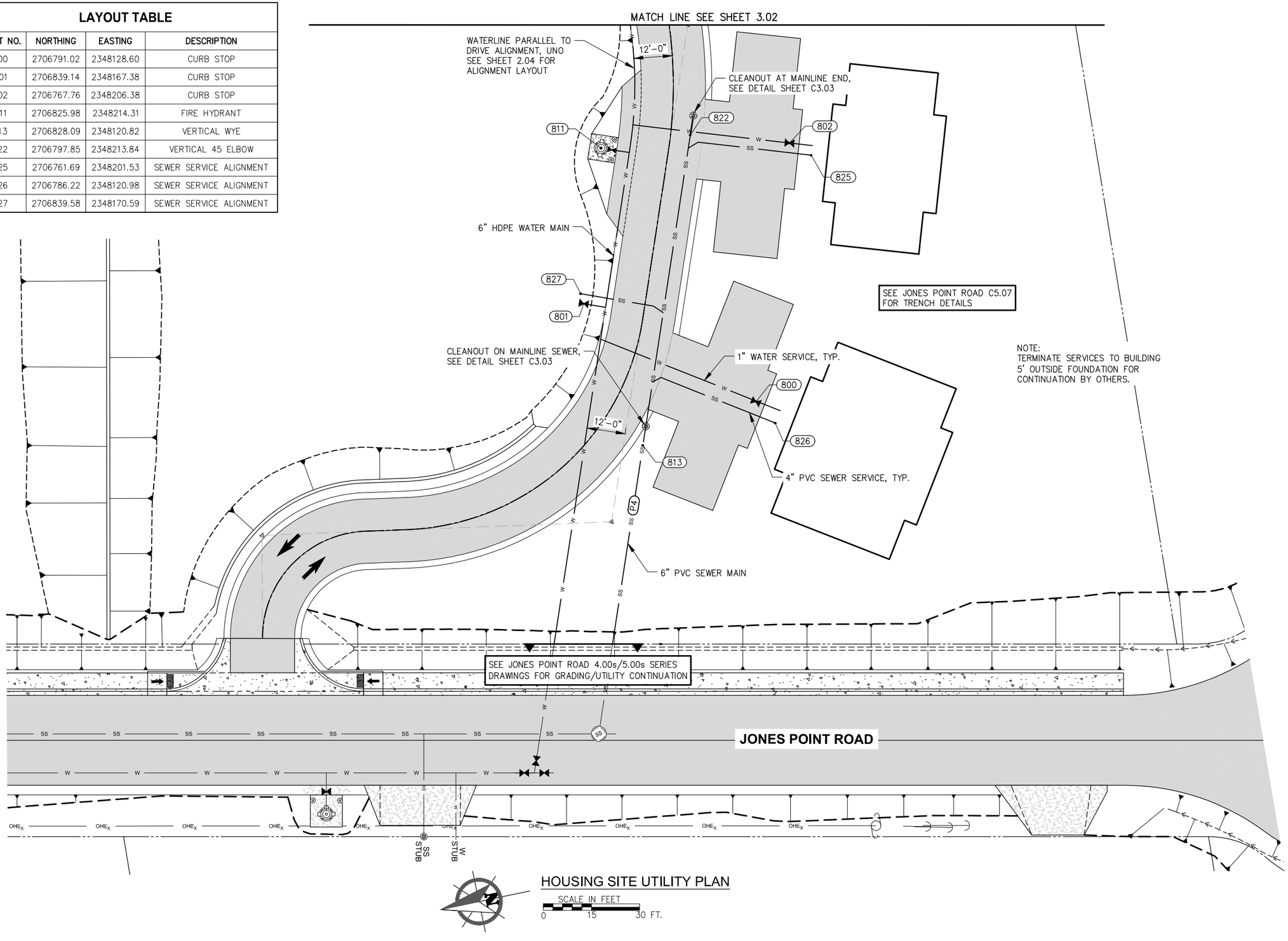
REVISIONS:

SITE DETAILS

C2.07

LAYOUT TABLE			
POINT NO.	NORTHING	EASTING	DESCRIPTION
800	2706791.02	2348128.60	CURB STOP
801	2706839.14	2348167.38	CURB STOP
802	2706767.76	2348206.38	CURB STOP
811	2706825.98	2348214.31	FIRE HYDRANT
813	2706828.09	2348120.82	VERTICAL WYE
822	2706797.85	2348213.84	VERTICAL 45 ELBOW
825	2706761.69	2348201.53	SEWER SERVICE ALIGNMENT
826	2706786.22	2348120.98	SEWER SERVICE ALIGNMENT
827	2706839.58	2348170.59	SEWER SERVICE ALIGNMENT



HOUSING SITE UTILITY PLAN

SCALE IN FEET
0 15 30 FT.

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Phone: 907-586-2093
AK. LIC# AECC250

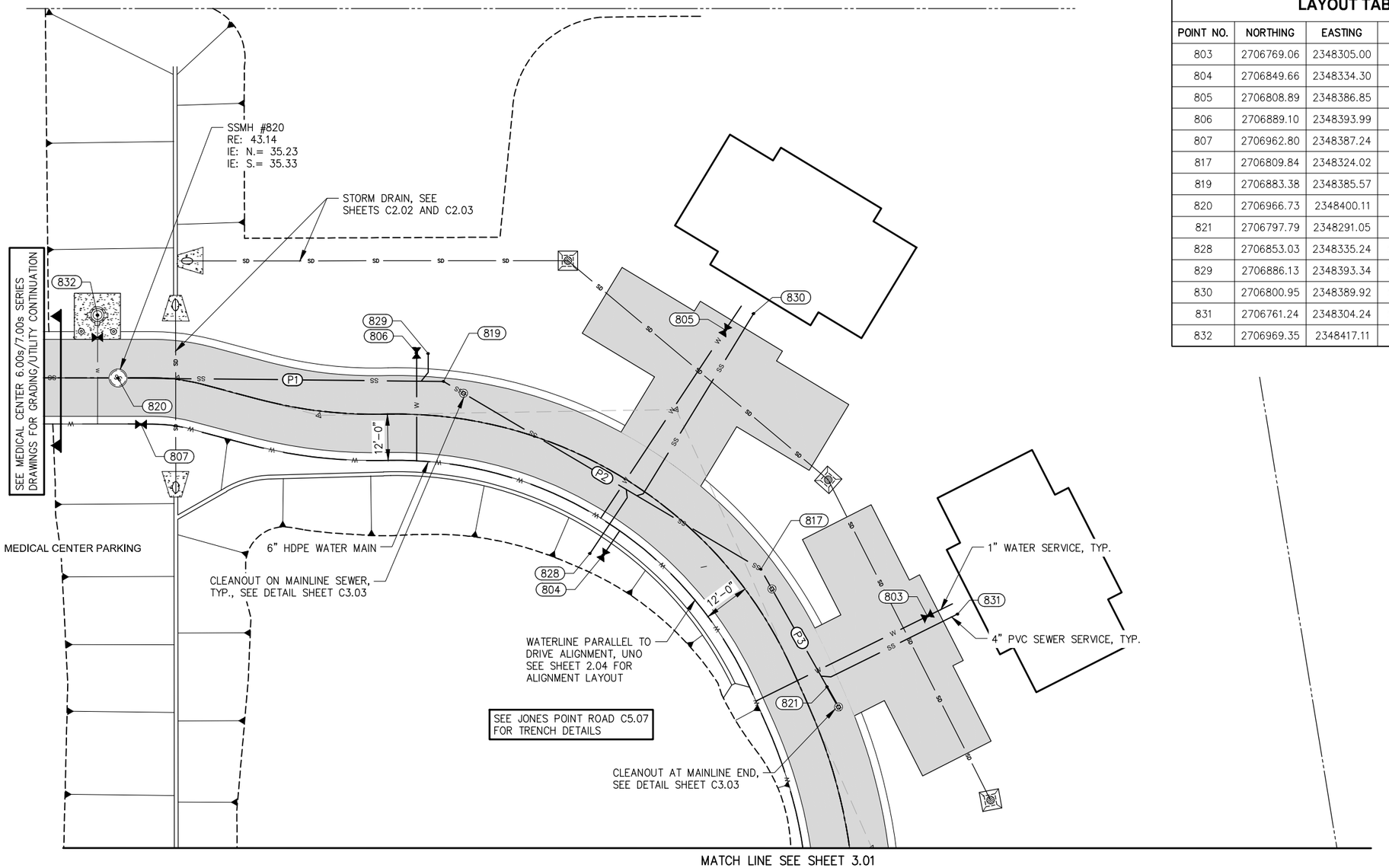
04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
HAINES WORKFORCE HOUSING

STATE OF ALASKA 49TH
Sean Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

PARTIAL HOUSING SITE UTILITY PLAN

C3.01



HOUSING SITE UTILITY PLAN

SCALE IN FEET
0 15 30 FT.

SANITARY SEWER PIPE

PIPE	TYPE	LENGTH	SLOPE	START INV.	END INV.
P1	6" PVC SEWER PIPE	84.62'	−4.87%	39.45	35.33
P2	6" PVC SEWER PIPE	95.87'	−8.92%	48.00	39.45
P3	6" PVC SEWER PIPE	35.07'	−5.10%	49.79	48.00
P4	6" PVC SEWER PIPE	160.52'	−6.65%	39.32	50.00

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	DESCRIPTION
803	2706769.06	2348305.00	CURB STOP
804	2706849.66	2348334.30	CURB STOP
805	2706808.89	2348386.85	CURB STOP
806	2706889.10	2348393.99	CURB STOP
807	2706962.80	2348387.24	WATER VALVE
817	2706809.84	2348324.02	SEWER 30 ELBOW
819	2706883.38	2348385.57	SEWER 30 ELBOW
820	2706966.73	2348400.11	CL SSMH
821	2706797.79	2348291.05	VERTICAL 45 ELBOW
828	2706853.03	2348335.24	SEWER SERVICE ALIGNMENT
829	2706886.13	2348393.34	SEWER SERVICE ALIGNMENT
830	2706800.95	2348389.92	SEWER SERVICE ALIGNMENT
831	2706761.24	2348304.24	SEWER SERVICE ALIGNMENT
832	2706969.35	2348417.11	CL FH

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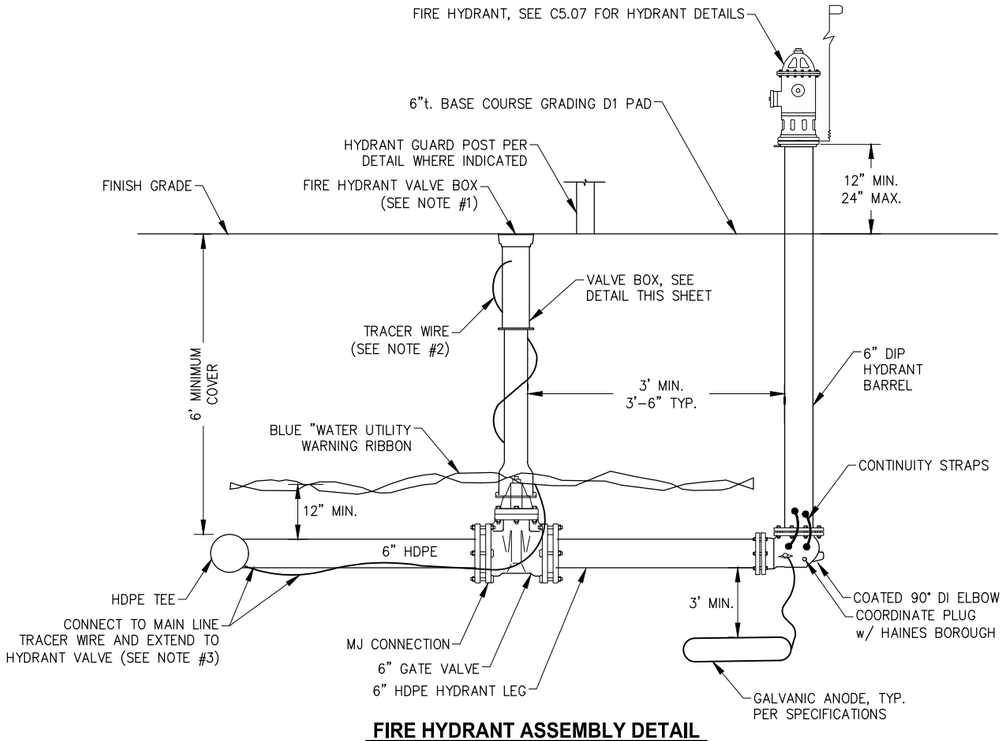
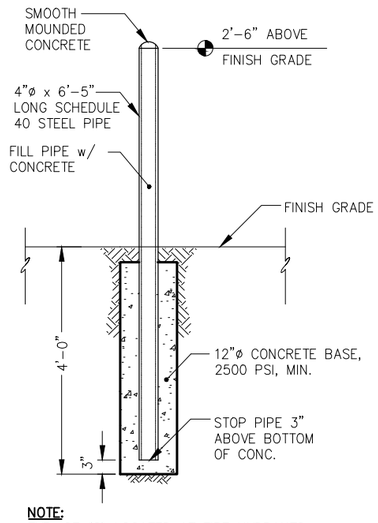
PARTIAL HOUSING SITE UTILITY PLAN

C3.02

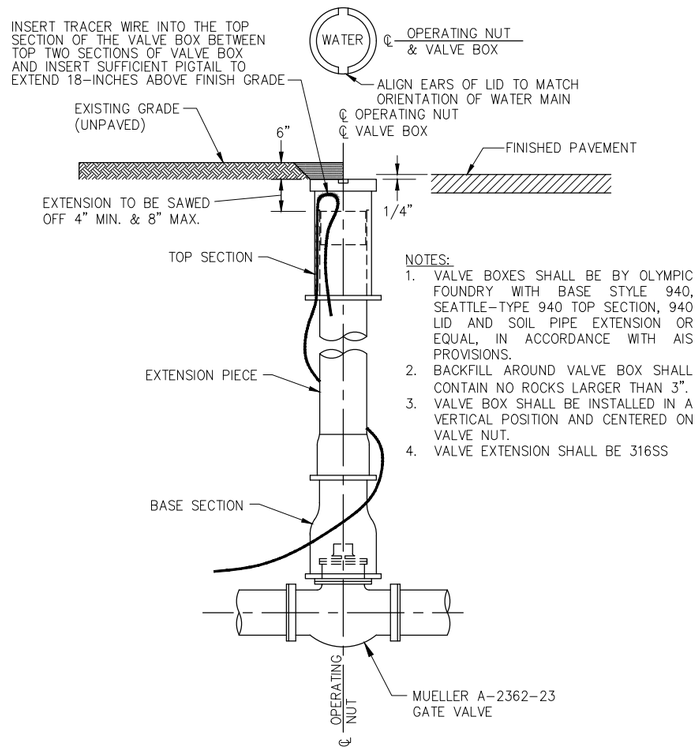


FIRE HYDRANT ASSEMBLY DETAIL



NOTE:
TYP. OF (8) LOCATED AT FIRE HYDRANTS ON JONES POINT ROAD PLANS.
TYP. OF (4) LOCATED AT FIRE HYDRANTS WITHIN HOUSING PLANS.

HYDRANT GUARD POST



NOTES:
1. VALVE BOXES SHALL BE BY OLYMPIC FOUNDRY WITH BASE STYLE 940, SEATTLE-TYPE 940 TOP SECTION, 940 LID AND SOIL PIPE EXTENSION OR EQUAL, IN ACCORDANCE WITH AIS PROVISIONS.
2. BACKFILL AROUND VALVE BOX SHALL CONTAIN NO ROCKS LARGER THAN 3".
3. VALVE BOX SHALL BE INSTALLED IN A VERTICAL POSITION AND CENTERED ON VALVE NUT.
4. VALVE EXTENSION SHALL BE 316SS

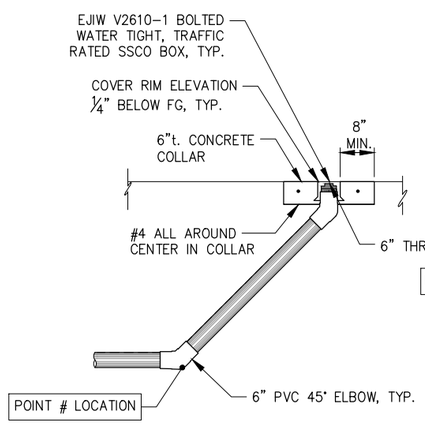
WATER VALVE DETAIL

NOTES:
1. FIRE HYDRANT VALVE BOX TO BE INSTALLED AS LOCATED ON PLAN. VALVE BOX FRAME AND COVER SHALL BE ADA COMPLIANT.
2. TRACER WIRE SHALL BE #10 AWG HIGH-STRENGTH COPPER CLAD STEEL WITH BLUE HDPE INSULATION JACKET. MAIN LINE TRACER WIRE SHALL NOT BE SPLICED AND SHALL BE CONTINUOUS BETWEEN VALVE BOXES. SERVICE AND HYDRANT LEGS SHALL USE WATERPROOF DIRECT BURY SPLICE CONNECTION LUGS. TRACER WIRE SHALL BE CONNECTED TO THE BOTTOM QUADRANT OF THE HDPE WATER PIPE. EACH END OF TRACER WIRE SHALL BE TERMINATED AT A VALVE BOX. TRACER WIRE SHALL RUN OUTSIDE THE VALVE BOX AND BE INSERTED INTO THE VALVE BOX THROUGH A 3/4"DRILLED HOLE WITHIN 9"- 12"OF THE TOP 5' OF ADDITIONAL TRACER WIRE SHALL BE NEATLY COILED WITHIN THE VALVE BOX.
3. TRACER SPLICE CONNECTIONS ARE TO BE CONSTRUCTED USING DRYCONN WATERPROOF DIRECT BURY LUGS AS MANUFACTURED BY KING INNOVATION OR APPROVED EQUAL.
4. HYDRANT BARREL AND VALVE BOX SHALL BE PLUMB.
5. GROUND COVER SHALL BE 6' MINIMUM. ADDITIONAL COVER (MORE THAN 6') MAY BE REQUIRED BY THE ENGINEER.
6. ALL HYDRANTS SHALL BE PAINTED CATERPILLAR YELLOW, AND THE NUMBER OF FEET TO THE VALVE SHALL BE PRINTED IN BLACK 1/2"BLOCK LETTERS JUST BELOW THE TOP BONNET. PORT CAPS SHALL BE COLOR CODED PER NFPA STANDARD 291 AS DIRECTED BY THE HAINES BOROUGH WATER UTILITIES DEPARTMENT
7. HYDRANT SHALL BE MUELLER CENTURION 200 OR 250 WITH INTEGRAL STORZ PUMPER CONNECTION OR APPROVED EQUAL.
8. ALL BOLTS TO HAVE THREADED ZINC CAP.
9. ALL JOINTS SHALL BE FULLY RESTRAINED.

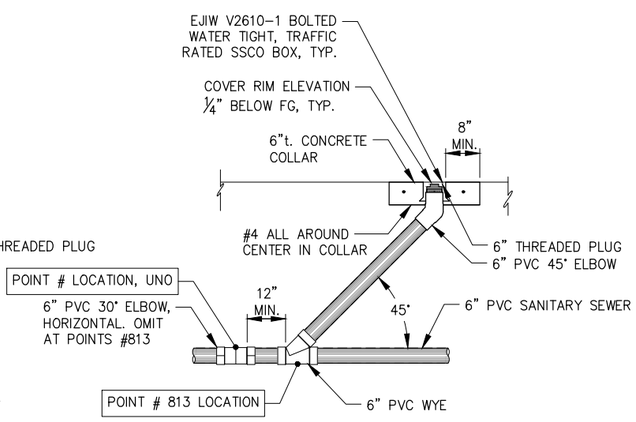
ANODES
1. ANODES SHALL BE 18-LBS. BARE WEIGHT ZINC WITH PREPACKAGED ANODE BACKFILL.
2. ACCEPTABLE ANODE MODELS ARE:
   - 2.1. MODEL NO. ZUR-18 FROM FARWEST INDUSTRIES
   - 2.2. MODEL S18 FROM MESA PRODUCTS
   - 2.3. APPROVED EQUAL.
3. INSTALL TYPE, SIZE, AND NUMBER OF ANODES SPECIFIED.
4. INSTALL 2 ANODES TO ALL CONNECTIONS TO EXISTING C.I. OR D.I. PIPE 12-INCH DIAMETER AND LARGER. INSTALL 1 ANODE TO ALL CONNECTIONS TO EXISTING C.I. OR D.I. PIPE 12-INCH DIAMETER AND SMALLER.
5. CONDUCTOR WIRE SHALL BE A MINIMUM OF 10-FEET IN LENGTH, SIZE #8 OR LARGER, AND INSULATED WITH HIGH MOLECULAR WEIGHT POLYETHYLENE.
6. PREPACKAGED ANODE SHALL BE SATURATED WITH WATER PRIOR TO BACKFILL.
7. ANODES SHALL BE PLACED IN NATIVE EARTH BACKFILL. DO NOT PLACE IN PIPE BEDDING MATERIAL.

THERMITE (EXOTHERMIC) WELDING
1. THERMITE WELD MATERIALS SHALL BE DESIGNED FOR CONNECTION OF COPPER TO C.I. AND D.I. SURFACES AND SHALL BE INSTALLED PER MANUFACTURERS INSTRUCTIONS.
2. ACCEPTABLE MANUFACTURERS OF THERMITE WELD PRODUCTS ARE:
   - 2.1. CADWELD BY ERICO PRODUCTS, INC.
   - 2.2. THERMOWELD BY CONTINENTAL INDUSTRIES, INC.
   - 2.3. APPROVED EQUAL.
3. A 2-INCH SQUARE AREA IN THE PIPE SURFACE SHALL BE GROUND CLEAN PER MANUFACTURERS RECOMMENDATIONS PRIOR TO THERMITE WELDING.
4. WIRE ENDS SHALL HAVE PROPER ADAPTER SLEEVES TO ENSURE PROPER BOND. #8 AWG SHALL HAVE ADAPTER SLEEVES SPECIFIED BY THERMITE WELD MANUFACTURER; FIELD INSTALLED SLEEVES SHALL HAVE WIRE CONDUCTOR EXTEND ¼"-INCH BEYOND END OF SLEEVE.
5. WIRE CONNECTION SHALL BE TESTED FOR INTEGRITY PRIOR TO COATING.
6. CONTINUITY STRAPS SHALL BE #2 AWG COPPER STRANDED WIRE WITH THE INSTALLATION AND SHALL BE ATTACHED TO THE PIPE BY THERMITE WELDING AND COATED AND SEALED AS DESCRIBED BELOW.
   - 6.1. COATING AND SEALINGALL TERMITE WELDS SHALL BE PROTECTED AND SEALED BY: PREFABRICATED THERMITE WELD CAPS, SIZED ACCORDING TO WIRE SIZE, MINIMUM DIMENSIONS OF 4-INCH BY 4-INCH FILLED WITH ELASTOMERIC COATING OR, HEAT SHRINK SLEEVE PIPE ENCASEMENT AFTER COATING TERMITE WELD WITH ELASTOMERIC MASTIC COATING - HEAT SHRINK SLEEVE SHALL BE CANUSA AQUA SEAL OR APPROVED EQUAL.
   - 6.2. ALL PIPE SURFACE COATING DAMAGED BEYOND THE WELD CAPS OR HEAT SHRINK SHALL BE COATED WITH PROTAL 7125 FROM DENSO NORTH AMERICA OR APPROVED EQUAL.

SEE JONES POINT ROAD C5.07 FOR TRENCH DETAILS AND JONES POINT ROAD C5.08 FOR SANITARY MANHOLE DETAILS



CLEANOUT AT MAINLINE END DETAIL



CLEANOUT ON MAINLINE SEWER DETAIL

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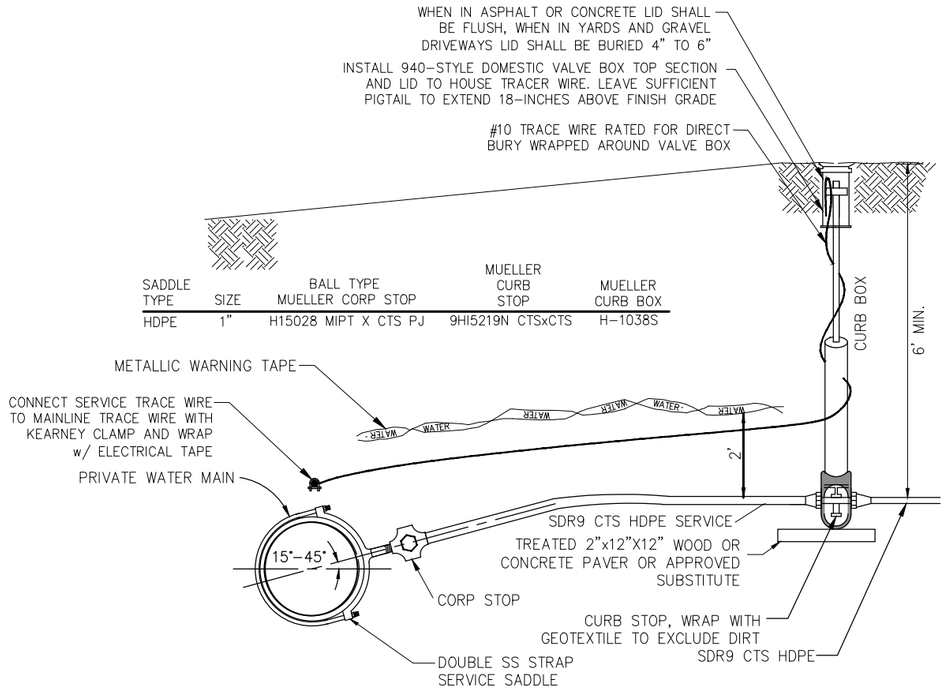
04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
HAINES WORKFORCE HOUSING

STATE OF ALASKA 49TH
Seaver Sjostedt CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

UTILITY DETAILS

C3.03

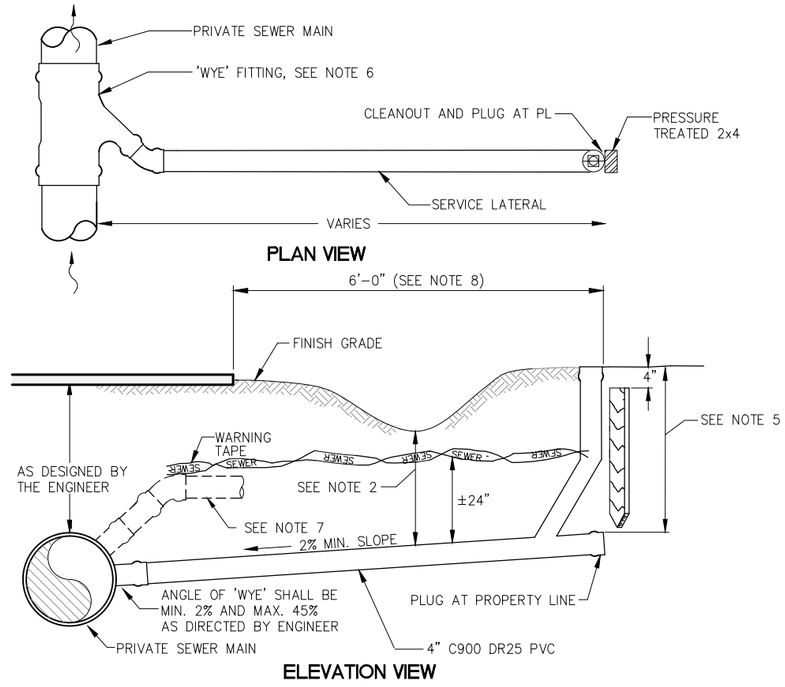


SADDLE TYPE	SIZE	BALL TYPE MUELLER CORP STOP	MUELLER CURB STOP	MUELLER CURB BOX
HDPE	1"	H15028 MIPT X CTS PJ	9HI5219N CTSxCTS	H-1038S

NOTES:

1. ROD TO BE ATTACHED TO CURB STOP WITH BRASS OR STAINLESS COTTER PIN.
2. SERVICE SHALL MAINTAIN 6' MINIMUM BURY UNLESS PROPERLY INSULATED AS DIRECTED BY THE ENGINEER.
3. WHERE SERVICE STUB IS REQUIRED PIPE SHALL BE CAPPED, 4' BEYOND CURB BOX, WITH HDPE FUSED CAP MARKED WITH LOCATOR BALL AND POST w/ USABLUEBOOK.COM WATER BALL=75025 BLUE & BLUE POST).
4. CURB STOP VALVE EXTENSIONS SHALL BE STAINLESS STEEL.

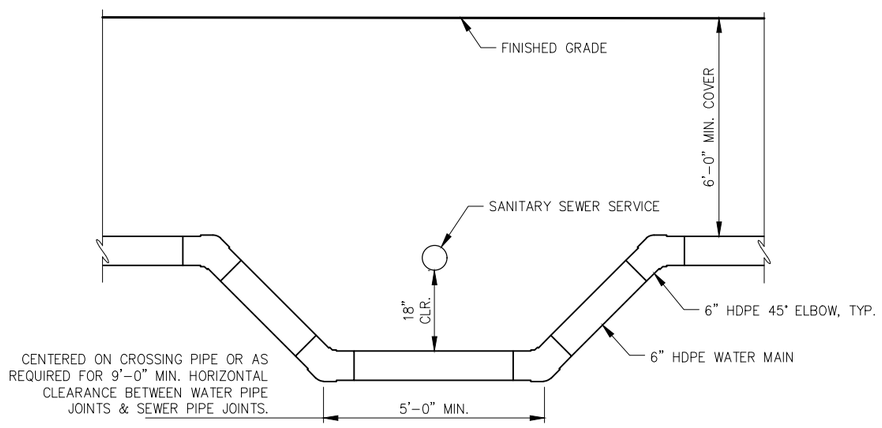
TYPICAL WATER SERVICE



NOTES:

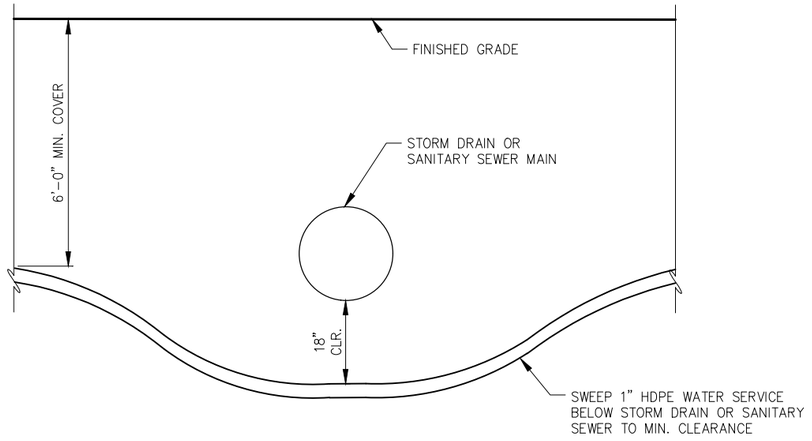
1. MARK SERVICE WITH PRESSURE TREATED 2x4 POST TO DEPTH OF 4" BELOW FINISHED GROUND LEVEL.
2. MINIMUM CLEARANCE OF 18" REQUIRED BENEATH DITCH LINE. PIPE WITH LESS THAN 3' OF COVER SHALL BE COVERED WITH 8'x4'x4" OF FOAM INSULATION CENTERED ON PIPE.
3. DISTANCE FROM WYE TO CENTER LID OF NEAREST UPSTREAM OR DOWNSTREAM MANHOLE AND THREE MEASURED DISTANCES FROM END OF SERVICE PIPE TO PERMANENT OBJECTS SHALL BE NOTED ON AS-BUILT PLANS.
4. SERVICE LATERAL SHALL BE PLUGGED IN A MANNER THAT WILL WITHSTAND TEST PRESSURES.
5. LATERAL DEPTH AT PIPE END SHALL ACCOMMODATE EXISTING BUILDING SEWER OR FUTURE BUILDING SITE(S).
6. WYE FITTING ON MAIN SHALL BE USED FOR NEW CONSTRUCTION. MARKER BALLS SHALL BE USABLUEBOOK.COM EMS MARKER BALL 31392.
7. WHERE CONFLICTS WITH OTHER UTILITIES OR OBSTRUCTIONS WOULD OTHERWISE EXIST, ORIENT WYE TO ALLOW FOR SERVICE PIPE TO CLEAR OBSTRUCTION PER ENGINEER DIRECTION. MAINTAIN SLOPE AND DEPTH OF BURY REQUIREMENTS AS SPECIFIED. ADDITIONAL PIPE AND FITTINGS SHALL BE INCIDENTAL TO SEWER SERVICE INSTALLATION.
8. WHERE SEWER SERVICE EXTENDS TO BUILDING SHOWN ON PLANS, EXTEND SERVICE WITHOUT CLEANOUT TO 5' FROM BUILDING PAD.

TYPICAL SEWER SERVICE



WATERLINE VERTICAL OFFSET AT SEWER SERVICE

NOT TO SCALE



WATER SERVICE VERTICAL OFFSET AT STORM DRAIN / SEWER MAIN

NOT TO SCALE

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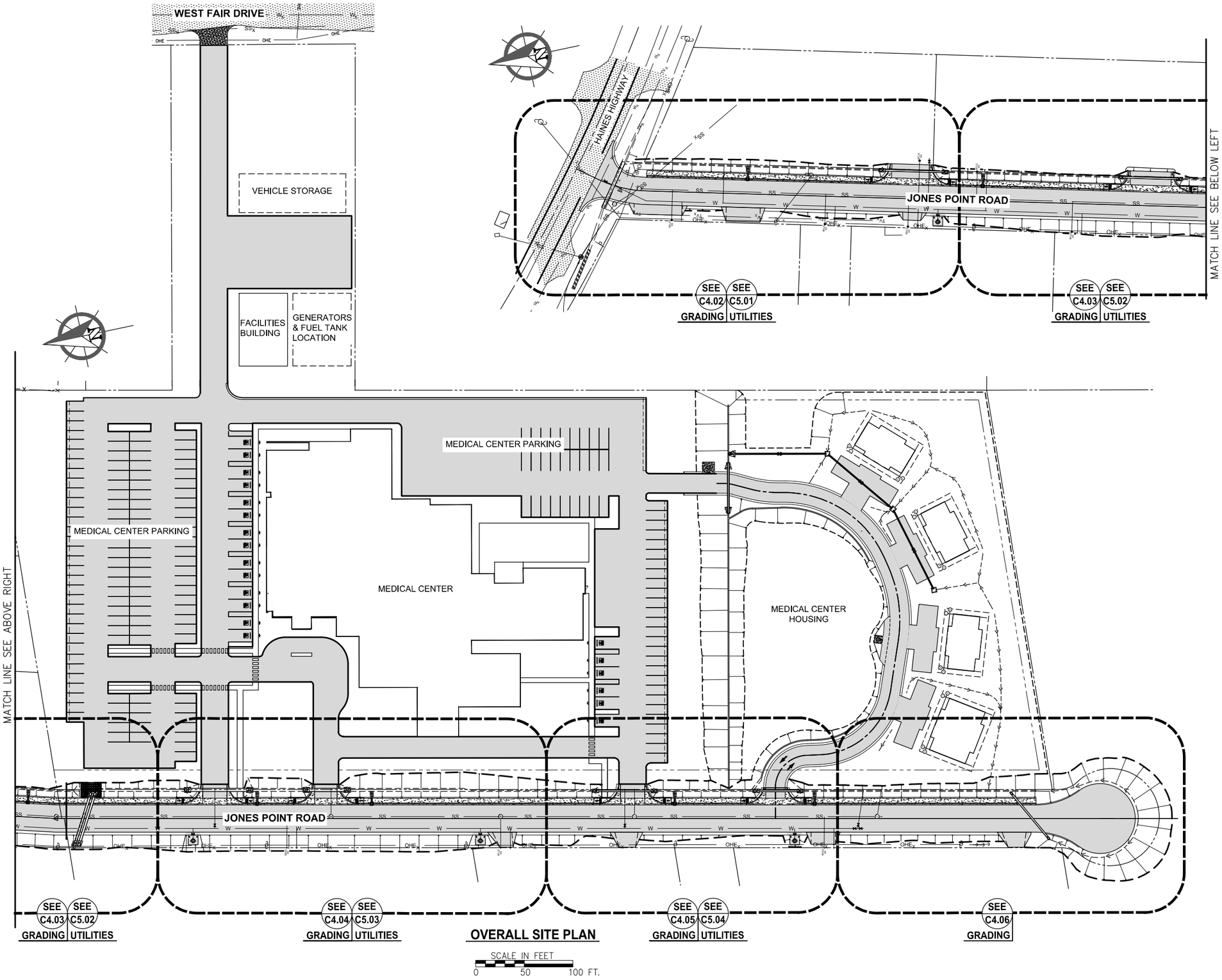
04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
HAINES WORKFORCE HOUSING

STATE OF ALASKA 49 TH Sean Sjostedt CE-102428 REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242076
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

UTILITY DETAILS

C3.04



OVERALL SITE PLAN

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04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM

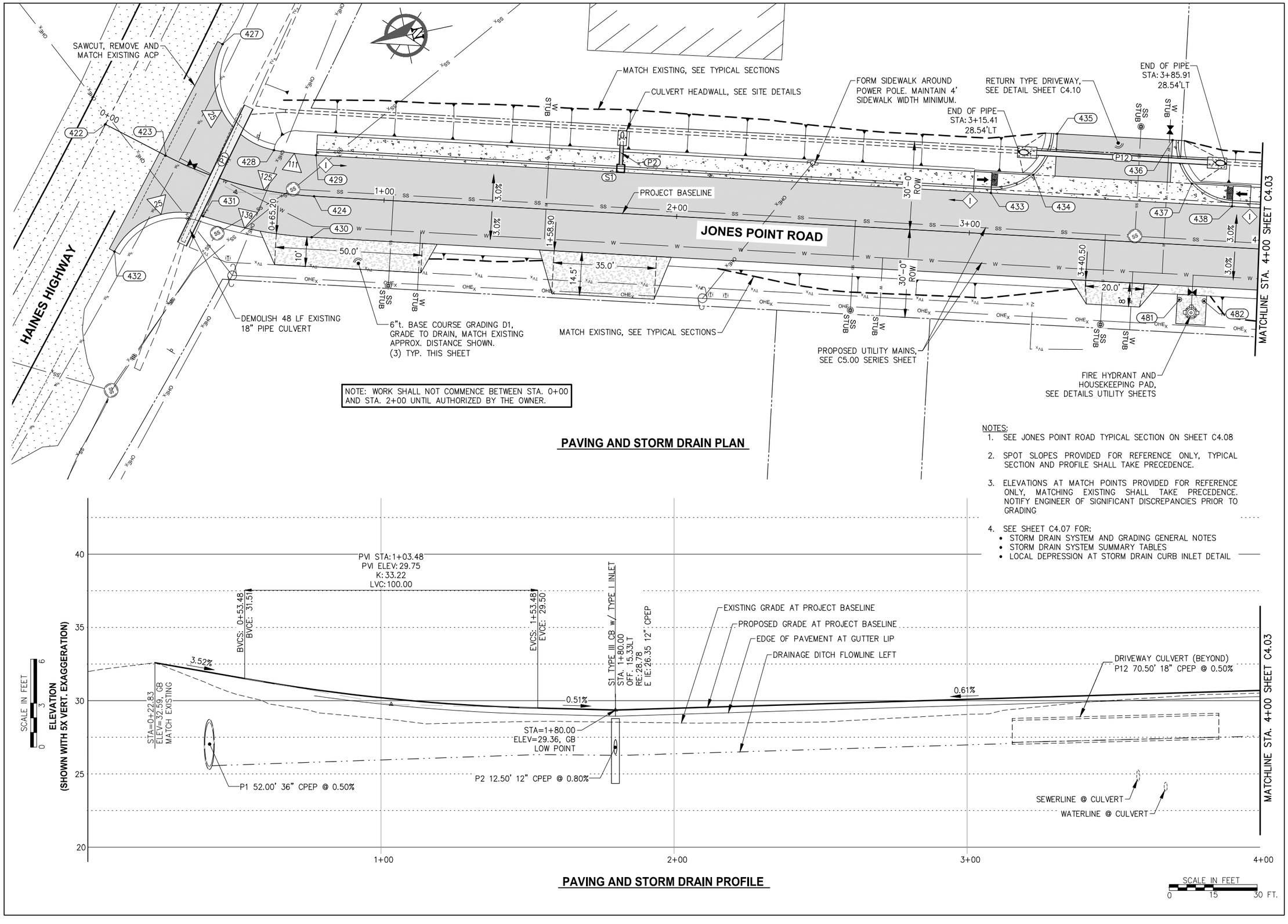
JONES POINT ROAD IMPROVEMENTS

STATE OF ALASKA 49TH
Scott Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

OVERALL SITE PLAN AND SHEET KEY MAP

C4.01



NOTE: WORK SHALL NOT COMMENCE BETWEEN STA. 0+00 AND STA. 2+00 UNTIL AUTHORIZED BY THE OWNER.

PAVING AND STORM DRAIN PLAN

NOTES:

1. SEE JONES POINT ROAD TYPICAL SECTION ON SHEET C4.08
2. SPOT SLOPES PROVIDED FOR REFERENCE ONLY, TYPICAL SECTION AND PROFILE SHALL TAKE PRECEDENCE.
3. ELEVATIONS AT MATCH POINTS PROVIDED FOR REFERENCE ONLY, MATCHING EXISTING SHALL TAKE PRECEDENCE. NOTIFY ENGINEER OF SIGNIFICANT DISCREPANCIES PRIOR TO GRADING
4. SEE SHEET C4.07 FOR:
   - STORM DRAIN SYSTEM AND GRADING GENERAL NOTES
   - STORM DRAIN SYSTEM SUMMARY TABLES
   - LOCAL DEPRESSION AT STORM DRAIN CURB INLET DETAIL

PAVING AND STORM DRAIN PROFILE

SCALE IN FEET
0 15 30 FT.

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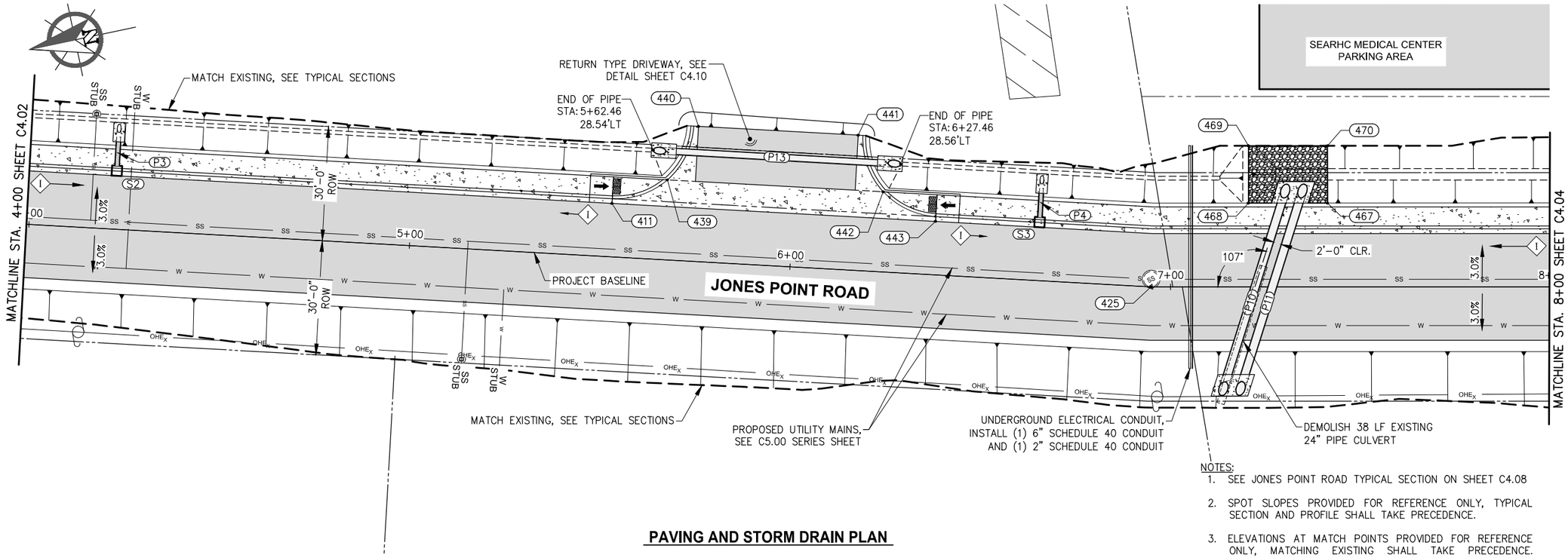
REVISIONS:

PAVING AND STORM DRAIN PLAN AND PROFILE BOP TO STA. 4+00

C4.02



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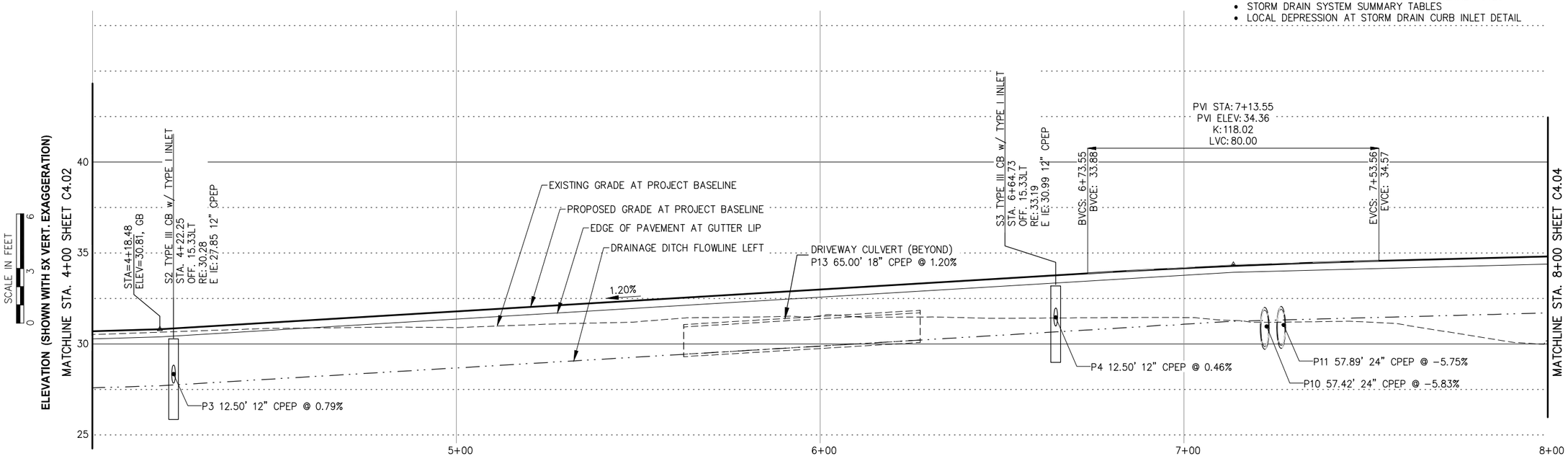

PAVING AND STORM DRAIN PROFILE

SCALE IN FEET
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JONES POINT ROAD IMPROVEMENTS

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Sean M. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
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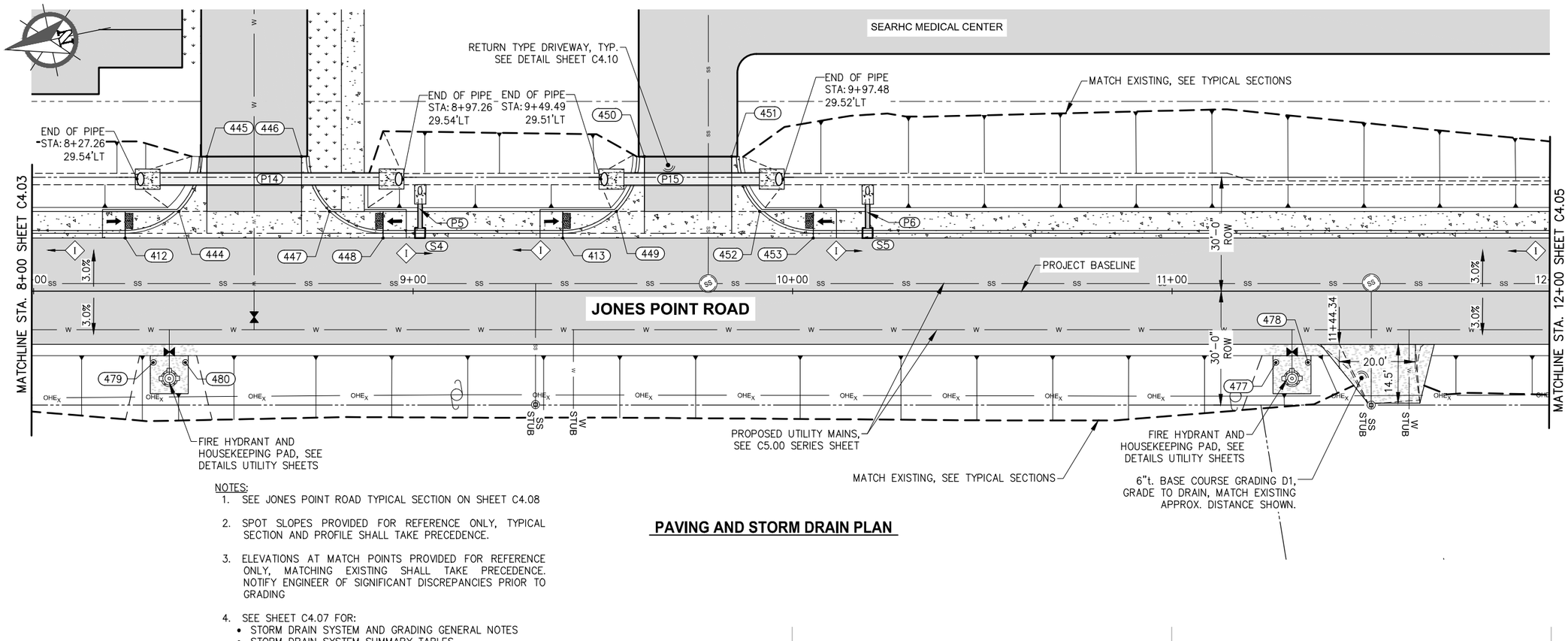
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

PAVING AND STORM DRAIN PLAN AND PROFILE
STA. 4+00 TO STA. 8+00

C4.03



PAVING AND STORM DRAIN PLAN

NOTES:

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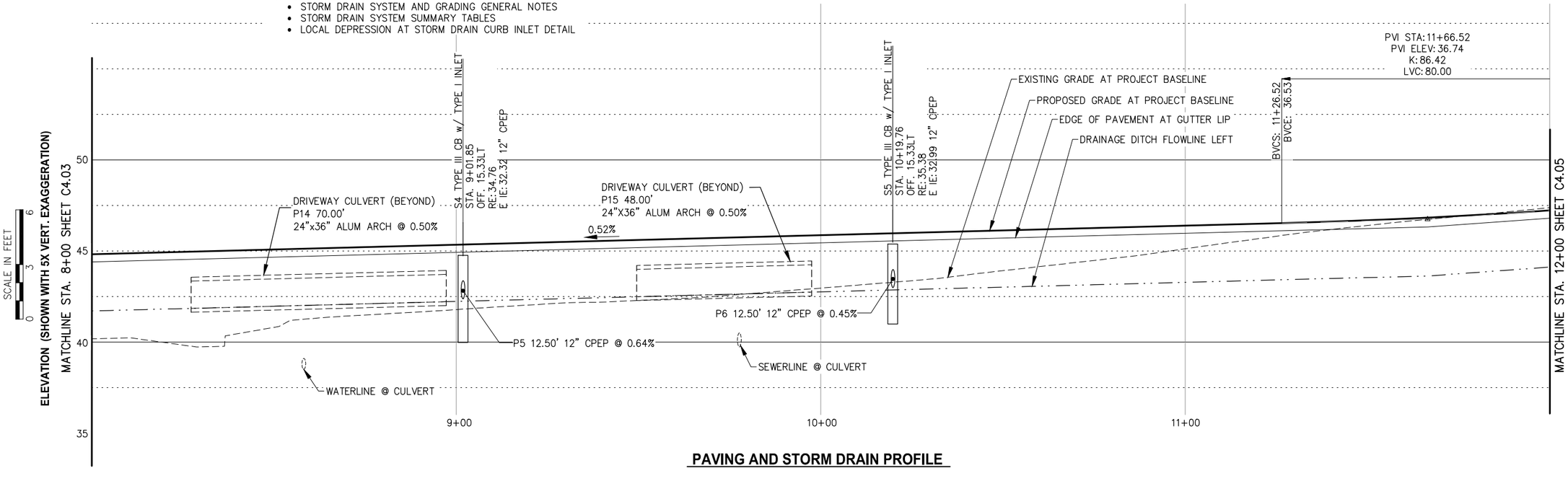
   - LOCAL DEPRESSION AT STORM DRAIN CURB INLET DETAIL



PAVING AND STORM DRAIN PROFILE

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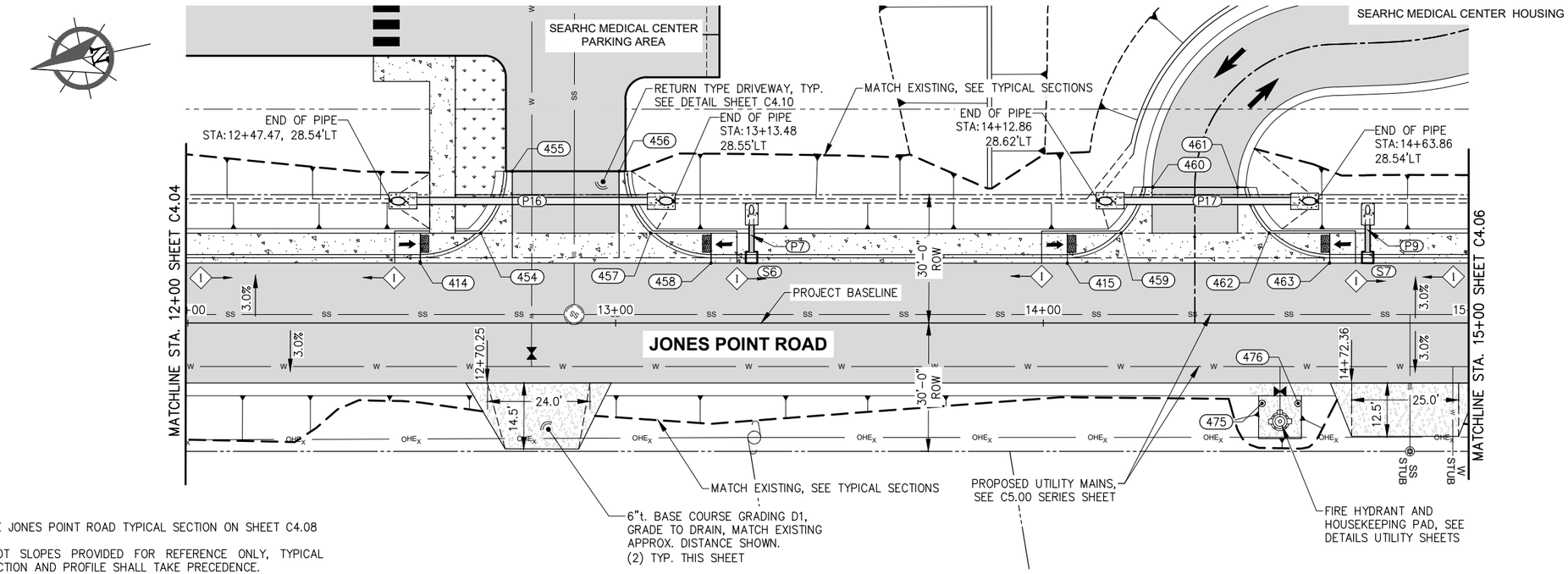
REVISIONS:

PAVING AND
STORM DRAIN PLAN
AND PROFILE
STA. 8+00 TO STA. 12+00

C4.04



PAVING AND STORM DRAIN PLAN

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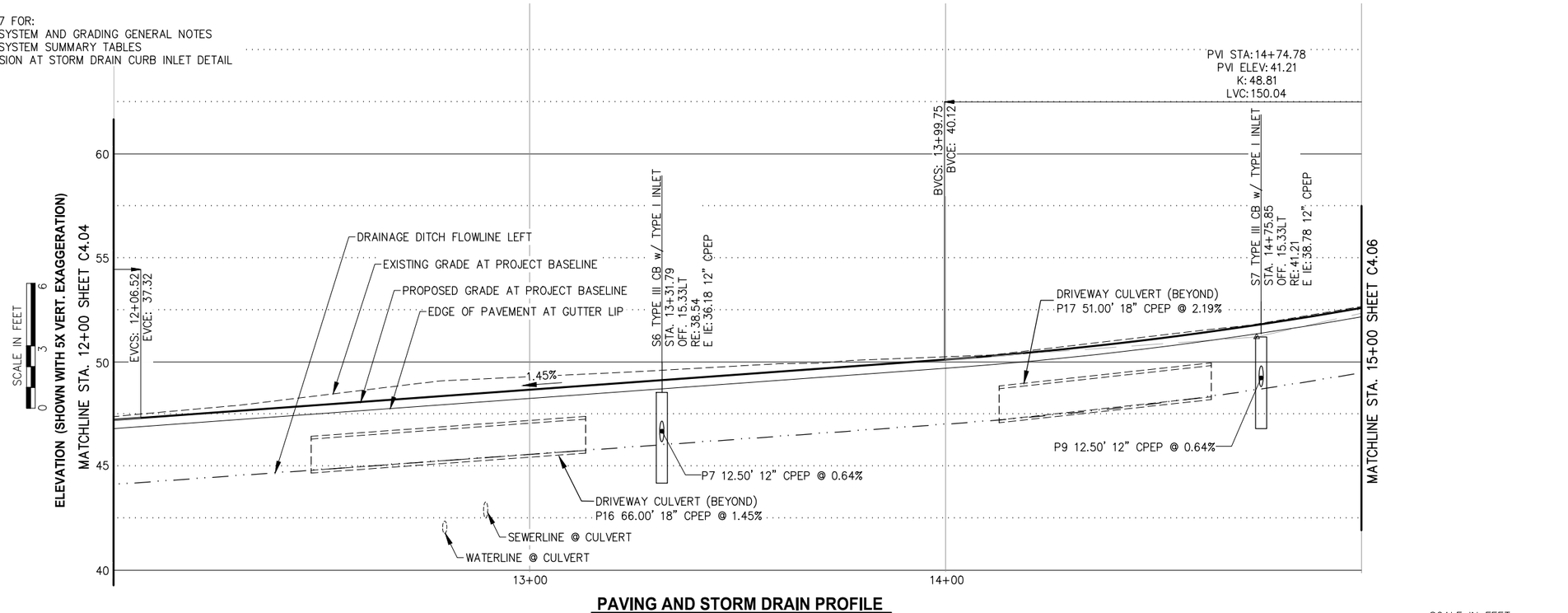
2. SPOT SLOPES PROVIDED FOR REFERENCE ONLY, TYPICAL SECTION AND PROFILE SHALL TAKE PRECEDENCE.
3. ELEVATIONS AT MATCH POINTS PROVIDED FOR REFERENCE ONLY, MATCHING EXISTING SHALL TAKE PRECEDENCE. NOTIFY ENGINEER OF SIGNIFICANT DISCREPANCIES PRIOR TO GRADING
4. SEE SHEET C4.07 FOR:
   - STORM DRAIN SYSTEM AND GRADING GENERAL NOTES
   - STORM DRAIN SYSTEM SUMMARY TABLES
   - LOCAL DEPRESSION AT STORM DRAIN CURB INLET DETAIL



PAVING AND STORM DRAIN PROFILE

SCALE IN FEET
0 15 30 FT.

Cushing Terrell.
cushingterrell.com
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Juneau, Alaska 99801
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AK. LIC# AECC250

04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM

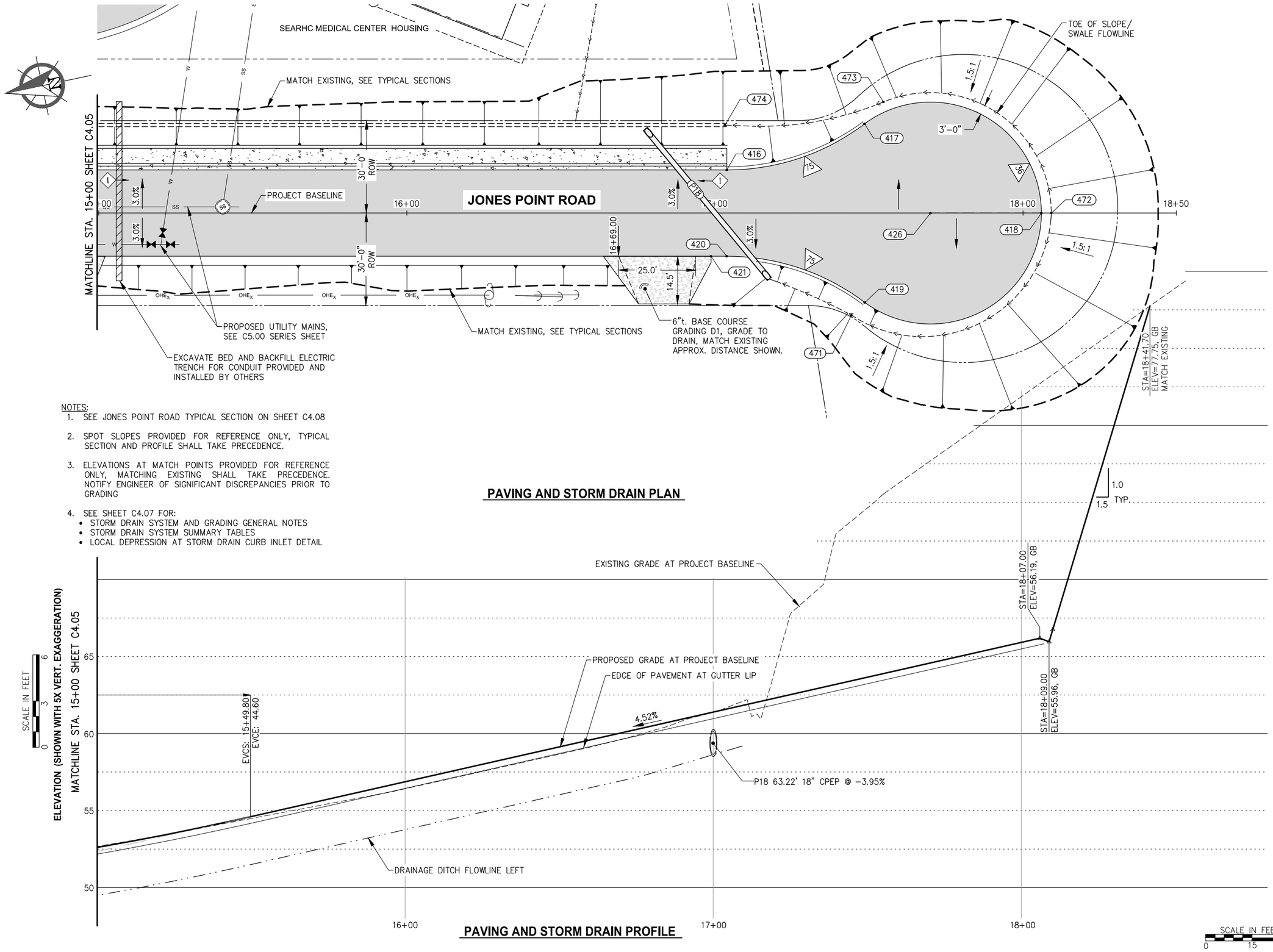
JONES POINT ROAD IMPROVEMENTS

STATE OF ALASKA 49 TH
Sean J. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

PAVING AND STORM DRAIN PLAN AND PROFILE STA. 12+00 TO STA. 15+00

C4.05



NOTES:

1. SEE JONES POINT ROAD TYPICAL SECTION ON SHEET C4.08
2. SPOT SLOPES PROVIDED FOR REFERENCE ONLY, TYPICAL SECTION AND PROFILE SHALL TAKE PRECEDENCE.
3. ELEVATIONS AT MATCH POINTS PROVIDED FOR REFERENCE ONLY, MATCHING EXISTING SHALL TAKE PRECEDENCE. NOTIFY ENGINEER OF SIGNIFICANT DISCREPANCIES PRIOR TO GRADING
4. SEE SHEET C4.07 FOR:
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PAVING AND STORM DRAIN PLAN

PAVING AND STORM DRAIN PROFILE

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REVISIONS:

PAVING AND
STORM DRAIN PLAN
AND PROFILE
STA. 15+00 TO EOP

C4.06

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
411	2707826.79	2348213.63	32.00	EP, PC
412	2707560.92	2348162.04	34.52	EP, PC
413	2707447.13	2348143.39	35.13	EP, PC
414	2707136.43	2348092.44	37.59	EP, PC
415	2706987.13	2348067.97	39.79	EP, PC
416	2706692.83	2348019.72	51.15	EP, PC
417	2706646.25	2348027.25	53.02	EP, PC
418	2706594.32	2347989.38	56.19	EP, PC
419	2706655.56	2347970.01	53.03	EP, PC
420	2706697.36	2347992.08	51.15	EP, PC
421	2706702.41	2347992.91	50.92	EP, FG
422	2708361.20	2348338.84	31.99	BEGIN PROJECT BASELINE
423	2708342.64	2348324.97	32.57	PC, PB
424	2708294.87	2348303.07	30.79	PT, PB
425	2707690.83	2348169.15	34.12	<PT, PB
426	2706629.84	2347995.20	54.54	END PROJECT BASELINE
427	2708317.30	2348359.36	32.84	EP, PC, ME
428	2708305.85	2348320.85	30.96	EP, PCC
429	2708291.98	2348316.81	30.37	EP, PT, BEGIN CURB
430	2708297.95	2348289.41	30.37	EP, PT
431	2708333.38	2348302.52	31.31	EP, PCC
432	2708365.14	2348295.49	32.19	EP, PC, ME
433	2708066.81	2348266.85	29.71	EP, PC
434	2708051.49	2348270.60	29.84	POC, FC
435	2708041.18	2348283.11	30.17	EP, END RETURN
436	2708002.67	2348274.61	30.48	EP, END RETURN
437	2707998.61	2348258.90	30.17	POC, FC
438	2707986.32	2348249.03	30.21	EP, PT
439	2707811.47	2348217.39	32.21	POC, FC
440	2707801.16	2348229.90	32.62	EP, END RETURN
441	2707760.15	2348220.86	32.80	EP, END RETURN
442	2707756.09	2348205.15	32.44	POC, FC
443	2707743.80	2348195.28	33.02	EP, PT
444	2707545.83	2348166.66	34.63	POC, FC
445	2707536.23	2348179.74	35.57	EP, END RETURN

TABLE ABBREVIATIONS:

CB	= CATCH BASIN
CPEP	= CORRUGATED POLYETHYLENE PIPE
EP	= EDGE OF PAVEMENT
FC	= FACE OF CURB
LT	= LEFT
ME	= MATCH EXISTING
<PT	= ANGLE POINT
PB	= PROJECT BASELINE
PC	= POINT OF CURVATURE
PCC	= POINT OF COMPOUND CURVATURE
PRC	= POINT OF REVERSE CURVATURE
POC	= POINT ON CURVE
PT	= POINT OF TANGENCY

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
446	2707511.61	2348175.70	35.57	EP, END RETURN
447	2707506.67	2348160.24	34.84	POC, FC
448	2707493.86	2348151.05	34.88	EP, PT
449	2707432.05	2348148.01	35.24	POC, FC
450	2707422.44	2348161.08	35.72	EP, END RETURN
451	2707399.76	2348157.36	35.84	EP, END RETURN
452	2707394.83	2348141.90	35.44	POC, FC
453	2707382.01	2348132.71	35.47	EP, PT
454	2707121.35	2348097.07	37.83	POC, FC
455	2707111.74	2348110.15	38.23	EP, END RETURN
456	2707087.09	2348106.11	38.70	EP, END RETURN
457	2707082.16	2348090.65	38.41	POC, FC
458	2707069.35	2348081.46	38.57	EP, PT
459	2706973.56	2348072.84	40.04	POC, FC
460	2706964.55	2348082.25	40.94	EP, END RETURN
461	2706944.97	2348079.00	41.44	EP, END RETURN
462	2706939.43	2348067.28	40.80	POC, FC
463	2706926.61	2348058.08	41.13	EP, PT
467	2707641.54	2348183.37	34.46	CORNER 6"RIPRAP
468	2707662.02	2348186.73	34.42	CORNER 6"RIPRAP
469	2707659.59	2348201.56	34.42	CORNER 6"RIPRAP
470	2707639.11	2348198.21	34.46	CORNER 6"RIPRAP
471	2706660.52	2347966.68	51.98	FG, FL
472	2706591.15	2347988.86	55.96	FG, FL
473	2706639.06	2348033.27	52.28	FG, FL
474	2706691.06	2348034.16	49.48	FG, FL
475	2706947.52	2348028.24	—	HYDRANT POST
476	2706939.16	2348026.87	—	HYDRANT POST
477	2707266.99	2348080.62	—	HYDRANT POST
478	2707258.64	2348079.25	—	HYDRANT POST
479	2707558.94	2348128.48	—	HYDRANT POST
480	2707550.58	2348127.12	—	HYDRANT POST
481	2708009.22	2348220.49	—	HYDRANT POST
482	2708000.95	2348218.63	—	HYDRANT POST

STORM DRAIN STRUCTURES

STRUCTURE	STATION	OFFSET	RIM ELEV.	TYPE
S1	1+80.00	15.33 LT.	28.78	TYPE III CB w/ TYPE I INLET
S2	4+22.25	15.33 LT.	30.28	TYPE III CB w/ TYPE I INLET
S3	6+64.73	15.33 LT.	33.19	TYPE III CB w/ TYPE I INLET
S4	9+01.85	15.33 LT.	34.76	TYPE III CB w/ TYPE I INLET
S5	10+19.76	15.33 LT.	35.38	TYPE III CB w/ TYPE I INLET
S6	13+31.79	15.33 LT.	38.54	TYPE III CB w/ TYPE I INLET
S7	14+75.85	15.33 LT.	41.21	TYPE III CB w/ TYPE I INLET

STORM DRAIN PIPE

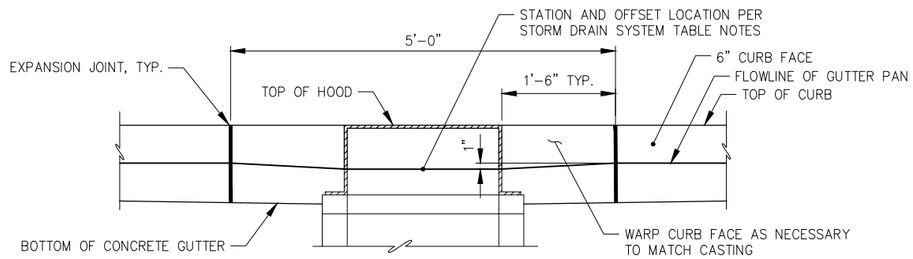
PIPE	TYPE	LENGTH	INVERT	DIRECTION	INVERT	DIRECTION
P1	36" CPEP	52.00'	25.64	EAST	25.38	WEST
P2	12" CPEP	12.50'	26.35	WEST (S1)	26.25	EAST
P3	12" CPEP	12.50'	27.85	WEST (S2)	27.75	EAST
P4	12" CPEP	12.50'	30.99	WEST (S3)	30.94	EAST
P5	12" CPEP	12.50'	32.32	WEST (S4)	32.24	EAST
P6	12" CPEP	12.50'	32.99	WEST (S5)	32.93	EAST
P7	12" CPEP	12.50'	36.18	WEST (S6)	36.10	EAST
P9	12" CPEP	12.50'	38.78	WEST (S8)	38.70	EAST
P10	24" CPEP	57.42'	28.16	WEST	31.51	EAST
P11	24" CPEP	57.89'	28.21	WEST	31.54	EAST
P12	18" CPEP	70.50'	27.15	NORTH	27.51	SOUTH
P13	18" CPEP	65.00'	29.43	NORTH	30.22	SOUTH
P14	36"x24" ALUM ARCH	70.00'	31.85	NORTH	32.21	SOUTH
P15	36"x24" ALUM ARCH	47.99'	32.49	NORTH	32.74	SOUTH
P16	18" CPEP	66.00'	34.80	NORTH	35.76	SOUTH
P17	18" CPEP	51.00'	37.22	NORTH	38.33	SOUTH
P18	18" CPEP	63.22'	47.23	NORTH	49.73	SOUTH

STORM DRAIN SYSTEM AND GRADING GENERAL NOTES:

1. MINOR FIELD ADJUSTMENTS SHALL BE MADE TO SIDEWALK WIDTH AND GRADE TO MINIMIZE IMPACTS TO PRIVATE PROPERTY PER ENGINEER DIRECTION.
2. TYPE III CATCH BASIN PER DETAILS SHEET C4.09 AND DETAIL THIS SHEET.
3. RIM ELEVATIONS AND OFFSETS FOR CURB INLETS REFERENCE THE CURB FLOWLINE AT CENTERLINE OF CATCH BASIN AND REFLECT A LOCAL DEPRESSION OF 1", SEE LOCAL DEPRESSION DETAIL.
4. CULVERTS, WATER AND SEWER PIPES CROSSING DITCH CULVERTS ARE SHOWN IN PROFILE VIEW, SHEETS C4.02–C4.06.

STORM DRAIN SYSTEM TABLE NOTES:

1. RIM ELEVATIONS AND OFFSETS FOR CURB INLETS REFERENCE THE CURB FLOWLINE AT CENTERLINE OF CATCH BASIN AND REFLECT A LOCAL DEPRESSION OF 1", SEE LOCAL DEPRESSION DETAIL.
2. POINTS AND RIM ELEVATIONS FOR STRUCTURES LOCATED OUTSIDE OF CURBS REFERENCE THE CENTER OF STRUCTURE.
3. TYPE I CURB INLET SHALL BE EJIW 7022 FRAME, M2 GRATE AND T4 BACK.



LOCAL DEPRESSION AT STORM DRAIN CURB INLET

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04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
JONES POINT ROAD IMPROVEMENTS

STATE OF ALASKA 49TH
Sean Sjostedt
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REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
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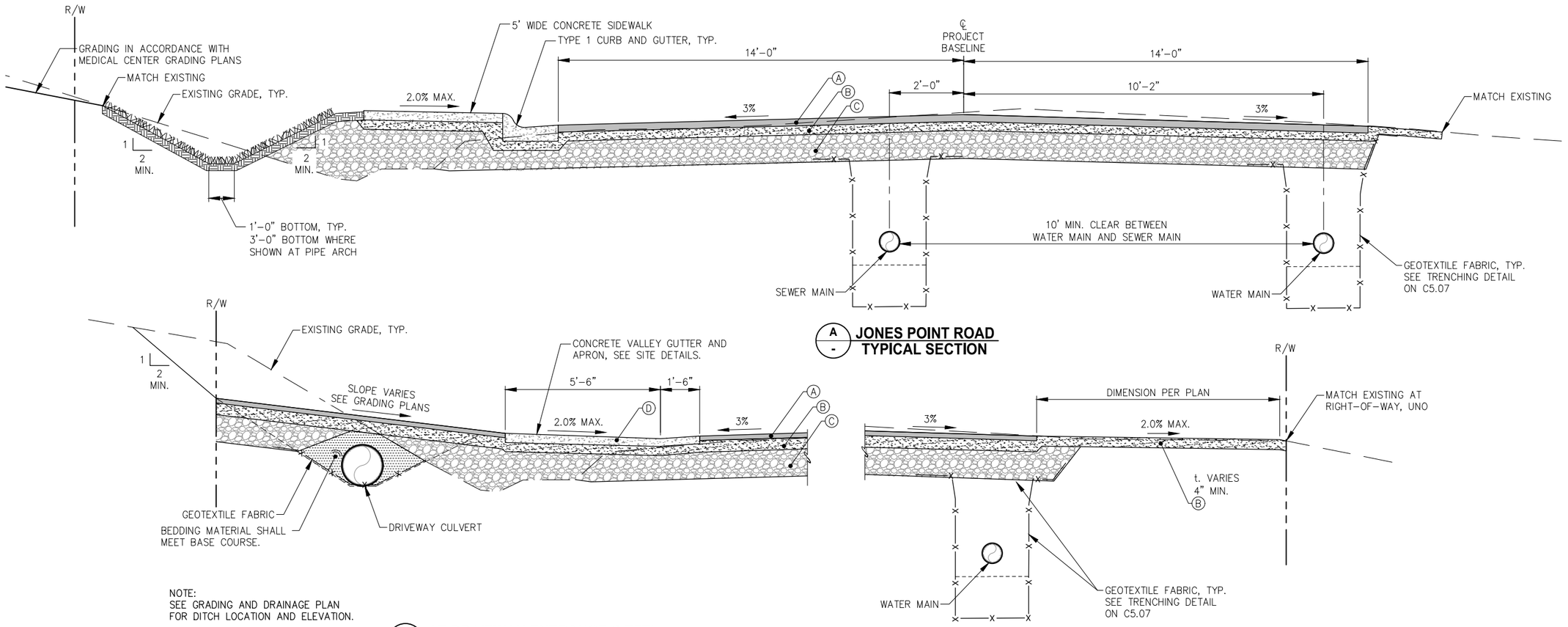
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

STORM DRAIN AND POINT LAYOUT TABLES

C4.07



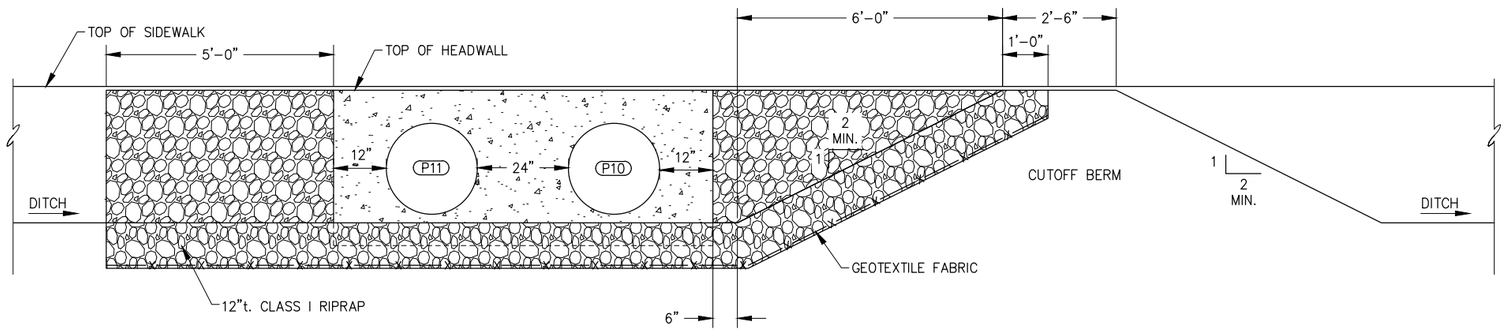
A - JONES POINT ROAD TYPICAL SECTION

NOTE:
SEE GRADING AND DRAINAGE PLAN FOR DITCH LOCATION AND ELEVATION.

B - AT DRIVEWAY ENTRANCE (LEFT) TYPICAL SECTION

C - AT DRIVEWAY ENTRANCE (RIGHT) TYPICAL SECTION

MATERIAL SCHEDULE	
SYMBOL	MATERIAL DESCRIPTION
Ⓐ	3"t. ACP, TYPE II, CLASS B
Ⓑ	6"t. AGGREGATE BASE COURSE, GRADING D-1, UNO
Ⓒ	12"t. CLASS A BORROW
Ⓓ	6"t. CONCRETE APRON, SEE DETAILS



DITCH SECTION AT DOUBLE CULVERT CROSSING

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04.08.2026
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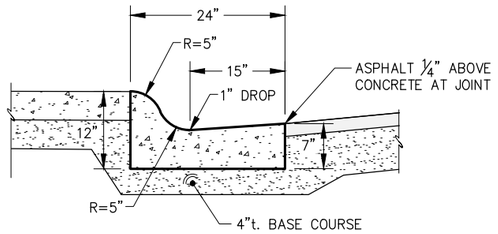
REVIEWED BY | SSJOSTEDT
REVISIONS:

TYPICAL SECTION

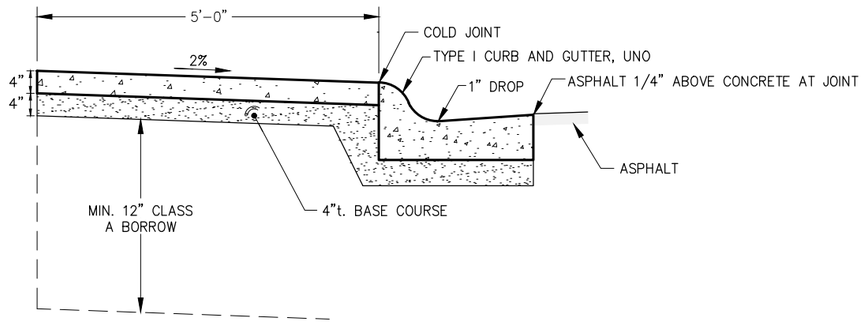
C4.08



TYPE I CONCRETE CURB & GUTTER

CURB NOTES:

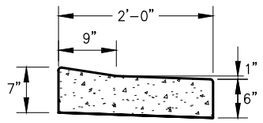
1. CURB AND GUTTER TRANSITION DESIGN TO BE APPROVED BY THE ENGINEER.
2. ALL STEEL MUST HAVE A MINIMUM OF 2" OF CONCRETE COVER.
3. ALL JOINTS SHALL BE EDGED.
4. EXPANSION JOINTS SHALL BE MAX ½", MIN ¼", WITH NO GAPS FOR WATER INTRUSION. JOINTS SHALL BE A MAXIMUM OF 30' O.C.
5. STEEL TROWELING FINISH REQUIRED PRIOR TO BROOM FINISHING OF ALL SURFACES.
6. CONCRETE INTERNATIONAL CORPORATION ASHFORD FORMULA OR APPROVED EQUAL SHALL BE APPLIED AS A CURING COMPOUND. APPLICATION SHALL CONFORM TO THE MANUFACTURER'S INSTRUCTIONS.



NOTES:

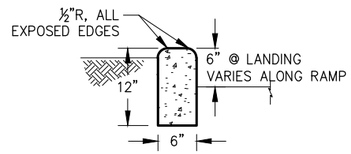
1. ALL STEEL MUST HAVE A MINIMUM OF 2" OF CONCRETE COVER. FIBER REINFORCING SHALL BE ALLOWED PER ENGINEER OF PLANS.
2. ALL JOINTS AND SEAMS SHALL BE EDGED.
3. EXPANSION JOINTS SHALL BE MAX ½", MIN ¼", WITH NO GAPS FOR WATER INTRUSION.
4. STEEL TROWELING FINISH REQUIRED PRIOR TO BROOM FINISHING ON ALL SURFACES.
5. CONCRETE INTERNATIONAL CORPORATION ASHFORD FORMULA OR APPROVED EQUAL SHALL BE APPLIED AS A CURING COMPOUND. APPLICATION SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATIONS.

CONCRETE SIDEWALK DETAIL



TYPE IV DEPRESSED CURB & GUTTER

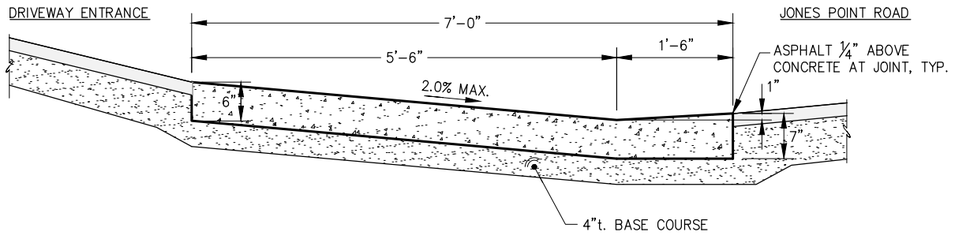
(USED AT ADA RAMPS)



NOTES:

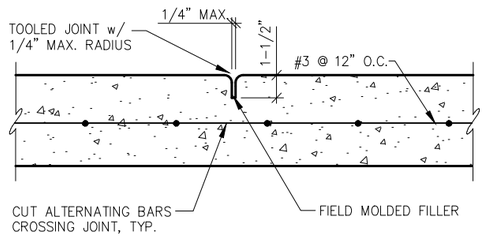
1. INCIDENTAL TO 4"t. SIDEWALK
2. TOP OF BACKING CURB SHALL BE FLUSH w/ SIDEWALK AT TOP OF ADA RAMP.

BACKING CURB

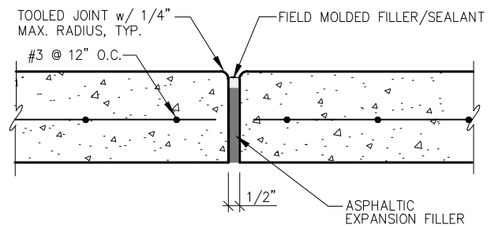


CONCRETE VALLEY GUTTER AND APRON

NOTES:
CONCRETE VALLEY GUTTER AND APRON AT DRIVEWAYS SHALL BE REINFORCED w/#4 REBAR @ 12" O.C., E.W.



TYPICAL CONTROL JOINT



TYPICAL EXPANSION JOINT

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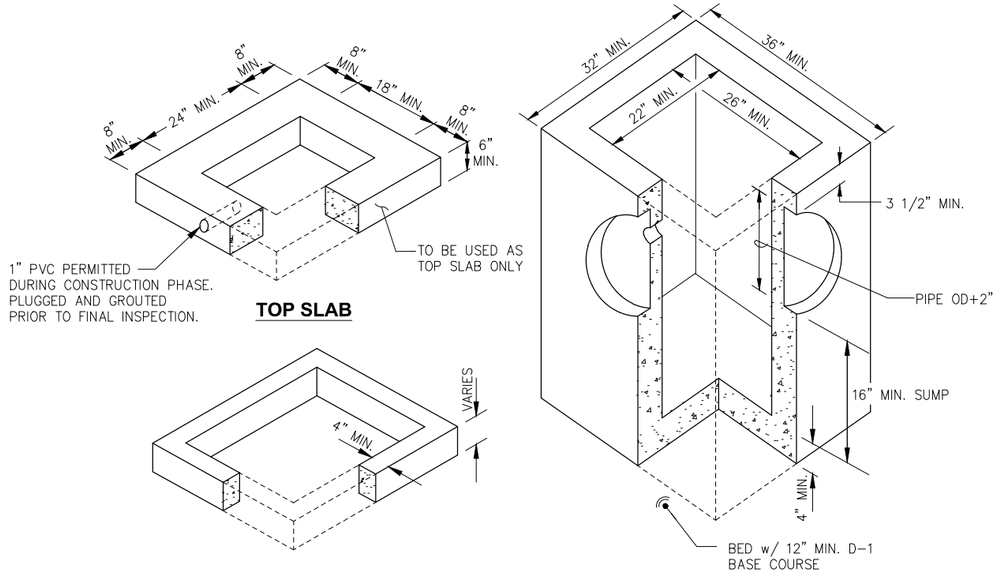
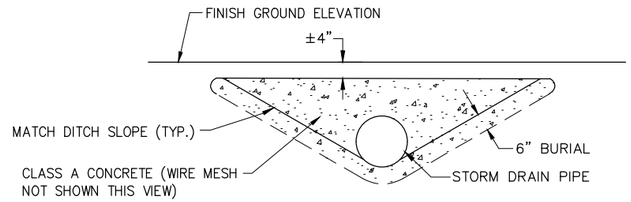
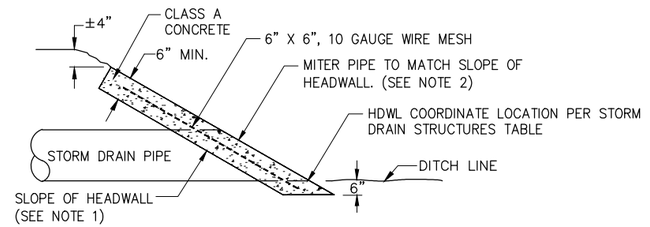
SITE DETAILS

C4.09



CATCH BASIN DETAILS

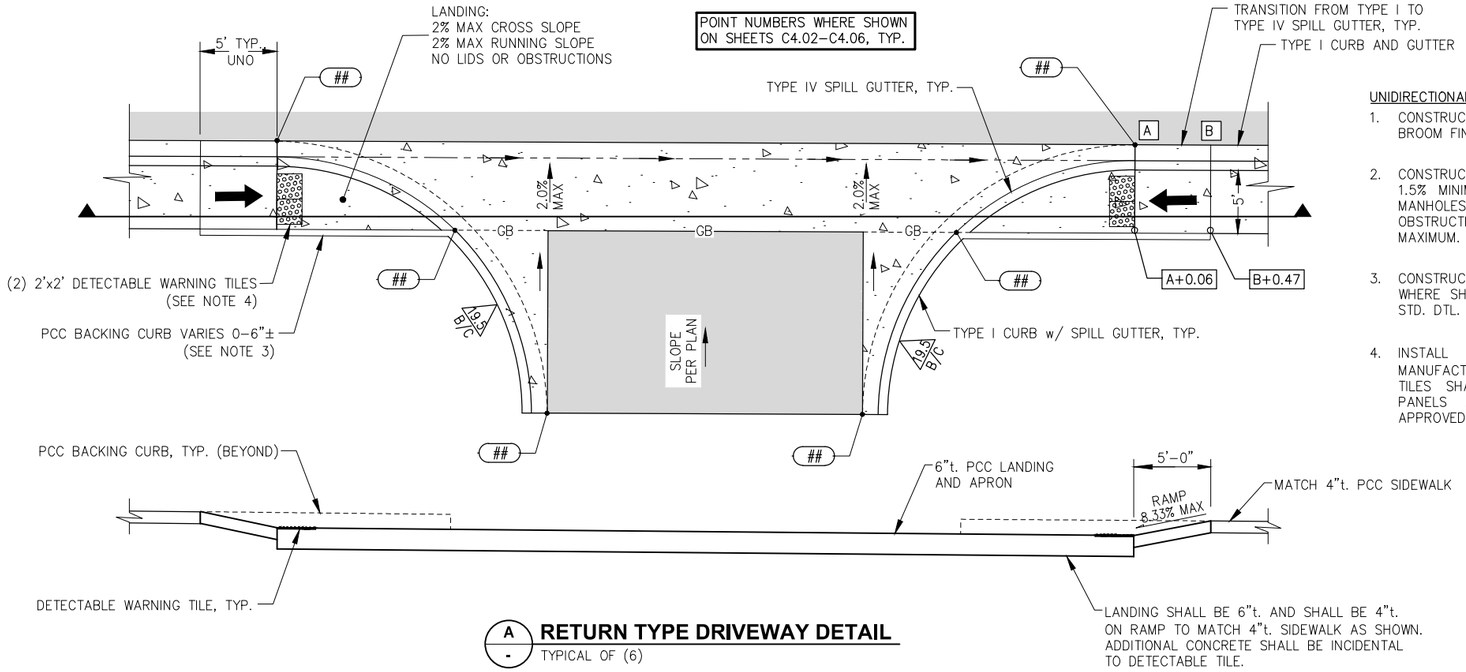




NOTES:

1. SLOPE OF HEADWALL SHALL BE 2:1 MIN.
2. EMPTY WATER FROM CORRUGATIONS ON MITERED ENDS AND THEN COMPLETELY FILL VOIDS WITH CONCRETE GROUT.

SLOPED CULVERT HEADWALL



A / - **RETURN TYPE DRIVEWAY DETAIL**
TYPICAL OF (6)

UNIDIRECTIONAL NOTES:

1. CONSTRUCT UNIDIRECTIONAL RAMPS AND LANDINGS WITH A BROOM FINISH PERPENDICULAR TO DIRECTION OF TRAVEL.
2. CONSTRUCT THE RAMP PORTION OF THE CURB RAMP WITH A 1.5% MINIMUM AND 2% MAXIMUM CROSS SLOPE WITH NO MANHOLES, UTILITY JUNCTION BOXES, OR OTHER OBSTRUCTIONS. THE RUNNING SLOPE SHALL BE 8.33% MAXIMUM.
3. CONSTRUCT BACKING CURB BEHIND LANDING AND RAMPS WHERE SHOWN OR AS DIRECTED BY THE ENGINEER IAW CBS STD. DTL. 30-2M, SEE SPECIAL PROVISIONS.
4. INSTALL (2) 2'x2' DETECTABLE WARNING TILES IAW MANUFACTURERS' RECOMMENDATIONS. DETECTABLE WARNING TILES SHALL BE CAST IN PLACE REPLACEABLE TACTILE PANELS AS MANUFACTURED BY ADA SOLUTIONS OR APPROVED EQUAL.

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REVISIONS:

SITE DETAILS

C4.10

REMOVE AND REPLACE EXISTING GATE VALVE

UTILITY EXPLORATION THIS AREA. CONTRACTOR SHALL POTHOLE TO LOCATE EXISTING SEWER PIPE TO BE INTERCEPTED.

WATER STUB @ ROW STA. 1+55.34

INSTALL GATE VALVE AND 2' STUB w/ WELDED CAP

WATER STUB @ ROW STA. 3+66.48

CLEANOUT @ ROW STA. 3+56.48, 37.5' LT.

HAINES HIGHWAY

JONES POINT ROAD

SSMH1

SSMH2

SSMH3

EXMH

SSP1

SSP2

SSP3

0+00

1+00

2+00

3+00

3.0%

2'-0"

10'-2"

MATCHLINE STA. 4+00 SHEET C5.02

CLEANOUT @ ROW STA. 1+03.07

WATER STUB @ ROW STA. 1+13.07

REMOVE AND DISPOSE EXISTING 8" SEWER LINE, CONNECT NEW 8" PVC SEWER LINE TO EXISTING MANHOLE AT EXISTING INVERT ELEVATION. REGRADE DITCH TO DRAIN BETWEEN CULVERTS.

VERTICAL OFFSET TO 18" CLEAR BELOW SANITARY SEWER, SEE DETAIL ON HOUSING UTILITY SHEET C3.04

CLEANOUT @ ROW STA. 2+60.95

WATER STUB @ ROW STA. 2+70.95

CLEANOUT @ ROW STA. 3+46.43

WATER STUB @ ROW STA. 3+56.43

VERTICAL OFFSET TO 18" CLEAR BELOW SANITARY SEWER, SEE DETAIL ON HOUSING UTILITY SHEET C3.04

STA. 3+77.68, 23.00'RT. FIRE HYDRANT AND HOUSEKEEPING PAD, SEE DETAILS UTILITY SHEETS

WATER AND SEWER SYSTEMS PLAN

NOTE: WORK SHALL NOT COMMENCE BETWEEN STA. 0+00 AND STA. 2+00 UNTIL AUTHORIZED BY THE OWNER.

WATER AND SEWER SHEET NOTES:

1. SEE SHEET C5.05 FOR WATER AND SEWER SYSTEMS GENERAL NOTES.
2. SEE SHEET C5.05 FOR WATER AND SEWER SERVICE CONNECTION SUMMARY TABLES.

EXMH STA. 0+35.96 OFF. 81.31RT RE: 31.55 NW, EX P1 IE:12.22 8" PVC SE, SSP1 IE: 21.10 8" PVC SDR35

SSMH1 STA. 0+47.61 OFF. 18.11RT RE: 31.56 NW, SSP1 IE:22.20 8" PVC S, SSP2 IE: 22.30 8" PVC SDR35

SSMH2 STA. 0+68.65 OFF. 1.78LT RE: 30.77 N, SSP2 IE:22.82 8" PVC SDR35 S, SSP3 IE:22.92 8" PVC SDR35 E, IE: 22.9± 4" PVC (CONTRACTOR TO CONFIRM)

SSMH3 STA. 3+56.50 OFF. 2.00LT RE: 30.38 N, SSP3 IE: 24.90 8" PVC SDR35 S, SSP4 IE: 25.00 8" PVC SDR35 E, IE: 25.08 6" PVC SDR35

CONNECT EXISTING 4" SEWER SERVICE (1031 HAINES HIGHWAY) TO SSMH2, INVERT UNKNOWN, SHOWN AT IE: 22.9±, VERIFY BY UTILITY EXPLORATION AND PROVIDE (E) PIPE INFORMATION TO ENGINEER.

EXISTING GRADE AT PROJECT BASELINE

FINISHED GRADE AT PROJECT BASELINE

SCALE IN FEET 0 3 6

ELEVATION (SHOWN WITH 5X VERT. EXAGGERATION)

40

30

20

EXISTING 6" DIP WATER

A C5.07

EXISTING 4" SS LT

4" SS RT

18" MIN.

6" MIN. COVER (WATER)

SSP3 287.74' 8" PVC SDR35 @ 0.69%

REMOVE AND REPLACE EXISTING 6" WATER VALVE NUT ELEV.=27.38

1" WS RT

1" WS LT

8" HDPE WATER MAIN

VERTICAL BENDS SUCH THAT WATER CLEARS SEWER BY 18" MIN.

CONNECT NEW 8" PVC SEWER LINE TO EXISTING MANHOLE AT EXISTING INVERT ELEVATION INV. ELEV.=21.10

EXISTING MANHOLE

8" INV. ELEV.=12.20

SSP2 29.91' 8" PVC SDR35 @ 1.74%

SSP1 64.70' 8" PVC SDR35 @ 1.70%

INSTALL SSMH INTERNAL DROP CONNECTION, SEE DETAIL SHEET C5.08

8"x8"x4" TEE, LEFT

HYDRANT TEE, RIGHT

MATCHLINE STA. 4+00 SHEET C5.02

1+00 2+00 3+00 4+

WATER AND SEWER SYSTEMS PROFILE

SCALE IN FEET 0 15 30 FT.

Cushing Terrell

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AK. LIC# AECC250

04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM

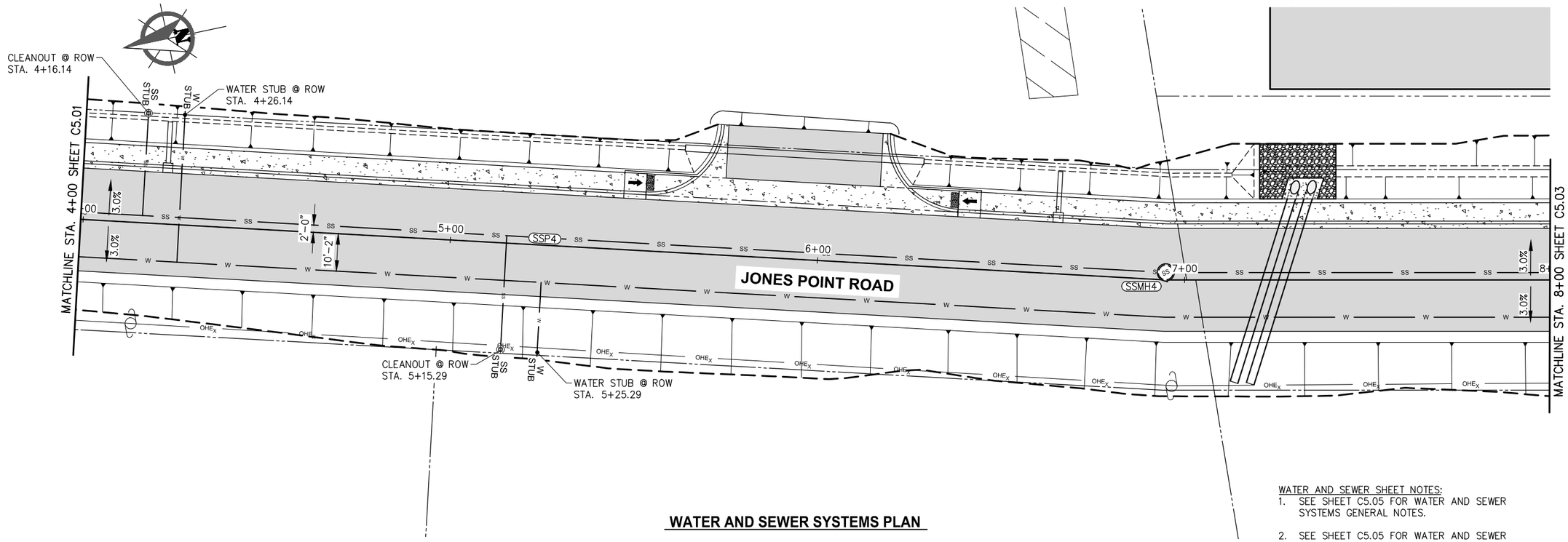
JONES POINT ROAD IMPROVEMENTS

STATE OF ALASKA 49TH
Sean M. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

WATER AND SEWER PLAN AND PROFILE BOP TO STA. 4+00

C5.01



WATER AND SEWER SYSTEMS PLAN

WATER AND SEWER SHEET NOTES:

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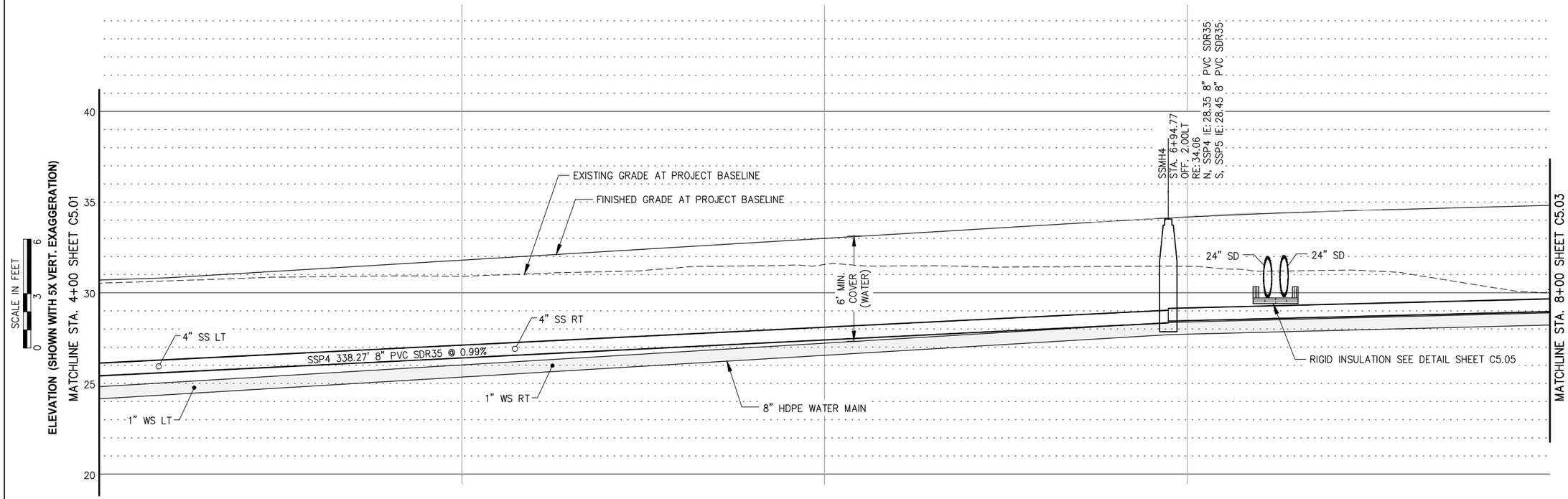
2. SEE SHEET C5.05 FOR WATER AND SEWER SERVICE CONNECTION SUMMARY TABLES.



WATER AND SEWER SYSTEMS PROFILE

SCALE IN FEET
0 15 30 FT.

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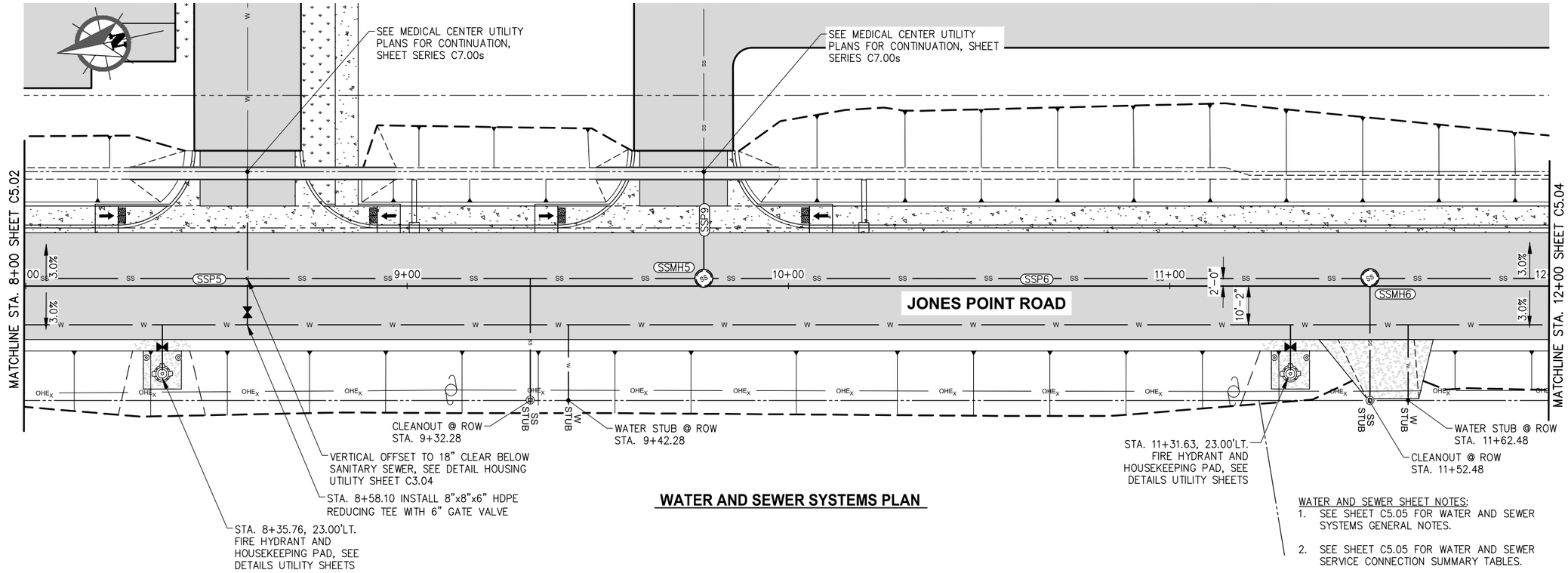
WATER AND SEWER PLAN AND PROFILE STA. 4+00 TO STA. 8+00

C5.02



WATER AND SEWER SYSTEMS PLAN

WATER AND SEWER SHEET NOTES:

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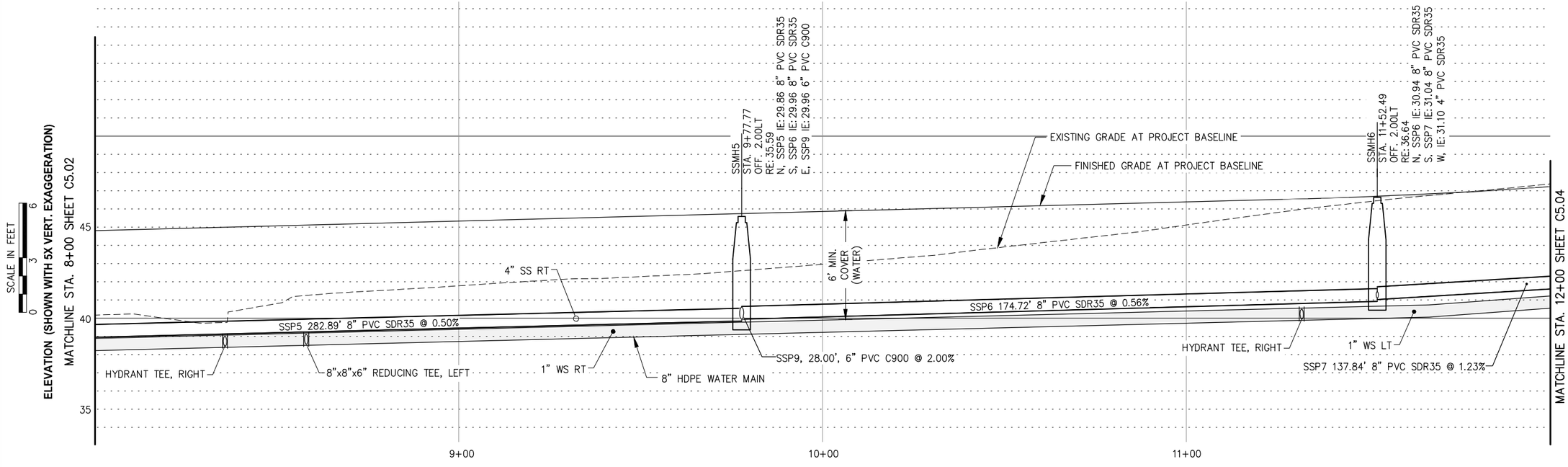
2. SEE SHEET C5.05 FOR WATER AND SEWER SERVICE CONNECTION SUMMARY TABLES.



WATER AND SEWER SYSTEMS PROFILE

SCALE IN FEET
0 15 30 FT.

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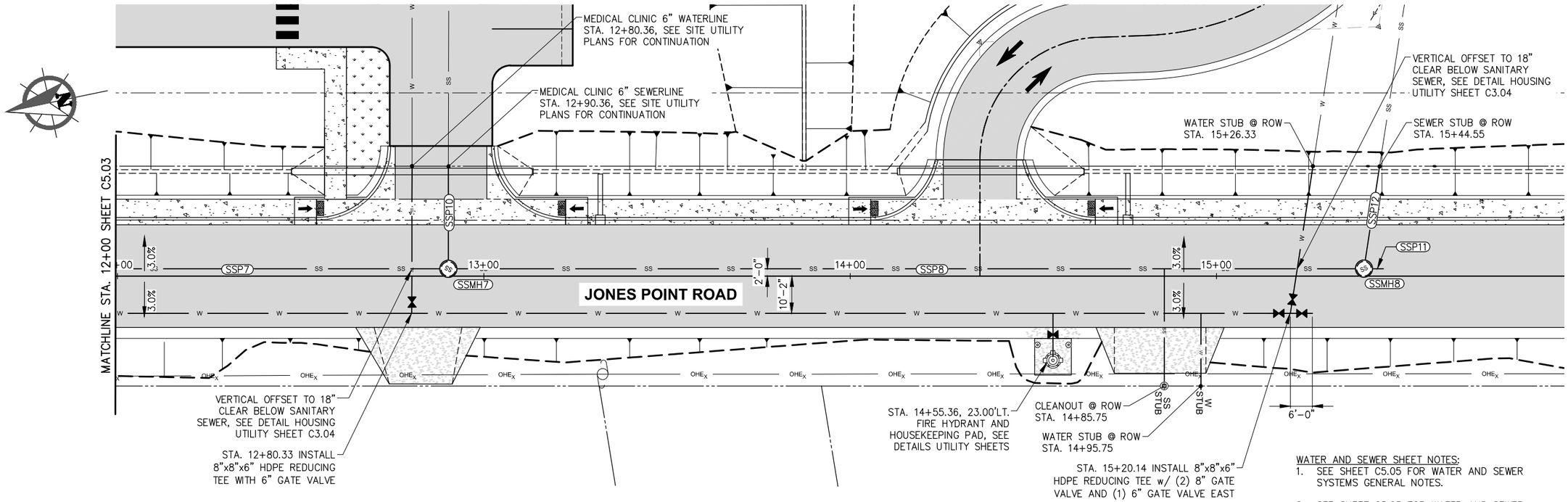
REVISIONS:

WATER AND SEWER PLAN AND PROFILE STA. 8+00 TO STA. 12+00

C5.03



WATER AND SEWER SYSTEMS PLAN

WATER AND SEWER SHEET NOTES:

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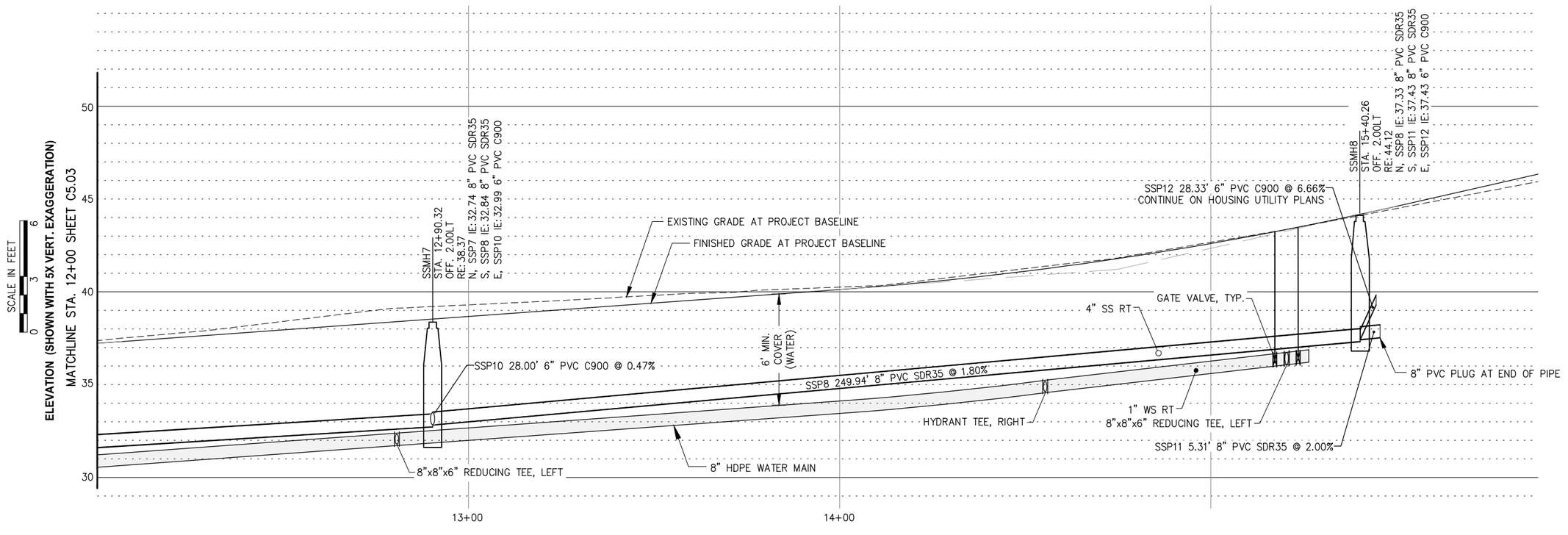
2. SEE SHEET C5.05 FOR WATER AND SEWER SERVICE CONNECTION SUMMARY TABLES.



WATER AND SEWER SYSTEMS PROFILE

SCALE IN FEET
0 15 30 FT.

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WATER AND SEWER PLAN AND PROFILE STA. 12+00 TO EOP

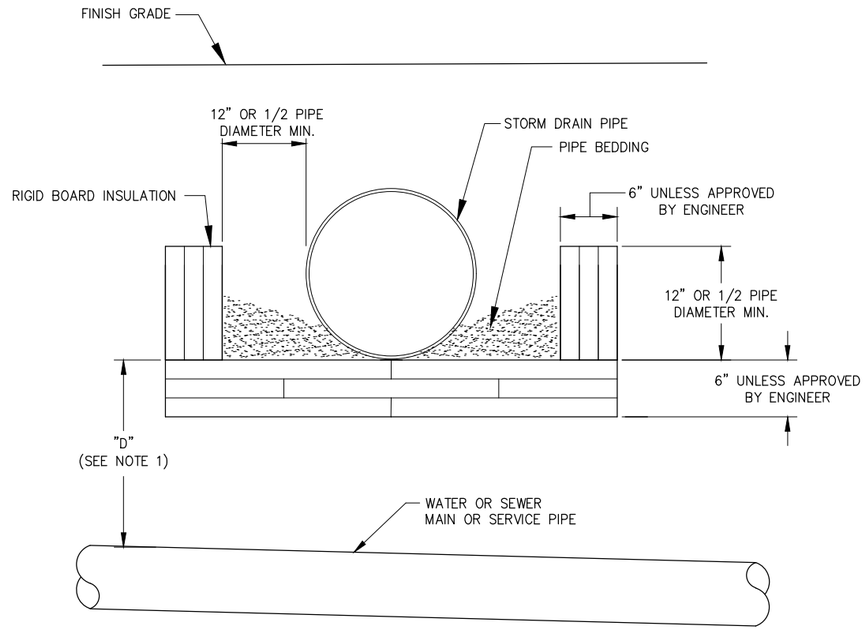
C5.04

SANITARY SEWER PIPE						
PIPE	TYPE	LENGTH	FROM	INVERT	TO	INVERT
EX P1	8" PVC SDR35	25.33'		11.97	EXMH	12.22
SSP1	8" PVC SDR35	64.70'	EXMH	21.10	SSMH1	22.20
SSP2	8" PVC SDR35	29.91'	SSMH1	22.30	SSMH2	22.82
SSP3	8" PVC SDR35	287.74'	SSMH2	22.92	SSMH3	24.90
SSP4	8" PVC SDR35	338.27'	SSMH3	25.00	SSMH4	28.35
SSP5	8" PVC SDR35	282.89'	SSMH4	28.45	SSMH5	29.86
SSP6	8" PVC SDR35	174.72'	SSMH5	29.96	SSMH6	30.94
SSP7	8" PVC SDR35	137.84'	SSMH6	31.04	SSMH7	32.74
SSP8	8" PVC SDR35	249.94'	SSMH7	32.84	SSMH8	37.33
SSP9	6" PVC C900	28.00'	SSMH5	29.96		30.44
SSP10	6" PVC C900	28.00'	SSMH7	32.99		33.12
SSP11	8" PVC SDR35	5.31'	SSMH8	37.43		37.54
SSP12	6" PVC C900	28.33'	SSMH8	37.43		39.32

SANITARY SEWER STRUCTURES				
STRUCTURE	STATION	OFFSET	RIM ELEV.	TYPE
SSMH8	15+40.26	2.00 LT.	44.12	TYPE A MANHOLE
SSMH7	12+90.32	2.00 LT.	38.37	TYPE A MANHOLE
SSMH6	11+52.49	2.00 LT.	36.64	TYPE A MANHOLE
SSMH5	9+77.77	2.00 LT.	35.59	TYPE A MANHOLE
SSMH4	6+94.77	2.00 LT.	34.06	TYPE A MANHOLE
SSMH3	3+56.50	2.00 LT.	30.38	TYPE A MANHOLE
SSMH2	0+68.65	1.78 LT.	30.77	TYPE A MANHOLE
SSMH1	0+47.61	18.11 RT.	31.56	TYPE A MANHOLE
EXMH	0+35.71	80.72 RT.	31.55	

WATER AND SEWER SYSTEMS GENERAL NOTES:

1. MAINTAIN 10' MIN. HORIZONTAL CLEARANCE FROM WATER MAIN TO SEWER AND STORM DRAIN MAINS AT ALL LOCATIONS EXCEPT AT CROSSINGS AND WHERE OTHERWISE NOTED.
2. AT ALL CROSSINGS MAINTAIN 18" VERTICAL CLEARANCE FROM WATER MAIN TO SEWER OR STORM MAINS AND 9'–0" MIN. HORIZONTAL CLEARANCE FROM WATER MAIN PIPE JOINTS TO SEWER OR STORM MAIN PIPE JOINTS, EXCEPT AS NOTED OR UNLESS OTHERWISE APPROVED BY THE ENGINEER.
3. LOCATIONS WHERE WATER MAIN DOES NOT MEET SEPARATION DISTANCE REQUIREMENTS HAVE BEEN PERMITTED BY ADEC. REFER TO THE PERMIT INCLUDED IN THE CONTRACT DOCUMENTS FOR SPECIFIC CONDITIONS & DETAILS.
4. WATER SERVICES AND SEWER SERVICES PER DETAILS SHEET C5.06.
5. CONSTRUCT SEWER MANHOLES PER DETAILS SHEET C5.08.
6. HYDRANTS PER DETAILS SHEET C5.07. HYDRANT ACCESS PAD SHALL BE BASE COURSE GRADING D1 PAD SHALL BE INCIDENTAL TO HYDRANT.
7. CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, ELBOWS AND OTHER FITTINGS AS REQUIRED TO CONNECT TO EXISTING SERVICES, INCIDENTAL.
8. ALL WATER SERVICES SHALL MAINTAIN 10' HORIZONTAL CLEAR TO SEWER SERVICES.
9. INSULATE WATER SERVICES AT STORM DRAIN OR SEWER CROSSINGS AS REQUIRED PER ENGINEER DIRECTION.
10. SUPPORT AND RE–BED ALL PIPES UNCOVERED WITH BEDDING MATERIAL PER TRENCH DETAILS.
11. INVERT ELEVATIONS OF EXISTING PIPES AT CROSSINGS ARE ESTIMATED BASED ON PROXIMITY TO KNOWN PIPE ELEVATIONS AND FIELD OBSERVATIONS, ACCURACY IS NOT WARRANTED. FIELD CONFIRM ALL EXISTING UTILITIES.
12. GRADE ADJUSTMENTS FOR NEW & EXISTING MANHOLES WITHIN PAVEMENT SHALL BE WITH EJIW "INFRA–RISER" 1/2"t. MIN. 3"t. MAX. REQUIRED UNLESS OTHERWISE APPROVED BY THE ENGINEER. RINGS SHALL BE TAPERED OR SHIMMED TO MATCH GRADE.
13. CONTRACTOR MAY BEND WATER MAIN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS TO ACHIEVE VERTICAL ALIGNMENT.
14. THE WATERLINE PROFILE HAS BEEN DEVELOPED TO ALLOW TRAPPED AIR BLOW–OFF FROM HYDRANT LOCATIONS. UNLESS OTHERWISE APPROVED BY THE ENGINEER, DEVIATIONS FROM DESIGN PROFILES SHALL NOT BE PERMITTED. DEVIATIONS FROM THE DESIGN PROFILES SHALL ONLY BE CONSIDERED BY THE ENGINEER WHEN, IN THE OPINION OF THE ENGINEER, ALTERNATIVES ARE UNAVAILABLE, COST PROHIBITIVE OR OTHERWISE DETRIMENTAL TO CBS FACILITIES. DEVIATIONS THAT, IN THE OPINION OF THE ENGINEER RESULT IN UNSATISFACTORY CONDITIONS SHALL NOT BE APPROVED.



NOTES

1. INSTALL INSULATION AS SHOWN WHEN "D" IS LESS THAN 6'–0" FOR WATER PIPE OR 4'–0" FOR SEWER PIPE.
2. PIPE INSULATION SHALL BE 8'–0" IN LENGTH, CENTERED OVER EXISTING WATER OR SEWER PIPE.
3. PIPE INSULATION WITH R–FACTOR EQUAL TO RIGID BOARD MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.
4. INSULATION BOARDS SHALL OVERLAP 12" AS SHOWN IN DRAWING.

RIGID INSULATION DETAIL

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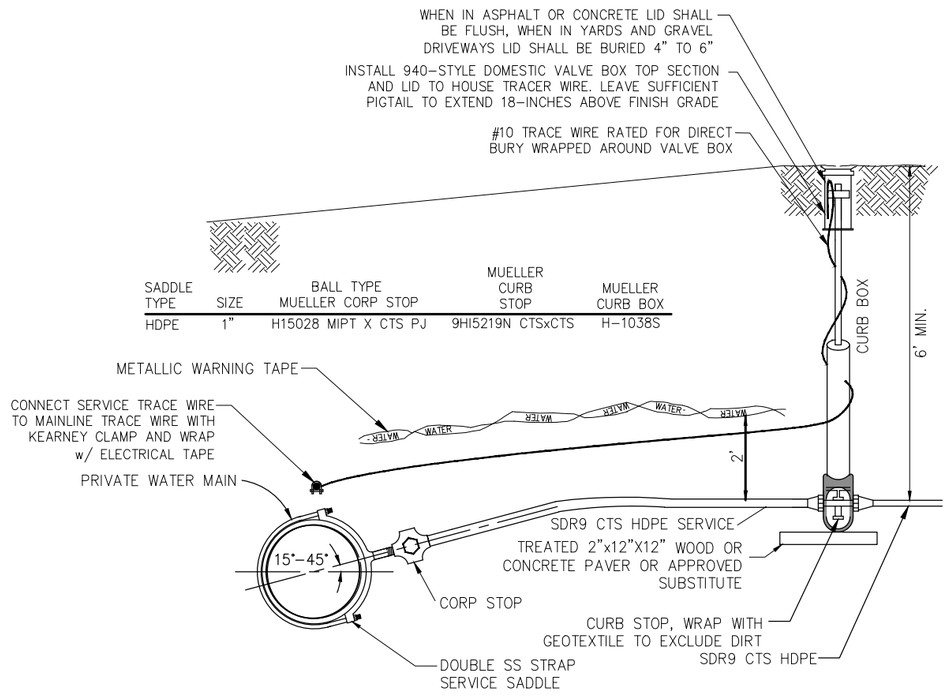
04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
JONES POINT ROAD IMPROVEMENTS

STATE OF ALASKA 49 TH
Seth J. Siostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242076
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

SUMMARY TABLES AND UTILITY DETAILS

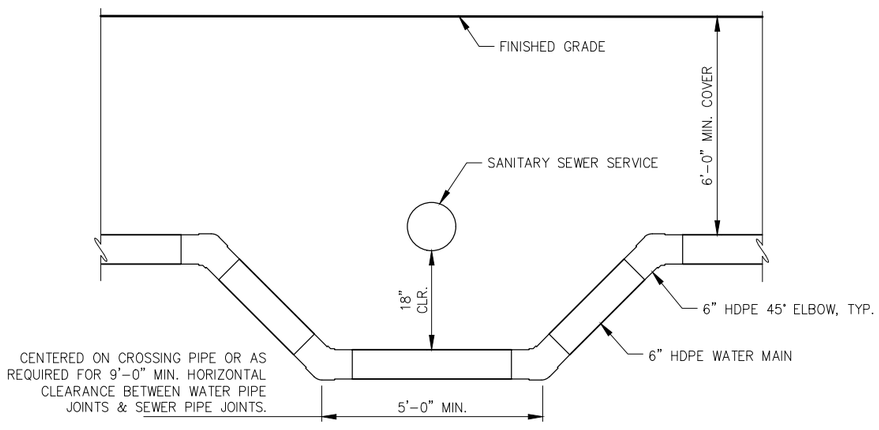
C5.05



NOTES:

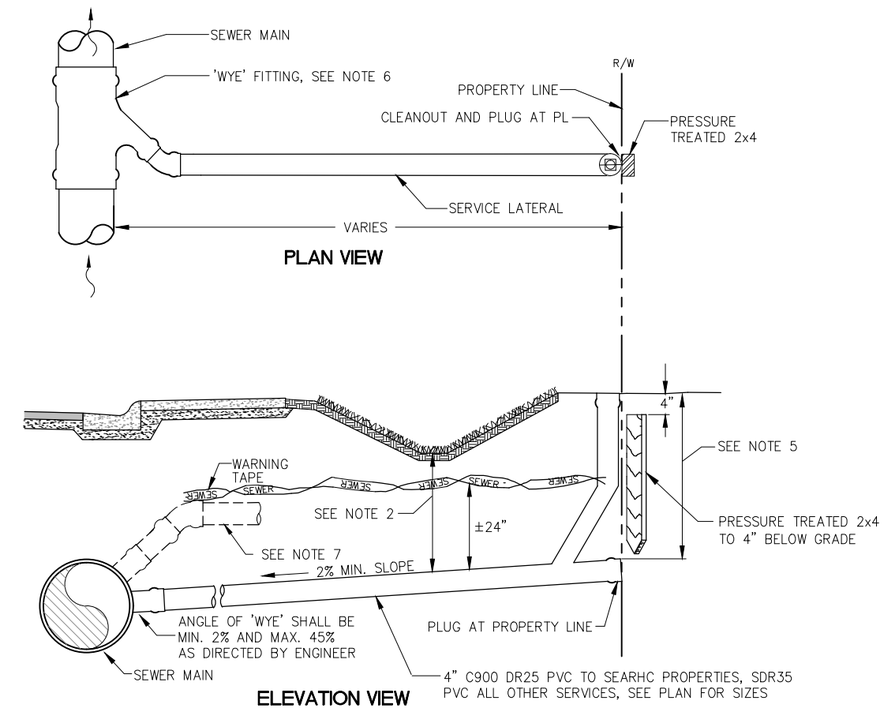
1. ROD TO BE ATTACHED TO CURB STOP WITH BRASS OR STAINLESS COTTER PIN.
2. SERVICE SHALL MAINTAIN 6' MINIMUM BURY UNLESS PROPERLY INSULATED AS DIRECTED BY THE ENGINEER.
3. WHERE SERVICE STUB IS REQUIRED PIPE SHALL BE CAPPED, 4' BEYOND CURB BOX, WITH HDPE FUSED CAP MARKED WITH LOCATOR BALL AND POST w/ USABLUEBOOK.COM WATER BALL=75025 BLUE & BLUE POST).
4. CURB STOP VALVE EXTENSIONS SHALL BE STAINLESS STEEL.

TYPICAL WATER SERVICE



WATERLINE VERTICAL OFFSET AT SEWER SERVICE

NOT TO SCALE



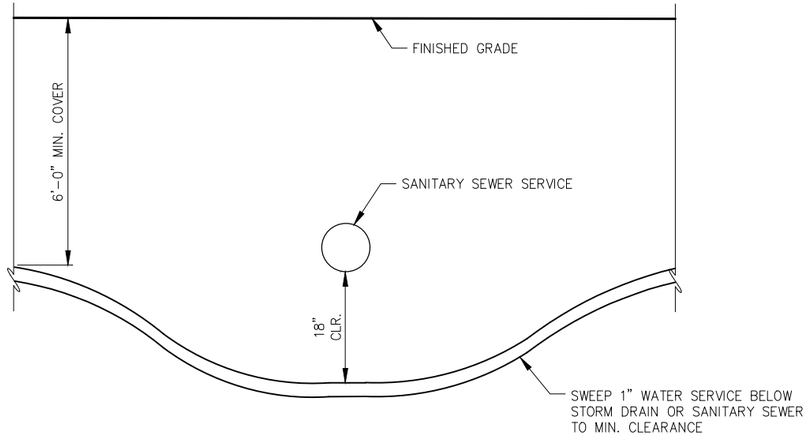
PLAN VIEW

ELEVATION VIEW

NOTES:

1. MARK SERVICE WITH PRESSURE TREATED 2x4 POST TO DEPTH OF 4" BELOW FINISHED GROUND LEVEL.
2. MINIMUM CLEARANCE OF 18" REQUIRED BENEATH DITCH LINE. PIPE WITH LESS THAN 3' OF COVER SHALL BE COVERED WITH 8'x4'x4" OF FOAM INSULATION CENTERED ON PIPE.
3. DISTANCE FROM WYE TO CENTER 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.
4. SERVICE LATERAL SHALL BE PLUGGED IN A MANNER THAT WILL WITHSTAND TEST PRESSURES.
5. LATERAL DEPTH AT PIPE END SHALL ACCOMMODATE EXISTING BUILDING SEWER OR FUTURE BUILDING SITE(S).
6. WYE FITTING ON MAIN SHALL BE USED FOR NEW CONSTRUCTION. MARKER BALLS SHALL BE USABLUEBOOK.COM EMS MARKER BALL 31392.
7. WHERE CONFLICTS WITH OTHER UTILITIES OR OBSTRUCTIONS WOULD OTHERWISE EXIST, ORIENT WYE TO ALLOW FOR SERVICE PIPE TO CLEAR OBSTRUCTION PER ENGINEER DIRECTION. MAINTAIN SLOPE AND DEPTH OF BURY REQUIREMENTS AS SPECIFIED. ADDITIONAL PIPE AND FITTINGS SHALL BE INCIDENTAL TO SEWER SERVICE INSTALLATION.

TYPICAL SEWER SERVICE



WATER SERVICE VERTICAL OFFSET AT STORM DRAIN / SEWER MAIN

NOT TO SCALE

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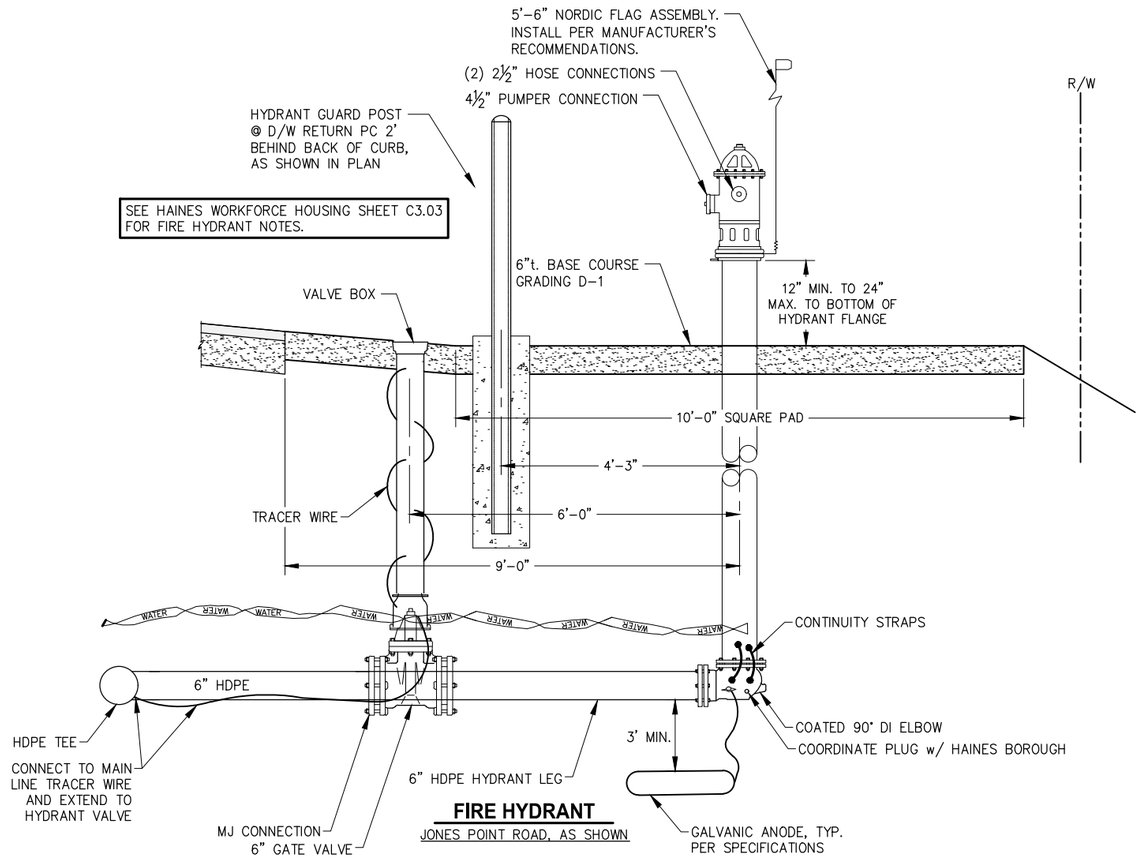
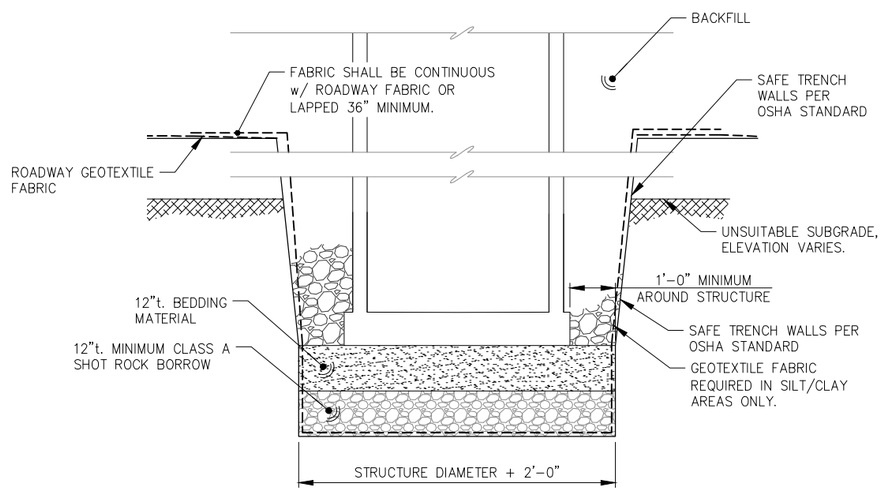
UTILITY DETAILS

C5.06



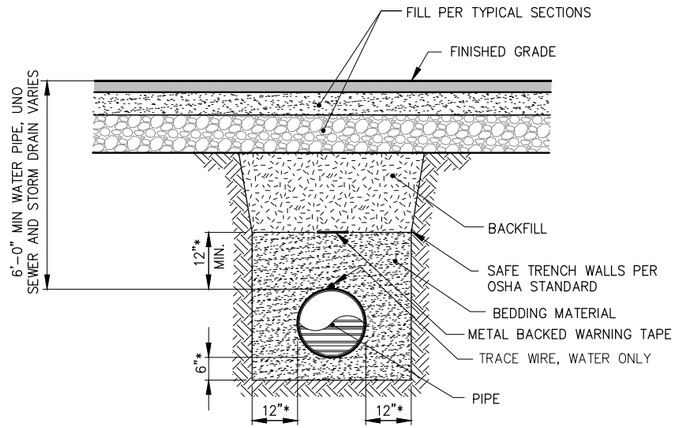
FIRE HYDRANT

JONES POINT ROAD, AS SHOWN



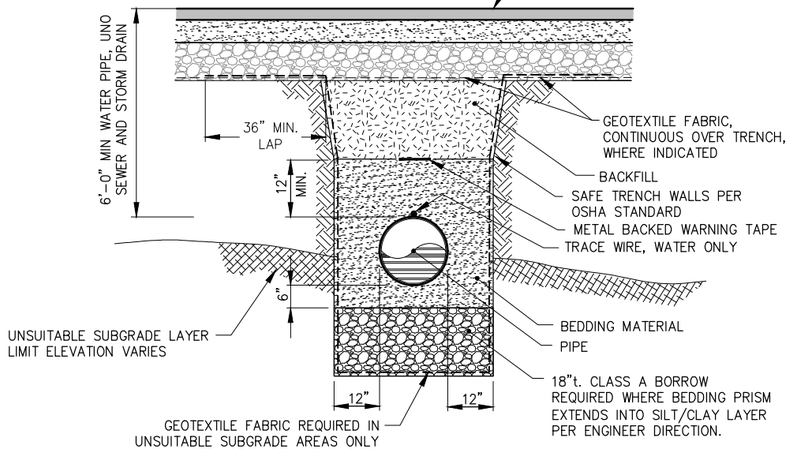
STRUCTURE SUPPORT DETAIL w/ SUBGRADE REINFORCEMENT

NOTES:
1. DETAIL SHALL ONLY BE UTILIZED AS DIRECTED BY THE ENGINEER.
2. UNSUITABLE SUBGRADE IS KNOWN TO EXIST IN AREAS NOTED ON TYPICAL SECTIONS. CONTRACTOR SHALL ANTICIPATE APPLICATION OF THIS DETAIL IN THESE AREAS AND ELSEWHERE AS DIRECTED BY THE ENGINEER.
3. DETAILS AND CALLOUTS NOT SHOWN SIMILAR TO STRUCTURE SUPPORT DETAIL WITHOUT SUBGRADE REINFORCEMENT



PIPE TRENCH DETAIL WITHOUT SUBGRADE REINFORCEMENT

NOTES:
1. DETAIL APPLIES TO ALL PIPE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. PIPE INSULATION SHALL BE PLACED OVER WATER PIPE AT ALL LOCATIONS WHERE DEPTH OF BURY MUST BE LESS THAN 6' AS DETERMINED AND DIRECTED BY THE ENGINEER.



PIPE TRENCH DETAIL WITH SUBGRADE REINFORCEMENT

NOTES:
1. DETAIL SHALL ONLY BE UTILIZED AS DIRECTED BY THE ENGINEER BUT IS ANTICIPATED THROUGHOUT HOUSING PROJECT AND JONES POINT ROAD.
2. UNSUITABLE SUBGRADE IS KNOWN TO EXIST IN AREAS NOTED ON TYPICAL SECTIONS. CONTRACTOR SHALL ANTICIPATE APPLICATION OF THIS DETAIL IN THESE AREAS AND ELSEWHERE AS DIRECTED BY THE ENGINEER.
3. GEOTEXTILE FABRIC SHALL BE LAPPED A MINIMUM OF 36" AS SHOWN.
4. PIPE INSULATION SHALL BE PLACED OVER WATER PIPE AT ALL LOCATIONS WHERE DEPTH OF BURY MUST BE LESS THAN 6' AS DETERMINED AND DIRECTED BY THE ENGINEER.

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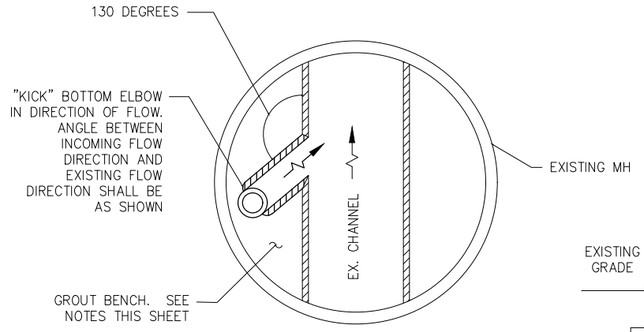
UTILITY DETAILS

C5.07



SECTION A–A

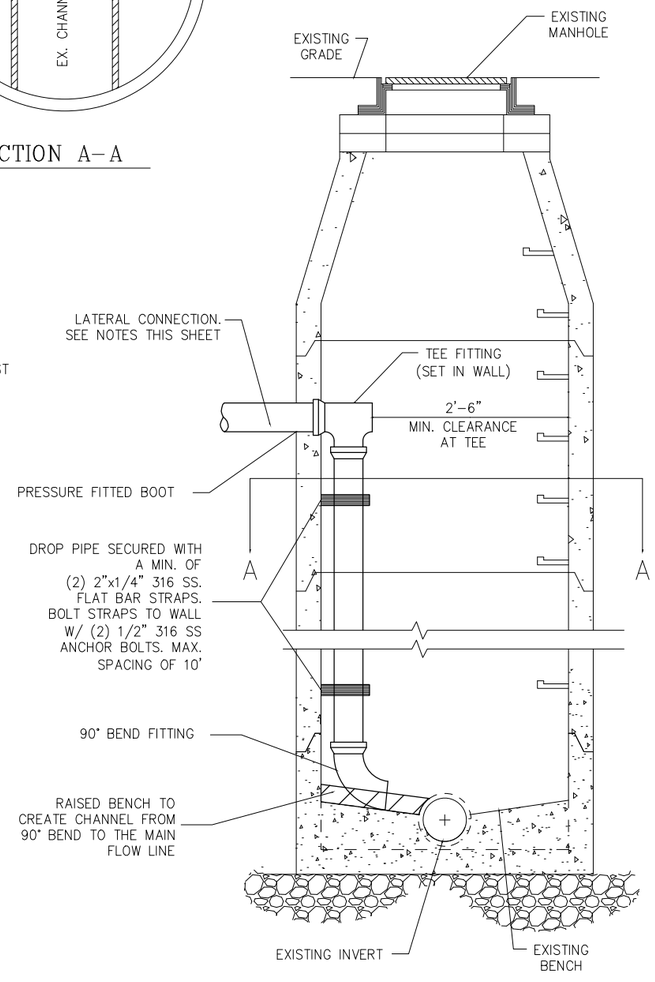
NOTES:

1. DROP CONNECTION SHALL NOT INTERFERE WITH MANHOLE STEPS.

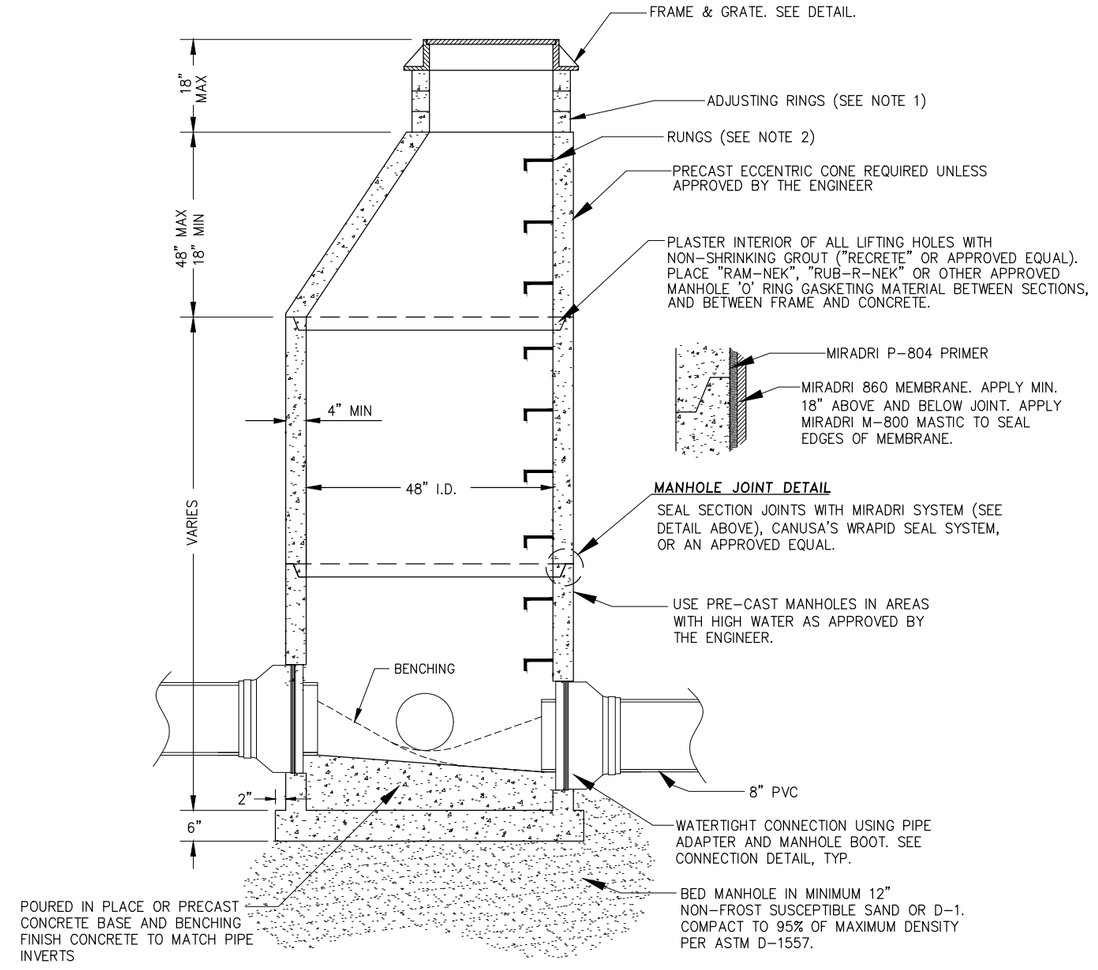
2. DROP CONNECTION MUST NOT DISTURB INTEGRITY OF JOINTS AND MUST NOT BE WITHIN 12" OF A JOINT.

3. EXISTING BENCH TO BE RAISED AND A CHANNEL TO BE CREATED FROM THE OUTLET OF THE 90° BEND TO THE MAIN FLOW LINE.

4. LATERAL TAP INTO EXISTING MANHOLE WALL SHALL BE AT EXISTING HOLE REMAINING FROM REMOVED EXISTING SEWER TAP AND A PRESSURE FITTED BOOT WITH STAINLESS STEEL BANDS USED TO MAKE A WATER TIGHT SEAL



INTERNAL DROP CONNECTION IN EXISTING MANHOLE



NOTES

1. USE NO MORE THAN ONE 4" ADJUSTING RING ON NEW CONSTRUCTION ON UNPAVED ROADS. FINAL ADJUSTING RINGS SHALL BE AN "INFRA–RISER", OR APPROVED EQUAL TO MEET FINAL GRADE. USE "PL POLYURETHANE SELF–LEVELING CONCRETE CRACK SEALANT" OR APPROVED EQUAL FOR "INFRA–RISER" INSTALLATION.

2. 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. RUNGS SHALL BE LANE POLYETHYLENE 14" LADDER STEPS OR AN APPROVED EQUAL.

SANITARY SEWER MANHOLE

Cushing Terrell
cushingterrell.com
800.757.9522

PND ENGINEERS, INC.
9360 Glacier Highway Suite 100
Juneau, Alaska 99801
Phone: 907-586-2093
AK. LIC# AECC250

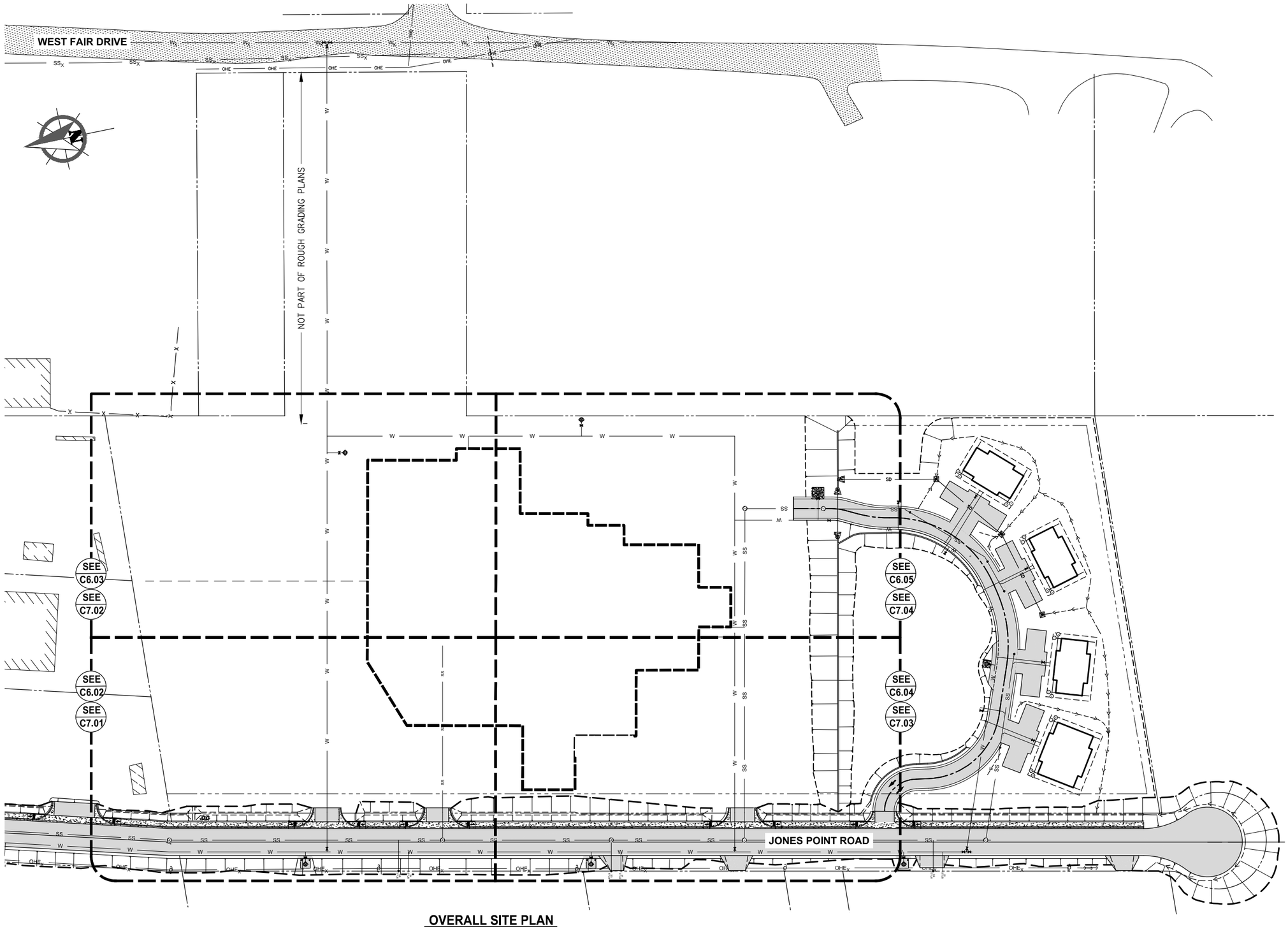
04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
JONES POINT ROAD IMPROVEMENTS

STATE OF ALASKA 49TH
Sean C. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

UTILITY DETAILS

C5.08



OVERALL SITE PLAN

SCALE IN FEET
0 50 100 FT.

Cushing Terrell
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800.757.9522

PND ENGINEERS, INC.
9360 Glacier Highway Suite 100
Juneau, Alaska 99801
Phone: 907-586-2093
AK. LIC# AECC250

04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM

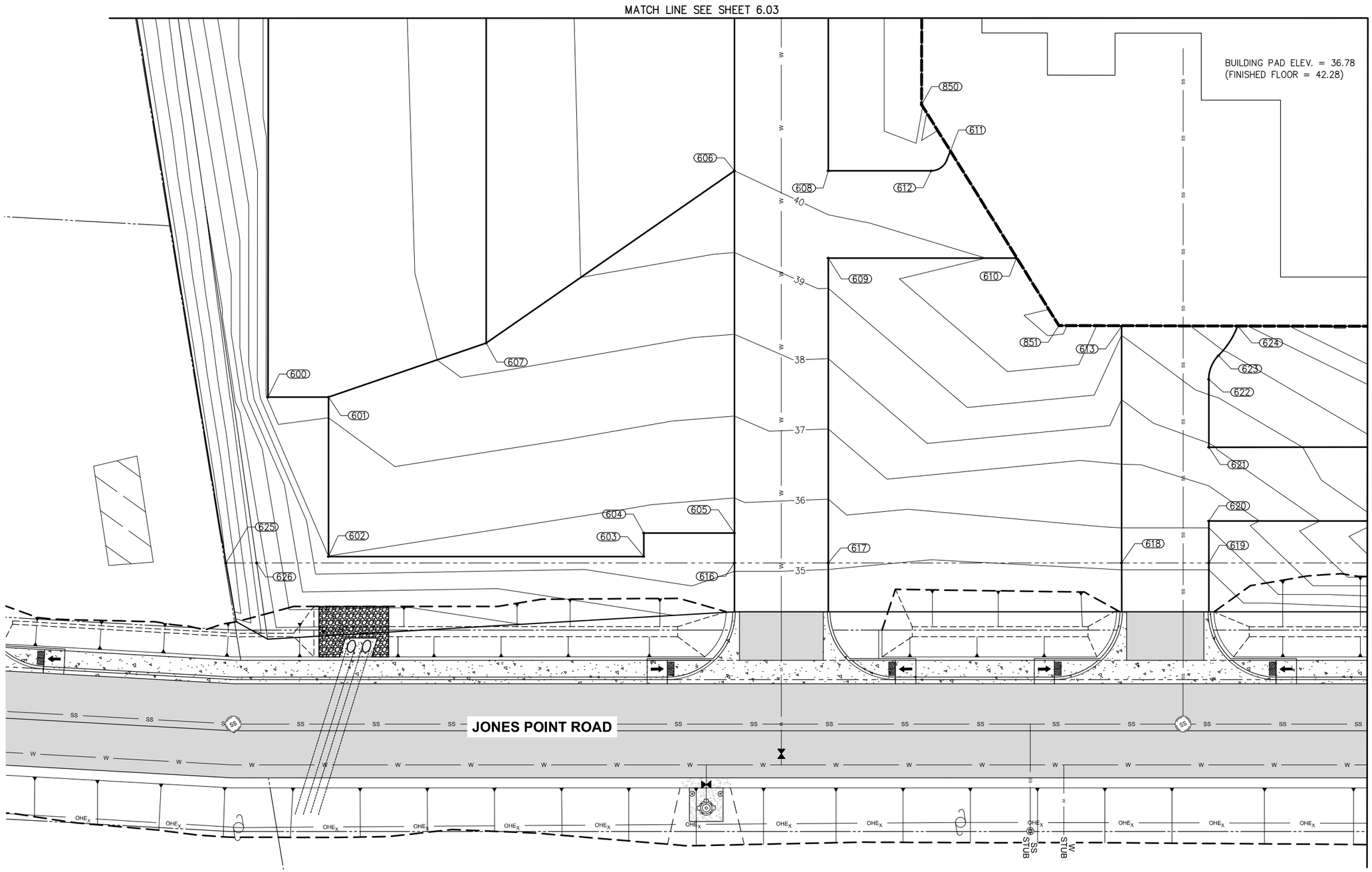
HAINES MEDICAL CENTER
SITE PREPARATION

STATE OF ALASKA 49TH
Sean C. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

OVERALL SITE PLAN
AND SHEET KEY MAP

C6.01



PARTIAL MEDICAL CENTER MASS GRADING PLAN

SCALE IN FEET
0 15 30 FT.

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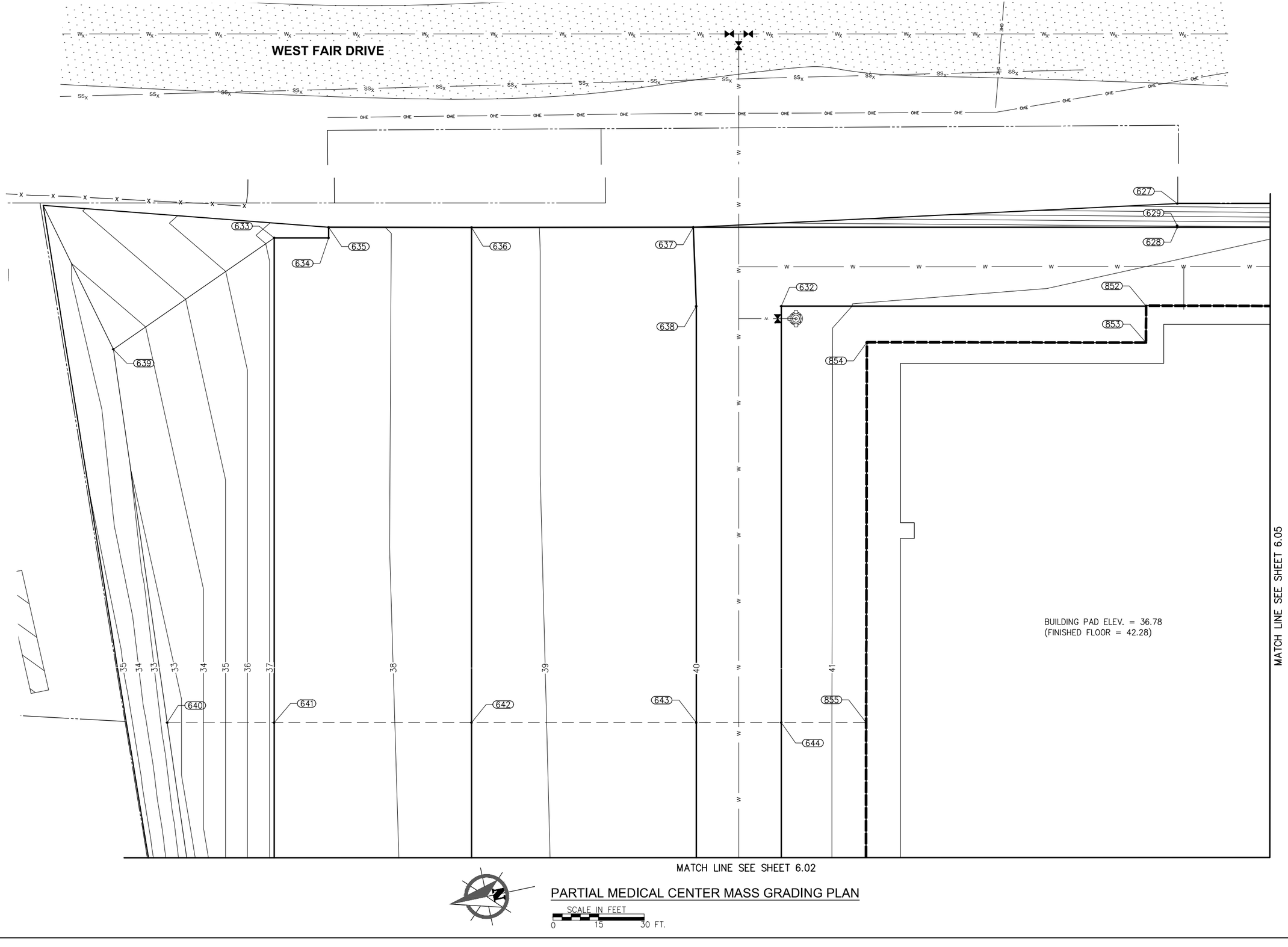
REVIEWED BY | SSJOSTEDT
REVISIONS:

PARTIAL MEDICAL CENTER MASS GRADING PLAN

C6.02



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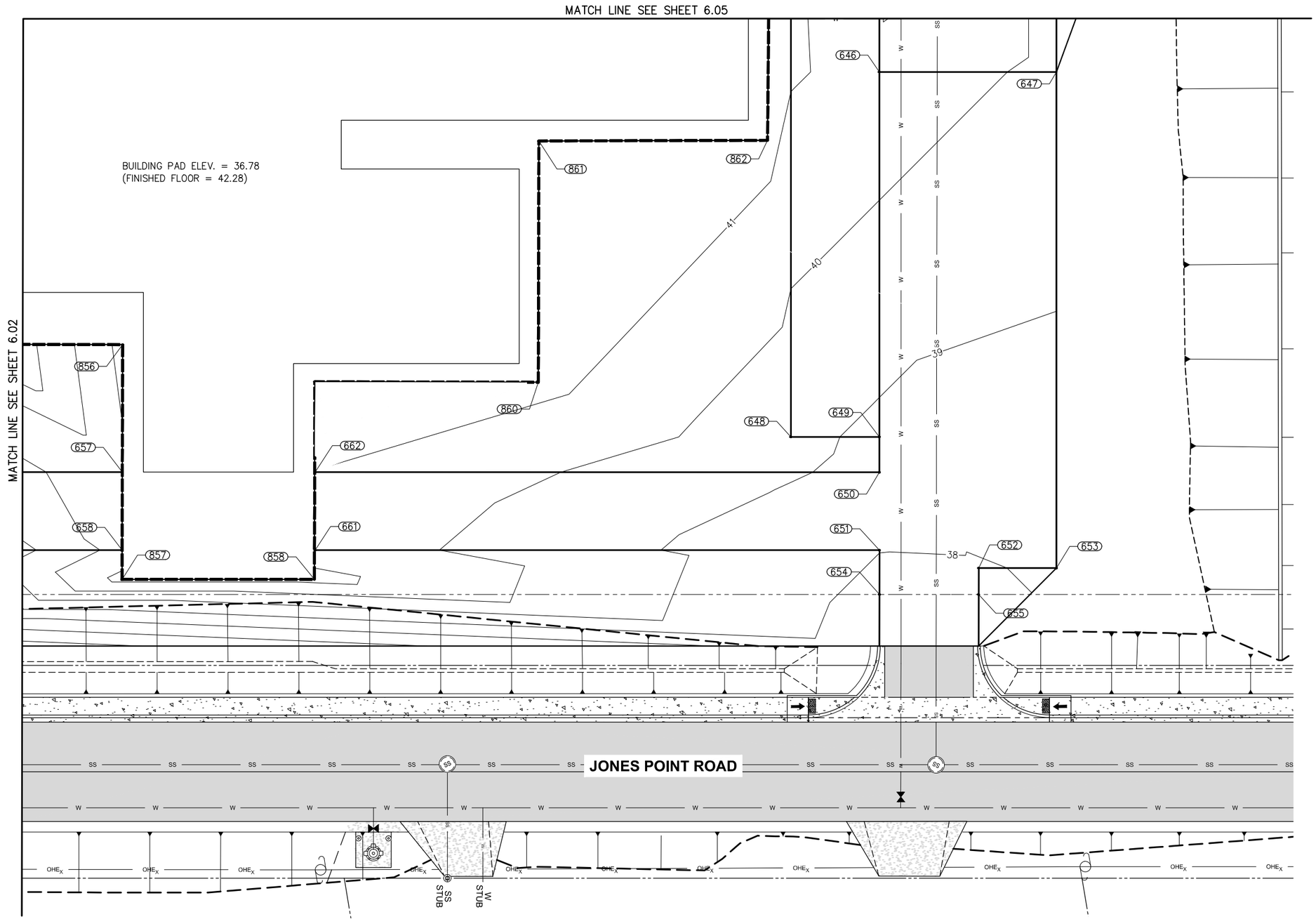
PARTIAL MEDICAL CENTER MASS GRADING PLAN

C6.03



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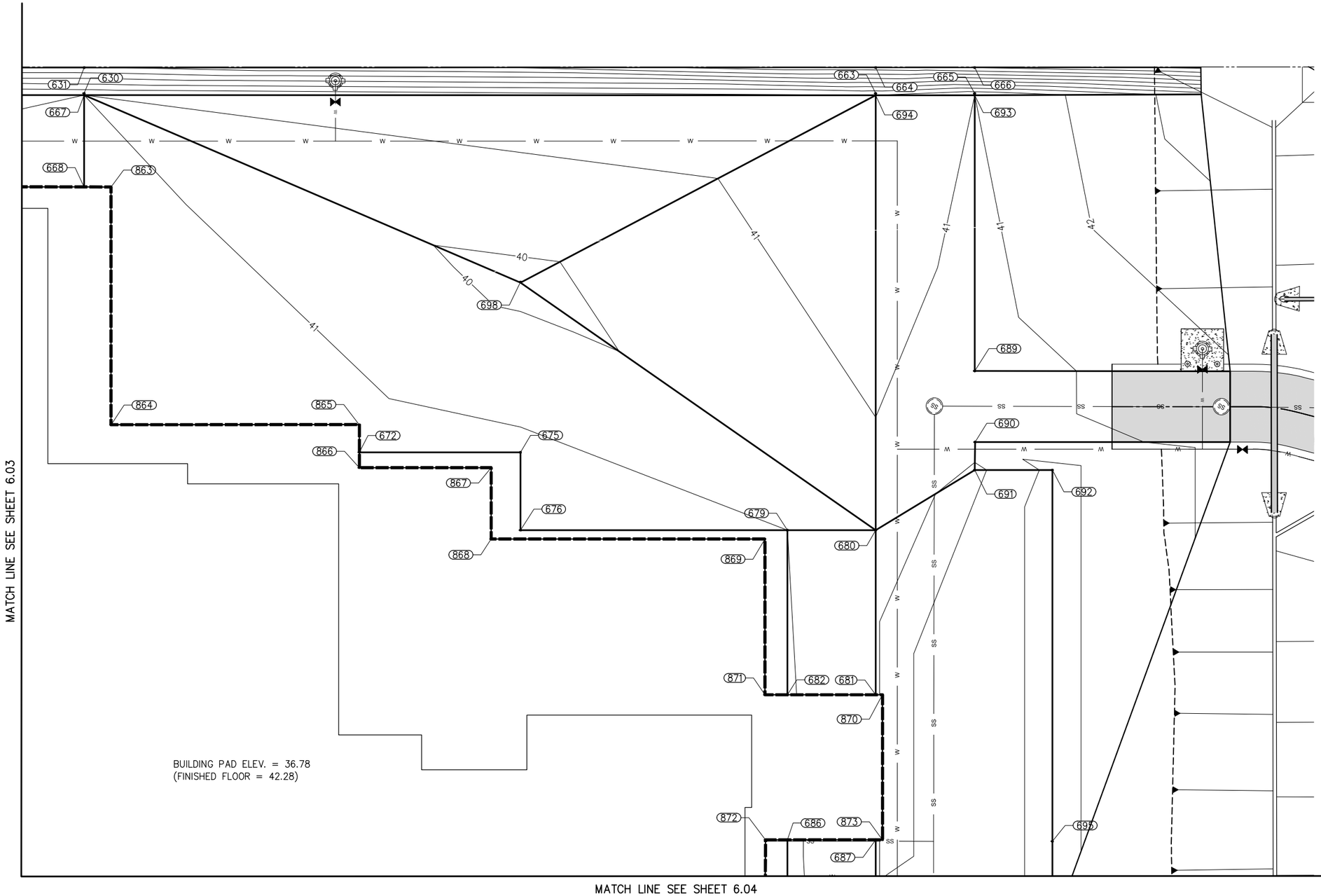
PARTIAL MEDICAL CENTER MASS GRADING PLAN

C6.04



PARTIAL MEDICAL CENTER MASS GRADING PLAN

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REVIEWED BY | SSJOSTEDT
REVISIONS:

PARTIAL MEDICAL CENTER MASS GRADING PLAN

C6.05

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
600	2707664.51	2348265.55	37.21	FG
601	2707646.68	2348262.63	37.15	FG
602	2707654.36	2348215.77	35.99	FG
603	2707561.71	2348200.58	35.68	FG
604	2707560.56	2348207.48	35.66	FG
605	2707533.94	2348203.11	35.57	FG
606	2707516.48	2348309.59	40.00	FG
607	2707597.74	2348270.91	38.38	FG
608	2707488.88	2348305.06	40.58	FG
609	2707493.08	2348279.43	39.43	FG
610	2707437.85	2348270.37	40.11	FG
611	2707452.02	2348304.96	40.93	FG
612	2707458.66	2348300.10	40.85	FG
613	2707410.18	2348245.21	39.14	FG
616	2707535.38	2348194.33	35.13	FG
617	2707507.78	2348189.81	35.09	FG
618	2707421.58	2348175.68	35.16	FG
619	2707395.94	2348171.47	35.16	FG
620	2707393.92	2348183.78	36.16	FG
621	2707390.36	2348205.47	37.92	FG

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
622	2707387.10	2348225.47	39.32	FG
623	2707383.05	2348231.98	39.86	FG
624	2707376.10	2348239.75	40.59	FG
625	2707684.80	2348218.83	34.98	FG
626	2707675.80	2348217.36	31.46	FG
627	2707316.00	2348554.48	45.66	FG, ME
628	2707317.26	2348546.80	40.77	FG
629	2707317.18	2348547.29	42.00	FG, BC
630	2707269.61	2348539.49	44.00	FG, BC
631	2707268.43	2348546.69	44.93	FG, ME
632	2707449.99	2348542.24	40.58	FG
633	2707611.00	2348591.41	37.21	FG
634	2707593.33	2348588.52	37.56	FG
635	2707592.76	2348591.94	37.63	FG
636	2707546.36	2348584.28	38.56	FG
637	2707474.40	2348572.56	40.00	FG
638	2707477.60	2348546.77	40.00	FG
639	2707669.13	2348563.81	33.20	FG
640	2707671.51	2348439.71	32.58	FG
641	2707636.80	2348434.02	37.21	FG

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
642	2707572.72	2348423.52	38.47	FG
643	2707499.76	2348411.55	40.00	FG
644	2707472.16	2348407.03	40.58	FG
646	2707087.03	2348270.10	40.65	FG
647	2707037.74	2348262.02	39.75	FG
648	2707128.33	2348172.60	39.25	FG
649	2707103.68	2348168.56	38.80	FG
650	2707105.29	2348158.74	38.74	FG
651	2707108.85	2348137.05	38.01	FG
652	2707082.02	2348127.55	37.89	FG
653	2707060.37	2348124.00	38.20	FG
654	2707110.83	2348124.73	37.81	FG
655	2707083.24	2348120.20	37.78	FG
657	2707316.01	2348193.32	40.83	FG
658	2707319.62	2348171.62	40.35	FG
661	2707265.91	2348162.80	40.56	FG
662	2707262.34	2348184.52	40.97	FG
663	2707048.80	2348503.30	44.00	FG, BC
664	2707047.62	2348510.51	47.93	FG, ME
665	2707021.20	2348498.77	44.00	FG, BC

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
666	2707020.02	2348505.98	46.83	FG, ME
667	2707269.69	2348539.00	41.00	FG
668	2707273.89	2348513.37	41.22	FG
672	2707209.24	2348426.81	41.22	FG
675	2707164.31	2348419.45	41.22	FG
676	2707167.87	2348397.76	41.30	FG
679	2707093.42	2348385.55	41.00	FG
680	2707068.77	2348381.51	40.65	FG
681	2707076.30	2348335.59	40.65	FG
682	2707100.94	2348339.63	41.04	FG
686	2707107.58	2348299.18	41.08	FG
687	2707082.92	2348295.17	40.65	FG
689	2707033.88	2348421.37	40.40	FG
690	2707037.03	2348401.54	40.40	FG
691	2707038.42	2348393.74	41.23	FG
692	2707016.73	2348390.18	39.75	FG
693	2707021.28	2348498.27	42.00	FG
694	2707048.88	2348502.80	42.00	FG
695	2707033.70	2348286.67	39.75	FG
698	2707156.52	2348466.96	39.76	FG

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
850	2707458.28	2348320.03	36.78	OVEREX, FF – 5.5'
851	2707428.58	2348248.47	36.78	OVEREX, FF – 5.5'
852	2707331.58	2348522.83	36.78	OVEREX, FF – 5.5'
853	2707333.54	2348510.98	36.78	OVEREX, FF – 5.5'
854	2707424.15	2348525.97	36.78	OVEREX, FF – 5.5'
855	2707444.61	2348402.47	36.78	OVEREX, FF – 5.5'
856	2707310.11	2348228.77	36.78	OVEREX, FF – 5.5'
857	2707320.95	2348163.48	36.78	OVEREX, FF – 5.5'
858	2707267.45	2348154.71	36.78	OVEREX, FF – 5.5'
859	2707258.32	2348209.68	36.78	OVEREX, FF – 5.5'
860	2707196.13	2348199.35	36.78	OVEREX, FF – 5.5'
861	2707184.98	2348266.46	36.78	OVEREX, FF – 5.5'
862	2707121.31	2348256.20	36.78	OVEREX, FF – 5.5'
863	2707266.42	2348512.14	36.78	OVEREX, FF – 5.5'
864	2707277.20	2348445.84	36.78	OVEREX, FF – 5.5'
865	2707207.98	2348434.49	36.78	OVEREX, FF – 5.5'
866	2707209.94	2348422.54	36.78	OVEREX, FF – 5.5'
867	2707173.20	2348416.52	36.78	OVEREX, FF – 5.5'
868	2707176.46	2348396.63	36.78	OVEREX, FF – 5.5'
869	2707100.09	2348384.11	36.78	OVEREX, FF – 5.5'

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
870	2707074.41	2348335.28	36.78	OVEREX, FF – 5.5'
871	2707107.22	2348340.66	36.78	OVEREX, FF – 5.5'
872	2707113.66	2348300.18	36.78	OVEREX, FF – 5.5'
873	2707081.04	2348294.86	36.78	OVEREX, FF – 5.5'

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AK. LIC# AECC250

04.08.2026
SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM

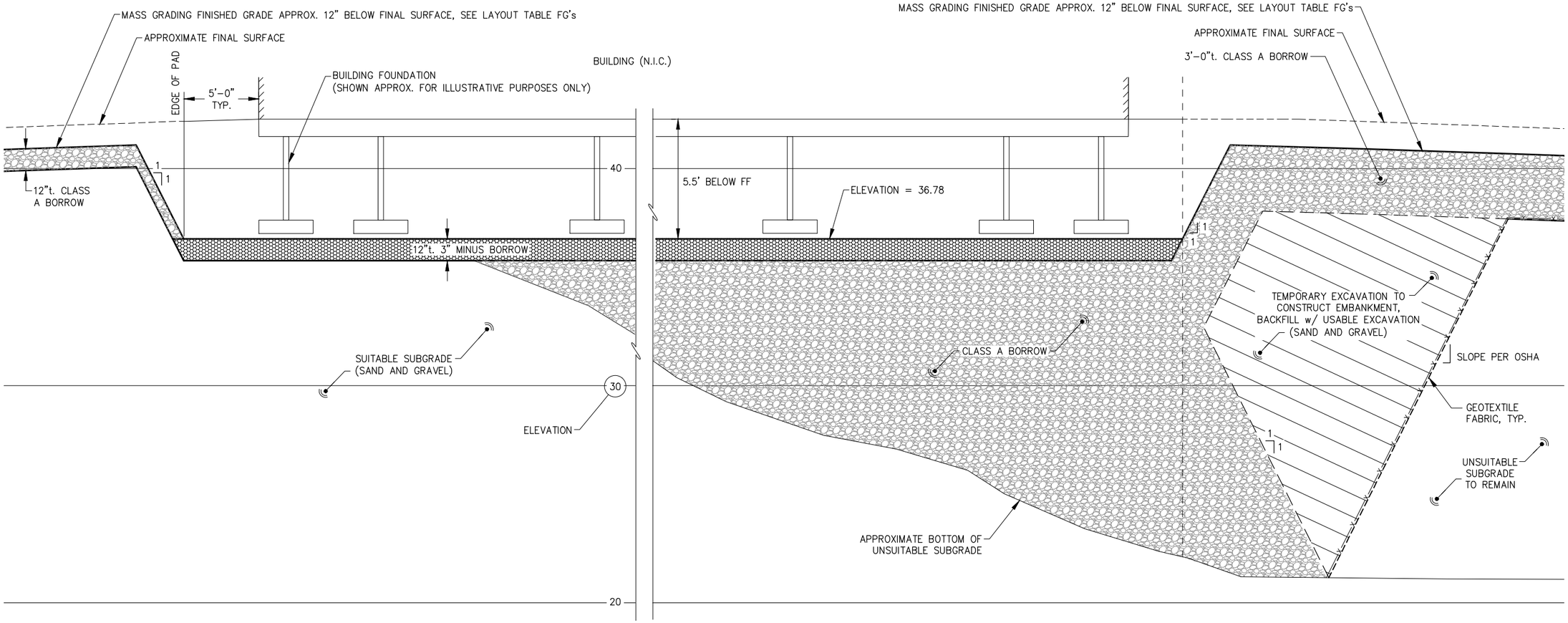
HAINES MEDICAL CENTER
SITE PREPARATION

STATE OF ALASKA 49TH
Sean C. Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

04.08.2026
PROJ# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

POINT LAYOUT TABLES

C6.06



MASS GRADING SECTION THRU BUILDING
LOOKING EAST

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SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM

HAINES MEDICAL CENTER
SITE PREPARATION

STATE OF ALASKA
49 TH
Sean Sjostedt
CE-102428
REGISTERED PROFESSIONAL ENGINEER

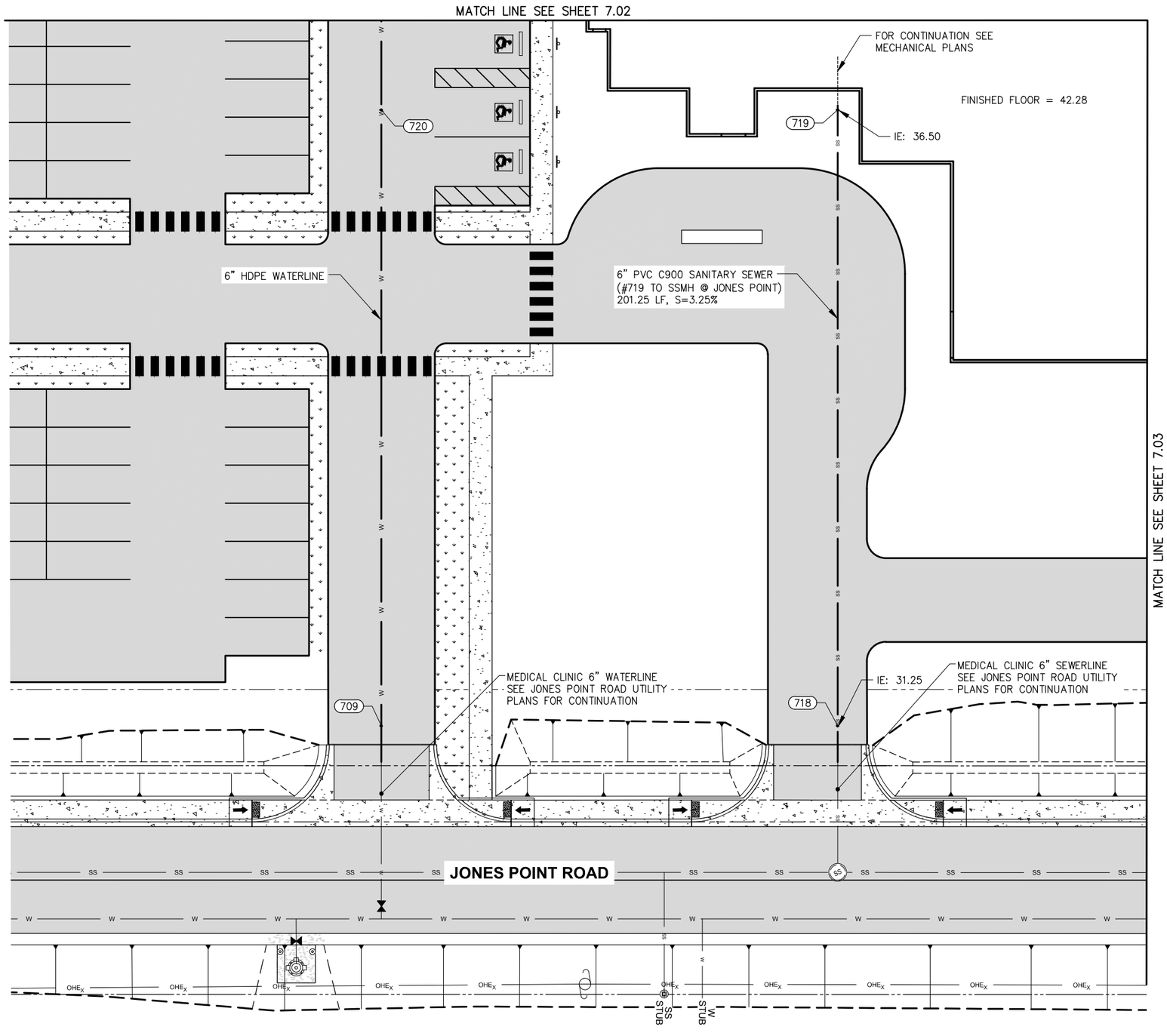
04.08.2026
PRO.# | 242078
DESIGNED BY | WBROWN
DRAWN BY | WBROWN
REVIEWED BY | SSJOSTEDT
REVISIONS:

SITE SECTION

C6.07

LAYOUT TABLE

POINT NO.	NORTHING	EASTING	DESCRIPTION
700	2707108.11	2348104.02	POL, WATERLINE
701	2707078.62	2348283.89	TEE
702	2707044.98	2348489.05	90 ELBOW
703	2707059.07	2348403.14	TEE
704	2707201.70	2348514.70	HYDRANT TEE
705	2707317.23	2348533.63	TEE
706	2707461.73	2348557.32	TEE
707	2707464.49	2348540.46	HYDRANT TEE
708	2707395.81	2348959.39	TEE, GATE VALVES
709	2707523.15	2348182.66	POL, WATERLINE
710	2707445.90	2348537.39	FIRE HYDRANT
711	2707198.94	2348531.54	FIRE HYDRANT
712	2707115.72	2348289.97	POL, WATERLINE
713	2706973.93	2348389.18	HYDRANT TEE
714	2707096.61	2348112.74	POL, SEWERLINE
715	2707066.87	2348292.08	SS WYE
716	2707114.10	2348299.89	POL, SEWERLINE
717	2707319.50	2348519.79	POL, WATERLINE
718	2707405.04	2348163.29	POL, SEWERLINE
719	2707378.89	2348322.77	POL, SEWERLINE
720	2707497.01	2348342.13	POL, WATERLINE
721	2707490.23	2348383.49	POL, WATERLINE
722	2707072.75	2348256.65	POL, SEWERLINE
723	2707082.73	2348258.78	POL, WATERLINE
724	2707046.75	2348413.38	SSMH



PARTIAL MEDICAL CENTER SITE UTILITY PLAN

SCALE IN FEET
0 15 30 FT.

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HAINES MEDICAL CENTER
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Scott C. Sjostedt
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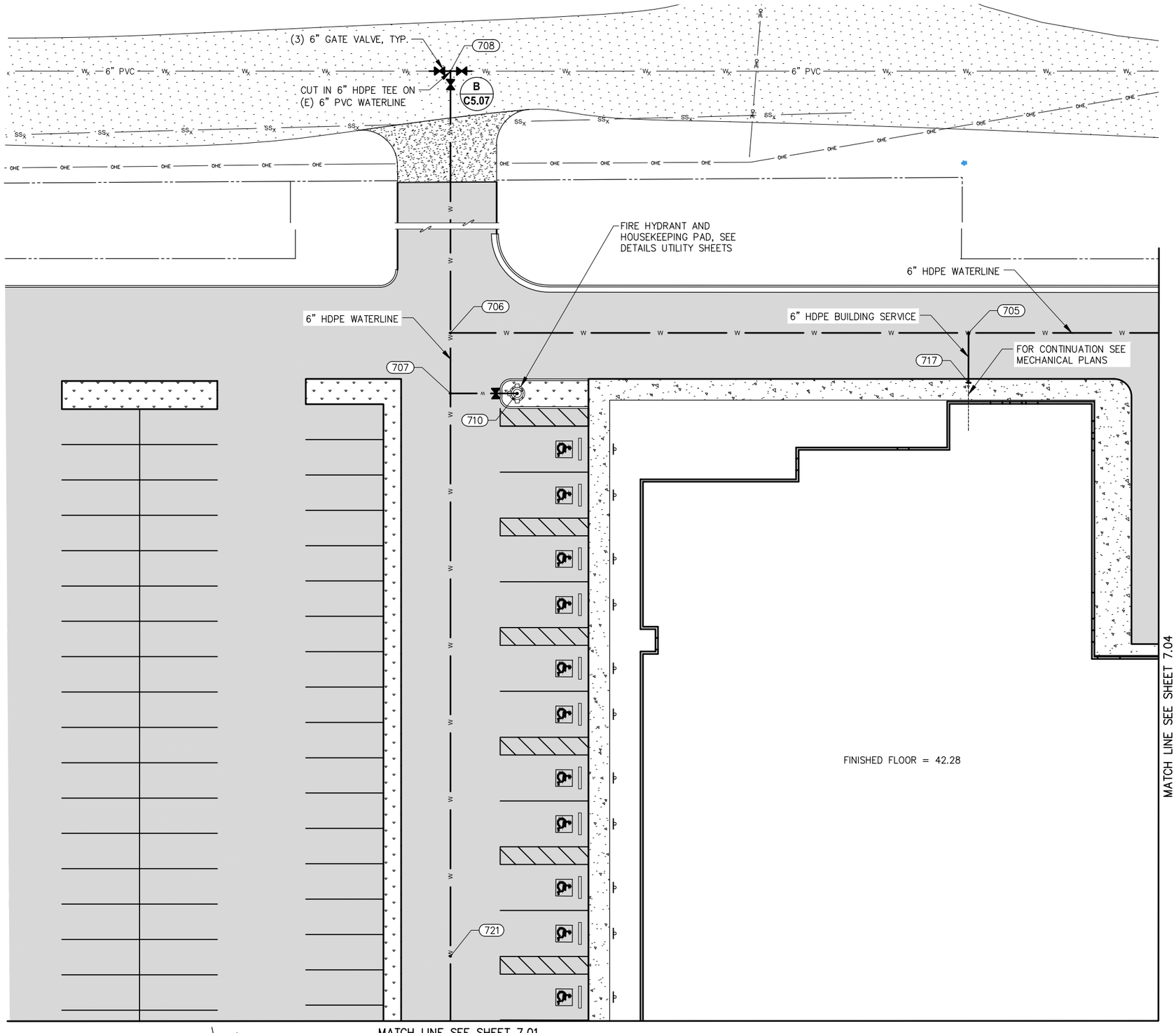
PARTIAL MEDICAL CENTER SITE UTILITY PLAN

C7.01



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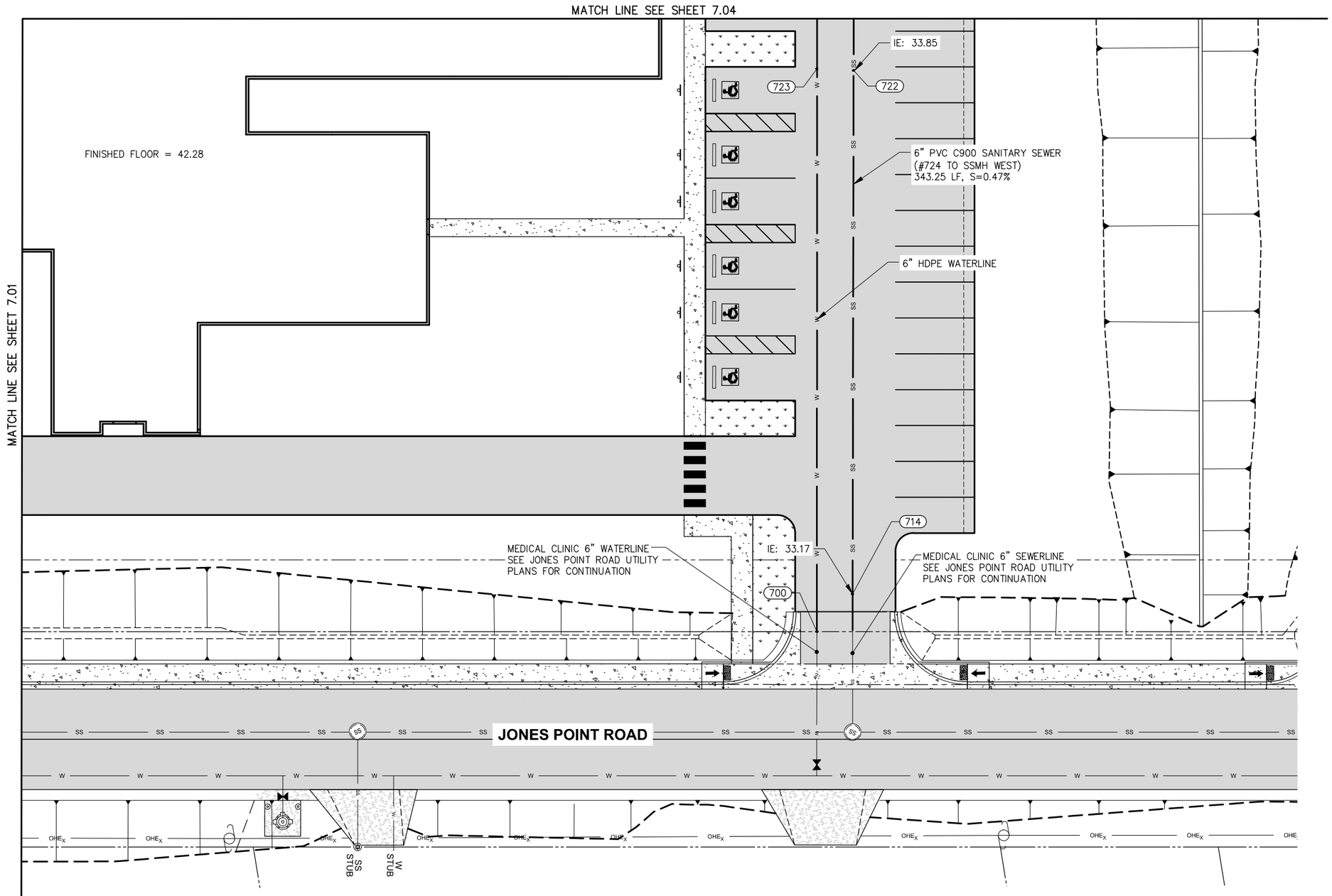
PARTIAL MEDICAL CENTER SITE UTILITY PLAN

C7.02



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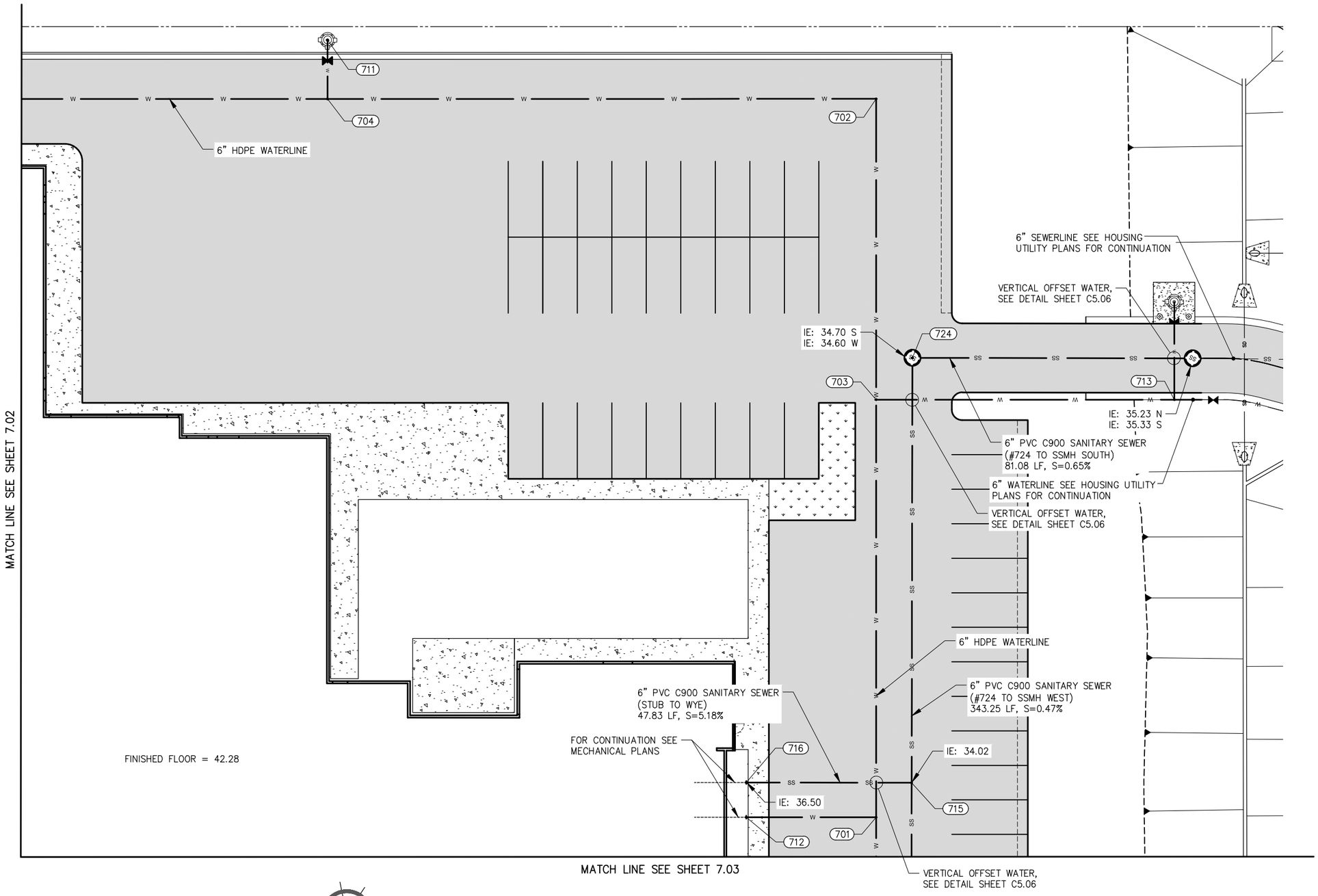
C7.03



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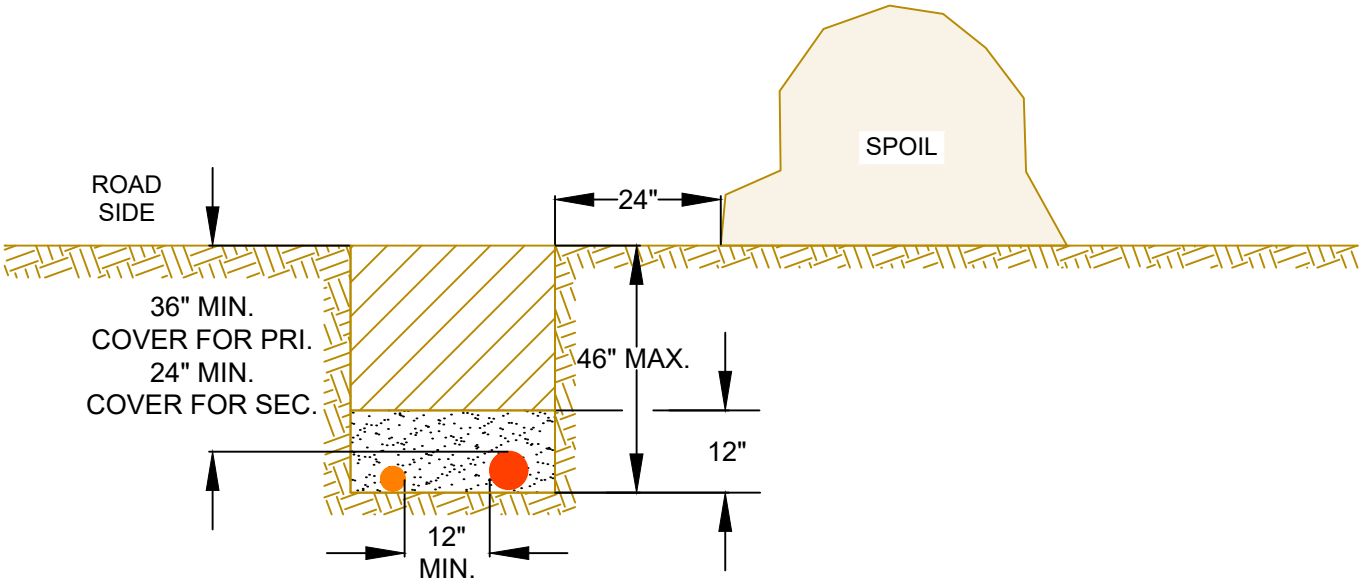
C7.04



LEGEND

- PRIMARY/SECONDARY CONDUIT
- COMMUNICATION CONDUIT
- BACKFILL
- SELECT BACKFILL
- UNDISTURBED EARTH

NOTES:

1. TRENCH CENTERLINE SHALL FOLLOW THE ALIGNMENT SPECIFIED BY AP&T.
2. ALL CROSSING SHALL PROVIDE A MINIMUM 12" OF CLEAR SEPARATION FROM ANY EXISTING UTILITIES.
3. CLEAN 1" MINUS FOR SELECT BACKFILL. NO BIG ROCKS OR STICKS.
4. BACKFILL BEFORE TRENCH AND CONDUIT INSTALLATION IS INSPECTED BY AP&T IS NOT ALLOWED.
5. CONSULT AP&T IF MINIMUM DEPTHS ARE NOT ABLE TO BE ACHIEVED DUE TO SITE CONDITIONS.

TRENCH DETAIL

DATE: 03/21/2023

SHEET 1 OF 1

DWG NAME: SS-16

PROJECT MANUAL

04.08.2026

Jones Point Road Improvements & Housing and Clinic Site Preparation

SEARHC MEDICAL CAMPUS HAINES, AK

Construction Documents

Volume 1 of 1 | Divisions 01-33

OWNER
Southeast Alaska Regional Health Consortium (SEARHC)
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Juneau, AK 99801

ARCHITECT
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208-336-4900

ENGINEER
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9360 Glacier Hwy # 100
Juneau, AK 99801
907-586-2093

TABLE OF CONTENTS

SECTION 003132 - GEOTECHNICAL DATA

PART 1 - GENERAL

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.

B. A geotechnical investigation report for Project, prepared by PND Engineers, Inc., dated December 19, 2025, is available for viewing as appended to this Document.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 00 4100 - COST PROPOSAL FORM

Provide a unit pricing cost; fill out this form completely and submit to SEARHC by the bid due date.

WORKFORCE HOUSING

Pay Item No.	Pay Item Description	Qty.	Unit	Unit Price	Subtotal
010000.1	General Conditions	All Req'd	LS		
010000.2	Mobilization / Demobilization	All Req'd	LS		
010000.3	Construction Surveying	All Req'd	LS		
015000.1	Traffic Control	All Req'd	LS		
015723.1	SWPPP	All Req'd	LS		
024116.1	Demolition and Disposal	All Req'd	LS		
101426.1	Signage	All Req'd	LS		
221313.1	Sanitary Sewer Pipe, 4-inch PVC	234	LF		
221313.2	Sanitary Sewer Pipe, 6-inch PVC	377	LF		
221313.4	Sanitary Sewer Manhole	1	EA		
311000.1	Clearing and Grubbing	All Req'd	LS		
312000.1	Unusable Excavation	5,300	CY		
312000.2	Usable Excavation	1,500	CY		
312000.3	Class A Borrow	5,540	CY		
312000.4	3-inch Minus Borrow	115	CY		
312000.5	Base Course, Grading D-1	335	CY		
312000.7	Geotextile	4,500	SY		
312000.8	Reinforced Utility Trench, Conduits Less Than 12-inch Diameter	1,326	LF		
312000.9	Reinforced Utility Trench, Conduits 12-inch Diameter and Larger	193	LF		
312319.1	Dewatering	All Req'd	LS		
321216.1	Asphalt Paving	372	Ton		
331415.1	Water Pipe, 1-inch HDPE	289	LF		
331415.3	Water Pipe, 6-inch HDPE	461	LF		
331415.6	Gate Valve, 6-inch	3	EA		
331415.8	Fire Hydrant Assembly	2	EA		
334200.1	Stormwater Pipe, 12-inch HDPE	142	LF		
334200.2	Stormwater Pipe, 18-inch HDPE	41	LF		
334200.6	Stormwater Catch Basin, Type III	3	EA		
334200.7	Area Drain Inlet	3	EA		
334200.8	Single Pipe Concrete Headwall, All Sizes	3	EA		
334200.10	Ditching	1,488	LF		
			Total		

LS=Lump Sum; LF=Linear Foot; EA=Each; CY=Cubic Yard; SY=Square Yard

JONES POINT ROAD

Pay Item No.	Pay Item Description	Qty.	Unit	Unit Price	Subtotal
010000.1	General Conditions	All Req'd	LS		
010000.2	Mobilization / Demobilization	All Req'd	LS		
010000.3	Construction Surveying	All Req'd	LS		
015000.1	Traffic Control	All Req'd	LS		
015723.1	SWPPP	All Req'd	LS		
024116.1	Demolition and Disposal	All Req'd	LS		
101426.1	Signage	All Req'd	LS		
221313.1	Sanitary Sewer Pipe, 4-inch PVC	228	LF		
221313.2	Sanitary Sewer Pipe, 6-inch PVC	126	LF		
221313.3	Sanitary Sewer Pipe, 8-inch PVC	1,567	LF		
221313.4	Sanitary Sewer Manhole	10	EA		
221313.5	Sanitary Sewer Manhole Drop Connection	1	EA		
221313.6	Connect to Existing Sanitary Sewer System	All Req'd	LS		
311000.1	Clearing and Grubbing	All Req'd	LS		
312000.1	Unusable Excavation	2,900	CY		
312000.3	Class A Borrow	4,320	CY		
312000.5	Base Course, Grading D-1	1,430	CY		
312000.6	Riprap, Class I	8	CY		
312000.7	Geotextile	2,390	SY		
312000.8	Reinforced Utility Trench, Conduits Less Than 12-inch Diameter	3,775	LF		
312000.10	Utility Investigation	All Req'd	LS		
312000.11	Electrical Utility Trench With Conduit	60	LF		
312000.12	Electrical Utility Trench Without Conduit	60	LF		
312319.1	Dewatering	All Req'd	LS		
321216.1	Asphalt Paving	1,094	Ton		
321313.1	Concrete Sidewalk, 4-inch Thick	665	SY		
321313.2	Concrete Sidewalk, 6-inch Thick	398	SY		
321313.3	Concrete Curb and Gutter, All Types	1,808	LF		
321723.1	Pavement Markings	All Req'd	LS		
321726.1	Detectable Tile	24	EA		
331415.1	Water Pipe, 1-inch HDPE	185	LF		
331415.2	Water Pipe, 4-inch HDPE	53	LF		
331415.3	Water Pipe, 6-inch HDPE	172	LF		
331415.4	Water Pipe, 8-inch HDPE	1,492	LF		
331415.5	Gate Valve, 4-inch	1	EA		
331415.6	Gate Valve, 6-inch	8	EA		
331415.7	Gate Valve, 8-inch	2	EA		
331415.8	Fire Hydrant Assembly	4	EA		
331415.9	Connect to Existing Water System	All Req'd	LS		
334200.1	Stormwater Pipe, 12-inch HDPE	88	LF		
334200.2	Stormwater Pipe, 18-inch HDPE	317	LF		
334200.3	Stormwater Pipe, 24-inch HDPE	116	LF		
334200.4	Stormwater Pipe, 36-inch HDPE	52	LF		

334200.5	Stormwater Pipe, Aluminum Arch	118	LF		
334200.6	Stormwater Catch Basin, Type III	7	EA		
334200.8	Single Pipe Concrete Headwall, All Sizes	23	EA		
334200.9	Double Pipe Concrete Headwall, All Sizes	1	EA		
334200.10	Ditching	1,646	LF		
		Total			

LS=Lump Sum; LF=Linear Foot; EA=Each; CY=Cubic Yard; SY=Square Yard

MEDICAL CENTER SITE PREPARATION – LOT 10

Pay Item No.	Pay Item Description	Qty.	Unit	Unit Price	Subtotal
010000.1	General Conditions	All Req'd	LS		
010000.2	Mobilization / Demobilization	All Req'd	LS		
010000.3	Construction Surveying	All Req'd	LS		
015000.3	Traffic Control	All Req'd	LS		
015723.1	SWPPP	All Req'd	LS		
024116.1	Demolition and Disposal	All Req'd	LS		
221313.2	Sanitary Sewer Pipe, 6-inch PVC	620	LF		
221313.4	Sanitary Sewer Manhole	1	EA		
311000.1	Clearing and Grubbing	All Req'd	LS		
312000.1	Unusable Excavation	54,400	CY		
312000.2	Usable Excavation	17,200	CY		
312000.3	Class A Borrow	53,000	CY		
312000.4	3-inch Minus Borrow	2,070	CY		
312000.7	Geotextile	4,170	SY		
312000.8	Reinforced Utility Trench, Conduits Less Than 12-inch Diameter	190	LF		
312319.1	Dewatering	All Req'd	LS		
331415.3	Water Pipe, 6-inch HDPE	1,400	LF		
331415.6	Gate Valve, 6-inch	2	EA		
331415.8	Fire Hydrant Assembly	2	EA		
334200.10	Ditching	390	LF		
		Total			

LS=Lump Sum; LF=Linear Foot; EA=Each; CY=Cubic Yard; SY=Square Yard

MEDICAL CENTER SITE PREPARATION – LOTS 5 AND 6

Pay Item No.	Pay Item Description	Qty.	Unit	Unit Price	Subtotal
311000.1	Clearing and Grubbing	All Req'd	LS		
312000.1	Unusable Excavation	2,950	CY		
312000.3	Class A Borrow	1,810	CY		
312000.4	3-inch Minus Borrow	490	CY		
331415.3	Water Pipe, 6-inch HDPE	392	LF		
331415.6	Gate Valve, 6-inch	3	EA		
		Total			

LS=Lump Sum; LF=Linear Foot; EA=Each; CY=Cubic Yard; SY=Square Yard

The Contractor acknowledges receipt of Addenda No(s)._____, and hereby represents that if awarded a contract, they will enter into and execute a contract with SEARHC for construction services referenced in this Request for Proposal at the compensation stated above.

By executing this proposal, I certify that I have the authority to bind the Contractor or other business entity who is submitting this proposal.

Contractor's Signature:

_____

_____ _____

Printed Name Printed Title

_____

Printed Company Name

Date:

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Contractor's use of site and premises.
4. Work restrictions.
5. Specification and Drawing conventions.

1.2 PROJECT INFORMATION

A. Project Identification: SEARHC Haines Medical Campus – Jones Point Road, Housing and Site Preparation in Haines, AK.

1. Project Location: Jones Point Road, Haines, Alaska; Lot 10, Referees Subdivision; Lots 5 and 6, Hannon Subdivision

B. Owner: Southeast Alaska Regional Health Consortium.

1. Owner's Representative: Mike Pountney.

C. Engineer: PND Engineers.

1. Engineer’s Representative: Sean Sjostedt - 907.586.2093

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following three distinct but related project components:

1. Jones Point Road

a. Jones Point Road is a narrow, gravel surfaced road that is generally owned by the Haines Borough but partially owned by SEARHC. At project completion, the entire road will be owned by the Haines Borough. The project will construct necessary improvements to bring Jones Point Road up to Haines Borough standards, including but not limited to excavation and embankment, base course, asphalt concrete pavement, concrete curb and gutter, concrete sidewalk, underground utilities (water, sewer, and stormwater), ditching, striping, and signage.

b. Jones Point Road intersects with Haines Highway at its north termination. Haines Highway is owned by the State of Alaska. This intersection will require improvements and modifications that are not yet clearly defined but will be included in the project scope.

2. Housing Site Preparation

a. A portion of the SEARHC-owned Lot 10 is designated for workforce housing. The project will construct improvements necessary to create an access road and building pads for the housing site. Improvements include, but are not limited to, excavation and embankment, base course, asphalt concrete pavement, underground utilities (water, sewer, and stormwater), ditching, and signage.
b. The building construction will be performed by a different contractor who will be working onsite simultaneously. The contractual limits of work within building bads are the rough-graded elevations shown in the plans.

3. Medical Center Site Preparation

a. The remainder of Lot 10 and the adjacent Lots 5 and 6 will be developed for a new medical center and ancillary support buildings. The scope of this contract is limited to site preparation consisting of mass excavation and backfill, rough grading, and utility service connections for water and sewer.
b. The building construction will be performed by a different contractor who will be working onsite simultaneously. The contractual limits of work within building bads are the rough-graded elevations shown in the plans.

B. Type of Contract:

1. Project will be constructed under a single prime contract on a unit price basis.

1.4 CONTRACTOR'S USE OF SITE AND PREMISES

A. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits on Use of Site: SEARHC owns the 10-acre site (Lot 10) where the new housing and clinic will be constructed as well as the adjacent Lots 5 and 6 where facility support buildings may be constructed. All three lots are available for material and equipment staging subject to approval by SEARHC. Other contractors will be operating on these lots concurrently and therefore staging plans and coordination must be approved in advance by SEARHC
2. Jones Point Road is owned by the Haines Borough, and Haines Highway is owned by the State of Alaska. Neither shall be used for staging or material storage without written approval from the respective authority having jurisdiction.

3. Driveways and Entrances: Keep driveways and entrances along Jones Point Road, serving neighboring properties clear and available to the public and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
4. Jones Point Road shall be kept operational for the building structure (housing and clinic) contractors for deliveries and access, as well as for the general public. Any lane or full road closures must be approved in advance by the Haines Borough and coordinated with SEARHC and their building contractors.

1.5 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by the public without following all required procedures.

1. Notify the Haines Borough and Owner not less than 7 days in advance of proposed utility interruptions.
2. Obtain the Haines Borough and Owner's written permission before proceeding with utility interruptions.

C. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to the public with the Owner and authorities having jurisdiction.

1. Notify Owner not less than 7 days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.
3. Comply with all local and state requirements for dust control and tracking on public rights of way.
4. Comply with local noise ordinances as applicable.

D. Nonsmoking Property: Smoking is not permitted on SEARHC property.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Project site is not permitted.

1.6 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for measurement and payment of the Work.

B. Related Sections:
   1. 01 2600 - Contract Modification Procedures: For procedures for submitting and handling Change Orders.
   2. 01 4000 - Quality Requirements: For general testing and inspecting requirements.

C. Payment for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of Work being described, as necessary to complete the various items of the Work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA).

D. No separate payment shall be made for any Work item that is not specifically set forth in the Bid Schedule, and all costs therefore shall be included in the prices named in the Bid Schedule for the various appurtenant items of Work.

E. In addition to other incidental items of Work listed elsewhere in the contract, the following items shall also be considered as incidental to other items of Work under this contract:
   1. Removal and replacement of survey monuments and markers disturbed during construction, whether shown on the Plans or not, unless otherwise noted.
   2. Re-vegetating areas disturbed during construction.
   3. Trench excavation and bedding as required for all piping, structures, and vault installations, except where specific trenching methods are identified in the bid schedule.
   4. Temporary shoring of trenches or bracing of existing facilities as required for constructing any/all improvements.
   5. Maintenance of all services through the Project area, including water, storm, garbage pickup, mail delivery, other deliveries and emergency vehicles.
   6. Minor grading of fill materials as required to match existing grades and maintain positive surface drainage.
   7. Minor changes in grades to fit field conditions.
   8. Miscellaneous connecting and attachment hardware as required installing new equipment.

9. Imported fill and compaction efforts required to fill voids left from removal of structures, pipes and foundations to be demolished or relocated.

1.2 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Owner reserves the right to reject Contractor's measurement of Work-in-place that involves use of established unit prices and to have this Work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

C. List of Unit Prices: A schedule of bid items and their associated unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - SCHEDULE OF BID ITEMS

3.1 GENERAL CONDITIONS (Pay Item No. 010000.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for General Conditions shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. Work under this Pay Item includes all planning, labor, materials, and equipment required to implement the Work and execute the project in accordance with Division 0 and Division 1 unless otherwise identified by other pay items.

C. Payment for General Conditions shall be made at the amount shown on the Bid Schedule under Pay Item No. 010000.1, which payment shall constitute full compensation for all Work described in Division 0 and Division 1 except as otherwise specified herein.

3.2 MOBILIZATION/DEMOBILIZATION (Pay Item No. 010000.2) PRICE BASED ON LUMP SUM

A. Measurement for payment for Mobilization shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. Payment for Mobilization shall be made at the amount shown on the Bid Schedule under Pay Item No. 010000.2, which payment shall constitute full compensation for all Work described in the Contract Documents.

C. Partial payments shall be made as the Work progresses as follows:
1. When 5% of the total original contract amount is earned from other pay items, 50% of the amount bid for Mobilization, or 5% of the original contract amount, whichever is lesser, shall be paid.
2. When 10% of the total original contract amount is earned from other pay items, 95% of the amount bid for Mobilization, or 10% of the original Contract amount, whichever is lesser, shall be paid.
3. Upon completion of all Work on the Project, payment of any remaining amount bid for Mobilization shall be paid.

3.3 CONSTRUCTION SURVEYING (Pay Item No. 010000.3) PRICE BASED ON LUMP SUM

A. Measurement for payment for Construction Surveying shall be based on the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. Payment for Construction Surveying shall be made at the amount shown on the Bid Schedule under Pay Item No. 010000.3, which payment shall constitute full compensation for all necessary surveying Work to execute the project, as shown on the Plans, and as directed by the Owner.

3.4 TRAFFIC CONTROL (Pay Item No. 015000.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for General Conditions shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. Work under this Pay Item includes the planning, preparation and implementation of all temporary traffic control measures for vehicular and pedestrian traffic and obtaining all necessary permits and approvals for Traffic Control.

C. Payment for Traffic Control shall be made at the amount shown on the Bid Schedule under Pay Item No. 015000.1, which payment shall constitute full compensation for all WORK described in Section 015000 – Temporary Facilities and Controls, as shown on the Plans and as directed by the Owner.

3.5 SWPPP (Pay Item No. 015723.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for SWPPP shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. WORK under this Pay Item includes obtaining all necessary permits for storm water control as required by Alaska Department of Conservation and the Environmental Protection Agency. This includes Storm Water Pollution Prevention Plan preparation and maintenance as required and obtaining an Alaska Construction General Permit.

Furnishing, installing and maintaining all measures required by these permits shall be included under this pay item.

C. Payment for SWPPP shall be made at the amount shown on the Bid Schedule under Pay Item No. 015723.1, which payment shall constitute full compensation for all WORK described in Section 0157230 – Temporary Stormwater Pollution Control, as shown on the Plans and as directed by the Owner.

3.6 DEMOLITION AND DISPOSAL (Pay Item No. 024116.1) PRICE BASED ON LUMP SUM

A. Measurement for payment of Demolition and Disposal will be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all-in accordance with the requirements of the Contract Documents.

B. This item shall include removal and disposal of all existing utilities, hardscapes, structures, pavements, and miscellaneous debris within the Project limits, unless otherwise indicated on the Drawings.

C. This item shall include compaction and backfill to original grade or bottom of subgrade with usable excavation and returning disturbed areas to original or better condition.

D. Payment for Demolition and Disposal will be made at the Unit Price named in the Bid Schedule under Pay Item No. 024116.1, which payment will constitute full compensation for all Work described in Section 024116 – Structure Demolition, as shown on the Drawings and as directed by the Owner.

3.7 SIGNAGE (Pay Item No. 101426.1) PRICE BASED ON LUMP SUM

A. Measurement for Signage will be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.

B. Work under this Pay Item includes providing new sign assembly panels, posts and hardware in accordance with the Contract Documents.

C. Removal and disposal of existing signs will be considered part of the Work under this Pay Item.

D. Payment for Sign Assemblies will be made at the Unit Price named in the Bid Schedule under Pay Item No. 101426.1, which payment will constitute full compensation for all Work, as shown on the Drawings, and as directed by the Owner.

3.8 SANITARY SEWER PIPE, [ ]-INCH PVC (Pay Item Nos. 221313.1 through .3) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement for Payment for Sanitary Sewer Main Pipe, [ ]-Inch PVC shall be per actual linear foot installed, measured by the staked length, from center to center of structures or to ends of pipe if no structure is present, complete in place, all in accordance with the Contract Documents.

B. Cleanouts (mainline or service), fittings, marker boards, and all other ancillary components, excavation, bedding, backfill, and testing shall not be measured separately for payment but shall be considered incidental.

C. Payment for Sanitary Sewer Pipe, 4-Inch shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 221313.1, which payment shall constitute full compensation for all Work described in Section 221313 – Facility Sanitary Sewers, as shown on the plans and as directed by the Owner.

D. Payment for Sanitary Sewer Pipe, 6-Inch shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 221313.1, which payment shall constitute full compensation for all Work described in Section 221313 – Facility Sanitary Sewers, as shown on the plans and as directed by the Owner.

E. Payment for Sanitary Sewer Pipe, 8-Inch shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 221313.1, which payment shall constitute full compensation for all Work described in Section 221313 – Facility Sanitary Sewers, as shown on the plans and as directed by the Owner.

3.9 SANITARY SEWER MANHOLE (Pay Item No. 221313.4) PRICE BASED ON QUANTITY, EACH

A. Sanitary Sewer Manhole shall be measured per each, complete in place, including all earthwork, grade rings, frames and covers all in accordance with the Contract Documents.

B. Payment for Sanitary Sewer Manhole shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 221313.4, which payment shall constitute full compensation for all Work described in Section 221313 – Facility Sanitary Sewers, as shown in the plans and as directed by the Owner.

3.10 SANITYAR SEWER MANHOLE INTERNAL DROP CONNECTION (Pay Item No. 221313.5) PRICE BASED ON QUANTITY, EACH

A. Sanitary Sewer Manhole Internal Drop Connection shall be measured per each, complete in place, including all earthwork, pipe, fittings, and connections all in accordance with the Contract Documents.

B. Payment for Sanitary Sewer Manhole Internal Drop Connection shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 221313.5, which payment shall constitute full compensation for all Work described in Section 221313 – Facility Sanitary Sewers as shown in the plans and as directed by the Owner.

3.11 CONNECT TO EXISTING SANITARY SEWER SYSTEM (Pay Item No. 221313.6) PRICE BASED ON QUANTITY, EACH

A. Connect to Existing Sanitary Sewer System shall be measured per each, complete in place, including all earthwork, pipe, fittings, and connections all in accordance with the Contract Documents.

B. Payment for Connect to Existing Sanitary Sewer System shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 221313.6, which payment shall constitute full compensation for all WORK described in Section 221313 – Facility Sanitary Sewers as shown in the plans and as directed by the Owner.

3.12 CLEARING AND GRUBBING (Pay Item No. 311000.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Clearing and Grubbing shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. Work under this pay item includes all labor, equipment, and materials to clear the project site of vegetation and surficial vegetative mat within the project limits, and offsite disposal of material resulting from clearing and grubbing.

C. Vegetation and mineral material generated from clearing and grubbing, and its offsite disposal, is included this pay item and shall not be measured for payment as Unusable Excavation.

D. Payment for Clearing and Grubbing shall be made at the amount shown on the Bid Schedule under Pay Item No. 311000.1, which payment shall constitute full compensation for all Work described in Section 311000 – Site Clearing, as shown on the Plans and as directed by the Owner.

3.13 UNUSABLE EXCAVATION (Pay Item No. 312000.1) PRICE BASED ON QUANTITY, CUBIC YARD

A. Measurement for payment for Unusable Excavation shall be based on the number of cubic yards of material excavated and disposed of offsite as determined by the average end area method as field measured by sections having not more than 50 feet between sections. Where impractical to measure by the average end area method, the Owner may approve other acceptable methods involving three-dimensional measurements.

B. Material excavated outside of the lines, grades and typical sections indicated in the Plans or as directed by the Owner shall not be included in the quantities for pay purposes.

C. Excavation and disposal required for pipes, bedding and structures shall not be measured directly for payment but shall be considered incidental to other pay items.
   1. No deduction in the measurement for Excavation will be made for the trenching required for pipe and structure installations above the bottom of, or within the sub-cut limits as shown on the Typical Sections.

D. The following will not be measured for direct payment; the cost of such Work will be considered incidental to other Work under the contract:
   1. Overburden and other spoil material from borrow sources.
   2. Removal of water by aeration of material to obtain required moisture content.
   3. Any volumes of water or other liquid material.
   4. Material used for the purpose other than directed.

5. Roadbed material scarified in place and not removed.
6. Material excavated when benching.
7. Slide or slipout material attributable to the carelessness of the Contractor.
8. The volume of conserved materials stockpiled at the option of the Contractor.

E. Payment for Unusable Excavation shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.1, which payment shall constitute full compensation for all WORK described in Section 312000 – Earth Moving, as shown on the Plans and as directed by the Owner.

3.14 USABLE EXCAVATION (Pay Item No. 312000.2) PRICE BASED ON QUANTITY, CUBIC YARD

A. Measurement for payment for Usable Excavation shall be based on the number of cubic yards of material excavated and reused onsite, including placement and compacting, as determined by the average end area method after placement as field measured by sections having not more than 50 feet between sections. Where impractical to measure by the average end area method, the Owner may approve other acceptable methods involving three-dimensional measurements.

B. Material excavated outside of the lines, grades and typical sections indicated in the Plans or as directed by the Owner shall not be included in the quantities for pay purposes.

C. Excavation required for pipes and structures shall not be measured directly for payment but shall be considered incidental to other pay items.
1. No deduction in the measurement for Excavation will be made for the trenching required for pipe and structure installations above the bottom of, or within the subcut limits as shown on the Typical Sections.

D. Excavated material suitable for re-use on the project, but in excess of the project needs, shall be disposed of offsite. Measurement and payment for shall be per Unusable Excavation.

E. Payment for Usable Excavation shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.2, which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the Plans and as directed by the Owner.

3.15 CLASS A BORROW (Pay Item No. 312000.3) PRICE BASED ON QUANTITY, CUBIC YARD

A. Measurement for payment for Class A Borrow shall be based on the number of cubic yards of material in place as determined by the average end area method as field measured by sections having not more than 50 feet between sections. Where impractical to measure by the average end area method, the OWNER may approve other acceptable methods involving three-dimensional measurements.

B. Material placed outside of the lines, grades and typical sections indicated in the plans or as directed by the Owner shall not be included in the quantities for pay purposes.

C. Payment for Class A Borrow shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.3, which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the plans and as directed by the Owner.

3.16 3-INCH MINUS BORROW (Pay Item No. 312000.4) PRICE BASED ON QUANTITY, CUBIC YARD

A. Measurement for payment for 3-Inch Minus Borrow shall be based on the number of cubic yards of material in place as determined by the average end area method as field measured by sections having not more than 50 feet between sections. Where impractical to measure by the average end area method, the Owner may approve other acceptable methods involving three-dimensional measurements.

B. Material placed outside of the lines, grades and typical sections indicated in the plans or as directed by the Owner shall not be included in the quantities for pay purposes.

C. Payment for 3-Inch Minus Borrow shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.4, which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the plans and as directed by the Owner.

3.17 BASE COURSE, GRADING D-1 (Pay Item No. 312000.5) PRICE BASED ON QUANTITY, CUBIC YARD

A. Measurement for payment for Base Course, Grading D-1 shall be based on the number of cubic yards of material in place as determined by the average end area method as field measured by sections having not more than 50 feet between sections. Where impractical to measure by the average end area method, the Owner may approve other acceptable methods involving three-dimensional measurements.

B. Material placed outside of the lines, grades and typical sections indicated in the plans or as directed by the Owner shall not be included in the quantities for pay purposes.

C. Payment for Base Course, Grading D-1 shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.5, which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the plans and as directed by the Owner.

3.18 RIPRAP, CLASS I (Pay Item No. 312000.6) PRICE BASED ON QUANTITY, CUBIC YARD

A. Measurement for payment for Riprap, Class I shall be based on the number of cubic yards of material in place as determined by the average end area method as field measured by sections having not more than 50 feet between sections. Where impractical to measure by the average end area method, the Owner may approve other acceptable methods involving three-dimensional measurements.

B. Material placed outside of the lines, grades and typical sections indicated in the plans or as directed by the Owner shall not be included in the quantities for pay purposes.

C. Payment for Riprap, Class I shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.6, which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the plans and as directed by the Owner.

3.19 GEOTEXTILE (Pay Item No. 312000.7) PRICE BASED ON QUANTITY, SQUARE YARD

A. Measurement for payment for Geotextile shall be based on the number of square yards of geotextile in place as measured by actual surface area covered.

B. Material placed outside of the lines, grades and typical sections indicated in the plans or as directed by the Owner shall not be included in the quantities for pay purposes.

C. Overlap at seams shall be considered incidental and not measured separately for payment.

D. Payment for Geotextile shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.7, which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the plans and as directed by the Owner.

3.20 REINFORCED UTILITY TRENCH, CONDUITS LESS THAN 12-INCH DIAMETER (Pay Item No. 312000.8) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement for Payment for Reinforced Utility Trench, Conduits Less Than 12-Inch Diameter shall be per actual linear foot installed, measured by the staked length, from center to center of structures or to ends of pipe if no structure is present, complete in place, all in accordance with the Contract Documents. The intent is to account for additional time and labor necessary to construct a reinforced utility trench section when compared to a typical trench section, as shown in the Drawings.

B. Class A Borrow and Geotextile shall be measured and paid for separately under their respective bid items.

C. Payment for Reinforced Utility Trench, Conduits Less Than 12-Inch Diameter shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.8 which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the plans and as directed by the Owner.

3.21 REINFORCED UTILITY TRENCH, CONDUITS 12-INCH DIAMETER AND LARGER (Pay Item No. 312000.9) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement for Payment for Reinforced Utility Trench, Conduits Less Than 12-Inch Diameter shall be per actual linear foot installed, measured by the staked length, from center to center of structures or to ends of pipe if no structure is present, complete in place, all in accordance with the Contract Documents. The intent is to account for additional time and labor necessary to construct a reinforced utility trench section when compared to a typical trench section, as shown in the Drawings.

B. Class A Borrow and Geotextile shall be measured and paid for separately under their respective bid items.

C. Payment for Reinforced Utility Trench, Conduits Less Than 12-Inch Diameter shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 312000.9 which payment shall constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the plans and as directed by the Owner.

3.22 UTILITY INVESTIGATION (Pay Item No. 312000.10) PRICE BASED ON LUMP SUM

A. Measurement for payment for Utility Investigation shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. Work under this Pay Item includes all planning, labor, materials, and equipment required to investigate the existing sanitary sewer system at the location identified on the plans and as described in the Contract Documents.

C. Payment for Utility Investigation shall be made at the amount shown on the Bid Schedule under Pay Item No. 312000.10, which payment shall constitute full compensation for all Work described in 312000 – Earth Moving, as shown on the Plans and as directed by the Owner.

3.23 ELECTRICAL UTILITY TRENCH WITH CONDUIT (Pay Item No. 312000.11) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement of electrical utility trench with conduit will be made along the horizontal length of the trench from conduit end to conduit end. Under this pay item, the Contractor shall procure and install electrical conduits for future conductor. All fittings, couplers, and caps required for satisfactory installation of conduits will be considered incidental to this Pay Item.

B. All conduits, trench excavation, bedding, backfill, sheeting and bracing, warning tape, compaction and all other items necessary for a complete installation will not be measured for payment, but will be considered incidental to the Work.

C. Payment for Electrical Utility Trench With Conduit will be made at the Unit Price named in the Bid Schedule under Pay Item No. 312000.11, which payment will constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the Drawings and as directed by the Owner.

3.24 ELECTRICAL UTILITY TRENCH WITHOUT CONDUIT (Pay Item No. 312000.12) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement of electrical utility trench without conduit will be made along the horizontal length of the trench.

B. Conduits will be provided and placed in the prepared trench by Alaska Power & Telephone.

C. All trench excavation, bedding, backfill, sheeting and bracing, warning tape, compaction, coordination with Alaska Power & Telephone, and all other items necessary for a complete installation will not be measured for payment, but will be considered incidental to the Work.

D. Payment for Electrical Utility Trench Without Conduit will be made at the Unit Price named in the Bid Schedule under Pay Item No. 312000.12, which payment will constitute full compensation for all Work described in Section 312000 – Earth Moving, as shown on the Drawings and as directed by the Owner.

3.25 DEWATERING (Pay Item No. 312319.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Dewatering shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents.

B. Work under this Pay Item includes all planning, labor, materials, and equipment required to dewater the site during construction as described in the Contract Documents.

C. Work and materials under this pay items includes pumps, piping, subsurface wells, power, and temporary ditching, as well as the removal of all dewatering equipment at project completion.

D. Payment for Dewatering shall be made at the amount shown on the Bid Schedule under Pay Item No. 312319.1, which payment shall constitute full compensation for all Work described in 312319 – Dewatering, as shown on the Plans and as directed by the Owner.

3.26 ASPHALT PAVING (Pay Item No. 321216.1) PRICE BASED ON QUANTITY, TON

A. Asphalt Paving shall be placed as shown in the plans and shall be measured for payment by the Ton.

B. No measurement shall be made for asphalt concrete pavement that exceeds the neat line quantity, as determined by the nominal design thickness multiplied by the actual area paved, using a conversion factor of 119 pounds per square yard per inch of thickness.

C. All resealing of joints with existing pavement, including those resealed after the pavement has cooled to ambient temperatures, shall not be measured for payment, but shall be considered incidental to other Work under the contract.

D. Tack Coat applied to existing joint surfaces, along edges of gutters prior to placement of A.C. pavement, and between asphalt lifts shall be considered incidental to Asphalt Paving.

E. Joint Sealant applied to existing joint surfaces and along edge of gutters subsequent to placement of A.C. pavement, shall be considered incidental to Asphalt Paving

F. Asphalt Pavement required for reconstructed collars around manholes and water valves, if any, shall be considered incidental to other Work under this Section.

G. Payment for Asphalt Paving shall be made at the amount shown on the Bid Schedule under Pay Item No. 321216.1, which payment shall constitute full compensation for all Work described in Section 321216 – Asphalt Paving as shown on the Plans and as directed by the Owner.

3.27 CONCRETE SIDEWALK, [ ]-INCH THICK (Pay Item Nos. 321313.1 and 321313.2) PRICE BASED ON QUANTITY, SQUARE YARD

A. Measurement for payment of Concrete Sidewalks [ ]-Inch Thick will be based on the actual square yards, complete in place and accepted.

B. Ramps transitioning from 6-inches thick to 4-inches thick at driveways and crossings shall be measured for payment under Concrete Sidewalk, 4-Inch Thick.

C. Payment for Concrete Sidewalks, 4-Inch Thick will be made at the amount named in the Bid Schedule under Pay Item No. 321313.1, which payment will constitute full compensation for all Work described in Section 321313– Concrete Paving, as shown on the Drawings and as directed by the Owner.

D. Payment for Concrete Sidewalks 6-Inch Thick will be made at the amount named in the Bid Schedule under Pay Item No. 321313.2, which payment will constitute full compensation for all Work described in Section 321313– Concrete Paving, as shown on the Drawings and as directed by the Owner.

3.28 CURB AND GUTTER, ALL TYPES (Pay Item No. 321313.3) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement for payment for Curb and Gutter, All Types shall be per actual linear foot installed, complete in place, including all rebar where required, as required by the Contract Documents and as shown on the plans. Measurements shall be made along the face of the curb and shall be continuous across ramps.

B. This item shall include backing curb and curb ramps.

C. Payment for Curb and Gutter, All Types shall be made at the amount shown on the Bid Schedule under Pay Item No. 321313.3, which payment shall constitute full compensation for all Work described in Section 321313 – Concrete Paving, as shown on the plans and as directed by the Owner.

3.29 PAVEMENT MARKINGS (Pay Item No. 321723.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Pavement Markings shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the plans.

B. Payment for Pavement Markings shall be made at the amount shown on the Bid Schedule under Pay Item No. 321723.1, which payment shall constitute full

compensation for all Work described in Section 321723 – Pavement Markings, as shown on the Plans and as directed by the Owner.

3.30 DETECTABLE TILE (Pay Item No. 321726.1) PRICE BASED ON QUANTITY, EACH

A. Detectable Tile shall be measured per each 2-foot x 2-foot area detectable tile installed, complete in place, all in accordance with the Contract Documents.

B. Payment for Detectable Tile shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 321723.1, which payment shall constitute full compensation for all Work as shown on the plans and as directed by the Owner.

3.31 WATER PIPE, [ ]-INCH HDPE (Pay Item Nos. 331415.1 through .4) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement of water pipe will be made along the horizontal length of the water pipe from the centers of fittings and valves in linear feet. No deduction in length will be made for valves, fittings, or fused reducers. All fittings, other than gate valves, required for satisfactory installation of water pipe will be considered incidental to this Pay Item.

B. All trench excavation, bedding, backfill, sheeting and bracing, cleaning and testing, warning tape, tracer wire, concrete thrust blocks, compaction and all other items necessary for a complete installation will not be measured for payment, but will be considered incidental to the Work.

C. Work under this Pay Item includes the installation of water pipe termination tracer wire boxes where shown on the Drawings, including the valve box, pressure treated board, stainless steel wire staples, and tracer wire.

D. Curb stops, corporation stops, and connections to existing systems shall not be measured for payment but shall be considered incidental.

E. Payment for 1-Inch HDPE Water Pipe will be made at the Unit Price named in the Bid Schedule under Pay Item No. 331415.1, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

F. Payment for 4-Inch HDPE Water Pipe will be made at the Unit Price named in the Bid Schedule under Pay Item No. 331415.2, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

G. Payment for 6-Inch HDPE Water Pipe will be made at the Unit Price named in the Bid Schedule under Pay Item No. 331415.3, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

H. Payment for 8-Inch HDPE Water Pipe will be made at the Unit Price named in the Bid Schedule under Pay Item No. 331415.4, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

3.32 GATE VALVE, [ ]-INCH (Pay Item Nos. 331415.5 through .7) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Gate Valve, [ ]-Inch will be based on the actual number of valves satisfactorily installed, complete and in place all in accordance with the Contract Documents.

B. Work under this pay item includes all labor, equipment, materials, excavation, backfill, and all other Work necessary to furnish and install gate valves in the locations shown on the plans and as directed by the Owner.

C. Furnish and installation of associated valve boxes will be considered incidental.

D. Payment for Gate Valve, 4-Inch will be made at the amount named in the Bid Schedule under Pay Item No. 331415.5, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

E. Payment for Gate Valve, 6-Inch will be made at the amount named in the Bid Schedule under Pay Item No. 331415.6, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

F. Payment for Gate Valve, 8-Inch will be made at the amount named in the Bid Schedule under Pay Item No. 331415.7, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

3.33 FIRE HYDRANT ASSEMBLY (Pay Item No. 331415.8) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment of Fire Hydrant Assembly will be based on the actual number of fire hydrant assemblies satisfactorily installed, complete and in place.

B. Fire Hydrant Assembly includes the fire hydrant, guard posts, the mainline tee and associated fittings, hydrant flag, joint restraints, tracer wires, warning tapes, anodes, and any other required fittings, including pipe to connect the hydrant leg from the mainline water pipe to the fire hydrant as shown on the Drawings.

C. Hydrant leg pipe and hydrant leg gate valves shall be measured for payment separately and paid for under their respective pay items.

D. Payment for Fire Hydrant Assembly will be made at the Unit Price named in the Bid Schedule under Pay Item No. 331415.8, which payment will constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping, as shown on the Drawings and as directed by the Owner.

3.34 CONNECT TO EXISTING WATER SYSTEM (Pay Item No. 331415.9) PRICE BASED ON QUANTITY, EACH

A. Connect to Existing Water System shall be measured per each, complete in place, including all earthwork, pipe, fittings, and connections all in accordance with the Contract Documents.

B. Payment for Connect to Existing Water System shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 331415.9, which payment shall constitute full compensation for all Work described in Section 331415 – Site Water Distribution Piping as shown in the plans and as directed by the Owner.

3.35 STORMWATER PIPE, [ ] - INCH HDPE (Pay Item Nos. 334200.1 through .4) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement for Payment for Stormwater Pipe, [ ]-Inch HDPE shall be per actual linear foot installed, measured by the staked length, from center to center of structures or to ends of pipe if no structure is present complete in place, all in accordance with the Contract Documents.

B. Payment for Stormwater Pipe, 12-Inch HDPE shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.1, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown on the plans and as directed by the Owner.

C. Payment for Stormwater Pipe, 18-Inch HDPE shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.2, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown on the plans and as directed by the Owner.

D. Payment for Stormwater Pipe, 24-Inch HDPE shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.3, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown on the plans and as directed by the Owner.

E. Payment for Stormwater Pipe, 36-Inch HDPE shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.4, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown on the plans and as directed by the Owner.

3.36 STORMWATER PIPE, ALUMINUM ARCH (Pay Item No. 334200.5) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement for Payment for Stormwater Pipe, Aluminum Arch shall be per actual linear foot installed, measured by the staked length, from center to center of structures or to ends of pipe if no structure is present complete in place, all in accordance with the Contract Documents.

B. Payment for Stormwater Pipe, Aluminum Arch shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.5, which payment shall constitute full

compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown on the plans and as directed by the Owner.

3.37 STORMWATER CATCH BASIN, TYPE [ ] (Pay Item No. 334200.6) PRICE BASED ON QUANTITY, EACH

A. Stormwater Catch Basin, Type [ ] shall be measured per each, complete in place, including all earthwork, grade rings, frames and covers all in accordance with the Contract Documents.

B. Payment for Stormwater Catch Basin, Type III shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.6, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown in the plans and as directed by the Owner.

3.38 AREA DRAIN INLET (Pay Item Nos. 334200.7) PRICE BASED ON QUANTITY, EACH

A. Area Drain Inlet shall be measured per each, complete in place, including all earthwork, formwork and reinforcing in accordance with the Contract Documents.

B. Payment for Area Drain Inlet shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.7, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown in the plans and as directed by the Owner.

3.39 SINGLE PIPE CONCRETE HEADWALL, ALL SIZES (Pay Item No. 334200.8) PRICE BASED ON QUANTITY, EACH

A. Single Pipe Concrete Headwall, All Sizes shall be measured per each, complete in place, including all earthwork, formwork and reinforcing in accordance with the Contract Documents.

B. Payment for Single Pipe Concrete Headwall, All Sizes shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.8, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown in the plans and as directed by the Owner.

3.40 DOUBLE PIPE CONCRETE HEADWALL, ALL SIZES (Pay Item No. 334200.9) PRICE BASED ON QUANTITY, EACH

A. Double Pipe Concrete Headwall, All Sizes shall be measured per each, complete in place, including all earthwork, formwork and reinforcing in accordance with the Contract Documents.

B. Payment for Double Pipe Concrete Headwall, All Sizes shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.9, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown in the plans and as directed by the Owner.

3.41 DITCHING (Pay Item No. 334200.10) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Ditching shall be measured per actual linear foot, complete in place, all in accordance with the Contract Documents.

B. Excavation and disposal of earth and organic waste generated by ditching shall be considered incidental and shall not be measured separately for payment.

C. Payment for Ditching shall be made at the Unit Price shown on the Bid Schedule under Pay Item No. 334200.10, which payment shall constitute full compensation for all Work described in Section 334200 – Stormwater Conveyance, as shown in the plans and as directed by the Owner.

END OF SECTION 012200

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

A. Engineer will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on approved form.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Engineer are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.4 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Contractor will issue a document for signatures of Owner and Contractor.

1.5 CONSTRUCTION CHANGES

A. Construction Changes Directive: Engineer may issue a Construction Change Directive on approved form. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Pay applications to meet the format outlined on the Cost Proposal Form.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule as indicated on the Cost Proposal Form.
2. Submit the schedule of values to Engineer at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Project meetings.

B. Related Requirements:

1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

1.3 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.4 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Engineer by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Name of Engineer.
2. Engineer’s Project number.
3. Date.
4. Name of Contractor.
5. RFI number, numbered sequentially.
6. RFI subject.
7. Specification Section number and title and related paragraphs, as appropriate.
8. Drawing number and detail references, as appropriate.
9. Field dimensions and conditions, as appropriate.
10. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
11. Contractor's signature.
12. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Engineer.

D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for approval of Contractor's means and methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Engineer's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information.
3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within five days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:

1. Name and address of Contractor.
2. Name and address of Engineer.
3. RFI number including RFIs that were returned without action or withdrawn.
4. RFI description.
5. Date the RFI was submitted.
6. Date Engineer's response was received.

F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within three days if Contractor disagrees with response.

1.5 PROJECT MEETINGS

A. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Responsibilities and personnel assignments.
    b. Tentative construction schedule.
    c. Phasing.
    d. Critical work sequencing and long lead items.
    e. Designation of key personnel and their duties.
    f. Lines of communications.
    g. Use of web-based Project software.
    h. Procedures for processing field decisions and Change Orders.
    i. Procedures for RFIs.
    j. Procedures for testing and inspecting.
    k. Procedures for processing Applications for Payment.
    l. Distribution of the Contract Documents.
    m. Submittal procedures.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

B. Progress Meetings: Conduct progress meetings at regular intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Construction schedule updating reports.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.

1.4 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that is capable of managing construction schedules.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer’s responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer’s responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
4. Submittal purpose and description.
5. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
6. Other necessary identification.
7. Remarks.
8. Signature of transmitter.

B. Options: Identify options requiring selection by Engineer.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Prepare submittals as PDF files.

1.4 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Engineer by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Engineer.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer’s receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
2. Resubmittal Review: Allow 7 days for review of each resubmittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer’s action stamp.

1.5 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's catalog cuts.
b. Manufacturer's product specifications.
c. Standard color charts.
d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams that show factory-installed wiring.
b. Printed performance curves.
c. Operational range diagrams.
d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in two submittal packages, delivered to project site and engineers office.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.
    f. Specification paragraph number and generic name of each item.

1.6 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

1.7 ENGINEER’S REVIEW

A. Action Submittals: Engineer will review each submittal, indicate corrections or revisions required, and return.

    1. PDF Submittals: Engineer will indicate, via markup on each submittal, the appropriate action.

B. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

C. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

D. Engineer will discard submittals received from sources other than Contractor.

E. Submittals not required by the Contract Documents will be returned by Engineer without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

E. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

F. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Engineer.

1.3 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Engineer regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Engineer for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.5 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.

8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

1.6 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Engage a qualified testing agency to perform quality-control services.

a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections, and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Engineer.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer’s and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
2. Section 015723 “Temporary Stormwater Pollution Controls” for erosion, sediment, and storm water pollution prevention requirements.

1.2 USE CHARGES

A. Installation, removal, and use charges for temporary facilities to be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Engineer, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System is not available for use. Contractor to provide connections and extensions of services and metering as required for construction operations.

C. Electric Power Service from Existing System is not available for use. Contractor to provide connections and extensions of services and metering as required for construction operations.

1.3 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit, Alaska Department of Environmental Conservation or other authorities having jurisdiction, whichever is more stringent.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Onsite temporary facilities shall be limited to porta-potty type restroom facilities unless otherwise approved by the Owner and Haines Borough.

B. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

C. Security Fencing: The Owner will deliver to the site adequate security fencing to encompass the entirety of the project area.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 SUPPORT FACILITIES INSTALLATION

A. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as required by AHJ.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: Coordinate with Owner for parking areas for construction personnel.

D. Storage and Staging: Coordinate with Owner for storage and staging needs.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction reasonably free of water such that the project can be constructed in accordance with the applicable specifications and in compliance with all local, state and federal regulations.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

F. Project Signs: Provide and/or install Project signs as required. Unauthorized signs are not permitted.

1. Identification Signs: The Owner will provide project identification signs. Contractor shall secure Owner-furnished signs to security fencing.
2. Temporary Signs: Provide other signs as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs, so they are legible at all times.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion, Sedimentation and Storm Water Pollution Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and the requirements specified in Section 015723 "Temporary Stormwater Pollution Controls."

D. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

F. Site Enclosure Fence: Install and maintain Owner-provided site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project, excluding Jones Point Road.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

3. Upon completion of the project, the fence shall remain in place. Keys and locking mechanisms shall be removed or delivered to the Owner.

G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

3.4 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Unless otherwise specified, remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section Includes: General protection of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

1.2 FIELD CONDITIONS

A. The following practices are prohibited within currently wooded and vegetated areas to remain:

1. Storage of construction materials, debris, or excavated material.
2. Moving or parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SITE MEETING

A. The Contractor shall conduct an onsite meeting with the Owner after the Contractor has staked the construction limits. The Owner will identify areas of vegetation and trees beyond the staked construction limits intended to remain that could be affected by miscellaneous grading. The Owner will also identify any trees within the staked construction limits that are desired to remain, pending evaluation of finished site grading. The contractor shall take all necessary precautions to not disturb the areas identified by the owner.

END OF SECTION 015639

SECTION 015723 - TEMPORARY STORMWATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary stormwater pollution controls.

1.2 STORMWATER POLLUTION PREVENTION PLAN

A. The Contractor shall prepare and obtain authorization for a Construction General Permit (CGP) Stormwater Pollution Prevention Plan (SWPPP) in accordance with current Alaska Department of Conservation (ADEC) guidelines. The project area is greater than 5 acres. The Contractor shall file a Notice of Intent (NOI) with the ADEC and provide a copy to the Owner.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Owner's Onsite Representative, and earthwork subcontractor.
2. Review requirements of the SWPPP, including permitting process, worker training, and inspection and maintenance requirements.

1.4 INFORMATIONAL SUBMITTALS

A. Stormwater Pollution Prevention Plan (SWPP): Within 15 days of date established for commencement of the Work, submit completed SWPPP.

B. Stormwater Pollution Prevention (SWPP) Training Log: For each individual performing Work under the SWPPP.

C. Inspection reports.

1.5 QUALITY ASSURANCE

A. Stormwater Pollution Prevention Plan (SWPPP) Coordinator: Experienced individual or firm with a record of successful water pollution control management coordination of projects with similar requirements.

1. SWPPP Coordinator shall be an Alaska Certified Erosion and Sediment Control Lead (AK-CESCL) with current and valid certification.
2. SWPPP Coordinator shall complete and finalize the SWPPP form.
3. SWPPP Coordinator shall be responsible for inspections and maintaining of all requirements of the SWPPP.

B. Installers: Trained as indicated in the SWPPP.

PART 2 - PRODUCTS

2.1 TEMPORARY STORMWATER POLLUTION CONTROLS

A. Provide temporary stormwater pollution controls as required by the SWPPP.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with all best management practices, general requirements, performance requirements, reporting requirements, and all other requirements included in the SWPPP.

B. Locate stormwater pollution controls in accordance with the SWPPP.

C. Conduct construction as required to comply with the SWPPP and that minimize possible contamination or pollution or other undesirable effects.

1. Inspect, repair, and maintain SWPPP controls during construction.

a. Inspect all SWPPP controls not less than every seven days, and after each occurrence of a storm event, as outlined in the SWPPP.

D. Remove SWPPP controls at completion of construction and restore and stabilize areas disturbed during construction.

END OF SECTION 015723

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Examination.
2. Preparation.
3. Construction layout.
4. Field engineering.
5. Installation.
6. Coordination of Owner's portion of the Work.
7. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for coordination of Owner-furnished products, Owner's separate contracts, and limits on use of Project site.
2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Engineer promptly.

B. Engage a professional engineer experienced in laying out the Work, using the following accepted surveying practices:

1. Establish benchmarks and control points to set lines and levels at each area of construction and elsewhere as needed to locate each element of Project.

2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

3.5 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Engineer. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

3.6 COORDINATION OF OWNER'S PORTION OF THE WORK

A. Site Access: Provide access to Project site for Owner's construction personnel and Owner's separate contractors.

1. Refer to Section 011000 "Summary" for other requirements for Owner-furnished, Contractor-installed products.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel and Owner's separate contractors.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

3.7 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final Completion procedures.
3. List of incomplete items.
4. Submittal of Project warranties.
5. Final cleaning.

B. Related Requirements:

1. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.2 ACTION SUBMITTALS

A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Advise Owner of changeover in utility services.
6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Complete final cleaning requirements.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1.5 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."

2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1.6 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1.7 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
c. Remove debris and surface dust from limited-access spaces, including trenches, equipment vaults, manholes, and similar spaces.

C. Pest Control: Comply with pest control requirements. Prepare written report.

D. Construction Waste Disposal: Comply with waste-disposal requirements.

3.2 CORRECTION OF THE WORK

A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Submit copies of Record Drawings as follows:

a. Final Submittal:

1) Submit PDF Files of as constructed conditions to engineer.

1.3 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown on plans. Provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of installation.

d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Actual equipment locations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 024116 - STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of site improvements.
2. Removing below-grade construction.
3. Disconnecting, capping or sealing, and removing site utilities.

B. Related Requirements:

1. Section 01 1000 - Summary; For use of the premises requirements.
2. Section 01 3200 - Construction Progress Documentation; For preconstruction photographs taken before building demolition.
3. Haines Borough Utility Connection Permit.
4. Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction, current edition.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged.

1.3 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 SUBMITTALS

A. Schedule of Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.
2. Temporary interruption of utility services.
3. Shutoff and capping or re-routing of utility services.

B. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Submit before the Work begins.

1. See Section 01 3200 – Construction Progress Documentation, for additional

information.

1.5 QUALITY ASSURANCE

A. Qualifications: See Section 01 4000 - Quality Requirements.

B. Preinstallation Meetings: See Section 01 3100 - Project Management and Coordination.

1. Convene pre-demolition meeting minimum 2 weeks before starting work of this Section.
2. Conduct conference at Project site.
3. Inspect and discuss condition of construction to be demolished.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.

1.6 FIELD CONDITIONS

A. On-site storage or sale of removed items or materials is not permitted.

1.7 COORDINATION

A. Arrange demolition schedule such that proper notice is given and approvals received from the AHJ for any temporary pedestrian or vehicle traffic re-routing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with traffic control, hauling and disposal regulations of authorities having jurisdiction.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Review Project Record Documents of existing construction or other existing condition information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

B. Inventory and record the condition of items to be removed and salvaged.

3.2 PROTECTION

A. Existing Facilities: Protect adjacent walkways, roadways and other existing utilities to remain. Shore excavations as required.

B. Existing Utilities to Remain: Maintain utility services to remain and protect from damage during demolition operations.

1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.

a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 01 5000 "Temporary Facilities and Controls."

1. Protect adjacent buildings and facilities from damage due to demolition activities.
2. Protect existing site improvements, appurtenances, and landscaping to remain.
3. Erect a plainly visible fence around groups of existing trees and vegetation to remain.
4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.3 DEMOLITION, GENERAL

A. General: Demolish indicated site improvements to approximate limits shown and to the minimal extent necessary to perform the Work. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
2. Maintain fire watch during and for at least 4 hours after flame-cutting operations.
3. Maintain adequate ventilation when using cutting torches.

B. Site Access and Temporary Controls: Conduct demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways,

and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed trafficways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

C. Explosives: Use of explosives for demolition activities is not permitted.

3.4 DEMOLITION BY MECHANICAL MEANS

A. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

3.5 SITE RESTORATION

A. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.6 REPAIRS

A. Promptly repair any hardscapes and pavement within rights of way in accordance with Haines Borough standards of practice and Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of at an approved, permitted waste disposal site.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn demolished materials.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing

before building demolition operations began.

1. Clean roadways of debris caused by debris transport.

END OF SECTION 024116

SECTION 221313 - FACILITY SANITARY SEWERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Site sanitary sewer systems.

B. Related Requirements

1. Drawings and general provisions of the Contract.
2. Section 31 5000 “Excavation Support and Protection” for trench shoring.
3. Section 31 2000 "Earth Moving" for utility trench excavating and backfill requirements.
4. Haines Borough Utility Connection Permit.
5. AKDOT&PF Utility Connection Permit

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

A. Section Includes:

1. PVC pipe and fittings.
2. Ductile iron pipes and fittings.
3. Cleanouts.
4. Manholes.
5. Internal Drop Connections
6. Concrete.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Pipe and fittings.
2. Cleanouts.

B. Shop Drawings: For manholes. Include plans, elevations, sections, details, and frames and covers.

C. Product Certificates: For each type of pipe and fitting.

D. Field quality-control reports.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of pipe and fitting.

B. Field quality-control reports.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic manholes, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle manholes according to manufacturer's written rigging instructions.

1.7 FIELD CONDITIONS

A. Interruption of Existing Sanitary Sewerage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Owner no fewer than seven days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

A. PVC Gravity Sewer Piping:

1. Pipe and Fittings:

a. For all material on and services extending to SEARHC-owned property, AWWA C900, DR 25, PVC gravity sewer pipe with bell-and-spigot ends and with integral ASTM F477, elastomeric seals for gasketed joints.
b. For all other material, SDR 35 PVC gravity sewer pipe with bell-and-spigot ends and with integral ASTM F477, elastomeric seals for gasketed joints.

2.2 CLEANOUTS

A. PVC Cleanouts:

1. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.
2. PVC cleanouts shall only be used in areas not subject to vehicular traffic.

B. Ductile Iron Cleanouts

1. Description: Class 50 ductile iron body, ductile iron cleanout cover, and watertight mechanical plug.
2. Ductile iron cleanouts shall be used in areas subject to vehicular traffic.

2.3 MANHOLES

A. Standard Precast Concrete Manholes:

1. Description: ASTM C478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Diameter: 48 inches minimum unless otherwise indicated.
3. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section; with separate base slab or base section with integral floor.
5. Riser Sections: 4-inch minimum thickness, of length to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated; with top of cone of size that matches grade rings.
7. Joint Sealant: ASTM C990, bitumen or butyl rubber.
8. Resilient Pipe Connectors: ASTM C923, cast or fitted into manhole walls, for each pipe connection.
9. Steps: Polyethylene; 14” wide designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12-inch intervals.
10. Grade Rings: Reinforced-concrete rings, not more than 12-inches total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.

B. Designed Precast Concrete Manholes:

1. Description: ASTM C913; designed according to ASTM C890 for A-16 (ASSHTO HS20-44 in AASHTO HL), heavy-traffic, structural loading; of depth, shape, and dimensions indicated, with provision for sealant joints.
2. Ballast: Increase thickness of one or more precast concrete sections or add concrete to manhole as required to prevent flotation.
3. Joint Sealant: ASTM C990, bitumen or butyl rubber.

4. Resilient Pipe Connectors: ASTM C923, cast or fitted into manhole walls, for each pipe connection.
5. Steps: Polyethylene; 14” wide designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12-inch intervals.
6. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.

C. Manhole Frames and Covers:

1. Description: Ferrous; 24-inch ID by 7- to 9-inch riser, with 4-inch-minimum-width flange and 26-inch-diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "SANITARY SEWER."
2. Material: ASTM A536, Grade 60-40-18 ductile iron unless otherwise indicated.
3. Covers shall be bolt-down gasketed type.

2.4 CONCRETE

A. General: Cast-in-place concrete complying with ACI 318, ACI 350, and the following:

1. Cement: ASTM C150/C150M, Type II.
2. Fine Aggregate: ASTM C33/C33M, sand.
3. Coarse Aggregate: ASTM C33/C33M, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A1064/A1064M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A615/A615M, Grade 60 deformed steel.

C. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.

    a. Invert Slope: 2 percent through manhole.

2. Benches: Concrete, sloped to drain into channel.

    a. Slope: 8 percent.

D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A1064/A1064M, steel, welded wire fabric, plain.

2. Reinforcing Bars: ASTM A615/A615M, Grade 60 deformed steel.

2.5 DROP CONNECTIONS

A. Internal drop connections at manholes shall be constructed of SDR 35 PVC pipe and fittings as specified herein. All mounting hardware shall be 316 SS.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Section 31 2000 "Earth Moving."

3.2 PIPING INSTALLATION

A. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.

B. Install manholes where indicated on the Drawings. Use fittings for branch connections unless direct tap into existing sewer is indicated.

C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

D. Install gravity-flow, nonpressure, sewer piping according to the following:

1. Install PVC gravity sewer piping according to ASTM D2321 and ASTM F1668.

E. Clear interior of piping and manholes of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure, drainage piping according to the following:

1. Join PVC gravity sewer piping according to ASTM D2321 and ASTM D3034 for elastomeric-seal joints or ASTM D3034 for elastomeric-gasket joints.

3.4 MANHOLE INSTALLATION

A. General: Install manholes complete with appurtenances and accessories indicated.

B. Install precast concrete manhole sections with sealants according to ASTM C891.

C. Form continuous concrete channels and benches between inlets and outlet.

D. Set tops of frames and covers 1/4 inch below finished surface for manholes that occur in pavements, walks and other areas subject to foot or vehicle traffic. Set tops 6 inches above finished surface elsewhere unless otherwise indicated.

3.5 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

3.6 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes in accordance with Drawings and Specifications. Install piping so cleanouts open in direction of flow in sewer pipe.

3.7 IDENTIFICATION

A. Comply with requirements in Section 31 2000 "Earth Moving" for underground utility identification devices.

3.8 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate report for each system inspection.
2. Defects requiring correction include the following:

    a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
    d. Infiltration: Water leakage into piping.
    e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.

4. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to requirements of authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 48 hours' advance notice.
4. Submit separate report for each test.
5. Test sanitary sewerage pipes by either air or hydrostatic methods according to requirements of authorities having jurisdiction and applicable testing standards.
6. Manholes: Perform hydraulic test according to ASTM C969.

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.9 CLEANING

A. Clean dirt and superfluous material from interior of piping. Flush with potable water.

END OF SECTION 221313

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Clearing and grubbing.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.
2. Section 015723 “Temporary Storm Water Pollution Control.”
3. Section 015639 “Temporary Tree and Plant Protection.”

1.3 DEFINITIONS

A. Clearing – the removal of above-grade vegetation, including trees of all sizes, within the project site disturbance limits and as identified by the Owner.

B. Grubbing – the removal of root wads of all sizes, and surficial vegetative mat to a maximum depth of 1 foot below the existing ground surface.

1.4 SITE MEETING

A. Conduct conference at Project site to review project and clearing limits.

1.5 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled, re-used, or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or video recordings.

1.7 FIELD CONDITIONS

A. Do not commence site clearing or earth-disturbing operations until temporary erosion- and sedimentation-control, plant-protection, and Storm Water Pollution Prevention measures are in place.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain have been flagged.

3.2 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to requirements in Section 01 5639 "Temporary Tree and Plant Protection."

3.3 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain.

3.4 DISPOSAL OF WASTE MATERIALS

A. Remove and dispose offsite all material generated from clearing and grubbing operations.

END OF SECTION

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating and backfilling for site work including buildings and structures, walks, curb and gutter, and pavement.
2. Excavating and backfilling trenches for utilities and pits for buried utility structures.

B. Related Requirements:
1. Section 01 3200 "Construction Progress Documentation" for recording pre-excavation and earth-moving progress.
2. Section 31 5000 "Excavation Support and Protection" for shoring and bracing of excavations.

A. References: The following specifications and standards of the organizations and documents listed in this paragraph form a part of the Specification to the extent required by the references thereto. In the event that the requirements of the following referenced standards and specification conflict with this specification section the requirements of this specification shall prevail. In the event that the requirements of any of the following referenced standards and specifications conflict with each other the more stringent requirement shall prevail.

1. ASTM: American Society of Testing Materials cited section numbers.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct pre-excavation conference at Project site.

1. Review methods and procedures related to earthmoving, including, but not limited to, the following:

a. Personnel and equipment needed to make progress and avoid delays.
b. Coordination of Work with utility locator service.
c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
d. Extent of trenching by hand or with air spade.
e. Field quality control.
f. Excavation shoring

1.3 ACTION SUBMITTALS

A. Product Data: For each type of the following manufactured products required:

1. Warning tapes.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Material Test Reports: For each material and test specified herein.

C. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.5 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify 811 Alaska Digline, Haines Borough Public Works, Alaska Power & Telephone, and Haines Cable TV and obtain utility locates before beginning earth-moving operations.

C. Do not commence earth moving operations until temporary site fencing and erosion and sedimentation control measures specified in Section 01 5000 "Temporary Facilities and Controls" are in place.

D. Do not commence earth moving operations until stormwater pollution prevention measures specified in Section 01 5723 “Temporary Storm Water Pollution Control” are in place.

E. Do not commence with earth moving operations until a site meeting with the Owner has been conducted to identify the project limits and any necessary trees or vegetation desired to remain.

PART 2 - PRODUCTS

2.1 UNUSALBE EXCAVATION

A. Unusable Excavation: Existing soil not suitable for re-use on the project due to material quality, composition, or lack of adequate space within a designated fill prism.

2.2 USABLE EXCAVATION

A. Usable Excavation: Existing onsite soil suitable for re-use on the project. Usable Excavation shall consist of non-frost susceptible earth, sand, gravel, fractured rock, or combination thereof containing no muck, peat, frozen materials, roots, sod, or other deleterious materials shall be placed and compacted to the density required herein. The maximum particle dimension on any one side shall not exceed 6 inches. Approval of Usable Excavation is subject to the opinion of the Owner's Onsite Representative.

B. Usable Excavation shall also consist of individual on-site boulders to be stockpiled at an Owner-designated location onsite for future project use. Up to 100 boulders, having a minimum long dimension of 3 feet and maximum long dimension of 5 feet, shall be salvaged and stockpiled. Excavating and transporting of stockpiled boulders shall be completed in a careful manner to not damage, scratch, scar, break, or otherwise compromise the stockpiled material.

2.3 CLASS A BORROW

A. Class A Borrow: Class A Borrow shall consist of hard angular and blasted quarry rock meeting the following requirements:

1. Percentage of wear of not more than 50 at 1000 revolutions, as determined by ASTM C535.
2. Gradation as determined by WAQTC FOP for AASHTO T27/T 11

SIEVE SIZE	% PASSING BY WEIGHT
4-Inch	100
2-Inch	60 – 90
No. 4	10 – 40
No. 200*	0 – 3
*Gradation shall be determined on that portion passing the 3-inch screen.	

3. Greatest dimension no longer than twice its smallest dimension.
4. Contain no muck, frozen material, roots, sod or other deleterious matter.

2.4 3-INCH MINUS BORROW

A. 3-inch Minus Borrow: 3-inch Minus Borrow shall consist of hard angular and blasted quarry rock meeting the following requirements:

1. Percentage of wear of not more than 50 at 1000 revolutions, as determined by ASTM C535.
2. Gradation as determined by WAQTC FOP for AASHTO T27/T 11

SIEVE SIZE	% PASSING BY WEIGHT
3-Inch	100
2-Inch	60 – 90
No. 4	10 – 40
No. 200*	0 – 6
*Gradation shall be determined on that portion passing the 3-inch screen.	

3. Greatest dimension no longer than 1.5 times its smallest dimension.
4. Contain no muck, frozen material, roots, sod or other deleterious matter.

2.5 CLASS A BEDDING

A. Bedding: Backfill material placed directly around buried utility pipes and structures meeting the following requirements:

1. A percentage of wear of not more than 50 at 500 revolutions as determined by AASHTO T-96 or ASTM C535.
2. Crushed rock material aggregate, free of muck, frozen material, lumps, organic material, trash, lumber or other debris, conforming to the following gradation:

SIEVE SIZE	% PASSING BY WEIGHT
1 1/2-Inch	100
3/8	35-65
No. 4	20-35
No. 200	0-6

2.6 SAND BEDDING

A. Sand Bedding: Soil consisting predominantly of sand containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as determined by WAQTC FOP for AASHTO T89 and T90.

B. Sand Bedding shall only be used for electrical and telecommunication conduits that are too close for base-course sized particles to distribute between adjacent conduits.

C. Sand Bedding shall meet the following gradation as determined by WAQTC FOP for AASHTO T27 and T11:

SIEVE SIZE	% PASSING BY WEIGHT
3/8-Inch	100
No. 4	95 – 100
No. 200	0 – 6

2.7 BASE COURSE

A. Base Course: Aggregate base course shall consist of crushed gravel or crushed stone, conforming to the quality requirements of AASHTO M 147. The aggregate shall be free from lumps, balls of clay, or other objectionable matter, and shall be durable and sound.

1. Base course shall be sampled according to WAQTC FOB for AASHTO T2 as described in the Alaska Test Method Manual, ATM 301.
2. Coarse aggregate (that material retained on the No. 4 sieve) shall be crushed stone and shall consist of sound, tough, durable rock of uniform quality. Rock shall be free of schist that cleaves along preferred foliation planes. Rock shall be free of platy mineral grains. Metamorphosed rock shall be free of slaty cleavage. All material shall be free from clay balls, vegetative matter or other deleterious materials. Coarse aggregate shall not be coted with dirt or other finely divided matter. All aggregates shall be free of roots and wood. In addition, coarse aggregate shall meet the following requirements:

Property	**Value**	**Test Method**
L.A. Wear, %	25 max.	AASHTO T 96
Degradation Value	45 min.	ATM 313
Fracture, %	70 min.	WAQTC FOP for AASHTO TP 61
Plastic Index	6 max.	WAQTC FOP for AASHTO T 90
Sodium Sulfate Loss, %	9 max.	AASHTO T 104

3. Aggregate shall not exceed eight (8) percent thin/elongated pieces as determined by ATM 306.
4. Fine Aggregate: Fine aggregate (that passing the No. 4 sieve) shall meet the quality requirements of AASHTO M 29
5. Base course material shall conform to one of the following gradations as specified:

Sieve Designation	A	B	C	C-1	D	D-1	E	E-1
2	100	100						
1 1/2	70-100			100				
1	40-70		100	70-100		100		
3/4				60-90	100	70-100	100	
3/8	20-40			45-75		50-80		100
No. 4	10-30	30-70	40-75	30-60	45-80	35-50		45-80
No. 8				22-52		20-35		32-80
No. 10			25-55		30-65			
No. 40				8-30		8-30		
No. 200	0-4	3-10	4-10	0-6	4-12	0-6	0-6	0-6

2.8 RIPRAP

A. Riprap size, quality, and placement requirements shall comply with the Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction, current edition.

2.9 REINFORCED TRENCH SECTION

A. Portions of the project will be constructed over very soft, wet, cohesive soil subgrade to remain. In these areas, underground utilities shall be constructed in a reinforced trench section consisting of over-excavation and replacement with Class A Borrow, and geotextile as shown in the Drawings.

2.10 ACCESSORIES

A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

2.11 GEOTEXTILE

A. Geotextile shall consist of RS380i as manufactured by Mirafi®.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect and maintain storm water pollution prevention controls during earth-moving operations.

D. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed, and in compliance with all local, state, and federal regulations. Dispose of water and sediment in a manner that avoids inconvenience to others.

3.3 EXCAVATION, GENERAL

A. Clearing and grubbing in excavation areas must be completed prior to beginning excavation operations.

B. Excavations shall be reasonably smooth to lines, grades and elevations specified in the Drawings or as directed by the Owner’s On-Site Representative. Excavation shall be conducted to ensure that material outside of the excavation limits remains undisturbed.

C. Where excavations to the limits indicated on the Drawings encounters unsuitable subgrade, the Owner's Onsite Representative shall be notified and the unsuitable material shall be removed and the excavation shall be backfilled with approved material as directed by the Owner. Adequate time shall be allowed to take the necessary cross-section measurements before backfill is placed.

D. Excavated soils not suitable for re-use on the project shall be disposed of by the Contractor at a location provided by the Contractor. No material may be wasted without prior approval.

E. The Contractor is responsible for securing waste excavation disposal sites if none are indicated on the Plans. The Contractor shall obtain the written permission of the Landowner for use of all disposal sites, and shall either obtain any required permits or assure that others have obtained them. If requested by the Owner, the Contractor shall furnish the permit numbers of all required permits for the disposal sites. The cost of securing such sites shall be borne by the Contractor.

F. Temporary storage of Usable Excavation is the responsibility of the Contractor, and no additional payment will be made. Usable Excavation shall be stored on-site at a location approved by the Owner's On-Site Representative. Usable Excavation shall be protected from saturation, erosion and sediment run-off in a manner consistent with the requirement of the Contractor's CGP, ESC and SWPPP.

G. The Contractor shall conduct all operations to prevent contaminating Usable Excavation with Unusable Excavation or otherwise unsuitable material.

H. When frozen material is excavated and meets all other requirements for Usable Excavation, it shall be allowed to thaw and drain prior to placing in the embankment. This material will be considered Usable Excavation and no additional payment will be made.

I. The Contractor shall provide added care including bracing and shoring as required when excavating adjacent to existing retaining walls, fences, buildings, sidewalks, and roads. Damage caused to existing features by the Contractor's excavation operations shall be repaired at the Contractor's expense.

J. Where excavations occur adjacent to existing sidewalks, roadways or other paved surfaces designated to remain undisturbed the Contractor shall record existing surface elevations prior to excavating and take necessary measures to ensure the surface is not damaged and existing elevations and grades are maintained throughout the project and upon completion. Damage caused to existing pavements by the Contractor shall be repaired at the Contractor's expense.

3.4 EXCAVATION FOR UTILITY STRUCTURES AND TRENCHES

A. Excavations and trenches for utilities shall conform to lines and grades indicated on the drawings as dictated by rim or lid elevations, structure or pipe dimensions, inverts, sumps, bedding or sub-excavation.

B. Excavation of any and all material more than two feet below the invert of a pipe or structure or as shown on the Plans shall be done only when ordered in writing by the Engineer. The material so excavated will be handled in the manner described below.

C. All excavated material suitable for use as backfill shall be stockpiled in an orderly manner separately from unsuitable material, at a sufficient distance from the edge to prevent material from sloughing or sliding back into the trench; except that when the trench is in a traveled roadway the Engineer may require removal and temporary storage of excavated material elsewhere.

D. Material unsuitable for use as backfill shall be hauled to a waste disposal site off the project, unless otherwise directed in writing by the Engineer. The Contractor is responsible for securing waste disposal sites if none are indicated on the plans. The Contractor shall obtain the written permission of the landowner for use of all disposal sites, and shall either obtain any required permits or assure that they have been obtained by others. If requested by the Engineer, the Contractor shall furnish the permit numbers of all required permits for the disposal sites. The cost of securing such sites shall be borne by the Contractor.

E. No more than 150 feet of trench shall be open in advance of laying of pipe, and not more than ten feet of trench shall remain open at the end of each working period. When the trench is in a traveled roadway, it shall be completely backfilled, in accordance with the Specifications, and opened to traffic at the end of each working period.

F. Where required to prevent caving of the trench, or by any safety law or regulation, the Contractor shall furnish and install incidental bracing and/or sheeting to protect the excavation. This bracing and/or sheeting shall be removed as trench backfill progresses.

G. The Contractor shall remove and dispose of all water entering the excavation. Disposal of water shall be done in a manner to prevent damage or nuisance to adjacent property, and in accordance with all applicable laws and regulations. Pumps shall be adequate to maintain a dry trench during the bedding, pipe installation, and initial backfill to an elevation at least one foot above the top of pipe. No backfill may be placed in standing water under any circumstance, except when the plans and/or Specifications specifically permit installation of pipe in a wet trench.

H. Excavations for manholes and similar structures shall be per OSHA standards and large enough to provide proper working room. Any over depth excavation shall be backfilled with concrete or other approved material at the Contractor’s expense.

I. The Contractor shall provide temporary support of existing structures, as necessary to protect the structures from settlement or other disturbances caused by construction activities. All structures disturbed by the Contractor's activities shall be returned to original condition, or better.

3.5 SUBGRADE INSPECTION

A. Notify Owner's On-Site Representative when excavations have reached required subgrade.

B. If Owner's On-Site Representative determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed and per the Drawings.

C. Proof-roll all other subgrade to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Owner's On-Site Representative, and replace with compacted backfill or fill as directed.

D. Authorized additional excavation of unsuitable subgrade and replacement material will be paid for according to Contract provisions for changes in the Work.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner's On-Site Representative, without additional compensation.

3.6 GEOTEXTILE

A. Geotextile shall be placed on prepared subgrade that has been graded relatively smooth and is free of protrusions, such as debris or branches, that may damage the geotextile.

B. Geotextile shall be laid with the long dimension parallel to the long axis of the project. Seams shall be sewn in accordance with the manufacturer's recommendations, or lapped a minimum of 3 feet.

3.7 STORAGE OF SOIL MATERIALS

A. Stockpiles of different materials shall not be allowed to intermix. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust and saturation by rain.

B. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 BACKFILL

A. Embankments shall be constructed to a reasonably smooth and uniform shape conforming to the lines, grades and cross sections indicated on the Plans or as directed by the Engineer.

B. The underlying ground shall be properly prepared, graded, and compacted prior to placing embankment material. Subgrade shall be free of free of mud, frost, snow, or ice. Clearing and grubbing in embankment areas must be completed prior to embankment operations. Debris shall be removed and surface depressions or holes shall be filled with suitable material to a level uniform surface and compacted before the embankment is constructed.

C. Wherever an existing compacted embankment surface within the project limits containing granular material lies within three feet of the new embankment surface, such existing embankment shall be scarified to a depth of six inches and incorporated into the first layer of embankment.

D. Embankments over swampy ground may be constructed by end dumping an initial lift of depth approved by the Engineer to support hauling and spreading equipment.

E. If continued hauling over a completed or partially completed embankment causes loss of stability as evidenced by pumping or rutting, or other damage, the Contractor shall repair the damaged embankment at its own expense and adjust its hauling equipment and procedures to avoid further damage.

3.9 UTILITY TRENCH BACKFILL

A. Bedding:

1. Bedding shall be placed in conformance with the lines, grades and limits shown on the Drawings. Before placing any bedding material, the bottom of the trench shall be hand raked ahead of the pipe laying operation to remove stones and lumps which will interfere with smooth and complete bedding of the pipe. Bedding material shall then be placed in layer(s) the full width of the trench, each layer not exceeding eight inches in thickness loose measure, and compacted to 95% of maximum density as determined by AASHTO T 180 D, until the elevation of the plan grade for the pipe invert is attained. The pipe bed shall then be fine graded by hand and compacted as above. Bell holes shall be hand dug at the location of the joints and shall be of sufficient size to allow proper making of the joint and to prevent the collar or bell of the pipe from bearing on the bottom of the trench.
2. After the pipe has been laid and approved for covering, bedding material shall be placed evenly on both sides of the pipe for the full width of the trench. Approval for covering does not imply final acceptance of the pipe, or relieve the Contractor in any way of responsibility to complete the project in conformance with the Drawings and Specifications. Bedding material shall be placed in layers. The

thickness, loose measure, of the first layer shall be either one half the outside diameter of the pipe plus two inches or eight inches, whichever is least. This layer shall be compacted as specified above to provide solid support to the underside of the pipe.

a. For pipe 10 inches and smaller nominal diameter, the next layer shall be of the thickness required to complete placement of the bedding to a plane six inches above the pipe, after compaction as specified above.
b. For pipe 12 inches and larger, the bedding material shall be placed and compacted in layers not more than eight inches in thickness, loose measure, up to a plane six inches above the top of the pipe.

3. Bedding material compaction shall be achieved by performing a minimum level of compactive effort over the complete coverage area with equipment provided by the Contractor suitably equipped by the manufacturer for compacting bedding materials.
4. For each type of bedding material, the minimum level of compactive effort shall be established by performing in place density tests in accordance with ATM 213-WAQTC FOP for AASHTO 310.
5. The initial density test at any location will be paid for by the Owner. If the initial test shows that the material compaction is not as specified, the Contractor shall modify the compaction methods used, as approved by the Engineer, and have the material retested until the tests show that the compaction meets the specification requirements. All tests, after the initial test at any given location, shall be paid for by the Contractor.
6. If, in the opinion of the Engineer, an area appears to have sub-standard compaction or the minimum level of compactive effort requires re-evaluation due to changing site or material conditions additional density tests may be called for by the Engineer. The results of such tests shall reestablish the minimum level of compactive effort as determined by the Engineer.
7. Bedding shall be considered incidental to all pipe, structures and utilities and shall be installed as shown in the Plans as part of other work.

B. Warning Tape: Install warning tape where indicated in the Drawings above all buried utilities.

C. The trench shall be backfilled above the bedding material, as shown on the Drawings with Class A Borrow. Class A Borrow shall be placed in lifts not exceeding 8 inches in thickness, loose measure, unless otherwise directed by the Engineer. Compaction shall be achieved by a level of effort consisting of at least six complete passes with a 15-ton vibratory drum compactor or equivalent heavy plate compactor. After backfilling of the trench is completed, any excess Class A Borrow from trench excavation shall be utilized elsewhere on site or hauled to a Contractor-furnished disposal site off the project.

D. Where trenches cross roadways, streets or driveways, backfilling shall be done immediately following excavation and laying of the pipe. All crossings shall be backfilled, compacted, and open to traffic at the end of each day’s work. Major road crossings shall be excavated and backfilled in half widths of the traveled way so that at

least one half of the roadway is open to controlled traffic at all times during the work. All work performed within a right of way shall be done in conformance with the appropriate permits issued by the respective agency having jurisdiction over the right of way.

E. At least 24 hours prior to commencing backfilling operations, the Contractor shall notify the Owner's Representative of the proposed method of compaction. No method will be approved until the Contractor has demonstrated, under actual field conditions, that such method will produce the degree of compaction required.

F. Where indicated on the plans, the Contractor shall excavate, bed and backfill electrical utility trenches.
   1. Where indicated on the plans, the Contractor shall furnish and install the electrical conduit, couplers, fittings, and plugs specified.
   2. Where indicated on the plans, Alaska Power & Telephone will furnish and install the electrical conduit, couplers, fittings and plugs. The Contractor shall be responsible for excavating the trench, allowing the installation of the conduit by Alaska Power & Telephone, bedding the conduit, and backfilling the trench. The Contractor shall notify Alaska Power & Telephone at least 3 days in advance of trenching.
   3. Electrical trench dimensions and materials shall comply with the Alaska Power & Telephone standard detail included in the Contract Documents.

3.10 SOIL MOISTURE CONTROL

A. Except for embankments constructed predominantly of rock fragments or boulders, all embankments shall be constructed with moisture density control. Embankments shall be placed in horizontal layers not to exceed eight inches in depth (except where noted otherwise), loose measurement, for the full width of the embankment, except as required for traffic, and shall be compacted before the next layer is placed. Embankments shall be compacted at the approximate optimum moisture content to not less than 95% of the maximum density as determined by AASHTO T 180-D unless otherwise noted. Embankment materials may require drying or moistening to bring the moisture content near to optimum. In-place field densities will be determined by ATM-213 or ATM-309 as required by the Owner's Representative. Sufficient time shall be allowed between layers to allow for field density tests.

3.11 EMBANKMENTS CONSTRUCTED WITH CLASS A BORROW

A. Subgrades shall be constructed to the required tolerances prior to placement of Class A Borrow. The Contractor shall place grade stakes at all changes in grade and at maximum 50-foot intervals prior to placing Class A Borrow.

B. Embankments shall be placed in horizontal layers not to exceed 12 inches in depth, loose measurement, for the full width of the embankment, except as required for traffic, and shall be compacted before the next layer is placed. Compaction of embankments

constructed with Class A Borrow shall be achieved by performing a minimum level of compactive effort consisting of six complete coverage passes with a 15-ton vibratory steel drum roller over the complete coverage area of any given lift with equipment suitably equipped by the manufacturer for compacting shot rock material.

3.12 EMBANKMENTS CONSTRUCTED WITH 3-INCH MINUS BORROW

A. Subgrades shall be constructed to the required tolerances prior to placement of Class A Borrow. The Contractor shall place grade stakes at all changes in grade and at maximum 50-foot intervals prior to placing Class A Borrow.

B. Embankments shall be placed in horizontal layers not to exceed 12 inches in depth, loose measurement, for the full width of the embankment, except as required for traffic, and shall be compacted before the next layer is placed. Compaction of embankments constructed with Class A Borrow shall be achieved by performing a minimum level of compactive effort consisting of six complete coverage passes with a 15-ton vibratory steel drum roller over the complete coverage area of any given lift with equipment suitably equipped by the manufacturer for compacting shot rock material.

3.13 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding.

1. Finished subgrade surfaces constructed with Class A Borrow shall not vary more than 0.1 foot when tested using a 10-foot straightedge, or more than 0.1-foot from established grade.
2. Finished subgrade surfaces constructed with Base Course shall not vary more than 0.5 inch when tested using a 10-foot straightedge, or more than 0.5 inch from established grade.

3.14 UTILITY INVESTIGATION

A. The anticipated sanitary sewer connection to existing system at the Haines Highway/Jones Point Road intersection is not well understood. The Contractor shall furnish all labor, equipment and materials to pothole at the planned connection point, expose the existing sewer pipe for observation by the Owner’s Representative, and backfill until the connection work is set to commence.

B. The Contractor shall record the location and elevation of the existing sewer pipe where the connection is intended to be made. Location and elevation information shall be in the same datum as the provided project control. This information shall then be provided to the Owner's Representative in spreadsheet format and shall consist of northings, eastings, and elevations to top of pipe as well as size and material of pipe.

C. The excavation shall be backfilled with excavated material until such a time when the final utility connection is ready to commence.

D. Utility Investigation shall commence before the Contractor begins procurement of sanitary sewer structures, including shop drawing preparation.

3.15 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Testing agency will test compaction of soils in place at the following locations and frequencies:

1. Trench Bedding: One test per 400 linear feet of pipe or conduit on the project site outside of the right of way, and one test in the right of way for each utility connection, for each material and source used. Additional tests will be performed for each material or source. The tests will be used to establish a minimum level of effort which will then be adhered to for the remainder of backfilling unless changed by subsequent in-place tests.
2. Utility Structure Bedding: One test per structure.
3. Base Coarse for Pavements and Walks: One test per 2,000 tons on the project site outside of the right-of-way, and one test at each location in the right-of-way for utility and driveway connections. Additional tests will be performed for each material or source.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace

soil materials to depth required; recompact and retest until specified compaction is obtained.

F. Density tests shall be performed within 24 hours of placement of the overlying material. Additional tests due to a lapse exceeding 24 hours shall be performed at no cost to the Owner.

G. In the event of rainfall or other forms of disturbance after initial testing, additional testing and, if necessary, grading and compacting shall be performed at no cost to the Owner.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Owner’s On-Site Representative; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Owner’s On-Site Representative.

   1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

SECTION 312319 - DEWATERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Construction dewatering.

B. Related Requirements:

1. Section 015723 "Temporary Storm Water Pollution Control" for temporary storm water pollution controls mandated under the EPA National and Alaska Pollutant Discharge Elimination System and Alaska Department of Environmental Conservation.
2. Section 312000 "Earth Moving" for excavating, backfilling, site grading, and controlling surface-water runoff and ponding.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Verify availability of Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review condition of site to be dewatered, including coordination with temporary erosion-control measures and temporary controls and protections.
3. Review geotechnical report.
4. Review proposed site clearing and excavations.
5. Review existing utilities and subsurface conditions.
6. Review observation and monitoring of dewatering system.

1.3 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Installer: An experienced installer that has specialized in design of dewatering systems and dewatering work.

2. Land Surveyor: A professional land surveyor who is legally qualified to practice in state where Project is located.

1.5 FIELD CONDITIONS

A. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Conditions noted in the report pertain to the time the field investigation was conducted. Soil and groundwater conditions should be expected to vary. Owner is not responsible for interpretations or conclusions drawn from this data.

1. Make additional test borings and conduct other exploratory operations necessary for dewatering in accordance with the performance requirements.
2. The geotechnical report is referenced elsewhere in Project Manual.

B. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of groundwater and permit excavation and construction to proceed on dry, stable subgrades.

1. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
2. Prevent surface water from entering excavations by grading, dikes, or other means.
3. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
4. Remove dewatering system when no longer required for construction.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.

1. Prevent surface water and subsurface or groundwater from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Provide temporary grading to facilitate dewatering and control of surface water.

D. Protect and maintain temporary erosion and sedimentation controls, which are specified in Section 01 5000 "Temporary Facilities and Controls," and Section 01 5723 "Temporary Storm Water Pollution Control" during dewatering operations.

3.2 INSTALLATION

A. Install dewatering system complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, surface-water controls, and contamination treatment measures.

1. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Provide sumps, sedimentation tanks, filters, and other flow-control devices as required by authorities having jurisdiction.

C. Provide standby equipment on-site, including replacement filters, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

A. Operate system as required until underground utilities have been constructed and fill materials have been placed and compacted or until dewatering is no longer required.

B. Operate system to lower and control groundwater to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations to facilitate proper compaction.

1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.

C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others and ensures compliance with all ADEC requirements and permits. Contractor responsible for permit compliance sampling as may be required.

D. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 60 inches below overlying construction.

3.4 FIELD QUALITY CONTROL

A. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Owner’s Onsite Representative if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

B. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

C. Prepare reports of observations and all other documentation as required by this section and ADEC permits.

3.5 PROTECTION

A. Protect and maintain dewatering system during dewatering operations.

B. Promptly repair damages to adjacent facilities caused by dewatering.

END OF SECTION 312319

SECTION 315000 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes temporary excavation support and protection systems.

B. Related Requirements:

1. Section 312000 "Earth Moving" for excavating and backfilling, for controlling surface-water runoff and ponding, and for dewatering excavations.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review geotechnical report.
2. Review existing utilities and subsurface conditions.
3. Review coordination for interruption, shutoff, capping, and continuation of utility services.
4. Review proposed excavations.
5. Review proposed equipment.
6. Review monitoring of excavation support and protection system.
7. Review removal of excavation support and protection system.

1.4 ACTION SUBMITTALS

A. Delegated-Design Submittal: For excavation support and protection systems, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Land surveyor.
2. Professional Engineer: Experience with providing delegated-design engineering services of the type indicated, including documentation that engineer is licensed in the state in which Project is located.

B. Contractor Calculations: For excavation support and protection system. Include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by inadequate performance of excavation support and protection systems. Submit before Work begins.

1.6 CLOSEOUT SUBMITTALS

A. Record Drawings: Identify locations and depths of encountered utilities (to remain active or abandoned in place), capped utilities, and other subsurface structural, electrical, or mechanical conditions.

1.7 FIELD CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility-serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:

1. Notify Owner and Haines Borough no fewer than 7 days in advance of proposed interruption of utility.
2. Do not proceed with interruption of utility without written permission from the Owner and Haines Borough.

B. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design excavation support and protection systems to resist all lateral loading and surcharge, including but not limited to, retained

soil, groundwater pressure, adjacent building loads, adjacent traffic loads, construction traffic loads, material stockpile loads, and seismic loads, based on the following:

1. Compliance with OSHA Standards and interpretations, 29 CFR 1926, Subpart P.
2. Compliance with requirements of authorities having jurisdiction.
3. Compliance with utility company requirements.

2.2 MATERIALS

A. Provide materials that are either new or in serviceable condition and appropriate for the shoring system being utilized.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.

1. Shore, support, and protect utilities encountered.

3.2 INSTALLATION - GENERAL

A. Locate excavation support and protection systems clear of permanent construction, so that construction and finishing of other work is not impeded.

B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Install excavation support and protection systems without damaging existing buildings, structures, and site improvements adjacent to excavation.

3.3 MAINTENANCE

A. Monitor and maintain excavation support and protection system.

B. Prevent surface water from entering excavations by grading, dikes, or other means.

C. Continuously monitor vibrations, settlements, and movements to ensure stability of excavations and constructed slopes and to ensure that damage to permanent structures is prevented.

3.4 FIELD QUALITY CONTROL

A. Survey-Work Benchmarks: Initially survey benchmarks prior to excavations and installation of shoring systems. Resurvey benchmarks daily during installation of excavation support and protection systems, excavation progress, and for as long as excavation remains open. Resurvey benchmarks after excavations are backfilled and shoring is removed.

1. Maintain an accurate log of surveyed elevations and positions for comparison with original elevations and positions.
2. Promptly notify Owner's Onsite Representative if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.

C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.5 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and earth and hydrostatic pressures.

1. Remove in stages to avoid disturbing underlying soils and rock or damaging structures, pavements, facilities, and utilities.

END OF SECTION 315000

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Hot-mix asphalt paving.
2. Hot-mix asphalt patching for utility connections and improvements in the right-of-way.

B. Related Requirements:

1. Section 024116 "Structure Demolition" for demolition and removal of existing asphalt pavement.
2. Section 312000 "Earth Moving" for subgrade preparation.
3. Section 321313 "Concrete Paving" for concrete curbs and gutters and sidewalk.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:

a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

1.4 ACTION SUBMITTALS

A. Product Data: Include technical data and tested physical and performance properties.

1. Joint sealant.

B. Hot-Mix Asphalt Designs:

1. Certification, by authorities having jurisdiction, of approval of each hot-mix asphalt design proposed for the Work.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For paving-mix manufacturer and testing agency.

B. Material Certificates:

1. Aggregates.
2. Asphalt binder.
3. Asphalt cement.
4. Cutback prime coat.
5. Emulsified asphalt prime coat.
6. Tack coat.
7. Fog seal.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by the Haines Borough.

B. Testing Agency Qualifications: Qualified in accordance with ASTM D3666 for testing indicated.

C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the Haines Borough for asphalt paving work.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:

1. Prime Coat: Minimum surface temperature of 60 deg F.
2. Tack Coat: Minimum surface temperature of 60 deg F.
3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: ASTM D692/D692M, sound; angular crushed stone, crushed gravel.

C. Fine Aggregate: AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.

1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

D. Mineral Filler: AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M 320 binder designation PG 52-28.

B. Cutback Prime Coat: ASTM D2027/D2027M, medium-curing cutback asphalt, MC-30.

C. Tack Coat: AASHTO M 140 emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

D. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.

B. Joint Sealant: ASTM D6690, Type IV, hot-applied, single-component, polymer-modified bituminous sealant.

2.4 MIXES

A. Surface Course Limit: Recycled content no more than 25 percent by weight.

B. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:

1. Surface Course: Type II, Class B in accordance with State of Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction, 2020 Edition.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction**,** repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

3.3 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.

2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

C. Placing Single-Course Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

D. Placing Two-Course Patch Material: Partially fill excavated pavements with hot-mix asphalt base course mix and, while still hot, compact. Cover asphalt base course with compacted layer of hot-mix asphalt surface course, finished flush with adjacent surfaces.

3.4 SURFACE PREPARATION

A. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.

B. Cutback Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.5 HOT-MIX ASPHALT PLACEMENT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. The maximum hot-mix asphalt lift thickness shall be 3 inches in compacted thickness. For total asphalt pavement thicknesses greater than 3 inches, the total thickness shall be achieved by placing individual lifts of equal thickness not exceeding 2 inches in measured compacted thickness.
2. Spread mix at a minimum temperature of 250 deg F.

3. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
2. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.6 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints as indicated on Drawings.
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.7 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density, Marshall Test Method: 96 percent of reference laboratory density in accordance with AASHTO T 245, but not less than 94 percent or greater than 100 percent.
2. Average Density, Rice Test Method: 92 percent of reference maximum theoretical density in accordance with ASTM D2041/D2041M, but not less than 90 percent or greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.8 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch.
2. Surface Course: 1/8 inch.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Thickness: In-place thickness shall be determined by visual inspection of the saw-cut joint heights, straight-edge spanning the patch width prior to paving, and straight-edge spanning the patch width after paving.

C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement in accordance with AASHTO T 168.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared in accordance with ASTM D2041/D2041M, and compacted in accordance with job-mix specifications.
2. In-place density of compacted pavement will be determined by nuclear method in accordance with ASTM D2950/D2950M and coordinated with ASTM D1188 or ASTM D2726/D2726M.

E. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 WASTE HANDLING

A. General: Handle asphalt-paving waste in accordance with local, state and federal laws. Dispose of asphalt paving waste at an approved, permitted offsite waste facility.

END OF SECTION 321216

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes**:**

1. Curbs and gutters.
2. Sidewalks.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

B. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Fiber reinforcement.
4. Admixtures.
5. Curing compounds.
6. Applied finish materials.
7. Bonding agent or epoxy adhesive.
8. Joint fillers.

C. Material Test Reports: For each of the following:

1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

D. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

B. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.

1. Personnel conducting field tests must be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.6 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, fabricated from as-drawn galvanized-steel wire into flat sheets.

B. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, flat sheet.

C. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

D. Steel Bar Mats: ASTM A184/A184M; with ASTM A615/A615M, Grade 60 deformed bars; assembled with clips.

E. Plain-Steel Wire: ASTM A1064/A1064M, as drawn.

F. Deformed-Steel Wire: ASTM A1064/A1064M.

2.4 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C150/C150M, gray Portland cement, Type I/II or IL.

B. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: ASTM C260/C260M.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

E. Water: Potable and complying with ASTM C94/C94M.

2.5 FIBER REINFORCEMENT

A. Synthetic Fiber, Fibrillated Fibers: Fibrillated polypropylene fibers engineered and designed for use in concrete paving, complying with ASTM C1116/C1116M, Type III, 1/2 to 1-1/2 inches long.

2.6 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 14 oz./sq. yd.

B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.

F. White, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 2, Class B, dissipating.

2.7 RELATED MATERIALS

A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber in preformed strips.

2.8 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.

B. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content, 1-1/2-inch Nominal Maximum Aggregate Size: 4-7 percent

C. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture in concrete as required for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

D. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd**.**

E. Concrete Mixtures: Normal-weight concrete.

1. Minimum Cement Content: 6 sacks/cu. yd.
2. Compressive Strength (28 Days): 3000 psi.
3. Maximum W/C Ratio at Point of Placement: 0.50.
4. Slump Range: 2-4 inches.

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M and ASTM C1116/C1116M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Project site mixing is not permitted.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed base surfaces for compliance with requirements for dimensional, grading, and elevation tolerances. Surface shall be graded and compacted according to the requirements of Section 312000 "Earth Moving."

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 INSTALLATION OF STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where concrete placement operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Continue steel reinforcement across construction joints unless otherwise indicated.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints where indicated on the Drawings.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/4 inch or more than 1/2 inch below finished surface if joint sealant is indicated.
4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
5. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows, to match jointing of existing adjacent concrete paving:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to the dimensions shown on the Drawings. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
2. Sawed Joints: Sawed joints are not permitted.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool as specified in the Drawings. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation**,** steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from base surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

F. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement and joint devices.

G. Screed paving surface with a straightedge and strike off.

H. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these as follows:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.
b. Continuous water-fog spray.
c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 1/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Joint Spacing: 3 inches.
4. Contraction Joint Depth: Plus 1/4 inch, no minus.
5. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C172/C172M will be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.

C. Test results to be reported in writing to Owner’s Representative, concrete manufacturer, and Contractor within 48 hours of testing.

D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Owner’s Representative but will not be used as sole basis for approval or rejection of concrete.

E. Additional Tests: Testing and inspecting agency will make additional tests of concrete when test results indicate that slump, air entrainment, or other requirements have not been met, as directed by Owner’s Representative.

F. Concrete will be considered defective if it does not pass tests and inspections.

G. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.11 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Owner’s Representative.

B. Drill test cores, where directed by Owner’s Representative, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory areas with Portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete from damage. Exclude foot traffic from sidewalks for at least 1 days after placement. Exclude vehicle traffic from curb and gutter for at least 3 days after placement.

END OF SECTION 321313

SECTION 321723 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Painted markings applied to asphalt paving.
2. Painted markings applied to concrete surfaces.

1.3 ACTION SUBMITTALS

A. Product Data: Include technical data and tested physical and performance properties.

1. Pavement-marking paint, alkyd.

B. Shop Drawings:

1. Indicate pavement markings, colors, lane separations, and dimensions to adjacent work.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction of for pavement-marking work.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for alkyd materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain pavement-marking paints from single source from single manufacturer.

2.2 PAVEMENT-MARKING PAINT

A. Pavement-Marking Paint, Alkyd: Alkyd-resin type, lead and chromate free, ready mixed, complying with AASHTO M 248, Type F; colors complying with FS TT-P-1952F.

1. Color: White and Yellow, As indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that pavement-marking substrate is dry and in suitable condition to begin pavement marking in accordance with manufacturer's written instructions.

B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

3.2 PAVEMENT MARKING

A. Pavement marking paint for all stripes and markings shall be alkyd-resin type.

B. Do not apply pavement-marking paint until layout, colors, and placement have been verified with the Owner and Haines Borough.

C. Allow asphalt paving or concrete surfaces to age for a minimum of 30 days before starting pavement marking.

D. Sweep and clean surface to eliminate loose material and dust.

E. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 20 mils.

3.3 PROTECTING AND CLEANING

A. Protect pavement markings from damage and wear during remainder of construction period.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 321723

SECTION 331415 - SITE WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Work in this section includes materials and installation for site combined domestic and fire water systems.

B. This section shall be replaced in its entirety with 02601 – Water Pipe of the City and Borough of Juneau Standard Specifications except as noted or modified herein.

C. Related Requirements:

1. Drawings and general provisions of the Contract.
2. Section 31 2000 "Earth Moving" for utility trench excavation and backfill requirements within the site.
3. Section 31 5000 "Excavation Support and Protection" for trench shoring.

PART 2 - MODIFICATIONS TO 02601 – WATER PIPE, CITY AND BOROUGH OF JUNEAU STANDARD SPECIFICATIONS

PRODUCTS, Article 2.3, FITTINGS, delete paragraph J and replace with the following:

A. Electrofusion couplers are not intended to be used on this project. Not having a fusion machine capable of being placed in the excavation to accomplish butt fusion is not an acceptable reason to consider use of an electrofusion coupler.

PRODUCTS, Article 2.9, TEMPORARY WATER SYSTEM, add the following paragraphs:

A. CONTRACTOR shall submit to ENGINEER for approval a Temporary Water Service Plan that addresses proposed layout, installation means and methods, shutdown times, flushing, disinfection and microbial testing before being placed into service, and that show that proposed temporary water lines meet Standard NSF-61 and that the temporary system will have appropriate cross connection controls.

B. A backflow preventor shall be used any time an above ground temporary water system is hydraulically connected to the public water system.

C. Consider Fire Protection System shutdowns and submit a Fire Protection System Impairment Plan as described in Article 3.9 herein.

EXECUTION, Article 3.5, HYDROSTATIC TESTING, add the following paragraphs:

A. At no time shall the CONTRACTOR pressure test or disinfect against existing valves, plugs, caps, fire hydrants or curb stops unless approved by Haines Borough Water Utility. CONTRACTOR shall provide a pressure testing and disinfection plan for approval by Haines Borough and the Owner prior to beginning water system installation.

B. Pressure testing shall be completed for the entire length of new water pipe and services to the limits where new water pipes and services connect to existing water pipes and services. The CONTRACTOR is responsible for providing all temporary or permanent joint restraints, thrust blocks, fittings, caps, plugs, curb stops and valves necessary for completion of pressure testing activities in accordance with specifications and to the satisfaction of the Haines Borough and Owner.

PART 3 EXECTUTION, Article 3.7 Disinfection, delete Paragraph E and replace with the following:

A. A residual of not less than 50 ppm and not more than 100 ppm free chlorine shall be produced, and verified by test, in all parts of the water pipe, including at the connection point for each service through curb stop, end of pipes, etc. After 24 hours detention time there shall be a minimum free chlorine residual of 25 ppm in all parts of the water pipe. This residual shall then be flushed neutralized and disposed of in an environmentally safe manner.

PART 3 EXECTUTION, Article 3.8 Connections to Existing Pipes, add the following paragraph:

A. All flushing, pressure testing, and disinfection of new water pipes shall be completed in accordance with specifications and accepted by the Haines Borough prior to making final or permanent connections to existing water pipes and services. At no time during flushing, pressure testing or disinfection activities shall there be a temporary or permanent cross-connection between new water pipe and existing water pipe or services, unless otherwise approved by the Haines Borough or a backflow prevention assembly meeting ANSI/AWWA Standards C510-97 or C511-97 is used to ensure no backflow into the existing and unprotected public water system occurs. No connections shall be made to any existing water appurtenances (existing water mains, customer service lines etc.) until after successful completion and acceptance of required flushing, disinfection and testing in accordance with this section.

    1. The Contractor may connect one end of the new water system to the existing mainline adjacent to a new or existing fully functioning valve to isolate the new system and pressure test against. This connection requires prior approval by Haines Borough Water Utility. The intent is to provide full flow water for flushing, disinfecting and testing the new water system. A disinfection sampling port shall be installed adjacent to the connection point. The sampling port shall be decommissioned (removal of corporation stop and saddle plugged) after all testing and disinfection requirements are met and prior to the new water system being put into service.

PART 3 – EXECUTION, add the following article:

3.9 FIRE PROTECTION SYSTEMS SHUTDOWN

A. For water system work requiring the shutdown of a building fire service line, the Contractor shall coordinate with the Owner, Haines Borough Fire Department, and affected building maintenance and supervisory staff prior to the shutdown of a fire protection system for any length of time. The Contractor shall use appropriate means and methods to minimize the shut down time for Fire Protection Systems.

B. For water system work that a requires a fire protection system to be out of service for more than eight hours in a 24-hour period, the Contractor shall develop and submit to the Owner and the Haines Borough Fire Department for approval, a Fire Protection System Impairment Plan which details the Work to be performed and the Contractor's proposed means and methods to comply with 2021, IFC 901.7 – Systems out of Service.

    1. The Contractor shall provide an "Impairment Coordinator" as defined in IFC 901.7.1.
    2. While the system is out of service the Contractor shall provide an individual to be the Fire Watch for the building as defined in IFC 901.7. The Fire Watch shall be provided with at least one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the building and keep watch for fires.
    3. The Contractor shall comply with system tagging requirements as described in IFC 901.7.2 and 901.7.3.
    4. The Contractor shall comply with IFC 901.7.4 – Preplanned Impairment Programs.
    5. The Contractor shall comply with IFC 901.7.6 once the service is restored to working order.

C. The Fire Protection System Impairment Plan shall be submitted a minimum of two weeks prior to the Work and shall include:

    1. Designation of an impairment coordinator as required by IFC 901.7.
    2. A description of the anticipated work and schedule including times that the system will be out of service.
    3. A description of notification requirements to the public, the fire department and to insurers as described in IFC 901.7, the means and methods to be employed to comply with notification requirements and when the notifications will be completed.
    4. A description of the system tagging requirements as described in IFC 901.7 as they apply to the system, the means and methods to be employed to comply with tagging requirements and when the tagging will be completed.
    5. Designation of the individual to perform Fire Watch duties as described in IFC 901.7.
    6. Implementation and monitoring procedures to comply with IFC 901.7.4 Preplanned Impairment Procedures.
    7. Implementation and inspections procedures to comply with IFC 901.7.6 – Restoring Systems to Service.

END OF SECTION 331415

SECTION 334200 - STORMWATER CONVEYANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract.

B. City and Borough of Sitka Standard Specifications and Standard Details.

C. City and Borough of Sitka Utility Service Connection/Driveway Permit

1.2 SUMMARY

A. Section Includes:

1. PE pipe and fittings.
2. Aluminum pipes.
3. PVC pipe and fittings.
4. Non-pressure transition couplings.
5. Cleanouts.
6. Catch basins.
7. Stormwater inlets.
8. Pipe outlets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates

B. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic manholes, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

PART 2 - PRODUCTS

2.1 CORRUGATED-PE PIPE AND FITTINGS

A. Source Limitations: Obtain corrugated-PE pipe and fittings from single manufacturer.

B. Corrugated-PE Drainage Pipe and Fittings NPS 3 to NPS 10: AASHTO M 252, dual wall smooth interior, Type S, with smooth waterway for coupling joints.

C. Corrugated-PE Pipe and Fittings NPS 12 to NPS 60: AASHTO M 294, dual wall smooth interior Type S, with smooth waterway for coupling joints.

D. Corrugated-PE Silttight Couplings: PE sleeve with ASTM D1056, Type 2, Class A, Grade 2 gasket material that mates with pipe and fittings.

2.2 CORRUGATED ALUMINUM PIPE

A. Source Limitations: Obtain corrugated aluminum pipe and fittings from single manufacturer.

B. Corrugated aluminum pip shall meet the requirements of ASTM B745/745M, Type I with fittings of similar form and construction as pipe.

2.3 PVC PIPE AND FITTINGS

A. Source Limitations: Obtain PVC pipe and fittings from single manufacturer.

B. NSF Marking: Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-drain" for plastic storm drain and "NSF-sewer" for plastic storm sewer piping.

2.4 NONPRESSURE TRANSITION COUPLINGS

A. Comply with ASTM C1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:

1. For Plastic Pipes: ASTM F477, elastomeric seal or ASTM D5926, PVC.
2. For Dissimilar Pipes: ASTM D5926, PVC or other material compatible with pipe materials being joined.

C. Shielded, Flexible Couplings:

1. Source Limitations: Obtain shielded, flexible couplings from single manufacturer.
2. Description: ASTM C1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

D. Ring-Type, Flexible Couplings:

1. Source Limitations: Obtain ring-type, flexible couplings from single manufacturer.
2. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.5 CLEANOUTS

A. Cast-Iron Cleanouts:

1. Source Limitations: Obtain cast-iron cleanouts from single manufacturer.
2. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside caulk or spigot connection and countersunk, tapered-thread, brass closure plug.
3. Top-Loading Classification(s): Light Duty, Medium Duty, Heavy Duty and Extra-Heavy Duty.
4. Sewer Pipe Fitting and Riser to Cleanout: ASTM A74, Service class, cast-iron soil pipe and fittings.

B. PVC Cleanouts:

1. Source Limitations: Obtain PVC cleanouts from single manufacturer.
2. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.6 CONCRETE

A. General: Cast-in-place concrete in accordance with ACI 318, ACI 350, and the following:

1. Cement: ASTM C150/C150M, Type II.
2. Fine Aggregate: ASTM C33/C33M, sand.
3. Coarse Aggregate: ASTM C33/C33M, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A1064/A1064M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A615/A615M, Grade 60 (420 MPa) deformed steel.

C. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A1064/A1064M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A615/A615M, Grade 60 (420 MPa) deformed steel.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.

D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. When installing pipe under streets or other obstructions that cannot be disturbed support and shore as required.

F. Install gravity-flow, nonpressure drainage piping in accordance with the following:

1. Install piping pitched down in direction of flow.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping in accordance with the following:

1. Join PVC profile gravity sewer piping in accordance with ASTM D2321 for elastomeric-seal joints or ASTM F794 for gasketed joints.
2. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding earth grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush 1/8 inch below surface.

3.5 CONCRETE PLACEMENT

A. Place cast-in-place concrete in accordance with ACI 318.

3.6 CONNECTIONS

A. Connect nonpressure, gravity-flow drainage piping in building's storm building drains.

3.7 IDENTIFICATION

A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.

1. Use detectable warning tape over ferrous and nonferrous piping and over edges of underground structures.

3.8 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.

2. Defects requiring correction include the following:

a. Alignment: Less than full diameter of inside of pipe is visible between structures.
b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
d. Infiltration: Water leakage into piping.
e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials and repeat inspections until defects are within allowances specified.

4. Reinspect and repeat procedure until results are satisfactory.

B. Replace leaking piping using new materials and repeat testing until leakage is within allowances specified.

3.9 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

END OF SECTION 334200