

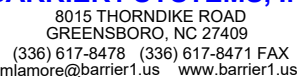
ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

BARRIER LAYOUT SHOWN BELOW TO BE MODIFIED BASED ON SITE SPECIFIC CONDITIONS.

The diagram illustrates a 'Final Denial' barrier system installed across a road. Key components and dimensions include:

- Power and Control System:** A 100 AMP single phase electrical subpanel and a PLC controls box are provided by Barrier1. A power supply line runs from the subpanel to the controls box and then to the guard house. Conduits for controls are shown on both the 'CONTROLS SIDE' and 'OTHER SIDE'.
- Barrier Structure:** The barrier consists of a central reinforced concrete foundation with a concrete curb or edge of pavement on both sides. A concrete foundation is also shown for the traffic signal and sign assembly.
- Safety and Detection:** Safety loop detectors are installed in the pavement. A ground retractable crash beam is positioned behind the barrier. A bollard with a cover is located near the foundation.
- Signage and Lighting:** Traffic signals and signs (typical) are mounted on the barrier. Signs include 'STOP HERE ON RED' and 'STOP HERE ON RED' (only if final denial application). Flashing warning lights and signs (typical) are also shown, with a note that they are only required for final denial applications.
- Dimensions:** The barrier has a total width of 100' (T.B.D.). The distance from the curb to the barrier is 12' on both sides. The barrier itself is 40' wide. The distance from the barrier to the traffic signal and sign assembly is 10'. The distance from the barrier to the 'STOP HERE ON RED' sign is 40'. The distance from the barrier to the flashing warning lights and sign is 100' (T.B.D.).
- Key Capabilities:**
 - Two (2) second deployment as 'FINAL DENIAL' barrier and/or 'HIGH CYCLE' CAPAB.
 - ENERGY ABSORPTION SYSTEMS PROVIDING REDUCED RISK ARRESTING.
 - ELECTRIC ROBUST ACTUATORS.
 - BARRIER IS PREFABRICATED AND ASSEMBLED UPON DELIVERY, ALLOWING FOR QUICK INS.
 - BARRIER ARM PROVIDES A VISUAL DETERRENT. (SAFETY YELLOW WITH RETRO REFLECT.

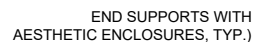
1. TWO (2) SECOND DEPLOYMENT AS "FINAL DENIAL" BARRIER AND/OR "HIGH CYCLE" CAPABILITY AS TRAFFIC CONTROL BARRIER
2. ENERGY ABSORPTION SYSTEMS PROVIDING REDUCED RISK ARRESTING.
3. ELECTRIC ROBUST ACTUATORS.
4. BARRIER IS PREFABRICATED AND ASSEMBLED UPON DELIVERY, ALLOWING FOR QUICK INSTALLATION.
5. BARRIER ARM PROVIDES A VISUAL DETERRENT. (SAFETY YELLOW WITH RETRO REFLECTIVE STRIPES)
6. BI-DIRECTIONAL STOPPING CAPABILITY. CERTIFIED TO STOP INBOUND AND OUTBOUND IMPACTS.
7. AUTOMATIC ELECTRIC LOCKING IN DOWN POSITION.
8. OPTIONAL UPS BACKUP POWER PROVIDES 10+ UP/DOWN CYCLES, OVER 2 HOURS.
9. AESTHETIC ENCLOSURES WITH LOCKING ACCESS DOORS. (NON-RUSTING)
10. ONLY 5 INCH WIDE OPENING ACROSS ROADWAY. A 4 INCH SPACE BELOW IS PROVIDED WHEN BEAM IS RETRACTED.
11. CUSTOM COLORS AVAILABLE.



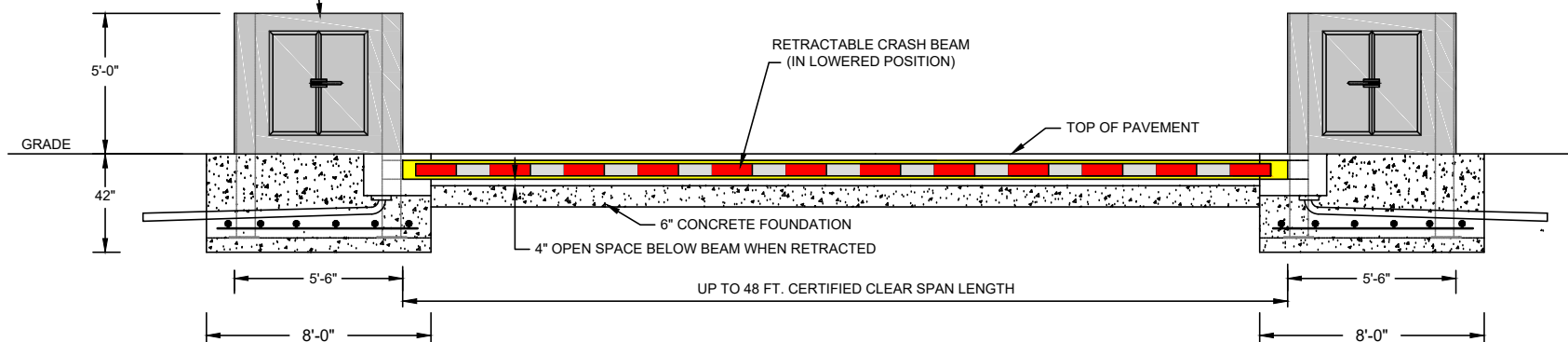
SCALE: N.T.S.

ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

ELEVATION VIEW - RAISED POSITION



ELEVATION VIEW - LOWERED POSITION



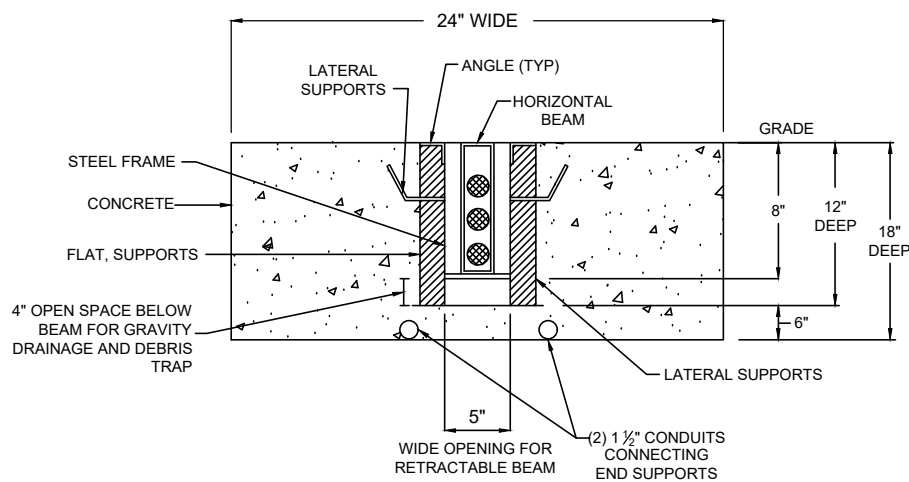
GROUND RETRACTABLE CRASH BEAM - MODEL HCB-EL-1200 (ELECTRICALLY OPERATED, REDUCED RISK)

STOPS 15,000 LB. VEHICLE AT 50 MPH IMPACT (BARRIER CERTIFIED UP TO 48 FEET CLEAR SPAN LENGTHS)

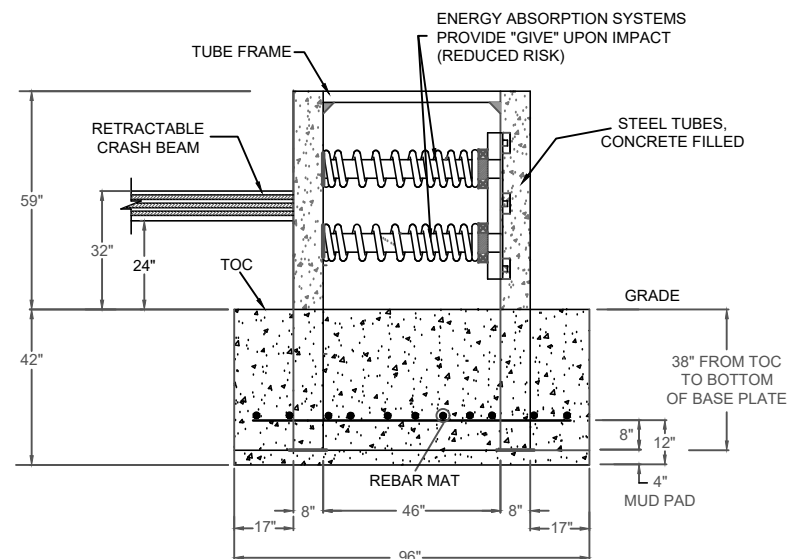
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TYPICAL SECTIONS AND DETAILS

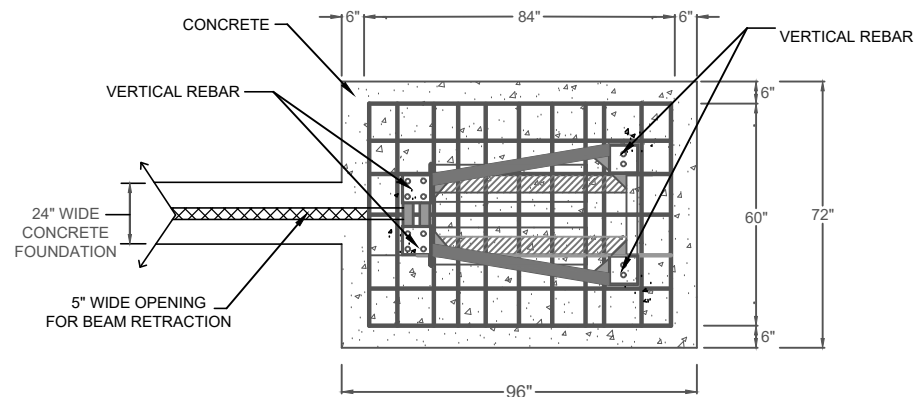
BELOW PAVEMENT HOUSING CROSS SECTION



SIDE CROSS SECTION VIEW



FOUNDATION - TOP VIEW



BARRIER1 SYSTEMS, INC.

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GROUND RETRACTABLE
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

SHEET: 3 OF 10

06222017

SCALE: N.T.S.

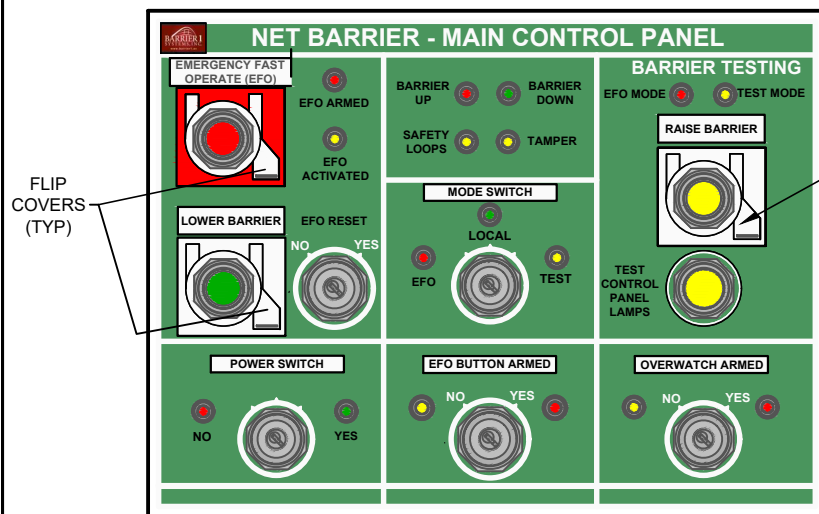
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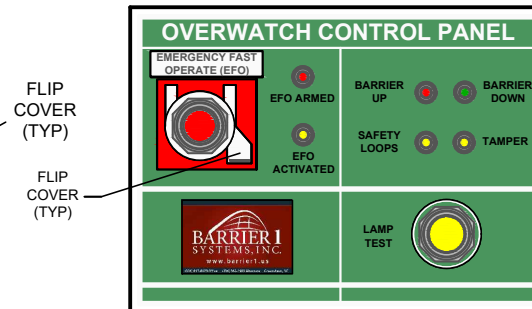
ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

MAIN CONTROLLERS

SAMPLE MAIN CONTROL PANEL

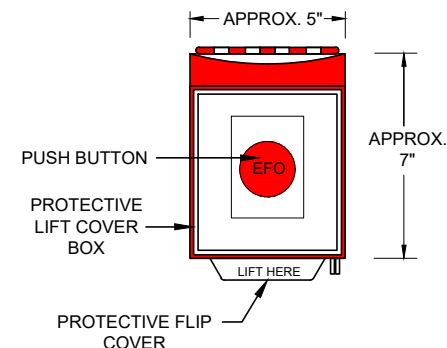


SAMPLE CONTROL PANEL AT OVERWATCH



REMOTE EFO BUTTON(S) TO DEPLOY NET (EMERGENCY FAST OPERATION)

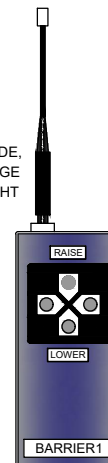
LOCATED WHERE NEEDED



KEY CAPABILITIES

1. CONTROL PANELS, ALARMS, KEYED SWITCHES, AND OTHER FEATURES ARE CUSTOMIZED BY BARRIER1 SYSTEMS IN ACCORDANCE WITH CUSTOMER'S NEEDS.
2. DATA LOGGER IS INCLUDED WHICH RECORDS THE DATE, TIME, AND LOCATION OF EACH NET BARRIER DEPLOYMENT.
3. UPS BATTERY BACKUP IS PROVIDED FOR ALL CONTROLS AND SYSTEMS DURING POWER OUTAGE.
4. IF VEHICLE SITS ON LOOP FOR 12 SECONDS, INDICATOR LIGHT ACTIVATES. THIS ACTIVATION TIME CAN BE ADJUSTED.
5. TAMPER SWITCH MONITORS DOOR OPENINGS ON AESTHETIC END SUPPORT ENCLOSURES AND PLC CABINET DOOR.
6. WHEN DOING MAINTENANCE, PLACE IN "LOCAL MODE" SO BARRIER DEPLOYMENT IS LOCKED OUT AT GUARD HOUSE AND OVERWATCH. NET CAN BE DEPLOYED LOCALLY AT BARRIER ONLY.

MILITARY GRADE,
1,500+ FOOT RANGE
LINE OF SIGHT



OPTIONAL REMOTE WIRELESS CONTROLLER



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GROUND RETRACTABLE
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

SHEET: 4 OF 10

06222017

SCALE: N.T.S.

GROUND RETRACTABLE CRASH BEAM - MODEL HCB-EL-1200 (ELECTRICALLY OPERATED, REDUCED RISK)

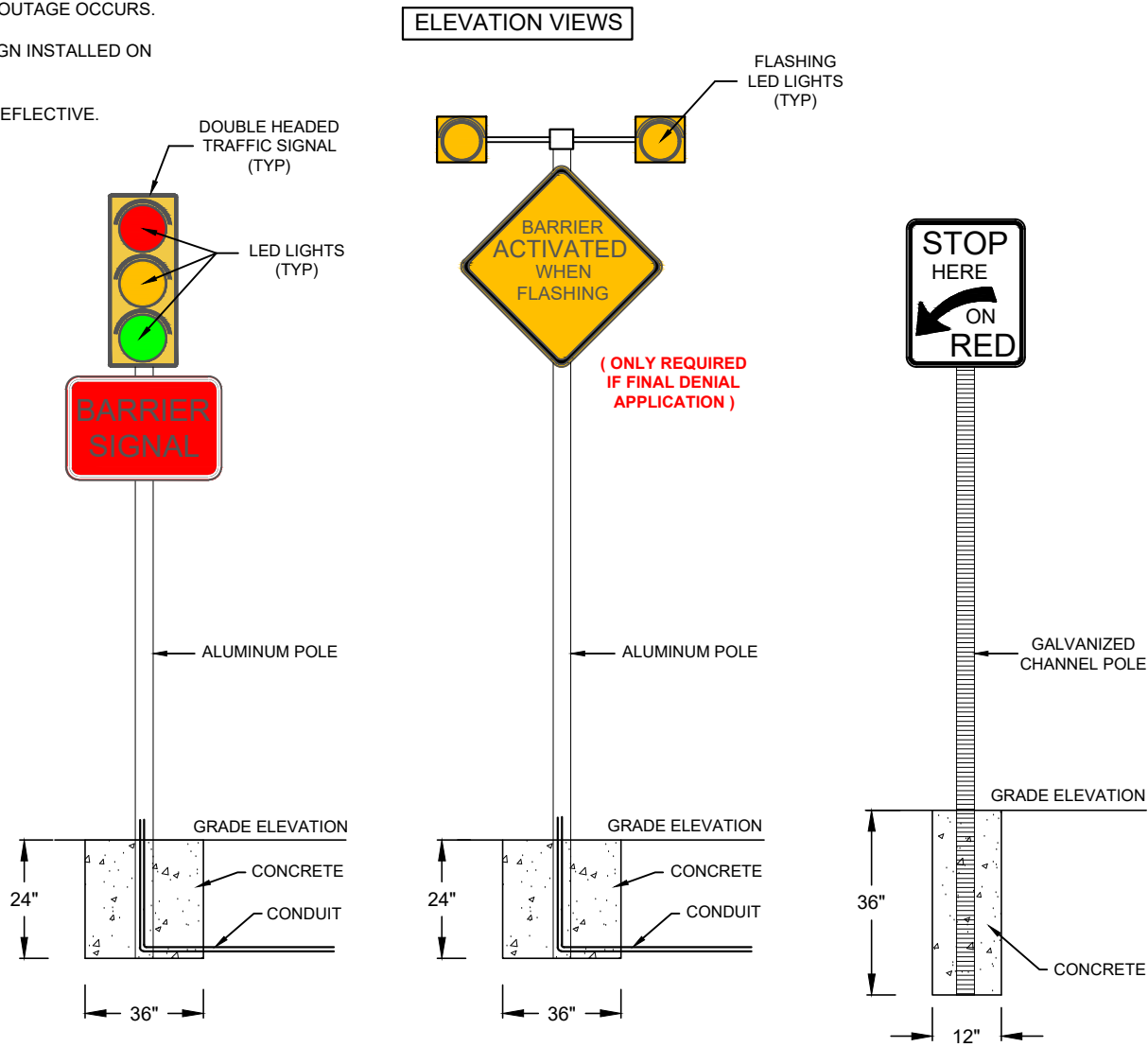
STOPS 15,000 LB. VEHICLE AT 50 MPH IMPACT (BARRIER CERTIFIED UP TO 48 FEET CLEAR SPAN LENGTHS)

ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

SIGNS AND SIGNALS (LOW VOLTAGE)

KEY CAPABILITIES:

1. UPS BATTERY BACKUP POWER PROVIDED FOR ALL LIGHTS, SIGNALS, CONTROL PANELS, DEVICES, ETC. IF POWER OUTAGE OCCURS.
2. TRAFFIC SIGNAL AND "BARRIER SIGNAL" SIGN INSTALLED ON POLE AND/OR MAST ARM.
3. SIGNS ARE DIAMOND GRADE AND RETRO REFLECTIVE.



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RETRACTABLE HORIZONTAL
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

SHEET: 5 OF 10

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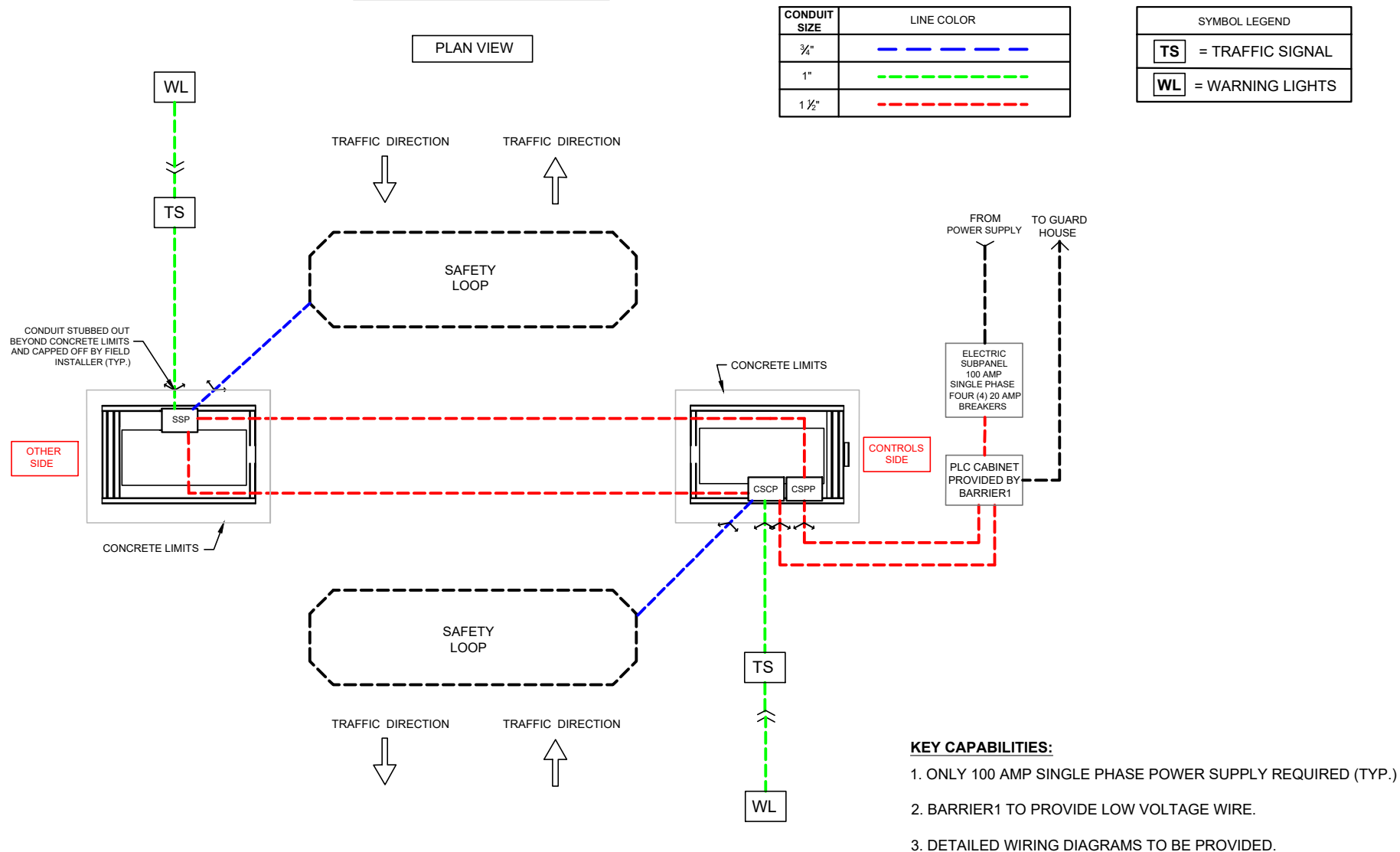
SCALE: N.T.S.

GROUND RETRACTABLE CRASH BEAM - MODEL HCB-EL-1200 (ELECTRICALLY OPERATED, REDUCED RISK)

STOPS 15,000 LB. VEHICLE AT 50 MPH IMPACT (BARRIER CERTIFIED UP TO 48 FEET CLEAR SPAN LENGTHS)

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CONDUIT SCHEMATIC



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GROUND RETRACTABLE
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

SHEET: 6 OF 10

06222017

SCALE: N.T.S.

GROUND RETRACTABLE CRASH BEAM - MODEL HCB-EL-1200 (ELECTRICALLY OPERATED, REDUCED RISK)

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ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

SEQUENCING OF TRAFFIC SIGNALS, WARNING LIGHTS, AND ALARMS UPON ACTIVATION

(ONLY APPLIES IF FINAL DENIAL APPLICATION)

TRAFFIC CONTROLS AND SAFETY AT ACTIVE BARRIERS	OPERATIONAL SEQUENCE PER SECOND (MIN. FOR SAFETY - 40 KPH (25 MPH) DESIGN SPEED)											
	ELAPSED TIME	0	1 SEC.	2 SEC.	3 SEC.	4 SEC.	5 SEC.	6 SEC.	7 SEC.	8 SEC.	9 SEC.	10 SEC.
	TRAFFIC CONTROLS	NORMAL OPS	GUARD PERCEPTION AND REACTION TIME TO THREAT (EFO BUTTON) - 3 SECONDS			YELLOW CLEARANCE - GET ACROSS BARRIER 3 SECONDS (MUTCD MINIMUM)			ALL RED	DEPLOYING BARRIER		THREAT CONTAINED
SIGN AND SIGNAL WARNING SYSTEM	WARNING SIGNS AND LIGHTS WITH BEACONS	OFF	OFF	OFF	OFF	ALT FY	ALT FY	ALT FY	ALT FY	ALT FY	ALT FY	ALT FY
	TRAFFIC SIGNAL	FY OR G	FY OR G	FY OR G	FY OR G	Y	Y	Y	R	R	R	R
	AUDIBLE SIREN ALARM	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
	SAFETY LOOP DETECTORS	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
	ACTIVE BARRIER POSITION	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	ACTIVATED	ACTIVATED	DEPLOYED

KEY:

R = RED

Y = YELLOW

G = GREEN

FY = FLASHING YELLOW

ALT = ALTERNATING

KEY CAPABILITIES:

1. SEQUENCING AND TIMING OF SIGNALS, ALARMS AND LIGHTS CAN BE FIELD ADJUSTED USING PLC.
2. SAFETY LOOP DETECTORS PREVENT DEPLOYMENT OF BARRIER IF A VEHICLE IS ABOVE LOOP. BARRIER DEPLOYS AFTER VEHICLE PASSES OVER THE SAFETY LOOPS.



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GROUND RETRACTABLE
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

SHEET: 7 OF 10

06222017

SCALE: N.T.S.

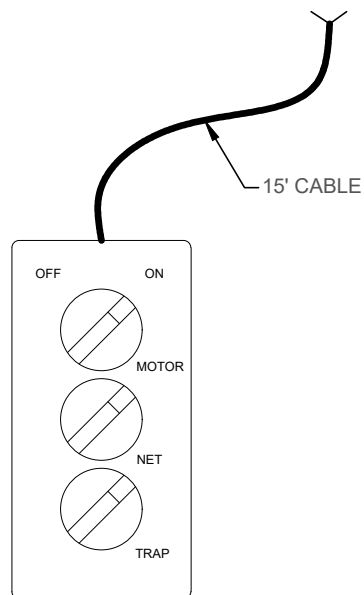
GROUND RETRACTABLE CRASH BEAM - MODEL HCB-EL-1200 (ELECTRICALLY OPERATED, REDUCED RISK)

STOPS 15,000 LB. VEHICLE AT 50 MPH IMPACT (BARRIER CERTIFIED UP TO 48 FEET CLEAR SPAN LENGTHS)

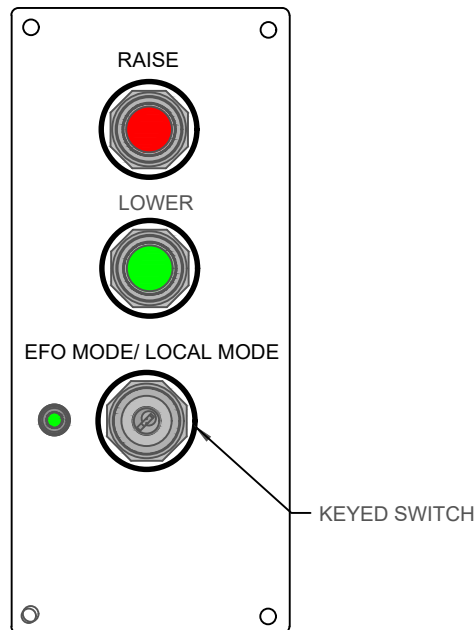
ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

LOCAL CONTROLLERS LOCKED INSIDE CONTROLS SIDE END SUPPORT ENCLOSURE

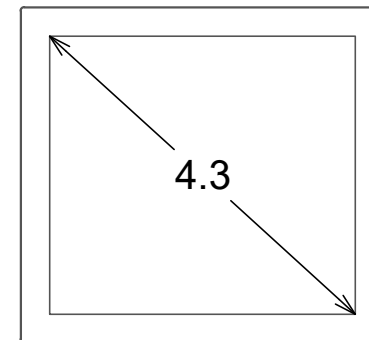
(USED WHEN DOING MAINTENANCE)



MAINTENANCE CONTROLLER



LOCAL CONTROLLER



OPTIONAL TOUCH SCREEN LOCAL CONTROLLER

PROGRAMMABLE TOUCH SCREEN WITH ICONS



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GROUND RETRACTABLE
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

SHEET: 8 OF 10

06222017

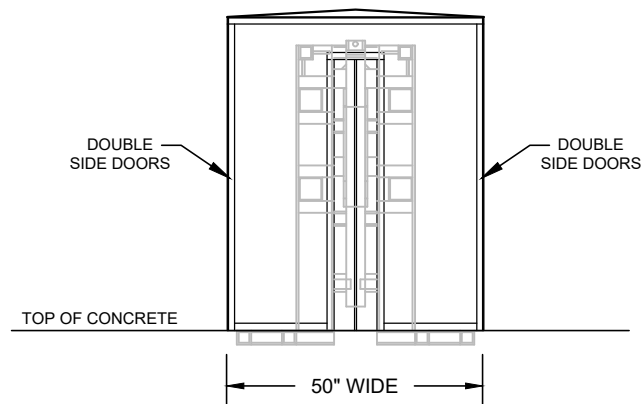
SCALE: N.T.S.

GROUND RETRACTABLE CRASH BEAM - MODEL HCB-EL-1200 (ELECTRICALLY OPERATED, REDUCED RISK)

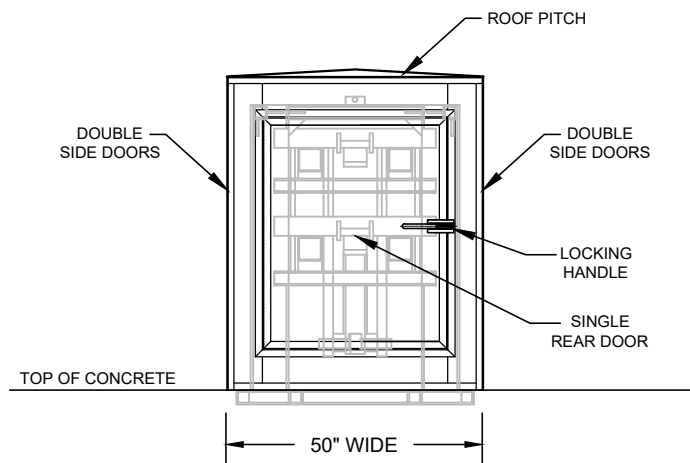
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ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

AESTHETIC LOCKING ENCLOSURES OVER END SUPPORTS NON-RUSTING ALUMINUM COVERS

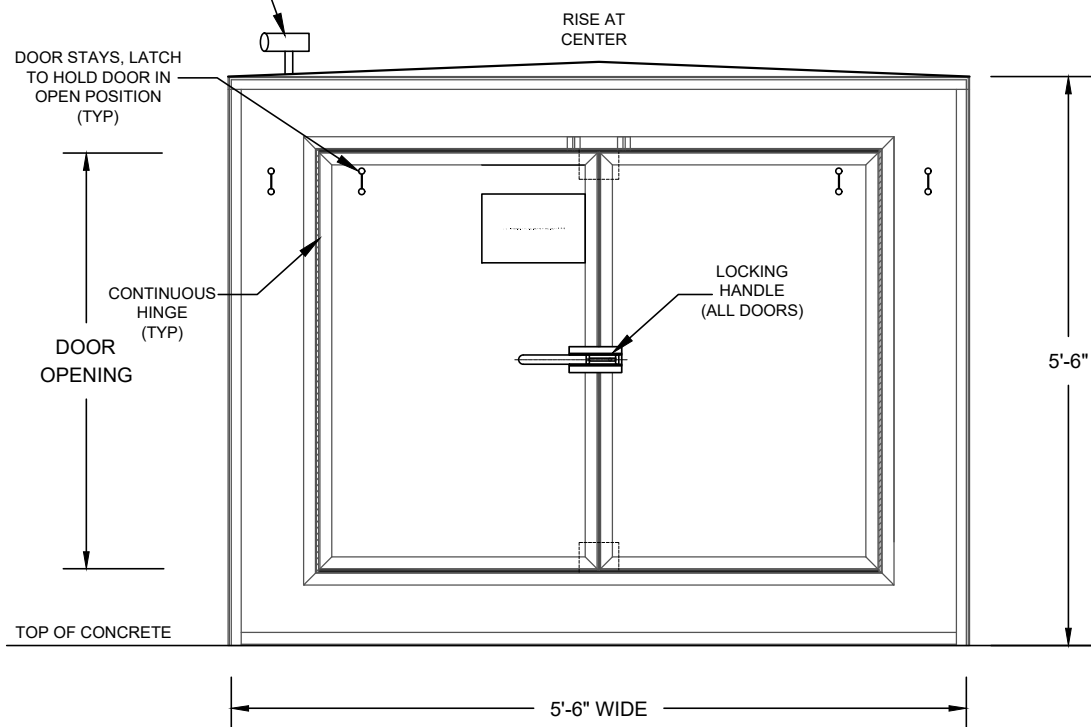


FRONT SIDE



REAR SIDE

OPTIONAL DAY/NIGHT CAMERA WITH
CONTINUOUS DVR RECORDING TO
VIDEO TAPE INCIDENTS



SIDE VIEW

KEY CAPABILITIES:

1. WEATHER SEAL WITH GASKETS ON DOOR OPENINGS. (OPTIONAL)
2. INSULATED ENCLOSURE WITH THERMOSTAT CONTROLLED HEATERS. (OPTIONAL)
3. COMPONENTS AND ELECTRONICS SENSITIVE TO WATER ARE 8" MINIMUM OFF TOP OF CONCRETE.
4. ENCLOSURES HAVE DOUBLE DOORS ON BOTH SIDES, AND SINGLE DOOR IN REAR.



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GROUND RETRACTABLE
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

SHEET: 9 OF 10

06222017

SCALE: N.T.S.

GROUND RETRACTABLE CRASH BEAM - MODEL HCB-EL-1200 (ELECTRICALLY OPERATED, REDUCED RISK)

STOPS 15,000 LB. VEHICLE AT 50 MPH IMPACT (BARRIER CERTIFIED UP TO 48 FEET CLEAR SPAN LENGTHS)

ASTM F2656-07 M50(K12) CERTIFIED, APPROVED BY DoD AND ON ANTI-RAM LIST

OPTIONAL ITEMS

1. CARD READERS AND/OR KEY PADS.
2. CAMERAS WITH CONTINUOUS DVR RECORDING TO VIDEO TAPE INCIDENTS.
3. UPS BACKUP POWER (PROVIDES 10+ CYCLES, OVER 2 HOURS IF POWER OUTAGE OCCURS).
4. ADDITIONAL TRAFFIC SIGNS, AUDIBLE ALARMS, AND/OR WARNING LIGHTS.
5. TAMPER ALARMS ON DOORS AND CABINETS.
6. REMOTE WIRELESS CONTROLLER(S) TO RAISE OR LOWER WEDGE BARRIER.
7. TRIGGER LOOPS AND/OR RFID TAGS TO RAISE OR LOWER BARRIER ARM.
8. STAINLESS STEEL MATERIALS AND COMPONENTS.
9. SPECIALTY PAINTING, PLACARDS, AND DETAILING.
10. OVER SPEED DETECTION AND EARLY WARNING ALARMS.
11. WRONG WAY DETECTION AND ALARMS.
12. TOUCH SCREEN CONTROLLERS WITH ICONS FOR GUARD HOUSE, OVER WATCH, AND LOCAL CONTROLLER.
13. CRASH RATED BOLLARDS AND COVERS. (ASTM M30 (K4), M40 (K8) AND M50 (K12).
14. CORRIDOR CABLE FENCING FROM ACP TO BARRIER LOCATION (PREVENTS VEHICLES FROM GOING AROUND BARRIER).
15. COLD WEATHER PACKAGE INCLUDES THERMOSTAT CONTROLLED SPACE HEATER, INSULATED ENCLOSURE FOR CONTROLS SIDE, WEATHERSEAL WITH GASKETS ON ENCLOSURE DOORS, AND THERMOSTAT CONTROLLED HEATER WIRE FOR BELOW PAVEMENT HOUSING.



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GROUND RETRACTABLE
FINAL DENIAL CRASH BEAM
ELECTRICALLY OPERATED

SAMPLE DRAWINGS

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SCALE: N.T.S.