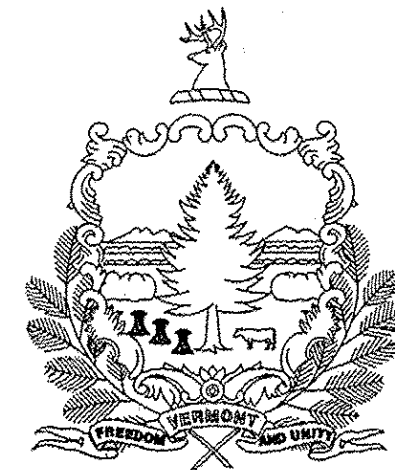


STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT TOWN OF MORETOWN COUNTY OF WASHINGTON US ROUTE 2 & VT ROUTE 100 MINOR ARTERIAL

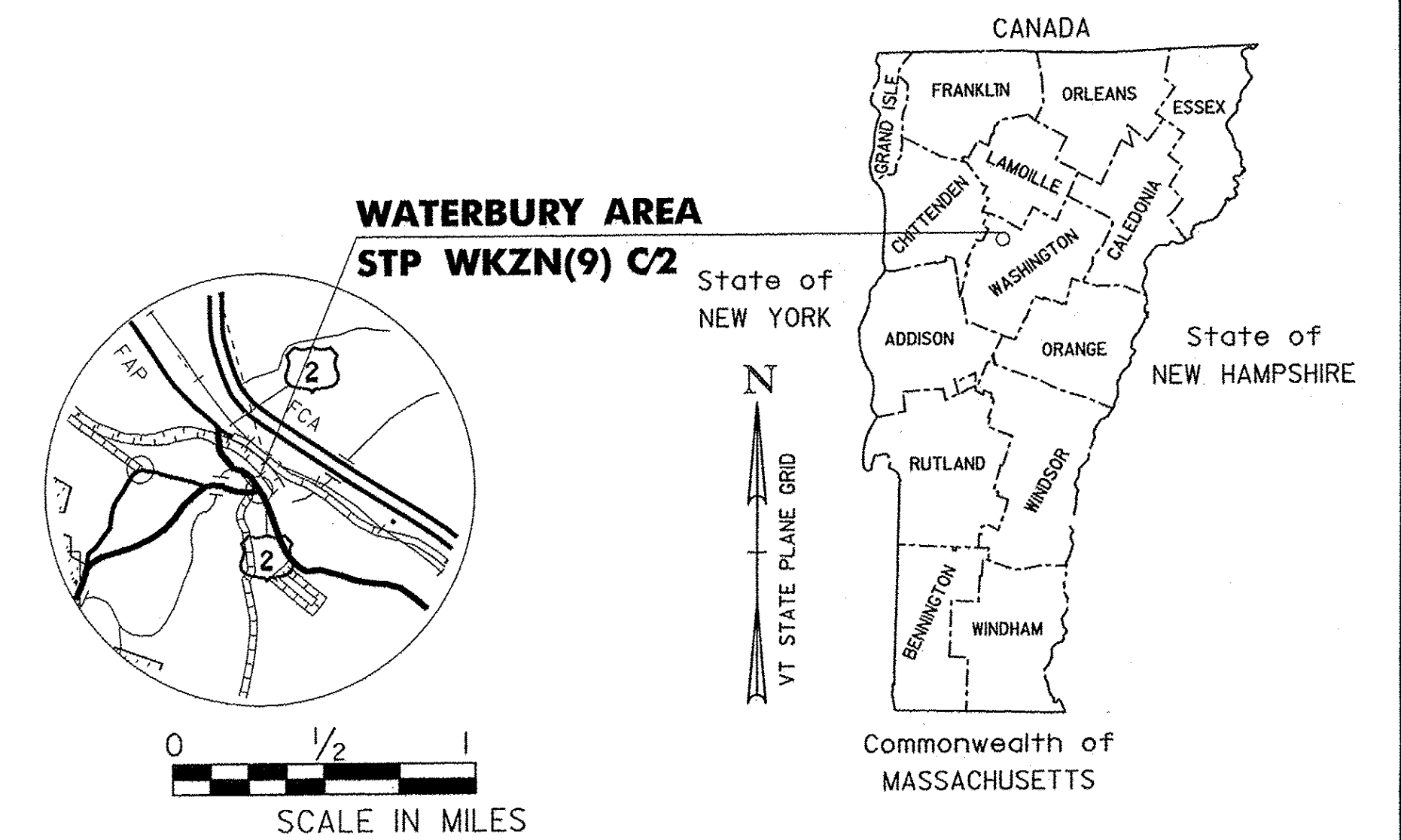
PROJECT LOCATION: AT THE INTERSECTION OF US-2 AND VT-100 IN THE TOWN OF MORETOWN
PROJECT INFORMATION: THE PROJECT SHALL CONSIST OF THE INSTALLATION OF A TRAFFIC CONTROL SIGNAL SYSTEM AND RELATED IMPROVEMENTS INCLUDING SIGNING AND STRIPING AND A DRIVEWAY RELOCATION.

INDEX OF SHEETS

| | |
|----|-----------------------------------|
| 1 | TITLE SHEET |
| 2 | CONVENTIONAL SYMBOLOLOGY LEGEND |
| 3 | QUANTITY SHEET |
| 4 | TIE SHEET |
| 5 | RIGHT OF WAY LAYOUT SHEET |
| 6 | RIGHT OF WAY DETAIL SHEET |
| 7 | TRAFFIC CONTROL PLAN SHEET |
| 8 | LAYOUT SHEET |
| 9 | DRIVE RELOCATION TYPICAL SECTIONS |
| 10 | TRAFFIC SIGNAL SHEET |
| 11 | TRAFFIC SIGN SUMMARY SHEET |
| 12 | TRAFFIC SIGNAL SYSTEM NOTES |
| 13 | STREET LIGHTING GENERAL NOTES |

STANDARDS LIST

| | | |
|--------|--|-----------|
| B-71 | STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES | 7/8/2005 |
| E-121 | STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD | 8/8/1995 |
| E-144 | REGULATORY SIGN DETAILS | 3/29/1999 |
| E-171A | TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS | 8/9/1995 |
| E-171B | TRAFFIC CONTROL SIGNALS MISC. DETAILS | 8/9/1995 |
| E-175 | POWER DROP STANCHIONS | 6/8/2009 |
| E-193 | PAVEMENT MARKING DETAILS | 8/18/1995 |
| T-1 | TRAFFIC CONTROL GENERAL NOTES | 8/6/2012 |
| T-10 | CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING | 8/6/2012 |
| T-30 | CONSTRUCTION SIGN DETAILS | 8/6/2012 |
| T-45 | SQUARE TUBE SIGN POST AND ANCHOR | 1/2/2013 |

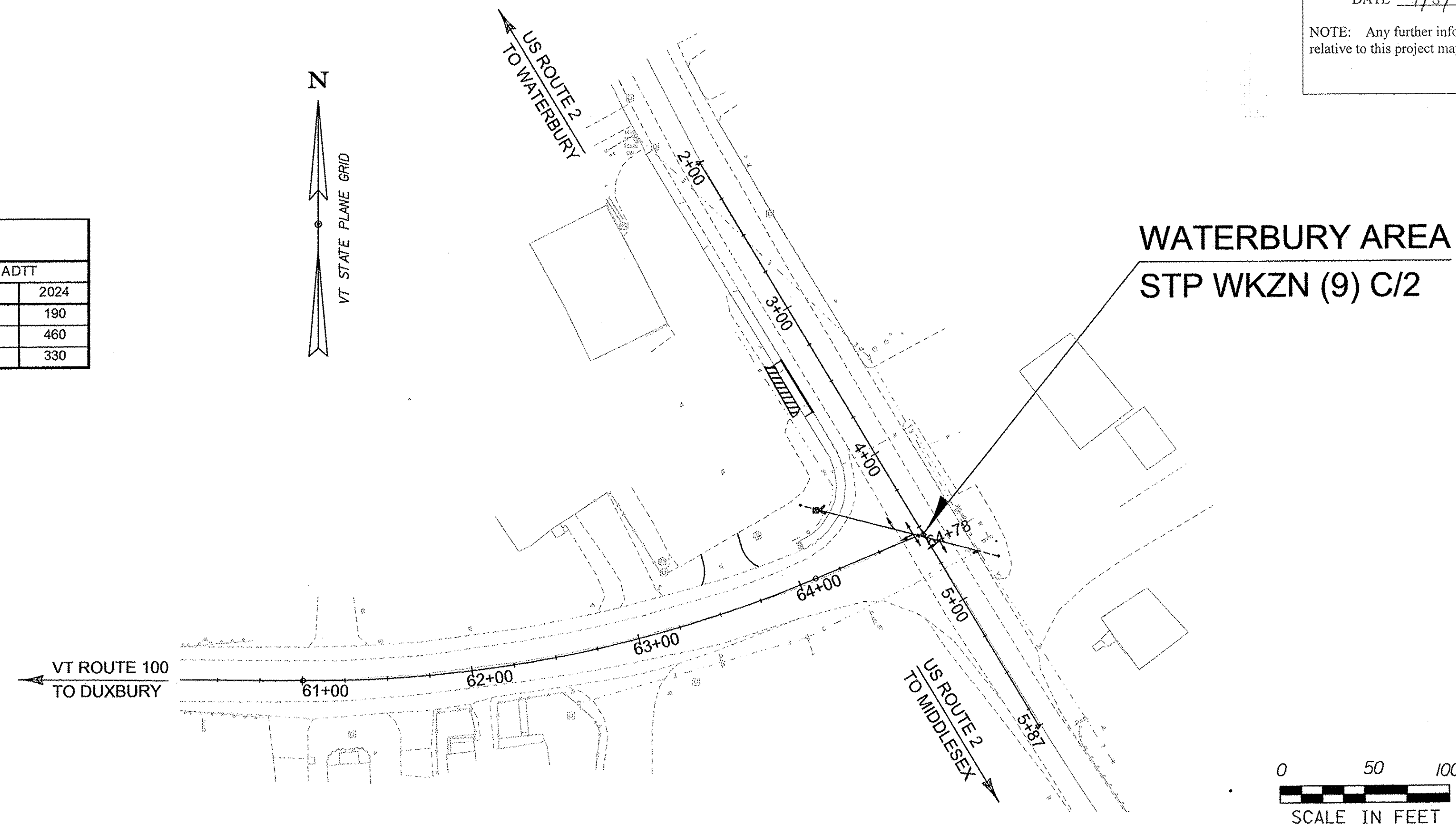


| | |
|--|---|
| RECORD PLANS | |
| CONTRACTOR: | DON WESTON EXCAVATING, INC. - WILLISTON, VT |
| RESIDENT ENGINEER: | TOM MANCINI |
| CONSTRUCTION BEGAN: | MARCH 16, 2015 |
| CONSTRUCTION COMPLETE: | MAY 6, 2015 |
| RECORD PLANS BY: | TOM MANCINI & CRAIG PIERCE |
| I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN. | |
| BY: | <i>Tom Mancini</i> RESIDENT ENGINEER |
| DATE: | 4/8/16 |
| NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives. | |

| TRAFFIC DATA: US-2 & VT-100 | | | | | | | | | | |
|-----------------------------|-------|-------|------|------|------|------|------|------|------|------|
| APPROACH | AADT | | DHV | | % T | | % D | | ADTT | |
| | 2014 | 2024 | 2014 | 2024 | 2014 | 2024 | 2014 | 2024 | 2014 | 2024 |
| US-2 EAST | 3,800 | 3,900 | 430 | 440 | 1.3 | 1.7 | 50 | 50 | 140 | 190 |
| US-2 WEST | 8,600 | 8,800 | 960 | 980 | 1.1 | 1.5 | 54 | 54 | 330 | 460 |
| VT-100 SOUTH | 5,800 | 5,900 | 660 | 670 | 1.0 | 1.3 | 56 | 56 | 240 | 330 |

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

| | |
|-------------------------------------|---------------|
| QUALITY ASSURANCE PROGRAM : LEVEL 3 | |
| SURVEYED BY : | VTRANS |
| SURVEYED DATE : | 2014 |
| DATUM | |
| VERTICAL | NAVD 88 |
| HORIZONTAL | NAD 83 (2011) |



| | |
|---------------------------------------|------------------------------------|
| DIRECTOR OF PROJECT DELIVERY | |
| APPROVED: | <i>[Signature]</i> DATE 10/21/2014 |
| PROJECT MANAGER : PATRICIA COBURN, PE | |
| PROJECT NAME : | WATERBURY AREA |
| PROJECT NUMBER : | STP WKZN (9) C/2 |
| SHEET 1 OF 13 SHEETS | |

CONVENTIONAL SYMBOLS

GENERAL INFORMATION

SYMBOLOLOGY LEGEND NOTE

THE SYMBOLOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOLOGY. THE SYMBOLOLOGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R.O.W. ABBREVIATIONS (CODES) & SYMBOLS

| POINT | CODE | DESCRIPTION |
|----------|-------|------------------------------|
| | CH | CHANNEL EASEMENT |
| | CONST | CONSTRUCTION EASEMENT |
| | CUL | CULVERT EASEMENT |
| | D&C | DISCONNECT & CONNECT |
| | DIT | DITCH EASEMENT |
| | DR | DRAINAGE EASEMENT |
| | DRIVE | DRIVEWAY EASEMENT |
| | EC | EROSION CONTROL |
| | I&M | INSTALL & MAINTAIN EASEMENT |
| | LAND | LANDSCAPE EASEMENT |
| | R&RES | REMOVE & RESET |
| | R&REP | REMOVE & REPLACE |
| | SR | SLOPE RIGHT |
| | UE | UTILITY EASEMENT |
| | (P) | PERMANENT EASEMENT |
| | (T) | TEMPORARY EASEMENT |
| ■ | BNDNS | BOUND SET |
| □ | BNDNS | BOUND TO BE SET |
| ● | IPNS | IRON PIN SET |
| ⊙ | IPNS | IRON PIN TO BE SET |
| ⊠ | CALC | EXISTING ROW POINT |
| ○ | PROW | PROPOSED ROW POINT |
| [LENGTH] | | LENGTH CARRIED ON NEXT SHEET |

COMMON TOPOGRAPHIC POINT SYMBOLS

| POINT | CODE | DESCRIPTION |
|-------|--------|---------------------------|
| ⊕ | APL | BOUND APPARENT LOCATION |
| □ | BM | BENCH MARK |
| □ | BND | BOUND |
| ⊠ | CB | CATCH BASIN |
| ⊕ | COMB | COMBINATION POLE |
| ⊠ | DITHR | DROP INLET THROATED DNC |
| ⊕ | EL | ELECTRIC POWER POLE |
| ⊙ | FPOLE | FLAGPOLE |
| ⊙ | GASFIL | GAS FILLER |
| ⊙ | GP | GUIDE POST |
| ⊙ | GSO | GAS SHUT OFF |
| ⊙ | GUY | GUY POLE |
| ⊙ | GUYW | GUY WIRE |
| ⊙ | GV | GATE VALUE |
| ⊙ | H | TREE HARDWOOD |
| △ | HCTRL | CONTROL HORIZONTAL |
| △ | HVCTRL | CONTROL HORIZ. & VERTICAL |
| ◇ | HYD | HYDRANT |
| ◇ | IP | IRON PIN |
| ● | IPIPE | IRON PIPE |
| ⊕ | LI | LIGHT - STREET OR YARD |
| ⊕ | MB | MAILBOX |
| ⊙ | MH | MANHOLE (MH) |
| □ | MM | MILE MARKER |
| ⊙ | PM | PARKING METER |
| ⊙ | PMK | PROJECT MARKER |
| ⊙ | POST | POST STONE/WOOD |
| ⊕ | RRSIG | RAILROAD SIGNAL |
| ⊕ | RRSL | RAILROAD SWITCH LEVER |
| ⊕ | S | TREE SOFTWOOD |
| ⊕ | SAT | SATELLITE DISH |
| ⊕ | SHRUB | SHRUB |
| ⊕ | SIGN | SIGN |
| ⊕ | STUMP | STUMP |
| ⊕ | TEL | TELEPHONE POLE |
| ⊕ | TIE | TIE |
| ⊕ | TSIGN | SIGN W/DOUBLE POST |
| ⊕ | VCTRL | CONTROL VERTICAL |
| ⊕ | WELL | WELL |
| ⊕ | WSO | WATER SHUT OFF |

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

| CODE | DESCRIPTION |
|------|-------------------------|
| PC | POINT OF CURVATURE |
| PI | POINT OF INTERSECTION |
| CC | CENTER OF CURVE |
| PT | POINT OF TANGENCY |
| PCC | POINT OF COMPOUND CURVE |
| PRC | POINT OF REVERSE CURVE |
| POB | POINT OF BEGINNING |
| POE | POINT OF ENDING |
| STA | STATION PREFIX |
| AH | AHEAD STATION SUFFIX |
| BK | BACK STATION SUFFIX |
| D | CURVE DEGREE OF (100FT) |
| R | CURVE RADUIS OF |
| T | CURVE TANGENT LENGTH |
| L | CURVE LENGTH OF |
| E | CURVE EXTERNAL DISTANCE |

UTILITY SYMBOLOLOGY

UNDERGROUND UTILITIES

| | |
|--------|-------------------------|
| — UT — | TELEPHONE |
| — UE — | ELECTRIC |
| — UC — | CABLE (TV) |
| — — — | ELECTRIC+CABLE |
| — — — | ELECTRIC+TELEPHONE |
| — — — | CABLE+TELEPHONE |
| — — — | ELECTRIC+CABLE+TELEP. |
| — G — | GAS LINE |
| — W — | WATER LINE |
| — S — | SANITARY SEWER (SEPTIC) |

ABOVE GROUND UTILITIES (AERIAL)

| | |
|-------------|-----------------------|
| — T — | TELEPHONE |
| — E — | ELECTRIC |
| — — — | CABLE (TV) |
| — — — | ELECTRIC+CABLE |
| — — — | ELECTRIC+TELEPHONE |
| — AER E&T — | ELECTRIC+TELEPHONE |
| — — — | CABLE+TELEPHONE |
| — — — | ELECTRIC+CABLE+TELEP. |
| — — — | UTILITY POLE GUY WIRE |

PROJECT CONSTRUCTION SYMBOLOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOLOGY

| | |
|--------|-----------------------|
| — CZ — | CLEAR ZONE |
| — — — | PLAN LAYOUT MATCHLINE |

PROJECT CONSTRUCTION FEATURES

| | |
|----------------------|----------------------------|
| △ | TOP OF CUT SLOPE |
| ○ | TOE OF FILL SLOPE |
| ⊕ | STONE FILL |
| — — — | BOTTOM OF DITCH CL |
| — — — | CULVERT PROPOSED |
| — — — | STRUCTURE SUBSURFACE |
| PDF | PROJECT DEMARCATION FENCE |
| — — — | BARRIER FENCE |
| XXXXXXXXXXXXXXXXXXXX | TREE PROTECTION ZONE (TPZ) |
| ////// | STRIPING LINE REMOVAL |
| ~~~~~ | SHEET PILES |

CONVENTIONAL BOUNDARY SYMBOLOLOGY

BOUNDARY LINES

| | |
|-----------------|--|
| — TOWN LINE — | TOWN BOUNDARY LINE |
| — COUNTY LINE — | COUNTY BOUNDARY LINE |
| — STATE LINE — | STATE BOUNDARY LINE |
| — — — | PROPOSED STATE R.O.W. (LIMITED ACCESS) |
| — — — | PROPOSED STATE R.O.W. |
| — — — | STATE ROW (LIMITED ACCESS) |
| — — — | STATE ROW |
| — — — | TOWN ROW |
| — — — | PERMANENT EASEMENT LINE (P) |
| — — — | TEMPORARY EASEMENT LINE (T) |
| — — — | SURVEY LINE |
| — P — | PROPERTY LINE (P/L) |
| SR | SLOPE RIGHTS |
| 6f | 6F PROPERTY BOUNDARY |
| 4f | 4F PROPERTY BOUNDARY |
| HAZ | HAZARDOUS WASTE |

EPSC LAYOUT PLAN SYMBOLOLOGY

EPSC MEASURES

| | |
|--------------|---|
| ONNOONNOONNO | FILTER CURTAIN |
| — — — | SILT FENCE |
| — — — | SILT FENCE WOVEN WIRE |
| — — — | CHECK DAM |
| — — — | DISTURBED AREAS REQUIRING RE-VEGETATION |
| — — — | EROSION MATTING |

ENVIRONMENTAL RESOURCES

| | |
|-----------------|---------------------------------|
| — — — | WETLAND BOUNDARY |
| — — — | RIPARIAN BUFFER ZONE |
| — — — | WETLAND BUFFER ZONE |
| — — — | SOIL TYPE BOUNDARY |
| — T&E — | THREATENED & ENDANGERED SPECIES |
| — HAZ — | HAZARDOUS WASTE AREA |
| — AG — | AGRICULTURAL LAND |
| — HABITAT — | FISH & WILDLIFE HABITAT |
| — FLOOD PLAIN — | FLOOD PLAIN |
| — OHW — | ORDINARY HIGH WATER (OHW) |
| — — — | STORM WATER |
| — — — | USDA FOREST SERVICE LANDS |
| — — — | WILDLIFE HABITAT SUIT/CONN |

ARCHEOLOGICAL & HISTORIC

| | |
|-------------------|----------------------------|
| — ARCH — | ARCHEOLOGICAL BOUNDARY |
| — HISTORIC DIST — | HISTORIC DISTRICT BOUNDARY |
| — HISTORIC — | HISTORIC AREA |
| (H) | HISTORIC STRUCTURE |

CONVENTIONAL TOPOGRAPHIC SYMBOLOLOGY

EXISTING FEATURES

| | |
|-------|--------------------|
| — — — | ROAD EDGE PAVEMENT |
| — — — | ROAD EDGE GRAVEL |
| — — — | DRIVEWAY EDGE |
| — — — | DITCH |
| — — — | FOUNDATION |
| — — — | FENCE (EXISTING) |
| — — — | FENCE WOOD POST |
| — — — | FENCE STEEL POST |
| — — — | GARDEN |
| — — — | ROAD GUARDRAIL |
| — — — | RAILROAD TRACKS |
| — — — | CULVERT (EXISTING) |
| — — — | STONE WALL |
| — — — | WALL |
| — — — | WOOD LINE |
| — — — | BRUSH LINE |
| — — — | HEDGE |
| — — — | BODY OF WATER EDGE |
| — — — | LEDGE EXPOSED |

PROJECT NAME: WATERBURY AREA
PROJECT NUMBER: STP WKZN(9) C/2

FILE NAME: t13k670frm.dgn
PROJECT LEADER: P. COBURN
DESIGNED BY: I. DEGUTIS
CONVENTIONAL SYMBOLOLOGY LEGEND SHEET

PLOT DATE: 10/21/2014
DRAWN BY: B. GROSE
CHECKED BY: M. LACROIX
SHEET 2 OF 13

QUANTITY SHEET

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | | | | | | | | TOTALS | | DESCRIPTIONS | | | | DETAILED SUMMARY OF QUANTITIES | | | | |
|---------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|---------|-----------------|--------------|-------|------|--|--------------------------------|-------|------------|------|-------|
| | | | | | | | | | | | | | ROADWAY | EROSION CONTROL | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | ROUND | QUANTITIES | UNIT | ITEMS |
| | | | | | | | | | | | | | 80 | | 80 | | CY | UNCLASSIFIED EXCAVATION | 203.17 | 4 | | | |
| | | | | | | | | | | | | | 2 | | 2 | | CY | EXCAVATION OF SURFACES AND PAVEMENTS | 203.28 | 0.4 | | | |
| | | | | | | | | | | | | | 1 | | 1 | | CY | TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.) | 204.22 | - | | | |
| | | | | | | | | | | | | | 70 | | 70 | | CY | SUBBASE OF DENSE GRADED CRUSHED STONE | 301.35 | 5 | | | |
| | | | | | | | | | | | | | 1 | | 1 | | LU | PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.) | 406.50 | - | | | |
| | | | | | | | | | | | | | 40 | | 40 | | LF | VERTICAL GRANITE CURB | 616.21 | 3.5 | | | |
| | | | | | | | | | | | | | 10 | | 10 | | LF | REMOVAL OF EXISTING CURB | 616.41 | 0.4 | | | |
| | | | | | | | | | | | | | 20 | | 20 | | SY | PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH | 618.10 | 0.2 | | | |
| | | | | | | | | | | | | | 48 | | 48 | | HR | UNIFORMED TRAFFIC OFFICERS | 630.10 | EST. | | | |
| | | | | | | | | | | | | | 240 | | 240 | | HR | FLAGGERS | 630.15 | EST. | | | |
| | | | | | | | | | | | | | 1 | | 1 | | LS | MOBILIZATION/DEMobilIZATION | 635.11 | - | | | |
| | | | | | | | | | | | | | 1 | | 1 | | LS | TRAFFIC CONTROL | 641.10 | - | | | |
| | | | | | | | | | | | | | 1 | | 1 | | EACH | PORTABLE CHANGEABLE MESSAGE SIGN | 641.15 | - | | | |
| | | | | | | | | | | | | | 20 | | 20 | | LF | 4 INCH WHITE LINE, WATERBORNE PAINT | 646.201 | EST. | | | |
| | | | | | | | | | | | | | 20 | | 20 | | LF | 4 INCH YELLOW LINE, WATERBORNE PAINT | 646.2111 | EST. | | | |
| | | | | | | | | | | | | | 25 | | 25 | | LF | 24 INCH STOP BAR, WATERBORNE PAINT | 646.261 | EST. | | | |
| | | | | | | | | | | | | | 33 | | 33 | | EACH | LETTER OR SYMBOL, WATERBORNE PAINT | 646.301 | EST. | | | |
| | | | | | | | | | | | | | 20 | | 20 | | LF | DURABLE 4 INCH WHITE LINE, POLYUREA | 646.404 | EST. | | | |
| | | | | | | | | | | | | | 20 | | 20 | | LF | DURABLE 4 INCH YELLOW LINE, POLYUREA | 646.414 | EST. | | | |
| | | | | | | | | | | | | | 25 | | 25 | | LF | DURABLE 24 INCH STOP BAR, POLYUREA | 646.484 | EST. | | | |
| | | | | | | | | | | | | | 33 | | 33 | | EACH | DURABLE LETTER OR SYMBOL, POLYUREA | 646.494 | - | | | |
| | | | | | | | | | | | | | 120 | | 120 | | SF | REMOVAL OF EXISTING PAVEMENT MARKINGS | 646.85 | EST. | | | |
| | | | | | | | | | | | | | | 3 | 3 | | CY | TOPSOIL | 651.35 | 0.8 | | | |
| | | | | | | | | | | | | | 35 | | 35 | | SF | TRAFFIC SIGNS, TYPE A | 675.20 | 0.3 | | | |
| | | | | | | | | | | | | | 105 | | 105 | | LF | SQUARE TUBE SIGN POST AND ANCHOR | 675.341 | 0.9 | | | |
| | | | | | | | | | | | | | 8 | | 8 | | EACH | REMOVING SIGNS | 675.50 | - | | | |
| | | | | | | | | | | | | | 6 | | 6 | | EACH | ERECTING SALVAGED SIGNS | 675.60 | - | | | |
| | | | | | | | | | | | | | 1 | | 1 | | EACH | TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION | 678.15 | - | | | |
| | | | | | | | | | | | | | 1 | | 1 | | EACH | BRACKET ARM | 679.47 | - | | | |
| | | | | | | | | | | | | | 1 | | 1 | | EACH | SPECIAL PROVISION (LUMINAIRE, LED) | 900.620 | - | | | |
| | | | | | | | | | | | | | 1 | | 1 | | EACH | SPECIAL PROVISION (RELOCATE LUMINAIRE AND BRACKET ARM) | 900.620 | - | | | |
| | | | | | | | | | | | | | 66 | | 66 | | SY | SPECIAL PROVISION (HAND-PLACED BITUMINOUS CONCRETE MATERIAL, DRIVES) | 900.675 | 0.7 | | | |

PROJECT NAME: WATERBURY AREA
 PROJECT NUMBER: STP WKZN(9) C/2
 FILE NAME: t13k670frm.dgn
 PROJECT LEADER: P. COBURN
 DESIGNED BY: I. DEGUTIS
 QUANTITY SHEET
 PLOT DATE: 10/21/2014
 DRAWN BY: I. DEGUTIS
 CHECKED BY: M. LACROIX
 SHEET 3 OF 13

GPS CONTROL POINTS

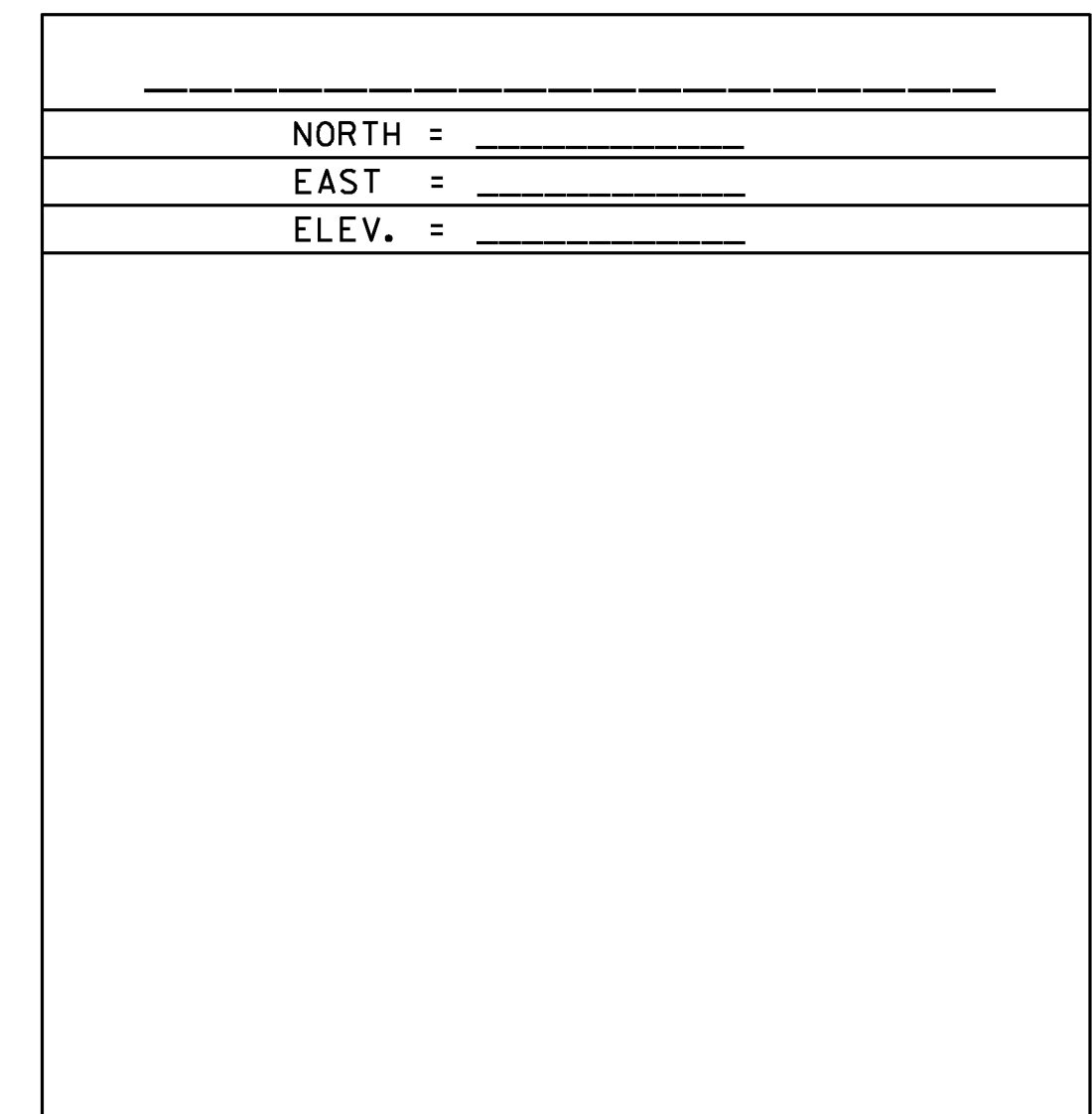
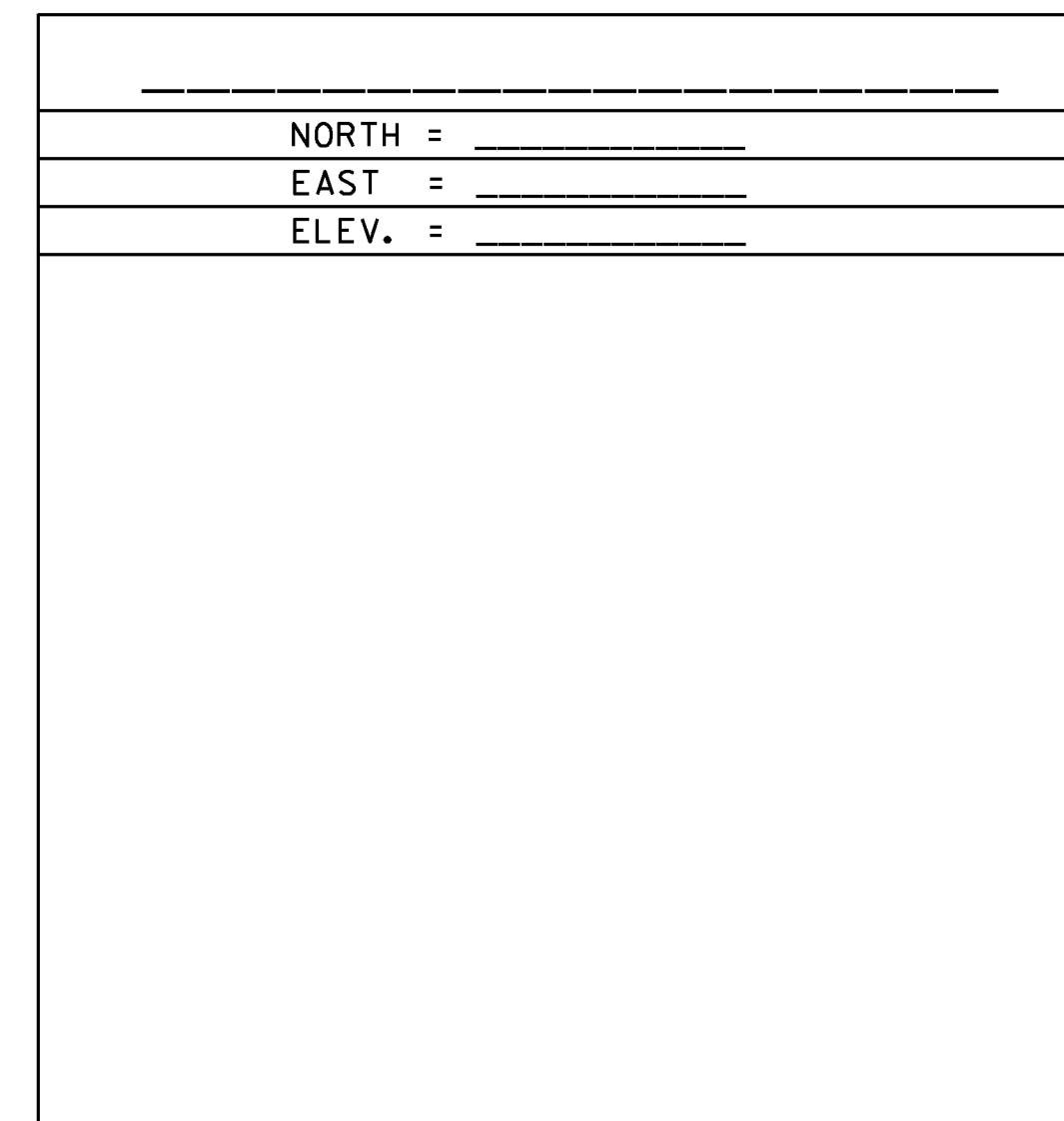
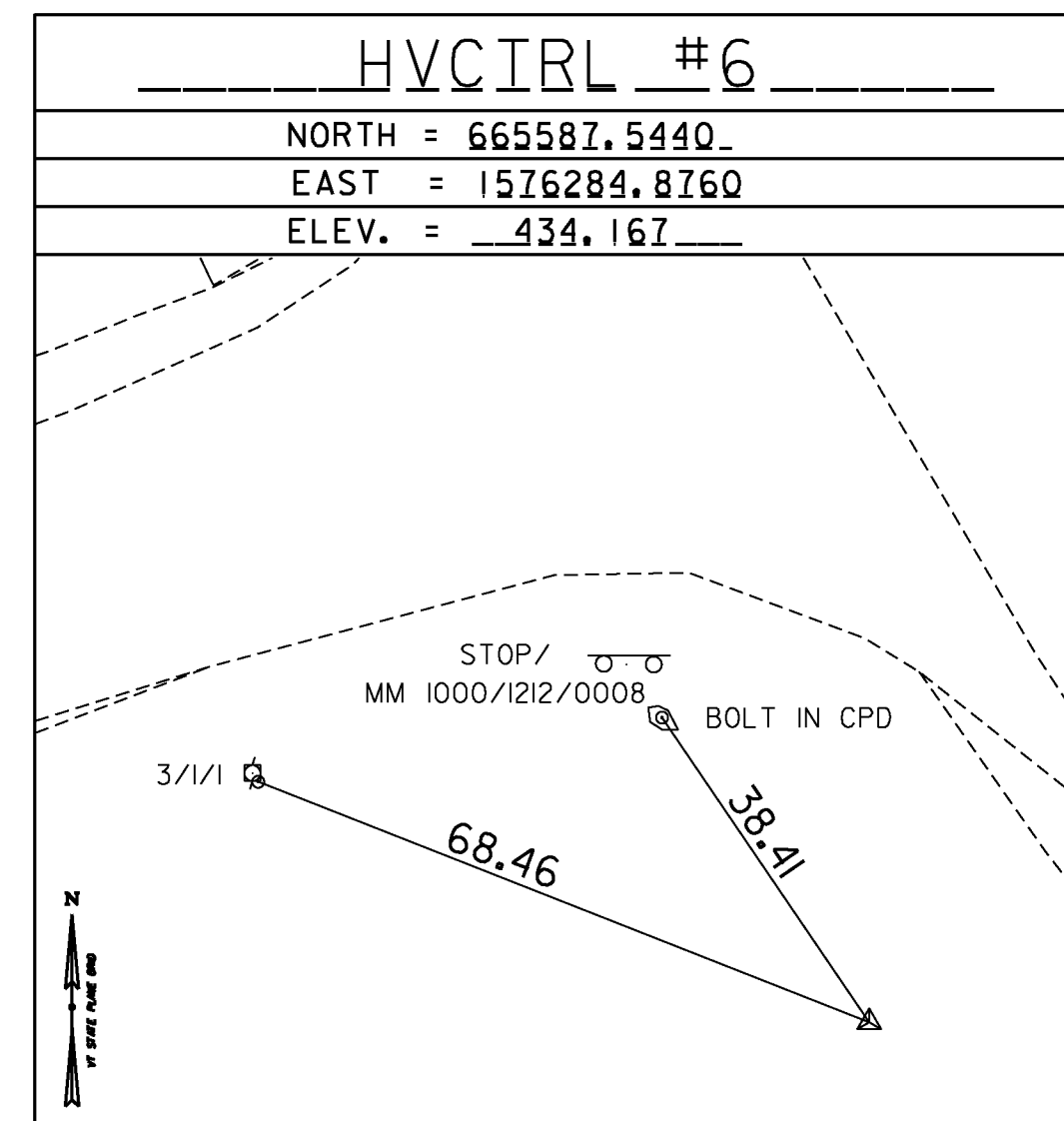
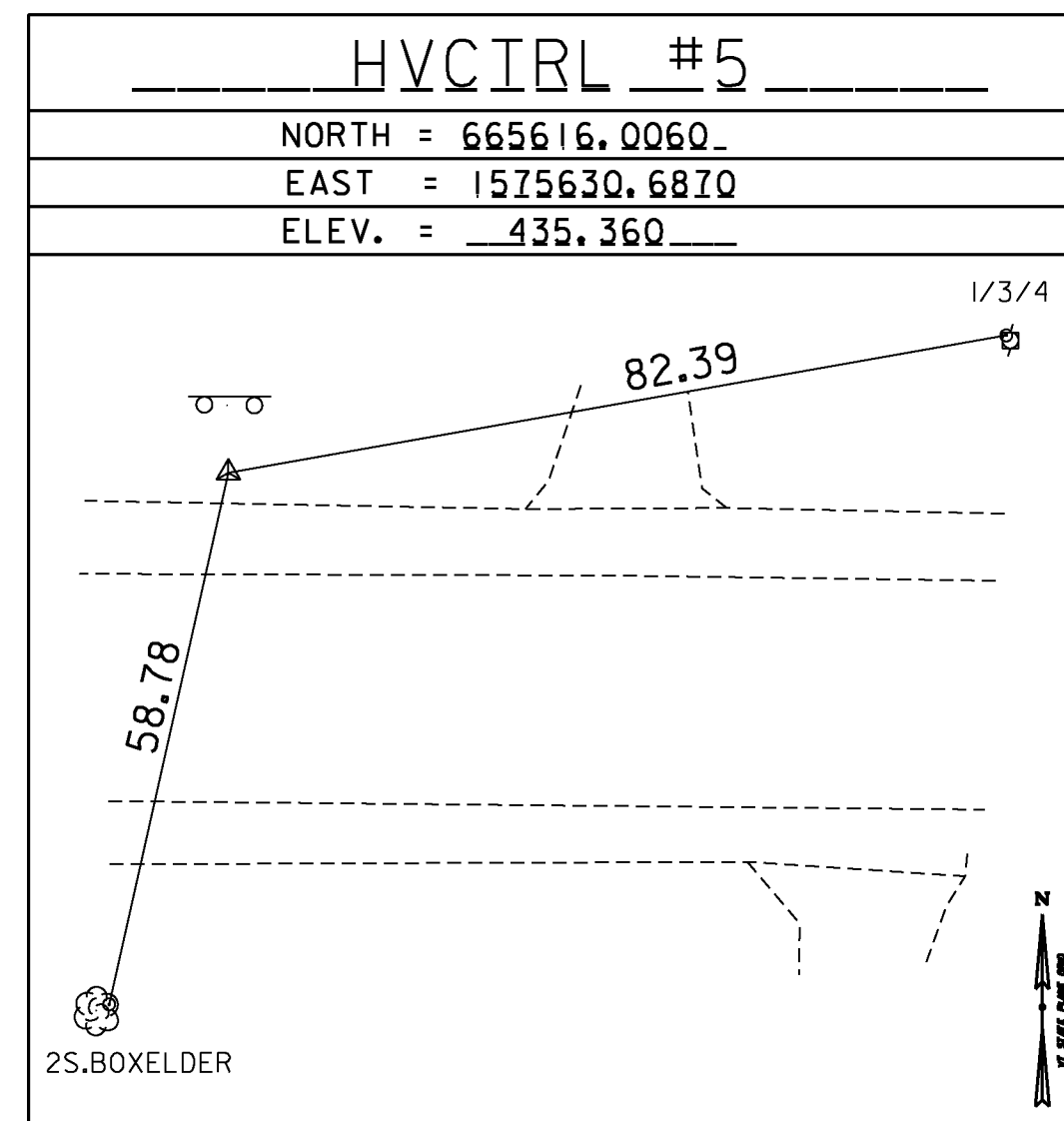
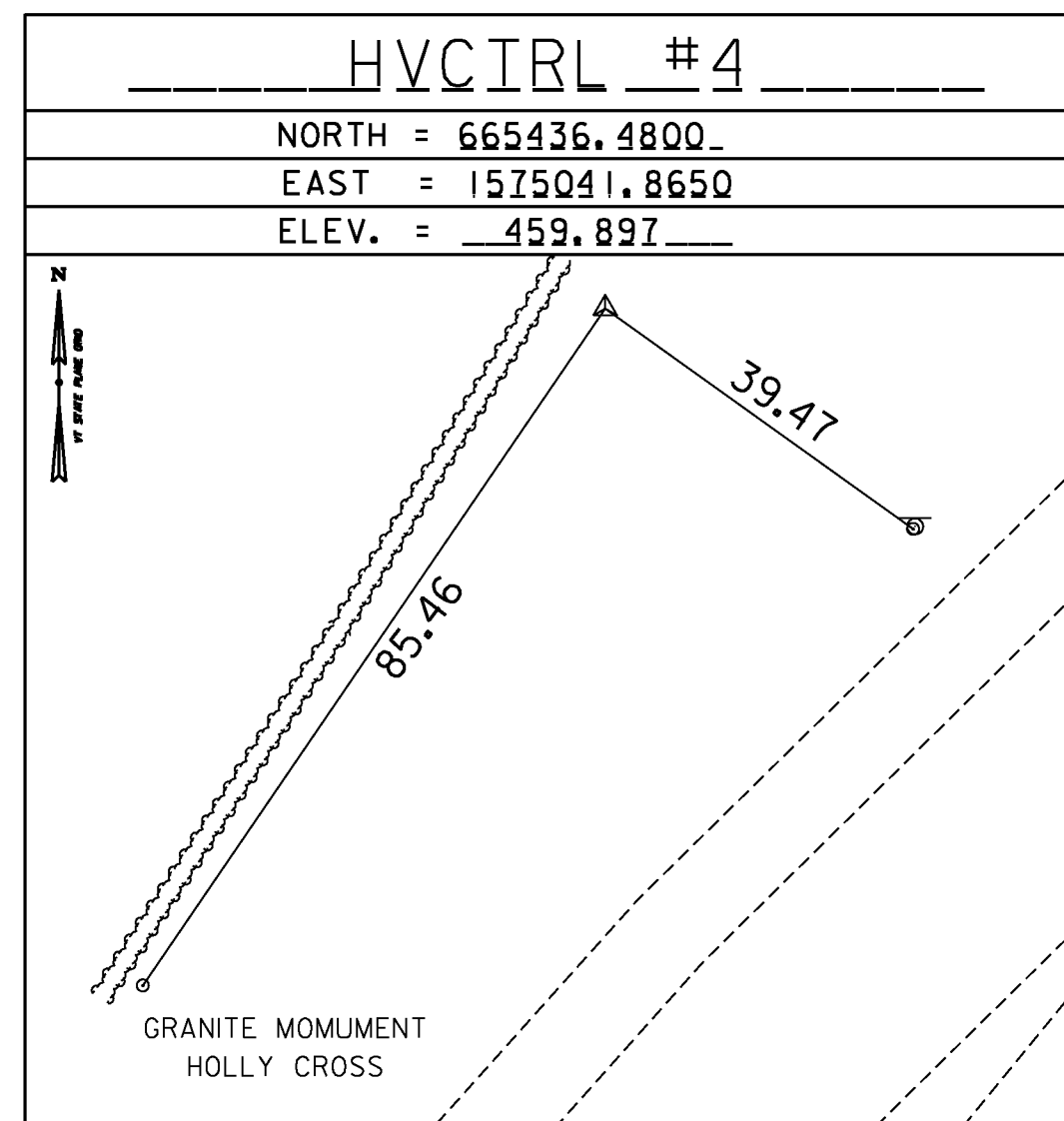
PI #1 PERRY_AZ_MK
 NORTH = 664617.3550
 EAST = 1573527.1190
 ELEV. = 533.540

GENERAL LOCATION, DUXBURY VT.
 THE MARK SET IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT WHICH PROJECTS SLIGHTLY ABOVE GROUND SURFACE. IT IS 7.4 M SOUTH OF AND 0.1 M HIGHER THAN THE CENTERLINE OF MAIN STREET, 9.2 M WEST-SOUTHWEST OF A HYDRANT, 28.6 M WEST-SOUTHWEST OF POLE NO 23/3-1/10, 20.8 M EAST-SOUTHEAST OF AND ACROSS THE ROAD FROM POLE NO 11/24 AND 16.2 M SOUTHWEST OF AND ACROSS THE ROAD FROM THE SOUTHWEST CORNER OF THE COVERED PORCH ON HOUSE NO 79.

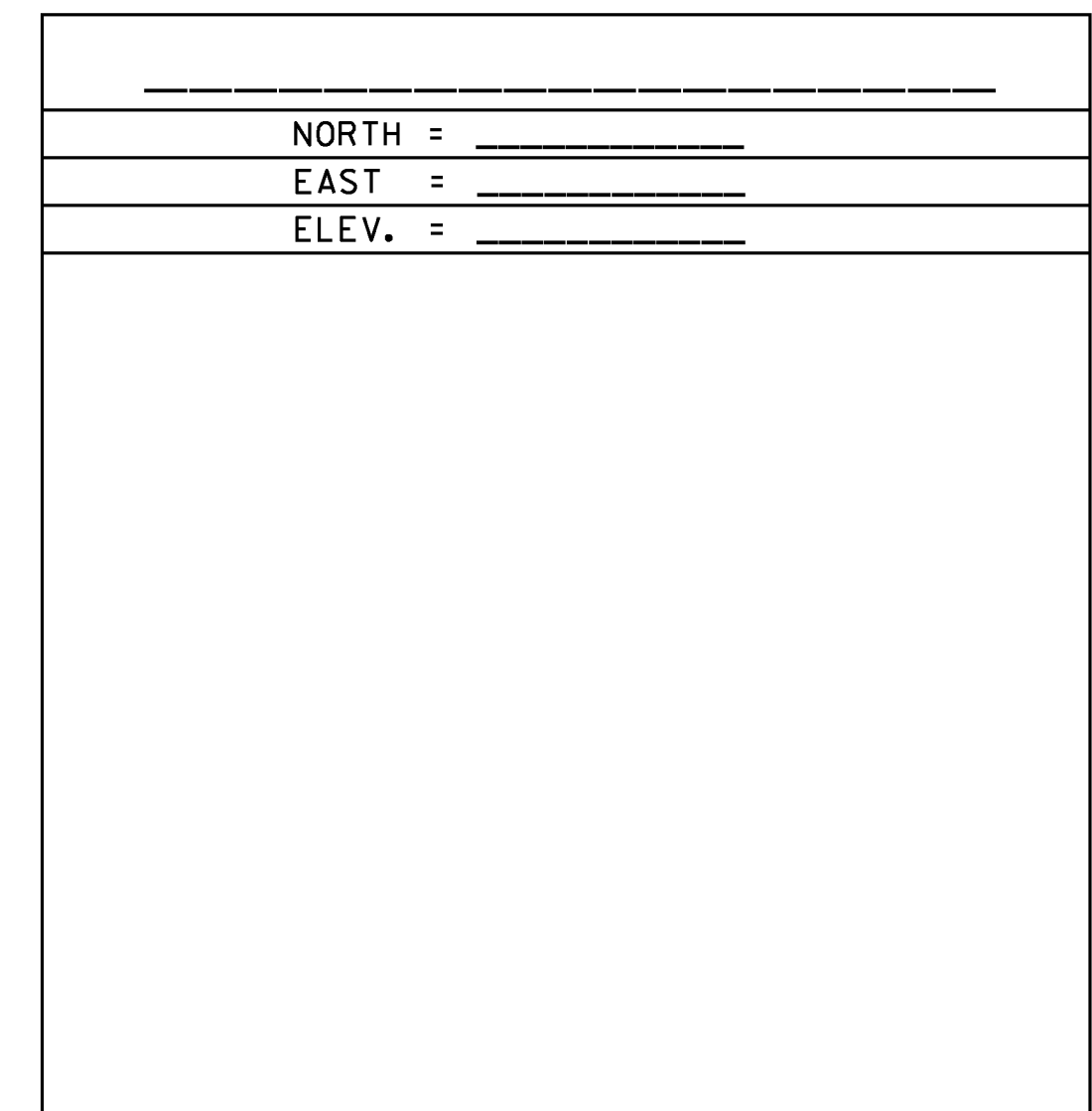
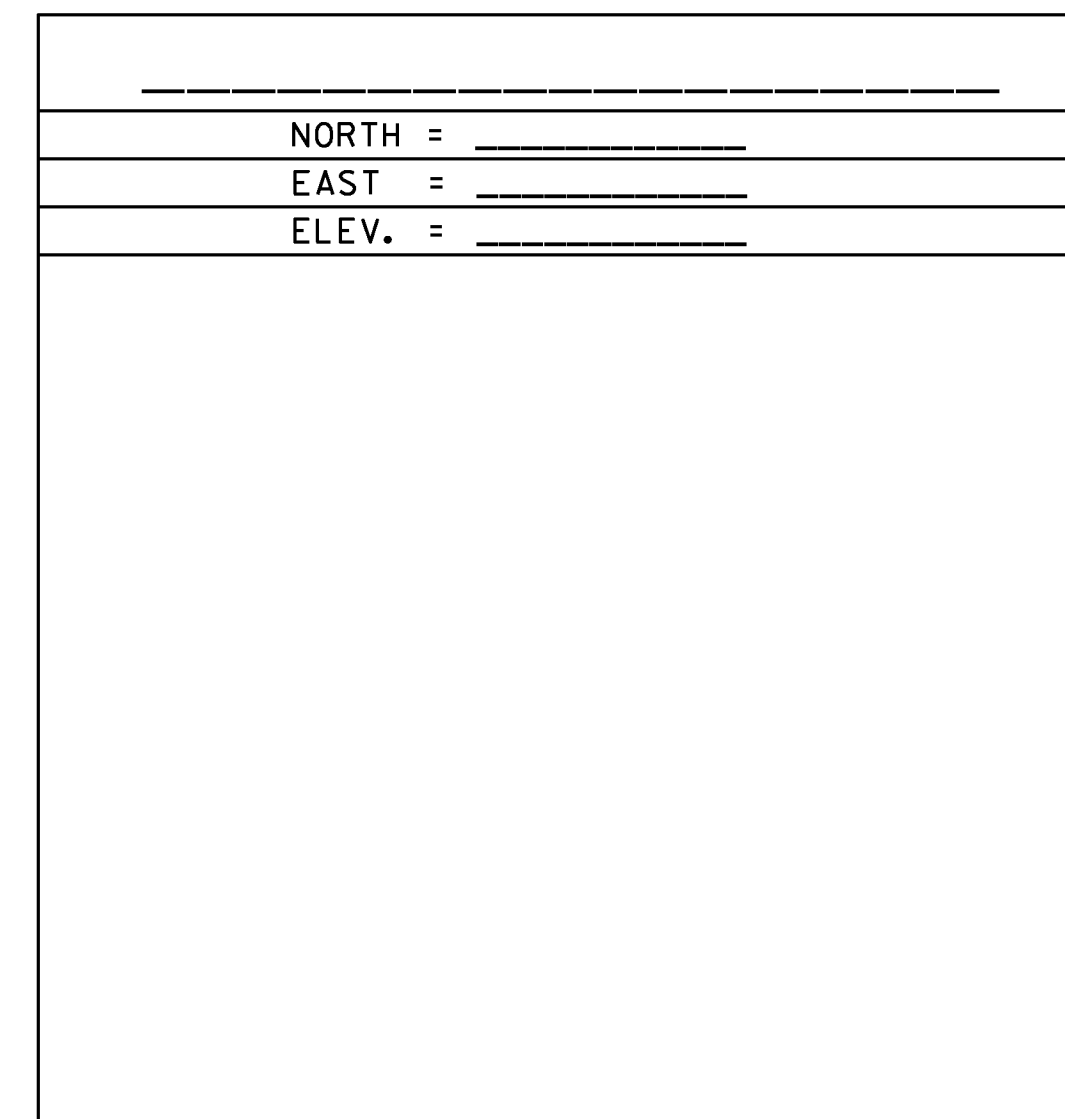
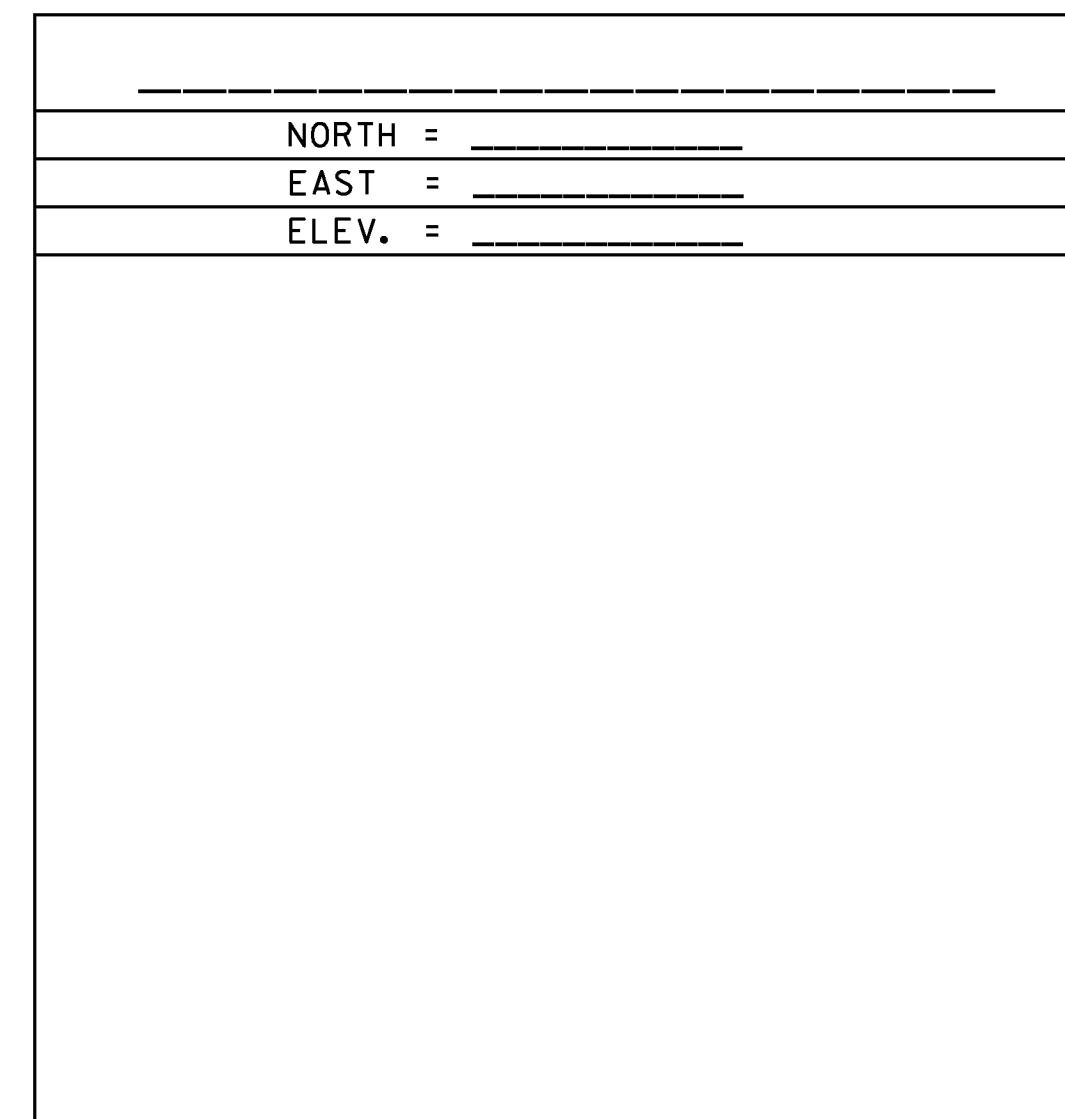
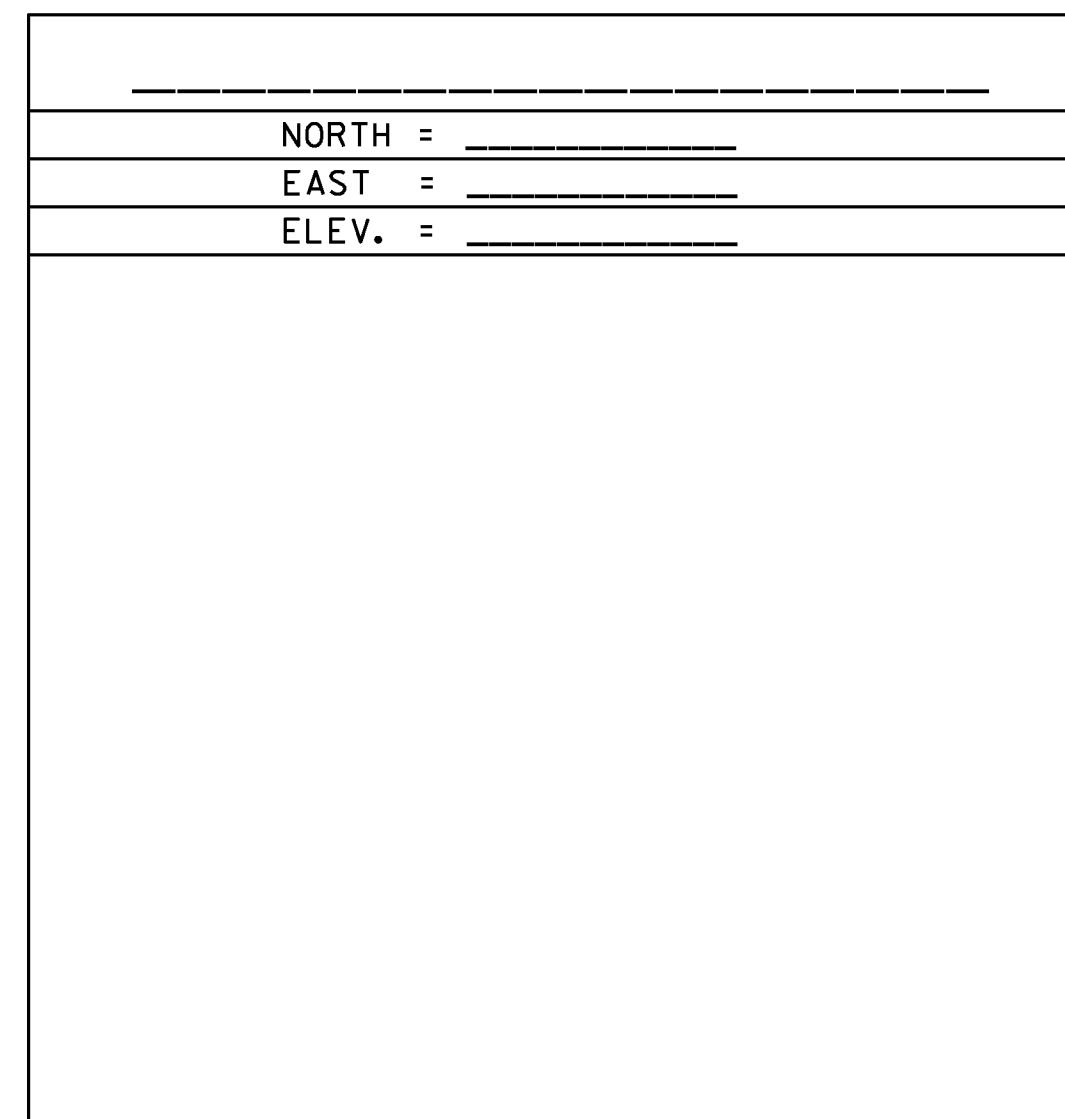
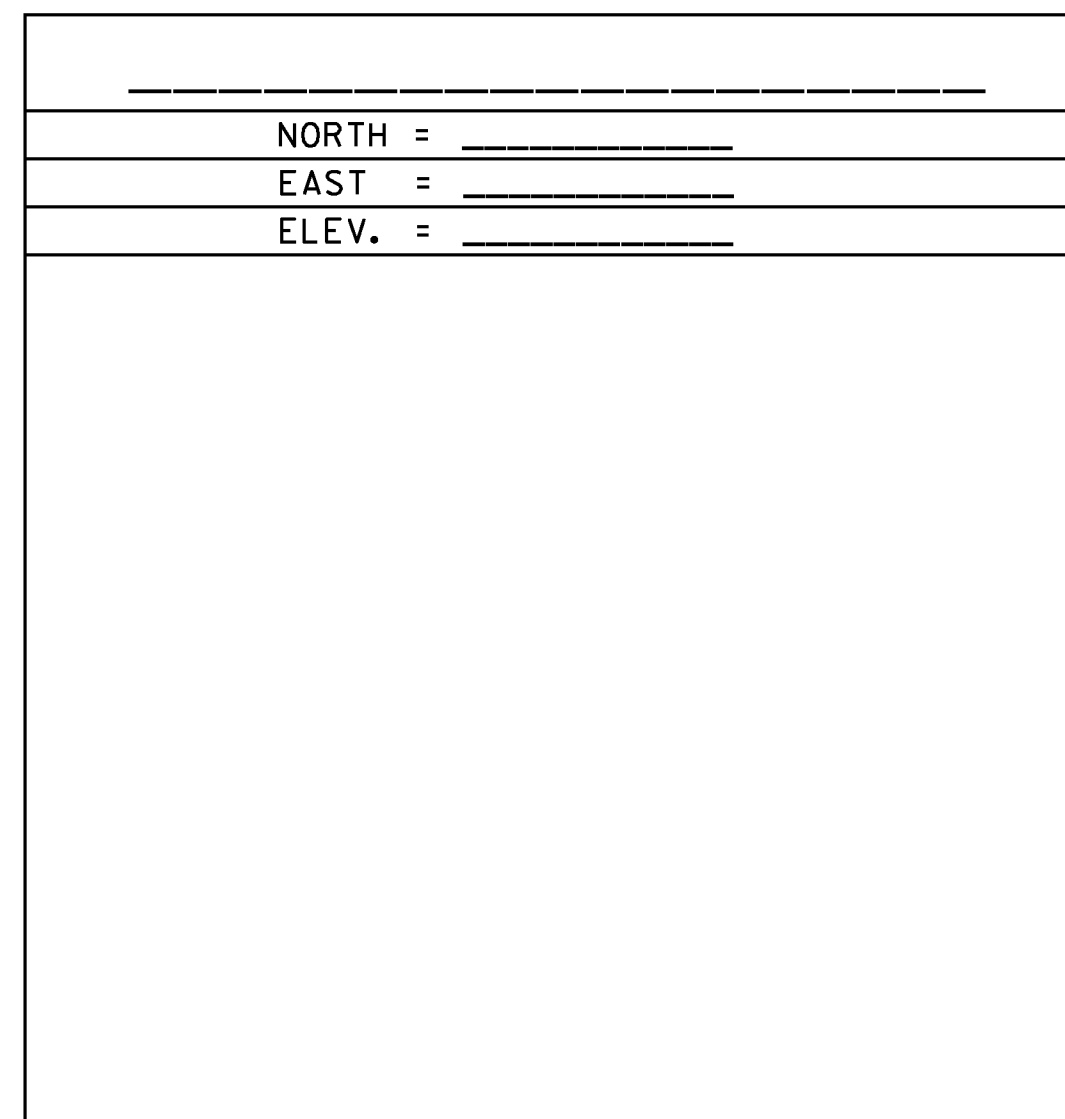
PI #99 STATE_FARM
 NORTH = 665405.4870
 EAST = 1575241.4920
 ELEV. = 456.740

GENERAL LOCATION, DUXBURY VT.
 THE MARK IS SET FLUSH WITH GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT, AT THE SITE OF THE FORMER STATE OF VERMONT FARM STORAGE BARN. IT IS 24.7 M SOUTH OF AND 1.5 M HIGHER THAN THE CENTERLINE OF VT ROUTE 100, 9.4 M EAST-NORTHEAST OF THE CENTERLINE OF A PAVED DRIVE LEADING TO THE BARN, 36.1 M NORTH-NORTHWEST OF THE NORTH CORNER OF THE BARN, 23.1 M EAST-NORTHEAST OF POLE NO 2/2, AND 1.9 M SOUTH OF THE GRAVEL DRIVE LEADING TO HOUSE NO 11.

TRAVERSE TIES

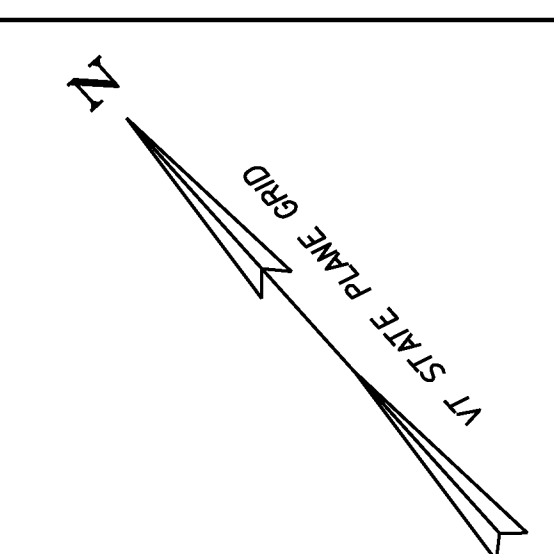


ALIGNMENT TIES



| | |
|------------|--------------|
| DATUM | |
| VERTICAL | NAVD88 |
| HORIZONTAL | NAOD83(2011) |
| ADJUSTMENT | COMPASS |

| | |
|-----------------|-----------------|
| PROJECT NAME: | WATERBURY |
| PROJECT NUMBER: | STP WKZN(9) C/2 |
| FILE NAME: | t13k670frm.dgn |
| PROJECT LEADER: | P. COBURN |
| DESIGNED BY: | I. DEGUTIS |
| TIE SHEET | |
| PLOT DATE: | 10/21/2014 |
| DRAWN BY: | C. CYR |
| CHECKED BY: | I. DEGUTIS |
| SHEET | 4 OF 13 |



**BEGIN R.O.W. PROJECT
STP WKZN (9) C/2
STA. 3+11.68 38.93' RT**

**1
OPUS MINOR, LLC**

**2
TOP NOTCH PROPERTIES, LLC**

**END R.O.W. PROJECT
STP WKZN (9) C/2
STA. 4+89.22 30.95' LT**

REMOVE EXISTING PAVEMENT
AND PLACE TOPSOIL, FERTILIZER,
SEED AND MULCH

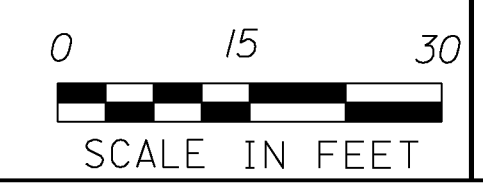
SAWCUTTING JOINT TO BE PAID
INCIDENTAL TO EXCAVATION OF
SURFACES AND PAVEMENTS

EXCAVATION OF SURFACES AND PAVEMENTS
STA 3+22.7 RT - STA 3+60.1 RT

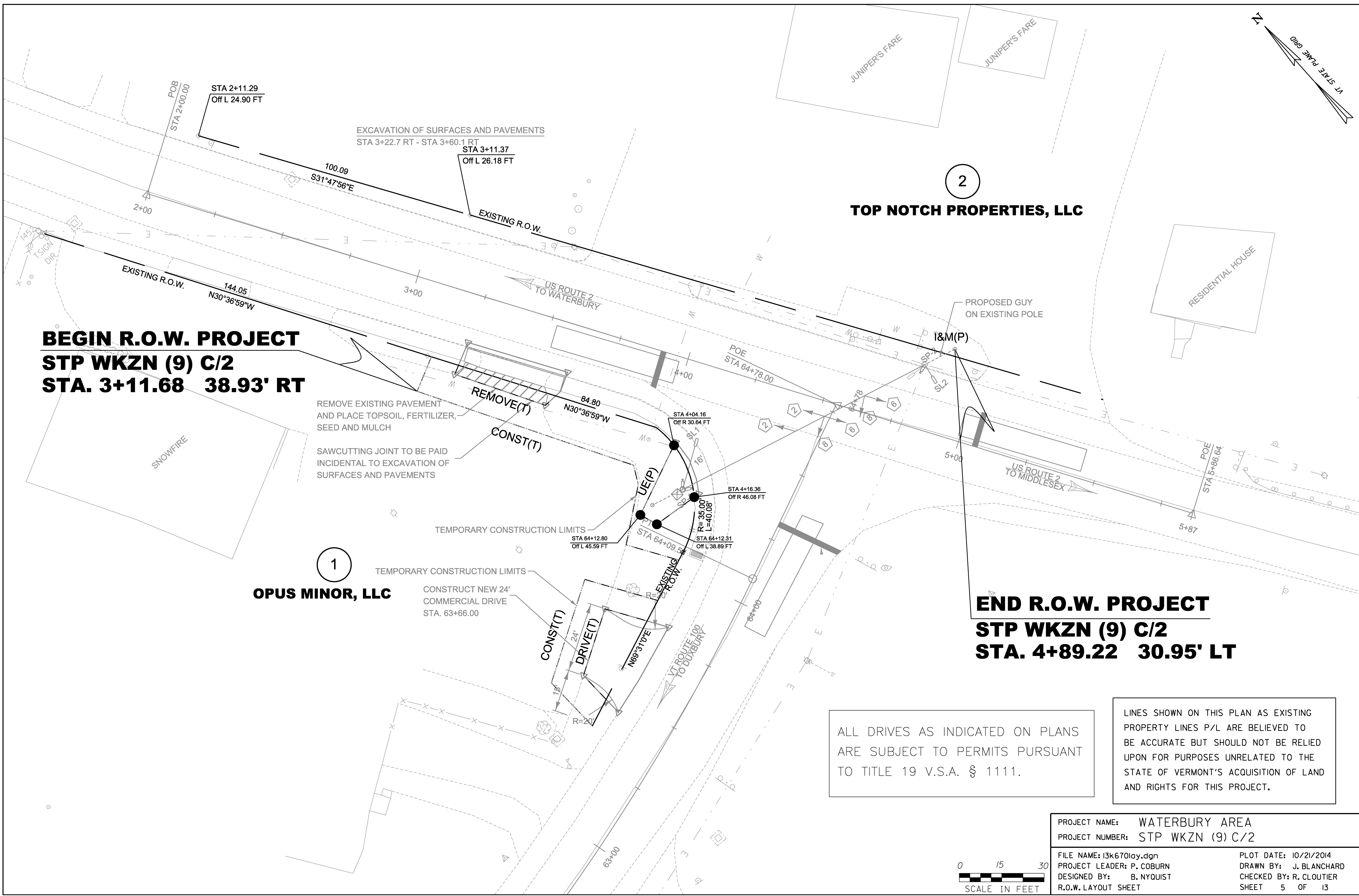
CONSTRUCT NEW 24'
COMMERCIAL DRIVE
STA. 63+66.00

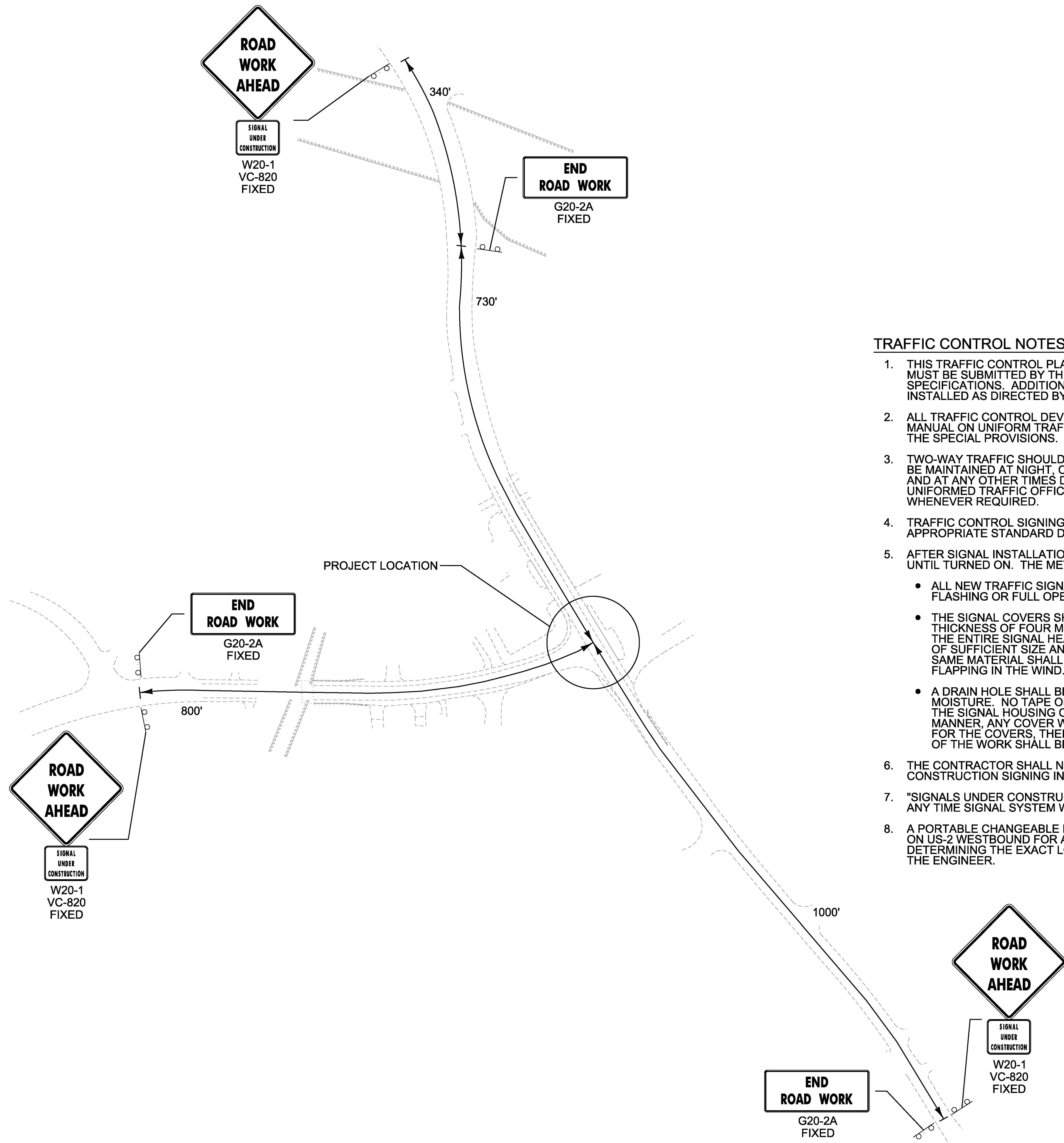
ALL DRIVES AS INDICATED ON PLANS
ARE SUBJECT TO PERMITS PURSUANT
TO TITLE 19 V.S.A. § 1111.

LINES SHOWN ON THIS PLAN AS EXISTING
PROPERTY LINES P/L ARE BELIEVED TO
BE ACCURATE BUT SHOULD NOT BE RELIED
UPON FOR PURPOSES UNRELATED TO THE
STATE OF VERMONT'S ACQUISITION OF LAND
AND RIGHTS FOR THIS PROJECT.



| | | | |
|-----------------|------------------|---------------------|-------------------------|
| PROJECT NAME: | WATERBURY AREA | PLOT DATE: | 10/21/2014 |
| PROJECT NUMBER: | STP WKZN (9) C/2 | DRAWN BY: | J. BLANCHARD |
| FILE NAME: | I3k670lay.dgn | DESIGNED BY: | B. NYQUIST |
| PROJECT LEADER: | P. COBURN | R.O.W. LAYOUT SHEET | CHECKED BY: R. CLOUTIER |
| | | | SHEET 5 OF 13 |





TRAFFIC CONTROL NOTES

1. THIS TRAFFIC CONTROL PLAN IS CONCEPTUAL ONLY. A SITE-SPECIFIC TRAFFIC CONTROL PLAN MUST BE SUBMITTED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 641 OF THE STANDARD SPECIFICATIONS. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE REQUIRED AND SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.
2. ALL TRAFFIC CONTROL DEVICES SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), VAOT "STANDARD DRAWINGS" AND THE SPECIAL PROVISIONS.
3. TWO-WAY TRAFFIC SHOULD BE MAINTAINED WHENEVER POSSIBLE. TWO-WAY TRAFFIC SHALL BE MAINTAINED AT NIGHT, ON WEEKENDS AND HOLIDAYS, DURING PEAK TRAFFIC FROM 7-9 AM AND 3-6 PM AND AT ANY OTHER TIMES DESIGNATED BY THE ENGINEER. AT THE DISCRETION OF THE ENGINEER, UNIFORMED TRAFFIC OFFICERS SHALL DIRECT TRAFFIC OR TRAINED FLAGGERS SHALL STOP TRAFFIC WHENEVER REQUIRED.
4. TRAFFIC CONTROL SIGNING AND CHANNELIZING DEVICES SHALL BE IN ACCORDANCE WITH THE APPROPRIATE STANDARD DRAWINGS (T-1, T-10, T-30, T-45) AND THE MUTCD.
5. AFTER SIGNAL INSTALLATION, ALL SIGNALS MUST BE COVERED (TURNING SHALL NOT BE ALLOWED) UNTIL TURNED ON. THE METHOD OF COVERING SHALL BE AS FOLLOWS:
 - ALL NEW TRAFFIC SIGNAL HEADS WHICH HAVE BEEN INSTALLED BUT NOT PLACED IN EITHER FLASHING OR FULL OPERATION SHALL BE COVERED.
 - THE SIGNAL COVERS SHALL CONSIST OF A ONE-PIECE PLASTIC BAG HAVING A MINIMUM THICKNESS OF FOUR MIL. THE BAG SHALL BE OPAQUE. THE COVER SHALL SLIP OVER THE ENTIRE SIGNAL HEAD AND SHALL BE SECURELY TIED AT THE OPENING WITH A ROPE OF SUFFICIENT SIZE AND STRENGTH TO SECURE THE COVER. AN INTERMEDIATE ROPE OF THE SAME MATERIAL SHALL BE DRAWN AROUND THE CENTER OF THE COVER TO PREVENT EXCESS FLAPPING IN THE WIND.
 - A DRAIN HOLE SHALL BE MADE AT THE BOTTOM OF THE BAG TO ALLOW THE ESCAPE OF MOISTURE. NO TAPE OR ADHESIVE WILL BE ALLOWED TO BE ATTACHED TO ANY SURFACE OF THE SIGNAL HOUSING OR LENSES. ALL COVERS SHALL BE PLACED IN A NEAT WORKMANLIKE MANNER. ANY COVER WHICH IS TORN OR MISSING SHALL BE IMMEDIATELY REPLACED. PAYMENT FOR THE COVERS, THEIR REPLACEMENT, AND REMOVAL AND ALL INCIDENTALS FOR COMPLETION OF THE WORK SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 678.15.
6. THE CONTRACTOR SHALL NOT WORK WITHIN THE HIGHWAY RIGHT-OF-WAY WITHOUT THE APPROPRIATE CONSTRUCTION SIGNING IN PLACE AS SHOWN ON STD. T-10.
7. "SIGNALS UNDER CONSTRUCTION" SIGN PANELS SHALL BE MOUNTED UNDER "ROAD WORK AHEAD" SIGNS ANY TIME SIGNAL SYSTEM WORK IS BEING PERFORMED. SEE SIGN DETAIL ON SHEET 12.
8. A PORTABLE CHANGEABLE MESSAGE SIGN HAS BEEN INCLUDED IN THIS CONTRACT FOR PLACEMENT ON US-2 WESTBOUND FOR ADVANCED WARNING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION. THE MESSAGE TO BE DISPLAYED SHALL BE APPROVED BY THE ENGINEER.

| | | | | | |
|-----------------|-----------------|----------------------|----------------|-------------|------------|
| PROJECT NAME: | WATERBURY AREA | FILE NAME: | +13k670+cp.dgn | PLOT DATE: | 10/21/2014 |
| PROJECT NUMBER: | STP WKZN(9) C/2 | PROJECT LEADER: | P. COBURN | DRAWN BY: | K. RECORD |
| | | DESIGNED BY: | I. DEGUTIS | CHECKED BY: | I. DEGUTIS |
| | | TRAFFIC CONTROL PLAN | | SHEET | 7 OF 13 |

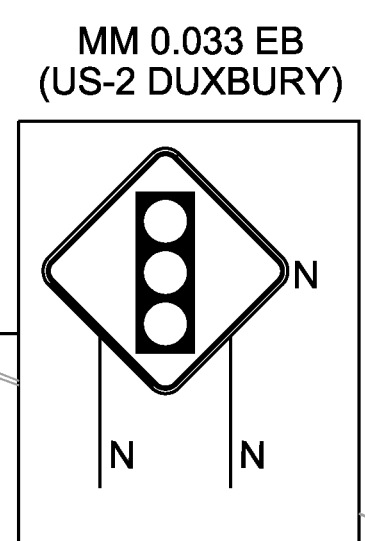
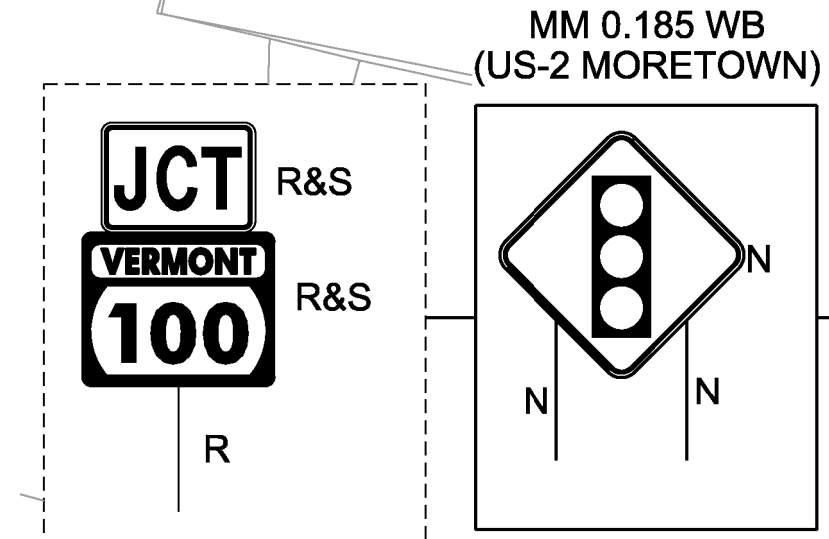
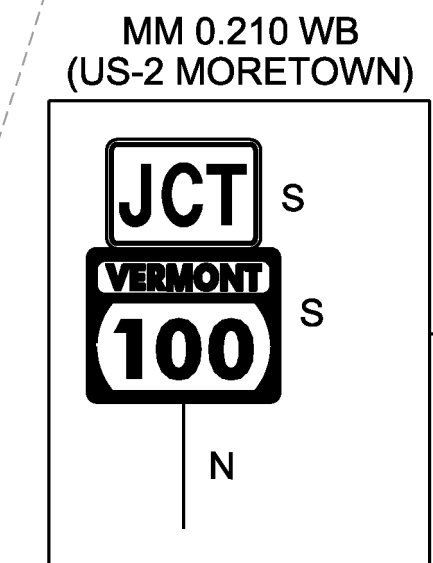
CONSTRUCT DRIVE
 STA. 63+49.5 LT - STA. 63+75.3 LT
 REMOVE DRIVE
 STA. 3+22.7 RT - STA. 3+60.5 RT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
 STA 3+24.00 RT - STA 3+60.5 RT
 VERTICAL GRANITE CURB
 STA 3+24.00 RT - STA 3+60.5 RT
 REMOVAL OF EXISTING CURB
 STA 3+24.0 RT - STA 3+29.0 RT
 STA 3+55.9 RT - STA 3+60.5 RT
 EXCAVATION OF SURFACES AND PAVEMENTS
 STA 3+22.7 RT - STA 3+60.1 RT

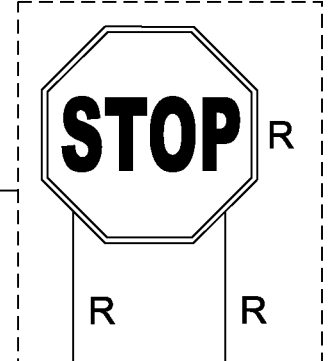
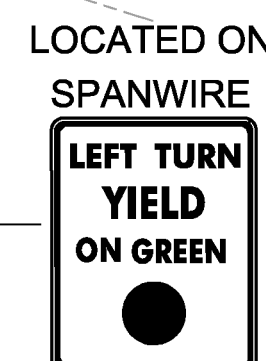
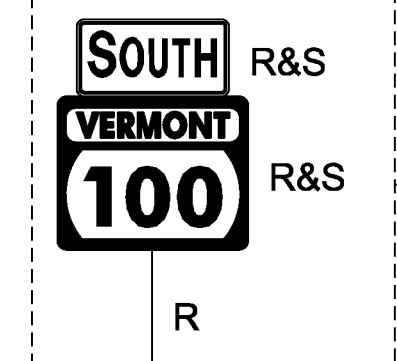
| ALIGNMENT: US-2 | | | | |
|-----------------|-------|---------|-------------|--------------|
| ELEMENT | POINT | STATION | NORTHING | EASTING |
| LINEAR | POB | 2+00.00 | 665892.2852 | 1576157.3332 |
| LINEAR | POE | 5+86.64 | 665561.1022 | 1576356.8579 |

| ALIGNMENT: VT ROUTE 100 | | | | |
|-------------------------|-------|----------|-------------|--------------|
| ELEMENT | POINT | STATION | NORTHING | EASTING |
| LINEAR | POB | 57+93.01 | 665593.6393 | 1575616.6907 |
| CURVE #1 | PC | 61+00.37 | 665589.8500 | 1575924.0293 |
| | PI | 62+57.12 | 665587.9176 | 1576080.7611 |
| | PT | 64+09.57 | 665647.8590 | 1576225.5907 |
| LINEAR | POE | 64+78.00 | 665674.0295 | 1576288.8236 |

| CURVE #1 DATA: | |
|----------------|---------------------|
| RADIUS: | 763.94' |
| Δ: | 23° 11' 23.38" LEFT |
| Dc: | 7° 30' 00.13" |
| LENGTH: | 309.2' |
| TANGENT: | 156.74' |
| EXTERNAL: | 15.91' |



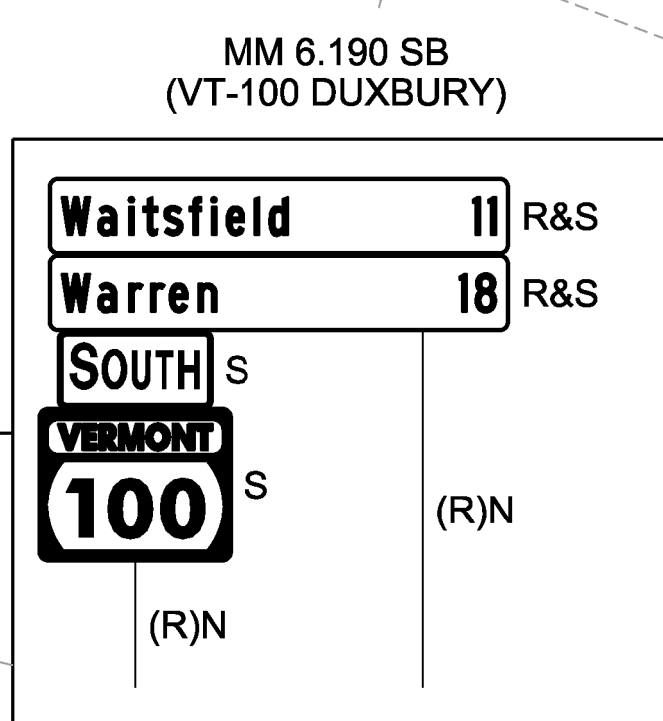
REMOVE EXISTING PAVEMENT AND PLACE TOPSOIL, FERTILIZER, SEED AND MULCH
 SAWCUTTING JOINT TO BE PAID INCIDENTAL TO EXCAVATION OF SURFACES AND PAVEMENTS



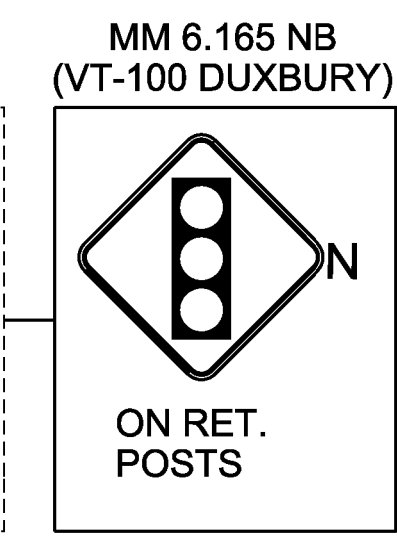
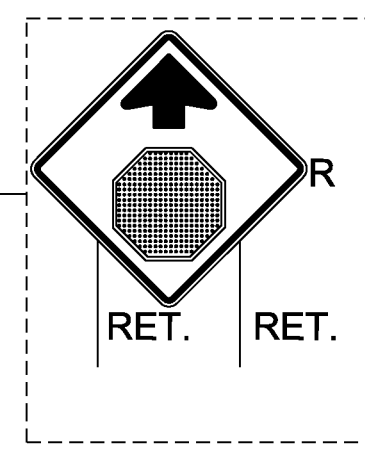
DURABLE 24" STOP BAR, POLYUREA
 STA 3+92 RT, 13'
 STA 5+05 LT, 12'
 4+48
 DURABLE 4" WHITE LINE, POLYUREA
 AS DIRECTED BY THE ENGINEER
 DURABLE 4" YELLOW LINE, POLYUREA
 AS DIRECTED BY THE ENGINEER

REMOVING SIGNS
 AS SHOWN - 8
 ERECTING SALVAGED SIGNS
 AS SHOWN - 6

CONSTRUCT NEW 24' COMMERCIAL DRIVE
 STA. 63+66.00

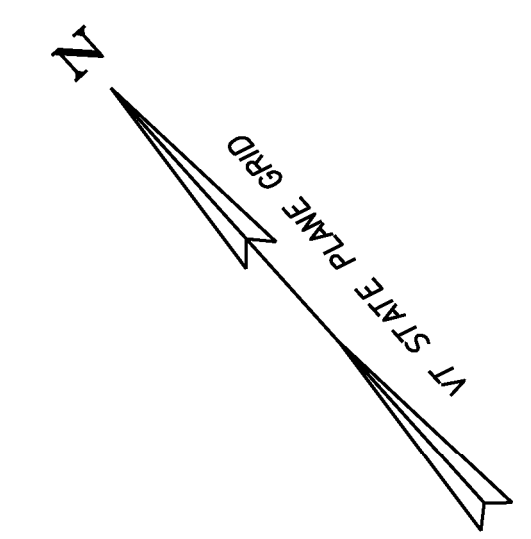
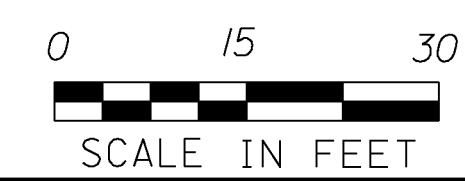


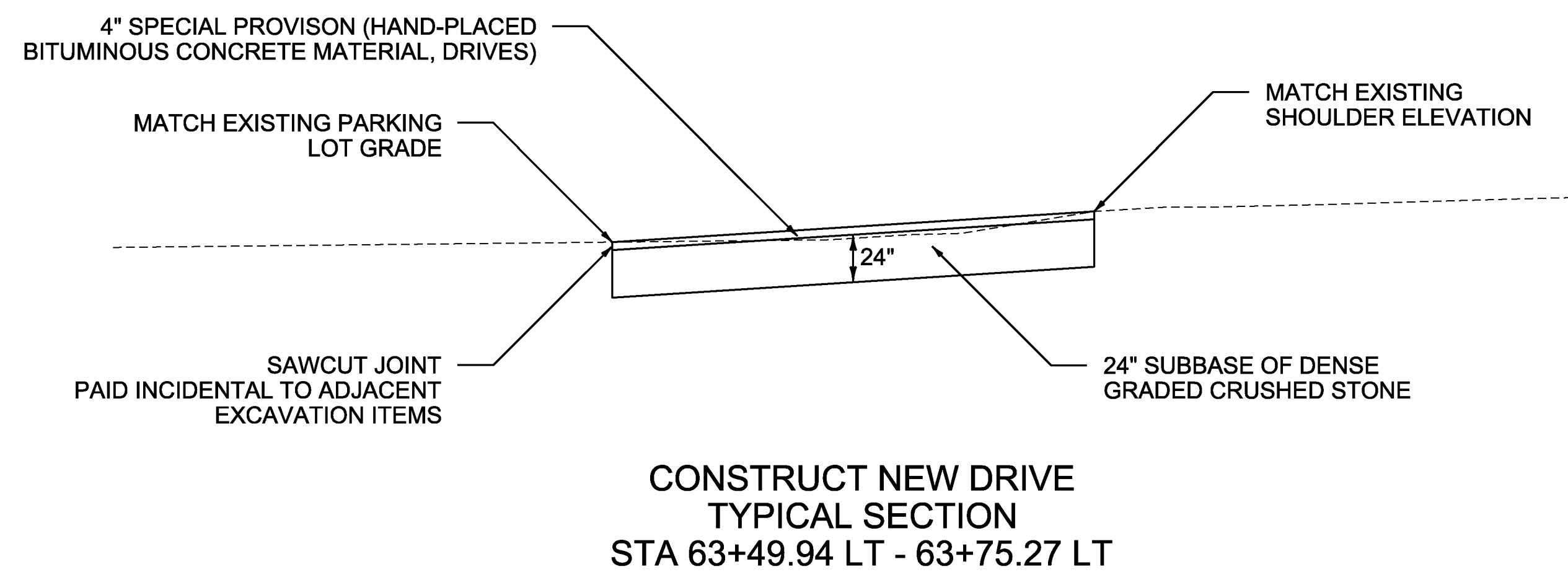
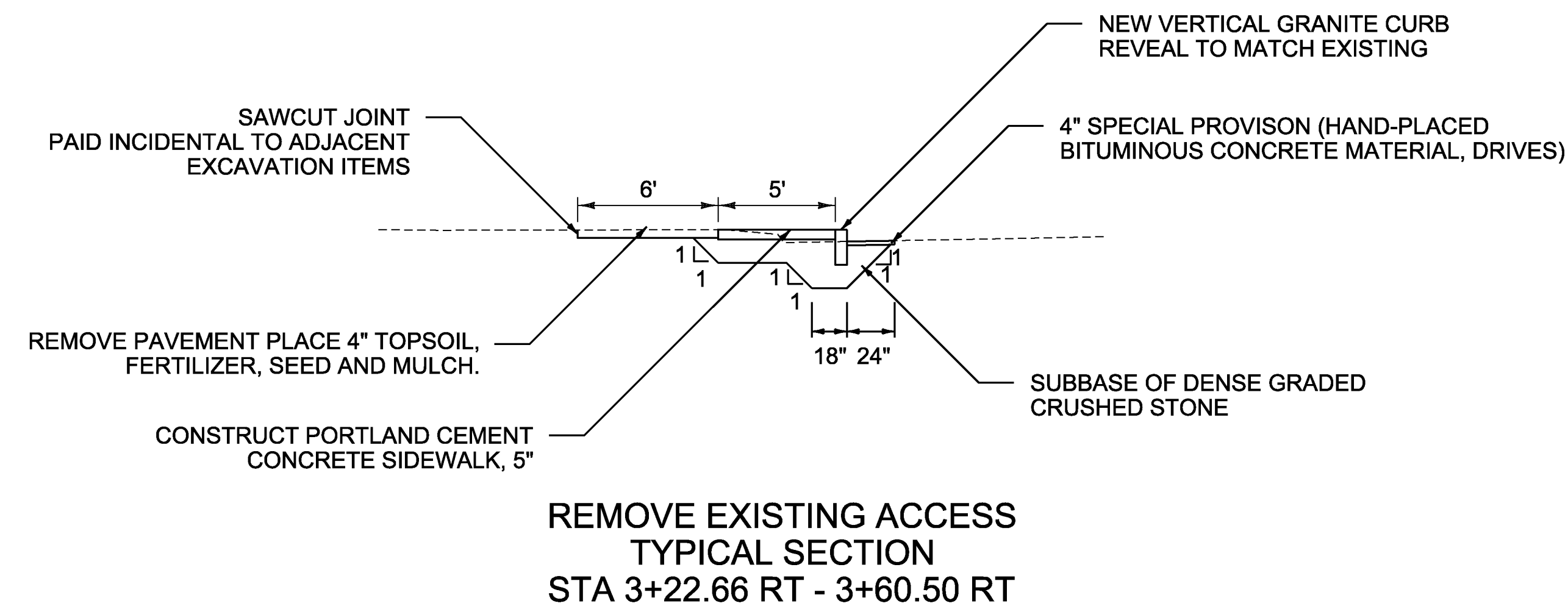
DURABLE LETTER OR SYMBOL, POLYUREA
 MM 6.165 NB (VT-100 DUXBURY) (SIGNAL AHEAD)
 MM 0.033 EB (US-2 DUXBURY) (SIGNAL AHEAD)
 MM 0.185 WB (US-2 MORETOWN) (SIGNAL AHEAD)
 REMOVAL OF EXISTING PAVEMENT MARKINGS
 MM 6.165 NB (VT-100 DUXBURY) (STOP AHEAD)
 AND AS DIRECTED BY THE ENGINEER



| LEGEND | |
|--------|-----------------------------|
| R | REMOVE |
| S | SALVAGE |
| R&S | REMOVE AND SALVAGE |
| RET. | RETAIN |
| (R)N | REMOVE AND REPLACE WITH NEW |
| N | NEW |

PROJECT NAME: WATERBURY AREA
 PROJECT NUMBER: STP WKZN(9) C/2
 FILE NAME: t13k670nu.dgn
 PROJECT LEADER: P. COBURN
 DESIGNED BY: I. DEGUTIS
 LAYOUT SHEET
 PLOT DATE: 10/21/2014
 DRAWN BY: I. DEGUTIS
 CHECKED BY: M. LACROIX
 SHEET 8 OF 13



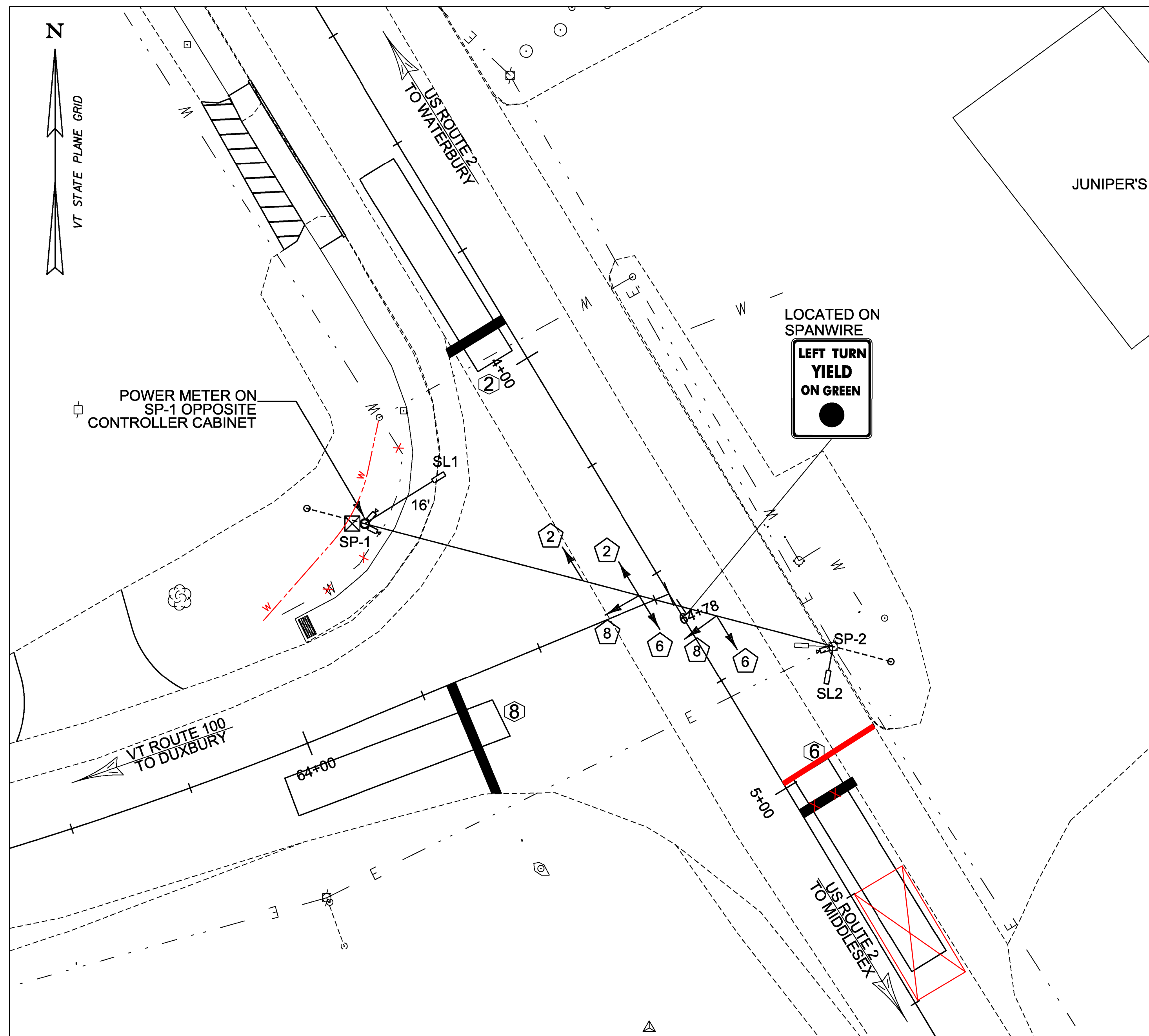


NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING UTILITIES WITHIN AND ADJACENT TO THE LIMITS OF WORK. IN THE EVENT OF DAMAGE TO THESE SYSTEMS, THE REPAIRS OR REPLACEMENT SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE AS APPROVED BY THE ENGINEER. SEE THE UTILITIES SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL WORK RELATED TO THE DRIVEWAYS AT SNOWFIRE AUTO SHALL BE COORDINATED WITH THE PROPERTY OWNER. CONTACT INFO:
JOHN DIETZ, GENERAL MANAGER
SNOWFIRE AUTO
802-244-5606
3. PAVEMENT TO BE REMOVED FROM EXISTING DRIVEWAY TO BE SAWCUT IN A NEAT MANNER. PAYMENT FOR THIS SAWCUTTING SHALL NOT BE MADE DIRECTLY BUT SHALL BE INCIDENTAL TO ADJACENT EXCAVATION ITEM(S).
4. THE INCLUDED QUANTITIES OF PAVEMENT MARKING AND REMOVAL OF PAVEMENT MARKINGS ARE ESTIMATED ONLY. FINAL DETERMINATION OF THE AMOUNT OF LINE STRIPING TO BE APPLIED UNDER THIS PROJECT TO BE MADE BY THE ENGINEER. ESTIMATED QUANTITIES OF PAINT MARKINGS HAVE BEEN INCLUDED IN THE CONTRACT FOR TEMPORARY WINTER USE IF NEEDED. USE OF THESE ITEM SHALL BE AT THE DISCRETION OF THE ENGINEER.
5. GRANITE CURB REMOVED SHALL REMAIN THE PROPERTY OF THE STATE. CURB SHALL BE SALVAGED TO THE MIDDLESEX GARAGE. CONTACT INFO:
JOHN DUNBAR, AREA MAINTENANCE SUPERVISOR
802-828-2697

NOT TO SCALE

| | |
|-----------------------------------|------------------------|
| PROJECT NAME: WATERBURY AREA | |
| PROJECT NUMBER: STP WKZN(9) C/2 | |
| FILE NAME: t13k670frm.dgn | PLOT DATE: 10/21/2014 |
| PROJECT LEADER: P. COBURN | DRAWN BY: I. DEGUTIS |
| DESIGNED BY: I. DEGUTIS | CHECKED BY: M. LACROIX |
| DRIVE RELOCATION TYPICAL SECTIONS | SHEET 9 OF 13 |



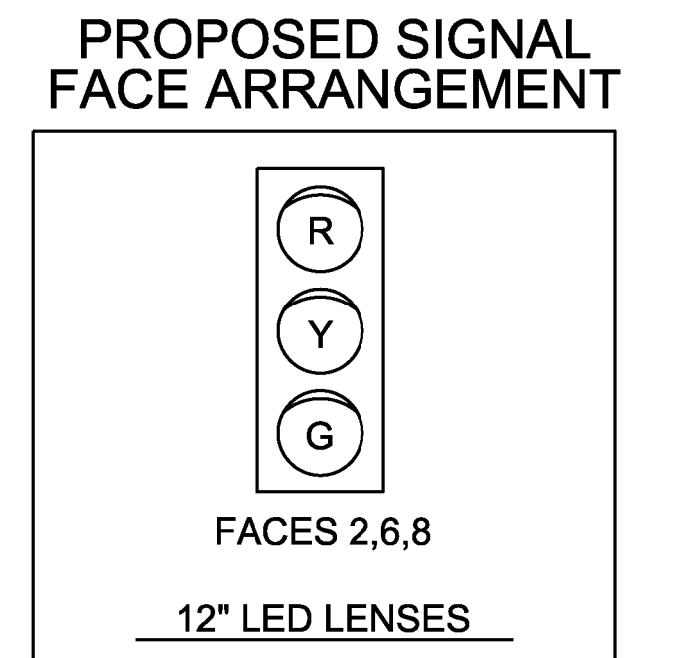
CONTROLLER TIMING CHART

| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------------------|---|------|---|---|---|------|---|-----|---|
| IN USE | | X | | | | X | | X | |
| TRAFFIC MOVEMENT | | ↓← | | | | ↑← | | ←→ | |
| MIN. GREEN | | 8 | | | | 8 | | 5 | |
| MAX 1 - GREEN (OFF) | | 32 | | | | 32 | | 26 | |
| MAX 2 - GREEN (AM) | | 31 | | | | 31 | | 27 | |
| MAX 3 - GREEN (PM) | | 42 | | | | 42 | | 21 | |
| YELLOW CLEARANCE | | 4.7 | | | | 4.7 | | 4.1 | |
| ALL RED CLEARANCE | | 1.5 | | | | 1.5 | | 2.1 | |
| VEHICLE EXTENSION | | 3 | | | | 3 | | 3 | |
| RECALL MODE | | SOFT | | | | SOFT | | | |

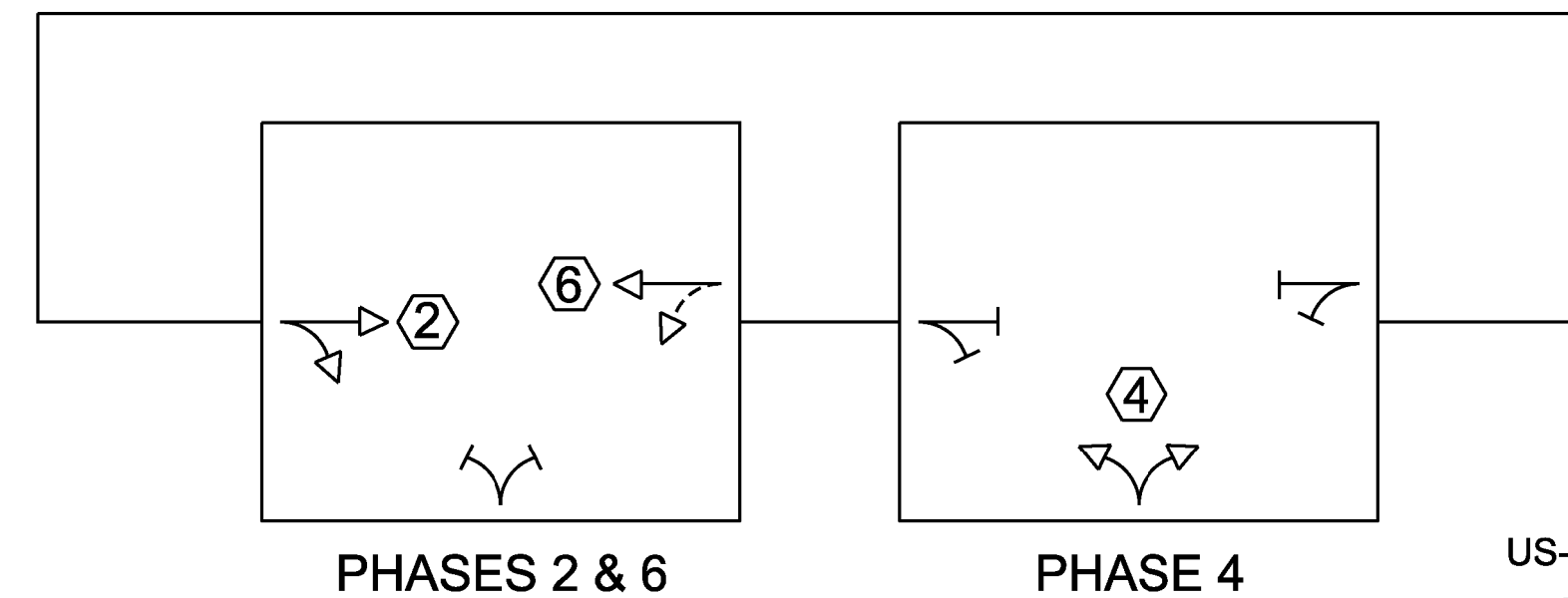
- NOTES:**
- TRAFFIC ITEM LOCATIONS LISTED ARE APPROXIMATE AND MAY BE MODIFIED BY THE RESIDENT ENGINEER IN THE FIELD.
 - THE ACTUAL STOP BAR DETECTOR LOCATION WILL BE DETERMINED BASED ON THE OPTIMAL LOCATION BASED ON THE TYPE OF DETECTOR SELECTED.
 - VEHICLE STOP BAR DETECTION ZONES SHALL EXTEND 5 FT PAST THE STOP BAR.
 - DESIGN OF SIGNAL SPAN WIRE AND REQUIRED GUYING TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - SPAN WIRE SAG TO BE LESS THAN 5%.
 - SIGNAL POWER TO BE RUN AERIALLY ON THE SAME POLES AS THE SIGNAL SPAN WIRE.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALL ARRANGEMENTS WITH THE UTILITY COMPANY. THIS INCLUDES PAYING ALL FEES, AND OBTAINING ALL LICENSES AND PERMITS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONING SIGNAL SYSTEM. PAYMENT SHALL BE INCIDENTAL TO ITEM 678.15.
CONTACT:
GREEN MOUNTAIN POWER
BRIAN DOOLEY
802-229-7927

TIME OF DAY PROGRAM

| | WEEKDAY TIMINGS | | | |
|------------------|-----------------|----|----------|--|
| FLASH | 12:00 AM | TO | 6:00 AM | |
| MAX 2 - AM PEAK | 6:00 AM | TO | 9:00 AM | |
| MAX 1 - OFF PEAK | 9:00 AM | TO | 3:00 PM | |
| MAX 3 - PM PEAK | 3:00 PM | TO | 6:00 PM | |
| MAX 1 - OFF PEAK | 6:00 PM | TO | 10:00 PM | |
| FLASH | 10:00 PM | TO | 12:00 AM | |
| | WEEKEND TIMINGS | | | |
| FLASH | 12:00 AM | TO | 6:00 AM | |
| MAX 1 - OFF PEAK | 6:00 AM | TO | 10:00 AM | |
| FLASH | 10:00 PM | TO | 12:00 AM | |



PHASING DIAGRAM



US-2 FROM WATERBURY

| AM | OFF | PM |
|-----|-----|-----|
| 30 | 20 | 30 |
| 140 | 95 | 270 |
| 210 | 150 | 320 |

US-2 FROM MIDDLESEX

| AM | OFF | PM |
|-----|-----|-----|
| 15 | 5 | 5 |
| 160 | 110 | 175 |
| 25 | 20 | 40 |

VT-100 FROM DUXBURY

| AM | OFF | PM |
|-----|-----|----|
| 280 | 15 | 40 |
| 180 | 5 | 30 |
| 235 | 10 | 45 |

LIST OF MAJOR EQUIPMENT

| EQUIPMENT UNDER PAY ITEM 678.15 - US-2 AND VT-100 | QUANTITY | REMARKS |
|---|----------|----------------------------|
| NEW 12-INCH LED SIGNAL HEADS (ONE-WAY, 3-SECTION, VISORS, DISCONNECT HANGERS, BACKPLATES AND MOUNTING HARDWARE) | 6 | |
| SPAN WIRE, INCLUDING MOUNTING HARDWARE | 1 | |
| NEW TRAFFIC SIGNAL CONTROLLER (NEMA TS2) | 1 | |
| NEW NEMA POLE MOUNTED CONTROLLER CABINET WITH ANCILLARY CONTROL EQUIPMENT | 1 | |
| STOP BAR DETECTORS | 3 | INCLUDES MOUNTING HARDWARE |
| WESTERN RED CEDAR OR SOUTHERN PINE WOODEN STRAIN POLE | 1 | SP-1 - 40' |
| DETECTOR CARD RACK AND PROCESSOR | 3 | |
| POWER METER | 1 | ON SP-1 |

TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION

- WOODEN STRAIN POLE
STA 4+11.6, RT 44.7' (SP-1)
- POLE MOUNTED CABINET WITH CONTROLLER
ATTACHED TO SP-1
- POWER METER
ATTACHED TO SP-1
- BRACKET ARM - SL-1 (16')
ATTACHED TO SP-1
- SPECIAL PROVISION (LUMINAIRE, LED) - SL-1
ATTACHED TO SP-1
- SPECIAL PROVISION (RELOCATE LUMINAIRE AND BRACKET ARM) - SL-2
ATTACHED TO SP-2

LEGEND

| | |
|---|-------------------|
| ○ | GUY WIRE |
| □ | LUMINAIRE |
| ◡ | SIGNAL HEAD |
| ⊠ | PULL BOX |
| ⊞ | STOP BAR DETECTOR |
| ○ | STRAIN POLE |
| ▭ | DETECTION ZONE |
| ⊕ | UTILITY POLE |

2014 HOURLY VOLUMES VT ROUTE 100 & US ROUTE 2

| | |
|----------------------|-----------------|
| PROJECT NAME: | WATERBURY AREA |
| PROJECT NUMBER: | STP WKZN(9) C/2 |
| FILE NAME: | t13k670+sl.dgn |
| PROJECT LEADER: | P. COBURN |
| DESIGNED BY: | I. DEGUTIS |
| TRAFFIC SIGNAL SHEET | |
| PLOT DATE: | 10/21/2014 |
| DRAWN BY: | I. DEGUTIS |
| CHECKED BY: | M. LACROIX |
| SHEET | 10 OF 13 |

TRAFFIC SIGNAL SYSTEM NOTES

A. NEW SIGNAL EQUIPMENT

1. ALL SIGNAL HEADS SHALL BE 12" POLYCARBONATE. THE SIGNAL HEADS SHALL HAVE FLAT BLACK HOUSINGS AND VISORS.
2. ALL SIGNAL HEADS SHALL HAVE FLAT BLACK LOUVERED BACKPLATES.
3. THE CONTROLLER SHALL BE AN ECONOLITE ASC/3-2100 (NEMA TS2) OR NAZTEC MODEL 980 (NEMA TS2) OR MCCAIN ATC eX (NEMA TS2) IN A NEMA "M" POLE MOUNTED CABINET INSTALLED AT THE LOCATION SHOWN ON THE PLANS. THE TRAFFIC CONTROL CABINET SHALL BE ORIENTED SUCH THAT THE DOOR DOES NOT FACE THE ROADWAY.
4. ALL SIGNAL HEADS SHALL HAVE RED, YELLOW AND GREEN L.E.D. SIGNALS WITH A VISIBLE BEAM SPREAD OF 80 DEGREES OFF AXIS.
5. ALL TRAFFIC SIGNAL EQUIPMENT SHALL BE PAINTED FLAT BLACK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
6. ALL TRAFFIC SIGNAL EQUIPMENT AND SPAN WIRE HANGING SIGNS SHALL HAVE SAFETY CABLES.
7. A DISCONNECT BREAKER FOR EACH CIRCUIT SHALL BE INSTALLED IN A RAINPROOF (NEMA 3R), LOCKED CABINET NEXT TO OR BELOW THE METER SOCKET.

B. SIGNAL OPERATION

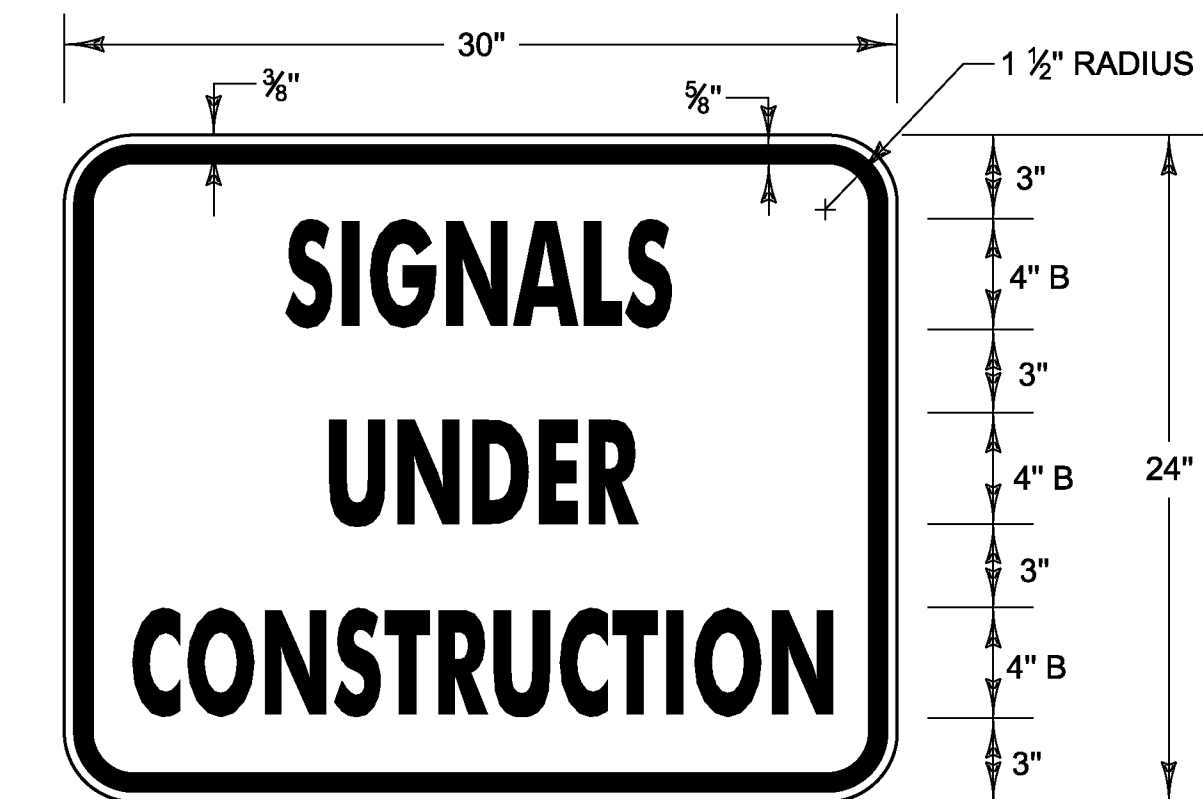
1. SWITCH-OVER TO THE NEW TRAFFIC SIGNAL SYSTEM SHALL NOT OCCUR DURING PEAK TRAFFIC OPERATING PERIODS. UNIFORMED TRAFFIC OFFICERS SHALL CONTROL TRAFFIC DURING THE SWITCH-OVER.
2. ALL SIGNALS SHALL DWELL ON US ROUTE 2 UNLESS OTHERWISE NOTED.
3. THE US ROUTE 2 THRU PHASE SHALL BE USED FOR THE START-UP PHASE FOLLOWING FLASHING OPERATION.
4. SIGNAL TIMING SHOWN ON THE PLANS MAY REQUIRE FINE-TUNING IN THE FIELD BASED ON TRAFFIC OBSERVATION AND/OR ADDITIONAL FIELD STUDIES.

C. VEHICLE STOP BAR DETECTION EQUIPMENT

1. THE ACTUAL VEHICLE STOP BAR DETECTOR LOCATION WILL BE DETERMINED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER BASED ON THE OPTIMAL LOCATION FOR THE TYPE OF DETECTOR SELECTED.
2. VEHICLE STOP BAR DETECTION ZONES SHALL EXTEND FIVE FEET PAST THE STOP BAR.
3. SEE THE PLANS AND/OR SPECIAL PROVISIONS FOR A DETAILED LIST OF EQUIPMENT.

D. GENERAL

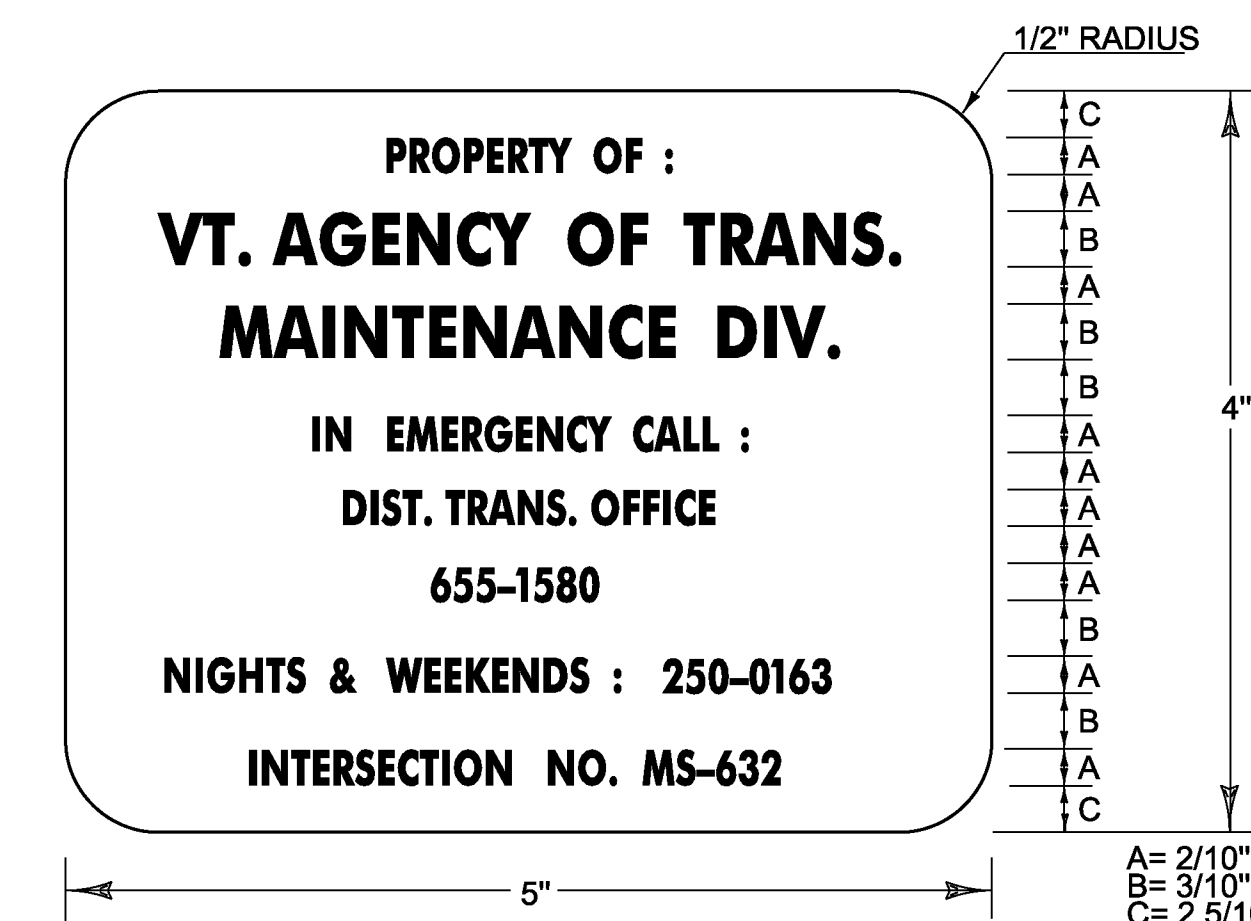
1. A UNIFORMED TRAFFIC OFFICER WITH A BLUE LIGHT SHALL BE PRESENT DURING ALL LANE CLOSURES.
2. THE CONTRACTOR SHALL ACQUIRE ALL THE NECESSARY PERMITS AND MAKE ALL NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANY TO PROVIDE A PERMANENT POWER SUPPLY TO THE TRAFFIC SIGNAL EQUIPMENT, IF APPLICABLE. THE ROUTING OF POWER TO THE INTERSECTION SHALL BE SUCH THAT THE STATE HAS FULL RESPONSIBILITY FROM THE TRANSFORMER THROUGH THE SIGNAL SYSTEM. NO INTERVENING OWNERSHIP/RESPONSIBILITY SHALL BE ALLOWED.
3. A YELLOW PLASTIC "GUY GUARD" SHALL BE INSTALLED ON ANY GUY WIRES ADJACENT TO THE SNOWFIRE PROPERTY AND MAY BE INSTALLED ON OTHER GUY WIRES AS APPROPRIATE.
4. ALL ELECTRICAL WIRING SHALL BE DONE BY A LICENSED ELECTRICIAN AND OVERSEEN BY A MASTER ELECTRICIAN.
POWER IS TO BE RUN AERIALY ON THE SAME POLE AS THE SPAN WIRE. MINIMUM DISTANCE BETWEEN THE SPAN WIRE SHALL BE IN ACCORDANCE WITH ANY AND ALL APPLICABLE STANDARDS AND REGULATIONS.
5. SEE STANDARDS E171-A AND 171-B FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
7. SAG ON THE LOADED SPAN WIRE SHALL NOT EXCEED 5% OF THE TOTAL LENGTH OF THE WIRE.
8. DESIGN OF SIGNAL SPAN WIRE AND SUPPORTS, INCLUDING REQUIRED GUYING TO BE THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH THE VERMONT STANDARD SPECIFICATION BOOK.



MATERIALS: SEE STD. E-144
 COLORS: TEXT & BORDER - BLACK
 BACKGROUND - ORANGE (RETROREFLECTIVE SHEETING)

CONSTRUCTION SIGN DETAIL

NOT TO SCALE
 TO BE INSTALLED ON ROAD WORK AHEAD SIGN POSTS.
 SEE TRAFFIC CONTROL PLAN FOR ADDITIONAL DETAILING.



LEGEND: - BLACK (NON-REFL.) - STAMPED PRIOR TO PAINTING
 BACKGROUND: NATURAL ALUMINUM OR BRASS SURFACE

NOTES:

1. THE PLAQUE SHALL BE MOUNTED ON ALL TRAFFIC SIGNAL CONTROLLER CABINETS. IT SHALL BE FASTENED TO THE CONTROLLER CABINET IN SUCH A MANNER AS TO BE NOT EASILY REMOVED, SUCH AS WELDED, RIVETED OR BOLTED WITH VANDAL PROOF BOLTS.
2. THE LETTERS SHALL BE PUNCHED OR STAMPED, SUCH STAMPING SHALL PENETRATE AT LEAST 1/2 THE BASE MATERIAL THICKNESS.
3. THE BASE MATERIAL FOR THE PLAQUE SHALL BE BRASS OR ALUMINUM WITH A MINIMUM THICKNESS OF 1/10".
4. THE CONTRACTOR SHALL CONTACT THE VTRANS DISTRICT 5 TRAFFIC SIGNAL TECHNICIAN TO GET THE PROPER MS NUMBERS FOR THE PLAQUES.

CONTROLLER IDENTIFICATION PLAQUE

NOT TO SCALE

PROJECT NAME: WATERBURY AREA
 PROJECT NUMBER: STP WKZN(9) C/2

FILE NAME: +13k670frm.dgn PLOT DATE: 10/21/2014
 PROJECT LEADER: P. COBURN DRAWN BY: B. GROSE
 DESIGNED BY: I. DEGUTIS CHECKED BY: M. LACROIX
 TRAFFIC SIGNAL SYSTEM NOTES SHEET 12 OF 13

STREET LIGHTING GENERAL NOTES

BRACKET ARMS

ALL NEW LUMINAIRE BRACKET ARMS SHOULD BE ALUMINUM.

LUMINAIRES

LUMINAIRES SHALL BE L.E.D. TYPE.

POLE-MOUNTED LUMINAIRES SHALL BE ONE OF THE FOLLOWING:

- BETA LEDWAY IP SERIES
- HOLOPHANE LEDgends SERIES
- LRL LED #SAT-96M SERIES

ALL POLE-MOUNTED LUMINAIRES SHALL BE SAME, A MIX OF FIXTURES WILL NOT BE ALLOWED.

NO LUMINAIRE SUBSTITUTIONS SHALL BE ALLOWED.

ALL POLE-MOUNTED LUMINAIRES MUST BE EQUIPPED WITH GALVANIZED BIRD SPIKES ON THE TOP.

WIRE

ALL WIRING BETWEEN THE METER AND/OR POWER SOURCE AND THE FIRST POLE AND/OR PULLBOX AND BETWEEN POLES AND/OR PULLBOXES SHALL BE COPPER AND SIZED AS SPECIFIED ON THE PLANS. ALL WIRE SHALL HAVE TYPE XHHW INSULATION OR EQUIVALENT.

CIRCUIT CONDUCTORS SHALL BE CLEARLY IDENTIFIED BY CORROSION RESISTANT TAGS INDICATING CIRCUIT NUMBER AND PANEL SOURCES AT EVERY POLE BASE AND HANDHOLE.

GROUNDING

ALL CONDUIT MUST INCLUDE A GROUNDING CONDUCTOR. RIGID STEEL CONDUIT SHALL BE PROPERLY CONNECTED AT THE JOINTS SO AS TO BE WATERTIGHT AND MAINTAIN ELECTRICAL CONTINUITY AND HAVE GROUNDING BUSHINGS SO AS TO ACT AS A GROUNDING CONDUCTOR. ALUMINUM WIRE SHALL NOT BE USED FOR GROUND WIRE.

THE GROUNDING CONDUCTOR SHALL BE CONTINUOUS.

GENERAL

THE LOAD ON EACH BRANCH OF A THREE WIRE CIRCUIT SHALL BE AS BALANCED AS POSSIBLE. LOAD TO NEUTRAL.

THE CONTRACTOR SHALL ACQUIRE ALL NECESSARY PERMITS AND MAKE ALL NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANY TO PROVIDE A PERMANENT POWER SUPPLY TO THE STREET LIGHTING SYSTEM. IF APPLICABLE, THE ROUTING OF POWER TO THE SYSTEM SHALL BE SUCH THAT THE AGENCY OF TRANSPORTATION HAS FULL RESPONSIBILITY FROM THE TRANSFORMER THROUGH THE LIGHTING SYSTEM. NO INTERVENING OWNERSHIP OR RESPONSIBILITY SHALL BE ALLOWED.

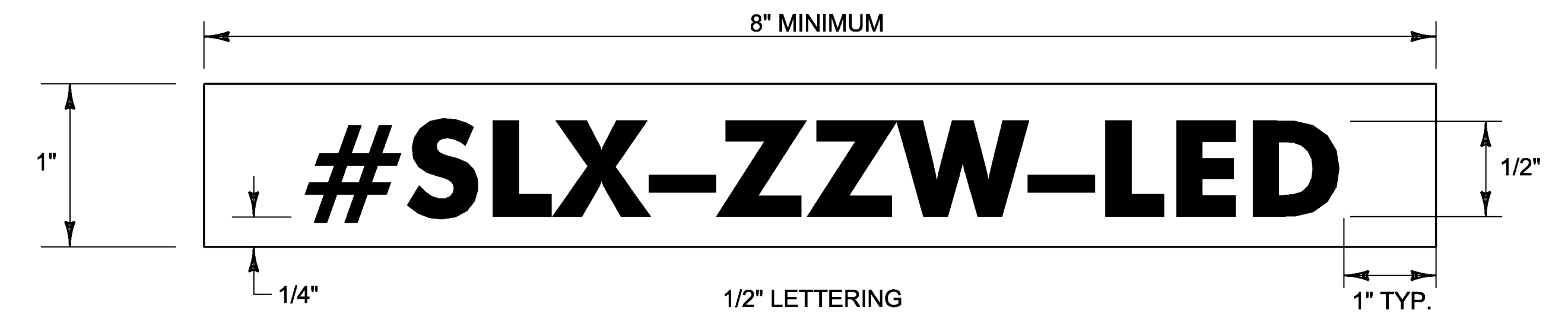
ALL CONNECTING HARDWARE (NUTS, BOLTS, ETC.) SHALL BE STAINLESS STEEL.

MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES AND SHALL BE INSTALLED IN ACCORDANCE WITH SUCH LISTINGS.

ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL CODES, REGULATIONS AND REQUIREMENTS OF ALL MUNICIPAL, STATE, FEDERAL AND OTHER PUBLIC OR PRIVATE AUTHORITIES WHICH HAVE JURISDICTION. IN EACH CASE, CODES ARE MINIMUM REQUIREMENTS.

ILLUMINATION REQUIREMENTS

AT INTERSECTIONS, LIGHTING LEVELS AS MEASURED AT THE ROADWAY SURFACE SHALL HAVE AN AVERAGE MAINTAINED ILLUMINANCE OF 1.3 FOOT-CANDLES..



LEGEND: BLACK OR WHITE (NON-REFLECTIVE) - STAMPED PRIOR TO PRINTING/PAINTING. BACKGROUND: NATURAL ALUMINUM OR FLAT BLACK SURFACE, THE SAME AS POLE FINISH.

NOTES:

1. THE TAG SHALL BE MOUNTED ON ALL POLES WITH NEW STREET LIGHTS IN SUCH A MANNER AS NOT TO BE EASILY REMOVED, SUCH AS WELDED, RIVETED, OR BOLTED WITH VANDAL PROOF BOLTS.
2. THE LETTERS SHALL BE PUNCHED, STAMPED, ENGRAVED, OR PHOTO-ETCHED. PUNCHING, STAMPING OR ENGRAVING SHALL PENETRATE AT LEAST 1/2 THE BASE MATERIAL THICKNESS.
3. THE BASE MATERIAL FOR THE TAG SHALL BE ALUMINUM WITH A MINIMUM THICKNESS OF 0.10 INCHES.
4. THE TAG SHALL BE ATTACHED TO THE POLE 6' ABOVE GROUND LEVEL.
5. FIXTURE TAG CHARACTER "X" SHALL BE THE DESIGNATED SL NUMBER AS SHOWN ON THE LIGHTING PLANS.
6. FIXTURE TAG CHARACTER "ZZ" SHALL BE THE WATTAGE OF THE LUMINAIRE

DETAIL FOR TAGS ATTACHED TO STREET LIGHT POLES

NOT TO SCALE

PROJECT NAME: WATERBURY AREA
PROJECT NUMBER: STP WKZN(9) C/2

FILE NAME: t13k670frm.dgn

PROJECT LEADER: P. COBURN

DESIGNED BY: I. DEGUTIS

STREET LIGHTING GENERAL NOTES

PLOT DATE: 10/21/2014

DRAWN BY: B. GROSE

CHECKED BY: M. LACROIX

SHEET 13 OF 13

STR-LWY-3M-HT-IP-07-12

LEDway® IP66 Street Light - Type III Medium - Horizontal Tenon Mount - 70-120 LEDs

Product Description

Luminaire housing is all aluminum construction. Standard luminaire utilizes terminal block for power input suitable for #2-#14 AWG wire. Luminaire is designed to mount on a 2" (51mm) IP, 2.375" (60mm) O.D. horizontal tenon or 1.25" (32mm) IP, 1.66" (42mm) O.D. horizontal tenon when ordered with XA-XIL125IP accessory kit and is adjustable +/-5° to allow for luminaire leveling (two axis T-level included). Horizontal tenon must be minimum 8" (203mm) long.

Performance Summary

- Utilizes BetaLED® Technology
- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- CRI:** Minimum 70 CRI
- CCT:** 5700K (+/- 500K) Standard, 4000K (+/- 300K)
- Limited Warranty:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish
- EPA and Weight:** Reference EPA and Weight spec sheet

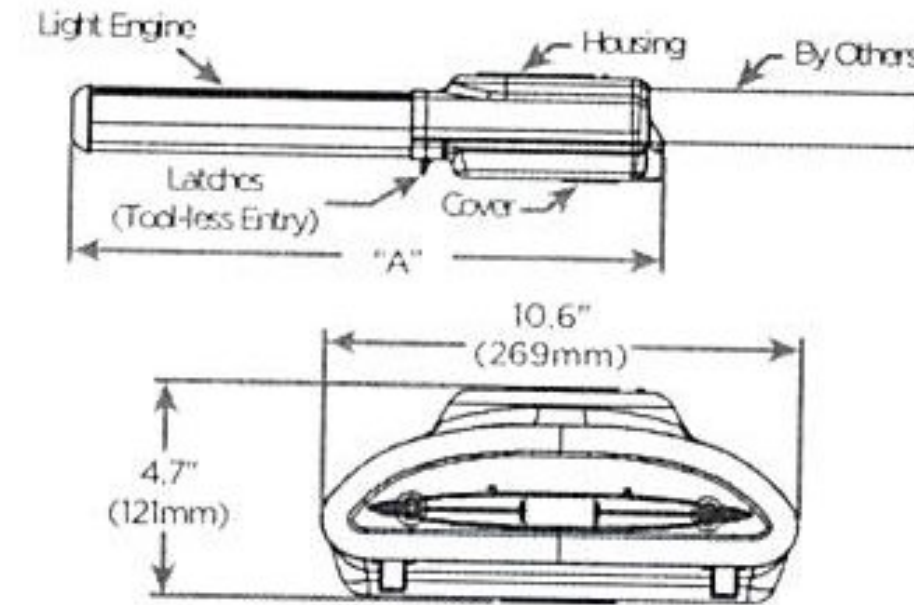
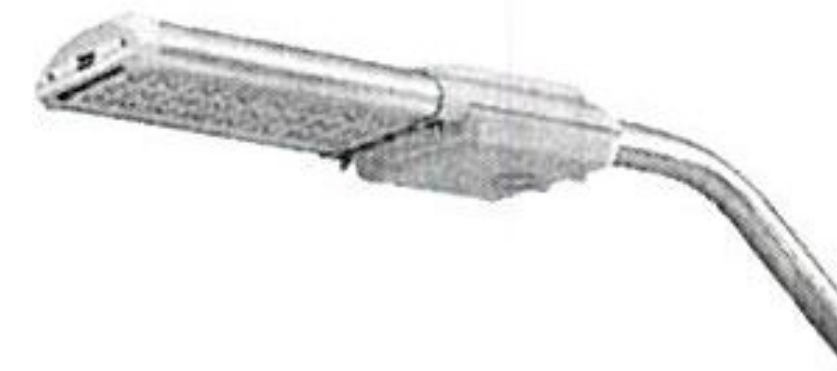
Accessories

| Field Installed Accessories | |
|------------------------------|----------------------------------|
| XA-BRDSPK90 (70-90 LEDs) | XA-XSLBLS90 (70-90 LEDs) |
| XA-BRDSPK120 (100-120 LEDs) | XA-XSLBLS120 (100-120 LEDs) |
| Bird Spikes for Light Engine | External Backlight Shield |
| XA-BRDSPKHSG | XA-XIL125IP |
| Bird Spikes for Housing | 1.25" (32mm) IP Pipe Sealing Kit |

Ordering Information

Example: STR-LWY-3M-HT-07-E-UL-SV-525-IP-OPTIONS

| STR-LWY | 3M | HT | | E | | | | IP - |
|---------|--------------------------|---------------------------|----------------------------------|---------|--|--|------------------------------|---|
| Product | Optic | Mounting | LED Count (x10) | Version | Voltage | Color Options* | Drive Current | Options |
| STR-LWY | 3M Type III Medium | HT Horizontal Tenon | 07 08 09 10 11 12 | E | UL Universal 120-277V UH Universal 347-480V | SV Silver (Standard) BK Black BZ Bronze PB Platinum Bronze WH White | 525 525mA 700 700mA | IP IP66 Classification 40K 4000K Color Temperature - Color temperature per luminaire DIM 0-10V Dimming - Control by others - Refer to dimming spec sheet for details - Can't exceed specified drive current F Fuse - Not available with all ML options. Refer to ML spec sheet for availability with ML options - When code dictates fusing, use time delay fuse HL Hi/Low (175/350/525 Dual Circuit Input) - Refer to ML spec sheet for details - Sensor not included ML Multi-Level - Refer to ML spec sheet for details N No Quick Disconnect Harness or Leveling Bubble - Standard product features unless N option is specified PD Power Door - All connections between door and luminaire are shipped unconnected from the factory; door release spring included to open door automatically when the latches are released R NEMA Photocell Receptacle - Not available with all ML options. Refer to ML spec sheet for availability with ML options - Photocell by others - Intended for downlight applications at 0° tilt SC Door Safety Tether - Stainless steel aircraft cable UTL Utility - Includes exterior wallage label that reflects watts for the drive current selected. The ability to exceed selected drive current will be disabled |



| LED Count (x10) | Dimension | Measurement |
|-----------------|-----------|---------------|
| 07 | "A" | 26.8" (685mm) |
| 08 | "A" | 26.8" (685mm) |
| 09 | "A" | 26.8" (685mm) |
| 10 | "A" | 33.1" (842mm) |
| 11 | "A" | 33.1" (842mm) |
| 12 | "A" | 33.1" (842mm) |

Product Specifications

CONSTRUCTION & MATERIALS

- Housing is all aluminum construction
- Terminal block for power input suitable for #2-#14 AWG wire
- Luminaire is designed to mount on a 2" (51mm) IP, 2.375" (60mm) O.D. horizontal tenon or 1.25" (32mm) IP, 1.66" (42mm) O.D. horizontal tenon when ordered with XA-XIL125IP accessory kit and is adjustable +/- 5" to allow for luminaire leveling (two axis T-level included). Horizontal tenon must be minimum 8" (203mm) long
- Exclusive Colorfast DeltaGuard[®] finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Standard is silver. Bronze, black, white, and platinum bronze are also available

ELECTRICAL SYSTEM

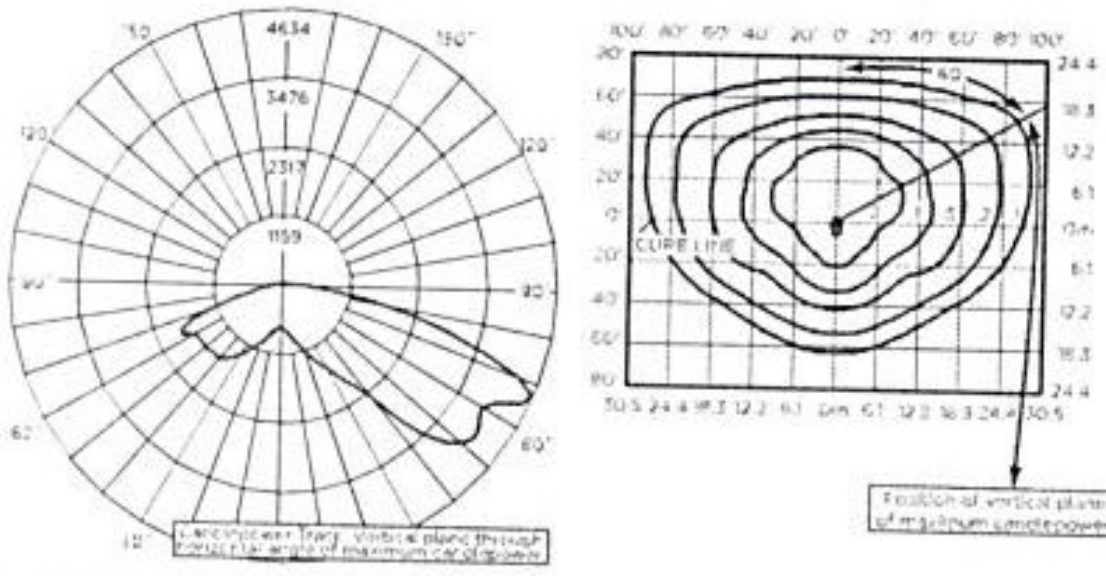
- Input Voltage:** 120-277V or 347-480V, 50/60Hz, Class 1 drivers
- Power Factor:** > 0.9 at full load
- Total Harmonic Distortion:** < 20% at full load
- Quick disconnect harness suitable for mate and break under load provided on power feed to driver for ease of maintenance
- Integral 10kV surge suppression protection standard
- To address inrush current, slow blow fuse or type C/D breaker should be used

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Enclosure rated IP66 per IEC 60529 when ordered without R or ML options
- Consult factory for CE Certified products
- Meets CALTrans 611 Vibration testing and GR-63-CORE Section 4.41/5.4.2 Earthquake Zone 4
- Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Luminaire and finish are endurance tested to withstand 5,000 hours of elevated ambient salt fog as defined in ASTM Standard B 117
- Product qualified on the DesignLights Consortium ("DLC") Qualified Products List ("QPL") when ordered without full backlight control shield
- RoHS Compliant
- Meets Buy American requirements within ARRA

Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory.



CESTL Test Report #: 2013-0068
STR-LWY-3M-09-E-UL-700-40K
Initial Delivered Lumens: 10,430

STR-LWY-3M-09-E-UL-700
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 16,514
Initial FC at grade



STR-LWY-3M-12-E-UL-700
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 22,004
Initial FC at grade

IES Files
To obtain an IES file specific to your project consult:
<http://www.cree.com/lighting/tools-and-support/exterior-ies-configuration-tool>

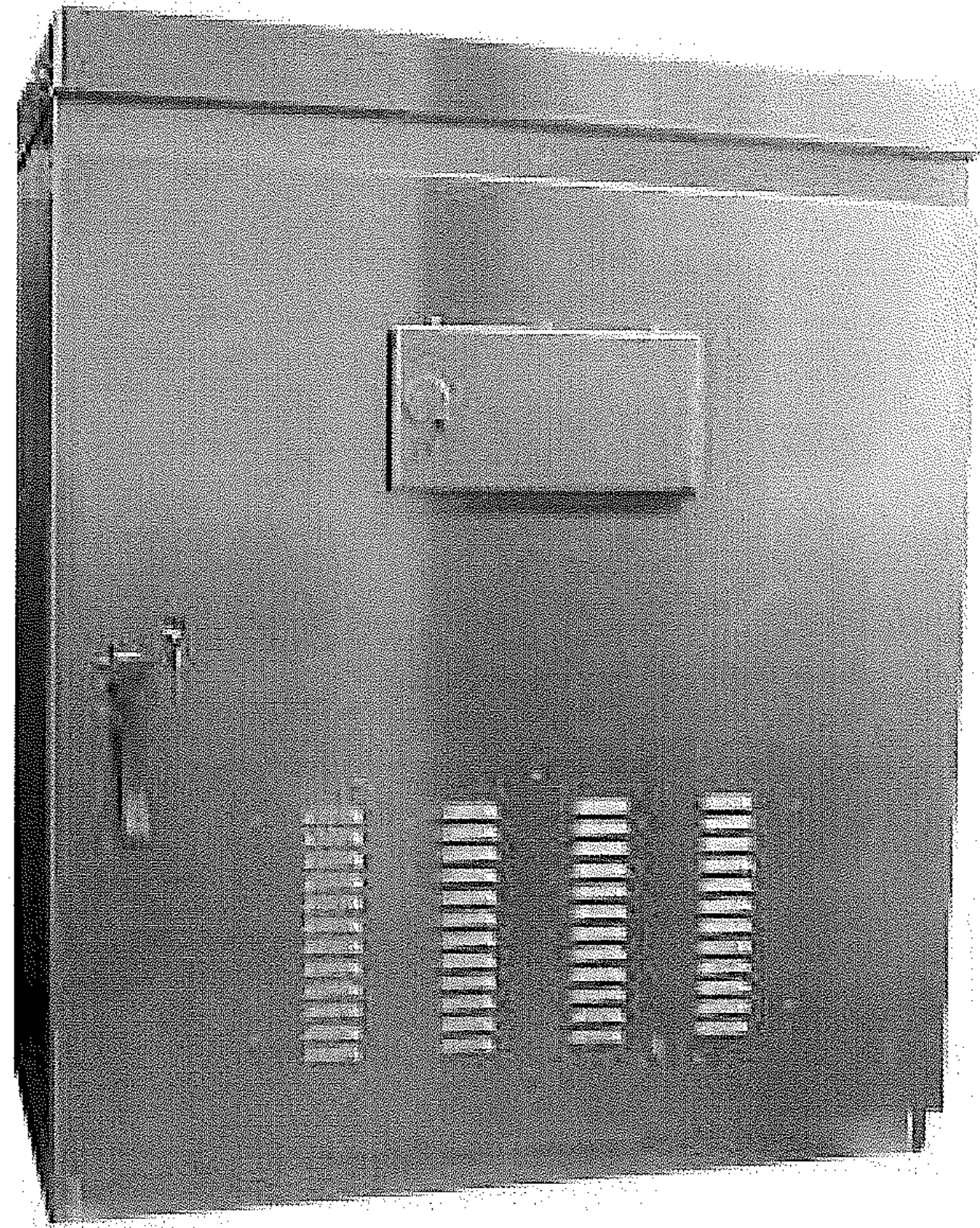
Lumen Output, Electrical, and Lumen Maintenance Data

| LED Count (x10) | Type III Medium Distribution | | | | | | | | | | | | 50K Hours Projected Lumen Maintenance Factor @ 15°C (59°F)** |
|----------------------------|------------------------------|---------------------------|--------------------------|---------------------------|-----------------------|-----------------------|---------------|------|------|------|------|------|--|
| | 5700K | | 4000K | | System Watts 120-277V | System Watts 347-480V | TOTAL CURRENT | | | | | | |
| | Initial Delivered Lumens | BUG Ratings* Per TM-15-II | Initial Delivered Lumens | BUG Ratings* Per TM-15-II | | | 120V | 208V | 240V | 277V | 347V | 480V | |
| 525mA @ 25°C (77°F) | | | | | | | | | | | | | 93% |
| 07 | 10,369 | B3 U0 G3 | 9,985 | B3 U0 G3 | 120 | 124 | 1.01 | 0.60 | 0.54 | 0.49 | 0.37 | 0.28 | |
| 08 | 11,797 | B3 U0 G3 | 11,360 | B3 U0 G3 | 139 | 140 | 1.17 | 0.69 | 0.62 | 0.56 | 0.41 | 0.31 | |
| 09 | 13,211 | B3 U0 G3 | 12,727 | B3 U0 G3 | 159 | 156 | 1.26 | 0.74 | 0.66 | 0.59 | 0.46 | 0.34 | |
| 10 | 14,752 | B3 U0 G3 | 14,215 | B3 U0 G3 | 187 | 177 | 1.31 | 0.82 | 0.73 | 0.65 | 0.50 | 0.39 | |
| 11 | 16,185 | B3 U0 G3 | 15,596 | B3 U0 G3 | 192 | 188 | 1.54 | 0.89 | 0.79 | 0.70 | 0.55 | 0.41 | |
| 12 | 17,604 | B3 U0 G3 | 16,952 | B3 U0 G3 | 197 | 202 | 1.67 | 0.96 | 0.85 | 0.75 | 0.59 | 0.44 | |
| 700mA @ 25°C (77°F) | | | | | | | | | | | | | 91% |
| 07 | 12,961 | B3 U0 G3 | 12,481 | B3 U0 G3 | 163 | 165 | 1.37 | 0.80 | 0.71 | 0.63 | 0.48 | 0.36 | |
| 08 | 14,745 | B3 U0 G3 | 14,260 | B3 U0 G3 | 182 | 186 | 1.54 | 0.93 | 0.79 | 0.70 | 0.54 | 0.40 | |
| 09 | 16,514 | B3 U0 G3 | 15,902 | B3 U0 G3 | 203 | 207 | 1.72 | 0.99 | 0.87 | 0.78 | 0.60 | 0.45 | |
| 10 | 18,452 | B3 U0 G3 | 17,769 | B3 U0 G3 | 227 | 229 | 1.92 | 1.11 | 0.97 | 0.86 | 0.67 | 0.49 | |
| 11 | 20,232 | B3 U0 G3 | 19,483 | B3 U0 G3 | 243 | 250 | 2.10 | 1.21 | 1.05 | 0.93 | 0.73 | 0.53 | |
| 12 | 22,004 | B3 U0 G3 | 21,190 | B3 U0 G3 | 267 | 274 | 2.26 | 1.30 | 1.13 | 1.00 | 0.80 | 0.58 | |

* For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit www.ies.org/PDF/Errata/TM-15-11BugRatingsAddendum.pdf
 ** Projected L₈₀ (L₇₀ at 60,000 hours) based on Series D L₈₀ data. For recommended lumen maintenance factor data see TD-15. Cree classifies the Series E LED packages as "successors to previously tested sub-components" in Section 5.1 per Sept. 9, 2011 ENERGY STAR guidelines.
 See http://www.energystar.gov/ia/partners/ind1_development/new_specs/downloads/luminaires/ENERGY_STAR_Final_Lumen_Maintenance_Guidance.pdf

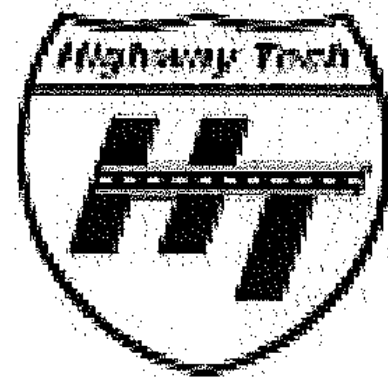


NEMA M-34 Traffic Control Cabinet



Features

- Meets NEMA standards
- Pole mounted
- Constructed of 0.125" thick aluminum
- "C" mounting channels on side and back walls for mounting shelves and panels
- 3-point latching mechanism of zinc plated steel
- Stainless steel door handle designed for padlock
- Stainless steel door hinge
- Optional Lifting Ears



Highway Tech Signal Equipment Sales, Inc.
8 Gardiner Road / P.O. Box 1209
Sabattus, ME 04280
Tel. (207) 375-8248
Fax (207) 375-8279

SPECIFICATIONS:

| | |
|---------------------|---|
| Outside dimensions: | 50" H x 34" W x 18" deep |
| Mounting Pattern: | Pole Mount |
| Material: | Aluminum (.125" thick) |
| Finish: | Bare or Painted |
| Mounting: | Pole Mounted |
| Locking System: | 3-point locking system with Corbin #2 lock |
| Door Stops: | Three position bar stop at bottom of door |
| Ventilation: | Pleated fiber filter in door, fan with thermostatic control |
| Light: | Incandescent or optional flourescent, door switch activated |

Technology That Moves America

Naztec, Inc. • 820 Park Two Drive • Sugar Land, Texas 77478 • Phone (281) 240-7233 • Fax (281) 240-7238

Email: naztec@naztec.com • <http://www.naztec.com>

NEMA M-34 Traffic Control Cabinet

APPROVED
By Ian Degutis at 3:42 pm, Jan 21, 2015

Options

● Mounting

- Pole Mount
- Base Mount
- Base Mount with Extension Base

● Finish

- Natural Aluminum
- Black Outside / Aluminum Inside
- Natural Aluminum Outside / White Inside

● NEMA Type

- NEMA TS1
- NEMA TS2 Type 2
- NEMA TS2 Type 1

● Panel Type

- 8 Position
- 12 Position
- 16 Position

● Detector Type

- Shelf Mount with Harnesses
- Rack Mount
- Rack Mount with BIU Slot

● Detector Channels

- 8
- 10
- 12
- 16
- Other:

● Monitor Harness

- 6 Channel
- 12/16 Channel

● "D" Panel

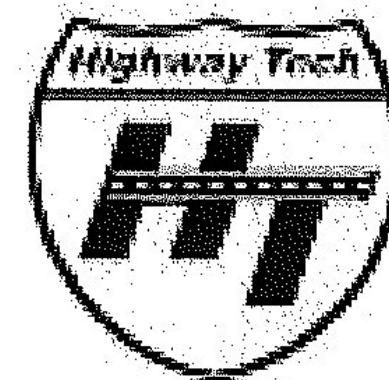
- Naztec 900 Series
- IDC/Multisonics 820A
- Other:

● Lighting

- Incandescent
- Incandescent Flexible Work Light
- Fluorescent with Door Switch

● Miscellaneous

- Main Door Open Switch
- Heat Lamp Socket with Thermostat
- Detector Test Switches
- Auxiliary Receptacle
- Other: slide-Out Shelf/Drawer



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Email: naztec@naztec.com • http://www.naztec.com

APPROVED

By Kelsi Record at 9:06 am, Jan 21, 2015



Traffic Responsive Secondary

The Model 980 NEMA Traffic Signal Secondary Controller is designed using state of the art electronics for reliability, long life, and superb performance in all signal control applications. The advanced architecture and NTCIP compliance provides the traffic engineer with a flexible platform for the future.

The Model 980 Secondary Controller meets and exceeds NEMA TS2 specifications, and includes advanced functionality for complex phasing, detector processing, coordination, preemption, communications, adaptive timing, as well as full systems operation in a closed-loop, hybrid, or centralized configuration.

The advanced LCD display and menu driven software provides a user-friendly approach to programming and access, and built-in diagnostics permit rapid evaluation of operational status. The use of Flash Memory allows software upgrades without PROM replacement.

Technology That Moves America

Naztec, Inc. • 820 Park Two Drive • Sugar Land, Texas 77478 • Phone (281) 240-7233 • Fax (281) 240-7238

Email: naztec@naztec.com • <http://www.naztec.com>

Series 980 NEMA TS2 Type 2 Signal Controller

FEATURES

- FLASH PROMS** The Model 980 Controller is easily configured to various firmware versions by the utilization of FLASH PROMS which eliminate the need for obsolete EPROM technology. A complete firmware update requires only ten minutes, and does not require hardware changes or EPROM replacements.
- DISPLAY** A back-lighted 4-line by 40-character supertwist LCD display provides full menu screens for ease of data entry. The display maintains an optimum contrast and brightness over the entire NEMA specified temperature range, using special temperature-compensating circuitry. The menu-driven format and context sensitive help screens eliminate need for programming instructions or look-up codes.
- EASILY SERVICED** The Model 980 Controller consists of only two printed circuit boards (three with optional modem) and an open frame power supply. The CPU/display board and the I/O board utilize machine tooled sockets for all integrated circuits for easy maintenance. An identification silkscreen on each circuit board clearly labels all components. No special tools or extender cards are needed for troubleshooting.
- REAL-TIME CLOCK** The real-time clock maintains accurate timing by utilizing a "super capacitor" which allows accuracy of 0.005% during a 24-hour time period. Retention time during power failures for the real time clock is extendible to 30 consecutive days.
- BARRIERS** Unique to the Naztec traffic controller product line is the flexibility of user programmable barriers. Four (4) separate barriers allow programming for applications from one (1) to eight (8) phases in each barrier.
- KEYBOARD** A 20-position keyboard containing 4 red function keys, 6 gray cursor movement keys, and 10 white digit keys with built in audio/tactile feedback provides user-friendly enhanced data entry.
- DIAGNOSTICS** Built-in diagnostics provide for improved maintenance and easier repairs. Internal diagnostics allow operator tests on all input and output signals, RAM devices, and memory. A built-in EEPROM eraser allows for a "clear-all" memory function.
- COMMUNICATIONS** Two RS-232 ports and an optional FSK modem port are available with each secondary unit. These ports are keyboard programmable with selectable baud rates from 300 to 19.2K with full and half duplex options. Various communication configurations allow the user multiple interfaces to other cabinet devices: conflict monitor, preemption equipment, detectors, WWW clocks, modems, notebooks, printers, etc. A RS-485 SDLC Bus Interface Port is provided for all TS2 Applications. The NTCIP protocol is fully supported.

Your Naztec Representative:



Highway Tech Signal Equipment Sales, Inc.
8 Gardiner Road / P.O. Box 1209
Sabattus, ME 04280
Tel. (207) 375-8248
Fax (207) 375-8279

Voltage: 89 to 135 VAC 60 HZ
Power: 30 Watts Maximum
Temperature: -30° F to 165° F
Humidity: 0 to 95 percent
Dimensions: Height: 10.50"
Width: 14.75"
Depth: 8.20"



Highway Tech

Automatic Generator Transfer Switch

APPROVED

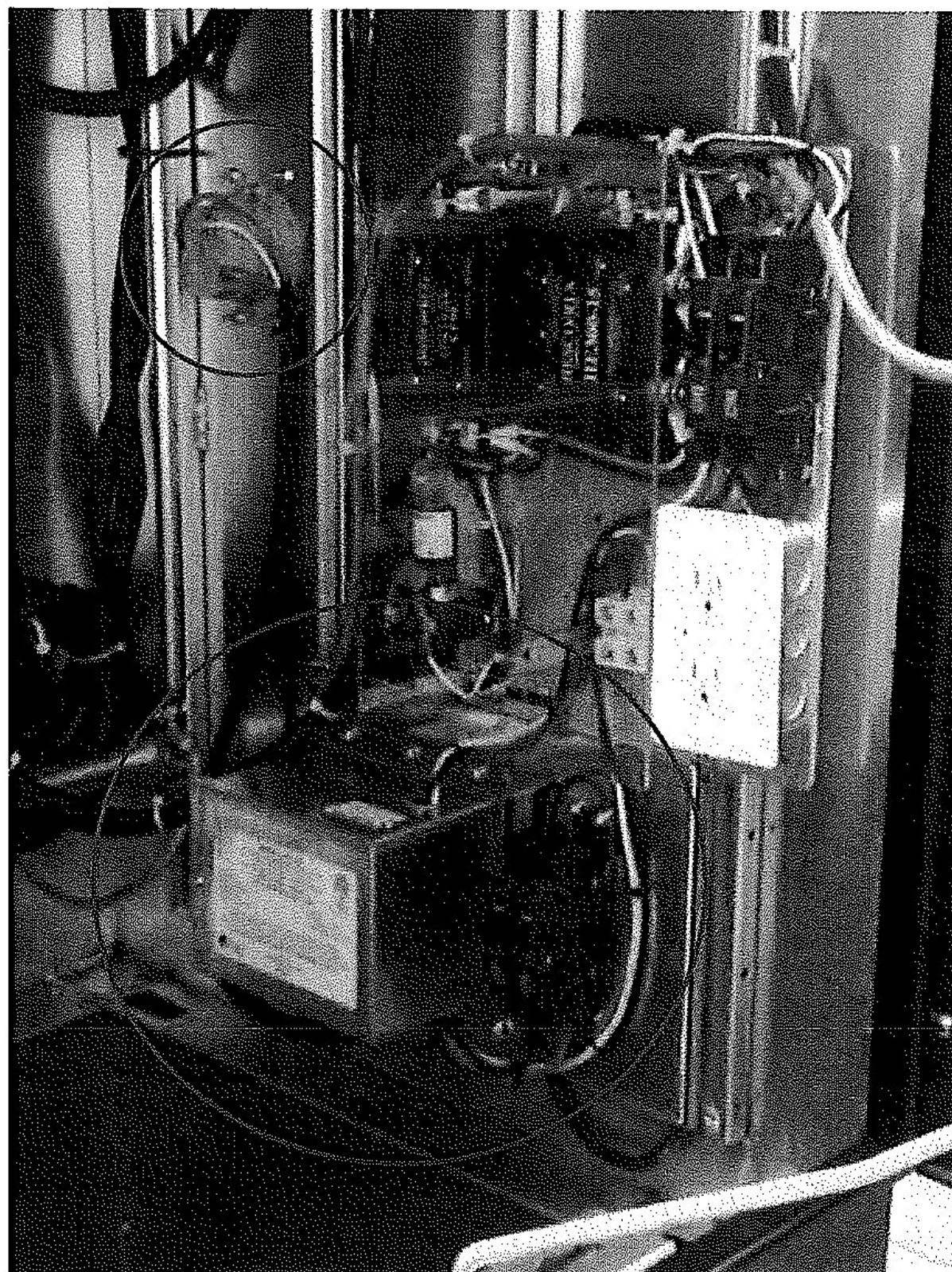
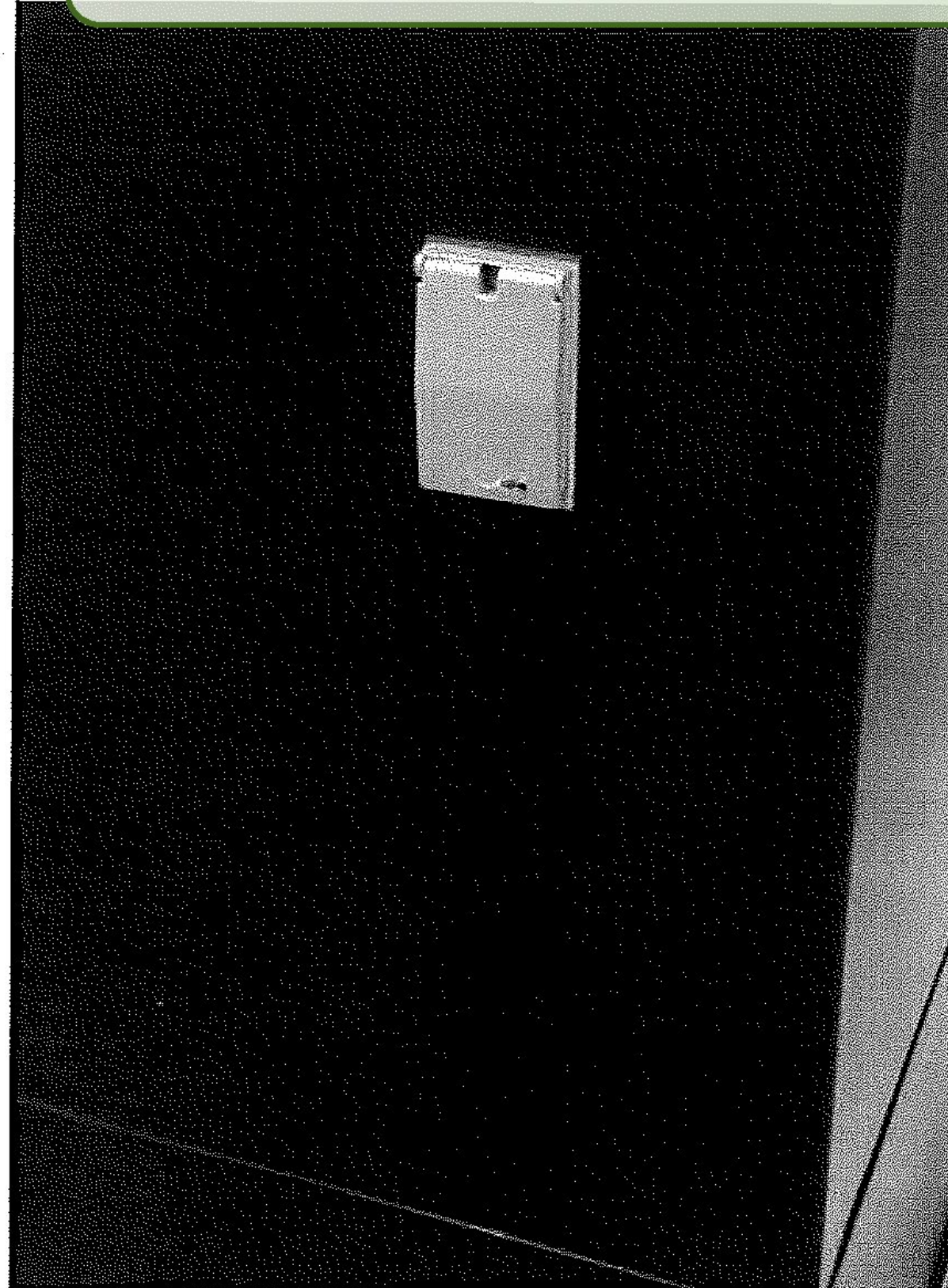
By Kelsi Record at 9:06 am, Jan 21, 2015

ATS Features

- Automatically Senses Generator Power and Switches Intersection Load to Generator.
- Smooth Power Transfer Regardless of Line Voltage Conditions.
- No Need to Open The Controller Cabinet or Flip Breakers
- Provides Overcurrent Protection on Both Generator Input and Line Input
- 20 Second Electronic Generator Time Delay Allows Generator to Stabilize and Protects Sensitive Traffic Control Equipment
- Chatter-Free Contact Operation Under Low Line Voltage Conditions
- 30 Amp, 120 Volt Rating
- 2-Year Warranty
- ETL Listed
- 50 Amp, 120/240 Volt ATS Also Available

Port Features

- Low Profile Generator Port
- Semi-Flush
- Hasp Lockable
- Small Footprint
- Compatible With All Generator Systems
- Other Generator Ports Available

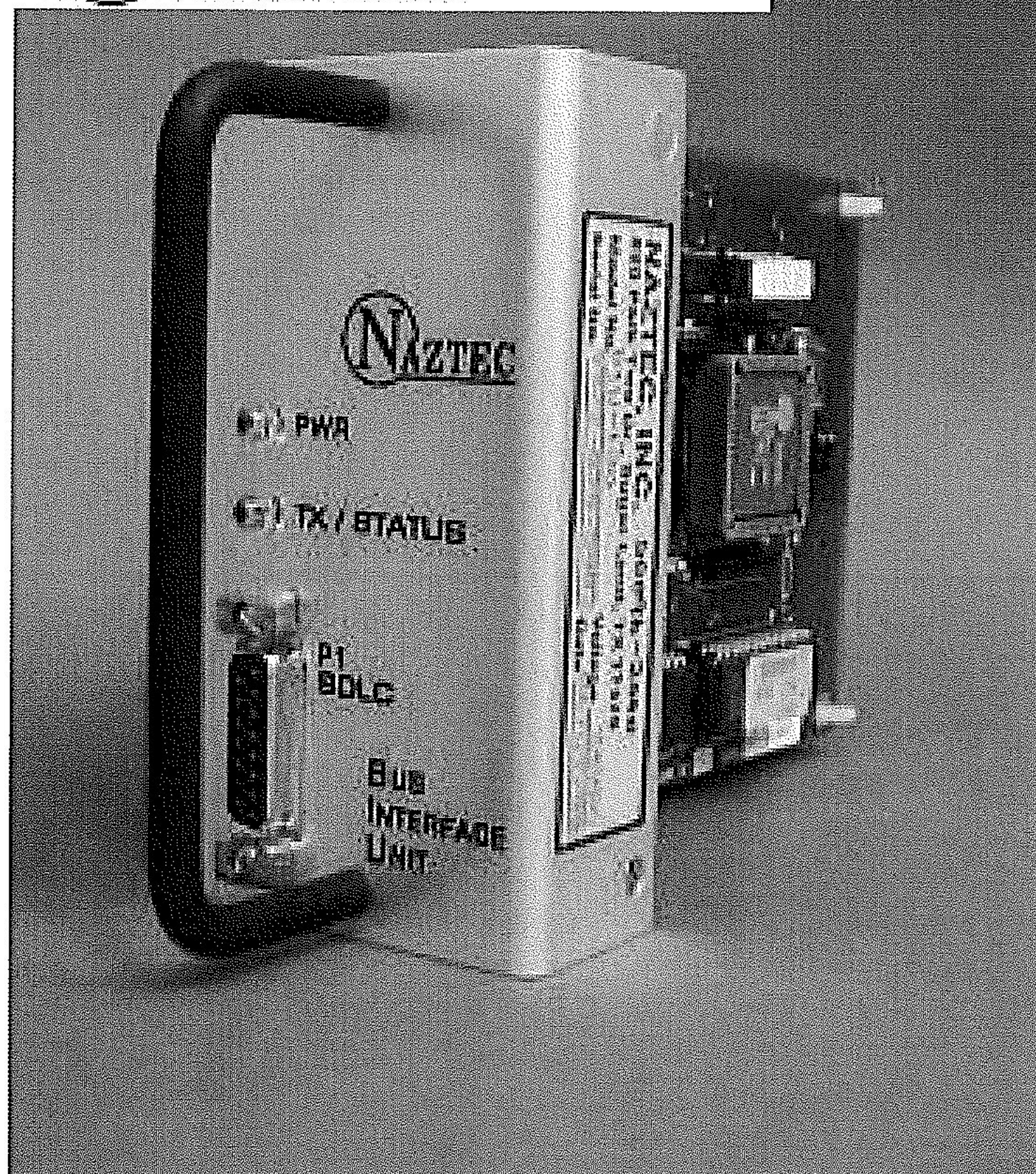
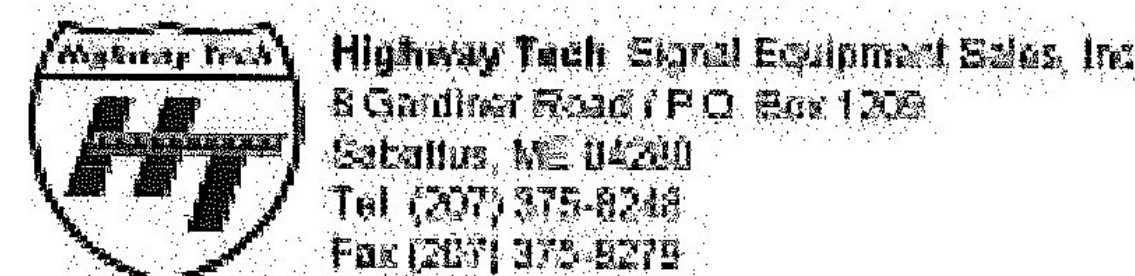


Highway Tech Signal Equipment Sales, Inc.

6 Sabattus Road • P.O. Box 1209 • Sabattus, Maine 04280 • Phone (207) 375-8248 • Fax (866)-232-7014

Email: sales@highwaytech.com • <http://www.highwaytech.com>

Model BIU 130 Bus Interface Unit



Features

- Meets or Exceeds all NEMA TS-2 Standards
- Less than 50 mA Standby Current
- Designed for "Hot plugging"
- Socketed I/O Drivers for Easy Maintenance
- Heavy Duty 200 mA Output Drive Capability
- Power Brownout Indication
- 120 Hz Reference Failure Indication
- Optional RS-232C Port for Custom Applications

The Naztec Model BIU 130 Bus Interface Unit links the TS-2 Controller Unit to the Cabinet I/O. It is responsible for controlling load switches, providing dimming, receiving and isolating pedestrian calls, analyzing detector faults, time-stamping detector calls, and providing detector resets. By design, the BIU is free of operator controls. The BIU performs its I/O functions based upon a pre-wired card rack address.

Power Specifications:

- 18-26 VDC
- 200 mA
- Less than 1.5 A Power-Up Surge
- Can be inserted with power applied

Input Specifications:

- 8 Dedicated Inputs
- 24 Configurable Inputs
- Low (True) Below 4 VDC
- High (False) Above 16 VDC
- Greater than 50 mA Sink Current

Port 1 Specifications:

- EIA-485 Standard Compliant
- 153.6 Kbps Data Rate
- SDLC Protocol

RS-232C Port Specifications

- RS-232 Standard Compliant
- Factory Customizable Interface

Opto-Input Specifications

- Less than 3 VRMS Active (True)
- Greater than 6 VRMS Inactive (False)
- 10 M Ω , 1000 VAC RMS Isolation

Power LED Indicator Details

- Short "Wink" Off Indicates 120 Hz Reference Failure
- Long Period On/Off Toggle Indicates Inadequate 24VDC Power Level
- Solid On Indicates Proper Power and Operation
- Solid Off Indicates No Power

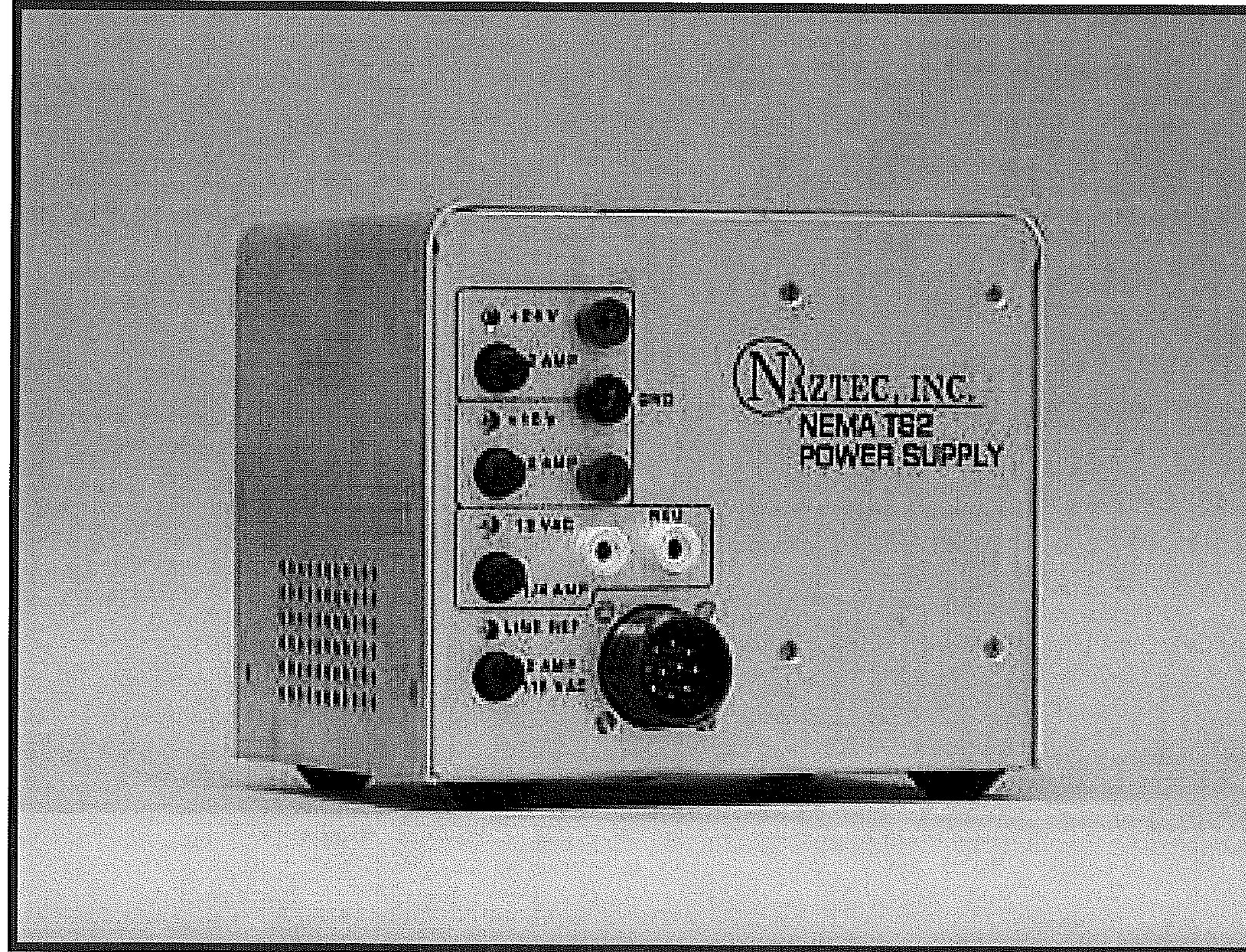
Transmit LED Indicator Details

- Quick Blinking Indicates Proper Communications Activity
- Solid Off Indicates Communications Failure

Technology That Moves America

Naztec, Inc. • 820 Park Two Drive • Sugar Land, Texas 77478 • Phone (281) 240-7233 • Fax (281) 240-7238

Email: naztec@naztec.com • <http://www.naztec.com>



FEATURES

- 2 Amp Total Output Current at 24VDC
- 2 Amp Total Output Current at 12VDC
- .25 Amp Total Output Current at 12VAC
- 50 mA Line Reference Clock Output
- Shelf Mount Type with Rubber Feet
- Fuse for AC Line Input and Each Output
- Durable Aluminum Casing
- NEMA TS2 Pin Type Output
- Line Reference LED
- Test Jacks

APPROVED

By Kelsi Record at 9:06 am, Jan 21, 2015



Highway Tech Signal Equipment Sales, Inc.
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Sabattus, ME 04280
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info@highwaytech.com



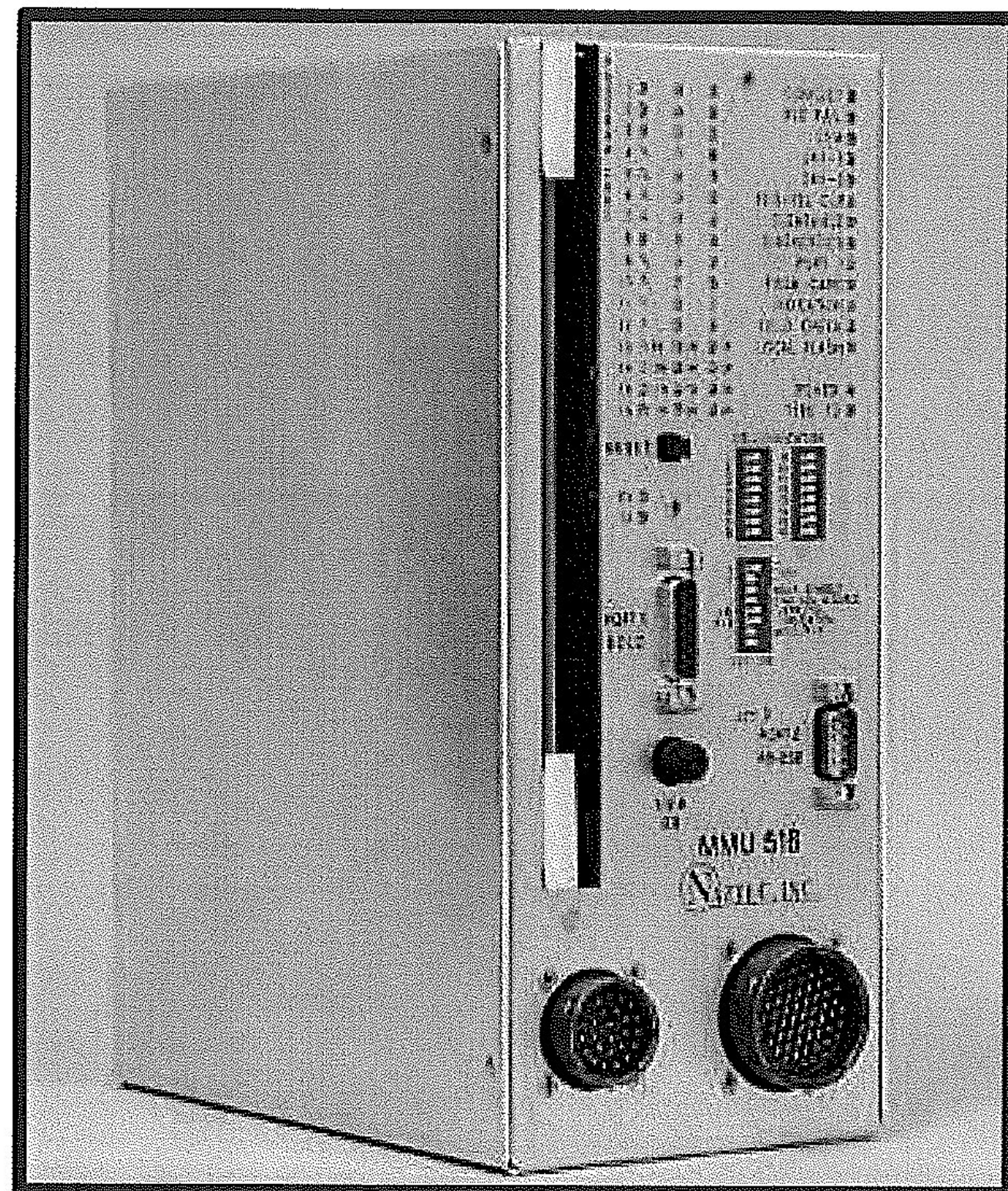
APPROVED

By Kelsi Record at 9:07 am, Jan 21, 2015

MMU 516 Malfunction Management Unit RS232

FEATURES

- Meets and exceeds all TS2 specifications
- High speed internal data transfer and communications via an SDLC port
- High speed external data transfer via an RS-232 port
- Tri-Color LEDs Red, Yellow, Green for channel display
- LED indicator lamps for operation analysis
- Removable program card
- High performance machine tooled sockets for integrated circuit mounting



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The Naztec Model MMU 516 Malfunction Management Unit is an enhanced MMU that monitors up to 16 traffic signal indications (channels) for conflict, improper sequencing, incorrect timing, and improper signal voltage levels. The MMU 516 is fully compliant with NEMA Standard TS2-1992. The MMU 516 is also capable of operating in older TS1 type cabinets, and is compatible with 12-channel Conflict Monitor Units conforming to the NEMA Standard TS1-1989.

All connectors, indicators and operator controls are located on the front panel of the MMU 516. Channel and control input signals and relay output connections are made through two MIL-C-26482 connectors, and the SDLC Port is an A-size, 15 contact, D shell connector. The RS232 Port is excellent for tracking important phase output data back to the controller or to a PC for logging. The programming card and the AC line fuse are easily accessed from the front panel.

The MMU 516 provides a Reset Timeout feature to prevent a broken switch or accidental wiring fault from holding the unit in the reset state for an extended period of time. LED indicators, in addition to the TS2 specified indicators, include Dual Indication Fault, Yellow+Red Clearance Fault, Programming Card Ajar, Field Check (active channels do not match SDLC message from controller) Fault, and LEDs for two +24VDC input faults and CVM input faults. Status indicators provided include: AC Line Power, Type 12 Indicator, SDLC Transmitter Active, and SDLC Msg Received.

For added safety, the MMU 516 performs continuous diagnostic tests during all operating modes. All memory elements, the microprocessor, operating voltages, and critical circuitry are checked.

820 Park Two Drive Sugar Land, TX 77478 (281) 240-7233
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MMU 516 Malfunction Management Unit

PROGRAMMING

- Minimum flash, 0-16 seconds
- Short yellow per channel
- Programmable sequence monitor
- Latch selectable options

INDICATIONS

- Conflict LED
- Red Fail LED
- 24 V-1
- 24 V-2
- Controller Voltage Monitor
- Red+Yel Clearance
- Clearance
- Diagnostics
- Port 1 Fault, Tx, Rx
- Program Card Ajar
- Indication Fail LED
- Field Check
- Power LED
- Type 12 Mode

ENVIRONMENTAL

- Operating Temperature: -34° C to +74° C
- Storage Temperature: -45° C to +85° C
- Humidity: Less than 95% non-condensing to +43° C

FEATURES

- Meets and exceeds TS2-1992 Specifications
- Operates in TS1 Cabinets
- EPROM Memory
- No batteries
- Machine tooled socket I.C.'s
- Programmable Minimum Flash Time
- Latch 24 V failures
- Latch CVM Failure
- Enhanced Monitoring

ELECTRICAL

• Power

Line Voltage: 75 to 150 VAC, RMS
Line Frequency: 57 to 63 Hz,
60Hz nominal
Power: 10 watts, typical
Fuse, Front Panel: 0.5A Slow Blow

• Monitoring Voltage

Pickup: 96 +/- 2.5 Volts AC, RMS
Dropout: 91 +/- 2.5 Volts AC, RMS
Hysteresis: 4 +/- 1.0 Volts AC, RMS

DIMENSIONS

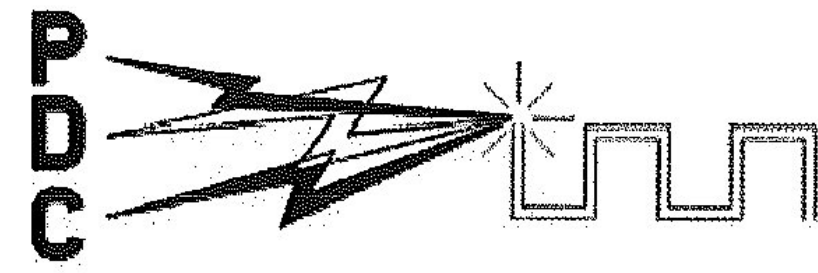
- Height: 10.5 inches
- Width: 4.5 inches
- Depth: 10.9 inches

Your Naztec Representative:

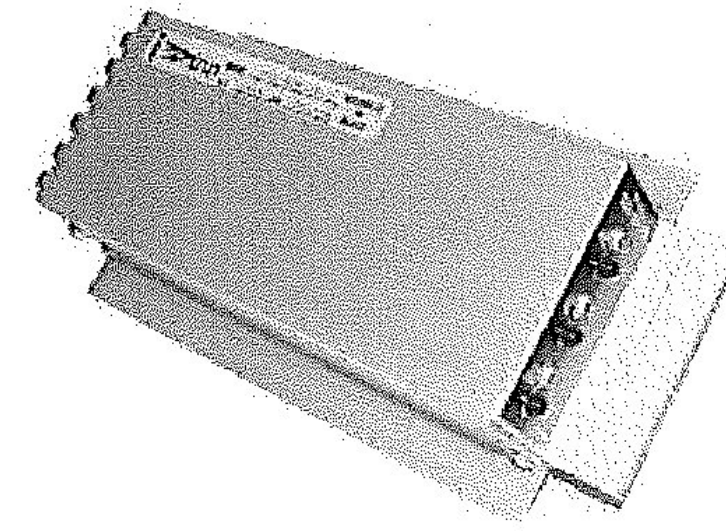


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DATA SHEET SSS-87IO



Solid State Loadswitch:

Description:

The PDC SSS-87I/O Loadswitch series is a tri-pack, modular, solid state relay designed specifically to meet NEMA specifications, as well as California and New York "Model 200" specifications. Each loadswitch contains 3 individually replaceable modules that are enclosed in a dust resistant, metal enclosure providing mechanical protection and excellent heat sinking for the modules. The modules are easily accessible with the use of a screwdriver. Each loadswitch also features a L.E.D. indicator on each output circuit.

Installation:

The switchpac inter mates with any standard NEMA loadbay or with the model 332 cabinet output file as well as with any NEMA loadbay. It is easily installed or removed by grasping the handle. Connector P1 pin outs are shown in FIG 1. The connector mates with a PDC BCS-12 or equal.

| PIN | FUNCTION |
|-----|----------------------------|
| 1 | +115VAC, 60 Hz |
| 2 | Chassis Ground |
| 3 | A Output (Red, Don't Walk) |
| 4 | Not Assigned |
| 5 | B Output (Yellow) |
| 6 | A Input (Red, Don't Walk) |
| 7 | C Output (Green, Walk) |
| 8 | B Input (Yellow) |
| 9 | +24 VDC |
| 10 | C Input (Green, Walk) |
| 11 | AC- |
| 12 | Not Assigned |

P1
(P1 as viewed from the outside of the product looking directly at the connector)

APPROVED
By Kelsi Record at 9:07 am, Jan 21, 2015

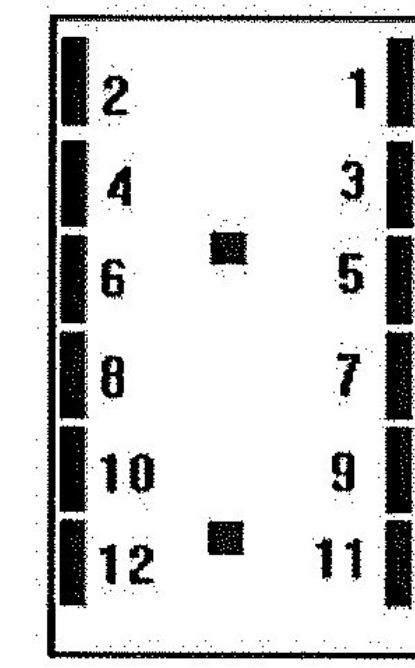
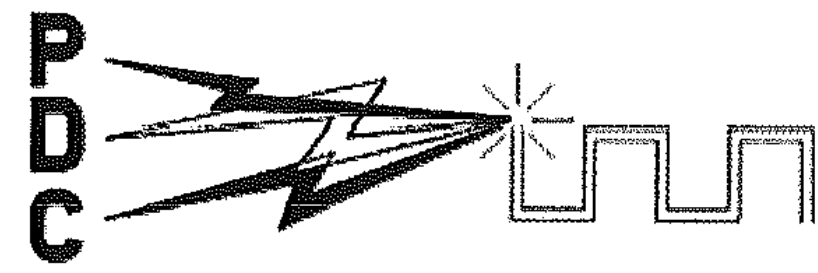


FIG 1.

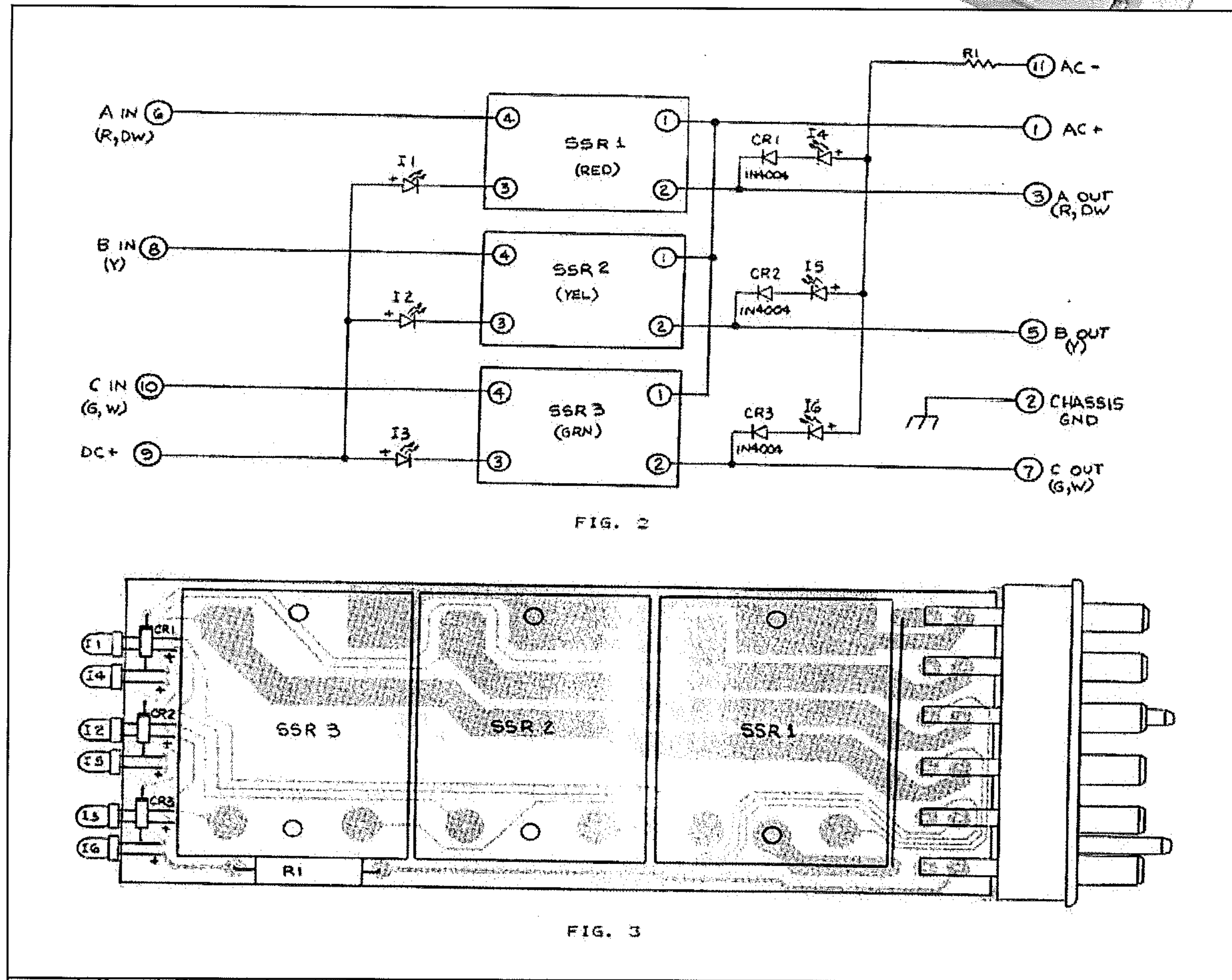
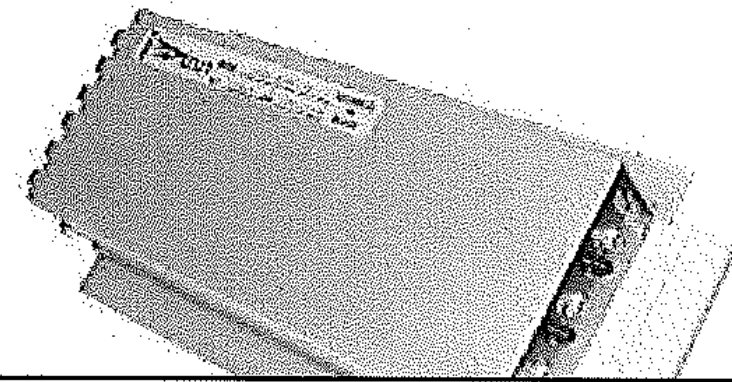
General Characteristics:

| | |
|--------------------------|---|
| Model | SSS-87I/O Series |
| Uses Module # | SSR-83-525 & SSR-87 |
| Meets Specs for | Nema, Caltrans, NY (model 200) |
| Load | voltage.....120 VAC current (max)..... 15.0 Amps |
| (Tungsten Filament Load) | |
| Control Signal | voltage..... +24VDC current 20.0 MA (max) |
| Switching | 1st alternation after.....±10 Degrees of line voltage at the zero signal is applied. crossover point. Succeeding alterations.....±5 Degrees of line voltage at the zero crossover point. |
| Off State | dv/dt.....100 V per microsecond line to load resistance.....15 K Ohms Min leakage current.....less than 20 MA |
| Isolation | voltage.....2500 VDC Min resistance.....10 Meg Ohms Min |
| Surge Current | one cycle.....175 Amps RMS Min one second.....40 Amps RMS Min |
| Life | operations.....30 million Min |
| Mechanical | length.....8.40 inches width.....1.74 inches height.....4.185 inches weight.....1.135 LBS |

Guarantee: The SSS-87I/O series is fully guaranteed against all failures due to manufacturing defects for two years.

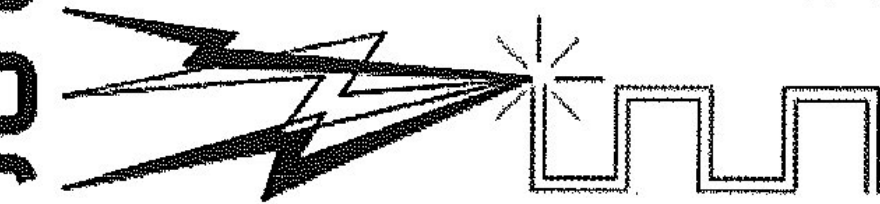


DATA SHEET SSS-87IO



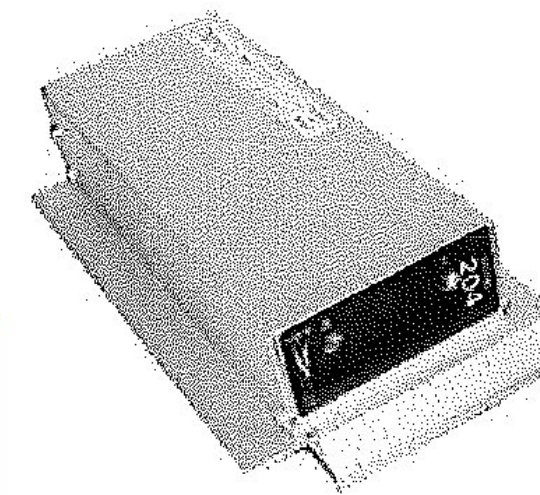
| | Qty | Description | PDC P/N | MFG | MFG P/N | REF DES |
|----|-----|---------------------------|---------|-----------|-----------|----------|
| 1 | 1 | Label s/n | OO043 | PDC | OO043 | |
| 2 | 3 | Solid State Relay, SSR-87 | OO144 | PDC | OO144 | SSR1,2,3 |
| 3 | 1 | Chassis | OO204 | PDC | OO204 | |
| 4 | 1 | Cover | OO206 | PDC | OO206 | |
| 5 | 1 | Label, front panel | OO214-8 | PDC | OO214-2 | |
| 6 | 1 | P.C. Board fab. | OO284 | PDC | OO284 | |
| 7 | 3 | Diode, 1N4004 | CR001 | PDC | CR0001 | CR1,2,3 |
| 8 | 6 | Screw, 8-32 x 3/8 brass | H0036 | | | |
| 9 | 6 | screw, 6-32 x 5/16 | H0037 | | | |
| 10 | 6 | Nut, keps 6-32 | H0038 | | | |
| 11 | 1 | Spacer | H0039 | | | |
| 12 | 4 | Screw, #5 x 3/8 | H0040 | | | |
| 13 | 8 | Screw, 6-32 x 3/8 | H0041 | | | |
| 14 | | Screw, 6-32 x 1 3/16 | H0043 | | | |
| 15 | 1 | Connector 12 pin | J0002 | Beu | P5412-S | |
| 16 | 3 | L.E.D. Clear Red | LD0004 | G.I. | MV5020 | I1,2,3 |
| 17 | 3 | L.E.D. Difused Red | LD0005 | Litronics | RL2000 | I4,5,6 |
| 18 | 3 | Resistor 5.6K 3W | R0060 | TRW | PW3-5.6KM | R1 |

P
D
C



DATA SHEET

SSF-87



APPROVED

By Kelsi Record at 9:07 am, Jan 21, 2015

Solid State Flasher With Replaceable Modules:

General Description:

The PDC model SSF-87 is a dual pack, modular, solid state flasher designed specifically to meet NEMA specifications as well as New York "Model 204" specifications. Each flasher contains two individually replaceable modules that are enclosed in a dust resistant, metal enclosure, providing mechanical protection, and excellent heatsinking for the modules. The modules are easily accessible with the use of a crew driver.

Installation:

The flasher intermates with the model 332 cabinet as well as with any NEMA loadbay. It is easily installed or removed by grasping the extruded handle. Connector pinouts are shown in FIG 1. The connector mates with a Beau S-5406-LAB or equivalent.

General Characteristics:

- Load
 - Voltage..... 120 VAC
 - Current (max)..... 15.0 Amps (Tungsten filament load)
- Off State
 - dv/dt..... 100V per microsecond
 - Line to load resistance... 15k Ohms min.
 - Leakage current..... less than 20 mA
- Surge Current
 - One cycle..... 175 Amps RMS min.
 - One second..... 40 Amps RMS min..
- Life
 - Operations..... 30 million min.

Flash Rate

50-60 cycles (flashes) per minute.

Mechanical

- Length..... 8.40 inches
- Width..... 1.70 inches
- Height..... 4.185 inches
- Weight..... 1.50 Lbs.

Operating Temperature -35 to +74 degrees C

Adjustments: The model SSF-86 flasher has no adjustment controls.

Guaranteed : The flasher is fully guaranteed against all failures due to manufacturing defects for two years.

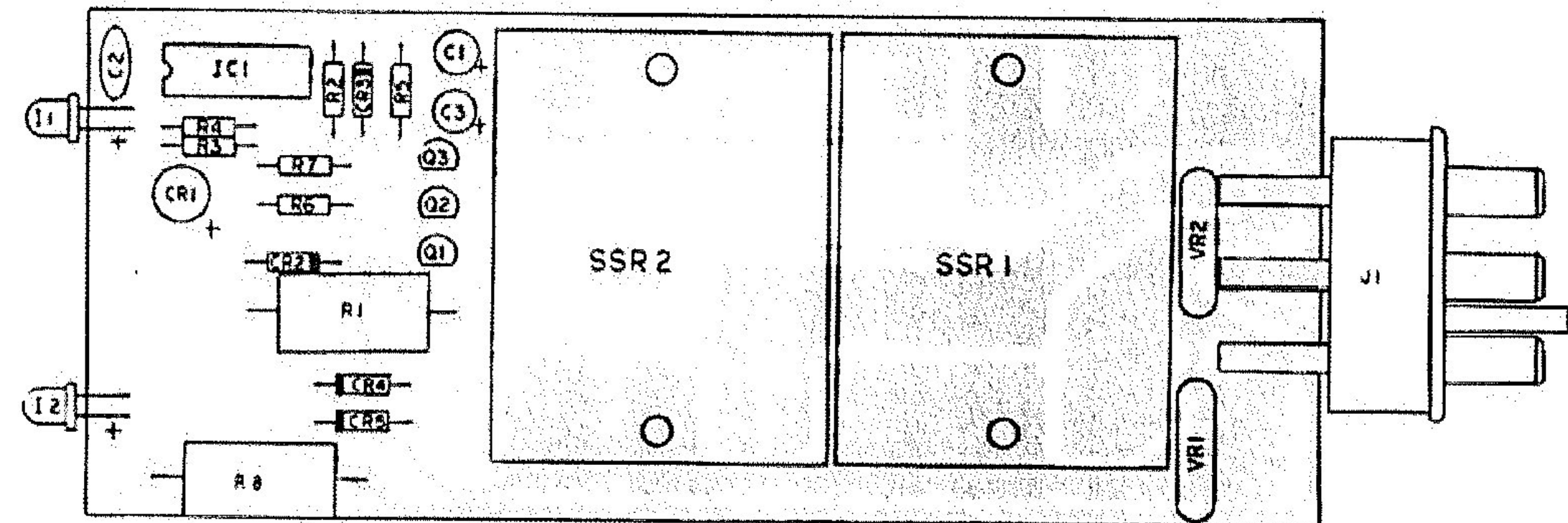
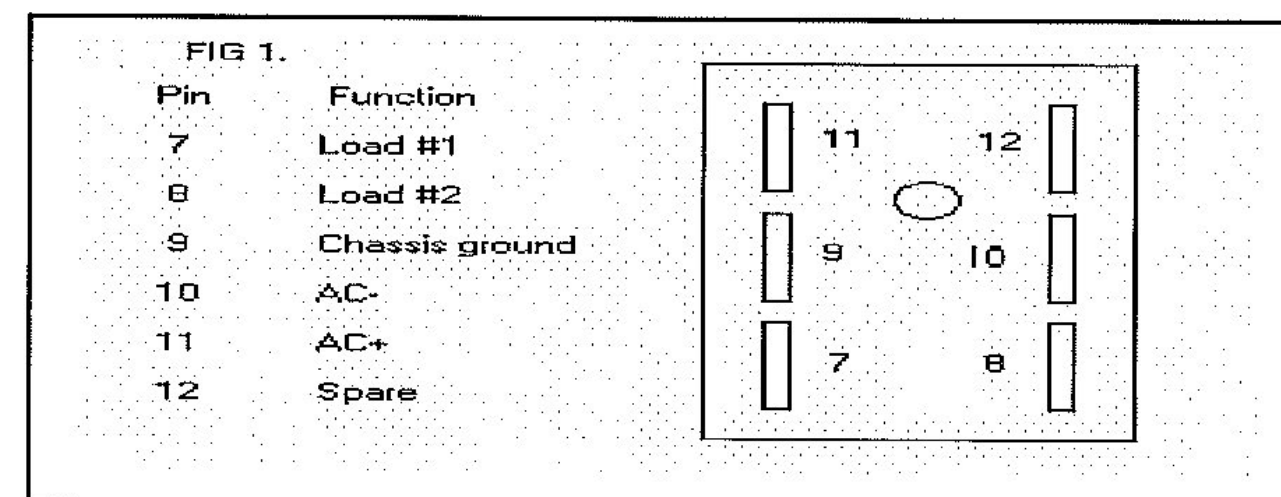
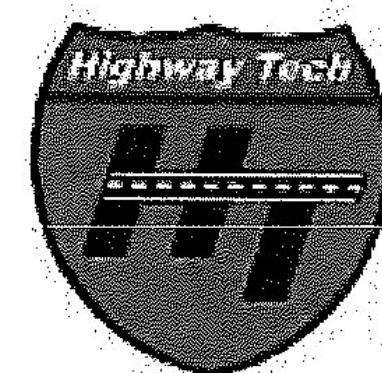


FIG. 2



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P
D

DATA SHEET

SSF-87

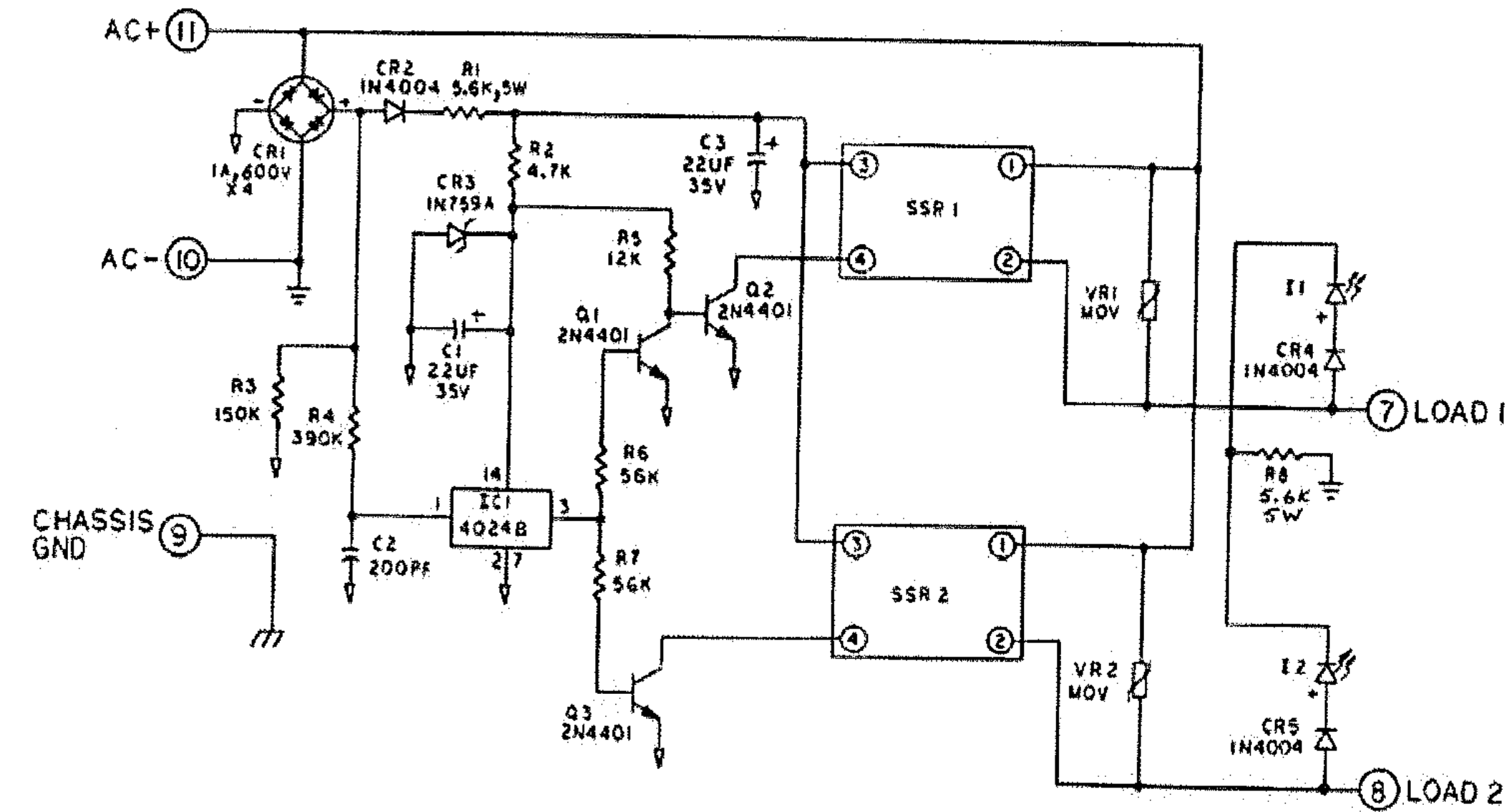


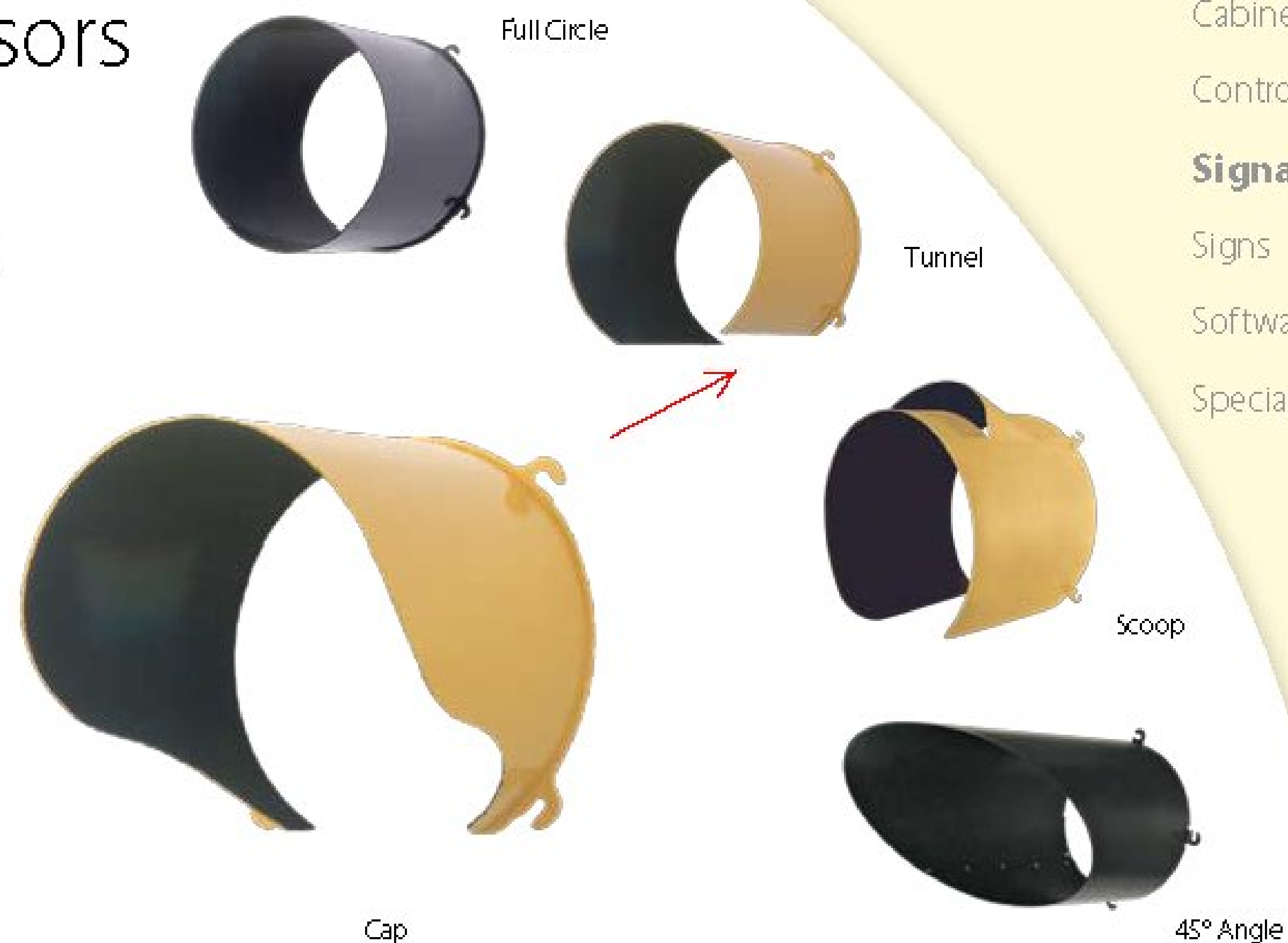
FIG. 3

| Item | Qty | Description | PDC P/N | Mfg | Mfg P/N | RefDes |
|------|-----|-------------------------------|---------|----------------|----------|---------|
| 1 | 1 | Label S/N | 00043 | PDC | 00043 | |
| 2 | 2 | Solid State Relay, SSR-87 | 00144 | PDC | 00144 | |
| 3 | 1 | Chassis | 00204 | PDC | 00204 | |
| 4 | 1 | Cover | 00206 | PDC | 00206 | |
| 5 | 1 | Label, Front Panel | 00214-5 | PDC | 00214-5 | |
| 6 | 1 | P.C. Board Fab. | 00267 | PDC | 00267 | |
| 7 | 2 | Cap. 22uf 35V | C0005 | Sprague | 503D | C1,3 |
| 8 | 1 | Cap. 220 pf 50V | C0017 | Dibar | 220pf50V | C2 |
| 9 | 3 | Diode, Power 1N4004 | CR0001 | Fairchild | 1N4004 | CR2,4,5 |
| 10 | 1 | Diode Bridge, 1A 600V | CR0004 | G.I. | WL06M | CR1 |
| 11 | 1 | Diode, Zener 1N759A | CR0005 | Fairchild | 1N759A | |
| 12 | 4 | Screw PH BIN HD 8-32 x 3/8 BR | H0036 | | | |
| 13 | 4 | Screw PH BIN HD 6-32 x 5/16 | H0037 | | | |
| 14 | 4 | Nut, Keps 6-32 BLK | H0038 | | | |
| 15 | 4 | Screw PH Pan HD #5 x 3/8 S.T. | H0040 | | | |
| 16 | 2 | Screw PH Pan HD 6-32 x 3/8 | H0041 | | | |
| 17 | 1 | I.C. CMOS 4024 | IC0002 | RCA | CD4024BE | IC1 |
| 18 | 1 | Connector 6 Pin | J0001 | Beau-Vernitron | P5406-S | J1 |
| 19 | 2 | L.E.D. Clear Red | LD0004 | G.I. | MV5020 | I1,2 |
| 20 | 2 | Res. 4.7K 1/4W | R0012 | Dale | | R2 |
| 21 | 1 | Res. 12K 1/4W | R0014 | Dale | | R5 |
| 22 | 2 | Res. 56K 1/4W | R0018 | Dale | | R6,7 |
| 23 | 1 | Res. 150K 1/4W | R0020 | Dale | | R3 |
| 24 | 1 | Res. 390K 1/4W | R0022 | Dale | | R4 |
| 25 | 2 | Res. 5.6K 5W | R0048 | TRW | PW5-5.6K | R1,8 |
| 26 | 3 | Transistor 2N4401 | Q0004 | G.E. | 2N4401 | Q1,2,3 |
| 27 | 2 | Varistor | VR0002 | NEC | NV240D19 | VR1,2 |

Signal Visors

Aluminum
Polycarbonate

45° Angle
Cap
Full Circle
Scoop
Tunnel



Cabinets
Controllers
Signals
Signs
Software
Specialty

Overview

McCain's Signal Visors increase signal visibility in sunlight while still allowing an unobstructed view for multiple lanes of approaching drivers and pedestrians. McCain produces a range of standard and angled visors including tunnel, full circle, and cap, that offer a variety of signal viewing angles. Whether you are looking for aluminum or polycarbonate, Federal yellow, signal green, black, or custom colors, McCain has the visors to meet your needs.

APPROVED

By Ian Degutis at 1:50 pm, Jan 21, 2015

Benefits

- Increases signal visibility in sunlight
- Available in a variety of materials, sizes, styles, and angles to meet your specific requirements
- Twist-on tabs facilitate ease of installation
- One-piece construction (except Scoop Visor)

Product Description

McCain's Signal Visors, molded polycarbonate or stamped and formed aluminum, are available in eight inch and 12 inch signal configurations. Integrally formed, twist-on mounting tabs make installation and maintenance a snap, and a standard three degree downward tilt facilitates signal visibility.

Specialty visors include the 45° Angle Visor and the Scoop Visor. The 45° Angle Visor comes in two standard lengths, 18" and 27" and in right and left versions. It is designed to narrow visibility for locations such as an angled intersection.

The Scoop Visor is designed to resist snow build-up on signal lenses in colder climates. A louvered vent on top and an open bottom contribute to the increased vertical movement of air across the face of the signal lens thereby increasing resistance to the deposit of snow.

Signal Visors

Standard Features

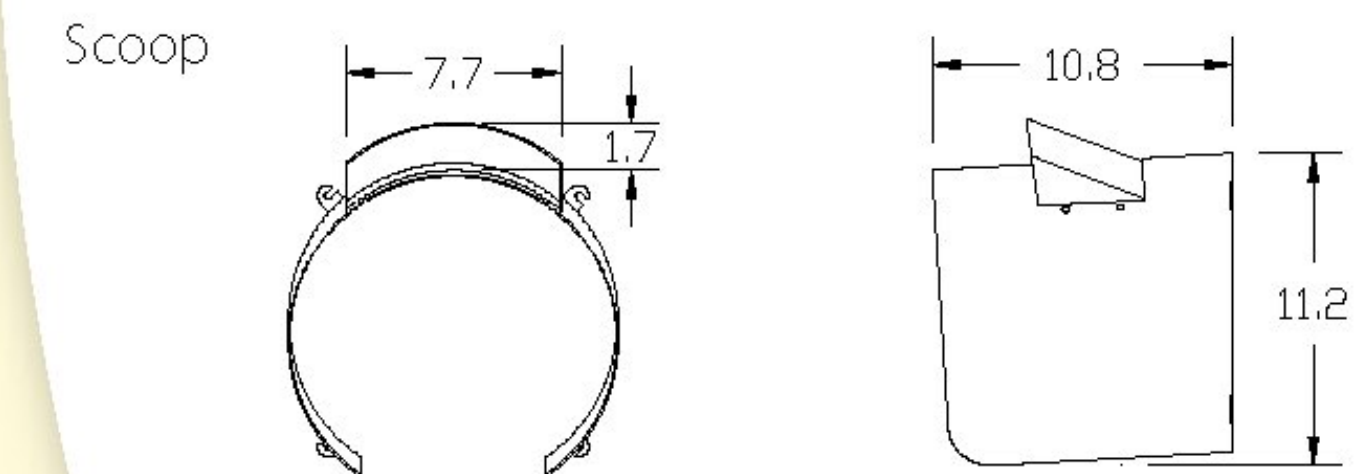
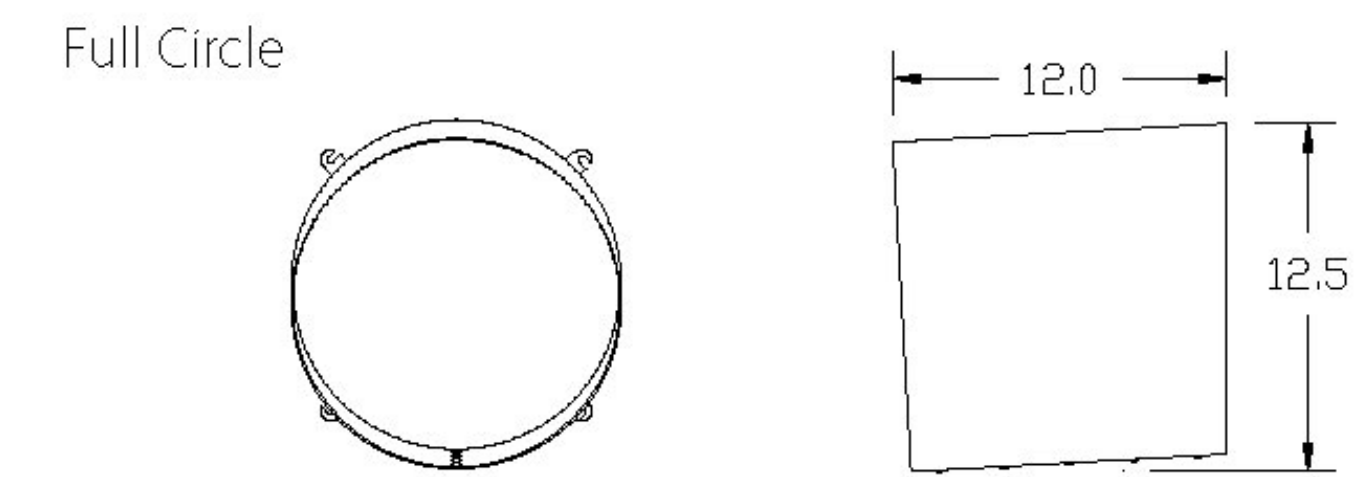
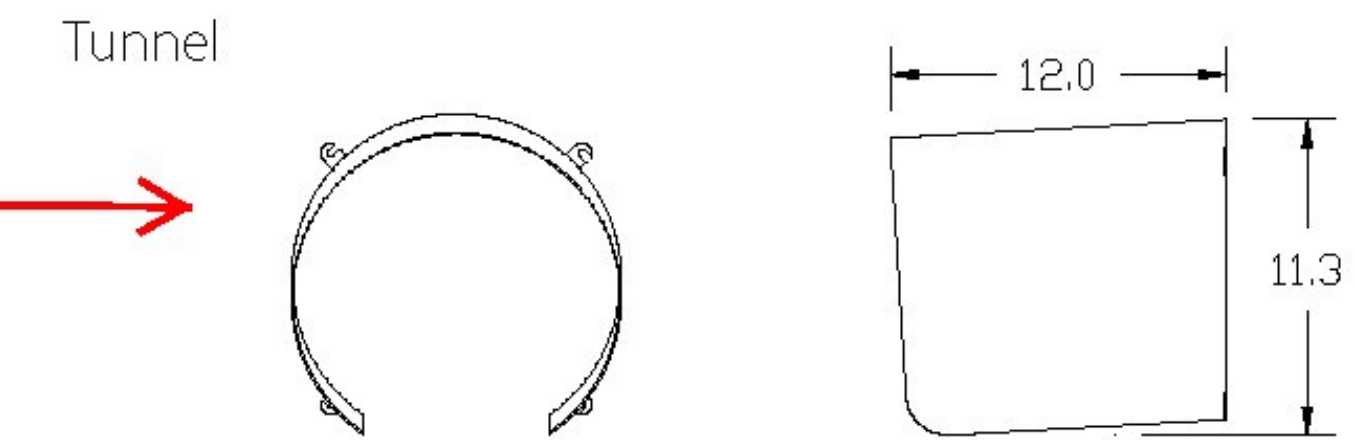
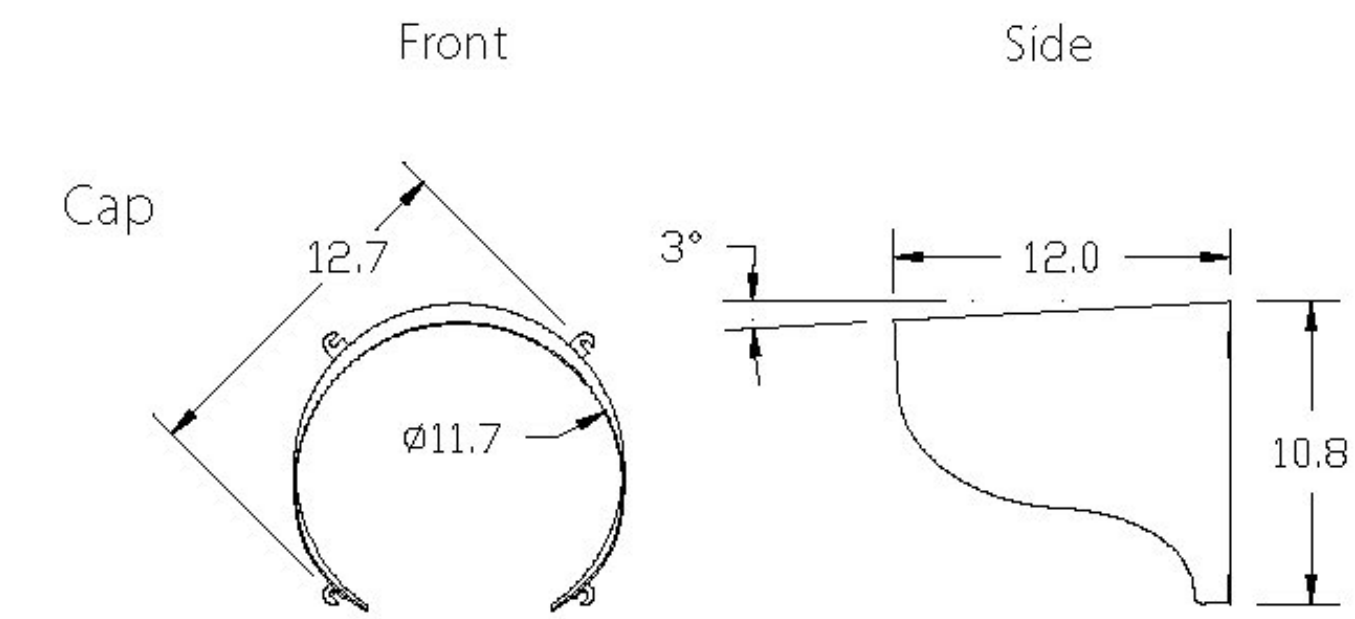
- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

General Specifications

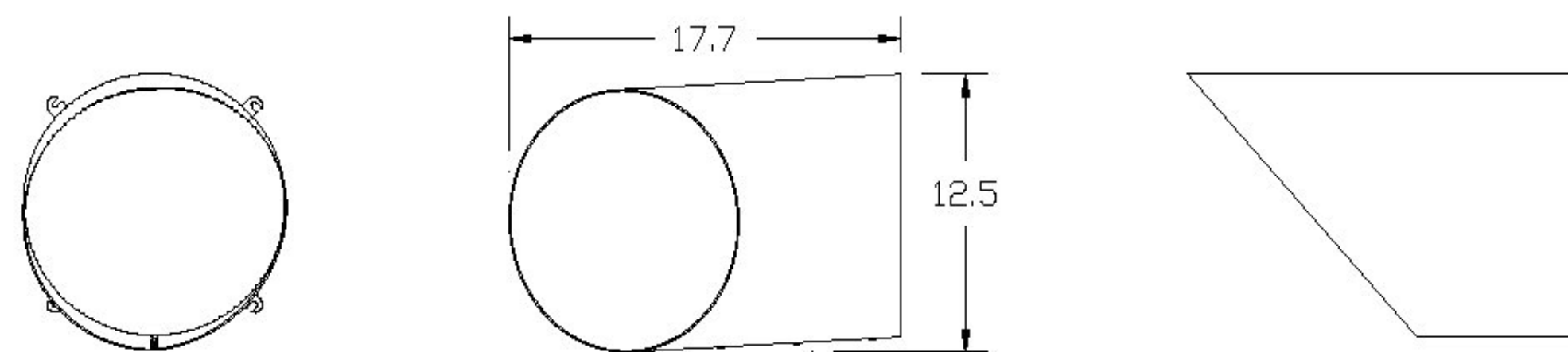
| Dimensions: | Standard Visors: | Diameter | Depth |
|------------------|--|----------|-------|
| | | 8" | 8" |
| | | 12" | 12" |
| | 45° Angle Visors: | 8" | 18" |
| | | 12" | 18" |
| | | 12" | 27" |
| Degree of Tilt: | 3° (down) | | |
| Material: | Aluminum: Type 3003, very good corrosion resistance, 0.050" thick | | |
| | Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10" nominal thickness | | |
| Finish(es): | Aluminum: Powder coated | | |
| | Polycarbonate (standard visors only): Colored resins integral to visor | | |
| Color(s): | Exterior: Federal yellow, signal green, black , or custom | | |
| | Interior: Flat black | | |
| Mounting: | Twist-on tabs | | |
| Shipping Weight: | 1 - 4 lbs., varies based on material, size, and style | | |

Options

- Other lengths available
- Degree of tilt



45° (18" right angle version)



Dimensions rounded to the nearest 0.1"
 All visors shown are 12" signal versions
 Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12" visors

To learn more about McCain's Integrated Traffic Solutions, please contact info@mccain-inc.com or call (760) 727-8100



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