



CITY OF CANNON BEACH

Volume Three
APPENDIX

10.10.19

CITY HALL / POLICE STATION
FACILITY REPORT

SRG



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COST ESTIMATES

- Cannon Beach City Hall Study Concept Rev1 12-11-18 From Rider Levett Bucknall
- Cannon Beach City Hall Study RV Park Concept 04-19-19 From Rider Levett Bucknall
- Cannon Beach City Hall Study RV Park 1story Concept Rev1 05-14-19 From Rider Levett Bucknall
- Email RE: South Wind foundation costs 12-28-18 From Catena Engineers
- Email RE: City Hall updated site cost 05-14-19 From Rider Levett Bucknall

GEOTECHNICAL INVESTIGATION From GRI

STRUCTURAL ANALYSIS From Catena Engineers

TRAFFIC MEMO From Kittleson & Associates

CIVIL ENGINEERING MEMO From Westlake Consultants, Inc.

UTILITY PLAN - GOWER STREET SITE From Westlake Consultants, Inc.

UTILITY PLAN - SOUTH WIND SITE Option A From Westlake Consultants, Inc.

UTILITY PLAN - SOUTH WIND SITE Option B From Westlake Consultants, Inc.

Cannon Beach City Hall Facility

Concept Rev1

Cannon Beach City Hall
Cannon Beach, OR
Site To Be Determined

Prepared For: SRG Partnership
621 SW Columbia St.
Portland, OR 97201

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Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
A CITY HALL SITE OPTION A			
A1 ONE-STORY BUILDING	16,000	478.92	7,662,712
A2 SITEWORK			1,300,069
A - CITY HALL SITE OPTION A	16,000	\$560.17	\$8,962,781
ESTIMATED NET COST	16,000	\$560.17	\$8,962,781
MARGINS & ADJUSTMENTS			
CMGC Contingency	3.0 %		\$259,450
Escalation to 3Q2020	9.7 %		\$899,167
ESTIMATED TOTAL COST	16,000	\$632.59	\$10,121,398

Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
A CITY HALL SITE OPTION A			
A1 ONE-STORY BUILDING	16,000	320.18	5,122,956
A2 SITEWORK			869,169
A - CITY HALL SITE OPTION A	16,000	\$374.51	\$5,992,125
ESTIMATED NET COST	16,000	\$374.51	\$5,992,125
MARGINS & ADJUSTMENTS			
Preconstruction Fee	0.9 %		\$53,930
Location Factor	4.0 %		\$241,843
Phasing & Temporary Work	1.5 %		\$94,318
General Conditions	10.0 %		\$638,221
Bonds & Insurance	3.0 %		\$210,613
Overhead & Profit	4.0 %		\$289,242
Design Contingency	15.0 %		\$1,128,044
CMGC Contingency	3.0 %		\$259,450
Market Volatility Contingency	2.0 %		\$178,156
Solar/Green Energy	1.5 %		\$136,289
Escalation to 3Q2020	9.7 %		\$899,167
ESTIMATED TOTAL COST	16,000	\$632.59	\$10,121,398

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 2 Summary

Gross Floor Area: 16,000 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
A10 Foundations	\$28.78	\$460,475
B10 Superstructure	\$27.30	\$436,800
B20 Exterior Enclosure	\$42.50	\$680,005
B30 Roofing	\$33.60	\$537,600
C10 Interior Construction	\$35.22	\$563,540
C30 Interior Finishes	\$31.39	\$502,256
D20 Plumbing	\$15.85	\$253,600
D30 HVAC	\$42.00	\$672,000
D40 Fire Protection	\$5.00	\$80,000
D50 Electrical	\$40.95	\$655,200
E10 Equipment	\$0.62	\$10,000
E20 Furnishings	\$12.60	\$201,680
G10 Site Preparations	\$21.37	\$341,879
G20 Site Improvements	\$28.19	\$451,006
G30 Site Civil/Mechanical Utilities	\$1.33	\$21,300
G40 Site Electrical Utilities	\$7.80	\$124,784
ESTIMATED NET COST	\$374.51	\$5,992,125
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$53,930
Location Factor	4.0 %	\$241,843
Phasing & Temporary Work	1.5 %	\$94,318
General Conditions	10.0 %	\$638,221
Bonds & Insurance	3.0 %	\$210,613
Overhead & Profit	4.0 %	\$289,242
Design Contingency	15.0 %	\$1,128,044
CMGC Contingency	3.0 %	\$259,450
Market Volatility Contingency	2.0 %	\$178,156
Solar/Green Energy	1.5 %	\$136,289
Escalation to 3Q2020	9.7 %	\$899,167
ESTIMATED TOTAL COST	\$632.59	\$10,121,398

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,000 SF
Rates Current At December 2018

Description		Cost/SF	Total Cost
A1010	Standard Foundations	\$16.78	\$268,475
A1030	Slab on Grade	\$12.00	\$192,000
B1020	Roof Construction	\$27.30	\$436,800
B2010	Exterior Walls	\$31.72	\$507,580
B2020	Exterior Windows	\$7.78	\$124,425
B2030	Exterior Doors	\$3.00	\$48,000
B3010	Roof Coverings	\$33.60	\$537,600
C1010	Partitions	\$18.00	\$288,000
C1020	Interior Doors	\$8.00	\$128,000
C1030	Specialties	\$9.22	\$147,540
C3010	Wall Finishes	\$8.91	\$142,576
C3020	Floor Finishes	\$9.00	\$144,000
C3030	Ceiling Finishes	\$13.48	\$215,680
D2010	Plumbing Fixtures	\$14.00	\$224,000
D2040	Rain Water Drainage	\$1.85	\$29,600
D3060	Controls & Instrumentation	\$4.00	\$64,000
D3090	Other HVAC Systems and Equipment	\$38.00	\$608,000
D4040	Sprinklers	\$5.00	\$80,000
D5010	Electrical Service & Distribution	\$12.35	\$197,600
D5020	Lighting & Branch Wiring	\$16.00	\$256,000
D5030	Communications & Security	\$12.60	\$201,600
E1090	Other Equipment	\$0.62	\$10,000
E2010	Fixed Furnishings	\$12.60	\$201,680
E2020	Moveable Furnishings		Excl.
G1010	Site Clearing	\$0.82	\$13,098
G1020	Site Demolition & Relocations	\$8.53	\$136,539
G1030	Site Earthwork	\$12.02	\$192,242
G2010	Roadways	\$2.81	\$45,018
G2020	Parking Lots	\$15.78	\$252,455
G2030	Pedestrian Paving	\$5.68	\$90,840
G2040	Site Development	\$2.22	\$35,505
G2050	Landcaping	\$1.70	\$27,188
G3010	Water Supply	\$0.42	\$6,800
G3020	Sanitary Sewer	\$0.19	\$3,000
G3030	Storm Sewer	\$0.72	\$11,500
G4020	Site Lighting	\$6.55	\$104,784

Cannon Beach City Hall Facility

Concept Rev1

Unifomat Level 3 Summary

Gross Floor Area: 16,000 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
G4090 Other Site Electrical Utilities	\$1.25	\$20,000
ESTIMATED NET COST	\$374.51	\$5,992,125
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$53,930
Location Factor	4.0 %	\$241,843
Phasing & Temporary Work	1.5 %	\$94,318
General Conditions	10.0 %	\$638,221
Bonds & Insurance	3.0 %	\$210,613
Overhead & Profit	4.0 %	\$289,242
Design Contingency	15.0 %	\$1,128,044
CMGC Contingency	3.0 %	\$259,450
Market Volatility Contingency	2.0 %	\$178,156
Solar/Green Energy	1.5 %	\$136,289
Escalation to 3Q2020	9.7 %	\$899,167
ESTIMATED TOTAL COST	\$632.59	\$10,121,398

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

A CITY HALL SITE OPTION A

A1 ONE-STORY BUILDING

GFA: 16,000 SF Cost/SF: \$320.18
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
A10 Foundations				
A1010 Standard Foundations				
96 Premium for excavation & haul off of contaminated soils	CY	593	75.00	44,475
4 Standard foundations, City Hall Site, incl. structural excavation	SF	16,000	14.00	224,000
Standard Foundations			\$16.78/SF	\$268,475
A1030 Slab on Grade				
6 Slab on grade, incl. base course and vapor barrier	SF	16,000	12.00	192,000
Slab on Grade			\$12.00/SF	\$192,000
Foundations			\$28.78/SF	\$460,475
B10 Superstructure				
B1020 Roof Construction				
7 Wood roof framing and sheathing	SF	16,800	26.00	436,800
Roof Construction			\$27.30/SF	\$436,800
Superstructure			\$27.30/SF	\$436,800
B20 Exterior Enclosure				
B2010 Exterior Walls				
9 Allowance for exterior building signage	Item			10,000
11 Exterior wall assembly; cedar shake shingles, drainage mat, weather barrier, sheathing, wood stud framing, batt insulation, vapor barrier, painted gyp board to inside face of exterior wall, flashings/sealants	SF	8,293	60.00	497,580
Exterior Walls			\$31.72/SF	\$507,580
B2020 Exterior Windows				
12 Wood windows (assumes 20% of exterior facade)	SF	1,659	75.00	124,425
Exterior Windows			\$7.78/SF	\$124,425
B2030 Exterior Doors				
14 Exterior doors	SF	16,000	3.00	48,000
Exterior Doors			\$3.00/SF	\$48,000
Exterior Enclosure			\$42.50/SF	\$680,005
B30 Roofing				
B3010 Roof Coverings				
18 Skylights - None included	Item			Excl.
19 Standing seam metal roof system	SF	16,800	32.00	537,600
Roof Coverings			\$33.60/SF	\$537,600
Roofing			\$33.60/SF	\$537,600

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

A CITY HALL SITE OPTION A

A1 ONE-STORY BUILDING (continued)

GFA: 16,000 SF Cost/SF: \$320.18
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
C10 Interior Construction				
C1010 Partitions				
23 Partitions	SF	16,000	18.00	288,000
Partitions			\$18.00/SF	\$288,000
C1020 Interior Doors				
24 Interior doors and glazing	SF	16,000	8.00	128,000
Interior Doors			\$8.00/SF	\$128,000
C1030 Specialties				
30 Premium for specialties in police program	SF	3,816	15.00	57,240
31 Specialties; markerboards, tackboards, code/wayfinding, signage, corner/wall protection, fire extinguisher cabinets	SF	16,000	4.50	72,000
32 Toilet/locker room fitments	SF	732	25.00	18,300
Specialties			\$9.22/SF	\$147,540
Interior Construction			\$35.22/SF	\$563,540
C30 Interior Finishes				
C3010 Wall Finishes				
33 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
107 Allowance for upgraded/higher durability finishes to Police spaces	SF	3,816	6.00	22,896
36 Wall finishes	SF	16,000	6.00	96,000
Wall Finishes			\$8.91/SF	\$142,576
C3020 Floor Finishes				
37 Floor finishes	SF	16,000	9.00	144,000
Floor Finishes			\$9.00/SF	\$144,000
C3030 Ceiling Finishes				
43 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
42 Ceiling finishes	SF	16,000	12.00	192,000
Ceiling Finishes			\$13.48/SF	\$215,680
Interior Finishes			\$31.39/SF	\$502,256
D20 Plumbing				
D2010 Plumbing Fixtures				
44 Plumbing fixtures and pipework	SF	16,000	14.00	224,000
Plumbing Fixtures			\$14.00/SF	\$224,000
D2040 Rain Water Drainage				
45 Rainwater drainage	SF	16,000	1.85	29,600
Rain Water Drainage			\$1.85/SF	\$29,600
Plumbing			\$15.85/SF	\$253,600

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

A CITY HALL SITE OPTION A

A1 ONE-STORY BUILDING (continued)

GFA: 16,000 SF Cost/SF: \$320.18
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
D30 HVAC				
D3060 Controls & Instrumentation				
148 DDC Controls--assumes open source bidding	SF	16,000	4.00	64,000
Controls & Instrumentation			\$4.00/SF	\$64,000
D3090 Other HVAC Systems and Equipment				
46 HVAC	SF	16,000	38.00	608,000
Other HVAC Systems and Equipment			\$38.00/SF	\$608,000
HVAC			\$42.00/SF	\$672,000
D40 Fire Protection				
D4040 Sprinklers				
48 Fire sprinklers design build	SF	16,000	5.00	80,000
Sprinklers			\$5.00/SF	\$80,000
Fire Protection			\$5.00/SF	\$80,000
D50 Electrical				
D5010 Electrical Service & Distribution				
49 Electrical service and and distribution	SF	16,000	12.35	197,600
Electrical Service & Distribution			\$12.35/SF	\$197,600
D5020 Lighting & Branch Wiring				
50 Lighting and branch wiring	SF	16,000	16.00	256,000
Lighting & Branch Wiring			\$16.00/SF	\$256,000
D5030 Communications & Security				
137 Audio visual systems--Backbone allowance--assumes flat screens, projectors or other equipment will be OFCI	SF	16,000	1.00	16,000
140 Distributed antenna system - allowance	SF	16,000	0.80	12,800
141 Fire alarm system	SF	16,000	3.00	48,000
136 Public Address, Intercom and clock systems with IP addressable features--allowance	SF	16,000	2.65	42,400
139 Security system--Includes CCTV and Access Control	SF	16,000	2.65	42,400
138 Telecommunications--includes outlets, floor boxes in conference/meeting rooms, and MDF/IDF buildout	SF	16,000	2.50	40,000
Communications & Security			\$12.60/SF	\$201,600
Electrical			\$40.95/SF	\$655,200

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

A CITY HALL SITE OPTION A

A1 ONE-STORY BUILDING (continued)

GFA: 16,000 SF Cost/SF: \$320.18
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
E10 Equipment				
E1090 Other Equipment				
52 A/V equipment - By Owner	Item			Excl.
54 Allowance for kitchen equipment/residential appliances	Item			10,000
Other Equipment			\$0.62/SF	\$10,000
Equipment			\$0.62/SF	\$10,000
E20 Furnishings				
E2010 Fixed Furnishings				
114 Allowance for upgraded casework and millwork in Council Chambers spaces	SF	2,368	15.00	35,520
115 Allowance for upgraded/specialty casework and millwork in Police spaces	SF	3,816	10.00	38,160
55 Casework and furnishings	SF	16,000	8.00	128,000
Fixed Furnishings			\$12.60/SF	\$201,680
E2020 Moveable Furnishings				
60 Movable furnishings - By Owner	Item			Excl.
Moveable Furnishings				Excl.
Furnishings			\$12.60/SF	\$201,680
G10 Site Preparations				
G1030 Site Earthwork				
69 Building pad prep	SF	16,000	3.00	48,000
Site Earthwork			\$3.00/SF	\$48,000
Site Preparations			\$3.00/SF	\$48,000
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
78 Fire department connection	EA	1	1,800.00	1,800
Water Supply			\$0.11/SF	\$1,800
Site Civil/Mechanical Utilities			\$0.11/SF	\$1,800
G40 Site Electrical Utilities				
G4090 Other Site Electrical Utilities				
92 Emergency generator	Item			20,000
Other Site Electrical Utilities			\$1.25/SF	\$20,000
Site Electrical Utilities			\$1.25/SF	\$20,000
ONE-STORY BUILDING			\$320.18/SF	\$5,122,956

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

A CITY HALL SITE OPTION A

A2 SITEWORK

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1010 Site Clearing				
133 City Hall Site General Site clearing	SF	21,652	0.25	5,413
134 City Hall Site Parking Lot Site clearing	SF	30,740	0.25	7,685
Site Clearing				\$13,098
G1020 Site Demolition & Relocations				
65 Allowance remove (E) Storm Line (incl. backfill etc)	LF	197	35.00	6,895
124 Demo (E) building	SF	6,382	8.00	51,056
62 Demo hardscapes and softscapes	SF	52,392	1.50	78,588
Site Demolition & Relocations				\$136,539
G1030 Site Earthwork				
150 Allowance for site excavation, backfill, grading to City Hall Site	SF	52,392	1.00	52,392
70 Erosion control	Item			15,000
132 Soil Stabilization to City Hall Site	SF	30,740	2.50	76,850
Site Earthwork				\$144,242
Site Preparations				\$293,879
G20 Site Improvements				
G2010 Roadways				
71 Patch back AC paving in roadway	SF	7,503	6.00	45,018
Roadways				\$45,018
G2020 Parking Lots				
121 AC paving, incl. base course	SF	30,740	6.00	184,440
135 Allowance for Bollards	EA	15	500.00	7,500
122 Concrete curb	LF	1,873	20.00	37,460
126 Directional & Wayfinding Signage	SF	30,740	0.50	15,370
123 Painting and striping	SF	30,740	0.25	7,685
Parking Lots				\$252,455
G2030 Pedestrian Paving				
75 Standard concrete paving, incl. base course	SF	9,084	10.00	90,840
Pedestrian Paving				\$90,840
G2040 Site Development				
149 Allowance for Chainlink Fencing 6'	LF	443	35.00	15,505
76 Allowance for misc. site development, retaining walls, site furnishings, etc.	Item			20,000
Site Development				\$35,505
G2050 Landscaping				
128 Allowance for Landscaping & Planting Areas (incl sub base)	SF	8,594	2.00	17,188

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

A CITY HALL SITE OPTION A

A2 SITEWORK (continued)

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
77 Allowance to repair/make good adjacent areas impacted by construction	Item			10,000
Landcaping				\$27,188
Site Improvements				\$451,006
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
79 Tap into (E) water line 1 1/2"	EA	1	5,000.00	5,000
Water Supply				\$5,000
G3020 Sanitary Sewer				
120 Sewer System - 6" Lateral Sanitary Connection to building	EA	1	3,000.00	3,000
Sanitary Sewer				\$3,000
G3030 Storm Sewer				
84 Storm drain piping, 12", incl. trenching and backfill	LF	100	85.00	8,500
118 Storm System - 6" Lateral Storm Connection to building	EA	1	3,000.00	3,000
Storm Sewer				\$11,500
Site Civil/Mechanical Utilities				\$19,500
G40 Site Electrical Utilities				
G4020 Site Lighting				
90 Allowance for site lighting (including carparks & roadways)	SF	52,392	2.00	104,784
Site Lighting				\$104,784
Site Electrical Utilities				\$104,784
SITEWORK				\$869,169

2.00 City Hall Site Option B

- . Grand Summary with Margins and Adjustments Distributed
- . Grand Summary with Margins and Adjustments Undistributed
- . Unifomat Level 2 Summary
- . Unifomat Level 3 Summary
- . Detail

Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
B CITY HALL SITE OPTION B			
B1 TWO STORY BUILDING	16,400	532.49	8,732,823
B2 SITEWORK			1,303,282
<i>B - CITY HALL SITE OPTION B</i>	16,400	\$611.96	\$10,036,105
ESTIMATED NET COST	16,400	\$611.96	\$10,036,105
MARGINS & ADJUSTMENTS			
CMGC Contingency	3.0 %		\$290,520
Escalation to 3Q2020	9.8 %		\$1,006,846
ESTIMATED TOTAL COST	16,400	\$691.07	\$11,333,471

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 2 Summary

Gross Floor Area: 16,400 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
A10 Foundations	\$61.88	\$1,014,800
B10 Superstructure	\$28.87	\$473,460
B20 Exterior Enclosure	\$54.40	\$892,210
B30 Roofing	\$16.80	\$275,520
C10 Interior Construction	\$37.55	\$615,740
C30 Interior Finishes	\$31.28	\$513,056
D10 Conveying	\$5.49	\$90,000
D20 Plumbing	\$15.85	\$259,940
D30 HVAC	\$42.00	\$688,800
D40 Fire Protection	\$5.00	\$82,000
D50 Electrical	\$40.95	\$671,580
E10 Equipment	\$0.61	\$10,000
E20 Furnishings	\$12.49	\$204,880
G10 Site Preparations	\$15.96	\$261,774
G20 Site Improvements	\$32.35	\$530,464
G30 Site Civil/Mechanical Utilities	\$1.30	\$21,300
G40 Site Electrical Utilities	\$6.35	\$104,180
ESTIMATED NET COST	\$409.13	\$6,709,704
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$60,387
Location Factor	4.0 %	\$270,803
Phasing & Temporary Work	1.5 %	\$105,614
General Conditions	10.0 %	\$714,651
Bonds & Insurance	3.0 %	\$235,834
Overhead & Profit	4.0 %	\$323,880
Design Contingency	15.0 %	\$1,263,131
CMGC Contingency	3.0 %	\$290,520
Market Volatility Contingency	2.0 %	\$199,491
Solar/Green Energy	1.5 %	\$152,610
Escalation to 3Q2020	9.8 %	\$1,006,846
ESTIMATED TOTAL COST	\$691.07	\$11,333,471

Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
B CITY HALL SITE OPTION B			
B1 TWO STORY BUILDING	16,400	356.00	5,838,386
B2 SITEWORK			871,318
B - CITY HALL SITE OPTION B	16,400	\$409.13	\$6,709,704
ESTIMATED NET COST	16,400	\$409.13	\$6,709,704
MARGINS & ADJUSTMENTS			
Preconstruction Fee	0.9 %		\$60,387
Location Factor	4.0 %		\$270,803
Phasing & Temporary Work	1.5 %		\$105,614
General Conditions	10.0 %		\$714,651
Bonds & Insurance	3.0 %		\$235,834
Overhead & Profit	4.0 %		\$323,880
Design Contingency	15.0 %		\$1,263,131
CMGC Contingency	3.0 %		\$290,520
Market Volatility Contingency	2.0 %		\$199,491
Solar/Green Energy	1.5 %		\$152,610
Escalation to 3Q2020	9.8 %		\$1,006,846
ESTIMATED TOTAL COST	16,400	\$691.07	\$11,333,471

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,400 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
A1010 Standard Foundations	\$5.39	\$88,400
A1020 Special Foundations	\$50.49	\$828,000
A1030 Slab on Grade	\$6.00	\$98,400
B1010 Floor Construction	\$14.00	\$229,600
B1020 Roof Construction	\$14.87	\$243,860
B2010 Exterior Walls	\$41.24	\$676,360
B2020 Exterior Windows	\$10.16	\$166,650
B2030 Exterior Doors	\$3.00	\$49,200
B3010 Roof Coverings	\$16.80	\$275,520
C1010 Partitions	\$18.00	\$295,200
C1020 Interior Doors	\$8.00	\$131,200
C1030 Specialties	\$9.11	\$149,340
C2010 Stair Construction	\$2.44	\$40,000
C3010 Wall Finishes	\$8.84	\$144,976
C3020 Floor Finishes	\$9.00	\$147,600
C3030 Ceiling Finishes	\$13.44	\$220,480
D1010 Elevators and Lifts	\$5.49	\$90,000
D2010 Plumbing Fixtures	\$14.00	\$229,600
D2040 Rain Water Drainage	\$1.85	\$30,340
D3060 Controls & Instrumentation	\$4.00	\$65,600
D3090 Other HVAC Systems and Equipment	\$38.00	\$623,200
D4040 Sprinklers	\$5.00	\$82,000
D5010 Electrical Service & Distribution	\$12.35	\$202,540
D5020 Lighting & Branch Wiring	\$16.00	\$262,400
D5030 Communications & Security	\$12.60	\$206,640
E1090 Other Equipment	\$0.61	\$10,000
E2010 Fixed Furnishings	\$12.49	\$204,880
E2020 Moveable Furnishings		Excl.
G1010 Site Clearing	\$0.64	\$10,523
G1020 Site Demolition & Relocations	\$6.35	\$104,061
G1030 Site Earthwork	\$8.98	\$147,190
G2010 Roadways	\$2.74	\$45,018
G2020 Parking Lots	\$19.20	\$314,886
G2030 Pedestrian Paving	\$5.54	\$90,840
G2040 Site Development	\$2.16	\$35,505
G2050 Landcaping	\$2.70	\$44,215
G3010 Water Supply	\$0.41	\$6,800

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,400 SF
Rates Current At December 2018

Description		Cost/SF	Total Cost
G3020	Sanitary Sewer	\$0.18	\$3,000
G3030	Storm Sewer	\$0.70	\$11,500
G4020	Site Lighting	\$5.13	\$84,180
G4090	Other Site Electrical Utilities	\$1.22	\$20,000
ESTIMATED NET COST		\$409.13	\$6,709,704
MARGINS & ADJUSTMENTS			
Preconstruction Fee		0.9 %	\$60,387
Location Factor		4.0 %	\$270,803
Phasing & Temporary Work		1.5 %	\$105,614
General Conditions		10.0 %	\$714,651
Bonds & Insurance		3.0 %	\$235,834
Overhead & Profit		4.0 %	\$323,880
Design Contingency		15.0 %	\$1,263,131
CMGC Contingency		3.0 %	\$290,520
Market Volatility Contingency		2.0 %	\$199,491
Solar/Green Energy		1.5 %	\$152,610
Escalation to 3Q2020		9.8 %	\$1,006,846
ESTIMATED TOTAL COST		\$691.07	\$11,333,471

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

B CITY HALL SITE OPTION B

B1 TWO STORY BUILDING

GFA: 16,400 SF Cost/SF: \$356.00
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
A10 Foundations				
A1010 Standard Foundations				
151 Elevator pit, complete incl. waterproofing	EA	1	20,000.00	20,000
96 Premium for excavation & haul off of contaminated soils	CY	912	75.00	68,400
Standard Foundations			\$5.39/SF	\$88,400
A1020 Special Foundations				
94 Matt foundation with tension anchors	SF	8,200	40.00	328,000
95 Soil grout mixing - Allowance	Item			500,000
Special Foundations			\$50.49/SF	\$828,000
A1030 Slab on Grade				
6 Slab on grade, incl. base course and vapor barrier	SF	8,200	12.00	98,400
Slab on Grade			\$6.00/SF	\$98,400
Foundations			\$61.88/SF	\$1,014,800
B10 Superstructure				
B1010 Floor Construction				
97 Wood floor framing and sheathing	SF	8,200	28.00	229,600
Floor Construction			\$14.00/SF	\$229,600
B1020 Roof Construction				
8 Concrete moment frame	LS	1	20,000.00	20,000
7 Wood roof framing and sheathing	SF	8,610	26.00	223,860
Roof Construction			\$14.87/SF	\$243,860
Superstructure			\$28.87/SF	\$473,460
B20 Exterior Enclosure				
B2010 Exterior Walls				
9 Allowance for exterior building signage	Item			10,000
11 Exterior wall assembly; cedar shake shingles, drainage mat, weather barrier, sheathing, wood stud framing, batt insulation, vapor barrier, painted gyp board to inside face of exterior wall, flashings/sealants	SF	11,106	60.00	666,360
Exterior Walls			\$41.24/SF	\$676,360
B2020 Exterior Windows				
12 Wood windows (assumes 20% of exterior facade)	SF	2,222	75.00	166,650
Exterior Windows			\$10.16/SF	\$166,650
B2030 Exterior Doors				
14 Exterior doors	SF	16,400	3.00	49,200
Exterior Doors			\$3.00/SF	\$49,200
Exterior Enclosure			\$54.40/SF	\$892,210

Cannon Beach City Hall Facility

Concept Rev1

Location Unformat Level 2/Unformat Level 3 Item

B CITY HALL SITE OPTION B

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$356.00
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
B30 Roofing				
B3010 Roof Coverings				
18 Skylights - None included	Item			Excl.
19 Standing seam metal roof system	SF	8,610	32.00	275,520
Roof Coverings			\$16.80/SF	\$275,520
Roofing			\$16.80/SF	\$275,520
C10 Interior Construction				
C1010 Partitions				
23 Partitions	SF	16,400	18.00	295,200
Partitions			\$18.00/SF	\$295,200
C1020 Interior Doors				
24 Interior doors and glazing	SF	16,400	8.00	131,200
Interior Doors			\$8.00/SF	\$131,200
C1030 Specialties				
30 Premium for specialties in police program	SF	3,816	15.00	57,240
31 Specialties; markerboards, tackboards, code/wayfinding, signage, corner/wall protection, fire extinguisher cabinets	SF	16,400	4.50	73,800
32 Toilet/locker room fitments	SF	732	25.00	18,300
Specialties			\$9.11/SF	\$149,340
C2010 Stair Construction				
143 Stairs	Flight	2	20,000.00	40,000
Stair Construction			\$2.44/SF	\$40,000
Interior Construction			\$37.55/SF	\$615,740
C30 Interior Finishes				
C3010 Wall Finishes				
33 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
107 Allowance for upgraded/higher durability finishes to Police spaces	SF	3,816	6.00	22,896
36 Wall finishes	SF	16,400	6.00	98,400
Wall Finishes			\$8.84/SF	\$144,976
C3020 Floor Finishes				
37 Floor finishes	SF	16,400	9.00	147,600
Floor Finishes			\$9.00/SF	\$147,600
C3030 Ceiling Finishes				
43 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B CITY HALL SITE OPTION B

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$356.00

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
42 Ceiling finishes	SF	16,400	12.00	196,800
Ceiling Finishes			\$13.44/SF	\$220,480
Interior Finishes			\$31.28/SF	\$513,056
D10 Conveying				
D1010 Elevators and Lifts				
108 Elevator	Stop	2	45,000.00	90,000
Elevators and Lifts			\$5.49/SF	\$90,000
Conveying			\$5.49/SF	\$90,000
D20 Plumbing				
D2010 Plumbing Fixtures				
44 Plumbing fixtures and pipework	SF	16,400	14.00	229,600
Plumbing Fixtures			\$14.00/SF	\$229,600
D2040 Rain Water Drainage				
45 Rainwater drainage	SF	16,400	1.85	30,340
Rain Water Drainage			\$1.85/SF	\$30,340
Plumbing			\$15.85/SF	\$259,940
D30 HVAC				
D3060 Controls & Instrumentation				
148 DDC Controls--assumes open source bidding	SF	16,400	4.00	65,600
Controls & Instrumentation			\$4.00/SF	\$65,600
D3090 Other HVAC Systems and Equipment				
46 HVAC	SF	16,400	38.00	623,200
Other HVAC Systems and Equipment			\$38.00/SF	\$623,200
HVAC			\$42.00/SF	\$688,800
D40 Fire Protection				
D4040 Sprinklers				
48 Fire sprinklers design build	SF	16,400	5.00	82,000
Sprinklers			\$5.00/SF	\$82,000
Fire Protection			\$5.00/SF	\$82,000
D50 Electrical				
D5010 Electrical Service & Distribution				
49 Electrical service and and distribution	SF	16,400	12.35	202,540
Electrical Service & Distribution			\$12.35/SF	\$202,540
D5020 Lighting & Branch Wiring				
50 Lighting and branch wiring	SF	16,400	16.00	262,400
Lighting & Branch Wiring			\$16.00/SF	\$262,400

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

B CITY HALL SITE OPTION B

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$356.00
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
D5030 Communications & Security				
137 Audio visual systems--Backbone allowance--assumes flat screens, projectors or other equipment will be OFCI	SF	16,400	1.00	16,400
140 Distributed antenna system - allowance	SF	16,400	0.80	13,120
141 Fire alarm system	SF	16,400	3.00	49,200
136 Public Address, Intercom and clock systems with IP addressable features--allowance	SF	16,400	2.65	43,460
139 Security system--Includes CCTV and Access Control	SF	16,400	2.65	43,460
138 Telecommunications--includes outlets, floor boxes in conference/meeting rooms, and MDF/IDF buildout	SF	16,400	2.50	41,000
Communications & Security			\$12.60/SF	\$206,640
Electrical			\$40.95/SF	\$671,580
E10 Equipment				
E1090 Other Equipment				
52 A/V equipment - By Owner	Item			Excl.
54 Allowance for kitchen equipment/residential appliances	Item			10,000
Other Equipment			\$0.61/SF	\$10,000
Equipment			\$0.61/SF	\$10,000
E20 Furnishings				
E2010 Fixed Furnishings				
114 Allowance for upgraded casework and millwork in Council Chambers spaces	SF	2,368	15.00	35,520
115 Allowance for upgraded/specialty casework and millwork in Police spaces	SF	3,816	10.00	38,160
55 Casework and furnishings	SF	16,400	8.00	131,200
Fixed Furnishings			\$12.49/SF	\$204,880
E2020 Moveable Furnishings				
60 Movable furnishings - By Owner	Item			Excl.
Moveable Furnishings				Excl.
Furnishings			\$12.49/SF	\$204,880

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B CITY HALL SITE OPTION B

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$356.00

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1030 Site Earthwork				
69 Building pad prep	SF	8,200	3.00	24,600
Site Earthwork			\$1.50/SF	\$24,600
Site Preparations			\$1.50/SF	\$24,600
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
78 Fire department connection	EA	1	1,800.00	1,800
Water Supply			\$0.11/SF	\$1,800
Site Civil/Mechanical Utilities			\$0.11/SF	\$1,800
G40 Site Electrical Utilities				
G4090 Other Site Electrical Utilities				
92 Emergency generator	Item			20,000
Other Site Electrical Utilities			\$1.22/SF	\$20,000
Site Electrical Utilities			\$1.22/SF	\$20,000
TWO STORY BUILDING			\$356.00/SF	\$5,838,386

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

B CITY HALL SITE OPTION B

B2 SITEWORK

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1010 Site Clearing				
133 City Hall Site General Site clearing	SF	11,351	0.25	2,838
134 City Hall Site Parking Lot Site clearing	SF	30,740	0.25	7,685
Site Clearing				\$10,523
G1020 Site Demolition & Relocations				
65 Allowance remove (E) Storm Line (incl. backfill etc)	LF	197	35.00	6,895
124 Demo (E) building	SF	6,382	8.00	51,056
62 Demo hardscapes and softscapes	SF	30,740	1.50	46,110
Site Demolition & Relocations				\$104,061
G1030 Site Earthwork				
150 Allowance for site excavation, backfill, grading to City Hall Site	SF	30,740	1.00	30,740
70 Erosion control	Item			15,000
132 Soil Stabilization to City Hall Site	SF	30,740	2.50	76,850
Site Earthwork				\$122,590
Site Preparations				\$237,174
G20 Site Improvements				
G2010 Roadways				
71 Patch back AC paving in roadway	SF	7,503	6.00	45,018
Roadways				\$45,018
G2020 Parking Lots				
142 (E) Carparking area Grind (Sth of Option B) City Hall	SF	11,351	2.00	22,702
146 (E) Carparking area Re-Stripe and Painting (Sth of Option B) City Hall	SF	11,351	0.50	5,676
145 (E) Carparking area Resurface 2" thick AC (Sth of Option B) City Hall	SF	11,351	3.00	34,053
121 AC paving, incl. base course	SF	30,740	6.00	184,440
135 Allowance for Bollards	EA	15	500.00	7,500
122 Concrete curb	LF	1,873	20.00	37,460
126 Directional & Wayfinding Signage	SF	30,740	0.50	15,370
123 Painting and striping	SF	30,740	0.25	7,685
Parking Lots				\$314,886
G2030 Pedestrian Paving				
75 Standard concrete paving, incl. base course	SF	9,084	10.00	90,840
Pedestrian Paving				\$90,840
G2040 Site Development				
149 Allowance for Chainlink Fencing 6'	LF	443	35.00	15,505

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B CITY HALL SITE OPTION B

B2 SITEWORK (continued)

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
76 Allowance for misc. site development, retaining walls, site furnishings, etc.	Item			20,000
Site Development				\$35,505
G2050 Landcaping				
147 (E) Carparking area Landscaping Works (Sth of Option B) City Hall	SF	11,351	1.50	17,027
128 Allowance for Landscaping & Planting Areas (incl sub base)	SF	8,594	2.00	17,188
77 Allowance to repair/make good adjacent areas impacted by construction	Item			10,000
Landcaping				\$44,215
Site Improvements				\$530,464
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
79 Tap into (E) water line 1 1/2"	EA	1	5,000.00	5,000
Water Supply				\$5,000
G3020 Sanitary Sewer				
120 Sewer System - 6" Lateral Sanitary Connection to building	EA	1	3,000.00	3,000
Sanitary Sewer				\$3,000
G3030 Storm Sewer				
84 Storm drain piping, 12", incl. trenching and backfill	LF	100	85.00	8,500
118 Storm System - 6" Lateral Storm Connection to building	EA	1	3,000.00	3,000
Storm Sewer				\$11,500
Site Civil/Mechanical Utilities				\$19,500
G40 Site Electrical Utilities				
G4020 Site Lighting				
90 Allowance for site lighting (including carparks & roadways)	SF	42,090	2.00	84,180
Site Lighting				\$84,180
Site Electrical Utilities				\$84,180
SITEWORK				\$871,318

3.00 Southwind Site Option A

- . Grand Summary with Margins and Adjustments Distributed
- . Grand Summary with Margins and Adjustments Undistributed
- . Unifomat Level 2 Summary
- . Unifomat Level 3 Summary
- . Detail

Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
C SOUTHWIND SITE OPTION A			
C1 BUILDING	16,600	534.42	8,871,317
C2 SITEWORK			8,736,470
C - SOUTHWIND SITE OPTION A	16,600	\$1,060.71	\$17,607,787
ESTIMATED NET COST	16,600	\$1,060.71	\$17,607,787
MARGINS & ADJUSTMENTS			
CMGC Contingency	3.0 %		\$509,701
Escalation to 3Q2020	9.7 %		\$1,766,455
ESTIMATED TOTAL COST	16,600	\$1,197.83	\$19,883,943

Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
C SOUTHWIND SITE OPTION A			
C1 BUILDING	16,600	362.65	6,019,941
C2 SITEWORK			5,928,436
C - SOUTHWIND SITE OPTION A	16,600	\$719.78	\$11,948,377
ESTIMATED NET COST	16,600	\$719.78	\$11,948,377
MARGINS & ADJUSTMENTS			
Preconstruction Fee	0.9 %		\$107,535
Location Factor	4.0 %		\$482,237
General Conditions	10.0 %		\$1,253,815
Bonds & Insurance	3.0 %		\$413,759
Overhead & Profit	4.0 %		\$568,229
Design Contingency	15.0 %		\$2,216,093
CMGC Contingency	3.0 %		\$509,701
Market Volatility Contingency	2.0 %		\$349,995
Solar/Green Energy	1.5 %		\$267,747
Escalation to 3Q2020	9.7 %		\$1,766,455
ESTIMATED TOTAL COST	16,600	\$1,197.83	\$19,883,943

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 2 Summary

Gross Floor Area: 16,600 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
A10 Foundations	\$45.51	\$755,400
B10 Superstructure	\$41.31	\$685,720
B20 Exterior Enclosure	\$52.28	\$867,925
B30 Roofing	\$25.10	\$416,640
C10 Interior Construction	\$37.46	\$621,840
C30 Interior Finishes	\$31.23	\$518,456
D10 Conveying	\$10.84	\$180,000
D20 Plumbing	\$15.85	\$263,110
D30 HVAC	\$42.00	\$697,200
D40 Fire Protection	\$5.00	\$83,000
D50 Electrical	\$40.95	\$679,770
E10 Equipment	\$0.60	\$10,000
E20 Furnishings	\$12.44	\$206,480
G10 Site Preparations	\$13.19	\$218,957
G20 Site Improvements	\$286.14	\$4,749,914
G30 Site Civil/Mechanical Utilities	\$46.52	\$772,285
G40 Site Electrical Utilities	\$13.35	\$221,680
ESTIMATED NET COST	\$719.78	\$11,948,377
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$107,535
Location Factor	4.0 %	\$482,237
General Conditions	10.0 %	\$1,253,815
Bonds & Insurance	3.0 %	\$413,759
Overhead & Profit	4.0 %	\$568,229
Design Contingency	15.0 %	\$2,216,093
CMGC Contingency	3.0 %	\$509,701
Market Volatility Contingency	2.0 %	\$349,995
Solar/Green Energy	1.5 %	\$267,747
Escalation to 3Q2020	9.7 %	\$1,766,455
ESTIMATED TOTAL COST	\$1,197.83	\$19,883,943

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,600 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
A1010 Standard Foundations	\$12.47	\$207,000
A1020 Special Foundations	\$30.00	\$498,000
A1030 Slab on Grade	\$3.04	\$50,400
B1010 Floor Construction	\$20.92	\$347,200
B1020 Roof Construction	\$20.39	\$338,520
B2010 Exterior Walls	\$39.55	\$656,500
B2020 Exterior Windows	\$9.74	\$161,625
B2030 Exterior Doors	\$3.00	\$49,800
B3010 Roof Coverings	\$25.10	\$416,640
C1010 Partitions	\$18.00	\$298,800
C1020 Interior Doors	\$8.00	\$132,800
C1030 Specialties	\$9.05	\$150,240
C2010 Stair Construction	\$2.41	\$40,000
C3010 Wall Finishes	\$8.81	\$146,176
C3020 Floor Finishes	\$9.00	\$149,400
C3030 Ceiling Finishes	\$13.43	\$222,880
D1010 Elevators and Lifts	\$10.84	\$180,000
D2010 Plumbing Fixtures	\$14.00	\$232,400
D2040 Rain Water Drainage	\$1.85	\$30,710
D3060 Controls & Instrumentation	\$4.00	\$66,400
D3090 Other HVAC Systems and Equipment	\$38.00	\$630,800
D4040 Sprinklers	\$5.00	\$83,000
D5010 Electrical Service & Distribution	\$12.35	\$205,010
D5020 Lighting & Branch Wiring	\$16.00	\$265,600
D5030 Communications & Security	\$12.60	\$209,160
E1090 Other Equipment	\$0.60	\$10,000
E2010 Fixed Furnishings	\$12.44	\$206,480
E2020 Moveable Furnishings		Excl.
G1010 Site Clearing	\$3.14	\$52,189
G1030 Site Earthwork	\$10.05	\$166,768
G2010 Roadways	\$235.93	\$3,916,385
G2020 Parking Lots	\$14.06	\$233,425
G2030 Pedestrian Paving	\$22.75	\$377,590
G2040 Site Development	\$9.04	\$150,000
G2050 Landcaping	\$4.37	\$72,514
G3010 Water Supply	\$4.80	\$79,740
G3020 Sanitary Sewer	\$4.64	\$77,030

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,600 SF
Rates Current At December 2018

Description		Cost/SF	Total Cost
G3030	Storm Sewer	\$9.97	\$165,515
G3090	Other Site Mechanical Utilities	\$27.11	\$450,000
G4020	Site Lighting	\$12.15	\$201,680
G4090	Other Site Electrical Utilities	\$1.20	\$20,000
ESTIMATED NET COST		\$719.78	\$11,948,377
MARGINS & ADJUSTMENTS			
Preconstruction Fee		0.9 %	\$107,535
Location Factor		4.0 %	\$482,237
General Conditions		10.0 %	\$1,253,815
Bonds & Insurance		3.0 %	\$413,759
Overhead & Profit		4.0 %	\$568,229
Design Contingency		15.0 %	\$2,216,093
CMGC Contingency		3.0 %	\$509,701
Market Volatility Contingency		2.0 %	\$349,995
Solar/Green Energy		1.5 %	\$267,747
Escalation to 3Q2020		9.7 %	\$1,766,455
ESTIMATED TOTAL COST		\$1,197.83	\$19,883,943

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

C SOUTHWIND SITE OPTION A
C1 BUILDING

GFA: 16,600 SF Cost/SF: \$362.65
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
A10 Foundations				
A1010 Standard Foundations				
151 Elevator pit, complete incl. waterproofing	EA	2	20,000.00	40,000
93 Premium for stepped footings, foundations wall, etc.	SF	16,600	5.00	83,000
144 Standard foundations, Southwind Site, incl. structural excavation	SF	4,200	20.00	84,000
Standard Foundations			\$12.47/SF	\$207,000
A1020 Special Foundations				
156 Allowance for special foundation systems/soil improvements	SF	16,600	30.00	498,000
Special Foundations			\$30.00/SF	\$498,000
A1030 Slab on Grade				
6 Slab on grade, incl. base course and vapor barrier	SF	4,200	12.00	50,400
Slab on Grade			\$3.04/SF	\$50,400
Foundations			\$45.51/SF	\$755,400
B10 Superstructure				
B1010 Floor Construction				
97 Wood floor framing and sheathing	SF	12,400	28.00	347,200
Floor Construction			\$20.92/SF	\$347,200
B1020 Roof Construction				
7 Wood roof framing and sheathing	SF	13,020	26.00	338,520
Roof Construction			\$20.39/SF	\$338,520
Superstructure			\$41.31/SF	\$685,720
B20 Exterior Enclosure				
B2010 Exterior Walls				
9 Allowance for exterior building signage	Item			10,000
11 Exterior wall assembly; cedar shake shingles, drainage mat, weather barrier, sheathing, wood stud framing, batt insulation, vapor barrier, painted gyp board to inside face of exterior wall, flashings/sealants	SF	10,775	60.00	646,500
Exterior Walls			\$39.55/SF	\$656,500
B2020 Exterior Windows				
12 Wood windows (assumes 20% of exterior facade)	SF	2,155	75.00	161,625
Exterior Windows			\$9.74/SF	\$161,625
B2030 Exterior Doors				
14 Exterior doors	SF	16,600	3.00	49,800
Exterior Doors			\$3.00/SF	\$49,800
Exterior Enclosure			\$52.28/SF	\$867,925

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

C SOUTHWIND SITE OPTION A
C1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
B30 Roofing				
B3010 Roof Coverings				
18 Skylights - None included	Item			Excl.
19 Standing seam metal roof system	SF	13,020	32.00	416,640
Roof Coverings			\$25.10/SF	\$416,640
Roofing			\$25.10/SF	\$416,640
C10 Interior Construction				
C1010 Partitions				
23 Partitions	SF	16,600	18.00	298,800
Partitions			\$18.00/SF	\$298,800
C1020 Interior Doors				
24 Interior doors and glazing	SF	16,600	8.00	132,800
Interior Doors			\$8.00/SF	\$132,800
C1030 Specialties				
30 Premium for specialties in police program	SF	3,816	15.00	57,240
31 Specialties; markerboards, tackboards, code/wayfinding, signage, corner/wall protection, fire extinguisher cabinets	SF	16,600	4.50	74,700
32 Toilet/locker room fitments	SF	732	25.00	18,300
Specialties			\$9.05/SF	\$150,240
C2010 Stair Construction				
143 Stairs	Flight	2	20,000.00	40,000
Stair Construction			\$2.41/SF	\$40,000
Interior Construction			\$37.46/SF	\$621,840
C30 Interior Finishes				
C3010 Wall Finishes				
33 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
107 Allowance for upgraded/higher durability finishes to Police spaces	SF	3,816	6.00	22,896
36 Wall finishes	SF	16,600	6.00	99,600
Wall Finishes			\$8.81/SF	\$146,176
C3020 Floor Finishes				
37 Floor finishes	SF	16,600	9.00	149,400
Floor Finishes			\$9.00/SF	\$149,400
C3030 Ceiling Finishes				
43 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

C SOUTHWIND SITE OPTION A

C1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
42 Ceiling finishes	SF	16,600	12.00	199,200
<i>Ceiling Finishes</i>			\$13.43/SF	\$222,880
<i>Interior Finishes</i>			\$31.23/SF	\$518,456
D10 Conveying				
D1010 Elevators and Lifts				
108 Elevator	Stop	4	45,000.00	180,000
<i>Elevators and Lifts</i>			\$10.84/SF	\$180,000
<i>Conveying</i>			\$10.84/SF	\$180,000
D20 Plumbing				
D2010 Plumbing Fixtures				
44 Plumbing fixtures and pipework	SF	16,600	14.00	232,400
<i>Plumbing Fixtures</i>			\$14.00/SF	\$232,400
D2040 Rain Water Drainage				
45 Rainwater drainage	SF	16,600	1.85	30,710
<i>Rain Water Drainage</i>			\$1.85/SF	\$30,710
<i>Plumbing</i>			\$15.85/SF	\$263,110
D30 HVAC				
D3060 Controls & Instrumentation				
148 DDC Controls--assumes open source bidding	SF	16,600	4.00	66,400
<i>Controls & Instrumentation</i>			\$4.00/SF	\$66,400
D3090 Other HVAC Systems and Equipment				
46 HVAC	SF	16,600	38.00	630,800
<i>Other HVAC Systems and Equipment</i>			\$38.00/SF	\$630,800
<i>HVAC</i>			\$42.00/SF	\$697,200
D40 Fire Protection				
D4040 Sprinklers				
47 Dry sprinklers under exterior roof overhangs - Assumes not required	Item			Excl.
48 Fire sprinklers design build	SF	16,600	5.00	83,000
<i>Sprinklers</i>			\$5.00/SF	\$83,000
<i>Fire Protection</i>			\$5.00/SF	\$83,000
D50 Electrical				
D5010 Electrical Service & Distribution				
49 Electrical service and and distribution	SF	16,600	12.35	205,010
<i>Electrical Service & Distribution</i>			\$12.35/SF	\$205,010

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

C SOUTHWIND SITE OPTION A
C1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
D5020 Lighting & Branch Wiring				
50 Lighting and branch wiring	SF	16,600	16.00	265,600
Lighting & Branch Wiring			\$16.00/SF	\$265,600
D5030 Communications & Security				
137 Audio visual systems--Backbone allowance--assumes flat screens, projectors or other equipment will be OFCI	SF	16,600	1.00	16,600
140 Distributed antenna system - allowance	SF	16,600	0.80	13,280
141 Fire alarm system	SF	16,600	3.00	49,800
136 Public Address, Intercom and clock systems with IP addressable features--allowance	SF	16,600	2.65	43,990
139 Security system--Includes CCTV and Access Control	SF	16,600	2.65	43,990
138 Telecommunications--includes outlets, floor boxes in conference/meeting rooms, and MDF/IDF buildout	SF	16,600	2.50	41,500
Communications & Security			\$12.60/SF	\$209,160
Electrical			\$40.95/SF	\$679,770
E10 Equipment				
E1090 Other Equipment				
52 A/V equipment - By Owner	Item			Excl.
54 Allowance for kitchen equipment/residential appliances	Item			10,000
Other Equipment			\$0.60/SF	\$10,000
Equipment			\$0.60/SF	\$10,000
E20 Furnishings				
E2010 Fixed Furnishings				
114 Allowance for upgraded casework and millwork in Council Chambers spaces	SF	2,368	15.00	35,520
115 Allowance for upgraded/specialty casework and millwork in Police spaces	SF	3,816	10.00	38,160
55 Casework and furnishings	SF	16,600	8.00	132,800
Fixed Furnishings			\$12.44/SF	\$206,480
E2020 Moveable Furnishings				
60 Movable furnishings - By Owner	Item			Excl.
Moveable Furnishings				Excl.
Furnishings			\$12.44/SF	\$206,480

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

C SOUTHWIND SITE OPTION A

C1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1030 Site Earthwork				
69 Building pad prep	SF	4,200	3.00	12,600
Site Earthwork			\$0.76/SF	\$12,600
Site Preparations			\$0.76/SF	\$12,600
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
78 Fire department connection	EA	1	1,800.00	1,800
Water Supply			\$0.11/SF	\$1,800
Site Civil/Mechanical Utilities			\$0.11/SF	\$1,800
G40 Site Electrical Utilities				
G4090 Other Site Electrical Utilities				
92 Emergency generator	Item			20,000
Other Site Electrical Utilities			\$1.20/SF	\$20,000
Site Electrical Utilities			\$1.20/SF	\$20,000
BUILDING			\$362.65/SF	\$6,019,941

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

C SOUTHWIND SITE OPTION A

C2 SITEWORK

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1010 Site Clearing				
61 Southwind Site General Site clearing	SF	38,328	0.75	28,746
125 Southwind Site Parking Lot Site clearing	SF	31,257	0.75	23,443
Site Clearing				\$52,189
G1030 Site Earthwork				
67 Allowance for site excavation, backfill, grading to Southwind Site	SF	69,584	2.00	139,168
70 Erosion control	Item			15,000
131 Soil Stabilization to Southwind Site	Item			Excl.
Site Earthwork				\$154,168
Site Preparations				\$206,357
G20 Site Improvements				
G2010 Roadways				
72 AC paving, incl. base course	SF	69,584	6.00	417,504
73 Concrete curb	LF	2,688	20.00	53,760
127 Directional & Wayfinding Signage	SF	69,584	0.50	34,792
101 HIGHWAY Upgrades - Bases (Escalated to 2018) - As per OSH Estimate provided	LS	1	107,500.00	107,500
100 HIGHWAY Upgrades - Drainage & Sewers (Escalated to 2018) - As per OSH Estimate provided	LS	1	144,875.00	144,875
98 HIGHWAY Upgrades - Mobilization & Traffic Control (Escalated to 2018) - As per OSH Estimate provided	LS	1	265,250.00	265,250
105 HIGHWAY Upgrades - OSH Markups (Escalated to 2018) - As per OSH Estimate provided	LS	1	1,036,950.00	1,036,950
103 HIGHWAY Upgrades - Permanent Traffic Control (Escalated to 2018) - As per OSH Estimate provided	LS	1	115,000.00	115,000
99 HIGHWAY Upgrades - Roadwork (Escalated to 2018) - As per OSH Estimate provided	LS	1	564,110.00	564,110
104 HIGHWAY Upgrades - ROW Development (Escalated to 2018) - As per OSH Estimate provided	LS	1	50,000.00	50,000
102 HIGHWAY Upgrades - Wearing Surfaces (Escalated to 2018) - As per OSH Estimate provided	LS	1	425,000.00	425,000
129 Painting and striping	SF	69,584	0.50	34,792
74 Painting and striping	SF	38,328	0.25	9,582
71 Patch back AC paving in roadway	SF	9,545	6.00	57,270
106 Street Network - Internal Site Streets - As per 55 Acre (Unescalated) Estimate provided	LS	1	600,000.00	600,000
Roadways				\$3,916,385

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

C SOUTHWIND SITE OPTION A

C2 SITEWORK (continued)

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G2020 Parking Lots				
121 AC paving, incl. base course	SF	31,257	6.00	187,542
135 Allowance for Bollards	EA	15	500.00	7,500
122 Concrete curb	LF	747	20.00	14,940
126 Directional & Wayfinding Signage	SF	31,257	0.50	15,628
123 Painting and striping	SF	31,257	0.25	7,815
Parking Lots				\$233,425
G2030 Pedestrian Paving				
112 Pedestrian Facilities - As per 55 Acre (Unescalated) Estimate provided	LS	1	350,000.00	350,000
75 Standard concrete paving, incl. base course	SF	2,759	10.00	27,590
Pedestrian Paving				\$377,590
G2040 Site Development				
76 Allowance for misc. site development, retaining walls, site furnishings, etc.	Item			150,000
Site Development				\$150,000
G2050 Landcaping				
128 Allowance for Landscaping & Planting Areas (incl sub base)	SF	31,257	2.00	62,514
77 Allowance to repair/make good adjacent areas impacted by construction	Item			10,000
Landcaping				\$72,514
Site Improvements				\$4,749,914
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
80 Water service to building, incl. trenching and backfill	LF	1,076	65.00	69,940
119 Water System - 3" Lateral Water Connection to building	EA	1	3,000.00	3,000
116 Water System - 8" Water Connection to Mains	EA	1	5,000.00	5,000
Water Supply				\$77,940
G3020 Sanitary Sewer				
81 Sanitary sewer service to building	LF	1,062	65.00	69,030
120 Sewer System - 6" Lateral Sanitary Connection to building	EA	1	3,000.00	3,000
117 Sewer System - 8" Sanitary Connection to Mains	EA	1	5,000.00	5,000
Sanitary Sewer				\$77,030
G3030 Storm Sewer				
130 Allowance for Stormwater Drainage System to Carparks and Roadways	SF	100,840	1.25	126,050
84 Storm drain piping, 12", incl. trenching and backfill	LF	429	85.00	36,465

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

C SOUTHWIND SITE OPTION A

C2 SITEWORK (continued)

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
118 Storm System - 6" Lateral Storm Connection to building	EA	1	3,000.00	3,000
Storm Sewer				\$165,515
G3090 Other Site Mechanical Utilities				
113 Telecom / Natural Gas / Electrical - As per 55 Acre (Unescalated) Estimate provided	LS	1	450,000.00	450,000
Other Site Mechanical Utilities				\$450,000
Site Civil/Mechanical Utilities				\$770,485
G40 Site Electrical Utilities				
G4020 Site Lighting				
90 Allowance for site lighting (including carparks & roadways)	SF	100,840	2.00	201,680
Site Lighting				\$201,680
Site Electrical Utilities				\$201,680
SITEWORK				\$5,928,436

4.00 Southwind Site Option B

- . Grand Summary with Margins and Adjustments Distributed
- . Grand Summary with Margins and Adjustments Undistributed
- . Unifomat Level 2 Summary
- . Unifomat Level 3 Summary
- . Detail

Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
D SOUTHWIND SITE OPTION B			
D1 BUILDING	16,600	534.42	8,871,316
D2 SITEWORK			9,091,694
<i>D - SOUTHWIND SITE OPTION B</i>	16,600	\$1,082.11	\$17,963,010
ESTIMATED NET COST	16,600	\$1,082.11	\$17,963,010
MARGINS & ADJUSTMENTS			
CMGC Contingency	3.0 %		\$519,985
Escalation to 3Q2020	9.8 %		\$1,802,093
ESTIMATED TOTAL COST	16,600	\$1,221.99	\$20,285,088

Cannon Beach City Hall Facility

Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At December 2018

Location	GFA SF	Cost/SF	Total Cost
D SOUTHWIND SITE OPTION B			
D1 BUILDING	16,600	362.65	6,019,941
D2 SITEWORK			6,169,486
<i>D - SOUTHWIND SITE OPTION B</i>	16,600	\$734.30	\$12,189,427
ESTIMATED NET COST	16,600	\$734.30	\$12,189,427
MARGINS & ADJUSTMENTS			
Preconstruction Fee	0.9 %		\$109,704
Location Factor	4.0 %		\$491,965
General Conditions	10.0 %		\$1,279,110
Bonds & Insurance	3.0 %		\$422,107
Overhead & Profit	4.0 %		\$579,693
Design Contingency	15.0 %		\$2,260,801
CMGC Contingency	3.0 %		\$519,985
Market Volatility Contingency	2.0 %		\$357,055
Solar/Green Energy	1.5 %		\$273,148
Escalation to 3Q2020	9.8 %		\$1,802,093
ESTIMATED TOTAL COST	16,600	\$1,221.99	\$20,285,088

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 2 Summary

Gross Floor Area: 16,600 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
A10 Foundations	\$45.51	\$755,400
B10 Superstructure	\$41.31	\$685,720
B20 Exterior Enclosure	\$52.28	\$867,925
B30 Roofing	\$25.10	\$416,640
C10 Interior Construction	\$37.46	\$621,840
C30 Interior Finishes	\$31.23	\$518,456
D10 Conveying	\$10.84	\$180,000
D20 Plumbing	\$15.85	\$263,110
D30 HVAC	\$42.00	\$697,200
D40 Fire Protection	\$5.00	\$83,000
D50 Electrical	\$40.95	\$679,770
E10 Equipment	\$0.60	\$10,000
E20 Furnishings	\$12.44	\$206,480
G10 Site Preparations	\$13.19	\$218,957
G20 Site Improvements	\$286.14	\$4,749,914
G30 Site Civil/Mechanical Utilities	\$61.04	\$1,013,335
G40 Site Electrical Utilities	\$13.35	\$221,680
ESTIMATED NET COST	\$734.30	\$12,189,427
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$109,704
Location Factor	4.0 %	\$491,965
General Conditions	10.0 %	\$1,279,110
Bonds & Insurance	3.0 %	\$422,107
Overhead & Profit	4.0 %	\$579,693
Design Contingency	15.0 %	\$2,260,801
CMGC Contingency	3.0 %	\$519,985
Market Volatility Contingency	2.0 %	\$357,055
Solar/Green Energy	1.5 %	\$273,148
Escalation to 3Q2020	9.8 %	\$1,802,093
ESTIMATED TOTAL COST	\$1,221.99	\$20,285,088

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,600 SF
Rates Current At December 2018

Description	Cost/SF	Total Cost
A1010 Standard Foundations	\$12.47	\$207,000
A1020 Special Foundations	\$30.00	\$498,000
A1030 Slab on Grade	\$3.04	\$50,400
B1010 Floor Construction	\$20.92	\$347,200
B1020 Roof Construction	\$20.39	\$338,520
B2010 Exterior Walls	\$39.55	\$656,500
B2020 Exterior Windows	\$9.74	\$161,625
B2030 Exterior Doors	\$3.00	\$49,800
B3010 Roof Coverings	\$25.10	\$416,640
C1010 Partitions	\$18.00	\$298,800
C1020 Interior Doors	\$8.00	\$132,800
C1030 Specialties	\$9.05	\$150,240
C2010 Stair Construction	\$2.41	\$40,000
C3010 Wall Finishes	\$8.81	\$146,176
C3020 Floor Finishes	\$9.00	\$149,400
C3030 Ceiling Finishes	\$13.43	\$222,880
D1010 Elevators and Lifts	\$10.84	\$180,000
D2010 Plumbing Fixtures	\$14.00	\$232,400
D2040 Rain Water Drainage	\$1.85	\$30,710
D3060 Controls & Instrumentation	\$4.00	\$66,400
D3090 Other HVAC Systems and Equipment	\$38.00	\$630,800
D4040 Sprinklers	\$5.00	\$83,000
D5010 Electrical Service & Distribution	\$12.35	\$205,010
D5020 Lighting & Branch Wiring	\$16.00	\$265,600
D5030 Communications & Security	\$12.60	\$209,160
E1090 Other Equipment	\$0.60	\$10,000
E2010 Fixed Furnishings	\$12.44	\$206,480
E2020 Moveable Furnishings		Excl.
G1010 Site Clearing	\$3.14	\$52,189
G1030 Site Earthwork	\$10.05	\$166,768
G2010 Roadways	\$235.93	\$3,916,385
G2020 Parking Lots	\$14.06	\$233,425
G2030 Pedestrian Paving	\$22.75	\$377,590
G2040 Site Development	\$9.04	\$150,000
G2050 Landcaping	\$4.37	\$72,514
G3010 Water Supply	\$19.27	\$319,880
G3020 Sanitary Sewer	\$4.70	\$77,940

Cannon Beach City Hall Facility

Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,600 SF
Rates Current At December 2018

Description		Cost/SF	Total Cost
G3030	Storm Sewer	\$9.97	\$165,515
G3090	Other Site Mechanical Utilities	\$27.11	\$450,000
G4020	Site Lighting	\$12.15	\$201,680
G4090	Other Site Electrical Utilities	\$1.20	\$20,000
ESTIMATED NET COST		\$734.30	\$12,189,427
MARGINS & ADJUSTMENTS			
Preconstruction Fee		0.9 %	\$109,704
Location Factor		4.0 %	\$491,965
General Conditions		10.0 %	\$1,279,110
Bonds & Insurance		3.0 %	\$422,107
Overhead & Profit		4.0 %	\$579,693
Design Contingency		15.0 %	\$2,260,801
CMGC Contingency		3.0 %	\$519,985
Market Volatility Contingency		2.0 %	\$357,055
Solar/Green Energy		1.5 %	\$273,148
Escalation to 3Q2020		9.8 %	\$1,802,093
ESTIMATED TOTAL COST		\$1,221.99	\$20,285,088

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

D SOUTHWIND SITE OPTION B
D1 BUILDING

GFA: 16,600 SF Cost/SF: \$362.65
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
A10 Foundations				
A1010 Standard Foundations				
151 Elevator pit, complete incl. waterproofing	EA	2	20,000.00	40,000
93 Premium for stepped footings, foundations wall, etc.	SF	16,600	5.00	83,000
144 Standard foundations, Southwind Site, incl. structural excavation	SF	4,200	20.00	84,000
Standard Foundations			\$12.47/SF	\$207,000
A1020 Special Foundations				
156 Allowance for special foundation systems/soil improvements	SF	16,600	30.00	498,000
Special Foundations			\$30.00/SF	\$498,000
A1030 Slab on Grade				
6 Slab on grade, incl. base course and vapor barrier	SF	4,200	12.00	50,400
Slab on Grade			\$3.04/SF	\$50,400
Foundations			\$45.51/SF	\$755,400
B10 Superstructure				
B1010 Floor Construction				
97 Wood floor framing and sheathing	SF	12,400	28.00	347,200
Floor Construction			\$20.92/SF	\$347,200
B1020 Roof Construction				
7 Wood roof framing and sheathing	SF	13,020	26.00	338,520
Roof Construction			\$20.39/SF	\$338,520
Superstructure			\$41.31/SF	\$685,720
B20 Exterior Enclosure				
B2010 Exterior Walls				
9 Allowance for exterior building signage	Item			10,000
11 Exterior wall assembly; cedar shake shingles, drainage mat, weather barrier, sheathing, wood stud framing, batt insulation, vapor barrier, painted gyp board to inside face of exterior wall, flashings/sealants	SF	10,775	60.00	646,500
Exterior Walls			\$39.55/SF	\$656,500
B2020 Exterior Windows				
12 Wood windows (assumes 20% of exterior facade)	SF	2,155	75.00	161,625
Exterior Windows			\$9.74/SF	\$161,625
B2030 Exterior Doors				
14 Exterior doors	SF	16,600	3.00	49,800
Exterior Doors			\$3.00/SF	\$49,800
Exterior Enclosure			\$52.28/SF	\$867,925

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

D SOUTHWIND SITE OPTION B
D1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
B30 Roofing				
B3010 Roof Coverings				
18 Skylights - None included	Item			Excl.
19 Standing seam metal roof system	SF	13,020	32.00	416,640
Roof Coverings			\$25.10/SF	\$416,640
Roofing			\$25.10/SF	\$416,640
C10 Interior Construction				
C1010 Partitions				
23 Partitions	SF	16,600	18.00	298,800
Partitions			\$18.00/SF	\$298,800
C1020 Interior Doors				
24 Interior doors and glazing	SF	16,600	8.00	132,800
Interior Doors			\$8.00/SF	\$132,800
C1030 Specialties				
30 Premium for specialties in police program	SF	3,816	15.00	57,240
31 Specialties; markerboards, tackboards, code/wayfinding, signage, corner/wall protection, fire extinguisher cabinets	SF	16,600	4.50	74,700
32 Toilet/locker room fitments	SF	732	25.00	18,300
Specialties			\$9.05/SF	\$150,240
C2010 Stair Construction				
143 Stairs	Flight	2	20,000.00	40,000
Stair Construction			\$2.41/SF	\$40,000
Interior Construction			\$37.46/SF	\$621,840
C30 Interior Finishes				
C3010 Wall Finishes				
33 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
107 Allowance for upgraded/higher durability finishes to Police spaces	SF	3,816	6.00	22,896
36 Wall finishes	SF	16,600	6.00	99,600
Wall Finishes			\$8.81/SF	\$146,176
C3020 Floor Finishes				
37 Floor finishes	SF	16,600	9.00	149,400
Floor Finishes			\$9.00/SF	\$149,400
C3030 Ceiling Finishes				
43 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

D SOUTHWIND SITE OPTION B
D1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
42 Ceiling finishes	SF	16,600	12.00	199,200
Ceiling Finishes			\$13.43/SF	\$222,880
Interior Finishes			\$31.23/SF	\$518,456
D10 Conveying				
D1010 Elevators and Lifts				
108 Elevator	Stop	4	45,000.00	180,000
Elevators and Lifts			\$10.84/SF	\$180,000
Conveying			\$10.84/SF	\$180,000
D20 Plumbing				
D2010 Plumbing Fixtures				
44 Plumbing fixtures and pipework	SF	16,600	14.00	232,400
Plumbing Fixtures			\$14.00/SF	\$232,400
D2040 Rain Water Drainage				
45 Rainwater drainage	SF	16,600	1.85	30,710
Rain Water Drainage			\$1.85/SF	\$30,710
Plumbing			\$15.85/SF	\$263,110
D30 HVAC				
D3060 Controls & Instrumentation				
148 DDC Controls--assumes open source bidding	SF	16,600	4.00	66,400
Controls & Instrumentation			\$4.00/SF	\$66,400
D3090 Other HVAC Systems and Equipment				
46 HVAC	SF	16,600	38.00	630,800
Other HVAC Systems and Equipment			\$38.00/SF	\$630,800
HVAC			\$42.00/SF	\$697,200
D40 Fire Protection				
D4040 Sprinklers				
47 Dry sprinklers under exterior roof overhangs - Assumes not required	Item			Excl.
48 Fire sprinklers design build	SF	16,600	5.00	83,000
Sprinklers			\$5.00/SF	\$83,000
Fire Protection			\$5.00/SF	\$83,000
D50 Electrical				
D5010 Electrical Service & Distribution				
49 Electrical service and and distribution	SF	16,600	12.35	205,010
Electrical Service & Distribution			\$12.35/SF	\$205,010

Cannon Beach City Hall Facility

Concept Rev1

Location Uniformat Level 2/Uniformat Level 3 Item

D SOUTHWIND SITE OPTION B
D1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65
Rates Current At December 2018

Description	Unit	Qty	Rate	Total
D5020 Lighting & Branch Wiring				
50 Lighting and branch wiring	SF	16,600	16.00	265,600
Lighting & Branch Wiring			\$16.00/SF	\$265,600
D5030 Communications & Security				
137 Audio visual systems--Backbone allowance--assumes flat screens, projectors or other equipment will be OFCI	SF	16,600	1.00	16,600
140 Distributed antenna system - allowance	SF	16,600	0.80	13,280
141 Fire alarm system	SF	16,600	3.00	49,800
136 Public Address, Intercom and clock systems with IP addressable features--allowance	SF	16,600	2.65	43,990
139 Security system--Includes CCTV and Access Control	SF	16,600	2.65	43,990
138 Telecommunications--includes outlets, floor boxes in conference/meeting rooms, and MDF/IDF buildout	SF	16,600	2.50	41,500
Communications & Security			\$12.60/SF	\$209,160
Electrical			\$40.95/SF	\$679,770
E10 Equipment				
E1090 Other Equipment				
52 A/V equipment - By Owner	Item			Excl.
54 Allowance for kitchen equipment/residential appliances	Item			10,000
Other Equipment			\$0.60/SF	\$10,000
Equipment			\$0.60/SF	\$10,000
E20 Furnishings				
E2010 Fixed Furnishings				
114 Allowance for upgraded casework and millwork in Council Chambers spaces	SF	2,368	15.00	35,520
115 Allowance for upgraded/specialty casework and millwork in Police spaces	SF	3,816	10.00	38,160
55 Casework and furnishings	SF	16,600	8.00	132,800
Fixed Furnishings			\$12.44/SF	\$206,480
E2020 Moveable Furnishings				
60 Movable furnishings - By Owner	Item			Excl.
Moveable Furnishings				Excl.
Furnishings			\$12.44/SF	\$206,480

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

D SOUTHWIND SITE OPTION B

D1 BUILDING (continued)

GFA: 16,600 SF Cost/SF: \$362.65

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1030 Site Earthwork				
69 Building pad prep	SF	4,200	3.00	12,600
Site Earthwork			\$0.76/SF	\$12,600
Site Preparations			\$0.76/SF	\$12,600
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
78 Fire department connection	EA	1	1,800.00	1,800
Water Supply			\$0.11/SF	\$1,800
Site Civil/Mechanical Utilities			\$0.11/SF	\$1,800
G40 Site Electrical Utilities				
G4090 Other Site Electrical Utilities				
92 Emergency generator	Item			20,000
Other Site Electrical Utilities			\$1.20/SF	\$20,000
Site Electrical Utilities			\$1.20/SF	\$20,000
BUILDING			\$362.65/SF	\$6,019,941

Cannon Beach City Hall Facility

Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

D SOUTHWIND SITE OPTION B

D2 SITEWORK

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1010 Site Clearing				
61 Southwind Site General Site clearing	SF	38,328	0.75	28,746
125 Southwind Site Parking Lot Site clearing	SF	31,257	0.75	23,443
Site Clearing				\$52,189
G1030 Site Earthwork				
67 Allowance for site excavation, backfill, grading to Southwind Site	SF	69,584	2.00	139,168
70 Erosion control	Item			15,000
131 Soil Stabilization to Southwind Site	Item			Excl.
Site Earthwork				\$154,168
Site Preparations				\$206,357
G20 Site Improvements				
G2010 Roadways				
72 AC paving, incl. base course	SF	69,584	6.00	417,504
73 Concrete curb	LF	2,688	20.00	53,760
127 Directional & Wayfinding Signage	SF	69,584	0.50	34,792
101 HIGHWAY Upgrades - Bases (Escalated to 2018) - As per OSH Estimate provided	LS	1	107,500.00	107,500
100 HIGHWAY Upgrades - Drainage & Sewers (Escalated to 2018) - As per OSH Estimate provided	LS	1	144,875.00	144,875
98 HIGHWAY Upgrades - Mobilization & Traffic Control (Escalated to 2018) - As per OSH Estimate provided	LS	1	265,250.00	265,250
105 HIGHWAY Upgrades - OSH Markups (Escalated to 2018) - As per OSH Estimate provided	LS	1	1,036,950.00	1,036,950
103 HIGHWAY Upgrades - Permanent Traffic Control (Escalated to 2018) - As per OSH Estimate provided	LS	1	115,000.00	115,000
99 HIGHWAY Upgrades - Roadwork (Escalated to 2018) - As per OSH Estimate provided	LS	1	564,110.00	564,110
104 HIGHWAY Upgrades - ROW Development (Escalated to 2018) - As per OSH Estimate provided	LS	1	50,000.00	50,000
102 HIGHWAY Upgrades - Wearing Surfaces (Escalated to 2018) - As per OSH Estimate provided	LS	1	425,000.00	425,000
129 Painting and striping	SF	69,584	0.50	34,792
74 Painting and striping	SF	38,328	0.25	9,582
71 Patch back AC paving in roadway	SF	9,545	6.00	57,270
106 Street Network - Internal Site Streets - As per 55 Acre (Unescalated) Estimate provided	LS	1	600,000.00	600,000
Roadways				\$3,916,385

Cannon Beach City Hall Facility

Concept Rev1

Location Unformat Level 2/Unformat Level 3 Item

D SOUTHWIND SITE OPTION B

D2 SITEWORK (continued)

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G2020 Parking Lots				
121 AC paving, incl. base course	SF	31,257	6.00	187,542
135 Allowance for Bollards	EA	15	500.00	7,500
122 Concrete curb	LF	747	20.00	14,940
126 Directional & Wayfinding Signage	SF	31,257	0.50	15,629
123 Painting and striping	SF	31,257	0.25	7,814
Parking Lots				\$233,425
G2030 Pedestrian Paving				
112 Pedestrian Facilities - As per 55 Acre (Unescalated) Estimate provided	LS	1	350,000.00	350,000
75 Standard concrete paving, incl. base course	SF	2,759	10.00	27,590
Pedestrian Paving				\$377,590
G2040 Site Development				
76 Allowance for misc. site development, retaining walls, site furnishings, etc.	Item			150,000
Site Development				\$150,000
G2050 Landcaping				
128 Allowance for Landscaping & Planting Areas (incl sub base)	SF	31,257	2.00	62,514
77 Allowance to repair/make good adjacent areas impacted by construction	Item			10,000
Landcaping				\$72,514
Site Improvements				\$4,749,914
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
119 Water System - 3" Lateral Water Connection to building	EA	1	3,000.00	3,000
154 Water System - 3" water lateral, incl. trenching and backfill	LF	424	45.00	19,080
116 Water System - 8" Water Connection to Mains	EA	1	5,000.00	5,000
153 Water System - 8" water lateral, incl. trenching and backfill	LF	1,464	90.00	131,760
155 Water System - 12" connection to (E) main	EA	1	7,500.00	7,500
152 Water System - 12" water main, incl. trenching and backfill	LF	1,124	135.00	151,740
Water Supply				\$318,080
G3020 Sanitary Sewer				
81 Sanitary sewer service to building	LF	1,076	65.00	69,940
120 Sewer System - 6" Lateral Sanitary Connection to building	EA	1	3,000.00	3,000
117 Sewer System - 8" Sanitary Connection to Mains	EA	1	5,000.00	5,000
Sanitary Sewer				\$77,940

Cannon Beach City Hall Facility

Concept Rev1

Location Unformat Level 2/Unformat Level 3 Item

D SOUTHWIND SITE OPTION B

D2 SITEWORK (continued)

Rates Current At December 2018

Description	Unit	Qty	Rate	Total
G3030 Storm Sewer				
130 Allowance for Stormwater Drainage System to Carparks and Roadways	SF	100,840	1.25	126,050
84 Storm drain piping, 12", incl. trenching and backfill	LF	429	85.00	36,465
118 Storm System - 6" Lateral Storm Connection to building	EA	1	3,000.00	3,000
Storm Sewer				\$165,515
G3090 Other Site Mechanical Utilities				
113 Telecom / Natural Gas / Electrical - As per 55 Acre (Unescalated) Estimate provided	LS	1	450,000.00	450,000
Other Site Mechanical Utilities				\$450,000
Site Civil/Mechanical Utilities				\$1,011,535
G40 Site Electrical Utilities				
G4020 Site Lighting				
90 Allowance for site lighting (including carparks & roadways)	SF	100,840	2.00	201,680
Site Lighting				\$201,680
Site Electrical Utilities				\$201,680
SITEWORK				\$6,169,486

5.00 Basis of Estimate

Cannon Beach City Hall Facility

Concept Rev1

Project Details

Description

Basis of Estimate

The project consists of options for a new City Hall building in Cannon Beach, Oregon and associated sitework at two different sites.

Items Specifically Included

ESTIMATE PRICING:

- . Pricing is based on Construction Costs as of December 2018
- . Margins and Adjustments are included in the estimate.
- . Items included or excluded are detailed in the estimate. Other assumptions, inclusions and exclusions are listed below.

GROSS FLOOR AREA:

- . City Hall Site Option A - 16,000 SF
- . City Hall Site Option B - 16,400 SF
- . Southwind Site Options A & B - 16,600 SF.

The following assumptions have been made in the preparation of this estimate:

- . The works will be carried out during normal working hours.
- . The Contractor will be required to pay prevailing wage rates.
- . Resources are available locally.

ITEMS SPECIFICALLY INCLUDED:

- . Please note where allowances have been made, we would request the Design Team and Owner to review the sum to ensure the allowance meets their intent.
- . Sub-Contractors Overheads and Profit are included in the unit rates.

The following items have been specifically included in Margins and Adjustments:

- . Preconstruction Fee (0.9%)

Cannon Beach City Hall Facility

Concept Rev1

Project Details

Description

- . Location Factor (4%)
- . Phasing & Temporary Work (1.5%) - Applied to City Hall Sites Only
- . General Conditions (10%)
- . Bonds & Insurance (3%)
- . Overhead & Profit (4%)
- . Design Contingency (15%)
- . CMGC Contingency (3%)
- . Market Volatility Contingency (2%)
- . Solar/Green Energy (1.5%)
- . Escalation to 3Q2020 (9.75%)

Items Specifically Excluded

ITEMS SPECIFICALLY EXCLUDED:

- . Items marked as "Excl." in the estimate.
- . Shiftwork or overtime working or acceleration.
- . Double handling or materials due to site access restrictions.
- . Delays or working restrictions on the Contractor.
- . Abatement of any type
- . Underpinning of adjacent structures.
- . Shoring and propping to adjacent buildings.
- . Rock or concrete excavation.
- . Underground services encountered during excavation.
- . De-watering required during excavation other than surface water.
- . Assumes disposal of materials to a local dump only.
- . Allow for improvements to existing site where shown.
- . Fireproofing steel.

Cannon Beach City Hall Facility

Concept Rev1

Project Details

Description

- . Walls coverings besides that shown in estimate.
- . Moveable book cases to classrooms.
- . Audio visual projectors.
- . Interior Landscaping.
- . Loose furniture, FF&E & equipment.
- . The affects of potential unfair Contract Conditions which may affect Bid pricing.
- . Building & Statutory Industry Fringe Benefits.
- . Statutory Authorities' charges, contributions (and compliance orders).
- . The implications of proposed Construction legislation which may occur during the Construction period.
- . Lack of competition amongst Sub-Contractors bidding the Project
- . Unavailability of local resources to undertake specific trades and the affect on bid pricing from non-regional bidders.
- . Uncompetitive bidding due to the complexity of the project Sub-Contractors work loads.
- . Abnormal changes in market conditions affecting our assessment of escalation.
- . Construction Management Fees.
- . Owner's Contingency & Insurances.
- . Development Soft Costs including; Land, Financing and Legal costs.

Documents

DESIGN DETAILS USED FOR THE ESTIMATE:

This estimate is based upon measured quantities and built-up rates prepared from the following information:

Architectural Details provided by SRG Partnership

November 6, 2018

- . Conceptual massing & site diagrams.

Cannon Beach City Hall Facility

Concept Rev1

Project Details

Description
<div> <div>.</div> <div>Where information was insufficient, assumptions and allowances were made based on conversations with the architect and other consultants.</div> </div>



CANNON BEACH CITY HALL FACILITY

**CANNON BEACH CITY HALL
RV PARK SITE - CONCEPT**

CONTENTS

1.00 Estimate Summaries

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1.00 Estimate Summaries

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- . Grand Summary with Margins and Adjustments Undistributed
- . Unifomat Level 2 Summary
- . Unifomat Level 3 Summary

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Summary

GFA: Gross Floor Area
Rates Current At April 2019

Location	GFA SF	Cost/SF	Total Cost
B RV PARK SITE			
B1 TWO STORY BUILDING	16,400	558.78	9,164,045
B2 SITEWORK			1,132,931
B - RV PARK SITE	16,400	\$627.86	\$10,296,976
ESTIMATED NET COST	16,400	\$627.86	\$10,296,976
MARGINS & ADJUSTMENTS			
Escalation to 3Q2020	7.5 %		\$772,274
ESTIMATED TOTAL COST	16,400	\$674.95	\$11,069,250

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Summary

GFA: Gross Floor Area
Rates Current At April 2019

Location	GFA SF	Cost/SF	Total Cost
B RV PARK SITE			
B1 TWO STORY BUILDING	16,400	368.51	6,043,631
B2 SITEWORK			747,162
B - RV PARK SITE	16,400	\$414.07	\$6,790,793
ESTIMATED NET COST	16,400	\$414.07	\$6,790,793
MARGINS & ADJUSTMENTS			
Preconstruction Fee	0.9 %		\$61,117
Location Factor	4.0 %		\$274,077
General Conditions	10.0 %		\$712,599
Bonds & Insurance	3.0 %		\$235,158
Overhead & Profit	4.0 %		\$322,950
Design Contingency	15.0 %		\$1,259,505
CMGC Contingency	3.0 %		\$289,686
Market Volatility Contingency	2.0 %		\$198,918
Solar/Green Energy	1.5 %		\$152,173
Escalation to 3Q2020	7.5 %		\$772,274
ESTIMATED TOTAL COST	16,400	\$674.95	\$11,069,250

Cannon Beach City Hall Facility

RV Park Site - Concept

Uniformat Level 2 Summary

Gross Floor Area: 16,400 SF
Rates Current At April 2019

Description	Cost/SF	Total Cost
A10 Foundations	\$61.88	\$1,014,800
B10 Superstructure	\$36.72	\$602,200
B20 Exterior Enclosure	\$62.87	\$1,031,035
B30 Roofing	\$13.00	\$213,200
C10 Interior Construction	\$37.55	\$615,740
C30 Interior Finishes	\$31.28	\$513,056
D10 Conveying	\$5.49	\$90,000
D20 Plumbing	\$15.85	\$259,940
D30 HVAC	\$42.00	\$688,800
D40 Fire Protection	\$5.00	\$82,000
D50 Electrical	\$40.95	\$671,580
E10 Equipment	\$0.61	\$10,000
E20 Furnishings	\$12.49	\$204,880
G10 Site Preparations	\$24.12	\$395,503
G20 Site Improvements	\$20.26	\$332,263
G30 Site Civil/Mechanical Utilities	\$1.02	\$16,800
G40 Site Electrical Utilities	\$2.99	\$48,996
ESTIMATED NET COST	\$414.07	\$6,790,793
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$61,117
Location Factor	4.0 %	\$274,077
General Conditions	10.0 %	\$712,599
Bonds & Insurance	3.0 %	\$235,158
Overhead & Profit	4.0 %	\$322,950
Design Contingency	15.0 %	\$1,259,505
CMGC Contingency	3.0 %	\$289,686
Market Volatility Contingency	2.0 %	\$198,918
Solar/Green Energy	1.5 %	\$152,173
Escalation to 3Q2020	7.5 %	\$772,274
ESTIMATED TOTAL COST	\$674.95	\$11,069,250

Cannon Beach City Hall Facility

RV Park Site - Concept

Uniformat Level 3 Summary

Gross Floor Area: 16,400 SF
Rates Current At April 2019

Description		Cost/SF	Total Cost
A1010	Standard Foundations	\$5.39	\$88,400
A1020	Special Foundations	\$50.49	\$828,000
A1030	Slab on Grade	\$6.00	\$98,400
B1010	Floor Construction	\$22.50	\$369,000
B1020	Roof Construction	\$14.22	\$233,200
B2010	Exterior Walls	\$49.71	\$815,185
B2020	Exterior Windows	\$10.16	\$166,650
B2030	Exterior Doors	\$3.00	\$49,200
B3010	Roof Coverings	\$13.00	\$213,200
C1010	Partitions	\$18.00	\$295,200
C1020	Interior Doors	\$8.00	\$131,200
C1030	Specialties	\$9.11	\$149,340
C2010	Stair Construction	\$2.44	\$40,000
C3010	Wall Finishes	\$8.84	\$144,976
C3020	Floor Finishes	\$9.00	\$147,600
C3030	Ceiling Finishes	\$13.44	\$220,480
D1010	Elevators and Lifts	\$5.49	\$90,000
D2010	Plumbing Fixtures	\$14.00	\$229,600
D2040	Rain Water Drainage	\$1.85	\$30,340
D3060	Controls & Instrumentation	\$4.00	\$65,600
D3090	Other HVAC Systems and Equipment	\$38.00	\$623,200
D4040	Sprinklers	\$5.00	\$82,000
D5010	Electrical Service & Distribution	\$12.35	\$202,540
D5020	Lighting & Branch Wiring	\$16.00	\$262,400
D5030	Communications & Security	\$12.60	\$206,640
E1090	Other Equipment	\$0.61	\$10,000
E2010	Fixed Furnishings	\$12.49	\$204,880
E2020	Moveable Furnishings		Excl.
G1020	Site Demolition & Relocations	\$8.22	\$134,763
G1030	Site Earthwork	\$15.90	\$260,740
G2010	Roadways	\$0.18	\$3,000
G2020	Parking Lots	\$7.22	\$118,442
G2030	Pedestrian Paving	\$3.05	\$50,000
G2040	Site Development	\$3.26	\$53,425
G2050	Landcaping	\$6.55	\$107,396
G3010	Water Supply	\$0.41	\$6,800
G3020	Sanitary Sewer	\$0.30	\$5,000

Cannon Beach City Hall Facility

RV Park Site - Concept

Unifomat Level 3 Summary

Gross Floor Area: 16,400 SF
Rates Current At April 2019

Description		Cost/SF	Total Cost
G3030	Storm Sewer	\$0.30	\$5,000
G4020	Site Lighting	\$1.77	\$28,996
G4090	Other Site Electrical Utilities	\$1.22	\$20,000
ESTIMATED NET COST		\$414.07	\$6,790,793
MARGINS & ADJUSTMENTS			
Preconstruction Fee		0.9 %	\$61,117
Location Factor		4.0 %	\$274,077
General Conditions		10.0 %	\$712,599
Bonds & Insurance		3.0 %	\$235,158
Overhead & Profit		4.0 %	\$322,950
Design Contingency		15.0 %	\$1,259,505
CMGC Contingency		3.0 %	\$289,686
Market Volatility Contingency		2.0 %	\$198,918
Solar/Green Energy		1.5 %	\$152,173
Escalation to 3Q2020		7.5 %	\$772,274
ESTIMATED TOTAL COST		\$674.95	\$11,069,250

2.00 Basis of Estimate

Cannon Beach City Hall Facility

RV Park Site - Concept

Project Details

Description

Basis of Estimate

The project consists of an option for a new City Hall building in Cannon Beach, Oregon and associated sitework at the proposed RV Park Site near Elk Land Drive and Haskell Lane.

Items Specifically Included

ESTIMATE PRICING:

- . Pricing is based on Construction Costs as of April 2019.
- . Margins and Adjustments are included in the estimate.
- . Items included or excluded are detailed in the estimate. Other assumptions, inclusions and exclusions are listed below.

GROSS FLOOR AREA:

- . City Hall at RV Park Site - 16,400 SF

The following assumptions have been made in the preparation of this estimate:

- . The works will be carried out during normal working hours.
- . The Contractor will be required to pay prevailing wage rates.
- . Resources are available locally.

ITEMS SPECIFICALLY INCLUDED:

- . Please note where allowances have been made, we would request the Design Team and Owner to review the sum to ensure the allowance meets their intent.
- . Sub-Contractors Overheads and Profit are included in the unit rates.

The following items have been specifically included in Margins and Adjustments:

- . Preconstruction Fee (0.9%)
- . Location Factor (4%)
- . General Conditions (10%)

Cannon Beach City Hall Facility

RV Park Site - Concept

Project Details

Description
<div> <div>.</div> <div>Bonds & Insurance (3%)</div> </div> <div> <div>.</div> <div>Overhead & Profit (4%)</div> </div> <div> <div>.</div> <div>Design Contingency (15%)</div> </div> <div> <div>.</div> <div>CMGC Contingency (3%)</div> </div> <div> <div>.</div> <div>Market Volatility Contingency (2%)</div> </div> <div> <div>.</div> <div>Solar/Green Energy (1.5%)</div> </div> <div> <div>.</div> <div>Escalation to 3Q2020 (7.5%)</div> </div>
<div> <div>Items Specifically Excluded</div> <div>ITEMS SPECIFICALLY EXCLUDED:</div> <div> <div>.</div> <div>Items marked as "Excl." in the estimate.</div> </div> <div> <div>.</div> <div>Shiftwork or overtime working or acceleration.</div> </div> <div> <div>.</div> <div>Double handling or materials due to site access restrictions.</div> </div> <div> <div>.</div> <div>Delays or working restrictions on the Contractor.</div> </div> <div> <div>.</div> <div>Abatement of any type</div> </div> <div> <div>.</div> <div>Underpinning of adjacent structures.</div> </div> <div> <div>.</div> <div>Shoring and propping to adjacent buildings.</div> </div> <div> <div>.</div> <div>Rock or concrete excavation.</div> </div> <div> <div>.</div> <div>Underground services encountered during excavation.</div> </div> <div> <div>.</div> <div>De-watering required during excavation other than surface water.</div> </div> <div> <div>.</div> <div>Assumes disposal of materials to a local dump only.</div> </div> <div> <div>.</div> <div>Allow for improvements to existing site where shown.</div> </div> <div> <div>.</div> <div>Fireproofing steel.</div> </div> <div> <div>.</div> <div>Walls coverings besides that shown in estimate.</div> </div> <div> <div>.</div> <div>Moveable book cases to classrooms.</div> </div> <div> <div>.</div> <div>Audio visual projectors.</div> </div> </div>

Cannon Beach City Hall Facility

RV Park Site - Concept

Project Details

Description

- . Interior Landscaping.
- . Loose furniture, FF&E & equipment.
- . The affects of potential unfair Contract Conditions which may affect Bid pricing.
- . Building & Statutory Industry Fringe Benefits.
- . Statutory Authorities' charges, contributions (and compliance orders).
- . The implications of proposed Construction legislation which may occur during the Construction period.
- . Lack of competition amongst Sub-Contractors bidding the Project
- . Unavailability of local resources to undertake specific trades and the affect on bid pricing from non-regional bidders.
- . Uncompetitive bidding due to the complexity of the project Sub-Contractors work loads.
- . Abnormal changes in market conditions affecting our assessment of escalation.
- . Construction Management Fees.
- . Owner's Contingency & Insurances.
- . Development Soft Costs including; Land, Financing and Legal costs.

Documents

DESIGN DETAILS USED FOR THE ESTIMATE:

This estimate is based upon measured quantities and built-up rates prepared from the following information:

Architectural Details provided by SRG Partnership

April 18th, 2019

- . Conceptual site sketch, aerial site photography, and narrative.
- . Where information was insufficient, assumptions and allowances were made based on conversations with the architect and other consultants.

3.00 Estimate Detail

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 TWO STORY BUILDING

GFA: 16,400 SF Cost/SF: \$368.51

Rates Current At April 2019

Description	Unit	Qty	Rate	Total
A10 Foundations				
A1010 Standard Foundations				
151 Elevator pit, complete incl. waterproofing	EA	1	20,000.00	20,000
96 Premium for excavation & haul off of contaminated soils	CY	912	75.00	68,400
Standard Foundations			\$5.39/SF	\$88,400
A1020 Special Foundations				
94 Matt foundation with tension anchors	SF	8,200	40.00	328,000
95 Soil grout mixing - Allowance	Item			500,000
Special Foundations			\$50.49/SF	\$828,000
A1030 Slab on Grade				
6 Slab on grade, incl. base course and vapor barrier	SF	8,200	12.00	98,400
Slab on Grade			\$6.00/SF	\$98,400
Foundations			\$61.88/SF	\$1,014,800
B10 Superstructure				
B1010 Floor Construction				
97 Post-tensioned concrete floor slab and columns to 2nd Floors	SF	8,200	45.00	369,000
Floor Construction			\$22.50/SF	\$369,000
B1020 Roof Construction				
8 Concrete moment frame	LS	1	20,000.00	20,000
7 Wood roof framing and sheathing	SF	8,200	26.00	213,200
Roof Construction			\$14.22/SF	\$233,200
Superstructure			\$36.72/SF	\$602,200
B20 Exterior Enclosure				
B2010 Exterior Walls				
9 Allowance for exterior building signage	Item			10,000
155 Exterior wall assembly, 1st Floor; cedar shake shingles, drainage mat, weather barrier, sheathing, CF metal stud framing (with breakaway capability), batt insulation, vapor barrier, painted gyp board to inside face of exterior wall, flashings/sealants	SF	5,553	80.00	444,240
11 Exterior wall assembly, 2nd Floor; cedar shake shingles, drainage mat, weather barrier, sheathing, wood stud framing, batt insulation, vapor barrier, painted gyp board to inside face of exterior wall, flashings/sealants	SF	5,553	65.00	360,945
Exterior Walls			\$49.71/SF	\$815,185
B2020 Exterior Windows				
12 Wood windows (assumes 20% of exterior facade)	SF	2,222	75.00	166,650
Exterior Windows			\$10.16/SF	\$166,650

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Unformat Level 2/Unformat Level 3 Item

B RV PARK SITE

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$368.51

Rates Current At April 2019

Description	Unit	Qty	Rate	Total
B2030 Exterior Doors				
14 Exterior doors	SF	16,400	3.00	49,200
Exterior Doors			\$3.00/SF	\$49,200
Exterior Enclosure			\$62.87/SF	\$1,031,035
B30 Roofing				
B3010 Roof Coverings				
18 Skylights - None included	Item			Excl.
19 Low-slope membrane roof system	SF	8,200	26.00	213,200
Roof Coverings			\$13.00/SF	\$213,200
Roofing			\$13.00/SF	\$213,200
C10 Interior Construction				
C1010 Partitions				
23 Partitions	SF	16,400	18.00	295,200
Partitions			\$18.00/SF	\$295,200
C1020 Interior Doors				
24 Interior doors and glazing	SF	16,400	8.00	131,200
Interior Doors			\$8.00/SF	\$131,200
C1030 Specialties				
30 Premium for specialties in police program	SF	3,816	15.00	57,240
31 Specialties; markerboards, tackboards, code/wayfinding, signage, corner/wall protection, fire extinguisher cabinets	SF	16,400	4.50	73,800
32 Toilet/locker room fitments	SF	732	25.00	18,300
Specialties			\$9.11/SF	\$149,340
C2010 Stair Construction				
143 Stairs	Flight	2	20,000.00	40,000
Stair Construction			\$2.44/SF	\$40,000
Interior Construction			\$37.55/SF	\$615,740
C30 Interior Finishes				
C3010 Wall Finishes				
33 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
107 Allowance for upgraded/higher durability finishes to Police spaces	SF	3,816	6.00	22,896
36 Wall finishes	SF	16,400	6.00	98,400
Wall Finishes			\$8.84/SF	\$144,976
C3020 Floor Finishes				
37 Floor finishes	SF	16,400	9.00	147,600
Floor Finishes			\$9.00/SF	\$147,600

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$368.51

Rates Current At April 2019

Description	Unit	Qty	Rate	Total
C3030 Ceiling Finishes				
43 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
42 Ceiling finishes	SF	16,400	12.00	196,800
Ceiling Finishes			\$13.44/SF	\$220,480
Interior Finishes			\$31.28/SF	\$513,056
D10 Conveying				
D1010 Elevators and Lifts				
108 Elevator	Stop	2	45,000.00	90,000
Elevators and Lifts			\$5.49/SF	\$90,000
Conveying			\$5.49/SF	\$90,000
D20 Plumbing				
D2010 Plumbing Fixtures				
44 Plumbing fixtures and pipework	SF	16,400	14.00	229,600
Plumbing Fixtures			\$14.00/SF	\$229,600
D2040 Rain Water Drainage				
45 Rainwater drainage	SF	16,400	1.85	30,340
Rain Water Drainage			\$1.85/SF	\$30,340
Plumbing			\$15.85/SF	\$259,940
D30 HVAC				
D3060 Controls & Instrumentation				
148 DDC Controls--assumes open source bidding	SF	16,400	4.00	65,600
Controls & Instrumentation			\$4.00/SF	\$65,600
D3090 Other HVAC Systems and Equipment				
46 HVAC	SF	16,400	38.00	623,200
Other HVAC Systems and Equipment			\$38.00/SF	\$623,200
HVAC			\$42.00/SF	\$688,800
D40 Fire Protection				
D4040 Sprinklers				
48 Fire sprinklers design build	SF	16,400	5.00	82,000
Sprinklers			\$5.00/SF	\$82,000
Fire Protection			\$5.00/SF	\$82,000
D50 Electrical				
D5010 Electrical Service & Distribution				
49 Electrical service and and distribution	SF	16,400	12.35	202,540
Electrical Service & Distribution			\$12.35/SF	\$202,540

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$368.51
Rates Current At April 2019

Description	Unit	Qty	Rate	Total
D5020 Lighting & Branch Wiring				
50 Lighting and branch wiring	SF	16,400	16.00	262,400
Lighting & Branch Wiring			\$16.00/SF	\$262,400
D5030 Communications & Security				
137 Audio visual systems--Backbone allowance--assumes flat screens, projectors or other equipment will be OFCI	SF	16,400	1.00	16,400
140 Distributed antenna system - allowance	SF	16,400	0.80	13,120
141 Fire alarm system	SF	16,400	3.00	49,200
136 Public Address, Intercom and clock systems with IP addressable features--allowance	SF	16,400	2.65	43,460
139 Security system--Includes CCTV and Access Control	SF	16,400	2.65	43,460
138 Telecommunications--includes outlets, floor boxes in conference/meeting rooms, and MDF/IDF buildout	SF	16,400	2.50	41,000
Communications & Security			\$12.60/SF	\$206,640
Electrical			\$40.95/SF	\$671,580
E10 Equipment				
E1090 Other Equipment				
52 A/V equipment - By Owner	Item			Excl.
54 Allowance for kitchen equipment/residential appliances	Item			10,000
Other Equipment			\$0.61/SF	\$10,000
Equipment			\$0.61/SF	\$10,000
E20 Furnishings				
E2010 Fixed Furnishings				
114 Allowance for upgraded casework and millwork in Council Chambers spaces	SF	2,368	15.00	35,520
115 Allowance for upgraded/specialty casework and millwork in Police spaces	SF	3,816	10.00	38,160
55 Casework and furnishings	SF	16,400	8.00	131,200
Fixed Furnishings			\$12.49/SF	\$204,880
E2020 Moveable Furnishings				
60 Movable furnishings - By Owner	Item			Excl.
Moveable Furnishings				Excl.
Furnishings			\$12.49/SF	\$204,880

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 TWO STORY BUILDING (continued)

GFA: 16,400 SF Cost/SF: \$368.51

Rates Current At April 2019

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1030 Site Earthwork				
69 Building pad prep	SF	8,200	3.00	24,600
Site Earthwork			\$1.50/SF	\$24,600
Site Preparations			\$1.50/SF	\$24,600
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
78 Fire department connection	EA	1	1,800.00	1,800
Water Supply			\$0.11/SF	\$1,800
Site Civil/Mechanical Utilities			\$0.11/SF	\$1,800
G40 Site Electrical Utilities				
G4090 Other Site Electrical Utilities				
92 Emergency generator	Item			20,000
Other Site Electrical Utilities			\$1.22/SF	\$20,000
Site Electrical Utilities			\$1.22/SF	\$20,000
TWO STORY BUILDING			\$368.51/SF	\$6,043,631

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B2 SITEWORK

Rates Current At April 2019

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1020 Site Demolition & Relocations				
124 Allowance to demo (E) buildings, utilities to RV sites	Item			75,000
62 Demo hardscapes and softscapes	SF	47,810	1.25	59,763
Site Demolition & Relocations				\$134,763
G1030 Site Earthwork				
150 Allowance for site excavation, backfill, grading	SF	47,810	1.50	71,715
70 Erosion control	Item			15,000
154 Imported fill	CY	758	50.00	37,900
152 Large Tree removal - Qty is allowance	EA	25	500.00	12,500
132 Soil Stabilization (building pad covered by item #95 in A1020 Special Foundations)	SF	39,610	2.50	99,025
Site Earthwork				\$236,140
Site Preparations				\$370,903
G20 Site Improvements				
G2010 Roadways				
71 Patch back AC paving in roadway - Qty is allowance	SF	500	6.00	3,000
Roadways				\$3,000
G2020 Parking Lots				
121 AC paving, incl. base course	SF	14,498	6.00	86,988
135 Allowance for Bollards	EA	15	500.00	7,500
122 Concrete curb	LF	654	20.00	13,080
126 Directional & Wayfinding Signage	SF	14,498	0.50	7,249
123 Painting and striping	SF	14,498	0.25	3,625
Parking Lots				\$118,442
G2030 Pedestrian Paving				
75 Standard concrete paving, incl. base course - Qty is allowance	SF	5,000	10.00	50,000
Pedestrian Paving				\$50,000
G2040 Site Development				
76 Allowance for misc. site development, retaining walls, site furnishings, etc.	Item			20,000
149 Chainlink Fencing, 6'	LF	955	35.00	33,425
Site Development				\$53,425
G2050 Landcaping				
128 Allowance for Landscaping & Planting Areas (incl sub base)	SF	20,113	3.50	70,396
77 Allowance to repair/make good adjacent areas impacted by construction	Item			10,000

Cannon Beach City Hall Facility

RV Park Site - Concept

Location Unformat Level 2/Unformat Level 3 Item

B RV PARK SITE

B2 SITEWORK (continued)

Rates Current At April 2019

Description	Unit	Qty	Rate	Total
153 Trees	EA	36	750.00	27,000
Landcaping				\$107,396
Site Improvements				\$332,263
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
79 Allowance for potable water connection	EA	1	5,000.00	5,000
Water Supply				\$5,000
G3020 Sanitary Sewer				
120 Allowance for connection to sanitary sewer system	EA	1	5,000.00	5,000
Sanitary Sewer				\$5,000
G3030 Storm Sewer				
118 Allowance for connection to storm sewer system	EA	1	5,000.00	5,000
Storm Sewer				\$5,000
Site Civil/Mechanical Utilities				\$15,000
G40 Site Electrical Utilities				
G4020 Site Lighting				
90 Allowance for site lighting (including carparks & roadways)	SF	14,498	2.00	28,996
Site Lighting				\$28,996
Site Electrical Utilities				\$28,996
SITEWORK				\$747,162



CANNON BEACH CITY HALL FACILITY

**CANNON BEACH CITY HALL
RV PARKT SITE ONE-STORY OPTION - CONCEPT REV1**

May 15, 2019

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1.00 Estimate Summaries

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Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At May 2019

Location	GFA SF	Cost/SF	Total Cost
B RV PARK SITE			
B1 ONE STORY BUILDING	16,000	530.78	8,492,522
B2 SITEWORK			1,132,931
B - RV PARK SITE	16,000	\$601.59	\$9,625,453
ESTIMATED NET COST	16,000	\$601.59	\$9,625,453
MARGINS & ADJUSTMENTS			
Escalation to 3Q2020	7.5 %		\$721,909
ESTIMATED TOTAL COST	16,000	\$646.71	\$10,347,362

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Summary

GFA: Gross Floor Area
Rates Current At May 2019

Location	GFA SF	Cost/SF	Total Cost
B RV PARK SITE			
B1 ONE STORY BUILDING	16,000	350.05	5,600,766
B2 SITEWORK			747,162
B - RV PARK SITE	16,000	\$396.75	\$6,347,928
ESTIMATED NET COST	16,000	\$396.75	\$6,347,928
MARGINS & ADJUSTMENTS			
Preconstruction Fee	0.9 %		\$57,131
Location Factor	4.0 %		\$256,203
General Conditions	10.0 %		\$666,127
Bonds & Insurance	3.0 %		\$219,822
Overhead & Profit	4.0 %		\$301,889
Design Contingency	15.0 %		\$1,177,365
CMGC Contingency	3.0 %		\$270,794
Market Volatility Contingency	2.0 %		\$185,945
Solar/Green Energy	1.5 %		\$142,249
Escalation to 3Q2020	7.5 %		\$721,909
ESTIMATED TOTAL COST	16,000	\$646.71	\$10,347,362

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Uniformat Level 2 Summary

Gross Floor Area: 16,000 SF
Rates Current At May 2019

Description	Cost/SF	Total Cost
A10 Foundations	\$60.81	\$972,950
B10 Superstructure	\$27.30	\$436,800
B20 Exterior Enclosure	\$59.16	\$946,540
B30 Roofing	\$14.70	\$235,200
C10 Interior Construction	\$35.22	\$563,540
C30 Interior Finishes	\$31.39	\$502,256
D20 Plumbing	\$15.85	\$253,600
D30 HVAC	\$42.00	\$672,000
D40 Fire Protection	\$5.00	\$80,000
D50 Electrical	\$40.95	\$655,200
E10 Equipment	\$0.62	\$10,000
E20 Furnishings	\$12.60	\$201,680
G10 Site Preparations	\$26.26	\$420,103
G20 Site Improvements	\$20.77	\$332,263
G30 Site Civil/Mechanical Utilities	\$1.05	\$16,800
G40 Site Electrical Utilities	\$3.06	\$48,996
ESTIMATED NET COST	\$396.75	\$6,347,928
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$57,131
Location Factor	4.0 %	\$256,203
General Conditions	10.0 %	\$666,127
Bonds & Insurance	3.0 %	\$219,822
Overhead & Profit	4.0 %	\$301,889
Design Contingency	15.0 %	\$1,177,365
CMGC Contingency	3.0 %	\$270,794
Market Volatility Contingency	2.0 %	\$185,945
Solar/Green Energy	1.5 %	\$142,249
Escalation to 3Q2020	7.5 %	\$721,909
ESTIMATED TOTAL COST	\$646.71	\$10,347,362

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,000 SF
Rates Current At May 2019

Description	Cost/SF	Total Cost
A1010 Standard Foundations	\$17.56	\$280,950
A1020 Special Foundations	\$31.25	\$500,000
A1030 Slab on Grade	\$12.00	\$192,000
B1020 Roof Construction	\$27.30	\$436,800
B2010 Exterior Walls	\$45.74	\$731,890
B2020 Exterior Windows	\$10.42	\$166,650
B2030 Exterior Doors	\$3.00	\$48,000
B3010 Roof Coverings	\$14.70	\$235,200
C1010 Partitions	\$18.00	\$288,000
C1020 Interior Doors	\$8.00	\$128,000
C1030 Specialties	\$9.22	\$147,540
C3010 Wall Finishes	\$8.91	\$142,576
C3020 Floor Finishes	\$9.00	\$144,000
C3030 Ceiling Finishes	\$13.48	\$215,680
D2010 Plumbing Fixtures	\$14.00	\$224,000
D2040 Rain Water Drainage	\$1.85	\$29,600
D3060 Controls & Instrumentation	\$4.00	\$64,000
D3090 Other HVAC Systems and Equipment	\$38.00	\$608,000
D4040 Sprinklers	\$5.00	\$80,000
D5010 Electrical Service & Distribution	\$12.35	\$197,600
D5020 Lighting & Branch Wiring	\$16.00	\$256,000
D5030 Communications & Security	\$12.60	\$201,600
E1090 Other Equipment	\$0.62	\$10,000
E2010 Fixed Furnishings	\$12.60	\$201,680
E2020 Moveable Furnishings		Excl.
G1020 Site Demolition & Relocations	\$8.42	\$134,763
G1030 Site Earthwork	\$17.83	\$285,340
G2010 Roadways	\$0.19	\$3,000
G2020 Parking Lots	\$7.40	\$118,442
G2030 Pedestrian Paving	\$3.12	\$50,000
G2040 Site Development	\$3.34	\$53,425
G2050 Landcaping	\$6.71	\$107,396
G3010 Water Supply	\$0.42	\$6,800
G3020 Sanitary Sewer	\$0.31	\$5,000
G3030 Storm Sewer	\$0.31	\$5,000
G4020 Site Lighting	\$1.81	\$28,996

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Uniformat Level 3 Summary

Gross Floor Area: 16,000 SF
Rates Current At May 2019

Description	Cost/SF	Total Cost
G4090 Other Site Electrical Utilities	\$1.25	\$20,000
ESTIMATED NET COST	\$396.75	\$6,347,928
MARGINS & ADJUSTMENTS		
Preconstruction Fee	0.9 %	\$57,131
Location Factor	4.0 %	\$256,203
General Conditions	10.0 %	\$666,127
Bonds & Insurance	3.0 %	\$219,822
Overhead & Profit	4.0 %	\$301,889
Design Contingency	15.0 %	\$1,177,365
CMGC Contingency	3.0 %	\$270,794
Market Volatility Contingency	2.0 %	\$185,945
Solar/Green Energy	1.5 %	\$142,249
Escalation to 3Q2020	7.5 %	\$721,909
ESTIMATED TOTAL COST	\$646.71	\$10,347,362

2.00 Basis of Estimate

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Project Details

Description

Basis of Estimate

The project consists of an option for a new City Hall building in Cannon Beach, Oregon and associated sitework at the proposed RV Park Site near Elk Land Drive and Haskell Lane.

Items Specifically Included

ESTIMATE PRICING:

- . Pricing is based on Construction Costs as of May 2019.
- . Margins and Adjustments are included in the estimate.
- . Items included or excluded are detailed in the estimate. Other assumptions, inclusions and exclusions are listed below.

GROSS FLOOR AREA:

- . City Hall at RV Park Site - 16,000 SF

The following assumptions have been made in the preparation of this estimate:

- . The works will be carried out during normal working hours.
- . The Contractor will be required to pay prevailing wage rates.
- . Resources are available locally.

ITEMS SPECIFICALLY INCLUDED:

- . Please note where allowances have been made, we would request the Design Team and Owner to review the sum to ensure the allowance meets their intent.
- . Sub-Contractors Overheads and Profit are included in the unit rates.

The following items have been specifically included in Margins and Adjustments:

- . Preconstruction Fee (0.9%)
- . Location Factor (4%)
- . General Conditions (10%)

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Project Details

Description

- . Bonds & Insurance (3%)
- . Overhead & Profit (4%)
- . Design Contingency (15%)
- . CMGC Contingency (3%)
- . Market Volatility Contingency (2%)
- . Solar/Green Energy (1.5%)
- . Escalation to 3Q2020 (7.5%)

Items Specifically Excluded

ITEMS SPECIFICALLY EXCLUDED:

- . Items marked as "Excl." in the estimate.
- . Shiftwork or overtime working or acceleration.
- . Double handling or materials due to site access restrictions.
- . Delays or working restrictions on the Contractor.
- . Abatement of any type
- . Underpinning of adjacent structures.
- . Shoring and propping to adjacent buildings.
- . Rock or concrete excavation.
- . Underground services encountered during excavation.
- . De-watering required during excavation other than surface water.
- . Assumes disposal of materials to a local dump only.
- . Allow for improvements to existing site where shown.
- . Fireproofing steel.
- . Walls coverings besides that shown in estimate.
- . Moveable book cases to classrooms.
- . Audio visual projectors.

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Project Details

Description

- . Interior Landscaping.
- . Loose furniture, FF&E & equipment.
- . The affects of potential unfair Contract Conditions which may affect Bid pricing.
- . Building & Statutory Industry Fringe Benefits.
- . Statutory Authorities' charges, contributions (and compliance orders).
- . The implications of proposed Construction legislation which may occur during the Construction period.
- . Lack of competition amongst Sub-Contractors bidding the Project
- . Unavailability of local resources to undertake specific trades and the affect on bid pricing from non-regional bidders.
- . Uncompetitive bidding due to the complexity of the project Sub-Contractors work loads.
- . Abnormal changes in market conditions affecting our assessment of escalation.
- . Construction Management Fees.
- . Owner's Contingency & Insurances.
- . Development Soft Costs including; Land, Financing and Legal costs.

Documents

DESIGN DETAILS USED FOR THE ESTIMATE:

This estimate is based upon measured quantities and built-up rates prepared from the following information:

Architectural Details provided by SRG Partnership

April 18th, 2019

- . Conceptual site sketch, aerial site photography, and narrative.
- . Where information was insufficient, assumptions and allowances were made based on conversations with the architect and other consultants.

3.00 Estimate Detail

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE
B1 ONE STORY BUILDING

GFA: 16,000 SF Cost/SF: \$350.05
Rates Current At May 2019

Description	Unit	Qty	Rate	Total
A10 Foundations				
A1010 Standard Foundations				
2 Premium for excavation & haul off of contaminated soils	CY	1,186	75.00	88,950
3 Standard foundations	SF	16,000	12.00	192,000
Standard Foundations			\$17.56/SF	\$280,950
A1020 Special Foundations				
4 Allowance for soil stabilization/special foundations as needed	Item			500,000
Special Foundations			\$31.25/SF	\$500,000
A1030 Slab on Grade				
5 Slab on grade, incl. base course and vapor barrier	SF	16,000	12.00	192,000
Slab on Grade			\$12.00/SF	\$192,000
Foundations			\$60.81/SF	\$972,950
B10 Superstructure				
B1020 Roof Construction				
7 Wood roof framing and sheathing	SF	16,800	26.00	436,800
Roof Construction			\$27.30/SF	\$436,800
Superstructure			\$27.30/SF	\$436,800
B20 Exterior Enclosure				
B2010 Exterior Walls				
8 Allowance for exterior building signage	Item			10,000
9 Exterior wall assembly, 1st Floor; cedar shake shingles, drainage mat, weather barrier, sheathing, wood stud framing (NO breakaway capability), batt insulation, vapor barrier, painted gyp board to inside face of exterior wall, flashings/sealants	SF	11,106	65.00	721,890
Exterior Walls			\$45.74/SF	\$731,890
B2020 Exterior Windows				
10 Wood windows (assumes 20% of exterior facade)	SF	2,222	75.00	166,650
Exterior Windows			\$10.42/SF	\$166,650
B2030 Exterior Doors				
11 Exterior doors	SF	16,000	3.00	48,000
Exterior Doors			\$3.00/SF	\$48,000
Exterior Enclosure			\$59.16/SF	\$946,540
B30 Roofing				
B3010 Roof Coverings				
12 Asphalt shingle roof system, insulated (assumes sloped roof)	SF	16,800	14.00	235,200

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 ONE STORY BUILDING (continued)

GFA: 16,000 SF Cost/SF: \$350.05
Rates Current At May 2019

Description	Unit	Qty	Rate	Total
13 Skylights - None included	Item		Excl.	
Roof Coverings			\$14.70/SF	\$235,200
Roofing			\$14.70/SF	\$235,200
C10 Interior Construction				
C1010 Partitions				
14 Partitions	SF	16,000	18.00	288,000
Partitions			\$18.00/SF	\$288,000
C1020 Interior Doors				
15 Interior doors and glazing	SF	16,000	8.00	128,000
Interior Doors			\$8.00/SF	\$128,000
C1030 Specialties				
16 Premium for specialties in police program	SF	3,816	15.00	57,240
17 Specialties; markerboards, tackboards, code/wayfinding, signage, corner/wall protection, fire extinguisher cabinets	SF	16,000	4.50	72,000
18 Toilet/locker room fitments	SF	732	25.00	18,300
Specialties			\$9.22/SF	\$147,540
Interior Construction			\$35.22/SF	\$563,540
C30 Interior Finishes				
C3010 Wall Finishes				
20 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
21 Allowance for upgraded/higher durability finishes to Police spaces	SF	3,816	6.00	22,896
22 Wall finishes	SF	16,000	6.00	96,000
Wall Finishes			\$8.91/SF	\$142,576
C3020 Floor Finishes				
23 Floor finishes	SF	16,000	9.00	144,000
Floor Finishes			\$9.00/SF	\$144,000
C3030 Ceiling Finishes				
24 Allowance for upgraded finishes to Council Chambers spaces	SF	2,368	10.00	23,680
25 Ceiling finishes	SF	16,000	12.00	192,000
Ceiling Finishes			\$13.48/SF	\$215,680
Interior Finishes			\$31.39/SF	\$502,256
D20 Plumbing				
D2010 Plumbing Fixtures				
27 Plumbing fixtures and pipework	SF	16,000	14.00	224,000
Plumbing Fixtures			\$14.00/SF	\$224,000

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 ONE STORY BUILDING (continued)

GFA: 16,000 SF Cost/SF: \$350.05
Rates Current At May 2019

Description	Unit	Qty	Rate	Total
D2040 Rain Water Drainage				
28 Rainwater drainage	SF	16,000	1.85	29,600
Rain Water Drainage			\$1.85/SF	\$29,600
Plumbing			\$15.85/SF	\$253,600
D30 HVAC				
D3060 Controls & Instrumentation				
29 DDC Controls--assumes open source bidding	SF	16,000	4.00	64,000
Controls & Instrumentation			\$4.00/SF	\$64,000
D3090 Other HVAC Systems and Equipment				
30 HVAC	SF	16,000	38.00	608,000
Other HVAC Systems and Equipment			\$38.00/SF	\$608,000
HVAC			\$42.00/SF	\$672,000
D40 Fire Protection				
D4040 Sprinklers				
31 Fire sprinklers design build	SF	16,000	5.00	80,000
Sprinklers			\$5.00/SF	\$80,000
Fire Protection			\$5.00/SF	\$80,000
D50 Electrical				
D5010 Electrical Service & Distribution				
32 Electrical service and and distribution	SF	16,000	12.35	197,600
Electrical Service & Distribution			\$12.35/SF	\$197,600
D5020 Lighting & Branch Wiring				
33 Lighting and branch wiring	SF	16,000	16.00	256,000
Lighting & Branch Wiring			\$16.00/SF	\$256,000
D5030 Communications & Security				
34 Audio visual systems--Backbone allowance--assumes flat screens, projectors or other equipment will be OFCI	SF	16,000	1.00	16,000
35 Distributed antenna system - allowance	SF	16,000	0.80	12,800
36 Fire alarm system	SF	16,000	3.00	48,000
37 Public Address, Intercom and clock systems with IP addressable features--allowance	SF	16,000	2.65	42,400
38 Security system--Includes CCTV and Access Control	SF	16,000	2.65	42,400

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 ONE STORY BUILDING (continued)

GFA: 16,000 SF Cost/SF: \$350.05
Rates Current At May 2019

Description	Unit	Qty	Rate	Total
39 Telecommunications--includes outlets, floor boxes in conference/meeting rooms, and MDF/IDF buildout	SF	16,000	2.50	40,000
Communications & Security			\$12.60/SF	\$201,600
Electrical			\$40.95/SF	\$655,200
E10 Equipment				
E1090 Other Equipment				
40 A/V equipment - By Owner	Item			Excl.
41 Allowance for kitchen equipment/residential appliances	Item			10,000
Other Equipment			\$0.62/SF	\$10,000
Equipment			\$0.62/SF	\$10,000
E20 Furnishings				
E2010 Fixed Furnishings				
42 Allowance for upgraded casework and millwork in Council Chambers spaces	SF	2,368	15.00	35,520
43 Allowance for upgraded/specialty casework and millwork in Police spaces	SF	3,816	10.00	38,160
44 Casework and furnishings	SF	16,000	8.00	128,000
Fixed Furnishings			\$12.60/SF	\$201,680
E2020 Moveable Furnishings				
45 Movable furnishings - By Owner	Item			Excl.
Moveable Furnishings				Excl.
Furnishings			\$12.60/SF	\$201,680
G10 Site Preparations				
G1030 Site Earthwork				
49 Building pad prep	SF	16,400	3.00	49,200
Site Earthwork			\$3.08/SF	\$49,200
Site Preparations			\$3.08/SF	\$49,200
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
67 Fire department connection	EA	1	1,800.00	1,800
Water Supply			\$0.11/SF	\$1,800
Site Civil/Mechanical Utilities			\$0.11/SF	\$1,800

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B1 ONE STORY BUILDING (continued)

GFA: 16,000 SF Cost/SF: \$350.05

Rates Current At May 2019

Description	Unit	Qty	Rate	Total
G40 Site Electrical Utilities				
G4090 Other Site Electrical Utilities				
71 Emergency generator	Item	20,000		
<i>Other Site Electrical Utilities</i>			<i>\$1.25/SF</i>	<i>\$20,000</i>
<i>Site Electrical Utilities</i>			<i>\$1.25/SF</i>	<i>\$20,000</i>
ONE STORY BUILDING			\$350.05/SF	\$5,600,766

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Unifomat Level 2/Unifomat Level 3 Item

B RV PARK SITE

B2 SITEWORK

Rates Current At May 2019

Description	Unit	Qty	Rate	Total
G10 Site Preparations				
G1020 Site Demolition & Relocations				
46 Allowance to demo (E) buildings, utilities to RV sites	Item			75,000
47 Demo hardscapes and softscapes	SF	47,810	1.25	59,763
Site Demolition & Relocations				\$134,763
G1030 Site Earthwork				
48 Allowance for site excavation, backfill, grading	SF	47,810	1.50	71,715
50 Erosion control	Item			15,000
51 Imported fill	CY	758	50.00	37,900
52 Large Tree removal - Qty is allowance	EA	25	500.00	12,500
53 Soil Stabilization (building pad covered by item #95 in A1020 Special Foundations)	SF	39,610	2.50	99,025
Site Earthwork				\$236,140
Site Preparations				\$370,903
G20 Site Improvements				
G2010 Roadways				
54 Patch back AC paving in roadway - Qty is allowance	SF	500	6.00	3,000
Roadways				\$3,000
G2020 Parking Lots				
55 AC paving, incl. base course	SF	14,498	6.00	86,988
56 Allowance for Bollards	EA	15	500.00	7,500
57 Concrete curb	LF	654	20.00	13,080
58 Directional & Wayfinding Signage	SF	14,498	0.50	7,249
59 Painting and striping	SF	14,498	0.25	3,625
Parking Lots				\$118,442
G2030 Pedestrian Paving				
60 Standard concrete paving, incl. base course - Qty is allowance	SF	5,000	10.00	50,000
Pedestrian Paving				\$50,000
G2040 Site Development				
61 Allowance for misc. site development, retaining walls, site furnishings, etc.	Item			20,000
62 Chainlink Fencing, 6'	LF	955	35.00	33,425
Site Development				\$53,425
G2050 Landscaping				
63 Allowance for Landscaping & Planting Areas (incl sub base)	SF	20,113	3.50	70,396
64 Allowance to repair/make good adjacent areas impacted by construction	Item			10,000

Cannon Beach City Hall Facility

RV Parkt Site One-Story Option - Concept Rev1

Location Unformat Level 2/Unformat Level 3 Item

B RV PARK SITE

B2 SITEWORK (continued)

Rates Current At May 2019

Description	Unit	Qty	Rate	Total
65 Trees	EA	36	750.00	27,000
Landcaping				\$107,396
Site Improvements				\$332,263
G30 Site Civil/Mechanical Utilities				
G3010 Water Supply				
66 Allowance for potable water connection	EA	1	5,000.00	5,000
Water Supply				\$5,000
G3020 Sanitary Sewer				
68 Allowance for connection to sanitary sewer system	EA	1	5,000.00	5,000
Sanitary Sewer				\$5,000
G3030 Storm Sewer				
69 Allowance for connection to storm sewer system	EA	1	5,000.00	5,000
Storm Sewer				\$5,000
Site Civil/Mechanical Utilities				\$15,000
G40 Site Electrical Utilities				
G4020 Site Lighting				
70 Allowance for site lighting (including carparks & roadways)	SF	14,498	2.00	28,996
Site Lighting				\$28,996
Site Electrical Utilities				\$28,996
SITEWORK				\$747,162

Email from Jason Thompson, Catena Engineers to Lisa Petterson, SRG
Dated 12, 28, 2019

Lisa –

Please find attached our concept design for the South Wind site, including the use of 48-inch-diameter drilled shafts. *This solution disregards the potential landslide risk.* Using 2016 unit prices from our KCRB project, approximate costs for the drilled shafts **only** are:

48"-dia x 90-ft drilled shafts = (28) x \$400/LF x 90ft = \$ 1,008,000
Mobilization = \$ 80,000

TOTAL = \$ 1,088,000

The \$400/LF unit cost reflects the installed costs of a heavily-reinforced 48-inch shaft with temporary casing to prevent cave-in during installation. I have not attempted to escalate prices to reflect a presumed 2020 date of construction, nor have I tried to adjust costs to reflect mobilization in Cannon Beach vs. Portland. For comparison sake, the 24-inch-diameter shafts on the KCRB project cost \$134/LF, roughly 1/3rd of the 48-inch-diameter shafts.

I hope this helps.

Thanks, and Happy New Year!

jason thompson, pe, se, LEED AP
catena consulting engineers
1500 ne irving suite 412
portland, oregon 97232
t 503.467.4980 | m 503.314.5155
a connected series of related elements

Excerpt from Email between Dan Junge, RLB and Lisa Petterson, SRG,
Dated May 14, 2019

Lisa,

See attached concept estimate for the 1 Story option on the RV site. Please note that we have kept the full \$500k allowance for subgrade improvements per our call last week. That is a generous allowance and hopefully isn't totally necessary. Also, we assumed that this one story option would have a sloped roof and so we changed the roofing type to a premium 40 year asphalt shingle roof. Please let us know if you have any questions or comments.

Also for the City Hall Site, our previous 2 story option costs would be applicable for the Option C site. However, the site costs themselves would be reduced because of a reduction in the assumptions around sitework. Please adjust the following line items:

G1020 Site Demolition increase to \$108,600 based on increased site area

G1030 Site Earthwork decrease to \$120,000 based on better soil assumptions

G2010 Roadways would decrease to \$0 since no work is proposed for Evergreen Avenue.

Dan Junge, CEP

Associate

Rider Levett Bucknall

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March 14, 2019

6192 GEOTECHNICAL FEASIBILITY STUDY

City of Cannon Beach
163 East Gower Street
Cannon Beach, OR 97110

Attention: Bruce St. Denis, City Manager

**SUBJECT: Geotechnical Feasibility Study
New Cannon Beach City Hall
South Wind Site
Cannon Beach, Oregon**

As requested, GRI completed a geotechnical-feasibility study for the proposed new city hall at the South Wind site in Cannon Beach, Oregon. The purpose of our study was to evaluate, on a preliminary basis, the subsurface conditions and geologic hazards in the project area and how these conditions and hazards may affect future development of the property with a new city hall. The feasibility study included a review of available geotechnical and geologic information for the site and surrounding area, subsurface explorations, installation of field instrumentation, laboratory testing, and limited engineering analyses and seismic studies. This feasibility report summarizes our findings and presents our preliminary conclusions regarding development of the property.

BACKGROUND INFORMATION

Geologic and environmental studies have been completed by others at the site. The following reports, letters, and memoranda were reviewed, and relevant information was used for this study:

Horning Geosciences, September 13, 2013, "Evaluation of Geologic Hazards for a 55-Acre Site in Tolovana Park, East of Highway 101; Map 4 10 6B, Northwest Quadrant of Tax Lot 800," prepared for the City of Cannon Beach.

Assessment Associates, Inc., October 4, 2013, "A Phase I Environmental Site Assessment, 55-Acre Partially-Forested Undeveloped, Campbell Group, LLC Tract Property, North 1/2 Section 6, Township 4 North, Range 10 West, Clatsop County, Oregon," prepared for the City of Cannon Beach.

Horning Geosciences, October 4, 2013, "Addendum to- Evaluation of Geologic Hazards for a 55-Acre Site in Tolovana Park, East of Highway 101; Map 4 10 6B, Northwest Quadrant of Tax Lot 800," prepared for the City of Cannon Beach.

PROJECT DESCRIPTION

We understand the City of Cannon Beach (City) is planning to construct a new city hall building and considering the South Wind site as one location for the new city hall. Information provided by SRG Partnership, Inc., the project architect, indicates the preferred building area is generally located in the northern portion of the site and shown as an orange rectangle on the Site Plan, Figure 2. Our discussions

with the City and the project team indicate the new city hall building will be designed to be seismically resilient following a magnitude (M)9.0 Cascadia Subduction Zone (CSZ) event. We understand the new city hall building will be approximately 16,000 sq ft and consist of an at-grade structure with one to two above-grade levels. Conceptual information provided by Catena, the project structural engineer, indicates the structure will have maximum column loads on the order of 200 kips, and structural support will be provided by 4-ft-diameter, drilled shafts. We anticipate the project will be designed in accordance with the 2019 Oregon Structural Specialty Code (OSSC), which will reference the new 2016 American Society of Civil Engineers (ASCE) 7-16 document titled “Minimum Design Loads and Associated Criteria for Buildings and Other Structures” (ASCE 7-16).

SITE DESCRIPTION

General

The South Wind site consists of 55 acres of undeveloped land in Tolovana Park generally bordered by a residential subdivision on the north; the Coastal Mountain Range, with heavily forested and recently logged parcels of property, on the east and south; and U.S. Highway 101 on the west. Our review of the Oregon Department of Geology and Mineral Industries (DOGAMI) Statewide Landslide Information Layer of Oregon (SLIDO) maps indicates the South Wind site is located within a large area of mapped landslide topography. Historical information indicates the property was heavily forested prior to logging in the mid-1950s, and portions of the property remain heavily forested. Review of available light detection and ranging (lidar) and satellite imagery indicates the ground surface gently slopes downward from southeast to northwest across the building area towards Highway 101 at about 10H:1V (Horizontal to Vertical) or flatter.

Geologic Units and Landslides

Published geologic mapping indicates the South Wind site is underlain by sedimentary and volcanic rocks of Quaternary and Miocene age, see the Local Geologic Map, Figure 3 (Niem and Niem, 1985). The rock units include, from youngest to oldest, Quaternary Coastal Marine Terrace, Miocene marine sedimentary rocks of the Astoria Formation, and Miocene volcanic rocks of the Columbia River Basalt Group (Niem and Niem, 1985).

In general, marine terrace deposits are formed by a combination of tectonic coastal uplift and sea-level fluctuations. The Coastal Marine Terrace Deposits are underlain by massive to laminated siltstone of the Cannon Beach member of the Astoria Formation. Regionally, this unit also contains layers of sandstone. The volcanic rock that underlies the site along the eastern and southern property boundaries has been mapped as an intrusive sill of Wanapum Basalt, which is part of the Columbia River Basalt Group (Niem and Niem, 1985).

The Coastal Marine Terrace and Astoria Formation rock units at the South Wind site have been modified by landslide processes (SLIDO; Schlicker et al, 1972). In detail, the South Wind site is located within a mapped landslide with movement estimated within about the last 100 years, as referenced on the engineering geologic map of the Cannon Beach quadrangle (Schlicker et al., 1972). Review of available satellite and lidar imagery indicate the ground surface at the South Wind site has an irregular, hummocky topography, with moderate to steep slopes generally ranging from about 10 to 45%. In localized areas, the ground-surface topography displays typical landslide-related characteristics.

The SLIDO mapping shows three areas of documented localized instability and/or landslides along Highway 101. These three areas coincide with roadway fills and culverts that pass surface water from the site area to locations west of Highway 101.

GEOLOGIC RECONNAISSANCE

An Oregon-certified engineering geologist from GRI completed a walking geologic reconnaissance of the site on December 4, 2018, to conduct a visual examination of the geologic and geomorphologic conditions exposed at the ground surface, such as soils and rock exposures, indications of surficial slope instability, and site drainages, seeps, and springs. Observations made during our site reconnaissance are shown on the Geologic Reconnaissance Map, Figure 4.

A gravel access road coming off Highway 101 enters the South Wind property from the south and traverses two unnamed creeks heading north. This road ends in a gentle (less than 15°) west-sloping open area cleared of the large conifer trees present in the northern and southern drainages of the site. The open area is the preferred location for the new city hall building. Prior to reaching the open area, the road construction appears to have required a rock cut on the south side of an unnamed creek. Siltstone was observed in an exposed cut slope of the road and appeared to consist of light- to dark-brown, slightly to moderately weathered, thin to very thin bedded siltstone. Northeast of the rock cut, a concave-shaped, steeply sloping ridge is present above an area of hummocky topography. The hummocky topography is located to the southeast and northwest of the road. The curved ridge and hummocky topography suggest a likely deep-seated (> 15 ft in depth) landslide crosses the road and appears to encompass both sides of the unnamed creek in this area. Water flowing in the creek bottom, from higher elevations in the east to the lower elevations to the west, crosses the road from the east in a culvert. Water flow from the west end of the culvert disappears into the ground a short distance west of the culvert outlet. The stream again reappears a short distance downstream, in an area of less gradient. Another unnamed creek channel is located north of the access road and open area being considered for the new city hall building. The creek channel in the north is broad with a poorly defined channel, creating ponding and marsh-like segments in the creek bottom.

The hillslopes above the unnamed drainages located in the southern portion of the site show relatively young, localized slumping and slope instability at several locations along both the north and south sides of the creeks. These localized areas are relatively young compared to the larger, older landslide areas of shown on DOGAMI maps. Some of the slope instability observed may be considered relatively deep seated, with failure planes likely greater than 15 ft in depth. The failures form roughly oval-shaped mounds of soil material below a slightly curved slope crest. Mature conifer trees are growing in the landslide debris. In addition, soil accumulation at the base of the southern slope of the unnamed drainage in the northern portion of the site is indicative of shallow slope failures. Thick vegetation in this area prevented direct observation of the material and channel bottom in the northern portion of the site. The approximate locations of these younger landslide deposits disclosed during our geologic reconnaissance are shown on Figure 4.

GRI walked along the Highway 101 frontage along the west portion of the site. Obvious indications of large-scale, deep-seated slope instability affecting the road were not observed. Light seepage of groundwater to the ground surface was observed at three locations along the western boundary of the site along Highway 101. As previously noted, localized, historical instability to the Highway 101 roadway likely associated with settlement of roadway fill near three culverts is reported on the SLIDO mapping.

FIELD EXPLORATIONS

General

Subsurface materials and conditions at the site were investigated between December 3 and 10, 2018, with three borings, designated B-1 through B-3. The borings were advanced to depths of about 100 to 151.5 ft below existing site grades at the approximate locations shown on Figure 2. Following completion of the borings, two vibrating-wire piezometers equipped with data loggers were installed in each of the borings at depths ranging from 50 to 150 ft for continuous measurement of piezometric (water) pressures, and inclinometer casings were installed to the base of the boreholes of borings B-2 and B-3 to monitor lateral ground movement. The drilling, sampling, and installation of instrumentation were observed by an experienced member of GRI's geotechnical engineering and/or geology staff, who maintained a log of the materials and conditions disclosed during the course of the work. Subsurface information from the explorations completed by GRI for this study are provided in Appendix A for reference.

Mud-Rotary Borings

Borings B-1 and B-3 were advanced to depths of about 100 and 151.5 ft, respectively, using mud-rotary techniques with a track-mounted drill rig provided and operated by Holt Services, Inc., of Vancouver, Washington. Disturbed and undisturbed soil samples were generally obtained from the borings at 2.5- to 5-ft intervals of depth in the upper 70 to 80 ft and 10-ft intervals below this depth. Disturbed soil samples were obtained using a 2-in.-outside-diameter (O.D.) standard split-spoon sampler or a larger, 3-in.-O.D. California-modified split-spoon (CMS) sampler. The CMS sampler was used when sample recovery was not possible with the split-spoon sampler due to the particle size of the material being sampled. Standard Penetration Tests (SPT) were conducted by driving the samplers into the soil a distance of 18 in. using a 140-lb hammer dropped 30 in. The number of blows required to drive the split-spoon sampler the last 12 in. is known as the Standard Penetration Resistance, or SPT N-value. The number of blows required to drive the CMS sampler the last 12 in. is denoted as the SPT N*-value. SPT N- and N*-values provide a measure of the relative density of granular soils and relative consistency of cohesive soils. Samples obtained from the borings were placed in airtight jars and returned to our laboratory for further classification and testing. In addition, relatively undisturbed soil samples were collected by pushing a 3-in.-O.D. Shelby tube into the undisturbed soil a maximum of 24 in. using the hydraulic ram of the drill rig. Where drilling refusal was encountered within the depth of interest, samples of rock were obtained using HQ rock coring techniques. The core samples were placed in boxes and returned to our laboratory for further examination and testing.

Logs of the mud-rotary borings and photographs of the rock cores are provided in Appendix A on Figures 1A and 3A and Figure 4A, respectively. Each log presents a summary of the various types of materials encountered in the borings and notes the depths at which the materials and/or characteristics of the materials change. To the right of the summary, the numbers and types of samples are indicated. Farther to the right, SPT N- and N*-values are shown graphically, along with natural moisture contents. The terms and symbols used to describe the materials encountered in the mud-rotary borings are defined in Tables 1A and 2A and on the attached legend.

Rotosonic Boring

Boring B-2 was advanced to a depth of about 140 ft using rotosonic drilling techniques with a track-mounted drill rig provided and operated by Yellow Jacket Drilling Services, LLC, of Portland, Oregon. Continuous 6-in.-diameter runs were obtained from the boring in 2- to 3-ft intervals and stored in flexible plastic tubing. The plastic tubing was opened in the field for visual classification, and digital photographs were taken of

each run. Representative grab soil samples were carefully examined in the field and saved in plastic bags for laboratory testing.

A log of the rotosonic boring and photographs of the runs are provided in Appendix A on Figure 2A and Figures 5A through 11A, respectively. Each log presents a summary of the various types of materials encountered in the boring and notes the depths at which the materials and/or characteristics of the materials change. To the right of the summary, the numbers and types of samples are indicated. The terms and symbols used to describe the materials encountered in the rotosonic boring are defined in Tables 1A and 2A and on the attached legend.

Inclinometer Instrumentation

Inclinometer casings 140 and 150 ft long were installed in the completed boreholes of borings B-2 and B-3, respectively. An inclinometer is a device that allows measurements to be made of subsurface lateral movements. An inclinometer casing consists of 2.75-in.- O.D., acrylonitrile butadiene styrene (ABS)-plastic casing with orthogonal grooves or slots that permit a calibrated instrument to be lowered to the bottom of the casing in a fixed orientation. When the ground surrounding the casing moves, the casing distorts above the zone of movement, and the orientation of the casing changes. The inclination, or vertical orientation, of the casing is monitored by lowering an electronic measuring device to the bottom of the grooved casing and obtaining readings at 2-ft intervals as the instrument is withdrawn. An initial set of readings serves as a “benchmark” and is commonly portrayed as the vertical axis on a plot of casing deflection versus depth. All subsequent readings are then referenced to the initial readings. By comparing relative movements at fixed depths over the length of the casing, zones of horizontal movement can be identified. The total, or cumulative, displacement with respect to the base of the casing is obtained by summing the relative displacements from the bottom to the top.

The inclinometers were installed by lowering the casing to the base of the borehole and filling the annular space surrounding the casing with a cement-bentonite slurry. The slurry was placed using tremie methods starting at the bottom of the borehole. The completed installation was protected at the ground surface with a steel monument set in concrete. Following installation, a benchmark reading of each inclinometer was taken on December 12, 2018, with subsequent readings taken on January 10 and February 8, 2019. The inclinometer benchmark and subsequent readings are provided on Figures 12A and 13A.

Vibrating Wire Piezometers

Vibrating-wire piezometers were installed at depths of 50 and 90 ft in borings B-1 and B-2 and at depths of 100 and 150 ft in boring B-3. A vibrating-wire piezometer is a device that allows measurements to be made of subsurface fluid pressures. The piezometer consists of a sensitive steel diaphragm to which a vibrating-wire element is connected. A filter is used to keep out solid particles and prevent damage to the sensitive diaphragm. Changing pressures cause the diaphragm to deflect, and this deflection is measured as a change in tension and frequency of vibration of the vibrating-wire element. The square of the vibration frequency is directly proportional to the pressure applied to the diaphragm. To read the piezometer, a pulse of varying frequency is applied to the piezometer and causes the wire to vibrate at its resonant frequency. After excitation ends, the wire continues to vibrate, and a signal is transmitted to a readout box, where it is conditioned and displayed. The data on the readout box can then be converted to a fluid pressure based on the calibration data supplied by the manufacturer.

The vibrating-wire piezometers were attached to the inclinometer casing or a sacrificial piece of polyvinyl chloride (PVC) pipe and lowered to the appropriate depths in the boreholes. The annular space surrounding the casing or PVC pipe was filled with a cement-bentonite slurry using tremie methods starting at the bottom of the borehole. The completed installation was protected at the ground surface with a steel monument set in concrete. Following installation, an initial reading of each piezometer was taken on December 12, 2018, and data loggers were attached to the piezometers to allow for continuous measurement of water pressures. The water pressures recorded in each piezometer over the monitoring period are provided on Figures 14A through 16A.

SUBSURFACE CONDITIONS

General

The geologic units disclosed by the subsurface explorations are consistent with work completed by others in the project area and our understanding of the local geology. For the purpose of discussion, the materials disclosed by the borings have been grouped into the following units based on their physical characteristics and engineering properties.

- 1. SURFACING**
- 2. CLAY (Coastal Marine Terrace/Landslide Debris)**
- 3. SILTSTONE (Astoria Formation)**
- 4. BASALT (Columbia River Basalt)**

The following paragraphs provide a description of these units and a discussion of the groundwater conditions at the site.

1. SURFACING. Borings B-2 and B-3 were advanced in areas surfaced with about 1.5 ft of fragmental rock.

2. CLAY (Coastal Marine Terrace/Landslide Debris). Clay, interpreted to be Coastal Marine Terrace/Landslide Debris, was encountered at the ground surface in boring B-1 and beneath the surfacing in borings B-2 and B-3 and extends to depths of about 33 to 51 ft. In general, the clay is brown or gray with varying degrees of orange, gray, and brown mottling; has a variable silt content ranging from some silt to silty; and contains a variable amount of fine- to coarse-grained sand ranging from a trace to some sand. Gravel- to cobble-sized fragments of decomposed to moderately weathered siltstone were encountered in the unit below a depth of 25 ft in boring B-1, between depths of 10 and 12 ft in boring B-2, below a depth of 40 ft in boring B-2, and between depths of 5 and 11.5 ft in boring B-3. Gravel- to cobble-sized fragments of fresh to moderately weathered basalt were encountered in the unit below depths of 40 and 23 ft in borings B-2 and B-3, respectively. Organics were encountered throughout the unit in all the explorations. Sheared zones of clay containing wood debris were encountered at depths of about 12.5 and 27.5 ft in boring B-1, and 0.5- to 2-ft-thick layers of wood debris were encountered at depths of 18, 25, 29.5, 43, 44.5, and 46 ft in boring B-2. Fossilized worm burrows were encountered in the unit at a depth of 20 ft in boring B-1, and coniferous tree needles were encountered in the unit between depths of 27.5 to 30 ft in boring B-1 and 5 to 7 ft in boring B-2. The relative consistency of the clay is very soft to very stiff based on SPT N-values and N*-values and is typically soft to stiff. The natural moisture content of the clay ranges from 24 to 128%.

Samples of wood debris obtained at depths of 18.5, 25.5, and 46.5 ft from boring B-2 were sent to Beta Analytic, Inc., in Miami, Florida, for conventional radiocarbon age testing in accordance with the

International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC) 17025:2005 accreditation protocols. The test results indicate the wood debris obtained at depths of 18.5, 25.5, and 46.5 ft are approximately 22,720, 26,500, and greater than 43,500 years old, respectively. The conventional radiocarbon age test results are provided in Appendix B for reference.

A sample of clay obtained between depths of 50 and 52 ft from boring B-2 was sent to Benchmark Geolabs in McMinnville, Oregon, for drained residual torsional shear-strength testing in accordance with ASTM International (ASTM) D6467. The test results indicate the clay has a residual friction angle of about 10° in the normal stress range of interest. The drained residual torsional shear-strength test results are provided in Appendix C for reference.

Chaotic structure was observed near or at the base of the unit in boring B-1 below a depth of 36 ft, in boring B-2 below a depth of 46 ft, and in boring B-3 below a depth of 30 ft. The chaotic structure is interpreted to be the result of landslide processes.

3. SILTSTONE (Astoria Formation). Extremely soft (R0) to very soft (R1) siltstone was encountered beneath the Coastal Marine Terrace/Landslide Debris in all the explorations. The siltstone extends to depths of about 90 to 95 ft in borings B-1 and B-2 and the maximum depth explored of about 151.5 ft in boring B-3. In general, the siltstone is brown to gray with varying degrees of white mottling and predominantly decomposed to decomposed in the upper 20 to 30 ft, moderately weathered to a depth of about 100 ft, and fresh to slightly weathered below this depth. Zones of green to black, very soft (R1) to medium-hard (R3) siltstone with very close fractures and slickensides along the fracture faces were encountered below depths of 90.5 and 84 ft in borings B-1 and B-2, respectively. The green to black color and presence of slickensides are indications of potential contact metamorphism and/or tectonic shearing and are not interpreted to be the result of landslide processes.

A sample of siltstone obtained between depths of 45 and 47.5 ft from boring B-1 was sent to Benchmark Geolabs in McMinnville, Oregon, for drained residual torsional shear-strength testing in accordance with ASTM D6467. The test results indicate the siltstone has a residual friction angle of about 8° in the normal stress range of interest. The drained residual torsional shear-strength test results are provided in Appendix C for reference.

Boring B-3 was terminated in siltstone at a depth of about 151.5 ft.

4. BASALT (Columbia River Basalt). Soft (R2) to hard (R4), dark-gray basalt was encountered beneath the siltstone in borings B-1 and B-2 at depths of 95 and 90 ft, respectively. The basalt extends to the maximum depths explored of about 100 and 140 ft in borings B-1 and B-2, respectively. In general, the basalt is slightly weathered to fresh, brecciated in boring B-1, and closely to very closely fractured in boring B-2. Slickensides are present on the fracture faces near the contact with the overlying siltstone in boring B-2, which is an indication of potential contact metamorphism and/or tectonic shearing.

Borings B-1 and B-2 were terminated in the basalt at depths of about 100 and 140 ft, respectively.

Groundwater

We anticipate the regional groundwater level typically occurs at depth in the highly fractured basalt that underlies the site and closely matches the elevation of the Pacific Ocean. However, the vibrating-wire

piezometer readings indicate perched groundwater conditions occur in the Coastal Marine Terrace/Landslide Debris that mantle the project area, particularly during the wet winter and spring months or during periods of heavy or prolonged precipitation. In addition, based on our interpretation of the piezometer readings, we anticipate artesian water conditions may develop near the contact between siltstone and basalt. Perched groundwater and artesian water-pressure measurements recorded in the piezometers are tabulated below by selected dates.

PERCHED GROUNDWATER DEPTH AND ARTESIAN WATER PRESSURES

Date	Perched Groundwater Depth, ft				Artesian Water-Pressure Head, ft	
	B-1, P-1 at 50 ft	B-2, P-1 at 50 ft	B-3, P-1 at 100 ft	B-3, P-2 at 150 ft	B-1, P-2 at 90 ft	B-2, P-2 at 90 ft
12/15/18	33.8	5.6	15.4	18.0	70.6	63.6
12/31/18	38.5	6.4	15.1	17.7	75.3	62.9
01/15/19	39.4	7.5	15.6	18.2	77.7	61.9
01/31/19	39.8	7.7	15.6	18.1	80.5	61.7
02/08/19	39.9	7.5	15.3	17.8	81.9	62.0

The vibrating-wire piezometer readings indicate the phreatic surface in the project area slopes downwards towards Highway 101. A sloping phreatic surface is an indication perched-groundwater movement through the Coastal Marine Terrace/Landslide Debris is likely occurring. Based on measurements of the piezometer installed at a depth of 50 ft in boring B-2, we anticipate the perched-groundwater level in the project area will typically occur at depths of 5 to 10 ft throughout the year; however, localized zones of perched groundwater may approach and inundate the ground surface during the wet winter and spring months or during periods of heavy or prolonged precipitation.

PRELIMINARY CONCLUSIONS

General

Subsurface explorations indicate the project area is mantled with about 40 to 50 ft of Coastal Marine Terrace/Landslide Debris consisting of clay and interbedded layers of wood debris. The Coastal Marine Terrace/Landslide Debris is underlain by siltstone of the Astoria Formation that extends to depths of about 90 to 95 ft in the project area. The lower contact of the Coastal Marine Terrace/Landslide Debris and underlying siltstone locally appears chaotic and non-homogenous, which we interpret to be an indicator of movement and shearing associated with the relatively older DOGAMI-mapped landslide deposits. The siltstone is underlain by Columbia River Basalt that extends to depths of at least 140 ft in the project area. Perched groundwater occurs at depths of about 5 to 10 ft in the project area and may approach or inundate the ground surface in localized areas during periods of heavy or prolonged rainfall.

The following preliminary conclusions are provided to assist the design team with project planning. For purposes of discussion, we interpret the project area to be underlain by landslide debris to the top of the Astoria Formation siltstone or to depths of about 33 to 51 ft below existing site grades. For the purpose of our analyses, we simplified this range of depths to a landslide debris thickness of 45 ft below existing site grades in the building area.

Preliminary Slope Stability Analyses

General. Preliminary analyses of ground-surface stability in the building area were performed with the aid of the software program SLIDE 8.0, developed by Rocscience, Inc., of Toronto, Canada. The static and seismic equilibrium of the ground surface was evaluated using Spencer and Morgenstern-Price's method of slices, which satisfies both force and moment equilibrium. The output of the analysis is the factor of safety, defined as the ratio of the forces and moments resisting movement, such as the shear strength of the soil, to the forces and moments driving movement of the soil mass, such as earthquake ground motions. During an earthquake, the resisting forces may decrease due to generation of excess pore-water pressures, and the driving forces will vary with each cycle of loading; therefore, the factor of safety is constantly fluctuating. As the factor of safety decreases and approaches 1.0, the relative stability of the building area is considered to decrease. A factor of safety less than 1.0 implies the soil mass is not in equilibrium, and lateral movement is likely to occur during that cycle of seismic loading. The acceleration that results in a factor of safety of 1.0 is defined as the yield acceleration. Methodologies recommended by Newmark (1965) were used to estimate the lateral movement of the ground surface when the earthquake accelerations exceed the yield acceleration.

Slope Model. The existing topography and generalized subsurface conditions in the building area were used to develop a SLIDE 8.0 model to evaluate the static and seismic stabilities of the ground surface. The model used for global-stability analyses was developed from a cross section and generalized subsurface profile considered characteristic of the site in the building area. The generalized subsurface profile for the model was based on our subsurface explorations, piezometer readings, and laboratory test results. Given the limited subsurface information available uphill of the building area, a well log completed for a T-Mobile tower site located on the hillside immediately south of the South Wind site was also used to develop the generalized subsurface profile and is provided in Appendix D for reference. For our analyses, a water-pressure grid was developed based on the piezometer measurements from borings B-1 and B-2. The following table summarizes the various soil units and strength parameters assumed in our preliminary analyses, which are based on laboratory testing and interpretation of subsurface conditions.

ENGINEERING PROPERTIES OF SOIL LAYERS

Material Name (Geologic Unit)	Unit Weight γ , pcf	Strength Type	Cohesion, psf	Friction Angle ϕ'	Compressive Strength (UCS), psi	GSI	mi	D
Terrace Deposits (Coastal Marine Terrace/Landslide Debris)	120	Mohr-Coulomb	200	28°	-	-	-	
Wood Debris (Coastal Marine Terrace/Landslide Debris)	19 ⁽¹⁾	Mohr-Coulomb	200 ⁽¹⁾	16° ⁽¹⁾	-	-	-	
Slip Surface (Coastal Marine Terrace/Landslide Debris)	120	Mohr-Coulomb	0	18°	-	-	-	
Siltstone (Astoria Formation)	125	Generalized Hoek-Brown	-	-	100	30 to 50	5 to 9	0.7 to 1.0
Basalt (Columbia River Basalt)	140	Generalized Hoek-Brown	-	-	35,000	80	25	1.0

Note:

- 1) Geotechnical parameters based on published literature (Azhar et al., 2016).

The geotechnical parameters for each soil type used in our slope model were determined based on laboratory testing, published literature, and our experience with similar soil conditions. The contact between the Coastal Marine Terrace/Landslide Debris and underlying siltstone appears chaotic and non-homogenous, which was interpreted to be a potential slip surface subject to historical movement and shearing. As discussed in the **Subsurface Conditions** section of this report, the drained residual torsional shear-strength test results indicate the clay near the contact has a residual friction angle of about 10° in the normal stress range of interest. However, research data indicate the residual strength of clay soils increases at a rate of about 10% per log cycle of shearing velocity (Kulhawy and Mayne, 1990). We estimate the earthquake velocity from a M9.0 event occurring on the CSZ would be about 8 orders of magnitude greater than the velocity of shearing during the residual torsional shear-strength test. This would increase the residual friction angle from 10° under static loading to 18° under earthquake loading.

Earthquake Motions. In accordance with ASCE 7-16, the potential for seismically induced displacement of the ground surface should be evaluated at the Maximum Credible Earthquake (MCE_G) level. The MCE_G-level earthquake is generally defined as a probabilistic earthquake that produces ground motions with a 2% probability of exceedance in 50 years, or 2,475-year return period. A suite of accelerograms from subduction-zone earthquakes were selected and scaled to best represent the MCE_G-level peak ground acceleration PGA_M of 0.73 g determined for the site. The selected time histories include records from the Maule, Chile (2010), and Tohoku, Japan (2011).

Analyses Results. Using the SLIDE 8.0 model, our analyses indicate the static global factor of safety and yield acceleration for the unimproved building area are about 2.6 and 0.21 g, respectively. The slope models used for our stability analyses of the unimproved building area are provided on Figures 5 and 6. Using the scaled acceleration earthquake records, a Newmark time-history analysis was completed to estimate the potential for seismically induced movement in the building area. Our analyses indicate about 4 ft of lateral movement of the ground surface toward Highway 101 could occur during a code-based seismic event under existing free-field conditions (no building or other improvements). The lateral movement will primarily occur on the contact between the overlying Coastal Marine Terrace/Landslide Debris and underlying siltstone at a depth of about 45 ft below the ground surface in the building area. We estimate vertical displacement due to slope movement could approach half of the estimated horizontal displacement. The methods used to estimate the seismically induced movement of the ground surface are highly sensitive to selected shear strengths, yield accelerations, groundwater levels, and acceleration time histories and consequently are an approximate estimate of the actual displacement that may occur. Seismic events of lesser magnitudes or the same magnitude occurring at greater epicentral distances from the site would be expected to produce smaller horizontal and vertical displacements of the ground surface.

Preliminary Foundation Support

General. We understand the city hall building will have maximum column loads on the order of 200 kips. Based on the potential for seismically induced lateral movement of the ground surface and the presence of wood debris that may decompose over time, it is our opinion support for the new city hall building will need to be provided by a deep-foundation system embedded in the siltstone or tipped in the basalt that underlies

the site. Our correspondence with the design team indicates 4-ft-diameter, drilled shafts are being considered on a preliminary basis for support of the new city hall building. We anticipate down-drag loads associated with decomposition of the wood-debris layers and seismically induced lateral loading will control design of the foundation system.

Axial Design Criteria. Capacities for drilled shafts depend on shaft diameter, structural strength of the shaft, and depth of penetration into the siltstone that underlies the site. However, ground settlement associated with decomposition of the wood-debris layers will induce large down-drag loads on the shafts and significantly reduce the compressive capacity. Static analyses were performed to estimate the down-drag loads induced on the shafts and determine the penetration criteria required to support the maximum column loads. On a preliminary basis, we estimate a 4-ft-diameter, drilled shaft will need to be socketed at least 45 ft into the underlying siltstone for a total depth of about 90 ft to achieve an allowable capacity of 200 kips due to downdrag loads in the upper 45 ft. This value assumes a factor of safety of 2.0 for compressive loading. Alternatively, the shaft diameter can be increased to 6 ft and the rock-socket length can be decreased to 25 ft to achieve an allowable capacity of 200 kips. It should be understood these capacities are preliminary and should only be used for project planning.

Lateral Seismic Support. As previously discussed, our preliminary analyses indicate about 4 ft of lateral movement of the ground surface toward Highway 101 could occur to a depth of 45 ft in the building area due to a code-based seismic event. The drilled shafts supporting the building will also provide shear resistance and increase the stability of the ground surface in the building area; however, the structural strength of the shaft in conjunction with the available soil resistance must be sufficient to resist the seismically induced lateral forces from the inertial load of the structure and kinematic load of the soil. Using the SLIDE 8.0 model and the scaled earthquake records, a sensitivity analysis was completed to evaluate the drilled-shaft support and configuration required to reduce lateral movement of the building. The conceptual foundation layout provided by Catena was used to model the drilled shafts supporting the building and additional 4-ft-diameter, drilled shafts were modeled as shear piles uphill of the building area.

For our analyses, the software program LPILE, developed by Ensoft, Inc., of Austin, Texas, was used to estimate the shear capacity of 4-ft-diameter, drilled shafts and the corresponding lateral soil movement required to mobilize that capacity without developing a plastic hinge in the shafts. The following table summarizes the structural parameters used to model the drilled shafts in LPILE and provides the results of our LPILE analyses.

PRELIMINARY LPILE ANALYSES INPUTS AND RESULTS

Support Name	Concrete Strength, ksi	Reinforcement	Steel Grade, ksi	Soil Movement, in.	Siltstone Socket Length, ft	Shear Capacity, kips
4-ft-Diameter Drilled Shafts	4	12 - #8 Vertical Bars	60	18 in.	45	470
4-ft-Diameter Shear Piles	6	14 - #14 Vertical Bars	60	10 in.	15	650

Based on the results of our LPILE analyses, we anticipate the shafts supporting the building can accommodate 18 in. of lateral soil movement without developing a plastic hinge and mobilize 470 kips of shear resistance. For the uphill mitigation, we anticipate 4-ft-diameter, drilled shafts (shear piles) socketed at least 15 ft into the underlying siltstone for a total length of about 60 ft can mobilize 650 kips of shear resistance with at least

10 in. of lateral soil movement. Deflection, shear, and moment diagrams from our LPILE analyses are provided on Figures 7 and 8. The structural engineer should review the associated pile stresses to evaluate acceptable deformation/stresses.

Our preliminary slope-stability analyses indicate a plastic hinge will likely develop in the drilled shafts supporting the building due to excessive lateral movement during a code-based seismic event; therefore, uphill mitigation will likely be required to meet the seismic-performance criteria of the structure. On a preliminary basis, we estimate about 50 to 100 shear piles will likely be required for uphill mitigation. For our analyses, the shear piles were spaced about 20 ft apart. Assuming the building is about 150 ft wide, a total of nine rows of five to 11 shear piles (a total of 45 to 99 shear piles) will likely be required for uphill mitigation to meet the seismic-performance criteria for the building. The slope models used for our analyses are provided on Figures 9 through 11, which show the critical yield acceleration for each model. Using the critical yield accelerations and the scaled earthquake records, Newmark time-history analyses were completed to estimate lateral movement of the ground surface in the building area. The Newmark time-history analysis results are summarized in the table below.

PRELIMINARY NEWMARK TIME HISTORY ANALYSES

Earthquake/Year	Magnitude, M	Record Used	Lateral Ground Movement, in.			
			Existing Conditions, Fig. 6	No Uphill Shear Piles, Fig 9	Five Uphill Shear Piles per Row, Fig. 10	11 Uphill Shear Piles per Row, Fig 11
Tohoku/2011	9.0	IBR008NS	17	14	10	6
Tohoku/2011	9.0	MYG006EW	25	21	14	10
Tohoku/2011	9.0	MYG015NS	49	41	29	18
Tohoku/2011	9.0	FKS020EW	51	44	32	22
Maule/2010	8.8	VinaDelMar_NS	22	17	10	5
Average			33	27	19	12

Summary

The South Wind site is located within a mapped landslide, as referenced on the published engineering geologic map of the Cannon Beach quadrangle (Schlicker et al., 1972). However, our interpretation of lidar imagery, our site reconnaissance observations, review of limited inclinometer measurements, and results of our preliminary analyses suggest the proposed building area is not underlain by an “active” landslide subject to continuous, creep-like static movements. It is our interpretation the landslide deposits directly under the building area are not presently moving (i.e., active). It should be understood our landslide-activity interpretation for the building area is primarily based on the lack of obvious indications of large-scale, deep-seated slope instability affecting the building area, such as ground cracks, hummocky topography, and bulging of the ground along Highway 101, as well as limited inclinometer-monitoring data and the results of our preliminary analyses. During our site reconnaissance, GRI did observe the access road into the site crosses a relatively young, deep-seated landslide with debris deposited on the east and west sides of the road. The disappearing stream observed suggests openings in the ground creating conduits for water. These observations are consistent with landslide debris. In addition, the valley walls of the unnamed drainages that cross the site from east to the west have relatively young, shallow, and potentially deep-seated failures that may require substantial setbacks from the edge of the slope.

Although there is no evidence to suggest the building area is underlain by an active landslide, subsurface information disclosed by the explorations and our experience with similar projects and geologic units on the northwest Oregon coast suggest movement of the Coastal Marine Terrace/Landslide Debris could have occurred during past seismic events. On a preliminary basis, our analyses indicate about 4 ft of lateral movement of the ground surface toward Highway 101 could occur during a code-based earthquake. Based on the potential for seismically induced lateral movement of the ground surface and the presence of wood debris that may decompose over time, it is our opinion support for the new city hall building will need to be provided by a deep-foundation system embedded in the siltstone or tipped in the basalt that underlies the site. Additional uphill mitigation will likely be required to limit seismically induced lateral movement of the building. For this study, GRI assumed building support would be provided by 4-ft-diameter, drilled shafts and uphill mitigation would consist of 4-ft-diameter, drilled shafts installed as shear piles. It should be understood using drilled shafts for shear support uphill of the building represents one method for reducing seismic movement of the ground surface. Additional methods, such as jet grout, ground anchors, and re-grading the uphill area, may also be possible and should be evaluated further if this site is selected for the new city hall. Support for infrastructure, such as roadways and parking lots, will depend on the desired performance level. However, our site-reconnaissance observations and interpretation of lidar imagery suggest a portion of the access road located south of the proposed building may be underlain by a younger landslide. The presence of younger landslides within the South Wind property boundary is an important consideration for infrastructure planning.

LIMITATIONS

This report has been prepared to aid the City of Cannon Beach with rough order of magnitude (ROM) cost development for construction of the new city hall building on the South Wind site and should be considered preliminary. The preliminary conclusions provided in this report are based on the data obtained from three subsurface explorations advanced at the locations indicated on Figure 2 and other sources of information discussed in this report. In the performance of subsurface explorations, specific information is obtained at specific locations at specific times, and variations in soil conditions may exist across the site. This report does not reflect any variations that may occur.

The conclusions provided in this report are preliminary in nature and should not be used for design purposes. Additional subsurface explorations and engineering analyses will be necessary to develop criteria and guidelines for final design.

Please contact the undersigned if you have any questions regarding this report.

Submitted for GRI,



Renews 06/2020

A. Wesley Spang, PhD, PE, GE
Principal



Renews 02/2020

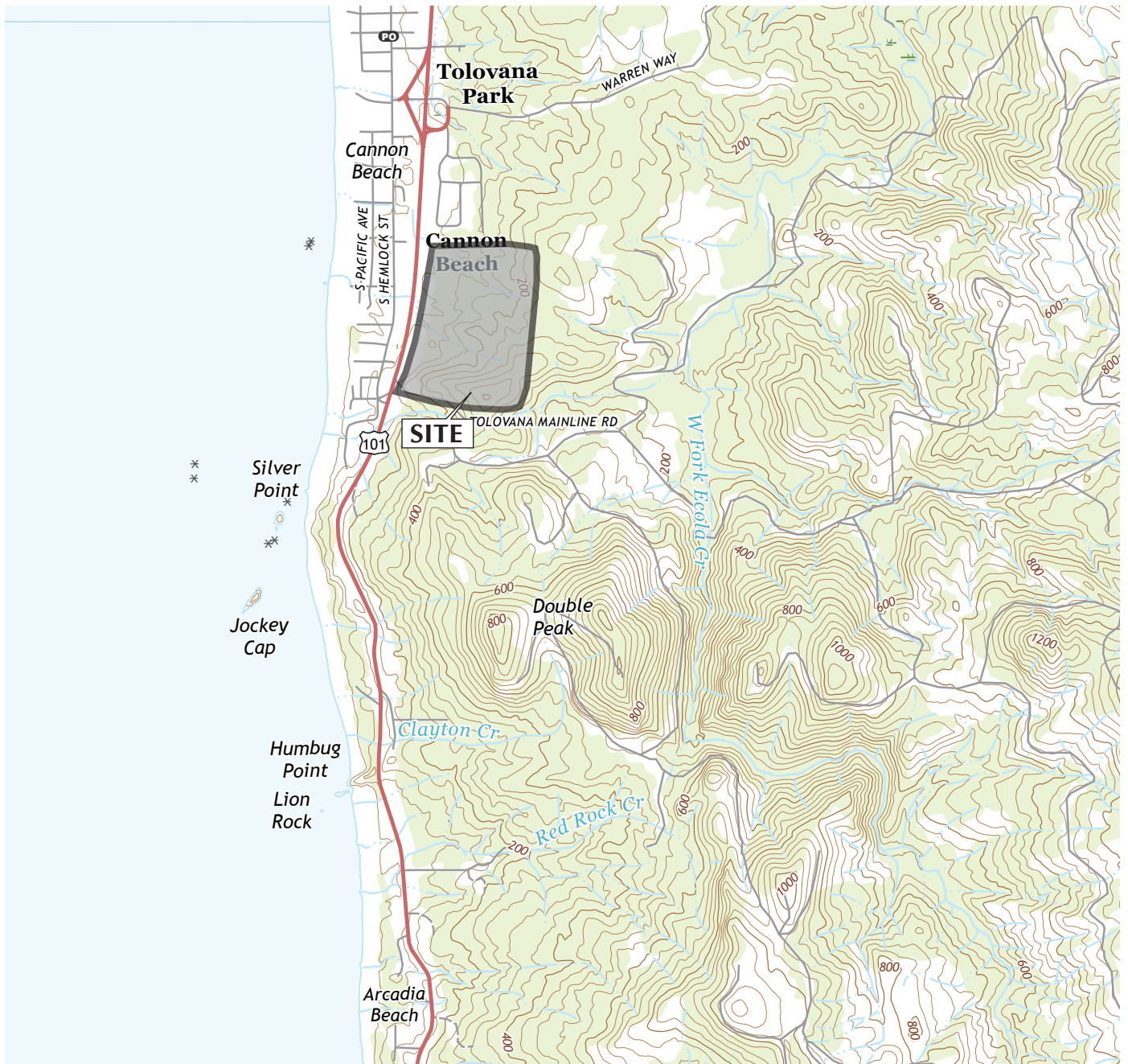
George A. Freitag, CEG
Principal

Nicolas M. Hatch, PE
Senior Engineer

This document has been submitted electronically.

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USGS TOPOGRAPHIC MAP
ARCH CAPE, OREG. (2017)



CITY OF CANNON BEACH
NEW CANNON BEACH CITY HALL, SOUTH WIND SITE

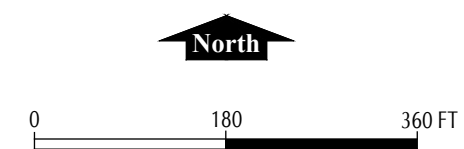
VICINITY MAP



 BORINGS COMPLETED BY GRI
(DECEMBER 3-10, 2018)

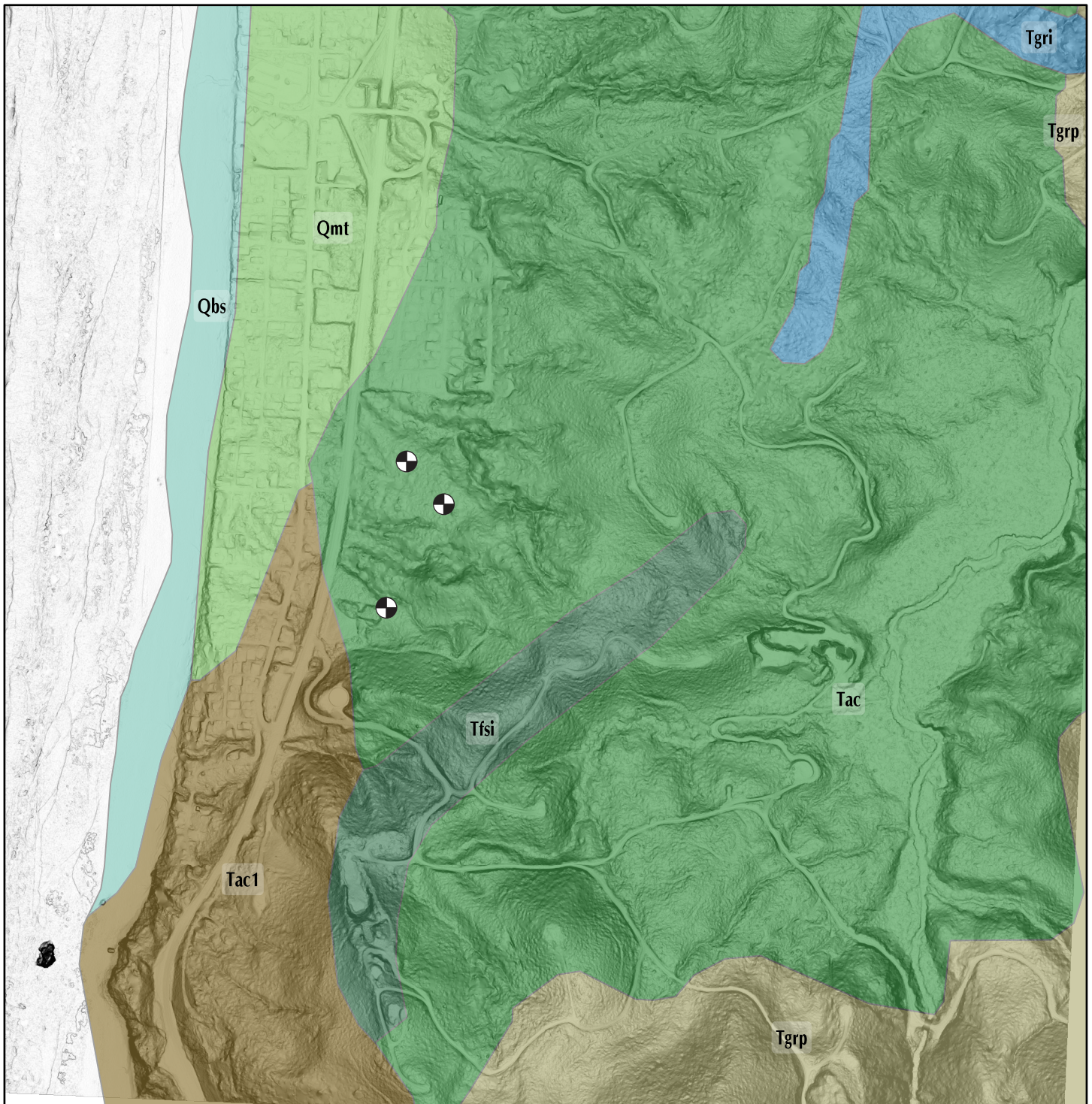
 CROSS SECTION USED IN SLOPE STABILITY ANALYSIS

SITE PLAN FROM FILE BY SRG PARTNERSHIP, 2018



GRI CITY OF CANNON BEACH
NEW CANNON BEACH CITY HALL, SOUTH WIND SITE

SITE PLAN



- Qbs - QUATERNARY BEACH SAND
- Qmt - COASTAL MARINE-TERRACE DEPOSITS
- Tac - ASTORIA FORMATION, CANNON BEACH MEMBER
- Tac1 - ASTORIA FORMATION, CANNON BEACH MEMBER
- Tfsi - WANAPUM BASALT, INTRUSIVE FRENCHMAN SPRINGS MEMBER
- Tgri - INTRUSIVE GRANDE RONDE BASALT
- Tgrp - GRANDE RONDE BASALT, SUBAERIAL BASALT FLOWS

BORING COMPLETED BY GRI
(DECEMBER 3-10, 2018)

MODIFIED FROM: OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
DIGITAL DATA SERIES OGDC-6



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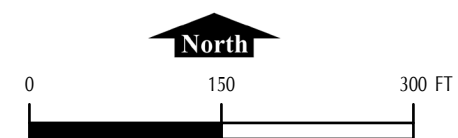


CITY OF CANNON BEACH
NEW CANNON BEACH CITY HALL, SOUTH WIND SITE

LOCAL GEOLOGIC MAP

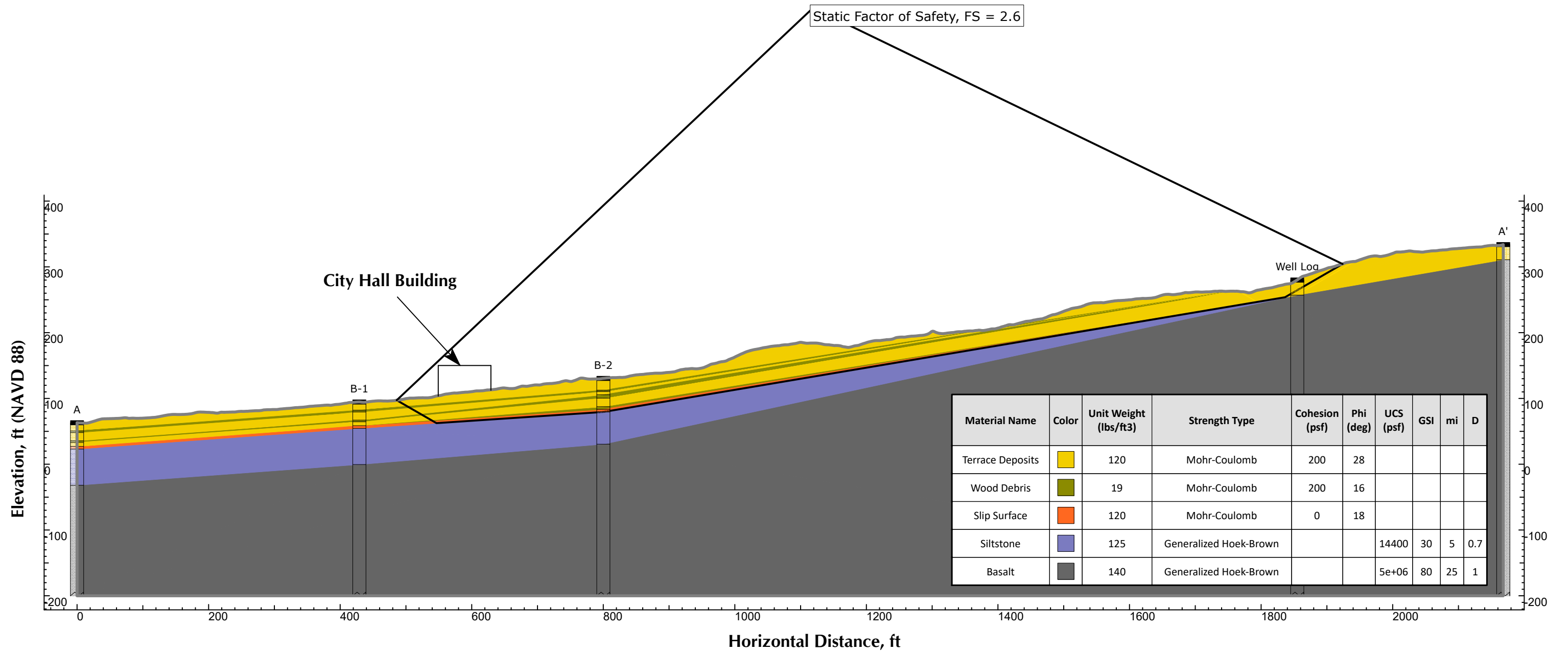


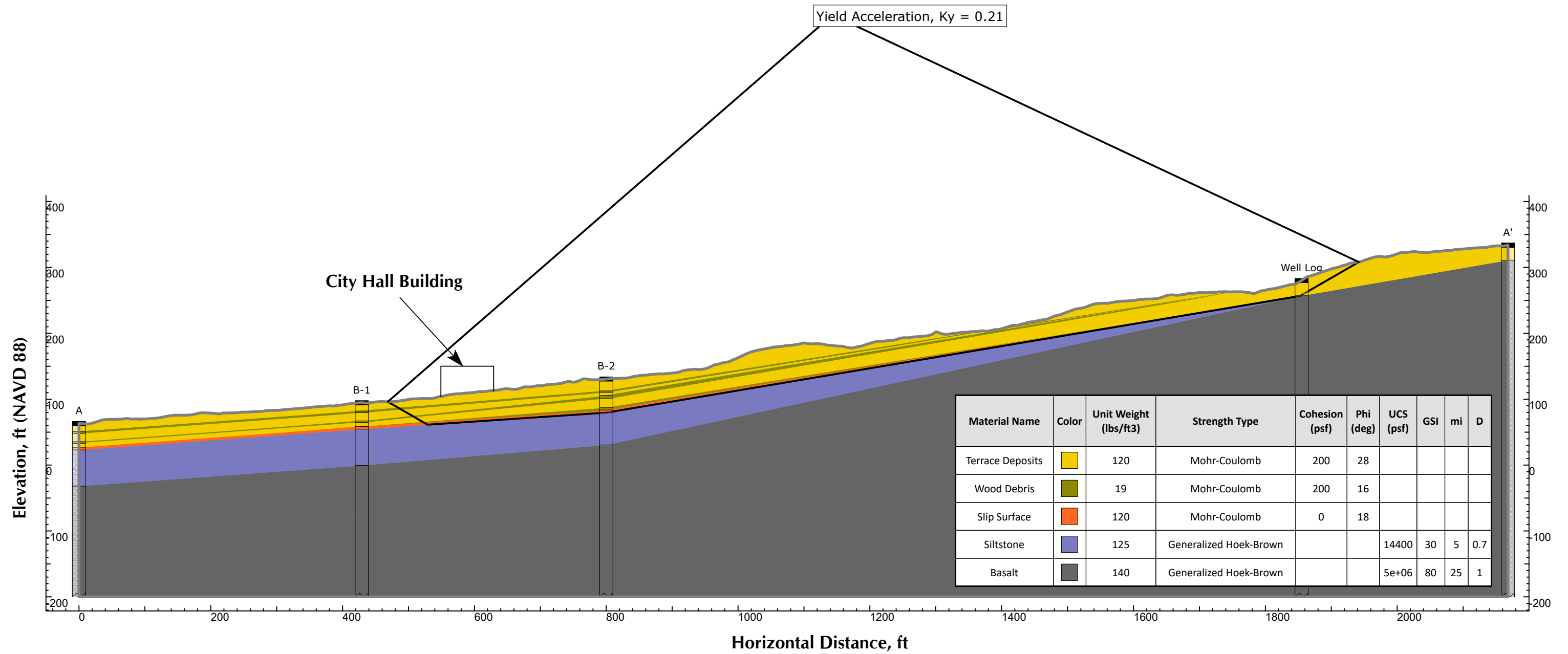
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- ⊕ EXPLORATIONS COMPLETED BY GRI (DECEMBER 3-10, 2018)
- - - POTENTIAL YOUNGER LANDSLIDE DEPOSITS
- ▭ DISTANT TSUNAMI EVACUATION ZONE
- ▭ LOCAL TSUNAMI EVACUATION ZONE

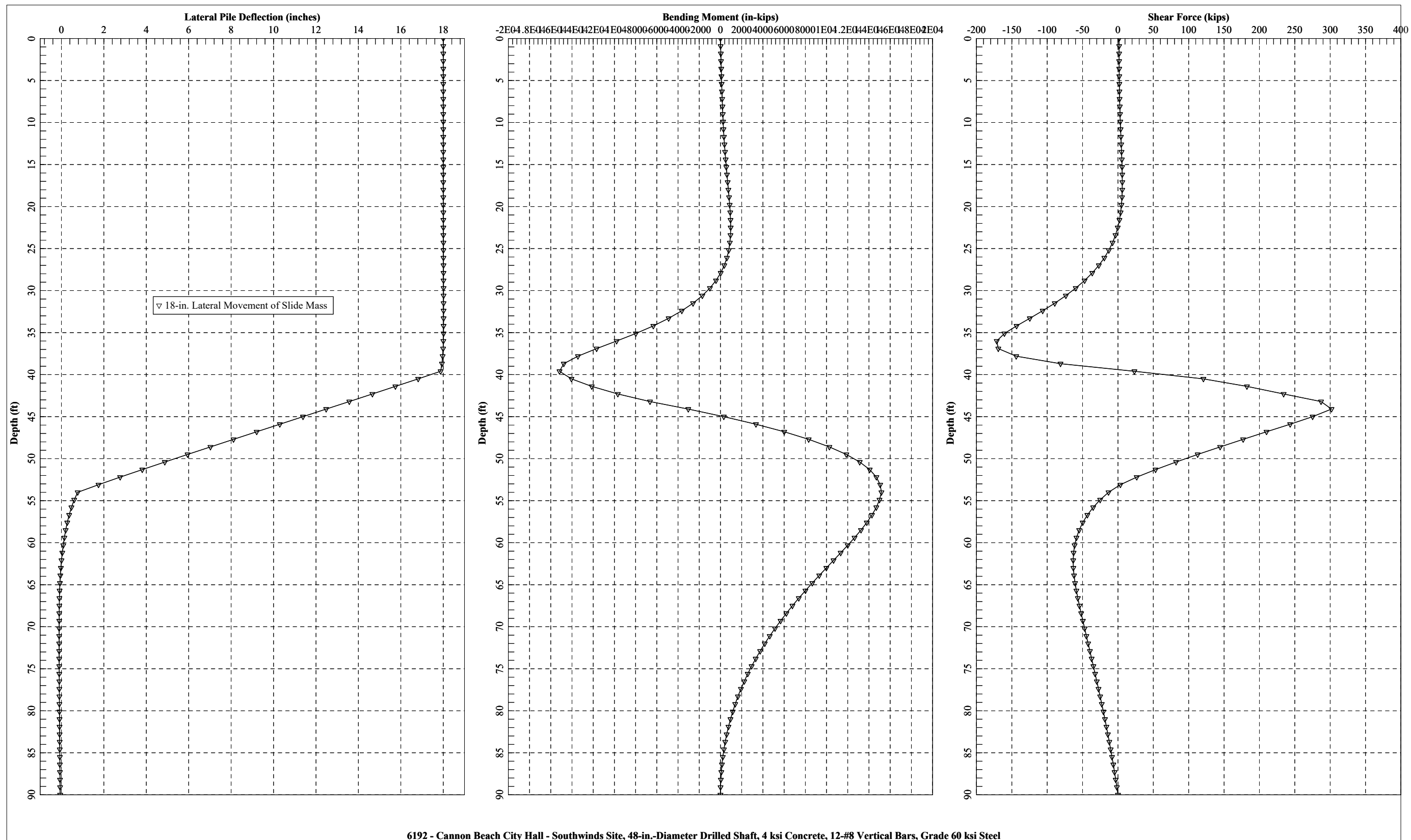


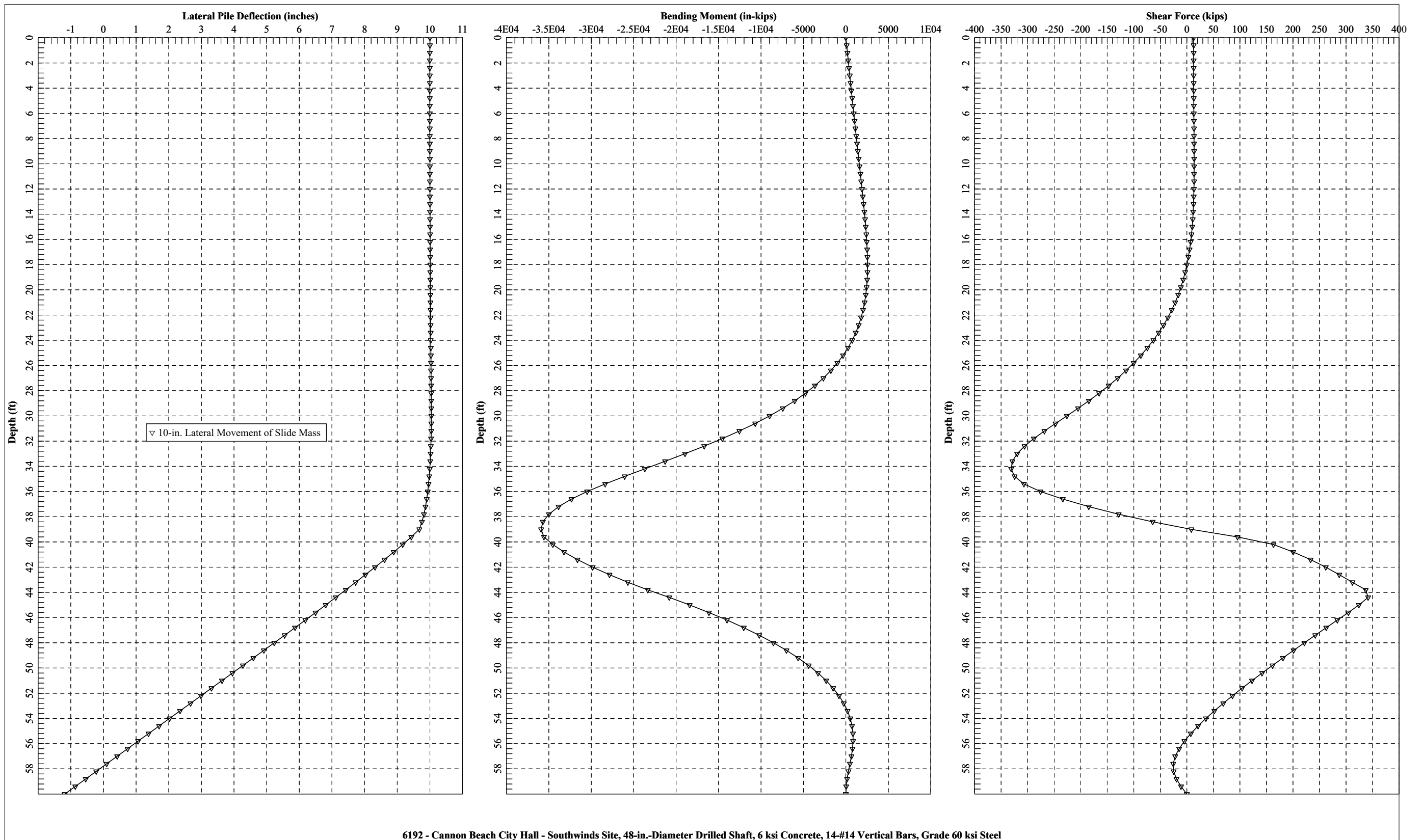
GRI CITY OF CANNON BEACH
NEW CANNON BEACH CITY HALL, SOUTH WIND SITE

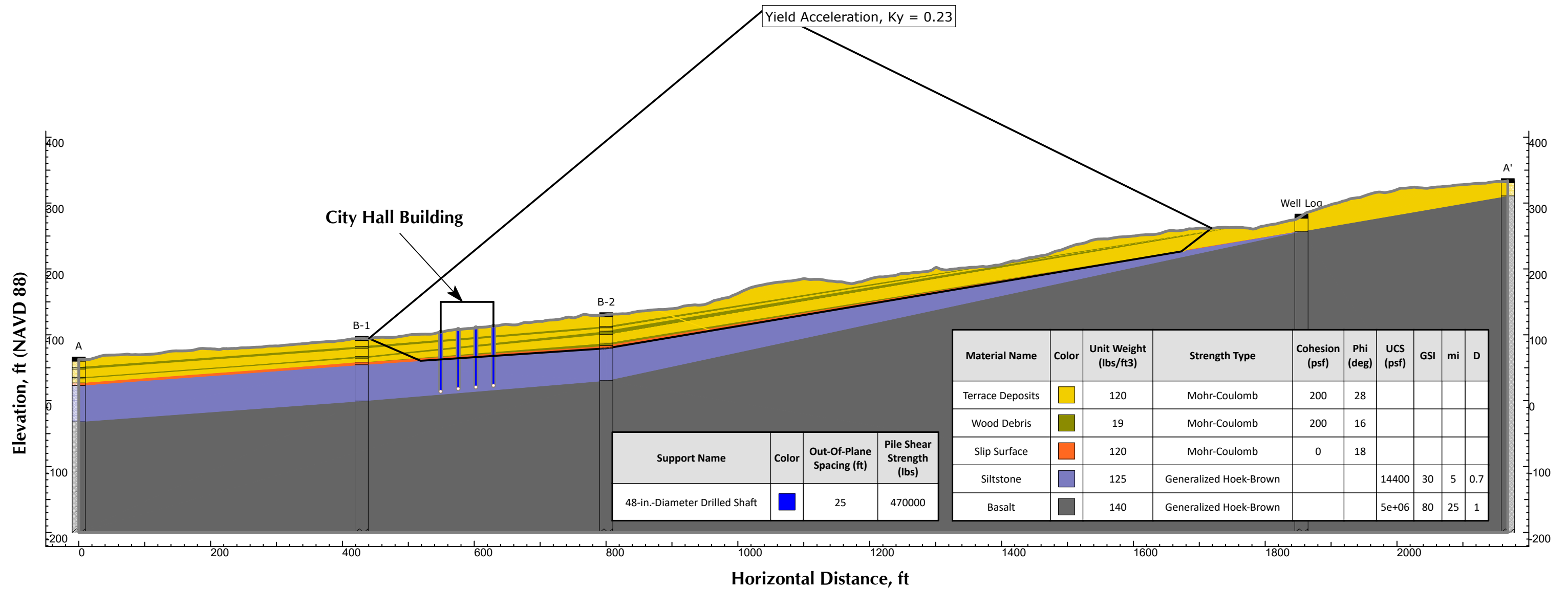
GEOLOGIC RECONNAISSANCE MAP

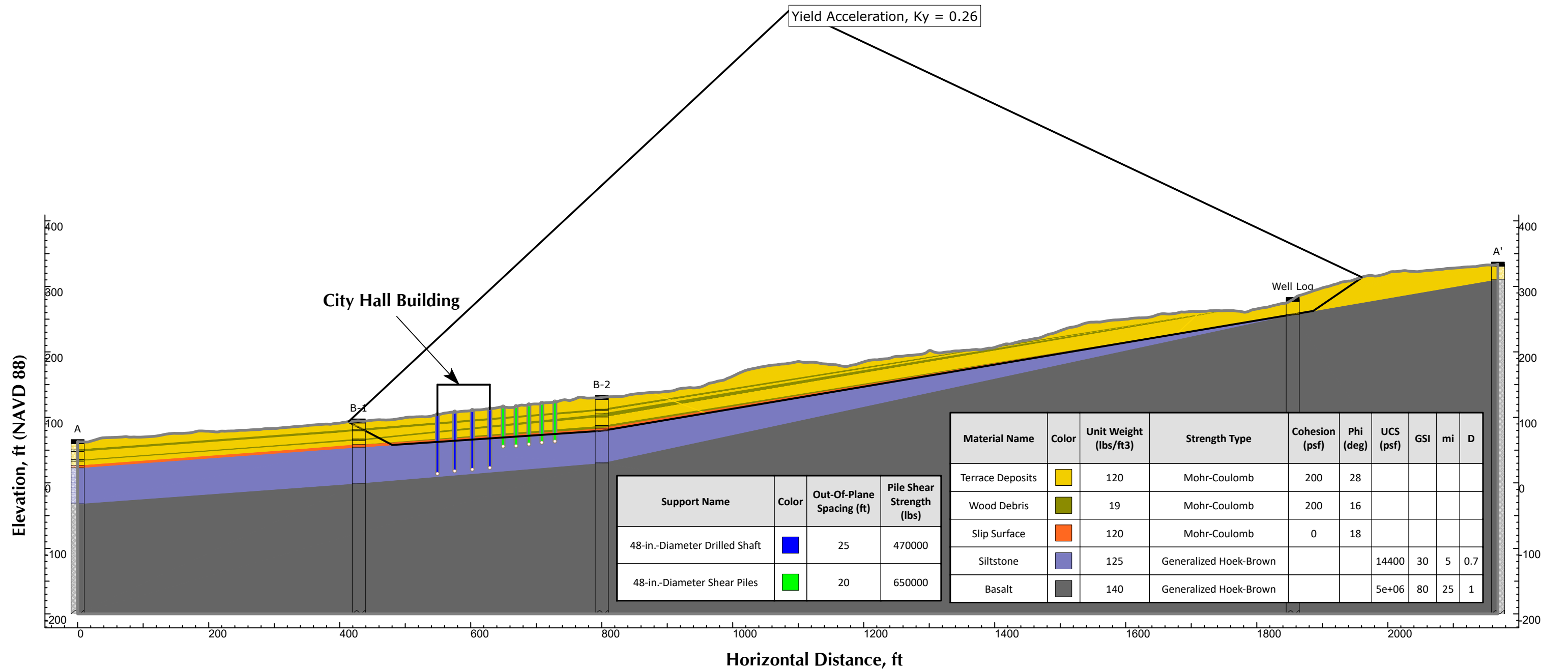


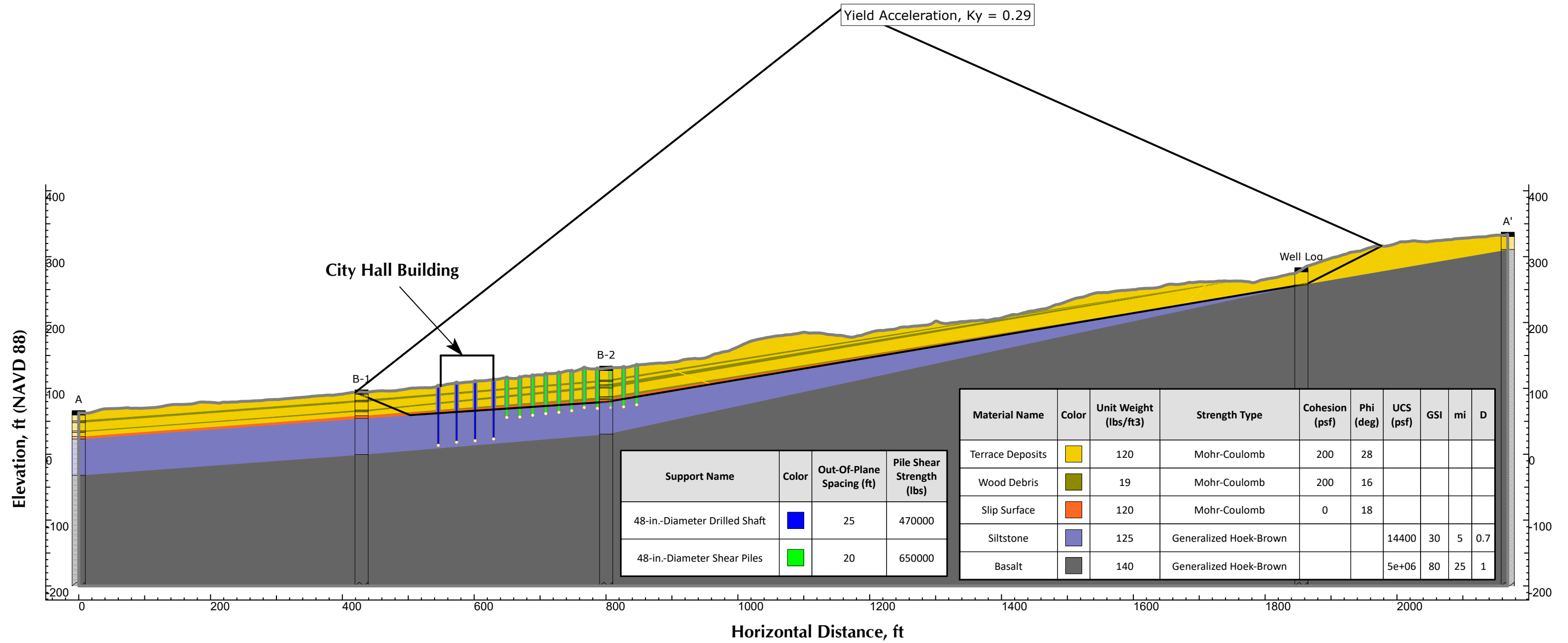












APPENDIX A

Field Explorations and Instrumentation Data

Table 1A: GUIDELINES FOR CLASSIFICATION OF SOIL

Description of Relative Density for Granular Soil

Relative Density	Standard Penetration Resistance (N-values), blows per ft
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	over 50

Description of Consistency for Fine-Grained (Cohesive) Soils

Consistency	Standard Penetration Resistance (N-values), blows per ft	Torvane or Undrained Shear Strength, tsf
Very Soft	0 - 2	less than 0.125
Soft	2 - 4	0.125 - 0.25
Medium Stiff	4 - 8	0.25 - 0.50
Stiff	8 - 15	0.50 - 1.0
Very Stiff	15 - 30	1.0 - 2.0
Hard	over 30	over 2.0

Grain-Size Classification	Modifier for Subclassification		
<i>Boulders:</i> > 12 in.		Primary Constituent SAND or GRAVEL	Primary Constituent SILT or CLAY
<i>Cobbles:</i> 3 - 12 in.	Adjective	Percentage of Other Material (by weight)	
<i>Gravel:</i> $\frac{1}{4}$ - $\frac{3}{4}$ in. (fine) $\frac{3}{4}$ - 3 in. (coarse)	trace: some: sandy, gravelly:	5 - 15 (sand, gravel) 15 - 30 (sand, gravel) 30 - 50 (sand, gravel)	5 - 15 (sand, gravel) 15 - 30 (sand, gravel) 30 - 50 (sand, gravel)
<i>Sand:</i> No. 200 - No. 40 sieve (fine) No. 40 - No. 10 sieve (medium) No. 10 - No. 4 sieve (coarse)	trace: some: silty, clayey:	< 5 (silt, clay) 5 - 12 (silt, clay) 12 - 50 (silt, clay)	<i>Relationship of clay and silt determined by plasticity index test</i>
<i>Silt/Clay:</i> pass No. 200 sieve			

Table 2A: GUIDELINES FOR CLASSIFICATION OF ROCK

RELATIVE ROCK WEATHERING SCALE

Term	Field Identification
Fresh	Crystals are bright. Discontinuities may show some minor surface staining. No discoloration in rock fabric.
Slightly Weathered	Rock mass is generally fresh. Discontinuities are stained and may contain clay. Some discoloration in rock fabric. Decomposition extends up to 1 in. into rock.
Moderately Weathered	Rock mass is decomposed 50% or less. Significant portions of rock show discoloration and weathering effects. Crystals are dull and show visible chemical alteration. Discontinuities are stained and may contain secondary mineral deposits.
Predominantly Decomposed	Rock mass is more than 50% decomposed. Rock can be excavated with geologist's pick. All discontinuities exhibit secondary mineralization. Complete discoloration of rock fabric. Surface of core is friable and usually pitted due to washing out of highly altered minerals by drilling water.
Decomposed	Rock mass is completely decomposed. Original rock "fabric" may be evident. May be reduced to soil with hand pressure.

RELATIVE ROCK HARDNESS SCALE

Term	Hardness Designation	Field Identification	Approximate Unconfined Compressive Strength
Extremely Soft	R0	Can be indented with difficulty by thumbnail. May be moldable or friable with finger pressure.	< 100 psi
Very Soft	R1	Crumbles under firm blows with point of a geology pick. Can be peeled by a pocket knife and scratched with fingernail.	100 - 1,000 psi
Soft	R2	Can be peeled by a pocket knife with difficulty. Cannot be scratched with fingernail. Shallow indentation made by firm blow of geology pick.	1,000 - 4,000 psi
Medium Hard	R3	Can be scratched by knife or pick. Specimen can be fractured with a single firm blow of hammer/geology pick.	4,000 - 8,000 psi
Hard	R4	Can be scratched with knife or pick only with difficulty. Several hard hammer blows required to fracture specimen.	8,000 - 16,000 psi
Very Hard	R5	Cannot be scratched by knife or sharp pick. Specimen requires many blows of hammer to fracture or chip. Hammer rebounds after impact.	> 16,000 psi

RQD AND ROCK QUALITY




















Relation of RQD and Rock Quality		Terminology for Planar Surface		
RQD (Rock Quality Designation), %	Description of Rock Quality	Bedding	Joints and Fractures	Spacing
0 - 25	Very Poor	Laminated	Very Close	< 2 in.
25 - 50	Poor	Thin	Close	2 in. – 12 in.
50 - 75	Fair	Medium	Moderately Close	12 in. – 36 in.
75 - 90	Good	Thick	Wide	36 in. – 10 ft
90 - 100	Excellent	Massive	Very Wide	> 10 ft

Table 3A
SUMMARY OF LABORATORY RESULTS





Sample Information				Atterberg Limits					Soil Type
Location	Sample	Depth, ft	Elevation, ft	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Fines Content, %	
B-1	S-1	2.5	--	63	--	--	--	--	CLAY
	S-2	5.0	--	61	--	--	--	--	CLAY
	S-3	7.5	--	66	--	--	--	--	CLAY
	S-4	10.0	--	70	--	--	--	--	CLAY
	S-6	15.0	--	95	--	--	--	--	CLAY
	S-7	17.5	--	75	--	--	--	--	CLAY
	S-8	20.0	--	49	--	--	--	--	CLAY
	S-9	22.5	--	65	--	--	--	--	CLAY
	S-10	25.0	--	72	--	--	--	--	CLAY
	S-12	30.0	--	49	--	--	--	--	CLAY
	S-13	32.5	--	53	--	--	--	--	CLAY
	S-14	35.0	--	52	--	--	--	--	CLAY
	S-15	37.5	--	42	--	--	--	--	CLAY
B-2	S-1	2.0	--	67	--	--	--	--	CLAY
	S-2	4.5	--	61	--	--	--	--	CLAY
	S-3	9.5	--	58	--	--	--	--	CLAY
	S-4	11.5	--	49	--	--	--	--	CLAY
	S-5	14.5	--	60	--	--	--	--	CLAY
	S-6	19.5	--	128	--	--	--	--	WOOD DEBRIS
	S-7	29.0	--	81	--	--	--	--	CLAY
	S-8	39.0	--	60	--	--	--	--	CLAY
	S-9	49.0	--	42	--	--	--	--	CLAY
B-3	S-1	5.0	--	24	--	--	--	--	CLAY
	S-2	10.0	--	47	--	--	--	--	CLAY
	S-3	15.0	--	46	--	--	--	--	CLAY
	S-5	23.0	--	37	--	--	--	--	CLAY
	S-6	25.0	--	65	--	--	--	--	CLAY
	S-7	30.0	--	55	--	--	--	--	CLAY

BORING AND TEST PIT LOG LEGEND




SOIL SYMBOLS

Symbol	Typical Description
	FILL
	GRAVEL; clean to some silt, clay, and sand
	Sandy GRAVEL; clean to some silt and clay
	Silty GRAVEL; up to some clay and sand
	Clayey GRAVEL; up to some silt and sand
	SAND; clean to some silt, clay, and gravel
	Gravelly SAND; clean to some silt and clay
	Silty SAND; up to some clay and gravel
	Clayey SAND; up to some silt and gravel
	SILT; up to some clay, sand, and gravel
	Gravelly SILT; up to some clay and sand
	Sandy SILT; up to some clay and gravel
	Clayey SILT; up to some sand and gravel
	CLAY; up to some silt, sand, and gravel
	Gravelly CLAY; up to some silt and sand
	Sandy CLAY; up to some silt and gravel
	Silty CLAY; up to some sand and gravel
	CLAY with heavy wood debris
	WOOD DEBRIS








BEDROCK SYMBOLS

Symbol	Typical Description
	BASALT
	MUDSTONE
	SILTSTONE
	SANDSTONE










SURFACE MATERIAL SYMBOLS

Symbol	Typical Description
	Asphalt concrete PAVEMENT
	Portland cement concrete PAVEMENT
	Crushed rock BASE COURSE





SAMPLER SYMBOLS

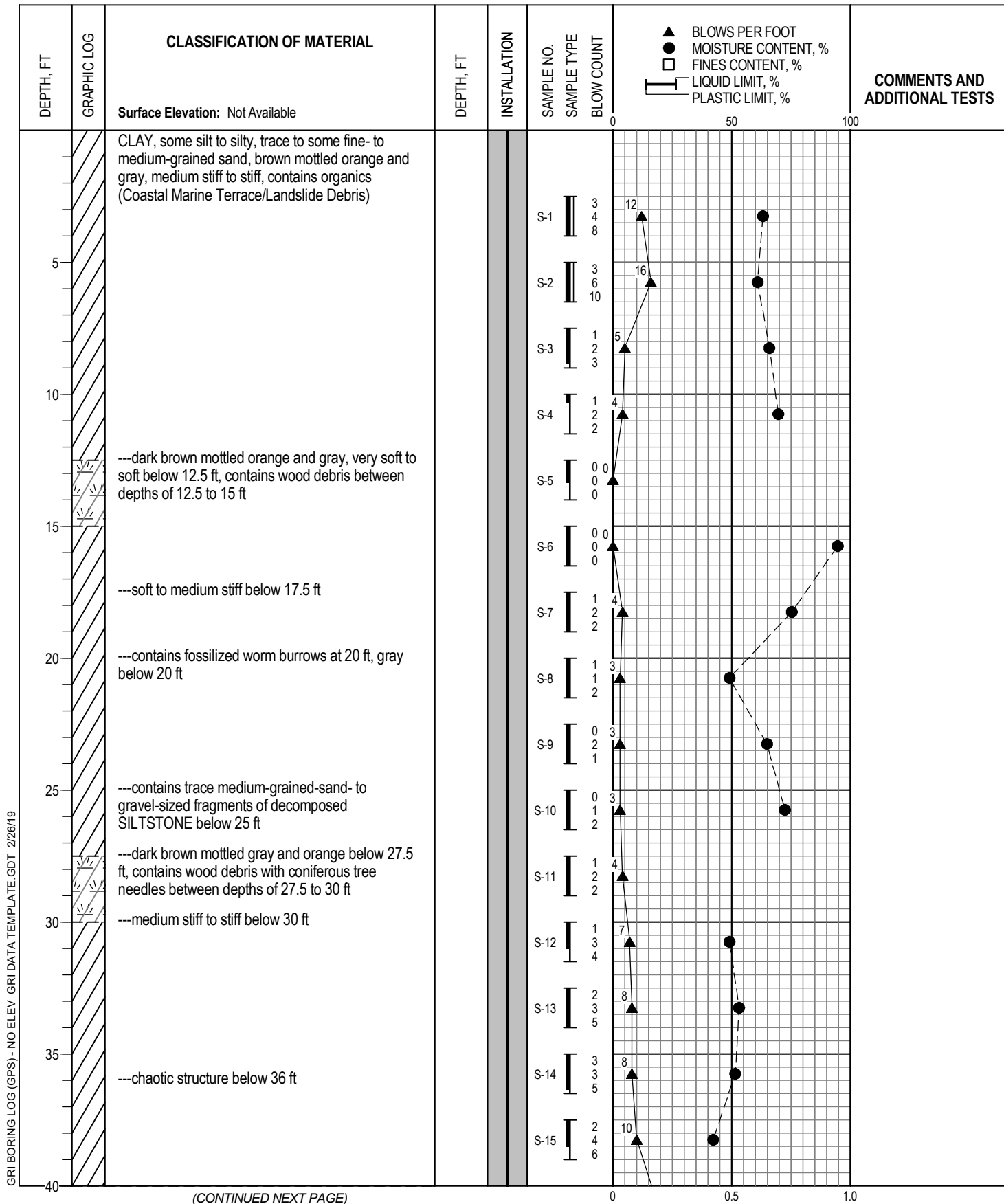
Symbol	Sampler Description
	2.0-in. O.D. split-spoon sampler and Standard Penetration Test with recovery (ASTM D1586)
	Shelby tube sampler with recovery (ASTM D1587)
	3.0-in. O.D. split-spoon sampler with recovery (ASTM D3550)
	Grab Sample
	Rock core sample interval
	Sonic core sample interval
	Geoprobe sample interval

INSTALLATION SYMBOLS

Symbol	Symbol Description
	Flush-mount monument set in concrete
	Concrete, well casing shown where applicable
	Bentonite seal, well casing shown where applicable
	Filter pack, machine-slotted well casing shown where applicable
	Grout, vibrating-wire transducer cable shown where applicable
	Vibrating-wire pressure transducer
	1-in.-diameter solid PVC
	1-in.-diameter hand-slotted PVC
	Grout, inclinometer casing shown where applicable

FIELD MEASUREMENTS

Symbol	Typical Description
	Groundwater level during drilling and date measured
	Groundwater level after drilling and date measured
	Rock core recovery (%)
	Rock quality designation (RQD, %)



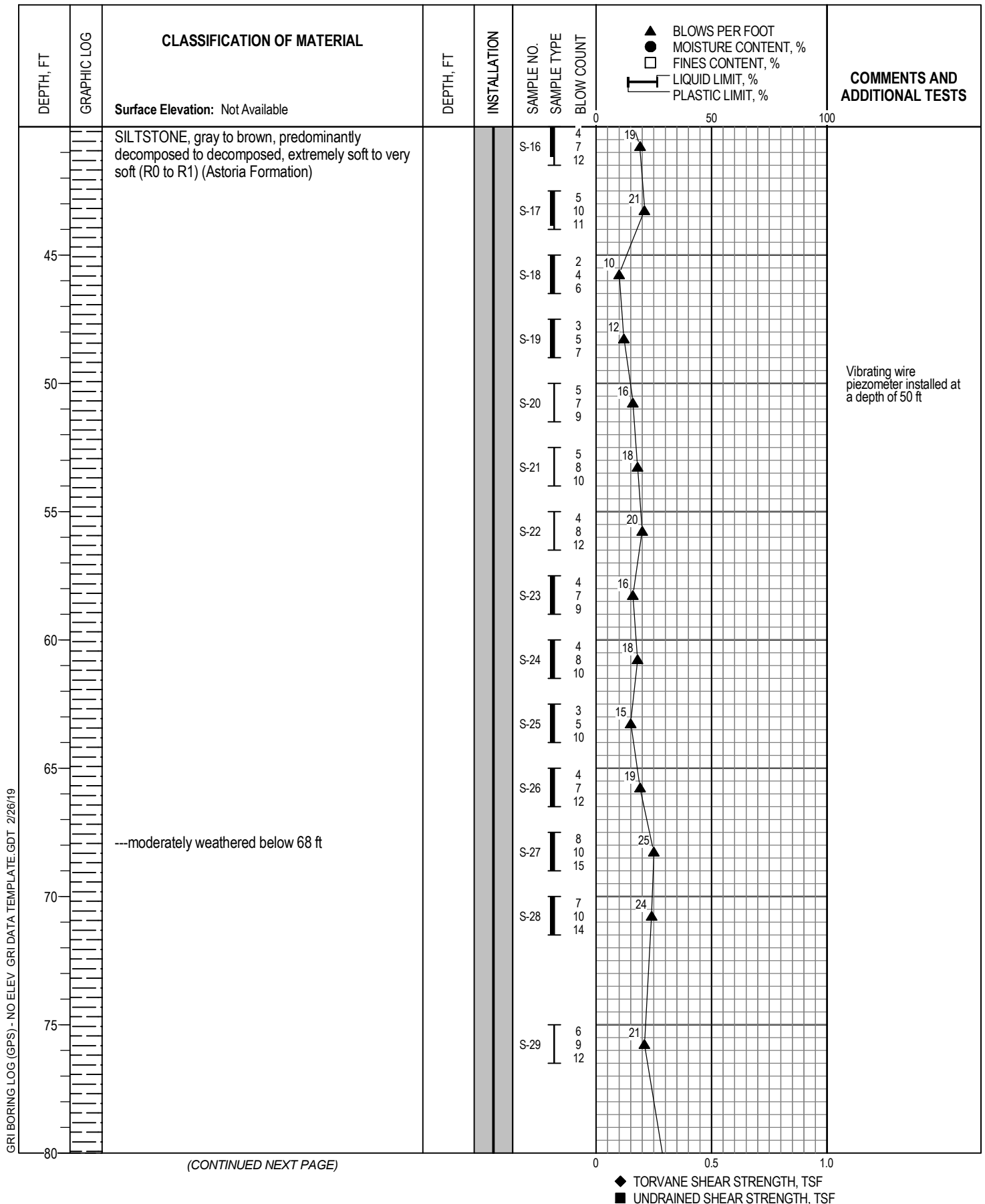
(CONTINUED NEXT PAGE)

Logged By: M. Rauthause		Drilled by: Holt Services, Inc.	
Date Started: 12/7/18		GPS Coordinates: Not Available	
Drilling Method: Mud Rotary		Hammer Type: Auto Hammer	
Equipment: CME 850 Track-Mounted Drill Rig		Weight: 140 lb	
Hole Diameter: 4 in.		Drop: 30 in.	
Note: See Legend for Explanation of Symbols		Energy Ratio:	

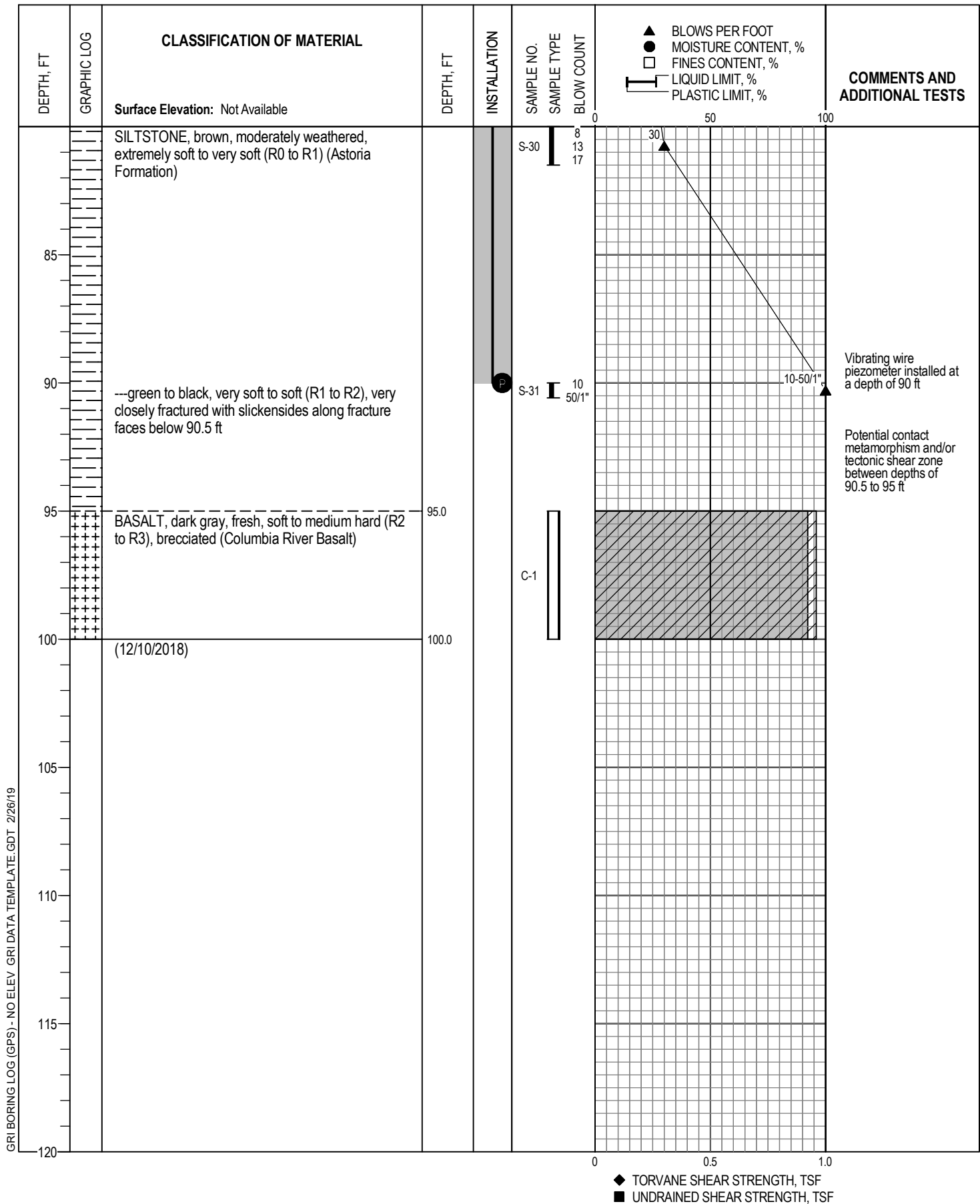
◆ TORVANE SHEAR STRENGTH, TSF
 ■ UNDRAINED SHEAR STRENGTH, TSF



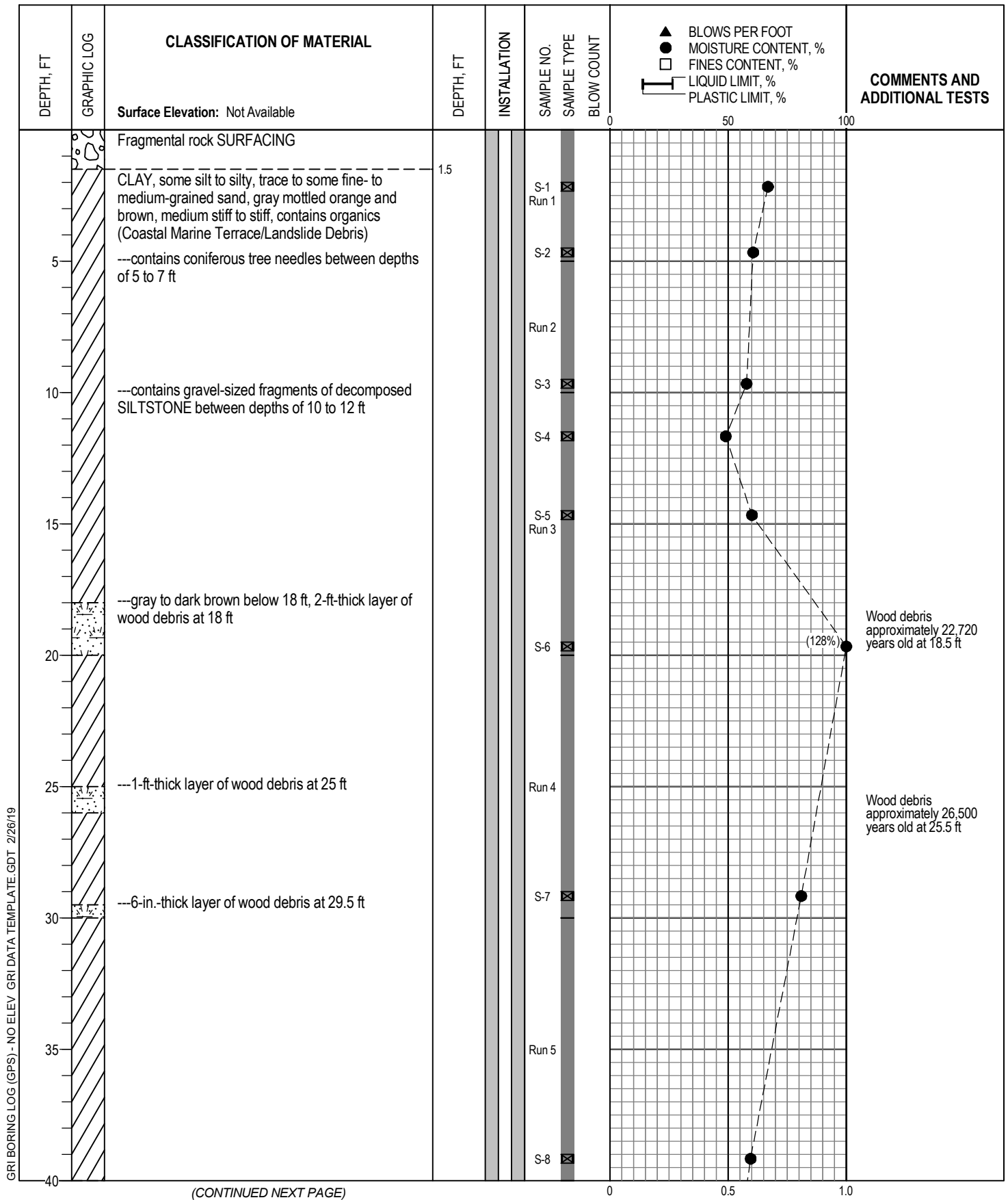
BORING B-1



BORING B-1



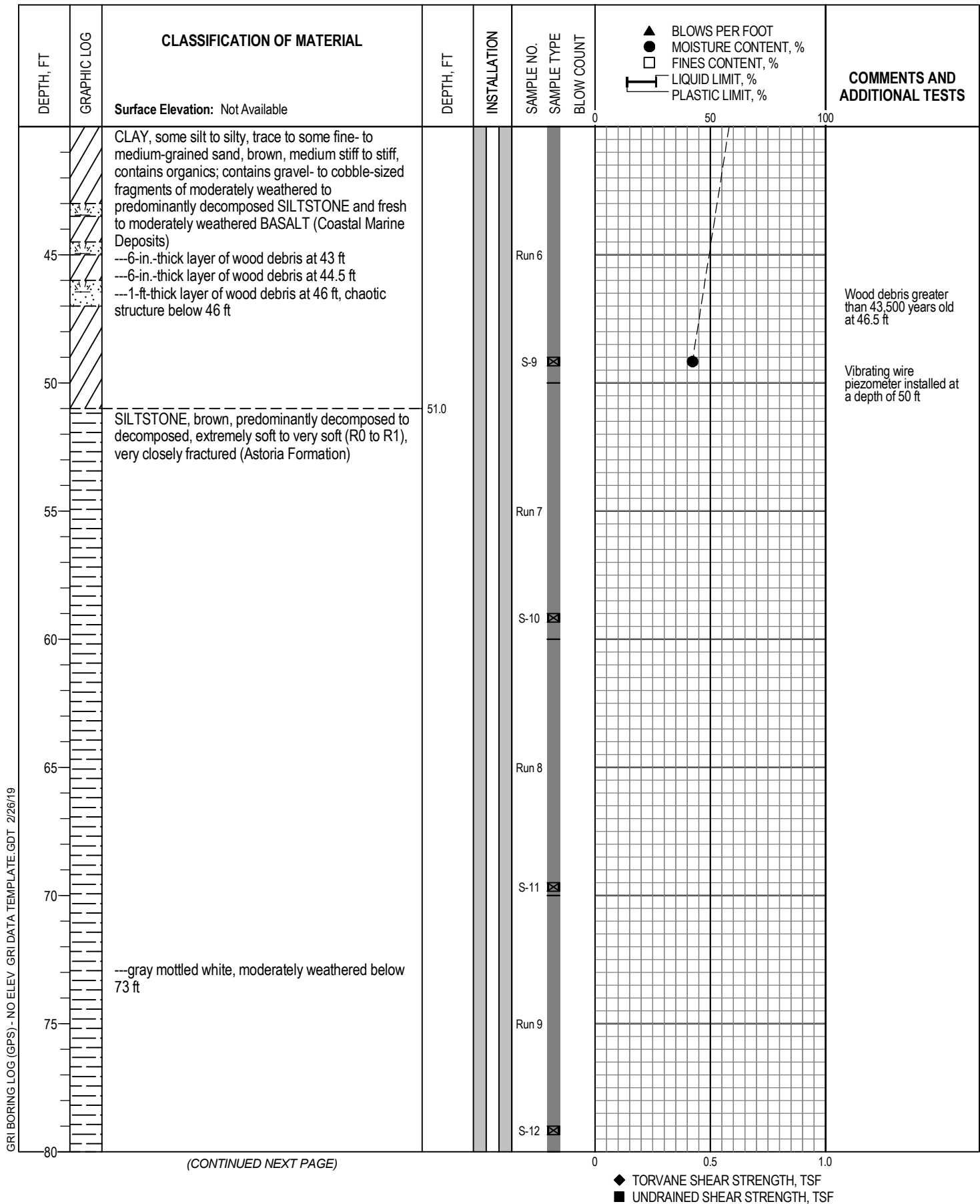
BORING B-1



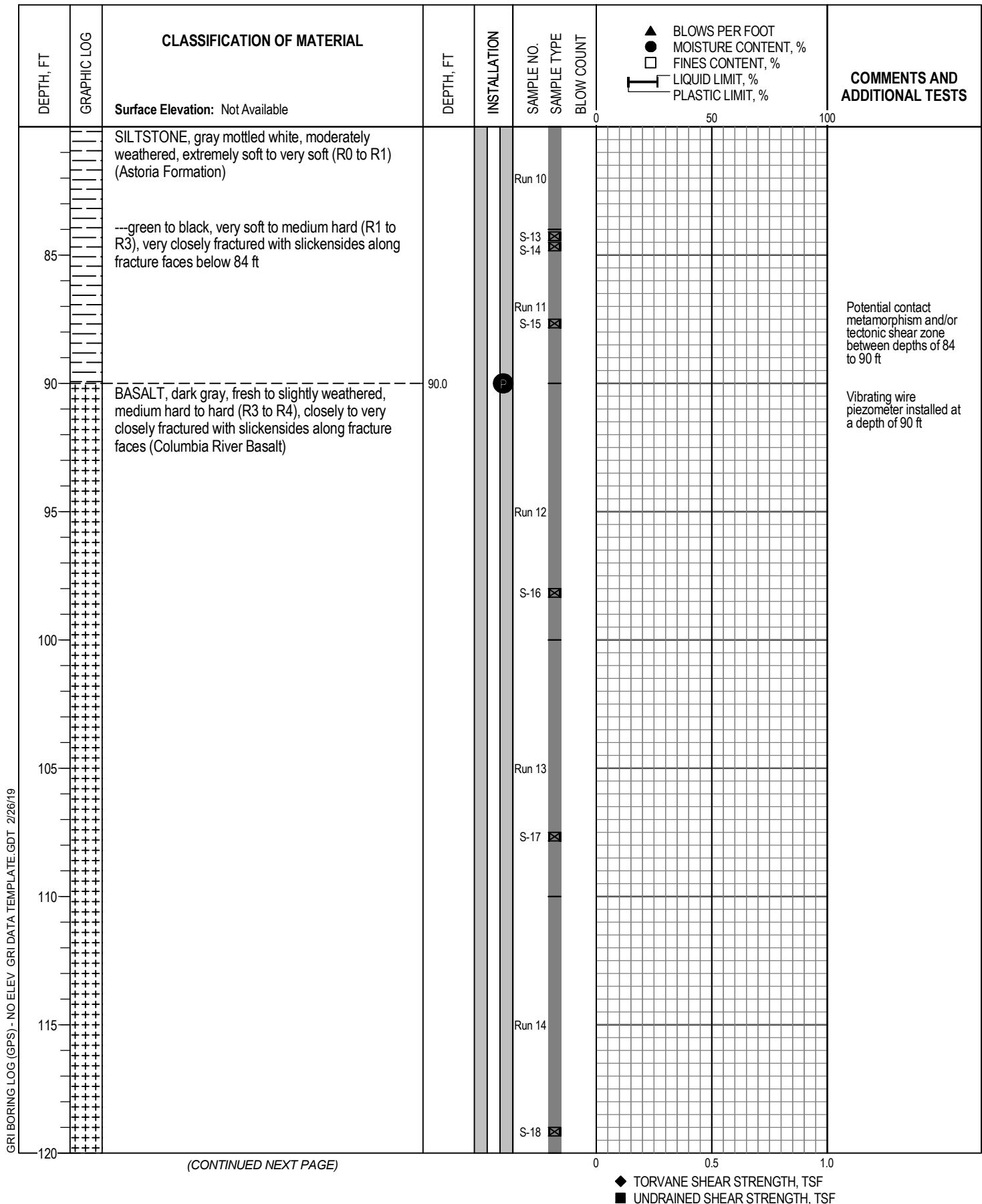
Logged By: N. Utevsy	Drilled by: Yellow Jacket Drilling Services
Date Started: 12/3/18	GPS Coordinates: Not Available
Drilling Method: Roto Sonic	Hammer Type: Not Used
Equipment: Terre Sonic 150	Weight:
Hole Diameter: 7 in.	Drop:
Note: See Legend for Explanation of Symbols	Energy Ratio:



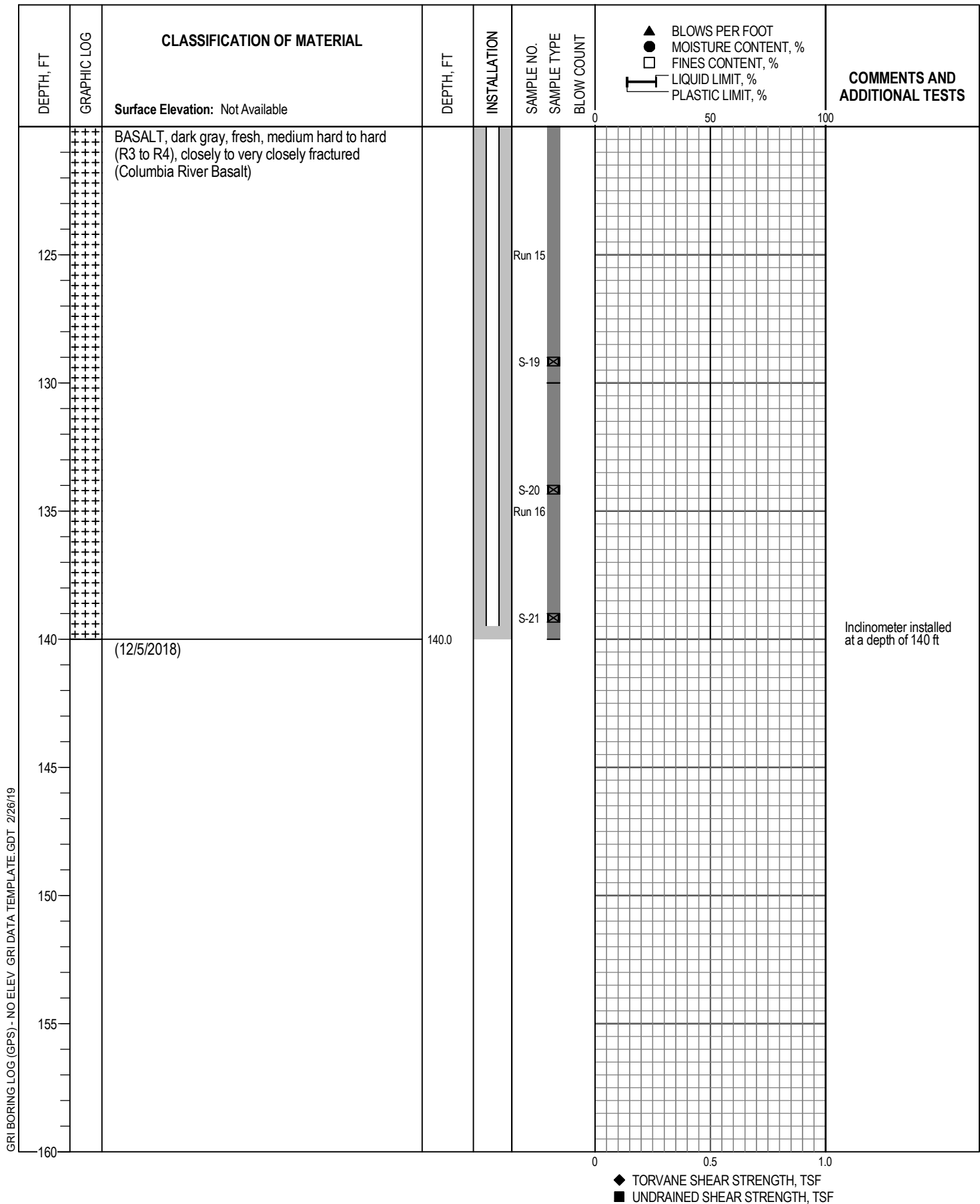
BORING B-2



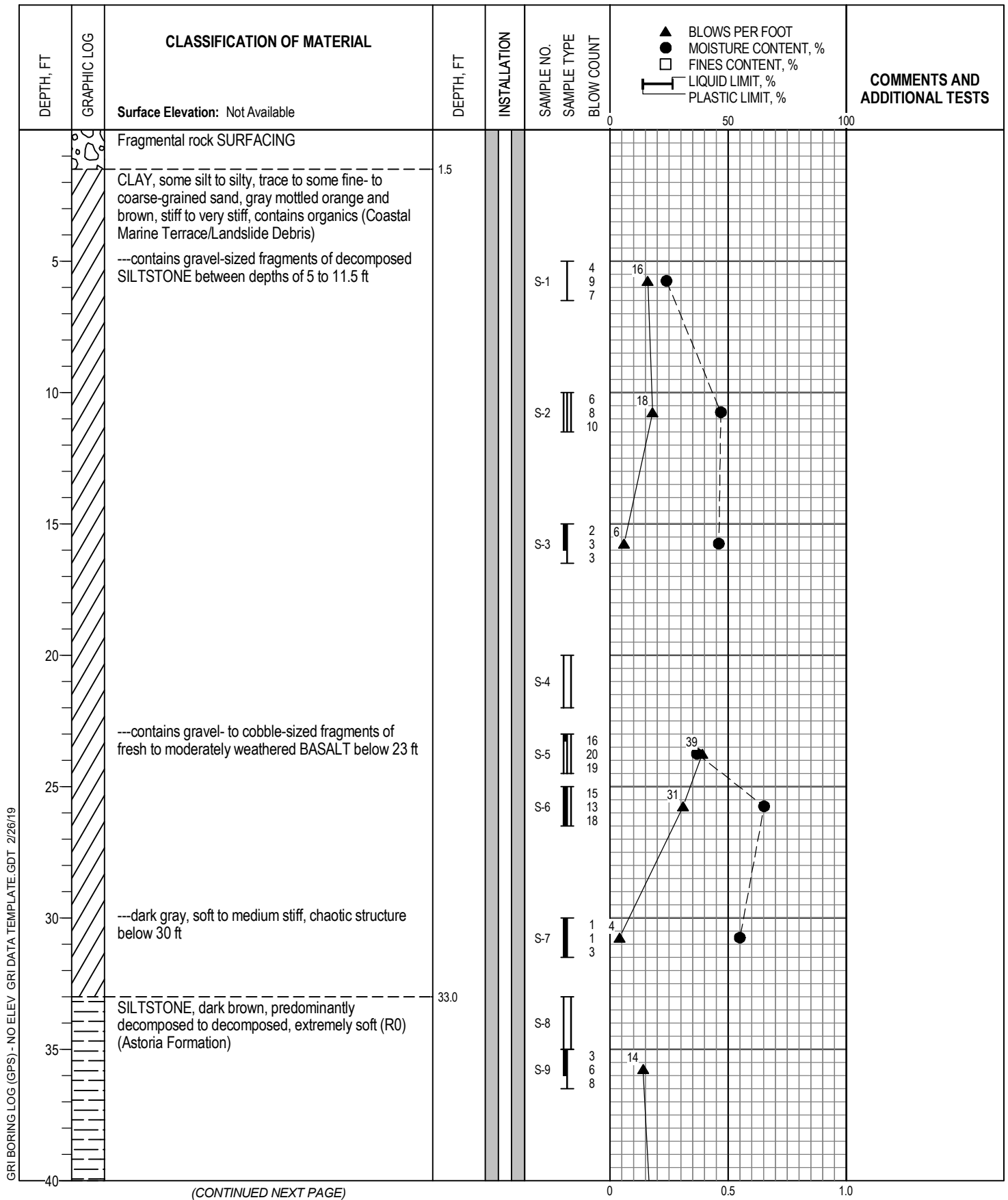
BORING B-2



BORING B-2



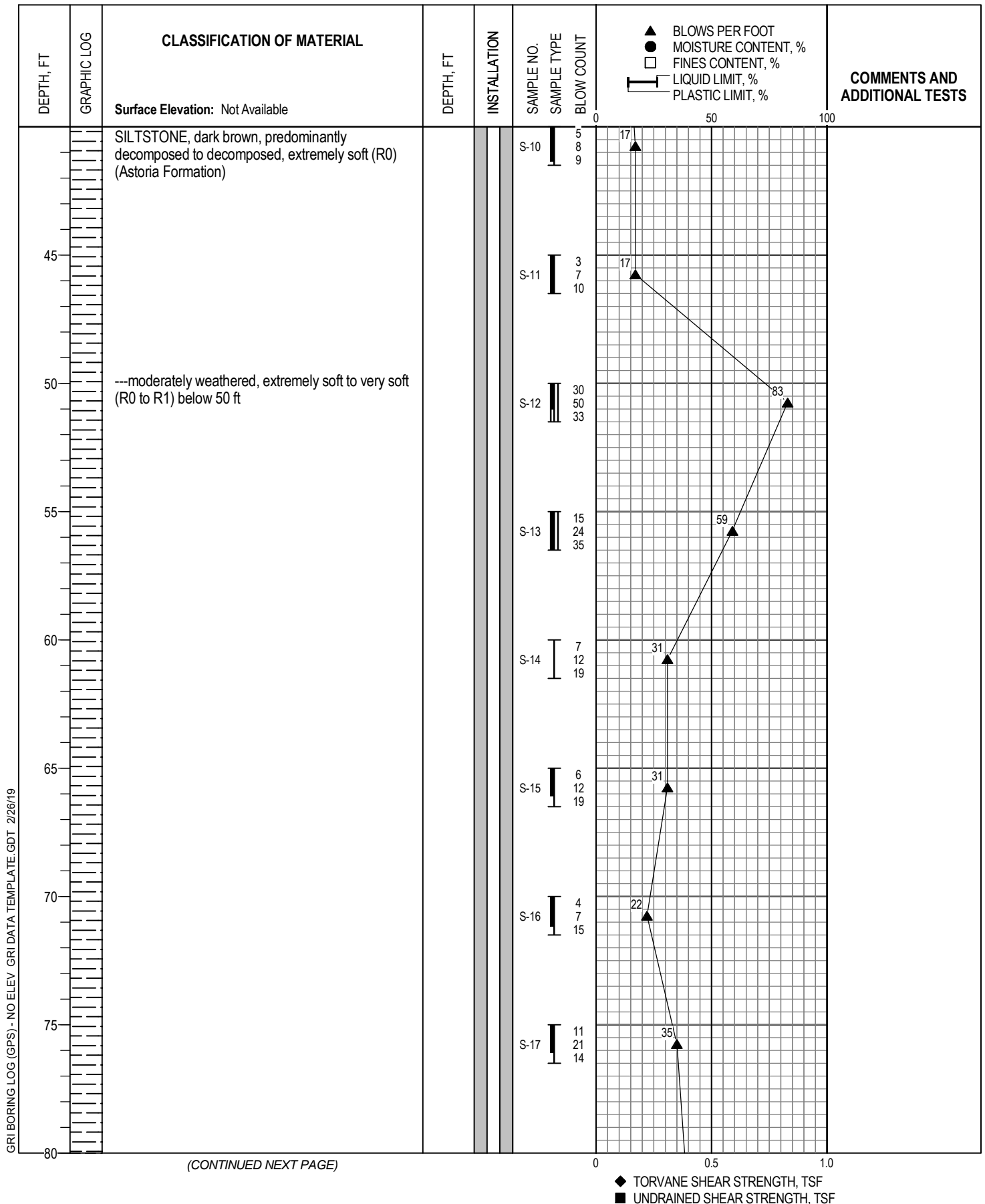
BORING B-2



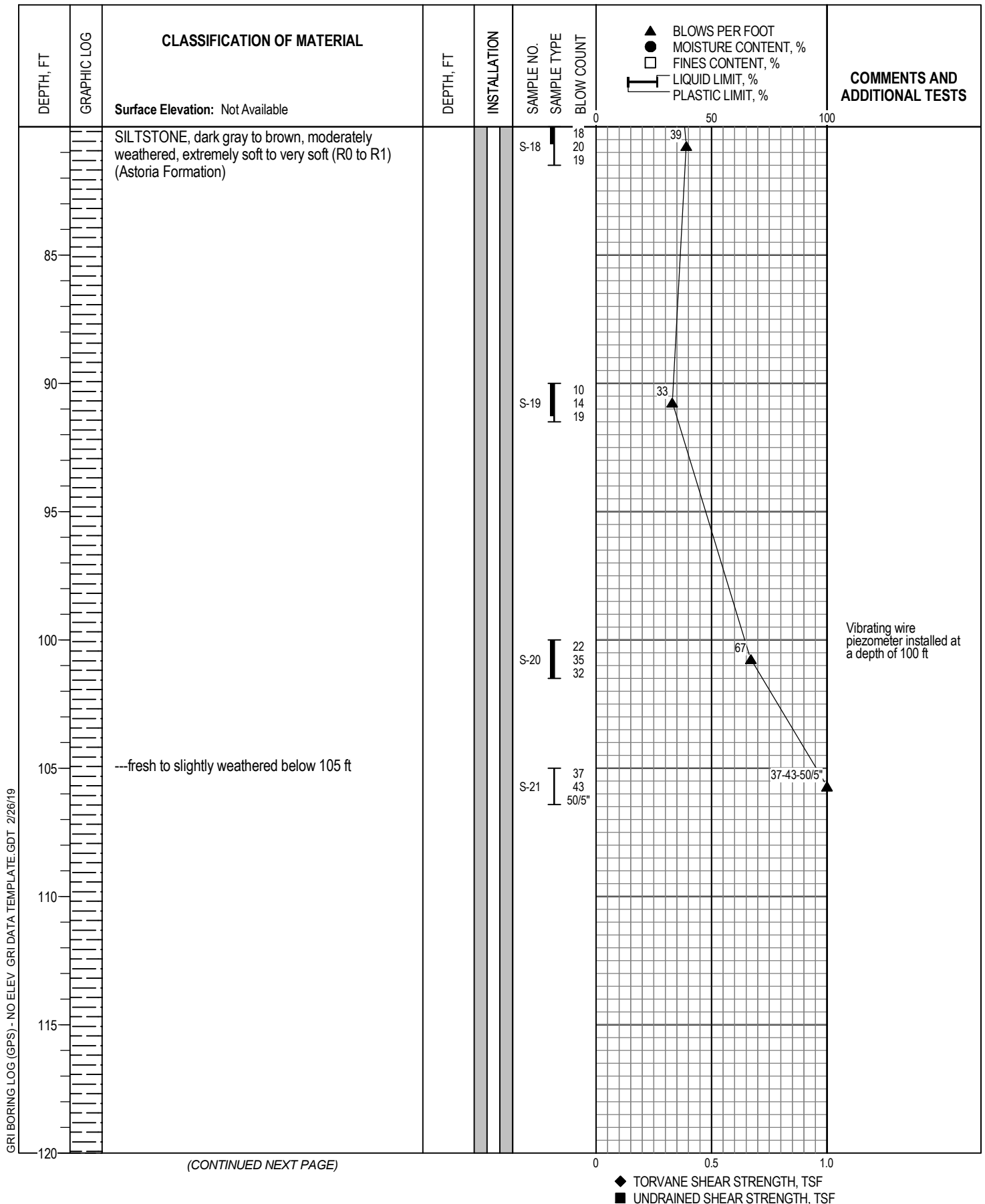
Logged By: M. Rauthause	Drilled by: Holt Services, Inc.
Date Started: 12/3/18	GPS Coordinates: Not Available
Drilling Method: Mud Rotary	Hammer Type: Auto Hammer
Equipment: CME 850 Track-Mounted Drill Rig	Weight: 140 lb
Hole Diameter: 5 in.	Drop: 30 in.
Note: See Legend for Explanation of Symbols	Energy Ratio:



BORING B-3



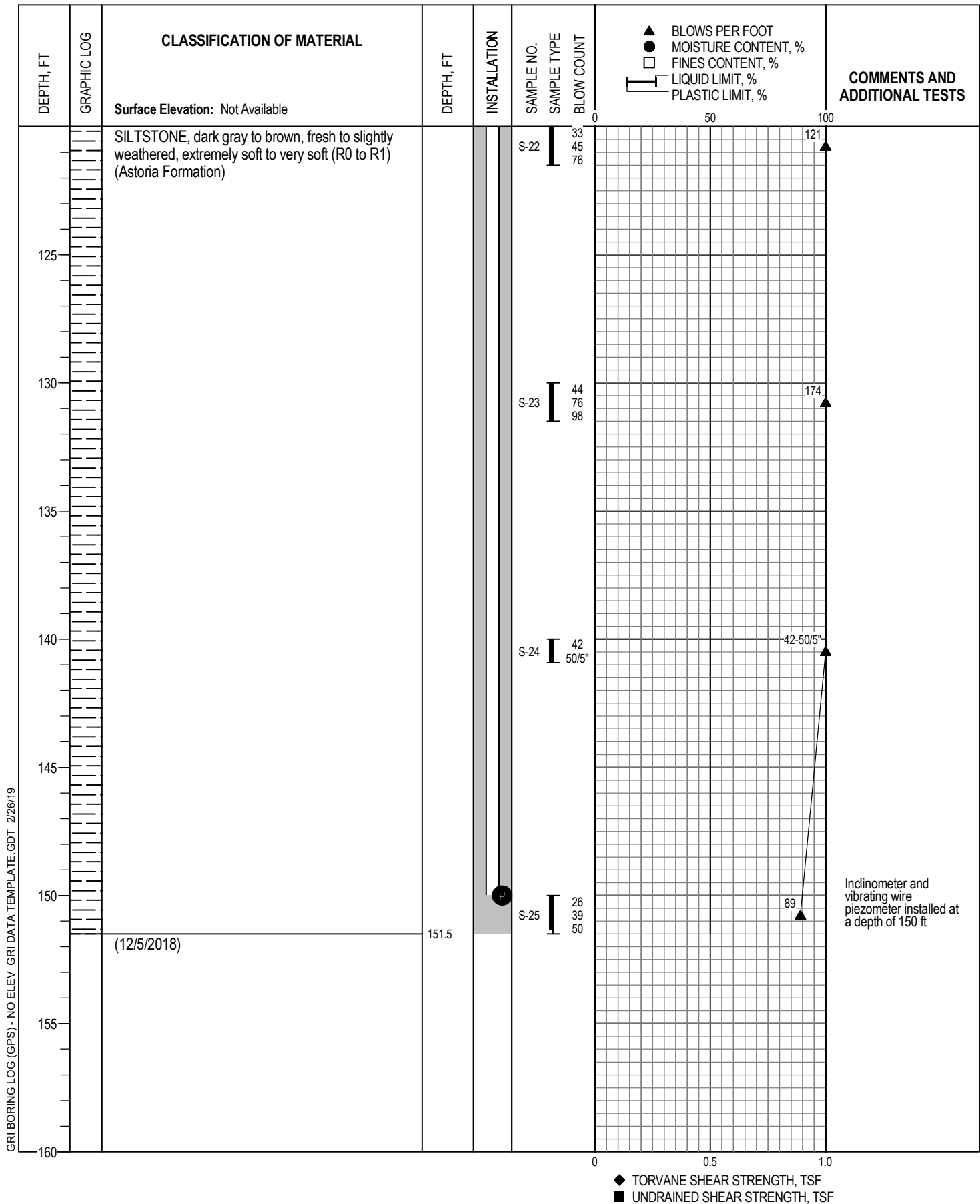
BORING B-3



GRI BORING LOG (GPS) - NO ELEV GRI DATA TEMPLATE: GDT 2/26/19



BORING B-3



BORING B-3



BORING B-1: 95 - 100 FT



ROCK CORE PHOTOGRAPH



CORE PHOTOGRAPHS
(BORING B-2)

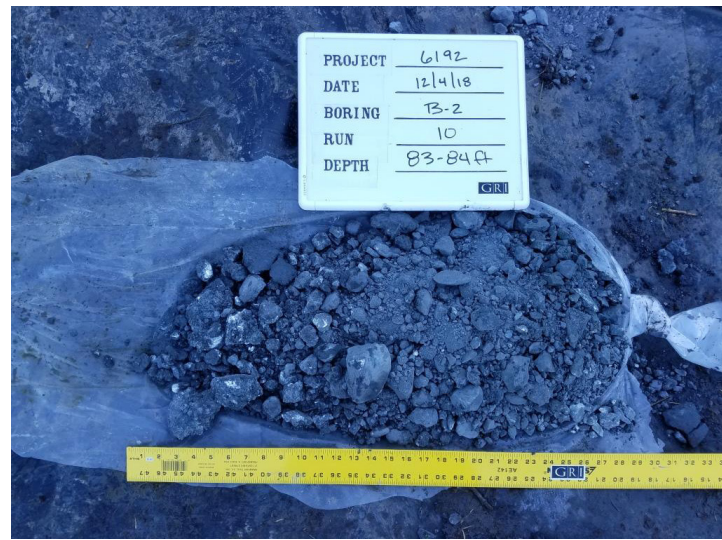
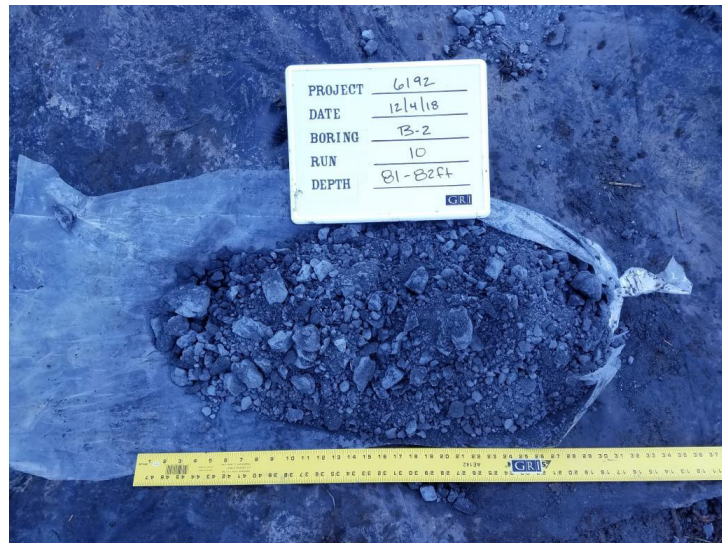


CORE PHOTOGRAPHS
(BORING B-2, CONTINUED)





CORE PHOTOGRAPHS
(BORING B-2, CONTINUED)



CORE PHOTOGRAPHS (BORING B-2, CONTINUED)



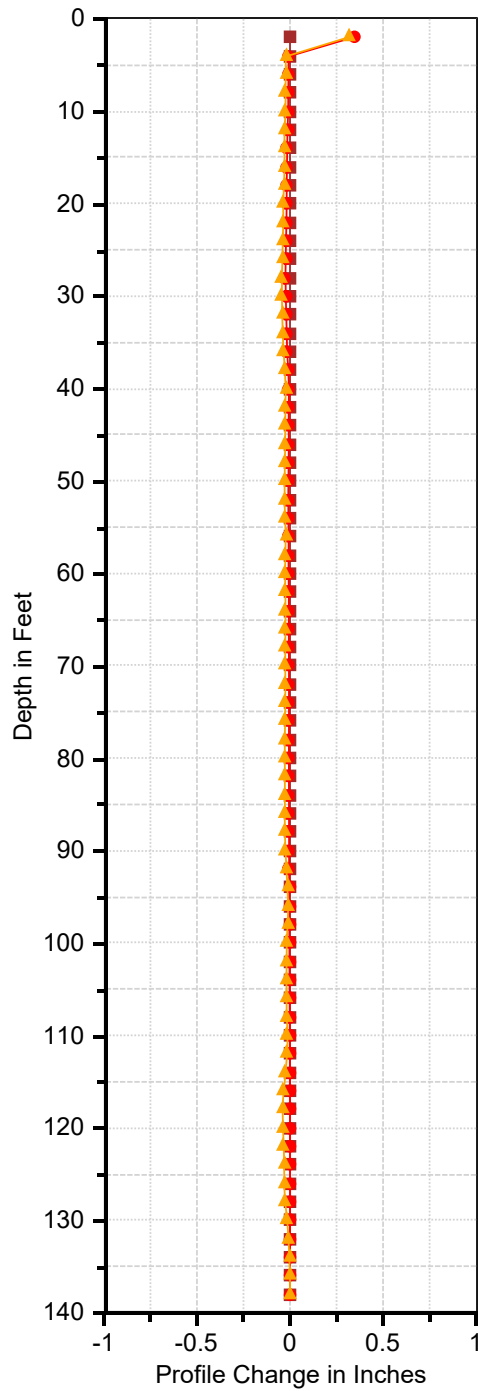
CORE PHOTOGRAPHS
(BORING B-2, CONTINUED)



CORE PHOTOGRAPHS
(BORING B-2, CONTINUED)

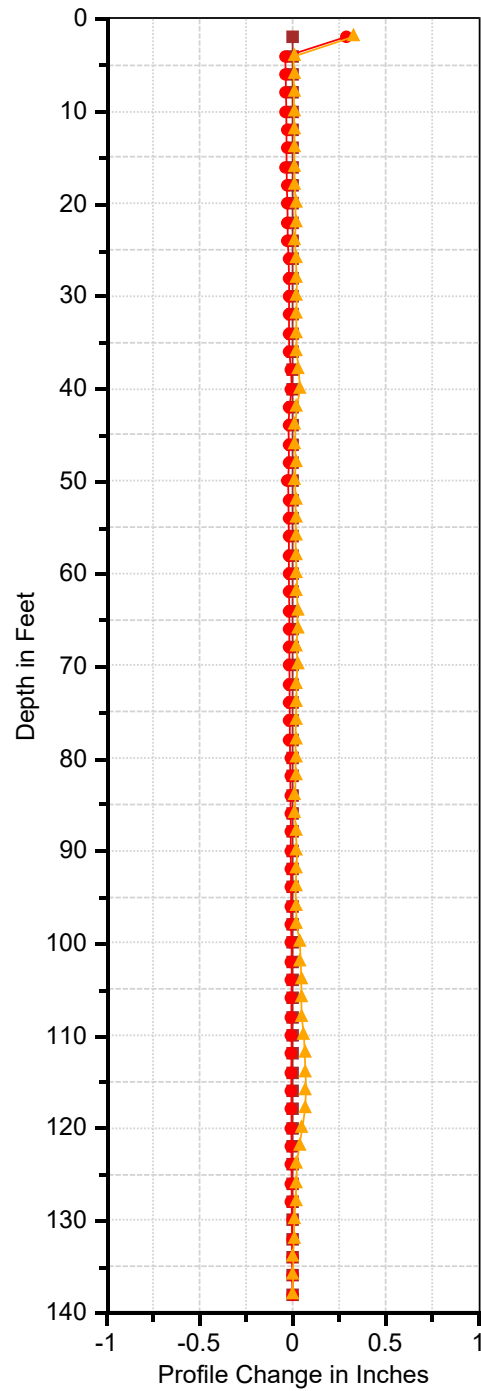
6192 B-2A A

12/12/2018 1/10/2019 2/8/2019



6192 B-2A B

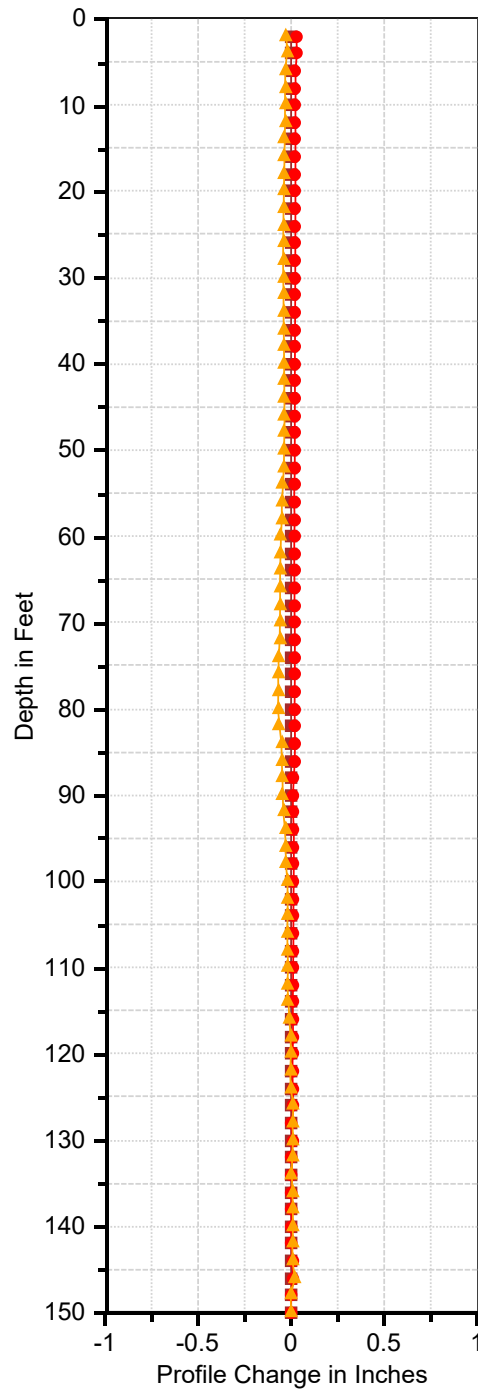
12/12/2018 1/10/2019 2/8/2019



INCLINOMETER SUMMARY BORING B-2

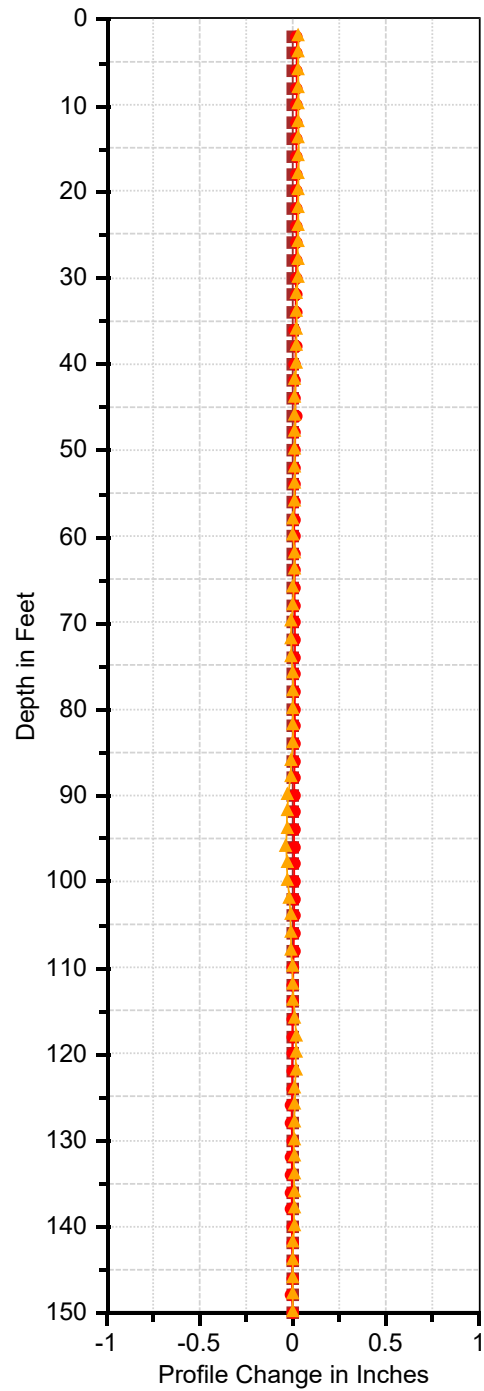
6192 B-3A A

12/12/2018 1/10/2019 2/8/2019

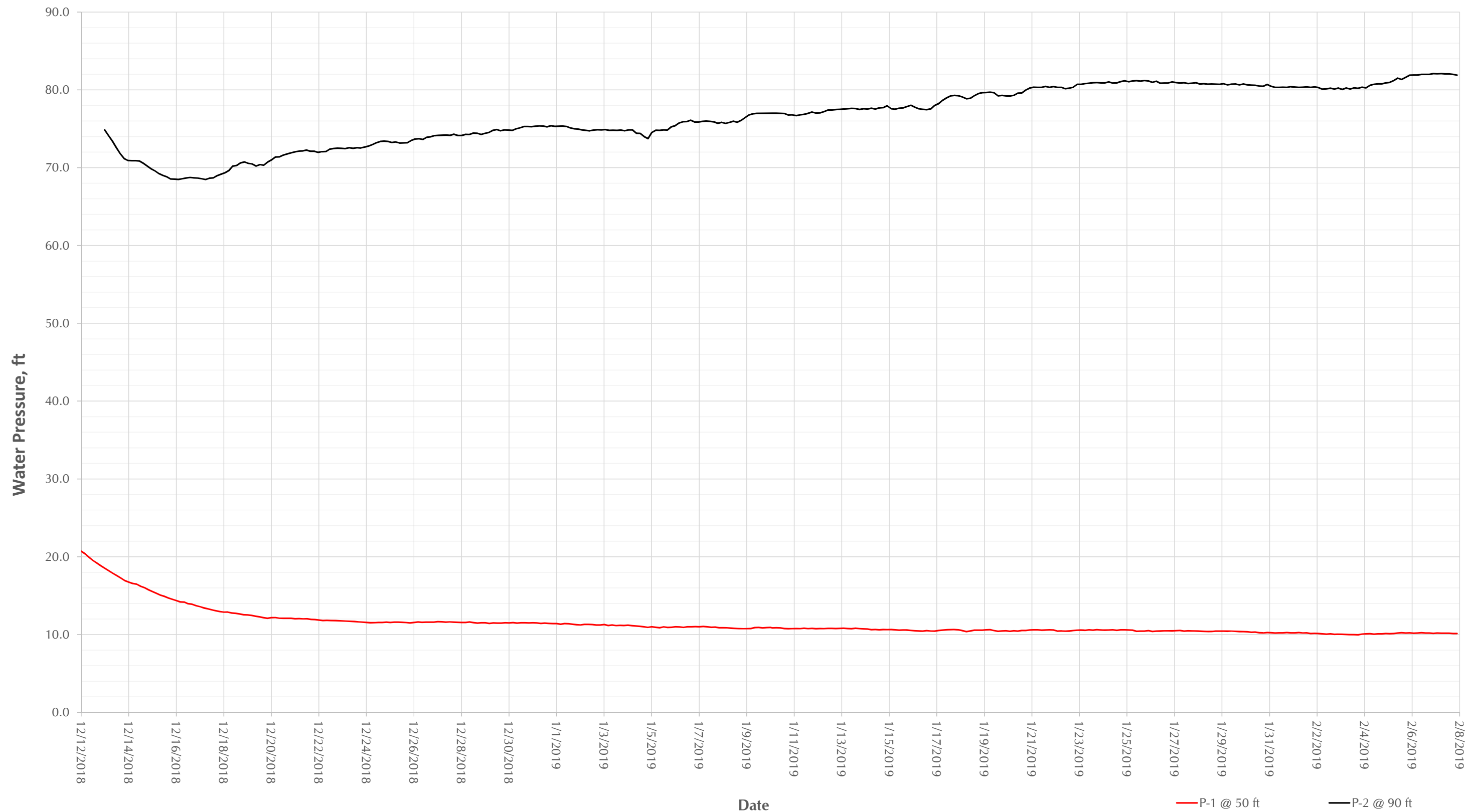


6192 B-3A B

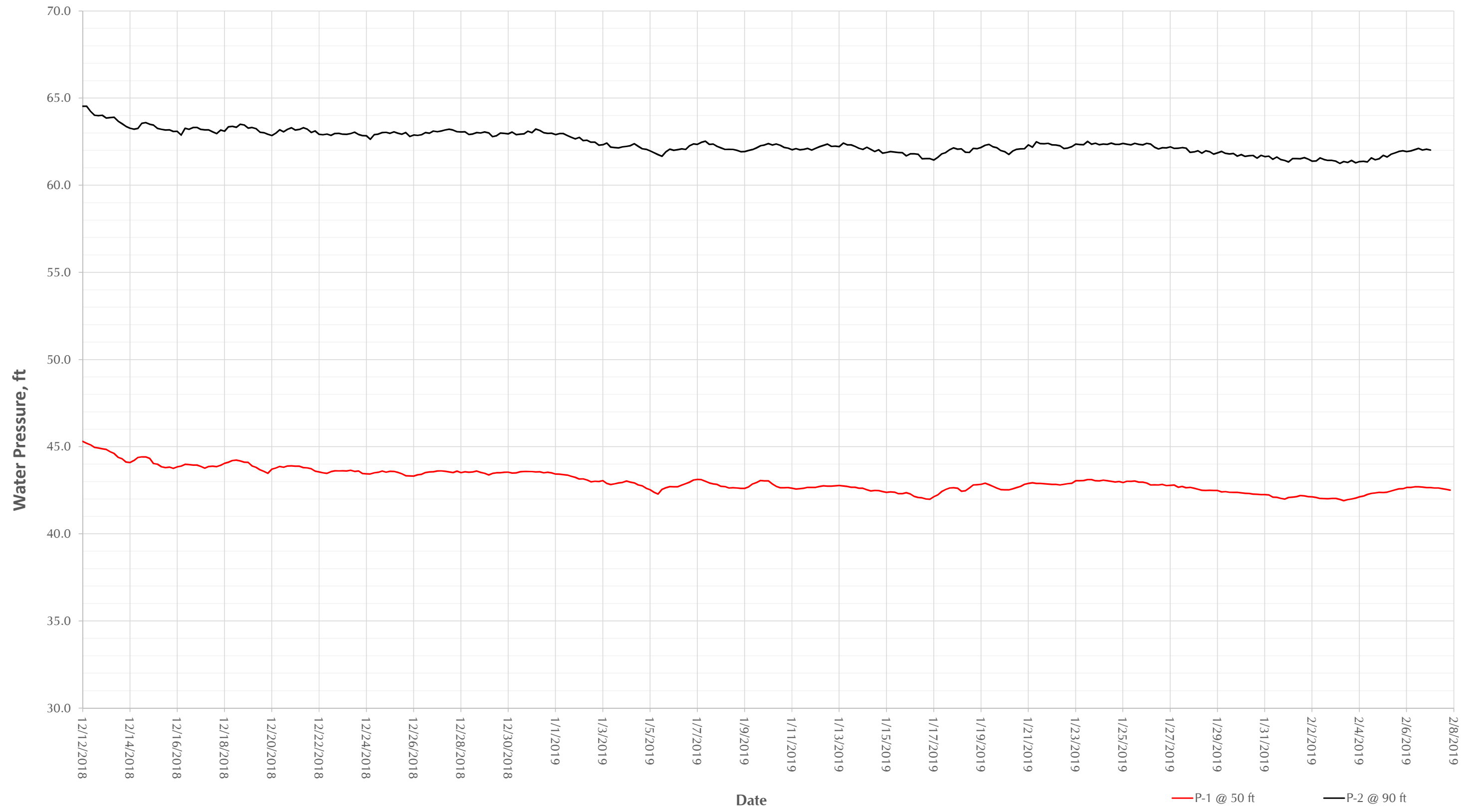
12/12/2018 1/10/2019 2/8/2019



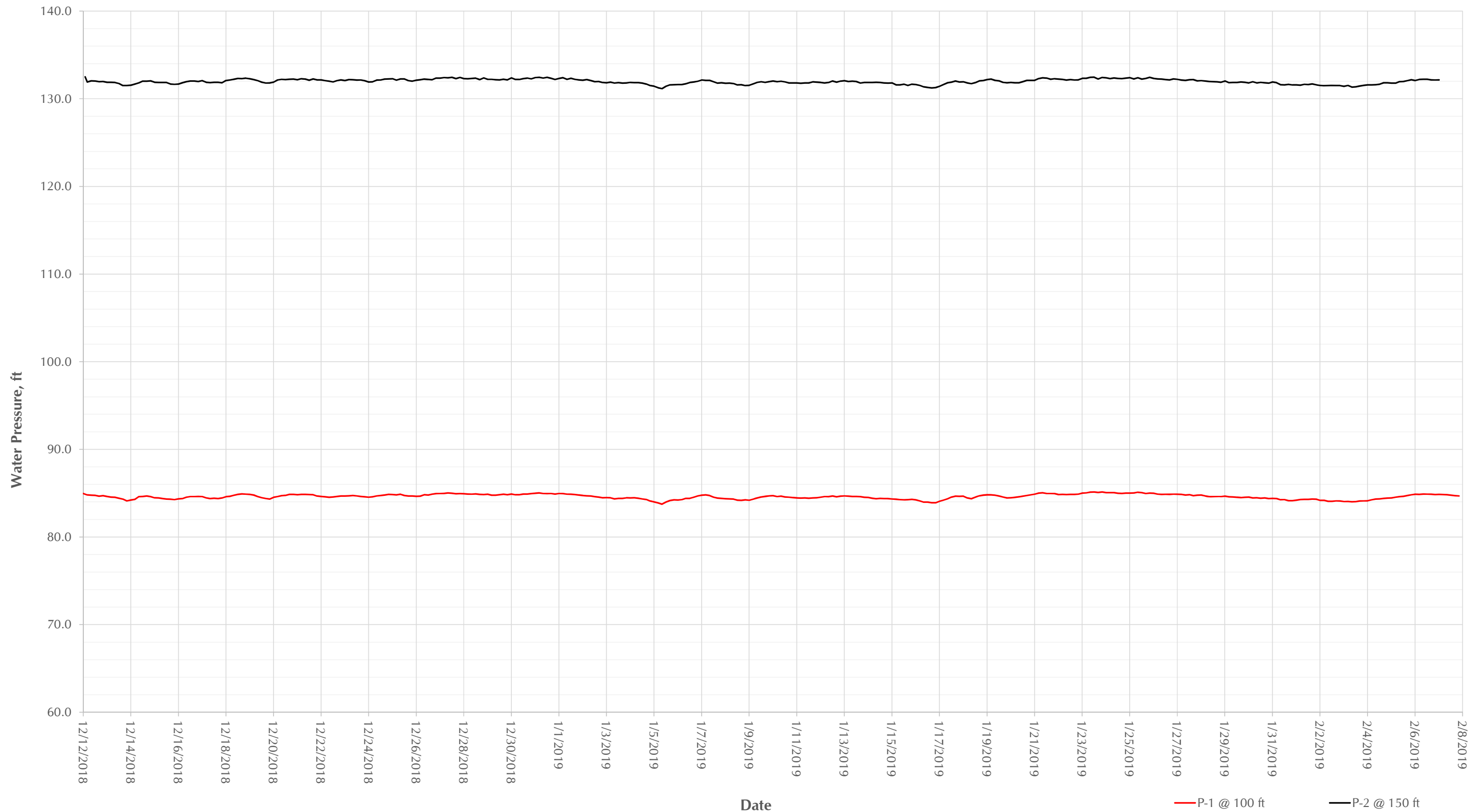
INCLINOMETER SUMMARY BORING B-3



PIEZOMETER SUMMARY
BORING B-1



PIEZOMETER SUMMARY BORING B-2



PIEZOMETER SUMMARY BORING B-3

APPENDIX B

Conventional Radiocarbon Age Test Results



Beta Analytic
TESTING LABORATORY

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

December 21, 2018

Mr. Gregory Martin
GRI
9750 Nimbus Avenue
Beaverton, OR 97008
United States

RE: Radiocarbon Dating Results

Dear Mr. Martin,

Enclosed are the radiocarbon dating results for three samples recently sent to us. The report sheet contains the Conventional Radiocarbon Age (BP), the method used, material type, and applied pretreatments, any sample specific comments and, where applicable, the two-sigma calendar calibration range. The Conventional Radiocarbon ages have been corrected for total isotopic fractionation effects (natural and laboratory induced).

All results (excluding some inappropriate material types) which fall within the range of available calibration data are calibrated to calendar years (cal BC/AD) and calibrated radiocarbon years (cal BP). Calibration was calculated using one of the databases associated with the 2013 INTCAL program (cited in the references on the bottom of the calibration graph page provided for each sample.) Multiple probability ranges may appear in some cases, due to short-term variations in the atmospheric ^{14}C contents at certain time periods. Looking closely at the calibration graph provided and where the BP sigma limits intercept the calibration curve will help you understand this phenomenon.

Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than ± 30 years, a conservative ± 30 BP is cited for the result.

All work on these samples was performed in our laboratories in Miami under strict chain of custody and quality control under ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 accreditation protocols. Sample, modern and blanks were all analyzed in the same chemistry lines by qualified professional technicians using identical reagents and counting parameters within our own particle accelerators. A quality assurance report is posted to your directory for each result.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,

Digital signature on file

Chris Patrick Director



REPORT OF RADIOCARBON DATING ANALYSES

Gregory Martin

Report Date: December 21, 2018

GRI

Material Received: December 10, 2018

Laboratory Number

Sample Code Number

Conventional Radiocarbon Age (BP) or
Percent Modern Carbon (pMC) & Stable Isotopes

Calendar Calibrated Results: 95.4 % Probability
High Probability Density Range Method (HPD)

Beta - 512337

S-5B-18.5

22720 +/- 80 BP

IRMS $\delta^{13}C$: -25.9 o/oo

(95.4%)

25408 - 24781 cal BC

(27357 - 26730 cal BP)

Submitter Material: Woody Material

Pretreatment: (wood) acid/alkali/acid

Analyzed Material: Wood

Analysis Service: AMS-Standard delivery

Percent Modern Carbon: 5.91 +/- 0.06 pMC

Fraction Modern Carbon: 0.0591 +/- 0.0006

D14C: -940.89 +/- 0.59 o/oo

$\Delta^{14}C$: -941.37 +/- 0.59 o/oo(1950:2,018.00)

Measured Radiocarbon Age: (without $\delta^{13}C$ correction): 22740 +/- 80 BP

Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the ^{14}C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. $\delta^{13}C$ values are on the material itself (not the AMS $\delta^{13}C$). $\delta^{13}C$ and $\delta^{15}N$ values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.



REPORT OF RADIOCARBON DATING ANALYSES

Gregory Martin

Report Date: December 21, 2018

GRI

Material Received: December 10, 2018

Laboratory Number

Sample Code Number

Conventional Radiocarbon Age (BP) or
Percent Modern Carbon (pMC) & Stable Isotopes

Calendar Calibrated Results: 95.4 % Probability
High Probability Density Range Method (HPD)

Beta - 512338

S-6B-25.5

26500 +/- 100 BP

IRMS $\delta^{13}C$: -25.8 o/oo

(95.4%)

29055 - 28626 cal BC

(31004 - 30575 cal BP)

Submitter Material: Woody Material

Pretreatment: (wood) acid/alkali/acid

Analyzed Material: Wood

Analysis Service: AMS-Standard delivery

Percent Modern Carbon: 3.69 +/- 0.05 pMC

Fraction Modern Carbon: 0.0369 +/- 0.0005

D14C: -963.08 +/- 0.46 o/oo

$\Delta^{14}C$: -963.38 +/- 0.46 o/oo(1950:2,018.00)

Measured Radiocarbon Age: (without $\delta^{13}C$ correction): 26510 +/- 100 BP

Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the ^{14}C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. $\delta^{13}C$ values are on the material itself (not the AMS $\delta^{13}C$). $\delta^{13}C$ and $\delta^{15}N$ values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.



REPORT OF RADIOCARBON DATING ANALYSES

Gregory Martin

Report Date: December 21, 2018

GRI

Material Received: December 10, 2018

Laboratory Number

Sample Code Number

Conventional Radiocarbon Age (BP) or
Percent Modern Carbon (pMC) & Stable Isotopes

Calendar Calibrated Results: 95.4 % Probability
High Probability Density Range Method (HPD)

Beta - 512339

S-8B-46.5

> 43500 BP

IRMS $\delta^{13}C$: -25.4 o/oo

Submitter Material: Woody Material
Pretreatment: (wood) acid/alkali/acid
Analyzed Material: Wood
Analysis Service: AMS-Standard delivery
Percent Modern Carbon: < 0.44 pMC
Fraction Modern Carbon: < 0.0044
D14C: < -995.5 o/oo
 $\Delta^{14}C$: < -995.6 o/oo(1950:2,018.00)
Measured Radiocarbon Age: (without d13C correction): NA
Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the ^{14}C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. $\delta^{13}C$ values are on the material itself (not the AMS $\delta^{13}C$). $\delta^{13}C$ and $\delta^{15}N$ values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

Calibration of Radiocarbon Age to Calendar Years

(highest probability ranges: INTCAL13)

(Variables: $\delta^{13}\text{C} = -25.9$ o/oo)

Laboratory number **Beta-512337**

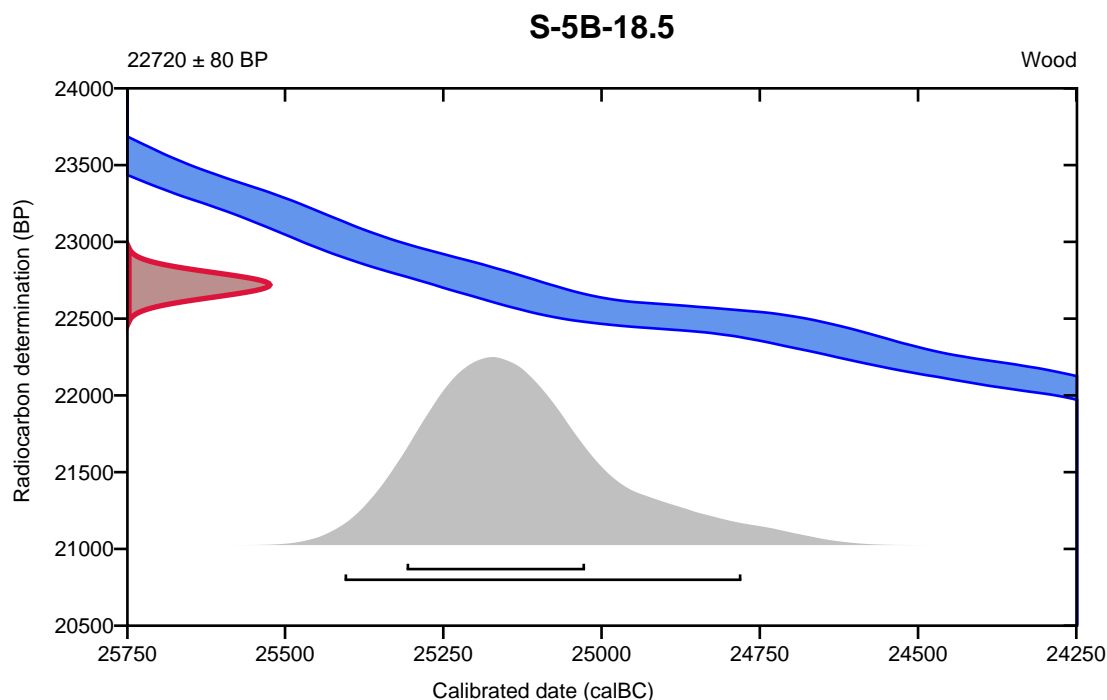
Conventional radiocarbon age **22720 \pm 80 BP**

95.4% probability

(95.4%) 25408 - 24781 cal BC (27357 - 26730 cal BP)

68.2% probability

(68.2%) 25310 - 25028 cal BC (27259 - 26977 cal BP)



Database used
INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. *Radiocarbon*, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, *Radiocarbon* 55(4).

Calibration of Radiocarbon Age to Calendar Years

(highest probability ranges: INTCAL13)

(Variables: $\delta^{13}\text{C} = -25.8$ o/oo)

Laboratory number **Beta-512338**

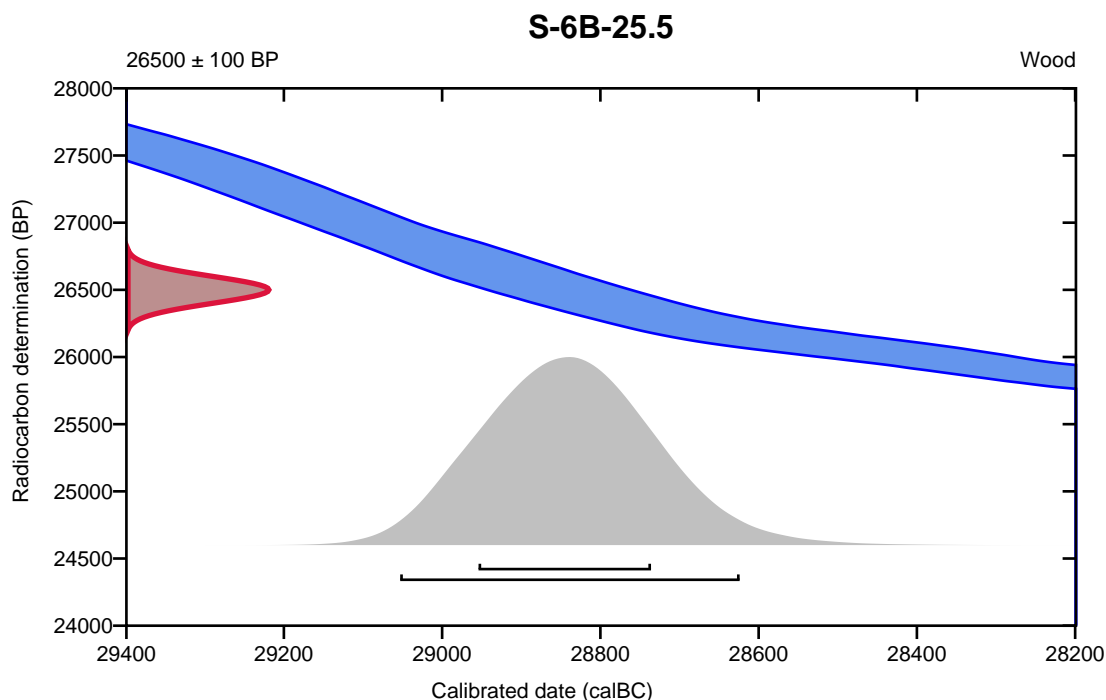
Conventional radiocarbon age **26500 \pm 100 BP**

95.4% probability

(95.4%) 29055 - 28626 cal BC (31004 - 30575 cal BP)

68.2% probability

(68.2%) 28956 - 28738 cal BC (30905 - 30687 cal BP)



Database used
INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

APPENDIX C

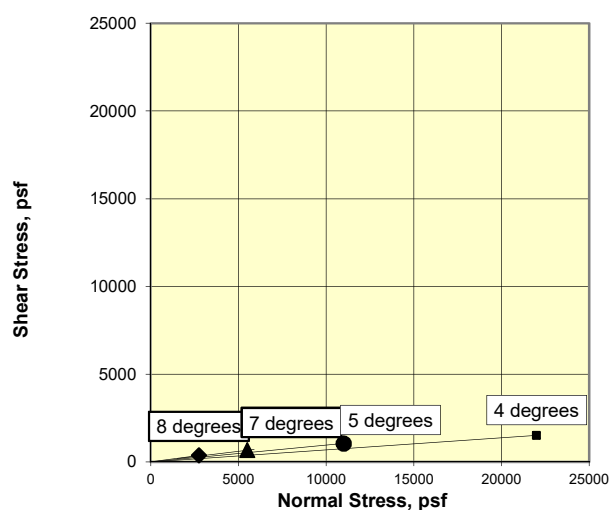
Drained Residual Torsional Shear Strength Test Results



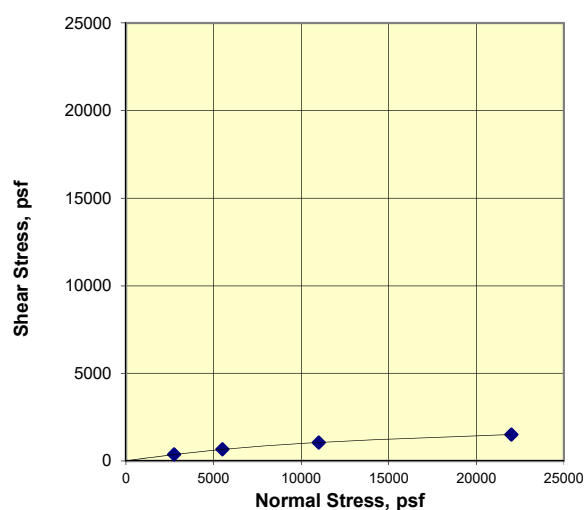
Drained Residual Torsional Shear Strength (ASTM D6467)

BGL Job No.:	028-016		Boring:	B-1		Date:	1/2/2019		Clay, %:	52.2	
Client:	GRI		Sample:	S-18/S-19		By:	PJ		LL:	79.6	
Project Name:	Cannon Beach		Depth (ft):	45-47.5		Checked:	PJ		PL:	30.3	
Project Number:	6192		Test Type:	Reconstituted Residual				Sample Preparation:		<#40	
Soil Type:	Dark Gray Fat CLAY					Remarks: A small friction correction was applied to each point. This material was extremely difficult to get into a residual condition without disturbing the shear plane. The shear strength of the 22 ksf point was still slowly dropping at the end of the test. The actual shear strength may be slightly lower than the reported value.					
Normal Stress, psf	2750	5500	11000	22000							
Secant Phi, deg.:	8	7	5	4							

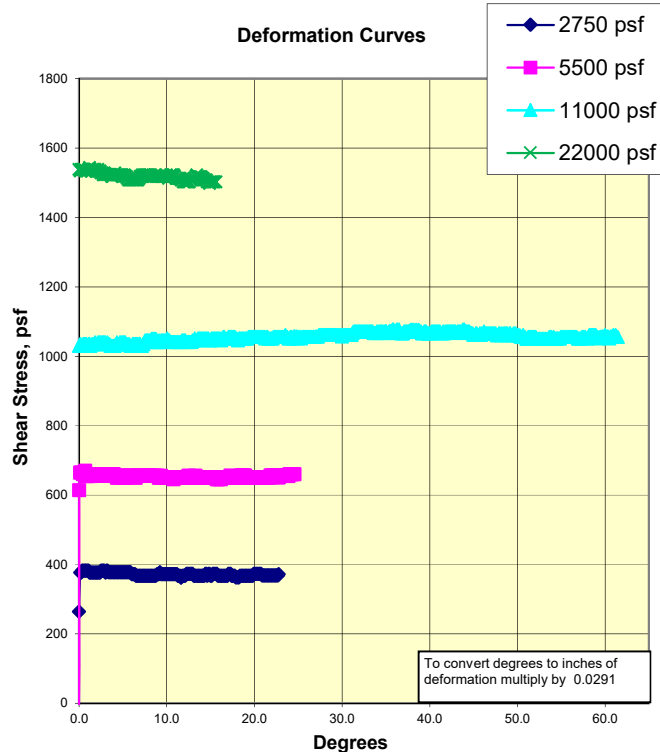
Secant Residual Stress Friction Angles



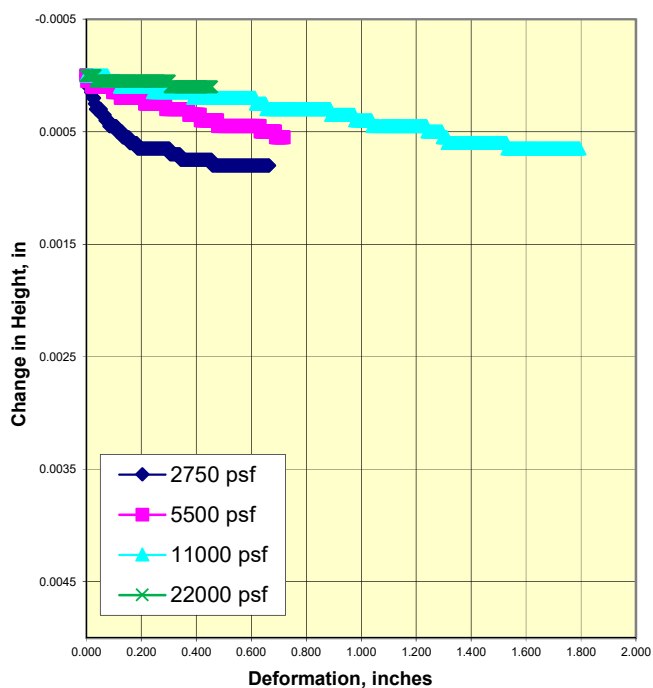
Strength Envelope



Deformation Curves



Vertical Deformation

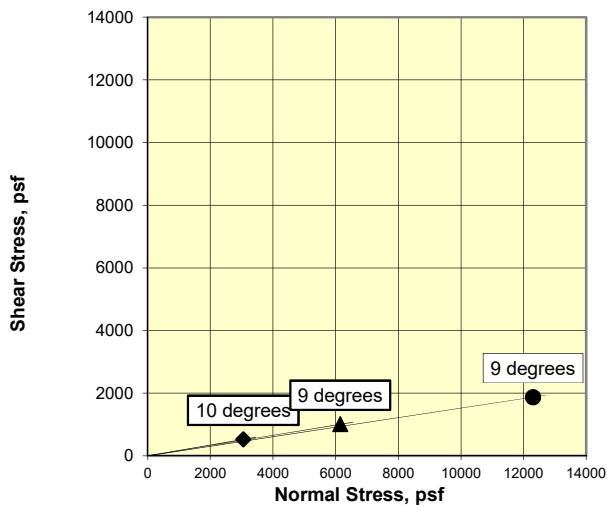




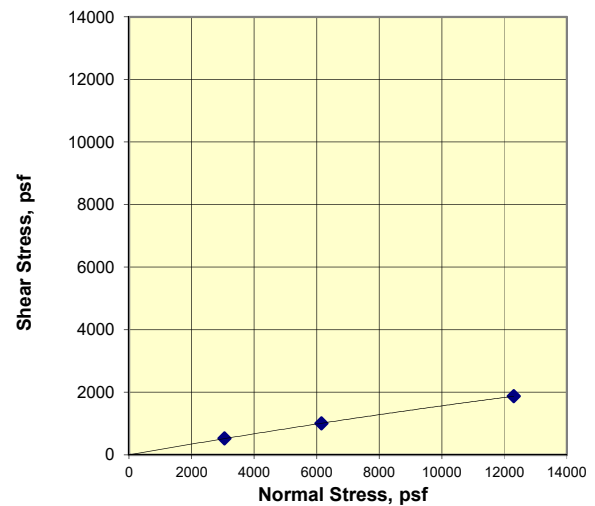
Drained Residual Torsional Shear Strength (ASTM D6467)

BGL Job No.:	028-016	Boring:	B-2	Date:	1/10/2019	Clay, %:	23.5
Client:	GRI	Sample:	Run 7	By:	PJ	LL:	62.3
Project Name:	Cannon Beach	Depth (ft):	50-52	Checked:	PJ	PL:	27.9
Project Number:	6192	Test Type:	Reconstituted Residual	Sample Preparation:	<#40		
Soil Type: Very Dark Gray Gravelly Fat CLAY				Remarks: A small friction correction was applied to each point.			
Normal Stress, psf	3050	6150	12300				
Secant Phi, deg.:	10	9	9				

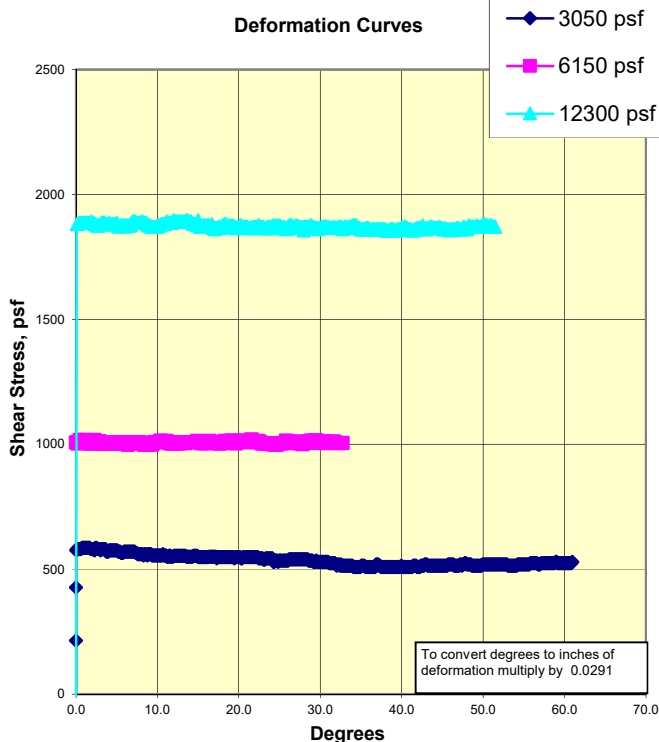
Secant Residual Stress Friction Angles



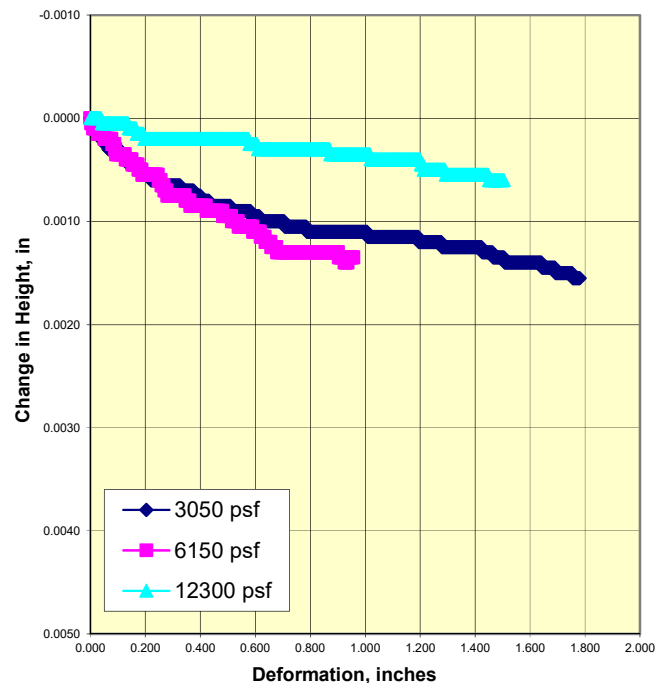
Strength Envelope



Deformation Curves



Vertical Deformation



APPENDIX D

Well Log

STATE OF OREGON
GEOTECHNICAL HOLE REPORT
(as required by OAR 690-240-035)

(1) OWNER/PROJECT: Hole Number **B-1**
 Name **T-MOBILE**
 Address **1500 NE IRVING ST SUITE 530**
 City **PORTLAND** State **OREGON** Zip **97232**

(2) TYPE OF WORK

☒ New ☐ Deepening ☐ Alteration (repair/recondition) ☒ Abandonment

(3) CONSTRUCTION:

☐ Rotary Air ☐ Hand Auger ☒ Hollow Stem Auger
☐ Rotary Mud ☐ Cable Tool ☐ Push Probe ☐ Other

(4) TYPE OF HOLE:

☒ Uncased Temporary ☐ Cased Permanent
☐ Uncased Permanent ☐ Slope Stability ☐ Other

(5) USE OF HOLE: GEOTECHNICAL

(6) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Hole 35 ft.

HOLE			SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds
8	0	35	BENT CHIPS	35	0	18 SKS

Backfill placed from _____ ft. to _____ ft. Material _____
Filter Pack placed from _____ ft. to _____ ft. Size of pack _____

(7) CASING/SCREEN:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	N/A				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Screen:					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slot size								

(8) WELL TEST:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian
 Permeability _____ Yield _____ GPM _____
 Conductivity _____ PH _____
 Temperature of water NONE °F Depth artesian flow found _____ ft.
 Was water analysis done? ☐ Yes ☐ No
 By whom? _____
 Depth of strata analyzed. From _____ ft. to _____ ft.
 Remarks: _____

Remarks: _____

(9) LOCATION OF HOLE by legal description:

County **CLATSOP** Latitude _____ Longitude _____
Township **4** N Range **10** W WM.
Section **6** SE 1/4 **SW** 1/4
Tax Lot **1800** Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) **TOLOVANA MAINLAND ROAD**

Map with location indentified must be attached

(10) STATIC WATER LEVEL:

NONE ft. below land surface. Date **3/4/03**
Artesian pressure lb. per square inch. Date

(11) SUBSURFACE LOG:

Ground Elevation

[illegible]

Date Started 3/4/03

Date Completed **3/4/03**

(12) ABANDONMENT LOG:

Material Description	From	To	Sacks or Pounds
BENT CHIPS	35	0	18 SKS
RECEIVED			
MAR 26 2003			
WATER RESOURCES DEPT SALEM, OREGON			

Date started 3/4/03

Date Completed 3/4/03

Professional Certification

(to be signed by a licensed water supply or monitoring well constructor, or registered geologist or civil engineer).

I accept responsibility for the construction, alteration, or abandonment work performed on during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.

License or Registration Number **10400**

Signed Allen Meeuwse Date 3-5-03
ALLEN MEEUWSEN

Affiliation **SUBSURFACE TECHNOLOGIES**

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

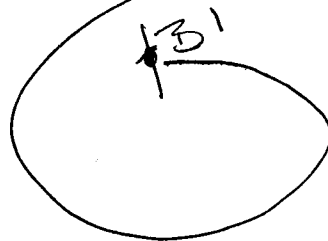
ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

RECEIVED

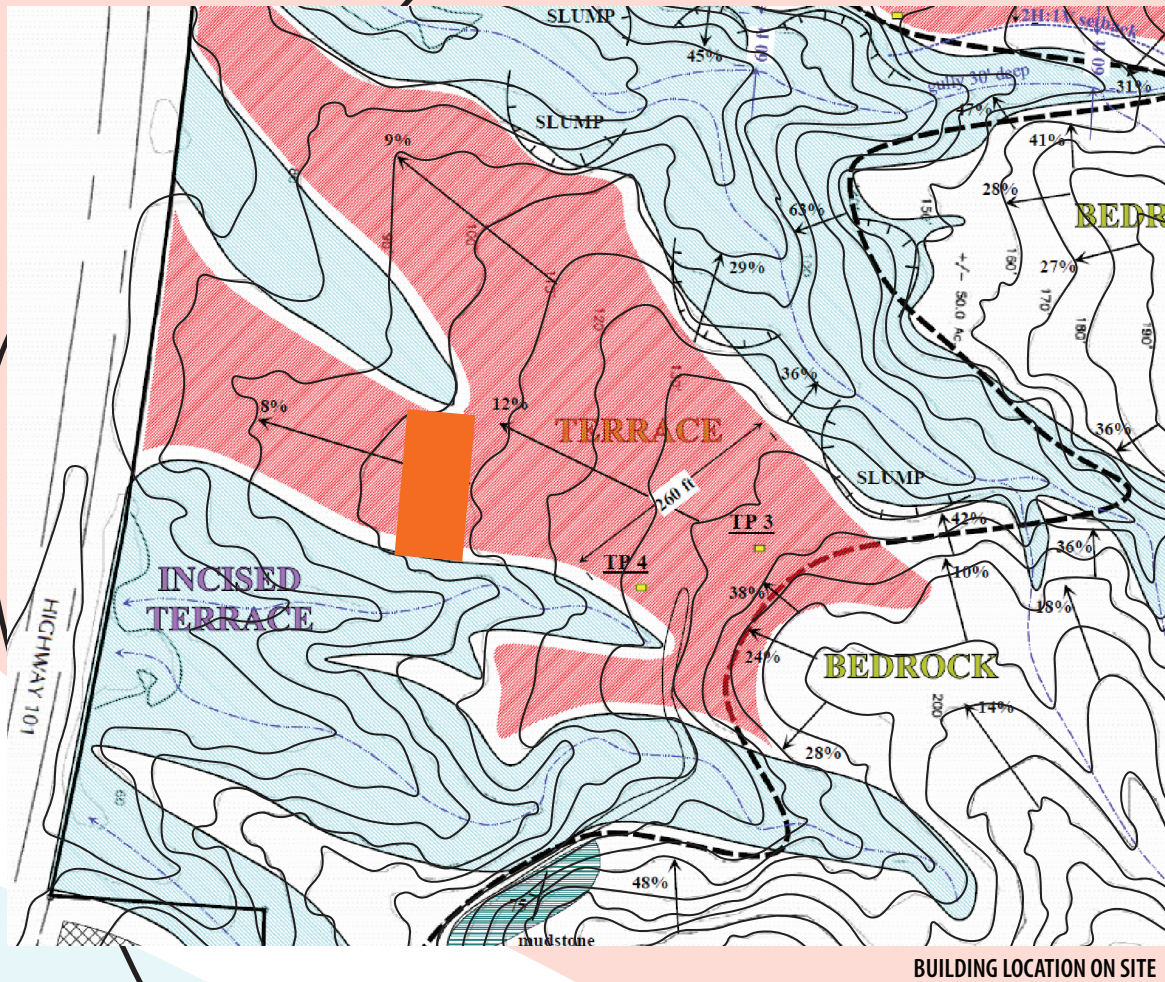
MAR 26 2003

WATER RESOURCES DEPT
SALEM, OREGON

Highway 101



1" = 1000'



BUILDING LOCATION ON SITE

CANNON BEACH CITY HALL

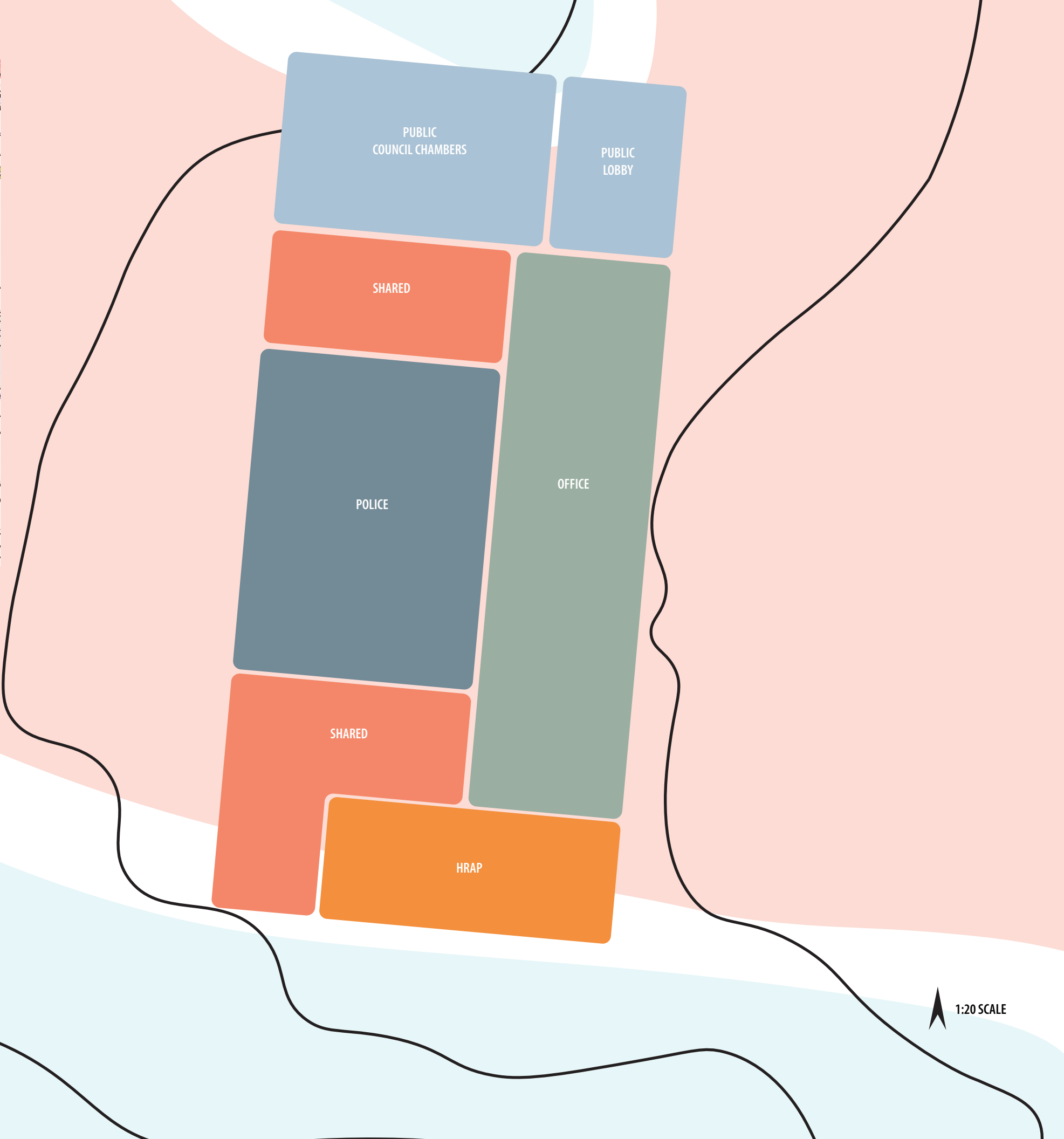
SOUTH WIND SITE
 Floor One 12,900 sf
 Floor Two 3,700 sf
 TOTAL Floor Area = 16,600 sf

Pros:
 Entire structure is above the Tsunami Inundation Zone
 Stepped scheme to align with grades allows for easy transfer from Police garage to interview rooms without any stairs
 Community Functions can enter from upper level, with Police entering from lower floor
 Limits costs of foundations

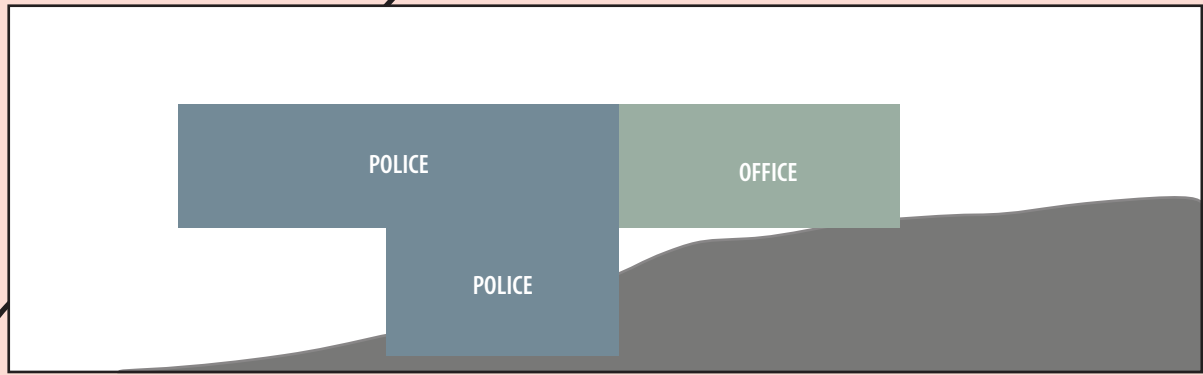
Cons:
 Largest overall building in terms of square footage
 Added Toilet rooms due to two floors
 Added elevator and stair costs
 Stepped profile provides for some covered parking at less cost than creating a level structure would
 City Hall function is removed from center of town
 Second way out for police is unimproved road currently

SRG

OCTOBER 31, 2018



1:20 SCALE



SECTION 1:20

CANNON BEACH CITY HALL

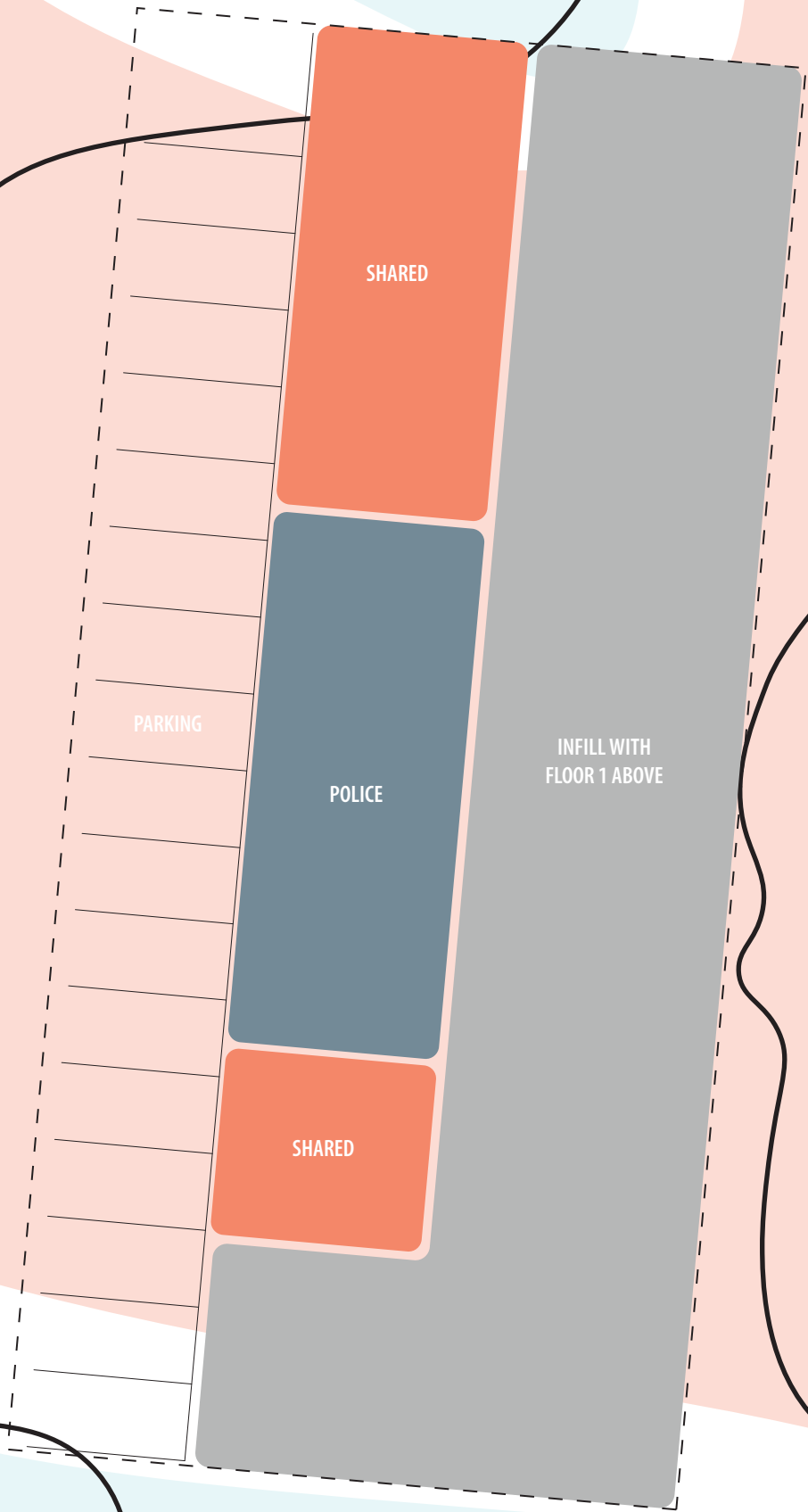
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SRG

OCTOBER 31,2018



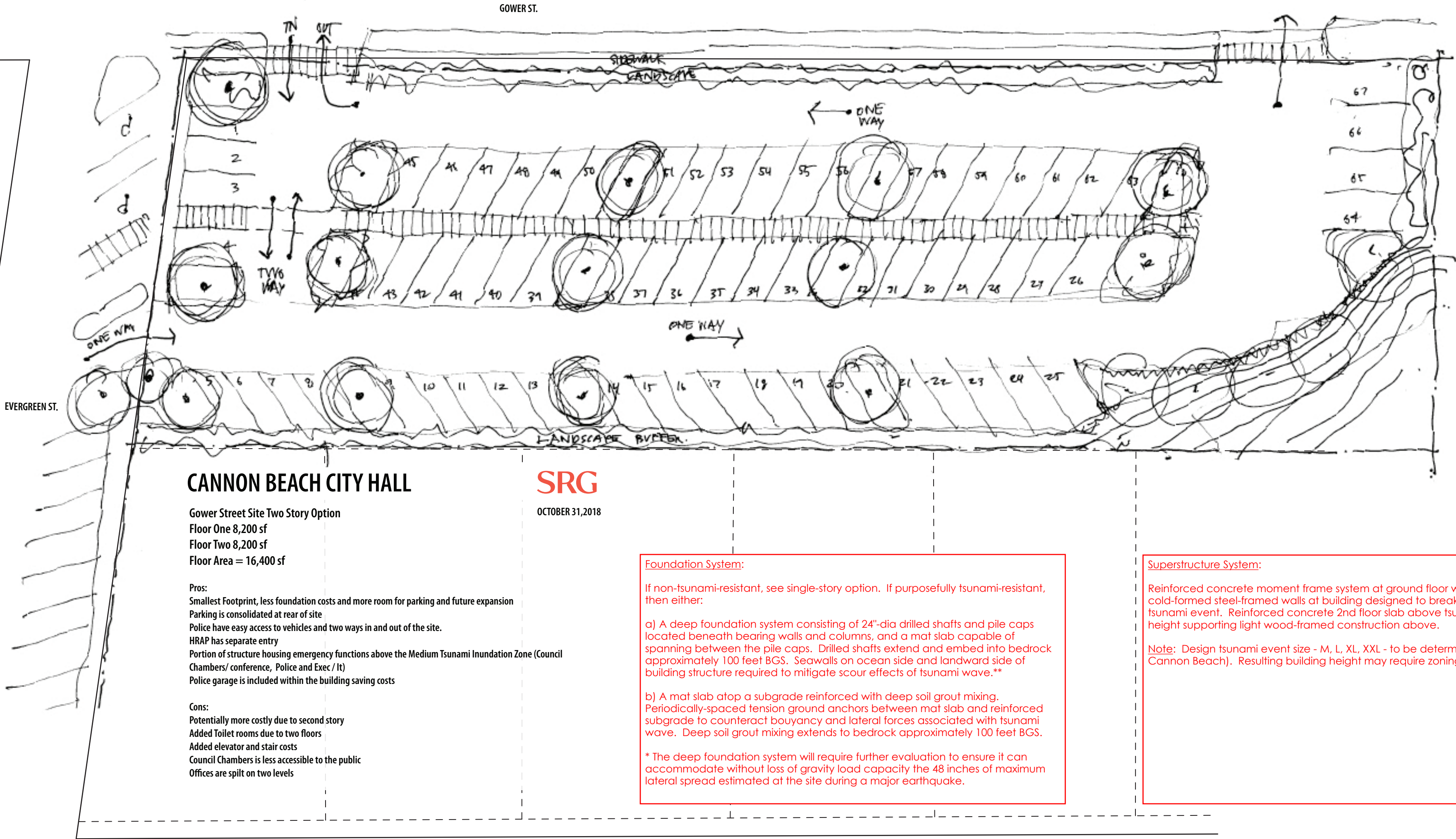
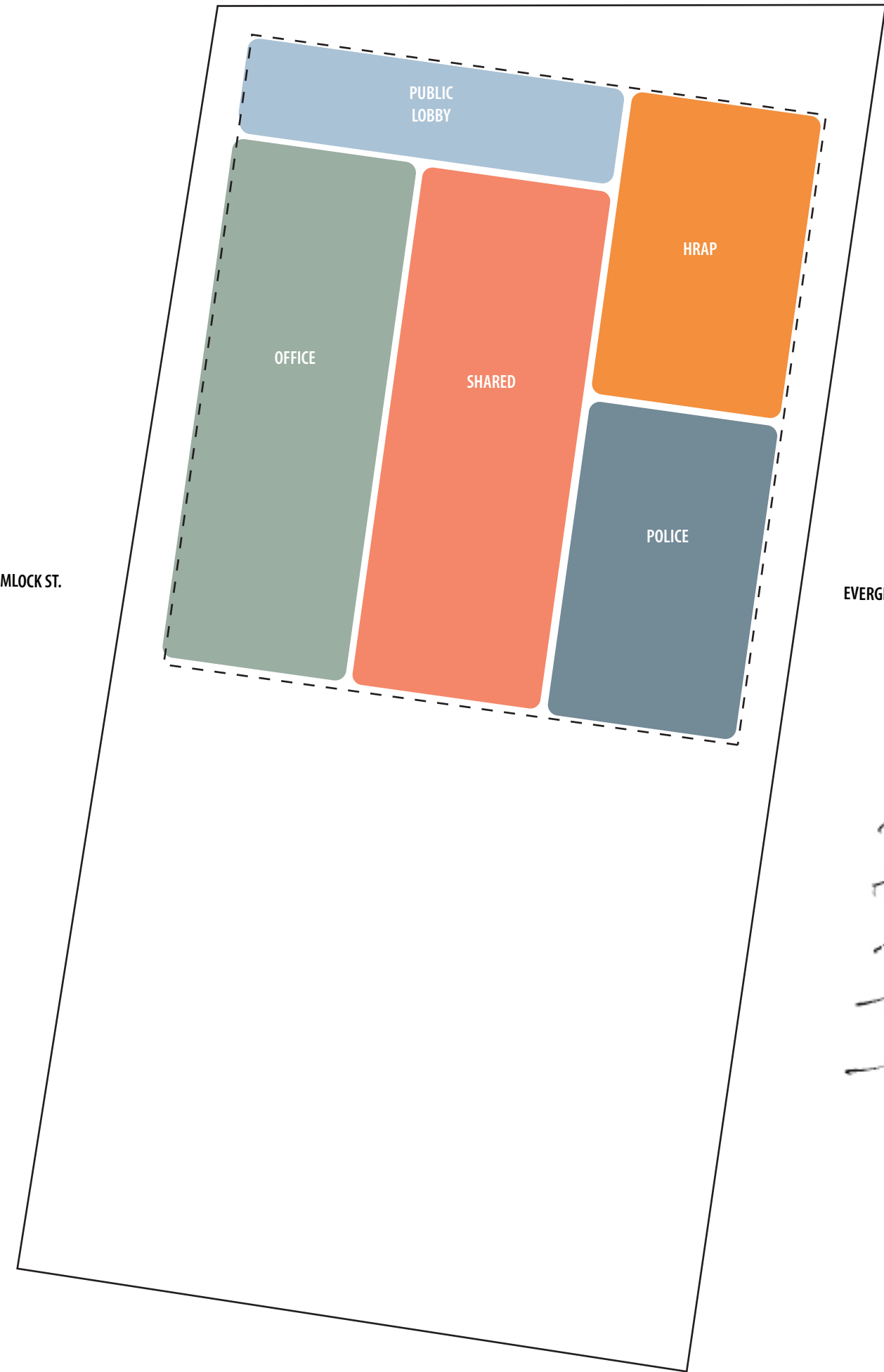
Foundation System:

A shallow foundation system consisting of spread or strip footings beneath bearing walls and columns, respectively, and non-structural slab on grade.**

** Note: A site-specific geotechnical report is required and may recommend ground improvement measures to mitigate potential site stability risks such as total/differential settlement and/or landslides. Mitigation measures may also be warranted for roadways and other utilities servicing the building.

Superstructure System:

Assumed Type V light wood-framed above 2nd floor reinforced concrete slab. Reinforced concrete daylight basement retaining walls at east side of ground floor spaces.



CANNON BEACH CITY HALL

SRG

OCTOBER 31, 2018

Gower Street Site Two Story Option
Floor One 8,200 sf
Floor Two 8,200 sf
Floor Area = 16,400 sf

Pros:
Smallest Footprint, less foundation costs and more room for parking and future expansion
Parking is consolidated at rear of site
Police have easy access to vehicles and two ways in and out of the site.
HRAP has separate entry
Portion of structure housing emergency functions above the Medium Tsunami Inundation Zone (Council Chambers/ conference, Police and Exec / It)
Police garage is included within the building saving costs

Cons:
Potentially more costly due to second story
Added Toilet rooms due to two floors
Added elevator and stair costs
Council Chambers is less accessible to the public
Offices are spilt on two levels

Foundation System:

If non-tsunami-resistant, see single-story option. If purposefully tsunami-resistant, then either:

a) A deep foundation system consisting of 24"-dia drilled shafts and pile caps located beneath bearing walls and columns, and a mat slab capable of spanning between the pile caps. Drilled shafts extend and embed into bedrock approximately 100 feet BGS. Seawalls on ocean side and landward side of building structure required to mitigate scour effects of tsunami wave.**

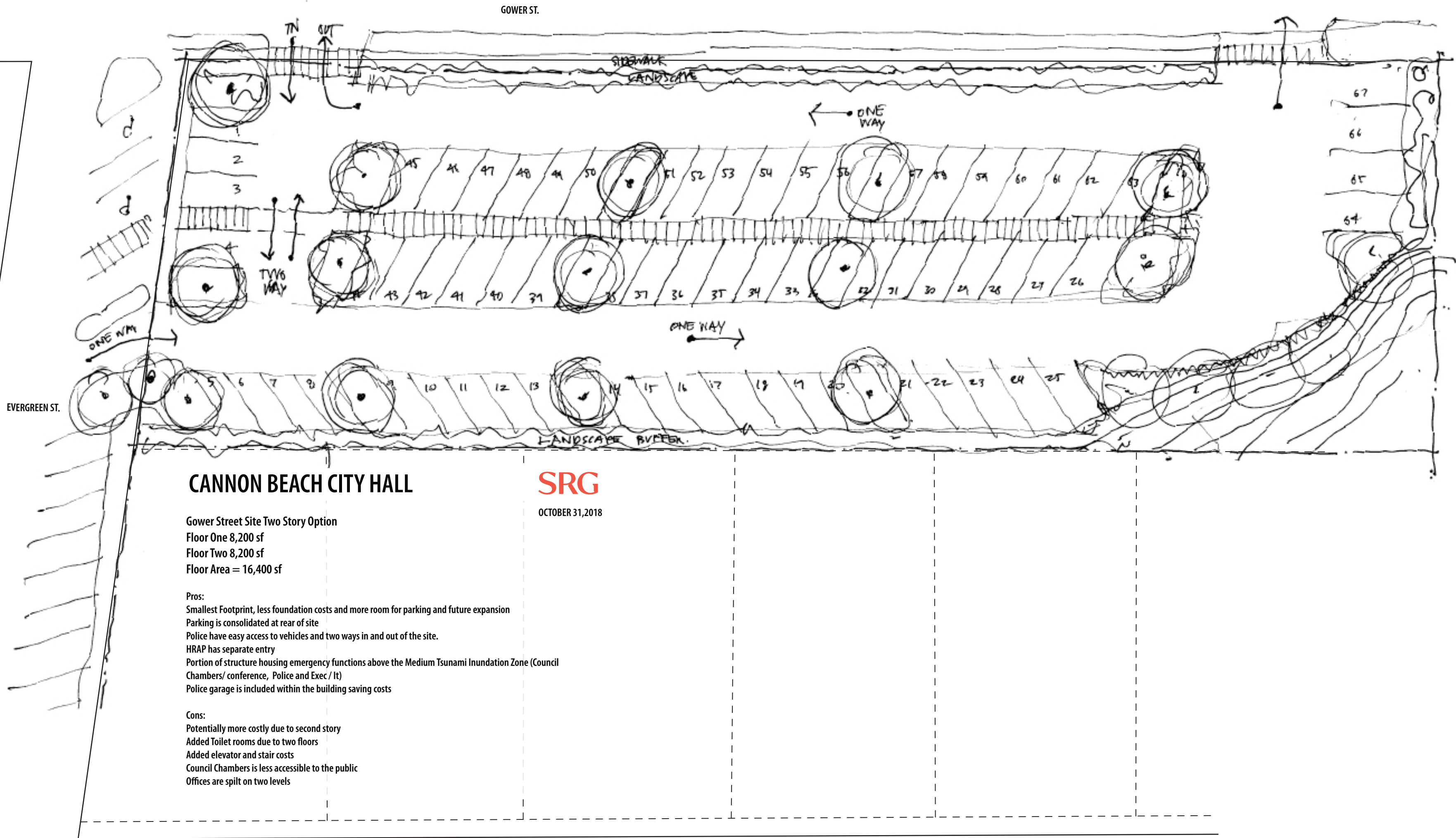
b) A mat slab atop a subgrade reinforced with deep soil grout mixing. Periodically-spaced tension ground anchors between mat slab and reinforced subgrade to counteract bouyancy and lateral forces associated with tsunami wave. Deep soil grout mixing extends to bedrock approximately 100 feet BGS.

* The deep foundation system will require further evaluation to ensure it can accommodate without loss of gravity load capacity the 48 inches of maximum lateral spread estimated at the site during a major earthquake.

Superstructure System:

Reinforced concrete moment frame system at ground floor w/ perimeter cold-formed steel-framed walls at building designed to break away during tsunami event. Reinforced concrete 2nd floor slab above tsunami inundation height supporting light wood-framed construction above.

Note: Design tsunami event size - M, L, XL, XXL - to be determined by City of Cannon Beach). Resulting building height may require zoning code change.



CANNON BEACH CITY HALL

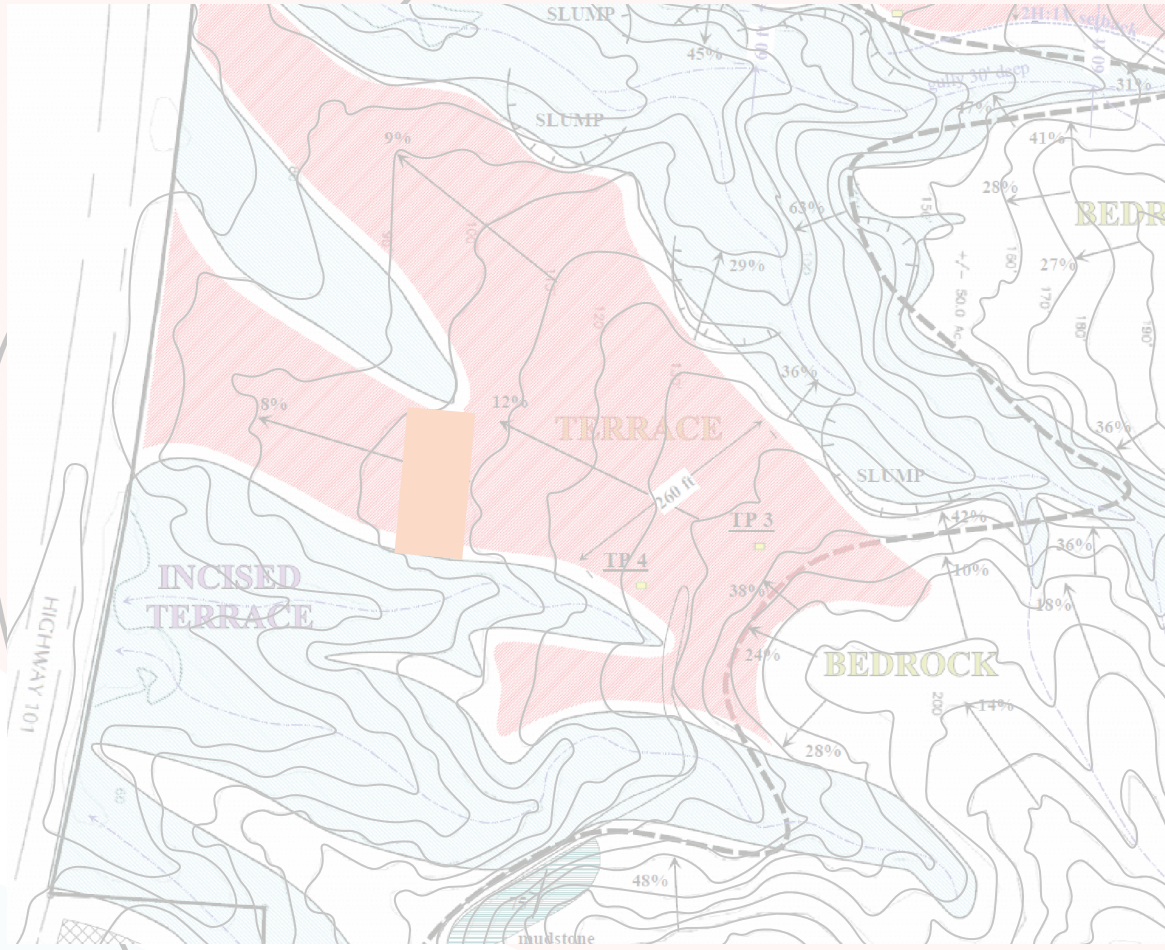
SRG

OCTOBER 31, 2018

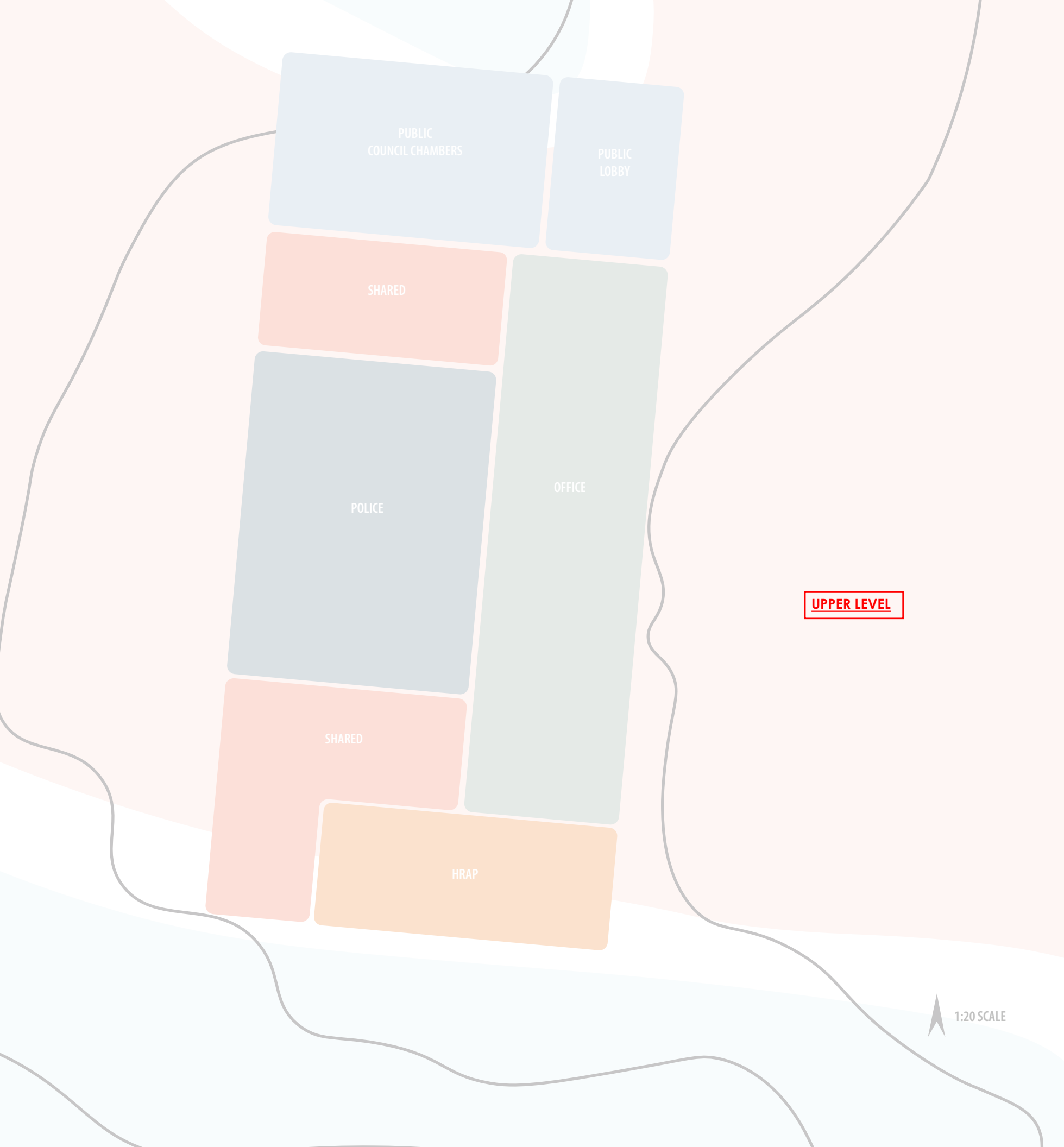
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BUILDING LOCATION ON SITE



CANNON BEACH CITY HALL

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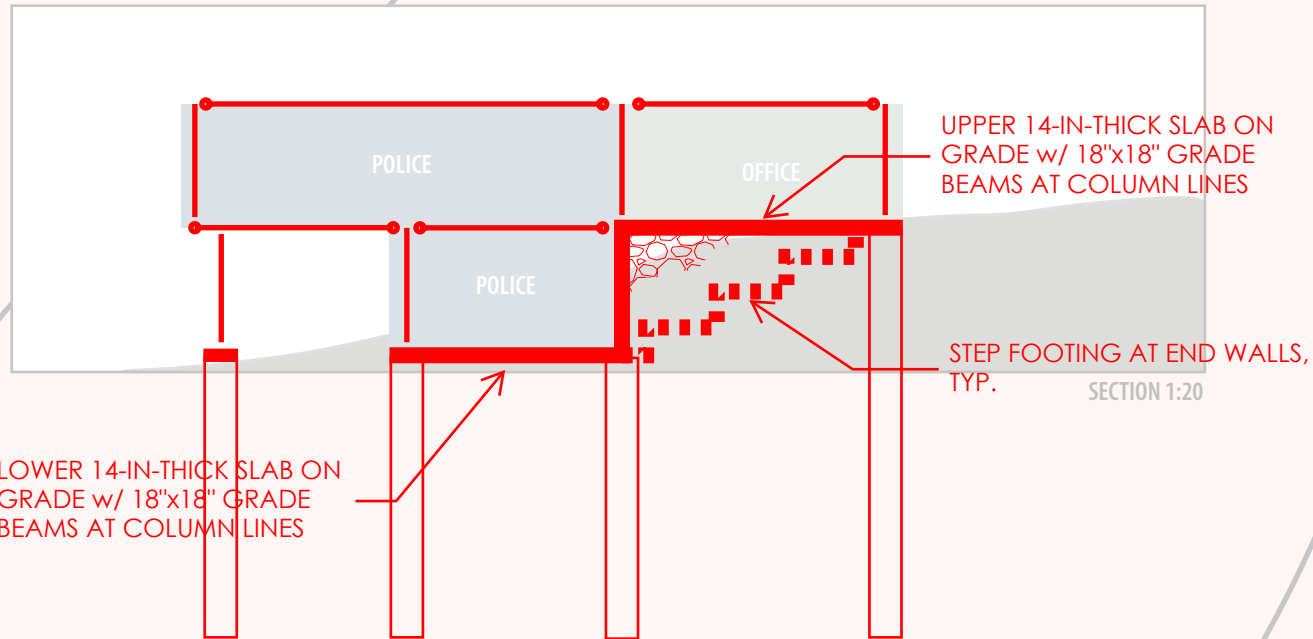
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SRG

OCTOBER 31, 2018

1:20 SCALE



CANNON BEACH CITY HALL

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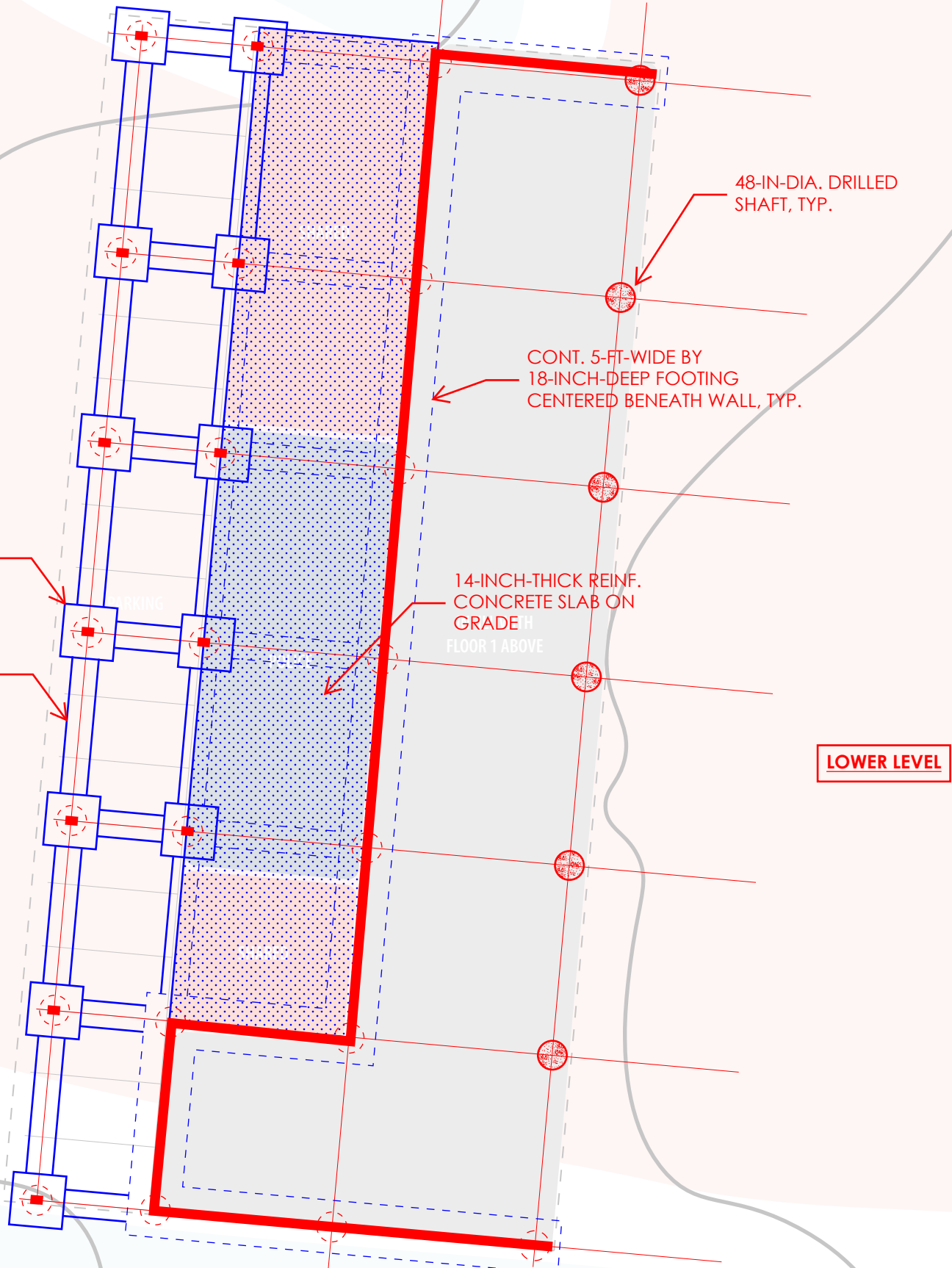
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SRG

OCTOBER 31, 2018

5-FTx5-FTx18-IN PILE CAP, TYP.

18"x18" GRADE BEAM, TYP.



Foundation System:

A deep foundation system consisting of 48-inch-diameter reinforced concrete drilled shafts extending 90 feet below existing grade surface (BGS) with pile caps, grade beams, and a structured slab on grade.**

** Note: The foundation system represented here **does not** mitigate potential site stability risks from landslides. Mitigation measures may also be warranted for roadways and other utilities servicing the building.

Superstructure System:

Assumed Type V light wood-framed above 2nd floor reinforced concrete slab. Reinforced concrete daylight basement retaining walls at east side of ground floor spaces.

November 26, 2018

Project #: 23452.0

Lisa Petterson
SRG Partnership, INC
621 SW Columbia Street
Portland, OR 97201

RE: Southwind Master Plan Site-Access Review

Dear Lisa,

This letter summarizes the results of a preliminary planning level site-access review for the Southwind Master Plan located along the east side of the Oregon Coast Highway (US 101) in Cannon Beach, Oregon¹. This letter offers guidance to the project team regarding the feasibility of permitting a new site-access along US 101 and the transportation-related improvements that will likely be needed to support the access. A traffic impact analysis is likely to be required by ODOT as part of a formal site plan/access application prior to permitting a new access. In summary, it appears that a new access is feasible and will likely require construction of a southbound left-turn lane on US 101. Pending the final site development density, provision of a northbound right-turn deceleration lane at the access is also likely to be required.

Project Background Context

The Southwind Master Plan identifies the potential for a new site-access along the east side of US 101 across from Brailier Street. Per the Master Plan and information provided by the project team, the site-access will serve a new 16,000 square-foot City Hall/Police Station, a new school, and another future development. For the purpose of this analysis, the future development is assumed to be a 40-unit single-family residential development. The following summarizes the access spacing standards along US 101 and the left- and right-turn lane criteria and design guidance.

Access Spacing Standards

Per OAR 734 Division 51, access spacing standards along state facilities are determined by the classification of the roadway as well as average annual daily traffic (AADT) volumes, travel speeds, and

¹ The information provided in this letter is based on Oregon Administrative Rule (OAR) 731 Division 51 (which identifies access spacing standards along state facilities) and the Oregon Department of Transportation (ODOT) Analysis Procedures Manual (APM) and Highway Design Manual (HDM), (these two documents collectively identify the criteria and design considerations for left- and right-turn lanes on state facilities).

the area type (urban/rural). The Oregon Highway Plan (OHP) classifies US 101 as a Statewide Highway. Per ODOT's Traffic Volumes Tables (TVT) for 2017, the AADT along US 101 at 0.20 miles south of the Warren Street overcrossing is 5,200. Per Google Streetview, the posted speed limit is 55 miles per hour (mph). Therefore, the minimum access spacing standard for US 101 within the study area is 1,320 feet. Based on a review of the existing street network, the Warren Street overcrossing/interchange is more than 1,320 feet to the north; however, a private driveway and Tolovana Mainline Road are located less than 1,320 feet to the south.

While the new site-access will not satisfy access spacing standards with respect to existing access points located to the south, ODOT generally does not limit or restrict access to parcels that have no other options, including contiguous parcels that have existing access points. We anticipate ODOT will seek to maximize the distance between the proposed access and the existing access points. Therefore, the new site-access should be located at least 1,320 feet south of the Warren Street overcrossing and as far north from the private driveway and local street connection as feasible.

Turn Lane Criteria

Per Chapter 12 of the APM, left- and right-turn lanes along state facilities are determined by traffic volumes and travel speeds. Exhibits 12-1 and 12-2 in Attachment A illustrate the left- and right-turn lane criteria from the APM. As shown, the left-turn lane criteria require opposing plus advancing volumes, the right-turn criteria require approaching volumes, and both criteria require left- and right-turn volumes during the design hour. The AADT information described above was used as a basis to determine the traffic volumes along US 101 while a trip generation estimate was prepared for the Southwind Master plan to assess potential left and right-turn lane volumes as described below.

Trip Generation

A trip generation estimate was prepared for the proposed Southwind Master Plan based on information provided in the standard reference manual, *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE). ITE does not provide rates for City Halls or Police Stations, therefore, ITE Land Use Code 730 (Government Office Building) was used as a basis for the estimate. ITE Land Use Code 120 (Elementary School) was used as a basis for the school and ITE Land Use Code 210 (Single-Family Residential) was used as a basis for the residential development. Table 1 summarizes the trip generation estimate for the daily, weekday AM, and weekday PM peak time periods.

Table 1: Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Government Office Building	730	16,000 sq ft	360	53	40	13	27	7	20
Elementary School	520	120 students	230	80	43	37	20	10	10
Single-Family Detached Housing	210	40 units	380	30	8	22	40	25	15
Total			970	163	91	72	87	42	45

Trip Distribution/Assignment

For preliminary planning purposes, it was assumed that approximately 75 percent of all traffic will travel to/from the north along US 101 and 25 percent will travel to/from the south. Assignment of the site-generated trips shown in Table 1 indicates that development of the City Hall/Police Station is expected to result in approximately 30 southbound left-turns during the weekday AM peak hour ($40 \times 0.75 = 30$), which satisfies the ODOT criteria to provide a southbound left-turn lane. With these assumptions, approximately 10 northbound right-turns would be added, and a northbound right-turn lane would not be required per the ODOT criteria.

Development of the City Hall/Police Station in combination with the potential school is estimated to result in 21 northbound right-turns during the weekday AM peak hour ($83 \times 0.25 = 21$), which is sufficient to trigger the need for a northbound right turn lane per the ODOT criteria. Conversely, development of the City Hall/Police Station in combination with the residential development is expected to result in approximately 12 northbound right-turns during the weekday AM peak hour ($48 \times 0.25 = 12$), which is not sufficient to trigger the criteria for a northbound right-turn lane.

In summary, it appears a southbound left-turn lane will be required with development of the City Hall/Police Station and that a northbound right-turn lane will be required with development of the City Hall and school, with or without the residential development.

Deceleration and Acceleration Lane Criteria

Chapters 7 and 8 of the HDM identify the design guidance and evaluation criteria for deceleration and acceleration lanes. Per the HDM, deceleration lanes are generally encouraged at intersections and can look similar to standard left- and right-turn lanes. While the HDM provides design guidance on deceleration lanes, there are no additional criteria. Per the HDM, acceleration lanes are generally only used at interchanges on rural expressways and are not appropriate at at-grade intersections.

The criteria to determine if an acceleration lane is appropriate includes:

- posted speed limit (45 mph or above),
- volume/capacity ratio (the right-turn v/c must exceed OHP standards with exception for heavy vehicle percentage [$>10\%$]; sight distance; and crash experience),
- peak hour right-turning volumes (>50 vehicles per hour),
- and potential conflicts.

Given that all of the criteria must be met to require an acceleration lane and one of the criteria includes volume/capacity (v/c), it is not possible to conclusively assess if an acceleration lane would be required given the current planning level exercise. Considering the above criteria, the trip generation estimates described above and current traffic volumes along US 101, it appears likely that neither the northbound right-turning volume (> 50 vehicles per hour) nor the v/c criteria are likely to be met. As such, it appears that acceleration lanes are not likely to be required.

Summary

The following provides a preliminary summary of the site-access review and potential considerations for future evaluation of the new site-access as part of a more refined analysis.

- The proposed new site-access location satisfies ODOT minimum access spacing standards to the north but does not satisfy those same spacing standards with respect to existing access points to the south (due to a private access and Tolovana Mainline Road, both of which are located less than 1,320 feet to the south).
 - Recommendation: The new site-access should be located no less than 1,320 feet south of the Warren Street overcrossing and as far north from the private driveway and local street connection as feasible.
- A southbound left-turn lane is likely to be required by ODOT on US 101 at the proposed access in conjunction with development of the City Hall/Police Station.
- A northbound right-turn lane is likely to be required by ODOT on US 101 at the proposed access in conjunction with development of the City Hall/Police Station and school, with or without the residential development.
- Deceleration lanes and tapers will likely be required on US 101 at the proposed access for the southbound left and northbound right-turn lanes consistent with the design standards in the HDM.
- Acceleration lanes will likely not be required to access the highway; however, further evaluation of the right-turn acceleration lane may be required by ODOT as part of a formal traffic impact analysis review.
- A rough order of magnitude cost estimate prepared for the proposed site-access, which includes the southbound left- and northbound right-turn lanes as well as drainage and lighting is approximately \$900,000.

Please let us know if you have any additional questions or comments regarding this preliminary review. We would be pleased to further refine our assessment in coordination with the project team and ODOT as the project advances.

Sincerely,
KITTELSON & ASSOCIATES, INC.



Matt Bell
Senior Planner

City Hall Facility Report – November 8, 2018
City of Cannon Beach, Clatsop County, OR

South Wind Site - Civil Design Considerations

Site Survey/Topographical Mapping

- Available information for existing conditions in the City of Cannon Beach, including PDF files of city master plans and a topographic survey obtained by DOGAMI/NOAA Lidar, were used for developing this narrative of civil related items for the Southwind Master Plan Site Development.
- It is recommended that a current topographic survey of existing conditions, including private utility locates, be conducted to obtain and verify actual current existing conditions. The additional topographic survey information is needed to:
 - 1) Provide design plans for new storm, sanitary sewer, and water laterals to serve the proposed building(s).
 - 2) Adequately show the location of existing utilities in relation to the proposed building(s) and access to and from Oregon Coast Highway 101. Proposed topographic survey limits expected to be coordinated with the Project Team based on the results of the programming phase and development of a preliminary site plan.

Site Plan Considerations

- Major concerns for development of a site plan are anticipated to be:
 - 1) ODOT requirements for entrance to and exit from existing Oregon Coast Highway 101 as well as stormwater runoff requirements.
 - 2) Impacts to existing utilities and feasibility of connections, including but not limited to Sanitary, Storm Sewer, and Water. This would also include considerations for future build-out of the site in the event that other facilities are located at this site, including a school and other support facilities.
 - 3) Pedestrian access along Oregon Coast Highway 101 to reach the proposed site.
 - 4) The driveway access and relatively steep slope needed to reach the higher elevation.
 - 5) The need for terracing on steeper slopes.
 - 6) Keeping away from the major drainage areas or geological areas of concern.
- Future designs anticipate minimizing materials for access routes and proposed utilities. See individual topics of consideration as outlined in this memo.

Earthwork/Grading Considerations

- The site is relatively flat near the actual development area however there will be slopes of about 10% downwards towards the City of Cannon Beach and Oregon Coast Highway 101. The size and location of the building footprint will determine the amount of cut/fill needed.
- Site plan development for access should consider slope requirements for pedestrian and vehicular access ways. Minimum slope requirements for adequate drainage will also be considered as design phase begins and progresses. Cross slopes for parking should be in the 2%-5% range and will likely need terracing or cut/fill scenarios.

Storm Drainage Considerations

- Runoff from streets, parking lots, roofs and other impervious surfaces will be directed to a series of ditches/hard piping down gradient along the access road toward Highway 101. The flow will then connect with the natural drainage channel westward toward the Oregon Coast Highway 101 and travel under the highway toward the City storm system. Coordination with ODOT will be required to provide culvert extensions, flow calculations and points of connection to the existing box culverts under the highway. Rip rap or other energy dissipation facilities may be required at the storm water discharge point to prevent erosion.
- Unless flows are determined to be beyond the capacity of the existing culverts under Highway 101, no on-site detention is anticipated. Water quality requirements will meet the City's public works standards.
- Additional survey /field verifications will be required to locate and confirm storm drainage locations, sizes, and inverts in the project vicinity.
- Once the design phase progresses, Project MEP designer or architect to provide roof drain and foundation drain points of connection and building storm pipe sizes.
- New storm drain conveyance ditches will be needed around the site and buildings. Further study will be needed once a site plan is developed and design phases progress.

Sanitary Sewer Considerations

- Existing as-built information from City of Cannon Beach's 'Wastewater Master Plan' show existing sanitary lines to the west of Oregon Coast Highway 101 along South Hemlock Street. An existing sanitary easement between Brailier Street and West Orford Street could act as the best point of connection as it avoids properties running along the east side of South Hemlock Street. It is anticipated that the existing sewer lines will be adequate for the proposed development. However, a current topographic survey of the existing sanitary sewer system, including verification of existing sewer line sizes, inverts and manhole locations will be needed for the design phase.
- Similar to the water main that would need to be bored under Highway 101, the sewer would also need a similar route across the ODOT ROW. A connection point in S Hemlock near Midway or Brailier is anticipated.
- Additional coordination will be required with the MEP designer in the future design phase to confirm sanitary sewer points of connection at the building and sanitary sewer service line size(s).

Water Considerations

- The water master plan shows an existing 12" water main that is located within South Hemlock Street west of Highway 101. The new facilities proposed at the South Wind site are proposed to have an 8" main that would connect to the 12" main in S Hemlock. The connection would require boring under Highway 101 with location to likely be located between Brailier and Orford, near an un-improved street (Midway) which appears to have access to Highway 101.
- City of Cannon Beach Southwind master plan incorporates future development of a school, residential area, and miscellaneous future development. The addition of these facilities would require an upsize in water main from 8" to a 10" or 12" main depending on distribution needs.

- Water information from City of Cannon Beach's 'Water Master Plan' shows a proposed 12" HDPE water main is proposed in the future to extend from a metered connection to the northwest of Tolovana reservoir. This new transmission line is noted as Project #33 and includes a new 12" HDPE connection between the Tolovana reservoir and W Chinook. This main could also be a proposed connection and source of water for the site. Further discussion and review would be needed to determine if the proposed water master plan project could be incorporated into the South Wind site and what implications might occur from tapping the main to service the proposed South Wind development.

Fire Service Considerations

- Fire service has been confirmed to lie within the City of Cannon Beach (i.e. Cannon Beach Fire-Rescue Main Station at 79816 E Beach Road, Arch Cape, OR 97102).
- Site plan development will need to consider fire truck access. Coordination with ODOT, City of Cannon Beach, and the Cannon Beach Fire-Rescue Department is anticipated for site plan development to address fire access requirements.
- Project MEP to confirm sprinklered connection points in the future design phase. MEP shall confirm and provide civil engineer with the proposed fire water and FDC points of connection. FDC locations to be coordinated between the Architect/MEP and the Cannon Beach Fire-Rescue Department. MEP shall provide civil engineer with backflow device locations (inside building or in a vault on site.)
- A fire flow test shall be conducted to determine sufficient fire flows. The flow test to be coordinated with the Architect and Owner. Fire flows are not anticipated to be an issue.

Natural Gas Considerations

- Existing information shows gas connection is not readily available. Coordination with NW Natural will be required in order to determine feasibility of line extension.

Electric Considerations

- It is anticipated the existing electrical service lines along Oregon Coast Highway 101 can be tapped into for service to the proposed building[s].

Communications/Fiber Considerations

- It is anticipated the existing communication lines along Oregon Coast Highway 101 can be tapped into for service to the proposed building[s].

Existing City Hall site (163 E Gower Avenue) - Civil Design Considerations

Understanding: The existing City Hall and proposed new building range in distance of 600'-900' from the shoreline and approximately 20' above existing the beach area. The proposed replacement building is to be located between S Hemlock Street and Evergreen Street with the existing building area to be re-purposed as parking area. Basically, the parking and building areas are to be swapped.

Civil considerations for this type of new building and parking use generally focus on utility connection availability (storm, water, sewer), grading and site access. Overall the site appears to have existing utilities in place to serve the proposed building and no significant grading issues in regards to slope steepness. Soil suitability of the new building site will be addressed by the geotechnical study, soil remediation is anticipated.

Site Survey/Topographical Mapping

- Available information for existing conditions in the City of Cannon Beach, including PDF files of city master plans and a topographic survey obtained by DOGAMI Lidar, were used for developing this narrative of civil related items.
- For detailed design, it is recommended that a current topographic survey of existing conditions, including private utility locates, be conducted to obtain and verify actual current existing conditions, including storm, water and sewer locations, sizes and invert elevations. The additional topographic survey information is needed to provide design plans for new storm, sanitary sewer, and water line laterals to serve the proposed building improvements.

Site Plan Considerations

- Major concerns for development of a site plan are anticipated to be:
 1. The existing site area is generally flat and the parking area should incorporate sufficient slope to adequately move storm water during significant rainfall events. Site drainage should be incorporated to convey stormwater away from parking areas.

Earthwork/Grading Considerations

- The site is relatively flat with gentle slopes and no significant grading is expected.

Storm Drainage Considerations

- Runoff from streets, parking lots, roofs and other impervious surfaces should be directed to hard-piped storm mains that outfall to the ocean. Water quality facilities may be part of the over-all storm design.
- Additional survey /field verifications will be required to locate and confirm storm drainage locations, sizes, and inverts in the project vicinity.
- Project MEP designer or architect to provide roof drain and foundation drain points of connection and building storm pipe sizes.
- The proposed building site appears to have a public storm line running under one corner of the site. This storm line would be capped and relocated to connect with other storm facilities located in the nearby streets.
- New storm drain conveyances may be needed around the parking areas and buildings.

Sanitary Sewer Considerations

- Existing as-built information from City of Cannon Beach's 'Wastewater Master Plan' show existing sanitary lines within the project area. (Gower, Coolidge and Evergreen) It is anticipated that the

existing sewer lines will be adequate for the proposed development. However, a current topographic survey of the existing sanitary sewer system, including verification of existing sewer line sizes, inverts and manhole locations will be needed for the design phase.

- Additional coordination will be required with the MEP designer to confirm sanitary sewer points of connection at the building and sanitary sewer service line size[s].

Water Considerations

- Existing as-built information from City of Cannon Beach's 'Water Master Plan' indicates an existing water main within the adjacent streets and will allow for a new service connection.
- Once the design phase progresses, MEP designer to confirm the point of water connection and water service sizing.

Fire Service Considerations

- Fire service has been confirmed to lie within the City of Cannon Beach (i.e. Cannon Beach Fire-Rescue Main Station at 79816 E Beach Road, Arch Cape, OR 97102). Continued fire service is expected to be maintained at the new building location.
- Project MEP to confirm sprinklered connection points in the future design phase. In a future phase the MEP shall confirm and provide civil engineer with the proposed fire water and FDC points of connection. FDC locations to be coordinated between the Architect/MEP and the Cannon Beach Fire-Rescue Department. MEP shall provide civil engineer with backflow device locations (inside building or in a vault on site.)
- A fire flow test shall be conducted to determine sufficient fire flows. The flow test to be coordinated with the Architect and Owner.

Natural Gas Considerations

- Existing information shows gas connection is not readily available. Coordination with NW Natural will be required in order to determine feasibility of line extension.

Electric Considerations

- It is anticipated the existing electrical service within E Gower and surrounding streets can be provided.

Communications/Fiber Considerations

- It is anticipated the existing communication lines within the surrounding streets can be tapped into for service to the proposed building[s].

Reference information:

RFP Site Map – dated August 10, 2018;

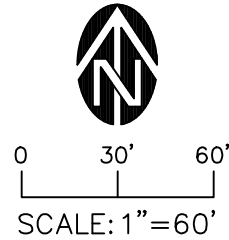
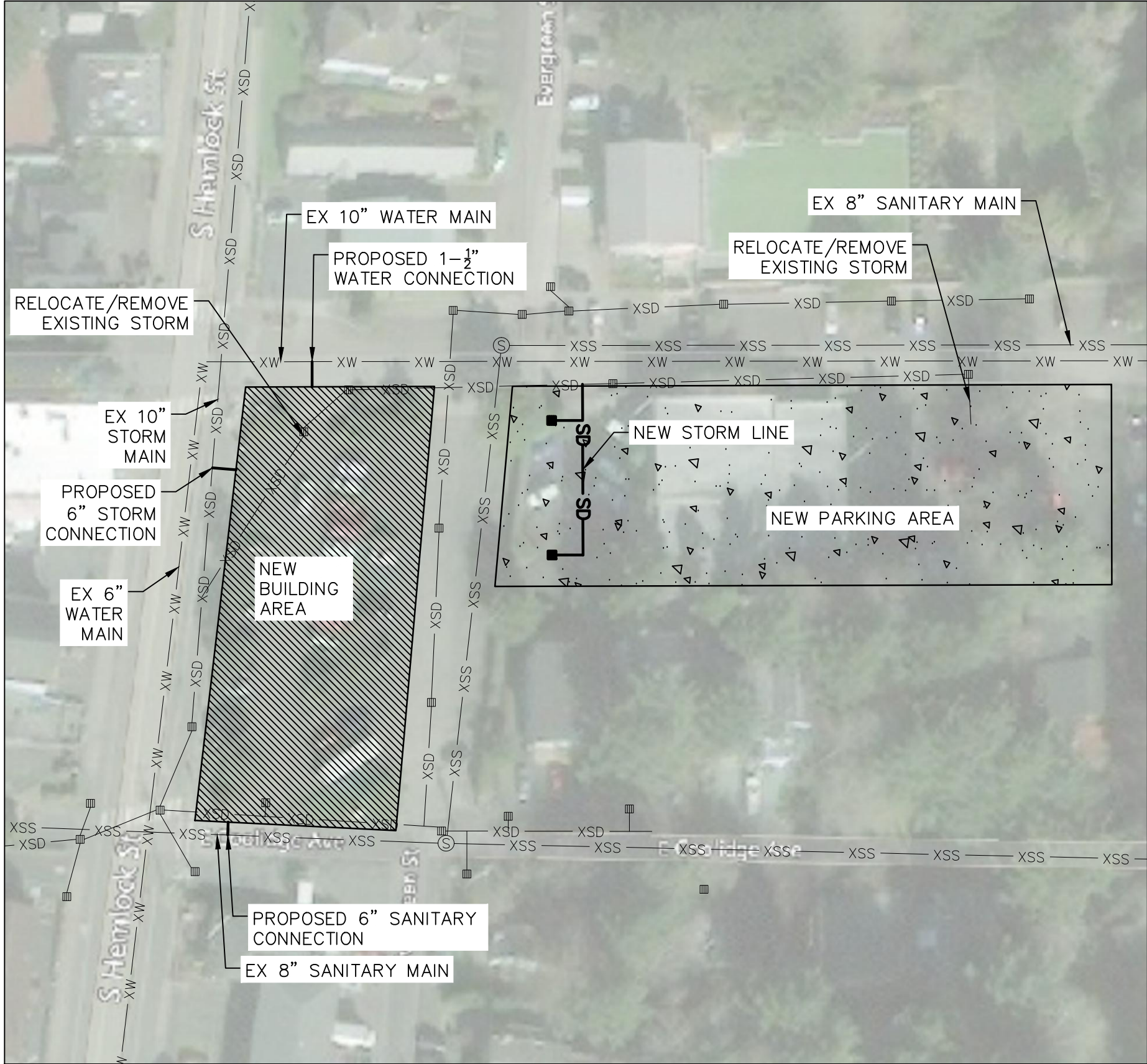
Water System Master Plan, City of Cannon beach, Clatsop County, Oregon dated December 2017, by Civil West Engineering Services;

Waste Water System Master Plan, City of Cannon beach, Clatsop County, Oregon dated December 2017, by Civil West Engineering Services;

South Wind Master Plan, prepared by the Master Plan Advisory Committee, dated December 17, 2014

Evaluation of Geologic Hazards for a 55-acre Site in Tolovana Park, by Horning geosciences, dated September 13, 2013.

Oregon Transportation Map, Cannon beach, Clatsop County, 2017 Edition.



LEGEND

	EXISTING STORM LINE
	EXISTING STORM STRUCTURE
	EXISTING SANITARY LINE
	EXISTING SANITARY STRUCTURE
	EXISTING WATER LINE
	PROPOSED STORM LINE
	PROPOSED STORM STRUCTURE
	PROPOSED SANITARY LINE
	PROPOSED WATER LINE
	PROPOSED PARKING AREA
	PROPOSED BUILDING AREA

NOTES

- EXHIBIT DEVELOPED BASED ON INFORMATION PROVIDED BY CITY OF CANNON BEACH, CITY OF CANNON BEACH MASTER PLANS, AND GOOGLE EARTH IMAGERY.

CITY OF CANNON BEACH

163 EAST GOWER STREET
CANNON BEACH, OR, 97110

CITY HALL EXHIBIT
EXISTING CONDITIONS AND PROPOSED CONNECTIONS

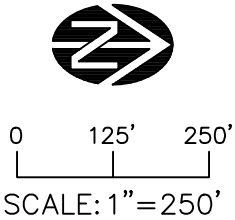
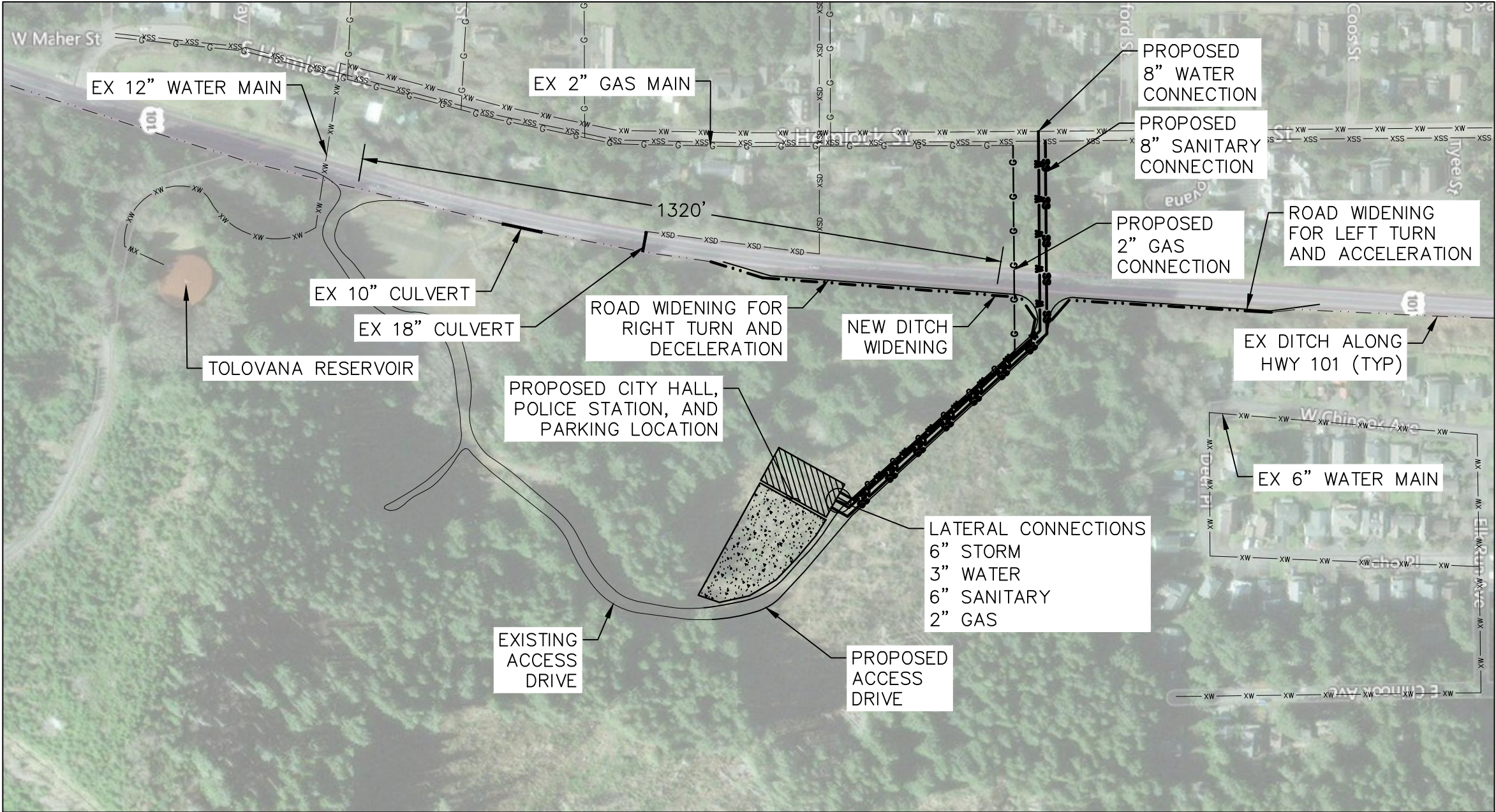
WESTLAKE
CONSULTANTS INC.

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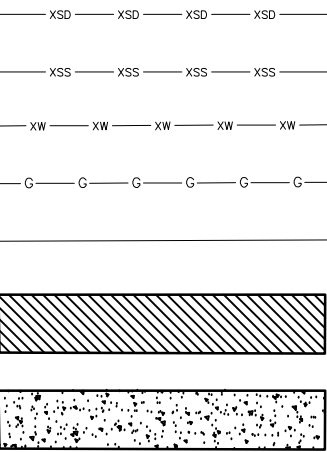
PACIFIC CORPORATE CENTER
15115 S.W. SEQUOIA PARKWAY, SUITE 150 (503) 684-0652
TIGARD, OREGON 97224 FAX (503) 624-0157

DATE	11/7/2018
REVISION	0
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CHECKED BY	BRS
JOB NO.	2283-007

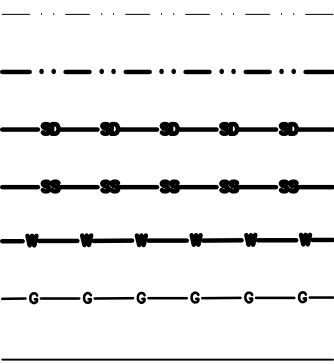
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LEGEND



EXISTING STORM LINE
EXISTING SANITARY LINE
EXISTING WATER LINE
EXISTING GAS LINE
EXISTING ROAD/ACCESS
PROPOSED BUILDING SITE
PROPOSED PARKING




EXISTING DITCH
PROPOSED DITCH
PROPOSED STORM LINE
PROPOSED SANITARY LINE
PROPOSED WATER LINE
PROPOSED GAS LINE
PROPOSED ROAD/ACCESS IMPROVEMENTS

NOTES

1. EXHIBIT DEVELOPED BASED ON INFORMATION PROVIDED BY CITY OF CANNON BEACH, CITY OF CANNON BEACH MASTER PLANS, AND GOOGLE EARTH IMAGERY.

CITY OF CANNON BEACH

SOUTHWIND SITE
CANNON BEACH, OR, 97110
SOUTHWIND EXHIBIT - 1
EXISTING CONDITIONS AND PROPOSED CONNECTIONS

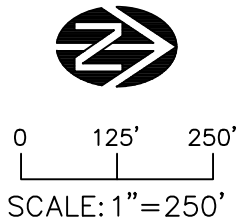
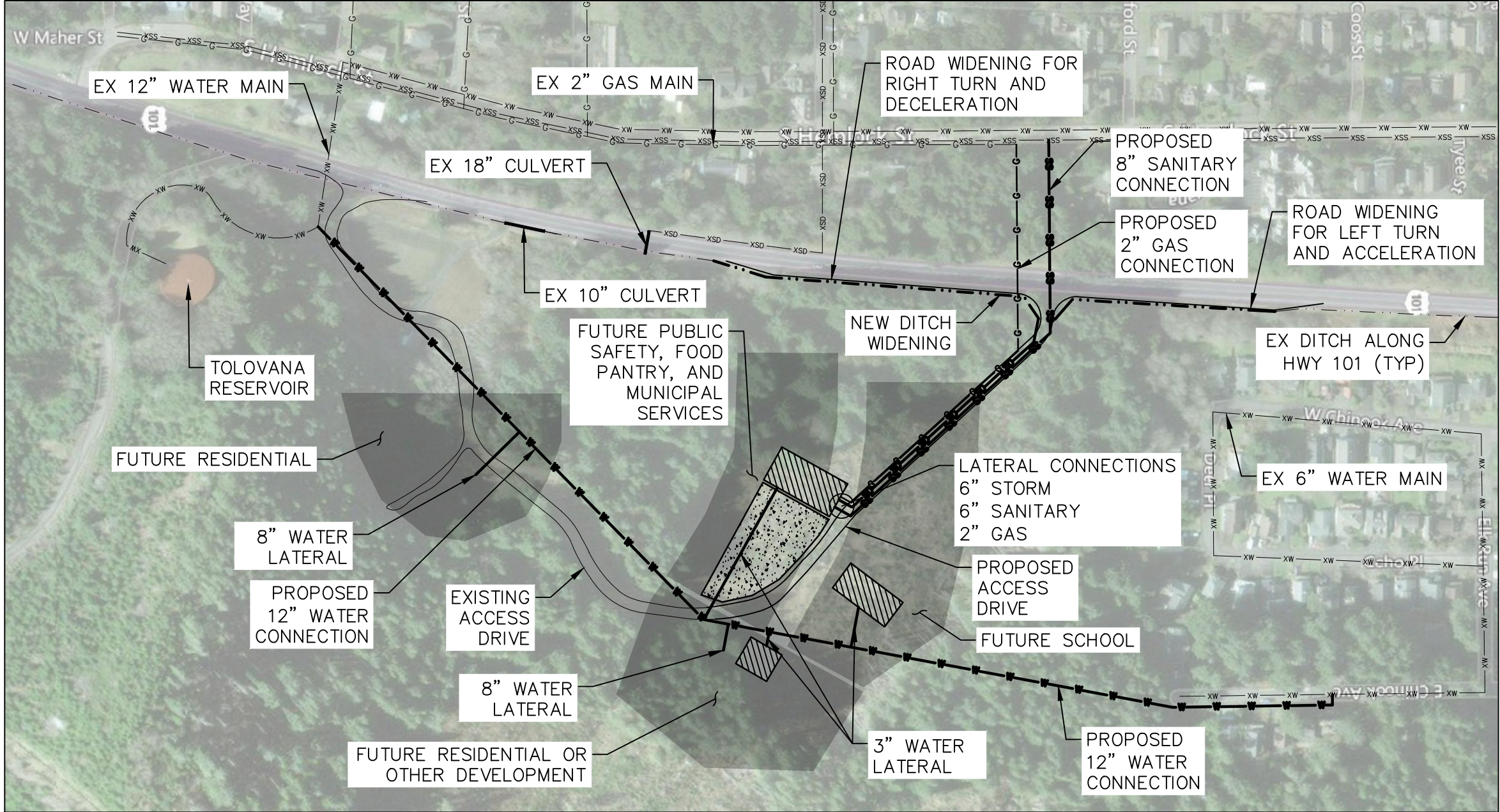
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LEGEND

	EXISTING STORM LINE		EXISTING DITCH
	EXISTING SANITARY LINE		PROPOSED DITCH
	EXISTING WATER LINE		PROPOSED STORM LINE
	EXISTING GAS LINE		PROPOSED SANITARY LINE
	EXISTING ROAD/ACCESS		PROPOSED WATER LINE
	PROPOSED BUILDING SITE		PROPOSED GAS LINE
	PROPOSED PARKING		PROPOSED ROAD/ACCESS IMPROVEMENTS
			FUTURE DEVELOPMENT

NOTES

1. EXHIBIT DEVELOPED BASED ON INFORMATION PROVIDED BY CITY OF CANNON BEACH, CITY OF CANNON BEACH MASTER PLANS, AND GOOGLE EARTH IMAGERY.

CITY OF CANNON BEACH
SOUTHWIND SITE - FUTURE DEVELOPMENT
CANNON BEACH, OR, 97110
SOUTHWIND EXHIBIT - 2
EXISTING CONDITIONS AND PROPOSED CONNECTIONS

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