Notes:
1. Concrete mix should be designed to yield 28 day compressive strength of 4000 psi.
2. The wall will be built with contraction and expansion joints (see Joint Details page 3). No section of wall will be over 30 foot long between contraction joints and no more than 90' between expansion joints.
3. A construction joint must be placed anywhere the concrete placement is not continuous. See Construction Joint Notes on page 6.
4. All steel must have a minimum clear concrete cover over reinforcement of 2 inch except when concrete is on or against earth, then minimum clear cover is 3 inch.
5. All rebars must be grade 60. Lap splice of rebar must have a minimum lapped length of: Mark 4 & 5 = 35"; all other #4 bars = 25"; #5 bars = 31".
6. No earth backfill will be placed around the outside of these walls.
7. Bin length is 13'-9" maximum and bin width is 15'-6" maximum.
8. Bedding under concrete must be IDOT Grad. No. FA 1, 2, 4, or CA 7, 8, 11, 13, 14, 15, 16.
9. Compact the bedding material with the track or tire of the equipment used for construction to ensure a smooth uniform foundation without depressions or irregularities.
10. Place an expansion joint filler between all wood/concrete interfaces and all concrete slab interfaces. The joint filler must conform to ASTM Specification D 994, D 1751 or D 1752 Type I, Type II, or Type III. This includes joints between concrete heavy use area and bins.

---

BIN COMPOSER

Bench Mark EL
Description:

---

CONCRETE COMPOST BIN WITH POLE BARN ROOF—SINGLE ROW

---

United States Department of Agriculture
Natural Resources Conservation Service

IL-ENG-170

Sheet 1 of 6

1/8" = 1'-0"
NOTES:
1. All posts and cross braces must be pressure treated with a preservative approved by the AWPA for ground contact.
2. Attach purlins to rafters with 2 16d nails at each rafter. Purlins shall overlap at trusses. See page 5.
3. Splice girders only at posts.
4. All bolts must be 5/8 inch diameter galvanized, with galvanized washers at both ends.
5. All 16d nails must be galvanized and ring Shank.
7. Nuts must be kept snug throughout the life of the structure or serious damage could result.
8. Install gutters where needed to control erosion or exclude clean water from contamination. Use drawing IL-ENG-124.
   - [ ] Cutter on rear side of roof.
   - [ ] Cutter on front side of roof.
9. Sheath gable ends of roof structure with pressure treated plywood or other suitable material.
10. See additional truss bracing on page 5.
11. Set post spacing so that each post will connect to a truss.
12. Connect truss on each end of compost facility to outside face of posts.
13. Extend purlins to full extent of roof overhang on each end of roof.

See Truss Manufacturer's Certification Sheet.
Trusses shall be designed and manufactured by a certified truss manufacturer.
Trusses are designed for 30 pounds per square foot total load.

Sixty Six (66) nails or screws per 100 square feet shall be used to secure the roofing.
TRUSS TO POST ANCHORAGE

Top Chord

Bottom Chord

2" x 4" Longitudinal Runners
On Top Of Bottom Chords.
Use 3 Equally Spaced The Entire
Length Of Structure

2" x 4" Diagonal Cross Bracing Attached
Underneath The Top Chord From Center Of
One Truss To Side Of Truss 2 Trusses Away.
Use Two Diagonal Cross Braces In Opposing
Directions At Each End Of Roof And For
Every 40 Feet Of Building Length

Attach All Cross Bracing And Runners With
2 Each 16d Ring Shank Nails At Each Truss

TRUSS BRACING DETAILS

TRUSS TO GIRDER ANCHORAGE

5/8" x 10" Galvanized Bolt
With Washer And Nut

Girder

2" x 6" x 20" Truss Connector
On Both Sides Of Truss

20d Nails, 6 On
Each Side

3 Each 20d Galvanized Ring Shank
Nails Driven Into The Post Into
The Truss Support At Bottom

2" x 6" x 42" Truss Support With 8 Each
20d Galvanized Ring Shank Nail

2 x 6" x 6" Knee
Brace With 6 Each
16d Galvanized
Ring Shank Nails
Driven Into The
Truss

5/8" x 10" Galvanized Bolt
With Washers And Nut

2" x 6" x 6" Girder Support
With 4 Each 20d Galvanized
Ring Shank Nails Driven Into
Each Girder Support On Both
Sides Of The Post

For Purlin Splice, Use
2 16d Ring Shank Nails
In Each Board

Typical Purlin Attachment 2 16d
Ring Shank Nails

2" x 4" On 24" Spacing

PURLINS SPACED @ 24" CENTERS

Note:
The truss support, girder support and knee
brace shall be pressure treated. See Note 1
page 4.
### Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posts</td>
<td>6” x 6” x 15’-0”</td>
</tr>
<tr>
<td>Concrete (4,000 PSI)</td>
<td></td>
</tr>
<tr>
<td>Walls &amp; Footing, Cu.Yd.</td>
<td></td>
</tr>
<tr>
<td>Slab, Cu.Yd.</td>
<td></td>
</tr>
<tr>
<td>Total Concrete, Cu.Yd. (Excludes Concrete Around Posts)</td>
<td></td>
</tr>
<tr>
<td>Floor Reinforcing Options 1 &amp; 2</td>
<td></td>
</tr>
<tr>
<td>1. Welded Wire Fabric 6” x 6” x 8/8 Gauge, Sq.Ft.</td>
<td>Or</td>
</tr>
<tr>
<td>2. #4 Bar, Lin.Ft.</td>
<td></td>
</tr>
<tr>
<td>Slab And Footing</td>
<td>Bedding, Tons</td>
</tr>
<tr>
<td>Expansion Filler And Isolation Joints</td>
<td>Expansion Board, Lin.Ft.</td>
</tr>
<tr>
<td>Water Stop</td>
<td>Lin.Ft.</td>
</tr>
<tr>
<td>Steel Dowel Bars</td>
<td>3/4” Dia x 14” Long, Each</td>
</tr>
<tr>
<td>Trusses</td>
<td></td>
</tr>
<tr>
<td>Truss</td>
<td></td>
</tr>
<tr>
<td>Truss Bracing 2” x 4”, Lin.Ft.</td>
<td></td>
</tr>
<tr>
<td>Knee Brace 2” x 6” x 6’, Each</td>
<td></td>
</tr>
<tr>
<td>Truss Support 2” x 6” x 42”, Each</td>
<td></td>
</tr>
<tr>
<td>Truss Connector 2” x 6” x 20”, Each</td>
<td></td>
</tr>
<tr>
<td>Girders</td>
<td></td>
</tr>
<tr>
<td>Girders 2” x 12”, Lin.Ft.</td>
<td></td>
</tr>
<tr>
<td>Girders Support 2” x 6” x 12”, Each</td>
<td></td>
</tr>
<tr>
<td>Roofing Material</td>
<td></td>
</tr>
<tr>
<td>Roof Cap, Lin.Ft.</td>
<td></td>
</tr>
<tr>
<td>Gable End Sheathing, Sq.Ft.</td>
<td></td>
</tr>
<tr>
<td>Purlin 2”x4”, Lin.Ft.</td>
<td></td>
</tr>
<tr>
<td>Gutters</td>
<td></td>
</tr>
<tr>
<td>Gutter 6”, Lin.Ft.</td>
<td></td>
</tr>
<tr>
<td>Downspout 3” x 4”, Lin.Ft.</td>
<td></td>
</tr>
<tr>
<td>Pressure Treated Plate 2” x 6”, Lin.Ft.</td>
<td></td>
</tr>
</tbody>
</table>

*Quantities Do Not Include Extra Material For Overlap

---

### Construction Joint Notes

1. A construction joint must be prepared when the concrete pour is not continuous, typically between the floor and wall.
2. Prepare all surfaces that will be in contact with new concrete as per note 5.
3. Let concrete cure at least 12 hours prior to steel tying and form construction for the next pour.
4. New concrete must not be placed until the hardened concrete has cured at least 12 hours.
5. Construction joints must be prepared using one of the following two methods:
   - **Method 1 – Water-Air or Sandblasting.** Clean the joint surface of all unsatisfactory concrete, laitance, coating, stains, and debris by sandblasting or high-pressure air-water cutting, or both. Sandblasting can be used after the concrete has gained sufficient strength to resist excessive cutting, and high-pressure air-water cutting can be used as soon as the concrete has hardened sufficiently to prevent the jet from displacing the coarse aggregates. The surface of the concrete in place must be cut to expose clean, sound aggregate, but not so deep as to undercut the edges of larger particles of the aggregate. Cut the surface to at least 1/4” depth. Thoroughly wash the surface to remove all material after cutting.
   - **Method 2 – Mechanical.** Clean the joint surface of all unsatisfactory concrete, laitance, coatings, stains, and debris by washing and scrubbing with a wire brush, wire broom, or other means approved by the engineer to expose coarse aggregate without displacing it. The surface must be roughened to at least 1/4” depth.
6. All construction joints must be wetted and standing water removed immediately before new concrete is placed.
7. New concrete must be sufficiently vibrated to ensure good contact into the prepared joint.
8. Keyways or steel plates cannot be substituted for the construction joint methods above.

---

**Example Wall Joint Placement Sequence**

```
+-------------------+-------------------+-------------------+
|                30'  |                30'  |                30'  |
| Expansion Joint   | Construction Joint| Construction Joint|
|                   |                   |                   |
```

---

**United States Department of Agriculture**

**Natural Resources**

**Conservation Service**