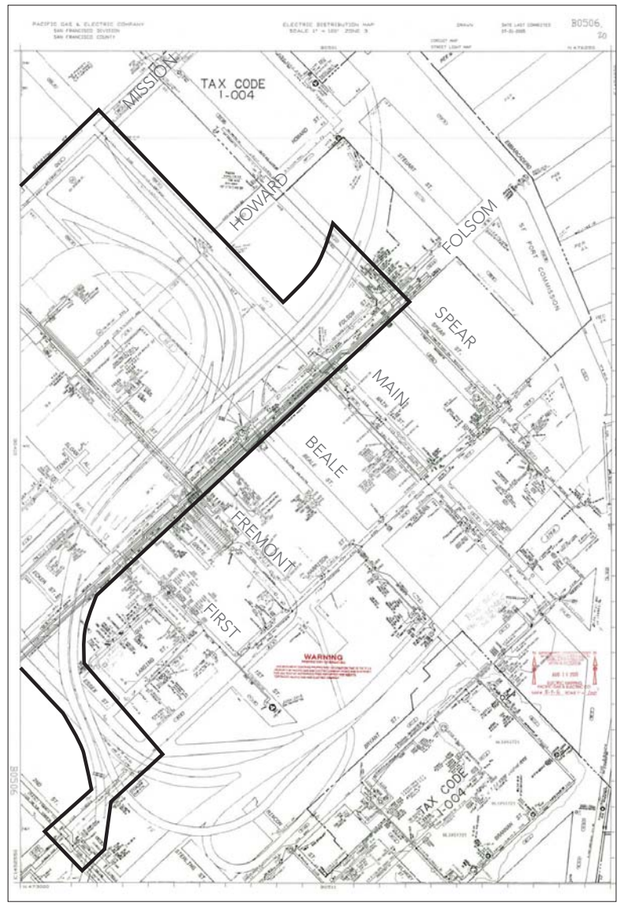

PGE Electrical Distribution map at Folsom Street

FOLSOM STREET

New development will be concentrated along the north side of Folsom. Due to the size of development, significant utility upgrades and the consequent rebuild of the street and underlying infrastructure may be necessary. In this scenario, the utility infrastructure can be coordinated with the proposed street trees to achieve a regular spacing. The wider 25' sidewalks offer the flexibility to integrate a storm water system into the landscaping scheme with the use of natural infiltration BMP's.

If the utilities within the street do not require significant upgrades, the most cost effective strategy may be to retrofit new trees and curb realignments within the existing utility layout. There are overhead electrical and communications lines on the north side of Folsom between Spear and Beale. If these are to remain as overhead lines, they will limit the height of trees planted underneath, and may cause irregular tree spacing within the streetscape. As development projects are progressed, consideration should be given to under grounding the overhead utility lines.

A PG&E substation is located on the south side of the street between Fremont and First as shown on the PG&E Electrical Distribution Map at Folsom Street. The utility information received from the SFRA shows a substantial number of electrical lines connecting to and from this substation along Folsom and the surrounding blocks. This electrical system could significantly constrain tree planting and curb adjustments if a retrofit approach is used on Folsom.

HOWARD STREET

Howard is currently almost completely developed, with limited opportunities for future redevelopment. It is possible that future redevelopment along Howard will not require significant upgrades to the existing utility system. In this retrofit scenario, regular tree spacing should be achievable in most locations, however it may become irregular in certain locations where constrained by existing utilities and basements. Visual inspection has shown that several electrical manholes are located in the north sidewalk between First and Second that could disrupt regular tree spacing.

MISSION STREET

The Transbay Terminal and the adjacent lot between First and Fremont are the areas along Mission that will be redeveloped. The streetscape on the south side of the street from Beale to First are assumed to be constructed as part of the Transbay Terminal project, using the design framework contained in this document. The strategy for integrating the new streetscape with the required infrastructure in these areas, will be determined by the Transbay Terminal project. Sections of Mission that are not redeveloped by the Transbay Terminal project should be redeveloped through streetscape retrofit, in areas where feasible and not constrained by curb cuts and utilities.

FIRST, FREMONT & SECOND STREETS

First, Fremont and Second streets are fully developed areas with limited space for redevelopment. It is possible that future redevelopment within these areas will not require significant upgrades to the existing utility system. In this retrofit scenario, regular tree spacing should be achievable in most locations, however it may become irregular in certain locations where constrained by existing utilities and basements.

There is a network of street trees along Second street that will most likely remain in place and be supplemented by additional trees. If additional trees are planted they must be placed such that they do not conflict with basements or existing utilities. Visual inspection shows that plantings along the east side of Fremont, south of Howard, may become irregular due to PG&E vaults in the sidewalk. If these utilities are not relocated during streetscape improvements the tree spacing may become irregular in this location.

The current proposed rail extension shows that tunnel construction from Second and Howard to the Terminal will be cut and cover. The cut and cover tunneling procedure creates a deep exposed trench in which construction takes place. During construction many of the existing utilities will have to be removed or diverted. This offers the opportunity to effectively integrate new infrastructure with the proposed streetscape improvements within the cut and cover area.

BEALE, MAIN & SPEAR STREETS

New development is concentrated along Beale and Main. Due to the size of development, significant utility upgrades may be required, therefore a complete rebuild of the street and underlying infrastructure may be necessary. In this scenario, the utility infrastructure can be coordinated with the proposed street trees to achieve a regular spacing.

On the east side of the Transbay Terminal there is a proposed rail turn-around under Main Street. The section of track under Beale Street that connects to the turn-around is planned to be constructed using cut and cover techniques, therefore many of the existing utilities will be removed or diverted between Mission and Howard. A complete rebuild of the street is likely, allowing the new infrastructure to be coordinated with the streetscape improvements.

Significant curb realignments are planned for Beale and Main streets between Mission and Howard. If the redevelopment within this area does not require complete rebuild of the street, there is the potential for utility conflicts with the proposed streetscape layout. Tree spacing may also be constrained to where spaces exist amongst curb cuts, basements and utilities.

Per the utility information from SFRA, the following potential utilities may be impacted by the Beale curb realignment.

- **PG&E electrical line** – The electrical line, and associated vaults and manholes on the southwest side of the street, may be impacted by the realigned curb. Those vaults that may be impacted by the curb realignment will require accurate survey to determine the extent of the conflict. Access to electrical facilities will need to be maintained per the access requirements of PG&E. The vaults will require adjustments to their cover elevations to incorporate grade changes caused by the curb relocations.

- **Overhead MUNI lines** – Street poles and overhead lines must be considered with respect to continued maintenance and usage requirements from the street. Proposed planting and pedestrian strategies should consider the existing overhead lines and poles.

- **Auxiliary water line** - A 10" auxiliary water line runs along the southeast curb line. Auxiliary water line fire hydrants and control valves may need to be relocated with respect to the proposed curb line depending on the Fire Department's requirements. There is an existing cistern, for water supply, at the intersection of Beale and Howard. Curb configurations must consider the impacts to these storage systems as well as the other utilities within the right of ways.

- **Sanitary sewer** - A 18" VCP (vitrified clay pipe) sanitary sewer line runs along the middle of the street. Two manholes lie within the proposed median. The rim elevations of the manholes may have to be adjusted to match the proposed grade in the median.

- **Utilities within the Proposed Median** - A communications line and electrical line are within the median and a gas line is in proximity to the proposed median. Communications vaults may also be located within the median. No other vaults, valves, etc are shown to exist within the median. These conduits are likely to be approximately 3-5' below road elevation and will likely constrain the type of planting that can be considered within the median unless they are relocated.

- **Storm drainage inlets** – All existing drainage inlets on Beale Street are grate inlets. The locations of grate inlets will need to be relocated to suit the amended curb line.

Per the utility information from the SFRA, the following potential utilities may be impacted by the Main curb realignment.

- **PG&E electrical line** – The electrical line, and associated vaults and manholes on the southwest side of the street, may be impacted by the proposed curb. Those vaults that may be impacted by the curb realignment will require accurate survey to determine the extent of the conflict. Access to electrical facilities will need to be maintained per the access requirements of PG&E. The vaults will require adjustments to their cover elevations to incorporate grade changes caused by the curb relocations.

  There is a series of high voltage vaults on the southeast side of the street. These should be taken into consideration during the design of the proposed bulb out in between Mission and Howard, and may preclude the bulb-out and regular tree spacing. The vaults could be relocated to accommodate the bulb outs, however this is likely to be prohibitively costly.

- **Overhead MUNI lines** - The proposed curb lines may place existing street poles in the middle of the new sidewalk. Proposed planting and pedestrian strategies should consider the existing overhead lines and poles. Street poles and overhead lines must be considered with respect to continued maintenance and usage requirements from the street.

- **Auxiliary water line** – A 14" auxiliary water line runs along the southwest curb line. Auxiliary water line fire hydrants and control valves may need to be relocated with respect to the proposed curb line depending on the Fire Department's requirements.

- **Storm drainage inlets** - All existing drainage inlets on Main Street are grate inlets. The locations of grate inlets will need to be relocated to suit the amended curb line.

The section of Spear street, near Folsom, is shown to have private development. New construction offers the chance to renovate the streetscape to meet the concepts set forth by this report, while fitting within the existing infrastructure.

ALLEYS (CLEMENTINA & TEHAMA)

The alleys are planned to be pedestrian friendly streets with lowered curbs and raised intersections engaging the street fabric with homes, shops, and restaurants. Stormwater is intended to be directed toward one or more of the following collection facilities: permeable pavers; a series of catch basins; a series of biofiltration planters located within the alley landscaping. The preferred drainage strategy should be determined during the detail design stage.

It is possible that future redevelopment within the alleys will not require significant upgrades to the existing utility system. The existing utility network shows that the majority of utility service to the alleys is from the surrounding major streets. In this retrofit scenario, regular tree spacing should be achievable in most locations, however it may become irregular where constrained by existing utilities and basements. The location and depths of existing utilities should be verified during the detailed design stages, to determine whether the existing infrastructure will constrain the alleys' streetscape strategies.

TRANSBAY PARK

Transbay Park is a formalized open space incorporating lighting features, landscaping, and grassy areas. To limit the amount of water used to irrigate the park, water efficient landscaping techniques should be integrated into the design of the park. Carefully considering issues such as plant selection, turf areas, zoning of plants by water needs, soil conditions, use of mulches and maintenance practices can offer significant water savings over traditional high water use landscape designs.

Water efficient landscaping

There is an opportunity for Transbay Park to integrate a storm water feature or an alternative strategy for stormwater management within its boundary. The open space is assumed to be self treating, because the amount of permeable surface and landscaping is sufficient to handle the amount of rain fall on the park area. A natural infiltration system could be integrated into the landscaped or grassy areas to improve water quality. Another storm water management strategy that can be integrated into the park is using recycled or reclaimed water for the water feature conceptualized for the park program. Rain water can be harvested and stored for use in this water feature, or it can be plumbed for the possibility of a future recycled water supply system.

Appropriate lighting design levels should be considered for the park. The conceptual plan should ensure a safe pedestrian environment within the park, without creating excessively bright areas. The park should be illuminated appropriately for use. For more information on lighting guidelines see Section 2.10 Lighting.

It is anticipated that the energy use requirements of the park lighting system is unlikely to require an upgrade of the electrical supply utilities in the area, however this should be confirmed as part of the future utility capacity study.

4.8 PHASING

Phasing of streetscape improvements should be considered throughout the duration of the project. Street improvements are likely to be driven by adjacent private development, therefore streetscape improvements could be phased in conjunction with parcel development. This would allow all significant parcel and utility construction to be performed prior to installing the finished surfacing, trees and street furniture. This would minimize the constraints placed on parcel developers by the existing streetscape, however implementation of the improved streetscape would be delayed until completion of the adjacent parcel blocks.

Alternatively, if certain streets are determined to merit immediate streetscape improvements prior to adjacent parcels being developed, this strategy could be implemented. An immediately improved streetscape would benefit the users of the area, however it would place a significant constraint on the construction of the adjacent parcels as the new surfaces, trees and street furniture would have to be protected, or replaced at cost by the parcel developers.

Streetscape that is adjacent to existing buildings to be retained is less likely to require significant utility upgrades, therefore phasing of the improvements is less likely to be constrained by coordination with new construction projects. These areas should be improved when funding is available and when it is logical within the context of the overall plan.

4.9 CURRENT AND FUTURE PROJECTS

Currently there are several development or renovation projects planned or known to be underway within the project area. These are located at 301, 535 and 555 Mission, 303 Second Street and at the northeast corner of Foundry Square near Howard and First. A high rise tower is also under construction adjacent to the project boundary on the south side of Folsom between Main and Spear. The San Francisco Department of Public Works has a five year plan that lists the proposed utility and street improvement projects throughout the city. There are several improvements scheduled for this area, and these projects should be tracked and followed as redevelopment progresses. Effective coordination of the streetscape improvements with these private construction projects will be a primary goal as development in the area progresses. Streetscape and utility improvements required by these projects should follow the recommendations of this plan.

Construction underway at Folsom and Main