

Appendix – Parking Curbs

A. Product Description and Customer Identification

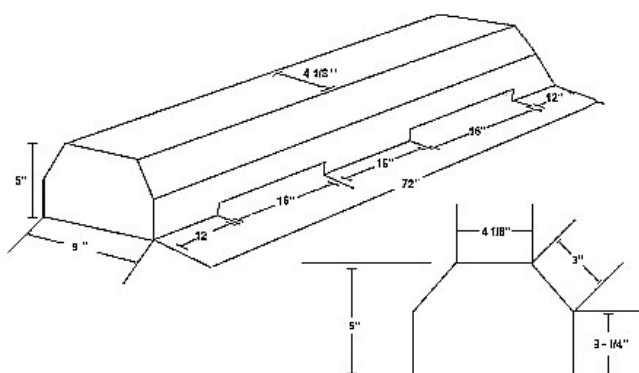
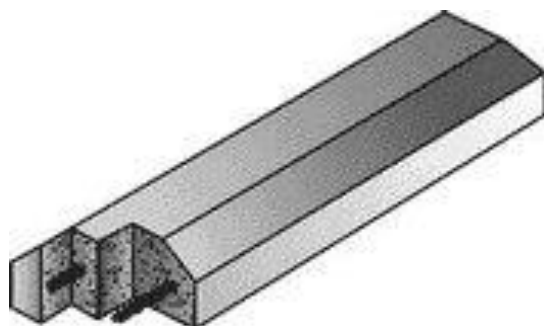
Product Description:

The Parking Curb, sometimes referred to as Parking Bumpers or Bumper Blocks, is one of the simplest of concrete precast structures. The finished product is six feet or seven feet long, five inches high and nine inches in depth. The most common product is made entirely of concrete but there is also a concrete filled plastic parking curb version available, which does not require steel reinforcement.



The parking curb is primarily used to restrict the forward position of a vehicle when parking in an open parking lot or to otherwise protect assets from inadvertent contact with a vehicle. Parking curbs offer a simple, effective and durable solution for improved parking management. These parking curbs are reinforced for increased durability, are suitable for any climate and are an economical solution in many common vehicular traffic applications.

The traditional parking curb is reinforced with deformed bar which runs the length of the structure. The rebar is placed to allow for vertical holes near both ends of the curb, which allows for the curb to be anchored. The parking curb may also include slots along the bottom to facilitate surface drainage.



Customer Identification:

Typical customers for parking curbs include asphalt paving companies, parking lot stripping companies, property managers, large retail stores, churches, apartment complexes, parks and municipal facilities.

These customers can be identified through a variety of resources that are available to anyone who is willing to invest some time and do the legwork. Asphalt paving companies, stripping companies and contractors doing site development work can be identified by simply using the yellow pages or other local publication where the public would turn to obtain these services. This may result in a rather long list of contractors which you will want to be able to whittle down to a more manageable list. One way to do this is to go to the authority that approves building plans and issues permits for paving and site development work. Depending on your market this will include both county and city permits and code enforcement offices. You may request a list of permits issued for paving and development work to determine which of the contractors on your long list are winning bids and pulling permits. The staff in these offices are generally willing to help you understand the process and can be very helpful.

You may also want to obtain a list of general contractors who have been issued permits for commercial construction including site development work. Since the dirt work and paving work is frequently subcontracted, the general contractors will be receiving the permit and may be the customer you will also want to talk with to let them know about your parking curbs. It is also important to note that the city and county staff working in the permit office will know the contractors and in time will be willing to share information with you in an unofficial capacity.

It is also important to check with the permitting officials to determine if they have an approved supplier list for materials used on city and county jobs that would cover parking curbs. Architects and engineers involved in site development work will frequently reference the local jurisdictions approved supplier list for materials used on their jobs regardless of whether or not it is a city or county project. If they do have parking curbs included you will need to learn how to obtain certification and be included as an approved supplier.

B. Manufacturing Requirements

The following bill of materials tables utilizes 5000 psi concrete at a cost of \$100/yd³. The Direct Labor, cost of manufacturing manpower, is estimated at a \$20/hr wage including an increase to account for benefits.

Bill of Materials:

6 Foot Parking Curb

Description	Units	Quantity	Unit Cost (\$)	Extended Cost (\$)
Concrete (5000 psi)	ft ³	1.41	3.700	5.22
Rod / Rebar 3/8 in dia.	Lbs.	4.512	0.400	1.80
Form Oil	Gal.	0.015	7.000	0.11
Direct Labor	MHrs	0.15	20.00	3.00
Total Unit Cost				10.13

7 Foot Parking Curb

Description	Units	Quantity	Unit Cost (\$)	Extended Cost (\$)
Concrete (5000 psi)	ft ³	1.6	3.700	5.92
Rod / Rebar 3/8 in dia.	Lbs.	5.264	0.400	2.11
Form Oil	Gal.	0.025	7.000	0.18
Direct Labor	MHrs	0.15	20.00	3.00
Total Unit Cost				11.20

6 Foot Concrete Filled Plastic Curb

Description	Units	Quantity	Unit Cost (\$)	Extended Cost (\$)
Concrete (5000 psi)	ft ³	1.00	3.700	3.70
Plastic Cap & Form (6 ft)	Each	1	10.000	10.00
Form Oil	Gal.	0	0.000	0.00
Direct Labor	MHrs	0.15	20.00	3.00
Total Unit Cost				16.70

Plant Requirements:

The plant requirements for the addition of a new product line, like parking curbs, is a small amount of surplus mixer capacity, forms and turning frame, adequate production floor space and adequate finished product storage area.

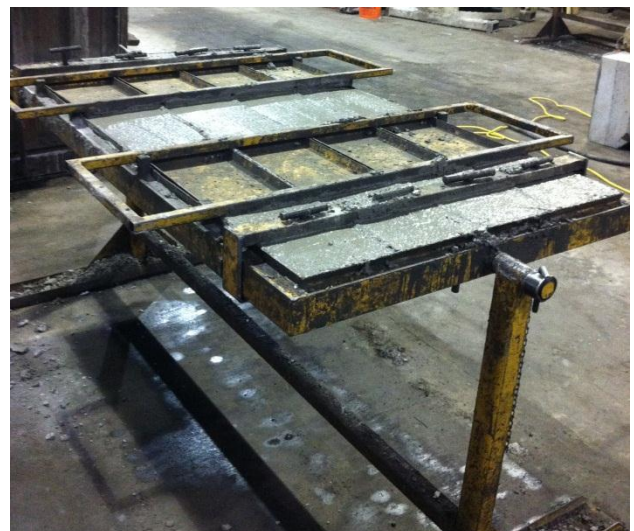
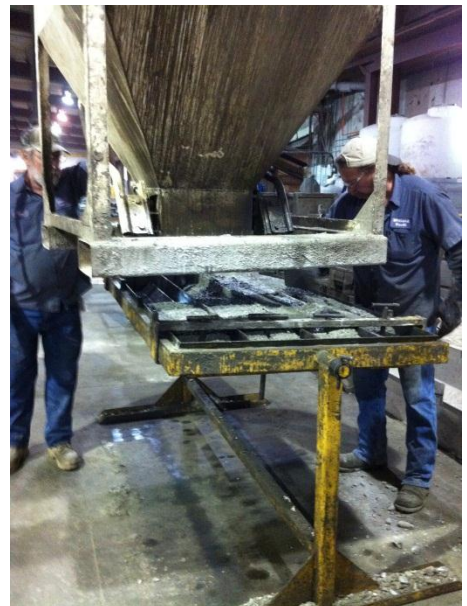
The surplus mixer capacity required to support the production of 4 parking curbs per day is 0.22 yd³. In some plant operations this volume of concrete is wasted during normal production after all the burial vault forms have been filled.

Forms for parking curb production are available from a number of sources and several are noted in a later section. The plant will need to determine if they prefer handling single curb forms or gang forms, which allows the production of multiple parking curbs in the same form. This analysis assumes gang form production of four 6 foot parking curbs.

The floor space required for gang form production is minimal but many of the Wilbert plants have very limited production floor space beyond their burial vault requirements. An area 6 ft. x 8 ft. is adequate for a 4 gang form on a turning frame but the area must be forklift accessible from one side. A forklift is utilized to support the blocks when they are released from the form and can then take the parking curbs directly to a pallet or yard for storage. The parking curbs weigh approximately 225 pounds each so the forklift capacity required during production is only 900 pounds. This product can be palletized on a standard 48" x 48" pallet in 3 courses of 4 parking curbs per course, making 12 parking curbs per pallet totaling 2,700 lbs.

Manufacturing Process:

The manufacturing process for the 6 foot long 4 gang form is straight forward precast production. The form is cleaned, sprayed with form oil and locked in the horizontal position. Since this is an above ground aesthetic product, form oil application needs to be very thin and uniform. The hole pins are inserted and secured to the form restraining bars. Concrete is placed into the form and the rebar, cut to the proper length, is placed on either side of the of the hole pins ensuring that proper cover is allowed for in each direction. The concrete is then consolidated by internal vibration to ensure it has properly molded to the form. The notch pans, if desired, are placed in the form and pressed to the proper depth and secured. The form may need to be topped off after consolidation to ensure that the form is completely filled. Strike off the form to ensure that it is not overfilled. Overfilled forms will result in parking curbs that are not level. Hole pins and notch pans are removed before the concrete is completely set. After the concrete has set and with the restraining bars clamped across all four parking curbs, the form is rotated to allow the castings to break free of the form. A forklift is positioned so the forks are under the flipped form and can be raised up to take the load off of the restraining bars, which are then removed. The parking curbs are then removed from the production area by the forklift and palletized or otherwise stored.



Employee Requirements:

There is no special employee training or knowledge associated with the production of this product.

Regulatory Requirements:

There are no national standards established for this product nor are there any known national regulatory requirements. There are regional authorities, including states, counties, municipalities and cities, which have established specifications to ensure consistency of the product they receive.

An investigation should be conducted into the state specifications and the city and county specifications within the normal delivery radius of your plant. The majority of this work can be accomplished through an internet search of the websites of the various authorities. In most states the Department of Transportation (or equivalent agency) will have a section on standards and specifications for materials allowed on state projects. Unfortunately there is not a standard format followed by all states so it will require a site search for materials made of concrete. This same process can be followed on county and city websites. In many cases you will learn that the local authority's specifications will point back to the state standards and specifications, since they do not have the resources to prepare detailed specifications.

Sourcing of Consumables:

The consumables for this product are consistent with your current vault production and will not require new or unique raw material inventory to be established. The consumables for this product include form oil, reinforcing steel, and storage pallets. If you choose to utilize the Concrete Filled Plastic Curb production method you will need to stock the plastic curb forms and trays which can be obtained as noted in the next section.

Sourcing of Forms:

Steel forms for parking curbs are available from a number of sources. New forms can be obtained from:

Steel Forms:

Del Zotto Pre-cast Concrete Products & Forming Systems

Website: www.delzottoproducts.com

Phone: 218-384-3066 (MN), 866-358-3834 (FL), 903-981-0400 (TX)

By email: formsales@delzottoproducts.com

Norwalk Precast Molds, Norwalk Ohio

Website: www.norwalkprecastmolds.com

Phone: 419-668-1639 or 1-800-251-8409

By email: sales@norwalkprecastmolds.com

World Block, Duluth Minnesota

Website: www.worldblock.com

Phone: 1-888-728-9481

By email: info@worldblock.com

Molds of Bethlehem, Inc., Hickory, North Carolina
 Website: www.moldsofbethlehem.com
 Phone: 828-495-7731 or 1-800-659-7815
 By email: thru link on website

A & R Custom Forms, Parsons, Kansas
 Website: None
 Phone: 620-423-1149 or 620-423-0170

Plastic Form (included as part of the finished product)

TUF-TITE, Lake Zurich, Illinois
 Website: www.tuf-tite.com
 Phone: 1-800-382-7009
 By email: sales@tuf-tite.com

C. Total Capital Investment

Capital Costs

Description	Units	Quantity	Unit Cost (\$)	Extended Costs (\$)
Turning Frame	Each	1	1,100	\$ 1,100
4 Gang 6 ft form	Each	1	1,700	\$ 1,700
Hole Pins	Pair	4	27	\$ 108
Notch Pans	Pair	4	55	\$ 220
Total Cost				\$ 3,128

Advertising Cost

Description	Units	Quantity	Unit Cost (\$)	Extended Cost (\$)
Postcard Mailers	Each	100	\$0.35	\$35.00
Product Flyers	Each	100	\$0.04	\$4.00
Milled Alum. Brand Mold	Each	1	\$400.00	\$400.00
Reinforced Rubber Brand Plate	Each	4	\$1.00	\$4.00
Yellow Page Advertisements	Each	12	\$100.00	\$1,200.00
Website Update	Each	1	\$80.00	\$80.00
Total Cost				\$1,723.00

Inventory Cost

To enter the precast parking curb market it is advisable to establish a working inventory. The typical parking curb customer has an immediate need and is prone to move on to the next supplier if you cannot meet their requirements. Of course, if the order is for a significant number of parking curbs they will be more tolerant of a production delay especially if they can begin installation from the curbs supplied from the working inventory. Input from some existing Wilbert plants, already manufacturing parking curbs, indicates that in most markets a working inventory of 200 parking curbs is adequate. If the parking curb unit cost is \$10.13 each, then your inventory cost for 200 parking curbs is \$2,025.

Breakeven Analysis

The following sample breakeven analysis allows you to look at the point at which you will be breaking even on this new product line. In order to perform this simple analysis we hold the profit at zero dollars (breakeven) and solve for the number of parking curbs sold.

Assigned Values:

$$\text{Selling Price} = \$ 25.00$$

$$\text{Cost to manufacture one parking curb} = \$ 10.13$$

$$\text{Profit} = 0$$

Calculated Values:

$$\text{Revenue} = \text{Selling Price} \times \text{Parking Curbs Sold}$$

$$\text{Revenue} = \$ 25.00 \times \text{Parking Curbs Sold}$$

$$\text{Fixed Cost} = \text{Capital Cost} + \text{Advertising Cost} + \text{Inventory Cost}$$

$$\text{Fixed Cost} = \$ 3,128 + \$ 1,723 + \$ 2,025$$

$$\text{Fixed Cost} = \$ 6,876$$

$$\text{Variable Cost} = \text{Cost to manufacturer one parking curb} \times \text{Parking Curbs Sold}$$

$$\text{Variable Cost} = \$10.13 \times \text{Parking Curbs Sold}$$

$$\text{Profit} = \text{Revenue} - \text{Fixed Cost} - \text{Variable Cost}$$

$$0 = (\$ 25.00 \times \text{Parking Curbs Sold}) - \$ 6,876 - (\$10.13 \times \text{Parking Curbs Sold})$$

$$\$ 6,876 = (\$25.00 - 10.13) \times \text{Parking Curbs Sold}$$

$$\$ 6,876 / \$14.87 = \text{Parking Curbs Sold}$$

$$462.4 = \text{Parking Curbs Sold}$$

This means you will have to manufacture and sell 463 parking curbs to break even on this new product. Since this plan is for manufacturing 4 parking curbs each day, it will take you 116 working days to make the curbs needed to breakeven.