

2.0 PROPOSED ACTION AND ALTERNATIVES

NEPA requires that federal agencies explore a range of reasonable alternatives. The range of alternatives considered reflects the type of Proposed Action and the potential for environmental impact. Since the Proposed Action would remain within DDOT and NPS right-of-way and there are no unresolved conflicts concerning available resources, only two Build Alternatives are being carried forward in addition to the No Build Alternative. 40 CFR Part 1502.14 requires that a No Build Alternative be considered as part of the environmental review process.

Section 2.3, Alternatives Eliminated from Consideration, provides a discussion of the alternatives considered, but ultimately dismissed from detailed analysis. FHWA and DDOT, in cooperation with NPS, explored and evaluated the following alternatives in detail:

- No Build Alternative
- Build Alternative 1 – Revised Square Alternative
- Build Alternative 2 – Conventional Intersection Alternative (*Preferred Alternative*)

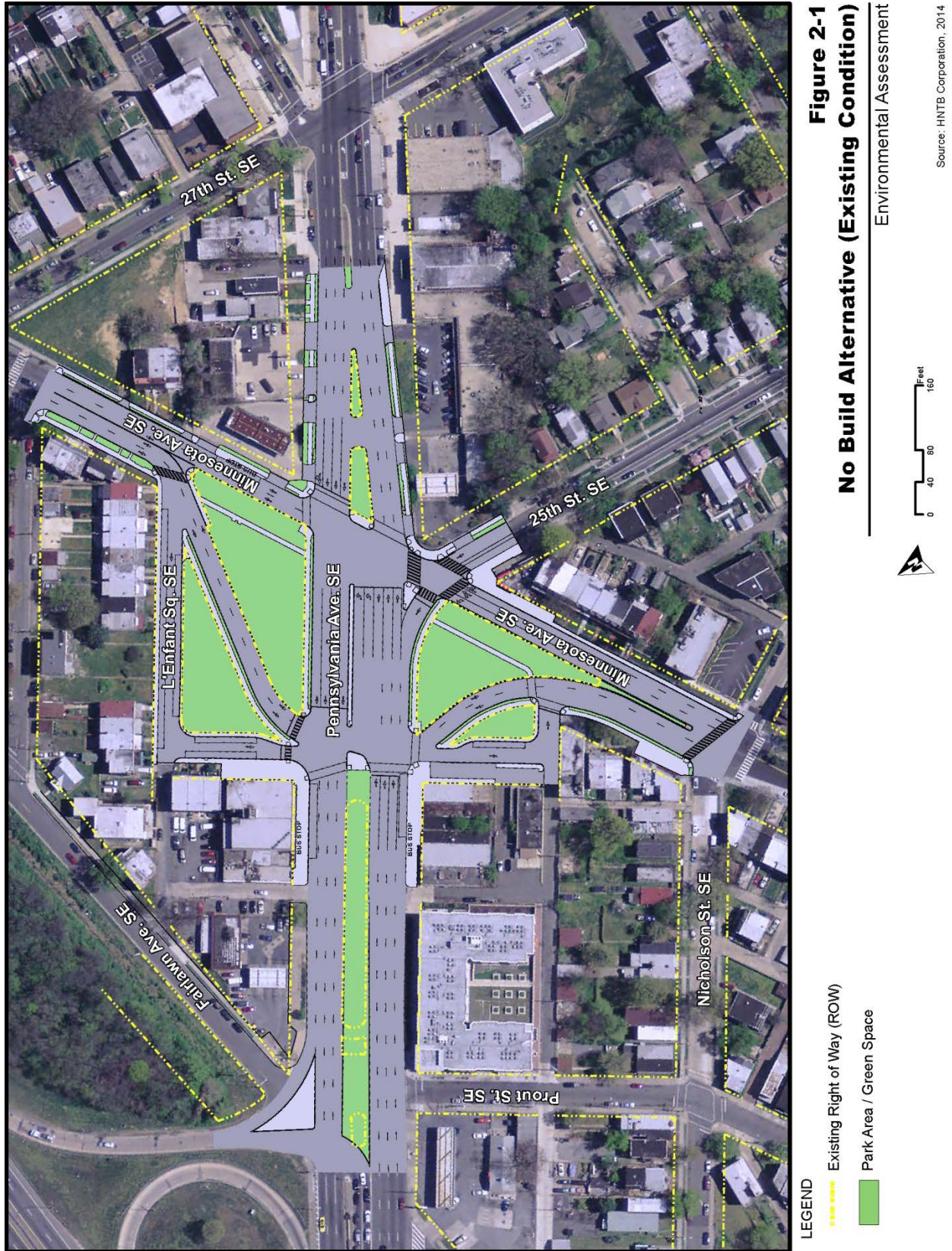
2.1 No Build Alternative

Consideration of the No Build Alternative is required by NEPA per CEQ Regulations. This alternative serves as a basis of comparison with other alternatives considered for detailed analysis. Under the No Build Alternative, no land jurisdiction exchange between NPS and DDOT would occur. The intersection would continue to function as it does today. Existing traffic patterns, crosswalks, signalization, and sidewalks would remain unimproved. Of the approximately 1.5 acres of green space/grassed area in the Study Area, approximately **1.44** acres of this area is owned and maintained by the NPS and would remain under NPS jurisdiction under the No Build Alternative; the remaining acreage (approximately 0.1 acres) is DDOT right-of-way (grassed sidewalk buffer areas) and would remain under DDOT jurisdiction. See **Figure 2-1** for an illustration of the existing condition of the intersection, which is the same as the No Build Alternative.

While the No Build Alternative does not meet the purpose and need of the Proposed Action, it provides a basis for comparing the environmental consequences of the Proposed Action Alternatives.

2.2 Proposed Action

The Proposed Action is to provide improvements to the Pennsylvania and Minnesota Avenues, SE intersection to improve safety, mobility, and connectivity for pedestrians and motorists at the intersection in keeping with the District's Great Streets Initiative. The Proposed Action would include a transfer of land jurisdiction from NPS to DDOT, as may be agreed upon by covenant with stipulations between the agencies following meetings and coordination. The land exchange is necessary to facilitate reconfiguration of the intersection. No private right-of-way would be impacted or acquired by the Proposed Action. *The open green space within Twining Square would remain parkland.*



2.2.1 Build Alternative 1 - Revised Square Alternative

Under Build Alternative 1, the intersection would be improved to create a “traffic square” concept, which would require all vehicles, with the exception of through-movements on Pennsylvania Avenue, SE, to go around the expanded central park area. Build Alternative 1 would include a jurisdictional land transfer from NPS to DDOT of approximately **1.44** acres to enable the proposed modifications to the intersection. Build Alternative 1 would consolidate the two park parcels to the north of Pennsylvania Avenue and the two park parcels to the south of Pennsylvania Avenue in order to provide more contiguous park area for residents and visitors to use as green space. The northern park area would total approximately one acre of contiguous park area and the southern park area would total approximately 0.5 acres of contiguous park area. The traffic medians to the east and west of the intersection currently owned by NPS would also transfer to DDOT in order to accommodate proposed improvements (approximately **0.28** acres). See **Figure 2-2** for an illustration of Build Alternative 1 – Revised Square Alternative.

Build Alternative 1 would improve the roadway alignment and configuration to promote traffic-calming thereby improving safety for pedestrians and vehicles at the intersection. Under this alternative, the traffic signal configuration is simplified and the left-turning conflicts are removed. Pennsylvania Avenue, SE would bisect the center of the square, and turning movements would be directed around the perimeter of the “square.” This perimeter route acts to calm the traffic, similar to how a traffic circle works, by allowing vehicles to enter and exit the square at locations identified by the intersecting streets. It would also reduce vehicular speeds by providing short, straight distances between tight radius turns, at the presumed four corners of the square.

Build Alternative 1 would maintain most of the intersecting street connections near their current locations; the exception is that 25th Street, SE would no longer connect to the Pennsylvania/Minnesota Avenues, SE intersection. This eliminates a connection that is proximate to other connections. With this change, to turn onto 25th Street, traffic would enter the “square” at L’Enfant Square, SE and follow the square around until exiting onto 25th Street, SE. This new movement would have a minimal impact on the residential neighborhood.

In this alternative, L’Enfant Square, SE to the north of the square would be widened to three lanes from the existing one lane to accommodate the traffic traveling around the square. As a result, on-street parking would only be maintained on the north side of the street, adjacent to residences. A grassed median between the sidewalk and the on-street parking to the north of the square (along L’Enfant Square, SE) is proposed to provide additional buffer for residences from the roadway.

Build Alternative 1 would reduce the interaction between pedestrians and vehicles, and would also improve the functionality of existing and new crosswalk facilities. The crosswalk alignments and refuge areas for pedestrians would be significantly enhanced; sidewalks and green space would be improved and green space frontage would be provided for local residences and businesses. ***Following comments received from the Washington Metropolitan Area Transit Authority (WMATA) on the October 2013 EA, a pedestrian bulb-out was included in the Build Alternative 1 design at the bus stop at westbound Pennsylvania Avenue, SE with L’Enfant Square, SE, to shorten pedestrian crossing distance, protect parked vehicles, and reduce traffic impact caused by bus pullovers.***

Summary

Build Alternative 1 includes the following key traffic improvements:

- Prohibit left turning movements on Pennsylvania **Avenue**, SE in the center of the square and require all turning vehicles to circulate around the square;
- Prohibit left turns from both directions of Minnesota Avenue, SE on to Pennsylvania Avenue, SE, directing all traffic to circulate around the square, and reduce vehicular conflicts with pedestrians on the crosswalks;
- Expand L'Enfant Square, SE to three lanes on the north side of the square and combine with southbound Minnesota Avenue, SE, providing parking spaces for residents and retail patrons along the north side of the street along the residences only;
- Expand L'Enfant Square, SE to two lanes on the south side of the square and realign the roadway to add the connection to northbound Minnesota Avenue and 25th Street, SE;
- Add wider sidewalks and additional crosswalks to provide safe and convenient access for pedestrians; and
- Add traffic signal control at the new south intersection (south of Minnesota Avenue, SE and 25th Street, SE) to improve traffic flow.

Build Alternative 1 would meet the purpose and need for the Proposed Action in promoting the principles set forth in the District's Great Streets Initiative. Build Alternative 1 would improve pedestrian and vehicular safety, create a usable park space, improve multimodal connectivity and access, and support improved land use and community needs.

2.2.2 Build Alternative 2 - Conventional Intersection Alternative (*Preferred Alternative*)

Under Build Alternative 2, the intersection would be redesigned into a typical at-grade intersection with all vehicle turning movements permitted for all approaches, with the exception of 25th Street, which would remain a one-way street going southbound. Build Alternative 2 would include a jurisdictional land transfer from NPS to DDOT of approximately **1.44** acres to enable the proposed modifications to the intersection and consolidate the green space. Build Alternative 2 would consolidate the two park parcels to the north of Pennsylvania Avenue and the two park parcels to the south of Pennsylvania in order to provide more contiguous park area than exists today for residents and visitors to the area.

The northern park area would total approximately one acre and the southern park area would total approximately 0.4 acres of contiguous park area. The traffic medians to the east and west of the intersection currently owned by NPS would also transfer to DDOT in order to accommodate proposed improvements (approximately **0.28** acres). See **Figure 2-3** for an illustration of Build Alternative 2 – Conventional Intersection Alternative.

The Build Alternative 2 design would improve the existing split roadway system that currently contains two complex intersections by reducing multiple traffic movements into one signalized intersection. This alternative would provide for left-turn movements in all directions and increase the left-turn bay storage length for vehicles. Under Build Alternative 2, the roadway that bisects the northern section of Twining

Square (southbound Minnesota Avenue, SE) would be shifted to realign the roadway. The existing western intersection (L'Enfant Square, SE/SB Minnesota Avenue at Pennsylvania Avenue, SE) in the square would be eliminated and the central, grassed median along Pennsylvania Avenue would be extended; a crosswalk with a pedestrian-activated traffic signal would also be provided at this location to allow safe crossing for pedestrians.

Build Alternative 2 maintains the one-lane roadway along L'Enfant Square, SE that exists currently, including the on-street parking on both sides of the street on L'Enfant Square, SE to the north of the "square." This alternative has the potential to reduce the traffic volume adjacent to the residences along L'Enfant Square, SE depending on which way traffic flows along this roadway stretch. Build Alternative 2 has two options for the movement of one-way traffic on L'Enfant Square, SE, located to the north and west of the "square." The one-way movement would work operationally as follows:

Option 1) Traffic flows one-way to the west and south on L'Enfant Square, SE. Commuter traffic could continue to cut-through the "square" to avoid the Pennsylvania/Minnesota Avenues, SE intersection and the right-turning vehicle/pedestrian conflict to the west of the square would remain; or

Option 2) Traffic flows one-way to the north and east on this roadway. Cut-through traffic would be minimized and the vehicle/pedestrian conflict would be reduced. ***Option 2 is the Preferred Option selected to be implemented in conjunction with the Preferred Alternative.***

Following the review of comments received during the October 2013 EA review period, the project team reevaluated the pedestrian crossing at the east side of the intersection (Pennsylvania and Minnesota Avenue) and determined that an extended median in the roadway between the east- and west-bound lanes of Pennsylvania Avenue, SE that will allow a "break" for pedestrians crossing the street within the crosswalk is feasible and is therefore included in the Final EA. This will effectively reduce the uninterrupted crossing length and provide a more pedestrian-friendly crosswalk. Additionally, the crosswalk at the western intersection of Pennsylvania Avenue, SE with L'Enfant Square, SE is improved to provide a shorter, continuous crossing length across the westbound lanes of traffic. Currently the crosswalk crosses the westbound lanes at an angle. Crosswalk markings will also be improved and the traffic signal timing will be adjusted to accommodate the crossing time required for pedestrians.

Summary

The Preferred Alternative, Build Alternative, includes the following key traffic improvements:

- Minnesota Avenue, SE would become a five-lane roadway through the intersection;
- A new left turn bay on westbound Pennsylvania Avenue, SE would be provided for quick access to southbound Minnesota Avenue and 25th Street, SE;
- ***On L'Enfant Square, SE, traffic would flow one-way to the north and east to minimize cut-through traffic and reduce right-turn conflict between vehicles and pedestrians;***
- ***Wider sidewalks and improved crosswalks would be added to provide safe and convenient access for pedestrians; and***

- Bulb-outs at multiple intersection corners would be added to shorten pedestrian crossing distance, protect parked vehicles, and reduce traffic impact caused by bus pullovers.

Build Alternative 2 would improve vehicle operations and reduce confusion at the complex intersection, create more consolidated park space for visitors and residents to the area, ***improve multimodal connectivity and access, and support improved land use and community needs. Therefore Build Alternative 2 would meet the purpose and need for the Proposed Action. Build Alternative 2 – Conventional Intersection Alternative is the Preferred Alternative for the Proposed Action.***

A cost estimate summary is presented in **Table 2.1**. Detailed cost estimates for the Build Alternatives are presented in ***Appendix D, Construction Cost Estimate and Schedule.***



LEGEND

- Existing Right of Way (ROW) to remain
- Proposed Transfer of Jurisdiction - NPS to DDOT (1.44 acres)
- Proposed Park Area / Green Space

Figure 2-2
Build Alternative 1 - Revised Square

Environmental Assessment



Source: HNTB Corporation, 2014

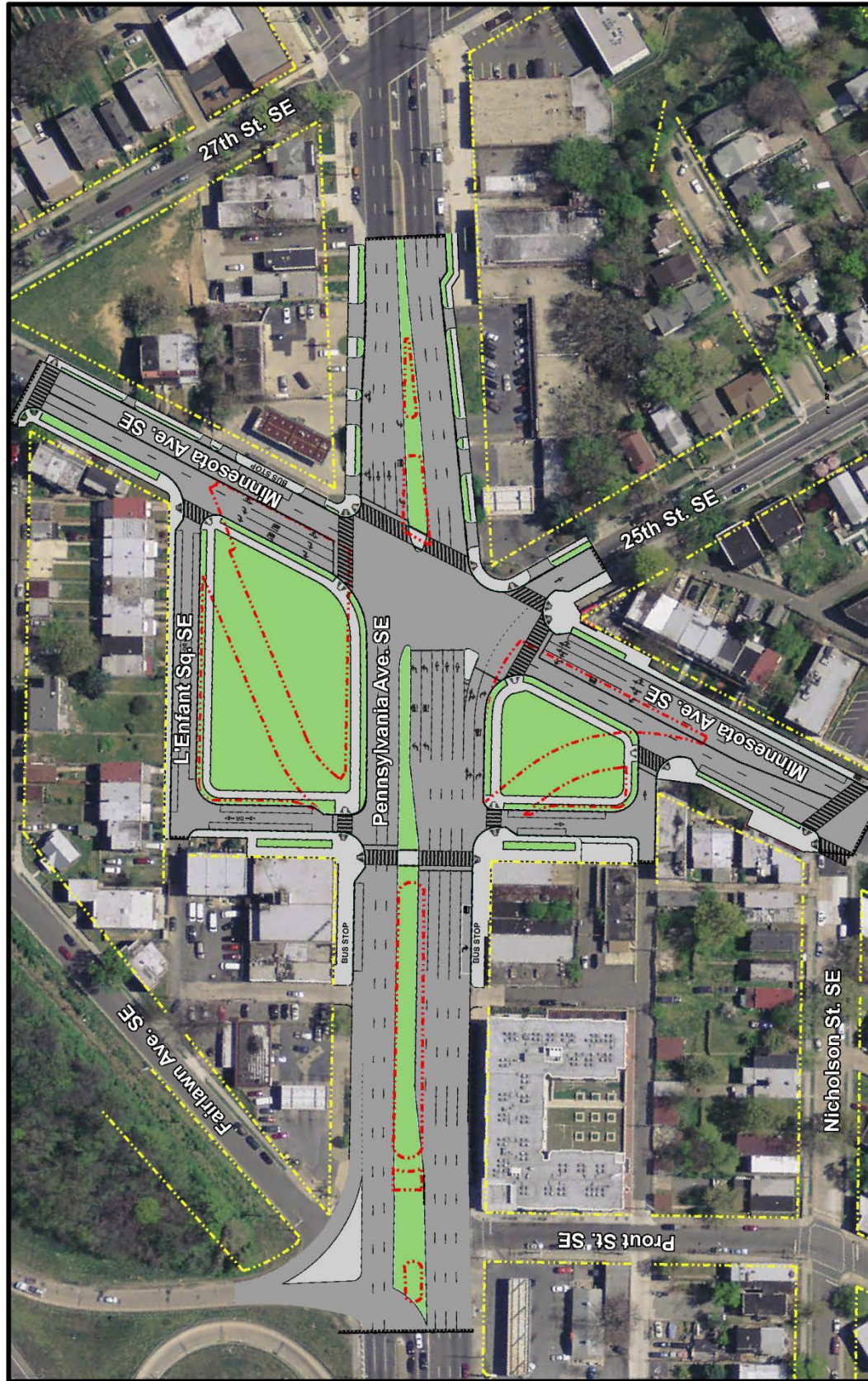


Figure 2-3

Build Alternative 2 - Conventional Intersection

Environmental Assessment

Source: HNTB Corporation, 2014

Table 2.1

Build Alternatives Cost Summary

COST ESTIMATE ITEMS		Alternative 1 - Revised Square				Alternative 2 - Conventional Intersection			
		UNITS	QUANTITY	UNIT COST	AMOUNT	QUANTITY	UNIT COST	AMOUNT	
1 Demolition									
2 Roadway									
3 Miscellaneous Items (Sidewalk, Driveway, Landscape, etc.) ¹									
A Sidewalk / Trail Area (exposed aggregate sidewalk)		SF	43,100	\$ 8.50	\$ 366,350	38,900	\$ 8.50	\$ 330,650	
B Driveway Entrance		SF	5,100	\$ 7.00	\$ 35,700	5,600	\$ 7.00	\$ 39,200	
C Bus Pad		SF	1,860	\$ 14.00	\$ 26,040	2,550	\$ 14.00	\$ 35,700	
D Grassed or Landscape Area		SF	70,000	\$ 1.50	\$ 105,000	67,700	\$ 1.50	\$ 101,550	
E Granite Curb & PCC Gutter		LF	4,600	\$ 57.00	\$ 262,200	4,550	\$ 57.00	\$ 259,350	
F Granite Curb		LF	3,050	\$ 50.00	\$ 152,500	1,800	\$ 50.00	\$ 90,000	
G PCC Wheelchair/Bicycle Ramp		Each	39	\$ 1,000.00	\$ 39,000	24	\$ 1,000.00	\$ 24,000	
4 Traffic Signals									
5 Miscellaneous Costs ²									
Drainage and Stormwater Management	60.0%				\$ 1,552,536			\$ 1,299,498	
Erosion and Sediment Control	5.0%				\$ 129,378			\$ 108,292	
Utility Adjustments and Relocations	30.0%				\$ 776,268			\$ 649,749	
Street Lighting	40.0%				\$ 1,035,024			\$ 866,332	
Signing and Pavement Marking	10.0%				\$ 258,756			\$ 216,583	
Grading and Earthwork	15.0%				\$ 388,134			\$ 324,875	
Landscaping/Tree Removal	5.0%				\$ 129,378			\$ -	
Concept Level Contingency ³	25.0%				\$ 1,714,259			\$ 1,407,790	
Maintenance of Traffic ⁴	25.0%				\$ 1,714,259			\$ 1,407,790	
Mobilization ⁴	10.0%				\$ 685,703			\$ 563,116	
						</			

Source: HNTB Corporation, 2013.

¹ Include measurable incidental items such as sidewalk, driveway aprons, grassed or landscaped areas, curb and gutter, etc. These measured items differ between the alternatives based on the actual quantity shown in each alternative.

² Include allowances for items that are generally needed but not shown nor measurable on the concept alternatives. These items include drainage items, utility adjustments, earthwork, lighting, etc. These costs are estimated based on a percentage of the measurable construction items at approximate typical overall project costs for similar type projects.

³ Contingency for unidentified items and reflects the level of development of the plans. As the design develops, the contingency percentage will decrease as the confidence factor of the hard costs increase.

⁴ Mobilization and MOT costs are also added as percentage of construction cost to reflect average percentage of project costs for similar type projects.

Note: The costs shown in this estimate represent an estimate of probable costs prepared in good faith and with reasonable care. HNTB has no control over the costs of construction labor, materials, or equipment, nor over competitive bidding or negotiating methods and does not make any commitment or assume any duty to assure that bids or negotiated prices will not vary from this estimate.

2.3 Alternatives Eliminated from Consideration

Throughout the concept development process and agency and public input, several intersection alternatives were considered and dismissed because they were not practical and/or feasible or were not consistent with the project objectives or purpose and need. The following is a discussion of concepts that are not recommended for detailed engineering or analysis, but were considered in the planning process.

2.3.1 Modified Square Alternative

The Modified Square Alternative concept was developed as part of the District's Great Streets Initiative in 2006-2007 and is the basis for the Revised Square Alternative being carried forward. This alternative would create a "traffic square" concept, requiring all vehicles to go around the perimeter of the square with the exception of the Pennsylvania Avenue through-movements. The Modified Square Alternative maintains most of the intersecting street connections near their current locations; the exception is that 25th Street SE would no longer connect to the Pennsylvania/Minnesota Avenues intersection. With this change, 25th Street, SE would be converted into a two-way street. As with the Revised Square Alternative, the Modified Square would also reduce the interaction between pedestrians and vehicles and improve safety at the intersection. This alternative would also require a jurisdictional land exchange between NPS and DDOT and would result in more contiguous park area/green space.

The Modified Square design has a greater central area (larger contiguous park area to the north and south of Pennsylvania Avenue, SE) which would require the taking of private right-of-way (ROW) from the existing gas stations and other businesses located at this intersection. Impacted businesses would include the Shell/Food Mart property at the southeast corner of the intersection (Pennsylvania and 25th Street, SE), the BP gas station at the northeast corner of the intersection (Pennsylvania and Minnesota Avenues, SE) and the two commercial walk-up eateries (Mario's Pizza House and AC Take-Out Chicken) in the southwest quadrant of the Minnesota Avenue, SE and 25th Street SE intersection.

The ROW acquisition of the lands belonging to the existing businesses would result in the closure of at least one of the gas stations, and could potentially necessitate the taking of the whole properties. As part of the ROW acquisition of the two gas stations, environmental site assessments would be needed to investigate the underground storage tanks or other possible contaminants associated with the gas station activities. Should there be any leakage from these tanks, there could be significant remediation measures that would be required prior to proceeding with the project. The cost of ROW and relocation alone for this alternative was estimated to be \$4.3 million (2006 dollars). Additionally, should any remediation efforts be required, significant additional costs and delays would be likely.

Given the potential economic impacts associated with displacing existing businesses and impacting private ROW, the potential environmental impacts due to gas station contaminants and the high costs associated with this alternative, the Modified Square Alternative is not considered feasible and was dismissed from detailed study.

2.3.2 Ellipse Alternative

The Ellipse Alternative concept was also developed as part of the District's Great Streets Initiative in 2006-2007. This alternative would function as a traffic circle but would also maintain the through-

movement for vehicles on Pennsylvania Avenue, SE. The Ellipse Alternative would maintain connections to all intersection roadways and would result in frontage changes to several properties, which would provide wider sidewalks and landscape areas. This alternative would also require a jurisdictional land exchange between NPS and DDOT.

With the design of the Ellipse Alternative, this configuration would require acquisition of three private properties and relocation assistance for four businesses that would be displaced at the intersection. Impacted businesses would include the Shell/Food Mart property at the southeast corner of the intersection (Pennsylvania Avenue and 25th Street, SE) and the two commercial walk-up eateries (Mario's Pizza House and AC Take-Out Chicken) at the 25th Street, SE and Minnesota Avenue, SE intersection. There would also be ROW required from the BP gas station at the northeast corner of the intersection (Pennsylvania and Minnesota Avenues, SE). The cost of ROW and relocation alone for this alternative was estimated to be \$3.2 million (2006 dollars). Additionally, as with the Modified Square Alternative, there is a high likelihood for environmental impacts and necessary remediation under the Ellipse Alternative due to the impacts to existing gas station properties.

Given the potential economic impacts associated with displacing existing businesses and impacts to private ROW, the potential environmental impacts due to gas station contaminants and the high costs associated with this alternative, the Ellipse Alternative is not considered feasible and was dismissed from detailed study.

2.4 Construction and Staging

Construction staging areas would be selected to protect environmental resources, to meet the needs of the contractor based on the construction phasing plans, and to minimize disruptions and safety hazards for pedestrians, bicyclists and motorists who utilize the intersection.

Construction would be phased in such a way as to provide the safest and most logical detours around the road and sidewalk segments under construction. Notifications would be used to alert users in advance of any closures or detours required for construction. Notifications may include electronic signage, postings to the DDOT and FHWA websites and social network pages, and emails to interested parties identified during the scoping process.

It is recommended that work on the main intersection roads of Pennsylvania Avenue and Minnesota Avenue, SE, be done during off-peak traffic hours to minimize disruptions to traffic. As detailed in Title 20 of the District of Columbia Code of Municipal Regulations (DCMR), construction is allowed Monday through Saturday from 7 am to 7 pm without any special permits. Any construction scheduled outside of these times would require obtaining an after-hours permit.³¹ It is estimated that construction would take approximately 18 to 24 months. The construction schedule is included in *Appendix D, Construction Cost Estimate and Schedule*.

Adequate construction techniques, including use of BMPs and LID strategies, would be adhered to so as to minimize the potential for impacts to the surrounding environment. Construction impacts are discussed within the appropriate environmental categories in *Section 4.0, Environmental Consequences*.

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