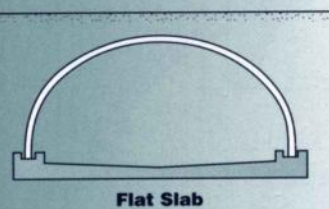
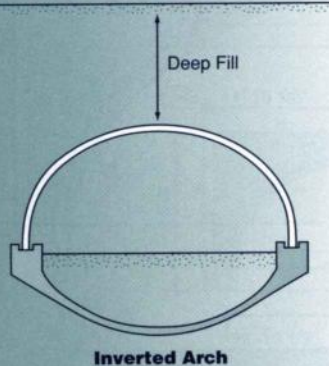
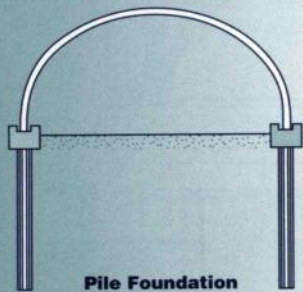


# BEBO ARCH SYSTEM

... The Economical Solution  
Foundations, Spandrels and Wingwalls

The simplest and most often used foundations for a BEBO System structure are cast-in-place spread footings. These are normally slabs, or slabs with a pedestal, depending on the depth of bearing. The footings have "keys" (shallow troughs) into which the arch elements are placed. The arch/key is then grouted. Statically, the performance of that arch/footing connection is that of a hinge.

## SPECIAL FOUNDATIONS

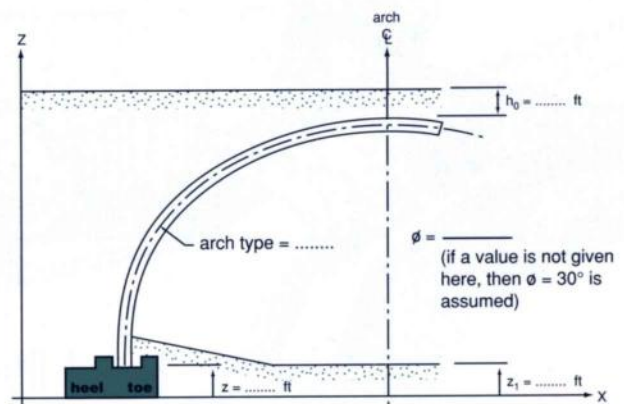
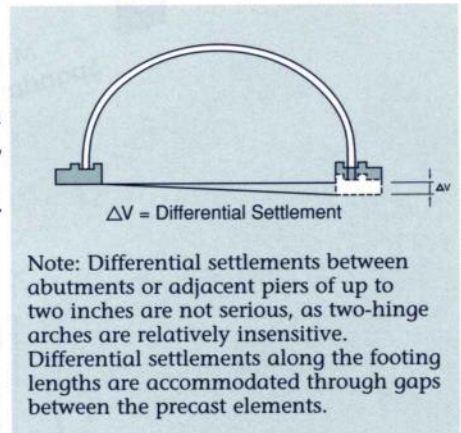


To allow for a quick footing design, design diagrams are available in your choice of formats. For the most common range of allowable soil bearing pressures, the footing dimensions can be evaluated as a function of arch type and fill height. Consult our footing design diagrams for detailed information.

Footing designs for a specific project can be provided by BEBO on request. Such designs can often be made available within 24 hours, provided the necessary input data is forwarded to us. This data must include the following:

1. Type of BEBO System structure to be installed
2. Reference height of the hinge; that being the height of the hinge relative to the bearing plane
3. Height of fill above the crown of the arch
4. Height of stream bed or road surface relative to the bearing plane
5. Unit weight of backfill
6. Allowable soil bearing pressure or soil profile with standard penetration test data

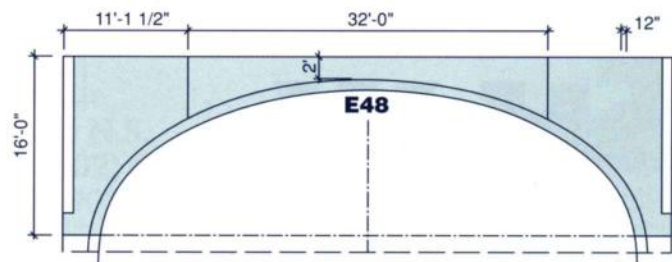
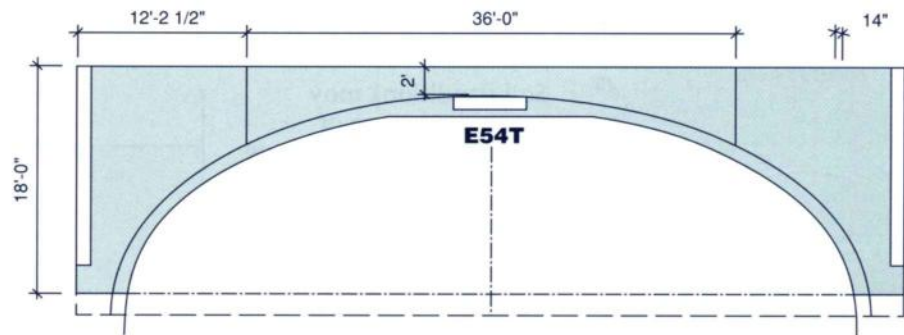
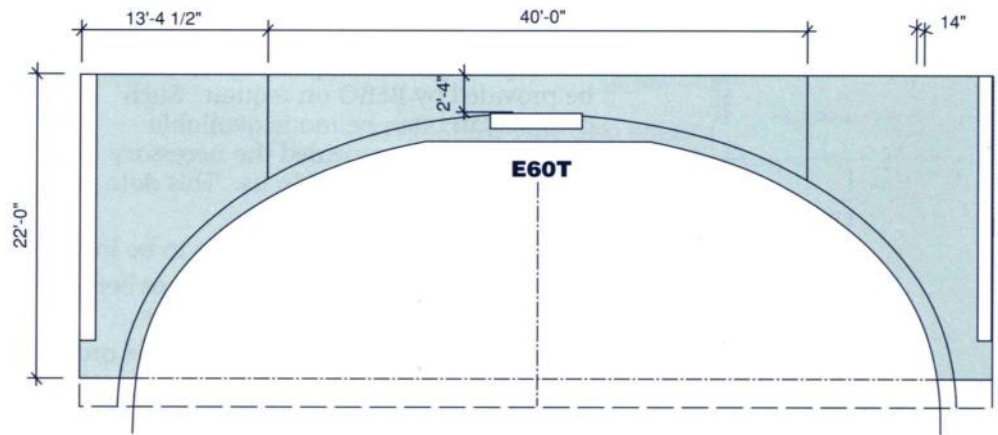
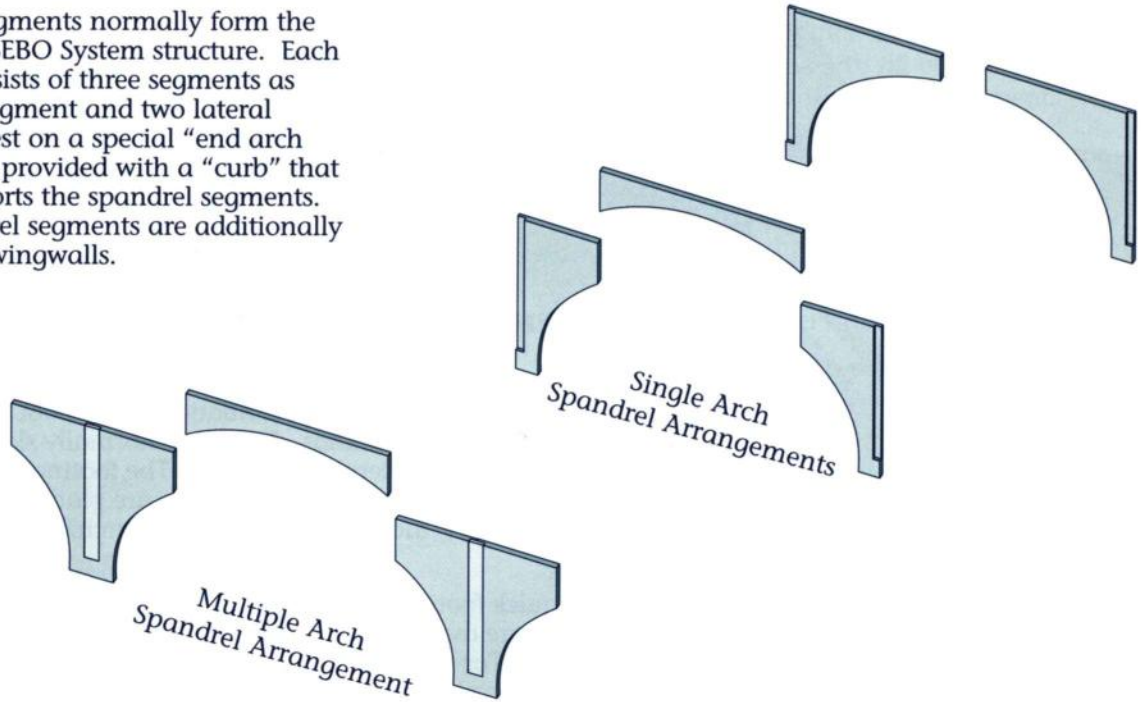
Soil conditions may preclude the use of spread footings. In these cases, piles, flat slabs or inverted arches may be used. These foundation types need special analysis and can be developed by BEBO on request.



allowable soil bearing pressure: ..... psf

# Spandrel

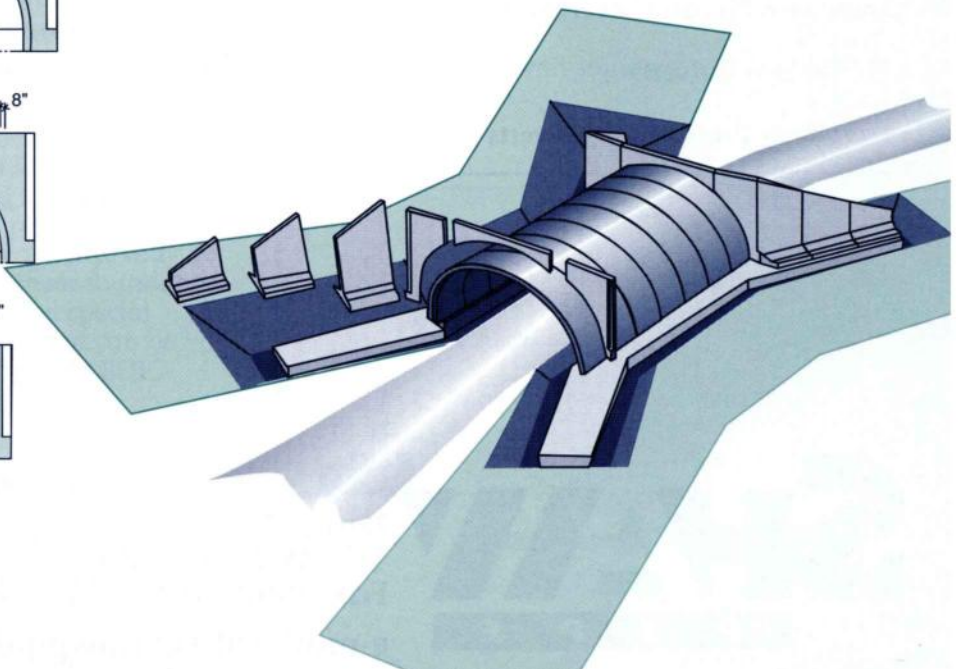
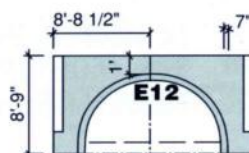
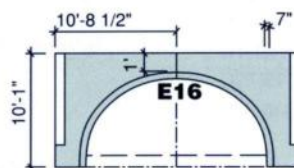
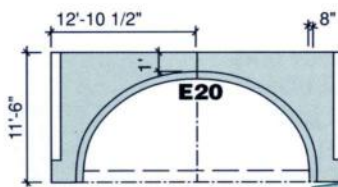
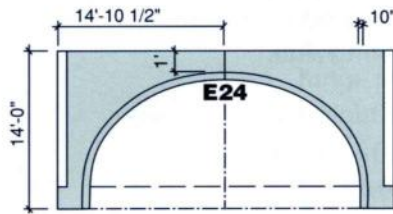
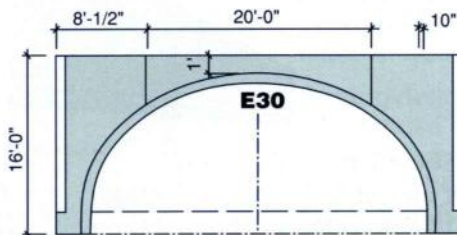
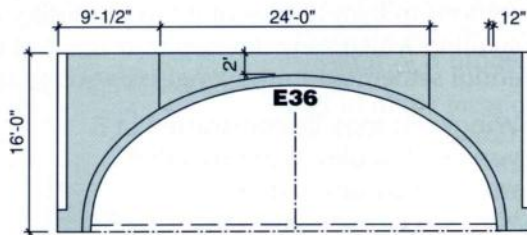
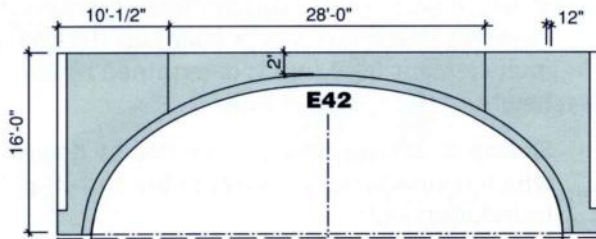
Spandrel wall segments normally form the end parts of a BEBO System structure. Each spandrel wall consists of three segments as shown; a center segment and two lateral segments. They rest on a special "end arch element" which is provided with a "curb" that horizontally supports the spandrel segments. The lateral spandrel segments are additionally supported by the wingwalls.



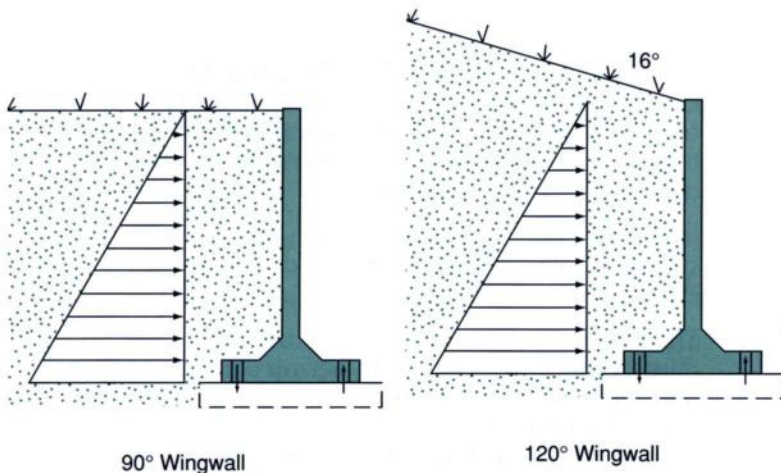
Spandrel walls achieve their final stability only when the BEBO System is backfilled and overfilled. For safety reasons it is necessary to temporarily fix the lateral segments to the end arch element and wingwalls.

In the case of a multiple arch structure, a special single piece "lateral" spandrel segment known as the "joining segment" is used.

The concrete cover over the spandrel wall reinforcement is sufficient to permit surface treatment of the units on the visible side. This allows for aesthetic surface treatment with grooves or dovetails up to one inch deep.



# WINGWALL



90° Wingwall

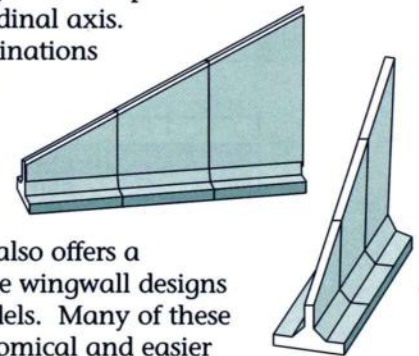
120° Wingwall

The wingwall segment adjacent to the spandrel wall (first element) must both retain the earth fill behind it and support the lateral spandrel segment. The element is in turn mutually supported by the spandrel wall. Additional wingwall elements (second and third elements) serve to retain earth only. The number of wingwall elements employed is dependent on the type of arch element used and is determined by the height of the spandrel wall.

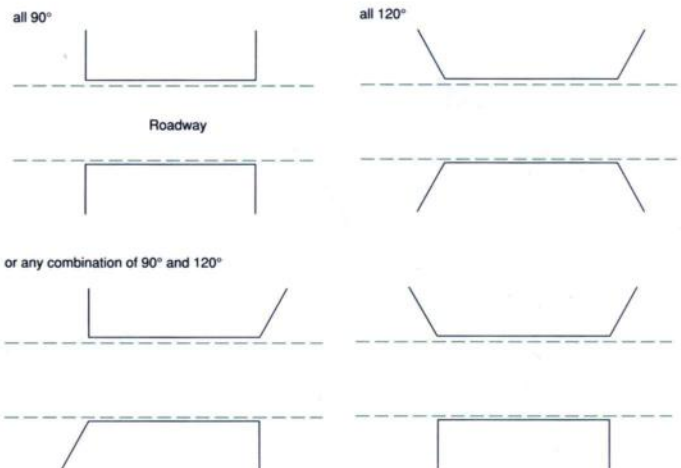
Sliding or overturning is prevented by dowels which connect the wingwall to the cast-in-place foundation slab.

Gaps are provided between adjacent wingwall sections to avoid forces and the possibility of spalling which may develop as a result of differential settlement in the longitudinal direction.

Wingwalls may be constructed at a variety of angles to the spandrel wall's longitudinal axis. Various combinations are therefore possible.



**NOTE:** Shaw Pipe also offers a variety of alternative wingwall designs for the E12-E24 models. Many of these are both more economical and easier to install, some without using a separate footing slab.



To learn more about how to specify the **SHAW PIPE BEBO ARCH SYSTEM** call the plant nearest you.

## Shaw Pipe...

our history is solid,

Shaw Pipe is pleased to offer the BEBO Arch System as an addition to our full line of engineered drainage products

- Shawspan Precast Culvert System
- Precast Box Culverts
- Deep Bury Precast Box Culverts



Lantz, N.S.  
Tel: (902) 883-2201  
Fax: (902) 883-1273

Moncton, N.B.  
Tel: (506) 857-8661  
Fax: (506) 859-7390

e-mail: [sales@shawpipe.com](mailto:sales@shawpipe.com)