RELOCATION OF UTILITY POLES ALONG THE SACRAMENTO RIVER EAST LEVEE - REACHES 5A TO 9B

Natomas Levee Improvement Program

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1.0 Purpose and Scope

As part of the Natomas Levee Improvement Program (NLIP), an adjacent levee will be constructed on the landside of the existing Sacramento River east levee (SREL) embankment (generally the east side of Garden Highway). The portion of the SREL included in the NLIP stretches from the Natomas Cross Canal to the American River confluence, a distance of over 18 miles. The levee has been broken into 20 reaches; this technical memorandum (TM) encompasses SREL Phase 2B, Reaches 5A through 9B, which is the area from just north of Elverta Road to just south of Interstate 5.

The construction of the adjacent levee will necessitate the removal and relocation of the existing utility poles. These poles support Sacramento Municipal Utility District (SMUD) electrical facilities and AT&T communication facilities. Currently, no cable television services are provided in the area. The U.S. Army Corps of Engineers (USACE) requirements will generally not allow wooden utility poles within the theoretical prism of the levee embankment. The purpose of this TM is to outline the planned relocations of the utility poles and connections to existing customer services. In addition, an underground relocation alternative for service to the waterside houses is presented for cost comparison. Finally, the need for temporary distribution and service poles during construction of the cutoff wall improvements is discussed.

1.1 Existing Utility Poles

The existing utility distribution poles are generally situated at the landside toe of the levee. Some waterside properties are served by waterside service poles. Some waterside properties are served by a landside service pole that leads to an underground service to the residence. Figure 1 shows a diagram of the existing utility pole configurations.
2.0 Planned Utility Relocation

2.1 Utility Pole Relocations in Utility Corridor

The relocated utility distribution poles will be placed in a 20 foot wide utility corridor located 15 feet to 50 feet outside of the landside levee boundary (i.e. levee toe or seepage berm toe and O&M corridor). Overhead lines from the relocated distribution poles to waterside customers would span the new adjacent levee/seepage berm to serve water side customers

2.1.1 Overhead Property Service

For waterside customers with overhead services to existing service poles located on the waterside of the levee (see Section A or B of Figure 1), overhead service lines from the relocated distribution poles to waterside customers would span the new adjacent levee/seepage berm, at a height to meet clearance standards, and connect directly to existing waterside poles. Service transformers would typically be located on the customer’s pole at the front of the property. Figure 2 shows a schematic of this configuration.

2.1.2 Underground Property Service

For waterside customers that are currently served by an existing landside service pole with an underground service across the levee (Garden Highway) to the residence (See Section C of Figure 1), overhead lines from the distribution poles would span the new adjacent levee/seepage berm, also at a height to meet clearance standards, to new service poles placed in the landside drainage swale between the Garden Highway and the new levee, intercepting existing underground services for these waterside properties. Service transformers would typically be located on the service poles east of the Garden Highway. Figure 3 shows a schematic of this configuration.
2.2 Utility Pole Relocation Estimated Cost

The estimated installation costs associated with SREL Phase 2B is summarized below.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>UNIT</th>
<th>UNIT COST</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SMUD Primary Overhead Distribution Line. Includes cable, wood poles, racking and transformers.</td>
<td>45</td>
<td>pole</td>
<td>$10,000</td>
<td>$450,000</td>
</tr>
<tr>
<td>2</td>
<td>SMUD Secondary Overhead Distribution Line Wood Pole. Includes cable, wood poles, racking and transformers.</td>
<td>76</td>
<td>pole</td>
<td>$10,000</td>
<td>$760,000</td>
</tr>
<tr>
<td>3</td>
<td>SMUD Secondary Overhead Distribution Line Wood Pole. Includes cable, wood poles, concrete foundation, racking and transformers.</td>
<td>13</td>
<td>pole</td>
<td>$15,000</td>
<td>$195,000</td>
</tr>
<tr>
<td>4</td>
<td>SMUD misc construction costs for equipment and material</td>
<td>1</td>
<td>LS</td>
<td>$25,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>5</td>
<td>AT&amp;T Overhead communications including joint pole, cable and misc transitions.</td>
<td>1</td>
<td>LS</td>
<td>$724,000</td>
<td>$724,000</td>
</tr>
</tbody>
</table>

Subtotal $2,154,000

Contingency (15%) $323,100
Design and Construction Services (10%) $247,710

Total Estimated Capital Cost of Improvements $2,724,810

2.3 Planned Project Considerations

1. There will be several locations where temporary poles will be required. Due to a limited construction easement and construction activities at the Teal Bend Golf Club, several temporary poles on the waterside of Garden Highway will be needed to maintain the distribution system along the Garden Highway. These poles are discussed in Section 4 of this TM.

2. All other temporary services will be similar to the properties’ current configuration with no additional poles on the waterside.

3. All but one property will have final service in the same manner as they are currently served.
3.0 Alternate Underground Service Description

3.1 Utility Service Line Underground

Under this alternative configuration, utility distribution poles will be placed in a 20 foot wide utility corridor located 15 feet to 50 feet outside of the landside levee toe and O&M corridor in the same manner as the planned configuration. In addition to this main distribution line, a parallel distribution line would be installed within the waterside lane of the Garden Highway along the area from the north end of the Teal Bend Golf Club south to Interstate 5 (I-5) to serve waterside customers. The parallel distribution lines would be required to maintain SMUD service to both waterside (underground) and landside (overhead) customers. All waterside services would be from the underground line beneath Garden Highway. Existing waterside poles could be removed. Transformers to serve waterside homes would be located on an 8 foot x 8 foot concrete pad near the front edge of each customer’s property line. Two customers could share a single transformer location. Figure 4 shows a schematic of these configurations.

3.1.1 Overhead service replacement

Customers with overhead services from existing service poles located on the front of their property could receive a new ground transformer pad or could continue to be served by a modified overhead service. If the underground service is selected, trenching would be required from the transformer pad to the customer’s meter box at the house to install the underground secondary service.

3.1.2 Underground service reconfiguration

Customers with current underground services beneath the Garden Highway would receive a new ground transformer pad on the west side of the Garden Highway. The existing secondary underground from the customer’s meter box would be intercepted on the waterside and connected to the new transformer.
3.2 Underground Service Alternative Estimated Cost

The estimated installation costs associated with SREL Phase 2B is summarized below.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>UNIT</th>
<th>UNIT COST</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Priority Improvements</td>
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<td>1</td>
<td>SMUD Primary Overhead Distribution Line. Includes cable, wood poles, racking and transformers.</td>
<td>45</td>
<td>pole</td>
<td>$10,000</td>
<td>$450,000</td>
</tr>
<tr>
<td>2</td>
<td>SMUD Secondary Overhead Distribution Line Wood Poles. Includes cable, wood poles, concrete foundation, racking and transformers.</td>
<td>13</td>
<td>pole</td>
<td>$15,000</td>
<td>$145,000</td>
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<tr>
<td>3</td>
<td>SMUD misc construction costs for equipment and material</td>
<td>1</td>
<td>LS</td>
<td>$25,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>4</td>
<td>SMUD underground from Teal Bend to I-5</td>
<td>1</td>
<td>LS</td>
<td>$3,138,000</td>
<td>$3,138,000</td>
</tr>
<tr>
<td>5</td>
<td>AT&amp;T Overhead communications including joint pole, cable and misc transitions.</td>
<td>1</td>
<td>LS</td>
<td>$724,000</td>
<td>$724,000</td>
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<tr>
<td></td>
<td>Subtotal</td>
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<td></td>
<td>$4,532,000</td>
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<tr>
<td>Contingency (15%)</td>
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<td></td>
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<td>$679,800</td>
<td></td>
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<tr>
<td>Design and Construction Services (10%)</td>
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<td>$521,180</td>
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<td>Total Estimated Capital Cost of Improvements</td>
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<td></td>
<td>$5,732,980</td>
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3.3 Underground Project Considerations

1. The costs of undergrounding power lines are much higher than overhead distribution.
2. There will be disruption of the Garden Highway during underground installation.
3. Each property owner served by the underground line will have to provide an 8 foot x 8 foot easement between properties to allow for a pad mounted transformer. This is required since there are no poles to mount the transformers.
4. Engineering analyses have not been completed to detail the underground approach; there will certainly be temporary services placed prior to the underground services being installed. Temporary and final locations would be determined at a later date.
5. Homes with existing overhead services would need to keep their waterside poles or trench to their metering box.
6. This approach will take considerably longer to construct. It is unlikely SMUD could begin this year.
4.0 Temporary Pole Description

4.1 Utility Service Line Temporary Poles along Teal Bend

Due to a limited construction easement and construction activities at the Teal Bend Golf Club, several temporary poles on the waterside of Garden Highway will be needed to maintain the distribution system along the Garden Highway. The temporary alignment of overhead lines will be placed approximately six feet from the waterside edge of the highway travel lane. Customers with underground services will receive a service drop from a pole located at the waterside edge of the highway that ties into their existing underground feed. Customers with overhead services will be transferred to the temporary overhead line. Customers with waterside poles near the highway will be connected overhead perpendicular to the highway at the existing pole location. This will minimize the area of any tree interference. Figure 5 shows a schematic of this area.

4.2 Utility Service Line Temporary Poles for the Remaining (SREL Reaches 7-9B)

There will be several locations where temporary poles will be required to allow the levee to be built before a permanent swale pole can be installed. These poles will be placed six feet from the existing landside edge of Garden Highway travel lane. These poles will be placed to provide a minimum of 20 feet of clearance to the centerline of the cut-off wall. This will allow excavation equipment enough clearance for construction. Customers with underground services will receive a service drop from a temporary pole located at the landside edge of the highway that ties into their existing underground feed. Customers with overhead services will be transferred to the temporary overhead line. Figure 6 through 10 show a schematic of this area.
5.0 Recommendations

As shown above, the cost favorable alternative would be the planned project (overhead poles). Under the planned project, the final services would remain predominantly unchanged and no additional permanent waterside facilities would be required.