Naval Amphibious Base Pedestrian Tunnel

TEAM 14

From left to right

Robert Villota : Structural

Stefanos Jerjees: Geotechnical

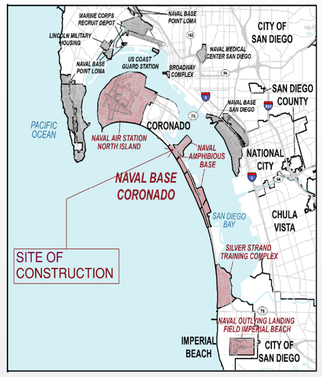
Minerva Munoz: Stormwater

Carlos Lopez: Project Manager & Site Design

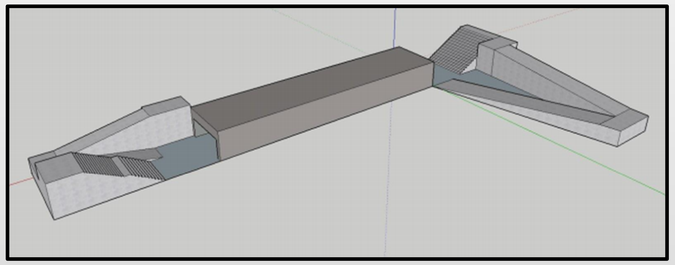
Rachelle Ann: Transportation

Emanuel Guerrero: Construction

Client



VICINITY MAP



3D RENDERING OF TUNNEL

Structural

Throughout the structural design, Caltrans standards were used as a guiding point for all aspects including the box culvert (12'x14'), retaining walls (12' H), and the slab footing used (14" thickness). A gradual slope was incorporated into the culvert sections seeing as though there is a need for stormwater drainage due to the location of the water table. Using high strength concrete for the precast culvert sections is needed due to the fact that there is a traffic load the culvert is exposed to.

Geotechnical

The soil description in the site is classified as in the is coarse sandy soil and is classified as corrosive soil. The high constant water table as well as the location of the tunnel near an earthquake that can cause lateral spreading and liquefaction is taken under consideration when creating recommendation to the designers in the Geotechnical Investigation.

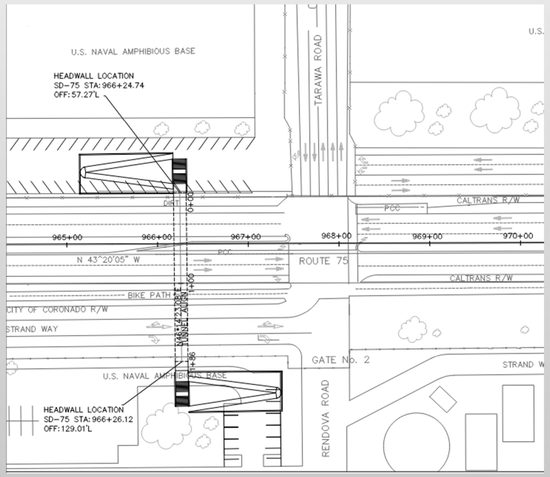
Transportation

Based on the City of Coronado's volume reports of pedestrians, bicycle and traffic along the SR-75, and the peak hours of traffic, it is determined that the best hours of construction would be between 7 PM to 5 AM. In addition, traffic control plans are designed (based on Caltrans and MUTCD standards) consisting of 4 different phases of lane closures, working east to west of the SR-75. For the design of the ADA ramp on both ends of the pedestrian tunnel, it is done in compliance to ADA 2010 standards.

SPONSORS:

Project Description

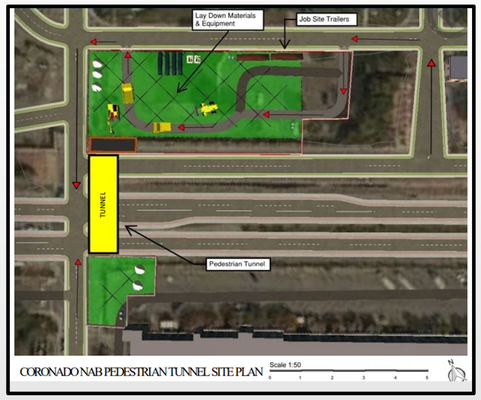
The proposal is an underground pedestrian tunnel under the SR-75 as a means of crossing the from one side to the Naval Amphibious Base to another base. The tunnel is created a replacement for the pedestrian crossing on Intersection of SR-75 and Tarawa Road off Coronado The Project has included Geotechnical investigation, structural design, construction planning and scheduling, traffic analysis and a storm water prevention plan.



TUNNEL LAYOUT

Site-Civil

The site where the tunnel will be constructed will require excavation and minor grading for the staircase and ramp. There will be more cut than fill and a considerable amount of burrow will need to be exported from the site. The elevation differences are within 1'-6" throughout the site and the demolition will include existing parking spaces that will be rebuilt. Existing utilities won't play a critical factor due to the boring being located beneath the utilities. The location of the tunnel was selected because there were less utilities away from the intersection, while maintaining the shortest tunnel length.



TUNNEL LOCATION AND SITE PLAN

Construction

The construction department is in charge of delivering the project to the Navy NAB center. Doing so, it is the contractor responsibility to provide each entity with construction documents, specifications, and plans. Moreover Prestige International, Inc. provides a site logistic plan, permitting/codes documents,project schedule and a project estimate.

Stormwater

The Stormwater department was in charge of quantifying the critical flows through the Rational Method. Using the County of San Diego Drainage manuals, we were able to obtain the peak flows for multiple storm rain events affecting the construction site of the tunnel. Assessment of storm drains were assessed for capacity and recommendations were made to install inlets at the entrance of the tunnel, as well as, the installation of BMPs to prevent pollution from the project site.

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