



WESTSIDE SUBWAY EXTENSION PROJECT

Westwood/UCLA Station and the Westwood/VA Hospital Station Locations Report

Metro

December 2011

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1.0 PURPOSE

This report evaluates the alternative station locations included in the Locally Preferred Alternative (LPA) for the Westwood/UCLA station and the Westwood/VA Hospital station. Recommendations are offered for the final station locations.

1.1 Background

The Los Angeles County Metropolitan Transportation Authority (Metro) and the Federal Transit Administration (FTA) are preparing an Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the Westside Subway Extension. FTA is serving as the lead agency for purposes of the National Environmental Policy Act (NEPA) environmental review and Metro is serving as the lead agency for purposes of the California Environmental Quality Act (CEQA) environmental review.

Planning and project development for the Westside Subway Extension began with an Alternatives Analysis (AA) Study, which evaluated alternative transit modes and alignments for the study area. Recommendations from the AA Study were approved by the Metro Board on January 22, 2009. Subsequently, Advanced Conceptual Engineering was performed and a Draft EIS/EIR was prepared and circulated, leading to the Metro Board's selection of a Locally Preferred Alternative (LPA) on October 28, 2010. From the existing Wilshire/Western Station on the Purple Line, the LPA travels west beneath Wilshire Boulevard to the Wilshire/Rodeo station and then west or southwest toward a Century City Station, then toward a Westwood/UCLA station. The line then continues west under the I-405 Freeway, terminating at a Westwood/VA Hospital station. The project also includes expansion of the existing maintenance facility (Division 20) and other support facilities. Appendix A includes the Board action taken October 28, 2010. In addition, a Board Motion was approved to request more detailed exploration of station location and alignment options between the Wilshire/ Rodeo Station in Beverly Hills and Westwood/VA Hospital station. The Preliminary Engineering phase supports decisions on the station locations and alignment west of Wilshire/Rodeo Station and presents more detailed information on the remaining station and alignment options and their impacts:

- Century City Station (Options at Constellation and Santa Monica Boulevard, with associated Alignment Options).
- Westwood/UCLA (On-Street and Off-Street Station options).
- Westwood/VA Hospital (North Station and South Station Options).

In this paper, the station options at Westwood/UCLA and at Westwood/VA Hospital are studied and recommendations made for the preferred station locations.

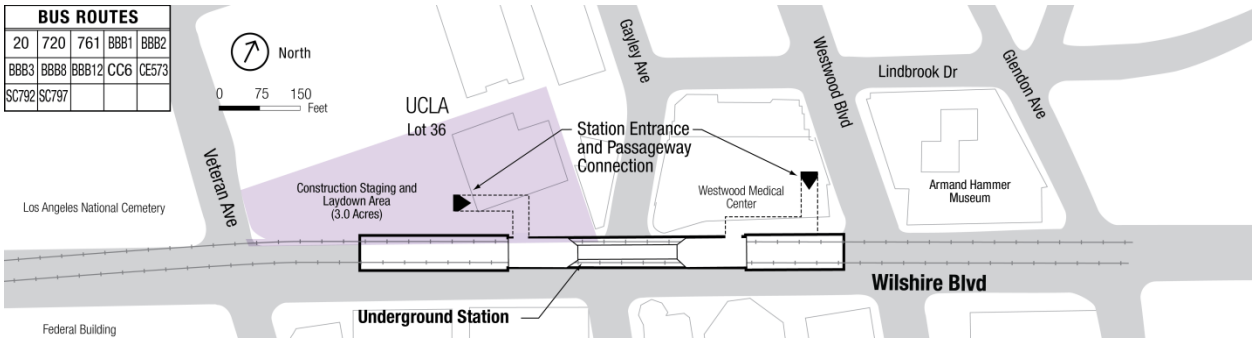
2.0 WESTWOOD/UCLA STATION OPTIONS

2.1 Description

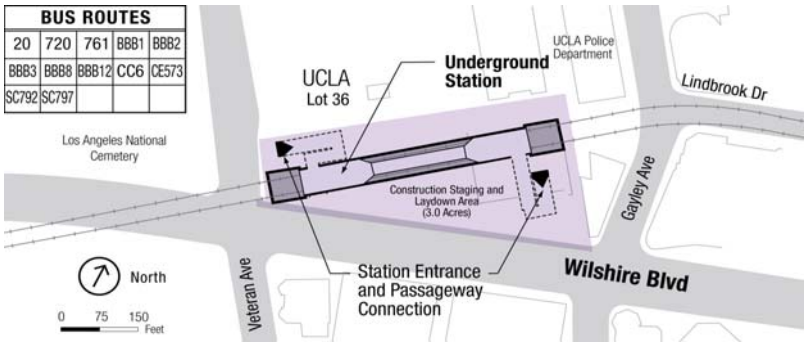
There are two options for the Westwood/UCLA Station. The first option (Westwood/UCLA Off-Street) is entirely within Lot 36, a parking lot on the north side of Wilshire Boulevard between Veteran Avenue and Gayley Avenue owned by UCLA. The second option (Westwood/UCLA On-Street) is farther east towards Westwood Boulevard and under Wilshire Boulevard. See Figure 2-1 for drawings showing these locations.

Figure 2-1: Westwood/UCLA Station Location Options

On-Street Option



Off-Street Option



2.2 Screening and Selection Process

The process used to evaluate station location options for Westwood/UCLA is summarized in Chapters 2 and 7 of the Draft EIS/EIR. Seven goals and associated objectives were used to highlight the significant differences between the options. Of the six station options considered for Westwood/

UCLA during the AA Study, the two options described above best met the seven goals. The seven goals used to narrow the options down to the final two alternatives were:

- Goal A—Mobility Improvement
- Goal B—Transit—Supportive Land Use Policies and Conditions
- Goal C—Cost Effectiveness
- Goal D—Project Feasibility
- Goal E—Equity
- Goal F—Environmental Considerations
- Goal G—Public Acceptance

In response to the Metro Board's request for more information before selecting a site for the Westwood/UCLA station, further analysis was undertaken to focus on the engineering aspects of the station options. The additional engineering analysis considered:

- Major Components—A review of any differences or constraints in the size of the major structures such as station box, crossovers, ventilation structures and station entrances
- Alignment—Does one location option provide for better track alignment than the other e.g. flatter curves?
- Profile—Are there differences in the tunnel profile between the options e.g. deeper tunnels vs. shallow?
- Traffic—Are there differences between the options on the impacts on traffic during the construction period? Is traffic better managed by one or the other option?
- Utility Relocations—Are there major differences in the extent of utility relocations?
- Contractor's Lay Down Areas—Are there differences in the lay down area space available?
- Construction cost—Are there differences in the cost of construction between the two options?
- Special Mitigations—Do any of the options require special mitigation measures and if so, how difficult will they be to implement?

Most of these factors ultimately affect the project's capital cost. An updated cost estimate has been prepared reflecting the more detailed engineering analysis carried out in the initial months of Preliminary Engineering.

In addition, continuing environmental and other studies supporting the development of the Final EIS/EIR have provided more detailed information for comparing the station location options in terms of:

- Proximity to Jobs and Residences—How many jobs and residences are within walking distance of the station portal?
- Transit Travel Time—How would the station location and orientation affect run times between stations?

- Right-of-Way Requirements—How many residences and jobs would be displaced by each of the station site options?
- Subsurface Easements—How many residences and commercial properties would lay atop the subway tunnel?
- Cultural Resource Impacts—To what extent would each of the station site options have adverse effects on historic sites, parks, and other cultural resource properties?

2.3 Evaluation

2.3.1 Major Components

- Station Module—Both the on-street and off-street locations have space to construct the standard 450-foot-long station platform module.
- Crossover Module—No crossovers are required at the Westwood/UCLA station.
- Ancillary Modules—Ancillary modules are required at both ends of the station. The Off-Street Station site is constrained by bordering property and by the intersection of Veteran Avenue/ Wilshire Boulevard in order to keep station construction out of this busy intersection and so non-standard short (65 feet) and 3-level ancillary modules would be required. The nonstandard short modules also require siting train control, communications and traction power equipment on the surface, occupying space on lot 36. The On-Street location would allow use of standard 180-foot and 284 foot ancillary modules below street level, which accommodate the train control, communications and traction power facilities equipment without surface disruption.
- Station Entrances—Construction of the Lot 36 entrance would be less difficult with the Off-Street location as the entrance is away from a 106"x126" RCB storm drain which runs along Gayley Avenue and Wilshire Boulevard. The 106"x126" RCB storm drain runs between the On-Street Station site and Lot 36, potentially making the Lot 36 entrance more difficult to construct; currently, the plan is to strengthen the soil beneath the storm drain and then mine out beneath it for the station entrance.

2.3.2 Alignment

Table 2-1 shows the design speeds for the four possible alignments between Westwood/UCLA Stations and Westwood/VA Hospital. The table shows that the Westwood/UCLA On-Street location has better design speeds than the Westwood/ UCLA Off –Street option

Table 2-1: Summary of curve design speeds between Westwood/UCLA Station and Westwood/ VA Hospital Station

		UCLA On Street			UCLA Off Street			
		Curve 2-1120	Curve 1-1130		Curve 2-1105	Curve 1-1110	Curve 2-1120	Curve 1-1130
VA South	Speed (mph)	45	25		25	25	25	25
	Radius (ft)	1402	900		962	1500	1062	900

		UCLA On Street			UCLA Off Street			
		Curve 2-1110	Curve 1-1120	Curve 2-1130	Curve 2-1110	Curve 1-1120	Curve 2-1130	
VA North	Speed (mph)	45	55	45	25	40	45	
	Radius (ft)	2561	5000	2961	1000	1250	3462	

The Off-Street location would require an alignment that runs beneath private property on Gayley Avenue and Lindbrook Drive for a distance of approximately 0.4 miles, passing beneath a new hotel development on Gayley Avenue and several other properties. The On-Street station location would not require subsurface easement for the tunnels but would require easements to construct the station entrance at the corner of Westwood Boulevard and Wilshire Boulevard.

2.3.3 Profile

The Off-Street location would require the station and tunnels to be deep enough to clear the underside of foundations for a future hotel development on Gayley Avenue. The hotel development is planned to have four levels of underground parking, so the top of the tunnels would need to be 86 feet below grade to clear the building foundations. The station excavation would need to be 110 feet deep. The water table at UCLA is 15 to 20 feet below grade making deep station excavation more difficult and expensive. Deeper stations are also more expensive to construct and operate due to need for longer escalators and elevators, access stairways, and heavier structures to withstand higher ground and water pressures. Deeper stations also require more time for transit riders to travel between the platform and the portal. While the difference is small, it has the potential to affect the project's ridership.

In contrast, the station excavation for the On-Street location would be approximately 70 feet deep, controlled by the depth of utilities in the street. This analysis anticipates that the conflict between the 106" x 126"- RCB storm drain (see Section 1.3.1) and the station entrance could be resolved without lowering the station, by locating the station box far enough away from the storm drain to build the station entrance between the station box and the storm drain.

2.3.4 Station Entrance Locations and Pedestrian Access

Westwood Boulevard, which crosses Wilshire Boulevard and runs north-south through Westwood Village to UCLA, is the center of activity for this station area. The On-Street option would have a station portal at the intersection of Wilshire Boulevard and Westwood Boulevard, which is the location recommended by the local Station Area Advisory Group (SAAG) as it provides good pedestrian access between the station and nearby activities. For the Off-Street station option, the station portal nearest Westwood Boulevard would be at Lot 36 west of Gayley Avenue, at least 500 feet west of Westwood Boulevard. Figure 2-1 shows the placement of the entrances for the two options. Both entrances have access to bus routes, but the On-Street option would service a more developed area (high-rises and commercial properties) with more bus routes running along Westwood. The Off-Street station location would be further from activities centered around Westwood Village. Both options would accommodate pedestrian use; however the On-Street Option would be accessible to more pedestrian activity along Westwood Boulevard. SAAG group recommendations[1] were

Portal Location: The SAAG Members feel strongly that there should be a portal on the south and north side of Wilshire with handicap access on both sides.

- The SAAG members do not like Westwood Medical portal configuration that comes out into the parking garage.

[1] Metro Westside Subway Extension, Station Area Advisory Groups. Summary of Comments and Feedback (DRAFT) - July 7, 2011

- Some of the SAAG members would prefer removing the existing bank building and putting the portal at the corner. Members would like Metro to further study the historical significance of the Westwood Medical building to see how a portal could be accommodated at the corner of Westwood and Wilshire.
- Members would like the current bus stop at the NW corner on Westwood to be relocated to the north at Kinross to reduce congestion and provide more waiting space.
- Members would like to see pedestrian access from Lot 36 to Kinross, making good pathways to Westwood Village.
- Station parking, bike parking, good bus interface, and safe, wide pedestrian sidewalks are critical issues for the Westwood/UCLA station.

2.3.5 Traffic Circulation during Construction

Wilshire Boulevard has four lanes each direction from west of Veteran Avenue to East of Glendon Avenue, plus left turn lanes at intersections. The existing Average Daily Traffic (ADT) is 123,000 vehicles per day (vpd) west of Veteran Avenue, and the three intersections of Wilshire Boulevard with Westwood Boulevard, Gayley Avenue and Veteran Avenue all operate at Level of Service (LOS) F in both the AM and PM peak hours. The intersection of Wilshire Boulevard with Glendon Avenue operates at LOS D in the AM peak hour and at LOS F in the PM peak hour.

With the On-Street option:

- Three lanes would be provided in each direction on Wilshire Boulevard between Veteran Avenue and Glendon Avenue during north and south side temporary shoring installation. This would result in a 25-percent reduction in roadway capacity in each direction for approximately 6 weeks.
- Left turn lanes would be maintained on Wilshire Boulevard between Veteran Avenue and Westwood Boulevard during north and south side temporary shoring installation. One lane westbound and two lanes eastbound on Wilshire Boulevard would be maintained during decking installation and removal which will take place during a series of weekend closures. Approximately 12-16 closures will be required to install decking and again for decking removal. . During decking installation and removal, there would be no left turn lane for eastbound traffic at Gayley Avenue and at Westwood Boulevard, and no left turn lane for west bound traffic at Westwood Boulevard, Gayley Avenue or Veteran Avenue

With the Off-Street option, there would be one westbound lane closed on Wilshire Boulevard between Veteran Avenue and Midvale Avenue during station construction. This would result in a 25-percent reduction in westbound roadway capacity and no reduction in eastbound roadway capacity for approximately 6 weeks. All left turn lanes would be maintained, and no decking would be required.

2.3.6 Utility Relocations

Utility investigations are still in progress, but almost certainly, the On-Street option would involve relocating and supporting more utilities than the Off-Street option. There are a number of major storm drains beneath Gayley Ave that cross the proposed station excavation. These storm drains can be rerouted into the 106"x126" Reinforced Concrete Box (RCB) and this would avoid disruptions to the eastbound lanes on Wilshire that tie-ins for temporary lines across the open station excavation

will entail, though the tie in to the 106" x 126" box will be difficult to construct. The current plan is to maintain these drains across the open station excavation

The west end of the Off-Street station would be directly below the 106"x126" RCB. The 106" x 126" RCB would have to be diverted around the station excavation, and this would require decking the intersection of Wilshire Boulevard and Veteran Avenue, with the associated traffic disruption and additional utility relocations.

2.3.7 Contractor's Lay Down Areas

Lot 36 would be a suitable site for both station options. The Off-Street location has better overall lay down as the station would be entirely within Lot 36, giving unrestricted access all around the station. Also, the Off Street location would not have to be decked, resulting in cost savings both in purchasing decking materials and by avoiding the stage work needed at the On-Street location to install and maintain and remove the deck and backfill above the station.

2.3.8 Construction Cost

Parametric cost estimates have been prepared for each of the alignment options considered in the FEIS/FEIR. These cost estimates are summarized in Table 2-2.

Table 2-2: Capital Cost Estimates for Station Alignment Options in 2010 Dollars (Millions)

Configuration Number	Configuration Description			Total Cost Range* ($2010)	
	Century City	Westwood / UCLA	Westwood / VA Hospital		
1	Santa Monica	On-Street	South	$4,221.642	$4,305.946
2	Santa Monica	On-Street	North	$4,253.995	$4,338.318
3	Santa Monica	Off-Street	South	$4,197.430	$4,281.752
4	Santa Monica	Off-Street	North	$4,229.999	$4,314.323
5	Constellation	On-Street	South	$4,241.525	$4,280.252
6	Constellation	On-Street	North	$4,273.871	$4,312.598
7	Constellation	Off-Street	South	$4,217.301	$4,256.031
8	Constellation	Off-Street	North	$4,249.868	$4,288.595
*Note: Costs do not include financing costs					

The difference in cost between the On- Street and Off- Street options at Westwood /UCLA can be calculated by comparing cost differences between the different configurations keeping Options at VA Hospital and Century City constant. See Table 2-3.

Table 2-3: Capital Cost difference Westwood/UCLA On-Street vs. Westwood UCLA Off-Street

Alignment Options	Alignment Costs ($2010)		Cost Difference* $ 2010 (millions)
Configuration 1 - Configuration 3	$4,221.642	$4,197.430	$24.212
Configuration 2 - Configuration 4	$4,253.995	$4,229.999	$23.996
Configuration 5 - Configuration 7	$4,241.525	$4,217.301	$24.224
Configuration 6 - Configuration 8	$4,273.871	$4,249.868	$24.003
*Note: Costs do not include financing costs			

The On-Street option is estimated to cost $24 million more to construct than the Off-Street option. The major difference in cost is the longer ancillary modules used for the On-Street station. The On-Street option also includes additional costs for Real Estate required for the entrance at the corner of Westwood Blvd and Wilshire Blvd

2.3.9 Special Mitigations

Mitigation measures would be required to offset the loss of parking on the UCLA Lot 36. During construction, the On–Street location would occupy the same amount of Lot 36 as the Off-Street option so the mitigation measures for lost parking during construction are the same for both alternatives. Post construction, the Off-Street station results in a permanent reduction in the parking capacity of Lot 36. Mitigation measures have not been addressed yet but the loss of parking would be a consideration if the Off-Street station were selected.

Table 2-4 provides a summary of the engineering analysis for the Westwood/UCLA Station options.

Table 2-4: Summary of Engineering Analysis for Westwood/UCLA Station Options

Major Components	Off - Street	On-Street
Station Platform Module	No Constraints	No constraints
East end crossover Module	None Required	None required
West end crossover module	None required	None required
Ancillary modules	3-level due to length restrictions. Short modules will not accommodate all ancillary equipment, which would have to be located at the surface.	Standard dimensions
Station entrances	No constraints	Lot 36 entrance may be impacted by 106 x 126" RCB storm drain. Westwood Boulevard/Wilshire Boulevard entrance has to be constructed within a historic building.
Alignment	25 mph curve to GSA crossover, 25 mph curves at east end of station, 40 & 45 mph curves to VA north station	45 mph curve to GSA crossover. 45 mph curves to VA north station

Table 2-4: Summary of Engineering Analysis for Westwood/UCLA Station Options (continued)

Major Components	Off - Street	On-Street
Profile—depth to top of rail	Station excavation would be 40 feet deeper than for On-Street to clear foundation of future hotel	Normal
Station entrance locations	Both entrances would be in Lot 36. Station Advisory Group has strong preference for an entrance at Westwood Boulevard	Provides entrance at Westwood and Lot 36—More convenient to center of activity
Traffic circulation during construction	Traffic will be disrupted during diversion of the 106 x 126" RCB	Traffic would be disrupted by utility relocations, soldier piles, decking
Utility relocations	106 x 126" RCB would have to be diverted around west end of station excavation.	106 x 126" RCB may impact Lot 36 entrance. Storm drains in Gayley Street may have to cross the station excavation.
Contractor's lay down areas	Sufficient space in Lot 36	Sufficient space in Lot 36
Construction cost	$24 million less than On-Street option. Does not include detailed costs of utility diversions nor detailed construction costs of station portals	$24 million more than Off- Street option. Does not include detailed costs of utility diversions nor detailed construction costs of station portals
Special mitigations	Replacement parking for Lot 36 during construction. Off-Street Station significantly reduces development potential at the Lot 36 site for UCLA	Replacement parking for Lot 36 during construction.
LEGEND		
		Satisfactory
		Presents Difficulties
		Presents Major Difficulties

2.3.10 Proximity to Jobs and Residences

In addition to the engineering analysis discussed in Sections 2.3.1 through 2.3.9, there are several other planning and environmental factors to be considered in selecting a preferred site for the Westwood/UCLA station. One of those is the proximity of the station entrances to jobs and residences.

While the station entrances for the On-Street option are closer to the center of activity for Westwood, the two station options for Westwood/UCLA have virtually the same numbers of residents and jobs within ¼ mile of the portal. The Direct Ridership Report[2] shows that the portals for both On-Street and Off-Street options have 1,280 residents and 1,260 residents are within ¼ mile respectively. The On-Street option is within ¼ mile of 10,310 jobs, while the Off-Street option is within ¼ mile of 10,360 jobs.

[2] Westside Subway Extension Project. Direct Ridership Forecasting Report – July 2011

2.3.11 Transit Travel Time

The time it takes a train to travel from station to station, called the run time, is a function of the distance between stations and speed of the train, which depends upon the degree of curvature along the alignment. As indicated in Table 2-5, transit run times through an Off-Street station at Westwood/UCLA would be 26 to 32 seconds longer than run times through an On-Street station between the Century City station and the Westwood station. Longer run times would reduce project benefits and increase O&M costs.

Table 2-5: Transit Run Times with Westwood/UCLA Station Options (eastbound)

	Century City / Constellation		Century City / Santa Monica		Time difference	
	UCLA On-Street	UCLA Off-Street	UCLA On-Street	UCLA Off-Street	From Century City / Constellation	From Century City / Santa Monica
Westwood/VA Hospital North	14:45	15:17	14:21	14:50	0:32	0:29
Westwood/VA Hospital South	14:44	15:11	14:19	14:45	0:27	0:26

2.3.12 Right-of-Way Requirements

The Off-Street station option would entail the permanent subsurface easement of approximately 3 acres of land at Lot 36 from UCLA for the station box and permanent surface easement for the station portals. With the On-Street option, Metro would obtain a temporary easement to allow use of this land as a construction lay-down area, and would require permanent surface easement of 1.03 acres of Lot 36. Additional private land would be acquired for a second entrance. For both options, a one-story structure located on Lot 36 would need to be demolished and relocated elsewhere in order to accommodate construction staging activities.

2.3.13 Subsurface Easements

The number of subsurface easements beneath private property depends not only on the location of the Westwood/UCLA station but also the location of the adjacent stations at Century City and Westwood/VA Hospital.

Table 2-6 compares the station options by counting the number of subsurface easements that would be required between Century City and the Westwood/VA Hospital stations With the Century City Station at Constellation, the On-Street station option at Westwood/UCLA would require from 122 to 124 subsurface easements, both residential and non-residential. The Off-Street station option at Westwood/UCLA would require from 135 to 137 subsurface easements. If a Century City Station at Santa Monica is combined with the On-Street option at Westwood/UCLA, 93 to 95 subsurface easements would be required. If the Santa Monica option is combined with an Off-Street Station at Westwood/UCLA, 106 to108 subsurface easements would be required.

Table 2-6: Subsurface Easements[3]

Station Combination			Residential Properties	School, Religious, and Other Community Facilities	Other Non Residential Properties	Total Sub-surface Easements
Century City/ Santa Monica	Westwood/ UCLA On Street	Westwood/ VA Hospital South	78	0	17	95
Century City/ Santa Monica	Westwood/ UCLA On Street	Westwood/ VA Hospital North	78	0	15	93
Century City/ Santa Monica	Westwood/ UCLA Off Street	Westwood/ VA Hospital South	82	1	25	108
Century City/ Santa Monica	Westwood/ UCLA Off Street	Westwood/ VA Hospital North	82	1	23	106
Century City/ Constellation	Westwood/ UCLA On Street	Westwood/ VA Hospital South	86	1	37	124
Century City/ Constellation	Westwood/ UCLA On Street	Westwood/ VA Hospital North	86	1	35	122
Century City/ Constellation	Westwood/ UCLA Off Street	Westwood/ VA Hospital South	90	2	45	137
Century City/ Constellation	Westwood/ UCLA Off Street	Westwood/ VA Hospital North	90	2	43	135

2.3.14 Cultural Resources

For the Westwood/UCLA Station the Westwood Medical Plaza Building has been identified as being eligible as an historic resource in the project's survey of historic properties[45]. For the On-Street option, a station entrance would be retrofitted into the structure to minimize any impact to the exterior. The entrance would be along Westwood Boulevard to avoid affecting the façade along Wilshire Boulevard. It is expected that this change would be acceptable under Section 4(f) and Section 106 requirements.

2.4 Summary

Table 2-7 summarizes the evaluation of the location options for the Westwood/UCLA station.

[3] Westside Subway Extension Project. Acquisitions and Displacement Supplemental Report - 2011

[4] Westside Subway Extension Project. Historic Property Survey Report - 2010

[5] Westside Subway Extension Project. Historic Properties Supplemental Survey Report - 2011

Table 2-7: Evaluation Results for Westwood/UCLA Station Options

Relevant Goals, Objectives, Criteria	Westwood/UCLA On-Street Station	Westwood/UCLA Off-Street Station
Mobility Improvement		
Transit run time from Westwood/VA Hospital Station to Century City (in minutes)	4:05 to 4:14	4:30 to 4:46
Bus Connections	12	12
Number of Residents within ¼ mile of station entrance[6]	1,280	1,260
Number of Jobs within ¼ mile of station entrance[6]	10,310	10,360
Land Use		
Number of Joint Development Opportunities	None	None
Cost Effectiveness		
Construction cost in million 2010 dollars	$24 million more than for Off- Street Option	
Utility relocation cost	More than off-street	Less than on-street
Environmental Considerations		
Number of Subsurface Easements	93 to 124	106 to 137
Displacements	0	0
Number of Cultural Resources Adversely Affected	0	0
Traffic Impacts during Construction	Higher impacts because decking is required above station construction in Wilshire Blvd.	Lower impacts because most construction is off street

[6] Westside Subway Extension Project. Direct Ridership Forecasting Report - July 2011

3.0 RECOMMENDATIONS

The off-street station cost is $24 million less than for the on–street station. However, the off-street option has the following disadvantages that make the on-street option preferable. These are:

1. Non standard ancillary modules and need for surface locations for ancillary equipment
2. 25 mph curves on east end of station, and on west end for VA Hospital South alignment
3. Tunnels would require more subsurface easements
4. Deeper station excavation with the commensurate risks that go with deep excavations
5. No station entrances at Westwood Boulevard, which goes against the strong recommendation from the Station Advisory group for Westwood Boulevard entrances
6. Occupies more of the Lot 36, reducing the ability to develop the site in the future.

Therefore, the Westwood/UCLA On-Street location is recommended as better fulfilling the community needs while reducing Metro's exposure to the risks of a deep station excavation and while keeping more of the Lot 36 site available for future development by UCLA.

4.0 WESTWOOD/VA HOSPITAL

4.1 Description

The LPA includes two location options for the Westwood/VA Hospital station. The first option would be on the south side of Wilshire Boulevard between Bonsall Avenue and I-405 Freeway. See Figure 4-1. The western end of the station would be constructed mainly below an existing parking lot which serves the VA and with the eastern end below the I-405 on and off ramps and landscaped cloverleaf. The second location option would be for the station to be constructed on the north side of Wilshire Boulevard, largely to the west of Bonsall Avenue and between Wilshire Boulevard and Eisenhower Avenue. See Figure 4-2.

Both station options presented in the Draft EIS/EIR were based on a four platform station module, with two side platforms and a center platform. A ventilation module was assumed at the west end of the station module and a module for turnouts was assumed on the east end. Tail tracks extended west of the station, and the south option included a ventilation shaft at the Army Reserve site. Tangent tailtracks were not a requirement.

Since the LPA, the station has been revised to a single center platform layout with no side platforms, making the station module identical to those used at all other locations on the project. West of the station module, there would be a crossover module and tailtracks extending 500 feet beyond the crossover module. To allow for coupling and uncoupling of trains on the tailtracks, the tailtrack layout will include sufficient tangent track to accommodate five car lengths. There is also a crossover module at the east end of the station, though in the case of the south station option, due to space constraints on the south side of Wilshire, the crossover module would be to the east of the I-405 freeway and would not be joined to the station module.

Figure 4-1: Westwood/VA Hospital Station South Option

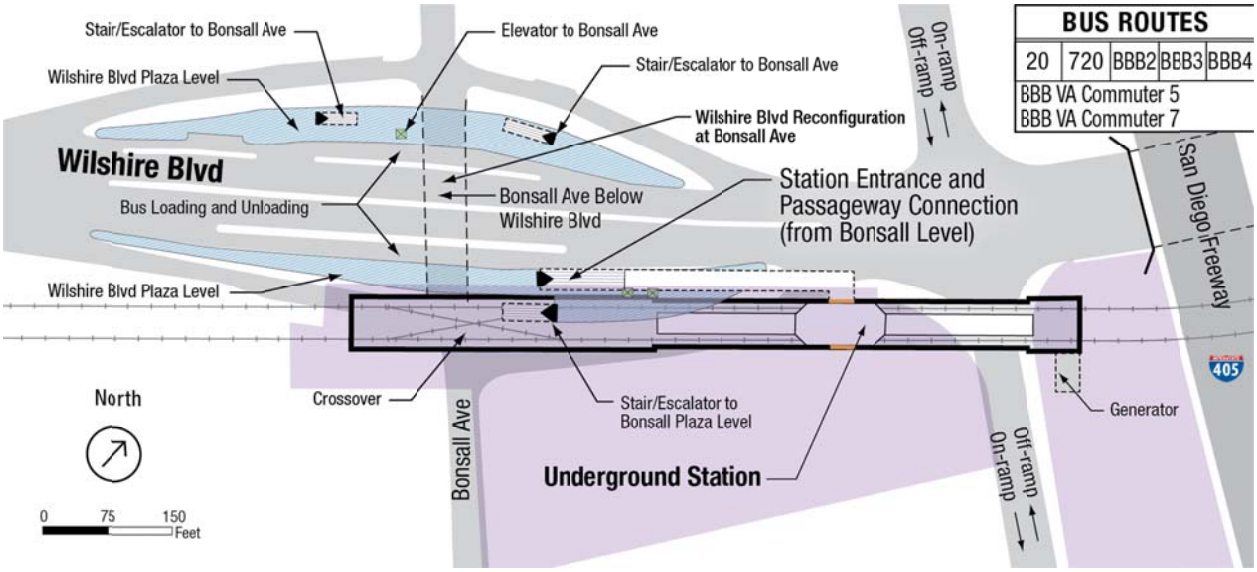
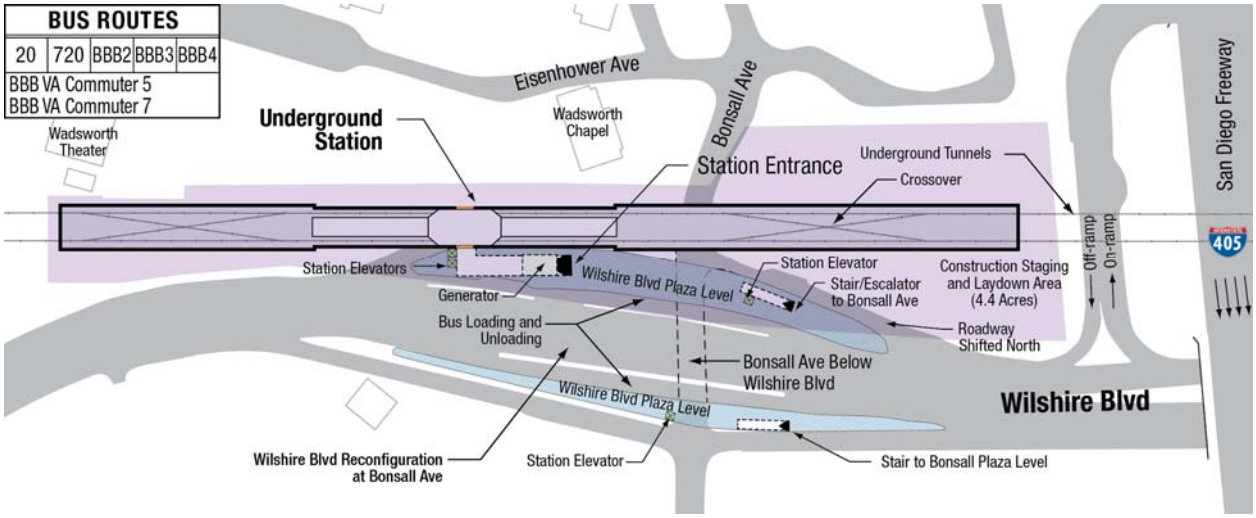


Figure 4-2: Westwood/VA Hospital Station North Option



4.2 Selection and Screening Process

As with the station options for Westwood/UCLA, an engineering analysis was performed to review the station location options at the Westwood/VA Hospital, taking into account:

- Major Components—A review of any differences or constraints in the size of the major structures such as station box, cross-overs, ventilation structures and station entrances
- Alignment—Does one location have a better track alignment than the other e.g. flatter curves?
- Profile—Are there differences in the tunnel profile between the options?
- Impacts on traffic during construction.
- Utility Relocations—Are there differences in the extent of utility relocations?
- Contractor's Lay Down Areas—Are there differences in the amount of lay down area available?
- Construction Cost—Are there differences in the cost of construction between the two options?
- Special Mitigations—Do any of the options require special mitigation measures and if so, how difficult will they be to implement?

In addition, continuing environmental and other studies supporting the development of the Final EIS/EIR have provided more detailed information for comparing the station location options.

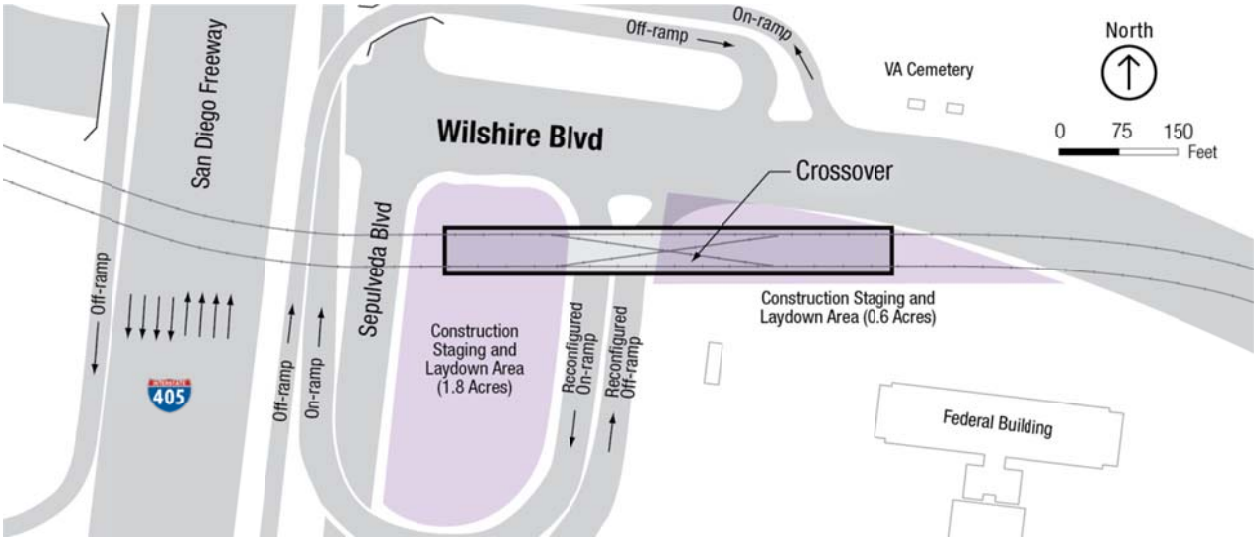
4.3 Evaluation

4.3.1 Major Components

- Station Module—Both north and south locations have space to accommodate the standard 450-foot-long station platform module.
- Eastern Crossover Module—There is space for the north option to accommodate a #15 crossover module adjacent to the station. The south option does not have space for a crossover module

abutting the station module and the crossover module would be east of I-405 in front of the GSA building (Figure 4-3).

Figure 4-3: Crossover Module at GSA (VA Hospital South Station option only)



- Ancillary Modules—Ancillary modules would not be required for the northern option, as ventilation fans and other equipment are included in the crossover modules on the east and west sides of the station. For the south option, no ancillary module would be needed on the west end of the station as ventilation and other equipment would be included in the west crossover module. An ancillary module however would be required on the east end of the station as the east crossover module has been moved to the east of I-405. Furthermore, there would not be enough space to accommodate a standard 114-foot ventilation module between the station module and I-405 and a shorter module customized to the site would be required.
- Station Entrances—As both the north and south station locations are in open space, either parking lots or landscaped areas, there would be no engineering restrictions on the construction of station entrances for any of the options. Both entrances do require widening Wilshire Blvd to provide bus loading and unloading.

4.3.2 Alignment

The South option would be restricted by the fact that the eastern crossover would be separated from the station (on the east side of I-405 freeway) and the fact that the crossover would have a design speed of 25 mph. The crossover location would only allow 25 mph speeds until trains travelling towards Westwood/UCLA station have cleared the crossover. The section of track between the crossover and Westwood/UCLA station would have a better design speed to the Westwood/UCLA On-Street location than to the Off-Street (see Table 4-3 details). The northern option offers better horizontal alignments, and in addition, the ability to locate the crossover module immediately next to the station module would allow for shorter travel times between the North Westwood/VA Hospital station and Westwood/UCLA station than for South Westwood/VA Hospital station and Westwood/UCLA station.

However, the North Option would create problems for the future extension of the line to Santa Monica. A north alignment west of San Vicente Boulevard would have to pass below a significant number of residential and commercial properties, requiring the acquisition of subsurface rights. With a North Station location, it would be advisable for Metro to purchase subsurface rights immediately to prevent future deep foundation developments from precluding the future construction of the extension to Santa Monica. The south option allows future extensions to the west to align with Wilshire Boulevard west of the VA Hospital station. In summary, the North Option would have severe problems with the alignment west of the station, making future extensions to the west more costly, or with lower design speeds, or both.

4.3.3 Profile

The station box for the VA North Option would have to be deeper than the box for the South Option alignment to allow future extensions to be deep enough to run below present and future building foundations.

Also, to reach the North Option Station- the alignment would need to pass beneath bridge foundations for the I-405 on-off ramps at Sepulveda, and would require a deeper tunnel profile.

Alignments for the South Option would not pass beneath existing or future structures and there would not be constraints on the profile, and hence a shallower station is possible for this option

4.3.4 Station Entrance Locations and Pedestrian Access

There are no engineering constraints for station entrances for any of the station locations under consideration. The South Option offers considerably better access to the VA Hospital for workers, visitors, and patients. The South Option's vertical alignment also would be shallower than the North Option alignment, reducing the time it takes transit users to reach the platform from the portal.

4.3.5 Traffic Circulation during Construction

Wilshire Boulevard currently has four lanes in each direction at the I-405 interchange, and three lanes each direction from I-405 interchange westerly and through the Bonsall Avenue interchange. There is a full cloverleaf interchange at I-405 and Wilshire Boulevard. Wilshire Boulevard has an existing ADT of 123,000 vpd west of Veteran Avenue.

With the North VA Hospital station option, all travel lanes would be maintained on Wilshire Boulevard, though lanes would have to be restriped and narrowed during the construction of the bus loading and unloading lanes. There would be no reduction in roadway capacity. Bonsall Avenue would be closed north of Wilshire Boulevard for 2 to 4 consecutive overnight/weekends for decking installation and removal. Lane closures on Bonsall will be required for installation of shoring. The Wilshire on and off ramps for Bonsall will require reconstruction to make new ramps along the north side of the existing ramps. This can be done with only night closures of the ramps to make tie-ins.

With the South Station Option, all travel lanes would be maintained on Wilshire Boulevard though lanes would have to be narrowed during the construction of the bus loading and unloading lanes. There would be no reduction in roadway capacity. For 2 to 4 consecutive weekends, the eastbound Wilshire Boulevard to southbound I-405 on ramp and the southbound I-405 to eastbound Wilshire Boulevard off-ramp would be closed for decking installation and removal. Similar I-405 ramp

closures will be required for the northbound I-405 ramps on the south side of Wilshire Blvd to construct the GSA crossover box. For 2-4 consecutive weekends, Bonsall Avenue will have to be closed to deck above the station box. Lane closures on Bonsall will be required for the installation of shoring, followed by full closures of the Wilshire Blvd on and off ramps at Bonsall to install decking. These full ramp closures are estimated to require 8-10 weekend closures to install decking, and a further 8-10 full ramp closures to remove the decking. Lane closures on the on- and off-ramps will also be required for constructing the bus loading and unloading area along eastbound Wilshire Blvd.

The south station option also requires the construction of a station entrance on the north side of Wilshire and construction bus loading and unloading area along the westbound Wilshire carriageway. Nighttime full closures of Bonsall Avenue will be required for installation and removal of falsework and lane closures on the on and off ramps for the construction of the bus loading and unloading area.

4.3.6 Utility Relocations

Utility investigations are still in progress. At this time, there do not appear to be any significant utility issues with either of the options. There may be steam tunnels connecting the VA hospital to the central plant facility located on the north side of Wilshire. It is not known whether steam tunnels cross the proposed station locations but it can be assumed that they would. The impact of the steam tunnels would likely be similar for either option. Information on VA utilities is being sought but is not yet available.

4.3.7 Contractor's Lay Down Areas

For the south Westwood/VA options, the existing large parking lot can provide sufficient lay down area.

For the north station site, the existing parking lot between the station site and Eisenhower Avenue would provide lay down, but not enough, and the landscaped areas east and west of Bonsall would also be required.

4.3.8 Construction Cost

Parametric cost estimates have been prepared for each of the eight different alignment alternatives considered for the FEIR/FEIS. This information is presented in Table 4-1 below.

Table 4-1: Capital Cost Estimates for Station Alignment Options in 2010 Dollars (Millions)

Configuration Number	Configuration Description			Total Cost Range* ($2010)	
	Century City	Westwood / UCLA	Westwood / VA Hospital		
1	Santa Monica	On-Street	South	$4,221.642	$4,305.946
2	Santa Monica	On-Street	North	$4,253.995	$4,338.318
3	Santa Monica	Off-Street	South	$4,197.430	$4,281.752
4	Santa Monica	Off-Street	North	$4,229.999	$4,314.323
5	Constellation	On-Street	South	$4,241.525	$4,280.252
6	Constellation	On-Street	North	$4,273.871	$4,312.598
7	Constellation	Off-Street	South	$4,217.301	$4,256.031
8	Constellation	Off-Street	North	$4,249.868	$4,288.595
*Note: Costs do not include financing costs					

The difference in cost between the North and South options at Westwood /VA Hospital can be calculated by comparing cost differences between the different configurations keeping Options at Westwood/UCLA and Century City constant. See Table 4-2

Table 4-2: Capital Cost difference Westwood/VA Hospital South vs. Westwood VA/Hospital North

Alignment Options	Alignment Costs ($2010)		Cost Difference* $ 2010 (millions)
Configuration 2 - Configuration 1	$4,253.995	$4,221.642	$32.353
Configuration 4 - Configuration 3	$4,229.999	$4,197.430	$32.569
Configuration 6 - Configuration 5	$4,273.871	$4,241.525	$32.346
Configuration 8 - Configuration 6	$4,249.868	$4,217.301	$32.567
*Note: Costs do not include financing costs			

The cost of construction for the Westwood/VA Hospital North Station is estimated to be $32.5 million more than for the South Option. Included in the cost estimate is $ 10 million for the construction of a 350 space parking structure for the Westwood/VA Hospital South station to offset the loss of parking during construction.

4.3.9 Special Mitigations

Mitigation measures will be required to offset the temporary loss of the existing parking at the VA South Station site. A parking structure to compensate for lost parking capacity (300 spaces approx) will be required and is included in this analysis

The crossover box on the west end of the South Station Option extends west of Bonsall into a historic district. Hand mining of approximately 50 feet of the western end crossover box may be required. Hand mining of the tailtracks west of the crossover box also would be required as cut and cover construction through the historic district is not feasible.

The south station option extends into the Caltrans cloverleaf, which is a storm water attenuation pond. This would reduce the capacity of the attenuation pond, and this would have to be replaced at a location within the I-405 widening project

For the North Station Option, the need for tangent tracks west of the station make future connections from the west impossible to design to Metro standards, unless the profile were lowered to pass beneath existing building foundations, and unless future developments above the future alignments was restricted such that the foundations of those new developments would not impact the construction of Metro tunnels.

Summarizing the engineering analysis – see Table 4-3, the lack of an unimpeded alignment for the future Purple Line extension to Santa Monica is a serious concern for the station site north of Wilshire. There are shortcomings with the alignment on the site south of Wilshire too, but less severe mitigations or work-arounds can be employed to build a station that would operate satisfactorily and an alignment that can be extended further west in the future. A North Option Station would have to be deeper than a station at the South Option site, as the alignments serving a North Option Station would pass under the bridge foundations where I-405 on and off ramps cross Sepulveda Boulevard, and to allow the future tunnels to Santa Monica to pass below building foundations.

In addition to the engineering considerations, decisions among the station location options should take into account the proximity of each station to jobs and residences, transit travel time, and various environmental factors. These are described in the following sections.

Table 4-3: Summary of Engineering Analysis for Westwood/VA Hospital Station Options

	North	South
Major Components		
Station platform	Standard	Standard
East End crossover	Standard	Separate—at GSA
West end crossover	Standard	Not standard—Super 8 required and hand mined at west end
Tailtrack	Difficult. Cannot obtain enough tangent tailtrack without impacting alignment of future western extension	Last car on spiral. Can provide enough tangent track for five of a six car train. This is acceptable
Station Entrances	No engineering constraints	No engineering constraints
Alignment		
Future alignment to Santa Monica	Much less than minimum radius. Extension to Santa Monica would require tunnel to be lowered to run beneath residential properties west of San Vicente Boulevard	45 mph curve back onto Wilshire
Between VA and UCLA	Good to UCLA on-Street. 25mph curve to UCLA off-street	Separate crossover reduces speed
Profile—depth to top of rail	Deep to clear foundations of I-405 ramp structures and properties west of San Vicente Boulevard	Standard
Station Entrance Locations	Longer walk from station to hospital	Better access from station to hospital

Table 4-3: Summary of Engineering Analysis for Westwood/VA Hospital Station Options (continued)

	North	South
Traffic circulation during construction	No impact on I-405 on and off ramps. Full closures of Bonsall Avenue required and partial closures of Wilshire Blvd on and off ramps to Bonsall Avenue	Partial and full closures of I-405 on and off ramps required. Full closures of Bonsall Avenue required. Full and partial closures of Wilshire Blvd on and off ramps to Bonsall Avenue.
Utility relocations	No issues	No issues
Contractor's lay down areas	Insufficient for a TBM launch site unless landscaped areas are used. Mitigation may also be required for loss of parking.	Good lay down space at existing parking lot, but mitigation for lost parking required
Construction cost	$32.5 more than south	$32.5 million less than north
Landscaped areas	Unavoidable impact	Hand mined section of tailtracks to avoid landscaped area. Crossover would be open cut and will require restoration of the landscaping
Land use restrictions required on future development above alignment west of San Vicente Boulevard	Necessary to prevent development above future tunnel alignment from blocking connection to Santa Monica.	None required
LEGEND		
	Satisfactory	
	Presents Difficulties	
	Presents Major Difficulties	

4.3.10 Proximity to Jobs and Residences

Both the North and the South Options are within 1/4 mile of 3,500 jobs. There are 25 residents located on the south side of Wilshire, just west of Bonsall Avenue. There are no residents living within ¼ mile of the north station entrance

4.3.11 Transit Travel Time

The travel times between the two Westwood VA Hospital station alternatives are comparable, as indicated in Table 4-4. The North Option at Westwood/VA Hospital in conjunction with the Westwood/UCLA Off-street station has longer travel times due to slower curves in the alignment. At the margin, longer travel times would reduce project benefits and increase O&M costs.

Table 4-4: Transit Run Times for Westwood/VA Hospital Station Options (in minutes)

	Century City / Constellation		Century City / Santa Monica		Time difference	
	VA Hospital North	VA Hospital South	VA Hospital North	VA Hospital South	From Century City / Constellation	From Century City / Santa Monica
Westwood/UCLA On -Street	14:45	14:44	14:21	14:19	0:01	0:02
Westwood/UCLA Off-Street	15:17	15:11	14:50	14:45	0:06	0:05

4.3.12 Right-of-Way Requirements

The North and South Station Options would require use of land currently owned by the US Government and Caltrans. Neither option would require the acquisition of private property or the displacement of residents or businesses.

4.3.13 Subsurface Easements

Section 3.3.2 noted that the North Option would require a significant number of subsurface easement in the event that the Westside Subway is extended beyond the Westwood/VA Hospital station. Looking only at the current project, there is little difference between the North and South Station Options in terms of subsurface easements. The number of easements required depends upon the location of the two stations to the east, Westwood/UCLA and Century City, but for any given combination of UCLA and Century City station locations, there is essentially no difference between the North and South Station Options at Westwood/VA Hospital (Table 4-5).

4.3.14 Cultural Resources

The North and South Options for the VA Hospital station would both impact the VA Historic District, which has been recommended as eligible for the National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR). The north option would significantly alter the landscaping of the historic district for a temporary construction staging site. This would require removal of mature landscaping and regarding of this area. Restoration following construction would occur but trees and other landscaping would take many years to mature. The South Option would impact a small segment of the landscaped areas south of Wilshire and west of Bonsall Avenue that are also within the VA Medical Center Historic District. Metro is engaging an arborist and historic landscape architect to determine project impacts. It is expected that impacts for the south alignment can be classified as not significant. They need not be determinants for the station location.

4.4 Summary

Table 4-5 summarizes the evaluation of the location options for the Westwood/UCLA station. This table and a summary discussion will be inserted into Chapter 7 of the Final EIS/EIR.

Table 4-5: Evaluation Results for Westwood/VA Hospital Station Options

Relevant Goals, Objectives, Criteria	North Option	South Option
Peak period transit travel time between Westwood/UCLA and Westwood/VA Hospital (in minutes)	1:17 to 1:29	1:16 to 1:19
Bus Connections	7	7
Number of Residents within ¼ mile of portal	0	25
Number of Jobs within ¼ mile of portal	3,500	3,500
Number of Joint Development Opportunities	None	None
Capital cost difference in million 2010 dollars	$32.5 million more than south	$32.5 million less than north
Number of Subsurface Easements	93 to 135	95 to 137
Displacements	0	0
Number of Cultural Resources Adversely Affected	0	0
Traffic Impacts during Construction	Widening of Wilshire Blvd for bus loading and unloading. Modifications to Wilshire Blvd on and off ramps to Bonsall required. Full closures of Bonsall Ave required	Widening of Wilshire Blvd for bus loading and unloading. Full and partial closures for decking over Wilshire Blvd on and off ramps to Bonsall required. Full and partial closures for decking over on and off ramps to I-405 required .

5.0 RECOMMENDATIONS

The Westwood/VA North station has the following serious shortcomings that make the South Station option preferable. These are:

1. Cost. The south alternative is estimated to be some $32 million less than the northern option
2. Future alignment. The future alignment to Santa Monica will have to run beneath buildings fronting Wilshire Boulevard. Future building development on Wilshire could compromise the alignment
3. Walking distance to the VA Hospital. The north station is further from the VA Hospital, and so less convenient for the VA Hospital patients and staff
4. The VA Hospital North Station will impact the landscaping and gardens along the north side of Wilshire.

Therefore, the Westwood/VA Hospital South Station is recommended as better fulfilling the needs of the VA Hospital community and also as a less costly option than the northern station option.