

SEE SHEET 2 FOR
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STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO.: F 2022 (096)
CSJ 0114-11-088, ETC.

US 290
WALLER COUNTY

FOR THE CONSTRUCTION OF LANDSCAPE AND SCENIC ENHANCEMENT WORK

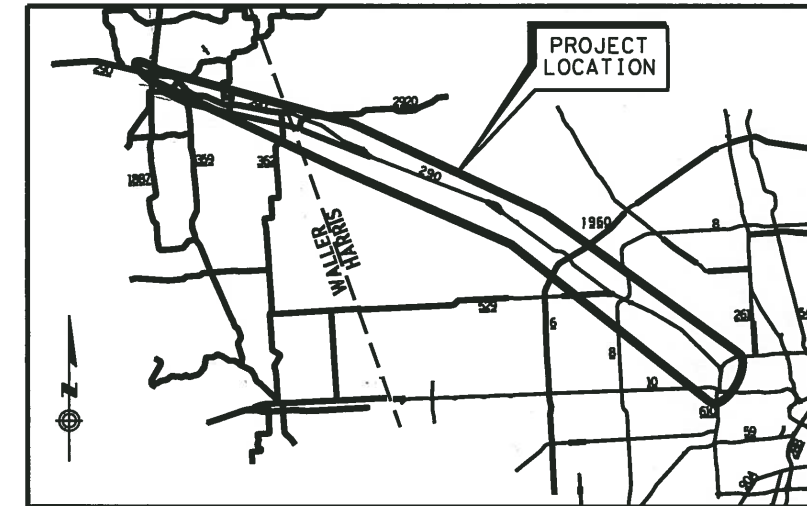
CONSISTING OF LANDSCAPE DEVELOPMENT

NET LENGTH OF PROJECT: 252542.40 FT = 47.830 MI

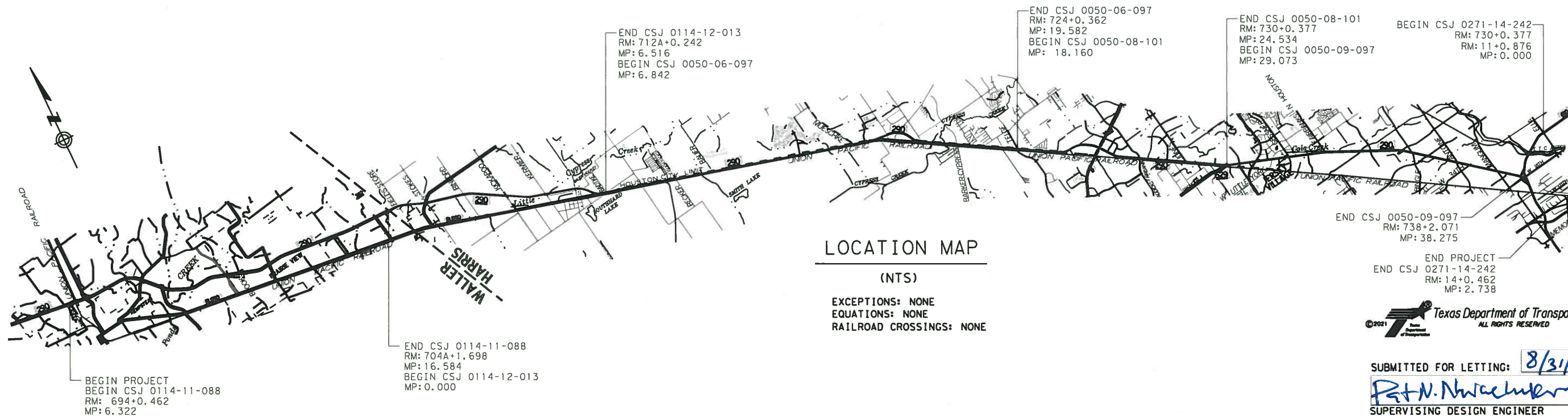
| | |
|--|-----|
| FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL | |
| DESIGN SPEED | |
| MAIN LANES..... | N/A |
| FRONTAGE ROADS | N/A |
| DESIGN ADT: SEE TABLE | |

| | | |
|-------------------|--------------|-----------|
| FED. RD. DIV. NO. | PROJECT NO. | |
| 6 | F 2022 (096) | |
| CONT. SECT. | JOB | HIGHWAY |
| 0114 11 | 088, ETC | US 290 |
| DIST. | COUNTY | SHEET NO. |
| HOU | WALLER | 1 |

| CSJ | LIMITS | HIGHWAY | LENGTH | | ADT | |
|-------------|---|---------|-----------|--------|---------|---------|
| | | | FT | MI | 2021 | 2041 |
| 0114-11-088 | FROM BLASINGAME/OLD HOWTH RD TO WALLER/HARRIS COUNTY LINE | US 290 | 54,183.36 | 10.262 | 47,205 | 57,847 |
| 0114-12-013 | FROM WALLER/HARRIS COUNTY LINE TO BADTKE RD | US 290 | 34,399.20 | 6.515 | 56,302 | 76,264 |
| 0050-06-097 | FROM BADTKE RD TO TELGE RD | US 290 | 67,267.20 | 12.740 | 88,620 | 124,762 |
| 0050-08-101 | FROM TELGE RD TO FM 529 | US 290 | 33,654.72 | 6.374 | 194,458 | 273,763 |
| 0050-09-097 | FROM FM 529 TO IH 610 | US 290 | 48,581.28 | 9.201 | 223,344 | 314,429 |
| 0271-14-242 | FROM IH 10 TO ELLA BLVD | IH 610 | 14,456.64 | 2.738 | 187,143 | 263,464 |



VICINITY MAP
(NTS)



LOCATION MAP
(NTS)

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE



SUBMITTED FOR LETTING: 8/31/21
R.N. Nwachuku
SUPERVISING DESIGN ENGINEER

APPROVED FOR LETTING: 9/2/2021
Designed by:
James W. Koch, P.E.

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION,
NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS,
SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS,
FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA-1273, MAY 1, 2012).

DATE: \$DATE\$
FILE: \$FILE\$
\$TIME\$

For DISTRICT ENGINEER

DATE: 08/20/2021 11:41 AM
 FILE: p:\txdot\projectwiseonline.com\TXDOT3\Documents\12 - HOU\Design Projects\005006097\4 - Design\Master Design Files\Index of Sheets

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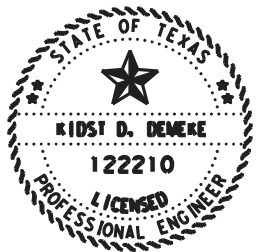
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**US 290
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OF
SHEETS**

SHEET 1 OF 1

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE (*) HAVE BEEN SELECTED BY ME, OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

[Signature]

, P.E.

08/20/2021

SIGNATURE

DATE

@2021

| | | | |
|------|--------|----------|-----------|
| CONT | SECT | JOB | HIGHWAY |
| 0114 | 11 | 088, etc | US 290 |
| DIST | COUNTY | | SHEET NO. |
| HOU | WALLER | | 2 |

County: Waller

Sheet

Highway: US 290

Control: 0114-11-088, ETC

General Notes:

General:

Contractor questions on this project are to be addressed to the following individual(s):

Hamoon Bahrami, P.E., Area Engineer
Hamoon.Bahrami@txdot.gov

Brett.Mcleod, P.E., Assistant Area Engineer
Brett.Mcleod@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals. Contractor questions will be reviewed by the Area Engineer or Assistant Area Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following address:

<https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/>

Questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, and CCSJ/Project Name.

If fixed features require, the governing slopes shown may vary between the limits shown and to the extent determined by the Engineer.

The following standard detail sheets are modified:

Modified Standards

None

References to manufacturer's trade name or catalog numbers are for the purpose of identification only. Similar materials from other manufacturers are permitted if they are of equal quality, comply with the specifications for this project, and are approved, except for roadway illumination, electrical, and traffic signal items.

The cost for materials, labor, and incidentals to provide for traffic across the roadway and for ingress and egress to private property in accordance with Section 7.2.4 of the standard specifications is subsidiary to the various bid items. Restore access roadways to their original condition upon completing construction.

Unless otherwise shown on the plans or otherwise directed, commence work after sunrise and ensure construction equipment is off the road by sunset.

County: Waller

Sheet 3

Highway: US 290

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Tolls incurred by the Contractor are incidental to the various bid items.

Procure permits and licenses, which are to be issued by the City, County, or Municipal Utility District.

General: Site Management

Mow the grass and weeds within the project limits a maximum of 3 times a year as directed. This work is subsidiary to the various bid items.

Mark stations every 100 ft. and maintain the markings for the project duration. Remove the station markings at the completion of the project. This work is subsidiary to the various bid items.

Do not mix or store materials, or store or repair equipment, on top of concrete pavement or bridge decks unless authorized by the Engineer. Permission will be granted to store materials on surfaces if no damage or discoloration will result.

Personal vehicles of employees are not permitted to park within the right of way, including sections closed to public traffic. Employees may park on the right of way at the Contractor's office, equipment, and materials storage yard sites.

Assume ownership of debris and dispose of at an approved location. Do not dispose of debris on private property unless approved in writing by the District Engineer.

Control the dust caused by construction operations. For sweeping the base material in preparation for laying asphalt and for sweeping the finished concrete pavement, use one of the following types of sweepers or approved equal:

Tricycle Type

Wayne Series 900
Elgin White Wing
Elgin Pelican

Truck Type - 4 Wheel

M-B Cruiser II
Wayne Model 945
Mobile TE-3
Mobile TE-4
Murphy 4042

General: Traffic Control and Construction

Schedule construction operations such that preparing individual items of work follows in close sequence to constructing storm drains in order to provide as little inconvenience as practical to the businesses and residents along the project.

This project requires extensive grading operations in an environmentally sensitive area.

If relocating mailboxes, place them with the post firmly in the ground at nearby locations. Upon completing the project, the Engineer will locate the final mailbox placement. Perform this work in accordance with the requirements of the Item, "Mailbox Assemblies," except for measurement and payment. This work is subsidiary to the various bid items.

If fences cross construction easements shown on the plans and work is required beyond the fences, remove and replace the fences as directed. This work and the materials are subsidiary to the various bid items.

General: Utilities

Consider the locations of underground utilities depicted in the plans as approximate and employ responsible care to avoid damaging utility facilities. Depending upon scope and magnitude of planned construction activities, advanced field confirmation by the utility owner or operator may be prudent. Where possible, protect and preserve permanent signs, markers, and designations of underground facilities.

If the Contractor damages or causes damage (breaks, leaks, nicks, dents, gouges, etc.) to the utility, contact the utility facility owner or operator immediately.

Be aware that an operational Computerized Transportation Management System (CTMS) exists within the limits of this project and that the system must remain operational throughout construction. If the Contractor damages or causes damage to this system, repair such damage within 8 hours of occurrence at no cost to the Department. In the event of system damage, notify the Director of Traffic Management Systems at 713-881-3283 within one hour of occurrence. Failure of the Contractor to repair damage to the main fiber optic cable and CCTV cable trunk lines, which convey all corridor information to TranStar, will result in the Contractor being billed for the full cost of emergency repairs.

At least 72 hours before starting work, make arrangements for locating existing Department-owned above ground and underground fiber optic, communications, power, illumination, and traffic signal cabling and conduit. Do this by calling the Department's Houston District Traffic Signal Operations Office at 713-802-5662, or by e-mailing the Department's Houston District Traffic Signal Operations Office at locaterequest@txdot.gov, to schedule marking of underground lines on the ground. Use caution if working in these areas to avoid damaging or interfering with existing facilities.

Install or remove poles and luminaires located near overhead or underground electrical lines using established industry and utility safety practices. Consult the appropriate utility company before beginning such work.

If overhead or underground power lines need to be de-energized, contact the electrical service provider to perform this work. Costs associated with de-energizing the power lines or other protective measures required are at no expense to the Department.

If working near power lines, comply with the appropriate sections of Texas State Law and Federal Regulations relating to the type of work involved.

Perform electrical work in conformance with the National Electrical Code (NEC) and Department's standard sheets.

Before beginning any underground work, notify the local entity's Chief Inspector, Public Works and Engineering, to establish the locations of any existing electrical systems for lighting facilities within the limits of this project.

Item 7: Legal Relations and Responsibilities

Do not initiate activities in a Project Specific Location (PSL), associated with a U.S. Army Corps of Engineers (USACE) permit area, that have not been previously evaluated by the USACE as part of the permit review of this project. Such activities include those pertaining to, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here means materials are delivered to or from the PSL. The permit area includes the waters of the U.S. or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. Assume responsibility for consultations with the USACE regarding activities, including PSLs that have not been previously evaluated by the USACE. Provide the Department with a copy of consultations or approvals from the USACE before initiating activities.

The Contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non-jurisdictional or if proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The Contractor is solely responsible for documenting any determinations that their activities do not affect a USACE permit area. Maintain copies of their determinations for review by the Department or any regulatory agency.

Document and coordinate with the USACE, if required, before hauling any excavation from or hauling any embankment to a USACE permit area by either 1 or 2 below:

1. Restricted Use of Materials for the Previously Evaluated Permit Areas.

- Document both the Project Specific Locations (PSL) and their authorization. Maintain copies for review by the Department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:
- a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in the Item, "Excavation" is used for permanent or temporary fill (under the Item, "Embankment") within a USACE permit area.

- b. Suitable embankment (under the Item, "Embankment") from within the USACE permit area is used as fill within a USACE evaluated area.
- c. Unsuitable excavation or excess excavation, "Waste" (under the Item, "Excavation"), that is disposed of at a location approved within a USACE evaluated area.

2. Contractor Materials from Areas Other than Previously Evaluated Areas.

Provide the Department with a copy of USACE coordination or approvals before initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites:

- a. The Item, "Embankment" used for temporary or permanent fill within a USACE permit area.
- b. Unsuitable excavation or excess excavation, "Waste" (under the Item, "Excavation"), that is disposed of outside a USACE evaluated area.

The total area disturbed for this project is 42.523 acres. The disturbed area in this project, the project locations in the Contract, and Contractor project specific locations (PSLs) within 1 mile of the project limits for the Contract, will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer (to the appropriate MS4 operator when on an off-state system route) and to the local government that operates a separate storm drain system.

This project does not require a U.S. Army Corps of Engineers (USACE) Section 404 Permit before letting, but if a permit is needed during construction, assume responsibility for preparing the permit application. Submit the permit application to the Department's District Environmental Section for approval. Once the permit application is approved, the Department will submit it to the USACE. Assume responsibility for the requested revisions, in coordination with the Department's District Environmental Section.

Maintain the roadway slope stability. Maintaining slope stability is subsidiary to the various bid items.

The nesting / breeding season for migratory birds is February 15 through September 30.

Conduct any tree removal outside of the migratory bird nesting season. If this is not possible due to scheduling, then exercise caution to remove only those trees with no active nests. Do not

destroy nests on structures or in trees within the project limits during the nesting / breeding season.

Take measures to prevent the building of nests on any structures or trees within the project limits throughout the duration of the construction if work / removal will be performed during the nesting / breeding season. This can be accomplished by application of bird repellent gel, netting by hand every 3 to 4 days, or any other non-threatening method approved by the Houston District Environmental Section. Obtain this approval well in advance of the planned use. Contact the Houston District Environmental Section at 713-802-5244. The cost of this work is subsidiary to the various bid items.

<https://www.txdot.gov/inside-txdot/division/traffic/safety/weather/hurricane.html>

This project is on a hurricane evacuation route. Provide at the pre-construction meeting a written plan outlining procedures to suspend work, secure the job site, and safely handle traffic through and across the project in the event of a hurricane evacuation.

During the hurricane season (June 1 through November 30), do not close any travel lanes except when the Contractor can demonstrate that he/she can provide labor, equipment, material, a work plan, and quality of work to satisfactorily return all lanes to an open, all-weather travel surface within 3 days of receiving written or verbal notice but no later than 3 days before the predicted hurricane landfall. Construction of temporary lanes to an all-weather surface will be paid for in accordance with Article 9.7, "Payment for Extra Work and Force Account Method."

In addition to lane closures, cease work 3 days before the predicted hurricane landfall on or near the roadway that adversely impacts the flow of traffic and reduces the capacity of the highway during an evacuation. Vehicles of the Contractor, subcontractors, or material suppliers will not be allowed to enter or exit the traffic stream, including those for the purpose of material hauling and delivery, and mobilization or demobilization of equipment. When directed, this prohibition will include a reasonable time period for the evacuees to return to their point of origin.

No significant traffic generator events have been identified.

Item 8: Prosecution and Progress

The Department will supply bidders, upon written request, one electronic copy of the time determination schedule. The time determination schedule provided is for informational use only and is not intended for bidding or construction purposes.

The Department will not adjust the number of days for the project and milestones, if any, due to differences in opinion regarding any assumptions made in the preparation of the schedule or for errors, omissions, or discrepancies found in the time determination schedule.

Working days will be computed and charged based on a standard workweek in accordance with Section 8.3.1.4

The Lane Closure Assessment Fee is \$ 1,000.00. This fee applies to the Contractor for closures or obstructions that overlap into restricted hour traffic for each hour or portion thereof, per lane, regardless of the length of lane closure or obstruction. For Restricted Hours subject to Lane Assessment Fee refer to the Item, "Barricades, Signs, and Traffic Handling."

Item 100: Preparing Right of Way

Clean existing ditches under fill sections of undesirable materials including grass, muck, and trash. Perform this work in accordance with the Construction section of the Item, "Preparing Right of Way." This work is subsidiary to this bid Item.

The Item, "Preparing Right of Way" will be measured for payment only in those designated areas shown on the plans. Preparing right of way necessary to perform construction that is outside designated areas is subsidiary to this bid Item.

Remove abandoned utilities that are in conflict with the new utilities, at no expense to the Department.

Reestablish and maintain right of way stakes after completing the right of way preparation activities and until the new utilities are in place.

Remove and assume ownership of the existing ground mounted signs within the limits of roadway construction unless otherwise noted or directed. This work is subsidiary to the Item, "Preparing Right of Way."

Item 161: Compost

Item 162: Sodding for Erosion Control

Item 166: Fertilizer

Item 168: Vegetative Watering

Refer to the "Fertilizer, Seed, Sod, Straw, Compost, and Water" plan sheet for material specifications, application rates, and for watering requirements.

Item 502: Barricades, Signs, and Traffic Handling

Use a traffic control plan for handling traffic through the various phases of construction. Follow the phasing sequence unless otherwise agreed upon by the Area Engineer and the Project Manager. Ensure this plan conforms to the latest "Texas Manual on Uniform Traffic Control Devices" and the latest Barricade and Construction (BC) Standard Sheets.

Furnish and maintain the barricades and warning signs, including the necessary temporary and portable traffic control devices, during the various phases of construction. Place and construct

these barricades and warning signs in accordance with the latest "Texas Manual on Uniform Traffic Control Devices" for typical construction layouts.

Cover work zone signs when work related to the signs is not in progress, or when any hazard related to the signs no longer exists.

Keep the delineation devices, signs, and pavement markings clean. This work is subsidiary to the Item, "Barricades, Signs, and Traffic Handling."

If a section is not complete before the end of the workday, pull back the base material to the existing pavement edge on a 6H: 1V slope. Edge drop-offs during the hours of darkness are not permitted.

Before detouring traffic onto the mainlane shoulders, remove dirt, debris, vegetation, and other deleterious material from the surface of the shoulders. Appropriately sign the detour in an approved manner. This work is subsidiary to the various bid items.

Cover or remove the permanent signs and construction signs that are incorrect or that do not apply to the current situation for a particular phase.

Do not mount signs on drums or barricades, except those listed in the latest Barricades and Construction standard sheets.

Use traffic cones for daytime work only. Replace the cones with plastic drums during nighttime hours.

Place positive barriers to protect drop-off conditions greater than 2 ft. within the clear zone that remain overnight.

Do not reduce the existing number of lanes open to traffic except as shown on the following time schedule:

| Day | One Lane Closure | | |
|-----------|----------------------------------|--------------------------------------|---|
| | Daytime Closure Hours | Nighttime Closure Hours | Restricted Hours Subject to Lane Assessment Fee |
| Monday | 9:00AM – 3:00PM | 12:00AM – 5:00AM 9:00PM – 11:59PM | 5:00AM – 9:00AM 3:00PM – 9:00PM |
| Tuesday | 9:00AM – 3:00PM | 12:00AM – 5:00AM 9:00PM – 11:59PM | 5:00AM – 9:00AM 3:00PM – 9:00PM |
| Wednesday | 9:00AM – 3:00PM | 12:00AM – 5:00AM 9:00PM – 11:59PM | 5:00AM – 9:00AM 3:00PM – 9:00PM |
| Thursday | 9:00AM – 3:00PM | 12:00AM – 5:00AM 9:00PM – 11:59PM | 5:00AM – 9:00AM 3:00PM – 9:00PM |
| Friday | 9:00AM – 3:00PM | 12:00AM – 5:00AM 9:00PM – 11:59PM | 5:00AM – 9:00AM 3:00PM – 9:00PM |
| Saturday | As Approved by the Area Engineer | As Approved by the Area Engineer | N/A |

| Day | Daytime Closure Hours | Nighttime Closure Hours | Restricted Hours Subject to Lane Assessment Fee |
|--------|----------------------------------|----------------------------------|---|
| Sunday | As Approved by the Area Engineer | As Approved by the Area Engineer | N/A |

The above times are approved for the traffic control conditions listed. The Area Engineer may approve other closure times if traffic counts warrant. The Area Engineer may reduce the above times for special events.

Law enforcement assistance will be required for this project and is expected to be required for major traffic control changes and lane closures. Coordinate with local law enforcement and arrange for law enforcement as directed or agreed by the Engineer. Before payment will be made, complete the "Daily Report on Law Enforcement Force Account Work" (Form 318), provided by the Department and submit daily invoices that agree with this form for any day during the month in which approved services were provided.

Provide full-time, off-duty, uniformed, certified peace officers, as part of traffic control operations. The peace officers must be able to show proof of certification by the Texas Commission on Law Enforcement Officers Standards. The cost of the officers is paid for on a force account basis.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Item 506: Temporary Erosion, Sedimentation and Environmental Controls

A Storm Water Pollution Prevention Plan (SWP3) is required. Since the disturbed area is more than 5 acres, a "Notice of Intent" (NOI) is also required.

Use appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. Remove and dispose of materials in compliance with State and Federal laws.

Before starting construction, review with the Engineer the SWP3 used for temporary erosion control as outlined on the plans. Before construction, place the temporary erosion and sedimentation control features as shown on the SWP3.

Schedule the seeding or sodding work as soon as possible. The project schedule provides for a vegetation management plan.

After completing earthwork operations, restore and reseed the disturbed areas in accordance with the Department's specifications for permanent or temporary erosion control.

Implement temporary and permanent erosion control measures to comply with the National Pollution Discharge Elimination System (NPDES) general permit under the Clean Water Act.

Before starting grading operations and during the project duration, place the temporary or permanent erosion control measures to prevent sediment from leaving the right of way.

Item 6185: Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

A shadow vehicle with Truck Mounted Attenuators (TMAs) or Trailer Attenuators (TAs) is required as shown on the appropriate Traffic Control Plan (TCP) sheets. TMAs/TAs must meet the requirements of the Compliant Work Zone Traffic Control Device List.

Level 3 Compliant TMAs/TAs are required for this project.

A total of one (1) shadow vehicle with a TMA/TA is required for the work with the exception of Pavement Marking Operations. The Contractor is responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs/TAs needed on the project.



CONTROLLING PROJECT ID 0114-11-088

DISTRICT Houston
HIGHWAY IH 610, US 290

COUNTY Harris, Waller

Estimate & Quantity Sheet

| CONTROL SECTION JOB | | | | 0050-06-097 | | 0050-08-101 | | 0050-09-097 | | 0114-11-088 | | 0114-12-013 | | 0271-14-242 | |
|---------------------|-----------|--|------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
| PROJECT ID | | | | A00133424 | | A00139326 | | A00139327 | | A00139297 | | A00133420 | | A00139328 | |
| COUNTY | | | | Harris | | Harris | | Harris | | Waller | | Harris | | Harris | |
| HIGHWAY | | | | US 290 | | US 290 | | US 290 | | US 290 | | US 290 | | IH 610 | |
| ALT | BID CODE | DESCRIPTION | UNIT | EST. | FINAL | EST. | FINAL | EST. | FINAL | EST. | FINAL | EST. | FINAL | EST. | FINAL |
| | 100-6006 | PREP ROW (TREE)(LESS THAN 24" DIA) | EA | | | | | | | 50.000 | | | | | |
| | 161-6009 | EROSION CONTROL COMPOST | CY | 4,803.000 | | 11,151.000 | | 1,613.000 | | 602.000 | | 7,339.000 | | 223.000 | |
| | 161-6012 | GENERAL USE COMPOST | CY | 2,203.000 | | 5,377.000 | | 773.000 | | 301.000 | | 3,471.000 | | 78.000 | |
| | 162-6002 | BLOCK SODDING | SY | | | | | | | 600.000 | | | | | |
| | 166-6001 | FERTILIZER | AC | | | | | | | 64.340 | | | | | |
| | 168-6001 | VEGETATIVE WATERING | MG | | | | | | | 385.320 | | | | | |
| | 180-6001 | WILDFLOWER SEEDING | AC | 7.660 | | 19.550 | | 2.200 | | | | 12.880 | | 0.230 | |
| | 180-6002 | WILDFLOWER SEEDING (MIX 1) | AC | | | | | | | 21.700 | | | | | |
| | 180-6003 | WILDFLOWER SEEDING (MIX 2) | AC | | | | | | | 62.610 | | | | | |
| | 192-6003 | PLANT MATERIAL (3-GAL) | EA | 3,388.000 | | 8,679.000 | | 975.000 | | | | 5,700.000 | | 101.000 | |
| | 192-6012 | MULCH | CY | | | | | | | 27,300.000 | | | | | |
| | 192-6023 | PLANT MATERIAL (15 GAL) (TREE) | EA | 2,222.000 | | 5,071.000 | | 592.000 | | | | 3,466.000 | | 121.000 | |
| | 192-6024 | PLANT MATERIAL (30 GAL) (TREE) | EA | 397.000 | | 397.000 | | 67.000 | | 756.000 | | 397.000 | | 67.000 | |
| | 192-6030 | PLANT MATERIAL (3 GAL) (SHRUB) | EA | 625.000 | | 499.000 | | 805.000 | | | | | | 70.000 | |
| | 192-6064 | PLANT BED PREP (TYPE II) | SY | 37,083.000 | | 94,607.000 | | 10,656.000 | | | | 62,359.000 | | 1,105.000 | |
| | 192-6065 | PLANT BED PREP (TYPE III) | SY | 2,488.000 | | 1,995.000 | | 3,228.000 | | 5,400.000 | | | | 292.000 | |
| | 193-6001 | PLANT MAINTENANCE | MO | | | | | | | 18.000 | | | | | |
| | 193-6002 | PLANT MAINTENANCE | CYC | | | | | | | 8.000 | | | | | |
| | 500-6001 | MOBILIZATION | LS | | | | | | | 1.000 | | | | | |
| | 502-6001 | BARRICADES, SIGNS AND TRAFFIC HANDLING | MO | | | | | | | 8.000 | | | | | |
| | 506-6041 | BIODEG EROSN CONT LOGS (INSTL) (12") | LF | | | | | | | 500.000 | | | | | |
| | 506-6043 | BIODEG EROSN CONT LOGS (REMOVE) | LF | | | | | | | 500.000 | | | | | |
| | 1006-6001 | LANDSCAPE SOIL AMENDMENT (TYPE I) | SY | 42,742.000 | | 99,778.000 | | 14,420.000 | | 5,400.000 | | 65,535.000 | | 1,933.000 | |
| | 1006-6002 | LANDSCAPE SOIL AMENDMENT (TYPE II) | SY | 42,742.000 | | 99,778.000 | | 14,420.000 | | 5,400.000 | | 65,535.000 | | 1,933.000 | |
| | 1022-6001 | LANDSCAPE TREATMENT(TY 1) | EA | 30,035.000 | | 14,147.000 | | 1,567.000 | | 756.000 | | 9,563.000 | | 222.000 | |
| | 1022-6002 | LANDSCAPE TREATMENT(TY 2) | EA | 26,065.000 | | 70,735.000 | | 7,835.000 | | 3,780.000 | | 47,815.000 | | 1,110.000 | |
| | 1022-6003 | LANDSCAPE TREATMENT(TY 3) | EA | | | | | | | 1.000 | | | | | |
| | 1022-6004 | LANDSCAPE TREATMENT(TY 4) | EA | | | | | | | 1.000 | | | | | |
| | 1022-6005 | LANDSCAPE TREATMENT (TY 5) | EA | 6,632.000 | | 14,646.000 | | 2,372.000 | | 756.000 | | 9,563.000 | | 292.000 | |
| | 6185-6002 | TMA (STATIONARY) | DAY | | | | | | | 10.000 | | | | | |
| | 6185-6005 | TMA (MOBILE OPERATION) | DAY | | | | | | | 25.000 | | | | | |
| 18 | | EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART) | LS | | | | | | | 1.000 | | | | | |
| | | SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING) | LS | | | | | | | 1.000 | | | | | |



CONTROLLING PROJECT ID 0114-11-088

DISTRICT Houston
HIGHWAY IH 610, US 290

Estimate & Quantity Sheet

COUNTY Harris, Waller

| CONTROL SECTION JOB | | | | TOTAL EST. | TOTAL FINAL |
|---------------------|-----------|--|------|-------------|-------------|
| PROJECT ID | | | | | |
| COUNTY | | | | | |
| HIGHWAY | | | | | |
| ALT | BID CODE | DESCRIPTION | UNIT | | |
| | 100-6006 | PREP ROW (TREE)(LESS THAN 24" DIA) | EA | 50.000 | |
| | 161-6009 | EROSION CONTROL COMPOST | CY | 25,731.000 | |
| | 161-6012 | GENERAL USE COMPOST | CY | 12,203.000 | |
| | 162-6002 | BLOCK SODDING | SY | 600.000 | |
| | 166-6001 | FERTILIZER | AC | 64.340 | |
| | 168-6001 | VEGETATIVE WATERING | MG | 385.320 | |
| | 180-6001 | WILDFLOWER SEEDING | AC | 42.520 | |
| | 180-6002 | WILDFLOWER SEEDING (MIX 1) | AC | 21.700 | |
| | 180-6003 | WILDFLOWER SEEDING (MIX 2) | AC | 62.610 | |
| | 192-6003 | PLANT MATERIAL (3-GAL) | EA | 18,843.000 | |
| | 192-6012 | MULCH | CY | 27,300.000 | |
| | 192-6023 | PLANT MATERIAL (15 GAL) (TREE) | EA | 11,472.000 | |
| | 192-6024 | PLANT MATERIAL (30 GAL) (TREE) | EA | 2,081.000 | |
| | 192-6030 | PLANT MATERIAL (3 GAL) (SHRUB) | EA | 1,999.000 | |
| | 192-6064 | PLANT BED PREP (TYPE II) | SY | 205,810.000 | |
| | 192-6065 | PLANT BED PREP (TYPE III) | SY | 13,403.000 | |
| | 193-6001 | PLANT MAINTENANCE | MO | 18.000 | |
| | 193-6002 | PLANT MAINTENANCE | CYC | 8.000 | |
| | 500-6001 | MOBILIZATION | LS | 1.000 | |
| | 502-6001 | BARRICADES, SIGNS AND TRAFFIC HANDLING | MO | 8.000 | |
| | 506-6041 | BIODEG EROSN CONT LOGS (INSTL) (12") | LF | 500.000 | |
| | 506-6043 | BIODEG EROSN CONT LOGS (REMOVE) | LF | 500.000 | |
| | 1006-6001 | LANDSCAPE SOIL AMENDMENT (TYPE I) | SY | 229,808.000 | |
| | 1006-6002 | LANDSCAPE SOIL AMENDMENT (TYPE II) | SY | 229,808.000 | |
| | 1022-6001 | LANDSCAPE TREATMENT(TY 1) | EA | 56,290.000 | |
| | 1022-6002 | LANDSCAPE TREATMENT(TY 2) | EA | 157,340.000 | |
| | 1022-6003 | LANDSCAPE TREATMENT(TY 3) | EA | 1.000 | |
| | 1022-6004 | LANDSCAPE TREATMENT(TY 4) | EA | 1.000 | |
| | 1022-6005 | LANDSCAPE TREATMENT (TY 5) | EA | 34,261.000 | |
| | 6185-6002 | TMA (STATIONARY) | DAY | 10.000 | |
| | 6185-6005 | TMA (MOBILE OPERATION) | DAY | 25.000 | |
| 18 | | EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART) | LS | 1.000 | |
| | | SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING) | LS | 1.000 | |

| | | | |
|----------|--------|-------------|-------|
| DISTRICT | COUNTY | CCSJ | SHEET |
| Houston | Waller | 0114-11-088 | 9 |

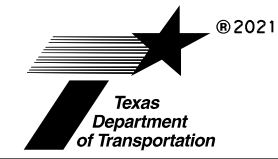
DATE: 08/13/2021 02:46 PM
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| CSJ | 100 | 161 | 161 | 162 | 166 | 168 | 180 | 180 | 180 | 192 | 192 | 192 | 192 | 192 | 192 | | |
|---------------|--|-------------------------------|---------------------------|------------------|------------|------------------------|-----------------------|----------------------------------|----------------------------------|------------------------------|-------|---|---|---|-----------------------------------|------------------------------------|-------|
| | 6006 | 6009 | 6012 | 6002 | 6001 | 6001 | 6001 | 6002 | 6003 | 6003 | 6012 | 6023 | 6024 | 6030 | 6064 | 6065 | |
| | PREP ROW (TREE) (LESS THAN 24" DIA) | EROSION CONTROL COMPOST | GENERAL USE COMPOST | BLOCK SODDING | FERTILIZER | VEGETATIVE WATERING | WILDFLOWER SEEDING | WILDFLOWER SEEDING (MIX 1) | WILDFLOWER SEEDING (MIX 2) | PLANT MATERIAL (3 GAL) | MULCH | PLANT MATERIAL (15 GAL) (TREE) | PLANT MATERIAL (30 GAL) (TREE) | PLANT MATERIAL (3 GAL) (SHRUB) | PLANT BED PREP (TYPE II) | PLANT BED PREP (TYPE III) | |
| | EA | CY | CY | SY | AC | MG | AC | AC | AC | EA | CY | EA | EA | EA | SY | SY | |
| 0114-11-088 | | 602 | 301 | | | | | | | | | | 756 | | | 5,400 | |
| 0114-12-013 | | 7,339 | 3,471 | | | | 12.88 | | | | | 3,466 | 397 | | 62,359 | | |
| 0050-06-097 | 50 | 4,803 | 2,203 | 600 | 64.34 | 385.32 | 7.66 | 21.70 | 62.61 | 27,300 | | 2,222 | 397 | 625 | 37,083 | 2,488 | |
| 0050-08-101 | | 11,151 | 5,377 | | | | 19.55 | | | | | 8,679 | 5,071 | 397 | 499 | 94,607 | 1,995 |
| 0050-09-097 | | 1,613 | 773 | | | | 2.20 | | | | | 975 | 592 | 67 | 805 | 10,656 | 3,228 |
| 0271-14-242 | | 223 | 78 | | | | 0.23 | | | | | 101 | 121 | 67 | 70 | 1,105 | 292 |
| PROJECT TOTAL | | 50 | 25,731 | | | | 12,203 | | | | | 600 | 64.34 | 385.32 | 42.52 | 21.70 | 62.61 |

| CSJ | 193 | 193 | 502 | 506 | 506 | 1006 | 1006 | 1022 | 1022 | 1022 | 1022 | 1002 | 6185 | 6185 |
|---------------|----------------------|----------------------|---|--|--|--|---|----------------------------------|-----------------------------------|------------------------------------|-----------------------------------|----------------------------------|---------------------|------------------------------|
| | 6001 | 6002 | 6001 | 6041 | 6043 | 6001 | 6002 | 6001 | 6002 | 6003 | 6004 | 6005 | 6002 | 6005 |
| | PLANT MAINTENANCE | PLANT MAINTENANCE | BARRICADES, SIGNS AND TRAFFIC HANDLING | BIODEG EROSN CONT LOGS (INSTR) (12") | BIODEG EROSN CONT LOGS (REMOVE) | LANDSCAPE SOIL AMENDMENT (TY I) | LANDSCAPE SOIL AMENDMENT (TY II) | LANDSCAPE TREATMENT (TY I) | LANDSCAPE TREATMENT (TY II) | LANDSCAPE TREATMENT (TY III) | LANDSCAPE TREATMENT (TY IV) | LANDSCAPE TREATMENT (TY V) | TMA (STATIONARY) | TMA (MOBILE OPERATION) |
| | MO | CYC | MO | LF | LF | SY | SY | EA | EA | EA | EA | EA | DAY | DAY |
| 0114-11-088 | | | | | | 5,400 | 5,400 | 756 | 3,780 | | | 756 | | |
| 0114-12-013 | 18 | 8 | 8 | 500 | 500 | 65,535 | 65,535 | 9,563 | 47,815 | 1 | 1 | 9,563 | 10 | 25 |
| 0050-06-097 | | | | | | 42,742 | 42,742 | 30,035 | 26,065 | | | 6,632 | | |
| 0050-08-101 | | | | | | 99,778 | 99,778 | 14,147 | 70,735 | | | 14,646 | | |
| 0050-09-097 | | | | | | 14,420 | 14,420 | 1,567 | 7,835 | | | 2,372 | | |
| 0271-14-242 | | | | | | 1,933 | 1,933 | 222 | 1,110 | | | 292 | | |
| PROJECT TOTAL | 18 | 8 | 8 | 500 | 500 | 229,808 | 229,808 | 56,290 | 157,340 | 1 | 1 | 34,261 | 10 | 25 |

**US 290
SUMMARY OF
LANDSCAPE
QUANTITIES**

SHEET 1 OF 1



| | | | |
|------|--------|----------|-----------|
| CONT | SECT | JOB | HIGHWAY |
| 0114 | 11 | 088, etc | US 290 |
| DIST | COUNTY | | SHEET NO. |
| HOU | WALLER | | 10 |

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

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WORKER SAFETY NOTES:


1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

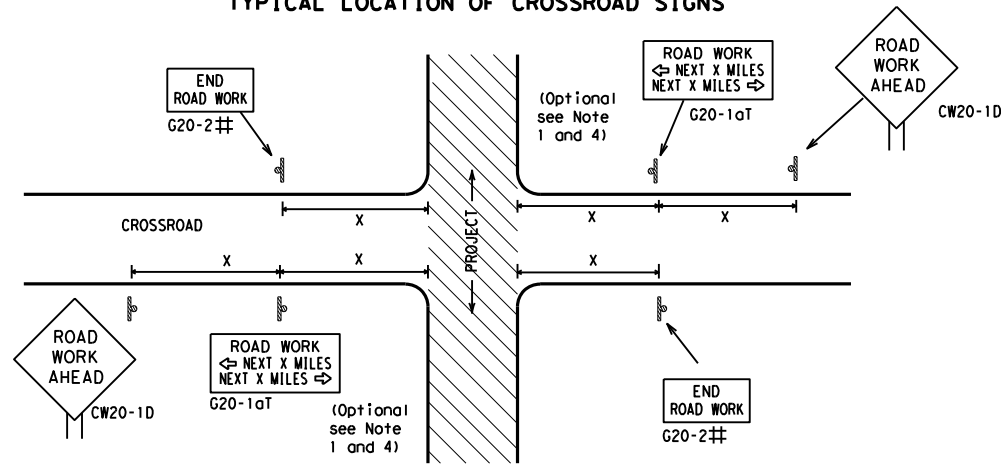
| |
|--|
| <p>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov</p> |
| COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD) |
| DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) |
| MATERIAL PRODUCER LIST (MPL) |
| ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)" |
| STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD) |
| TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) |
| TRAFFIC ENGINEERING STANDARD SHEETS |

SHEET 1 OF 12

| | | | |
|---|---------------|----------------------------------|-----------|
|  Texas Department of Transportation | | Traffic Safety Division Standard | |
| <p>BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS</p> <p>BC (1) - 21</p> | | | |
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| DW: TxDOT | ck: TxDOT | JOB | HIGHWAY |
| © TxDOT | November 2002 | CONT | 11 |
| REVISIONS | 0114 | 11 | 088, etc |
| 4-03 | 7-13 | DIST | COUNTY |
| 9-07 | 8-14 | HOU | WALLER |
| 5-10 | 5-21 | SHEET NO. | 11 |

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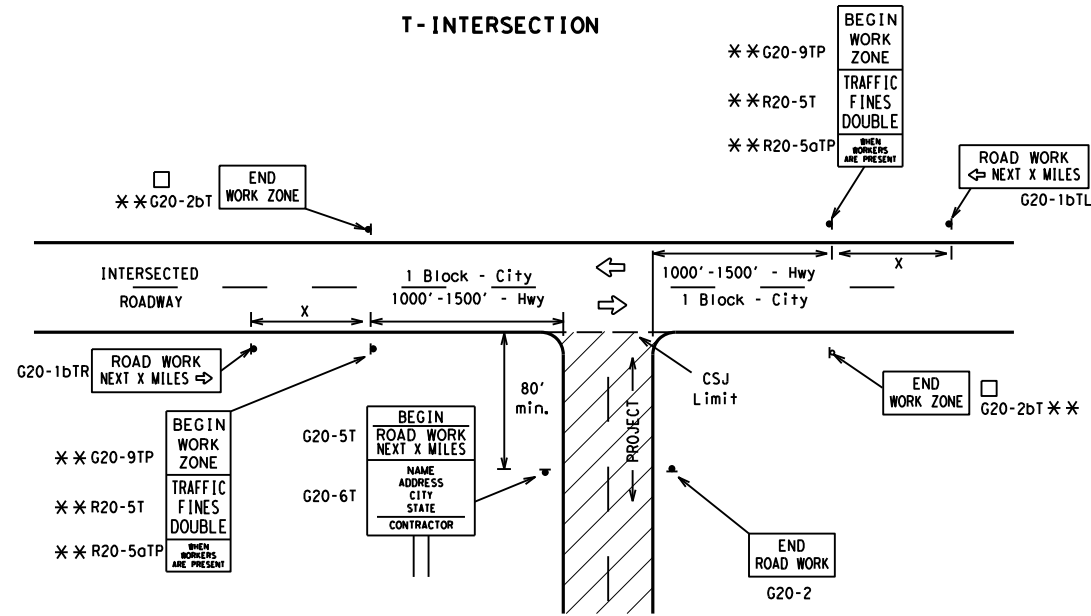
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES" (G20-1aT) sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR) signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING^{1,5,6}

| Sign Number or Series | SIZE | | SPACING | |
|---------------------------------------|-------------------|--------------------|--------------|-------------------|
| | Conventional Road | Expressway/Freeway | Posted Speed | Sign Spacing "X" |
| CW20 ⁴ | 48" x 48" | 48" x 48" | MPH | Feet (Apprx.) |
| CW21 | | | 30 | 120 |
| CW22 | | | 35 | 160 |
| CW23 | | | 40 | 240 |
| CW25 | 45 | 320 | | |
| CW1, CW2, CW7, CW8, CW9, CW11, CW14 | 36" x 36" | 48" x 48" | 50 | 400 |
| | | | 55 | 500 ² |
| | | | 60 | 600 ² |
| | | | 65 | 700 ² |
| CW3, CW4, CW5, CW6, CW8-3, CW10, CW12 | 48" x 48" | 48" x 48" | 70 | 800 ² |
| | | | 75 | 900 ² |
| | | | 80 | 1000 ² |
| | | | * | * ³ |

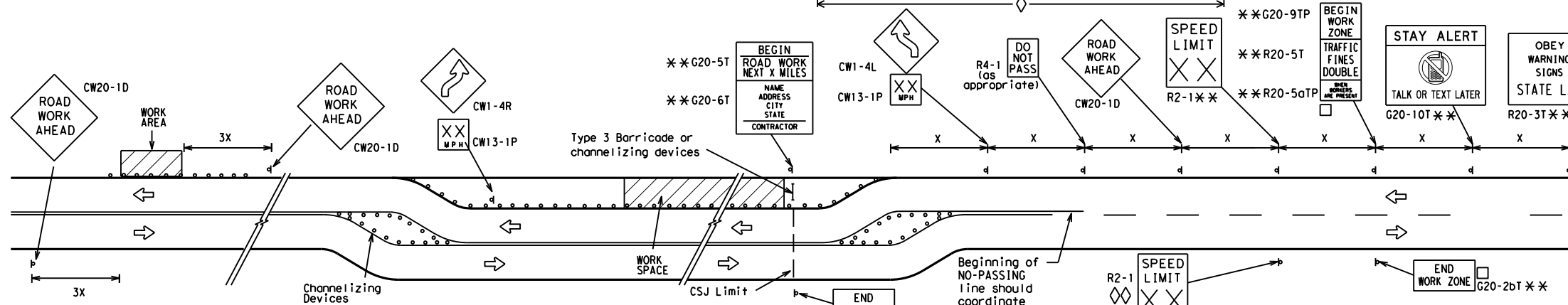
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

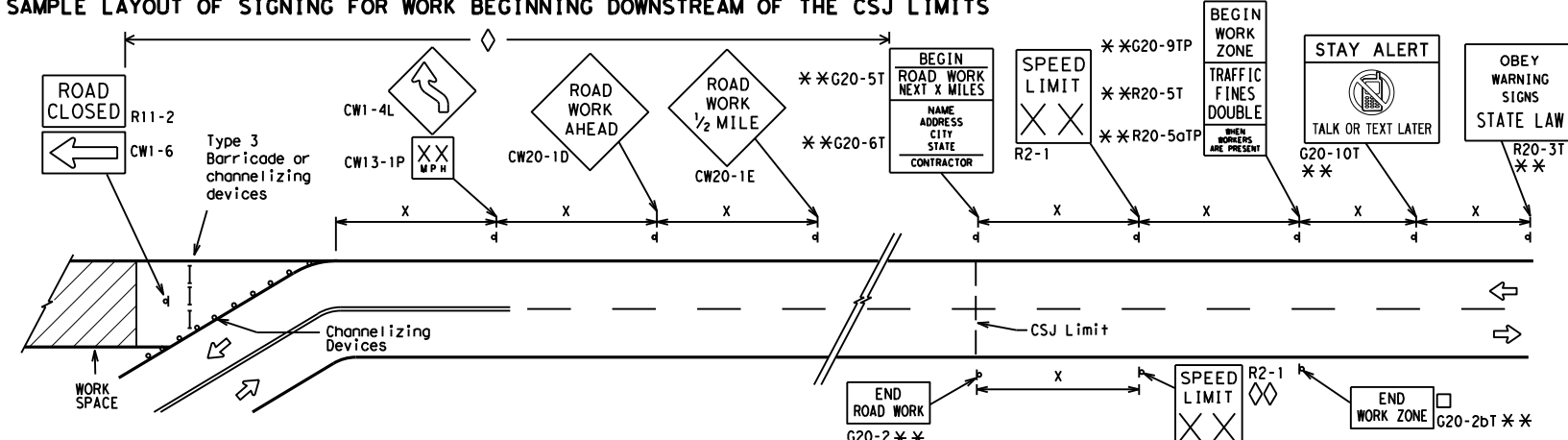
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
- ** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
- ◇ Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
- ◇◇ Contractor will install a regulatory speed limit sign at the end of the work zone.

| LEGEND | |
|--------|---|
| — | Type 3 Barricade |
| ○ ○ ○ | Channelizing Devices |
| ■ | Sign |
| X | See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements. |

SHEET 2 OF 12

Texas Department of Transportation
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

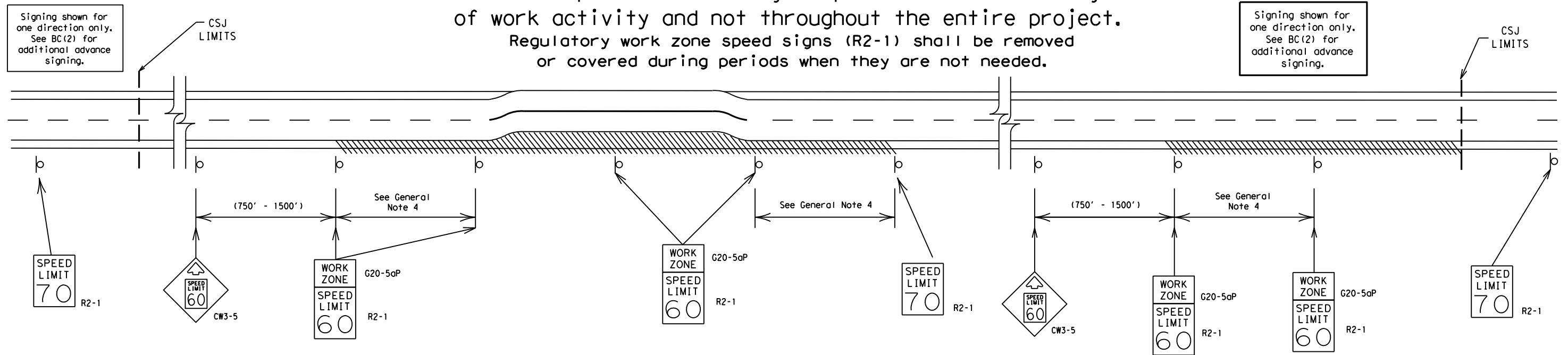
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| © TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | 0114 | 11 | 088, etc | US 290 |
| 9-07 8-14 | DIST | COUNTY | SHEET NO. | |
| 7-13 5-21 | HOU | WALLER | 12 | |

DATE: FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project. Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present.

Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered. (See Removing or Covering on BC(4)).

GENERAL NOTES

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- Frequency of work zone speed limit signs should be:

| | |
|--------------------|----------------|
| 40 mph and greater | 0.2 to 2 miles |
| 35 mph and less | 0.2 to 1 mile |
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

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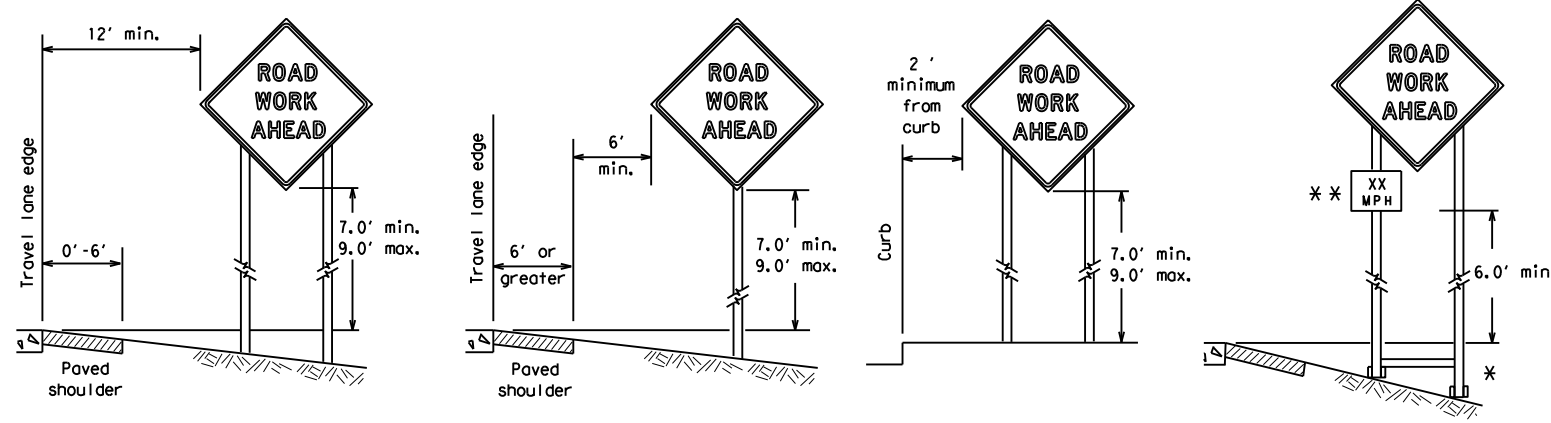
DATE:
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SHEET 3 OF 12

| | | | |
|---|-----------|----------------------------------|--------------|
| | | Traffic Safety Division Standard | |
| <h2>BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT</h2> | | | |
| <h3>BC (3) - 21</h3> | | | |
| FILE: | bc-21.dgn | DN: TxDOT | ck: TxDOT |
| REVISED: | 0114 11 | 088, etc | US 290 |
| DATE: | 9-07 8-14 | DIST: | COUNTY |
| FILE: | 7-13 5-21 | HOU: | WALLER |
| | | | SHEET NO. 13 |

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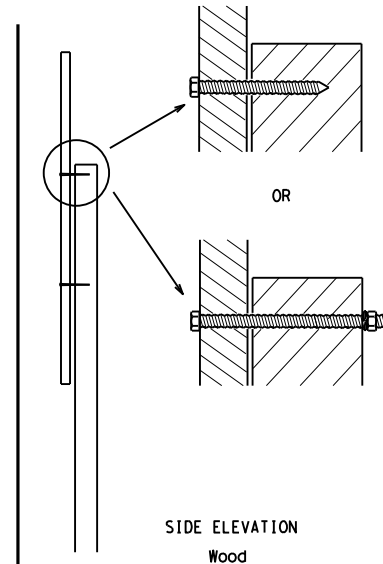
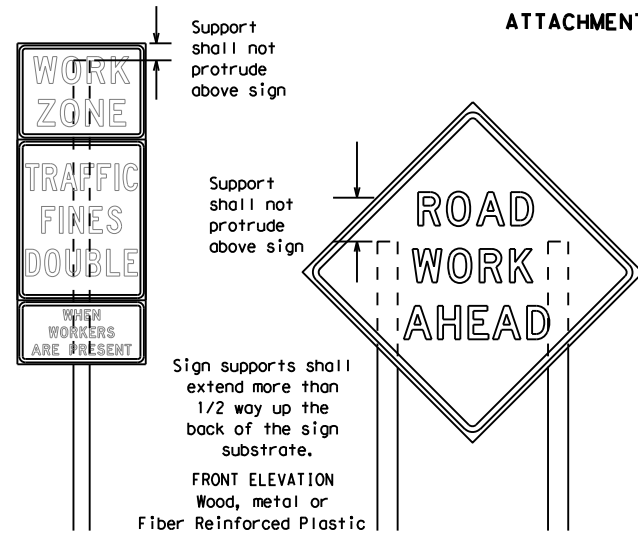
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* When placing skid supports on uneven ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



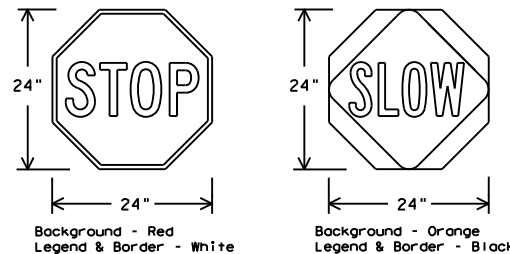
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed.
Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

- STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
- STOP/SLOW paddles shall be retroreflectORIZED when used at night.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



| SHEETING REQUIREMENTS (WHEN USED AT NIGHT) | | |
|--|--------|--|
| USAGE | COLOR | SIGN FACE MATERIAL |
| BACKGROUND | RED | TYPE B OR C SHEETING |
| BACKGROUND | ORANGE | TYPE B _{FL} OR C _{FL} SHEETING |
| LEGEND & BORDER | WHITE | TYPE B OR C SHEETING |
| LEGEND & BORDER | BLACK | ACRYLIC NON-REFLECTIVE FILM |

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

- Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
- When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRs standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
- The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
- The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
- The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
- Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
- The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

- The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
 - Long-term stationary - work that occupies a location more than 3 days.
 - Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
- The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
- Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

- The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

- The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

- All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

- All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
- Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
- When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
- Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
- Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
- Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

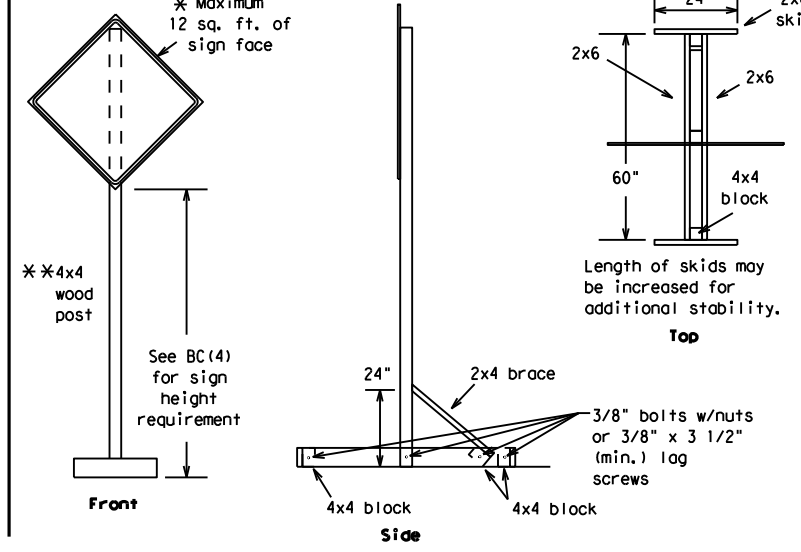
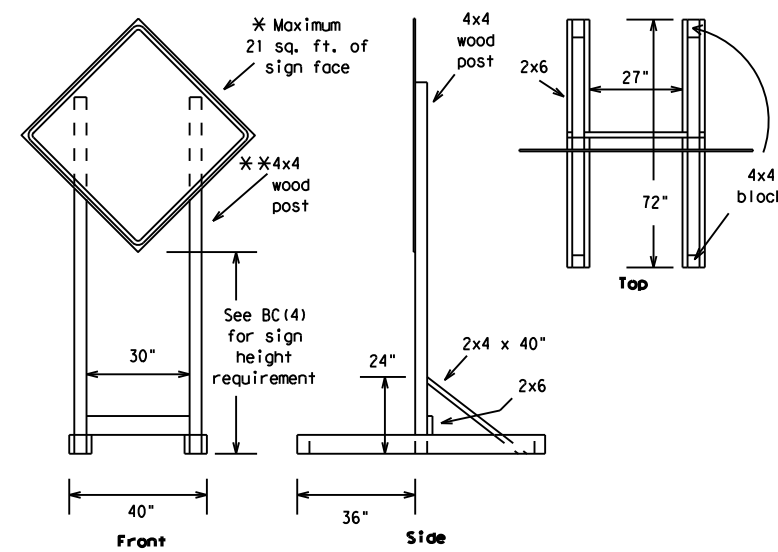
- Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

SHEET 4 OF 12

| | | | |
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| | | | |
| <p>BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES</p> | | | |
| <p>BC (4) - 21</p> | | | |
| FILE: | bc-21.dgn | DN: | TxDOT |
| REVISED: | November 2002 | CK: | TxDOT |
| REVISIONS: | 0114 11 | DW: | TxDOT |
| 9-07 8-14 | 0114 11 | CR: | TxDOT |
| 7-13 5-21 | 0114 11 | JOB | HIGHWAY |
| | | DIST | COUNTY |
| | | HOU | WALLER |
| | | | SHEET NO. 14 |

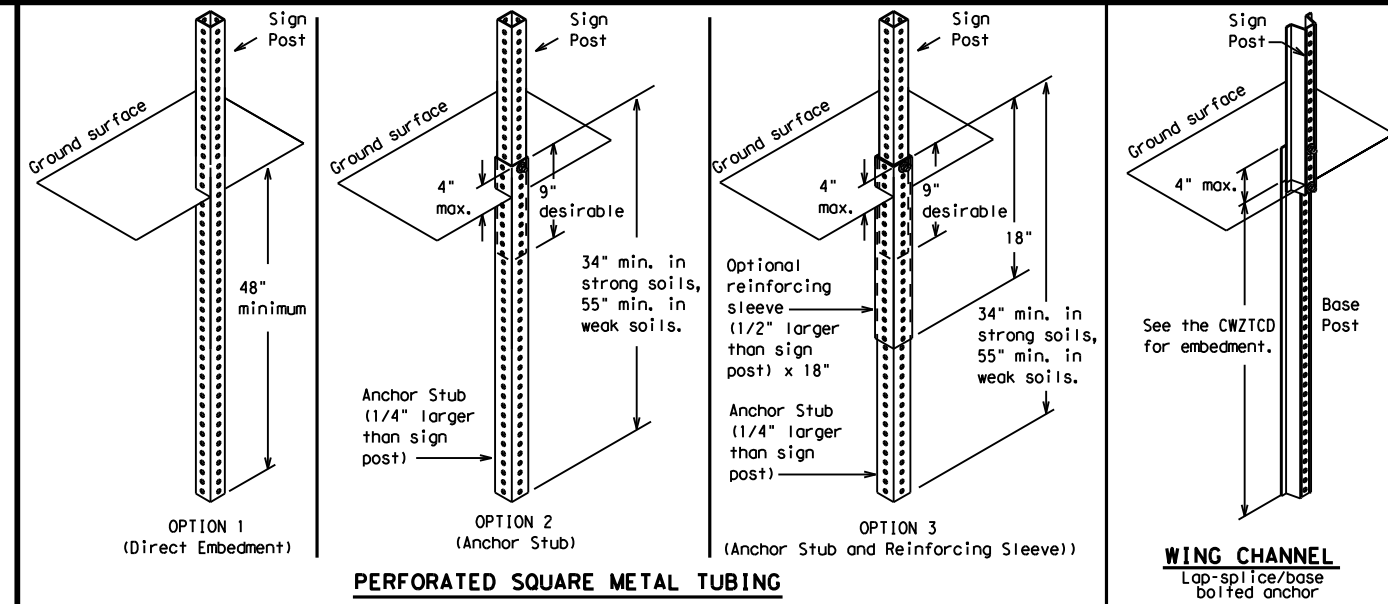
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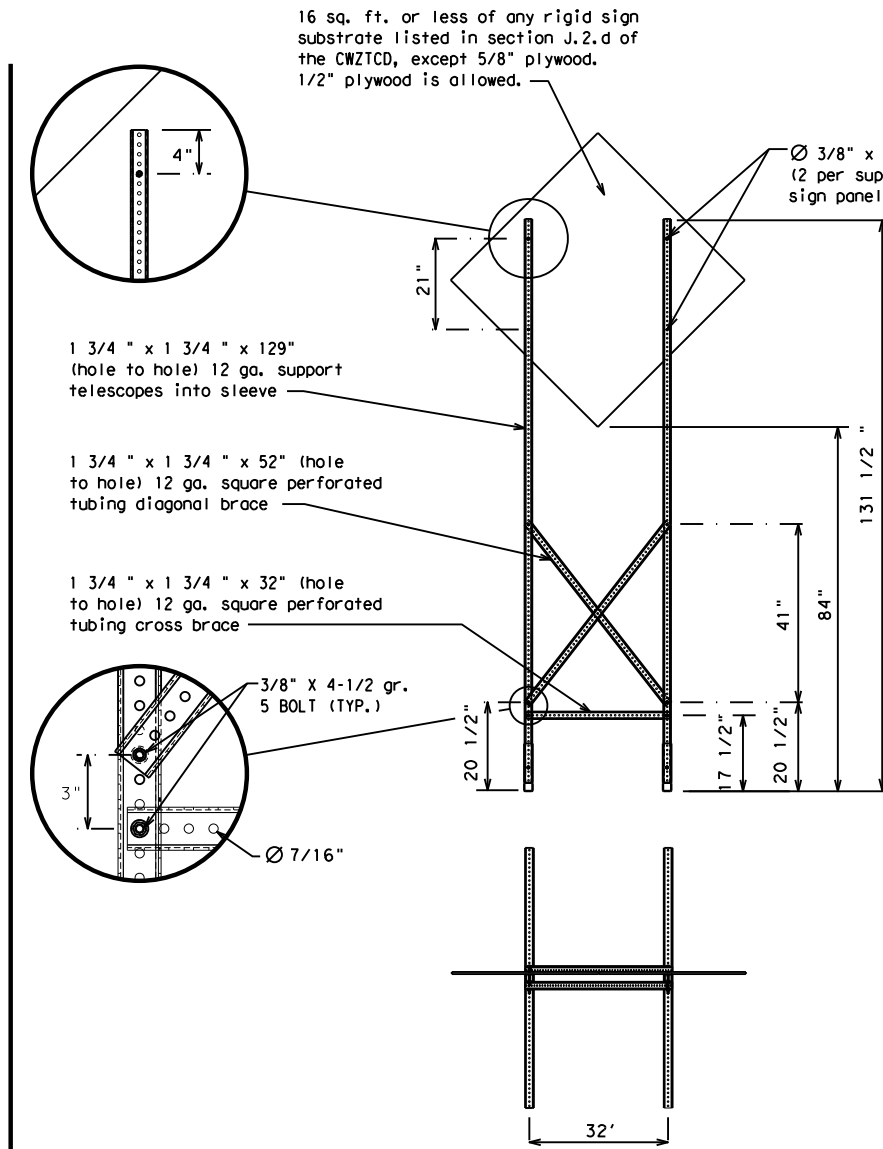
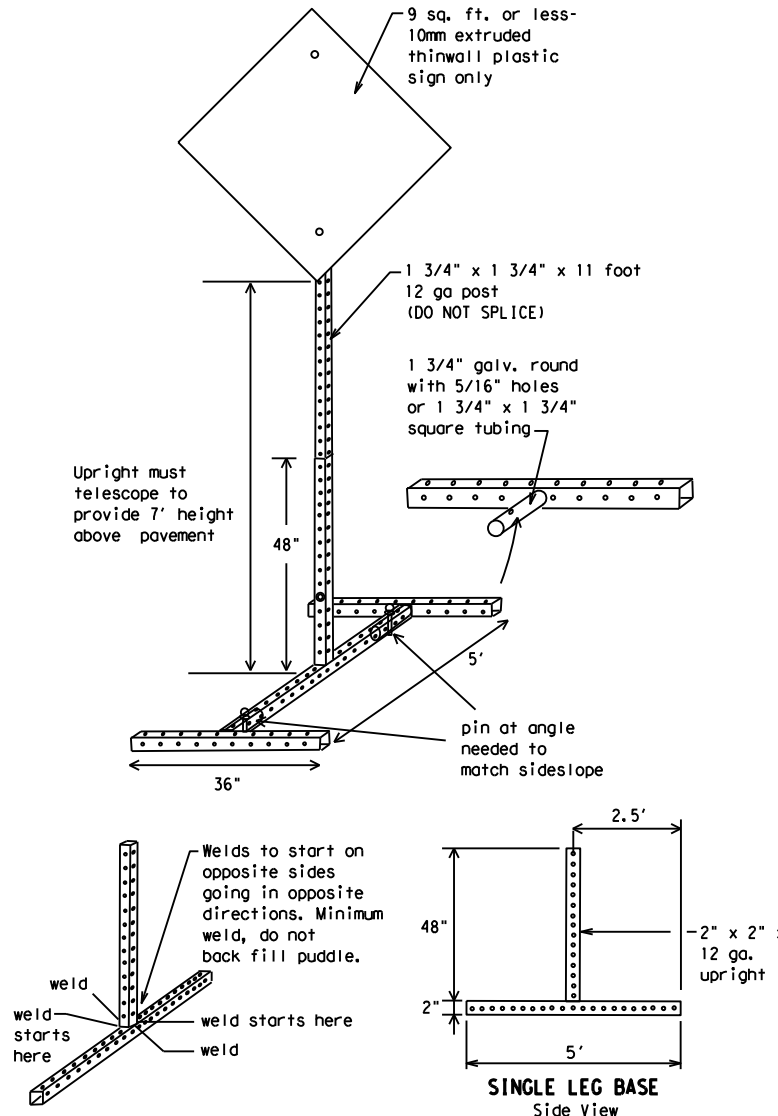
SKID MOUNTED WOOD SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

- Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
- No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
- When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

- * See BC(4) for definition of "Work Duration."
- ** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.
- See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12



BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

| | | | | |
|-----------------------|-----------|-----------|-----------|-----------|
| FILE: bc-21.dgn | DW: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
| © TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | 0114 | 11 | 088, etc | US 290 |
| 9-07 8-14 | DIST | COUNTY | SHEET NO. | |
| 7-13 5-21 | HOU | WALLER | 15 | |

DATE:
FILE:

WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
- Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
- PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

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| WORD OR PHRASE | ABBREVIATION | WORD OR PHRASE | ABBREVIATION |
|--------------------|--------------|----------------|--------------|
| Access Road | ACCS RD | Major | MAJ |
| Alternate | ALT | Miles | MI |
| Avenue | AVE | Miles Per Hour | MPH |
| Best Route | BEST RTE | Minor | MNR |
| Boulevard | BLVD | Monday | MON |
| Bridge | BRDG | Normal | NORM |
| Cannot | CANT | North | N |
| Center | CTR | Northbound | (route) N |
| Construction Ahead | CONST AHD | Parking | PKING |
| CROSSING | XING | Road | RD |
| Detour Route | DETOUR RTE | Right Lane | RT LN |
| Do Not | DONT | Saturday | SAT |
| East | E | Service Road | SERV RD |
| Eastbound | (route) E | Shoulder | SHLDR |
| Emergency | EMER | Slippery | SLIP |
| Emergency Vehicle | EMER VEH | South | S |
| Entrance, Enter | ENT | Southbound | (route) S |
| Express Lane | EXP LN | Speed | SPD |
| Expressway | EXPWY | Street | ST |
| XXXX Feet | XXXX FT | Sunday | SUN |
| Fog Ahead | FOG AHD | Telephone | PHONE |
| Freeway | FRWY, FWY | Temporary | TEMP |
| Freeway Blocked | FWY BLKD | Thursday | THURS |
| Friday | FRI | To Downtown | TO DWNTN |
| Hazardous Driving | HAZ DRIVING | Traffic | TRAF |
| Hazardous Material | HAZMAT | Travelers | TRVLRS |
| High-Occupancy | HOV | Tuesday | TUES |
| Vehicle | HWY | Time Minutes | TIME MIN |
| Highway | HR, HRS | Upper Level | UPR LEVEL |
| Hour(s) | HR, HRS | Vehicles (s) | VEH, VEHS |
| Information | INFO | Warning | WARN |
| It Is | ITS | Wednesday | WED |
| Junction | JCT | Weight Limit | WT LIMIT |
| Left | LFT | West | W |
| Left Lane | LFT LN | Westbound | (route) W |
| Lane Closed | LN CLOSED | Wet Pavement | WET PVMT |
| Lower Level | LWR LEVEL | Will Not | WONT |
| Maintenance | MAINT | | |

Roadway designation # IH-number, US-number, SH-number, FM-number

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

| |
|-----------------------|
| FREEWAY CLOSED X MILE |
| ROAD CLOSED AT SH XXX |
| ROAD CLSD AT FM XXXX |
| RIGHT X LANES CLOSED |
| CENTER LANE CLOSED |
| NIGHT LANE CLOSURES |
| VARIOUS LANES CLOSED |
| EXIT CLOSED |
| MALL DRIVEWAY CLOSED |
| XXXXXXXX BLVD CLOSED |

Other Condition List

| |
|--------------------------|
| FRONTAGE ROAD CLOSED |
| SHOULDER CLOSED XXX FT |
| RIGHT LN CLOSED XXX FT |
| RIGHT X LANES OPEN |
| DAYTIME LANE CLOSURES |
| I-XX SOUTH EXIT CLOSED |
| EXIT XXX CLOSED X MILE |
| RIGHT LN TO BE CLOSED |
| X LANES CLOSED TUE - FRI |
| ROADWORK XXX FT |
| FLAGGER XXXX FT |
| RIGHT LN NARROWS XXXX FT |
| MERGING TRAFFIC XXXX FT |
| LOOSE GRAVEL XXXX FT |
| DETOUR X MILE |
| ROADWORK PAST SH XXXX |
| BUMP XXXX FT |
| TRAFFIC SIGNAL XXXX FT |
| ROAD REPAIRS XXXX FT |
| LANE NARROWS XXXX FT |
| TWO-WAY TRAFFIC XX MILE |
| CONST TRAFFIC XXX FT |
| UNEVEN LANES XXXX FT |
| ROUGH ROAD XXXX FT |
| ROADWORK NEXT FRI-SUN |
| US XXX EXIT X MILES |
| LANES SHIFT * |

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

| |
|----------------------|
| MERGE RIGHT |
| DETOUR NEXT X EXITS |
| USE EXIT XXX |
| STAY ON US XXX SOUTH |
| TRUCKS USE US XXX N |
| WATCH FOR TRUCKS |
| EXPECT DELAYS |
| REDUCE SPEED XXX FT |
| USE OTHER ROUTES |
| STAY IN LANE * |

Location List

| |
|--------------------------|
| AT FM XXXX |
| BEFORE RAILROAD CROSSING |
| NEXT X MILES |
| PAST US XXX EXIT |
| XXXXXXXX TO XXXXXXX |
| US XXX TO FM XXXX |

Warning List

| |
|-----------------------|
| SPEED LIMIT XX MPH |
| MAXIMUM SPEED XX MPH |
| MINIMUM SPEED XX MPH |
| ADVISORY SPEED XX MPH |
| RIGHT LANE EXIT |
| USE CAUTION |
| DRIVE SAFELY |
| DRIVE WITH CARE |

** Advance Notice List

| |
|-----------------------|
| TUE-FRI XX AM-X PM |
| APR XX-X PM-X AM |
| BEGINS MONDAY |
| BEGINS MAY XX |
| MAY X-X XX PM - XX AM |
| NEXT FRI-SUN |
| XX AM TO XX PM |
| NEXT TUE AUG XX |
| TONIGHT XX PM-XX AM |

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
- For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.



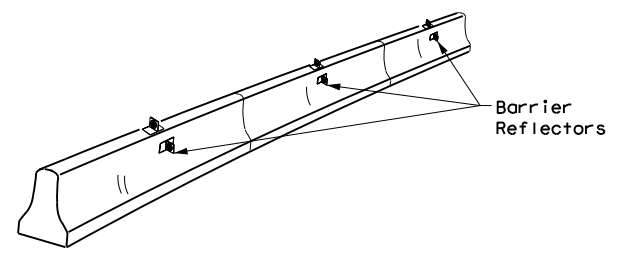
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC (6) - 21

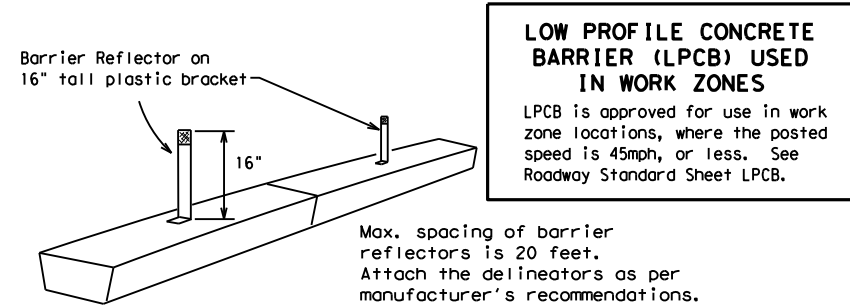
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

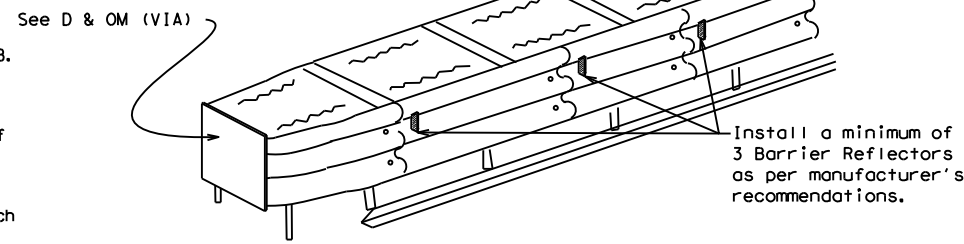


CONCRETE TRAFFIC BARRIER (CTB)



LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES
 LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
- Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional) while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.



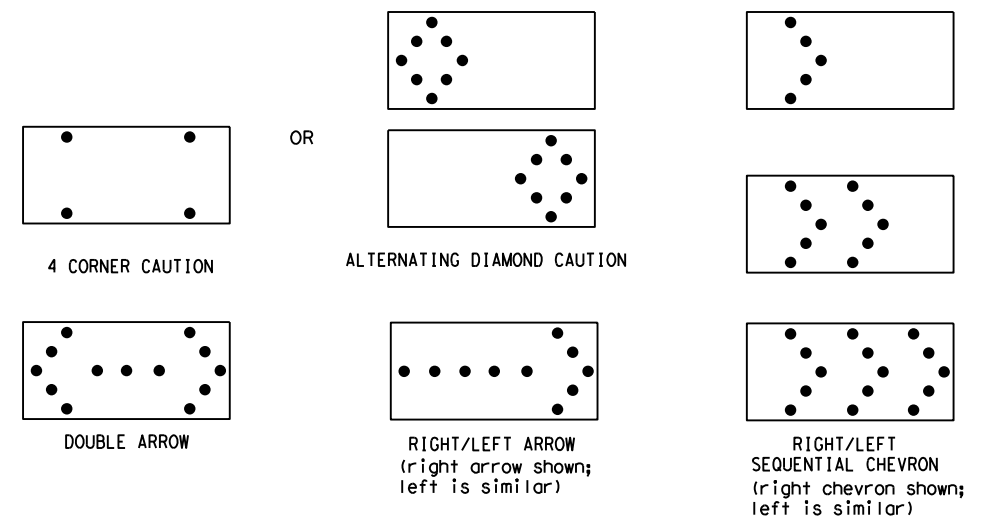
DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES
 End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

- The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
- Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
- The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
- Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

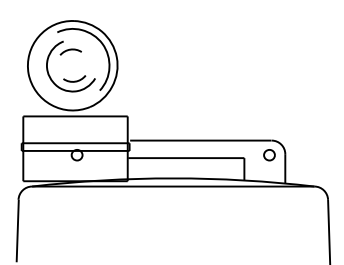
| REQUIREMENTS | | | |
|--------------|--------------|-------------------------------|-----------------------------|
| TYPE | MINIMUM SIZE | MINIMUM NUMBER OF PANEL LAMPS | MINIMUM VISIBILITY DISTANCE |
| B | 30 x 60 | 13 | 3/4 mile |
| C | 48 x 96 | 15 | 1 mile |

ATTENTION
 Flashing Arrow Boards shall be equipped with automatic dimming devices.

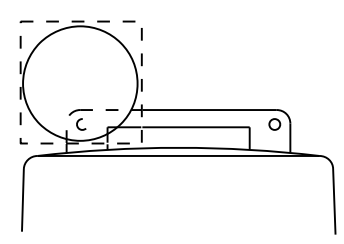
WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

SHEET 7 OF 12



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{PL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
- When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
- Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

- A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
- The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
- The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
- The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.



BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC (7) - 21

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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
- For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
- Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
- The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

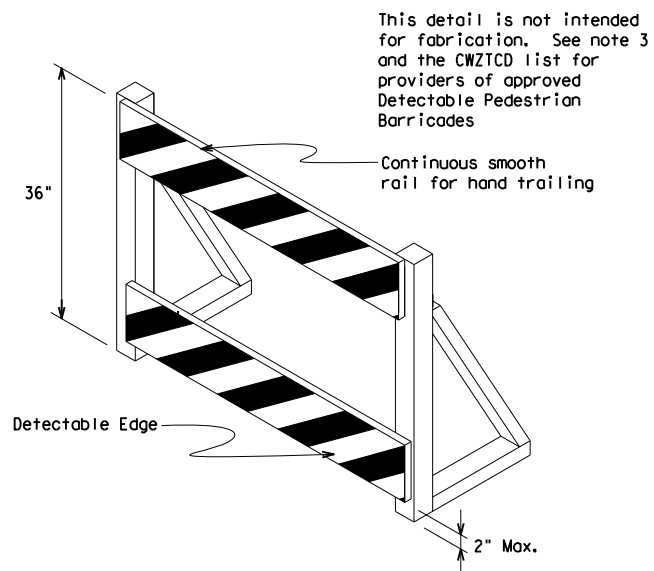
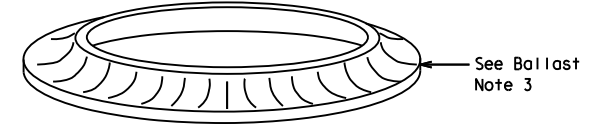
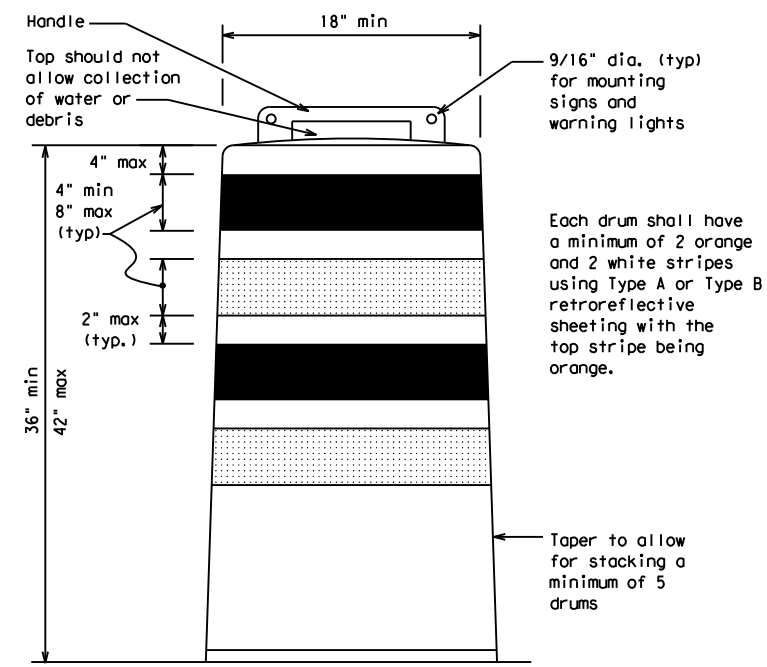
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
- Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
- The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
- The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectORIZED space between any two adjacent stripes shall not exceed 2 inches in width.
- Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
- The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

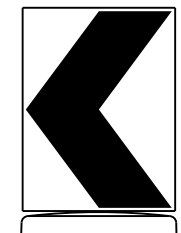
BALLAST

- Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
- Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
- When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

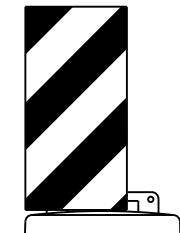


DETECTABLE PEDESTRIAN BARRICADES

- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
- Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
- Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
- Warning lights shall not be attached to detectable pedestrian barricades.
- Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24" Vertical Panel
mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
- R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12



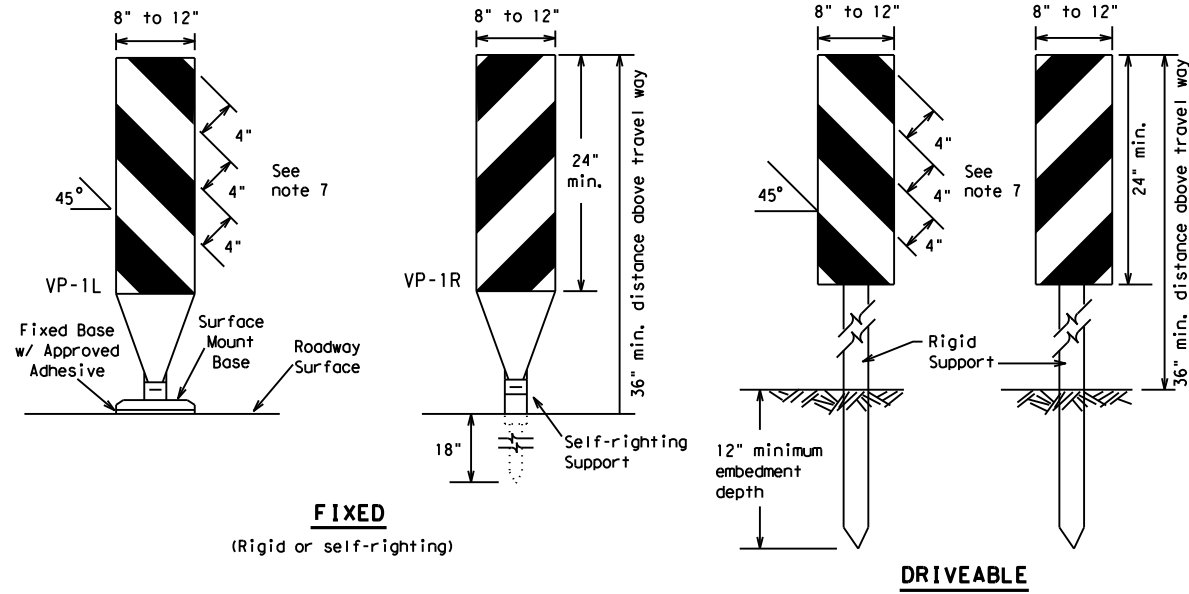
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 21

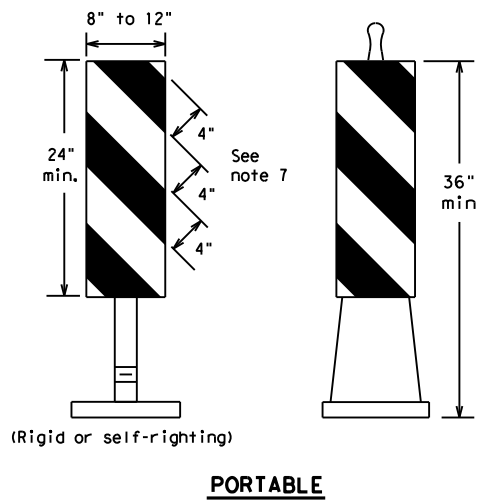
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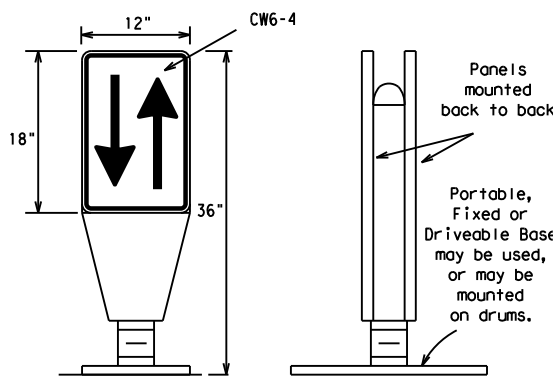
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- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
- VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
- VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

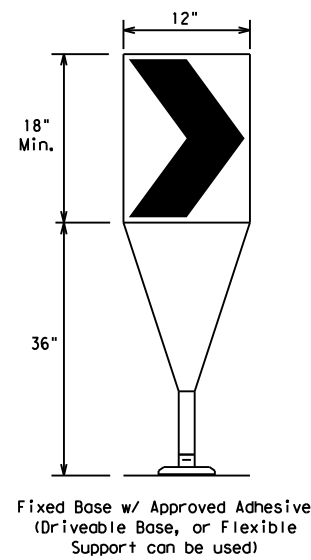


VERTICAL PANELS (VPs)



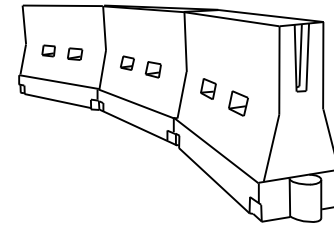
- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
- Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
- Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
- Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

GENERAL NOTES

- Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
- Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
- The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

| Posted Speed | Formula | Minimum Desirable Taper Lengths | | | Suggested Maximum Spacing of Channelizing Devices | |
|--------------|--------------------------|---------------------------------|------------|------------|---|--------------|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent |
| 30 | L = WS ² / 60 | 150' | 165' | 180' | 30' | 60' |
| 35 | | 205' | 225' | 245' | 35' | 70' |
| 40 | | 265' | 295' | 320' | 40' | 80' |
| 45 | L = WS | 450' | 495' | 540' | 45' | 90' |
| 50 | | 500' | 550' | 600' | 50' | 100' |
| 55 | | 550' | 605' | 660' | 55' | 110' |
| 60 | | 600' | 660' | 720' | 60' | 120' |
| 65 | | 650' | 715' | 780' | 65' | 130' |
| 70 | | 700' | 770' | 840' | 70' | 140' |
| 75 | | 750' | 825' | 900' | 75' | 150' |
| 80 | | 800' | 880' | 960' | 80' | 160' |

**Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 21

| | | | | | | | | | |
|-----------|---------------|------|--------|----------|-----------|--------|-------|-----|-------|
| FILE: | bc-21.dgn | DW: | TxDOT | CK: | TxDOT | DW: | TxDOT | CK: | TxDOT |
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| 9-07 | 8-14 | DIST | COUNTY | | SHEET NO. | | | | |
| 7-13 | 5-21 | HOU | WALLER | | 19 | | | | |

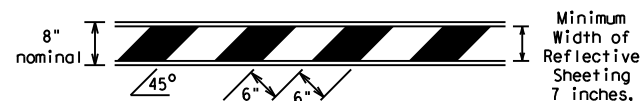
DATE:
FILE:

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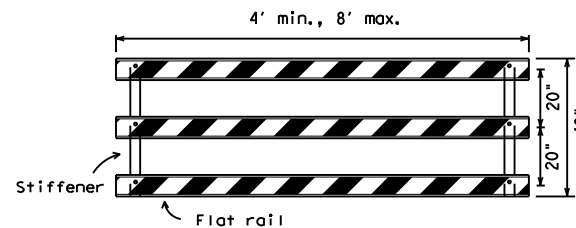
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

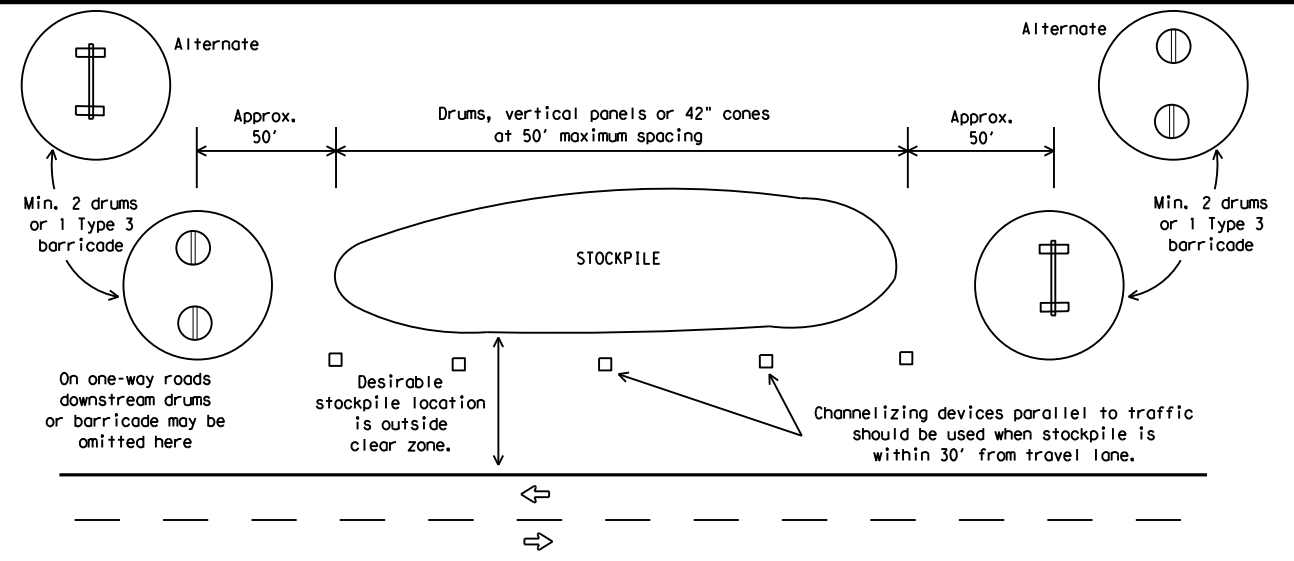


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



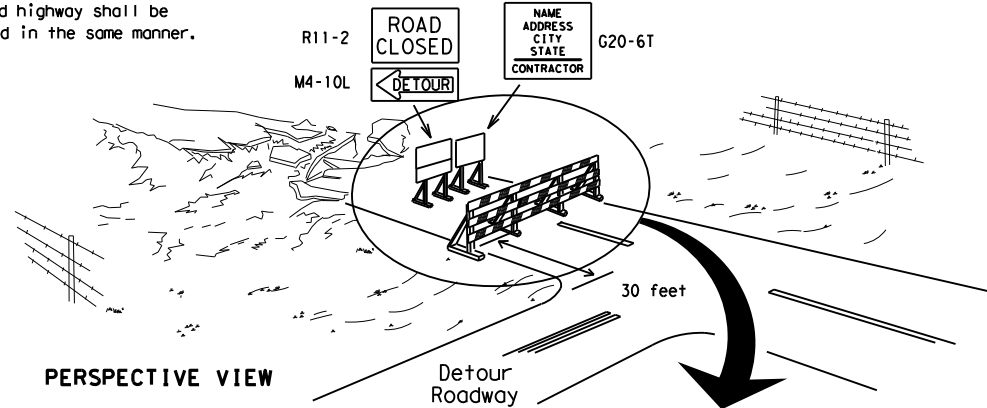
Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



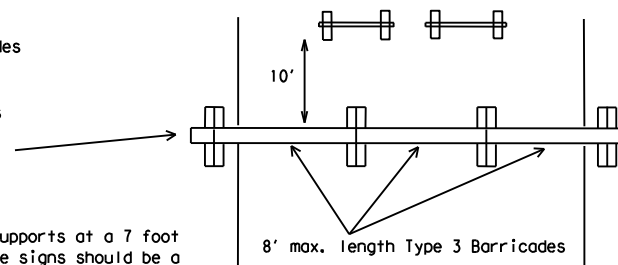
TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

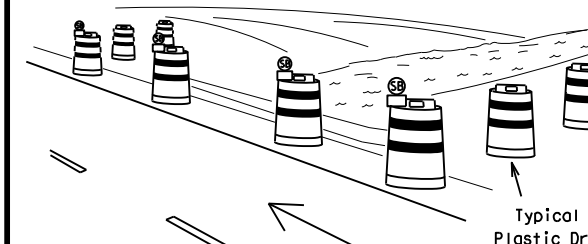
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

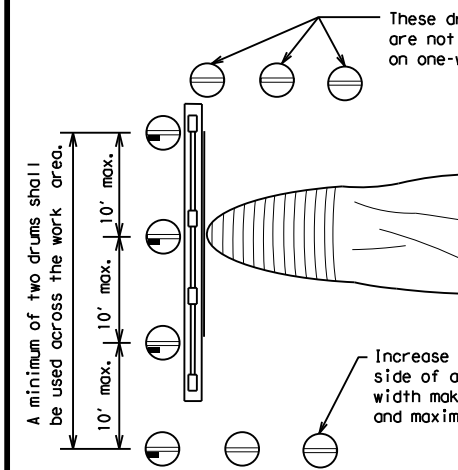
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

Typical Plastic Drum
These drums are not required on one-way roadway



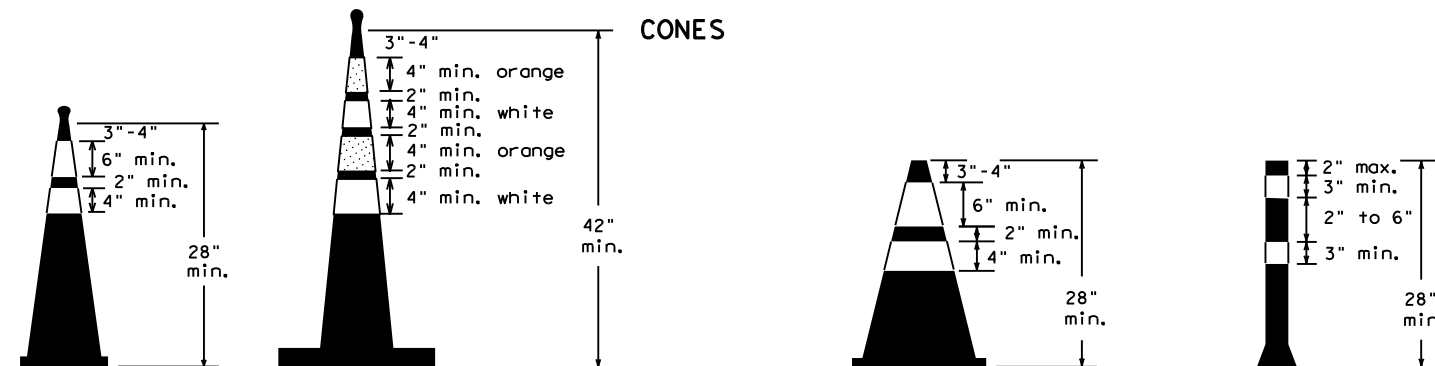
PLAN VIEW

Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

1. Where positive redirection capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.

| LEGEND | |
|--------|---|
| | Plastic drum |
| | Plastic drum with steady burn light or yellow warning reflector |
| | Steady burn warning light or yellow warning reflector |

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones

One-Piece cones

Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

SHEET 10 OF 12



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

| | | | | |
|-----------------------|-----------|-----------|-----------|-----------|
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| 9-07 8-14 | DIST | COUNTY | SHEET NO. | |
| 7-13 5-21 | HOU | WALLER | 20 | |

DATE:
FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

- The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
- When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

- Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
- Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

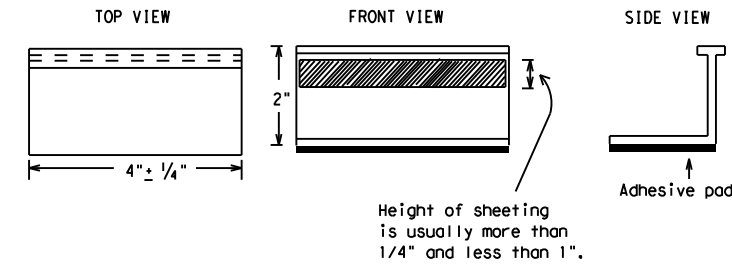
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
- The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
- Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

- Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
- The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
- Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
- Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



**STAPLES OR NAILS SHALL NOT BE USED TO SECURE
TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER
TABS TO THE PAVEMENT SURFACE**

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
 - Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
 - Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
- Small design variances may be noted between tab manufacturers.
- See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:

- YELLOW - (two amber reflective surfaces with yellow body).
- WHITE - (one silver reflective surface with white body).

| DEPARTMENTAL MATERIAL SPECIFICATIONS | |
|--|----------|
| PAVEMENT MARKERS (REFLECTORIZED) | DMS-4200 |
| TRAFFIC BUTTONS | DMS-4300 |
| EPOXY AND ADHESIVES | DMS-6100 |
| BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS | DMS-6130 |
| PERMANENT PREFABRICATED PAVEMENT MARKINGS | DMS-8240 |
| TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS | DMS-8241 |
| TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS | DMS-8242 |

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

SHEET 11 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

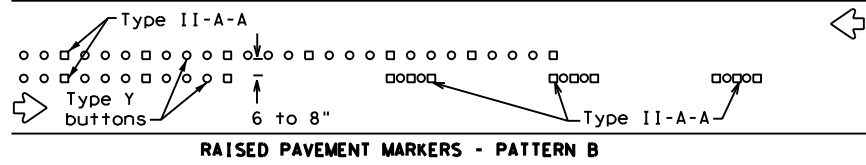
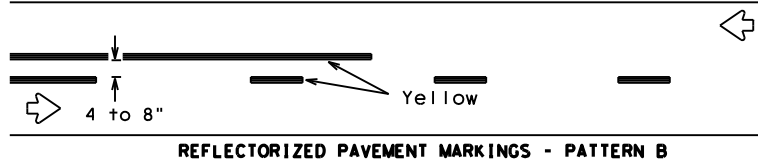
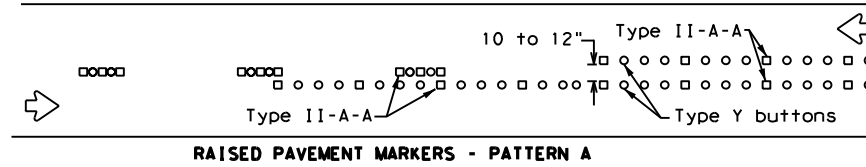
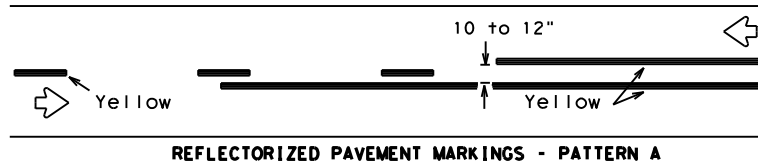
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| 2-98 | 9-07 | 5-21 | DIST | | COUNTY | SHEET NO. | | | |
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| 11-02 | 8-14 | | | | | | | | |

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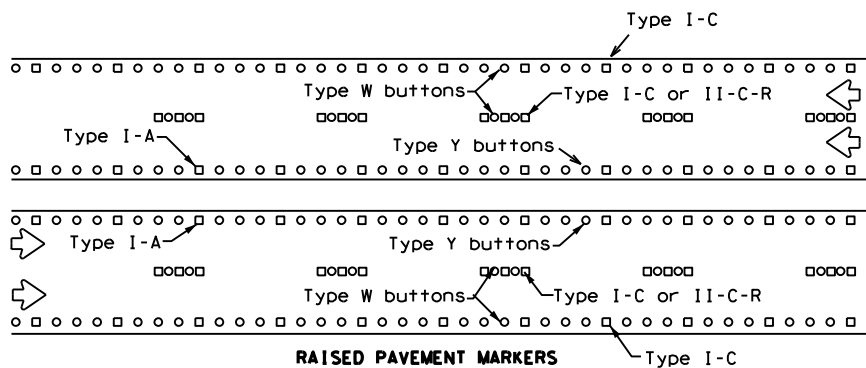
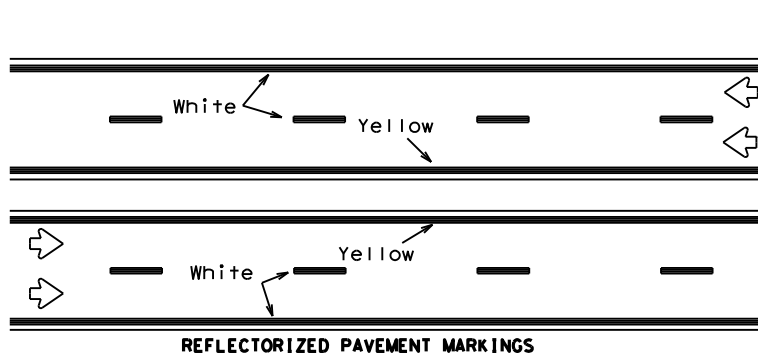
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PAVEMENT MARKING PATTERNS



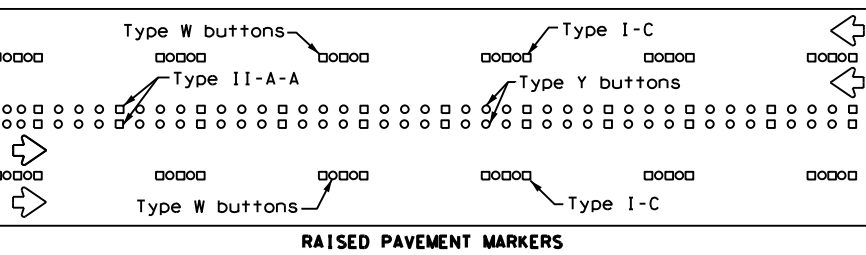
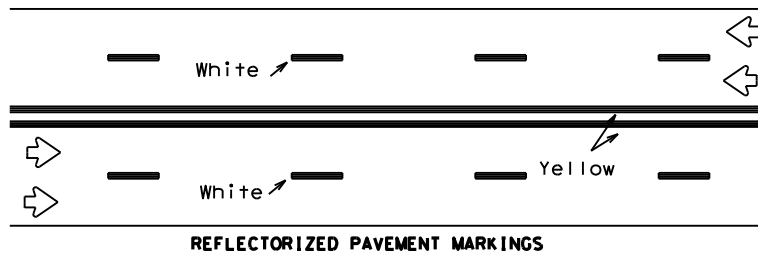
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



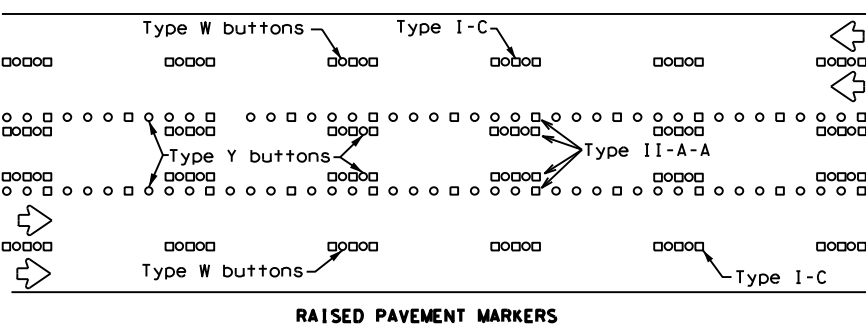
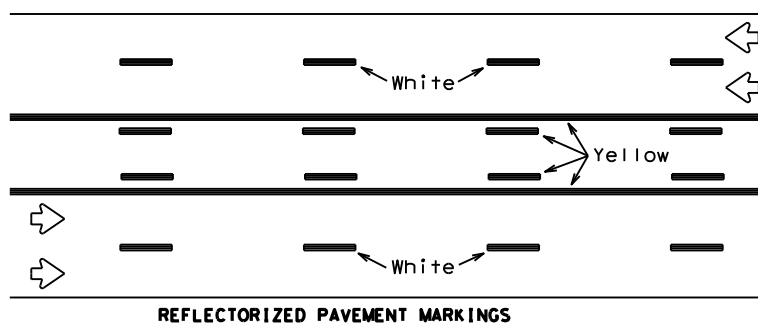
Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectorized pavement markings.

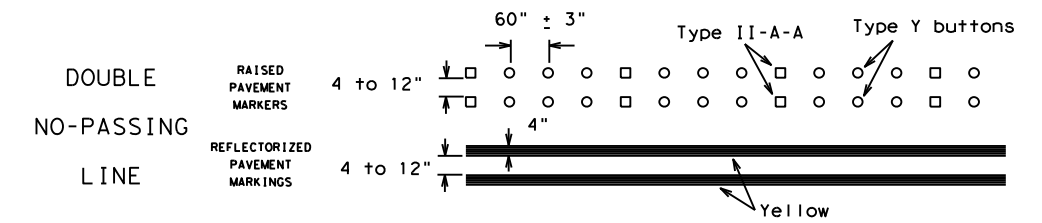
LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



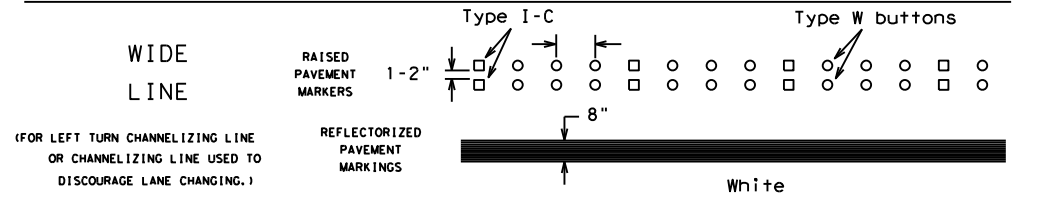
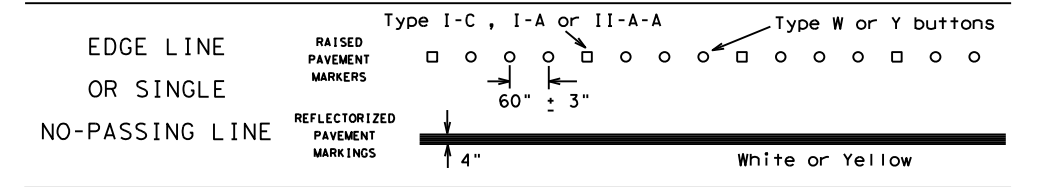
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

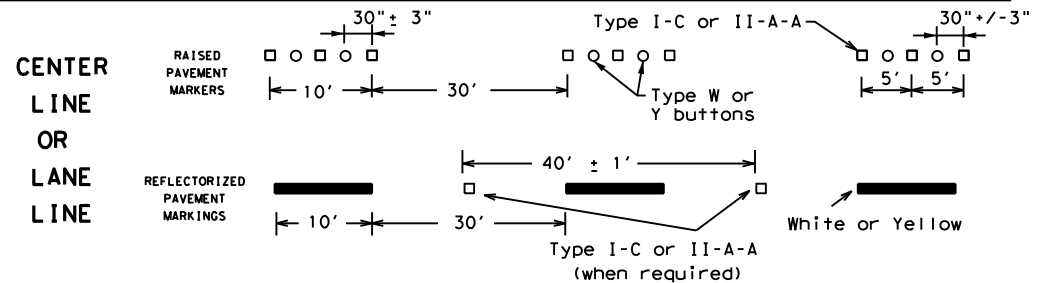
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



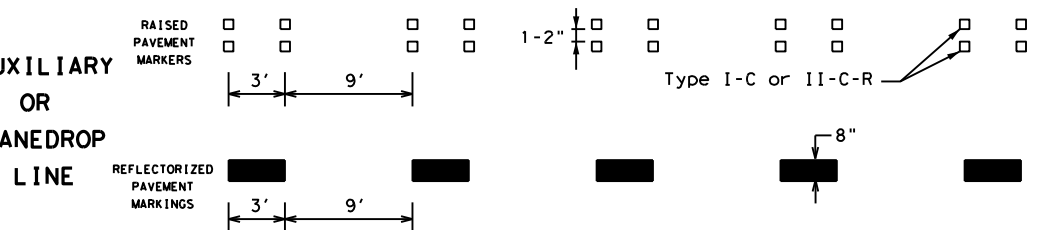
SOLID LINES



BROKEN LINES

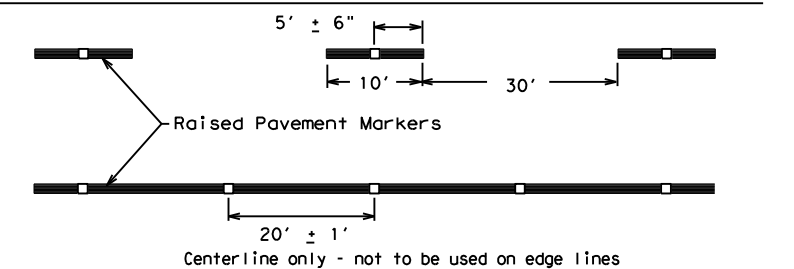


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

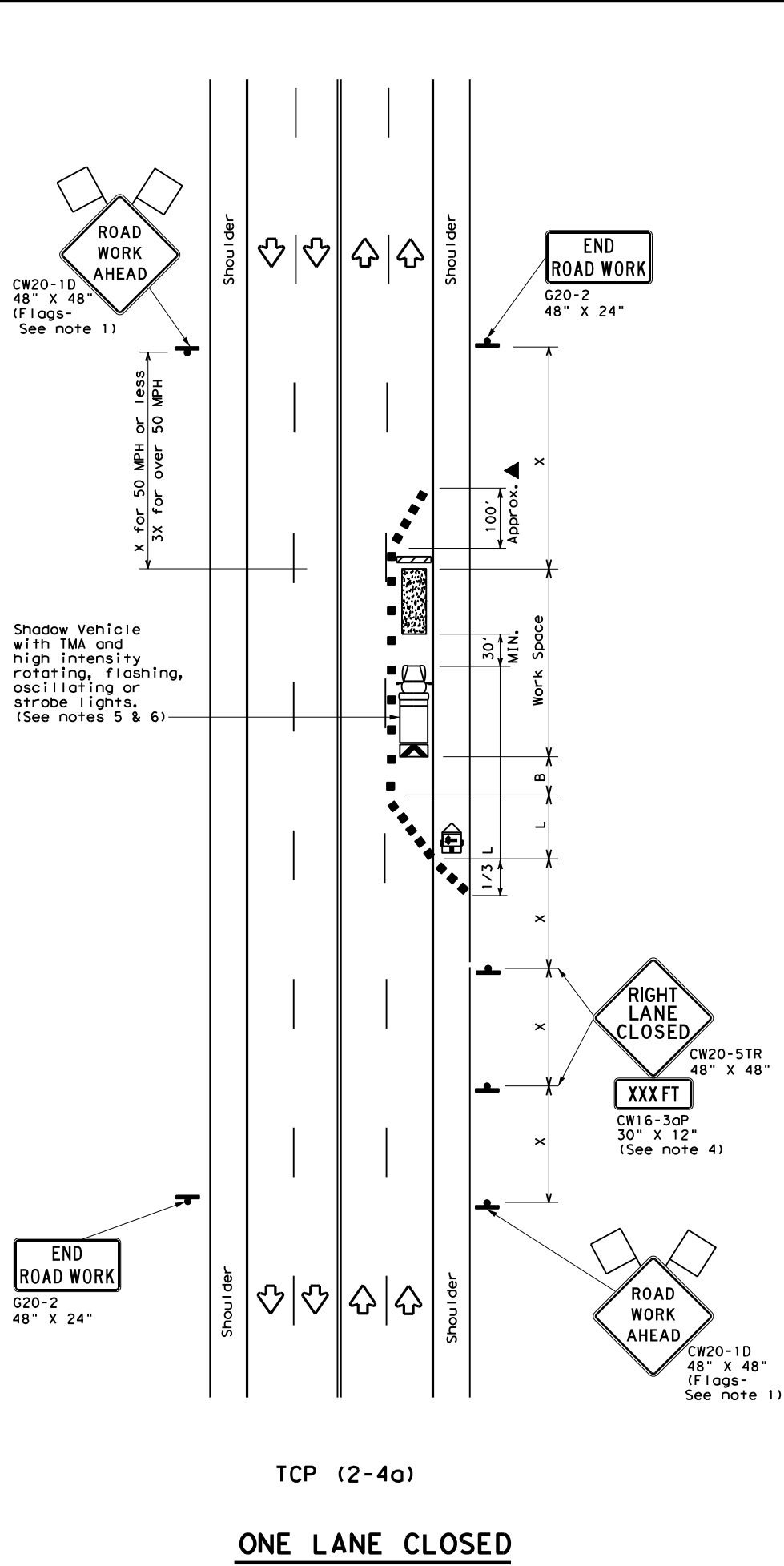
Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

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| 1-97 9-07 5-21 | DIST | COUNTY | SHEET NO. | |
| 2-98 7-13 | HOU | WALLER | 22 | |
| 11-02 8-14 | | | | |

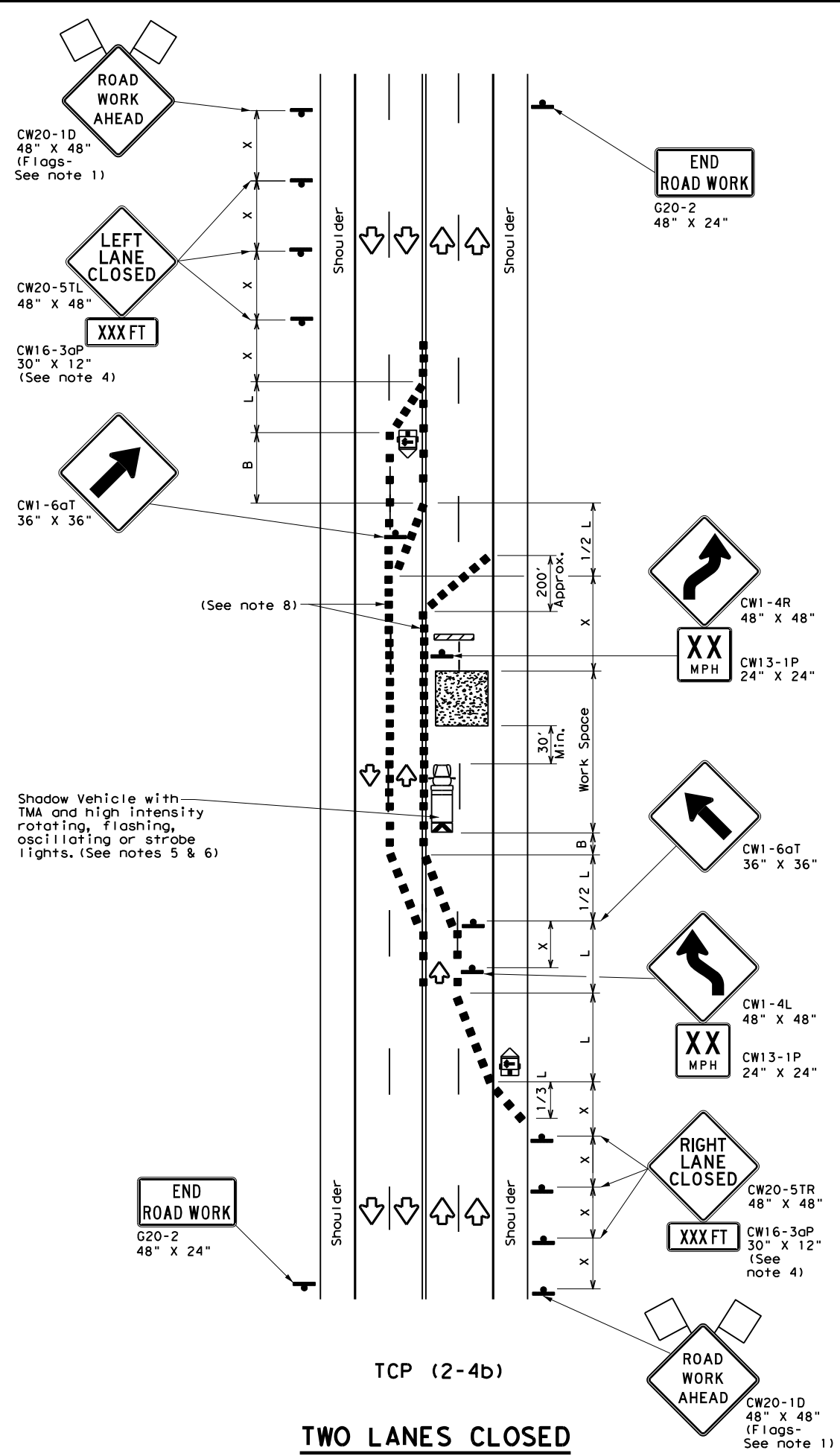
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TCP (2-4a)
ONE LANE CLOSED



TCP (2-4b)
TWO LANES CLOSED

| LEGEND | | | |
|--------|--------------------------------------|--|---|
| | Type 3 Barricade | | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed * | Formula | Minimum Desirable Taper Lengths * X | | | Suggested Maximum Spacing of Channelizing Devices | | Minimum Sign Spacing "X" Distance | Suggested Longitudinal Buffer Space "B" |
|----------------|--------------------------|-------------------------------------|------------|------------|---|--------------|-----------------------------------|---|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent | | |
| 30 | L = WS ² / 60 | 150' | 165' | 180' | 30' | 60' | 120' | 90' |
| 35 | | 205' | 225' | 245' | 35' | 70' | 160' | 120' |
| 40 | L = WS | 265' | 295' | 320' | 40' | 80' | 240' | 155' |
| 45 | | 450' | 495' | 540' | 45' | 90' | 320' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 400' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 500' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 600' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 700' | 410' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 800' | 475' |
| 75 | 750' | 825' | 900' | 75' | 150' | 900' | 540' | |

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

| TYPICAL USAGE | | | | |
|---------------|----------------|-----------------------|------------------------------|----------------------|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | | ✓ | ✓ | |

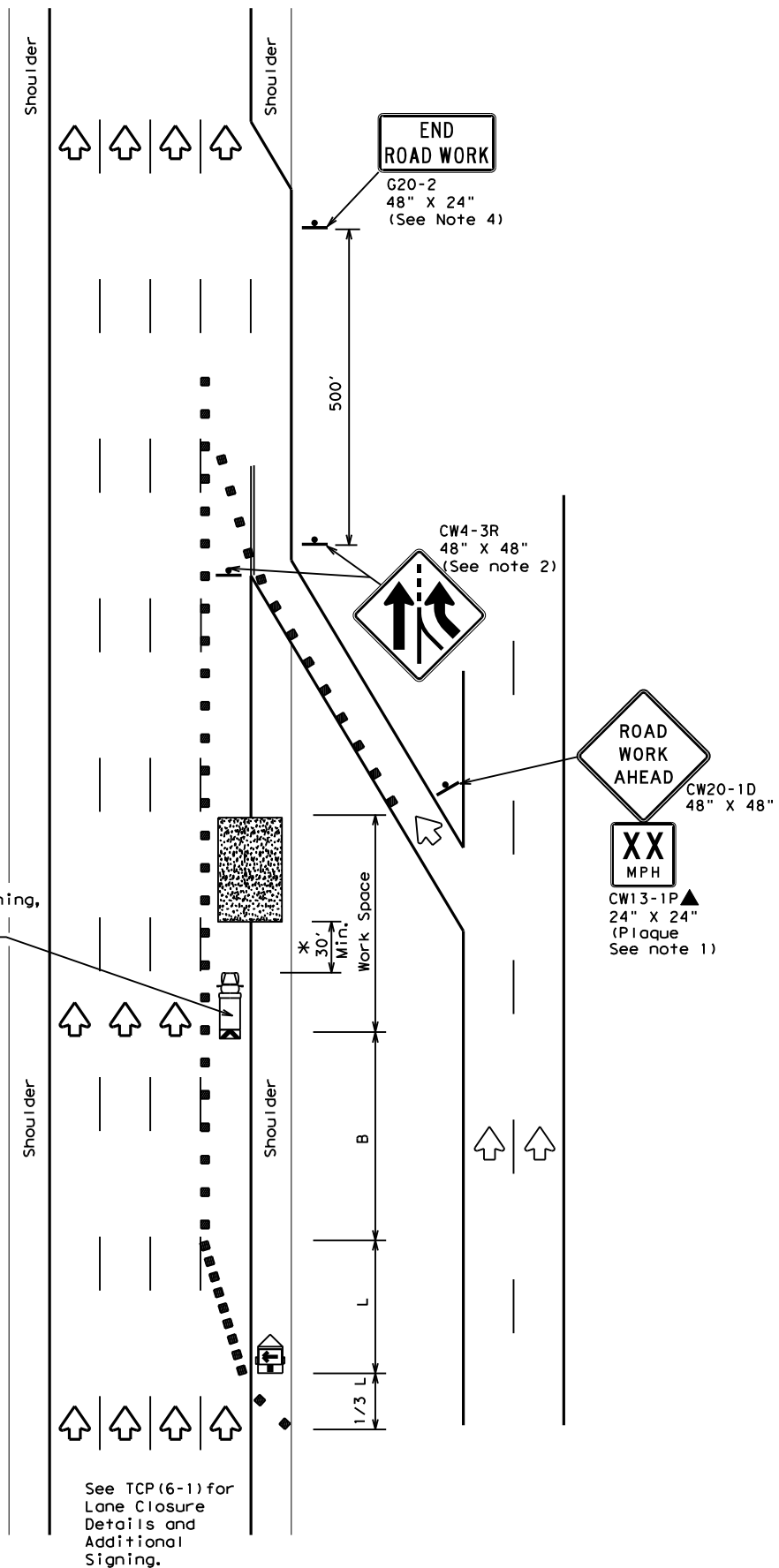
GENERAL NOTES

- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
 - For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-4a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-4b)**
- For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings, not the entire work zone.

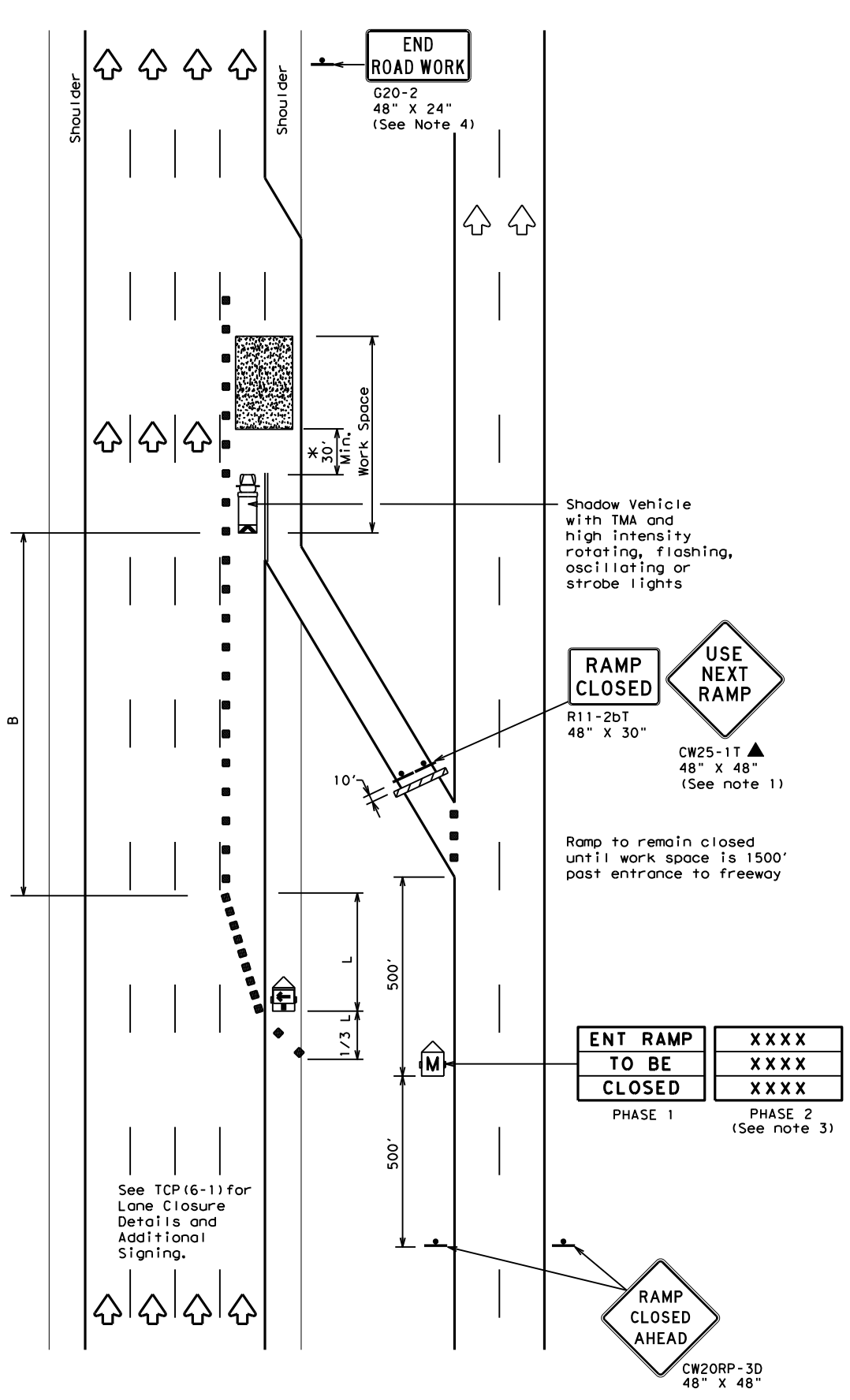
| | | | |
|---|------------------|--------------------------------------|-----------|
| | | Traffic Operations Division Standard | |
| TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS | | | |
| TCP (2-4) - 18 | | | |
| FILE: tcp2-4-18.dgn | DN: | CK: | DW: |
| © TxDOT December 1985 | CONT | SECT | JOB |
| 8-95 3-03 | 0114 11 088, etc | | US 290 |
| 1-97 2-12 | DIST | COUNTY | SHEET NO. |
| 4-98 2-18 | HOU | WALLER | 23 |

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TCP (6-2a)
ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b)
ENTRANCE RAMP CLOSED

| LEGEND | | | |
|--------|--------------------------------------|--|---|
| | Type 3 Barricade | | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed | Formula | Minimum Desirable Taper Lengths "L" ** | | | Suggested Maximum Spacing of Channelizing Devices | | Suggested Longitudinal Buffer Space "B" |
|--------------|---------|--|------------|------------|---|--------------|---|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent | |
| 45 | L = WS | 450' | 495' | 540' | 45' | 90' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 410' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 475' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 540' |
| 80 | | 800' | 880' | 960' | 80' | 160' | 615' |

** Taper lengths have been rounded off.
L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

| TYPICAL USAGE | | | | |
|---------------|----------------|-----------------------|------------------------------|----------------------|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | ✓ | ✓ | ✓ | |

GENERAL NOTES

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- ADDED LANE Symbol (CW4-3) sign may be omitted when sign between ramp and mainlane can be seen from both roadways.
- See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
- The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.



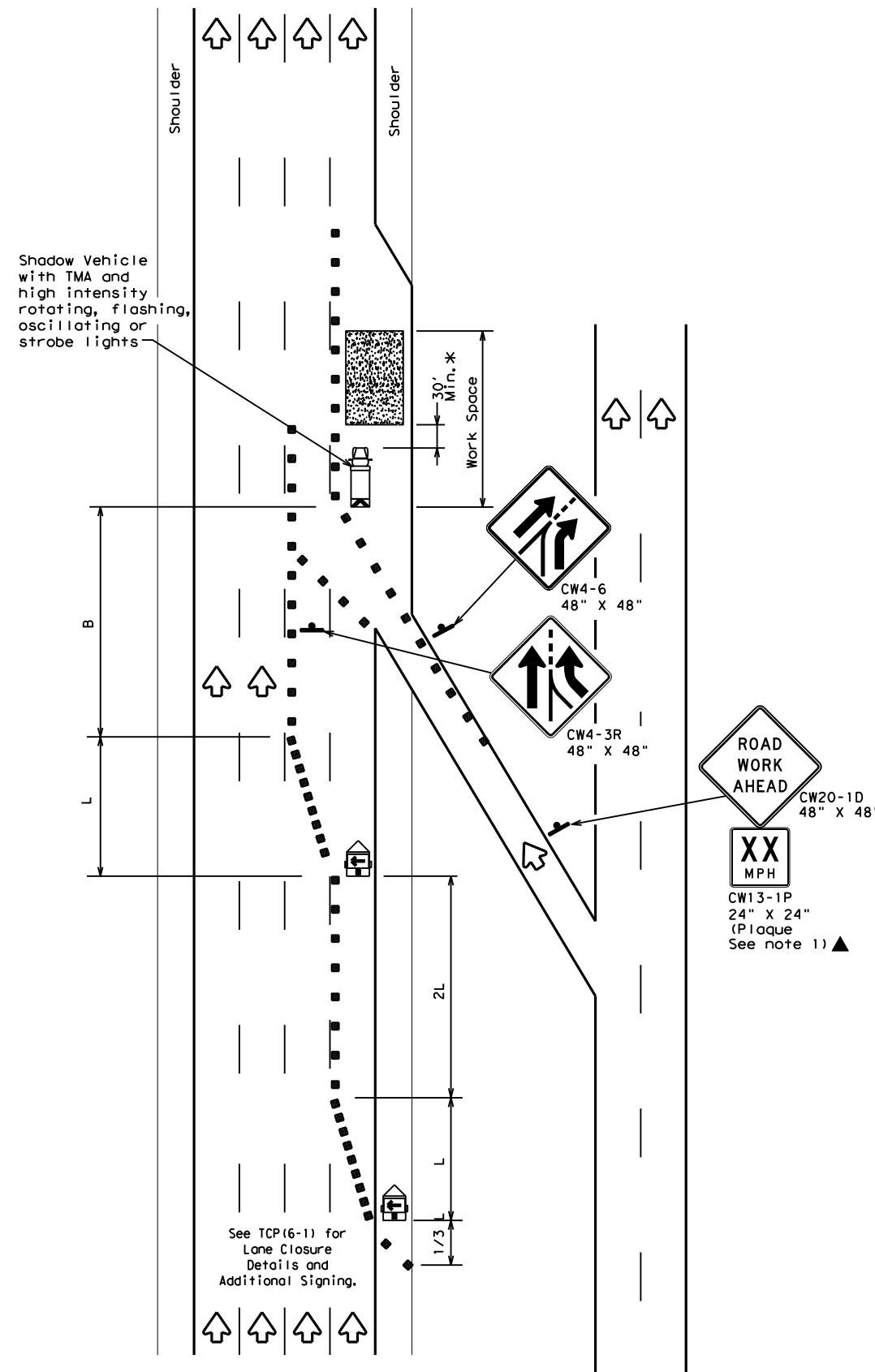
TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP

TCP (6-2) - 12

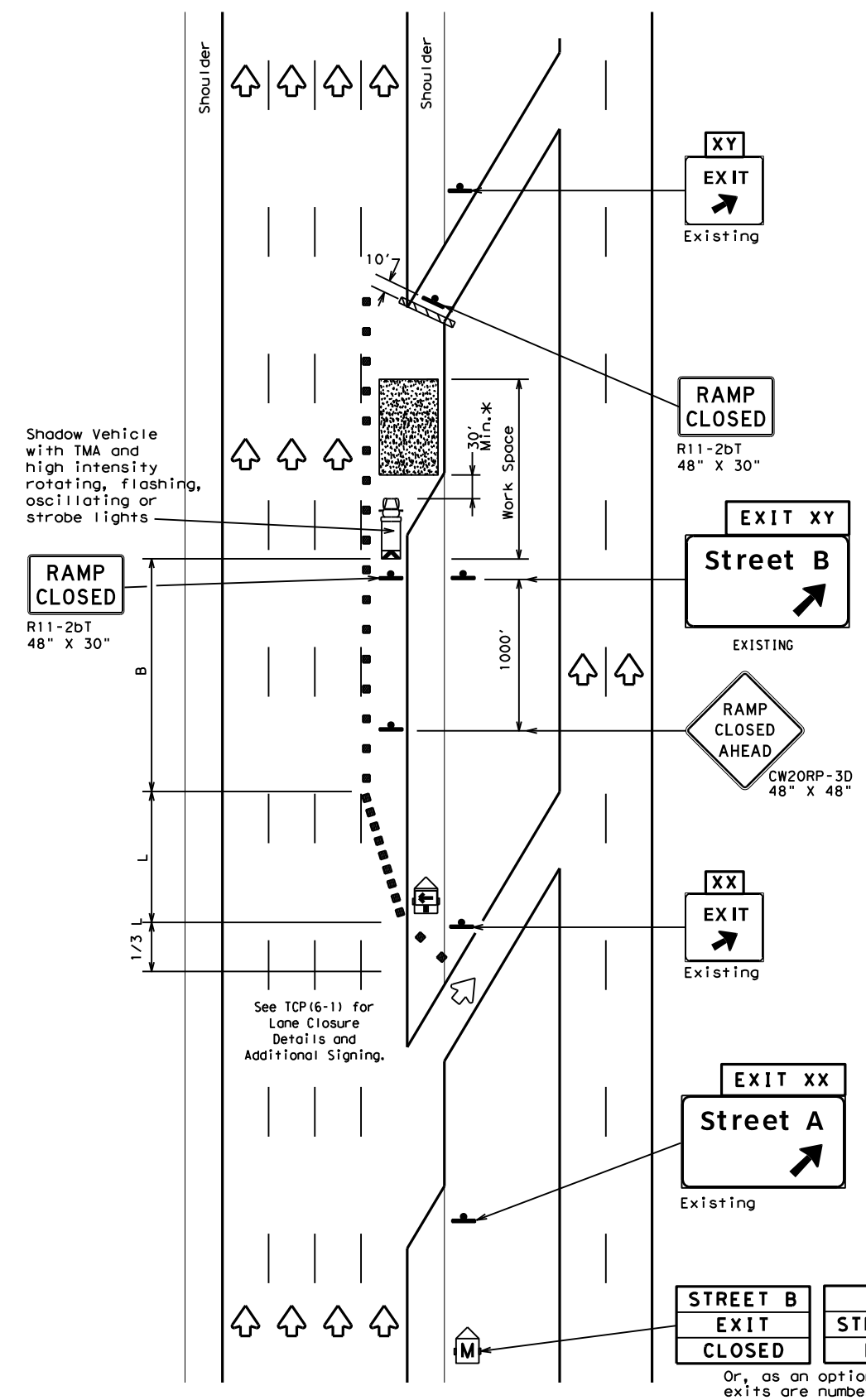
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| © TxDOT February 1994 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | 0114 | 11 | 088, etc | US 290 |
| 1-97 8-98 | DIST | COUNTY | SHEET NO. | |
| 4-98 8-12 | HOU | WALLER | 24 | |

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TCP (6-3a)
ENTRANCE RAMP OPEN



TCP (6-3b)
EXIT RAMP CLOSED
TRAFFIC EXITS PRIOR TO CLOSED RAMP

STREET B
EXIT
CLOSED

USE
STREET A
EXIT

Or, as an option when exits are numbered

EXIT XY
CLOSED

USE
EXIT XX

Place 1 mile (approx.) in advance of Street A exit.

| LEGEND | | | |
|--------|--------------------------------------|--|---|
| | Type 3 Barricade | | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed | Formula | Minimum Desirable Taper Lengths "L" * * | | | Suggested Maximum Spacing of Channelizing Devices | | Suggested Longitudinal Buffer Space "B" |
|--------------|---------|---|------------|------------|---|--------------|---|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent | |
| 45 | L = WS | 450' | 495' | 540' | 45' | 90' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 410' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 475' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 540' |
| 80 | 800' | 880' | 960' | 80' | 160' | 615' | |

* * * Taper lengths have been rounded off.
L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

| TYPICAL USAGE | | | | |
|---------------|----------------|-----------------------|------------------------------|----------------------|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | ✓ | ✓ | ✓ | |

GENERAL NOTES:
1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

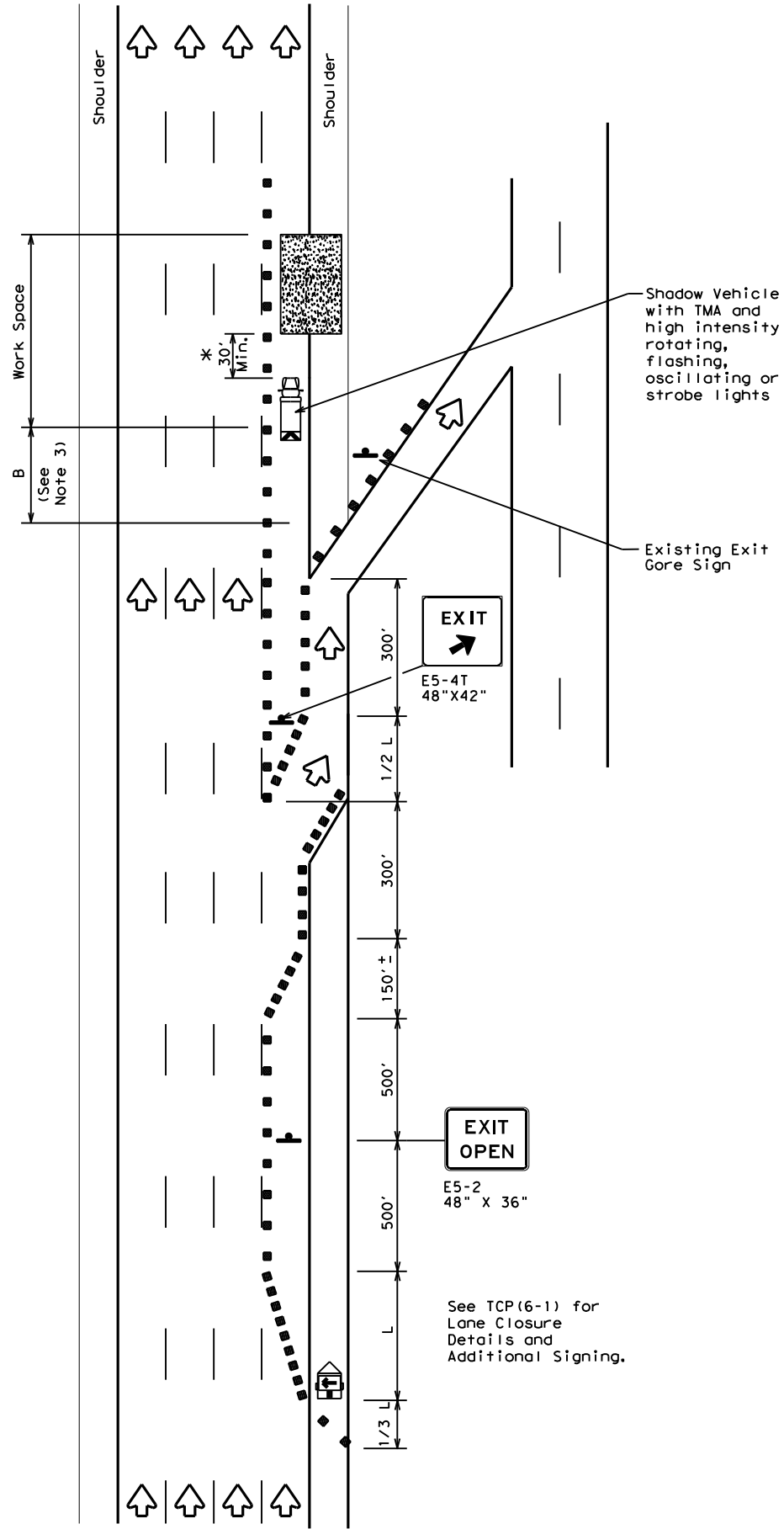
**TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP**

TCP (6-3) - 12

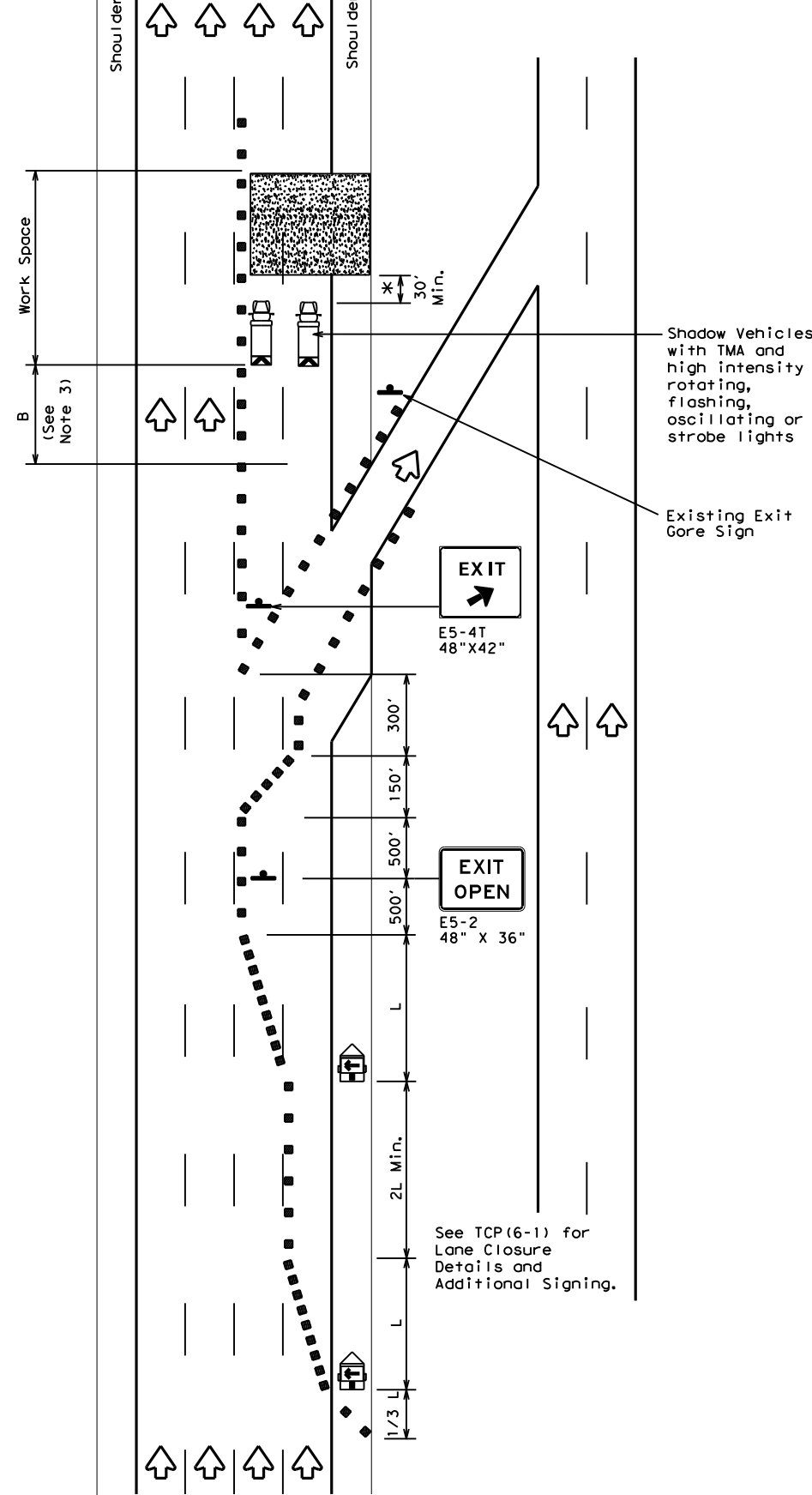
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| © TxDOT February 1994 | CONT | SECT | JOB | HIGHWAY |
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| 1-97 8-98 | DIST | COUNTY | SHEET NO. | |
| 4-98 8-12 | HOU | WALLER | 25 | |

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TCP (6-5a)
EXIT RAMP OPEN



TCP (6-5b)
**EXIT RAMP OPEN
TWO LANE CLOSURE WITHIN
1500' PAST EXIT RAMP**

| LEGEND | | | |
|--------|--------------------------------------|--|---|
| | Type 3 Barricade | | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed | Formula | Minimum Desirable Taper Lengths "L" ** | | | Suggested Maximum Spacing of Channelizing Devices | | Suggested Longitudinal Buffer Space "B" |
|--------------|---------|--|------------|------------|---|--------------|---|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent | |
| 45 | L = WS | 450' | 495' | 540' | 45' | 90' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 410' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 475' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 540' |
| 80 | | 800' | 880' | 960' | 80' | 160' | 615' |

** Taper lengths have been rounded off.
L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

| TYPICAL USAGE | | | | |
|---------------|----------------|-----------------------|------------------------------|----------------------|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | ✓ | ✓ | ✓ | |

GENERAL NOTES

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- See BC standards for sign details.
- If adequate longitudinal buffer length "B" does not exist between the work space and the exit ramp, consideration should be given to closing the ramp.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

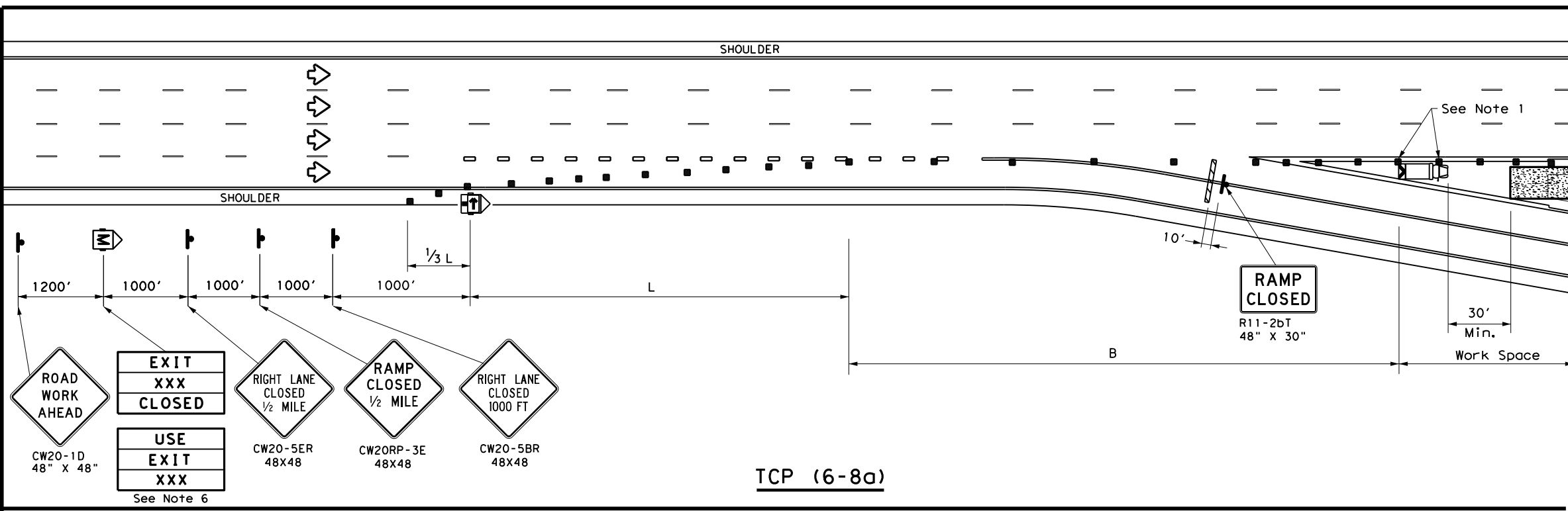
**TRAFFIC CONTROL PLAN
WORK AREA BEYOND EXIT RAMP**

TCP (6-5) - 12

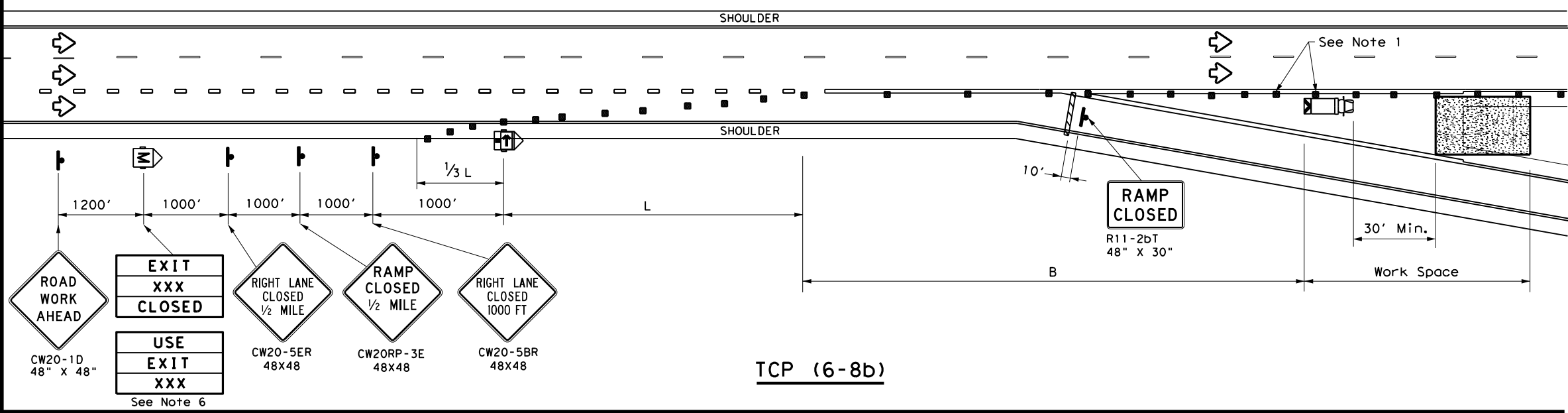
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| © TxDOT February 1998 | CONT | SECT | JOB | HIGHWAY |
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| 1-97 8-98 | DIST | COUNTY | SHEET NO. | |
| 4-98 8-12 | HOU | WALLER | 26 | |

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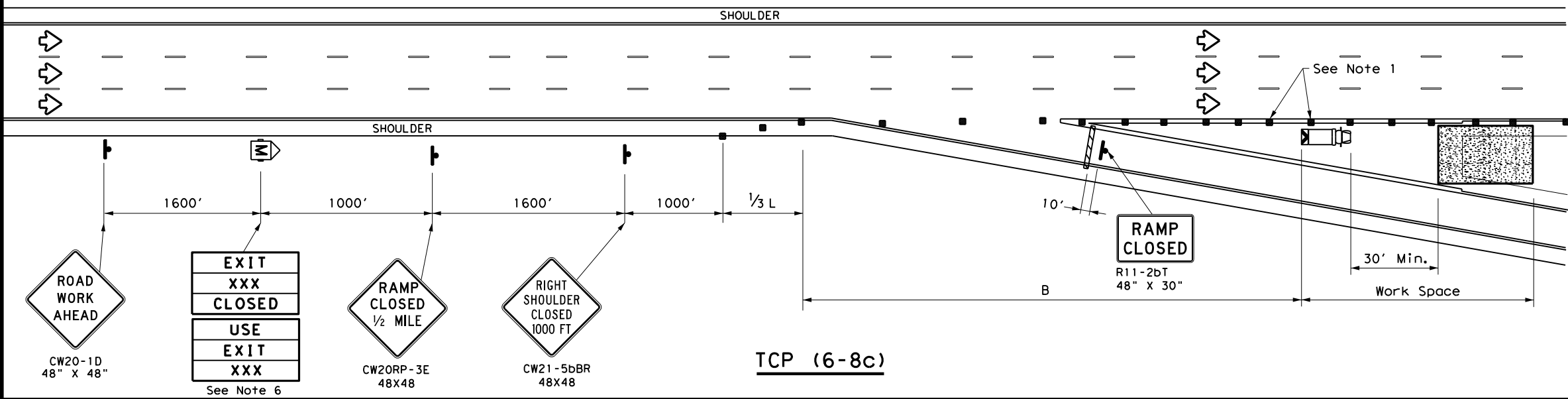
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TCP (6-8a)



TCP (6-8b)



TCP (6-8c)

| LEGEND | | | |
|--------|--------------------------------------|--|---|
| | Type 3 Barricade | | Channelizing Devices (CDs) |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed | Formula | Minimum Desirable Taper Lengths "L" | | | Suggested Maximum Spacing of Channelizing Devices | | Suggested Longitudinal Buffer Space "B" |
|--------------|---------|-------------------------------------|------------|------------|---|--------------|---|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent | |
| 45 | L = WS | 450' | 495' | 540' | 45' | 90' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 410' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 475' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 540' |
| 80 | | 800' | 880' | 960' | 80' | 160' | 615' |

** Taper lengths have been rounded off.
L=Length of Taper (FT) W=Width of Offset (FT)
S=Posted Speed (MPH)

| TYPICAL USAGE | | | | |
|---------------|----------------|-----------------------|------------------------------|----------------------|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | ✓ | ✓ | | |

- GENERAL NOTES**
- Place channelizing devices in the gore at 20' spacing.
 - See the Standard Highway Sign Design for Texas (SHSD) for sign details.
 - The PCMS may be omitted when a permanent DMS sign is available in an appropriate location to display a similar message as called for on the PCMS.
 - When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) for traffic control details.
 - Truck mounted attenuator is required.
 - The PCMS may be omitted if replaced with a "RAMP CLOSED" AHEAD (CW20RP-3D) Sign.
 - Roadway ADT should be greater than 10,000.

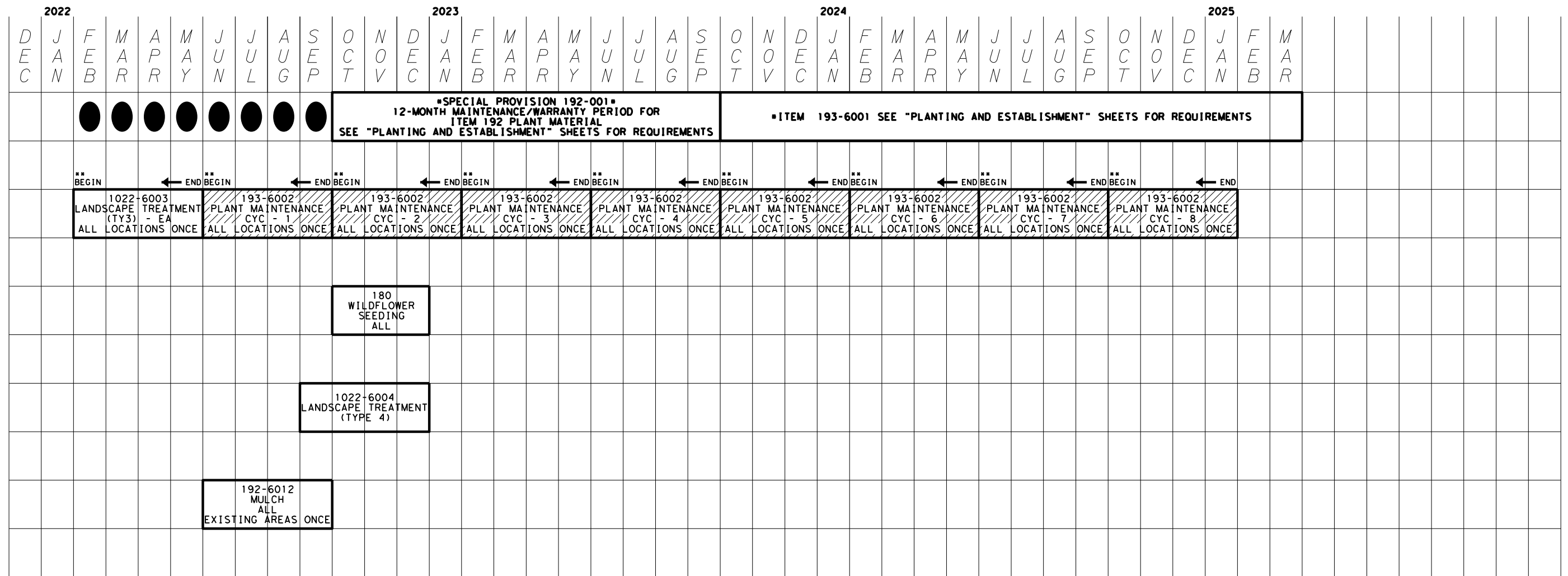
Texas Department of Transportation
Traffic Operations Division Standard

WORK IN EXIT GORE FOR ADT GREATER THAN 10,000

TCP (6-8) - 14

| | | | | |
|-----------------------|-----------|-----------|-----------|-----------|
| FILE: tcp6-8.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
| © TxDOT February 2014 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | 0114 | 11 | 088, etc | US 290 |
| DIST | COUNTY | | SHEET NO. | |
| HOU | WALLER | | 27 | |

CONSTRUCTION PHASE (WORKING DAYS) FOR ITEMS 160, 161, 162, 166, 168, 192, 502, 506, 1006 and 1022 - SEE PLANS AND SPECIFICATIONS FOR REQUIREMENTS



* Start time for SP 192-001 and ITEM 193-6001 will be adjusted to match end of CONSTRUCTION PHASE to avoid any break in maintenance and/or establishment of plant material.
All other items of work will remain as scheduled.

** Each cycle must be 100% complete prior to beginning the next cycle.
If all maintenance, as defined on PLANT MAINTENANCE SHEET 1 OF 5, is not 100% complete and approved within the allotted time shown on this sheet, that cycle payment may be adjusted accordingly.
Any cycle not started and completed with allotted time will be forfeited.

NOTES:

1. Timeline is for Contractor's information only, actual dates may change as directed.
2. See PLANTING AND ESTABLISHMENT SHEETS for additional requirements and information not shown on this sheet.
3. Contractor will provide Engineer and Landscape Architect sufficient time to review and approve all proposed work locations and items prior to installation. Work completed prior to approval will not be paid for.
4. Reference ITEM 5.10, inspection or lack of inspection will not relieve the Contractor from obligation to provide materials or perform the work in accordance with the contract.
5. At any time during contract, the Engineer and Landscape Architect may remove installed items in order to inspect covered work and materials. Contractor is responsible for re-installing removed items per details. Re-installing inspected items is incidental and will not be paid for separately.



Dana Dean
6/2/2021

| PLANTING AND MAINTENANCE TIMELINE | | | |
|-----------------------------------|-------------|----------|-------------|
| SHEET 1 OF 1 | | | |
| | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 28 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

ITEM 1022-6003 LANDSCAPE TREATMENT (TY3) - EA

BEGIN ** END
 1022-6003
 LANDSCAPE TREATMENT (TY3)
 ALL LOCATIONS ONCE

AS SHOWN ON PLANTING, MAINTENANCE AND ESTABLISHMENT TIMELINE, SHEET 1 OF 1

REQUIREMENTS FOR EXISTING LANDSCAPE AREAS

GENERAL

1. Perform all requirements described on this sheet unless otherwise shown.
2. Work includes redefining all existing planting areas within project limits in accordance with PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheets 1-5 except: landscape installed by adjacent property owners.
3. Work will be limited to the redefined planting areas and adjacent 5'- 7' perimeter mow edge.
4. Work includes removing trees and/or shrubs which may actually reduce the original planting area size and eliminate further maintenance of an area.
5. Work includes pruning and removal of plant material:
 - Prune in accordance with ANSI A300.
 - Remove plant material stumps to existing grade.
 - Chip and evenly distribute plant debris on site.
 - Remove any plant debris too large to chip from site.
 - Do not prune or remove more plant material than what can be chipped or removed the same day unless otherwise approved by Engineer.
 - Fill any holes from removal of dead plant material with topsoil, topsoil is incidental.
6. EACH CYCLE INCLUDES COMPLETING THE SPECIFIED WORK FOR ALL LOCATIONS IDENTIFIED WITHIN THE PROJECT LIMITS ONCE.

PLANT BED MAINTENANCE

7. Maintain and/or reshape planting areas to conform to original installation (see PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT sheets) so that planting areas do not hinder roadway drainage, especially behind slotted barrier.
8. Chemically control weeds and undesirable grasses in planting areas with ROUNDUP PROMAX.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.

UNDESIRABLES

9. Chemically treat and remove all JOHNSON GRASS within redefined planting areas, adjacent 5'- 7' perimeter areas and along fences/walls/structures adjacent to perimeter area with an approved herbicide.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - Do not remove undesirable plant until herbicide manufacturer's recommended time period for herbicide absorption.
 - Repeat as required for complete kill.
 - Herbicide is subsidiary to ITEM 1022-6003.
10. Remove invasive and/or undesirable trees, shrubs and vines within redefined planting areas, adjacent 5'- 7' perimeter areas and along fences/walls/structures adjacent to perimeter area. Chemically treat stumps of cut invasive and/or undesirable plants with PATHFINDER II BASAL BARK HERBICIDE, or approved equal.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - Invasive and/or undesirable plants include but are not limited to: willow, tallow, baccharis, mulberry, trumpet vine, bind weed, japanese honeysuckle, morning glory, vetch, sunflower, etc.
 - Repeat stump treatment as necessary for complete kill.
 - Herbicide is subsidiary to ITEM 1022-6003.

HERBICIDE

11. Chemically treat all redefined planting areas with an approved herbicide as needed to control understory growth prior to mowing and trimming.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - Do not mow and/or trim understory until after herbicide manufacturer's recommended absorption time.
 - Do not allow herbicide to come in contact with desirable vines, shrubs, or trees, including seedlings.
 - Herbicide is subsidiary to ITEM 1022-6003.

MOWING AND TRIMMING

12. Mow 5'- 7' perimeter of all redefined planting areas to standard height (4"-7").
13. Scalp mow/trim within all redefined planting areas, including between trees after herbicide manufacturer's recommended time period for herbicide absorption.
 - Trimming with cord trimmer is allowed within planting areas in between trees.
 - Many existing and new desirable seedling plants exist in planting areas, extra caution IS NECESSARY TO PROTECT SEEDLINGS.
 - Do not touch, scratch, or scar existing and new desirable plants.
 - Do not trim within 12" inches of any existing and new desirable plant. Tall grass may remain around desirable plant. Hand pull undesirable plants within 12" inches of desirable plant.
 - Damaged plants will be replaced, maintained, and warranted through duration of contract at Contractor's expense.
 - Damaged plants will be replaced immediately, unless otherwise directed.

PRUNING AND REMOVALS

14. Prune all plants of any size, height, and diameter in the following conditions:
 - Within sight clearance areas for traffic and signage, see PLANT MAINTENANCE, Sheet 3, 4 AND 5 OF 6 (pruning related to signage applies to both existing and any new signs installed for the duration of contract).
 - With vertical clearance issues over any roadways and access routes (19' Min.), 8'- 10' width planting area perimeter (9' Min.) and sidewalks (9' Min.), see PLANT MAINTENANCE, Sheet 3 and 4 OF 6.
 - Prune all sucker growth and/or new limbs to maintain clear trunk in accordance with PLANT MAINTENANCE, Sheet 2 of 6.
 - Prune dead, dying or damaged branches/limbs (includes freeze and/or drought damage to any existing plant material).
15. Remove all plants of any size, height, and diameter not conforming to PLANT MAINTENANCE, Sheet 4 and 5 of 6, and:
 - Remove dead, dying and non-viable plants with permanent structural damage.
 - Remove invasive or undesirable plants as described on this sheet.
 - Remove leaning trees more than Approx. 8" off center measured at a height of Approx. 5' (see leaning tree removal image this sheet).
 - Remove any existing stumps to grade.
 - Remove all pampas grass within planting areas unless otherwise noted on plans.
 - Remove oleanders, crape myrtle, wax myrtle, etc. (large shrubs) 75' in front of and 25' behind any ground mounted sign (small and large) unless otherwise noted on plans, treat stumps as described in note #10.
 - Remove crape myrtle, wax myrtle, etc. (multi-stemmed tree) located < 10' from travel lane and along entire edge of sign site triangle.
 - Remove all vines from trees and shrubs and vines that have fallen from installed support structure(s).
 - Remove all vines from barriers, fences, retaining walls, sign structures, sound walls, etc. adjacent to planting areas unless otherwise noted on plans.

STAKES AND STRAPS

16. Remove all existing stakes, straps, guy wires, cables, and tags from site.

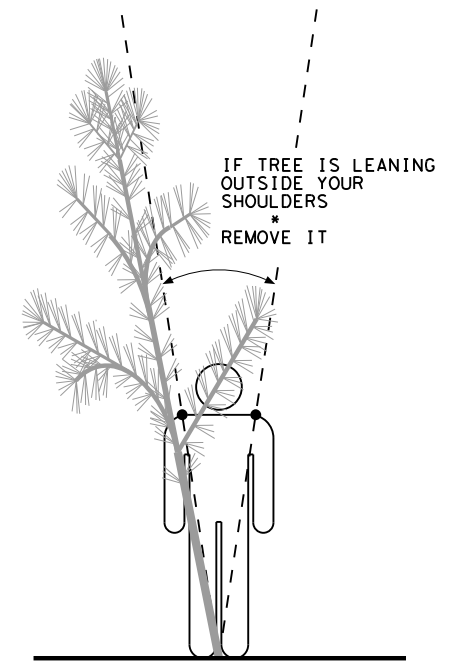
IRRIGATION SYSTEMS

17. Remove any existing irrigation system not in use to grade within redefined planting areas.
 - Receive TxDOT approval prior to any removals.
 - Cap and seal all cut irrigation lines and pipes.
 - Removed irrigation system becomes the property of the Contractor and will be disposed of appropriately - removal is incidental.

OTHER

18. Remove all litter and debris (rocks, tires, concrete, lumber, trash, bandit signs, etc.) located within planting areas.
19. Treat all fire ant colonies within planting areas.
20. Treat existing plants displaying evidence of insect, fungal, bacterial, or other negative indications - use appropriate methods and products for treatments.
21. Remove silt fence, erosion control logs, and staking associated with any planting area unless directed otherwise.
22. Access to some areas is constrained. No additional compensation is allowed for limited access.
23. Reference ITEM 5.10 INSPECTION OF THE TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES 2014. At any time during all phases of the contract, any materials or work performed not in accordance with plans and specifications will be replaced and/or reworked until in compliance with no additional compensation.
24. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractor's expense.
25. District Landscape Architect or Vegetation Specialist must approve completed work prior to acceptance and payment.

| CLEAR ZONE (Tree Setbacks) | |
|---|---|
| Dimensions are minimum requirements and are not limited to the items listed, adjustments will be made to accommodate site conditions. | |
| DO NOT PLANT WITHIN SIGHT TRIANGLE | |
| 46' | Travel Lane (shoulder section) with slopes greater than or equal to 5:1 |
| 32' | Travel Lane (shoulder section) with slope less than 5:1, Direct Connector, Highmast Lighting, Overhead Transmission Line, CTMS, AVI, Camera, Sensor, Antenna, and/or Other Warning Devices |
| 18' | Ramp, Overhead Distribution Line |
| 10' | Bridge Overhang, Concrete Barrier, Curb, Ground Boxes, Guard Rail, Culvert/Inlet, Manhole, Retaining Wall, Ditch, Right-of-way Line, Riprap, Fence, Large and Small Sign (See PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheets 2 and 3 of 5 for sight triangles) |



LEANING TREE REMOVAL



6/2/2021

| LANDSCAPE TREATMENT (TY 3) | | | |
|------------------------------------|-------------|-----------|-------------|
| SHEET 1 OF 1 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 29 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

NTS

ITEM 1022-6004 LANDSCAPE TREATMENT (TY4) - EA

BEGIN ** END
 1022-6004
 LANDSCAPE TREATMENT (TY4)
 ALL LOCATIONS ONCE

AS SHOWN ON PLANTING, MAINTENANCE AND ESTABLISHMENT TIMELINE, SHEET 1 OF 1

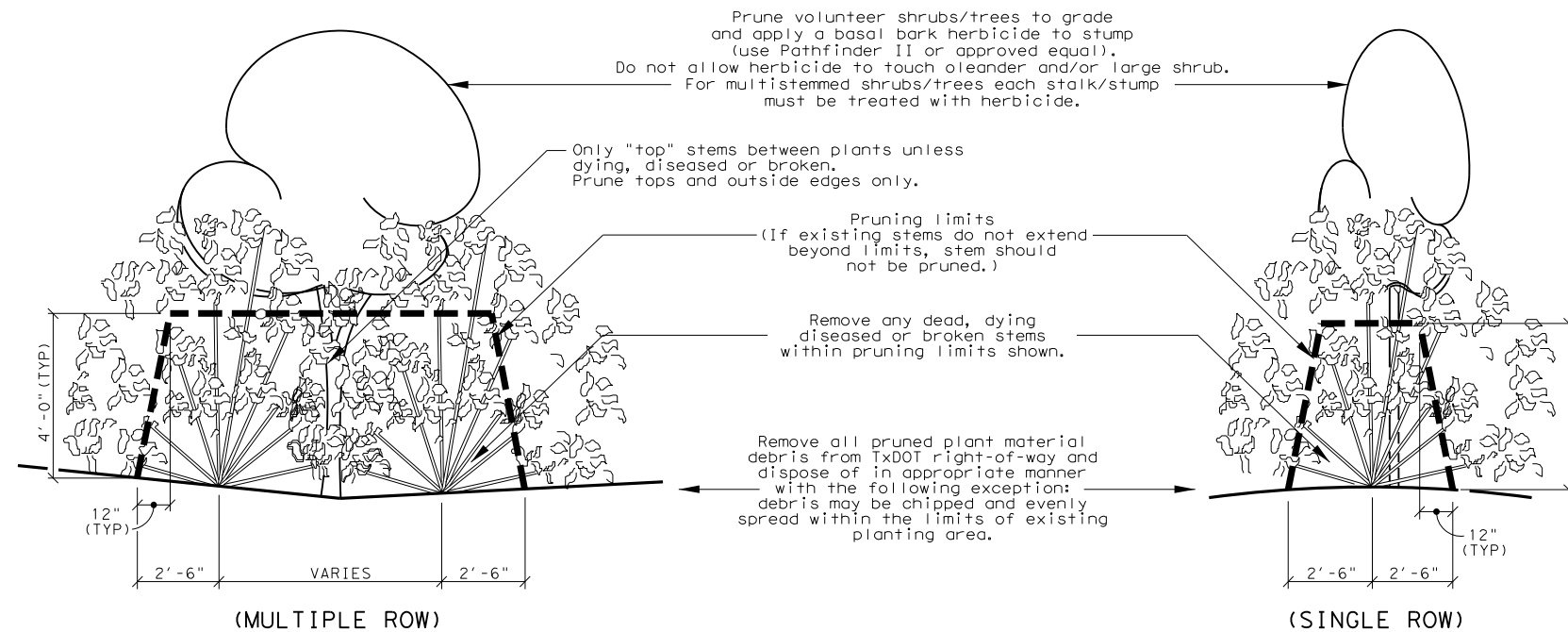
REQUIREMENTS FOR TRIMMING EXISTING LARGE SHRUBS (OLEANDERS)

GENERAL

1. All requirements described under ITEM 1022-6004 for existing landscape areas apply.
2. Work areas shown in plans must be identified by Contractor in the field and approved by Engineer Prior to beginning any work.
 - For each treatment, perform all requirements described on this sheet unless otherwise shown.
3. Work includes pruning/trimming of oleanders and/or large shrubs and subsequent removal of plant material debris:
 - Prune/trim in accordance with ANSI 300.
 - Pruned/trimmed plant material debris may be chipped and spread evenly of site or removed from site.
 - Do not create more plant material debris than what can be removed from the site the same day unless otherwise directed.
4. Each treatment includes completing the specified work for all locations identified within the project limits once.

TRIMMING

5. Trim all oleanders and/or large shrubs in designated areas shown in plans.
6. Trim all oleanders and/or large shrubs in accordance with details shown.
7. District Landscape Architect or Vegetation Specialist must approve completed work prior to acceptance and payment.



LARGE SHRUB PRUNING (OLEANDER AND/OR OTHER LARGE SHRUB SHOWN IN PLANS)

GENERAL

LARGE SHRUB PRUNING OCCURS ONLY ONCE DURING THE CONTRACT PERIOD AS DIRECTED. Make an examination of the project site and become familiar with the nature and extent of the work to be accomplished. No extra compensation will be allowed for work made necessary by unusual conditions or obstacles encountered during the progress of the work. Damage to any utilities, structures or right-of-way by the Contractor will be repaired at Contractor's expense.

SCHEDULE

Schedule and sequence all work activities in order to complete the work within the specified timeframe.

CERTIFICATION

Certification and/or reference that, through training and/or on the job experience, Contractor is familiar with the techniques and equipment required for the proposed work.

EQUIPMENT

Furnish all equipment, tools and machinery, in good repair and operating condition, necessary for the proper prosecution of the proposed work. If at anytime the Engineer determines any equipment is defective to the point that it may affect the quality of work, that equipment will be immediately repaired or replaced.

SCOPE OF WORK

The project limits include all area(s) shown on the plans. Confine all maintenance operations and associated work to these areas and other such areas of the right-of-way that may be required to gain access to the area(s).

Prune OLEANDERS in the manner described in these details. Pruning and trimming will conform to approved and/or acceptable horticultural practices included in ANSI 300 and appropriate to the type of shrub and special conditions.

PRUNE AND TRIM A 30' SECTION OF BOTH SINGLE AND MULTIPLE ROW PLANTINGS IN THE PRESENCE OF THE ENGINEER BEFORE FULL SCALE PRUNING OPERATIONS BEGIN.



6/2/2021

LANDSCAPE TREATMENT (TY 4)

SHEET 1 OF 1



| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
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| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

ITEM 193-6002 PLANT MAINTENANCE - CYC

| | | |
|---|---|--------------------------------|
| BEGIN | ** END BEGIN | ** END BEGIN |
| 193-6002 PLANT MAINTENANCE - CYC 1 ALL LOCATIONS ONCE | 193-6002 PLANT MAINTENANCE - CYC 2 ALL LOCATIONS ONCE | 193- PLANT MAINT ALL LOC |

AS SHOWN ON PLANTING AND MAINTENANCE TIMELINE SHEET

REQUIREMENTS FOR EXISTING LANDSCAPE AREAS

GENERAL

- Perform all requirements described on this sheet unless otherwise shown.
- Work includes redefining all existing planting areas within project limits in accordance with PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheets 1-5 except: landscape installed by adjacent property owners.
- Work will be limited to the redefined planting areas and adjacent 5'- 7' perimeter mow edge.
- Work includes removing trees and/or shrubs which may actually reduce the original planting area size and eliminate further maintenance of an area.
- Work includes pruning and removal of plant material:
 - Prune in accordance with ANSI A300.
 - Remove plant material stumps to existing grade.
 - Chip and evenly distribute plant debris on site.
 - Remove any plant debris too large to chip from site.
 - Do not prune or remove more plant material than what can be chipped or removed the same day unless otherwise approved by Engineer.
 - Fill any holes from removal of dead plant material with topsoil, topsoil is incidental.
- EACH CYCLE INCLUDES COMPLETING THE SPECIFIED WORK FOR ALL LOCATIONS IDENTIFIED WITHIN THE PROJECT LIMITS ONCE.

PLANT BED MAINTENANCE

- Maintain and/or reshape planting areas to conform to original installation (see PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT sheets) so that planting areas do not hinder roadway drainage, especially behind slotted barrier.
- Chemically control weeds and undesirable grasses in planting areas with ROUNDUP PROMAX.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.

UNDESIRABLES

- Chemically treat and remove all JOHNSON GRASS within redefined planting areas, adjacent 5'- 7' perimeter areas and along fences/walls/structures adjacent to perimeter area with an approved herbicide.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - Do not remove undesirable plant until herbicide manufacturer's recommended time period for herbicide absorption.
 - Repeat as required for complete kill.
 - Herbicide is subsidiary to ITEM 193-6002.
- Remove invasive and/or undesirable trees, shrubs and vines within redefined planting areas, adjacent 5'- 7' perimeter areas and along fences/walls/structures adjacent to perimeter area. Chemically treat stumps of cut invasive and/or undesirable plants with PATHFINDER II BASAL BARK HERBICIDE, or approved equal.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - Invasive and/or undesirable plants include but are not limited to: willow, tallow, baccharis, mulberry, trumpet vine, bind weed, japanese honeysuckle, morning glory, vetch, sunflower, etc.
 - Repeat stump treatment as necessary for complete kill.
 - Herbicide is subsidiary to ITEM 193-6002.

HERBICIDE

- Chemically treat all redefined planting areas with an approved herbicide as needed to control understory growth prior to mowing and trimming.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - Do not mow and/or trim understory until after herbicide manufacturer's recommended absorption time.
 - Do not allow herbicide to come in contact with desirable vines, shrubs, or trees, including seedlings.
 - Herbicide is subsidiary to ITEM 193-6002.

MOWING AND TRIMMING

- Mow 5'- 7' perimeter of all redefined planting areas to standard height (4"-7").
- Scalp mow/trim within all redefined planting areas, including between trees after herbicide manufacturer's recommended time period for herbicide absorption.
 - Trimming with cord trimmer is allowed within planting areas in between trees.
 - Many existing and new desirable seedling plants exist in planting areas, extra caution IS NECESSARY TO PROTECT SEEDLINGS.
 - Do not touch, scratch, or scar existing and new desirable plants.
 - Do not trim within 12" inches of any existing and new desirable plant. Tall grass may remain around desirable plant. Hand pull undesirable plants within 12" inches of desirable plant.
 - Damaged plants will be replaced, maintained, and warranted through duration of contract at Contractor's expense.
 - Damaged plants will be replaced immediately, unless otherwise directed.

PRUNING AND REMOVALS

- Prune all plants of any size, height, and diameter in the following conditions:
 - Within sight clearance areas for traffic and signage, see PLANT MAINTENANCE, Sheet 3, 4 AND 5 OF 6 (pruning related to signage applies to both existing and any new signs installed for the duration of contract).
 - With vertical clearance issues over any roadways and access routes (19' Min.), 8'- 10' width planting area perimeter (9' Min.) and sidewalks (9' Min.), see PLANT MAINTENANCE, Sheet 3 and 4 OF 6.
 - Prune all sucker growth and/or new limbs to maintain clear trunk in accordance with PLANT MAINTENANCE, Sheet 2 of 6.
 - Prune dead, dying or damaged branches/limbs (includes freeze and/or drought damage to any existing plant material).
- Remove all plants of any size, height, and diameter not conforming to PLANT MAINTENANCE, Sheet 4 and 5 of 6, and:
 - Remove dead, dying and non-viable plants with permanent structural damage.
 - Remove invasive or undesirable plants as described on this sheet.
 - Remove leaning trees more than Approx. 8" off center measured at a height of Approx. 5' (see leaning tree removal image this sheet).
 - Remove any existing stumps to grade.
 - Remove all pampas grass within planting areas unless otherwise noted on plans.
 - Remove oleanders, crape myrtle, wax myrtle, etc. (large shrubs) 75' in front of and 25' behind any ground mounted sign (small and large) unless otherwise noted on plans, treat stumps as described in note #10.
 - Remove crape myrtle, wax myrtle, etc. (multi-stemmed tree) located < 10' from travel lane and along entire edge of sign site triangle.
 - Remove all vines from trees and shrubs and vines that have fallen from installed support structure(s).
 - Remove all vines from barriers, fences, retaining walls, sign structures, sound walls, etc. adjacent to planting areas unless otherwise noted on plans.

STAKES AND STRAPS

- Remove all existing stakes, straps, guy wires, cables, and tags from site.

IRRIGATION SYSTEMS

- Remove any existing irrigation system not in use to grade within redefined planting areas.
 - Receive TxDOT approval prior to any removals.
 - Cap and seal all cut irrigation lines and pipes.
 - Removed irrigation system becomes the property of the Contractor and will be disposed of appropriately - removal is incidental.

OTHER

- Remove all litter and debris (rocks, tires, concrete, lumber, trash, bandit signs, etc.) located within planting areas.
- Treat all fire ant colonies within planting areas.
- Treat existing plants displaying evidence of insect, fungal, bacterial, or other negative indications - use appropriate methods and products for treatments.
- Remove silt fence, erosion control logs, and staking associated with any planting area unless directed otherwise.
- Access to some areas is constrained. No additional compensation is allowed for limited access.
- Reference ITEM 5.10 INSPECTION OF THE TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES 2014. At any time during all phases of the contract, any materials or work performed not in accordance with plans and specifications will be replaced and/or reworked until in compliance with no additional compensation.
- Any adjustments due to the failure to comply with plans and specifications shown will be at Contractor's expense.
- District Landscape Architect or Vegetation Specialist must approve completed work prior to acceptance and payment.

CLEAR ZONE (Tree Setbacks)

Dimensions are minimum requirements and are not limited to the items listed, adjustments will be made to accommodate site conditions.

| DO NOT PLANT WITHIN SIGHT TRIANGLE | |
|------------------------------------|---|
| 46' | Travel Lane (shoulder section) with slopes greater than or equal to 5:1 |
| 32' | Travel Lane (shoulder section) with slope less than 5:1, Direct Connector, Highmast Lighting, Overhead Transmission Line, CTMS, AVI, Camera, Sensor, Antenna, and/or Other Warning Devices |
| 18' | Ramp, Overhead Distribution Line |
| 10' | Bridge Overhang, Concrete Barrier, Curb, Ground Boxes, Guard Rail, Culvert/Inlet, Manhole, Retaining Wall, Ditch, Right-of-way Line, Riprap, Fence, Large and Small Sign (See PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheets 2 and 3 of 5 for sight triangles) |

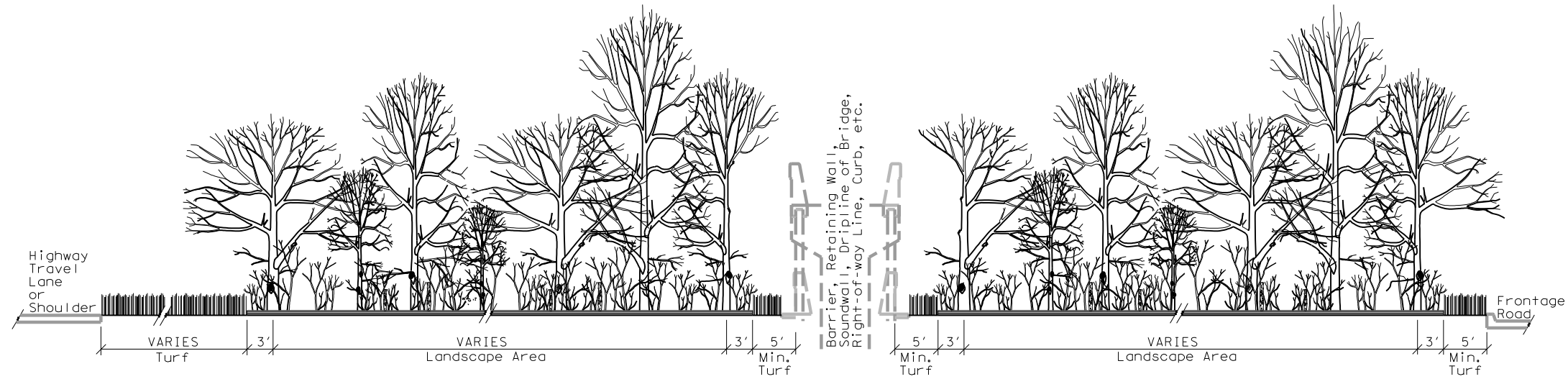


6/2/2021

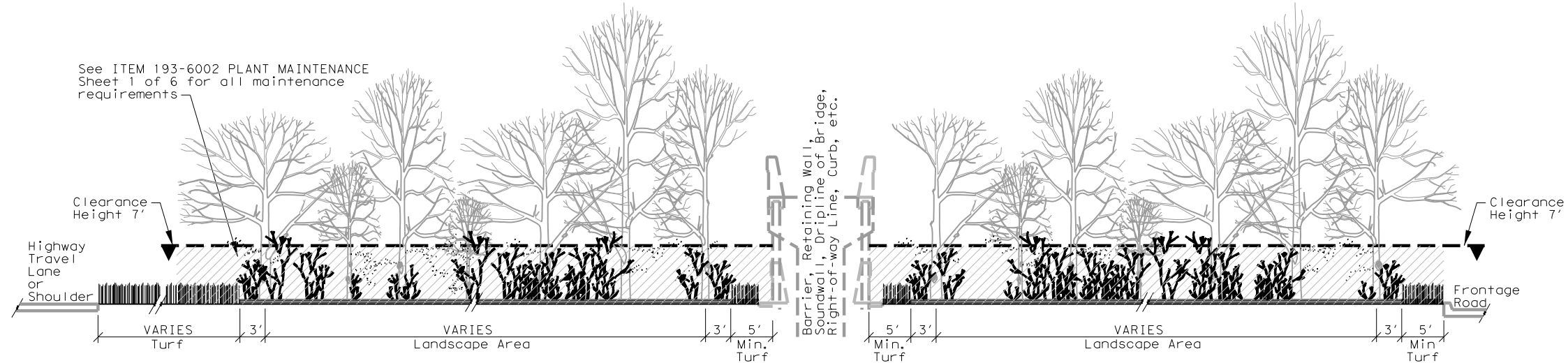
NTS

| PLANT MAINTENANCE | | | |
|-------------------|-------------|-----------|-------------|
| SHEET 1 OF 6 | | | |
| | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 30 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
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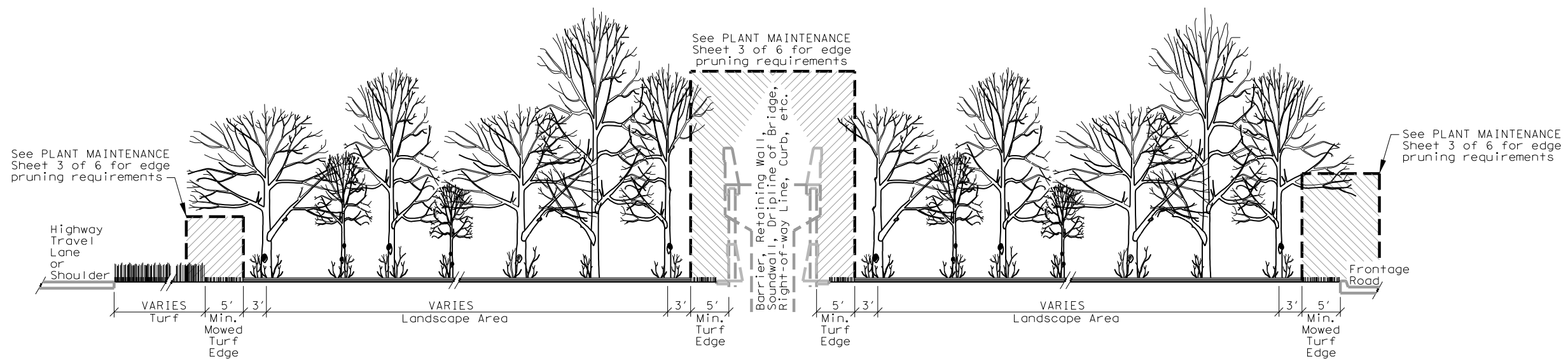
EXISTITION



PRUNING REQUIREMENTS



CONDITION



NTS

PLANT MAINTENANCE - UNDERSTORY AND SUCKER GROWTH PRUNING, TRIMMING AND REMOVAL



6/2/2021

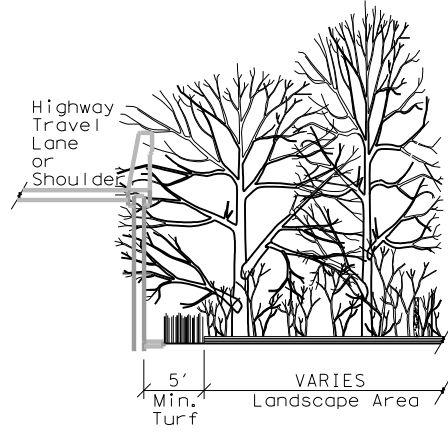
| PLANT MAINTENANCE | | | |
|-------------------|-------------|----------|-------------|
| SHEET 2 OF 6 | | | |
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| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
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| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

EXISTITION

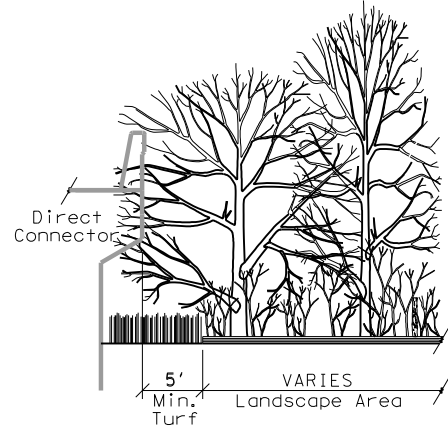
REQUIREMENTS

CONDITION

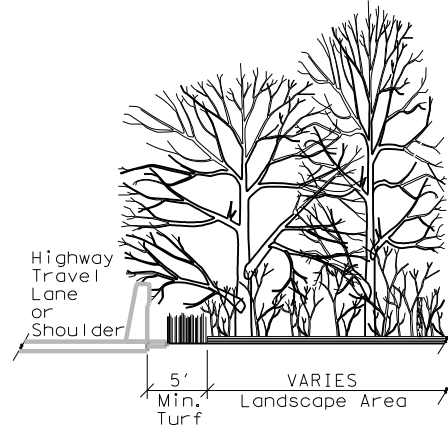
RETAINING WALL



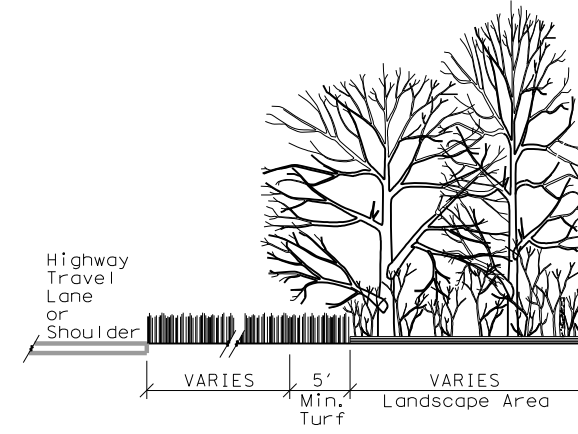
DIRECT CONNECTOR



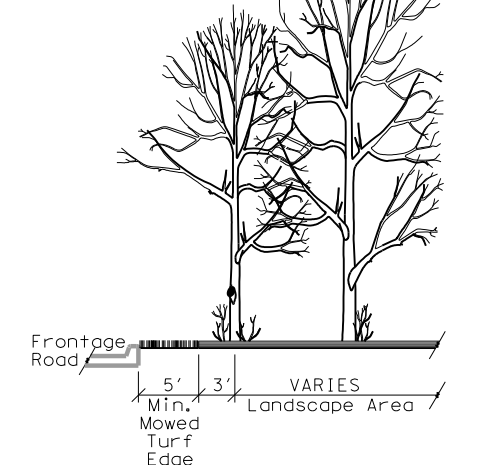
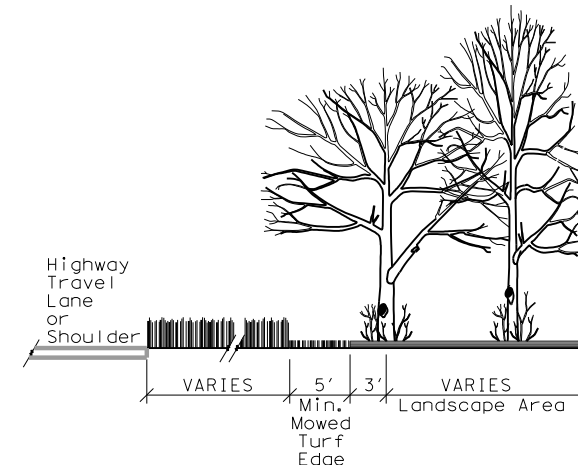
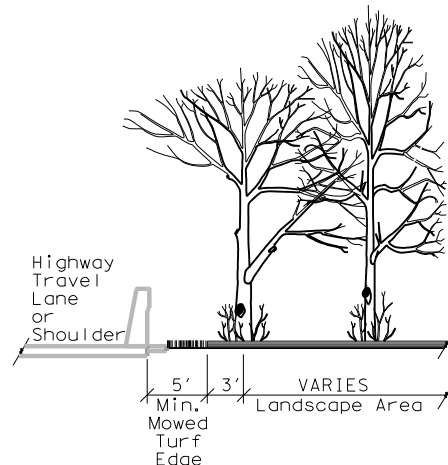
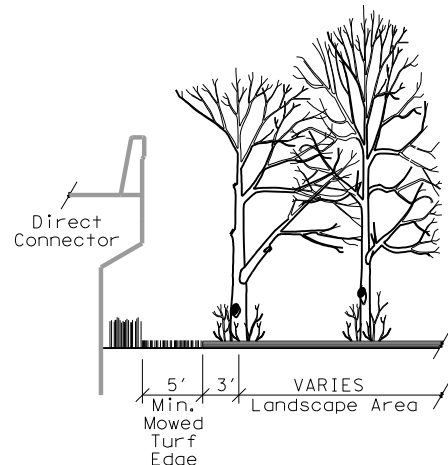
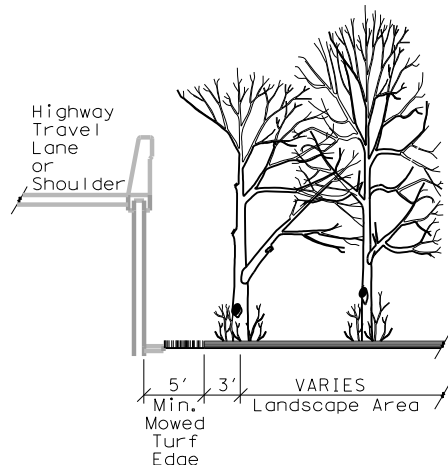
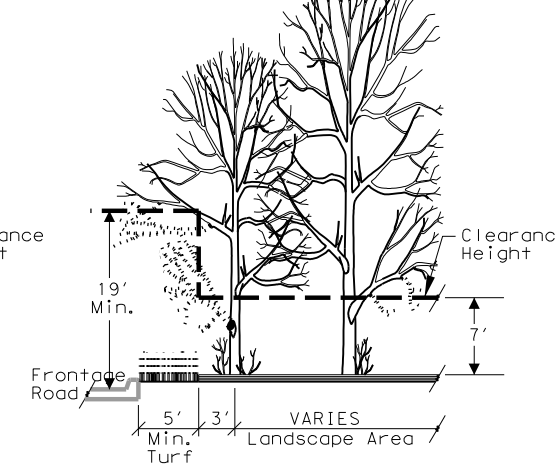
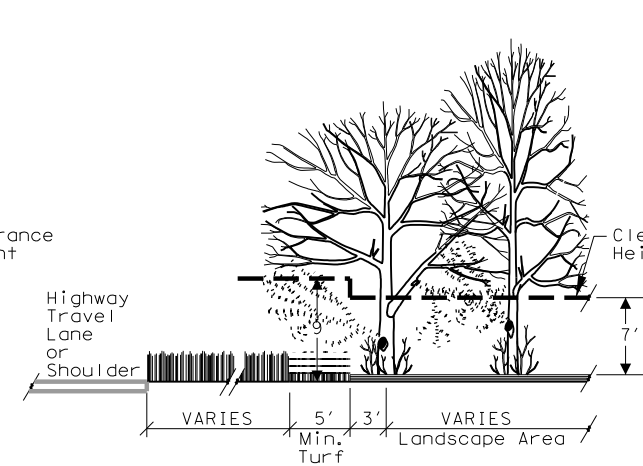
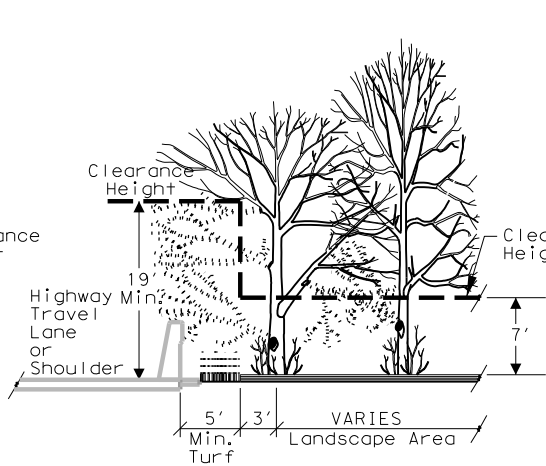
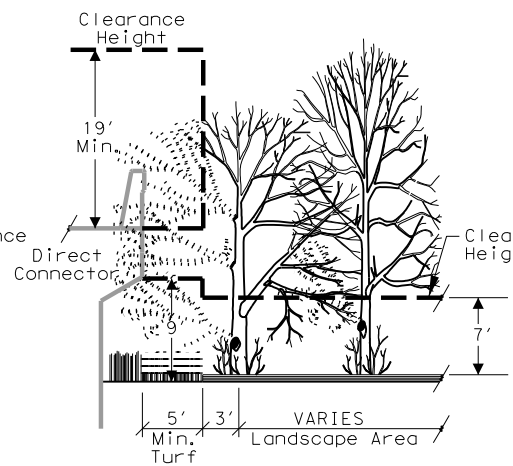
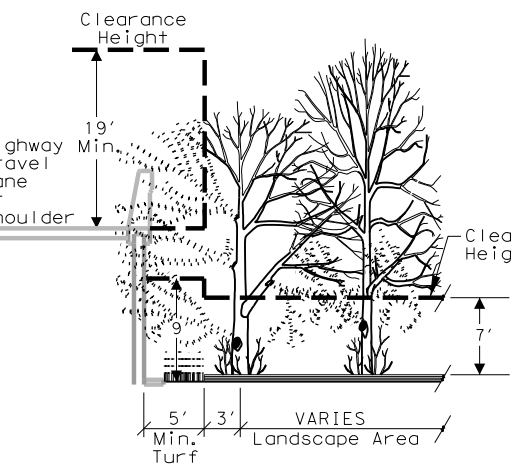
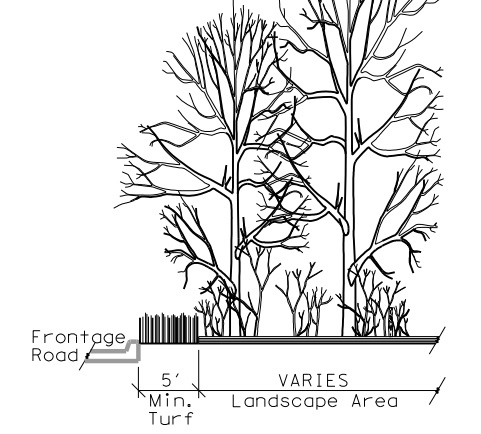
BARRIER



HIGHWAY SHOULDER



CURB



NTS

PLANT MAINTENANCE - EDGE PRUNING, TRIMMING AND REMOVAL



6/2/2021

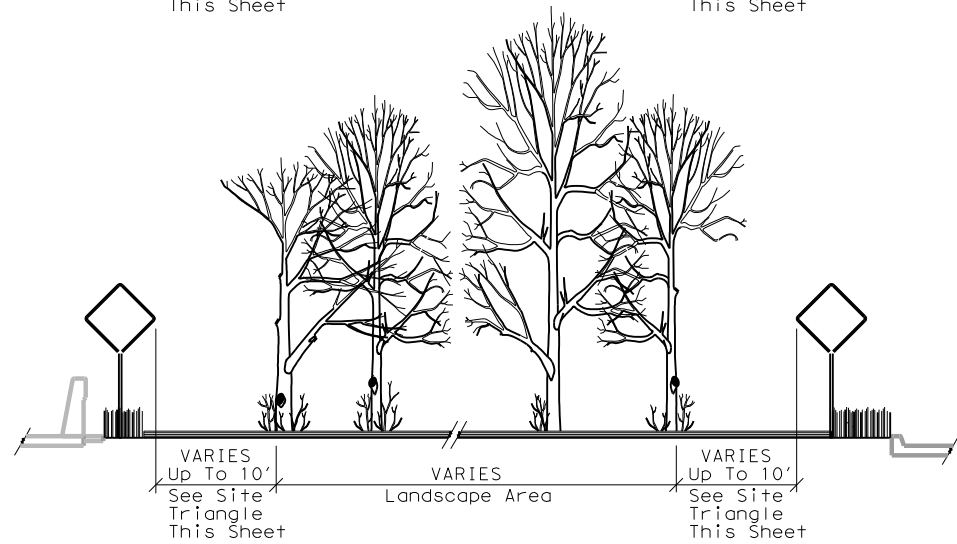
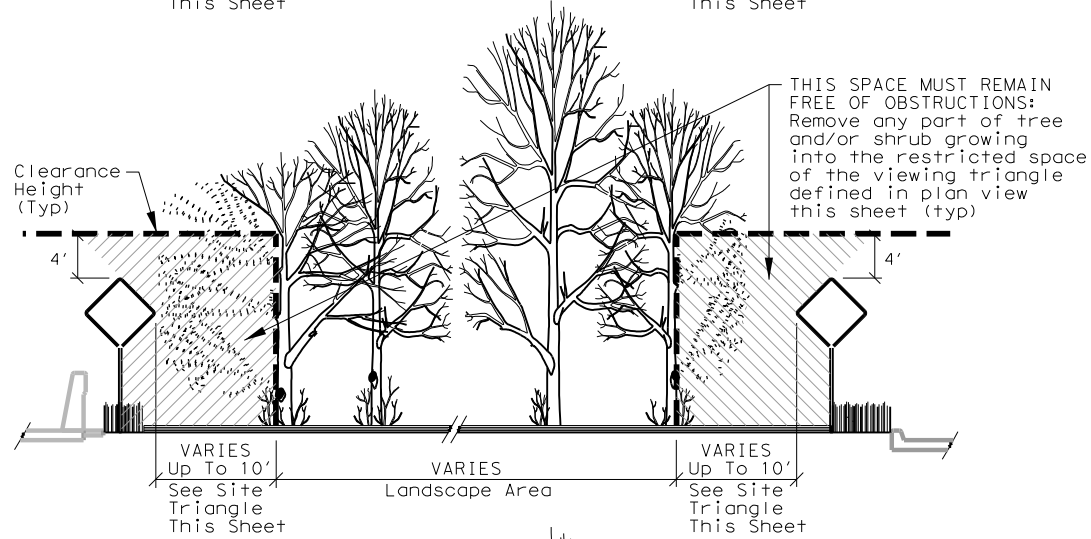
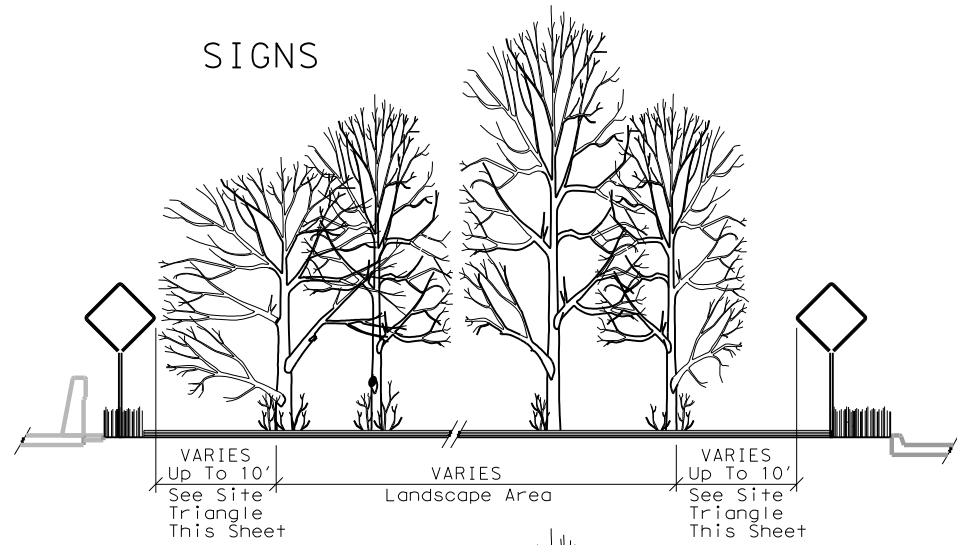
| PLANT MAINTENANCE | | | |
|------------------------------------|-------------|-----------|-------------|
| SHEET 3 OF 6 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
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| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

CONDITION

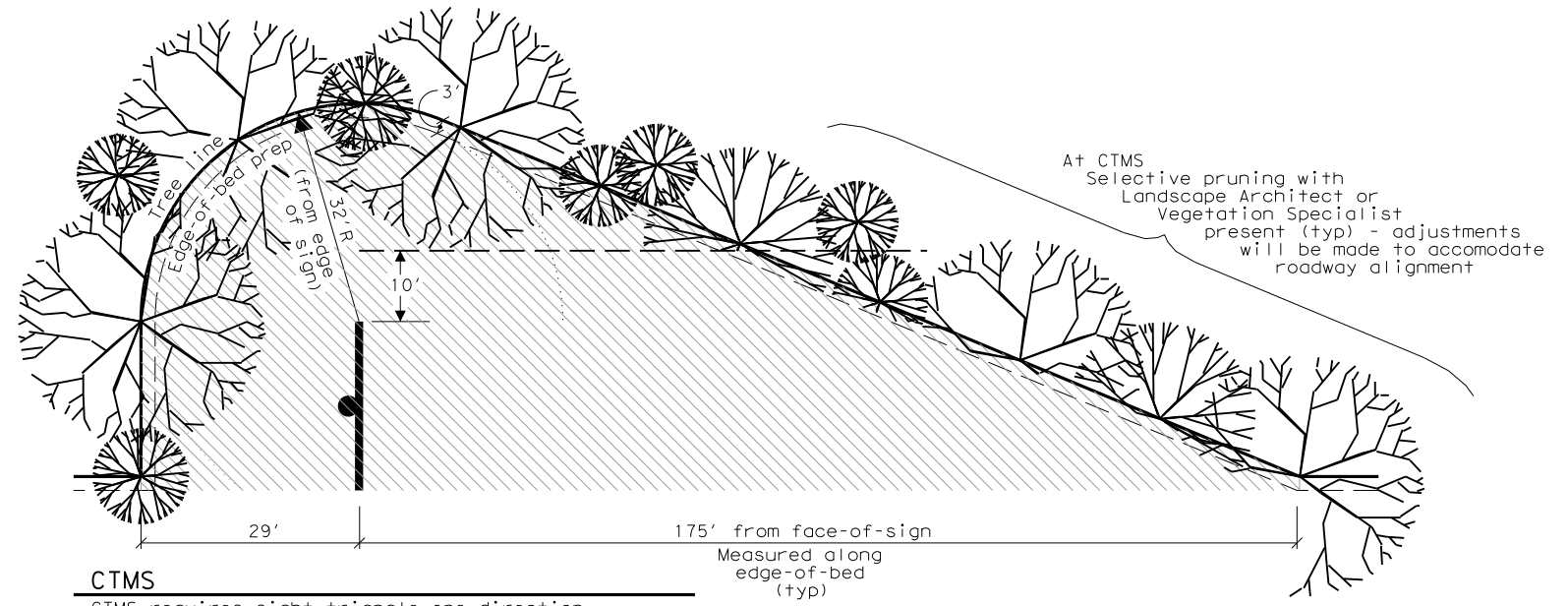
PRUNING REQUIREMENTS

CONDITION

SIGNS

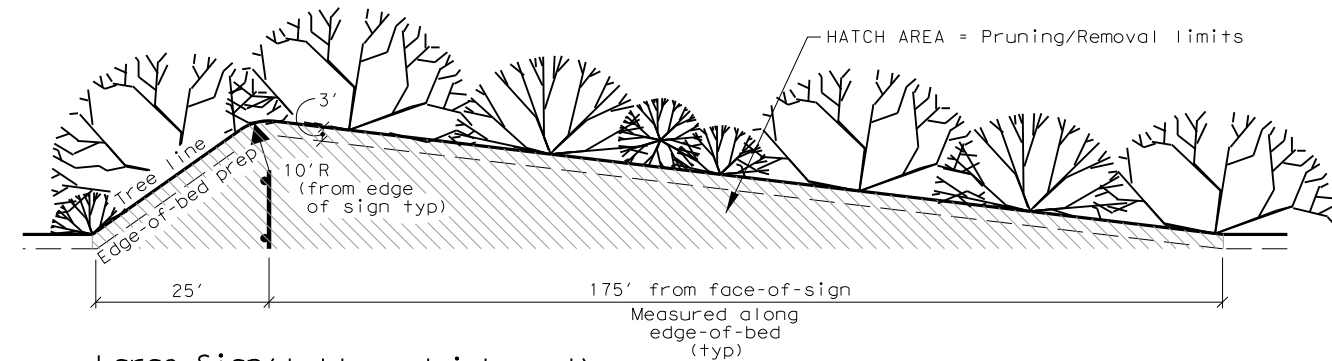


ELEVATION



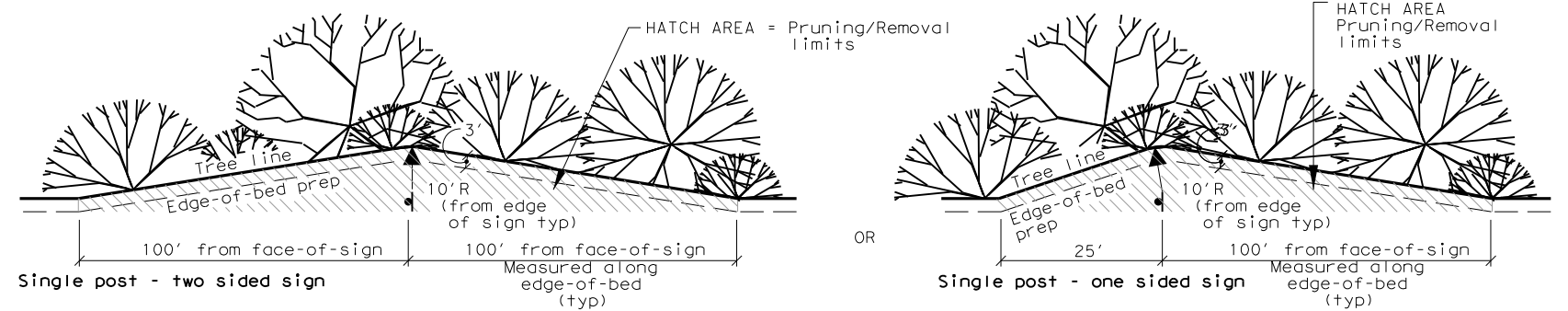
CTMS

CTMS requires sight triangle one direction



Large Sign (double or triple post)

Applies to ground mounted and structure mounted (rails, wall, columns, etc.) signs



Small Sign

Applies to ground mounted and structure mounted (rails, wall, columns, etc.) signs

PLAN

PLANT MAINTENANCE - SIGHT CLEARANCE FOR SIGNAGE



6/2/2021

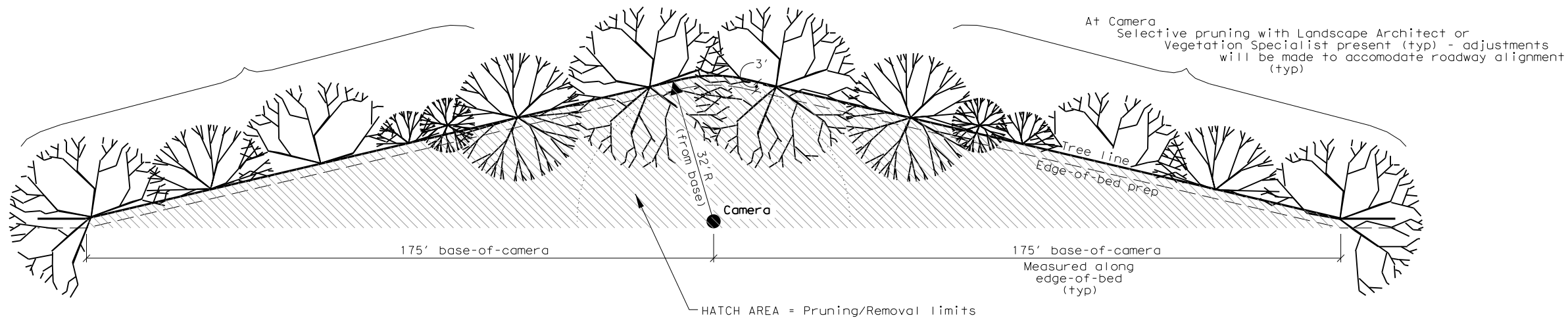
NTS

PLANT MAINTENANCE

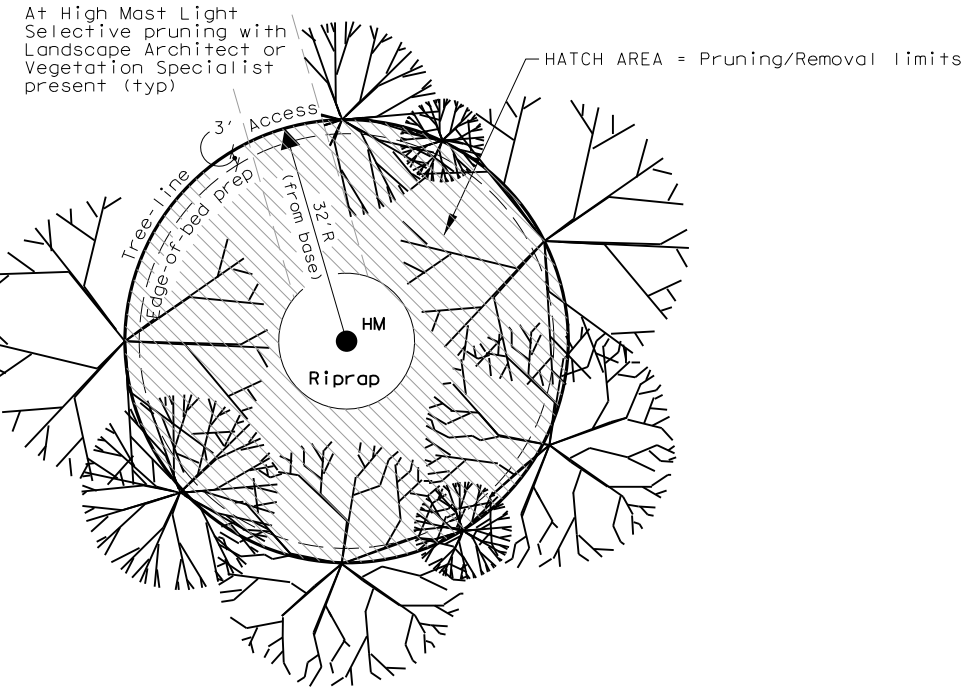
SHEET 4 OF 6



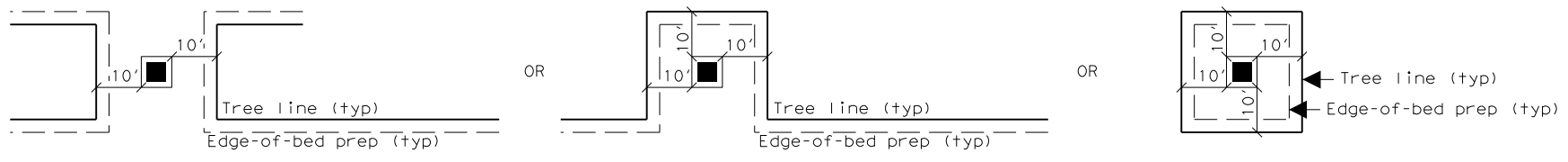
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Camera
Camera requires sight triangle both directions



High Mast Lighting, etc.
High mast lighting, sensors, antennas, etc. require full or partial circle depending on location and access required - access will be determined in the field



Ground Box, Inlet, Manhole, etc.
Include any riprap as part of structure

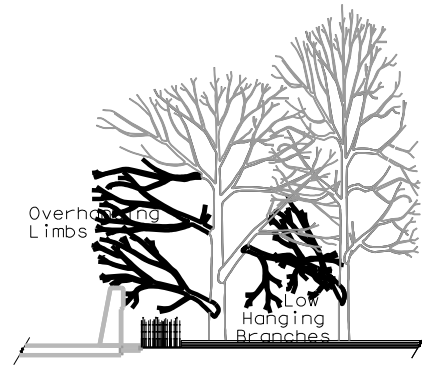
PLANT MAINTENANCE - CAMERA, HIGHMAST LIGHTING AND DRAIN INLET CLEARANCE



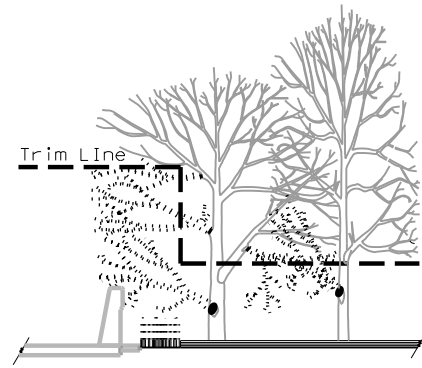
6/2/2021

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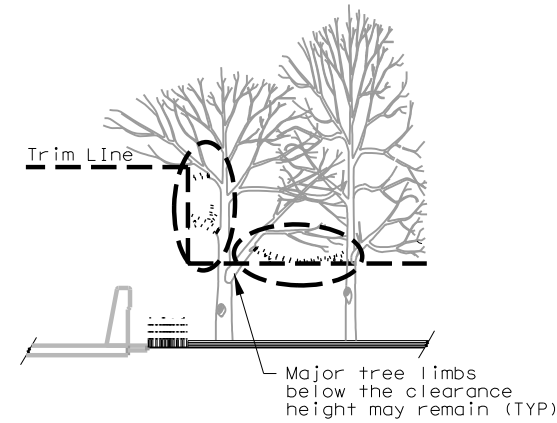
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| PLANT MAINTENANCE | | | |
| SHEET 5 OF 6 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
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| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
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EXISTING CONDITION



BRANCHES / LIMBS TO BE REMOVED

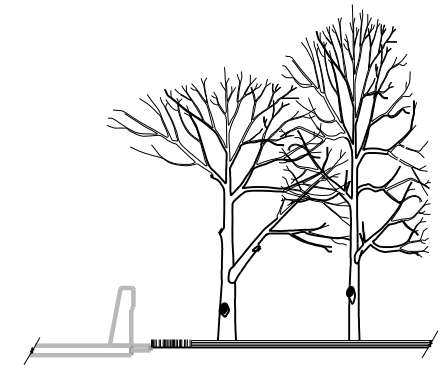


IMPROPERLY PRUNED TREES

Cut limbs at a major fork in the branch or, if the entire branch is encroaching into the area to be cleared, remove the branch at the trunk.

Do not leave a stub beyond the branch collar or cut through the branch collar when making pruning cuts.

The branch collar is generally visible, but if it is not, make the final cut approximately 1/2" from the parent branch or trunk, perpendicular to the branch or limb being removed.

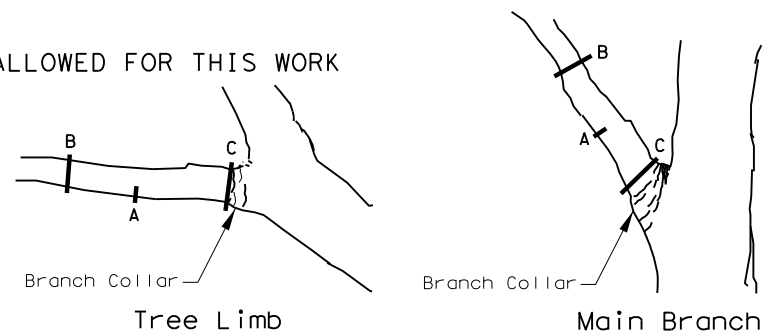


PROPERLY PRUNED TREES

PLANT MAINTENANCE - BRANCH / LIMB REMOVAL

FLAILING EQUIPMENT IS NOT ALLOWED FOR THIS WORK

- A - STEP 1
Cut 1/3 way through bottom of limb 8-12" above main stem or trunk
- B - STEP 2
Remove limb 4-6" beyond the first cut
- C - STEP 3
Remove stub with a smooth cut just beyond the branch collar of the removed limb



PRUNING CUTS - LIMBS 2" IN DIAMETER AND GREATER



6/2/2021

NTS

| | | | |
|--------------------------|-------------|----------|-------------|
| PLANT MAINTENANCE | | | |
| SHEET 6 OF 6 | | | |
| | | | |
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| CONT. | SECT. | JOB | HIGHWAY NO. |
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ITEM 192-6012 MULCH - CY

BEGIN ** END
 192-6012
 MULCH
 ALL LOCATIONS ONCE

AS SHOWN ON PLANTING AND MAINTENANCE TIMELINE SHEET

REQUIREMENTS FOR MULCH FOR EXISTING LANDSCAPE AREAS ONLY

GENERAL

1. Coarse uniform mulch virtually free of metal, plastic or other contamination.
2. Mulch feestock will consist of tree limbs, logs, and leaves from various trees that are ground (hammer milled) once through a grinder with 5"x7" screens.

BASIS OF ESTIMATE


Mulch in place at a depth of two inches (2") - Area (SF) X .166 (2") / 27 = CY

DELIVERY REQUIREMENTS

Submit delivery ticket(s) to Engineer same day as delivery to site(s) or as directed by Engineer.



6/10/2021

| | | | |
|---|-------------|----------|-------------|
| MULCH | | | |
| SHEET 1 OF 1 | | | |
|  Texas Department of Transportation | | | |
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| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

CLEAR ZONE (Tree Setbacks)
 Dimensions are minimum requirements and are not limited to the items listed, adjustments will be made to accommodate site conditions.

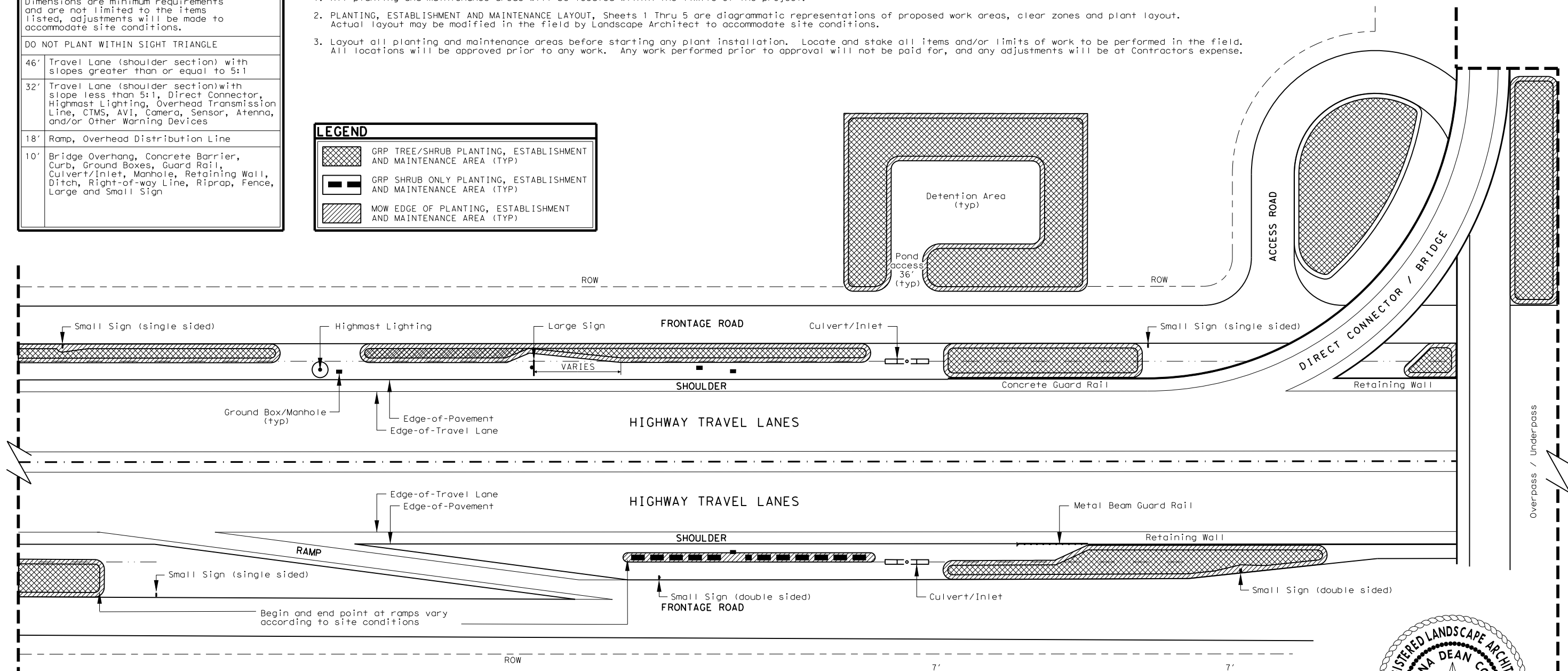
| | |
|------------------------------------|--|
| DO NOT PLANT WITHIN SIGHT TRIANGLE | |
| 46' | Travel Lane (shoulder section) with slopes greater than or equal to 5:1 |
| 32' | Travel Lane (shoulder section) with slope less than 5:1, Direct Connector, Highmast Lighting, Overhead Transmission Line, CTMS, AVI, Camera, Sensor, Antenna, and/or Other Warning Devices |
| 18' | Ramp, Overhead Distribution Line |
| 10' | Bridge Overhang, Concrete Barrier, Curb, Ground Boxes, Guard Rail, Culvert/Inlet, Manhole, Retaining Wall, Ditch, Right-of-way Line, Riprap, Fence, Large and Small Sign |

NOTES:

- All planting and maintenance areas will be located within the limits of the project.
- PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheets 1 Thru 5 are diagrammatic representations of proposed work areas, clear zones and plant layout. Actual layout may be modified in the field by Landscape Architect to accommodate site conditions.
- Layout all planting and maintenance areas before starting any plant installation. Locate and stake all items and/or limits of work to be performed in the field. All locations will be approved prior to any work. Any work performed prior to approval will not be paid for, and any adjustments will be at Contractors expense.

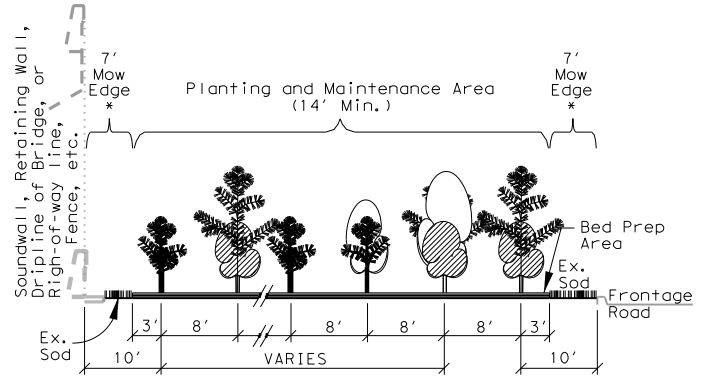
LEGEND

| | |
|--|---|
| | GRP TREE/SHRUB PLANTING, ESTABLISHMENT AND MAINTENANCE AREA (TYP) |
| | GRP SHRUB ONLY PLANTING, ESTABLISHMENT AND MAINTENANCE AREA (TYP) |
| | MOW EDGE OF PLANTING, ESTABLISHMENT AND MAINTENANCE AREA (TYP) |



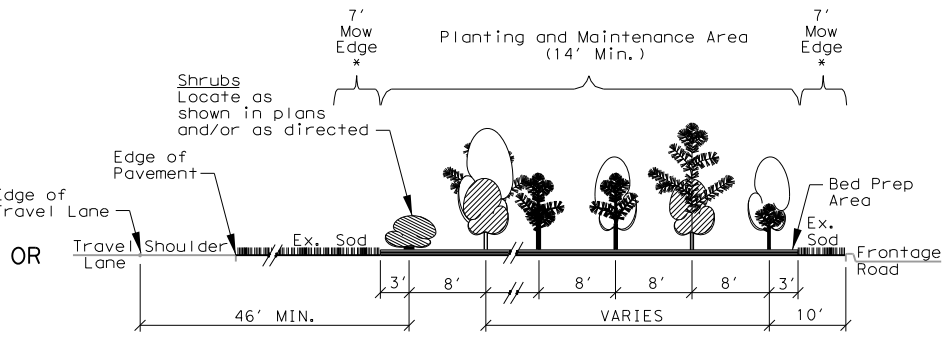
Roadway Planting and Maintenance Areas (Typ)

See CLEAR ZONE table this sheet for dimensions not shown.



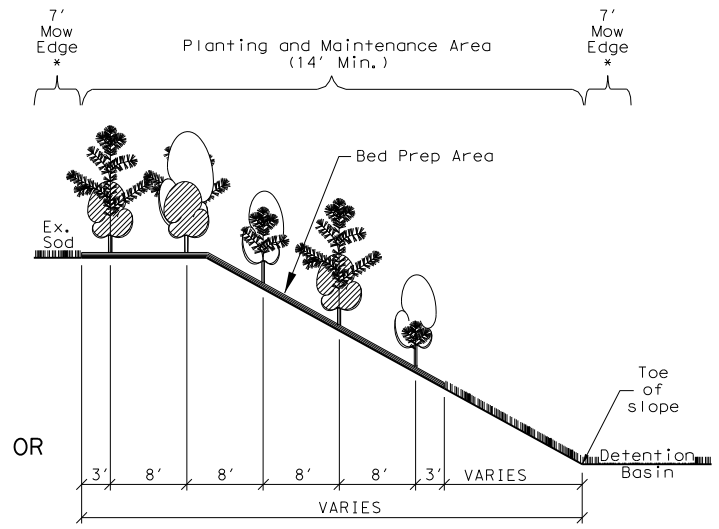
* Mow edge varies at signs and structures

Typical Elevation



* Mow edge varies at signs and structures

Typical Elevation



* Mow edge varies at signs and structures

Typical Elevation



Dana Dean Cote
 6/2/2021

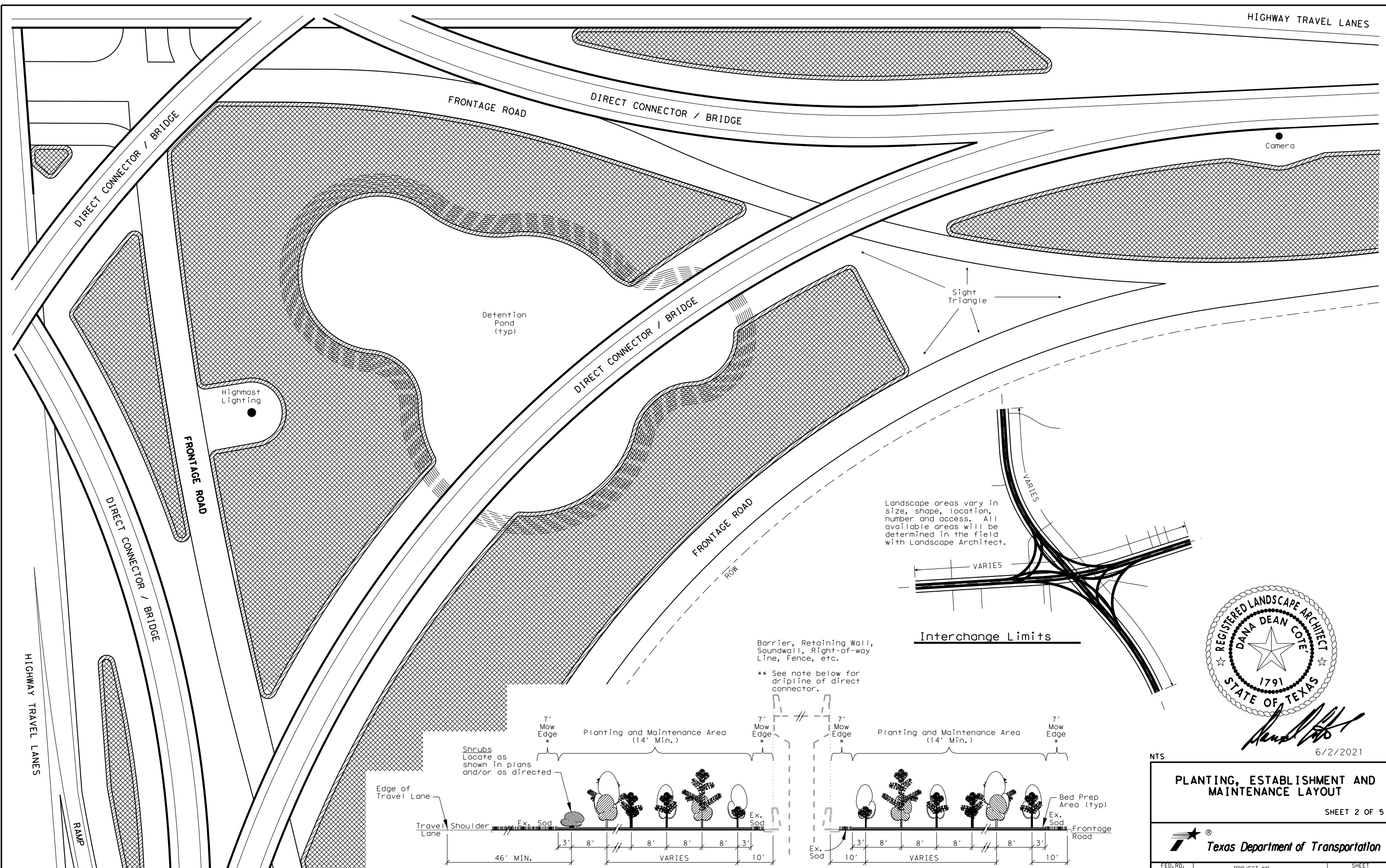
NTS

PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT
 SHEET 1 OF 5

Texas Department of Transportation

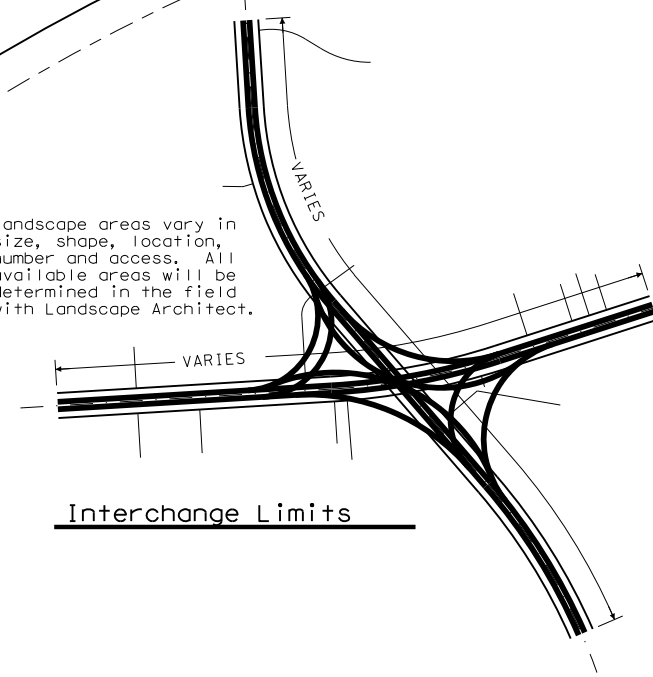
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| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
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| TEXAS | HOU | WALLER |
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HIGHWAY TRAVEL LANES



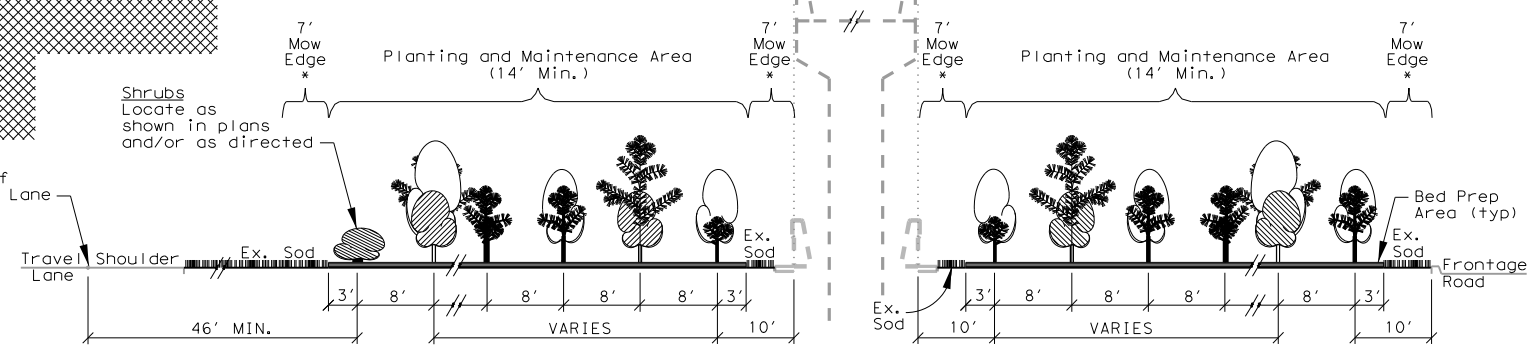
Landscape areas vary in size, shape, location, number and access. All available areas will be determined in the field with Landscape Architect.

Interchange Limits



Barrier, Retaining Wall, Soundwall, Right-of-way Line, Fence, etc.

** See note below for dripline of direct connector.



(D) TYPICAL ELEVATION

* Mow edge varies at signs and structures
 ** 29' mow edge adjacent to direct connectors



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PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT

SHEET 2 OF 5

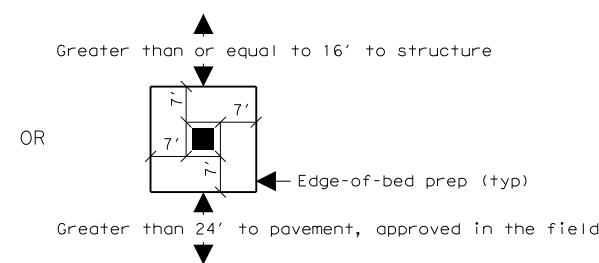
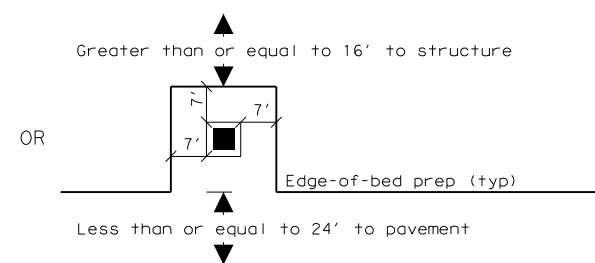
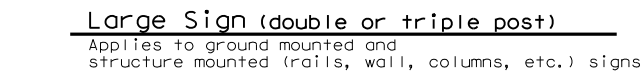
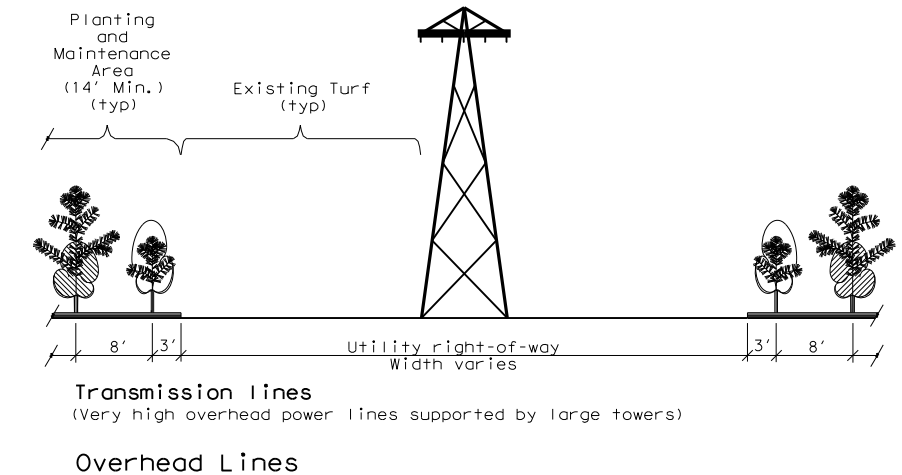
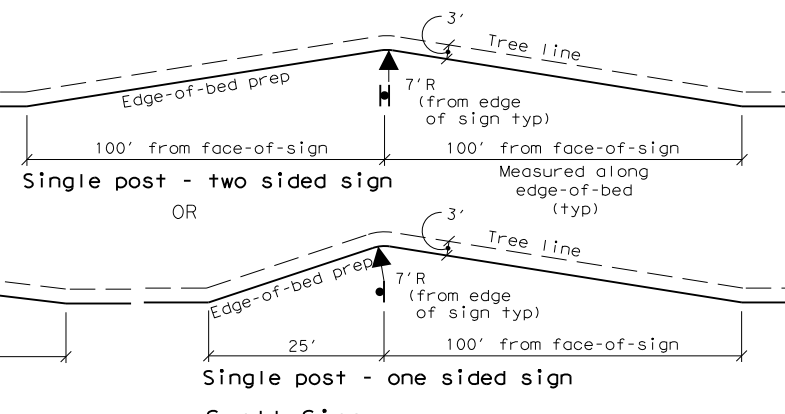
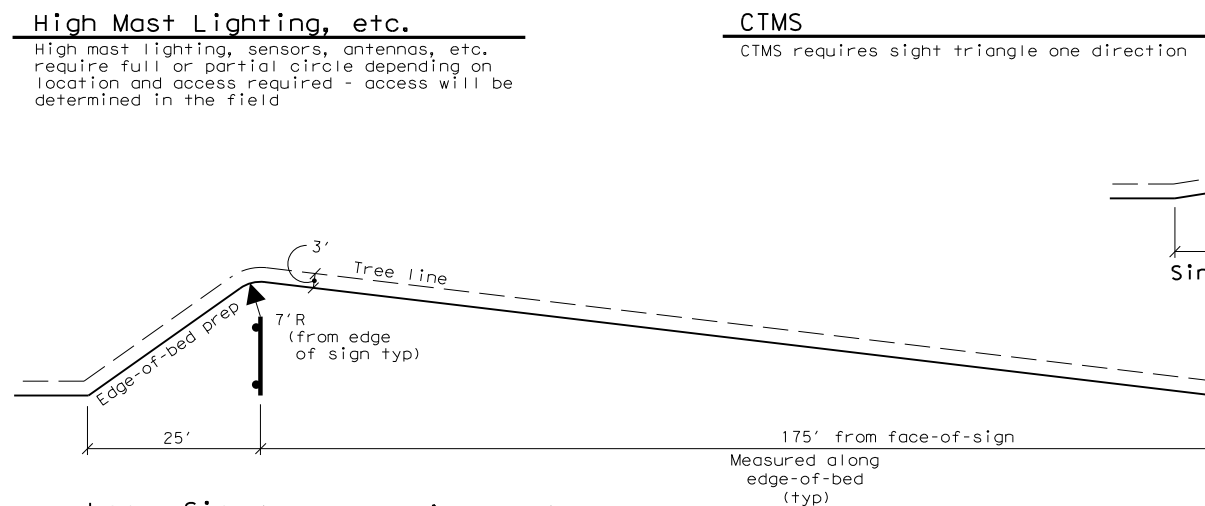
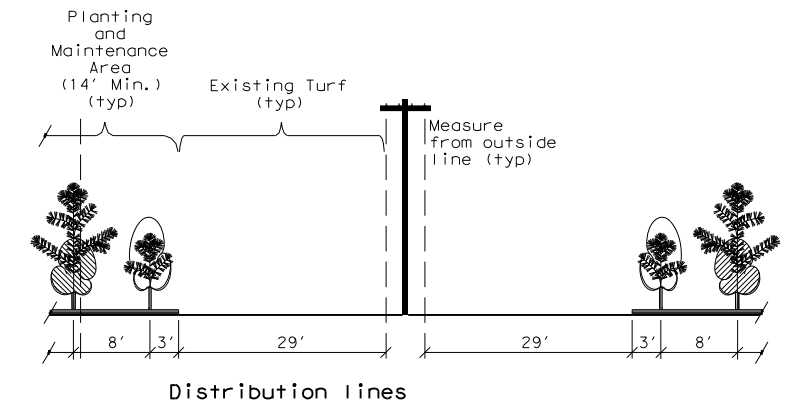
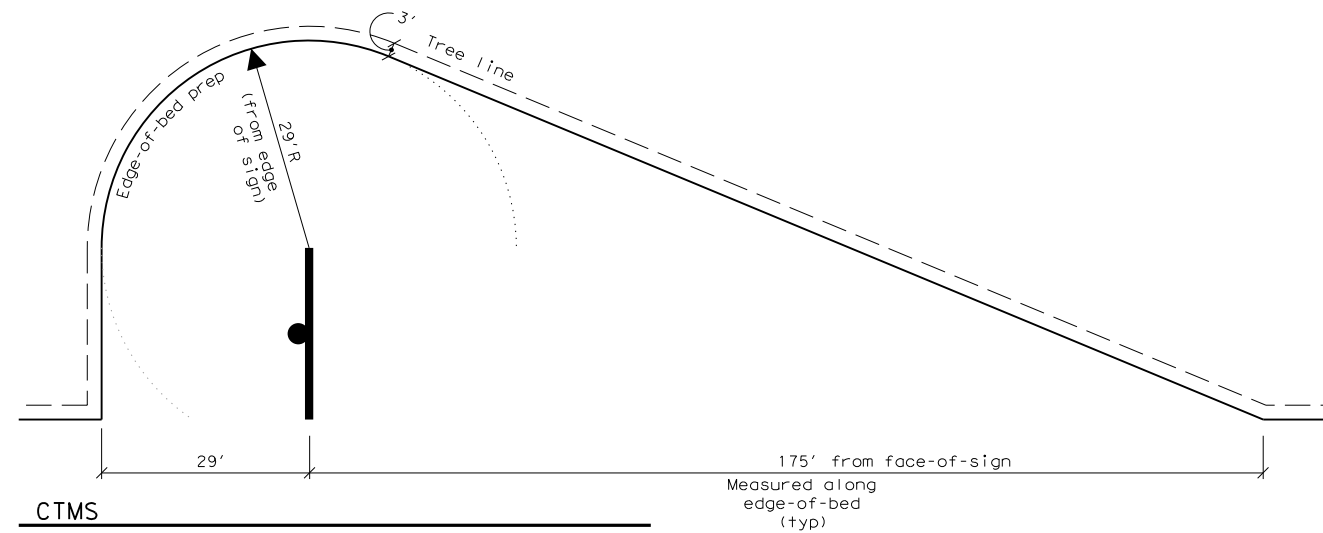
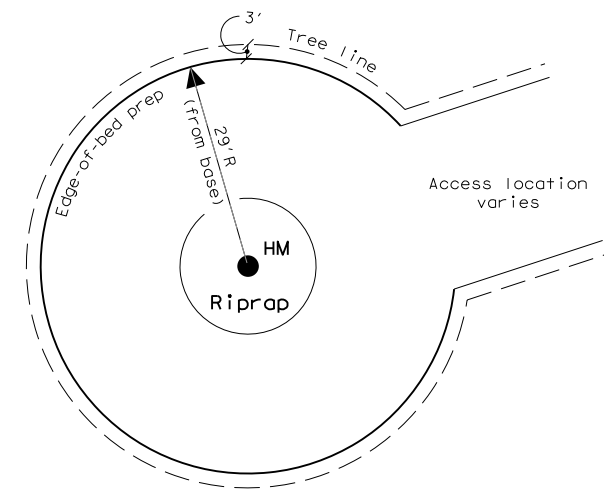
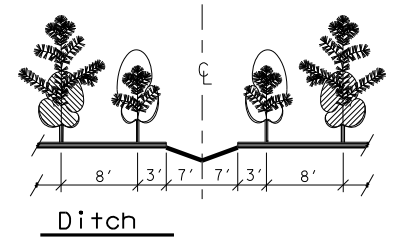
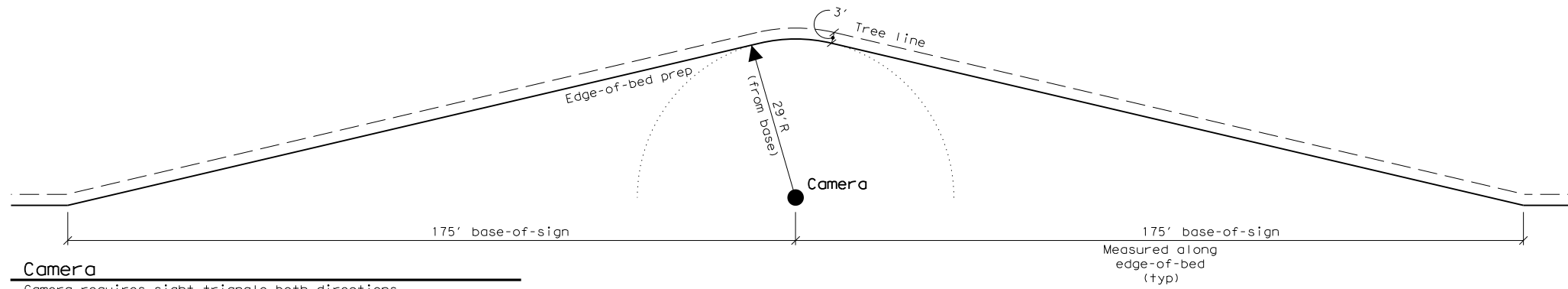
Texas Department of Transportation

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| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
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Interchange Planting and Maintenance Areas (Typ)
 Interchange w/ Direct Connectors

CLEAR ZONE / SIGHT DISTANCE REQUIREMENTS

Dimensions are minimum requirements and are not limited to the items shown, adjustments will be made to accommodate site conditions



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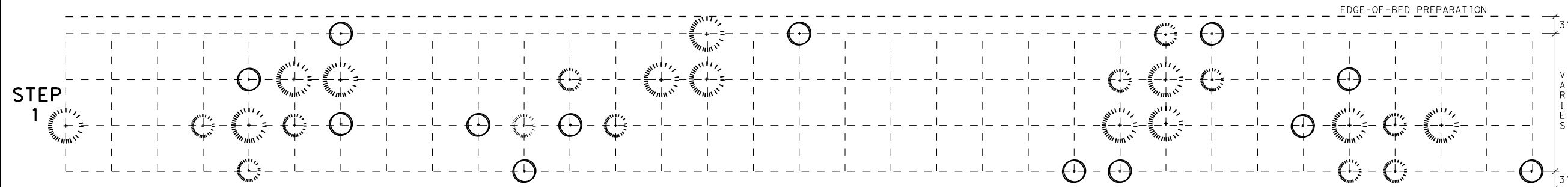
PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT

SHEET 3 OF 5

Texas Department of Transportation

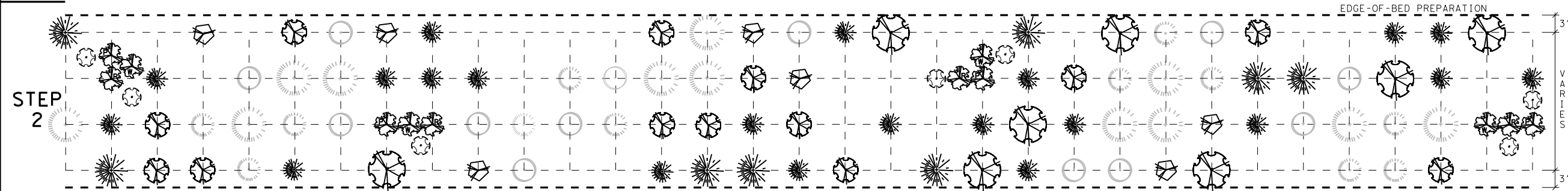
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| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 39 |
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| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB |
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| | | HIGHWAY NO. |
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TYPE A PLANTING



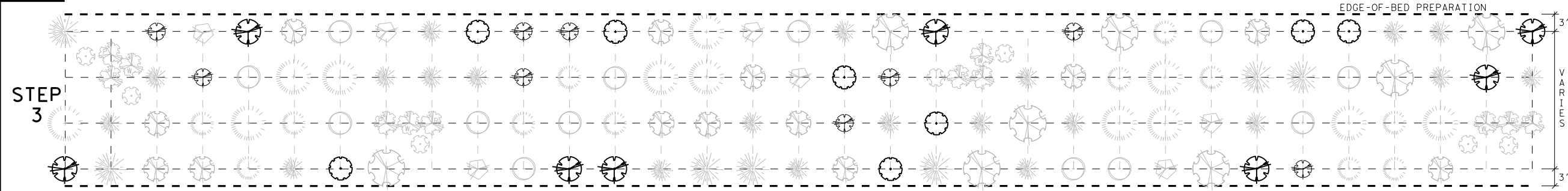
| PLANT LEGEND | | | |
|--------------|--------------|------------|-------|
| SYMBOL | DESC | SIZE (GAL) | % QTY |
| | Bald Cypress | 3g | 10% |
| | Bald Cypress | 15g | 10% |
| | Sycamore | 3g | 10% |

- 1) Locate bed area(s) and determine square footage, unless otherwise shown in plans. The square footage determines tree quantities of each species. Use 8' O.C. spacing to determine quantities.
- 2) Evenly distribute Bald Cypress and Sycamore 8' O.C. in groups of 1, 3 and 5. These plants should be located first within and/or adjacent to poor drainage (moist and/or wet) areas of the site. If moist/wet areas dominate the site bald cypress should be planted one-for-one in lieu of loblolly pine.



| PLANT LEGEND | | | |
|--------------|----------------|------------|-------|
| SYMBOL | DESC | SIZE (GAL) | % QTY |
| | American Holly | 15g | 5% |
| | Cedar Elm | 3g | 10% |
| | Cedar Elm | 15g | 5% |
| | Crape Myrtle | 3g | 10% |
| | Fringe | 3g | 5% |
| | Loblolly Pine | 3g | 15% |
| | Loblolly Pine | 15g | 5% |

- 1) Evenly distribute American Holly, Elms and Pine 8' O.C. in groups of 1, 3 and 5.
- 2) Evenly distribute Crape Myrtles and Fringe tree 4' O.C. in groups of 3, or 5 (red, white and pink) within the interior of planting area(s) and freeway edge without barrier. Locate a minimum of 18' from any curb, barrier or retaining wall site triangle to avoid conflict with signage.



| PLANT LEGEND | | | |
|--------------|-------------|------------|-------|
| SYMBOL | DESC | SIZE (GAL) | % QTY |
| | Bur Oak | 3g | 5% |
| | Bur Oak | 15g | 5% |
| | Shumard Oak | 15g | 5% |

- 1) Evenly distribute Loblolly Pines 8' O.C. in groups and individually within remaining area(s) as shown.

Tree Layout Sequence Within New Planting Area (Typ)

Trees Within New Planting Areas

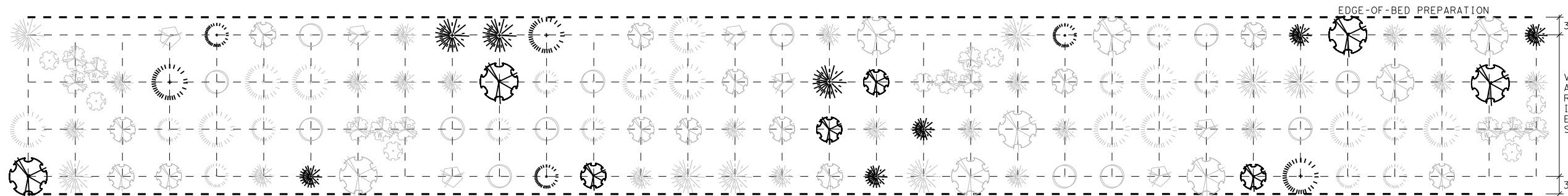


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EXISTING AREA INFILL PLANTING



- 1) Locate bed area(s) and determine quantities for replacements.
- 2) Evenly distribute replacement species individually or in groups as needed.
- 3) Location and quantities will be approved by landscape architect or vegetation specialist.

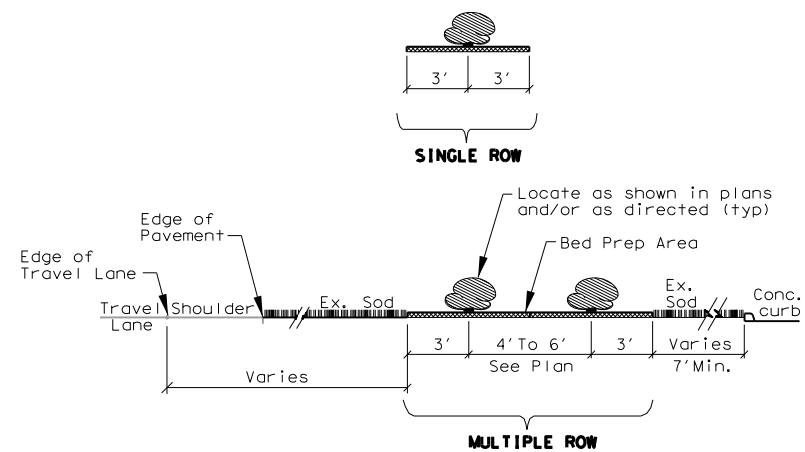
| PLANT LEGEND | | | |
|--------------|---------------|------------|-------|
| SYMBOL | DESC | SIZE (GAL) | % QTY |
| | Cedar Elm | 15g | 20% |
| | Cedar Elm | 30g | 20% |
| | Bald Cypress | 15g | 15% |
| | Bald Cypress | 30g | 15% |
| | Loblolly Pine | 15g | 15% |
| | Loblolly Pine | 30g | 15% |

For Contractor Information Only - See PLANT SPECIFICATIONS sheet for additional information

1325 - 15g Infill trees
 1325 - 30g Infill trees
 Each tree requires the following:
 Landscape Soil Amendment (Type I) - 4 SY each tree X 2650 trees = 10600 SY
 Landscape Soil Amendment (Type II) - 4 SY each tree X 2650 trees = 10600 SY
 Landscape Treatment (Type 1) - 1 EA each tree X 2650 trees = 2650 EA
 Landscape Treatment (Type 2) - 1 EA each tree X 2650 trees X 5 applications = 13250 EA
 Landscape Treatment (Type 5) - 1 EA each tree X 2650 trees = 2650 EA
 Erosion Control Compost - .50 CY each tree (4" depth) X 2550 trees = 1325 CY

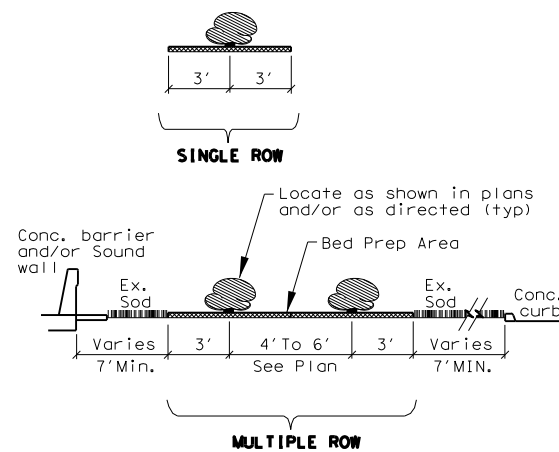
Tree Layout Sequence Within New Planting Area (Typ)

Trees Within New Planting Areas



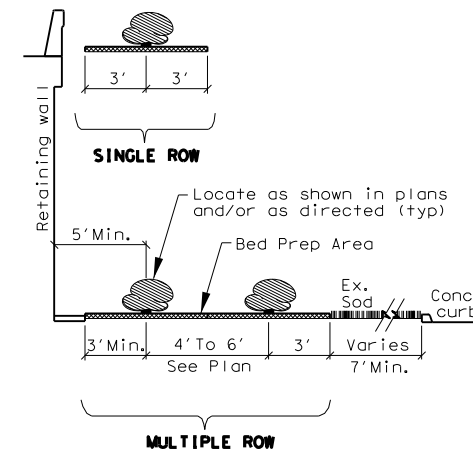
Shrub Planting Typical Elevation

Shoulder / Curb



Shrub Planting Typical Elevation

Barrier / Sound Wall / Curb



Shrub Planting Typical Elevation

Retaining Wall / Curb



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PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT

SHEET 5 OF 5



| | | |
|-------------------|-------------|-------------|
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| 0114 | 11 | 088, etc |
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| | | US 290 |

TYPE OF WORK

ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

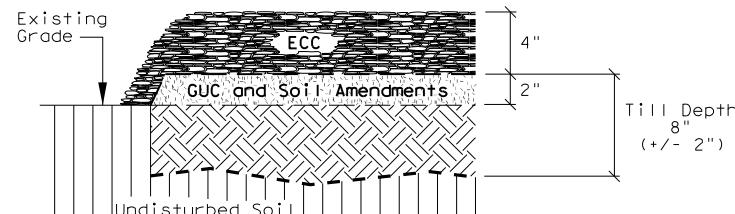
| | |
|--|---|
| | Reference Item 161, 192 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. Reference Special Specification Item 1006 and 1022. |
| 161-6009 EROSION CONTROL COMPOST CY | Item 161.2. Materials. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days). Lab analysis performed by an STA-certified lab must be dated within 30 days before delivery of the compost. Item 161.2. Erosion Control Compost (ECC). Apply uniform layer over plant bed prep area as determined by SY shown on plans. BASIS OF ESTIMATE = Plant bed prep area (SY) shown on plans x 4" depth = CY's required / plant bed prep area. |
| 161-6012 GENERAL USE COMPOST CY | Item 161.2. Materials. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days). Lab analysis performed by an STA-certified lab must be dated within 30 days before delivery of the compost. Item 161.2.3. General Use Compost (GUC). Apply uniform layer over plant bed prep area as determined by SY shown on plans. BASIS OF ESTIMATE = Plant bed prep area (SY) shown on plans x 2" depth = CY's required / plant bed prep area. |
| 192-6065 PLANT BED PREP (TYPE II) SY | The following work is subsidiary to Item 192-6065 PLANT BED PREP (TYPE III) and not paid for separately unless shown otherwise. 1. PLANT BED AREA - Define plant bed area(s) in accordance with plans and specifications. 2. SCALP MOW - Prior to rotor tilling, scalp mow 15 days after final herbicide treatment. 3. ROTOR TILL - After application of GUC and soil amendments, rotor till to a depth of 8" (+/- 2"). GUC and soil amendments are paid for separately. |
| 1006-6001 LANDSCAPE SOIL AMENDMENT (TYPE I) SY | Use a non-chemical fertilizer with the following requirements: (1) Is OMRI Listed or certified by Washington State Department of Agriculture meeting USDA National Organic Program Rules, provide current certification. (2) Is registered with Texas State Chemist as a commercial fertilizer. (3) Meets USEPA guidelines for unrestricted use. (4) Derived from the following biological source: processed poultry manure. (5) Contains 3.0% nitrogen and 2.2% of nitrogen is water insoluble, 4% phosphate, 3% soluble potash, 10% calcium. (6) Use the following product or an approved equal: Plant Vigor 3-4-3 Plus 10% Calcium manufactured by Natural Resources Group, Inc., Tomball, Texas 800-279-9567. APPLICATION RATE = 0.30 lbs/SY |
| 1006-6002 LANDSCAPE SOIL AMENDMENT (TYPE II) SY | Use a Humate containing 2.25% iron in the raw material and greater than 45% humic acid, dextrose 2.5% to 5% on weight basis. Pelletized humate without added binders and pass #16 mesh. Use the following product or an approved equal: San Jacinto Humate, San Jacinto Environmental Supplies, 713-957-0909. APPLICATION RATE = 0.25 lbs/SY |
| 1022-6001 LANDSCAPE TREATMENT (TY 1) EA | See PLANT BED PREPARATION TYPE III, Sheet 2 of 2 for requirements. |
| 1022-6002 LANDSCAPE TREATMENT (TY 2) EA | See PLANT BED PREPARATION TYPE III, Sheet 2 of 2 for requirements. |
| 1022-6005 LANDSCAPE TREATMENT (TY 5) EA | Use a non-chemical fertilizer with the following requirements: (1) Is OMRI Listed or certified by Washington State Department of Agriculture meeting USDA National Organic Program Rules, provide current certification. (2) Is registered with Texas State Chemist as a commercial fertilizer. (3) Meets USEPA guidelines for unrestricted use. (4) Derived from the following biological source: worm castings. (5) Contains 0.02% humic acid derived from humate, 1.0% nitrogen and 0.9% of nitrogen is water insoluble, 0.5% phosphate, 0.2% soluble potash, 1.0% calcium, 0.02% iron. (6) Use the following product or an approved equal: Black Castings manufactured by Vermi-Technology Unlimited available from Earth's Outlet 866-504-1139. APPLICATION RATE = 0.30 lbs / Each plant at the time of planting. |

SEQUENCE OF WORK

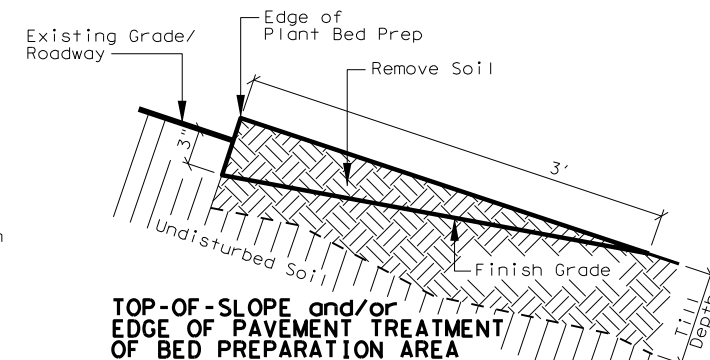
- PLANT BED PREPARATION TYPE II
1. Define Bed Prep Area
 2. Scalp Mow
 3. Landscape Soil Amendments I and II
 4. General Use Compost (GUC)
 5. Rotor Till
 6. Erosion Control Compost (ECC)
 7. Landscape Treatment (TY 5)
 8. Landscape Treatment (TY 1)
 9. Landscape Treatment (TY 2)

BED PREPARATION NOTES:

1. Reference Item 192 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements not shown.
2. Reference Item 192.3 mark plant locations and bed outlines.
3. Locate and stake all underground conduits and utilities associated with but not limited to: CTMS, CTMS power supply, lighting, signal wires and detectors, gas, electric, telephone, fiber optics, etc.
4. Locate and stake existing ground boxes, inlets, culverts, manholes, etc. within the project area with a 4' wooden stake painted orange. Maintain the stakes in place for duration of the project. Remove stakes when directed by Engineer.
5. Repair any damage within right of way caused by Contractor at no additional expense to the Department.
6. Provide a 1000 SF "mock up" of soil amendment, general use compost, and bed preparation complete and in place within an approved area for approval by Engineer.
7. Pick-up litter prior to scalp mow and bed preparation.
8. All concrete, steel, trash, and other debris uncovered during bed preparation work which the Engineer determines as detrimental to the project will become the responsibility of the Contractor and disposed of in an approved manner. Debris removal will occur daily and will be subsidiary to bed preparation and will not be paid for separately.
9. Reference Item 5.10 Inspection of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014. At any time during all phases of the contract, any materials or work performed not in accordance with the plans and specifications will be replaced and/or reworked until in compliance.
10. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractor's expense.
11. Clean and clear bed prep areas and nearby inlets of existing tall vegetation and any piles or layers of dead grass and weeds caused by drought or mowing operations by others.



PLANTING BED PREPARATION SECTION
SEE ITEMS AND REQUIREMENTS THIS SHEET FOR DIMENSIONS, RATES, AND SPECIFICATIONS
(See Top-of-Slope detail this sheet when applicable)



**TOP-OF-SLOPE and/or
EDGE OF PAVEMENT TREATMENT
OF BED PREPARATION AREA**

Install at all areas with the following conditions:
Within the bed preparation areas at top-of-slope (adjacent to shoulder sections and areas with slotted barrier/curb) and/or at edge of roadway, remove tilled or untilled (TYPE IV) soil as shown. Evenly distribute removed soil in a thin layer over adjacent existing tilled or untilled (TYPE IV) soil being careful not to create a mound. This work is subsidiary to Item 192 Plant Bed Prep Preparation.



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**PLANT BED PREPARATION
TYPE II**

SHEET 1 OF 2



| | | |
|------------------------|--------------|-----------------------|
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| CONT. 0114 | SECT. 11 | JOB 088, etc |
| | | HIGHWAY NO. US 290 |

USE COMPOST TEA OR EXTRACT AS SHOWN ON THIS SHEET

COMPOST EXTRACT

**ITEM 1022-6001 LANDSCAPE TREATMENT (TY 1) and
ITEM 1022-6002 LANDSCAPE TREATMENT (TY 2) requirements.**

MATERIALS REQUIREMENTS

Compost for use in liquid compost/extract must contain the following (per gram dry weight of compost):

1. Test within range of Soil Food Web standards using a full bio-assay to include the following:
 - a) 15-25 micrograms of active bacteria,
 - b) 100- 3000 micrograms total bacterial biomass,
 - c) 15-25 micrograms active fungal biomass,
 - d) 100-300 micrograms total fungal biomass,
 - e) 10,000 each of flagellates and amoebae,
 - f) 20-100 ciliates, and
 - g) 20 to 30 beneficial nematodes.
2. Meet the Solvita Compost Maturity test of 6.0 or higher.

Liquid compost/extract must contain the following (per gram dry weight):

1. 150-3000 micrograms total bacterial biomass,
2. 2-20 micrograms total fungal biomass,
3. 1000 each of flagellates and amoebae,
4. 20-50 ciliates, and
5. 2-10 beneficial nematodes.

Liquid compost must be verified, with time and date, for content to have minimum activity and meet minimum standards as specified above using a 100x and 400x microscope with camera attachment by a Soil Foodweb Certified Advisor or their representative. This verification must be within 30 minutes of material leaving premises on the day of manufacture. Picture will be kept on file for each 500 gallons manufactured.

Liquid compost/extract additives include the following:

1. Mycorrhizal fungi endo/ecto blend sourced with a minimum potency of 100,000 propagules per pound with NO Tricoderma included in the inoculum.
2. Humate, low sodium, naturally processed 70% humate that has been liquefied to 12% humic-fulvic as available from Mesa Verde Resources at 877-418-8776 or approved equal.
3. Fulvic acid derived from natural shale ore as available from Sustainable Growth Texas at 936-232-5738 or approved equal.
4. Soluble kelp seaweed, dehydrated liquid extract made from the seaplant Ascophyllum nodosum as available from Sustainable Growth Texas at 936-232-5738, or approved equal.
5. Naturally derived blackstrap non-sulfured molasses (for foliar application only).

Liquid compost/extract with additives solution must sit on air for 3-4 hours and monitored every 1/2 hour with a Dissolved Oxygen Meter to assure the material does not drop below 6ppm oxygen content during full activation period.

EQUIPMENT REQUIREMENTS

For each batch use a delivery tank verified for overall cleanliness, to be free of residue, soil, compost or stains. Tank shall then be rinsed with clean non-chlorinated or non-chloramines treated well water before filling with Liquid Compost. All equipment used for application of liquid compost must have never been used or will not be used with any non organic conventional inorganic fertilizers or chemical herbicides or pesticides, owner must submit written verification to this.

Tank shall be equipped with two, 2 inch quick coupler type fittings capable of coupling, without leaks. All lines and fittings should have quick couplers at every junction. Ninety (90) degree bend fittings should be avoided for quick clean out and verification of cleanliness.

Delivery tank must be equipped with an operating circulation pump of a low velocity, high volume pump of diaphragm or centrifugal design.

Injectors capable of penetrating four (4) inches into soil and/or root balls as manufactured by LESCO Deeproot Feeder at 713-466-6730 or approved equal.

Delivery tank must be equipped with an operating aeration system.

Dissolved oxygen meter.

TRANSPORT, STORAGE AND APPLICATION REQUIREMENTS

Liquid compost/extract with additives solution must be circulated for five (5) minutes per five hundred (500) gallons of material every three (3) hours. Liquid compost/extract with additives solution must be continuously aerated from time of manufacture through complete application. All solution must be applied within 24 hours, or new material must be sourced. Materials not applied within 24 hours is not allowed.

CONSTRUCTION METHODS AND APPLICATION RATES

- 1022-6001 LANDSCAPE TREATMENT (TY 1) EA
Installation date: Install root injection 14 calendar days minimum to 30 calendar days maximum after plant installation.
Limits/measurement: Each injected tree and woody shrub.
Inject 1/2 gallon liquid compost/extract with additives solution four (4) inches into the root zone and/or rootball of each tree and woody shrub only. Mix additives with liquid compost/extract using the following rates:
1. Mycorrhizal fungi endo/ecto blend: 30 lbs per 500 gallons of liquid compost/extract,
 2. Humate: 30 lbs per 500 gallons of liquid compost/extract,
 3. Fulvic acid: 32 oz per 500 gallons of liquid compost/extract,
 4. Soluble kelp seaweed: 2 lbs per 500 gallons of liquid compost/extract.

- 1022-6002 LANDSCAPE TREATMENT (TY 2) EA
Installation date: Install first foliar application 30 calendar days minimum to 60 calendars days maximum after root injection described on this sheet. Additional foliar applications as described on following sheets.
Limits/measurement: Each sprayed tree and woody shrub. Spray foliar application over all trees and woody shrubs. Solution must be sprayed targeting the full surface of the plant including leaves (top and bottom), limbs and trunk.
Spray foliar application at the following rates:
1. Liquid compost/extract: 500 gallons per acre,
 2. Humate: 2 lbs per acre,
 3. Fulvic acid: 32 oz per acre,
 4. Soluble kelp seaweed: 2 lbs per acre,
 5. Blackstrap molasses: 16 oz per acre.

Soil Foodweb Certified Advisor:

Sustainable Growth Texas
103 Sherbrook Circle
Conroe, TX 77385
936-232-5738
sustainablegrowthtexas.com

Soil Foodweb Oregon, LLC
728 SW Wake Robin Ave.
Corvallis, Oregon 97333-1612
541-752-5066
soilfoodweb.com

Soil Foodweb New York, Inc.
555-7 Hallock Ave.
Port Jefferson Station, NY 11776
631-474-8848
soilfoodwebny.com

COMPOST TEA

**ITEM 1022-6001 LANDSCAPE TREATMENT (TY 1) and
ITEM 1022-6002 LANDSCAPE TREATMENT (TY 2) requirements.**

MATERIALS REQUIREMENTS

Compost for use in liquid compost tea must contain the following (per gram dry weight of compost):

1. Test within range of Soil Food Web standards using a full bio-assay to include the following:
 - a) 15-25 micrograms of active bacteria,
 - b) 100- 300 micrograms total bacterial biomass,
 - c) 15-25 micrograms active fungal biomass,
 - d) 100-300 micrograms total fungal biomass,
 - e) 10,000 each of flagellates and amoebae,
 - f) Less than 50 ciliates, and
 - g) No root feeding nematodes present.

Actively aerated compost tea must contain the following per milliliter as applied (measured after having passed through the actual application apparatus):

1. Meet the minimum desired ranges by Soil Food Web for:
 - a. Active bacteria 10-150
 - b. Total bacteria 150-3000
 - c. Active Fungi 2-10
 - d. Total Fungi 2-20
 - e. Flagellages and amoebae 2000 combined
 - f. Ciliates 50 or less
 - g. No root feeding nematodes present

Tea is to be tested from application device a minimum once per month during each application cycle. Each batch of actively aerated compost tea must be qualitatively assessed using light microscope methods as established by Soil Food Web. Photographs of microscopy must be kept on file with a qualitative assay report.

If the following additives are used in tea brewing to meet the minimum biological standards, the additives must meet these standards.

- a) Fish Hydrolysate - certified organic manufacturer's documentation verifying no oil extraction has occurred.
- b) Kelp - must be certified organic soluble extract.
- c) Humic Acid - certified organic water extracted.
- d) Molasses - certified organic blackstrap molasses.

Actively aerated compost tea must maintain dissolved oxygen level above 6 mg/l until application. Use a dissolved oxygen meter to monitor.

EQUIPMENT REQUIREMENTS

For each batch use a delivery tank verified for overall cleanliness, to be free of residue, soil, compost or stains. Tank shall then be rinsed with clean non-chlorinated or non-chloramines treated well water before filling with Liquid Compost Tea. All equipment used for application of liquid compost must have never been used or will not be used with any non organic conventional inorganic fertilizers or chemical herbicides or pesticides, owner must submit written verification to this nature.

Application pump must be high volume (greater than 3.0 gpm) and low pressure (less than 60 psi). Application pump must be a diaphragm type pump. Foliar application device must be capable of adequately covering front and backs of leaves. Foliar application device shall be Gunjet AA18-AL or approved equal.

Delivery tank must be equipped with an operating aeration system capable of maintaining 6 mg/l oxygen content.

Injectors capable of penetrating four (4) inches into soil and/or root balls as manufactured by LESCO Deeproot Feeder at 713-466-6730 or approved equal.

Dissolved oxygen meter.

TRANSPORT, STORAGE AND APPLICATION REQUIREMENTS

Actively aerated compost tea must be continuously aerated from time of manufacture through complete application. Materials not applied within 24 hours are not allowed.

CONSTRUCTION METHODS AND APPLICATION RATES

- 1022-6001 LANDSCAPE TREATMENT (TY 1) EA
Installation date: Install root injection 14 calendar days minimum to 30 calendar days maximum after plant installation.
Limits/measurement: Each injected tree and woody shrub. Inject all trees and woody shrubs.
Inject 1/2 gallon liquid compost tea with additives solution four (4) inches into the root zone and/or rootball of each tree and woody shrub only. Mix additives with compost tea using the following rates:
1. 8 oz/ Fish Hydrolysate per gallon.

- 1022-6002 LANDSCAPE TREATMENT (TY 2) EA
Installation date: Install first foliar application 30 calendar days minimum to 60 calendar maximum after root injection described on this sheet. Additional foliar applications as described on following sheets.
Limits/measurement: Each sprayed tree or woody shrub. Spray foliar application over all trees and woody shrubs. Solution must be sprayed targeting the full surface of the plant including leaves (top and bottom), limbs and trunk.
Spray foliar application at the following rate:
1. Liquid compost tea: 500 gallons per acre.

Soil Foodweb Certified Advisor:

Sustainable Growth Texas
103 Sherbrook Circle
Conroe, TX 77385
936-232-5738
sustainablegrowthtexas.com

Soil Foodweb New York, Inc.
555-7 Hallock Ave.
Port Jefferson Station, NY 11776
631-474-8848
soilfoodwebny.com

Soil Foodweb Oregon, LLC
728 SW Wake Robin Ave.
Corvallis, Oregon 97333-1612
541-752-5066
oregonfoodweb.com



Dana Dean
6/2/20210

NTS

**PLANT BED PREPARATION
TYPE II**

SHEET 2 OF 2



| | | |
|-------------------|-------------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 43 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB |
| 0114 | 11 | 088, etc |
| | | HIGHWAY NO. |
| | | US 290 |

TYPE OF WORK

ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

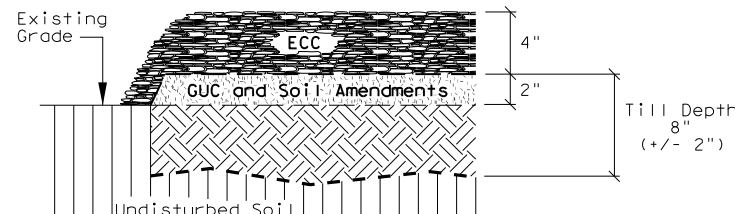
| | |
|--|---|
| | Reference Item 161, 192 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. Reference Special Specification Item 1006 and 1022. |
| 161-6009 EROSION CONTROL COMPOST CY | Item 161.2. Materials. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days). Lab analysis performed by an STA-certified lab must be dated within 30 days before delivery of the compost. Item 161.2. Erosion Control Compost (ECC). Apply uniform layer over plant bed prep area as determined by SY shown on plans. BASIS OF ESTIMATE = Plant bed prep area (SY) shown on plans x 4" depth = CY's required / plant bed prep area. |
| 161-6012 GENERAL USE COMPOST CY | Item 161.2. Materials. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days). Lab analysis performed by an STA-certified lab must be dated within 30 days before delivery of the compost. Item 161.2.3. General Use Compost (GUC). Apply uniform layer over plant bed prep area as determined by SY shown on plans. BASIS OF ESTIMATE = Plant bed prep area (SY) shown on plans x 2" depth = CY's required / plant bed prep area. |
| 192-6065 PLANT BED PREP (TYPE III) SY | The following work is incidental to Item 192-6065 PLANT BED PREP (TYPE III) and not paid for separately unless shown otherwise. 1. PLANT BED AREA - Define plant bed area(s) in accordance with plans and specifications. 2. HERBICIDE - Prior to all other work, apply two applications of an approved herbicide with 15 days between the applications. Apply herbicide during weather conditions and at a rate per manufacturer's recommendations. 3. SCALP MOW - Prior to rotor tilling scalp mow 15 days after final herbicide treatment. 4. ROTOR TILL - After application of GUC and soil amendments rotor till to a depth of 8" (+/- 2"). GUC and soil amendments are paid for separately. |
| 1006-6001 LANDSCAPE SOIL AMENDMENT (TYPE I) SY | Use a non-chemical fertilizer with the following requirements: (1) Is OMRI Listed or certified by Washington State Department of Agriculture meeting USDA National Organic Program Rules, provide current certification. (2) Is registered with Texas State Chemist as a commercial fertilizer. (3) Meets USEPA guidelines for unrestricted use. (4) Derived from the following biological source: processed poultry manure. (5) Contains 3.0% nitrogen and 2.2% of nitrogen is water insoluble, 4% phosphate, 3% soluble potash, 10% calcium. (6) Use the following product or an approved equal: Plant Vigor 3-4-3 Plus 10% Calcium manufactured by Natural Resources Group, Inc., Tomball, Texas 800-279-9567. APPLICATION RATE = 0.30 lbs/SY |
| 1006-6002 LANDSCAPE SOIL AMENDMENT (TYPE II) SY | Use a Humate containing 2.25% iron in the raw material and greater than 45% humic acid, dextrose 2.5% to 5% on weight basis. Pelletized humate without added binders and pass #16 mesh. Use the following product or an approved equal: San Jacinto Humate, San Jacinto Environmental Supplies, 713-957-0909. APPLICATION RATE = 0.25 lbs/SY |
| 1022-6001 LANDSCAPE TREATMENT (TY 1) EA | See PLANT BED PREPARATION TYPE III, Sheet 2 of 2 for requirements. |
| 1022-6002 LANDSCAPE TREATMENT (TY 2) EA | See PLANT BED PREPARATION TYPE III, Sheet 2 of 2 for requirements. |
| 1022-6005 LANDSCAPE TREATMENT (TY 5) EA | Use a non-chemical fertilizer with the following requirements: (1) Is OMRI Listed or certified by Washington State Department of Agriculture meeting USDA National Organic Program Rules, provide current certification. (2) Is registered with Texas State Chemist as a commercial fertilizer. (3) Meets USEPA guidelines for unrestricted use. (4) Derived from the following biological source: worm castings. (5) Contains 0.02% humic acid derived from humate, 1.0% nitrogen and 0.9% of nitrogen is water insoluble, 0.5% phosphate, 0.2% soluble potash, 1.0% calcium, 0.02% iron. (6) Use the following product or an approved equal: Black Castings manufactured by Vermi-Technology Unlimited available from Earth's Outlet 866-504-1139. APPLICATION RATE = 0.30 lbs / Each plant at the time of planting. |

SEQUENCE OF WORK

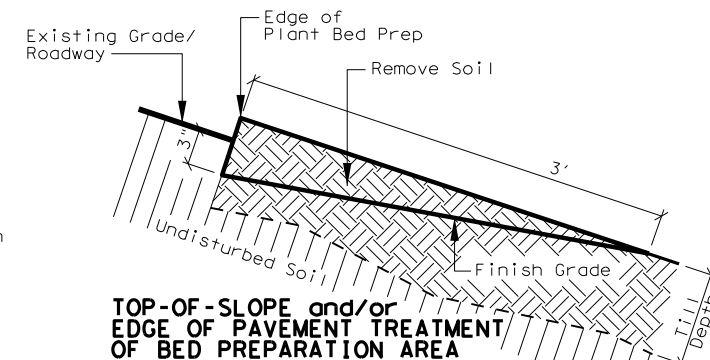
- PLANT BED PREPARATION TYPE II
1. Define Bed Prep Area
 2. Scalp Mow
 3. Landscape Soil Amendments I and II
 4. General Use Compost (GUC)
 5. Rotor Till
 6. Erosion Control Compost (ECC)
- DIG HOLES FOR TREES AND SHRUBS
7. Landscape Treatment (TY 5)
- PLANT TREES AND SHRUBS
8. Landscape Treatment (TY 1)
 9. Landscape Treatment (TY 2)

BED PREPARATION NOTES:

1. Reference Item 192 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements not shown.
2. Reference Item 192.3 mark plant locations and bed outlines.
3. Locate and stake all underground conduits and utilities associated with but not limited to: CTMS, CTMS power supply, lighting, signal wires and detectors, gas, electric, telephone, fiber optics, etc.
4. Locate and stake existing ground boxes, inlets, culverts, manholes, etc. within the project area with a 4' wooden stake painted orange. Maintain the stakes in place for duration of the project. Remove stakes when directed by Engineer.
5. Repair any damage within right of way caused by Contractor at no additional expense to the Department.
6. Provide a 1000 SF "mock up" of soil amendment, general use compost, and bed preparation complete and in place within an approved area for approval by Engineer.
7. Pick-up litter prior to scalp mow and bed preparation.
8. All concrete, steel, trash, and other debris uncovered during bed preparation work which the Engineer determines as detrimental to the project will become the responsibility of the Contractor and disposed of in an approved manner. Debris removal will occur daily and will be subsidiary to bed preparation and will not be paid for separately.
9. Reference Item 5.10 Inspection of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014. At any time during all phases of the contract, any materials or work performed not in accordance with the plans and specifications will be replaced and/or reworked until in compliance.
10. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractors expense.
11. Clean and clear bed prep areas and nearby inlets of existing tall vegetation and any piles or layers of dead grass and weeds caused by drought or mowing operations by others.



PLANTING BED PREPARATION SECTION
SEE ITEMS AND REQUIREMENTS THIS SHEET FOR DIMENSIONS, RATES, AND SPECIFICATIONS
(See Top-of-Slope detail this sheet when applicable)



TOP-OF-SLOPE and/or EDGE OF PAVEMENT TREATMENT OF BED PREPARATION AREA

Install at all areas with the following conditions:
Within the bed preparation areas at top-of-slope (adjacent to shoulder sections and areas with slotted barrier/curb) and/or at edge of roadway, remove tilled or untilled (TYPE IV) soil as shown. Evenly distribute removed soil in a thin layer over adjacent existing tilled or untilled (TYPE IV) soil being careful not to create a mound. This work is subsidiary to Item 192 Plant Bed Prep Preparation.



Dana Dean Cote
6/2/2021

NTS

PLANT BED PREPARATION TYPE III

SHEET 1 OF 2

Texas Department of Transportation

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| 6 | | 44 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

USE COMPOST TEA OR EXTRACT AS SHOWN ON THIS SHEET

COMPOST EXTRACT

**ITEM 1022-6001 LANDSCAPE TREATMENT (TY 1) and
ITEM 1022-6002 LANDSCAPE TREATMENT (TY 2) requirements.**

MATERIALS REQUIREMENTS

Compost for use in liquid compost/extract must contain the following (per gram dry weight of compost):

1. Test within range of Soil Food Web standards using a full bio-assay to include the following:
 - a) 15-25 micrograms of active bacteria,
 - b) 100- 3000 micrograms total bacterial biomass,
 - c) 15-25 micrograms active fungal biomass,
 - d) 100-300 micrograms total fungal biomass,
 - e) 10,000 each of flagellates and amoebae,
 - f) 20-100 ciliates, and
 - g) 20 to 30 beneficial nematodes.
2. Meet the Solvita Compost Maturity test of 6.0 or higher.

Liquid compost/extract must contain the following (per gram dry weight):

1. 150-3000 micrograms total bacterial biomass,
2. 2-20 micrograms total fungal biomass,
3. 1000 each of flagellates and amoebae,
4. 20-50 ciliates, and
5. 2-10 beneficial nematodes.

Liquid compost must be verified, with time and date, for content to have minimum activity and meet minimum standards as specified above using a 100x and 400x microscope with camera attachment by a Soil Foodweb Certified Advisor or their representative. This verification must be within 30 minutes of material leaving premises on the day of manufacture. Picture will be kept on file for each 500 gallons manufactured.

Liquid compost/extract additives include the following:

1. Mycorrhizal fungi endo/ecto blend sourced with a minimum potency of 100,000 propagules per pound with NO Tricoderma included in the inoculum.
2. Humate, low sodium, naturally processed 70% humate that has been liquefied to 12% humic-fulvic as available from Mesa Verde Resources at 877-418-8776 or approved equal.
3. Fulvic acid derived from natural shale ore as available from Sustainable Growth Texas at 936-232-5738 or approved equal.
4. Soluble kelp seaweed, dehydrated liquid extract made from the seaplant Ascophyllum nodosum as available from Sustainable Growth Texas at 936-232-5738, or approved equal.
5. Naturally derived blackstrap non-sulfured molasses (for foliar application only).

Liquid compost/extract with additives solution must sit on air for 3-4 hours and monitored every 1/2 hour with a Dissolved Oxygen Meter to assure the material does not drop below 6ppm oxygen content during full activation period.

EQUIPMENT REQUIREMENTS

For each batch use a delivery tank verified for overall cleanliness, to be free of residue, soil, compost or stains. Tank shall then be rinsed with clean non-chlorinated or non-chloramines treated well water before filling with Liquid Compost. All equipment used for application of liquid compost must have never been used or will not be used with any non organic conventional inorganic fertilizers or chemical herbicides or pesticides, owner must submit written verification to this.

Tank shall be equipped with two, 2 inch quick coupler type fittings capable of coupling, without leaks. All lines and fittings should have quick couplers at every junction. Ninety (90) degree bend fittings should be avoided for quick clean out and verification of cleanliness.

Delivery tank must be equipped with an operating circulation pump of a low velocity, high volume pump of diaphragm or centrifugal design.

Injectors capable of penetrating four (4) inches into soil and/or root balls as manufactured by LESCO Deeproot Feeder at 713-466-6730 or approved equal.

Delivery tank must be equipped with an operating aeration system.

Dissolved oxygen meter.

TRANSPORT, STORAGE AND APPLICATION REQUIREMENTS

Liquid compost/extract with additives solution must be circulated for five (5) minutes per five hundred (500) gallons of material every three (3) hours. Liquid compost/extract with additives solution must be continuously aerated from time of manufacture through complete application. All solution must be applied within 24 hours, or new material must be sourced. Materials not applied within 24 hours is not allowed.

CONSTRUCTION METHODS AND APPLICATION RATES

- 1022-6001 LANDSCAPE TREATMENT (TY 1) EA
Installation date: Install root injection 14 calendar days minimum to 30 calendar days maximum after plant installation.
Limits/measurement: Each injected tree and woody shrub.
Inject 1/2 gallon liquid compost/extract with additives solution four (4) inches into the root zone and/or rootball of each tree and woody shrub only. Mix additives with liquid compost/extract using the following rates:
1. Mycorrhizal fungi endo/ecto blend: 30 lbs per 500 gallons of liquid compost/extract,
 2. Humate: 30 lbs per 500 gallons of liquid compost/extract,
 3. Fulvic acid: 32 oz per 500 gallons of liquid compost/extract,
 4. Soluble kelp seaweed: 2 lbs per 500 gallons of liquid compost/extract.

- 1022-6002 LANDSCAPE TREATMENT (TY 2) EA
Installation date: Install first foliar application 30 calendar days minimum to 60 calendars days maximum after root injection described on this sheet. Additional foliar applications as described on following sheets.
Limits/measurement: Each sprayed tree and woody shrub. Spray foliar application over all trees and woody shrubs. Solution must be sprayed targeting the full surface of the plant including leaves (top and bottom), limbs and trunk.
Spray foliar application at the following rates:
1. Liquid compost/extract: 500 gallons per acre,
 2. Humate: 2 lbs per acre,
 3. Fulvic acid: 32 oz per acre,
 4. Soluble kelp seaweed: 2 lbs per acre,
 5. Blackstrap molasses: 16 oz per acre.

Soil Foodweb Certified Advisor:

Sustainable Growth Texas
103 Sherbrook Circle
Conroe, TX 77385
936-232-5738
sustainablegrowthtexas.com

Soil Foodweb Oregon, LLC
728 SW Wake Robin Ave.
Corvallis, Oregon 97333-1612
541-752-5066
soilfoodweb.com

Soil Foodweb New York, Inc.
555-7 Hallock Ave.
Port Jefferson Station, NY 11776
631-474-8848
soilfoodwebny.com

COMPOST TEA

**ITEM 1022-6001 LANDSCAPE TREATMENT (TY 1) and
ITEM 1022-6002 LANDSCAPE TREATMENT (TY 2) requirements.**

MATERIALS REQUIREMENTS

Compost for use in liquid compost tea must contain the following (per gram dry weight of compost):

1. Test within range of Soil Food Web standards using a full bio-assay to include the following:
 - a) 15-25 micrograms of active bacteria,
 - b) 100- 300 micrograms total bacterial biomass,
 - c) 15-25 micrograms active fungal biomass,
 - d) 100-300 micrograms total fungal biomass,
 - e) 10,000 each of flagellates and amoebae,
 - f) Less than 50 ciliates, and
 - g) No root feeding nematodes present.

Actively aerated compost tea must contain the following per milliliter as applied (measured after having passed through the actual application apparatus):

1. Meet the minimum desired ranges by Soil Food Web for:
 - a. Active bacteria 10-150
 - b. Total bacteria 150-3000
 - c. Active Fungi 2-10
 - d. Total Fungi 2-20
 - e. Flagellages and amoebae 2000 combined
 - f. Ciliates 50 or less
 - g. No root feeding nematodes present

Tea is to be tested from application device a minimum once per month during each application cycle. Each batch of actively aerated compost tea must be qualitatively assessed using light microscope methods as established by Soil Food Web. Photographs of microscopy must be kept on file with a qualitative assay report.

If the following additives are used in tea brewing to meet the minimum biological standards, the additives must meet these standards.

- a) Fish Hydrolysate - certified organic manufacturer's documentation verifying no oil extraction has occurred.
- b) Kelp - must be certified organic soluble extract.
- c) Humic Acid - certified organic water extracted.
- d) Molasses - certified organic blackstrap molasses.

Actively aerated compost tea must maintain dissolved oxygen level above 6 mg/l until application. Use a dissolved oxygen meter to monitor.

EQUIPMENT REQUIREMENTS

For each batch use a delivery tank verified for overall cleanliness, to be free of residue, soil, compost or stains. Tank shall then be rinsed with clean non-chlorinated or non-chloramines treated well water before filling with Liquid Compost Tea. All equipment used for application of liquid compost must have never been used or will not be used with any non organic conventional inorganic fertilizers or chemical herbicides or pesticides, owner must submit written verification to this nature.

Application pump must be high volume (greater than 3.0 gpm) and low pressure (less than 60 psi). Application pump must be a diaphragm type pump. Foliar application device must be capable of adequately covering front and backs of leaves. Foliar application device shall be Gunjet AA18-AL or approved equal.

Delivery tank must be equipped with an operating aeration system capable of maintaining 6 mg/l oxygen content.

Injectors capable of penetrating four (4) inches into soil and/or root balls as manufactured by LESCO Deeproot Feeder at 713-466-6730 or approved equal.

Dissolved oxygen meter.

TRANSPORT, STORAGE AND APPLICATION REQUIREMENTS

Actively aerated compost tea must be continuously aerated from time of manufacture through complete application. Materials not applied within 24 hours are not allowed.

CONSTRUCTION METHODS AND APPLICATION RATES

- 1022-6001 LANDSCAPE TREATMENT (TY 1) EA
Installation date: Install root injection 14 calendar days minimum to 30 calendar days maximum after plant installation.
Limits/measurement: Each injected tree and woody shrub. Inject all trees and woody shrubs.
Inject 1/2 gallon liquid compost tea with additives solution four (4) inches into the root zone and/or rootball of each tree and woody shrub only. Mix additives with compost tea using the following rates:
1. 8 oz/ Fish Hydrolysate per gallon.

- 1022-6002 LANDSCAPE TREATMENT (TY 2) EA
Installation date: Install first foliar application 30 calendar days minimum to 60 calendar maximum after root injection described on this sheet. Additional foliar applications as described on following sheets.
Limits/measurement: Each sprayed tree or woody shrub. Spray foliar application over all trees and woody shrubs. Solution must be sprayed targeting the full surface of the plant including leaves (top and bottom), limbs and trunk.
Spray foliar application at the following rate:
1. Liquid compost tea: 500 gallons per acre.

Soil Foodweb Certified Advisor:

Sustainable Growth Texas
103 Sherbrook Circle
Conroe, TX 77385
936-232-5738
sustainablegrowthtexas.com

Soil Foodweb New York, Inc.
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728 SW Wake Robin Ave.
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6/2/20210

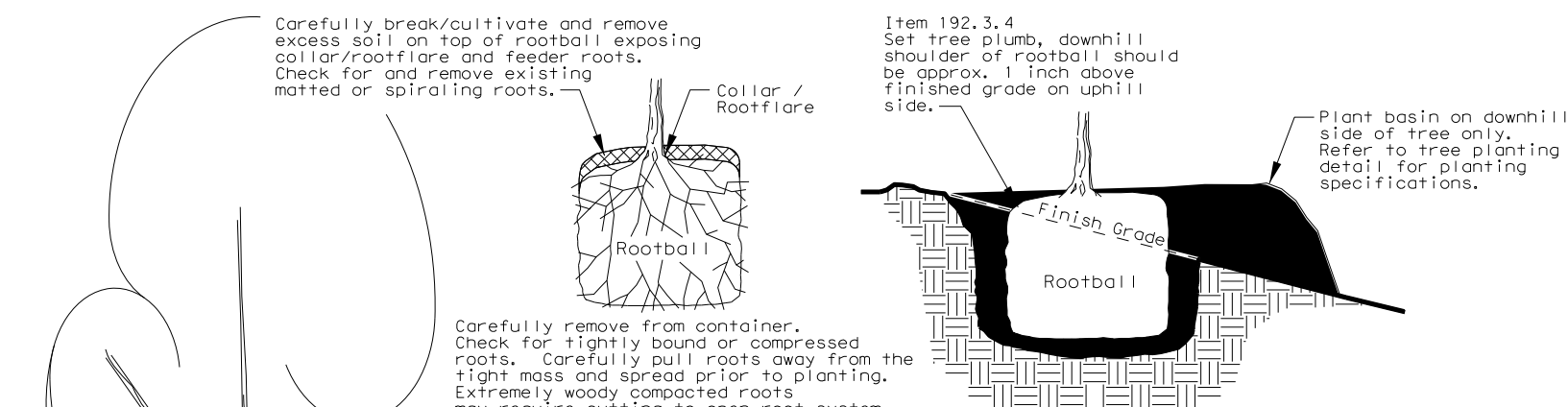
NTS

**PLANT BED PREPARATION
TYPE III**

SHEET 2 OF 2



| | | |
|-------------------|-------------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 45 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB |
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| | | HIGHWAY NO. |
| | | US 290 |



VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES

FOR VEGETATIVE WATERING FOR PALMS ONLY SEE PLANTING AND ESTABLISHMENT SHEET 2 of 8

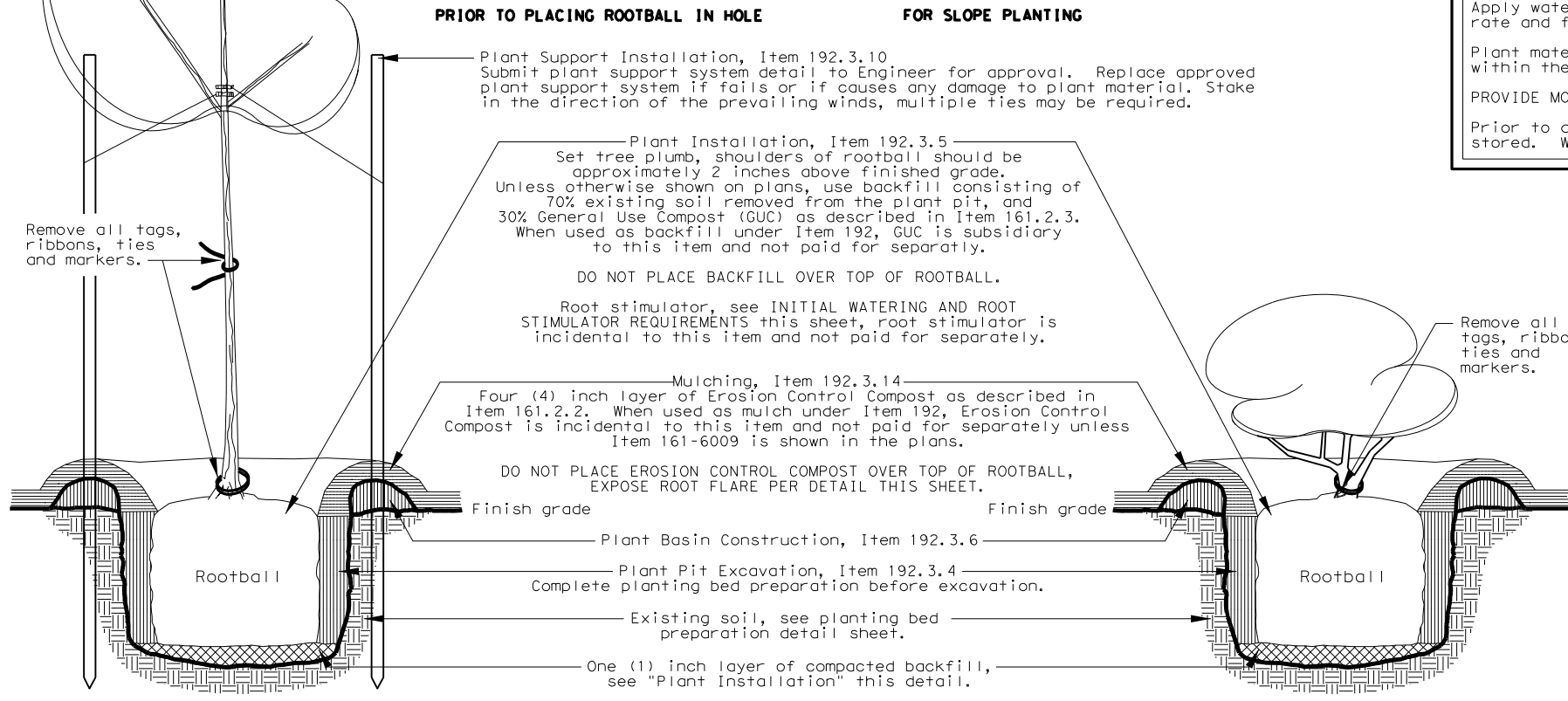
| PHASE | ITEM DESCRIPTION | FREQUENCY | RATE / PLANT |
|--|---|--|---|
| Item 192.3 Construction | Item 192.3.7. Watering is subsidiary to Item 192 and is not paid for separately See Initial Watering note | Begin same day as planting then: 3 times per week with 1 day minimum between waterings See Initial Watering note | CNTR SIZE WATER QTY 30 GAL = 16 gallons 15 GAL = 10 gallons 5 GAL = 4 gallons 3 GAL = 2 gallons 1 GAL = 2 gallons |
| Item 192.3.15 Maintenance | Item 192.3.15.1. Watering is subsidiary to Item 192 and is not paid for separately | | (1/2 X plant CNTR gallon size per plant for sizes not shown, one (1) gallon minimum) See Initial Watering Note |
| Item 193 Landscape Establishment (When Shown In Plans) | Item 193.3.3. Watering is subsidiary to Item 193 and is not paid for separately | 2 times per week with 2 days minimum between waterings | |

NOTES:
Apply water over the rootball within the tree well only, unless otherwise shown on plans. Adjust rate and frequency to meet site conditions and weather as approved or directed by Engineer.

Plant material in poor condition due to the failure to apply the specified amount of water within the time allowed or overwatering will be replaced at Contractor's expense.

PROVIDE MONTHLY METER READINGS OF WATER APPLIED.

Prior to arrival at project or storage area, provide watering plan(s) of plants to be installed or stored. Watering plan(s) must be approved by Engineer prior to delivery to project or storage area.

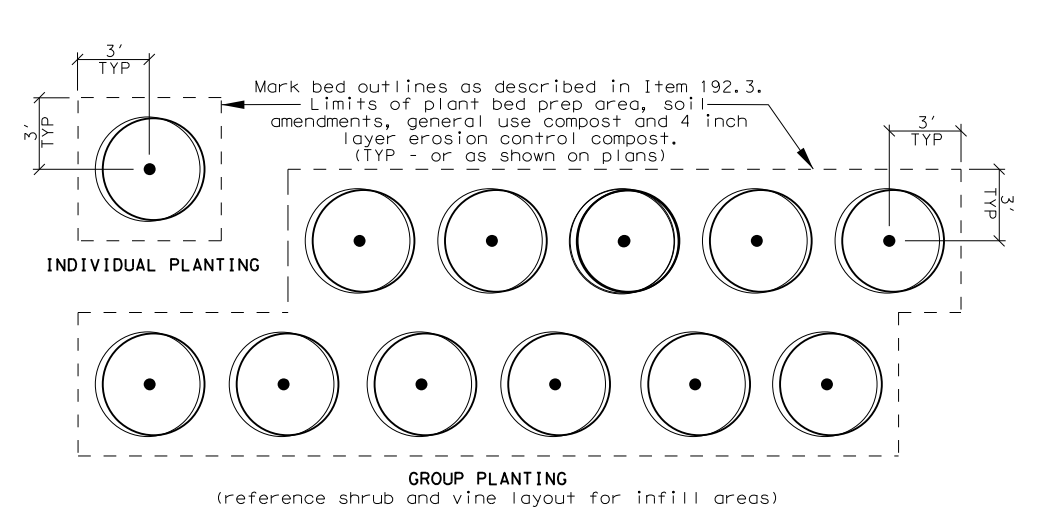


INITIAL WATERING AND ROOT STIMULATOR REQUIREMENTS

| | |
|------------------------|--|
| PHASE | Item 192.3 Construction. Initial watering. |
| ITEM DESCRIPTION | Item 192.3.5. Plant Installation. Root stimulator material is subsidiary to Item 192 and is not paid for separately. |
| MATERIALS and SOLUTION | Two (2) ounces of root stimulator concentrate per one (1) gallon water. Root stimulator must be commercially available and labeled as an all organic/non-chemical liquid concentrate Bio-Stimulant and Root Stimulator. Use the following product or an approved equal: Super Seaweed, San Jacinto Environmental Supplies, 713-957-0909. |
| FREQUENCY and RATE | At the time of planting, provide initial watering at rate shown in Vegetative Watering Schedule this sheet. Use root stimulator solution for initial watering. |

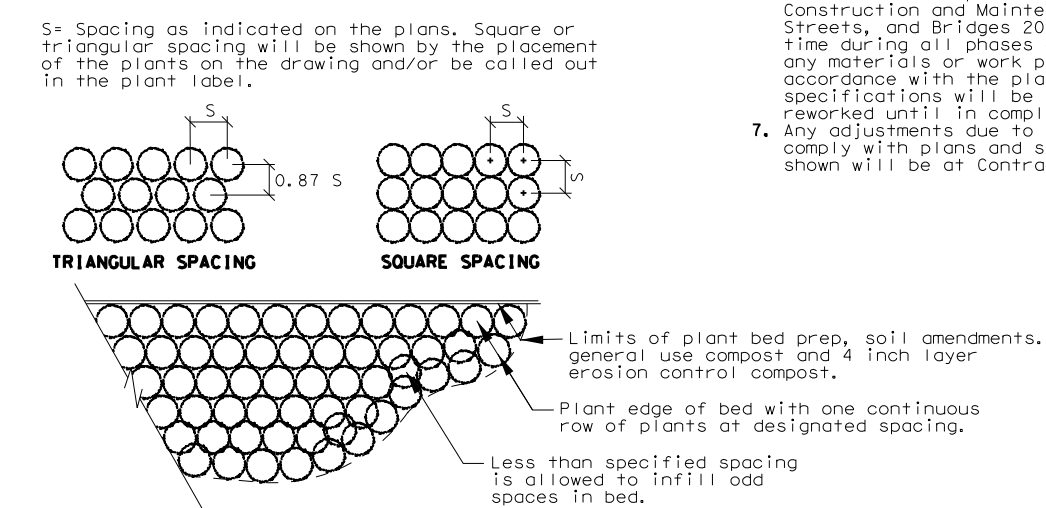
TREE PLANTING DETAIL

FOR PALM TREE PLANTING DETAIL SEE PLANTING AND ESTABLISHMENT SHEET 2 of 4



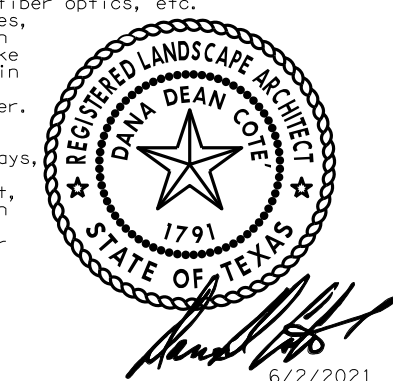
TREE PLACEMENT WITHIN PLANTING BED PREP AREA, LAYOUT AND SPACING SHOWN ON PLANS

SHRUB AND VINE PLANTING DETAIL



SHRUB AND VINE PLACEMENT WITHIN PLANTING BED PREP AREA LAYOUT AND SPACING SHOWN ON PLANS

- NOTES:**
- Reference Item 192 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014 for specifications, dimensions, volumes, and measurements not shown.
 - Reference Item 192.3, mark plant locations and bed outlines.
 - Verify that all planting meets the following clear zone minimum distance requirements from the edge of the travel lane:
Trees: 46' unless protected by a barrier,
Shrubs: 16' unless protected by a barrier,
Engineer has final authority over all clear zone related issues.
 - Locate and stake all underground conduits and utilities associated with but not limited to: CTMS, CTMS power supply, lighting, signal wires and detectors, gas, electric, telephone, fiber optics, etc.
 - Locate and stake existing ground boxes, inlets, culverts, manholes, etc. within the project area with a 4" wooden stake painted orange. Maintain the stakes in place for duration of contract. Remove stakes when directed by Engineer.
 - Reference Item 5.10 Inspection of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014. At any time during all phases of the contract, any materials or work performed not in accordance with the plans and specifications will be replaced and/or reworked until in compliance.
 - Any adjustments due to the failure to comply with plans and specifications shown will be at Contractors expense.



NTS

PLANTING AND ESTABLISHMENT

SHEET 1 OF 4

Texas Department of Transportation

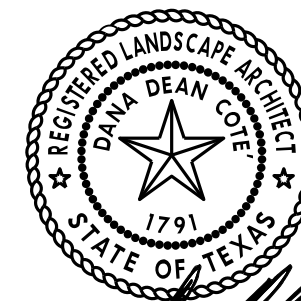
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| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 46 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

PROJECT CONDITIONS DURING INSTALLATION AND SUSPENSION

During project installation and suspension periods, project site conditions are Contractor's responsibility. Contractor will maintain project site conditions as shown on plans. All project site maintenance work is subsidiary and is not paid for separately unless otherwise shown on plans. Reference pertinent items of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. Notify Engineer prior to each site visit, determination of the completeness of work will be done in the presence of the Engineer same day as work activity.

| DESCRIPTION OF WORK | TIMELINE |
|--|---|
| | <i>From BEGINNING OF PROJECT CONSTRUCTION OR SUSPENSION thru END OF CONSTRUCTION/INSTALLATION</i> |
| | |
| WATERING (See PLANTING AND ESTABLISHMENT SHEET 1 of , VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES) | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| MOWING, TRIMMING, AND EDGING (From back of curb, retaining wall, barrier, and riprap to bed preparation areas, otherwise 6' width around outside edge of bed preparation areas, around and between planting bed preparation areas, including areas around any structures within the outer limits adjacent to the roadway) DO NOT MOW, TRIM, OR EDGE WITHIN 3' of ANY TREE | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| PLANT BASIN, BED, AND WORKSITE MAINTENANCE (Includes keeping all inlets within or near the bed preparation areas free of compost. Maintain bed preparation areas as shown below and reshape beds every 30 days or as site conditions and weather require. If no requirement is selected, maintain per Item 192.3.15.3) WEED CONTROL REQUIREMENT <input checked="" type="checkbox"/> See PLANTING AND ESTABLISHMENT SHEET 3 of 4 For Requirements | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| PLANT SUPPORTS See PLANTING AND ESTABLISHMENT SHEET 5 of 6 For Requirements | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| PRUNING (Includes palm plant material and dead, diseased, or damaged palm fronds.) | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| INSECT, DISEASE, AND ANIMAL INSPECTION AND TREATMENT (Exterminate all active ant colonies in bed preparation areas) | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| LITTER AND DEBRIS COLLECTION AND DISPOSAL (Includes planting bed preparation areas and designated mowing limits. In addition, keep all inlets within or near planting bed preparation areas free of debris and litter) | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| TREE TRUNK WRAP AND PROTECTION GUARD REMOVAL AND DISPOSAL (Not applicable) | |
| PLANT REPLACEMENT* | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| 1022-6002 LANDSCAPE TREATMENT (TY 2) (See PLANT BED PREPARATION TYPE III, SHEETS 1 AND 2 of 2, each application will be paid for separately) | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |
| | |
| IRRIGATION SYSTEM (Only when Item 170 Irrigation System or a temporary irrigation system is part of the contract, see IRRIGATION DETAILS AND MATERIALS SHEET 1 OF 3, GUARANTEE AND ACCEPTANCE) | FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4. |

* Remove any materials damaged by actions described in Item 7.17. Removal and disposal of damaged materials is incidental to Item 192. Contractor may be reimbursed for plant replacement in accordance with Item 7.17.1. Theft is not a reimbursable repair.



[Signature]
6/2/2021

NTS

PLANTING AND ESTABLISHMENT

SHEET 2 OF 4

| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 47 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

ITEM 193 LANDSCAPE ESTABLISHMENT REQUIREMENTS

After completion of the Item 192 maintenance period, as shown in the plans and approved by the Engineer, begin Item 193 establishment activities and continue for the duration of time shown in the plans. Reference Item 193 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. All establishment work is paid for separately in accordance with Item 193 unless otherwise shown on plans. Notify Engineer prior to each site visit, determination of the completeness of work will be done in the presence of the Engineer same day as work activity.

| DESCRIPTION OF WORK | TIMELINE (Days) - (1 - 365 = Month 1 thru 12 366 - 726 = Month 13 thru 24) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|----|----|----|----|----|---------|----|----|----|----|----|----|---------|-----|-----|-----|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|---|----------|---|---|---|--|--|--|----------|--|--|--|--|--|--|----------|--|--|--|--|--|--|----------|--|--|--|--|--|--|----------|--|--|--|--|--|--|-----|--|--|--|--|--|
| | 0(366) | | | | | | | 30(396) | | | | | | | 60(426) | | | | | | | 90(456) | | | | | | | 120(486) | | | | | | | 150(516) | | | | | | | 180(546) | | | | | | | 210(576) | | | | | | | 240(606) | | | | | | | 270(636) | | | | | | | 300(666) | | | | | | | 330(696) | | | | | | | 365 | | | | | |
| | 1 | 8 | 16 | 23 | 31 | 38 | 46 | 53 | 61 | 68 | 76 | 83 | 91 | 98 | 106 | 113 | 121 | 128 | 136 | 143 | 151 | 158 | 166 | 173 | 181 | 188 | 196 | 203 | 211 | 218 | 226 | 233 | 241 | 248 | 256 | 263 | 271 | 278 | 286 | 293 | 301 | 308 | 316 | 323 | 331 | 339 | 347 | 355 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.1.1. PRUNING (Includes palm plant material and dead, diseased, or damaged palm fronds.) | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.1.2. INSECT, DISEASE, AND ANIMAL CONTROL (Exterminate all active ant colonies in bed preparation areas) | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.1.4. MULCHING, PLANT BASIN, AND PLANT BED MAINTENANCE (Includes keeping all inlets within or near the bed preparation areas free of compost. Maintain bed preparation areas as shown below and reshape beds every 30 days or as site conditions and weather require. If no requirement is selected below, maintain per Item 193.3.1.4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WEED CONTROL REQUIREMENT <input type="checkbox"/> Maintain weed-free per Item 193.3.1.4. Cord trimmers are not allowed. Replace damaged plants per Item 193.3.2. INVASIVE VINES MUST BE CHEMICALLY TREATED, NOT MANUALLY REMOVED. OLEANDER BEDS ONLY. <input checked="" type="checkbox"/> Maintain grasses and weeds at 24" maximum height. Eradicate all vines regardless of height, VINES MUST BE CHEMICALLY TREATED, NOT MANUALLY REMOVED. Eradicate invasive shrubs and trees as directed. Method must be either a spot-treatment chemical application such as a wick applicator or manual hand pulling of weeds. Hand-pull previously treated dead plants over 24" tall. | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.1.5. MOWING, TRIMMING, AND EDGING (From back of curb, retaining wall, barrier, and riprap to bed preparation areas, otherwise 6' width around outside edge of bed preparation areas, around and between planting bed preparation areas, including areas around any structures within the outer limits adjacent to the roadway) DO NOT MOW, TRIM, OR EDGE WITHIN 3' of ANY TREE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.1.6. STAKING, GUYING, AND BRACING OF PLANTS (Remove plant stakes and all appurtenances within last 30 days of this schedule, unless otherwise directed by Engineer) | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.2. PLANT REPLACEMENT* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.3. VEGETATIVE WATERING (See PLANTING AND ESTABLISHMENT SHEET 1 of 4, VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193.3.4. IRRIGATION SYSTEM OPERATION AND MAINTENANCE | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1022-6002 LANDSCAPE TREATMENT (TY 2) (See PLANT BED PREPARATION TYPE III, SHEETS 1 AND 2 of 2, each application will be paid for separately) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LITTER AND DEBRIS COLLECTION AND DISPOSAL (Includes planting bed preparation areas and designated mowing limits. In addition, keep all inlets within or near planting bed preparation areas free of debris and litter) | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Remove any materials damaged by actions described in Item 7.17. Removal and disposal of damaged materials is subsidiary to Item 193.

✓ = Work required during defined period of timeline. All work must be completed for entire project.

NOTES:
 1. Reference Item 5.10 Inspection of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014. At any time during all phases of the contract, any materials or work performed not in accordance with the plans and specifications will be replaced and/or reworked until in compliance.
 2. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractors expense.



NTS

PLANTING AND ESTABLISHMENT

SHEET 4 OF 4

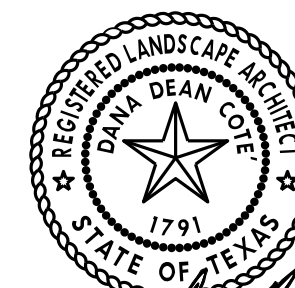
Texas Department of Transportation

| | | |
|-------------------|-------------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 49 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB |
| 0114 | 11 | 088, etc |
| | | HIGHWAY NO. |
| | | US 290 |

| PLANT SPECIFICATIONS (PLANT MATERIAL MUST CONFORM TO ALL SPECIFICATIONS) | | | | | | MINIMUM SPECIFICATIONS | | | | |
|--|-------|----------------------|-------|------------------|----------------------|------------------------|---------|--------|--------|--|
| Botanical Name | ABBRV | Common Name | Color | Quantity | | Root Condition | Caliper | Height | Spread | Remarks |
| | | | | New Bed Planting | Existing Area Infill | | | | | |
| Lagerstroemia indica x faueri 'Miami' | CM | Miami Crape Myrtle | Pink | 252 | | 30 GAL (TREE) | 2" | 9' | 4' | Full branching, straight-trunk, SPECIMEN QUALITY (Must "NOT" require bamboo splint to stand upright) |
| Lagerstroemia indica x faueri 'Arapaho' | CM | Arapaho Crape Myrtle | Red | 252 | | | | | | |
| Lagerstroemia indica x faueri 'Natchez' | CM | Natchez Crape Myrtle | White | 252 | | | | | | |
| Pinus Taeda | LP | Loblolly Pine | | | 397 | | | | | |
| Taxodium distichum | BC | Bald Cypress | | | 398 | | | | | |
| Ulmus crassifolia | CE | Cedar Elm | | | 530 | | | | | |
| | | | | 756 | 1325 | | | | | |
| Ilex opaca | AH | American Holly | | 1449 | | 15 GAL (TREE) | 1-1/4" | 7' | 3' | Full branching, straight-trunk, SPECIMEN QUALITY (Must "NOT" require bamboo splint to stand upright) |
| Pinus Taeda | LP | Loblolly Pine | | 1450 | 398 | | | | | |
| Quercus macrocarpa | BO | Bur Oak | | 1449 | | | | | | |
| Quercus Shumardii | SO | Shumard Oak | | 1449 | | | | | | |
| Taxodium distichum | BC | Bald Cypress | | 2901 | 397 | | | | | |
| Ulmus crassifolia | CE | Cedar Elm | | 1449 | 530 | | | | | |
| | | | | 10147 | 1325 | | | | | |
| Chionanthus virginicus | FT | White Fringe Tree | | 1449 | | 3 GAL | 1/2" | | | Some branching, straight-trunk, SPECIMEN QUALITY (Must "NOT" require bamboo splint to stand upright) |
| Lagerstroemia indica | CM | Crape Myrtle | Pink | 967 | | | | | | |
| Lagerstroemia indica | CM | Crape Myrtle | Red | 967 | | | | | | |
| Lagerstroemia indica | CM | Crape Myrtle | White | 967 | | | | | | |
| Pinus Taeda | LP | Loblolly Pine | | 4347 | | | | | | |
| Plantanus occidentalis | S | Sycamore | | 2899 | | | | | | |
| Quercus macrocarpa | BO | Bur Oak | | 1449 | | | | | | |
| Taxodium distichum | BC | Bald Cypress | | 2899 | | | | | | |
| Ulmus crassifolia | CE | Cedar Elm | | 2899 | | | | | | |
| | | | | 18843 | | | | | | |
| Nerium oleander | NO | Standard Oleander | Pink | 667 | | 3 GAL (SHRUB) | | 18" | | Full branching, SPECIMEN QUALITY (Roots, shoots and branching) |
| Nerium oleander | NO | Standard Oleander | Red | 665 | | | | | | |
| Nerium oleander | NO | Standard Oleander | White | 667 | | | | | | |
| | | | | 1999 | | | | | | |

PLANT SPECIFICATION NOTES:

- Reference Item 192 of the Texas Standard Specifications for Construction of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown.
- All plants to be nursery grown in containers unless otherwise shown on plans.
- Provide photographs of plant material when requested by Engineer.
- Properly handle and maintain plants during delivery, handling, storage, and planting. The Engineer may inspect any phase of work and may reject any plant material improperly handled and/or maintained.
- DELIVERY NOTICE. Provide 48 hour notice of proposed plant material delivery prior to arrival at project or storage area.
- DELIVERY TICKETS. For each plant material shipment, provide invoice showing the number, size, and name (common and botanical) of each of the species of plant material.
- WATERING PLAN(S). Prior to arrival at project or storage area, provide watering plan(s) of plants to be installed or stored. Watering plan(s) must be approved by Engineer prior to delivery to project or storage area.



Dana Dean Cote
6/2/2021

NTS

PLANT SPECIFICATIONS

SHEET 1 OF 1



| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 50 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

TYPE OF WORK

ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

| SODDING | PERMANENT SEEDING | TEMPORARY SEEDING | Reference Item 161, 162, 164, 166, 168 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. Use latest Houston District, Special Provisions for those items indicated. | | |
|---------|-------------------|-------------------|--|--|---|
| | ✓ | | 161-6017 COMPOST MANUF TOPSOIL (BIP) (4") SY | APPLICATION RATE Item 161.2.1. Compost Manufactured Topsoil (CMT) | Item 161.2. Materials. Submit quality control (QC) documentation to the Engineer. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days per STA requirements). Lab analysis performed by an STA-certified lab must be dated within 30 days before delivery of the compost. |
| ✓ | | | 162-6002 BLOCK SODDING SY | GRASS SPECIES Item 162.2. Materials. Common Bermuda (Cynodon Dactylon) | Item 162.2.1. Block Sod. Use block palletized or roll type sod. REMOVE PLASTIC BACKING FROM ROLL TYPE SOD. Place sod within 48 hours of delivery to site. No exceptions. Place sod with joints alternating on each row to prevent continuous joint lines. Peg sod as needed with wood pegs to hold sod in place. Pegging sod is subsidiary to Item 162. |
| | ✓ | | 164-6066 DRILL SEEDING (PERM) (WARM OR COOL) SY Item 164.1. Description Provide and install seeding as shown on District Standard | PLANTING MONTH SEED MIX March, April, May, June, July, August, September, October Hulled - Bermudagrass (Cynodon dactylon) - 40.0 lbs PLS/acre Foxtail Millet (Setaria italica) - 34.0 lbs PLS/acre Green Sprangletop (Leptochloa dubia) - 4.0 lbs PLS/acre Sideoats Grama (Bouteloua curtipendula) - 3.2 lbs PLS/acre Little Bluestem (Schizachyrium scoparium) - 1.4 lbs PLS/acre | PLS (Pure Live Seed) Provide documentation of PLS requirements per Item 164.2.1. CONSTRUCTION. Cultivate the area to a depth of 4 inches before placing the seed unless otherwise directed. When performing permanent seeding after an established temporary seeding, cultivate the seeded to a depth of 4 inches or mow the area before placement of the permanent seed. Plant the seed and place the straw or hay mulch after the area has been completed to lines and grades as shown on the plans. |
| | ✓ | | 164-6052 BROADCAST SEED (PERM) (SPECIAL MIX) SY Item 164.1. Description Provide and install seeding as shown on District Standard | PLANTING MONTH SEED MIX November, December, January, February Unhulled - Bermudagrass (Cynodon dactylon) - 40.0 lbs PLS/acre Oats (Avena sativa) - 72.0 lbs PLS/acre Green Sprangletop (Leptochloa dubia) - 4.0 lbs PLS/acre Sideoats Grama (Bouteloua curtipendula) - 3.2 lbs PLS/acre Little Bluestem (Schizachyrium scoparium) - 1.4 lbs PLS/acre | Drill Seeding. Plant seed or seed mixture uniformly over the area shown on the plans at a depth of 1/4 to 1/3 inch using a cultipacker (turfgrass) type seeder. Plant seed along the contour of the slopes. |
| | | ✓ | 164-6051 DRILL SEED (TEMP) (WARM OR COOL) SY Item 164.1. Description Provide and install seeding as shown on District Standard | PLANTING MONTH SEED MIX March, April, May, June, July, August, September, October Foxtail Millet (Setaria italica) - 34.0 lbs PLS/acre | Use broadcast seeding method where site conditions prevent drill seeding method. |
| | | ✓ | 164-6009 BROADCAST SEED (TEMP) (WARM) SY Item 164.1. Description Provide and install seeding as shown on District Standard | PLANTING MONTH SEED MIX November, December, January, February Oats (Avena sativa) - 72.0 lbs PLS/acre | Broadcast Seeding. Distribute the dry seed or dry seed mixture uniformly over the areas shown on the plans using hand or mechanical distribution on top of soil. |
| | ✓ | ✓ | 162-6003 STRAW OR HAY MULCH SY | APPLICATION RATE Immediately after planting the seed or seed mixture, apply straw or hay mulch uniformly over the seeded area. Apply straw or hay mulch at 2 tons per acre. Use tacking agent with straw or hay mulch as described on this sheet. | Use straw or hay mulch in conformance with Article 162.2.5, "Mulch." Use biodegradable tacking agents only applied at a rate in accordance with manufacturer's recommendations. Use the following products or an approved equal (see note this sheet): Conweb/Contac Guar Gum, Profile Products Corporation, (307) 655-9565, Ramtec/Procol/Viscol Guar Gum, Ramtec Corporation, (800) 366-1180 |
| ✓ | ✓ | ✓ | 166-6001 FERTILIZER AC Item 166.2. Materials Use fertilizer as shown on District Standard | APPLICATION RATE Deliver and evenly distribute fertilizer at a rate of 4000 lbs/acre. | Use a NON-CHEMICAL fertilizer which meets all the following criteria: (1) BRAND NAME must be registered with the Texas State Chemist as a commercial fertilizer. (2) Meets USEPA guidelines for unrestricted use. (3) Derived from biological sources such as, but not limited to: sewage sludge, manures, vegetation, etc. (4) In granular form and essentially dust free. Submit proof of registration and nutrient source to Engineer. Use the following products or an approved equal (see note this sheet): Sigma, SIGMA AgriScience, 281-851-6749 Sustainite-standard grade, Automation Nation, Inc., 713-675-4999 Milorganite, MMSD, 800-287-9645 Agricultural Organic P/L, Ag Org, INC., 713-523-4396 |
| ✓ | ✓ | ✓ | 168-6001 VEGETATIVE WATERING MG | APPLICATION RATE Item 168.3 Construction. 6000 gallons/acre x 20 consecutive working days = 120,000 gallons total/acre | Begin watering immediately after installation of seed or sod. Replace, fertilize, and water any seed or sod in poor condition due to the failure to apply the specified amount of water within the time allowed at no expense to the Department. |

SEQUENCE OF WORK

| BLOCK SOD | PERMANENT SEEDING | TEMPORARY SEEDING |
|---|--|--|
| 1. FERTILIZER 2. CULTIVATE SOIL (ITEM 162.3) 3. SOD 4. VEGETATIVE WATERING | 1. FERTILIZER 2. COMPOST MANUFACTURED TOPSOIL 3. CULTIVATE SOIL (ITEMS 164.3 AND 161.3.1) 4. PERMANENT SEEDING 5. STRAW OR HAY MULCH 6. VEGETATIVE WATERING | 1. FERTILIZER 2. CULTIVATE SOIL (PER ITEM 164.3) 3. TEMPORARY SEEDING 4. STRAW OR HAY MULCH 5. VEGETATIVE WATERING |



FERTILIZER, SEED, SOD, STRAW, COMPOST, AND WATER

SHEET 1 OF 1

| REVISIONS | | FED DIV | STATE | PROJECT NUMBER | | | SHEET |
|-----------|----------------------|---------|--------|----------------|------|----------|---------|
| 10/2014 | UPDATED TO 2014 SPEC | 6 | TEXAS | | | | 51 |
| ORIGINAL: | | DIST | COUNTY | CONTROL | SECT | JOB | HIGHWAY |
| | | 12 | WALLER | 0114 | 11 | 088, etc | US 290 |

TYPE OF WORK

ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

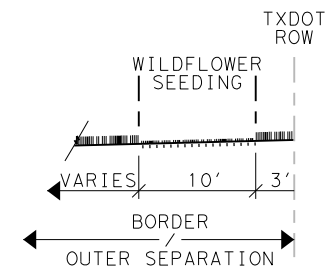
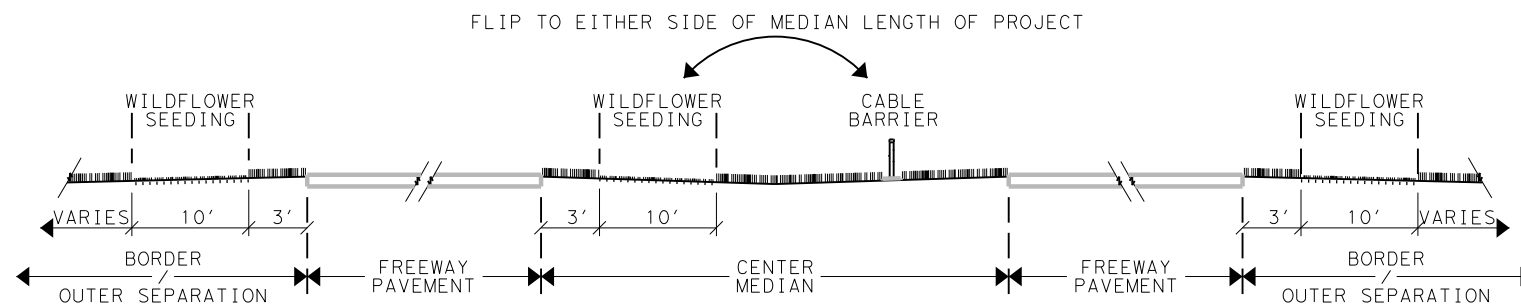
Reference Item 166, 168 and 180, of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. Use latest Houston District, Special Provisions for those items indicated.

WILDFLOWER SEEDING

| | | |
|---|---|--|
| 180-6001 WILDFLOWER SEEDING AC (Open Areas Waller County) | ITEM 180.2. CONSTRUCTION | PLS (Pure Live Seed) Provide documentation of PLS requirements per Item 108.2. Provide seed labels in accordance with Item 180.2 to Vegetation Specialist for approval prior to any seeding. Any seeding completed prior to approval will not be paid for. BROADCAST SEEDING method to be used in all areas unless otherwise shown in the plans. |
| ITEM 180.2. MATERIALS INDIAN BLANKET, <i>Gaillardia pulchella</i>3.00 LB PLS/AC PINK EVENING PRIMROSE, <i>Oenothera speciosa</i>1.00 LB PLS/AC PLAINS COREOPSIS, <i>Coreopsis tinctoria</i>3.00 LB PLS/AC TEXAS BLUEBONNET, <i>Lupinus texensis</i>2.00 LB PLS/AC | Planting date: OCTOBER 1 - DECEMBER 1 | |
| 180-6002 WILDFLOWER SEEDING (MIX 1) AC (Roadside) | Unless otherwise directed by District Vegetation Manager. Scalp mow seeding areas shown on plans one month prior to seeding. | |
| 180-6003 WILDFLOWER SEEDING (MIX 2) AC (Bed Prep Areas) | ITEM 180.2. CONSTRUCTION | |
| ITEM 180.2. MATERIALS BLACK-EYED SUSAN, <i>Rudbeckia hirta</i>2.00 LB PLS/AC INDIAN BLANKET, <i>Gaillardia pulchella</i>3.00 LB PLS/AC MEXICAN HAT, <i>Ratibida columnifera</i>1.00 LB PLS/AC PLAINS COREOPSIS, <i>Coreopsis tinctoria</i>3.00 LB PLS/AC PURPLE CONEFLOWER, <i>Echinacea purpurea</i>1.00 LB PLS/AC TEXAS BLUEBONNET, <i>Lupinus texensis</i>1.00 LB PLS/AC | Planting date: OCTOBER 1 - DECEMBER 1 Unless otherwise directed by District Vegetation Manager. | |

| | | |
|---|--|--|
| 166-6001 FERTILIZER AC | ITEM 166.3. CONSTRUCTION | Use a NON-CHEMICAL fertilizer which meets all the following criteria: (1) BRAND NAME must be registered with the Texas State Chemist as a commercial fertilizer. (2) Meets USEPA guidelines for unrestricted use. (3) Derived from biological sources such as, but not limited to: sewage sludge, manures, vegetation, etc. (4) In granular form and essentially dust free. Submit proof of registration and nutrient source to Engineer. Use the following products or an approved equal (see note this sheet): Sigma, SIGMA AgriScience, 281-851-6749 Sustanite-standard grade, Automation Nation, Inc., 713-675-4999 Milorganite, MMSD, 800-287-9645 Agricultural Organic P/L, Ag Org, INC., 713-523-4396 |
| ONLY APPLIES TO: 180-8001 WILDFLOWER SEEDING 180-8002 WILDFLOWER SEEDING (MIX 1) | Apply fertilizer uniformly, prior or simultaneous to seeding. RATE: 4000 lbs/acre | |

| | |
|---|---|
| 168-6001 VEGETATIVE WATERING MG | ITEM 168.3 CONSTRUCTION |
| ONLY APPLIES TO: 180-8001 WILDFLOWER SEEDING 180-8002 WILDFLOWER SEEDING (MIX 1) | One time application after seeding. Complete vegetative watering within 7 days of seeding. RATE: 6000 gallons/acre. |



WILDFLOWER SECTION
WILDFLOWER SEEDING AREAS ADJACENT TO FREEWAY (TYP)
LOCATION MAY BE ADJUSTED IN THE FIELD TO MEET SITE CONDITIONS

WILDFLOWER SECTION
WILDFLOWER SEEDING AREAS ADJACENT TO FREEWAY (TYP)
LOCATION MAY BE ADJUSTED IN THE FIELD TO MEET SITE CONDITIONS

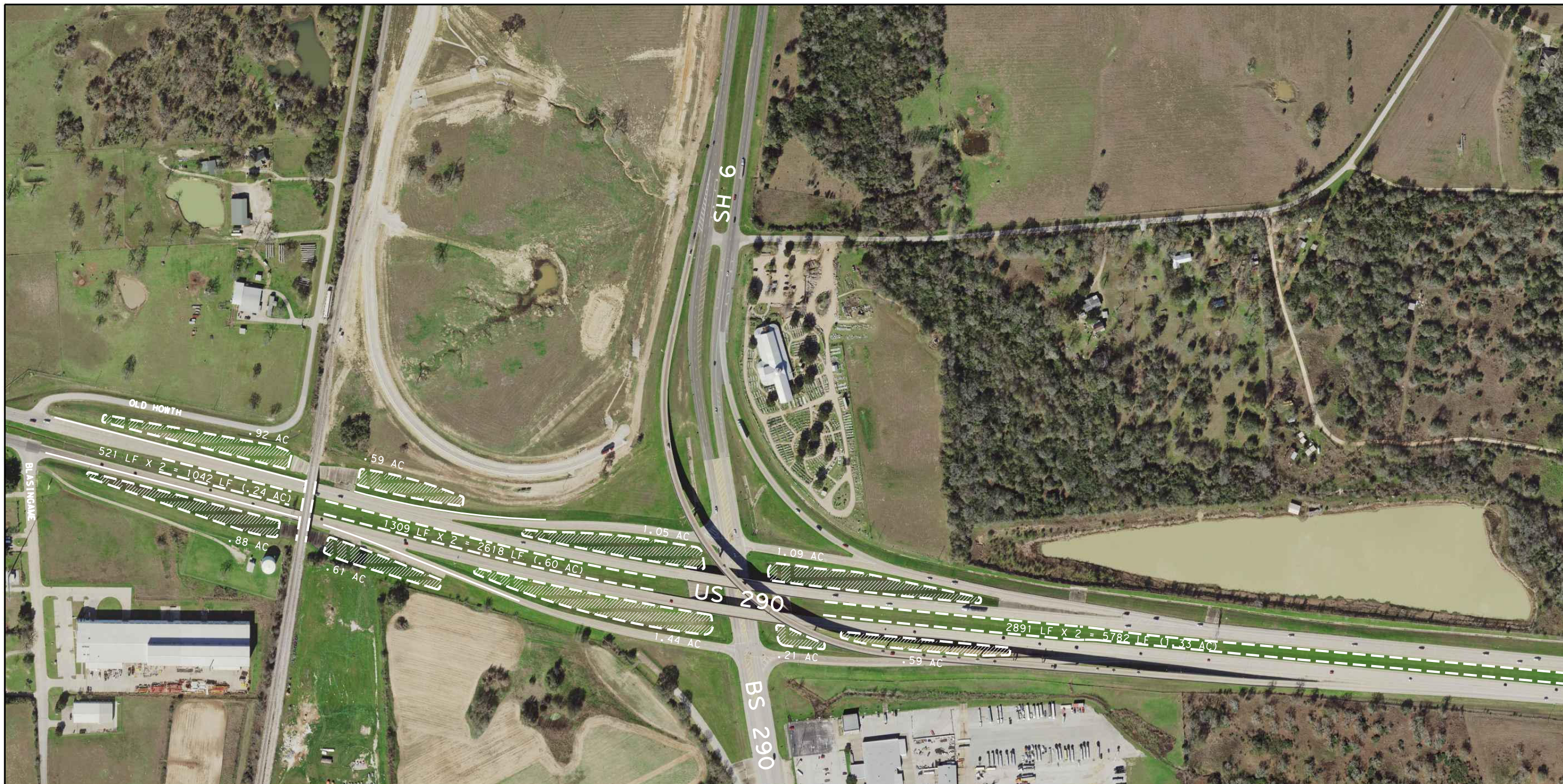
SEQUENCE OF WORK

| OPEN AREA WALLER CO | ROADSIDE | BEB PREP AREAS |
|--|--|-----------------------|
| 1. Scalp mow 2. Fertilizer 3. Wildflower seeding 4. Vegetative watering | 1. Scalp mow 2. Fertilizer 3. Wildflower seeding 4. Vegetative watering | 1. Wildflower seeding |



Dana Dean Cote
6/2/2021

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|--------------------|-------------|----------|-------------|
| WILDFLOWER SEEDING | | | |
| SHEET 1 OF 1 | | | |
| | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 52 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE x 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

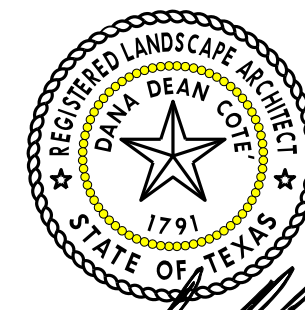


WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
22' MINIMUM WIDTH

NOTE:
Site location sheets are diagrammatic representations of proposed work areas only, additional areas may be identified in the field.
Contractor is responsible for locating and staking limits of each original and new bed preparation area in accordance with the plans.
Adjustments will be made to accommodate site conditions. All locations will be approved prior to any work.



0114-11-088



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5/27/2021

| | | | |
|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 1 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 53 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



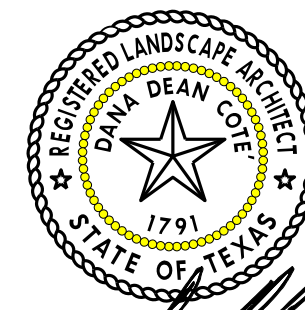
NEW PLANTING AREA - BED PREP (TYPE III)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 FOR SETBACK REQUIREMENTS (WIDTH 22' MINIMUM), LOCATE IN THE FILED WITH LANDSCAPE ARCHITECT



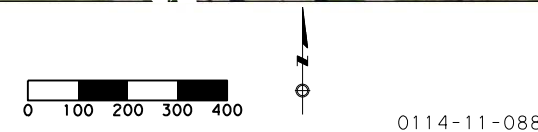
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE X 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



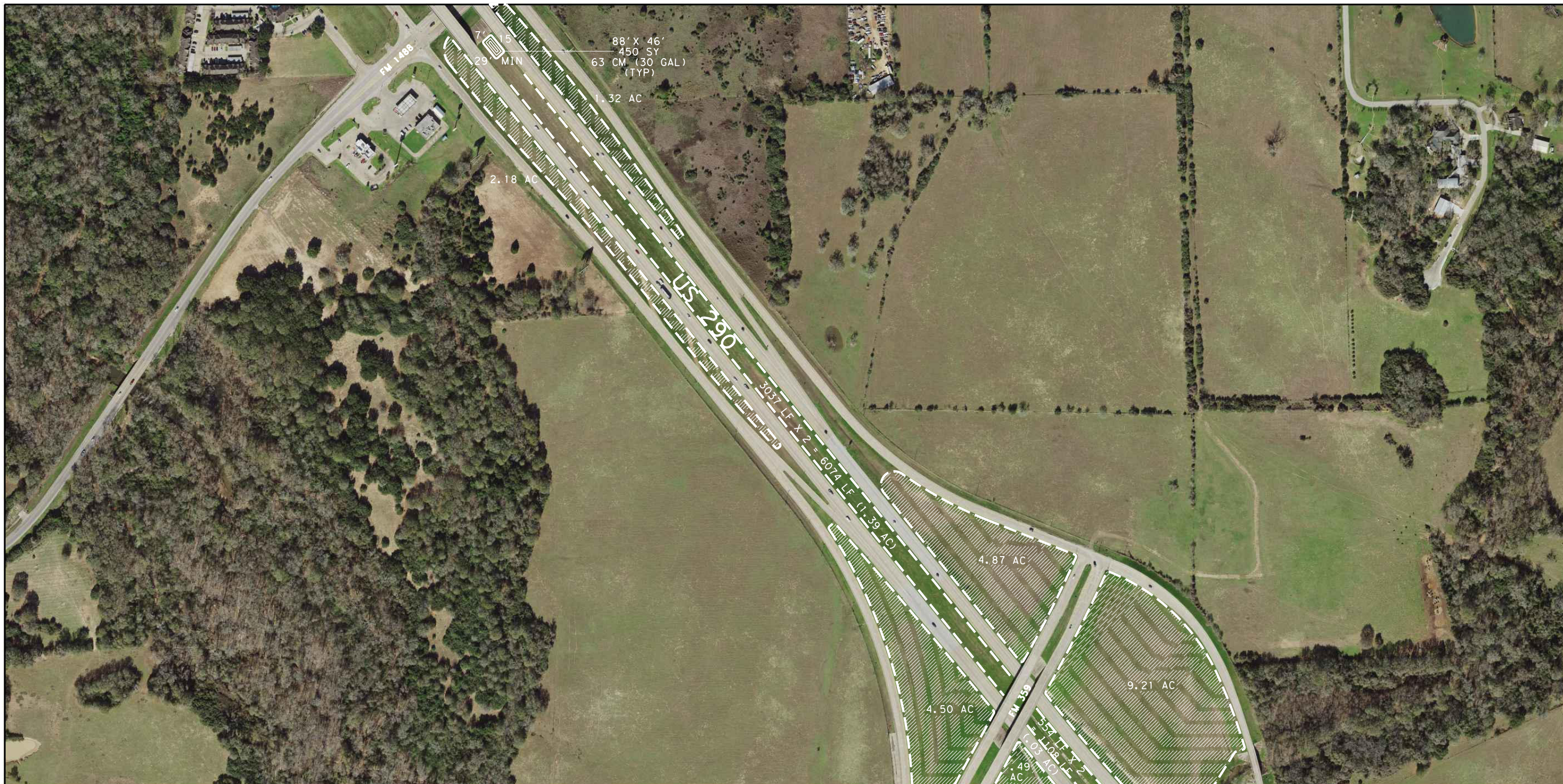
WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
22' MINIMUM WIDTH



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| | | | |
|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 2 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 54 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



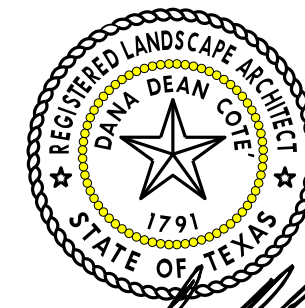
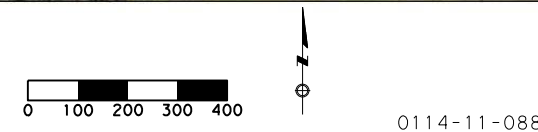
NEW PLANTING AREA - BED PREP (TYPE III)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 FOR SETBACK REQUIREMENTS (WIDTH 22' MINIMUM), LOCATE IN THE FILED WITH LANDSCAPE ARCHITECT



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE x 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
22' MINIMUM WIDTH



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| | | | |
|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 3 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 55 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



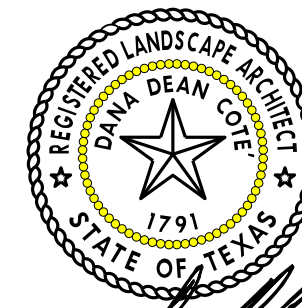
NEW PLANTING AREA - BED PREP (TYPE III)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 FOR SETBACK REQUIREMENTS (WIDTH 22' MINIMUM), LOCATE IN THE FILED WITH LANDSCAPE ARCHITECT



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE X 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
22' MINIMUM WIDTH



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|---|-------------|-----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 4 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 56 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREA - BED PREP (TYPE III)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 FOR SETBACK
REQUIREMENTS (WIDTH 22' MINIMUM), LOCATE IN THE FILED WITH LANDSCAPE ARCHITECT



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE X 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
22' MINIMUM WIDTH



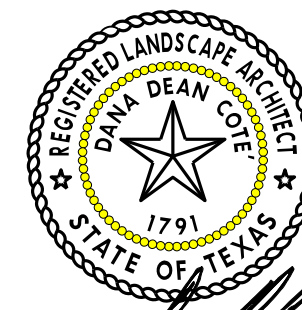
0114-11-088

US 290
SITE LOCATION

SHEET 5 OF 10

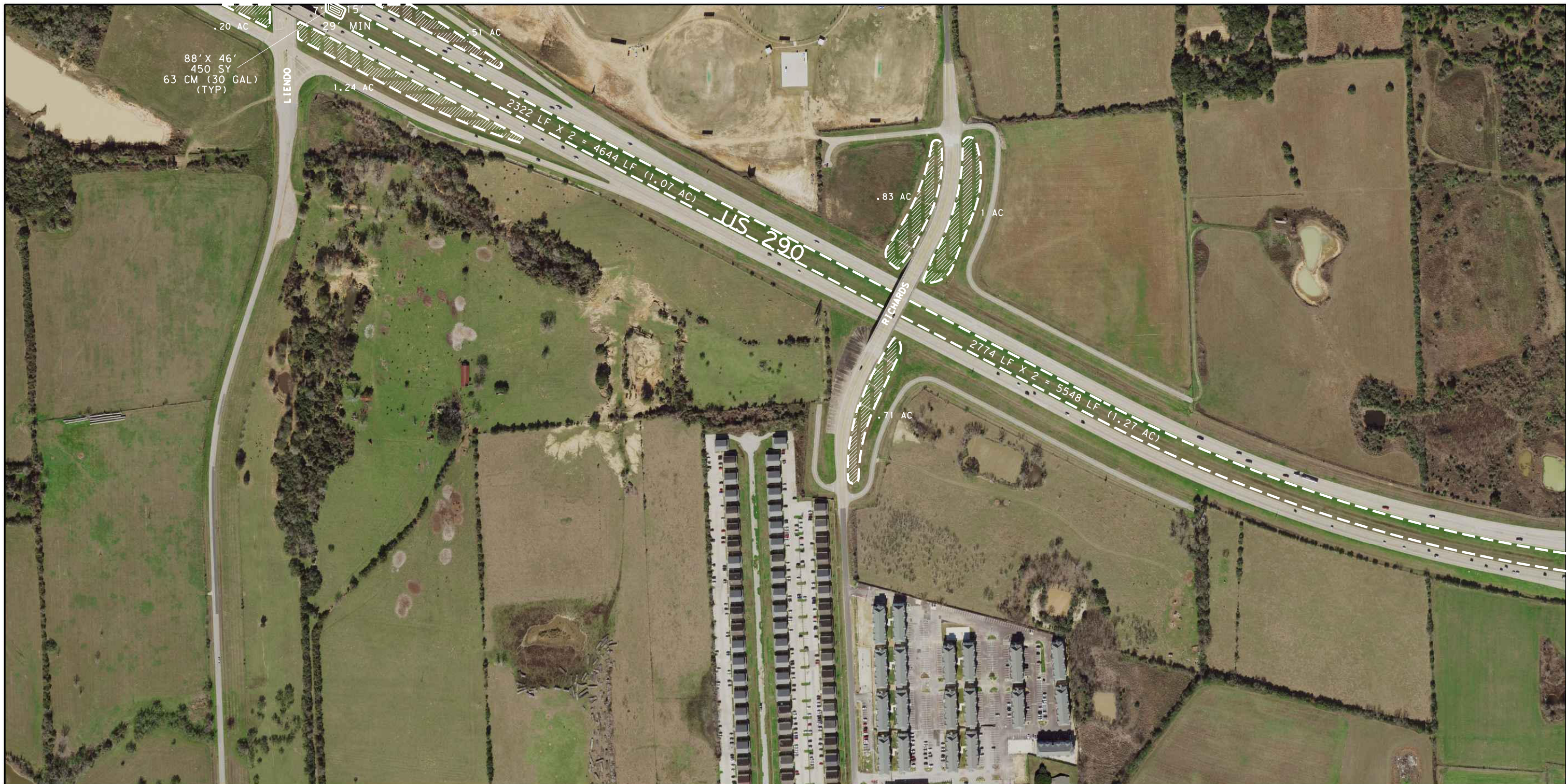


Texas Department of Transportation



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|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 57 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



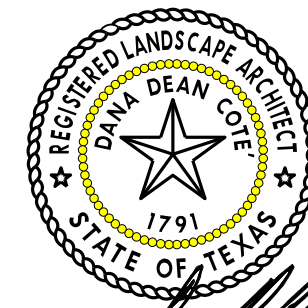
NEW PLANTING AREA - BED PREP (TYPE III)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 FOR SETBACK REQUIREMENTS (WIDTH 22' MINIMUM), LOCATE IN THE FILED WITH LANDSCAPE ARCHITECT



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE X 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
22' MINIMUM WIDTH



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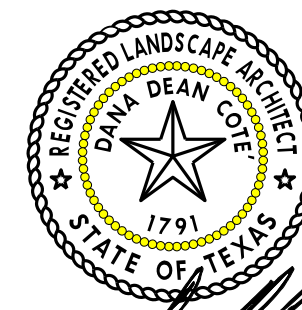
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|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 6 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 58 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



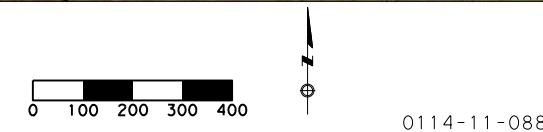
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE x 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
22' MINIMUM WIDTH



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|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 7 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 59 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



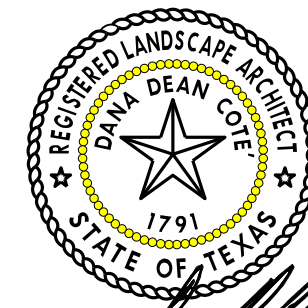
NEW PLANTING AREA - BED PREP (TYPE III)
 SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 FOR SETBACK
 REQUIREMENTS (WIDTH 22' MINIMUM), LOCATE IN THE FILED WITH LANDSCAPE ARCHITECT



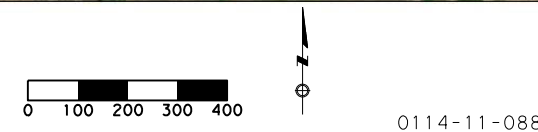
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
 10' WIDE X 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



WILDFLOWER SEEDING (SEE WILDFLOWER SEEDING SHEET) - AC
 22' MINIMUM WIDTH



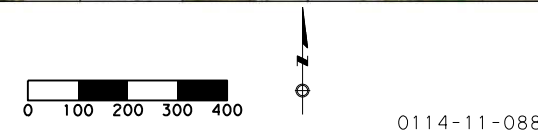
Dana Dean Cote
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|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 8 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 60 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



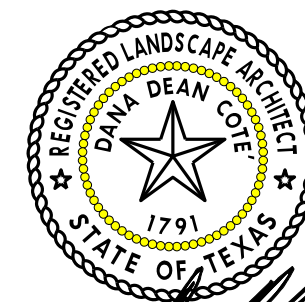
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
 10' WIDE x 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



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**US 290
 SITE LOCATION**

SHEET 9 OF 10



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|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 61 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREA - BED PREP (TYPE III)
 SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 FOR SETBACK
 REQUIREMENTS (WIDTH 22' MINIMUM), LOCATE IN THE FILED WITH LANDSCAPE ARCHITECT



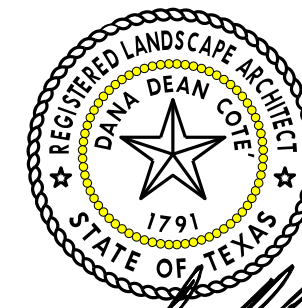
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
 10' WIDE x 2 FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



0114-11-088

US 290
 SITE LOCATION

SHEET 10 OF 10



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|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 62 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

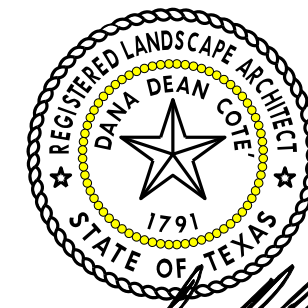


WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

NOTE:
Site location sheets are diagrammatic representations of proposed work areas only, additional areas may be identified in the field.
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5/28/2021



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|---|-------------|-----------|-------------|
| 0114-12-013 | | | |
| US 290 SITE LOCATION | | | |
| SHEET 1 OF 7 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 63 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

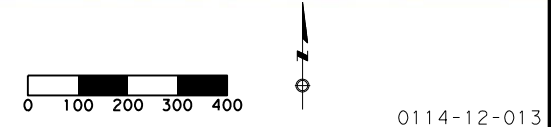


NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

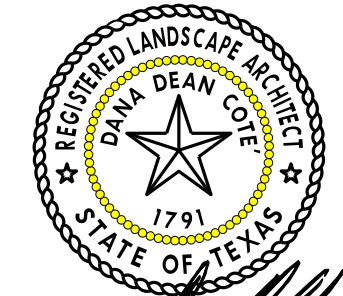
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0114-12-013

**US 290
SITE LOCATION**

SHEET 2 OF 7



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| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 64 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |

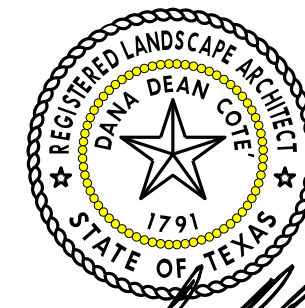


NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

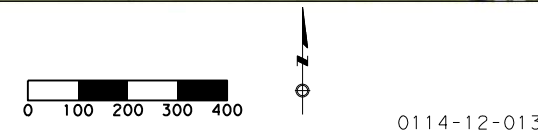
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

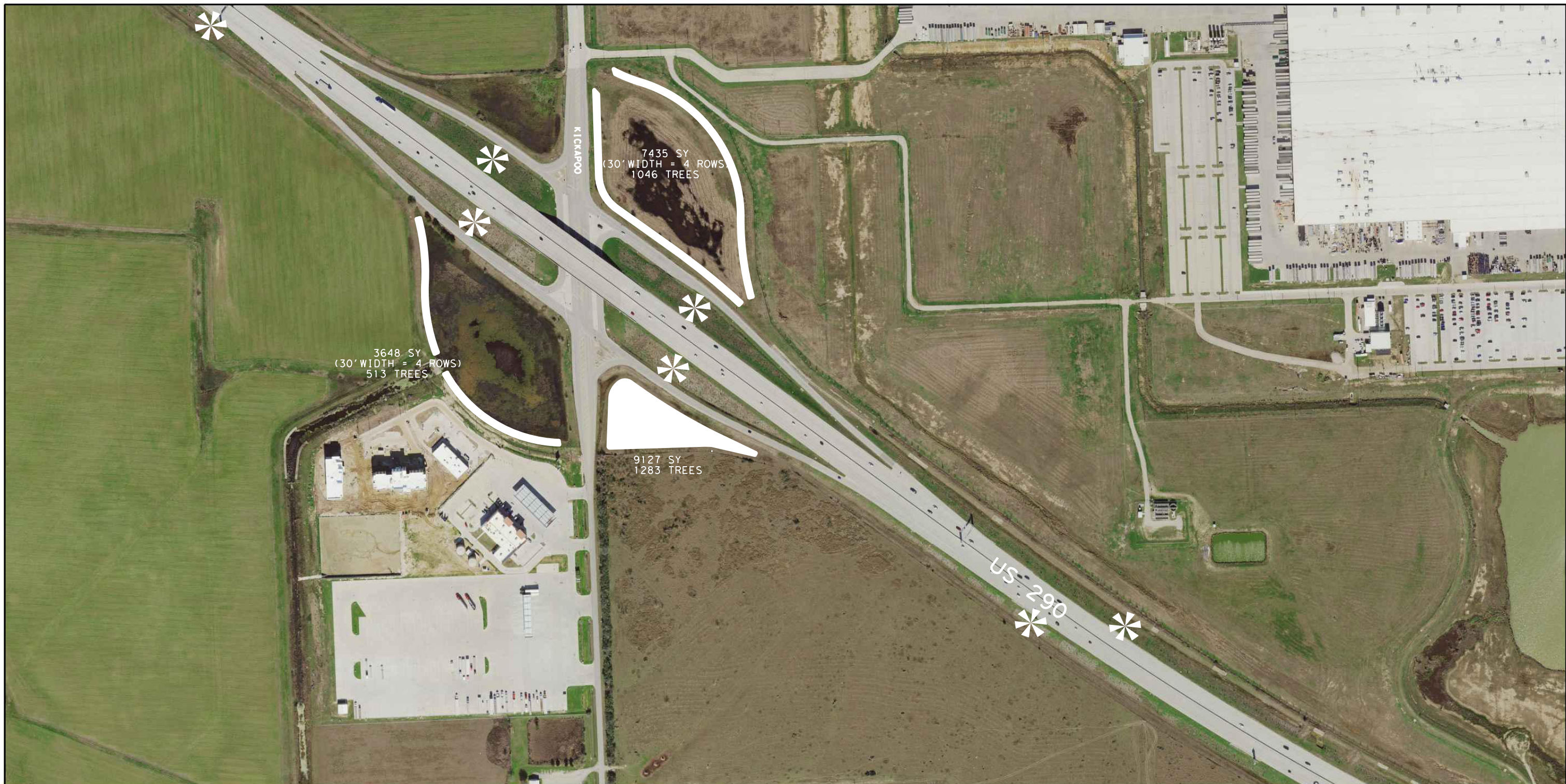
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



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|---|-------------|----------|-------------|
| 0114-12-013 | | | |
| US 290 SITE LOCATION | | | |
| SHEET 3 OF 7 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 65 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

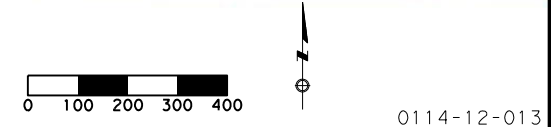


NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

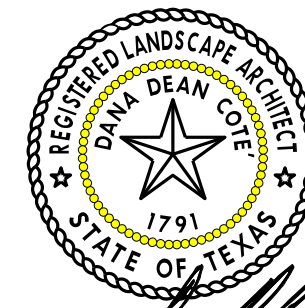
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0114-12-013

**US 290
SITE LOCATION**

SHEET 4 OF 7



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|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 66 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

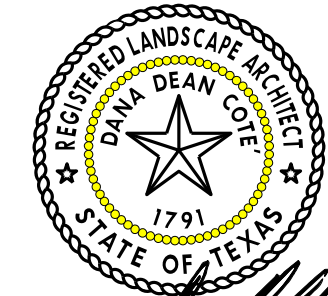
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INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0114-12-013

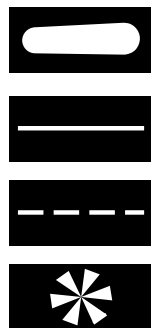
**US 290
SITE LOCATION**

SHEET 5 OF 7



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| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 67 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

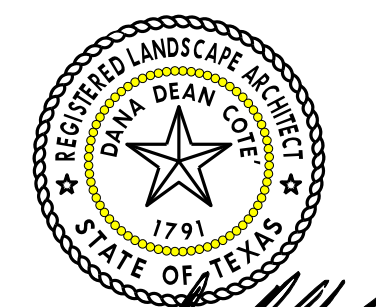
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0114-12-013

**US 290
SITE LOCATION**

SHEET 6 OF 7



Dana Dean Cote
5/28/2021

| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 68 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

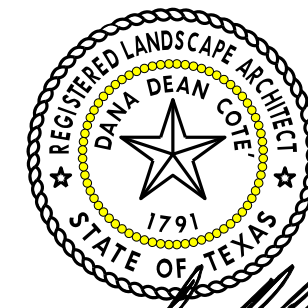
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0114-12-013

**US 290
SITE LOCATION**

SHEET 7 OF 7



Dana Dean Cote
5/28/2021

| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 69 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

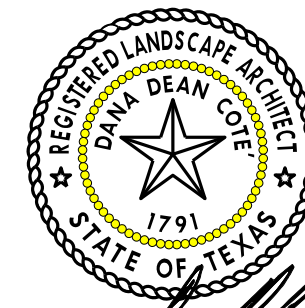


192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

NOTE:
Site location sheets are diagrammatic representations of proposed work areas only, additional areas may be identified in the field.
Contractor is responsible for locating and staking limits of each original and new bed preparation area in accordance with the plans.
Adjustments will be made to accommodate site conditions. All locations will be approved prior to any work.



0050-06-097



Dana Dean Cote
5/28/2021

| | | | |
|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 1 OF 12 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 70 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

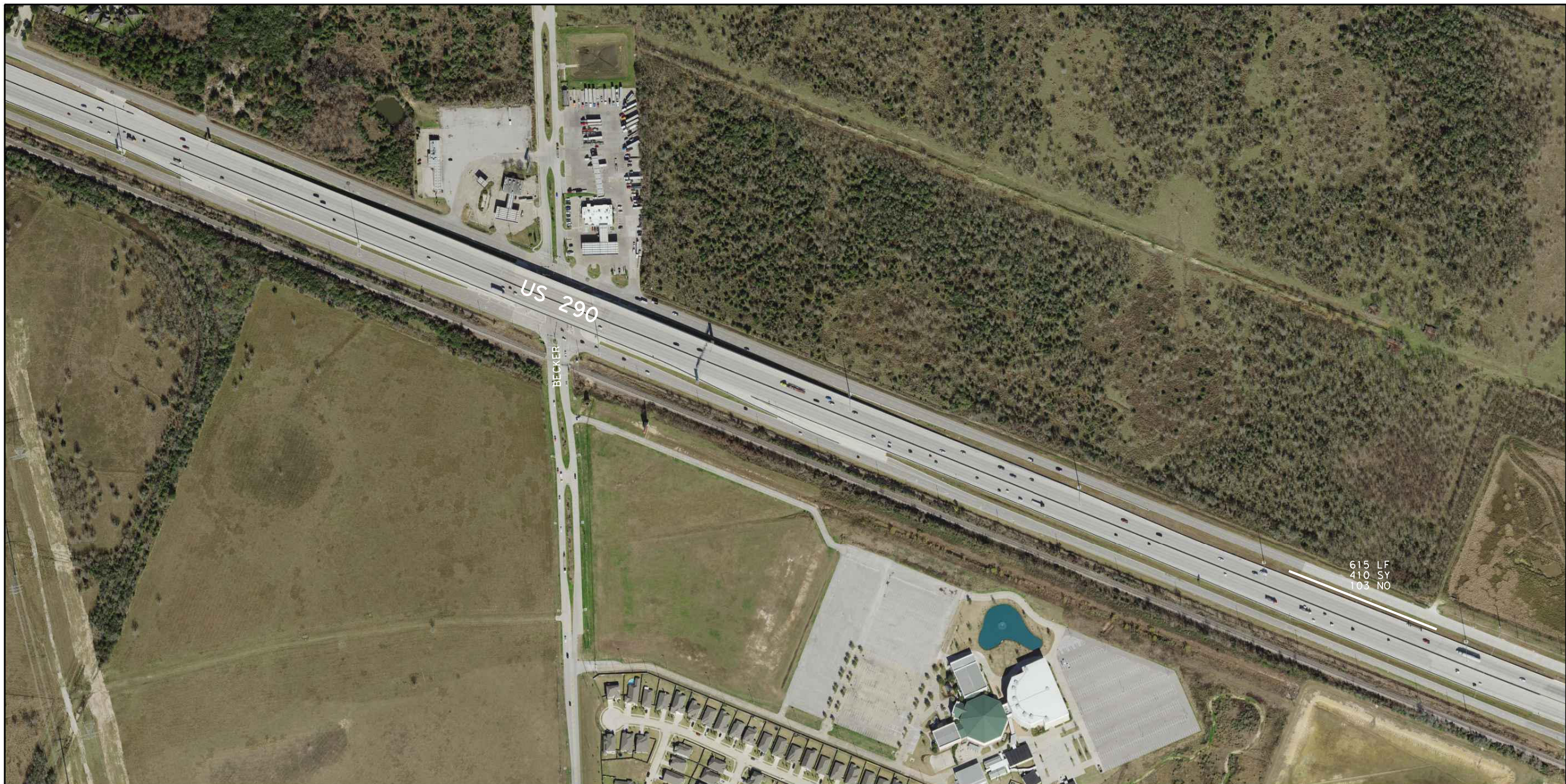


0050-06-097



5/28/2021

| | | | |
|---|-------------|-----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 2 OF 12 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 71 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



615 LF
410 SY
103 NO



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



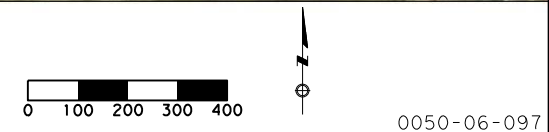
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



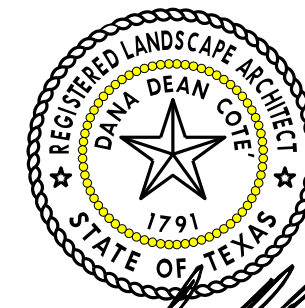
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0050-06-097

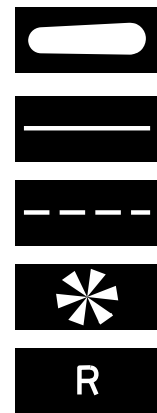
**US 290
SITE LOCATION**

SHEET 3 OF 12



Dana Dean Cote
5/28/2021

| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 72 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



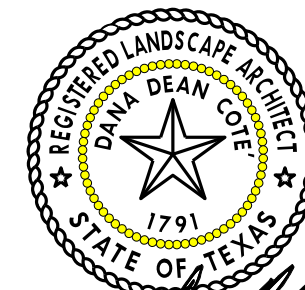
NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
 SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
 WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
 10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
 INFILL EXISTING AREAS AS DIRECTED - QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
 193-6002 PLANT MAINTENANCE - CYC
 1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

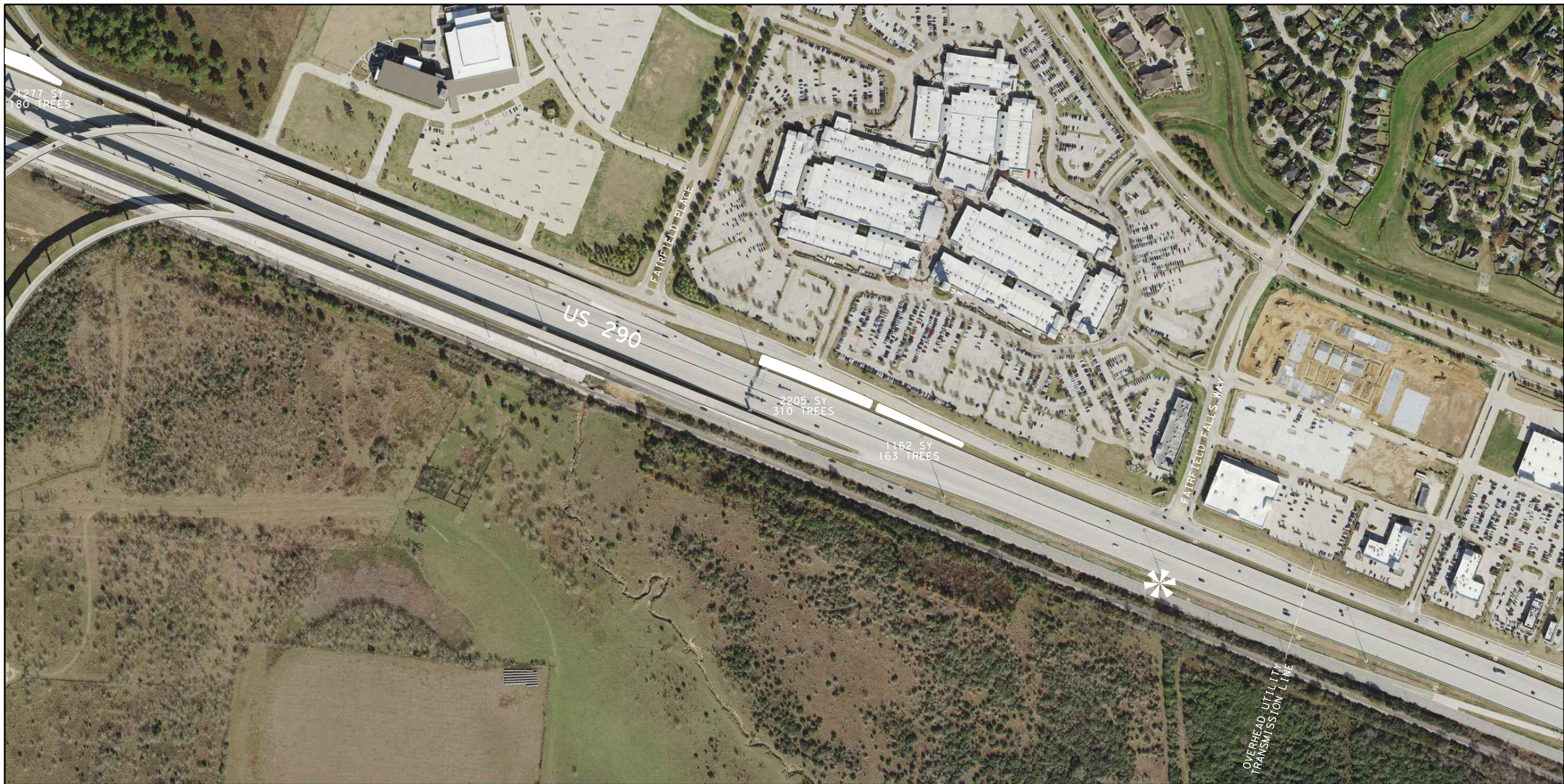
REMOVE OLEANDER ALONG RETAINING WALL - INCIDENTAL TO ITEM 1022-6003



Dana Dean Cote
 5/28/2021



| | | | |
|---|--------------|------------------|-----------------------|
| US 290 SITE LOCATION | | | |
| SHEET 4 OF 12 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 73 | |
| STATE TEXAS | DIST. HOU | COUNTY WALLER | |
| CONT. 0114 | SECT. 11 | JOB 088, etc | HIGHWAY NO. US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



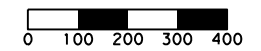
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



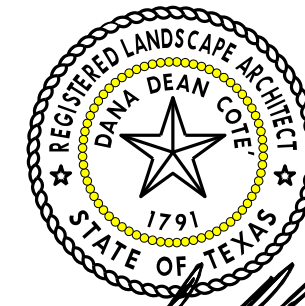
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0050-06-097



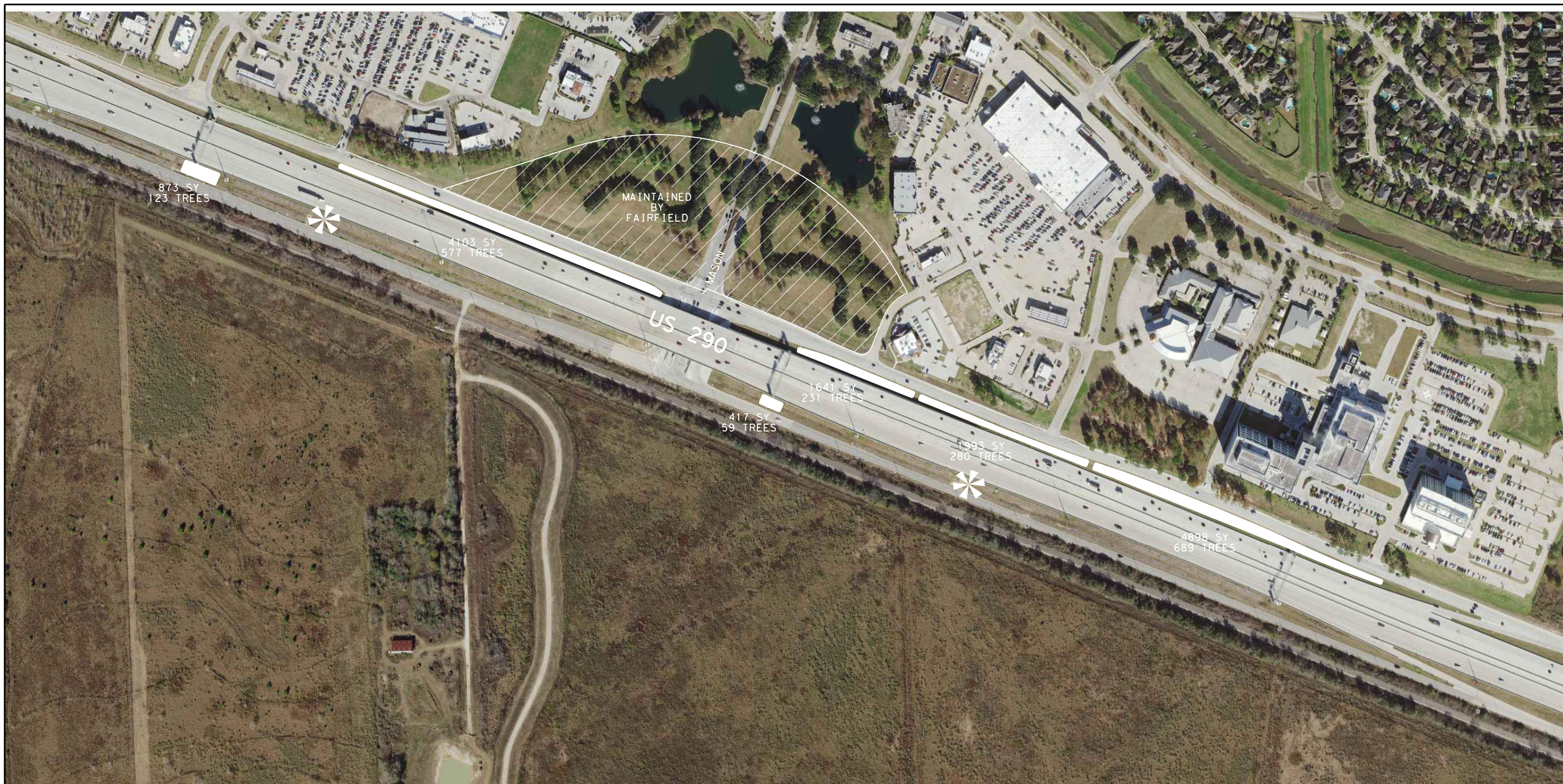
Dana Dean Cote
5/28/2021

**US 290
SITE LOCATION**

SHEET 5 OF 12



| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 74 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

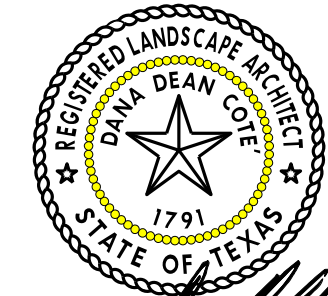
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0050-06-097

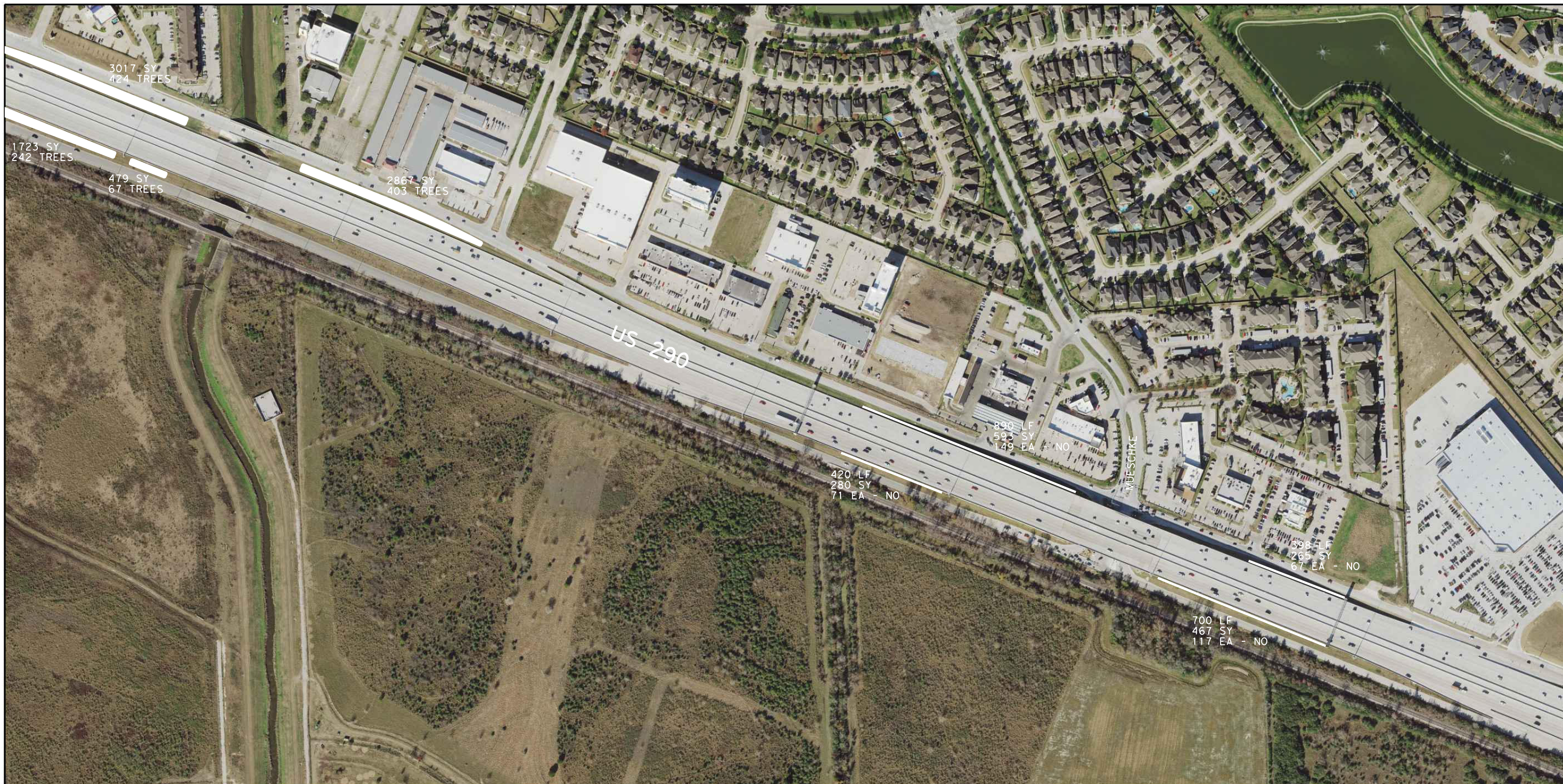
**US 290
SITE LOCATION**

SHEET 6 OF 12



Dana Dean Cote
5/28/2021

| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 75 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



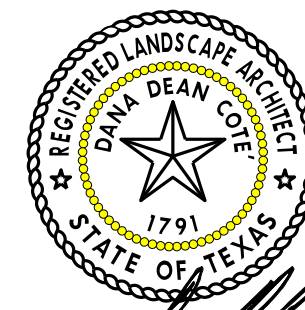
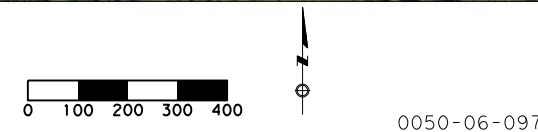
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



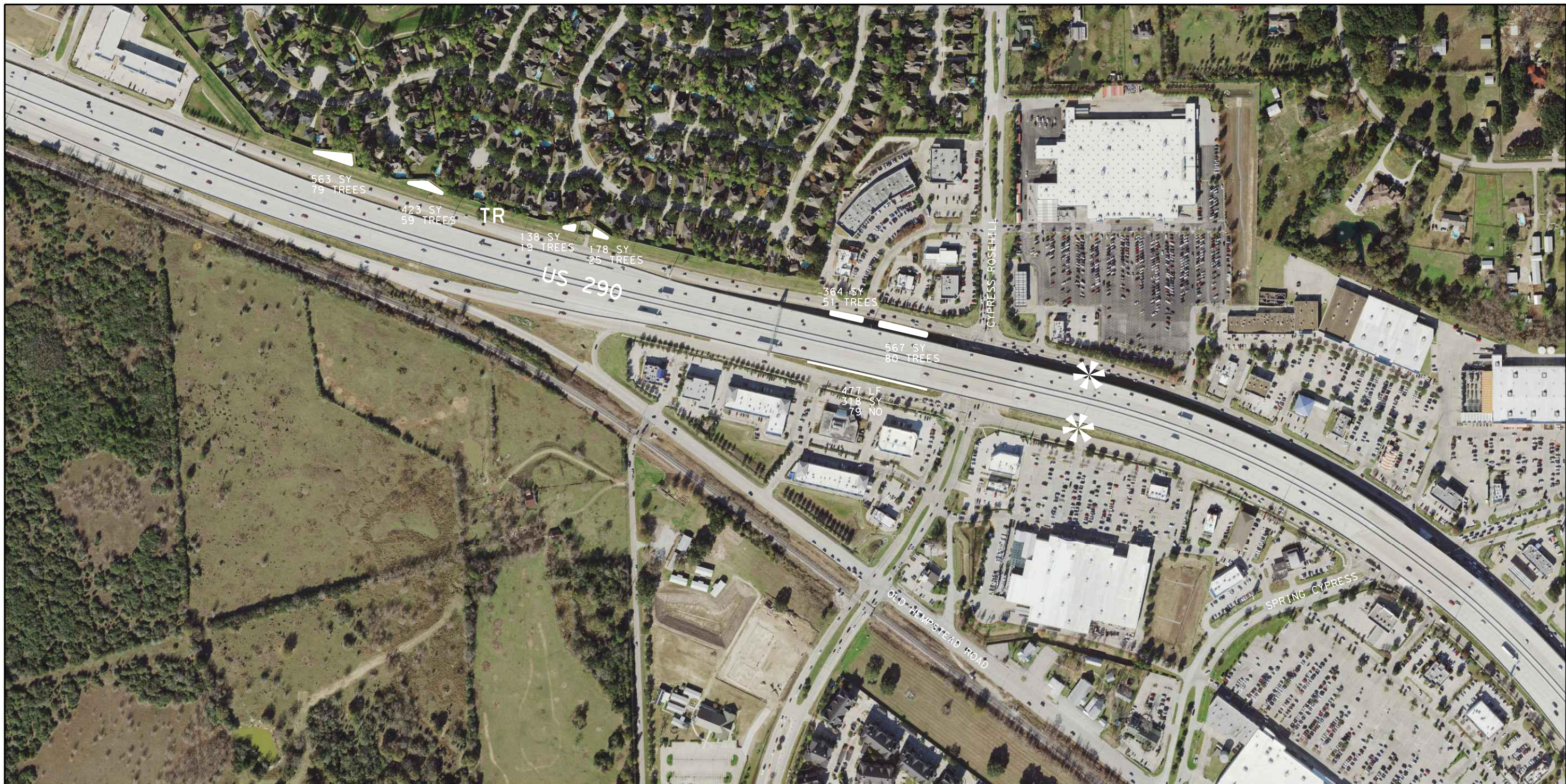
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



Dana Dean Cote
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US 290
SITE LOCATION
SHEET 7 OF 12

| | | |
|-------------------|-------------|-----------------|
| | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 76 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



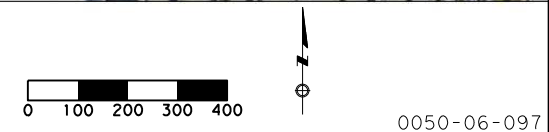
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



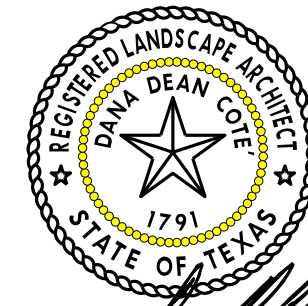
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



100-6006 PREP ROW (TREE) (LESS THAN 24" DIA) - EA
REMOVE EXISTING LARGE TREES OUTSIDE EXISTING REFORESTATION AREAS AS DIRECTED

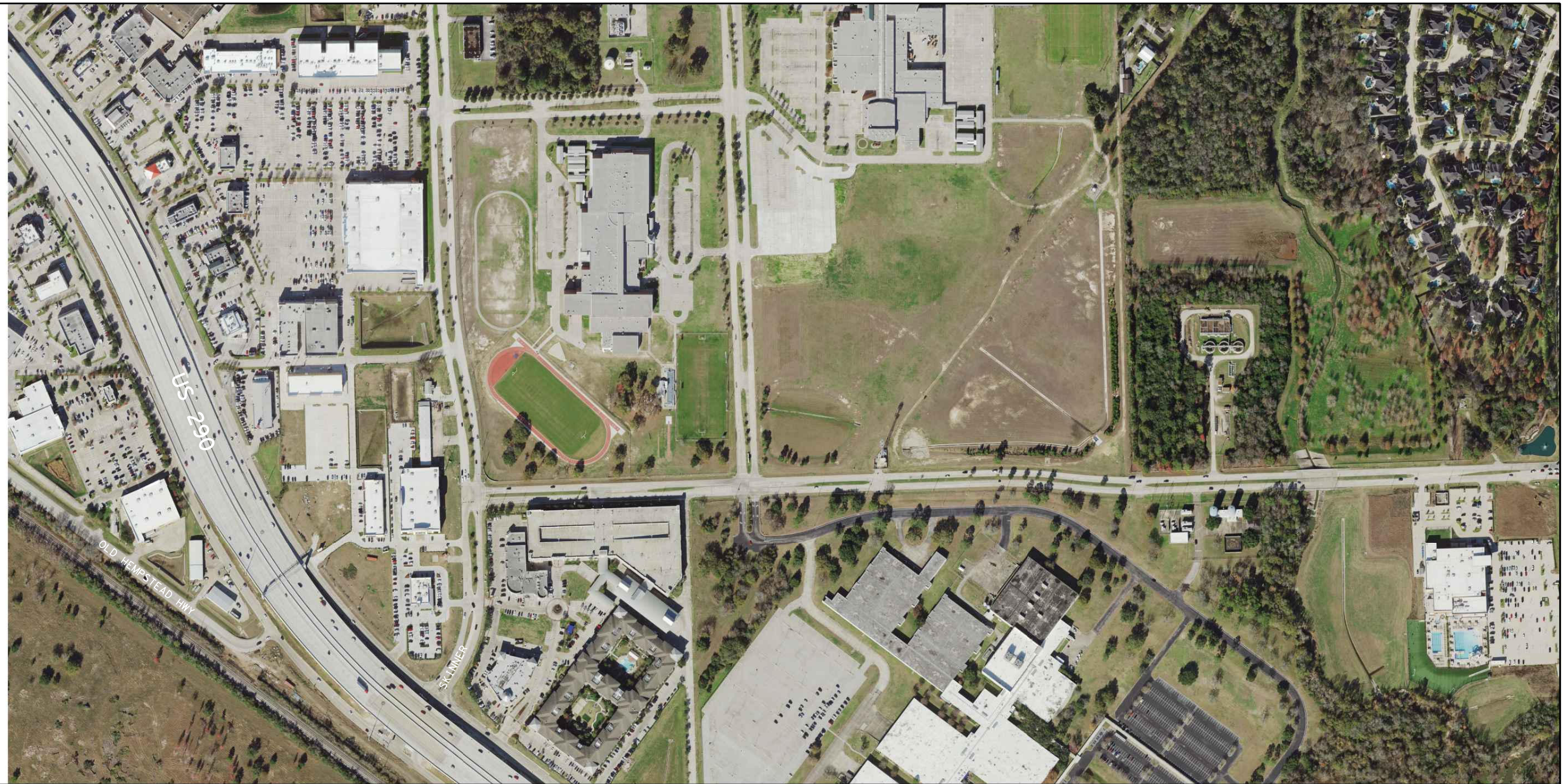


0050-06-097



Dana Dean Cote
5/28/2021

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|---|-------------|-----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 8 OF 12 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 77 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



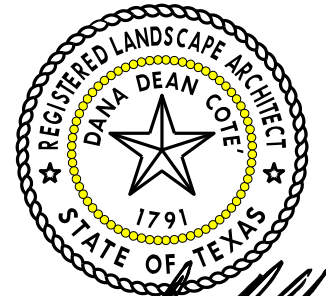
NO WORK THIS SHEET



0050-06-097

**US 290
SITE LOCATION**

SHEET 9 OF 12



Dana Dean Cote
5/28/2021

| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 78 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



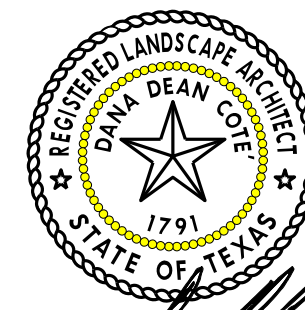
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



REMOVE OLEANDER ALONG RETAINING WALL - INCIDENTAL TO ITEM 1022-6003



0050-06-097



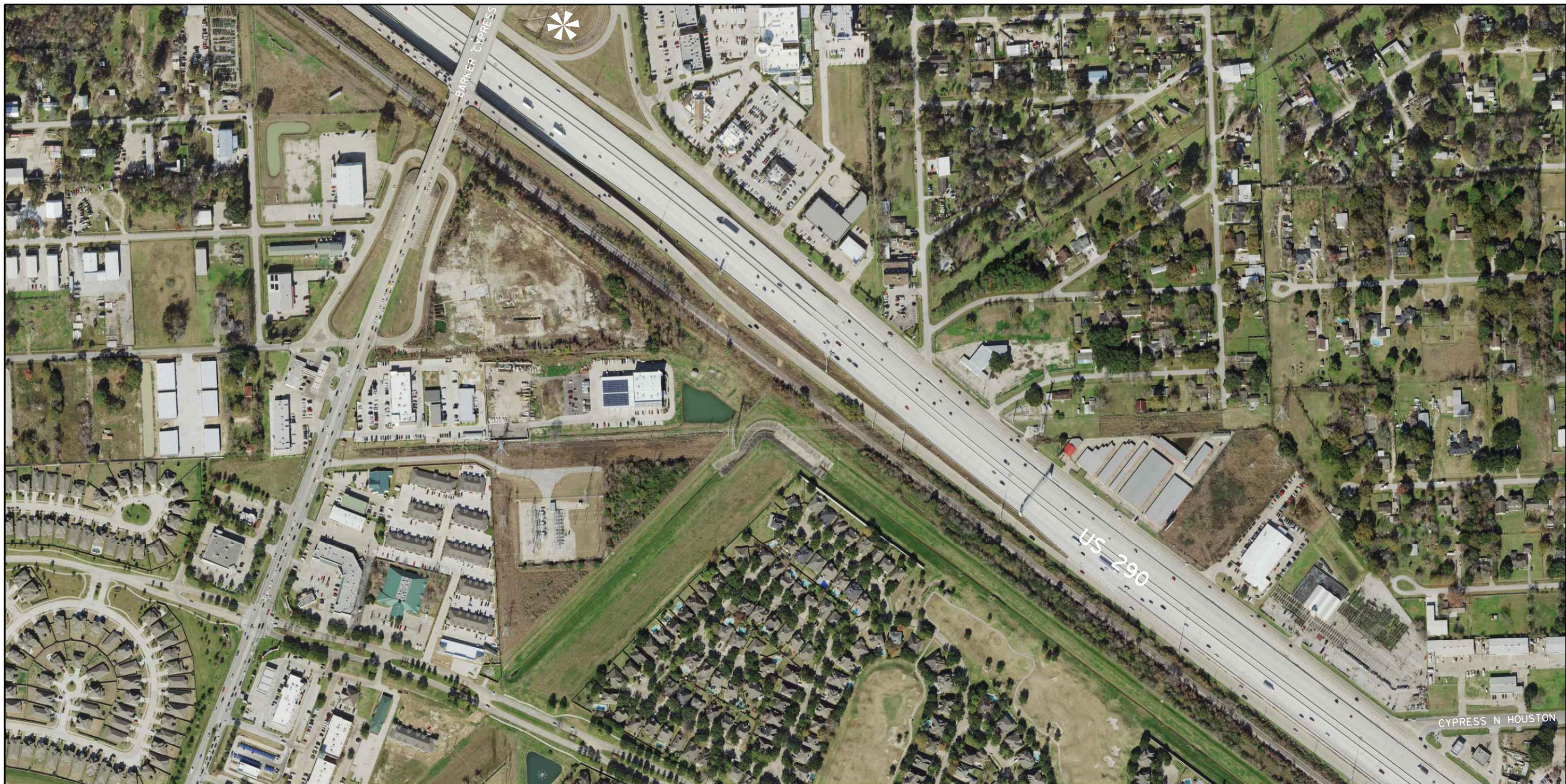
Dana Dean Cote
5/28/2021

**US 290
SITE LOCATION**

SHEET 10 OF 12



| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 79 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



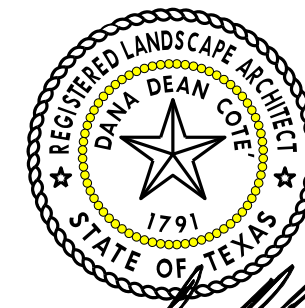
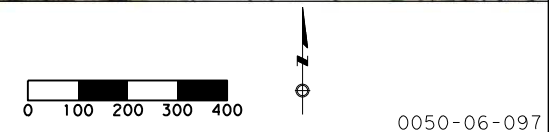
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



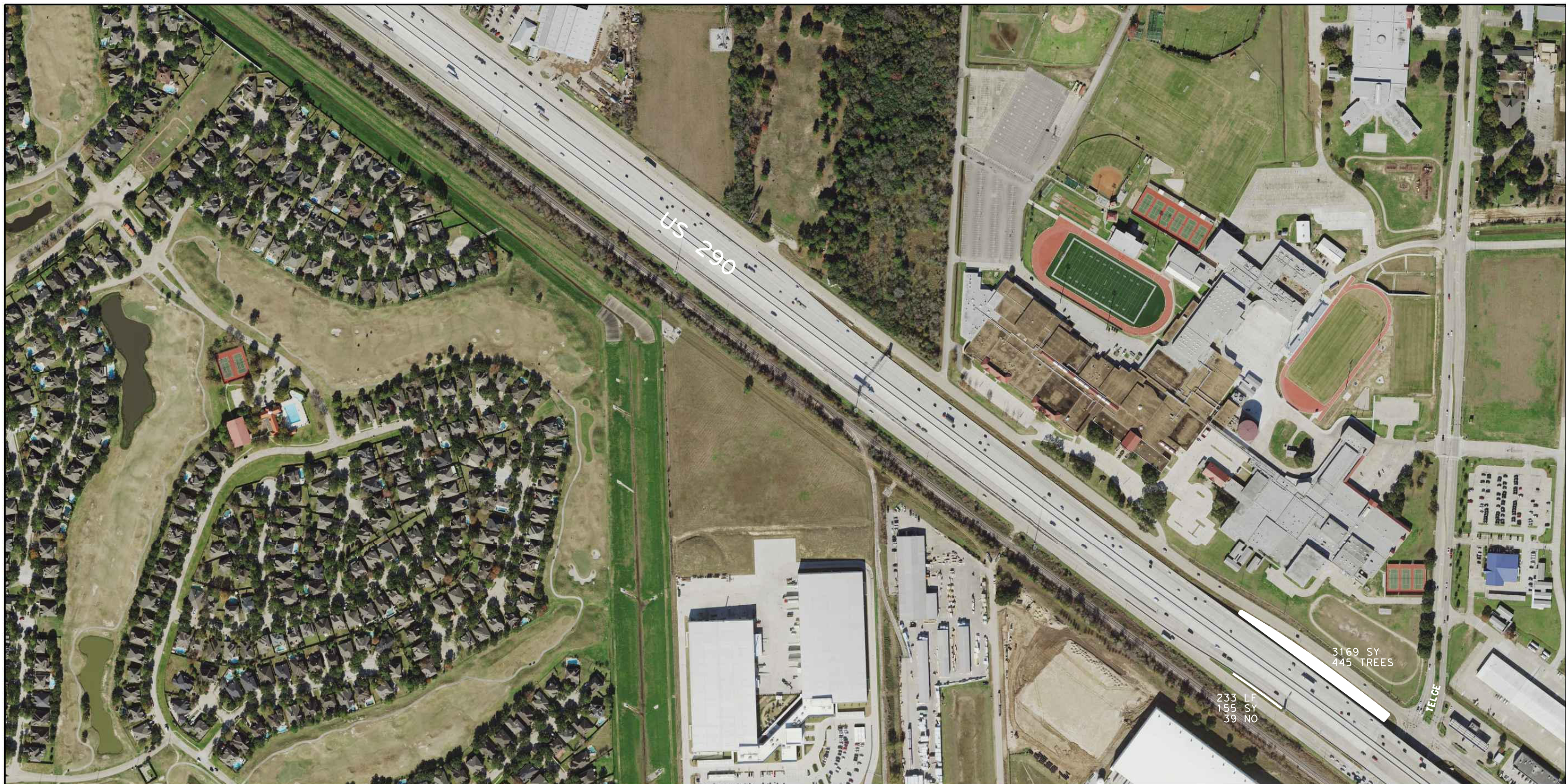
Dana Dean Cote
5/28/2021

**US 290
SITE LOCATION**

SHEET 11 OF 12



| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 80 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



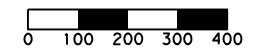
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



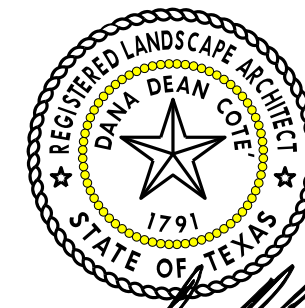
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0050-06-097



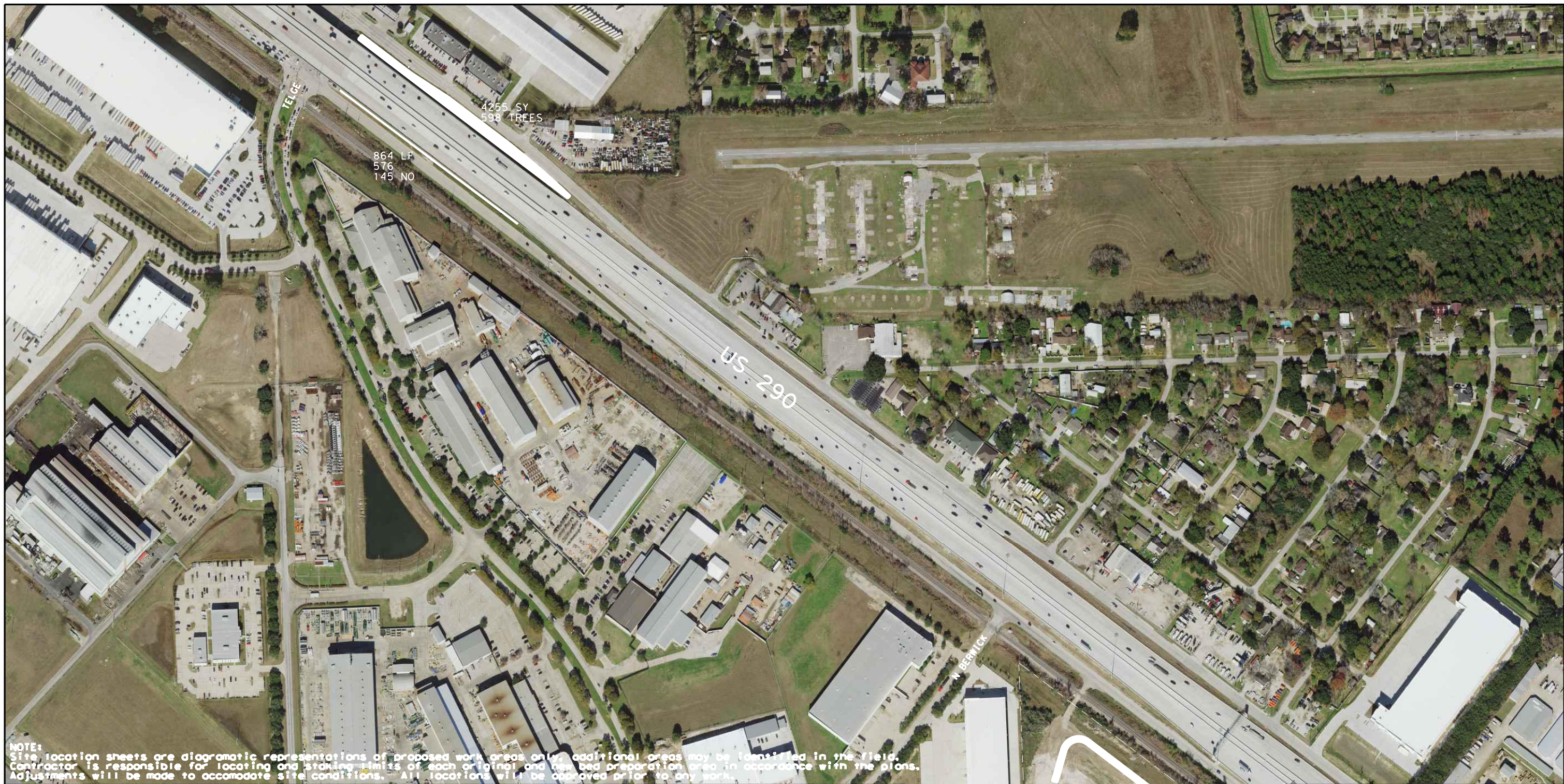
Dana Dean Cote
5/28/2021

US 290
SITE LOCATION





SHEET 12 OF 12



| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 81 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NOTE: Site location sheets are diagrammatic representations of proposed work areas only, additional areas may be identified in the field. Contractor is responsible for locating and staking limits of each original and new bed preparation area in accordance with the plans. Adjustments will be made to accommodate site conditions. All locations will be approved prior to any work.

-  NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2) SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 WIDTH 22' MINIMUM
-  OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)
-  WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC 10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT
-  192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA INFILL EXISTING AREAS AS DIRECTED QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
- 193-6002 PLANT MAINTENANCE - CYC
- 1022-6003 LANDSCAPE TREATMENT (TY 3) - EA




9423 SY
30' WIDTH (4 ROWS)
1325 TREES

LAYOUT WILL BE ADJUSTED TO ACCOMMODATE INLETS, ACCESS TO BASIN, ETC.

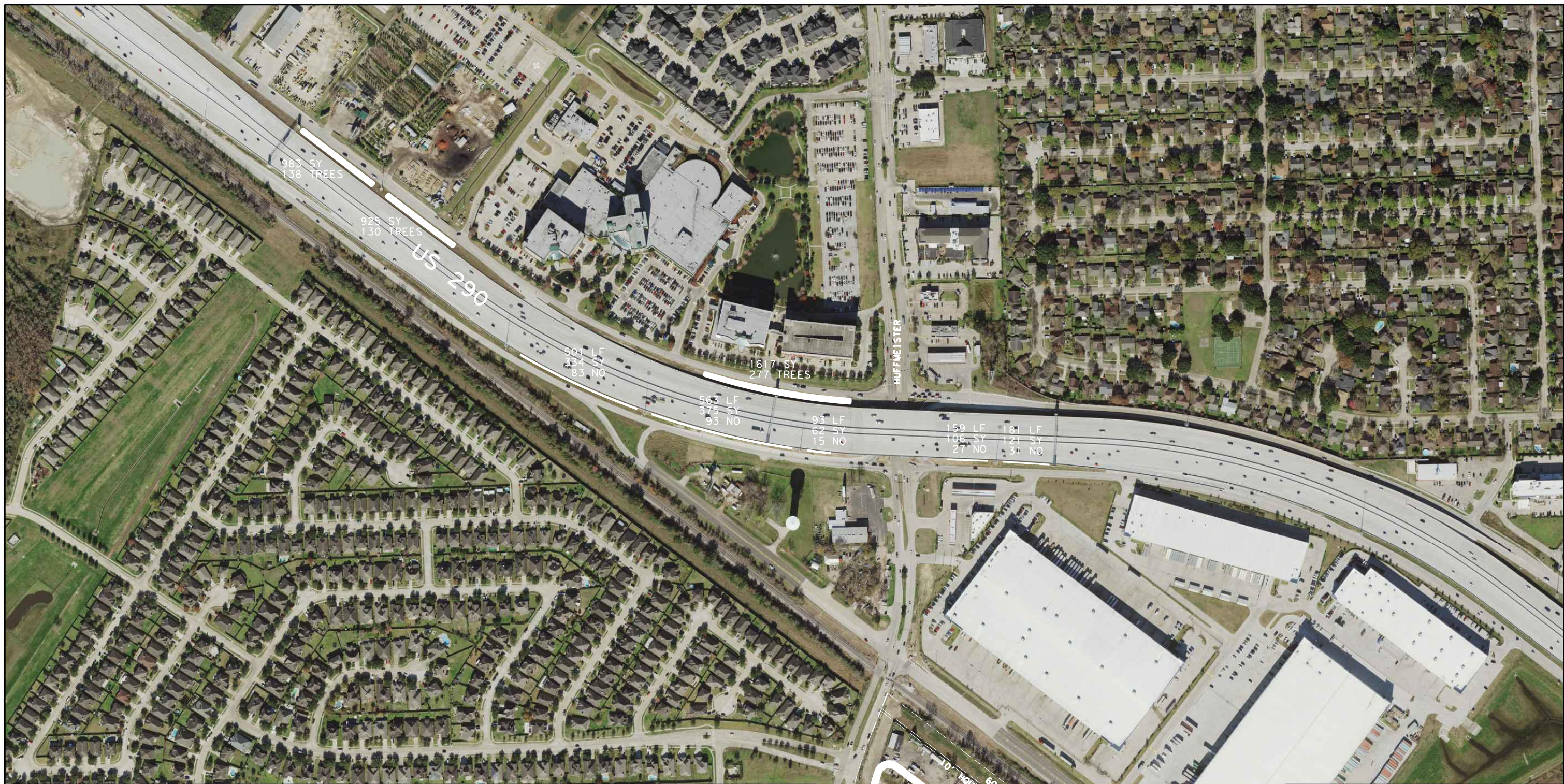
0050-08-101

US 290
SITE LOCATION

SHEET 1 OF 7



| | | | | | |
|-------------------|-------|-------------|-------------|-----------|--|
| FED. RD. DIV. NO. | | PROJECT NO. | | SHEET NO. | |
| 6 | | | | 82 | |
| STATE | DIST. | COUNTY | | | |
| TEXAS | HOU | WALLER | | | |
| CONT. | SECT. | JOB | HIGHWAY NO. | | |
| 0114 | 11 | 088, etc | US 290 | | |

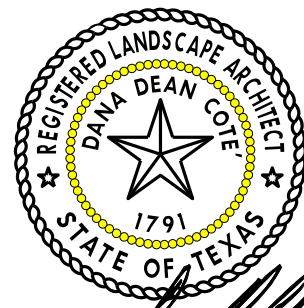


NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

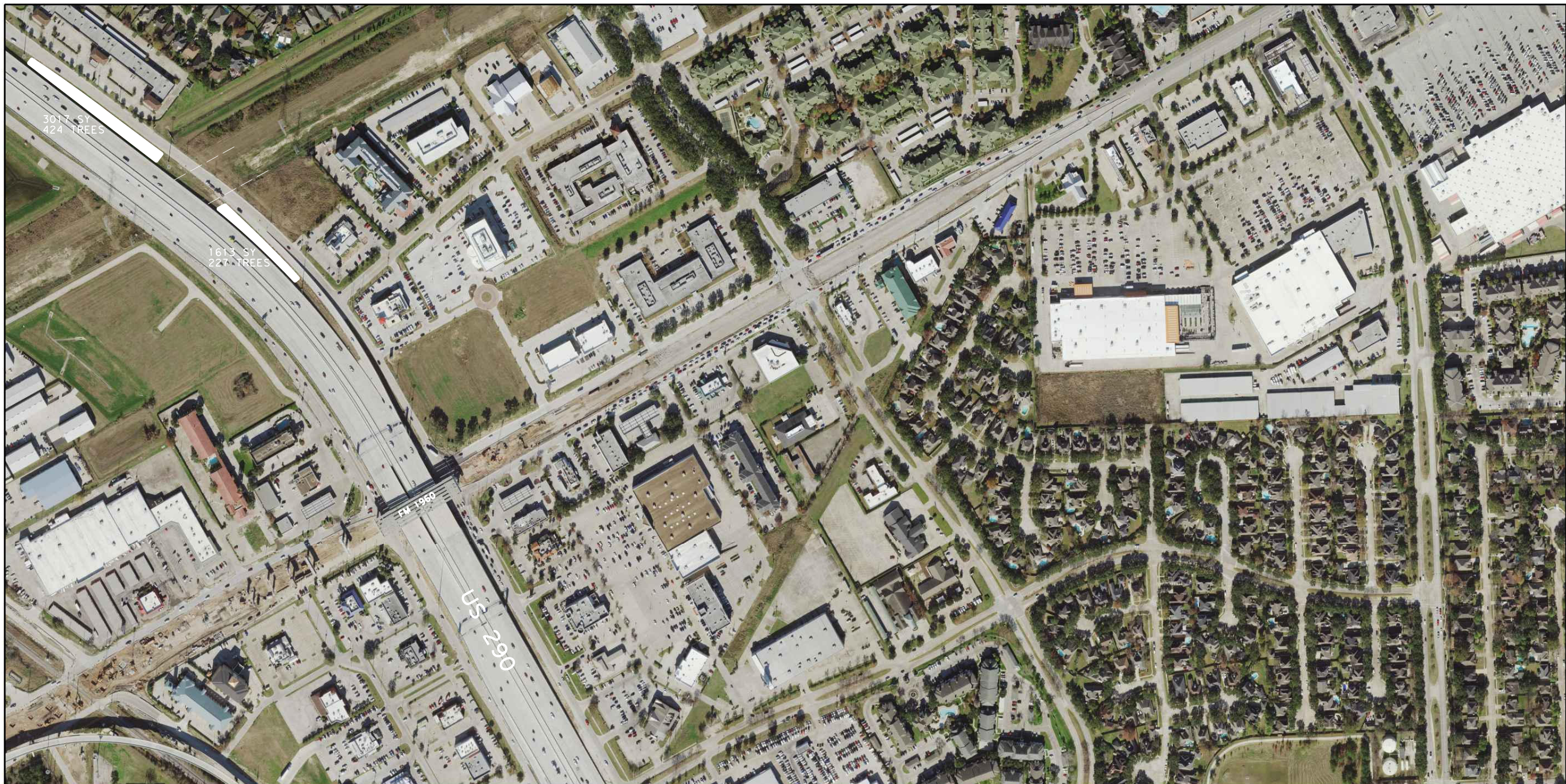
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY
LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



Dana Dean Cote
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| | | | |
|---|---------------------|-------------------------|------------------------------|
| US 290 SITE LOCATION | | | |
| SHEET 2 OF 7 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 83 | |
| STATE TEXAS | DIST. HOU | COUNTY WALLER | |
| CONT. 0114 | SECT. 11 | JOB 088, etc | HIGHWAY NO. US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



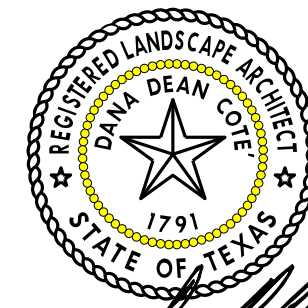
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



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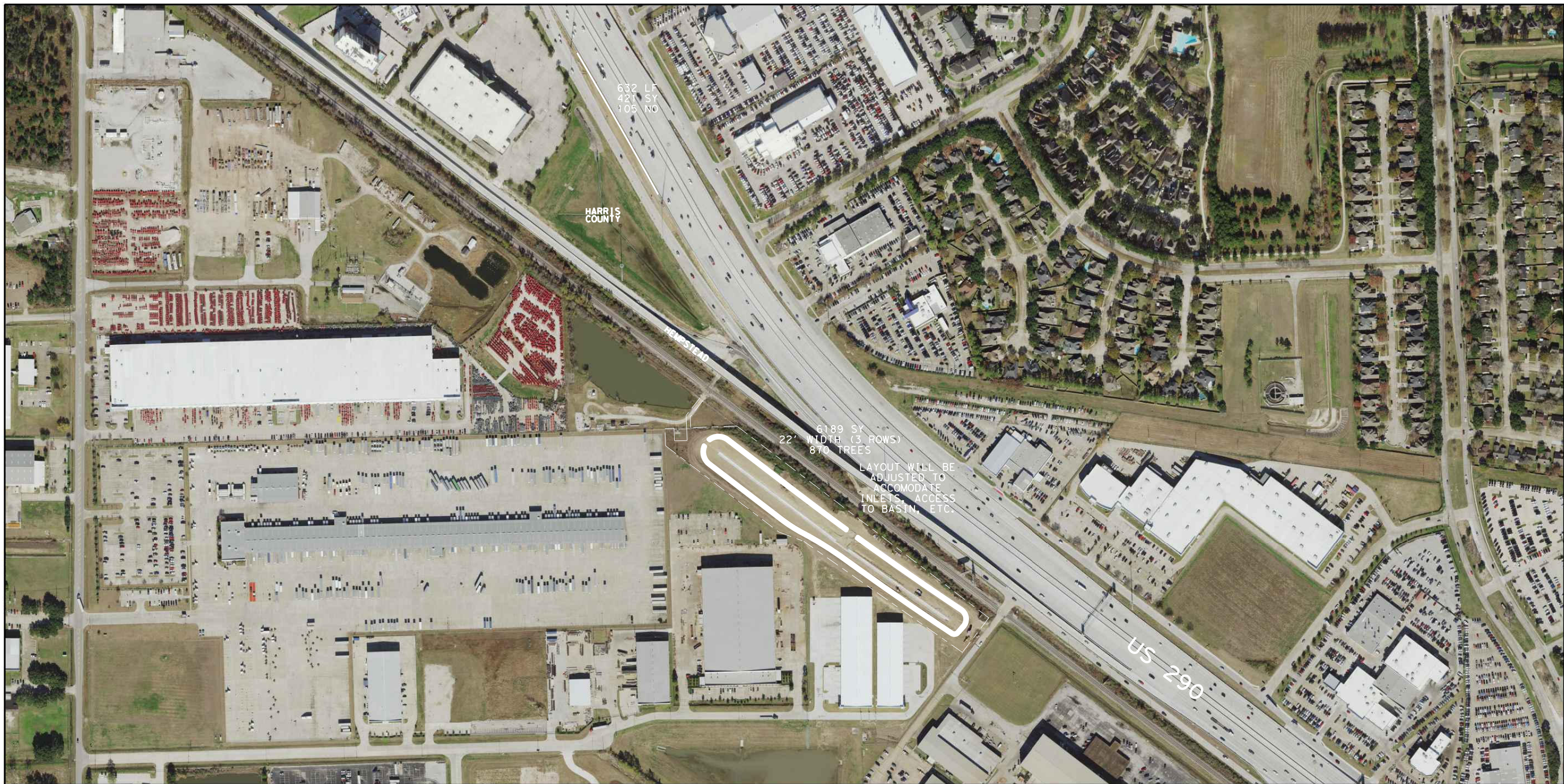
**US 290
SITE LOCATION**

SHEET 3 OF 7



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| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 84 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



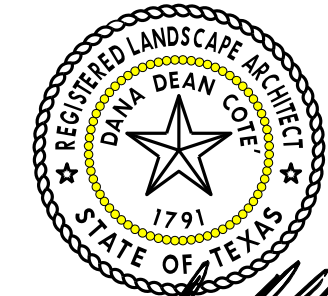
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
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QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



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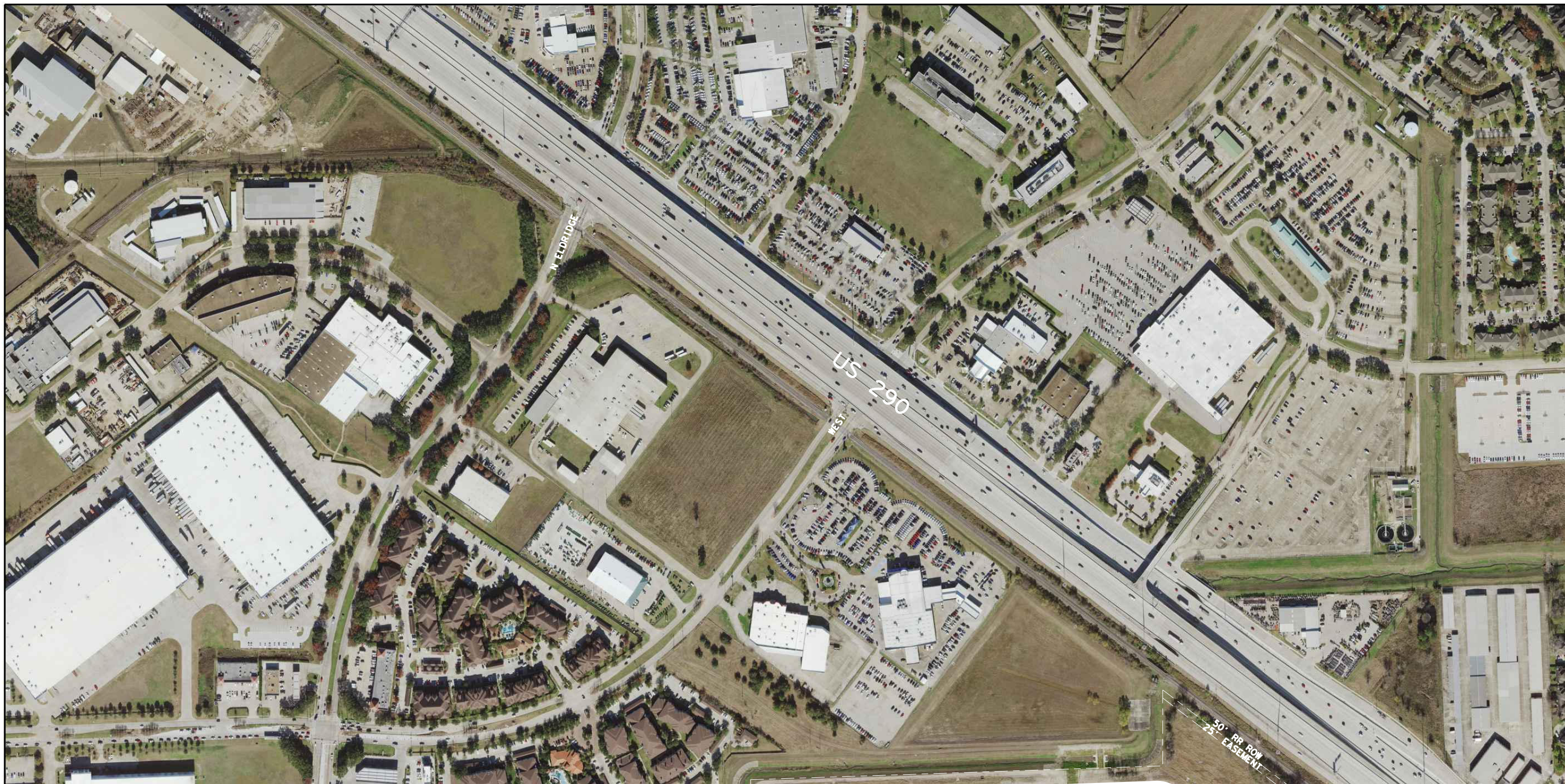
**US 290
SITE LOCATION**

SHEET 4 OF 7



Dana Dean Cote
5/28/2021

| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 85 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



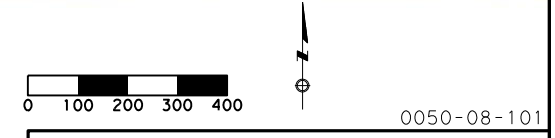
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

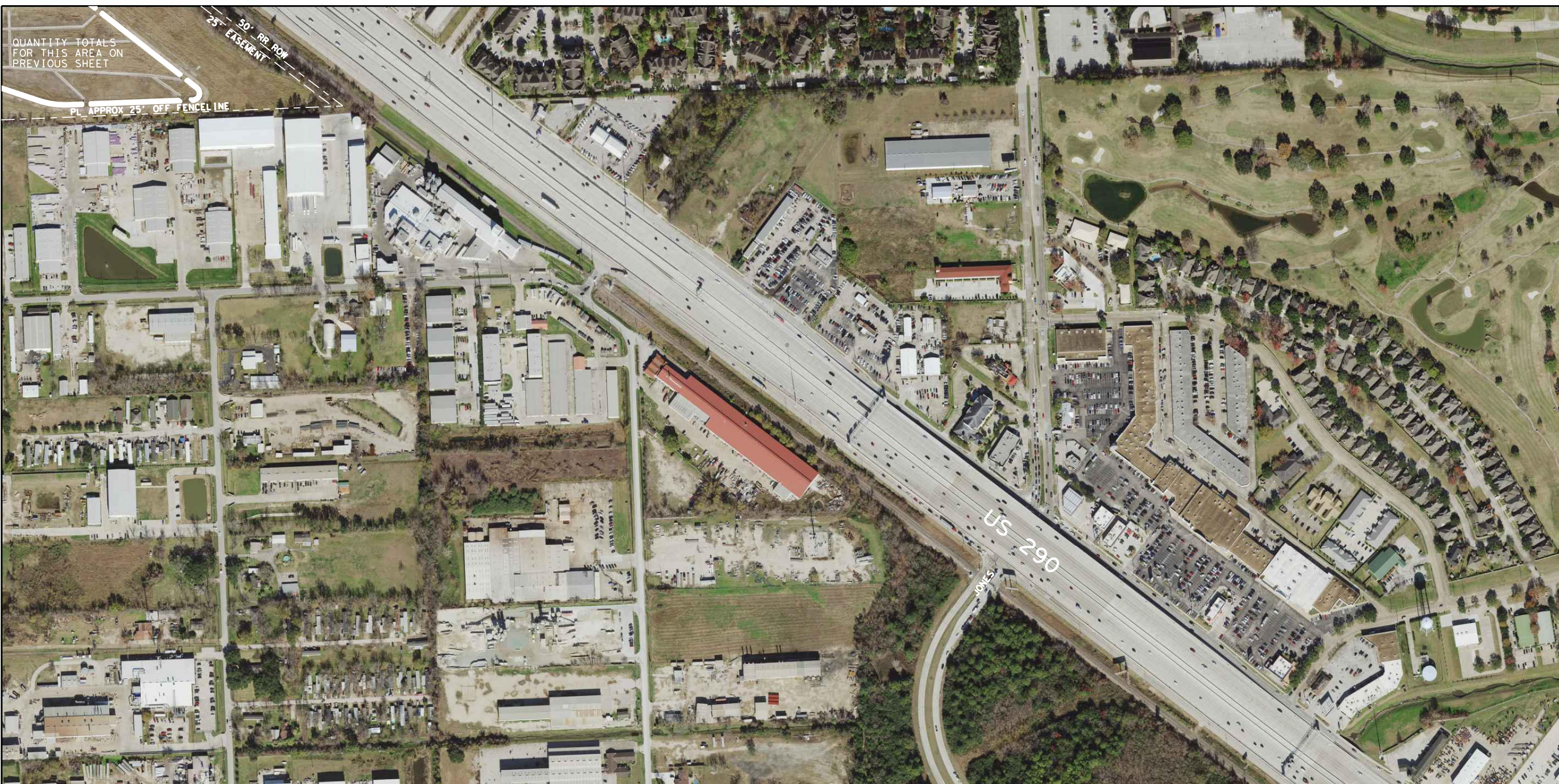


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**US 290
SITE LOCATION**
SHEET 5 OF 7

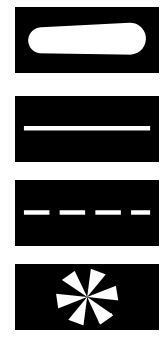
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|-------|-------|-------------|-------------|-----------|
| | | PROJECT NO. | | SHEET NO. |
| | | 6 | | 86 |
| STATE | DIST. | COUNTY | | |
| TEXAS | HOU | WALLER | | |
| CONT. | SECT. | JOB | HIGHWAY NO. | |
| 0114 | 11 | 088, etc | US 290 | |



QUANTITY TOTALS
FOR THIS AREA ON
PREVIOUS SHEET

PL APPROX 25' OFF FENCE LINE

US 290
JONES



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT

193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

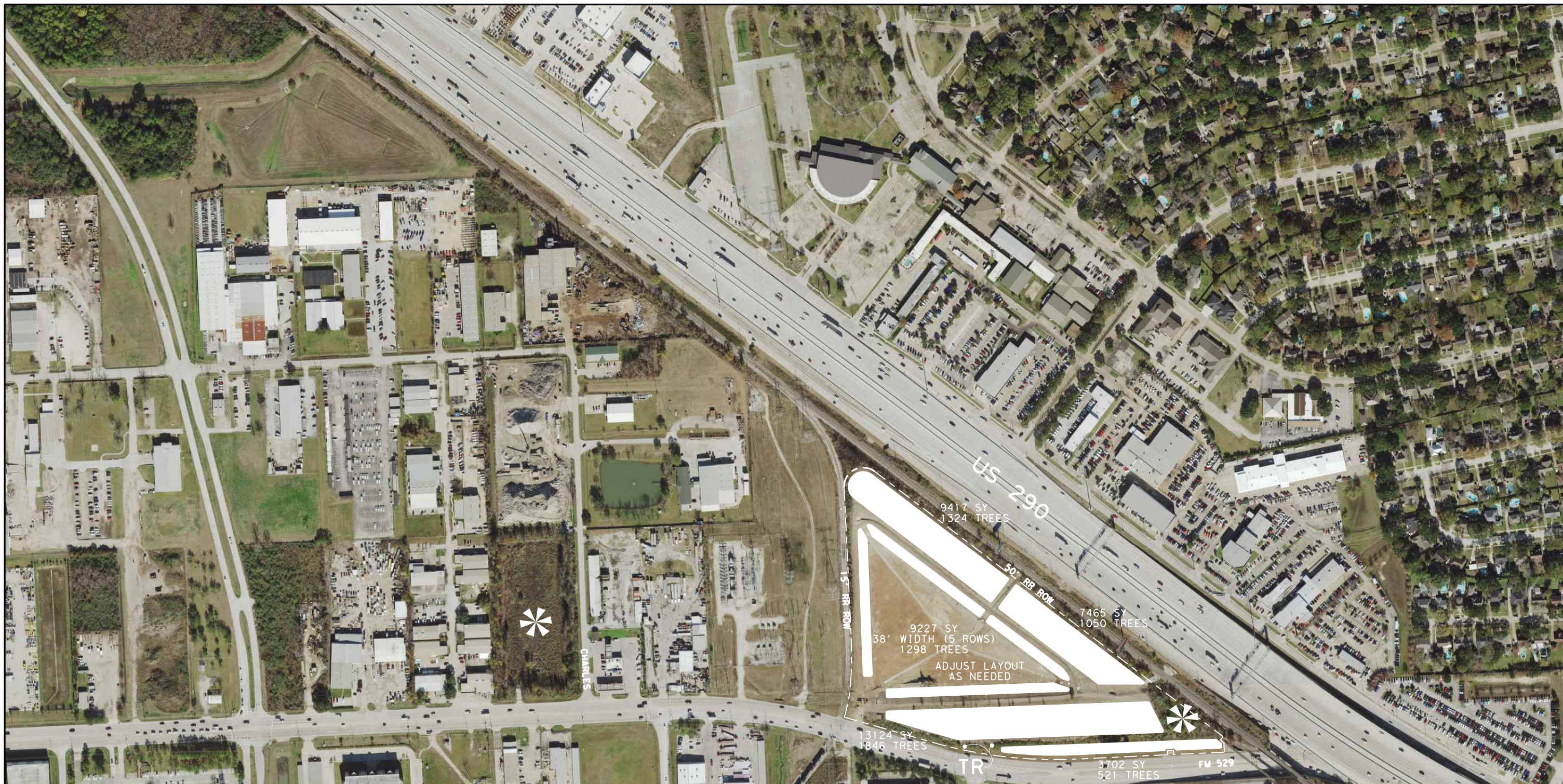


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|---|--------------|------------------|-----------------------|
| US 290 SITE LOCATION | | | |
| SHEET 6 OF 7 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 87 | |
| STATE TEXAS | DIST. HOU | COUNTY WALLER | |
| CONT. | SECT. | JOB 088, etc | HIGHWAY NO. US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



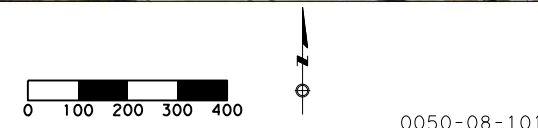
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



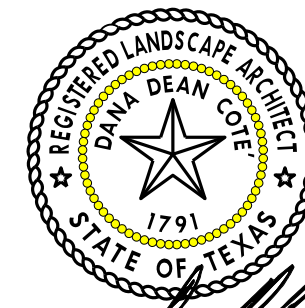
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED - QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



100-6006 PREP ROW (TREE) (LESS THAN 24" DIA) - EA
REMOVE EXISTING LARGE TREES OUTSIDE EXISTING REFORESTATION AREAS AS DIRECTED



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**US 290
SITE LOCATION**

SHEET 7 OF 7



| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 88 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |

FM 529

US 290

SENATE

OLD HEMPSTEAD ROAD

SAM HOUSTON TOLLWAY

MAINTENANCE TO GULF BANK

MAINTENANCE TO LITTLE YORK

NOTE: Site location sheets are diagrammatic representations of proposed work areas only. Additional areas may be identified in the field. Contractor is responsible for locating and staking limits of each original and new bed preparation area in accordance with the plans. Adjustments will be made to accommodate site conditions. All locations will be approved prior to any work.



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2) SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4 WIDTH 22' MINIMUM



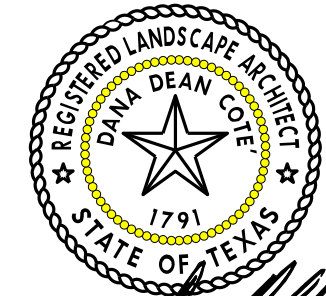
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC 10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA INFILL EXISTING AREAS AS DIRECTED QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



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US 290 SITE LOCATION

SHEET 1 OF 10



| | | |
|------------------------|--------------|-----------------------|
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 89 |
| STATE TEXAS | DIST. HOU | COUNTY WALLER |
| CONT. 0114 | SECT. 11 | JOB 088, etc |
| | | HIGHWAY NO. US 290 |



DETERMINE APPROPRIATE SITE TRIANGLE IN THE FIELD WITH LANDSCAPE ARCHITECT

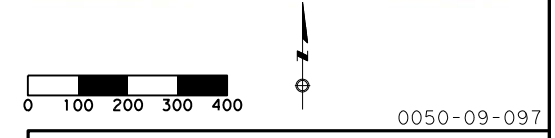


NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

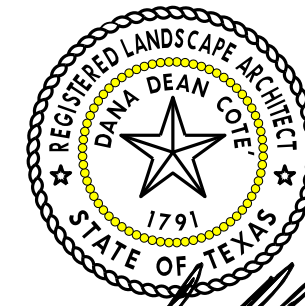
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



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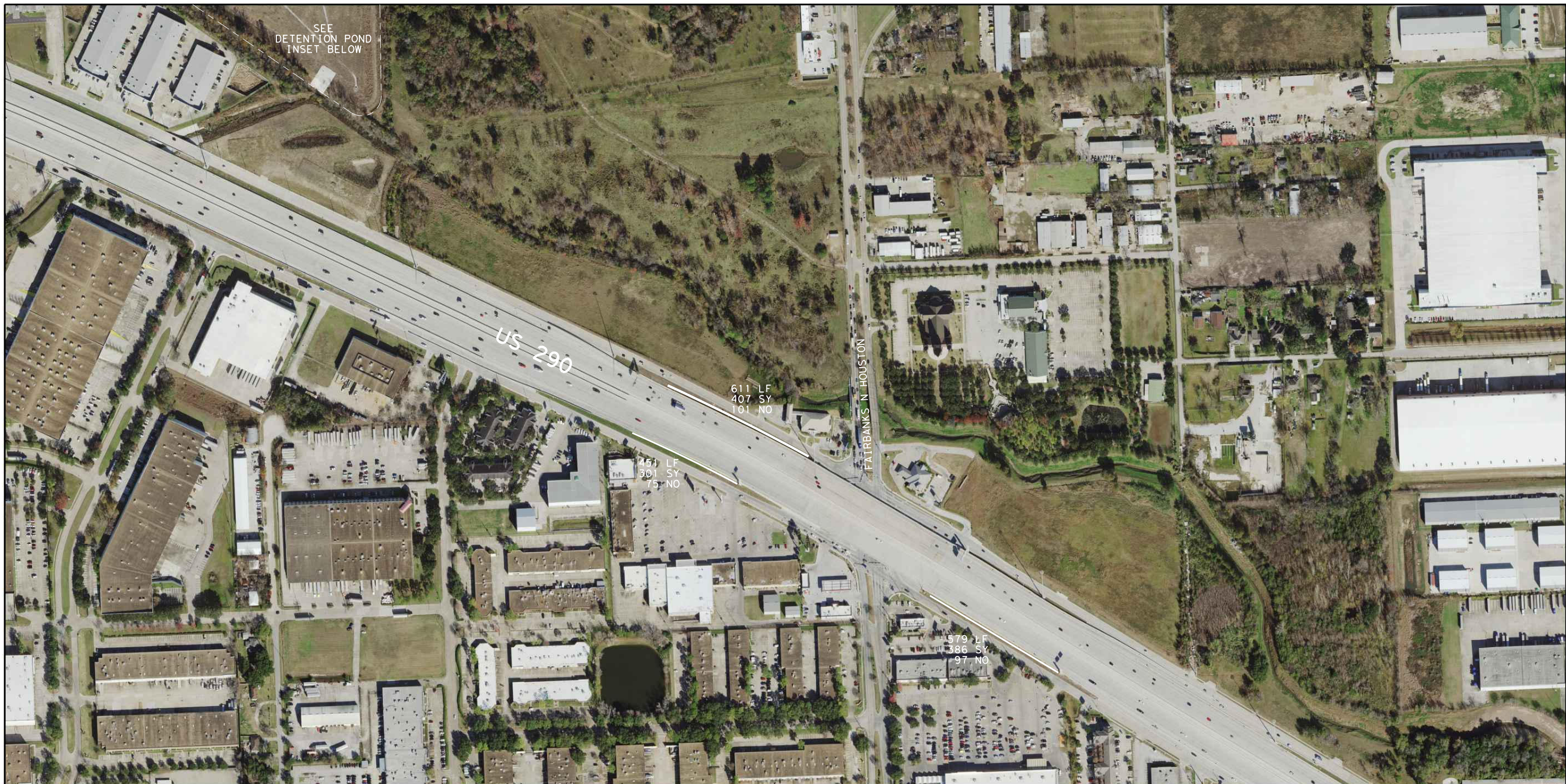
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**US 290
SITE LOCATION**

SHEET 2 OF 10



| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 90 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



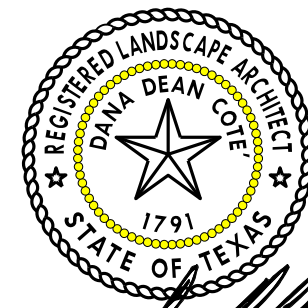
NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
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LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

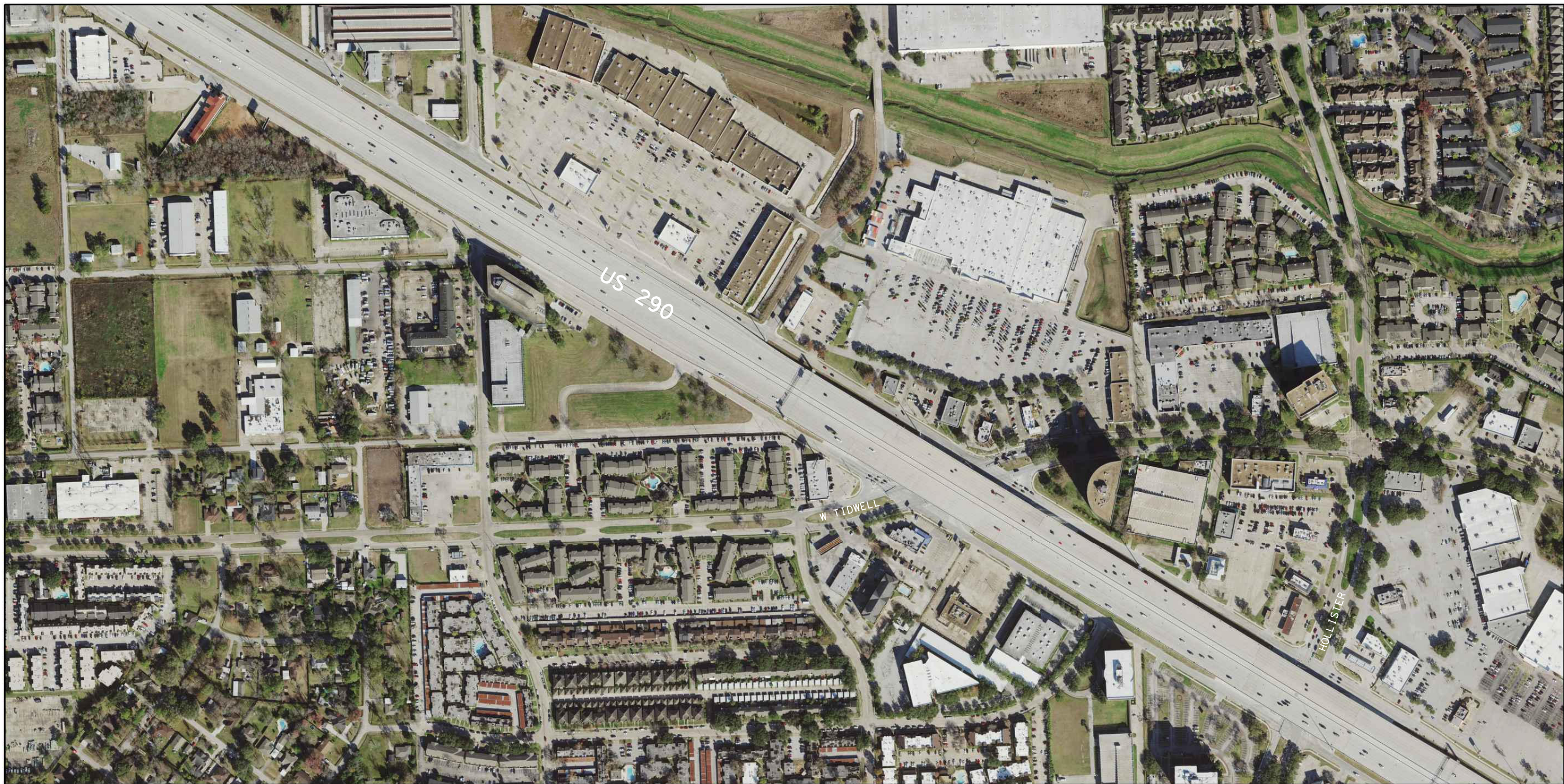
DETENTION POND
INSET



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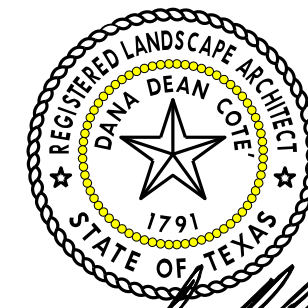
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| 0050-09-097 | | | |
| US 290 SITE LOCATION | | | |
| SHEET 3 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 91 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NO WORK THIS SHEET

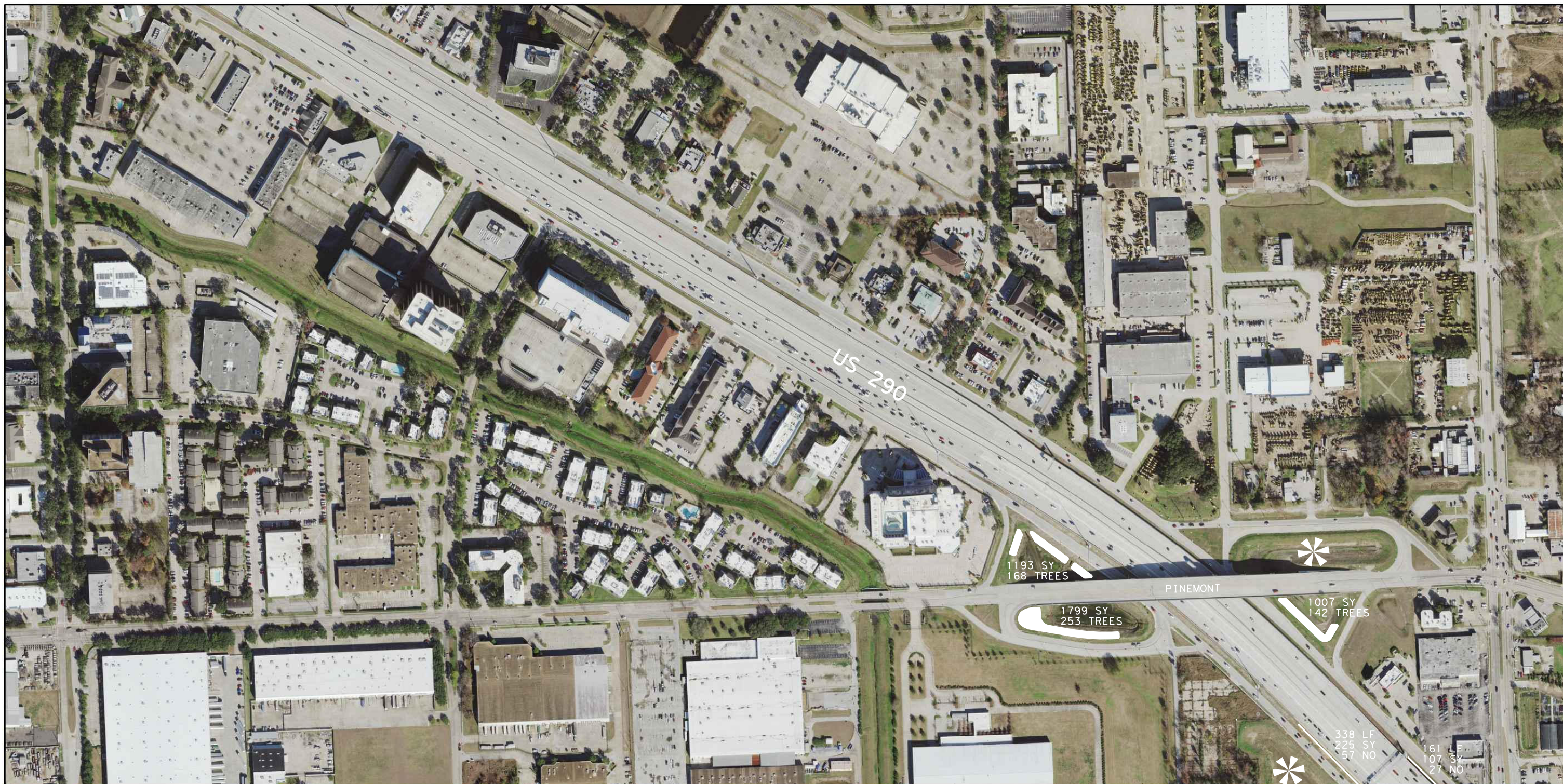


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|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 4 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 92 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



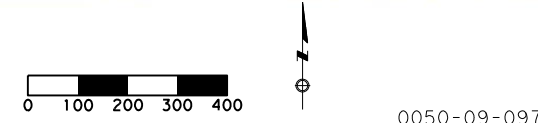
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



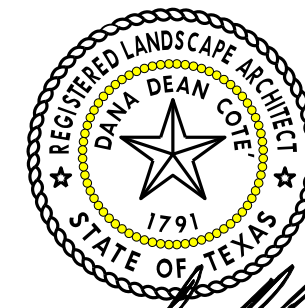
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

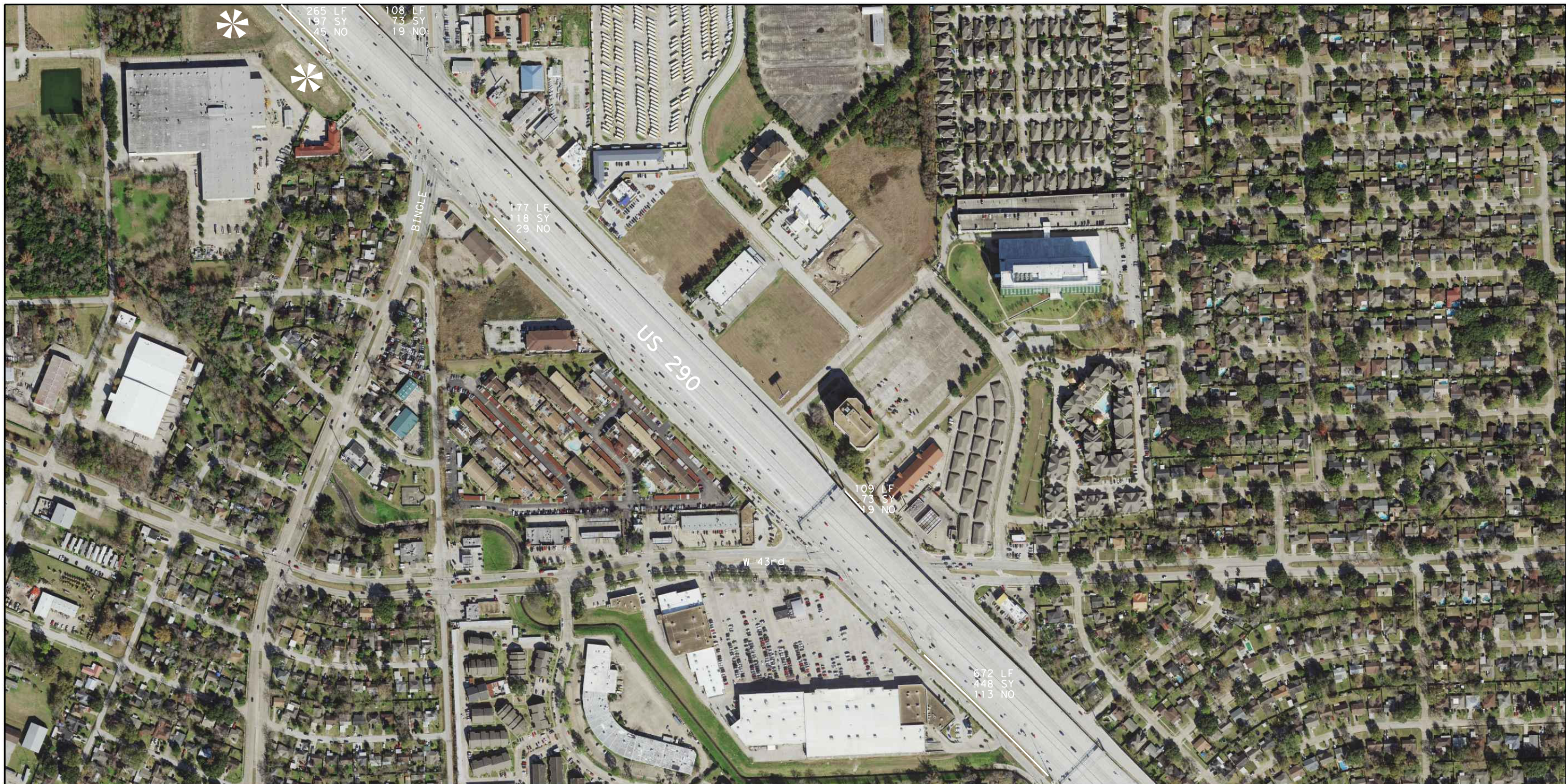


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|---|-------------|-----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 5 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 93 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



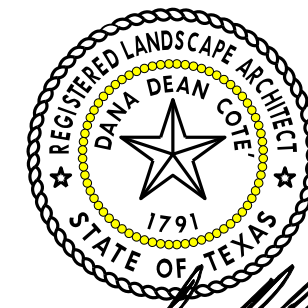
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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



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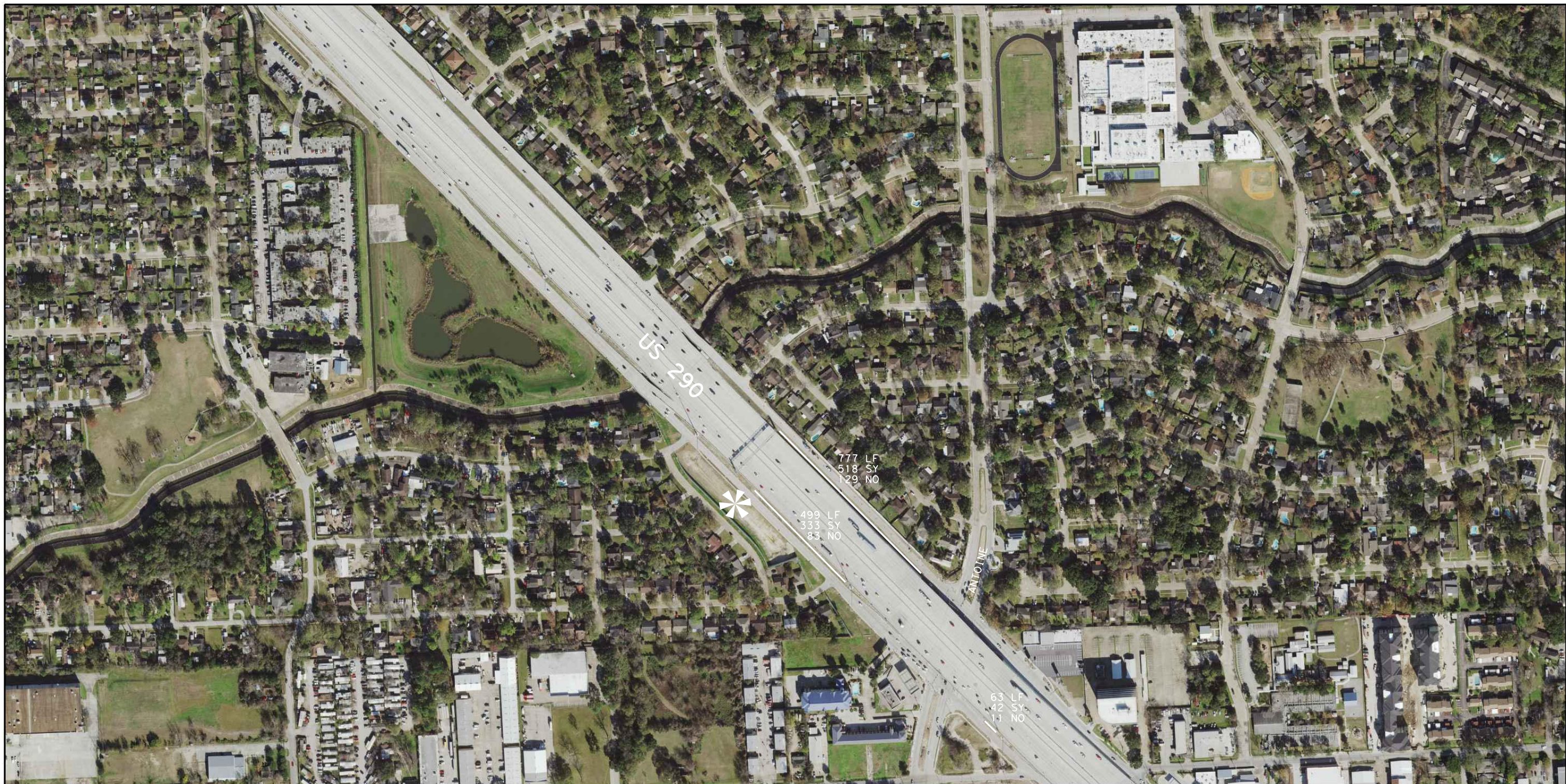
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**US 290
SITE LOCATION**

SHEET 6 OF 10



| | | |
|-------------------|-------------|-----------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 94 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



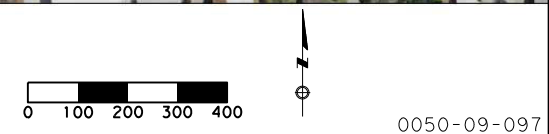
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



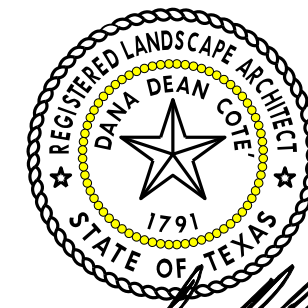
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



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| | | | |
|---|-------------|----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 7 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 95 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

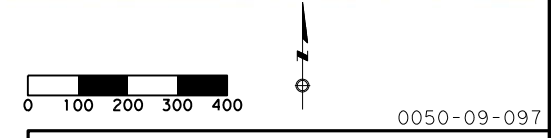


NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

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10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT

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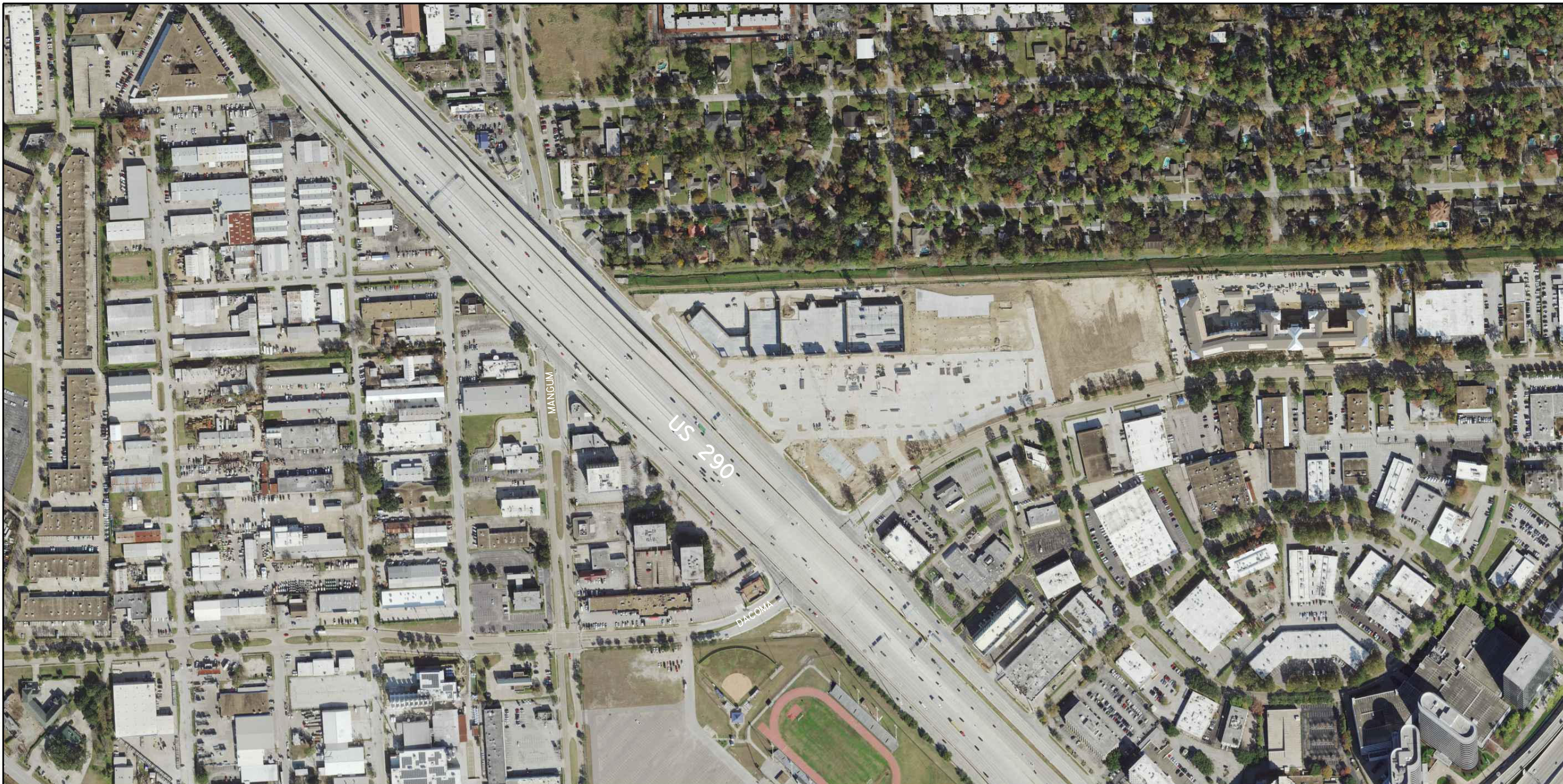


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|---|-------------|-----------|-------------|
| US 290 SITE LOCATION | | | |
| SHEET 8 OF 10 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 96 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



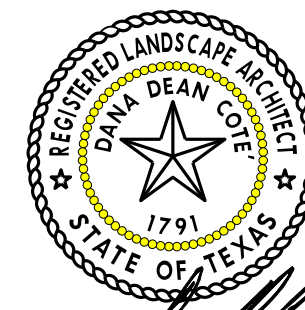
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0050-09-097

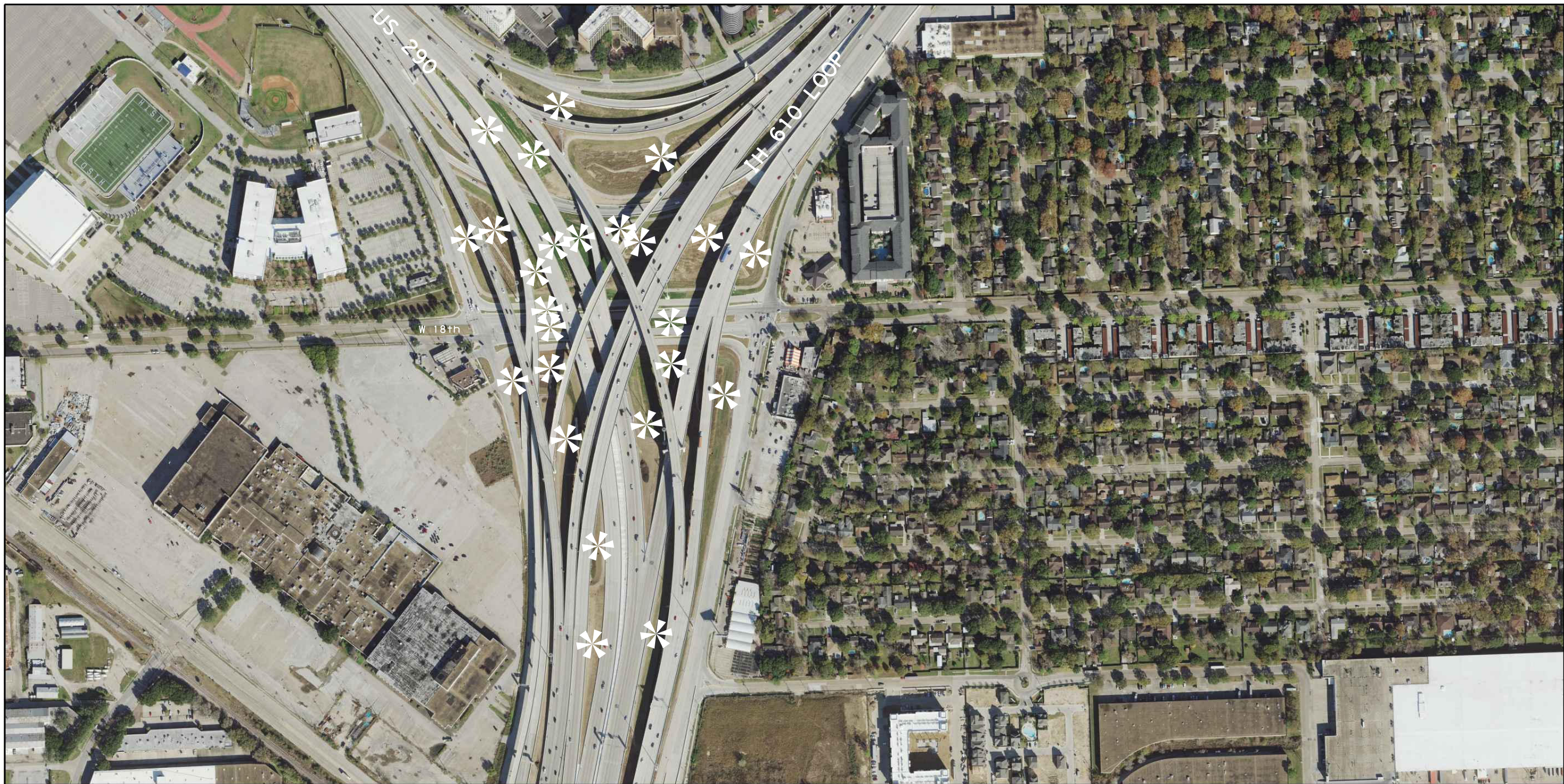
**US 290
SITE LOCATION**

SHEET 9 OF 10



Dana Dean Cote
5/28/2021

| | | | |
|-------------------|-------------|----------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 97 |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



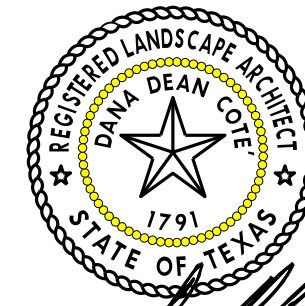
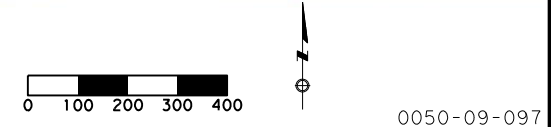
OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
10' WIDE FOR LENGTH SHOWN ON PLANS 3' FROM EDGE-OF-PAVEMENT



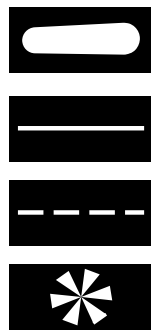
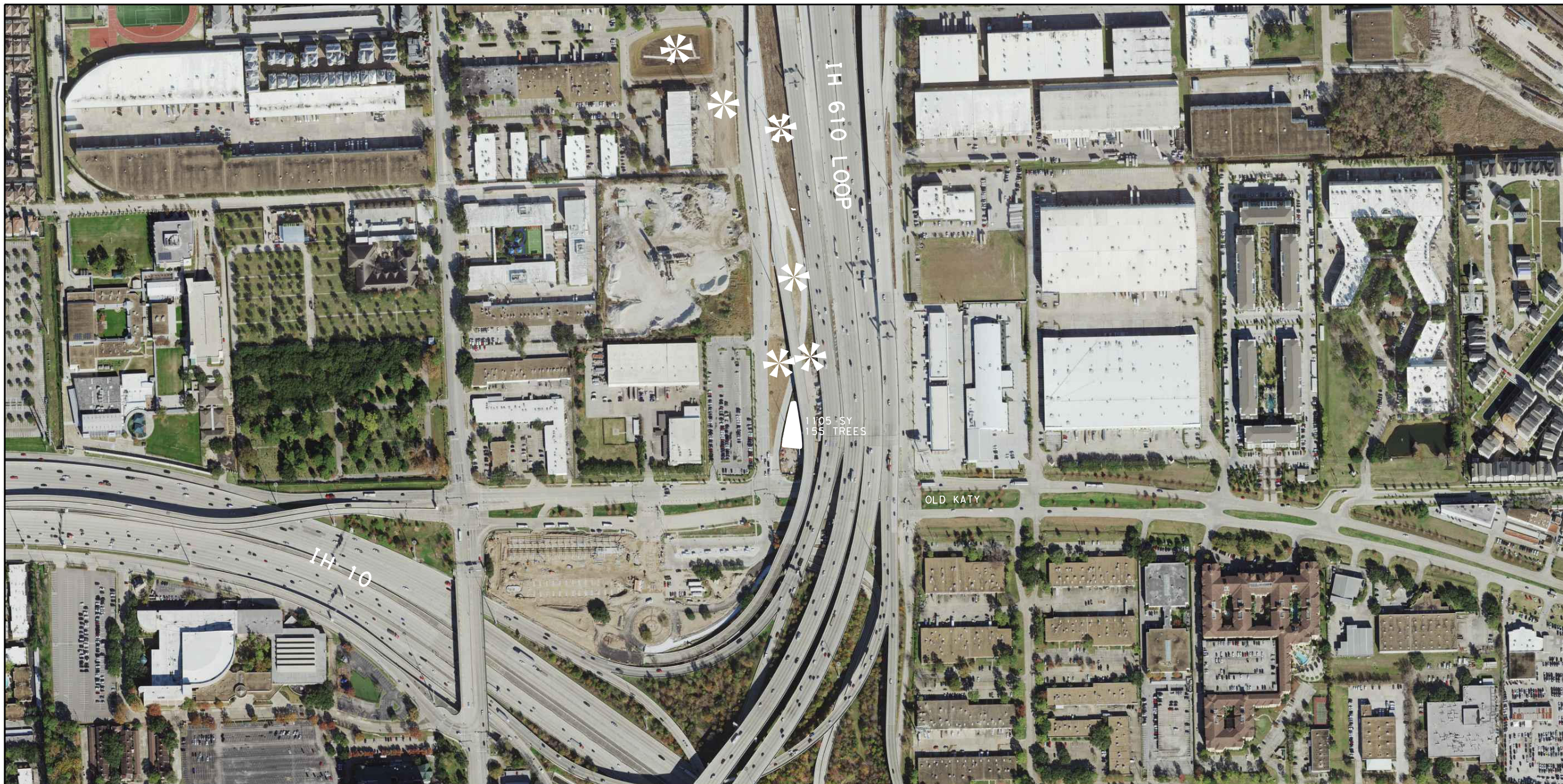
192-6024-001 PLANT MATERIAL (30 GAL) (TREE) - EA
INFILL EXISTING AREAS AS DIRECTED
QUANTITY AND TREE LOCATION WILL BE APPROVED BY LANDSCAPE ARCHITECT
193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



Dana Dean Cote
5/28/2021

US 290
SITE LOCATION
SHEET 10 OF 10

| | | |
|-------------------|-------------|-----------------|
| | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 98 |
| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)

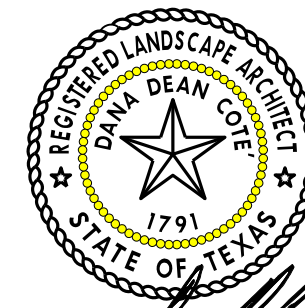
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193-6002 PLANT MAINTENANCE - CYC
1022-6003 LANDSCAPE TREATMENT (TY 3) - EA

NOTE:
Site location sheets are diagrammatic representations of proposed work areas only, additional areas may be identified in the field.
Contractor is responsible for locating and staking limits of each original and new bed preparation area in accordance with the plans.
Adjustments will be made to accommodate site conditions. All locations will be approved prior to any work.

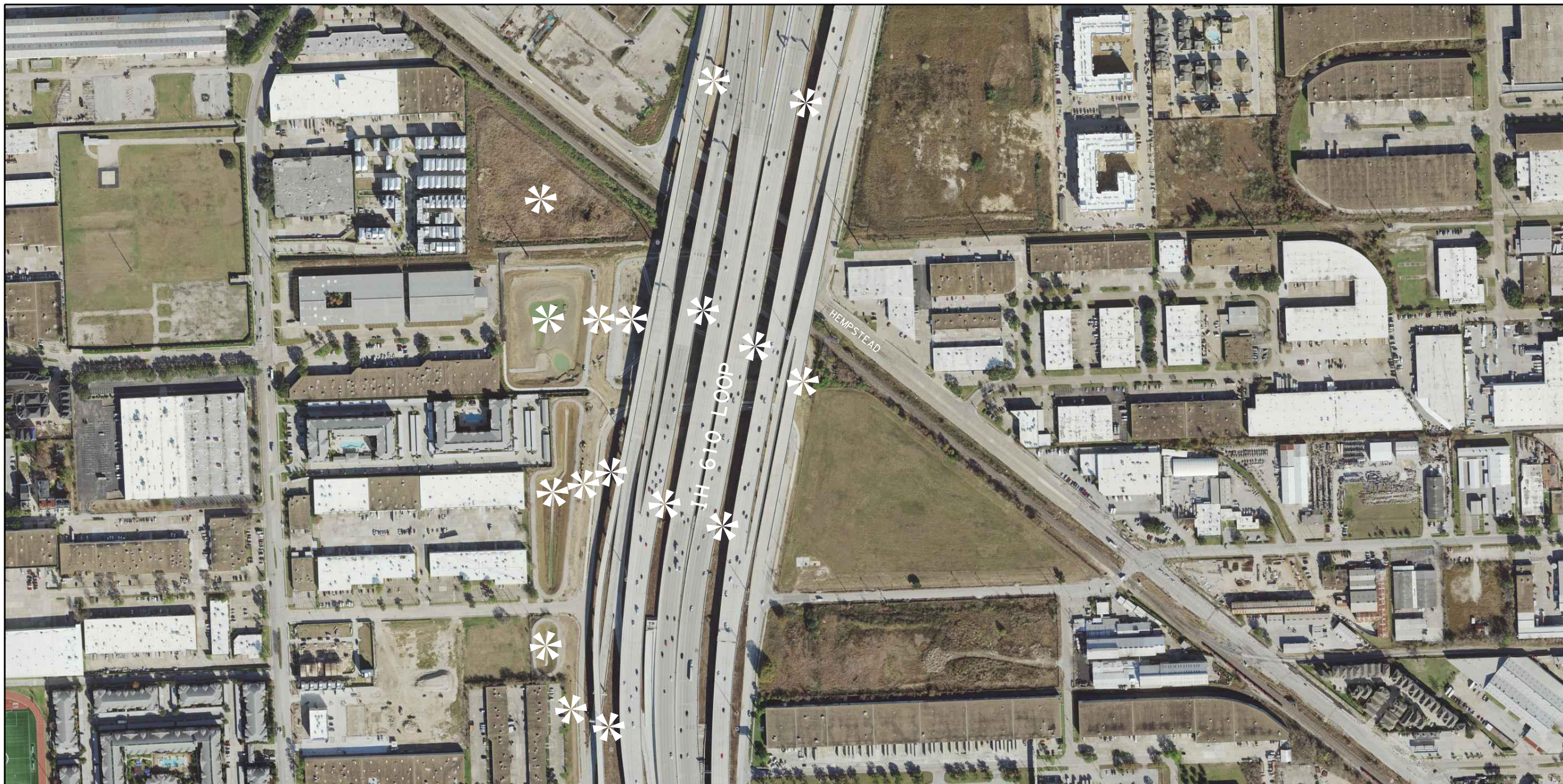


0271-14-242



Dana Dean Cote
5/28/2021

| | | | |
|---|-------------|-----------|-------------|
| IH 610 SITE LOCATION | | | |
| SHEET 1 OF 4 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 99 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM



OLEANDER PLANTING (6' X LENGTH SHOWN ON PLANS / 9 = BED AREA)



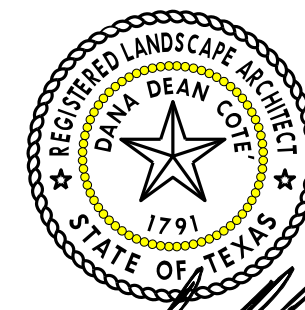
WILDFLOWER SEEDING (MIX 1, SEE WILDFLOWER SEEDING SHEET) - AC
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1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0271-14-242



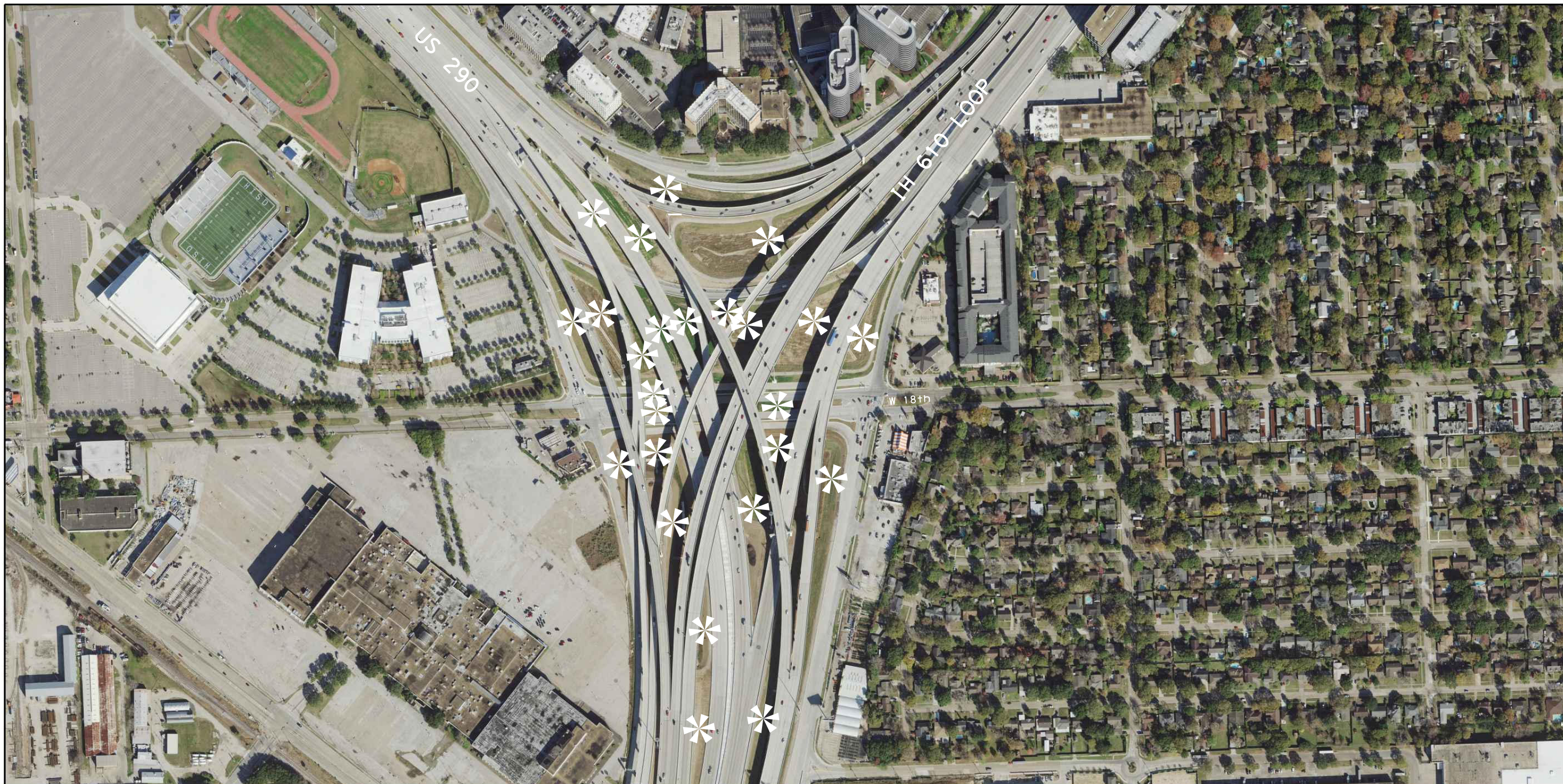
Dana Dean Cote
5/28/2021

**IH 610
SITE LOCATION**

SHEET 2 OF 4



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| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
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| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
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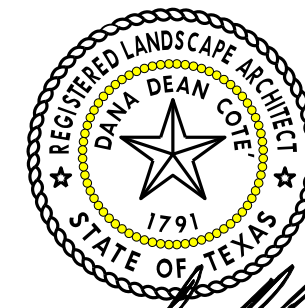
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1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



0271-14-242



Dana Dean Cote
5/28/2021

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**IH 610
SITE LOCATION**

SHEET 3 OF 4

Texas Department of Transportation

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| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
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| STATE | DIST. | COUNTY |
| TEXAS | HOU | WALLER |
| CONT. | SECT. | JOB HIGHWAY NO. |
| 0114 | 11 | 088, etc US 290 |



54 LF
36 SY
6 NO

192 LF
128 SY
32 NO

192 LF
128 SY
32 NO



NEW PLANTING AREAS - BED PREP (TYPE II) WITH WILDFLOWER SEEDING (MIX 2)
SEE PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, SHEETS 1 THRU 4
WIDTH 22' MINIMUM

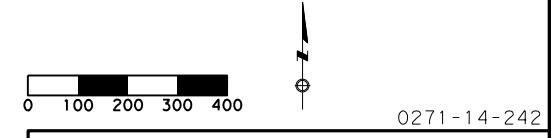
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193-6002 PLANT MAINTENANCE - CYC

1022-6003 LANDSCAPE TREATMENT (TY 3) - EA



5/28/2021

| | | | |
|---|-------------|-----------|-------------|
| 0271-14-242 | | | |
| IH 610 SITE LOCATION | | | |
| SHEET 4 OF 4 | | | |
| Texas Department of Transportation | | | |
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. | |
| 6 | | 102 | |
| STATE | DIST. | COUNTY | |
| TEXAS | HOU | WALLER | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0114 | 11 | 088, etc | US 290 |

SITE DESCRIPTION

PROJECT LIMITS: US 290 FROM BLASINGAME/ OLD HOWTH RD TO IH 610
IH 610 FROM IH 10 TO ELLA BLVD

PROJECT DESCRIPTION: LANDSCAPE DEVELOPMENT

MAJOR SOIL DISTURBING ACTIVITIES: PLANT BED PREPARATION, PLANT MATERIALS,
LANDSCAPE CONSTRUCTION AND MAINTENANCE

TOTAL PROJECT AREA: N/A

TOTAL AREA TO BE DISTURBED: 42.523 ac

WEIGHTED RUNOFF COEFFICIENT:
 (AFTER CONSTRUCTION): 0.65

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: THE SOIL TYPES ARE SILTY, LOAMY SOILS SUCH AS WOCKLEY, GESSNER AND ARIS. THE SOILS ARE POORLY DRAINED AND THE VEGETATIVE COVER ALONG THE SCOPE OF THE PROJECT IS ABOUT 60% WITH MIXTURE OF GRASS AND TREES.

NAME OF RECEIVING WATERS: CYPRESS CREEK (#1009),
WHITE OAK BAYOU ABOVE TIDAL (#1017)

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT PLANTING, SODDING, OR SEEDING
- MULCHING
- SOIL RETENTION BLANKET
- BUFFER ZONES
- PRESERVATION OF NATURAL RESOURCES

OTHER: _____

STRUCTURAL PRACTICES:

- SILT FENCES
- HAY BALES
- ROCK BERMS
- DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- DIVERSION DIKE AND SWALE COMBINATIONS
- PIPE SLOPE DRAINS
- PAVED FLUMES
- ROCK BEDDING AT CONSTRUCTION EXIT
- TIMBER MATTING AT CONSTRUCTION EXIT
- CHANNEL LINERS
- SEDIMENT TRAPS
- SEDIMENT BASINS
- STORM INLET SEDIMENT TRAP
- STONE OUTLET STRUCTURES
- CURBS AND GUTTERS
- STORM SEWERS
- VELOCITY CONTROL DEVICES
- EROSION CONTROL LOGS

OTHER: _____

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

1. INSTALL EROSION CONTROL LOGS BEFORE COMMENCING LANDSCAPE WORK.
2. MAINTAIN EROSION CONTROL MEASURES THROUGHOUT PROJECT COMPLETION.
3. WHEN ALL WORK IS COMPLETE AND APPROVED BY THE ENGINEER, REMOVE SWP3 DEVICES AND ENSURE ALL SOIL AREAS ARE STABILIZED.

STORM WATER MANAGEMENT: STORM WATER RUNOFF WILL BE CONVEYED BY ROADSIDE DITCHES AND STORM DRAINS TO THE EXISTING OUTFALLS.

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The area adjacent to creeks and drainageways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: All inspections will be performed by a TxDOT inspector per one of the options below as directed by the Area Engineer
 1. At least every 7 calendar days
 2. At least every 14 days or after 0.5 inches or more of rainfall
An inspection and maintenance report should be made for each inspection. Based on the inspection results, the controls shall be revised according to the inspection report.

WASTE MATERIALS: The dumpster used to store all waste material will meet all state and local city solid waste management regulations. All trash and construction debris will be deposited in the dumpster. The dumpster will be emptied as necessary or as required by local regulation and the trash will be hauled to a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): In the event of a spill which may be considered hazardous, the Houston District Safety Office shall be contacted immediately at 713-802-5962.

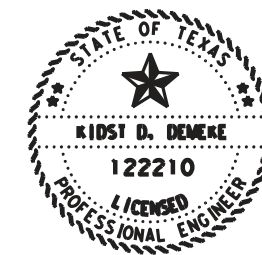
SANITARY WASTE: All Sanitary Waste will be collected from the portable units as necessary or as required by local regulations by a licensed sanitary waste management contractor.

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY
- STABILIZED CONSTRUCTION ENTRANCE

OTHER: _____

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the sediment that may enter receiving waterways. Disposal areas shall not be located in any waterway, waterbody or streambed. Construction staging areas and vehicle maintenance areas shall be constructed by the contractor in a manner which minimizes the runoff of all pollutants. All waterways shall be cleared as soon as practical of temporary embankments, temporary bridges, matting, falsework, piling, debris, and other obstructions placed during construction operations that are not part of the finished work.




[Signature]
 08/20/2021

Texas Department of Transportation
 Houston District

TxDOT STORM WATER POLLUTION PREVENTION PLAN

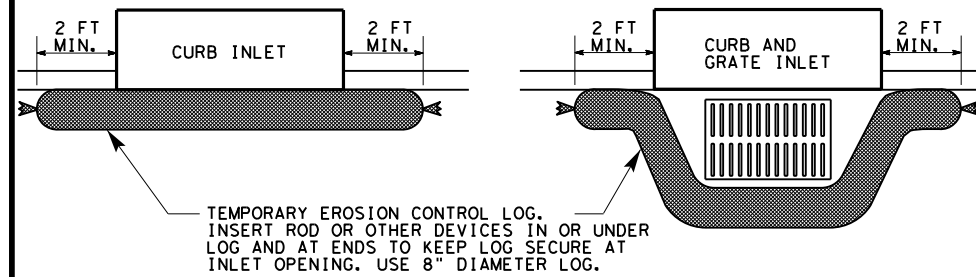
SWP3

| | | | | |
|------------------------|-----------|-----------|-------------|-----------|
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| © TxDOT JANUARY 2007 | DIST | FED REG | PROJECT NO. | SHEET |
| REVISIONS | HOU | 6 | | 103 |
| 9/2010 INSPECTION NOTE | COUNTY | CONTROL | SECT | JOB |
| 9/2013 INSPECTION NOTE | WALLER | 0114 | 11 | 088, etc. |
| 11/2013 SWP3 TO SWP3 | | | | US 290 |
| 03/2015 2014 SPECS | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|----------------------|-----------|-----|-----|-----|---------------------|------|------|-----|---------|-----------|------|----|-----------|--------|--|------|--------|--|-----------|--|-----|--------|--|-----|
| <p>I. STORMWATER POLLUTION PREVENTION</p> <p>Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit is required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506. Refer to Storm Water Pollution Prevention Plan (SWP3) Houston District standard plan.</p> <p style="text-align: center;">No Additional Comments</p> | <p>III. CULTURAL RESOURCES</p> <p>Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the area and contact the Engineer immediately.</p> <p style="text-align: center;">No Additional Comments</p> | <p>VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES</p> <p>Refer to TxDOT Standard Specifications in the event potentially contaminated materials are observed, such as dead or distressed vegetation, trash disposal areas, drums, canisters, barrels, leaching or seepage of substances, unusual smells or odors, or stained soil, cease work in the area and contact the Engineer immediately.</p> <p style="text-align: center;">No Additional Comments</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS</p> <p>United States Army Corps of Engineers (USACE) Permit is required for filling, dredging, excavating or other work in water bodies, rivers, creeks, streams, wetlands or wet areas. The Contractor must adhere to all of the terms and general conditions associated with the following permit(s). If additional work not represented in the plans is required, contact the Engineer immediately.</p> <p><input checked="" type="checkbox"/> No United States Army Corps (USACE) Permit Required</p> <p><input type="checkbox"/> Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) without a Pre-Construction Notification (PCN). Project specific permit was not issued by USACE, therefore is not in the plan set. The USACE general conditions are in the "General Notes."</p> <p><input type="checkbox"/> Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) with a Pre-Construction Notification (PCN). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set. The USACE general conditions are in the "General Notes."</p> <p><input type="checkbox"/> Work is authorized by the United States Army Corps of Engineers (USACE) under a Individual Permit (IP). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set.</p> <p><input type="checkbox"/> Work would be authorized by the United States Army Corps of Engineers (USACE) permit. The project specific permit issued by the USACE will be provided to the contractor.</p> <p>United States Coast Guard (USCG) Permit is required for projects that involve the construction or modification (including changes to lighting) of a bridge or causeway across a water body determined to be navigable by the United States Coast Guard (USCG) under Section 9 of the Rivers and Harbors Act. If additional work not represented in the plans is required, contact the Engineer immediately.</p> <p><input checked="" type="checkbox"/> No United States Coast Guard (USCG) Coordination Required</p> <p><input type="checkbox"/> United States Coast Guard (USCG) Permit</p> <p><input type="checkbox"/> United States Coast Guard (USCG) Exemption</p> <p style="text-align: center;">No Additional Comments</p> | <p>IV. VEGETATION RESOURCES</p> <p>Preserve native vegetation to the extent practical. Refer to TxDOT Standard Specifications in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal.</p> <p style="text-align: center;">No Additional Comments</p> | <p>V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS</p> <p>If any of the listed species below are observed, cease work in the area, do not disturb species or habitat and contact the Engineer immediately.</p> <p>The work may not remove active nests (from bridges, structures, or vegetation adjacent to the roadway, etc.) during nesting season (February 15 to October 1). If removal of structures or vegetation is necessary during the nesting season, the Contractor shall conduct a bird survey no more than 3 days in advance of the clearing/demolish start date. All bird surveys shall be conducted by a Field Biologist and adhere to the guidance document "Avoiding Migratory Birds and Handling Potential Violations" found in the TxDOT Environmental Compliance Toolkits at the time of the survey. (See below for Field Biologist and Ornithologist qualifications)</p> <p style="text-align: center;">No Additional Comments</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <p>VII. OTHER ENVIRONMENTAL ISSUES</p> <p>Comments:</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| | |  <div style="display: inline-block; vertical-align: middle; text-align: right;"> <p>TxDOT Houston District</p> </div> | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <p>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS</p> <p>EPIC</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
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| FILE: EPIC Sheet.dgn | DN: | CK: | DW: | CK: | | | | | | | | | | | | | | | | | | | | | | | |
| © TxDOT: March 2017 | CONT | SECT | JOB | HIGHWAY | | | | | | | | | | | | | | | | | | | | | | | |
| REVISIONS | 0114 | 11 | 088, ETC. | US 290 | | | | | | | | | | | | | | | | | | | | | | | |
| UPDATED section V. text and added definition (10/17) ADDED USCG and USACE notes in Section VII (04/18) | DIST | COUNTY | | SHEET NO. | | | | | | | | | | | | | | | | | | | | | | | |
| | HOU | WALLER | | 104 | | | | | | | | | | | | | | | | | | | | | | | |

CURB INLETS 8" DIAMETER LOGS

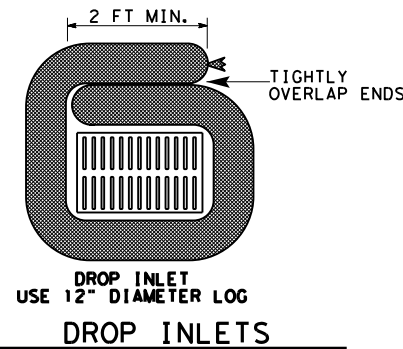
ITEM 506-6040 BIODEG EROSN CONT LOGS (INSTL) (8")



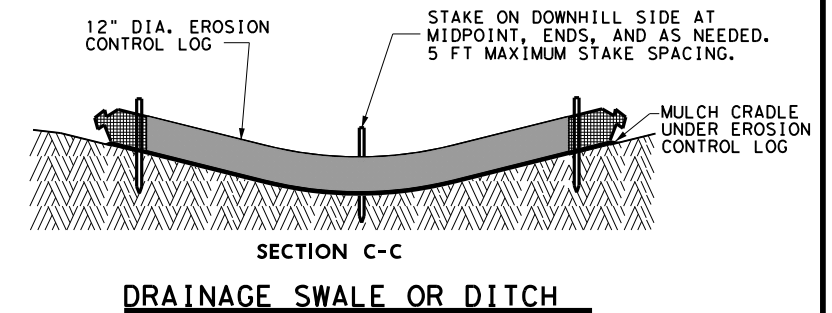
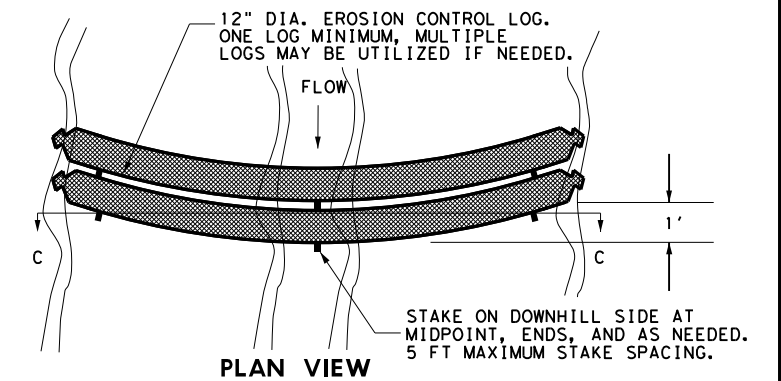
TEMPORARY EROSION CONTROL LOG. INSERT ROD OR OTHER DEVICES IN OR UNDER LOG AND AT ENDS TO KEEP LOG SECURE AT INLET OPENING. USE 8" DIAMETER LOG.

DROP INLETS AND OTHER LOCATIONS 12" DIAMETER LOGS

ITEM 506-6041 BIODEG EROSN CONT LOGS (INSTL) (12")



DROP INLET
USE 12" DIAMETER LOG
DROP INLETS



MATERIAL REQUIREMENTS

FILL:

Use 100% shredded mulch or other non-compost biodegradable material as fill for logs. No compost or fines.

DO NOT USE MATERIAL WHICH PROHIBITS WATER INFILTRATION.

LOG MESH:

Use mesh with 1/4" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

A sediment trap (erosion control log) may be used to filter sediment out of runoff draining from an unstabilized area.

Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

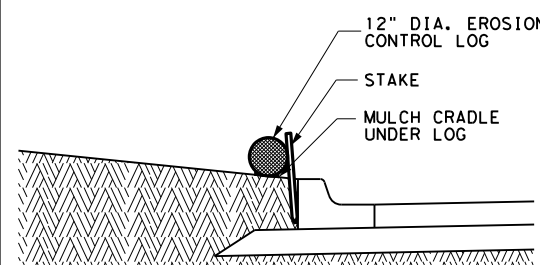
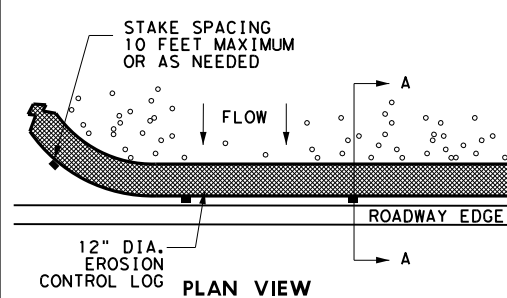
Sediment traps should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way

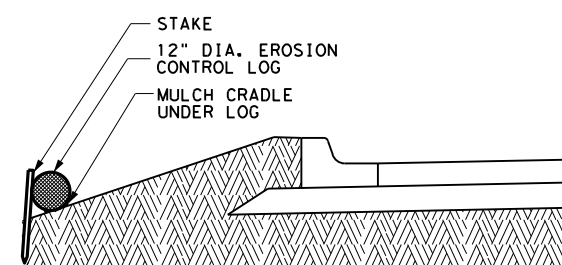
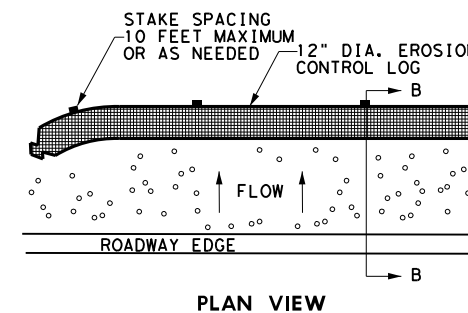
The trap should be cleaned when the capacity has been reduced by 1/2 or the sediment has accumulated to a depth of 1', whichever is less.

REQUIRED ITEMS:

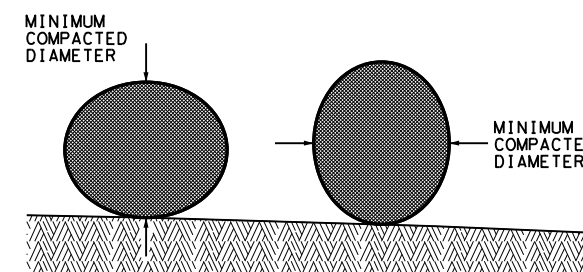
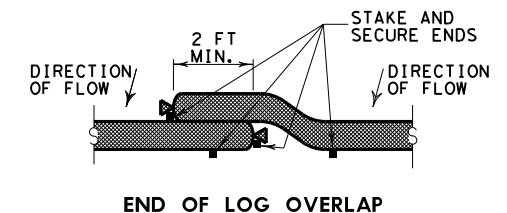
- ITEM 506-6040 BIODEG EROSN CONT LOGS (INSTL) (8") LF
- ITEM 506-6041 BIODEG EROSN CONT LOGS (INSTL) (12") LF
- ITEM 506-6043 BIODEG EROSN CONT LOGS (REMOVE) LF



SECTION A-A
SLOPE TO ROADWAY EDGE



SECTION B-B
SLOPE AWAY FROM ROADWAY EDGE



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation
Houston District

EROSION CONTROL LOG

ECL-I2

| | | | | |
|------------------------|-----------|-----------|----------------|-------------|
| FILE: STDG4g.DGN | DN: TxDot | CK: TxDot | DW: TxDot | CR: TxDot |
| © TXDOT 2014 | DISTRICT | FED REG | PROJECT NUMBER | SHEET |
| REVISIONS | HOU | 6 | | 105 |
| 3/15 MINOR CORRECTIONS | COUNTY | CONTROL | SECT | JOB |
| | WALLER | 0114 | 11 | 088 etc. |
| | | | | US 290 |