Professional Service Industries, Inc.
5555 Canal Rd., Cleveland, OH 44125
(216) 447-1335 (P) & (216) 642-7008 (F)

November 6, 2019

Mr. Robert A. Shenal II, PE
Consultant Manager
ODOT District 3
906 Clark Avenue
Ashland, Ohio 44805
(419) 207-7054 (Office)
(419) 565-1744 (Cell)
robert.shenal@dot.ohio.gov

Re: Report for Geotechnical Subsurface Exploration
MED-57-17.52 Drainage Study
Task Order No.: 30625-D3-3
MED-57 (between station: 926+00 to 974+00)
Medina County, Ohio
PSI Project Number: 0142-2020

Dear Mr. Shenal:

Enclosed is PSI's Report for the Geotechnical Subsurface Investigation for the above-referenced project. PSI's services for this project were performed in accordance with PSI's PSI Proposal No. 0142-247581, dated June 21, 2018 and revised on July 25, 2019. Authorization to perform this exploration was in the form of an emailed authorization letter to PSI acknowledged by Mr. Robert A. Shenal II, PE, Consultant Manager of ODOT District 3, on September 10, 2019.

Project information has been provided by Mr. Robert A. Shenal II, PE, Consultant Manager of ODOT District 3. Included, we have received a boring location plan. Based on the available information, it is understood that the proposed project will include the drainage improvement along the SR-57 (Spieth Road) between SR-252 and Lester Road. The proposed drainage improvement will include installation of a 36 inches diameter storm sewer line along the project limit.

The subsurface conditions at the site were explored with a total of thirteen (13) test borings. The test borings were drilled to depths of about 5 to 25 feet below the existing grades at the approximate locations shown on the Boring Location Plan presented in the Appendix of this report. The number and location of the test borings were selected by the representatives of Ohio Department of Transportation at District 3 and field located by PSI prior to the field drilling operations.

Field and laboratory testing were completed by PSI in general accordance with the Ohio Department of Transportation Specifications for Subsurface Investigations, Classification of Soil. Descriptions of the soils encountered in the test borings are provided on the Boring Logs included in the Appendix. Groundwater conditions, standard penetration resistances, and other pertinent information are also included. The remaining soil samples will be retained at our office for 60 days from the date of this report and then discarded.

The soil samples obtained during the field exploration were transported to the laboratory and visually examined. The soil samples obtained from the drilling operation were tested for moisture content (AASHTO

T-265), liquid limits (AASHTO T-89), plastic limits (AASHTO T-90), and grain size analyses (AASHTO T-88). The samples were classified in general accordance with the ODOT Specifications for Subsurface Investigations, Classification of Soil. Descriptions and lab test data of the soils encountered in the test borings are provided on the Boring Logs included in the Appendix. Groundwater conditions, standard penetration resistances, and other pertinent information are also included. The remaining soil samples will be retained at our office for 60 days from the date of this report and then discarded.

The surface of the site at test boring locations B-001, B-003, and B-013 was covered with a layer of asphalt concrete measuring approximately 9.25 to 13 inches in thickness. The surface of the site at test boring locations B-002 and B-004 through B-012 was covered with a layer of topsoil measuring approximately 3 to 14 inches in thickness. Additionally, asphalt pavement at roadway offset from test borings B-002-0-19A, B-006-0-19A, and B-007-0-19A also cored and measured thickness ranging from 5.75 to 7.75 inches. The thickness of the surface materials should be expected to vary throughout the site.

The surface materials at the test boring locations B-001, B-003, and B-005 were underlain by fill soils, which were encountered to a depth of about 3.5 feet below the existing grades. Fill soils consisted of gravel with sand (A-1-b), sandy silt (A-4a), and silty clay (A-6b), with varying amounts of asphalt. The fill soils exhibited moisture contents ranging from approximately 8 to 16 percent. The thickness and composition of the fill materials should be expected to be variable throughout the site.

The surface materials and fill soils in all the test boring locations except B-001 were underlain by natural soils extending to a depth of about 1.5 to 13.5 feet below the existing surface grade. The natural soils consisted of sandy silt (A-4a), silt & clay (A-6a and A-6b) and clay (A-7-6) with some gravel. The natural soils exhibited a moisture content of 7 to 25 percent. The natural soils exhibited a medium stiff to hard consistency based on the Standard Penetration Tests.

The area's bottommost formation consisted of very weak to strong, highly weathered sandstone and shale bedrock, encountered in all test borings. A 5 feet rock core is performed at test boring location B-12 (7 to 12 feet below the existing surface grades) with 77% recovery and 0% RQD. The top of the rock depths at each bore locations are listed in the table below.

Test Boring	Top of the Rock Depth (Ft.)	Test Boring	Top of the Rock Depth (Ft.)
B-001	3.5 ft	B-008	8.3 ft
B-002	4.0 ft	B-009	1.5 ft
B-003	8.5 ft	B-010	1.5 ft
B-004	6.5 ft	B-011	3.0 ft
B-005	8.0 ft	B-012	5.5 ft
B-006	13.5 ft	B-013	8.5 ft
B-007	13.5 ft		

Please note that the subsurface description is of a generalized nature, which is provided to highlight the major strata encountered. The boring logs and laboratory test data included in the Appendix should be reviewed for specific information at the individual boring locations. The stratifications shown on the boring logs represent the conditions only at the actual test positions. Variations may occur and should be expected

between the boring locations. The stratifications represent the approximate boundary between the subsurface materials, and the transition may be gradual or not clearly defined.

Groundwater was encountered in test boring B-007 at a depth of 8.5 feet below the existing grade. Groundwater was not encountered in the remaining test boring locations. However, groundwater levels fluctuate seasonally as a function of rainfall. During a time of year or weather different from the time of drilling, there may be a considerable change in the water table or the occurrence of water where not previously encountered. Furthermore, the water levels in the boreholes often are not representative of the actual groundwater level, because the boreholes remain open for a relatively short time. Therefore, we recommend that the contractor determine the actual groundwater levels at the time of construction to evaluate groundwater impact on the construction procedures.

However, it should be noted that groundwater levels will fluctuate seasonally as a function of precipitation and other hydrogeological factors. Therefore, at a time of year different from the time of drilling, there may be a considerable change in the water table, or the occurrence of water where not previously encountered. Accordingly, we recommend that the contractor determine the actual groundwater levels at the time of construction to evaluate groundwater impact on the construction procedures.

As always, should you have any questions regarding this transmittal, please do not hesitate to contact the undersigned at 216-447-1335.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Surya Thapa, P.E.
Geotechnical Department Manager

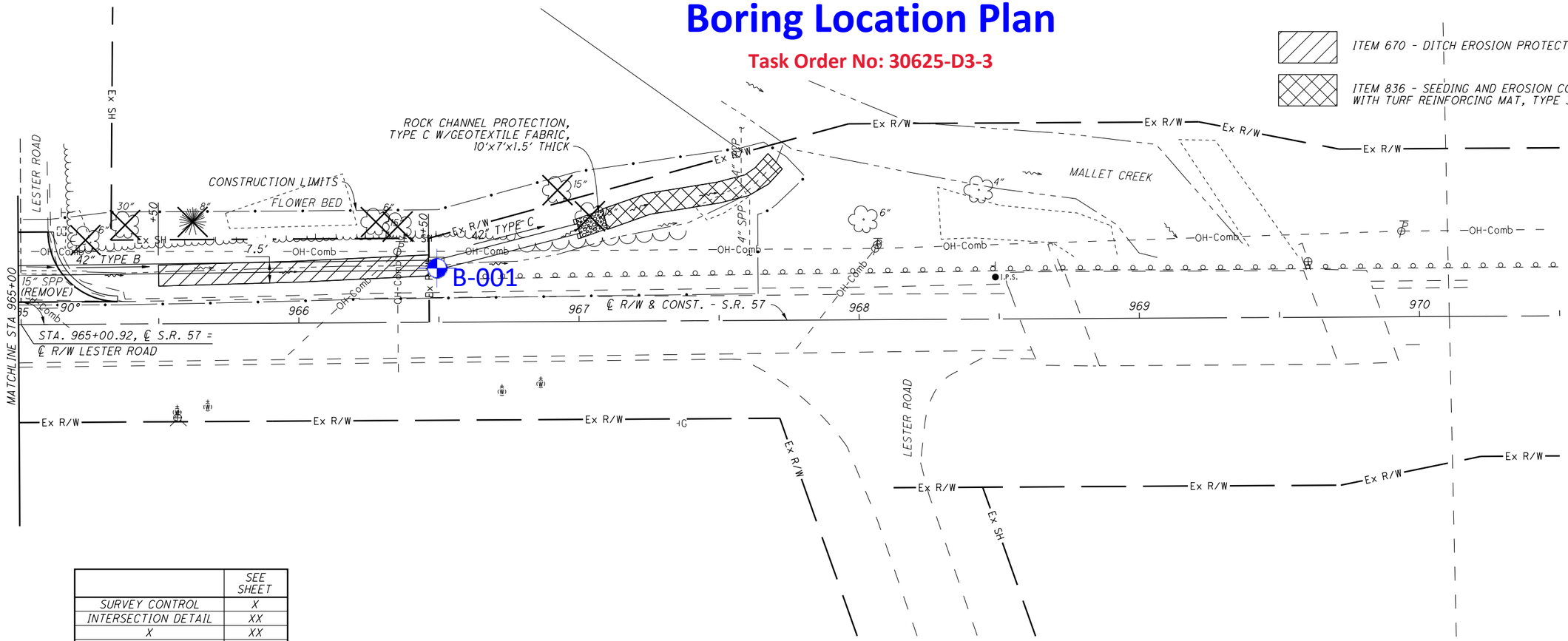
A. Veeramani, P.E.
Director / Principal Consultant

Enclosures:

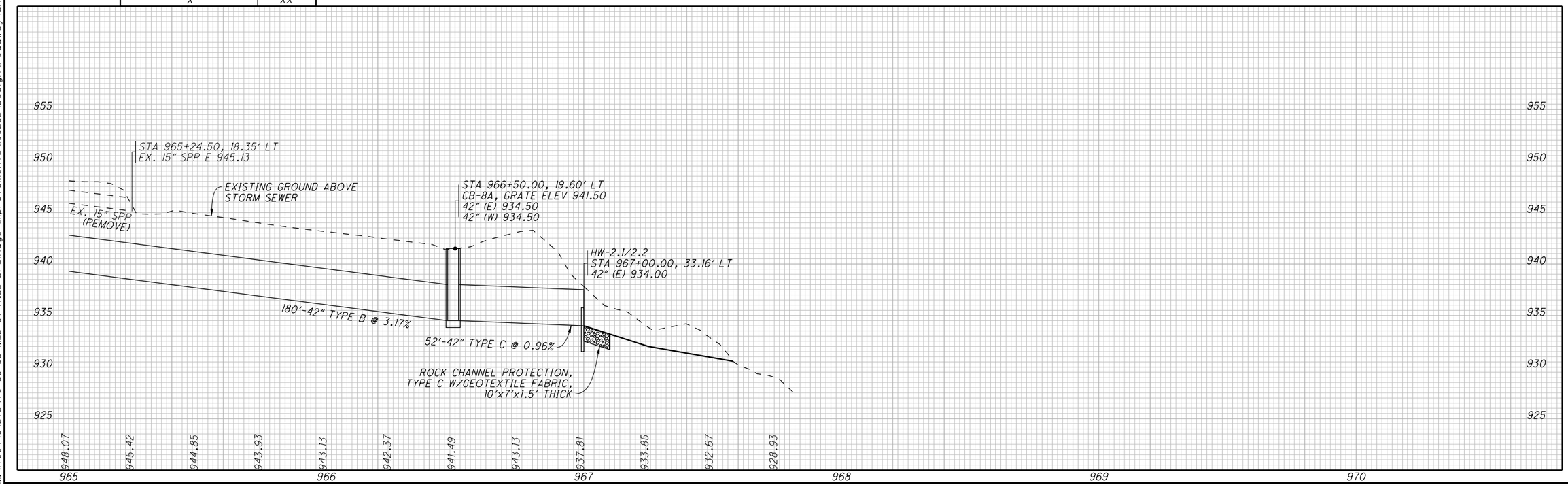
Boring Location Plan
Boring Logs
Rock Core Photo Log
Pavement Core Photo Logs
ODOT General Notes

Boring Location Plan

Task Order No: 30625-D3-3



	SEE SHEET
SURVEY CONTROL	X
INTERSECTION DETAIL	XX
X	XX
X	XX



HORIZONTAL SCALE IN FEET: 0, 10, 20, 40

CALCULATED XXX | CHECKED XXX

PLAN AND PROFILE - S.R. 57
STA 965+00 TO STA 970+50

MED-57-17.52

1

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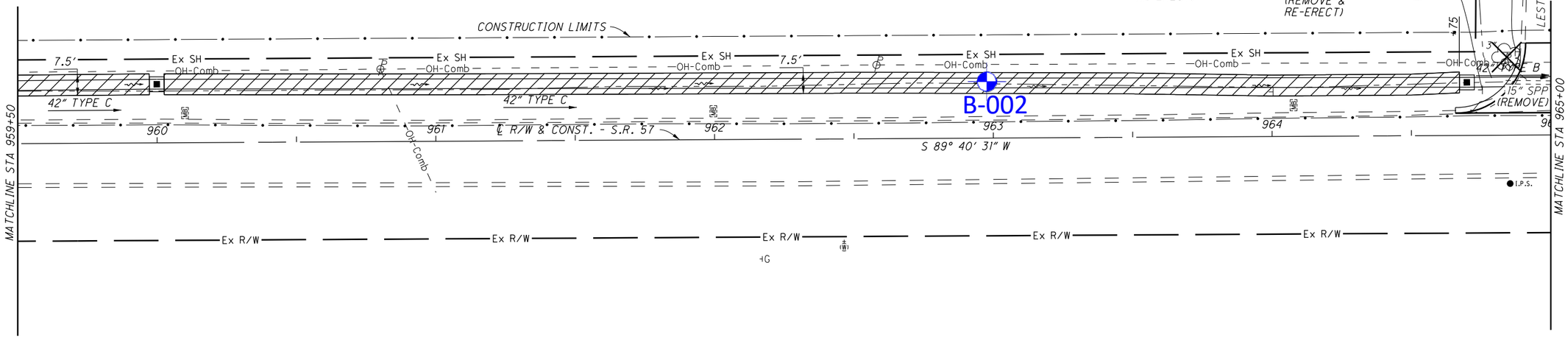
Boring Location Plan

Task Order No: 30625-D3-3



	SEE SHEET
SURVEY CONTROL	X
INTERSECTION DETAIL	XX
X	XX
X	XX

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED XXX
CHECKED XXX

PLAN AND PROFILE - S.R. 57
STA 959+50 TO STA 965+00

MED-57-17.52

2

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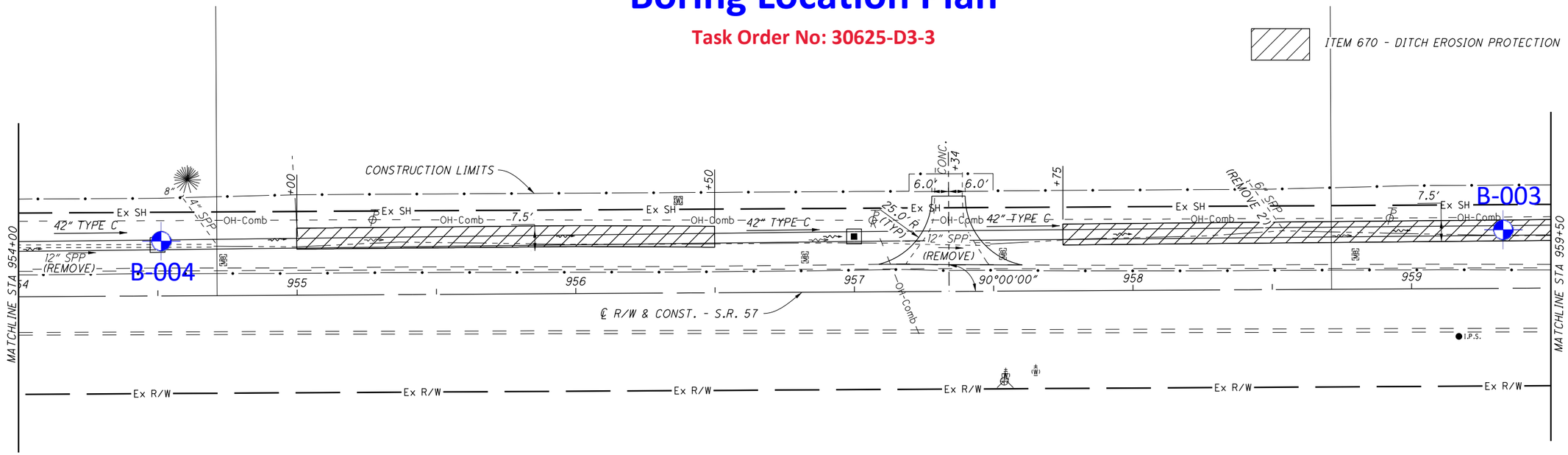
Boring Location Plan

Task Order No: 30625-D3-3

ITEM 670 - DITCH EROSION PROTECTION



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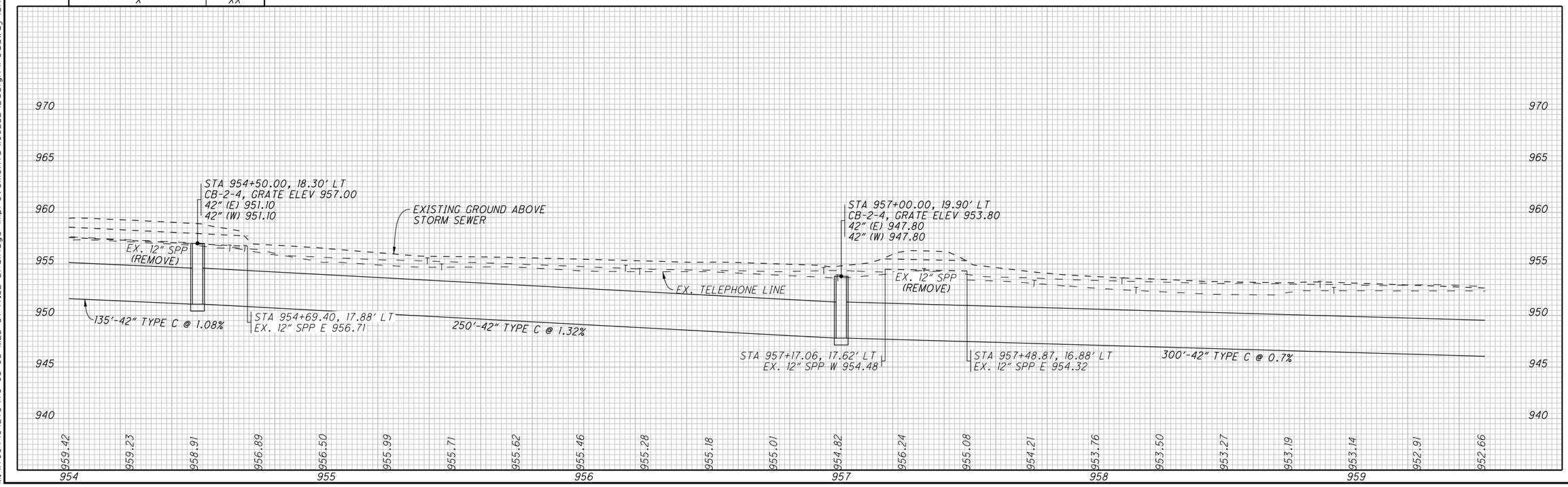
DRIVE DETAIL	XX
X	XX
X	XX



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED XXX
CHECKED XXX

PLAN AND PROFILE - S.R. 57
STA 954+00 TO STA 959+50

MED-57-17.52

3

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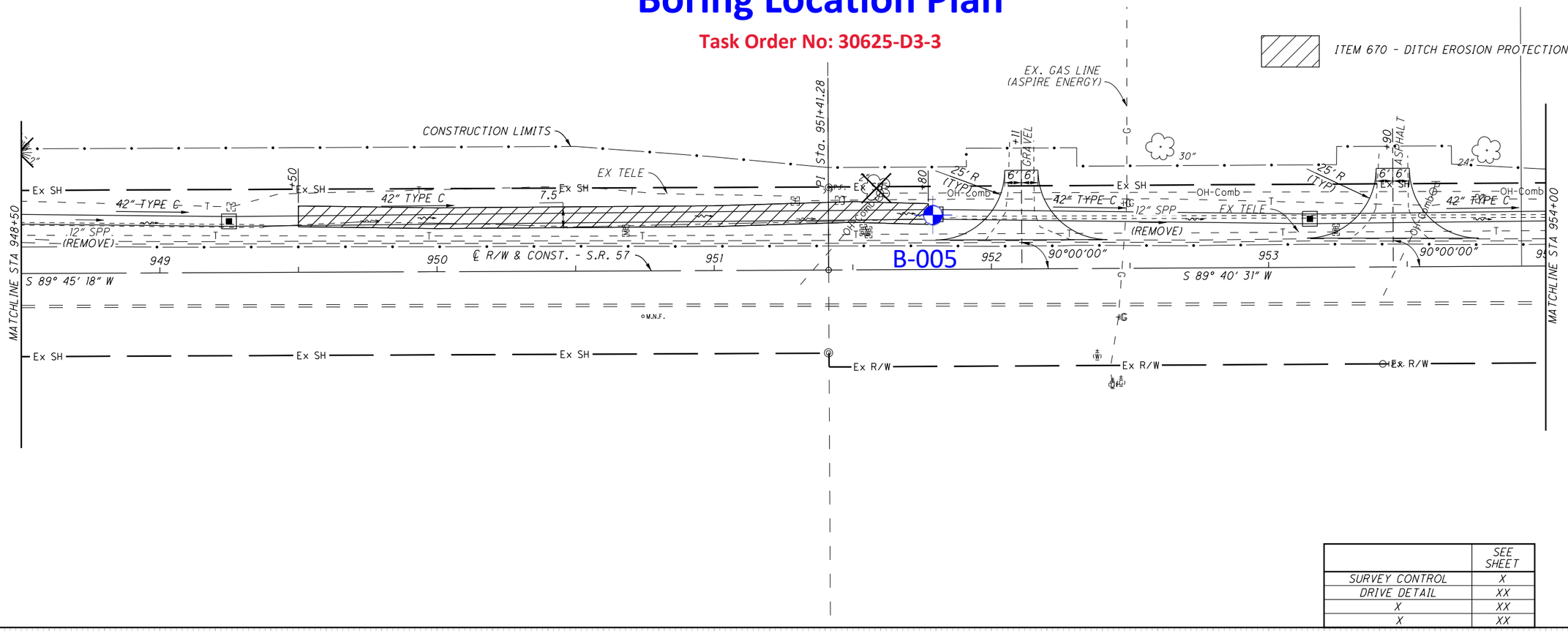
Boring Location Plan

Task Order No: 30625-D3-3



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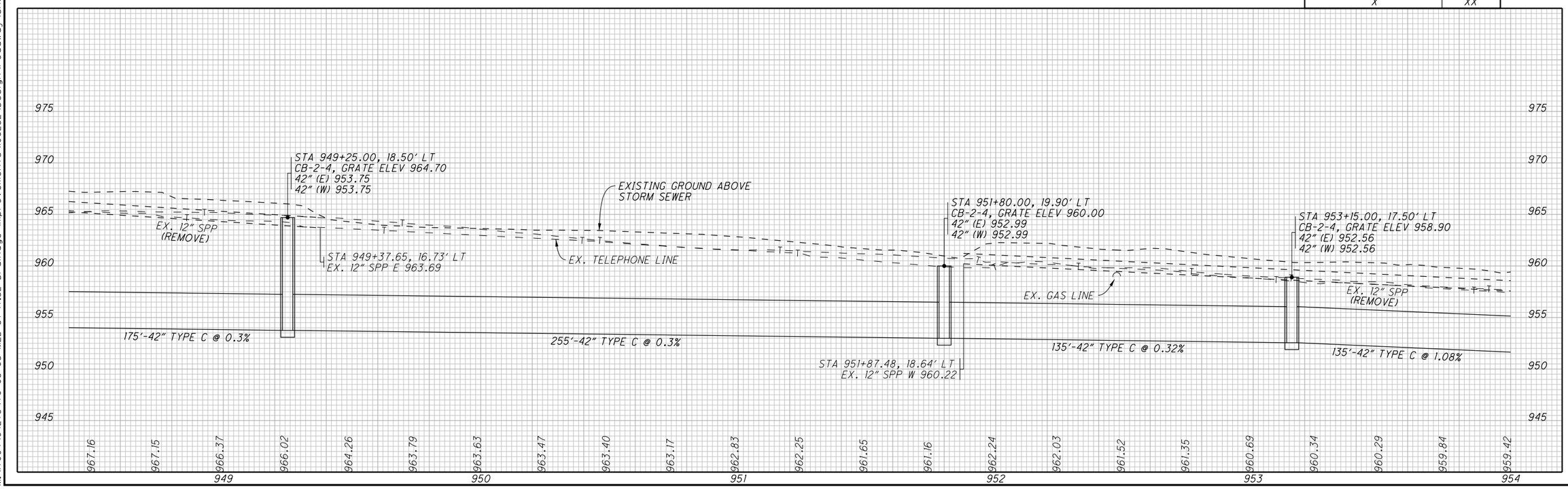
DRIVE DETAIL	XX
X	XX
X	XX



PLAN AND PROFILE - S.R. 57
STA 948+50 TO STA 954+00

MED-57-17.52

4

CALCULATED XXX CHECKED XXX

HORIZONTAL SCALE IN FEET 10 20 40

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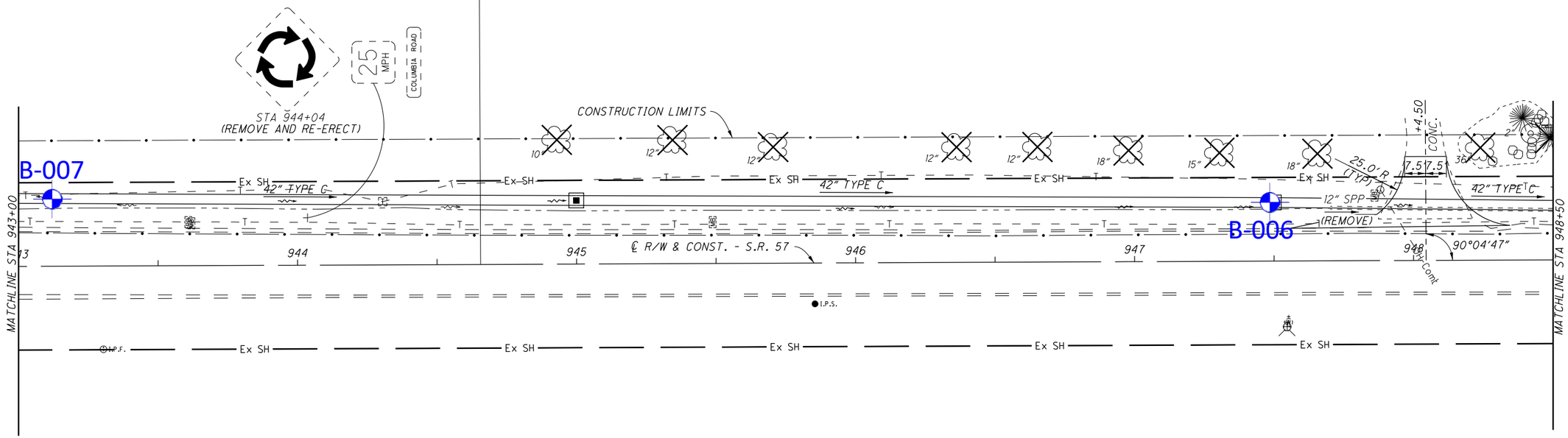
Boring Location Plan

Task Order No: 30625-D3-3



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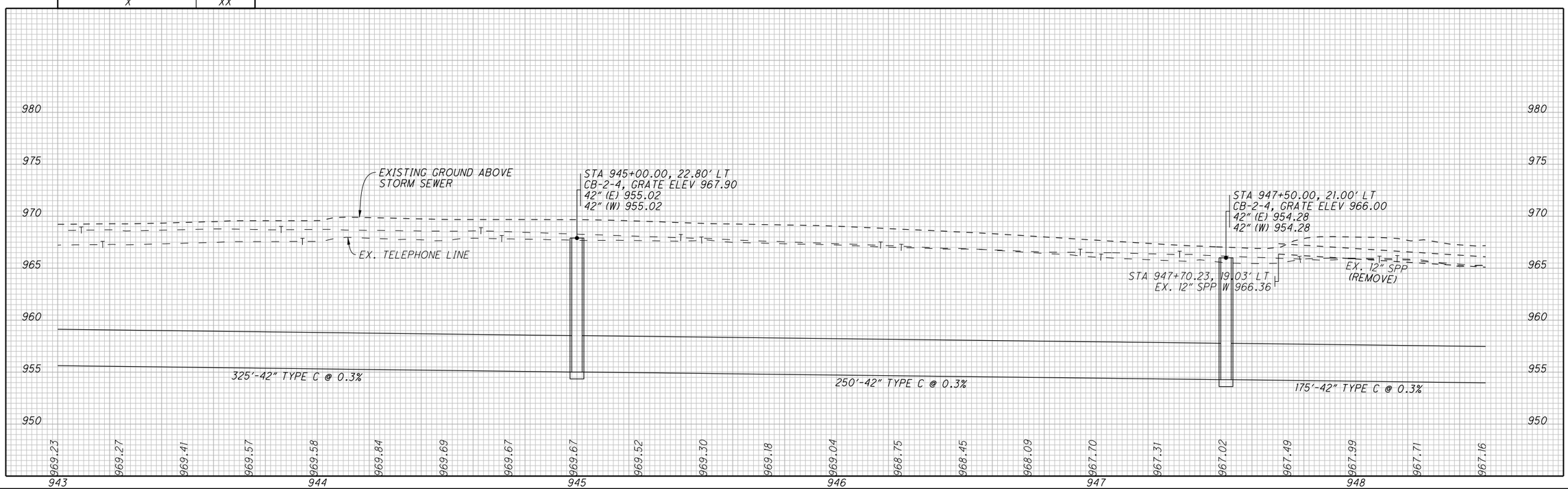
SURVEY CONTROL	X
DRIVE DETAIL	XX
X	XX
X	XX



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED XXX
CHECKED XXX

PLAN AND PROFILE - S.R. 57
STA 943+00 TO STA 948+50

MED-57-17.52

5

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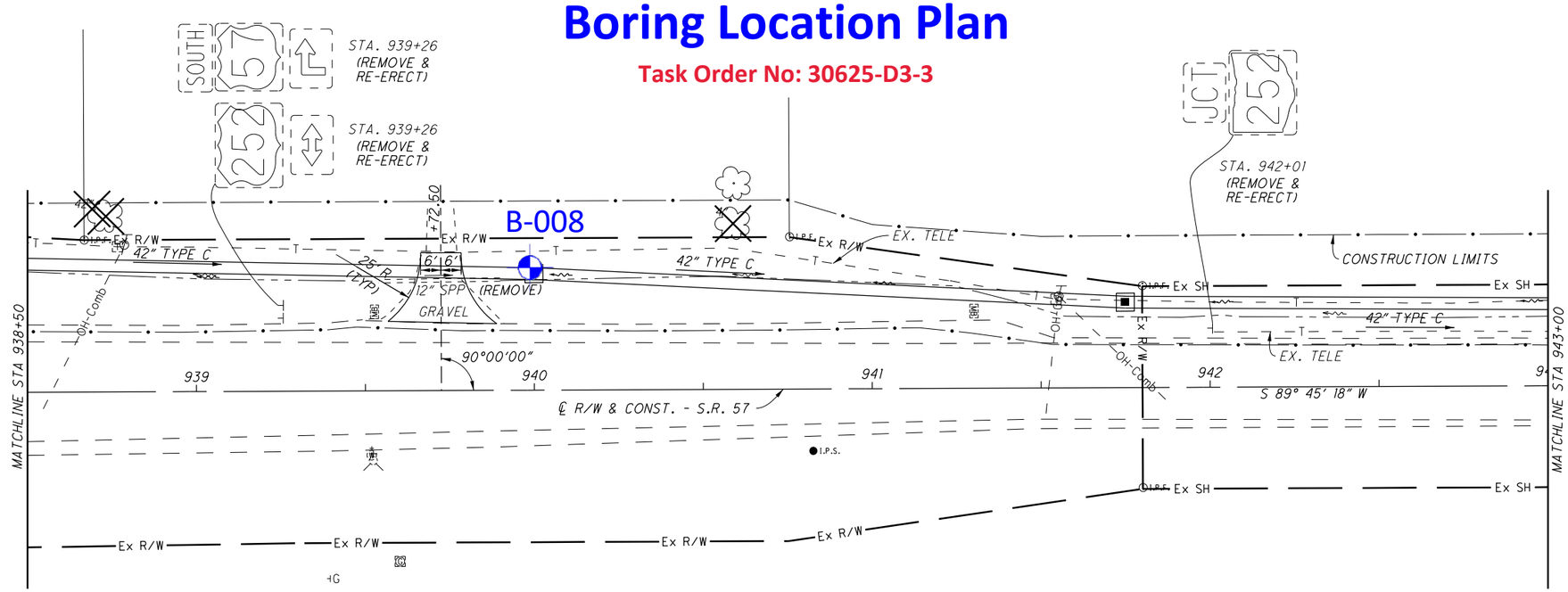
Boring Location Plan

Task Order No: 30625-D3-3



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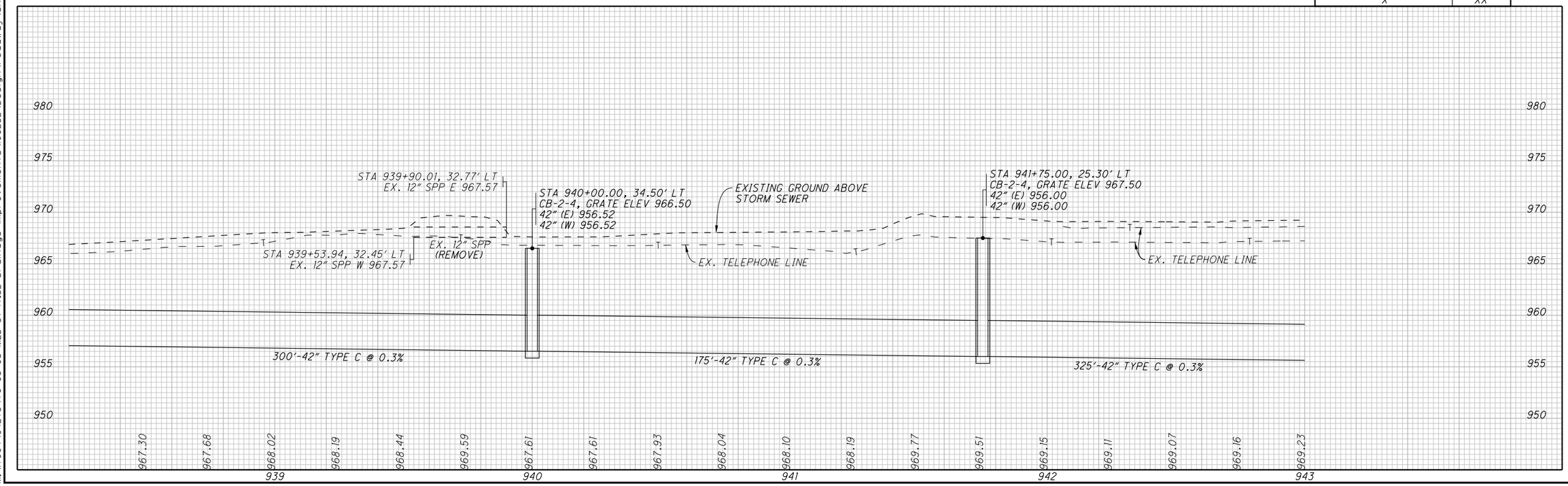
DRIVE DETAIL	XX
X	XX
X	XX



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED XXX
CHECKED XXX

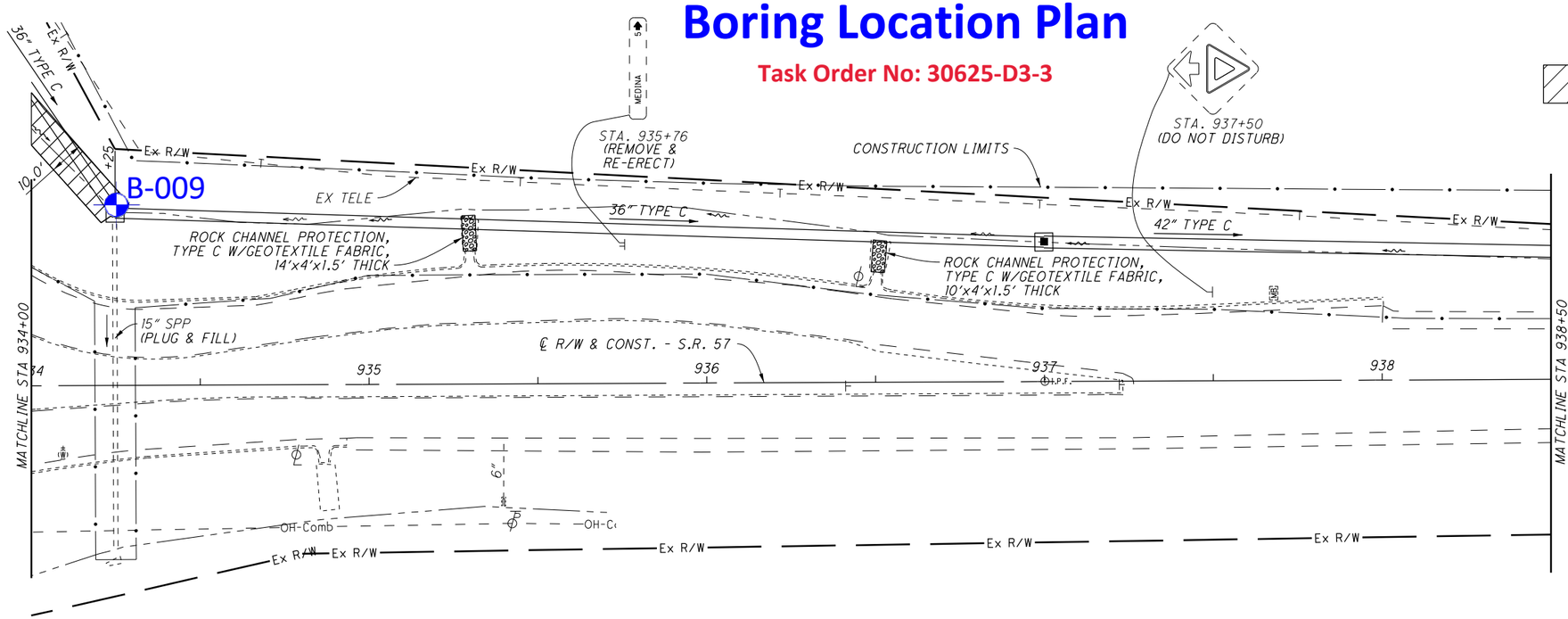
PLAN AND PROFILE - S.R. 57
STA 938+50 TO STA 943+00

MED-57-17.52

6

Boring Location Plan

Task Order No: 30625-D3-3



ITEM 670 - DITCH EROSION PROTECTION

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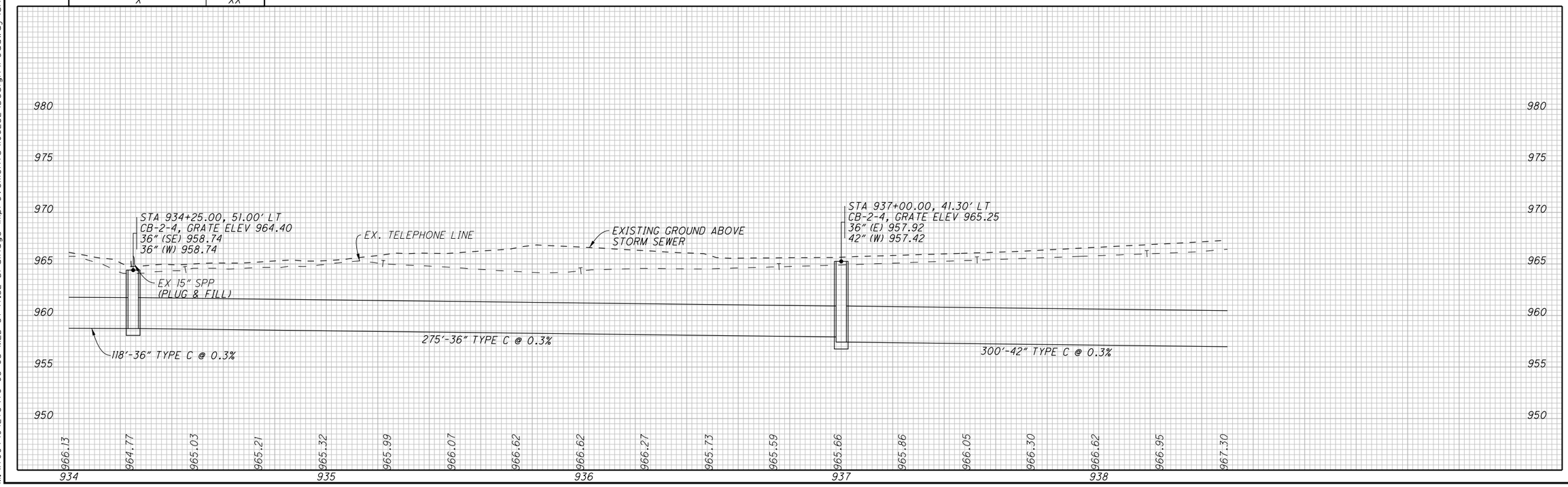
SURVEY CONTROL	X
X	XX
X	XX
X	XX



HORIZONTAL SCALE IN FEET
10 20 40

CALCULATED XXX
CHECKED XXX

PLAN AND PROFILE - S.R. 57
STA 934+00 TO STA 938+50

MED-57-17.52

7

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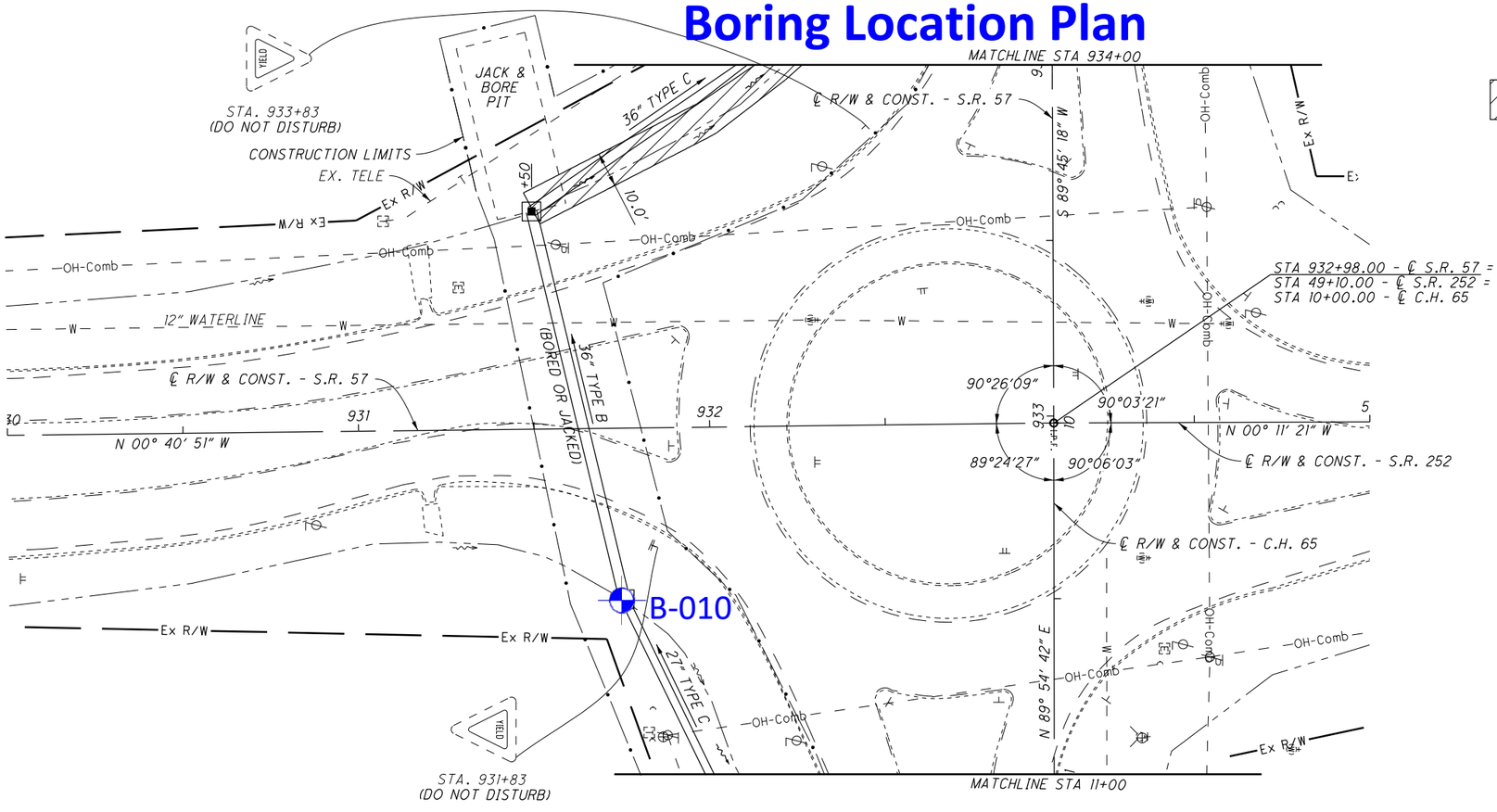
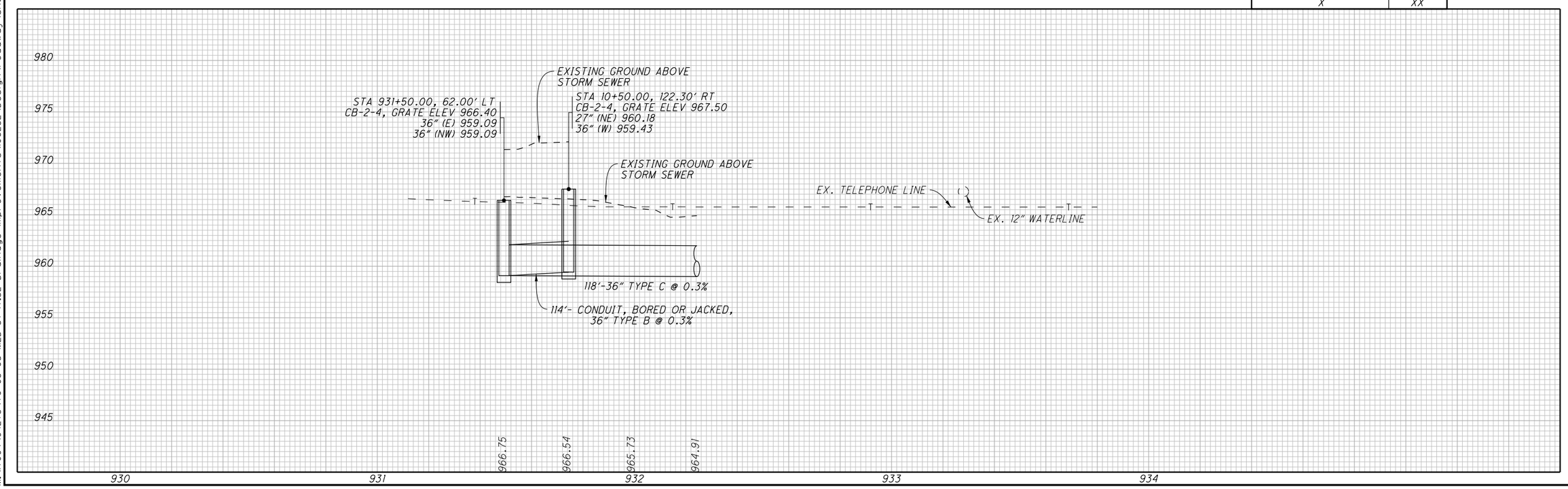
Boring Location Plan

Task Order No: 30625-D3-3



ITEM 670 - DITCH EROSION PROTECTION

	SEE SHEET
SURVEY CONTROL	X
X	XX
X	XX
X	XX



HORIZONTAL SCALE IN FEET
10 20 40

CALCULATED XXX
CHECKED XXX

PLAN AND PROFILE - S.R. 57
STA 930+00 TO STA 934+00

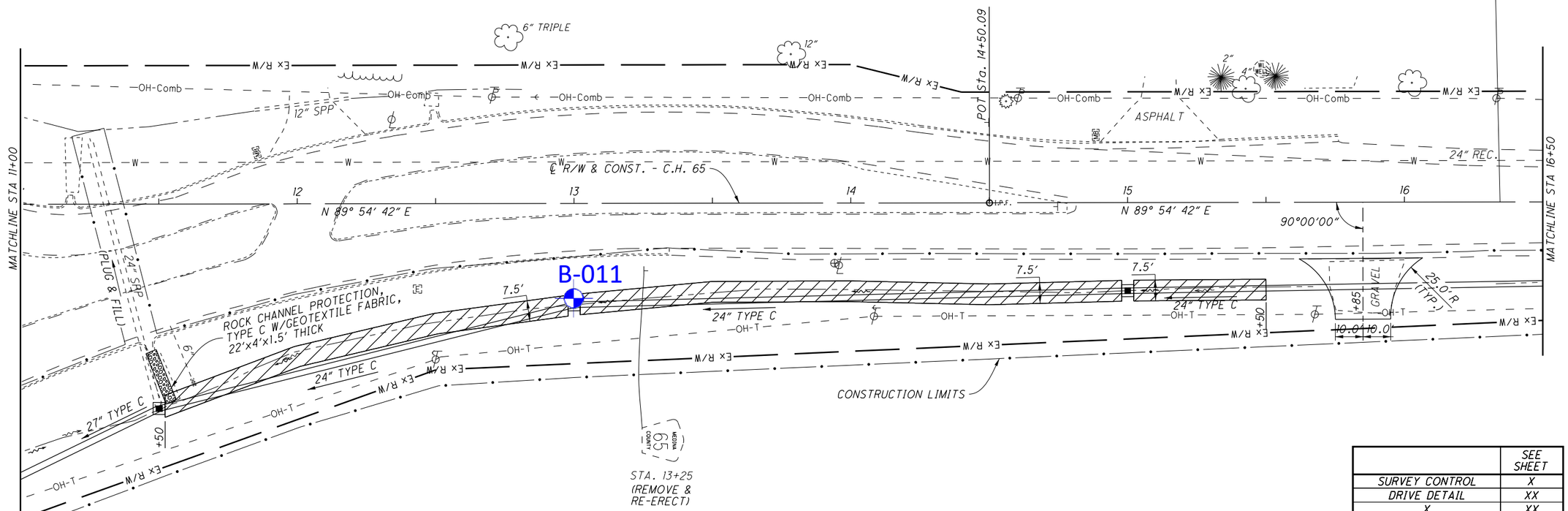
MED-57-17.52

8

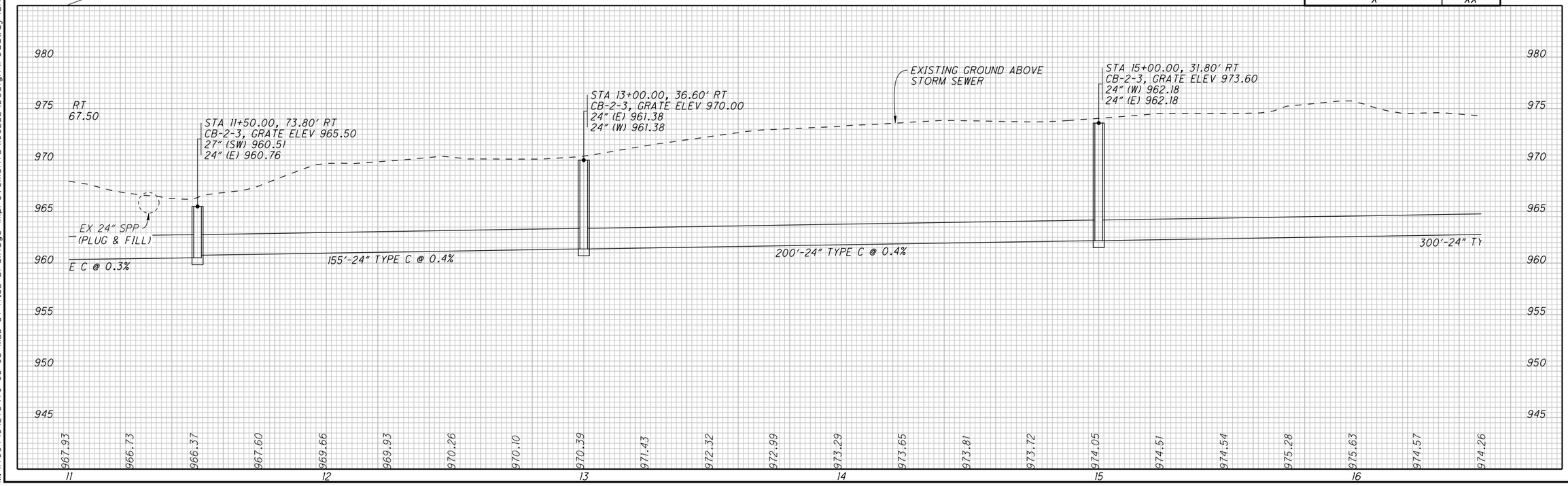
Boring Location Plan

Task Order No: 30625-D3-3

ITEM 670 - DITCH EROSION PROTECTION



	SEE SHEET
SURVEY CONTROL	X
DRIVE DETAIL	XX
X	XX
X	XX



CALCULATED XXX CHECKED XXX

HORIZONTAL SCALE IN FEET 0 10 20 40

PLAN AND PROFILE - C.H. 65
STA 11+00 TO STA 16+50

MED-57-17.52

9

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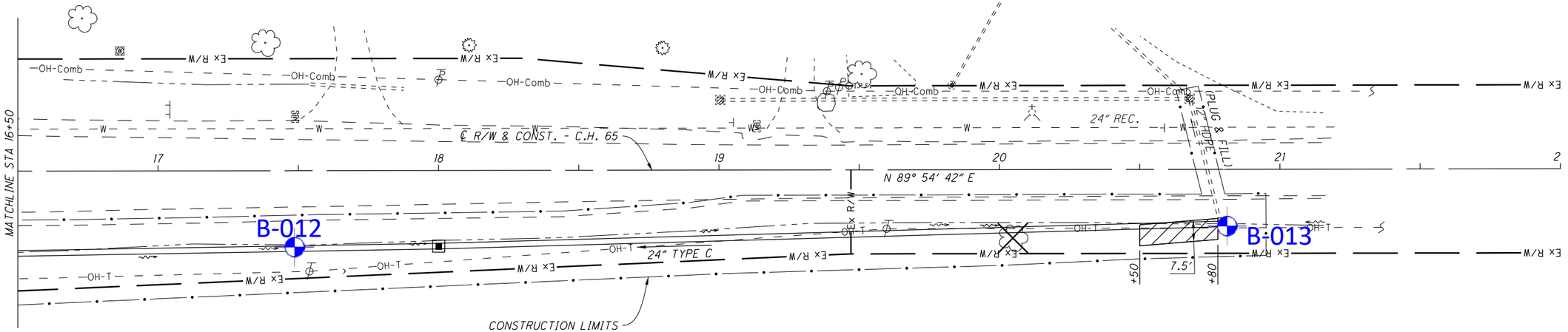
Boring Location Plan

Task Order No: 30625-D3-3

ITEM 670 - DITCH EROSION PROTECTION



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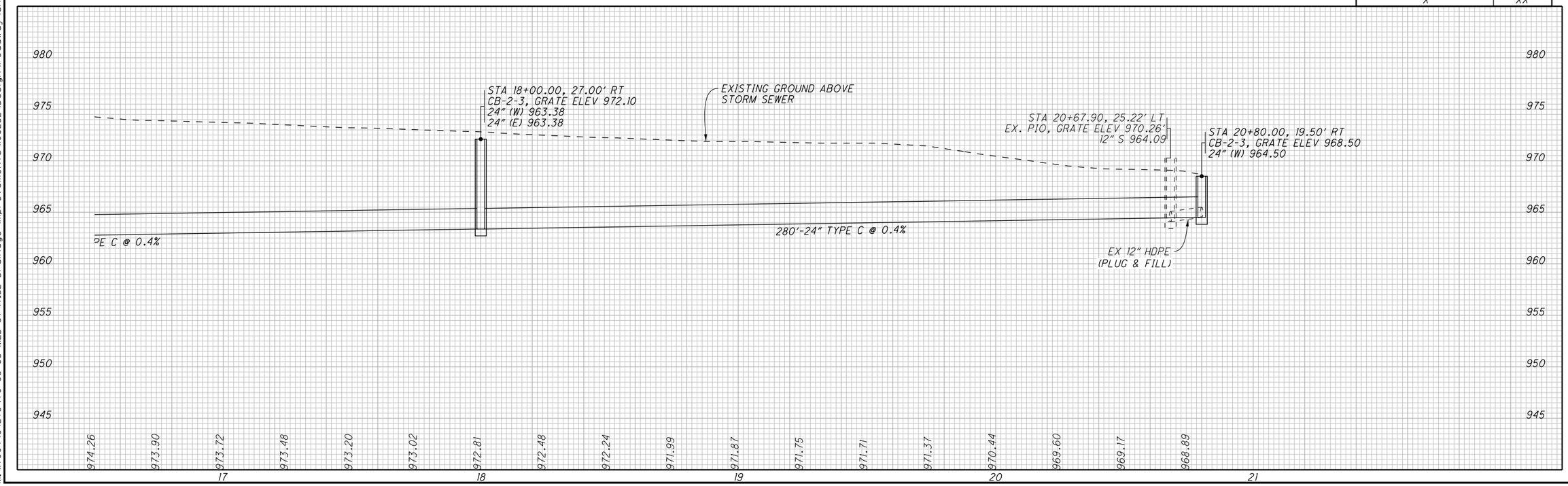
X	XX
X	XX



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED XXX
CHECKED XXX

PLAN AND PROFILE - C.H. 65
STA 16+50 TO STA 22+00

MED-57-17.52

10

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PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / KEITH	DRILL RIG: D-50 (18)	STATION / OFFSET: 966+50, 19' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 941.5 (MSL) EOB: 5.0 ft.
START: 10/3/19 END: 10/3/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.9	LAT / LONG: 41.180792°, -81.937321°

EXPLORATION ID B-001-0-19

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 941.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
12" ASPHALT PAVEMENT	940.5																	
VERY DENSE, BROWN AND BLACK, **GRAVEL AND STONE FRAGMENTS WITH SAND**, TRACE SILT/CLAY (Fill)	938.0	1	18 50/4"	-	100	SS-1	-	51	15	10	16	8	20	18	2	8	A-1-b (0)	
		2																
		3																
SANDSTONE, BROWN, HIGHLY WEATHERED, VERY STRONG.		TR 4	50/1"	-	100	SS-2	-	-	-	-	-	-	-	-	-	7	Rock (V)	
Auger Refusal @5'	936.5	EOB 5																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / KEITH	DRILL RIG: D-50 (18)	STATION / OFFSET: 963+00, 20' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 950.0 (MSL) EOB: 9.5 ft.
START: 10/3/19 END: 10/3/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.9	LAT / LONG: 41.180818°, -81.936022°

EXPLORATION ID B-002-0-19

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 950.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
10" TOPSOIL	949.2																	
MEDIUM STIFF, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, WET	947.5	1	3 2 2	6	72	SS-1	-	2	6	14	45	33	34	18	16	25	A-6b (10)	
STIFF, BROWN, **SANDY SILT**, TRACE CLAY, TRACE GRAVEL, MOIST	946.0	2 3																
SHALE, BROWN, HIGHLY WEATHERED, VERY WEAK.		TR 4	5 23 18	59	89	SS-2A	-	42	10	7	32	9	28	20	8	13	A-4a (1)	
						SS-2B	-	-	-	-	-	-	-	-	-	8	Rock (V)	
		5																
		6	50	-	83	SS-3	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		7 8																
	940.5	9 EOB	21 59	-	83	SS-4	-	-	-	-	-	-	-	-	-	8	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / KEITH	DRILL RIG: D-50 (18)	STATION / OFFSET: 959+68, 21' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 953.0 (MSL) EOB: 8.6 ft.
START: 10/3/19 END: 10/3/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.9	LAT / LONG: 41.180794°, -81.934760°

EXPLORATION ID B-003-0-19

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	953.0																	
9.25" ASPHALT PAVEMENT	952.2																	
STIFF, GRAY, **SANDY SILT**, TRACE GRAVEL/ASPHALT FRAGMENT (Fill)	949.5	1	20 7 6	19	72	SS-1	-	3	6	24	48	19	21	15	6	14	A-4a (6)	
VERY STIFF, BROWN, **SILTY CLAY**, TRACE GRAVEL/SAND	944.5	4	3 5 10	22	89	SS-2	-	2	6	14	39	39	32	16	16	15	A-6b (10)	
		7	6 10 17	39	94	SS-3	-	-	-	-	-	-	-	-	-	16	A-6b (V)	
SANDSTONE, GRAY, MODERATELY WEATHERED, VERY STRONG.	944.4	TR 8	50/1"	-	100	SS-4	-	-	-	-	-	-	-	-	-	7	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / KEITH	DRILL RIG: D-50 (18)	STATION / OFFSET: 954+50, 19' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 958.0 (MSL) EOB: 8.83 ft.
START: 10/3/19 END: 10/3/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.9	LAT / LONG: 41.180789°, -81.932713°

EXPLORATION ID B-004-0-19

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 958.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
6" TOPSOIL	957.5																	
MEDIUM STIFF, BROWN, **SILT AND CLAY**, TRACE GRAVEL, MOIST	954.5	1	3 3 2	7	72	SS-1	-	1	5	15	49	30	34	20	14	23	A-6a (10)	
STIFF TO HARD, BROWN, **SANDY SILT**, TRACE GRAVEL, MOIST	951.5	2 3 4 5	8 11 13	35	100	SS-2	-	4	4	10	46	36	27	18	9	16	A-4a (8)	
SHALE, BROWN, HIGHLY WEATHERED, SLIGHTLY TO MODERATELY STRONG.	949.2	TR 6 7 8 EOB	5 32 50/2"	-	93	SS-3B	-	-	-	-	-	-	-	-	-	12	Rock (V)	
						SS-3A	-	-	-	-	-	-	-	-	-	7	A-4a (V)	
			50/4"	-	75	SS-4	-	-	-	-	-	-	-	-	-	10	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 951+78, 19' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 961.0 (MSL) EOB: 9.92 ft.
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180788°, -81.931883°

EXPLORATION ID B-005-0-19

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 961.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
12" TOPSOIL	960.0																	
STIFF, BROWN, **SILTY CLAY**, TRACE GRAVEL/ROCK FRAGMENTS, MOIST (FILL)	957.5	1 2 3	2 3 6	14	56	SS-1	-	27	6	11	29	27	34	17	17	16	A-6b (7)	
VERY STIFF, BROWN, **SILT AND CLAY**, TRACE GRAVEL, MOIST	953.0	4 5 6 7	4 5 8	20	94	SS-2	-	3	5	15	42	35	32	18	14	18	A-6a (10)	
			4 5 8	20	72	SS-3	-	-	-	-	-	-	-	-	-	19	A-6a (V)	
SHALE, BROWN, HIGHLY WEATHERED, VERY WEAK TO WEAK.	951.1	TR 8 9 EOB	24 40 50/5"	-	65	SS-4	-	-	-	-	-	-	-	-	-	7	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 947+50, 19' LT.	EXPLORATION ID B-006-0-19
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)	
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 967.0 (MSL) EOB: 13.6 ft.	PAGE 1 OF 1
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180788°, -81.930457°	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
14" TOPSOIL	967.0																	
	965.8																	
STIFF TO HARD, BROWN, **SILT AND CLAY**, TRACE GRAVEL, MOIST		1	1 2 4	9	72	SS-1B	-	2	5	14	43	36	31	17	14	18	A-6a (10)	
		2																
		3																
		4	6 8 9	26	100	SS-2	-	2	6	15	44	33	27	16	11	16	A-6a (8)	
		5																
		6																
		7	5 9 12	32	100	SS-3	-	-	-	-	-	-	-	-	-	15	A-6a (V)	
		8																
		9	9 10 15	38	100	SS-4	-	-	-	-	-	-	-	-	-	20	A-6a (V)	
		10																
		11																
		12																
	953.5	13																
SANDSTONE, GRAY, HIGHLY WEATHERED, VERY STRONG.		TR3	60/1"	-	100	SS-5	-	-	-	-	-	-	-	-	-	-	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 943+12, 24' LT.	EXPLORATION ID B-007-0-19
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)	
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 969.5 (MSL) EOB: 17.0 ft.	PAGE 1 OF 1
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180792°, -81.928773°	

MATERIAL DESCRIPTION AND NOTES	ELEV. 969.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
12" TOPSOIL	968.5																	
STIFF, BROWN, **SILTY CLAY**, TRACE GRAVEL, MOIST	966.0		2 2 4	9	67	SS-1	-	3	6	10	36	45	36	20	16	20	A-6b (10)	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, TRACE GRAVEL, MOIST			6 9 13	33	100	SS-2	-	2	6	13	43	36	29	18	11	16	A-6a (8)	
			5 8 12	30	100	SS-3	-	-	-	-	-	-	-	-	-	15	A-6a (V)	
		W 961.0																
			6 9 12	32	100	SS-4	-	-	-	-	-	-	-	-	-	16	A-6a (V)	
	956.0	TR																
SANDSTONE, GRAY, HIGHLY WEATHERED, WEAK TO MODERATELY STRONG.	953.5		27 35 50/2"	-	93	SS-5	-	-	-	-	-	-	-	-	-	14	Rock (V)	
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK. clay layers	952.5	EOB	37 9 10	29	67	SS-6A	-	-	-	-	-	-	-	-	-	13	Rock (V)	
						SS-6B	-	-	-	-	-	-	-	-	-	12	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 940+00, 36' LT.	EXPLORATION ID B-008-0-19
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)	
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 967.5 (MSL) EOB: 13.6 ft.	PAGE 1 OF 1
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180768°, -81.927695°	

MATERIAL DESCRIPTION AND NOTES	ELEV. 967.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
3" TOPSOIL	967.2																	
VERY STIFF, BROWN, **SILTY CLAY**, TRACE GRAVEL, MOIST		1	4 5 8	20	72	SS-1	-	2	6	12	41	39	35	18	17	18	A-6b (11)	
	964.0	2																
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, TRACE GRAVEL, MOIST		3																
		4	6 8 10	27	94	SS-2	-	4	8	14	42	32	28	17	11	16	A-6a (8)	
		5																
		6	6 8 12	30	100	SS-3	-	-	-	-	-	-	-	-	-	15	A-6a (V)	
	959.2	7																
SHALE, GRAY, HIGHLY WEATHERED, MODERATELY STRONG TO VERY STRONG.		8 TR	50/3"	-	67	SS-4	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		9																
		10																
		11																
		12																
	953.9	13 EOB	50/1"	-	100	SS-5	-	-	-	-	-	-	-	-	-	1	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 934+25, 54' LT.	EXPLORATION ID B-009-0-19
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: SR-57 (SPIETH RD)	
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 965.0 (MSL) EOB: 5.4 ft.	PAGE 1 OF 1
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180731°, -81.925588°	

MATERIAL DESCRIPTION AND NOTES	ELEV. 965.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
3" TOPSOIL	964.7																	
MEDIUM DENSE, BROWN AND GRAY, **SILTY CLAY**, TRACE GRAVEL/SHALE FRAGMENTS, MOIST	963.5	TR	1 14 31	68	67	SS-1A	-	5	4	12	50	29	35	19	16	20	A-6b (10)	
						SS-1B	-	-	-	-	-	-	-	-	-	8	Rock (V)	
SHALE, BROWN, HIGHLY WEATHERED, VERY WEAK TO WEAK.			23 54	-	100	SS-2	-	-	-	-	-	-	-	-	-	8	Rock (V)	
Auger Refusal @5.4'	959.6	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 931+73, 48' RT.	EXPLORATION ID B-010-0-19
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: SR-57 (COLUMBIA RD)	
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 966.5 (MSL) EOB: 10.9 ft.	PAGE 1 OF 1
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180533°, -81.924901°	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
4" TOPSOIL	966.5																	
SOFT, BROWN AND GRAY, **SILTY CLAY**, TRACE GRAVEL/SHALE FRAGMENTS, MOIST	966.2																	
	965.0	TR	3 50/4"	-	90	SS-1A	-	34	6	10	28	22	35	18	17	16	A-6b (5)	
						SS-1B	-	-	-	-	-	-	-	-	-	12	Rock (V)	
SHALE, BROWN, HIGHLY WEATHERED, WEAK TO SLIGHTLY STRONG.		1																
		2																
		3																
		4	52	-	100	SS-3	-	-	-	-	-	-	-	-	-	10	Rock (V)	
		5																
		6	50/4"	-	100	SS-4	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		7																
		8																
		9	50/5"	-	100	SS-5	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		10																
	955.6	EOB	50/5"	-	100	6	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 13+00, 34' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: CH-65 (SPIETH RD)
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 970.5 (MSL) EOB: 10.75 ft.
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180754°, -81.924053°

EXPLORATION ID B-011-0-19

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 970.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
6" TOPSOIL	970.0																	
MEDIUM STIFF, BROWN, **CLAY**, TRACE SAND/GRAVEL	967.5	1	3 3 4	11	56	SS-1	-	11	9	14	48	18	42	26	16	23	A-7-6 (9)	
		2																
		3 TR																
SHALE, BROWN, HIGHLY WEATHERED, WEAK TO MODERATELY STRONG.		4	51	-	100	SS-2	-	-	-	-	-	-	-	-	-	8	Rock (V)	
		5																
		6	50/3"	-	67	SS-3	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		7																
		8																
		9	50/5"	-	100	SS-4	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		10																
	959.8	EOB	50/3"	-	67	SS-5	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: DRAINAGE STUDY	DRILLING FIRM / OPERATOR: PSI / TOM	DRILL RIG: CME 55 ATV (18)	STATION / OFFSET: 17+50, 25' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: PSI / JOE	HAMMER: CME AUTOMATIC	ALIGNMENT: CH-65 (SPIETH RD)
PID: 106232 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/26/18	ELEVATION: 973.5 (MSL) EOB: 12.0 ft.
START: 10/15/19 END: 10/15/19	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	LAT / LONG: 41.180743°, -81.922443°

EXPLORATION ID B-012-0-19

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 973.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
12" TOPSOIL	972.5																	
STIFF TO VERY STIFF, BROWN, **SILT AND CLAY**, TRACE SAND/GRAVEL, MOIST			3 6 8	21	72	SS-1	-	2	5	13	40	40	32	17	15	17	A-6a (10)	
			7 10 14	36	100	SS-2	-	11	8	9	39	33	33	18	15	14	A-6a (9)	
	968.0	TR																
SHALE, BROWN, HIGHLY WEATHERED, WEAK TO SLIGHTLY STRONG.			30 50/4"	-	100	SS-3	-	-	-	-	-	-	-	-	-	7	Rock (V)	
			0		77	NQ-4											CORE	
	961.5	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

Boring No.	Run No.	Run Depth	Recovery	RQD
B-012-0-19	1 of 1	7.0’ – 12.0’	77%	0%

intertek psi	MED-57-17.52 Drainage Study Task Order No. 30625-D3-3 Spieth Road Medina County, Ohio	Date: 10/29/2019 Drawn By: JC Scale: NA	Rock Core Photo Run 1 of 1 PSI Project No.: 0142-2020

PROJECT: DRAINAGE STUDY
TYPE: ROADWAY
PID: 106232 SFN:
START: 10/3/19 END: 10/3/19

DRILLING FIRM / OPERATOR: PSI / KEITH
SAMPLING FIRM / LOGGER: PSI / JOE
DRILLING METHOD: 3.25" HSA
SAMPLING METHOD: SPT

DRILL RIG: D-50 (18)
HAMMER: DIEDRICH AUTOMATIC
CALIBRATION DATE: 6/26/18
ENERGY RATIO (%): 86.9

STATION / OFFSET: 20+81, 21' RT.
ALIGNMENT: CH-65 (SPIETH RD)
ELEVATION: 968.5 (MSL) EOB: 8.67 ft.
LAT / LONG: 41.180759°, -81.921236°

EXPLORATION ID B-013-0-19

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	968.5																	
13" ASPHALT PAVEMENT	967.4																	
STIFF, GRAY, **SANDY SILT**, TRACE GRAVEL/ASPHALT FRAGMENTS, MOIST	965.0	1	9 5 6	16	89	SS-1	-	1	6	27	43	23	22	14	8	14	A-4a (6)	
STIFF TO VERY STIFF, BROWN, **SILTY CLAY**, TRACE GRAVEL, MOIST	960.0	4	4 5 6	16	89	SS-2	-	16	19	28	15	22	35	14	21	17	A-6b (3)	
		7	5 9 12	30	61	SS-3	-	-	-	-	-	-	-	-	-	19	A-6b (V)	
SANDSTONE, BROWN, MODERATELY WEATHERED, STRONG.	959.8	8 TR EOB	50/2"	-	100	SS-4	-	-	-	-	-	-	-	-	-	6	Rock (V)	

NOTES: NONE

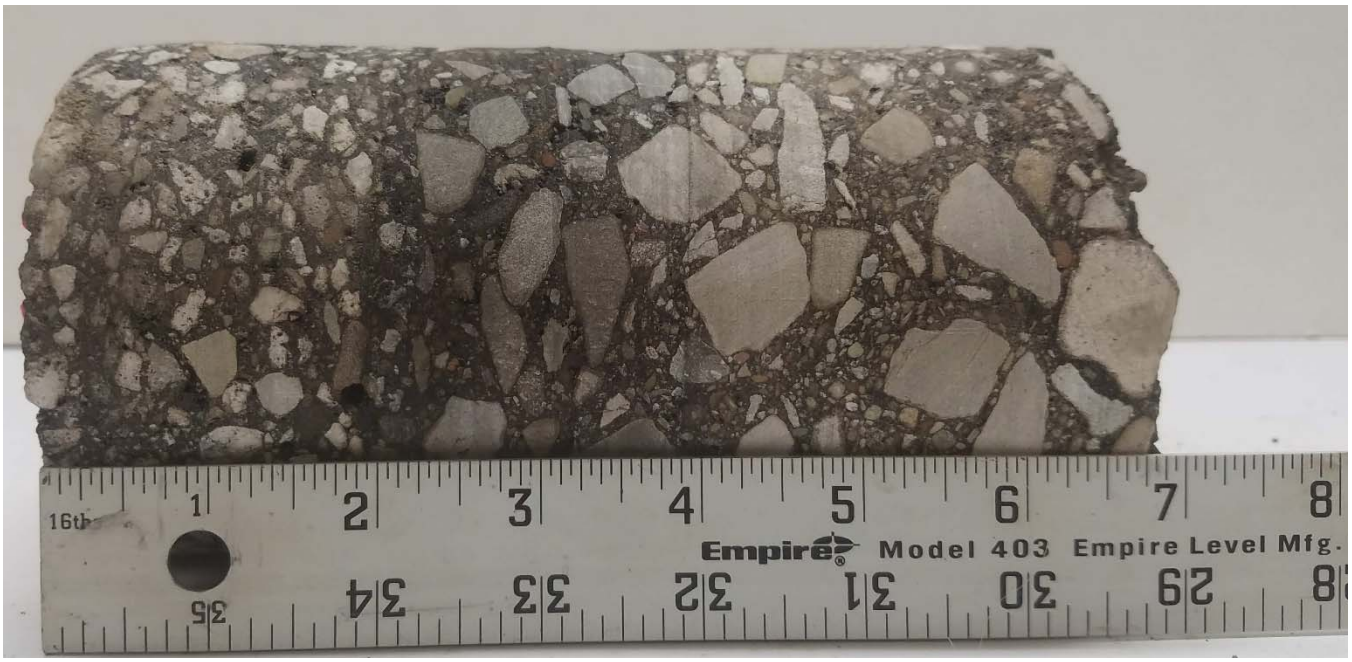
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

Core # B-001-0-19
(Bottom 4" not able to Retrieved)

Core # B-002-0-19A
(Pavement Cored on Roadway)

intertek psi	MED-57-17.52 Drainage Study (Task:30625-D3-3) (between station: 926 to 974) , Medina County, Ohio	Date: 11/05/19 PSI Project No: 0142-2020	Core Photo Log

Core # B-003-0-19



Core # B-006-0-19A
(Pavement Cored on Roadway)

intertek psi	MED-57-17.52 Drainage Study (Task:30625-D3-3) (between station: 926 to 974) , Medina County, Ohio	Date: 11/05/19 PSI Project No: 0142-2020	Core Photo Log

Core # B-007-0-19A
(Pavement Cored on Roadway)

Core # B-013-0-19

intertek psi	MED-57-17.52 Drainage Study (Task:30625-D3-3) (between station: 926 to 974) , Medina County, Ohio	Date: 11/05/19 PSI Project No: 0142-2020	Core Photo Log

APPENDIX A.1 - ODOT Quick Reference for Visual Description of Soils

1) STRENGTH OF SOIL:

Non-Cohesive (granular) Soils - Compactness	
Description	**Blows Per Ft.**
Very Loose	≤ 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 – 50
Very Dense	> 50

2) COLOR :

If a color is a uniform color throughout, the term is single, modified by an adjective such as light or dark. If the predominate color is shaded by a secondary color, the secondary color procedes the primary color. If two major and distinct colors are swirled throughout the soil, the colors are modified by the term "mottled"

3) PRIMARY COMPONENT

Use **DESCRIPTION** from ODOT Soil Classification Chart on Back

Cohesive (fine grained) Soils - Consistency

Description	Qu (TSF)	Blows Per Ft.	Hand Manipulation
Very Soft	<0.25	<2	Easily penetrates 2" by fist
Soft	0.25-0.5	2 - 4	Easily penetrates 2" by thumb
Medium Stiff	0.5-1.0	5 - 8	Penetrates by thumb with moderate effort
Stiff	1.0-2.0	9 - 15	Readily indents by thumb, but not penetrate
Very Stiff	2.0-4.0	16 - 30	Readily indents by thumbnail
Hard	>4.0	>30	Indent with difficulty by thumbnail

4) COMPONENT MODIFIERS:

Description	Percentage By Weight
Trace	0% - 10%
Little	10% - 20%
Some	20% - 35%
"And"	35% -50%

5) Soil Organic Content

Description	% by Weight
Slightly Organic	2% - 4%
Moderately Organic	4% - 10%
Highly Organic	> 10%

6) Relative Visual Moisture

Description	Criteria	
	Cohesive Soil	**Non-cohesive Soils**
Dry	Powdery; Cannot be rolled; Water content well below the plastic limit	No moisture present
Damp	Leaves very little moisture when pressed between fingers; Crumbles at or before rolled to $^1/_8$"; Water content below plastic limit	Internal moisture, but no to little surface moisture
Moist	Leaves small amounts of moisture when pressed between fingers; Rolled to $^1/_8$" or smaller before crumbling; Water content above plastic limit to -3% of the liquid limit	Free water on surface, moist (shiny) appearance
Wet	Very mushy; Rolled multiple times to $^1/_8$" or smaller before crumbles; Near or above the liquid limit	Voids filled with free water, can be poured from split spoon.

CLASSIFICATION OF SOILS

Ohio Department of Transportation

(The classification of a soil is found by proceeding from top to bottom of the chart.
The first classification that the test data fits is the correct classification.)

SYMBOL	DESCRIPTION	Classifcation AASHTO	Classifcation OHIO	LL_O/LL x 100*	% Pass #40	% Pass #200	Liquid Limit (LL)	Plastic Index (PI)	Group Index Max.	REMARKS
	Gravel and/or Stone Fragments	A-1-a			30 Max.	15 Max.		6 Max.	0	Min. of 50% combined gravel, cobble and boulder sizes
	Gravel and/or Stone Fragments with Sand	A-1-b			50 Max.	25 Max.		6 Max.	0	
F S	Fine Sand	A-3			51 Min.	10 Max.	NON-PLASTIC		0	
	Coarse and Fine Sand	--	A-3a			35 Max.		6 Max.	0	Min. of 50% combined coarse and fine sand sizes
	Gravel and/or Stone Fragments with Sand and Silt	A-2-4				35 Max.	40 Max.	10 Max.	0	
		A-2-5					41 Min.			
	Gravel and/or Stone Fragments with Sand, Silt and Clay	A-2-6				35 Max.	40 Max.	11 Min.	4	
		A-2-7					41 Min.			
	Sandy Silt	A-4	A-4a	76 Min.		36 Min.	40 Max.	10 Max.	8	Less than 50% silt sizes
	Silt	A-4	A-4b	76 Min.		50 Min.	40 Max.	10 Max.	8	50% or more silt sizes
	Elastic Silt and Clay	A-5		76 Min.		36 Min.	41 Min.	10 Max.	12	
	Silt and Clay	A-6	A-6a	76 Min.		36 Min.	40 Max.	11 - 15	10	
	Silty Clay	A-6	A-6b	76 Min.		36 Min.	40 Max.	16 Min.	16	
	Elastic Clay	A-7-5		76 Min.		36 Min.	41 Min.	≤LL-30	20	
	Clay	A-7-6		76 Min.		36 Min.	41 Min.	>LL-30	20	
	Organic Silt	A-8	A-8a	75 Max.		36 Min.				W/o organics would classify as A-4a or A-4b
	Organic Clay	A-8	A-8b	75 Max.		36 Min.				W/o organics would classify as A-5, A-6a, A-6b, A-7-5 or A-7-6

MATERIAL CLASSIFIED BY VISUAL INSPECTION

Sod and Topsoil

Pavement or Base

Uncontrolled Fill (Describe)

Bouldery Zone

P Peat

* Only perform the oven-dried liquid limit test and this calculation if organic material is present in the sample.

Figure 600-1. ODOT Soil Classification Chart