**Repair Carswell Ave**
**JSBA- Lackland, San Antonio, TX**
MPLS215339

Civil Package
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For:

**US Army Corps of Engineers**

# 100% Issue For Construction Design Analysis

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<u>Attachements</u>

- Geotechnical Report

# I. General Project Information

## A. Site information

The proposed site is located on JBSA-Lackland in San Antonio, Texas. The site is bounded by Femoyer Street to the north, Hughes Ave to the east, Tinker Street/Gott Street to the south and Craw Ave, Castle, and Luke Blvd to the west. The Repair Carswell Ave project is a three (3) phases design followed by phase one (1) construction.

Phase 1: Gott Street to Cheli Lane
Phase 2: Cheli Lane to Truemper Street
Phase 3: Truemper Street to Femoyer Street

The project site is currently an active street with heavy traffic. Carswell Ave has deteriorated and failed through the years and will need replacement. In certain areas there is localized flooding and water ponding on Carswell Ave. The road provides use for Buses and Tractor-Trailer Traffic and everyday traffic. The road's centerline is approximately 2,066 LF and is 30 LF wide for the two-lane section and 42 LF wide for the four-lane section for phase I, approximately 2,154 LF and is 42 LF wide for phase II, and approximately 2,657 LF and is 42 LF wide for phase III.

## B. Facets of Construction

This project will contain a complete set of design plans for all three phases (1-3) and will be followed by phase I construction. The complete design set will include a traffic control plan for all three phases. Major facets of work include demolition, concrete curb and gutter replacement, subgrade preparation, flexible base, asphalt paving, and pavement markings (permanent and temporary). The demolition phase of the project includes full depth removal of the existing deteriorated asphalt pavement and associated base and subgrade layers to a depth that allows for replacement with the proposed pavement section. Precautionary measures such as double edge saw-cutting of asphalt edges to remain are used during this phase to ensure no damage to existing adjacent infrastructure including pavements and utility appurtenances. The subgrade preparation phase of work encompasses preparation of the existing subgrade for placement of the proposed pavement section. It is expected that some subgrade areas will require soft-spot subgrade repair by over-excavating the area between 4 to 6 inches. The final geotechnical investigation and analysis will determine final design to support existing traffic condition.

## C. Existing Conditions Survey

At award, an existing conditions survey was scheduled and subsequently conducted in an effort to verify all existing conditions in the field. All apparent existing utilities, pavement markings, asphalt joints, duct banks, existing grades, spot elevations, and appurtenances were tied down along with any underground features such as storm drain inverts. Existing data was used as necessary to develop the design to field conditions.

### D. Site Facilities

At the design kickoff meeting, careful consideration was given to contractor facilities in regard to location and available utility connections. The contractor anticipates having laydown area, and offices onsite as shown on the construction plans. Construction traffic through the base will adhere to the specified routes when possible, in an effort to minimize adverse impact to base operations and the continued use of existing base infrastructure. Further coordination between the contractor and base operations will ensure efficient use of the contractor facilities and minimize the impact to base operations. Materials to be stored in these areas will be kept to a minimum to help ensure a neat, safe project site. Articles in the laydown areas will consist of heavy and smaller construction equipment and items such as steel dowel bars for the pavement section or other items of limited size.

### E. Geotechnical Report

A geotechnical investigation was performed to obtain the thickness of existing pavement sections, the underlying soil conditions, and pavement recommendations for repair. The supplemental investigation was conducted by Rock Engineering & Testing Lab., Inc. Field Exploration for Carswell Ave. consisted of drilling a total eighteen bores to the depths of 10-ft. Testing data and results as applicable are included in the appendix. Concurrent with current review and design efforts, our geotechnical consultant will evaluate the data results as needed to verify the minimum pavement cross section requirements per Pavement-Transportation Computer Assisted Structural Engineering (PCASE), Version 7.0.1 released July 2021. Results of this evaluation of the pavement cross section are included in attachments.

### F. Construction Security

Construction security design objective is to identify a plan for managing labor, material, and facility security during project demolition and construction activities. The Contractor shall coordinate a construction security program with the Contracting Officer. Potential construction activities and items include, among others:

- workforce safety and sanitation
- workforce and vehicular movements;
- checkpoints
- material transport, storage and protection;
- construction office location, accessibility, and surveillance system

## II. Civil Design

### A. Demolition

Repair Carswell Ave Phase (1 -3) will require a complete full depth replacement of the road. This will require full depth removal of the existing deteriorated asphalt pavement and associated

base and subgrade layers to a depth that allows for replacement from Gott Street to Femoyer Street. All curbs and gutters that are out of alignment by more than ½ inch, damaged, or broken will be demolished. Any curb inlets that are also out of alignment by more than ½ inch shall be demolished. Existing appurtenances in pavement to be preserved.

### B. Proposed Improvements

The proposed improvements include the replacement of approximately 2,066 linear feet for Phase I, 2,154 linear feet for Phase II, and 2,657 linear feet for Phase III of Carswell Ave. The replacement of Carswell Ave for Phase I will begin at the intersection of Carswell Ave and Gott Street and will stretch to intersection of Carswell Ave and Cheli Lane. The replacement of Carswell Ave for Phase II will begin at the intersection of Carswell Ave and Cheli Lane and will stretch to intersection of Carswell Ave and Truemper Street. The replacement of Carswell Ave for Phase III will begin at the intersection of Carswell Ave and Truemper Street and will stretch to intersection of Carswell Ave and Femoyer Street. The road and surrounding area will be analyzed, and drainage will be improved to reduce any localized flooding. The road will have a 2% crown or washout section and adequate longitudinal slopes to help with existing drainage issues.

Any curbs, gutters, inlets, and utilities will be replaced as needed along Carswell Ave. Curbs along the road that are broken and out of alignment will be adjusted as. Any existing manholes, water valves and curbing shall be adjusted to the finished road elevation to prevent any trip hazard or possible damage to vehicles.

## III. Design Criteria

### A. Geotechnical Engineering

Rock Engineering & Testing Lab., Inc., Signed and Sealed Geotechnical Report attached

### B. Pavement Design

UFC 3-190-06 Protective Coatings and Paints

UFC 3-220-08FA Engineering Use of Textiles

UFC 3-250-07 Standard Practice for Pavement Recycling

UFC 3-250-01 Pavement Design for Roads and Parking Areas

UFC 3-250-03 Standard Practice Manual for Flexible Pavements

UFC 3-250-11 Soil Stabilization for Pavements

# IV. Drainage and Grading

## A. Existing Drainage

The existing drainage patterns of the site convey storm water from north to south. There are several drainage structures along Carswell Ave that accept water runoff from the existing road and parking around the area.

## B. Proposed Drainage

Since there will not be any impervious cover added to the site, the on-site flows will not increase, and no water quality or detention features are proposed. Existing drainage patterns will be maintained and/or restored.

## C. Proposed Grading

The proposed site grading will maintain existing topography while recognizing standard gradients and positive drainage to alleviate ponding. The road's crown will be established with a 2% slope. A balance of the quantity of cut and fill soils will be used to create a smooth transition of graded areas into the existing natural site and still providing positive drainage. Additionally, the contractor shall remove sediment and debris from roadway drainage structures to promote positive drainage to existing drainage features.

# V. Site Utilities

## A. Sanitary Sewer System

The existing sanitary sewer around Carswell Ave will not require improvements but adjustments of appurtenances will be made as necessary.

## B. Water System

The existing water services around Carswell Ave will not require improvements but adjustments of appurtenances will be made as necessary.

## C. Storm Sewer System

The existing storm sewer around Carswell Ave will not require improvements but adjustments of appurtenances will be made as necessary.

## D. Communication System

The existing communication lines around Carswell Ave will not require improvements but adjustments of appurtenances will be made as necessary.

### E. Fire Hydrants

Several fire hydrants existing along Carswell Ave to serve nearby existing buildings. Relocation and/or installation of new fire hydrants will not be required. However, blue reflectors will be installed or replaced in front of the existing fire hydrants to UFC/Base regulations.

## VI. Traffic Control

Traffic control lights, barricades, road markings, signs, and signal persons for the safe movement of traffic shall be provided in accordance with the DOT Federal Highway Administration's "Manual on Uniform Traffic Control Devices". Barricades, danger, warning and detour signs, as required, shall be established before any roads are closed. Carswell Ave from Femoya Street to Selfridge Blvd consist of four lanes and will always have 2 lanes open with one lane in each direction. Carswell Ave from Selfridge Blvd to Gott Street consists of two lanes and will have one lane traffic control. Carswell Ave will never be shut down completely.

## VII. Striping

All existing road striping will be replaced with new striping and will comply with JBSA-Lackland, TxDOT, and UFC regulations.