333L CABINET

1.0 Introduction

The 333L Cabinet shall be a cabinet that combines an ITS (Intelligent Transportation Systems) 340-style, double wide, four-door cabinet with standard 170/2070 electronics contained on two full size EIA (Electronic Industries Alliance) 19” racks.

Note: when referencing the front or back, right door or left door of the cabinet, it should be noted that the rear left door is seen on the right as viewed from the front of the cabinet.The equivalent is true for the rear right doors being on the left side of the cabinet as seen from the front of the cabinet. All other references to equipment on the right side or left side of the cabinet shall be as viewed from the front of the cabinet, except where noted.

2.0 Cabinet Enclosure.

2.1 The cabinet enclosure shall conform to the ITS 340 cabinet specifications, shall meet the following workmanship and design specifications, and shall have:

2.1.1 A size equal to 44.5” [1130 mm] wide x 26” [660 mm] deep x 67” [1702 mm] tall.

2.1.2 No weld flash on any surface.

2.1.3 Smooth welds, neatly formed, and be free from cracks, blowholes and other irregularities.

2.1.4 Rounded edges with a minimum radius of 0.03” [0.76 mm].

2.1.5 A centered, crowned top, extending 1” [25 mm] above the top edges, in order to prevent rain accumulation.

2.1.6 Lifting eyes on removeable tabs that shall:

2.1.6.1 Be located in the top center of both sides of cabinet.

2.1.6.2 Be 9” [229 mm] high x 4” [102 mm] wide.

2.1.6.3 Have a 1” [25 mm] chamfer on each top corner.

2.1.6.4 Be 0.125” [3.2 mm] thick.

2.1.6.5 Have a lifting eye hole 1” [25 mm] in diameter.

2.1.6.6 Be mounted to the enclosure side walls so that the lifting eye hole shall be centered 1.4” [36 mm] above the top edge.

2.2 The cabinet shall have four (4) full-size doors and shall:

2.2.1 Have two (2) doors mounted on the front of the cabinet and two (2) doors mounted on the back of the cabinet.

2.2.2 Have the doors hinged on the edges closest to the corners of the cabinet so that all doors open from the center of their respective cabinet faces.

2.2.3 Match a rain channel incorporated into the door opening to prevent dripping water from entering the enclosure.

2.2.4 Have a weatherproof and dustproof closed-cell neoprene gasket that shall:

2.2.4.1 Measure 0.375” [10 mm] thick x 1.25” [32 mm] wide.

2.2.4.2 Be permanently bonded to the door.

2.2.5 Have a three-point (3) latching mechanism that shall have:

2.2.5.1 No extension of handle in the closed position beyond perimeter of the door.

2.2.5.2 No interference of the handle on the lock assembly with the key when opening the door.

2.2.5.3 A provision to enable padlocking in the closed position.

2.2.6 Have a Best or Corbin tumbler lock with two (2) keys provided.

2.2.7 Have a latching door mechanism to hold the door open at approximately 90° and 165° from the front face of the enclosure.

2.2.8 Have two (2) sets of 0.25” diameter [6.4 mm] hooks on the inside of the front right door and the inside of the rear right door that shall:

2.2.8.1 Serve the purpose of hanging a plastic pouch that shall:

2.2.8.1.1 Measure 16” [406 mm] wide x 12” [305 mm] high.

2.2.8.1.2 Feature two grommets along the top edge of the pouch that shall

2.2.8.1.2.1 Be 12.6” [320 mm] apart, to facilitate hanging the pouch on the hooks.

2.2.8.1.2.2 Have a ½” [12.7 mm] inside diameter.

2.2.8.2 Be installed on the inside of the front and back right doors.

2.2.8.3 Have each set on each door mounted horizontally 12.6” [320 mm] apart.

2.2.8.4 Have the first set on each door mounted 6” below the top of the respective door.

2.2.8.5 Have the second set on each door mounted vertically 12.5” [318 mm] below the first set.

2.2.9 Have a louvered air entrance across the lower portion of both the front and back left doors that shall:

2.2.9.1 Allow sufficient airflow as per the rated fan capacity.

2.2.9.2 Consist of 40 louvered slots, each 2.5” [63.5 mm] long by 0.15” [3.8 mm] wide.

2.2.9.3 Have a removable air filter secured to the inside surface of the air entrance that shall cover all air intake vents.

2.2.10 Each have four (4) hinges that shall:

2.2.10.1 Be a butt-type hinge.

2.2.10.2 Have fixed pins permanently welded to one (1) hinge leaf and ground smooth.

2.2.10.3 Have two cap bolts securing each hinge leaf to the housing or the door.

2.2.10.4 Be 4” [102 mm] long.

2.2.10.5 Have cap bolts arranged in such a manner that back nuts are not exposed.

2.2.11 A police compartment installed in the top of the front face of the housing that shall:

2.2.11.1 Have continuously welded seams.

2.2.11.2 Have minimum internal dimensions of 13.25” [337 mm] wide x 4” [102 mm] high x 2.5” [64 mm] deep.

2.2.11.3 Have a door that shall:

2.2.11.3.1 Be flush with and open on the outside front face of the enclosure.

2.2.11.3.2 Close against a weatherproof and dustproof closed-cell neoprene gasket that shall:

2.2.11.3.2.1 Measure 0.5” [12.7 mm] thick x 0.5” [12.7 mm] wide.

2.2.11.3.2.2 Be permanently bonded to the enclosure door.

2.2.11.3.3 Permit access to a Police Switch Panel.

2.2.11.3.4 Dis-allow access to exposed electrical terminals or other equipment within the cabinet.

2.2.11.4 Be provided with a Type I Police lock which can be operated by a master police key.

2.2.11.5 Contain the following switches:

2.2.11.5.1 Signals On/Off

2.2.11.5.2 Flash/Auto

2.3 The cabinet materials shall meet the following specifications and shall:

2.3.1 Be manufactured from type 5052-H32 aluminum

2.3.2 Have a minimum aluminum thickness of 0.125” [3.2 mm].

2.3.3 Have a natural mill finish with an optional powder coat per agency specifications.

2.3.4 Have all exterior door hardware be made of stainless steel.

2.4 The cabinet enclosure shall have:

2.4.1 Two (2) full-height EIA cages, one on each side of the 333L enclosure, that shall:

2.4.1.1 Have four (4) vertical right-angled EIA rails, one in each corner, that shall:

2.4.1.1.1 Measure 56” [1422 mm] long.

2.4.1.1.2 Have two (2) flanges formed at a 90° angle and shall have:

2.4.1.1.2.1 One flange oriented to face the doors and drilled per EIA universal spacing requirements.

2.4.1.1.2.2 The other flange oriented to face the sides of the cages and supplied with five (5) pressed-in nuts to provide a means for attachement of side plates when required.

2.4.1.1.3 Measure 1.375” inches [35 mm] wide across the drilled flange facing the doors.

2.4.1.1.4 Measure 1.625” [41 mm] wide across the flanges facing the sides of the cage.

2.4.1.2 Have two (2) end supports that shall:

2.4.1.2.1 Be formed from one (1) piece aluminum, 0.125” thick [3.2 mm].

2.4.1.2.2 Have a flange, with a minimum width of 0.625” [16 mm], along all four edges bent down on the upper support and bent up on the lower support.

2.4.1.2.3 Have an opening centered in each support measuring 16.2” [411 mm] wide by 17.1” [434 mm] deep.

2.4.1.2.4 Provide an opening between the rails to mount standard 19” [483 mm] EIA assemblies measuring 17.75” [451 mm] wide.

2.4.1.3 Be mounted on and held in place by four (4) supports that shall:

2.4.1.3.1 Be mounted to the enclosure front to back.

2.4.1.3.2 Have two (2) at the top, one (1) on each side of the cage, and be bolted to the enclosure.

2.4.1.3.3 Have two (2) at the bottom, one (1) on each side of the cage and be welded to the enclosure.

2.4.1.4 Be intended to house the controller, Input File(s) and output file(s) on the EIA cage on the left side.

2.4.1.5 Be intended to house other equipment on the EIA cage on the right side.

2.4.2 Two (2) removable shelves that shall:

2.4.2.1 Be 21” [533 mm] deep by 19.25” [489 mm] wide.

2.4.2.2 Have a front face with a formed 90° edge to the back.

2.4.2.3 Have a back face with a formed 90° edge to the front.

2.4.2.4 Be formed with a 0.75” [19 mm] flange bent down at a 90° angle along the front and back edges.

2.4.2.5 Be formed with a 2.5” [64 mm] flange bent upward at a 90° angle along the left and right edges.

2.4.2.6 Have on the 2.5” [64 mm] side flanges an additional flange bent at a 90° angle so that the additional flange is flush with the front and back flanges.

2.4.2.7 Have on the additional flanges on the side flanges two (2) 0.25” [6.4 mm] by 1” [25 mm] obround holes to mount the shelf to the EIA rails.

2.4.2.8 Both be mounted on the EIA cage on the right side.

2.4.3 A slide-out documentation drawer that shall:

2.4.3.1 Have sliding tracks with drawer stop and quick-disconnect feature.

2.4.3.2 Have minimum dimensions of 1.4” [36 mm] high x 12.125” [308 mm] deep x 15.9” [404 mm] wide.

2.4.3.3 Have a hinged cover that shall:

2.4.3.3.1 When the drawer is extended, be possible to raise in order to gain access to the interior of the drawer.

2.4.3.3.2 Have a 0.7” [18 mm] wide lip on the front edge that is formed at a 90° angle that when lowered onto the drawer extends 0.75” [19 mm] beyond the front edge of the drawer and acts as a pull to open the drawer.

2.4.3.3.3 Have the cover powder coated black.

2.4.3.4 Have both drawer and cover fabricated from 0.090” [2.3 mm] thick aluminum.

2.4.3.5 Be capable of supporting 40 pounds when fully extended.

2.4.3.6 Be mounted on the EIA cage on the left side.

3.0 The cabinet shall be provided with:

3.1 An air exhaust system that shall be comprised of:

3.1.1 Four (4) ventilation fans that shall:

3.1.1.1 Measure 4.7” [120 mm] square x 1.5” [38 mm] deep.

3.1.1.2 Be thermostatically controlled.

3.1.1.3 Be an axial ball bearing type.

3.1.1.4 Be capable of drawing a minimum of 100 cubic feet [2.84 cubic meters] of air per minute.

3.1.1.5 Operate on 115 VAC and draw 15 watts each.

3.1.1.6 Have finger guards to protect accidental contact with rotating fan blades.

3.1.2 Two (2) fan panels that shall:

3.1.2.1 Each hold two fans.

3.1.2.2 Each hold a thermostat assembly.

3.1.2.3 Be mounted one (1) panel each in the upper right and upper left corners of the enclosure.

3.1.2.4 Be positioned such that the exhausting air shall be channeled to a row of slots that shall:

3.1.2.4.1 Be formed in the upper sides of the enclosure, one (1) on each side.

3.1.2.4.2 Be formed in a downward-facing flange positioned in a cavity running the full depth of the cabinet.

3.1.2.4.3 Measure 0.125” [3.2 mm] wide x 1.375” [35 mm] long.

3.1.2.4.4 Be formed on 0.25” [6.4 mm] centers.

3.1.3 Two thermostat assemblies that shall:

3.1.3.1 Have thermostats that are adjustable between 70°-160° Fahrenheit (21°-71° Centigrade)

3.1.3.2 Control the two (2) fans on the panel to which the thermostat assembly is mounted.

3.1.3.3 Be protected by a fuse that shall:

3.1.3.3.1 Be contained in a panel mount fuse holder with a push and twist type knob/fuse carrier that requires no tools to replace the fuse.

3.1.3.3.2 Measure 0.25” [6.35 mm] wide x 1.25” [31.75 mm] long.

3.1.3.3.3 Be a 3AG, time-delay type, rated at 1 A, 250 V.

3.1.3.4 Have EMI/RFI RC network power noise filters that shall be rated at 0.1 µF, 150 Ω, 0.5 W, 250 VAC.

3.2 Two (2) interior lamps that shall:

3.2.1 Be LED lamps.

3.2.2 Have one (1) mounted under the front upper inside of the enclosure.

3.2.3 Have one (1) mounted under the back upper inside of the enclosure.

3.2.4 Both be centered in front of the cage on the left side.

3.2.5 Be controlled by two (2) switches that shall:

3.2.5.1 Be mounted such they are activated by the left front door and the left back door.

3.2.5.2 Turn both lamps on when either left door is activated.

3.2.6 Be protected by a fuse that shall:

3.2.6.1 Be contained in an in-line fuse holder.

3.2.6.2 Measure 0.25” [6.35 mm] wide x 1.25” [31.75 mm] long.

3.2.6.3 Be a 3AG, time-delay type, rated at 1 A, 250 V.

4.0 There shall be a service panel that shall:

4.1 Be wired to provide the necessary power to the cabinet.

4.2 Provide a location to connect external power to the cabinet.

4.3 Be mounted to the back left rail, top, and bottom of the left cage.

4.4 Be 55.7” [1415 mm] high x 11” [279 mm] wide x 0.125” [3.2 mm] thick aluminum.

4.5 Have attached to it the following components:

4.5.1 A three (3) position terminal block, with four (4) locations per pole for wire connections, to attach field service power conductors: AC hot, AC neutral, and equipment ground.

4.5.2 A two (2) position terminal block, with four (4) locations per pole for wire connections to attach conductors from a battery backup system and shall be jumpered when a battery backup system is not used.

4.5.3 Main circuit breaker of the thermal magnetic type, 30A, single pole.

4.5.4 A noise and surge line filter that shall:

4.5.4.1 Filter out power line noise and switching transients.

4.5.4.2 Contain MOVs with L-C filtering,

4.5.4.3 Have two (2) LEDs that indicate power on and MOV functionality.

4.5.4.4 Have a dry relay contact output indicating filter status suitable for interfacing with a remote sensing computer.

4.5.4.5 Plug into a 12-position, 2-row socket.

4.5.5 A neutral copper bus bar, 15-position, 1-row, capable of connecting three (3) No. 12 AWG wires per position.

4.5.6 A ground copper bus bar, 15-position, 1-row, capable of connecting three (3) No. 12 AWG wires per position.

4.5.7 A spare,12-position, 2-row terminal block.

5.0 There shall be a Input Panel that shall:

5.1 Be wired to provide a location to connect input and output conductors bringing signals to and from the cabinet.

5.2 Be mounted to the back right rail, top, and bottom of the left cage.

5.3 Be 55.7” [1415 mm] high x 10.5” [267 mm] wide x 0.125” [3.2 mm] thick aluminum.

5.4 Have the following components:

5.4.1 On the lower portion of the panel:

5.4.1.1 Eight (8) 12-position, 2-row terminal blocks for the connection of input and output filed wires arranged in two columns of four (4) each.

5.4.1.2 Three (3) 12-position, 1-row copper bus bars for equipment ground between the two (2) columns of the eight (2) input/output terminal blocks.

5.4.2 On the upper portion of the panel:

5.4.2.1 A 10-position, 1-row copper bus bar for DC ground connections.

5.4.2.2 A 7-position, 2-row terminal block for +24 VDC power connections and Monitor Reset.

5.4.2.3 An empty CPC 23-24 connector, without conductors, for storage of the C5 cable.

6.0 There shall be an Power Distribution Assembly (PDA) #2L that shall have:

6.1 Dimensions equal to 17.25” [438 mm] wide x 7” [178 mm] high x 11” [279 mm] deep.

6.2 Two (2) flanges angled at 90° from both sides of the assembly to provide an attachment surface to the front vertical EIA rails.

6.3 Four (4) separate compartments that shall:

6.3.1 Have two (2) of the compartments open, facing, and centered in the front of the unit in which shall be mounted:

6.3.1.1 Two (2) Model 204 flasher units.

6.3.1.2 Two (2) relays.

6.3.2 Include one (1) compartment that shall:

6.3.2.1 Be on the left side of the PDA #2L.

6.3.2.2 Be covered with a panel that shall be hinged along the left edge of the PDA #2L.

6.3.2.3 Have two (2) knurled, captive thumb screws, one in each right corner, to hold the panel in the closed position.

6.3.2.4 Have mounted on it the following:

6.3.2.4.1 One (1) Main 30 A circuit breaker.

6.3.2.4.2 One (1) Equipment 15 A circuit breaker.

6.3.2.4.3 Six (6) 10 A circuit breakers that shall have:

6.3.2.4.3.1 Four (4) for the Signal Bus.

6.3.2.4.3.2 Two (2) for the Flasher Bus.

6.3.2.4.4 One (1) Auto/Flash switch.

6.3.2.4.5 One (1) Flash lamp indicator.

6.3.2.4.6 One (1) SSR fault indicator lamp.

6.3.2.4.7 One (1) push button switch.

6.3.2.4.8 One (1) ground fault interrupted duplex receptacle.

6.3.3 Include one (1) compartment for mounting a Model 206L 24 VDC power supply that shall:

6.3.3.1 Be on the right side of the PDA #2L.

6.3.3.2 Be open toward the front.

6.3.3.3 Have one (1) 6-position socket mounted on an inner back panel.

6.3.3.4 Have two (2) card guides mounted on the bottom of the compartment and two mounted on the top of the compartment to guide and facilitate the

power supply contacts mating with the socket mounted on the inner back panel.

6.4 An outer back panel positioned behind the inner back panel that shall:

6.4.1 Be hinged on the bottom to allow tilting the back panel down.

6.4.2 Have two (2) knurled, captive thumb screws, one in the upper right corner and one along the left edge near the upper left corner, to hold the outer back panel in the closed, fully vertical, position.

6.4.3 Have mounted on it, facing toward the back, the following:

6.4.3.1 Three (3) 10-position, 1-row terminal blocks, oriented horizontally, for AC connections and connections to the Output File.

6.4.3.2 One (1) 4-position, 1-row terminal block, oriented vertically, for 24 DC connections.

6.4.3.3 One (1) duplex receptacle, mounted vertically, for controller power

6.4.3.4 One (1) duplex receptacle, mounted horizontally, for equipment power.

7.0 There shall be two (2) Input Files that shall:

7.1 Include a 14-position upper Input File that shall be referred to as the “I” file.

7.2 Include a 14-position lower Input File that shall be referred to as the “J” file.

7.3 Each consist of an open compartment that is mounted in the left 19” [483 mm] EIA cage.

7.4 Support 14 channels of detection in each file.

7.5 Allow insertion of either a two-channel (2) or four-channel (4) detector in each slot.

7.6 Each be of the following form:

7.6.1 Have dimensions equal to 17.25” [438 mm] wide x 5.25” [133 mm] high x 8.25” [210 mm] deep.

7.6.2 Have two (2) flanges angled at 90° from both sides of the assembly to provide an attachment surface to the front vertical EIA rails.

7.6.3 Have upper and lower card guides that allow standard detector modules to be inserted into 22-position card edge connectors that shall:

7.6.3.1 Be mounted on a printed circuit mother board mounted across the back of the Input File.

7.6.3.2 Accommodate 0.62”-thick [16 mm] detector printed circuit boards.

7.6.3.3 Have their conductors on 0.156” [4 mm] centers.

7.6.3.4 Have 0.000010”-thick [0.000254 mm] gold plating on the conductor contacts.

7.6.3.5 Each be wired to a corresponding 14-position, 1-row, vertically-mounted terminal block on the back of the assembly so that conductors can be connected to the detector modules by attachment to the terminal blocks.

7.6.4 Have a 3-position, 1-row, horizontally-mounted terminal block for AC power connections.

7.6.5 Have a 4-position, 1-row, horizontally-mounted terminal block for DC power connections, and detector Reset.

8.0 There shall be an Output File that shall have:

8.1 Dimensions equal to 17.25” [438 mm] wide x 10.25” [260 mm] high x 12” [305] deep.

8.2 Two (2) flanges angled at 90° from both sides of the assembly to provide an attachment surface to the front vertical EIA rails.

8.3 Four (4) separate compartments that shall:

8.3.1 Be open and face the front of the unit.

8.3.2 Include two (2) horizontal, central compartments that shall:

8.3.2.1 Have a total of 12 load switch positions.

8.3.2.2 Hold six (6) load switches in each bay.

8.3.2.3 Be located one above the other.

8.3.2.4 Allow for the insertion of Model 200 load switches.

8.3.2.5 Have upper and lower card guides at each position that facilitate the insertion of load switches into sockets that shall:

8.3.2.5.1 Be mounted on an inner back panel.

8.3.2.5.2 Be 12-position sockets.

8.3.2.5.3 Accept pins arranged in two (2) vertical rows of six (6) pins each.

8.3.3 Include one (1) vertical compartment that shall:

8.3.3.1 Be located to the left of the load switch bays.

8.3.3.2 Allow for the insertion of four (4) flash transfer relays into sockets that shall.

8.3.3.2.1 Be mounted on an inner back panel.

8.3.3.2.2 Be spaced vertically.

8.3.3.2.3 Accept pins arranged in two (2) horizontal rows of four (4) pins each.

8.3.4 Include one (1) vertical compartment that shall:

8.3.4.1 Be located to the right of the load switch bays.

8.3.4.2 Allow for the insertion of one (1) 210/2010 monitor board.

8.3.4.3 Have upper and lower card guides that facilitate the insertion of the monitor board into into a PCB edge connector that shall be:

8.3.4.3.1 Mounted on an inner back panel.

8.3.4.3.2 Mounted vertically.

8.3.4.3.3 A 28-position connector.

8.3.4.3.4 Keyed between positions 17 and 18.

8.4 An outer back panel positioned behind the inner back panel that shall:

8.4.1 Be hinged on the bottom to allow tilting the back panel down.

8.4.2 Have two (2) knurled, captive thumb screws, one in each upper corner, to hold the outer back panel in the closed, fully vertical, position.

8.4.3 Have mounted on it, facing toward the back, the following:

8.4.3.1 One (1) 14-position, 1-row terminal block mounted vertically for AC connections to the switch packs, flash transfer relay connections to the Power Distribution Assembly #2L, and other connections.

8.4.3.2 Three (3) 12-position, 1-row terminal blocks mounted vertically for connections to the switch pack outputs.

8.4.3.3 One (1) 7-position, 1-row terminal block mounted vertically for DC power and logic signal connections to the Output file.

8.4.3.4 One (1) CPC 23-37 connector for signals from the controller to the switchpacks.

8.4.3.5 One (1) 24 VDC relay and matching socket.

8.4.3.6 One (1) 120 VAC relay and matching socket.

8.4.4 Have mounted on it, facing toward the front, eight (8) flash programming terminal blocks.

9.0 There shall be a police panel that shall contain Auto/Flash and Signal On/Off switches, and when switched to the flash position shall:

9.1 Place the intersection in flash.

9.2 Allow power to the controller to be maintained.

9.3 Put the controller in a stop timed condition when in flash if the maintenance panel Stop Time On/Off/Auto switch is in the Auto position.