# Texas Department of Transportation

# TECHNICAL PROVISIONS

# STATE HIGHWAY 71 TOLL LANES

# Attachment 2-1

# Project Management Plan Contents

# Execution Version

# Attachment 2-1 – Project Management Plan Contents

## The Project Management Plan (PMP) Contents and Schedule for provision of the component parts.

**Legend:**

**A = Submitted by DB Contractor within 30 days of NTP 1 and approved by TxDOT prior to Commencement of Design and issuance of NTP 2**

**B = Submitted by DB Contractor within 90 days of NTP 1 and approved by TxDOT prior to Commencement of Construction**

| Part | Ref | Section | Contents | Required by |
|---|---|---|---|---|
| 1. Project Administration | | | | |
| | 1.1 | Organization | Organization diagram | A |
| | 1.2 | Personnel | Names and contract details, titles, and job roles | A |
| | 1.3 | Contractors | Procedures to establish how the DB Contractor will manage Contractors | A |
| | 1.4 | Schedule | Project Baseline Schedule in accordance with the Technical Provision Section 2 | A |
| | 1.5 | Quality Control | Procedures to establish and encourage continuous improvement | A |
| | 1.6 | Audit | Procedures to facilitate review and audit by TxDOT and/or the Independent Reviewers | A |
| | | | Auditing and management review of DB Contractor's own activities under the PMP | A |
| | | | Auditing and management review of Contractor's activities and management procedures | A |
| | 1.7 | PMP Update | Procedures for preparation of amendments and submission of amendments to any part of the PMP | A |
| | 1.8 | Document Management | The manner in which records will be maintained in compliance with the Technical Provisions, including any specific systems DB Contractor will use. | A |
| | | | Document management procedures in compliance with the Technical Provisions Section 2. | A |
| | | | Procedures for documenting all required Plans not specifically stated in this attachment, including but not limited to: Aesthetics and Landscaping Plan, ITS Implementation Plan, Haul Route Plan, Maintenance Management Plan (MMP), Emergency Response Plan, Demolition and Abandonment Plan, etc | A |
| 2. Quality Management Plan | | | | |
| 2A. Design Quality Management | | | | |
| | 2A.1 | Organization | DB Contractor's main contractual arrangements | A |
| | | | Organizational structure covering the activities to be performed in accordance with the Contract Documents | A |
| | 2A.2 | Personnel | Resource Plan for the DB Contractor and its subcontractors | A |

|  |  |  |  |  |
|---|---|---|---|---|
| 2. Quality Management Plan |  |  |  |  |
| 2A. Design Quality Management |  |  |  |  |
|  | 2A.2 | Personnel | Arrangements for coordinating and managing staff interaction with TxDOT and its consultants including collocation of Key Personnel and description of approach to coordinating work of off-site personnel | A |
|  |  |  | Names and contact details, titles, job roles and specific experience required for the Key Personnel and for other principal personnel during the period of Design Work | A |
|  |  |  | Names and contact details, titles, job roles and specific experience required for the principal personnel for Contractors and any third party with which DB Contractor will coordinate activities. | A |
|  | 2A.3 | Offices and equipment | Description of the necessary offices and office equipment to be provided by DB Contractor during the period of Design Work | A |
|  | 2A.4 | Contractors | Overall control procedures for Contractors, including consultants and Subconsultants | A |
|  |  |  | Responsibility of Contractors and Affiliates | A |
|  |  |  | Steps taken to ensure Contractors and Suppliers meet the obligations imposed by their respective Contracts | A |
|  | 2A.5 | Interfaces | Interfacing between the DB Contractor, Contractors and the Independent certifiers during the period of Design Work | A |
|  |  |  | Coordination with Utility Owners | A |
|  | 2A.6 | Environmental | Integration of the interface between environmental requirements (including landscaping) and the design of the Project | A |
|  | 2A.7 | Procedures | Procedures describing how the principal activities will be performed during the design stage: to include geotechnical site investigation, surveys and mapping, environmental management, safety audit, structural audit, and checking | A |
|  | 2A.8 | Quality Control | Quality Management Plan (QMP), including control procedures including a resource table for monitoring and auditing all design services, design review and certification, and verification of plans | A |
|  |  |  | Procedures for environmental compliance | A |
|  |  |  | Procedures to establish DB Contractor's hold points in the design process at which checking and review will take place | A |
|  |  |  | Procedures to ensure accuracy, completion, and quality in submittals to TxDOT, Governmental Entities and other third parties. | A |
|  |  |  | Procedures to establish and encourage continuous improvement | A |
|  | 2A.9 | Audit | Name of DB Contractor's representative(s) with defined authority for establishing, maintaining, auditing and reporting on the PMP | A |
|  |  |  | Name, title, roles and responsibilities of supporting quality management staff reporting to the person with defined authority | A |
|  | 2A.10 | Document Management | The manner in which records will be maintained in compliance with the Technical Provisions, including any specific systems DB Contractor will use | A |
|  |  |  | Document management procedures in compliance with the Technical Provisions Section 2 | A |
|  |  |  | Identify environmental documentation and reporting requirements, including Environmental Permits, Issues and Commitments (EPIC) sheets | A |
| 2B. Construction Quality Management |  |  |  |  |

| | | | | |
|---|---|---|---|---|
| | 2B.1 | Organization | DB Contractor's main contractual arrangements | A |
| | | | Organizational structure covering the activities to be performed in accordance with the Contract Documents | A |
| | 2B.2 | Personnel | Resource Plan for the DB Contractor and its Contractors | B |
| | | | Arrangements for coordinating and managing staff interaction with TxDOT and its consultants including collocation of Key Personnel and description of approach to coordinating work of off-site personnel | B |
| | | | Names and contact details, titles, job roles and specific experience required for the Key Personnel as related to construction | A |
| | | | Names and contact details, titles, job roles of principal personnel for Contractors and any third party with which DB Contractor will coordinate his activities | B |
| | | | Procedures for implementation of the Environmental Protection Training Plan (EPTP) for all employees in accordance with the Technical Provisions Section 4 | B |
| | 2B.3 | Offices and equipment | Description of the necessary offices and office equipment to be provided by DB Contractor during construction | A |
| | 2B.4 | Contractors | Overall control procedures for Contractors, including consultants and subconsultants | B |
| | | | Responsibility of Contractors and affiliates | B |
| | | | Steps taken to ensure Contractors and Suppliers meet the obligations imposed by their respective Contracts | B |
| | | | Procedures for implementation of Environmental Protection Training Plan (EPTP) for employees of subcontractors in accordance with the Technical Provisions Section 4 | B |
| | 2B.5 | Interfaces | Interfacing between the DB Contractor, Contractors, including any testing contractor, and the Independent verifiers during construction | A |
| | 2B.6 | Procedures | List of Project specific construction procedures | B |
| | | | Construction detailed procedure for each major activity whether directly undertaken or subcontracted to include pavement, structures, drainage, communications | B |
| | | | Traffic Management Plan | B |
| | 2B.7 | Quality Control/<br>Quality Assurance | Construction Quality Management Plan (CQMP) | B |
| | | | Integration of component parts of the Comprehensive Environmental Protection Program (CEPP) into construction quality management | B |
| | | | Control, identification and traceability of materials, including any material or samples temporarily or otherwise removed from site for testing or other reasons. | B |
| | | | Examinations and audit of Construction Work, review of examination and audit, issue of certificates | B |
| | | | Observation and reporting of all tests in compliance with the Technical Provisions Section 2 | B |
| | | | Procedures for tests and inspections for the purpose of the Contractor certifying that prior to burying, each part of the Works is complete and conforms to the Contract Documents | B |
| | | | Quality control procedures including a resource table for monitoring and auditing during construction any work and testing undertaken by Contractors and Suppliers both on and off Site | B |

| 2B. Construction Quality Management (continued) | | | | |
|---|---|---|---|---|
| | 2B.7 | Quality Control | Procedures to establish DB Contractor's hold points in construction | B |
| | | | Procedures to ensure accuracy, completion, and quality in submittals to TxDOT, Governmental Entities and other third parties | B |
| | | | Procedures to establish and encourage continuous improvement | A |
| | 2B.8 | Audit | Inspection and test plans that identify the proforma and/or databases to be used for recording the inspection and test results and a methodology for transmitting acceptance testing and inspection reports to TxDOT | B |
| | | | Name of DB Contractor's representative with defined authority for establishing, maintaining, auditing and reporting on the PMP | A |
| | | | Name, title, roles and responsibilities of supporting quality management staff reporting to the person with defined authority. | B |
| | 2B.9 | Document Management | The manner in which records will be maintained in compliance with the Technical Provisions, including any specific systems DB Contractor will use | B |
| | | | Document management procedures in compliance with the Technical Provisions Section 2 | A |
| 3. Comprehensive Environmental Protection Program (CEPP) | | | | |
| | 3.1 | Organization | DB Contractor’s main contractual arrangements | A |
| | | | Organizational structure covering the activities to be performed in accordance with the Contract Documents | A |
| | | | Environmental Contact Tree | A |
| | 3.2 | Personnel | Resource Plan for the DB Contractor and its Contractors | B |
| | | | Arrangements for coordinating and managing staff interaction with TxDOT and its consultants, including collocation of Key Personnel and description of approach to coordinating work of off-site personnel | A |
| | | | Names and contact details, titles, job roles and specific experience required for Key Personnel and for other environmental personnel | A |
| | | | Implement Environmental Protection Training Plan (EPTP) for all employees in accordance with the Technical Provisions Section 4 | A |

| | | | | |
|---|---|---|---|---|
| 3. Comprehensive Environmental Protection Plan (continued) | | | | |
| | 3.3 | Contractors | Overall control procedures for Contractors, including consultants and subconsultants | A |
| | | | Responsibility of Contractors and Affiliates | A |
| | | | Implement Environmental Protection Training Plan (EPTP) for employees of Contractors in accordance with the Technical Provisions Section 4 | |
| | 3.4 | Environmental | Establishment of the component parts of the Environmental Compliance Mitigation Program (ECMP) | B |
| | 3.5 | Quality Control | Procedures to ensure accuracy, completion, and quality in submittals to TxDOT, Governmental Entities and other third parties | A |
| | | | Procedures to establish and encourage continuous improvement | A |
| | | | Procedures for environmental compliance | A |
| | 3.6 | Audit | Name, title, roles and responsibilities of supporting quality management staff reporting to the person with defined authority | B |
| | 3.7 | Document Management | The manner in which records will be maintained in compliance with the Technical Provisions, including any specific systems DB Contractor will use | A |
| | | | Identify environmental documentation and reporting requirements | A |
| 4. Safety Plan | | | | |
| | 4.1 | | Policies, plans, training programs, Work Site controls, and Incident response plans to ensure the health and safety of personnel involved in the Project and the general public affected by the Project | A |
| | 4.2 | | Procedures for notifying TxDOT of Incidents arising out of or in connection with the performance of the Work | A |
| 5. Communications Plan | | | | |
| | 5.1 | | The manner in which the DB Contractor’s organization will respond to unexpected requests for information, communicate changes or revisions to necessary DB Contractor personnel and support TxDOT in notifying the affected stakeholders before and after the changes are made. | A |
| | 5.2 | | Processes and procedures for communication of Project information between the DB Contractor’s organization and TxDOT | A |
| 6. Risk Management Plan | | | | |
| | 6.1 | | Approach to identification, management, mitigation, and allocation of Project-specific risks. | A |
| | 6.2 | | Development of a risk matrix including at a minimum identification and description of potential project risks, consequences of identified risks and appropriate risk mitigation strategies | A |

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 2-2

# Work Breakdown Structure Requirements

# Execution Version

Table 1 represents the minimum levels of the Work Breakdown Structure (WBS) that all schedule information shall rollup to once the Project Baseline Schedule is fully developed.

The WBS in general shall conform to level structure as follows or as otherwise approved byTxDOT:

**Table 1: WBS Minimum Requirements**

**1 Project**
  **1.1. Location**
    **1.1.1 Project Administration**
      1.1.1.1. Mobilization
      1.1.1.2. Submittals and Permitting
    **1.2. Utility Adjustments**
      1.2.1. Utility Coordination
      1.2.2. Utility Relocations
    **1.3. Design**
      1.3.1. General Activities and Field Work
      1.3.2. Design Packages
    **1.4. Construction**
      1.4.1. General
      1.4.2 By Location
    **1.5. Maintenance**
      1.4.1. General
      1.4.2 By Location
    **1.6. Warranty**
      1.4.1. General
      1.4.2 By Location

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL EXPRESS LANES

# Attachment 2-3

# I2MS Test Field Forms

# Execution Version

# I2MS Test Field Report

**File:** I2MSFieldReport.xls
**File Type:** Microsoft Excel (spreadsheet)
**File Description:** Describes what fields are required to be submitted per test, including pertinent header and footer information.  All fields are required to be submitted if possible.

# I2MS Test Form Fields

## Purpose

The purpose of this document is to provide information on the tables and fields within I2MS.

## Material Test Forms

Material Test Forms are forms used to run tests for a sample. A test form contains header and footer information which all forms have in common. Each test form also has a form body containing fields specific to the test method(s) being performed.

## Header Fields

The header information is the metadata of the form. It is vital for searching for and analyzing records. All of the test forms have similar header information.

**Table Name: HEADER_VALUE_OVT** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Course Lift | course_lift | nvarchar | 250 | | TRUE |
| Direction | direction | nvarchar | 250 | CVL | TRUE |
| Distance From CL | dist_from_cl | nvarchar | 250 | | TRUE |
| Feature | feature | nvarchar | 250 | CVL | TRUE |
| Grade | grade | nvarchar | 100 | CVL | TRUE |
| Material | material | nvarchar | 100 | CVL | TRUE |
| Misc | misc | nvarchar | 250 | | TRUE |
| Report Type | report_type | nvarchar | 250 | CVL | TRUE |
| Roadway | roadway | nvarchar | 250 | CVL | TRUE |
| Sample ID | sample_id | nvarchar | 13 | | TRUE |
| Sample Location | sample_location | nvarchar | 250 | | TRUE |
| Sample Type | sample_type | nvarchar | 100 | CVL | TRUE |
| Sampled By | sampled_by | nvarchar | 250 | CVL | TRUE |
| Sampled Date | sampled_date | datetime | | MM/dd/yyyy | TRUE |
| Section | section | nvarchar | 100 | CVL | TRUE |
| Spec Item | spec_item | nvarchar | 100 | CVL | TRUE |
| Spec Year | spec_year | nvarchar | 250 | | TRUE |
| Special Provision | special_provision | nvarchar | 250 | CVL | TRUE |
| Split Sample ID | split_sample_id | nvarchar | 250 | | TRUE |
| Station | station | nvarchar | 250 | Pattern: [0-9]+\+[0-9][0-9](\.[0-9][0-9])? | TRUE |
| Structure Number | structure_number | nvarchar | 250 | CVL | TRUE |
| Supplier | supplier | nvarchar | 100 | CVL | TRUE |

## Footer Fields

The footer contains approval data and comments for each of the test forms.

**Table Name: FOOTER_VALUE_OVT** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Authorized By | authorized_by | nvarchar | 100 | CVL | TRUE |
| Authorized Date | authorized_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Completed Date | completed_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Digital Signature ID 1 | dig_sig_id1 | int | | | FALSE |
| Digital Signature ID 2 | dig_sig_id2 | int | | | FALSE |
| Remarks | remarks | text | | | TRUE |
| Reviewed By | reviewed_by | nvarchar | 100 | CVL | TRUE |

## Body Fields

### Moisture Content of Aggregates (DB-103-E)

**Table Name: VALUE_DB103E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dish No. | dish_no | nvarchar | 100 | | FALSE |
| Mass of Dry Sample | dry_sample_tare | decimal | (19, 8) | | FALSE |
| Moisture Content | moisture_content | decimal | (19, 8) | | TRUE |
| Payable Weight of Class 2 Flex Base | payable_weight | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tare Mass | tare_mass | decimal | (19, 8) | | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Mass of Wet Sample Tare | wet_sample_tare | decimal | (19, 8) | | FALSE |

## Liquid Limit, Plastic Limit, Plastic Index (DB-104-6)

**Table Name: VALUE_DB104E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Liquid Limit | liquid_limit_total | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB104E_SAMPLE** **Maximum Rows: 6**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dish No. | dish_no | nvarchar | 100 | | FALSE |
| Liquid Limit (%) | liquid_limit | decimal | (19, 8) | | FALSE |
| Mass of Dry Sample + Tare (g) | mass_dry_sample | decimal | (19, 8) | | FALSE |
| Mass of Wet Sample + Tare (g) | mass_wet_sample | decimal | (19, 8) | | FALSE |
| Moisture Content, % | moisture_content | decimal | (19, 8) | | FALSE |
| Number of Blows | number_blows | int | | | FALSE |
| Tare Mass (g) | tare_mass | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB105E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Plastic Limit | plastic_limit_total | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB105E_SAMPLE** **Maximum Rows: 3**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dish No. | dish_no | nvarchar | 100 | | FALSE |
| Mass of Dry Sample + Tare (g) | mass_dry_sample | decimal | (19, 8) | | FALSE |
| Mass of Wet Sample + Tare (g) | mass_wet_sample | decimal | (19, 8) | | FALSE |
| Plastic Limit (%) | plastic_limit | decimal | (19, 8) | | FALSE |
| Tare Mass (g) | tare_mass | decimal | (19, 8) | | FALSE |
| Mass of Water (g) | water_mass | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB106E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Plastic Index | plasticity_index | int | | | TRUE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |
| Use Bar Linear Shrinkage to Calculate Plasticity Index? | use_bar_linear | nvarchar | 100 | {Yes, No} | FALSE |

## Bar Linear Shrinkage (DB-107-E)

**Table Name: VALUE_DB107E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Calculate Plasticity Index | calculate_plasticity_index | bit | | {Yes, No} | FALSE |
| Final Length | final_length | decimal | (19, 8) | | FALSE |
| Initial Length | initial_length | decimal | (19, 8) | | FALSE |
| Linear Shrinkage | linear_shrinkage | decimal | (19, 8) | | TRUE |
| Maximum By Specification | maximum_by_specification | decimal | (19, 8) | | FALSE |
| Minimum By Specification | minimum_by_specification | decimal | (19, 8) | | FALSE |
| Plasticity Index | plasticity_index | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Unit | unit | nvarchar | 100 | | FALSE |

## Particle Size Analysis (DB-110-E)

**Table Name: VALUE_DB110E_SIEVE** **Maximum Rows: 6**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Percent Retained | cumulative_pct_retained | decimal | (19, 8) | | TRUE |
| Cumulative Weight Retained | cumulative_weight_retained | decimal | (19, 8) | | FALSE |
| Lower Spec Limit | lower_spec_limit | decimal | (19, 8) | | FALSE |
| Master Grading | master_grading | nvarchar | 100 | | TRUE |
| Sieve Size | sieve_size | nvarchar | 100 | CVL | TRUE |
| Upper Spec Limit | upper_spec_limit | decimal | (19, 8) | | FALSE |
| Weight Retained | weight_retained | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB110E_TEST** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Method | individual_cumulative | nvarchar | 100 | {Cumulative, Individual} | FALSE |
| Negative No.40 | negative_no_40 | nvarchar | 100 | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |
| Total | total | nvarchar | 100 | | FALSE |

## Moisture-Density Work Sheet (DB-113-E)

**Table Name: VALUE_DB113E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dry Density Scale Max | dry_density_scale_max | decimal | (19, 8) | | FALSE |
| Dry Density Scale Min | dry_density_scale_min | decimal | (19, 8) | | FALSE |
| Dry Density Scale unit | dry_density_scale_unit | decimal | (19, 8) | | FALSE |
| Hygroscopic Moisture | hygroscopic_moisture | decimal | (19, 8) | | FALSE |
| Max Density(kg) | max_density_kg | decimal | (19, 8) | | FALSE |
| Max Density (pcf) | max_density_pcf | decimal | (19, 8) | | TRUE |
| Moisture scale max | moisture_scale_max | decimal | (19, 8) | | FALSE |
| Moisture scale min | moisture_scale_min | decimal | (19, 8) | | FALSE |
| Moisture scale unit | moisture_scale_unit | decimal | (19, 8) | | FALSE |
| Optimum Moisture | optimum_moisture | decimal | (19, 8) | | TRUE |
| Oven Dry Weight | oven_dry_weight | decimal | (19, 8) | | FALSE |
| Soil Description | soil_desc | nvarchar | 100 | | TRUE |
| Specific Gravity (Apparent) | specific_gravity | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Weight of Aggr., Pycn. & Water | weight_of_aggr | decimal | (19, 8) | | FALSE |
| Weight of Pycnometer & Water | weight_of_pycnometer | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB113E_SPECIMEN** **Maximum Rows: 4**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dry Density | dry_density | decimal | (19, 8) | | FALSE |
| Dry Mass Material | dry_mass_material | decimal | (19, 8) | | FALSE |
| Dry Mass Pan & Specimen | dry_mass_pan_specimen | decimal | (19, 8) | | FALSE |
| Estimated Dry Density | est_dry_density | decimal | (19, 8) | | FALSE |
| Height of Specimen | height_specimen | decimal | (19, 8) | | FALSE |
| Mass Material | mass_material | decimal | (19, 8) | | FALSE |
| Mass Water | mass_water | decimal | (19, 8) | | FALSE |
| Mass Water Added | mass_water_added | decimal | (19, 8) | | FALSE |
| Percent Water Content | pct_water_content | decimal | (19, 8) | | FALSE |
| Percent Water On Total | pct_water_total | decimal | (19, 8) | | FALSE |
| Tare Mass Mold | tare_mass_mold | decimal | (19, 8) | | FALSE |
| Tare Mass Pan | tare_mass_pan | decimal | (19, 8) | | FALSE |
| Volume Per Linear | volume_per_linear | decimal | (19, 8) | | FALSE |
| Volume of Specimen | volume_specimen | decimal | (19, 8) | | FALSE |
| Wet Density of Specimen | wet_density_specimen | decimal | (19, 8) | | FALSE |
| Wet Mass Of Pan & Specimen | wet_mass_pan_specimen | decimal | (19, 8) | | FALSE |
| Wet Mass Specimen | wet_mass_specimen | decimal | (19, 8) | | FALSE |
| Wet Mass Specimen & Mold | wet_mass_specimen_mold | decimal | (19, 8) | | FALSE |

## Moisture-Density Relationship of Subgrade and Embankment Soils (DB-114-E)

**Table Name: VALUE_DB114E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dry Density Scale Max | dry_density_scale_max | decimal | (19, 8) | | FALSE |
| Dry Density Scale Min | dry_density_scale_min | decimal | (19, 8) | | FALSE |
| Dry Density Scale unit | dry_density_scale_unit | decimal | (19, 8) | | FALSE |
| Hygroscopic Moisture | hygroscopic_moisture | decimal | (19, 8) | | FALSE |
| Max Density (kg) | max_density_kg | decimal | (19, 8) | | FALSE |
| Max Density (pcf) | max_density_pcf | decimal | (19, 8) | | TRUE |
| Moisture scale max | moisture_scale_max | decimal | (19, 8) | | FALSE |
| Moisture scale min | moisture_scale_min | decimal | (19, 8) | | FALSE |
| Moisture scale unit | moisture_scale_unit | decimal | (19, 8) | | FALSE |
| Optimum Moisture | optimum_moisture | decimal | (19, 8) | | TRUE |
| Oven Dry Weight | oven_dry_weight | decimal | (19, 8) | | FALSE |
| Soil Descript | soil_description | nvarchar | 100 | | TRUE |
| Specific Gravity | specific_gravity | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Weight of Aggr., Pycn. & Water | weight_of_aggr | decimal | (19, 8) | | FALSE |
| Weight of Pycnometer & Water | weight_of_pycnometer | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB114E_SPECIMEN** **Maximum Rows: 4**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dry Density | dry_density | decimal | (19, 8) | | FALSE |
| Dry Mass Material | dry_mass_material | decimal | (19, 8) | | FALSE |
| Dry Mass Pan & Specimen | dry_mass_pan_specimen | decimal | (19, 8) | | FALSE |
| Estimated Dry Density | est_dry_density | decimal | (19, 8) | | FALSE |
| Height of Specimen | height_specimen | decimal | (19, 8) | | FALSE |
| Mass Material | mass_material | decimal | (19, 8) | | FALSE |
| Mass Water | mass_water | decimal | (19, 8) | | FALSE |
| Mass Water Added | mass_water_added | decimal | (19, 8) | | FALSE |
| Percent Water Content | pct_water_content | decimal | (19, 8) | | FALSE |
| Percent Water Total | pct_water_total | decimal | (19, 8) | | FALSE |
| Tare Mass Mold | tare_mass_mold | decimal | (19, 8) | | FALSE |
| Tare Mass Pan | tare_mass_pan | decimal | (19, 8) | | FALSE |
| Volume Per Linear mm | volume_per_linear | decimal | (19, 8) | | FALSE |
| Volume of Specimen | volume_specimen | decimal | (19, 8) | | FALSE |
| Wet Density of Specimen | wet_density_specimen | decimal | (19, 8) | | FALSE |
| Wet Mass of Pan & Specimen | wet_mass_pan_specimen | decimal | (19, 8) | | FALSE |
| Wet Mass Specimen | wet_mass_specimen | decimal | (19, 8) | | FALSE |
| Wet Mass Specimen & Mold | wet_mass_specimen_mold | decimal | (19, 8) | | FALSE |

## Nuclear Density and Moisture Determination (DB-115-1)

**Table Name: VALUE_DB115_1** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Density Count | density_count | int | | | FALSE |
| Density, % | density_pct | decimal | (19, 8) | | TRUE |
| Pass/Fail | density_pct_pass_fail | nvarchar | 100 | | FALSE |
| Max Density Specification Requirement | density_specification_req_max | decimal | (19, 8) | | FALSE |
| Low Density Specification Req | density_specification_req_min | decimal | (19, 8) | | FALSE |
| density_standard | density_standard | int | | | FALSE |
| Determined By Test Method | determined_by_test_method | nvarchar | 100 | {DB-113-E, DB-114-E} | FALSE |
| Dry Density, pcf | dry_density_pcf | decimal | (19, 8) | | TRUE |
| Gauge No. | gauge_no | nvarchar | 100 | | TRUE |
| Maximum Dry Density | max_dry_density_pcf | decimal | (19, 8) | | TRUE |
| Moisture Content, % | moisture_content_pct | decimal | (19, 8) | | TRUE |
| Moisture Content Pct Pass or Fail | moisture_content_pct_pass_fail | nvarchar | 100 | {Pass, Fail} | FALSE |
| Moisture Count | moisture_count | int | | | FALSE |
| Max Moisture Specification Requirement | moisture_specification_req_max | decimal | (19, 8) | | FALSE |
| Low Moisture Specification Req | moisture_specification_req_min | decimal | (19, 8) | | FALSE |
| Moisture Standard | moisture_standard | int | | | FALSE |
| Optimum Moisture Content | optimum_moisture_content_pct | decimal | (19, 8) | | TRUE |
| Probe Depth | probe_depth | decimal | (19, 8) | | TRUE |
| Soil Description | soil_desc | nvarchar | 100 | | TRUE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |
| Wet Density , pcf | wet_density_pcf | decimal | (19, 8) | | FALSE |

## Soil /Aggregate Field Unit Weight Tests (DB-115-2)

**Table Name: VALUE_DB115_2** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Compaction, % | compaction_pct | decimal | (19, 8) | | FALSE |
| Compaction Required | compaction_req_pct | decimal | (19, 8) | | FALSE |
| Dry unit weight | dry_unit_weight | decimal | (19, 8) | | FALSE |
| Dry Weight Total Moisture Sample | dry_weight_total_moisture | decimal | (19, 8) | | FALSE |
| Final Weight Apparatus & Sand | final_weight_apparatus | decimal | (19, 8) | | FALSE |
| Final Weight of Sand | final_weight_sand | decimal | (19, 8) | | FALSE |
| Initial Weight Apparatus & Sand | initial_weight_apparatus | decimal | (19, 8) | | FALSE |
| Initial Weight of Sand | initial_weight_sand | decimal | (19, 8) | | FALSE |
| Maximum dry unit weight | max_dry_unit_weight | decimal | (19, 8) | | FALSE |
| Moisture Required | moisture_req_pct | decimal | (19, 8) | | FALSE |
| Optium Moisture (% if of dry unit weight) | optimum_moisture | decimal | (19, 8) | | FALSE |
| Pass/Fail % Density | pass_fail_pct_density | nvarchar | 100 | | FALSE |
| Pass/Fail % Moisture | pass_fail_pct_moisture | nvarchar | 100 | | FALSE |
| % Moisture | pct_moisture | decimal | (19, 8) | | FALSE |
| Sand bulk unit weight | sand_bulk_unit_weight | decimal | (19, 8) | | FALSE |
| Soil Descript | soil_desc | nvarchar | 100 | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | FALSE |
| Total Volume-Sand Userd | total_volume | decimal | (19, 8) | | FALSE |
| Volume of Hole | volume_hole | decimal | (19, 8) | | FALSE |
| Volume of Surface | volume_surface | decimal | (19, 8) | | FALSE |
| Weight of Material From Hole | weight_material_hole | decimal | (19, 8) | | FALSE |
| Wet Unit Weight | wet_unit_weight | decimal | (19, 8) | | FALSE |
| Wet Weight Total Moisture Sample | wet_weight_total_moisture | decimal | (19, 8) | | FALSE |

## Test Resistance to Degradation By Wet Ball Mill Method (DB-116-E)

**Table Name: VALUE_DB116E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Method | cumulative_method | nvarchar | 50 | {Cumulative, Individual} | FALSE |
| Total of 3000g weight retained | individual_weight_retained_3000g_total | decimal | (19, 8) | | FALSE |
| Total of 3500g weight retained | individual_weight_retained_3500g_total | decimal | (19, 8) | | FALSE |
| Percent Soil Binder | pct_soil_binder | decimal | (19, 8) | | FALSE |
| Percent Soil Binder Increase | pct_soil_binder_increase | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Wet Ball Mill -No.40 Individual Percent Retained | wbm_individual_pct_retained_minusno40 | decimal | (19, 8) | | FALSE |
| Wet Ball Mill No.40 Individual Percent Retained | wbm_individual_pct_retained_no40 | decimal | (19, 8) | | FALSE |
| Wet Ball Mill Initial Weight | wbm_initial_weight | decimal | (19, 8) | | FALSE |
| Wet Ball Mill Value | wbm_value | decimal | (19, 8) | | TRUE |
| Wet Ball Mill -No.40 Weight Retained | wbm_weight_retained_minusno40 | decimal | (19, 8) | | FALSE |
| Wet Ball Mill No.40 Weight Retained | wbm_weight_retained_no40 | decimal | (19, 8) | | FALSE |
| Total of weight retained | weight_retained_total | decimal | (19, 8) | | FALSE |
| Washed Sieve Analysis No.40 Individual Percent Retained | wsa_individual_pct_retained_no40 | decimal | (19, 8) | | FALSE |
| Washed Sieve Analysis -No.40 Individual Percent Retained | wsa_inidividual_pct_retained_minusno40 | decimal | (19, 8) | | FALSE |
| Washed Sieve Analysis Initial Weight | wsa_initial_weight | decimal | (19, 8) | | FALSE |
| Washed Sieve Analysis -No.40 Weight Retained | wsa_weight_retained_minusno40 | decimal | (19, 8) | | FALSE |
| Washed Sieve Analysis No.40 Weight Retained | wsa_weight_retained_no40 | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB116E_SIEVE** **Maximum Rows: 7**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Percent Retained | cumulative_pct_retained | decimal | (19, 8) | | FALSE |
| 3000g Cumulative Weight Retained | cumulative_weight_retained_3000g | decimal | (19, 8) | | FALSE |
| 3500g Cumulative Weight Retained | cumulative_weight_retained_3500g | decimal | (19, 8) | | FALSE |
| Individual Percent Retained | individual_pct_retained | decimal | (19, 8) | | FALSE |
| 3000g Individual Weight Retained | individual_weight_retained_3000g | decimal | (19, 8) | | FALSE |
| 3500g Individual Weight Retained | individual_weight_retained_3500g | decimal | (19, 8) | | FALSE |
| Sieve Size | sieve_size | nvarchar | 100 | | FALSE |
| Weight Retained | weight_retained | decimal | (19, 8) | | FALSE |

## Triaxial Compression Tests (DB-117-E)

**Table Name: VALUE_DB117E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Corrected Strength, 00 psi | average_corrected_strength_0psi | decimal | (19, 8) | | TRUE |
| Average Corrected Strength, 15 psi | average_corrected_strength_15psi | decimal | (19, 8) | | TRUE |
| Classification | classification | nvarchar | 100 | | FALSE |
| Cohesion, psi | cohesion_psi | decimal | (19, 8) | | FALSE |
| Correlation Factor | correlation_factor | decimal | (19, 8) | | FALSE |
| Grade, 00 psi | grade_0psi | nvarchar | 100 | | FALSE |
| Grade, 15 psi | grade_15psi | nvarchar | 100 | | FALSE |
| Internal Angle of Friction | internal_angle_friction | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB117E_SPECIMEN** **Maximum Rows: 8**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Area, in.^2 | area | decimal | (19, 8) | | FALSE |
| Avg. Cross Sectional Area, in^2 | avg_cross_sectional_area | decimal | (19, 8) | | FALSE |
| Average Diameter, in. | avg_diameter | decimal | (19, 8) | | FALSE |
| Corrected Stress, psi. | corrected_stress_psi | decimal | (19, 8) | | FALSE |
| Dry Density of Specimen, pcf | dry_density_specimen_pcf | decimal | (19, 8) | | FALSE |
| Final Weight of Stones | final_weight_stones | decimal | (19, 8) | | FALSE |
| Height of Stone 1, in. | height_stone1 | decimal | (19, 8) | | FALSE |
| Height of Stone 2, in. | height_stone2 | decimal | (19, 8) | | FALSE |
| I-Strain, in./in. | i_strain | decimal | (19, 8) | | FALSE |
| Initial Height of Specimen, in. | initial_height | decimal | (19, 8) | | FALSE |
| Lateral Pressure, psi. | lateral_pressure_psi | decimal | (19, 8) | | FALSE |
| New Height of Specimen, in. | new_height | decimal | (19, 8) | | FALSE |
| Moisture of Specimen, % | pct_moisture_specimen | decimal | (19, 8) | | FALSE |
| % Strain , in./in. | pct_strain | decimal | (19, 8) | | FALSE |
| Uncorrected Stress, psi. | uncorrected_stress_psi | decimal | (19, 8) | | FALSE |
| Weight of Specimen | weight_specimen | decimal | (19, 8) | | FALSE |
| Weight of Stones and Specimen | weight_stones_specimen | decimal | (19, 8) | | FALSE |

## Determining Soil pH (DB-128-E)

**Table Name: VALUE_DB128E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Soil pH | soil_ph | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |

## Measuring Resistivity of Soil Materials (DB-129-E)

**Table Name: VALUE_DB129E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Resistance using resistivity meter | resistance_using_meter | decimal | (19, 8) | | FALSE |
| Resistivity | resistivity_result | decimal | (19, 8) | | TRUE |
| A= Area of one electrode | sbf_area | decimal | (19, 8) | | FALSE |
| Distance between electrodes | sbf_distance | decimal | (19, 8) | | FALSE |
| Soil Box Factor | sbf_factor | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |

## Measuring Thickness of Pavement Layer (DB-140-E)

**Table Name: VALUE_DB140E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Depth: | avg_depth | decimal | (19, 8) | | TRUE |
| Depth 1: | depth_1 | decimal | (19, 8) | | FALSE |
| Depth 2: | depth_2 | decimal | (19, 8) | | FALSE |
| Depth 3: | depth_3 | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

## OVF HMAC Test Data: DB-200-F, DB-207-FPR, DB-227-F, DB-236-F, DB-207-F (DB-200/07/36)

**Table Name: VALUE_DB207F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Specific Gravity of Asphalt Binder | specific_gravity | decimal | (19, 3) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | FALSE |
| Voids in Mineral Aggregate (VMA) | vma | decimal | (19, 1) | | TRUE |

**Table Name: VALUE_DB207FPR** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Actual Specific Gravity (Ga): | GA | nvarchar | 100 | | TRUE |
| Lab Molded Density, %: | LMD | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | nvarchar | 100 | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB227F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Rice Specific Gravity (Gr): | rice_specific_gravity | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | nvarchar | 100 | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB229F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Stamp Code | stamp_code | nvarchar | 100 | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB229F_SIEVE** **Maximum Rows: 10**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Current JMF | Current_JMF | nvarchar | 100 | | FALSE |
| Design JMF | Design_JMF | nvarchar | 100 | | FALSE |
| Adjusted Individual % Retained | pct | decimal | (19, 8) | | TRUE |
| Sieve Size | sieve_size | nvarchar | 100 | CVL | TRUE |

**Table Name: VALUE_DB236F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Asphalt Content, %: | AC | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | nvarchar | 100 | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

## Sieve Analysis of Non-Surface Treatment Aggregates (DB-200-F)

**Table Name: VALUE_DB200F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Weight Retained Minusno14 | cumulative_weight_retained_minusno14 | decimal | (19, 8) | | FALSE |
| Dry Weight After Washing | dry_weight_after_washing | decimal | (19, 8) | | FALSE |
| Limit As Percent | limit_as_percent | nvarchar | 100 | {Passing, Retained} | FALSE |
| Original Dry Weight | original_dry_weight | decimal | (19, 8) | | FALSE |
| Sieve Analysis Result 1 | sieve_analysis_result1 | nvarchar | 100 | | FALSE |
| Sieve Analysis Result 2 | sieve_analysis_result2 | decimal | (19, 8) | | FALSE |
| Sieve Analysis Result 3 | sieve_analysis_result3 | decimal | (19, 8) | | FALSE |
| Sieve Analysis Result 4 | sieve_analysis_result4 | decimal | (19, 8) | | FALSE |
| Sieving Loss | sieving_loss | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Total Weight | total_weight | decimal | (19, 8) | | FALSE |
| Washing Loss | washing_loss | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB200F_SIEVE** **Maximum Rows: 12**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Percent Passing | cumulative_pct_passing | decimal | (19, 8) | | TRUE |
| Cumulative Percent Retained | cumulative_pct_retained | decimal | (19, 8) | | FALSE |
| Cumulative Weight Retained | cumulative_weight_retained | decimal | (19, 8) | | FALSE |
| Individual Weight Retained | individual_weight_retained | decimal | (19, 8) | | FALSE |
| Lower Limit Grading | lower_limit_grading | decimal | (19, 8) | | FALSE |
| Sieve Size | sieve_size | nvarchar | 100 | {2", 1-3/4", 1-1/2", 1-1/4", 1", 7/8", 3/4", 5/8", 1/2", 7/16", 3/8", 5/16", 1/4", No. 4, No. 6, No. 8, No. 10, No. 14, No. 16, No. 20, No. 30, No. 40, No. 50, No. 80, No. 100, No. 200 } | TRUE |
| Upper Limit Grading | upper_limit_grading | decimal | (19, 8) | | FALSE |
| Within Grading Limits | within_grading_limits | bit | | | TRUE |

## Sand Equivalent (DB-203-F)

**Table Name: VALUE_DB203F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Sand Equivalent | average_sand_equivalent | decimal | (19, 8) | | TRUE |
| Clay No.1 Reading | clay1_reading | decimal | (19, 8) | | FALSE |
| Clay No.2 Reading | clay2_reading | decimal | (19, 8) | | FALSE |
| Sand No.1 Calculated | sand1_calculated | decimal | (19, 8) | | FALSE |
| Sand No.1 Reading | sand1_reading | decimal | (19, 8) | | FALSE |
| Sand No.1 Reported | sand1_reported | decimal | (19, 8) | | FALSE |
| Sand No.2 Calculated | sand2_calculated | decimal | (19, 8) | | FALSE |
| Sand No.2 Reading | sand2_reading | decimal | (19, 8) | | FALSE |
| Sand No.2 Reported | sand2_reported | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |

## QC/QA Test Data (DB-207-FPL)

**Table Name: VALUE_DB207FPL** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| In Place Air Void, % | air_void | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | nvarchar | 100 | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

## Deleterious Material & Decantation For Coarse Aggr (DB-217-F)

**Table Name: VALUE_DB217F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Original Weight  Retained | part1_orig_weight_retained | decimal | (19, 8) | | FALSE |
| Percent Deterious Material | part1_pct_deleterious_material | decimal | (19, 8) | | TRUE |
| Sieve Size | part1_sieve_size | nvarchar | 100 | | FALSE |
| Weight Deleterious Material | part1_weight_deleterious_material | decimal | (19, 8) | | FALSE |
| Dry Weight after Washing | part2_dry_weight_after_washing | decimal | (19, 8) | | FALSE |
| Percent Loss By Decantation | part2_loss_by_decantation | decimal | (19, 8) | | TRUE |
| Original Weight Retained | part2_orig_weight_retained | decimal | (19, 8) | | FALSE |
| Sieve Size | part2_sieve_size | nvarchar | 53 | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

## Sieve Analysis for Fine & Coarse Aggregate (DB-401-A)

**Table Name: VALUE_DB401A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Equivalent Exceed 85 | equivalent_exceed_85 | bit | | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Total | total | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB401A_SIEVE** **Maximum Rows: 8**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Percent Passing | cumulative_pct_passing | decimal | (19, 8) | | FALSE |
| Cumulative Percent Retained | cumulative_pct_retained | decimal | (19, 8) | | TRUE |
| Cumulative Weight Retained | cumulative_weight_retained | decimal | (19, 8) | | FALSE |
| Individual Weight Retained | individual_weight_retained | decimal | (19, 8) | | FALSE |
| Lower Spec Limit | lower_retained_spec_limit | decimal | (19, 8) | | FALSE |
| Sieve Size | sieve_size | nvarchar | 100 | | TRUE |
| Upper Spec Limit | upper_retained_spec_limit | decimal | (19, 8) | | FALSE |
| Within Master Grading | within_master_grading | varchar | 20 | | TRUE |

**Table Name: VALUE_DB402A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Fineness Modulus | fineness_modulus | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | FALSE |

## Decantation Test For Concrete Aggregates (DB-406-A)

**Table Name: VALUE_DB406A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Dry Mass After Washing | dry_mass_after_washing | decimal | (19, 8) | | FALSE |
| Mass of Pycnometer Containing Sample and Water To Fill After Washing | mass_of_pycnometer_after_washing | decimal | (19, 8) | | FALSE |
| Mass of Pycnometer Containing Sample and Water To Fill Before Washing | mass_of_pycnometer_before_washing | decimal | (19, 8) | | FALSE |
| Mass of Pycnometer Filled With Water at Approx. Same Temperature as above | mass_of_pycnometer_with_water | decimal | (19, 8) | | FALSE |
| Original  Dry Mass of Sample | original_dry_mass | decimal | (19, 8) | | FALSE |
| % Loss | percent_loss_part1 | decimal | (19, 8) | | TRUE |
| Percent Loss | percent_loss_part2 | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Test By: | test_by | nvarchar | 100 | {Part I - Lab Method, Part II - Field Method} | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested By - Part II | tested_by_part2 | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Tested Date - Part II | tested_date_part2 | datetime | | MM/dd/yyyy | FALSE |

## Organic Impurities in Fine Aggregate for Concrete (DB-408-A)

**Table Name: VALUE_DB408A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Color of the Supernatant Liquid | color_of_supernatant_liquid | nvarchar | 100 | {LIGHTER THAN STANDARD, EQUAL TO STANDARD, DARKER THAN STANDARD} | TRUE |
| Stamp Code | stamp_code | int |  | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime |  | MM/dd/yyyy | TRUE |

## Deleterious Material (DB-413-A)

**Table Name: VALUE_DB413A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Clay | clay_value1 | decimal | (19, 8) |  | FALSE |
| Clay Percentage | clay_value2 | decimal | (19, 8) |  | TRUE |
| Friable | friable_value1 | decimal | (19, 8) |  | FALSE |
| Friable Percentage | friable_value2 | decimal | (19, 8) |  | TRUE |
| Laminated | laminated_value1 | decimal | (19, 8) |  | FALSE |
| Laminated Percentage | laminated_value2 | decimal | (19, 8) |  | TRUE |
| Other | other_value1 | decimal | (19, 8) |  | FALSE |
| Othesr Percentage | other_value2 | decimal | (19, 8) |  | FALSE |
| Deleterious Material Retained | percent_deleterious_material_retained | decimal | (19, 8) |  | TRUE |
| Shale | shale_value1 | decimal | (19, 8) |  | FALSE |
| Shale Percentage | shale_value2 | decimal | (19, 8) |  | TRUE |
| Sieve Size | sieve_size | nvarchar | 100 |  | FALSE |
| Stamp Code | stamp_code | int |  | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime |  | MM/dd/yyyy | TRUE |
| Total | total | decimal | (19, 8) |  | FALSE |
| Total Weight Sample | total_weight_sample | decimal | (19, 8) |  | FALSE |

## Field Form Concrete Sample - Cylinders (DB-418-A)

**Table Name: VALUE_DB418A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Actual Water | actual_water | nvarchar | 100 | | TRUE |
| Agg. Correction Factor | agg_correction_factor | nvarchar | 100 | CVL | TRUE |
| Agg. Size | agg_size | nvarchar | 100 | CVL | TRUE |
| Air Temperature | air_temperature | nvarchar | 100 | | TRUE |
| Batch Size | batch_size | nvarchar | 100 | | TRUE |
| Batch Time | batch_time | nvarchar | 100 | | TRUE |
| Class of Concrete | class_of_concrete | nvarchar | 100 | CVL | TRUE |
| Concrete Temperature | concrete_temperature | nvarchar | 100 | | TRUE |
| Corrected Air Content | corrected_air_content | decimal | (19, 8) | | TRUE |
| Design Water | design_water | nvarchar | 100 | | TRUE |
| Mix ID | mix_id | nvarchar | 100 | | TRUE |
| Placement Air | placement_air | decimal | (19, 8) | | TRUE |
| Placement Slump | placement_slump | decimal | (19, 8) | CVL | TRUE |
| Pump Air Loss | pump_air_loss | decimal | (19, 8) | | TRUE |
| Pump Slump Loss | pump_slump_loss | decimal | (19, 8) | | TRUE |
| Req. Strength | req_strength | nvarchar | 100 | | TRUE |
| Sample Time | sample_time | nvarchar | 100 | | TRUE |
| Average 7 Day Compressive Strength | seven_day_average | decimal | (19, 8) | | FALSE |
| Slump | slump | decimal | (19, 8) | | TRUE |
| Specimen Size | specimen_size | nvarchar | 100 | {4x8, 6x12} | TRUE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Ticket # | ticket_number | nvarchar | 100 | | TRUE |
| Total Water | total_water | nvarchar | 100 | | TRUE |
| Truck # | truck_number | nvarchar | 100 | | TRUE |
| Average 28 Day Compressive Strength | twenty_eight_day_average | decimal | (19, 8) | | FALSE |
| Unit Wt. | unit_weight | nvarchar | 100 | | TRUE |
| Water Added | water_added | nvarchar | 100 | | TRUE |

**Table Name: VALUE_DB418A_AVERAGE** **Maximum Rows: 3**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Age | average_age | nvarchar | 100 | | TRUE |
| Average Strength | average_strength | decimal | (19, 8) | | TRUE |

**Table Name: VALUE_DB418A_SPECIMEN** **Maximum Rows: 7**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Age(days) | age | nvarchar | 100 | CVL | TRUE |
| Area | area | decimal | (19, 8) | | TRUE |
| Load(lbs) | load_lbs | decimal | (19, 8) | | TRUE |
| Pass/Fail | pass_fail | nvarchar | 5 | | FALSE |
| Specimen | specimen | nvarchar | 100 | | FALSE |
| Strength | strength | decimal | (19, 8) | | TRUE |
| Test Date | test_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Type Fracture | type_fracture | varchar | 50 | {A, B, C, D, E} | TRUE |

## Determining Pavement Thickness By Direct Measurement (DB-423-A)

**Table Name: VALUE_DB423A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Measure Unit | measure_unit | nvarchar | 100 | {Inches, Millimeters} | FALSE |
| Pavement Depth | pavement_depth | decimal | (19, 8) | | TRUE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB423A_LOCATION** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average | average | decimal | (19, 8) | | TRUE |
| Measurement 1 | measurement_1 | decimal | (19, 8) | | FALSE |
| Measurement 2 | measurement_2 | decimal | (19, 8) | | FALSE |
| Measurement 3 | measurement_3 | decimal | (19, 8) | | FALSE |
| Measurement Identification / Location | measurement_id_location | nvarchar | 100 | | FALSE |

## Soil-Cement, Soil-Lime Testing (DB-120-E) ** INACTIVE **

**Table Name: VALUE_DB120E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Avg. Corrected Stress, psi: | avg_corrected_stress_psi | decimal | (19, 8) | | FALSE |
| Percent Cement, (%) | percent_cement | decimal | (19, 8) | | TRUE |
| Performed By DB-120-E: | performed_by | nvarchar | 200 | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Target Percent Cement, %: | target_percent_cement | decimal | (19, 8) | | FALSE |
| Target Stress, psi: | target_stress_psi | decimal | (19, 8) | | FALSE |
| Tested By | tested_by | nvarchar | 200 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB120E_SPECIMEN** **Maximum Rows: 3**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Area, in.^2: | area | decimal | (19, 8) | | FALSE |
| Avg. Corrected Stress, psi: | avg_corrected_stress | decimal | (19, 8) | | FALSE |
| Avg. Cross Sectional Area, in^2: | avg_cross_section_area | decimal | (19, 8) | | FALSE |
| Average Diameter, in.: | avg_diameter | decimal | (19, 8) | | FALSE |
| Circumference, in.: | circumference | decimal | (19, 8) | | FALSE |
| Corrected Stress, psi.: | corrected_stress | decimal | (19, 8) | | FALSE |
| Dead Load, lbs.: | dead_load | decimal | (19, 8) | | FALSE |
| Deformation at Max Load, in. | deformation_at_max_load | decimal | (19, 8) | | FALSE |
| Height of Stone 1, in. | height_stone1 | decimal | (19, 8) | | FALSE |
| Height of Stone 2, in. | height_stone2 | decimal | (19, 8) | | FALSE |
| I-Strain, in./in.: | i_strain | decimal | (19, 8) | | FALSE |
| Initial Height of Specimen, in.: | initial_height_specimen | decimal | (19, 8) | | FALSE |
| Lateral Pressure, psi.: | lateral_pressure | decimal | (19, 8) | | FALSE |
| Max. Load Reading, div. | max_load_reading | decimal | (19, 8) | | FALSE |
| New Height of Specimen, in.: | new_height_specimen | decimal | (19, 8) | | FALSE |
| % Strain , in./in.: | pct_strain | decimal | (19, 8) | | FALSE |
| Percent Cement, (%) | percent_cement | decimal | (19, 8) | | FALSE |
| Ring Factor, lbs./div | ring_factor | decimal | (19, 8) | | FALSE |
| Specimen Number: | specimen_no | int | | | FALSE |
| Uncorr'd Stress, psi.: | uncorrected_stress | decimal | (19, 8) | | FALSE |

## Soil-Lime Testing: DB-121-E (DB-121-E) ** INACTIVE **

**Table Name: VALUE_DB121E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Corrected Strength, 00 psi | average_corrected_strength_0psi | decimal | (19, 8) | | TRUE |
| Average Corrected Strength, 15 psi | average_corrected_strength_15psi | decimal | (19, 8) | | FALSE |
| Classification | classification | nvarchar | 100 | | FALSE |
| Cohesion, psi | cohesion_psi | decimal | (19, 8) | | FALSE |
| Correlation Factor | correlation_factor | decimal | (19, 8) | | FALSE |
| Grade, 00 psi | grade_0psi | nvarchar | 100 | | FALSE |
| Grade, 15 psi | grade_15psi | nvarchar | 100 | | FALSE |
| Internal Angle of Friction | internal_angle_friction | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |

**Table Name: VALUE_DB121E_SPECIMEN** **Maximum Rows: 8**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Area, in.^2 | area | decimal | (19, 8) | | FALSE |
| Avg. Cross Sectional Area, in^2 | avg_cross_sectional_area | decimal | (19, 8) | | FALSE |
| Average Diameter, in. | avg_diameter | decimal | (19, 8) | | FALSE |
| Corrected Stress, psi. | corrected_stress_psi | decimal | (19, 8) | | FALSE |
| Dry Density of Specimen, pcf | dry_density_specimen_pcf | decimal | (19, 8) | | FALSE |
| Final Weight of Stones | final_weight_stones | decimal | (19, 8) | | FALSE |
| Height of Stone 1, in. | height_stone1 | decimal | (19, 8) | | FALSE |
| Height of Stone 2, in. | height_stone2 | decimal | (19, 8) | | FALSE |
| I-Strain, in./in. | i_strain | decimal | (19, 8) | | FALSE |
| Initial Height of Specimen, in. | initial_height | decimal | (19, 8) | | FALSE |
| Lateral Pressure, psi. | lateral_pressure_psi | decimal | (19, 8) | | FALSE |
| New Height of Specimen, in. | new_height | decimal | (19, 8) | | FALSE |
| Moisture of Specimen, % | pct_moisture_specimen | decimal | (19, 8) | | FALSE |
| % Strain , in./in. | pct_strain | decimal | (19, 8) | | FALSE |
| Uncorrected Stress, psi. | uncorrected_stress_psi | decimal | (19, 8) | | FALSE |
| Weight of Specimen | weight_specimen | decimal | (19, 8) | | FALSE |
| Weight of Stones and Specimen | weight_stones_specimen | decimal | (19, 8) | | FALSE |

## Density of Asphalt Stabilized Base (DB-126-E) ** INACTIVE **

**Table Name: VALUE_DB126E** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Percent Asphalt in Mix(max) | asphalt_pct_max | decimal | (19, 8) | | FALSE |
| Percent Asphalt in Mix(min) | asphalt_pct_min | decimal | (19, 8) | | FALSE |
| Broken Method | broken_method | nvarchar | 20 | {Fast Break, Slow Break} | FALSE |
| Date Broken(max)(max) | date_broken_max | smalldatetime | | MM/dd/yyyy | FALSE |
| Date Broken(min) | date_broken_min | smalldatetime | | MM/dd/yyyy | FALSE |
| Density of Specimen(max) | density_of_specimen_max | decimal | (19, 8) | | FALSE |
| Density of Specimen(min) | density_of_specimen_min | decimal | (19, 8) | | FALSE |
| Gauge Reading(max) | gague_reading_psi_max | decimal | (19, 8) | | FALSE |
| Gauge Reading (min) | gague_reading_psi_min | decimal | (19, 8) | | FALSE |
| Height of Specimen(max) | height_max | decimal | (19, 8) | | FALSE |
| Height of Specimen(min) | height_min | decimal | (19, 8) | | FALSE |
| Measured Weight(max) | measured_weight_max | decimal | (19, 8) | | FALSE |
| Measured Weight(min) | measured_weight_min | decimal | (19, 8) | | FALSE |
| Minimum Allowable Density | min_allowable_density | decimal | (19, 8) | | FALSE |
| Minimum Percent Density | min_pct_density | decimal | (19, 8) | | FALSE |
| Minimum Specimen Unconfined Compressive Strength | min_specimen_UCS | decimal | (19, 8) | | FALSE |
| Mold Number(max) | mold_number_max | nvarchar | 100 | | FALSE |
| Mold Number(min) | mold_number_min | nvarchar | 100 | | FALSE |
| Date Molded(max) | molded_date_max | smalldatetime | | MM/dd/yyyy | FALSE |
| Date Molded(min) | molded_date_min | smalldatetime | | MM/dd/yyyy | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | FALSE |
| Unconfined Compressive Strength (max) | UCS_max | nvarchar | 100 | | FALSE |
| Unconfined Compressive Strength (min) | UCS_min | nvarchar | 100 | | FALSE |
| Volume of Mold(max) | volume_of_mold_max | decimal | (19, 8) | | FALSE |
| Volume of Mold(min) | volume_of_mold_min | decimal | (19, 8) | | FALSE |
| Volume of Specimen(max) | volume_of_specimen_max | decimal | (19, 8) | | FALSE |
| Volume of Specimen(min) | volume_of_specimen_min | decimal | (19, 8) | | FALSE |
| Weight of Filters(max) | weight_of_filters_max | decimal | (19, 8) | | FALSE |
| Weight of Filters(min) | weight_of_filters_min | decimal | (19, 8) | | FALSE |
| Weight of Material(max) | weight_of_mat_max | decimal | (19, 8) | | FALSE |
| Weight of Material(min) | weight_of_mat_min | decimal | (19, 8) | | FALSE |
| Weight of Plates(max) | weight_of_plates_max | decimal | (19, 8) | | FALSE |
| Weight of Plates(min) | weight_of_plates_min | decimal | (19, 8) | | FALSE |
| Weight of Specimen(max) | weight_of_specimen_max | decimal | (19, 8) | | FALSE |
| Weight of Specimen(min) | weight_of_specimen_min | decimal | (19, 8) | | FALSE |

## Sieve Analysis of Surface Treatment Aggregate (DB-200-ST) ** INACTIVE **

**Table Name: VALUE_DB200ST** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Sphalt | asphalt_pct | decimal | (19, 8) | | FALSE |
| Dry Weight After Washing | dry_weight_after_washing | decimal | (19, 8) | | FALSE |
| Moisture | moisture_pct | decimal | (19, 8) | | FALSE |
| Original Dry Weight | orig_dry_weight | decimal | (19, 8) | | FALSE |
| Total | pan_weight | decimal | (19, 8) | | FALSE |
| Percent Difference | percent_difference | decimal | (19, 8) | | FALSE |
| Sieving Loss | sieving_loss | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | FALSE |
| Total Weight | total_weight | decimal | (19, 8) | | FALSE |
| Type | type | nvarchar | 100 | {A, B, C, D, E, L, PA, PB, PC, PD, PE, PL} | FALSE |
| Washing Loss | washing_loss | decimal | (19, 8) | | FALSE |
| Weight Difference | weight_difference | decimal | (19, 8) | | FALSE |
| PrePan | weight_retained | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB200ST_SIEVE** **Maximum Rows: 8**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cumulative Percent Passing | cumulative_percent_passing | decimal | (19, 8) | | FALSE |
| Lower Retained Limit | lower_retained_limit | decimal | (19, 8) | | FALSE |
| Cumulative Percent Retained | percent_retained_cumulative | decimal | (19, 8) | | FALSE |
| Individual Percent Retained | percent_retained_individual | decimal | (19, 8) | | FALSE |
| Sieve Size | sieve_size | nvarchar | 100 | | FALSE |
| Upper Retained Limit | upper_retained_limit | decimal | (19, 8) | | FALSE |
| Cumulative Weight Retained | weight_retained_cumulative | decimal | (19, 8) | | FALSE |
| Individual weight Retained | weight_retained_individual | decimal | (19, 8) | | FALSE |
| Within Master Grading | within_master_grading | nvarchar | 100 | | FALSE |

## Determining Flakiness Index (DB-224-F) ** INACTIVE **

**Table Name: VALUE_DB224F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Flakiness Index | flakiness_index | decimal | (19, 8) | | TRUE |
| Number of Particles | num_particles_1 | decimal | (19, 8) | | FALSE |
| Number of Particles | num_particles_2 | decimal | (19, 8) | | FALSE |
| Number of Particles | num_particles_3 | decimal | (19, 8) | | FALSE |
| Number of Particles Passing for 1/4" slot | slot_1_4 | decimal | (19, 8) | | FALSE |
| Number of Particles Passing for 3/8" slot | slot_3_8 | decimal | (19, 8) | | FALSE |
| Number of Particles Passing for 5/32" slot | slot_5_32 | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |
| Total Particles | total_particles | decimal | (19, 8) | | FALSE |
| Total Passing Particles | total_passing_particles | decimal | (19, 8) | | FALSE |

## Determining Draindown Characteristics in Bituminous Materials (DB-235-F) ** INACTIVE **

**Table Name: VALUE_DB235F** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Percent of Draindown for Two Samples | avg_pct_draindown | decimal | (19, 8) | | FALSE |
| Final Weight Plate | final_weight_plate_1 | decimal | (19, 8) | | FALSE |
| Final Weight Plate | final_weight_plate_2 | decimal | (19, 8) | | FALSE |
| Initial Sample Weight | init_sample_weight_1 | decimal | (19, 8) | | FALSE |
| Initial Sample Weight | init_sample_weight_2 | decimal | (19, 8) | | FALSE |
| Initial Weight Plate | init_weight_plate_1 | decimal | (19, 8) | | FALSE |
| Initial Weight Plate | init_weight_plate_2 | decimal | (19, 8) | | FALSE |
| Percent Of Draindown | pct_draindown_1 | decimal | (19, 8) | | FALSE |
| Percent Of Draindown | pct_draindown_2 | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | TRUE |

## Resistance To Degradation By Abrasion & Impact in Los Angeles Machine (DB-410-A) ** INACTIVE **

**Table Name: VALUE_DB410A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Final Weight | final_weight | decimal | (19, 8) | | FALSE |
| Initial Weight | initial_weight | decimal | (19, 8) | | FALSE |
| La Abrasion Type | la_abrasion_type | nvarchar | 100 | CVL | FALSE |
| La Abrasion Value | la_abrasion_value | decimal | (19, 8) | | FALSE |
| Loss of Weight | loss_of_weight | decimal | (19, 8) | | FALSE |
| Number of Spheres | number_of_spheres | int | | | FALSE |
| Percent Loss | percent_loss | decimal | (19, 8) | | FALSE |
| Sieve | sieve | nvarchar | 100 | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | FALSE |
| Weight of Charge | weight_of_charge | nvarchar | 100 | | FALSE |

**Table Name: VALUE_DB410A_SAMPLE** **Maximum Rows: 4**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Actual Weight | actual_weight | decimal | (19, 8) | | FALSE |
| Passing Sieve | passing_sieve | nvarchar | 100 | | FALSE |
| Projected Weight | projected_weight | nvarchar | 100 | | FALSE |
| Retained Sieve | retained_sieve | nvarchar | 100 | | FALSE |
| Within Range | within_range | bit | | | FALSE |

## Magnesium Sulfate Soundness (DB-411-M) ** INACTIVE **

**Table Name: VALUE_DB411M** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Normalized Individual Percent Retained Total | ni_pct_retained_total | decimal | (19, 8) | | FALSE |
| % Loss Total | pct_loss_total | decimal | (19, 8) | | FALSE |
| Soundness Loss | soundness_loss | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Weighted Average % Loss Total | weighted_avg_pct_loss_total | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB411M_CYCLE** **Maximum Rows: 5**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Cycle | cycle | nvarchar | 5 | | FALSE |
| In Oven Date | in_oven_date | smalldatetime | | MM/dd/yyyy | FALSE |
| In Oven Time In | in_oven_time_in | smalldatetime | | MM/dd/yyyy | FALSE |
| In Oven Time Out | in_oven_time_out | smalldatetime | | MM/dd/yyyy | FALSE |
| In Solution Date | in_solution_date | smalldatetime | | MM/dd/yyyy | FALSE |
| In Solution Time In | in_solution_time_in | smalldatetime | | MM/dd/yyyy | FALSE |
| In Solution Time Out | in_solution_time_out | smalldatetime | | MM/dd/yyyy | FALSE |
| Out Oven Date | out_oven_date | smalldatetime | | MM/dd/yyyy | FALSE |
| Out Oven Time In | out_oven_time_in | smalldatetime | | MM/dd/yyyy | FALSE |
| Out Oven Time Out | out_oven_time_out | smalldatetime | | MM/dd/yyyy | FALSE |
| Out Solution Date | out_solution_date | smalldatetime | | MM/dd/yyyy | FALSE |
| Out Solution Time In | out_solution_time_in | smalldatetime | | MM/dd/yyyy | FALSE |
| Out Solution Time Out | out_solution_time_out | smalldatetime | | MM/dd/yyyy | FALSE |
| Remarks | remarks | nvarchar | 250 | | FALSE |

**Table Name: VALUE_DB411M_PARTICLE** **Maximum Rows: 8**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Final Weight (g) | final_weight | decimal | (19, 8) | | FALSE |
| Initial Weight (g) | initial_weight | decimal | (19, 8) | | FALSE |
| Loss of Weight (g) | loss_of_weight | decimal | (19, 8) | | FALSE |
| Normalized Individual Percent Retained | ni_pct_retained | decimal | (19, 8) | | FALSE |
| % Loss | pct_loss | decimal | (19, 8) | | FALSE |
| Particle Size Range Passing | size_range_passing | nvarchar | 100 | | FALSE |
| Particle Size Range Retained | size_range_retained | nvarchar | 100 | | FALSE |
| Weighted Average % Loss | weighted_avg_pct_loss | decimal | (19, 8) | | FALSE |

## Testing Of Drilled Cores Of Portland Cement Concrete (DB-424-A, Part III) ** INACTIVE **

**Table Name: VALUE_DB424A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested By - Part II | tested_by_part2 | nvarchar | 100 | CVL | FALSE |
| Tested By - Part III | tested_by_part3 | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | FALSE |
| Tested Date - Part II | tested_date_part2 | datetime | | MM/dd/yyyy | FALSE |
| Tested Date - Part III | tested_date_part3 | datetime | | MM/dd/yyyy | FALSE |

**Table Name: VALUE_DB424A_CORE** **Maximum Rows: 4**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Age (Days) | age | int | | | FALSE |
| Compressive Strength | compressive_strength1 | decimal | (19, 8) | | FALSE |
| Compressive Strength | compressive_strength2 | decimal | (19, 8) | | FALSE |
| Diameter of Core (inches) | core_diameter1 | decimal | (19, 8) | | FALSE |
| Diameter of Core (inches) | core_diameter2 | decimal | (19, 8) | | FALSE |
| Length of Core (inches) | core_length1 | decimal | (19, 8) | | FALSE |
| Length of Core (inches) | core_length2 | decimal | (19, 8) | | FALSE |
| Core Number | core_number1 | nvarchar | 100 | | FALSE |
| Core Number | core_number2 | nvarchar | 100 | | FALSE |
| Failure Type | failure_type1 | nvarchar | 100 | | FALSE |
| Failure Type | failure_type2 | nvarchar | 100 | | FALSE |
| Max Load (Lbs) | max_load1 | decimal | (19, 8) | | FALSE |
| Max Load (Lbs) | max_load2 | decimal | (19, 8) | | FALSE |

## Texture Depth By Sand Patch Method (DB-436-A) ** INACTIVE **

**Table Name: VALUE_DB436A** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Average Diameter | avg_diameter | decimal | (19, 8) | | FALSE |
| Diameter 1 | measurement_1 | decimal | (19, 8) | | FALSE |
| Diameter 2 | measurement_2 | decimal | (19, 8) | | FALSE |
| Diameter 3 | measurement_3 | decimal | (19, 8) | | FALSE |
| Diameter 4 | measurement_4 | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | varchar | 200 | CVL | FALSE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | FALSE |
| Thickness | thickness | decimal | (19, 8) | | FALSE |
| Volume of Cylinder | vol_cylinder | decimal | (19, 8) | | FALSE |

## Concrete Sample - Beams (DB-448-A) ** INACTIVE **

**Table Name: VALUE_DB448A**

**Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Actual Water | act_water | decimal | (19, 8) | | FALSE |
| Added Gal | added_gal | decimal | (19, 8) | | FALSE |
| Agg. Correction Factor | agg_corr_factor | decimal | (19, 8) | CVL | FALSE |
| Agg Size | agg_size | nvarchar | 100 | CVL | FALSE |
| Air Temperature | air_temp | decimal | (19, 8) | | FALSE |
| Batch Size | batch_size | decimal | (19, 8) | | FALSE |
| Batch Time | batch_time | smalldatetime | | MM/dd/yyyy | FALSE |
| Class of Concrete | class_concrete | nvarchar | 100 | CVL | FALSE |
| Concrete Temperature | concrete_temp | decimal | (19, 8) | | FALSE |
| Corrected Air Content | corrected_air_content | decimal | (19, 8) | CVL | FALSE |
| Design Water | des_water | decimal | (19, 8) | | FALSE |
| Mix ID | mix_id | nvarchar | 100 | CVL | FALSE |
| Qty Load | qty_load | decimal | (19, 8) | | FALSE |
| Req. Strength, psi | req_strength | decimal | (19, 8) | | FALSE |
| Sample Time | sample_time | smalldatetime | | MM/dd/yyyy | FALSE |
| Slump | slump | decimal | (19, 8) | CVL | FALSE |
| Specimen Dimensions | spec_dimensions | nvarchar | 100 | CVL | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | FALSE |
| Ticket Number | ticket_num | decimal | (19, 8) | | FALSE |
| Total Water | total_water | decimal | (19, 8) | | FALSE |
| Truck Number | truck_num | decimal | (19, 8) | | FALSE |
| Unit Weight | unit_weight | decimal | (19, 8) | | FALSE |

**Table Name: VALUE_DB448A_SPECIMEN**

**Maximum Rows: 6**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Age | age | nvarchar | 100 | CVL | FALSE |
| Avg Depth | avg_depth | decimal | (19, 8) | | FALSE |
| Avg. Width | avg_width | decimal | (19, 8) | | FALSE |
| Correction Factor | corr_factor | decimal | (19, 8) | | FALSE |
| Max Load, lbs | max_load_psi | decimal | (19, 8) | | FALSE |
| Mod Rupture | mod_rupture | decimal | (19, 8) | | FALSE |
| Pass Fail | pass_fail | nvarchar | 100 | | FALSE |
| Specimen | specimen | nvarchar | 100 | | FALSE |
| Test Date | test_date | smalldatetime | | MM/dd/yyyy | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |

## Coarse Aggregate Angularity By Fractured Faces Count (DB-460-A) ** INACTIVE **

**Table Name: VALUE_DB460A**

**Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Number of Particles w/ one or no FF | number_of_particles_with_one | int | | | FALSE |
| Number of Particles w/ 2 or more FF | number_of_particles_with_two | int | | | FALSE |
| Number of Questionable Particles | number_of_questionable_particles | int | | | FALSE |
| Percent Crushed Particles | percent_crushed_particles | decimal | (19, 8) | | FALSE |
| Percent Crushed Particles | percent_crushed_particles_result | decimal | (19, 8) | | TRUE |
| Sieve Size | sieve_size | nvarchar | 100 | | FALSE |
| Stamp Code | stamp_code | int | | CVL | TRUE |
| Tested By | tested_by | nvarchar | 100 | CVL | TRUE |
| Tested Date | tested_date | smalldatetime | | MM/dd/yyyy | TRUE |
| Total Number of Particles | total_number_of_particles | int | | | FALSE |

## Effect of Water On Bituminous Paving Mixtures (DB-530-C) ** INACTIVE **

**Table Name: VALUE_DB530C** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Estimated Percent of Stripping | est_pct_stripping | nvarchar | 100 | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | datetime | | MM/dd/yyyy | FALSE |

## Determining Chloride and Sulfate Content in Soils (DB-620-J) ** INACTIVE **

**Table Name: VALUE_DB620J** **Maximum Rows: 1**

| Field Description | Field Name | Datatype | Length | Values | Required |
|---|---|---|---|---|---|
| Chloride (CL) (PPM) | chloride_ppm | decimal | (19, 8) | | FALSE |
| Crucible + Residue Weight | crucible_residue_weight | decimal | (19, 8) | | FALSE |
| Crucible Weight | crucible_weight | decimal | (19, 8) | | FALSE |
| Ending | ending | decimal | (19, 8) | | FALSE |
| Normality of AgNO3 | normality_of_agno3 | decimal | (19, 8) | | FALSE |
| Residue Weight | residue_weight | decimal | (19, 8) | | FALSE |
| Sample Weight | sample_weight_chloride | decimal | (19, 8) | | FALSE |
| Sample Weight | sample_weight_sulfate | decimal | (19, 8) | | FALSE |
| Stamp Code | stamp_code | int | | CVL | FALSE |
| Starting | starting | decimal | (19, 8) | | FALSE |
| Sulfate (SO4) (PPM) | sulfate_ppm | decimal | (19, 8) | | FALSE |
| Tested By | tested_by | nvarchar | 100 | CVL | FALSE |
| Tested Date | tested_date | nvarchar | 100 | | FALSE |
| Total | total | decimal | (19, 8) | | FALSE |

# CQAF Sample

**File:** CQAFSample.xml
**File Type:** XML (Extensible Markup Language). The de facto standard for transferring data.
**File Description:** An example of an electronic submission that can be read into I2MS. The example provided was used for a previous project and passed the verification process for that particular project's inputs. This file can be submitted to I2MS via a web service run on I2MS using SOAP (Simple Object Access Protocol), which is a standard programming protocol by which software developers send data between systems.

# CQAF Sample

```
<?xml version='1.0' encoding='UTF-8'?>
<form name="DB-115-1" version_no="1.0" key="0020905270501151" date="2009-05-27T00:00:00"
display_key="00209052705">
    <owner_name value="CQAF" />
    <security username="CQAFDataXfer" password="as9-3958$h@" />
    <header>
        <column name="sample_id" value="00209052705" />
        <column name="sampled_date" value="5/27/2009 12:00:00 AM" />
        <column name="sample_type" value="Random-Independent" />
        <column name="split_sample_id" />
        <column name="report_type" value="Original" />
        <column name="section" value="5.1" />
        <column name="sampled_by" value="Al Jones" />
        <column name="spec_year" value="2004" />
        <column name="material" value="14" />
        <column name="spec_item" value="247" />
        <column name="supplier" value="Pit" />
        <column name="special_provision" />
        <column name="structure_number" />
        <column name="grade" value="1" />
        <column name="sample_location" />
        <column name="feature" value="Mainlane" />
        <column name="course_lift" value="2" />
        <column name="station" value="342+49" />
        <column name="dist_from_cl" value="5' LT" />
        <column name="misc" />
        <column name="roadway" value="Loop 375" />
        <column name="direction" value="NB" />
    </header>
    <test name="DB-115-1">  <!-- This can be the same value as the form name. -->
        <table name="VALUE_DB115_1">
            <row>
                <column name="determined_by_test_method" value="DB-113-E" />
                <column name="max_dry_density_pcf" value="132.5" />
                <column name="optimum_moisture_content_pct" value="7.7" />
                <column name="density_standard" value="4200" />
                <column name="moisture_standard" value="420" />
                <column name="density_count" value="1045" />
                <column name="moisture_count" value="231" />
                <column name="probe_depth" value="10" />
                <column name="wet_density_pcf" value="140.5" />
                <column name="dry_density_pcf" value="133.5" />
                <column name="moisture_content_pct" value="5.2" />
                <column name="gauge_no" value="3242" />
                <column name="moisture_content_pct_pass_fail" />
                <column name="density_pct" value="100.7" />
                <column name="density_pct_pass_fail" />
```

# CQAF Sample

```
                <column name="density_specification_req_max" />
                <column name="moisture_specification_req_max" />
                <column name="soil_desc" />
                <column name="density_specification_req_min" value="100" />
                <column name="moisture_specification_req_min" value="5.2" />
                <column name="tested_by" value="Al Jones" />
                <column name="tested_date" value="5/27/2009 12:00:00 AM" />
                <column name="stamp_code" value="1" />
            </row>
        </table>
    </test>
    <footer>
        <column name="remarks" />
        <column name="reviewed_by" />
        <column name="completed_date" />
        <column name="authorized_by" />
        <column name="authorized_date" />
    </footer>
</form>
```

# Web Form Validation

**File:** WebFormValidation.xsd
**File Type:** XSD (XML Schema Document). Describes a schema used for an XML document.
**File Description:** Describes elements, annotations, and documentation used in the aforementioned XML. XSD files are the standard used to describe XML file formats and are often used to assist in developing XML files with added features such as intellisense (which is an added type ahead feature used by developers).

# Web Form Validation

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema id="FormValidation" xmlns:xs="http://www.w3.org/2001/XMLSchema">
   <xs:element name="form">
      <xs:complexType>
         <xs:sequence>
            <xs:choice minOccurs="1" maxOccurs="1" id="owner">
                    <xs:annotation>
                              <xs:documentation>
                                        The owner of the record must be supplied to upload successfully.  The
user login provided in the security element
                                        must have permission to add a record for the owner as part of the
validation process.

                                        The record owner can be identified by a variety of properties.  In general,
when submitting XML from an external source,
                                        the owner_name attribute is the preferred method.
                              </xs:documentation>
                    </xs:annotation>
               <xs:element name="owner_name" minOccurs="1" maxOccurs="1">
                    <xs:annotation>
                              <xs:documentation>
                                        The name of the owner of this record.  For example, "OVF" or "CQAF".
                              </xs:documentation>
                    </xs:annotation>
                  <xs:complexType>
                     <xs:attribute name="value" type="xs:string" use="required" />
                  </xs:complexType>
               </xs:element>
               <xs:element name="owner_guid" minOccurs="1" maxOccurs="1">
                  <xs:complexType>
                     <xs:attribute name="value" type="xs:string" use="required" />
                  </xs:complexType>
               </xs:element>
               <xs:element name="owner_id" minOccurs="1" maxOccurs="1">
                  <xs:complexType>
                     <xs:attribute name="value" type="xs:int" use="required" />
                  </xs:complexType>
               </xs:element>
            </xs:choice>
            <xs:element name="security" minOccurs="1" maxOccurs="1">
                    <xs:annotation>
                              <xs:documentation>
                                        User login credentials must be provided to upload a record.  Supply a
username and password.
                              </xs:documentation>
                    </xs:annotation>
               <xs:complexType>
```

```
                 <xs:attribute name="user_guid" type="xs:string" />
               <xs:attribute name="username" type="xs:string" />
               <xs:attribute name="password" type="xs:string" />
            </xs:complexType>
          </xs:element>
          <xs:element name="header" minOccurs="0" maxOccurs="1">
                <xs:annotation>
                        <xs:documentation>
                                The collection of header column values common to multiple forms.
                        </xs:documentation>
                </xs:annotation>
            <xs:complexType>
               <xs:sequence>
                 <xs:element name="column" type="ColumnType" maxOccurs="unbounded" />
               </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="test" minOccurs="0" maxOccurs="unbounded">
                <xs:annotation>
                        <xs:documentation>
                                Container element for Body Table elements, which contain the data
specific to the form type being uploaded.
                                This element can be used to logically group the body tables by the test
method they represent, but it is not required to do so.
                                All body table elements can be placed under one test element, and the
test name attribute is inconsequential.
                        </xs:documentation>
                </xs:annotation>
            <xs:complexType>
               <xs:sequence>
                 <xs:element name="table" minOccurs="1" maxOccurs="unbounded">
                        <xs:annotation>
                                <xs:documentation>
                                        A collection of rows of form data for a specific table.

                                        The number of rows permitted for each table depends on the
form and table name. For testing forms, the number of rows allowed for each table can be found in the
I2MS Test Form Fields report.
                                </xs:documentation>
                        </xs:annotation>
                    <xs:complexType>
                      <xs:sequence>
                        <xs:element name="row" minOccurs="0" maxOccurs="unbounded">
                                <xs:annotation>
                                        <xs:documentation>
                                                A collection of body column values.
                    </xs:documentation>
                </xs:annotation>
```

# Web Form Validation

```
                <xs:complexType>
               <xs:sequence>
                <xs:element name="column" type="ColumnType" minOccurs="0"
maxOccurs="unbounded" />
               </xs:sequence>
             </xs:complexType>
            </xs:element>
           </xs:sequence>
           <xs:attribute name="name" type="xs:string" use="required">
            <xs:annotation>
                <xs:documentation>
                    The name of the body table.

                    For testing forms, the list of supported table names can be found
in the I2MS Test Form Fields report.
                </xs:documentation>
            </xs:annotation>
           </xs:attribute>
          </xs:complexType>
         </xs:element>
       </xs:sequence>
       <xs:attribute name="name" type="xs:string" use="required" />
      </xs:complexType>
     </xs:element>
     <xs:element name="footer" minOccurs="0" maxOccurs="1">
        <xs:annotation>
            <xs:documentation>
                The collection of footer column values common to multiple forms.
            </xs:documentation>
        </xs:annotation>
      <xs:complexType>
       <xs:sequence>
         <xs:element name="column" type="ColumnType" minOccurs="0"
maxOccurs="unbounded" />
       </xs:sequence>
      </xs:complexType>
     </xs:element>
    </xs:sequence>
    <xs:attribute name="name" form="unqualified" type="xs:string" use="required" >
     <xs:annotation>
        <xs:documentation>
            The short name of the I2MS form for which data is being submitted.  This value
determines the data columns that are supported and required
            for the header, body, and footer elements.
```

For testing forms, the list of supported form names can be found in the I2MS Test Form Fields report.

# Web Form Validation

The form name is the value in parentheses for each subheading under the Body Fields section.

```
                </xs:documentation>
         </xs:annotation>
        </xs:attribute>
        <xs:attribute name="key" form="unqualified" use="required">
         <xs:annotation>
                <xs:documentation>
                        A value representing the test record in I2MS.  This value is required to be unique
for each owner (OVF/CQAF).
                        The same key is used for all revisions of the record.  To add a new revision,
supply the same key with the new form data and a
                        new value for the version_no attribute.
                </xs:documentation>
         </xs:annotation>
         <xs:simpleType>
                <xs:restriction base="xs:string">
                        <xs:maxLength value="100"></xs:maxLength>
                </xs:restriction>
         </xs:simpleType>
        </xs:attribute>
         <xs:attribute name="version_no" use="required">
                <xs:annotation>
                        <xs:documentation>
                                The version number of this revision within the series of revisions
identified by the key attribute.
                                The revision in the series with the greatest version number will be
considered the latest revision regardless of the order in which revisions were submitted to I2MS.
                                Submitting a record with the same key and version number as another
record in the system is an error.
                        </xs:documentation>
                </xs:annotation>
                <xs:simpleType>
                        <xs:restriction base="xs:decimal">
                                <xs:totalDigits value="19" />
                                <xs:fractionDigits value="9" />
                        </xs:restriction>
                </xs:simpleType>
         </xs:attribute>
        <xs:attribute name="display_key">
         <xs:annotation>
                <xs:documentation>
```

```
            The value displayed to users as the ID value of the record (for example, Sample
ID for testing forms).
            This value is not required to be unique.
        </xs:documentation>
    </xs:annotation>
    <xs:simpleType>
        <xs:restriction base="xs:string">
```

# Web Form Validation

```
                <xs:maxLength value="100"></xs:maxLength>
        </xs:restriction>
    </xs:simpleType>
   </xs:attribute>
   <xs:attribute name="version_key">
    <xs:annotation>
        <xs:documentation>
            An optional identifier for this revision.  For example, when submitting XML to
I2MS from an external source,
            this could be the Version ID of the record in the external system.
        </xs:documentation>
    </xs:annotation>
    <xs:simpleType>
        <xs:restriction base="xs:string">
            <xs:maxLength value="100"></xs:maxLength>
        </xs:restriction>
    </xs:simpleType>
   </xs:attribute>
   <xs:attribute name="action_name" type="xs:string">
    <xs:annotation>
        <xs:documentation>
            The name of a custom workflow action to execute when submitting the form.
The user login submitting the form
            must have permissions in I2MS for the action and validation rules must pass
before allowing the action.

            When submitting XML to I2MS from an external source, this attribute should
generally be omitted unless other
            instructions have been provided.
        </xs:documentation>
    </xs:annotation>
   </xs:attribute>
   <xs:attribute name="date" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>
            The value displayed to users as the date of the record (for example, Sampled
Date for testing forms).
        </xs:documentation>
    </xs:annotation>
```

```
        </xs:attribute>
      </xs:complexType>
    </xs:element>

        <xs:complexType name="ColumnType">
        <xs:attribute name="name" type="xs:string" use="required">
                <xs:annotation>
                        <xs:documentation>
                                The name of the column for which a value is being provided.
```

# Web Form Validation

```
                                For testing forms, the list of supported data columns can be found in the
I2MS Test Form Fields report.
                        </xs:documentation>
                </xs:annotation>
        </xs:attribute>
      <xs:attribute name="value" type="xs:string" use="optional">
        <xs:annotation>
                <xs:documentation>
                        The value of the column.
                </xs:documentation>
        </xs:annotation>
      </xs:attribute>
        </xs:complexType>

</xs:schema>
```

# Form Submission Service

**File:** FormSubmissionService.wsdl
**File Type:** WSDL (Web Services Description Language). Describes a web service and its respective protocols in XML format.
**File Description:** Describes the web service used by I2MS for submitting data electronically for the purposes of Validation (i.e. Verification) and Submission. The I2MS system takes in data electronically via a web service (often via the SOAP protocol), for the purposes of verifying or submitting a test (submitted in XML format).

# Form Submission Service

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:s="http://www.w3.org/2001/XMLSchema"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/" xmlns:tns="http://tempuri.org/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/" targetNamespace="http://tempuri.org/"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <s:schema elementFormDefault="qualified" targetNamespace="http://tempuri.org/">
      <s:element name="SubmitForm">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="xmlForm" type="s:string" />
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:element name="SubmitFormResponse">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="1" maxOccurs="1" name="SubmitFormResult" type="s:int" />
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:element name="ValidateForm">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="xmlForm" type="s:string" />
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:element name="ValidateFormResponse">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="ValidateFormResult" type="s:string" />
          </s:sequence>
        </s:complexType>
      </s:element>
    </s:schema>
  </wsdl:types>
  <wsdl:message name="SubmitFormSoapIn">
    <wsdl:part name="parameters" element="tns:SubmitForm" />
  </wsdl:message>
  <wsdl:message name="SubmitFormSoapOut">
    <wsdl:part name="parameters" element="tns:SubmitFormResponse" />
  </wsdl:message>
```

# Form Submission Service

```
<wsdl:message name="ValidateFormSoapIn">
   <wsdl:part name="parameters" element="tns:ValidateForm" />
 </wsdl:message>
 <wsdl:message name="ValidateFormSoapOut">
   <wsdl:part name="parameters" element="tns:ValidateFormResponse" />
 </wsdl:message>
 <wsdl:portType name="FormSubmissionServiceSoap">
   <wsdl:operation name="SubmitForm">
     <wsdl:input message="tns:SubmitFormSoapIn" />
     <wsdl:output message="tns:SubmitFormSoapOut" />
   </wsdl:operation>
   <wsdl:operation name="ValidateForm">
     <wsdl:input message="tns:ValidateFormSoapIn" />
     <wsdl:output message="tns:ValidateFormSoapOut" />
   </wsdl:operation>
 </wsdl:portType>
 <wsdl:binding name="FormSubmissionServiceSoap" type="tns:FormSubmissionServiceSoap">
   <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
   <wsdl:operation name="SubmitForm">
     <soap:operation soapAction="http://tempuri.org/SubmitForm" style="document" />
     <wsdl:input>
       <soap:body use="literal" />
     </wsdl:input>
     <wsdl:output>
       <soap:body use="literal" />
     </wsdl:output>
   </wsdl:operation>
   <wsdl:operation name="ValidateForm">
     <soap:operation soapAction="http://tempuri.org/ValidateForm" style="document" />
     <wsdl:input>
       <soap:body use="literal" />
     </wsdl:input>
     <wsdl:output>
       <soap:body use="literal" />
     </wsdl:output>
   </wsdl:operation>
 </wsdl:binding>
 <wsdl:binding name="FormSubmissionServiceSoap12" type="tns:FormSubmissionServiceSoap">
   <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
   <wsdl:operation name="SubmitForm">
     <soap12:operation soapAction="http://tempuri.org/SubmitForm" style="document" />
     <wsdl:input>
       <soap12:body use="literal" />
     </wsdl:input>
     <wsdl:output>
       <soap12:body use="literal" />
```

# Form Submission Service

```
  </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="ValidateForm">
      <soap12:operation soapAction="http://tempuri.org/ValidateForm" style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:service name="FormSubmissionService">
    <wsdl:port name="FormSubmissionServiceSoap" binding="tns:FormSubmissionServiceSoap">
      <soap:address location="https://i2ms-sh130.txdot.gov/i2ms/i2ms/formsubmissionservice.asmx" />
    </wsdl:port>
    <wsdl:port name="FormSubmissionServiceSoap12" binding="tns:FormSubmissionServiceSoap12">
      <soap12:address location="https://i2ms-sh130.txdot.gov/i2ms/i2ms/formsubmissionservice.asmx" />
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 4-1

# Draft EA Commitments

# Execution Version

The project environmental documentation required under the National Environmental Policy Act (NEPA) may not be completed prior to the award of the Project. NEPA documentation associated with this Project will include two Environmental Assessments (EA) and Finding of No Significant Impacts (FONSI). Currently, TxDOT has received a FONSI for the FM 973 portion of the Project (FONSI obtained September 16, 2011). TxDOT will be responsible for completing and obtaining FHWA's approval for the SH 71 portion of the Project. TxDOT anticipates a FONSI for the SH 71 EA in May 2014.

The following Environmental Permits, Issues, and Commitments (EPICs) matrix summarizes all authorized and draft commitments set forth for the Project by TxDOT. The DB Contractor shall review the commitments included in the EPICs matrix to ensure compliance with the authorized FM 973 and the draft SH 71 NEPA documentation. If the DB Contractor's proposed design significantly alters the design concepts and/or alters the affected environment authorized within the approved EA and defined in the draft EA, the DB Contractor shall be responsible for obtaining the required supplemental documentation and implementing any additional environmental conditions or mitigation measures as required per the NEPA document(s),environmental permits, and approvals for the Project. TxDOT will update the EPICs matrix as the Project progresses to reflect any future commitments resulting from permits or approvals obtained by TxDOT. The DB Contractor shall incorporate all future commitments into the Final Design Submittal for this Project.

The DB Contractor shall review the commitments included in the EPICs matrix to ensure compliance with the authorized NEPA documentation.

|  | DRAFT 2/14 SH 71 (EA) | FM 973 (EA) |
|---|---|---|
| **Threatened and Endangered Species** | Texas fatmucket mussel species were observed within Project limits. TxDOT will relocate Texas fatmucket mussels prior to construction. If the Texas fatmucket mussel is reconsidered for federal listing or is listed on the federal threatened and endangered species list prior to construction, consultation with USFWS would be required. | No habitat for threatened and endangered federal and state listed species within Project limits. No adverse effects or impacts anticipated. |
| **Migratory Birds** | DB Contractor must comply with MBTA. Measures to be taken to discourage swallows from nesting under the overpasses at Sprit of Texas Dr. and Presidential Blvd. due to presence of ABIA. Proposed nesting prevention methods would require approval of the TxDOT Austin District Biologist prior to implementation. | DB Contractor must comply with the Migratory Bird Treaty Act (MBTA). |
| **Vegetation** | No compensatory mitigation proposed. Employ efforts to avoid and minimize disturbance of vegetation and soils during construction. All disturbed areas would be re-vegetated according to TxDOT specifications, Executive Order 133112, Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA Guidance on Invasive Species. | No compensatory mitigation proposed. Employ efforts to avoid and minimize disturbance of vegetation and soils during construction. All disturbed areas would be re-vegetated according to TxDOT specifications, Executive Order 133112, Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA Guidance on Invasive Species. |
| **Wetlands/waters of the U.S. Section 404** | Section 404 impacts to Onion Creek would total approximately 0.045 acre. NWP #14 Non-PCN required. DB Contractor shall comply with all general and regional conditions applicable to NWP #14. | Section 404 impacts to unnamed Tributary of the Colorado River within the Project limits. Impacts at this location would be less than 0.1 acre. NWP #14 Non-PCN required. DB Contractor shall comply with all general and regional conditions applicable to NWP #14. |
| **Water Quality** | DB Contractor shall comply with the TPDES Construction General Permit. A SW3P must be developed and an NOI must be filed prior to construction. DB Contractor shall comply with applicable MS4 requirements. | DB Contractor shall comply with the TPDES Construction General Permit. A SW3P must be developed and an NOI must be filed prior to construction. DB Contractor shall comply with applicable MS4 requirements. |
| **Historical Resources** | No historic properties within the Project's APE. | No historic properties within the Project's APE. |
| **Archeological Resources** | Project limits cleared for archeological resources. In the event archeological remains are discovered during construction, work should cease in the immediate vicinity of the discovery and emergency discovery procedures should be initiated. | Project limits cleared for archeological resources. In the event archeological remains are discovered during construction, work should cease in the immediate vicinity of the discovery and emergency discovery procedures should be initiated. |
| **Noise** | No noise abatement measures proposed | No noise abatement measures proposed |
| **Hazardous Materials** | Numerous sites identified. Project risk from the sites is considered "low". Any structures containing asbestos or lead-based paint and proposed for demolition shall be identified and properly mitigated prior to demolition. The contractor shall take appropriate measures to prevent, minimize, and control spillage of hazardous materials. | Numerous sites identified. Due to the proposed scope of work, no impacts are anticipated. Any structures containing asbestos or lead-based paint and proposed for demolition shall be identified and properly mitigated prior to demolition. The contractor shall take appropriate measures to prevent, minimize, and control spillage of hazardous materials. |

| | DRAFT 2/14 SH 71 (EA) | FM 973 (EA) |
|---|---|---|
| **Air Quality** | DB Contractor shall employ fugitive dust control measures during construction. | DB Contractor shall employ fugitive dust control measures during construction. |
| **Section 4(f)/6(f)** | No anticipated impacts to Section 4(f)/6(f) properties | No anticipated impacts to Section 4(f)/6(f) properties |
| **Aesthetics** | Approved context sensitive solutions shall be incorporated into final design | Approved context sensitive solutions shall be incorporated into final design |
| **Public Facilities** | CapMetro service to be maintained during construction | CapMetro service to be maintained during construction |
| **FAA Coordination** | Coordination with the FAA is required prior to construction | N/A |

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 5-1

# Municipal Maintenance Agreement

# Operations and Maintenance of Traffic Signals

# Execution Version

File
CoA
Agreements

Contract No.____________

# AGREEMENT FOR THE INSTALLATION AND REIMBURSEMENT FOR THE OPERATION AND MAINTENANCE OF TRAFFIC SIGNALS WITHIN A MUNICIPALITY

STATE OF TEXAS §

COUNTY OF TRAVIS §

This AGREEMENT made by and through the State of Texas acting by and through the Texas Department of Transportation, hereinafter called the "State" and the City of Austin, hereinafter called the "City," acting by and through its duly authorized officers, as evidenced by Resolution/Ordinance No. ______________, executed on ____________________, hereinafter acknowledged by reference.

## WITNESSETH

WHEREAS, by virtue of a Municipal Maintenance Agreement entered into by the City and the State on the _____ day of __________, 19__, the State has been authorized to maintain certain highway routes within the City; and

WHEREAS, from time to time the City requests the State to install traffic signals on certain highways within the City; and

WHEREAS, in accordance with Texas Administrative Code: Title 43 Texas Administrative Code Section 25.5, on the 27th day of May, 1987, the State Highway and Public Transportation Commission now the Texas Transportation Commission passed Commission Minute Order No. 85777, authorizing the State to install, operate and maintain traffic signals on: (a) highway routes not designated as full control of access inside the corporate limits of cities, having a population less than 50,000 (latest Federal Census); and (b) highways designated as full control of access in all cities; and

WHEREAS, the City has a population of (over/less) than 50,000 population according to the latest Federal Census; and

WHEREAS, the City requests the State to assume the installation, operation and maintenance responsibilities of the signalized intersections as shown in EXHIBIT 1, attached hereto and made a part of this Agreement; and

WHEREAS, the City agrees to maintain and operate the signalized intersections with the State reimbursing the City for all maintenance and operations costs at a flat rate per location as shown on EXHIBIT 3.

NOW, therefore, in consideration of the premises and of the mutual covenants and agreements of the parties hereto to be by them respectively kept and performed, as hereinafter set forth, it is agreed as follows:

## AGREEMENT

### Article 1. Contract Period

This Agreement becomes effective when fully executed by the City and the State and shall remain in force for a period of one year from the date of final execution by the State and shall be automatically renewed annually for a one year period, unless modified by mutual agreement of both parties, or terminated as hereinafter provided.

### Article 2. Construction Responsibilities

A. The State shall prepare or cause to be prepared the plans and specifications, advertise for bids, let the construction contract, or otherwise provide for the construction of new traffic signals and/or reconstruction of existing traffic signals (including, at the State's option, any special auxiliary equipment, interconnect and/or communication material and equipment), and will supervise construction, reconstruction or betterment work as required by said plans and specifications. As a project is developed to construction stage, either as a unit or in increments, the State will submit plans and specifications of the proposed work to the City and will secure the City's consent to construct the traffic signal prior to awarding the contract; said City consent to be signified by the signatures of duly authorized City officers in the spaces provided on the title sheet of plans containing the following notation:

"Attachment No. ___________ to special Agreement for construction, maintenance and operation of traffic signals within municipality, dated _______________________.

The City-State construction, maintenance and operation responsibilities shall be as heretofore agreed to, accepted, and specified in the Agreement to which these plans are made a part."

B. All costs of construction and/or reconstruction of new and existing traffic signals will be borne by the State, and the traffic signal system will remain the property of the State.

Article 3. Maintenance, Operation, and Power Responsibilities

A. The State shall be responsible for all electrical power costs for the operation of the traffic signals covered by this Agreement and shown on EXHIBIT 1. Power costs shall be billed as specified in EXHIBIT 2, "Traffic Signal Maintenance and Operations Provisions," attached hereto and made a part of this Agreement.

B. The City will provide a trained staff to maintain and operate the traffic signals shown on EXHIBIT 1, and the State will reimburse the

City at the flat rate shown in EXHIBIT 3 for parts and labor. All repairs shall be prioritized based on public safety and made as soon as possible.

C. The City shall maintain and operate the traffic signals in accordance with the minimum requirements specified in EXHIBIT 2.

D. The City shall maintain at least one log of all emergency calls and all routine maintenance.

E. Routine maintenance will be performed by the city as specified in EXHIBIT 2.

Article 4. Compensation

A. The maximum amount payable under this Agreement is $__________ per year.

B. Calculations for the above lump sum amount shall be shown in EXHIBIT 3, attached hereto and made a part of this Agreement for maintaining and operating the traffic signal installations covered under this Agreement.

C. The addition or deletion of traffic signals shall be made by supplemental agreement.

Article 5. Payment

A. The State agrees to reimburse the City at the flat rate shown in EXHIBIT 3 for maintenance and operation costs for the traffic signals described in EXHIBIT 1. The City shall submit to the State Form 132, "Billing Statement," or an invoice statement acceptable to the State on a (monthly/quarterly/annual basis). An original Form 132 or acceptable invoice and four copies shall be submitted to the following address:

B. The City shall maintain a system of records necessary to support and establish the eligibility of all claims for payment under the terms of this Agreement. These records may be reviewed at any time to substantiate the payment by the State and/or determine the need for an adjustment in the amount paid by the State.

C. The State shall make payment to the City within 30 days from receipt of the City's request for payment, provided that the request is properly prepared.

D. Knockdowns or damage resulting from accident or act of God and requiring emergency replacement of major equipment shall not be included in the (monthly/ quarterly/annual) payments. For eligibility of payment for emergency replacement of major equipment, actual cost shall be submitted to the State for review and determination of reimbursement eligibility.

E. Payment for the addition or deletion of a traffic signal installation shall be made by supplemental agreement.

## Article 6. Indemnification

To the extent permitted by law, the City shall indemnify and save harmless the State, its agents or employees, from all suits, actions or claims and from all liability and damages for any and all injuries or damages sustained by any person or property in consequence of any neglect in the performance, or failure of performance by the City, its agents, officers and employees, under this Agreement.

## Article 7. Termination

A. This Agreement may be terminated by any of the following conditions:

(1) By mutual agreement and consent of both parties.

(2) By the State upon thirty (30) days written notice to the City for failure of the City to provide adequate maintenance and operation services for those traffic signal installations which the City has agreed to maintain and operate.

(3) By the State upon sixty (60) days written notice to the City that the State will assume operation and maintenance at the end of the one (1) year period of this contract.

(4) By the City upon one hundred twenty (120) days written notice to the State.

B. In the event this Agreement is terminated by any of the above conditions, the maintenance and operation of the traffic signal systems shall become the responsibility of the State. Any State owned equipment being held by the City shall be promptly returned within 30 calendar days to the State upon termination of this Agreement.

### Article 8. Subletting

The City shall not sublet or transfer any portion of the work under this Agreement unless specifically approved in writing by the State. All subcontracts shall include the provisions required in this contract and shall be approved in writing by the State.

### Article 9. Amendments

Changes in the character, costs, provisions in the attached exhibits, responsibilities or obligations authorized herein shall be enacted by written amendment. Any amendment to this Agreement must be executed by both parties.

### Article 10. Successors and Assigns

The State and the City bind themselves, successors, assigns and legal representatives to the other party to this Agreement and the successors, assigns and legal representatives of such other party to all covenants and provisions provided herein. Furthermore, the City shall not assign, sublet or transfer any interests in this Agreement without the written consent of the State.

## Article 11. Legal Construction

In case any one or more of the provisions contained in this Agreement shall for any reason, be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision thereof and this Agreement shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

## Article 12. Prior Agreements Superseded

This Agreement constitutes the sole and only agreement of the parties hereto and supersedes any prior understandings or written or oral agreements between the parties respecting the within subject matter.

## Article 13. Gratuities

Texas Transportation Commission policy mandates that employees of the Department shall not accept any benefits, gifts or favors from any person doing business or who reasonably speaking may do business with the State under this contract. The only exceptions allowed are ordinary business lunches and items that have received the advanced written approval of the Texas Department of Transportation Executive Director. Any person doing business with or who reasonably speaking do business with the State under this contract may not make any offer of benefits, gifts or favors to Departmental employees, except as mentioned hereabove. Failure on the part of the City to adhere to this policy may result in the termination of this contract.

IN WITNESS WHEREOF, the parties have executed duplicate counterparts to effectuate this Agreement.

The City of: Austin

By: Matthew Kite
(Name)

Assistant Director
(Title)

9-13-96
(Date)

ATTEST:

City Secretary

THE STATE OF TEXAS

Certified as being executed for the purpose and affect of activating and/or carrying out the orders, established policies, or work programs heretofore approved and authorized by the Texas Transportation Commission under the authority of Minute Order 100002.

By: William C Garbade
District Engineer

Date: 9-25-96

# EXHIBIT 1

Signalized intersections on State Highways located within the City of Austin.

| Location | Type of Signal |
|---|---|
| Braker at IH 35 | 1 |
| Parmer (FM 734) at IH 35 | 1 |
| Wells Branch at IH 35 | 1 |
| William Canon at IH 35 | 2 |
| Stassney at IH 35 | 1 |
| Ben White at IH 35 | 2 |
| Oltorf at IH 35 | 2 |
| Woodward at IH 35 | 1 |
| Riverside at IH 35 | 2 |
| 1st Street at IH 35 | 2 |
| 6th Street at IH 35 | 2 |
| 7th Street at IH 35 | 2 |
| 8th Street at IH 35 | 2 |
| 11th Street at IH 35 | 2 |
| 12th Street at IH 35 | 1 |
| M.L.K. at IH 35 | 2 |
| 32nd Street at IH 35 | 1 |
| 38th½ Street at IH 35 | 1 |
| Airport at IH 35 | 2 |
| 51st Street at IH 35 | 2 |
| US 290 at IH 35 | 4 |
| St. Johns at IH 35 | 1 |
| Rundberg at IH 35 | 1 |
| Loop 1 at FM 734 | 1 |
| Loop 1 at Burnet Road/Duval | 1 |
| Loop 1 at Braker Lane | 1 |
| Loop 1 at Capitol of Texas Hwy. | 1 |
| Loop 1 at Steck | 1 |
| Loop 1 at Anderson | 1 |

# EXHIBIT 1

Signalized intersections on State Highways located within the City of Austin.

| Location | Type of Signal |
|---|---|
| Loop 1 at Far West | 1 |
| Loop 1 at RM 2222 | 1 |
| Loop 1 at 45th Street | 1 |
| Loop 1 at 38th Street | 1 |
| Loop 1 at Windsor | 1 |
| Loop 1 at Enfield | 1 |
| Loop 1 at Lake Austin Blvd. | 1 |
| Loop 1 at RM 2244 | 1 |
| Loop 1 at Barton Skyway | 1 |
| Loop 1 at William Cannon | 1 |
| Loop 1 at Slaughter | 1 |
| US 183 at Burnet Rd. | 1 |
| US 183 at Loop 360 | 1 |
| US183 at Great Hills Trail | 1 |
| US 183 at Braker Lane | 1 |
| US 183 at Balcones Woods | 1 |
| US 183 at Springdale | 1 |
| US 290 at Cameron Road | 1 |
| US 290 at Berkman Drive | 1 |
| US 290 at US 183 | 1 |
| US 290 at Airport Blvd. | 1 |

## EXHIBIT 2

## TRAFFIC SIGNAL MAINTENANCE AND OPERATION PROVISIONS

The maintaining and operating city agrees to:

1. Inspect the highway traffic signal system a minimum of once every six months and replace burned out lamps or damaged sockets as may be required. The reflector and lens should be cleaned each time a lamp is replaced. All replacement lamps shall equal the wattage and type of the existing lamp.

2. Keep signal posts, controller pedestals, and foundations in alignment.

3. Keep signal posts and controller pedestals tight on foundation.

4. Keep signal heads aligned and controller cabinets tight on their pedestals and properly adjusted.

5. Time settings should be compared to master time sheet every 6 months. Controller, detectors and auxiliary equipment should be dusted every 3 months. Detector sensors and loop amplifiers should be checked every 3 months. Relays should be checked every 12 months. Conflict monitors should be bench tested, not field tested, every 12 months. Conflict monitors should be exchanged with a bench tested working monitor while testing is going on.

6. Keep interior of controller cabinets in a neat and clean condition at all times.

7. Clean reflectors, lenses, and lamps a minimum of once every twelve months.

8. Repaint all highway traffic signal components exposed to weather with a non-lead based paint a minimum of once every two years. Plastic signal heads and galvanized and aluminum components are excluded.

9. Repair or replace any and all equipment that malfunctions or is damaged.

10. Provide alternate traffic control during a period of failure or when the controller must be repaired. This may be accomplished through installation of a spare controller, placing the intersection on flash, manually operating the controller, or manually directing traffic through the use of proper authorities. In addition, barricades and warning signs shall be provided in accordance with the requirements of the latest edition of the Texas Manual on Uniform Traffic Control Devices.

11. Provide maintenance personnel trained in the maintenance of traffic signal equipment who will be available to respond to emergency calls from authorized parties 24 hours a day, including Saturdays, Sundays and holidays.

12. Provide the State and local law enforcement agencies the location and respective names and telephone numbers of individuals responsible for emergency maintenance.

13. Document routine observations during the year by trained City personnel of traffic signal operation at each traffic signal during various times of the day to assure fair distribution of time for all traffic movements (phases) during varying traffic conditions.

14. Check cabinet filter a minimum of once every six months and clean if necessary. Cabinet filter shall be replace every year.

15. Document all checks and corrective actions.

Power costs shall be billed directly to the State.

# EXHIBIT 3

Actuated Signals at conventional intersections and at Tee intersections shall be reimbursed at N/A per intersection per year.

Calculations:

Fixed Time Signals shall be reimbursed at N/A per intersection per year.

Calculations:

Diamond Interchange Signals with one controller shall be reimbursed at $1,729.08 per intersection per year.

Calculations: 37 Locations x $1,729.08 = 63,975.96

Billed as $144.09 per location, per month.

Diamond Interchange Signals with two or more controllers shall be reimbursed at $1,899.96 per intersection per year.

Calculations: 13 Locations x $1,899.96 = $24,699.48

Billed as $158.33 per location, per month.

Sign Mounted Flashers shall be reimbursed at N/A per unit per year.

Calculations:

Overhead Flashing Beacons shall be reimbursed at N/A per intersection per year.

Calculations:

EXHIBIT 1

Signalized Intersections on State Highways located with the City of Austin.

| Location | Type of Signal |
|---|---|
| **IH 35** | |
| IH 35 at Braker | 1 |
| IH 35 at Parmer | 1 |
| IH 35 at William Cannon | 1 |
| IH 35 at Stassney | 1 |
| IH 35 at Ben White (US 290)(NorthSide) | 1 |
| IH 35 at Ben White (US 290)(South Side) | 1 |
| IH 35 at FM 1825 (Wells Branch Parkway) | 1 |
| IH 35 at Oltorf | 2 |
| IH 35 at Riverside | 2 |
| IH 35 at 1st Street | 2 |
| IH 35 at 6th Street | 2 |
| IH 35 at 7th Street | 2 |
| IH 35 at 8th Street | 2 |
| IH 35 at 11th Street | 2 |
| IH 35 at 12th Street | 1 |
| IH 35 at 15th Street | 1 |
| IH 35 at M.L.K. | 2 |
| IH 35 at 32nd Street | 1 |
| IH 35 at 38 1/2 Street | 1 |
| IH 35 at Airport Blvd | 2 |
| IH 35 at US 290 (East) | 4 |
| IH 35 at St Johns | 1 |
| IH 35 at Rundberg | 1 |
| IH 35 at Yager Ln/Tech Ridge Blvd | 1 |
| IH 35 at Slaughter Ln | 1 |
| IH 35 at Howard/Dessau | 2 |
| IH 35 at Woodland | 1 |
| IH 35 at Woodward St | 1 |
| IH 35 at Hancock | 1 |
| IH 35 at Holly St | 1 |
| IH 35 at Manor Rd | 1 |
| | |
| **LOOP 1** | |
| LP 1 at FM 734 (Parmer) | 1 |
| LP 1 at Burnet/Duval | 1 |
| LP 1 at Braker Ln | 1 |
| LP 1 at Capitol of Texas Hwy | 1 |
| LP 1 at Steck | 1 |
| LP 1 at Anderson Ln | 1 |
| LP 1 at Far West | 1 |
| LP 1 at RM 2222 | 1 |
| LP 1 at 45th Street | 1 |

EXHIBIT 1

Signalized Intersections on State Highways located with the City of Austin.

| Location | Type of Signal |
|---|---|
| **LOOP 1 (Cont'd)** | |
| LP 1 at 38th Street | 1 |
| LP 1 at Windsor | 1 |
| LP 1 at Enfield | 1 |
| LP 1 at Lake Austin Blvd | 1 |
| LP 1 at Slaughter | 1 |
| LP 1 at Barton Skyway | 1 |
| LP 1 at William Cannon | 1 |
| LP 1 at Gracy Farms | 1 |
| LP 1 at Waters Park | 1 |
| LP 1 at LP 360 (East Frontage Rd) | 1 |
| LP 1 at LP 360 (West Frontage Rd) | 1 |
| LP 1 at US 290 West | 1 |
| LP 1 at US 290 East | 1 |
| LP 1 at Southwest Pkwy | 1 |
| LP 1 at La Crosse Ave | 1 |
| | |
| **US 183** | |
| US 183 at Burnet Rd | 1 |
| US 183 at Balconnes Woods | 1 |
| US 183 at Springdale Rd | 1 |
| US 183 at Lamar Blvd | 2 |
| US 183 at IH 35 | 1 |
| US 183 at Oak Knoll | 1 |
| US 183 at Duval | 1 |
| US 183 at Georgian | 1 |
| US 183 at Anderson Square | 1 |
| US 183 at Fairfield | 1 |
| US 183 at Ohlen | 1 |
| US 183 at Braker Ln | 1 |
| US 183 at Great Hills Trail | 1 |
| US 183 at LP 360 | 1 |
| US 183 at M.L.K. Blvd | 1 |
| US 183 at Anderson Mill | 1 |
| US 183 at Lakecreek | 1 |
| US 183 at McNeil Dr | 1 |
| US 183 at Pond Springs Rd | 1 |
| US 183 at SH45/RM 620 | 1 |
| US 183 at Lakeline Blvd | 1 |
| US 183 at Lakeline Mall | 1 |
| US 183 at Pecan Park Blvd | 1 |

EXHIBIT 1

Signalized Intersections on State Highways located with the City of Austin.

| Location | Type of Signal |
|---|---|
| **US 290** | |
| US 290 at Cameron Rd | 1 |
| US 290 at Berkman Dr | 1 |
| US 290 at Airport Blvd | 1 |
| US 290 at Lamar | 1 |
| US 290 at Manchaca | 1 |
| US 290 at Pack Saddle | 1 |
| US 290 at Bannister | 1 |
| US 290 at South First Street | 1 |
| US 290 at Congress Ave | 1 |
| US 290 at Westgate | 1 |
| US 290 at Industral Oaks/Monterey Oaks Blvd | 1 |
| US 290 (Ben White Blvd) at Woodward St | 1 |
| *US 290 at Old Fredericksburg Rd* | *1* |
| **SH 45** | |
| SH 45/RM 620 at N. Lake Creek Pkwy | 1 |
| SH 45/RM 620 at Pecan Park Blvd | 1 |
| **SH 71** | |
| SH 71 at Burleson Rd | 1 |
| SH 71 at Montopolis | 1 |
| SH 71 at Todd Ln | 1 |
| **TOTALS** | **84/ 12** |

*Indicates a signal location listed in attached revision*

Texas
Department
of Transportation

# MEMORANDUM

**TO:** Greg A. Malatek, P.E.
Austin District Engineer

**DATE:** June 04, 2013

**FROM:** Jason L. Brecht, P.E.
Traffic Operations Section P.E.

**SUBJECT:** Signal Agreement Supplement with the City of Austin

---

Attached please find two signed originals of a supplemental agreement with the City of Austin by which modifications will be made to the original Reimbursement Agreement (TY R) as entered into between TxDOT and the City on September 25, 1996. Such an agreement provides reimbursement to the city for those traffic signals it maintains along controlled access highways within its jurisdiction.

The following intersection is added by this supplement:

US 290 at Old Fredericksburg Road

This is the current version of a standard TxDOT agreement, as developed by OGC for such a purpose, that we have not modified other than to fill in the blanks.

I therefore recommend the placement of your signature on these two attached originals. Then the final execution of this agreement shall be accomplished.

Thank you.

#7349

Austin Transportation Department
**Office of the Director**
505 Barton Springs Road, Suite 800
Austin, TX 78704
(512) 974-1150, Fax (512) 974-1171

T.X.D.O.T.
RECEIVED
JUN 0 1 2013
DISTRICT 14 - MAIL ROOM
AUSTIN, TX

May 29, 2013

T.X.D.O.T.
RECEIVED
JUN 03 2013
DISTRICT 14
TRANSPORTATION
OPERATIONS

Jason L. Brecht, P.E.
Traffic Engineer – South
Austin District Traffic Ops
Texas Department of Transportation
P.O. Box 15426
Austin, TX 78761-5426

Dear Mr. Brecht:

Enclosed you will find two partially executed copies of the Supplemental Agreement No. 17 (TY R) which adds US 290 at Old Fredericksburg Road to the list of State traffic signals that are maintained by the City on a reimbursed basis.

Contract No. 14-AU092596R

Please send me a fully executed original copy of the Amendment for our records. If you should have any questions or require further assistance, please do not hesitate to contact Brian Craig, Consulting Engineer with the Austin Transportation Department at (512) 974-4061 or email him at brian.craig@austintexas.gov.

Sincerely,

Gilda M. Powers

Gilda M. Powers
Executive Assistant
Office of the Director
**Austin Transportation Department**

Enclosures

Contract No. 14-AU092596R

**STATE OF TEXAS §**

**COUNTY OF TRAVIS §**

ORIGINAL

## SUPPLEMENTAL AGREEMENT NO. 17 TO AGREEMENT FOR THE INSTALLATION AND REIMBURSEMENT FOR THE OPERATION AND MAINTENANCE OF TRAFFIC SIGNALS WITHIN A MUNICIPALITY

**WHEREAS,** on the 25th day of September, 1996, an Agreement for the Installation and Reimbursement for the Operation and Maintenance of Traffic Signals within a Municipality was entered into by and between the Texas Department of Transportation hereinafter called the "State," and the City of Austin, hereinafter called the "City," and subsequently identified the agreement as Contract Number 14-AU092596R; and

**WHEREAS,** the parties to this agreement have mutually determined that it is necessary to amend the original agreement due to the following reason/reasons: Assumption of Maintenance of a Traffic Signal by the City.

**NOW, THEREFORE,** Contract No. 14-AU092596R is amended as follows:

### EXHIBIT 1

EXHIBIT 1 is amended to add/delete the traffic signal(s) installation(s) at the intersection(s) of US 290 at Old Fredericksburg Rd. A copy of the revised EXHIBIT 1 is attached hereto and made a part of this agreement.

### Article 4. Compensation

The maximum amount payable under this agreement is increased from $166,313.16 to $168,042.24 per year in accordance with the above changes. Calculations for the increase/decrease to the maximum amount payable are as follows:

| | |
|---|---|
| AMOUNT OF THIS SUPPLEMENTAL AGREEMENT | $ 1,729.08 |
| ORIGINAL MAXIMUM AMOUNT PAYABLE PER YEAR | $ 88,675.60 |
| TOTAL PREVIOUS SUPPLEMENTAL AGREEMENTS | $ 77,637.56 |
| REVISED MAXIMUM AMOUNT PAYABLE PER YEAR | $ 168,042.24 |

### ARTICLE 5. Payment

The amount of this supplemental agreement shown above shall be a prorated amount based on the cost for the type of installation calculated on EXHIBIT 3 of the original agreement and any increases or decreases caused by any subsequent supplemental agreements. The (monthly/quarterly/annual) payment shall be adjusted accordingly.

Contract No. 14-AU092596R

All other terms or conditions are unchanged and remain in full force and effect.

**IN TESTIMONY WHEREOF**, the parties hereto have caused these presents to be executed in duplicate on the dates shown hereinbelow.

ORIGINAL

**THE CITY OF AUSTIN**
Executed on behalf of the City by:

By____________ Date 5/23/13

Typed or Printed Name and Title Robert Goode

Assistant City Manager

**ATTEST:**

By____________ Date 5/28/13
City Secretary

**THE STATE OF TEXAS**
Executed for the Executive Director and approved for the Texas Transportation Commission for the purpose and effect of activating and/or carrying out the orders, established policies or work programs heretofore approved and authorized by the Texas Transportation Commission.

By____________ Date 6/5/13
District Engineer

**APPROVED AS TO FORM:**

____________
Angela C. Rodriguez
Assistant City Attorney

EXHIBIT 1

Signalized Intersections on State Highways located with the City of Austin.

| Location | Type of Signal |
|---|---|
| **IH 35** | |
| IH 35 at Braker | 1 |
| IH 35 at Parmer | 1 |
| IH 35 at William Cannon | 1 |
| IH 35 at Stassney | 1 |
| IH 35 at Ben White (US 290)(NorthSide) | 1 |
| IH 35 at Ben White (US 290)(South Side) | 1 |
| IH 35 at FM 1825 (Wells Branch Parkway) | 1 |
| IH 35 at Oltorf | 2 |
| IH 35 at Riverside | 2 |
| IH 35 at 1st Street | 2 |
| IH 35 at 6th Street | 2 |
| IH 35 at 7th Street | 2 |
| IH 35 at 8th Street | 2 |
| IH 35 at 11th Street | 2 |
| IH 35 at 12th Street | 1 |
| IH 35 at 15th Street | 1 |
| IH 35 at M.L.K. | 2 |
| IH 35 at 32nd Street | 1 |
| IH 35 at 38 1/2 Street | 1 |
| IH 35 at Airport Blvd | 2 |
| IH 35 at US 290 (East) | 4 |
| IH 35 at St Johns | 1 |
| IH 35 at Rundberg | 1 |
| IH 35 at Yager Ln/Tech Ridge Blvd | 1 |
| IH 35 at Slaughter Ln | 1 |
| IH 35 at Howard/Dessau | 2 |
| IH 35 at Woodland | 1 |
| IH 35 at Woodward St | 1 |
| IH 35 at Hancock | 1 |
| IH 35 at Holly St | 1 |
| IH 35 at Manor Rd | 1 |
| **LOOP 1** | |
| LP 1 at FM 734 (Parmer) | 1 |
| LP 1 at Burnet/Duval | 1 |
| LP 1 at Braker Ln | 1 |
| LP 1 at Capitol of Texas Hwy | 1 |
| LP 1 at Steck | 1 |
| LP 1 at Anderson Ln | 1 |
| LP 1 at Far West | 1 |
| LP 1 at RM 2222 | 1 |
| LP 1 at 45th Street | 1 |

EXHIBIT 1

Signalized Intersections on State Highways located with the City of Austin.

| Location | Type of Signal |
|---|---|
| **LOOP 1 (Cont'd)** | |
| LP 1 at 38th Street | 1 |
| LP 1 at Windsor | 1 |
| LP 1 at Enfield | 1 |
| LP 1 at Lake Austin Blvd | 1 |
| LP 1 at Slaughter | 1 |
| LP 1 at Barton Skyway | 1 |
| LP 1 at William Cannon | 1 |
| LP 1 at Gracy Farms | 1 |
| LP 1 at Waters Park | 1 |
| LP 1 at LP 360 (East Frontage Rd) | 1 |
| LP 1 at LP 360 (West Frontage Rd) | 1 |
| LP 1 at US 290 West | 1 |
| LP 1 at US 290 East | 1 |
| LP 1 at Southwest Pkwy | 1 |
| LP 1 at La Crosse Ave | 1 |
| | |
| **US 183** | |
| US 183 at Burnet Rd | 1 |
| US 183 at Balconnes Woods | 1 |
| US 183 at Springdale Rd | 1 |
| US 183 at Lamar Blvd | 2 |
| US 183 at IH 35 | 1 |
| US 183 at Oak Knoll | 1 |
| US 183 at Duval | 1 |
| US 183 at Georgian | 1 |
| US 183 at Anderson Square | 1 |
| US 183 at Fairfield | 1 |
| US 183 at Ohlen | 1 |
| US 183 at Braker Ln | 1 |
| US 183 at Great Hills Trail | 1 |
| US 183 at LP 360 | 1 |
| US 183 at M.L.K. Blvd | 1 |
| US 183 at Anderson Mill | 1 |
| US 183 at Lakecreek | 1 |
| US 183 at McNeil Dr | 1 |
| US 183 at Pond Springs Rd | 1 |
| US 183 at SH45/RM 620 | 1 |
| US 183 at Lakeline Blvd | 1 |
| US 183 at Lakeline Mall | 1 |
| US 183 at Pecan Park Blvd | 1 |

EXHIBIT 1

Signalized Intersections on State Highways located with the City of Austin.

| Location | Type of Signal |
|---|---|
| **US 290** | |
| US 290 at Cameron Rd | 1 |
| US 290 at Berkman Dr | 1 |
| US 290 at Airport Blvd | 1 |
| US 290 at Lamar | 1 |
| US 290 at Manchaca | 1 |
| US 290 at Pack Saddle | 1 |
| US 290 at Bannister | 1 |
| US 290 at South First Street | 1 |
| US 290 at Congress Ave | 1 |
| US 290 at Westgate | 1 |
| US 290 at Industral Oaks/Monterey Oaks Blvd | 1 |
| US 290 (Ben White Blvd) at Woodward St | 1 |
| *US 290 at Old Fredericksburg Rd* | *1* |
| **SH 45** | |
| SH 45/RM 620 at N. Lake Creek Pkwy | 1 |
| SH 45/RM 620 at Pecan Park Blvd | 1 |
| **SH 71** | |
| SH 71 at Burleson Rd | 1 |
| SH 71 at Montopolis | 1 |
| SH 71 at Todd Ln | 1 |
| **TOTALS** | **84/ 12** |

*Indicates a signal location listed in attached revision*

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 6-1

# Utility Forms

# Execution Version

- **PUAA – DB Contractor Managed**
- **PUAA – Owner Managed**
- **PUAA – DB Contractor Managed**
- **PUAA – Owner Managed**

County:
Highway:
Limits:
Fed. Proj. No.:
ROW CSJ No.:
Const. CSJ No.:

# PROJECT UTILITY ADJUSTMENT AGREEMENT
## (Developer Managed)

Agreement No.: -U-_____

**THIS AGREEMENT,** by and between , hereinafter identified as the "**Developer**", and _____, hereinafter identified as the "**Owner**", is as follows:

## WITNESSETH

**WHEREAS,** the STATE OF TEXAS, acting by and through the Texas Department of Transportation, hereinafter identified as “TxDOT”, is authorized to design, construct, operate, maintain, and improve turnpike projects as part of the state highway system throughout the State of Texas, all in conformance with the provisions of Chapters 201, 203, 222, 223, 224, and 228 Texas Transportation Code, as amended; and

**WHEREAS,** the TxDOT proposes to construct a toll project identified as the ___________ Project (the “Project”); and

**WHEREAS,** pursuant to that certain Development Agreement by and between TxDOT and the Developer with respect to the Project (the “DA”), the Developer has undertaken the obligation to design, construct, finance, operate and maintain the Project and adhere to all requirements in the DA; and

**WHEREAS,** the Developer’s duties pursuant to the DA include causing the relocation, removal or other necessary adjustment of existing utilities impacted by the Project (collectively, “Adjustment”), subject to the provisions herein; and

**WHEREAS,** the Project may receive Federal funding, financing and/or credit assistance; and

**WHEREAS**, the Developer has notified the Owner that certain of its facilities and appurtenances (the "Owner Utilities") are in locational conflict with the Project (and/or with the “Ultimate Configuration” of the Project), and the Owner has requested that the Developer undertake the Adjustment of the Owner Utilities as necessary to accommodate the Project (and the Ultimate Configuration) and Owner agrees that the “Project” will be constructed in accordance with §203.092, Texas Transportation Code, as amended, Rule 21.23 of Title 43 Tex. Admin. Code, and 23 CFR 645 Subpart A (Utility Relocations, Adjustments and Reimbursement); and

**WHEREAS**, the Owner Utilities and the proposed Adjustment of the Owner Utilities are described as follows *[insert below a description of the affected facilities (by type, size and location) as well as a brief description of the nature of the Adjustment work to be performed (e.g., “adjust 12” waterline from approximately Highway Station 100+00 to approximately Highway Station 200+00”)]:*
_____*;* and

**WHEREAS**, the Owner recognizes that time is of the essence in completing the work contemplated herein; and

**WHEREAS**, the Developer and the Owner desire to implement the Adjustment of the Owner Utilities by entering into this Agreement.

## AGREEMENT

NOW, THEREFORE, in consideration of these premises and of the mutual covenants and agreements of the parties hereto and other good and valuable consideration, the receipt and sufficiency of which being hereby acknowledged, the Developer and the Owner agree as follows:

1. **Preparation of Plans.** [Check one box that applies:]

☐ The Developer has hired engineering firm(s) acceptable to the Owner to perform all engineering services needed for the preparation of plans, required specifications, and cost estimates, attached hereto as Exhibit A (collectively, the "Plans"), for the proposed Adjustment of the Owner Utilities. The Developer represents and warrants that the Plans conform to the most recent Utility Accommodation Rules issued by the Texas Department of Transportation ("TxDOT"), set forth in 43 Tex. Admin. Code Part 1, Chapter 21, Subchapter C *et seq*., (the "UAR"). By its execution of this Agreement or by the signing of the Plans, the Owner hereby approves the Plans and confirms that the Plans are in compliance with the "standards" described in Paragraph 3(a)(4).

☐ The Owner has provided plans, required specifications and cost estimates, attached hereto as Exhibit A (collectively, the "Plans"), for the proposed Adjustment of the Owner Utilities. The Owner represents and warrants that the Plans conform to the UAR. By its execution of this Agreement, the Developer and the Owner hereby approve the Plans. The Owner also has provided to the Developer a utility plan view map illustrating the location of existing and proposed utility facilities on the Developer's right of way map of the Project. With regard to its preparation of the Plans, the Owner represents as follows *[check one box that applies]*:

  ☐ The Owner's employees were utilized to prepare the Plans, and the charges therefore do not exceed the Owner's typical costs for such work.

  ☐ The Owner utilized consulting engineers to prepare the Plans, and the fees for such work are not based upon a percentage of construction costs. Further, such fees encompass only the work necessary to prepare the Plans for Adjustment of the Owner Utilities described herein, and do not include fees for work done on any other project. The fees of the consulting engineers are reasonable and are comparable to the fees typically charged by consulting engineers in the locale of the Project for comparable work for the Owner.

2. **Review by TxDOT.** The parties hereto acknowledge and agree as follows:

(a) Upon execution of this Agreement by the Developer and the Owner, the Developer will submit this Agreement, together with the attached Plans, to TxDOT for its review and approval as part of a package referred to as a "Utility Assembly". The parties agree to cooperate in good faith to modify this Agreement and/or the Plans, as necessary and mutually acceptable to all parties, to respond to any comments made by TxDOT thereon. Without limiting the generality of the foregoing, (i) the Owner agrees to respond (with comment and/or acceptance) to any modified Plans and/or Agreement prepared by the Developer in response to TxDOT comments within **fourteen (14) business days** after receipt of such modifications; and (ii) if the Owner originally prepared the Plans, the

Owner agrees to modify the Plans in response to TxDOT comments and to submit such modified Plans to the Developer for its comment and/or approval (and re-submittal to TxDOT for its comment and/or approval) within **fourteen (14) business days** after receipt of TxDOT's comments. The Owner's failure to timely respond to any modified Plans submitted by the Developer pursuant to this paragraph shall be deemed the Owner's approval of same. If the Owner fails to timely prepare modified Plans which are its responsibility hereunder, then the Developer shall have the right to modify the Plans for the Owner's approval as if the Developer had originally prepared the Plans. The process set forth in this paragraph will be repeated until the Owner, Developer and TxDOT have all approved this Agreement and accepted the Plans.

(b) The parties hereto acknowledge and agree that TxDOT's review, comments, and/or approval of a Utility Assembly or any component thereof shall constitute TxDOT's approval of the location and manner in which a Utility Assembly will be installed, adjusted, or relocated within the state highway right of way (the "ROW"), subject to the Developer's and Owner's satisfactory performance of the Adjustment work in accordance with the approved Plans. TxDOT has no duty to review Owner Facilities or components for their quality or adequacy to provide the intended utility service.

3. **Design and Construction Standards**.

(a) All design and construction performed for the Adjustment work which is the subject of this Agreement shall comply with and conform to the following:

(1) All applicable local and state laws, regulations, decrees, ordinances and policies, including the UAR, the Utility Manual issued by TxDOT (to the extent its requirements are mandatory for the Adjustment necessitated by the Project, as communicated to the Owner by the Developer, or TxDOT), the requirements of the DA, and the policies of TxDOT;

(2) All Federal laws, regulations, decrees, ordinances and policies applicable to projects receiving Federal funding, financing and/or credit assistance, including without limitation 23 CFR 645 Subparts A and B;

(3) The terms of all governmental permits or other approvals, as well as any private approvals of third parties necessary for such work; and

(4) The standard specifications, standards of practice, and construction methods (collectively, "standards") which the Owner customarily applies to utility facilities comparable to the Owner Utilities that are constructed by the Owner or for the Owner by its contractors at the Owner's expense, which standards are current at the time this Agreement is signed by the Owner, and which the Owner has submitted to the Developer in writing.

(5) Owner agrees that all service meters must be placed outside of the State ROW.

(b) Such design and construction also shall be consistent and compatible with (i) the Developer's current design and construction of the Project, (ii) the "Ultimate Configuration" for the Project, and (iii) any other utilities being installed in the same vicinity. The Owner acknowledges receipt from the Developer of Project plans and Ultimate Configuration documents as necessary to comply with the foregoing. In case of any inconsistency among any of the standards referenced in this Agreement, the most stringent standard shall apply.

(c) The plans, specifications, and cost estimates contained in Exhibit A shall identify and detail all utility facilities that the Owner intends to abandon in place rather than remove, including material type, quantity, size, age, and condition. No facilities containing hazardous or contaminated materials may be abandoned, but shall be specifically identified and removed in accordance with the requirements of subparagraph (a). It is understood and agreed that the Developer shall not pay for the assessment and remediation or other corrective action relating to soil and ground water contamination caused by the utility facility prior to the removal.

4. **Responsibility for Costs of Adjustment Work**. With the exception of any Betterment (hereinafter defined), the parties shall allocate the cost of any Adjustment between themselves as identified in Exhibit A and in accordance with § 203.092, Texas Transportation Code. An allocation percentage may be determined by application of an eligibility ratio, if appropriate, as detailed in Exhibit A.

5. **Construction by the Developer**.

(a) The Owner hereby requests that the Developer perform the construction necessary to adjust the Owner Utilities and the Developer hereby agrees to perform such construction. All construction work hereunder shall be performed in a good and workmanlike manner, and in accordance with the Plans (except as modified pursuant to Paragraph 16).

(b) The Developer shall retain such contractor or contractors as are necessary to adjust the Owner Utilities.

(c) The Developer shall obtain all permits necessary for the construction to be performed by the Developer hereunder, and the Owner shall cooperate in that process as needed.

6. **Reimbursement of Owner's Indirect Costs**.

(a) Developer agrees to reimburse the Owner its share of the Owner's indirect costs (e.g., engineering, inspection, testing, ROW) as identified in Exhibit A. When requested by the Owner, monthly progress payments will be made. The monthly payment will not exceed 80% of the estimated indirect work done to date. Once the indirect work is complete, final payment of the eligible indirect costs will be made. Intermediate payments shall not be construed as final payment for any items included in the intermediate payment.

(b) The Owner's indirect costs associated with Adjustment of the Owner Utilities shall be developed pursuant to the method checked and described below *[check only one box]*:

☐ (1) Actual related indirect costs accumulated in accordance with (i) a work order accounting procedure prescribed by the applicable Federal or State regulatory body, or (ii) established accounting procedure developed by the Owner and which the Owner uses in its regular operations (either (i) or (ii) referred to as "Actual Cost") or,

☐ (2) The agreed sum of $_____ ("Agreed Sum") as supported by the analysis of the Owner's estimated costs attached hereto as part of Exhibit A.

(c) All indirect costs charged to the Developer by the Owner shall be reasonable and shall be computed using rates and schedules not exceeding those applicable to similar work performed by or for the Owner at the Owner's expense. Developer's performance of the Adjustment work hereunder and payment of the Developer's share of the Owner's costs pursuant to this Agreement, if applicable, shall be full compensation to the Owner for all costs incurred by the Owner in Adjusting the Owner Utilities (including without limitation costs of relinquishing and/or acquiring right of way).

7. **Advancement of Funds by Owner for Construction Costs**.

(a) Advancement of Owner's share, if any, of estimated costs

Exhibit A shall identify all estimated engineering and construction-related costs, including labor, material, equipment and other miscellaneous construction items. Exhibit A shall also identify the Owner's and Developer's respective shares of the estimated costs.

The Owner shall advance to the Developer its allocated share, if any, of the estimated costs for construction and engineering work to be performed by the Developer, in accordance with the following terms:

☐ The adjustment of the Owner's Utilities does not require advancement of funds.

☐ The adjustment of the Owner's Utilities does require advancement of funds and the terms agreed to between the Developer and Owner are listed below.

*[Insert terms of advance funding to be agreed between Developer and Owner.]*

(b) Adjustment Based on Actual Costs or Agreed Sum

*[Check the one appropriate provision, if advancement of funds is required]*:

☐ The Owner is responsible for its share of the Developer's actual cost for the Adjustment, including the identified Betterment. Accordingly, upon completion of all Adjustment work to be performed by both parties pursuant to this Amendment, (i) the Owner shall pay to the Developers the amount, if any, by which the actual cost of the Betterment (as determined in Paragraph 9(b)) plus the actual cost of Owner's share of the Adjustment (based on the allocation set forth in Exhibit A) exceeds the estimated cost advanced by the Owner, or (ii) the Developer shall refund to the Owner the amount, if any, by which such advance exceeds such actual cost, as applicable.

☐ The Agreed Sum is the agreed and final amount due for the Adjustment, including any Betterment, under this Amendment. Accordingly, no adjustment (either up or down) of such amount shall be made based on actual costs.

8. **Invoices.** On invoices prepared by either the Owner or the Developer, all costs developed using the "Actual Cost" method described in Section 6(b)(1) shall be itemized in a format allowing for comparisons to the approved estimates, including listing each of the services performed, the amount of time spent and the date on which the service was performed. The original and three (3) copies of each invoice, together with (1) such supporting information to substantiate all invoices as reasonably requested, and (2) such waivers and releases of liens as the other party may reasonably require, shall be submitted to the other party at the address for notices stated in Paragraph 22, unless otherwise directed pursuant to Paragraph 22. The Owner and the Developer shall make commercially reasonable efforts to submit final invoices not later than one hundred twenty (120) days after completion of work. The Owner and the Developer hereby acknowledge and agree that any costs not submitted to the other party within eighteen months following completion of all Adjustment work to be performed by the parties pursuant to this Agreement shall be deemed to have been abandoned and waived.

9. **Betterment and Salvage**

(a) For purposes of this Agreement, the term “Betterment” means any upgrading of an Owner Utility being adjusted that is not attributable to the construction of the Project and is made solely for the benefit of and at the election of the Owner, including but not limited to an increase in the capacity, capability, efficiency or function of the adjusted Utility over that provided by the existing Utility facility or an expansion of the existing Utility facility; provided, however, that the following are not considered Betterments:

(i) any upgrading which is required for accommodation of the Project;

(ii) replacement devices or materials that are of equivalent standards although not identical;

(iii) replacement of devices or materials no longer regularly manufactured with the next highest grade or size;

(iv) any upgrading required by applicable laws, regulations or ordinances;

(v) replacement devices or materials which are used for reasons of economy (e.g., non-stocked items may be uneconomical to purchase); or

(vi) any upgrading required by the Owner’s written “standards” meeting the requirements of Paragraph 3(d).

*[Include the following for fiber optic Owner Utilities only:]* Extension of an Adjustment to the nearest splice boxes shall not be considered a Betterment if required by the Owner in order to maintain its written telephony standards.

Any upgrading required by the Owner’s written “standards” meeting the requirements of Paragraph 3(a)(4) shall be deemed to be of direct benefit to the Project.

(b) It is understood and agreed that the Developer shall not pay for any Betterments and that the Owner shall be solely responsible therefor. No Betterment may be performed hereunder which is incompatible with the Project or the Ultimate Configuration or which cannot be performed within the other constraints of applicable law, any applicable governmental approvals, including without limitation the scheduling requirements thereunder. Accordingly, the parties agree as follows *[check one box that applies, and complete if appropriate]*:

☐ The Adjustment of the Owner Utilities pursuant to the Plans does not include any Betterment.

☐ The Adjustment of the Owner Utilities pursuant to the Plans includes Betterment to the Owner Utilities by reason of *[insert explanation, e.g. "replacing 12" pipe with 24" pipe]*:_____. The Developer has provided to the Owner comparative estimates for (i) all work to be performed by the Developer pursuant to this Agreement, including work attributable to the Betterment, and (ii) the cost to perform such work without the Betterment, which estimates are hereby approved by the Owner. The estimated cost of the Developer's work hereunder which is attributable to Betterment is $_____, calculated by subtracting (ii) from (i). The percentage of the total cost of the Developer's work hereunder which is attributable to Betterment is _____%, calculated by subtracting (ii) from (i), which remainder is divided by (i).

(c) If Paragraph 9(b) identifies Betterment, the Owner shall advance to the Developer, at least **fourteen (14) business days** prior to the date scheduled for commencement of construction for Adjustment of the Owner Utilities, the estimated cost attributable to Betterment as set forth in Paragraph 9(b). Should the Owner fail to advance payment to the Developer fourteen (14) business days prior to commencement of the Adjustment construction, the Developer shall have the option of commencing and completing (without delay) the Adjustment work without installation of the applicable Betterment. *[If Paragraph 9(b) identifies Betterment, check the one appropriate provision]*:

☐ The estimated cost stated in Paragraph 9(b) is the agreed and final amount due for Betterment hereunder, and accordingly no adjustment (either up or down) of such amount shall be made based on actual costs.

☐ The Owner is responsible for the Developer's actual cost for the identified Betterment. Accordingly, upon completion of all Adjustment work to be performed by both parties pursuant to this Agreement, (i) the Owner shall pay to the Developer the amount, if any, by which the actual cost of the Betterment (determined as provided below in this paragraph) exceeds the estimated cost advanced by the Owner, or (ii) the Developer shall refund to the Owner the amount, if any, by which such advance exceeds such actual cost, as applicable. Any additional payment by the Owner shall be due within **sixty (60) calendar days** after the Owner's receipt of the Developer's invoice therefor, together with supporting documentation; any refund shall be due within **sixty (60) calendar days** after completion of the Adjustment work hereunder. The actual cost of Betterment incurred by the Developer shall be calculated by multiplying (i) the Betterment percentage stated in Paragraph 9(b), by (ii) the actual cost of all work performed by the Developer pursuant to this Agreement (including work attributable to the Betterment), as invoiced by the Developer to the Owner.

(d) If Paragraph 9(b) identifies Betterment, the amount allocable to Betterment in Owner's indirect costs shall be determined by applying the percentage of the Betterment calculated in Paragraph 9(b) to the Owner's indirect costs. The Owner's invoice to the Developer for the Developer's share of the Owner's indirect costs shall credit the Developer with any Betterment amount determined pursuant to this Paragraph 9(d).

(e) For any Adjustment from which the Owner recovers any materials and/or parts and retains or sells the same, after application of any applicable Betterment credit, the

Owner's invoice to the Developer for its costs shall credit the Developer with the salvage value for such materials and/or parts..

(f) The determinations and calculations of Betterment described in this Paragraph 9 shall exclude right of way acquisition costs. Betterment in connection with right-of-way acquisition is addressed in Paragraph 15.

10. **Management of the Adjustment Work.** The Developer will provide project management during the Adjustment of the Owner Utilities.

11. **Utility Investigations.** At the Developer's request, the Owner shall assist the Developer in locating any Utilities (including appurtenances) which are owned and/or operated by Owner and may be impacted by the Project. Without limiting the generality of the foregoing, in order to help assure that neither the adjusted Owner Utilities nor existing, unadjusted utilities owned or operated by the Owner are damaged during construction of the Project, the Owner shall mark in the field the location of all such utilities horizontally on the ground in advance of Project construction in the immediate area of such utilities.

12. **Inspection and Acceptance by the Owner**.

(a) Throughout the Adjustment construction hereunder, the Owner shall provide adequate inspectors for such construction. The work shall be inspected by the Owner's inspector(s) at least once each working day, and more often if such inspections are deemed necessary by Owner. Further, upon request by the Developer or its contractors, the Owner shall furnish an inspector at any reasonable time in which construction is underway pursuant to this Agreement, including occasions when construction is underway in excess of the usual forty (40) hour work week and at such other times as reasonably required. The Owner agrees to promptly notify the Developer of any concerns resulting from any such inspection.

(b) The Owner shall perform a final inspection of the adjusted Owner Utilities, including conducting any tests as are necessary or appropriate, within **five (5) business days** after completion of construction hereunder. The Owner shall accept such construction if it is consistent with the performance standards described in Paragraph 3, by giving written notice of such acceptance to the Developer within said **five (5) day** period. If the Owner does not accept the construction, then the Owner shall, not later than the expiration of said **five (5) day** period, notify the Developer in writing of its grounds for non-acceptance and suggestions for correcting the problem, and if the suggested corrections are justified, the Developer will comply. The Owner shall re-inspect any revised construction (and re-test if appropriate) and give notice of acceptance, not later than **five (5) business days** after completion of corrective work. The Owner's failure to inspect and/or to give any required notice of acceptance or non-acceptance within the specified time period shall be deemed acceptance.

(c) From and after the Owner's acceptance (or deemed acceptance) of an adjusted Owner Utility, the Owner agrees to accept ownership of, and full operation and maintenance responsibility for, such Owner Utility.

13. **Design Changes.** The Developer will be responsible for additional Adjustment design and construction costs necessitated by design changes to the Project, upon the terms specified herein.

14. **Field Modifications.** The Developer shall provide the Owner with documentation of any field modifications, including Utility Adjustment Field Modifications as well as minor changes described in Paragraph 16(b), occurring in the Adjustment of the Owner Utilities.

15. **Real Property Interests.**

(a) The Owner has provided, or upon execution of this Agreement shall promptly provide to the Developer, documentation acceptable to TxDOT indicating any right, title or interest in real property claimed by the Owner with respect to the Owner Utilities in their existing location(s). Such claims are subject to TxDOT's approval as part of its review of the Developer Utility Assembly as described in Paragraph 2. Claims approved by TxDOT as to rights or interests are referred to herein as "Existing Interests".

(b) If acquisition of any new easement or other interest in real property ("New Interest") is necessary for the Adjustment of any Owner Utilities, then the Owner shall be responsible for undertaking such acquisition. The Owner shall implement each acquisition hereunder expeditiously so that related Adjustment construction can proceed in accordance with the Developer's Project schedules. The Developer shall be responsible for its share (as specified in Paragraph 4) of the actual and reasonable acquisition costs of any such New Interest (including without limitation the Owner's reasonable overhead charges and reasonable legal costs as well as compensation paid to the landowner), excluding any costs attributable to Betterment as described in Paragraph 15(c), and subject to the provisions of Paragraph 15(e); provided, however, that all acquisition costs shall be subject to the Developer's prior written approval. Eligible acquisition costs shall be segregated from other costs on the Owner's estimates and invoices. Any such New Interest shall have a written valuation and shall be acquired in accordance with applicable law.

(c) The Developer shall pay its share only for a replacement in kind of an Existing Interest (e.g., in width and type), unless a New Interest exceeding such standard (i) is required in order to accommodate the Project or by compliance with applicable law, or (ii) is called for by the Developer in the interest of overall Project economy. Any New Interest which is not the Developer's responsibility pursuant to the preceding sentence shall be considered a Betterment to the extent that it upgrades the Existing Interest which it replaces, or in its entirety if the related Owner Utility was not installed pursuant to an Existing Interest. Betterment costs shall be solely the Owner's responsibility.

(d) For each Existing Interest located within the final Project right of way, upon completion of the related Adjustment work and its acceptance by the Owner, the Owner agrees to execute a quitclaim deed or other appropriate documentation relinquishing such Existing Interest to TxDOT, unless the affected Owner Utility is remaining in its original location or is being reinstalled in a new location within the area subject to such Existing Interest. All quitclaim deeds or other relinquishment documents shall be subject to TxDOT's approval as part of its review of the Utility Assembly as described in Paragraph 2. For each such Existing Interest relinquished by the Owner, the Developer shall do one of the following to compensate the Owner for such Existing Interest, as appropriate:

(e) (i) If the Owner acquires a New Interest for the affected Owner Utility, the Developer shall reimburse the Owner for the Developer's share of the Owner's actual and reasonable acquisition costs in accordance with Paragraph 15(b), subject to Paragraph 15(c); or

(ii) If the Owner does not acquire a New Interest for the affected Owner Utility, the Developer shall compensate the Owner for the Developer's share of the fair market value of such relinquished Existing Interest, as mutually agreed between the Owner and the Developer and supported by a written valuation.

The compensation provided to the Owner pursuant to either subparagraph (i) or subparagraph (ii) above shall constitute complete compensation to the Owner for the relinquished Existing Interest and any New Interest, and no further compensation shall be due to the Owner from the Developer or TxDOT on account of such Existing Interest or New Interest(s).

(f) The Owner shall execute a Utility Joint Use Acknowledgment (ROW-U-JUAA-DA) for each Adjustment where required pursuant to TxDOT policies. All Utility Joint Use Acknowledgments shall be subject to TxDOT approval as part of its review of the Utility Assembly as described in Paragraph 2.

16. **Amendments and Modifications.** This Agreement may be amended or modified only by a written instrument executed by the parties hereto, in accordance with Paragraph 16(a) or Paragraph 16(b) below.

(a) Except as otherwise provided in Paragraph 16(b), any amendment or modification to this Agreement or the Plans attached hereto shall be implemented by a Utility Adjustment Agreement Amendment ("UAAA") in the form of Exhibit B hereto (TxDOT-DA-U-71A-DM). The UAAA form can be used for a new scope of work with concurrence of the Developer and TxDOT as long as the design and construction responsibilities have not changed. Each UAAA is subject to the review and approval of TxDOT, prior to its becoming effective for any purpose and prior to any work being initiated thereunder. The Owner agrees to keep and track costs for each UAAA separately from other work being performed.

(b) For purposes of this Paragraph 16(b), "Utility Adjustment Field Modification" shall mean any horizontal or vertical design change from the Plans included in a Utility Assembly previously approved by TxDOT, due either to design of the Project or to conditions not accurately reflected in the approved Utility Assembly (e.g., shifting the alignment of an 8 in. water line to miss a modified or new roadway drainage structure). A Utility Adjustment Field Modification agreed upon by the Developer and Owner does not require a UAAA, provided that the modified Plans have been submitted to TxDOT for its review and comment. A minor change (e.g., an additional water valve, an added utility marker at a ROW line, a change in vertical bend, etc.) will not be considered a Utility Adjustment Field Modification and will not require a UAAA, but shall be shown in the documentation required pursuant to Paragraph 14.

(c) This Agreement does not alter and shall not be construed in any way to alter the obligations, responsibilities, benefits, rights, remedies, and claims between the Developer and TxDOT to design and construct the Project, including the Adjustment.

17. **Entire Agreement.** This Agreement embodies the entire agreement between the parties and there are no oral or written agreements between the parties or any representations made which are not expressly set forth herein.

18. **Assignment; Binding Effect; TxDOT as Third Party Beneficiary.** Neither the Owner or the Developer may assign any of its rights or delegate any of its duties under this Agreement without the prior written consent of the other party and of TxDOT, which consent may not be

unreasonably withheld or delayed; provided, however, that the Developer may assign any of its rights and/or delegate any of its duties to TxDOT or to any other entity engaged by TxDOT to fulfill the Developer's obligations, at any time without the prior consent of the Owner.

This Agreement shall bind the Owner, the Developer and their successors and permitted assigns, and nothing in this Agreement nor in any approval subsequently provided by any party hereto shall be construed as giving any benefits, rights, remedies, or claims to any other person, firm, corporation or other entity, including, without limitation, any contractor or other party retained for the Adjustment work or the public in general; provided, however, that the Owner and the Developer agree that although TxDOT is not a party to this Agreement, TxDOT is intended to be a third-party beneficiary to this Agreement.

19. **Breach by the Parties.**

(a) If the Owner claims that the Developer has breached any of its obligations under this Agreement, the Owner will notify the Developer and TxDOT in writing of such breach, and the Developer shall have 30 days following receipt of such notice in which to cure such breach, before the Owner may invoke any remedies which may be available to it as a result of such breach; provided, however, that both during and after such period TxDOT shall have the right, but not the obligation, to cure any breach by the Developer. Without limiting the generality of the foregoing, (a) TxDOT shall have no liability to the Owner for any act or omission committed by the Developer in connection with this Agreement, including without limitation any claimed defect in any design or construction work supplied by the Developer or by its contractors, and (b) in no event shall TxDOT be responsible for any repairs or maintenance to the Owner Utilities Adjusted pursuant to this Agreement.

(b) If the Developer claims that the Owner has breached any of its obligations under this Agreement, the Developer will notify the Owner and TxDOT in writing of such breach, and the Owner shall have 30 days following receipt of such notice in which to cure such breach, before the Developer may invoke any remedies which may be available to it as a result of such breach.

20. **Traffic Control.** The Developer shall provide traffic control or shall reimburse the Owner for the Developer's share (if any, as specified in Paragraph 4) of the costs for traffic control made necessary by the Adjustment work performed by either the Developer or the Owner pursuant to this Agreement, in compliance with the requirements of the Texas Manual on Uniform Traffic Control Devices. Betterment percentages calculated in Paragraph 9 shall also apply to traffic control costs.

21. **Notices.** Except as otherwise expressly provided in this Agreement, all notices or communications pursuant to this Agreement shall be sent or delivered to the following:

The Owner:

Phone:
Fax:

The Developer:

Phone:

Fax:

A party sending a notice of default of this Agreement to another party shall also send a copy of such notice to TxDOT and the DA Utility Manager at the following addresses:

TxDOT:

TxDOT Department of Transportation
Attention: Donald C. Toner, Jr., SR/WA
125 E. 11th Street
Austin, Texas 78701-2483
Phone: (512) 936-0980

DA Utility Manager:

Any notice or demand required herein shall be given (a) personally, (b) by certified or registered mail, postage prepaid, return receipt requested, or (c) by reliable messenger or overnight courier to the appropriate address set forth above. Any notice served personally shall be deemed delivered upon receipt, and any notice served by certified or registered mail or by reliable messenger or overnight courier shall be deemed delivered on the date of receipt as shown on the addressee's registry or certification of receipt or on the date receipt is refused as shown on the records or manifest of the U.S. Postal Service or such courier. Any party may from time to time designate any other address for this purpose by written notice to all other parties; TxDOT may designate another address by written notice to all parties.

22. **Approvals.** Any acceptance, approval, or any other like action (collectively "Approval") required or permitted to be given by either the Developer, , the Owner or TxDOT pursuant to this Agreement:

(a) Must be in writing to be effective (except if deemed granted pursuant hereto),

(b) Shall not be unreasonably withheld or delayed; and if Approval is withheld, such withholding shall be in writing and shall state with specificity the reason for withholding such Approval, and every effort shall be made to identify with as much detail as possible what changes are required for Approval, and

(c) Except for approvals by TxDOT, and except as may be specifically provided otherwise in this Agreement, shall be deemed granted if no response is provided to the party requesting an Approval within the time period prescribed by this Agreement (or if no time period is prescribed, then fourteen (14) calendar days), commencing upon actual receipt by the party from which an Approval is requested or required, of a request for Approval from the requesting party. All requests for Approval shall be sent out by the requesting party to the other party in accordance with Paragraph 21.

23. **Time**.

(a) Time is of the essence in the performance of this Agreement.

(b) All references to "days" herein shall be construed to refer to calendar days, unless otherwise stated.

(c) No party shall be liable to another party for any delay in performance under this Agreement from any cause beyond its control and without its fault or negligence ("Force

Majeure"), such as acts of God, acts of civil or military authority, fire, earthquake, strike, unusually severe weather, floods or power blackouts.

24. **Continuing Performance.** In the event of a dispute, the Owner and the Developer agree to continue their respective performance hereunder to the extent feasible in light of the dispute, including paying billings, and such continuation of efforts and payment of billings shall not be construed as a waiver of any legal right.

25. **Equitable Relief.** The Developer and the Owner acknowledge and agree that delays in Adjustment of the Owner Utilities will impact the public convenience, safety and welfare, and that (without limiting the parties' remedies hereunder) monetary damages would be inadequate to compensate for delays in the construction of the Project. Consequently, the parties hereto (and TxDOT as well, as a third party beneficiary) shall be entitled to specific performance or other equitable relief in the event of any breach of this Agreement which threatens to delay construction of the Project; provided, however, that the fact that specific performance or other equitable relief may be granted shall not prejudice any claims for payment or otherwise related to performance of the Adjustment work hereunder.

26. **Authority.** The Owner and the Developer each represent and warrant to the other party that the warranting party possesses the legal authority to enter into this Agreement and that it has taken all actions necessary to exercise that authority and to lawfully authorize its undersigned signatory to execute this Agreement and to bind such party to its terms. Each person executing this Agreement on behalf of a party warrants that he or she is duly authorized to enter into this Agreement on behalf of such party and to bind it to the terms hereof.

27. **Cooperation.** The parties acknowledge that the timely completion of the Project will be influenced by the ability of the Owner (and its contractors) and the Developer to coordinate their activities, communicate with each other, and respond promptly to reasonable requests. Subject to the terms and conditions of this Agreement, the Owner and the Developer agree to take all steps reasonably required to coordinate their respective duties hereunder in a manner consistent with the Developer's current and future construction schedules for the Project.

28. **Termination.** If the Project is canceled or modified so as to eliminate the necessity of the Adjustment work described herein, then the Developer shall notify the Owner in writing and the Developer reserves the right to thereupon terminate this Agreement. Upon such termination, the parties shall negotiate in good faith an amendment that shall provide mutually acceptable terms and conditions for handling the respective rights and liabilities of the parties relating to such termination.

29. **Nondiscrimination**. Each party hereto agrees, with respect to the work performed by such party pursuant to this Agreement, that such party shall not discriminate on the grounds of race, color, sex, national origin or disability in the selection and/or retention of contractors and consultants, including procurement of materials and leases of equipment.

30. **Applicable Law, Jurisdiction and Venue**. This Agreement shall be governed by the laws of the State of Texas, without regard to the conflict of laws principles thereof. Venue for any action brought to enforce this Agreement or relating to the relationship between any of the parties shall be the District Court of Travis County, Texas or the United States District Court for the Western District of Texas (Austin).

31. **Waiver of Consequential Damages.** No party hereto shall be liable to any other party to this Agreement, whether in contract, tort, equity, or otherwise (including negligence, warranty, indemnity, strict liability, or otherwise,) for any punitive, exemplary, special, indirect, incidental,

or consequential damages, including, without limitation, loss of profits or revenues, loss of use, claims of customers, or loss of business opportunity.

32. **Captions**. The captions and headings of the various paragraphs of this Agreement are for convenience and identification only, and shall not be deemed to limit or define the content of their respective paragraphs.

33. **Counterparts.** This Agreement may be executed in any number of counterparts. Each such counterpart hereof shall be deemed to be an original instrument but all such counterparts together shall constitute one and the same instrument.

34. **Effective Date.** This Agreement shall become effective upon the later of (a) the date of signing by the last party (either the Owner or Developer) signing this Agreement, and (b) the date of TxDOT's approval as indicated by the signature of TxDOT's representative, below.

APPROVED BY:
**TEXAS DEPARTMENT OF TRANSPORTATION**

By: ______________________________________
Authorized Signature

Printed
Name: Donald C. Toner, Jr. SR/WA
Director – Strategic Projects Right of Way
Strategic Projects Division
Texas Department of Transportation

Date: ______________________________________

**OWNER**

_____
[Print Owner Name]

By: ______________________________________
Duly Authorized Representative

Printed
Name: ______________________________________

Title: ______________________________________

Date: ______________________________________

**DEVELOPER**

By: ______________________________________
Duly Authorized Representative

Printed
Name: ______________________________________

Title: ______________________________________

Date: ______________________________________

County:
ROW CSJ No.:
Const. CSJ No.:
Highway:
Limits:
Fed. Proj. No.:

# EXHIBIT A

# PLANS, SPECIFICATIONS, COST ESTIMATES AND ALLOCATION

County:
ROW CSJ No.:
Const. CSJ No.:
Highway:
Limits:
Fed. Proj. No.:

# EXHIBIT B

# UTILITY ADJUSTMENT AGREEMENT AMENDMENT (TxDOT-DA-U-71A-DM)

County:
Highway:
Limits:
Fed. Proj. No.:
ROW CSJ No.:
Const. CSJ No.:

# PROJECT UTILITY ADJUSTMENT AGREEMENT
## (Owner Managed)

Agreement No.: -U-______

**THIS AGREEMENT,** by and between __________, hereinafter identified as the "**Developer**", and _____, hereinafter identified as the "**Owner**", is as follows:

## WITNESSETH

**WHEREAS,** the STATE OF TEXAS, acting by and through the Texas Department of Transportation, hereinafter identified as "TxDOT", is authorized to design, construct, operate, maintain, and improve turnpike projects as part of the state highway system throughout the State of Texas, all in conformance with the provisions of Chapters 201, 203, 222, 223, 224 and 228, Texas Transportation Code, as amended; and

**WHEREAS,** TxDOT proposes to construct a toll project identified as the ___________ Project (the "Project"); and

**WHEREAS,** pursuant to that certain Development Agreement by and between TxDOT and the Developer with respect to the Project (the "DA"), the Developer has undertaken the obligation to design, construct, finance, operate and maintain the Project and adhere to all requirements in the DA; and

**WHEREAS,** the Developer's duties pursuant to the DA include causing the relocation, removal, or other necessary adjustment of existing utilities impacted by the Project (collectively, "Adjustment"), subject to the provisions herein; and

**WHEREAS,** the Project may receive Federal funding, financing and/or credit assistance; and

**WHEREAS**, the Developer has notified the Owner that certain of its facilities and appurtenances (the "Owner Utilities") are in locational conflict with the Project (and/or the "Ultimate Configuration" of the Project), and the Owner has decided to undertake the Adjustment of the Owner Utilities and agrees that the "Project" will be constructed in accordance with §203.092, Texas Transportation Code, as amended, Rule 21.23 of Title 43 Tex. Admin. Code, and 23 CFR 645A (Utility Relocations, Adjustments and Reimbursement); and

**WHEREAS**, the Owner Utilities and the proposed Adjustment of the Owner Utilities are described as follows *[insert below a description of the affected facilities (by type, size and location) as well as a brief description of the nature of the Adjustment work to be performed (e.g., "adjust 12" waterline from approximately Highway Station 100+00 to approximately Highway Station 200+00")]:*
_____; and

**WHEREAS**, the Owner recognizes that time is of the essence in completing the work contemplated herein; and

**WHEREAS**, the Developer and the Owner desire to implement the Adjustment of the Owner Utilities by entering into this Agreement.

## AGREEMENT

**NOW, THEREFORE**, in consideration of these premises and of the mutual covenants and agreements of the parties hereto and other good and valuable consideration, the receipt and sufficiency of which being hereby acknowledged, the Developer and the Owner agree as follows:

1. **Preparation of Plans**. *[Check one box that applies:]*

☐ The Developer has hired engineering firm(s) acceptable to the Owner to perform all engineering services needed for the preparation of plans, required specifications, and cost estimates, attached hereto as Exhibit A (collectively, the “Plans”), for the proposed Adjustment of the Owner Utilities. The Developer represents and warrants that the Plans conform to the most recent Utility Accommodation Rules issued by the Texas Department of Transportation (“TxDOT”), set forth in 43 Tex. Admin. Code, Part 1, Chapter 21, Subchapter C, *et seq*. (the “UAR”). By its execution of this Agreement or by the signing of the Plans, Owner hereby approves and confirms that the Plans are in compliance with the “standards” described in Paragraph 3(d).

☐ The Owner has provided plans, required specifications and cost estimates, attached hereto as Exhibit A (collectively, the “Plans”), for the proposed Adjustment of the Owner Utilities. The Owner represents and warrants that the Plans conform to the UAR. By its execution of this Agreement theDeveloper hereby approves the Plans. The Owner also has provided to the Developer a utility plan view map illustrating the location of existing and proposed utility facilities on the Developer’s right of way map of the Project. With regard to its preparation of the Plans, Owner represents as follows *[check one box that applies]*:

  ☐ The Owner’s employees were utilized to prepare the Plans, and the charges therefore do not exceed the Owner’s typical costs for such work.

  ☐ The Owner utilized consulting engineers to prepare the Plans, and the fees for such work are not based upon a percentage of construction costs. Further, such fees encompass only the work necessary to prepare the Plans for Adjustment of the Owner Utilities described herein, and do not include fees for work done on any other project. The fees of the consulting engineers are reasonable and are comparable to the fees typically charged by consulting engineers in the locale of the Project for comparable work for the Owner.

2. **Review by TxDOT**. The parties hereto acknowledge and agree as follows:

(a) Upon execution of this Agreement by the Developer and the Owner, the Developer will submit this Agreement, together with the attached Plans, to TxDOT for its review and approval as part of a package referred to as a “Utility Assembly”. The parties agree to cooperate in good faith to modify this Agreement and/or the Plans, as necessary and mutually acceptable to all parties, to respond to any comments made by TxDOT thereon. Without limiting the generality of the foregoing, (i) the Owner agrees to respond (with comment and/or acceptance) to any modified Plans and/or Agreement prepared by the Developer in response to TxDOT comments within **fourteen (14) business days** after receipt of such modifications; and (ii) if the Owner originally prepared the Plans, the

Owner agrees to modify the Plans in response to TxDOT comments and to submit such modified Plans to the Developer for its comment and/or approval (and re-submittal to TxDOT for its comment and/or approval) within **fourteen (14) business days** after receipt of TxDOT's comments. The Owner's failure to timely respond to any modified Plans submitted by the Developer pursuant to this paragraph shall be deemed the Owner's approval of same. If the Owner fails to timely prepare modified Plans which are its responsibility hereunder, then the Developer shall have the right to modify the Plans for the Owner's approval as if the Developer had originally prepared the Plans. The Developer shall be responsible for providing Plans to and obtaining comments on and approval of the Plans from the Developer. The process set forth in this paragraph will be repeated until the Owner, the Developer and TxDOT have all approved this Agreement and the Plans.

(b) The parties hereto acknowledge and agree that TxDOT's review, comments, and/or approval of a Utility Assembly or any component thereof shall constitute TxDOT's approval of the location and manner in which a Utility Assembly will be installed, adjusted, or relocated within the state highway right of way, subject to the Developer's and Owner's satisfactory performance of the Adjustment work in accordance with the approved Plans. TxDOT has no duty to review Owner facilities or components for their quality or adequacy to provide the intended utility service.

3. **Design and Construction Standards.**

(a) All design and construction performed for the Adjustment work which is the subject of this Agreement shall comply with and conform to the following:

(1) All applicable local and state laws, regulations, decrees, ordinances and policies, including the UAR, the Utility Manual issued by TxDOT (to the extent its requirements are mandatory for Utility Adjustments necessitated by the Project, communicated to the Owner by the Developer or TxDOT), the requirements of the DA, and the policies of TxDOT;

(2) All Federal laws, regulations, decrees, ordinances and policies applicable to projects receiving Federal funding, financing and/or credit assistance, including without limitation 23 CFR 645 Subparts A and B;

(3) The terms of all governmental permits or other approvals, as well as any private approvals of third parties necessary for such work; and

(4) The standard specifications, standards of practice, and construction methods (collectively, "standards") which the Owner customarily applies to facilities comparable to the Owner Utilities that are constructed by the Owner or for the Owner by its contractors at the Owner's expense, which standards are current at the time this Agreement is signed by the Owner, and which the Owner has submitted to the Developer in writing.

(5) Owner agrees that all service meters must be placed outside of the State ROW.

(b) Such design and construction also shall be consistent and compatible with (i) the Developer's current design and construction of the Project, (ii) the "Ultimate Configuration" for the Project, and (iii) any other utilities being installed in the same vicinity. The Owner acknowledges receipt from the Developer of Project plans and Ultimate Configuration documents as necessary to comply with the foregoing. In case of any inconsistency among any of the standards referenced in this Agreement, the most stringent standard shall apply.

(c) The plans, specifications, and cost estimates contained in Exhibit A shall identify and detail all utility facilities that the Owner intends to abandon in place rather than remove, including material type, quantity, size, age, and condition. No facilities containing hazardous or contaminated materials may be abandoned, but shall be specifically identified and removed in accordance with the requirements of subparagraph (a). It is understood and agreed that the Developer shall not pay for the assessment and remediation or other corrective action relating to soil and ground water contamination caused by the utility facility prior to the removal.

## 4. **Construction by the Owner; Scheduling.**

(a) The Owner hereby agrees to perform the construction necessary to adjust the Owner Utilities. All construction work hereunder shall be performed in a good and workmanlike manner, and in accordance with the Plans (except as modified pursuant to Paragraph 17). The Owner agrees that during the Adjustment of the Owner Utilities, the Owner and its contractors will coordinate their work with the Developer so as not to interfere with the performance of work on the Project by the Developer or by any other party. "Interfere" means any action or inaction that interrupts, interferes, delays or damages Project work.

(b) The Owner may utilize its own employees or may retain such contractor or contractors as are necessary to adjust the Owner Utilities, through the procedures set forth in Form TxDOT-U-48 "Statement Covering Contract Work" attached hereto as Exhibit C. If the Owner utilizes its own employees for the Construction work portion of the Adjustment of Owner Utilities, a Form TxDOT-U-48 is not required. If the Adjustment of the Owner Utilities is undertaken by the Owner's contractor under a competitive bidding process, all bidding and contracting shall be conducted in accordance with all federal and state laws and regulations applicable to the Owner and the Project.

(c) The Owner shall obtain all permits necessary for the construction to be performed by the Owner hereunder, and the Developer shall cooperate in that process as needed. The Owner shall submit a traffic control plan to the Developer as required for Adjustment work to be performed on existing road rights of way.

(d) The Owner shall commence its construction for Adjustment of each Owner Utility hereunder promptly after (i) receiving written notice to proceed therewith from the Developer, and (ii) any Project right of way necessary for such Adjustment has been acquired either by Developer (for adjusted facilities to be located within the Project right of way) or by the Owner (for adjusted facilities to be located outside of the Project right of way), or a right-of-entry permitting Owner's construction has been obtained from the landowner by the Developer or by the Owner with the Developer's prior approval. The Owner shall notify the Developer at least 72 hours prior to commencing construction for the Adjustment of each Owner Utility hereunder.

(e) The Owner shall expeditiously stake the survey of the proposed locations of the Owner Utilities being adjusted, on the basis of the final approved Plans. The Developer shall verify that the Owner's Utilities, whether moving to a new location or remaining in place, clear the planned construction of the Project as staked in the field as well as the Ultimate Configuration.

(f) The Owner shall complete all of the Utility reconstruction and relocation work, including final testing and acceptance thereof *[check one box that applies]*:

☐ on or before ______, 20___.

☐ a duration not to exceed _____ calendar days upon notice to proceed by the Developer.

(g) The amount of reimbursement due to the Owner pursuant to this Agreement for the affected Adjustment(s) shall be reduced by ten percent (10%) for each 30-day period (and by a pro rata amount of said ten percent (10%) for any portion of a 30-day period) by which the final completion and acceptance date for the affected Adjustment(s) exceeds the applicable deadline. The provisions of this Paragraph 4(g) shall not limit any other remedy available to the Developer at law or in equity as a result of the Owner's failure to meet any deadline hereunder.

The above reduction applies except to the extent due to (i) Force Majeure as described in Paragraph 24(c), (ii) any act or omission of the Developer, if the Owner fails to meet any deadline established pursuant to Paragraph 4(f), or (iii) if the Developer and/or TxDOT determine, in their sole discretion, that a delay in the relocation work is the result of circumstances beyond the control of the Owner or Owner's contractor and the Developer will not reduce the reimbursement.

## 5. **Costs of the Work.**

(a) The Owner's costs for Adjustment of each Owner Utility shall be derived from (i) the accumulated total of costs incurred by the Owner for design and construction of such Adjustment, plus (ii) the Owner's other related costs to the extent permitted pursuant to Paragraph 5(c) (including without limitation the eligible engineering costs incurred by the Owner for design prior to execution of this Agreement), plus (iii) the Owner's right of way acquisition costs, if any, which are reimbursable pursuant to Paragraph 16.

(b) The Owner's costs associated with Adjustment of the Owner Utilities shall be developed pursuant to the method checked and described below *[check only one box]*:

☐ (1) Actual costs accumulated in accordance with a work order accounting procedure prescribed by the applicable Federal or State regulatory body ("Actual Cost"); or

☐ (2) Actual costs accumulated in accordance with an established accounting procedure developed by the Owner and which the Owner uses in its regular operations ("Actual Cost"); or

☐ (3) The agreed sum of $ _____ ("Agreed Sum"), as supported by the analysis of estimated costs attached hereto as part of Exhibit A.

6. **Responsibility for Costs of Adjustment Work.**

The Agreed Sum or Actual Cost, as applicable, of all work to be performed pursuant to this Agreement shall be allocated between the Developer and the Owner as identified in Exhibit A and in accordance with §203.092, Texas Transportation Code. An allocation percentage may be determined by application of an eligibility ratio, if appropriate, as detailed in Exhibit A; provided, however, that any portion of an Agreed Sum or Actual Cost attributable to Betterment shall be allocated 100% to the Owner in accordance with Paragraph 10. All costs charged to the Developer by the Owner shall be reasonable and shall be computed using rates and schedules not exceeding those applicable to similar work performed by or for the Owner at the Owner's expense. Payment of the costs allocated to the Developer pursuant to this Agreement (if any) shall be full compensation to the Owner for all costs incurred by the Owner in Adjusting the Owner Utilities (including without limitation costs of relinquishing and/or acquiring right of way).

7. **Billing, Payment, Records and Audits: Actual Cost Method.** The following provisions apply if the Owner's costs are developed under procedure (1) or (2) described in Paragraph 5(b):

(a) After (i) completion of all Adjustment work to be performed pursuant to this Agreement, (ii) the Developer's final inspection of the Adjustment work by Owner hereunder (and resolution of any deficiencies found), and (iii) receipt of an invoice complying with the applicable requirements of Paragraph 9, the Developer shall pay to the Owner an amount equal to ninety percent (90%) of the Developer's share of the Owner's costs as shown in such final invoice (less amounts previously paid, and applicable credits). After completion of the Developer's audit referenced in Paragraph 7(c) and the parties' mutual determination of any necessary adjustment to the final invoice resulting therefrom, the Developer shall make any final payment due so that total payments will equal the total amount of the Developer's share reflected on such final invoice (as adjusted, if applicable).

(b) When requested by the Owner and properly invoiced in accordance with Paragraph 9, the Developer shall make intermediate payments to the Owner based upon the progress of the work completed at not more than monthly intervals, and such payments shall not exceed eighty percent (80%) of the Developer's share of the Owner's eligible costs as shown in each such invoice (less applicable credits). Intermediate payments shall not be construed as final payment for any items included in the intermediate payment.

(c) The Owner shall maintain complete and accurate cost records for all work performed pursuant to this Agreement,. The Owner shall maintain such records for four (4) years after receipt of final payment hereunder. The Developer and their respective representatives shall be allowed to audit such records during the Owner's regular business hours. Unsupported charges will not be considered eligible for reimbursement. The parties shall mutually agree upon (and shall promptly implement by payment or refund, as applicable) any financial adjustment found necessary by the Developer's audit. TxDOT, the Federal Highway Administration, and their respective representatives also shall be allowed to audit such records upon reasonable notice to the Owner, during the Owner's regular business hours.

8. **Billing and Payment: Agreed Sum Method.** If the Owner's costs are developed under procedure (3) described in Paragraph 5(b), then the Developer shall pay its share of the Agreed Sum to the Owner after (a) completion of all Adjustment work to be performed pursuant to this Agreement, (b) the Developer's final inspection of the Adjustment work by Owner hereunder

(and resolution of any deficiencies found), and (c) receipt of an invoice complying with the applicable requirements of Paragraph 9.

9. **Invoices.** If the Owner's costs are developed under procedure (1) or (2) described in Paragraph 5(b), then Owner shall list each of the services performed, the amount of time spent and the date on which the service was performed. The original and three (3) copies of each invoice shall be submitted to the Developer at the address for notices stated in Paragraph 22, unless otherwise directed by the Developer pursuant to Paragraph 22, together with (1) such supporting information to substantiate all invoices as reasonably requested by the Developer, and (2) such waivers or releases of liens as the Developer may reasonably require. The Owner shall make commercially reasonable efforts to submit final invoices not later than one hundred twenty (120) days after completion of work. Final invoices shall include any necessary quitclaim deeds pursuant to Paragraph 16, and all applicable record drawings accurately representing the Adjustment as installed. The Owner hereby acknowledges and agrees that any right it may have for reimbursement of any of its costs not submitted to the Developer within eighteen months following completion of all Adjustment work to be performed by both parties pursuant to this Agreement shall be deemed to have been abandoned and waived. Invoices shall clearly delineate total costs, and those costs that are reimbursable pursuant to the terms of this Agreement.

10. **Betterment.**

(a) For purposes of this Agreement, the term "Betterment" means any upgrading of an Owner Utility being adjusted that is not attributable to the construction of the Project and is made solely for the benefit of and at the election of the Owner, including but not limited to an increase in the capacity, capability, efficiency or function of the adjusted Utility over that provided by the existing Utility facility or an expansion of the existing Utility facility; provided, however, that the following are not considered Betterments:

(i) any upgrading which is required for accommodation of the Project;

(ii) replacement devices or materials that are of equivalent standards although not identical;

(iii) replacement of devices or materials no longer regularly manufactured with the next highest grade or size;

(iv) any upgrading required by applicable laws, regulations or ordinances;

(v) replacement devices or materials which are used for reasons of economy (e.g., non-stocked items may be uneconomical to purchase); or

(vi) any upgrading required by the Owner's written "standards" meeting the requirements of Paragraph 3(a)(4).

*[Include the following for fiber optic Owner Utilities only:]* Extension of an Adjustment to the nearest splice boxes shall not be considered a Betterment if required by the Owner in order to maintain its written telephony standards.

Any upgrading required by the Owner's written "standards" meeting the requirements of Paragraph 3(a)(4) shall be deemed to be of direct benefit to the Project.

(b) It is understood and agreed that the Developer will not pay for any Betterments and that the Owner shall not be entitled to payment therefor. No Betterment may be performed in connection with the Adjustment of the Owner Utilities which is incompatible with the Project or the Ultimate Configuration or which cannot be performed within the other constraints of applicable law, any applicable governmental approvals, including without limitation the scheduling requirements thereunder. Accordingly, the parties agree as follows *[check the one box that applies, and complete if appropriate]*:

☐ (i) The Adjustment of the Owner Utilities pursuant to the Plans does not include any Betterment.

☐ The Adjustment of the Owner Utilities pursuant to the Plans includes Betterment to the Owner Utilities by reason of *[insert explanation, e.g. "replacing 12" pipe with 24" pipe]*: _____. The Owner has provided to the Developer comparative estimates for (i) all costs for work to be performed by the Owner pursuant to this Agreement, including work attributable to the Betterment, and (ii) the cost to perform such work without the Betterment, which estimates are hereby approved by the Developer. The estimated amount of the Owner's costs for work hereunder which is attributable to Betterment is $_____, calculated by subtracting (ii) from (i). The percentage of the total cost of the Owner's work hereunder which is attributable to Betterment is _____%, calculated by subtracting (ii) from (i), which remainder shall be divided by (i).

(c) If Paragraph 10(b) identifies Betterment, then the following shall apply:

(i) If the Owner's costs are developed under procedure (3) described in Paragraph 5(b), then the Agreed Sum stated in that Paragraph includes any credits due to the Developer on account of the identified Betterment, and no further adjustment shall be made on account of same.

(ii) If the Owner's costs are developed under procedure (1) or (2) described in Paragraph 5(b), the parties agree as follows *[If Paragraph 10(b) identifies Betterment and the Owner's costs are developed under procedure (1) or (2), check the one appropriate provision]*:

☐ The estimated cost stated in Paragraph 10(b) is the agreed and final amount due for Betterment hereunder. Accordingly, each intermediate invoice submitted pursuant to Paragraph 7(b) shall include a credit for an appropriate percentage of the agreed Betterment amount, proportionate to the percentage of completion reflected in such invoice. The final invoice submitted pursuant to Paragraph 7(a) shall reflect the full amount of the agreed Betterment credit. For each invoice described in this paragraph, the credit for Betterment shall be applied before calculating the Developer's share (pursuant to Paragraph 6) of the cost of the Adjustment work. No other adjustment (either up or down) shall be made based on actual Betterment costs.

☐ The Owner is responsible for the actual cost of the identified Betterment, determined by multiplying (a) the Betterment percentage stated in Paragraph 10(b), by (b) the actual cost of all work performed by the Owner pursuant to this Agreement (including work attributable to the Betterment), as invoiced by the Owner to the Developer. Accordingly, each invoice submitted pursuant to either Paragraph 7(a) or Paragraph 7(b) shall credit the Developer with an amount calculated by multiplying (x) the Betterment percentage stated in Paragraph 10(b), by (y) the amount billed on such invoice.

(d) The determinations and calculations of Betterment described in this Paragraph 10 shall exclude right of way acquisition costs. Betterment in connection with right-of-way acquisition is addressed in Paragraph 16.

11. **Salvage.** For any Adjustment from which the Owner recovers any materials and/or parts and retains or sells the same, after application of any applicable Betterment credit, the Developer is entitled to a credit for the salvage value of such materials and/or parts. If the Owner's costs are developed under procedure (1) or (2) described in Paragraph 5(b), then the final invoice submitted pursuant to Paragraph 7(a) shall credit the Developer with the full salvage value. If the Owner's costs are developed under procedure (3) described in Paragraph 5(b), then the Agreed Sum includes any credit due to the Developer on account of salvage.

12. **Utility Investigations.** At the Developer's request, the Owner shall assist the Developer in locating any Utilities (including appurtenances) which are owned and/or operated by Owner and may be impacted by the Project. Without limiting the generality of the foregoing, in order to help assure that neither the adjusted Owner Utilities nor existing, unadjusted utilities owned or operated by the Owner are damaged during construction of the Project, the Owner shall mark in the field the location of all such utilities horizontally on the ground in advance of Project construction in the immediate area of such utilities.

13. **Inspection and Ownership of Owner Utilities.**

(a) The Developer shall have the right, at its own expense, to inspect the Adjustment work performed by the Owner or its contractors, during and upon completion of construction. All inspections of work shall be completed and any comment provided within **five (5) business days** after request for inspection is received.

(b) The Owner shall accept full responsibility for all future repairs and maintenance of said Owner Utilities. In no event shall the Developer or TxDOT become responsible for making any repairs or maintenance, or for discharging the cost of same. The provisions of this Paragraph 13(b) shall not limit any rights which the Owner may have against the Developer if either party respectively damages any Owner Utility as a result of its respective Project activities.

14. **Design Changes.** The Developer will be responsible for additional Adjustment design and responsible for additional construction costs necessitated by design changes to the Project made after approval of the Plans, upon the terms specified herein.

15. **Field Modifications.** The Owner shall provide the Developer with documentation of any field modifications, including Utility Adjustment Field Modifications as well as minor changes as described in Paragraph 17(b), occurring in the Adjustment of the Owner Utilities.

16. **Real Property Interests.**

(a) The Owner has provided, or upon execution of this Agreement shall promptly provide to the Developer, documentation acceptable to TxDOT indicating any right, title or interest in real property claimed by the Owner with respect to the Owner Utilities in their existing location(s). Such claims are subject to TxDOT's approval as part of its review of the Developer's Utility Assembly as described in Paragraph 2. Claims approved by TxDOT as to rights or interests are referred to herein as "Existing Interests".

(b) If acquisition of any new easement or other interest in real property ("New Interest") is necessary for the Adjustment of any Owner Utilities, then the Owner shall be responsible for undertaking such acquisition. The Owner shall implement each acquisition hereunder expeditiously so that related Adjustment construction can proceed in accordance with the Developer's Project schedules. The Developer shall be responsible for its share (if any, as specified in Paragraph 6) of the actual and reasonable acquisition costs of any such New Interest (including without limitation the Owner's reasonable overhead charges and reasonable legal costs as well as compensation paid to the landowner), excluding any costs attributable to Betterment as described in Paragraph 16(c), and subject to the provisions of Paragraph 16(e); provided, however, that all acquisition costs shall be subject to the Developer's prior written approval. Eligible acquisition costs shall be segregated from other costs on the Owner's estimates and invoices. Any such New Interest shall have a written valuation and shall be acquired in accordance with applicable law.

(c) The Developer shall pay its share only for a replacement in kind of an Existing Interest (e.g., in width and type), unless a New Interest exceeding such standard (i) is required in order to accommodate the Project or by compliance with applicable law, or (ii) is called for by the Developer in the interest of overall Project economy. Any New Interest which is not the Developer's cost responsibility pursuant to the preceding sentence shall be considered a Betterment to the extent that it upgrades the Existing Interest which it replaces, or in its entirety if the related Owner Utility was not installed pursuant to an Existing Interest. Betterment costs shall be solely the Owner's responsibility.

(d) For each Existing Interest located within the final Project right of way, upon completion of the related Adjustment work and its acceptance by the Owner, the Owner agrees to execute a quitclaim deed or other appropriate documentation relinquishing such Existing Interest to TxDOT, unless the affected Owner Utility is remaining in its original location or is being reinstalled in a new location within the area subject to such Existing Interest. All quitclaim deeds or other relinquishment documents shall be subject to TxDOT's approval as part of its review of the Utility Assembly as described in Paragraph 2. For each such Existing Interest relinquished by the Owner, the Developer shall do one of the following to compensate the Owner for such Existing Interest, as appropriate:

(i) If the Owner acquires a New Interest for the affected Owner Utility, the Developer shall reimburse the Owner for the Developer's share of the Owner's actual and reasonable acquisition costs in accordance with Paragraph 16(b) and subject to Paragraph 16(c); or

(ii) If the Owner does not acquire a New Interest for the affected Owner Utility, the Developer shall compensate the Owner for the Developer's share of the fair market value of such relinquished Existing Interest, as mutually agreed between the Owner and the Developer and supported by a written valuation.

The compensation, if any, provided to the Owner pursuant to either subparagraph (i) or subparagraph (ii) above shall constitute complete compensation to the Owner for the relinquished Existing Interest and any New Interest, and no further compensation shall be due to the Owner from the Developer or TxDOT on account of such Existing Interest or New Interest(s).

(e) The Owner shall execute a Utility Joint Use Acknowledgment (ROW-U-JUAA-DA) for each Adjustment where required pursuant to TxDOT policies. All Utility Joint Use

Acknowledgments shall be subject to TxDOT approval as part of its review of the Utility Assembly as described in Paragraph 2.

17. **Amendments and Modifications.** This Agreement may be amended or modified only by a written instrument executed by the parties hereto, in accordance with Paragraph 17(a) or Paragraph 17(b) below.

(a) Except as otherwise provided in Paragraph 17(b), any amendment or modification to this Agreement or the Plans attached hereto shall be implemented by a Utility Adjustment Agreement Amendment ("UAAA") in the form of Exhibit B hereto (TxDOT-DA-U-71A-OM). The UAAA form can be used for a new scope of work with concurrence of the Developer and TxDOT as long as the Design and Construction responsibilities have not changed. Each UAAA is subject to the review and approval of TxDOT, prior to its becoming effective for any purpose and prior to any work being initiated thereunder. The Owner agrees to keep and track costs for each UAAA separately from other work being performed.

(b) For purposes of this Paragraph 17(b), "Utility Adjustment Field Modification" shall mean any horizontal or vertical design change from the Plans included in a Utility Assembly previously approved by TxDOT, due either to design of the Project or to conditions not accurately reflected in the approved Utility Assembly (e.g., shifting the alignment of an 8 in. water line to miss a modified or new roadway drainage structure). A Utility Adjustment Field Modification agreed upon by the Developer and the Owner does not require a UAAA, provided that the modified Plans have been submitted to TxDOT for its review and comment. A minor change (e.g., an additional water valve, an added Utility marker at a ROW line, a change in vertical bend, etc.) will not be considered a Utility Adjustment Field Modification and will not require a UAAA, but shall be shown in the documentation required pursuant to Paragraph 15.

18. **Entire Agreement.** This Agreement embodies the entire agreement between the parties and there are no oral or written agreements between the parties or any representations made which are not expressly set forth herein.

19. **Assignment; Binding Effect; TxDOT as Third Party Beneficiary.** The Owner and the Developer may not assign any of its rights or delegate any of its duties under this Agreement without the prior written consent of the other parties and of TxDOT, which consent may not be unreasonably withheld or delayed; provided, however, that the Developer may assign any of its rights and/or delegate any of its duties to TxDOT or to any other entity with which TxDOT contracts to fulfill the Developer's obligations at any time without the prior consent of the Owner.

This Agreement shall bind the Owner, the Developer and their successors and permitted assigns, and nothing in this Agreement nor in any approval subsequently provided by any party hereto shall be construed as giving any benefits, rights, remedies, or claims to any other person, firm, corporation or other entity, including, without limitation, any contractor or other party retained for the Adjustment work or the public in general; provided, however, that the Owner and the Developer agree that although TxDOT is not a party to this Agreement, TxDOT is intended to be a third-party beneficiary to this Agreement.

20. **Breach by the Parties.**

(a) If the Owner claims that the Developer has breached any of its obligations under this Agreement, the Owner will notify the Developer and TxDOT in writing of such breach, and the Developer shall have 30 days following receipt of such notice in which to cure such breach, before the Owner may invoke any remedies which may be available to it as a result of such breach; provided, however, that both during and after such period TxDOT shall have the right, but not the obligation, to cure any breach by the Developer. Without limiting the generality of the foregoing, (a) TxDOT shall have no liability to the Owner for any act or omission committed by the Developer in connection with this Agreement, and (b) in no event shall TxDOT be responsible for any repairs or maintenance to the Owner Utilities adjusted pursuant to this Agreement.

(b) If the Developer claims that the Owner has breached any of its obligations under this Agreement, the Developer will notify the Owner and TxDOT in writing of such breach, and the Owner shall have 30 days following receipt of such notice in which to cure such breach, before the Developer or the Developer may invoke any remedies which may be available to it as a result of such breach.

21. **Traffic Control.** The Developer shall provide traffic control or shall reimburse the Owner for the Developer's share (if any, as specified in Paragraph 6) of the costs for traffic control made necessary by the Adjustment work performed by either the Developer or the Owner pursuant to this Agreement, in compliance with the requirements of the Texas Manual on Uniform Traffic Control Devices. Betterment percentages calculated in Paragraph 10 shall also apply to the traffic control costs.

22. **Notices.** Except as otherwise expressly provided in this Agreement, all notices or communications pursuant to this Agreement shall be sent or delivered to the following:

The Owner:

Phone:
Fax:

The Developer:

Phone:
Fax:

A party sending a notice of default of this Agreement to another party shall also send a copy of such notice to TxDOT and to the DA Utility Manager at the following addresses:

TxDOT:
TxDOT Department of Transportation
Attention: Donald C. Toner, Jr., SR/WA
125 E. 11th Street
Austin, Texas 78701-2483
Phone: (512) 936-0980

DA Utility Manager:

Any notice or demand required herein shall be given (a) personally, (b) by certified or registered mail, postage prepaid, return receipt requested, or (c) by reliable messenger or overnight courier to the appropriate address set forth above. Any notice served personally shall be deemed delivered upon receipt and served by certified or registered mail or by reliable messenger or overnight courier shall be deemed delivered on the date of receipt as shown on the addressee's registry or certification of receipt or on the date receipt is refused as shown on the records or manifest of the U.S. Postal Service or such courier. Any party may from time to time designate any other address for this purpose by written notice to all other parties; TxDOT may designate another address by written notice to all parties.

23. **Approvals.** Any acceptance, approval, or any other like action (collectively "Approval") required or permitted to be given by either the Developer or the Owner pursuant to this Agreement:

(a) Must be in writing to be effective (except if deemed granted pursuant hereto),

(b) Shall not be unreasonably withheld or delayed; and if Approval is withheld, such withholding shall be in writing and shall state with specificity the reason for withholding such Approval, and every effort shall be made to identify with as much detail as possible what changes are required for Approval, and

(c) Except for approvals by TxDOT, and except as may be specifically provided otherwise in this Agreement, shall be deemed granted if no response is provided to the party requesting an Approval within the time period prescribed by this Agreement (or if no time period is prescribed, then fourteen (14) calendar days), commencing upon actual receipt by the party from which an Approval is requested or required, of a request for Approval from the requesting party. All requests for Approval shall be sent out by the requesting party to the other party in accordance with Paragraph 22.

24. **Time; Force Majeure.**

(a) Time is of the essence in the performance of this Agreement.

(b) All references to “days” herein shall be construed to refer to calendar days, unless otherwise stated.

(c) No party shall be liable to another party for any delay in performance under this Agreement from any cause beyond its control and without its fault or negligence (“Force Majeure”), such as acts of God, acts of civil or military authority, fire, earthquake, strike, unusually severe weather, floods or power blackouts. If any such event of Force Majeure occurs, the Owner agrees, if requested by the Developer, to accelerate its efforts hereunder if reasonably feasible in order to regain lost time, so long as the Developer agrees to reimburse the Owner for the reasonable and actual costs of such efforts.

25. **Continuing Performance.** In the event of a dispute, the Owner and the Developer agree to continue their respective performance hereunder to the extent feasible in light of the dispute, including paying billings, and such continuation of efforts and payment of billings shall not be construed as a waiver of any legal right.

26. **Equitable Relief**. The Developer and the Owner acknowledge and agree that delays in Adjustment of the Owner Utilities will impact the public convenience, safety and welfare, and that (without limiting the parties’ remedies hereunder) monetary damages would be inadequate to compensate for delays in the construction of the Project. Consequently, the parties hereto (and TxDOT as well, as a third party beneficiary) shall be entitled to specific performance or other equitable relief in the event of any breach of this Agreement which threatens to delay construction of the Project; provided, however, that the fact that specific performance or other equitable relief may be granted shall not prejudice any claims for payment or otherwise related to performance of the Adjustment work hereunder.

27. **Authority.** The Owner and the Developer each represent and warrant to the other party that the warranting party possesses the legal authority to enter into this Agreement and that it has taken all actions necessary to exercise that authority and to lawfully authorize its undersigned signatory to execute this Agreement and to bind such party to its terms. Each person executing this Agreement on behalf of a party warrants that he or she is duly authorized to enter into this Agreement on behalf of such party and to bind it to the terms hereof.

28. **Cooperation.** The parties acknowledge that the timely completion of the Project will be influenced by the ability of the Owner (and its contractors) and the Developer to coordinate their activities, communicate with each other, and respond promptly to reasonable requests. Subject to the terms and conditions of this Agreement, the Owner and the Developer agree to take all steps reasonably required to coordinate their respective duties hereunder in a manner consistent with the Developer's current and future construction schedules for the Project. The Owner further agrees to require its contractors to coordinate their respective work hereunder with the Developer.

29. **Termination.** If the Project is canceled or modified so as to eliminate the necessity of the Adjustment work described herein, then the Developer shall notify the Owner in writing and the Developer reserves the right to thereupon terminate this Agreement. Upon such termination, the parties shall negotiate in good faith an amendment that shall provide mutually acceptable terms and conditions for handling the respective rights and liabilities of the parties relating to such termination.

30. **Nondiscrimination**. Each party hereto agrees, with respect to the work performed by such party pursuant to this Agreement, that such party shall not discriminate on the grounds of race, color, sex, national origin or disability in the selection and/or retention of contractors and consultants, including procurement of materials and leases of equipment.

31. **Applicable Law, Jurisdiction and Venue**. This Agreement shall be governed by the laws of the State of Texas, without regard to the conflict of laws principles thereof. Venue for any action brought to enforce this Agreement or relating to the relationship between any of the parties shall be the District Court of Travis County, Texas or the United States District Court for the Western District of Texas (Austin).

32. **Waiver of Consequential Damages**. No party hereto shall be liable to any other party to this Agreement, whether in contract, tort, equity, or otherwise (including negligence, warranty, indemnity, strict liability, or otherwise), for any punitive, exemplary, special, indirect, incidental, or consequential damages, including, without limitation, loss of profits or revenues, loss of use, claims of customers, or loss of business opportunity.

33. **Captions**. The captions and headings of the various paragraphs of this Agreement are for convenience and identification only, and shall not be deemed to limit or define the content of their respective paragraphs.

34. **Counterparts.** This Agreement may be executed in any number of counterparts. Each such counterpart hereof shall be deemed to be an original instrument but all such counterparts together shall constitute one and the same instrument.

35. **Effective Date.** This Agreement shall become effective upon the later of (a) the date of signing by the last party (either the Owner or the Developer) signing this Agreement, and (b) the date of TxDOT's approval as indicated by the signature of TxDOT's representative, below.

APPROVED BY:
**TEXAS DEPARTMENT OF TRANSPORTATION**

By: ____________________________________
Authorized Signature

Printed
Name: Donald C. Toner, Jr. SR/WA
Director – Strategic Projects Right of Way
Strategic Projects Division
Texas Department of Transportation

Date: ____________________________________

**OWNER**

_____
[Print Owner Name]

By: ____________________________________
Duly Authorized Representative

Printed
Name: ____________________________________

Title: ____________________________________

Date: ____________________________________

**DEVELOPER**

By: ____________________________________
Duly Authorized Representative

Printed
Name: ____________________________________

Title: ____________________________________

Date: ____________________________________

County:
ROW CSJ No.:
Const. CSJ No.:
Highway:
Limits:
Fed. Proj. No.:

# EXHIBIT A

## PLANS, SPECIFICATIONS, COST ESTIMATES AND ALLOCATION

County:
ROW CSJ No.:
Const. CSJ No.:
Highway:
Limits:
Fed. Proj. No.:

# EXHIBIT B

## UTILITY ADJUSTMENT AGREEMENT AMENDMENT
## (TxDOT-DA-U-71A-OM)

County:
ROW CSJ No.:
Const. CSJ No.:
Highway:
Limits:
Fed. Proj. No.:

# EXHIBIT C

## STATEMENT COVERING CONTRACT WORK
## (TxDOT-U-48)

Texas Department of Transportation
Form TxDOT-DA-U-71A-DM
Page 1 of 6 Rev. 10/25/13

County:
Highway:
Limits:
Fed. Proj. No.:
ROW CSJ No.:

## UTILITY ADJUSTMENT AGREEMENT AMENDMENT (Developer Managed)

**(Amendment No. to Agreement No.: -U-_____)**

**THIS AMENDMENT TO PROJECT UTILITY ADJUSTMENT AGREEMENT** (this "Amendment"), by and between , hereinafter identified as the "**Developer**", and _____, hereinafter identified as the "**Owner**", is as follows:

## WITNESSETH

**WHEREAS,** the STATE of TEXAS, acting by and through the Texas Department of Transportation, hereinafter identified as "TxDOT", proposes to construct the toll project identified above (the "Project", as more particularly described in the "Original Agreement", defined below); and

**WHEREAS,** pursuant to that certain Development Agreement ("DA") by and between TxDOT and the Developer with respect to the Project, the Developer has undertaken the obligation to design, construct, and potentially maintain the Project, including causing the removal, relocation, or other necessary adjustment of existing utilities impacted by the Project (collectively, "Adjustment"); and

**WHEREAS,** the Owner and Developer are parties to that certain executed Project Utility Adjustment Agreement designated by the "Agreement No." indicated above, as amended by previous amendments, if any (the "Original Agreement"), which provides for the adjustment of certain utilities owned and/or operated by the Owner (the "Utilities"); and

**WHEREAS**, the parties are required to utilize this Amendment form in order to modify the Original Agreement to add the adjustment of Owner facilities not covered by the Original Agreement; and

**WHEREAS,** the parties desire to amend the Original Agreement to add additional Owner utility facility(ies), on the terms and conditions hereinafter set forth.

**NOW, THEREFORE**, in consideration of the agreements contained herein, the parties hereto agree as follows:

1. **Amendment.** The Original Agreement is hereby amended as follows:

1.1 **Plans.**

(a) The description of the Owner Utilities and the proposed Adjustment of the Owner Utilities in the Original Agreement is hereby amended to add the following utility facility(ies) ("Additional Owner Utilities") and proposed Adjustment(s) to the Owner Utilities described in the Original Agreement *[insert below a description of the affected facilities (by type, size and location) as well as a brief description of the nature of the Adjustment work to be performed (e.g., "adjust 12" waterline from approximately Highway Station 100+00 to approximately Highway Station 200+00)];* and

(b) The Plans, as defined in Paragraph 1 of the Original Agreement, are hereby amended to add thereto the plans, specifications and cost estimates attached hereto as Exhibit A.

(c) The Plans attached hereto as Exhibit A, along with this Amendment, shall be submitted upon execution to TxDOT in accordance with Paragraph 2 of the Original Agreement, and Paragraph 2 shall apply to this Amendment and the Plans attached hereto in the same manner as if this Amendment were the Original Agreement. If the Owner claims an Existing Interest for any of the Additional Owner Utilities, documentation with respect to such claim shall be submitted to TxDOT as part of this Amendment and the attached Plans, in accordance with Paragraph 15(a) of the Original Agreement.

1.2 **Reimbursement of Owner's Indirect Costs.** For purposes of Paragraph 6 of the Original Agreement, the following terms apply to the Additional Owner Utilities and proposed Adjustment:

(a) Developer agrees to reimburse the Owner its share of the Owner's indirect costs (e.g., engineering, inspection, testing, ROW) as identified in Exhibit A. When requested by the Owner, monthly progress payments will be made. The monthly payment will not exceed 80% of the estimated indirect work done to date. Once the indirect work is complete, final payment of the eligible indirect costs will be made. Intermediate payments shall not be construed as final payment for any items included in the intermediate payment.

(b) The Owner's indirect costs associated with Adjustment of the Owner Utilities shall be developed pursuant to the method checked and described below *[check only one box]*:

☐ (1) Actual related indirect costs accumulated in accordance with (i) a work order accounting procedure prescribed by the applicable Federal or State regulatory body, or (ii) established accounting procedure developed by the Owner and which the Owner uses in its regular operations (either (i) or (ii) referred to as "Actual Cost") or,

☐ (2) The agreed sum of $_____ ("Agreed Sum") as supported by the analysis of the Owner's estimated costs attached hereto as part of Exhibit A.

1.3 **Advancement of Funds by Owner for Construction Costs.**

(a) Advancement of Owner's Share, if any, of Estimated Costs

Exhibit A shall identify all estimated engineering and construction-related costs, including labor, material, equipment and other miscellaneous construction items. Exhibit A shall also identify the Owner's and Developer's respective shares of the estimated costs.

The Owner shall advance to the Developer its allocated share, if any, of the estimated costs for construction and engineering work to be performed by Developer, in accordance with the following terms:

☐ The adjustment of the Owner's Utilities does not require advancement of funds.

☐ The adjustment of the Owner's Utilities does require advancement of funds and the terms agreed to between the Developer and Owner are listed below.

*[Insert terms of advance funding to be agreed between Developer and Owner.]*

(b) Adjustment Based on Actual Costs or Agreed Sum

*[Check the one appropriate provision, if advancement of funds is required]*:

☐ The Owner is responsible for its share of the Developer actual cost for the Adjustment, including the identified Betterment. Accordingly, upon completion of all Adjustment work to be performed by both parties pursuant to this Amendment, (i) the Owner shall pay to the Developer the amount, if any, by which the actual cost of the Betterment (as determined in Paragraph 9(b)) plus the actual cost of Owner's share of the Adjustment (based on the allocation set forth in Exhibit A) exceeds the estimated cost advanced by the Owner, or (ii) the Developer shall refund to the Owner the amount, if any, by which such advance exceeds such actual cost, as applicable.

☐ The Agreed Sum is the agreed and final amount due for the Adjustment, including any Betterment, under this Amendment. Accordingly, no adjustment (either up or down) of such amount shall be made based on actual costs.

1.4 **Reimbursement of Owner's Indirect Costs.** For purposes of Paragraph 6 of the Original Agreement, the following terms apply to the Additional Owner Utilities and proposed Adjustment:

(a) Developer agrees to reimburse the Owner its share of the Owner's indirect costs (e.g., engineering, inspection, testing, ROW) as identified in Exhibit A. When requested by the Owner, monthly progress payments will be made. The monthly payment will not exceed 80% of the estimated indirect work done to date. Once the indirect work is complete, final payment of the eligible indirect costs will be made. Intermediate payments shall not be construed as final payment for any items included in the intermediate payment.

(b) The Owner's indirect costs associated with Adjustment of the Owner Utilities shall be developed pursuant to the method checked and described below *[check only one box]*:

☐ (1) Actual related indirect costs accumulated in accordance with (i) a work order accounting procedure prescribed by the applicable Federal or State regulatory body, or (ii) established accounting procedure developed by the Owner and which the Owner uses in its regular operations (either (i) or (ii) referred to as "Actual Cost") or,

☐ (2) The agreed sum of $_____ ("Agreed Sum") as supported by the analysis of the Owner's estimated costs attached hereto as part of Exhibit A.

1.5 **Responsibility for Costs of Adjustment Work.** For purposes of Paragraph 4 of the Original Agreement, responsibility for the Agreed Sum or Actual Cost, as applicable, of all Adjustment work to be performed pursuant to this Amendment shall be allocated between the Developer and the Owner as identified in Exhibit A hereto and in accordance with §203.092, Texas Transportation Code. An allocation percentage may be determined by application of an Eligibility Ratio, if appropriate, as detailed in Exhibit A, provided however, that any portion of an Agreed Sum or Actual Cost attributable to Betterment shall be allocated 100% to the Owner in accordance with Paragraph 9 of the Original Agreement.

1.6 **Betterment.**

(a) Paragraph 9(b) (Betterment and Salvage) of the Original Agreement is hereby amended to add the following *[Check the one box that applies, and complete if appropriate]*:

☐ The Adjustment of the Additional Owner Utilities, pursuant to the Plans as amended herein, does not include any Betterment.

☐ The Adjustment of the Additional Owner Utilities, pursuant to the Plans as amended herein, includes Betterment to the Additional Owner Utilities by reason of *[insert explanation, e.g. "replacing 12" pipe with 24" pipe]*: _____. The Developer has provided to the Owner comparative estimates for (i) all work to be performed by the Developer pursuant to this Amendment, including work attributable to the Betterment, and (ii) the cost to perform such work without the Betterment, which estimates are hereby approved by the Owner. The estimated cost of the Developer work under this Amendment which is attributable to Betterment is $_____, calculated by subtracting (ii) from (i). The percentage of the total cost of the Developer work under this Amendment which is attributable to Betterment is _____ %, calculated by subtracting (ii) from (i), which remainder is divided by (i).

(b) If the above Paragraph 1.6(a) identifies Betterment, the Owner shall advance to the Developer, at least **fourteen (14) days** prior to the date scheduled for commencement of construction for Adjustment of the Additional Owner Utilities, the estimated cost attributable to Betterment as set forth in Paragraph 1.6(a) of this Amendment. If the Owner fails to advance payment to the Developer on or before the foregoing deadline, the Developer shall have the option of commencing and completing (without delay) the Adjustment work without installation of the applicable Betterment. *[Check the one appropriate provision]*:

☐ The estimated cost stated in Paragraph 1.6(a) of this Amendment is the agreed and final amount due for Betterment under this Amendment, and accordingly no adjustment (either up or down) of such amount shall be made based on actual costs.

☐ The Owner is responsible for the Developer Actual Cost for the identified Betterment. Accordingly, upon completion of all Adjustment work to be performed by both parties pursuant to this Amendment, (i) the Owner shall pay to the Developer the amount, if any, by which the actual cost of the Betterment (determined as provided below in this paragraph) exceeds the estimated cost advanced by the Owner, or (ii) the Developer shall refund to the Owner the amount, if any, by which such advance exceeds such actual cost, as applicable. Any additional payment by the Owner shall be due within **sixty (60) days** after the Owner's receipt of the Developers invoice therefor, together with supporting documentation; any refund shall be due within **sixty (60) days** after completion of the Adjustment work under this Amendment. The Actual Cost of Betterment incurred by the Developer shall be calculated by multiplying (i) the Betterment percentage stated in Paragraph 1.6(a) of this Amendment, by (ii) the Actual Cost of all work performed by the Developer pursuant to this Amendment (including work attributable to the Betterment), as invoiced by the Developer to the Owner.

(c) The determinations and calculations of Betterment described in this Amendment shall exclude right-of-way acquisition costs. Betterment in connection with right-of-way acquisition is addressed in Paragraph 15 of the Original Agreement.

1.7 **Miscellaneous.**

(a) Owner and Developer agree to refer to this Amendment, designated by the "Amendment No." and "Agreement Number" indicated on page 1 above, on all future correspondence regarding the Adjustment work that is the subject of this Amendment and to track separately all costs relating to this Amendment and the Adjustment work described herein.

(b) [*Include any other proposed amendments allowed by applicable law.*]

2. **General.**

(a) All capitalized terms used in this Amendment shall have the meanings assigned to them in the Original Agreement, except as otherwise stated herein.

(b) This Amendment may be executed in any number of counterparts. Each such counterpart hereof shall be deemed to be an original instrument but all such counterparts together shall constitute one and the same instrument.

(c) Except as amended hereby, the Original Agreement shall remain in full force and effect. In no event shall the responsibility, as between the Owner and the Developer, for the preparation of the Plans and the Adjustment of the Owner Utilities be deemed to be amended hereby.

(d) This Amendment shall become effective upon the later of (a) the date of signing by the last party (either the Owner or the Developer) signing this Amendment, and (b) the completion of TxDOT's review and approval as indicated by the signature of TxDOT's representative, below.

APPROVED BY:

**TEXAS DEPARTMENT OF TRANSPORTATION**

By: ______________________________________
Authorized Signature

Printed Name: ____________________________________

Title: ______________________________________

Date: ______________________________________

**OWNER**

________________________________________________
[Print Owner Name]

By: ______________________________________
Duly Authorized Representative

Printed Name: ____________________________________

Title: ______________________________________

Date: ______________________________________

**DEVELOPER**

By: ______________________________________
Duly Authorized Representative

Printed Name: ____________________________________

Title: ______________________________________

Date: ______________________________________

Texas Department of Transportation
Form TxDOT-DA-U-71A-OM
Page 1 of 5 Rev. 10/25/13

County:
Highway:
Limits:
Fed. Proj. No.:
ROW CSJ No.:
Const. CSJ No.:

# UTILITY ADJUSTMENT AGREEMENT AMENDMENT (Owner Managed)

## (Amendment No. to Agreement No.: -U- )

**THIS AMENDMENT TO PROJECT UTILITY ADJUSTMENT AGREEMENT** (this "Amendment"), by and between, hereinafter identified as the "**Developer**", and _____, hereinafter identified as the "**Owner**", is as follows:

## WITNESSETH

**WHEREAS,** the STATE of TEXAS, acting by and through the Texas Department of Transportation, hereinafter identified as "TxDOT", proposes to construct the toll project identified above (the "Project", as more particularly described in the "Original Agreement", defined below); and

**WHEREAS,** pursuant to that certain Development Agreement ("DA") by and between TxDOT and the Developer with respect to the Project, the Developer has undertaken the obligation to design, construct, and potentially maintain the Project, including causing the removal, relocation, or other necessary adjustment of existing utilities impacted by the Project (collectively, "Adjustment"); and

**WHEREAS,** the Owner and Developer are parties to that certain executed Project Utility Adjustment Agreement designated by the "Agreement No." indicated above, as amended by previous amendments, if any (the "Original Agreement"), which provides for the adjustment of certain utilities owned and/or operated by the Owner (the "Utilities"); and

**WHEREAS**, the parties are required to utilize this Amendment form in order to modify the Original Agreement to add the adjustment of Owner utilities facilities not covered by the Original Agreement; and

**WHEREAS,** the parties desire to amend the Original Agreement to add additional Owner utility facility(ies), on the terms and conditions hereinafter set forth.

**NOW, THEREFORE**, in consideration of the agreements contained herein, the parties hereto agree as follows:

1. **Amendment.** The Original Agreement is hereby amended as follows:

   (a) The description of the Owner Utilities and the proposed Adjustment of the Owner Utilities in the Original Agreement is hereby amended to add the following facility(ies) ("Additional Owner Utilities") and proposed Adjustment(s) *[insert below a description of the affected facilities (by type, size and location) as well as a brief description of the nature of the Adjustment work to be performed (e.g., "adjust 12" waterline from approximately Highway Station 100+00 to approximately Highway Station 200+00")]*:

   (b) The Plans, as defined in Paragraph 1 of the Original Agreement, are hereby amended to add thereto the plans, specifications and cost estimates attached hereto as Exhibit A.

(c) The Plans attached hereto as Exhibit A, along with this Amendment, shall be submitted upon execution to TxDOT in accordance with Paragraph 2 of the Original Agreement, and Paragraph 2 shall apply to this Amendment and the Plans attached hereto in the same manner as if this Amendment were the Original Agreement. If the Owner claims an Existing Interest for any of the Additional Owner Utilities, documentation with respect to such claim shall be submitted to TxDOT as part of this Amendment and the attached Plans, in accordance with Paragraph 16(a) of the Original Agreement.

(d) Paragraph 4(f) of the Original Agreement is hereby amended to add the following deadline for the Adjustment of the Additional Owner Utilities *[check one box that applies]*:

☐ Owner shall complete all of the utility reconstruction and relocation work, including final testing and acceptance thereof, on or before _____, 20_____.

☐ Owner shall complete all of the utility reconstruction and relocation work, including final testing and acceptance thereof, within _____ calendar days after delivery to Owner of a notice to proceed by Developer.

(e) For purposes of Paragraph 5(b) of the Original Agreement, the Owner's costs associated with Adjustment of the Additional Owner Utilities shall be developed pursuant to the method checked and described below, *[check only one box]*:

☐ (1) Actual costs accumulated in accordance with a work order accounting procedure prescribed by the applicable Federal or State regulatory body ("Actual Cost"); or

☐ (2) Actual costs accumulated in accordance with an established accounting procedure developed by the Owner and which the Owner uses in its regular operations ("Actual Cost"); or

☐ (3) The agreed sum of $_____("Agreed Sum"), as supported by the analysis of estimated costs attached hereto as part of Exhibit A

(f) For purposes of Paragraph 6 of the Original Agreement, responsibility for the Agreed Sum or Actual Cost, as applicable, of all Adjustment work to be performed pursuant to this Amendment shall be allocated between the Developer and the Owner as identified in Exhibit A and in accordance with §203.092 of the Texas Transportation Code. An allocation percentage may be determined by application of an Eligibility Ratio, if appropriate, as detailed in Exhibit A; provided, however, that any portion of an Agreed Sum or Actual Cost attributable to Betterment shall be allocated 100% to the Owner in accordance with Paragraph 10 of the Original Agreement.

(g) Paragraph 10(b) of the Original Agreement is hereby amended to add the following *[Check the one box that applies]*:

☐ The Adjustment of the Additional Owner Utilities, pursuant to the Plans as amended herein, does not include any Betterment.

☐ The Adjustment of the Additional Owner Utilities, pursuant to the Plans as amended herein, includes Betterment to the Additional Owner Utilities by reason of *[insert explanation, e.g. "replacing 12" pipe with 24" pipe]*: _____. The Owner has provided to the Developer comparative estimates for (i) all costs for work to be performed by the Owner pursuant to this Amendment, including work attributable to the Betterment, and (ii) the cost to perform such work without the Betterment, which estimates are hereby approved by the Developer. The estimated amount of the Owner's costs for work under this Agreement which is attributable to Betterment is $_____, calculated by subtracting (ii) from (i). The percentage of the total cost of the Owner's work hereunder which is attributable to Betterment is _____%, calculated by subtracting (ii) from (i) which remainder shall be divided by (i).

(h) The following shall apply to any Betterment described in Paragraph 1(g) of this Amendment:

(i) If the Owner's costs are developed under procedure (3) described in Paragraph 1(e) of this Amendment, then the agreed sum stated in that Paragraph includes any credits due to the Developer on account of the identified Betterment, and no further adjustment shall be made on account of same.

(ii) If the Owner's costs are developed under procedure (1) or (2) described in Paragraph 1(e) of this Amendment, the parties agree as follows *[check the* _one_ *appropriate provision]*:

☐ The estimated cost stated in Paragraph 1(g) of this Amendment is the agreed and final amount due for Betterment under this Amendment. Accordingly, each intermediate invoice submitted for Adjustment(s) of the Additional Owner Utilities pursuant to Paragraph 7(b) of the Original Agreement shall credit the Developer with an appropriate amount of the agreed Betterment amount, proportionate to the percentage of completion reflected in such invoice. The final invoice submitted for Adjustment(s) of the Additional Owner Utilities pursuant to Paragraph 7(a) of the Original Agreement shall reflect the full amount of the agreed Betterment credit. For each invoice described in this paragraph, the credit for Betterment shall be applied before calculating the Developer's share (pursuant to Paragraph 1(e) of this Amendment) of the cost of the Adjustment work. No other adjustment (either up or down) shall be made based on actual Betterment costs.

☐ The Owner is responsible for the actual cost of the identified Betterment, determined by multiplying (a) the Betterment percentage stated in Paragraph 1(g) of this Amendment, by (b) the actual cost of all work performed by the Owner pursuant to this Amendment (including work attributable to the Betterment), as invoiced by the Owner to the Developer. Accordingly, each invoice submitted for Adjustment of the Additional Owner Utilities pursuant to either Paragraph 7(a) or Paragraph 7(b) of the Original Agreement shall credit the Developer with an amount calculated by multiplying (x) the Betterment percentage stated in Paragraph 1(g) of this Amendment, by (y) the amount billed on such invoice.

(i) The determinations and calculations of Betterment described in this Amendment shall exclude right-of-way acquisition costs. Betterment in connection with right-of-way acquisition is addressed in Paragraph 16 of the Original Agreement.

(j) Owner and the Developer agree to refer to this Amendment, designated by the "Amendment No." and "Agreement number" indicated on page 1 above, on all future correspondence regarding the Adjustment work that is the subject of this Amendment and to track separately all costs relating to this Amendment and the Adjustment work described herein.

(k) [*Include any other proposed amendments in compliance with the applicable law*.]

2. **General.**

(a) All capitalized terms used in this Amendment shall have the meanings assigned to them in the Original Agreement, except as otherwise stated herein.

(b) This Amendment may be executed in any number of counterparts. Each such counterpart hereof shall be deemed to be an original instrument but all such counterparts together shall constitute one and the same instrument.

(c) Except as amended hereby, the Original Agreement shall remain in full force and effect. In no event shall the responsibility, as between the Owner and the Developer, for the preparation of the Plans and the Adjustment of the Owner Utilities be deemed to be amended hereby.

(d) This Amendment shall become effective upon the later of (a) the date of signing by the last party (either the Owner or the Developer) signing this Amendment, and (b) the completion of TxDOT's review and approval as indicated by the signature of TxDOT's representative, below.

APPROVED BY:

**TEXAS DEPARTMENT OF TRANSPORTATION**

By: ______________________________
Authorized Signature

Printed Name: ______________________________

Title: ______________________________

Date: ______________________________

**OWNER**

______________________________
[Print Owner Name]

By: ______________________________
Duly Authorized Representative

Printed Name: ______________________________

Title: ______________________________

Date: ______________________________

**DEVELOPER**

By: ______________________________
Duly Authorized Representative

Printed Name: ______________________________

Title: ______________________________

Date: ______________________________

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

## Attachment 8-1

## ESAL Counts

## Execution Version

| Description of Location | Average Daily Traffic | | Base Year | | | | ATHWLD | % Tandem Axles in ATHWLD | Total Number of Equivalent 18K ESAL Single Axle Load Applications in One Direction Expected for a 20 Year Period (2016 to 2036) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dir. Dist. % | K factor | Percent Truck | | | | Flexible Pavement | Rigid Pavement |
| | 2016 | 2036 | | | ADT | DHV | | | | |
| SH71 Toll Lanes<br>From Presidential Blvd to SH130<br>New Lanes and Inside Widening Section<br>Travis County | 24,887 | 29,532 | 50 | 8.7 | 10.4 | 5.1 | 15,100 | 50 | 6,325,996 | -- |

| Description of Location | Average Daily Traffic | | Base Year | | | | ATHWLD | % Tandem Axles in ATHWLD | Total Number of Equivalent 18K ESAL Single Axle Load Applications in One Direction Expected for a 30 Year Period (2016 to 2046) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dir. Dist. % | K factor | Percent Truck | | | | Flexible Pavement | Rigid Pavement |
| | 2016 | 2046 | | | ADT | DHV | | | | |
| SH71 Toll Lanes<br>From Presidential Blvd to SH130<br>New Lanes<br>Travis County | 24,993 | 35,138 | 50 | 8.7 | 10.4 | 5.1 | 15,100 | 50 | 13,858,879 | 20,888,445 |

| Description of Location | Average Daily Traffic | | Base Year | | | | ATHWLD | % Tandem Axles in ATHWLD | Total Number of Equivalent 18K ESAL Single Axle Load Applications in One Direction Expected for a 20 Year Period (2016 to 2036) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dir. Dist. % | K factor | Percent Truck | | | | Flexible Pavement | Rigid Pavement |
| | 2016 | 2036 | | | ADT | DHV | | | | |
| SH71 General Purpose Lanes<br>New Lanes (20-y Design) and 4' Widening- Outside Shoulder<br>Travis County | 41,898 | 50,848 | 50 | 8.7 | 10.4 | 5.1 | 15,000 | 50 | 10,645,733 | -- |

| | | | | | | | | | Total Number of Equivalent 18K ESAL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Description of Location | Average Daily Traffic | | Base Year | | | | ATHWLD | % Tandem Axles in ATHWLD | Single Axle Load Applications in One Direction Expected for a 20 Year Period (2016 to 2036) | | | |
| | | | Dir. Dist. % | K Factor | Percent Truck | | | | Flexible | S | Rigid | SLAB |
| | 2016 | 2036 | | | ADT | DHV | | | Pavement | N | Pavement | |
| FM 973<br>From Harold Green Dr (CR1594) to 0.5mi South of SH71<br>Travis County | 21,775 | 32,275 | 73 - 27 | 13.5 | 8.1 | 6.1 | 13,600 | 70 | 7,510,720 | 3 | 10,231,272 | 8" |

| | | | | | | | | | Total Number of Equivalent 18K ESAL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Description of Location | Average Daily Traffic | | Base Year | | | | ATHWLD | % Tandem Axles in ATHWLD | Single Axle Load Applications in One Direction Expected for a 30 Year Period (2016 to 2046) | | | |
| | | | Dir. Dist. % | K Factor | Percent Truck | | | | Flexible | S | Rigid | SLAB |
| | 2016 | 2046 | | | ADT | DHV | | | Pavement | N | Pavement | |
| FM 973<br>From Harold Green Dr (CR1594) to 0.5mi South of SH71<br>Travis County | 21,775 | 35,380 | 73 - 27 | 13.5 | 8.1 | 6.1 | 13,700 | 70 | 11,872,272 | 3 | 16,172,646 | 8" |

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 11-1

# Roadway Design Criteria

# Execution Version

## Table 1

| | SH 71 General Purpose Lanes west of Spirit of Tx Blvd. and between Pres. Blvd and FM 973 | SH 71 General Purpose Lanes Between Spirit of Tx Blvd and Pres. Blvd. | SH 71 General Purpose Lanes west of FM 973 to east of FM 973 | SH 71 Toll Lanes from Terry Lane to east SH 130 | Ramps | SH 71 Toll Lanes east Terminus Transition | SH 71 General Purpose Lanes east Terminus Transition | Cross Streets |
|---|---|---|---|---|---|---|---|---|
| Functional Classification | Principal Arterial/Suburban | Urban Principal Arterial/Freeway | Urban Minor Arterial | Urban Principal Arterial/Freeway | - | Principal Arterial/ Urban Freeway | Urban Minor Arterial | [1] |
| Approximate station limits (alignment SH71) | 11024+23 to 11059+99[10] and 11077+86 to 11124+24 | 11059+99 to 11077+86 | 11124+24 to 11180+90 | 11124+24 to 11216+89 | - | 11216+89 to 11220+10 (11219+75[10]) | 11211+00 to 11232+52 | - |
| Design Speed [2] | 60 mph[3] | 60 mph[3] | 50 mph | 60 mph | 50 mph[4] | 60 mph | 50 mph | [1] |
| Superelevation | e(max)= 6% | e(max)= 6% | e(max)= 6% | e(max)= 6% | e(max)= 6% | e(max)= 6% | e(max)= 6% | N/A |
| Maximum Curvature (Min Radius) w/o Superelevation | 8,500 ft | 8,500 ft | 6,030 ft | 8,500 ft | 6,030 ft | 8,500 ft | 6,030 ft | 4,010-6,030 ft |
| Lane Widths | 12 ft | 12 ft | 12 ft, 14 ft[5] | 12 ft | 14 ft | 12 ft | 12 ft | 12 ft |
| Inside Shoulder Widths | 10 ft[9,11] | 10 ft | N/A | 10 ft[13] | 4 ft | 12 ft[14] | 4 ft | - |
| Outside Shoulder Widths | 10ft[12] | 10 ft | N/A | 10 ft | 8 ft | 10 ft | 10 ft | - |
| Pavement Cross Slope | Match exist. [6,7] | Match exist.[7] | 0.025 ft/ft | 0.025 ft/ft | 0.025 ft/ft | 0.025 ft/ft | 0.025 ft/ft | 0.02 ft/ft |
| Side Slopes | | | | | | | | |
| Within Clear Zone | 4:1 | 4:1 | 4:1 | 4:1 | 4:1 | 4:1 | 4:1 | 4:1 |
| Outside of Clear Zone | 4:1 usual<br>3:1 max | 4:1 usual<br>3:1 max | 4:1 usual<br>3:1 max | 4:1 usual<br>3:1 max | 4:1 usual<br>3:1 max | 4:1 usual<br>3:1 max | 4:1 usual<br>3:1 max | 4:1 usual<br>3:1 max |
| Gore Width - Entrance | - | - | - | - | 6 ft min | - | - | - |
| Gore Width - Exit | - | - | - | - | 6 ft min | - | - | - |
| Clear Zone Width | 30 ft[8] | 30 ft | 30 ft[8] | 30 ft | 16 ft | 30 ft | 30 ft | 3 ft |
| Corner Radii | 40 ft min | N/A | 40 ft min | N/A | - | N/A | N/A | - |
| Preferred Corner Geometry | Curve w/taper | N/A | Curve w/ taper | N/A | - | N/A | N/A | - |

Notes:

1. See Table 2 for details
2. For additional design speed limit details see Attachment 11-2
3. Vertical alignment design speed of 50 mph is acceptable from station 11051+00 to 11083+00
4. Vertical alignment design speed of 45 mph is acceptable for WB Presidential entrance ramp
5. Outside lane
6. 2.5% slope to the outside east of Presidential Boulevard
7. Transition is required to match an existing crowned bridge section
8. Insofar as existing available border width permits.
9. 4' shoulder west of Spirit of Texas Blvd.
10. Westbound
11. 4 ft east of Presidential Blvd.
12. 4 ft west of Thornberry Road
13. 12 ft on SH 130 overpass structure
14. Varies from 12 ft to 4 ft as shown on Schematic Design

# Table 2

| Intersecting Street | Functional Classification | Design Speed (MPH) | Configuration (Over/Under) | Design Vehicle | U-Turn | Sidewalk Minimum Width | Curb | Through Lanes | Shoulders | Turn Lanes | Median |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spirit of Texas Blvd.[1] | - | - | - | WB-67 | - | - | Y | - | - | - | - |
| U-Turn at Presidential Blvd. [2] | Urban – Low Speed | 15 | Under | WB-50 | Y-20’ | Y-6’ | Y | - | - | - | - |
| FM 973 | Suburban Major Arterial | 50[3] | Under | WB-62 | Y-20’ | Y-6’ | Y | 2 (12’) | 10’ | Y | 24’[4] |

Note:

1. Connecting roadway from NB Spirit of Texas Blvd. to EB SH 71 as indicated in Schematic Design
2. SH 71 Westbound to SH 71 Eastbound U-Turn.
3. 15 on U-Turns
4. And as shown on Schematic Design

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 11-2

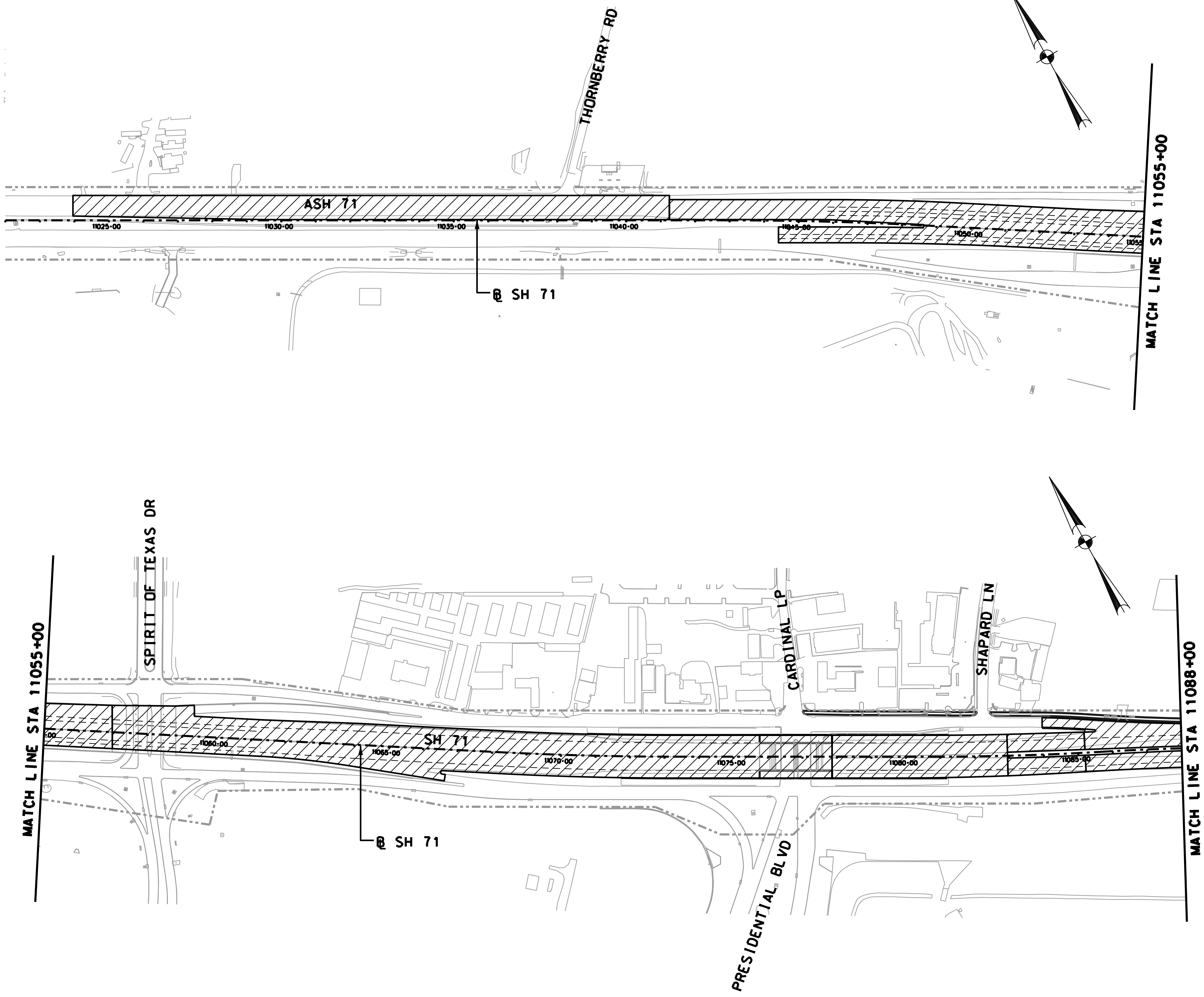
# Design Speed Limits

# Execution Version

# STATE HIGHWAY 71
# DESIGN SPEED LIMITS
# ATTACHMENT 11-2

**LEGEND**

| | |
|---|---|
| ▨ | SH 71 DESIGN SPEED 60 MPH |
| ⬡ | SH 71 TOLL ROAD DESIGN SPEED 60 MPH |
| ■ | SH 71 GENERAL PURPOSE LANES DESIGN SPEED 50 MPH |
| ▦ | RAMPS, SH 71 EASTERLY TERMINI DESIGN SPEED 50 MPH |


THORNBERRY RD
SH 71
11025+00
11030+00
11035+00
11040+00
11045+00
11050+00
℄ SH 71
MATCH LINE STA 11055+00
MATCH LINE STA 11055+00
SPIRIT OF TEXAS DR
CARDINAL LP
SHAPARD LN
SH 71
11060+00
11065+00
11070+00
11075+00
11080+00
11085+00
℄ SH 71
PRESIDENTIAL BLVD
MATCH LINE STA 11088+00

Texas Department of Transportation

SH 71 TOLL LANES
ATTACHMENT 11-2
DESIGN SPEED LIMITS

SCALE: 1"=300'

SHEET 1 OF 3

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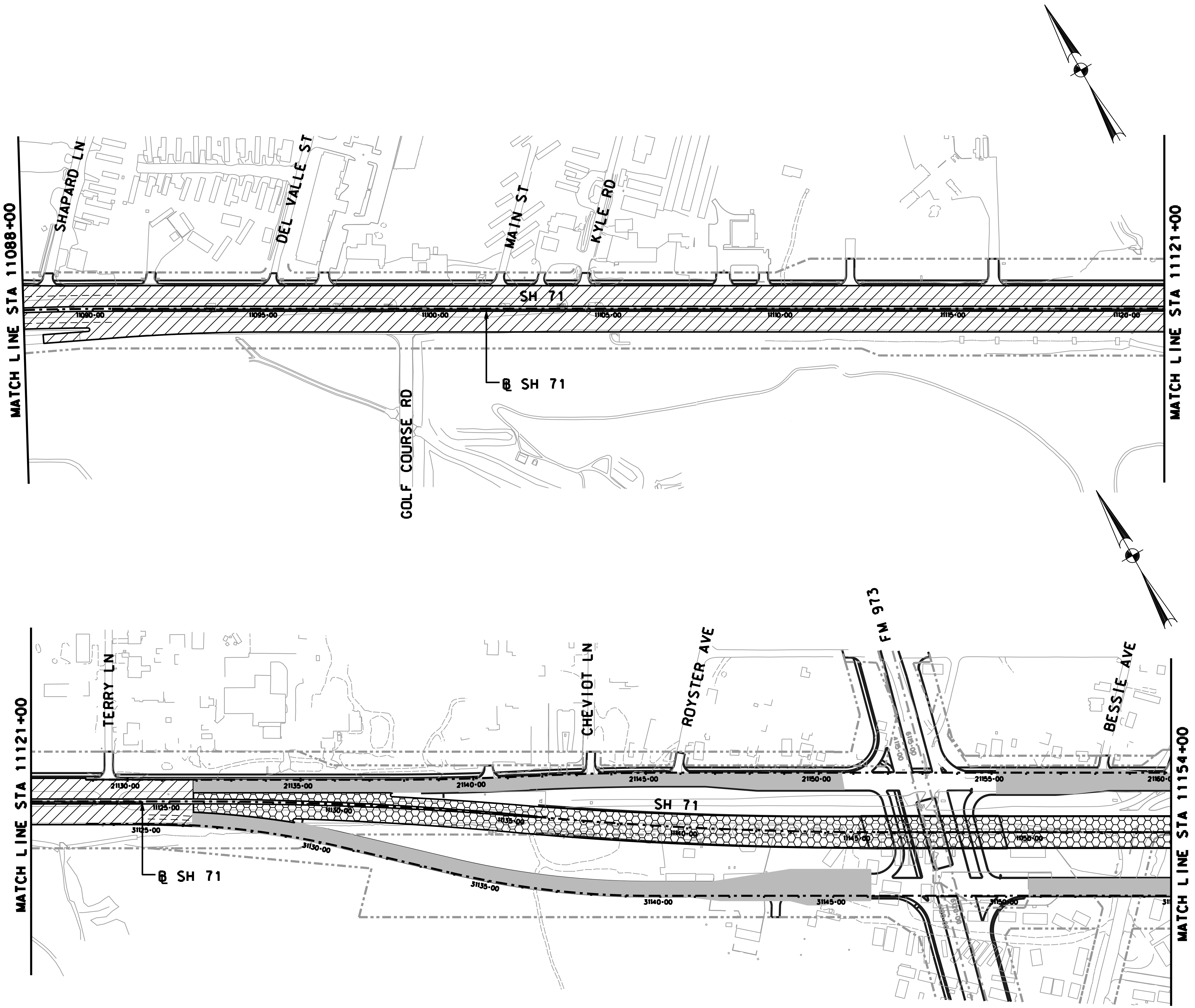
## LEGEND

| | |
|---|---|
| ▨ | SH 71 DESIGN SPEED 60 MPH |
| ⬡ | SH 71 TOLL ROAD DESIGN SPEED 60 MPH |
| ■ | SH 71 GENERAL PURPOSE LANES<br>DESIGN SPEED 50 MPH |
| ▤ | RAMPS, SH 71 EASTERLY TERMINI<br>DESIGN SPEED 50 MPH |


MATCH LINE STA 11088+00
SHAPARD LN
DEL VALLE ST
MAIN ST
KYLE RD
SH 71
11090+00
11095+00
11100+00
11105+00
11110+00
11115+00
11120+00
℄ SH 71
GOLF COURSE RD
MATCH LINE STA 11121+00
MATCH LINE STA 11121+00
TERRY LN
CHEVIOT LN
ROYSTER AVE
FM 973
BESSIE AVE
21130+00
21135+00
21140+00
21145+00
21150+00
21155+00
21160+00
11125+00
11130+00
11135+00
11140+00
11145+00
11150+00
31125+00
31130+00
31135+00
31140+00
31145+00
31150+00
SH 71
℄ SH 71
MATCH LINE STA 11154+00

*Texas Department of Transportation*

SH 71 TOLL LANES
ATTACHMENT 11-2
DESIGN SPEED LIMITS

SCALE: 1"=300'

SHEET 2 OF 3

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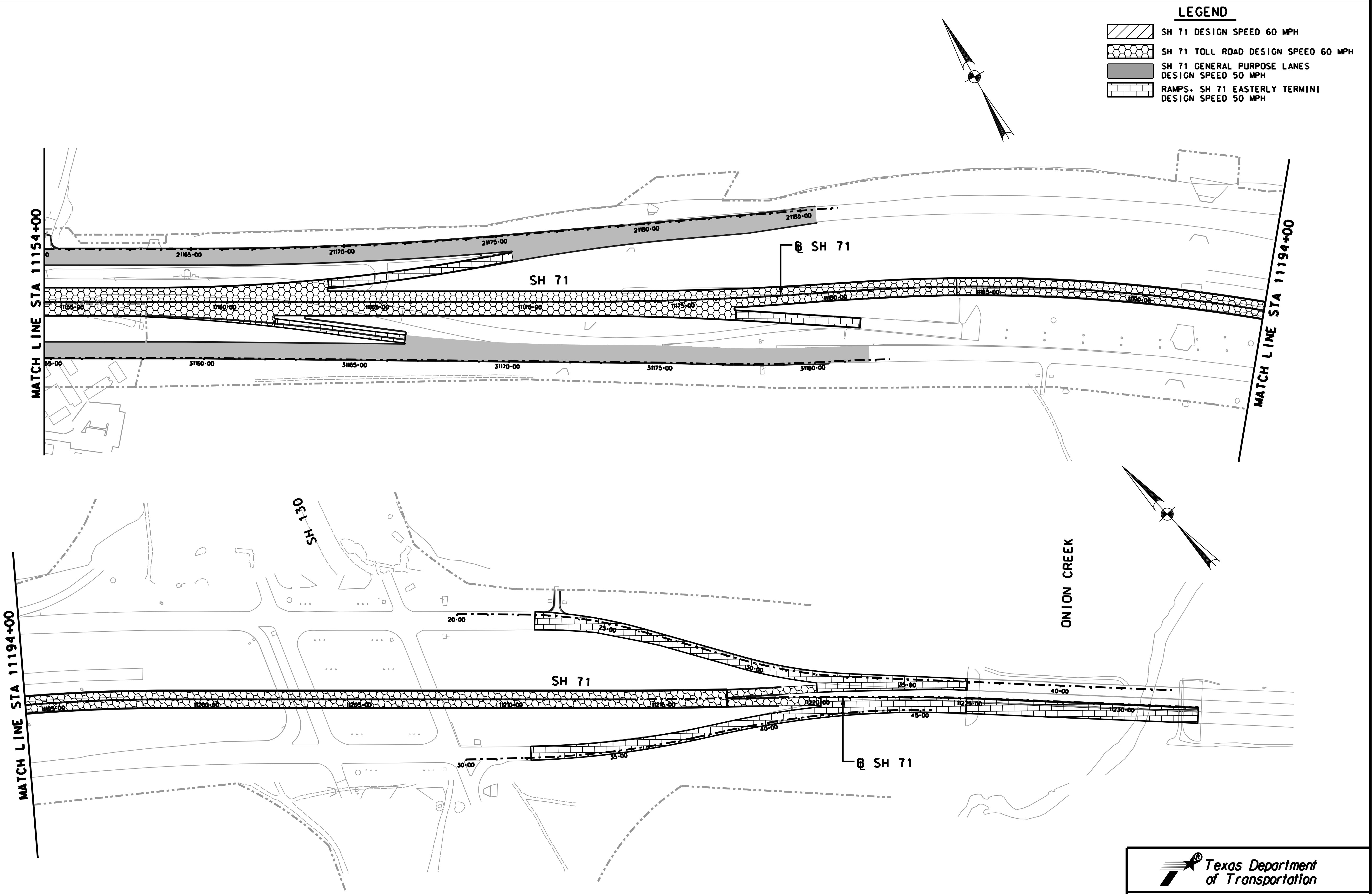
LEGEND
▨ SH 71 DESIGN SPEED 60 MPH
▦ SH 71 TOLL ROAD DESIGN SPEED 60 MPH
▩ SH 71 GENERAL PURPOSE LANES DESIGN SPEED 50 MPH
▤ RAMPS, SH 71 EASTERLY TERMINI DESIGN SPEED 50 MPH
MATCH LINE STA 11154+00
MATCH LINE STA 11194+00
SH 71
℄ SH 71
21165+00
21170+00
21175+00
21180+00
21185+00
11155+00
11160+00
11165+00
11170+00
11175+00
11180+00
11185+00
11190+00
31160+00
31165+00
31170+00
31175+00
31180+00
MATCH LINE STA 11194+00
SH 130
ONION CREEK
SH 71
℄ SH 71
11195+00
11200+00
11205+00
11210+00
11215+00
11220+00
11225+00
11230+00
20+00
25+00
30+00
35+00
40+00
30+00
35+00
40+00
45+00

Texas Department of Transportation

SH 71 TOLL LANES

# ATTACHMENT 11-2
# DESIGN SPEED LIMITS

SCALE: 1"=300'

SHEET 3 OF 3

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# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

## Attachment 11-3

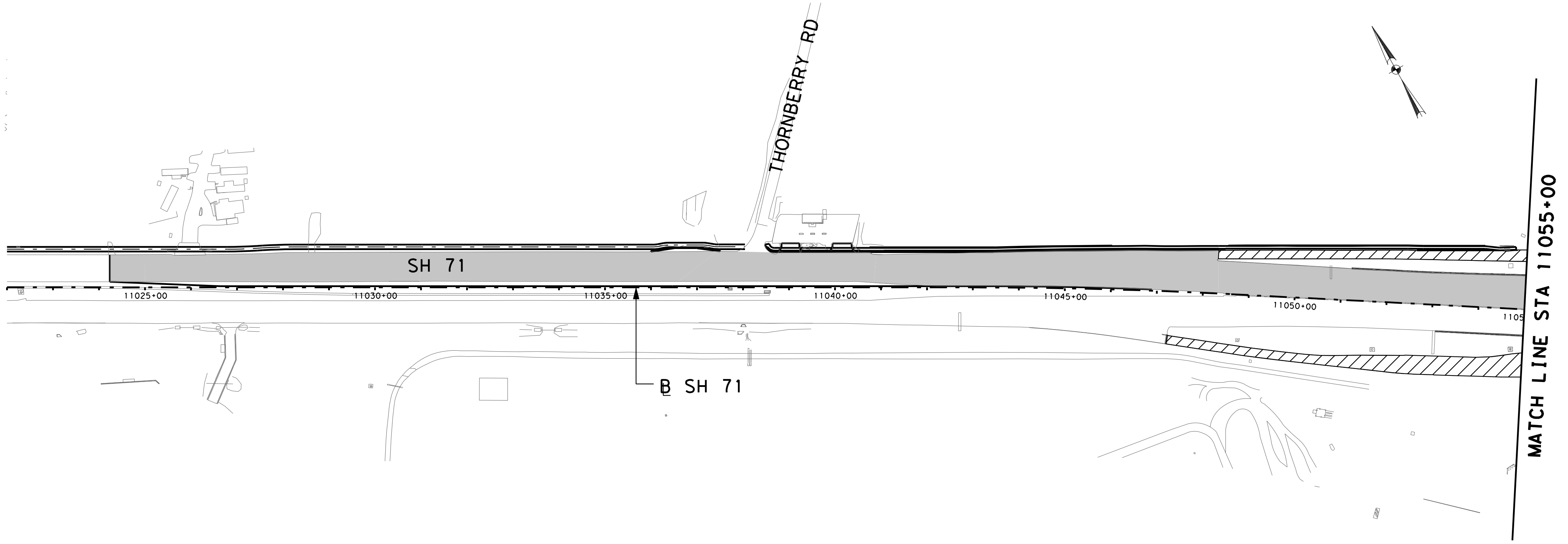
## Mill and Overlay Limits

## Execution Version

# STATE HIGHWAY 71
# ATTACHMENT 11-3
# MILL & OVERLAY LIMITS

**LEGEND**

| | |
|---|---|
| ▨ | SH 71 RAMPS, FRONTAGE ROADS, AND CROSS STREETS OVERLAY |
| ■ | SH 71 GENERAL PURPOSE AND TOLL LANES OVERLAY |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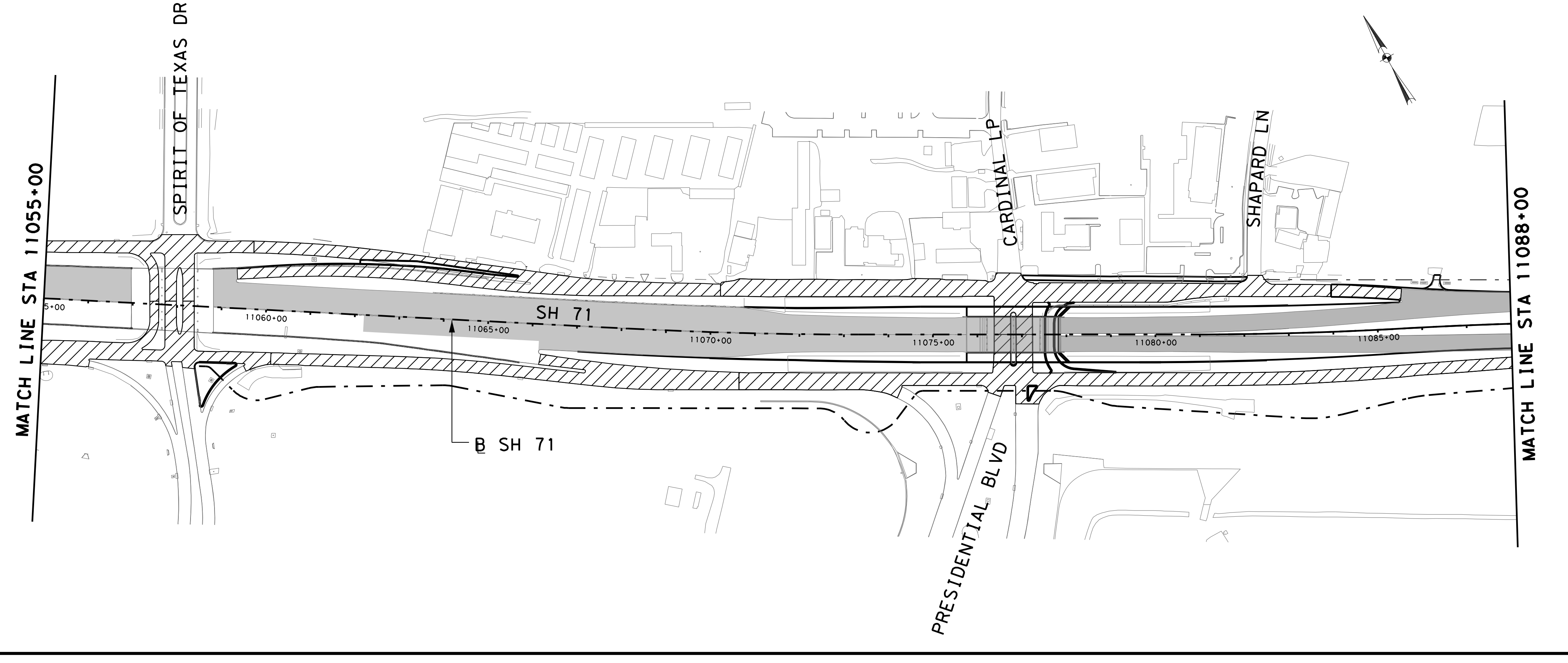
11030+00
11035+00
11040+00
11045+00
11050+00
1105
℄ SH 71
MATCH LINE STA 11055+00


SPIRIT OF TEXAS DR
MATCH LINE STA 11055+00
5+00
11060+00
11065+00
SH 71
11070+00
11075+00
11080+00
11085+00
CARDINAL LP
SHAPARD LN
PRESIDENTIAL BLVD
℄ SH 71
MATCH LINE STA 11088+00

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Texas Department of Transportation

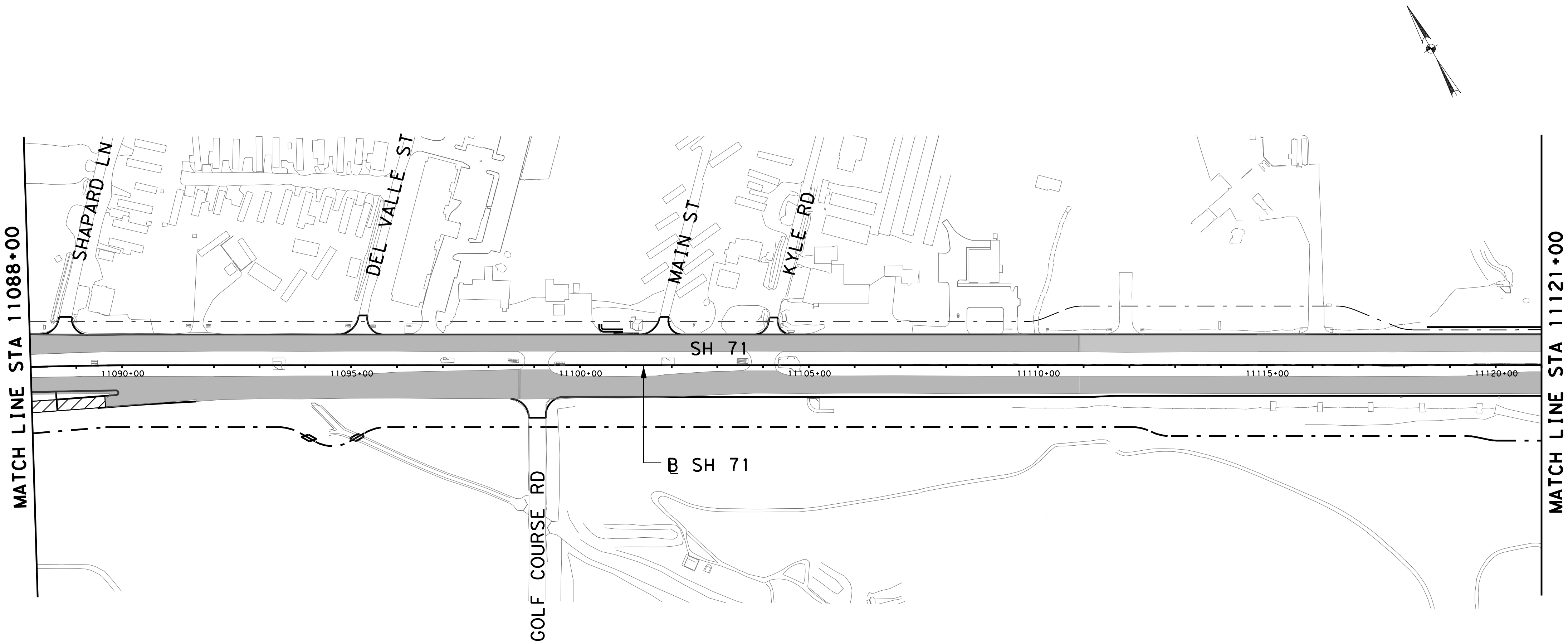
SH 71 TOLL LANES
ATTACHMENT 11-3
MILL & OVERLAY LIMITS

SCALE: 1"=300'
SHEET 1 OF 3

LEGEND

▨ SH 71 RAMPS, FRONTAGE ROADS, AND CROSS STREETS OVERLAY

■ SH 71 GENERAL PURPOSE AND TOLL LANES OVERLAY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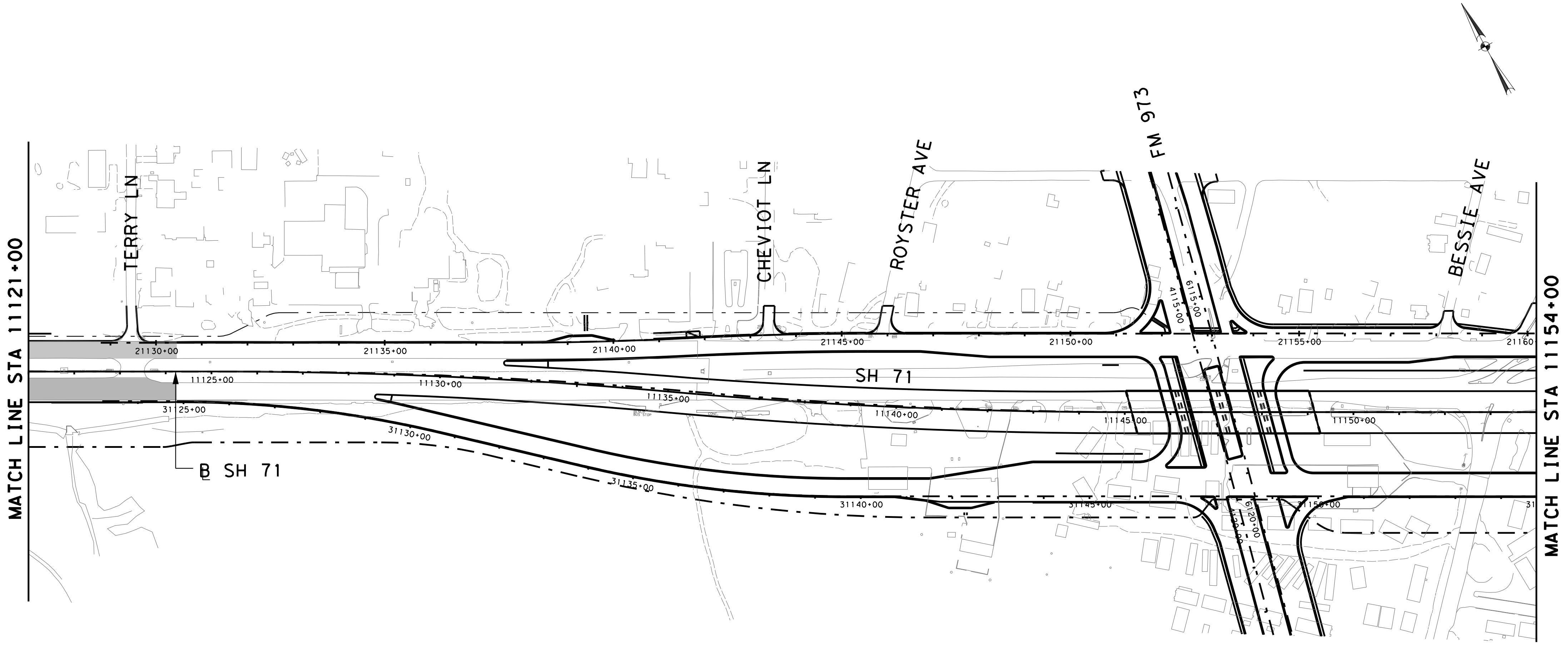
SHAPARD LN
DEL VALLE ST
MAIN ST
KYLE RD
SH 71
11090+00
11095+00
11100+00
11105+00
11110+00
11115+00
11120+00
℄ SH 71
GOLF COURSE RD
MATCH LINE STA 11121+00


MATCH LINE STA 11121+00
TERRY LN
CHEVIOT LN
ROYSTER AVE
FM 973
BESSIE AVE
21130+00
21135+00
21140+00
21145+00
21150+00
21155+00
21160
SH 71
11125+00
11130+00
11135+00
11140+00
11145+00
11150+00
31125+00
31130+00
31135+00
31140+00
31145+00
31150+00
4115+00
6115+00
6120+00
℄ SH 71
MATCH LINE STA 11154+00

Texas Department of Transportation

SH 71 TOLL LANES

ATTACHMENT 11-3
MILL & OVERLAY LIMITS

SCALE: 1"=300'

SHEET 2 OF 3

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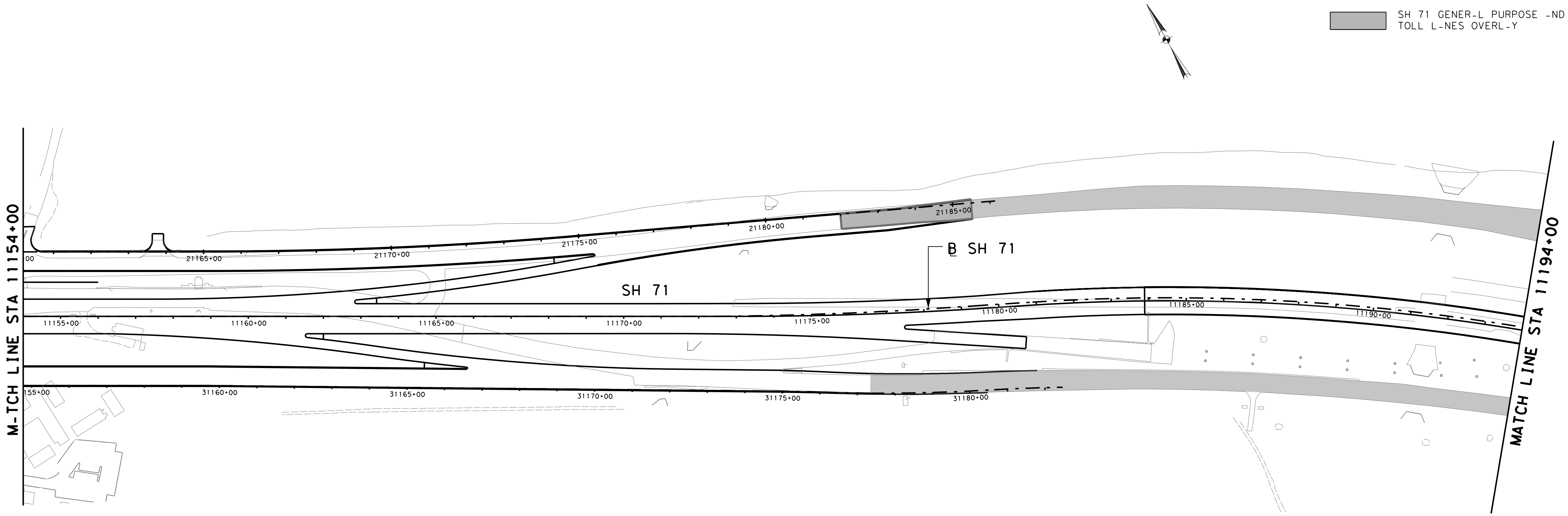
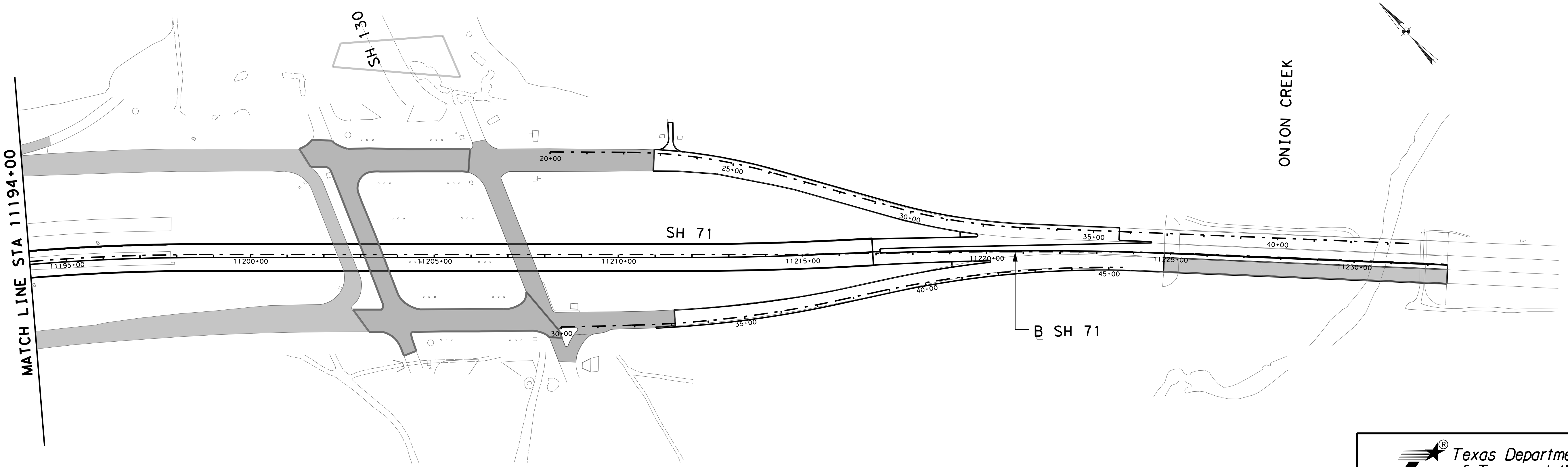
## LEGEND

▨ SH 71 RAMPS, FRONTAGE ROADS, AND CROSS STREETS OVERLAY

▩ SH 71 GENERAL PURPOSE AND TOLL LANES OVERLAY


MATCH LINE STA 11154+00
21165+00
21170+00
21175+00
21180+00
21185+00
℄ SH 71
SH 71
11155+00
11160+00
11165+00
11170+00
11175+00
11180+00
11185+00
11190+00
31160+00
31165+00
31170+00
31175+00
31180+00
MATCH LINE STA 11194+00


SH 130
ONION CREEK
MATCH LINE STA 11194+00
SH 71
20+00
25+00
30+00
35+00
40+00
11195+00
11200+00
11205+00
11210+00
11215+00
11220+00
11225+00
11230+00
45+00
40+00
35+00
30+00
℄ SH 71

Texas Department of Transportation

SH 71 TOLL LANES
ATTACHMENT 11-3
MILL & OVERLAY LIMITS

SCALE: 1"=300'

SHEET 3 OF 3

5/5/2014 5:10:19 PM
...\SH71+OVLY+03.dgn

...\SH71+OVLY+03.dgn

# Texas Department of Transportation

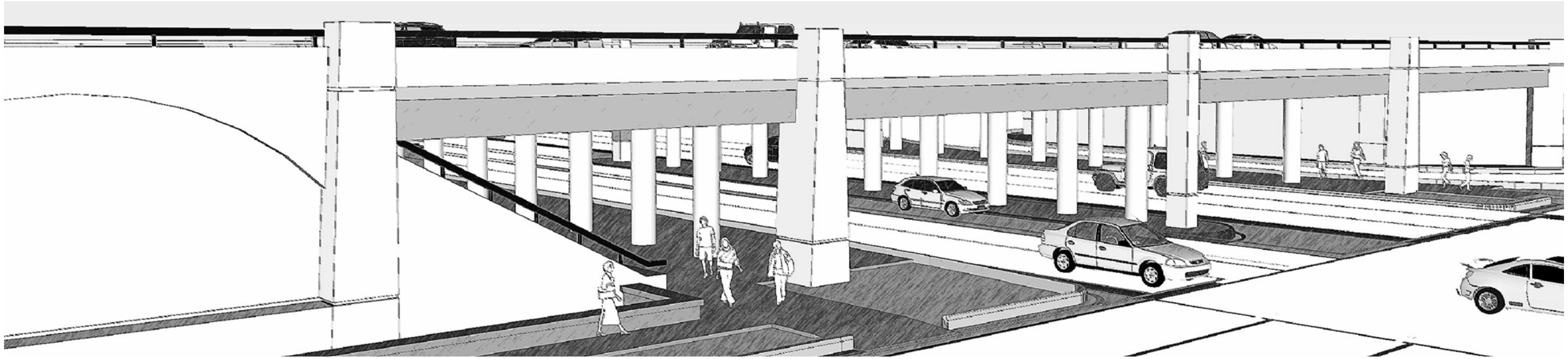
## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 15-1

# Aesthetic Guidelines

# Execution Version



# SH 71 AESTHETIC GUIDELINES

ATTACHMENT 15-1
AESTHETIC GUIDELINES
REVISION 2

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- Spirit of Texas Drive Sheet 3
- FM 973 Sheet 4
- SH 130 Aesthetic Coordination Sheet 5

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- Presidential Boulevard Sheets 7-9
- Spirit of Texas Drive Sheet 10
- FM 973 Sheet 11

**2.0 Bridge Abutment Walls & Rip Rap** **Sheet 12**
- Presidential Boulevard Sheets 13-17
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**3.0 Pylons** **Sheet 25**
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DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

REVISION 2

Texas Department of Transportation

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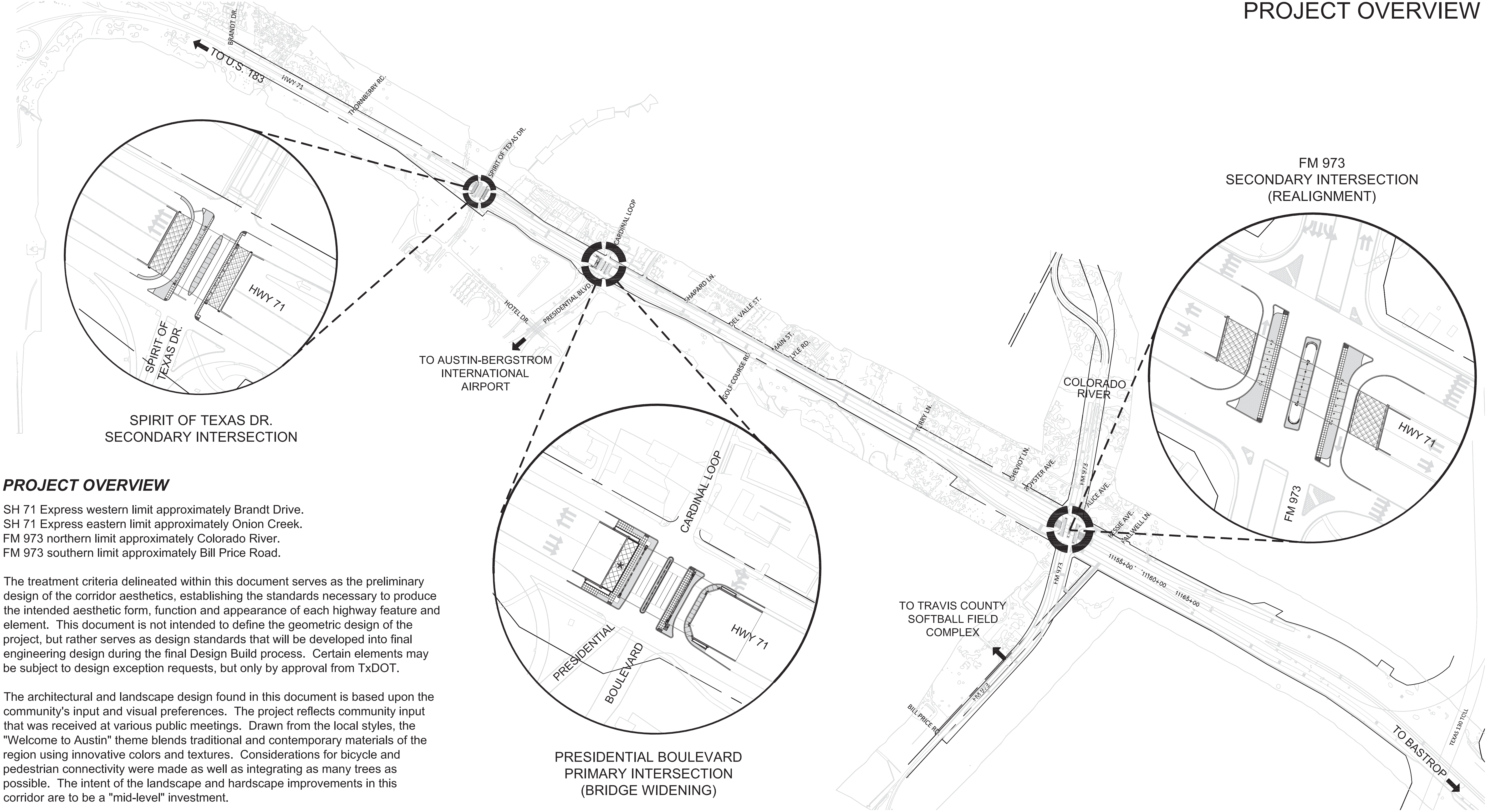
# PROJECT OVERVIEW



TO U.S. 183
BRANDT DR.
HWY 71
THORNBERRY RD.
SPIRIT OF TEXAS DR.
CARDINAL LOOP
HOTEL DR.
PRESIDENTIAL BLVD.
SHAPARD LN.
DEL VALLE ST.
MAIN ST.
LYLE RD.
GOLF COURSE RD.
FERRY LN.
CHEVIOT LN.
ROYSTER AVE.
FM 973
ALICE AVE.
JESSIE AVE.
CALLWELL LN.
11155+00
11160+00
11165+00
BILL PRICE RD.
TEXAS 130 TOLL
TO BASTROP
COLORADO RIVER
TO AUSTIN-BERGSTROM INTERNATIONAL AIRPORT
TO TRAVIS COUNTY SOFTBALL FIELD COMPLEX
HWY 71
SPIRIT OF TEXAS DR.
SPIRIT OF TEXAS DR. SECONDARY INTERSECTION
CARDINAL LOOP
PRESIDENTIAL BOULEVARD
HWY 71
PRESIDENTIAL BOULEVARD PRIMARY INTERSECTION (BRIDGE WIDENING)
FM 973 SECONDARY INTERSECTION (REALIGNMENT)
HWY 71
FM 973

## *PROJECT OVERVIEW*

SH 71 Express western limit approximately Brandt Drive.
SH 71 Express eastern limit approximately Onion Creek.
FM 973 northern limit approximately Colorado River.
FM 973 southern limit approximately Bill Price Road.

The treatment criteria delineated within this document serves as the preliminary design of the corridor aesthetics, establishing the standards necessary to produce the intended aesthetic form, function and appearance of each highway feature and element. This document is not intended to define the geometric design of the project, but rather serves as design standards that will be developed into final engineering design during the final Design Build process. Certain elements may be subject to design exception requests, but only by approval from TxDOT.

The architectural and landscape design found in this document is based upon the community's input and visual preferences. The project reflects community input that was received at various public meetings. Drawn from the local styles, the "Welcome to Austin" theme blends traditional and contemporary materials of the region using innovative colors and textures. Considerations for bicycle and pedestrian connectivity were made as well as integrating as many trees as possible. The intent of the landscape and hardscape improvements in this corridor are to be a "mid-level" investment.

CONTEXT DIAGRAM

SCALE: 1" = 1200' (CONTEXT)
SCALE: 1" = 200' (AREA ENLARGEMENTS)

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

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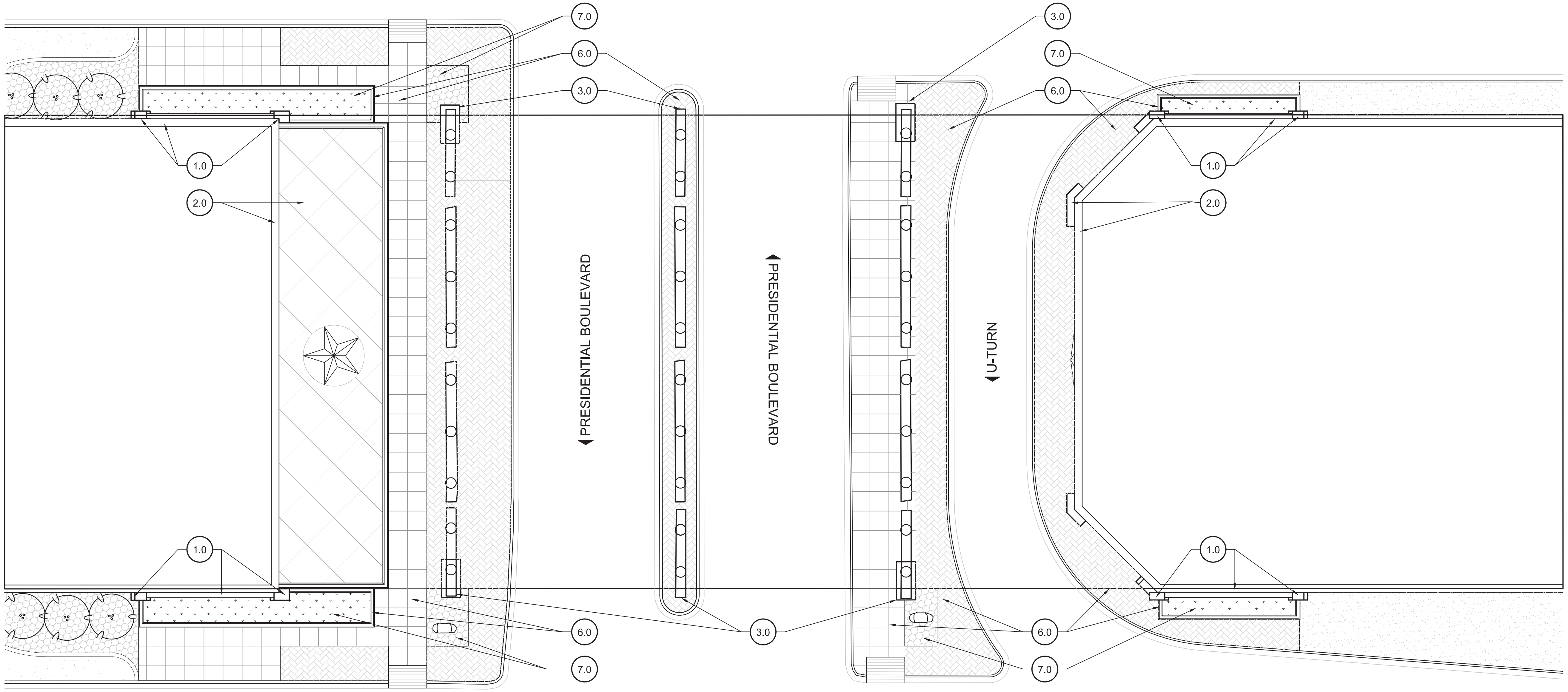
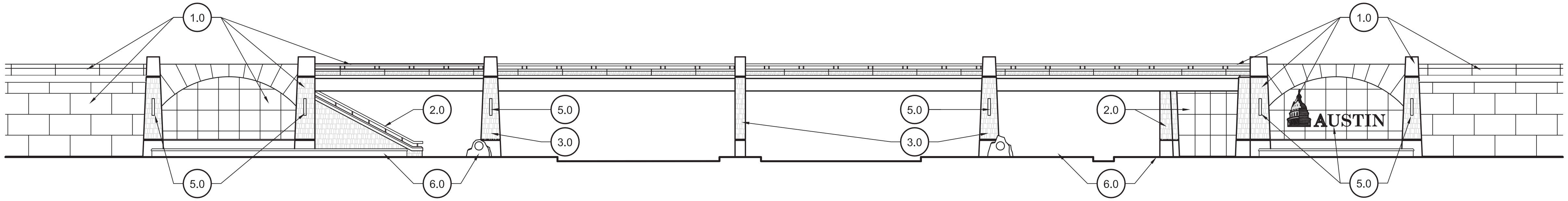
# INTERSECTION & OVERPASS ELEVATION - PRESIDENTIAL BOULEVARD


7.0
6.0
3.0
1.0
2.0
1.0
6.0
7.0
3.0
PRESIDENTIAL BOULEVARD
PRESIDENTIAL BOULEVARD
U-TURN
3.0
7.0
6.0
1.0
2.0
1.0
6.0
7.0

## PRESIDENTIAL PLAN

SCALE: 1"= 30'-0"


1.0
2.0
5.0
3.0
5.0
3.0
2.0
AUSTIN
1.0
5.0
6.0
6.0
5.0

## PRESIDENTIAL SOUTH SOUTHWEST ELEVATION

SCALE: 1"= 30'-0"

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11

(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24

(3.0) PYLONS - Sheets 25-30

(4.0) SIGN STRUCTURES - Sheets 31-32

(5.0) LIGHTING STANDARDS - Sheets 33-36

(6.0) PAVING/ HARDSCAPE - Sheets 37-46

(7.0) LANDSCAPE - Sheets 47-63

(8.0) FINISH SCHEDULE - Sheets 64-65

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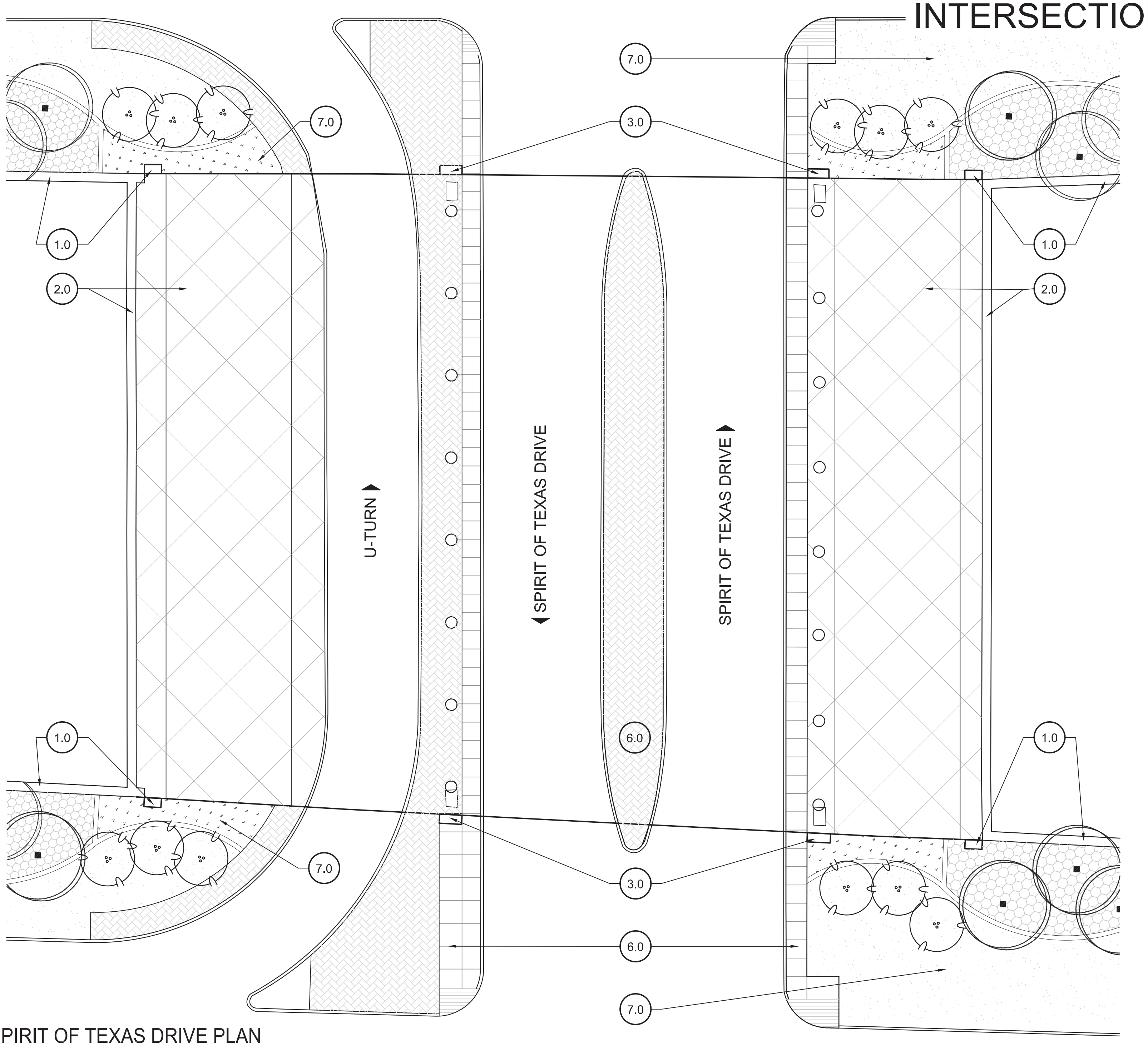
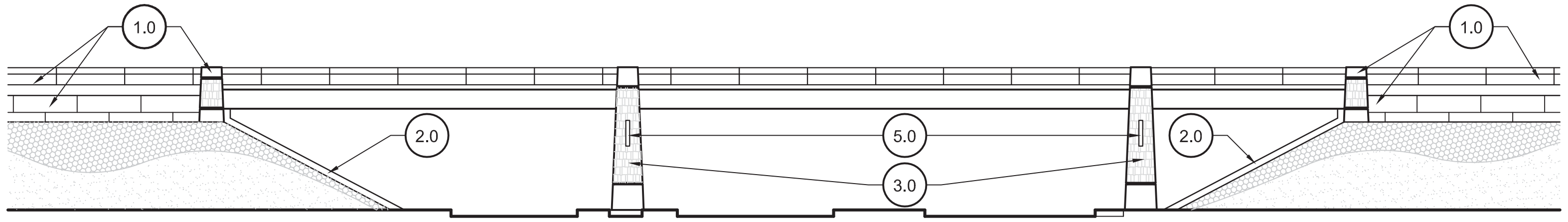
# INTERSECTION & OVERPASS ELEVATION - SPIRIT OF TEXAS DRIVE


7.0
7.0
3.0
1.0
1.0
2.0
2.0
U-TURN
SPIRIT OF TEXAS DRIVE
SPIRIT OF TEXAS DRIVE
1.0
1.0
6.0
7.0
3.0
6.0
7.0

SPIRIT OF TEXAS DRIVE PLAN

SCALE: 1"= 30'-0"


1.0
1.0
2.0
5.0
2.0
3.0

SPIRIT OF TEXAS DRIVE SOUTH SOUTHWEST ELEVATION

SCALE: 1"= 30'-0"

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11

(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24

(3.0) PYLONS - Sheets 25-30

(4.0) SIGN STRUCTURES - Sheets 31-32

(5.0) LIGHTING STANDARDS - Sheets 33-36

(6.0) PAVING/ HARDSCAPE - Sheets 37-46

(7.0) LANDSCAPE - Sheets 47-63

(8.0) FINISH SCHEDULE - Sheets 64-65

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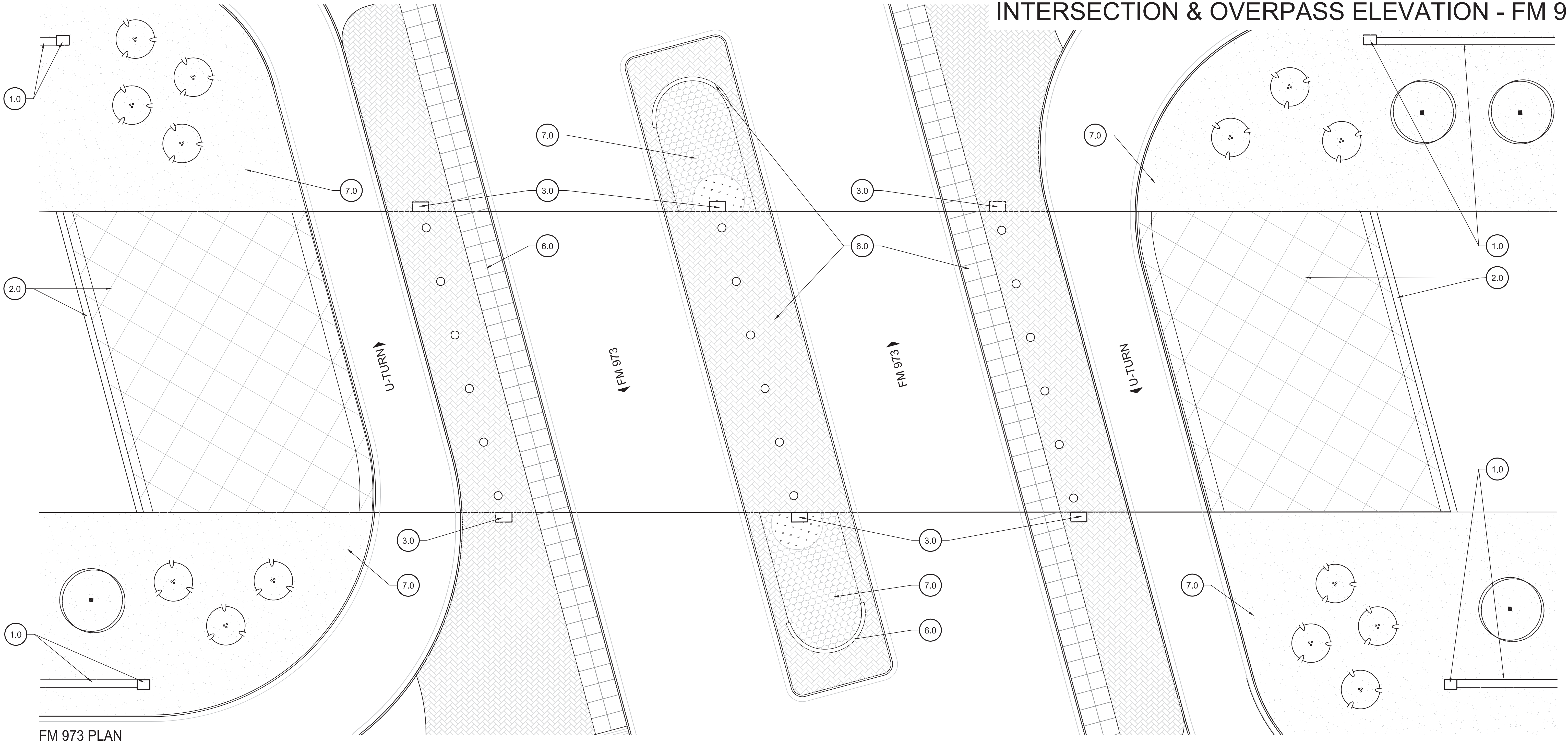
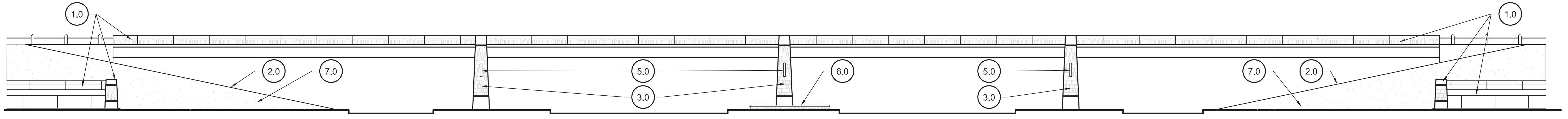
# INTERSECTION & OVERPASS ELEVATION - FM 973


1.0
7.0
7.0
3.0
3.0
7.0
3.0
1.0
2.0
6.0
6.0
2.0
U-TURN
FM 973
FM 973
U-TURN
1.0
3.0
3.0
7.0
7.0
7.0
6.0
1.0

FM 973 PLAN

SCALE: 1"= 30'-0"


1.0
1.0
2.0
7.0
5.0
3.0
6.0
5.0
3.0
7.0
2.0

FM 973 SOUTH SOUTHWEST ELEVATION

SCALE: 1"= 30'-0"

| | |
|---|---|
| 1.0 | RETAINING WALLS & PILASTERS - Sheets 6-11 |
| 2.0 | BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24 |
| 3.0 | PYLONS - Sheets 25-30 |
| 4.0 | SIGN STRUCTURES - Sheets 31-32 |
| 5.0 | LIGHTING STANDARDS - Sheets 33-36 |
| 6.0 | PAVING/ HARDSCAPE - Sheets 37-46 |
| 7.0 | LANDSCAPE - Sheets 47-63 |
| 8.0 | FINISH SCHEDULE - Sheets 64-65 |

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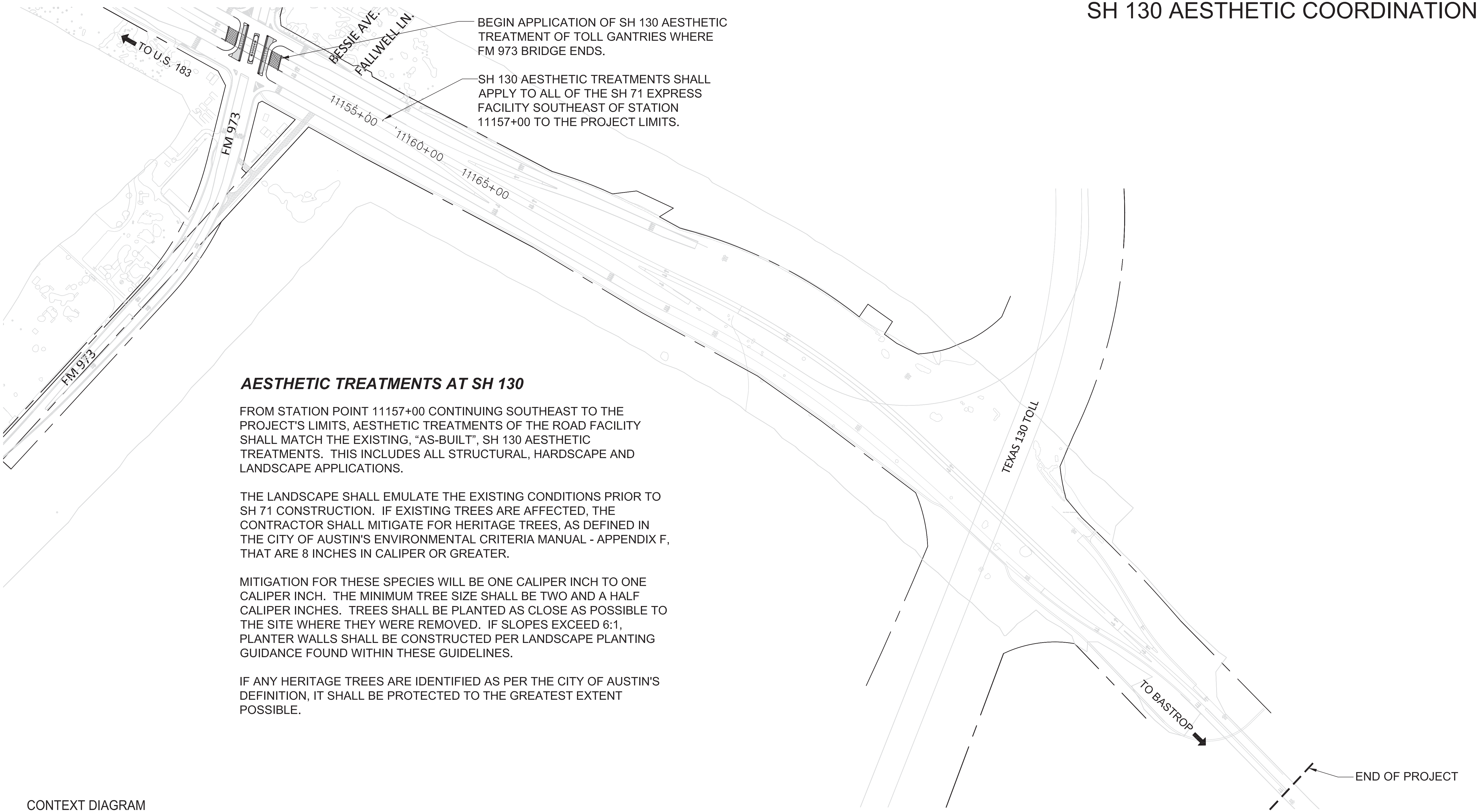

BEGIN APPLICATION OF SH 130 AESTHETIC TREATMENT OF TOLL GANTRIES WHERE FM 973 BRIDGE ENDS.

SH 130 AESTHETIC TREATMENTS SHALL APPLY TO ALL OF THE SH 71 EXPRESS FACILITY SOUTHEAST OF STATION 11157+00 TO THE PROJECT LIMITS.

END OF PROJECT

### *AESTHETIC TREATMENTS AT SH 130*

FROM STATION POINT 11157+00 CONTINUING SOUTHEAST TO THE PROJECT'S LIMITS, AESTHETIC TREATMENTS OF THE ROAD FACILITY SHALL MATCH THE EXISTING, "AS-BUILT", SH 130 AESTHETIC TREATMENTS. THIS INCLUDES ALL STRUCTURAL, HARDSCAPE AND LANDSCAPE APPLICATIONS.

THE LANDSCAPE SHALL EMULATE THE EXISTING CONDITIONS PRIOR TO SH 71 CONSTRUCTION. IF EXISTING TREES ARE AFFECTED, THE CONTRACTOR SHALL MITIGATE FOR HERITAGE TREES, AS DEFINED IN THE CITY OF AUSTIN'S ENVIRONMENTAL CRITERIA MANUAL - APPENDIX F, THAT ARE 8 INCHES IN CALIPER OR GREATER.

MITIGATION FOR THESE SPECIES WILL BE ONE CALIPER INCH TO ONE CALIPER INCH. THE MINIMUM TREE SIZE SHALL BE TWO AND A HALF CALIPER INCHES. TREES SHALL BE PLANTED AS CLOSE AS POSSIBLE TO THE SITE WHERE THEY WERE REMOVED. IF SLOPES EXCEED 6:1, PLANTER WALLS SHALL BE CONSTRUCTED PER LANDSCAPE PLANTING GUIDANCE FOUND WITHIN THESE GUIDELINES.

IF ANY HERITAGE TREES ARE IDENTIFIED AS PER THE CITY OF AUSTIN'S DEFINITION, IT SHALL BE PROTECTED TO THE GREATEST EXTENT POSSIBLE.

CONTEXT DIAGRAM

SCALE: 1" = 1200'

1.0 RETAINING WALLS & PILASTERS - Sheets 6-11
2.0 BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
3.0 PYLONS - Sheets 25-30
4.0 SIGN STRUCTURES - Sheets 31-32
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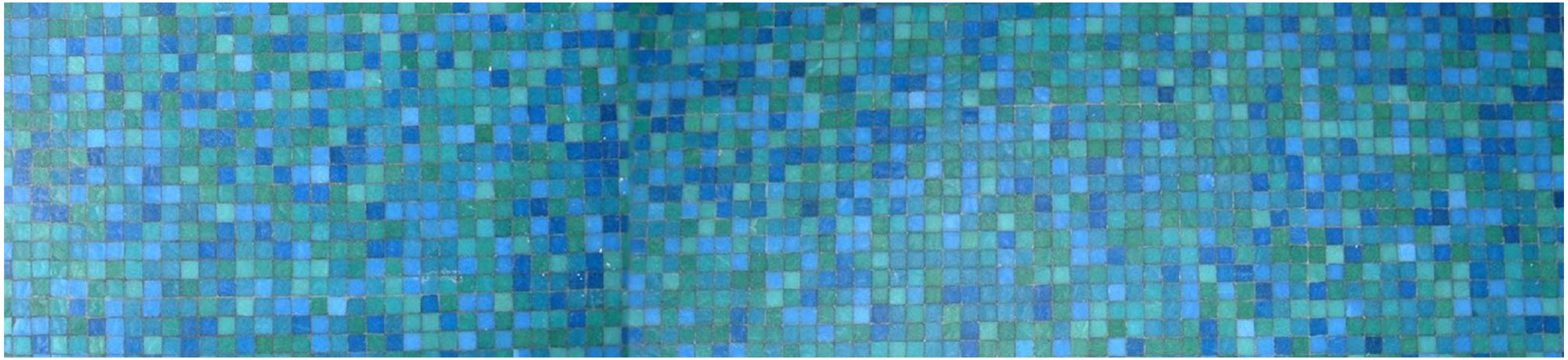
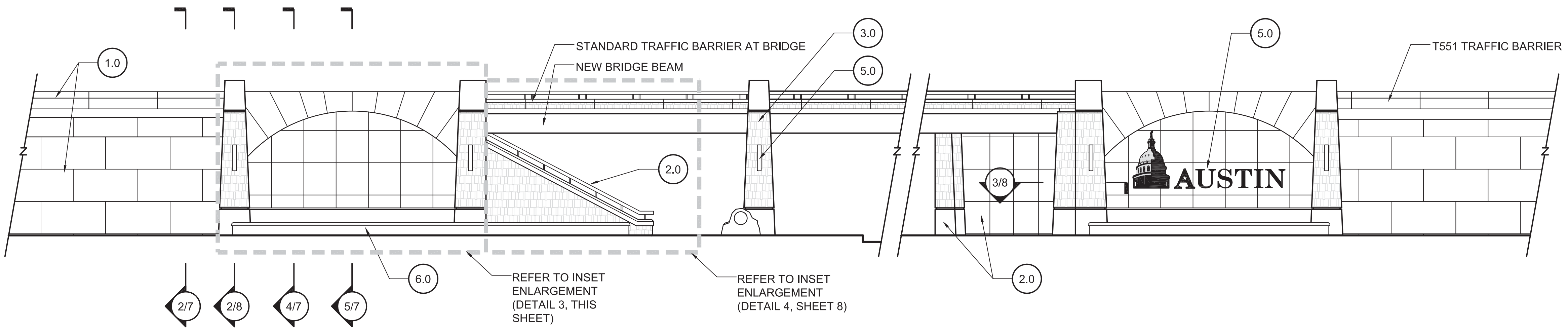


# 1.0 RETAINING WALLS

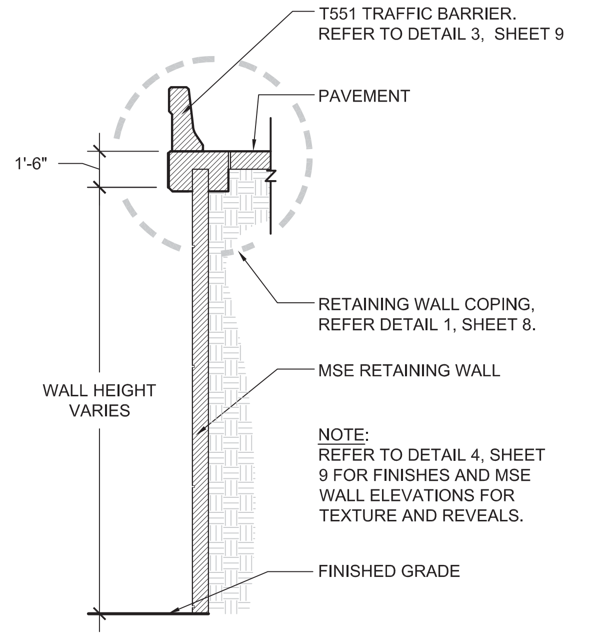
# RETAINING WALLS - PRESIDENTIAL BOULEVARD


1.0
STANDARD TRAFFIC BARRIER AT BRIDGE
NEW BRIDGE BEAM
3.0
5.0
5.0
T551 TRAFFIC BARRIER
2.0
3/8
AUSTIN
6.0
REFER TO INSET ENLARGEMENT (DETAIL 3, THIS SHEET)
REFER TO INSET ENLARGEMENT (DETAIL 4, SHEET 8)
2.0
2/7
2/8
4/7
5/7

## 1 RETAINING WALL ELEVATION

SCALE: 1" = 20'

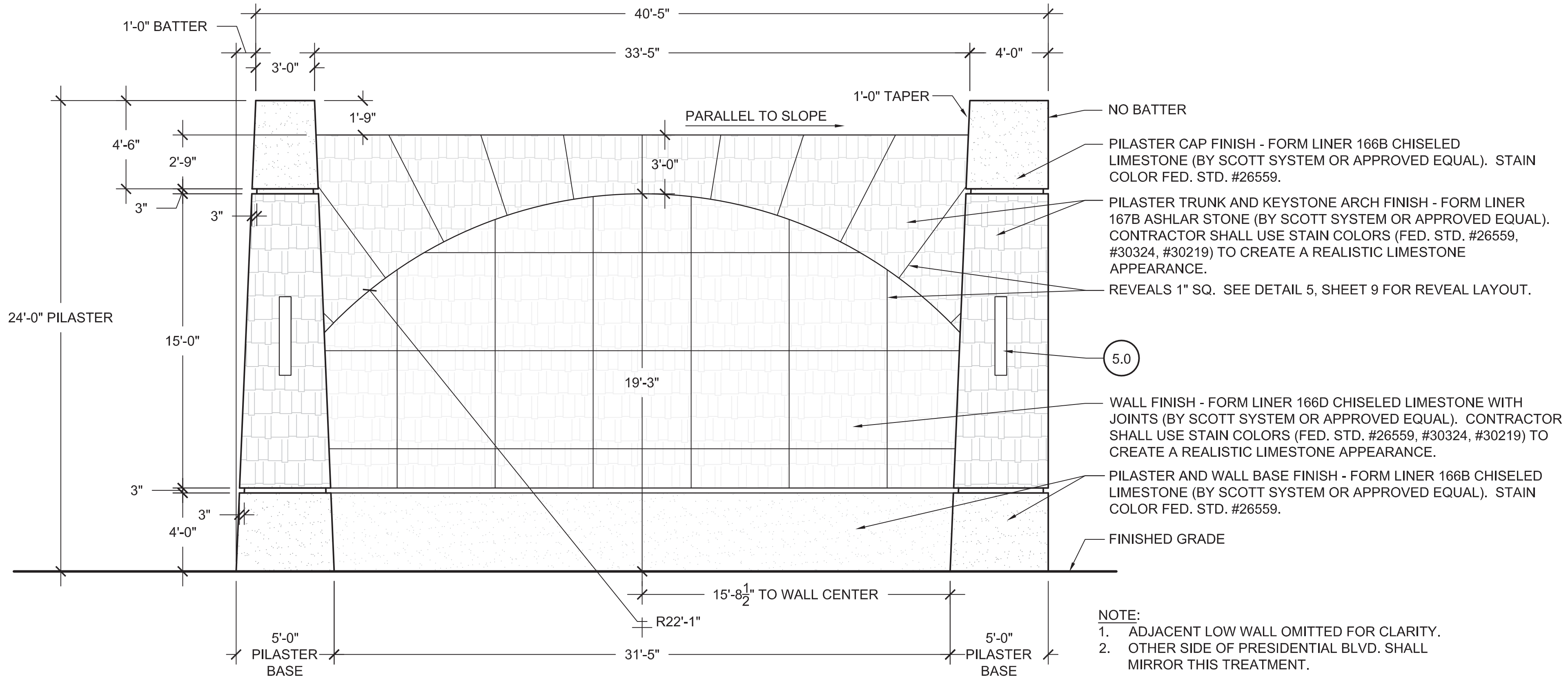
NOTES:
1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BACKS OF WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.


T551 TRAFFIC BARRIER. REFER TO DETAIL 3, SHEET 9
PAVEMENT
1'-6"
RETAINING WALL COPING, REFER DETAIL 1, SHEET 8.
MSE RETAINING WALL
WALL HEIGHT VARIES
FINISHED GRADE

NOTE:
REFER TO DETAIL 4, SHEET 9 FOR FINISHES AND MSE WALL ELEVATIONS FOR TEXTURE AND REVEALS.

## 2 MSE WALL SECTION

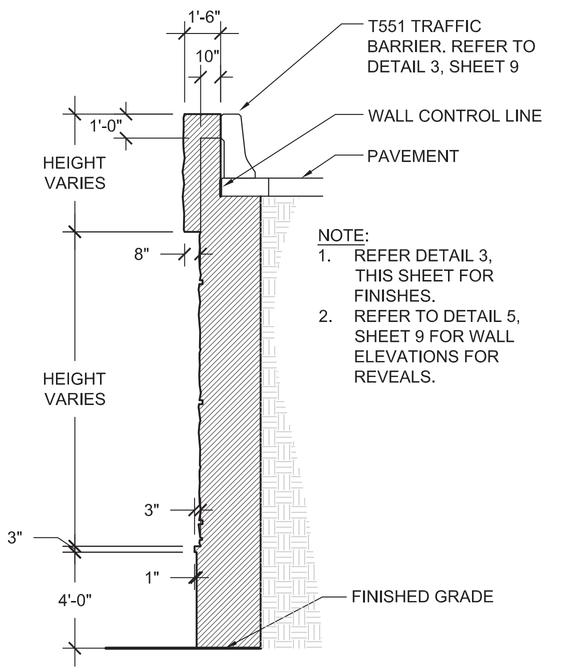
SCALE: 1/8" = 1'-0"


40'-5"
1'-0" BATTER
33'-5"
3'-0"
4'-0"
1'-0" TAPER
NO BATTER
1'-9"
PARALLEL TO SLOPE
3'-0"
4'-6"
2'-9"
3"
3"
24'-0" PILASTER
15'-0"
19'-3"
3"
3"
4'-0"
5.0
15'-8½" TO WALL CENTER
R22'-1"
5'-0" PILASTER BASE
31'-5"
5'-0" PILASTER BASE
PILASTER CAP FINISH - FORM LINER 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
PILASTER TRUNK AND KEYSTONE ARCH FINISH - FORM LINER 167B ASHLAR STONE (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
REVEALS 1" SQ. SEE DETAIL 5, SHEET 9 FOR REVEAL LAYOUT.
WALL FINISH - FORM LINER 166D CHISELED LIMESTONE WITH JOINTS (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
PILASTER AND WALL BASE FINISH - FORM LINER 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
FINISHED GRADE

NOTE:
1. ADJACENT LOW WALL OMITTED FOR CLARITY.
2. OTHER SIDE OF PRESIDENTIAL BLVD. SHALL MIRROR THIS TREATMENT.

## 3 FEATURE WALL

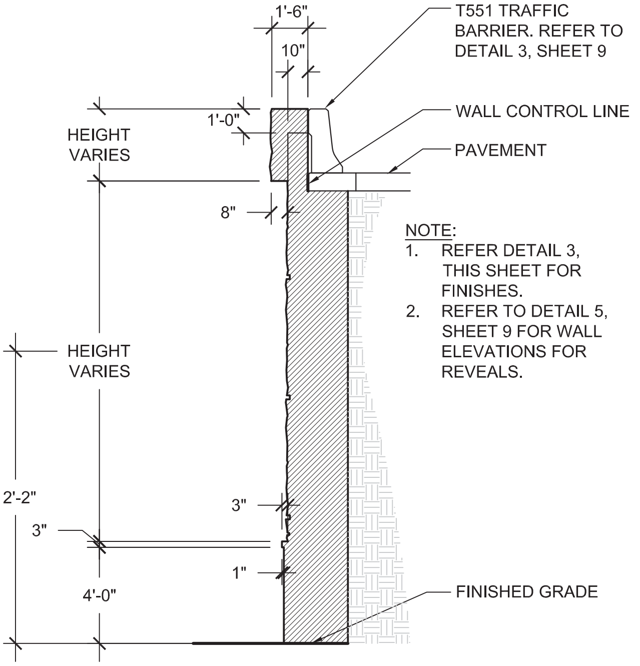
SCALE: 1/8" = 1'-0"


1'-6"
10"
T551 TRAFFIC BARRIER. REFER TO DETAIL 3, SHEET 9
1'-0"
WALL CONTROL LINE
PAVEMENT
HEIGHT VARIES
8"
HEIGHT VARIES
3"
3"
1"
4'-0"
FINISHED GRADE

NOTE:
1. REFER DETAIL 3, THIS SHEET FOR FINISHES.
2. REFER TO DETAIL 5, SHEET 9 FOR WALL ELEVATIONS FOR REVEALS.

## 4 FEATURE WALL SECTION

SCALE: 1/8" = 1'-0"


1'-6"
10"
T551 TRAFFIC BARRIER. REFER TO DETAIL 3, SHEET 9
WALL CONTROL LINE
1'-0"
PAVEMENT
HEIGHT VARIES
8"
HEIGHT VARIES
12'-2"
3"
3"
1"
4'-0"
FINISHED GRADE

NOTE:
1. REFER DETAIL 3, THIS SHEET FOR FINISHES.
2. REFER TO DETAIL 5, SHEET 9 FOR WALL ELEVATIONS FOR REVEALS.

## 5 FEATURE WALL SECTION

SCALE: 1/8" = 1'-0"

1.0 RETAINING WALLS & PILASTERS - Sheets 6-11
2.0 BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
3.0 PYLONS - Sheets 25-30
4.0 SIGN STRUCTURES - Sheets 31-32
5.0 LIGHTING STANDARDS - Sheets 33-36
6.0 PAVING/ HARDSCAPE - Sheets 37-46
7.0 LANDSCAPE - Sheets 47-63
8.0 FINISH SCHEDULE - Sheets 64-65

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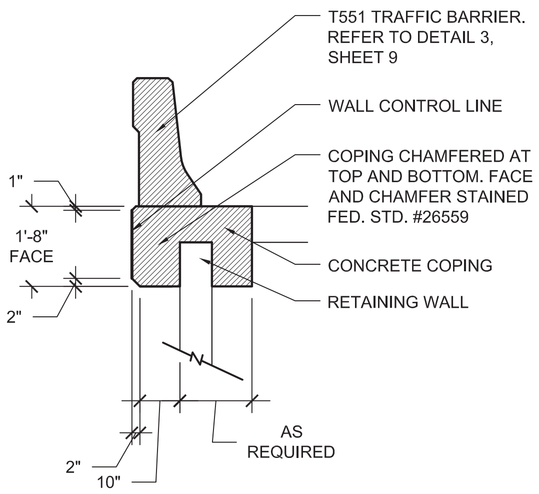
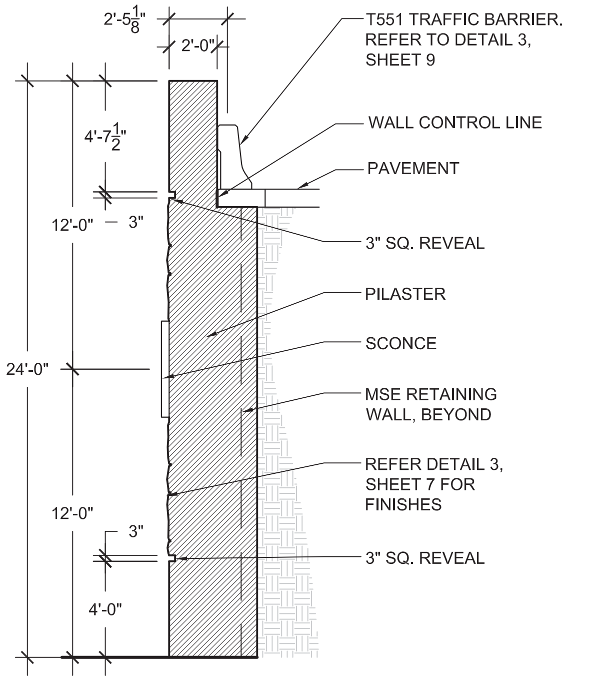
# RETAINING WALLS - PRESIDENTIAL BOULEVARD

NOTES:
1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BACKS OF WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

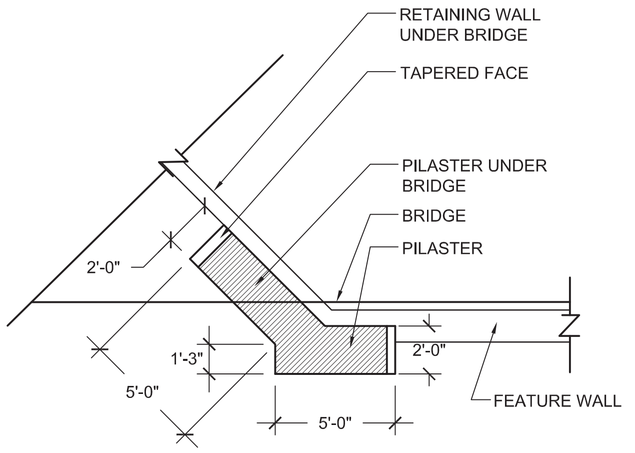

T551 TRAFFIC BARRIER. REFER TO DETAIL 3, SHEET 9
WALL CONTROL LINE
COPING CHAMFERED AT TOP AND BOTTOM. FACE AND CHAMFER STAINED FED. STD. #26559
CONCRETE COPING
RETAINING WALL
1"
1'-8" FACE
2"
2"
10"
AS REQUIRED

1 COPING DETAIL
SCALE: 1/4" = 1'-0"

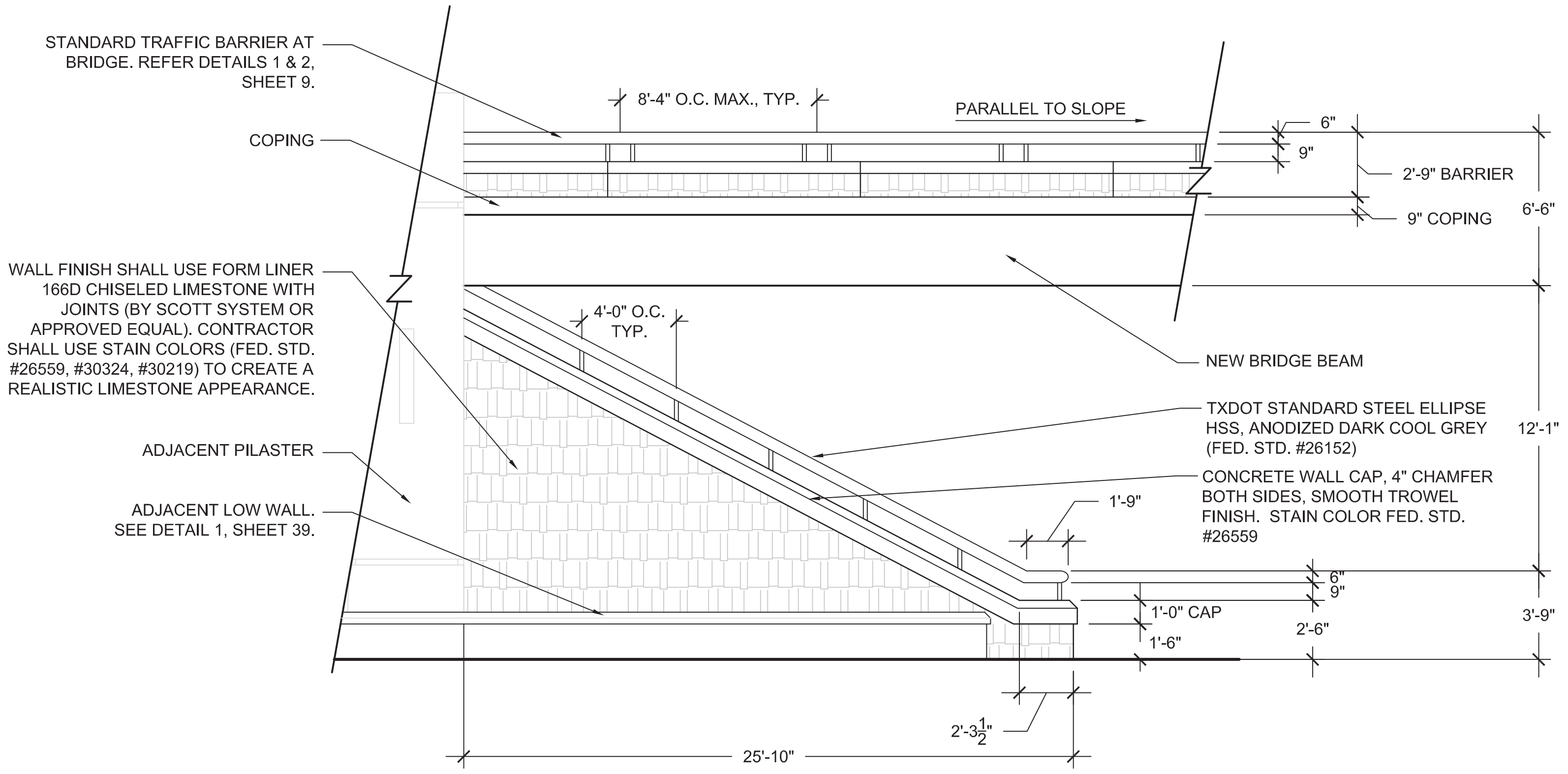

2'-5$\frac{1}{8}$"
2'-0"
T551 TRAFFIC BARRIER. REFER TO DETAIL 3, SHEET 9
4'-7$\frac{1}{2}$"
WALL CONTROL LINE
PAVEMENT
12'-0"
3"
3" SQ. REVEAL
PILASTER
SCONCE
24'-0"
MSE RETAINING WALL, BEYOND
REFER DETAIL 3, SHEET 7 FOR FINISHES
12'-0"
3"
3" SQ. REVEAL
4'-0"

2 PILASTER SECTION
SCALE: 1/8" = 1'-0"

NOTE:
REFER DETAIL 3, SHEET 7 FOR FINISHES.


RETAINING WALL UNDER BRIDGE
TAPERED FACE
PILASTER UNDER BRIDGE
BRIDGE
PILASTER
2'-0"
1'-3"
5'-0"
5'-0"
2'-0"
FEATURE WALL

3 PILASTER PLAN SECTION
SCALE: 1/8" = 1'-0"


STANDARD TRAFFIC BARRIER AT BRIDGE. REFER DETAILS 1 & 2, SHEET 9.
COPING
WALL FINISH SHALL USE FORM LINER 166D CHISELED LIMESTONE WITH JOINTS (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
ADJACENT PILASTER
ADJACENT LOW WALL. SEE DETAIL 1, SHEET 39.
8'-4" O.C. MAX., TYP.
PARALLEL TO SLOPE
6"
9"
2'-9" BARRIER
9" COPING
6'-6"
4'-0" O.C. TYP.
NEW BRIDGE BEAM
TXDOT STANDARD STEEL ELLIPSE HSS, ANODIZED DARK COOL GREY (FED. STD. #26152)
12'-1"
CONCRETE WALL CAP, 4" CHAMFER BOTH SIDES, SMOOTH TROWEL FINISH. STAIN COLOR FED. STD. #26559
1'-9"
6"
9"
1'-0" CAP
1'-6"
2'-6"
3'-9"
2'-3$\frac{1}{2}$"
25'-10"

4 SLOPED RETAINING WALL, TRAFFIC BARRIER AND RAILING ELEVATION
SCALE: 1/8" = 1'-0"

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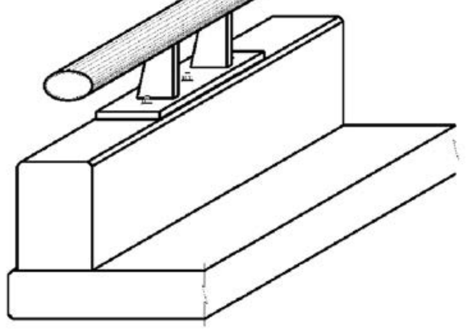
REVISION 2

Texas Department of Transportation

# TRAFFIC BARRIER & MSE WALL - PRESIDENTIAL BOULEVARD

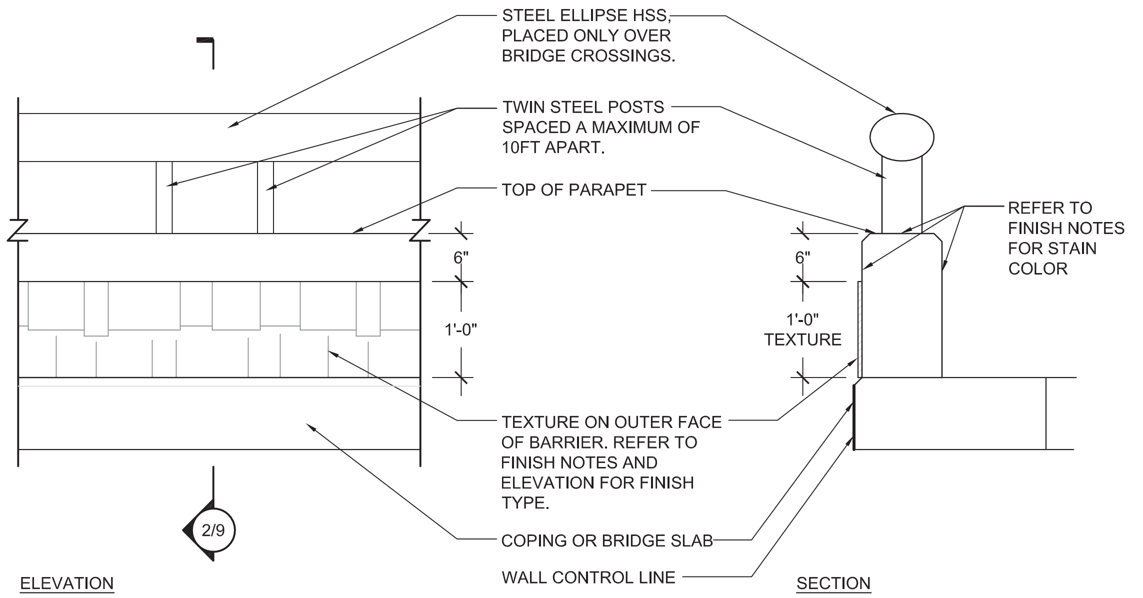


TRAFFIC BARRIER NOTES PER TXDOT BRIDGE RAILING MANUAL. VERIFY CURRENT REQUIREMENTS AND STANDARDS.

NOTE:
TRAFFIC RAILING TYPE T401-
THIS RAILING IS 33-INCHES HIGH WITH AN 18-INCH CONCRETE PARAPET AND A STEEL ELLIPSE HSS 15 INCHES ABOVE THE CONCRETE. IT HAS TWIN STEEL POSTS SPACED A MAXIMUM OF 10 FT APART. IT FEATURES A BOLT ANCHORAGE SYSTEM FOR THE STEEL RAIL POSTS THAT MAY BE DRILLED AND EPOXY-ANCHORED ALLOWING SLIP-FORMING OF THE CONCRETE PARAPET. STEEL RAIL TO BE PLACED ONLY OVER BRIDGE CROSSINGS.

1 STANDARD TRAFFIC BARRIER

SCALE: NOT TO SCALE

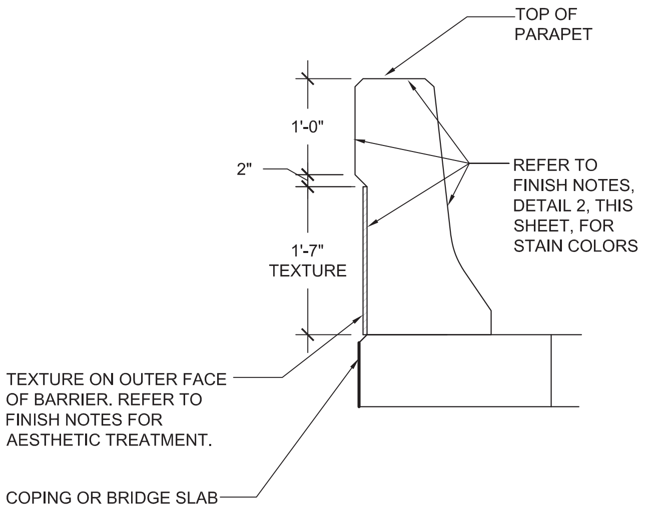

STEEL ELLIPSE HSS, PLACED ONLY OVER BRIDGE CROSSINGS.
TWIN STEEL POSTS SPACED A MAXIMUM OF 10FT APART.
TOP OF PARAPET
6"
1'-0"
6"
1'-0" TEXTURE
REFER TO FINISH NOTES FOR STAIN COLOR
TEXTURE ON OUTER FACE OF BARRIER. REFER TO FINISH NOTES AND ELEVATION FOR FINISH TYPE.
COPING OR BRIDGE SLAB
WALL CONTROL LINE
2/9
ELEVATION
SECTION

FINISH NOTES:

1. TEXTURE OF BARRIER AT BRIDGE (EXCEPT AT SPIRIT OF TEXAS) - 166D CHISELED LIMESTONE WITH JOINTS. CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
2. TEXTURE OF BARRIER ATOP RETAINING WALLS (EXCEPT AT SPIRIT OF TEXAS) - 166A CHISELED LIMESTONE. CONTRACTOR SHALL USE STAIN COLOR FED. STD. #30324.
3. TEXTURE FINISHES BY SCOTT SYSTEM OR APPROVED EQUAL.
4. STEEL ELLIPSE HSS AND TWIN STEEL POSTS ANODIZED DARK COOL GREY (FED. STD. #26152)
5. CONCRETE SURFACES OF THE BARRIERS WITHOUT APPLIED TEXTURE SHALL BE STAINED FED. STD. COLOR #26559.
6. MEDIAN BARRIERS FROM WEST MOST PROJECT LIMIT TO STATION 11157+00 SHALL BE STAINED FED. STD. COLOR #26559.
7. ALL BARRIERS SOUTHEAST OF STATION 11157+00 TO THE SOUTHEAST MOST PROJECT LIMIT SHALL BE STAINED TO MATCH SH 130 BARRIERS.

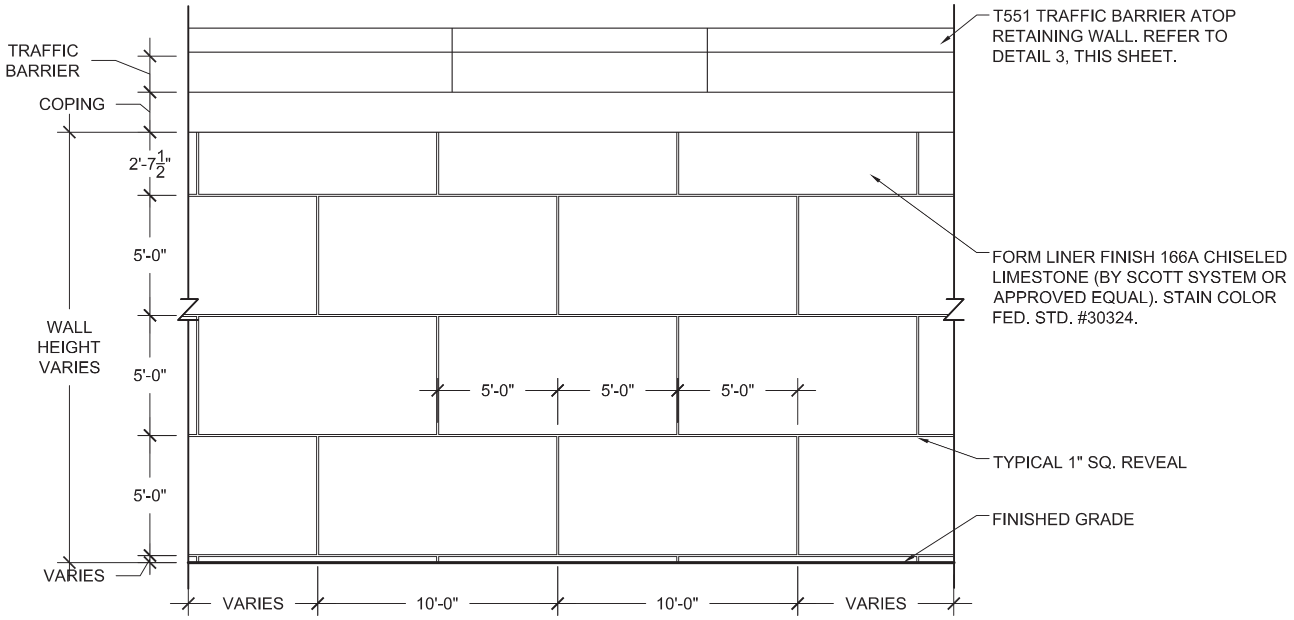
2 STANDARD TRAFFIC BARRIER AT PRESIDENTIAL BRIDGE CROSSING ONLY

SCALE: 1/2" = 1'-0"


TOP OF PARAPET
1'-0"
2"
1'-7" TEXTURE
REFER TO FINISH NOTES, DETAIL 2, THIS SHEET, FOR STAIN COLORS
TEXTURE ON OUTER FACE OF BARRIER. REFER TO FINISH NOTES FOR AESTHETIC TREATMENT.
COPING OR BRIDGE SLAB

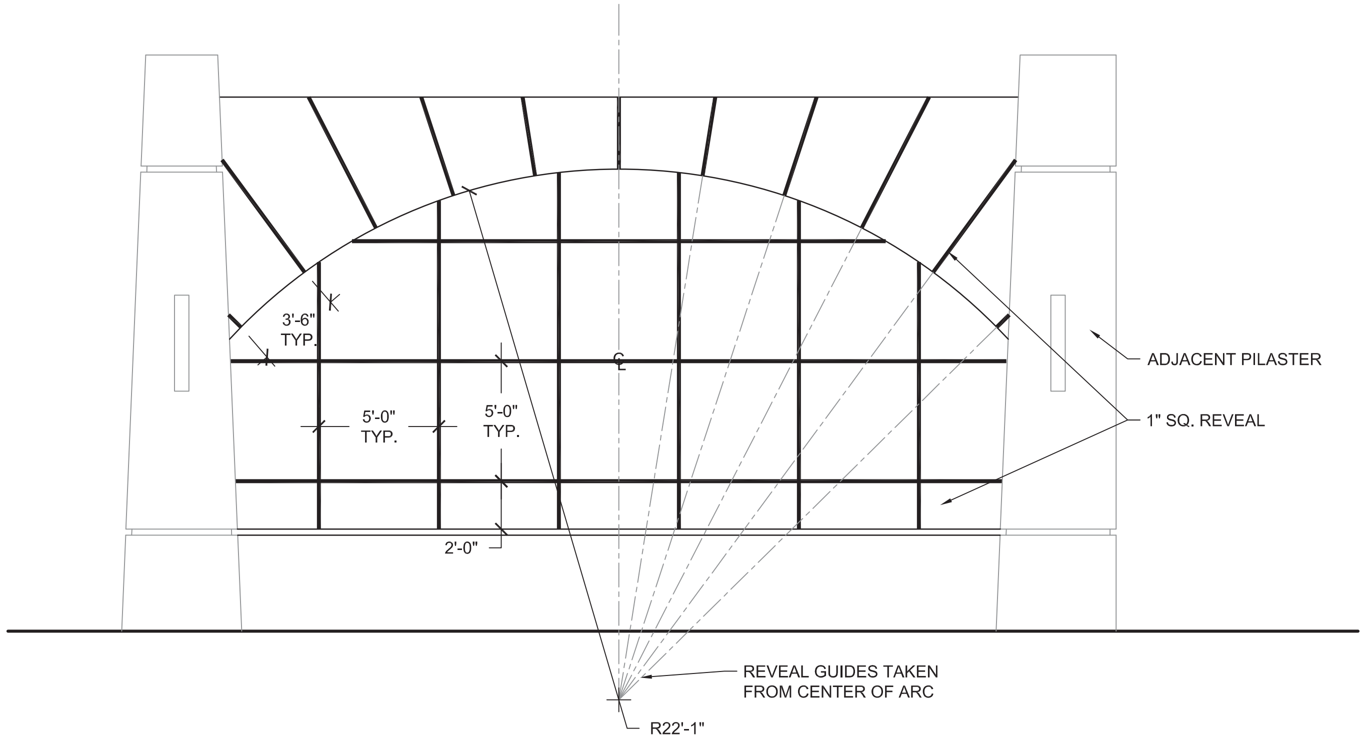
3 T551 TRAFFIC BARRIER - WITH TEXTURE

SCALE: 1/2" = 1'-0"


TRAFFIC BARRIER
COPING
2'-7½"
5'-0"
WALL HEIGHT VARIES
5'-0"
5'-0"
VARIES
5'-0"
5'-0"
5'-0"
VARIES
10'-0"
10'-0"
VARIES
T551 TRAFFIC BARRIER ATOP RETAINING WALL. REFER TO DETAIL 3, THIS SHEET.
FORM LINER FINISH 166A CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #30324.
TYPICAL 1" SQ. REVEAL
FINISHED GRADE

4 MSE WALL ELEVATION

SCALE: 1/8" = 1'-0"


3'-6" TYP.
℄
5'-0" TYP.
5'-0" TYP.
2'-0"
ADJACENT PILASTER
1" SQ. REVEAL
REVEAL GUIDES TAKEN FROM CENTER OF ARC
R22'-1"

5 SCORING AT RETAINING WALL FEATURE

SCALE: 1/8" = 1'-0"

NOTES:

1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BACKS OF WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

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REVISION 2

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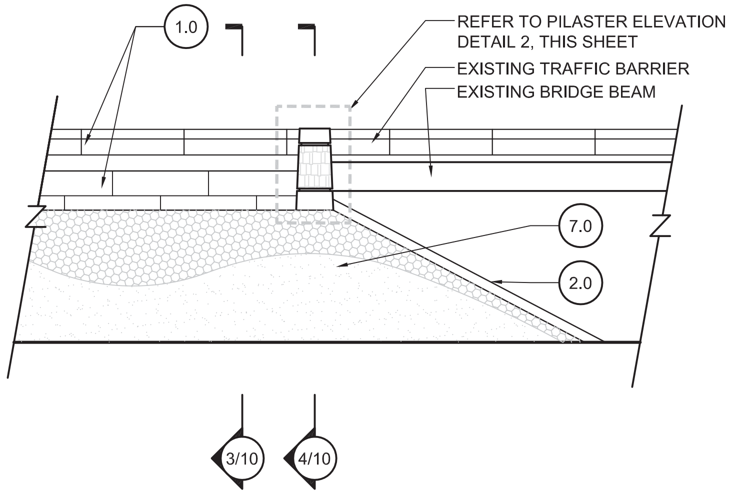
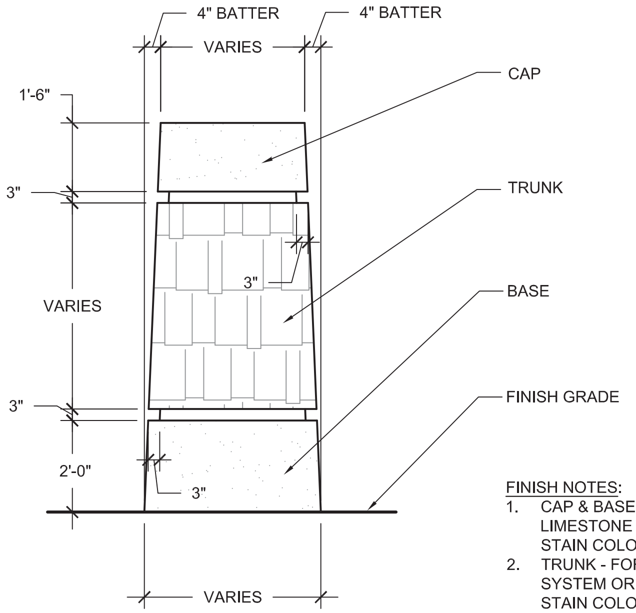
# RETAINING WALLS - SPIRIT OF TEXAS DRIVE


1.0
REFER TO PILASTER ELEVATION DETAIL 2, THIS SHEET
EXISTING TRAFFIC BARRIER
EXISTING BRIDGE BEAM
7.0
2.0
3/10
4/10

## 1 RETAINING WALL ELEVATION

SCALE: 1" = 20'


4" BATTER
4" BATTER
VARIES
CAP
1'-6"
3"
TRUNK
3"
VARIES
BASE
3"
FINISH GRADE
2'-0"
3"
VARIES

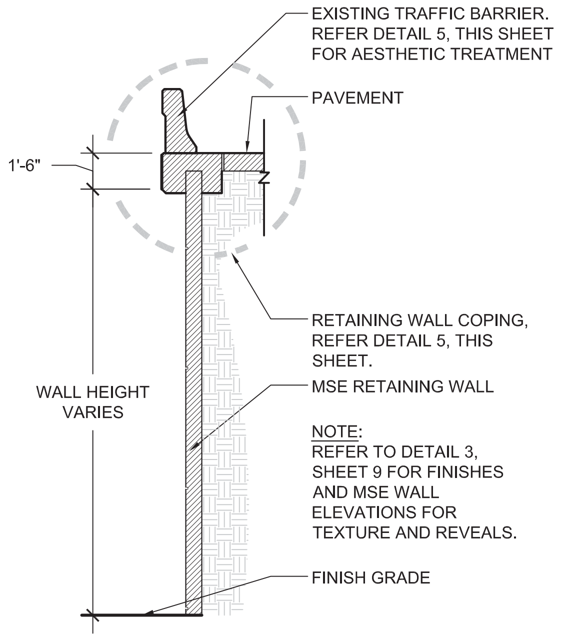
PILASTER NOTES:
ALL PILASTER BATTERS SHALL BE UNIFORM PER BRIDGE.

FINISH NOTES:
1. CAP & BASE - FORM LINER FINISH 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
2. TRUNK - FORM LINER 167B ASHLAR STONE (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.

## 2 PILASTER ELEVATION

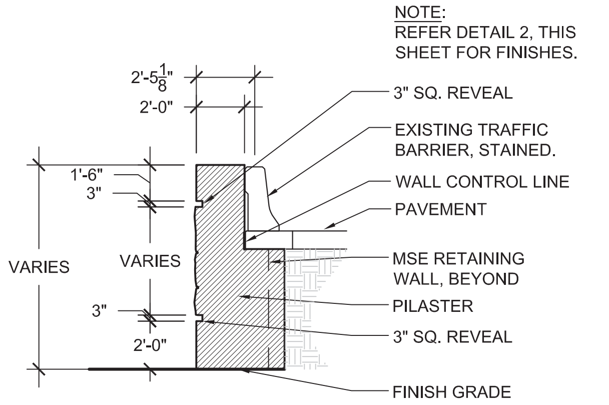
SCALE: 1/4" = 1'-0"

NOTES:
1. AESTHETIC TREATMENT OF EXISTING TRAFFIC BARRIERS AT THIS INTERSECTION SHALL ONLY CONSIST OF PAINT AS SPECIFIED IN DETAIL 5, THIS SHEET. FORMLINER OR TEXTURES SHALL NOT BE APPLIED.
2. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BACKS OF WALLS AND PAVED SURFACES.
3. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.


EXISTING TRAFFIC BARRIER. REFER DETAIL 5, THIS SHEET FOR AESTHETIC TREATMENT
PAVEMENT
1'-6"
RETAINING WALL COPING, REFER DETAIL 5, THIS SHEET.
WALL HEIGHT VARIES
MSE RETAINING WALL
NOTE: REFER TO DETAIL 3, SHEET 9 FOR FINISHES AND MSE WALL ELEVATIONS FOR TEXTURE AND REVEALS.
FINISH GRADE

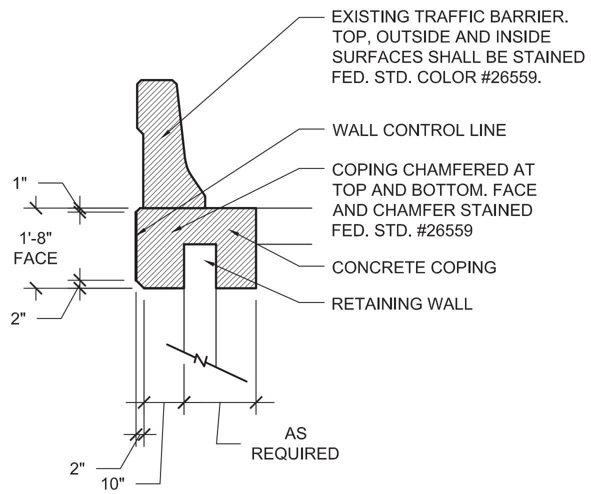
## 3 RETAINING WALL SECTION

SCALE: 1/8" = 1'-0"


NOTE: REFER DETAIL 2, THIS SHEET FOR FINISHES.
2'-5 1/8"
2'-0"
3" SQ. REVEAL
EXISTING TRAFFIC BARRIER, STAINED.
1'-6"
3"
WALL CONTROL LINE
PAVEMENT
VARIES
VARIES
MSE RETAINING WALL, BEYOND
PILASTER
3"
3" SQ. REVEAL
2'-0"
FINISH GRADE

## 4 PILASTER SECTION

SCALE: 1/8" = 1'-0"


EXISTING TRAFFIC BARRIER. TOP, OUTSIDE AND INSIDE SURFACES SHALL BE STAINED FED. STD. COLOR #26559.
WALL CONTROL LINE
1"
COPING CHAMFERED AT TOP AND BOTTOM. FACE AND CHAMFER STAINED FED. STD. #26559
1'-8" FACE
CONCRETE COPING
RETAINING WALL
2"
AS REQUIRED
2"
10"

## 5 COPING DETAIL

SCALE: 1/4" = 1'-0"

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11

(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24

(3.0) PYLONS - Sheets 25-30

(4.0) SIGN STRUCTURES - Sheets 31-32

(5.0) LIGHTING STANDARDS - Sheets 33-36

(6.0) PAVING/ HARDSCAPE - Sheets 37-46

(7.0) LANDSCAPE - Sheets 47-63

(8.0) FINISH SCHEDULE - Sheets 64-65

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REVISION 2

Texas Department of Transportation

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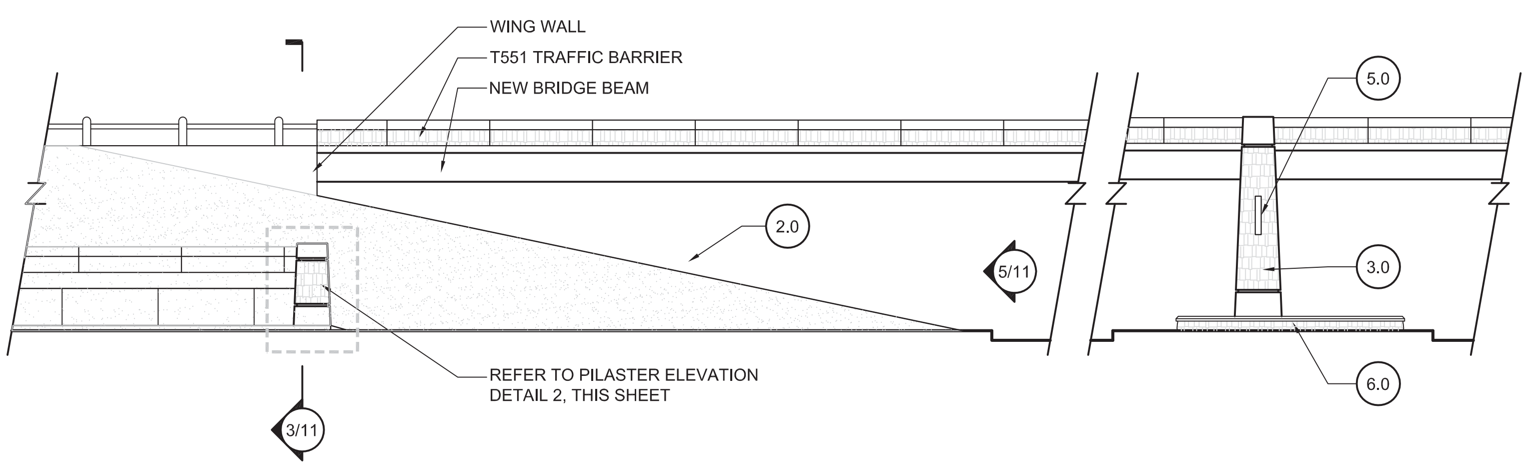
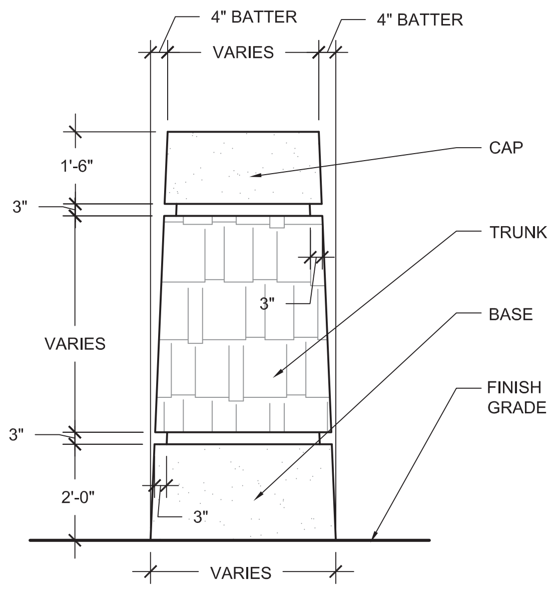
NOTE:
SHOULD THE CONTRACTOR'S DESIGN REQUIRE RETAINING WALLS, NO PERCHED WALLS SHALL BE USED.


WING WALL
T551 TRAFFIC BARRIER
NEW BRIDGE BEAM
5.0
2.0
5/11
3.0
6.0
REFER TO PILASTER ELEVATION DETAIL 2, THIS SHEET
3/11

1 RETAINING WALL ELEVATION
SCALE: 1" = 20'

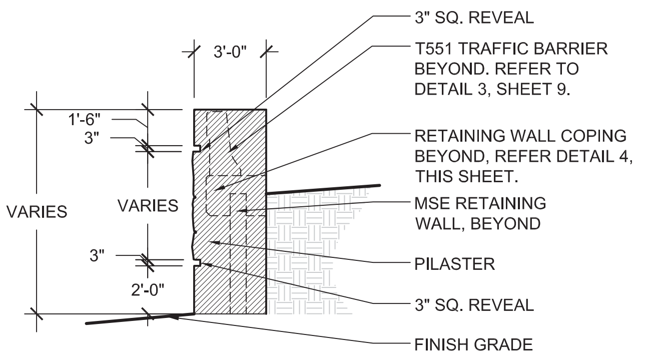

4" BATTER
4" BATTER
VARIES
1'-6"
3"
VARIES
3"
3"
2'-0"
3"
VARIES
CAP
TRUNK
BASE
FINISH GRADE

PILASTER NOTES:
ALL PILASTER BATTERS SHALL BE UNIFORM PER BRIDGE.

FINISH NOTES:
1. CAP & BASE - FORM LINER FINISH 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
2. TRUNK - FORM LINER 167B ASHLAR STONE (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.

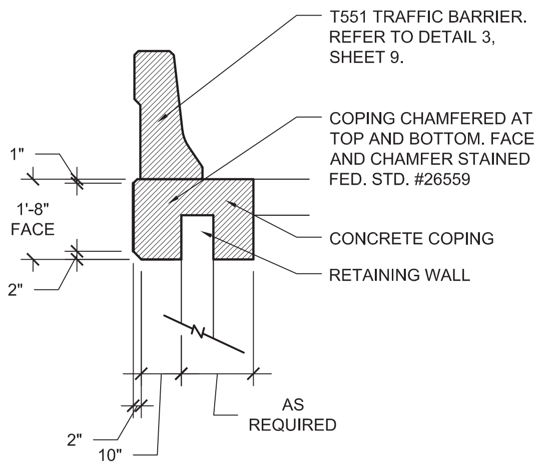
2 PILASTER ELEVATION
SCALE: 1/4" = 1'-0"

NOTE:
REFER DETAIL 2, THIS SHEET FOR FINISHES.

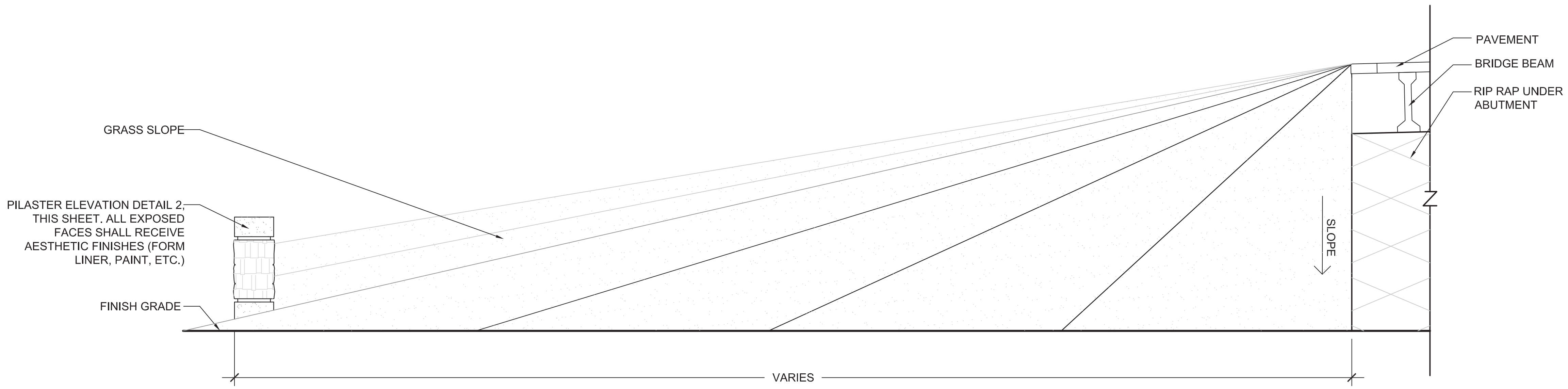

3'-0"
1'-6"
3"
VARIES
VARIES
3"
2'-0"
3" SQ. REVEAL
T551 TRAFFIC BARRIER BEYOND. REFER TO DETAIL 3, SHEET 9.
RETAINING WALL COPING BEYOND, REFER DETAIL 4, THIS SHEET.
MSE RETAINING WALL, BEYOND
PILASTER
3" SQ. REVEAL
FINISH GRADE

3 PILASTER SECTION
SCALE: 1/8" = 1'-0"

NOTES:
1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BACKS OF WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.


T551 TRAFFIC BARRIER. REFER TO DETAIL 3, SHEET 9.
COPING CHAMFERED AT TOP AND BOTTOM. FACE AND CHAMFER STAINED FED. STD. #26559
CONCRETE COPING
RETAINING WALL
1"
1'-8" FACE
2"
AS REQUIRED
2"
10"

4 COPING DETAIL
SCALE: 1/4" = 1'-0"


GRASS SLOPE
PILASTER ELEVATION DETAIL 2, THIS SHEET. ALL EXPOSED FACES SHALL RECEIVE AESTHETIC FINISHES (FORM LINER, PAINT, ETC.)
FINISH GRADE
PAVEMENT
BRIDGE BEAM
RIP RAP UNDER ABUTMENT
SLOPE
VARIES

5 WINGWALL AND RIP RAP ELEVATION
SCALE: 1" = 10'

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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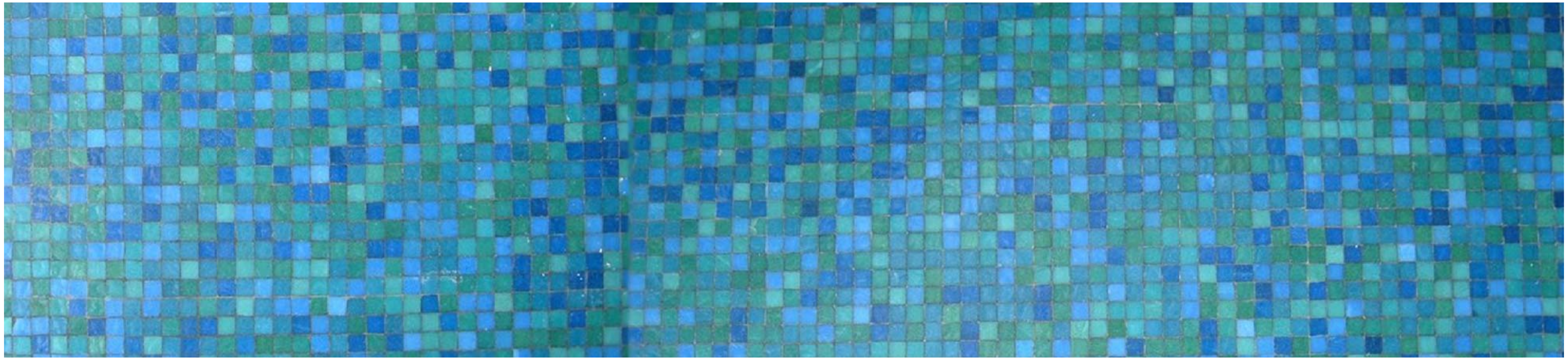
SH71
Express
Project



# 2.0 BRIDGE ABUTMENT WALLS & RIP RAP

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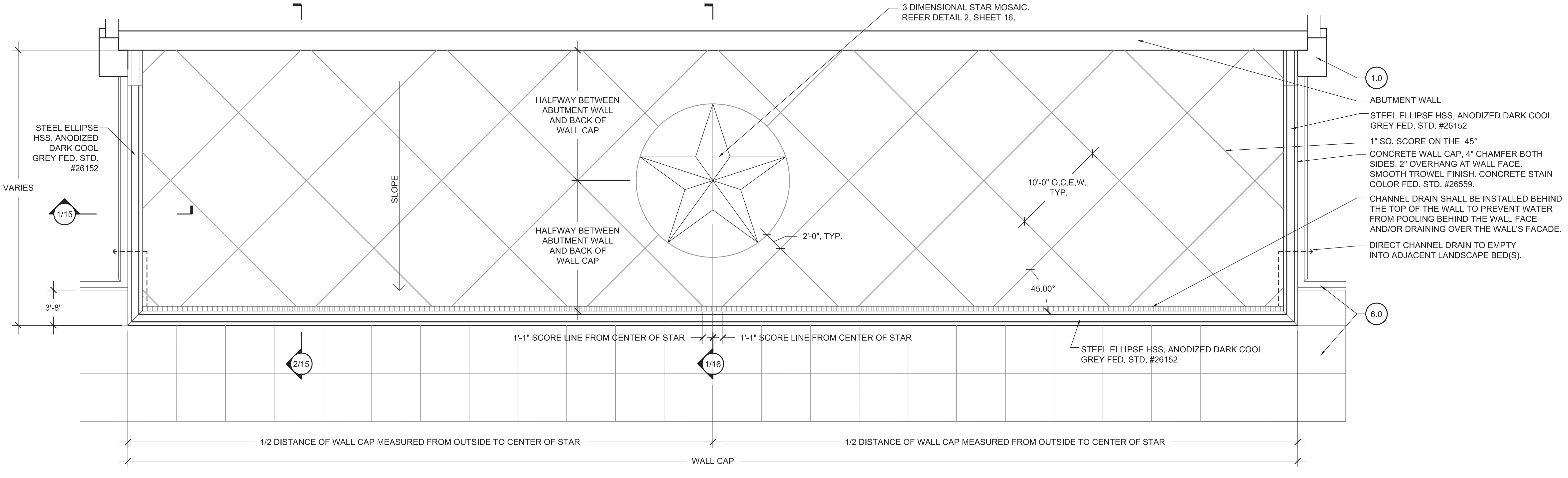
3 DIMENSIONAL STAR MOSAIC.
REFER DETAIL 2, SHEET 16.
1.0
ABUTMENT WALL
STEEL ELLIPSE HSS, ANODIZED DARK COOL GREY FED. STD. #26152
1" SQ. SCORE ON THE 45°
CONCRETE WALL CAP, 4" CHAMFER BOTH SIDES, 2" OVERHANG AT WALL FACE. SMOOTH TROWEL FINISH. CONCRETE STAIN COLOR FED. STD. #26559.
CHANNEL DRAIN SHALL BE INSTALLED BEHIND THE TOP OF THE WALL TO PREVENT WATER FROM POOLING BEHIND THE WALL FACE AND/OR DRAINING OVER THE WALL'S FACADE.
DIRECT CHANNEL DRAIN TO EMPTY INTO ADJACENT LANDSCAPE BED(S).
6.0
STEEL ELLIPSE HSS, ANODIZED DARK COOL GREY FED. STD. #26152
HALFWAY BETWEEN ABUTMENT WALL AND BACK OF WALL CAP
HALFWAY BETWEEN ABUTMENT WALL AND BACK OF WALL CAP
SLOPE
10'-0" O.C.E.W., TYP.
2'-0", TYP.
45.00°
VARIES
1/15
3'-8"
1'-1" SCORE LINE FROM CENTER OF STAR
1'-1" SCORE LINE FROM CENTER OF STAR
2/15
1/16
STEEL ELLIPSE HSS, ANODIZED DARK COOL GREY FED. STD. #26152
1/2 DISTANCE OF WALL CAP MEASURED FROM OUTSIDE TO CENTER OF STAR
1/2 DISTANCE OF WALL CAP MEASURED FROM OUTSIDE TO CENTER OF STAR
WALL CAP

## NORTHWEST ABUTMENT AND SLOPED RIP RAP WALL PLAN

SCALE: 1" = 10'

NOTES:

1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

1.0 RETAINING WALLS & PILASTERS - Sheets 6-11
2.0 BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
3.0 PYLONS - Sheets 25-30
4.0 SIGN STRUCTURES - Sheets 31-32
5.0 LIGHTING STANDARDS - Sheets 33-36
6.0 PAVING/ HARDSCAPE - Sheets 37-46
7.0 LANDSCAPE - Sheets 47-63
8.0 FINISH SCHEDULE - Sheets 64-65

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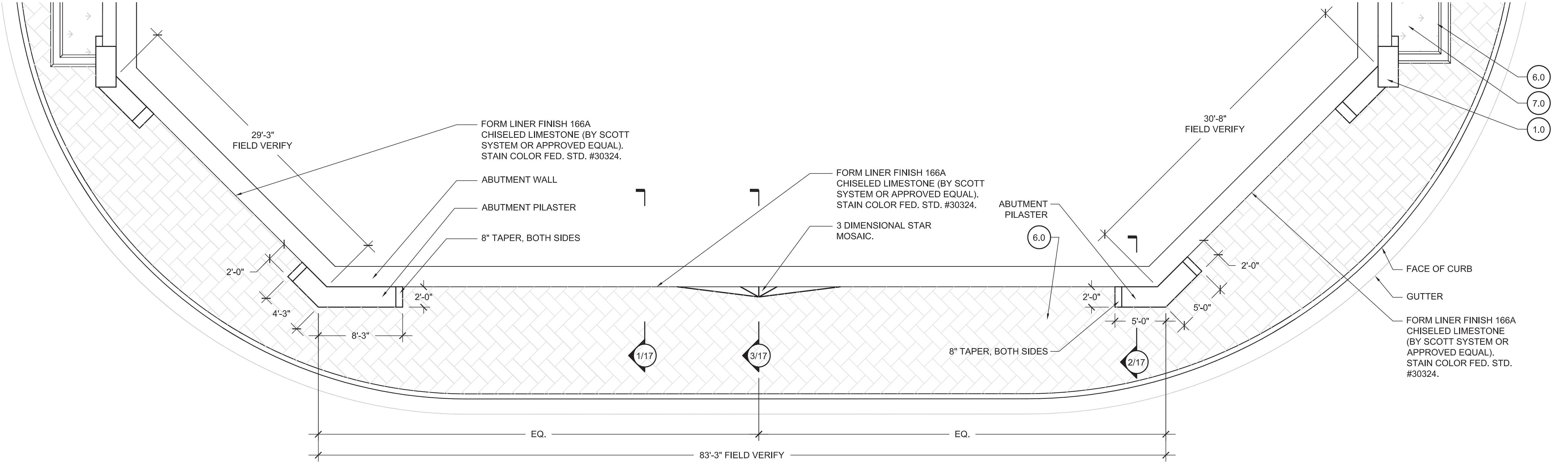
# BRIDGE ABUTMENT WALLS & RIP RAP - PRESIDENTIAL BOULEVARD



29'-3"
FIELD VERIFY
FORM LINER FINISH 166A
CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL).
STAIN COLOR FED. STD. #30324.
ABUTMENT WALL
ABUTMENT PILASTER
8" TAPER, BOTH SIDES
FORM LINER FINISH 166A
CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL).
STAIN COLOR FED. STD. #30324.
3 DIMENSIONAL STAR MOSAIC.
ABUTMENT PILASTER
6.0
30'-8"
FIELD VERIFY
6.0
7.0
1.0
FACE OF CURB
GUTTER
FORM LINER FINISH 166A
CHISELED LIMESTONE
(BY SCOTT SYSTEM OR APPROVED EQUAL).
STAIN COLOR FED. STD. #30324.
2'-0"
4'-3"
8'-3"
2'-0"
1/17
3/17
2/17
8" TAPER, BOTH SIDES
2'-0"
5'-0"
5'-0"
2'-0"
EQ.
EQ.
83'-3" FIELD VERIFY

SOUTHEAST ABUTMENT WALL PLAN

SCALE: 1" = 10'

NOTES:

1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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Texas Department of Transportation

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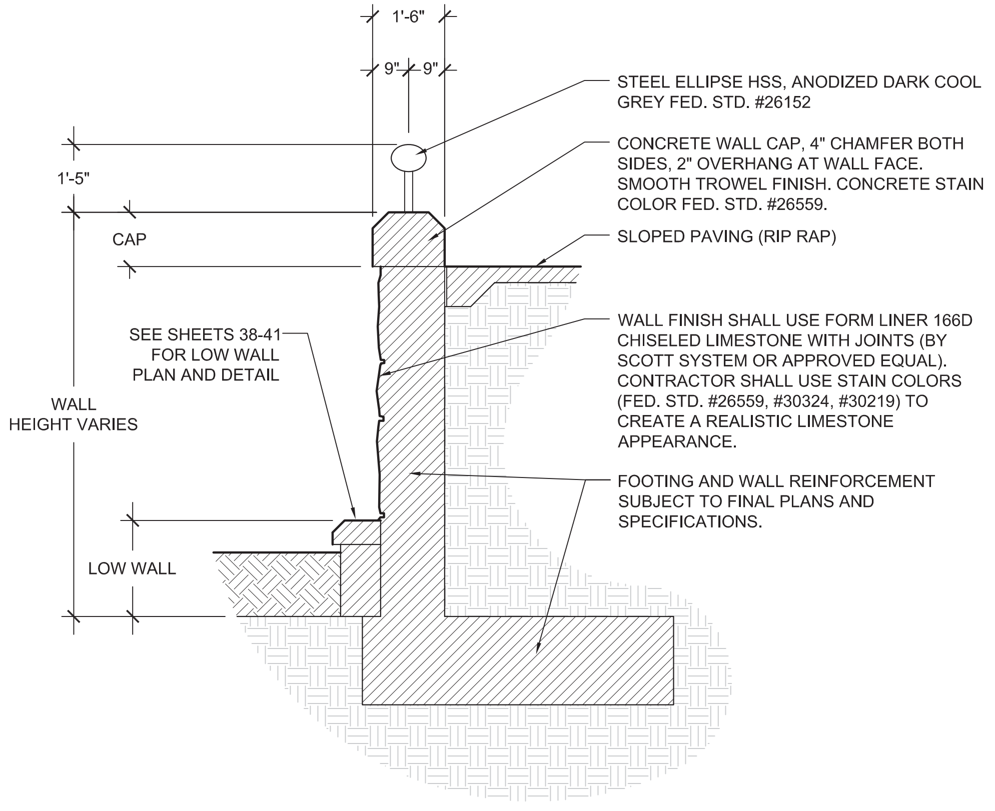
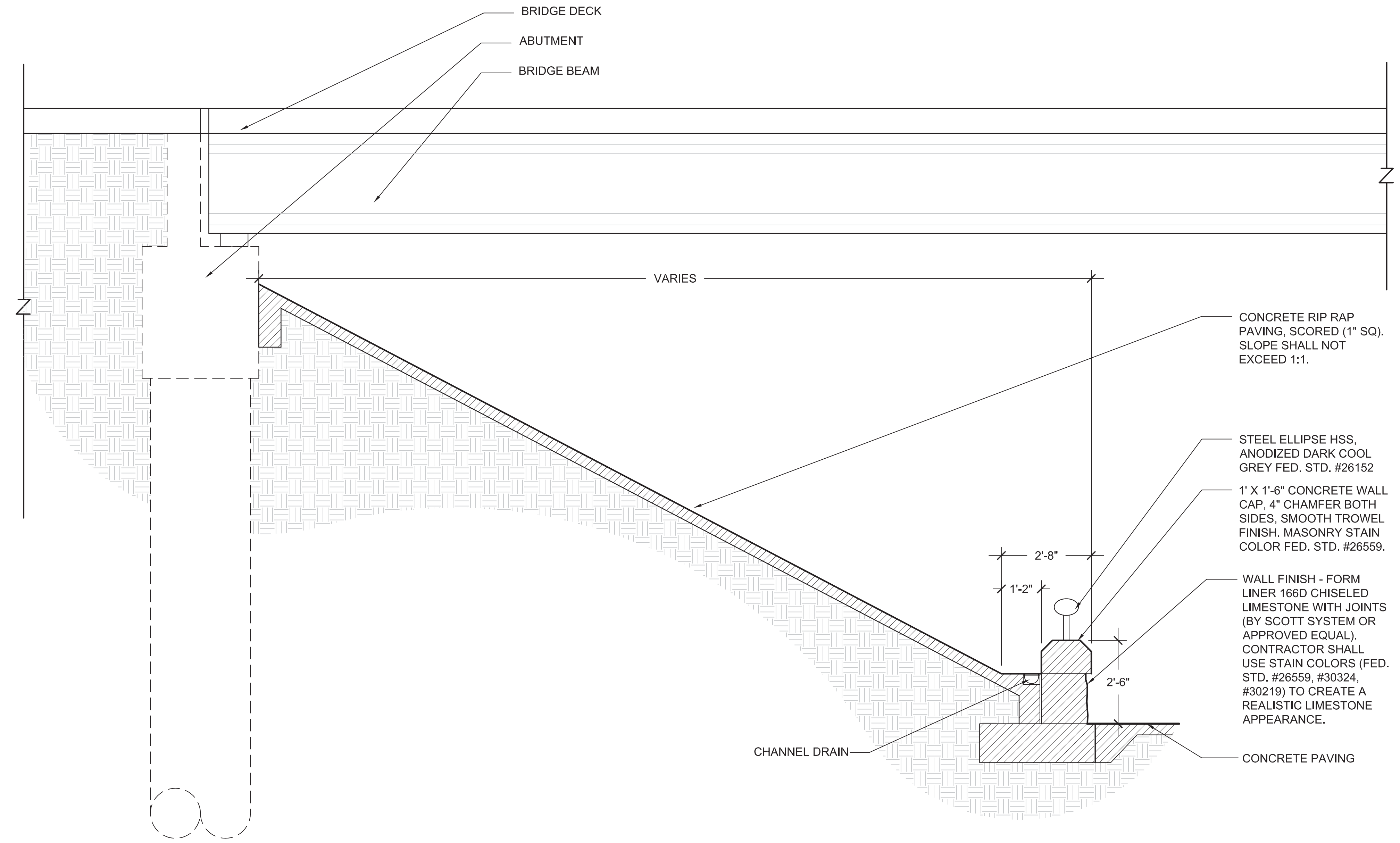
# BRIDGE ABUTMENT WALLS & RIP RAP - PRESIDENTIAL BOULEVARD


1'-6"
9"
9"
1'-5"
CAP
SEE SHEETS 38-41 FOR LOW WALL PLAN AND DETAIL
WALL HEIGHT VARIES
LOW WALL
STEEL ELLIPSE HSS, ANODIZED DARK COOL GREY FED. STD. #26152
CONCRETE WALL CAP, 4" CHAMFER BOTH SIDES, 2" OVERHANG AT WALL FACE. SMOOTH TROWEL FINISH. CONCRETE STAIN COLOR FED. STD. #26559.
SLOPED PAVING (RIP RAP)
WALL FINISH SHALL USE FORM LINER 166D CHISELED LIMESTONE WITH JOINTS (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
FOOTING AND WALL REINFORCEMENT SUBJECT TO FINAL PLANS AND SPECIFICATIONS.

1 SLOPED RIP RAP WALL SECTION

SCALE: 1/4" = 1'-0"


BRIDGE DECK
ABUTMENT
BRIDGE BEAM
VARIES
CONCRETE RIP RAP PAVING, SCORED (1" SQ). SLOPE SHALL NOT EXCEED 1:1.
STEEL ELLIPSE HSS, ANODIZED DARK COOL GREY FED. STD. #26152
1' X 1'-6" CONCRETE WALL CAP, 4" CHAMFER BOTH SIDES, SMOOTH TROWEL FINISH. MASONRY STAIN COLOR FED. STD. #26559.
2'-8"
1'-2"
2'-6"
WALL FINISH - FORM LINER 166D CHISELED LIMESTONE WITH JOINTS (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
CHANNEL DRAIN
CONCRETE PAVING

2 ABUTMENT AND SLOPED RIP RAP WALL SECTION

SCALE: 1/4" = 1'-0"

NOTES:

1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

REVISION 2

Texas Department of Transportation

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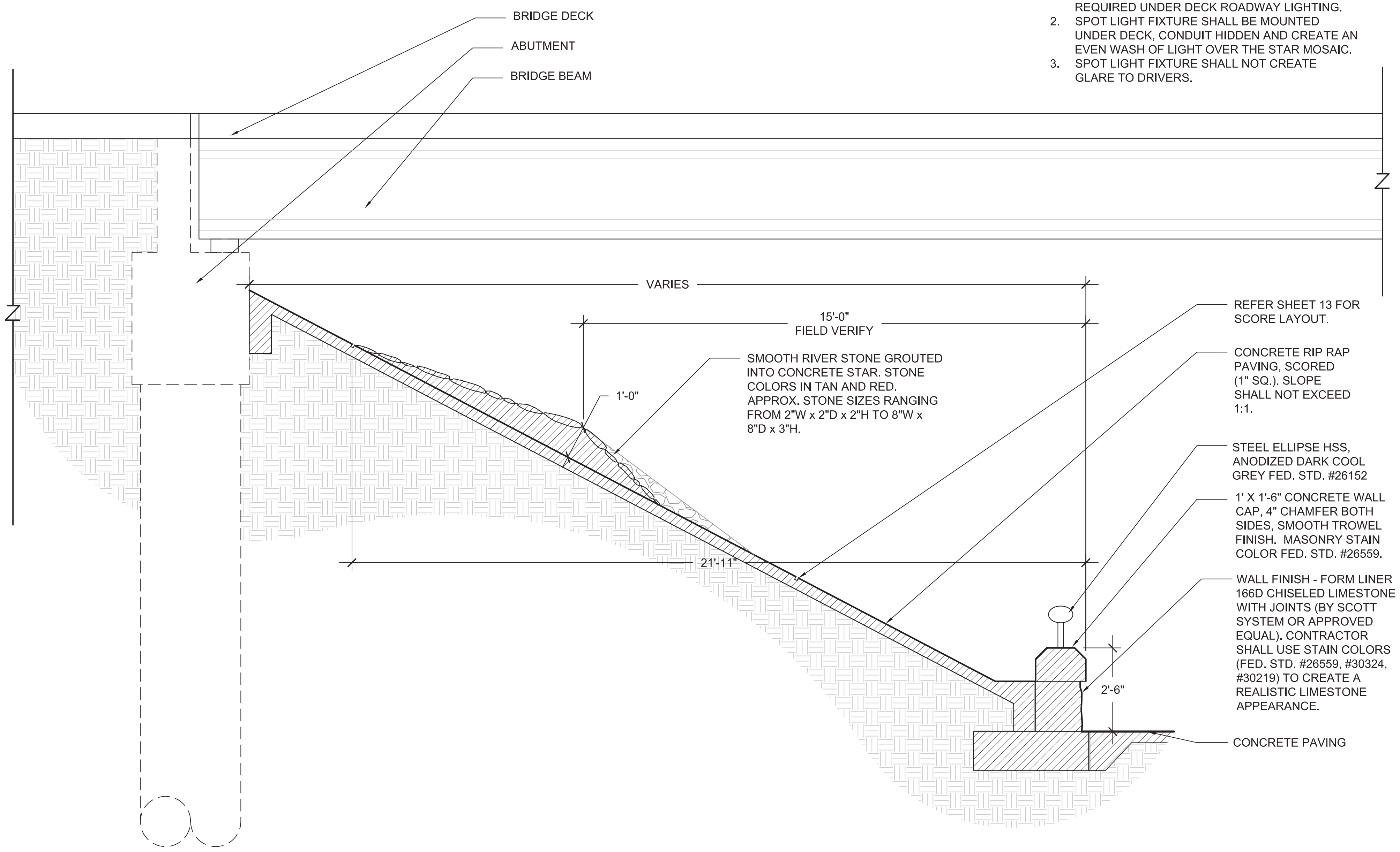
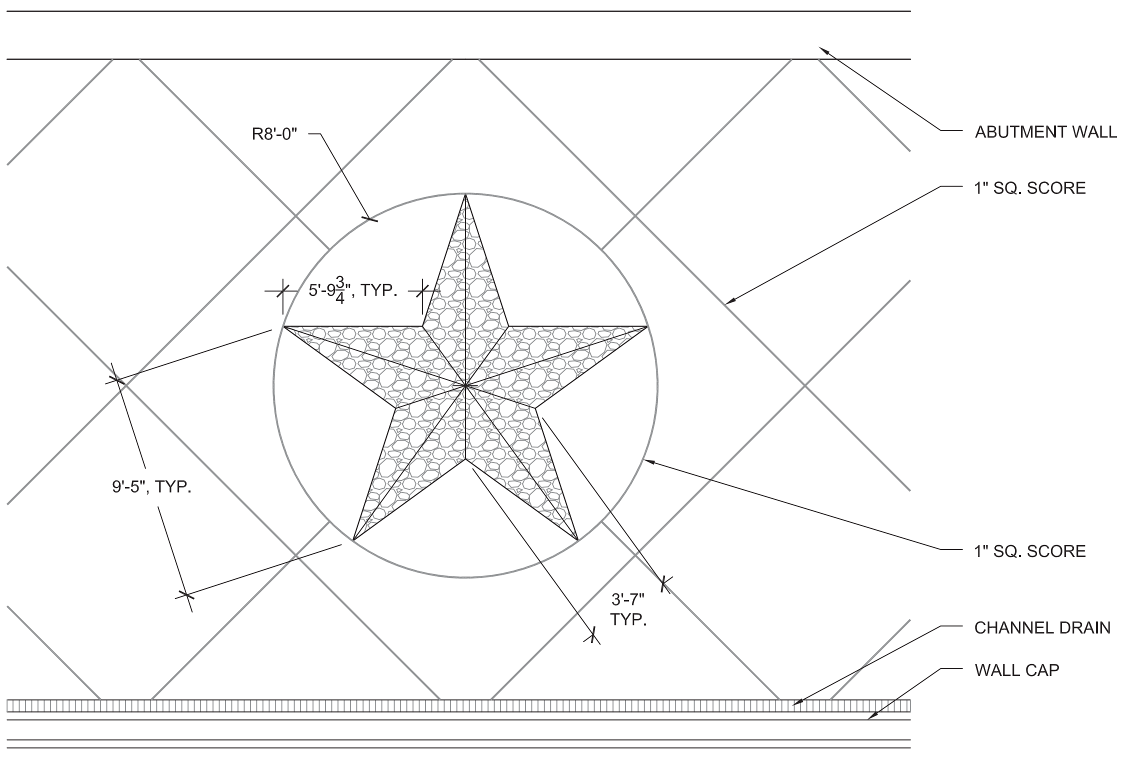
# BRIDGE ABUTMENT WALLS & RIP RAP - PRESIDENTIAL BOULEVARD

NOTES:
1. STAR MOSAIC SHALL RECEIVE A DEDICATED SPOT LIGHT FIXTURE SEPARATE FROM REQUIRED UNDER DECK ROADWAY LIGHTING.
2. SPOT LIGHT FIXTURE SHALL BE MOUNTED UNDER DECK, CONDUIT HIDDEN AND CREATE AN EVEN WASH OF LIGHT OVER THE STAR MOSAIC.
3. SPOT LIGHT FIXTURE SHALL NOT CREATE GLARE TO DRIVERS.


BRIDGE DECK
ABUTMENT
BRIDGE BEAM
VARIES
15'-0"
FIELD VERIFY
SMOOTH RIVER STONE GROUTED INTO CONCRETE STAR. STONE COLORS IN TAN AND RED. APPROX. STONE SIZES RANGING FROM 2"W x 2"D x 2"H TO 8"W x 8"D x 3"H.
1'-0"
21'-11"
2'-6"
REFER SHEET 13 FOR SCORE LAYOUT.
CONCRETE RIP RAP PAVING, SCORED (1" SQ.). SLOPE SHALL NOT EXCEED 1:1.
STEEL ELLIPSE HSS, ANODIZED DARK COOL GREY FED. STD. #26152
1' X 1'-6" CONCRETE WALL CAP, 4" CHAMFER BOTH SIDES, SMOOTH TROWEL FINISH. MASONRY STAIN COLOR FED. STD. #26559.
WALL FINISH - FORM LINER 166D CHISELED LIMESTONE WITH JOINTS (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
CONCRETE PAVING

1 ABUTMENT, SLOPED RIP RAP AND STAR MOSAIC SECTION

SCALE: 1/4" = 1'-0"


R8'-0"
5'-9 3/4", TYP.
9'-5", TYP.
3'-7" TYP.
ABUTMENT WALL
1" SQ. SCORE
1" SQ. SCORE
CHANNEL DRAIN
WALL CAP

2 STAR MOSAIC DETAIL

SCALE: 1/8" = 1'-0"

NOTES:
1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

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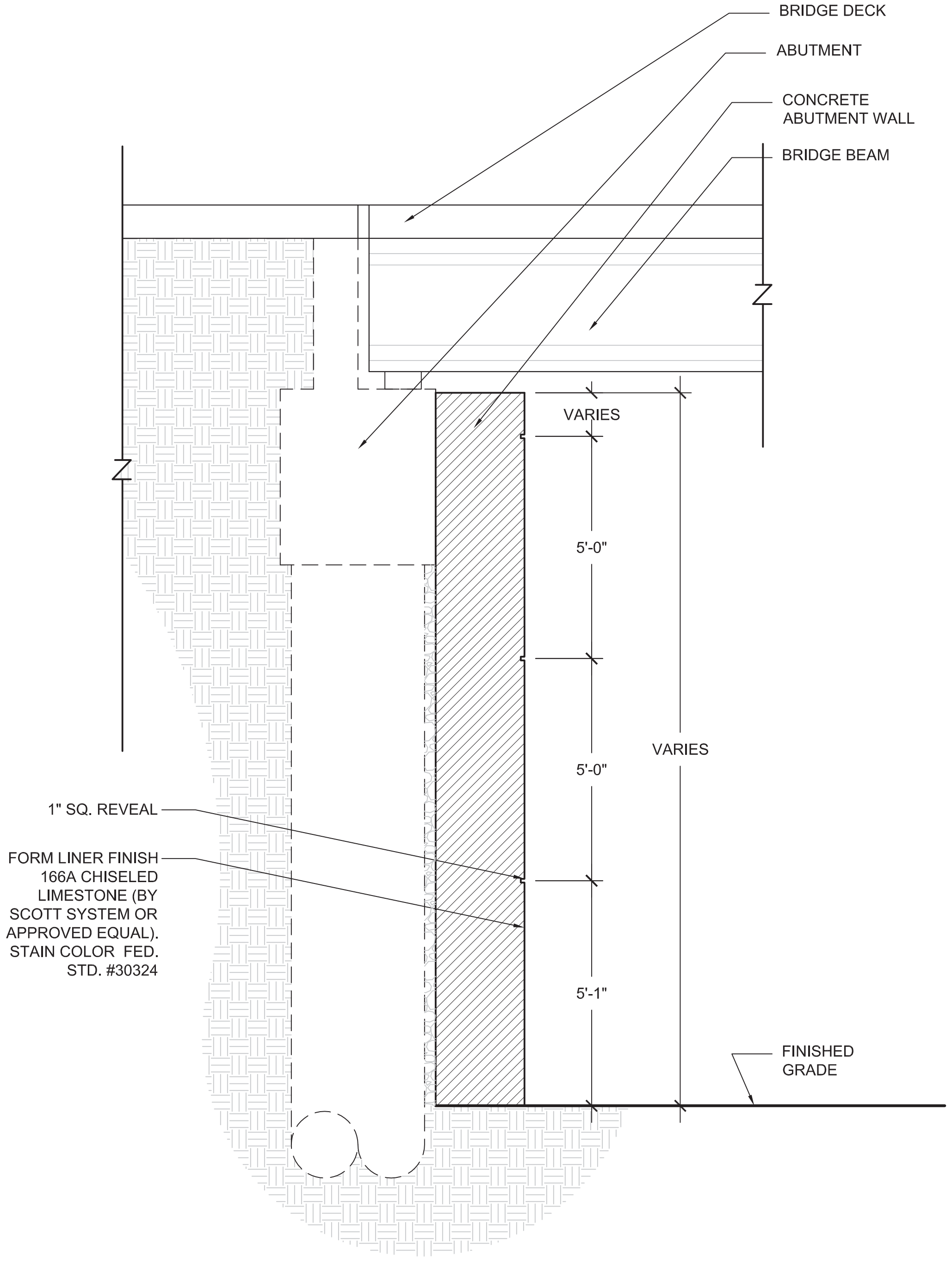
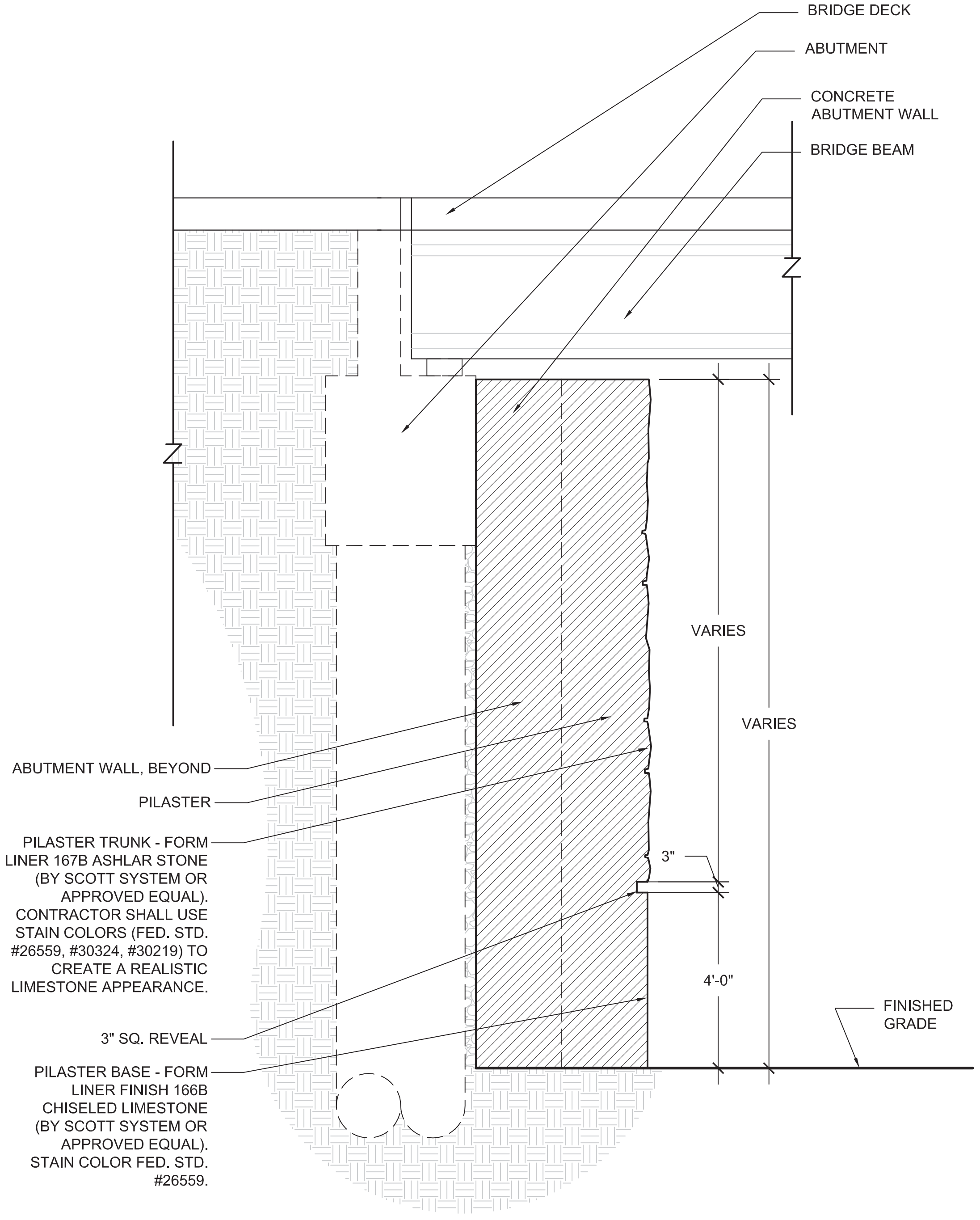
# BRIDGE ABUTMENT WALLS & RIP RAP - PRESIDENTIAL BOULEVARD

NOTES:
1. STAR MOSAIC SHALL RECEIVE A DEDICATED SPOT LIGHT FIXTURE SEPARATE FROM REQUIRED UNDER DECK ROADWAY LIGHTING.
2. SPOT LIGHT FIXTURE SHALL BE MOUNTED UNDER DECK, CONDUIT HIDDEN AND CREATE AN EVEN WASH OF LIGHT OVER THE STAR MOSAIC.
3. SPOT LIGHT FIXTURE SHALL NOT CREATE GLARE TO DRIVERS.


BRIDGE DECK
ABUTMENT
CONCRETE ABUTMENT WALL
BRIDGE BEAM
VARIES
5'-0"
5'-0"
VARIES
1" SQ. REVEAL
FORM LINER FINISH 166A CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #30324
5'-1"
FINISHED GRADE

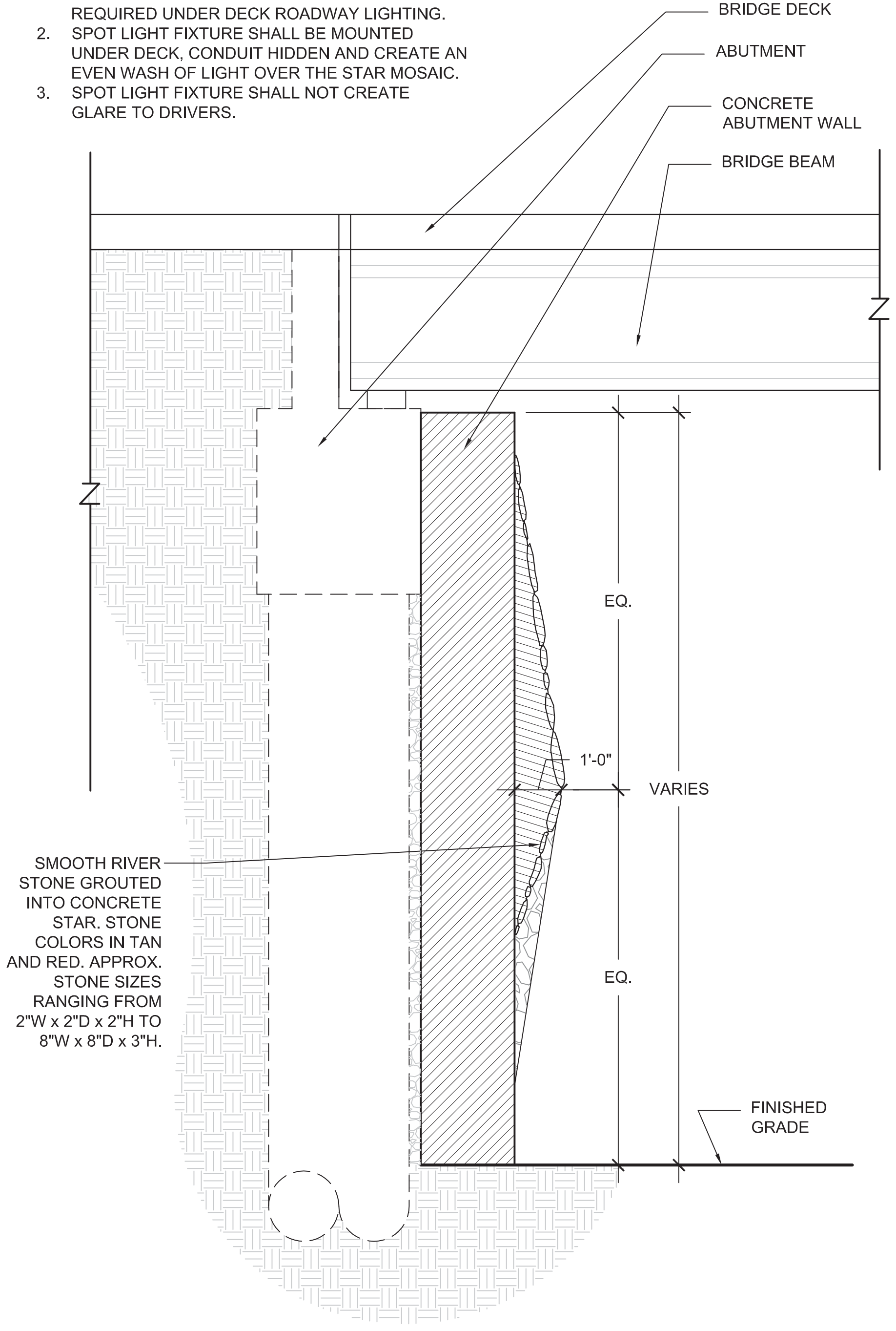
1 ABUTMENT WALL SECTION

SCALE: 1/4" = 1'-0"


BRIDGE DECK
ABUTMENT
CONCRETE ABUTMENT WALL
BRIDGE BEAM
VARIES
VARIES
ABUTMENT WALL, BEYOND
PILASTER
PILASTER TRUNK - FORM LINER 167B ASHLAR STONE (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
3"
4'-0"
FINISHED GRADE
3" SQ. REVEAL
PILASTER BASE - FORM LINER FINISH 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.

2 ABUTMENT WALL PILASTER SECTION

SCALE: 1/4" = 1'-0"


BRIDGE DECK
ABUTMENT
CONCRETE ABUTMENT WALL
BRIDGE BEAM
EQ.
1'-0"
VARIES
SMOOTH RIVER STONE GROUTED INTO CONCRETE STAR. STONE COLORS IN TAN AND RED. APPROX. STONE SIZES RANGING FROM 2"W x 2"D x 2"H TO 8"W x 8"D x 3"H.
EQ.
FINISHED GRADE

3 ABUTMENT AND STAR MOSAIC SECTION

SCALE: 1/4" = 1'-0"

NOTES:
1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

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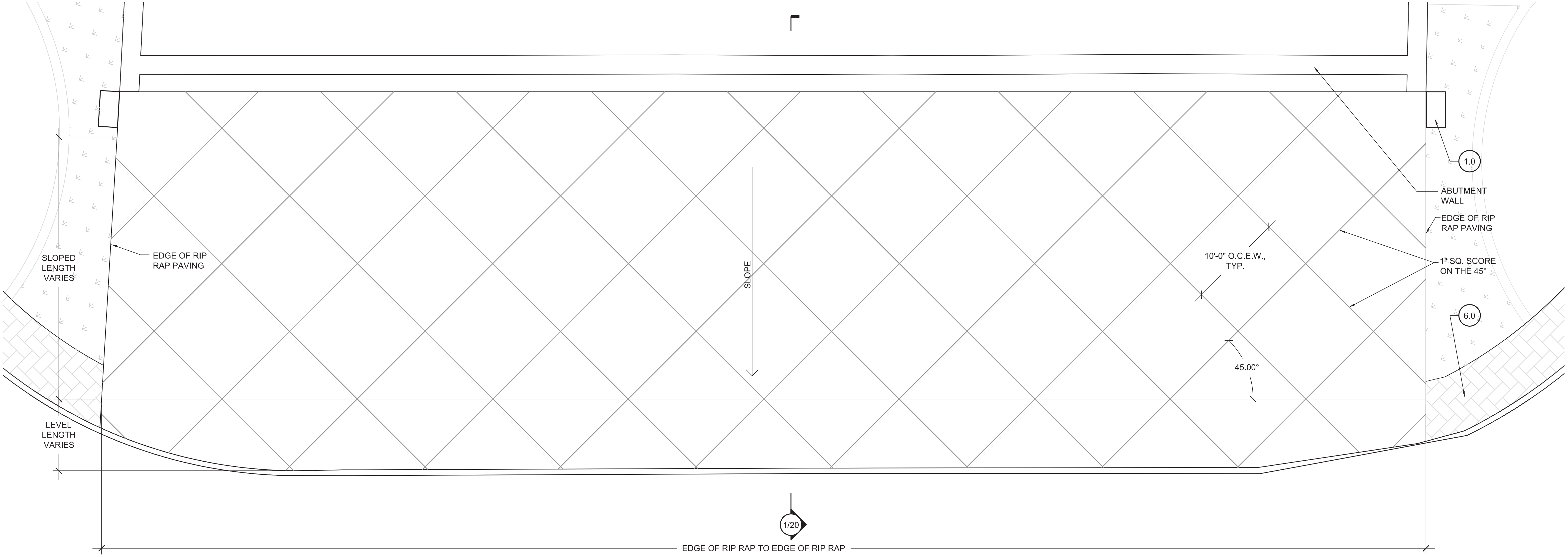
# BRIDGE ABUTMENT WALLS & RIP RAP - SPIRIT OF TEXAS DRIVE


SLOPED LENGTH VARIES
LEVEL LENGTH VARIES
EDGE OF RIP RAP PAVING
SLOPE
1.0
ABUTMENT WALL
EDGE OF RIP RAP PAVING
10'-0" O.C.E.W., TYP.
1" SQ. SCORE ON THE 45°
6.0
45.00°
1/20
EDGE OF RIP RAP TO EDGE OF RIP RAP

NORTHWEST ABUTMENT AND SLOPED RIP RAP WALL PLAN

SCALE: 1" = 10'

NOTE:
EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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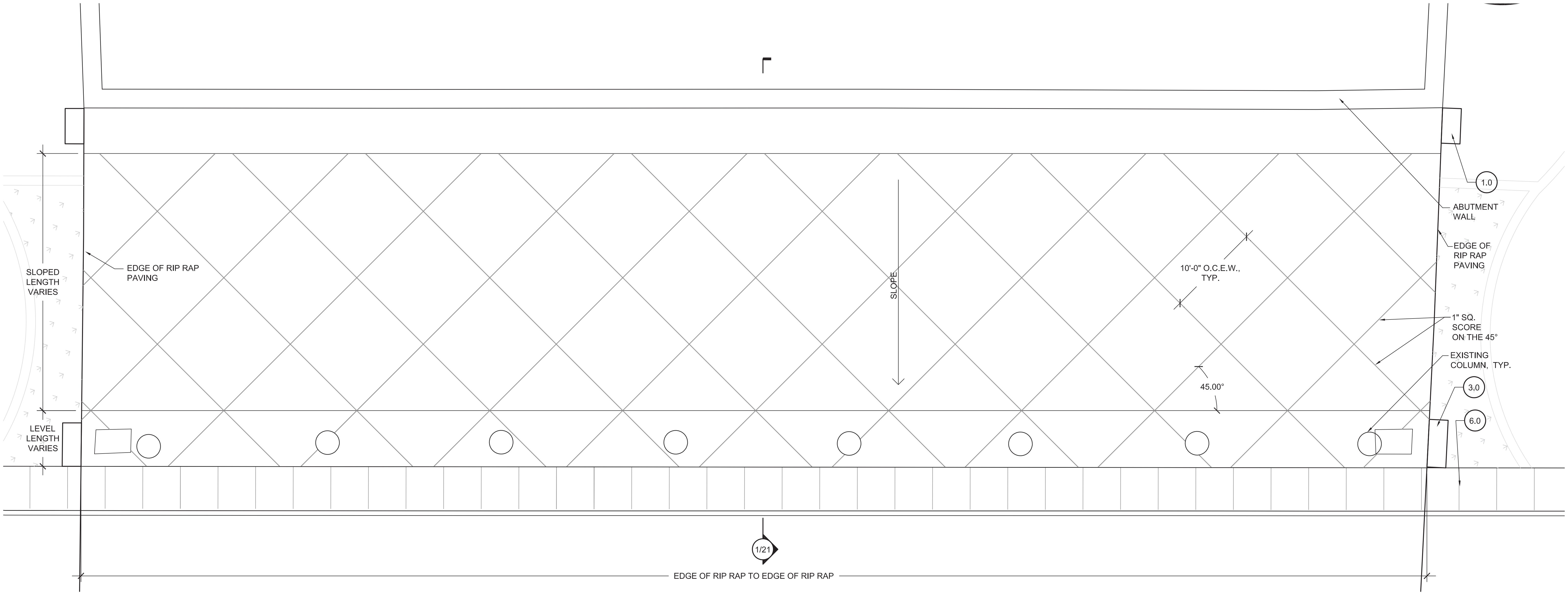
1.0
ABUTMENT WALL
EDGE OF RIP RAP PAVING
EDGE OF RIP RAP PAVING
SLOPED LENGTH VARIES
SLOPE
10'-0" O.C.E.W., TYP.
1" SQ. SCORE ON THE 45°
EXISTING COLUMN, TYP.
45.00°
3.0
6.0
LEVEL LENGTH VARIES
1/21
EDGE OF RIP RAP TO EDGE OF RIP RAP

SOUTHEAST ABUTMENT AND SLOPED RIP RAP WALL PLAN

SCALE: 1" = 10'

NOTE:
EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

- (1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
- (2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
- (3.0) PYLONS - Sheets 25-30
- (4.0) SIGN STRUCTURES - Sheets 31-32
- (5.0) LIGHTING STANDARDS - Sheets 33-36
- (6.0) PAVING/ HARDSCAPE - Sheets 37-46
- (7.0) LANDSCAPE - Sheets 47-63
- (8.0) FINISH SCHEDULE - Sheets 64-65

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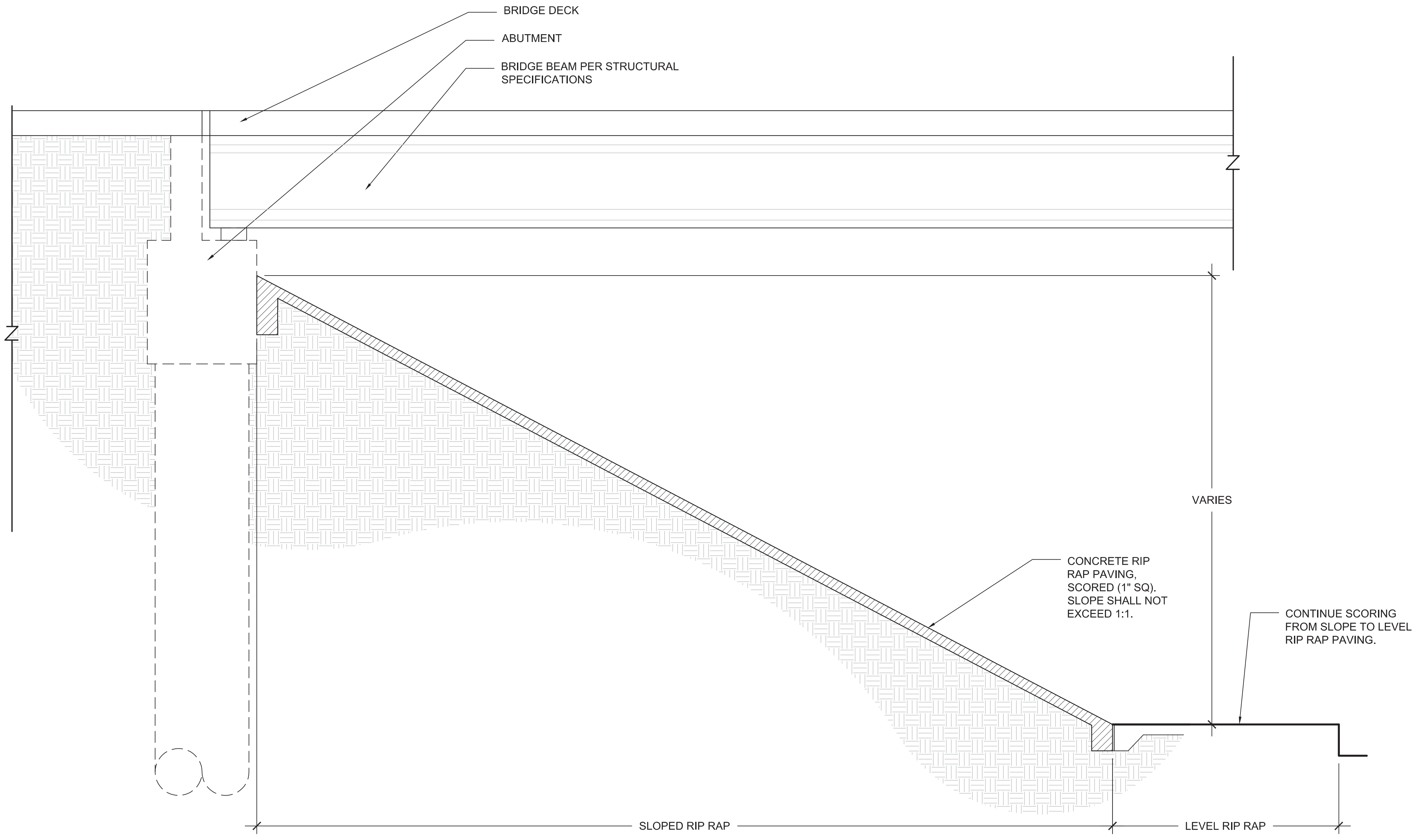
BRIDGE DECK
ABUTMENT
BRIDGE BEAM PER STRUCTURAL SPECIFICATIONS
VARIES
CONCRETE RIP RAP PAVING, SCORED (1" SQ). SLOPE SHALL NOT EXCEED 1:1.
CONTINUE SCORING FROM SLOPE TO LEVEL RIP RAP PAVING.
SLOPED RIP RAP
LEVEL RIP RAP

1 ABUTMENT AND SLOPED RIP RAP WALL SECTION

SCALE: 1" = 10'

NOTE:
EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

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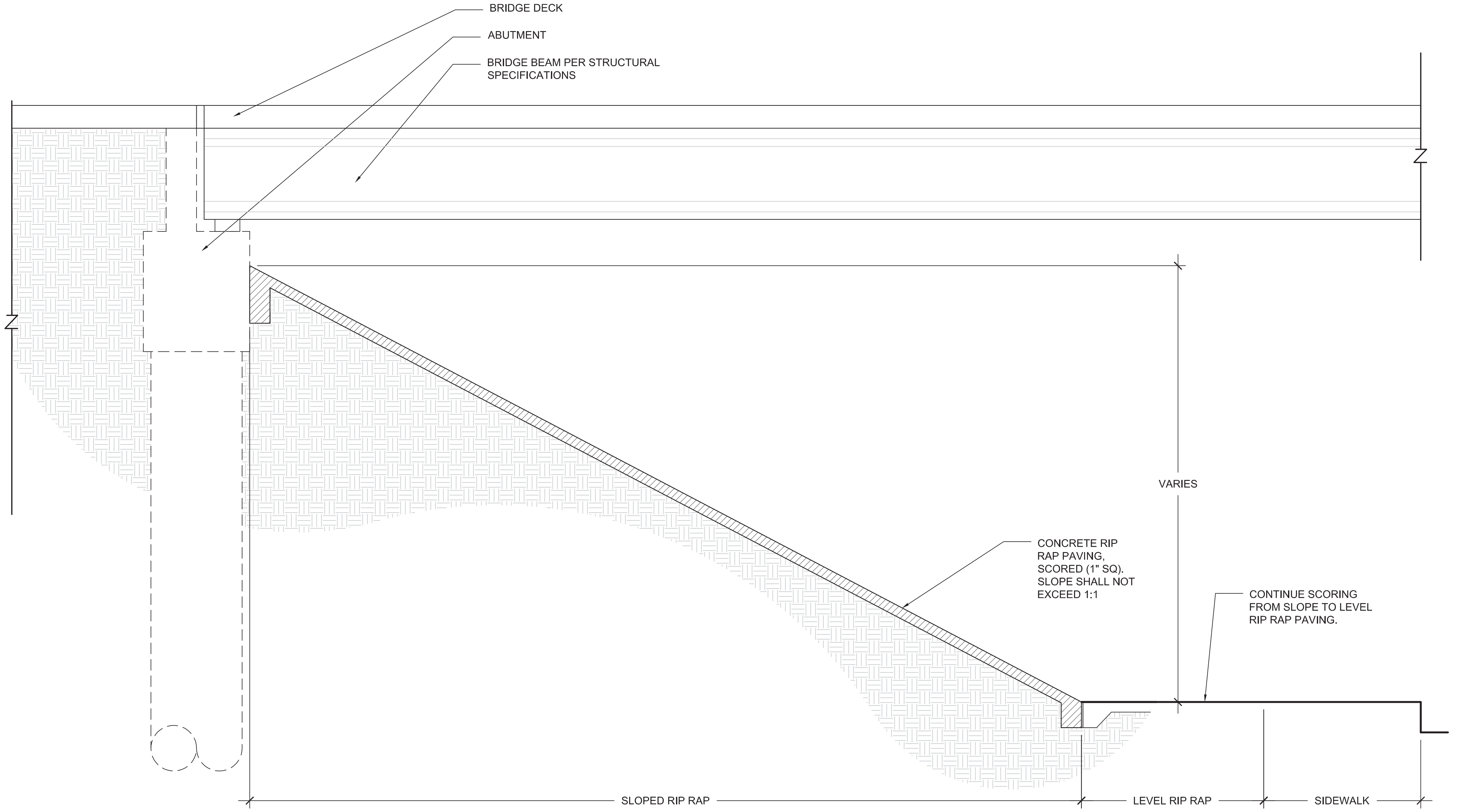
BRIDGE DECK
ABUTMENT
BRIDGE BEAM PER STRUCTURAL SPECIFICATIONS
VARIES
CONCRETE RIP RAP PAVING, SCORED (1" SQ). SLOPE SHALL NOT EXCEED 1:1
CONTINUE SCORING FROM SLOPE TO LEVEL RIP RAP PAVING.
SLOPED RIP RAP
LEVEL RIP RAP
SIDEWALK

1 ABUTMENT AND SLOPED RIP RAP WALL SECTION

SCALE: 1" = 10'

NOTE:
EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

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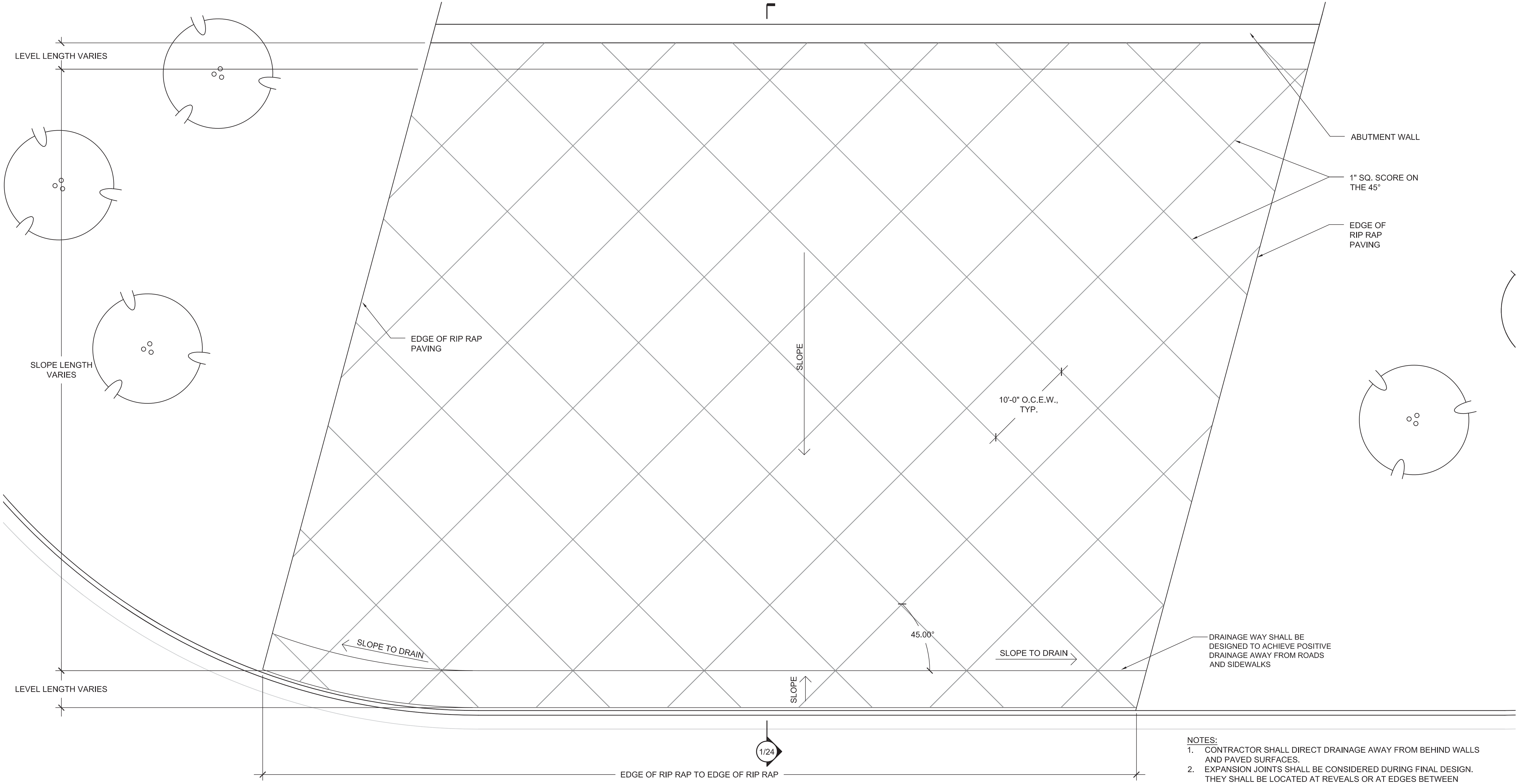
# BRIDGE ABUTMENT WALLS & RIP RAP - FM 973


LEVEL LENGTH VARIES
SLOPE LENGTH VARIES
LEVEL LENGTH VARIES
ABUTMENT WALL
1" SQ. SCORE ON THE 45°
EDGE OF RIP RAP PAVING
EDGE OF RIP RAP PAVING
SLOPE
10'-0" O.C.E.W., TYP.
45.00°
SLOPE TO DRAIN
SLOPE TO DRAIN
SLOPE
DRAINAGE WAY SHALL BE DESIGNED TO ACHIEVE POSITIVE DRAINAGE AWAY FROM ROADS AND SIDEWALKS
1/24
EDGE OF RIP RAP TO EDGE OF RIP RAP

NOTES:

1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

NORTHWEST ABUTMENT AND SLOPED RIP RAP WALL PLAN

SCALE: 1" = 10'

- (1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
- (2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
- (3.0) PYLONS - Sheets 25-30
- (4.0) SIGN STRUCTURES - Sheets 31-32
- (5.0) LIGHTING STANDARDS - Sheets 33-36
- (6.0) PAVING/ HARDSCAPE - Sheets 37-46
- (7.0) LANDSCAPE - Sheets 47-63
- (8.0) FINISH SCHEDULE - Sheets 64-65

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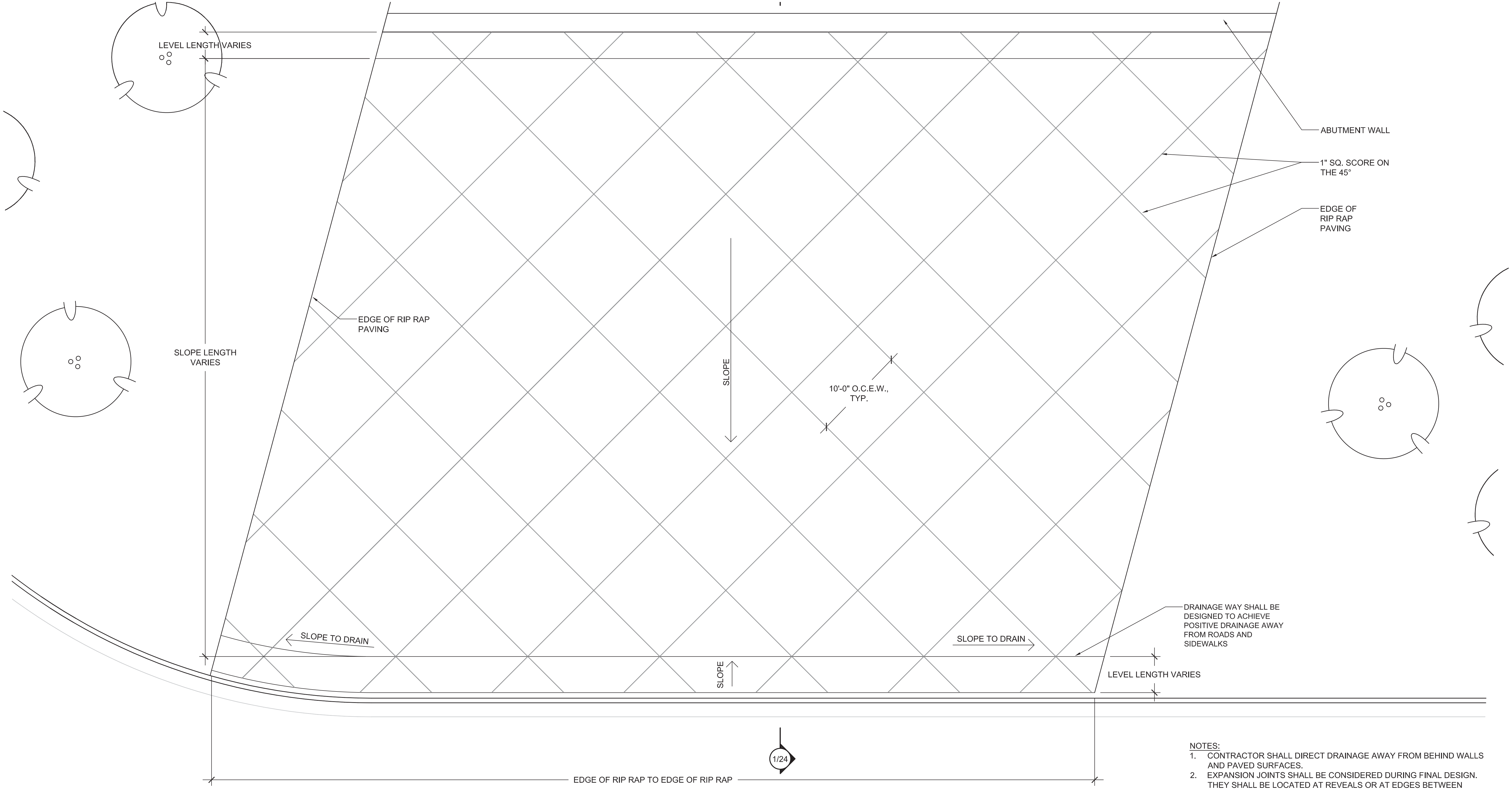
# BRIDGE ABUTMENT WALLS & RIP RAP - FM 973


LEVEL LENGTH VARIES
ABUTMENT WALL
1" SQ. SCORE ON THE 45°
EDGE OF RIP RAP PAVING
EDGE OF RIP RAP PAVING
SLOPE LENGTH VARIES
SLOPE
10'-0" O.C.E.W., TYP.
DRAINAGE WAY SHALL BE DESIGNED TO ACHIEVE POSITIVE DRAINAGE AWAY FROM ROADS AND SIDEWALKS
SLOPE TO DRAIN
SLOPE TO DRAIN
SLOPE
LEVEL LENGTH VARIES
1/24
EDGE OF RIP RAP TO EDGE OF RIP RAP

NOTES:

1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

SOUTHEAST ABUTMENT AND SLOPED RIP RAP WALL PLAN

SCALE: 1" = 10'

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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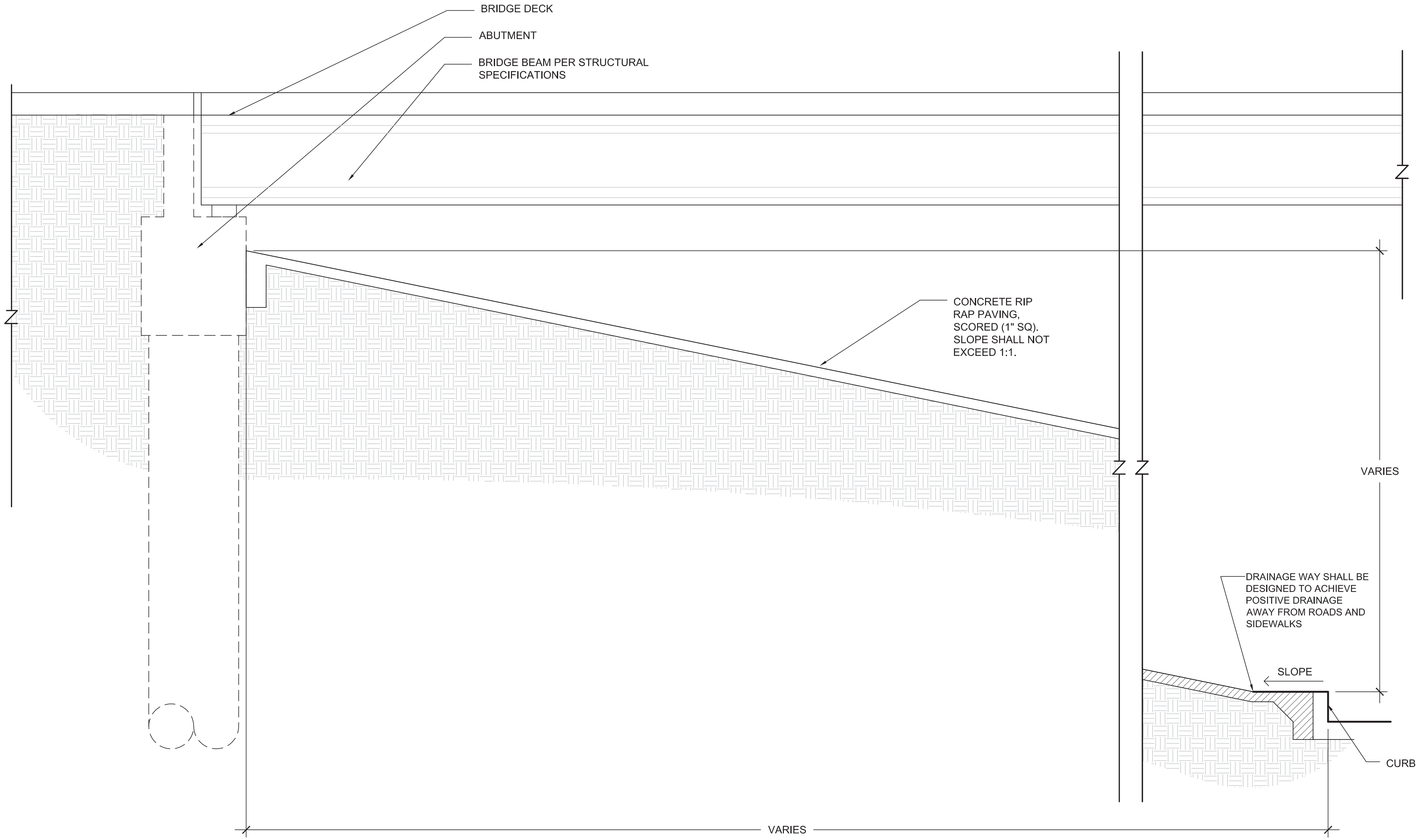
# BRIDGE ABUTMENT WALLS & RIP RAP - FM 973


BRIDGE DECK
ABUTMENT
BRIDGE BEAM PER STRUCTURAL SPECIFICATIONS
CONCRETE RIP RAP PAVING, SCORED (1" SQ). SLOPE SHALL NOT EXCEED 1:1.
VARIES
DRAINAGE WAY SHALL BE DESIGNED TO ACHIEVE POSITIVE DRAINAGE AWAY FROM ROADS AND SIDEWALKS
SLOPE
CURB
VARIES

1 ABUTMENT AND SLOPED RIP RAP WALL SECTION

SCALE: 1/4" = 1'-0"

NOTES:

1. CONTRACTOR SHALL DIRECT DRAINAGE AWAY FROM BEHIND WALLS AND PAVED SURFACES.
2. EXPANSION JOINTS SHALL BE CONSIDERED DURING FINAL DESIGN. THEY SHALL BE LOCATED AT REVEALS OR AT EDGES BETWEEN DIFFERENT ELEMENTS, SUCH AS PILASTERS AND RETAINING WALL PANELS, WHENEVER POSSIBLE.

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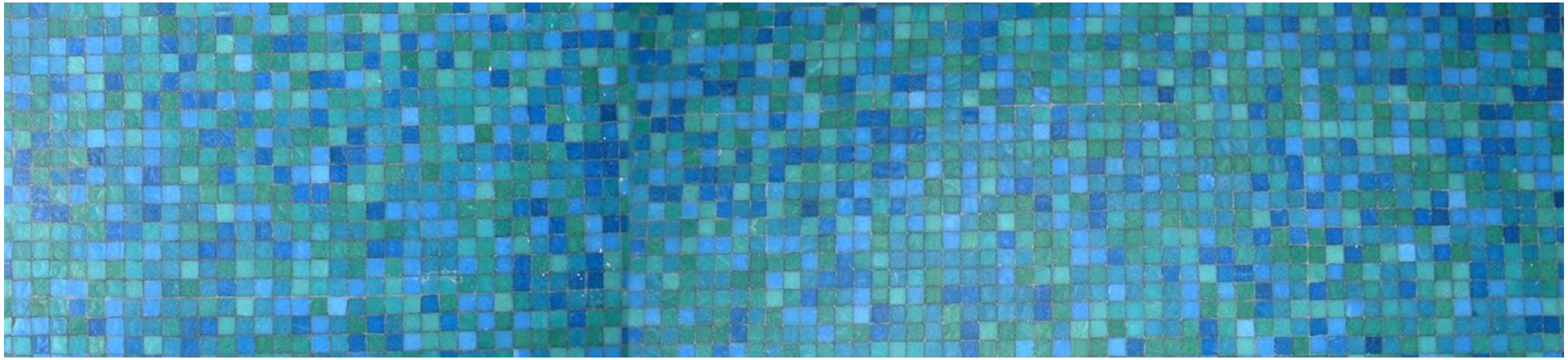
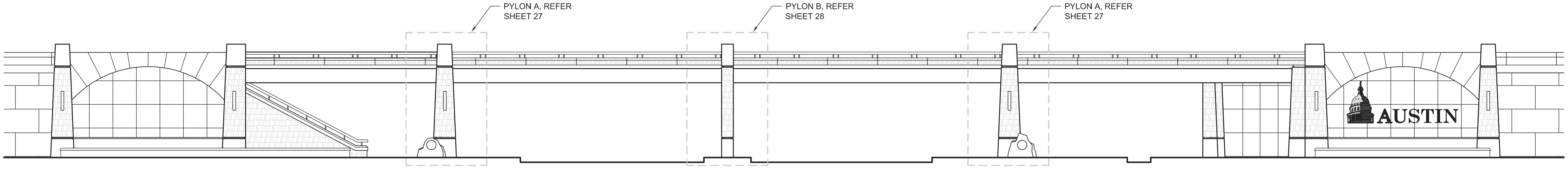
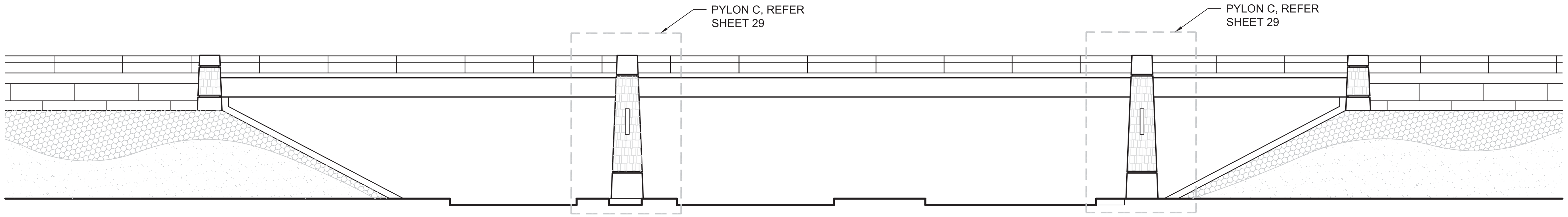


# 3.0 PYLONS


PYLON A, REFER
SHEET 27
PYLON B, REFER
SHEET 28
PYLON A, REFER
SHEET 27
AUSTIN

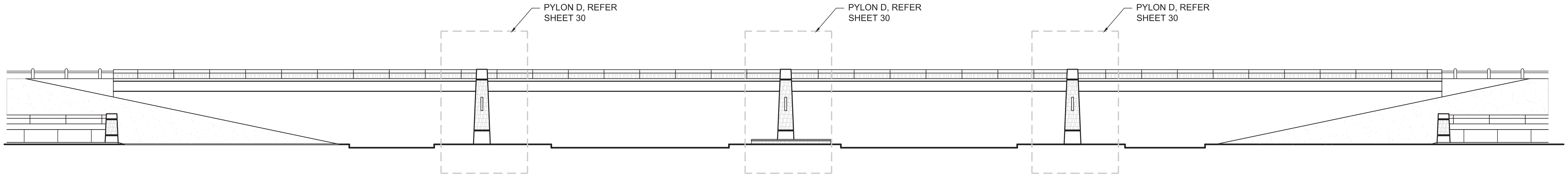
1 PRESIDENTIAL BOULEVARD ELEVATION

SCALE: 1" = 20'-0"


PYLON C, REFER
SHEET 29
PYLON C, REFER
SHEET 29

2 SPIRIT OF TEXAS DRIVE ELEVATION

SCALE: 1" = 20'-0"


PYLON D, REFER
SHEET 30
PYLON D, REFER
SHEET 30
PYLON D, REFER
SHEET 30

3 FM 973 ELEVATION

SCALE: 1" = 30'-0"

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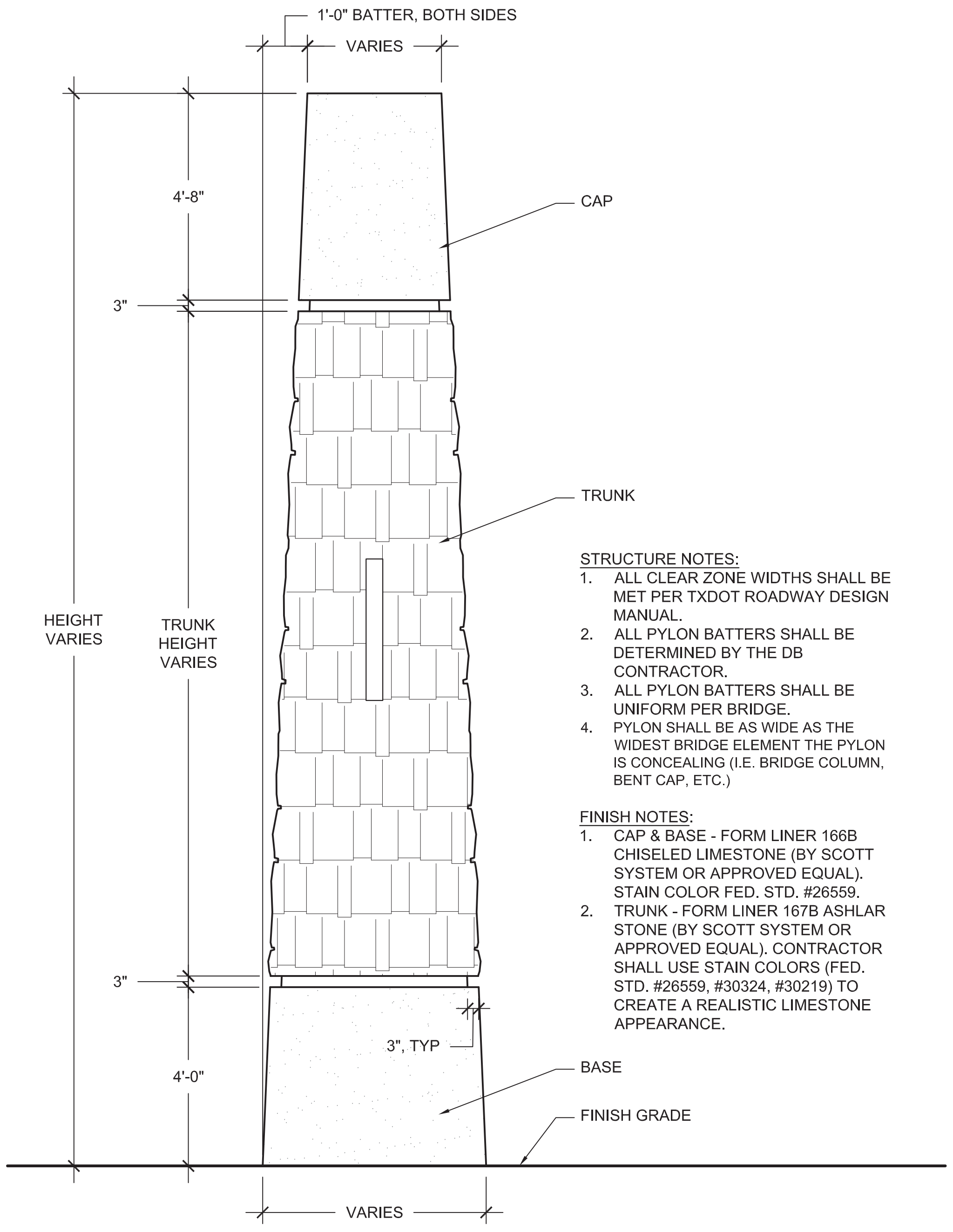
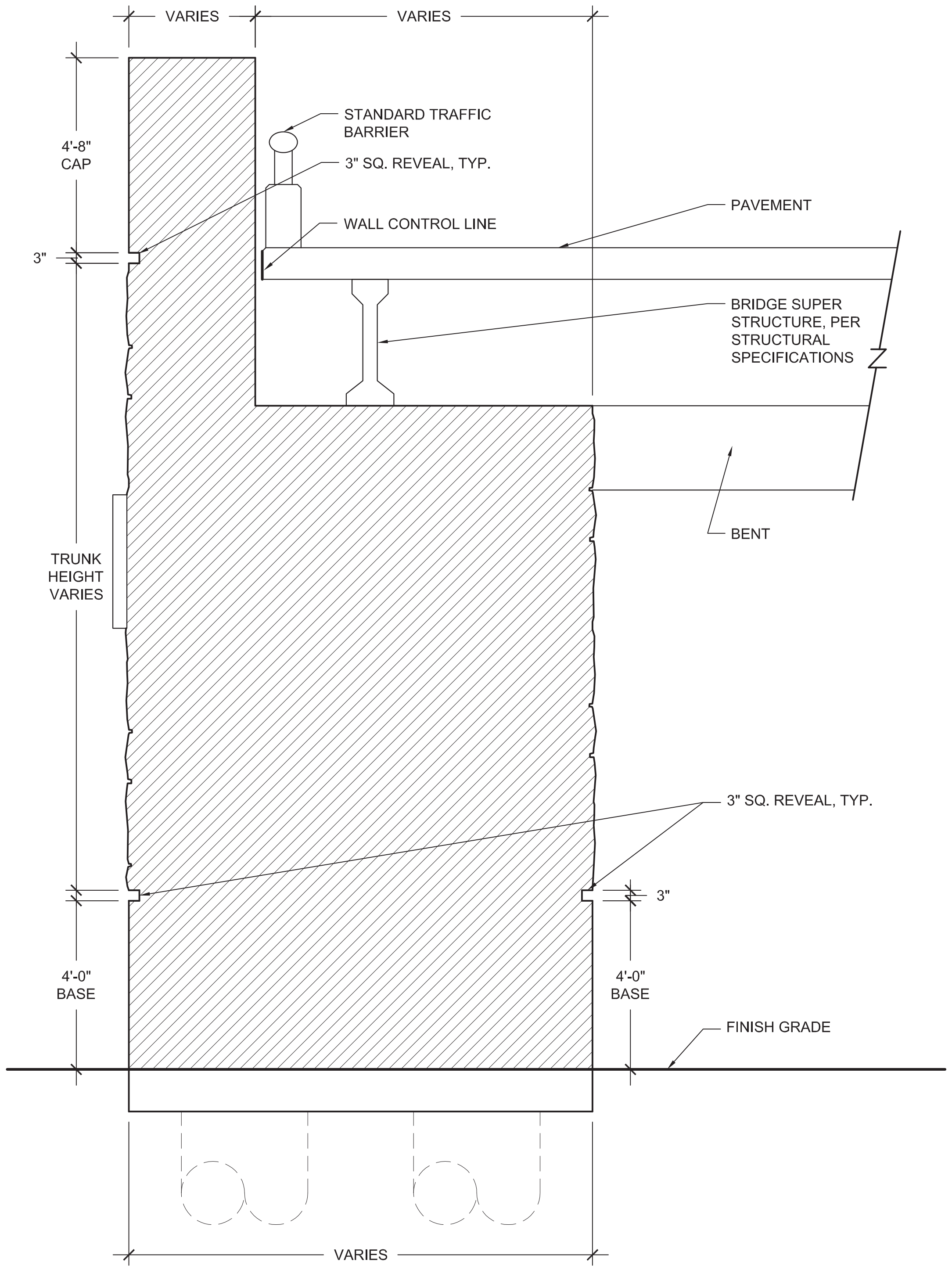
# PYLONS - PRESIDENTIAL BOULEVARD DETAILS


1'-0" BATTER, BOTH SIDES
VARIES
4'-8"
CAP
3"
TRUNK
HEIGHT VARIES
TRUNK HEIGHT VARIES
3"
3", TYP
4'-0"
BASE
FINISH GRADE
VARIES

STRUCTURE NOTES:
1. ALL CLEAR ZONE WIDTHS SHALL BE MET PER TXDOT ROADWAY DESIGN MANUAL.
2. ALL PYLON BATTERS SHALL BE DETERMINED BY THE DB CONTRACTOR.
3. ALL PYLON BATTERS SHALL BE UNIFORM PER BRIDGE.
4. PYLON SHALL BE AS WIDE AS THE WIDEST BRIDGE ELEMENT THE PYLON IS CONCEALING (I.E. BRIDGE COLUMN, BENT CAP, ETC.)

FINISH NOTES:
1. CAP & BASE - FORM LINER 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
2. TRUNK - FORM LINER 167B ASHLAR STONE (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.

1 PYLON A ELEVATION
SCALE: 1/4" = 1'-0"


VARIES
VARIES
4'-8"
CAP
STANDARD TRAFFIC BARRIER
3" SQ. REVEAL, TYP.
WALL CONTROL LINE
PAVEMENT
3"
BRIDGE SUPER STRUCTURE, PER STRUCTURAL SPECIFICATIONS
BENT
TRUNK HEIGHT VARIES
3" SQ. REVEAL, TYP.
3"
3"
4'-0"
BASE
4'-0"
BASE
FINISH GRADE
VARIES

2 PYLON A SECTION
SCALE: 1/4" = 1'-0"

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

REVISION 2

Texas Department of Transportation

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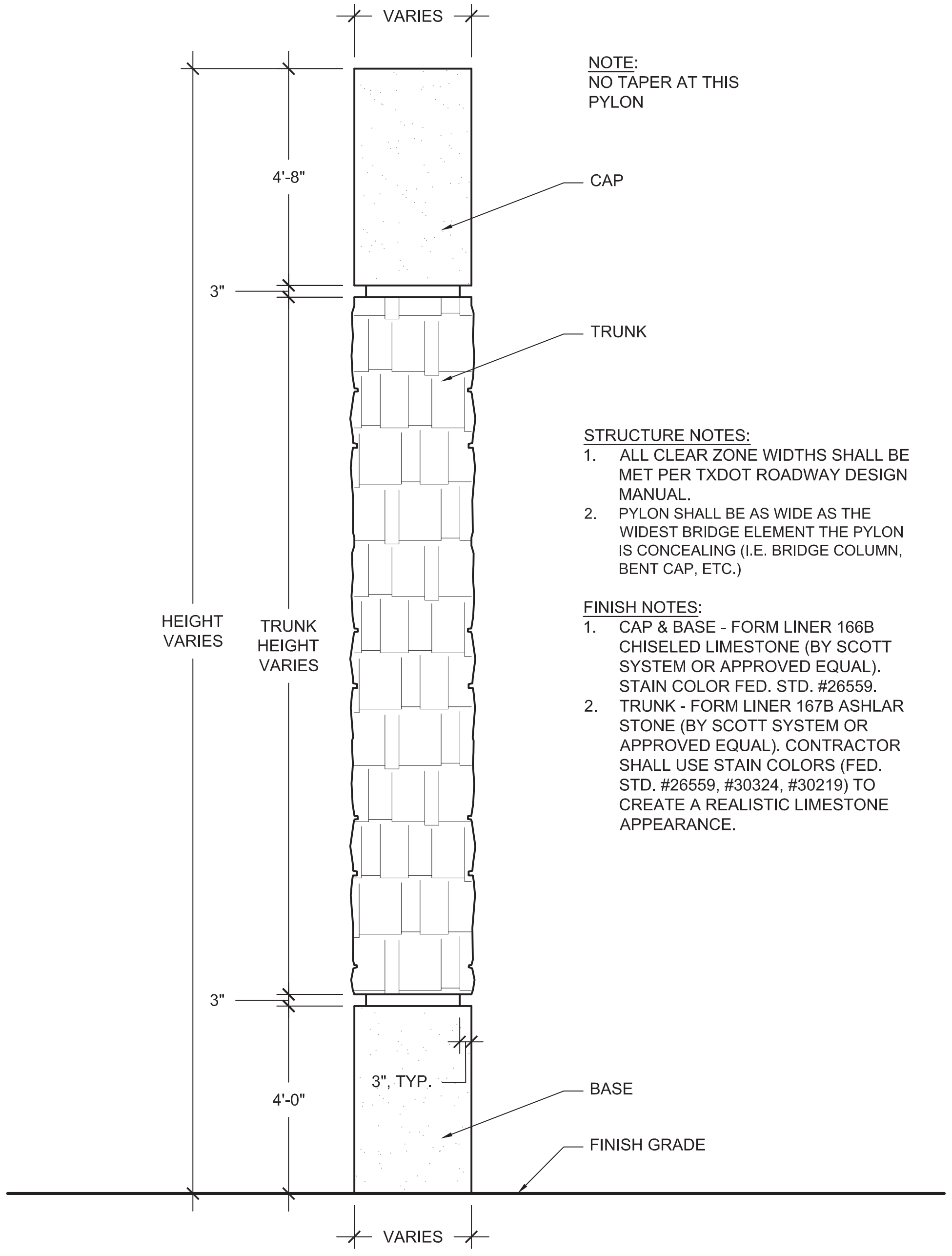
# PYLONS - PRESIDENTIAL BOULEVARD DETAILS


VARIES
4'-8"
CAP
3"
TRUNK
HEIGHT VARIES
TRUNK HEIGHT VARIES
3"
3", TYP.
4'-0"
BASE
FINISH GRADE
VARIES

NOTE:
NO TAPER AT THIS PYLON

STRUCTURE NOTES:
1. ALL CLEAR ZONE WIDTHS SHALL BE MET PER TXDOT ROADWAY DESIGN MANUAL.
2. PYLON SHALL BE AS WIDE AS THE WIDEST BRIDGE ELEMENT THE PYLON IS CONCEALING (I.E. BRIDGE COLUMN, BENT CAP, ETC.)

FINISH NOTES:
1. CAP & BASE - FORM LINER 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
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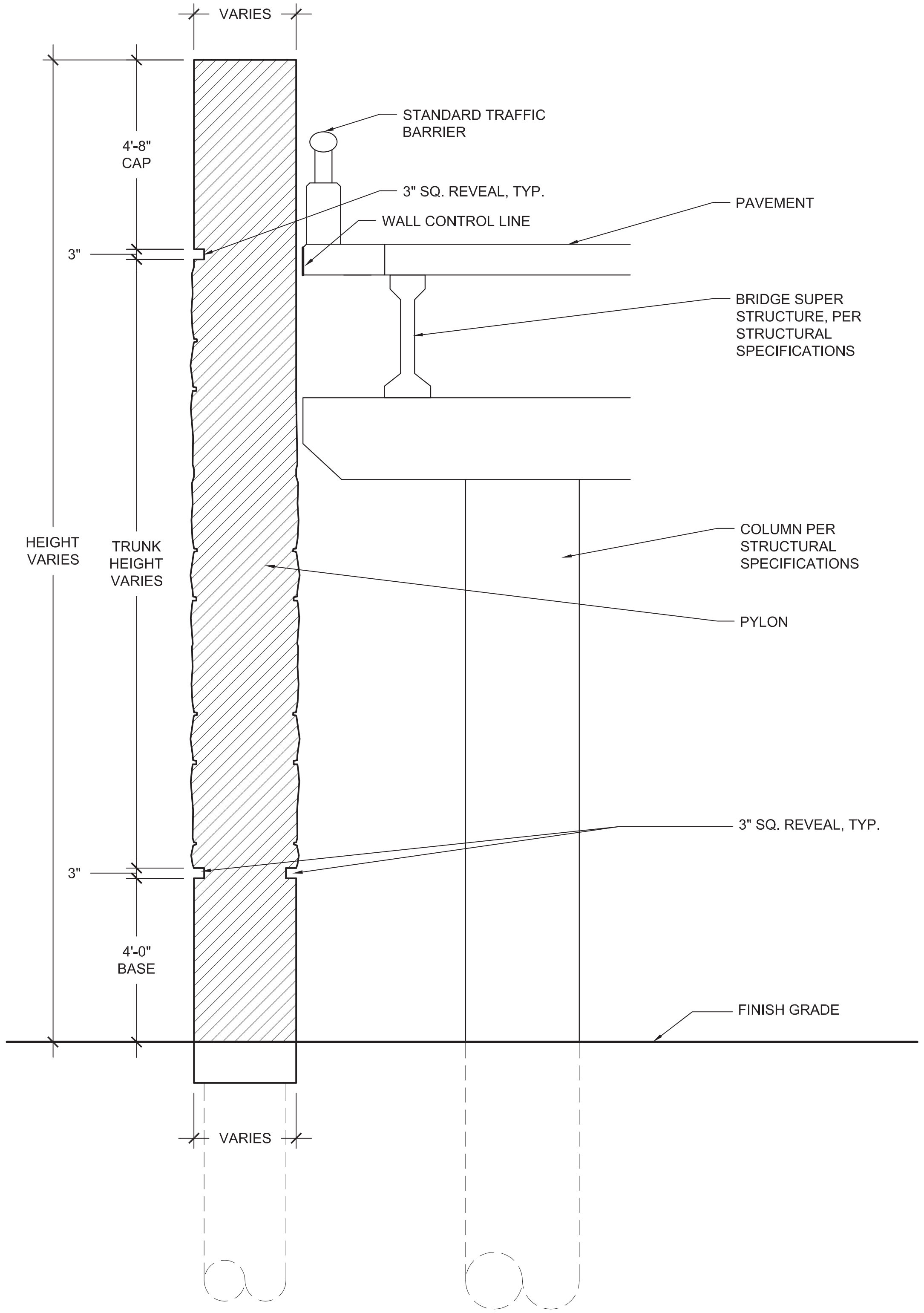
1 PYLON B ELEVATION
SCALE: 1/4" = 1'-0"


VARIES
4'-8"
CAP
3"
HEIGHT VARIES
TRUNK HEIGHT VARIES
3"
4'-0"
BASE
STANDARD TRAFFIC BARRIER
3" SQ. REVEAL, TYP.
WALL CONTROL LINE
PAVEMENT
BRIDGE SUPER STRUCTURE, PER STRUCTURAL SPECIFICATIONS
COLUMN PER STRUCTURAL SPECIFICATIONS
PYLON
3" SQ. REVEAL, TYP.
FINISH GRADE
VARIES

2 PYLON B SECTION
SCALE: 1/4" = 1'-0"

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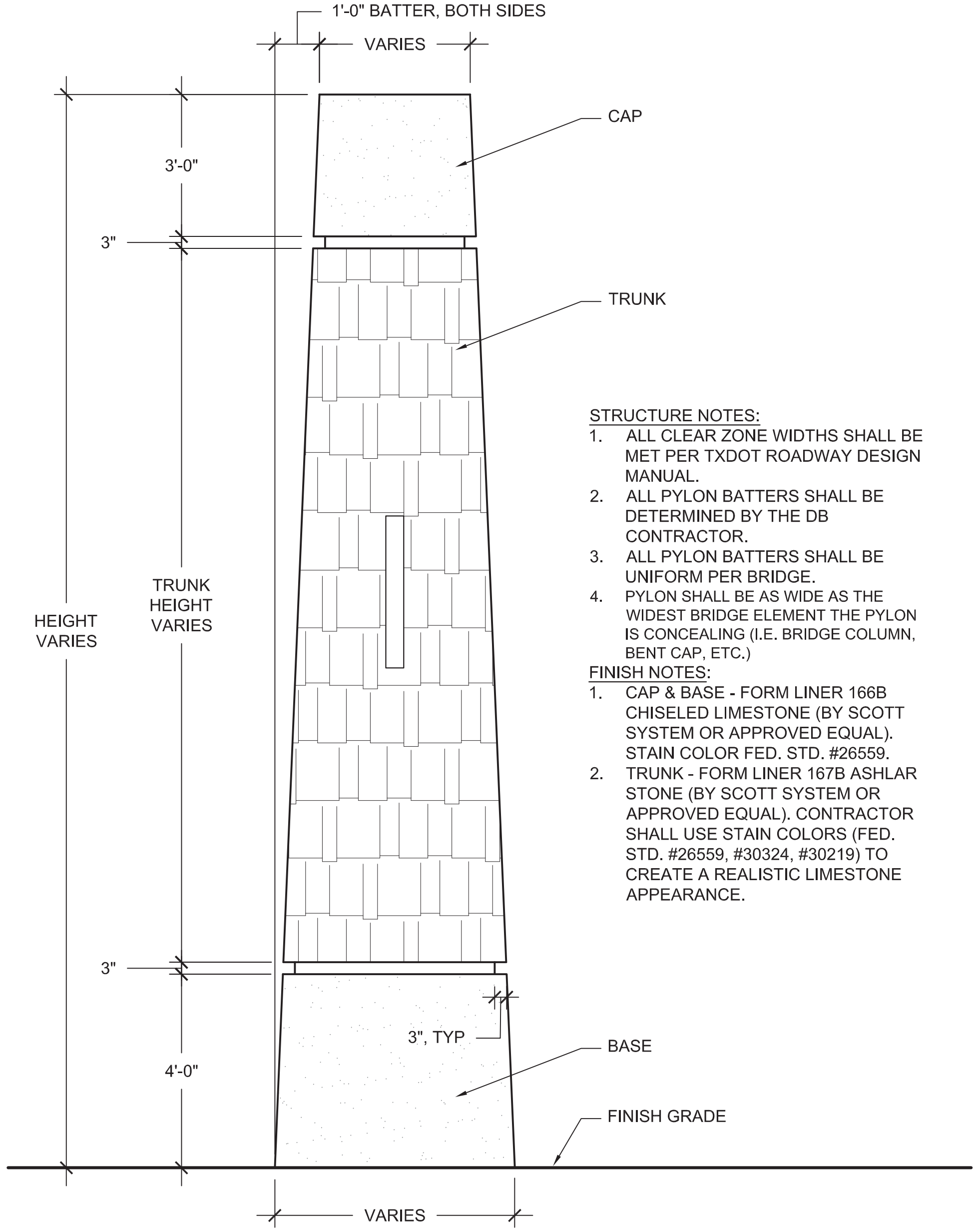
1'-0" BATTER, BOTH SIDES
VARIES
CAP
3'-0"
3"
TRUNK
HEIGHT VARIES
TRUNK HEIGHT VARIES
3"
3", TYP
BASE
4'-0"
FINISH GRADE
VARIES

STRUCTURE NOTES:

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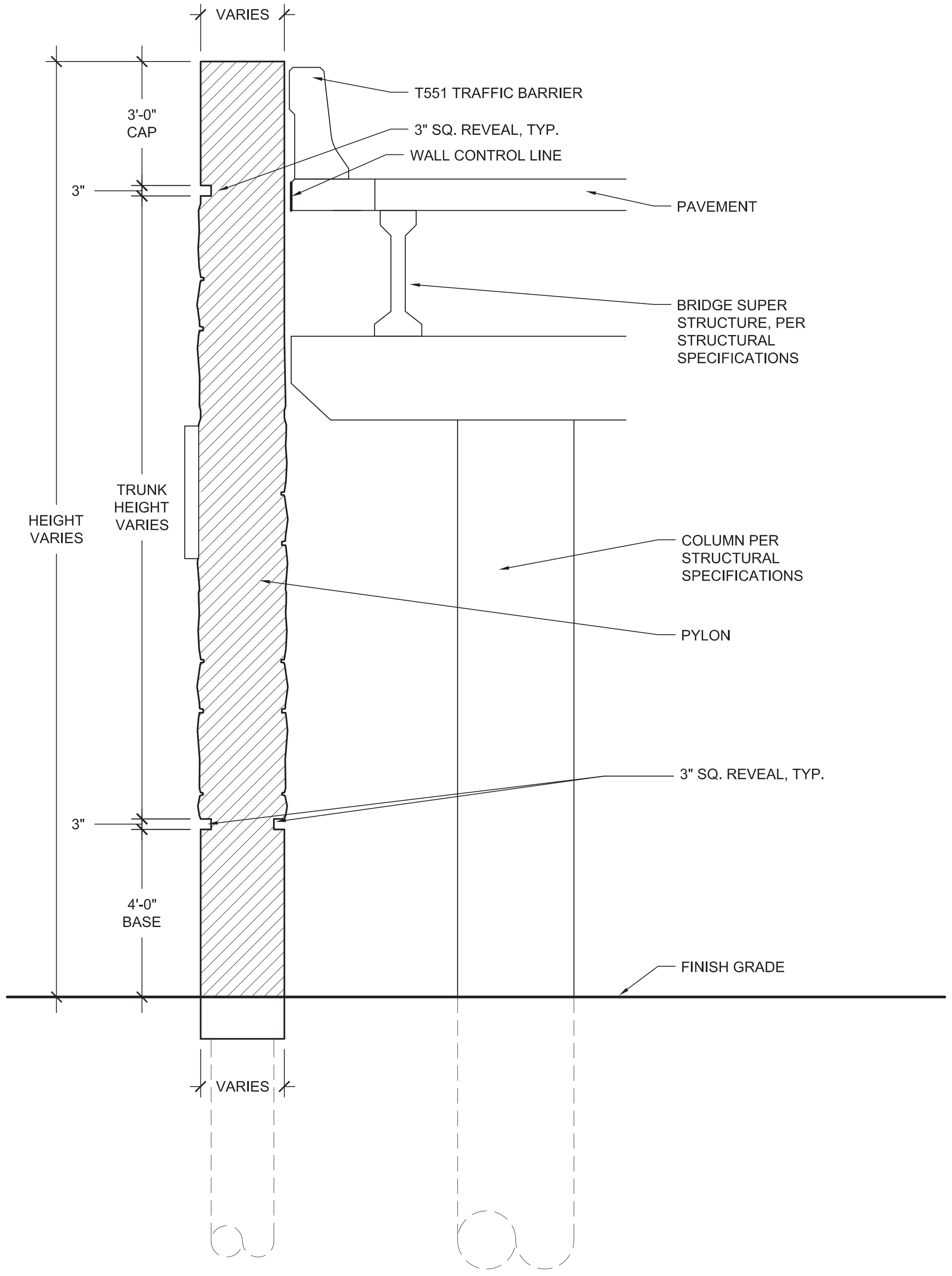
2. TRUNK - FORM LINER 167B ASHLAR STONE (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.

1 PYLON C ELEVATION

SCALE: 1/4" = 1'-0"


VARIES
T551 TRAFFIC BARRIER
3" SQ. REVEAL, TYP.
WALL CONTROL LINE
3'-0" CAP
3"
PAVEMENT
BRIDGE SUPER STRUCTURE, PER STRUCTURAL SPECIFICATIONS
HEIGHT VARIES
TRUNK HEIGHT VARIES
COLUMN PER STRUCTURAL SPECIFICATIONS
PYLON
3" SQ. REVEAL, TYP.
3"
4'-0" BASE
FINISH GRADE
VARIES

2 PYLON C SECTION

SCALE: 1/4" = 1'-0"

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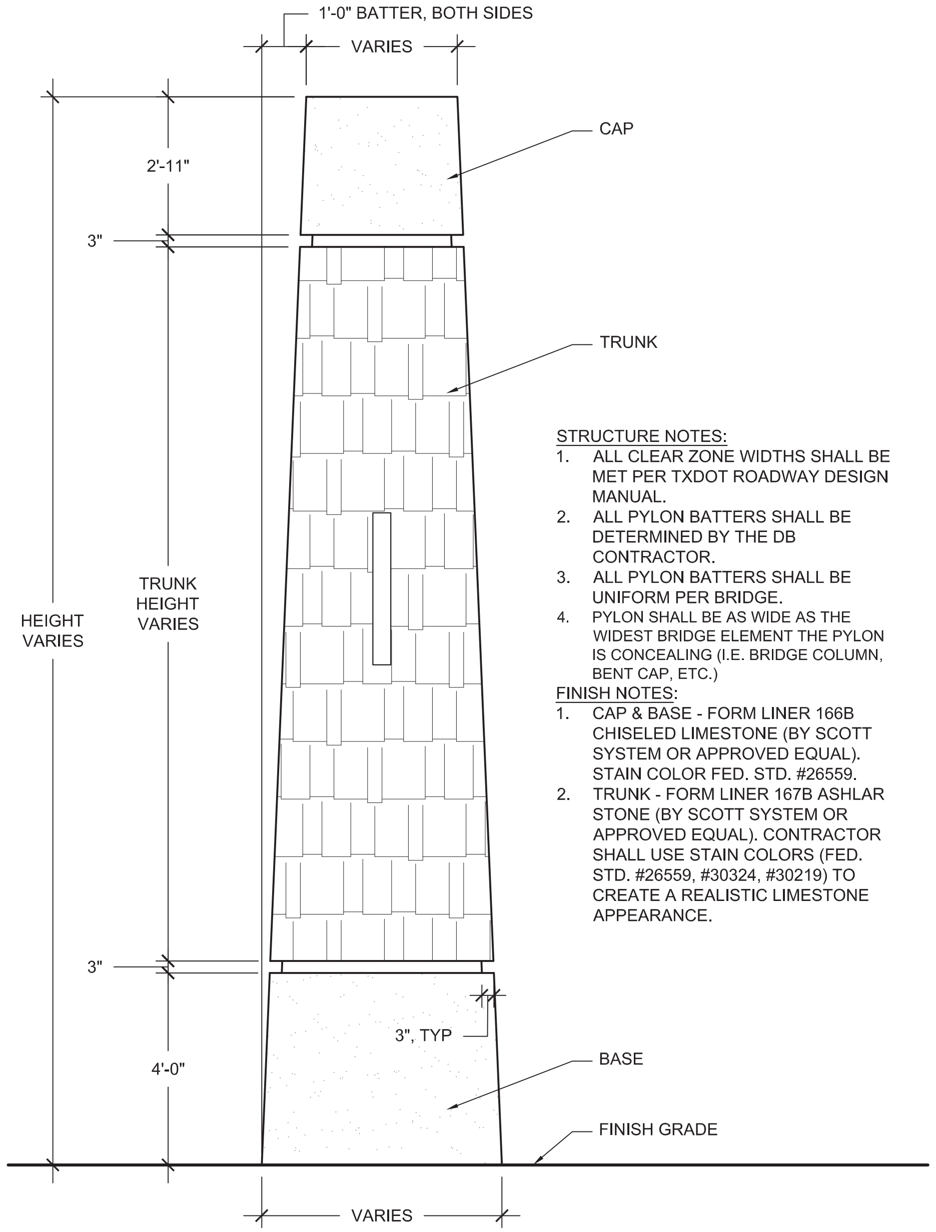
1'-0" BATTER, BOTH SIDES
VARIES
CAP
2'-11"
3"
TRUNK
HEIGHT VARIES
TRUNK HEIGHT VARIES
3"
3", TYP
BASE
4'-0"
FINISH GRADE
VARIES

STRUCTURE NOTES:

1. ALL CLEAR ZONE WIDTHS SHALL BE MET PER TXDOT ROADWAY DESIGN MANUAL.
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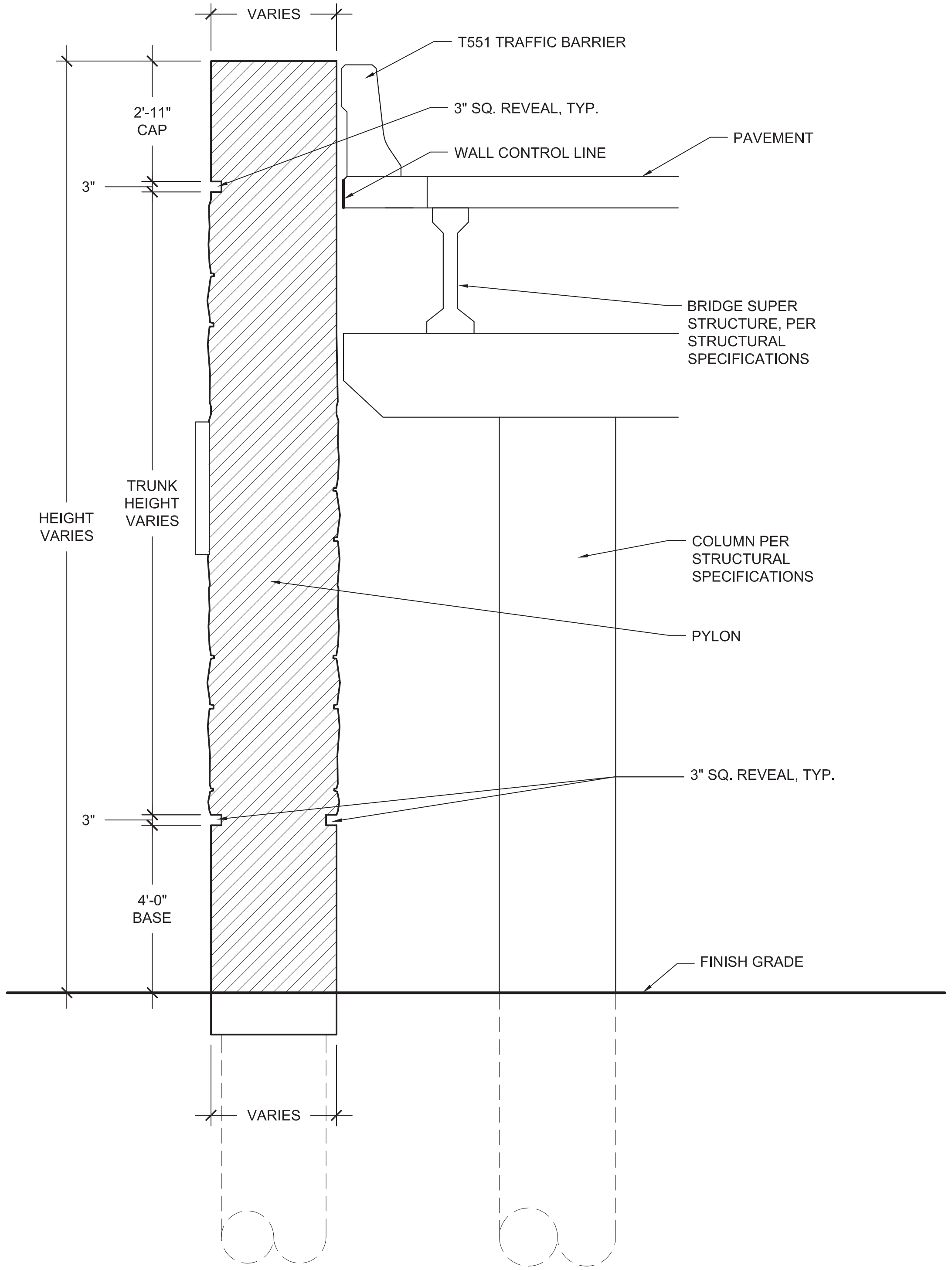
1 PYLON D ELEVATION

SCALE: 1/4" = 1'-0"


VARIES
T551 TRAFFIC BARRIER
2'-11" CAP
3" SQ. REVEAL, TYP.
WALL CONTROL LINE
PAVEMENT
3"
BRIDGE SUPER STRUCTURE, PER STRUCTURAL SPECIFICATIONS
HEIGHT VARIES
TRUNK HEIGHT VARIES
COLUMN PER STRUCTURAL SPECIFICATIONS
PYLON
3" SQ. REVEAL, TYP.
3"
4'-0" BASE
FINISH GRADE
VARIES

2 PYLON D SECTION

SCALE: 1/4" = 1'-0"

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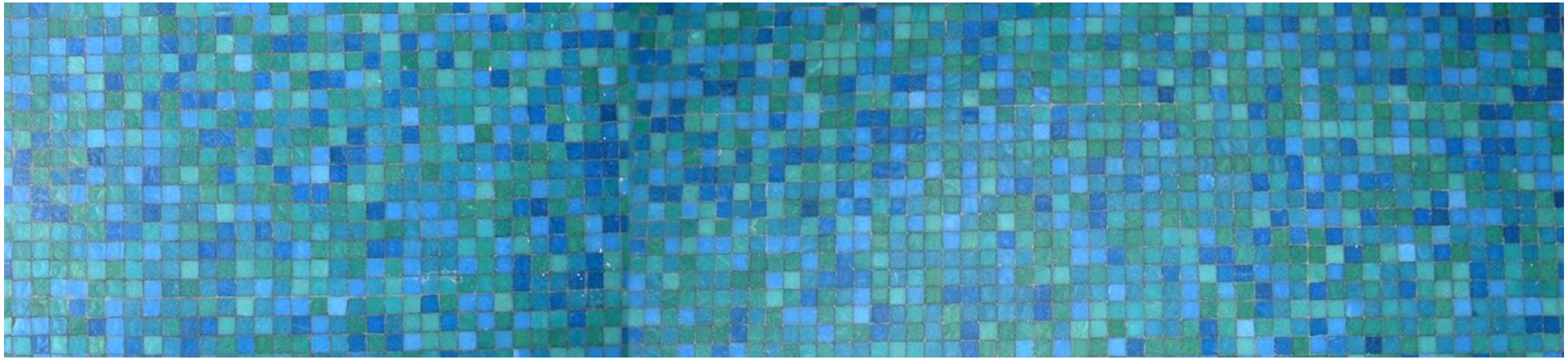
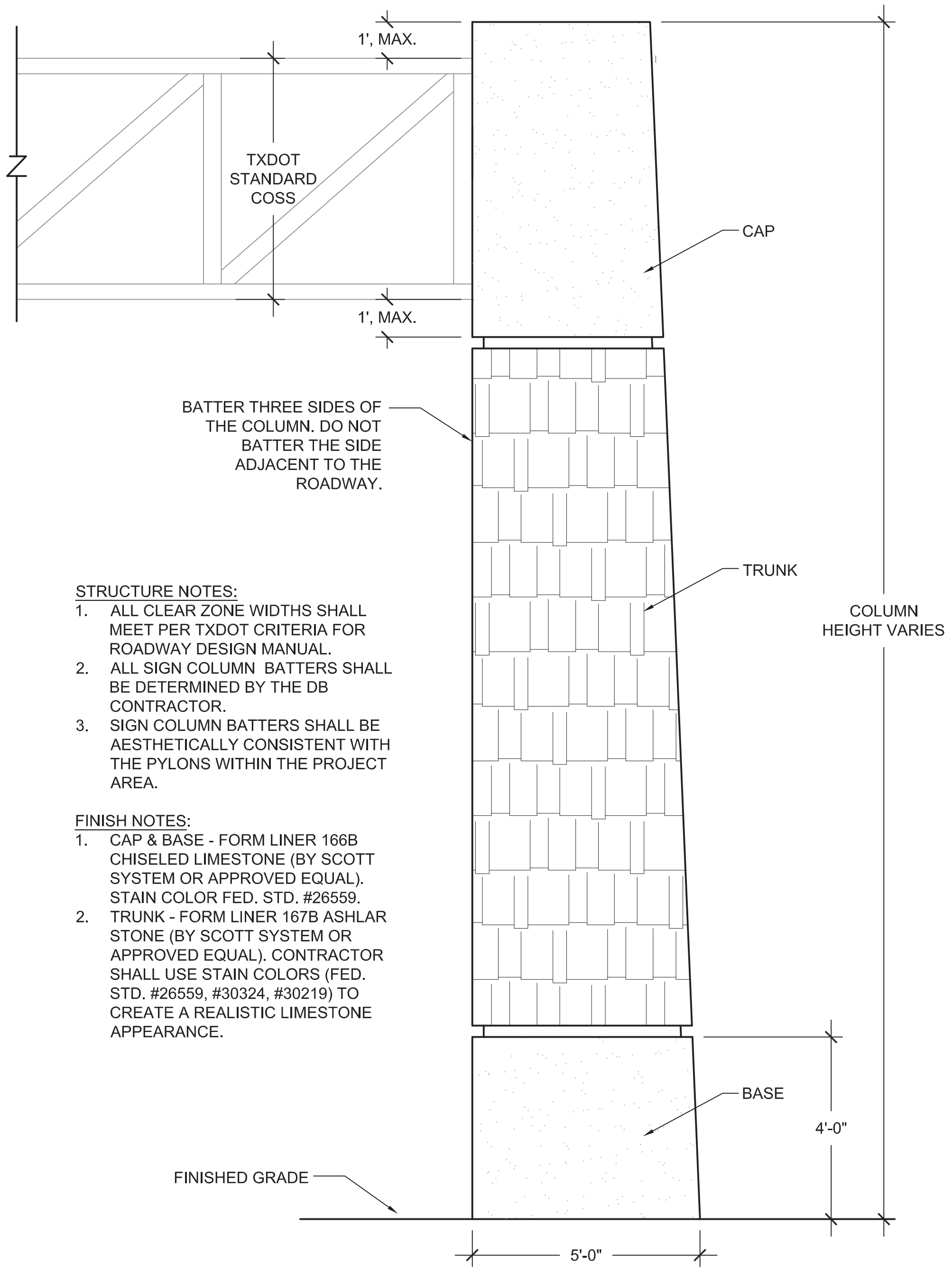


# 4.0 SIGN STRUCTURES

REVISION 2


1', MAX.
TXDOT
STANDARD
COSS
1', MAX.
CAP
BATTER THREE SIDES OF THE COLUMN. DO NOT BATTER THE SIDE ADJACENT TO THE ROADWAY.
TRUNK
COLUMN
HEIGHT VARIES
BASE
4'-0"
FINISHED GRADE
5'-0"

STRUCTURE NOTES:

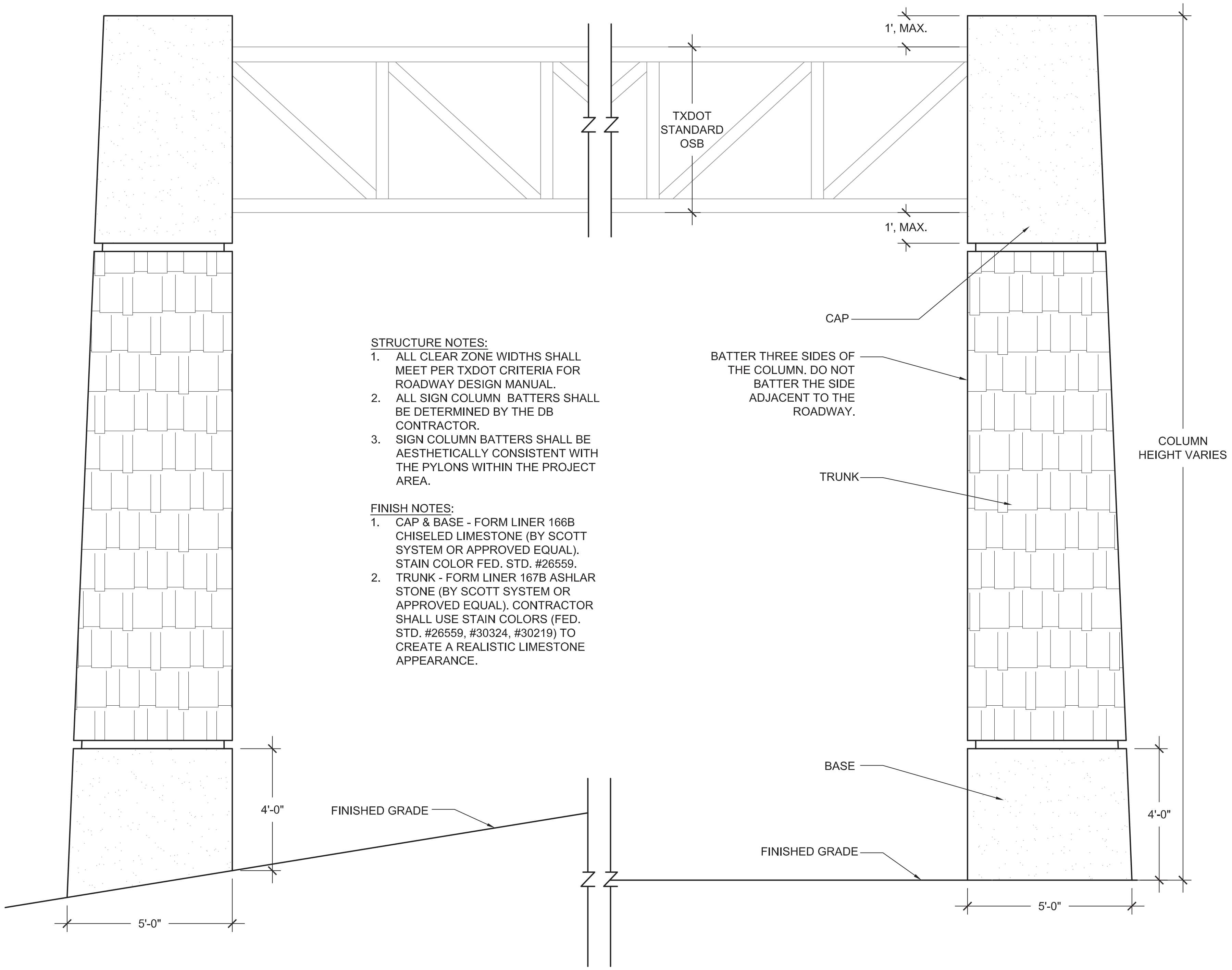
1. ALL CLEAR ZONE WIDTHS SHALL MEET PER TXDOT CRITERIA FOR ROADWAY DESIGN MANUAL.
2. ALL SIGN COLUMN BATTERS SHALL BE DETERMINED BY THE DB CONTRACTOR.
3. SIGN COLUMN BATTERS SHALL BE AESTHETICALLY CONSISTENT WITH THE PYLONS WITHIN THE PROJECT AREA.

FINISH NOTES:

1. CAP & BASE - FORM LINER 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
2. TRUNK - FORM LINER 167B ASHLAR STONE (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.

1 CUSTOM COSS SIGN COLUMN

SCALE: 1/4" = 1'-0"


1', MAX.
TXDOT
STANDARD
OSB
1', MAX.
CAP
BATTER THREE SIDES OF THE COLUMN. DO NOT BATTER THE SIDE ADJACENT TO THE ROADWAY.
TRUNK
COLUMN
HEIGHT VARIES
BASE
4'-0"
4'-0"
FINISHED GRADE
FINISHED GRADE
5'-0"
5'-0"

STRUCTURE NOTES:

1. ALL CLEAR ZONE WIDTHS SHALL MEET PER TXDOT CRITERIA FOR ROADWAY DESIGN MANUAL.
2. ALL SIGN COLUMN BATTERS SHALL BE DETERMINED BY THE DB CONTRACTOR.
3. SIGN COLUMN BATTERS SHALL BE AESTHETICALLY CONSISTENT WITH THE PYLONS WITHIN THE PROJECT AREA.

FINISH NOTES:

1. CAP & BASE - FORM LINER 166B CHISELED LIMESTONE (BY SCOTT SYSTEM OR APPROVED EQUAL). STAIN COLOR FED. STD. #26559.
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2 CUSTOM OSB SIGN COLUMN

SCALE: 1/4" = 1'-0"

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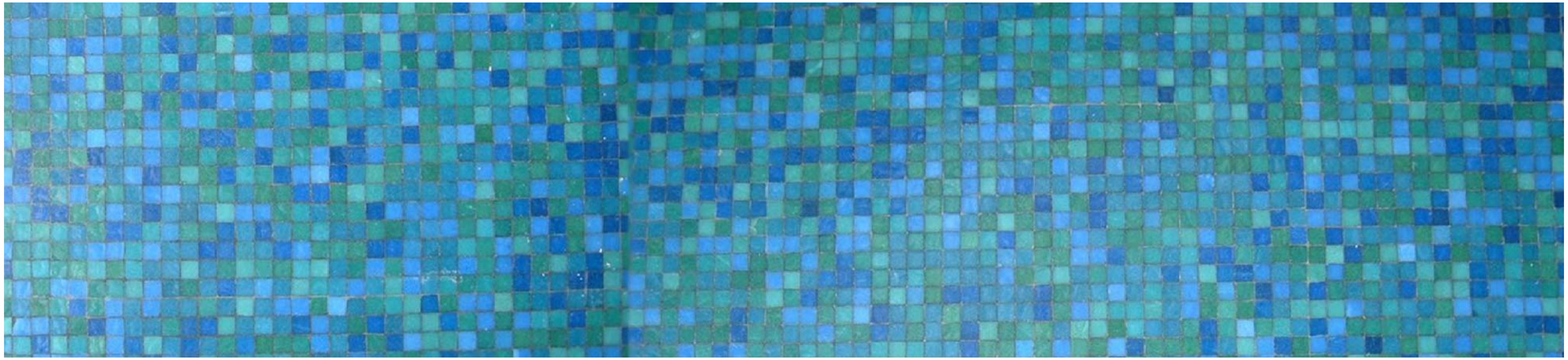
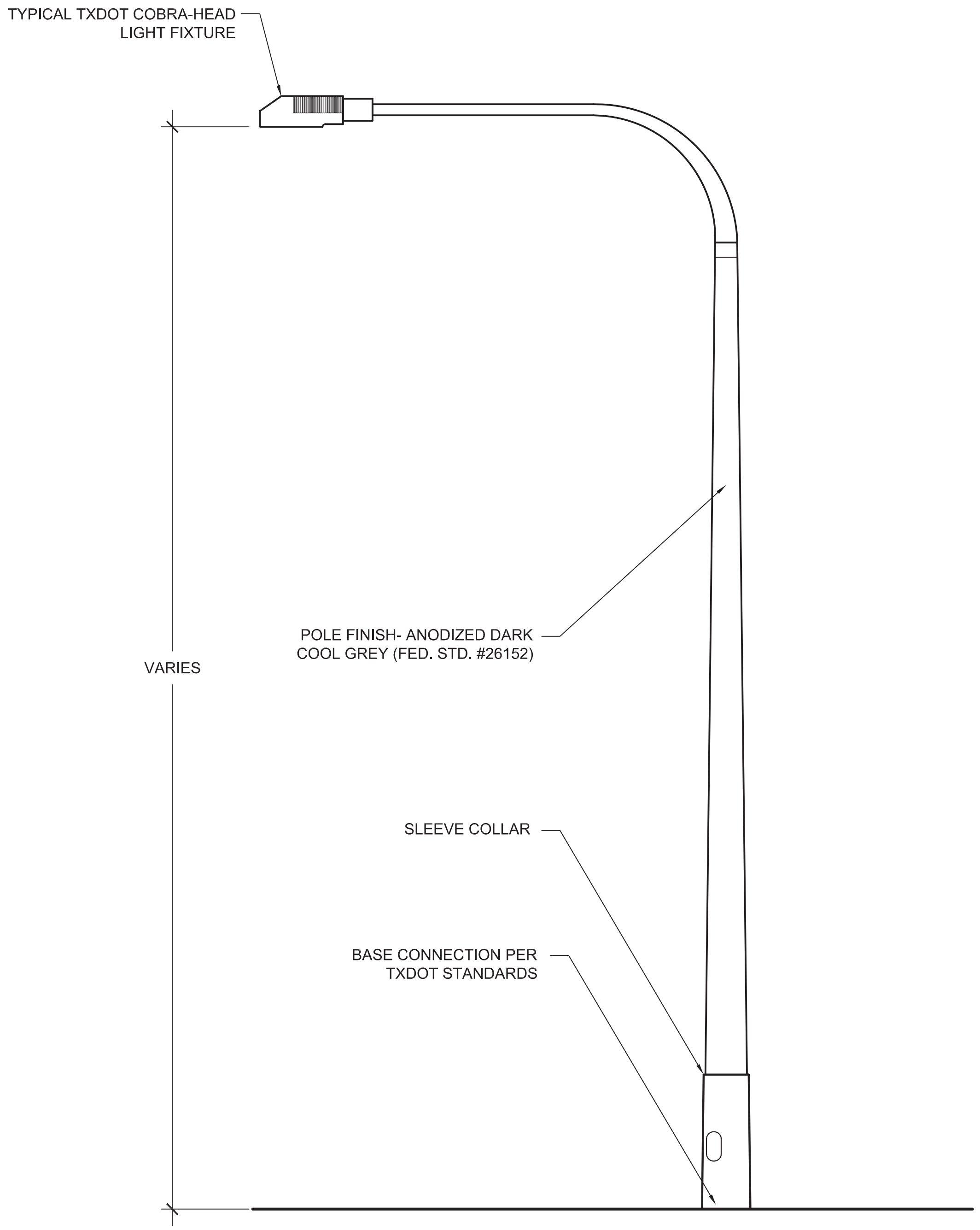


# 5.0 LIGHTING STANDARDS

REVISION 2

# LIGHTING STANDARDS - LIGHT POLE

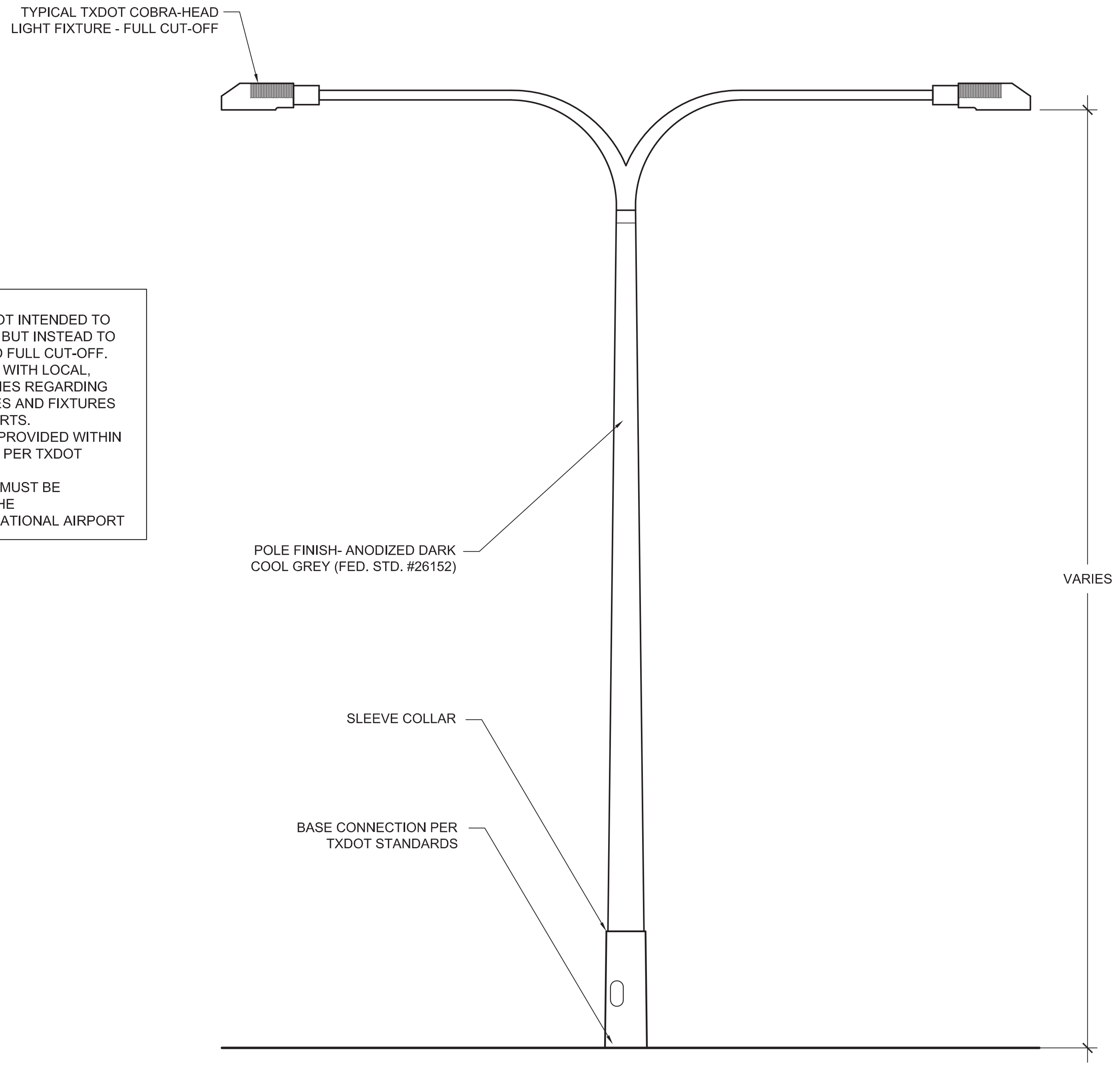

TYPICAL TXDOT COBRA-HEAD
LIGHT FIXTURE
VARIES
POLE FINISH- ANODIZED DARK
COOL GREY (FED. STD. #26152)
SLEEVE COLLAR
BASE CONNECTION PER
TXDOT STANDARDS

1 SINGLE DAVIT STYLE HORIZONTAL ARM W/ POLE

SCALE: 1/4" = 1'-0"

NOTES:

1. DEPICTION OF POLES ARE NOT INTENDED TO INDICATE FURNISHING TYPE, BUT INSTEAD TO SHOW FINISH AND REQUIRED FULL CUT-OFF.
2. CONTRACTOR SHALL VERIFY WITH LOCAL, STATE AND FEDERAL AGENCIES REGARDING THE HEIGHTS OF LIGHT POLES AND FIXTURES WITHIN PROXIMITY TO AIRPORTS.
3. SAFETY LIGHTING SHALL BE PROVIDED WITHIN THE ENTIRE PROJECT LIMITS PER TXDOT STANDARDS.
4. LIGHT FIXTURES AND POLES MUST BE APPROVED BY TXDOT AND THE AUSTIN-BERGSTROM INTERNATIONAL AIRPORT


TYPICAL TXDOT COBRA-HEAD
LIGHT FIXTURE - FULL CUT-OFF
POLE FINISH- ANODIZED DARK
COOL GREY (FED. STD. #26152)
VARIES
SLEEVE COLLAR
BASE CONNECTION PER
TXDOT STANDARDS

2 DOUBLE DAVIT STYLE HORIZONTAL ARM W/ POLE

SCALE: 1/4" = 1'-0"

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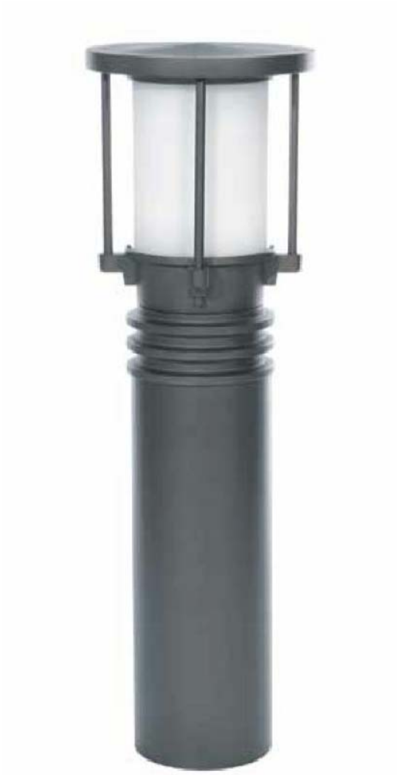
# BOLLARD & SCONCE

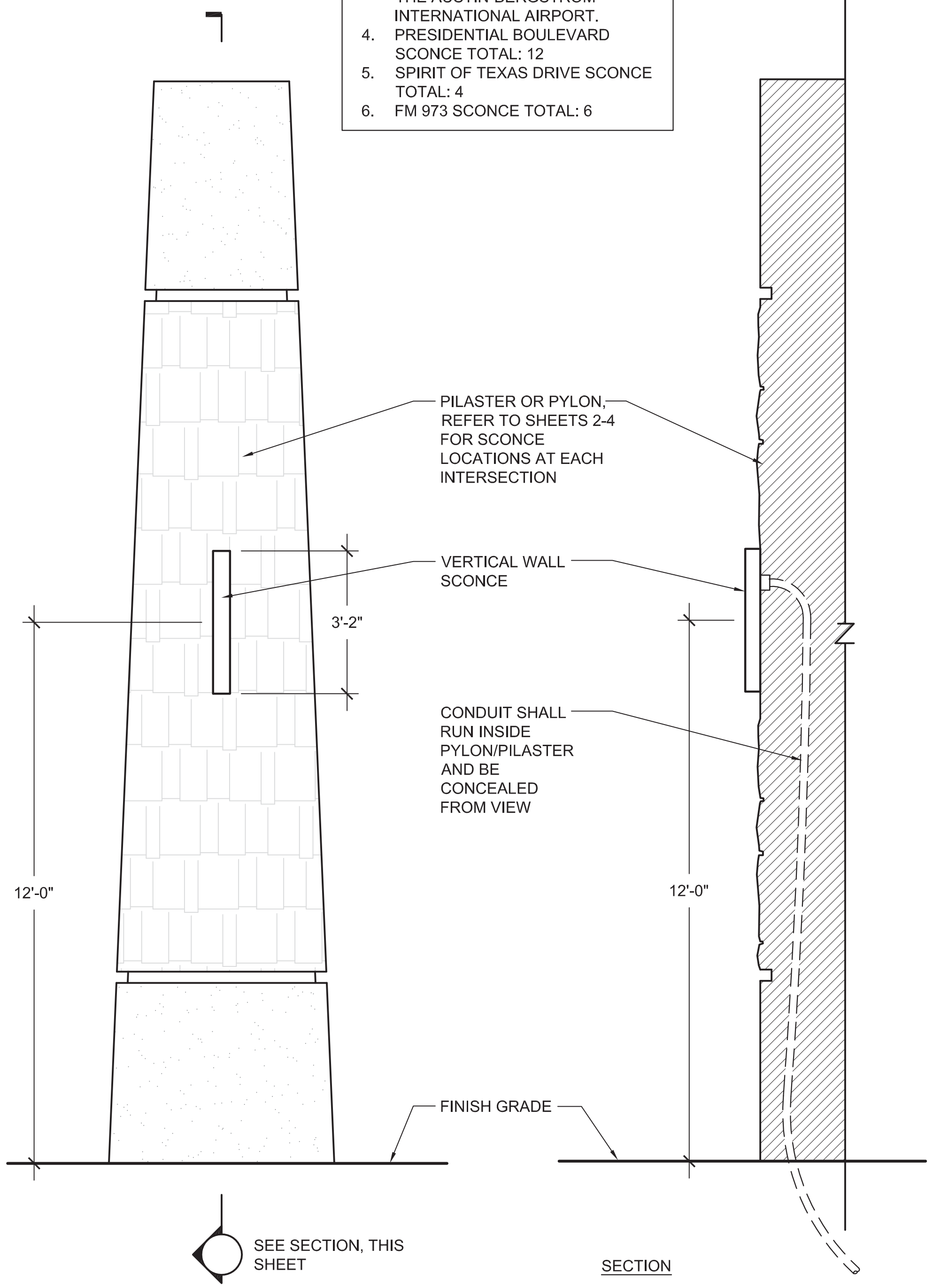


NOTES:
1. BOLLARD LIGHTING SHALL MAINTAIN A MINIMUM AVERAGE OF .2 FOOTCANDLES ALONG THE SHARED USE PATH. CONTRACTOR SHALL OBTAIN AUSTIN-BERGSTROM INTERNATIONAL AIRPORT APPROVAL FOR ALL LIGHTING LEVELS.
2. BOLLARD SHALL BE FULL CUT OFF.
3. NUMBER OF UNITS SHALL DEPEND ON STATE, FEDERAL AND AVIATION LIGHTING REQUIREMENTS FOR PEDESTRIAN AND BICYCLE SHARED USED PATHS AND MANUFACTURER RECOMMENDATIONS.

1 SHARED USE PATH - TYPICAL LIT BOLLARD

SCALE: NOT TO SCALE

NOTES:
1. MATTE SILVER FINISH
2. CONTRACTOR SHALL ENSURE ONCOMING VEHICLES DO NOT RECEIVE GLARE FROM THE SCONCE FIXTURES.
3. COORDINATE LIGHT LEVELS WITH THE AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
4. PRESIDENTIAL BOULEVARD SCONCE TOTAL: 12
5. SPIRIT OF TEXAS DRIVE SCONCE TOTAL: 4
6. FM 973 SCONCE TOTAL: 6


PILASTER OR PYLON, REFER TO SHEETS 2-4 FOR SCONCE LOCATIONS AT EACH INTERSECTION
VERTICAL WALL SCONCE
3'-2"
CONDUIT SHALL RUN INSIDE PYLON/PILASTER AND BE CONCEALED FROM VIEW
12'-0"
12'-0"
FINISH GRADE
SEE SECTION, THIS SHEET
SECTION

2 TYPICAL DECORATIVE SCONCE

SCALE: 1/4" = 1'-0"

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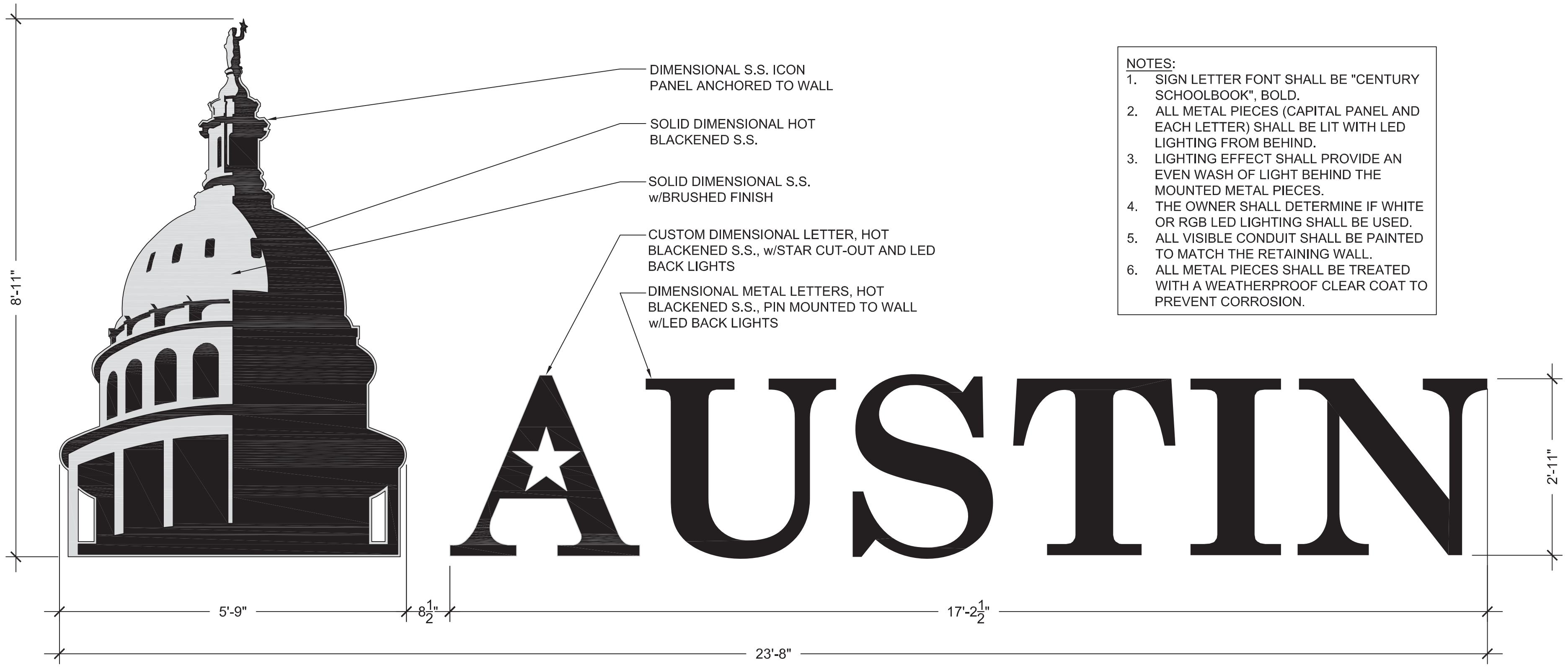
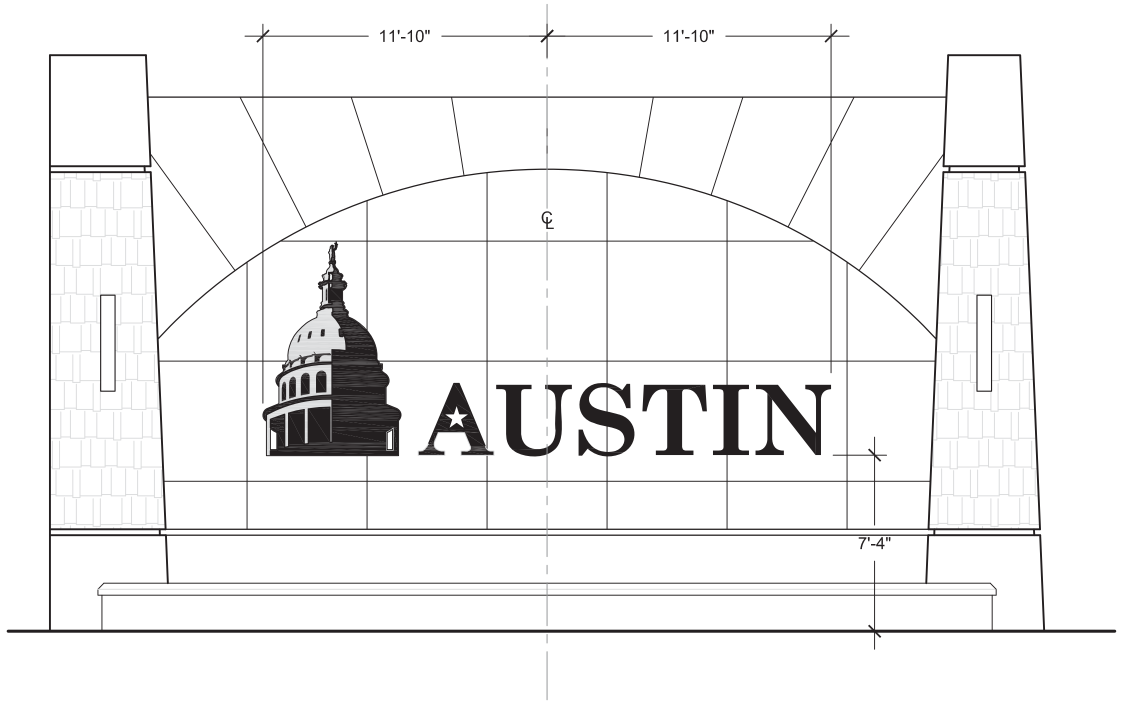
# ICON ELEMENT - PRESIDENTIAL BOULEVARD


DIMENSIONAL S.S. ICON PANEL ANCHORED TO WALL
SOLID DIMENSIONAL HOT BLACKENED S.S.
SOLID DIMENSIONAL S.S. w/BRUSHED FINISH
CUSTOM DIMENSIONAL LETTER, HOT BLACKENED S.S., w/STAR CUT-OUT AND LED BACK LIGHTS
DIMENSIONAL METAL LETTERS, HOT BLACKENED S.S., PIN MOUNTED TO WALL w/LED BACK LIGHTS
AUSTIN
8'-11"
2'-11"
5'-9"
8½"
17'-2½"
23'-8"

NOTES:
1. SIGN LETTER FONT SHALL BE "CENTURY SCHOOLBOOK", BOLD.
2. ALL METAL PIECES (CAPITAL PANEL AND EACH LETTER) SHALL BE LIT WITH LED LIGHTING FROM BEHIND.
3. LIGHTING EFFECT SHALL PROVIDE AN EVEN WASH OF LIGHT BEHIND THE MOUNTED METAL PIECES.
4. THE OWNER SHALL DETERMINE IF WHITE OR RGB LED LIGHTING SHALL BE USED.
5. ALL VISIBLE CONDUIT SHALL BE PAINTED TO MATCH THE RETAINING WALL.
6. ALL METAL PIECES SHALL BE TREATED WITH A WEATHERPROOF CLEAR COAT TO PREVENT CORROSION.

1 ICON ELEMENT DETAIL
SCALE: 1/4" = 1'-0"


11'-10"
11'-10"
℄
AUSTIN
7'-4"

2 ICON ELEMENT WALL PLACEMENT DETAIL
SCALE: 1/8" = 1'-0"

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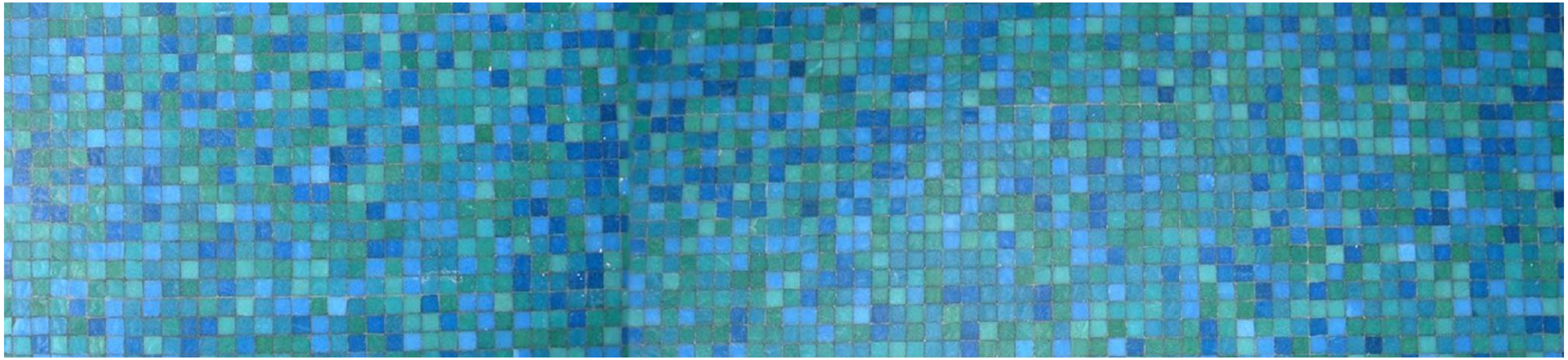
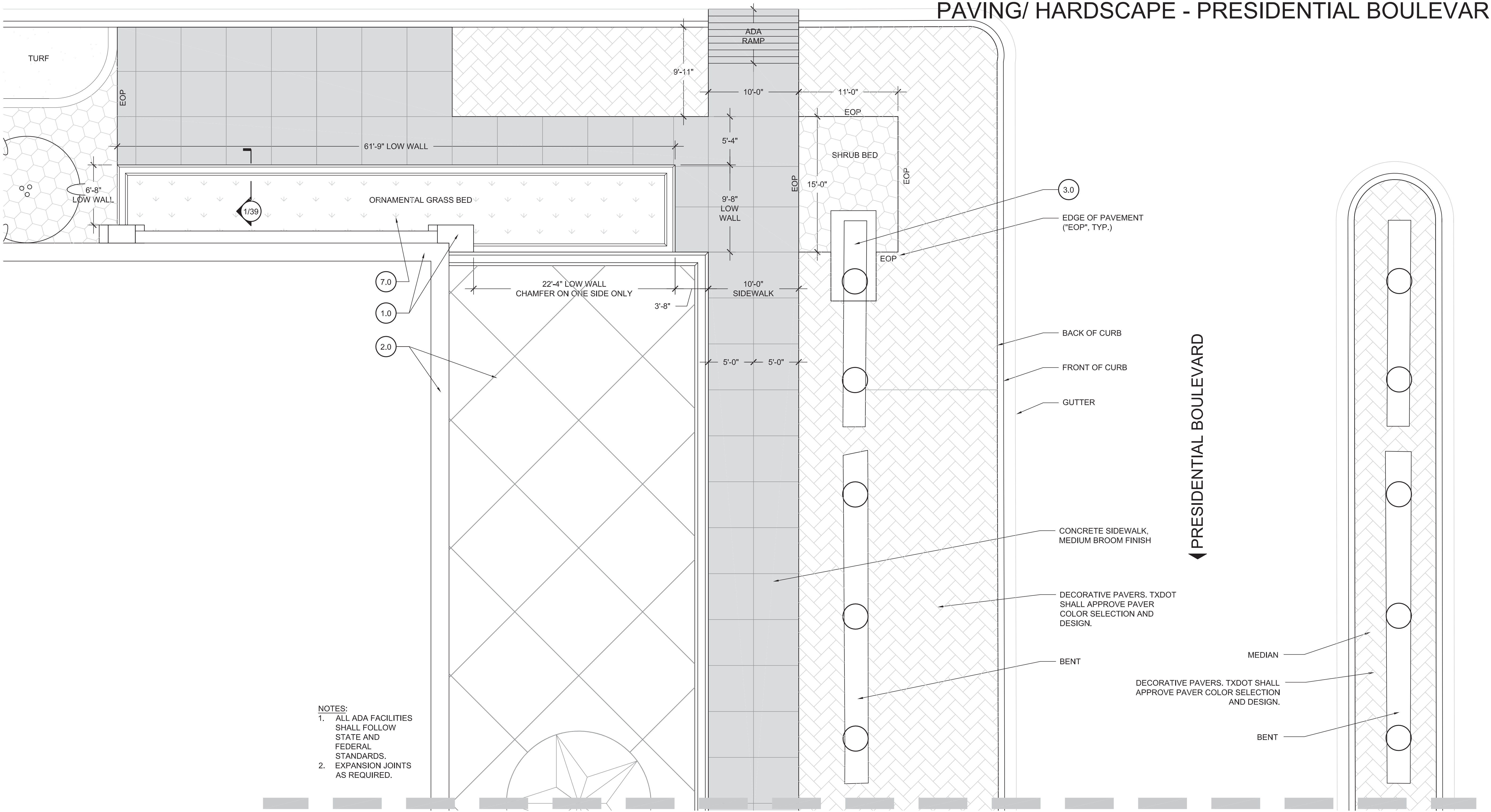


# 6.0 PAVING, HARDSCAPE & SHARED USE PATH

REVISION 2

# PAVING/ HARDSCAPE - PRESIDENTIAL BOULEVARD


TURF
EOP
ADA RAMP
9'-11"
10'-0"
11'-0"
EOP
5'-4"
61'-9" LOW WALL
SHRUB BED
EOP
15'-0"
EOP
6'-8" LOW WALL
ORNAMENTAL GRASS BED
1/39
9'-8" LOW WALL
3.0
EDGE OF PAVEMENT ("EOP", TYP.)
EOP
7.0
22'-4" LOW WALL CHAMFER ON ONE SIDE ONLY
10'-0" SIDEWALK
3'-8"
1.0
2.0
5'-0"
5'-0"
BACK OF CURB
FRONT OF CURB
GUTTER
PRESIDENTIAL BOULEVARD
CONCRETE SIDEWALK, MEDIUM BROOM FINISH
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
BENT
MEDIAN
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
BENT
MATCHLINE A - SEE SHEET 39

NOTES:
1. ALL ADA FACILITIES SHALL FOLLOW STATE AND FEDERAL STANDARDS.
2. EXPANSION JOINTS AS REQUIRED.

HARDSCAPE PLAN

SCALE: 1" = 10'

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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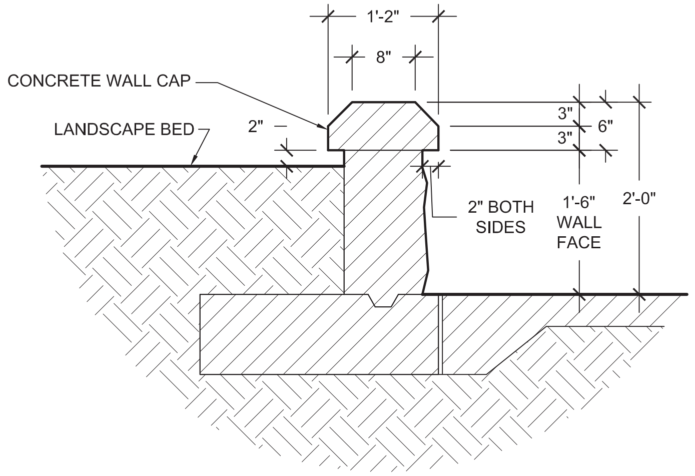
# PAVING/ HARDSCAPE - PRESIDENTIAL BOULEVARD


1'-2"
8"
CONCRETE WALL CAP
LANDSCAPE BED
2"
3"
3"
6"
2'-0"
2" BOTH SIDES
1'-6" WALL FACE

CONSTRUCTION NOTES:

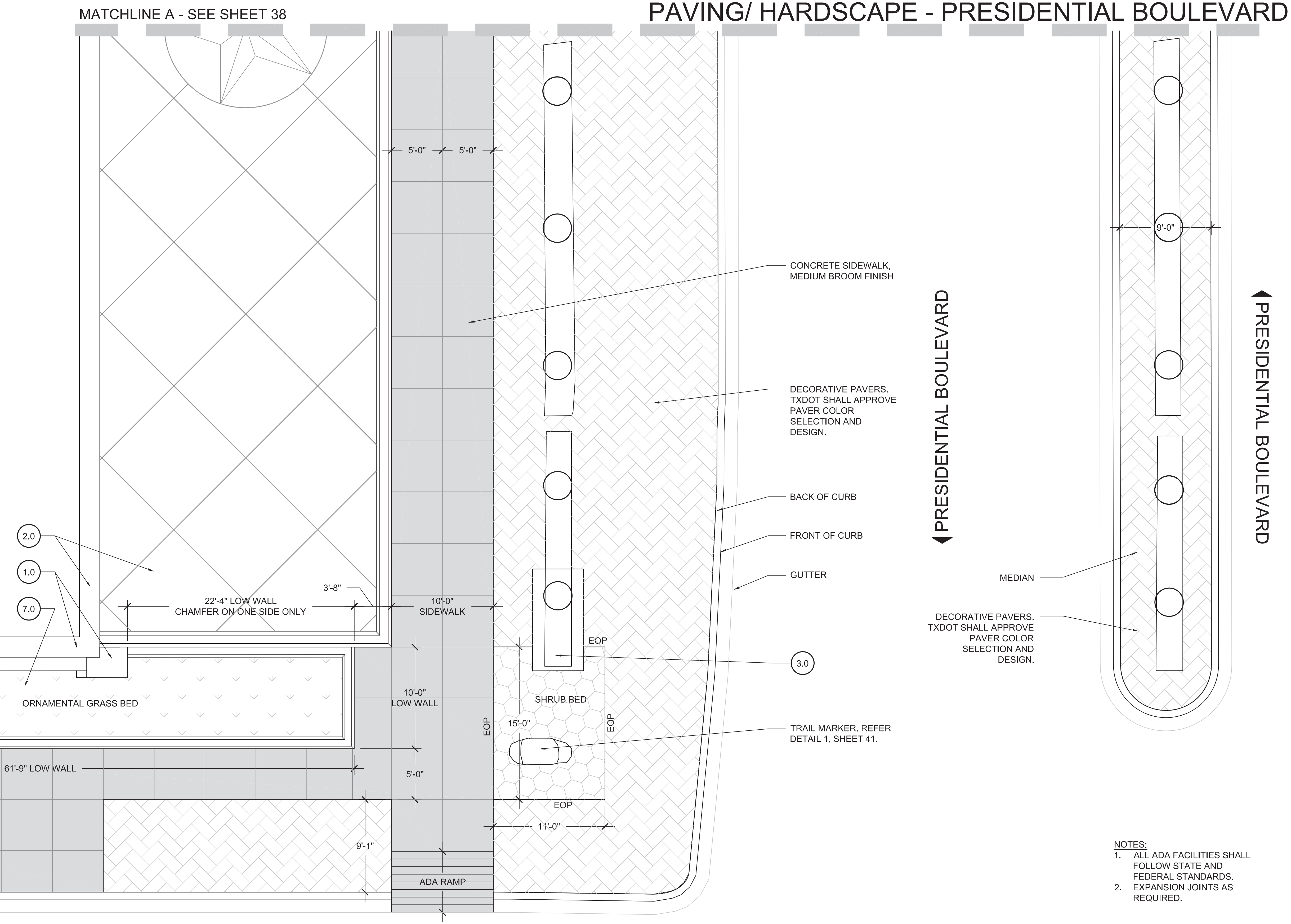
1. FOOTING AND WALL REINFORCEMENT SUBJECT TO FINAL PLANS AND SPECIFICATIONS.
2. CONTRACTOR SHALL PLACE WEEP HOLES IN WALL TO ALLOW FOR BED DRAINAGE.

FINISH NOTES:

1. CONCRETE WALL CAP - 3" CHAMFER BOTH SIDES UNLESS OTHERWISE NOTED ON PLAN. SMOOTH TROWEL FINISH. INSTALLATION & REINFORCEMENT PER STRUCTURAL SPECIFICATIONS. STAIN COLOR FED. STD. #26559.
2. WALL FACE - FORM LINER 166D CHISELED LIMESTONE WITH JOINTS (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.

1 LOW WALL SECTION

SCALE: 1/2" = 1'-0"


MATCHLINE A - SEE SHEET 38
5'-0"
5'-0"
CONCRETE SIDEWALK, MEDIUM BROOM FINISH
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
BACK OF CURB
FRONT OF CURB
GUTTER
PRESIDENTIAL BOULEVARD
PRESIDENTIAL BOULEVARD
9'-0"
MEDIAN
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
2.0
1.0
7.0
3.0
22'-4" LOW WALL CHAMFER ON ONE SIDE ONLY
3'-8"
10'-0" SIDEWALK
EOP
ORNAMENTAL GRASS BED
1/39
10'-0" LOW WALL
SHRUB BED
15'-0"
EOP
EOP
TRAIL MARKER. REFER DETAIL 1, SHEET 41.
7'-0" LOW WALL
61'-9" LOW WALL
EOP
5'-0"
EOP
11'-0"
9'-1"
TURF
ADA RAMP

NOTES:

1. ALL ADA FACILITIES SHALL FOLLOW STATE AND FEDERAL STANDARDS.
2. EXPANSION JOINTS AS REQUIRED.

HARDSCAPE PLAN

SCALE: 1" = 10'

- (1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
- (2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
- (3.0) PYLONS - Sheets 25-30
- (4.0) SIGN STRUCTURES - Sheets 31-32
- (5.0) LIGHTING STANDARDS - Sheets 33-36
- (6.0) PAVING/ HARDSCAPE - Sheets 37-46
- (7.0) LANDSCAPE - Sheets 47-63
- (8.0) FINISH SCHEDULE - Sheets 64-65

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

N

REVISION 2

Texas Department of Transportation

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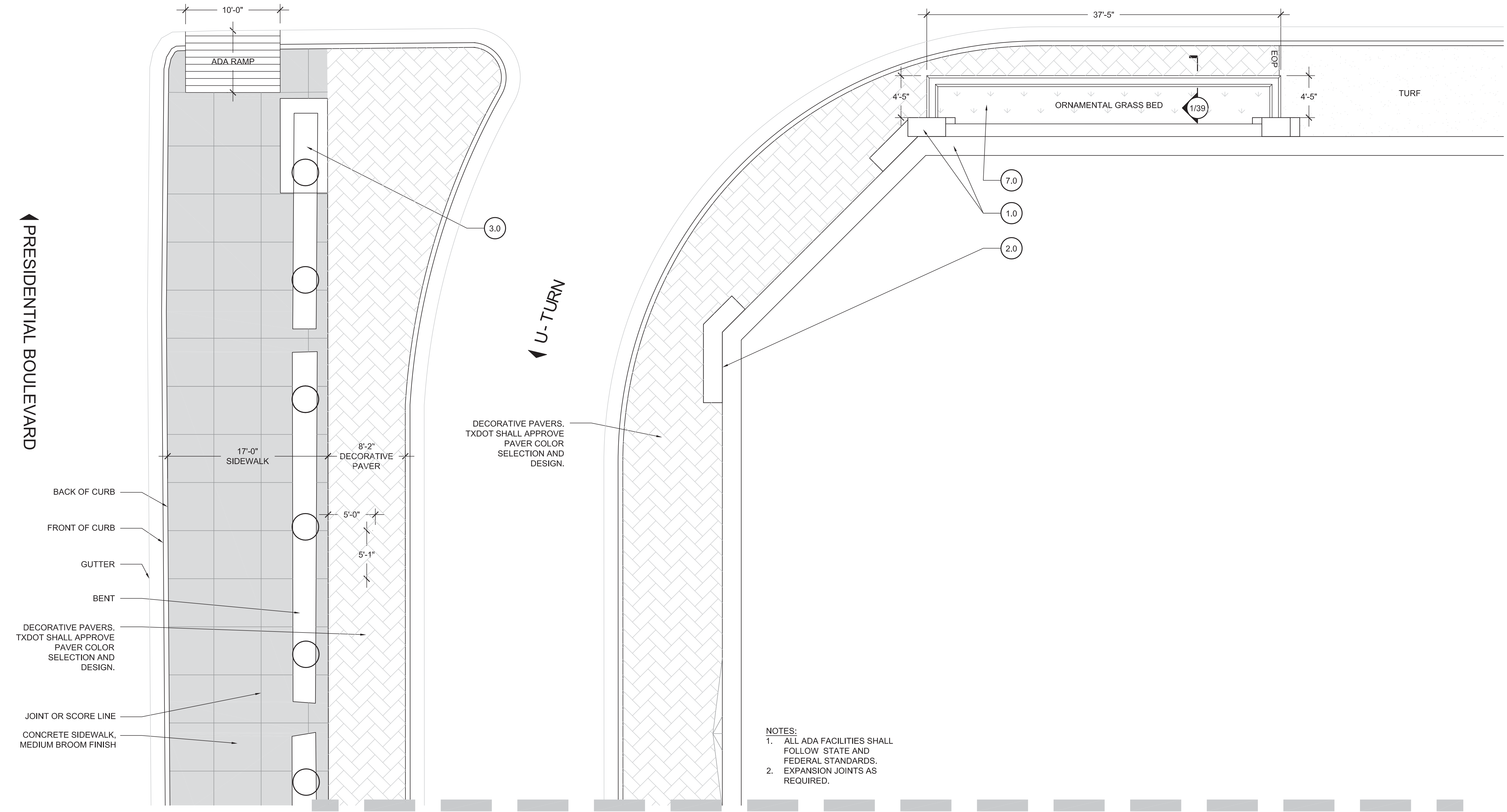
# PAVING/ HARDSCAPE - PRESIDENTIAL BOULEVARD


10'-0"
ADA RAMP
3.0
PRESIDENTIAL BOULEVARD
U- TURN
17'-0" SIDEWALK
8'-2" DECORATIVE PAVER
5'-0"
5'-1"
BACK OF CURB
FRONT OF CURB
GUTTER
BENT
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
JOINT OR SCORE LINE
CONCRETE SIDEWALK, MEDIUM BROOM FINISH
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
37'-5"
EOP
4'-5"
ORNAMENTAL GRASS BED
1/39
4'-5"
TURF
7.0
1.0
2.0

NOTES:
1. ALL ADA FACILITIES SHALL FOLLOW STATE AND FEDERAL STANDARDS.
2. EXPANSION JOINTS AS REQUIRED.

HARDSCAPE PLAN

SCALE: 1" = 10'

MATCHLINE B - SEE SHEET 41

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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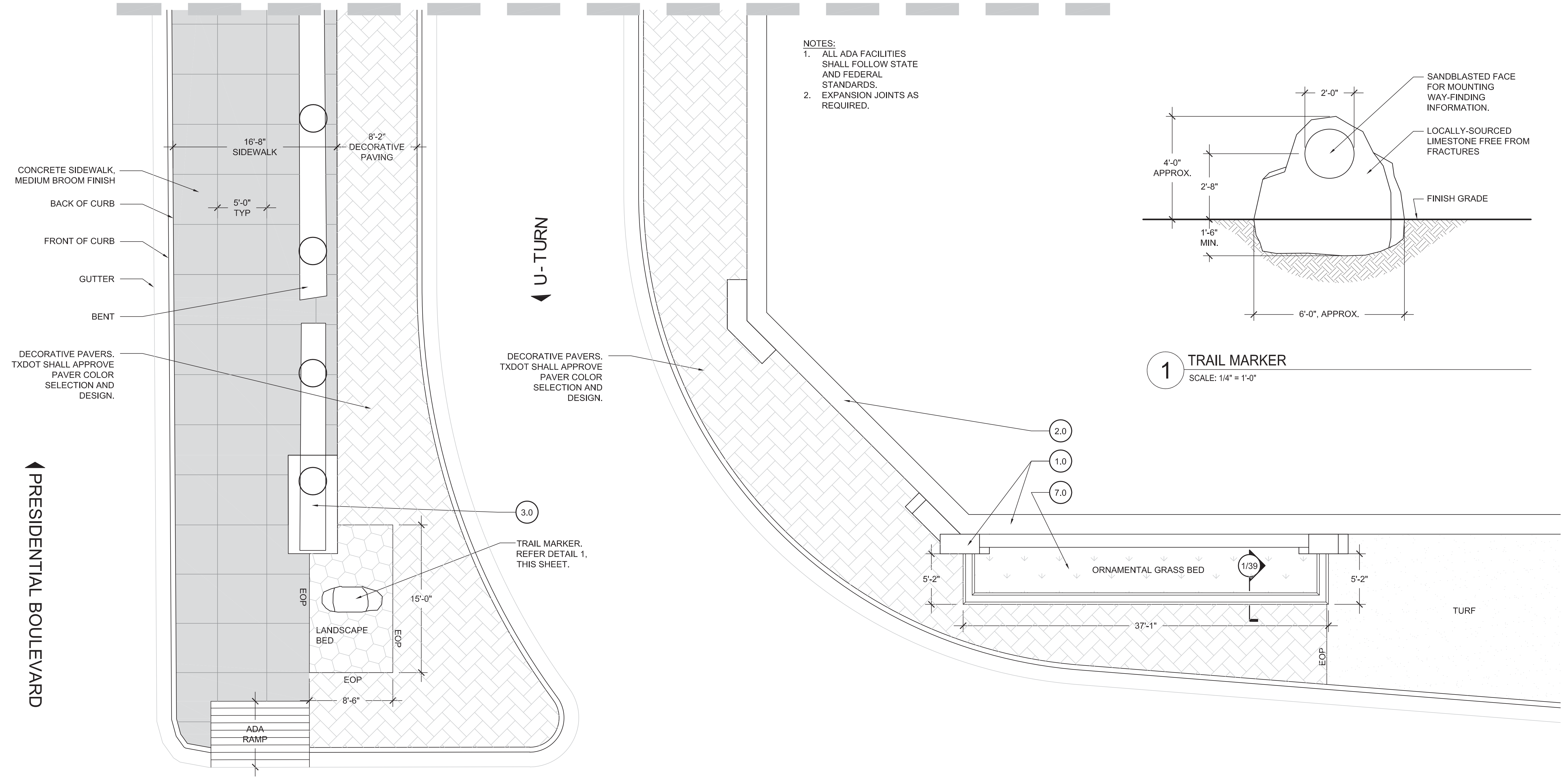
# PAVING/ HARDSCAPE - PRESIDENTIAL BOULEVARD

MATCHLINE B - SEE SHEET 40

NOTES:
1. ALL ADA FACILITIES SHALL FOLLOW STATE AND FEDERAL STANDARDS.
2. EXPANSION JOINTS AS REQUIRED.



16'-8" SIDEWALK
8'-2" DECORATIVE PAVING
CONCRETE SIDEWALK, MEDIUM BROOM FINISH
5'-0" TYP
BACK OF CURB
FRONT OF CURB
GUTTER
BENT
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
U-TURN
PRESIDENTIAL BOULEVARD
3.0
TRAIL MARKER. REFER DETAIL 1, THIS SHEET.
EOP
15'-0"
LANDSCAPE BED
EOP
EOP
8'-6"
ADA RAMP
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
2.0
1.0
7.0
ORNAMENTAL GRASS BED
1/39
5'-2"
5'-2"
37'-1"
EOP
TURF
2'-0"
SANDBLASTED FACE FOR MOUNTING WAY-FINDING INFORMATION.
LOCALLY-SOURCED LIMESTONE FREE FROM FRACTURES
4'-0" APPROX.
2'-8"
FINISH GRADE
1'-6" MIN.
6'-0", APPROX.

1 TRAIL MARKER
SCALE: 1/4" = 1'-0"

HARDSCAPE PLAN
SCALE: 1" = 10'

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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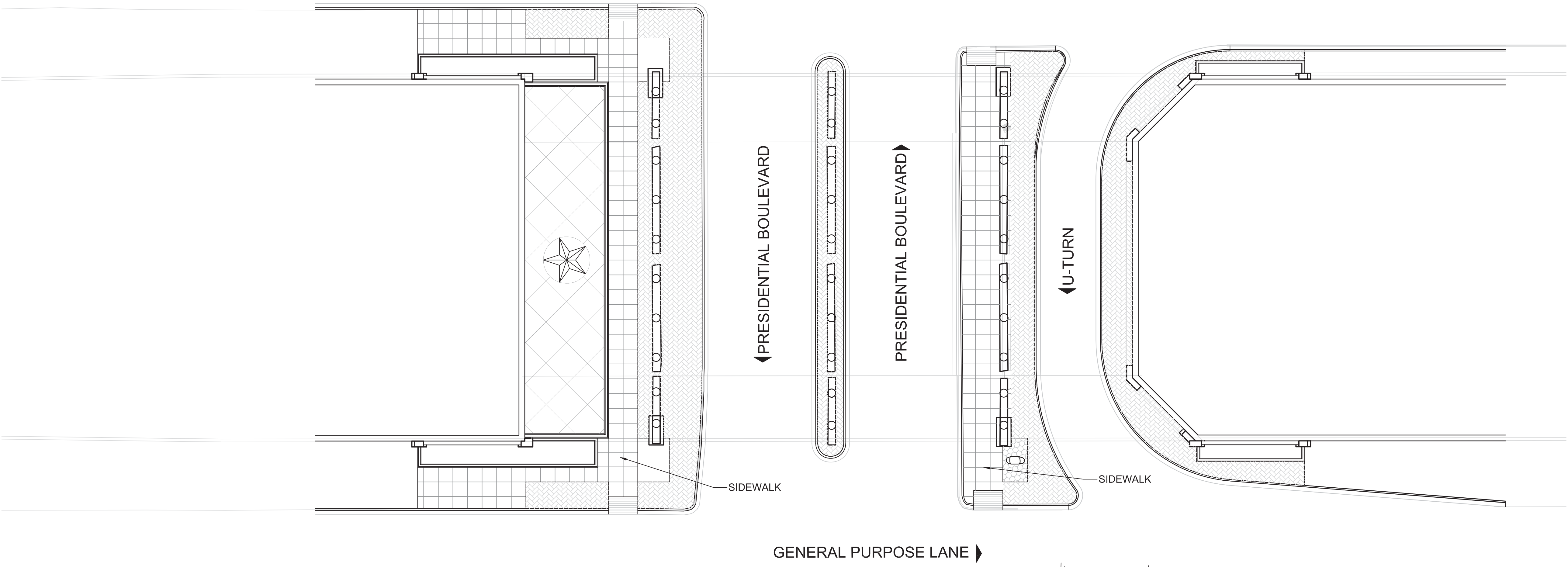
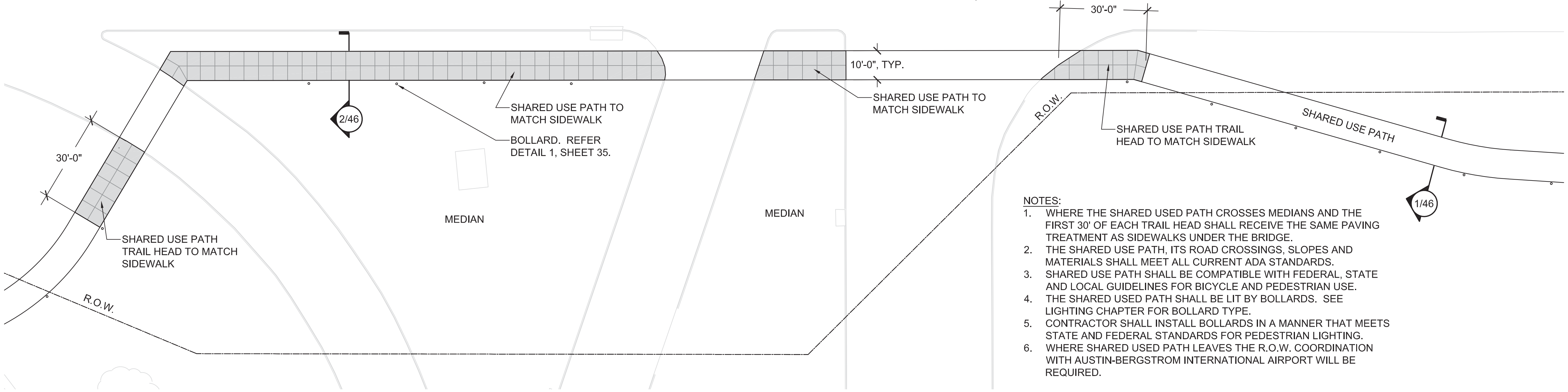

PRESIDENTIAL BOULEVARD
PRESIDENTIAL BOULEVARD
U-TURN
SIDEWALK
SIDEWALK
GENERAL PURPOSE LANE


30'-0"
10'-0", TYP.
SHARED USE PATH TO MATCH SIDEWALK
BOLLARD. REFER DETAIL 1, SHEET 35.
2/46
SHARED USE PATH TO MATCH SIDEWALK
R.O.W.
SHARED USE PATH TRAIL HEAD TO MATCH SIDEWALK
SHARED USE PATH
1/46
30'-0"
SHARED USE PATH TRAIL HEAD TO MATCH SIDEWALK
MEDIAN
MEDIAN
R.O.W.

NOTES:

1. WHERE THE SHARED USED PATH CROSSES MEDIANS AND THE FIRST 30' OF EACH TRAIL HEAD SHALL RECEIVE THE SAME PAVING TREATMENT AS SIDEWALKS UNDER THE BRIDGE.
2. THE SHARED USE PATH, ITS ROAD CROSSINGS, SLOPES AND MATERIALS SHALL MEET ALL CURRENT ADA STANDARDS.
3. SHARED USE PATH SHALL BE COMPATIBLE WITH FEDERAL, STATE AND LOCAL GUIDELINES FOR BICYCLE AND PEDESTRIAN USE.
4. THE SHARED USED PATH SHALL BE LIT BY BOLLARDS. SEE LIGHTING CHAPTER FOR BOLLARD TYPE.
5. CONTRACTOR SHALL INSTALL BOLLARDS IN A MANNER THAT MEETS STATE AND FEDERAL STANDARDS FOR PEDESTRIAN LIGHTING.
6. WHERE SHARED USED PATH LEAVES THE R.O.W. COORDINATION WITH AUSTIN-BERGSTROM INTERNATIONAL AIRPORT WILL BE REQUIRED.

SHARED USE PATH PLAN

SCALE: 1" = 40'

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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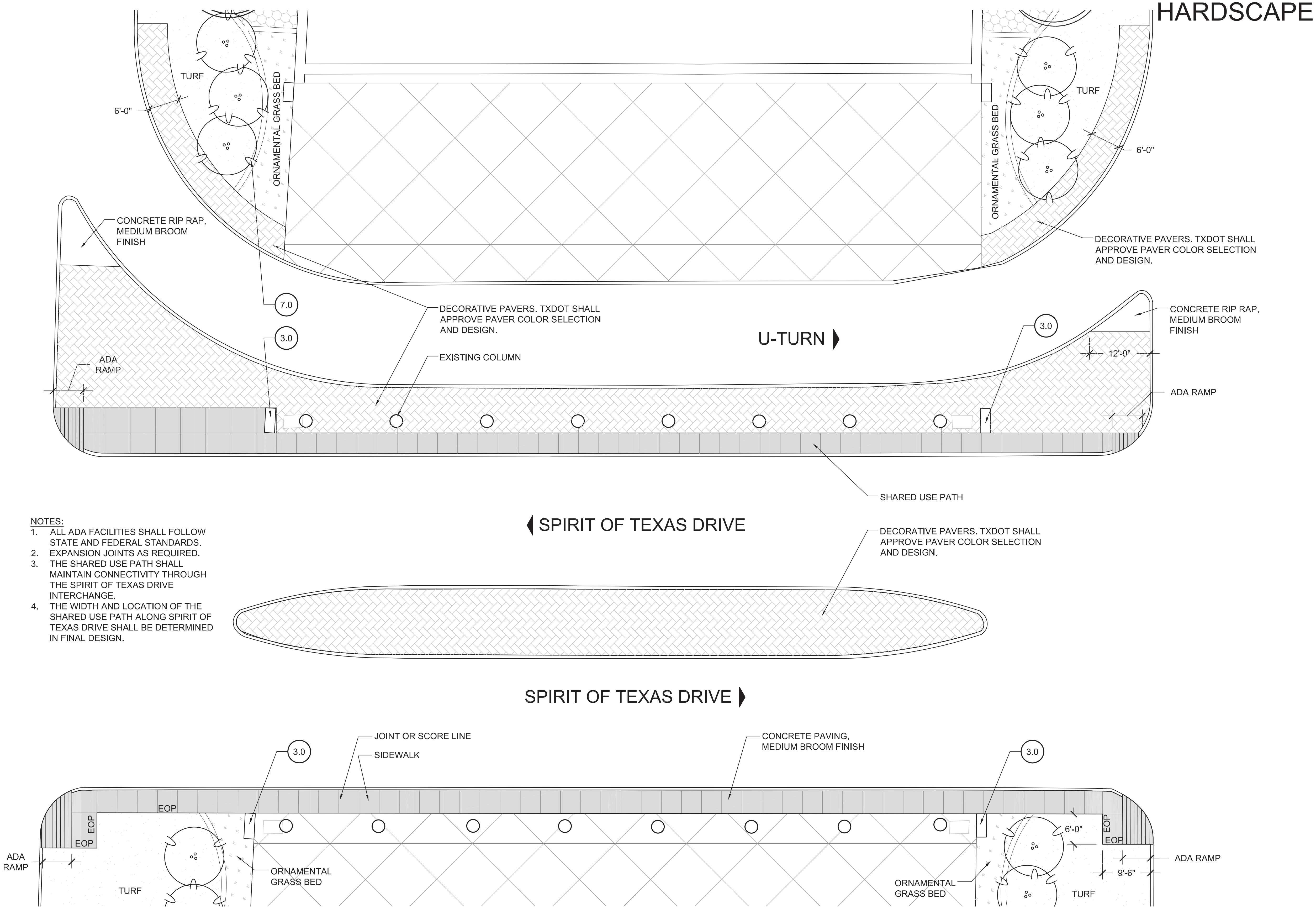
# HARDSCAPE - SPIRIT OF TEXAS DRIVE


TURF
6'-0"
ORNAMENTAL GRASS BED
CONCRETE RIP RAP, MEDIUM BROOM FINISH
7.0
3.0
ADA RAMP
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
EXISTING COLUMN
U-TURN
TURF
6'-0"
ORNAMENTAL GRASS BED
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
3.0
CONCRETE RIP RAP, MEDIUM BROOM FINISH
12'-0"
ADA RAMP
SHARED USE PATH
SPIRIT OF TEXAS DRIVE
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
SPIRIT OF TEXAS DRIVE
3.0
JOINT OR SCORE LINE
SIDEWALK
CONCRETE PAVING, MEDIUM BROOM FINISH
3.0
EOP
EOP
EOP
ADA RAMP
TURF
ORNAMENTAL GRASS BED
ORNAMENTAL GRASS BED
6'-0"
EOP
EOP
ADA RAMP
9'-6"
TURF

NOTES:
1. ALL ADA FACILITIES SHALL FOLLOW STATE AND FEDERAL STANDARDS.
2. EXPANSION JOINTS AS REQUIRED.
3. THE SHARED USE PATH SHALL MAINTAIN CONNECTIVITY THROUGH THE SPIRIT OF TEXAS DRIVE INTERCHANGE.
4. THE WIDTH AND LOCATION OF THE SHARED USE PATH ALONG SPIRIT OF TEXAS DRIVE SHALL BE DETERMINED IN FINAL DESIGN.

HARDSCAPE PLAN

SCALE: 1" = 20'

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
(8.0) FINISH SCHEDULE - Sheets 64-65

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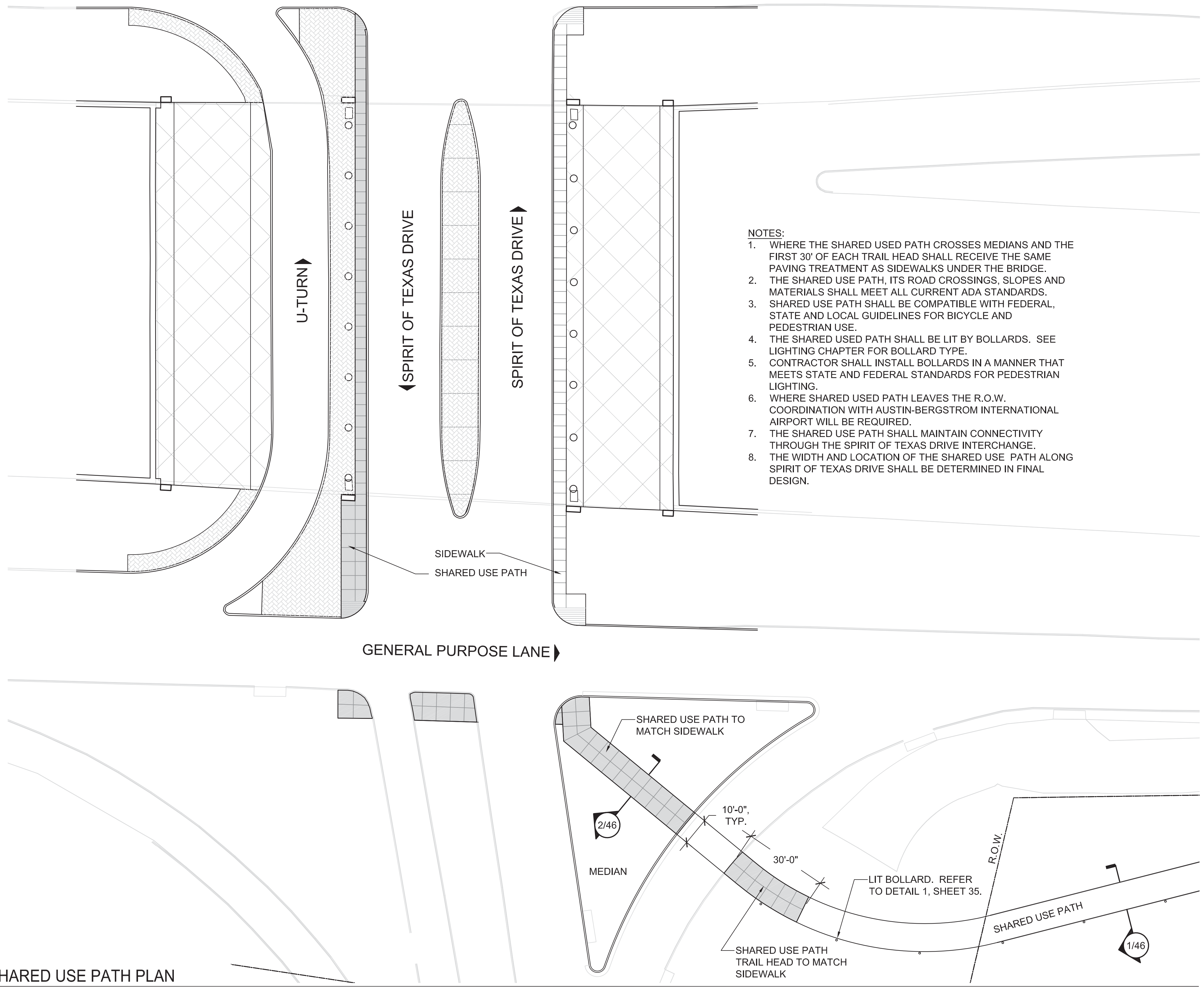
# SHARED USE PATH - SPIRIT OF TEXAS DRIVE


U-TURN
SPIRIT OF TEXAS DRIVE
SPIRIT OF TEXAS DRIVE
SIDEWALK
SHARED USE PATH
GENERAL PURPOSE LANE
SHARED USE PATH TO MATCH SIDEWALK
2/46
10'-0", TYP.
30'-0"
MEDIAN
LIT BOLLARD. REFER TO DETAIL 1, SHEET 35.
R.O.W.
SHARED USE PATH
1/46
SHARED USE PATH TRAIL HEAD TO MATCH SIDEWALK

NOTES:

1. WHERE THE SHARED USED PATH CROSSES MEDIANS AND THE FIRST 30' OF EACH TRAIL HEAD SHALL RECEIVE THE SAME PAVING TREATMENT AS SIDEWALKS UNDER THE BRIDGE.
2. THE SHARED USE PATH, ITS ROAD CROSSINGS, SLOPES AND MATERIALS SHALL MEET ALL CURRENT ADA STANDARDS.
3. SHARED USE PATH SHALL BE COMPATIBLE WITH FEDERAL, STATE AND LOCAL GUIDELINES FOR BICYCLE AND PEDESTRIAN USE.
4. THE SHARED USED PATH SHALL BE LIT BY BOLLARDS. SEE LIGHTING CHAPTER FOR BOLLARD TYPE.
5. CONTRACTOR SHALL INSTALL BOLLARDS IN A MANNER THAT MEETS STATE AND FEDERAL STANDARDS FOR PEDESTRIAN LIGHTING.
6. WHERE SHARED USED PATH LEAVES THE R.O.W. COORDINATION WITH AUSTIN-BERGSTROM INTERNATIONAL AIRPORT WILL BE REQUIRED.
7. THE SHARED USE PATH SHALL MAINTAIN CONNECTIVITY THROUGH THE SPIRIT OF TEXAS DRIVE INTERCHANGE.
8. THE WIDTH AND LOCATION OF THE SHARED USE PATH ALONG SPIRIT OF TEXAS DRIVE SHALL BE DETERMINED IN FINAL DESIGN.

SHARED USE PATH PLAN

SCALE: 1" = 40'

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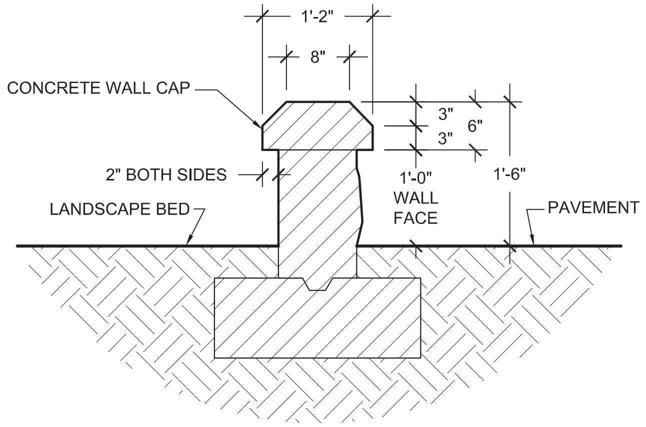
# HARDSCAPE - FM 973

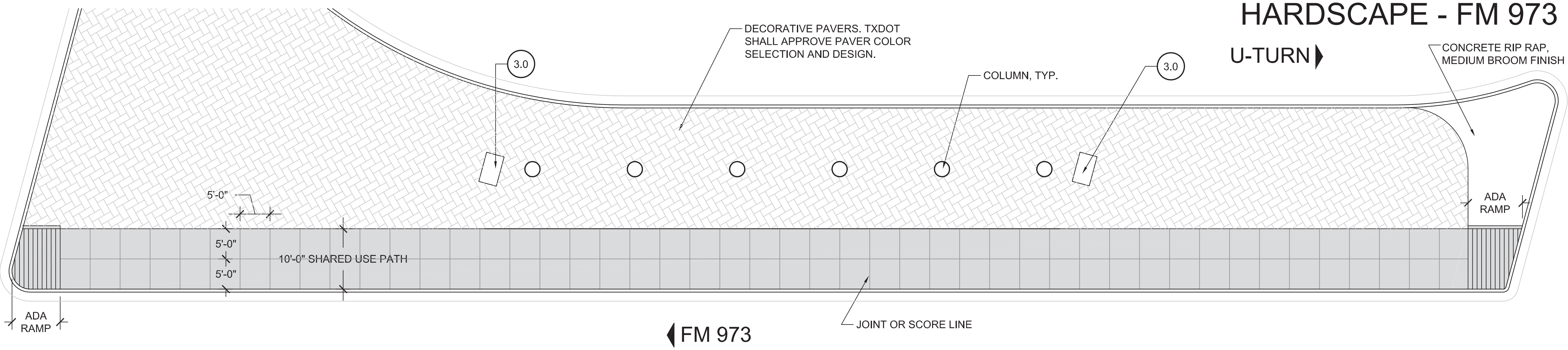

1'-2"
8"
CONCRETE WALL CAP
3"
6"
3"
2" BOTH SIDES
1'-0" WALL FACE
1'-6"
LANDSCAPE BED
PAVEMENT

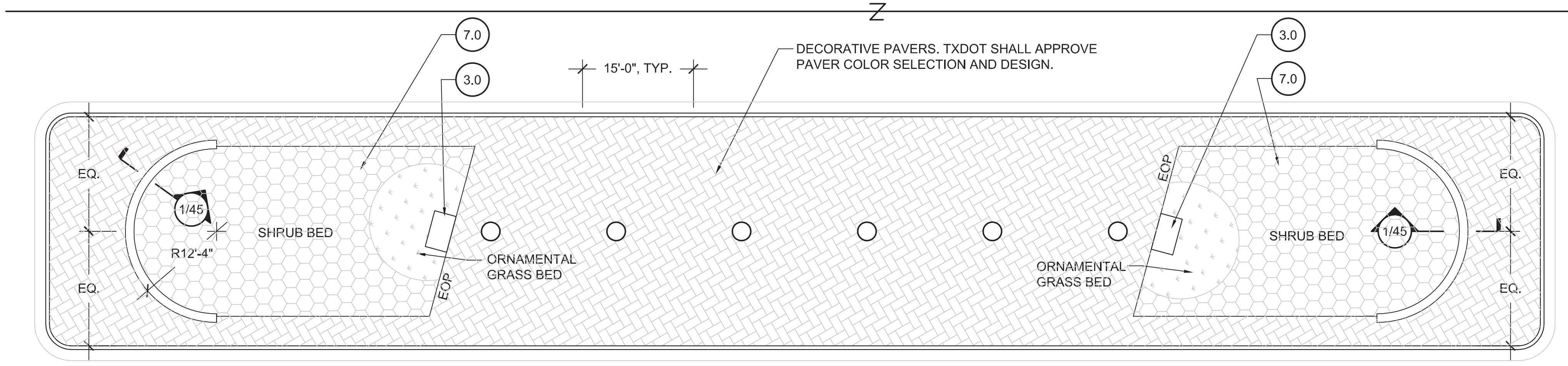
CONSTRUCTION NOTES:
1. FOOTING AND WALL REINFORCEMENT SUBJECT TO FINAL PLANS AND SPECIFICATIONS.
2. CONTRACTOR SHALL PLACE WEEP HOLES IN WALL TO ALLOW FOR BED DRAINAGE.

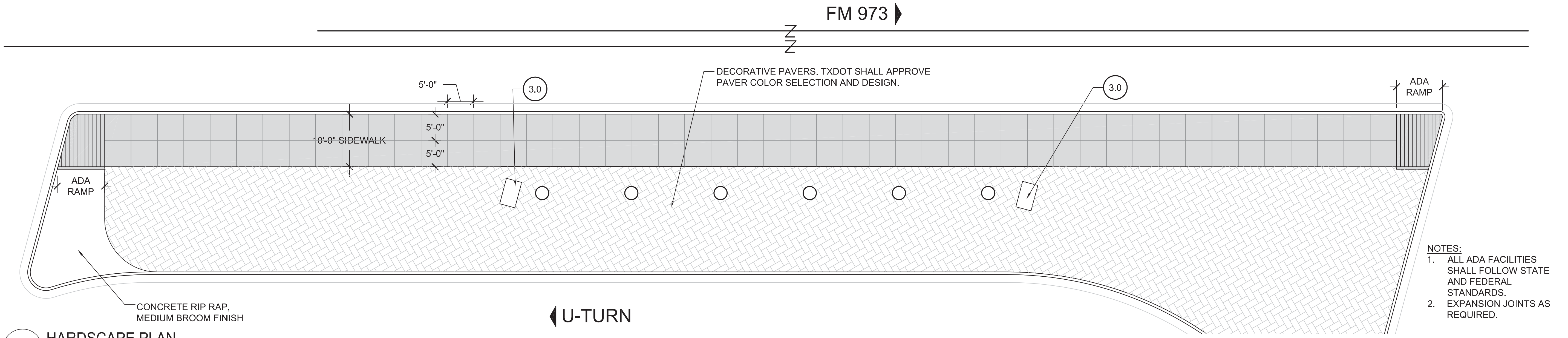
FINISH NOTES:
1. CONCRETE WALL CAP- 3" CHAMFER BOTH SIDES. SMOOTH TROWEL FINISH. INSTALLATION & REINFORCEMENT PER STRUCTURAL SPECIFICATIONS. STAIN COLOR FED. STD. #26559.
2. OUTER WALL FACE- (PAVEMENT SIDE) FORM LINER 166D CHISELED LIMESTONE WITH JOINTS (BY SCOTT SYSTEM OR APPROVED EQUAL). CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.
3. INNER WALL FACE- (LANDSCAPE BED SIDE) SMOOTH TROWEL FINISH. STAIN COLOR FED. STD. #26559.

1 FREE STANDING LOW WALL

SCALE: 1/2" = 1'-0"


U-TURN
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
3.0
COLUMN, TYP.
3.0
CONCRETE RIP RAP, MEDIUM BROOM FINISH
5'-0"
5'-0"
10'-0" SHARED USE PATH
5'-0"
ADA RAMP
ADA RAMP
JOINT OR SCORE LINE
FM 973


7.0
3.0
15'-0", TYP.
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
3.0
7.0
EQ.
EQ.
1/45
R12'-4"
SHRUB BED
ORNAMENTAL GRASS BED
EOP
EOP
ORNAMENTAL GRASS BED
SHRUB BED
1/45
EQ.
EQ.


FM 973
DECORATIVE PAVERS. TXDOT SHALL APPROVE PAVER COLOR SELECTION AND DESIGN.
5'-0"
3.0
3.0
ADA RAMP
10'-0" SIDEWALK
5'-0"
5'-0"
ADA RAMP
CONCRETE RIP RAP, MEDIUM BROOM FINISH
U-TURN

NOTES:
1. ALL ADA FACILITIES SHALL FOLLOW STATE AND FEDERAL STANDARDS.
2. EXPANSION JOINTS AS REQUIRED.

2 HARDSCAPE PLAN

SCALE: 1" = 20'

1.0 RETAINING WALLS & PILASTERS - Sheets 6-11
2.0 BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
3.0 PYLONS - Sheets 25-30
4.0 SIGN STRUCTURES - Sheets 31-32
5.0 LIGHTING STANDARDS - Sheets 33-36
6.0 PAVING/ HARDSCAPE - Sheets 37-46
7.0 LANDSCAPE - Sheets 47-63
8.0 FINISH SCHEDULE - Sheets 64-65

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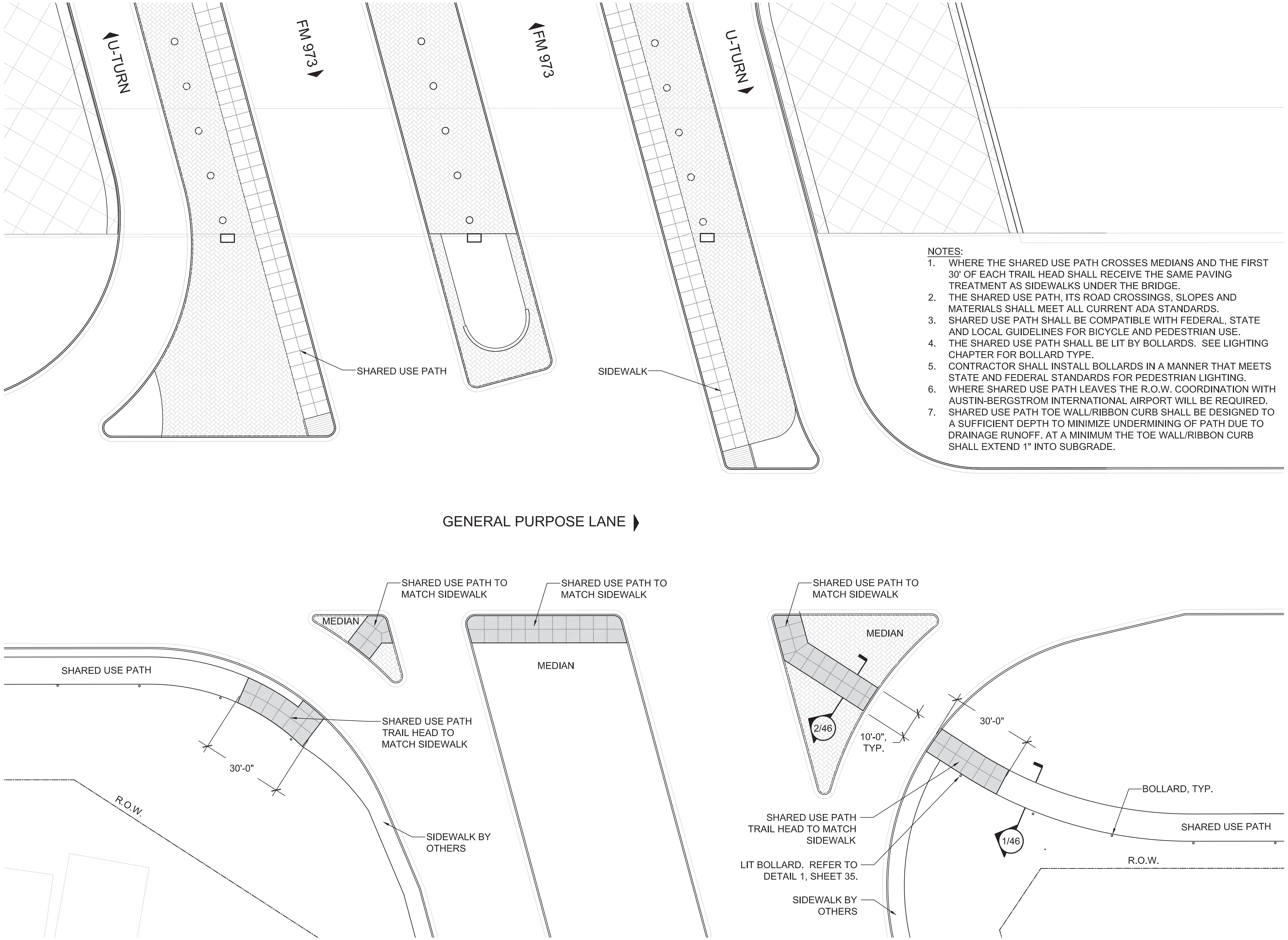
# SHARED USE PATH - FM 973

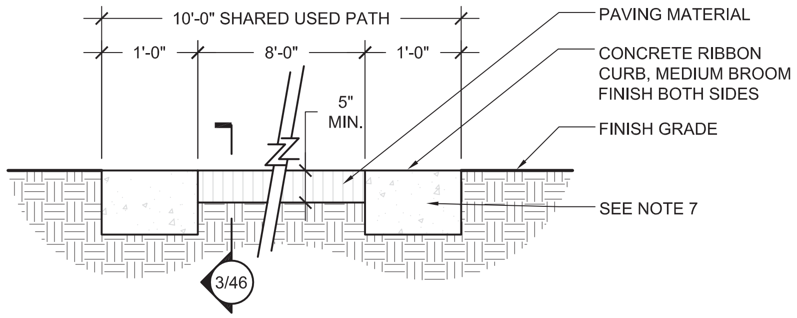

U-TURN
FM 973
FM 973
U-TURN
SHARED USE PATH
SIDEWALK
GENERAL PURPOSE LANE
SHARED USE PATH TO MATCH SIDEWALK
SHARED USE PATH TO MATCH SIDEWALK
SHARED USE PATH TO MATCH SIDEWALK
MEDIAN
MEDIAN
MEDIAN
SHARED USE PATH
SHARED USE PATH TRAIL HEAD TO MATCH SIDEWALK
30'-0"
R.O.W.
SIDEWALK BY OTHERS
2/46
10'-0", TYP.
30'-0"
BOLLARD, TYP.
SHARED USE PATH
SHARED USE PATH TRAIL HEAD TO MATCH SIDEWALK
1/46
R.O.W.
LIT BOLLARD. REFER TO DETAIL 1, SHEET 35.
SIDEWALK BY OTHERS

NOTES:

1. WHERE THE SHARED USE PATH CROSSES MEDIANS AND THE FIRST 30' OF EACH TRAIL HEAD SHALL RECEIVE THE SAME PAVING TREATMENT AS SIDEWALKS UNDER THE BRIDGE.
2. THE SHARED USE PATH, ITS ROAD CROSSINGS, SLOPES AND MATERIALS SHALL MEET ALL CURRENT ADA STANDARDS.
3. SHARED USE PATH SHALL BE COMPATIBLE WITH FEDERAL, STATE AND LOCAL GUIDELINES FOR BICYCLE AND PEDESTRIAN USE.
4. THE SHARED USE PATH SHALL BE LIT BY BOLLARDS. SEE LIGHTING CHAPTER FOR BOLLARD TYPE.
5. CONTRACTOR SHALL INSTALL BOLLARDS IN A MANNER THAT MEETS STATE AND FEDERAL STANDARDS FOR PEDESTRIAN LIGHTING.
6. WHERE SHARED USE PATH LEAVES THE R.O.W. COORDINATION WITH AUSTIN-BERGSTROM INTERNATIONAL AIRPORT WILL BE REQUIRED.
7. SHARED USE PATH TOE WALL/RIBBON CURB SHALL BE DESIGNED TO A SUFFICIENT DEPTH TO MINIMIZE UNDERMINING OF PATH DUE TO DRAINAGE RUNOFF. AT A MINIMUM THE TOE WALL/RIBBON CURB SHALL EXTEND 1" INTO SUBGRADE.

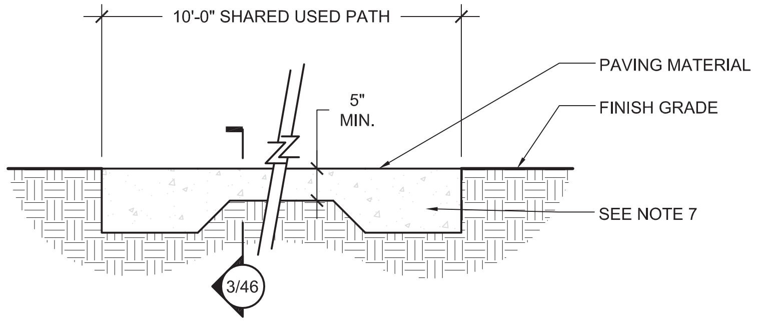
SHARED USE PATH PLAN

SCALE: 1" = 40'


10'-0" SHARED USED PATH
1'-0"
8'-0"
1'-0"
5" MIN.
PAVING MATERIAL
CONCRETE RIBBON CURB, MEDIUM BROOM FINISH BOTH SIDES
FINISH GRADE
SEE NOTE 7
3/46

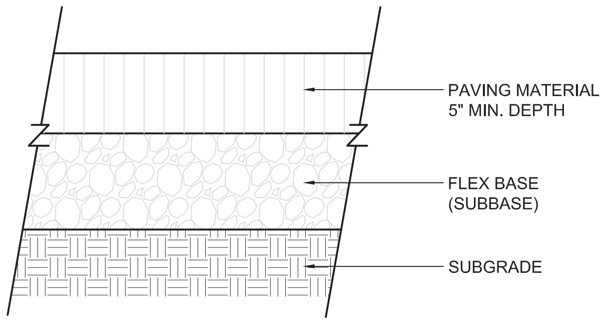
1 SHARED USE PATH SECTION

SCALE: 1/2" = 1'-0"


10'-0" SHARED USED PATH
5" MIN.
PAVING MATERIAL
FINISH GRADE
SEE NOTE 7
3/46

2 SHARED USE PATH AT TRAIL HEAD SECTION

SCALE: 1/2" = 1'-0"


PAVING MATERIAL 5" MIN. DEPTH
FLEX BASE (SUBBASE)
SUBGRADE

3 PAVING SECTION

SCALE: 1" = 1'-0"

(1.0) RETAINING WALLS & PILASTERS - Sheets 6-11
(2.0) BRIDGE ABUTMENT WALLS & RIP RAP - Sheets 12-24
(3.0) PYLONS - Sheets 25-30
(4.0) SIGN STRUCTURES - Sheets 31-32
(5.0) LIGHTING STANDARDS - Sheets 33-36
(6.0) PAVING/ HARDSCAPE - Sheets 37-46
(7.0) LANDSCAPE - Sheets 47-63
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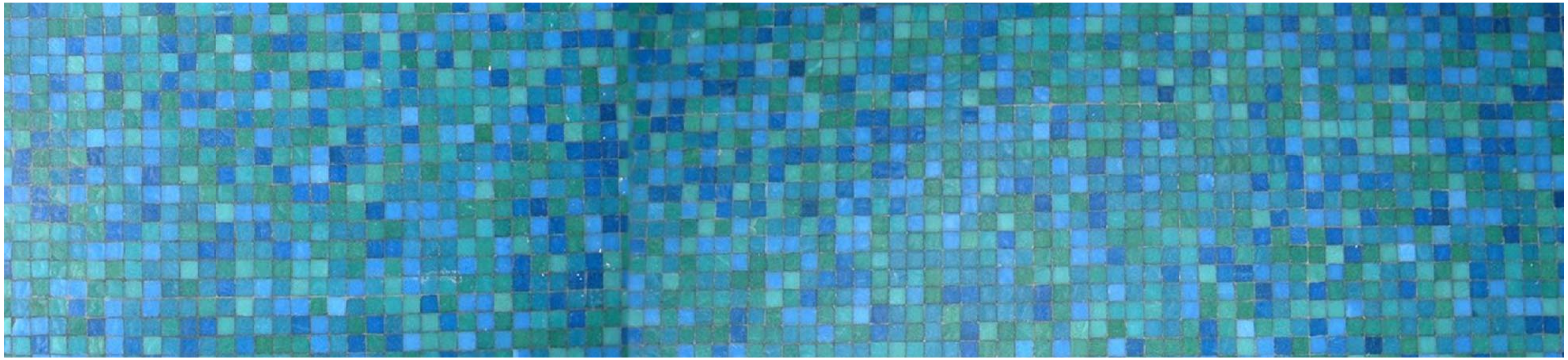
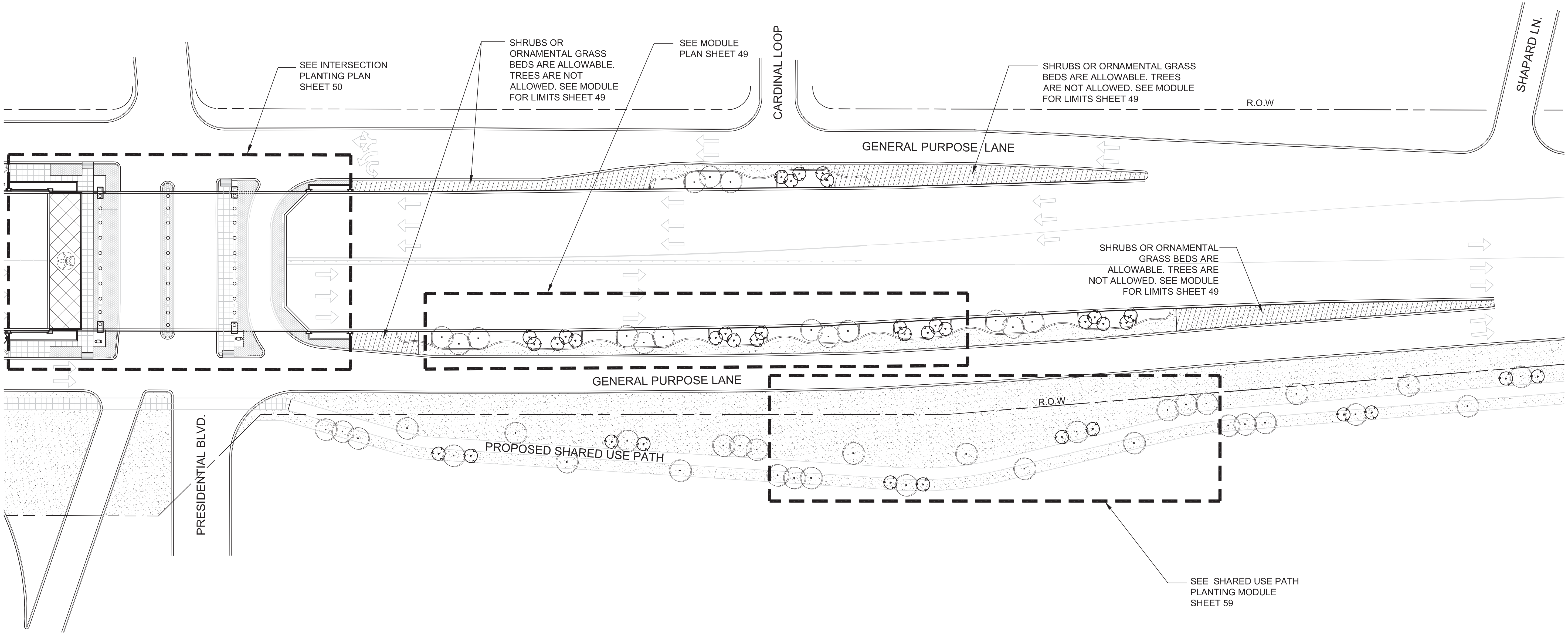


# 7.0 LANDSCAPE

# LANDSCAPE LAYOUT PLAN - PRESIDENTIAL BOULEVARD

NOTES:
1. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
2. THE CONTRACTOR IS RESPONSIBLE FOR MODIFYING LANDSCAPE AND HARDSCAPE TREATMENTS WHERE UTILITIES WILL REMAIN.
3. NO TREES WHERE DISTANCES BETWEEN BACK OF CURB AND RETAINING WALLS ARE LESS THAN 20'-0". IF THERE IS NO CURB, MEASURE FROM EDGE OF PAVEMENT.
4. ALL TREES ASSOCIATED WITH THE SHARED USE PATH SHALL BE LOCATED MINIMUM 30'-0" FROM BACK OF CURB.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING SLOPES THAT REQUIRE EROSION CONTROL SEEDING.
6. THE PLANTING AREAS OF THIS INTERSECTION OCCUR BETWEEN STATION POINTS 11067+00 AND 11090+00.


SEE INTERSECTION PLANTING PLAN SHEET 50
SHRUBS OR ORNAMENTAL GRASS BEDS ARE ALLOWABLE. TREES ARE NOT ALLOWED. SEE MODULE FOR LIMITS SHEET 49
SEE MODULE PLAN SHEET 49
CARDINAL LOOP
SHRUBS OR ORNAMENTAL GRASS BEDS ARE ALLOWABLE. TREES ARE NOT ALLOWED. SEE MODULE FOR LIMITS SHEET 49
R.O.W
SHAPARD LN.
GENERAL PURPOSE LANE
SHRUBS OR ORNAMENTAL GRASS BEDS ARE ALLOWABLE. TREES ARE NOT ALLOWED. SEE MODULE FOR LIMITS SHEET 49
GENERAL PURPOSE LANE
R.O.W
PROPOSED SHARED USE PATH
PRESIDENTIAL BLVD.
SEE SHARED USE PATH PLANTING MODULE SHEET 59

LANDSCAPE PLAN

SCALE: NOT TO SCALE

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

REVISION 2

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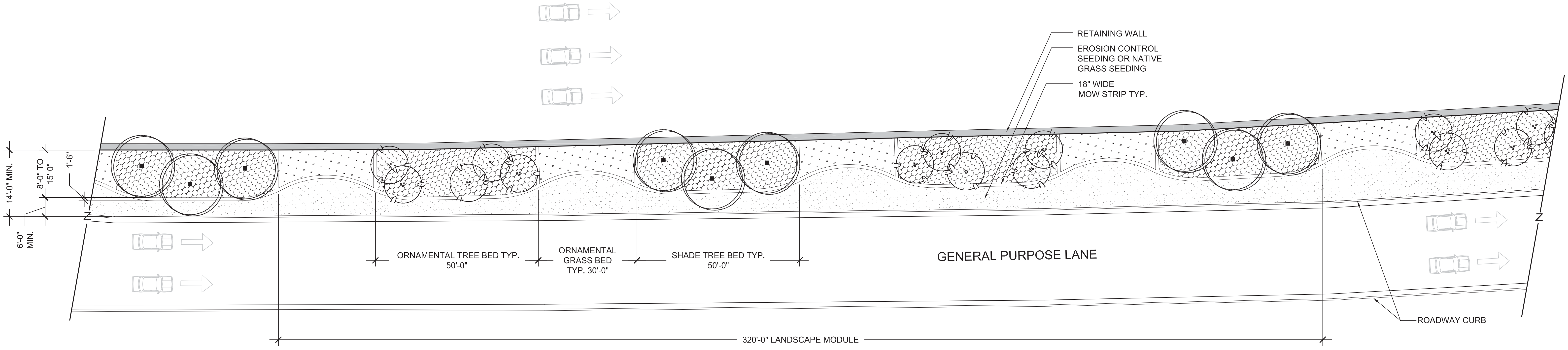
# 320'-0" MODULE PLAN - PRESIDENTIAL BOULEVARD


RETAINING WALL
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
18" WIDE MOW STRIP TYP.
14'-0" MIN.
8'-0" TO 15'-0"
1'-6"
6'-0" MIN.
ORNAMENTAL TREE BED TYP. 50'-0"
ORNAMENTAL GRASS BED TYP. 30'-0"
SHADE TREE BED TYP. 50'-0"
GENERAL PURPOSE LANE
ROADWAY CURB
320'-0" LANDSCAPE MODULE

ROADWAY MODULE PLANTING PLAN

SCALE: 1" = 30'-0"

NOTES:

1. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
2. THE CONTRACTOR IS RESPONSIBLE FOR MODIFYING LANDSCAPE AND HARDSCAPE TREATMENTS WHERE UTILITIES WILL REMAIN.
3. NO TREES WHERE DISTANCES BETWEEN BACK OF CURB AND RETAINING WALLS ARE LESS THAN 20'-0". IF THERE IS NO CURB, MEASURE FROM EDGE OF PAVEMENT.
4. ALL TREES ASSOCIATED WITH THE SHARED USE PATH SHALL BE LOCATED MINIMUM 30'-0" FROM BACK OF CURB.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING SLOPES THAT REQUIRE EROSION CONTROL SEEDING.
6. THE PLANTING AREAS OF THIS INTERSECTION OCCUR BETWEEN STATION POINTS 11067+00 AND 11090+00.

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REVISION 2

Texas Department of Transportation

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# INTERSECTION PLANTING PLAN - PRESIDENTIAL BOULEVARD

NOTES:

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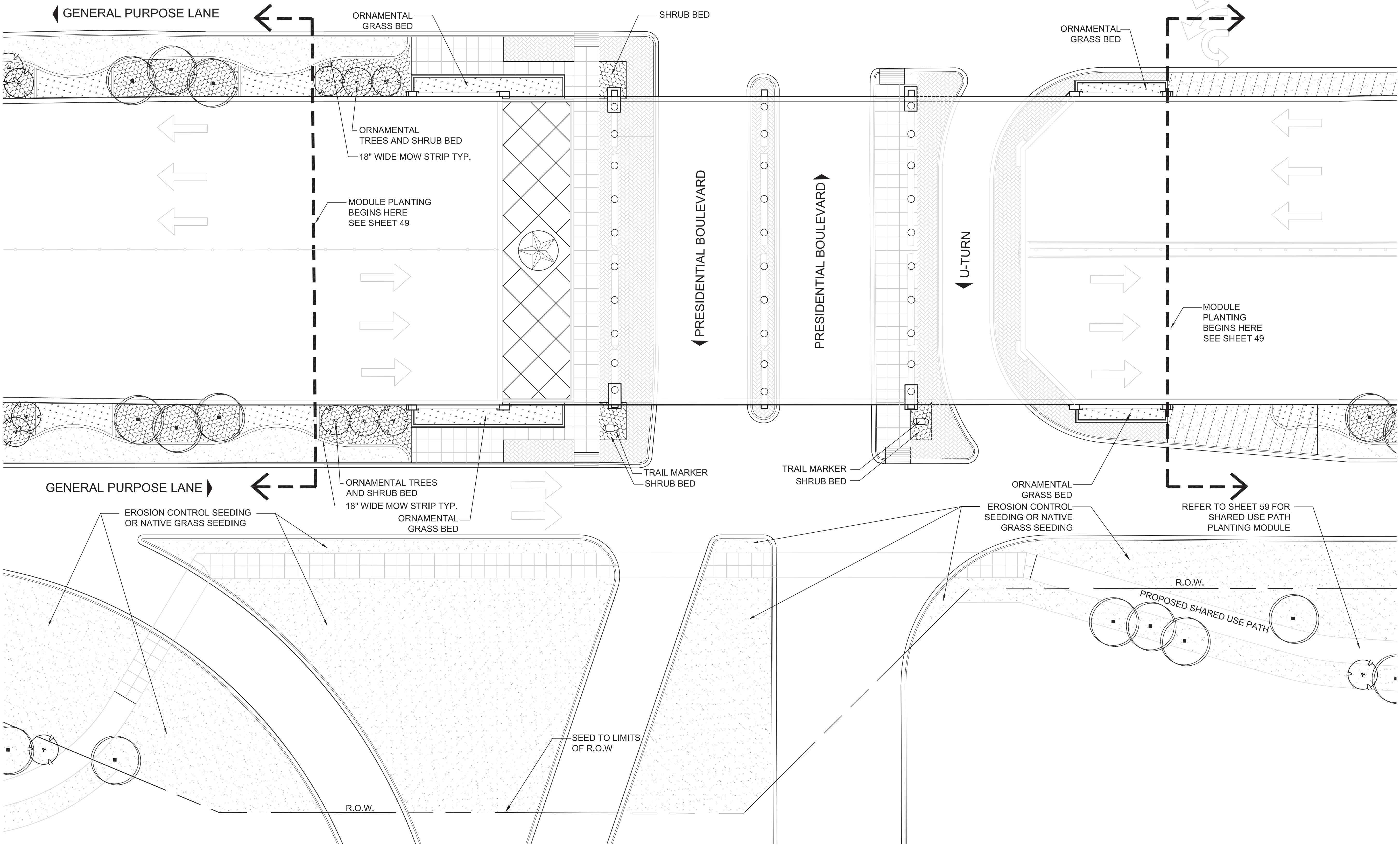
GENERAL PURPOSE LANE
ORNAMENTAL GRASS BED
SHRUB BED
ORNAMENTAL GRASS BED
ORNAMENTAL TREES AND SHRUB BED
18" WIDE MOW STRIP TYP.
MODULE PLANTING BEGINS HERE SEE SHEET 49
PRESIDENTIAL BOULEVARD
PRESIDENTIAL BOULEVARD
U-TURN
MODULE PLANTING BEGINS HERE SEE SHEET 49
GENERAL PURPOSE LANE
ORNAMENTAL TREES AND SHRUB BED
18" WIDE MOW STRIP TYP.
ORNAMENTAL GRASS BED
TRAIL MARKER
SHRUB BED
TRAIL MARKER
SHRUB BED
ORNAMENTAL GRASS BED
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
REFER TO SHEET 59 FOR SHARED USE PATH PLANTING MODULE
R.O.W.
PROPOSED SHARED USE PATH
SEED TO LIMITS OF R.O.W
R.O.W.

INTERSECTION PLANTING PLAN

SCALE: 1" = 40'-0"

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# LANDSCAPE LAYOUT PLAN - SPIRIT OF TEXAS DRIVE

NOTES:

1. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
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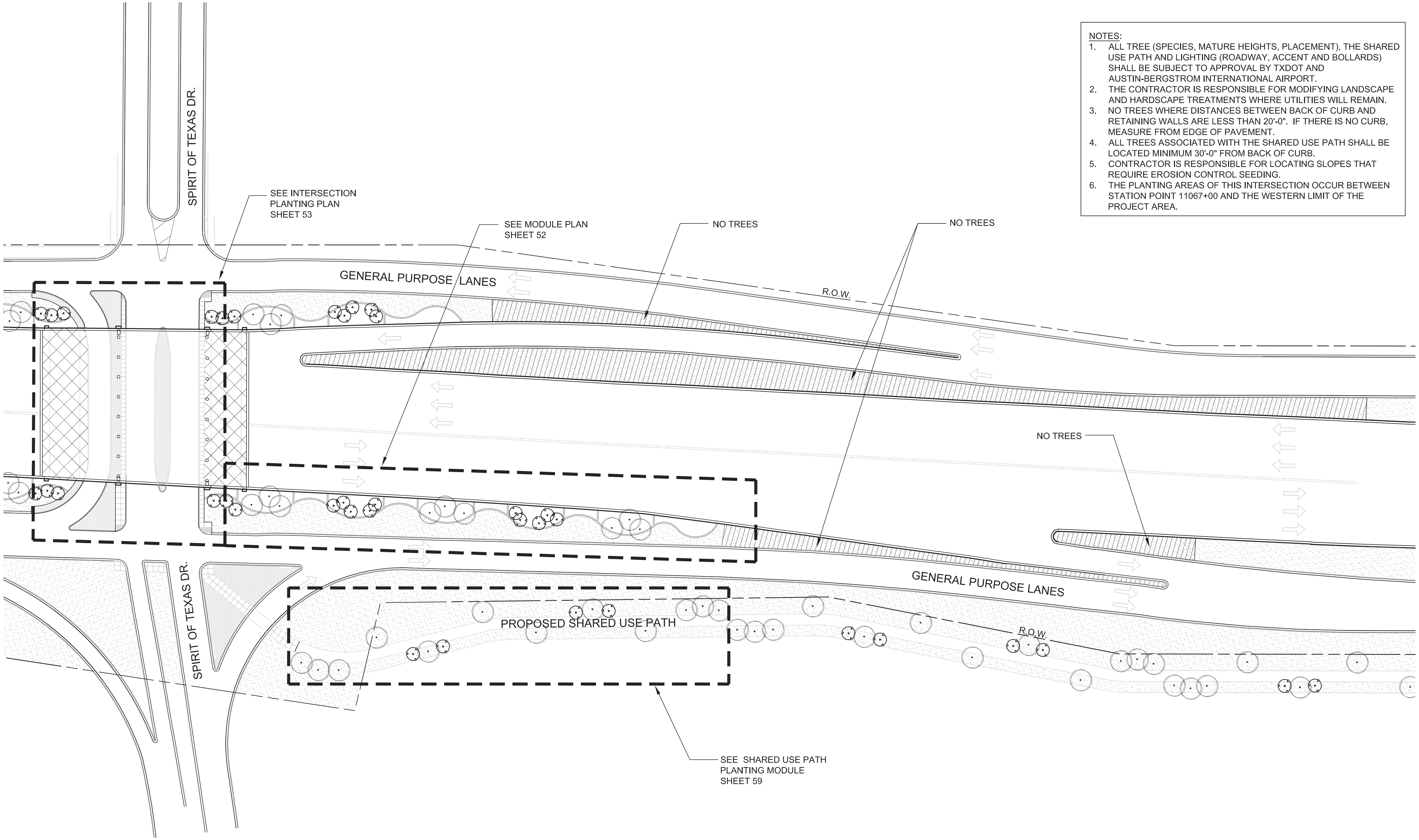
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING SLOPES THAT REQUIRE EROSION CONTROL SEEDING.
6. THE PLANTING AREAS OF THIS INTERSECTION OCCUR BETWEEN STATION POINT 11067+00 AND THE WESTERN LIMIT OF THE PROJECT AREA.


SPIRIT OF TEXAS DR.
SEE INTERSECTION PLANTING PLAN SHEET 53
SEE MODULE PLAN SHEET 52
NO TREES
NO TREES
GENERAL PURPOSE LANES
R.O.W.
NO TREES
GENERAL PURPOSE LANES
SPIRIT OF TEXAS DR.
PROPOSED SHARED USE PATH
R.O.W.
SEE SHARED USE PATH PLANTING MODULE SHEET 59

LANDSCAPE PLAN

SCALE: NOT TO SCALE

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N

REVISION 2

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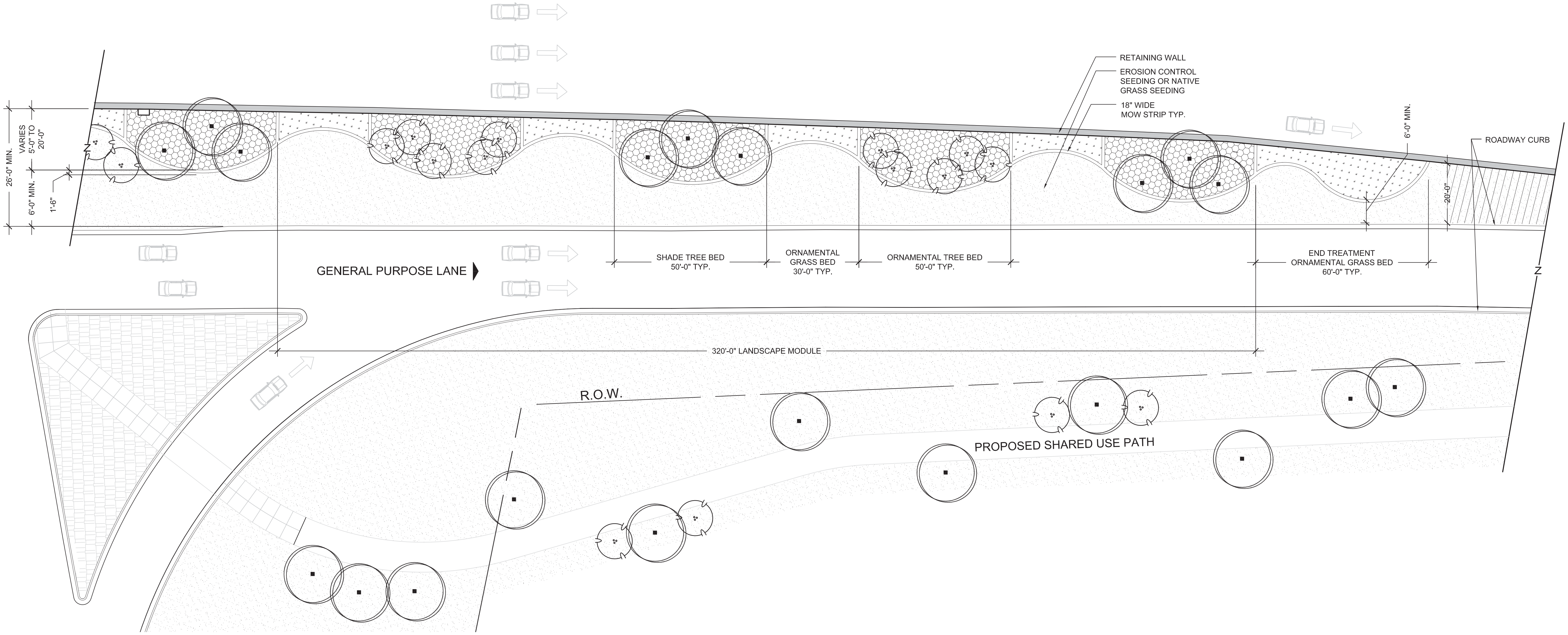
## 320'-0" MODULE PLAN - SPIRIT OF TEXAS DRIVE


RETAINING WALL
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
18" WIDE MOW STRIP TYP.
6'-0" MIN.
ROADWAY CURB
VARIES 5'-0" TO 20'-0"
26'-0" MIN.
6'-0" MIN.
1'-6"
20'-0"
N
SHADE TREE BED 50'-0" TYP.
ORNAMENTAL GRASS BED 30'-0" TYP.
ORNAMENTAL TREE BED 50'-0" TYP.
END TREATMENT ORNAMENTAL GRASS BED 60'-0" TYP.
N
GENERAL PURPOSE LANE
320'-0" LANDSCAPE MODULE
R.O.W.
PROPOSED SHARED USE PATH

### ROADWAY MODULE PLANTING PLAN

SCALE: 1" = 30'-0"

NOTES:

1. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
2. THE CONTRACTOR IS RESPONSIBLE FOR MODIFYING LANDSCAPE AND HARDSCAPE TREATMENTS WHERE UTILITIES WILL REMAIN.
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4. ALL TREES ASSOCIATED WITH THE SHARED USE PATH SHALL BE LOCATED MINIMUM 30'-0" FROM BACK OF CURB.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING SLOPES THAT REQUIRE EROSION CONTROL SEEDING.
6. THE PLANTING AREAS OF THIS INTERSECTION OCCUR BETWEEN STATION POINT 11067+00 AND THE WESTERN LIMIT OF THE PROJECT AREA.

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

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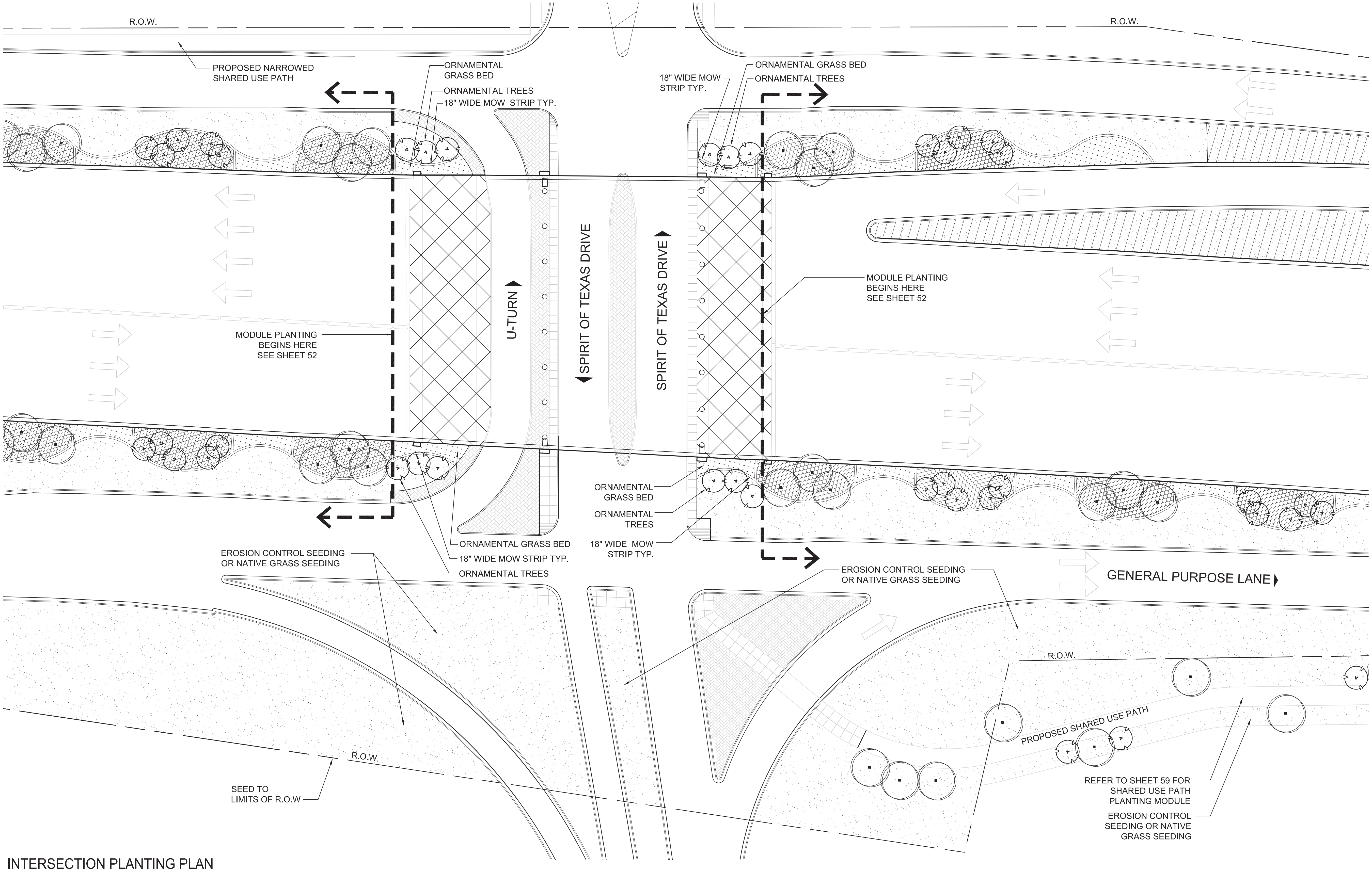
R.O.W.
R.O.W.
PROPOSED NARROWED SHARED USE PATH
ORNAMENTAL GRASS BED
ORNAMENTAL TREES
18" WIDE MOW STRIP TYP.
18" WIDE MOW STRIP TYP.
ORNAMENTAL GRASS BED
ORNAMENTAL TREES
MODULE PLANTING BEGINS HERE SEE SHEET 52
U-TURN
SPIRIT OF TEXAS DRIVE
SPIRIT OF TEXAS DRIVE
MODULE PLANTING BEGINS HERE SEE SHEET 52
ORNAMENTAL GRASS BED
ORNAMENTAL TREES
18" WIDE MOW STRIP TYP.
ORNAMENTAL GRASS BED
18" WIDE MOW STRIP TYP.
ORNAMENTAL TREES
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
GENERAL PURPOSE LANE
R.O.W.
PROPOSED SHARED USE PATH
R.O.W.
SEED TO LIMITS OF R.O.W
REFER TO SHEET 59 FOR SHARED USE PATH PLANTING MODULE
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING

INTERSECTION PLANTING PLAN

SCALE: 1" = 50'-0"

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# LANDSCAPE LAYOUT PLAN - FM 973

NOTES:

1. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
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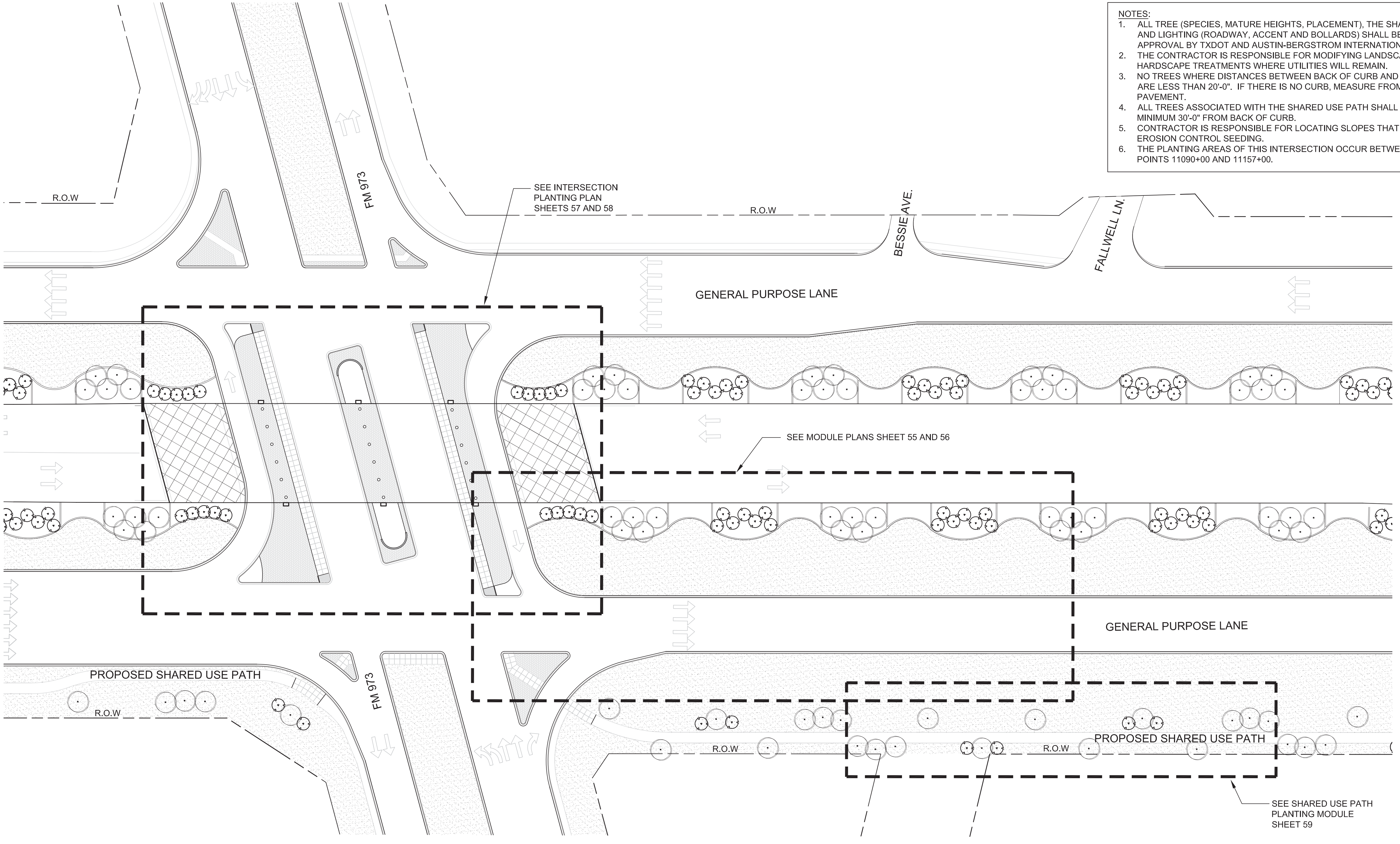
R.O.W
FM 973
SEE INTERSECTION PLANTING PLAN SHEETS 57 AND 58
R.O.W
BESSIE AVE.
FALLWELL LN.
GENERAL PURPOSE LANE
SEE MODULE PLANS SHEET 55 AND 56
GENERAL PURPOSE LANE
PROPOSED SHARED USE PATH
R.O.W
FM 973
R.O.W
R.O.W
PROPOSED SHARED USE PATH
SEE SHARED USE PATH PLANTING MODULE SHEET 59

LANDSCAPE PLAN

SCALE: NOT TO SCALE

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REVISION 2

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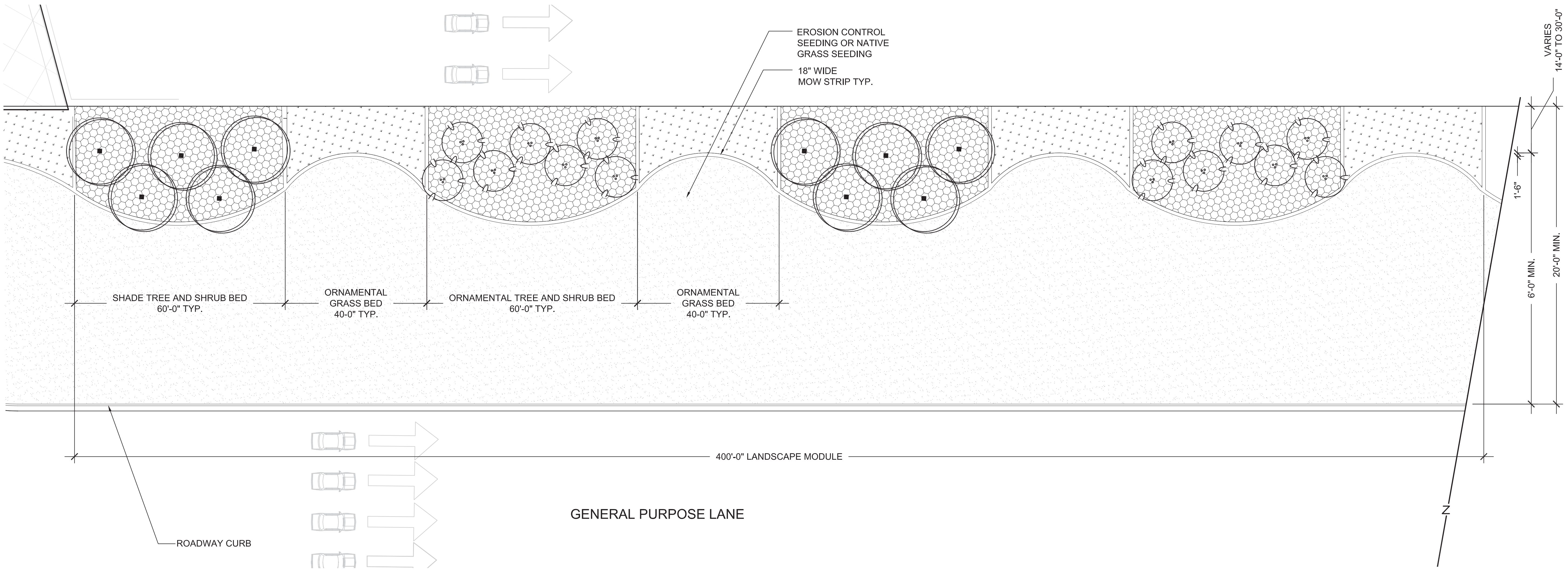
# 400'-0" MODULE PLAN - FM 973


EROSION CONTROL
SEEDING OR NATIVE
GRASS SEEDING
18" WIDE
MOW STRIP TYP.
VARIES
14'-0" TO 30'-0"
1'-6"
6'-0" MIN.
20'-0" MIN.
SHADE TREE AND SHRUB BED
60'-0" TYP.
ORNAMENTAL
GRASS BED
40-0" TYP.
ORNAMENTAL TREE AND SHRUB BED
60'-0" TYP.
ORNAMENTAL
GRASS BED
40-0" TYP.
400'-0" LANDSCAPE MODULE
GENERAL PURPOSE LANE
ROADWAY CURB

ROADWAY MODULE PLANTING PLAN - WITHOUT RETAINING WALLS

SCALE: 1" = 30'-0"

NOTES:

1. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
2. THE CONTRACTOR IS RESPONSIBLE FOR MODIFYING LANDSCAPE AND HARDSCAPE TREATMENTS WHERE UTILITIES WILL REMAIN.
3. NO TREES WHERE DISTANCES BETWEEN BACK OF CURB AND RETAINING WALLS ARE LESS THAN 20'-0". IF THERE IS NO CURB, MEASURE FROM EDGE OF PAVEMENT.
4. ALL TREES ASSOCIATED WITH THE SHARED USE PATH SHALL BE LOCATED MINIMUM 30'-0" FROM BACK OF CURB.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING SLOPES THAT REQUIRE EROSION CONTROL SEEDING.
6. THE PLANTING AREAS OF THIS INTERSECTION OCCUR BETWEEN STATION POINTS 11090+00 AND 11157+00.

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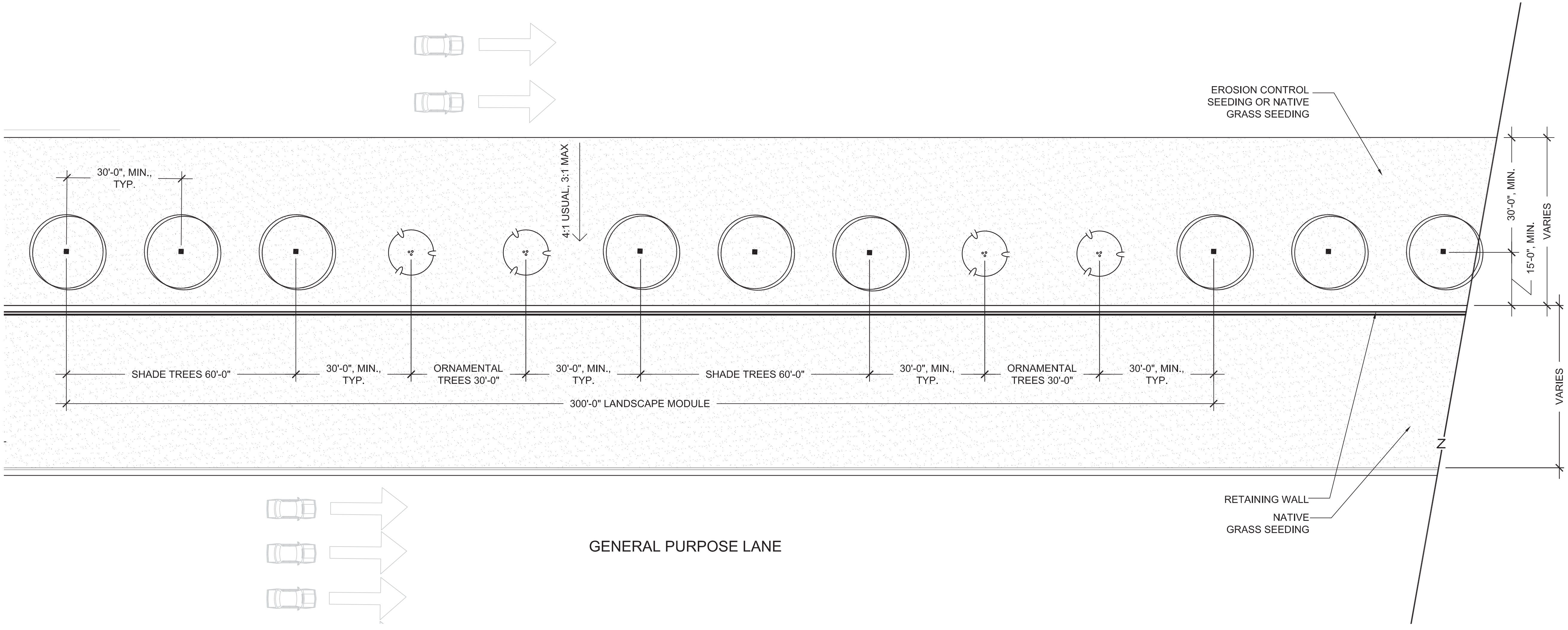
EROSION CONTROL
SEEDING OR NATIVE
GRASS SEEDING
30'-0", MIN.,
TYP.
4:1 USUAL, 3:1 MAX
30'-0", MIN.
15'-0", MIN.
VARIES
SHADE TREES 60'-0"
30'-0", MIN.,
TYP.
ORNAMENTAL
TREES 30'-0"
30'-0", MIN.,
TYP.
SHADE TREES 60'-0"
30'-0", MIN.,
TYP.
ORNAMENTAL
TREES 30'-0"
30'-0", MIN.,
TYP.
300'-0" LANDSCAPE MODULE
VARIES
RETAINING WALL
NATIVE
GRASS SEEDING
GENERAL PURPOSE LANE

## ROADWAY MODULE PLANTING PLAN - WITH RETAINING WALLS

SCALE: 1" = 30'-0"

SITE CONDITIONS:

1. TREES, SHRUBS AND ORNAMENTAL GRASSES SHALL NOT BE LOCATED IN DITCHES, SWALES OR ON SLOPES GREATER THAN 4:1.
2. NO GRASS SHALL BE LOCATED ON SLOPES GREATER THAN 2:1. SLOPES GREATER THAN 2:1 SHALL RECEIVE PAVED RIP RAP.
3. IF ANY TREES ARE LOCATED CLOSER THAN 15'-0" TO ANOTHER TREE OR STRUCTURE, THE CONTRACTOR SHALL PLACE THAT TREE(S) IN A MULCH BED. THE MULCH BED SHALL BE CONTAINED BY AN 18" WIDE MOW CURB.
4. CONTRACTOR SHALL COORDINATE PLANT SPECIES AND PLACEMENT WITH AUSTIN-BERSTROM INTERNATIONAL AIRPORT.

## FM 973 (WITH RETAINING WALLS) ROADWAY MODULE PLANT KEY AND REQUIREMENTS

SHADE TREES

QTY: 6 PER MODULE LENGTH OF LANDSCAPE SPACING: 40'-0"
SEE SECTION, SHEET 61 FOR SPECIES OPTIONS
(MIN. 2 SPECIES PER MODULE)

ORNAMENTAL TREES

QTY: 4 PER MODULE LENGTH OF LANDSCAPE
SPACING: 20'-0"
SEE SECTION, SHEET 61 FOR SPECIES OPTIONS
(MIN. 2 SPECIES PER MODULE)

▨ SEEDED NATIVE GRASS AREAS

SQUARE FOOTAGE OF SEED PER MODULE OF LANDSCAPE WILL VARY (CALICHE MIX)
SEE SECTION, SHEET 61 FOR SEED MIX INFORMATION

EROSION CONTROL SEEDING (APPLIED TO SLOPES GREATER THAN 6:1)

DONE IN ACCORDANCE WITH 2004 TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES- ITEM 164 WITH THE ADDITION OF WILDFLOWER SEED MIX AS SHOWN IN TXDOT'S "BLACKLAND PRAIRIE REGION" SEED LIST (FOUND ON TXDOT'S WEBSITE)- http://www.dot.state.tx.us/mnt/wildflower/Seed_List_htm/blackland.htm

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Texas Department of Transportation

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# INTERSECTION PLANTING PLAN - FM 973

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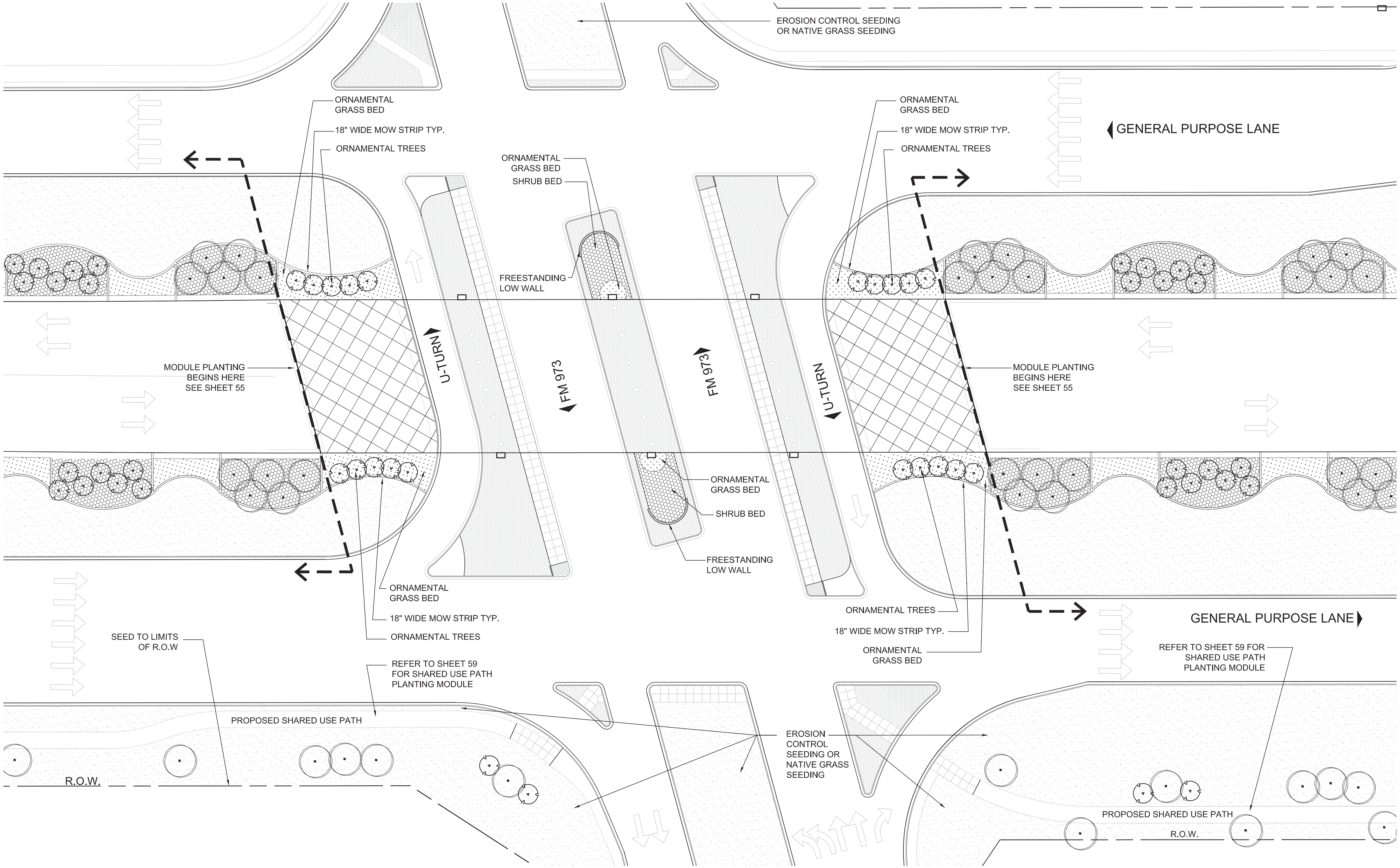
EROSION CONTROL SEEDING
OR NATIVE GRASS SEEDING
ORNAMENTAL GRASS BED
18" WIDE MOW STRIP TYP.
ORNAMENTAL TREES
ORNAMENTAL GRASS BED
SHRUB BED
FREESTANDING LOW WALL
ORNAMENTAL GRASS BED
18" WIDE MOW STRIP TYP.
ORNAMENTAL TREES
GENERAL PURPOSE LANE
MODULE PLANTING BEGINS HERE SEE SHEET 55
U-TURN
FM 973
FM 973
U-TURN
MODULE PLANTING BEGINS HERE SEE SHEET 55
ORNAMENTAL GRASS BED
SHRUB BED
FREESTANDING LOW WALL
ORNAMENTAL GRASS BED
18" WIDE MOW STRIP TYP.
ORNAMENTAL TREES
ORNAMENTAL TREES
18" WIDE MOW STRIP TYP.
ORNAMENTAL GRASS BED
GENERAL PURPOSE LANE
SEED TO LIMITS OF R.O.W
REFER TO SHEET 59 FOR SHARED USE PATH PLANTING MODULE
PROPOSED SHARED USE PATH
R.O.W.
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
REFER TO SHEET 59 FOR SHARED USE PATH PLANTING MODULE
PROPOSED SHARED USE PATH
R.O.W.

INTERSECTION PLANTING PLAN - WITHOUT RETAINING WALLS

SCALE: 1" = 60'-0"

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

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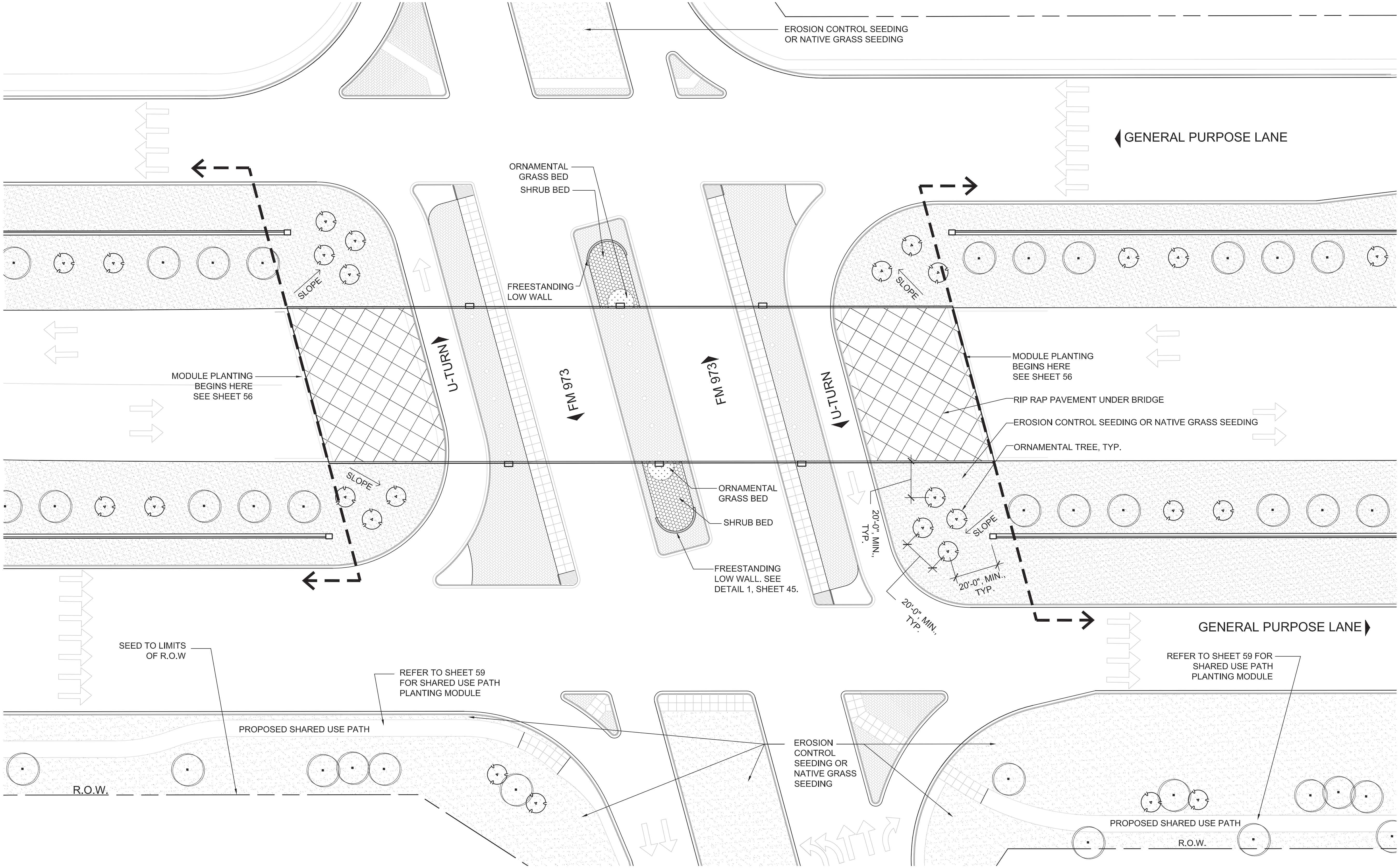
# INTERSECTION PLANTING PLAN - FM 973

NOTES:

1. THE RETAINING WALLS SHOWN IN THIS PLAN ARE CONCEPTUAL IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND IDENTIFYING THE NEED FOR RETAINING WALLS IN THIS INTERSECTION.
2. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
3. THE CONTRACTOR IS RESPONSIBLE FOR MODIFYING LANDSCAPE AND HARDSCAPE TREATMENTS WHERE UTILITIES WILL REMAIN.
4. NO TREES WHERE DISTANCES BETWEEN BACK OF CURB AND RETAINING WALLS ARE LESS THAN 20'-0". IF THERE IS NO CURB, MEASURE FROM EDGE OF PAVEMENT.
5. ALL TREES ASSOCIATED WITH THE SHARED USE PATH SHALL BE LOCATED MINIMUM 30'-0" FROM BACK OF CURB.
6. CONTRACTOR IS RESPONSIBLE FOR LOCATING SLOPES THAT REQUIRE EROSION CONTROL SEEDING.
7. THE PLANTING AREAS OF THIS INTERSECTION OCCUR BETWEEN STATION POINTS 11090+00 AND 11157+00.


EROSION CONTROL SEEDING
OR NATIVE GRASS SEEDING
GENERAL PURPOSE LANE
ORNAMENTAL GRASS BED
SHRUB BED
FREESTANDING LOW WALL
SLOPE
U-TURN
FM 973
FM 973
U-TURN
MODULE PLANTING BEGINS HERE SEE SHEET 56
MODULE PLANTING BEGINS HERE SEE SHEET 56
RIP RAP PAVEMENT UNDER BRIDGE
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
ORNAMENTAL TREE, TYP.
SLOPE
ORNAMENTAL GRASS BED
SHRUB BED
FREESTANDING LOW WALL. SEE DETAIL 1, SHEET 45.
20'-0", MIN., TYP.
SLOPE
20'-0", MIN., TYP.
20'-0", MIN., TYP.
GENERAL PURPOSE LANE
SEED TO LIMITS OF R.O.W
REFER TO SHEET 59 FOR SHARED USE PATH PLANTING MODULE
PROPOSED SHARED USE PATH
R.O.W.
EROSION CONTROL SEEDING OR NATIVE GRASS SEEDING
REFER TO SHEET 59 FOR SHARED USE PATH PLANTING MODULE
PROPOSED SHARED USE PATH
R.O.W.

INTERSECTION PLANTING PLAN - WITH RETAINING WALLS

SCALE: 1" = 60'-0"

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

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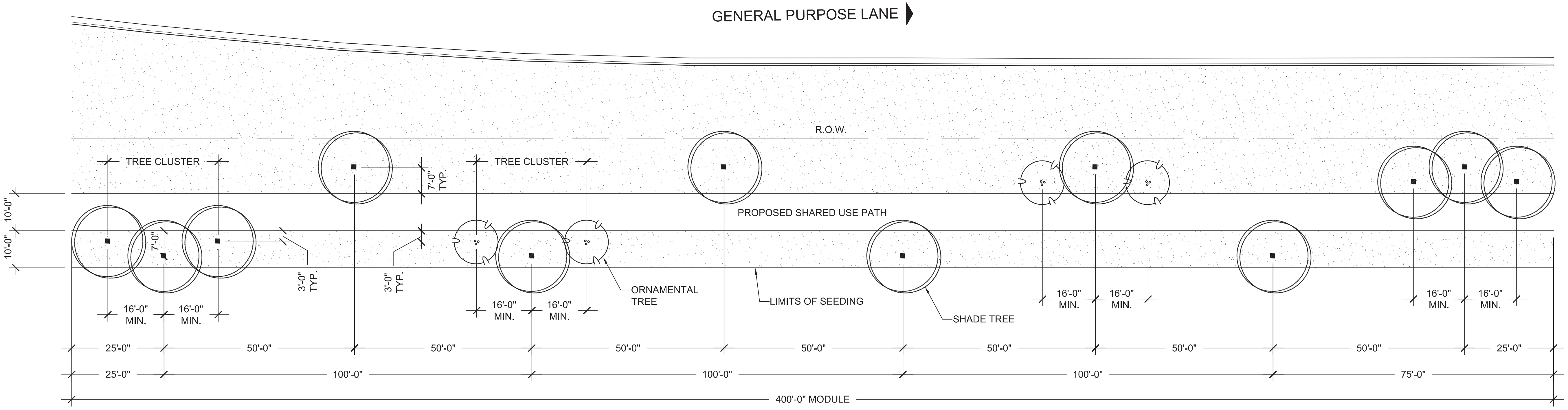
# 400'-0" SHARED USE PATH MODULE PLAN


GENERAL PURPOSE LANE
R.O.W.
TREE CLUSTER
TREE CLUSTER
7'-0" TYP.
10'-0"
10'-0"
7'-0"
PROPOSED SHARED USE PATH
3'-0" TYP.
3'-0" TYP.
16'-0" MIN.
16'-0" MIN.
16'-0" MIN.
16'-0" MIN.
ORNAMENTAL TREE
LIMITS OF SEEDING
SHADE TREE
16'-0" MIN.
16'-0" MIN.
16'-0" MIN.
16'-0" MIN.
25'-0"
50'-0"
50'-0"
50'-0"
50'-0"
50'-0"
50'-0"
50'-0"
25'-0"
25'-0"
100'-0"
100'-0"
100'-0"
75'-0"
400'-0" MODULE

## SHARED USE PATH MODULE PLANTING PLAN

SCALE: 1" = 30'-0"

## SHARED USE PATH MODULE PLANT KEY AND REQUIREMENTS

**SHADE TREES**

QTY: 12 PER MODULE LENGTH OF LANDSCAPE
TREE CLUSTER SPACING: 16'-0" MIN., 20'-0" MAX.
REFER TO SHEET 61 FOR SPECIES OPTIONS
(MIN. 2 SPECIES PER MODULE)

**ORNAMENTAL TREES**

QTY: 4 PER MODULE LENGTH OF LANDSCAPE
TREE CLUSTER SPACING: 16'-0" MIN., 20'-0" MAX.
REFER TO SHEET 61 FOR SPECIES OPTIONS
(1 SPECIES PER MODULE)

**SEEDED NATIVE GRASS AREAS**

SQUARE FOOTAGE OF SEED PER MODULE OF LANDSCAPE WILL VARY (CALICHE MIX)
REFER TO SHEET 61 FOR SEED MIX INFORMATION

**EROSION CONTROL SEEDING (APPLIED TO SLOPES GREATER THAN 6:1)**

DONE IN ACCORDANCE WITH 2004 TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES- ITEM 164 WITH THE ADDITION OF WILDFLOWER SEED MIX AS SHOWN IN TXDOT'S "BLACKLAND PRAIRIE REGION" SEED LIST (FOUND ON TXDOT'S WEBSITE)-
http://www.dot.state.tx.us/mnt/wildflower/Seed_List_htm/blackland.htm

NOTES:

1. ALL TREE (SPECIES, MATURE HEIGHTS, PLACEMENT), THE SHARED USE PATH AND LIGHTING (ROADWAY, ACCENT AND BOLLARDS) SHALL BE SUBJECT TO APPROVAL BY TXDOT AND AUSTIN-BERGSTROM INTERNATIONAL AIRPORT.
2. THE CONTRACTOR IS RESPONSIBLE FOR MODIFYING LANDSCAPE AND HARDSCAPE TREATMENTS WHERE UTILITIES WILL REMAIN.
3. NO TREES WHERE DISTANCES BETWEEN BACK OF CURB AND RETAINING WALLS ARE LESS THAN 20'-0". IF THERE IS NO CURB, MEASURE FROM EDGE OF PAVEMENT.
4. ALL TREES ASSOCIATED WITH THE SHARED USE PATH SHALL BE LOCATED MINIMUM 30'-0" FROM BACK OF CURB.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING SLOPES THAT REQUIRE EROSION CONTROL SEEDING.

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

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# TREE PROTECTION

TREE PROTECTION:

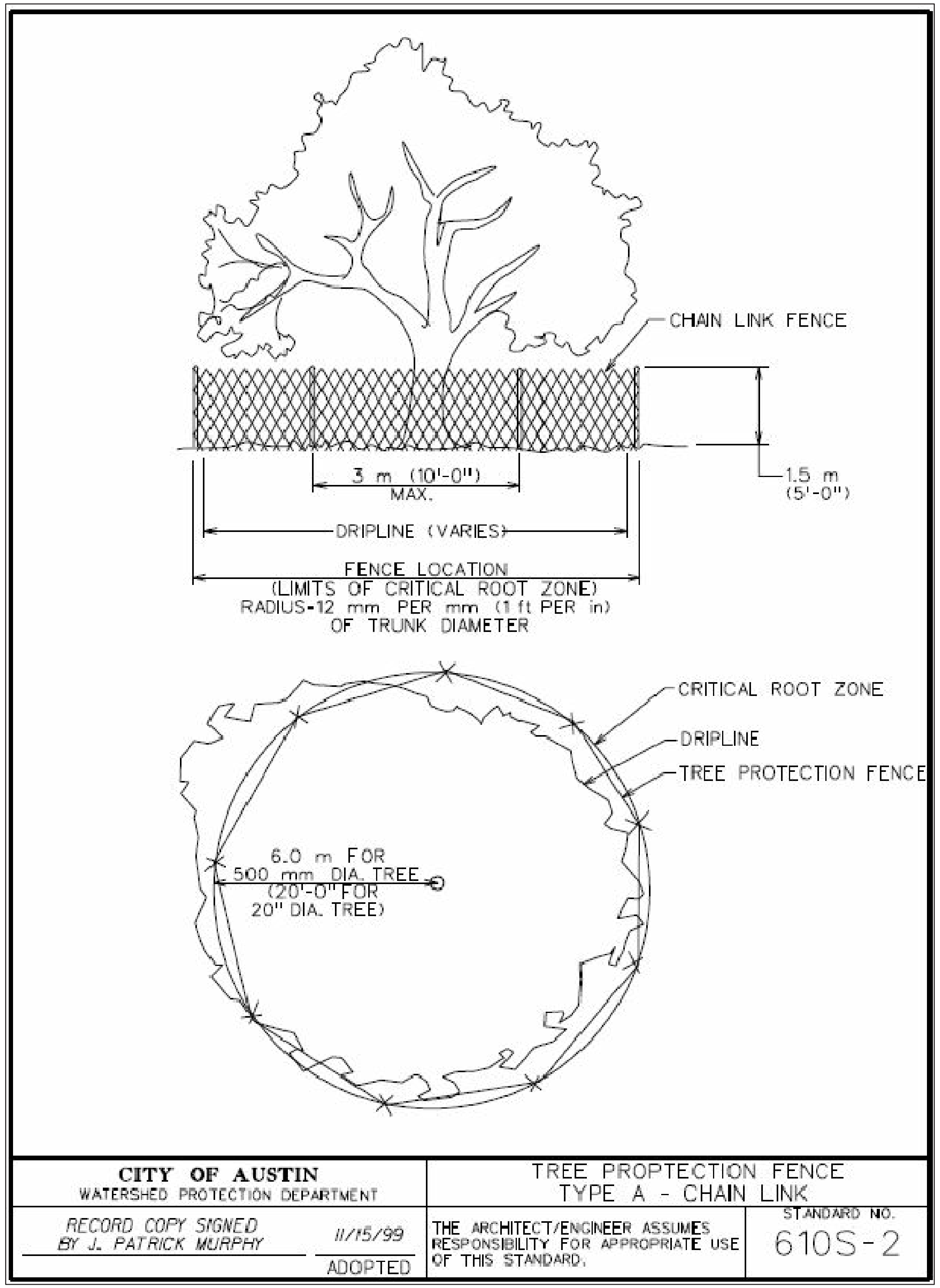
A. IF A TREE/TREES IN THE R.O.W. IS/ARE DETERMINED TO BE PROTECTED, THE CONTRACTOR SHOULD FOLLOW THE CURRENT CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION BELOW.

B. IF A TREE/TREES ON AUSTIN-BERGSTROM INTERNATIONAL AIRPORT PROPERTY IS/ARE DETERMINED TO BE PROTECTED, THE CONTRACTOR SHALL FOLLOW THE CURRENT CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION.

C. THE CONTRACTOR SHALL COORDINATE TREE REMOVAL AND PROTECTION WITH TXDOT AND AUSTIN- BERGSTROM INTERNATIONAL AIRPORT.

CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION :

1. ALL TREES AND NATURAL AREAS SHOWN ON PLAN TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION WITH TEMPORARY FENCING.
2. PROTECTIVE FENCES SHALL BE ERECTED ACCORDING TO CITY OF AUSTIN STANDARDS FOR TREE PROTECTION.
3. PROTECTIVE FENCES SHALL BE INSTALLED PRIOR TO THE START OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING), AND SHALL BE MAINTAINED THROUGHOUT ALL PHASES OF THE CONSTRUCTION PROJECT.
4. EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILD-UP WITHIN TREE DRIP LINES.
5. PROTECTIVE FENCES SHALL SURROUND THE TREES OR GROUP OF TREES, AND WILL BE LOCATED AT THE OUTERMOST LIMIT OF BRANCHES (DRIP LINE) , FOR NATURAL AREAS, PROTECTIVE FENCES SHALL FOLLOW THE LIMIT OF CONSTRUCTION LINE, IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIALS;
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 6 INCHES CUT OR FILL), OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY ABORIST;
   C. WOUNDS TO EXPOSED ROOTS, TRUNK OR LIMBS BY MECHANICAL EQUIPMENT;
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING, AND FIRES.
6. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIP LINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT, ERECT THE FENCE APPROXIMATELY 2 TO 4 FEET BEYOND THE AREA DISTURBED;
   B. WHERE PERMEABLE PAVING IS TO BE INSTALLED WITHIN A TREE'S DRIP LINE, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA (PRIOR TO SITE GRADING SO THAT THIS AREA IS GRADED SEPARATELY PRIOR TO PAVING INSTALLATION TO MINIMIZED ROOT DAMAGE);
   C. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE TO ALLOW 10 FEET OF WORK SPACE BETWEEN THE FENCE AND THE BUILDING;
   D. WHERE THERE ARE SEVERE SPACE CONSTRAINTS DUE TO TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT THE CITY ARBORIST AT (512) 974-1876 TO DISCUSS ALTERNATIVES.



**CITY OF AUSTIN**
WATERSHED PROTECTION DEPARTMENT

TREE PROPTECTION FENCE
TYPE A - CHAIN LINK

RECORD COPY SIGNED
BY J. PATRICK MURPHY
11/15/99
ADOPTED

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO.
610S-2

CHAIN LINK TREE PROTECTION FENCE

SCALE: NOT TO SCALE

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# PLANT LIST

PLANT MATERIAL:

1. ALL PLANT MATERIAL SHALL BE DROUGHT TOLERANT, COLD HARDY, LOW MAINTENANCE AND NATIVE OR ADAPTED SPECIES.
2. NOT ONE SHADE TREE, ORNAMENTAL TREE, SHRUB, OR ORNAMENTAL GRASS SHALL BE USED FOR MORE THAN 40% OF THE PROJECT AREA.
   - A MINIMUM OF THREE (3) SHADE TREE SPECIES SHALL BE USED.
   - A MINIMUM OF THREE (3) ORNAMENTAL TREE SPECIES SHALL BE USED.
   - A MINIMUM OF TWO (2) 5 GALLON SHRUBS SHALL BE USED.
   - A MINIMUM OF THREE (3) 3 GALLON SHRUBS SHALL BE USED.
   - A MINIMUM OF THREE (3) 1 GALLON SHRUBS SHALL BE USED.
   - A MINIMUM OF THREE (3) ORNAMENTAL GRASSES SHALL BE USED.
3. IT IS NOT REQUIRED FOR ALL RECOMMENDED PLANT MATERIAL TO BE USED.
4. IF THE CONTRACTOR WOULD LIKE TO PROPOSE A PLANT THAT IS NOT IDENTIFIED IN THIS DOCUMENT, THE PLANT TYPE AND ITS SIZE CAN BE SUBMITTED TO THE OWNER FOR APPROVAL.
5. THE PLANT SIZES LISTED ARE MINIMUM REQUIREMENTS. IF ORNAMENTAL GRASSES/SHRUBS ARE NOT AVAILABLE IN THE IDENTIFIED SIZES, AN ALTERNATIVE PLANT SIZE WITH A MODIFIED SPACING CAN BE SUBMITTED TO THE OWNER FOR APPROVAL.

SITE CONDITIONS:

1. TREES, SHRUBS AND ORNAMENTAL GRASSES SHALL NOT BE LOCATED IN DITCHES OR SWALES.
2. NO PLANT MATERIAL SHALL BE LOCATED ON SLOPES GREATER THAN 3:1.
3. CONTRACTOR SHALL COORDINATE PLANT SPECIES AND PLACEMENT WITH AUSTIN-BERSTROM INTERNATIONAL AIRPORT.

## ROADWAY MODULE PLANT KEY AND REQUIREMENTS

○ SHADE TREES

QTY: 6 PER MODULE LENGTH OF
LANDSCAPE SPACING: 15'-0" MAX.
SEE SECTION, THIS SHEET
FOR SPECIES OPTIONS
(MIN. 2 SPECIES PER MODULE)

○ ORNAMENTAL TREES

QTY: 10 PER MODULE LENGTH OF
LANDSCAPE
SPACING: 10'-0" MAX.
SEE SECTION, THIS SHEET
FOR SPECIES OPTIONS
(MIN. 2 SPECIES PER MODULE)

▨ SHRUB BEDS

QTY: 4 PER MODULE LENGTH OF LANDSCAPE
SPACING: PER PLANT LIST
SEE SECTION, THIS SHEET
FOR SPECIES OPTIONS
(MIN. 2 SPECIES PER MODULE. REFER TO THE PLANT LIST FOR SPACING REQUIREMENTS TO DETERMINE THE NUMBER OF PLANTS PER BED.)

▨ ORNAMENTAL GRASS BEDS

QTY: 4 PER MODULE LENGTH OF LANDSCAPE
SPACING: PER PLANT LIST
SEE SECTION, THIS SHEET
FOR SPECIES OPTIONS
(MIN. 2 SPECIES PER MODULE. REFER TO THE PLANT LIST FOR SPACING REQUIREMENTS TO DETERMINE THE NUMBER OF PLANTS PER BED.)

▨ SEEDED NATIVE GRASS AREAS

SQUARE FOOTAGE OF SEED PER
MODULE OF LANDSCAPE WILL VARY
(CALICHE MIX)
SEE SECTION, THIS SHEET
FOR SEED MIX INFORMATION

EROSION CONTROL SEEDING (APPLIED TO SLOPES GREATER THAN 6:1)

DONE IN ACCORDANCE WITH 2004 TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES- ITEM 164 WITH THE ADDITION OF WILDFLOWER SEED MIX AS SHOWN IN TXDOT'S "BLACKLAND PRAIRIE REGION" SEED LIST (FOUND ON TXDOT'S WEBSITE)-
http://www.dot.state.tx.us/mnt/wildflower/Seed_List_htm/blackland.htm

## PLANT LIST

| Botanical Name | Common Name | Plant Size | Spacing |
|---|---|---|---|
| **SHADE TREES** | | | |
| *Quercus macrocarpa* | Burr Oak | 3"-3.5" CAL | 15' MAX |
| *Quercus texana* | Texas Red Oak | 3"-3.5" CAL | 15' MAX |
| *Quercus virginiana* | Live Oak | 3"-3.5" CAL | 15' MAX |
| *Ulmus crassifolia* | Cedar Elm | 3"-3.5" CAL | 15' MAX |
| **ORNAMENTAL TREES** | | | |
| *Cercis canadensis var. texana* | Texas Redbud | 2" CAL | 10' MAX |
| *Rhus lanceolata* | Prairie Flameleaf Sumac | 2" CAL | 10' MAX |
| *Sophora secundiflora* | Texas Mountain Laurel - Multi Trunk | 2" CAL | 10' MAX |
| *Ungnadia speciosa* | Mexican Buckeye | 2" CAL | 10' MAX |
| **SHRUBS/ PERENNIALS** | | | |
| *Elaeagnus pungens* | Elaeagnus | 5 GAL | 60" MAX |
| *Leucophyllum frutescens* | Texas Sage | 5 GAL | 48" MAX |
| *Mahonia trifoliolata* | Agarita | 5 GAL | 48" MAX |
| *Ansacanthus quadrifidus v. wrightii* | Flame Acanthus | 3 GAL | 36" MAX |
| *Dasylirion texanum* | Texas Sotol | 3 GAL | 48" MAX |
| *Hesperaloe parviflora* | Red Yucca | 3 GAL | 36" MAX |
| *Hibiscus martianus* | Heartleaf Rosemallow | 3 GAL | 36" MAX |
| *Salvia leucantha* | Mexican Bush Sage | 3 GAL | 36" MAX |
| *Dalea frutescens* | Black Dalea | 3 GAL | 36" MAX |
| *Chrysactinia mexicana* | Damianita | 1 GAL | 18" MAX |
| *Glandularia bipinnatifida v bipinnatifida* | Prairie Verbena | 1 GAL | 18" MAX |
| *Pavonia lasiopetala* | Texas Rock Rose | 1 GAL | 36" MAX |
| *Penstemon triflorus* | Hill Country Penstemon | 1 GAL | 18" MAX |
| *Salvia greggii 'White'* | White Autumn Sage | 1 GAL | 36" MAX |
| *Tagetes lemmonii* | Copper Canyon Daisy | 1 GAL | 36" MAX |
| **ORNAMENTAL GRASSES** | | | |
| *Bouteloua curtipendula* | Sideoats Grama | 1 GAL | 18" MAX |
| *Nassella tenuissima* | Mexican Feathergrass | 1 GAL | 18" MAX |
| *Muhlenbergia capillaris* | Gulf Muhly | 1 GAL | 24" MAX |
| *Muhlenbergia lindheimerii* | Lindheimer's Muhly | 1 GAL | 36" MAX |
| *Schizachyrium scoparium* | Little Bluestem | 1 GAL | 18" MAX |
| **CALICHE SEED MIX FOR NATIVE GRASSES** | | | |
| *Bouteloua curtipendula* | Sideoats Grama | Refer to TxDOT Specifications for Rates. | |
| *Bouteloua gracilis* | Blue Grama | | |
| *Buchloe dactyloides* | Buffalograss | | |
| *Elymus canadensis* | Prairie Wildrye | | |
| *Eragrostis trichodes (Nutt.) Wood* | Sand Lovegrass | | |
| *Leptochloa dubia* | Green Sprangletop | | |
| *Schizachyrium scoparium* | Little Bluestem | | |
| *Sporoblus cryptandrus (Torr.) Gray* | Sand Dropseed | | |

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REVISION 2

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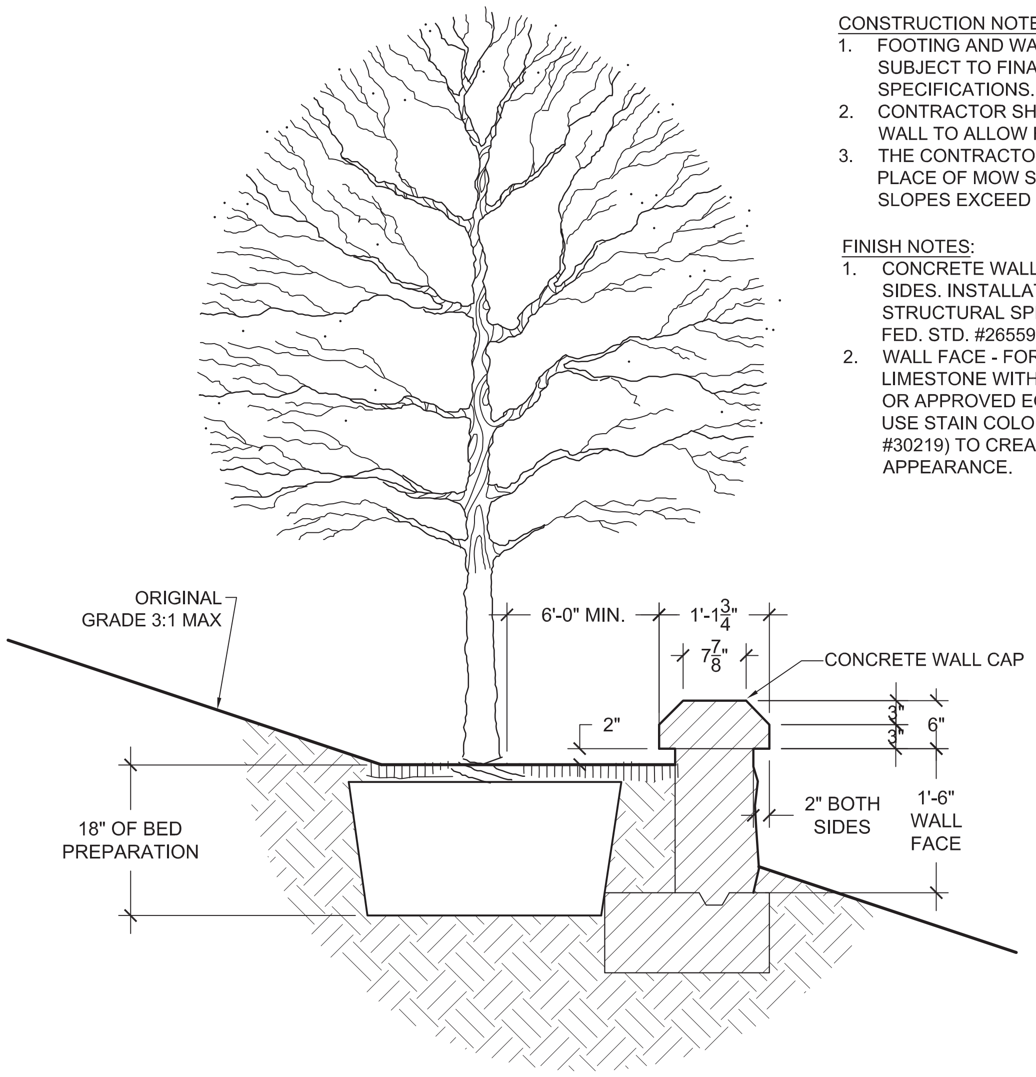
# PLANTING DETAILS

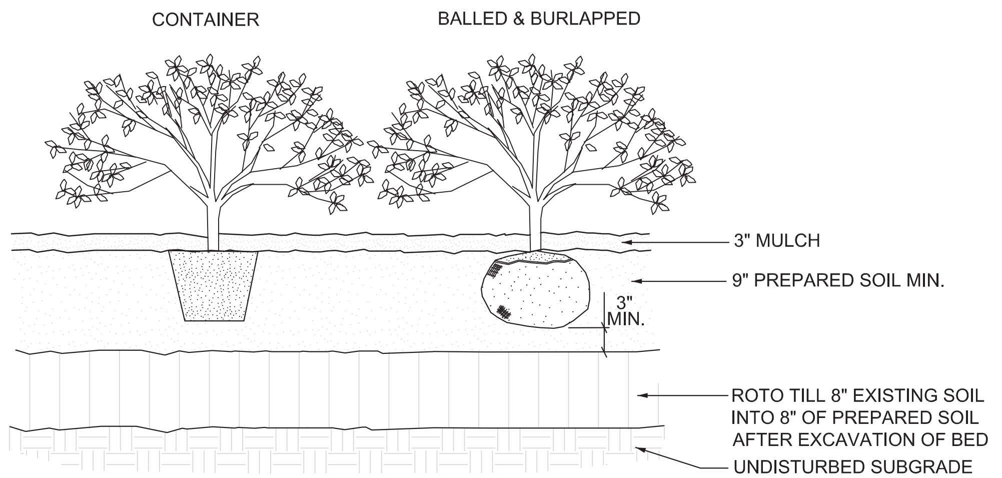

ORIGINAL GRADE 3:1 MAX
6'-0" MIN.
1'-1 3/4"
7 7/8"
CONCRETE WALL CAP
2"
3"
3"
6"
18" OF BED PREPARATION
2" BOTH SIDES
1'-6" WALL FACE

CONSTRUCTION NOTES:
1. FOOTING AND WALL REINFORCEMENT SUBJECT TO FINAL PLANS AND SPECIFICATIONS.
2. CONTRACTOR SHALL PLACE WEEP HOLES IN WALL TO ALLOW FOR BED DRAINAGE.
3. THE CONTRACTOR MAY BUILD THIS WALL IN PLACE OF MOW STRIP IN AREAS WHERE SLOPES EXCEED 6:1.

FINISH NOTES:
1. CONCRETE WALL CAP- 3" CHAMFER BOTH SIDES. INSTALLATION & REINFORCEMENT PER STRUCTURAL SPECIFICATIONS. STAIN COLOR FED. STD. #26559.
2. WALL FACE - FORM LINER 166D CHISELED LIMESTONE WITH JOINTS BY SCOTT SYSTEM OR APPROVED EQUAL. CONTRACTOR SHALL USE STAIN COLORS (FED. STD. #26559, #30324, #30219) TO CREATE A REALISTIC LIMESTONE APPEARANCE.

## 1 PLANT INSTALLATION ON SLOPES STEEPER THAN 6:1

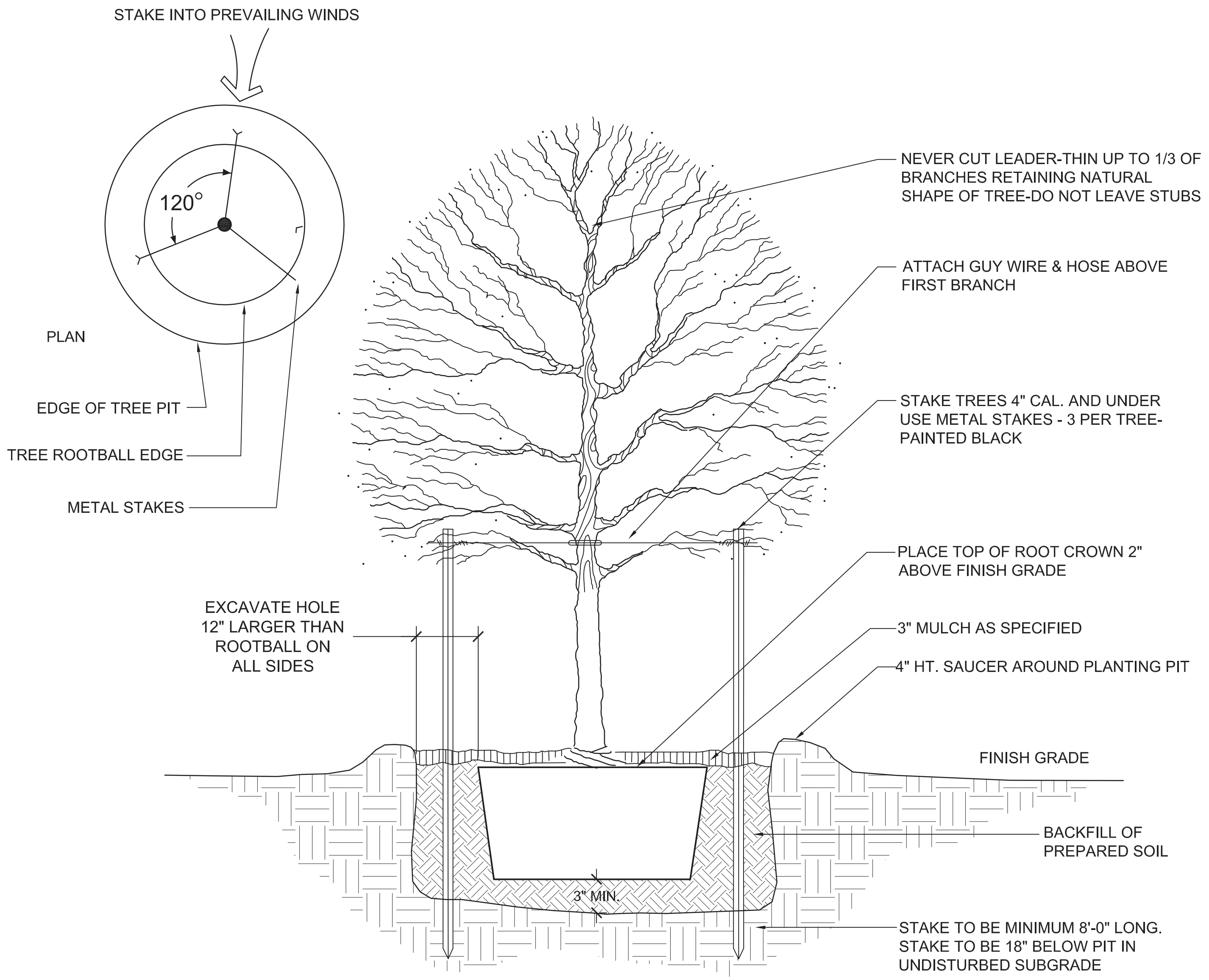
SCALE: NOT TO SCALE


CONTAINER
BALLED & BURLAPPED
3" MULCH
9" PREPARED SOIL MIN.
3" MIN.
ROTO TILL 8" EXISTING SOIL INTO 8" OF PREPARED SOIL AFTER EXCAVATION OF BED
UNDISTURBED SUBGRADE

NOTE:
PLANT SHRUBS USING TRIANGULAR SPACING

## 2 SHRUB BED AND BED PREPARATION DETAIL

SCALE: NOT TO SCALE


STAKE INTO PREVAILING WINDS
120°
PLAN
EDGE OF TREE PIT
TREE ROOTBALL EDGE
METAL STAKES
NEVER CUT LEADER-THIN UP TO 1/3 OF BRANCHES RETAINING NATURAL SHAPE OF TREE-DO NOT LEAVE STUBS
ATTACH GUY WIRE & HOSE ABOVE FIRST BRANCH
STAKE TREES 4" CAL. AND UNDER USE METAL STAKES - 3 PER TREE- PAINTED BLACK
PLACE TOP OF ROOT CROWN 2" ABOVE FINISH GRADE
EXCAVATE HOLE 12" LARGER THAN ROOTBALL ON ALL SIDES
3" MULCH AS SPECIFIED
4" HT. SAUCER AROUND PLANTING PIT
FINISH GRADE
BACKFILL OF PREPARED SOIL
3" MIN.
STAKE TO BE MINIMUM 8'-0" LONG. STAKE TO BE 18" BELOW PIT IN UNDISTURBED SUBGRADE

## 3 SHRUB BED AND BED PREPARATION DETAIL

SCALE: NOT TO SCALE

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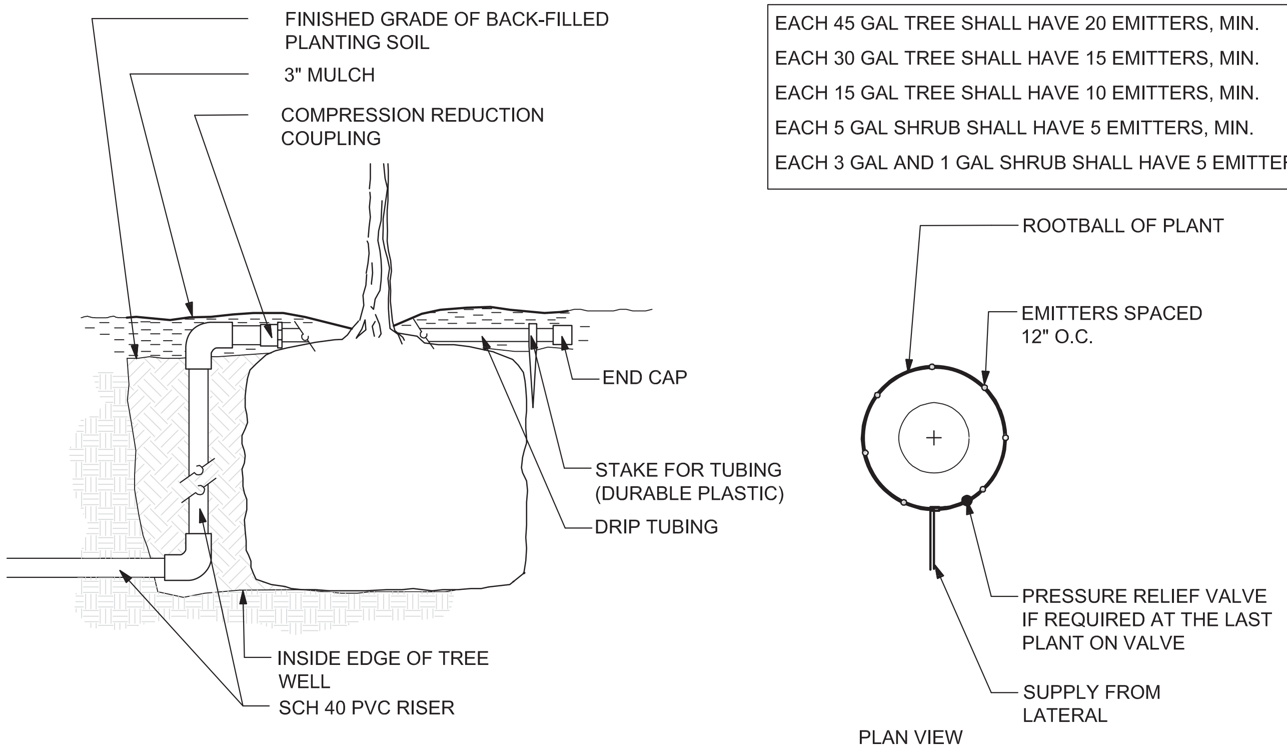
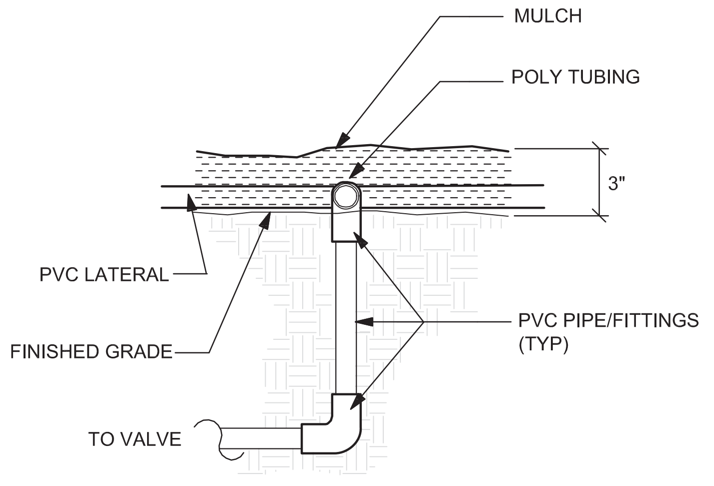
EACH 45 GAL TREE SHALL HAVE 20 EMITTERS, MIN.
EACH 30 GAL TREE SHALL HAVE 15 EMITTERS, MIN.
EACH 15 GAL TREE SHALL HAVE 10 EMITTERS, MIN.
EACH 5 GAL SHRUB SHALL HAVE 5 EMITTERS, MIN.
EACH 3 GAL AND 1 GAL SHRUB SHALL HAVE 5 EMITTERS, MIN.


FINISHED GRADE OF BACK-FILLED PLANTING SOIL
3" MULCH
COMPRESSION REDUCTION COUPLING
END CAP
STAKE FOR TUBING (DURABLE PLASTIC)
DRIP TUBING
INSIDE EDGE OF TREE WELL
SCH 40 PVC RISER
ROOTBALL OF PLANT
EMITTERS SPACED 12" O.C.
PRESSURE RELIEF VALVE IF REQUIRED AT THE LAST PLANT ON VALVE
SUPPLY FROM LATERAL
PLAN VIEW

## 1 TYPICAL INSTALLATION OF DRIP IRRIGATION AT TREES

SCALE: NOT TO SCALE

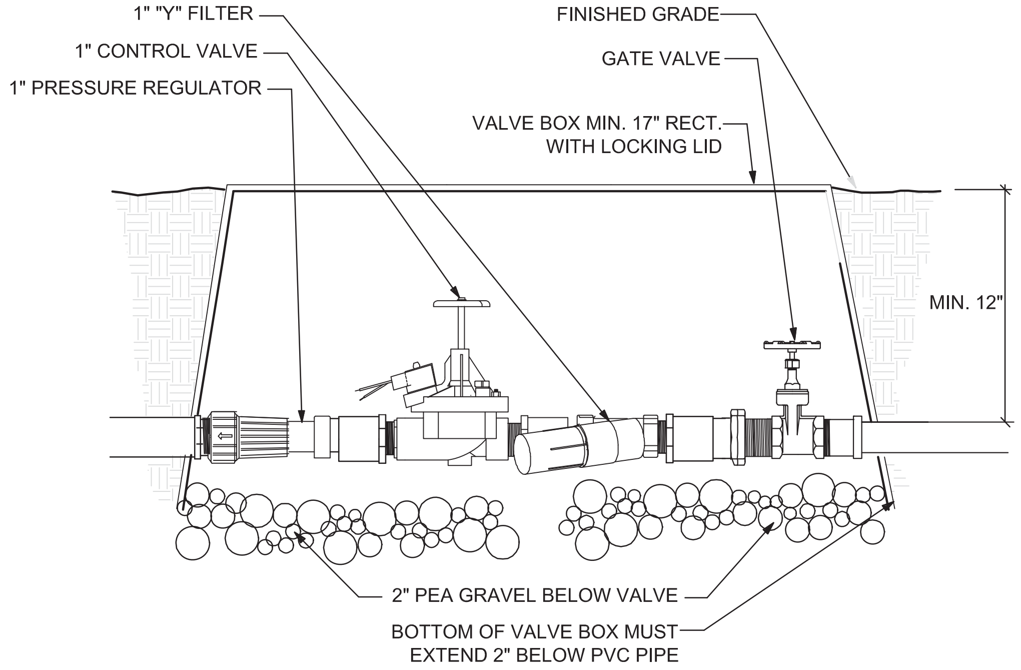

MULCH
POLY TUBING
3"
PVC LATERAL
FINISHED GRADE
PVC PIPE/FITTINGS (TYP)
TO VALVE

## 2 TYPICAL DRIP IRRIGATION PVC/ HEADER CONNECTION

SCALE: NOT TO SCALE

NOTES:

1. ALL LANDSCAPE PLANTING BEDS AND TREES SHALL HAVE DRIP IRRIGATION WITH POWER CONTROLLERS. ALL IRRIGATION IMPROVEMENTS SHALL BE OF OPERATIONAL QUALITY FOR A MINIMUM OF 5 YEARS.
2. INSTALLATION OF ALL IRRIGATION SYSTEMS SHALL BE DONE IN ACCORDANCE WITH THE CITY OF AUSTIN SITE DEVELOPMENT PERMIT - IRRIGATION NOTES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES REQUIRED, AND FOR THE PAYMENT OF ALL FEES NECESSARY FOR THE INSTALLATION AND OPERATION OF THE IRRIGATION SYSTEM.
4. IRRIGATION SYSTEMS SHALL MAINTAIN A DISTANCE BETWEEN TREES AND STRUCTURES EQUAL TO OR GREATER THAN THE RADIUS OF THE MATURE DRIPLINE.
5. CONTRACTOR SHALL PROVIDE TXDOT WITH AN IRRIGATION DESIGN AND SUBMITTALS FOR REVIEW AND APPROVAL.
6. IRRIGATION CONTROLLER(S) LOCATION(S) SHALL BE APPROVED BY TXDOT.
7. IRRIGATION CONTROLLER(S) SHALL BE A.C.


1" "Y" FILTER
1" CONTROL VALVE
1" PRESSURE REGULATOR
FINISHED GRADE
GATE VALVE
VALVE BOX MIN. 17" RECT. WITH LOCKING LID
MIN. 12"
2" PEA GRAVEL BELOW VALVE
BOTTOM OF VALVE BOX MUST EXTEND 2" BELOW PVC PIPE

## 3 TYPICAL VALVE ASSEMBLY FOR DRIP IRRIGATION SECTION

SCALE: NOT TO SCALE

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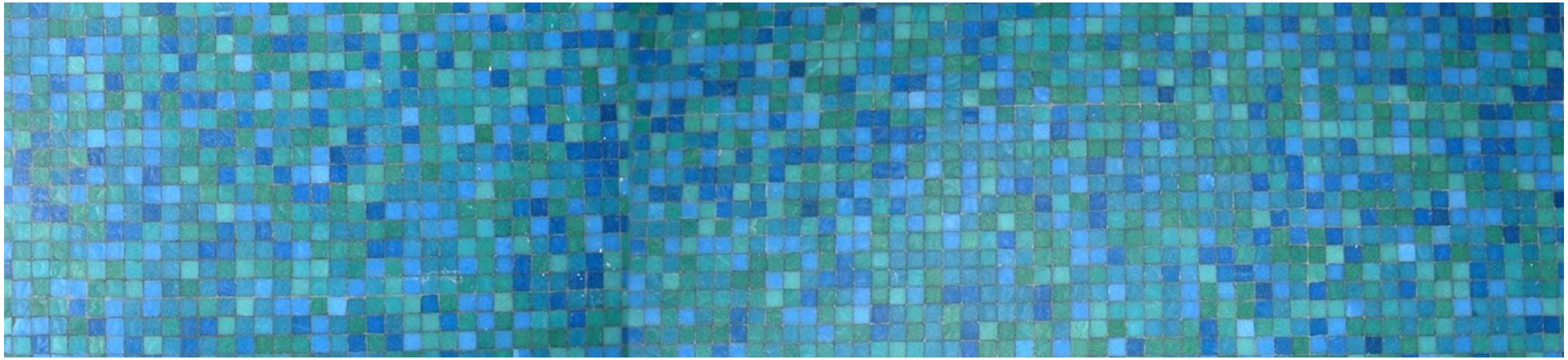
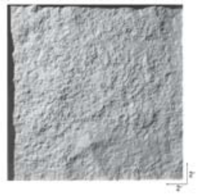
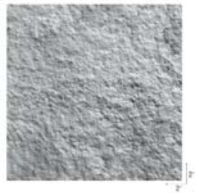


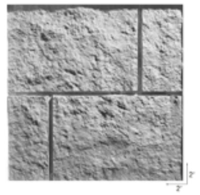
# 8.0 FINISH SCHEDULE

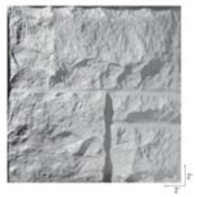
REVISION 2

| FORM LINER | STAIN COLOR | FACILITY ELEMENTS |
|---|---|---|
| <br>166A CHISELED LIMESTONE<br>SCOTT SYSTEM (OR APPROVED EQUAL) | FED. STD. #30324 | STANDARD TRAFFIC BARRIER TEXTURE ATOP RETAINING WALLS<br>T551 TRAFFIC BARRIER ATOP RETAINING WALLS<br>MSE WALL<br>BRIDGE ABUTMENT WALL (PRESIDENTIAL BOULEVARD) |

| STAIN COLOR | FACILITY ELEMENTS |
|---|---|
| FED. STD. #26152 | STEEL ELLIPSE HSS<br>LIGHT POLE AND ARM |

| FORM LINER | STAIN COLOR | FACILITY ELEMENTS |
|---|---|---|
| <br>166B 1 1/4" CHISELED LIMESTONE<br>SCOTT SYSTEM (OR APPROVED EQUAL) | FED. STD. #26559 | FEATURE WALL PILASTER CAP AND BASE<br>RETAINING WALL PILASTER CAP & BASE<br>BRIDGE ABUTMENT WALL PILASTER BASE (PRESIDENTIAL BOULEVARD)<br>PYLONS "A" THROUGH "D" CAP & BASE<br>SIGN STRUCTURE CAP & BASE |

| FORM LINER | STAIN COLOR(S) | | | FACILITY ELEMENTS |
|---|---|---|---|---|
| <br>166D CHISELED LIMESTONE W/ JOINTS<br>SCOTT SYSTEM (OR APPROVED EQUAL) | FED. STD. #26559 | FED. STD. #30324 | FED. STD. #30219 | FEATURE WALL<br>MSE RETAINING WALL<br>SLOPED RETAINING WALL<br>STANDARD TRAFFIC BARRIER AT BRIDGE<br>T551 TRAFFIC BARRIER AT BRIDGE<br>LOW WALL<br>FREE STANDING LOW WALL<br>PLANT INSTALLATION ON SLOPES STEEPER THAN 6:1 |

| FORM LINER | STAIN COLOR(S) | | | FACILITY ELEMENTS |
|---|---|---|---|---|
| <br>167B ASHLAR STONE B<br>SCOTT SYSTEM (OR APPROVED EQUAL) | FED. STD. #26559 | FED. STD. #30324 | FED. STD. #30219 | FEATURE WALL PILASTER TRUNK<br>KEYSTONE ARCH AT FEATURE WALL<br>RETAINING WALL PILASTER TRUNK<br>BRIDGE ABUTMENT WALL PILASTER TRUNK (PRESIDENTIAL BOULEVARD)<br>PYLONS "A" THROUGH "D" TRUNK<br>SIGN STRUCTURE TRUNK |

DIMENSIONS ARE APPROXIMATE AND ARE FOR PROPORTIONAL RELATIONSHIPS. ALL DIMENSIONS OF EXISTING ELEMENTS REQUIRE FIELD VERIFICATION. FIELD ADJUSTMENTS TO LAYOUT ARE EXPECTED.

REVISION 1

Texas Department of Transportation

* NOT INTENDED FOR PERMIT OR CONSTRUCTION. ALL MATERIALS, DETAILS, AND LOCATION OF ELEMENTS SHOWN AS PART OF THIS DOCUMENT ARE SUBJECT TO FINAL PLANS AND SPECIFICATIONS.

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 17-1

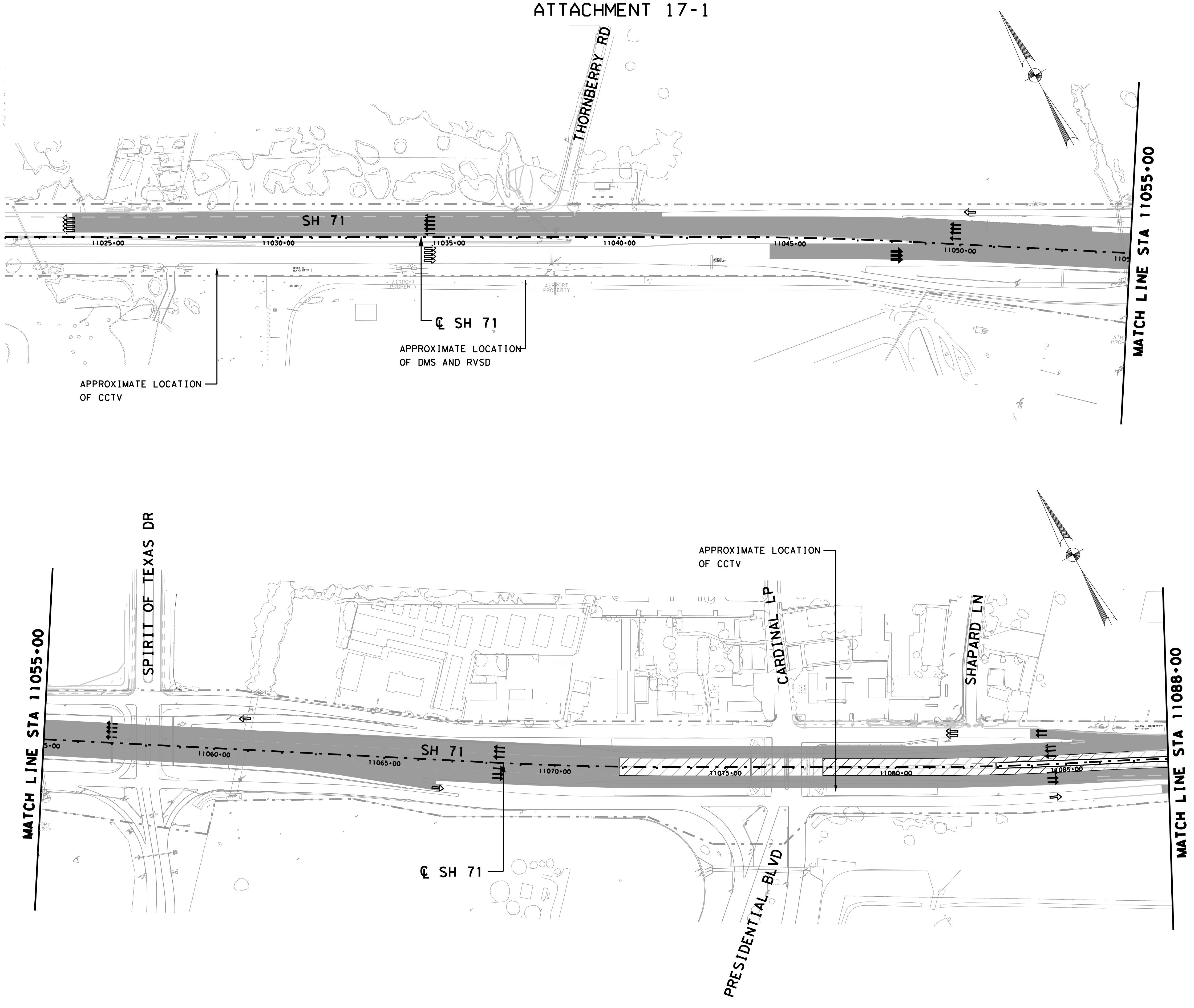
# Conceptual ITS Layout

# Execution Version

# STATE HIGHWAY 71
# CONCEPTUAL ITS LAYOUT
# ATTACHMENT 17-1

**LEGEND**

| | |
|---|---|
| ▨ | PROPOSED TOLL |
| ■ | PROPOSED NON-TOLL (SH 71 MAINLANES) |
| ▩ | PROPOSED NON-TOLL (FM 973) |


THORNBERRY RD
SH 71
11025+00
11030+00
11035+00
11040+00
11045+00
11050+00
AIRPORT PROPERTY
MATCH LINE STA 11055+00
℄ SH 71
SPIRIT OF TEXAS DR
CARDINAL LP
SHAPARD LN
PRESIDENTIAL BLVD
11060+00
11065+00
11070+00
11075+00
11080+00
11085+00
MATCH LINE STA 11088+00

APPROXIMATE LOCATION OF CCTV

APPROXIMATE LOCATION OF DMS AND RVSD

APPROXIMATE LOCATION OF CCTV

Texas Department of Transportation

STATE HIGHWAY 71
CONCEPTUAL ITS LAYOUT
ATTACHMENT 17-1

SCALE: 1"=300'

SHEET 1 OF 3

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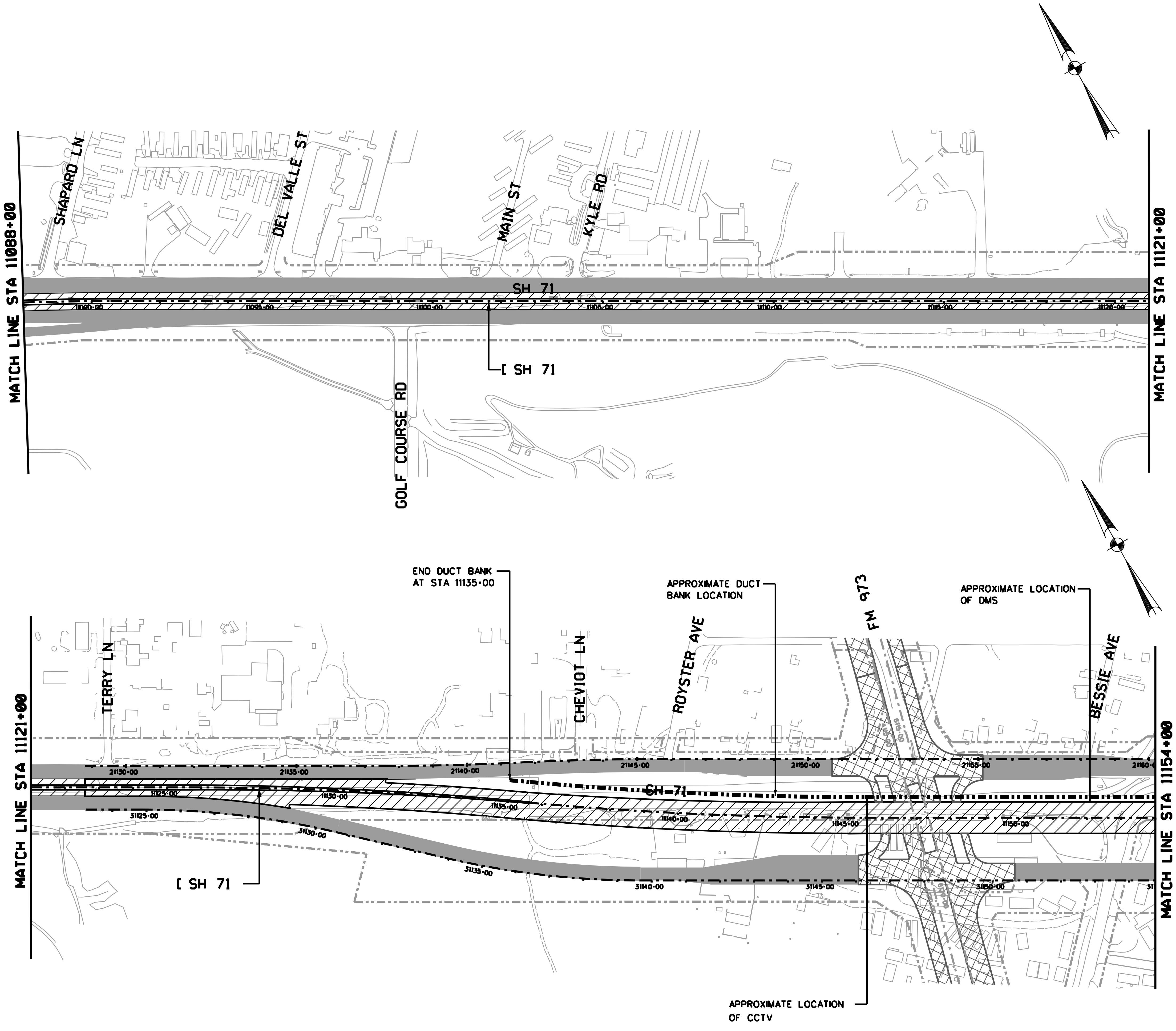
C:\Users\Dan\Desktop\Exhibit 1\SH71*ITS*01.dgn

## LEGEND

| | |
|---|---|
| ▨ | PROPOSED TOLL |
| ■ | PROPOSED NON-TOLL<br>(SH 71 MAINLANES) |
| ▩ | PROPOSED NON-TOLL<br>(FM 973) |


MATCH LINE STA 11088+00
SHAPARD LN
DEL VALLE ST
MAIN ST
KYLE RD
SH 71
11090+00
11095+00
11100+00
11105+00
11110+00
11115+00
11120+00
[ SH 71
GOLF COURSE RD
MATCH LINE STA 11121+00
MATCH LINE STA 11121+00
TERRY LN
CHEVIOT LN
ROYSTER AVE
FM 973
BESSIE AVE
21130+00
21135+00
21140+00
21145+00
21150+00
21155+00
21160+00
SH 71
11125+00
11130+00
11135+00
11140+00
11145+00
11150+00
31125+00
31130+00
31135+00
31140+00
31145+00
31150+00
[ SH 71
MATCH LINE STA 11154+00

END DUCT BANK AT STA 11135+00

APPROXIMATE DUCT BANK LOCATION

APPROXIMATE LOCATION OF DMS

APPROXIMATE LOCATION OF CCTV

Texas Department of Transportation

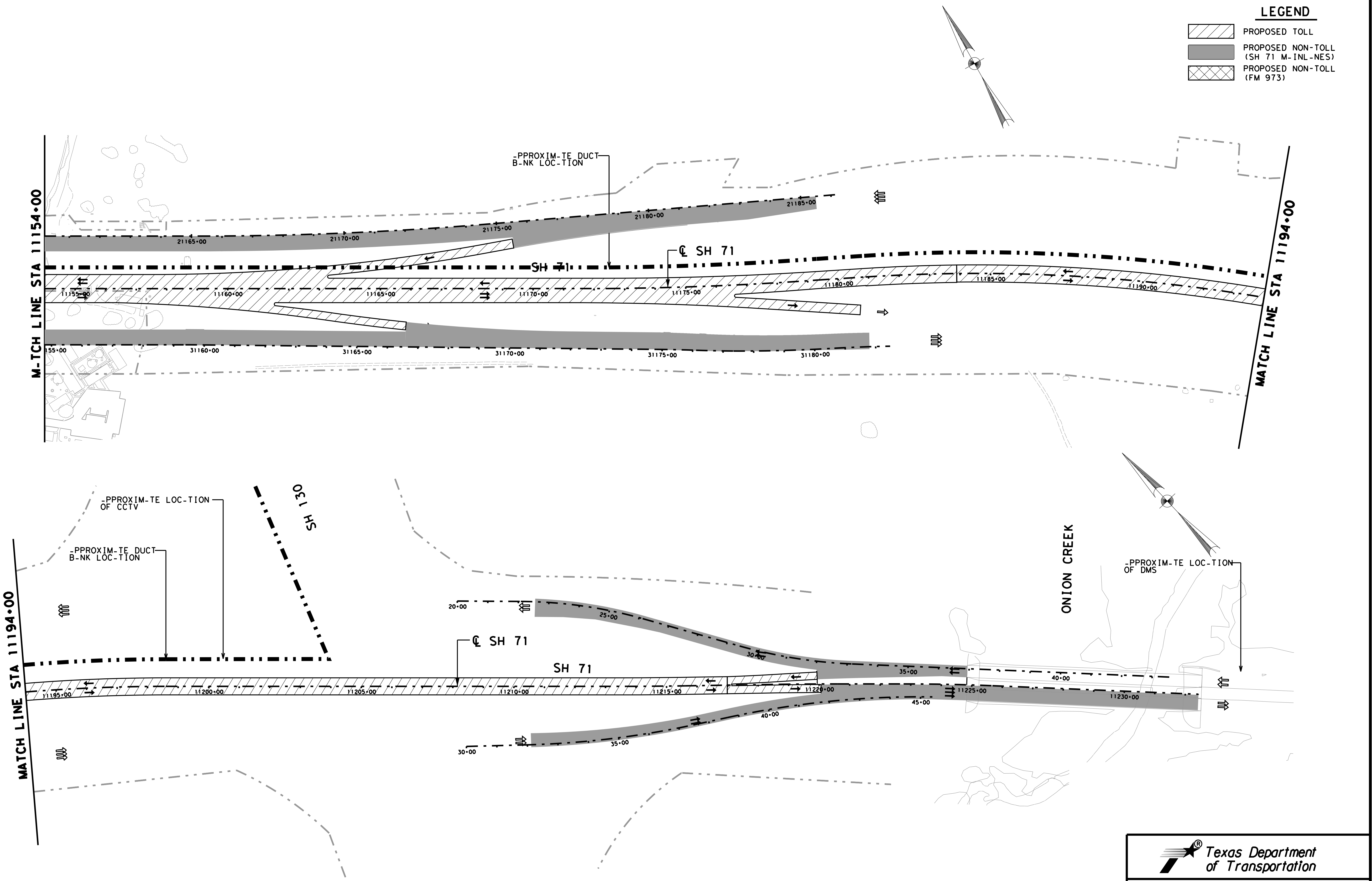
SH 71 TOLL LANES

CONCEPTUAL ITS LAYOUT

ATTACHMENT 17-1

SCALE: 1"=300'

SHEET 2 OF 3



LEGEND
▨ PROPOSED TOLL
▨ PROPOSED NON-TOLL (SH 71 MAINLANES)
▨ PROPOSED NON-TOLL (FM 973)
MATCH LINE STA 11154+00
MATCH LINE STA 11194+00
APPROXIMATE DUCT BANK LOCATION
℄ SH 71
SH 71
21165+00
21170+00
21175+00
21180+00
21185+00
11155+00
11160+00
11165+00
11170+00
11175+00
11180+00
11185+00
11190+00
155+00
31160+00
31165+00
31170+00
31175+00
31180+00
MATCH LINE STA 11194+00
APPROXIMATE LOCATION OF CCTV
APPROXIMATE DUCT BANK LOCATION
SH 130
℄ SH 71
SH 71
ONION CREEK
APPROXIMATE LOCATION OF DMS
20+00
25+00
30+00
35+00
40+00
30+00
35+00
40+00
45+00
11195+00
11200+00
11205+00
11210+00
11215+00
11220+00
11225+00
11230+00

Texas Department of Transportation

STATE HIGHWAY 71
CONCEPTUAL ITS LAYOUT
ATTACHMENT 17-1

SCALE: 1"=300'

SHEET 3 OF 3

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# Texas Department of Transportation

## TECHNICAL PROVISIONS

## SH 71 TOLL LANES

# Attachment 19-1

# Performance and Measurement Table Baseline

# Execution Version

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| **1) ROADWAY** | | | | | | | | | |
| | | | | | | | **Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's *Pavement Management Information System Rater's Manual.*** | | |
| | 1.1 | Obstructions and debris | Roadway and clear zone free from obstructions and debris | 2 hrs | N/A | N/A | Visual Inspection | Number of obstructions and debris | Nil |
| | 1.2 | Pavement | All roadways have a smooth surface course (including bridge decks, covers, gratings, frames and boxes) and free from Defects. | 24 hrs | 28 days | 6 months | **a) Ruts – Mainlanes, shoulders & ramps** | | |
| | | | | | | | 10ft straight edge used to measure rut depth for localized areas. | Depth of rut at any location greater than 0.5" | Nil |
| | | | | | | | **b) Failures**<br>Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures | Occurrence of any failure | Nil |
| | | | | | | | **c) Edge drop-offs**<br>Physical measurement of edge drop-off level compared to adjacent surface | Instances of edge drop-off greater than 2" (Number) | Nil |
| | 1.3 | Crossovers and other paved areas | Crossovers and other paved areas are free of Defects | 24 hrs | 28 days | 6 months | **a) Potholes**<br>Visual Inspection | Potholes of low severity or higher (Number) | Nil |

**Table 19-1: Performance and Measurement Table**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | 1.3 con't. | | | | | | **b) Base failures** | Base failures of low severity or higher (Number) | Nil |
| | 1.4 | Joints in concrete | Joints in concrete paving are sealed and watertight | 24 hrs | 28 days | 6 months | Visual inspection of joints | Length unsealed joints greater than ¼" | Nil |
| | | | Longitudinal joint separation | | | | Measurement of joint width and level difference of two sides of joints | Joint width more than 1" or faulting more than ¼" | Nil |
| | 1.5 | Curbs | Curbs are free of defects | 24 hrs | 28 days | 6 months | Visual inspection | Length out of alignment | Less than 1" deflection out of alignment over 10' |
| **2) DRAINAGE** | | | | | | | | | |
| | 2.1 | Travel Way | The travel way is free from water to the extent that such water would represent a hazard by virtue of its position and depth. | 24 hrs | 28 days | 6 months | Visual inspection of water on surface | Instances of hazardous water build-up | Nil |
| **3) STRUCTURES** | | | | | | | | | |
| | 3.1 | Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes | Substructures and superstructures are free of:<br>• graffiti<br>• undesirable vegetation<br>• debris and bird droppings<br>• blocked drains, weep pipes manholes and chambers<br>• blocked drainage holes in structural components | 24 hrs | 28 days | 6 months | Visual inspection. | Instances of defect. | Nil<br>100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | 3.1 con't. | | • defects in joint sealants<br>• defects in pedestrian protection measure<br>• scour damage<br>• corrosion of rebar<br>• paint system failures<br>• impact damage | | | | | | |
| | 3.2 | Structure components | i) Expansion joints are free of:<br>• dirt debris and vegetation<br>• defects in drainage systems<br>• loose nuts and bolts<br>• defects in gaskets<br>ii) The deck drainage system is free of all and operates as intended.<br>iii) Parapets are free of:<br>• loose nuts or bolts<br>• blockages of hollow section drain holes<br>• graffiti<br>• vegetation<br>• accident damage<br>iv) Bearings and bearing shelves are clean.<br>v) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions in the Structure Maintenance Manual is followed. | 24 hrs | 28 days | 6 months | Visual inspection | Instances of defect. | Nil<br>100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | 3.2 con't. | Structure components | vi) Special finishes are clean and perform to the appropriate standards.<br>vii) All non-structural items such as hoists and electrical fixings, operate correctly, are clean and lubricated as appropriate, in accordance with the manufacturer's recommendations and certification of lifting devices is maintained. | 24 hrs | 28 days | 6 months | Visual inspection | Instances of defect. | Nil<br>100% |
| | 3.3 | Non-bridge class culverts | Non-bridge-class culverts are free of:<br>• defects in sealant to movement joints | 24 hrs | 28 days | 6 months | Visual inspection | Number with defects in sealant and movement joints | Nil |
| **4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS** | | | | | | | | | |
| | 4.1 | Pavement markings | Pavement markings are:<br>• clean and visible during the day and at night<br>• whole and complete and of the correct color, type, width and length<br>• placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets | 24 hrs | 28 days | 6 months | a) Markings - Visual inspection | Length found defective. | 100% |
| | | | | | | | Physical measurement | Length with more than 5% loss of area of material at any point | Nil |
| | | | | | | | | Length with spread more than 10% of specified dimensions. | Nil |
| | | | | | | | b) Profile Markings<br>Visual inspection | Length performing its intended function and compliant with relevant regulations | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | 4.2 | Raised reflective markers<br>Raised reflective markers | Raised reflective pavement markers, object markers and delineators are:<br>• Clean and clearly visible<br>• Of the correct color and type<br>• Reflective or retroreflective as TxDOT standard<br>• Correctly located, aligned and at the correct level<br>• Are firmly fixed<br>• Are in a condition that will ensure that they remain at the correct level. | 24hrs | 28 days | 6 months | Visual inspection | Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk.)<br>A minimum of four markers should be visible at 80' spacing when viewed under under low beam headlights.<br>Uniformity (replacement rpms having equivalent physical and performance characteristics to adjacent markers). | Nil<br>100% |
| | 4.3 | Delineators & Markers | Object markers, mail box markers and delineators are:<br>• clean and visible<br>• of the correct color and type<br>• legible and reflective<br>• Straight and Vertical | 24 hrs | 28 days | 6 months | Visual inspection | Number of object markers or delineators defective or missing | Nil |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS Cat 1 Hazard Mitigation | Cat 1 Permanent Remedy | Cat 2 Permanent Repair | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| **5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS** | | | | | | | | | |
| | 5.1 | Guard rails and safety barriers | All guardrails, safety barriers, concrete barriers, etc. are maintained free of Defects. They are appropriately placed and correctly installed at the correct height and distance from roadway or obstacles. Installation and repairs shall be carried out in accordance with the requirements of NCHRP 350 standards. | 24 hrs | 28 days | 6 months | Visual inspection | Length of road restraint systems correctly installed<br>Length free from defects<br>Length at correct height<br>Length at correct distance from roadway and obstacle | 100%<br>100%<br>100%<br>100% |
| | 5.2 | Impact attenuators | All impact attenuators are appropriately placed and correctly installed | 24 hrs | 7 days | 6 months | Visual inspection | Number correctly placed and installed | 100% |
| **6) TRAFFIC SIGNS** | | | | | | | | | |
| | 6.1 | General – All Signs | i) Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height and free from structural and electrical defects | 24 hrs | 28 days | 6 months | **a) Retroreflectivity** Coefficient of retro reflectivity | Number of signs with reflectivity below the requirements of TxDOT's TMUTCD | Nil |
| | | | ii) Identification markers are provided, correctly located, visible, clean and legible | | | | **b) Face damage** Visual inspection | Number of signs with face damage greater than 5% of area | Nil |
| | | | iii) Sign mounting posts are vertical, structurally sound and rust free | | | | **c) Placement** Visual inspection | Signs are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | 6.1 con't | | iv) All break-away sign mounts are clear of silt or other debris that could impede break-away features and shall have correct stub heights<br>v) Obsolete and redundant signs are removed or replaced as appropriate<br>vi) Visibility distances meet the stated requirements<br>vii) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements<br>viii) All structures and elements of the signing system are kept clean and free from debris and have clear access provided.<br>ix) All replacement and repair materials and equipment are in accordance with the | | | | **d) Obsolete signs**<br>Visual inspection | Number of obsolete signs | Nil |
| | | | | | | | **e) Sign Information**<br>Visual inspection | Sign information is of the correct size, location, type and wording to meet its intended purpose | 100% |
| | | | | | | | **f) Dynamic Message Signs**<br>Visual inspection | Dynamic message signs are fully functioning | 100% |
| | 6.2 | General - Safety critical signs | i) Requirements of the TMUTCD<br>ii) Dynamic message signs are in an operational condition | 2hrs | 1 week | 6 months | Visual inspection | Number of damaged Safety critical signs | Nil |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| **7) TRAFFIC SIGNALS** | | | | | | | | | |
| | 7.1 | General | i) Traffic Signals and their associated equipment are:<br>• clean and visible<br>• correctly aligned and operational<br>• free from damage caused by accident or vandalism<br>• correctly aligned and operational<br>ii) Signal timing and operation is correct<br>iii) Contingency plans are in place to rectify Category 1 defects not immediately repairable to assure alternative traffic control is provided during a period of failure | 2 hrs | 24 hrs | 6 months | **a) General condition**<br>Visual inspection | Signals are clean and visible | 100% |
| | | | | | | | **b) Damage**<br>Visual inspection | Signals are undamaged | 100% |
| | | | | | | | **c) Signal timing**<br>Timed measurements | Installations have correct signal timings | 100% |
| | | | | | | | **d) Contingency plans**<br>Records review | Full contingency plans are in place | 100% |
| | 7.2 | Soundness | Traffic signals are structurally and electrically sound | 24 hrs | 28 days | 6 months | **a) Structural soundness**<br>Visual inspection | | |
| | | | | | | | **b) Electrical soundness**<br>Testing to meet NEC regulations | Inspection records showing safe installation and maintenance | 100% |
| | 7.3 | Identification marking | Signals have identification markers and the telephone number for reporting faults are correctly located, clearly visible, clean and legible | N/A | 28 days | 6 months | Visual inspection | Inspection records showing identification markers and other information are easily readable | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | 7.4 | Pedestrian Elements and vehicle detectors | All pedestrian Elements and vehicle detectors are correctly positioned and fully functional at all times | 24 hrs | 28 days | 6 months | Visual Inspection | Inspection records showing compliance | 100% |
| **8) LIGHTING** | | | | | | | | | |
| | 8.1 | Roadway lighting – General | i) All lighting is free from defects and provides acceptable uniform lighting quality<br>ii) Lanterns are clean and correctly positioned<br>iii) Lighting units are free from accidental damage or vandalism<br>iv) Columns are upright, correctly founded, visually acceptable and structurally sound | 24 hrs | 28 days | 6 months | **a) Mainlane lights operable** Night time inspection or automated logs<br>**b) Mainlane lights out of action** Night time inspection or automated logs | Number of sections with less than 90% of lights functioning correctly at all times<br>Instances of more than two consecutive lights out of action | Nil<br>Nil |
| | 8.2 | Sign lighting | Sign lighting is fully operational | 24 hrs | 28 days | 6 months | Night time inspection or automated logs | Instances of more than one bulb per sign not working | Nil |
| | 8.3 | Electrical supply | Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning | 24 Hrs | 7 Days | 1 Month | Testing to meet NEC regulations, visual inspection | Inspection records showing safe installation and maintenance | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS Cat 1 Hazard Mitigation | Cat 1 Permanent Remedy | Cat 2 Permanent Repair | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | 8.4 | Access panels | All access panels in place at all times. | 24 Hrs | 7 Days | 1 Month | Visual inspection | Instances of missing access panels | Nil |
| **9) FENCES, WALLS AND SOUND ABATEMENT** | | | | | | | | | |
| | 9.1 | Design and location | Fences and walls act as designed and serve the purpose for which they were intended | 24 hrs | 28 days | 6 months | Visual Inspection | Inspection records showing compliance | 100% |
| | 9.2 | Construction | Integrity and structural condition of the fence is maintained | 24 hrs | 28 days | 6 months | Structural assessment if visual inspection warrants | Inspection records showing compliance | 100% |
| **10) ROADSIDE MANAGEMENT** | | | | | | | | | |
| | 10.1 | Vegetated Areas – Except landscaped areas – General | Vegetation is maintained so that:<br>i) Height of grass and weeds is kept within the limits described for urban and rural areas. Mowing begins before vegetation reaches the maximum height.<br>ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance. | 24 hrs | 7 days | 28 days | **a) Urban areas**<br>Physical measurement of height of grass and weeds | Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 18 in | 100% |
| | | | | | | | **b) Rural areas**<br>Physical measurement of height of grass and weeds | Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 30 in | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | | | iii) Grass or vegetation does not encroach into or on paved shoulders, main lanes, sidewalks, islands, riprap, traffic barrier or curbs. | | | | **c) Encroachment**<br>Visual inspection of instances of encroachment of vegetation | Occurrences of vegetation encroachment in each auditable section | Nil |
| | | | iv) A herbicide program is undertaken in accordance with the TxDOT Herbicide Manual to control noxious weeds and to eliminate grass in pavement or concrete. | | | | **d) Wildflowers**<br>Visual Inspection with audit of process. | Adherence to vegetation management manuals | 100% |
| | | | v) A full width mowing cycle is completed after the first frost.<br>vi) Wildflowers are preserved utilizing the guidelines in the mowing specifications and TXDOT *Roadside Vegetation Manual*. | | | | **e) Sight lines**<br>Visual inspection | Instances of impairment of sight lines or sight distance to signs | Nil |
| **11) EARTHWORKS, EMBANKMENTS AND CUTTINGS** | | | | | | | | | |
| | 11.1 | Slope Failure | All structural or natural failures of the embankment and cut slopes of the Facility are repaired | 24 hrs | 28 days | 6 months | Visual inspection by geotechnical specialist and further tests as recommended by the specialist | Recorded instances of slope failure | Nil |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS |  |  | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | Cat 1 | Cat 1 | Cat 2 |  |  |  |
|  |  |  |  | Hazard Mitigation | Permanent Remedy | Permanent Repair |  |  |  |
|  | 11.2 | Slopes - General | Slopes are maintained in general conformance to the original graded cross-sections, the replacement of landscaping materials, reseeding and re-vegetation for erosion control purposes and removal and disposal of all eroded materials from the roadway and shoulders | 24 hrs | 28 days | 6 months |  | Inspection records showing compliance | 100% |
| **12) AMENITY** |  |  |  |  |  |  |  |  |  |
|  | 12.1 | Graffiti | Graffiti is removed in a manner and using materials that restore the surface to a like appearance similar to adjoining surfaces | 24 hrs | 28 days | 6 months | All graffiti is considered a Category 1 defect | Inspection records showing compliance | 100% |
|  | 12.2 | Animals | All dead or injured animals are removed from the ROW | 2 hrs | N/A | N/A | Visual inspection | No dead or injured animals are present on ROW | 100% |
|  | 12.3 | Abandoned vehicles and equipment | All abandoned vehicles and equipment are removed from the ROW. | 1 hr | 24 hrs | N/A | Visual inspection | No abandoned vehicles or equipment present | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS |  |  | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | Cat 1 | Cat 1 | Cat 2 |  |  |  |
|  |  |  |  | Hazard Mitigation | Permanent Remedy | Permanent Repair |  |  |  |
| **13) SNOW AND ICE CONTROL** |  |  |  |  |  |  |  |  |  |
|  | 13.1 | Travel lanes | Maintain travel way free from snow and ice | 2 hrs | N/A | N/A | Maximum 1hr response time to complete manning and loading of spreading vehicles<br>Maximum 2hrs from departure from loading point to complete treatment and return to loading point<br>Maximum 1hr response time for snow and ice clearance vehicles to depart from base | Inspection records showing compliance | 100% |
|  | 13.2 | Weather forecasting | weather forecast information is obtained and assessed and appropriate precautionary treatment is carried out to prevent ice forming on the travel way | 2hrs | N/A | N/A | Operations plan details the process and procedures in place and followed | Inspection records showing compliance | 100% |
| **14) INCIDENT RESPONSE** |  |  |  |  |  |  |  |  |  |
|  | 14.1 | General | Respond to Incidents in accordance with Section 22. | 1 hr | N/A | N/A | Response times met for 98% of Incidents measured on a 1 year rolling basis.<br>No complaints from Emergency Services. | Inspection records showing compliance | 100% |
|  | 14.2 | Hazardous Materials | For any Hazardous Materials spills, comply with the requirements of Section 22. | 1 hr | N/A | N/A | MMP details the process and procedures in place and followed. | Inspection records showing compliance | 100% |
|  | 14.3 | Structural assessment | Evaluate structural damage to structures and liaise with Emergency Services to ensure safe working in clearing the Incident | 1 hr | N/A | N/A | Inspections and surveys as required by Incident | Incident reports showing compliance | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS Cat 1 Hazard Mitigation | Cat 1 Permanent Remedy | Cat 2 Permanent Repair | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | 14.4 | Temporary and permanent remedy | Propose and implement temporary measures or permanent repairs to Defects arising from the Incident.<br>Ensure the structural safety of any structures affected by the Incident | 24 hrs | 28 days | N/A | Review and inspection of the Incident site | Auditable inspection records showing compliance | 100% |
| **15) SWEEPING AND CLEANING** | | | | | | | | | |
| | 15.1 | Sweeping | **i)** Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean. | 24 hrs | 28 days | 6 months | Buildup of dirt, ice rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep | Inspection records showing compliance | 100% |
| | 15.1 con't. | Sweeping | ii) Clear and remove debris from traffic lanes, hard shoulders, verges and central reservations. footways and cycle ways<br>iii) Remove all sweepings without stockpiling in the right of way and dispose of at approved tip. | 24 hrs | 28 days | 6 months | | | |
| | 15.2 | Litter | i) Keep the right of way in a neat condition, remove litter regularly.<br>ii) Pick up large litter items before mowing operations.<br>iii) Dispose of all litter and debris collected at an approved solid waste site. | 24 hrs | 28 days | 6 months | No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed. | Inspection records showing compliance | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| **16) ITS EQUIPMENT** | | | | | | | | | |
| | 16.1 | ITS Equipment - Maintenance | All ITS equipment is fully functional and housing is functioning and free of defects.<br>i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear.<br>ii) Steps, handrails and accesses are kept in a good condition.<br>iii) Access to all communication hubs, ground boxes, cabinets and sites is clear,<br>iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition.<br>v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced.<br>vi) Backup power supply system is available at all times | 24 hr | 14 days | 1 month | Visual Inspection | Inspection records showing compliance | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | 16.2 | Dynamic Message Sign Equipment | Dynamic Message Signs are free from faults such as:<br>i) Any signal displaying an message which is deemed to be a safety hazard<br>ii) Failure of system to clear sign settings when appropriate.<br>iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions<br>iv) Signs displaying an incorrect message. | 2 hr | 24 hrs | 14 days | MMP details the process and procedures in place and followed. | Inspection records showing compliance | 100% |
| | 16.3 | CCTV Equipment | CCTV Systems are free from faults that limit the availability of the operators to monitor the area network, such as:<br>i) Failure of CCTV Systems to provide control offices with access and control of CCTV images<br>ii) Failure of a CCTV camera or its video transmission system.<br>iii) Failure of a Pan / Tilt unit or its control system. iv) | 2 hr | 24 hrs | 14 days | Defect measurement dependent on equipment | Incident reports showing compliance | 100% |

## Table 19-1: Performance and Measurement Table

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 | Cat 1 | Cat 2 | | | |
| | | | | Hazard Mitigation | Permanent Remedy | Permanent Repair | | | |
| | | | Moisture ingress onto CCTV camera lens<br>iv) Faults that result in significant degradation of CCTV images | | | | | | |

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 20-1

# TTI Pedestrian and Bicycle Study

# State Highway 71 – Del Valle Area

# Execution Version

# *Pedestrian and Bicycle Study*
# *State Highway 71 – Del Valle Area*

## EXISTING CONDITIONS AND RECOMMENDATIONS - FINAL

**To:** **Ed Collins, Austin District**
**Texas Department of Transportation**

**From:** **Joan G. Hudson, P.E., Associate Research Engineer**
**Texas Transportation Institute**

**Date:** **June 15, 2011**

The Texas Department of Transportation (TxDOT) is in the process of designing a "superstreet" along SH 71 to reduce congestion. A superstreet is a new type of intersection design which is intended to reduce the delay for motorists. The project increases the number of vehicles through the signalized intersections by eliminating left turn movements. Those left turning motorists would be required to turn right and then make a U-turn to effectively complete the left turn maneuver. See Figure 1.

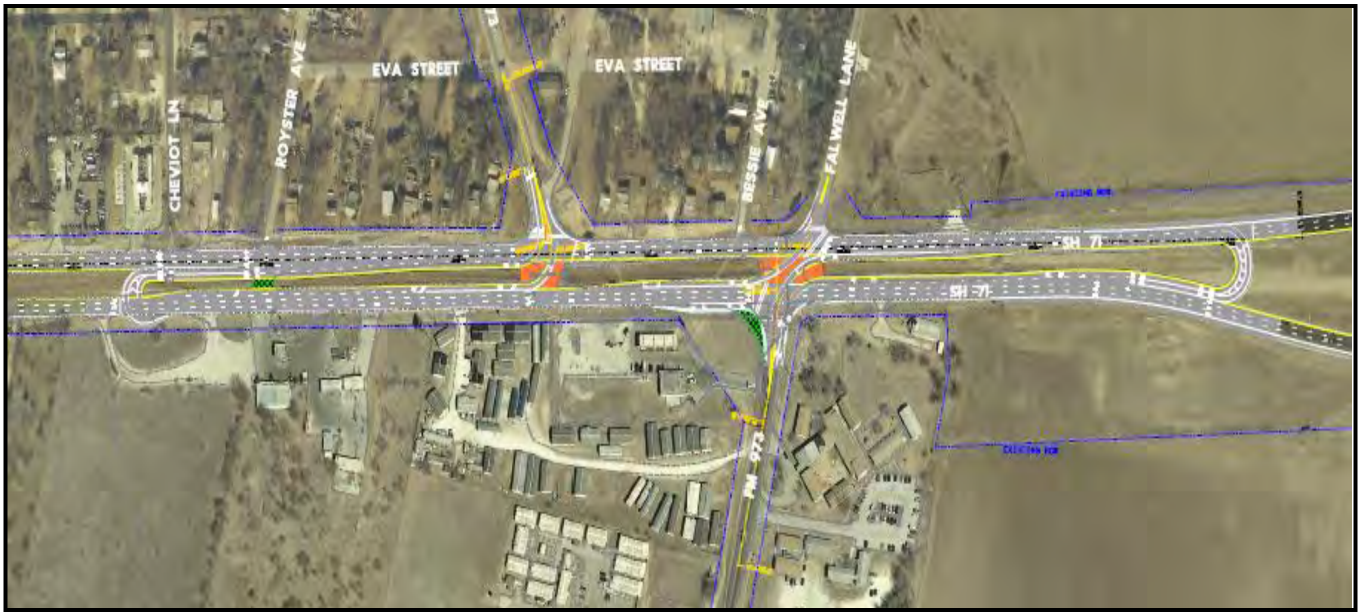


**Figure 1. Proposed Layout of Superstreet**
**([ftp://ftp.dot.state.tx.us/pub/txdot-info/library/projects/austin/SH 71e/schematic_102510.pdf](ftp://ftp.dot.state.tx.us/pub/txdot-info/library/projects/austin/SH 71e/schematic_102510.pdf))**

One concern with the superstreet concept is the safety and accommodation of pedestrians and bicyclists. Crosswalks, pedestrian signals, and pedestrian push buttons will be available at the FM 973 (south leg)/Falwell Lane intersection. No accommodations for pedestrians will be provided at the FM 973 (north leg) intersection with SH 71. As such, the Austin District requested that the Texas Transportation Institute (TTI) conduct a study of SH 71 and FM 973 near the planned superstreet. Two main tasks of the project include:

1. Develop, administer, and analyze a survey of people who attend the Open House meeting held on November 16, 2010, and
2. Collect pedestrian and bicyclist volume and movement data along SH 71 near FM 973 and on FM 973 just south of SH 71.
3. Contact stakeholders to discuss potential walking and bicycling concerns related to the project.

This technical memorandum summarizes the findings of the study and includes recommendations for the District to consider in their planning of the superstreet.

## Survey

The survey, developed in English and Spanish, included questions about typical walking or biking routes, trip purposes, and time-of-day for these walking or biking trips focused specifically on the state-maintained roadways in the area. The superstreet area was expanded to include US 183. Researchers asked whether participants felt safe walking or biking on these routes. In addition to the survey, an aerial photo of SH 71 between Riverside Drive and Ross Road was printed and available at the open house meeting for people to draw typical walking and biking routes.

There were 22 participants in the survey, 19 of which indicated that they live in the East Austin/Del Valle area. The questions and results are shown in Appendix A. Of the 19 residents, 18 said they live in neighborhoods and 17 identified the neighborhood or street of their residence. The map in Appendix B shows these neighborhoods. It is important to note that none of the residents in the area immediately adjacent to the proposed superstreet answered the survey. The lack of input from residents living near the project is unfortunate. However, insight was gained through discussions with representatives from several agencies and organizations including:

- Capital Metropolitan Transportation Authority (CapMetro)
- Austin Transitional Housing Center
- Del Valle Community Coalition
- Travis County Correctional Facility
- South Rural Community Center
- Children's Wellness Center

### Survey Results

Six of the survey participants walk or bike to the grocery or convenience store, three walk to the bus stop, three to community center, and two walk to work or school. Five people said that they walk or bike to a neighborhood park or public library. Only three of the respondents indicated that they walk or bike along or across the state facilities and none of those three indicated feeling safe doing so.

When speaking of feeling safe walking or biking along or across these roadways, all of the comments provided by respondents focused on reasons why they feel unsafe. Too much traffic, going too fast, too many crashes and the lack of sidewalks top the list of concerns. To address safety, options including crosswalks, sidewalks, pedestrian "walk/do not walk" signals and curb ramps were selected as needed for adults and children alike. Other ideas for improving the safety of children include the addition of crossing guards, police officers, a wall or barrier to protect children from high speed traffic, and hike and bike trails. One person said, "It would not be safe (for children) with any of these measures."

From the aerial photo of the roadway section which was on display at the November 16th Open House, seven people mentioned specific safety concerns or marked their walking/biking routes. SH 71 at Ross Road, east of SH 130, was mentioned a couple of times by people who would like to walk or bike from the Berdoll Farms neighborhood south of SH 71 to Southeast Metro Park on the north side of SH 71. Other people mentioned the high speed of motorists on SH 71 and the occurrence of crashes at the median west of Ross Road as deterrents to walking or bicycling. A pedestrian overpass was suggested.

The Dollar General store located on Ross Road near Del Valle High School was mentioned as a popular destination for the students by two open house attendees. Students walk across Ross Road to reach the store and create a safety concern as they interact with motorists. These attendees were given contact information of Travis County Transportation and Natural Resources staff since Ross Road is not under TxDOT's jurisdiction.

The desire for sidewalks on FM 973 north of SH 71 from Eva Street to businesses like Tolivers (north of Eva Street and south of the Colorado River) was mentioned by a person who used to live in the area and wanted to bike to these businesses. That person said, "There's no space on the roadway for bicycles."

Along SH 71 west of the proposed superstreet, there is a bus stop (Bus Stop Number 1851) on the south side and businesses, a post office, and a residential area on the north side (Austin Pecan Park). Instead of staying on the bus until the turnaround at the correctional facility and getting off on the north side near the destination, parents with children disembark and cross SH 71 midblock, according to the bus driver who attended the open house meeting.

Another person mentioned the post office as needing sidewalks leading to it.

Other people who marked the aerial photo focused on the intersections of SH 71 at US 183 and SH 71 at Riverside Drive as problem locations in terms of crashes and pedestrian accessibility, respectively.

Therefore, the comments received on the survey, at the open house, and written on the aerial photo are generally for sections of SH 71 outside of the superstreet section. Therefore, special attention should be given to the comments made by the various agencies and organizations listed above.

## Data Collection

Walking and biking volume and origin/destination data was gathered on Thursday, November 18, 2010 from 6:00am to 6:00pm with two 1-hour breaks in the day from 10-11am and 3-4pm. Daylight hours limited the view prior to 6:30am. Almost 300 pedestrian crossings and six bicyclists were counted crossing and/or traveling along the roadway over the course of the 10-hour period. These were mostly adults and a few teenagers. Data were collected in three parts as shown circled in Figure 2: SH 71 West, SH 71 East and FM 973 (south leg). The highest hourly volume crossing SH 71 was 23 pedestrians, 19 of whom crossed midblock at uncontrolled locations in the western section of SH 71. In the eastern section, many more pedestrians were seen crossing at the signalized intersections of FM 973. There were seven (7) pedestrians who crossed midblock between 5-6pm and six (6) pedestrians who crossed midblock between 2-3pm. Over 100 pedestrians were counted

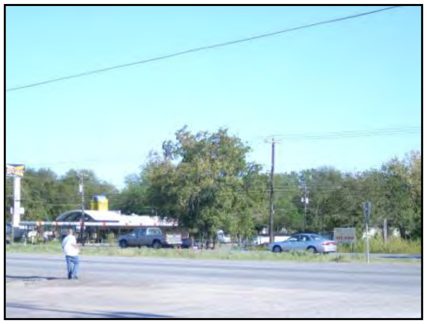


**Figure 2. Pedestrian Crossing Midblock on SH 71**

over the course of the ten hour period in each of the two sections of SH 71. A total of 84 pedestrians were counted crossing or walking along FM 973.

Other items to note are listed below:

1. SH 71 was divided into two parts and covered by two observers (Figure 3). Some of the pedestrians may have been counted twice since their activities may extend to two observers' range. This issue doesn't exist in the figures since every activity has its own trajectory.
2. Pedestrians were noted as crossing midblock (uncontrolled location), crossing at the intersection, or walking on the edge of the roadway (sidewalk area) only.
3. Crossing at the intersection was defined as crossing the SH 71 at FM 973 signalized intersections (north leg and south leg).
4. The counts were based on activity, not on pedestrian. For example, one person walking into the convenient store and later walking out was counted as two activities.
5. Starting at about 10:00 AM there were people standing at the intersections asking for money from the motorists. They were only counted twice in the data set (showing up and leaving).
6. Figures 4, 5, and 6 chart the pedestrian and bicycle count data by behavior.

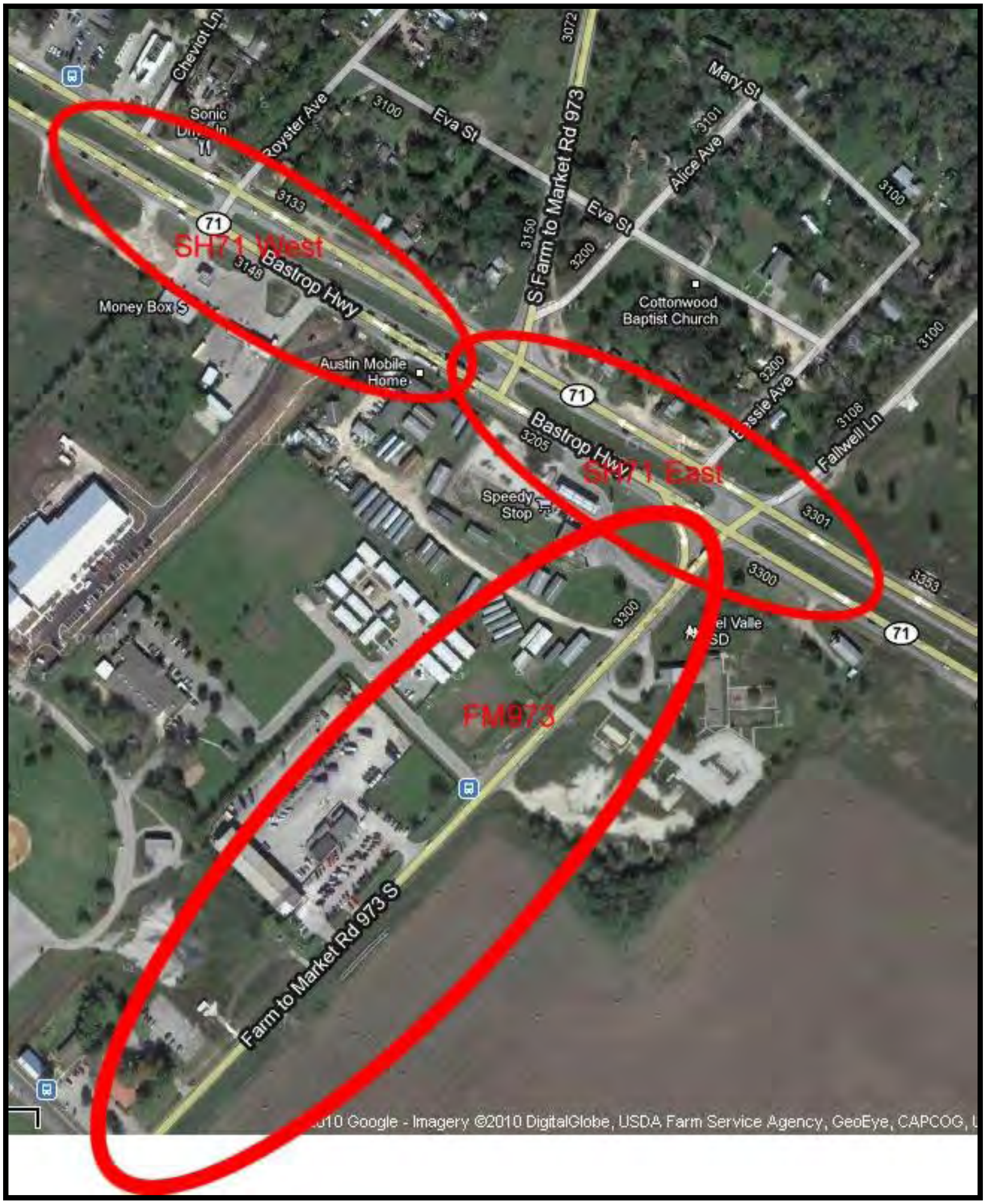
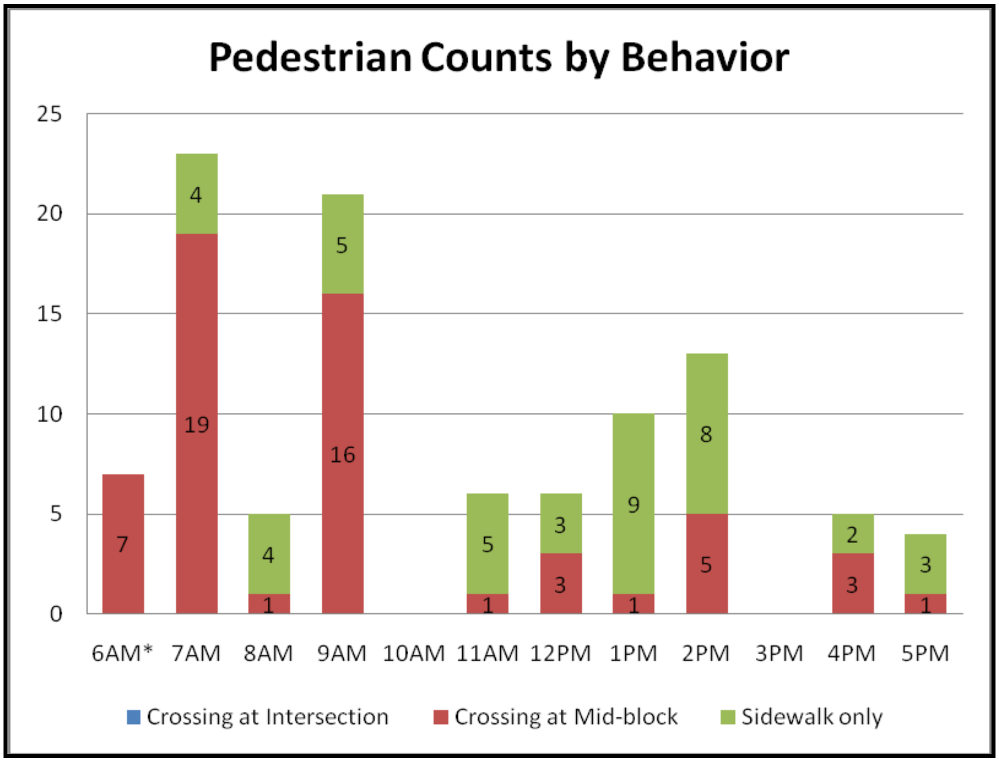
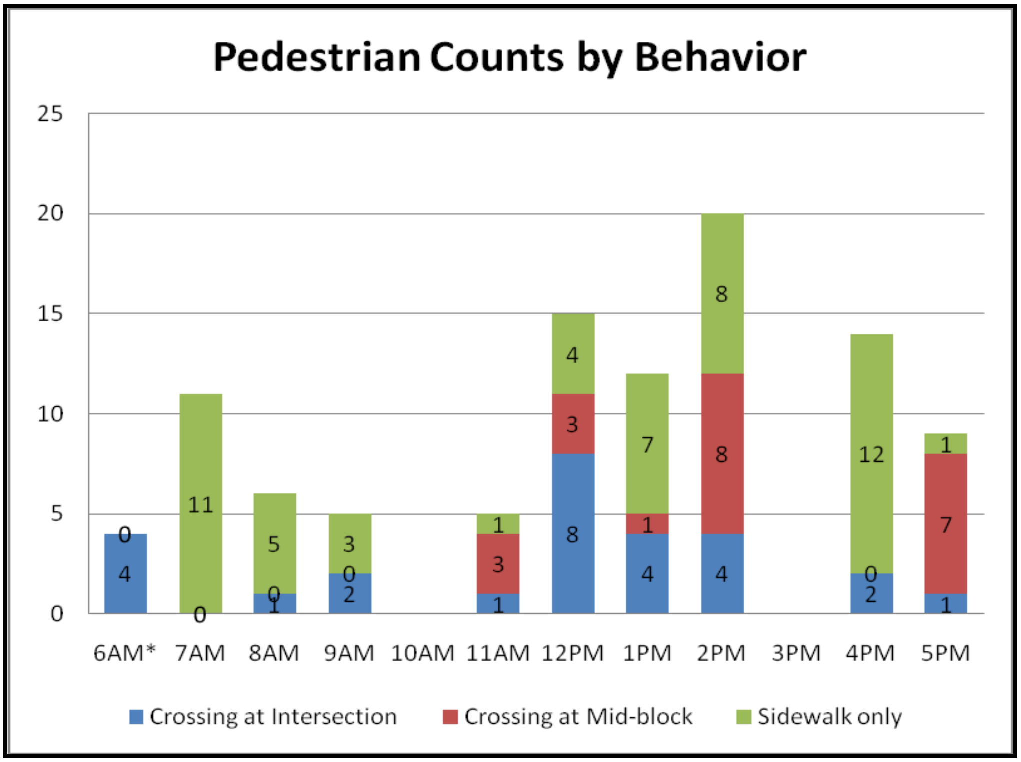

Cheviot Ln
Sonic Drive-In
Royster Ave
3100
Eva St
3072
S Farm to Market Rd 973
Mary St
3101
Alice Ave
3100
3133
71
SH71 West
3148
Bastrop Hwy
3150
3200
Eva St
Cottonwood Baptist Church
Money Box
Austin Mobile Home
71
Bastrop Hwy
3205
SH71 East
3200
Bessie Ave
3108
Fallwell Ln
3100
Speedy Stop
3301
3300
3353
Del Valle ISD
71
3300
FM973
Farm to Market Rd 973 S
010 Google - Imagery ©2010 DigitalGlobe, USDA Farm Service Agency, GeoEye, CAPCOG,

**Figure 3. SH 71 West, SH 71 East, and South leg of FM 973**



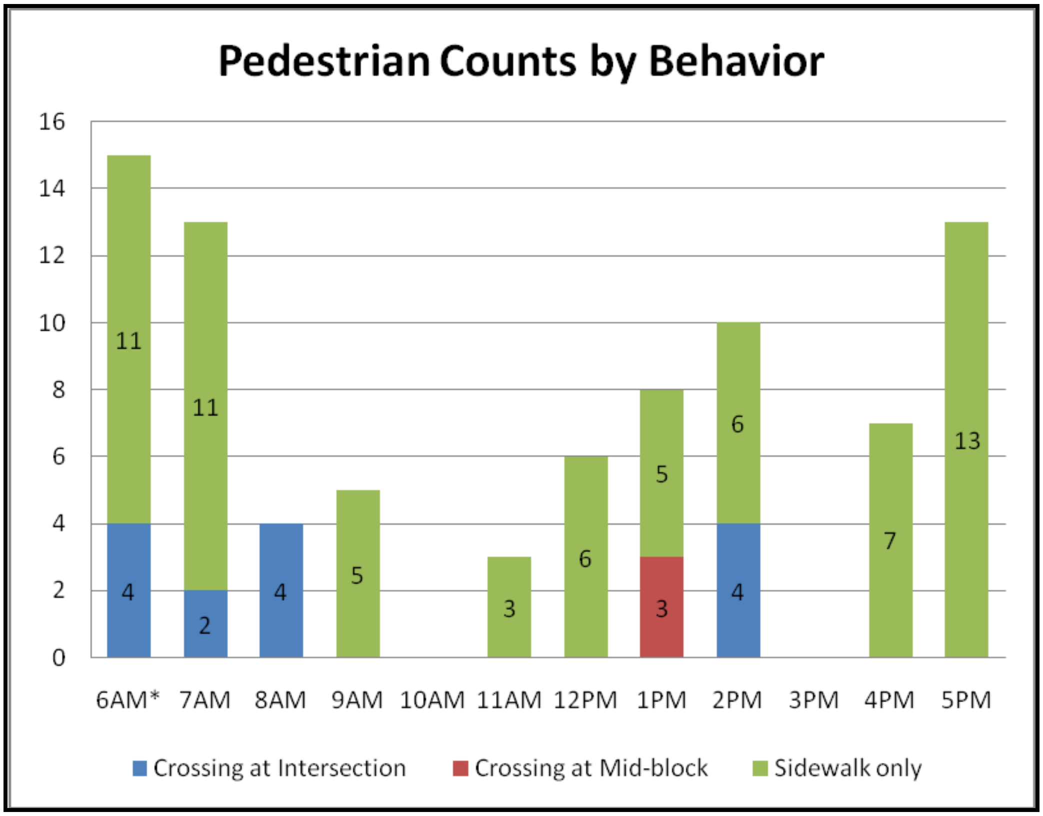
Note: No data was collected from 10-11am and 3-4pm

Figure 4. SH 71 West Pedestrian Counts by Behavior



Note: No data was collected from 10-11am and 3-4pm

Figure 5. SH 71 East Pedestrian Counts by Behavior



Note: No data was collected from 10-11am and 3-4pm

**Figure 6. FM 973 South Leg Pedestrian Counts by Behavior**

There are no signalized intersections in the western section of SH 71 while the eastern section of SH71 has two signalized intersections (both legs of FM 973). Even so, a similar number of pedestrians were counted crossing the highway in each of these two sections. Clearly defined worn trails exist along both roadways indicating pedestrian use (see photos in Figure 7). This evidence of pedestrian use is confirmed in all three charts showing pedestrians walking along the roadway.

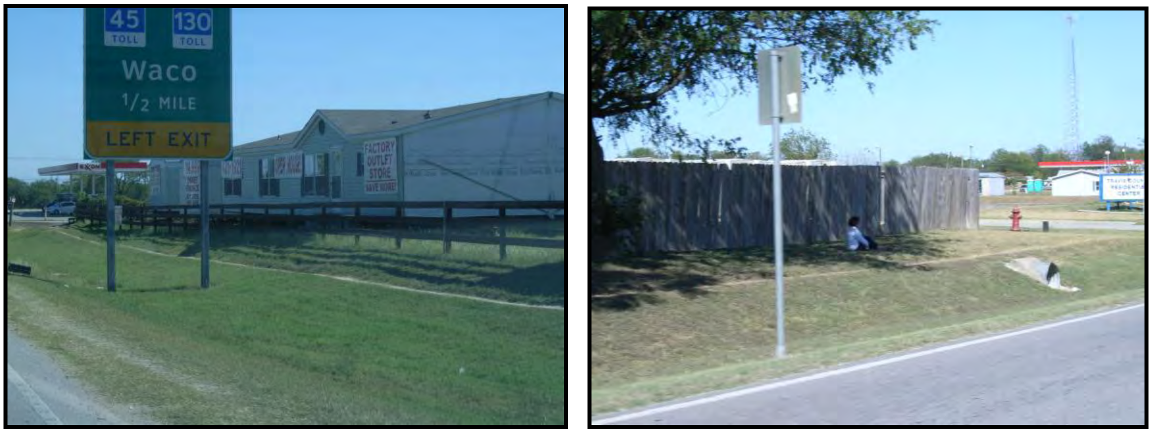


**Figure 7. Worn paths on (a) the south side of SH 71 and (b) the west side of FM 973**

Charts showing approximate age of the pedestrian by time of day are available in Appendix C. As seen in Figures 4-6 above, there were 10 or more pedestrians per hour in each of these sections. The maximum hour for SH 71 pedestrian activity occurred from 7:00 to 8:00 AM when 23 people were counted walking along or across the west section and 11 people were seen walking along or across the east section. The maximum hour for FM 973 occurred from 6:00 to 7:00 AM (even though visibility was limited by darkness) when 15 pedestrians walked along or across the roadway. On average, 10 pedestrians per hour were counted on SH 71. Over half of the pedestrians seen on the west leg of SH 71 were crossing midblock. Just under a third of the pedestrians counted in the eastern section crossed midblock SH 71. Almost all of the pedestrians counted on FM 973 were walking along the roadway. Table 1 summarizes the pedestrian totals for each section.

**Table 1. Pedestrian Volume on SH 71**

| Hour | Crossing Midblock SH 71 West | Walking Along SH 71 West | Total Peds/Hr SH 71 West | Crossing SH 71 East at FM 973 | Crossing Midblock SH 71 East | Walking Along SH 71 East | Total Peds/Hr SH 71 East |
|---|---|---|---|---|---|---|---|
| 6-7am* | 7 | 0 | 7 | 4 | 0 | 0 | 4 |
| 7-8am | 19 | 4 | 23 | 0 | 0 | 11 | 11 |
| 8-9am | 1 | 4 | 5 | 1 | 0 | 5 | 6 |
| 9-10am | 16 | 5 | 21 | 2 | 0 | 3 | 5 |
| 11-12noon | 1 | 5 | 6 | 1 | 3 | 1 | 5 |
| 12-1pm | 3 | 3 | 6 | 8 | 3 | 4 | 15 |
| 1-2pm | 1 | 9 | 10 | 4 | 1 | 7 | 12 |
| 2-3pm | 5 | 8 | 13 | 4 | 8 | 8 | 20 |
| 4-5pm | 3 | 2 | 5 | 2 | 0 | 12 | 14 |
| 5-6pm | 1 | 3 | 4 | 1 | 7 | 1 | 9 |
| 10-hr Total | 57 | 43 | 100 | 27 | 22 | 52 | 101 |

* Darkness limited sight of pedestrians before 6:30am.

**Table 2. Pedestrian Volume on FM 973**

| Hour | Crossing FM 973 at SH 71 | Crossing Midblock FM 973 | Walking Along FM 973 | Total Peds/Hr FM 973 |
|---|---|---|---|---|
| 6-7am* | 4 | 0 | 11 | 15 |
| 7-8am | 2 | 0 | 11 | 13 |
| 8-9am | 4 | 0 | 0 | 4 |
| 9-10am | 0 | 0 | 5 | 5 |
| 11-12noon | 0 | 0 | 3 | 3 |
| 12-1pm | 0 | 0 | 6 | 6 |
| 1-2pm | 0 | 3 | 5 | 8 |
| 2-3pm | 4 | 0 | 6 | 10 |
| 4-5pm | 0 | 0 | 7 | 7 |
| 5-6pm | 0 | 0 | 13 | 13 |
| 10-hr Total | 14 | 3 | 67 | 84 |

* Darkness limited sight of pedestrians before 6:30am.

Lines were drawn on a satellite image of the study area and extended beyond the roadway to better indicate the pedestrian's origin and destination. These lines are shown in Figures 8-10 where each pedestrian is represented by a line. The pedestrians who crossed the roadway are not counted as walking along even though they might have walked adjacent to the roadway for some part of their walking trip. A closer view of each of the primary crossing points showing arrows for the direction of travel is included in Appendix D.

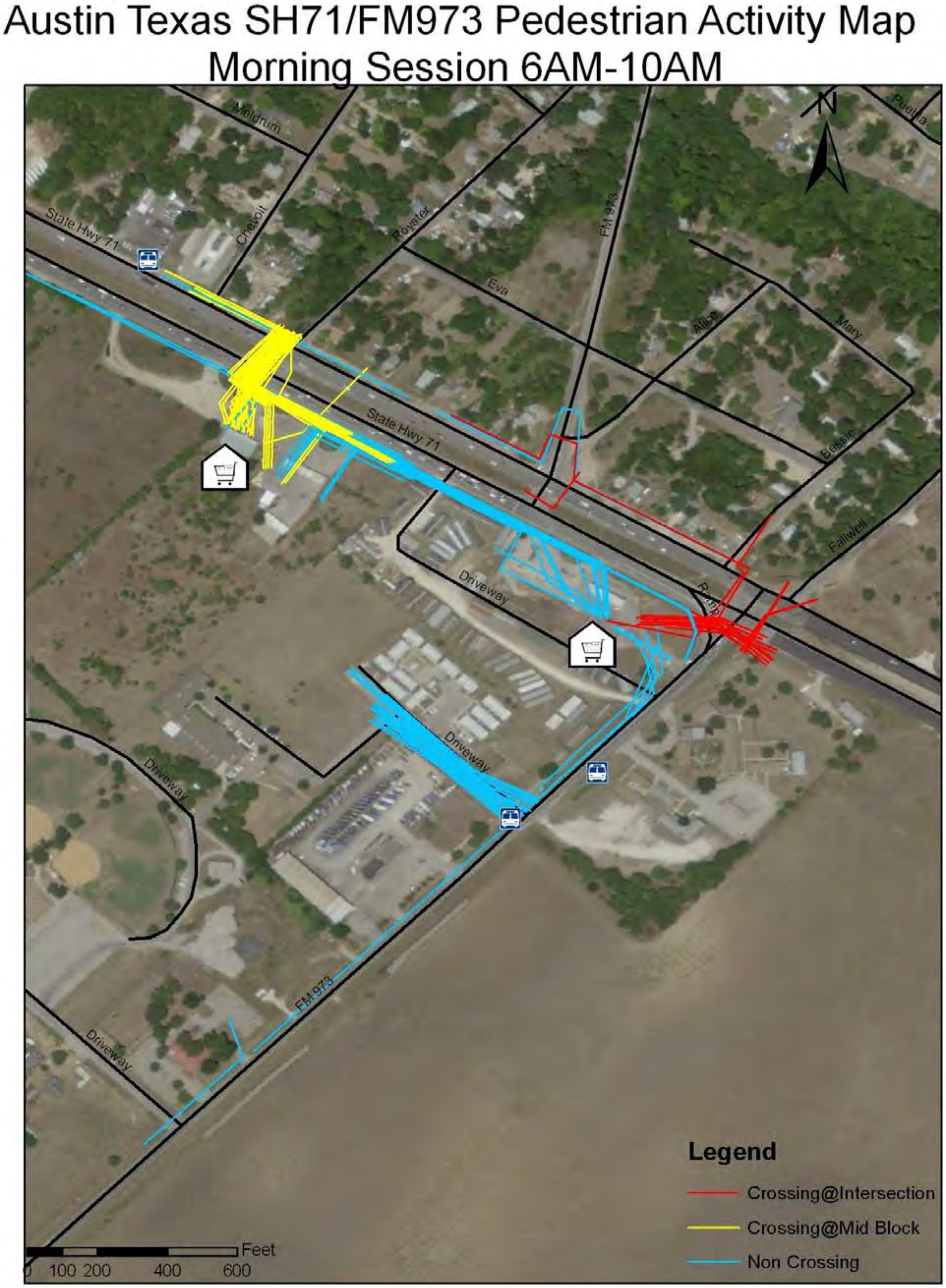

Austin Texas SH71/FM973 Pedestrian Activity Map
Morning Session 6AM-10AM
N
Meldrum
Puebla
Chevrolt
Royster
FM 973
State Hwy 71
Eva
Alice
Mary
State Hwy 71
Bessie
Faliwell
Driveway
Ramp
Driveway
Driveway
FM 973
Driveway
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0 100 200 400 600

Figure 8. Morning Pedestrian Travel

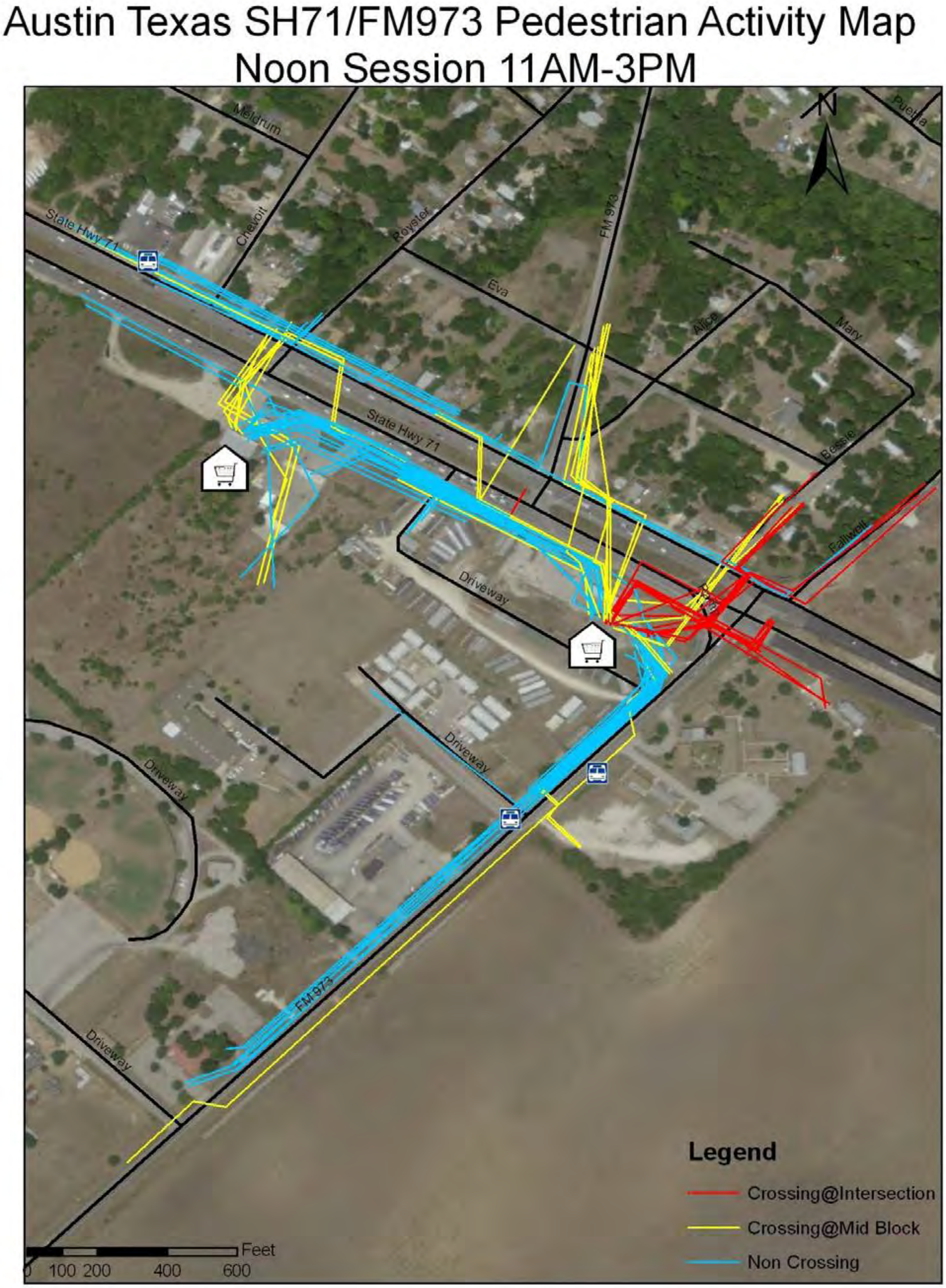
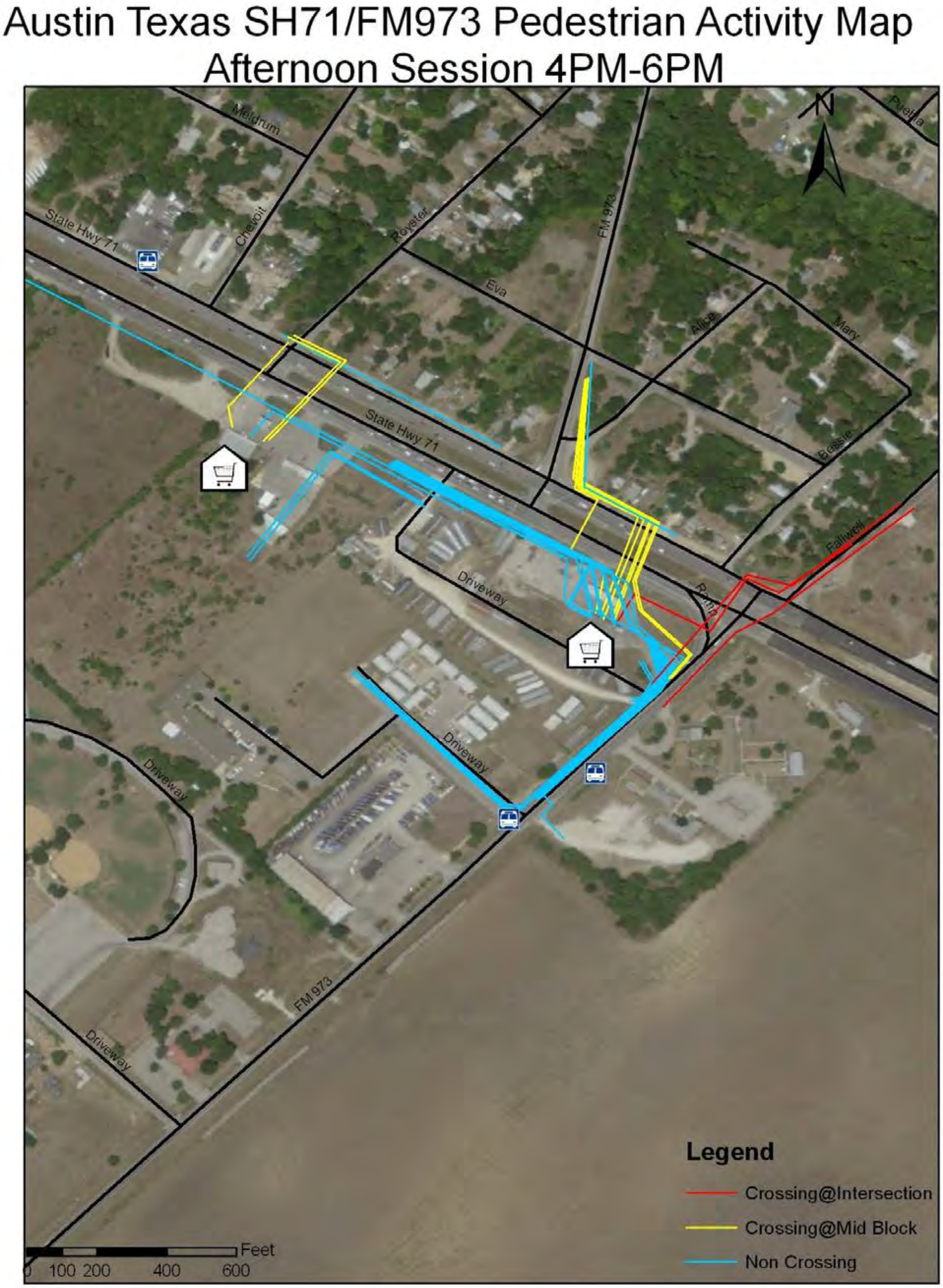

Austin Texas SH71/FM973 Pedestrian Activity Map
Noon Session 11AM-3PM
N
Meldrum
Puebla
Chevoit
Royster
FM 973
State Hwy 71
Eva
Alice
Mary
State Hwy 71
Bessie
Fallwell
Driveway
Driveway
Driveway
FM 973
Driveway
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0 100 200 400 600

**Figure 9. Noon-time Pedestrian Travel**



Austin Texas SH71/FM973 Pedestrian Activity Map
Afternoon Session 4PM-6PM
N
Meldrum
Puebla
Chevrolt
Royster
FM 973
State Hwy 71
Eva
Alice
Mary
State Hwy 71
Bessie
Fallwell
Driveway
Ramp
Driveway
Driveway
Driveway
FM 973
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0 100 200 400 600

**Figure 10. Afternoon Pedestrian Travel**

**Stakeholder Discussions**

The pedestrian data collection results indicate that many pedestrians are crossing SH 71 near Royster Avenue to reach the bus stop located near the Sonic Drive-In at Cheviot Lane (see Figure 11). This is especially true in the morning hours. Since Capital Metropolitan Transportation Authority (CapMetro) handles the placement and construction of bus stops, researchers were asked to contact them to discuss concerns. In addition to CapMetro, several other agencies were contacted to understand the needs of the community including: Travis County Correctional Facility, Austin Transitional Housing Center, the Del Valle Community Coalition, South Rural Community Center, and the Children's Wellness Center.

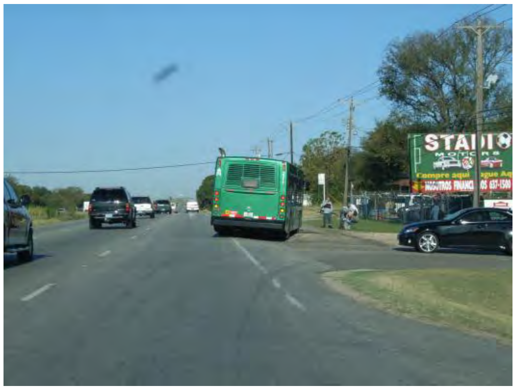


Figure 11. Westbound Bus Stop at Cheviot Lane

Capital Metro

From the discussions, it is clear that CapMetro would like to have an improved and accessible westbound bus stop. Any modifications to this stop would necessitate upgrading the stop to meet current standards. They have funding available to support this work. When asked if they would move this westbound bus stop to the east, CapMetro staff indicated that they would be willing to shift the bus stop to the east as long as it remains west of FM 973 (south leg). Moving to the east of FM 973 (south leg) is not preferred.

CapMetro would also like to install an eastbound bus stop on the south side of SH 71. They are willing to pay for the bus stop and the sidewalks leading to it if TxDOT gives the approval. They point to the FM 969/Martin Luther King Jr. Boulevard east of Airport Boulevard project where TxDOT had limited right-of-way and drainage ditches on either side and still managed to install sidewalks and accessible bus stops on both sides of the roadway.

Bus pull-outs are also needed on SH 71 so that the bus driver can move the bus off of the main lanes to load and unload. CapMetro staff said that ideally the pull-out would be similar to the one on Loop 1/MoPac East Frontage Road north of RM 2244. Photos of sidewalks and pullouts on FM 969 and Loop 1/MoPac north of RM2244 are available in Appendix E.

A meeting of TxDOT and CapMetro was held on April 14, 2011 to discuss these issues.

Austin Transitional Housing Center

The Austin Transitional Housing Center is located behind the convenience stores with a driveway connecting to SH 71. This center houses almost 350 people most of whom are transit dependent. Release times begin at 5:30am when residents leave for jobs. Between 6:30 and 7:00am, others are released to search for jobs. The residents are encouraged to use the bus stop located on the Travis County Correctional Facility by the baseball fields. A section of fence was removed to enable access to the stop. However, it appears that many of the residents choose not to use that stop and instead cross SH 71 to reach the westbound stop near Cheviot Lane.

To compound matters, the administrators of the correctional facility recently decided to remove the bus stop due to damage caused to the pavement structure and problems during weekends when motor vehicle parking around the fields constrains bus travel. Administrators have been in discussion with CapMetro about this bus stop removal.

Travis County Correctional Facility

Many people travel to and from the correctional facility by bus, according to the facility director. They come to visit relatives, to assist people who are being released, or are themselves being released. The director indicated that people who are released often choose to walk. He requests that a sidewalk be installed as part of this superstreet project along the west side of FM 973 in front of their facility leading to SH 71. He also suggests a bus stop on eastbound SH 71 near the driveway to the transitional center so that residents are less tempted to cross the highway. However, he has no funding to support such a project.

South Rural Community Center

Research staff also contacted the South Rural Community Center staff who indicated that many people come to their facility which houses a clinic and support services for families. The clients reportedly walk, bus, bike, and drive to the facility. Adults are sometimes seen with children in tow.

What has resulted from people walking to and from the facilities mentioned above is a hard-packed trail on the western side of FM 973.

Del Valle Community Coalition and Children's Wellness Center

The Del Valle Community Coalition staff person recommended researchers speak with the director of the Children's Wellness Center on Ross Road. Although the center is on Ross Road which is located east of the superstreet project, the director indicated that she has heard from people who regularly walk the section of SH 71 where the superstreet is planned. Researchers provided questions and the director called several people who live in the area. The questions and answers are as follows:

- Do you walk along or across the FM 973 and SH 71?

  *Along and across 973 and 71. Some of us ride bikes too but it is not safe and our children cannot attend ACC, even though they have been accepted because it is not safe for them to ride their bikes to the bus stop.*

- If you cross, do you cross at a traffic signal?

  *Yes, but there are no crosswalks.*

- How do you feel when walking in the area?

  *Very unsafe. Please check the wrecks on this strip on 973 and around 71 along Del Valle proper. The numbers grow each year. The main problem is the truck (drivers) who speed and pass lanes, even at the top of the hill. Many of us actually have to dodge the trucks.*

- Have there been times when you have to run to get across the street for fear of being hit?

  *Yes and I have had to run away from the road to avoid being hit.*

- What obstacles do you face when walking along or across the roadways?

  *Flying rocks/dirt. No room to walk side by side with my children, too dark in the morning to get to work, no bike lane, trucks, trucks and more trucks who never seem to get stopped for dangerous driving.*

- Do you ride the bus and get on or off at the bus stops in the area?

  *Yes.*

- Where are you typically walking to/from? In other words, are you walking from home or the bus stop to destinations in the area?

  *Further down south on 973, off Pierce Lane, Elroy Road, Jacobson Road*

- What improvements would you most like to see on these roadways?

  *A flyway or walking bridge from Ross Rd to the Metropolitan Park across from 71 so that the children and families can safely cross to the park. Bike lanes/walking lane. Signs that enforce speed limits and driving laws. Cross walks with traffic lights that help people cross. Bus stops that have a shelter for rain and sun.*

- Anything else you'd like to add?

  *A longer side lane to turn into Ross Rd from 71, a wider 973 road from 71 to MLK near Hornsby. A pass for the toll roads so that those who have the quality of life lowered by the toll way can actually afford to use the road.*

**Recommendations**

Based on the data collection results as well as input from the stakeholders in the SH 71/FM 973 area, many pedestrians walk along and across the roadways. To increase the safety and provide accommodations for pedestrians in this area, the following recommendations are made:

1. Relocate the westbound bus stop on the north side of SH 71 near Cheviot Lane to the section of SH 71 between the two legs of FM 973. By relocating the stop, current accessibility standards must be met. People are more likely to cross SH 71 at the FM 973 (south leg) signalized intersection since it will be closer to the bus stop and pedestrians will continue to be accommodated with crosswalks, pedestrian signals, curb ramps, and pedestrian push buttons.
2. Install sidewalks along both sides of SH 71 between Cheviot Lane and FM 973 (south leg).
3. Install a sidewalk along the west side of FM 973 between SH 71 and the Travis County Correctional Facility southernmost driveway.
4. Improve the southbound bus stop on FM 973 to current accessibility standards.
5. Install a bus stop on the south side of eastbound SH 71 near the Austin Transitional Center driveway.
6. Re-evaluate pedestrian travel after the superstreet is installed to see if pedestrians continue to cross SH 71 at uncontrolled locations.

## Appendix A: Survey Results

### Survey for Walking and Bicycling in the Area of SH 71, US 183, and FM 973
### Austin District
### 16-Nov-10

There were 22 survey responses received at the Open House Meeting on November 16, 2010. The following answers were received.

**1. Where do you live?**

| | | |
|---|---|---|
| East Austin/Del Valle area | 19 | |
| Other | 2 | |
| | 1 | Owns property in East Austin/Del Valle |

**2. If you live in the East Austin/Del Valle area, do you live in?**

| | | |
|---|---|---|
| ð A neighborhood. Name of neighborhood or street________________________ | 18 | Colorado Crossing and Berdoll Farms listed most. See Google Map for neighborhood information. |
| ð Rural area | 1 | |
| ð Not applicable | 1 | |

**3. Do you work in the East Austin/Del Valle area?**

| | |
|---|---|
| ☐ Yes | 10 |
| ☐ No | 12 |

**4. Do you bike or walk to the following? (check all that apply)**

| | | |
|---|---|---|
| ☐ Grocery/convenience store | 6 | |
| ☐ Bus stop – where do you or your children usually catch the bus? | 3 | |
| ☐ Work or school | 2 | |
| ☐ Community center | 3 | |
| ☐ Doctor or other medical appointments | 0 | |
| ☐ Other ____________________________ | 5 | neighborhood park (2), weekend recreation, on my street, to public library |
| ☐ No. I do not walk or bike. Go to Question 7. | 10 | |

**5. Do you walk or bike along or across SH 71, US 183 or FM 973?**

| | |
|---|---|
| ☐ Yes | 3 |
| ☐ No | 12 |

**If yes, do you feel safe walking or biking along or across these roadways?**

| | |
|---|---|
| ☐ Yes | 0 |
| ☐ No | 3 |
| ☐ Explain_______________________________________________ | Although this was for people who said that they do walk on the roadway mentioned, several took the time to indicate that they do not feel safe and several listed reasons shown below. |
| Comments: 1) Try to avoid, others in the neighborhood do travel on these busy roads. Too much traffic. 2) There is too much traffic and daily accidents. 3) Not right now. Too dangerous. No sidewalks or bike lanes. 4) Too dangerous. 5) We need pedestrian crosswalks with stop bars. Please support more pedestrian and bike routes. 6) Need sidewalks near commercial areas. 7) Cars go too fast. | |

**6. What time do you typically walk or bike across or along SH 71, US 183 or FM 973? (check all that apply)**

| | |
|---|---|
| ☐ Peak periods (weekdays from 6:30-9:30 AM or 4-7 PM) | 2 |
| ☐ Mid-day (non-peak periods) | 1 |
| ☐ Nights | 0 |
| ☐ Weekends | 4 |

**7. What needs to be present for children to walk or bicycle across or along SH 71, US 183 and FM 973? (check all that apply)**

| | |
|---|---|
| ð Crosswalks at the signalized intersections | 12 |
| ð "Walk/Do Not Walk" lights at the traffic signals | 9 |
| ð Sidewalks | 12 |
| ð Sidewalk ramps for wheelchair accessibility | 8 |
| ð Other_______________________________________________________ | safety monitors; bright lighting/signals and signage announcing crosswalks/bicycle routes/lanes; it would not be safe with any of these measures; police; recreation (a reason to walk, somewhere to go); any and everything cause we don't have anything; some kind of wall or barrier to protect children and adults from high speed traffic; hike/bike trails. |

**8. Would you cross SH 71, US 183, and FM 973 at the signalized intersections if the following amenities existed? (check all that apply)**

| | |
|---|---|
| ☐ Crosswalks | 11 |
| ☐ “Walk/Do Not Walk” lights | 9 |
| ☐ Sidewalks | 10 |
| ☐ Sidewalk ramps for wheelchair accessibility | 6 |
| ☐ Other _____________________________________________________ | No; Signage; It would not be safe with any of these measures; Over the street bridge; Need these in the future when more businesses are established, example Dollar General on Ross Road. |

**9. Please feel free to share other transportation safety concerns.**

| |
|---|
| This is an accident (fatality) waiting to happen especially for children. |
| Need weekend bus service. Need to anticipate commerce and development and provide for peds. |
| Thanks for your openness to feedback and public input. |
| Traffic on FM969. |
| There is no way I would ever bike or walk along either the way it is. |
| 71 should be three lanes until Ross Road |
| Need more walking safety features on busy highways. |
| Bike riders do not feel safe sharing the road with cars. |

**10. What is your age group?**

| | |
|---|---|
| ☐ 18-19 (you must be 18 or older to participate in this survey) | 0 |
| ☐ 20-24 | 0 |
| ☐ 25-44 | 10 |
| ☐ 45-64 | 9 |
| ☐ 65 and over | 1 |

## Appendix B: Neighborhood of Survey Participants

Includes respondents who listed their neighborhood/street (includes 17 out of 19 people). Neighborhood is indicated with a blue balloon in aerial photo.

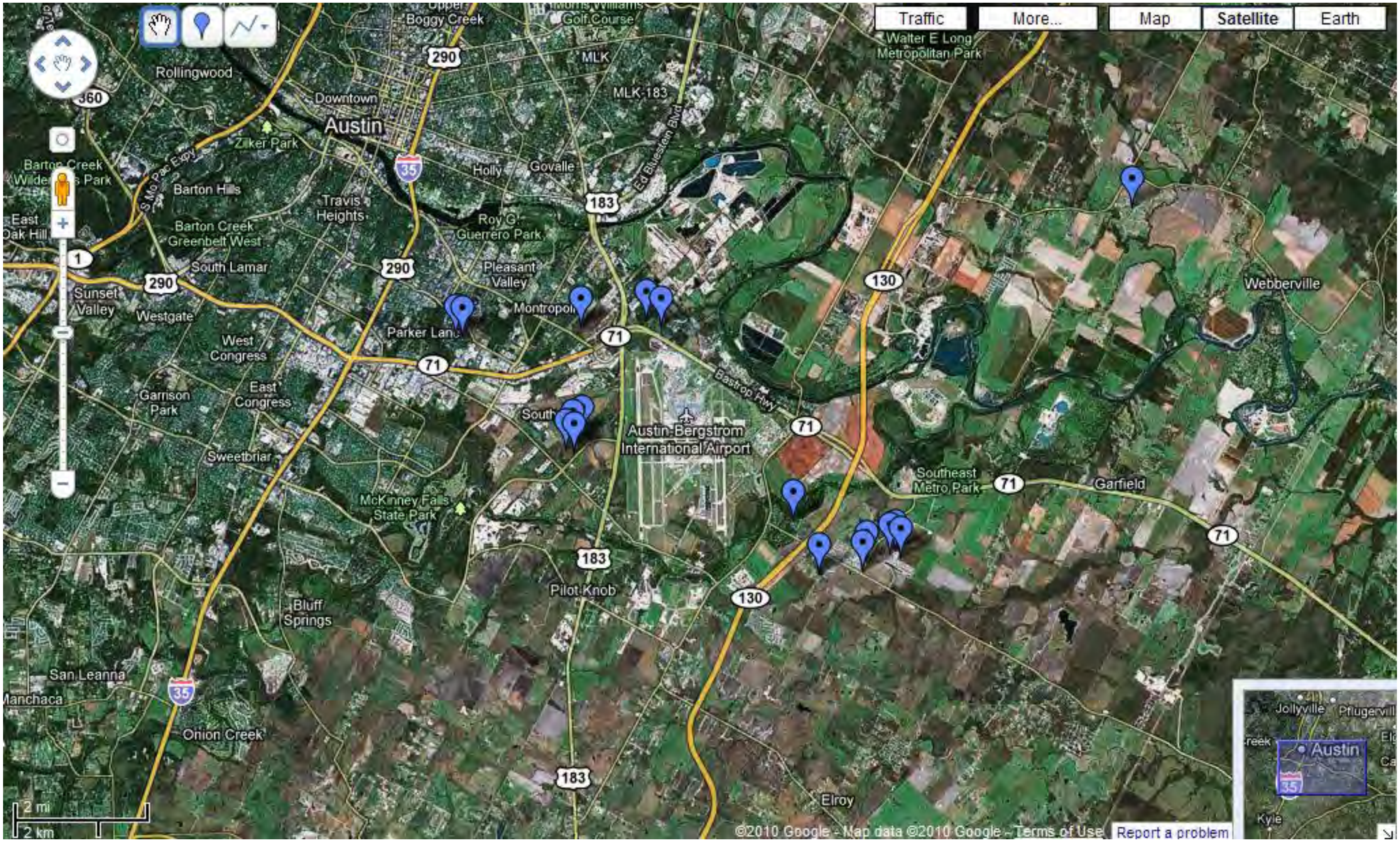

Traffic
More...
Map
Satellite
Earth
Upper Boggy Creek
Morris Williams Golf Course
Walter E Long Metropolitan Park
290
MLK
MLK-183
Rollingwood
360
Downtown
Austin
Zilker Park
Barton Creek Wilderness Park
Barton Hills
S Mo Pac Expy
35
Holly
Govalle
183
Ed Bluestein Blvd
Travis Heights
East Oak Hill
Barton Creek Greenbelt West
Roy G Guerrero Park
1
290
South Lamar
Pleasant Valley
290
130
Webberville
Sunset Valley
Westgate
Montopolis
Parker Lane
71
71
West Congress
Bastrop Hwy
Garrison Park
East Congress
South
Austin-Bergstrom International Airport
71
Sweetbriar
Southeast Metro Park
71
Garfield
McKinney Falls State Park
71
183
Pilot Knob
130
Bluff Springs
San Leanna
Manchaca
35
Onion Creek
183
Elroy
2 mi
2 km
©2010 Google - Map data ©2010 Google - Terms of Use
Report a problem
Jollyville
Pflugerville
Austin
35
Kyle

Figure 12. Residential Areas of Survey Respondents

## Appendix C:  Pedestrian Counts by Age

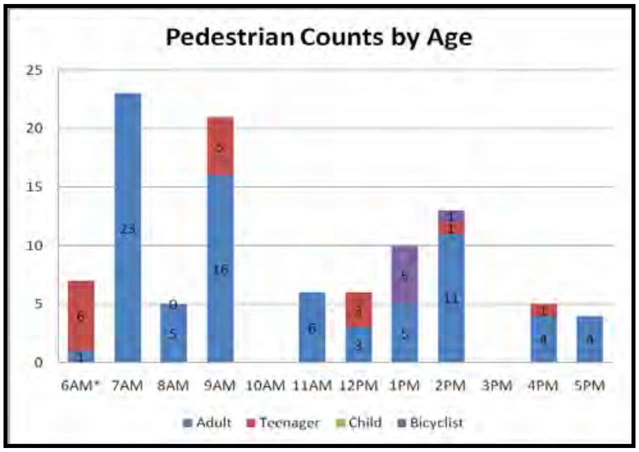


Figure 13.  SH 71 West Pedestrian Volume by Age

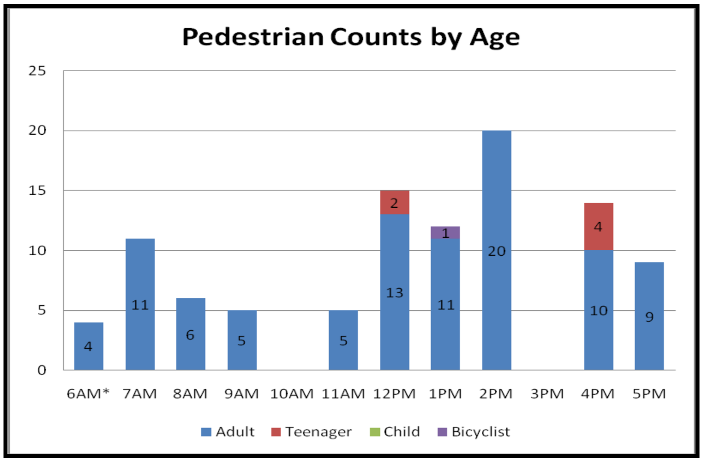


Figure 14.  SH 71 East Pedestrian Volume by Age

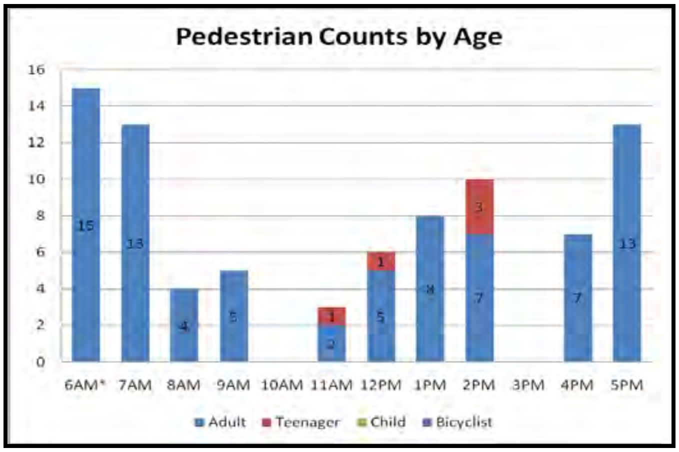


Figure 15.  FM 973 (south leg) Pedestrian Volume by Age

## Appendix D: Close Up Views

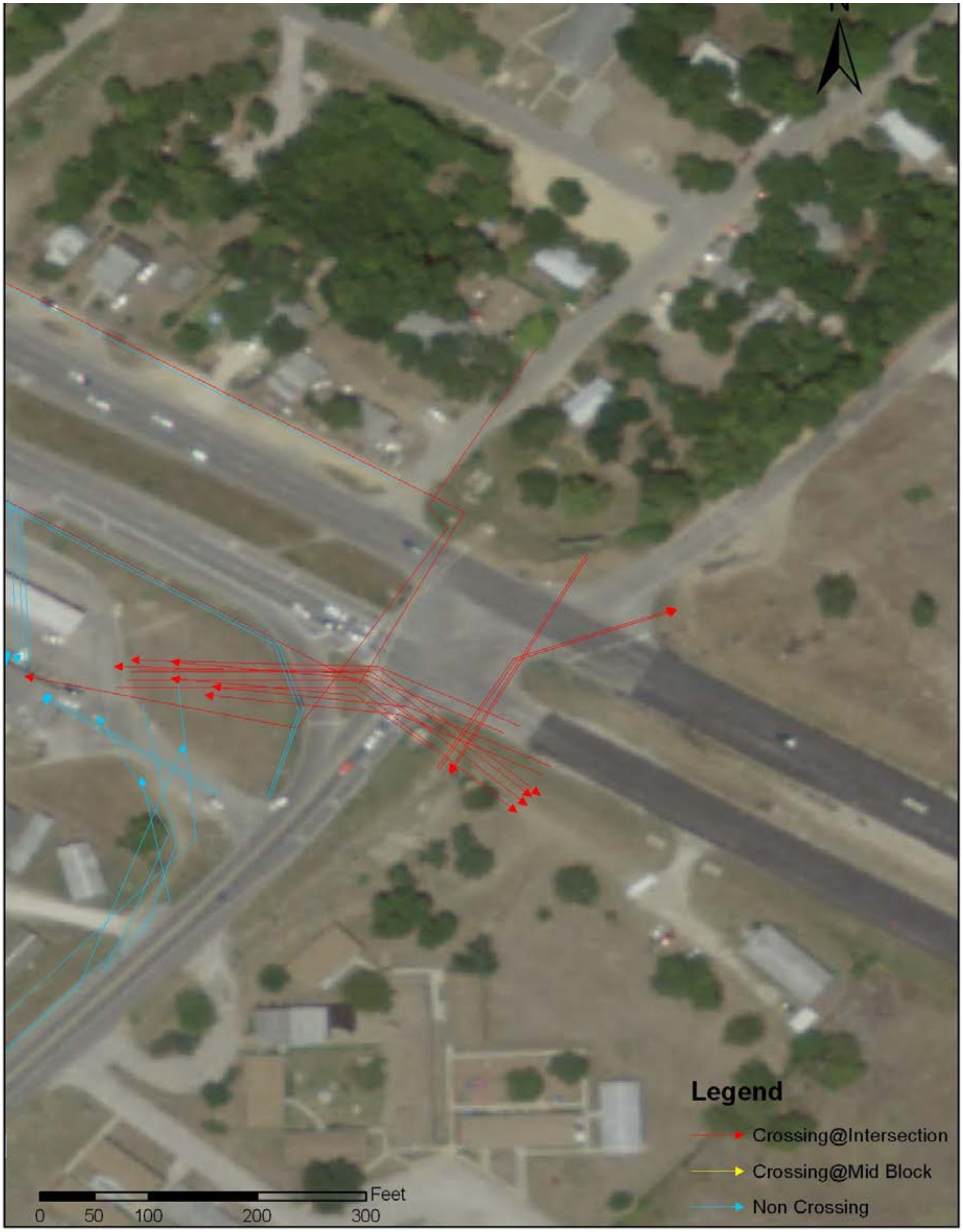

N
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0
50
100
200
300

**Figure 16. SH 71 at FM 973 South Leg**

**Morning Period - 6-10AM**

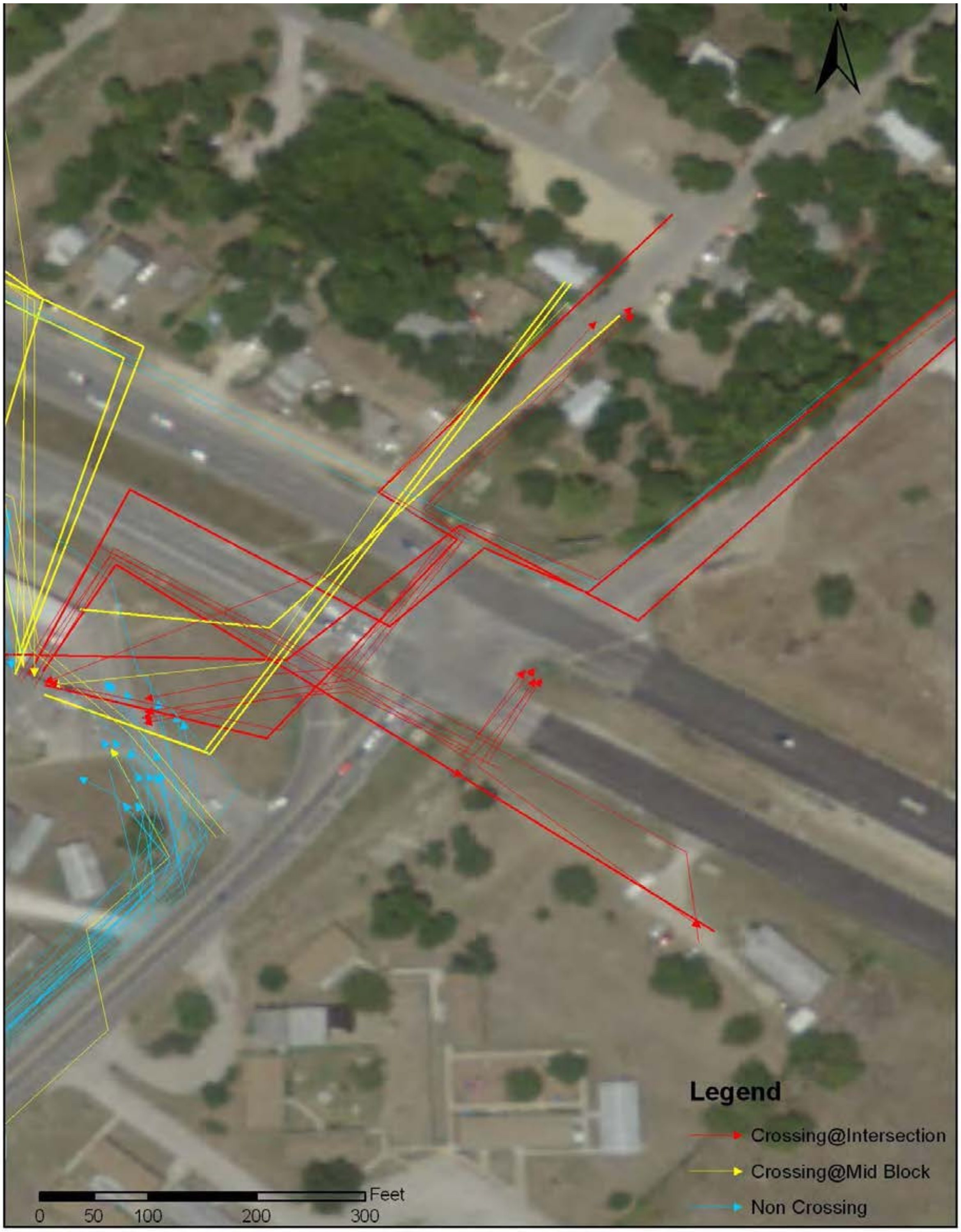

Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0
50
100
200
300
N

Figure 17. SH 71 at FM 973 South Leg

Noon Period - 11-3PM

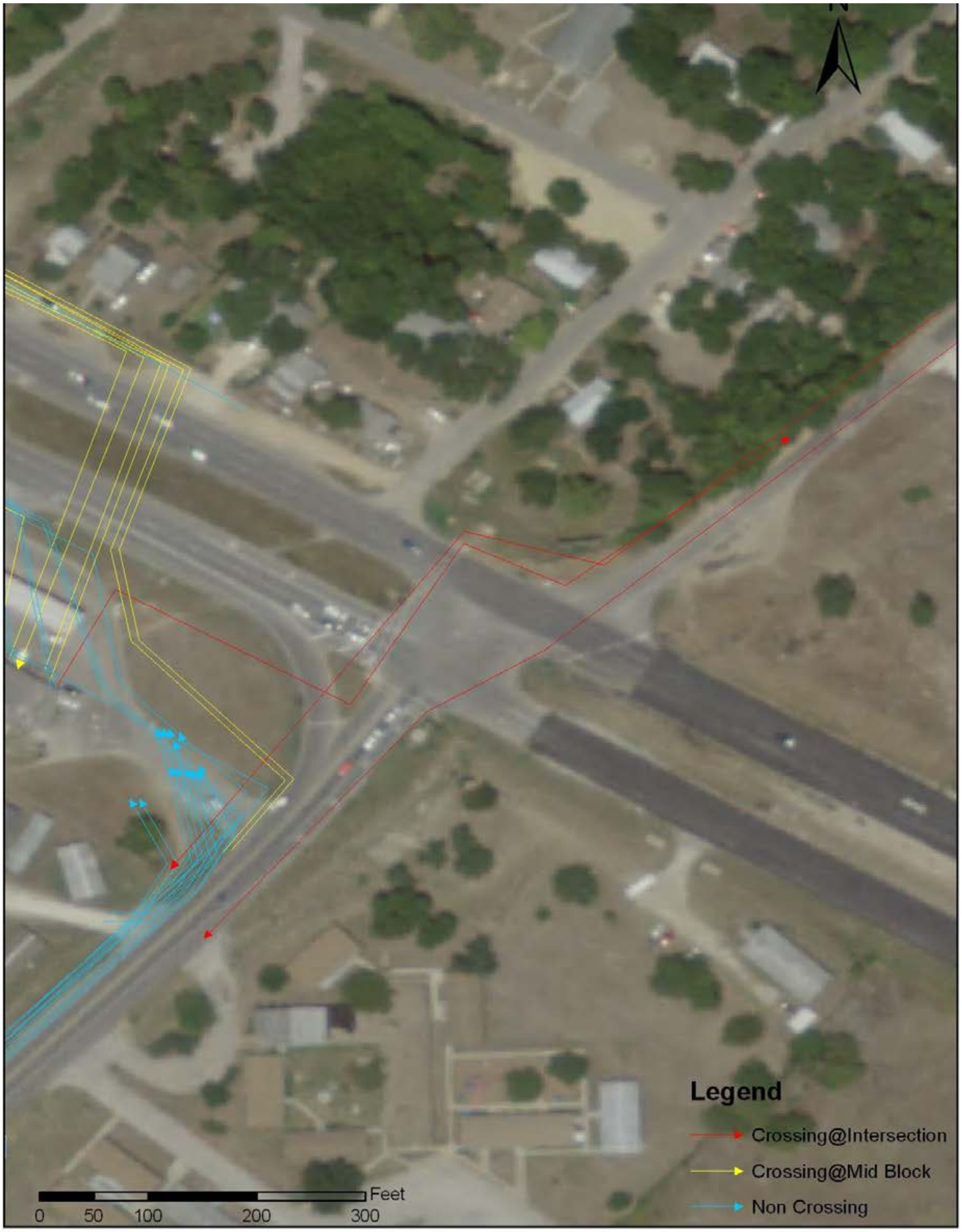

N
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
0
50
100
200
300
Feet

Figure 18. SH 71 at FM 973 South Leg

Afternoon Period – 4-6PM

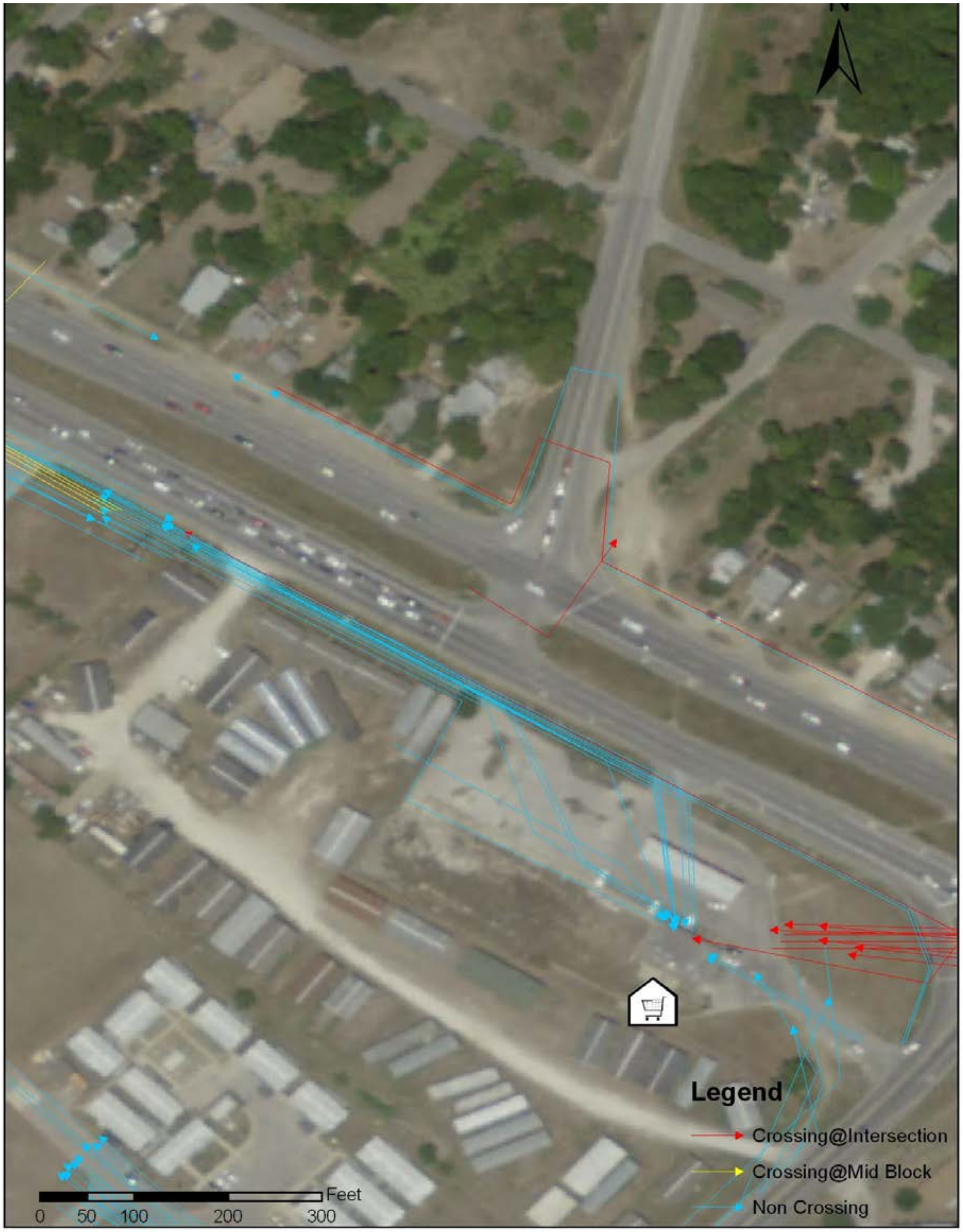

N
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0
50
100
200
300

Figure 19. SH 71 at FM 973 North Leg

Morning Period - 6-10AM

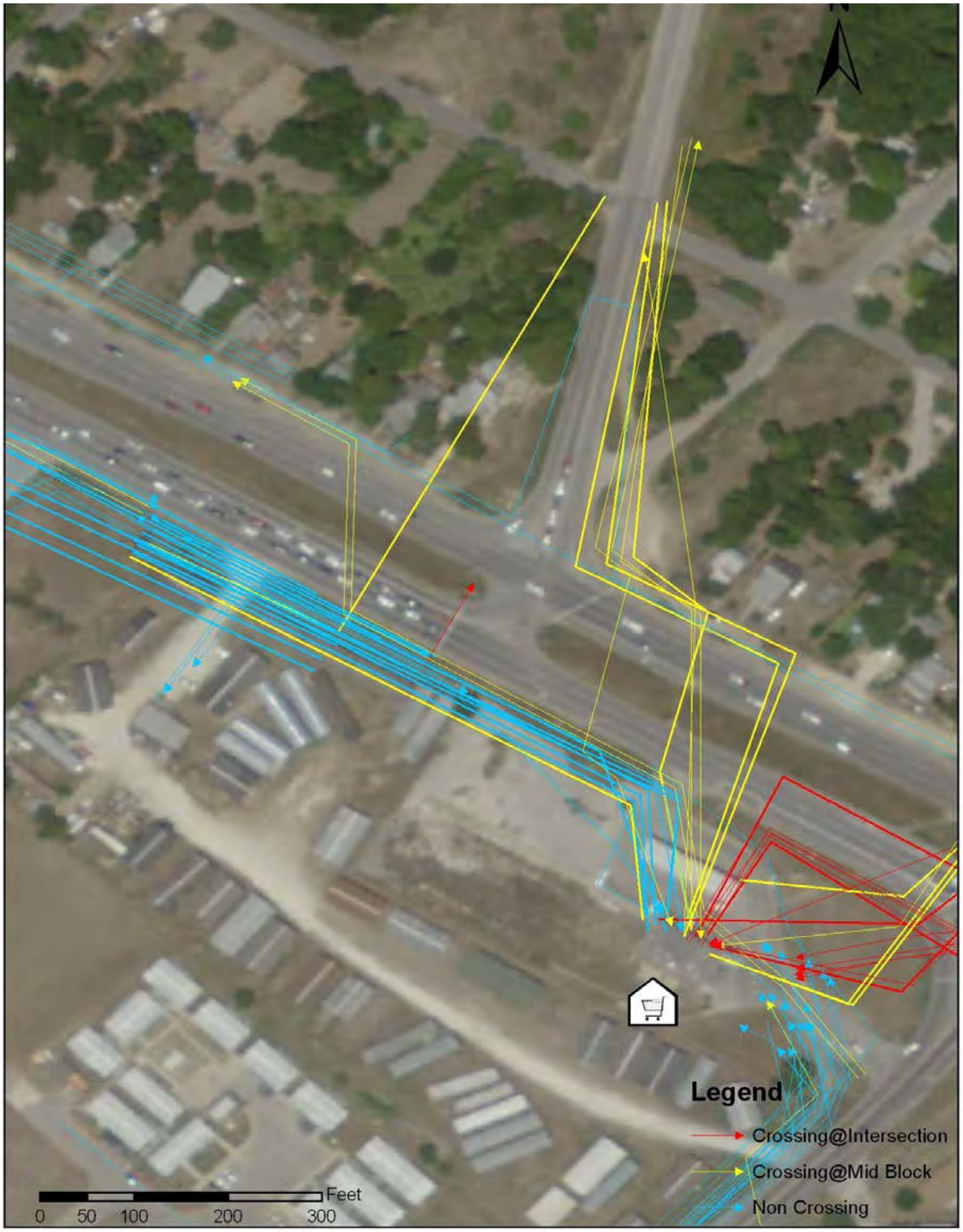

Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0
50
100
200
300

**Figure 20. SH 71 at FM 973 North Leg**

**Noon Period – 11-3PM**

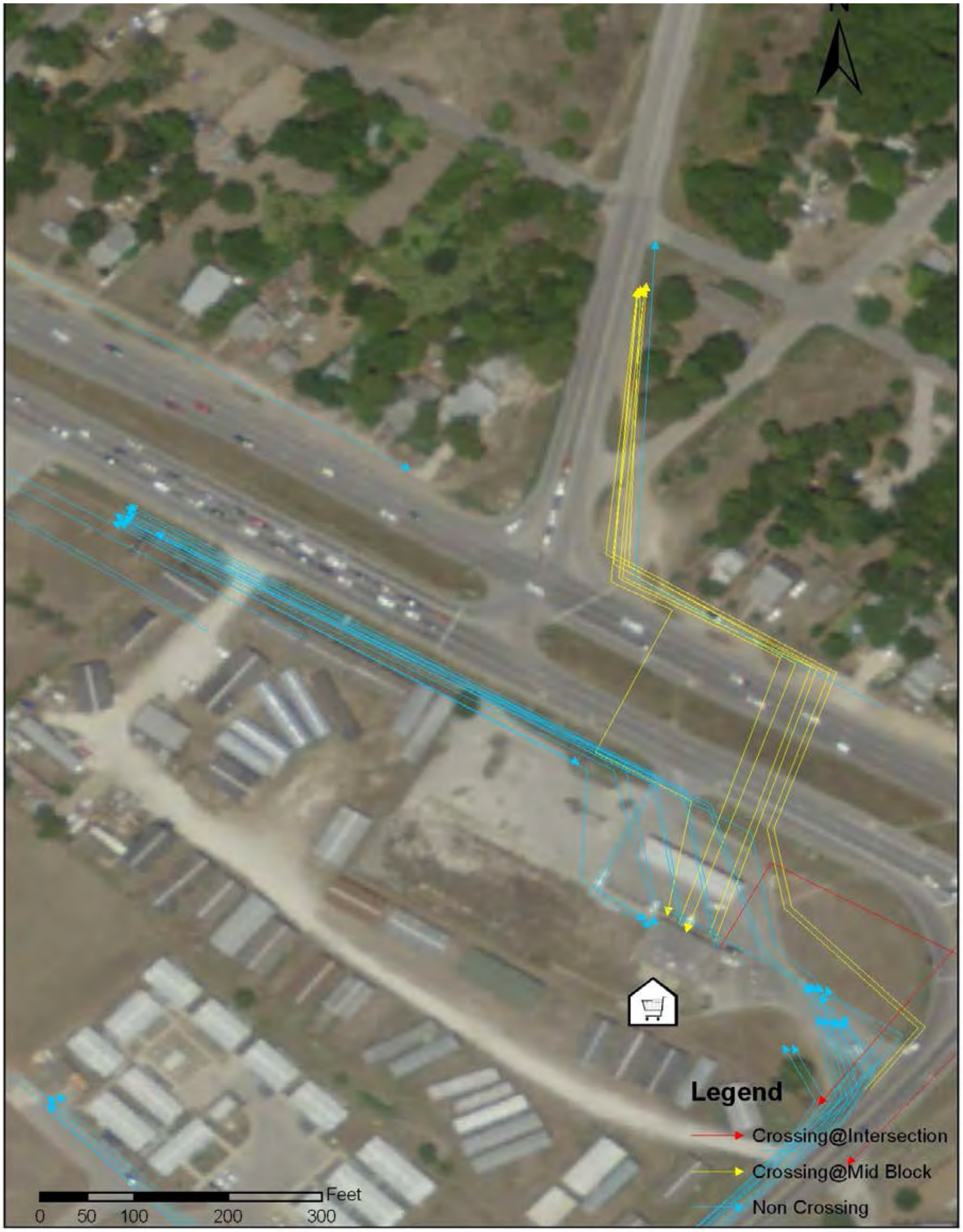

Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0
50
100
200
300

Figure 21. SH 71 East Section at FM 973 North Leg

Afternoon Period – 4-6PM

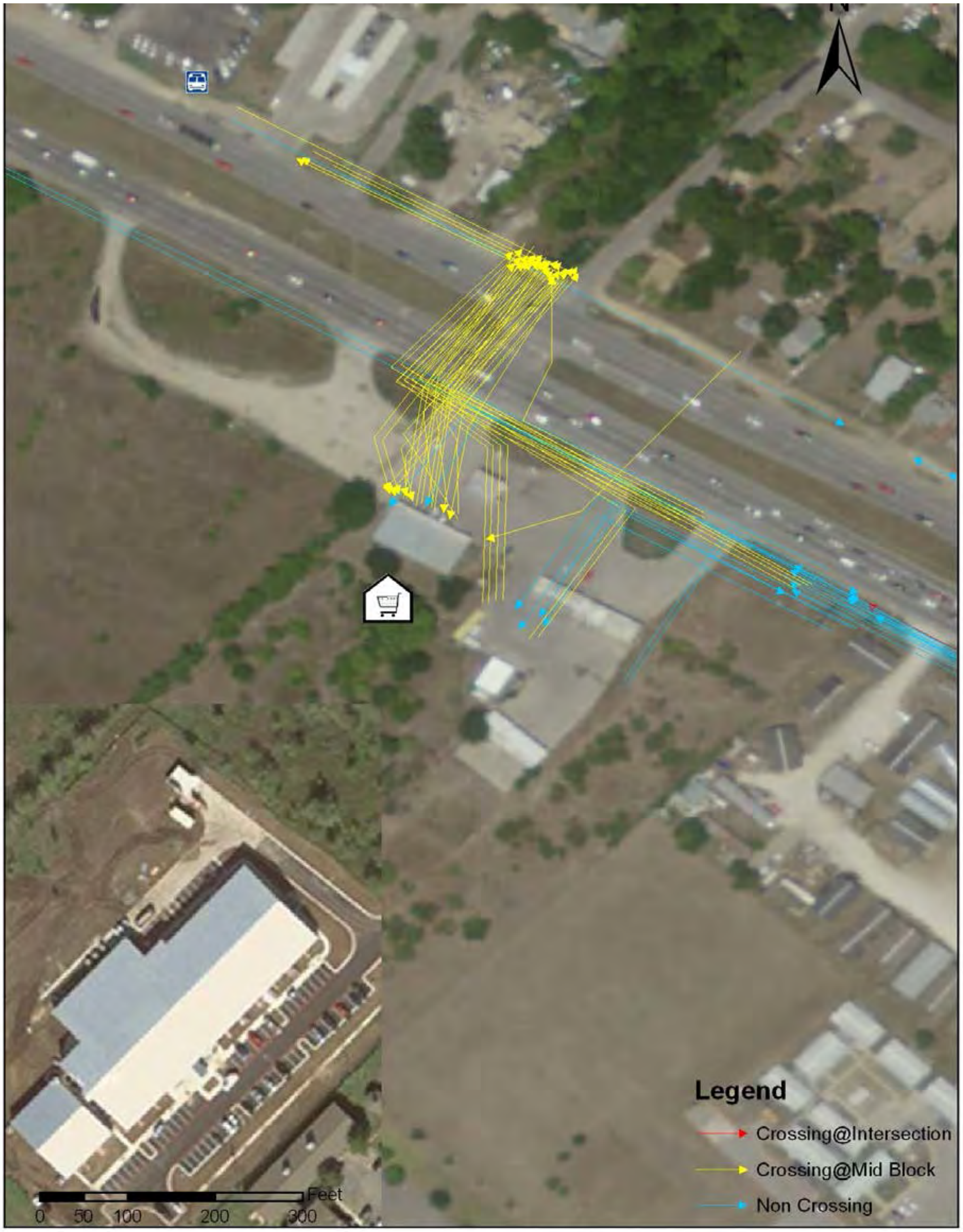

N
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
0 50 100 200 300
Feet

**Figure 22. SH 71 at Royster Avenue**

**Morning Period - 6-10AM**

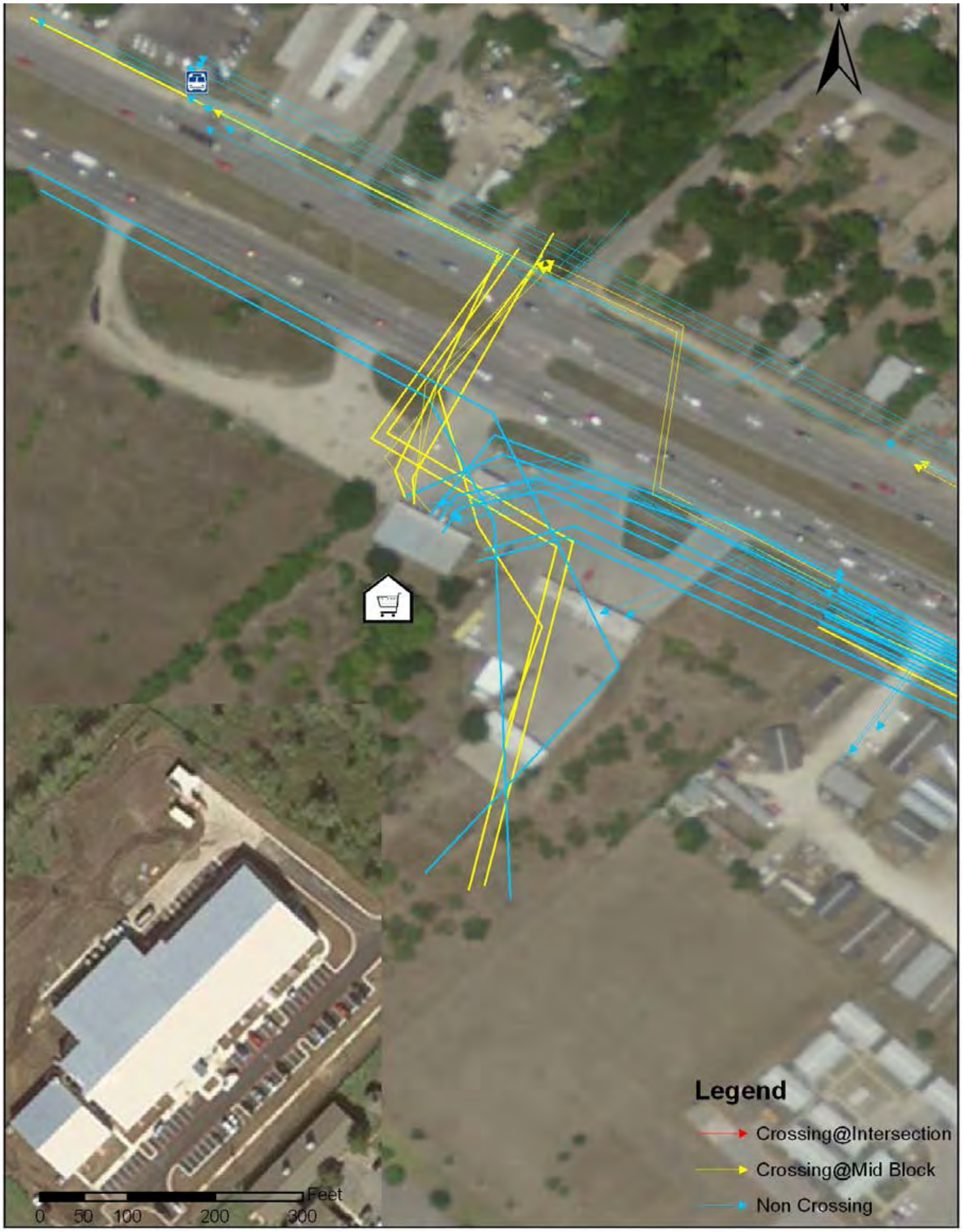

N
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0
50
100
200
300

Figure 23. SH 71 at Royster Avenue

Noon Period – 11-3PM

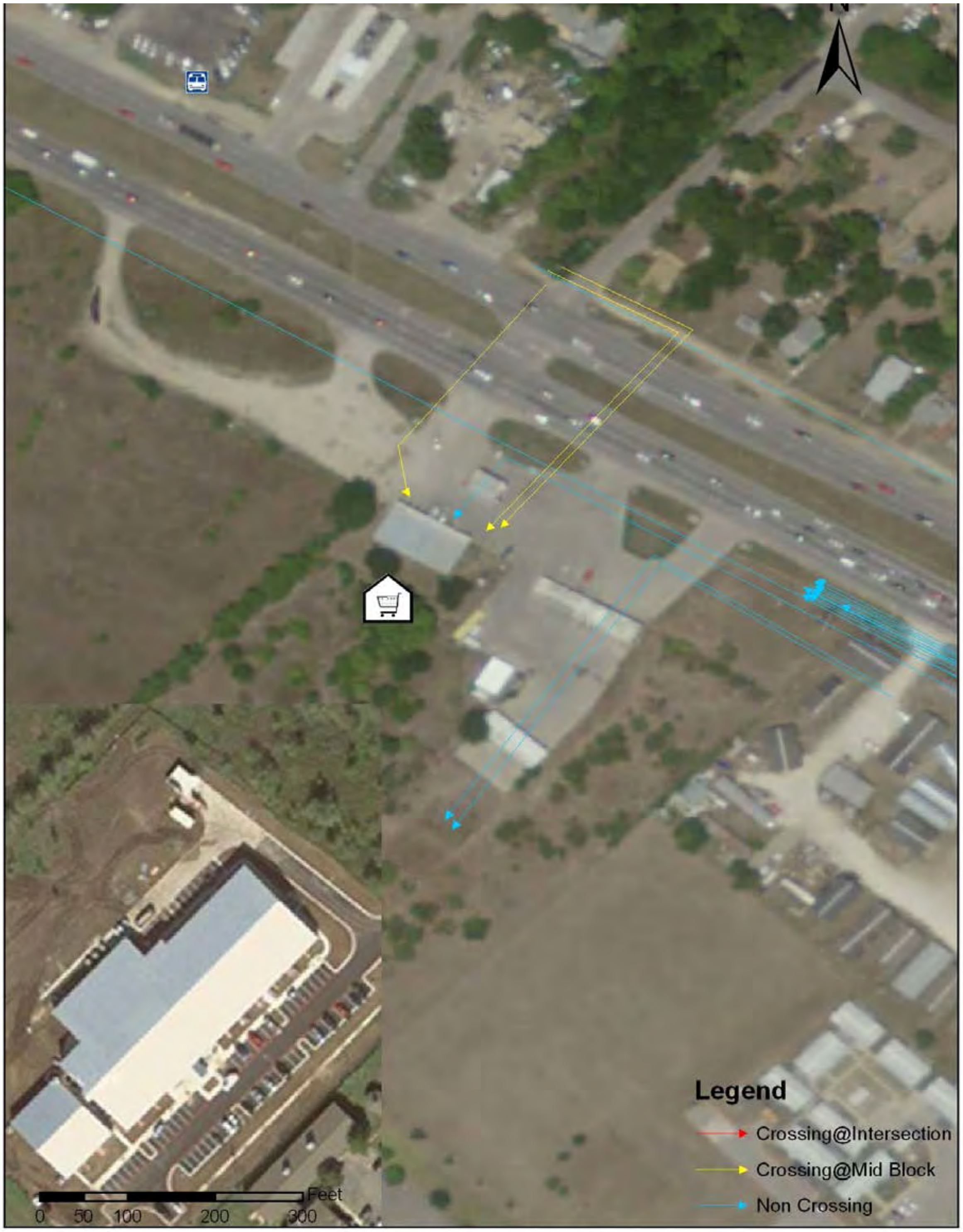

N
Legend
Crossing@Intersection
Crossing@Mid Block
Non Crossing
Feet
0
50
100
200
300

Figure 24. SH 71 at Royster Avenue

Afternoon Period – 4-6PM

## Appendix E: Photos of Example Sidewalks and Bus Stops

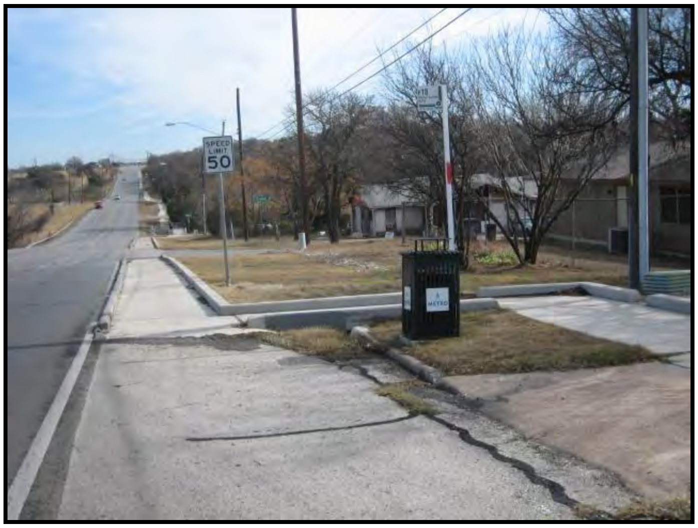


Figure 25. Bus Pull-Out on FM 969

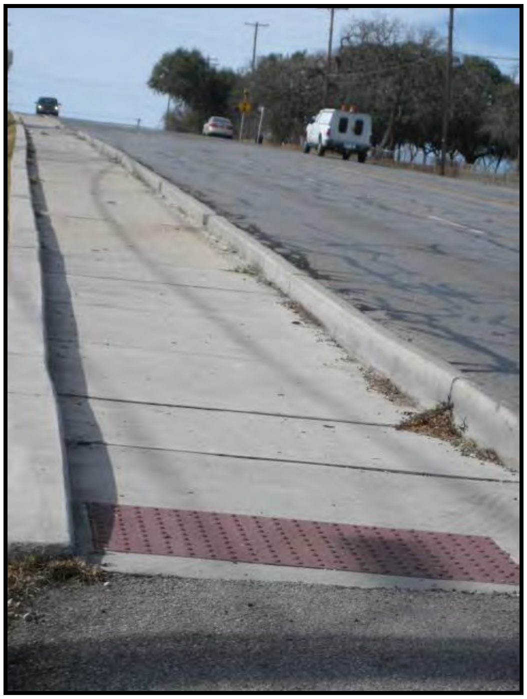


Figure 26. Sidewalk on FM 969 Eastbound

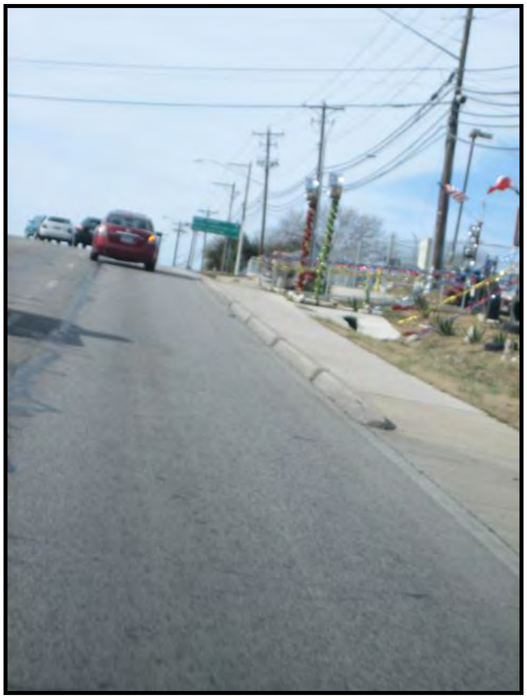


Figure 27. FM 969 Westbound (note sidewalk and drainage)

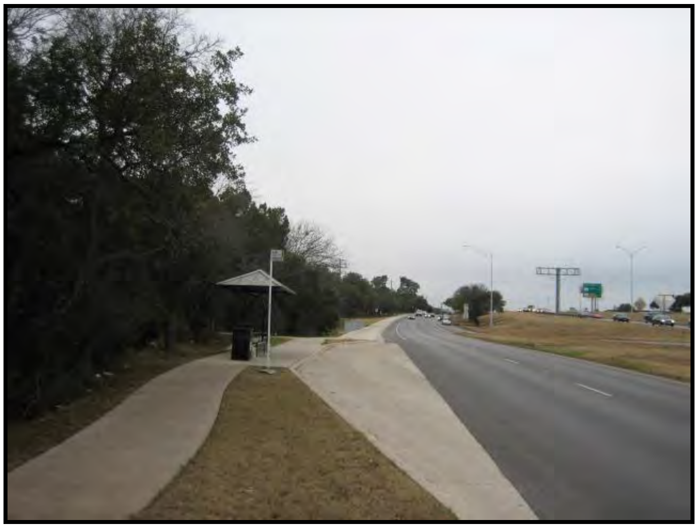


Figure 28. Loop 1 EFR north of RM 2244 (good example)

# Texas Department of Transportation

## TECHNICAL PROVISIONS

## STATE HIGHWAY 71 TOLL LANES

# Attachment 21-1

# Toll Facility Responsibility Matrix

# Execution Version

# TOLL FACILITY RESPONSIBILITY MATRIX
## SH 71 Project

| Responsibility Assignment Legend | | | |
|---|---|---|---|
| **Primary Responsibility: P** | **Support Responsibility: S** | **Coordination Responsibility Only: C** | **No Responsibility: N** |

| **Element/Task/Component/ Sub-system** | **DB Contractor (DB)** | | | **Systems Integrator (SI)** | | | **Comments Other Responsibility/Information** |
|---|---|---|---|---|---|---|---|
| | **Design** | **Procure** | **Install/ Construct** | **Design** | **Procure** | **Install / Construct** | |
| **GENERAL REQUIREMENTS** | | | | | | | |
| Schedule | **P** | **P** | **P** | S | C | S | DB must accommodate and incorporate the SI scheduled activities into the DB schedule. All schedule changes or updates which impact the SI tasks must be agreed to by the SI prior to submittal to the Mobility Authority. A weekly schedule must be distributed and incorporate any SI updates or changes. |
| Request for Early Opening | **P** | **P** | **P** | S | S | S | SI must be able to match schedule request for early opening to conform to requirements in RFDP. |
| Design Package – Installation and Electrical Design and Plans | **P** | **P** | **P** | C | N | C | DB to incorporate all SI requirements and specifications into Structural and Electrical Design Packages. SI to provide approval prior to issuance of Released For Construction (RFC) plans. |
| Grading | **P** | **P** | **P** | C | N | C | |
| Drainage | **P** | **P** | **P** | C | N | C | No culverts or pipes under tolling zones. |
| Utilities/Electrical Services | **P** | **P** | **P** | S | C | C | SI to provide specific power requirements for the Toll System. DB to incorporate into toll facilities design and construct power utilities interface, and all power infrastructure. |
| Traffic Control/Safe work zone | **P** | **P** | **P** | S | N | C | SI to provide DB detailed lane closure requirements and schedule for installation and testing. |
| Signing | **P** | **P** | **P** | C | N | N | All toll signing must be coordinated with and approved by the Mobility Authority. If toll price signs utilize changeable electronic signs, the DB will provide the static sign and the SI will provide the electronic insert. |
| Striping | **P** | **P** | **P** | S | N | C | SI to coordinate striping with pavement loop locations. |
| Lighting | **P** | **P** | **P** | S | C | S | Roadway and toll location lighting provided by DB. SI to provide lighting requirements in vicinity of toll locations and locations of other Toll System equipment. DB to confirm that lighting does not obstruct toll related signing or impede the Toll System. |

# TOLL FACILITY RESPONSIBILITY MATRIX
## SH 71 Project

| Responsibility Assignment Legend | | | |
|---|---|---|---|
| **Primary Responsibility: P** | **Support Responsibility: S** | **Coordination Responsibility Only: C** | **No Responsibility: N** |

| **Element/Task/Component/ Sub-system** | **DB Contractor (DB)** | | | **Systems Integrator (SI)** | | | **Comments Other Responsibility/Information** |
|---|---|---|---|---|---|---|---|
| | **Design** | **Procure** | **Install/ Construct** | **Design** | **Procure** | **Install / Construct** | |
| Landscaping | **P** | **P** | **P** | C | N | N | |
| Fencing/Guardrail/Bollards/Concrete Barrier | **P** | **P** | **P** | S | C | C | SI to provide requirements for specific equipment clearances for Toll System. DB to incorporate into roadway design. SI to confirm that design plans meet requirements. |
| **TOLL SYSTEM: LOCATIONS, LAYOUTS, STRUCTURES, MOUNTS/BRACKETS** | | | | | | | |
| Locations and Layouts | **P** | **P** | **P** | S | C | C | SI to provide specific locations for the Toll System, SI to provide requirements for specific lane and facility layouts. DB to incorporate into Design Packages. SI to review and approve. |
| Gantries/Foundation/Trusses/Junction boxes/Conduits/Grounding | **P** | **P** | **P** | S | C | S | SI to provide requirements for conduits (for SI installed power and communications cables, including specific requirement for below ground conduits for the loops), junction boxes, and power needs for the Toll System. DB to incorporate into structural design, including electrical grounding, bonding. DB to provide and install junction boxes and conduit pull strings and bell ends for all conduits up to one foot above pole and gantry foundation. The DB will require SI to sign off on below-ground conduits for the loops prior to installation of special pavement structure. |
| Gantries/Foundation/Trusses/Junction boxes/Conduits/Grounding | S | C | S | **P** | **P** | **P** | SI to install conduits from one foot above grade to all Toll System components. |
| Equipment Mounts on Brackets/Frames | S | N | C | **P** | **P** | **P** | SI to procure and install all Toll System equipment, and related cable & wiring, including communications from roadside cabinets to the equipment mounted on the gantries. SI to provide requirements for all brackets and frames needed to attach SI procured equipment to DB provided truss. |
| Equipment Brackets/Frames on Gantries | **P** | **P** | **P** | S | N | C | DB to provide and install all frames needed to attach all SI procured equipment. SI to provide locations for installation to the DB. SI to provide and install all mounting brackets required for tolling equipment. |

# TOLL FACILITY RESPONSIBILITY MATRIX
## SH 71 Project

| Responsibility Assignment Legend | | | |
|---|---|---|---|
| **Primary Responsibility: P** | **Support Responsibility: S** | **Coordination Responsibility Only: C** | **No Responsibility: N** |

| Element/Task/Component/ Sub-system | DB Contractor (DB) | | | Systems Integrator (SI) | | | Comments Other Responsibility/Information |
|---|---|---|---|---|---|---|---|
| | Design | Procure | Install/ Construct | Design | Procure | Install / Construct | |
| Pavement structure, including special nonferrous zones and conduit stub-outs for in-pavement sensors/loops | **P** | **P** | **P** | S | N | C | SI to provide requirements for special pavement structure at toll gantry areas. SI shall coordinate joint spacing to avoid conflicts with loop placement and sign off on riser locations before concrete pour. DB to assure ferrous objects (i.e. rebar, grates, pipes, etc.) are not in toll revenue collection detection system(s) zone of influence. DB to locate loop risers after pavement is poured. |
| **EQUIPMENT CABINETS** | | | | | | | |
| Toll Equipment Cabinets | C | N | S | **P** | **P** | **P** | SI to provide size and number of cabinets needed for Toll System. DB shall incorporate location into site grading and drainage. SI to procure and install environmentally controlled cabinets. The environmentally controlled enclosures provided by SI must comply with the America Society of Heating, Refrigeration, and Air Conditioning Engineers: Thermal Guidelines for Data Processing Environments. DB to provide traffic control devices and safe working conditions for SI during installation of all toll equipment. |
| Toll Equipment Cabinet Site (TEC) and Roadside Equipment Cabinet Base Slabs | **P** | **P** | **P** | S | N | C | SI to provide requirements for specific equipment weight and anchorages for cabinets to the DB. DB to incorporate into Roadway Design. DB to install slabs with conduit plumbing. |
| Facility Security and Security Communications at Toll System locations | C | N | C | **P** | **P** | **P** | SI to provide security communications for all toll system equipment. DB to incorporate into the Roadway Design. |
| | | | | | | | |
| **TOLL SUB-SYSTEMS** | | | | | | | |
| Automatic Vehicle Identification (AVI) Antennas and Readers | N | N | S | **P** | **P** | **P** | SI to provide AVI System Mounts, Wiring and Cables. SI will perform all AVI system installation and terminations, and to make the connections to the electronics in the cabinets. |
| Automatic Vehicle Classification and Detection (AVC) and (AVD) | N | N | S | **P** | **P** | **P** | SI to install, connect and terminate AVC and/or AVD System mounted on the gantries and/or |

| Responsibility Assignment Legend | | | |
|---|---|---|---|
| **Primary Responsibility: P** | **Support Responsibility: S** | **Coordination Responsibility Only: C** | **No Responsibility: N** |

| **Element/Task/Component/ Sub-system** | **DB Contractor (DB)** | | | **Systems Integrator (SI)** | | | **Comments Other Responsibility/Information** |
|---|---|---|---|---|---|---|---|
| | **Design** | **Procure** | **Install/ Construct** | **Design** | **Procure** | **Install / Construct** | |
| | | | | | | | installed in the pavement to the electronics in the cabinets. |
| In-Pavement Sensors/Loops | N | N | S | **P** | **P** | **P** | SI to saw cut pavement, procure, install, and seal pavement sensors with approved sealant. DB to assure ferrous objects (i.e. rebar, grates, etc.) are not in toll revenue collection detection system(s) zone of influence. |
| Video Capture Sub-System (VCS/VES) Cameras, Illumination, Sensors and Servers | N | N | S | **P** | **P** | **P** | SI to provide, install, terminate all Video Capture Sub-System (VCS/VES) equipment. |
| In-Lane Processing Servers and Electronics | N | N | N | **P** | **P** | **P** | SI to provide, install, connect, and terminate all electronics in the cabinet and assures proper communications to the devices on the gantry and/or in the pavement. |
| **POWER DISTRIBUTION SUB-SYSTEM** | | | | | | | |
| Metered power service at each location: | **P** | **P** | **P** | C | N | C | SI to provide power requirements and special requirements for construction of utilities near each Toll System. DB to provide and install necessary conduit & junction/pull boxes. |
| Metered power service at each toll location: | C | N | C | **P** | **P** | **P** | The SI shall provide and install all other wiring, switches, surge protection/suppression, etc. for power from the meter for the Toll System equipment. SI will terminate all power wiring from ATS at Toll System. |
| Generators & Automatic Transfer Switches (ATS) | S | N | C | **P** | **P** | **P** | SI to provide generators, ATS, generator cabinets, wiring, connect and terminate all power at the Toll System sites. |
| Generator Power Source is Natural Gas (if applicable) | **P** | **P** | **P** | S | N | C | If natural gas is available, the DB shall provide, install and incorporate the gas lines into the roadway design. SI to coordinate and provide generator requirements including location for gas feed. |
| Generator Power Source is propane or diesel | S | N | C | **P** | **P** | **P** | The SI shall provide, and install the propane/diesel tank for the generator if natural gas is not a viable option for the project. The Mobility Authority will |

| Responsibility Assignment Legend | | | |
|---|---|---|---|
| **Primary Responsibility: P** | **Support Responsibility: S** | **Coordination Responsibility Only: C** | **No Responsibility: N** |

| **Element/Task/Component/ Sub-system** | **DB Contractor (DB)** | | | **Systems Integrator (SI)** | | | **Comments Other Responsibility/Information** |
|---|---|---|---|---|---|---|---|
| | **Design** | **Procure** | **Install/ Construct** | **Design** | **Procure** | **Install / Construct** | |
| | | | | | | | decide if propane or diesel will be used. |
| Uninterruptible Power Supplies (UPS) | S | N | C | **P** | **P** | **P** | SI to provide and install Uninterruptible Power Supply Systems (UPS) in the cabinets.<br>UPS will be required for the Toll System. |
| Lightning Protection & Grounding | **P** | **P** | **P** | S | C | C | SI to provide specific requirements for equipment lightning protection and grounding. DB to furnish and install required lightning protection and grounding. |
| **COMMUNICATIONS SUB-SYSTEMS** | | | | | | | |
| Conduits/Ducts & Junction/Pull Boxes/Outlets | **P** | **P** | **P** | S | C | S | SI to provide specific Communications design requirements including location of long-radius sweep conduit bends. DB to incorporate into the roadway design and install including conduits, junction boxes, bell ends with pull strings. The DB Contractor shall verify that all duct banks and conduits are clear and have pull strings prior to the beginning of the Toll System installation. |
| Fiber Optic cabling in conduits for Toll System | S | S | S | **P** | **P** | **P** | SI to provide fiber requirements for Toll System. DB to incorporate into design of backbone and laterals. SI to furnish and install along the corridor from communication hub to cabinets. |
| Toll Hardware in Cabinets | C | N | C | **P** | **P** | **P** | SI to provide and install all toll hardware within the cabinets. Equipment must be installed in a clean and organized manner and must not be affected by the environmental controls. The SI must provide and install the redundant environmental controls. |
| Routers | C | N | C | **P** | **P** | **P** | SI to provide, install and configure the routers for connection from hub locations to the Mobility Authority's Traffic Management Center (TMC). |
| Hubs | N | N | C | **P** | **P** | **P** | If applicable. |
| Switches | N | N | C | **P** | **P** | **P** | SI to provide, install and configure the switches for connection from tolling to hub locations. |
| Firewalls | N | N | C | **P** | **P** | **P** | SI to provide, install and configure the necessary firewall for the toll system. |
| Patch/Distribution Panels | N | N | C | **P** | **P** | **P** | SI to provide and install all the necessary patch and distribution panels to provide Fault Tolerant Single |

| Responsibility Assignment Legend | | | |
|---|---|---|---|
| **Primary Responsibility: P** | **Support Responsibility: S** | **Coordination Responsibility Only: C** | **No Responsibility: N** |

| **Element/Task/Component/ Sub-system** | **DB Contractor (DB)** | | | **Systems Integrator (SI)** | | | **Comments Other Responsibility/Information** |
|---|---|---|---|---|---|---|---|
| | **Design** | **Procure** | **Install/ Construct** | **Design** | **Procure** | **Install / Construct** | |
| | | | | | | | Mode Fiber Optic IP-Based Communication System. |
| Corridor Communications System | S | N | C | **P** | **P** | **P** | SI to provide Fault Tolerant Single Mode Fiber Optic IP-Based Communication System for Toll Revenue Collection Systems. |
| Corridor Communications Conduits | **P** | **P** | **P** | C | N | S | DB to provide branch conduit to the TxDOT ductbank system, including conduit, ground boxes, and terminations |
| Corridor to Traffic Management Center (TMC) | N | N | N | **P** | **P** | **P** | SI to provide Fault Tolerant IP-Based Communication System to the TMC for Toll Revenue Collection Systems. |
| Data/Communications Service to each Tolling Location | N | N | N | **P** | **P** | **P** | SI to provide system design plans indicating power and communications/data requirements. SI to install up to the Toll System locations at demark panel. |
| **SYSTEMS SERVERS AND SPACE** | | | | | | | |
| Toll Collection Systems Computer(s) | N | N | N | **P** | **P** | **P** | |
| Support Equipment at CTRMA Offices | N | N | N | **P** | **P** | **P** | SI to provide data and power wiring schematics, equipment rack/cabinet requirement, and elevations, layouts, floor plans, air flow diagrams, and environmental controls load calculations, electrical power distribution, including grounding, bonding, lightning protection, panel boards, TVSS, circuit breakers conduit, conductors, j-boxes, receptacles. |
| Systems Servers & Workstations | N | N | C | **P** | **P** | **P** | SI to provide, install and configure all system servers and workstations required at the TMC to support the operations and management of the Project. |

# TOLL FACILITY RESPONSIBILITY MATRIX
## SH 71 Project

| Responsibility Assignment Legend | | | |
|---|---|---|---|
| **Primary Responsibility: P** | **Support Responsibility: S** | **Coordination Responsibility Only: C** | **No Responsibility: N** |

| **Element/Task/Component/ Sub-system** | **DB Contractor (DB)** | | | **Systems Integrator (SI)** | | | **Comments Other Responsibility/Information** |
|---|---|---|---|---|---|---|---|
| | **Design** | **Procure** | **Install/ Construct** | **Design** | **Procure** | **Install / Construct** | |
| Federal Communication Commission License Preparation and Submission | C | N | N | **P** | **P** | **P** | SI to provide all information necessary to acquire FCC Licensing to the Mobility Authority. |
| | | | | | | | |
| **DUCT BANK & INTELLIGENT TRANSPORTATION SYSTEMS (ITS) – TXDOT OWNED** | | | | | | | |
| Duct Bank Adjustment & ITS relocations design | **P** | **P** | **P** | N | N | N | DB is responsible for the design of any necessary ITS relocations, including, foundations, conduits, electrical services, grounding circuits, and support structures. DB responsible for adjusting any existing duct bank manholes and providing new junction/boxes and manholes if in conflict with the project. Coordination with TxDOT will be required. |
| Duct Bank Adjustments/new connections | **P** | **P** | **P** | S | N | C | DB is responsible for all manhole adjustments and new manhole ties. |
| Fiber optic cables | **P** | **P** | **P** | N | N | N | Any adjustments to existing cables are DB responsibility. |
| Relocation of existing CCTV & DMS foundations, conduits, grounding, camera poles, and electrical services | **P** | **P** | **P** | N | N | N | DB is responsible for relocating any existing CCTV and DMS structures and services impacted by the Project Design, including communications and power. Damaged or inoperable equipment shall be moved but not repaired. |
| Existing and new vehicle detector foundations, conduits, loops, grounding, vehicle detector support structures, and electrical services | **P** | **P** | **P** | N | N | N | DB to coordinate with TxDOT regarding any existing vehicle detector/ loops within the pavement to determine if they need to be replaced/ relocated. The DB will replace/relocate any detectors/loops unless TxDOT prefers to do the work. Any damaged detectors/loops that are to remain must be replaced by the DB. |
| Vehicle detectors, communications, and equipment enclosures | **P** | **P** | **P** | N | N | N | |