SOLIDLOCK®

TIGHTLOCK™

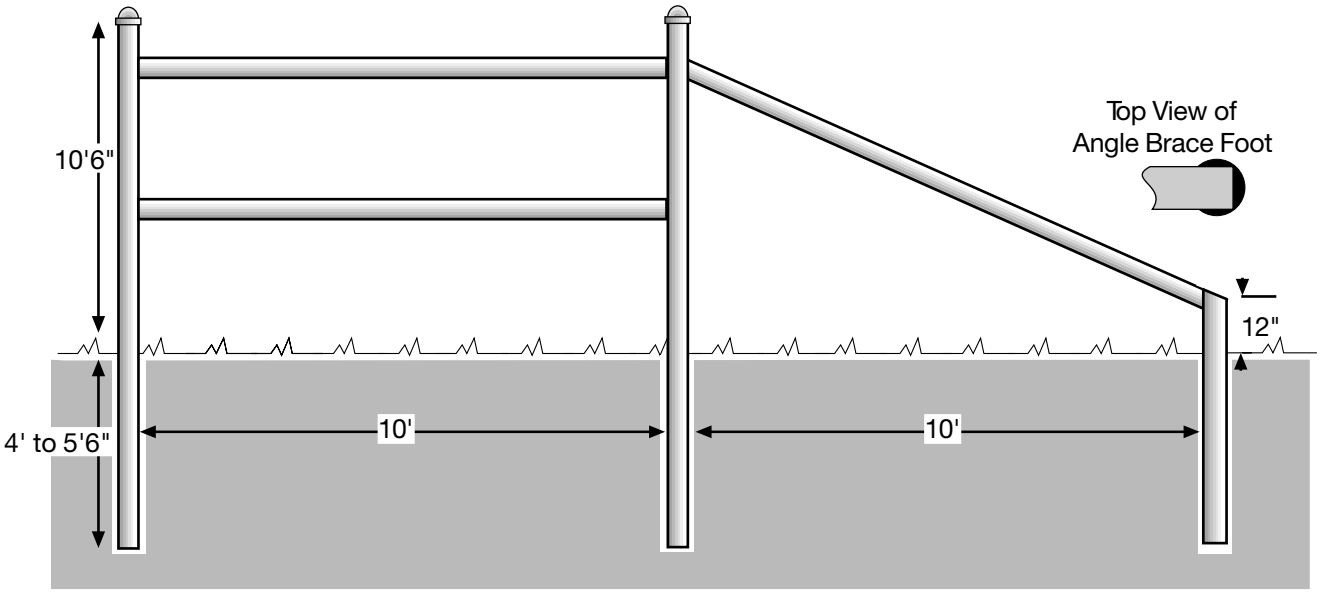
# Fixed-Knot Brace Specifications and Installation Guide

BEKAERT

1-800-241-4126

Ext. 2272

# PIPE BRACE ASSEMBLY - 10' FIXED-KNOT FENCE




## COMPONENTS

| | |
|---|---|
| Brace posts ..... | 16' x 2 7/8" Structural Tubing |
| Cross Members ..... | 11' x 2 3/8" Structural Tubing |
| Angle Brace ..... | 13' x 2 3/8" Structural Tubing |
| Angle Brace Foot ..... | 6' x 2 7/8" Structural Tubing |

OSPHO Metal Primer
Oil Base Porch Enamel
Rust Rustler ™

**Note:** 3½" pipe should be used where gates are being hung.

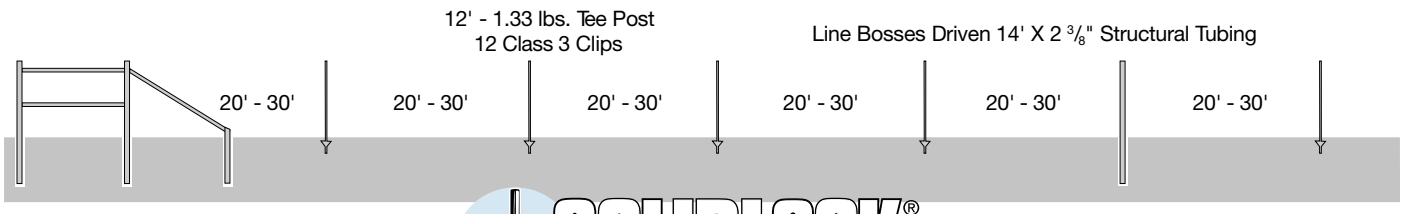
## INSTALLATION

**Note:** Pipe Braces set in mixed soils are set 5'6" deep in concrete, with the minimum diameter of the hole being 12". Pipe set in solid rock are set 4' deep in concrete with a hole diameter of 4" to 9". Pipe may also be driven in mixed soils to a minimum depth of 6'.

1. Treat pipe with OSPHO before setting.
2. Set End Post and pull Guide Wire.
3. Set Brace Post and Angle Foot at 10' and 10', respectfully.
4. Measure inside brace width, then cut and saddle two cross members. Position top cross member between 2nd and 3rd wires of fence fabric, and the middle cross member half the distance between the ground and top cross member. Try to set the middle cross member so it will fall between horizontal wires of the fabric. Weld solid.
5. Notch angle brace foot so 2 3/8" angle brace can lay inside foot. Cut and saddle angle brace to meet the top cross member of the brace. Weld solid.
6. Cap all pipe with cement or pressed steel cap. If pipe is left open, water will rust the pipe off at ground level.
7. Brush all welds. Treat with OSPHO and paint with enamel, or 2 coats of Rust Rustler ™ can be used instead.

**Caution:** Allow 2 days for cement to cure before pulling on brace.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of 2 3/8" pipe and Tee Post is used the ratio of Tee Posts to line bosses should not exceed a 4 to 1 ratio. 1 7/8" to 2 3/8" pipe can be used for all line posts. Use 30' post spacing as a guideline - in rough terrain closer post spacing will be required. A rigid post should be placed on top of all hips and in the bottom of all dips. Tee Post weight should not be less than 1.33 lbs. per foot.

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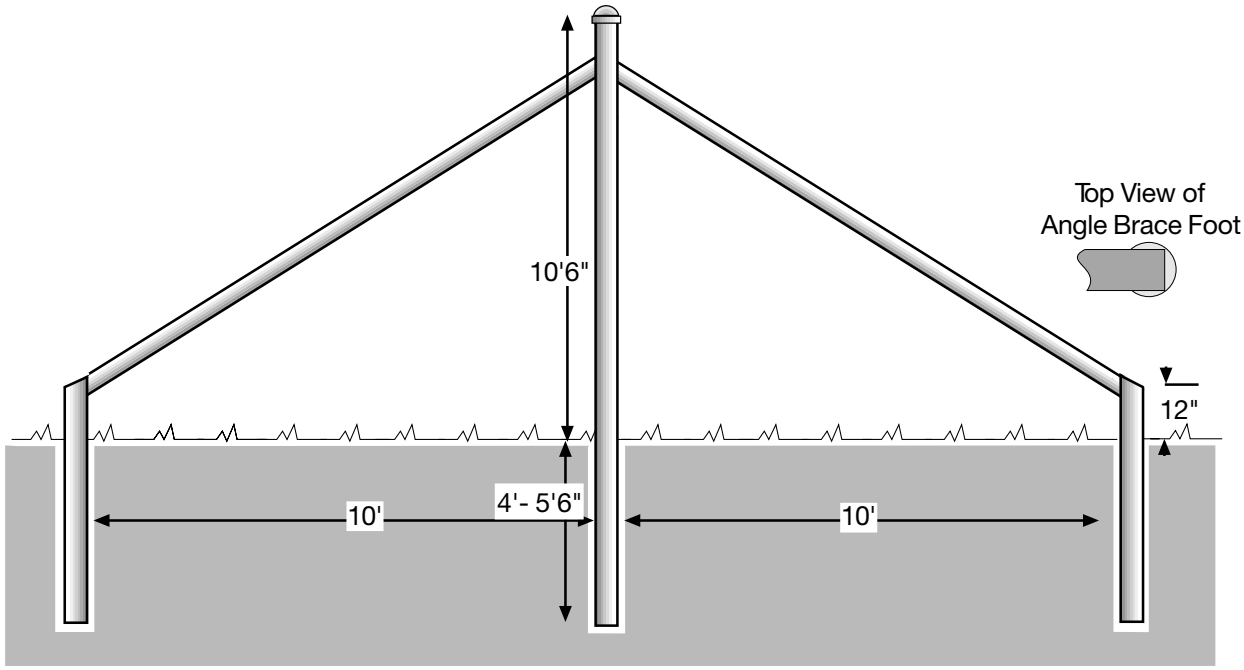
# PIPE LINE BRACE ASSEMBLY: 10' FIXED-KNOT FENCE




## COMPONENTS

Brace posts ..... 16' x 2 7/8" Structural Tubin
Angle Brace ..... 13' x 2 3/8"Structural Tubing
Angle Brace Foot ..... 6' x 2 7/8"Structural Tubing

OSPHO Metal Primer
Oil Base Porch Enamel
Rust Rustler tm

## INSTALLATION

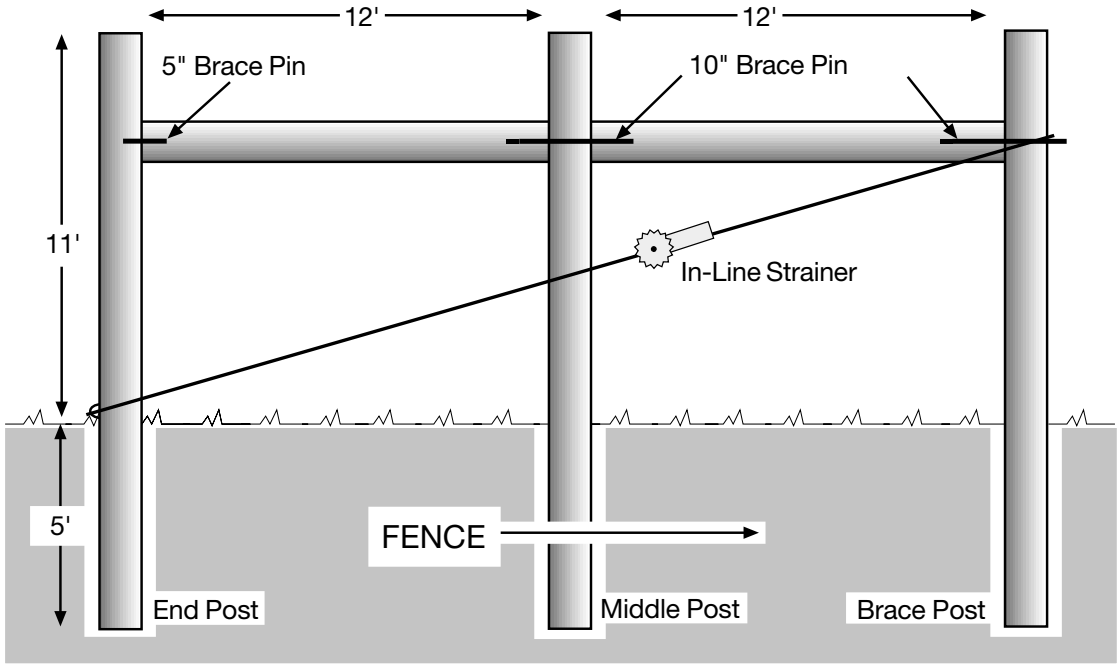
**Note:** Pipe Braces set in mixed soils are set 5'6" deep in concrete, with the minimum diameter of the hole being 12". Pipe set in solid rock are set up to 4' deep in concrete with a hole diameter of 4" to 9". Pipe may also be driven in mixed soils to a depth of 5'.

1. Treat pipe with OSPHO before setting.
2. Set Mid Post and pull Guide Wire.
3. Set Angle Feet 10' from Brace Post on either side and in line with fence line.
4. Notch both Angle Feet on Brace Post side to accept Angle Brace.
5. Cut and saddle Angle Brace so it will meet the Brace Post 9' from ground. Weld solid, top and bottom.
6. Cap all pipe with cement or pressed steel caps. If pipe is left open, water will rust the pipe off at ground level.
7. Brush all welds. Treat with OSPHO and paint with enamel, or 2 coats of Rust Rustler tm can be used instead.

**Caution:** Allow 2 days for cement to cure before pulling on brace.

Line Brace Assemblies should be set no more than 1320' apart.

# BRACE ASSEMBLY: 10' FIXED-KNOT FENCE




## COMPONENTS

Brace Posts ..... 16' x 7" .40 CCA Treated Pine
Cross Member ..... 12' x 3" Schedule 40 Pipe
or ..... 16' x 3" Schedule 40 Pipe
Brace Pins ..... ½" x 4" Galvanized Pin
and ..... ½" x 10" Galvanized Pin

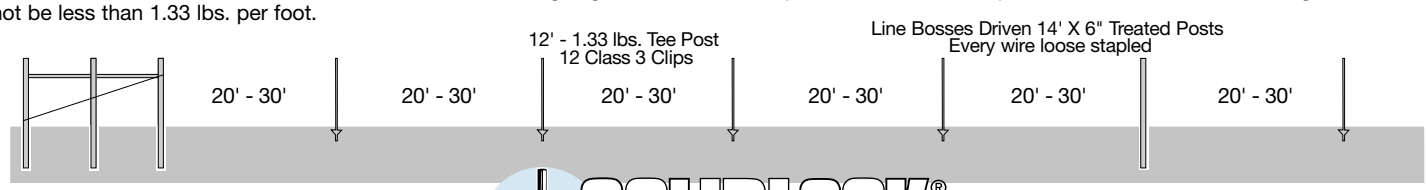
Brace Wire ..... Double Wrap 9 Ga. Cl. 3 Low Tensile Wire
or ..... Double Wrap 12½ Ga. Cl. 3 High Tensile Wire
or ..... Single Wrap $^{5}/_{16}$" Cable
Ratchet Type In-Line Wire Strainer
Staples ..... 1¾" Cl. 3 Barbed Staples

## INSTALLATION

1. Drive or auger and tamp the End Post.
2. Pull the Guide Wire.
3. Set the Brace Posts, using the cross member for measurement and aligning to the Guide Wire.
4. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 3nd and 4th wire from the top. Using this measurement, mark the inside of the brace posts.
5. Drill a $^{1}/_{2}$" by 2" hole in the End Post and drill a $^{1}/_{2}$" hole through the Middle Post and the Brace Post. Set the 4" Brace Pin in the End Post and start the 10" pin in the Brace Post.
6. Pilot drill the ends of the cross member. Set one end of the cross member on the 4" pin, then lift the other end to align with the 10" pin. Drive the 10" pin into the Brace Post, leaving 2" exposed for the installation of the second cross member. Drill a 1/2" pilot hole in one end of the second cross member. Place this end on the brace pin in the Middle Post. Lift the other end so it is in line with the first cross member, and drive the 10" pin into the Top Rail, leaving 1" exposed for the installation of the Brace Wire.
7. Drive a staple partially in approximately 3 to 4 inches above ground level on the side of the end post opposite the cross member.
8. Guide the Brace Wire through the staple, behind the End Post, in front of the Middle Post, behind the Brace Post, over the 10' pin, back down behind the Middle Post, across the front of the End Post and through the staple. Repeat a second time, following the criss-cross pattern. This will provide a double wrap, double figure eight, configuration of the brace wire.
9. Install a ratchet type wire strainer on the Brace Wire. Install the ratchet on the opposite side of the brace that the wire fabric will be on. Tighten the Brace Wire. until the Brace Post moves approximately $^{1}/_{4}$" away from the soil.

**NOTE:**
Braces must be installed in fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred). Never cut into treated posts, as you will expose untreated wood to the elements.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of Tee Posts and wood line bosses is used, the ratio of tee posts to line bosses should not exceed 4 to 1. The line bosses should be 5" to 6" diameter. If the fence is going to be all wood line posts, 4" to 5" treated posts can be used. Tee Post weight should not be less than 1.33 lbs. per foot.

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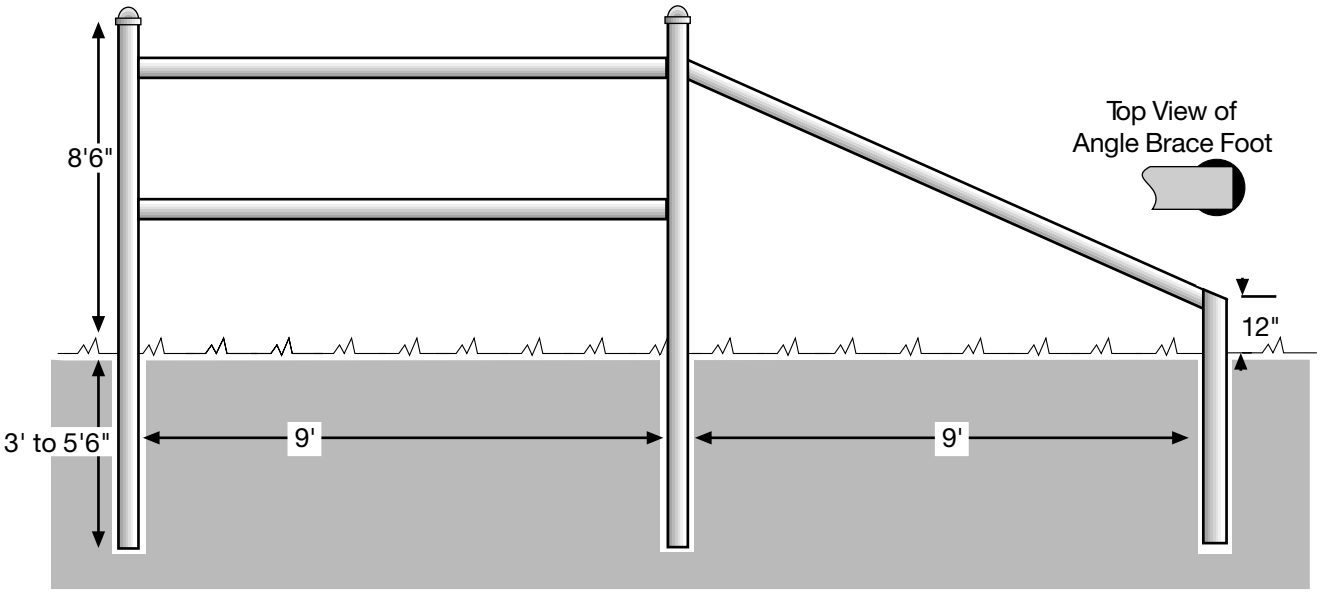
# PIPE BRACE ASSEMBLY - 8' FIXED-KNOT FENCE




## COMPONENTS

| | |
|---|---|
| Brace posts ..... | 14' x 2 7/8" Structural Tubing |
| Cross Members ..... | 10' x 2 3/8" Structural Tubing |
| Angle Brace ..... | 12' x 2 3/8" Structural Tubing |
| Angle Brace Foot ..... | 6' x 2 7/8" Structural Tubing |

OSPHO Metal Primer
Oil Base Porch Enamel
Rust Rustler ™

**Note:** 3 1/2" pipe should be used where gates are being hung.

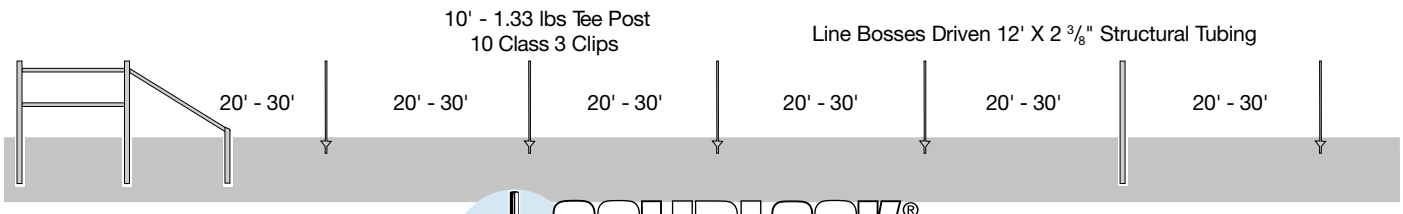
## INSTALLATION

**Note:** Pipe Braces set in mixed soils are set 5'6" deep in concrete, with the minimum diameter of the hole being 12". Pipe set in solid rock are set 3' deep in concrete with a hole diameter of 4" to 9". Pipe may also be driven in mixed soils to a minimum depth of 6'.

1. Treat pipe with OSPHO before setting.
2. Set End Post and pull Guide Wire.
3. Set Brace Post and Angle Foot at 9' and 9', respectfully.
4. Measure inside brace width, then cut and saddle two cross members. Position top cross member between 2nd and 3rd wires of fence fabric, and the middle cross member half the distance between the ground and top cross member. Try to set the middle cross member so it will fall between horizontal wires of the fabric. Weld solid.
5. Notch angle brace foot so 2 3/8" angle brace can lay inside foot. Cut and saddle angle brace to meet the top cross member of the brace. Weld solid.
6. Cap all pipe with cement or pressed steel cap. If pipe is left open, water will rust the pipe off at ground level.
7. Brush all welds. Treat with OSPHO and paint with enamel, or 2 coats of Rust Rustler™ can be used instead.

**Caution:** Allow 2 days for cement to cure before pulling on brace.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of 2 3/8" pipe and Tee Post is used the ratio of Tee Posts to line bosses should not exceed a 4 to 1 ratio. 1 7/8" to 2 3/8" pipe can be used for all line posts. Use 30' post spacing as a guideline, in rough terrain closer post spacing will be required. A rigid post should be placed on top of all hips and in the bottom of all dips. Tee Post weight should not be less than 1.33 lbs. per foot.

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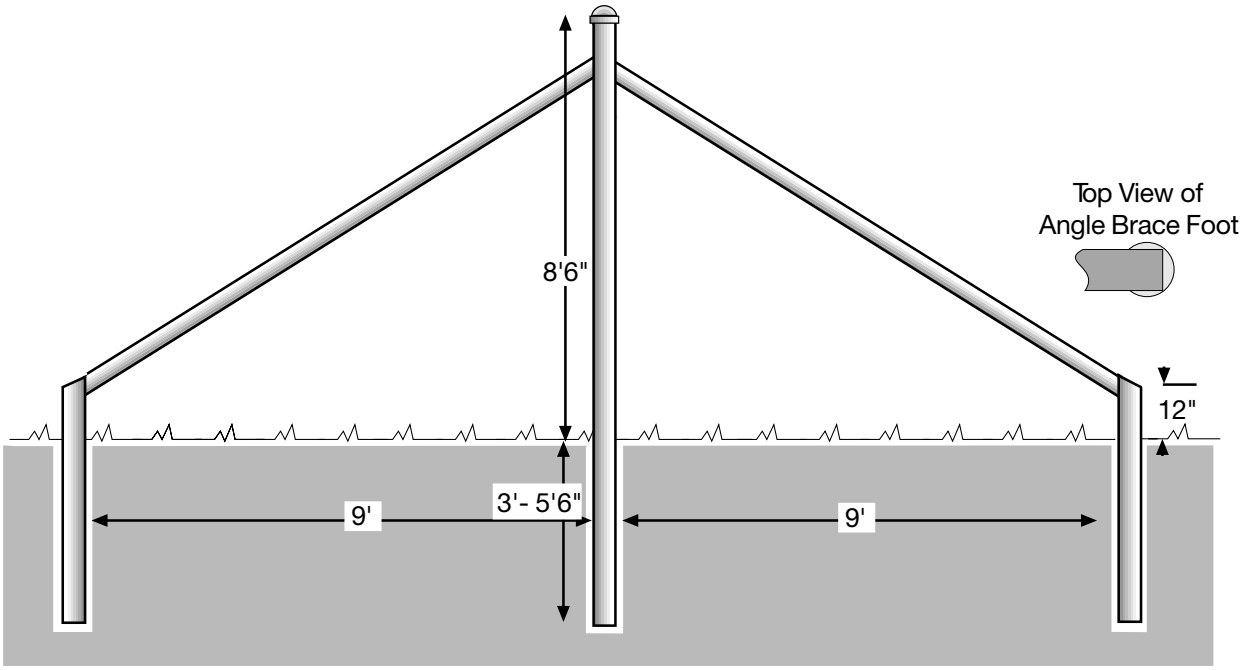
# PIPE LINE BRACE ASSEMBLY: 8' FIXED-KNOT FENCE




## COMPONENTS

Brace posts ..... 14' x 2 7/8" Structural Tubin
Angle Brace ..... 12' x 2 3/8"Structural Tubing
Angle Brace Foot ..... 6' x 2 7/8"Structural Tubing

OSPHO Metal Primer
Oil Base Porch Enamel
Rust Rustler tm

## INSTALLATION

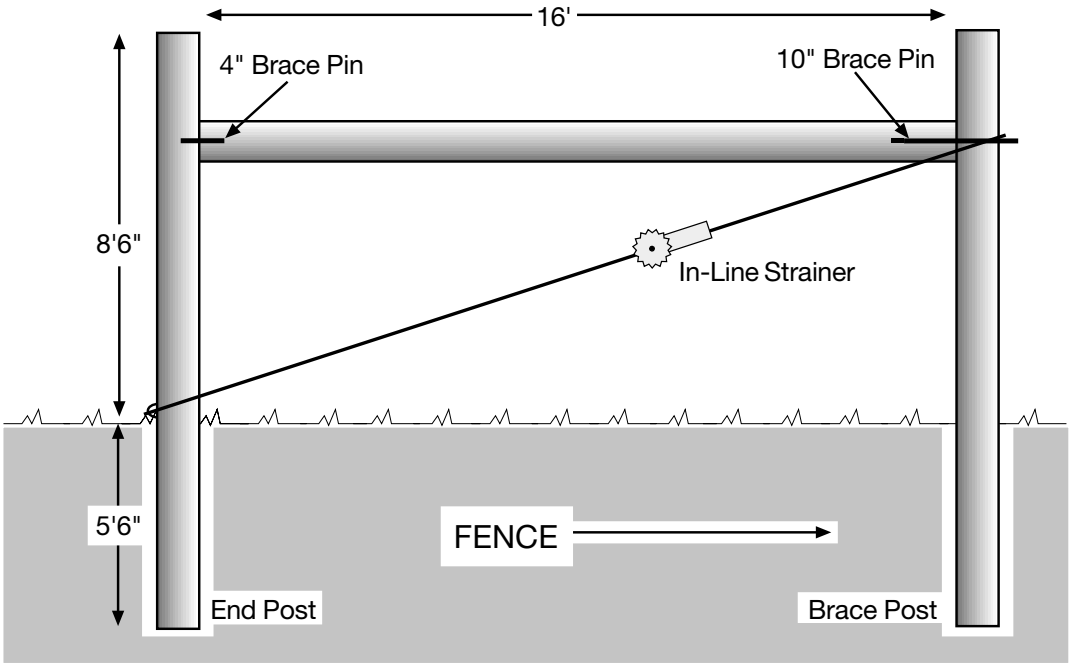
**Note:** Pipe Braces set in mixed soils are set 5'6" deep in concrete, with the minimum diameter of the hole being 12". Pipe set in solid rock are set up to 3' deep in concrete with a hole diameter of 4" to 9". Pipe may also be driven in mixed soils to a depth of 5'.

1. Treat pipe with OSPHO before setting.
2. Set Mid Post and pull Guide Wire.
3. Set Angle Feet 9' from Brace Post on either side and in line with fence line.
4. Notch both Angle Feet on Brace Post side to accept Angle Brace.
5. Cut and saddle Angle Brace so it will meet the Brace Post 7' from ground. Weld solid, top and bottom.
6. Cap all pipe with cement or pressed steel caps. If pipe is left open, water will rust the pipe off at ground level.
7. Brush all welds. Treat with OSPHO and paint with enamel, or 2 coats of Rust Rustler tm can be used instead.

**Caution:** Allow 2 days for cement to cure before pulling on brace.

Line Brace Assemblies should be set no more than 1320' apart.

# BRACE ASSEMBLY: 8' FIXED-KNOT FENCE




## COMPONENTS

Brace Posts ..... 14' x 7" .40 CCA Treated Pine
Cross Member ..... 16' x 5" Schedule 40 Pipe
or ..... 16' x 3" Schedule 40 Pipe
Brace Pins ..... ½" x 4" Galvanized Pin
and ..... ½" x 10" Galvanized Pin

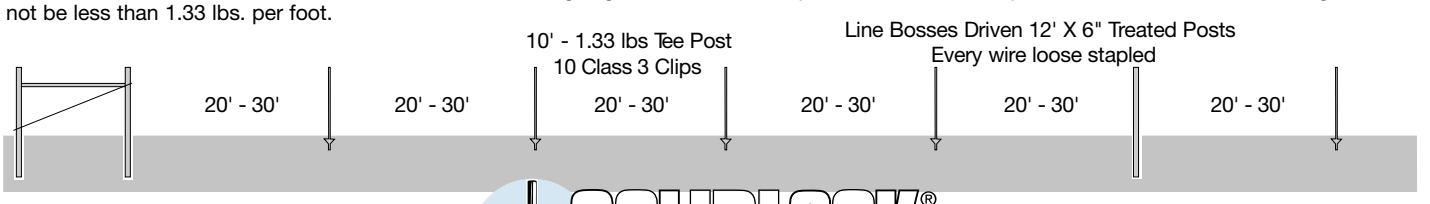
Brace Wire ..... Double Wrap 9 Ga. Cl. 3 Low Tensile Wire
or ..... Double Wrap 12½ Ga. Cl. 3 High Tensile Wire
or ..... Single Wrap $^{5}/_{16}$" Cable
Ratchet Type In-Line Wire Strainer
Staples ..... 1¾" Cl. 3 Barbed Staples

## INSTALLATION

1. Drive or auger and tamp the End Post.
2. Pull the Guide Wire.
3. Set the Brace Posts, using the cross member for measurement and aligning to the Guide Wire.
4. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 2nd and 3rd wire. Using this measurement, mark the inside of the brace posts.
5. Drill a $^{1}/_{2}$" by 2" hole in the End Post and drill a $^{1}/_{2}$" hole through the Brace Post. Set the 4" Brace Pin in the End Post and start the 10" pin in the Brace Post.
6. Pilot drill the ends of the cross member. Set one end of the cross member on the 4" pin, then lift the other end to align with the 10" pin. Drive the 10" pin into the Brace Post, leaving 1" exposed for the installation of the Brace Wire.
7. Drive a barbed staple partially in, approximately 3 to 4 inches above ground level on the side of the end post opposite the cross member.
8. Guide the Brace Wire through the staple in the End Post, up over the 10" pin in the Brace Post, back down and through the staple and over the 10" pin again. This will provide a double wrap for the Brace Wire.
9. Install a ratchet type wire strainer on the Brace Wire. Install the ratchet on the opposite side of the brace that the wire fabric will be on. Tighten the Brace Wire. until the Brace Post moves approximately $^{1}/_{4}$" away from the soil.

**NOTE:**
Braces must be installed in fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred). Never cut into treated posts, as you will expose untreated wood to the elements.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of Tee Posts and wood line bosses is used, the ratio of tee posts to line bosses should not exceed 4 to 1. The line bosses should be 5" to 6" diameter. If the fence is going to be all wood line posts, 4" to 5" treated posts can be used. Tee Post weight should not be less than 1.33 lbs. per foot.

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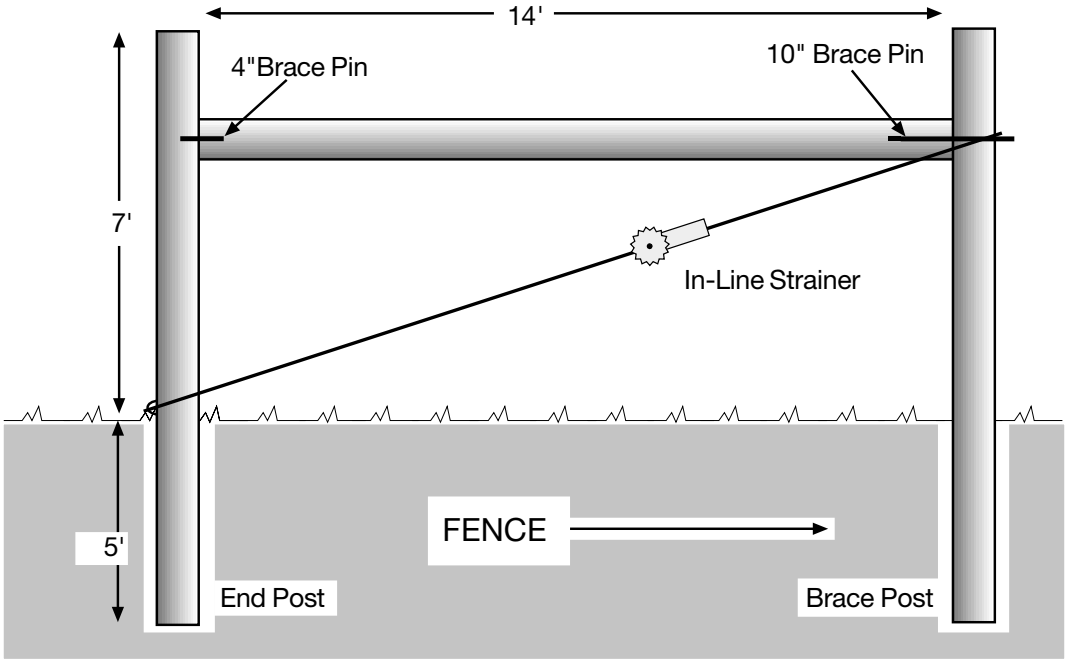
# BRACE ASSEMBLY: 6' FIXED-KNOT FENCE




## COMPONENTS

Brace Posts ..... 12' x 6" .40 CCA Treated Pine
Cross Member ..... 14' x 5" Schedule 40 Pipe
or ..... 14' x 2½" Schedule 40 Pipe
Brace Pins ..... ½" x 4" Galvanized Pin
and ..... ½" x 10" Galvanized Pin

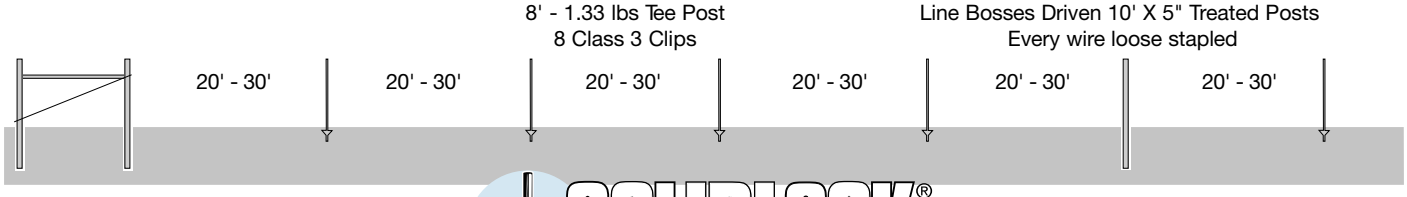
Brace Wire ..... Double Wrap 9 Ga. Cl. 3 Low Tensile Wire
or ..... Double Wrap 12½ Ga. Cl. 3 High Tensile Wire
or ..... Single Wrap $^{5}/_{16}$" Cable
Ratchet Type In-Line Wire Strainer
Staples ..... 1¾" Cl. 3 Barbed Staples

## INSTALLATION

1. Drive or auger and tamp the End Post.
2. Pull the Guide Wire.
3. Set the Brace Posts, using the cross member for measurement and aligning to the Guide Wire.
4. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 2nd and 3rd wire. Using this measurement, mark the inside of the brace posts.
5. Drill a $^{1}/_{2}$" by 2" hole in the End Post and drill a $^{1}/_{2}$" hole through the Brace Post. Set the 4" Brace Pin in the End Post and start the 10" pin in the Brace Post.
6. Pilot drill the ends of the cross member. Set one end of the cross member on the 4" pin, then lift the other end to align with the 10" pin. Drive the 10" pin into the Brace Post, leaving 1" exposed for the installation of the Brace Wire.
7. Drive a barbed staple partially in, approximately 3 to 4 inches above ground level on the side of the end post opposite the cross member.
8. Guide the Brace Wire through the staple in the End Post, up over the 10" pin in the Brace Post, back down and through the staple and over the 10" pin again. This will provide a double wrap for the Brace Wire.
9. Install a ratchet type wire strainer on the Brace Wire. Install the ratchet on the opposite side of the brace that the wire fabric will be on. Tighten the Brace Wire. until the Brace Post moves approximately $^{1}/_{4}$" away from the soil.

**NOTE:** Braces must be installed in fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred). Never cut into treated posts, as you will expose untreated wood to the elements.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of Tee Posts and wood line bosses is used, the ratio of tee posts to line bosses should not exceed 4 to 1. The line bosses should be 5" to 6" diameter. If the fence is going to be all wood line posts, 4" to 5" treated posts can be used. Tee Post weight should not be less than 1.33 lbs. per foot.

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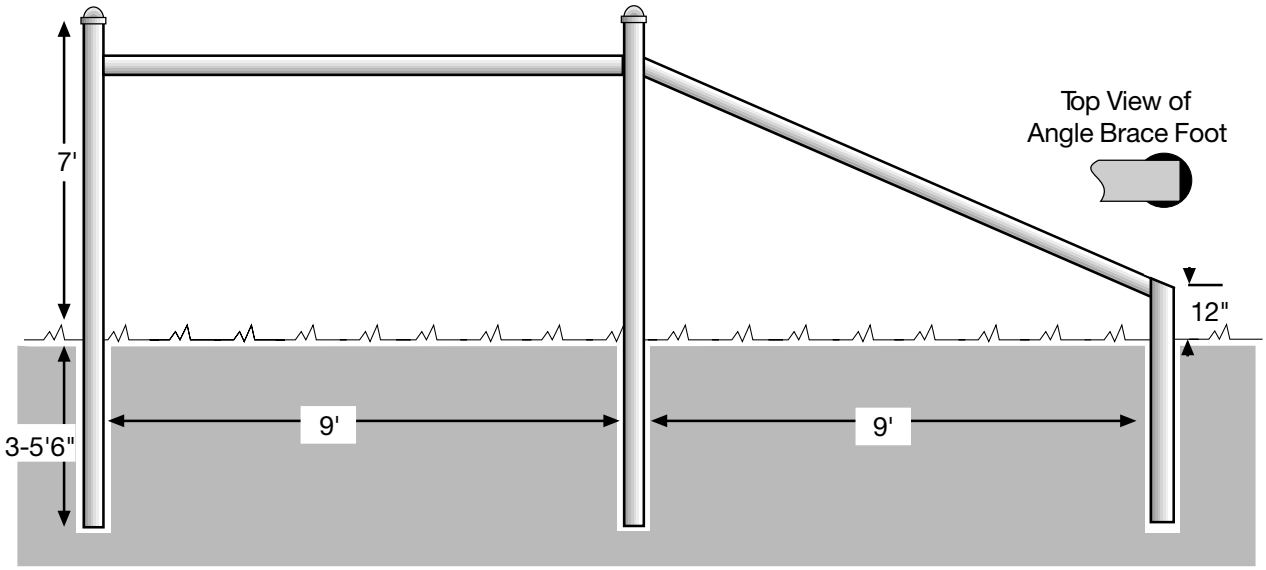
# PIPE BRACE ASSEMBLY - 6' FIXED-KNOT FENCE




## COMPONENTS

| | |
|---|---|
| Brace posts ..... 12' x 2 7/8" Structural Tubing | OSPHO Metal Primer |
| Cross Member ..... 9' x 2 3/8" Structural Tubing | Oil Base Porch Enamel |
| Angle Brace ..... 11' x 2 3/8" Structural Tubing | Rust Rustler™ |
| Angle Brace Foot ..... 5' x 2 7/8" Structural Tubing | |

**Note:** 3½" pipe should be used where gates are being hung.

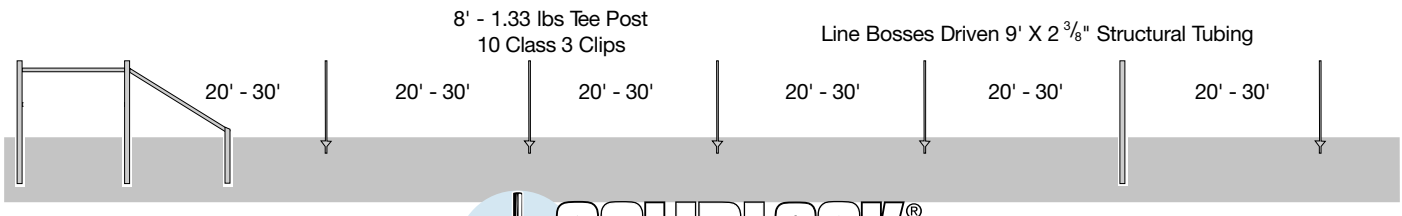
## INSTALLATION

**Note:** Pipe Braces set in mixed soils are set 5'6" deep in concrete, with the minimum diameter of the hole being 12". Pipe set in solid rock are set 3' deep in concrete with a hole diameter of 4" to 9". Pipe may also be driven in mixed soils to a minimum depth of 6'.

1. Treat pipe with OSPHO before setting.
2. Set End Post and pull Guide Wire.
3. Set Brace Post and Angle Foot at 9' and 9', respectfully.
4. Measure inside brace width, then cut and saddle the cross member. Position the cross member between 2nd and 3rd wires of fence fabric. Weld solid.
5. Notch angle brace foot so 2 3/8" angle brace can lay inside foot. Cut and saddle angle brace to meet the top cross member of the brace. Weld solid.
6. Cap all pipe with cement or pressed steel cap. If pipe is left open, water will rust the pipe off at ground level.
7. Brush all welds. Treat with OSPHO and paint with enamel, or 2 coats of Rust Rustler™ can be used instead.

**Caution:** Allow 2 days for cement to cure before pulling on brace.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of 2 3/8" pipe and Tee Post is used the ratio of Tee Posts to line bosses should not exceed a 4 to 1 ratio. 1 7/8" to 2 3/8" pipe can be used for all line posts. Use 30' post spacing as a guideline, in rough terrain closer post spacing will be required. A rigid post should be placed on top of all hips and in the bottom of all dips. Tee Post weight should not be less than 1.33 lbs. per foot.

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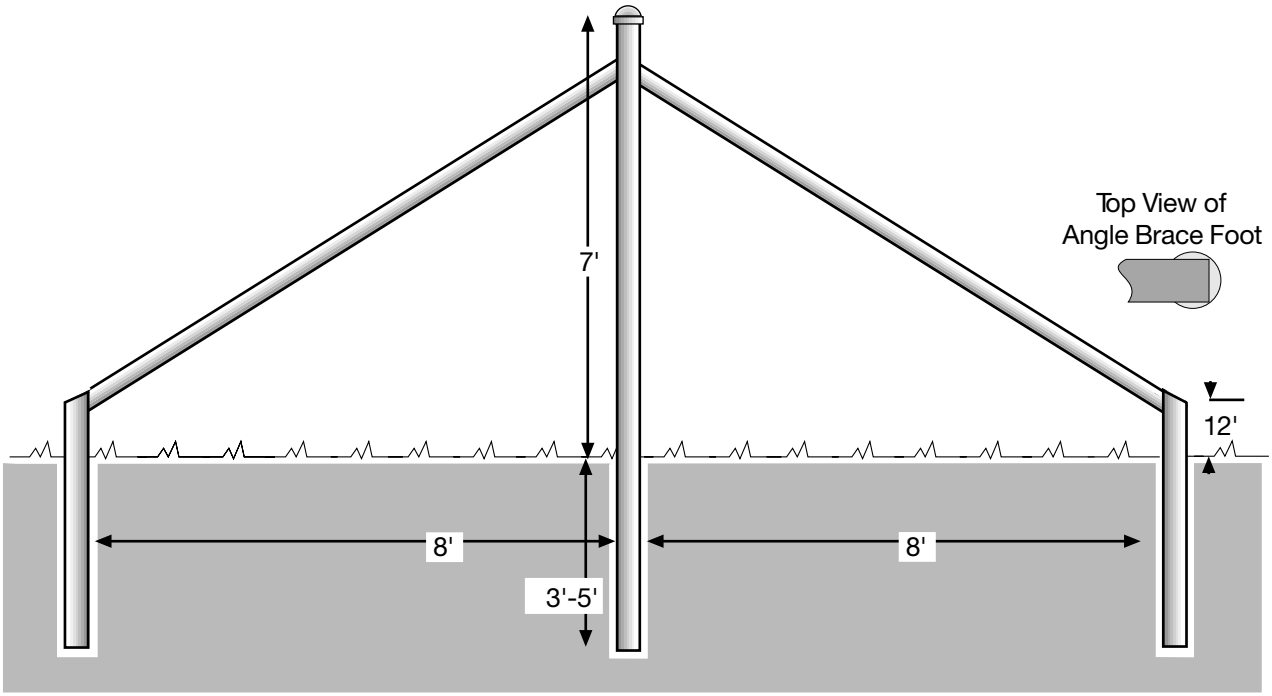
# PIPE LINE BRACE ASSEMBLY: 6' FIXED-KNOT FENCE




## COMPONENTS

Brace posts ..... 12' x 2 7/8" Structural Tubing
Angle Brace ..... 10' x 2 3/8" Structural Tubing
Angle Brace Foot ..... 5' x 2 7/8" Structural Tubing

OSPHO Metal Primer
Oil Base Porch Enamel
Rust Rustler™

## INSTALLATION

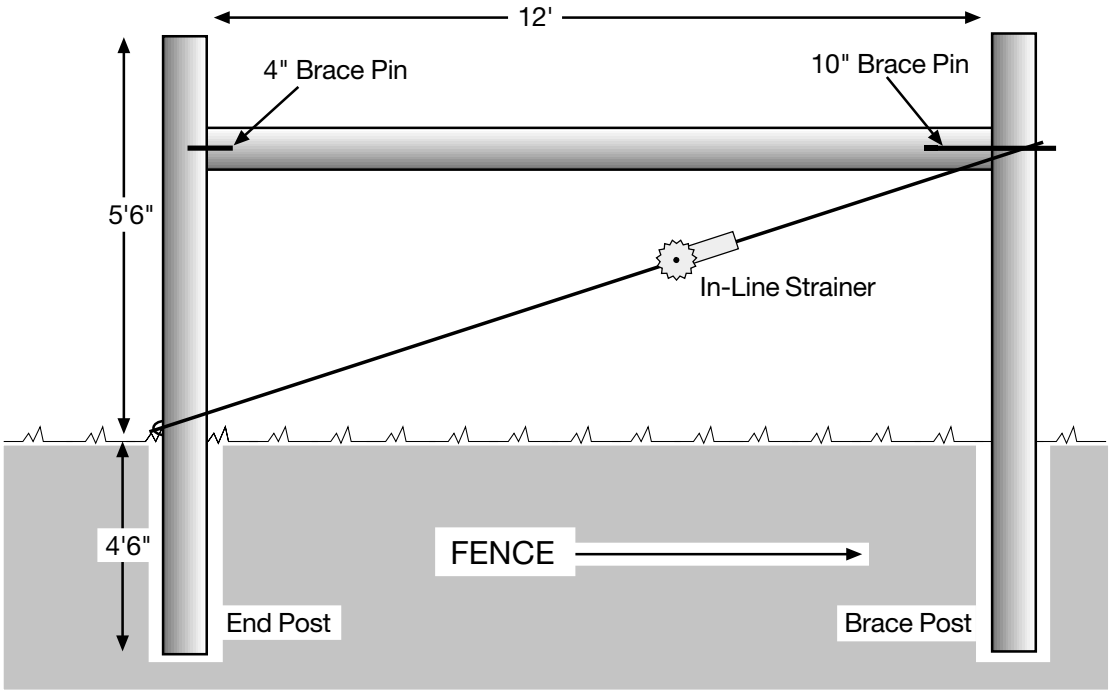
Note: Pipe Braces set in mixed soils are set 5'6" deep in concrete, with the minimum diameter of the hole being 12". Pipe set in solid rock are set up to 3' deep in concrete with a hole diameter of 4" to 9". Pipe may also be driven in mixed soils to a depth of 5'.

1. Treat pipe with OSPHO before setting.
2. Set Mid Post and pull Guide Wire.
3. Set Angle Feet 8' from Brace Post on either side and in line with fence line.
4. Notch both Angle Feet on Brace Post side to accept Angle Brace.
5. Cut and saddle Angle Brace so it will meet the Brace Post 5' from ground. Weld solid, top and bottom.
6. Cap all pipe with cement or pressed steel caps. If pipe is left open, water will rust the pipe off at ground level.
7. Brush all welds. Treat with OSPHO and paint with enamel, or 2 coats of Rust Rustler ™ can be used instead.

Caution: Allow 2 days for cement to cure before pulling on brace.

Line Brace Assemblies should be set no more than 1320' apart.

# BRACE ASSEMBLY - 5' FIXED-KNOT FENCE




## COMPONENTS

Brace Posts ..... 10' x 6" CCA Treated Pine
Cross Member ..... 12' x 5" CCA Treated Pine
or ..... 12' x 2" SS-20 H.T. Tubing
Brace Pins .....½" x 4" Galvanized Pin
and .....½" x 10" Galvanized Pin

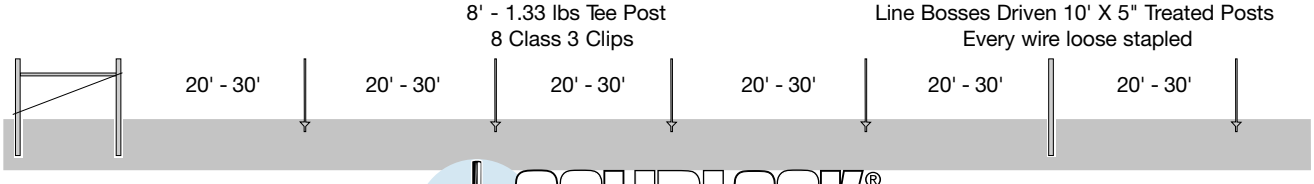
Brace Wire ..... Double Wrap 9 Ga. Cl. 3 Low Tensile Wire
or ..... Double Wrap 12½ Ga. Cl. 3 High Tensile Wire
Ratchet Type In-Line Wire Strainer
Staples ..... 1¾" Cl. 3 Barbed Staples

## INSTALLATION

1. Drive or auger and tamp the End Post.
2. Pull the Guide Wire.
3. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 2nd and 3rd wire. Using this measurement, mark the inside of the brace posts.
4. Drill a $^1/_2$" by 2" hole in the End Post and drill a $^1/_2$" hole through the Brace Post. Set the 4î Brace Pin in the End Post and start the 10" pin in the Brace Post.
5. Pilot drill the ends of the cross member. Set one end of the cross member on the 4" pin, then lift the other end to align with the 10" pin. Drive the 10" pin into the Brace Post, leaving 1" exposed for the installation of the Brace Wire.
6. Drive a barbed staple partially in, approximately 3 to 4 inches above ground level on the side of the end post opposite the cross member.
7. Guide the Brace Wire through the staple in the End Post, up over the 10" pin in the Brace Post, back down and through the staple and over the 10" pin again. This will provide a double wrap for the Brace Wire.
8. Install a ratchet type wire strainer on the Brace Wire. Install the ratchet on the opposite side of the brace that the wire fabric will be on. Tighten the Brace Wire until the Brace Post moves approximately $^1/_4$" away from the soil.

NOTE: Braces must be installed in fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred). Never cut into treated posts, as you will expose untreated wood to the elements.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of Tee Posts and wood line bosses is used, the ratio of tee posts to line bosses should not exceed 4 to 1. The line bosses should be 5" to 6" diameter. If the fence is going to be all wood line posts, 4" to 5" treated posts can be used. Tee Post weight should not be less than 1.33 lbs. per foot.

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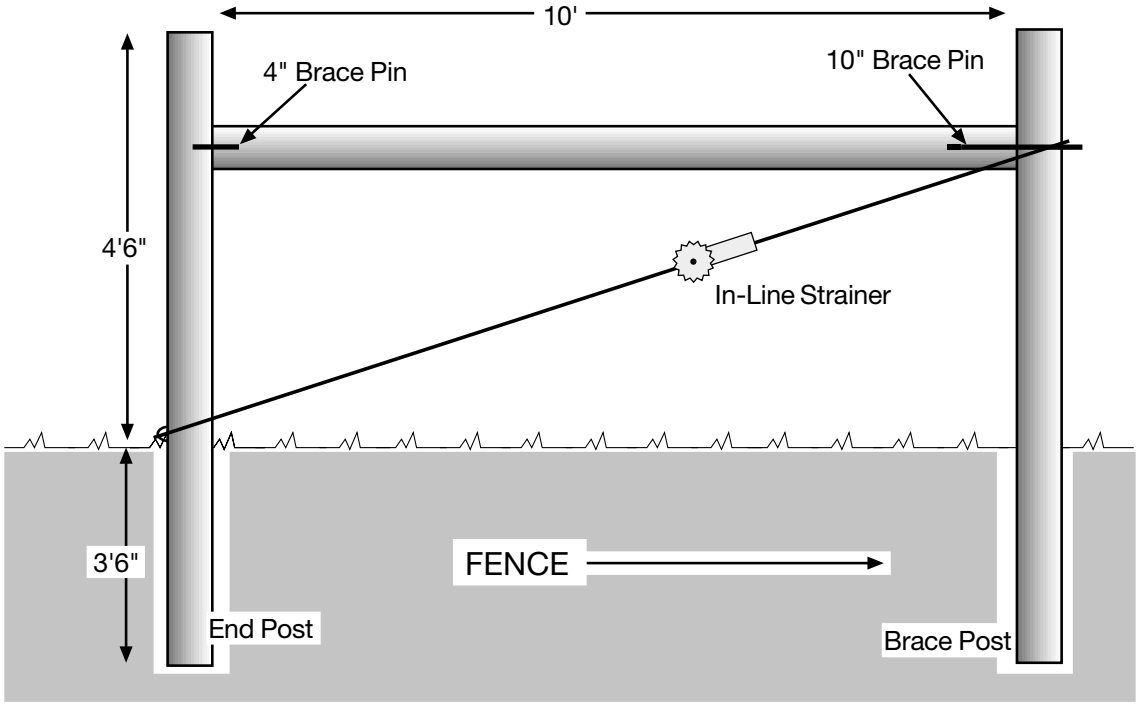
# BRACE ASSEMBLY - 4' FIXED-KNOT FENCE




## COMPONENTS

Brace Posts ..... 8' x 6" CCA Treated Pine
Cross Member ..... 10' x 5" CCA Treated Pine
or .....10' x 2" SS-20 H.T. Tubing
Brace Pins .....½" x 4" Galvanized Pin
and .....½" x 10" Galvanized Pin

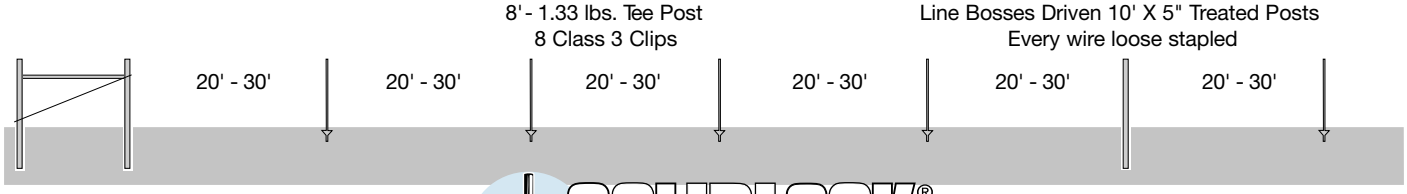
Brace Wire ..... Double Wrap 9 Ga. Cl. 3 Low Tensile Wire
or .....Double Wrap 12½ Ga. Cl. 3 High Tensile Wire
Ratchet Type In-Line Wire Strainer
Staples ..... 1¾" Cl. 3 Barbed Staples

## INSTALLATION

1. Drive or auger and tamp the End Post.
2. Pull the Guide Wire.
3. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 2nd and 3rd wire. Using this measurement, mark the inside of the brace posts.
4. Drill a $^1/_2$" by 2" hole in the End Post and drill a $^1/_2$" hole through the Brace Post. Set the 4" Brace Pin in the End Post and start the 10" pin in the Brace Post.
5. Pilot drill the ends of the cross member. Set one end of the cross member on the 4" pin, then lift the other end to align with the 10" pin. Drive the 10" pin into the Brace Post, leaving 1" exposed for the installation of the Brace Wire.
6. Drive a barbed staple partially in, approximately 3 to 4 inches above ground level on the side of the end post opposite the cross member.
7. Guide the Brace Wire through the staple in the End Post, up over the 10" pin in the Brace Post, back down and through the staple and over the 10" pin again. This will provide a double wrap for the Brace Wire.
8. Install a ratchet type wire strainer on the Brace Wire. Install the ratchet on the opposite side of the brace that the wire fabric will be on. Tighten the Brace Wire until the Brace Post moves approximately $^1/_4$" away from the soil.

NOTE: Braces must be installed in fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred). Never cut into treated posts, as you will expose untreated wood to the elements.

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of Tee Posts and wood line bosses is used, the ratio of tee posts to line bosses should not exceed 4 to 1. The line bosses should be 5" to 6" diameter. If the fence is going to be all wood line posts, 4" to 5" treated posts can be used. Tee Post weight should not be less than 1.33 lbs. per foot.

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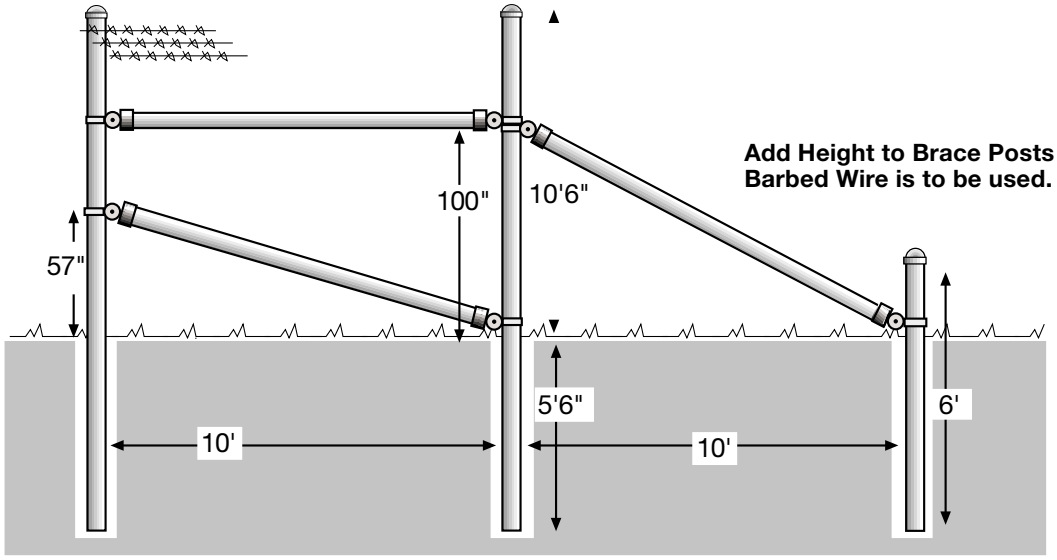
# AIRPORT & GVMT. BRACE ASSEMBLY: 10' FIXED-KNOT FENCE




## COMPONENTS

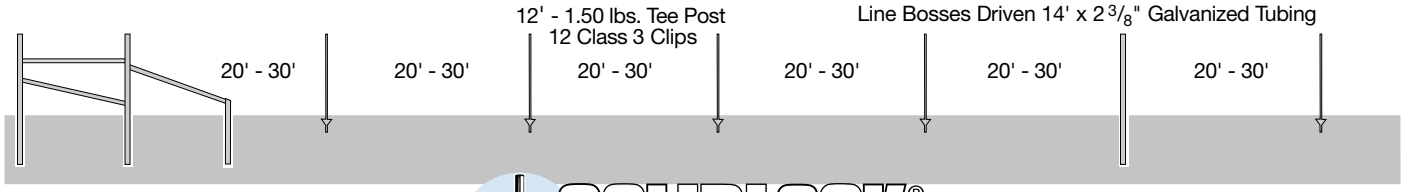
2 - 16' x 3 1/2" Sch 20 High Tensile Brace Posts
1 - 6' x 3 1/2" Sch 20 High Tensile Pusher Post
2- 13' x 1 7/8" Sch 20 High Tensile Pushers
1- 10' x 1 7/8" Sch 20 High Tensile Cross Member
6 - 1 7/8" Pressed Steel Rail Ends
6 - 3 1/2" x 1" x 1/8" Brace Bands
6 - 1 1/2" x 3/8" Carriage Bolts
3 - 3 1/2" Pressed Steel Dome Caps

## INSTALLATION

1. Drive or concrete the End Posts and pull a Guide Wire between them. Drive or concrete the Brace Posts and Pusher Posts using the Guide Wire for alignment. If they are set in concrete, allow a minimum of 2 days for the concrete to cure before pulling on the brace.
2. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 3rd and 4th wire. Using this measurement, mark the End Post and the Brace Post.
3. Attach a rail end and a brace band at these points: do not tighten completely. Attach another rail end and brace band on the Pusher Post.
4. Measure the distance between the insides of the two rail ends on the Brace Posts. Cut the cross member to this length. ***This must be a tight fit.*** Install same by putting one end in one cup and sliding the other cup up or down the post to receive the other end. Slide back into place and tighten.
5. Install a second rail end and brace band underneath the first brace band on the Brace Post, or middle post, facing toward the Pusher Post.
6. Slide the brace band and rail end on the Pusher Post down to ground level.
7. Measure the distance between the insides of the two remaining rail ends. Cut the Pusher to this length. Install same by putting the Pusher into the rail end on the Brace Post, then put the other end into the cup on the Pusher Post. Jam this very tight by lifting this end as far as possible. This will set the brace, allowing no movement when the fence is tightened.
8. Use the same procedure to install the Center Pusher. The high end of the Pusher should be 57" above ground level.
9. Make sure the rail ends and brace bands are aligned to the center of the posts. Tighten everything thoroughly.

**NOTE:** Braces must be installed at the end of every fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Do not substitute lighter tubing for this brace, as it will fail. Use only hot-dipped galvanized commercial fittings. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred).

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of 2" Galvanized pipe and Galvanized Post is used, the ratio of Tee Posts to line bosses should not exceed a 4 to 1 ratio. 2" to 2 3/8" Galvanized Tubing can be used for all line posts. Use 30' post spacing as a guideline, in rough terrain closer post spacing will be required. A rigid post should be placed on top of all hips and in the bottom of all dips. Tee Post weight should not be less than 1.50 lbs. per foot.

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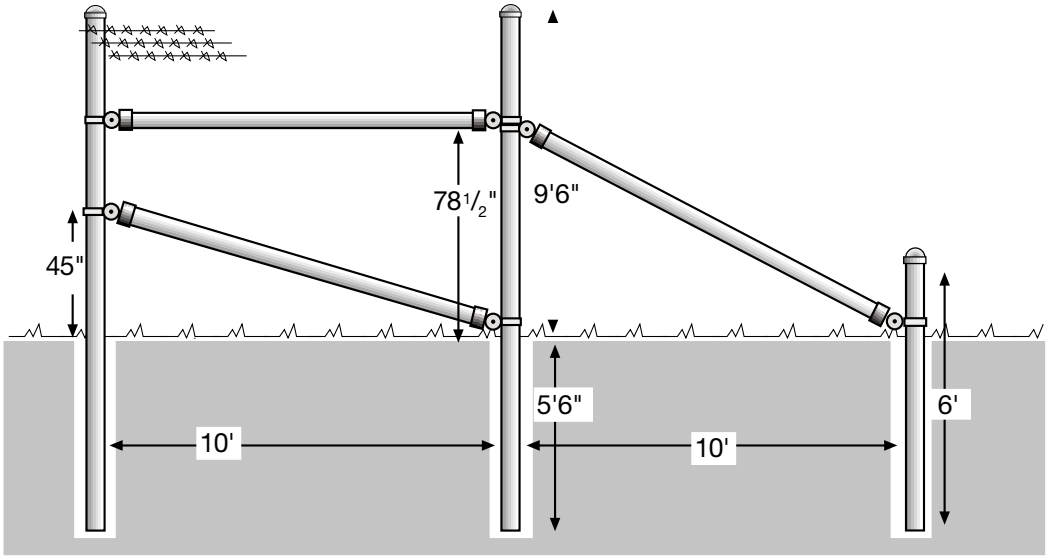
# AIRPORT & GVMT. BRACE ASSEMBLY: 8' FIXED-KNOT FENCE




## COMPONENTS

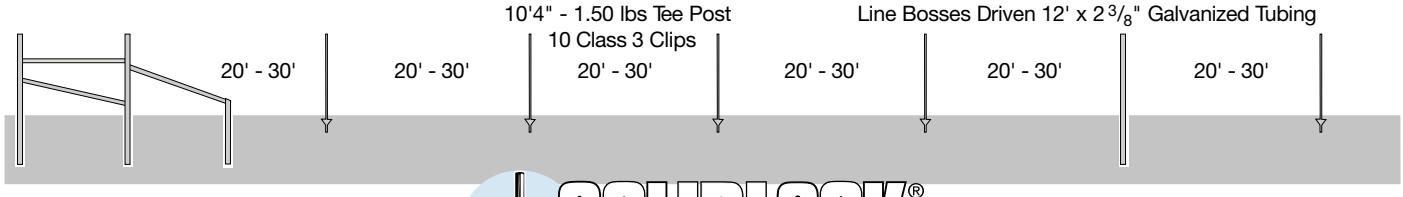
2 - 15' x 3 1/2" Sch 20 High Tensile Brace Posts
1 - 6' x 3 1/2" Sch 20 High Tensile Pusher Post
2- 12' x 1 7/8" Sch 20 High Tensile Pushers
1- 10' x 1 7/8" Sch 20 High Tensile Cross Member
6 - 1 7/8" Pressed Steel Rail Ends
6 - 3 1/2" x 1" x 1/8" Brace Bands
6 - 1 1/2" x 3/8" Carriage Bolts
3 - 3 1/2" Pressed Steel Dome Caps

## INSTALLATION

1. Drive or concrete the End Posts and pull a Guide Wire between them. Drive or concrete the Brace Posts and Pusher Posts using the Guide Wire for alignment. If they are set in concrete, allow a minimum of 2 days for the concrete to cure before pulling on the brace.
2. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 3rd and 4th wire. Using this measurement, mark the End Post and the Brace Post.
3. Attach a rail end and a brace band at these points: do not tighten completely. Attach another rail end and brace band on the Pusher Post.
4. Measure the distance between the insides of the two rail ends on the Brace Posts. Cut the cross member to this length. ***This must be a tight fit.*** Install same by putting one end in one cup and sliding the other cup up or down the post to receive the other end. Slide back into place and tighten.
5. Install a second rail end and brace band underneath the first brace band on the Brace Post, or middle post, facing toward the Pusher Post.
6. Slide the brace band and rail end on the Pusher Post down to ground level.
7. Measure the distance between the insides of the two remaining rail ends. Cut the Pusher to this length. Install same by putting the Pusher into the rail end on the Brace Post, then put the other end into the cup on the Pusher Post. Jam this very tight by lifting this end as far as possible. This will set the brace, allowing no movement when the fence is tightened.
8. Use the same procedure to install the Center Pusher. The high end of the Pusher should be 48" above ground level.
9. Make sure the rail ends and brace bands are aligned to the center of the posts. Tighten everything thoroughly.

**NOTE:** Braces must be installed at the end of every fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Do not substitute lighter tubing for this brace, as it will fail. Use only hot-dipped galvanized commercial fittings. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred).

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of 2" Galvanized pipe and Galvanized Post is used, the ratio of Tee Posts to line bosses should not exceed a 4 to 1 ratio. 2" to 2 3/8" Galvanized Tubing can be used for all line posts. Use 30' post spacing as a guideline, in rough terrain closer post spacing will be required. A rigid post should be placed on top of all hips and in the bottom of all dips. Tee Post weight should not be less than 1.50 lbs. per foot.

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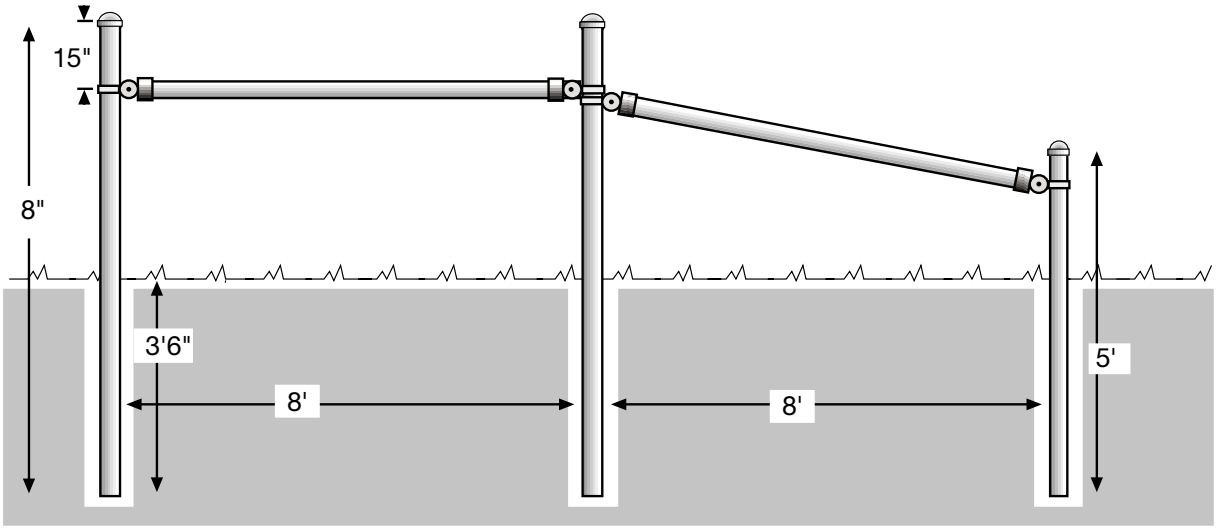
# HOMESTEAD BRACE ASSEMBLY: 4' FIXED-KNOT FENCE




## COMPONENTS

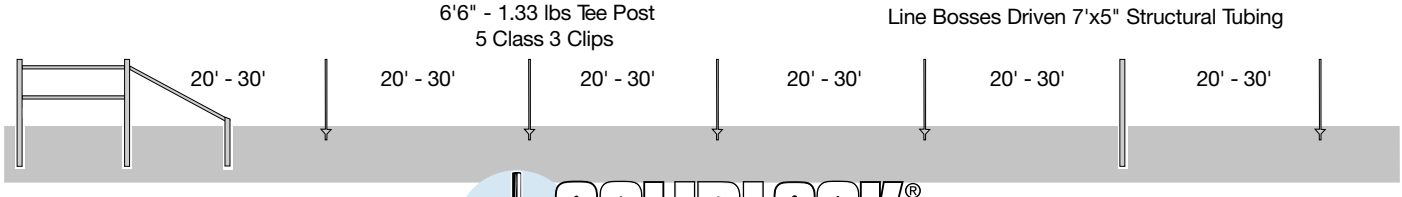
2 - 2 3/8 " x 8' SS-20 Galvanized Tubing
2 - 1 7/8 " x 8' SS- 20 Galvanized Tubing
1 - 2 3/8 " x 5' SS- 20 Galvanized Tubing
3 - 2 3/8 " Pressed Steel Dome Caps
4 - 1 7/8" Pressed Steel Rail Ends
4 - 2 3/8" x 1" x 1/8" Brace Bands
4 - 5/16" x 1 1/4" Carriage Bolts

## INSTALLATION

1. Drive or concrete the End Posts and pull a Guide Wire between them. Drive or concrete the Brace Posts and Pusher Posts using the Guide Wire for alignment. If they are set in concrete, allow a minimum of 2 days for the concrete to cure before pulling on the brace.
2. To establish the location of the cross member, measure the distance from the bottom of the fabric to a point midway between the 2nd and 3rd wire. Using this measurement, mark the End Post and the Brace Post.
3. Attach a rail end and a brace band at these points: do not tighten completely. Attach another rail end and brace band on the Pusher Post.
4. Measure the distance between the insides of the two rail ends on the Brace Posts. Cut the cross member to this length. ***This must be a tight fit.*** Install same by putting one end in one cup and sliding the other cup up or down the post to receive the other end. Slide back into place and tighten.
5. Install a second rail end and brace band underneath the first brace band on the Brace Post, or middle post, facing toward the Pusher Post.
6. Slide the brace band and rail end on the Pusher Post down to ground level.
7. Measure the distance between the insides of the two remaining rail ends. Cut the Pusher to this length. Install same by putting the Pusher into the rail end on the Brace Post, then put the other end into the cup on the Pusher Post. Jam this very tight by lifting this end as far as possible. This will set the brace, allowing no movement when the fence is tightened.
8. Make sure the rail ends and brace bands are aligned to the center of the posts. Tighten everything thoroughly.

**NOTE:** Braces must be installed at the end of every fence line, regardless of the length of pull. Braces should be placed no more than 1320 ft. apart. Do not substitute lighter tubing for this brace, as it will fail. Use only hot-dipped galvanized commercial fittings. Brace width must be a minimum of 2 times the height of the fence (2.5 times is preferred).

**Line Posts:** Set line posts using 20'- 30' spacing. Post spacings should be determined by terrain, turns in fence line, changes in weather conditions and animal pressure. If a combination of 2 3/8" pipe and Tee Post is used the ratio of Tee Posts to line bosses should not exceed a 4 to 1 ratio. 2" Galvanized Tubing can be used for all line posts. Use 30' post spacing as a guideline, in rough terrain closer post spacing will be required. A rigid post should be placed on top of all hips and in the bottom of all dips. Tee Post weight should not be less than 1.33 lbs. per foot.

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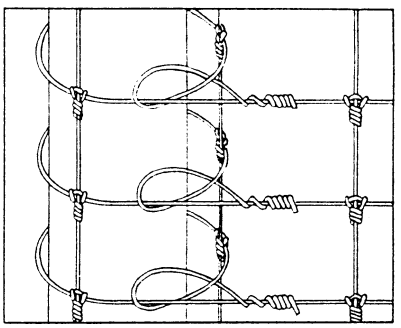
# FENCE CONSTRUCTION

**End Posts and Guide Wire**
To begin construction, locate and set, end and corner posts. Use treated posts of no less than 6" in diameter or 3-1/2" pipe, set 4' to 6'deep. Depth of setting depends on soil types, rocky soils 4' sandy soils 6'. After setting posts a guide wire of 12-1/2. High Tensile wire is pulled tight between posts. This wire becomes the fence line.

**Bracing**
Braces are the backbone of any fence and must be built correctly. Braces may be single or double, however the width should ALWAYS be 2-1/2 times the height of the fence. Cross members should be pipe, tubing, or round wood posts. Never 4 X 4 or landscape timbers. Double wraps of 12-1/2 High Tensile or 9 ga. low-tensile wire make the twitch wire. Twitch wire MUST be anchored securely or the brace will fail.

**Dips and Humps**
Generally, the use of 20' post centers is more than adequate for High Tensile fencing, however this is only a guideline. A rigid post should be placed at the lowest point of a dip and the crown of a hump. These posts should be larger than the line posts and set a little deeper. They will hold the fence up or down as required. Standing on the guide wire in dips will show you where to put the rigid post.

**Tying Off**
Generally, High Tensile wire is tied off at both ends of the fence and is tensioned to the middle of the pull. This allows the fence to be tied off without being under tension. Use the High Tensile slip knot to tie off the wire. Keep the vertical wire straight so the wire will tension the same throughout the fence.



**Splicing**
Splicing can be done two ways, one by placing vertical stays over each other and wrapping the loose end of the wire around the corresponding horizontal wire 6 times. Secondly a splicing sleeve can be installed between the vertical stays and crimped with a crimping tool. Use sleeves designed for 12-1/2 ga. High Tensile wire only. Only Nicropress or EZ Pull tools should be used to achieve adequate holding strength.

**Tensioning**
Using stretcher bars up to 4 rolls or 1/4 mile of wire may be tightened in one single pull. The tension crimp should be 1/2 the size of an untensioned crimp. Splice wire and remove Stretcher Bars.

**Trimming Out**
Position the wire 1" off the ground and staple to post. Use barbed staples and leave room for the wire to move freely under the staple. Staple all high points first and then pull the wire down and staple it last. If there are a lot of dips a little less tension would be applied as pulling the wire down will tighten the wire more.

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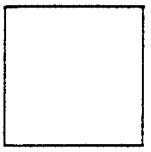
## Common Fence Measurements

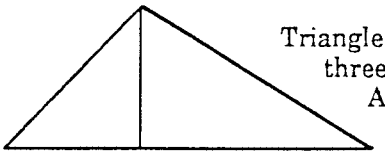
1 foot = 12 inches
1 yard = 3 feet
1 rod = 16.5 feet
1 mile = 5280 feet = 1760 yards = 320 rods
1 acre = 43,560 square feet = 160 sq. rods = .4047 hectares
1 square mile = 640 acres = 1 section
1 square foot = 144 square inches
1 square yard = 9 square feet
1 square rod - 272.25 square feet

## Formulas to Determine Perimeter & Area



Square: Perimeter = 4 x 1 side.
Area = 1 side squared

Rectangle: Perimeter = (2 x length) + (2 x width).
Area = length x width.



Triangle: Perimeter = Total of three sides.
Area = 1/2 base x height.

## Diagrams & Tables For Estimating Amount of Fence

| Rectangle Acres | Length of Field (ft) | Width of Field (ft) | Length of Fence Required (ft) |
|---|---|---|---|
| 1 | 264 | 165 | 858 |
| 1 | 330 | 132 | 924 |
| 1 1/4 | 330 | 165 | 990 |
| 2 1/2 | 660 | 165 | 1650 |
| 4 | 528 | 330 | 1716 |
| 5 | 660 | 330 | 1980 |
| 6 | 990 | 264 | 2508 |
| 7 | 1320 | 231 | 3102 |
| 8 | 1320 | 264 | 3168 |
| 9 | 1320 | 297 | 3234 |
| 10 | 825 | 528 | 2706 |
| 15 | 1320 | 495 | 3630 |
| 20 | 1650 | 528 | 4356 |
| 25 | 1320 | 825 | 4290 |
| 30 | 1320 | 990 | 4620 |
| 40 | 1650 | 1056 | 5412 |
| 50 | 1650 | 1320 | 5940 |
| 60 | 1980 | 1320 | 6600 |
| 70 | 2640 | 1155 | 7590 |
| 80 | 2112 | 1650 | 7524 |
| 100 | 2640 | 1650 | 8580 |
| 120 | 3168 | 1650 | 9636 |
| 140 | 4620 | 1320 | 11880 |
| 160 | 5280 | 1320 | 13200 |
| 320 | 6600 | 2112 | 17424 |
| 640 | 6600 | 4224 | 21648 |

| Square | Length of Side of Square | | Length of Fence Required | |
|---|---|---|---|---|
| Acres | Feet | Inches | Feet | Inches |
| 1 | 208 | 9 | 835 | – |
| 2 | 295 | 2 | 1180 | 8 |
| 2 1/2 | 330 | – | 1320 | – |
| 3 | 361 | 6 | 1446 | – |
| 4 | 417 | 5 | 1669 | 8 |
| 5 | 466 | 8 | 1866 | 8 |
| 6 | 511 | 3 | 2045 | – |
| 7 | 552 | 2 | 2208 | 8 |
| 8 | 590 | 4 | 2361 | 4 |
| 9 | 626 | 2 | 2504 | 8 |
| 10 | 660 | – | 2640 | – |
| 20 | 933 | 5 | 3733 | 8 |
| 25 | 1043 | 7 | 4174 | 4 |
| 30 | 1143 | 2 | 4572 | 8 |
| 40 | 1320 | – | 5280 | – |
| 50 | 1475 | 10 | 5903 | 4 |
| 60 | 1616 | 8 | 6466 | 8 |
| 70 | 1746 | 2 | 6984 | 8 |
| 75 | 1807 | 6 | 7230 | – |
| 80 | 1866 | 9 | 7467 | – |
| 100 | 2087 | 1 | 8348 | 4 |
| 120 | 2286 | 4 | 9145 | 4 |
| 140 | 2469 | 6 | 9878 | – |
| 160 | 2640 | – | 10560 | – |
| 320 | 3733 | 7 | 14934 | 4 |
| 640 | 5280 | – | 21120 | – |