Aboveground Equipment Screening Manual (AESM)
For Utility Equipment
September 2014

CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT
201 SOUTH ANAHEIM BOULEVARD
ANAHEIM, CA 92805
WATER ENGINEERING: 6TH FLOOR
ELECTRICAL ENGINEERING: 7TH FLOOR
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Anaheim Public Utilities – Aboveground Equipment Screening Manual
Introduction
The Aboveground Equipment Screening Manual (AESM) provides guidelines for screening or softening the appearance of aboveground utility equipment. Utility equipment is primarily located on private property as part of development projects and shall be reviewed and approved by the Planning Department and the Public Utilities Department. The screening methods illustrated are typical and provides visual examples from which a developer can work with the Planning Department to make choices for improving aesthetics, selecting plant types, and locating equipment necessary to serve the development.

In addition, the AESM provides clearance requirements for utility workers to safely access, operate, and maintain utility equipment. The Public Utilities Department intends to maximize service reliability in a cost-effective manner in its placement of utility infrastructure for all types of aboveground utility devices, and allows screening to help improve overall aesthetics as long as it does not adversely impact operation or maintenance of equipment. These include, but are not limited to, devices such as electric utility pad mounted equipment and aboveground water utility devices.

Utility equipment that is required to be placed within the public right-of-way shall be reviewed and approved by the Department of Public Works and the Public Utilities Department. This may apply to electrical, water, telecommunications, or other utility-related equipment.

SAFETY NOTICE: Electrical utility equipment may only be operated and maintained by Anaheim utility workers, or its qualified contractors, who have requisite training to operate high voltage equipment.

Purpose
The AESM provides developers, consultants, contractors, property owners, and general customers with alternatives and guidelines for acceptable screening around aboveground utility equipment primarily located on private property. The manual provides acceptable screening methods including screening devices, equipment location and clearance requirements.

In accordance with Section 18.38.160 of the Anaheim Municipal Code, aboveground utility equipment must be screened from view. Screening may be provided through landscaping, fencing, or other architectural features. For new construction projects, the equipment shall be located a minimum of five feet from property line (except in single-family zones) and outside of required structural setbacks. Equipment that is over 18 inches must also be reviewed for line-of-sight considerations. A site plan including elevation details shall be
submitted to the Planning Department and Public Utilities Department identifying the location of the device and the proposed screening for review and approval prior to construction.

In accordance with the AESM, screening methods shall be planned and installed such that it provides required clearances for safe operation and maintenance of the utility equipment. Accessibility to utility equipment on private property shall be maintained by the property owner or their tenant in order to maintain service reliability. The AESM does not intend to replace or supersede the existing Anaheim Public Utilities Construction Standards. The standards are available at www.anaheim.net and are updated periodically.

**Contacts**

Electrical Engineering Division    (714)765-5156  
Electric Utility Inspection        (714)765-6846  
Water Engineering Division        (714)765-5196  
Water Utility Inspection           (714)765-5196  
Planning Department                (714)765-5139  
Public Works Development Services  (714)765-5176  

**Section 1 – Acceptable Screening Devices**

The following screening materials are not intended to be all-inclusive. There may be instances where customers propose to utilize screening devices not included in this manual. Alternative screening devices and methods may be acceptable provided they effectively reduce the visual impact of the utility equipment and maintain required clearances. Whether the screening plans incorporate guidelines from this manual or otherwise, the plans must be submitted to the Planning Department and the Public Utilities Department for review and approval prior to construction.

**1.01 Landscape**

*Shrubs and plants* are popular screening devices that provide aesthetically pleasing results by screening utility equipment from view. Placement of shrubs and plants shall be outside the easement/clearance area as shown on the Typical Screening Methods and Clearance Requirements illustrations. In order to maintain required clearances around utility equipment, customers shall consider the size and spread that shrubs will reach at maturity. In addition, the customer shall select shrubs that are not invasive and whose root systems, vines, or branches will not grow under or into structures or equipment. See Appendix A for planting material recommendations that are low maintenance and drought tolerant.
Specific plant types shall be reviewed and approved by the Planning Department.

1.02 Fencing

Fencing can be used as an alternative screening device to screen utility equipment from public view. Typically, fencing used to screen utility equipment is custom made by the customer for each application. All fencing shall be non-see-through solid construction. Acceptable fence types include block, wood, and vinyl. All fence installations shall follow the AESM equipment clearance requirements. Since utility equipment also requires access from above by crane or other means, the easement/clearance area shall remain open to the sky and screening from above will not be allowed. The customer shall submit proposed fencing plans including elevation details to the Planning Department and Public Utilities Department for review and approval prior to construction. All fencing construction shall comply with the Planning Department - Building Division requirements.

1. **Block walls** may be utilized for screening and shall be installed outside the easement/clearance area with an unrestricted clear 10-foot working clearance in front of the utility equipment. The front side of the equipment can be enclosed with a gate provided that it opens outward and provides a clear 10-foot working clearance upon opening (Reference Electrical Construction Standard CU 1600-6). The gate shall screen the equipment completely and shall be non-see-through construction. If the gate opens onto the right-of-way, it shall meet minimum clearances for ADA requirements.

2. **Wood and vinyl** fences can also be used to screen utility equipment. All fencing shall be installed outside the easement/clearance area as shown on the Typical Screening Methods and Clearance Requirements illustrations. However, removable type fencing can be installed in the easement/clearance area. Removable type fencing shall be planned and constructed in panel sections in order for a 1-man crew to easily remove for access and working clearance. Wood and vinyl fencing shall be non-see-through construction.

3. **Other architectural features** and devices may also be acceptable provided they screen utility equipment from view and maintain working clearances. Alternative architectural screening features shall be submitted to the Planning Department and Public Utilities Department for review and approval.
1.03 Re-Painting Utility Equipment

The Public Utilities Department may also grant authorization to change the color of utility equipment to closely match the surrounding environment. Re-painting of utility equipment is not intended to camouflage equipment, but to help improve aesthetics. The equipment identification numbers and any utility signage shall not be painted over and shall remain visible. Paint colors shall be submitted to the Planning Department and Public Utilities Department for review and approval.

1.04 Alternative Types of Screening

The Public Utilities Department may also provide customers with an alternative solution to blend the view of pad mounted equipment to the surrounding environment with the use of alternative screening types such as artificial vines (see picture below) or other materials. However, screening shall not interfere with or adversely affect the operation of the equipment or its access by utility workers. If materials obstruct the cooling of equipment, or restricts opening and closing of access doors or pull boxes, the utility may restrict application of the screening materials. To discuss alternative screening options, please contact the Public Utilities Department.

Pad mounted transformer covered with artificial ivy to blend in with surrounding environment.
Protective posts may be required to prevent vehicle-caused damage to utility equipment. The Public Utilities Department will work with the developer to identify and locate protective posts. (Reference Electrical Construction Standard CU 1600-9)

Section 2 – Approval Process

The approval process consists of a coordinated effort between the Planning Department, Public Utilities Department, and the customer. Every case is considered on an individual basis to accommodate the needs and requirements of each project. The location of electric and water facilities on private property must be approved by the Planning Department and Public Utilities Department prior to the initiation of the screening coordination. The customer shall provide a site plan including elevation details and landscape plans showing screening methods and how the utility equipment will fit within the area. After electric equipment locations are approved, the Electrical Engineering Division will provide an approved electric utility service plan that will include electric service requirements and show approved equipment locations. Water Engineering Division will work with the developer for water facility location approvals and service requirements. Easement and clearance requirements vary depending on the utility equipment type and size and must follow the clearance requirements included in this manual. Access to utility equipment on private property must always be maintained. After approval and during installation, the utility inspector will check for compliance with the AESM.
Section 3 – Typical Screening Methods and Clearance Requirements

The following are typical screening installation methods and clearance requirements for aboveground utility equipment. The illustrations and guidelines are intended as a reference in developing an acceptable screening method for submittal to the City for approval process.

Front of transformer is parallel to R.O.W.

Front of transformer facing R.O.W.

3.01 Single Phase Pad Mounted Transformer
Front of fuse cabinet is parallel to R.O.W.

Front of fuse cabinet facing R.O.W.

3.02 Pad Mounted Distribution Fuse Cabinet (DFC)
Transformer with 8'X10' pad.
Front of transformer parallel with R.O.W.

Transformer with 8'X10' pad.
Front of transformer facing R.O.W.

Transformer with 8'X10' pad screened with block wall and gate. Gate opening provides a 10 foot working clearance in front.

Transformer with 8'X10' pad screened with landscape. Screening is installed outside clearance area.

3.03 Three Phase Pad Mounted Transformer
Transformer with 6’X8’ pad.
Front of transformer parallel with R.O.W.

Transformer with 6’X8’ pad.
Front of transformer facing R.O.W.

Transformer with 6’X8’ pad screened with block wall and gate. Gate opening provides a 10 foot working clearance in front.

Transformer with 6’X8’ pad screened with landscape and fencing. Screening is installed outside clearance area.

3.03 Three Phase Pad Mounted Transformer
Hedge used to screen transformer. See picture to the right.

Hedge is installed outside clearance area.

Wall and gate used to screen transformer. See picture to the right.

Gate opening provides a 10 foot clearance in front.

### 3.03 Three Phase Pad Mounted Transformer
Front of capacitor parallel to R.O.W.

Front of capacitor facing R.O.W.

Picture of pad mounted capacitor. Screening is installed outside easement/clearance area.

3.04 Pad Mounted Capacitor Cabinet
3.05 Pad Mounted Switch (PMC & PME Types)

Picture of pad mounted switches. Screening is installed outside easement/clearance area.
3.06 Pad Mounted Switch (PMV Type)

Front of PMV switch parallel to R.O.W.

Front of PMV switch facing R.O.W.

Picture of pad mounted switch. Screening is installed outside easement/clearance area.
Standard orientation installation for above ground water assemblies.

Parallel orientation installation for above ground water assemblies.

3.07 Aboveground Water Utility Devices
Pad mounted transformer painted to match surrounding environment.

Pad mounted equipment painted to blend with surrounding environment.

3.08 Re-Painting Utility Equipment
Section 4 - Irrigation Systems

Complete, operable, and automatic irrigation systems shall be installed by the customer for all landscape screening around utility equipment. The water supply line to irrigate the landscape around utility equipment shall be provided via the property owner’s water supply. Irrigation systems including controllers, wiring, backflow prevention devices, valves, conduit, and sprinklers shall be installed in accordance with all codes and ordinances including testing and inspection. No water lines shall be installed beneath utility equipment slab or box. Sprinklers shall be preset or adjusted to spray water away from utility equipment.

Section 5 - Maintenance

The property owner shall maintain all screening devices including fencing, landscaping, and irrigation systems in accordance with all applicable City codes and ordinances. In order to maintain required clearances, the property owner shall maintain shrubs, and plants on a regular basis. Please note that utility crews may need to remove shrubs that have grown into the easement/clearance area or is too close to the equipment to safely operate and maintain for the benefit of the customer and tenant, as accessibility helps to keep service reliability at a high level.

Landscape screening in the public ROW is subject to the Department of Public Works Standard Plans and Details, Section 5: Landscape and Irrigation Improvements. For details, please go to www.anaheim.net and view the Department of Public Works’ City Standards.
APPENDIX A

Planting Material Examples

The requirements for planting materials are as follows:

- Placement of shrubs and plants shall be outside the easement/clearance area as shown on the Typical Screening Methods and Clearance Requirements illustrations.
- Size and spread of shrubs shall be consistent with requirements for utility screening as identified in the AESM.
- Shrubs shall not be invasive, i.e., root systems, vines, or branches will not grow under or into structures or equipment.

It is recommended that shrubs are half as tall as the utility equipment being screened so as to provide immediate softening of the surrounding environment. The Planting Material Examples provides a list of suggested plant materials that are low maintenance and drought tolerant that may be used for screening utility equipment.
# APPENDIX A
## PLANTING MATERIAL EXAMPLES

### LANDSCAPE

<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Plant Properties</th>
<th>Low Maintenance</th>
<th>Drought Tolerant</th>
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<tbody>
<tr>
<td>Small Shrub</td>
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<tr>
<td><em>Artemisia ‘Powis Castle’</em></td>
<td>Artemisia</td>
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<td><em>Heliotrichon Semprevirens</em></td>
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<td><em>Hemerocallis Hybrid</em></td>
<td>Daylily</td>
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<td><em>Tulbaghia Violacea ‘Silver Lace’</em></td>
<td>Society Garlic</td>
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<td>Medium Shrub</td>
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<td><em>Cassia artemisiodes</em></td>
<td>Feathery Cassia</td>
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<td><em>Ceanothus ‘Joyce Coulter’</em></td>
<td>NCN*</td>
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<td><em>Ligustrum Japonicum ‘Texanum’</em></td>
<td>Waxleaf Privet</td>
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<td><em>Lupinus Hybrid</em></td>
<td>Silver Lupine</td>
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<td><em>Myrtus Communis ‘Compactum’</em></td>
<td>Dwarf Myrtle</td>
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<td><em>Pennisetum Setaceum ‘Cupream’</em></td>
<td>Purple Fountain Grass</td>
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<td><em>Pittosporum Tobira ‘Wheelerii’</em></td>
<td>Tobira Dwarf</td>
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<td><em>Rosmarinus Officinalis</em></td>
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<td><em>Salvia Leucantha</em></td>
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<td>Large Shrub</td>
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<td><em>Dodonaeae Viscosa</em></td>
<td>Hopseed Bush</td>
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<td><em>Pittosporum Tobira</em></td>
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<td><em>Photinia Frasera ‘Indian Princess’</em></td>
<td>Photinia</td>
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