Freeway Facility Memorandum

I-805 / 47th Street BRT / LRT Station Project

Introduction
The primary purpose of the I-805 / 47th Street BRT / LRT Station Project is to develop and evaluate design options to provide the nearby community with access to the new bus rapid transit (BRT) service on the future I-805 express lanes to improve access to regional transit services and facilitate regional system connectivity between the Orange Line Trolley, I-805 BRT services and local buses. This memorandum is a summary of the existing condition of the freeway facility, and the proposed project alternatives.

Overview of Existing Facility Condition

1. Freeway and Interchanges
The scope of work involves the general area along the I-805 corridor between Logan Ave and Hilltop Dr with heavy emphasis between Imperial Ave and Market St. This project is studied as a potential enhancement consistent with the I-805 corridor-wide improvement master plan which is currently being implemented. Therefore, the freeway condition to be referenced for this study will not be the current configuration – rather it will be an updated freeway layout which will be referred to as the “future-existing” condition (see Attachment A). The future existing I-805 freeway condition and features in the area of interest include:
   - Four buffer-separated express lanes (former four managed lanes) with two lanes in both the northbound (NB) and southbound (SB) directions with a median barrier. Express lanes refer to high occupancy/toll (HOT) lanes, and express toll lanes. Managed lanes in California include both express lanes and high occupancy vehicle (HOV) lanes.
   - Five standard 12-foot wide general purpose lanes; one auxiliary lane and shoulder in both the NB and SB directions;
   - Relatively flat profile grade of approximately 1.3% when travelling NB;
   - Horizontal freeway alignment has a radial curve of 3000 feet which is sufficient for design speed of 70 mph.

I-805 express lanes project was cleared with an environment document in June 2011: Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact. The first phase of construction includes two HOV lanes, the Palomar DAR/transit station and noise mitigation. Phase 1 construction was started in 2012 and is to be completed by the end of 2014. Phase 2, which consists of later design stages scheduled to meet the targeted implementation strategies, would complete the ultimate project and is projected to be completed by year 2020.

2. Bridge/Retaining Walls

- Bridge type is concrete box girder.
- Total length of bridge is 285 feet.
- Depth of bridge structure is 11.25 feet.
- Vertical clearance between the bottom of bridge and top of freeway is approximately 25.75 feet.

Retaining walls under and around the following bridges are part of the I-805 express lane project, or future existing condition:

a) Imperial Ave OC: Type 1 retaining wall along NB side
b) Greenwood UP: combination soil nail and tie-back wall along SB and NB sides
c) Market St OC: combination soil nail and tie-back wall along NB side; tie-back wall along SB side

Imperial Ave crosses over I-805 on an overcrossing structure (Imperial Ave OC, #57-0650, PM 12.344) and includes freeway ramps to form a diamond interchange. I-805/Market St interchange is a diamond type as well (Market St OC, #57-0658, PM 12.953). SR 94/I-805 interchange (94/805 Separation, #57-0665, PM 13.507) is approximately 0.5 mile north of Imperial avenue interchange. The existing interchanges are closely spaced and the spacing between the interchanges is nonstandard. Other bridges within the project limits include: Hilltop Dr OC (#57-0660, PM 13.233), Ocean View Blvd OC (#57-0649, PM 12.085) and Logan Ave OC (#57-0648, PM 11.833).

3. Chollas Creek/Drainage

Flows within the study area (including off-site watersheds) are conveyed generally west and south through existing Caltrans and municipal storm drain facilities, as well as in natural drainages including the South Chollas Creek.

In summary, the major constraints of this segment of new freeway related to the provision of future BRT station include: 1) Closely spaced interchanges; 2) Retaining walls along both sides of the freeway that are planned the I-805 express lane project; 3) Impact on trolley operations if the Greenwood UP needs to be replaced; 4) Impact on Chollas creek during construction or potential permanent impact. Other constraints west or east of freeway include: 1) Close proximity of Greenwood cemetery properties and YMCA west of the freeway; 2) Close proximity of the Chollas-Mead elementary school, Sprint PCS tower and apartment/condominium east of the freeway.

Overview of Proposed Alternatives

General Assumptions Applied to Alternatives

In studying the feasibilities and impacts related to each of the proposed alternatives, the following are the assumptions that are applied to all alternatives to preserve the future existing freeway level of service and safety conditions:
• Maintain the same number of general purpose and express lanes – specifically 5 general purpose lanes, 2 express lanes, 1 express buffer, 1 auxiliary lane, and 2 shoulders (one on each side) between Imperial Ave and Market St.
• All lanes, shoulders, and buffer widths are built to Caltrans standards – 12’ lanes, 10’ shoulders, and 4’ buffers. No mandatory design exceptions are proposed during this phase. Future coordination with Caltrans will be required if new design exceptions are proposed.
• Any alteration of freeway alignment must support a design speed of 70 mph.
• Vertical clearances between bottom of bridges and freeway grade must be at least 16.5’.
• No BRT auxiliary lane is proposed for acceleration because of the flat profile grade within the project limits.
• There will be no impact on the SR 94/I-805 HOV connector because the improvement of this project will be south of Hilltop Dr where the HOV connector touches down north of Hilltop.
• Pedestrian bridges could be proposed along both sides of the Greenwood UP. A pedestrian bridge is shown south of the Greenwood UP in the attached exhibits.
• The BRT station is assumed south of the tracks. A variation is to place the BRT station north of the tracks.

Table 1 is a summary of the alternatives. The alternatives and their variations are described as follows. See Attachment B for the exhibits of each alternative.

TABLE 1: Summary of Alternatives and BRT Station Locations

<table>
<thead>
<tr>
<th>Street/Track Level</th>
<th>Off-line Station West of Freeway</th>
<th>In-line Station</th>
<th>Off-line Station East of Freeway</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - Street/Track Level</td>
<td>(3b) Track Level - Off-line - Left Hand DAR, West Side Station</td>
<td>(3a) Track Level - In-line - Left Hand DAR</td>
<td>(3c) Track Level - Off-line - Left Hand DAR, East Side Station</td>
</tr>
<tr>
<td></td>
<td>(3e) Track Level - Off-line - Right Hand DAR, West Side Station</td>
<td>(3d) Track Level - In-line - Right Hand DAR</td>
<td>(3f) Off-line - East BRT Station with Right Hand DAR</td>
</tr>
<tr>
<td></td>
<td>(3g) Track Level, Off-Line Station, Flyover, West Side Station</td>
<td></td>
<td>(3h) Track Level, Off-Line Station, Flyover, East Side Station</td>
</tr>
<tr>
<td>2 - Mid-Level</td>
<td>(2b) Mid-Level, Off-Line Station, Flyover, West Side Station, Tunnel Crossing Under Tracks</td>
<td>(2a) Mid-level - In-line - Side Platform</td>
<td>(2c) Mid-Level, Off-Line Station, Flyover, East Side Station, Tunnel Crossing Under Tracks</td>
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<tr>
<td></td>
<td>(2d) Mid-Level, Off-Line Station, Flyover, West Side Station, Open Crossing Under Tracks</td>
<td></td>
<td>(2a) Mid-Level, Off-Line Station, Flyover, East Side Station, Open Crossing Under Tracks</td>
</tr>
<tr>
<td>1 - Freeway Level</td>
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<td>(1a) Freeway Level - In-line - Side Platform</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1b) Freeway Level In-line - Center Platform</td>
<td></td>
</tr>
</tbody>
</table>

Legend

- **Bus Lane Ramp**
  - Left Hand Exit DAR
  - Right Hand Exit DAR
  - Flyover above the general purpose lanes
  - Mid-level
  - At grade freeway level

After the initial screening the alternatives selected for detailed evaluations include: 1a, 2a, 2c (or 2e), 3a, 3c, and 3h.
1. **Alternative 1a: Freeway Level – In-line Station – Side Platforms**

   Alternative 1a adds dedicated NB and SB BRT lanes within the existing median with side station platforms south of Greenwood UP. Pedestrians would access stations from the existing transit station east of I-805 or from west of I-805 via a pedestrian overcrossing and vertical connections. The pedestrian overcrossing could be placed at track level and adjacent to Greenwood UP. Separate NB and SB bus stations would be positioned to the right of the bus lane within the median. This new station is to be separated by concrete barriers from adjacent express lanes. Median widening will be required. Proposed features and impacts are:
   - BRT lanes in median
   - at-grade side platforms, with stairs and elevators
   - pedestrian bridge at track level north/south of Greenwood UP
   - realign I-805 express lanes and general purpose lanes
   - replace Greenwood UP and Imperial Ave OC

2. **Alternative 1b: Freeway Level – In-Line Station – Center Platform**

   Alternative 1b adds dedicated NB and SB BRT lanes within the existing median with a center station platform south Greenwood UP. Pedestrians would access stations from the existing transit station east of I-805 or from west of I-805 via a pedestrian overcrossing and vertical connections. The pedestrian overcrossing could be placed at track level and adjacent to Greenwood UP. This alternative would include NB buses crossing over SB bus lane on a bridge that is south of Greenwood UP. Likewise, SB buses would cross over NB bus lane on a bridge that is north of Greenwood UP. This new station is to be separated by concrete barriers from adjacent express lanes. Median widening will be required. Proposed features and impacts are:
   - BRT lanes in median
   - BRT grade-separated crossovers
   - at-grade center platforms, with stairs and elevators
   - pedestrian bridge at track level north/south of Greenwood UP
   - realign I-805 express lanes and general purpose lanes
   - replace Greenwood UP, Imperial Ave OC, Ocean View Blvd OC, and Market St OC

3. **Alternative 2a: Mid-Level – In-Line Station – Side Platform**

   Similar to Alternative 1a, Alternative 2a adds dedicated NB and SB BRT lanes within the existing median with side station platforms at Greenwood UP. However, this station would be placed at mid-level – a grade between freeway level and track level. Bus lanes would be built on retained earth with station platforms cantilevering over express lanes to minimize widening footprint. Pedestrians would access stations from the existing transit station east of I-805 or from west of I-805 via a pedestrian overcrossing and vertical connections. The pedestrian overcrossing could be placed at track level and adjacent to Greenwood UP. Separate NB and SB bus stations would be positioned to the right of the bus lane. Median widening will be required. Proposed features and impacts are:
   - BRT lanes in median
• mid-level side platforms, with pedestrian ramp bridges to the track level
• pedestrian bridge at track level north/south of Greenwood UP
• realign I-805 express lanes and general purpose lanes
• replace Greenwood UP and Imperial Ave OC (or Market St OC if platforms are north of LRT line)

4. Alternative 2b – Mid-Level – Off-Line Station – Flyover West Tunnel
Alternative 2b adds dedicated NB and SB BRT lanes within the existing median with flyover bridges across the SB express and general purpose lanes. Side station platforms would be located outside the freeway facility and west of I-805. Pedestrians would access the stations from east of I-805 via a pedestrian overcrossing. The pedestrian overcrossing would be placed at track level and adjacent to Greenwood UP. Separate NB and SB bus stations would be positioned to the right of the bus lane and to be placed at mid-level grade. There would be two flyover structures – one south of Greenwood UP and the other north of Greenwood UP. A tunnel, also at mid-level, running underneath LRT tracks on the west side of I-805 would provide a grade-separation for buses crossing the tracks. To assist in transferring passengers between the two transit modes, the existing LRT transit station could be relocated to the west side of I-805. Proposed features and impacts are:
• BRT lanes in median
• new flyovers through tunnel west of freeway
• realign I-805 express lanes and general purpose lanes
• replace Ocean View Blvd OC, Imperial Ave OC, and Market St OC
• BRT station west of freeway
• pedestrian bridge north/south of Greenwood UP

A variation of this alternative is to keep the existing LRT station east of I-805, or relocate the LRT station closer to the freeway but east of the freeway. Other improvements will be similar to the above mentioned features.

5. Alternative 2c – Mid-Level – Off-Line Station – Flyover East Tunnel
Alternative 2c adds dedicated NB and SB BRT lanes within the existing median and which flyover on bridges across the NB express and general purpose lanes. Side station platforms would be located outside the freeway facility and east of I-805. Pedestrians would access the stations from west of I-805 via a pedestrian overcrossing. The pedestrian overcrossing would be placed at track level and adjacent to Greenwood UP. Separate NB and SB bus stations would be positioned to the right of the bus lane and to be placed at mid-level grade. There would be two flyover structures – one south of Greenwood UP and the other north of Greenwood UP. A tunnel, also at mid-level, running underneath LRT tracks on the east side of I-805 would provide a grade-separation for buses crossing the tracks. Transferring passengers between the two transit modes would take place on the east side of I-805 where the existing LRT transit station is currently located. Proposed features and impacts are:
• BRT lanes in median
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- new flyovers through tunnel east of freeway
- realign I-805 express lanes and general purpose lanes
- replace Ocean View Blvd OC, Imperial Ave OC, and Market St OC
- BRT station east of freeway and south of the tracks (or north of the tracks)
- pedestrian bridge north/south of Greenwood UP

6. Alternative 2d – Mid-Level – Off-Line Station – Flyover West Shoulder
Similar to Alternative 2b, Alternative 2d adds dedicated NB and SB BRT lanes within the existing median; flyover on bridges across the SB express and general purpose lanes; and side station platforms located outside the freeway facility and west of I-805. Pedestrians would access the stations from east of I-805 via a pedestrian overcrossing. Separate NB and SB bus stations would be positioned to the right of the bus lane and also be placed at mid-level grade. There would be two flyover structures – one south of Greenwood UP and the other north of Greenwood UP. The major difference between this alternative and Alternative 2b, is instead of a mid-level tunnel, the bus lanes would negotiate between the Greenwood UP bridge abutment and the SB general purpose lane’s edge of shoulder. Although the bus lanes would be adjacent to SB general purpose lanes at this location, they would be raised and barrier protected. To assist in transferring passengers between the two transit modes, the existing LRT transit station could be relocated to the west side of I-805. Proposed features and impacts are:
  - BRT lanes in median
  - new flyovers
  - realign I-805 express lanes and general purpose lanes
  - replace Greenwood UP, Ocean View Blvd OC, Imperial Ave OC, and Market St OC
  - BRT station west of freeway
  - pedestrian bridge north/south of Greenwood UP

A variation of this alternative is to keep the existing LRT station east of I-805, or relocate the LRT station closer to the freeway but east of the freeway. Other improvements will be similar to the above mentioned features.

7. Alternative 2e – Mid-Level – Off-Line Station – Flyover East Shoulder
Similar to Alternative 2c, Alternative 2e adds dedicated NB and SB BRT lanes within the existing median; flyover on bridges across the NB express and general purpose lanes; and side station platforms located outside the freeway facility and east of I-805. Pedestrians would access the stations from west of I-805 via a pedestrian overcrossing. Separate NB and SB bus stations would be positioned to the right of the bus lane and also be placed at mid-level grade. There would be two flyover structures – one south of Greenwood UP and the other north of Greenwood UP. The major difference between this alternative and Alternative 2c, is instead of a mid-level tunnel, the bus lanes would negotiate between the Greenwood UP bridge abutment and the NB general purpose lane’s edge of shoulder. Although the bus lanes would be adjacent to NB general purpose lanes at this location, they would be raised and barrier protected. Transferring passengers between the two
transit modes would take place on the east side of I-805 where the existing LRT transit station is currently located. Proposed features and impacts are:

- BRT lanes in median
- new flyovers
- realign I-805 express lanes and general purpose lanes
- replace Greenwood UP, Ocean View Blvd OC, Imperial Ave OC, and Market St OC
- BRT station east of freeway
- pedestrian bridge north/south of Greenwood UP

8. Alternative 3a – Track-Level – In-Line Station – Left Hand DAR

Alternative 3a adds dedicated NB and SB BRT lanes within the existing median with left-hand-exit direct access ramps (DAR). Side station platforms would be located at Greenwood UP and cantilevering off bus lanes at track level. Pedestrians would access station platforms from the existing transit station east of I-805 or from west of I-805 via a pedestrian overcrossing. The pedestrian overcrossing would be placed at track level and adjacent to Greenwood UP. Separate NB and SB bus stations would be positioned to the right of the bus lanes. Although the vertical profile of the bus lanes would rise and fall between freeway level and track level, its horizontal alignment will follow within the freeway median. Proposed features and impacts are:

- BRT lanes in median
- in-line BRT station with cantilevered platform south of Greenwood UP
- pedestrian bridge at track level north/south of Greenwood UP
- realign I-805 express lanes and general purpose lanes
- replace Greenwood UP and Imperial Ave OC


Alternative 3b includes a new bus station west of I-805 that would be located outside the freeway facility. There would also be dedicated NB and SB BRT lanes within the existing median with left-hand-exit direct access ramps. Instead of a pedestrian bridge in Alternative 3a, this alternative would utilize a track level, vehicular bridge with a sidewalk that is adjacent to Greenwood UP for buses to travel. To assist in transferring passengers between the two transit modes, the existing LRT transit station could be relocated to the west side of I-805 (or east of I-805 but closer to the freeway). Proposed features and impacts are:

- BRT lanes in median
- BRT station west of freeway, relocate 47th St LRT station to west of freeway
- vehicular bridge with sidewalk at track level south of Greenwood UP
- realign I-805 express lanes and general purpose lanes
- replace Greenwood UP and Imperial Ave OC

A variation of this alternative is to keep the existing LRT station east of I-805, or relocate the LRT station closer to the freeway but east of the freeway. Other improvements will be similar to the above mentioned features.
The off-line BRT station is assumed to have a minimum two bus bay to minimize potential right-of-way take. In the exhibits a four bus bay station is shown. This assumption also applies to Alternatives 12, 13 and 13.

10. Alternative 3c – Track-Level – Off-Line Station – Left Hand DAR East
Alternative 3c includes a new bus station east of I-805 that would be located outside the freeway facility. There would also be dedicated NB and SB BRT lanes within the existing median with left-hand-exit direct access ramps. Similar to Alternative 3b, this alternative would utilize a track level, vehicular bridge that is adjacent to Greenwood UP for buses to travel. Transferring passengers between the two transit modes would take place on the east side of I-805 where the existing LRT transit station is currently located. Proposed features and impacts are:
   - BRT lanes in median
   - BRT station east of freeway
   - vehicular bridge with sidewalk at track level south of Greenwood UP
   - realign I-805 express lanes and general purpose lanes
   - replace Greenwood UP and Imperial Ave OC

11. Alternative 3d – Track-Level – In-Line Station – Right Hand DAR
Alternative 3d includes all of the concept features of Alternative 3a with the exception that the direct access ramp is a right-hand-exit. Proposed features and impacts are:
   - BRT lanes in median
   - in-line BRT station with cantilevered platform south of Greenwood UP
   - pedestrian bridge at track level north/south of Greenwood UP
   - realign I-805 express lanes and general purpose lanes
   - replace Greenwood UP, Ocean View Blvd OC, Imperial Ave OC, and Market St OC

12. Alternative 3e – Track-Level – Off-Line Station – Right Hand DAR West
Alternative 3e includes all of the concept features of Alternative 3b with the exception that the direct access ramp is a right-hand-exit. Proposed features and impacts are:
   - BRT lanes in median
   - BRT station west of freeway, relocate 47th St LRT station to west of freeway
   - vehicular bridge with sidewalk at track level south of Greenwood UP
   - realign I-805 express lanes and general purpose lanes
   - replace Greenwood UP, Ocean View Blvd OC, Imperial Ave OC, and Market St OC

A variation of this alternative is to keep the existing LRT station east of I-805, or relocate the LRT station closer to the freeway but east of the freeway. Other improvements will be similar to the above mentioned features.

Alternative 3f includes all of the concept features of Alternative 3c with the exception that the direct access ramp is a right-hand-exit. Proposed features and impacts are:
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• BRT lanes in median
• BRT station east of freeway
• vehicular bridge with sidewalk at track level south of Greenwood UP
• realign I-805 express lanes and general purpose lanes
• replace Greenwood UP, Ocean View Blvd OC, Imperial Ave OC, and Market St OC

14. Alternative 3g – Track-Level – Off-Line Station – Flyover West
Alternative 3g adds dedicated NB and SB BRT lanes within the existing median with flyover bridges across the SB express and general purpose lanes. Side station platforms would be located outside the freeway facility and west of I-805. Pedestrians would access the stations from east of I-805 via a pedestrian overcrossing. The pedestrian overcrossing would be placed at track level and adjacent to Greenwood UP. Separate NB and SB bus stations would be positioned to the right of the bus lane and to be placed at track level. There would be two flyover structures – one south of Greenwood UP and the other north of Greenwood UP. To assist in transferring passengers between the two transit modes, the existing LRT transit station would be relocated to the west side of I-805. Proposed features and impacts are:
• BRT lanes in median
• new flyovers
• realign I-805 express lanes and general purpose lanes
• replace Ocean View Blvd OC, Imperial Ave OC, and Market St OC
• BRT station west of freeway
• pedestrian bridge north/south of Greenwood UP

A variation of this alternative is to keep the existing LRT station east of I-805, or relocate the LRT station closer to the freeway but east of the freeway. Other improvements will be similar to the above mentioned features.

15. Alternative 3h – Track-Level – Off-Line Station – Flyover East
Alternative 3h adds dedicated NB and SB BRT lanes within the existing median with flyover bridges across the NB express and general purpose lanes. Side station platforms would be located outside the freeway facility and east of I-805. Pedestrians would access the stations from west of I-805 via a pedestrian overcrossing. The pedestrian overcrossing would be placed at track level and adjacent to Greenwood UP. Separate NB and SB bus stations would be positioned to the right of the bus lane and to be placed at track level. There would be two flyover structures – one south of Greenwood UP and the other north of Greenwood UP. Transferring passengers between the two transit modes would take place on the east side of I-805 where the existing LRT transit station is currently located. Proposed features and impacts are:
• BRT lanes in median
• new flyovers
• realign I-805 express lanes and general purpose lanes
• replace Ocean View Blvd OC, Imperial Ave OC, and Market St OC
• BRT station east of freeway
- pedestrian bridge north/south of Greenwood UP

Table 2 is a summary of the impact on the bridges of each alternative. Greenwood UP could be saved in Alternatives 2b, 2c, 3g and 3h.

**TABLE 2 Summary of Potential Bridge Replacement**

<table>
<thead>
<tr>
<th>Alt No.</th>
<th>Description</th>
<th>1) Oceanview Blvd OC</th>
<th>2) Imperial Ave OC</th>
<th>3) Greenwood UP</th>
<th>4) Market St OC</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a</td>
<td>Track Level - In-line - Left Hand DAR</td>
<td>X</td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>3b</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>3c</td>
<td>Track Level - Off-line - Left Hand DAR, East Side Station</td>
<td>X</td>
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<td>3d</td>
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<td>3g</td>
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<td>Mid-Level, Off-Line Station, Flyover, West Side Station, Tunnel Crossing Under Tracks</td>
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<td>Freeway Level, In-Line, Center Platform</td>
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Note: X – Bridge Replacement
ATTACHMENT A

FUTURE EXISTING CONDITION (I-805 EXPRESS LANES)
FUTURE EXISTING CONDITION
ULTIMATE EXPRESS LANES
ATTACHMENT B

PROJECT ALTERNATIVE EXHIBITS
PROPOSED FEATURES

1. BRT LINES IN MEDIAN.
2. AT-GRADE SIDE PLATFORMS, WITH STAIRS AND ELEVATORS.
3. PEDESTRIAN BRIDGE AT TRACK LEVEL SOUTH OF GREENWOOD UP.
4. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANE.
5. REPLACE GREENWOOD UP AND IMPERIAL AVE OC.
PROPOSED FEATURES

1. BRT LANES IN MEDIAN.
2. BRT GRADE-SEPARATED CROSSEOVERS.
3. AT-GRADE CENTER PLATFORMS, WITH STAIRS AND ELEVATORS.
4. PEDESTRIAN BRIDGE AT TRACK LEVEL SOUTH OF GREENWOOD UP.
5. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANES.
6. REPLACE GREENWOOD UP, IMPERIAL AVE OC, OCEANVIEW BLVD OC, AND MARKET ST OC.

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ALTERNATIVE 1b - IN-LINE STATION CENTER PLATFORM FREEWAY LEVEL (WITHOUT BRT AUX LANE)
PROPOSED FEATURES

1. BRT LINES IN MEDIAN.
2. MID-LEVEL SIDE PLATFORMS, WITH PEDESTRIAN BRIDGES.
3. PEDESTRIAN BRIDGE AND PLATFORM AT TRACK LEVEL SOUTH OF GREENWOOD UP.
4. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LAKES.
5. REPLACE GREENWOOD UP AND IMPERIAL AVE OC (OR MARKET ST OC IF PLATFORMS ARE NORTH OF LRT LINE).

LEGEND

EXISTING CALTRANS RIGHT-OF-WAY
BRT ONLY LANE
EXPRESS LANE
REPLACE BRIDGE/ROADWAY
PROPOSED PEDESTRIAN BRIDGE
PROPOSED VEHICULAR BRIDGE

DRAFT

SANDAG

IBI GROUP

CH2MILL

SAN DIEGO

I-805/47TH STREET BRT/LRT
ALTERNATIVE 2a - IN-LINE STATION SIDE PLATFORMS
MID-LEVEL (WITHOUT BRT AUX LANE)

REV DATE: 10-25-2012
PROPOSED FEATURES

1. BRT LINES IN MEDIAN.
2. NEW FLYOVERS THROUGH TUNNEL WEST OF FREEWAY.
3. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANES.
4. REPLACE OCEANVIEW BLVD OC, IMPERIAL AVE OC, AND MARKET ST OC.
5. BRT STATION (NUMBER OF BUS BAYS TO BE DETERMINED) WEST OF FREEWAY.
6. PEDESTRIAN BRIDGE SOUTH OF GREENWOOD UP.
**Proposed Features**

1. BRT lanes in median.
2. New flyovers through tunnel east of freeway.
3. Realignment I-805 express lanes and general-purpose lanes.
5. BRT station (number of bus bays to be determined) east of freeway.
6. Pedestrian bridge south of Greenwood up.
PROPOSED FEATURES
1. BRT LINES IN MEDIAN.
2. NEW LANE.
3. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANE.
4. REPLACE GREENWOOD UP, OCEANVIEW BDWY O.C., IMPERVIAL AVE O.C., AND MARKET ST O.C.
5. BRT STATION (NUMBER OF BUS BAYS TO BE DETERMINED) WEST OF FREEWAY.
6. PEDESTRIAN BRIDGE SOUTH OF GREENWOOD UP.
PROPOSED FEATURES
1. BRT LINES IN MEDIAN.
2. NEW LANEWAYS.
3. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANES.
4. REPLACE GREENWOOD UP, OCEANAVIDE BLVD OC,
   IMPERIAL AVE OC, AND MARKET ST OC.
5. BRT STATION (NUMBER OF BUS BAYS TO BE DETERMINED)
   EAST OF FREEWAY.
6. PEDESTRIAN BRIDGE SOUTH OF GREENWOOD UP.

LEGEND
- EXISTING CALTRANS
  RIGHT-OF-WAY
- BRT ONLY LANE
- EXPRESS LANE
- REPLACE BRIDGE
- PROPOSED PEDESTRIAN
  BRIDGE
- PROPOSED VEHICULAR
  BRIDGE

DRAFT
REV DATE: 10-25-2012

I-805/47TH STREET BRT/LRT
ALTERNATIVE 2e - FLYOVER EAST SHOULDER
MID-LEVEL (WITHOUT BRT AUX LANE)
**PROPOSED FEATURES**

1. BRT Lanes in Median.
2. In-Line BRT Station with Cantilevered Platform South of Greenwood Up.
3. Pedestrian Bridge at Track Level South of Greenwood Up.
5. Replace Greenwood Up and Imperial Ave Oc.

**LEGEND**

- Existing Caltrans
- Proposed BRT Station
- Right-Off-Way
- BRT Only Lane
- Express Lane
- Replace Bridge/Roadway
- Proposed Pedestrian Bridge
- Proposed Yorkshire Bridge

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**CH2MILL**

**SANTE**

**IBI GROUP**

**DRAFT**

**REV DATE: 10-25-2012**

**1-805/47TH STREET BRT/LRT**

**ALTERNATIVE 3a - IN-LINE LEFT HAND DAR**

**TRACK LEVEL (WITHOUT BRT AUX LANE)**
**PROPOSED FEATURES**

1. BRT LINES IN MEDIAN.
2. BRT STATION WEST OF FREEWAY, RELOCATE 47TH ST LRT STATION TO WEST OF FREEWAY.
3. VEHICULAR BRIDGE ATIHERAL AL AT TRACK LEVEL SOUTH OF GREENWOOD UP.
4. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANES.
5. REPLACE GREENWOOD UP AND IMPERIAL AVE OC.

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**LEGEND**

- EXISTING CALTRANS
- BRT ONLY LANE
- PROPOSED BRT PLATFORM
- PROPOSED BRT STATION
- PROPOSED BRT AUX LANE
- RIGHT-OF-WAY
- PROPOSED PEDESTRIAN BRIDGE
- PROPOSED VEHICULAR BRIDGE

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**DRAFT**

**REV DATE: 10-25-2012**

**SAN DIEGO**

**IBI GROUP**

**SANFORD**

**CH2MILL**

**I-805/47TH STREET BRT/LRT**

**ALTERNATIVE 3b - OFF-LINE LEFT DAR WEST**

**TRACK LEVEL (WITHOUT BRT AUX LANE)**

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**EXISTING GREENWOOD UNDERPASS AT GREENWOOD UNDERPASS**

- 10' SHLD
- 12' HOV
- 4' GP
- 12' AUX LANE

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**STANDARD BUFFER MINIMUM**

- 10' SHLD
- 12' HOV
- 4' GP
- 12' AUX LANE

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**BYPASS PLATFORM 15' 11' BYPASS 12' BUS LANE**

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**HOV HOV HOV HOV GP GP GP GP GP GP GP GP GP GP GP**

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**AUX LANE 10' Shld**

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**LEGEND**

- EXISTING CALTRANS
- PROPOSED BRT STATION
- RIGHT-OF-WAY
- BRT ONLY LANE
- PROPOSED BRT PLATFORM
- PROPOSED BRT STATION
- PROPOSED BRT AUX LANE
- RIGHT-OF-WAY
- PROPOSED PEDESTRIAN BRIDGE
- PROPOSED VEHICULAR BRIDGE

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**REV DATE: 10-25-2012**

**SAN DIEGO**

**IBI GROUP**

**SANFORD**

**CH2MILL**

**I-805/47TH STREET BRT/LRT**

**ALTERNATIVE 3b - OFF-LINE LEFT DAR WEST**

**TRACK LEVEL (WITHOUT BRT AUX LANE)**
**PROPOSED FEATURES**

1. BRT LANES IN MEDIAN.
2. BRT STATION EAST OF FREEWAY.
3. VEHICULAR BRIDGE WITH SIDEWALK AT TRACK LEVEL SOUTH OF GREENWOOD UP.
4. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANES.
5. REPLACE GREENWOOD UP AND IMPERIAL AVE OG.

**LEGEND**
- **EXISTING CALTRANS**
- **PROPOSED BRT STATION**
- **RIGHT-OF-WAY**
- **BRT ONLY LANE**
- **EXPRESS LANE**
- **REPLACE BRIDGE/ROADWAY**
- **PROPOSED PEDESTRIAN BRIDGE**
- **PROPOSED PEDESTRIAN BIDGE**

**REV DATE: 10-25-2012**
PROPOSED FEATURES

1. BRT LINES IN MEDIUM.
2. IN-LINE BRT STATION WITH CANTILEVERED PLATFORM SOUTH OF GREENWOOD UP.
3. PEDESTRIAN BRIDGE AT TRACK LEVEL SOUTH OF GREENWOOD UP.
4. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANE.
5. REPLACE GREENWOOD UP, OCEANVIEW BLVD OC, IMPERIAL AVE OC, AND MARKET ST OC.
PROPOSED FEATURES
1. BRT LANES IN MEDIAN.
2. BRT STATION WEST OF FREEWAY, RELOCATE 47TH ST.
   LRT STATION TO WEST OF FREEWAY.
3. VEHICULAR BRIDGE AT TRACK LEVEL SOUTH OF GREENWOOD UP.
4. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LINES.
5. REPLACE GREENWOOD UP, OCEAN VIEW BLVD OC, IMPERIAL AVE OC, AND MARKET ST OC.

LEGEND
- EXISTING CALTRANS
- PROPOSED BRT STATION
- RIGHT-OF-WAY
- BRT ONLY LANE
- EXPRESS LANE
- REPLACE BRIDGE/ROADWAY
- PROPOSED PEDESTRIAN BRIDGE
- PROPOSED VEHICULAR BRIDGE

I-805/47TH STREET BRT/LRT
ALTERNATIVE 3e - OFF-LINE RIGHT DAR WEST
TRACK LEVEL (WITHOUT BRT AUX LANE)
PROPOSED FEATURES

1. BRT LINES IN MEDIAN.
2. BRT STATION EAST OF FREEWAY.
3. VEHICULAR BRIDGE WITH SIDEWALK AT TRACK LEVEL SOUTH OF GREENWOOD UP.
4. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANES.
5. REPLACE GREENWOOD UP, OCEANVIEW BLVD OC, IMPERIAL AVE OC, AND MARKET ST OC.

I-805/47TH STREET BRT/LRT
ALTERNATIVE 3f - OFF-LINE RIGHT DAR EAST
TRACK LEVEL (WITHOUT BRT AUX LANE)

LEGEND
EXISTING CALTRANS RIGHT-OF-WAY
BRT ONLY LANE
EXPRESS LANE
REPLACE BRIDGE/ROADWAY
PROPOSED PEDESTRIAN BRIDGE
PROPOSED VEHICULAR BRIDGE

DRAFT
CH2MILL
REV DATE: 10-25-2012
PROPOSED FEATURES
1. BRT LINES IN MEDIAN.
2. NEW LANE.
3. REALIGN I-805 EXPRESS LANES AND GENERAL-PURPOSE LANES.
4. REPLACE OCEANVIEW BLVD OC, IMPERIAL AVE OC, AND MARKET ST OC.
5. BRT STATION (NUMBER OF BUS BAYS TO BE DETERMINED) WEST OF FREEWAY.
6. PEDESTRIAN BRIDGE SOUTH OF GREENWOOD UP.

LEGEND
- EXISTING CALTRANS RIGHT-OF-WAY
- BRT ONLY LANE
- EXPRESS LANE
- REPLACE BRIDGE/ROADWAY
- PROPOSED PEDESTRIAN BRIDGE
- PROPOSED VEHICULAR BRIDGE

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REV DATE: 10-25-2012

I-805/47TH STREET BRT/LRT
ALTERNATIVE 3g - FLYOVER WEST
TRACK LEVEL (WITHOUT BRT AUX LANE)
**PROPOSED FEATURES**

1. BRT lanes in median.
2. New flyovers.
3. Realign I-805 express lanes and general-purpose lanes.
4. Replace Oceanview Blvd OC, Imperial Ave OC, and Market St OC.
5. BRT Station (number of bus bays to be determined) east of freeway.
6. Pedestrian bridge south of Greenwood UP.

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**LEGEND**

- **Existing Caltrans Right-Of-Way**
- **Proposed BRT Station**
- **Proposed LRT Station**
- **BRT Only Lane**
- **Express Lane**
- **Replace Bridge/Right-Of-Way**
- **Proposed Pedestrian Bridge**
- **Proposed vehicular Bridge**

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**I-805 / 47TH STREET BRT/LRT**

**ALTERNATIVE 3h - FLYOVER EAST**

**TRACK LEVEL (WITHOUT BRT AUX LANE)**