July 9, 2015

LOCHNER
4350 W. Cypress Street, Suite 800
Tampa, FL 33607

Attn: Mr. Douglas M. Hershey, P.E.

RE: Report of Geotechnical Engineering Services
USCG Pedestrian Bridge
St. Petersburg-Clearwater International Airport
Pinellas County, Florida
Tierra Project No.: 6511-15-061

Mr. Hershey:

Tierra, Inc. (Tierra) has completed geotechnical engineering services for the above referenced project. The results of our field exploration and laboratory testing program, foundation analyses and subsequent geotechnical recommendations are presented in this report.

Should there be any questions regarding this report, please do not hesitate to contact our office at (813) 989-1354. Tierra would be pleased to continue providing geotechnical services throughout the implementation of the project. We look forward to working with you on this and future projects.

Respectfully Submitted,

TIERRA, INC.

Kevin W. Lo, P.E.
Senior Geotechnical Engineer
Florida License No. 56959
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT DESCRIPTION</td>
<td>1</td>
</tr>
<tr>
<td>Project Information</td>
<td>1</td>
</tr>
<tr>
<td>Scope of Services</td>
<td>1</td>
</tr>
<tr>
<td>REVIEW OF PUBLISHED DATA</td>
<td>2</td>
</tr>
<tr>
<td>USGS Quadrangle Map</td>
<td>2</td>
</tr>
<tr>
<td>USDA Soil Survey</td>
<td>2</td>
</tr>
<tr>
<td>SUBSURFACE EXPLORATION</td>
<td>3</td>
</tr>
<tr>
<td>RESULTS OF SUBSURFACE EXPLORATION</td>
<td>4</td>
</tr>
<tr>
<td>General Soil Conditions</td>
<td>4</td>
</tr>
<tr>
<td>Groundwater Information</td>
<td>5</td>
</tr>
<tr>
<td>Laboratory Testing</td>
<td>5</td>
</tr>
<tr>
<td>EVALUATION AND RECOMMENDATIONS</td>
<td>5</td>
</tr>
<tr>
<td>General</td>
<td>5</td>
</tr>
<tr>
<td>Site Preparation</td>
<td>6</td>
</tr>
<tr>
<td>Foundation Recommendations</td>
<td>6</td>
</tr>
<tr>
<td>Settlement</td>
<td>6</td>
</tr>
<tr>
<td>CONSTRUCTION CONSIDERATIONS</td>
<td>7</td>
</tr>
<tr>
<td>General</td>
<td>7</td>
</tr>
<tr>
<td>Fill Placement and Subgrade Preparation</td>
<td>7</td>
</tr>
<tr>
<td>Scour/Slope Protection</td>
<td>9</td>
</tr>
<tr>
<td>Drainage and Groundwater Concerns</td>
<td>9</td>
</tr>
<tr>
<td>Structural Fill</td>
<td>9</td>
</tr>
<tr>
<td>Excavations</td>
<td>9</td>
</tr>
<tr>
<td>REPORT LIMITATIONS</td>
<td>10</td>
</tr>
<tr>
<td>APPENDIX</td>
<td></td>
</tr>
<tr>
<td>USGS/USDA Vicinity Maps</td>
<td></td>
</tr>
<tr>
<td>Boring Location Plan and Soil Profiles</td>
<td></td>
</tr>
<tr>
<td>Proposed Foundation Dimensions and Depth</td>
<td></td>
</tr>
</tbody>
</table>
PROJECT DESCRIPTION

Project Information

The project site is located within the limits of the existing St. Petersburg-Clearwater International Airport in Pinellas County, Florida. More specifically, the project site is located approximately 80 feet to the northeast of the intersection of Rescue Way and Spadco Drive near the western entrance to the airport facility.

Based on information provided to us, it is our understanding that a new pedestrian bridge and associated sidewalk(s) are currently planned for the project site. The pedestrian bridge will be a single span structure approximately 54 feet long and 8 feet wide. The bridge will span an existing shallow drainage ditch/canal located on the north side of Rescue Way.

We understand that the pedestrian bridge structure is planned to be supported on a shallow foundation system. Design loads provided by LOCHNER for each bridge abutment are as follows:

Service Load: 97.23 kips
Factored Design Load: 124.79 kips

The finished grade at each bridge abutment is anticipated to be within 1 to 2 feet of the existing site grades (approx. elevation +5 to +7 feet NGVD).

If any of the project information noted is incorrect or has changed, Tierra should be notified as soon as possible so we can determine if the changes impact our recommendations.

Scope of Services

Tierra’s involvement in the project was to obtain information concerning subsurface conditions at the pedestrian bridge site in order to establish geotechnical parameters and recommendations for the design of the proposed structure foundations. In order to meet this objective, Tierra performed the following services:

1. Reviewed published soils and topographic information. This published information was obtained from the “Safety Harbor, Florida” Quadrangle Map published by the United States Geological Survey (USGS) and the Soil Survey of Pinellas County, Florida, published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).
2. Executed a program of subsurface exploration consisting of borings, subsurface sampling, and field testing. Tierra performed two (2) Standard Penetration Test (SPT) borings to depths of approximately 40 feet below grade.

3. Visually classified the samples in the laboratory using the Unified Soil Classification System (USCS). Conducted a limited laboratory testing program and identified soil conditions at each boring location.

4. Collected groundwater level measurements at each boring location.

5. Prepared this formal report in accordance with the scope of services herein that summarizes the course of study pursued, the field data generated, subsurface conditions encountered and our engineering recommendations in each of the pertinent topic areas.

The scope of our services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, groundwater, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items or conditions are strictly for the information of our client.

REVIEW OF PUBLISHED DATA

USGS Quadrangle Map

Based on a review of the “Safety Harbor, Florida” United States Geological Survey (USGS) Quadrangle Map, the natural ground surface elevations at the project site are generally on the order of +5 to +10 feet, National Geodetic Vertical Datum of 1929 (NGVD 29). This information is consistent with site specific topographic information provided to Tierra. A reproduction of the USGS Vicinity Map is illustrated on Sheet 1 in the Appendix.

USDA Soil Survey

Based on a review of the Pinellas County Soil Survey, it appears that there is one (1) primary soil-mapping unit noted within the vicinity of the project site. The general soil description is presented in the following paragraph and table, as described in the Soil Survey. A reproduction of the USDA Vicinity Map is also illustrated on Sheet 1 in the Appendix.

Matlacha-St. Augustine-Urban land (Map Unit 16)

The Matlacha component makes up 32 percent of the map unit. Slopes are 0 to 2 percent. This component is on fills on ridges on marine terraces on coastal plains. The parent material consists of sandy mine spoil or earthy fill. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not
ponded. A seasonal zone of water saturation is at a depth of 30 inches during the months of June to October.

The St. Augustine component makes up 32 percent of the map unit. Slopes are 0 to 2 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy mine spoil or earthy fill. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at a depth of 27 inches during the months of June to October.

The Urban Land component of the map unit consists of areas where most of the soil surface is covered with impervious materials, such as buildings and paved areas. This land type consists of areas where the original soil has been modified through cutting, grading, filling, and shaping or has been generally altered for urban development.

<table>
<thead>
<tr>
<th>USDA Map Symbol and Soil Name</th>
<th>Soil Classification</th>
<th>Permeability (in/hr)</th>
<th>pH</th>
<th>Seasonal High Water Table</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (in)</td>
<td>USCS</td>
<td>AASHTO</td>
<td>Depth (feet)</td>
</tr>
<tr>
<td>Matlacha-St. Augustine-Urban land</td>
<td>0-42 SP, SP-SM</td>
<td>A-3</td>
<td>2.0 - 6.0</td>
<td>6.1-8.4</td>
</tr>
<tr>
<td></td>
<td>42-80 SP, SP-SM</td>
<td>A-3</td>
<td>6.0 - 20.0</td>
<td>6.1-8.4</td>
</tr>
<tr>
<td></td>
<td>0-8 SP, SP-SM</td>
<td>A-3</td>
<td>6.0 - 20.0</td>
<td>6.1-8.4</td>
</tr>
<tr>
<td></td>
<td>8-33 SP-SM</td>
<td>A-2-4</td>
<td>2.0 - 20.0</td>
<td>6.1-8.4</td>
</tr>
<tr>
<td></td>
<td>33-48 SP, SP-SM</td>
<td>A-3</td>
<td>6.0 - 20.0</td>
<td>6.1-8.4</td>
</tr>
<tr>
<td></td>
<td>48-63 SM, SP-SM</td>
<td>A-2-4</td>
<td>2.0 - 20.0</td>
<td>6.1-8.4</td>
</tr>
<tr>
<td></td>
<td>63-80 SP, SP-SM</td>
<td>A-3</td>
<td>6.0 - 20.0</td>
<td>6.1-8.4</td>
</tr>
</tbody>
</table>

It should be noted that information contained in the USDA Soil Survey may not be reflective of current subsurface conditions, particularly if development in the project vicinity has modified existing soils or surface/subsurface drainage.

**SUBSURFACE EXPLORATION**

Prior to commencing field activities, Tierra developed a boring location plan based on project information provided by LOCHNER. To evaluate the subsurface conditions within the footprint of the proposed pedestrian bridge structure, Tierra performed a total of two (2) SPT borings to depths of approximately 40 feet below grade.
The borings were located in the field by a representative of Tierra using a hand-held Garmin Etrex® Global Positioning System (GPS) equipment with a reported accuracy of ±10 feet. The approximate boring locations are presented on the Boring Location Plan sheet in the Appendix. If a more accurate determination of the boring locations is required, then Tierra recommends the boring locations be survey located by the project surveyor.

The SPT borings were performed with the use of a drill rig equipped with an automatic hammer system using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with American Society for Testing and Materials (ASTM) Test Designation D-1586 titled “Penetration Test and Split-Barrel Sampling of Soils.” SPT resistance N-values and soil samples were taken continuously to a depth of 10 feet and at intervals of 5 feet thereafter to the boring termination depths.

As each soil type was encountered, samples were collected and visually classified in the field with representative soil samples collected and returned to Tierra for soil classification and stratification. The results of the SPT borings performed are presented on the Soil Profiles sheet in the Appendix.

**RESULTS OF SUBSURFACE EXPLORATION**

**General Soil Conditions**

The SPT borings generally encountered loose to medium dense sandy soils to depths of approximately 8 feet below existing site grades underlain by very loose to loose sandy soils to depths of approximately 33 feet below existing site grades. Stiff sandy clay to sandy silt was then encountered to the boring termination depths of 40 feet below grade. The subsurface conditions encountered within each of the test borings performed are presented on the Soil Profile sheet in the Appendix.

The soil strata encountered in the borings performed at the project site are summarized in the following table:

<table>
<thead>
<tr>
<th>Stratum Number</th>
<th>Soil Description</th>
<th>USCS Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown Fine SAND to SAND with Silt</td>
<td>SP/SP-SM</td>
</tr>
<tr>
<td>2</td>
<td>Gray Silty SAND with Shell Fragments</td>
<td>SM</td>
</tr>
<tr>
<td>3</td>
<td>Gray to Blue-Gray Sandy CLAY to Sandy SILT</td>
<td>ML/CL</td>
</tr>
</tbody>
</table>

The subsurface soil stratification is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The Soil Profiles included in the Appendix should be reviewed for specific information at individual boring locations. These profiles include soil descriptions, stratifications, and penetration resistances. The stratifications shown on the boring profiles represent the conditions
only at the actual boring location. Variations did occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual.

**Groundwater Information**

At the time of drilling (April 17, 2015), the groundwater table was encountered at a depth of 6 feet below the existing ground surface. Groundwater conditions will vary with environmental changes and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as swales, drainage features and areas of covered soil (paved parking lots, sidewalks, etc.).

The estimated normal seasonal high groundwater levels presented herein are based on the observed soil stratigraphy, measured groundwater levels in the borings, USDA Soil Survey information, and our past experience in the general project area. In this regard, we estimate the normal seasonal high groundwater will be approximately 1.5 feet below the existing site grades (approximate elevation +3.5 feet based on topographic information provided to Tierra).

In general, the normal seasonal high groundwater level is not intended to define a limit or ensure that future seasonal fluctuations in groundwater levels will not exceed the estimated levels. Post-development groundwater levels could exceed the normal seasonal high groundwater level estimate as a result of a series of rainfall events, changed conditions at the site that alter surface water drainage characteristics, or variations in the duration, intensity, or total volume of rainfall.

**Laboratory Testing**

Representative soil samples collected from the SPT borings were classified and stratified in general accordance with the Unified Soil Classification System (USCS). Our classification was based on visual observations, using the results from the laboratory testing as confirmation. Laboratory testing consisted of fines content (percentage passing No. 200 mesh sieve) and environmental corrosion tests. The results of the laboratory tests are presented on the Soil Profile sheet in the Appendix.

**EVALUATION AND RECOMMENDATIONS**

**General**

Based on the results of the borings and our understanding of the proposed pedestrian bridge as discussed herein, subsurface conditions are considered suitable for supporting the bridge structure on shallow foundations after being prepared in accordance with the recommendations provided herein. Our recommendations for site preparation, foundation design criteria, settlement, and construction considerations are presented in the following report sections.
Site Preparation

Prior to construction, the location of any existing underground utilities within the construction area should be established. Material suitable for re-use may be stockpiled; however, any material stockpiled for re-use shall be tested for conformance to material specifications as indicated in the following sections of this report. Provisions should then be made to relocate any interfering utility lines within the construction area to appropriate locations and backfilling the resulting excavations with compacted approved fill. In this regard, it should be noted that if abandoned underground pipes are not properly removed or plugged, they might serve as conduits for subsurface erosion, which subsequently may result in excessive settlement.

As a minimum, it is recommended that the clearing operations extend to the depth needed to remove material considered deleterious at least 5 feet beyond the proposed construction limits, where practical. Deleterious materials to be removed include roots, organics, tree stumps or other buried or surface debris. Fill placement and subgrade preparation recommendations are presented in the Construction Considerations section of this report.

Foundation Recommendations

Based on the results of our borings and our understanding of the proposed pedestrian bridge as discussed herein, subsurface conditions are considered suitable for supporting the structure on shallow spread foundations. A maximum factored bearing resistance of 2,700 pounds per square foot (psf) can be used for the design of the foundations. This value was developed based on the proposed foundation dimensions and depth provided by LOCHNER, which are shown in the Appendix. Based on the soil conditions encountered and the recommended site preparation requirements, a modulus of subgrade reaction of 50 pounds per cubic inch (pci) is recommended for use in design.

The noted values presume that the foundations are surrounded by well-compacted sand backfill and can withstand horizontal movements on the order of one-quarter to three-eighth inches. Horizontal restraint determined in accordance with the recommended values should be considered resistance that is available rather than allowable. Therefore, the design should incorporate a minimum factor of safety of 1.5 to limit horizontal movement.

Settlement

The settlement of shallow foundations supported on compacted sand fill and/or natural sandy soils should occur rapidly after loading. Thus, the expected settlement should occur during construction as dead loads are imposed. Provided the recommended site preparation operations are properly performed and the recommendations noted herein are utilized, the total settlement should not exceed approximately ½ inch. The differential settlement is not expected to exceed one half of the total settlement.
Differential settlement of this magnitude is usually considered tolerable for the anticipated construction; however, the tolerance of the proposed structure to the predicted total and differential settlements should be confirmed by the structural engineer.

**CONSTRUCTION CONSIDERATIONS**

**General**

It is recommended that Tierra be retained to provide observation and testing of construction activities involved in the foundation earthwork, and related activities of this project. Tierra cannot accept any responsibility for any conditions, which deviate from those described in this report, if not engaged to provide construction observation and testing for this project.

**Fill Placement and Subgrade Preparation**

The following are our recommendations for overall site preparation and mechanical densification work for the construction of the proposed improvements based on the anticipated construction and our test boring results. These recommendations should be used as a guideline for the project general specifications prepared by the design engineer.

1. The site should be cleared; this primarily includes removing any deleterious materials currently on the site. It is recommended that any unsuitable material be removed to the satisfaction of Tierra prior to beginning construction at the site. Resulting excavations should be backfilled with compacted structural fill. As a minimum, it is recommended that the clearing operations extend at least five (5) feet beyond the development perimeters, where practical.

2. Following the clearing operations, the exposed existing subgrade should be evaluated and proofrolled as directed by representatives of Tierra to confirm that all unsuitable materials have been removed. The proofrolling should consist of compaction using a fully loaded 2 cubic yard capacity front end loader or equivalent. Vibratory compaction equipment should not be used within 50 feet of any existing structures.

3. Careful observations should be made during proofrolling to help identify any areas of soft yielding soils that may require over excavation and replacement. The proofrolling equipment should make a minimum of eight (8) overlapping passes over the structure areas with the successive passes aligned perpendicular. It is recommended that within the pavement/sidewalk areas leading up to the pedestrian bridge, the natural ground, to a minimum depth of one (1) foot below stripped or excavated grade, be compacted to a minimum of 95% of the material’s Modified Proctor maximum dry density.
4. Following satisfactory completion of the initial compaction, the structure areas may be brought up to finished subgrade levels, if needed, using structural fill. Imported fill should consist of fine sand with less than 12% passing the No. 200 sieve, free of rubble, organics, clay, debris and other unsuitable material. Fill should be tested and approved prior to acquisition. Approved sand fills should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to a minimum density of 95% of the Modified Proctor maximum dry density. Density tests to confirm compaction should be performed in each fill lift before the next lift is placed.

5. Prior to beginning compaction, soil moisture contents may need to be adjusted in order to facilitate proper compaction. If additional moisture is necessary to achieve compaction objectives, then water should be applied in such a way that it will not cause erosion or removal of the subgrade soils. Moisture content within the range needed to achieve compaction is recommended prior to compaction of the natural ground and fill.

6. After proofrolling and compaction, the foundation excavations can begin. Foundation excavations should be observed by the geotechnical engineer or a representative to explore the extent of any loose, soft, or otherwise unsuitable materials. If the foundation excavations appear suitable as load bearing materials, the bottom of the foundation excavations should be compacted to a minimum density of 95% of the Modified Proctor maximum dry density for a minimum depth of two (2) feet below the bottom of the footing depth, as determined by field density compaction tests.

7. If soft pockets are encountered in the footing excavations, the unsuitable materials should be removed and the proposed footing elevation re-established by backfilling. This backfilling may be done with a very lean concrete or with a well-compact ed, suitable fill such as clean sand, gravel, or crushed FDOT No. 57 or FDOT No. 67 stone. Sand backfill should be compacted to a minimum density of 95% of the modified Proctor maximum dry density. Gravel/stone should be compacted to a firm unyielding condition.

8. Immediately prior to reinforcing steel placement, it is suggested that the bearing surfaces of all footing excavations be compacted using hand operated mechanical tampers. In this manner, any localized areas which have been loosened by excavation operations should be adequately re-compacted.

A representative of Tierra should be retained to provide on-site observation of earthwork and ground modification activities. Density tests should be performed in the top one (1) foot of compacted existing ground, each fill lift, and the bottom of foundation excavations. It is important that Tierra be retained to observe that the subsurface conditions are as we have discussed herein, and that foundation construction ground modification and fill placement is in accordance with our recommendations.
Scour/Slope Protection

Normal slope protection measures (i.e. grassed/vegetated side slopes) and periodic maintenance of the drainage ditch/canal will be required to protect the bridge foundations from scour/erosion impacts at all times.

Drainage and Groundwater Concerns

Groundwater levels were encountered at a depth of 6 feet below the existing grade at the time of our field activities. We recommend that the Contractor determine the actual groundwater levels at the time of construction to determine potential groundwater impacts that may occur during the proposed construction.

Structural Fill

All materials used for structural fill or backfill should be evaluated and, if necessary, tested by Tierra prior to placement to determine if they are suitable for the intended use. Suitable fill materials should consist of sand with less than 12% passing the No. 200 sieve, free of rubble, organics, clay, debris and other unsuitable material.

In general, the majority of the Stratum 1 sands (SP/SP-SM) can be moved and used for grading purposes, site leveling, general engineering fill, structural fill and backfill in other areas, provided the fill is free of organic material, clay, debris or any other material deemed unsuitable for construction. All fill should be placed in accordance with the recommendations provided in this report.

Excavations

Excavations and temporary side slopes should comply with the Occupational Safety and Health Administration’s (OSHA) trench safety standards, 29 C.F.R., s. 1926.650, Subpart P, all subsequent revisions or updates of OSHA’s referenced standard adopted by the Department of Labor and Employment Security and Florida’s Trench Safety Act, Section 553.62, Florida Statutes.

We are providing this information solely as a service to our client. Tierra does not assume responsibility for construction site safety or the contractor’s or other party’s compliance with local, state, and federal safety or other regulations. Excavated materials should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth.
REPORT LIMITATIONS

The analyses, conclusions and recommendations contained in this report are professional opinions based on the site conditions and project layout described herein and further assume that the conditions observed in the exploratory borings are representative of the subsurface conditions throughout the site, i.e., the subsurface conditions elsewhere on the site are the same as those disclosed by the borings. If, during construction, subsurface conditions different from those encountered in the exploratory borings are observed or appear to be present beneath excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary.

This report was prepared for the exclusive use of LOCHNER and the St. Petersburg-Clearwater International Airport for evaluating the design of the project as it relates to the geotechnical aspects discussed herein. It should be made available to prospective contractors for information on factual data only and not as a warranty of subsurface conditions included in this report. Unanticipated soil conditions may require that additional expense be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.
APPENDIX

USDA/USGS Vicinity Maps (Sheet 1)
Boring Location Plan and Soil Profiles (Sheet 2)
Proposed Foundation Dimensions and Depth
GENERAL NOTES

DESIGN SPECIFICATIONS:
Florida Department of Transportation, 2015 design standards and revised index drawings as appended herein and 2015 standard specifications for road and bridge construction as amended by contract documents.

VERTICAL DATUM:
DAVU 88

DESIGN METHODOLOGY:
Load and resistance factor design (LRFD) method using strength, service and fatigue limit states.

DESIGN LOADS:
1. Life Load: H-5
2. Pedestrian Load: 90 PSF
3. Dead Loads: Aluminum Pedestrian Railing: 20 P/LF; Reinforced Concrete: 150 PCF; Future Wearing Surface: 0 PSF
4. Utilities: No allowance for utility loads has been included in the design.

MATERIALS:
1. Concrete:
   All concrete shall conform to specifications section 346.

<table>
<thead>
<tr>
<th>CONCRETE CLASS</th>
<th>MIN. 28 DAY COMpressive STRENGTH (PSI)</th>
<th>LOCATION OF CONCRETE IN STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (Bridge Deck)</td>
<td>4500</td>
<td>Approach Slabs</td>
</tr>
<tr>
<td>IV</td>
<td>5500</td>
<td>End Bents</td>
</tr>
<tr>
<td>V</td>
<td>6500</td>
<td>Prestressed Double-Fly Beam</td>
</tr>
</tbody>
</table>

2. Concrete Cover:
Concrete cover dimensions shown in the plans do not include placement and fabrication tolerances unless shown as "Minimum Cover". See specification 415 for allowable tolerances. All dimensions pertaining to the location of reinforcing steel are to the centerline of bar except where clear dimension is noted to face of concrete.

| STRUCTURE Type                          | MIN. CONCRETE COVER
|----------------------------------------|-------------------|
| Precast Prestressed Beam (unless noted otherwise) | 2"
| Cast-in-place Substructure (cast against earth) | 4½"
| Cast-in-place Substructure (formed surfaces) | 4"
| Cast-in-place Approach Slab (top of slab) | 3"
| Cast-in-place Approach Slab (bottom of slab) | 4"

3. Reinforcing Steel:
   A. Provide ASTM A615 Grade 60 conventional reinforcing steel in accordance with specification 415.
   B. Typical reinforcing bars are designated as:

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>SIZE</th>
<th>MARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODERATELY AGGRESSIVE</td>
<td>CONCRETE AND STEEL:</td>
<td>MODERATELY AGGRESSIVE</td>
</tr>
</tbody>
</table>

ENVIRONMENT:

<table>
<thead>
<tr>
<th>SUPERSTRUCTURE</th>
<th>SUBSTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODERATELY AGGRESSIVE</td>
<td>CONCRETE AND STEEL: MODERATELY AGGRESSIVE</td>
</tr>
</tbody>
</table>

PLAN DIMENSIONS:
All dimensions in these plans are measured in feet either horizontally or vertically unless noted otherwise.

JOINTS IN CONCRETE:
Construction joints will be permitted only at the locations indicated in the plans. Additional construction joints or alterations to those shown shall require approval of the engineer.

ABBREVIATIONS:
E.F. denotes "each face"  E.J. denotes "expansion joint"
R.F. denotes "near face"  E denotes "expansion bearing"
F.F. denotes "far face"
U.O. denotes "unless otherwise noted"

FOR ADDITIONAL ABBREVIATIONS SEE FDOT INDEX NO. 001.

SHOP DRAWINGS:
Shop drawings shall be submitted to:

Douglas M. Hershey, PE
HW Lochner, INC.
4350 W. Cypress Street, Suite 800
Tampa, FL 33607
Plan and Elevation

Notes:
1. See the roadway plans for sidewalk details leading up to the approach slabs.
2. 110. Proposed beam low member elevation is EL 5.333. The mean high water elevation is EL 0.71 and the mean high high water elevation is EL 1.04.

Legend:
- Indicates boring location. For boring data, see sheet B1-3.
- Removal of existing ground underneath proposed structure.

Notation:
- Indicates boring location. For boring data, see sheet B1-3.
- Removal of existing ground underneath proposed structure.

- Indicates boring location. For boring data, see sheet B1-3.
- Removal of existing ground underneath proposed structure.

- Indicates boring location. For boring data, see sheet B1-3.
- Removal of existing ground underneath proposed structure.
**BEAM ELEVATION**

**SECTION A-A**

**STEEL SPACER PLATE DETAIL**

**DETAIL B**

**STRAND DEBONDING LEGEND**

- FULLY BONDED STRANDS

**TYPICAL SECTION**

**STRAND PATTERN**

**NOTES:**

1. PRESTRESSED CONCRETE BEAM SHALL HAVE AN INITIAL CONCRETE STRENGTH AT RELEASE, $f'_{ci}$, OF 5000 PSI AND A 28-DAY STRENGTH, $f'_{c}$, OF 6500 PSI.

2. PRESTRESSED BEAM COVER SHALL BE 2" UNLESS NOTED OTHERWISE.

3. TOP SURFACE OF PRESTRESSED BEAM SHALL RECEIVE A TOP SURFACE TREATMENT IN ACCORDANCE WITH FOOT SPECIFICATION 522-7.

4. BARS 4S1 AND 4S2 SHALL BE TYPE 1 AS PER INDEX 21300. BAR 5S1 SHALL BE TYPE 6 AS PER INDEX 21300 WITH B = 1'-8", C = 6", D = 5" AND E = 6".

5. IN LIEU OF CORE DRILLING HOLES FOR PLACEMENT OF THE ANCHOR BOLTS, THE CONCRETE PRECASTER MAY PLACE THE ANCHOR BOLT DURING FABRICATION OF THE PRESTRESSED BEAM.

6. STEEL SPACER PLATE SHALL BE IN ACCORDANCE WITH ASTM A36 AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 962 OF THE FOOT SPECIFICATIONS.

7. THE MATERIAL AND LABOR REQUIRED FOR PLACEMENT OF THE STEEL SPACER PLATE SHALL BE INCLUDED IN THE COST OF THE PRESTRESSED BEAM.

8. "STRAND CUTTING AND PROTECTING DETAIL" SHOWN IN INDEX 20010 SHALL BE UTILIZED.

9. PRESTRESSED BEAMS SHALL BE STORED, TRANSPORTED AND HANDLED IN AN UPRIGHT POSITION UNLESS OTHERWISE APPROVED BY THE ENGINEER. THE BEAMS SHALL BE SUPPORTED DURING STORAGE AND TRANSPORT NO CLOSER THAN 6 INCHES TO THE END NOR FURTHER THAN 18 INCHES FROM THE END AND THE BEAMS SHALL BE PICKED UP FROM POINTS LOCATED BETWEEN 2 FEET AND 3 FEET FROM THE ENDS.