



# HORIZONTAL CLIMBING WALLS

REFERENCE FOR DESIGNING AND CONSTRUCTING LOW, HORIZONTAL CLIMBING WALLS. CLIMBING WALL FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CLIMBING WALL ASSOCIATION'S STANDARDS. [www.climbingwallindustry.com](http://www.climbingwallindustry.com)

**Horizontal Climbing or Bouldering Walls:** Bouldering is a common way to learn, practice and perfect climbing techniques. While its name comes from the practice of climbers working out moves on actual boulders, it can also be practiced on freestanding or indoor climbing surfaces designed for bouldering. These structures typically feature horizontal, rather than vertical, climbing routes. Bouldering can be practiced without helmets and belays, and it only requires a climber, people to “spot” him and “crash pads” or other suitable safety surface on the ground below the climbing surface. Boy Scout standards state that a climber should not climb higher than their shoulder height.

*MC/R6 Bouldering participants’ feet above ground must never be higher than their shoulder height, and participants must not be allowed to climb over the top of the bouldering facility.*

This means that for some Cub Scouts their feet should never get more than about three feet off the ground and Boy Scouts can expect to safely climb with their feet about five feet above the ground. With these height limits in mind, most climbing walls will be eight to twelve feet tall. Climbers should be using holds mounted on the wall and not the edges of the walls. Sometimes walls are built taller than needed to prevent this from happening, but no holds are mounted on these upper surfaces. When Scouts are climbing on walls higher than shoulder-height, trained leadership and safety equipment such as helmets, harnesses and belays are required. For program guidance related to climbing, rappelling and bouldering, refer to “Topping Out, A BSA Climbing/Rappelling Manual” #32007.

**Construction Standards:** Bouldering walls can be built as free-standing exterior walls or integrated into the structure of buildings. Portions of the current “COPE and Climbing / Rappelling National Standards” apply to horizontal climbing walls or bouldering walls built in either condition.

*M4 Constructed facilities must meet applicable Association for Challenge Course Technology (ACCT) installation standards or Climbing Wall Association (CWA) design and engineering standards as well as any state and local laws. All constructed facilities are inspected by a qualified professional challenge course builder\* (or structural engineer for constructed climbing facilities to verify compliance with design standards) before initial use; after any significant stress, such as lightning, high winds, falling objects, etc.; and at least once every two years. Closed elements must be inspected and approved by the council COPE/climbing committee and must conform to ACCT standards (or CWA standards for towers and climbing walls) before being reopened for use. A copy of the current ACCT standards is available at the program site. Bouldering walls may be inspected by the local council. Written documentation of inspections is available for review.*



## HORIZONTAL CLIMBING WALLS

BSA DESIGN & DEVELOPMENT

MARCH 2011

DESIGN  
360  
GUIDELINE

These standards are intended to be applied to vertical climbing walls. The Climbing Wall Association considers low horizontal climbing walls, as described in this document, as “play ground equipment.” With this in mind the most important portion of the standard for low horizontal walls will be the inspections:

- All constructed facilities must be inspected by structural engineer before initial use, and written records must be kept.
- All constructed facilities must be inspected (by the council) once every two years, and written records kept. Although it is not specified, it would be prudent to use a structural engineer for this inspection.

**Wall Systems:** There are a number of wall systems that can be used to mount hand holds for a Bouldering or Climbing Wall. Realistic “synthetic rock systems” can cost as much as \$100 per square foot. Wall systems made from treated plywood can cost \$75 per square foot installed. A fiberglass system can cost approximately \$55 per square foot installed. (This is provided by PM Climbing Systems, Saint Paul, MN.) All costs are for complete installed systems without holds or other equipment. Holds are fairly inexpensive, costing \$20 to \$80 for 10

**Structural Support for a Wall System:** Wall systems constructed from plywood and framing should be designed to support multiple climbers by a professional architect or engineer. If more commercial panels such as those that simulate stone are to be used, contact the manufacturer and get their recommendations and specifications for mounting their systems.

**Protective Surfacing:** The U.S. Consumer Product Safety Commission’s Publication #324 “Tips for Public Playground Safety” provides useful information on protective surfaces for playground equipment where falls could occur. Six feet in all directions below the climbing wall should be provided with an appropriate protective surface. This publication lists the following depths of various materials that can provide this protection.

Fall Height In Feet From Which A Life-Threatening Head Injury Would Not Be Expected			
Type of Material	6" Depth	9" Depth	12" Depth
Double Shredded Bark Mulch	6	10	11
Wood Chips	6	7	12
Fine Sand	5	5	9
Fine Gravel	6	7	10

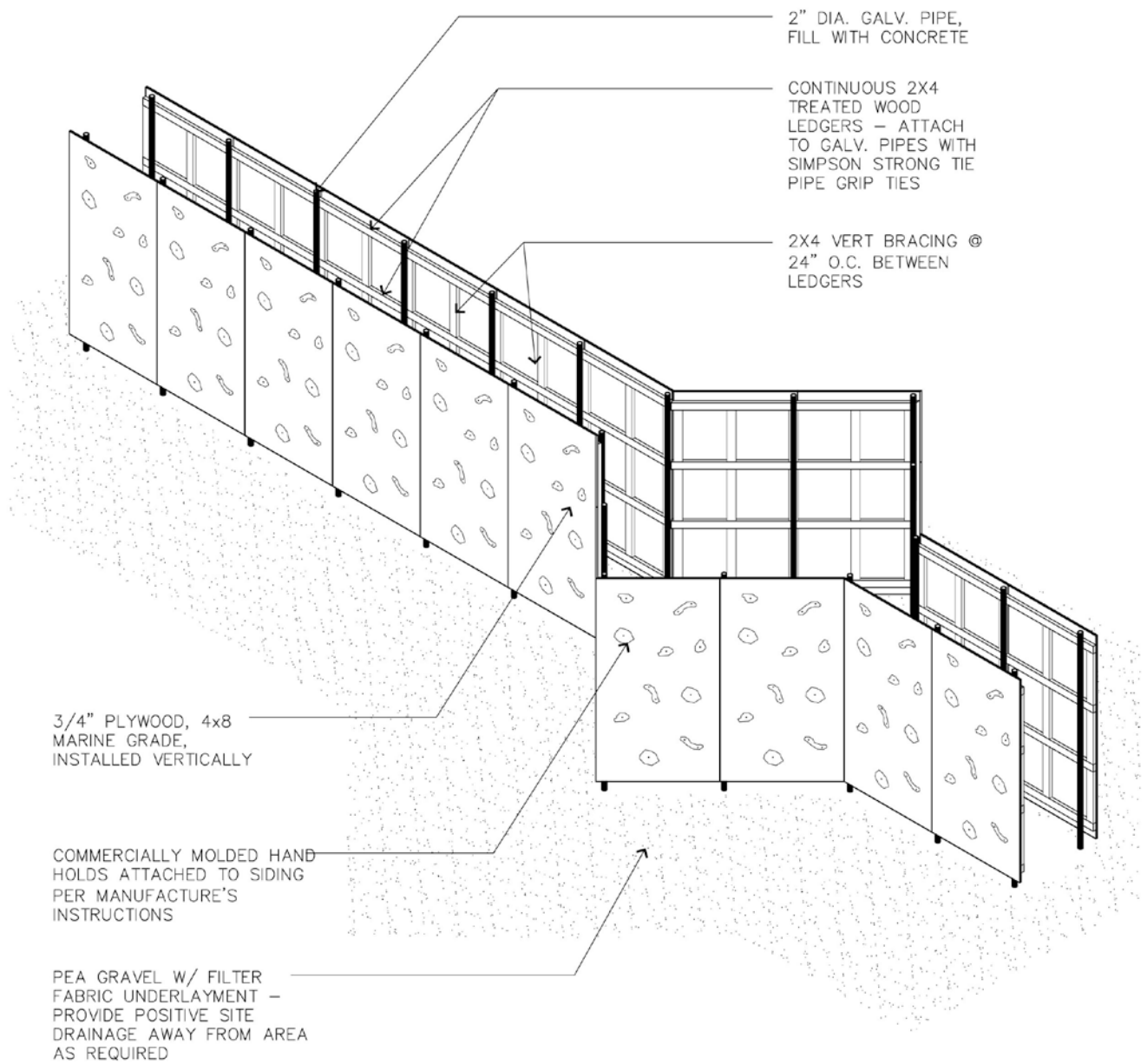
For outdoor climbing walls, the most commonly used material is 12 inches of fine gravel (pea gravel) because it will not deteriorate, wash away or retain moisture the way mulch, wood chips, and sand do in certain conditions.

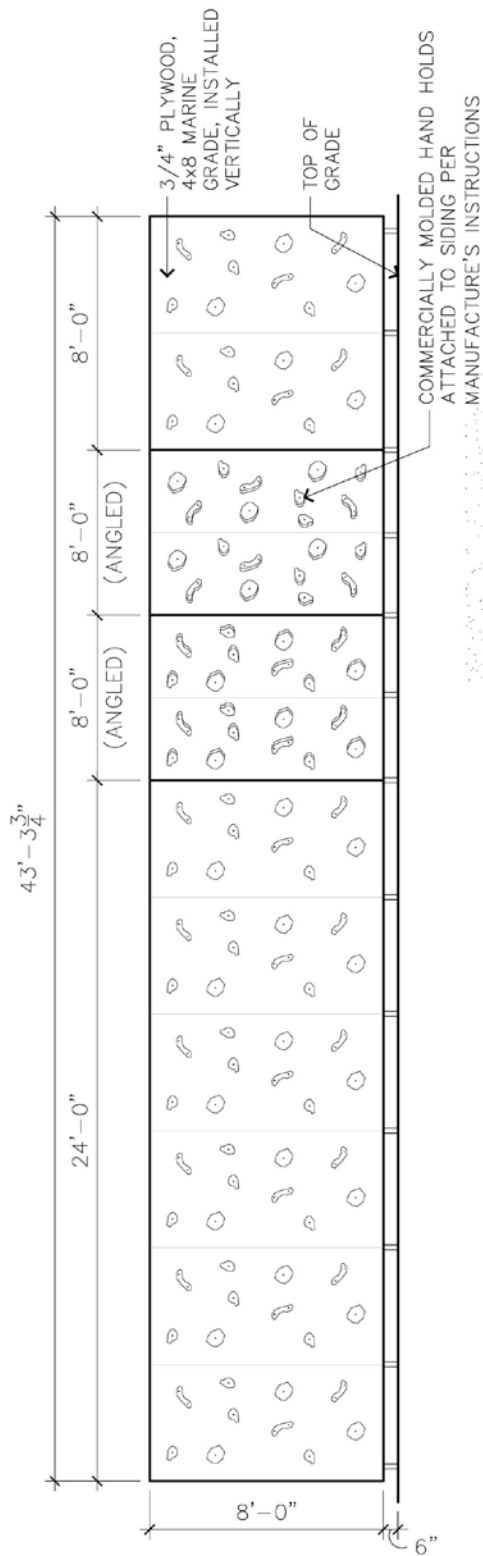
For interior bouldering walls, there are pads and other products designed especially for this application. Typically foam and rubber mats will be similar in thickness to the loose materials. There are some shredded rubber products designed for indoor and outdoor use as well.

**Roofs and Shading:** Roof structures can be added to exterior walls to shade structures and keep them from getting too hot to climb on and to extend the life of holds and panels by protecting them from deterioration that may be caused by weather and the sun's UV-rays. Care should be taken to make sure that the roof and its supports are not used as holds for the climbers and that any columns or other roof supports do not pose a hazard to falling climbers.

#### **References:**

- "Project COPE and Climbing/Rappelling National Standards" Boy Scouts of America
- "Topping Out, A BSA Climbing/Rappelling Manual" Boy Scouts of America #32007

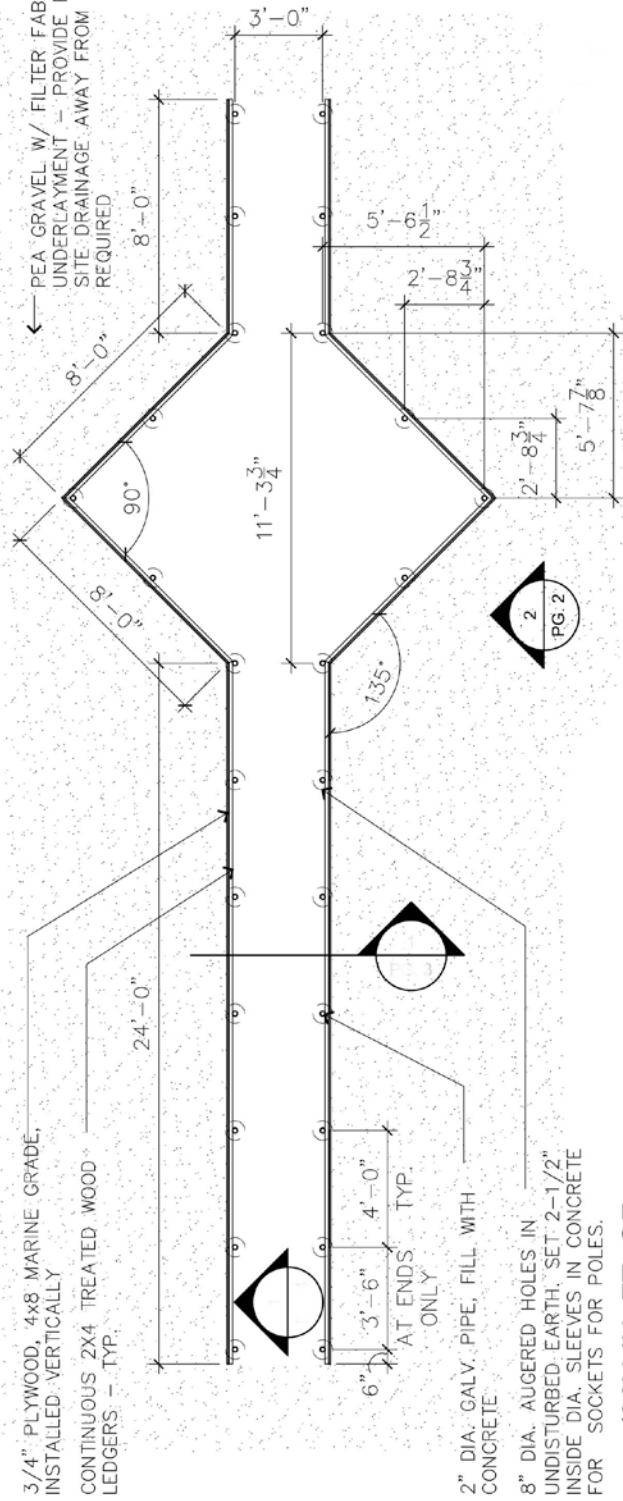




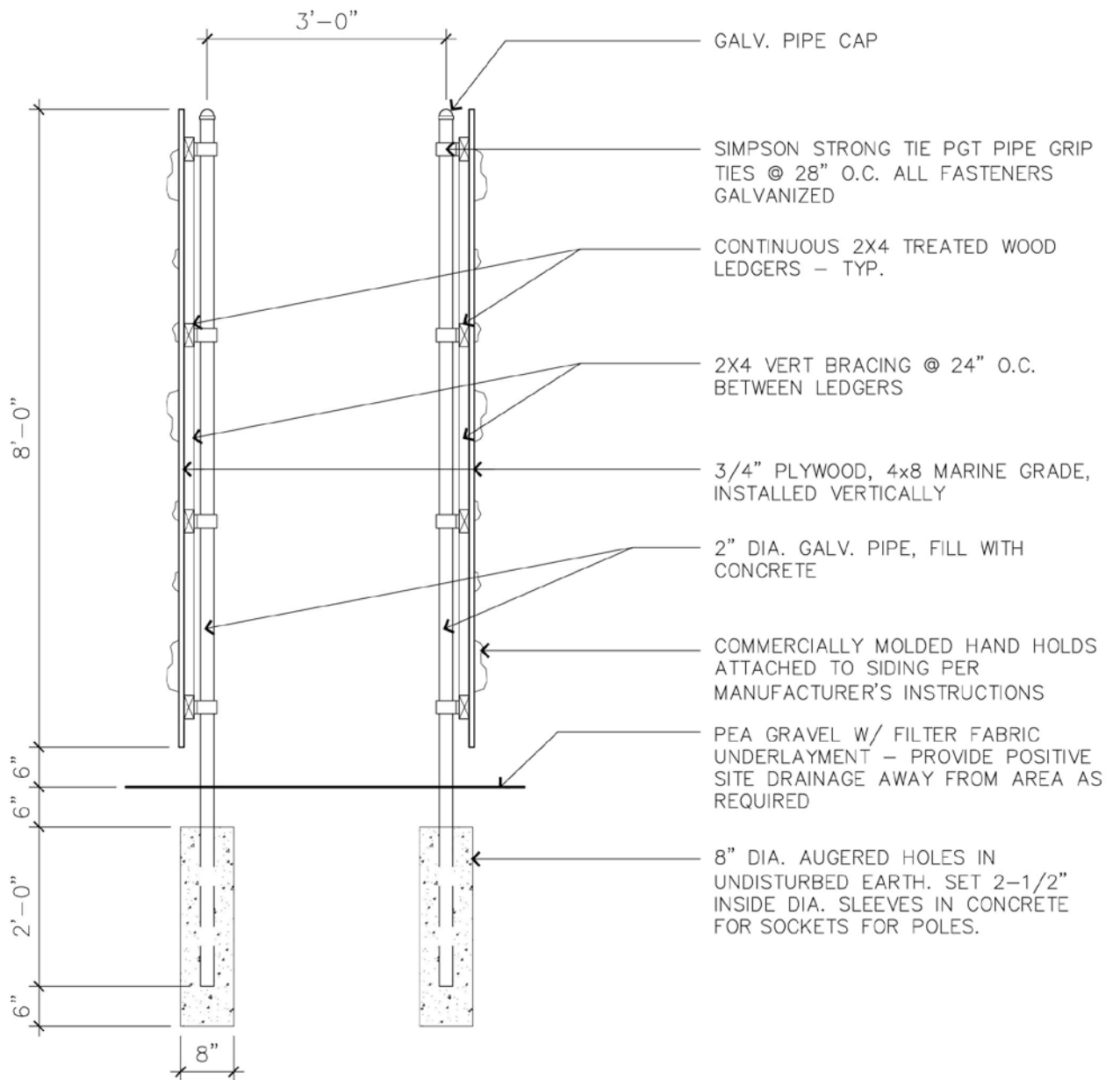
3/4" PLYWOOD, 4x8 MARINE GRADE, INSTALLED VERTICALLY

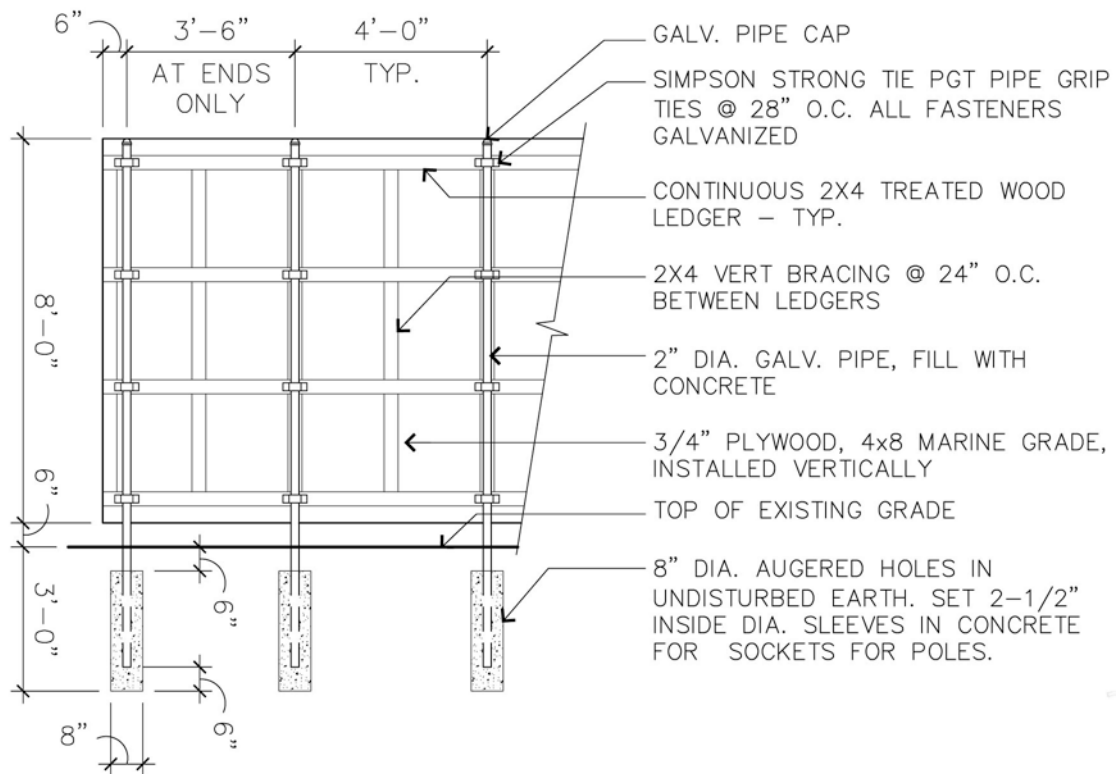
CONTINUOUS 2x4 TREATED WOOD LEDGERS - TYP.

PEA GRAVEL W/ FILTER FABRIC UNDERLAYMENT - PROVIDE POSITIVE SITE DRAINAGE AWAY FROM AREA AS REQUIRED

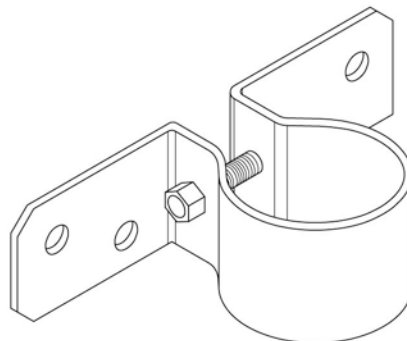


(96' LIN. FT. OF ACTIVITY SURFACE)





RIP



(SIMPSON STRONG TIE CO.)

NOTE:

- USE THE PGT2 FOR 2" PIPE (2-3/8" OUTSIDE DIA.)
- MATERIAL: 12 GAUGE
- FINISH: GALVANIZED
- USE 4 PGTS PER PIPE, LINE UP TO STRINGLINE.
- FASTEN WITH 1/4" MACHINE BOLTS W/ 1/4" NUT AND 2 WASHERS, WITH NUT AND ONE WASHER ON BRACKET SIDE.
- BRACKET ATTACHES TO POST WITH A 1/4" DIA. SCREW.

DE,

