

LIST OF MAJOR EQUIPMENT		
EQUIPMENT ITEMS - 678.15	QUANTITY	REMARKS
INSTALL TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION (VT ROUTE 2A & U.S. ROUTE 2)		
POWER STANCHION WITH DISCONNECTS	1	
TRAFFIC SIGNAL CONTROLLER (NEMA TS2)	1	ECONOLITE COBALT
NEW 12-INCH LED SIGNAL HEADS (ONE-WAY 3-SECTION, VISORS, DISCONNECT HANGERS, 5 INCH LOUVERED BACKPLATES WITH 2 INCH RETRO-REFLECTIVE BORDER AND MOUNTING HARDWARE (FLAT BLACK)	6	
NEW 12-INCH LED SIGNAL HEADS (ONE-WAY 4-SECTION, VISORS, DISCONNECT HANGERS, 5 INCH LOUVERED BACKPLATES WITH 2 INCH RETRO-REFLECTIVE BORDER AND MOUNTING HARDWARE (FLAT BLACK)	4	
NEW 12-INCH LED SIGNAL HEADS (ONE-WAY 5-SECTION, VISORS, DISCONNECT HANGERS, 5 INCH LOUVERED BACKPLATES WITH 2 INCH RETRO-REFLECTIVE BORDER AND MOUNTING HARDWARE (FLAT BLACK)	4	
SIGNAL HEAD BRACKETS AND ANCILLARY EQUIPMENT	14	
PEDESTRIAN PUSH BUTTON ASSEMBLIES POLE MOUNTED WITH LOCATOR TONE, RIO-3e SIGN, FLAT BLACK HOUSING	12	
PEDESTRIAN SIGNAL HEAD COUNTDOWN STYLE, FLAT BLACK HOUSING	12	
PEDESTRIAN PEDSTAL POST AND FOUNDATION	5	
NEMA BASE-MOUNTED CONTROLLER CABINET WITH 15-INCH EXTENDED BASE ON A CONCRETE FOUNDATION (72"x40"x24")	1	PAINTED FLAT BLACK WITH ANCILLARY EQUIPMENT, FACING AWAY FROM TRAFFIC (24 PHASE)
ELECTRICAL WIRING	1520'	SEE SUMMARY THIS SHEET
SMART MALFUNCTION MONITORING UNIT (MMU)	1	ECONOLITE MMU2-16E SMART MONITOR
BIU	2	ECONOLITE BIU-64
DETECTOR BRACKET FOR MAST ARM OR POLE	4	
STOP BAR DETECTOR ASSEMBLY	4	ECONOLITE AUTOSCOPE ENCORE
ADVANCED DETECTOR ASSEMBLY	4	WAVETRONIX SMARTSENSOR ADVANCE
DETECTION PROCESSOR (CARDS)	1	WAVETRONIX CLICK 650
STOP BAR DETECTION PROCESSOR (CARDS)	1	ECONOLITE AUTOSCOPE TIP
STOP BAR DETECTION PROCESSOR (CARDS)	1	ECONOLITE AUTOSCOPE TAP
DETECTION CABINET RACK	2	
OPTICAL PREEMPTION DETECTORS	4	TOMAR
OPTICAL PREEMPTION SIGNAL PROCESS CARD & CAGE	4	TOMAR
PREEMPTION AC STROBE - RED	4	TOMAR
CONTROLLER IDENTIFICATION PLAQUE	1	SEE TRAFFIC SIGNAL SYSTEM NOTES
GPS CLOCK	1	

CONTROLLER TIMING CHART									
PHASE	1	2	3	4	5	6	7	8	9
IN USE	X	X	X	X	X	X	X	X	X
TRAFFIC MOVEMENT	↓	←	↖	↑	↗	→	↘	↙	
MIN. GREEN	5	5	5	5	5	5	5	5	
MAX 2 - GREEN (AM)	7	31	7	19	8	30	5	21	
MAX 1 - GREEN (OFF)	5	30	7	18	10	25	5	21	
MAX 3 - GREEN (PM)	8	30	6	28	12	26	5	29	
YELLOW CLEARANCE	4	4	4	4	4	4	4	4	
ALL RED CLEARANCE	0	2	0	2	0	2	0	2	
VEHICLE EXTENSION	1	2	1.5	2	1.5	2	1	2	
DELAY GREEN									
WALK									4
PEDESTRIAN CLEAR		7		7		7		7	17
RECALL MODE (50FT)		X				X			

ELECTRICAL WIRING		
	LENGTH	DESCRIPTION
EX MAP-1 TO EX MA-1	20'	DETECTION
EX MAP-1 TO EX MA-1	20'	DETECTION
EX MAP-1 TO EX MA-1	20'	SIGNAL HEAD
EX MAP-1 TO EX MA-1	20'	SIGNAL HEAD
EX MAP-1 TO EX MA-1	20'	SIGNAL HEAD
EX MAP-1 TO EX MA-1	20'	SIGNAL HEAD
EX MAP-1 TO EX MA-1	20'	SIGNAL HEAD
EX MAP-1 TO EX MA-1	20'	SIGNAL HEAD
EX MAP-1 TO EX MA-1	20'	PREEMPTION DETECTOR
EX MAP-1 TO EX MA-1	20'	PREEMPTION STROBE
EX MAP-1 TO EX MA-1	20'	PREEMPTION DETECTOR
EX MAP-1 TO EX MA-1	20'	PREEMPTION STROBE
EX MA-1 TO DETECTOR	25'	STOP BAR DETECTION
EX MA-1 TO DETECTOR	25'	STOP BAR DETECTION
EX MA-1 TO SIGNAL HEAD	25'	SIGNAL HEAD
EX MA-1 TO SIGNAL HEAD	25'	SIGNAL HEAD
EX MA-1 TO SIGNAL HEAD	25'	SIGNAL HEAD
EX MA-1 TO SIGNAL HEAD	25'	SIGNAL HEAD
EX MA-1 TO SIGNAL HEAD	25'	SIGNAL HEAD
EX MA-1 TO SIGNAL HEAD	25'	DETECTION
EX MA-1 TO PREEMPTION DETECTOR	25'	MAINLINE PREEMPTION
EX MA-1 TO PREEMPTION LIGHT	25'	STROBE LIGHT
EX MA-1 TO PREEMPTION DETECTOR	25'	MAINLINE PREEMPTION
EX MA-1 TO PREEMPTION LIGHT	25'	STROBE LIGHT
EX MAP-2 TO EX MA-2	20'	DETECTION
EX MAP-2 TO EX MA-2	20'	DETECTION
EX MAP-2 TO EX MA-2	20'	SIGNAL HEAD
EX MAP-2 TO EX MA-2	20'	SIGNAL HEAD
EX MAP-2 TO EX MA-2	20'	SIGNAL HEAD
EX MAP-2 TO EX MA-2	20'	SIGNAL HEAD
EX MAP-2 TO EX MA-2	20'	SIGNAL HEAD
EX MAP-2 TO EX MA-2	20'	SIGNAL HEAD
EX MAP-2 TO EX MA-2	20'	PREEMPTION DETECTOR
EX MAP-2 TO EX MA-2	20'	PREEMPTION STROBE
EX MAP-2 TO EX MA-2	20'	PREEMPTION DETECTOR
EX MAP-2 TO EX MA-2	20'	PREEMPTION STROBE
EX MAP-2 TO EX MA-2	20'	PREEMPTION DETECTOR
EX MAP-2 TO EX MA-2	20'	PREEMPTION STROBE
EX MA-2 TO SIGNAL HEAD	20'	SIGNAL HEAD
EX MA-2 TO SIGNAL HEAD	20'	SIGNAL HEAD
EX MA-2 TO SIGNAL HEAD	20'	SIGNAL HEAD
EX MA-2 TO SIGNAL HEAD	20'	SIGNAL HEAD
EX MA-2 TO SIGNAL HEAD	20'	SIGNAL HEAD
EX MA-2 TO SIGNAL HEAD	20'	SIGNAL HEAD
EX MA-2 TO PREEMPTION DETECTOR	20'	MAINLINE PREEMPTION
EX MA-2 TO PREEMPTION LIGHT	20'	STROBE LIGHT
EX MA-2 TO PREEMPTION DETECTOR	20'	MAINLINE PREEMPTION
EX MA-2 TO PREEMPTION DETECTOR	20'	MAINLINE PREEMPTION
EX MA-2 TO PREEMPTION LIGHT	20'	STROBE LIGHT
ASSUMED EXTRA	500'	ADDITIONAL (SEE NOTE 1 BELOW)
SUBTOTAL	1500'	
ROUNDING	20'	
TOTAL	1520'	(SEE NOTES BELOW)

SCHEDULE PLAN			
SCHEDULE NO.	DAY PLAN	DAYS	DATES
1	1	MON, TUE, WED, THU, FRI	1-31
1	2	SAT, SUN	1-31

COORDINATION PLAN												
PATTERN	COS	CYCLE	OFFSET	SPLIT PHASES/SPLIT TIMES								
1	III	84	0	16	31	13	24	16	31	11	26	22
2	2II	88	0	14	36	13	25	14	36	11	27	1
3	3II	96	0	18	32	12	34	18	32	11	35	

DAY PLAN				
PLAN NO.	EVENT	ACTION PLAN	START TIME	
1	1	254	12:00 AM	
1	2	2	6:00 AM	
1	3	1	10:00 AM	
1	4	3	3:00 PM	
1	5	1	7:00 PM	
1	6	254	10:00 PM	
2	1	254	12:00 AM	
2	2	2	6:00 AM	
2	3	3	9:00 AM	
2	4	254	10:00 PM	

ACTION PLAN			
PLAN NO.	PATTERN	FLASH	REFERENCE
1	1	NO	MAX 1
2	2	NO	MAX 2
3	3	NO	MAX 3
4	254-FREE	NO	MAX 1

WEEKDAY PEAKS			
	HOURS		
MAX 2 - AM PEAK	6:00 AM	TO	10:00 AM
	10:00 AM	TO	2:30 PM
MAX 1 - OFF PEAK	7:00 PM	TO	10:00 PM
MAX 3 - PM PEAK	2:30 PM	TO	7:00 PM
FREE	10:00 PM	TO	6:00 AM

PREEMPTION TIMING				
	PREEMPTOR			
	1	2	3	4
DIRECTION	EB	WB	SB	NB
HOLD PHASE	2&5	1&6	3&8	4&7
DETECTOR LOCK	YES	YES	YES	YES
DURATION TIME	12	12	12	12
MIN. GREEN	5	5	5	5
HOLD GREEN	12	12	12	12
YELLOW	4	4	4	4
RED	2	2	2	2

DETECTOR OPERATOR	
STOP BAR	PRESENCE
* ADVANCE	PULSE OR ACTUATION

* FOR DATA COLLECTION ONLY

CONDUIT SCHEDULE					
	WIRED CONDUIT		ELECTRICAL CONDUIT		DESCRIPTION
	2"	4"	2"	4"	
POWER TO STANCHION					SERVICE
STANCHION TO CONTROLLER	5'				POWER
CONTROLLER TO JB-1	9'				DETECTION
CONTROLLER TO JB-1	9'				SIGNAL / LIGHTING
CONTROLLER TO JB-1			9'		FUTURE USE
CONTROLLER TO JB-2	9'				PEDESTRIAN
CONTROLLER TO JB-2			9'		FUTURE USE
CONTROLLER TO JB-3	25'				DETECTION
CONTROLLER TO JB-3	25'				SIGNAL / LIGHTING
CONTROLLER TO JB-3			25'		FUTURE USE
JB-3 TO JB-4	18'				PEDESTRIAN
JB-3 TO JB-4			13'		FUTURE USE
JB-5 TO JB-1	18'				PEDESTRIAN
JB-5 TO JB-1			15'		FUTURE USE
JB-5 TO JB-2	9'				PEDESTRIAN
JB-5 TO JB-2			9'		FUTURE USE
JB-6 TO JB-3	8'				PEDESTRIAN
JB-6 TO JB-3			8'		FUTURE USE
JB-6 TO JB-4	8'				PEDESTRIAN
JB-6 TO JB-4			8'		FUTURE USE
JB-6 TO JB-5	10'				PEDESTRIAN
JB-6 TO JB-5			10'		FUTURE USE
SUBTOTAL	153'			106'	
ROUNDING	7'			4'	
TOTALS	160'			110'	

CONDUIT SCHEDULE (CONTINUED)		
	WIRED 2"	ELECTRICAL 2"
POWER TO STANCHION STANCHION (EXISTING POWER) TO CONTROLLER (NEW CONDUIT TO CONTROLLER)	21'	
CONTROLLER TO JB-1	8'	
CONTROLLER TO JB-1	8'	
CONTROLLER TO JB-1	8'	
CONTROLLER TO JB-1	8'	
CONTROLLER TO JB-1	8'	
CONTROLLER TO MAP-1	18'	
CONTROLLER TO MAP-1	18'	
JB-1 TO MAP-1		16'
JB-4 TO PP	15'	
JB-4 TO PP		15'
JB-4 TO JB-3	13'	
JB-4 TO JB-3		13'
JB-3 TO JB-1	22'	
JB-3 TO JB-1	22'	
JB-3 TO JB-1	22'	
JB-6 TO PP-3	13'	
JB-6 TO PP-3	8'	
JB-6 TO SP-1	5'	
EX. SLEEVE CROSSING US2 TO JB-6	7'	
EX. SLEEVE CROSSING US2 SLIP LANE TO JB-6	12'	
PP-2 TO EXISTING PB	6'	
PP-1 TO EXISTING PB	24'	
TOTALS	266'	44'

- NOTES:
1. ASSUMED ELECTRICAL WIRE FOR USE IF, AT THE DISCRETION OF THE ENGINEER, LENGTHS OF EXISTING SIGNAL WIRE ARE REPLACED.
 2. TOTAL QUANTITY OF ELECTRICAL WIRING SHOWN IS APPROXIMATED FOR BIDDING PURPOSES. THE ACTUAL AMOUNT OF ELECTRICAL WIRING MAY VARY DUE TO FIELD CONDITIONS.
 3. ELECTRICAL WIRING WILL BE PAID UNDER ITEM 678.15 - TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION (VT ROUTE 2A AND U.S. ROUTE 2).

VT ROUTE 2A / U.S. ROUTE 2 INTERSECTION



PROJECT NAME:	WILLISTON	PLOT DATE:	2/15/2017
PROJECT NUMBER:	NH 2949(I)	DRAWN BY:	P. ARMATA
FILE NAME:	z12d224bdr.sig.dgn	DESIGNED BY:	D. DEBAIE
PROJECT LEADER:	J. LITTLE	CHECKED BY:	T. LUTHER
TRAFFIC SIGNAL SYSTEMS SHEET 4		SHEET	244 OF 249