AMERISTAR SECURITY PRODUCTS | ATG ACCESS

A DIVISION OF AMERISTAR FENCE PRODUCTS, INC.

General Installation Guidelines

1.0 BARRIER FOUNDATION

Determine vehicle barrier location and prepare the excavation and foundation for insertion of the barrier according to plans.

2.0 DRAINAGE

Once installation configuration is determined and the foundation excavation is prepared, adequate drainage must be installed.

2.1 FOUNDATION DRAINAGE OPTIONS

A. Route drainage from barrier to an approved storm drain.
B. Install sump pit and a sump pump to eject water run-off from the barrier. Eject into a storm drain of gutter
C. Install a French drain or dry well in the barrier foundation. Use only in extremely dry climates.
   - Adequate drainage is required
   - A 2 inch minimum drain line is required. Local precipitation may require a larger drainage capacity.
   - Consideration should be given to special drainage conditions during the winter months.

3.0 INSTALLATION OF VEHICLE BARRIER

The following is the general procedure for installing concrete around the Patriot Barrier. Actual site conditions may vary and require appropriate deviations, as required.

A. Prepare the work-site and locate the general area for the barrier installation by surveying, or other suitable measurements. Barrier must be properly located with planned roadways.

B. Excavate the barrier foundation hole, slightly larger than the foundation dimensions shown on the drawings to accommodate rebar installation and shore as necessary for site-specific conditions.
Note: When installing the barrier, it is recommended that you elevate the barrier slightly above grade to allow for water run-off away from the barrier.

C. Construct a levelling pad form in the bottom of the excavation and pour the levelling pads. The levelling pads should be six inches thick. Level and rough smooth the top surface. Allow the levelling pads to cure before proceeding to the next steps.

Note: Rebar or wire mesh is not required in the levelling pad since this is just a support surface for properly locating the barrier.

D. After initial curing of the levelling pads, remove the form and load-in each barrier buttress column.

E. Position and align both barrier columns on the levelling pad, equally inside the excavation. Ensure the barrier lateral (X-Y) position, especially relative to the site and roadway. Ensure that the barrier is not cocked (or rotated) end-to-end. Ensure that the barrier columns are at the same elevation. The beam pan must be used to assist in setting the correct separation between the barrier buttress columns.

F. Level the barrier columns and shim-up to roadway grade level as necessary.

G. *Optional Anchoring.* The barrier column base can be anchored to the levelling pads to assist in preventing movement of the barrier during subsequent construction steps and during the concrete pour. Use anchor bolts or other suitable anchoring method as appropriate.

H. Install rebar around the entire barrier structure and barrier beam pan, just below roadway grade. Rebar does not penetrate any portion of the barrier or through the base plate into the levelling pads.
Note: The barrier beam pan may be temporarily removed to assist in work access during rebar installation, however, great care must be used to ensure that the barrier column spacing does not shift or move in any way during construction activities while the pan is removed.

Note: Hydraulic lines and electrical conduits are typically run underground to the barrier from the HPU. Coordinate and integrate any secondary trenches and underground runs with the barrier foundation.

I. With the rebar complete, the barrier columns set and the beam pan installed and secured; verify and check the final position of the barrier.

J. Install concrete form in accordance with barrier foundation dimensions, including adequate support to prevent form from bulging and/or deflection during the concrete pour.
Note: The depth of the foundation is quite deep so pressure on the form will be considerable.

K. Make sure all drain lines are in place per the drawings and pour the barrier foundation concrete layer 2 up to approximately four inches below the pan level. Level and rough finish the top surface. Allow the foundation to cure and dry before proceeding with the next following steps.
Note: A minimum 3,000 psi concrete mix is recommended.

L. Remove the concrete forms after cure time.

M. Back fill and tamp around the barrier concrete foundation.

N. Install conduits to interconnect the vehicle barrier to the Hydraulic Power Unit (HPU) electrical enclosure. Trench from the HPU site to the barrier for the conduit. Lay in the conduit.
   - This normally involves:
     (1) 3 inch PVC conduit from HPU to barrier with **long sweep elbows (ONLY)**, which can accommodate
     (1) 1 inch and (1) ¾ inch hydraulic lines for an Emergency Fast Operate (EFO) equipped barrier or
     (1) ¾ inch and (1) ½ inch hydraulic lines for a non-EFO equipped barrier.
     (**Hydraulic hose lines may vary depending on distance from HPU to barrier and the exact numbers of barriers being operated from 1 HPU)**

     (1) 3 inch PVC conduit interconnecting both ends of the barrier.
     (2) 1 inch PVC conduit for limit switches.
     (1) 1 inch PVC additional conduit *if accessory options are selected.*

O. After conduit has been installed and attached to the barrier, finish the remaining concrete pour.

P. Finish the roadway surface up to the barrier beam pan and around the barrier.

Q. Finish the mechanical and hydraulic assembly of the barrier.

R. Apply or construct any architectural build-outs around the barrier columns.
   Note: Maintenance and service access is required to the hydraulic cylinders, hydraulic lines and manifold; electrical conduits and beam wear plates. Ensure proper clearance is maintained for service access.

4.0 HYDRAULIC POWER UNIT (HPU)

A. Determine the location of the HPU (75 feet maximum distance for connection between the vehicle barrier and the HPU, unless reviewed and approved in writing by ATG).

B. Set the HPU in an adequately ventilated location. If a concrete foundation is required be sure that consideration is given for freezing conditions (i.e. pad may be required to extend below frost-line). Form up the pad approximately 6 inches larger than the HPU footprint (see site specific HPU drawings for dimensions). Set in stub ups (see site specific stub up drawings) for PVC conduits and finish smooth. When cured, set and secure HPU with a minimum 5/16 inch by 3-1/2 inch long anchor bolts.

C. If the HPU is located outside, an optional weather resistant enclosure is required.

D. Route all conduits from the vehicle barrier to the HPU.

E. The main facility electrical power for the vehicle barrier system must be connected at the HPU.

F. Be sure to also connect all conduits for the control stations (operator control panels) to the HPU.

5.0 CONTROL STATIONS

A. Locate and install the Master Control Panel
   - For safety purposes, it is recommended that one control panel be installed within "line of sight" of the vehicle barrier. This is usually installed inside a guard house.

B. Locate and install the Remote Control Panel (if used).

C. All control panels must be interconnected directly with the HPU. Normally a 1 inch PVC conduit per control panel is adequate for control wiring.

6.0 VEHICLE LOOP DETECTORS (*Optional)*

A. When used, the Loop Detection Module is installed inside the HPU.

B. Customer/End-user is responsible for the in-ground loops, conduit and wiring back to the HPU.

C. All loop wiring must be in PVC conduits. (Metallic conduits introduce higher than acceptable inductive noise levels to the loop detection modules).

D. See site specific drawings for loop size and placement.

7.0 FINAL SYSTEM CONNECTION

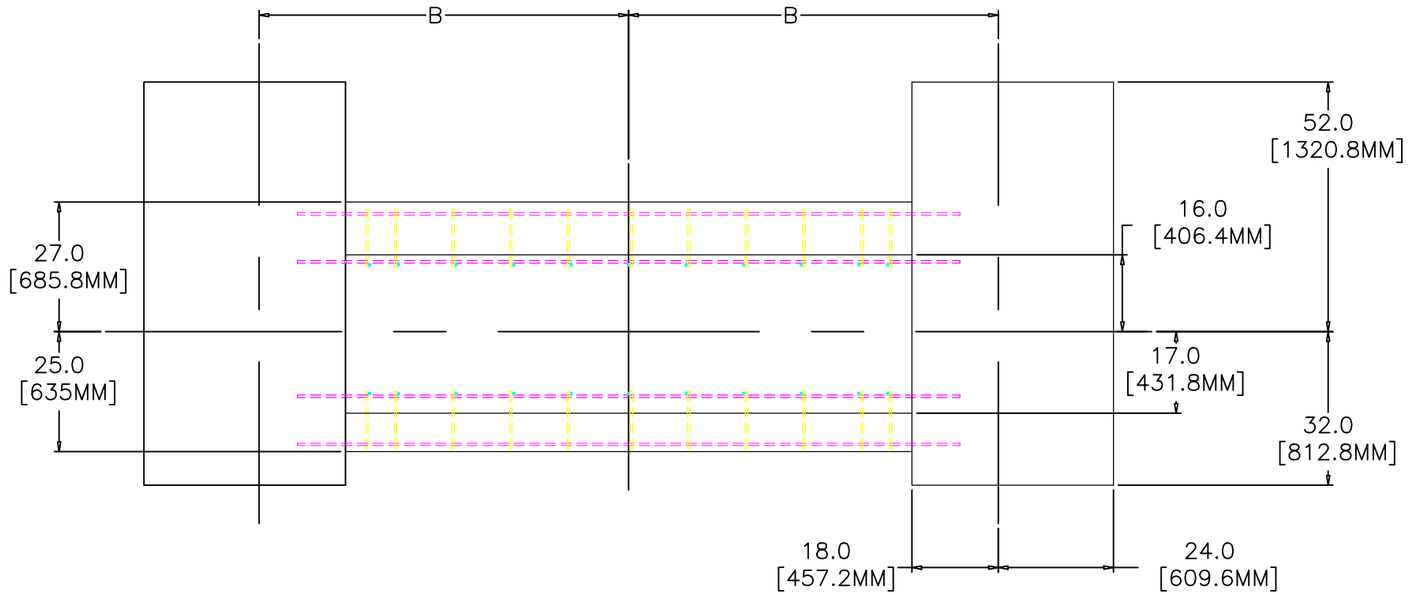
A. The basic installation should now be complete.

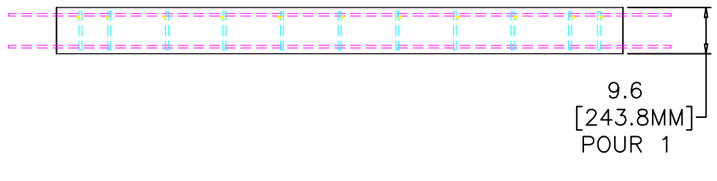
B. The Patriot vehicle barrier systems require hydraulic energy to power the system to raise the barrier. This requires that hydraulic interconnect lines be connected between the HPU and the barrier. Install the hydraulic lines as required on the site specific hydraulic schematic. Ensure that dust, dirt and other contaminates do not get into the hydraulic lines.

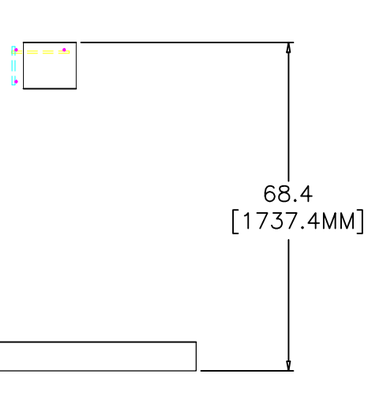
C. Install control and power wiring as required on the electrical schematics.

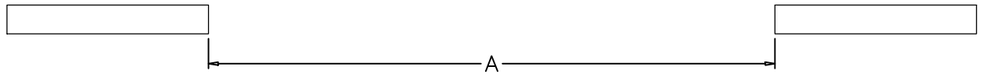
D. Be sure to follow the HPU start-up procedures (or have a qualified technician to perform this procedure) and run several operational tests on the complete system prior to barrier usage,

END OF INSTALLATION GUIDELINE









	Dimension	A	B
12' foot	Inch	118.0	77.0
	mm	2997	1956
14' foot	Inch	142.0	89.0
	mm	3607	2261
16' foot	Inch	166.0	101.0
	mm	4216	2565
18' foot	Inch	190.0	113.0
	mm	4826	2870
20' foot	Inch	214.0	125.0
	mm	5436	3175
22' foot	Inch	238.0	137.0
	mm	6045	3480
24' foot	Inch	262.0	149.0
	mm	6655	3785

FIRST LAYER WITH REINFORCING

SEE POUR 2 FOR SECOND LAYER WITH REINFORCING
SEE POUR 3 FOR FINISHING LAYER

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1555 N. Mingo
Tulsa, OK 74116
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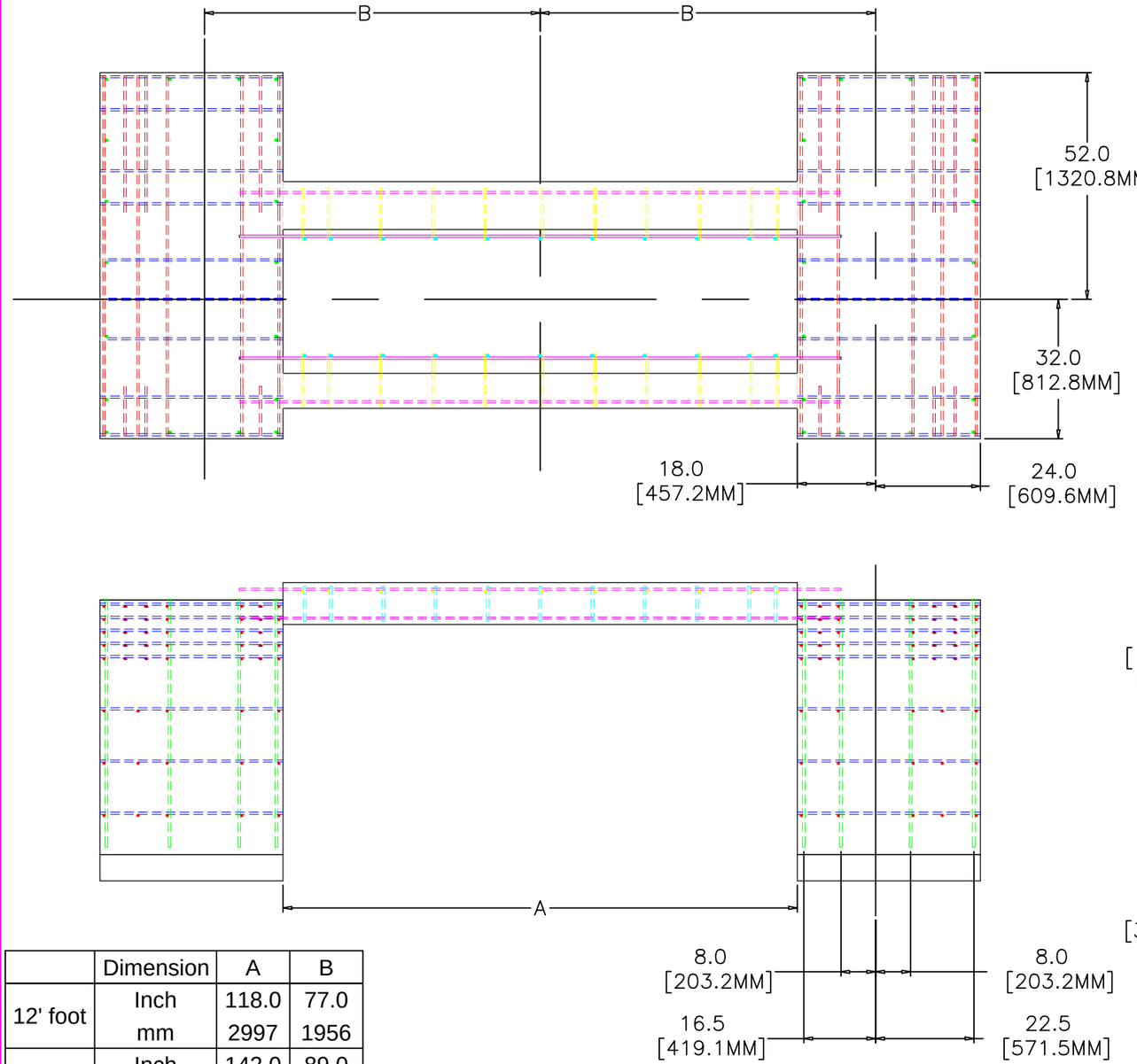
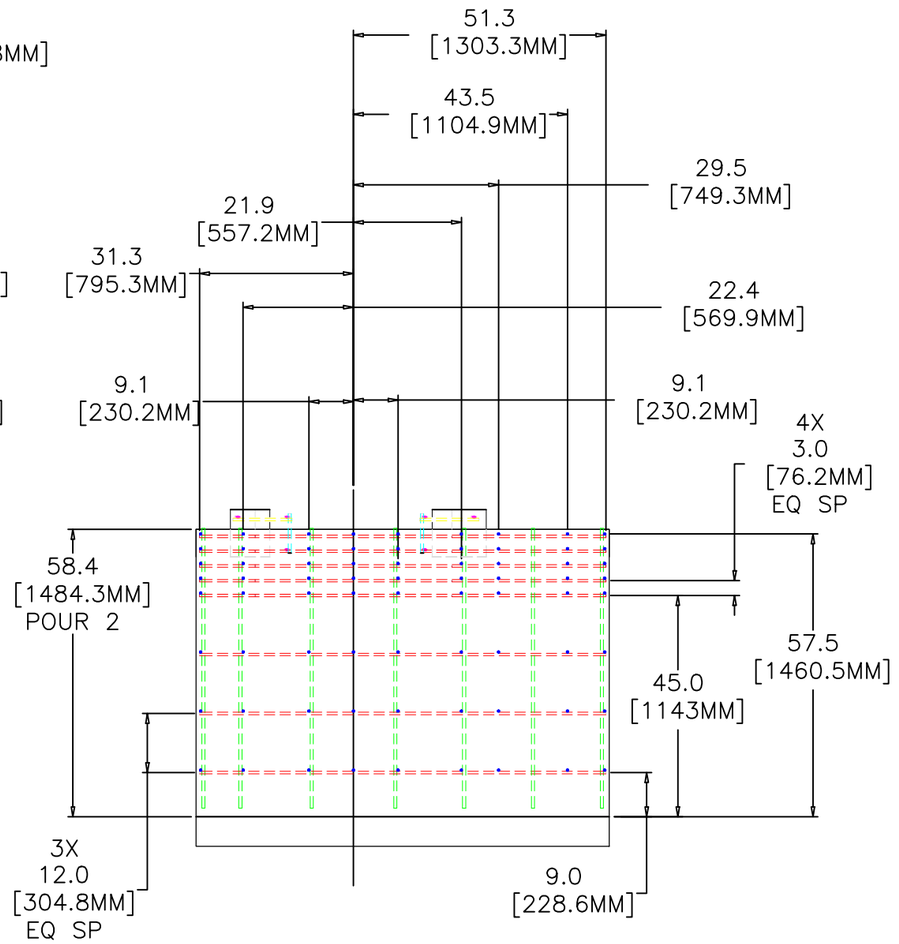
TITLE: Patriot Foundation Pour 1 - All

DATE:	SCALE:	SHEET: 1/1
DRN BY:	CHK BY: xxxxxxxxx	REV: a
DRAWING NO:		





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	mm	6655	3785

1. ALL CONCRETE SHALL BE 3000 PSI [C25/30] AT 28 DAYS U.N.O
2. ALL STEEL GRADE SHALL BE ASTM A615 GRADE 60 U.N.O.
3. ALL HORIZONTAL REINFORCING BARS TO BE #4 [12 MM] U.N.O.
4. ALL VERTICAL REINFORCING BARS TO BE #5 [16 MM] U.N.O.

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TITLE: Patriot Foundation Pour 2 - All

DATE:	SCALE:	SHEET: 1/1
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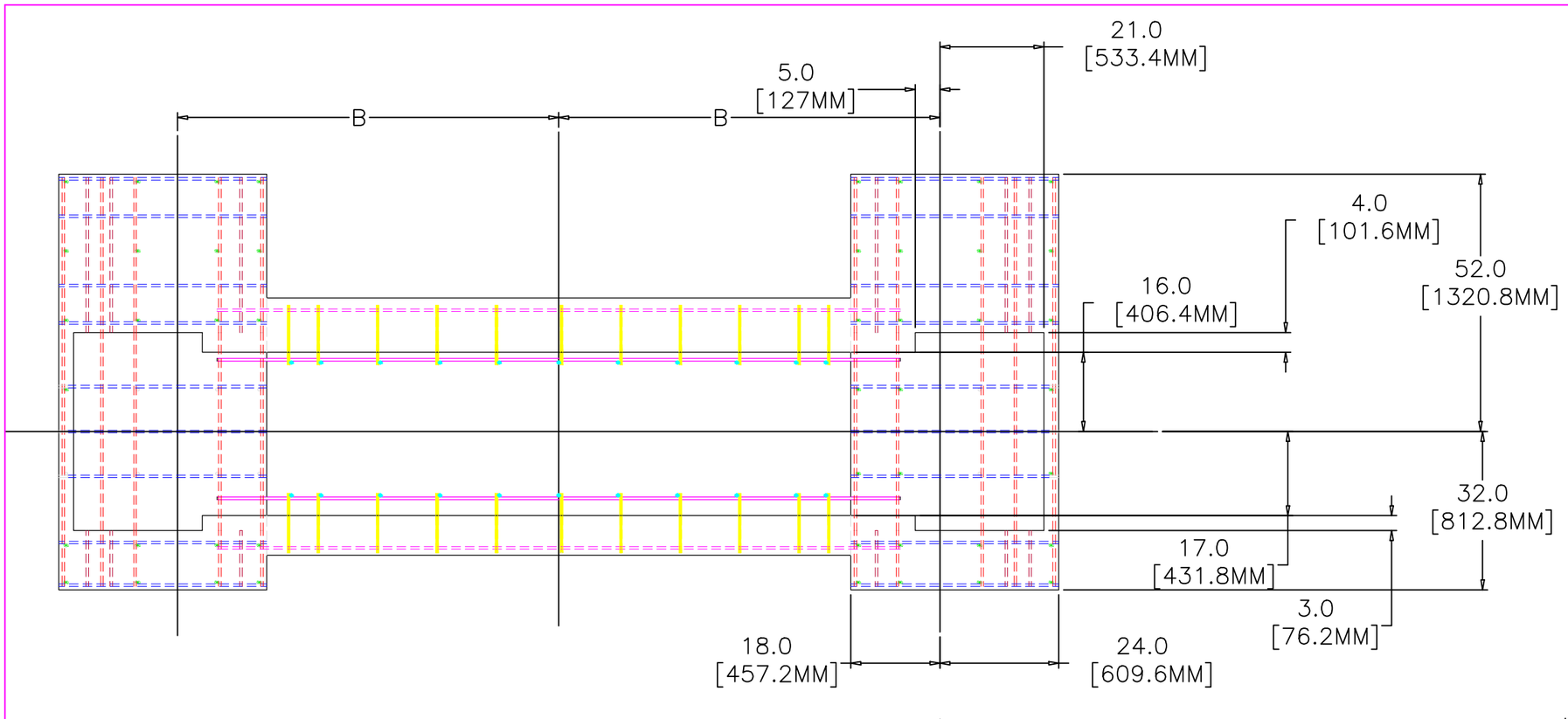
DRAWING NO:



	Dimension	A	B
12' foot	Inch	118.0	77.0
	mm	2997	1956
14' foot	Inch	142.0	89.0
	mm	3607	2261
16' foot	Inch	166.0	101.0
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	mm	4826	2870
20' foot	Inch	214.0	125.0
	mm	5436	3175
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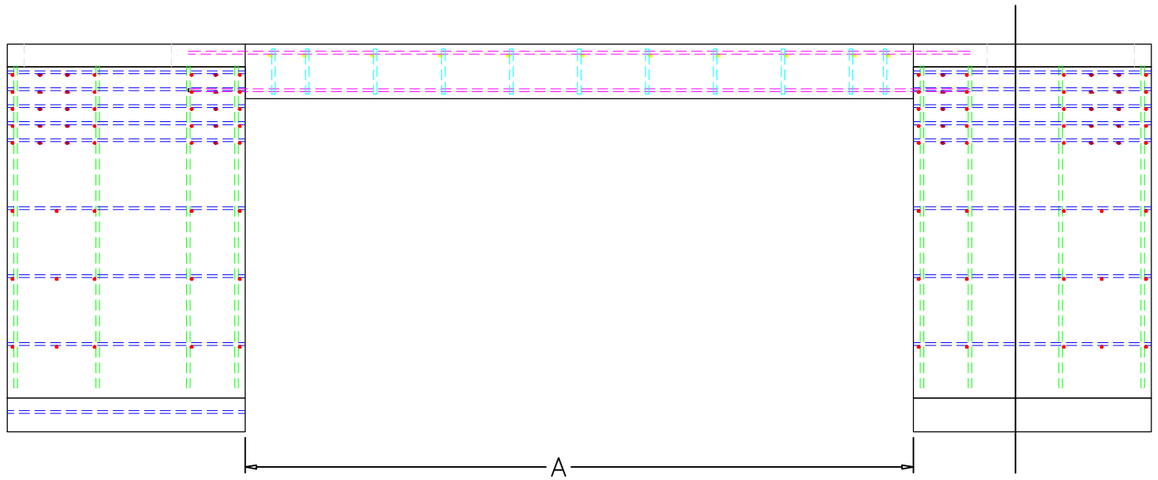
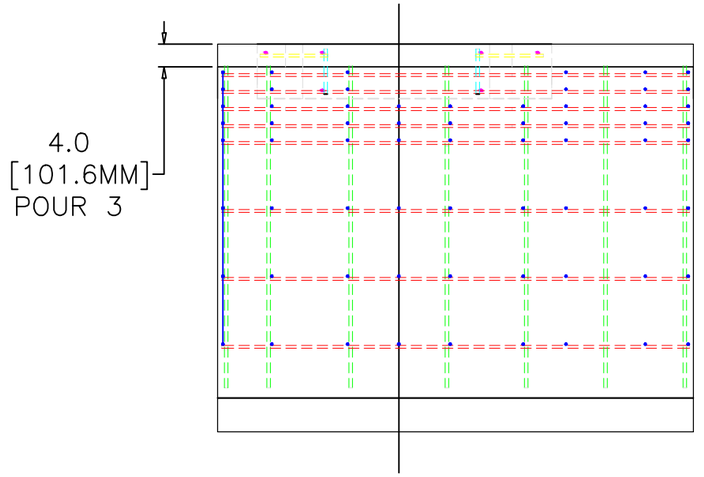
	mm	6045	3480
24' foot	Inch	262.0	149.0
	mm	6655	3785





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3. ALL HORIZONTAL REINFORCING BARS TO BE #4 [12 MM] U.N.O.
4. ALL VERTICAL REINFORCING BARS TO BE #5 [16 MM] U.N.O.

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TITLE: Patriot Foundation Pour 3 - All

DATE:	SCALE:	SHEET: 1/1
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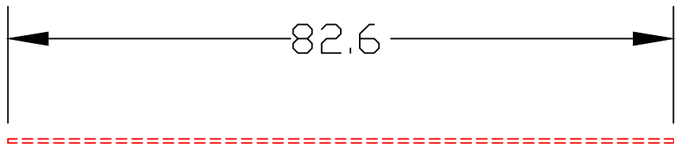

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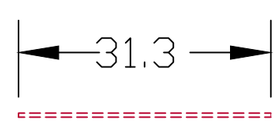
ALL STEEL GRADE SHALL BE ASTM A615 GRADE 60 U.N.O.



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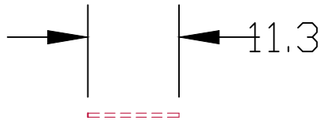

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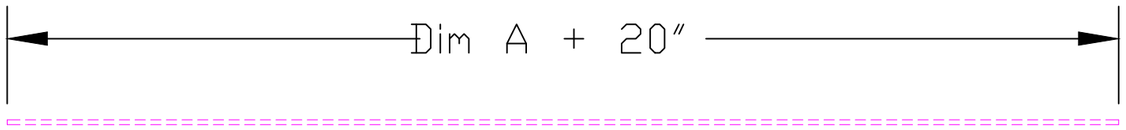

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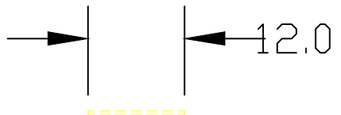

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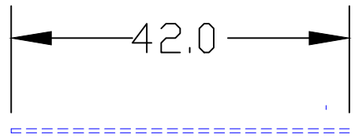

QTY - 132
#4 (16mm)

	Dimension	A	B
12' foot	Inch	118.0	77.0
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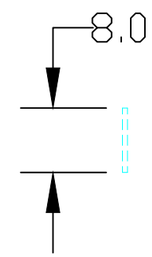
	mm	6045	3480
24' foot	Inch	262.0	149.0
	mm	6655	3785

QTY - 36
#5 (12mm)



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#5 (12mm)

1. ALL CONCRETE SHALL BE 3000 PSI [C25/30] AT 28 DAYS U.N.O
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TITLE: Patriot Rebar Pieces

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