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PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
POLK COUNTY
TRAFFIC SIGNALS

US 6 / Hickman Rd Interchange in Clive and Urbandale

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

For Project Location Map, refer to Sheet A.2



REVISIONS

TOTAL	
42	
PROJECT IDENTIFICATION NUMBER	
15-77-080-060	
PROJECT NUMBER	
IM-080-3(277)125--13-77	
R.O.W. PROJECT NUMBER	
IMN-080-3(279)124--0E-77	

U.S. Hwy. 6 DESIGN DATA RURAL			
20 22	AADT	37,600	V.P.D.
20 50	AADT	66,000	V.P.D.
20 50	DHV	4,240	V.P.H.
TRUCKS		6	%
Total			
Design ESALs		--	

I-35/80 DESIGN DATA RURAL			
20 22	AADT	122,100	V.P.D.
20 50	AADT	185,900	V.P.D.
20 50	DHV	14,110	V.P.H.
TRUCKS		13	%
Total			
Design ESALs		--	

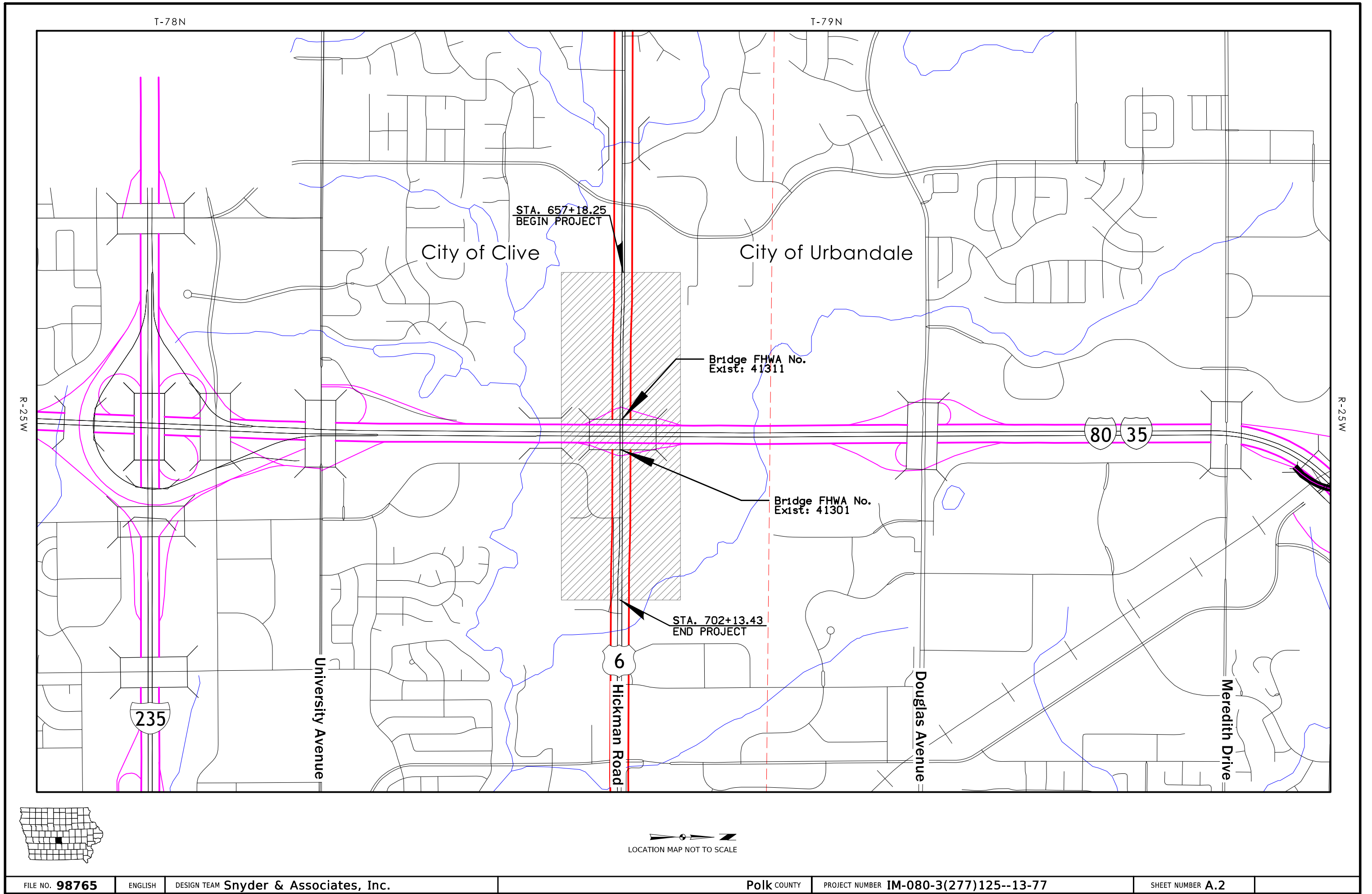


I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Andrew J. Houchin 7/6/26
Andrew J. Houchin, P.E. Date

License Number P25711
My License Renewal Date is December 31, 2026

Pages or sheets covered by this seal:
A.1-A.2, C.1-C.10, G.1-G.7, J.1-J.2, N.1-N.11, P.1-P.10



ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Traffic Signal Items : Traffic Signal Items
Project Enhancements : Pedestrian and Tunnel Lighting

Item no.	Item Code	Item	Unit	Quantities			Estimate Reference Notes
				Estimated			
				Traffic Signal Items	Project Enhancements	Total	
1	2401-6745359	REMOVAL OF CONCRETE FOUNDATIONS OF LIGHT POLES	EACH	1		1	Refer to P-Sheets for location. All materials removed shall become the property of the Contractor. Method of Measurement: The engineer will count the number of foundations removed. Basis of Payment: The contractor shall be paid the contract unit price for each foundation removed.
2	2401-6745765	REMOVAL OF LIGHT POLES	EACH	1		1	Refer to P-Sheets for location. All materials removed shall become the property of the Contractor. Method of Measurement: The engineer will count the number of light poles removed. Basis of Payment: The contractor shall be paid the contract unit price for each light pole assembly removed.
3	2523-0000100	LIGHTING POLES 12-FT MOUNTING HEIGHT TRAIL	EACH		10	10	Refer to Tabulation 108-1 and P-Sheets for locations. Refer to P-Sheets for light pole and luminaire information. Light pole foundations shall be per the details in these plans.
4	2523-0000100	LIGHTING POLES 20-FT MOUNTING HEIGHT TRAIL	EACH		12	12	
5	2523-0000100	LIGHTING POLES 40-FT MOUNTING HEIGHT DUAL ARM BANNER RATED	EACH	5		5	Refer to Tabulation 108-1 and P-Sheets for locations. Refer to P-Sheets for light pole and luminaire information. Light pole foundations shall be per Standard Road Plan LI-201.
6	2523-0000100	LIGHTING POLES 40-FT MOUNTING HEIGHT SINGLE ARM	EACH	25		25	
7	2523-0000200	ELECTRICAL CIRCUITS	LF	5,281	2,024	7,305	Refer to Tabulation 108-2A, Tabulation 108-12, and P-Sheets. Electrical circuits shall be per Standard Road Plans LI-141 and LI-142.
8	2523-0000310	HANDHOLES AND JUNCTION BOXES TYPE I	EACH	26	19	45	Refer to Tabulation 108-2A and P-Sheets for locations and types. Handholes shall be per Standard Road Plan LI-103.
9	2523-0000310	HANDHOLES AND JUNCTION BOXES TYPE IV	EACH	4		4	

Item no.	Item Code	Item	Unit	Quantities			Estimate Reference Notes
				Estimated			
				Traffic Signal Items	Project Enhancements	Total	
10	2523-0000400	CONTROL CABINET	EACH	2	2	4	Refer to P-Sheets for locations and additional information. Cabinets shall be per modified Standard Road Plan LI-152 as shown in P-Sheets.
11	2523-6765009	REMOVE AND REINSTALL LIGHT POLE AND LUMINAIRE	EACH	3		3	Refer to P-Sheets for locations and additional information. Method of Measurement: The engineer will count the number of light poles removed and reinstalled. Basis of Payment: The contractor shall be paid the contract unit price for each light pole removed and reinstalled, and is full compensation to remove existing pole and foundation, construct new foundation, relocate light pole to new foundation, and to reconnect new light pole to existing electrical circuit.
12	2524-9325001	TYPE A SIGNS, SHEET ALUMINUM	SF	170.5		170.5	Refer to Tabulation 190-66 and P-Sheets for locations and details.
13	2525-0000100	TRAFFIC SIGNALIZATION US 6 & I-80/35 NORTHBOUND RAMPS	LS	1		1	Refer to N-Sheets for information and estimated signal quantities.
14	2525-0000100	TRAFFIC SIGNALIZATION US 6 & I-80/35 SOUTHBOUND RAMPS	LS	1		1	
15	2525-0000100	TRAFFIC SIGNALIZATION US 6 & NW 111TH STREET	LS	1		1	
16	2525-0000120	REMOVAL OF TRAFFIC SIGNALIZATION US 6 & I-80/35 NORTHBOUND RAMPS	LS	1		1	Refer to N-Sheets for information.
17	2525-0000120	REMOVAL OF TRAFFIC SIGNALIZATION US 6 & I-80/35 SOUTHBOUND RAMPS	LS	1		1	
18	2525-0000120	REMOVAL OF TRAFFIC SIGNALIZATION US 6 & NW 111TH STREET	LS	1		1	
19	2528-8400256	TEMPORARY TRAFFIC SIGNALS US 6 & NW 108TH STREET	EACH	1		1	Refer to N-Sheets for information.
20	2599-9999005	('EACH' ITEM) COMBINATION SIGNING / DUAL LIGHTING MASTARM 40-FT MOUNTING HEIGHT	EACH	1		1	Refer to P-Sheets for locations and details. Section 2525 of the Standard Specifications shall apply. This item shall consist of installation of a signing mastarm, mastarm sign support structure, mastarm pole with dual light fixtures, mastarm base, and foundation. Method of Measurement: The engineer will count each signing/lighting mastarm installed. Basis of Payment: The contractor shall be paid the contract unit price for each signing/lighting mastarm installed. This payment shall be considered full compensation for furnishing all materials, equipment, labor, and performance of all work necessary to install the signing/lighting mastarm.

Item no.	Item Code	Item	Unit	Quantities			Estimate Reference Notes
				Estimated			
				Traffic Signal Items	Project Enhancements	Total	
21	2599-9999005	('EACH' ITEM) COMBINATION SIGNING / LIGHTING MASTARM 40-FT MOUNTING HEIGHT	EACH	1		1	Refer to P-Sheets for locations and details. Section 2525 of the Standard Specifications shall apply. This item shall consist of installation of a signing mastarm, mastarm sign support structure, mastarm pole with light fixture, mastarm base, and foundation. Method of Measurement: The engineer will count each signing/lighting mastarm installed. Basis of Payment: The contractor shall be paid the contract unit price for each signing/lighting mastarm installed. This payment shall be considered full compensation for furnishing all materials, equipment, labor, and performance of all work necessary to install the signing/lighting mastarm.
22	2599-9999010	('LUMP SUM' ITEM) STRING LIGHTING FOR PEDESTRIAN TUNNEL HICKMAN TUNNEL	LS		1	1	Refer to P-Sheets. Method of Measurement: Lump sum. Basis of Payment: The contractor shall be paid the contract lump sum price for a fully complete and operational string lighting system within the Hickman Pedestrian Tunnel and is full compensation for furnishing all materials, equipment, and labor needed to install the system according to these plans.
23	2599-9999010	('LUMP SUM' ITEM) STRING LIGHTING FOR PEDESTRIAN TUNNEL I-80/35 TUNNEL	LS		1	1	Refer to P-Sheets. Method of Measurement: Lump sum. Basis of Payment: The contractor shall be paid the contract lump sum price for a fully complete and operational string lighting system within the I-80/35 Pedestrian Tunnel and is full compensation for furnishing all materials, equipment, and labor needed to install the system according to these plans.

100_01D
8/15/22

PROJECT DESCRIPTION

This project installs new traffic signals and lighting at the US Highway 6 interchange with Interstate 80/35 and at the intersection of US Highway 6 with the NW 111th Street intersection. The lighting includes roadway lighting, trail lighting, and pedestrian tunnel lighting. This project also removes the existing traffic signals and provides a temporary traffic signal at the intersection of US Highway 6 and NW 108th Street to facilitate roadway construction staging.

This project is tied to one other project: IM-080-3(274)125--13-77

105_04 4/21/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
LI-101	10-21-14	Light Pole Location
LI-103	10-21-25	Conduit and Precast Handholes
LI-141	10-21-14	Electrical Installation (Roadway Ducts)
LI-142	04-21-15	Electrical Installation (Bases)
LI-201	04-21-26	Light Pole Foundation
LI-210	10-21-14	Transformer Base (Cast Aluminum)
LI-211	10-20-15	Slip-Base for Light Poles
TS-102	10-21-25	Traffic Signal Pole Foundation

108_01 8/15/22							
LIGHTING INSTALLATIONS							
Line No.	Location No.	Station	LI-101 Type	A	E (FT)	LI-201 Type	Remarks
1.0	A-01	60014+02.55				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
2.0	A-02	60015+03.16				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
3.0	A-03	60015+80.19				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
4.0	B-01	672+90.95				A	Single - 40' MH. See P Sheets for offset
5.0	B-02	672+85.17				A	Single - 40' MH. See P Sheets for offset
6.0	B-03	673+56.70				A	Single - 40' MH. See P Sheets for offset
7.0	B-04	674+36.50				A	Single - 40' MH. See P Sheets for offset
8.0	B-05	675+20.08				A	Single - 40' MH. See P Sheets for offset
9.0	B-06	674+36.53				A	Single - 40' MH. See P Sheets for offset
10.0	B-07	670+58.00				A	Dual-40' MH, banner rated. See P Sheets for offset
11.0	B-08	669+26.00				A	Dual-40' MH, banner rated. See P Sheets for offset
12.0	C-01	674+10.82				A	Single - 40' MH. See P Sheets for offset
13.0	C-02	673+55.70				A	Single - 40' MH. See P Sheets for offset
14.0	C-03	672+16.40				A	Dual-40' MH, banner rated. See P Sheets for offset
15.0	C-04	673+34.49				A	Single - 40' MH. See P Sheets for offset
16.0	D-01	50057+97.47				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
17.0	D-02	60019+67.52				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
18.0	D-03	60018+98.86				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
19.0	D-04	60018+25.08				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
20.0	E-01	50061+76.40				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
21.0	E-02	50062+24.69				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
22.0	E-03	50062+75.97				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
23.0	E-04	50063+28.04				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
24.0	E-05	50063+71.20				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
25.0	F-01	678+25.61				A	Single - 40' MH. See P Sheets for offset
26.0	F-02	680+31.95				A	Single - 40' MH. See P Sheets for offset
27.0	F-03	679+67.76				A	Single - 40' MH. See P Sheets for offset
28.0	F-04	682+43.91				A	Single - 40' MH. See P Sheets for offset
29.0	F-05	685+33.89				A	Single - 40' MH. See P Sheets for offset
30.0	F-06	687+37.60				A	Single - 40' MH. See P Sheets for offset
31.0	F-07	689+02.62				A	Single - 40' MH. See P Sheets for offset
32.0	G-01	678+32.15				A	Single - 40' MH. See P Sheets for offset
33.0	G-02	682+68.00				A	Dual-40' MH, banner rated. See P Sheets for offset
34.0	G-03	684+03.00				A	Dual-40' MH, banner rated. See P Sheets for offset
35.0	G-04	679+75.17				A	Single - 40' MH. See P Sheets for offset
36.0	G-05	680+75.76				A	Single - 40' MH. See P Sheets for offset
37.0	G-06	680+47.80				A	Single - 40' MH. See P Sheets for offset
38.0	G-07	679+76.11				A	Single - 40' MH. See P Sheets for offset
39.0	G-08	679+02.52				A	Single - 40' MH. See P Sheets for offset
40.0	H-01	683+12.30				TS-102	Combo signing/lighting mast arm. See P sheets
41.0	H-02	685+61.81				A	Single - 40' MH. See P Sheets for offset
42.0	H-03	687+28.97				A	Single - 40' MH. See P Sheets for offset
43.0	H-04	689+02.66				A	Single - 40' MH. See P Sheets for offset
44.0	I-01	50067+70.05				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
45.0	I-02	50067+22.03				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
46.0	I-03	50066+86.52				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
47.0	I-04	50066+44.90				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
48.0	I-05	50066+07.31				2'x6'	Trail - 12' MH. See P Sheets - offset and footing
49.0	I-06	50074+63.13				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
50.0	I-07	50073+42.98				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
51.0	I-08	50071+19.78				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
52.0	I-09	50070+33.91				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
53.0	I-10	50069+41.60				2'x6'	Trail - 20' MH. See P Sheets - offset and footing
54.0	S-01	669+55.67				TS-102	Combo signing/lighting mast arm. See P sheets

										108_02A 8/15/22
LISTING OF LIGHTING AND SIGNAL WORK										
Line No.	Handhole No.	Handhole Station	Handhole Type	Conduit Line No.	Station From	Station To	Conduit Type	Diameter (IN)	Length (LF)	Remarks
1.0	LH-05	60015+77.61	I	A	60016+04.27	60015+77.61	PVC	2	40.0	Hickman tunnel cabinet to LH-05
2.0	LH-04	60015+03.16	I	A	60015+77.61	60015+03.16	PVC	2	87.0	LH-05 to LH-04
3.0	LH-03	60014+02.55	I	A	60015+03.16	60014+02.55	PVC	2	109.0	LH-04 to LH-03
4.0		671+66.94	Existing	A	60014+02.55	671+66.94	PVC	2	149.0	LH-03 to existing handhole
5.0		671+66.94	Existing	B	672+90.95	671+66.94	PVC	2	138.0	Pole B-02 to existing handhole
6.0	LH-02	672+88.93	I	A,B	671+66.94	672+88.93	PVC	2	108.0	Existing handhole to LH-02
7.0	LH-01	673+53.53	IV	A,B	672+88.93	673+53.53	PVC	2	68.0	LH-02 to LH-01
8.0		673+53.53		B	673+56.70	673+53.53	PVC	2	20.0	Pole B-03 to LH-01
9.0	LH-07	675+16.28	I	B	674+36.53	675+16.28	PVC	2	123.0	Pole B-06 to LH-07
10.0	LH-06	674+35.43	I	B	675+16.28	674+35.43	PVC	2	106.0	LH-07 to LH-06
11.0		673+53.53		B	674+35.43	673+53.53	PVC	2	84.0	LH-06 to LH-01
12.0		673+53.53		A,B,C,D,E	673+53.53	673+35.07	PVC	3	20.0	LH-01 to Lighting Cabinet (West)
13.0	LH-09	670+57.93	I	B	669+26.00	670+57.93	PVC	2	137.0	Pole B-08 to LH-09
14.0	LH-08	671+89.62	I	B	670+57.93	671+89.62	PVC	2	137.0	LH-09 to LH-08
15.0		673+53.53		B	671+89.62	673+53.53	PVC	2	177.0	LH-08 to LH-01
16.0	LH-10	675+40.20	I	B	675+40.20	673+53.53	PVC	2	206.0	LH-10 to LH-01
17.0	LH-13	672+20.74	I	C	673+34.49	672+20.74	PVC	2	180.0	Pole C-04 to LH-13
18.0	LH-12	672+95.29	I	C,D	672+20.74	672+95.29	PVC	2	94.0	LH-13 to LH-12
19.0	LH-11	673+50.18	IV	C,D	672+95.29	673+50.18	PVC	2	55.0	LH-12 to LH-11
20.0	LH-15	674+08.30	I	C	673+55.70	674+08.30	PVC	2	60.0	Pole C-02 to LH-15
21.0	LH-14	673+97.77	I	C	674+08.30	673+97.77	PVC	2	47.0	LH-15 to LH-14
22.0		673+50.18		C,E	673+97.77	673+50.18	PVC	2	51.0	LH-14 to LH-11
23.0		673+53.53		C,D,E	673+50.18	673+53.53	PVC	3	108.0	LH-11 to LH-01
24.0	LH-18	60018+98.64	I	D	60018+25.08	60018+98.64	PVC	2	38.0	Pole D-04 to LH-18
25.0	LH-17	60019+67.01	I	D	60018+98.64	60019+67.01	PVC	2	59.0	LH-18 to LH-17
26.0	LH-16	50057+97.58	I	D	60019+67.01	50057+97.58	PVC	2	110.0	LH-17 to LH-16
27.0		672+20.74		D	50057+97.58	672+20.74	PVC	2	133.0	LH-16 to LH-13
28.0	LH-23	50063+66.70	I	E	50063+93.43	50063+66.70	PVC	2	32.0	I-35/80 tunnel cabinet to LH-23
29.0	LH-22	50063+23.73	I	E	50063+66.70	50063+23.73	PVC	2	41.0	LH-23 to LH-22
30.0	LH-21	50062+72.34	I	E	50063+23.73	50062+72.34	PVC	2	51.0	LH-22 to LH-21
31.0	LH-20	50062+21.72	I	E	50062+72.34	50062+21.72	PVC	2	60.0	LH-21 to LH-20
32.0	LH-19	50061+80.51	I	E	50062+21.72	50061+80.51	PVC	2	55.0	LH-20 to LH-19
33.0		673+97.77		E	50061+80.51	673+97.77	PVC	2	179.0	LH-19 to LH-14
34.0	LH-25	679+43.06	I	F	678+25.61	679+43.06	PVC	2	175.0	Pole F-01 to LH-25
35.0	LH-24	679+95.96	IV	F	679+43.06	679+95.96	PVC	2	57.0	LH-25 to LH-24
36.0		679+95.96		F	680+22.62	679+95.96	PVC	2	27.0	Signal Pole 3 (East Crossover) to LH-24
37.0	LH-27	680+36.48	I	F	679+67.76	680+36.48	PVC	2	111.0	Pole F-03 to LH-27
38.0	LH-26	680+80.01	I	F	680+36.48	680+80.01	PVC	2	51.0	LH-27 to LH-26
39.0	LH-30	687+37.59	I	F	689+02.62	687+37.59	PVC	2	170.0	Pole F-07 to LH-30
40.0	LH-29	685+34.14	I	F	687+37.59	685+34.14	PVC	2	214.0	LH-30 to LH-29
41.0	LH-28	682+44.13	I	F	685+34.14	682+44.13	PVC	2	296.0	LH-29 to LH-28
42.0		680+80.01		F	682+44.13	680+80.01	PVC	2	154.0	LH-28 to LH-26
43.0		679+95.96		F	680+80.01	679+95.96	PVC	2	93.0	LH-26 to LH-24
44.0		679+95.96		F,G,H,I	679+95.96	679+75.79	PVC	3	21.0	LH-24 to Lighting Cabinet (East)
45.0	LH-31	678+33.69	I	G	678+32.15	678+33.69	PVC	2	21.0	Pole G-01 to LH-31
46.0		678+33.69		G	677+92.14	678+33.69	PVC	2	42.0	Signal Pole 1 (East Crossover) to LH-31
47.0		679+95.96		G	678+33.69	679+95.96	PVC	2	177.0	LH-31 to LH-24
48.0	LH-33	682+68.39	I	G	684+03.00	682+68.39	PVC	2	140.0	Pole G-03 to LH-33
49.0	LH-32	681+49.61	I	G	682+68.39	681+49.61	PVC	2	124.0	LH-33 to LH-32
50.0		679+95.96		G	681+49.61	679+95.96	PVC	2	162.0	LH-32 to LH-24
51.0	LH-38	679+04.91	I	G,I	679+04.91	679+75.24	PVC	2	111.0	LH-38 to LH-37
52.0	LH-37	679+75.24	I	G,I	679+75.24	680+47.80	PVC	2	105.0	LH-37 to LH-36
53.0	LH-36	680+47.80	I	G,I	680+47.80	680+74.89	PVC	2	47.0	LH-36 to LH-35
54.0	LH-35	680+74.89	I	G,H,I	680+74.89	679+85.52	PVC	2	99.0	LH-35 to LH-34
55.0	LH-34	679+85.52	IV	G	679+75.17	679+85.52	PVC	2	10.0	Pole G-04 to LH-34
56.0		679+95.96		G,H,I	679+85.52	679+95.96	PVC	2	97.0	LH-34 to LH-24
57.0	LH-41	687+28.97	I	H	689+02.66	687+28.97	PVC	2	179.0	Pole H-04 to LH-41

LISTING OF LIGHTING AND SIGNAL WORK										108_02A 8/15/22
Line No.	Handhole No.	Handhole Station	Handhole Type	Conduit Line No.	Station From	Station To	Conduit Type	Diameter (IN)	Length (LF)	Remarks
58.0	LH-40	685+62.16	I	H	687+28.97	685+62.16	PVC	2	167.0	LH-41 to LH-40
59.0	LH-39	683+12.21	I	H	685+62.16	683+12.21	PVC	2	260.0	LH-40 to LH-39
60.0		680+74.89		H	683+12.21	680+74.89	PVC	2	252.0	LH-39 to LH-35
61.0	LH-45	50066+49.30	I	I	50066+07.31	50066+49.30	PVC	2	36.0	Pole I-05 to LH-45
62.0	LH-44	50066+89.67	I	I	50066+49.30	50066+89.67	PVC	2	40.0	LH-45 to LH-44
63.0	LH-43	50067+25.60	I	I	50066+89.67	50067+25.60	PVC	2	48.0	LH-44 to LH-43
64.0	LH-42	50067+65.02	I	I	50067+25.60	50067+65.02	PVC	2	53.0	LH-43 to LH-42
65.0		679+04.91		I	50067+65.02	679+04.91	PVC	2	129.0	LH-42 to LH-38
66.0	LH-49	50070+37.50	I	I	50069+41.60	50070+37.50	PVC	2	107.0	Pole I-10 to LH-49
67.0	LH-48	50071+23.84	I	I	50070+37.50	50071+23.84	PVC	2	87.0	LH-49 to LH-48
68.0	LH-47	50073+46.95	I	I	50071+23.84	50073+46.95	PVC	2	228.0	LH-48 to LH-47
69.0	LH-46	50074+67.30	I	I	50073+46.95	50074+67.30	PVC	2	125.0	LH-47 to LH-46
70.0		685+62.16		I	50074+67.30	685+62.16	PVC	2	28.0	LH-46 to LH-40

																				108.12 8/15/22
WIRE, CABLE AND CONNECTORS																				
Line No.	Circuit Number	Connector Type	Quantity (EA)	Connector Type	Quantity (EA)	Connector Type	Quantity (EA)	Connector Type	Quantity (EA)	Phase Line Size (AWG)	Quantity (LF)	Phase Line Size (AWG)	Quantity (LF)	Phase Line Size (AWG)	Quantity (LF)	Phase Line Size (AWG)	Quantity (LF)	Ground Size (AWG)	Quantity (LF)	Remarks
1.0	A	L-Fuse	6	Y-Fuse		Y	6			#6	1230.0	#10	190.0					#6	410.0	#6 AWG between handholes/poles, #10 AWG in poles
2.0	B	L-Fuse	14	Y-Fuse	6	Y	18			#6	2790.0	#10	1720.0					#6	1400.0	#6 AWG between handholes/poles, #10 AWG in poles
3.0	C	L-Fuse	10	Y-Fuse	2	Y	10			#6	1300.0	#10	940.0					#6	630.0	#6 AWG between handholes/poles, #10 AWG in poles
4.0	D	L-Fuse	8	Y-Fuse		Y	6			#6	1300.0	#10	260.0					#6	360.0	#6 AWG between handholes/poles, #10 AWG in poles
5.0	E	L-Fuse	10	Y-Fuse		Y	10			#6	1260.0	#10	240.0					#6	440.0	#6 AWG between handholes/poles, #10 AWG in poles
6.0	F	L-Fuse	18	Y-Fuse		Y	16			#6	2880.0	#10	1230.0					#6	1440.0	#6 AWG between handholes/poles, #10 AWG in poles
7.0	G	L-Fuse	14	Y-Fuse	6	Y	18			#6	2430.0	#10	1720.0					#6	1200.0	#6 AWG between handholes/poles, #10 AWG in poles
8.0	H	L-Fuse	6	Y-Fuse	2	Y	6			#6	2260.0	#10	670.0					#6	910.0	#6 AWG between handholes/poles, #10 AWG in poles
9.0	I	L-Fuse	20	Y-Fuse		Y	18			#6	3940.0	#10	550.0					#6	930.0	#6 AWG between handholes/poles, #10 AWG in poles
10.0	S	L-Fuse	2	Y-Fuse		Y				#6		#10	140.0					#6		Combo signing/lighting mast arm at Sta 669+55.67
Total:			108		16		108				19390		7660						7720	

190.66
9/29/23

SUMMARY OF TYPE 'A' SIGNS						
Line No.	Sign Number	Non-Standard or Name	Sign Number	Quantity (EA)	Size (IN)	Total Sign Area (SF)
1.0		EB - I-35 N/I-80 E Down Arrow (Only)		1	66 x 66	30.3
2.0		EB - I-35 N/I-80 E Down Arrow		1	66 x 54	24.8
3.0		EB - I-35 S/I-80 W Up-Right Arrow (Only)		1	66 x 66	30.3
4.0		WB - I-35 S/I-80 W Down Arrow (Only)		1	66 x 66	30.3
5.0		WB - I-35 S/I-80 W Down Arrow		1	66 x 54	24.8
6.0		WB - I-35 N/I-80 E Up-Right Arrow (Only)		1	66 x 66	30.3
Total:						170.8

Survey Information

POLK COUNTY
IM-080-4(69)125—13-77
I-35/80 & US HWY 6/HICKMAN ROAD INTERCHANGE
PIN 13770804069
SAP#04129

General Information

Measurement units for this survey are US survey feet. This survey is Preliminary Engineering Survey for the proposed Hickman Interchange project. This project is a Partial DTM survey. Traditional survey was performed within the project limits, with the exception of interstate pavement. For efficiency and safety, UAS was utilized to collect photo generated point cloud data on the interstate. The point cloud data was used to generate 3D line in the SUR file.

Vertical Control

Vertical datum for this survey is relative to NAVD88 Geoid 12b. Vertical datum originated from Hickman Road and 128th intersection, NHSX-006-4(189)—77, SAP 07011. Vertical positions originated from City of Urbandale published city benchmark report. BM #55 was used as the primary vertical control and is an IHC brass marker located at NE corner of northbound I-35 bridge over U.S. Highway 6. This survey observed three City of Urbandale Benchmark Monuments with published NAVD88 elevations:

City of Urbandale Benchmark #55 has a published Elev. of 929.83
Survey Elev. = 929.83

City of Urbandale Benchmark #45 has a published Elev. of 908.05
IR-35-2(204)73--12-77 published Elev. of 907.82
Survey Elev. = 908.05

BM #38B Project STP-6-49119)—2C-77 published Elev. of 889.17 (271.021m)
Survey Elev.= 889.46

City of Urbandale Benchmark #57 has a published Elev. of 899.61
Survey Elev. = 899.61

IDOT performed a 2018 survey of the SB University exit ramp, Project IMN-080-3(235)124—OE-77, SAP 0412.8. A difference of 0.07’ was found. Vertical difference between this current survey and the SB University exit ramp project are shown below.

Control Point	Published Elevation	Surveyed Elevation
FENO1	915.08	915.02
FENO2	895.27	895.21
G032	937.70	937.63

Horizontal Control

The project coordinate system is the Iowa Regional Coordinate System, Zone 8. Horizontal datum is NAD83 (2011) for Epoch 2010.00. The projection parameters for Zone 8 of the IaRCS is defined below:

Traverse Mercator Projection North American Datum of 1983
Origin Lat: 40°15'00"N
Origin Central Meridian: 093°43'00"W
Central Meridian Scale: 1.000033
False Northing: 7,000,000
False Easting: 18,500,000

Coordinates were determined by averaging a minimum of three IaRTN observations with appropriate time spans between. The horizontal standard deviation of these observations was less than 0.05’ at 95% confidence level.

Alignment Information

The horizontal alignments for I-35 was a retrace of as-built pacing plans for project IR-35-2(204)73—12-77. Stationing was held at POT Station 419+51.50 and ran ahead and back without equation.

P.C. 363+05.61 (plan) = P.C. 363+00.68 (this survey)

Plan Equation
P.O.T. 388+16.72 (plan back) = P.O.T. 388+17.60 (plan ahead) = P.C. 388+21.85 (this survey)
P.O.T. 419+51.50 (plan) = P.O.T 419+51.50 (this survey)

P.C. 437+32.9 (plan) = P.C. 437+32.9 (this survey)

P.T. 443+32.9 (plan) = P.T. 443+32.89 (this survey)

P.C. 469+65.5 (plan) = P.C. 469+65.5 (this survey)

P.T. 475+65.5 (plan) = P.T. 475+64.91 (this survey)

P.C. 522+83.36 (plan) = P.C. 522+84.09 (this survey)

The horizontal alignments for U.S. Highway 6 and 128th Street was provided by Iowa DOT District 1 Office. Description of alignment as received described below.

The horizontal alignment for U.S. 6 (Hickman Road) is a retrace of as-built paving plan for project STP-6-4(119)--2C-77. Plan stationing is in metric and was converted to U.S. survey foot for this survey. Stationing was held at P.I. 186+92.513m (converted to station 613+27.02 in U.S. survey foot) and ran ahead without equation.

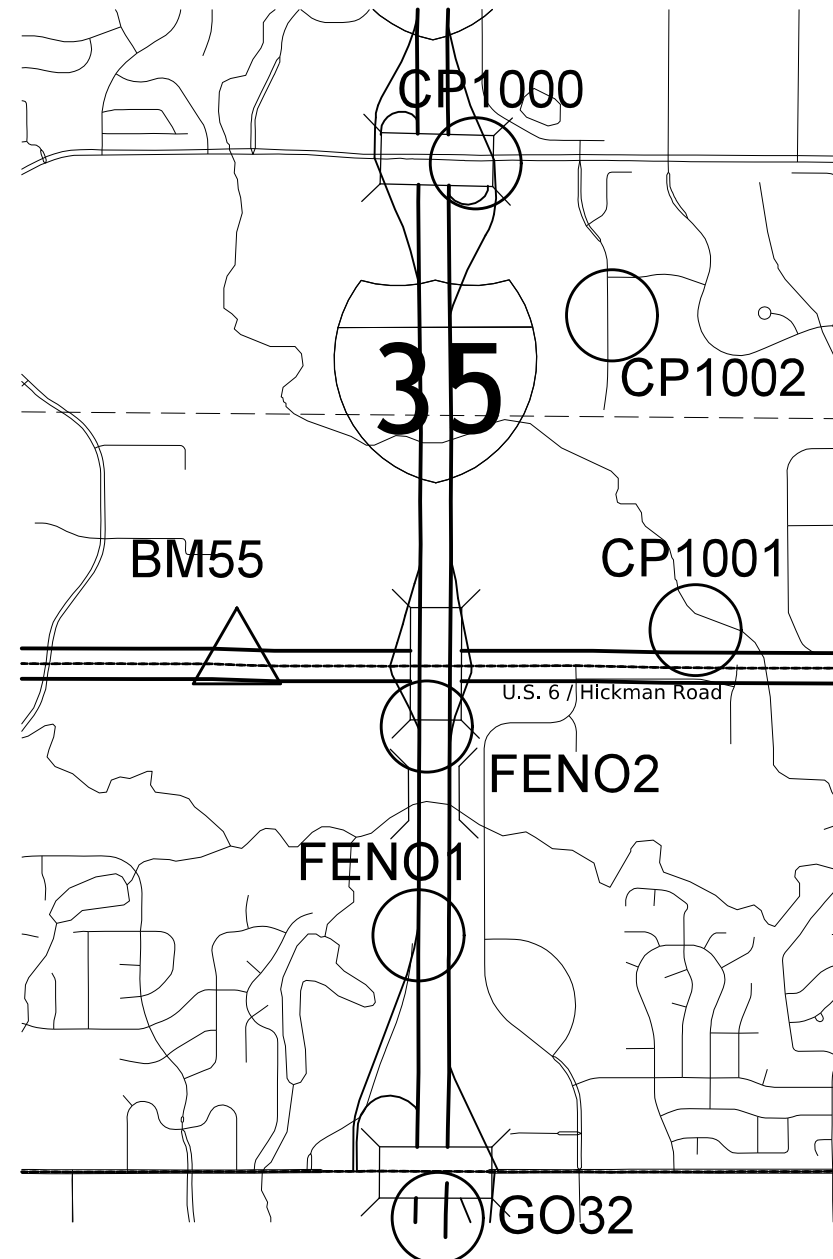
P.I. 186+92.513m (613+27.02 U.S. survey foot) = P.I. 186+92.513m (613+27.02 U.S. survey foot) (this survey)
Found “P-K” nail in conc. crossover

P.C. 198+53.721m (651+36.75 U.S. survey foot) = P.C. 198+53.757 (651+36.87 U.S. survey foot) (this survey)
Found 5/8” re-rod (flush)

Utilizing the provided alignment and the same as-built paving plans for project STP-6-4(119)--2C-77, Snyder & Associates extended alignment east from 651+36.75 to 673+00.

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points
Primary control is for use with RTK base stations and for RTN validation.
Future surveys will use primary project control to establish temporary
control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 8

Coordinate listing from next sheet will be used with 1aRTN for monument
recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 8

Point Name	Northing	Easting	Elevation	Feature Definition
CP1000	7502552.37	18483969.64	999.20	FENO-SET MONUMENT +/- 25' SOUTH OF DOUGLAS AVE, +/-25' OFF RAMP.
CP1001	7497688.97	18486259.21	876.70	FENO-SET MONUMENT NORTH SIDE NW 11TH ST, 8' NORTH OF BACK OF CURB, 40' SW OF LIGHT POLE.
CP1002	7500968.72	18485389.65	935.99	FENO-SET MONUMENT EAST SIDE OF 11TH ST, +/- 7' EAST OF 1ST HYDRANT SOUTH OF JOHNSTON SUPPLY.
FEN01	7494509.38	18483375.02	915.02	FENO-FOUND MONUMENT WEST SIDE OF I-35 AT START OF UNIVERSITY OFF RAMP.
FEN02	7496684.19	18483459.91	895.21	FENO-FOUND MOUNUMENT WEST SIDE I-35 AND EAST OF SB ON RAMP OF HICKMAN ROAD.
G032	7491564.87	18483573.86	937.63	FENO-FOUND MONUMENT +/- 5' EAST OF EAST SHOULDER NB I-35, 500' SOUTH OF UNIVERSITY AVE.
BM55	7497393.85	18481482.57	929.83	URBANDALE BM55//FOUND BRASS PLUG IN CONCRETE/NORTH SIDE OF HICKMAN ROAD

ALIGNMENT COORDINATES																				101_16 10/25/24
Name	Location	Point on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting	
1	SR006_(274)	613+27.02	7497336.77	18477210.04																
2	SR006_(274)							651+36.87	7497335.47	18481019.89	653+55.18	7497335.40	18481238.20	655+73.43	7497327.00	18481456.34				
4	SR006_(274)							657+09.06	7497321.79	18481591.87	659+05.58	7497314.23	18481788.25	661+02.06	7497313.41	18481984.76				
6	SR006_(274)							669+29.74	7497309.99	18482812.44	669+47.20	7497309.91	18482829.90	669+64.65	7497310.45	18482847.35				
8	SR006_(274)							680+71.65	7497344.51	18483953.82	681+26.43	7497346.19	18484008.57	681+81.10	7497341.89	18484063.18				
10	SR006_(274)							685+49.49	7497312.94	18484430.44	685+88.30	7497309.89	18484469.12	686+27.06	7497309.84	18484507.93				
12	SR006_(274)							697+16.64	7497308.65	18485597.50	697+28.00	7497308.63	18485608.86	697+39.36	7497308.36	18485620.22				
14	SR006_(274)							703+76.92	7497293.18	18486257.60	703+88.28	7497292.91	18486268.96	703+99.64	7497292.89	18486280.32				
15	SR006_(274)	733+84.07	7497289.61	18489264.75																
1	SR006_EB_(274)	2668+00.00	7497282.52	18482682.58																
2	SR006_EB_(274)							2668+33.88	7497282.38	18482716.47	2668+94.00	7497282.13	18482776.59	2669+53.59	7497268.10	18482835.04				
3	SR006_EB_(274)							2669+53.59	7497268.10	18482835.04	2671+13.47	7497230.76	18482990.51	2672+63.19	7497290.04	18483138.99				
5	SR006_EB_(274)							2674+56.73	7497361.80	18483318.73	2675+47.89	7497395.60	18483403.40	2676+37.19	7497398.40	18483494.52				
7	SR006_EB_(274)							2677+40.62	7497401.59	18483597.89	2678+31.78	7497404.39	18483689.01	2679+21.08	7497375.86	18483775.59				
9	SR006_EB_(274)							2681+23.45	7497312.53	18483967.79	2682+03.90	7497287.36	18484044.20	2682+83.00	7497287.27	18484124.65				
10	SR006_EB_(274)	2693+01.42	7497286.15	18485143.07																
1	SR006_WB_(274)	1668+00.00	7497340.52	18482682.82																
2	SR006_WB_(274)							1668+24.32	7497340.42	18482707.14	1668+93.92	7497340.13	18482776.74	1669+62.68	7497358.26	18482843.93				
3	SR006_WB_(274)							1669+62.68	7497358.26	18482843.93	1671+13.27	7497397.48	18482989.32	1672+55.31	7497350.35	18483132.35				
5	SR006_WB_(274)							1674+53.94	7497288.19	18483321.00	1675+45.10	7497259.66	18483407.58	1676+34.41	7497262.47	18483498.70				
7	SR006_WB_(274)							1677+37.83	7497265.65	18483602.07	1678+28.99	7497268.45	18483693.19	1679+18.30	7497302.25	18483777.86				
9	SR006_WB_(274)							1681+11.84	7497374.01	18483957.60	1683+15.94	7497449.69	18484147.15	1684+99.62	7497371.88	18484335.84				
10	SR006_WB_(274)							1684+99.62	7497371.88	18484335.84	1686+01.79	7497332.93	18484430.30	1687+01.37	7497332.82	18484532.48				
11	SR006_WB_(274)	1701+01.62	7497331.28	18485932.73																
1	SR111_(274)	3682+18.87	7496718.73	18484580.87																
2	SR111_(274)							3684+03.03	7496719.25	18484765.03	3686+57.04	7496719.96	18485019.04	3688+02.59	7496973.97	18485019.32				
4	SR111_(274)							3693+70.50	7497541.88	18485019.94	3698+08.38	7497979.76	18485020.42	3699+86.25	7497865.97	18485443.26				
6	SR111_(274)							3702+08.40	7497808.24	18485657.77	3703+21.68	7497778.80	18485767.17	3704+26.16	7497687.09	18485833.67				
8	SR111_(274)							3705+08.37	7497620.53	18485881.94	3707+26.44	7497443.99	18486009.95	3708+39.81	7497586.76	18486174.79				
10	SR111_(274)							3709+78.50	7497677.57	18486279.62	3715+26.57	7498036.39	18486693.90	3715+49.92	7497488.32	18486693.30				
11	SR111_(274)	3717+45.80	7497292.44	18486693.08																
1	RPA006_1_(274)							13419+38.68	7497423.55	18483452.44	13419+43.68	7497423.02	18483447.46	13419+48.69	7497422.40	18483442.50				
2	RPA006_1_(274)							13419+48.69	7497422.40	18483442.50	13419+84.02	7497418.00	18483407.44	13420+16.61	7497436.60	18483377.40				
3	RPA006_1_(274)							13420+16.61	7497436.60	18483377.40	13421+54.67	7497509.27	18483260.02	13422+53.82	7497642.48	18483296.28				
4	RPA006_1_(274)	13422+63.82	7497652.13	18483298.91																
1	RPA006_2_(274)							23418+58.44	7497402.84	18483003.61	23418+63.45	7497402.57	18483008.61	23418+68.46	7497402.21	18483013.61				
2	RPA006_2_(274)							23418+68.46	7497402.21	18483013.61	23420+33.16	7497390.23	18483177.87	23421+44.02	7497549.15	18483221.13				
3	RPA006_2_(274)	23421+54.02	7497558.80	18483223.76																
1	RPB006_1_(274)	14416+31.90	7497006.54	18483752.79																
2	RPB006_1_(274)							14416+41.89	7497016.19	18483755.42	14417+84.02	7497153.33	18483792.75	14418+84.27	7497224.73	18483669.86				
3	RPB006_1_(274)							14418+84.27	7497224.73	18483669.86	14419+14.02	7497239.68	18483644.14	14419+42.10	7497238.14	18483614.43				
4	RPB006_1_(274)							14419+42.10	7497238.14	18483614.43	14419+47.10	7497237.88	18483609.44	14419+52.10	7497237.71	18483604.44				
1	RPB006_2_(274)	24417+53.22	7497111.01	18483830.97																
2	RPB006_2_(274)							24417+63.50	7497120.93	18483833.67	24419+36.01	7497287.38	18483878.98	24420+48.19	7497267.00	18484050.28				
3	RPB006_2_(274)	24420+58.19	7497265.82	18484060.21																
1	RPC006_1_(274)	15415+58.92	7496927.36	18483306.20																
2	RPC006_1_(274)							15415+68.92	7496937.18	18483304.33	15416+19.17	7496986.55	18483294.94	15416+69.09	7497036.80	18483295.56				
3	RPC006_1_(274)							15416+69.09	7497036.80	18483295.56	15418+63.27	7497230.96	18483297.95	15419+77.35	7497234.30	18483492.11				
4	RPC006_1_(274)	15419+87.36	7497234.57	18483502.12																

ALIGNMENT COORDINATES																				101_16 10/25/24
Name	Location	Point on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting	
1	RPC006_2_(274)	25415+88.39	7496951.83	18483277.11																
2	RPC006_2_(274)							25415+98.39	7496961.65	18483275.25	25416+59.74	7497021.92	18483263.78	25417+20.94	7497080.34	18483245.03				
3	RPC006_2_(274)							25417+20.94	7497080.34	18483245.03	25418+89.01	7497240.37	18483193.67	25420+00.48	7497217.33	18483027.19				
4	RPC006_2_(274)	25420+10.48	7497216.05	18483017.27																
1	RPD006_1_(274)							16419+11.63	7497429.81	18483609.36	16419+16.63	7497429.85	18483614.36	16419+21.63	7497429.80	18483619.36				
2	RPD006_1_(274)							16419+21.63	7497429.80	18483619.36	16420+96.02	7497428.02	18483793.74	16422+08.47	7497600.53	18483819.25				
3	RPD006_1_(274)							16422+08.47	7497600.53	18483819.25	16422+85.75	7497676.99	18483830.56	16423+61.82	7497753.28	18483818.26				
4	RPD006_1_(274)	16423+71.82	7497763.16	18483816.66																
1	RPD006_2_(274)							26419+05.24	7497449.96	18484098.54	26419+10.25	7497449.54	18484093.55	26419+15.26	7497449.03	18484088.57				
2	RPD006_2_(274)							26419+15.26	7497449.03	18484088.57	26420+82.06	7497432.05	18483922.62	26421+93.32	7497592.25	18483876.13				
3	RPD006_2_(274)							26421+93.32	7497592.25	18483876.13	26422+54.67	7497651.17	18483859.03	26423+15.87	7497711.74	18483849.27				
4	RPD006_2_(274)	26423+25.87	7497721.61	18483847.67																
1	TRAIL_006_(274)	50050+00.00	7497390.59	18482183.36																
2	TRAIL_006_(274)							50050+99.92	7497390.18	18482283.28	50051+07.18	7497390.15	18482290.54	50051+14.42	7497391.12	18482297.74				
3	TRAIL_006_(274)							50051+14.42	7497391.12	18482297.74	50051+21.68	7497392.09	18482304.94	50051+28.92	7497392.06	18482312.20				
5	TRAIL_006_(274)	50054+48.35	7497390.73	18482631.63																
6	TRAIL_006_(274)							50055+38.51	7497384.63	18482721.58	50055+59.77	7497383.19	18482742.79	50055+80.85	7497386.60	18482763.78				
7	TRAIL_006_(274)							50055+80.85	7497386.60	18482763.78	50056+12.82	7497391.72	18482795.34	50056+44.69	7497401.07	18482825.91				
9	TRAIL_006_(274)							50057+85.67	7497442.27	18482960.73	50058+01.34	7497446.85	18482975.72	50058+17.00	7497450.48	18482990.96				
11	TRAIL_006_(274)							50061+77.91	7497534.13	18483342.04	50062+17.23	7497543.25	18483380.30	50062+44.55	7497582.57	18483380.45				
13	TRAIL_006_(274)							50062+92.14	7497630.16	18483380.64	50063+42.14	7497680.16	18483380.84	50063+70.68	7497679.96	18483430.84				
15	TRAIL_006_(274)							50066+05.34	7497679.03	18483665.50	50066+55.34	7497678.83	18483715.50	50066+83.88	7497628.83	18483715.30				
17	TRAIL_006_(274)							50066+85.85	7497626.86	18483715.30	50067+35.85	7497576.86	18483715.10	50067+64.38	7497576.67	18483765.10				
19	TRAIL_006_(274)							50069+21.55	7497576.04	18483922.26	50069+85.65	7497575.79	18483986.36	50070+42.70	7497529.29	18484030.48				
20	TRAIL_006_(274)							50070+42.70	7497529.29	18484030.48	50071+17.32	7497475.16	18484081.84	50071+83.76	7497474.75	18484156.45				
21	TRAIL_006_(274)							50071+83.76	7497474.75	18484156.45	50072+68.44	7497474.27	18484241.13	50073+51.16	7497443.05	18484319.84				
23	TRAIL_006_(274)							50074+32.63	7497413.02	18484395.57	50075+09.06	7497384.84	18484466.61	50075+83.67	7497384.84	18484543.04				
24	TRAIL_006_(274)	50081+19.62	7497384.84	18485079.00																
1	TRAIL_080_(274)	60000+00.00	7496001.17	18483411.55																
2	TRAIL_080_(274)							60001+07.11	7496108.26	18483409.45	60001+43.70	7496144.84	18483408.74	60001+75.74	7496168.22	18483380.60				
3	TRAIL_080_(274)							60001+75.74	7496168.22	18483380.60	60002+22.90	7496198.36	18483344.33	60002+63.88	7496245.53	18483344.51				
5	TRAIL_080_(274)							60004+06.66	7496388.31	18483345.08	60004+53.18	7496434.82	18483345.27	60004+93.74	7496464.93	18483309.81				
6	TRAIL_080_(274)							60004+93.74	7496464.93	18483309.81	60005+20.88	7496482.46	18483289.08	60005+46.75	7496508.06	18483280.06				
8	TRAIL_080_(274)							60010+35.89	7496969.41	18483117.56	60010+68.47	7497000.15	18483106.73	60010+98.89	7497018.61	18483079.88				
10	TRAIL_080_(274)							60011+46.16	7497045.38	18483040.92	60011+75.57	7497062.04	18483016.68	60011+99.33	7497091.32	18483019.46				
12	TRAIL_080_(274)							60012+48.15	7497139.92	18483024.08	60013+66.34	7497257.59	18483035.09	60013+65.21	7497183.55	18482942.97				
13	TRAIL_080_(274)							60013+65.21	7497183.55	18482942.97	60013+71.77	7497179.44	18482937.86	60013+78.24	7497176.96	18482931.78				
14	TRAIL_080_(274)							60013+78.24	7497176.96	18482931.78	60014+16.53	7497162.49	18482896.33	60014+53.22	7497166.79	18482858.28				
16	TRAIL_080_(274)							60015+53.22	7497178.01	18482758.91	60015+80.14	7497181.03	18482732.16	60015+97.10	7497207.94	18482732.27				
18	TRAIL_080_(274)							60017+90.48	7497401.32	18482733.08	60018+36.56	7497447.40	18482733.27	60018+64.94	7497450.97	18482779.20				
20	TRAIL_080_(274)							60019+35.79	7497456.45	18482849.84	60019+59.85	7497458.31	18482873.83	60019+76.34	7497435.31	18482880.86				
21	TRAIL_080_(274)	60020+98.03	7497318.93	18482916.42																

FILE NO.	ENGLISH	DESIGN TEAM	Snyder & Associates, Inc.	POLK COUNTY	PROJECT NUMBER	IM-080-3(277)125--13-77	SHEET NUMBER	G.6
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SPIRAL OR CIRCULAR CURVE DATA																	101_17 1/17/24
Line No.	Name	Location	SCS	S	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	C	T	L	R	E	Remarks
58.0	C13	TRAIL_006_(274)										7.766	31.971	63.844	471	1.084	
59.0	C4	TRAIL_006_(274)										3.59	15.67	31.329	500	0.245	
60.0	C5	TRAIL_006_(274)										76.37	39.325	66.646	50	13.612	
61.0	C6	TRAIL_006_(274)										90	50	78.54	50	20.711	
62.0	C7	TRAIL_006_(274)										90	50	78.54	50	20.711	
63.0	C8	TRAIL_006_(274)										90	50	78.54	50	20.711	
64.0	C9	TRAIL_006_(274)										46.276	64.099	121.151	150	13.122	
65.0	C10	TRAIL_006_(274)										46.184	74.615	141.061	175	15.243	
66.0	C11	TRAIL_006_(274)										21.314	84.68	167.402	450	7.898	
67.0	C12	TRAIL_006_(274)										21.634	76.428	151.035	400	7.236	
68.0																	
69.0	C1	TRAIL_080_(274)										49.149	36.584	68.626	80	7.968	
70.0	C2	TRAIL_080_(274)										50.5	47.163	88.139	100	10.564	
71.0	C3	TRAIL_080_(274)										49.891	46.515	87.077	100	10.289	
72.0	C4	TRAIL_080_(274)										30.375	27.146	53.014	100	3.619	
73.0	C5	TRAIL_080_(274)										36.099	32.587	63.004	100	5.176	
74.0	C6	TRAIL_080_(274)										60.928	29.41	53.17	50	8.008	
75.0	C7	TRAIL_080_(274)										134.139	118.19	117.058	50	78.331	
76.0	C8	TRAIL_080_(274)										16.59	6.561	13.029	45	0.476	
77.0	C12	TRAIL_080_(274)										28.642	38.293	74.984	150	4.811	
78.0	C9	TRAIL_080_(274)										83.796	26.915	43.875	30	10.304	
79.0	C10	TRAIL_080_(274)										85.322	46.076	74.458	50	17.993	
80.0	C11	TRAIL_080_(274)										77.449	24.056	40.552	30	8.454	

108_23A
8/15/22

TRAFFIC CONTROL PLAN

Refer to J-Sheets in tied project IM-080-3(274)125--13-77 for traffic control plan and staging layout details.

111_01 10/14/22 COORDINATED OPERATIONS Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.	
Project	Type of Work
IM-080-3(269)124--13-77	PCC Pavement - Grade and New
IM-080-3(274)125--13-77	PCC Pavement - Grade and New
IM-080-3(275)125--13-77	Traffic Signs
IM-080-3(276)125--13-77	Lighting
IM-080-3(342)125--13-77	Bridge Replacement - Steel Girder
IMN-080-3(344)125-0E-77	RCB Culvert New - Single Box

ESTIMATE OF TRAFFIC SIGNAL QUANTITIES						
ITEM	DESCRIPTION	UNITS	I-35/80 SB RAMPs	I-35/80 NB RAMPs	NW 111TH ST	TOTAL
CONTROLLER AND CABINET	ATC CONTROLLER, CABINET, 12" RISER, AND ACCESSORIES	LS	1	1	1	3
	UNINTERRUPTABLE POWER SUPPLY (BATTERY BACK-UP)	LS	1	1	1	3
	EMERGENCY VEHICLE PREEMPTION INTERFACE CARD AND RACK	LS	1	1	1	3
	TRAFFIC MONITORING CAMERA SYSTEM	LS	1	1	1	3
DETECTION	NOTRAFFIC VIDEO/RADAR DETECTION SYSTEM	LS	1	1	1	3
	APS PEDESTRIAN PUSHBUTTON WITH SIGN	EACH			6	6
	EMERGENCY VEHICLE PREEMPTION DETECTORS (GPS)	EACH	1	1	1	3
TRAFFIC SIGNAL HEADS	12" R,<Y,<G (ANGLED LEFT) (ALL LED) W/ BACKPLATE, MAST-ARM MOUNTED	EACH	2	2		4
	12" R,<Y,<G (ANGLED LEFT) (ALL LED), SIDE-OF-POLE MOUNTED	EACH	2	2		4
	12" <R,<Y,<G (ALL LED) W/ BACKPLATE, MAST-ARM MOUNTED	EACH			2	2
	12" <R,<Y,<FY,<G (ALL LED) W/ BACKPLATE, MAST-ARM MOUNTED	EACH			3	3
	12" R,Y,G (ALL LED) W/ BACKPLATE, MAST-ARM MOUNTED	EACH			8	8
	12" R,Y,G, (ALL LED), SIDE-OF-POLE MOUNTED	EACH			2	2
	12" R,Y,G,G' (UP ARROW) (ALL LED) W/ BACKPLATE, MAST-ARM MOUNTED	EACH	7	7		14
	12" R,Y,G,G' (UP ARROW) (ALL LED), SIDE-OF-POLE MOUNTED	EACH	6	6		12
	12" R,Y,G,Y>,G> (ALL LED) W/ BACKPLATE, MAST-ARM MOUNTED	EACH			2	2
	12" R,Y,G,Y>,G>, (ALL LED), SIDE-OF-POLE MOUNTED	EACH			2	2
	12" R,Y>,G> (ANGLED RIGHT) (ALL LED) W/ BACKPLATE, MAST-ARM MOUNTED	EACH	2	2		4
	12" R,Y>,G> (ANGLED RIGHT) (ALL LED), SIDE-OF-POLE MOUNTED	EACH	2	2		4
	16" PEDESTRIAN HEAD, HAND/PERSON, COUNTDOWN SIDE-OF-POLE MOUNTED	EACH			6	6
POWER	POWER SUPPLY	EACH	1	1	1	3
HANDHOLES	TYPE III - 24" x 36" PRE-CAST POLYMER-CONCRETE HANDHOLE	EACH	2	4	3	9
	TYPE IV - 30" x 48" PRE-CAST POLYMER-CONCRETE HANDHOLE	EACH	2	1	1	4
WIRE AND CABLE	SIGNAL CABLE - 16c #14 AWG	LIN FT	840	580	580	2,000
	SIGNAL CABLE - 7c #14 AWG	LIN FT			130	130
	SIGNAL CABLE - 5c #14 AWG	LIN FT	1,800	1,710	1,380	4,890
	SIGNAL CABLE - 2c #14 AWG	LIN FT			1,060	1,060
	EMERGENCY VEHICLE PREEMPTION CABLE	LIN FT	250	110	90	450
	VIDEO/RADAR DETECTION CABLE	LIN FT	1,120	860	1,030	3,010
	TRAFFIC MONITORING CABLE	LIN FT	250	110	90	450
	LUMINAIRE CABLE - 1c #8 AWG	LIN FT			1,030	1,030
	LUMINAIRE CABLE - 1c #10 AWG	LIN FT			870	870
	POWER CABLE - 1c #6 AWG	LIN FT	40	260	810	1,110
	GROUND WIRE - 1c #6 BARE	LIN FT	930	800	690	2,420
	TRACER WIRE - 1c #10	LIN FT	950	1,000	800	2,750
	PULL TAPE	LIN FT	1,080	1,010	810	2,900
CONDUIT	2" PVC OR HDPE, TRENCHED/BORED	LIN FT	260	460	640	1,360
	3" PVC OR HDPE, TRENCHED/BORED	LIN FT	780	630	530	1,940
CONCRETE FOOTING	COMBINATION SIGNAL/LIGHTING CONTROL CABINET FOOTING	EACH	1	1		2
	SIGNAL CONTROLLER CABINET FOOTING				1	1
	POLE FOOTING, 2' DIA x 4' DEPTH	EACH	4	3	6	13
	POLE FOOTING, 3' DIA x 12' DEPTH	EACH		1		1
	POLE FOOTING, 3' DIA x 14' DEPTH	EACH	1			1
	POLE FOOTING, 3' DIA x 16' DEPTH	EACH	2	1	1	4
	POLE FOOTING, 3' DIA x 18' DEPTH	EACH		1	1	2
	POLE FOOTING, 3.5' DIA x 18' DEPTH	EACH			1	1
	POLE FOOTING, 3.5' DIA x 21' DEPTH	EACH	1	1	1	3
	STEEL COMBINATION SIGNAL/DUAL LIGHTING - 35' MAST ARM	EACH	1			1
	STEEL COMBINATION SIGNAL/LIGHTING - 40' MAST ARM	EACH	1			1
	STEEL COMBINATION SIGNAL/LIGHTING - 55' MAST ARM	EACH	1	1		2
TRAFFIC SIGNAL POLES	STEEL COMBINATION SIGNAL/DUAL LIGHTING - 55' MAST ARM	EACH	1		1	2
	STEEL COMBINATION SIGNAL/LIGHTING - 58' MAST ARM	EACH		1		1
	STEEL COMBINATION SIGNAL/LIGHTING - 60' MAST ARM	EACH			1	1
	STEEL COMBINATION SIGNAL/LIGHTING - 65' MAST ARM	EACH			1	1
	STEEL COMBINATION SIGNAL/LIGHTING - 75' MAST ARM	EACH	1	1		2
	STEEL COMBINATION SIGNAL/DUAL LIGHTING - 80' MAST ARM	EACH			1	1
	ALUMINUM PEDESTAL POLE - HEIGHT 5'	EACH			4	4
	ALUMINUM PEDESTAL POLE - HEIGHT 10'	EACH			1	1
	ALUMINUM PEDESTAL POLE - HEIGHT 15'	EACH	4	3		7
	LUMINAIRE FIXTURE	EACH			6	6
	CONNECTOR - Y-1, UNFUSED	EACH			6	6
	CONNECTOR - Y-1, FUSED	EACH			4	4
CONNECTOR - L-1, FUSED	EACH			4	4	
FIBER OPTIC	SINGLE MODE CABLE - 12-CT	EACH	160	340	110	610
	FIBER OPTIC TERMINATION	EACH	12	12	12	36
	FIBER OPTIC SPLICE	EACH		12	12	24
MISC	STREET NAME SIGN - 90" x 24", MAST-ARM MOUNTED	EACH			2	2
	STREET NAME SIGN - 96" x 24", MAST-ARM MOUNTED	EACH			2	2
	TRAFFIC SIGN - R3-5L, 30" x 36", MAST-ARM MOUNTED	EACH	2	2	5	9
	TRAFFIC SIGN - R3-5a, 30" x 36", MAST-ARM MOUNTED	EACH	7	7		14
	TRAFFIC SIGN - R3-5R, 30" x 36", MAST-ARM MOUNTED	EACH	2	2	2	6
	TRAFFIC SIGN - R3-6R, 30" x 36", MAST-ARM MOUNTED	EACH			2	2
	TRAFFIC SIGN - R3-2, 36" x 36", MAST-ARM MOUNTED	EACH	1	1		2
	TRAFFIC SIGN - R3-1, 36" x 36", MAST-ARM MOUNTED	EACH	3	3		6
	TRAFFIC SIGN - R10-17aL, 30" x 36", MAST-ARM MOUNTED	EACH	1	1		2
	TRAFFIC SIGN - R6-1L, 30" x 36", MAST-ARM MOUNTED	EACH	1	1		2
	TRAFFIC SIGN - R6-1R, 30" x 36", MAST-ARM MOUNTED	EACH	1	1		2
	WIND DAMPENING DEVICE (PER MANUFACTURER SPECIFICATIONS)	EACH	4	4		12

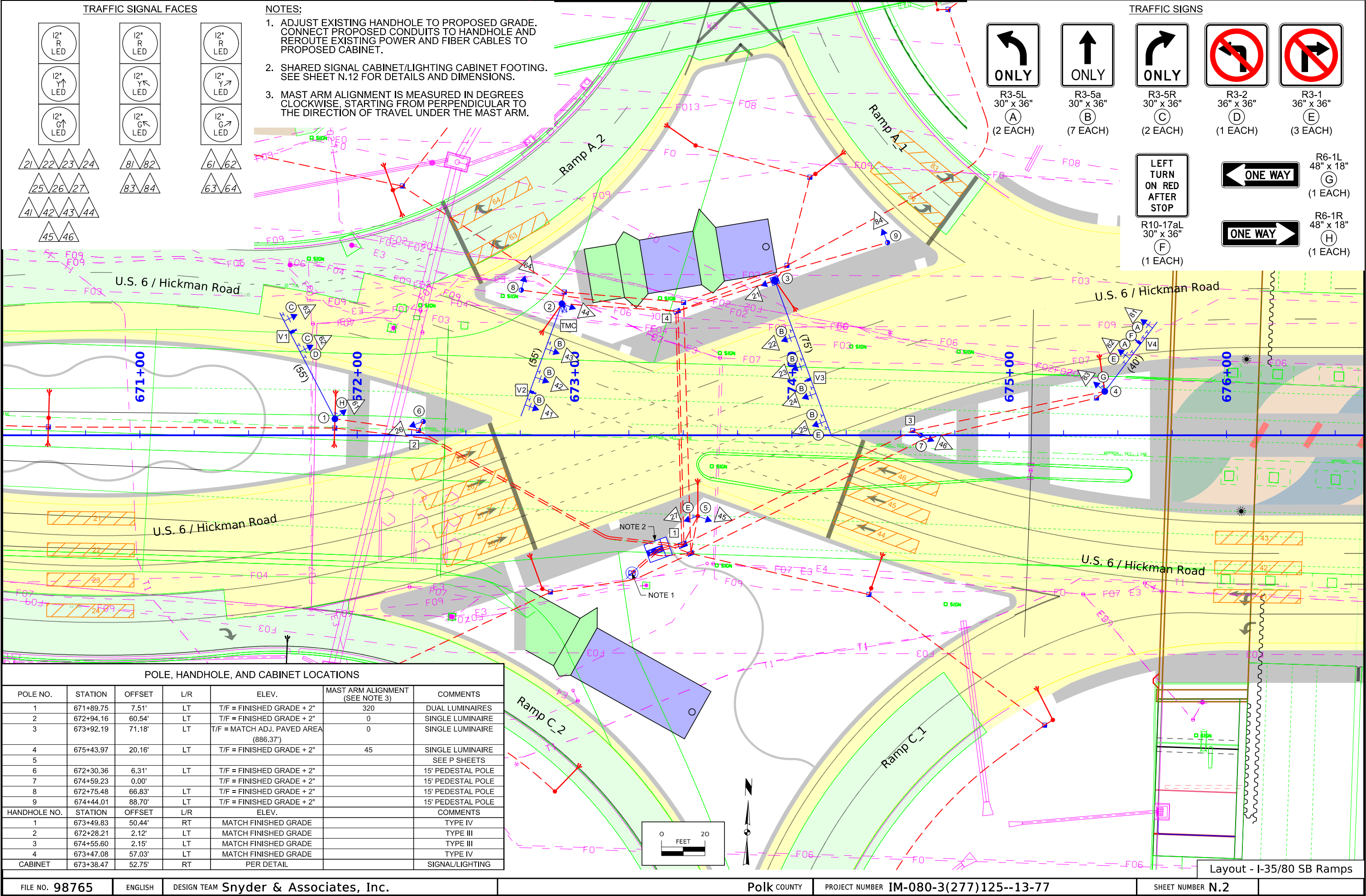
GENERAL NOTES:

1. ALL QUANTITIES IN THE TRAFFIC SIGNAL PLANS ARE FOR INFORMATIONAL AND ESTIMATING PURPOSES ONLY. THE CONTRACTOR'S LUMP SUM BID SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO PROVIDE COMPLETE AND FUNCTIONAL TRAFFIC SIGNAL INSTALLATIONS IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS.
2. PROVIDE TRAFFIC CONTROL DEVICES (INCLUDING THOSE REQUIRED TO FACILITATE CONSTRUCTION OF TRAFFIC SIGNALS) IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR THE STREETS AND HIGHWAYS, AS ADOPTED BY THE IOWA DEPARTMENT OF TRANSPORTATION PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC), CHAPTER 130.
3. TRAFFIC SIGNALS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST VERSION OF THE IOWA DOT STANDARD SPECIFICATIONS, EXCEPT AS MODIFIED BY THE PLANS.
4. THE CONTRACTOR SHALL HAVE AN EMPLOYEE ON THE PROJECT SITE WITH A LEVEL II INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION (IMSA) TRAFFIC SIGNAL TECHNICIAN CERTIFICATION WHEN CONSTRUCTION ACTIVITIES OCCUR.
5. THE CONTRACTOR SHALL FURNISH A SCHEDULE OF UNIT PRICES FOR ESTIMATED TRAFFIC SIGNAL QUANTITIES AT PROJECT PRE-CONSTRUCTION MEETING. PAYMENT WILL BE BASED ON PLAN QUANTITIES. QUANTITIES WILL NOT BE FIELD MEASURED.
6. ROADWAY GEOMETRICS REPRESENT EXISTING AND PROPOSED FEATURES.
7. THE PLAN LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO STARTING ANY EXCAVATION ON THE PROJECT TO ESTABLISH LOCATIONS.
8. THE PLAN LOCATIONS OF ALL HANDHOLES ARE APPROXIMATE ONLY AND ARE SUBJECT TO ADJUSTMENT IN THE FIELD BY THE ENGINEER. OBTAIN ENGINEER'S APPROVAL PRIOR TO PLACING HANDHOLES AND CONSTRUCTING FOOTINGS.
9. PROVIDE STRUCTURAL CONCRETE TESTING (2 CYLINDERS, 7-DAY AND 28-DAY, FOR EACH BATCH) IN ACCORDANCE WITH ASTM C39 AS POURED FOR POLE FOOTINGS.
10. PROVIDE TWO WEEK NOTICE TO THE IOWA DOT, CITY OF CLIVE, CITY OF URBANDALE, AND ENGINEER BEFORE PLACING THE PERMANENT TRAFFIC SIGNALS INTO OPERATION. THE DOT, CITIES, OR ENGINEER MAY DIRECT THE CONTRACTOR TO PROVIDE PORTABLE DYNAMIC MESSAGE SIGNS ON THE HICKMAN RD APPROACHES OF THE PROPOSED SIGNALS A MINIMUM OF 7 DAYS PRIOR TO ACTIVATION IN ACCORDANCE WITH THE IOWA DOT'S SIGNAL TURN-ON PROCEDURES IF IT IS DETERMINED TO BE NECESSARY.
11. INSTALL ONE SIGNAL CABLE FROM EACH SIGNAL HEAD TO THE BASE OF THE POLE. A 7-CONDUCTOR CABLE SHALL BE USED IN THE POLE FOR EACH 5-SECTION VEHICLE SIGNAL HEAD, AND A 5-CONDUCTOR CABLE SHALL BE USED IN THE POLE FOR EACH 3- OR 4-SECTION VEHICLE HEAD AND EACH PEDESTRIAN SIGNAL HEAD. ALL SIGNAL CABLE SHALL BE #14 AWG UNLESS OTHERWISE NOTED ON THE PLANS.
12. INSTALL A #6 AWG BARE COPPER GROUND WIRE BETWEEN THE SIGNAL FOOTINGS AND THE CONTROLLER CABINET GROUND RODS TO FORM A CONTINUOUSLY GROUNDED SYSTEM.
13. DETECTION, TMC, AND EVP CABLES SHALL BE AS PER SUPPLIER SPECIFICATIONS. NO SPLICES ALLOWED IN DETECTION, TMC, OR EVP CABLES.
14. ABOVE GROUND RISERS SHALL BE RIGID STEEL CONDUIT. ALL OTHER CONDUIT SHALL BE RIGID PVC CONDUIT OR DIRECTIONAL BORED HDPE CONDUIT.
15. UNLESS OTHERWISE DIRECTED, TRAFFIC SIGNAL HEADS ON MAST ARMS ARE TO BE ALIGNED OVER THE CENTER OF INTERSECTION APPROACH OR DEPARTURE LANES. APPROXIMATE LOCATIONS ARE AS SHOWN IN THE TRAFFIC SIGNAL POLE DATA TABLE. CONTRACTOR SHALL FIELD VERIFY SIGNAL HEAD LOCATIONS.
16. TRAFFIC SIGNAL MOUNTING BRACKETS SHALL UTILIZE STAINLESS STEEL BANDING FOR SIDE OF POLE MOUNTING AND GALVANIZED STEEL CABLE FOR MAST ARM MOUNTING.
17. MAST ARMS AND POLES SHALL BE DESIGNED TO SUPPORT TRAFFIC SIGNALS, SIGNS, AND EQUIPMENT AS SHOWN IN THE PLANS.
18. ALL SIGNAL INDICATIONS SHALL BE LED IN ACCORDANCE WITH MOST RECENT ITE SPECIFICATIONS. SIGNAL HEADS SHALL HAVE BLACK FACES, VISORS, AND BACKPLATES (WHERE INDICATED). SIGNAL HEAD BODIES SHALL BE YELLOW.
19. PEDESTRIAN PUSHBUTTON STATIONS SHALL BE ACCESSIBLE PEDESTRIAN SIGNAL (APS) COMPLIANT. PROVIDE R10-3E SIGN ABOVE EACH PEDESTRIAN PUSHBUTTON. ALL NECESSARY APPURTENANCES TO OPERATE THE PEDESTRIAN PUSHBUTTON STATION SHALL BE INCLUDED. VOICE MESSAGES TO BE APPROVED BY CITY OF CLIVE PRIOR TO INSTALLATION.
20. STREET NAME SIGNS SHALL HAVE HIGHWAY SERIES C 12" FONT ON GREEN BACKGROUND WITH WHITE FONT AND WHITE BORDER.
21. INSTALL WIND DAMPENING DEVICE PER MANUFACTURER SPECIFICATIONS ON ALL MAST ARMS. SIGN BLANK MOUNTED ADJACENT TO MAST ARM IS NOT ACCEPTABLE.
22. CONTROLLER CABINETS SHALL BE MCCAIN 350 ATC CABINET (16-CHANNEL) WITH ACCESSORIES AND 12" RISER. NOMINAL CABINET WIDTH 44" x DEPTH 26". NO AUXILIARY OR PIGGY-BACK UNITS ARE ALLOWED.
23. LUMINAIRES SHALL BE LED, 18,000 LUMENS (+/- 5%), 100 LUMENS/WATT MINIMUM EFFICACY, 4000 K COLOR TEMPERATURE, MEDIUM, B3-U0-G3, L70> 70,000 HOURS WITH AT LEAST 5-YEAR WARRANTY, AND GRAY FINISH. LUMINAIRES ON POLES AT INTERCHANGE RAMP INTERSECTIONS SHALL BE TYPE II DISTRIBUTION WITH NO INDIVIDUAL PHOTOCCELL CONTROL AND LUMINAIRES ON POLES AT THE NW 111TH ST INTERSECTION SHALL BE TYPE III DISTRIBUTION WITH INDIVIDUAL PHOTOCCELL CONTROL.
24. FOR NW 111TH ST LUMINAIRES ON SIGNAL POLES, INSTALL TWO (2) 1-CONDUCTOR #10 CABLES FROM THE LUMINAIRE HEAD TO THE BASE OF THE POLE. FURNISH AND INSTALL FUSED L OR Y CONNECTORS IN THE POLE BASE (L FOR SINGLE LUMINAIRES AND Y FOR DUAL LUMINAIRES). FURNISH AND INSTALL UNFUSED Y CONNECTORS IN THE ADJACENT HANDHOLE WHERE APPLICABLE.
25. FOR LUMINAIRES ON SIGNAL POLES AT INTERCHANGE RAMP INTERSECTIONS, PROVIDE SEPARATE LIGHTING CIRCUITS AND CONDUITS PER THE P SHEETS.
26. SECONDARY SERVICE SHALL BE 120 V SINGLE-PHASE. FOR NW 111TH ST INTERSECTION, SIGNALS AND COMBINATION LIGHTING SHALL BE METERED TOGETHER, WITH LIGHTING ON SEPARATE 20 AMPERE BREAKER. CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS AND EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE FOR ALL SIGNALS. SIGNAL CABINET ADDRESSES WILL BE PROVIDED.
27. SECONDARY SERVICE LOCATIONS ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR COORDINATING POWER SERVICE LOCATIONS WITH POWER SERVICE PROVIDER PRIOR TO CONDUIT/CIRCUIT INSTALLATION.
28. VEHICLE DETECTION SYSTEMS SHALL BE NOTRAFFIC WITH ONE UNIT PER APPROACH AS SHOWN ON N SHEETS.
29. INSTALL RODENT GUARD (NOT GROUT) BETWEEN MAST ARM POLE BASES AND TOP OF POLE FOUNDATIONS INTERIOR TO BASE. PROVIDE STIFFENER COLLARS FOR PUSHBUTTON POSTS.
30. TRAFFIC SIGNAL REMOVAL ITEM INCLUDES REMOVAL OF TRAFFIC SIGNAL HEADS (VEHICULAR AND PEDESTRIAN), POLES, SIGNAL CABINET AND EQUIPMENT, VIDEO DETECTION CAMERAS, EXISTING SIGNAL CABLE FROM EXISTING CONDUITS, AND HANDHOLES. CONTRACTOR TO SALVAGE EXISTING SIGNAL AND COMMUNICATION EQUIPMENT - COORDINATE WITH CITY OF CLIVE FOR DELIVERY OF SALVAGED MATERIALS. ABANDON CONDUITS IN PLACE. REMOVE MAST ARM POLE FOUNDATIONS TO DEPTH OF AT LEAST 4 FEET BELOW FINISHED GRADE. COMPLETELY REMOVE PEDESTAL POLE FOOTINGS AND CABINET FOOTINGS.
31. EACH PROPOSED TRAFFIC SIGNAL SHALL BE FULLY OPERATIONAL PRIOR TO REOPENING ITS RESPECTIVE INTERSECTION TO FULL ACCESS.
32. ANY WORK INVOLVING FIBER OPTIC CABLE REQUIRES THE CONTRACTOR TO NOTIFY THE CITY OF CLIVE A MINIMUM OF TWO BUSINESS DAYS IN ADVANCE. COORDINATE WITH THE CITY TO CONFIRM WORK ACTIVITIES DO NOT DISRUPT EXISTING COMMUNICATION.
33. COIL 100' OF FIBER OPTIC CABLE IN EACH TYPE III OR IV HANDHOLE AND 30' IN EACH SIGNAL CABINET.
34. RELOCATE EXISTING CABINET EQUIPMENT FOR FIBER OPTIC INTERCONNECT TO NEW CABINETS AT SOUTHBOUND RAMPS, NORTHBOUND RAMPS, AND NW 111TH ST INTERSECTIONS.
35. REFER TO N.8 FOR INFORMATION ON TEMPORARY SIGNAL AT NW 108TH ST.

TRAFFIC SIGNAL LEGEND			
EXISTING		PROPOSED	
		TRAFFIC SIGNAL	
		TRAFFIC SIGNAL WITH BACKPLATE	
		PEDESTRIAN SIGNAL	
		MAST ARM SUSPENDED TRAFFIC SIGNAL (XX = LENGTH OF MAST ARM)	
		METAL TRAFFIC SIGNAL PEDESTAL	
		TRAFFIC SIGNAL HEAD NUMBER	
		POLE OR SIGN NUMBER	
		STREET LIGHT ON SIGNAL POLE	
		CONDUIT TRENCHED, PUSHED, JACKED, OR BORED	
		OVERHEAD CABLES	
		HANDHOLE	
		CONTROLLER CABINET WITH FOOTING	
		SECONDARY SERVICE POINT	
		DETECTION ZONE (XX = NUMBER DESIGNATION)	
		VIDEO DETECTION CAMERA	
		TRAFFIC MONITORING CAMERA	
		EMERGENCY VEHICLE DETECTOR	
		POLE MOUNTED SIGN	
		WOOD POLE WITH GUY WIRE	

TRAFFIC SIGNAL EQUIPMENT		
EQUIPMENT	MANUFACTURER	MODEL NO.
CABINET	McCAIN	350ATC, HIGH VOLTAGE, 16-CHANNEL
CONTROLLER	Q-FREE/INTELIGHT	ATC RACKMOUNT CONTROLLER
EMERGENCY VEHICLE PREEMPTION		
DETECTOR	OPTICOM	GTT 3100
PHASE SELECTOR	OPTICOM	GTT 764
INTERFACE PANEL	OPTICOM	GTT 768
CARD RACK ASSEMBLY	OPTICOM	GTT 760
CABLE	OPTICOM	GTT 1070
VIDEO/RADAR DETECTION	NOTRAFFIC	1 UNIT PER APPROACH, AS SHOWN
UNINTERRUPTIBLE POWER SUPPLY	CLARY	CAPTAIN SP1250PDU
TRAFFIC MONITORING CAMERA	AXIS	Q6074-E
ABOVE EQUIPMENT IS INCLUDED IN OR INCIDENTAL TO ITEMS SHOWN IN THE ESTIMATE OF TRAFFIC SIGNAL QUANTITIES		

										GENERAL NOTES AND QUANTITIES	
FILE NO. 98765	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.			Polk COUNTY		PROJECT NUMBER IM-080-3(277)125--13-77			SHEET NUMBER N.1	



DETECTOR SUMMARY						
CAMERA NUMBER	DETECTION ZONE	ZONE LIMITS (DISTANCE FROM STOP LINE)	PHASE CALLED	PHASE EXTENDED	DETECTOR INPUT ASSIGNMENT	COMMENTS
V1	61	170' TO 210'	6	6	36	
	62	170' TO 210'	6	6	37	
	63	0' TO 40'	6	6	44	
	64	0' TO 40'	6	6	45	
V2	41	170' TO 210'	4	4	20	
	42	170' TO 210'	4	4	21	
	43	170' TO 210'	4	4	22	
	44	0' TO 40'	4	4	28	
	45	0' TO 40'	4	4	29	
V3	21	170' TO 210'	2	2	4	
	22	170' TO 210'	2	2	5	
	23	170' TO 210'	2	2	6	
	24	170' TO 210'	2	2	7	
	25	0' TO 40'	2	2	12	
	26	0' TO 40'	2	2	13	
	27	0' TO 40'	2	2	14	
	28	0' TO 40'	2	2	15	
V4	81	170' TO 210'	8	8	52	
	81	170' TO 210'	8	8	53	
	82	0' TO 40'	8	8	60	
	82	0' TO 40'	8	8	61	

DETECTION NOTES:

1. ZONE LIMITS ARE FOR DETECTION LIMITS ONLY. ACTUAL DETECTION AREAS FOR EACH ZONE WILL BE DETERMINED IN THE FIELD.

WIRING NOTES:

1. STREET LIGHTING CIRCUIT. SEE P SHEETS.
2. ADJUST EXISTING HANDHOLE TO PROPOSED GRADE. CONNECT PROPOSED CONDUITS TO HANDHOLE AND REROUTE EXISTING POWER AND FIBER CABLES TO PROPOSED CABINET.
3. TERMINATE SAME FIBERS IN PROPOSED CABINET AS EXISTNG CABINET (12 TERMINATIONS ANTICIPATED).

INITIAL RECOMMENDED TIMING (SECONDS)

PHASE	1	2	3	4	5	6	7	8
MINIMUM GREEN		15		15		17		17
PASSAGE		2.0		2.0		2.0		2.0
MAXIMUM I		60		60		57		57
MAXIMUM II								
YELLOW CHANGE		4.1		4.1		4.1		4.1
RED CLEARANCE		1.7		1.7		0		0

TIMING NOTES:

1. SEE N.11 FOR INITIAL RECOMMENDED COORDINATION TIMINGS

TRAFFIC SIGNAL POLE NOTES:

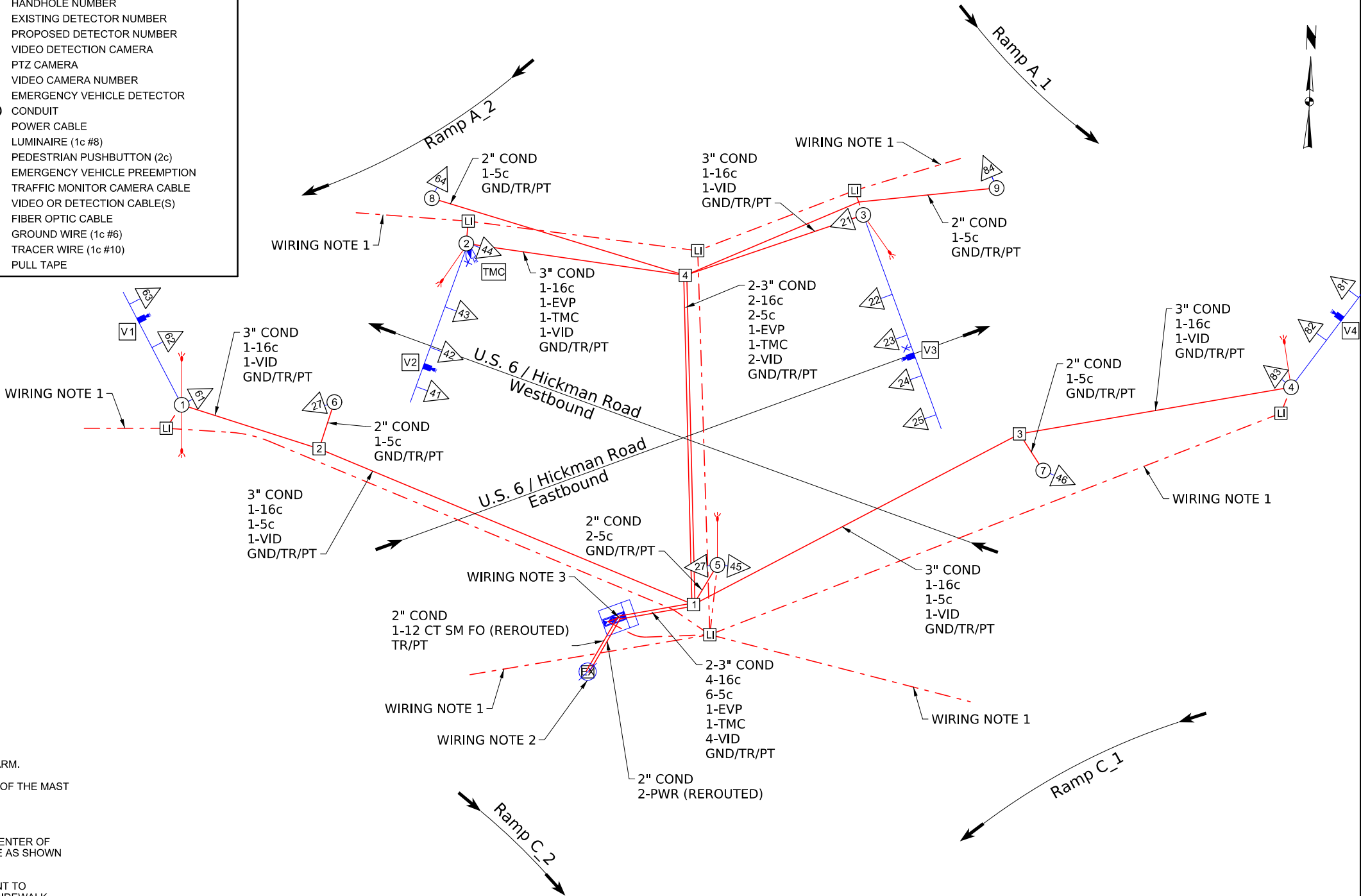
- ① LOCATION REPRESENTS APPROXIMATE LINEAR DISTANCE FROM POLE MEASURED OUTWARD TO END OF ARM.
- ② ORIENTATION OF LUMINAIRE ARM REPRESENTS A CLOCKWISE ANGLE MEASURED FROM THE CENTERLINE OF THE MAST ARM, WHEN VIEWED FROM ABOVE.
- ③ POLES SHALL BE DESIGNED PER THE PROPOSED LOADINGS WITH A ONE-PIECE VERTICAL POLE.
- ④ UNLESS OTHERWISE DIRECTED, TRAFFIC SIGNAL HEADS ON MAST ARMS ARE TO BE ALIGNED OVER THE CENTER OF INTERSECTION APPROACH LEFT TURN AND DEPARTURE THROUGH LANES. APPROXIMATE LOCATIONS ARE AS SHOWN IN THE TRAFFIC SIGNAL POLE DATA TABLE. CONTRACTOR SHALL FIELD VERIFY SIGNAL HEAD LOCATIONS.
- ⑤ TRAFFIC SIGNAL POLE FOOTINGS SHALL BE PER IOWA DOT STANDARD ROAD PLAN TS-102. WHEN ADJACENT TO SIDEWALK, THE TOP OF FOOTING SHALL BE FORMED SQUARE AND FLUSH WITH PROPOSED OR EXISTING SIDEWALK.
- ⑥ POLE UPRIGHT SHALL BE DESIGNED TO SUPPORT BANNERS.

TRAFFIC SIGNAL POLE DATA

POLE NO.	POLE TYPE	MAST ARM LENGTH/ PEDESTAL HEIGHT (ft.)	TRAFFIC SIGNAL ① HEADS		① TRAFFIC SIGNS		① VIDEO CAMERAS	② LUMINAIRE ARM			FOOTINGS		MISCELLANEOUS	TOTAL QUANTITY
			QTY.	LOCATION ON ARM (ft.)	QTY.	LOCATION ON ARM (ft.)	LOCATION ON ARM (ft.)	SPREAD (ft.)	MOUNTING HEIGHT (ft.)	ORIENTATION (degrees)	DIA. (ft.)	DEPTH (ft.)		
1	COMBINATION SIGNAL/DUAL LIGHTING	55	2	50,35	3	53,38,32	44	10,10	40,40	30,210	3	16	③ ④ ⑤ ⑥	1
2	COMBINATION SIGNAL/LIGHTING	55	3	49,36,22	3	46,33,19	43	15	40	0	3	16	③ ④ ⑥	1
3	COMBINATION SIGNAL/LIGHTING	75	4	69,55,41,27	5	72,66,52,38,24	48	15	40	0	3.5	21	③ ④ ⑤	1
4	COMBINATION SIGNAL/LIGHTING	40	2	36,19	4	33,30,22,16	27	15	40	315	3	14	③ ④ ⑤	1
5	LIGHT POLE												SEE P SHEETS	
6-9	PEDESTAL	15									2	4	⑤	4

WIRING LEGEND

- ② SIGNAL NUMBER
- ② POLE NUMBER
- ② HANDHOLE NUMBER
- ② EXISTING DETECTOR NUMBER
- ② PROPOSED DETECTOR NUMBER
- VIDEO DETECTION CAMERA
- PTZ CAMERA
- VIDEO CAMERA NUMBER
- EMERGENCY VEHICLE DETECTOR
- COND CONDUIT
- PWR POWER CABLE
- LUM LUMINAIRE (1c #8)
- PB PEDESTRIAN PUSHBUTTON (2c)
- EVP EMERGENCY VEHICLE PREEMPTION
- TMC TRAFFIC MONITOR CAMERA CABLE
- VID VIDEO OR DETECTION CABLE(S)
- FO FIBER OPTIC CABLE
- GND GROUND WIRE (1c #6)
- TR TRACER WIRE (1c #10)
- PT PULL TAPE



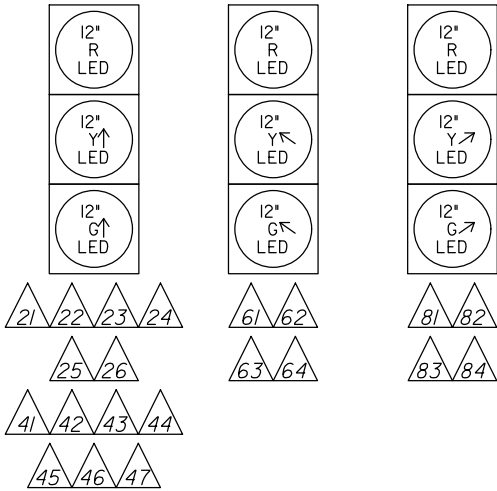
TRAFFIC PHASING SEQUENCE

Ø 2	Ø 2+6	Ø 4	Ø 4+8
	Phase 6 (SBR) green shall begin 3 seconds after phase 2 (EBT) green to allow phase 4 (WBT) traffic to clear the ramp intersection area. Phase 6 and phase 2 shall terminate together.		Phase 8 (SBL) green shall begin 3 seconds after phase 4 (WBT) green to allow phase 2 (EBT) traffic to clear the ramp intersection area. Phase 6 and phase 2 shall terminate together.

Wiring/Phasing - I-35/80 SB Ramps

FILE NO. 98765	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	Polk COUNTY	PROJECT NUMBER IM-080-3(277)125--13-77	SHEET NUMBER N.3
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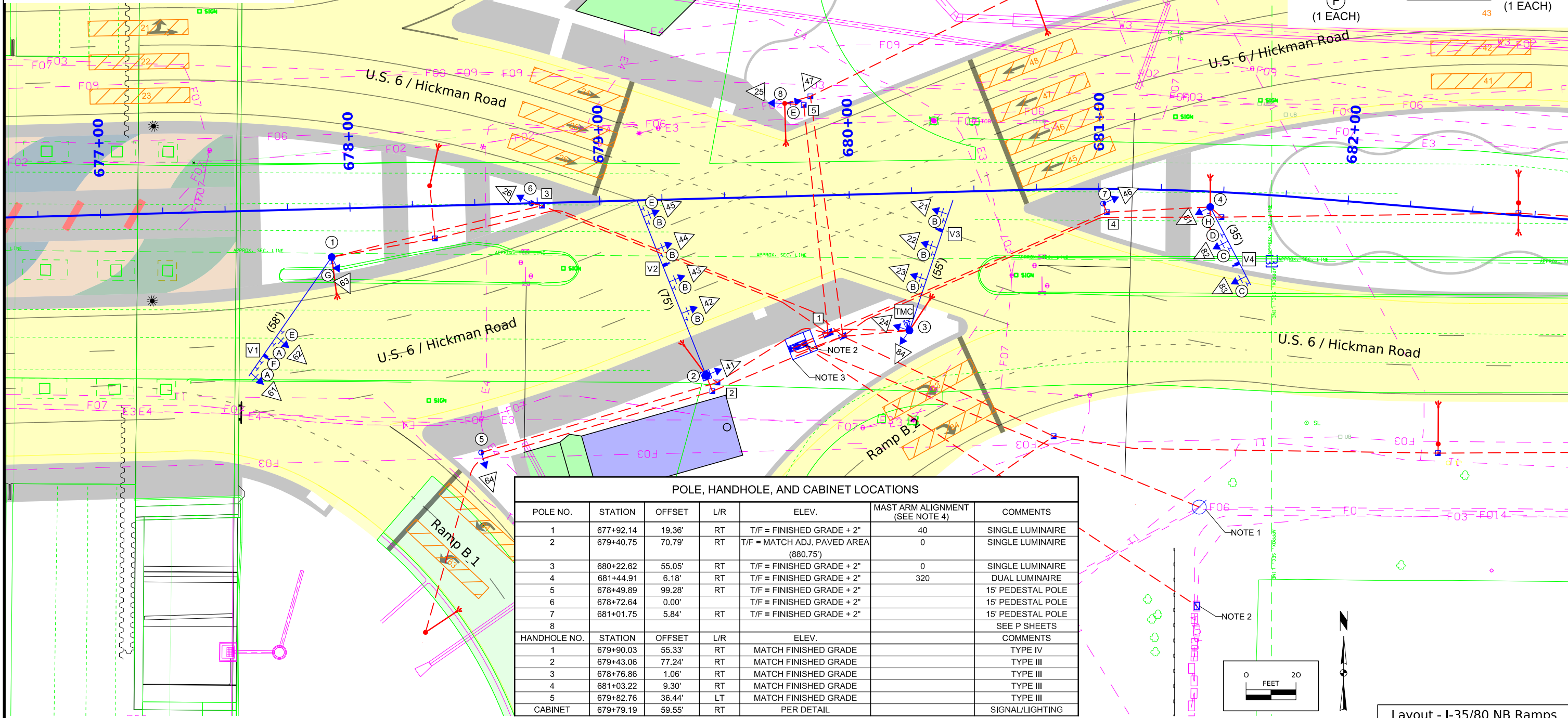
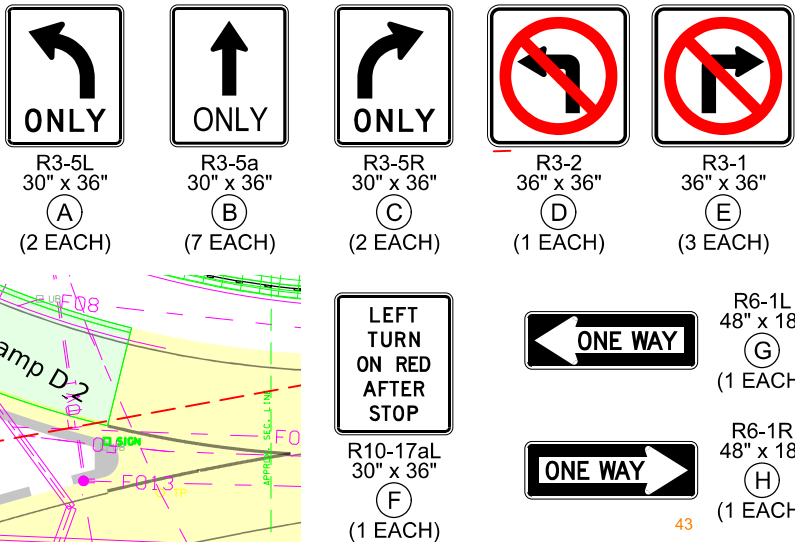
TRAFFIC SIGNAL FACES



NOTES:

1. ANTICIPATED SECONDARY SERVICE LOCATION IS MIDAMERICAN ENERGY GROUND MOUNTED TRANSFORMER SOUTHEAST OF RAMP B2. COORDINATE POWER SOURCE CONNECTION WITH MIDAMERICAN ENERGY.
2. CONNECT PROPOSED CONDUIT TO EXISTING CITY OF CLIVE FIBER OPTIC HANDHOLE AT THE NORTH END OF THE BANK OF HANDHOLES. SPLICE NEW 12-CT SM FIBER OPTIC CABLE TO SAME FIBERS AS EXISTING SPLICE (12 SPLICES ANTICIPATED). TERMINATE SAME FIBERS IN PROPOSED CABINET AS IN EXISTING CABINET.
3. SHARED SIGNAL CABINET/LIGHTING CABINET FOOTING. SEE SHEET N.12 FOR DETAILS AND DIMENSIONS.
4. MAST ARM ALIGNMENT IS MEASURED IN DEGREES CLOCKWISE, STARTING FROM PERPENDICULAR TO THE DIRECTION OF TRAVEL UNDER THE MAST ARM.

TRAFFIC SIGNS



POLE, HANDHOLE, AND CABINET LOCATIONS

POLE NO.	STATION	OFFSET	L/R	ELEV.	MAST ARM ALIGNMENT (SEE NOTE 4)	COMMENTS
1	677+92.14	19.36'	RT	T/F = FINISHED GRADE + 2"	40	SINGLE LUMINAIRE
2	679+40.75	70.79'	RT	T/F = MATCH ADJ. PAVED AREA (880.75')	0	SINGLE LUMINAIRE
3	680+22.62	55.05'	RT	T/F = FINISHED GRADE + 2"	0	SINGLE LUMINAIRE
4	681+44.91	6.18'	RT	T/F = FINISHED GRADE + 2"	320	DUAL LUMINAIRE
5	678+49.89	99.28'	RT	T/F = FINISHED GRADE + 2"		15' PEDESTAL POLE
6	678+72.64	0.00'	RT	T/F = FINISHED GRADE + 2"		15' PEDESTAL POLE
7	681+01.75	5.84'	RT	T/F = FINISHED GRADE + 2"		15' PEDESTAL POLE
8						SEE P SHEETS
HANDHOLE NO.	STATION	OFFSET	L/R	ELEV.		COMMENTS
1	679+90.03	55.33'	RT	MATCH FINISHED GRADE		TYPE IV
2	679+43.06	77.24'	RT	MATCH FINISHED GRADE		TYPE III
3	678+76.86	1.06'	RT	MATCH FINISHED GRADE		TYPE III
4	681+03.22	9.30'	RT	MATCH FINISHED GRADE		TYPE III
5	679+82.76	36.44'	LT	MATCH FINISHED GRADE		TYPE III
CABINET	679+79.19	59.55'	RT	PER DETAIL		SIGNAL/LIGHTING

Layout - I-35/80 NB Ramps

FILE NO. 98765

ENGLISH

DESIGN TEAM Snyder & Associates, Inc.

Polk COUNTY

PROJECT NUMBER IM-080-3(277)125--13-77

SHEET NUMBER N.4

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7/6/2026

dshlain

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DETECTOR SUMMARY						
CAMERA NUMBER	DETECTION ZONE	ZONE LIMITS (DISTANCE FROM STOP LINE)	PHASE CALLED	PHASE EXTENDED	DETECTOR INPUT ASSIGNMENT	COMMENTS
V1	61	170' TO 210'	6	6	36	
	62	170' TO 210'	6	6	37	
	63	0' TO 40'	6	6	44	
	64	0' TO 40'	6	6	45	
V2	41	170' TO 210'	4	4	20	
	42	170' TO 210'	4	4	21	
	43	170' TO 210'	4	4	22	
	44	170' TO 210'	4	4	23	
	45	0' TO 40'	4	4	28	
	46	0' TO 40'	4	4	29	
	47	0' TO 40'	4	4	30	
	48	0' TO 40'	4	4	31	
V3	21	170' TO 210'	2	2	4	
	22	170' TO 210'	2	2	5	
	23	170' TO 210'	2	2	6	
	24	0' TO 40'	2	2	12	
	25	0' TO 40'	2	2	13	
	26	0' TO 40'	2	2	14	
V4	81	170' TO 210'	8	8	52	
	81	170' TO 210'	8	8	53	
	82	0' TO 40'	8	8	60	

DETECTION NOTES:

1. ZONE LIMITS ARE FOR DETECTION LIMITS ONLY. ACTUAL DETECTION AREAS FOR EACH ZONE WILL BE DETERMINED IN THE FIELD.

WIRING NOTES:

1. STREET LIGHTING CIRCUIT. SEE P SHEETS.
2. CONNECT PROPOSED CONDUIT TO EXISTING CITY OF CLIVE FIBER OPTIC HANDHOLE AT THE NORTH END OF THE BANK OF HANDHOLES. SPLICE NEW 12-CT SM FIBER OPTIC CABLE TO SAME FIBERS AS EXISTING SPLICE (12 SPLICES ANTICIPATED). TERMINATE SAME FIBERS IN PROPOSED CABINET AS IN EXISTING CABINET (12 TERMINATIONS ANTICIPATED).

INITIAL RECOMMENDED TIMING (SECONDS)

PHASE	1	2	3	4	5	6	7	8
MINIMUM GREEN		15		15		11		13
PASSAGE		2.0		2.0		2.0		2.0
MAXIMUM I		60		60		56		58
MAXIMUM II								
YELLOW CHANGE		4.1		4.1		4.1		4.1
RED CLEARANCE		1.7		1.7		0		0

TIMING NOTES:

1. SEE N.11 FOR INITIAL RECOMMENDED COORDINATION TIMINGS

TRAFFIC SIGNAL POLE NOTES:

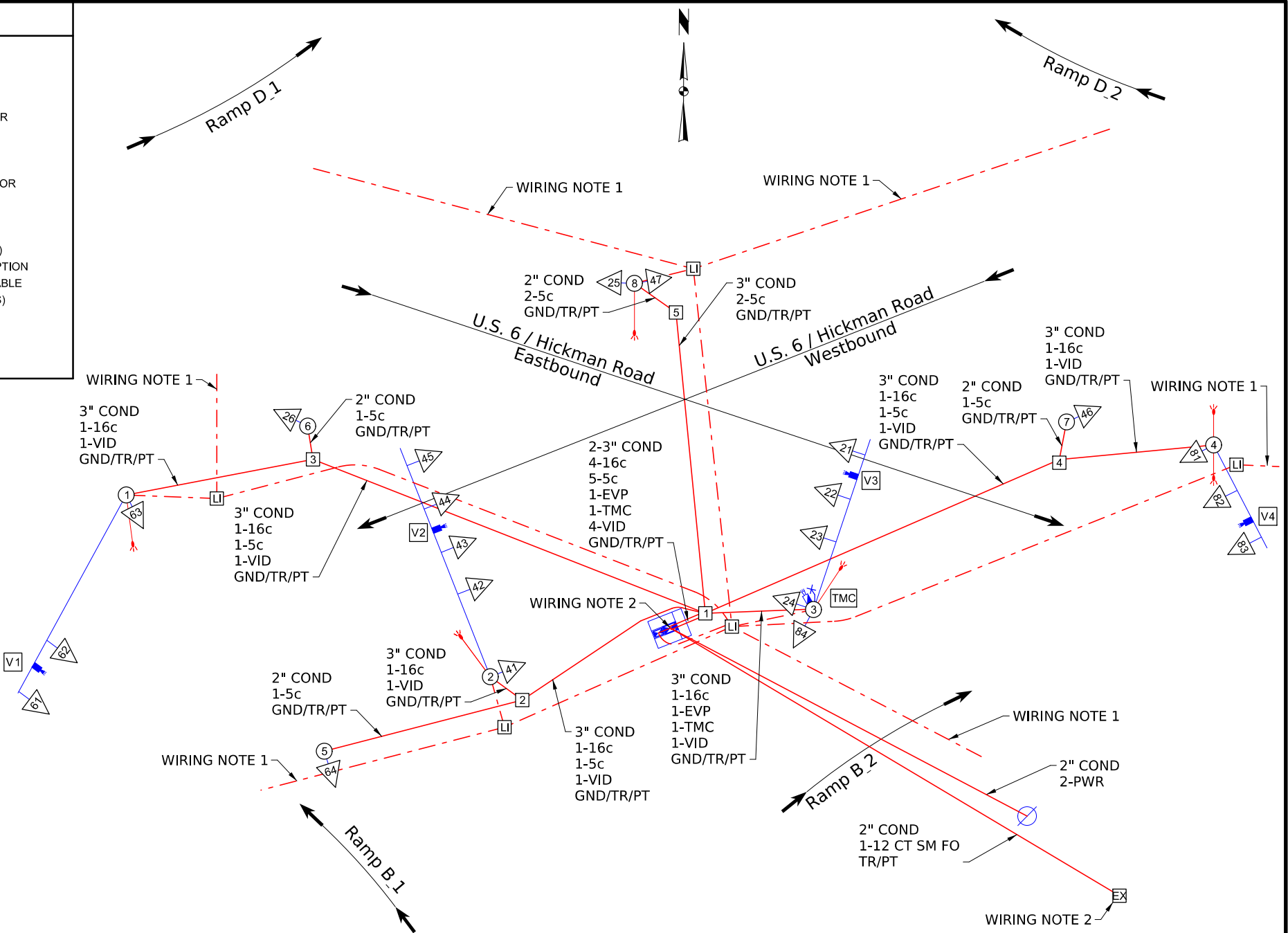
- ① LOCATION REPRESENTS APPROXIMATE LINEAR DISTANCE FROM POLE MEASURED OUTWARD TO END OF ARM.
- ② ORIENTATION OF LUMINAIRE ARM REPRESENTS A CLOCKWISE ANGLE MEASURED FROM THE CENTERLINE OF THE MAST ARM, WHEN VIEWED FROM ABOVE.
- ③ POLES SHALL BE DESIGNED PER THE PROPOSED LOADINGS WITH A ONE-PIECE VERTICAL POLE.
- ④ UNLESS OTHERWISE DIRECTED, TRAFFIC SIGNAL HEADS ON MAST ARMS ARE TO BE ALIGNED OVER THE CENTER OF INTERSECTION APPROACH LEFT TURN AND DEPARTURE THROUGH LANES. APPROXIMATE LOCATIONS ARE AS SHOWN IN THE TRAFFIC SIGNAL POLE DATA TABLE. CONTRACTOR SHALL FIELD VERIFY SIGNAL HEAD LOCATIONS.
- ⑤ TRAFFIC SIGNAL POLE FOOTINGS SHALL BE PER IOWA DOT STANDARD ROAD PLAN TS-102. WHEN ADJACENT TO SIDEWALK, THE TOP OF FOOTING SHALL BE FORMED SQUARE AND FLUSH WITH PROPOSED OR EXISTING SIDEWALK.
- ⑥ POLE UPRIGHT SHALL BE DESIGNED TO SUPPORT BANNERS.

TRAFFIC SIGNAL POLE DATA

POLE NO.	POLE TYPE	MAST ARM LENGTH/ PEDESTAL HEIGHT (ft.)	TRAFFIC SIGNAL ① HEADS		① TRAFFIC SIGNS		① VIDEO CAMERAS			② LUMINAIRE ARM			FOOTINGS		MISCELLANEOUS	TOTAL QUANTITY
			QTY.	LOCATION ON ARM (ft.)	QTY.	LOCATION ON ARM (ft.)	LOCATION ON ARM (ft.)	SPREAD (ft.)	MOUNTING HEIGHT (ft.)	ORIENTATION (degrees)	DIA. (ft.)	DEPTH (ft.)				
1	COMBINATION SIGNAL/ LIGHTING	58	2	56,39	4	53,50,42,36	47	15	40	320	3	18	③ ④ ⑤			1
2	COMBINATION SIGNAL/LIGHTING	75	4	68,54,40,26	5	71,65,51,37,23	47	15	40	0	3.5	21	③ ④ ⑤			1
3	COMBINATION SIGNAL/LIGHTING	55	3	49,35,21	3	46,32,18	42	15	40	0	3	16	③ ④ ⑤			1
4	COMBINATION SIGNAL/DUAL LIGHTING	35	2	31,15	3	34,18,12	25	15,15	40	25,205	3	12	③ ④ ⑤ ⑥			1
5-7	PEDESTAL	15									2	4	⑤			3
8	LIGHT POLE												SEE P SHEETS			

WIRING LEGEND

- ② SIGNAL NUMBER
- ② POLE NUMBER
- ② HANDHOLE NUMBER
- ② EXISTING DETECTOR NUMBER
- ② PROPOSED DETECTOR NUMBER
- VIDEO DETECTION CAMERA
- PTZ CAMERA
- VIDEO CAMERA NUMBER
- EMERGENCY VEHICLE DETECTOR
- COND CONDUIT
- PWR POWER CABLE
- LUM LUMINAIRE (1c #8)
- PB PEDESTRIAN PUSHBUTTON (2c)
- EVP EMERGENCY VEHICLE PREEMPTION
- TMC TRAFFIC MONITOR CAMERA CABLE
- VID VIDEO OR DETECTION CABLE(S)
- FO FIBER OPTIC CABLE
- GND GROUND WIRE (1c #6)
- TR TRACER WIRE (1c #10)
- PT PULL TAPE

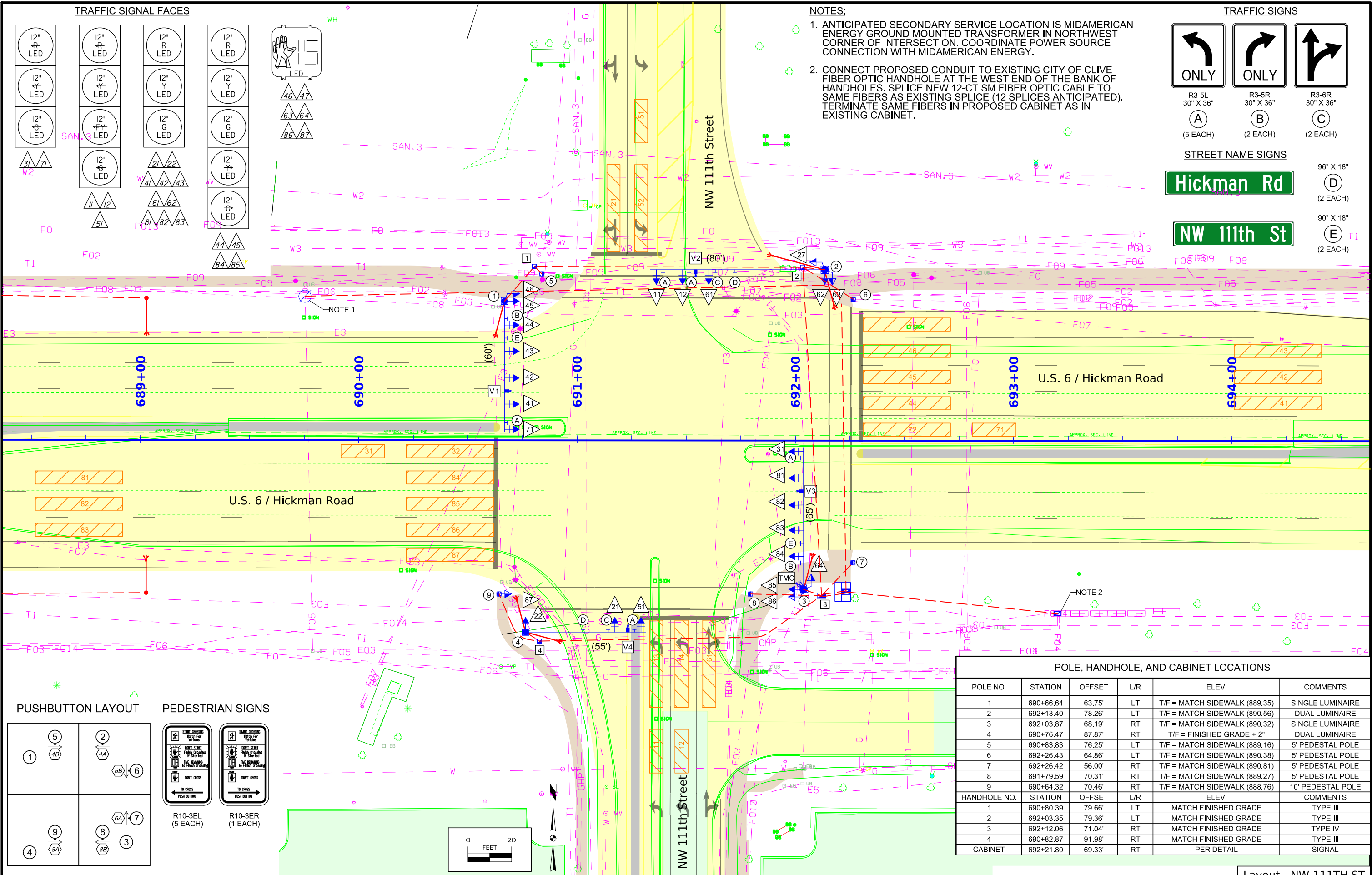


TRAFFIC PHASING SEQUENCE

Ø 2	Ø 2+6	Ø 4	Ø 4+8
	Phase 6 (NBL) green shall begin 4 seconds after phase 2 (EBT) green to allow phase 4 (WBT) traffic to clear the ramp intersection area. Phase 6 and phase 2 shall terminate together.		Phase 8 (NBR) green shall begin 2 seconds after phase 4 (WBT) green to allow phase 2 (EBT) traffic to clear the ramp intersection area. Phase 4 and phase 8 shall terminate together.

Wiring/Phasing - I-35/80 NB Ramps

FILE NO. 98765	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	Polk COUNTY	PROJECT NUMBER IM-080-3(277)125--13-77	SHEET NUMBER N.5
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- NOTES:
1. ANTICIPATED SECONDARY SERVICE LOCATION IS MIDAMERICAN ENERGY GROUND MOUNTED TRANSFORMER IN NORTHWEST CORNER OF INTERSECTION. COORDINATE POWER SOURCE CONNECTION WITH MIDAMERICAN ENERGY.
 2. CONNECT PROPOSED CONDUIT TO EXISTING CITY OF CLIVE FIBER OPTIC HANDHOLE AT THE WEST END OF THE BANK OF HANDHOLES. SPLICE NEW 12-CT SM FIBER OPTIC CABLE TO SAME FIBERS AS EXISTING SPLICE (12 SPLICES ANTICIPATED). TERMINATE SAME FIBERS IN PROPOSED CABINET AS IN EXISTING CABINET.

TRAFFIC SIGNAL FACES

TRAFFIC SIGNS

ONLY

R3-5L 30" X 36" (5 EACH)

R3-5R 30" X 36" (2 EACH)

R3-6R 30" X 36" (2 EACH)

STREET NAME SIGNS

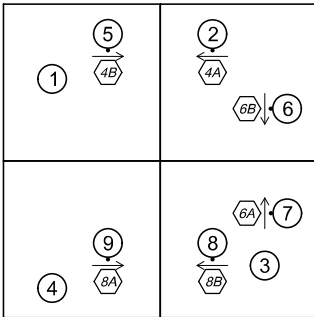
Hickman Rd

NW 111th St

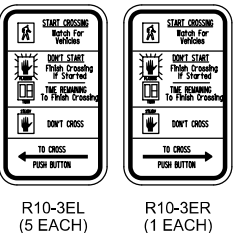
96" X 18" (2 EACH)

90" X 18" (2 EACH)

PUSHBUTTON LAYOUT



PEDESTRIAN SIGNS



POLE, HANDHOLE, AND CABINET LOCATIONS

POLE NO.	STATION	OFFSET	L/R	ELEV.	COMMENTS
1	690+66.64	63.75'	LT	T/F = MATCH SIDEWALK (889.35)	SINGLE LUMINAIRE
2	692+13.40	78.26'	LT	T/F = MATCH SIDEWALK (890.56)	DUAL LUMINAIRE
3	692+03.87	68.19'	RT	T/F = MATCH SIDEWALK (890.32)	SINGLE LUMINAIRE
4	690+76.47	87.87'	RT	T/F = FINISHED GRADE + 2"	DUAL LUMINAIRE
5	690+83.83	76.25'	LT	T/F = MATCH SIDEWALK (889.16)	5' PEDESTAL POLE
6	692+26.43	64.86'	LT	T/F = MATCH SIDEWALK (890.38)	5' PEDESTAL POLE
7	692+26.42	56.00'	RT	T/F = MATCH SIDEWALK (890.81)	5' PEDESTAL POLE
8	691+79.59	70.31'	RT	T/F = MATCH SIDEWALK (889.27)	5' PEDESTAL POLE
9	690+64.32	70.46'	RT	T/F = MATCH SIDEWALK (888.76)	10' PEDESTAL POLE
HANDHOLE NO.	STATION	OFFSET	L/R	ELEV.	COMMENTS
1	690+80.39	79.66'	LT	MATCH FINISHED GRADE	TYPE III
2	692+03.35	79.36'	LT	MATCH FINISHED GRADE	TYPE III
3	692+12.06	71.04'	RT	MATCH FINISHED GRADE	TYPE IV
4	690+82.87	91.98'	RT	MATCH FINISHED GRADE	TYPE III
CABINET	STATION	OFFSET	L/R	ELEV.	COMMENTS
	692+21.80	69.33'	RT	PER DETAIL	SIGNAL

Layout - NW 111TH ST

DETECTOR SUMMARY						
CAMERA NUMBER	DETECTION ZONE	ZONE LIMITS (DISTANCE FROM STOP LINE)	PHASE CALLED	PHASE EXTENDED	DETECTOR INPUT ASSIGNMENT	COMMENTS
V1	41	170' TO 210'	4	4	20	
	42	170' TO 210'	4	4	21	
	43	170' TO 210'	4	4	22	
	44	0' TO 40'	4	4	28	
	45	0' TO 40'	4	4	29	
	46	0' TO 40'	4	4	30	
	47	0' TO 40'	4	4	31	
	71	50' TO 70'	7	7	26	
V2	72	0' TO 40'	7	7	27	
	11	50' TO 70'	1	1,6	42	
	12	50' TO 70'	1	1,6	42	
	13	0' TO 40'	1	1,6	43	
V3	14	0' TO 40'	1	1,6	43	
	61	0' TO 40'	6	6	44	
	31	50' TO 70'	3	3	58	
	32	0' TO 40'	3	3	59	
	81	170' TO 210'	8	8	52	
	82	170' TO 210'	8	8	53	
	83	170' TO 210'	8	8	54	
	84	0' TO 40'	8	8	60	
	85	0' TO 40'	8	8	61	
	86	0' TO 40'	8	8	62	
V4	87	0' TO 40'	8	8	63	
	21	0' TO 40'	2	2	12	
	51	50' TO 70'	8	8	10	
	52	0' TO 40'	8	8	11	
4A, 4B			4			PUSHBUTTON
6A, 6B			6			PUSHBUTTON
8A, 8B			8			PUSHBUTTON

DETECTION NOTES:

1. ZONE LIMITS ARE FOR DETECTION LIMITS ONLY. ACTUAL DETECTION AREAS FOR EACH ZONE WILL BE DETERMINED IN THE FIELD.

INITIAL RECOMMENDED TIMING (SECONDS)								
PHASE	1	2	3	4	5	6	7	8
MINIMUM GREEN	7	10	7	15	7	10	7	15
PASSAGE	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
MAXIMUM I	35	35	35	60	35	45	35	60
MAXIMUM II								
YELLOW CHANGE	3.0	3.4	3.3	4.1	3.0	3.4	3.3	4.1
RED CLEARANCE	2.5	2.3	3.1	1.4	2.5	2.3	3.1	1.4
WALK				7				7
PEDESTRIAN CLEARANCE				26				23

TIMING NOTES:

1. SEE N.11 FOR INITIAL RECOMMENDED COORDINATION TIMINGS

TRAFFIC SIGNAL POLE NOTES:

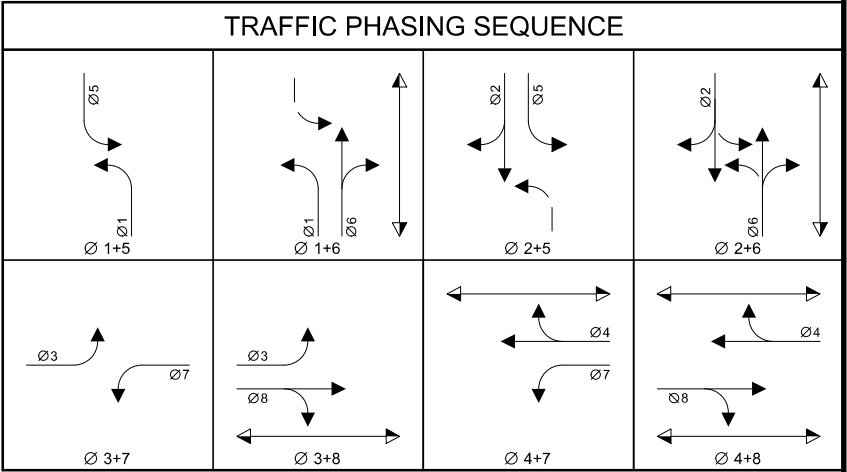
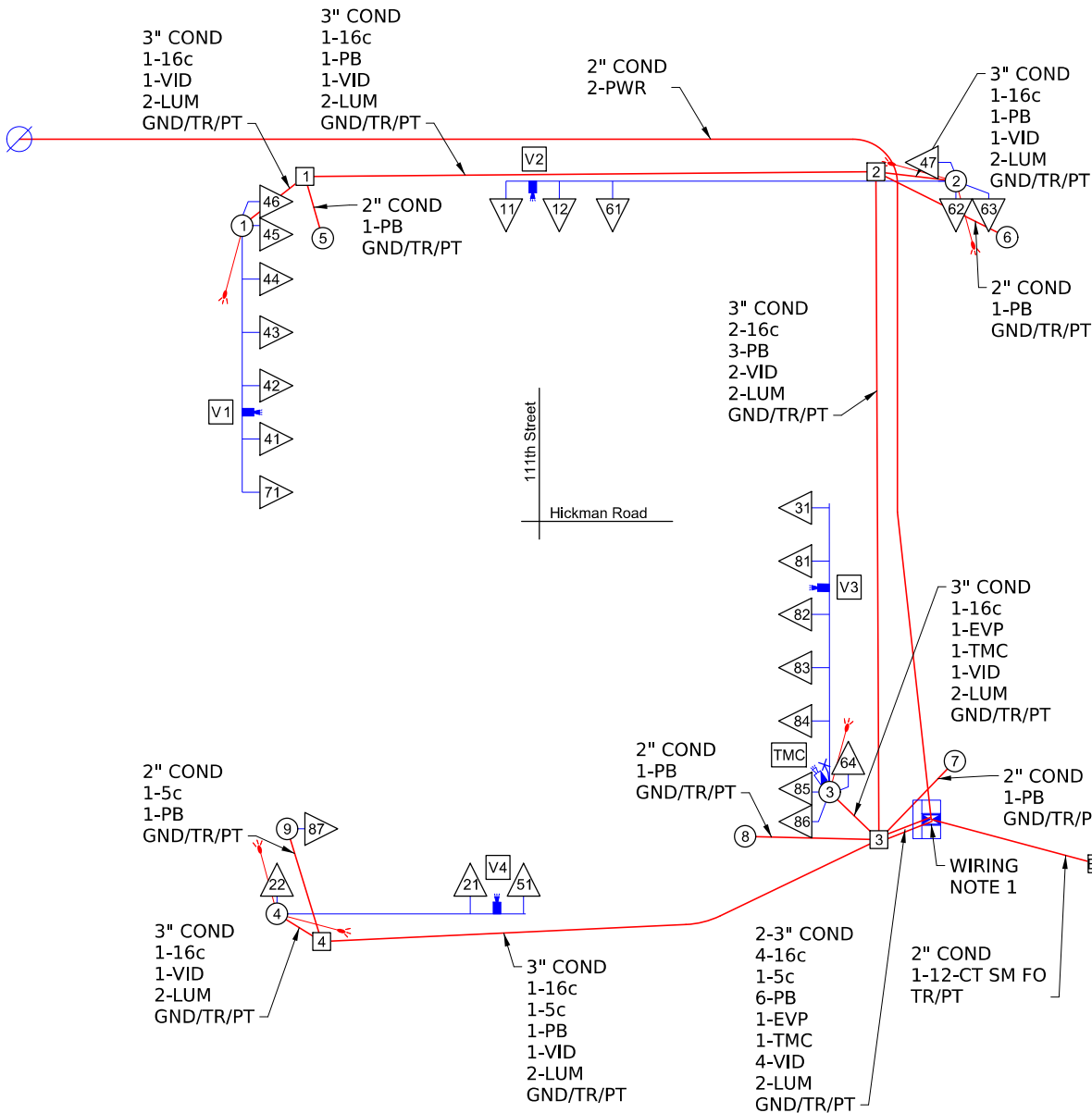
- ① LOCATION REPRESENTS APPROXIMATE LINEAR DISTANCE FROM POLE MEASURED OUTWARD TO END OF ARM.
- ② ORIENTATION OF LUMINAIRE ARM REPRESENTS A CLOCKWISE ANGLE MEASURED FROM THE CENTERLINE OF THE MAST ARM, WHEN VIEWED FROM ABOVE.
- ③ POLES SHALL BE DESIGNED PER THE PROPOSED LOADINGS WITH A ONE-PIECE VERTICAL POLE.
- ④ UNLESS OTHERWISE DIRECTED, TRAFFIC SIGNAL HEADS ON MAST ARMS ARE TO BE ALIGNED OVER THE CENTER OF INTERSECTION APPROACH LEFT TURN AND DEPARTURE THROUGH LANES. APPROXIMATE LOCATIONS ARE AS SHOWN IN THE TRAFFIC SIGNAL POLE DATA TABLE. CONTRACTOR SHALL FIELD VERIFY SIGNAL HEAD LOCATIONS.
- ⑤ TRAFFIC SIGNAL POLE FOOTINGS SHALL BE PER IOWA DOT STANDARD ROAD PLAN TS-102. WHEN ADJACENT TO SIDEWALK, THE TOP OF FOOTING SHALL BE FORMED SQUARE AND FLUSH WITH PROPOSED OR EXISTING SIDEWALK.

TRAFFIC SIGNAL POLE DATA														
POLE NO.	POLE TYPE	MAST ARM LENGTH/ PEDESTAL HEIGHT (ft.)	TRAFFIC SIGNAL ① HEADS		① TRAFFIC SIGNS		① VIDEO CAMERAS	② LUMINAIRE ARM			FOOTINGS		MISCELLANEOUS	TOTAL QUANTITY
			QTY.	LOCATION ON ARM (ft.)	QTY.	LOCATION ON ARM (ft.)	LOCATION ON ARM (ft.)	SPREAD (ft.)	MOUNTING HEIGHT (ft.)	ORIENTATION (degrees)	DIA. (ft.)	DEPTH (ft.)		
1	COMBINATION SIGNAL/LIGHTING	60	5	59,47,35,23,11	3	56,17,8	41	15	40	0	3	18	③ ④ ⑤	1
2	COMBINATION SIGNAL/DUAL LIGHTING	80	3	77,65,53	4	74,62,50,41	59	25,15	40	0,270	3.5	21	③ ④ ⑤	1
3	COMBINATION SIGNAL/LIGHTING	65	5	63,51,39,27,15	3	60,21,12	45	15	40	0	3.5	18	③ ④ ⑤	1
4	COMBINATION SIGNAL/DUAL LIGHTING	55	2	53,41	3	50,38,26	47	15,15	40	0,270	3	16	③ ④ ⑤	1
5-8	PEDESTAL	5									2	4	⑤	4
9	PEDESTAL	10									2	4	⑤	1

WIRING LEGEND	
	SIGNAL NUMBER
	POLE NUMBER
	HANDHOLE NUMBER
	EXISTING DETECTOR NUMBER
	PROPOSED DETECTOR NUMBER
	VIDEO DETECTION CAMERA
	PTZ CAMERA
	VIDEO CAMERA NUMBER
	EMERGENCY VEHICLE DETECTOR
	CONDUIT
	POWER CABLE
	LUMINAIRE (1c #8)
	PEDESTRIAN PUSHBUTTON (2c)
	EMERGENCY VEHICLE PREEMPTION
	TRAFFIC MONITOR CAMERA CABLE
	VIDEO OR DETECTION CABLE(S)
	FIBER OPTIC CABLE
	GROUND WIRE (1c #6)
	TRACER WIRE (1c #10)
	PULL TAPE

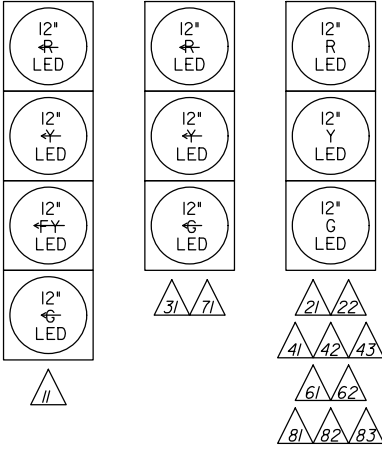
WIRING NOTES:

1. CONNECT PROPOSED CONDUIT TO EXISTING CITY OF CLIVE FIBER OPTIC HANDHOLE AT THE WEST END OF THE BANK OF HANDHOLES. SPLICE NEW 12-CT SM FIBER OPTIC CABLE TO SAME FIBERS AS EXISTING SPLICE (12 SPLICES ANTICIPATED). TERMINATE SAME FIBERS IN PROPOSED CABINET AS IN EXISTING CABINET (12 TERMINATIONS ANTICIPATED).



Wiring/Phasing - NW 111th St

TRAFFIC SIGNAL FACES



NOTES:

- 1. INSTALL TEMPORARY TRAFFIC SIGNAL PRIOR TO IMPLEMENTATION OF STAGE 2 TRAFFIC CONTROL. ANTICIPATED POLE AND CABINET LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN THE AREA PRIOR TO STARTING ANY EXCAVATION. FIELD ADJUSTMENTS TO EQUIPMENT LOCATIONS MAY BE NECESSARY.
- 2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING POWER SOURCE CONNECTION WITH MIDAMERICAN ENERGY (SCOTT YOUNG - SCOTT.YOUNG@MIDAMERICAN.COM, 515-281-2951). A NEW TRANSFORMER IS EXPECTED TO BE REQUIRED AND A SERVICE APPLICATION TO MIDAMERICAN MAY BE NECESSARY.
- 3. PROVIDE STOP BAR VEHICLE DETECTION FOR ALL LANES AND ADVANCE VEHICLE DETECTION FOR HICKMAN RD LANES. ADVANCE DETECTION ZONE LIMITS SHALL BE APPROXIMATELY 280 TO 320 FEET UPSTREAM EACH DIRECTION.
- 4. REMOVE TEMPORARY TRAFFIC SIGNAL FOLLOWING COMPLETION OF STAGE 3.

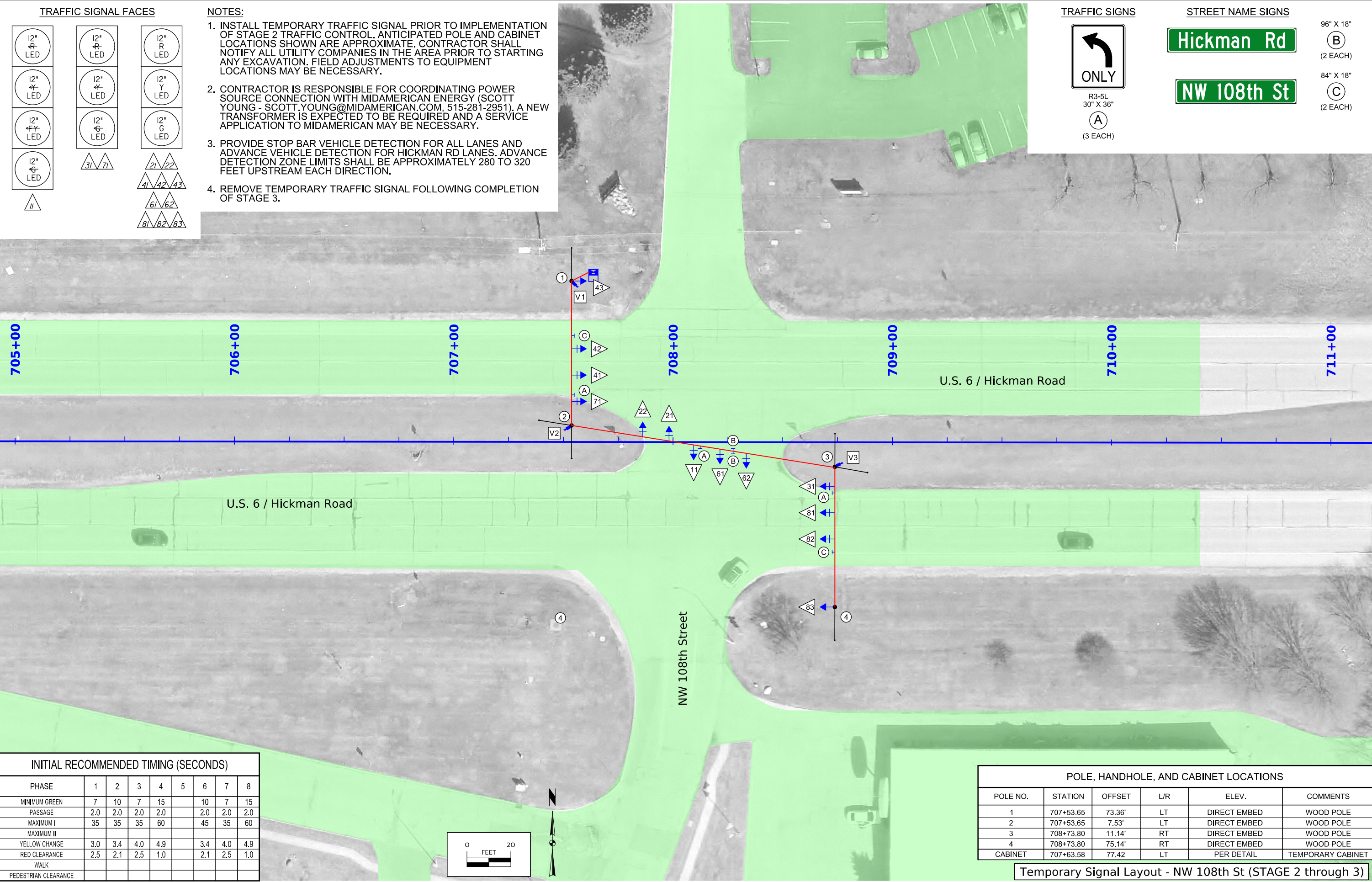
TRAFFIC SIGNS



STREET NAME SIGNS



96" X 18" (B) (2 EACH)
84" X 18" (C) (2 EACH)

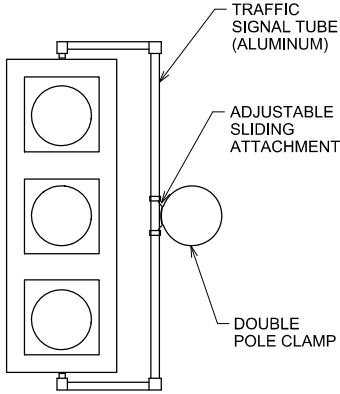


INITIAL RECOMMENDED TIMING (SECONDS)								
PHASE	1	2	3	4	5	6	7	8
MINIMUM GREEN	7	10	7	15		10	7	15
PASSAGE	2.0	2.0	2.0	2.0		2.0	2.0	2.0
MAXIMUM I	35	35	35	60		45	35	60
MAXIMUM II								
YELLOW CHANGE	3.0	3.4	4.0	4.9		3.4	4.0	4.9
RED CLEARANCE	2.5	2.1	2.5	1.0		2.1	2.5	1.0
WALK								
PEDESTRIAN CLEARANCE								

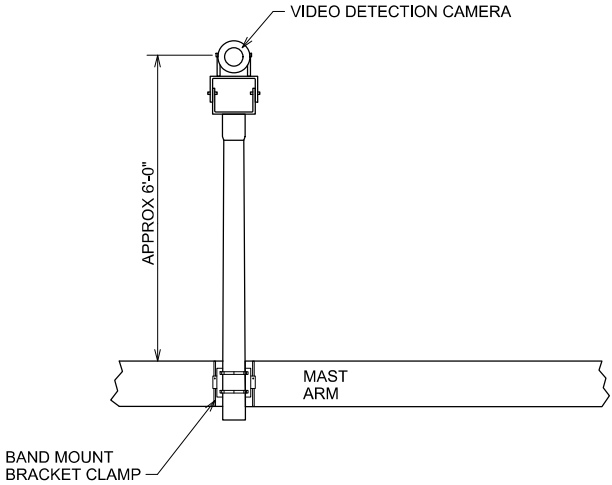
POLE, HANDHOLE, AND CABINET LOCATIONS					
POLE NO.	STATION	OFFSET	L/R	ELEV.	COMMENTS
1	707+53.65	73.36'	LT	DIRECT EMBED	WOOD POLE
2	707+53.65	7.53'	LT	DIRECT EMBED	WOOD POLE
3	708+73.80	11.14'	RT	DIRECT EMBED	WOOD POLE
4	708+73.80	75.14'	RT	DIRECT EMBED	WOOD POLE
CABINET	707+63.58	77.42	LT	PER DETAIL	TEMPORARY CABINET

Temporary Signal Layout - NW 108th St (STAGE 2 through 3)

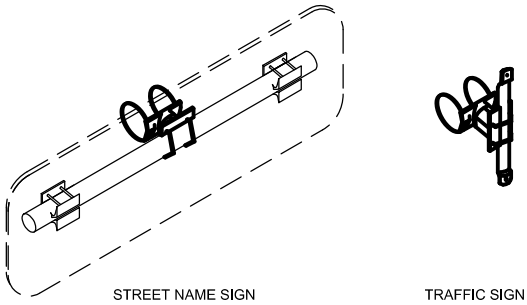
NOTE:
BRACKET SHALL PROVIDE
FOR COMPLETELY CONCEALED
WIRING OF SIGNAL HEADS.



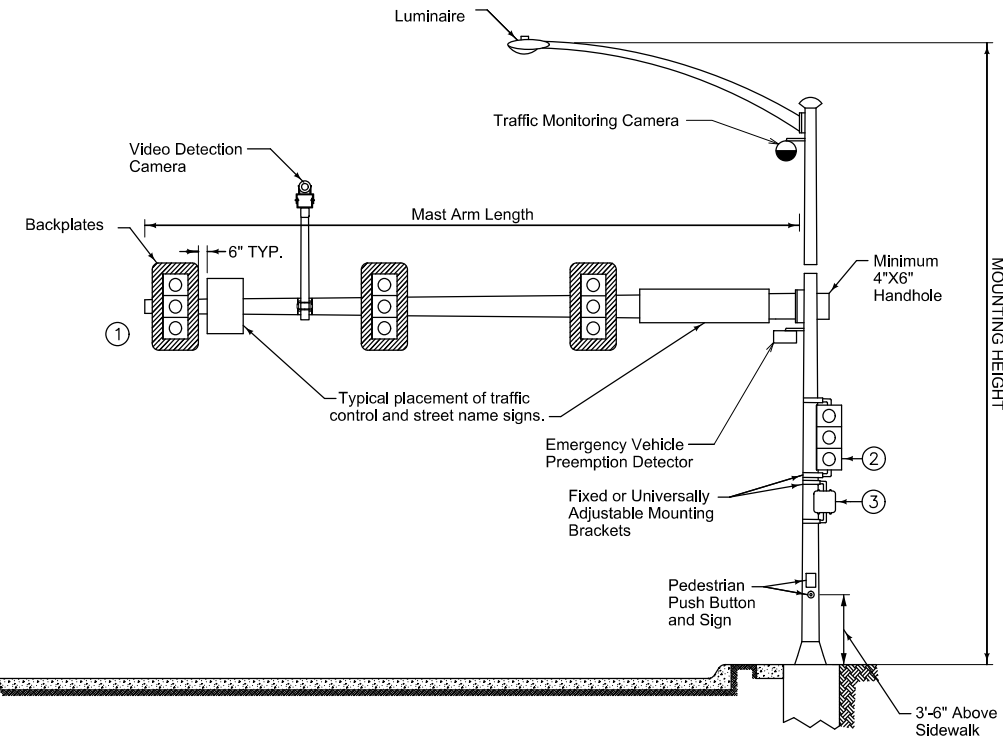
1 MAST ARM SIGNAL BRACKET
N.9 NO SCALE



2 VIDEO DETECTION CAMERA
N.9 NO SCALE

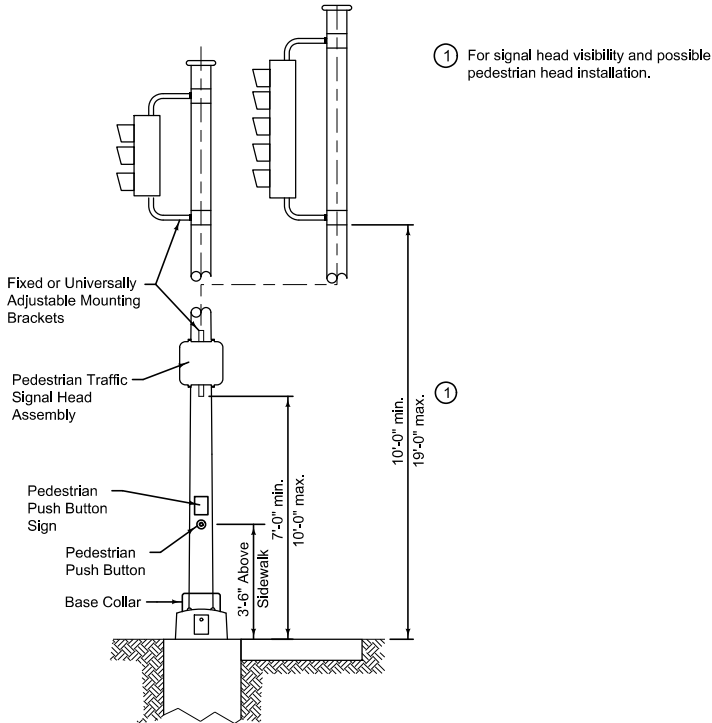


3 MAST ARM SIGN BRACKET
N.9 NO SCALE

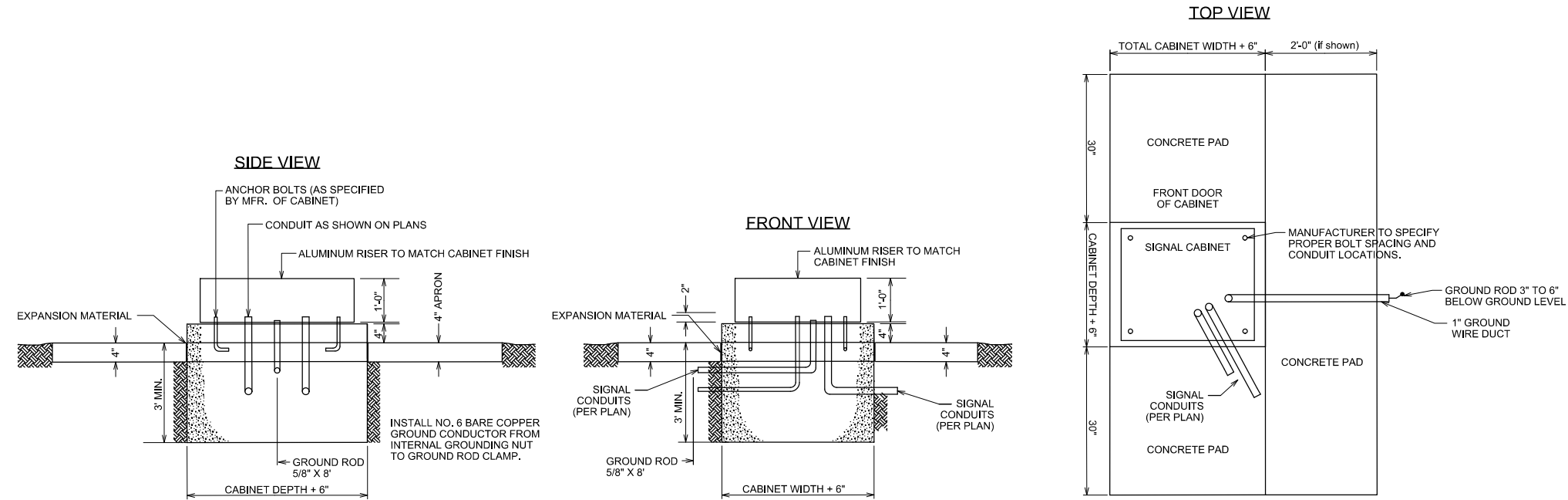


4 STEEL MAST ARM POLE
N.9 NO SCALE

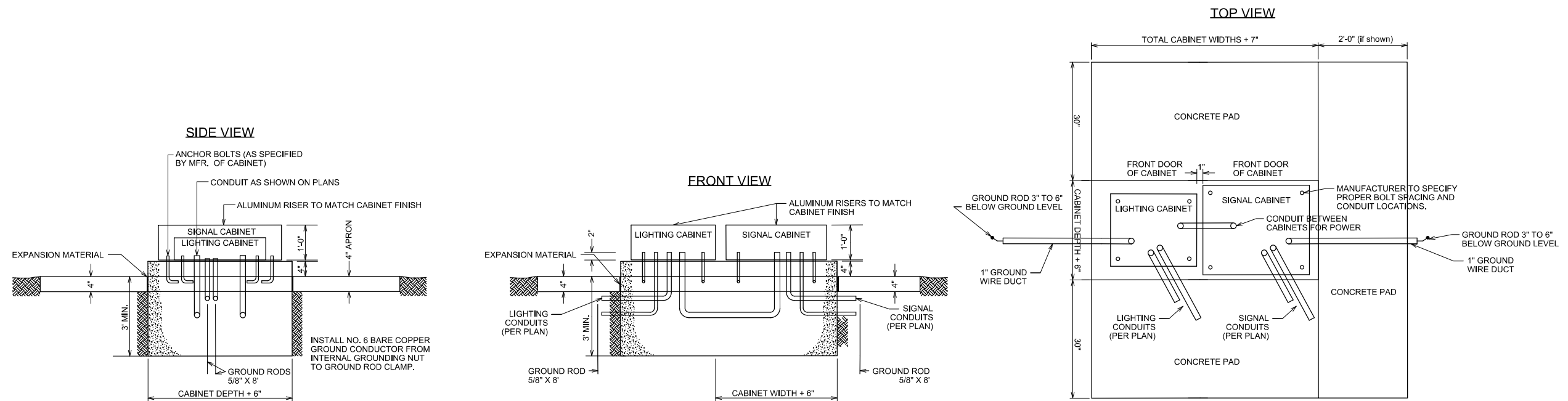
- 1 Ensure the top of the signal housing is no more than 25.6 feet above the pavement. Ensure the bottom of the signal housing and related attachments are at least 16 feet above the pavement.
- 2 Ensure the bottom of the signal housing (including brackets) that is not located over a roadway is a minimum of 8 feet and a maximum of 19 feet above the sidewalk or, if there is no sidewalk, above the pavement grade at the center of the roadway.
- 3 Mount pedestrian signal heads with the bottom of the signal housing (including brackets) no less than 7 feet or more than 10 feet above the sidewalk level. Position and adjust heads to provide maximum visibility at the beginning of the controlled crosswalk.



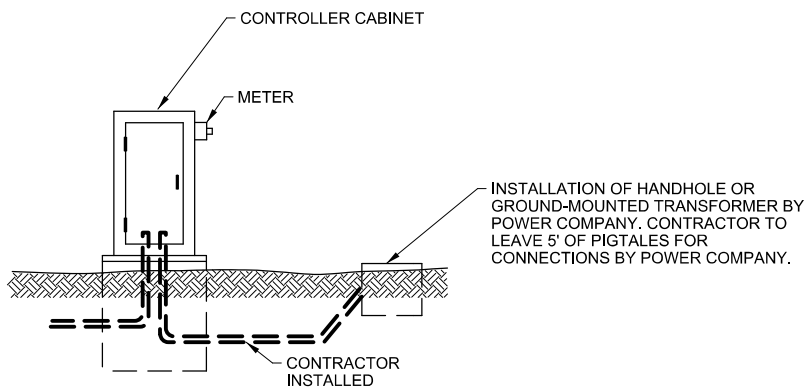
5 PEDESTAL POLE
N.9 NO SCALE



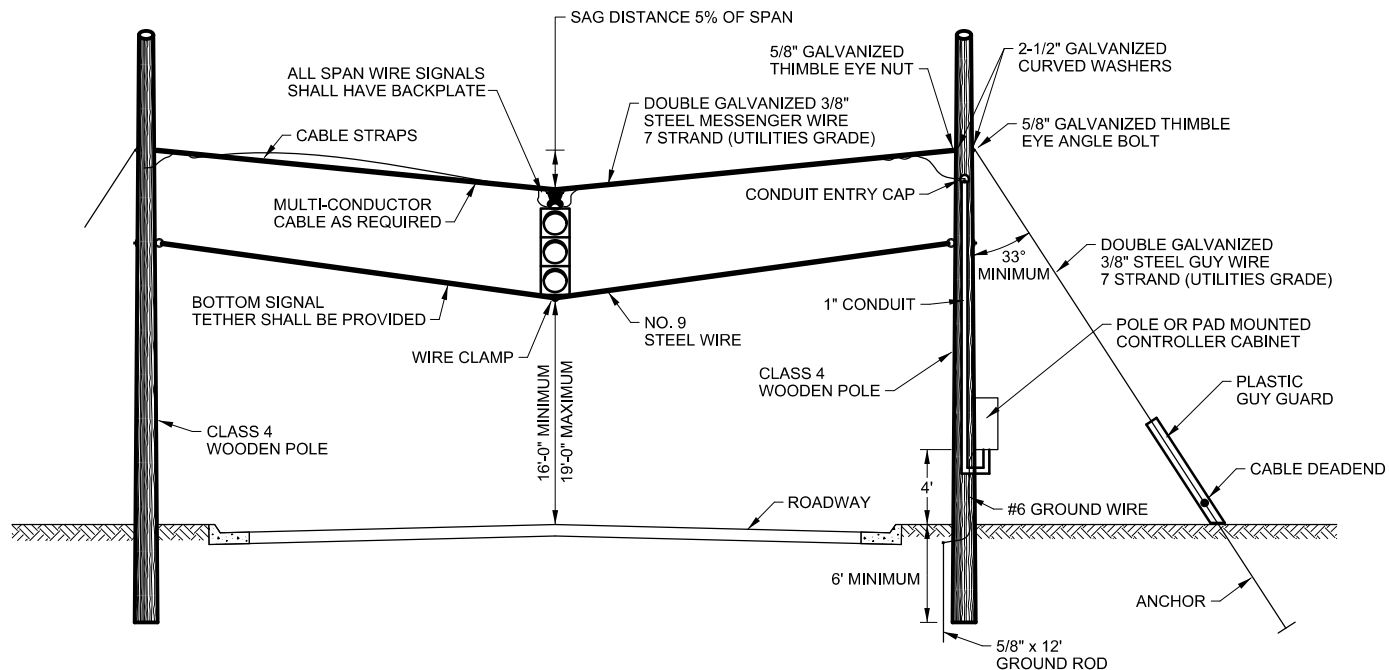
1
N.10
NO SCALE



2
N.10
NO SCALE



1 UNDERGROUND SECONDARY SERVICE
N.11 NO SCALE



2 WOOD POST SPAN ASSEMBLY
N.11 NO SCALE

Coordination Plan Data - US 6 & West Interchange Crossover

Plan 5: AM		Cycle: 120		Offset: 68		Sequence: 1	
Phase		2-EB		4-WB		6-SBR	8-SBL
Time		63		57		63	57
Mode		Coord-Max		Coord-Max Ref Phase			

Plan 2: Midday		Cycle: 110		Offset: 27		Sequence: 1	
Phase		2-EB		4-WB		6-SBR	8-SBL
Time		55		55		55	55
Mode		Coord-Max		Coord-Max Ref Phase			

Plan 3: PM		Cycle: 120		Offset: 70		Sequence: 1	
Phase		2-EB		4-WB		6-SBR	8-SBL
Time		60		60		60	60
Mode		Coord-Max		Coord-Max Ref Phase			

Plan 4: "Free"		Cycle: 60		Offset: 0		Sequence: 1	
Phase		2-EB		4-WB		6-SBR	8-SBL
Time		30		30		30	30
Mode		Coord-Max		Coord-Max Ref Phase			

Add'l Settings
Phase 6 green shall begin 3 seconds after the beginning of Phase 2 green (overlap with leading delay)
Phase 8 green shall begin 3 seconds after the beginning of Phase 4 green (overlap with leading delay)

Coordination Plan Data - US 6 & East Interchange Crossover

Plan 5: AM		Cycle: 120		Offset: 68		Sequence: 1	
Phase		2-EB		4-WB		6-NBL	8-NBR
Time		63		57		63	57
Mode		Coord-Max		Coord-Max Ref Phase			

Plan 2: Midday		Cycle: 110		Offset: 27		Sequence: 1	
Phase		2-EB		4-WB		6-NBL	8-NBR
Time		55		55		55	55
Mode		Coord-Max		Coord-Max Ref Phase			

Plan 3: PM		Cycle: 120		Offset: 70		Sequence: 1	
Phase		2-EB		4-WB		6-NBL	8-NBR
Time		60		60		60	60
Mode		Coord-Max		Coord-Max Ref Phase			

Plan 4: "Free"		Cycle: 60		Offset: 0		Sequence: 1	
Phase		2-EB		4-WB		6-NBL	8-NBR
Time		30		30		30	30
Mode		Coord-Max		Coord-Max Ref Phase			

Add'l Settings
Phase 6 green shall begin 4 seconds after the beginning of Phase 2 green (overlap with leading delay)
Phase 8 green shall begin 2 seconds after the beginning of Phase 4 green (overlap with leading delay)

Coordination Plan Data - US 6 & NW 111th St

Plan 5: AM		Cycle: 120		Offset: 25		Sequence: 9	
Phase		1-NBL	2-SB	3-EBL	4-WB	5-SBL	6-NB
Time		23	15	18	64	38	27
Mode					Coord-Max	OMIT	LAG

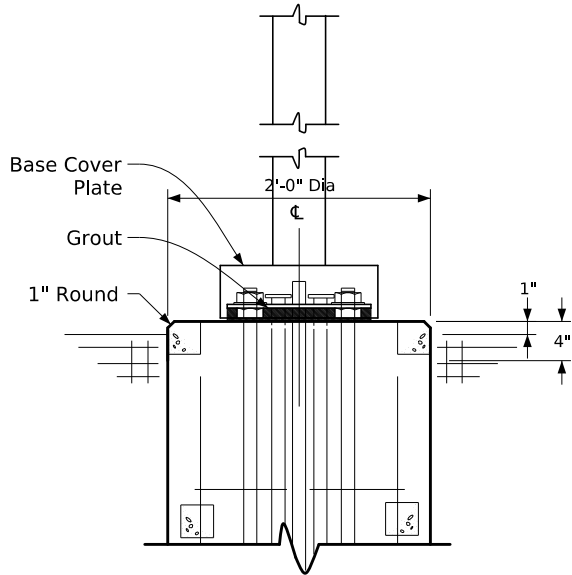
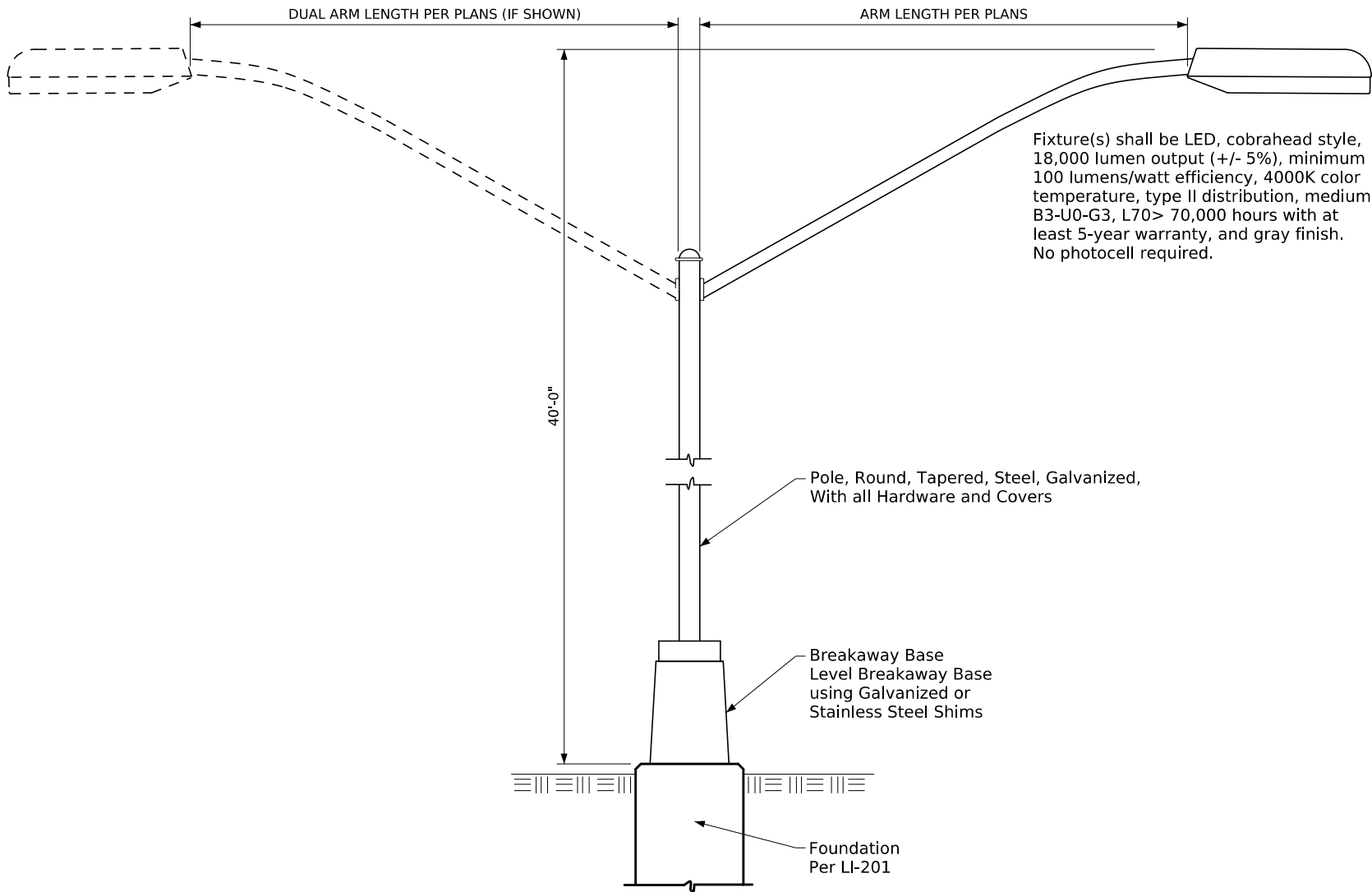
Plan 2: Midday		Cycle: 110		Offset: 88		Sequence: 9	
Phase		1-NBL	2-SB	3-EBL	4-WB	5-SBL	6-NB
Time		17	17	18	58	34	25
Mode					Coord-Max	OMIT	LAG

Plan 3: PM		Cycle: 120		Offset: 25		Sequence: 9	
Phase		1-NBL	2-SB	3-EBL	4-WB	5-SBL	6-NB
Time		20	17	18	65	37	27
Mode					Coord-Max	OMIT	LAG

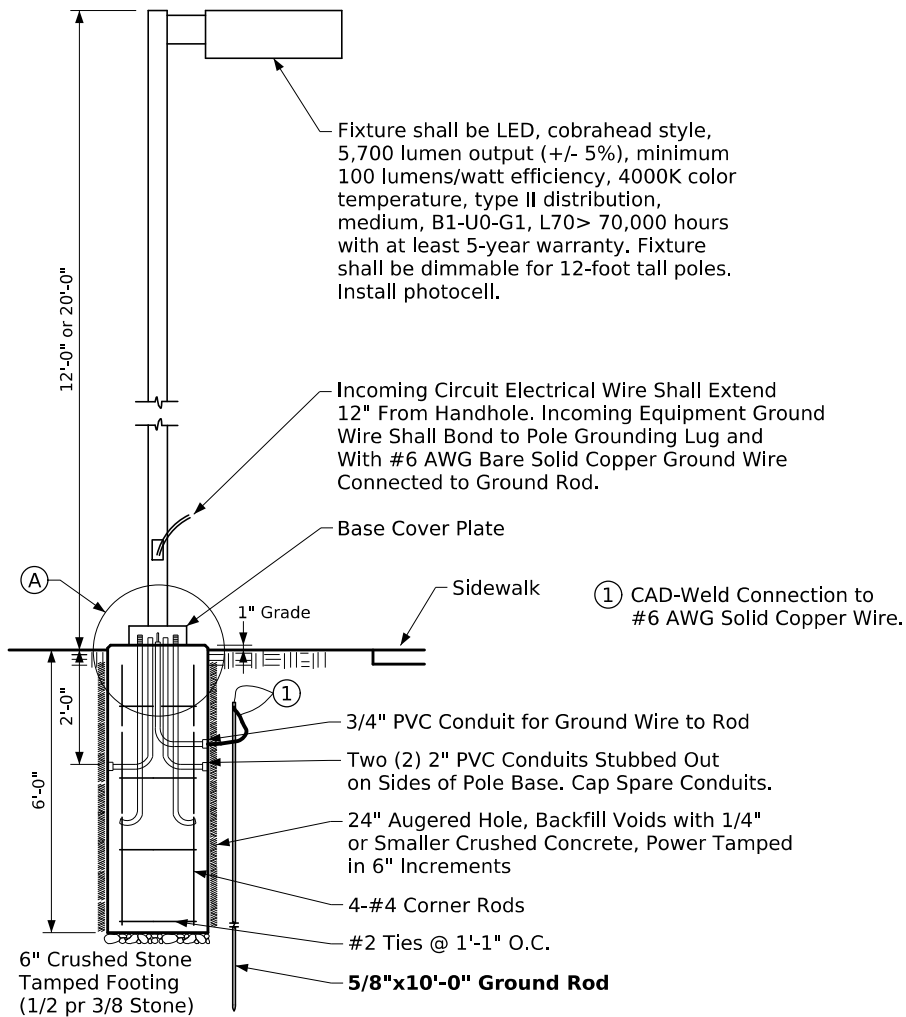
3 RECOMMENDED INITIAL COORDINATION TIMINGS
N.11 NO SCALE

LIGHTING GENERAL NOTES:

1. THE CONTRACTORS BID SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO PROVIDE A COMPLETE AND FUNCTIONAL LIGHTING INSTALLATION IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS.
2. PROVIDE TRAFFIC CONTROL DEVICES AS REQUIRED TO FACILITATE CONSTRUCTION OF STREET LIGHTING IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR THE STREETS AND HIGHWAYS, AS ADOPTED BY THE IOWA DEPARTMENT OF TRANSPORTATION PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC), CHAPTER 130.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE IOWA DOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, EXCEPT AS MODIFIED BY THE PLANS.
4. THE PLAN LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO STARTING ANY EXCAVATION ON THE PROJECT TO ESTABLISH LOCATIONS.
5. ELECTRICAL CIRCUITS ITEM INCLUDES 2-INCH HDPE CONDUIT, TWO #6 AWG CIRCUIT WIRES, GROUND WIRE, TRACER WIRE, AND PULL TAPE FOR EACH SEPARATE CIRCUIT. ELECTRICAL CIRCUITS ITEM ALSO INCLUDES ALL CONNECTORS NECESSARY TO FACILITATE LIGHTING AS SHOWN IN THESE PLANS. INSTALLATION SHALL BE PER STANDARD ROAD PLAN LI-142.
6. ALL LIGHT POLE ITEMS INCLUDE TWO #10 AWG WIRES FROM THE POLE BASE TO EACH LUMINAIRE.
7. ALL LIGHT POLE ITEMS INCLUDE THE ASSOCIATED FOUNDATION FOR EACH RESPECTIVE LIGHT POLE TYPE. NEW ROADWAY LIGHT POLE FOUNDATIONS SHALL BE PER STANDARD ROAD PLAN LI-201. TRAIL LIGHT POLE FOUNDATIONS SHALL BE PER DETAIL 2 ON SHEET P.1. NEW COMBINATION SIGNING/LIGHTING POLE FOUNDATIONS SHALL BE PER STANDARD ROAD PLAN TS-102 AND THE POLE DATA TABLE ON P.03.
8. INSTALL STRING LIGHTING WITHIN PEDESTRIAN TUNNELS. LIGHTING SHALL BE CAPABLE OF PROVIDING BETWEEN 100 TO 150 LUMENS PER FOOT WITH A 4000K COLOR TEMPERATURE. LIGHTING SHALL BE CAPABLE OF WORKING IN A DAMP ENVIRONMENT, BE VANDAL RESISTANT, AND HAVE AT LEAST A FIVE-YEAR WARRANTY. MOUNT ROPE LIGHTING TO UPPER CORNER OF TUNNEL AS SHOWN IN THE DETAILS ON P.02. CONTROL EQUIPMENT SHALL BE HOUSED IN A CABINET LOCATED OUTSIDE EACH TUNNEL. EACH SYSTEM SHALL BE DIMMABLE WITH FULL LIGHT DURING DAYS AND DIMMED TO 80% AT NIGHT. SWITCHING FROM DAY TO DARK BRIGHTNESS SHALL BE CONTROLLED BY PHOTOCELL ON CABINET. STRING LIGHTING SHALL BE SECURED TO THE TUNNEL VIA AN ALUMINUM CHANNEL AND MOUNTED TO THE CONCRETE TUNNEL THROUGH APPROVED METHODS. STRING LIGHTING SHALL BE SECURED TO THE CHANNEL WITH SILICONE. MULTIPLE STRING LIGHT SEGMENTS ARE ALLOWED. TOTAL LENGTH OF STRING LIGHTING IN TUNNEL UNDER I-35/80 IS 185 FT (TUNNEL LENGTH IS 187.5 FT). TOTAL LENGTH OF STRING LIGHTING IN TUNNEL UNDER US 6/HICKMAN RD IS 175 FT (TUNNEL LENGTH IS 177.5 FT). CABLE BETWEEN DRIVERS AND LIGHTING SHALL BE PER MANUFACTURER'S RECOMMENDATION AND SIZED FOR THE CONDITIONS. PROVIDE MANUFACTURER'S RECOMMENDED CONNECTIONS BETWEEN CABLE AND STRING LIGHTING. UTILIZE EXISTING CONDUIT PATH IN EACH TUNNEL HEADWALL TO ROUTE CABLE FROM CABINET TO STRING LIGHTING LOCATION.
9. STRING LIGHTING CONTROL CABINET SHALL BE MOUNTED ON CONCRETE FOUNDATION, LOCATED NEAR THE TUNNEL HEADWALL. CABINET SHALL HAVE A NATURAL ALUMINUM FINISH AND NEMA 3 RATED AND KEYED WITH A TRAFFIC SIGNAL #2 KEY. FOUNDATION SHALL BE PER TRAFFIC SIGNAL CABINET FOUNDATION IN DETAIL 1 ON SHEET N.10 WITH A SINGLE CONCRETE PAD IN FRONT OF THE CABINET DOOR.
10. CABLE TO SEGMENTS BEYOND THE START OF THE TUNNEL SHALL BE LOCATED WITHIN A ONE-INCH GALVANIZED STEEL CONDUIT MOUNTED ADJACENT TO THE ROPE LIGHTING CHANNEL. UTILIZE GALVANIZED STEEL JUNCTION BOXES, AS NEEDED, TO CONNECT CONDUIT TO ROPE LIGHTING CHANNEL.
11. INSTALL A TWO-INCH-BY-TWO-INCH GALVANIZED STEEL MESH, MINIMUM OF 11 GAUGE, OVER THE ROPE LIGHTING. MESH IS INTENDED TO SECURE/PROTECT ROPE LIGHTING FROM PHYSICAL DAMAGE. SECURE MESH TO CONCRETE WITH APPROVED METHOD. INSTALL MESH THE ENTIRE LENGTH OF THE ROPE LIGHTING, NO GAPS, PROTECTING JUNCTION BOXES AS WELL.
12. STREET AND TRAIL LIGHTING CONTROL CABINET SHALL PROVIDE PHOTOCELL CONTROL FOR STREET LIGHTING. TRAIL LIGHTING SHALL BE CONTROLLED BY INDIVIDUAL PHOTOCELLS WITH CONSTANT POWER TO EACH POLE AND THE STRING LIGHTING CABINETS.



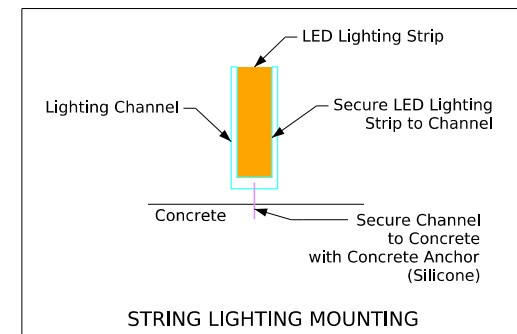
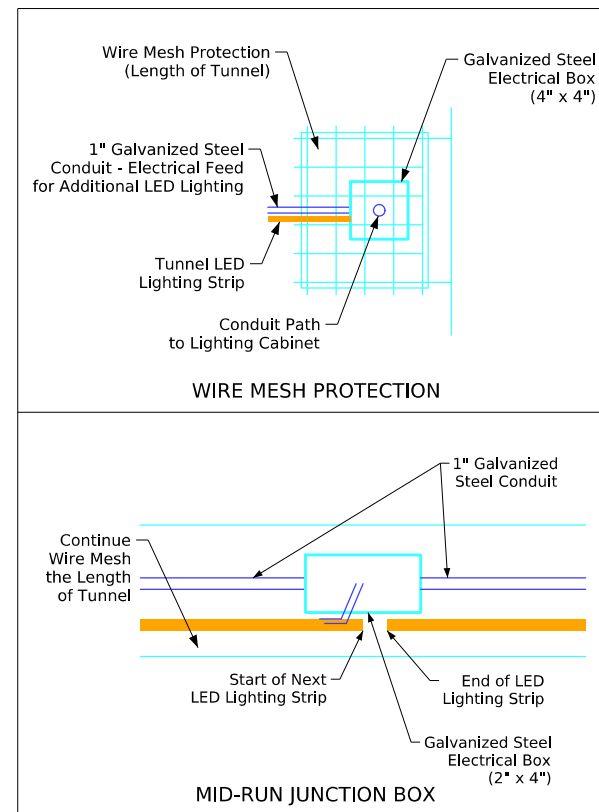
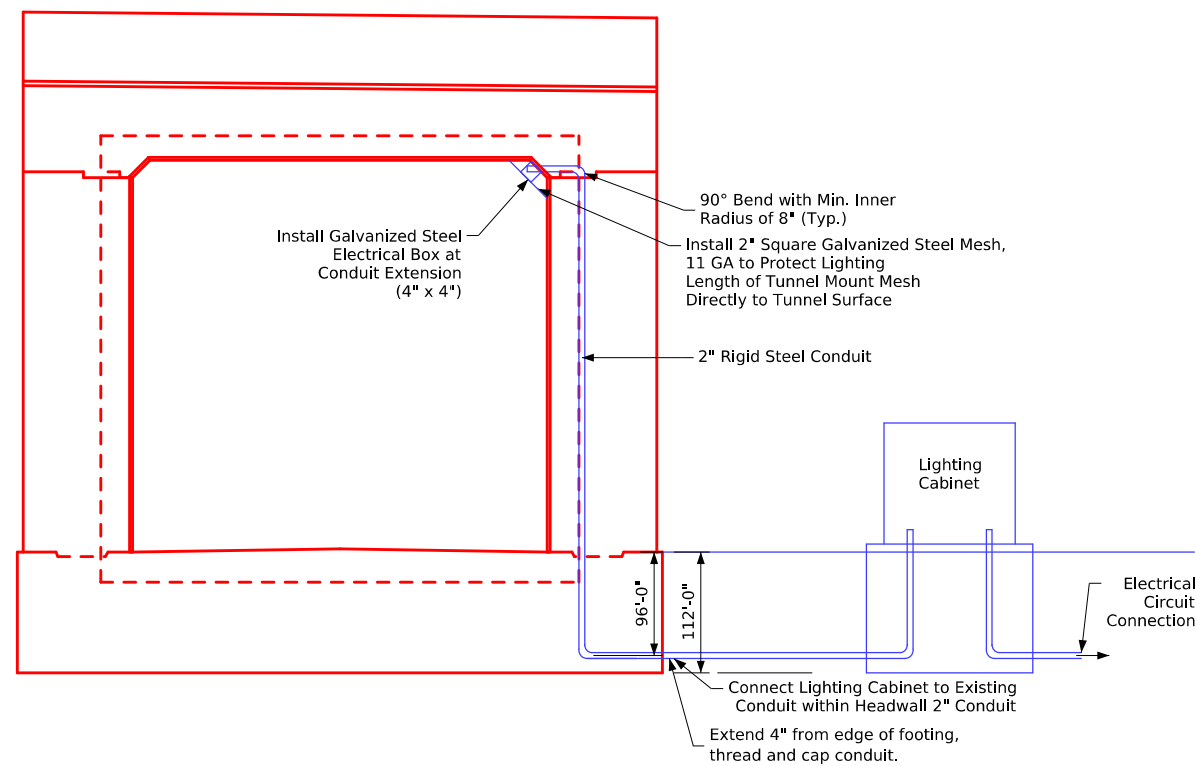
Detail A



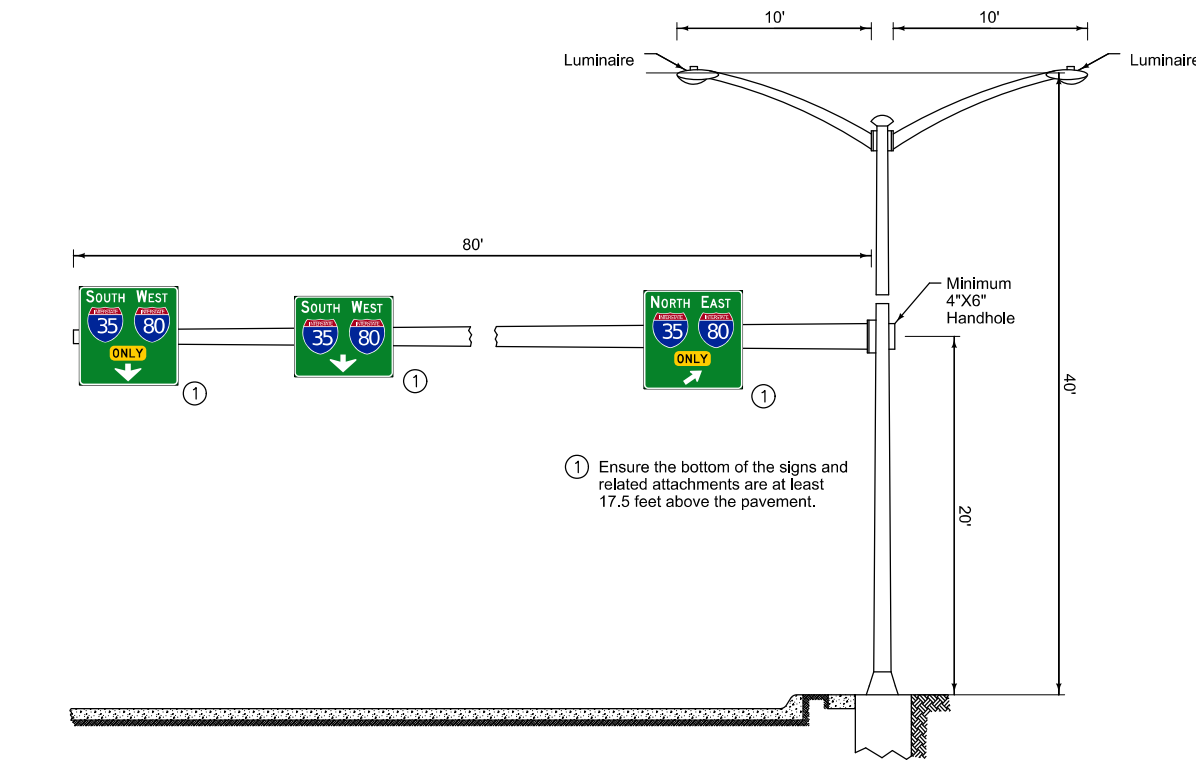
1
P.1
ROADWAY LIGHTING
NO SCALE

2
P.1
TRAIL LIGHTING
NO SCALE

Lighting Notes and Details

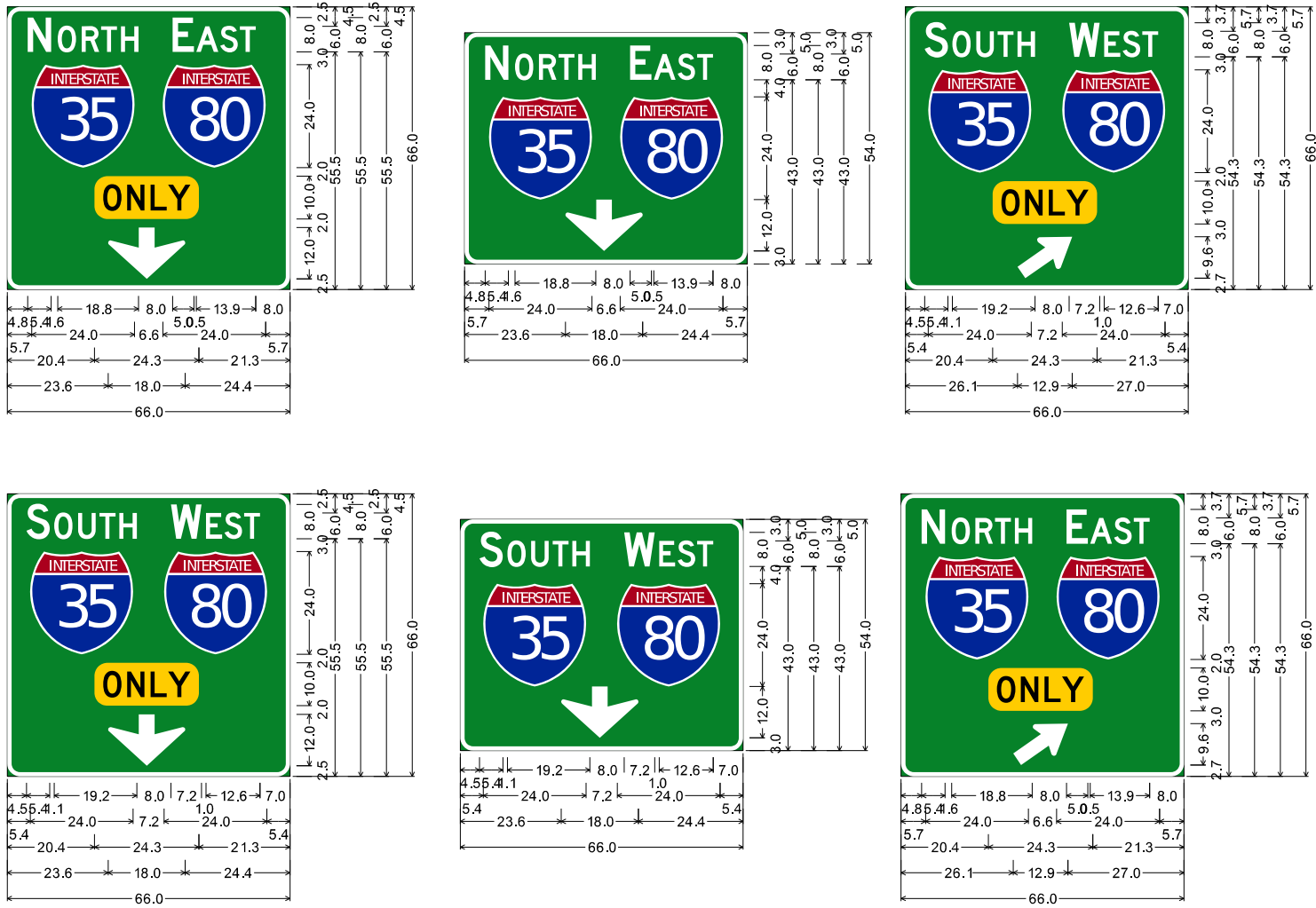


1 EASTBOUND SIGNING/LIGHTING MAST ARM (POLE S-01)
NO SCALE



2 WESTBOUND SIGNING/LIGHTING MAST ARM (POLE H-01)
NO SCALE

3 GUIDE SIGN DIMENSIONS
NO SCALE

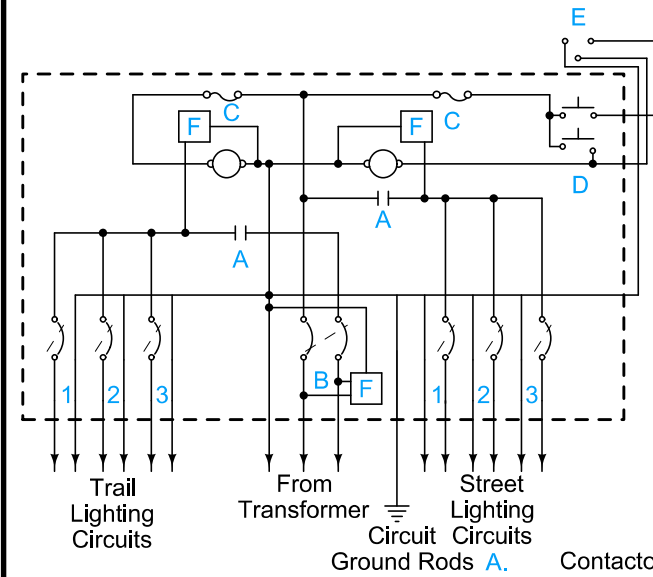


COMBINATION SIGNING/LIGHTING POLE NOTES:

- 1 LOCATION REPRESENTS APPROXIMATE LINEAR DISTANCE OF THE CENTER OF THE SIGN FROM POLE MEASURED OUTWARD TO END OF ARM.
- 2 ORIENTATION OF LUMINAIRE ARM REPRESENTS A CLOCKWISE ANGLE MEASURED FROM THE CENTERLINE OF THE MAST ARM, WHEN VIEWED FROM ABOVE.
- 3 POLES SHALL BE DESIGNED PER THE PROPOSED LOADINGS WITH A ONE-PIECE VERTICAL POLE.
- 4 UNLESS OTHERWISE DIRECTED, SIGNS ON MAST ARMS ARE TO BE ALIGNED OVER THE CENTER OF THEIR RESPECTIVE LANES. APPROXIMATE LOCATIONS ARE AS SHOWN IN THE POLE DATA TABLE. CONTRACTOR SHALL FIELD VERIFY SIGN LOCATIONS.
- 5 POLE FOOTINGS SHALL BE PER IOWA DOT STANDARD ROAD PLAN TS-102. WHEN ADJACENT TO SIDEWALK, THE TOP OF FOOTING SHALL BE FORMED SQUARE AND FLUSH WITH PROPOSED OR EXISTING SIDEWALK.

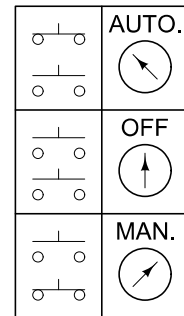
COMBINATION SIGNING/LIGHTING MAST ARM POLE DATA											
POLE NO.	POLE TYPE	MAST ARM LENGTH (ft.)	1 SIGNS		2 LUMINAIRE ARM			FOOTINGS		MISCELLANEOUS	TOTAL QUANTITY
			QTY.	LOCATION ON ARM (ft.)	SPREAD (ft.)	MOUNTING HEIGHT (ft.)	ORIENTATION (degrees)	DIA. (ft.)	DEPTH (ft.)		
H-01	COMBINATION SIGN/DUAL LIGHTING	80	3	73,59,17	10,10	40,40	0,180	3.5	21	3 4 5	1
S-01	COMBINATION SIGN/LIGHTING	80	3	74,60,19	15	40	0	3.5	21	3 4 6	1

4 COMBINATION SIGNING/LIGHTING POLE DATA TABLE
NO SCALE

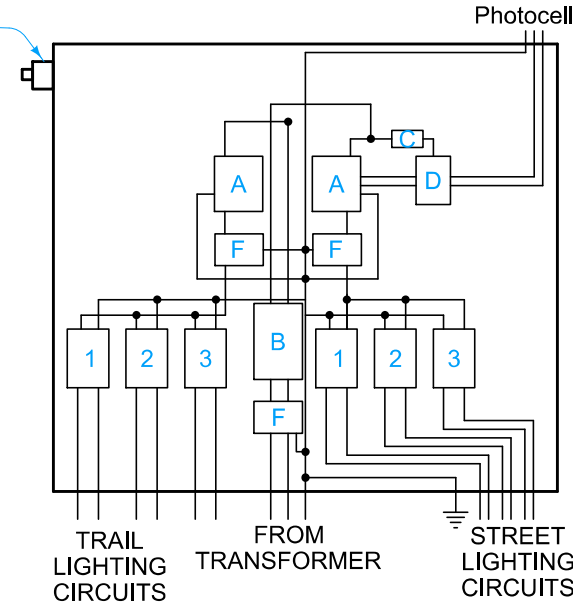


SCHEMATIC DIAGRAM

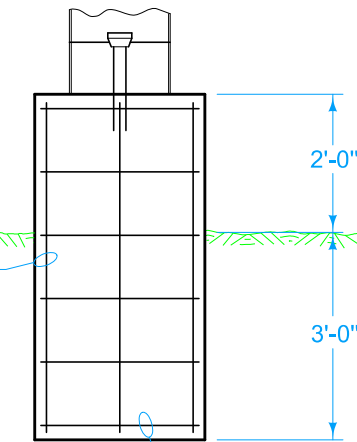
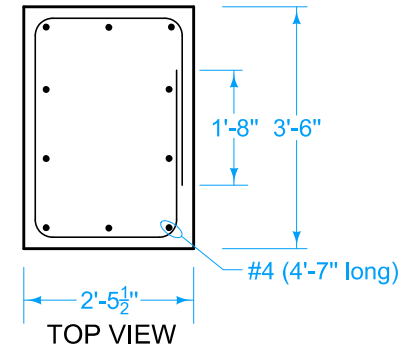
WATTHOUR METER
AS REQUIRED



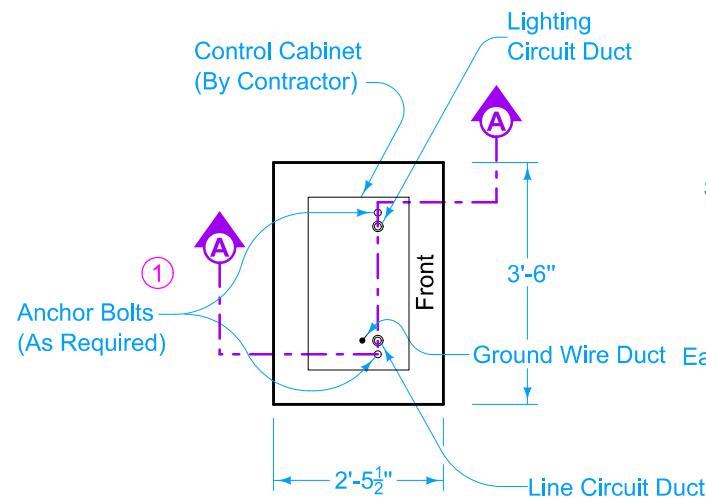
SWITCH
OPERATION



CONTROL PANEL WIRING DIAGRAM

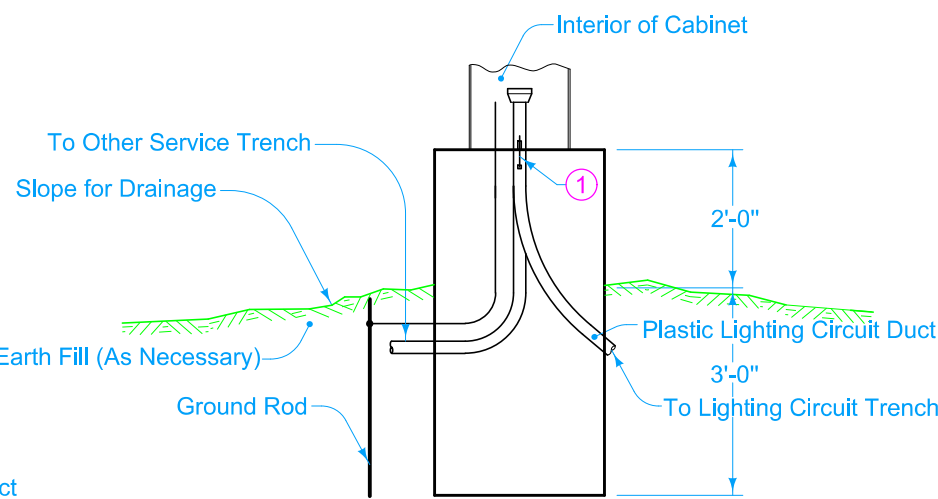


SIDE VIEW
CONTROLLER PAD



PLAN VIEW

INSTALLATION DETAILS



SECTION A-A

ESTIMATED QUANTITIES (One Pad)	
Reinforcing Steel	79.5 lbs.
Structural Concrete	1.6 yd ³

LAYOUT LEGEND	
Control Cabinet (Pad-Mounted)	

Alternate design may be submitted to the Engineer for approval.

All circuit ducts shown, including ground wire duct, are included in the estimated quantities for plastic conduit contained in the tabulations.

The estimated quantities for wire and cable contained in the tabulations include connections to the loadside terminals of the branch circuit breakers.

The No. 12, AWG grounding jumper for the photoelectric control is incidental to the length of ground wire.

① 1/2" x 4" long Bolts (2 required)

Possible Contract Item:
Control Cabinet

