This chapter provides information on the standard elements that comprise Treasure Island streetscape designs. This information includes guidelines and details for describing design intent and performance criteria for all streetscape elements, to ensure high quality and consistency in the public realm, over years of implementation.
F1. PAVING

STANDARD SIDEWALK PAVING MATERIALS

The following paving materials shall be used in sidewalks throughout the island. All sidewalk paving must be durable, practical from a maintenance standpoint, and safe and comfortable for all pedestrians, including those who use wheelchairs.

Paving materials contribute to the character of a street. In addition to standard concrete, special paving shall be used judiciously to enhance the quality and define sidewalk zones on some Treasure Island streets. Refer to the Streetscape Designs in Section C for paving material palettes for each street.

Non-City standard paving materials for use in the public right-of-way must be reviewed and approved by San Francisco Department of Public Works (DPW).
TYPE A  
**DPW STANDARD CAST IN PLACE CONCRETE**

Per the current San Francisco Department of Public Works specification for cast in place concrete for sidewalks. Refer to DPW standard for color, finish, and typical joint layouts.

See Streetscape Designs for additional notes.

TYPE B  
**ENHANCED CAST IN PLACE CONCRETE**

Enhanced concrete may have an exposed aggregate finish for a rich, textured surface, and may incorporate special joint patterns for a more refined appearance. Integral color and decorative aggregates shall be selected for aesthetic quality and meet accessible design requirements for slip resistance. Design must be reviewed and approved by DPW as part of Sub-Phase Improvement Plans.

TYPE C  
**UNIT PAVERS**

Unit paving is a modular system that provides an enhanced level of material quality and detail. Paver color and finish shall be selected for aesthetic quality and meet accessible design requirements for proper visual contrast and slip resistance. Paver edges and joints shall create a smooth, continuous surface. The installation design (paving section) shall ensure a level, stable paving surface, and in accordance with manufacturer's recommended installation method(s). Unit pavers shall comply with DPW, PUC, and MOD permeable paving guidelines. Design must be reviewed and approved by DPW as part of Sub-Phase Improvement Plans.

TYPE D  
**STONE SETTS**

Quarried stone worked to a regular shape, setts provide the most refined material quality to special Treasure Island streets. Stone color and finish shall be selected for aesthetic quality and meet accessible design requirements for slip resistance. Edges and joints shall create a smooth, continuous surface. The installation design (paving section) shall ensure a level, stable paving surface and in accordance with manufacturer's recommended installation method(s). Design must be reviewed and approved by DPW as part of Sub-Phase Improvement Plans.
TYPE E  DETECTABLE SURFACE PAVING - DPW STANDARD

Used where pedestrians enter vehicular zones of the street, standard detectable paving clearly delineates the edge or end of the pedestrian-only zone, consistent with the treatment of public sidewalks throughout the City. Refer to DPW standard for material, color, and installation specifications.

TYPE F  DETECTABLE SURFACE PAVING - ALTERNATIVE

Used in special situations where the DPW standard detectable surface is not required but a tactile paving treatment is necessary, detectable paving alternatives clearly delineate the edge of the pedestrian-only zone with a textured surface, such as approved truncated dome products. Material shall meet accessible design requirements for slip resistance and provides high visual contrast (70% from adjacent paving) per DPW standards. To meet these standards, design must be reviewed and approved by DPW as part of Sub-Phase Improvement Plans.
OTHER STREET PAVING MATERIALS

Treasure Island streets shall be paved and striped according to DPW and MTA standards, with some exceptions for special situations.

Typically the roadway shall be provided with an asphalt concrete wearing surface over concrete base; however pedestrian oriented streets like the Retail Main Street and Shared Public Ways may have a cast in place concrete surface or other material, to denote their special quality.

Concrete shall be used in place of asphalt, as needed, to accommodate particular storm water drainage strategies. For example, some streets with multiple midblock bulbouts may require concrete parking lanes.

Enhanced green bike lanes and other road treatments shall be used to guide cyclists and optimize their visibility, throughout the islands. On Class 1 Cycle tracks a special more muted paving may be used to define the cycle track from the surrounding context.

Zones with textured pavement such as medians and street edges, will provide emergency vehicle clearance requirements while keeping travel lanes narrow, shall be paved with textured paving.

All designs must be reviewed and approved by DPW as part of Sub-Phase Improvement Plans.
CURBS & CURB RAMPS

Except where exceptional conditions or special design objectives require an alternative design, curbs, gutters, and curb ramps shall comply with the DPW standard plans and specifications.

Design must be reviewed and approved by DPW as part of Sub-Phase Improvement Plans.
BULB-OUTS

Bulb-outs—localized curb extensions at street corners or in the middle of the block—serve several important goals. By expanding the sidewalk into the parking lane, they increase space for trees, planting, and furnishings. Bulb-outs also improve the pedestrian’s comfort and safety by shortening crosswalks and increasing visibility at intersections, and slowing vehicles by physically and visually narrowing the roadway. Bulb-outs are a key feature of the Treasure Island streetscape.

Bulb-outs shall be designed with consideration for these goals, as well as practical and technical requirements for the turning movements of large vehicles, stormwater drainage along curbs, utility access, and on-street parking needs.

The San Francisco Department of Public Works (DPW) provides standard plans for the layout geometry of bulb-out transitions, based on the maneuverability of City street sweeping vehicles. Deviations from this standard must be reviewed and approved by DPW. Bulb-out designs may require additional review by PUC, where utility lines underlay surface improvements. Bulb-outs shall also conform to the SF Better Streets Plan.
F2. STREET TREES

OVERVIEW

The purpose of this section is to provide guidelines for tree selection on Treasure Island and Yerba Buena Island. As street trees are some of the most functional and iconic elements in the streetscape, careful selection is important in creating a successful urban forest. Species selection criteria for Treasure Island and Yerba Buena Island includes:

- Species adapted to the Treasure Island and Yerba Buena Island micro-climate and soil conditions
- Trees that thrive receiving the natural regional precipitation and require minimal supplemental irrigation
- Species that have proven long-term durability in the region
- Species that are tolerant of rough urban conditions and are adaptable to adjacencies to development
- Although not required, trees that provide habitat opportunities for birds and other small wildlife are encouraged

In coordination with the San Francisco Department of Urban Forestry and long-time Bay Area expert and arborist, Barrie Coate, a collection of street trees has been identified for their character and potential to thrive in the uniquely challenging Treasure Island and Yerba Buena Island climate. Additional tree selections that maintain character, scale, and suitability may be considered, and are listed as “alternates” in the corresponding pages. As a maintenance request from the City, TIDA will be responsible for maintaining the required trees height clearance of 13’-6” minimum.
TREASURE ISLAND STREET TREES: KEY MAP OF TYPES

TREASURE ISLAND TREE TYPES AND LOCATIONS

- Type A: Windrow Street - Canopy
- Type B: Windrow Street - Accent
- Type C: Avenue C - Accent
- Type C1: Avenue C - Canopy
- Type D: Island Perimeter Streets
- Type E: California Avenue
- Type F: Palm Dr. & Clipper Cove
- Type G: Retail Main Street
- Type H: Not Used
- Type I: Eastside Neighborhood Streets - Accent
- Type J: Eastside Neighborhood - Canopy
- Type K: Cityside Neighborhood Streets
- Type L: Shared Public Way
- Type M: TI Road Causeway

FIG - 7.1. TREASURE ISLAND TREE TYPES AND LOCATIONS
**STREET TREE TYPES**

**TYPE A  WINDROW STREET - CANOPY**

DESCRIPTION:
*E. saligna* or Sydney Blue Gum is a fast growing evergreen flowering hardwood. Its native coastal climate is very similar to the site’s climatological conditions. Showy white flowers appear from December to February. Prefers good drainage. Consider expanded tree pit with this species selection.

SPECIES: *Eucalyptus saligna*
MATURE SIZE: H: 100’ - 140’
W: 25’ - 35’

SPECIES ALTERNATE: 
*Eucalyptus citriodora*  
*Pinus canariensis*

**TYPE B  WINDROW STREET - ACCENT**

DESCRIPTION:
*M. linariifolia* or Snow in Summer features soft coarsely textured ‘paper bark’ and its distinctive feature, profuse scented white flowers that bloom in June. Wind tolerant and a regular attraction for insects and birds. Well drained soils and regular pruning preferred for longevity.

SPECIES: *Melaleuca linariifolia*
MATURE SIZE: H: 15’ - 25’
W: 10’ - 15’

SPECIES ALTERNATE: 
*Tristamiaopsis laurina ‘Elegant’  
Lophostemon confertus*

**TYPE C  AVENUE C - ACCENT**

DESCRIPTION:
*Corymbia ficifolia* (previously *Eucalyptus ficifolia*) or Red Flowering Gum is an ornamental tree prized for its prolific red flower clusters. Considered an ideal street trees for its ability to adapt to different climatological conditions, Red Flowering Gum is also a prized garden tree.

SPECIES: *Corymbia ficifolia*  
(or *Eucalyptus ficifolia*)
MATURE SIZE: H: 20’ - 30’
W: 20’ - 25’

SPECIES ALTERNATE: *Melaleuca linariifolia*
**TYPE C1  AVENUE C - CANOPY**

**DESCRIPTION:**
*Q. virginia* or Virginian Live Oak is a medium to large evergreen tree with a spreading and dense canopy. This fast grower performs best in sandy well-drained soils and full sun. Acorns attract birds and shiny leaves are resistant to salt spray.

**SPECIES:**  
*Quercus virginiana*  
**MATURE SIZE:**  
H: 30’ - 45’  
W: 35’ - 50’  
**ALTERNATE SPECIES:**  
*Quercus agrifolia*  
*Quercus suber*

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**TYPE D  ISLAND PERIMETER STREETS**

**DESCRIPTION:**
*W. filibusta* or Filibusta Palm is a hybrid native to the southwestern United States. This fast growing and impressively large palm tree is amenable to dry conditions. Full sun or light shade, tolerant of extreme heat. Well-drained soil and drought tolerant. Solitary or grouped.

**SPECIES:**  
*Washingtonia filifusta*  
**MATURE SIZE:**  
H: 45’ - 60’  
W: 10’ - 15’  
**SPECIES ALTERNATE:**  
*Phoenix dactylifera*

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**TYPE E  CALIFORNIA AVENUE**

**DESCRIPTION:**
*G. biloba* is a large heritage tree with a life expectancy of up to 3,000 years. Its regular leaves resemble other ‘maidenhair’ plants and changes from a light green to a brilliant yellow or gold. Fallen leaves in the winter reveal a spectacular, nearly architectural, tree structure. Considered disease resistant. Well-drained soils required.

**SPECIES:**  
*Ginkgo biloba ‘Autumn Gold’*  
**MATURE SIZE:**  
H: 50’ - 80’  
W: 25’ - 45’  
**SPECIES ALTERNATE:**  
*Ulmus parvifolia ‘Allee’*  
*Fraxinus americana ‘Autumn Purple’*  
*Koelreuteria bipinnata*
TYPE F  PALM DRIVE & CLIPPER COVE

DESCRIPTION:  
*P. dactylifera* or Date Palm has been in cultivation for several thousand years. These medium - large palms grow in clumps or singularly with 10’ - 12’ long leaves. These palms thrive in warm dry climates. Full sun and well drained soils preferred.

SPECIES:  
*Phoenix dactylifera ‘Medjool’*

MATURE SIZE:  
H: 40’ - 60’
W: 10’ - 20’

SPECIES ALTERNATE:  
*Phoenix canariensis*
*Jubaea chilensis*

TYPE G  RETAIL MAIN STREET

DESCRIPTION:  
*C. leptophylla* or Gold Medallion Tree is a broad semi-evergreen tree. Large showy yellow flowers bloom in early to mid-summer. Full sun, low water needs (drought tolerant). Consider expanded tree pit with this species selection.

SPECIES:  
*Cassia leptophylla*

MATURE SIZE:  
H: 15’ - 25’
W: 15’ - 25’

SPECIES ALTERNATE:  
*Ulmus parvifolia*

TYPE H  NOT USED
TYPE I  EASTSIDE NEIGHBORHOOD STREETS - ACCENT

DESCRIPTION:  
F. americana, P. chinensis and G. biloba (see Type 5 for Ginkgo description) comprise the Eastside Neighborhood type. The objective for this type is a reliable canopy with seasonal interest that will cover the island’s garden district.

SPECIES:  
Ginkgo biloba ‘Autumn Gold’
MATURE SIZE:  
H: 50' - 80'
W: 25' - 45'

SPECIES ALTERNATE:

F. americana ‘Autumn Purple’ or Autumn Purple White Ash is a fast growing tree with prolonged visual interest in the fall months. Pyramidal and regular when juvenile, F. americana trees mature towards a more ovoid form. Moderate drought tolerance with regular watering preferred. Higher sun exposure yields its characteristic deep purple color. Consider expanded tree pit with this species selection.

SPECIES:  
Fraxinus americana ‘Autumn Purple’
MATURE SIZE:  
H: 30’ - 40’
W: 20’ - 30’

SPECIES ALTERNATE:

P. chinensis or Chinese Pistache is a small to medium sized tree native to western China. Its small ornamental fruits follow spectacular fall color. Can withstand poor quality soils and growing conditions. Prefers full sun, acidic to slightly alkaline soils.

SPECIES:  
Pistacia chinensis ‘Keith Davey’
MATURE SIZE:  
H: 25’ - 45’
W: 25’ - 35’

SPECIES ALTERNATE:
TYPE J  
EASTSIDE NEIGHBORHOOD STREETS - CANOPY

DESCRIPTION:
*P. acerifolia* ‘Columbia’ or London Plane Tree is synonymous with many great boulevards and civic places. This large deciduous hybrid is ideal for streets with its ocher fall color, and dense to dappled canopy coverage in the summer.

SPECIES: *Platanus x acerifolia* ‘Columbia’

MATURE SIZE:
H: 45’ - 75’
W: 30’ - 40’

SPECIES ALTERNATE: (None)

TYPE K  
CITYSIDE NEIGHBORHOOD STREETS

DESCRIPTION
*L. confertus* or Brisbane Box trees are hardy fast growing evergreen trees. Their pyramidal form consists of a mass of medium sized deep green leaves. White flowers in the summer. Can be pruned for a high canopy with dappled light.

SPECIES: *Lophostemon confertus*

MATURE SIZE:
H: 25’ - 45’
W: 15’ - 25’

SPECIES ALTERNATE: *Tristaniopsis laurina* OR *Tristaniopsis laurina* ‘Elegant’

*Corymbia ficifolia* (previously *Eucalyptus ficifolia*) or Red Flowering Gum is an ornamental tree prized for its prolific red flower clusters. Considered an ideal street trees for its ability to adapt to different climatological conditions, Red Flowering Gum is also a prized garden tree.

SPECIES: *Corymbia ficifolia* (or *Eucalyptus ficifolia*)

MATURE SIZE:
H: 20’ - 30’
W: 20’ - 25’

SPECIES ALTERNATE:
TYPE L  SHARED PUBLIC WAYS

DESCRIPTION:
G. biloba or Ginkgo; F. americana ‘Autumn Purple’ or Autumn Purple White Ash; and L. confertus or Brisbane Box; alternate in the Shared Public Way. These medium to large trees feature a stunning variety of color and upright growing habit all with limited water needs. For information on Ginkgo trees see Type 5.

F. americana ‘Autumn Purple’ or Autumn Purple White Ash is a fast growing tree with prolonged visual interest in the fall months. Pyramidal and regular when juvenile, F. americana trees mature towards a more ovoid form. Moderate drought tolerance with regular watering preferred. Higher sun exposure yields its characteristic deep purple color. Consider expanded tree pit with this species selection.

L. confertus or Brisbane Box trees are hardy fast growing evergreen trees. Their pyramidal form consists of a mass of medium sized deep green leaves. White flowers in the summer. Can be pruned for a high canopy with dappled light.

SPECIES:  
Ginkgo biloba ‘Autumn Gold’
MATURE SIZE:  
H: 50' - 80'
W: 25' - 45'

SPECIES ALTERNATE:

SPECIES:  
Fraxinus americana ‘Autumn Purple’
MATURE SIZE:  
H: 30' - 40'
W: 20' - 30'

SPECIES ALTERNATE:

SPECIES:  
Lophostemon confertus
MATURE SIZE:  
H: 25' - 45'
W: 15' - 25'

SPECIES ALTERNATE:  
Tristaniopsis laurina OR Tristaniopsis laurina ‘Elegant’
**TYPE M  
TI ROAD CAUSEWAY**

**DESCRIPTION:**
*C. macrocarpa* or Monterey Cypress is a fast growing evergreen tree native to the central coast of California. Typically associated with windy rocky slopes, this native Cypress can tolerate urban environments. Pyramidal when juvenile; open at maturity. Full sun. Slightly alkaline-acidic well drained soils. Moderate drought tolerance. High tolerance for salinity.

**SPECIES:** *Cupressus macrocarpa*

**MATURE SIZE:**
- H: 50’ - 85’
- W: 30’ - 50’

**SPECIES ALTERNATE:**
- *Quercus agrifolia*
- *Quercus virginiana*
TREE PIT DESIGNS

OVERVIEW

Establishment of a healthy and enduring urban forest and successful street tree planting are dependent on a wide range of factors including species selection, soils design, drainage, irrigation and tree care. Among the most significant considerations are tree pit design, soil volume and type.

The following recommendations for tree pit sizing and soils design have been developed based on a thorough analysis of existing site conditions and best practices for urban tree planting. These include the following key factors:

EXISTING SOILS:
Treasure Island was constructed by hydraulic dredging of nearby sand shoals and existing soils are predominated by sandy, free draining soils with low organic matter and fertility. While the subsoils are not particularly fertile, the well drained nature of the subsoils will be beneficial for tree health and as a result requirements for underdrainage will be limited.

GEO-TECHNICAL AND GRADING OPERATIONS:
In order to address geo-technical requirements and sea level rise, both the development areas and streets will be improved with geo-technical measures to densify existing soils and raise elevations. As a result the soils within the critical tree root zone (2’ - 4’ in depth) will be imported as part of the construction process. These soils will generally consist of clean structural fill soils.
**TREE PLANTING COMPONENTS**

**TREE PIT SIZE AND OPENINGS:**
The tree pit sizes and openings for Tree Planting have been developed based on the type of trees proposed in each location with larger trees associated with larger tree pits and bulb-outs. The minimum tree pit/opening size is 4 feet wide by 6 feet long and a minimum depth of 3'-6".

**PLANTING SOILS:**
Tree planting soil for back fill within tree pits shall be sandy loam soils amended as required to provide a healthy and fertile root zone. In select locations sand-based structural soil may be utilized under adjacent pedestrian paving.

**UNDERDRAINAGE:**
In general the sandy sub-soil should preclude the need for underdrainage. Provision of tree underdrainage should only be required if in-situ percolation testing of tree pits indicates that subsoil drainage rates are below 1 inch per hour.

**IRRIGATION:**
Centrally controlled automatic drip irrigation shall be provided to each tree for establishment irrigation during the first 2 - 5 years. Following that period tree irrigation may be reduced or eliminated. In lieu of automatic irrigation, tree watering may be provided by manual watering within deep watering tubes or with tree water bags.

**STAKING:**
In general, tree staking should be avoided, however considering frequency and strength of prevailing winds, manufactured steel staking systems shall be utilized to stake trees as required during the establishment period. Staking details shall be integrated with tree pit surface design such as grates and pavers shall not block pedestrian circulation.

**TREE PIT TYPOLOGY**

Four street tree planting methods are recommended for use within the streetscape:

- **Type A** - Standard Tree Pit: Standard tree pit design for general use throughout the island
- **Type B** - Expanded Tree Pit or Trench with Sand Based Structural Soil
- **Type C** - Tree Planting at Bulb-outs
- **Type D** - Structural Cell System

The following figures indicate the general components for each tree pit type outlined above. Key notes in the figures are as follows:

1. **Planting Soil**: Specified Tree Planting Soil
2. **Sand-Based Structural Soil**
3. **Surface Treatment**: Varies - Refer to Standards for Tree Pit Surfaces.
4. **Irrigation Main Line**: Connect to irrigation system.
5. **Irrigation Drip System**: All trees shall be irrigated with a drip-tube system.
6. **Sub-Drainage**: Where underlying soils do not provide adequate drainage.
7. **Tree Staking**: As required
TYPE A 
STANDARD TREE PIT

APPLICATION:
Standard Tree Pit for use throughout the streetscape.

DESCRIPTION
Typical street tree planting with well size tree pit and provisions for subdrainage and irrigation.

Tree Pit Legend

1. PLANTING SOIL
2. SAND-BASED STRUCTURAL SOIL
3. TREE PIT SURFACE TREATMENT
4. IRRIGATION MAIN LINE
5. IRRIGATION DRIP SYSTEM
6. TREE-PIT SUB-DRAINAGE- (as needed)
7. TREE STAKING- (where required)
TYPE B  EXPANDED SAND BASED STRUCTURAL SOIL

APPLICATION:
For selective use on a case by case basis where with larger tree species and existing soils suggest expanded root zone soils. Use based on testing, analysis and evaluation of the soils for specific tree types and locations on a sub-phase basis.

DESCRIPTION
Expanded tree pits that utilize a non-proprietary sand/soil blend composed of a uniform gradation of sand and organic matter. Allows for high compaction and structural strength while maintaining high aeration and drainage capacity and fertility, similar to ‘Amsterdam Soil Blend’. Where possible connect successive tree pits with structural soil panels and connect tree pits to nearby plant beds.

Tree Pit Legend
1. PLANTING SOIL
2. SAND-BASED STRUCTURAL SOIL
3. TREE PIT SURFACE TREATMENT
4. IRRIGATION MAIN LINE
5. IRRIGATION DRIP SYSTEM
6. TREE-PIT SUB-DRAINAGE- (as needed)
7. TREE STAKING- (where required)
TYPE C

TREE PIT IN PLANTED BULB-OUT

APPLICATION:
Enlarged tree planting at designated street bulb-outs.

DESCRIPTION
Tree planting at bulb-outs allows for larger soil volumes and potentially larger street tree size.

Tree Pit Legend

1. PLANTING SOIL
2. SAND-BASED STRUCTURAL SOIL
3. TREE PIT SURFACE TREATMENT
4. IRRIGATION MAIN LINE
5. IRRIGATION DRIP SYSTEM
6. TREE-PIT SUB-DRAINAGE-(as needed)
7. TREE STAKING-(where required)
TYPE D TREE PIT WITH STRUCTURAL CELL SYSTEM

APPLICATION:
Structural Cell Systems may be utilized in select areas for large trees in key locations to allow for increased soil volumes and to provide root pathways to adjacent landscape areas. Structural Cell Systems will be limited and will require DPW review and coordination.

DESCRIPTION
Expand soil volume available to tree roots by extending panels of planting soil in a manufactured structural cell system to support adjacent paving while providing high quality uncompacted planting soils.

Tree Pit Legend
1. PLANTING SOIL
2. SAND-BASED STRUCTURAL SOIL
3. TREE PIT SURFACE TREATMENT
4. IRRIGATION MAIN LINE
5. IRRIGATION Drip SYSTEM
6. TREE-PIT SUB-DRAINAGE- (as needed)
7. TREE STAKING- (where required)
The surface of a tree pit is part of the sidewalk. To foster growth and longterm health of trees, this surface must allow air and water to penetrate into the soil below, as well as protect the root zone from compaction. To support and accommodate the street’s image and function for people, this surface must be attractive, manageable, and suited to the particular conditions and uses of the surrounding sidewalk.

In all cases, the surface shall be installed and maintained to be flush with the adjacent sidewalk paving and comply with Department of Public Works (DPW) guidelines.

**TYPE A CRUSHED STONE**

**APPLICATION:**
Streets without sidewalk planting.

**DESCRIPTION:**
Stabilized crushed stone or decomposed granite.

**DESIGN CRITERIA:**
Material shall be selected to maximize tree health and provide a safe walking surface for passengers existing and entering parked cars. Material and color shall be consistent, and complement the colors and textures of adjacent sidewalk paving materials.
**TYPE B  PLANTING**

**APPLICATION:**
Planting areas in furnishing zones and bulb-outs

**DESCRIPTION:**
Understory plants with mulch*

**DESIGN CRITERIA:**
Planting areas require a 2" paved “courtesy strip” at parallel parking, to provide a path for passengers exiting and entering parked cars. Plant material shall be robust and resilient to the impacts of sidewalk use by pedestrians and dogs, and deter vandalism. *As needed, planting may be substituted with an alternate garden material such as stone cobbles or blocks. See Understory Planting section, page 232.

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**TYPE C  TREE GRATE**

**APPLICATION:**
High pedestrian-traffic sidewalks and transit stops in Treasure Island Village.

**DESCRIPTION:**
Ductile cast iron tree grate

**DESIGN CRITERIA:**
Tree grates shall be perforated, with an expandable opening to accommodate tree trunk growth over time. They shall be fully accessible for all pedestrians and Title 24 compliant. A single design or “family” of designs shall be selected and used for all Treasure Island installations; it should be refined and timeless.
F3. UNDERSTORY PLANTING

OVERVIEW

Understory plantings enhance the identity of a street network and provide opportunities for uniquely characterizing special districts within a greater neighborhood context. The following palette represents an array of locally-adapted species both native to the area and suitable to Mediterranean climates, noted for their interesting form, flower, foliage, and urban resilience. General requirements for understory planting species are as follows:

- Compatibility with site soils
- Durability in urban settings
- Low water usage
- Compatibility with corresponding street trees
- Low maintenance
- Serving the street service needs (such as biofiltration)
- Seasonal interest
- Ecological benefits

These general guidelines shall apply to future species selections. However, the plant palettes highlighted in this document express a design intention, and selection of the plants is to be determined within the sub-phase of that development area. Final review of understory planting selections shall be conducted by the Department of Public Works Urban Forestry Division and a local horticulturist.
TREASURE ISLAND UNDERSTORY PLANTING: KEY MAP OF TYPES

Type A: Windrow Mix
Type B: Avenue C Parkway
Type B1: Avenue C Parkway Bulb Out
Type C: Coastal Strand
Type D: Eastside Gardens
Type D1: Eastside Gardens Bulb Out
Type E: California Avenue Understory
Type F: Urban Street Planter
UNDERSTORY PLANTING TYPES

TYPE A  WINDROW MIX

DESCRIPTION:
This type supports a mixed canopy of medium to large sized Australian trees located in heavily frequented areas. Thus this mix of plants must be resilient to heavy foot traffic, wind, and other urbanized conditions. Given the frequency of this type, the need for drought tolerant and low maintenance species is highly preferred. This regular nature of this type throughout the development is also cause for an interest in plants that display seasonal interest. Lastly this palette features a Mediterranean palette to complement trees on windrow streets.

Aeonium arboreum varieties
TREE AENIUM

Agave attenuata ‘Nova’
FOXTAIL AGAVE

Anigozanthos hybrids
KANGAROO PAW

Callistemon ‘Little John’
BOTTLEBRUSH SHRUB

Helichtrichon sempervirens
BLUE OAT GRASS

Leucadendron ‘Perry’s Red’
PERRY’S RED LEUCADENDRON

Leucadendron salignum ‘Blush’
WILLOW CONE BUSH

Senecio serpens
BLUE CHALKSTICKS
DESCRIPTION:
This understory type consists of a diverse array of plant species providing a tapestry of colors, textures, heights and growing habits. Those strolling along Avenue C may encounter butterflies, hummingbirds and other creatures that enjoy these prolific bloomers.

While some of these plants may be considered suitable for cut flowers and floral arrangements, maintenance for this understory type is surprisingly low. Water needs for all plants in the type complement the water needs for the oak trees that will frame the street’s edge.

**A VENUE C PARKWAY (OAK UNDERSTORY)**

- **Achillea millefolium spp.**
  - CALIFORNIA YARROW

- **Arctostaphylos edmundii ‘Carmel Sur’**
  - CARMELO SUR MANZANITA

- **Ceanothus griseus ‘Yankee Point’**
  - CALIFORNIA LILAC

- **Heuchera maxima**
  - ALUM ROOT

- **Mimus aurantiacus**
  - STICKY MONKEY FLOWER

- **Salvia spathacea**
  - HUMMINGBIRD SAGE

- **Satureja douglasii**
  - YERBA BUENA

- **Zauschneria septentrionalis ‘Mattole River’**
  - CALIFORNIA FUCHSIA
TYPE C  
COASTAL MEADOW

DESCRIPTION:
The coastal meadow understory supports a waterfront streetscape where the dynamic functions of the coast are invited into the built landscape. Thus wind and fog friendly plants establish a ground cover that may mass at the streets edge while tapering into adjacent open spaces. Lastly, this type also consists primarily of low lying plants. This will aid in framing sight lines out into the waters’ edge.

Artemisia arborescens  
‘Powis Castle’  
POWIS CASTLE

Calamagrostis foliosa  
LEAFY REED GRASS

Carex tumulicola  
BERKELEY SEDGE

Erigeron karvinskianus  
Santa Barbara Daisy

Helichtrichon  
BLUEROOT GRASS

Lavendula stoechas  
‘Otto Quast’  
SPANISH LAVENDER

Erigeron glaucus  
BEACH ASTER

Salvia chamaedryoides  
GERMANDER SAGE
EASTSIDE GARDENS

DESCRIPTION:
The Eastside Garden Streets are some of the most intimate, quaint streets on Treasure Island due to their small scale and generous zones dedicated to neighborhood plantings. The understory plantings in this area are derived from the Mediterranean plant palette and the desired aesthetic is informal drifts of seasonally interesting planting that reflect the scale and fine-grain quality of the development in Eastside Neighborhood.

- **Abelia grandiflora**
  - **PROSTRATE GLOSSY ABELIA**

- **Coleonema pulchellum**
  - ‘Sunset Gold’
  - **GOLDEN BREATH OF HEAVEN**

- **Lavandula angustifolia**
  - ‘Buena Vista’
  - **REBLOOMING ENGLISH LAVENDER**

- **Olea europaea ‘Little Olive’**
  - **DWARF OLIVE**

- **Salvia chamaedryoides**
  - **GERMANDER SAGE**

- **Sesleria autumnalis**
  - **AUTUMN MOOR GRASS**

- **Lavandula stoechas**
  - ‘Otto Quast’
  - **SPANISH LAVENDER**

- **Sollya heterophyla**
  - **BLUEBELL CREEPER**
DESCRIPTION:
California Avenue will be one of Treasure Island’s most iconic streets. Thus, this understory type celebrates the seasonality, grandeur, and texture of the Ginkgo biloba trees that frame this space. With a palette of two flowering species, the understory planting will bring a simple and beautiful thoroughfare with minimal maintenance and year-round seasonal interest to California Avenue.

**TYPE E  CALIFORNIA AVENUE UNDERSTORY**

- *Eschscholzia californica*  
  **CALIFORNIA POPPY**

- *Coprosma kirkii*  
  ‘Variegata’  
  **Coprosma Kirkii**

- *Cotoneaster congestus*  
  ‘Likiang’  
  **LIKIA NG COTONEASTER**

- *Narcissus spp.*  
  **VARIOUS BULBS**  
  (Varieties sourced from Sloat Garden Center, Bill Baron, or similar. See below for species).

- *Narcissus jonquilla*  
  **JONQUIL NARCISSUS**

- *Narcissus papyraceus*  
  **PAPERWHITE NARCISSUS**

- *Narcissus pseudonarcissus*  
  **DAFFODIL NARCISSUS**

- *Rosmarinus officinalis*  
  ‘Tuscan Blue’  
  **‘TUSCAN BLUE’ ROSEMARY**
TYPE F  URBAN STREET PLANTER

DESCRIPTION:
This simple modern understory is a striking, yet functional companion for the more developed context. If the Retail Main Street is designated to be a stormwater treatment facility in future phases, the planting will capture urban runoff from the Retail Street while framing the street ‘rooms’. If the stormwater treatment capability is not needed at this location, Small Cape Rush, California Gray Rush, and Red Twig Dogwood to be removed from the palette and alternate species to be incorporated including:
- *Anigozanthos flavidus*
- *Salvia ‘Santa Barbara Dwarf’*
- *Cislanthe grandiflora*
- *Senecio mandraliscae*

- *Carex tumulicola*
  BERKELEY SEDGE

- *Chondropetalum tectorum*
  SMALL CAPE RUSH

- *Cornus stolonifera ‘Farrow’*
  ARTIC FIRE RED TWIG DOGWOOD

- *Dietes iridiodes*
  FORTNIGHT LILY

- *Sisyrinchium bellum*
  BLUE EYED GRASS

- *Iris douglasiana ‘Canyon Snow’*
  DOUGLAS IRIS

- *Juncus patens*
  CALIFORNIA GRAY RUSH

- *Libertia peregrinans*
  BRONZE SWORD
F4. LIGHTING

OVERVIEW

INTRODUCTION

For most of us, vision is the primary means by which we gather information about our surroundings. The variations in color, texture and brightness make up our visual world and inform our perception of the environment around us. Light is the medium that renders our visual environment and shades our perceptions, and as such it is an important design element.

This master plan report is intended to be used as a guideline for designing exterior streetscape lighting systems on Treasure Island and Yerba Buena Island utilizing the design considerations, prototypical examples and design criteria presented. To develop a design that is inspiring yet practical and economical, this streetscape lighting master plan builds upon and reinforces the conceptual goals of connectivity and cohesiveness. This report illustrates how these concepts can be realized using a family of fixtures that is responsive to the character of each streetscape as well as the functional criteria.

This report is comprised of three sections. First, general exterior lighting issues will be discussed in Functional Criteria. The second section, Design Criteria and Approach, addresses lighting design goals for the site by discussing the intended “quality of light” for each space. This will be followed by a third section, Technical Criteria, where quantifiable design metrics will be presented and important concepts from the report are extracted in a series of summary tables per prototypical street type. Please note that this report addresses lighting for the typical pedestrian and vehicular lighting conditions in a general manner. Atypical conditions must be handled on a case by case basis utilizing the criteria contained in this document.

FUNCTIONAL CRITERIA

The primary goal of most exterior lighting systems is functional: to provide adequate light for safety and security. However, a comprehensive lighting design for a project such as Treasure Island / Yerba Buena Island must also establish a nighttime identity, provide visual information, facilitate vehicular and pedestrian wayfinding necessitated by many new and renovated landmarks as well as simplify maintenance.

NIGHTTIME IDENTITY

Another important goal of the lighting system will be to provide consistency and unity throughout the site, much in the same way that signage and planting will. While each open space has its own set of lighting criteria, the use of common effects, sources and equipment among separate areas will strengthen the visual identity of the overall campus. Treasure Island is a sizable development where lighting considerations should be based on a community-wide, cohesive concept.

Establishing a hierarchy of light fixtures and lamp sources with an intentional approach to the color and quality of light is important to the cohesive nighttime identity of the project. The scale, form, overall style, proportion, color, source, and spacing of the proposed lighting fixtures should be compatible with the modern, simple, and timeless design of other site elements. The project team has applied this concept of a “family of fixtures” to the streets, pedestrian circulation and open spaces.

SAFETY AND SECURITY

The Treasure Island / Yerba Buena Island site is comprised of different types of paths and roadways, multiple buildings (existing, historic and new), public open spaces, neighborhoods, parks and gateways, as well as a variety of planting palettes. Given this level of diversity and scale, it is necessary to have a primary layer of the site lighting system for creating a sense of safety and security within each of the neighborhood districts, open spaces and parks with special attention paid to the transition areas between them. This can be achieved by adequate horizontal illuminance at the ground for navigation of roads and pathways, and adequate vertical luminance at surfaces such as buildings, people, and planting to provide visual context. Technical criteria associated with these goals are discussed further in the Technical Section.
ENVIRONMENTAL CONSIDERATIONS

Given the project’s location in the middle of San Francisco Bay, light pollution reduction and dark sky measures are also an important design consideration. For example, the Backlight, Uplight, and Glare (BUG) ratings of exterior light fixtures shall meet the criteria established in the current California Green Building Code such as CALGreen. Exterior lighting controls which may include but is not limited to motion sensing and dimming capability shall also be considered to allow for energy savings as well as preservation of the night sky. Lighting installations should also be avoided in areas where lighting is not required for public safety in an effort to minimize bird strikes.

Unnecessary glare, light spill, excessive illumination levels, and poor color rendering should be avoided in order to create a pleasing environment. Special consideration of light cutoff angle in relation to fixture mounting height is necessary in residential areas where the height of the fixture head may correspond to the height of the second or third floor windows.

WAYFINDING

After dark, many of the visual cues that direct daytime visitors around the site are less visible, and site lighting must be utilized to compensate for this deficiency. Effective illumination of Gateway signage, path and roadway intersections, and site “landmarks” facilitates wayfinding and reinforces a sense of safety and security. Illumination of vertical surfaces against darker backgrounds is an effective way to create a visual context at night. Lighting systems that enhance or are integrated with signage are especially important for wayfinding.

MAINTENANCE

The scale of the project and its variety of streetscapes, buildings and open spaces translates into a lighting system with many fixtures and potentially an extensive maintenance program. Maintenance issues that must be addressed include standardizing lamp and fixture types as much as possible, maximizing accessibility of fixtures for repair and re-lamping, optimizing lamp life, cost, and energy efficiency, and minimizing opportunities for vandalism. By carefully selecting fixtures that serve dual purposes, providing light for safety as well as night-time identity for example, fixture quantities can be reduced resulting in reduced maintenance as well as first cost and energy savings. Fixtures for the streetscape design have been chosen from the San Francisco Public Utilities Commission’s Street Lighting Catalog to assist in simplifying the maintenance requirements now and into the future.
DESIGN CRITERIA AND APPROACH

Lighting quality depends upon many aspects, one of which is the effect of source color and color rendering in the nighttime environment. High color rendering sources including LED sources provide a more realistic rendering of illuminated surfaces and objects - tree leaves appear green, colors of objects are more easily distinguishable, and pedestrians and surrounding building materials and more are easily recognized. Poor color rendering sources such as the high pressure sodium lamps currently used for many existing city streets are a limited spectrum source that turn most surfaces and objects to a dull gray. Color and color rendition of light are important design factors since the color of light can either improve or distort the nighttime environment. The security and safety of the nighttime environment is especially important in areas with high levels of nighttime activity such as in the Island Core District and surrounding areas where community and retail activities may occur well into the evening.

STREETScape

Lighting for neighborhood, commercial and retail streets can be defined by the estimated amount and type of vehicular and pedestrian use. Exit ramps off of the Bay Bridge and onto Treasure Island Road towards Palm Drive are defined by the IES (Illuminating Engineering Society) as Major Roadways. Light poles for these major streets are typically the tallest in the proposed light fixture family at 28.5 feet and are designed as Group A light fixtures. Since the exit ramp off of the Bay Bridge onto Macala Road on Yerba Buena Island travels through a residential area, while it is still designated as a Major roadway in terms of light level criteria, the proposed light poles here are not as tall and are designated as Group B light fixtures.

These Major Roadways transition to Collector roads, namely California Avenue and Clipper Cove Avenue and the light poles remain at this taller height, which may incorporate signage elements or banners, depending on SFPUC approval. Local roads then extend off of these Collector roads to distribute vehicular and pedestrian traffic to the various neighborhoods such as the Cityside District, the Eastside District, the Island Center District, and the Yerba Buena District. Neighborhood roads do not typically carry through traffic classifying them as Local Roadways and indicating lower light levels. Sufficient vertical illumination should be provided on adjacent sidewalks for identification of pedestrians and fixtures should be placed between trees to minimize light blockage. Within the hierarchy of brightness of the entire project site, the intensity of roadway lighting should not compete with facade lighting, site features, main circulation spines and other more important elements of the nighttime composition.

OTHER STREETScape CONSIDERATIONS

To create a visual hierarchy along California Avenue, LED uplighting of the large trees should be considered to add visual texture and interest along this street of historic buildings.

Other design considerations include the M1 streetscape which shall include an additional layer of festive illumination such as string lighting. LED sources are preferred and coordination in terms of fixture mounting on buildings is important. The pedestrian light pole proposed on this street is currently the Landscape Forms Alcott fixture but there is a possibility that a custom light pole may be required to accommodate various elements within the light pole such as cameras for security or speakers for annunciation or power receptacles for event lighting purposes which may be required.

FOOTNOTES TO STREETScape INSTALLATION

1. Please note all Street Lights located within planting will have concrete flags at the base of the pole to comply with city requirements.
*(IES) MAJOR ROADWAY
The part of the roadway system that serves as the principal network for through-traffic flow. The routes connect areas of principle traffic generation and important rural roadways leaving the city. These routes are often known as “arterials,” “thoroughfares,” or “preferentials” They are sometimes subdivided into primary and secondary; however, such distinctions are not necessary in roadway lighting.

*(IES) COLLECTOR ROADWAY
These are roadways servicing traffic between major and local streets. These are streets used mainly for traffic movements within residential, commercial and industrial areas. They do not handle long, through trips. Collector streets may be used for truck or bus movements and give direct service to abutting properties.

*(IES) LOCAL ROADWAY
Local streets are used primarily for direct access to residential, commercial, industrial or other abutting property. They make up a large percentage of the total street system, but carry a small proportion of vehicular traffic.

FIG - 7.3. ROAD AND INTERSECTION TYPES DIAGRAM

Please Note:
*As defined by the Illuminating Engineering Society (IES).
**Street lighting fixtures that may be located within planted areas shall have a concrete base (flag) to provide a physical separation from vegetation.
This section will discuss how the goals stated above are quantified and achieved from a technical standpoint. Standard criteria will be defined for major areas of the site and issues such as source color, light levels, and uniformity will be addressed. The major areas of the site can be broken down into the following categories for lighting: Major Roadways, Collector Roadways, Local Roadways, Walkways, and Bikeways.

While many of the criteria presented in this section are based on the illuminance guidelines established by the Illuminating Engineering Society (IES), it is important to remember that illuminance levels are not the only aspect of a successful lighting design. The recommended quantities of light, defined as illuminance, are not difficult to achieve in most cases and other metrics of quality such as uniformity, composition, cohesiveness, connectivity, visual interest, and texture must also be incorporated. The following table summarizes the technical criteria which should be integrated with the Function Criteria and Design Criteria described in the above sections.
FIG - 7.5. LIGHTING FIXTURES FAMILY DIAGRAM

LIGHTING FIXTURE FAMILY DIAGRAM

- Type 1: 28.5 ft. Tall Primary Street Light (Group A)
- Type 2: 16-22 ft. Tall Residential Street Light (Group B)
- Type 3: 12 ft. Tall Pedestrian Light (Group C)
- Type 4: 12 ft. Tall Special Pedestrian Light (Group C+)
- Lighting provided per other city projects
- Special Lower Lighting Design

NOTES:
1. California Avenue to have tree uplighting. (GROUP A+)
2. M1 Retail Street to have festive string lighting. (GROUP C+)
3. Clipper Cove Promenade to have unique light fixture specified by others.
FIXTURE FAMILIES

GROUP A
The Group A fixture family consists of simple and modern San Francisco Public Utilities Commission approved LED streetlight fixtures to provide illumination along IES defined Major and Collector roadways.

GROUP A+
The Group A+ fixture family consists of in-grade adjustable LED light fixtures (located outside of the pedestrian accessible route) to illuminate landscape trees along California Avenue to add texture and visual interest to the nighttime streetscape identity.

GROUP B
The Group B fixture family consists of the same simple and modern San Francisco Public Utilities Commission approved LED streetlight fixtures to provide illumination along IES defined Collector and Local roadways.

GROUP C
The Group C fixture family consists of pedestrian scaled modern San Francisco Public Utilities Commission approved LED pedestrian light fixtures to provide illumination along IES defined Local roadways.

GROUP C+
The Group C+ fixture family consists of catenary mounted decorative “string” light fixtures with a low level luminous quality to them to add a festive ambiance to the M1 Retail Street area.

- Light poles are 28.5 feet tall along streets and 28.5’ tall at intersections.
- Light pole locations to be staggered along the street unless otherwise noted.
- Light pole fixture wattage and photometric distribution to meet light level criteria as outlined in IES RP-8-00 and as documented in the San Francisco Public Utilities Commission Street Lighting Design Criteria.

- Light poles are 16’ tall along streets and 22’ tall at intersections.
- Light pole locations to be staggered along the street unless otherwise noted.
- Light pole fixture wattage and photometric distribution to meet light level criteria as outlined in IES RP-8-00 and as documented in the San Francisco Public Utilities Commission Street Lighting Design Criteria.

- Light poles are 12’ tall along streets and 12’ tall at intersections.
- Light pole locations to be staggered along the street unless otherwise noted.
- Light pole fixture wattage and photometric distribution to meet light level criteria as outlined in IES RP-8-00 and as documented in the San Francisco Public Utilities Commission Street Lighting Design Criteria.
Lumec Roadstar

E6, E6A, E6B, E7, E7A, E7B (LS100)

E3 (LS100)

E1, E1B, E2, E4 (LS103)

E8, E9, E10, E11 (LP160)

Supplemental String Lighting on M1 Street

Supplemental Uplighting on California Avenue

Group A

Group B

Group C

Group C+

Group A+
## Technical Strategies & Specifications

### Avenue C Between 6th St. and 7th St.

- **Type:** E4
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-65W49LED4K-ES-LE3-Voltage-NA-Mod. Wireless control system-DMG
- **Source Wattage:** 65 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Controls:** 0-10V dimming module included to be compatible with city asset management wireless control system
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160-Finish option-Arm option-GFIC option
- **Fixture Spacing:** Light poles paired along the street spaced approximately 80 ft. to 85 ft. on center
- **Roadway:** IES Collector Roadway / Medium Conflict per RP-8-00
- **Walkway/Bikeway:** Medium Pedestrian Conflict per RP-8-00
- **Roadway:** 0.6 fc avg. horizontal 4 to 1 uniformity avg. to min.
- **Walkway/Bikeway:** 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.

### Avenue C Between 8th St. and 9th St.

- **Type:** E4
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-65W49LED4K-ES-LE3-Voltage-NA-Mod. Wireless control system-DMG
- **Source Wattage:** 65 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Controls:** 0-10V dimming module included to be compatible with city asset management wireless control system
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160-Finish option-Arm option-GFIC option
- **Fixture Spacing:** Light poles paired along the street spaced approximately 80 ft. to 85 ft. on center
- **Roadway:** IES Local Roadway / Medium Conflict per RP-8-00
- **Walkway/Bikeway:** Medium Pedestrian Conflict per RP-8-00
- **Roadway:** 0.5 fc avg. horizontal 6 to 1 uniformity avg. to min.
- **Walkway/Bikeway:** 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.

### Avenue C Between California Avenue and Clipper Cove

- **Type:** E8
- **Manufacturer:** Landscape Forms Alcott
- **Catalog Series:** AC142-01-Type 3-Special dimming-Mod. pole base plate and cover to fit 10” dia. bolt circle-Special wireless control system-Special 4100 Kelvin-Finish Option Voltage per EE
- **Source Wattage:** 57 watt LED module
- **Color Temperature:** 4100 Kelvin
- **Photometric Distribution:** Type 3
- **Controls:** 0-10V dimming module included to be compatible with city asset management wireless control system
- **Manufacturer:** Landscape Forms
- **Pole Height:** 12 ft.
- **Catalog Series:** Mod. pole base plate and cover to fit 10” dia. bolt circle
- **Fixture Spacing:** Light poles staggered along the street spaced approximately 40 ft. to 45 ft. on center
- **Roadway:** IES Local Roadway / High Conflict per RP-8-00
- **Walkway/Bikeway:** Medium Pedestrian Conflict per RP-8-00
- **Roadway:** 0.6 fc avg. horizontal 6 to 1 uniformity avg. to min.
- **Walkway/Bikeway:** 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.
### Avenue D

**Between 7th St. and 8th St.**

| **Type:** | E1 |
| **Manufacturer:** | Philips Lumec |
| **Catalog Series:** | GPLS-40W49LED4K-E5-LE3-Voltage-NA-Mod. Wireless control system-DMG |
| **Source Wattage:** | 40 watt LED module |
| **Color Temperature:** | 4000 Kelvin |
| **Photometric Distribution:** | Type 3 |
| **Controls:** | 0-10V dimming module included to be compatible with city asset management wireless control system |
| **Manufacturer:** | Valmont |
| **Pole Height:** | 16 ft. |
| **Catalog Series:** | FL30-4W-700A160-Finish option-Arm option-GFIC option |
| **Fixture Spacing:** | Light poles staggered along the street spaced approximately 80 ft. to 85 ft. on center |
| **Roadway:** | 0.5 fc avg. horizontal |
| **Walkway:** | 0.2 fc avg. vertical at 4.9 ft. |
| **Roadway Uniformity:** | 6 to 1 |
| **Walkway Uniformity:** | 4 to 1 |

### Avenue D

**Between California Avenue and Clipper Cove**

| **Type:** | E8 |
| **Manufacturer:** | Landscape Forms Alcott |
| **Catalog Series:** | AC142-03-Type 3-Special dimming-Mod. pole base plate and cover to fit 10” dia. bolt circle-Special wireless control system-Special 4100 Kelvin-Finish Option-Voltage per EE |
| **Source Wattage:** | 57 watt LED module |
| **Color Temperature:** | 4100 Kelvin |
| **Photometric Distribution:** | Type 3 |
| **Controls:** | 0-10V dimming module included to be compatible with city asset management wireless control system |
| **Manufacturer:** | Landscape Forms |
| **Pole Height:** | 12 ft. |
| **Catalog Series:** | Mod. pole base plate and cover to fit 10” dia. bolt circle |
| **Fixture Spacing:** | Light poles staggered along the street spaced approximately 40 ft. to 45 ft. on center |
| **Roadway:** | 0.6 fc avg. horizontal |
| **Walkway:** | 0.6 fc avg. vertical at 4.9 ft. |
| **Roadway Uniformity:** | 2 to 1 |
| **Walkway Uniformity:** | 2 to 1 |

### Avenue E

**Between California Avenue and Clipper Cove**

| **Type:** | E8 |
| **Manufacturer:** | Landscape Forms Alcott |
| **Catalog Series:** | AC142-03-Type 3-Special dimming-Mod. pole base plate and cover to fit 10” dia. bolt circle-Special wireless control system-Special 4100 Kelvin-Finish Option-Voltage per EE |
| **Source Wattage:** | 57 watt LED module |
| **Color Temperature:** | 4100 Kelvin |
| **Photometric Distribution:** | Type 3 |
| **Controls:** | 0-10V dimming module included to be compatible with city asset management wireless control system |
| **Manufacturer:** | Landscape Forms |
| **Pole Height:** | 12 ft. |
| **Catalog Series:** | Mod. pole base plate and cover to fit 10” dia. bolt circle |
| **Fixture Spacing:** | Light poles staggered along the street spaced approximately 40 ft. to 45 ft. on center |
| **Roadway:** | 0.6 fc avg. horizontal |
| **Walkway:** | 0.6 fc avg. vertical at 4.9 ft. |
| **Roadway Uniformity:** | 2 to 1 |
| **Walkway Uniformity:** | 2 to 1 |
### Avenue F
**Between 2nd St. and 4th St.**

**Specifications**
- **Type:** E1
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-40W49LED4K-ES-LE3
- **Voltage:** NA

**Lamping and Controls**
- **Source Wattage:** 40 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Control:** 0-10V dimming module included to be compatible with city asset management wireless control system

**Lamp and Base Cover**
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160

**Layout Strategy**
- **Light poles staggered along the street spaced approximately 80 ft. to 85 ft. on center**

**Illumination Criteria**
- **Roadway:**
  - **IES Local Roadway / Medium Conflict per RP-8-00**
- **Walkway:**
  - **Medium Pedestrian Conflict per RP-8-00**

**Target Light Levels**
- **Roadway:**
  - 0.5 fc avg. horizontal
  - 6 to 1 uniformity avg. to min.
- **Walkway:**
  - 0.5 fc avg. horizontal
  - 0.2 fc avg. vertical at 4.9 ft.
  - 4 to 1 uniformity avg. to min.

### Avenue G
**Between 2nd St. and 4th St.**

**Specifications**
- **Type:** E1
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-40W49LED4K-ES-LE3
- **Voltage:** NA

**Lamping and Controls**
- **Source Wattage:** 40 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Control:** 0-10V dimming module included to be compatible with city asset management wireless control system

**Lamp and Base Cover**
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160

**Layout Strategy**
- **Light poles staggered along the street spaced approximately 80 ft. to 85 ft. on center**

**Illumination Criteria**
- **Roadway:**
  - **IES Local Roadway / Medium Conflict per RP-8-00**
- **Walkway:**
  - **Medium Pedestrian Conflict per RP-8-00**

**Target Light Levels**
- **Roadway:**
  - 0.5 fc avg. horizontal
  - 6 to 1 uniformity avg. to min.
- **Walkway:**
  - 0.5 fc avg. horizontal
  - 0.2 fc avg. vertical at 4.9 ft.
  - 4 to 1 uniformity avg. to min.

### Cityside Avenue
**Between 9th St. and 10th St.**

**Specifications**
- **Type:** E1
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-40W49LED4K-ES-LE3
- **Voltage:** NA

**Lamping and Controls**
- **Source Wattage:** 40 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Control:** 0-10V dimming module included to be compatible with city asset management wireless control system

**Lamp and Base Cover**
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160

**Layout Strategy**
- **Light poles staggered along the street spaced approximately 80 ft. to 85 ft. on center**

**Illumination Criteria**
- **Roadway:**
  - **IES Local Roadway / Medium Conflict per RP-8-00**
- **Walkway/Bikeway:**
  - **Low Pedestrian Conflict per RP-8-00**

**Target Light Levels**
- **Roadway:**
  - 0.5 fc avg. horizontal
  - 6 to 1 uniformity avg. to min.
  - 1.0 fc avg. horizontal
  - 3 to 1 uniformity avg. to min.
- **Walkway/Bikeway:**
  - 0.4 fc avg. horizontal
  - 0.1 fc avg. vertical at 4.9 ft.
  - 4 to 1 uniformity avg. to min.

### East Side Avenue
**Between 2nd St. and 4th St.**

**Specifications**
- **Type:** E1
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-40W49LED4K-ES-LE3
- **Voltage:** NA

**Lamping and Controls**
- **Source Wattage:** 40 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Control:** 0-10V dimming module included to be compatible with city asset management wireless control system

**Lamp and Base Cover**
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160

**Layout Strategy**
- **Light poles staggered along the street spaced approximately 80 ft. to 85 ft. on center**

**Illumination Criteria**
- **Roadway:**
  - **IES Local Roadway / Medium Conflict per RP-8-00**
- **Walkway/Bikeway:**
  - **Low Pedestrian Conflict per RP-8-00**

**Target Light Levels**
- **Roadway:**
  - 0.5 fc avg. horizontal
  - 6 to 1 uniformity avg. to min.
  - 1.0 fc avg. horizontal
  - 3 to 1 uniformity avg. to min.
- **Walkway/Bikeway:**
  - 0.4 fc avg. horizontal
  - 0.3 fc avg. vertical at 4.9 ft.
  - 4 to 1 uniformity avg. to min.
## Prototypical Block

### Specifications

**2nd Street**
- **Type:** E1
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-40W49LED4K-ES-LE3-Voltage-NA-Mod. Wireless control system-DMG

**8th Street**
- **Type:** E1
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-40W49LED4K-ES-LE3-Voltage-NA-Mod. Wireless control system-DMG

**10th Street**
- **Type:** E1
- **Manufacturer:** Philips Lumec
- **Catalog Series:** GPLS-40W49LED4K-ES-LE3-Voltage-NA-Mod. Wireless control system-DMG

### Lamping and Controls

**2nd Street**
- **Source Wattage:** 40 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Controls:** 0-10V dimming module included to be compatible with city asset management wireless control system

**8th Street**
- **Source Wattage:** 40 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Controls:** 0-10V dimming module included to be compatible with city asset management wireless control system

**10th Street**
- **Source Wattage:** 40 watt LED module
- **Color Temperature:** 4000 Kelvin
- **Photometric Distribution:** Type 3
- **Controls:** 0-10V dimming module included to be compatible with city asset management wireless control system

### Pole and Base Cover

**2nd Street**
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160-Finish option-Arm option-GFIC option

**8th Street**
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160-Finish option-Arm option-GFIC option

**10th Street**
- **Manufacturer:** Valmont
- **Pole Height:** 16 ft.
- **Catalog Series:** FL30-4W-700A160-Finish option-Arm option-GFIC option

### Layout Strategy

**2nd Street**
- **Fixture Spacing:** Light poles staggered along the street spaced approximately 70 ft. to 75 ft. on center

**8th Street**
- **Fixture Spacing:** Light poles staggered along the street spaced approximately 70 ft. to 75 ft. on center

**10th Street**
- **Fixture Spacing:** Light poles staggered along the street spaced approximately 75 ft. to 80 ft. on center

### Illumination Criteria

**2nd Street**
- **Roadway:** IES Local Roadway / Medium Conflict per RP-8-00
- **Roadway:** 0.5 fc avg. horizontal 6 to 1 uniformity avg. to min.
- **Walkway/Bikeway:** Medium Pedestrian Conflict per RP-8-00
- **Walkway/Bikeway:** 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.

**8th Street**
- **Roadway:** IES Local Roadway / Medium Conflict per RP-8-00
- **Roadway:** 0.5 fc avg. horizontal 6 to 1 uniformity avg. to min.
- **Walkway/Bikeway:** Medium Pedestrian Conflict per RP-8-00
- **Walkway/Bikeway:** 0.4 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.

**10th Street**
- **Roadway:** IES Local Roadway / Medium Conflict per RP-8-00
- **Roadway:** 0.5 fc avg. horizontal 6 to 1 uniformity avg. to min.
- **Walkway/Bikeway:** Medium Pedestrian Conflict per RP-8-00
- **Walkway/Bikeway:** 0.4 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.
<table>
<thead>
<tr>
<th>PROTOTYPICAL BLOCK</th>
<th>SPECIFICATIONS</th>
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<th>TARGET LIGHT LEVELS</th>
<th>ESTIMATED PROTOTYPICAL LIGHT LEVELS</th>
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</thead>
<tbody>
<tr>
<td>Shared Public Way Between 7th St. and 8th St.</td>
<td>Type: E9</td>
<td>Source Wattage: 115 watt LED module</td>
<td>Manufacturer: Landscape Forms Alcott</td>
<td>Manufacturer: Landscape Forms</td>
<td>Fixture Spacing: Light poles staggered along the street spaced approximately 45 ft. to 50 ft. on center</td>
<td>Roadway: 0.5 fc avg. horizontal 6 to 1 uniformity avg. to min.</td>
<td>Roadway: 2.8 fc avg. horizontal 2 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td></td>
<td>Color Temperature: 4100 Kelvin</td>
<td>Pole Height: 12 ft.</td>
<td>Pole Height: 12 ft.</td>
<td>Walkway/Bikeway: 2.0 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Walkway/Bikeway: 0.5 fc avg. horizontal 4 to 1 uniformity avg. to min.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Photometric Distribution: Type 5</td>
<td>Catalog Series: AC142-01-Type 5-Special dimming- Mod. pole base plate and cover to fit 10&quot; dia. bolt circle-Special wireless control system-Special 4100 Kelvin-Finish Option-Voltage per EE</td>
<td>Catalog Series: AC142-01-Type 5-Special dimming- Mod. pole base plate and cover to fit 10&quot; dia. bolt circle</td>
<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
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<td>Controls:</td>
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<tr>
<td>M1 Street Between Avenue C and Avenue D</td>
<td>Type: E10</td>
<td>Source Wattage: 57 watt LED module</td>
<td>Manufacturer: Landscape Forms Alcott</td>
<td>Manufacturer: Landscape Forms</td>
<td>Fixture Spacing: Light poles staggered along the street spaced approximately 45 ft. to 50 ft. on center</td>
<td>Roadway: 0.6 fc avg. horizontal 6 to 1 uniformity avg. to min.</td>
<td>Roadway: 1.5 fc avg. horizontal 4 to 1 uniformity avg. to min.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color Temperature: 4100 Kelvin</td>
<td>Pole Height: 12 ft.</td>
<td>Pole Height: 12 ft.</td>
<td>Walkway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Walkway: 0.5 fc avg. horizontal 2 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td></td>
<td>Photometric Distribution: Type 3</td>
<td>Catalog Series: AC142-01-Type 3-Special dimming- Mod. pole base plate and cover to fit 10&quot; dia. bolt circle-Special wireless control system-Special 4100 Kelvin-Finish Option-Voltage per EE</td>
<td>Catalog Series: AC142-01-Type 3-Special dimming- Mod. pole base plate and cover to fit 10&quot; dia. bolt circle</td>
<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
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<td>Controls:</td>
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<tr>
<td>California Avenue Between Palm Drive and Avenue C - North Side (Cultural Park)</td>
<td>Type: E7B</td>
<td>Source Wattage: 130 watt LED module</td>
<td>Manufacturer: Philips Lumec</td>
<td>Manufacturer: Valmont</td>
<td>Fixture Spacing: Light poles staggered with E7A along the street spaced approximately 80 ft. to 85 ft. on center</td>
<td>Roadway: 0.8 fc avg. horizontal 4 to 1 uniformity avg. to min.</td>
<td>Roadway: 2.3 fc avg. horizontal 2 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td></td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 18.5 ft.</td>
<td>Pole Height: 18.5 ft.</td>
<td>Bikeway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Bikeway: 1.4 fc avg. horizontal 1.2 fc avg. vertical at 4.9 ft. 2 to 1 uniformity avg. to min.</td>
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</tr>
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<td></td>
<td></td>
<td>Photometric Distribution: Type 5</td>
<td>Catalog Series: GPLM-130W98LED4K-ES-LES-Voltage per EE-Finish option*-Mod. wireless control system-DMG</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
<td>Walkway: High Pedestrian Conflict / Pedestrian Only per RP-8-00</td>
<td>Walkway: 1.0 fc avg. horizontal 0.5 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Walkway: 1.0 fc avg. horizontal 2 to 1 uniformity avg. to min.</td>
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<td></td>
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<td>Controls:</td>
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<tr>
<td>California Avenue</td>
<td>Block: Building 1</td>
<td>Type: E7A</td>
<td>Source Wattage: 130 watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixture Spacing: Light poles staggered with E7B along the street spaced approximately 80 ft. to 85 ft. on center</td>
<td>Roadway: IES Collector Roadway / High Conflict per RP-8-00</td>
<td>Roadway: 0.8 fc avg. horizontal 4 to 1 uniformity avg. to min.</td>
</tr>
<tr>
<td>Between Palm Drive and Avenue C</td>
<td></td>
<td>Manufacturer: Philips Lumec</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 28.5 ft.</td>
<td></td>
<td>Bikeway: High Pedestrian Conflict / Mixed Vehicle and Pedestrian per RP-8-00</td>
<td>Bikeway: 2.0 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
</tr>
<tr>
<td>and Avenue C</td>
<td>Catalog Series: GPLM-130W98LED4K-ES-LE3</td>
<td></td>
<td>Photometric Distribution: Type 3</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
<td></td>
<td>Walkway: Medium Pedestrian Conflict / Pedestrian Only per RP-8-00</td>
<td>Walkway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
</tr>
<tr>
<td>South Side</td>
<td>Voltage per EE-Finish option* - Mod. wireless control system-DMG</td>
<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
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<tr>
<td>California Avenue</td>
<td>Block: Building 1</td>
<td>Type: E7A</td>
<td>Source Wattage: 130 watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixture Spacing: Light poles staggered along the street spaced approximately 80 ft. to 85 ft. on center</td>
<td>Roadway: IES Collector Roadway / High Conflict per RP-8-00</td>
<td>Roadway: 0.8 fc avg. horizontal 4 to 1 uniformity avg. to min.</td>
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<tr>
<td>Between Avenue C and Avenue G</td>
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<td>Manufacturer: Philips Lumec</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 28.5 ft.</td>
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<td>Bikeway: High Pedestrian Conflict / Mixed Vehicle and Pedestrian per RP-8-00</td>
<td>Bikeway: 2.0 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
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<tr>
<td>and Avenue G</td>
<td>Catalog Series: GPLM-130W98LED4K-ES-LE3</td>
<td></td>
<td>Photometric Distribution: Type 3</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
<td></td>
<td>Walkway: High Pedestrian Conflict / Pedestrian Only per RP-8-00</td>
<td>Walkway: 1.0 fc avg. horizontal 0.5 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
</tr>
<tr>
<td></td>
<td>Voltage per EE-Finish option* - Mod. wireless control system-DMG</td>
<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
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<tr>
<td>Palm Drive</td>
<td>Block: Building 1</td>
<td>Type: E7A</td>
<td>Source Wattage: 130 watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixture Spacing: Light poles staggered along the street spaced approximately 90 ft. to 95 ft. on center</td>
<td>Roadway: IES Major Roadway / High Conflict per RP-8-00</td>
<td>Roadway: 1.2 fc avg. horizontal 3 to 1 uniformity avg. to min.</td>
</tr>
<tr>
<td>Between California Avenue and Clipper Cove</td>
<td></td>
<td>Manufacturer: Philips Lumec</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 28.5 ft.</td>
<td></td>
<td>Bikeway: High Pedestrian Conflict / Mixed Vehicle and Pedestrian per RP-8-00</td>
<td>Bikeway: 2.0 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
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<td></td>
<td>Catalog Series: GPLM-130W98LED4K-ES-LE3</td>
<td></td>
<td>Photometric Distribution: Type 3</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
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<td>Walkway: High Pedestrian Conflict / Pedestrian Only per RP-8-00</td>
<td>Walkway: 1.0 fc avg. horizontal 0.5 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td>Voltage per EE-Finish option* - Mod. wireless control system-DMG</td>
<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
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<tr>
<td>Clipper Cove</td>
<td>Type: E6B</td>
<td>Source Wattage: 105watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixture Spacing: Light poles staggered along the street spaced approximately 80 ft. to 85 ft. on center</td>
<td>Roadway: IES Collector Roadway / High Conflict per RP-8-00</td>
<td>Roadway: 0.8 fc avg. horizontal 4 to 1 uniformity avg. to min.</td>
<td>Roadway: 2.1 fc avg. horizontal 2 to 1 uniformity avg. to min.</td>
</tr>
<tr>
<td></td>
<td>Manufactures:</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 28.5 ft.</td>
<td>Bikeway: High Pedestrian Confict / Mixed Vehicle and Pedestrian per RP-8-00</td>
<td>Bikeway: 2.0 fc avg. horizontal 1.0 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Bikeway: 2.0 fc avg. horizontal 1.1 fc avg. vertical at 4.9 ft. 2 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td>Philips Lumec</td>
<td>Photometric Distribution: Type 3</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
<td>Walkway: High Pedestrian Conflict / Pedestrian Only per RP-8-00</td>
<td>Walkway: 1.0 fc avg. horizontal 0.5 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Walkway: 1.3 fc avg. horizontal 1.0 fc avg. vertical at 4.9 ft. 2 to 1 uniformity avg. to min.</td>
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<tr>
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<td>Catalog Series: GPLM-105W79LED4K-ES-LE3 - Voltage per EE-Finish option* - Mod. wireless control system-DMG</td>
<td>Controls: D-10V dimming module included to be compatible with city asset management wireless control system</td>
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<tr>
<td>Treasure Island Road Causeway</td>
<td>Type: E6A</td>
<td>Source Wattage: 105watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixture Spacing: Light poles staggered along the street spaced approximately 150 ft. to 160 ft. on center</td>
<td>Roadway: IES Major Roadway / Medium Conflict per RP-8-00</td>
<td>Roadway: 0.9 fc avg. horizontal 3 to 1 uniformity avg. to min.</td>
<td>Roadway: 1.0 fc avg. horizontal 2 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td>Manufactures:</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 28.5 ft.</td>
<td>Walkway/Bikeway: Med Pedestrian Conflict per RP-8-00</td>
<td>Walkway/Bikeway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Walkway: 0.7 fc avg. horizontal 0.7 fc avg. vertical at 4.9 ft. 2 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td>Philips Lumec</td>
<td>Photometric Distribution: Type 4</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
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<td>Catalog Series: GPLM-105W79LED4K-ES-LE4 - Voltage per EE-Finish option* - Mod. wireless control system-DMG</td>
<td>Controls: D-10V dimming module included to be compatible with city asset management wireless control system</td>
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<tr>
<td>Treasure Island Road Viaduct</td>
<td>Type: E6</td>
<td>Source Wattage: 105watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixture Spacing: Light poles along the street spaced approximately 80 ft. to 85 ft. on center</td>
<td>Roadway: IES Major Roadway / Medium Conflict per RP-8-00</td>
<td>Roadway: 0.9 fc avg. horizontal 3 to 1 uniformity avg. to min.</td>
<td>Roadway: 1.8 fc avg. horizontal 2 to 1 uniformity avg. to min.</td>
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<tr>
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<td>Manufactures:</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 28.5 ft.</td>
<td>Walkway/Bikeway: Med Pedestrian Conflict per RP-8-00</td>
<td>Walkway/Bikeway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td>Walkway: 0.7 fc avg. horizontal 0.7 fc avg. vertical at 4.9 ft. 2 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td>Philips Lumec</td>
<td>Photometric Distribution: Type 2</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
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<td>Catalog Series: GPLM-105W79LED4K-ES-LE2 - Voltage per EE-Finish option* - Mod. wireless control system-DMG</td>
<td>Controls: D-10V dimming module included to be compatible with city asset management wireless control system</td>
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<td>Yerba Buena Road</td>
<td>Type: E1B</td>
<td>Manufacturer: Philips Lumec</td>
<td>Catalog Series: GPLS-65W49LED4K-ES-LE5-</td>
<td>Source Wattage: 65watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixtures Spacing: Light poles along the street spaced approximately 70 ft. to 75 ft. on center</td>
<td>Roadway: IES Local Roadway / Low Conflict per RP-8-00</td>
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<tr>
<td></td>
<td>Manufacturer: Philips Lumec</td>
<td>Catalog Series: GPLS-65W49LED4K-ES-LE5-</td>
<td>Voltage per EE-Finish option*-Mod. wireless control system-DMG</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 16 ft.</td>
<td>Walkway/Bikeway: Med Pedestrian Conflict per RP-8-00</td>
<td>Walkway/Bikeway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td>Source Wattage: 65watt LED module</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Photometric Distribution: Type 5</td>
<td>Controls: D-10V dimming module included to be compatible with city asset management wireless control system</td>
<td>Catalog Series: FL30-4W-700A160-Finish option-Arm option-GFIC option</td>
<td>Walkway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
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<td></td>
<td>Macalla Road</td>
<td>Type: E1B</td>
<td>Manufacturer: Philips Lumec</td>
<td>Catalog Series: GPLS-65W49LED4K-ES-LE5-</td>
<td>Source Wattage: 65watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixtures Spacing: Light poles along the street spaced approximately 60 ft. to 65 ft. on center</td>
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<td></td>
<td>Manufacturer: Philips Lumec</td>
<td>Catalog Series: GPLS-65W49LED4K-ES-LE5-</td>
<td>Voltage per EE-Finish option*-Mod. wireless control system-DMG</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 16 ft.</td>
<td>Walkway/Bikeway: Med Pedestrian Conflict per RP-8-00</td>
<td>Walkway/Bikeway: 0.5 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
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<tr>
<td></td>
<td>Source Wattage: 65watt LED module</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Photometric Distribution: Type 5</td>
<td>Controls: D-10V dimming module included to be compatible with city asset management wireless control system</td>
<td>Catalog Series: FL30-4W-700A160-Finish option-Arm option-GFIC option</td>
<td>Walkway: 0.9 fc avg. horizontal 0.2 fc avg. vertical at 4.9 ft. 4 to 1 uniformity avg. to min.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Major/Major Intersection At Treasure Island Road and Macalla Road</td>
<td>Type: E7</td>
<td>Manufacturer: Philips Lumec</td>
<td>Catalog Series: GPLM-130W98LED4K-ES-LE2-</td>
<td>Source Wattage: 130 watt LED module</td>
<td>Manufacturer: Valmont</td>
<td>Fixtures Spacing: Light poles at each corner</td>
</tr>
<tr>
<td></td>
<td>Manufacturer: Philips Lumec</td>
<td>Catalog Series: GPLM-130W98LED4K-ES-LE2-</td>
<td>Voltage per EE-Finish option*-Mod. wireless control system-DMG</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Pole Height: 28.5 ft.</td>
<td>Intersection: Major/Major Medium Conflict per RP-8-00</td>
<td>Intersection: 2.6 fc avg. horizontal 3 to 1 uniformity avg. to min.</td>
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<td></td>
<td>Source Wattage: 130 watt LED module</td>
<td>Color Temperature: 4000 Kelvin</td>
<td>Photometric Distribution: Type 2</td>
<td>Controls: D-10V dimming module included to be compatible with city asset management wireless control system</td>
<td>Catalog Series: FL30-4W-800A286-Finish option-Arm option-GFIC option</td>
<td>Intersection: Major/Major Medium Conflict per RP-8-00</td>
<td>Intersection: 2.6 fc avg. horizontal 3 to 1 uniformity avg. to min.</td>
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<td>PROTOTYPICAL BLOCK</td>
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<td>LAMPPING AND CONTROLS:</td>
<td>POLE AND BASE COVER</td>
<td>LAYOUT STRATEGY</td>
<td>ILLUMINATION CRITERIA</td>
<td>TARGET LIGHT LEVELS</td>
<td>ESTIMATED PROTOTYPICAL LIGHT LEVELS</td>
</tr>
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<tr>
<td>Collector/Collector Intersection At Avenue C and California Avenue</td>
<td>Type: E6</td>
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<td>Source Wattage: 105watt LED module</td>
<td>Manufacturer: Valmont</td>
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<td>2.4 fc avg. horizontal 4 to 1 uniformity avg. to min.</td>
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<td>Photometric Distribution: Type 2</td>
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<td>Fixture Spacing: Light poles at each corner</td>
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<td>Collector/Local Intersection At Avenue D and California Avenue</td>
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<td>Fixture Spacing: Light poles at each corner</td>
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<td>Photometric Distribution: Type 5</td>
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<td>Fixture Spacing: Light poles at each corner</td>
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### Local/Local Intersection At Avenue D and M1 Street

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<tr>
<th>LAMPING AND CONTROLS:</th>
<th>POLE AND BASE COVER</th>
<th>LAYOUT STRATEGY</th>
<th>ILLUMINATION CRITERIA</th>
<th>TARGET LIGHT LEVELS</th>
<th>ESTIMATED PROTOTYPICAL LIGHT LEVELS</th>
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<tr>
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<td>Controls: 0-10V dimming module included to be compatible with city asset management wireless control system</td>
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### Midblock Crossing At Avenue F and Eastern Commons

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<th>LAMPING AND CONTROLS:</th>
<th>POLE AND BASE COVER</th>
<th>LAYOUT STRATEGY</th>
<th>ILLUMINATION CRITERIA</th>
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<th>ESTIMATED PROTOTYPICAL LIGHT LEVELS</th>
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<td>Manufacturer: Valmont</td>
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</table>

### NOTES:

1. Illumination Criteria listed indicates the IES (Illuminating Engineering Society) roadway classifications and assumed activity level used to determine the recommended light level criteria for the street and pedestrian areas.

2. Target Light Levels listed are based on roadway, walkway and bikeway classifications in the 10th edition of the IES Lighting Handbook and as shown in the Recommended Practice by IES RP-8-00 which is both referenced by the San Francisco Better Streets Program.

3. Estimated Prototypical Light Levels listed are the estimated footcandle and uniformity ratio results of in-house light level calculations of prototypical street sections and plans only based on drawings provided by the Landscape Architect. Detailed point-by-point light level calculations shall be performed by the design team(s) as needed in the further phases of the project to confirm and coordinate light fixture locations meet the Target Light Level criteria and any other associated applicable codes and regulations.

4. Illuminance or luminance calculations are for lighting design aid purposes only. All calculations performed by Horton Lees Brogden Lighting Design have been based on IESNA standards, lighting manufacturers’ data and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the calculations such as area dimensions, reflectances, landscape and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.
<table>
<thead>
<tr>
<th>AREA DESCRIPTION</th>
<th>IES - USE TYPE</th>
<th>Target Light Level*</th>
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<td><strong>Illuminance: ( E_{avg} ) (fc)</strong></td>
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<td><strong>Roadways</strong></td>
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<td>Major Roadways</td>
<td>Medium to High Conflict Areas</td>
<td>0.9 - 1.2</td>
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<td>Low Conflict Areas</td>
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<td>Collector Roadways</td>
<td>Medium to High Conflict Areas</td>
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<td>Low Conflict Areas</td>
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<td>Local Roadways</td>
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<td>Low Conflict Areas</td>
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<td>Major/Major Intersections</td>
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<td><strong>Midblock Crossings</strong></td>
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<td>Low to High Conflict Areas</td>
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<td><strong>Walkways/Bikeways</strong></td>
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<td><strong>Bus Loading</strong></td>
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<td>Bus and Shuttle Pick-up and Drop-off</td>
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<td><strong>Plazas and Town Squares</strong></td>
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<td>Low Activity</td>
<td>0.2</td>
</tr>
</tbody>
</table>

*Target light levels based on RP-8-00, IES 10th Edition Handbook and SFPUC Lighting Calculation Criteria.
Candela: The SI unit of luminous intensity. One candela is one lumen per steradian.

Color Rendering Index (CRI): Measure of the degree of color shift a defined set of objects undergo when comparing their color illuminated by the light source to the color of those same objects when illuminated by a reference source of comparable color temperature.

Color Rendering: A general expression for the effect of a light source on the color appearance of objects in conscious or subconscious comparison with their color appearance under a reference light source.

Color Temperature: A general expression related to the whiteness of optical radiation on a scale from warm to cool. More technically, it is the absolute temperature of a blackbody radiator having a chromaticity equal to that of the light source, expressed in units of kelvin.

Footcandle: A unit of illuminance, equal to 1 lumen per square foot or 10.76 lux.

Glare: The sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort or loss in visual performance and visibility.

Illuminance: The area density of the luminous flux incident at a point on a surface.

Illuminance Uniformity (Eavg to Emin): The ratio between the average illuminance to the minimum illuminance.

Lumen: The SI unit of luminous flux. Radiometrically, it is determined from the radiant. Photometrically, it is the luminous flux emitted within a unit solid angle (one steradian) by a point source having a uniform luminous intensity of one candela.

Luminance: The amount of light coming from a surface or point, and it is measured in candelas per square meter (cd/m²).

Luminance Uniformity (Lavg to Lmin): The ratio between the average luminance to the minimum luminance.

The following general terms are taken from the 10th Edition of the Illuminating Engineering Handbook.

GLOSSARY OF LIGHTING TERMS
OVERVIEW

ISLAND-WIDE APPROACH

Seating on Treasure Island streets provides a place for people to stop and rest, have a conversation, or eat a meal. Seats—benches, perches, chairs, lounges, and other objects that provide a surface for sitting—are important because they make streets more humane: inviting, comfortable, and attractive.

The island-wide approach to seating includes several types of seating to be incorporated into the design of streets. These include a standard Treasure Island bench throughout the island, in addition to special seating types for key locations in each of the three neighborhoods: Retail Main Street Lounges, Shared Public Way seating, and Eastside Neighborhood Perches. Each type is specially suited to its situation and supports the unique identity of the surrounding neighborhood.

Together these seating types, along with seating throughout the island’s public open spaces, provide a basic level of universally accessible seating where pedestrians are most likely to use it. Additional types or increased frequency of seating may be applied in the future, as need and desire are demonstrated.

GENERAL GUIDELINES

DESIGN

Seats should be selected or designed to be:
- Inviting, comfortable, and accessible to all people.
- Attractive, and support the value of high quality in the public realm.
- Durable and resilient, suitable for high-use in an urban environment.

LOCATION

Seats should be located where:
- They are most likely to be used: where they are visible, convenient, and comfortable, or where they provide an appealing view to users.
- They are part of an inviting arrangement of streetscape features such as planting areas, trees, or other seats.
- They are outside the sidewalk’s path of travel, there is sufficient space for comfortable sitting (i.e. leg room), and the functions of the sidewalk are not compromised by the seat.
TREASURE ISLAND SIDEWALK SEATING: TYPES & CONCEPTUAL LOCATIONS

SEATING PLAN: CONCEPTUAL LOCATIONS

- TI Standard Bench
- Retail Main Street Lounges
- Shared Public Way Furniture
- Supplemental Shared Public Way Seating
- Eastside Neighborhood Perches

FIG - 7.6. SEATING PLAN: CONCEPTUAL LOCATIONS
TREASURE ISLAND STANDARD BENCH

DESCRIPTION

The Treasure Island Standard bench shall be located throughout the island’s streets to ensure a basic level of seating everywhere, so that anyone can rely on regular places to stop and rest briefly, on any pedestrian route among the island’s three districts.

As a recurring feature of Treasure Island streetscapes, the bench Standard is a unifying design element that expresses the value of high quality in the public realm.

DESIGN CRITERIA

- Contemporary and timeless in style.
- Comfortable for short stays but not intended for extended use.
- Optional backrests and armrests.
- Areas with backless benches without armrests shall also include at least one bench with back and armrests.
- Each seating area shall also allow for wheelchair user seating positioned in side by side, shoulder-to-shoulder configuration.
- Suitable for a range of sidewalk conditions.

LOCATION CRITERIA

- Comfortable, inviting positions associated with other streetscape features.
- Regular intervals, to provide a baseline level of reliable place to stop and rest along pedestrian routes.
- Sidewalk furnishing zones and bulb-outs.
RETAIL MAIN STREET LOUNGES

DESCRIPTION

A singular feature of this vibrant, social street, Lounges are special, comfortable outdoor “rooms” for shoppers and other visitors to spend time: pleasant places to be on the street—to watch people or meet friends.

The four Lounges are clearly defined spaces, located outside the flow of pedestrian traffic. They provide a comfortable barrier from passing cars and integrated seating, but are also open and flexible, to invite use and adoption by adjacent businesses and vendors.

DESIGN CRITERIA

- Inviting for different types of use, including long stays.
- Spacious and flexible for varied uses: fixed elements with options for movable ones.
- Provides a comfortable feeling of separation from passing cars.
- Visually open but well defined and distinct from the rest of the sidewalk.
- Rare quality and clear design intention for comfort, use, and unique identity.
- Each lounge may be designed to have its own special use and character.

LOCATION CRITERIA

- (4) locations along the block, as shown in plan (Chapter C).
- Corresponding to adjacent storefronts or active building entrances.
SHARED PUBLIC WAY FURNITURE

DESCRIPTION
As both active pedestrian route and communal front yard for residents, the Shared Public Way provides social seating arrangements for neighbors and visitors: places to have a conversation or eat lunch. A suite of distinctive, matching furniture pieces—such as love seats, comfortable chairs, and coffee tables—invites people to spend time in the street and also coheres the length of several, eclectic blocks with a standard, special group of furnishings.

DESIGN CRITERIA
- A suite of distinctive matching furniture pieces: chairs, benches, and tables.
- Comfortable for leisurely use, such as for reading a book or eating lunch.
- Strong, consistent image: contemporary and timeless in style.

LOCATION CRITERIA
- Consistently located throughout the entire length of both Shared Public Ways
- In comfortable, social arrangements
SUPPLEMENTAL SHARED PUBLIC WAY SEATING ELEMENTS

DESCRIPTION

The Shared Public Way seating program is enhanced by additional seating elements that are designed specifically for each block, to support a distinct image and character that enriches the neighborhood and movement through it. This supplemental seating is integrated into the design of the street, incorporating elements such as walls and planting areas.

Additionally, future development of adjacent parcels and encroachments into the Shared Public Way shall provide even more specific and eclectic seating options.

DESIGN CRITERIA

• Consistent through the length of each block; varied from block to block.
• Rare quality and clear design intention for comfort, use, and unique identity.
• Comfortable for leisurely and social use.

LOCATION CRITERIA

• Sunny, social locations.
• Near midblock easements and neighborhood parks.
EASTSIDE NEIGHBORHOOD PERCHES

DESCRIPTION

Situated among the Eastside neighborhood’s lush bulb-out gardens, Perches are small, informal seats for brief stops or spontaneous conversations between neighbors. Close to the ample open space and comfortable seating of Eastside Commons, Perches are not intended for people to pass time. Instead they are simple, rustic garden elements—such as stone blocks, tree stumps, or stools—that reinforce the unique identity of the Eastside neighborhood.

DESIGN CRITERIA

- Comfortable for brief stops
- Supports the garden identity of the neighborhood
- Simple and integrated into surround planting areas
- Leaves room for other seating or elements, such as folding chairs or flower pots.
- Consistent throughout a block, but may vary block to block.

LOCATION CRITERIA

- Integrated with large planting areas in the sidewalk furnishing zone and at bulb-outs.
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TRANSIT SHELTERS

FERRY PLAZA TRANSIT SHELTERS

To encourage the use of public transportation on Treasure Island, an important component of the Intermodal Transit Hub are the transit shelters for both the bus lines picking up passengers at the island as well as the on-island shuttle service. Two separate transit shelters will be provided and co-located between the Ferry Shelter and Palm Drive. The designs shall be unique to Treasure Island and will be developed in detail in future phases of the project. Imagery shown for general character reference only. Design criteria and location criteria are specified below:

LOCATION CRITERIA

- Locate in the designated zone between westernmost drive lane and the cycle-track on Palm Drive.
- Placement shall not obstruct pedestrians. A minimum of four feet (4’) of pedestrian clearance (free of all obstacles for a clear path of travel, unobstructed pedestrian walkway) shall be maintained at all times.
- The shelter shall not intrude on pedestrian “clear zones” at street corners.
- Set back a minimum of five (5’) from any fire hydrant, driveway, curb ramp, or blue zone parking space.
- Ensure shelter is set back a minimum of five (5’) feet from the edge of crosswalk and minimum of 18” from the face of curb.
- Locate to preserve optimal views to historic Building 1.
- Placed at front zone and in a location that maximizes passenger flow.

DESIGN CRITERIA

- Provide shelter from climatic conditions.
- Incorporate seating elements.
- Include map/route information (per TIMMA, SFMTA, and AC Transit).
- Are universally accessible.
- Include lighting and City standard security features.
- Include Real-Time information monitors with push to talk features.
- Correspond to the architectural design of the Ferry Shelter Structure.
- Are composed of transparent elements to allow views to historic Building 1.
ISLAND SHUTTLE SHELTERS

Island Shuttle Shelters will be located throughout Treasure Island and Yerba Buena Island at designated stops. Unique designs will be developed for the TI and YBI shelters in the future phases of the project. Refer to the proposed locations for these shelters in the ‘Transit Service’ diagram in Chapter B. Imagery shown for general character reference only.

DESIGN CRITERIA

• Provide shelter from climatic conditions
• Incorporate seating elements
• Include map/route information (per TIMMA)
• Are universally accessible
• Include lighting and standard security features
• Include Real-Time information monitors

LOCATION CRITERIA

• Located in a bulb-out or furnishing zone.
• Do not impede into the ADA standards/pedestrian throughway zone.
• Maintain required setbacks per City code from the curb.
• Placed at front zone and in a location that maximizes passenger flow.
F6. BIKE PARKING

OVERVIEW

Bike parking promotes bicycle use on Treasure Island for transportation and recreation. To provide secure short-term parking and express a commitment to cyclist and bike culture, high quality racks shall be located throughout the island, on all streets. Groups of two to three bike racks (for four to six bikes) shall be installed as part of the initial design of streets, as well a several on-street “bike corrals” where needed. A Treasure Island custom bike rack standard shall reflect the general value of high quality in the public realm.

LOCATION CRITERIA

Individual bike racks or groupings on sidewalks should be located in the furnishing zone or bulb-out zone, where:
- They are visible to cyclists and pedestrians.
- They will be well used.
- There is ample space and they do not compromise pedestrian flow or any other sidewalk function.
- They do not conflict with access to underground utilities.


Bike Corrals should be located at sidewalk level in bulb-outs. A design feature should be located to separate bike racks from the path of travel. Corrals should be located where:
- There is a high demand for bike parking.
- Adjacent sidewalks are not sufficiently wide to accommodate necessary or desired levels of bike parking.
- They do not interfere with vehicular or transit flow or other street function.
- Street-cleaning around the Corral will be provided, since standard street-sweeping trucks cannot access this area.


CUSTOM BIKE RACK: DESIGN CRITERIA

- Racks should be strong, with at least two points of contact and multiple locking options for a range of bikes.
- Racks should be robust and well suited for a high-use urban environment and minimal maintenance.
- Racks should be consistent and distinctive to Treasure Island, refined and timeless in their design.

BIKE SHARE PROGRAMS

Refer to SFMTA “On-Street Bike Share Station Placement Recommendations”, Attachments A and B for reference to location and installation of Bike Share Stations.
TREASURE ISLAND BIKE PARKING: CONCEPTUAL LOCATIONS

BICYCLE PARKING PLAN: CONCEPTUAL LOCATIONS

- Single/Dual Bike Racks (On Sidewalk)
- Bike Corrals (On Sidewalk)
- Proposed Bike Share Locations (On Sidewalk)
F7. WASTE STATIONS

OVERVIEW

Treasure Island waste stations contribute to keeping streets clean and promoting good behavior by people who use them. Their frequent presence ensures a place to put one’s waste and exhibits a value of quality and care in the public realm.

Each waste station includes receptacles for three streams of waste: trash, recycling, and compostable materials. The selection of receptacle products shall be reviewed and coordinated with the maintenance provider.

LOCATION CRITERIA

Waste stations on sidewalks shall be located near cross-walks, in the furnishing zone or bulb-out zone where:
- They are visible to pedestrians.
- They will be well used.
- There is ample space and they do not compromise pedestrian flow or any other sidewalk function.
- They do not conflict with access to underground utilities.
- See “Conceptual Locations” plan.

RECEPTACLE OPTIONS & DESIGN CRITERIA

Receptacles may be one of the following:
- OPTION 1: San Francisco Standard, with Treasure Island customization
- OPTION 2: Solar Intelligent Collection System (by BigBelly Solar)
- RETAIL MAIN STREET ALTERNATE: Other product.

All receptacles shall be:
- Durable, resilient, and suited to hard use and cleaning.
- Easy and clean to use.
- High-capacity to Minimize collection frequency.
- Side-opening and covered, for rain protection.
TREASURE WASTE STATIONS: CONCEPTUAL LOCATIONS

FIG - 7.8. WASTE STATIONS

WASTE STATIONS

- Waste Locations
OVERVIEW

Streets are corridors for underground utilities whose main lines, lateral lines, and surface expressions impact the placement of streetscape elements. For the health and consistent spacing of trees, continuous paving surfaces, good placement of furnishings, and unobstructed to access to utilities, coordination of all these elements is critical to a high-quality and functional street design.

The San Francisco Department of Public Works (DPW) and Public Utilities Commission (PUC) provide guidelines and requirements for the relative location of streetscape elements and utilities. This section provides an overview, with additional coordination guidance for Treasure Island and Yerba Buena Island.

PROTOTYPICAL BLOCK: UTILITY LOCATIONS

1. FIRE HYDRANT
2. JOINT TRENCH UNDERGROUND STRUCTURE
3. CATCH BASIN
4. SANITARY SEWER AIR RELEASE VENT
5. POTABLE WATER METER
6. RECYCLED WATER METER
7. LATERAL-FREE ZONE AT TREE
8. PARKING METER
GUIDELINES FOR THE LOCATION OF UTILITY EXPRESSIONS

Public utilities implemented during the design of Treasure Island and Yerba Buena Island shall be coordinated with the streetscape design to support the design intent and quality expressed in the Streetscape Master Plan (See Chapters C and D).

Future lateral connections to development parcels, and their associated surface expressions, shall be planned not to interfere with existing utilities, street trees, and street lights.

Surface expressions generally shall be located in the sidewalk furnishing zone, per DPW and SFPUC guidelines and requirements. In rare cases where a utility box does not fully fit within the furnishing zone, the paving design shall be adapted to resolve this condition in an intentional and elegant manner.

FIRE HYDRANTS AND FIRE DEPARTMENT OPERATIONS

Fire hydrants shall be located at intersections. Building Fire Department connections shall be within 100’ of a fire hydrant. Additional hydrants may be located mid-block when needed. Maintain a minimum 3’ clear around the barrel of the hydrant. Understory planting, street furniture, and bike parking shall not obstruct hydrant visibility, fire scene operations, or fire department access to buildings. “No Stopping” zones shall be indicated in front of all hydrants with signage or red painted curb. There shall be one (minimum) recycled water hydrant per block. Standard blue, raised reflector shall be located in the centerline of the street at all hydrant locations.

PARKING METERS

Single space meters are preferred by MTA. Multi space pay stations may be considered. The preferred spacing for single space meters is 2’ from the face of curb and 2’ from the beginning of the space. Twin mounted meters shall be placed between spaces and 2’ from face of curb. Meter poles shall be minimum 3’ from street trees.

TREE CLEARANCE FROM UTILITIES

Trees must be planted a minimum of 5’ from the edge of PUC utility lines. On narrow streets, tree locations in midblock bulb-outs may require “shifting” away from the street centerline, to ensure this 5’ clearance is achieved in this special condition.

PROTECTION OF TREE ROOT ZONES

Utility laterals shall be located outside of “lateral-free zones” at each street tree, to ensure health and protect the mature roots of new and existing trees. The extent of the lateral-free zone shall be established in Sub-Phase Improvement Plans.
OVERVIEW

Curb cuts for building access represent interruptions to the streetscape. To preserve the character of the street and make it as consistent and continuous as possible, the placement and design of curb cuts at development parcels shall follow the basic guidelines provided in this section.

General standards and guidelines for curb cuts and garage entries are included in the TI/YBI Design for Development document, Section T6.3.

Precedent images of curb cuts in urban sidewalks
GUIDELINES FOR THE LOCATION OF CURB CUTS & GARAGE ENTRIES

Curb cuts and driveways must be located between street lights; street lights cannot be relocated. The Preferred Placement of driveways is between existing street trees, outside the tree pit and preferably outside the “lateral-free zone” described in Section F8. The intent of this guideline is to preserve a continuous tree canopy with consistent spacing, throughout each street.

In cases where the Preferred Placement is not feasible—and an existing street tree must be removed to accommodate the driveway—that tree shall be transplanted or replaced in an appropriate location outside the driveway, per the recommendation of the design team (see Alternate Ramp Placement figure on this page). If no feasible location exists due to the location of streetlights, utilities, or other trees, the tree shall not be replaced.

With respect to the addition of new driveways, streets shall be considered holistically, taking into consideration the cumulative effect of driveways on the tree canopy and quality of the streetscape in general.

Legend

1 MINIMUM RAMP WIDTH
2 MAXIMUM RAMP WIDTH
3 STREET TREE
4 STREET LIGHT
F10. LOADING & ACCESSIBLE PARKING

OVERVIEW

INTENT

On-street universal passenger loading zones and accessible parking zones shall be located throughout Treasure Island, providing convenient access to the island’s buildings and open spaces.

This section provides an overview of the island-wide approach and standard design of loading and accessible parking zones on Treasure Island. The exact location and detailed design of specific zones shall be determined in Sub-Phase Improvement Plans.
UNIVERSAL PASSENGER LOADING ZONES

DESCRIPTION

Passenger loading zones are curbside stalls for pick-up and drop-off, limited to five minute stops (per SFMTA). Drivers must remain with the vehicle. All passenger loading zones are universally accessible and ADA compliant, and provide a wheelchair access aisle along the passenger side of the car and access to the sidewalk via a DPW standard curb ramp.

LOCATION GUIDELINES

Generally passenger loading zones shall be located in the middle of a block face, to provide convenient access to building entrances on the block. In some cases, such as at parks and open spaces, the loading zone may be located at an intersection, to utilize the associated bulb-out and crosswalk, for easy access across the street.

See “Conceptual Locations” map, next page. Exact locations shall be determined in Sub-Phase Improvement Plans.

DESIGN GUIDELINES

Per Typical Layout

- 20’ stall, adjacent sidewalk clear of objects
- 5’ aisle on passenger side
- 10’ loading area at rear, with DPW standard curb ramp
- Note: Universal Passenger Loading Zone requires 13’ clear from face of curb. Where sidewalk width does not accommodate this clearance, the 5’ striped zone adjacent to the loading stall may be eliminated. These conditions are referred to as “Modified Loading Zones” and are located on the conceptual locations diagram on the following page.
UNIVERSAL PASSENGER LOADING ZONE: TYPICAL LAYOUT

- Generally located at middle of block face, location varies
- 8’ x 20’ loading stall
- 5’ x 20’ clear zone between stall and curb
- 8’ x 20’ clear zone at sidewalk, can be accommodated in adjacent parcel
- Loading zone curb ramp w/ 4’ clear at top

If 8'-0" width is not available in adjacent thoroughway, a “modified loading zone” is to be provided. “Modified loading zones” will not include the 5’ striped area adjacent to the loading stall. Refer to loading plan for actual locations.
ACCESSIBLE PARKING

DESCRIPTION

Accessible parking stalls ensure convenient, equal parking access for drivers and passengers with a valid disabled parking permit.

There are two types of accessible parking stalls: standard and “enhanced.”

LOCATION GUIDELINES

Generally accessible parking stalls are located at the beginning of the block, utilizing the street corner bulb-out for curb-ramp access to the sidewalk.

See “Conceptual Locations” map, next page. Exact locations shall be determined in Sub-Phase Improvement Plans.

DESIGN GUIDELINES

Standard accessible parking stalls at sidewalks 14’ wide or less:

- 20’ stall, adjacent sidewalk clear of objects
- 10’ loading area at rear, with DPW standard curb ramp

“Enhanced” accessible parking stalls at sidewalks greater than 14’

- 20’ stall, adjacent sidewalk clear of objects
- 5’ aisle on passenger side
- 10’ loading area at rear, with DPW standard curb ramp
TREASURE ISLAND ACCESSIBLE PARKING STALLS: CONCEPTUAL LOCATIONS

ACCESSIBLE ON-STREET ADA PARKING PLAN: CONCEPTUAL LOCATIONS

- Accessible Parking Space - Typical: 37
- Accessible Parking Space - Enhanced: 12
- Additional Accessible Parking - Off-Street, In public parking areas: 6

Note: Plan does not show off-street parking in public and private lots and garages.
Note: Accessible parking space quantities based on Table R214 On-Street Parking Spaces “Minimum Required Number of Accessible Parking Spaces”, Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, United States Access Board 2011. Total parking spaces per block have been estimated.
ACCESSIBLE PARKING STALL: STANDARD (SIDEWALKS 14’ WIDE OR LESS)

- Located at beginning of block face
- 8’ x 20’ ADA parking space with loading behind
- Transition if parking lane is 7’
- Loading zone curb ramp w/ 4’ clear at top, can be on adjacent parcel
ACCESSIBLE PARKING STALL: ENHANCED (SIDEWALKS GREATER THAN 14’ WIDE)

- LOCATED AT BEGINNING OF BLOCK FACE
- 8’ X 20’ ADA PARKING SPACE WITH LOADING BEHIND
- TRANSITION IF PARKING LANE IS 7’
- LOADING ZONE CURB RAMP W/ 4’ CLEAR AT TOP
F11. CITY STREETSCAPE MANAGEMENT RESPONSIBILITY

STREETSCAPE MAINTENANCE

This matrix provides a summary of the maintenance responsibilities for improvements within public rights-of-way on Treasure Island and Yerba Buena Island. Generally, maintenance of standard improvements in Treasure Island and Yerba Buena Island streets is governed by Public Works Code, including standard street pavement sections, curbs and gutters. Behind the curb, sidewalk improvements will generally be privately maintained, either by the fronting property owner, master HOA or commercial district. Furnishings, other than standard MTA bike racks and DPW trash receptacles will also be privately maintained, as well as trees and understory plantings.

A signed agreement/document will be required to specifically identify maintenance responsibilities above and beyond the Public Works Code. Specifically, the maintenance of various facilities by the HOA/CFD/TIDA/TICD instead of the fronting property owners will need to be documented to ensure property notification for repairs in the future. This will also apply to median and bulb-out maintenance.

FOOTNOTES TO MATRIX

i. DPW will evaluate the location and size of the retaining walls on a case by case basis for maintenance purposes. Design must be reviewed and approved by DPW as part of Sub-Phase Improvement Plans."

ii. Special pavement section (raised/tables intersections, combined bicycle/pedestrian trails), will need to be reviewed and evaluated on a case by case basis.

iii. Including plantings in storm water planters

iv. For BMPs that treat street runoff; excluding plant maintenance

v. Requires permit
### TREASURE ISLAND AND YERBA BUENA ISLAND STREET IMPROVEMENTS MAINTENANCE RESPONSIBILITIES

<table>
<thead>
<tr>
<th>STREETSCAPE ELEMENT</th>
<th>TIDA (CFD) OR HOA</th>
<th>SFPUC</th>
<th>UTILITY PROVIDER</th>
<th>SFDPW</th>
<th>SFMTA</th>
<th>TIMMA</th>
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