

## 20' X 40' PORTABLE CATTLE SHADE

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### Construction Notes and Comments

- Runners and posts are constructed from 2½-inch structural steel pipe.
- Post/runner angle braces are 2" x 2" x ¼" structural steel angle.
- End braces (between posts) are 1½-inch structural steel pipe.
- Other structural members are constructed of 1¼-inch structural steel pipe.
- Members ⑤ and ⑥ are 1¼-inch structural steel pipe braces that extend from a point on the posts approximately 6-foot above ground level to the outside corners of the steel top that supports the shade cloth.
- Cover with shade cloth.
- Cap steel pipe ends that would allow water to accumulate in the tubing. The runner ends would be an example.
- The recommended capacity of the shade is 16 – 24 head.
- Width of the shade is 9 feet up to a 6-foot vertical height to facilitate movement of the shade through gates.
- Structural steel tubing could be substituted for the steel pipe in the shade construction.

Note: Prototype shade constructed by the Martin Prairie Dairy, Humansville, MO. Shade sketched and slightly modified by J.A. Hoehne and J.M. Zulovich, Extension Agricultural Engineers, Commercial Agriculture Program, University of Missouri, Columbia, MO. Assembly drawings completed by J.C. Twenter.

## BILL OF MATERIALS

### 20' x 40' PORTABLE CATTLE SHADE

#### 1-1/4" Structural Steel Pipe Stock

##### A. Roof Structure

- ① 4 – 40' sections
- ② 5 – 20' sections

##### B. Angled Supports

- ③ 8 – 10' sections
- ④ 8 – 5' sections

##### C. Support Members

- ⑤ 4 – 11'8" sections \*
- \*(Note: Cut from 12' sections)
- ⑥ 4 – 11'9" sections \*
- \*(Note: Cut from 12' sections)

#### 1-1/2" Structural Steel Pipe Stock

##### A. Horizontal End Support Members

- ⑦ 6 – 8' 9½" sections\*
- \*(Note: cut from 10' sections)

##### B. Diagonal End Support Members

- ⑧ 4 – 10' sections

#### 2" x 2" x ¼" Angle Stock

##### A. Post/Runner Angle Braces

- ⑨ 4 – 2' sections

#### 2-1/2" Structural Steel Pipe Stock

##### A. Supporting Post

- 4 – 9' 2-¼" sections\*
- \*(Note: cut from 10' sections)

##### B. Runners

- 2 – 22' sections\*

\* Note: 10-¾" sections on each end of runner bent at 30° to provide for smooth transport of shade.

#### **TOTAL PIPE REQ'D (LINEAL FT)**

Stock Des.	Length (Lineal ft.)	Total (Lineal ft.)
<b>1-1/4"</b>		
①	160	
②	100	
③	80	
④	40	
⑤	48	
⑥	48	
		<b>476</b>
<b>1-1/2"</b>		
⑦	54	
⑧	40	
		<b>94</b>
<b>2" x 2" x ¼"</b>		
⑨	8	
		<b>8</b>
<b>2-1/2"</b>		
Posts	40	
Runners	44	
		<b>84</b>

Note: If you print drawing on 11"x17" paper, the drawing will be to scale.

