

SENSOR OPERATIONS LOG : THE MACHINE VISION SENSOR SHALL MAINTAIN A NON-VOLATILE OPERATIONS LOG, WHICH MINIMALLY CONTAINS:

- REVISION NUMBERS FOR THE CURRENT MACHINE VISION SENSOR HARDWARE AND SOFTWARE COMPONENTS IN OPERATION.
- TITLE AND COMMENTS FOR THE DETECTOR CONFIGURATION.
- DATE AND TIME THE LAST DETECTOR CONFIGURATION WAS DOWNLOADED TO THE MACHINE VISION SENSOR.
- DATE AND TIME THE OPERATION LOG WAS LAST CLEARED.
- DATE AND TIME COMMUNICATIONS WERE OPENED OR CLOSED WITH THE MACHINE VISION SENSOR.
- DATE AND TIME OF LAST POWER-UP.
- TIME-STAMPED, SELF-DIAGNOSED HARDWARE, AND SOFTWARE ERRORS THAT SHALL AID IN SYSTEM MAINTENANCE AND TROUBLESHOOTING.

SENSOR VEHICLE DETECTION PERFORMANCE : THE REAL TIME DETECTION PERFORMANCE OF THE MACHINE VISION SENSOR SHALL BE OPTIMIZED BY FOLLOWING THE GUIDELINES FOR THE TRAFFIC APPLICATIONS INCLUDING, MACHINE VISION SENSOR MOUNTING LOCATION; THE NUMBER OF TRAFFIC LANES TO MONITOR, THE SIZING, PLACEMENT, AND ORIENTATION OF VEHICLE DETECTORS, TRAFFIC APPROACHING AND/OR DEPARTING FROM THE SENSOR'S FIELD OF VIEW, AND MINIMIZING THE EFFECTS OF LANE CHANGING FIELD OF MANEUVERS.

DETECTION ZONE PLACEMENT : THE VIDEO DETECTION SYSTEM SHALL PROVIDE FLEXIBLE DETECTION ZONE PLACEMENT ANYWHERE AND AT ANY ORIENTATION WITHIN THE FIELD OF VIEW OF THE MACHINE VISION SENSOR. PREFERRED DETECTOR CONFIGURATIONS SHALL BE DETECTION ZONES PLACED ACROSS LANES OF TRAFFIC FOR OPTIMAL COUNT ACCURACY, DETECTION ZONES PLACED PARALLEL TO LANES OF TRAFFIC FOR OPTIMAL PRESENCE DETECTION ACCURACY OF MOVING OR STOPPED VEHICLES. A SINGLE DETECTION ZONE SHALL BE ABLE TO REPLACE ONE OR MORE CONVENTIONAL DETECTOR LOOPS CONNECTED IN SERIES. DETECTION ZONES SHALL BE ABLE TO BE OVERLAPPED FOR OPTIMAL ROAD COVERAGE. IN ADDITION, SELECTIVE GROUPS OF DETECTORS SHALL BE ABLE TO BE LOGICALLY COMBINED INTO A SINGLE OUTPUT BY USING OPTIONAL DELAY AND EXTEND TIMING AND SIGNAL STATE INFORMATION. OPTIMAL DETECTION SHALL BE ACHIEVED WHEN THE MACHINE VISION SENSOR PLACEMENT PROVIDES AN UNOBSTRUCTED VIEW OF EACH TRAFFIC LANE WHERE VEHICLE DETECTION IS REQUIRED. OBSTRUCTIONS ARE NOT LIMITED TO FIXED OBJECTS. OBSTRUCTION OF THE VIEW CAN ALSO OCCUR WHEN VEHICLES FROM A LANE NEARER TO THE SENSOR OBSCURE THE VIEW OF THE ROADWAY OF A LANE FURTHER AWAY FROM THE SENSOR.

DETECTION ZONE PROGRAMMING : PLACEMENT OF DETECTION ZONES SHALL BE BY MEANS OF A PORTABLE OR DESKTOP COMPUTER USING THE WINDOWS 98, MILLENNIUM, WINDOWS NT 4.0, 2000, OR XP OPERATING SYSTEMS, A KEYBOARD, AND A MOUSE. THE VGA MONITOR SHALL BE ABLE TO SHOW THE DETECTION ZONES SUPERIMPOSED ON IMAGES OF TRAFFIC SCENES. THE MOUSE AND KEYBOARD SHALL BE USED TO PLACE, SIZE, AND ORIENT DETECTION ZONES TO PROVIDE OPTIMAL ROAD COVERAGE FOR VEHICLE DETECTION, MODIFY DETECTOR PARAMETERS FOR SITE GEOMETRY TO OPTIMIZE PERFORMANCE, EDIT PREVIOUSLY DEFINED DETECTOR CONFIGURATIONS, ADJUST THE DETECTION ZONE SIZE AND PLACEMENT, ADD DETECTORS FOR ADDITIONAL TRAFFIC APPLICATIONS, REPROGRAM THE SENSOR FOR DIFFERENT TRAFFIC APPLICATIONS, CHANGES IN INSTALLATION SITE GEOMETRY, OR TRAFFIC REROUTING.

IT SHALL BE POSSIBLE TO DOWNLOAD DETECTOR CONFIGURATIONS FROM THE COMPUTER TO THE MACHINE VISION SENSOR, UPLOAD THE CURRENT DETECTOR CONFIGURATION THAT IS RUNNING IN THE MACHINE VISION SENSOR, BACK UP DETECTOR CONFIGURATIONS BY SAVING THEM TO THE COMPUTER'S REMOVABLE OR FIXED DISKS, PERFORM THE ABOVE UPLOAD, STORE, AND RETRIEVE FUNCTIONS FOR VIDEO SNAPSHOTS OF THE MACHINE VISION SENSOR'S VIEW.

OPTIMAL DETECTION : THE VIDEO DETECTION SYSTEM SHALL PROVIDE OPTIMAL DETECTION OF VEHICLE PASSAGE AND PRESENCE WHEN THE MACHINE VISION SENSOR IS MOUNTED 30 FT. OR HIGHER ABOVE THE ROADWAY, THE IMAGE SENSOR IS ADJACENT TO THE DESIRED COVERAGE AREA AND THE DISTANCE TO THE FARTHEST DETECTION ZONE LOCATIONS IS NOT GREATER THAN 10 TIMES THE MOUNTING HEIGHT OF THE MACHINE VISION SENSOR.

THE MACHINE VISION SENSOR SHALL BE ABLE TO VIEW EITHER APPROACHING OR DEPARTING TRAFFIC OR BOTH IN THE SAME FIELD OF VIEW. THE MACHINE VISION SENSOR, WHEN PLACED AT A MOUNTING HEIGHT THAT MINIMIZES VEHICLE IMAGE OCCLUSION AND EQUIPPED WITH A LENS TO MATCH THE WIDTH OF THE ROAD SHALL BE ABLE TO MONITOR A MAXIMUM OF 6 TO 8 TRAFFIC LANES SIMULTANEOUSLY.

DETECTION ZONE OPERATION : THE MACHINE VISION SENSOR'S REAL-TIME DETECTION OPERATION SHALL BE VERIFIABLE THROUGH THE FOLLOWING MEANS:

- VIEW THE VIDEO OUTPUT OF THE SENSOR WITH ANY STANDARD VIDEO DISPLAY DEVICE (MONITOR).
- THE VIDEO OUTPUT OF THE MACHINE VISION SENSOR (DIFFERENTIAL TWISTED PAIR) SHALL BE CAPABLE OF SELECTIVELY TRANSMITTING:
 - CAMERA VIDEO ONLY.
 - ANALOG VIDEO OVERLAID WITH THE CURRENT REAL-TIME DETECTION STATE OF EACH DETECTOR.
 - CAMERA VIDEO WITH OVERLAID, SCALED CROSS-HAIRS THAT ARE USED FOR AIMING THE SENSOR (DURING INSTALLATION).
 - INDIVIDUAL DETECTORS SHALL HAVE THE OPTION OF BEING HIDDEN. OF BEING HIDDEN.

- ELECTRICALLY MONITOR ASSIGNED CONTACT CLOSURE PINOUTS FROM A DETECTOR PORT MASTER SUCH AS A TS2 MINI-HUB INTERFACE CARD, OR DETECTOR RACK INTERFACE CARD. EACH PIN OF AN INTERFACE CARD SHALL HAVE ONE ASSOCIATED LED OUTPUT TO REFLECT ITS OUTPUT STATE.
- VIEW THE ASSOCIATED OUTPUT LED STATE ON THE DETECTOR PORT MASTER:
 - AN LED SHALL BE ON WHEN ITS ASSIGNED DETECTOR OUTPUT OR SIGNAL CONTROLLER PHASE INPUT IS ON.
 - AN LED SHALL BE OFF WHEN ITS ASSIGNED DETECTOR OR SIGNAL CONTROLLER INPUT IS OFF.

COUNT DETECTION PERFORMANCE : USING A MACHINE VISION SENSOR INSTALLED WITHIN THE OPTIMAL VIEWING SPECIFICATIONS DESCRIBED ABOVE FOR THE COUNT STATION TRAFFIC APPLICATIONS THE SYSTEM SHALL BE ABLE TO ACCURATELY COUNT VEHICLES WITH AT LEAST 96% ACCURACY UNDER NORMAL OPERATING CONDITIONS (DAY AND NIGHT) AND AT LEAST 93% ACCURACY UNDER ADVERSE CONDITIONS. ADVERSE CONDITIONS ARE COMBINATIONS OF WEATHER AND LIGHTING CONDITIONS THAT RESULT FROM SHADOWS, FOG, RAIN, SNOW, ETC.

DEMAND PRESENCE DETECTION PERFORMANCE : USING A MACHINE VISION SENSOR INSTALLED WITHIN THE OPTIMAL VIEWING SPECIFICATIONS DESCRIBED ABOVE FOR INTERSECTION CONTROL APPLICATIONS THE SYSTEM SHALL BE ABLE TO ACCURATELY PROVIDE DEMAND PRESENCE DETECTION. THE DEMAND PRESENCE ACCURACY SHALL BE BASED ON THE ABILITY TO ENABLE A PROTECTED TURNING MOVEMENT ON AN INTERSECTION STOP LINE, WHEN A DEMAND EXISTS. THE PROBABILITY OF NOT DETECTING A VEHICLE FOR DEMAND PRESENCE SHALL BE LESS THAN 1% ERROR UNDER ALL OPERATING CONDITIONS. IN THE PRESENCE OF ADVERSE CONDITIONS, THE MACHINE VISION SENSOR SHALL MINIMIZE EXTRANEOUS (FALSE) PROTECTED MOVEMENT CALLS TO LESS THAN 7%.

SPEED DETECTION PERFORMANCE : THE MACHINE VISION SENSOR SHALL ACCURATELY MEASURE AVERAGE (ARITHMETIC MEAN) SPEED OF MULTIPLE VEHICLES WITH MORE THAN 98% ACCURACY UNDER ALL OPERATING CONDITIONS FOR APPROACHING AND DEPARTING TRAFFIC. THE AVERAGE SPEED MEASUREMENT SHALL INCLUDE MORE THAN 10 VEHICLES IN THE SAMPLE TO ENSURE STATISTICAL SIGNIFICANCE. OPTIMAL SPEED DETECTION PERFORMANCE REQUIRES THE SENSOR LOCATION TO FOLLOW THE SPECIFICATIONS DESCRIBED ABOVE FOR COUNT STATION TRAFFIC APPLICATIONS WITH THE EXCEPTION THAT THE SENSOR MUST BE HIGHER THAN 40 FEET. THE MACHINE VISION SENSOR SHALL ACCURATELY MEASURE INDIVIDUAL VEHICLE SPEEDS WITH MORE THAN 95% ACCURACY UNDER ALL OPERATING CONDITIONS FOR VEHICLES APPROACHING THE SENSOR (VIEWING THE FRONT END OF VEHICLES), 90% ACCURACY FOR VEHICLES DEPARTING FROM THE SENSOR (VIEWING THE REAR END OF VEHICLES). THESE SPECIFICATIONS SHALL APPLY TO VEHICLES THAT TRAVEL THROUGH BOTH THE COUNT AND SPEED DETECTOR PAIR AND SHALL NOT INCLUDE PARTIAL DETECTION SITUATIONS CREATED BY LANE CHANGING MANEUVERS.

SENSOR ELECTRICAL : THE VIDEO OUTPUT OF THE MACHINE VISION SENSOR SHALL BE ISOLATED FROM EARTH GROUND. ALL VIDEO CONNECTIONS FROM THE SENSOR TO THE INTERFACE PANEL SHALL ALSO BE ISOLATED FROM EARTH GROUND. THE VIDEO OUTPUT, COMMUNICATION, AND POWER STAGES OF THE SENSOR SHALL INCLUDE TRANSIENT PROTECTION TO PREVENT DAMAGE TO THE SENSOR DUE TO VOLTAGE TRANSIENTS OCCURRING ON THE CABLE LEADING FROM THE MACHINE VISION SENSOR TO OTHER FIELD TERMINATIONS. CONNECTIONS FOR VIDEO, COMMUNICATIONS AND POWER SHALL BE MADE TO THE IMAGE SENSOR USING A SINGLE 18-PIN CIRCULAR METAL SHELL CONNECTOR (BENDIX PT07C-14-18P OR EQUIVALENT). THE MACHINE VISION SENSOR SHALL HAVE PASSED REQUIREMENTS FOR AND RECEIVED THE CE MARK. THE POWER TO THE SENSOR SHALL BE FUSED IN THE CONTROLLER CABINET.

VIDEO VEHICLE DETECTION SYSTEM (VDS)

OPTION 2:

SYSTEM HARDWARE : THE VIDEO DETECTION SYSTEMS SHALL CONSIST OF MODULAR (1), (2), (3), or (4) CAMERA INPUT VIDEO DETECTION MODULES (VDM), INSERTED IN A STANDARD TS-1 OR TS-2 VEHICLE DETECTOR CARD RACK. IT SHALL ALSO INCLUDE A POWER SUPPLY, SELF MOUNTED RACK OPTION, VIDEO ISOLATION/SURGE ARRESTORS, CABLING, VIDEO DETECTION MODULE(S) (VDM), A USB MOUSE, AND VIDEO MONITOR. THE SHELF MOUNT RACK OPTION SHALL HAVE THE VIDEO INPUTS IN THE BNC AND D-SUB TO PROVIDE FOR STANDARD VIDEO INPUT OR UNIMPEDED PASS THROUGH ANALOG VIDEO.

SYSTEM SOFTWARE: THE SYSTEM SHALL INCLUDE SOFTWARE RESIDENT TO EACH VDM THAT DETECTS VEHICLES IN MULTIPLE LANES USING ONLY THE VIDEO IMAGE. DETECTION ZONES SHALL BE DEFINED USING ONLY A VIDEO MENU AND A POINTING DEVICE TO PLACE THE ZONES ON A VIDEO IMAGE WITHOUT USING A COMPUTER. UP TO TWENTY-SIX (26) DETECTION ZONES PER CAMERA AND SHALL BE AVAILABLE PER VDM AND SHALL BE LOGICALLY ASSIGNABLE TO FOUR (12) OUTPUTS PER CARD ASSEMBLY. THE VDM WILL ALSO HAVE AN EMBEDDED HELP SYSTEM AND COMPLETE OPERATION MANUAL AVAILABLE INTERGRALLY WITH THE MENU DRIVEN INTERFACE.

FUNCTIONAL CAPABILITIES: THE VDM SHALL PROCESS VIDEO DERIVED FROM EITHER VIDEO CAMERAS. THE VDM SHALL SUPPORT EIA STANDARDS (NTSC COLOR OR MONOCHROME) CCD CAMERAS.

EACH VDM SHALL DETECT THE PRESENCE OF VEHICLES IN UP TO 26 DETECTION ZONES. EACH DETECTION ZONE SHALL BE APPROXIMATELY THE WIDTH AND LENGTH OF ONE CAR. THE DETECTION ZONES ON EACH CAMERA SHALL BE ASSIGNABLE TO ONE OF TWELVE OUTPUTS.

DETECTOR ZONES SHALL BE PROGRAMMED VIA A MENU DISPLAYED ON THE VIDEO MONITOR AND A POINTING DEVICE CONNECTED TO THE VDM. THE MENU SHALL BE USED EXCLUSIVELY TO PROGRAM ALL THE FEATURES OF THE SYSTEM INCLUDING THE PLACEMENT OF THE DETECTION ZONES AND ATTACHING SPECIFIC SETTINGS TO THE FOV AND THE DETECTION ZONE. A SEPARATE COMPUTER SHALL NOT BE REQUIRED FOR PROGRAMMING ANY OF THE FEATURES OF THE VDM INCLUDING THE DETECTION ZONES.

EACH VDM SHALL STORE 256 DETECTOR CONFIGURATIONS UNIQUE TO THE DIRECTION FOR WHICH IT IS PROGRAMMED. DETECTOR AND OR SYSTEM CONFIGURATIONS WILL ALSO BE OFF LOADED FROM THE UNIT VIA A USB MEMORY STICK INSERTED INTO (1) OF TWO USB SLOTS ON THE FACE OF THE UNIT.

EACH VDM SHALL HAVE A RCA VIDEO OUTPUT FOR CONNECTION TO A MONITOR FOR PROGRAMMING PURPOSES. EACH DISPLAY FROM THE RCA WILL ALLOW FOR SIMULTANEOUS DISPLAY OF ALL THE CONNECTED CAMERAS. A QUADRAPLEXOR SHALL BE INTEGRATED INTO THE ASSEMBLY.

EACH VDM SHALL DETECT VEHICLES IN REAL TIME AS THEY TRAVEL ACROSS EACH DETECTOR ZONE. CAMERA ZOOM AND FOCUS FUNCTIONS SHALL BE PROGRAMMED THROUGH THE USER INTERFACE ON THE VDM.

VEHICLE DETECTION : UP TO 26 DETECTION ZONES SHALL BE SUPPORTED AND EACH DETECTION ZONE CAN BE SIZED TO SUIT THE SITE AND THE DESIRED VEHICLE DETECTION REGION.

DETECTION ZONES ON EACH CAMERA MAY BE LOGICALLY ASSIGNABLE TO INDICATE VEHICLE PRESENCE ON A SINGLE OR MULTIPLE DETECTOR OUTPUT CHANNELS.

THE PLACEMENT OF DETECTION ZONES SHALL BE DONE BY USING ONLY A USB MOUSE, CONNECTED TO THE FRONT PANEL OF THE VDM AND GRAPHICALLY DISPLAYED ON A VIDEO MONITOR. THE DETECTOR ZONES CAN EITHER BE DRAWN OR SELECTED FROM A "PICK AND DROP" MENU.

DETECTION ZONE PATTERNS SHALL BE SAVED WITHIN EACH VDM MEMORY AND SHALL BE MAINTAINED IN THE EVENT OF A POWER OUTAGE.

WHEN A VEHICLE IS DETECTED CROSSING A DETECTION ZONE, THE DETECTION ZONE WILL FLASH A SYMBOL OR INDICATE DETECTION IN SOME MANNER ON THE VIDEO OVERLAY DISPLAY TO CONFIRM THE DETECTION OF THE VEHICLE.

DETECTION SHALL BE AT LEAST 97% ACCURATE IN GOOD WEATHER CONDITIONS, WITH SLIGHT DEGRADATION POSSIBLE UNDER ADVERSE WEATHER CONDITIONS (E.G. RAIN, SNOW, OR FOG). WHICH WILL REDUCE VISIBILITY.

DETECTION ZONES SHALL BE DIRECTIONAL TO REDUCE FALSE DETECTION FROM OBJECTS TRAVELING IN DIRECTIONS OTHER THAN THE DESIRED DIRECTION OF TRAVEL IN THE DETECTION AREA.

DETECTION ZONE SETUP SHALL NOT REQUIRE SITE-SPECIFIC INFORMATION SUCH AS LATITUDE AND LONGITUDE TO BE ENTERED INTO THE SYSTEM.

DETECTION ZONE SETUP SHALL NOT REQUIRE TEMPORAL INFORMATION SUCH AS DATE AND TIME.

THE VDM SHALL OUTPUT A CONSTANT CALL FOR EACH ENABLE DETECTOR OUTPUT CHANNEL IF A LOSS OF VIDEO SIGNAL OCCURS.

HARDWARE: THE EQUIPMENT SHALL BE CAPABLE OF BEING MOUNTED IN A STANDARD TS-1 OR TS-2 DETECTOR CARD RACK. THE EQUIPMENT SHALL OPERATE SATISFACTORILY IN A TEMPERATURE RANGE FROM -30F TO +165F AND HUMIDITY RANGE FROM 0% TO 95% RH, NON-CONDENSING AS SET FORTH IN NEMA SPECIFICATIONS.

THE EQUIPMENT SHALL BE POWERED BY 120 VAC 60 HZ SINGLE-PHASE POWER. SURGE RATINGS SHALL BE SET FORTH IN NEMA SPECIFICATIONS. POWER CONSUMPTION SHALL NOT EXCEED 240 WATTS.

THE FRONT PANEL SHALL HAVE A STANDARD ETHERNET PORT FOR CONNECTION TO A NETWORK FOR FACILITATING REMOTE VIEWING AND PROGRAMMING. THE REMOTE COMMAND AND CONTROL SOFTWARE WILL BE OPEN SOURCE AND NOT REQUIRE LICENSING FEES.

THE VIDEO INPUT TO THE VDM SHALL INCLUDE TRANSIENT VOLTAGE SUPPRESSION ISOLATION.

THE VDM SHALL BE BONDED TO A GOOD EARTH GROUND.

THE COAXIAL CABLE TO USE BETWEEN THE CAMERA AND THE CABINET SHALL BE 75 OHM, PRECISION VIDEO CABLE WITH 20 GAUGE SOLID BARE COPPER CONDUCTOR (9.9 OHMS/M), SOLID POLYETHYLENE INSULATING DIELECTRIC, 98% (MIN.) TINNED COPPER DOUBLE BRAIDED SHIELD AND BLACK POLYETHYLENE OUTER COVERING. THE SIGNAL ATTENUATION SHALL NOT EXCEED 0.78 DB PER 100 FEEDS AT 10 MHZ. NOMINAL OUTSIDE DIAMETER IS 0.304 INCHES. THIS CABLE SHALL BE SUITABLE FOR INSTALLATION IN CONDUIT OR OVERHEAD WITH APPROPRIATE SPAN WIRE.

THE POWER CABLING SHALL BE 16 AWG THREE CONDUCTOR CABLE. THE CABLE SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE, AS WELL AS LOCAL ELECTRICAL CODES.

CAMERA : THE VIDEO CAMERAS USED FOR TRAFFIC DETECTION SHALL BE FURNISHED BY THE VDM SUPPLIER AND SHALL BE QUALIFIED BY THE SUPPLIER TO ENSURE PROPER VIDEO DETECTION SYSTEM OPERATION.

THE CAMERA SHALL PRODUCE A USABLE VIDEO IMAGE OF THE BODIES OF VEHICLES UNDER ALL ROADWAY LIGHTING CONDITIONS, REGARDLESS OF THE TIME OF DAY. THE MINIMUM RANGE OD SCENE LUMINANCE OVER WHICH THE CAMERA SHALL PRODUCE A USABLE VIDEO IMAGE SHALL BE THE MINIMUM RANGE FROM NIGHTTIME TO DAYTIME, BUT NOT LESS THAN THE RANGE 0.1 LUX TO 10,000 LUX.

THE CAMERA SHALL USE A CCD SENSING ELEMENT AND SHALL OUTPUT MONOCHROME VIDEO WITH RESOLUTION OF NOT LESS THAN 350 LINES VERTICAL AND 500 LINES HORIZONTAL.

THE CAMERA SHALL INCLUDE AUTO-IRIS CONTROL BASED UPON AVERAGE SCENE LUMINANCE AND SHALL BE EQUIPPED WITH AN AUTO-IRIS LENS.

THE CAMERA SHALL INCLUDE A VARIABLE FOCAL LENGTH LENS WITH VARIABLE FOCUS THAT CAN BE ADJUSTED, WITHOUT OPENING UP THE CAMERA HOUSING, TO SUIT THE SIDE GEOMETRY.

THE CAMERA ELECTRONICS SHALL INCLUDE AGC TO PRODUCE A SATISFACTORY IMAGE AT NIGHT.

THE CAMERA SHALL BE HOUSED IN AN ENVIRONMENTALLY SEALED ENCLOSURE. THE HOUSING SHALL BE FIELD ROTATABLE TO ALLOW PROPER ALIGNMENT BETWEEN THE CAMERA AND THE TRAVELED ROAD SURFACE.

THE CAMERA ENCLOSURE SHALL BE EQUIPPED WITH A SUN-SHIELD. THE SUN-SHIELD SHALL INCLUDE A PROVISION FOR WATER DIVERSION TO PREVENT WATER FROM FLOWING IN THE CAMERA FIELD OF VIEW.

THE CAMERA ENCLOSURE SHALL INCLUDE A THERMOSTATICALLY CONTROLLED HEATER TO ASSURE PROPER OPERATION OF THE LENS IRIS AT LOW TEMPERATURE AND PREVENT MOISTURE CONDENSATION ON THE OPTICAL FACEPLATE OF THE ENCLOSURE.

WHEN MOUNTED OUTDOORS IN THE ENCLOSURE, THE CAMERA SHALL OPERATE SATISFACTORILY IN A TEMPERATURE RANGE FROM -27F TO +130F AND A HUMIDITY RANGE FROM 0% RH TO 100% RH.

120 VAC 60 HZ SHALL POWER THE CAMERA. POWER CONSUMPTION SHALL BE LESS THAN 40 WATTS UNDER ALL CONDITIONS.

THE CAMERA SHALL VIEW APPROACHING AT A DISTANCE NOT TO EXCEED 350 FEET FOR RELIABLE DETECTION. THE CAMERA ENCLOSURE SHALL BE EQUIPPED WITH SEPARATE, WEATHER-TIGHT CONNECTIONS FOR POWER AND VIDEO CABLES AT THE REAR OF THE ENCLOSURE TO ALLOW DIAGNOSTIC TESTING VIEWING OF VIDEO AT THE CAMERA WHILE THE CAMERA IS INSTALLED ON A MAST ARM OR POLE.

A BRACKET SUITABLE FOR MOUNTING THE CAMERA EITHER ON TOP OF A POLE OR ON AN 1 1/2 INCH EXTENSION SHALL BE PROVIDED.

TRAINING: A ONE-DAY TRAINING SEMINAR WILL BE PROVIDED BY THE VENDOR AND SHALL PROVIDE INSTRUCTION IN THE PROPER INSTALLATION AND PROGRAMMING OF THE VIDEO DETECTION SYSTEM.

WARRANTY : THE VIDEO DETECTION SYSTEM SHALL BE WARRANTED TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF TWO YEARS FROM THE DATE OF ACCEPTANCE BY THE CITY. DURING THE WARRANTY PERIOD, THE SUPPLIER SHALL REPAIR WITH NEW OR REFURBISHED MATERIALS, OR REPLACE AT NO CHARGE, ANY PRODUCT CONTAINING A WARRANTY DEFECT. ALL MATERIALS RETURNED FOR WARRANTY REPAIRS SHALL BE MADE THROUGH THE PRODUCT DISTRIBUTOR AT NO ADDED CHARGE TO THE CITY. WARRANTY REPAIRS/REPLACEMENT SHALL NOT EXCEED TWO WEEKS FROM THE DATE OF RETURN TO DISTRIBUTORS.

DURING THE WARRANTY PERIOD, UPDATES TO ALL SOFTWARE SHALL BE AVAILABLE FROM THE SUPPLIER WITHOUT CHARGE.

INSTRUCTIONS : ONE WIRING DIAGRAM OF THE SYSTEM AND INSTALLATION MANUAL SHALL BE PROVIDED WITH EACH VIDEO TRAFFIC DETECTION SYSTEM.

CHANGES OR SUBSTITUTIONS IN THESE REQUIREMENTS WILL NOT BE ACCEPTED UNLESS AUTHORIZED IN WRITING.

THE COMPANY AGREES UPON THE REQUEST OF THE ENGINEER, TO DELIVER A SAMPLE OF THE VIDEO VEHICLE DETECTION SYSTEM TO BE SUPPLIED IN COMPLIANCE WITH THESE SPECIFICATIONS FOR TEST BEFORE ACCEPTANCE. AFTER COMPLETION OF THE TEST, THE SAMPLE SHALL BE RETURNED.

1	01/05/10	VIDEO OPTION 2 ADDED	KAP	LGV	
NO.	DATE:	REVISION	BY:	APP'D	

DRAWN BY: K.PELTON

APP'D BY: *Linda Pelton*



STANDARD DETAILS

TRAFFIC SIGNAL SPECIFICATIONS

DATE: _____

PAGE: _____ OF _____

DRAWING: DT-107

PROJ. _____