



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
C Sheets	Quantities and General Information
C.1	Estimated Project Quantities and Reference Notes
C.2	Project Description
C.3	Standard Road Plans
C.4	Index of Tabulations
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
N Sheets	Traffic Signal Sheets
N.1	Traffic Signal General Notes
N.2	Traffic Signal Quantities
N.3	Traffic Signal Layout
N.4	Traffic Signal Wiring
N.5	Traffic Signal Detection
N.6	Traffic Signal Details

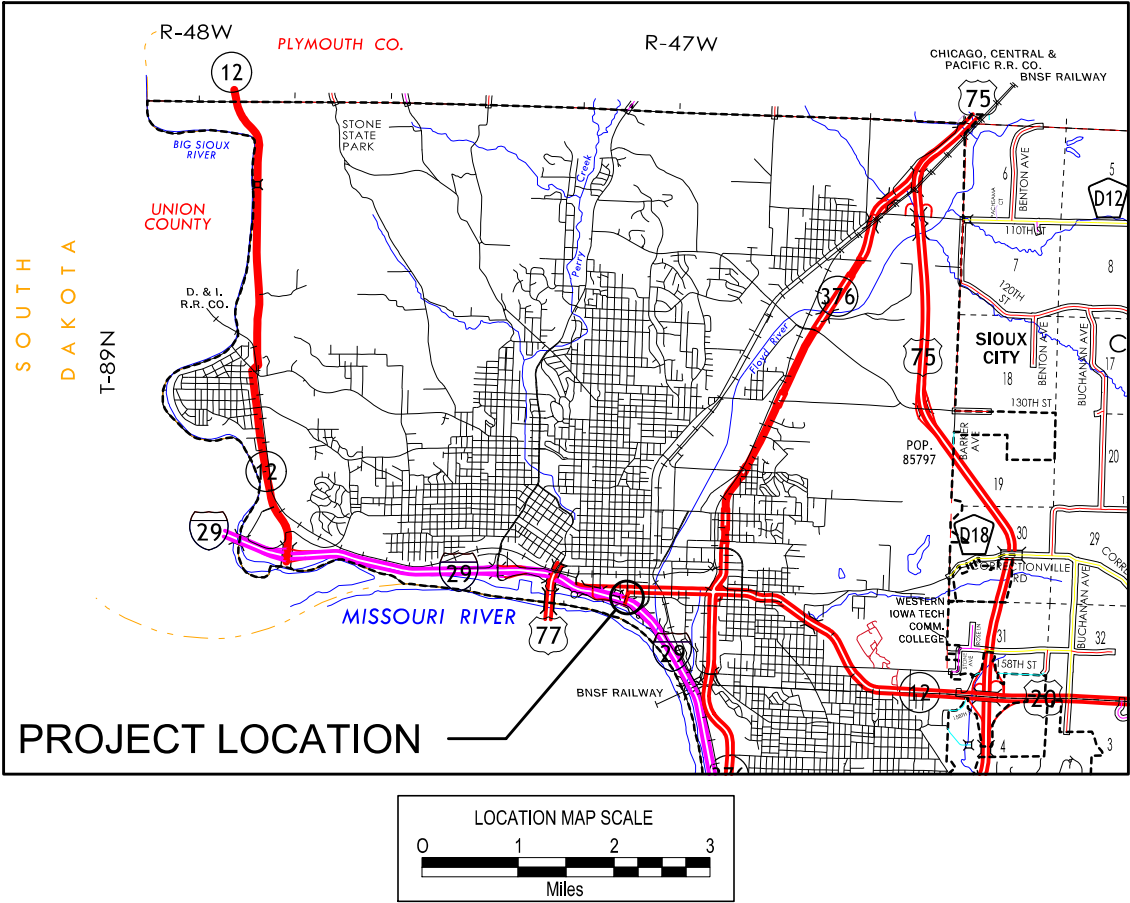


PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
WOODBURY COUNTY
TRAFFIC SIGNALS
Frontage Rd and IA 12/S Virginia St Intersection in Sioux City

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS	
	TOTAL
	12
PROJECT IDENTIFICATION NUMBER	
26-97-029-030	
PROJECT NUMBER	
IMN-029-6(330)148--0E-97	
R.O.W. PROJECT NUMBER	

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.

Casey Dix 8/3/2026

CASEY DIX, P.E. DATE

License Number: 25048

My license renewal date is December 31, 2027.

Pages or sheets covered by this seal:

ALL SHEETS

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Traffic Signal Items : Traffic Signal Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Traffic Signal Items	
1	2525-0000100	TRAFFIC SIGNALIZATION	LS	1	Traffic Signalization A. Refer to N Sheets for Traffic Signalization information. B. All items necessary for the new operational traffic signal are incidental to this item.
2	2525-0000120	REMOVAL OF TRAFFIC SIGNALIZATION	LS	1	A. Refer to the N Sheets for location and details.
3	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1	A. Refer to N Sheets for additional information. B. This lump sum item pertains to the special attention required to properly position the proposed traffic signal equipment.
4	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan on sheet J.1
5	2533-4980005	MOBILIZATION	LS	1	--

PROJECT DESCRIPTION		100_01D 8/15/22
This project will include the installation of additional supplemental signal heads and lane usage signage at intersection of northbound I-29 Frontage Road and IA 12/S Virginia Street in Sioux City, Iowa.		

105_04 10/20/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-18-23	Work Within 15 ft of Traveled Way
TC-402	04-18-23	Work Within 15 ft of Traveled Way
TC-419	04-18-23	Lane Closure on Undivided Highway

INDEX OF TABULATIONS				111_25 10/20/26
Line No.	Tabulation	Tabulation Title	Sheet No.	
1.0	100_01D	PROJECT DESCRIPTION	C.2	
2.0	105_04	STANDARD ROAD PLANS	C.3	
3.0	111_25	INDEX OF TABULATIONS	C.4	
4.0	108_23A	TRAFFIC CONTROL PLAN	J.1	

108_23A
8/15/22

TRAFFIC CONTROL PLAN

Traffic control on this project shall be in accordance with the Standard Road Plans shown in Tabulation 105-4. For additional information, refer to Part 6 of Manual on Uniform Traffic Control Devices and the current Standard Specifications.

TRAFFIC SIGNAL GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST 48 HOURS IN ADVANCE OF THE ACTUAL STARTING DATE OF CONSTRUCTION. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS TO UTILIZE THE FOLLOWING TELEPHONE NUMBER, 1-800-292-8989, WHEN REQUESTING LOCATIONS AS WELL AS NOTIFYING THE CITY UTILITY DEPARTMENT AND OTHERS AS NECESSARY.
2. THE LOCATIONS OF ALL FOOTINGS, HANDHOLES AND CONDUIT ARE TO BE COORDINATED WITH THE ENGINEER AND ARE SUBJECT TO ADJUSTMENT IN THE FIELD BY THE ENGINEER.
3. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH SHOP DRAWINGS/CATALOG CUTS OF TRAFFIC SIGNAL ITEMS FOR APPROVAL PRIOR TO INSTALLATION.
4. ALL ELECTRICAL CONNECTORS, GROUND CONDUCTORS, GROUND RODS AND OTHER MISCELLANEOUS MATERIALS WHICH ARE NOT LISTED ON THE ESTIMATE OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL TO THE TRAFFIC SIGNAL BID ITEM.
5. THE CONTRACTOR SHALL INSTALL ONE SIGNAL CABLE FROM EACH SIGNAL HEAD TO THE BASE OF THE POLE. A FIVE CONDUCTOR CABLE SHALL BE UTILIZED IN THE POLES FOR THREE SECTION SIGNAL HEADS AND ONE SEVEN CONDUCTOR CABLE SHALL BE UTILIZED FOR FOUR OR FIVE SECTION SIGNAL HEADS.
6. THE CONTRACTOR SHALL DELIVER ALL SALVAGED SIGNAL EQUIPMENT TO THE SIOUX CITY SIGNAL SHOP.
7. LINEAR MEASUREMENTS ARE TAKEN BETWEEN POLE BASE AND PULL BOX CENTERS AND DO NOT INCLUDE ALLOWANCES FOR MAST ARM LENGTHS, VERTICAL RISE OR SPLICES. THIS ADDITIONAL CABLE SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM TRAFFIC SIGNAL BID ITEM. THE NORTHERN AND EASTING ARE TO THE CENTER OF THE ITEM UNLESS OTHERWISE NOTED.
8. ALL CONDUIT UNDER PAVEMENT SHALL BE GALVANIZED RIGID STEEL. ALL OTHER CONDUIT SHALL BE SCHEDULE 80 PVC OR HDPE SDR 13.5.
9. ALL QUANTITIES SHOWN IN THE TRAFFIC SIGNAL PLANS AND SPECIFICATIONS ARE FOR INFORMATION AND ESTIMATING PURPOSES ONLY. THE CONTRACTOR'S LUMP SUM BID FOR THIS PROJECT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO PROVIDE A COMPLETE AND FUNCTIONAL TRAFFIC SIGNAL.
10. ALL CONDUIT ELBOWS SHALL BE LONG RADIUS TYPE - 36" MINIMUM.
11. ALL MAST ARM MOUNTED VEHICLE SIGNAL HEADS SHALL HAVE HIGH VISIBILITY BACKPLATES, CONSISTING OF YELLOW RETROREFLECTIVE BORDERS.
12. A #6 A.W.G. BARE COPPER GROUND WIRE SHALL BE INSTALLED IN ALL CONDUITS THAT CARRY 120 VOLT SIGNAL CABLES. ALL STEEL CONDUITS, POLES, PEDESTALS AND THE CONTROLLER CABINET SHALL BE BONDED TO FORM A CONTINUOUS SYSTEM AND BE EFFECTIVELY GROUNDED. BONDING JUMPERS SHALL BE #6 A.W.G. COPPER GROUND WIRE CONNECTED BY APPROVED CADWELD CONNECTORS. ALL OTHER TRAFFIC SIGNAL WIRING IS #14 A.W.G. UNLESS OTHERWISE NOTED.
13. ALL MAST ARM MOUNTED SIGNAL HEADS, TRAFFIC SIGNS AND STREET NAME SIGNS SHALL BE MOUNTED USING A UNIVERSALLY ADJUSTABLE MOUNTING BRACKET.
14. THE FINISH OF ALL NEW SIGNAL POLES, LUMINAIRE ARMS AND TRANSFORMER BASES ARE TO BE BLACK PER THE TRAFFIC SIGNAL SPECIAL PROVISIONS.
15. NO SPICING OF CABLES IN UNDERGROUND HANDHOLES.

SIGNAL LEGEND

PROPOSED

- 
- PEDESTAL POLE, FOOTING SYMBOL, AND IDENTIFYING NUMBER
- 
- TRAFFIC SIGNAL HEAD WITH BACKPLATE SYMBOL AND IDENTIFYING NUMBER
- 
- TRAFFIC SIGNAL HEAD SYMBOL AND IDENTIFYING NUMBER
- 
- PEDESTRIAN HEAD SYMBOL AND IDENTIFYING NUMBER
- 
- MAST ARM MOUNTED SIGN SYMBOL AND IDENTIFYING NUMBER
- 
- DETECTION AREA SYMBOL AND IDENTIFYING NUMBER
- 
- 24" HANDHOLE SYMBOL AND IDENTIFYING NUMBER – TYPE I
- 
- "TUB" HANDHOLE SYMBOL AND IDENTIFYING NUMBER – TYPE III OR IV
- 
- TRENCHED SIGNAL CONDUIT
- 
- PUSHED SIGNAL CONDUIT

EXISTING

- 
- POWER SOURCE
- 
- CABINET AND CONTROLLER
- 
- TRAFFIC SIGNAL POLE, FOOTING SYMBOL, AND IDENTIFYING NUMBER
- 
- LUMINAIRE
- 
- TRAFFIC SIGNAL HEAD WITH BACKPLATE SYMBOL AND IDENTIFYING NUMBER
- 
- TRAFFIC SIGNAL HEAD SYMBOL AND IDENTIFYING NUMBER
- 
- PEDESTRIAN SIGNAL HEAD SYMBOL AND IDENTIFYING NUMBER
- 
- MAST ARM MOUNTED SIGN SYMBOL AND IDENTIFYING NUMBER
- 
- DETECTOR AREA SYMBOL AND IDENTIFYING NUMBER
- 
- 24" HANDHOLE SYMBOL AND IDENTIFYING NUMBER – TYPE I
- 
- "TUB" HANDHOLE SYMBOL AND IDENTIFYING NUMBER – TYPE III OR IV
- 
- TRENCHED SIGNAL CONDUIT
- 
- PUSHED SIGNAL CONDUIT

CONDUIT QUANTITIES
I-29 and Virginia St

From	To	Trenched, PVC (Feet)	Pushed, RMC (Feet)
		2" Dia.	3" Dia.
Handhole 2	Pedestal Pole 6	5	
Handhole 1	Handhole 6		160
Handhole 6	Pedestal Pole 7	5	
Handhole 6	Handhole 7		110
Handhole 7	Pedestal Pole 8	5	
Total		15	270

Traffic Signal Special Equipment To Be Used
I-29 and Virginia St

Equipment	Manufacturer/Style
Poles and Bases	Pelco
Signal Heads	Econolite
Push Button Stations	APS

TRAFFIC SIGNAL HEAD QUANTITIES
I-29 and Virginia St

Pole No.	Signal Head Number(s)	3-Sect 12" RYG	Hand/Man Countdown Ped Head	Back Plate	Mounting	
					OH	Side
4	61,64,83B	3		3	1	2
6	83A,88,89	1	2	1	0	3
7	65, 83C	2		2	0	2
8	66	1		1	0	1
Totals		7	2	7	1	8

NOTES:
Plan Length: Center to Center length between objects.
Adjusted Length: Plan length with additional slack length.

BASE AND HANDHOLE QUANTITIES
I-29 and Virginia St

Signal Pole No.	Location (X,Y)		Footing Size	Comments
Pedestal Pole 6	14077954.27	8587597.83	2.0' x 4.0' Deep	14' Pedestal Pole
Pedestal Pole 7	14077935.7	8587535.38	2.0' x 4.0' Deep	14' Pedestal Pole
Pedestal Pole 8	14077934.56	8587531.71	2.0' x 4.0' Deep	10' Pedestal Pole
Handhole No.	Location (X,Y)		Handhole Size	Comments
Handhole 1	UAC	UAC	-	EX Type 4 Handhole (TRAFFIC)
Handhole 2	UAC	UAC	-	EX Type 4 Handhole (TRAFFIC)
Handhole 6	14077936.87	8587538.79	-	Type 1 Handhole (TRAFFIC)
Handhole 7	14077935.55	8587534.91	-	Type 1 Handhole (TRAFFIC)
Cabinet No.	Location		Footing Size	Comments
Proposed Cabinet	UAC	UAC	See Details	w/ Attached Meter

SIGNAGE QUANTITIES
I-29 and Virginia St

Legend Letter	"A"	"B"	"C"	"D"	"E"
Sign Type	R3-2	R3-1	R3-5a	R10-3e (Modified)	R6-1L
Size	36"x36"	36"x36"	30" X 36"	9" X 15"	36" X 18"
Signal Pole 4	1*	1*	3*		1*
Pedestal Pole 6				1	
Pedestal Pole 7		1			
Pedestal Pole 8	1				
Totals	1	1	0	1	0

* Existing signage on mast arm

Traffic Signal Quantities -
Virginia St and NB
Frontage Rd

TRAFFIC DESIGN NOTES

- 1

REMOVE PEDESTRIAN POLE AND REPLACE WITH 14' SIGNAL POLE ON EXISTING FOUNDATION. REINSTALL PEDESTRIAN SIGNAL HEADS, PUSHBUTTONS, AND SIGNS.
- 2

RELOCATE EXISTING R3-2 SIGN TO LEFT OF TRAFFIC SIGNAL. TRAFFIC SIGNAL MAY NEED TO BE SHIFTED TO ACCOMMODATE SIGN AT END OF MAST ARM.
- 3

REMOVE EXISTING DUAL THRU LANE SIGN FROM MAST ARM, REPLACE WITH R3-5a.
4.

UNDERGROUND UTILITIES SHALL BE VERIFIED BY THE FIELD ENGINEER TO AVOID CONFLICTS PRIOR TO INSTALLATION OF SIGNAL POLES AND CONDUITS.

TRAFFIC SIGNAL FACES

12" R

12" Y

12" G

21

NO. 88,89
(2-REQ'D)

NO.61,64,65,
66,83A,83B,83C
(7-REQ'D)

ALL SIGNAL FACES SHALL BE LED
AND WITH RETROREFLECTIVE YELLOW
BACKPLATES

TRAFFIC SIGNS

A

R3-2
36" x 36"
(2-REQ'D)

B

R3-1
36" x 36"
(2-REQ'D)

C

ONLY

R3-5a
30" x 36"
(3-REQ'D)

D

START CROSSING
Watch For
Vehicles

DON'T START
Finish Crossing
If Stopped
TIME REMAINING
To Finish Crossing

DON'T CROSS
PUSH BUTTON
TO CROSS

R10-3e (Modified)
9" x 15"
(1-REQ'D)

E

ONE WAY

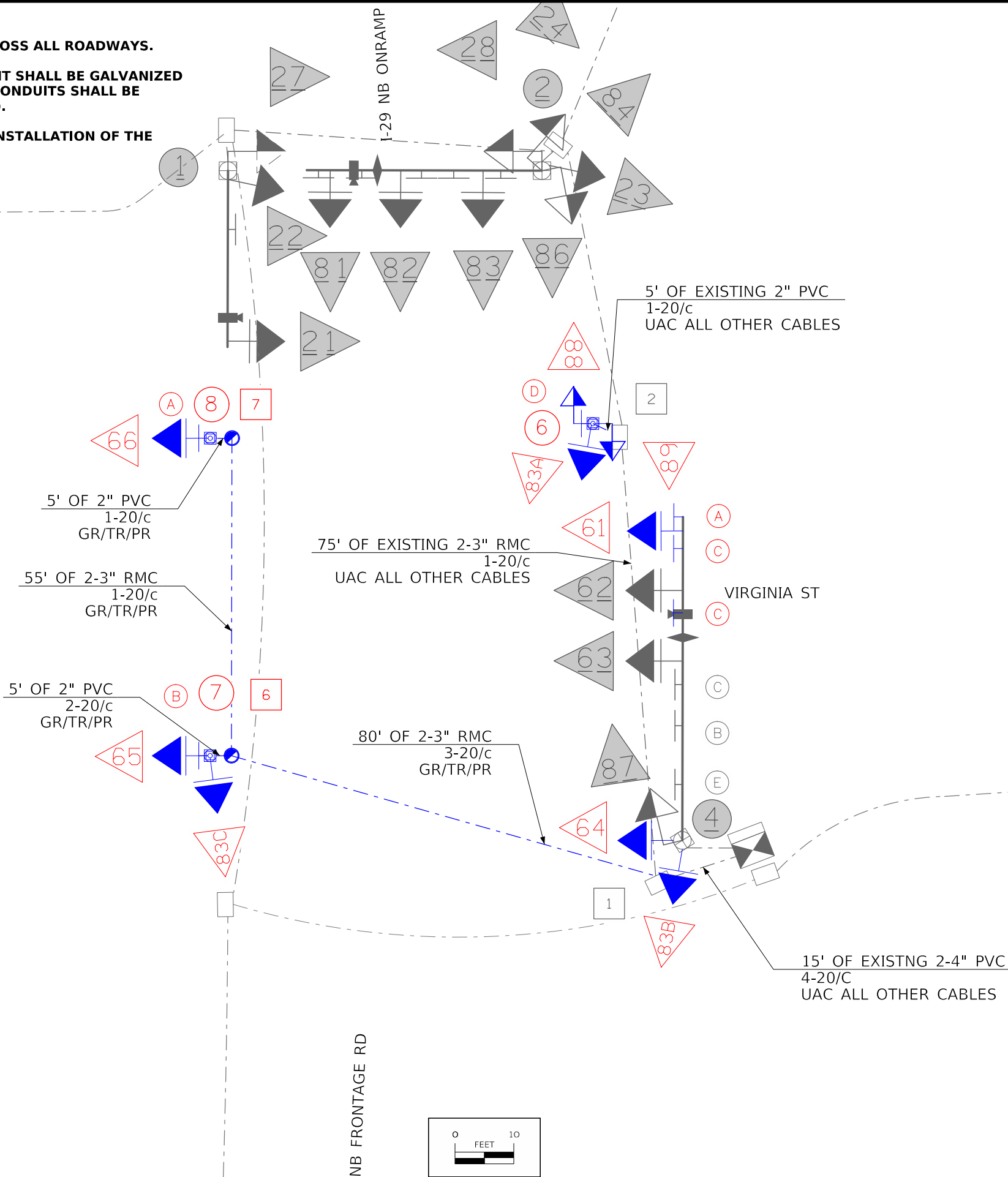
R6-1L
36" x 18"
(1-REQ'D)

Traffic Signal Layout -
Virginia St and NB
Frontage Rd

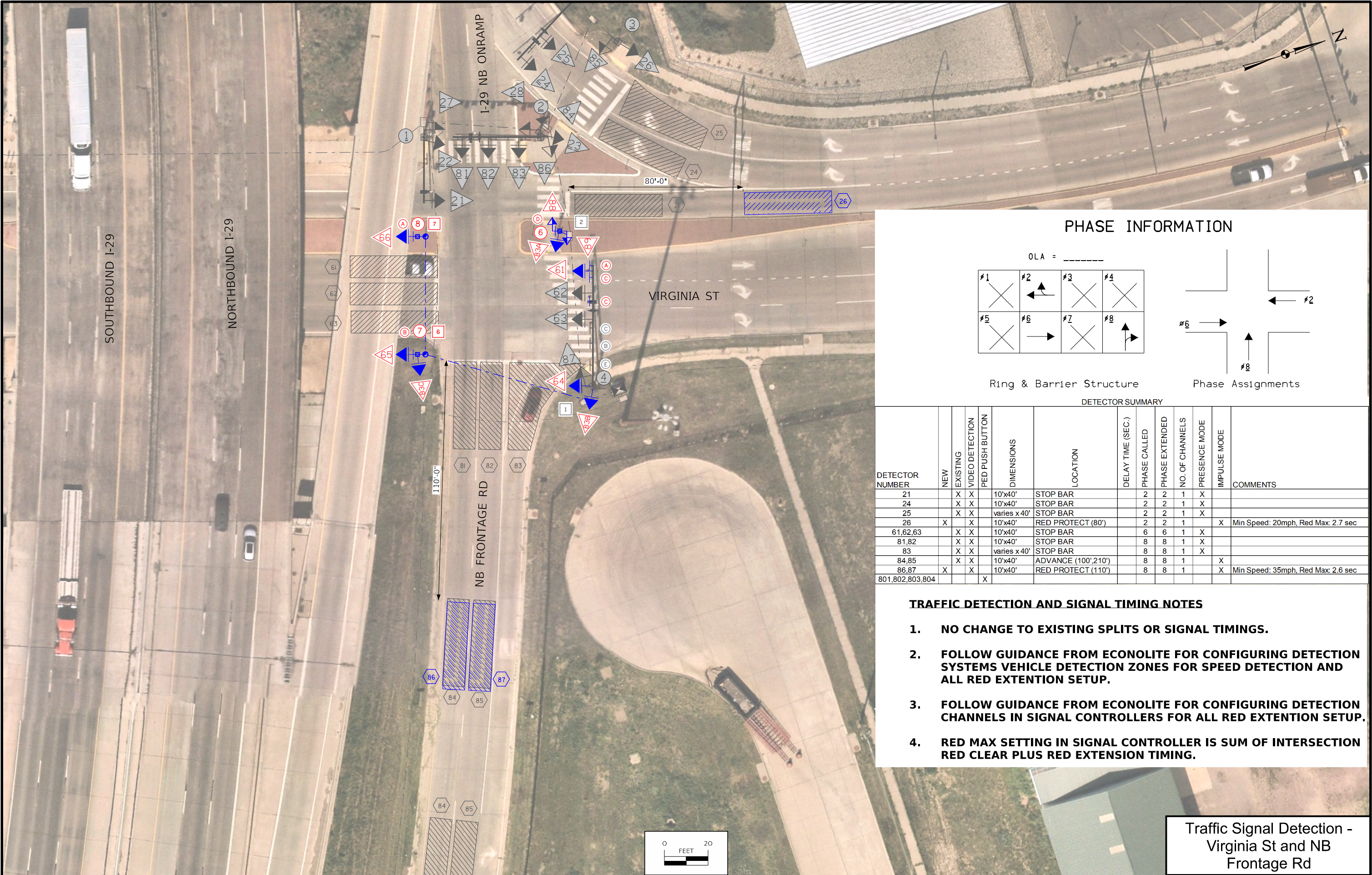
TRAFFIC WIRING NOTES

- 1. TWO (2) 3 INCH CONDUITS SHALL BE INSTALLED ACROSS ALL ROADWAYS.
- 2. ALL CONDUITS LOCATED UNDER ROADWAY PAVEMENT SHALL BE GALVANIZED RIGID METAL CONDUIT (LABELED RMC). ALL OTHER CONDUITS SHALL BE SCHEDULE 80 PVC OR HDPE SDR 13.5 (LABELED PVC).
- 3. THE PAVEMENT SHALL NOT BE DISTURBED DURING INSTALLATION OF THE CONDUIT UNDERGROUND.

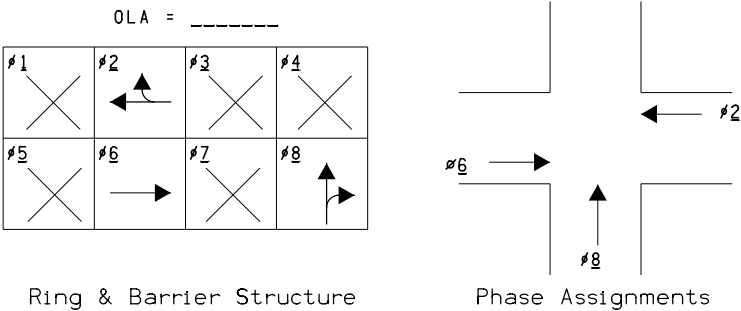
20-CONDUCTOR SIGNAL WIRE COLOR ASSIGNMENT TABLE			
	INSULATION COLOR	STRIPE COLOR	SIGNAL INDICATION
1	Black	----	Spare
2	White	----	Neutral
3	Red	----	Red
4	Green	----	Green
5	Orange	----	Yellow
6	Blue	----	Spare
7	White	Black	Spare
8	Red	Black	<- Red
9	Green	Black	<- Green
10	Orange	Black	<- Yellow
11	Blue	Black	Spare
12	Black	White	Spare
13	Red	White	-> Red
14	Green	White	-> Green
15	Blue	White	-> Yellow
16	Black	Red	W (major)
17	White	Red	DW (major)
18	Orange	Red	W (minor)
19	Blue	Red	DW (minor)
20	Red	Green	Spare



Traffic Signal Wiring -
Virginia St and NB
Frontage Rd



PHASE INFORMATION



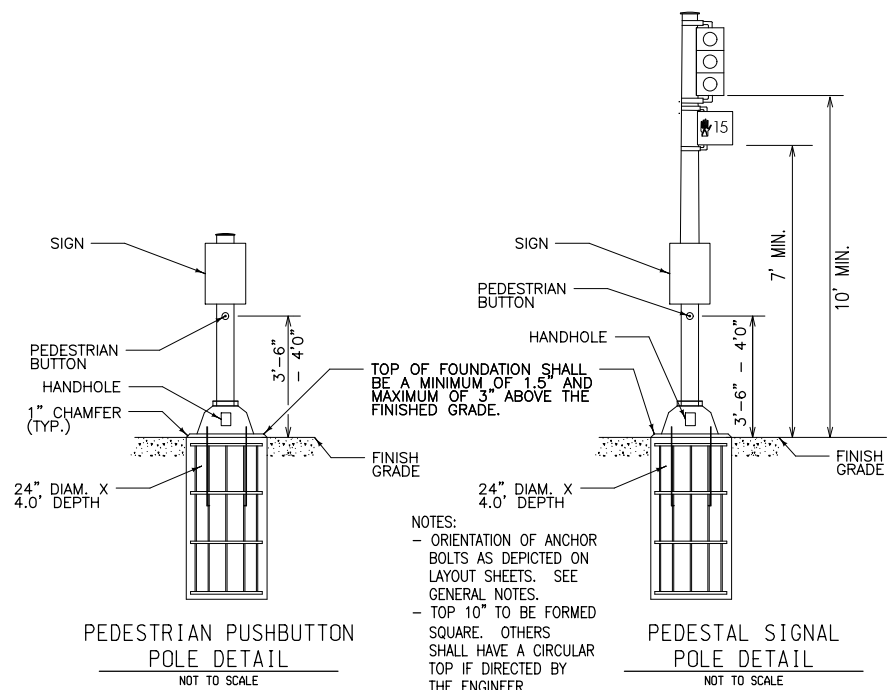
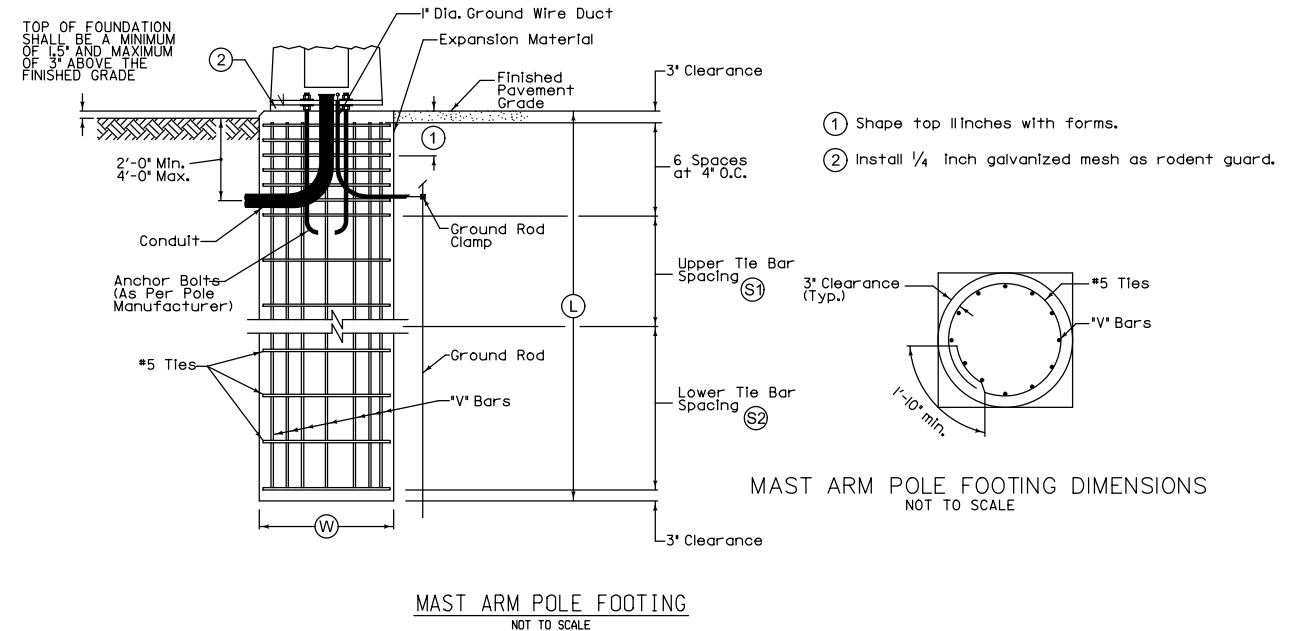
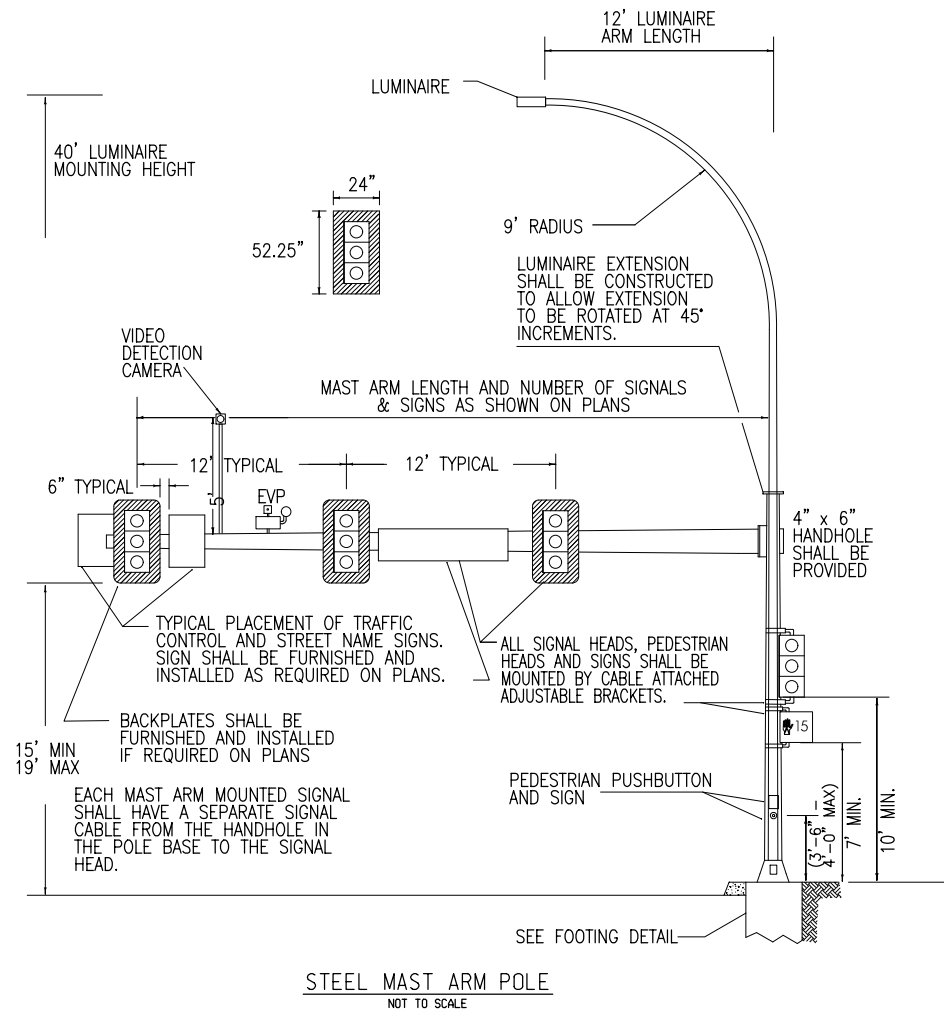
DETECTOR SUMMARY

DETECTOR NUMBER	NEW	EXISTING	VIDEO DETECTION	PED PUSH BUTTON	DIMENSIONS	LOCATION	DELAY TIME (SEC.)	PHASE CALLED	PHASE EXTENDED	NO. OF CHANNELS	PRESENCE MODE	IMPULSE MODE	COMMENTS
21		X	X		10'x40'	STOP BAR		2	2	1	X		
24		X	X		10'x40'	STOP BAR		2	2	1	X		
25		X	X		varies x 40'	STOP BAR		2	2	1	X		
26	X	X	X		10'x40'	RED PROTECT (80')		2	2	1		X	Min Speed: 20mph, Red Max: 2.7 sec
61,62,63		X	X		10'x40'	STOP BAR		6	6	1	X		
81,82		X	X		10'x40'	STOP BAR		8	8	1	X		
83		X	X		varies x 40'	STOP BAR		8	8	1	X		
84,85		X	X		10'x40'	ADVANCE (100',210')		8	8	1		X	
86,87	X	X	X		10'x40'	RED PROTECT (110')		8	8	1		X	Min Speed: 35mph, Red Max: 2.6 sec
801,802,803,804				X									

TRAFFIC DETECTION AND SIGNAL TIMING NOTES

- NO CHANGE TO EXISTING SPLITS OR SIGNAL TIMINGS.
- FOLLOW GUIDANCE FROM ECONOLITE FOR CONFIGURING DETECTION SYSTEMS VEHICLE DETECTION ZONES FOR SPEED DETECTION AND ALL RED EXTENTION SETUP.
- FOLLOW GUIDANCE FROM ECONOLITE FOR CONFIGURING DETECTION CHANNELS IN SIGNAL CONTROLLERS FOR ALL RED EXTENTION SETUP.
- RED MAX SETTING IN SIGNAL CONTROLLER IS SUM OF INTERSECTION RED CLEAR PLUS RED EXTENSION TIMING.

Traffic Signal Detection -
Virginia St and NB
Frontage Rd



Traffic Signal Details -
Virginia St and NB
Frontage Rd