ABBREVIATIONS:

A	AMPERES
AC	ALTERNATING CURRENT
AIC	AMPERE INTERRUPTING CAPACITY
AMP	AMPERES
AWG	AMERICAN WIRE GAUGE
C/B	CIRCUIT BREAKER
CAT.	CATALOG
CAT	CATEGORY
CCTV	CLOSED CIRCUIT TELEVISION
CIP	CAST IN PLACE
CMS	CHANGEABLE MESSAGE SIGN
COMM	COMMUNICATION(S)
DMS	DYNAMIC MESSAGE SIGN
EA	EACH
FDN	FOUNDATION
FMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
FTP	FIBER TERMINATION PANEL
GND	GROUND
HCMS	HYBRID CHANGEABLE MESSAGE SIGN
ITS	INTELLIGENT TRANSPORTATION SYSTEM
ITSF–XX	ITS FIBER OPTIC CABLE WITH XX STRANDS
ITSS	INTELLIGENT TRANSPORTATION SYSTEM STATION
LED	LIGHT EMITTING DIODE
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
O.D.	OUTER DIAMETER
PCRMC	PVC COATED RIGID METALLIC CONDUIT
POE	POWER OVER ETHERNET
PTZ	PAN–TILT–ZOOM
PVC	POLYVINYL CHLORIDE
PWR	POWER
REQD	REQUIRED
RMC	RIGID METALLIC CONDUIT
RNMC–XX	RIGID NONMETALLIC CONDUIT, SCHEDULE XX
SCC	SYSTEMS CONTROL CABINET
S.S.	STAINLESS STEEL
STD	STANDARD
TDS	TRAFFIC DETECTION STATION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VMS	VARIABLE MESSAGE SIGN
VSLS	VARIABLE SPEED LIMIT SIGN
W	WATT(S)
W/	WITH
WAP	WIRELESS ACCESS POINT
WTS	WIRELESS TRAFFIC SENSOR (IN–PAVEMENT WIRELESS SENSOR)
XFMR	TRANSFORMER

EQUIPMENT:

(A) ITSS DISCONNECT: DISCONNECT SHALL BE CONSTRUCTED OF A MOLDED CASE CIRCUIT BREAKER HOUSED IN A NEMA 3R OUTDOOR RATED ENCLOSURE WITH HINGED COVER. SIZE AND TYPE OF BREAKER SHALL BE AS SPECIFIED ON ITS–30.

(B) ITSS TRANSFORMER: 480V, 1–PHASE, 120/240V SECONDARY, PAD MOUNT, 37.5KVA, DRY TYPE TRANSFORMER WITH PAINTED STEEL NEMA 3R RAINPROOF ENCLOSURE WITH WEATHER SHIELD AND SHALL BE MANUFACTURED BY SQUARE D CAT. #EE37S3H 37"H X 20"W X 20"D. (WHERE REQUIRED IN THE PLANS)

(C) ITSS PANELBOARD: 120/240V, 1–PHASE, 3 WIRE, SERVICEABLE MAIN BREAKER, NEMA 3R RATED, WITH HINGED COVER AND SHALL BE MANUFACTURED BY SQUARE D, CAT. # QO12040M200RB 26.04"H X 14.75"W X 4.52"D. USE 200A OR 100A MAIN BREAKER AS SHOWN ON PLANS. (SEE ITS–30 FOR MORE INFORMATION)

(D) SCC DISCONNECT: 240V, 1–PHASE, 100A, 2–POLE, 3 WIRE NON–FUSIBLE SINGLE THROW, NEMA 3R RATED AND SHALL BE MANUFACTURED BY SQUARE D, CAT. # DU323RB WITH EXTERNAL LEVER. 17.5"H X 8.5"W X 6.5"D

(E) SCC: NEMA 3R CABINET CONSTRUCTED OF .125" THICK ALUMINUM WITH INTERNAL 19" EQUIPMENT RACK HOUSING ELECTRONICS AND POWER DISTRIBUTION EQUIPMENT FOR VMS AND VSLS AND ADDITIONAL ITS EQUIPMENT. 67"H X 32.5"D X 24"W.

(F) WAP: COMMUNICATES WITH WIRELESS TRAFFIC SENSORS DEPLOYED IN ROADWAY WHICH ARE PART OF THE WIRELESS TRAFFIC DETECTION STATION 6.25"H X 6.25"W X 3"D.

(G) CCTV CAMERA: A PTZ CAMERA HOUSED IN AN ENVIRONMENTALLY SEALED OUTDOOR RATED ENCLOSURE WITH HEATER.

(H) REMOTE POWER UNIT: A NON–METALLIC NEMA 3R ENCLOSURE WHICH HOUSES CCTV CAMERA ELECTRONICS SUCH AS TRANSFORMERS, TERMINAL BLOCKS AND QUICK DISCONNECTS.

(I) VMS: FULL COLOR HIGH INTENSITY LED VARIABLE MESSAGE SIGN. SEE SPECIFICATIONS FOR DETAILS.

(J) VSLS: HIGH INTENSITY LED VARIABLE SPEED LIMIT SIGN. SEE SPECIFICATIONS FOR DETAILS.

(K) WIRELESS TRAFFIC SENSOR: PART OF THE TDS, EACH SENSOR IS 1.9"H X 2.9"W X 2.9"D AND THREE (3) SENSORS SHALL BE PLACED ALONG THE CENTERLINE OF EACH LANE SPACED 20' APART.

(L) METER CABINET: METER CABINET TYPE AS SHOWN ON THE CONTRACT PLANS WITH DISCONNECT.

(M) SCC PANELBOARD: 120/240V, 1–PHASE DISTRIBUTION PANEL (INSIDE SCC) 100A MAIN LUG, BY SQUARE D CAT. # QO612L100DS 12.57"H X 8.88"W X 3.8"D.

(N) UPS PANELBOARD: 120V DISTRIBUTION PANEL (INSIDE SCC) 70A MAIN LUG, BY SQUARE D CAT. # QO24L70TS 9.3"H X 4.81"W X 3"D.

(O) UPS: CAPABLE OF SUPPORTING A 2000VA LOAD AT 120V FOR 30MIN.

(P) NETWORK EQUIPMENT: A ROUTER OR SWITCH CAPABLE OF SINGLE AND/OR MULTIMODE FIBER OPTIC CONNECTIONS AND SHALL HAVE A MINIMUM OF TEN (10) RJ45 COPPER CONNECTIONS. MAY BE PROVIDED BY OTHERS, SEE SPECIFICATIONS FOR MORE INFORMATION.

(Q) SIGN CONTROLLER: ONE (1) CONTROLLER PER VMS AND HCM SIGN SHALL BE CAPABLE OF COMMUNICATING WITH VMS OR HCMS VIA MULTIMODE FIBER OPTIC CABLE 3.5"H X 14.25"W X 9"D.

(R) RACK SHELF: SHALL BE USED TO HOUSE NON–RACK MOUNTABLE ELECTRONICS SUCH AS POWER–OVER–ETHERNET INJECTORS 5"H X 19"W X 18"D.

(S) POE INJECTOR: SHALL BE USED TO POWER THE WAP, EQUIPMENT ITEM (F), INSTALLED AS PART OF THE TDS 1.5"H X 2.6"W X 4.2"D.

(T) FIBER TERMINATION PANEL: RACK MOUNTABLE ENCLOSURE WHICH HOUSES THREE (3) 6–PACKS OF FIBER CONNECTORS. SEE SPECIFICATIONS FOR DETAILS.

(U) WIRELESS REPEATER: PART OF THE TDS, EACH REPEATER IS 4.75"HX 3.54"WX 3.15"D.

(V) TVSS: SHALL BE USED TO PROTECT ITSS ELECTRONIC EQUIPMENT INSTALLED INSIDE OF THE SCC.

(W) SLIDING DRAWER: A SLIDING DRAWER SHALL BE INSTALLED IN THE SCC TO SUPPORT THE USE OF A LAPTOP FOR MAINTAINING THE ELECTRONIC EQUIPMENT.

(X) END NODE RADIO ANTENNA: A RADIO AND/OR ANTENNA SHALL BE INSTALLED ON SIGN STRUCTURES WHERE SHOWN ON THE CONTRACT PLANS. SEE DETAILS SHOWN ON ITS–26.

(Y) ITS POWER EQUIPMENT CABINET: SHALL BE A NEMA 3R RATED ALUMINUM ENCLOSURE AND HOUSE EQUIPMENT AS SHOWN ON ITS–09 OR AS DIRECTED ON THE PLANS. SEE NOTE 4 ON STANDARD DRAWING E–34 FOR MORE INFORMATION.

(Z) HCMS MAINLINE: TWO LINE HORIZONTAL ROTATING DRUM SIGN. SEE SPECIFICATIONS FOR DETAILS.

(AA) HCMS RAMP: SINGLE LINE HORIZONTAL ROTATING DRUM SIGN, SEE SPECIFICATIONS FOR DETAILS.

(AB) MANUAL TRANSFER SWITCH: 240V, 1–PHASE, 200A, BY SQUARE D, CAT.# DTU224NRB.

(AC) GENERATOR RECEPTACLE: 600V, 200A, BY HUBBELL CAT. # VR20422E6 S39 VJ68 (SPLICE BOX) WITH A VP204612 S39 PLUG AND VPR204212 CONNECTOR. PROVIDE FOUR (4)–20 FOOT SECTIONS OF 2/0 TYPE W INDUSTRIAL CABLE FOR GENERATOR LEADS.

NOTES:

1. ELECTRICAL INSTALLATIONS SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (NEC).
2. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS RELATING TO ELECTRICAL EQUIPMENT INSTALLATION PRIOR TO PERFORMING ACTUAL EQUIPMENT INSTALLATIONS OR REMOVALS. ANY DEVIATIONS NOTED AS PART OF THE FIELD VERIFICATION SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
3. STRUCTURAL, ARCHITECTURAL, AND CIVIL INFORMATION SHOWN WITHIN THE ITS STANDARD DRAWINGS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL REFER TO THE APPROPRIATE SECTIONS OF THE CONTRACT DRAWINGS FOR ALL PROPER DIMENSIONING, ROADWAY ALIGNMENTS, AND STRUCTURAL ASPECTS.
4. CONDUITS SHALL BE INSTALLED WITH A NYLON PULL–CORD. ENDS OF CONDUITS SHALL BE PLUGGED AND SEALED WITH AN APPROVED RODENT BLOCKING MATERIAL, SUCH AS FOAM AND COPPER WIRE MESH EXCEPT AT CONDUITS ENTERING UNDER SIGN STRUCTURE BASE PLATES AND IN SIGN ENCLOSURES. CONDUIT ENDS SHALL HAVE MINIMUM 3" OF WIRE MESH LAYER TOPPED WITH MAXIMUM 3" OF FOAM LAYER. (SEE CONDUIT ENDS RODENT BLOCKING DETAIL ON ITS–43).
5. THESE STANDARD DRAWINGS ARE DIAGRAMMATIC IN NATURE AND SCALED SIZES OF EQUIPMENT ARE APPROXIMATE. DEPENDING ON MANUFACTURERS SELECTED, NOT EVERY DETAIL OF OR EXACT LOCATION OF EQUIPMENT MAY BE SHOWN. FINAL PHYSICAL CONDITIONS SHALL BE VERIFIED IN THE FIELD. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ANY DEVIATIONS IN PROPOSED CABLE AND RACEWAY ROUTINGS.
6. ELECTRICAL EQUIPMENT FURNISHED AND INSTALLED SHALL BE NEW AND, TO THE EXTENT POSSIBLE, STANDARD PRODUCTS OF THE VARIOUS MANUFACTURERS, UNLESS NOTED OTHERWISE. WHEN MORE THAN ONE OF ANY SPECIFIC ITEM IS REQUIRED, ALL SHALL BE OF THE SAME TYPE AND MANUFACTURER, UNLESS NOTED OTHERWISE ON THE PLANS OR SPECIFICATIONS. ITEMS OF EQUIPMENT OR MATERIAL WHICH ARE NOT SPECIFICALLY DEFINED SHALL CONFORM TO THE GENERAL STANDARD OF QUALITY ESTABLISHED HEREIN.
7. MODIFY THE DEPTH AND ROUTING OF ALL UNDERGROUND CONDUITS AND DUCT BANKS WHERE NECESSARY TO AVOID INTERFERENCE WITH EXISTING DUCT BANKS, CONDUITS, AND UTILITIES. MAINTAIN 6 INCHES OF CLEARANCE BETWEEN ALL UNDERGROUND CONDUITS INSTALLED IN THIS CONTRACT WHEN CROSSING OTHER CONDUITS OR EXISTING UNDERGROUND UTILITIES.
8. EXPOSED OUTDOOR CONDUITS UNLESS NOTED OTHERWISE SHALL BE PVC–COATED RIGID METALLIC CONDUIT AS MANUFACTURED BY OCAL, OR APPROVED EQUAL. MINIMUM SIZE DIAMETER SHALL BE 1" UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL UTILIZE THE CONDUIT MANUFACTURER'S RECOMMENDED SUPPORTS FOR ALL CONDUIT ROUTINGS.
9. UNLESS NOTED OTHERWISE, MAXIMUM SPACING BETWEEN CONDUIT SUPPORTS SHALL BE 6 FEET.
10. THE MINIMUM BEND RADIUS FOR ALL CONDUITS SHALL BE WITHIN THE MANUFACTURER'S RECOMMENDED TOLERANCES OR IN ACCORDANCE WITH THE NEC, WHICHEVER IS GREATER.
11. WHERE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IS NOT SHOWN ON THE CONTRACT DRAWINGS, PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.
12. REFER TO THE STANDARD SPECIFICATIONS FOR DETAILS ON STANDARD ELECTRICAL MATERIALS SUCH AS CONDUITS, JUNCTION BOXES, AND MANHOLES.
13. THE ROUTING OF CONDUITS SHOWN ON THESE PLANS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE BUT ARE DIAGRAMMATIC AND MAY BE MODIFIED TO FIT FIELD CONDITIONS. SUBMIT DEVIATIONS TO THE ENGINEER FOR APPROVAL.
14. DMS AND DMS STRUCTURE GROUNDING, INCLUDING GROUND RODS, LUGS, AND GROUND WIRE SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE DMS AND SHALL NOT BE PAID FOR SEPARATELY.

	BY	DATE
MADE	EMG	10/2013
TRACED	MDC	10/2013
CHECKED	EMG	10/2013
SUPERVISED	ALB	10/2013

0 ½ 1 2 3 4

ORIGINAL SIZE IN INCHES

APP.	NO.	DATE	REVISION
	0	11/2013	ORIGINAL DRAWING

NEW JERSEY TURNPIKE AUTHORITY

NEW JERSEY TURNPIKE

HCMS GENERAL NOTES, LEGENDS, AND ABBREVIATIONS – 1

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STANDARD DRAWING ITS–37

CONTRACT NO. SHEET NO. OF

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