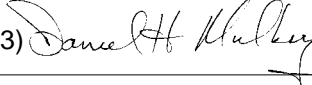
	<b>LANDSCAPE SCREEN FOR PAD-MOUNTED TRANSFORMERS</b>	<b>063422</b>
<b>Department:</b> Electric T&D	<b>Section:</b> T&D Engineering and Technical Support	
<b>Approved by:</b> D. H. Mulkey (DHM3)		<b>Date:</b> 02-02-02
<b>Rev. #02:</b> This document replaces PG&E Document 063422, Rev. #01. For a description of the changes, see Page 12.		

**This document is also included in the following manual:**

- *Electric and Gas Service Requirements (Greenbook)*

**Purpose and Scope**

This document provides a variety of landscape design ideas that may be used by the applicant to screen pad-mounted transformers.

Pad-mounted transformers are much less costly to install and maintain than subsurface transformers. While any landscaping, retaining walls, decorative walls, etc. may be installed or maintained by the applicant, landscape screening is encouraged as it helps improve the overall appearance and acceptance of pad-mounted transformers.

**General Information**

1. This document is intended to illustrate a variety of design concepts. They may be modified to fit a particular need or site condition.
2. The figures in this document are illustrative designs and are not intended to be construction or working drawings. Materials, quantities, and construction methods will have to be determined by the installer to meet the requirements of the particular site.
3. The addition of suitable plants to these basic designs will enhance the overall screening effect.
4. The designs illustrate screening single-phase transformers, but the same concepts may also be applied to screening three-phase, pad-mounted transformers.
5. The decorative walls, fences, etc., depicted in this document are not substitutes for any required barrier posts, fire walls, etc., that may be required by Document 051122.
6. The applicant may paint the exterior of the transformer a different color. Operating numbers and warning signs must not be obscured. If PG&E repaints or replaces the transformer, it will be green in color.

**Plant Matrices**

7. See Pages 7 through 12 for a plant matrix that identifies plant species suitable for screening transformers within the different climatic areas of each division.

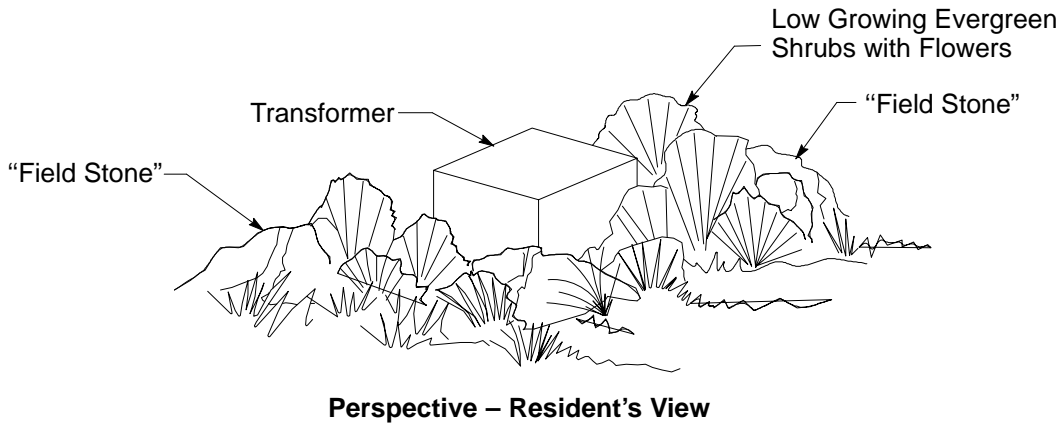
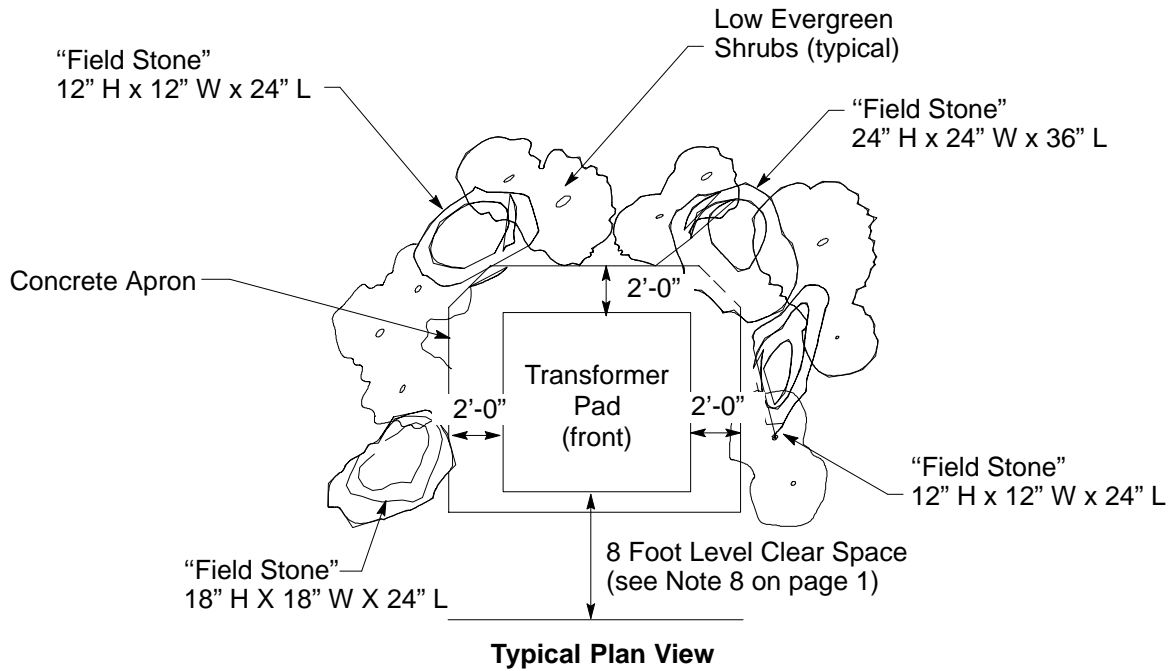
**Clearances**

8. A clear, level working space of 8 feet is required in front of the transformer.
9. A clearance of 2 feet is required from the transformer pad to walls, fences, etc., as depicted in this document. The clearance may be reduced to 1 foot if the height of the wall does not exceed 2 feet and if the wall thickness does not exceed 1 foot (i.e., planter box). See Document 051122 for the clearances to building walls.
10. Gates and doors may be placed with minimal clearance in front of the transformers if the required 8-foot clearance is available with the doors or gates open.

**References**

	<b>Document</b>
Location, Clearances, and Mechanical Protection Details for Pad-Mounted and Subsurface Equipment .....	051122

**Landscape Screen**



**Figure 1  
Landscape Screen**

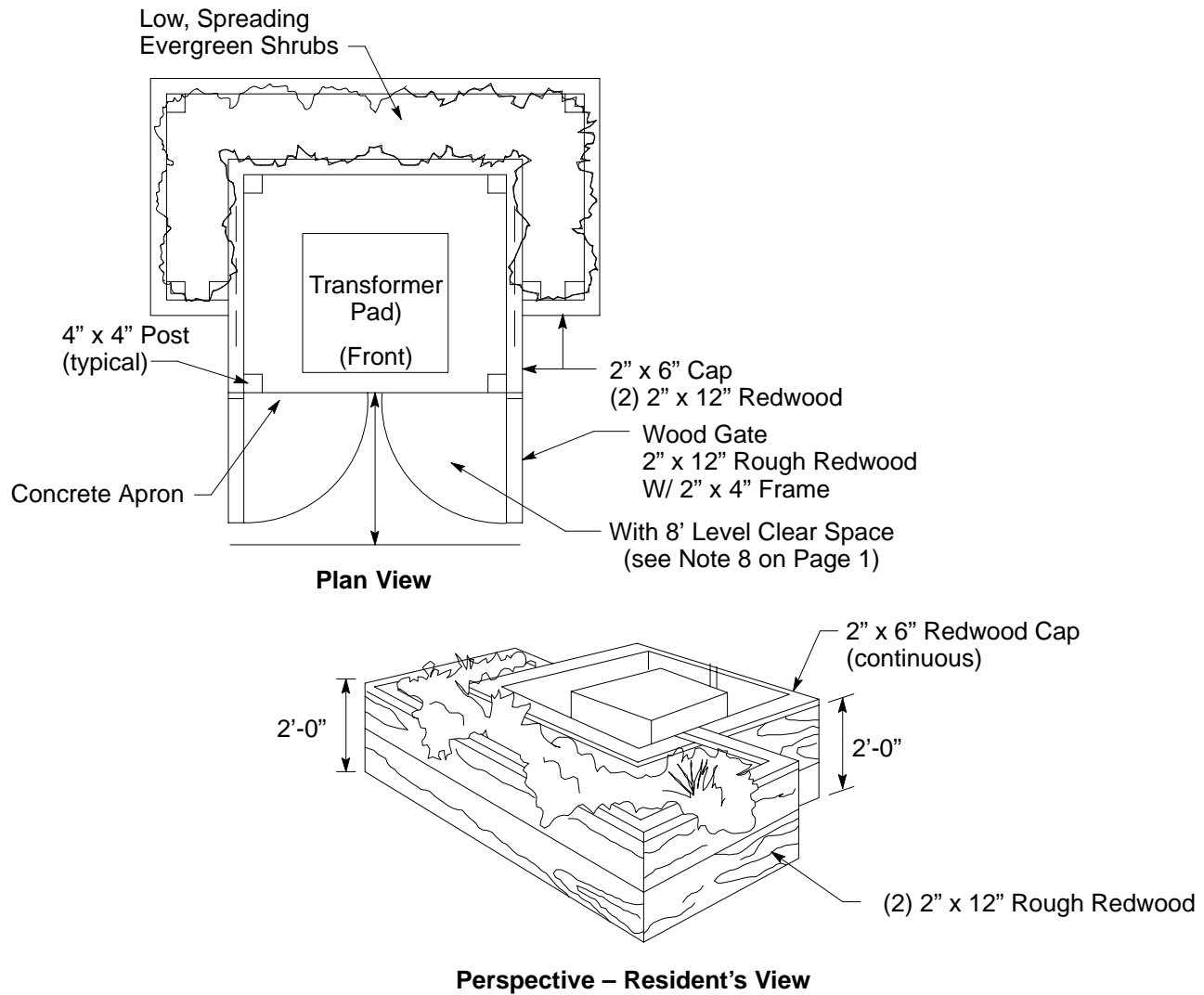
**Table 1 List of Material for Landscape Screen**

Quantity	Description
4	“Sonoma Field Stones”
10-12	Low Evergreen Shrubs (5 gallon size)
1/2 Cubic Yard	Concrete (4” deep, broom finish) <sup>1</sup>
1/2 Cubic Yard	Gravel Sub Base (4” deep) <sup>1</sup>

<sup>1</sup> Excluding transformer pad.

Landscape Screen for Pad-Mounted Transformers

**Planter Wall Screen**



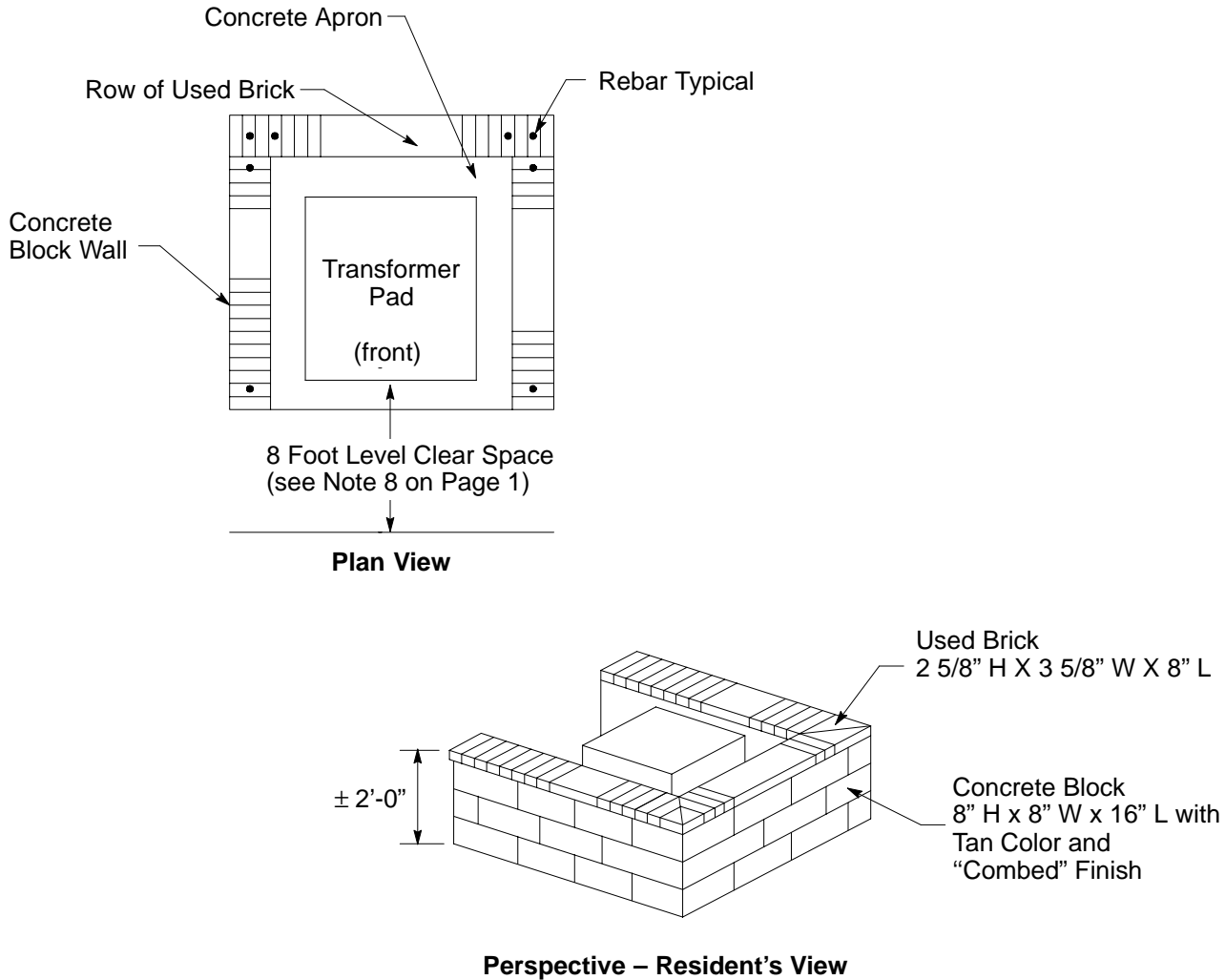
**Figure 2**  
**Planter Wall Screen**

**Table 2 List of Materials for Planter Wall Screen**

Quantity	Description
6	2" x 12" Rough Redwood (12 feet long)
4	2" x 12" Rough Redwood (8 feet long)
3	2" x 6" Rough Redwood (12 feet long)
5	4" x 4" Rough Redwood (8 feet long)
1/2 Cubic Yard	Concrete (broom finish) <sup>1</sup>
1/2 Cubic Yard	Gravel Sub Base (4" deep) <sup>1</sup>
10	Low Evergreen Shrubs ( 5 gallon size)
4	2" x 4" Rough Redwood (8 feet long)
1	2" x 6" Rough Redwood (8 feet long)

<sup>1</sup> Excluding transformer pad.

**Wall for Screening**



**Figure 3**  
**Wall for Screening**

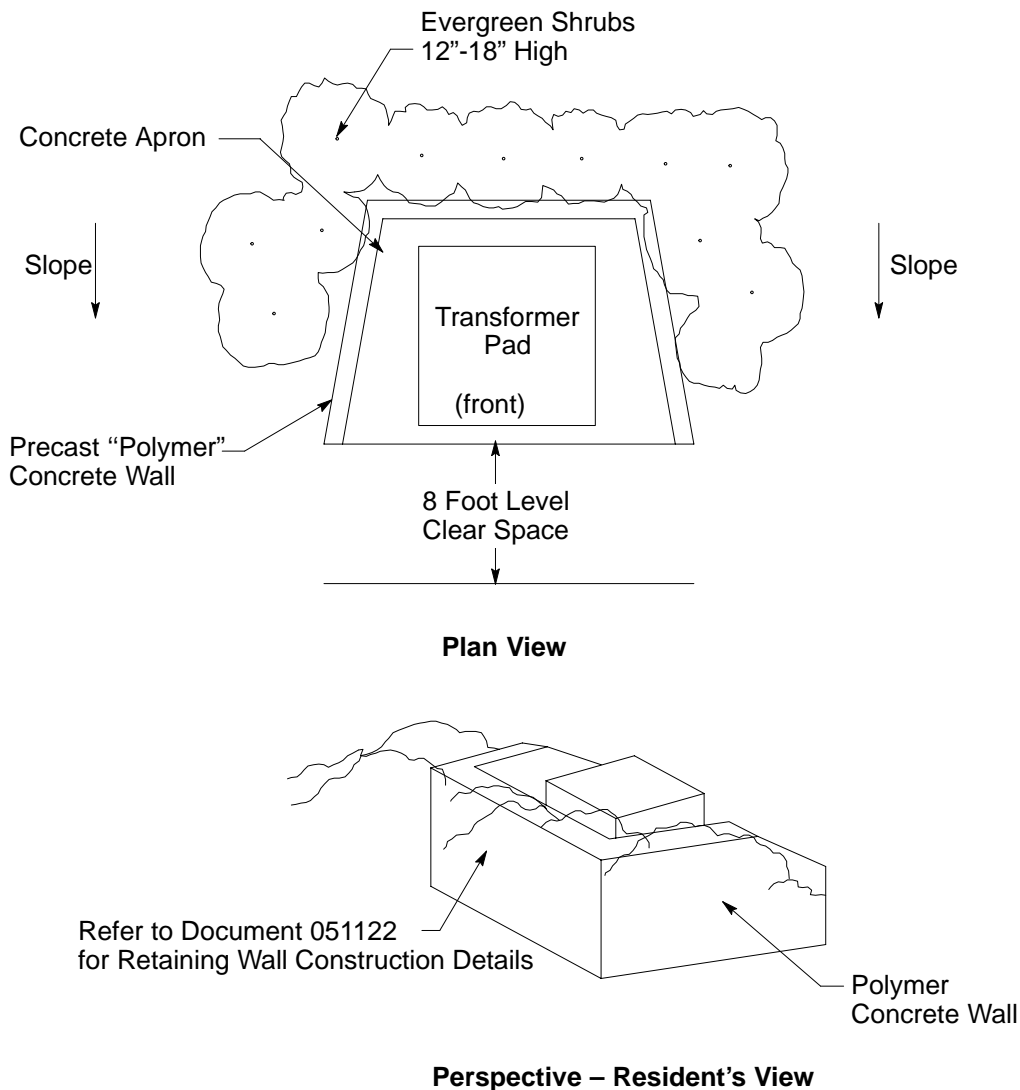
**Table 3 List of Materials for Wall for Screening**

Quantity	Description
80	Used Bricks
—	Mortar
52	Concrete Blocks (8" W x 8" H x 16" L)
1/2 Cubic Yard	Concrete (4" deep, broom finish) <sup>1</sup>
1/2 Cubic Yard	Gravel Sub Base (4" deep) <sup>1</sup>
—	1/2" x 2' Rebar for Cells at Block Corners and Edges (minimum of 8 pieces)
—	Grout Fill for Block Corners and Edges

<sup>1</sup> Excluding transformer pad.

Landscape Screen for Pad-Mounted Transformers

**Retaining Wall**



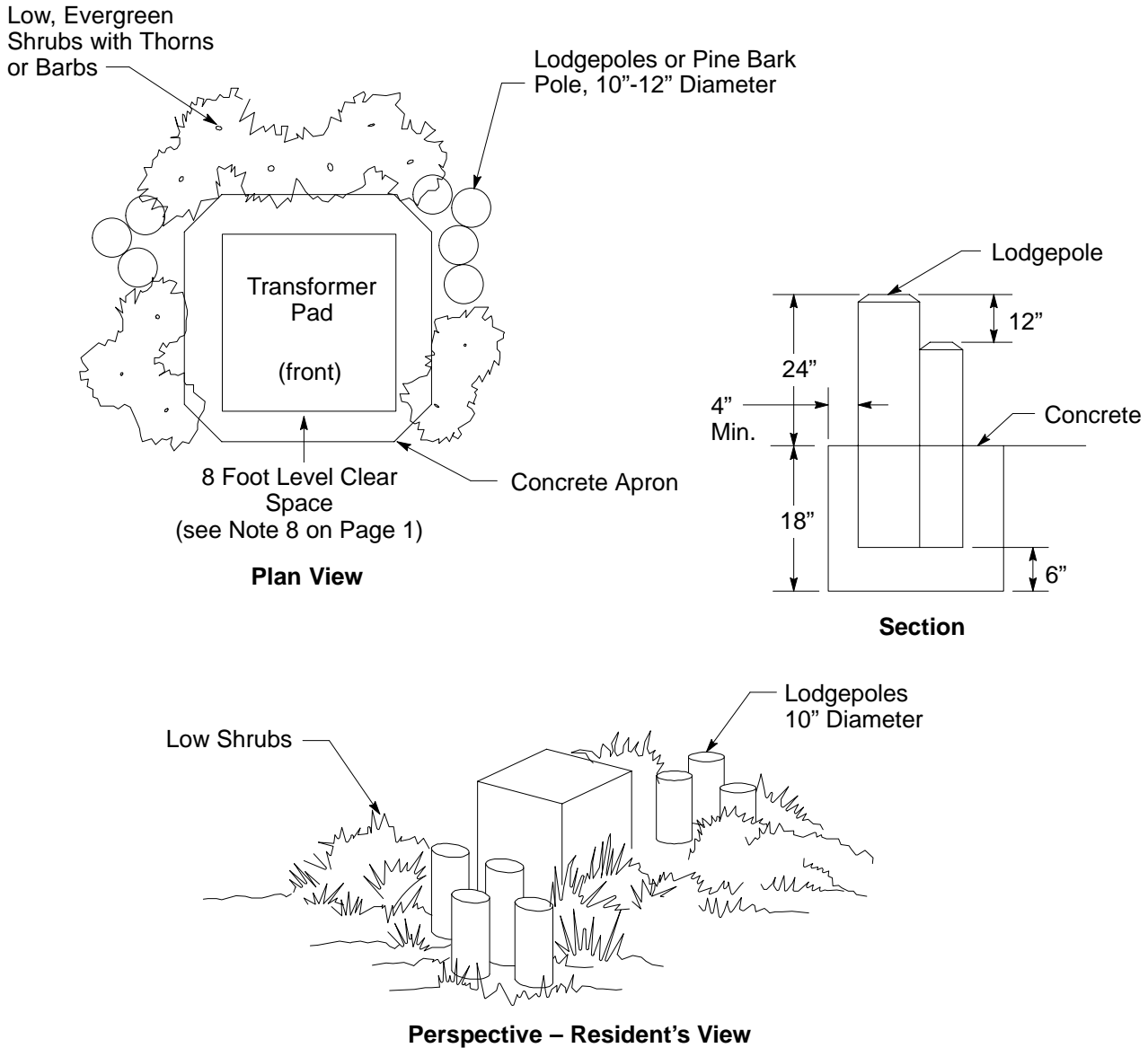
**Figure 4**  
**Retaining Wall**

**Table 4 List of Materials for Retaining Wall**

Quantity	Description
12-14	Low, Evergreen Shrubs (5 gallon size)
19 LF	2' Polymer Concrete Wall
1/2 Cubic Yard	Concrete (4" deep, broom finish) <sup>1</sup>
1/2 Cubic Yard	Gravel Sub Base (4" deep) <sup>1</sup>

<sup>1</sup> Excluding transformer pad.

**Pole and Landscape Screen**



**Figure 5**  
**Pole and Landscape Screen**

**Table 5 List of Materials**

Quantity	Description
7	10" Diameter Lodgepoles (3'-6" long)
3	10" Diameter Lodgepoles (3'-10" long)
12-14	Low Evergreen Shrubs (5 gallon size)
1/2 Cubic Yard	Concrete (4" deep, broom finish) <sup>1</sup>
1/2 Cubic Yard	Gravel Sub Base (4" deep) <sup>1</sup>

<sup>1</sup> Excluding transformer pad

Landscape Screen for Pad-Mounted Transformers

**Plant Matrix for Stockton, Yosemite, Fresno, and Kern Divisions**

**Notes**

1. All shrubs are evergreen plants not over 5 feet at maturity.
2. All shrubs should be planted at a minimum 5 gallon size.
3. Refer to the climate zone map in the *Sunset New Western Garden Book* for the climate zone in your area.

Plants (shrubs)	Climatic Zones				
	Zone 1	Zone 7	Zone 8	Zone 9	Zone 14
	Cold Climate, High Elevation, Snow All Year, Frost All Year, High Mountain, Area	Warm Climate, Hot Summer, Mild Winters, Low Elevations, Foothill Area	Warm Climate, Cold-Air Basins In Winter, Low Elevations, Hot, Dry Summers, Cool Winter	Hot Climate, Within Thermal Belt, Warmer and Higher Elevations than Zone 8, Foothill Areas	Warm Climate, Low Elevation, Hot and Dry Summers, Mainly Inland Valley Areas
Arctostaphylos "Hookeri" (Monterey Manzanita)	-	X	-	-	X
Arctostaphylos "Emerald Carpet" (Manzanita)	-	X	-	-	X
Arctostaphylos "Uva Ursi" (Bearberry)	-	X	-	-	X
Caenothus G.H. "Yankee Point" (Yankee Point Ceanothus)	-	X	-	-	X
Nandina Domestica (Heavenly Bamboo)	-	X	X	X	X
Agapanthus Orientalis (Lily-of-the-Nile)	-	X	X	X	X
Santolina Chamaecyparissus (Lavender Cotton)	X	X	X	X	X
Cistus Hybridus (White Rockrose)	-	X	X	X	-
Cistus Purpureus (Purple Rockrose)	-	X	X	X	-
Raphiolepis I. "Coates Crimson" (Indian Hawthorn)	-	-	X	X	X
Raphiolepis I. "Enchantress" (Indian Hawthorn)	-	-	X	X	X
Eriophyllum Confertiflorum (Yellow Yarrow)	X	X	X	X	X
Juniperus Conferta (Shore Juniper)	X	X	X	X	X
Rosemarinus Officinalus (Creeping Rosemary)	-	-	X	X	X

**Plant Matrix for San Francisco, Peninsula, and DeAnza Divisions**

**Notes**

1. All shrubs are evergreen plants not over 5 feet at maturity.
2. All shrubs should be planted at a minimum 5 gallon size.
3. Refer to the climate zone map in the *Sunset New Western Garden Book* for the climate zone in your area.

Plants (shrubs)	Climatic Zones			
	Zone 14	Zone 15	Zone 16	Zone 17
	Warm Climate, Low Elevation, Hot and Dry Summers, Mainly Inland Valley Areas	Mild Climate, Coastal Influence, Cool-Air Basins in Coast Mountain Areas	Mild Climate, Coastal Influence, Within the Thermal Belt, Coastal Mountain Areas	Coastal Climate, Cool Winters and Hot Summers, Coastal Plain and Bay Shoreline
Senecio Cineraria (Dusty Miller)	X	X	X	X
Arctostaphylos "Hookeri" (Monterey Manzanita)	X	X	X	X
Caenothus G.H. "Yankee Point" (Yankee Point Ceanothus)	X	X	X	X
Cistus Hybridus (White Rockrose)	-	-	X	X
Cistus Purpureus (Purple Rockrose)	-	-	X	X
Santolina Chamaecyparissus (Lavender Cotton)	X	X	X	X
Raphiolepis I. "Coates Crimson" (Indian Hawthorn)	X	X	X	X
Raphiolepis I. "Enchantress" (Indian Hawthorn)	X	X	X	X
Pinus Mugo Mughos (Dwarf Forms)	X	X	X	X
Eriophyllum Confertiflorum (Yellow Yarrow)	X	X	X	X
Juniperus Conferta (Shore Juniper)	X	X	X	X
Rosemarinus Officinalus (Creeping Rosemary)	X	X	X	X
Cotoneaster Horizontalis (Rock Cotoneaster)	X	X	X	X
Nandina Domestica (Heavenly Bamboo)	X	X	X	X
Agapanthus Orientalis (Lily-of-the-Nile)	X	X	X	X



Landscape Screen for Pad-Mounted Transformers

**Plant Matrix for San Jose, Central Coast, and Los Padres Divisions**

**Notes**

1. All shrubs are evergreen plants not over 5 feet at maturity.
2. All shrubs should be planted at a minimum 5 gallon size.
3. Refer to the climate zone map in the *Sunset New Western Garden Book* for the climate zone in your area.

Plants (shrubs)	Climatic Zones				
	Zone 7	Zone 14	Zone 15	Zone 16	Zone 17
	Warm Climate, Hot Summer, Mild Winters, Low Elevations, Foothill Area	Warm Climate, Low Elevation, Hot and Dry Summers, Mainly Inland Valley Areas	Mild Climate, Coastal Influence, Cool-Air Basins in Coastal Mountain Areas	Mild Climate, Coastal Influence Within the Thermal Belt, Coastal Mountain Areas	Coastal Climate, Cool Winters and Hot Summers, Coastal Plain and Bay Shoreline
Senecio Cineraria (Dusty Miller)	X	X	X	X	X
Arctostaphylos "Uva Ursi" (Bearberry)	X	X	X	X	X
Arctostaphylos "Hookeri" (Monterey Manzanita)	X	X	X	X	X
Arctostaphylos "Emerald Carpet" (Manzanita)	X	X	X	X	X
Cistus Hybridus (White Rockrose)	X	-	-	X	X
Cistus Purpureus (Purple Rockrose)	X	-	-	X	X
Santolina Chamaecyparissus (Lavender Cotton)	X	X	X	X	X
Raphiolepis l. "Coates Crimson" (Indian Hawthorn)	-	-	-	X	X
Pinus Mugo Mughos (Dwarf Forms)	X	X	X	X	X
Eriophyllum Confertiflorum (Yellow Yarrow)	X	X	X	X	X
Juniperus Conferta (Shore Juniper)	X	X	X	X	X
Rosemarinus Officinalis (Creeping Rosemary)	X	X	X	X	X
Cotoneaster Horizontalis (Rock Cotoneaster)	X	X	X	X	X
Nandina Domestica (Heavenly Bamboo)	X	X	X	X	X
Agapanthus Orientalis (Lily-of-the-Nile)	X	X	X	X	-

**Plant Matrix for North Valley, Sierra, and Sacramento Divisions**

**Notes**

1. All shrubs are evergreen plants not over 5 feet at maturity.
2. All shrubs should be planted at a minimum 5 gallon size.
3. Refer to the climate zone map in the *Sunset New Western Garden Book* for the climate zone in your area.

Plants (shrubs)	Climatic Zones					
	Zone 1	Zone 2	Zone 7	Zone 8	Zone 9	Zone 14
	Cold Climate, High Elevation, Snow All Year, Frost All Year, High Mountain Area	Cold Climate, Snow and Frost 50% of the Year, Mountain Areas	Warm Climate, Hot Summer, Mild Winters, Low Elevations, Foothill Area	Warm Climate, Cold Air Basins in Winter, Low Elevations, Hot, Dry Summers, Cool Winter	Hot Climate Within the Thermal Belt, Warmer and Higher Elevations than Zone 8, Foothill Areas	Warm Climate, Low Elevation, Hot and Dry Summers, Mainly Inland Valley Areas
Senecio Cineraria (Dusty Miller)	–	–	X	–	–	X
Arctostaphylos "Hooker" (Monterey Manzanita)	–	–	X	–	–	X
Arctostaphylos "Emerald Carpet" (Manzanita)	–	–	X	–	–	X
Euryoes Pectinatus (Desert Daisy)	–	–	–	–	–	X
Juniperus Conferta (Shore Juniper)	X	X	X	X	X	X
Santolina Chamaecyparissus (Lavender Cotton)	X	X	X	X	X	X
Cistus Hybridus (White Rockrose)	–	–	X	–	X	X
Cistus Purpureus (Purple Rockrose)	–	–	X	–	X	X
Eriophyllum Confertiflorum (Yellow Yarrow)	X	X	X	X	X	X
Agapanthus Orientalia (Lily-of-the-Nile)	–	–	X	X	X	X

Landscape Screen for Pad-Mounted Transformers

**Plant Matrix for Diablo, Mission, and East Bay Divisions**

**Notes**

1. All shrubs are evergreen plants not over 5 feet at maturity.
2. All shrubs should be planted at a minimum 5 gallon size.
3. Refer to the climate zone map in the *Sunset New Western Garden Book* for the climate zone in your area.

Plants (shrubs)	Climatic Zones				
	Zone 7	Zone 14	Zone 15	Zone 16	Zone 17
	Warm Climate, Hot Summer, Mild Winters, Low Elevations, Foothill Area	Warm Climate, Low Elevation, Hot and Dry Summers, Mainly Inland Valley Areas	Mild Climate, Coastal Influence, Cool-Air Basins in Coastal Mountain Areas	Mild Climate, Coastal Influence Within the Thermal Belt, Coastal Mountain Areas	Coastal Climate, Cool Winters and Hot Summers, Coastal Plain and Bay Shoreline
Senecio Cineraria (Dusty Miller)	–	X	X	X	X
Arctostaphylos “Hookeri” (Monterey Manzanita)	X	X	X	X	X
Euryops Pectinatus (Desert Daisy)	–	X	X	X	X
Cistus Hybridus (White Rockrose)	X	–	–	X	X
Cistus Purpureus (Purple Rockrose)	X	–	–	X	X
Santolina Chamaecyparissus (Lavender Cotton)	X	X	X	X	X
Raphiolepis I. “Coates Crimson” (Indian Hawthorn)	–	X	X	X	X
Raphiolepis I. “Enchantress” (Indian Hawthorn)	–	X	X	X	X
Pinus Mugo Mughos (Dwarf Forms)	X	X	X	X	X
Ceanothus G.H. “Yankee Point” (Yankee Point Ceanothus)	X	X	X	X	X
Juniperus Conferta (Shore Juniper)	X	X	X	X	X
Cotoneaster Horizontalis (Rock Cotoneaster)	X	X	X	X	X
Nandina Domestica (Heavenly Bamboo)	X	X	X	X	X
Agapanthus Orientalis (Lily-of-the-Nile)	X	X	X	X	X

**Plant Matrix for North Coast, and North Bay Divisions**

**Notes**

1. All shrubs are evergreen plants not over 5 feet at maturity.
2. All shrubs should be planted at a minimum 5 gallon size.
3. Refer to the climate zone map in the *Sunset New Western Garden Book* for the climate zone in your area.

Plants (shrubs)	Climatic Zones						
	Zone 1	Zone 2	Zone 7	Zone 14	Zone 15	Zone 16	Zone 17
	Cold Climate, High Elev. and Snow All Year, Frost All Year, High Mountain Areas	Cold Climate, Snow and Frost 50% of the Year, Mountain Areas	Warm Climate, Hot Summers, Mild Winters, Low Elevations, Foothill Areas	Warm Climate, Low Elevation, Hot and Dry Summers, Mainly Inland Valley Areas	Mild Climate, Coastal Influence, Cool-air Basins in Coast Mountain Areas	Mild Climate, Coastal Influence Within the Thermal Belt, Coastal Mountain Areas	Coastal Climate, Cool Winters and Hot Summers, Coastal Plain and Bay Shoreline
Senecio Cineraria (Dusty Miller)	–	–	X	X	X	X	X
Arctostaphylos "Hookeri" (Monterey Manzanita)	–	–	X	X	X	X	X
Arctostaphylos "Emerald Carpet" (Manzanita)	–	–	X	X	X	X	X
Ceanothus G.H. "Yankee Point" (Yankee Pt. Ceanothus)	–	–	X	X	X	X	X
Euryops Pectinatus (Desert Daisy)	–	–	–	X	X	X	X
Juniperus Conferta (Shore Juniper)	X	X	X	X	X	X	X
Santolina Chamaecyparissus (Lavender Cotton)	X	X	X	X	X	X	X
Cistus Hybridus (White Rockrose)	–	–	X	–	–	X	X
Cistus Purpureus (Purple Rockrose)	–	–	X	–	–	X	X
Mahona Aquifolium "Compacta" (Oregon Grape)	X	X	X	X	X	X	X
Raphiolepis I. "Coates Crimson" (Indian Hawthorn)	–	–	X	X	X	X	X
Pinus Mugo Mughos (Dwarf Forms)	X	X	X	X	X	X	X

**Revision Notes**

Revision 02 has the following changes:

1. Revised Note 9 on Page 1 to clarify wall clearances.