

Hanoi City Ring Road 3 Construction Project, Section Mai Dich –
South Thang Long

Package No.3: Consultancy Services
Technical Design, Cost Estimation and Tender Assistance

DESIGN REPORT OF SOUTH THANG LONG
INTERCHANGE

Date: 31st March 2016



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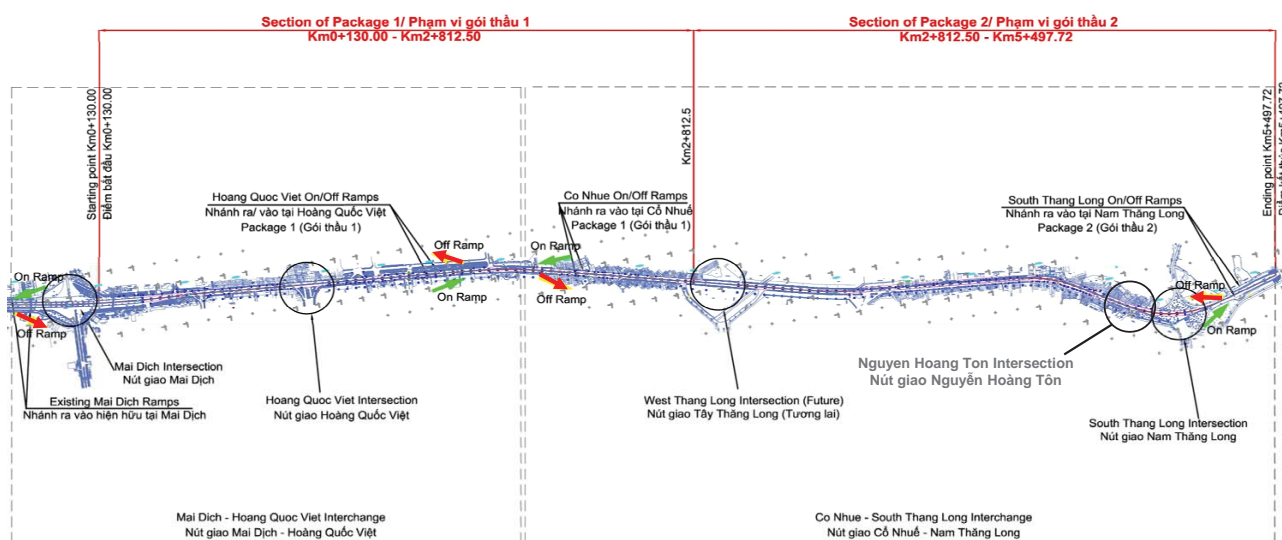
Design of South Thang Long Interchange

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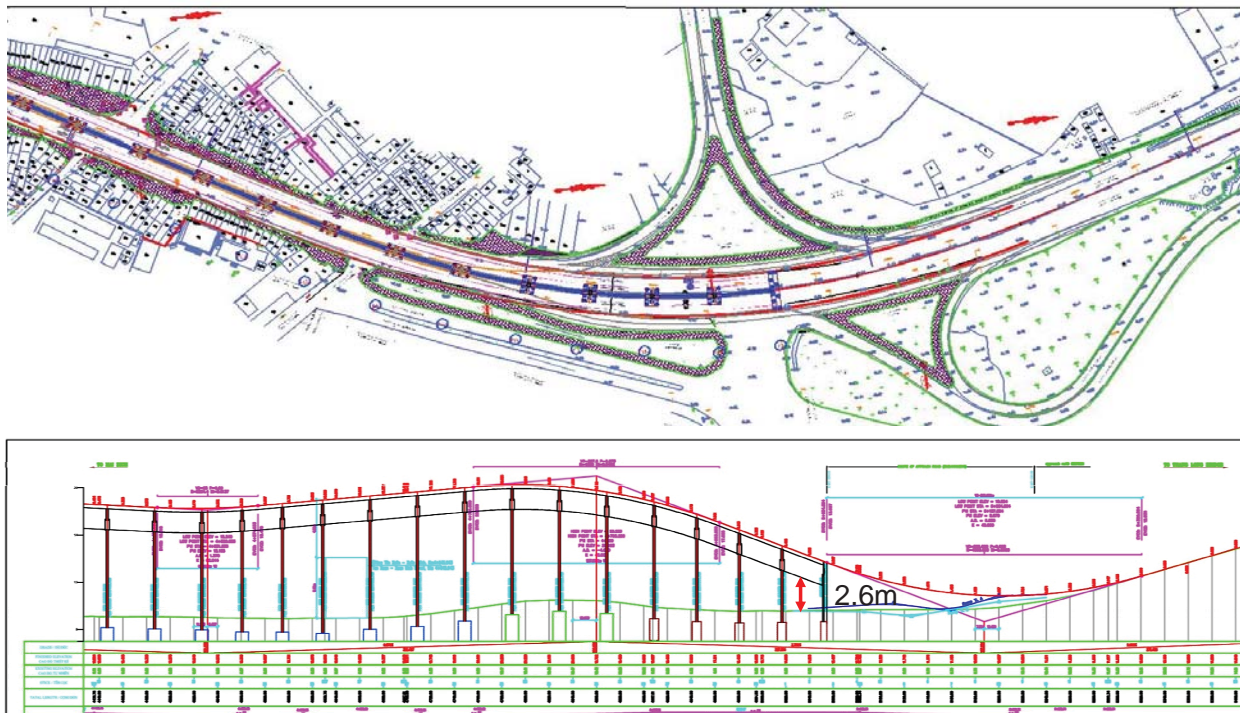
1. Planned intersections of the Urban Road and On/Off Ramps of the Expressway

- According to Plan of the Widening Project of Pham Van Dong Road, there are 5 intersections, including: (1) Mai Dich; (2) Hoang Quoc Viet; (3) West Thang Long; (4) Nguyen Hoang Ton; (5) South Thang Long.
- According to the approved F/S of the elevated expressway, on/off ramps are designed as follow:
 - (1) 2 on/off ramps at South Side of Mai Dich Intersection;
 - (2) 2 on/off ramps at North Side of Hoang Quoc Viet Intersection;
 - (3) 2 on/off ramps at South Side of West Thang Long Intersection;
 - (4) 2 on/off ramps at North Side of South Thang Long Intersection forming 2 dimond type Interchange Groups.



2. Approved Design of South Thang Long Interchange (F/S)

2 on/off ramps have been designed in South Side of Thang Long Bridge basing on plan of existing intersection (1 off ramp from Thang Long Bridge direction and 1 on ramp to Thang Long Bridge), not arrange on/off ramps at the interchange for the direction from Mai Dich to Thang long Bridge, not arrange the At-grade Intersection under the Viaduct (According to Decision No.2660/QĐ-BGTVT dated 3rd September 2013 regarding the approval for construction investment of Hanoi City Ring Road 3 Construction Project, Section Mai Dich – South Thang Long).



3. Nội dung xem xét điều chỉnh

(1) Basis for reviewing the adjustment by the DD Consultant .

- Letter No.3618/CQLXD-DDB1 dated 6th November 2015 of TCQM regarding comments of Dr. Nguyen Ngoc Long – Head of SAC on contents for design of South Thang Long Interchange.
- Letter No. 430/TGD-NHCT13+16 dated 18th January 2016 of Vietin Bank regarding the proposal for reviewing traffic connection plan of South Thang Long Interchange.
- Letter No. 434/QHKT-P7 dated 8th February 013 of Hanoi Department of Architectural Planning regarding contributive opinions for the viaduct construction project in F/S stage
- Letter No.1148/SGTVT-TD dated 2nd May 2013 of Hanoi DoT regarding contributive opinions for the viaduct construction project in F/S stage.

(2) Reviewed opinions of the DD Consultant on the approved Alternative

In F/S of the Project, there was analysis of 3 Alternatives for the interchange: Alternative 1 connects to existing road before South Thang Long Interchange, 2 is the approved Alternative and 3 is the extension of the viaduct over the existing intersection. However, Alternatives 1 and 3 were not selected, because of large quantity of land acquisition. According to the TOR, the DD Consultant is responsible to review F/S and based on the reviewed result of the F/S, there are some outstanding matters on designed Alternative of South Thang Long Interchange as follows:

- This Alternative does not satisfy design requirement for connecting to South Thang Long and Nguyen Hoang Ton Intersections (according to the Plan) as well as the convenient connection with urban roads entering and exiting the expressway.
- The current arrangement of on/off ramps connecting to Thang Long Bridge will concentrate big number of vehicles moving in the urban road, which will cause traffic congestion in the urban road and not bring into full play of the serviceability of the expressway.
- The non-arrangement of on/off ramps in South Side of the Interchange will not be convenient for connecting the traffic from the expressway to large urban areas and to dockyards along the South River Bank or vice versa. When the West Thang Long Road has been constructed, the traffic demand in this area is large.

With such reasons above, it is necessary to have studies for supplementation for a better adjustment of this interchange.

4. Adjusted Alternative

(3) Recommended Adjusted Alternative of DD Consultant.

The Consultant has preliminary studies on supplementation of South Thang Long Intersection, including the followings:

- Raise profile of the viaduct and extend the viaduct for about 107.1m (3 Super-T Girder Spans with length of 36m) to ensure vertical clearance and arrange an at-grade intersection under the viaduct with a roundabout of R=30m matching with the plan of the existing intersection;
- Readjust the retaining wall section of Abutment A2 of the viaduct, adjust 2 on/off ramps in North Side of the Interchange for a smooth connection with Thang Long Bridge Approach (going towards North Side); In the off ramp (left side) it is required to supplement RC retaining wall for shoulder to minimize land acquisition.
- South Side of the Interchange is supplemented with 2 on/off ramps for traffic connection with dockyard area in Red River Bank, Ciputra Urban Area and the existing Residential Areas along the river bank.

(1) (a) Advantages:

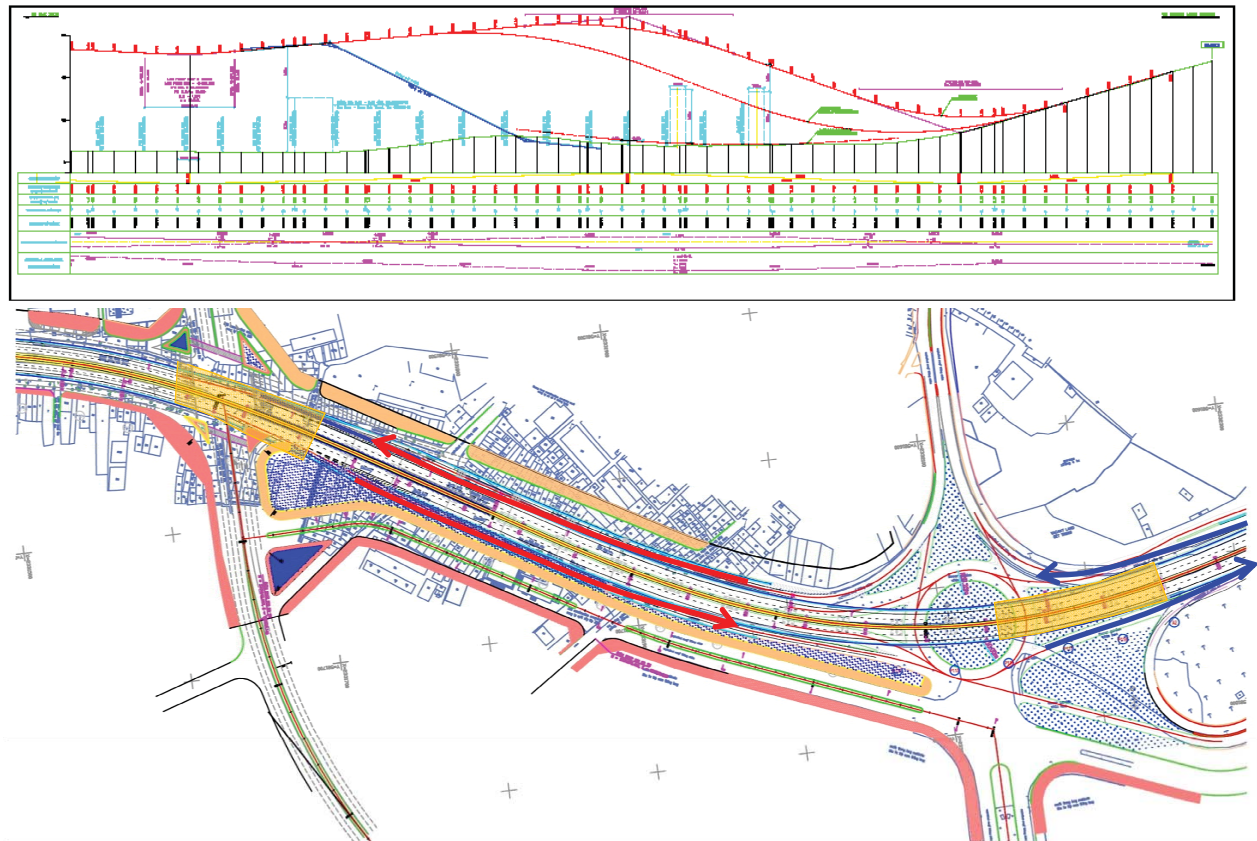
- Match with Plan and meet the traffic demand connecting from the Elevated Ring Road 3 to dockyards along Red River, Large Urban Areas via the South Thang Long and Nguyen Hoang Ton Intersections.
- The viaduct, when connected directly with Thang Long Bridge (with review of traffic organization under the viaduct) will enable convenience for urban traffic, connecting urban roads along both side of the expressway.
- Enhance the serviceability of the viaduct, avoiding of traffic congestion for the urban road, because the distance from 2 on/off ramps in South Side of West Thang Long Intersection to 2 on/off ramps in South Side of South Thang Long Interchange is 2.5km.

(b) Disadvantages:

- Requires a large quantity of land acquisition in South Side of South Thang Long Interchange for construction of 2 on/off ramps (scheduled in Phase 2)
- More difficulties in arranging diversion roads for traffic control during the construction.
- Requires additional amount of about 150 billion VND in the Elevated Expressway Project.

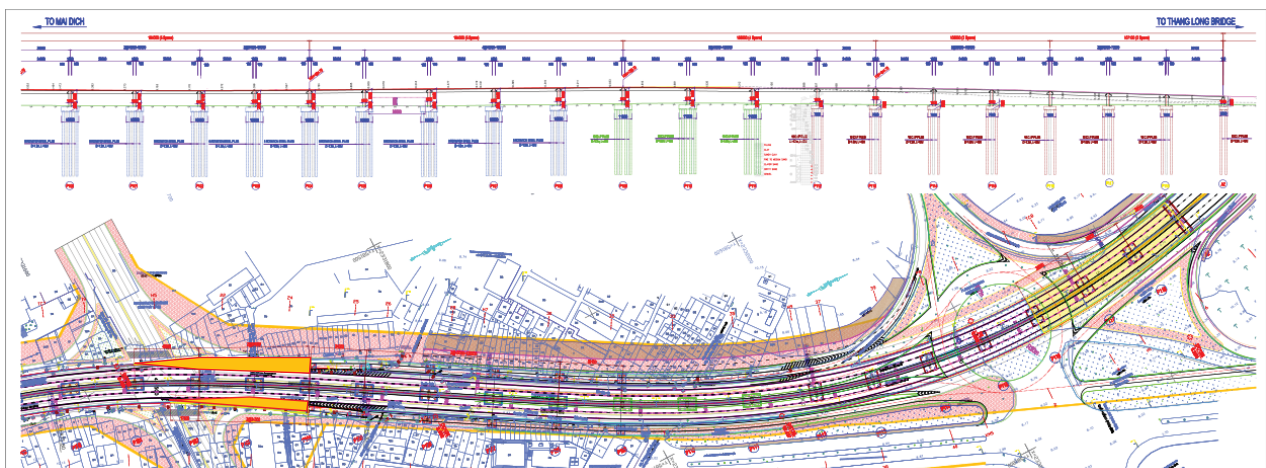
4. Adjusted Alternative

(4) Adjusted South Thang Long Interchange



4. Recommended Adjustment Alternative

(4) Adjusted South Thang Long Interchange



5. Conclusion and Recommendation

(1) Conclusion

- (i) F/S Design of the South Thang Long Interchange included the consideration of extension of ending point of the viaduct. However, due to the limits in land acquisition, the Consultant and Client have recommended the Alternative with best suit to the conditions of land acquisition and construction time of the project.
- (ii) The DD Consultant has reviewed, studied and recommended the adjustment of South Thang Long Interchange as reported. Considering the technical aspect and traffic organization, the adjusted alternative has more advantages than the approved alternative. However, it requires to consider the issues related to land acquisition and additional cost of the project.

(2) Recommendation:

- (i) The DD Consultant and Client of the Project have completed detailed design of the project, and are submitting to MOT for approval (following the approved F/S). So far, due to the unavailability of legal basis, the submitted DD document not include the additional work of South Thang Long Intersection. Authorized agencies are kindly requested to review the adjusted contents and procedures for implementation to ensure progress of the project.
- (ii) Recommend and consider the staged construction plan in phases suitable to land acquisition condition and budget of the project, viz:
 - Phase 1: Raise profile, extend 3 spans of main bridge; adjust on/off ramps of Thang Long Bridge; Widen main bridge, the section changing width from 24m~33m (from P101 – P104) for future connection with on/off ramps constructed in Phase 2. This area is basically within the existing plan of Pham Van Dong Road, not requires land acquisition.
 - Phase 2: Widen the main bridge, section from P104 – P105 ; Construct 2 on/off ramps in South Side of the Interchange, direction from Mai Dich to Thang Long Bridge; Adjust plan of Urban Road (when widening Pham Van Dong Road) suitable to plan of the Piers constructed in Phase 1.