A d d e n d u m

Iowa Department of Transportation
Office of Contracts

Date of Letting: February 17, 2015
Date of Addendum: February 10, 2015

B.O.	Proposal ID	Proposal Work Type	County	Project Number	Addendum
306	78-0293-102	GRADING	POTTAWATTAMIE	IM-NHS-029-3(102)48--03-78 IM-NHS-029-3(103)48--03-78 IM-NHS-029-3(104)48--03-78 IM-029-3(105)48--13-78 NHS-029-3(106)48--11-78 IM-NHS-029-3(110)48--03-78 IM-NHS-029-3(122)48--03-78 IM-NHS-029-3(146)48--03-78 IM-NHS-080-1(416)3--03-78	17FEB306.A08

Replace place sheets N.1, N.3, N.4, N.5, N.7, N.9, N.10, N.11, N.12, & N.14 with the attached plan sheets for project IM-NHS-029-3(104)48--03-78

N.1
Update Bill of Materials items:
-Advance Microwave Radar Detection (Detector Units)
-Presence Microwave Radar Detection (Detector Units)
-Radar (Wire and Cable)
-3’-0” Dia. X 14-0” (Wire and Cable)
-3’6” Dia. X 23’-0” (Wire and Cable)
-POWER - 1c #6

N.3
Removed Advance Detector for NB Ramp (3A)

N.4
Remove Advance Detector for NB Ramp (3A)
Updated Radar cable quantities
Updated power connection.

N.5
Removed Detector 3A

N.7
Removed Advance Microwave Detector from Pole 2

N.9
Removed Detector 3A
Removed “power located in north Bridge Rail” note

Adjusted location on “02” Preemption
Added power source

N.10
Adjusted Radar Cable Quantities
Removed Detector 3A

N.11
Removed Detector 3A

N.12
Removed Detector 3A from Pole 2
Removed Advance Microwave Detector from Pole 2
Removed Detectors from Pole 4 (looking north)

N.14
Updated power connection. Added note.

BILL OF MATERIALS

ITEM	ITEM CODE	DESCRIPTION	UNIT	PROPOSED QUANTITIES			AS BUILT QUANTITIES		
				—	—	TOTAL	—	—	TOTAL
Controller and Cabinet	—	8 Phase, Cabinet W/ Accessories	Each	3	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
Detector Units	—	Advance Microwave Radar Detector	Each	6	—	—	—	—	—
	—	Presence Microwave Radar Detector	Each	10	—	—	—	—	—
Traffic Signal Heads	—	12" R,Y,G, <G Mastarm Mount (with backplate)	Each	2	—	—	—	—	—
	—	12" <R,<Y,<FY,<G Mastarm Mount (with backplate)	Each	5	—	—	—	—	—
	—	12" R, Y, G Mastarm Mount (with backplate)	Each	17	—	—	—	—	—
	—	12" R, Y>,G> Mastarm Mount (with backplate)	Each	2	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	12" R,Y,G,Y>,G> Pole Mount (no backplate)	Each	2	—	—	—	—	—
	—	12" R,Y,G Pole Mount (no backplate)	Each	3	—	—	—	—	—
	—	12" <R, <Y,<G Mastarm Mount (with backplate)	Each	3	—	—	—	—	—
	—	12" R,Y,G,Y>,G> Mastarm Mount (with backplate)	Each	3	—	—	—	—	—
Handholes	—	LJ-103 Type I	Each	11	—	—	—	—	—
Wire and Cable	—	SIGNAL - 5c #14	Ft.	5500	—	—	—	—	—
	—	SIGNAL - 7c #14	Ft.	3670	—	—	—	—	—
	—	Radar	Ft.	6550	—	—	—	—	—
	—	POWER - 1c #6	Ft.	1400	—	—	—	—	—
	—	GROUND - 1c #6, BARE	Ft.	1415	—	—	—	—	—
	—	TRACER - 1c #10	Ft.	1415	—	—	—	—	—
	—	LUMINAIRE - 1c #8	Ft.	4130	—	—	—	—	—
	—	Opticom Pre-Emption	Ft.	2025	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
Detector Saw Cut	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
Conduit	—	2" PVC, Trenched	Ft.	—	—	—	—	—	—
	—	2" PVC, Pushed	Ft.	—	—	—	—	—	—
	—	3" PVC, Trenched	Ft.	225	—	—	—	—	—
	—	3" PVC, Pushed	Ft.	1150	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
Concrete Foundations	—	Controller Foundation	Each	3	—	—	—	—	—
	—	3'-0" Dia. X 16'-0"	Each	1	—	—	—	—	—
	—	3'-0" Dia. X 14'-0"	Each	2	—	—	—	—	—
	—	3'-6" Dia. X 21'-0"	Each	4	—	—	—	—	—
	—	3'-6" Dia. X 23'-0"	Each	1	—	—	—	—	—
	—	2'-0" Dia. X 3'-0" Ped pushbutton pole	Each	4	—	—	—	—	—
	—	Contractor Designed	Each	2	—	—	—	—	—
Traffic Signal Poles	—	Combo Pole - 55 feet	Each	1	—	—	—	—	—
	—	Combo Pole - 60 feet	Each	1	—	—	—	—	—
	—	Twin Combo Pole - 45 feet and 70 feet	Each	1	—	—	—	—	—
	—	Combo Pole - 65 feet	Each	2	—	—	—	—	—
	—	Combo Pole - 70 feet	Each	2	—	—	—	—	—
	—	Combo Pole - 80 feet	Each	1	—	—	—	—	—
	—	Combo Pole - 85 feet	Each	1	—	—	—	—	—
	—	Signing Mastarm - 50 feet	Each	1	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
Luminaire	—	15' Spread	10	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
Misc.	—	12" LED Displays	Each	128	—	—	—	—	—
	—	16" PED Display	Each	4	—	—	—	—	—
	—	R 3-5L Sign, 30" x 36"	Each	8	—	—	—	—	—
	—	R 3-5R Sign, 30" x 36"	Each	8	—	—	—	—	—
	—	R 3-5A Sign, 30" x 36"	Each	4	—	—	—	—	—
	—	R 3-6L Sign, 30" x 36"	Each	3	—	—	—	—	—
	—	R 3-6R Sign, 30" x 36"	Each	1	—	—	—	—	—
	—	Opticom GPS Emergency Vehicle Preemption System	Each	3	—	—	—	—	—
	—	PED pushbutton and pole	Each	4	—	—	—	—	—
	—	R 3-2 Sign, 30" x 30"	Each	1	—	—	—	—	—
	—	R 3-1 Sign, 30" x 30"	Each	1	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
Power Supply	—	Signal Control Cabinet	Each	3	—	—	—	—	—
	—	---	—	—	—	—	—	—	—
	—	---	—	—	—	—	—	—	—

TRAFFIC SIGNAL LEGEND

- Trenched Signal Conduit
- Pushed Signal Conduit
- Traffic Signal Cabinet and Controller
- Fiber Optic Cabinet and Controller
- Traffic Signal Foundation and Identifying Number
- Traffic Signal Head and Identifying Number
- Traffic Signal Head with Backplate and Identifying Number
- Pedestrian Signal Head and Identifying Number
- Mastarm Suspended Traffic Signal (## - Length of Mastarm)
- Loop Detector and Identifying Number
- Video/Radar Detection Area and Identifying Number
- Video Detection Camera and Identifying Number
- Radar Detector and Identifying Number
- Preemption Detector and Identifying Number
- Handhole and Identifying Number
- Luminaire
- Mastarm Mounted Sign and Identifying Letter
- R Solid Red Ball
- R Solid Red Arrow
- Y Solid Yellow Ball
- SY Solid Yellow Arrow
- FY Flashing Yellow Arrow
- G Solid Green Ball
- G Solid Green Arrow

Traffic signal general notes:

1. All quantities shown in the plans and specifications are for informational and estimating purposes only the contractor's lump sum bid for this project shall include all labor and material necessary to provide a complete and functional traffic signal installation, in conformance with the plans and specifications.

2. The plan locations of underground utilities are approximate only. the Contractor shall notify all utility companies prior to excavation on the project to establish locations.

3. The locations of all footings, handholes, detector loops, and conduit are to be coordinated with the Engineer and are subject to adjustment in the field by the engineer.

4. The Contractor shall 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 a 5-section vehicle signal head. A 5-conductor cable shall be used in the poles for all other 3-section vehicle heads.

5. The body of the signal head housing shall be of the yellow polycarbonate type.

6. Install a no. 6 A.W.G. bare copper ground wire between the ground rods in the signal footings and the controller cabinet to form a continuously grounded system. The ground wire shall be installed in all conduits with the exception of the 1 inch conduit between the detector loops and the handhole, and any conduit containing only dectector lead-in cable.

7. All conduit shall be rigid PVC or innerduct conduit, unless otherwise noted.

8. Controllers and cabinet hardware shall be expansible to provide the number of phases as indicated on the traffic signal phasing and timing sheet.

9. All detector units shall be provided with delay and extension timing. The delay inhibit on each unit shall be in effect during the associated green phase.

10. All secondary service points will be field located. Provide meter socket on controller cabinet and construct service risers for signals. All labor, equipment, and materials necessary to establish secondary service shall be included in the traffic signalization item.

11. The Contractor shall furnish a schedule of unit prices for each item listed in the estimate of traffic signal quantities.

12. The new light poles shall have a 40' mounting height, 15' mastarms, and a 150 W HPS fixture.

13. Refer to plan IM-NHS-029-3(102)48--03-78 for additional staging information

14. Installation of radar detection units, pre-emption devices, and vehicle detection zones shall be coordinated with the City of Council Bluffs and be set in accordance with the manufacturer's specifications.

15. The Contractor shall be responsible for contacting the local utility company to determine the location of the power connection(s).

16. Additional temporary traffic signal faces may be added as site conditions warrant.

17. Maintain the use of the existing wireless interconnect for signal coordination between the signal controllers at Exit 47 East Terminal, West Terminal, and Harrly Langdon Boulevard

18. Existing emergency pre-emption shall be maintained throughout the project. Temporary pre-emption shall be compatible with existing pre-emption. The Contractor should coordinate pre-emption installation with the City of Council Bluffs.

Traffic Signal General Notes

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.1	REVISED 2/9/15

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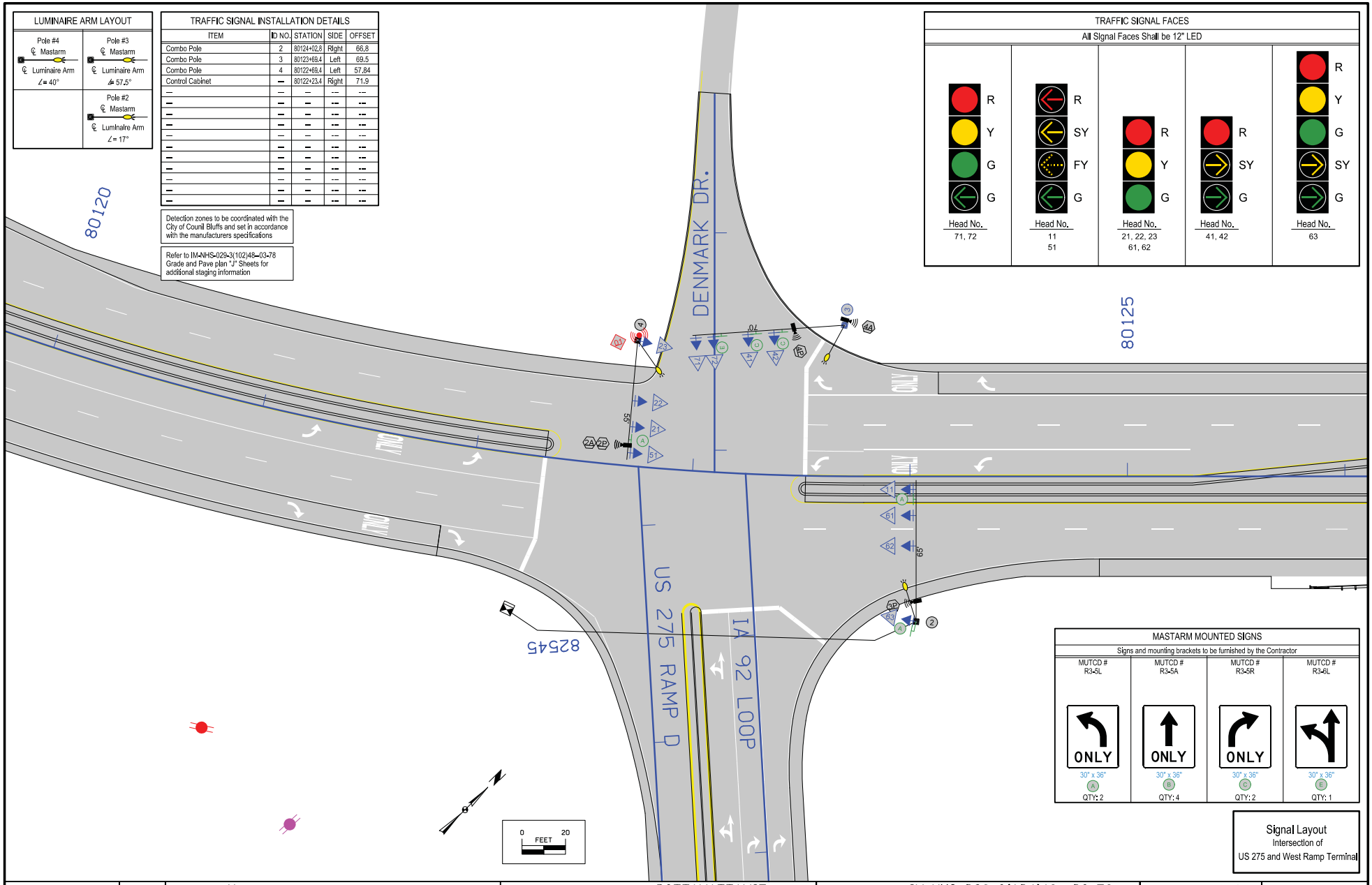

LUMINAIRE ARM LAYOUT

Pole #4 ℄ Mastarm ℄ Luminaire Arm ∠= 40°	Pole #3 ℄ Mastarm ℄ Luminaire Arm ∠= 57.5°
	Pole #2 ℄ Mastarm ℄ Luminaire Arm ∠= 17°

TRAFFIC SIGNAL INSTALLATION DETAILS

ITEM	ID NO.	STATION	SIDE	OFFSET
Combo Pole	2	80124+02.8	Right	66.8
Combo Pole	3	80123+69.4	Left	69.5
Combo Pole	4	80122+69.4	Left	57.84
Control Cabinet	—	80122+23.4	Right	71.9
—	—	—	---	---
—	—	—	---	---
—	—	—	---	---
—	—	—	---	---
—	—	—	---	---
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Detection zones to be coordinated with the City of Council Bluffs and set in accordance with the manufacturers specifications

Refer to IM-NHS-029-3(102)48--03-78 Grade and Pave plan "J" Sheets for additional staging information

TRAFFIC SIGNAL FACES

All Signal Faces Shall be 12" LED

Head No.	Head No.	Head No.	Head No.	Head No.
71, 72	11 51	21, 22, 23 61, 62	41, 42	63

MASTARM MOUNTED SIGNS

Signs and mounting brackets to be furnished by the Contractor

MUTCD # R3-5L	MUTCD # R3-5A	MUTCD # R3-5R	MUTCD # R3-6L
ONLY	ONLY	ONLY	
30" x 36"	30" x 36"	30" x 36"	30" x 36"
A	B	C	E
QTY: 2	QTY: 4	QTY: 2	QTY: 1

Signal Layout
Intersection of
US 275 and West Ramp Terminal

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.3	REVISED 2/9/15

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TRAFFIC SIGNAL INSTALLATION DETAILS				
ITEM	ID NO.	STATION	SIDE	OFFSET
Control Cabinet	—	80122+23.4	Right	71.9
Hanhole, Type 1	11	80122+37.7	Right	79.6
Hanhole, Type 1	12	80123+83.8	Right	75.5
Hanhole, Type 1	13	80123+62.0	Left	78.3
Hanhole, Type 1	14	80122+61.5	Left	64.4
—	—	—	—	—
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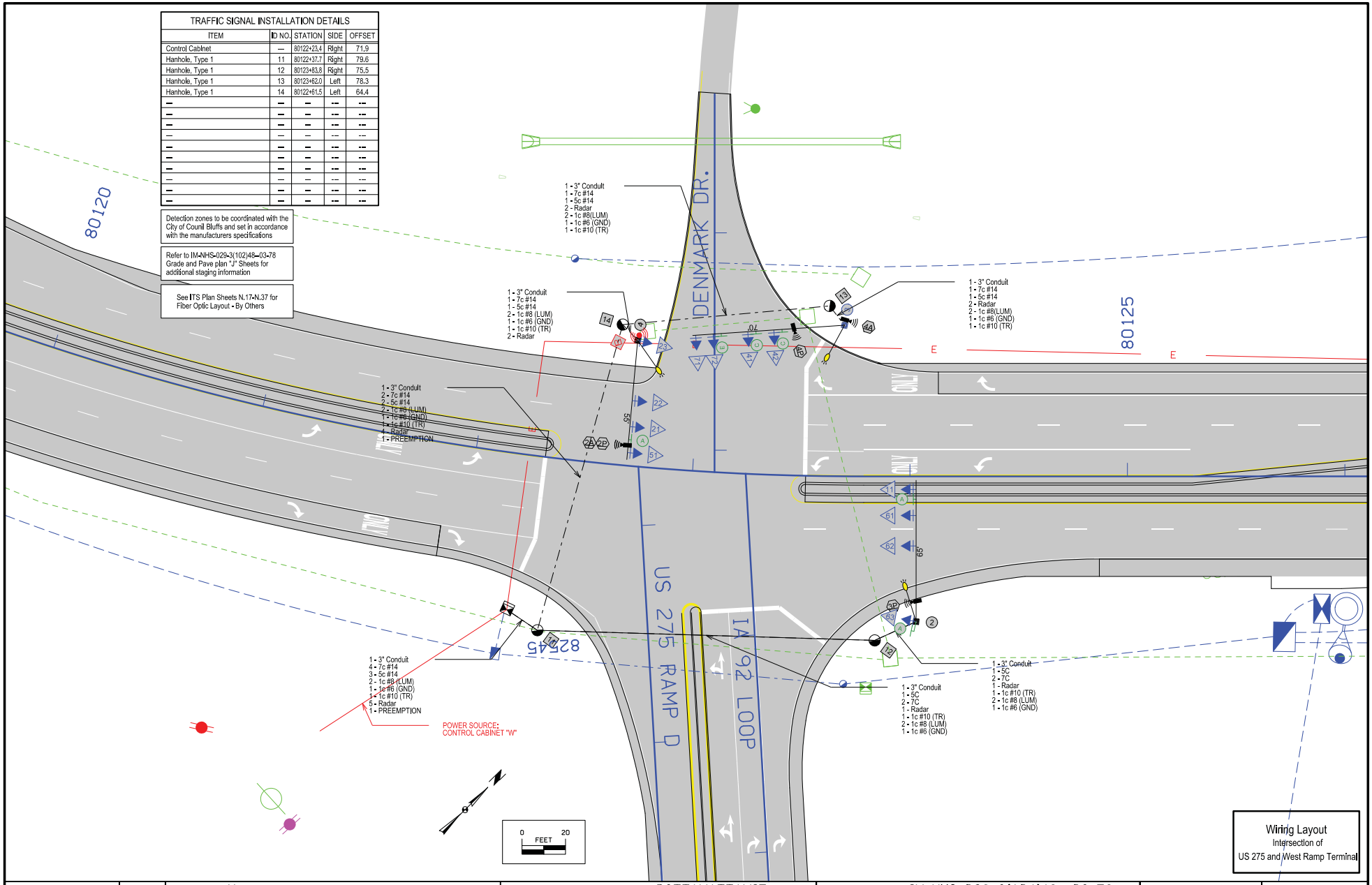
—	—	—	—	—

Detection zones to be coordinated with the City of Council Bluffs and set in accordance with the manufacturers specifications

Refer to IM-NHS-029-3(102)48--03-78 Grade and Pave plan "J" Sheets for additional staging information

See ITS Plan Sheets N.17-N.37 for Fiber Optic Layout - By Others



FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.4	REVISED 2/9/15

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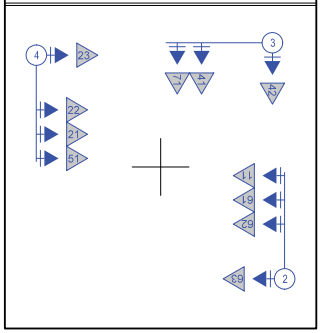
SIGNAL FACE LOCATION

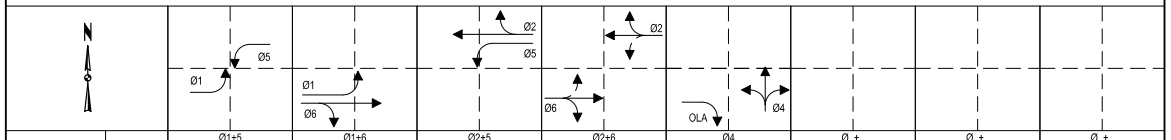


LEGEND

- Actuated Vehicular Movement
- Non-Actuated Vehicular Movement
- Partially Restricted Vehicular Movement
- Actuated Pedestrian Movement
- Non-Actuated Pedestrian Movement

R/W	Right Of Way Interval
Ø	Traffic Phase
R	Circular Red
Y	Circular Yellow
G	Circular Green
↑G	Green Straight Ahead Arrow
<Y	Yellow Left Arrow
<FY	Flashing Yellow Left Arrow
<G	Green Left Arrow
Y>	Yellow Right Arrow
FY>	Flashing Yellow Right Arrow
G>	Green Right Arrow
W	Walk
DW	Don't Walk
FDW	Flashing Don't Walk
AO	All Other Phases
PR1	Preempt #1
PR2	Preempt #2

TRAFFIC PHASING AND COLOR SEQUENCE



APPROACH	FACE NO.	Ø1+5					Ø1+6					Ø2+5					Ø2+6					Ø4					Ø_+_					Ø_+_					Ø_+_				
		R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø			
			1+6	2+5	2+6	4+7		2+5	2+6	4+7	_+_		2+6	4+7	_+_	_+_		4+7	_+_	_+_	_+_		1+5	_+_	_+_	_+_		_+_	_+_	_+_	_+_		_+_	_+_	_+_	_+_		_+_	_+_	_+_	_+_
WB Approach US 275	51	<G	Y	<G	<SY	<SY	R	R	R	R	—	<G	<SY	<SY	—	—	<FY	<SY	---	---	—	R	R	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
	21, 22, 23	R	R	R	R	R	R	R	R	R	—	G	G	Y	—	—	G	Y	---	---	—	R	R	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
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EB Approach US 275	11	<G	<G	Y	<SY	<SY	<G	<SY	<SY	<SY	—	R	R	R	—	—	<FY	<SY	---	---	—	R	R	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
	61, 62	R	R	R	R	R	G	Y	G	Y	—	R	R	R	—	—	G	Y	---	---	—	R	R	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
	63	R	R	R	R	R	G	Y	G	G	—	R	R	R	—	—	G	Y	---	---	—	G>	Y>	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
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NB Approach Ramp B	71, 72	R	R	R	R	R	R	R	R	R	—	R	R	R	—	—	R	R	---	---	—	<G,G	Y	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
	41	R	R	R	R	R	R	R	R	R	—	R	R	R	—	—	R	R	---	---	—	G>	Y>	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
	42	G>	Y	G>	Y	Y>	R	R	R	R	—	G>	G>	G>	—	—	R	R	---	---	—	G>	G>	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
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	---	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
	---	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—
	---	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	---	---	—	—	—	—	—	—	—	—	—	—	—

INITITAL RECOMMENDED TIMINGS (SECONDS)

	Phase 1	2	3	4	5	6	7	8
Minimum Green	10	10	—	7	10	10	7	—
Passage	—	—	—	—	—	—	—	—
Maximum I	—	—	—	—	—	—	—	—
Maximum II	—	—	—	—	—	—	—	—
Yellow Change	4.5	4.5	—	3.0	4.5	4.5	3.0	—
Red Clearance	2.2	2.2	—	3.5	2.2	2.2	3.5	—
Walk	—	—	—	—	—	—	—	—
Flashing Don't Walk	—	—	—	—	—	—	—	—
Added Initial	—	—	—	—	—	—	—	—
Time to Reduce	—	—	—	—	—	—	—	—
Time before Reduction	—	—	—	—	—	—	—	—
Recall Position	—	—	—	—	—	—	—	—
Vehicle Call Memory	—	—	—	—	—	—	—	—
Volume Density	—	—	—	—	—	—	—	—
Maximum Initial	—	—	—	—	—	—	—	—
Minimum Gap	—	—	—	—	—	—	—	—

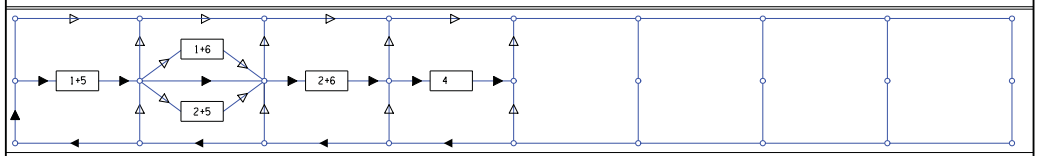
** NOTE: The timings shown are for start-up only. The final and coordination timings should be obtained from Mark Franz with The City of Concil Bluffs. The Contractor shall notify the City of Council Bluffs three weeks prior to needing the timings.

DETECTOR SUMMARY

Approach	Detector Number	New	Existing	TYPE: Pedestrian Pushbutton	TYPE: Inductive Loop	TYPE: Video	TYPE: Microwave	LOOP PARAMETERS: Distance from Stop Bar ft.	LOOP PARAMETERS: Size (ft. x ft.)	LOOP PARAMETERS: Number of Turns
EB	2A	X	—	—	—	—	X	—	—	—
EB	2P	X	—	—	—	—	X	—	—	—
---	—	—	—	—	—	—	—	—	—	—
NB	3P	X	—	—	—	—	X	—	—	—
WB	4A	X	—	—	—	—	X	—	—	—
WB	4P	X	—	—	—	—	X	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—
---	—	—	—	—	—	—	—	—	—	—

* LINES IN THE TABLE WITH MULTIPLE DETECTORS SHALL BE CONFIGURED IN SERIES

PHASE FLOW DIAGRAM



Note: → Flow path if all phases are requested
→ Flow path when phase is not requested before right of way transfer

CONTROLLER AND CABINET HARDWARE

Phases Used:	6
Expansible To:	8
Minimum Number of Backpanel Positions:	16

FLASHING OPERATIONS

US 275	Red
West Ramp	Red
Pedestrian Indications	OFF

TYPE OF INTERCONNECT

None	—
TBC	—
Closed Loop Twisted Pair *	—
Closed Loop Fiber Optic *	X
Radio	—
* Location of the Master Controller	—
Signal System *:	—

TYPE OF PRE-EMPT

None	—
Railroad	—
Emergency Vehicle	—
Opticom	X
Tomar	—
Hardwire	—
Other	—
Queue Detector	—

PHASE SEQUENCE NOT ALLOWED

FROM →	TO
2+6	1+5
_+_	_+_, _+_, _+_
DUAL ENTRY PHASES	
_+_, _+_	

TYPE OF LIGHTING

By Other Agency	X
In Traffic Signal Cabinet	X
In Separate DOT Lighting Cabinet	—

PHASING DIAGRAM
Intersection of
US 275 and West Ramp Terminal

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.5	REVISED 2/9/15

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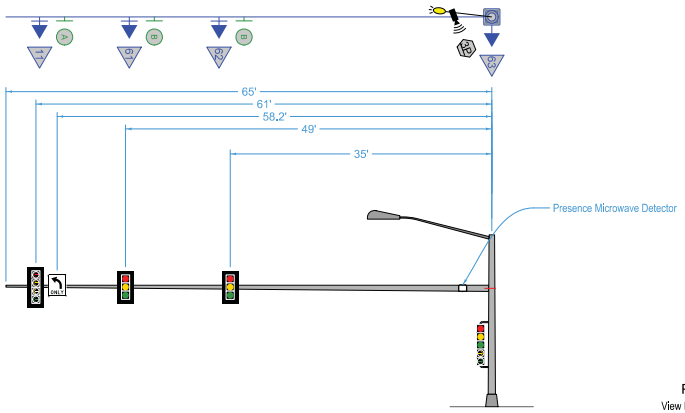
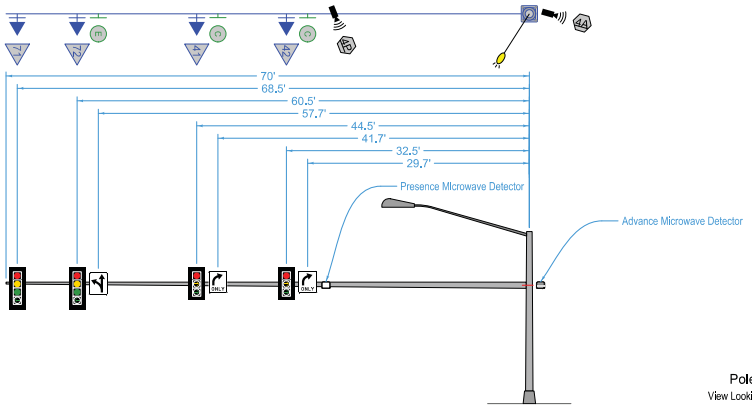
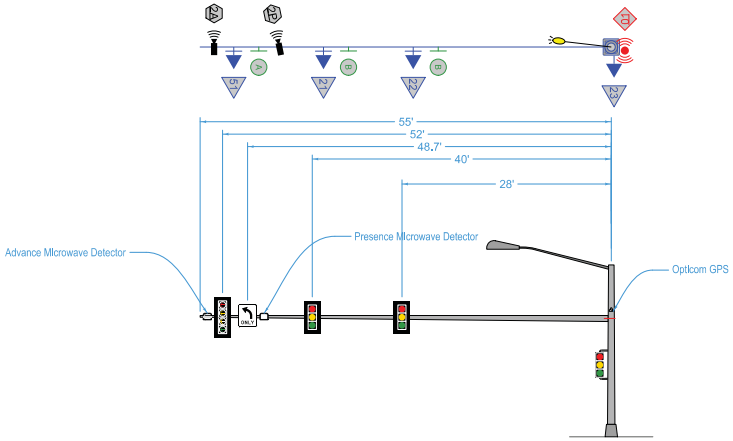


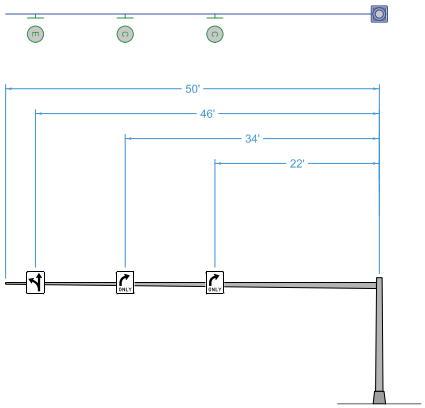
Pole #2
View Looking East



Pole #3
View Looking North



Pole #4
View Looking West



Pole #1
View Looking North

TRAFFIC SIGNAL POLE DATA

Intersection	Pole Number	Pole Type	Mastarm Length Or Pedestal Height	Traffic Signal Heads (1)		Traffic Signs (2)		Luminaire Arm (3)			Footing Dimensions		Miscellaneous	Total Quantity
				Qty.	Location On Pole	Qty.	Location On Pole	Spread	Mounting Height	Orientation	Dia.	Depth		
			FT	EACH	FT	EACH	FT	FT	FT	DEGREE	FT	FT		
Intersection of US 275 and West Ramp Terminal in Council Bluffs	1	Signing Mastarm	50	–	–	3	See N.7	–	–	–	3	14	Sta. 82541+25 US 275 Ramp B.	1
	2	Combo Signal / Lighting	65	4	See N.7	3	See N.7	15	40	17	3.5	21	–	1
	3	Combo Signal / Lighting	70	3	See N.7	2	See N.7	15	40	57.5	3.5	21	–	1
	4	Combo Signal / Lighting	55	4	See N.7	3	See N.7	15	40	40	3	14	–	1
	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–	–	–	–	–	–
	9	–	–	–	–	–	–	–	–	–	–	–	–	–

(1) (2) Location is distance for center of pole measured out to the end of the arm.
(3) Orientation of luminaire arm is clockwise angle measured from the centerline of the signal mast arm.

On combination poles, a minimum 4"x6" handhole and cover shall be located in the shaft opposite the signal mast arm.

POLE DETAILS
Intersection of
US 275 and West Ramp Terminal
in Council Bluffs

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.7	REVISED 2/9/15

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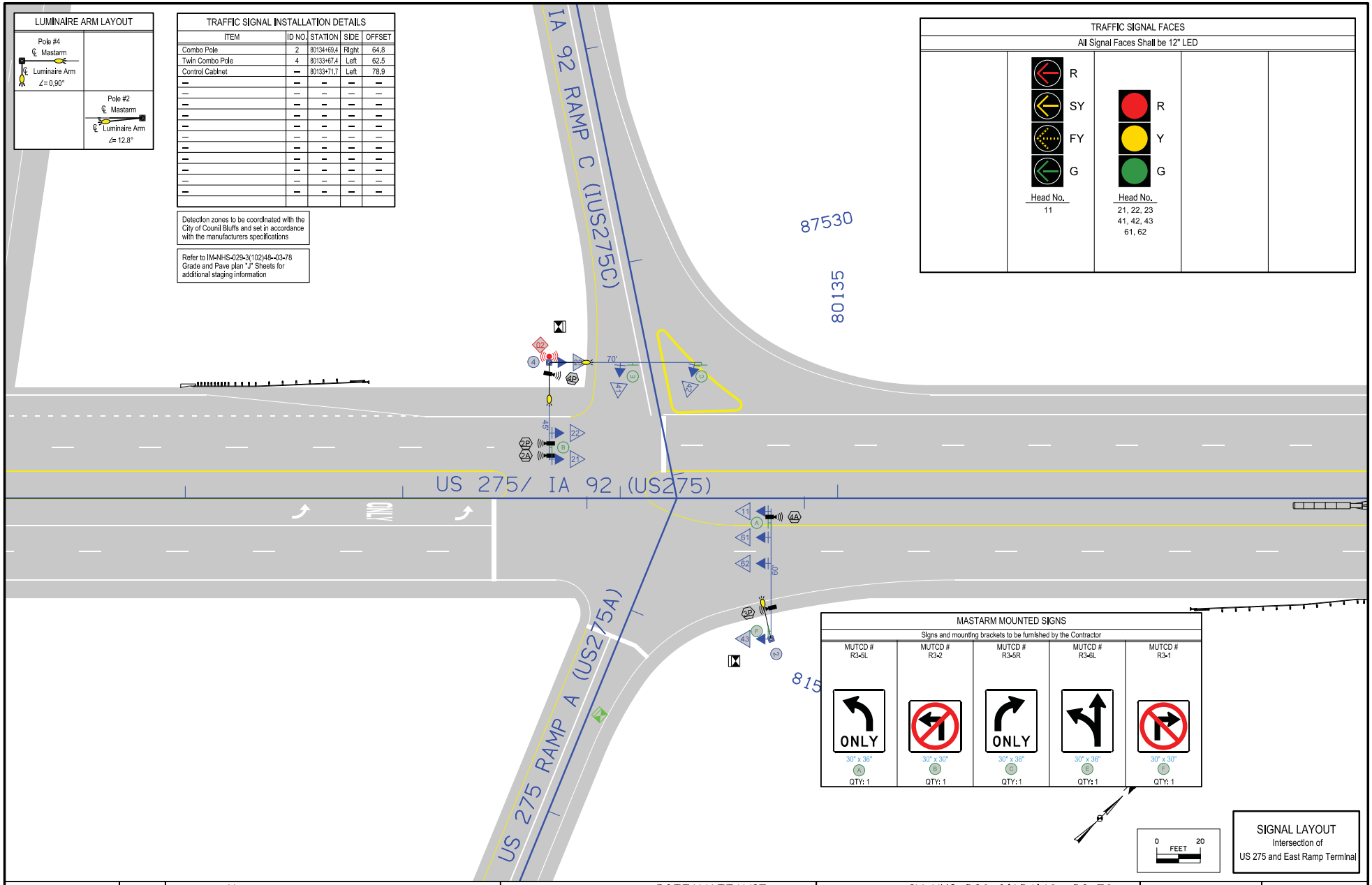

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.9	REVISED 2/9/15

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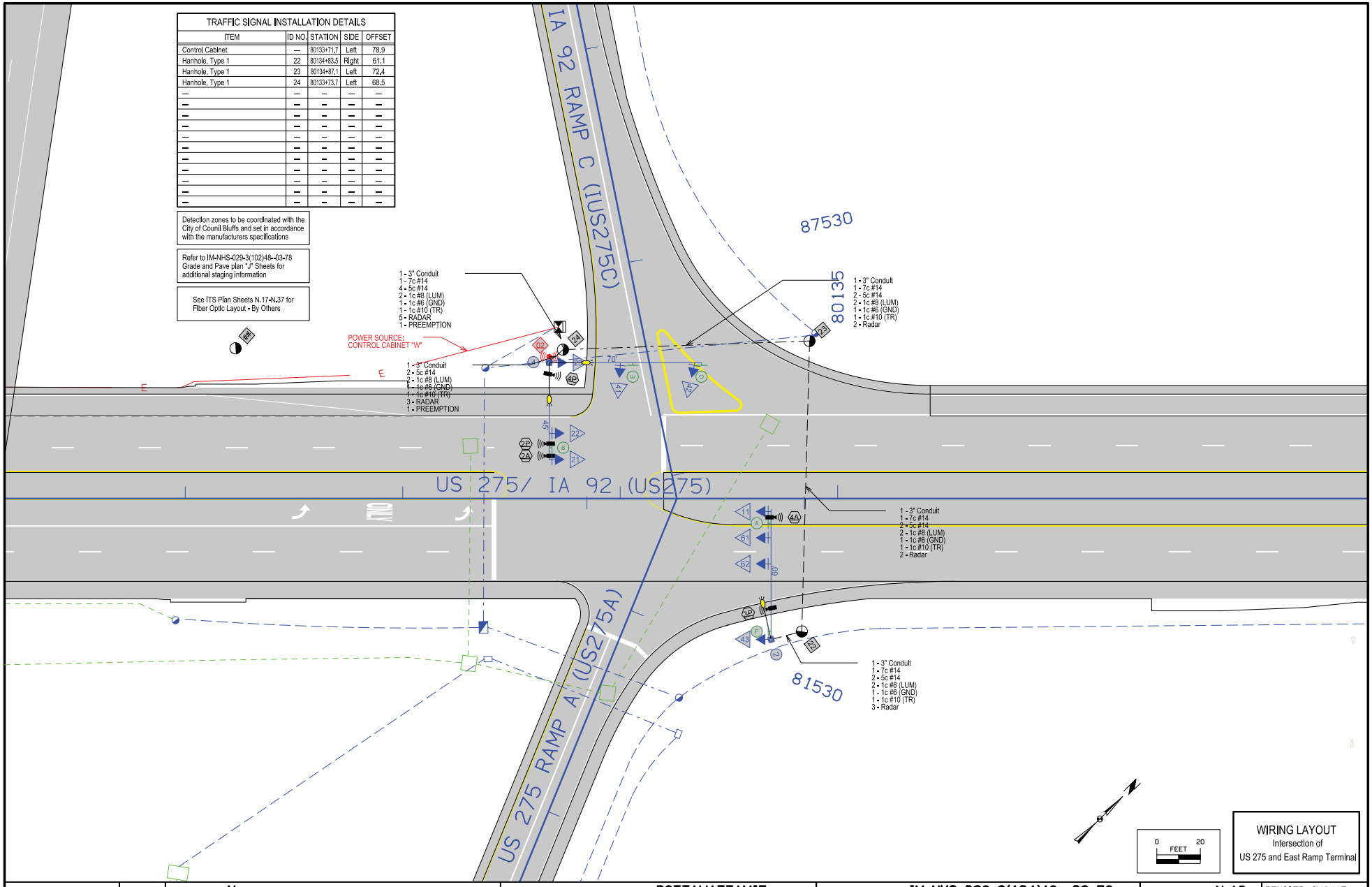
TRAFFIC SIGNAL INSTALLATION DETAILS				
ITEM	ID NO.	STATION	SIDE	OFFSET
Control Cabinet	—	80133+71.7	Left	78.9
Hanhole, Type 1	22	80134+83.5	Right	61.1
Hanhole, Type 1	23	80134+87.1	Left	72.4
Hanhole, Type 1	24	80133+73.7	Left	68.5
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—

Detection zones to be coordinated with the City of Council Bluffs and set in accordance with the manufacturers specifications

Refer to IM-NHS-029-3(102)48--03-78 Grade and Pave plan "J" Sheets for additional staging information

See ITS Plan Sheets N.17-N.37 for Fiber Optic Layout - By Others



WIRING LAYOUT
Intersection of
US 275 and East Ramp Terminal

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.10	REVISED 2/9/15

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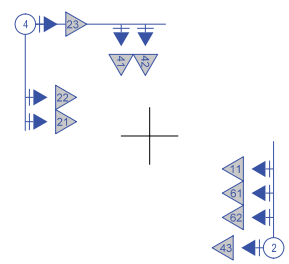
SIGNAL FACE LOCATION

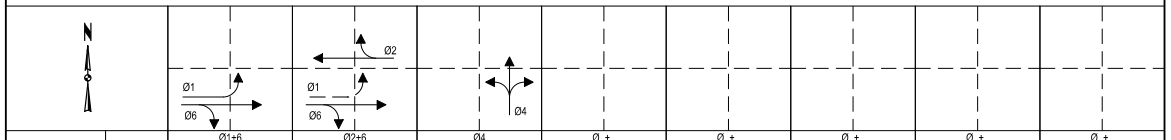


LEGEND

- Actuated Vehicular Movement
- Non-Actuated Vehicular Movement
- Partially Restricted Vehicular Movement
- Actuated Pedestrian Movement
- Non-Actuated Pedestrian Movement

R/W	Right Of Way Interval
Ø	Traffic Phase
R	Circular Red
Y	Circular Yellow
G	Circular Green
↑G	Green Straight Ahead Arrow
<Y	Yellow Left Arrow
<FY	Flashing Yellow Left Arrow
<G	Green Left Arrow
Y>	Yellow Right Arrow
FY>	Flashing Yellow Right Arrow
G>	Green Right Arrow
W	Walk
DW	Don't Walk
FDW	Flashing Don't Walk
AO	All Other Phases
PR1	Preempt #1
PR2	Preempt #2

TRAFFIC PHASING AND COLOR SEQUENCE



APPROACH	FACE NO.	Ø1+6					Ø2+6					Ø4					Ø_+_					Ø_+_					Ø_+_					Ø_+_					Ø_+_					Ø_+_				
		R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø				R/W	CLEAR TO Ø			
			2+6	4	_+_	_+_		4	_+_	_+_	_+_		1+6	2+6	_+_	_+_		_+_	_+_	_+_	_+_		_+_	_+_	_+_	_+_		_+_	_+_	_+_	_+_		_+_	_+_	_+_	_+_		_+_	_+_	_+_	_+_
EB Approach US 275	11	<G	<SY	<SY	—	—	<FY	<SY	—	—	—	R	R	R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	61,62	G	G	Y	—	—	G	Y	—	—	—	R	R	R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
WB Approach US 275	21,22	R	R	R	—	—	G	Y	—	—	—	R	R	R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	23	R	R	R	—	—	G>	Y>	—	—	—	R	R	R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
NB Approach RAMP A	41,42,43	R	R	R	—	—	R	R	—	—	—	G	Y	Y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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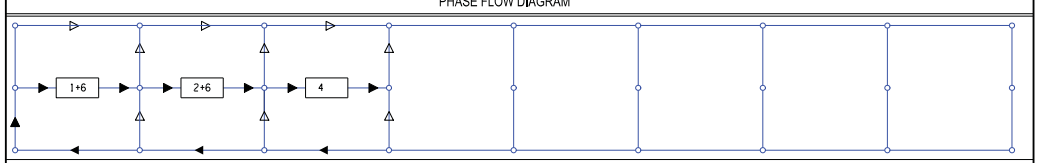
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

PHASE FLOW DIAGRAM



Note: → Flow path if all phases are requested
→ Flow path when phase is not requested before right of way transfer

INITITAL RECOMMENDED TIMINGS (SECONDS)

	Phase 1	2	3	4	5	6	7	8
Minimum Green	10	10	—	7	—	10	—	—
Passage	—	—	—	—	—	—	—	—
Maximum I	—	—	—	—	—	—	—	—
Maximum II	—	—	—	—	—	—	—	—
Yellow Change	4.3	4.3	—	4.3	—	4.3	—	—
Red Clearance	1.4	1.4	—	2.0	—	1.4	—	—
Walk	—	—	—	—	—	—	—	—
Flashing Don't Walk	—	—	—	—	—	—	—	—
Added Initial	—	—	—	—	—	—	—	—
Time to Reduce	—	—	—	—	—	—	—	—
Time before Reduction	—	—	—	—	—	—	—	—
Recall Position	—	—	—	—	—	—	—	—
Vehicle Call Memory	—	—	—	—	—	—	—	—
Volume Density	—	—	—	—	—	—	—	—
Maximum Initial	—	—	—	—	—	—	—	—
Minimum Gap	—	—	—	—	—	—	—	—

** NOTE: The timings shown are for start-up only. The final and coordination timings should be obtained from Mark Franz with The City of Council Bluffs. The Contractor shall notify the City of Council Bluffs three weeks prior to needing the timings.

DETECTOR SUMMARY

Approach	Detector Number	New	Existing	TYPE: Pedestrian Pushbutton	TYPE: Inductive Loop	TYPE: Video	TYPE: Microwave	LOOP PARAMETERS: Distance from Stop Bar ft.	LOOP PARAMETERS: Size (ft. x ft.)	LOOP PARAMETERS: Number of Turns
EB	2A	X	—	—	—	—	X	—	—	—
EB	2P	X	—	—	—	—	X	—	—	—
—	—	—	—	—	—	—	—	—	—	—
NB	3P	X	—	—	—	—	X	—	—	—
WB	4A	X	—	—	—	—	X	—	—	—
WB	4P	X	—	—	—	—	X	—	—	—
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
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—	—	—	—	—	—	—	—	—	—	—

* LINES IN THE TABLE WITH MULTIPLE DETECTORS SHALL BE CONFIGURED IN SERIES

CONTROLLER AND CABINET HARDWARE

Phases Used:	8
Expansible To:	8
Minimum Number of Backpanel Positions:	16

FLASHING OPERATIONS

Roadway 1	Red
Roadway 2	Red
Pedestrian Indications	OFF

TYPE OF INTERCONNECT

None	—
TBC	—
Closed Loop Twisted Pair *	—
Closed Loop Fiber Optic *	X
Radio	—
* Location of the Master Controller	—
Signal System *:	—

TYPE OF PRE-EMPT

None	—
Railroad	—
Emergency Vehicle	—
Opticom	X
Tomar	—
Hardwire	—
Other	—
Queue Detector	—

PHASE SEQUENCE NOT ALLOWED

FROM →	TO
_+_	_+_, _+_, _+_
_+_	_+_, _+_, _+_

DUAL ENTRY PHASES
_+_, _+_

TYPE OF LIGHTING

By Other Agency	X
In Traffic Signal Cabinet	X
In Separate DOT Lighting Cabinet	—

PHASING DIAGRAM
Intersection of
US 275 and East Ramp Terminal

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.11	REVISED 2/9/15

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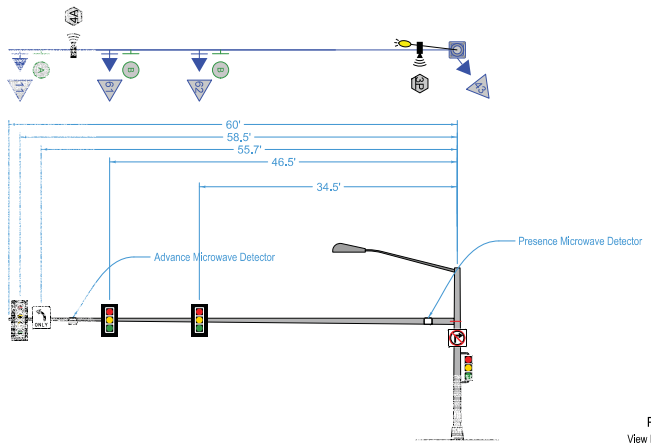
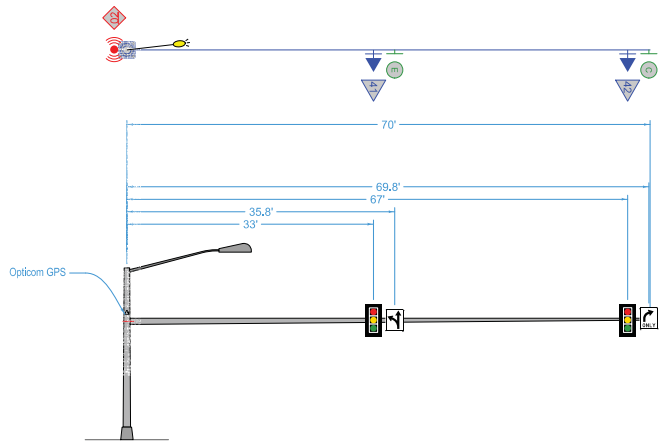
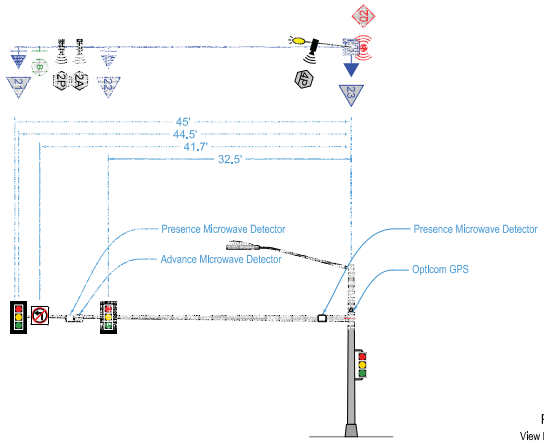


Pole #2
View Looking East



Pole #4
View Looking North



Pole #4
View Looking West

TRAFFIC SIGNAL POLE DATA

Intersection	Pole Number	Pole Type	Mastarm Length Or Pedestal Height	Traffic Signal Heads (1)		Traffic Signs (2)		Luminaire Arm (3)			Footing Dimensions		Miscellaneous	Total Quantity
				Qty.	Location On Pole	Qty.	Location On Pole	Spread	Mounting Height	Orientation	Dia.	Depth		
			FT	EACH	FT	EACH	FT	FT	FT	DEGREE	FT	FT		
Intersection of US 275 and East Ramp Terminal in Council Bluffs	1	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	Combo Signal / Lighting	60	4	See N.12	3	See N.12	15	40	12,8	3	16	–	1
	3	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	Twin Combo Signal/Lighting	70,45	2,3	See N.12	2,2	See N.12	15,15	40,40	0,90	–	–	Contractor to submit footing design	1
	5	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–	–	–	–	–	–
	9	–	–	–	–	–	–	–	–	–	–	–	–	–

(1) (2) Location is distance for center of pole measured out to the end of the arm.
(3) Orientation of luminaire arm is clockwise angle measured from the centerline of the signal mast arm.

On combination poles, a minimum 4"x6" handhole and cover shall be located in the shaft opposite the signal mast arm.

POLE DETAILS
Intersection of
US 275 and East Ramp Terminal
In Council Bluffs

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.12	REVISED 2/9/15

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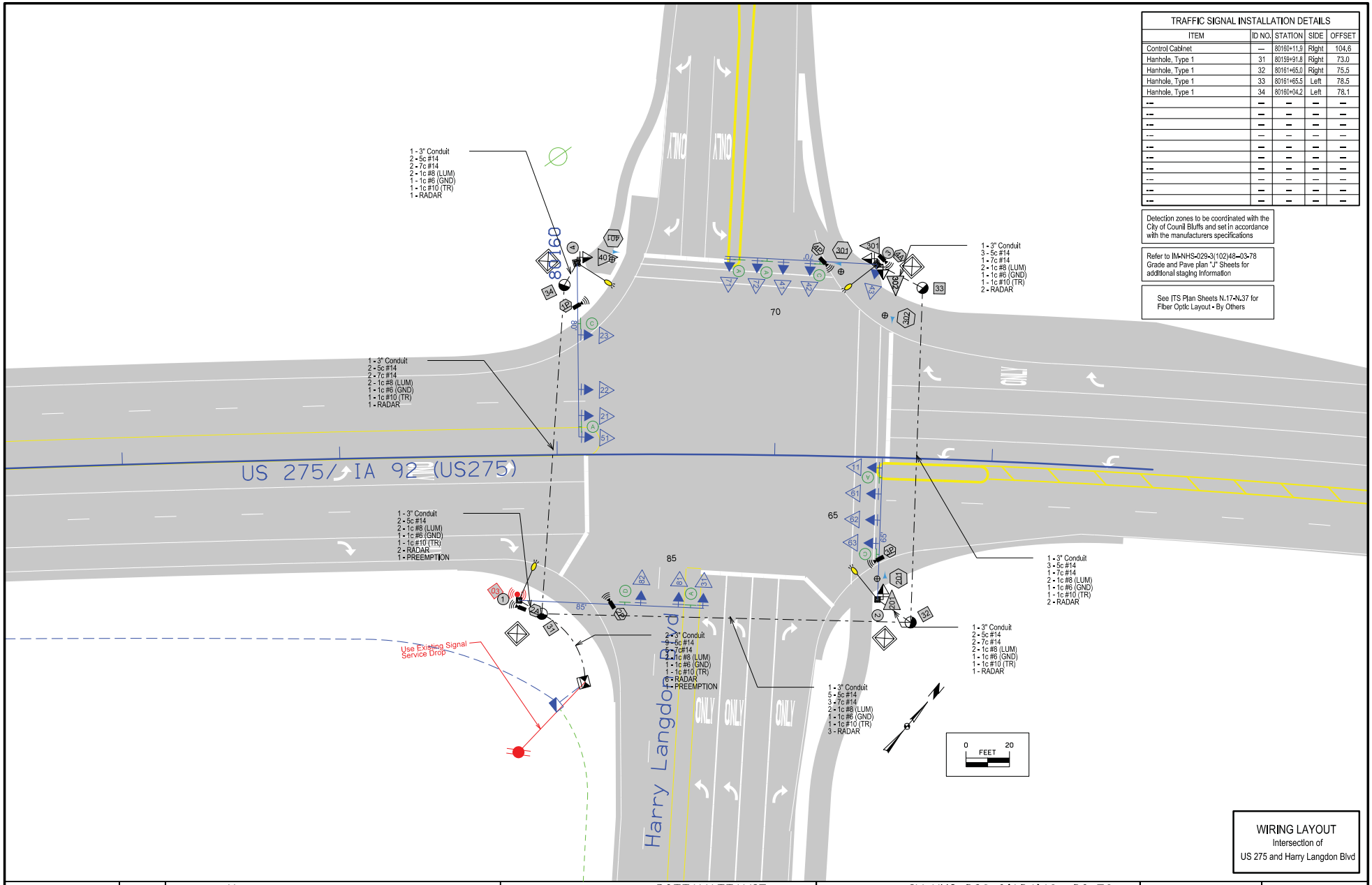

TRAFFIC SIGNAL INSTALLATION DETAILS

ITEM	ID NO.	STATION	SIDE	OFFSET
Control Cabinet	—	80160+11.9	Right	104.6
Hanhole, Type 1	31	80159+91.8	Right	73.0
Hanhole, Type 1	32	80161+65.0	Right	75.5
Hanhole, Type 1	33	80161+65.5	Left	78.5
Hanhole, Type 1	34	80160+04.2	Left	78.1
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Detection zones to be coordinated with the City of Council Bluffs and set in accordance with the manufacturers specifications

Refer to IM-NHS-029-3(102)48--03-78 Grade and Pave plan "J" Sheets for additional staging information

See ITS Plan Sheets N.17-N.37 for Fiber Optic Layout - By Others

WIRING LAYOUT
Intersection of
US 275 and Harry Langdon Blvd

FILE NO.	ENGLISH	DESIGN TEAM Abrams	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-NHS-029-3(104)48--03-78	SHEET NUMBER N.14	REVISED 2/9/15

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